HAM - IR 71-01.97
170042 PID - 82975
Dist 8 2/16/2017

Contract Proposal Available @ www.contracts.dot.state.oh.us/home

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STATE OF OHIO

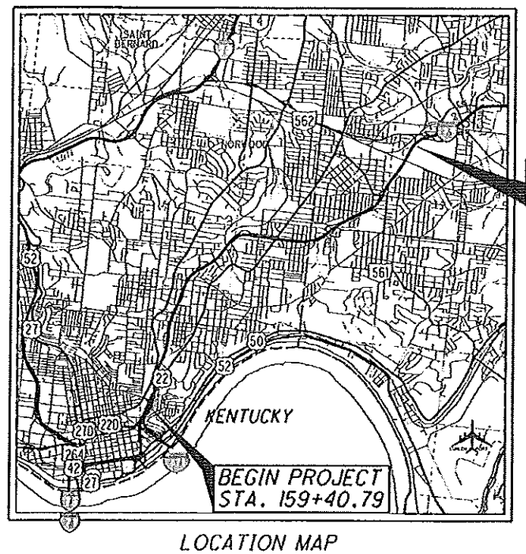
DEPARTMENT OF TRANSPORTATION

HAM-71-1.97

CITIES OF CINCINNATI AND NORWOOD

COLUMBIA TOWNSHIP

HAMILTON COUNTY



LOCATION MAP

LATITUDE: 39°08'36" LONGITUDE: 84°28'14"

SCALE IN MILES 0 1 2 3 4

PORTION TO BE IMPROVED
INTERSTATE HIGHWAY
FEDERAL ROUTES
STATE ROUTES
COUNTY & TOWNSHIP ROADS
OTHER ROADS

DESIGN DESIGNATION

CURRENT ADT (2017)	153,120
DESIGN YEAR ADT (2037)	165,300
DESIGN HOURLY VOLUME (2037)	14,877
DIRECTIONAL DISTRIBUTION	0.51
TRUCKS (24 HOUR B&C)	0.08
DESIGN SPEED	60 MPH
LEGAL SPEED	55 MPH
DESIGN FUNCTIONAL CLASSIFICATION:	
01 INTERSTATE (URBAN)	
NHS PROJECT	YES

DESIGN EXCEPTIONS

DESIGN FEATURE	APPROVAL DATES	SHEET NUMBER
VERTICAL CLEARANCE	9/13/16	77
STRUCTURAL CAPACITY	9/13/16	286

UNDERGROUND UTILITIES

CONTACT BOTH SERVICES TWO WORKING DAYS BEFORE YOU DIG.

OHIO Utilities Protection SERVICE — Call Before You Dig 1-800-362-2764
(Non-members must be called directly)

OIL & GAS PRODUCERS UNDERGROUND PROTECTION SERVICE 1-800-925-0988

PLAN PREPARED BY:

Palmer ENGINEERING — PALMER ENGINEERING, 8350 E. KEMPER RD - SUITE B, CINCINNATI, OH 45249
ROCHESTER • NASHVILLE • LOUISVILLE • CINCINNATI • HERON • TALLAHASSEE • ORLANDO

ENGINEERS SEAL:
SHEETS 2-6,11-12,236-249
STATE OF OHIO DANIEL P FICKER E-63918 REGISTERED PROFESSIONAL ENGINEER
SIGNED:
DATE: 9/22/16

ENGINEERS SEAL:
SHEETS 1-10,73-90
STATE OF OHIO James L Goodwin E-53858 REGISTERED PROFESSIONAL ENGINEER
SIGNED: James L. Goodwin
DATE: 9-22-16

ENGINEERS SEAL:
SHEETS 251-292 (EXCEPTING SHEETS 254-255,260,261,277,278)
STATE OF OHIO XUEQIAN ALICE CHEN E-66165 REGISTERED PROFESSIONAL ENGINEER
SIGNED:
DATE: 9-21-16

ENGINEERS SEAL:
SHEETS 254-255,260,261,277,278
STATE OF OHIO BRONSON J FUNKE E-61829 REGISTERED PROFESSIONAL ENGINEER
SIGNED:
DATE: 9/22/2016

ENGINEERS SEAL:
SHEETS 91-102,250
STATE OF OHIO KRISTIN EGGEMAN E-64479 REGISTERED PROFESSIONAL ENGINEER
SIGNED:
DATE: 09-22-2016

ENGINEERS SEAL:
SHEETS 103-235
STATE OF OHIO MARK J HUNTER E-63976 REGISTERED PROFESSIONAL ENGINEER
SIGNED:
DATE: 9/22/16

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STANDARD CONSTRUCTION DRAWINGS

										SUPPLEMENTAL SPECIFICATIONS		SPECIAL PROVISIONS
BP-2.1	7/17/15	TC-7.65	1/15/16	TC-42.10	10/18/13	MT-97.10	7/18/14	MT-99.60	7/15/16	800	10/21/16	ULTRASONIC
BP-2.2	7/18/08	TC-9.10	1/17/14	TC-42.20	10/18/13	MT-97.12	7/18/14	MT-101.75	7/15/16	804	7/15/16	IMPACT
BP-2.5	7/19/13	TC-12.30	10/18/13	TC-51.11	1/15/16	MT-98.10	7/18/14	MT-102.30	10/16/15	806	3/2/15	TREATMENT
BP-3.1	7/18/14	TC-15.115	10/18/13	TC-51.12	1/15/16	MT-98.11	7/18/14	MT-103.10	1/16/15	808	1/29/16	6/22/04
BP-9.1	7/19/13	TC-18.26	1/17/14	TC-52.10	10/18/13	MT-98.20	7/18/14	MT-104.10	10/16/15	809	4/15/16	
MGS-1.1	7/19/13	TC-21.10	7/15/16	TC-52.20	7/15/16	MT-98.22	7/18/14	MT-105.10	7/19/13	821	4/20/12	
MGS-2.1	7/19/13	TC-21.20	7/15/16	TC-61.30	7/18/14	MT-98.28	7/18/14	ITS-10.10	7/17/15	832	1/17/14	
MGS-3.1	7/18/14	TC-21.50	7/15/16	TC-64.10	7/17/15	MT-98.30	7/18/14	ITS-10.11	7/17/15	843	4/18/03	
MGS-4.2	7/19/13	TC-22.10	10/18/13	TC-65.10	1/17/14	MT-99.20	7/19/13	ITS-11.10	7/17/15	848	7/17/15	
MGS-4.3	1/18/13	TC-22.20	1/17/14	TC-65.11	7/15/16	MT-99.30	1/16/15	ITS-12.10	7/17/15	878	10/18/13	
MGS-5.3	7/15/16	TC-41.10	7/19/13	TC-71.10	7/15/16	MT-101.60	7/19/13	ITS-14.10	7/17/15	904	7/15/16	
RM-4.3	7/18/14	TC-41.15	10/18/13	TC-72.20	7/15/16	MT-101.70	1/17/14	ITS-14.11	7/17/15	908	1/29/16	
RM-4.4	7/18/14	TC-41.20	10/18/13	TC-73.20	7/15/16	MT-101.90	7/17/15	ITS-50.10	1/15/16	921	4/20/12	
RM-4.6	7/19/13	TC-41.30	10/18/13	TC-82.10	7/17/15	MT-102.20	7/18/14	ITS-50.12	1/15/16			
HL-30.41	7/18/14	TC-41.41	10/18/13	MT-95.30	7/15/16	MT-95.30	7/15/16	LA-1.1	10/15/10			
HL-60.11	1/15/16	TC-41.50	10/18/13	MT-95.31	7/18/14	MT-98.29	7/19/13	VPF-1-90	7/17/15			

PROJECT DESCRIPTION

MINOR PAVEMENT REHABILITATION ON 5.28 MILES OF I-71 FROM THE BRIDGE NO. HAM-71-0197 TO S.R. 562. RESURFACING ON I-71 BETWEEN BRIDGE HAM-71-0111 L/R AND ALL 3 TUBES IN THE LYTLE TUNNEL TO THE NORTH PORTAL. RESURFACING OF RAMPS IN SR562 INTERCHANGE. MINOR REHABILITATION WITH DECK OVERLAYS ON BRIDGES HAM-71-0197; HAM-71-0248 L/R; HAM-71-0793L; HAM-71-0804R; HAM-71-0843S & MINOR REPAIRS TO OTHER BRIDGES. SLIDE REPAIR ALONG SIDE THE NORTH BOUND LANES NEAR MONTGOMERY ROAD. SIGN AND PAVEMENT MARKING UPGRADES.

EARTH DISTURBED AREAS

PROJECT EARTH DISTURBED AREA: N/A (MAINTENANCE PROJECT)

ESTIMATED CONTRACTOR EARTH DISTURBED AREA: N/A (MAINTENANCE PROJECT)

NOTICE OF INTENT EARTH DISTURBED AREA: N/A (MAINTENANCE PROJECT)

LIMITED ACCESS

THIS IMPROVEMENT IS ESPECIALLY DESIGNED FOR THROUGH TRAFFIC AND HAS BEEN DECLARED A LIMITED ACCESS HIGHWAY OR FREEWAY BY ACTION OF THE DIRECTOR IN ACCORDANCE WITH THE PROVISIONS OF SECTION 5511.02 OF THE OHIO REVISED CODE.

2016 SPECIFICATIONS

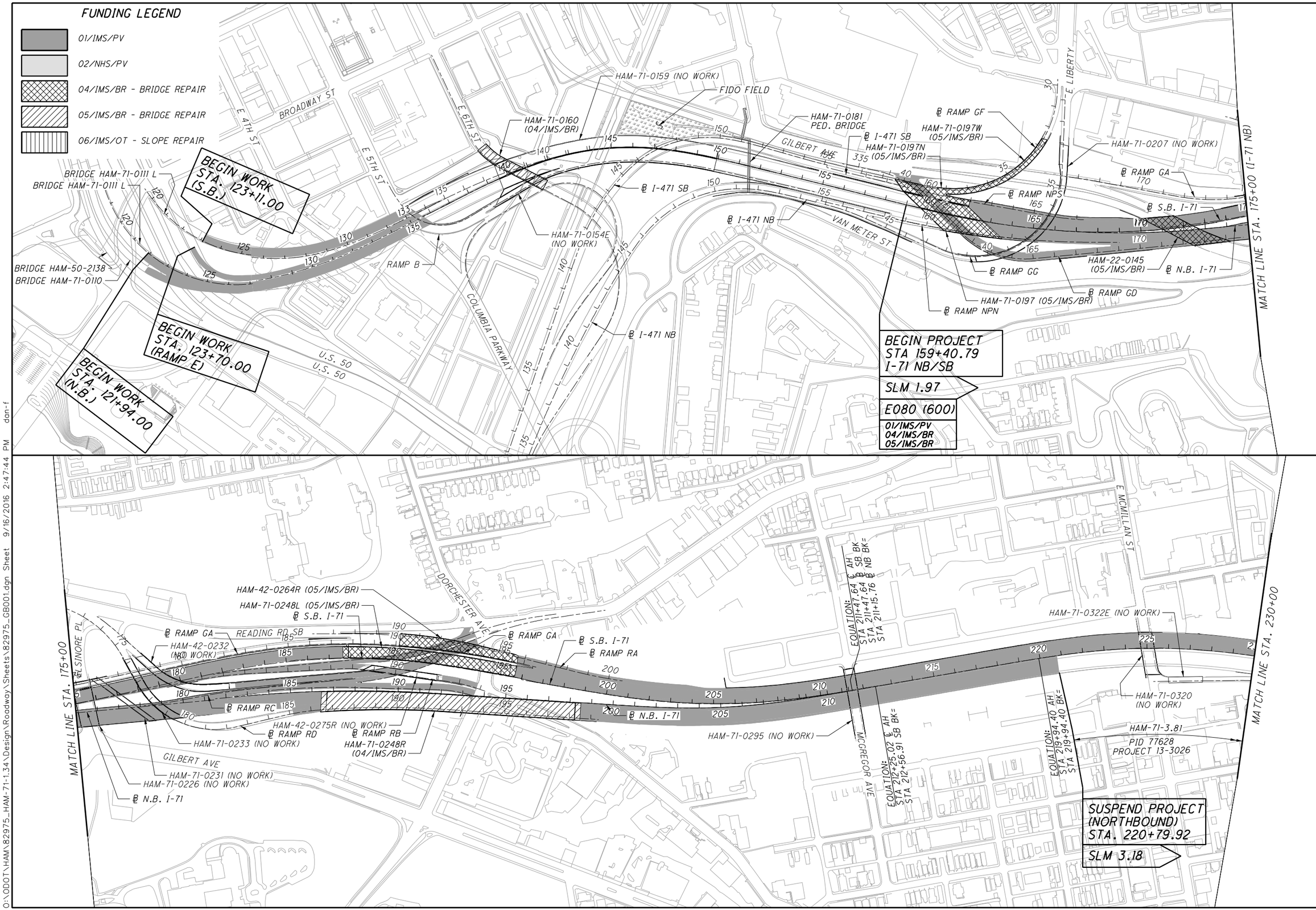
THE STANDARD SPECIFICATIONS OF THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, INCLUDING CHANGES LISTED IN THE PROPOSAL SHALL GOVERN THIS IMPROVEMENT.

I HEREBY APPROVE THESE PLANS AND DECLARE THAT THE MAKING OF THIS IMPROVEMENT WILL NOT REQUIRE THE CLOSING TO TRAFFIC OF THE HIGHWAY EXCEPT AS NOTED ON SHEETS 58-65, AND THAT PROVISIONS FOR THE MAINTENANCE AND SAFETY OF TRAFFIC WILL BE AS SET FORTH ON THE PLANS AND ESTIMATES.

APPROVED Tony K Campbell
DATE 10/12/2016 DISTRICT DEPUTY DIRECTOR

APPROVED Jerry Wray
DATE 11-23-16 DIRECTOR, DEPARTMENT OF TRANSPORTATION

FEDERAL PROJECT NO. E080 (600)
PID NO. 82975
CONSTRUCTION PROJECT NO.
RAILROAD INVOLVEMENT NONE
HAM-71-1.97
1 / 292



HORIZONTAL SCALE IN FEET 0 100 200 400

CALCULATED DPF
CHECKED BJF

SCHEMATIC PLAN
STA. 134+00 TO STA. 230+00

HAM-71-1.97

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SUSPEND PROJECT
(SOUTHBOUND)
STA. 235+30.00
SLM 3.45

WILLIAM HOWARD TAFT RD

MATCH LINE STA. 230+00

OAK ST

LINCOLN AVE

MARTIN LUTHER KING DR

FREEDONIA AVE

BLAIR AVE

MATCH LINE STA. 285+00

HAM-71-3.81 PID 77628 PROJECT: 13-3026

HAM-71-0344 (NO WORK)

HAM-71-0332 (NO WORK)

RESUME PROJECT
(SOUTHBOUND)
STA. 297+00.00
SLM 4.62

HAM-71-0450
(NO WORK)

VICTORY PKWY

JONATHAN AVE

EQUATION:
STA 317+66.68 BK=
STA 318+14.80 AH

RESUME PROJECT
(NORTHBOUND)
STA. 311+50.00
SLM 4.90

℄ RAMP ME

℄ RAMP MF

HAM-71-0505
(NO WORK)

WOODBURN AVE

DANA AVE.

MONTGOMERY RD

SLOPE REPAIR
(06/IMS/OT)

HAM-22-0446
(05/IMS/BR)

℄ MONTGOMERY ROAD (US22/SR3)

MATCH LINE STA. 345+00

FOR LEGEND, SEE SHEET 2

HORIZONTAL SCALE IN FEET
0 100 200 400

CALCULATED DPF
CHECKED BJF

SCHEMATIC PLAN
STA. 230+00 TO STA. 345+00

HAM-71-1.97

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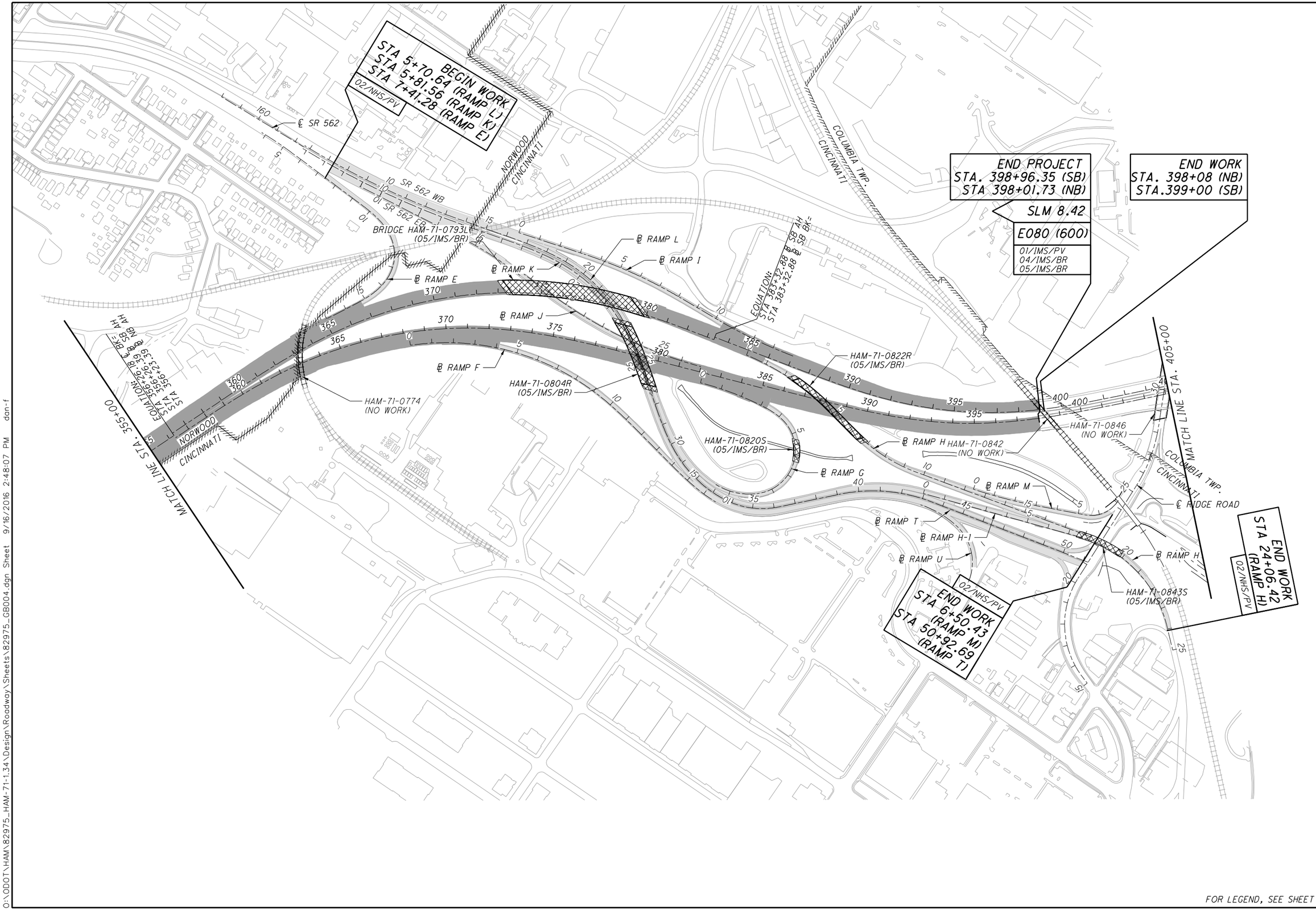
FOR LEGEND, SEE SHEET 2

4 / 292	HAM-71-1.97	SCHEMATIC PLAN STA. 345+00 TO STA. 355+00	CALCULATED DPF CHECKED BJF 0 200 100 400 HORIZONTAL SCALE IN FEET



FOR LEGEND, SEE SHEET 2

HORIZONTAL SCALE IN FEET
0 100 200 400

CALCULATED DPF
CHECKED BJF

SCHEMATIC PLAN
STA. 355+00 TO STA. 405+00

HAM-71-1.97

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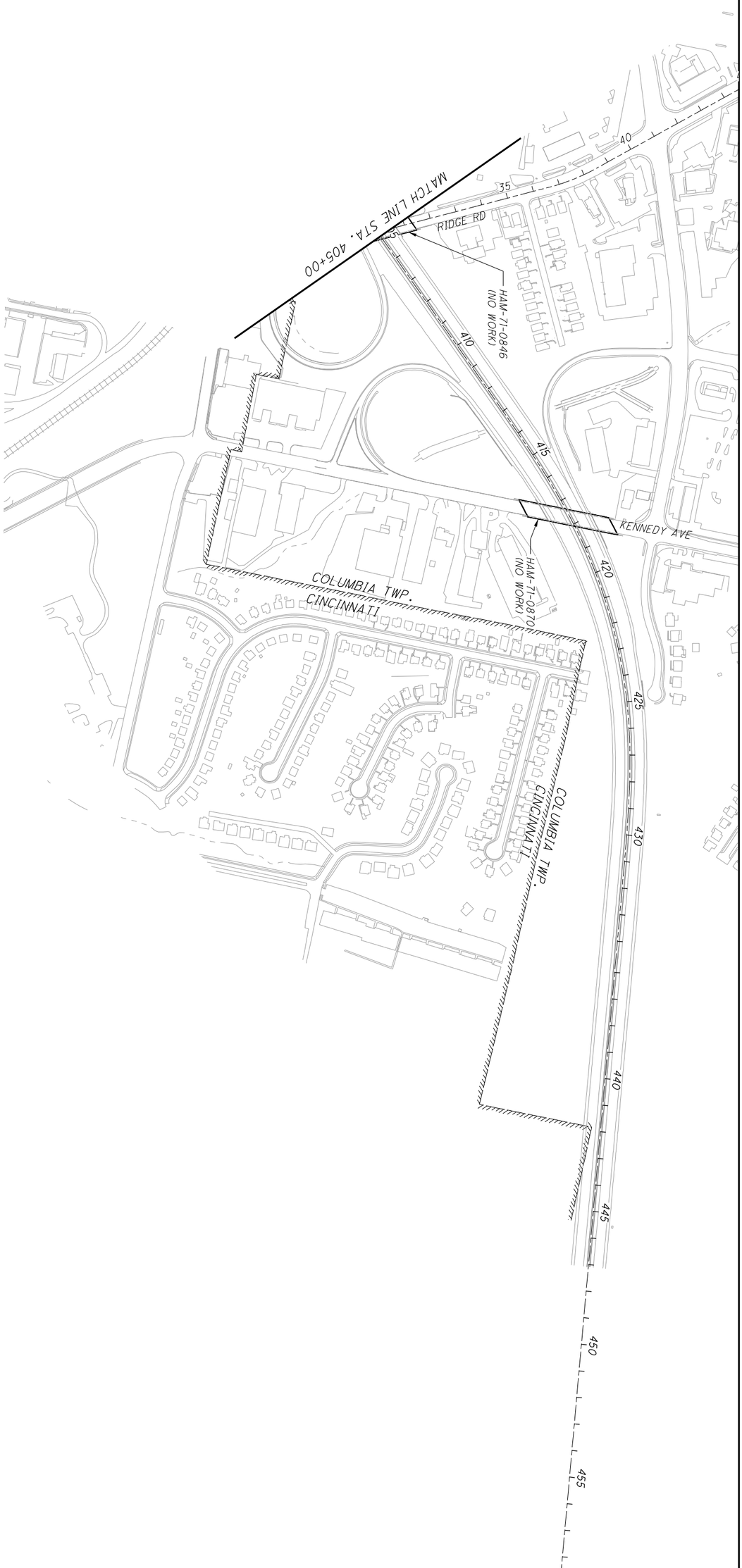


6 / 292	HAM-71-1.97	SCHEMATIC PLAN STA. 405+00 TO STA. 455+00	CALCULATED DPF CHECKED BJF	0 100 200 400 HORIZONTAL SCALE IN FEET

PROPOSED LEGEND

(1) ITEM 806 - 1 ½" ASPHALT CONCRETE SURFACE COURSE, 12.5 mm, TYPE A
(2) ITEM 407 - NON-TRACKING TACK COAT
(3) ITEM 442 - 2 ¾" ASPHALT CONCRETE INTERMEDIATE COURSE, 19 mm, TYPE A (446)
(4) ITEM 407 - TACK COAT, 702.13
(5) ITEM 254 - PAVEMENT PLANING, ASPHALT CONCRETE (4 ¼" DEPTH)
(6) ITEM 302 - 10" ASPHALT CONCRETE BASE
(7) ITEM 304 - 6" AGGREGATE BASE
(8) ITEM 204 - SUBGRADE COMPACTION
(9) ITEM 622 - CONCRETE BARRIER, SINGLE SLOPE, TYPE B1
(10) ITEM 254 - PAVEMENT PLANING, ASPHALT CONCRETE (3" DEPTH)
(11) ITEM 442 - 1 ¾" ASPHALT CONCRETE INTERMEDIATE COURSE, 19 mm, TYPE A (446)
(12) ITEM 606 - GUARDRAIL, TYPE MGS (SEE PLANS FOR LOCATIONS AND LIMITS)
(13) ITEM 618 - RUMBLE STRIPS, (ASPHALT CONCRETE), AS PER PLAN
(14) ITEM 442 - 1 ½" ASPHALT CONCRETE SURFACE COURSE, 12.5 mm, TYPE A (446), PG76-22M, AS PER PLAN

EXISTING LEGEND

(A) EX ASPHALT CONCRETE ± 4 ¼"
(B) EX AGGREGATE BASE ± 9"
(C) EX ASPHALT CONCRETE (VARIABLE DEPTH)
(D) EX AGGREGATE BASE / SUBBASE 6" AND VARIES
(E) EX TYPE 6 CURB
(F) EX PIPE UNDERDRAIN
(G) EX CONCRETE BARRIER
(H) EX RETAINING WALL
(I) EX GUARDRAIL
(J) EX 9" OR 10" REINFORCED CONCRETE PAVEMENT
(K) EX 9" ASPHALT CONCRETE BASE
(L) EX 6" AGGREGATE BASE
(M) EX ASPHALT CONCRETE ± 4"
(N) EX 6" ASPHALT CONCRETE BASE
(O) EX ASPHALT CONCRETE ± 3"
(P) EX CONCRETE BOX (LYTLE TUNNEL)

NOTE:

FOR ADDITIONAL EXISTING TYPICAL SECTION INFORMATION
REFER TO THE EXISTING PLANS;
HAM-71-1.30-9.00 (1995), HAM-71-2.92 (1995) AND OTHERS
LISTED UNDER "EXISTING PLANS" IN THE GENERAL NOTES.

ITEM 442 - ASPHALT CONCRETE SURFACE COURSE, 12.5MM, TYPE A (446/448), PG 76-22M, AS PER PLAN

THE COARSE VIRGIN AGGREGATE FOR THIS ITEM SHALL BE LIMITED TO A BLEND OF AIR COOLED BLAST FURNACE SLAG (ACBFS) OR TRAP ROCK FROM ONTARIO AND LIMESTONE. THE CONTRACTOR SHALL USE A MINIMUM 60% OF ACBFS OR TRAP ROCK FROM ONTARIO WITH LIMESTONE COMPRISING THE REMAINING PERCENTAGE. AT LEAST 50% OF FINE VIRGIN AGGREGATE FOR THIS ITEM SHALL BE LIMITED TO ACBFS OR TRAP ROCK FROM ONTARIO.

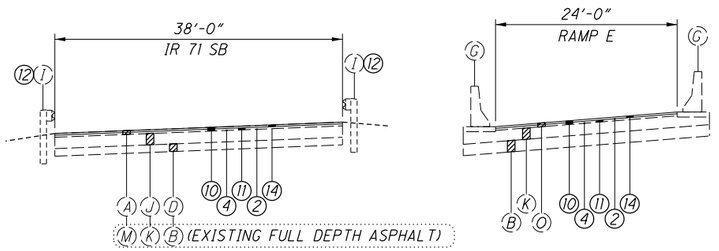
TABLE 442.02-2 APPLIES EXCEPT NO. 4 SIEVE REQUIREMENTS ARE 52 TO 62 TOTAL PERCENT PASSING.

WHEN ACBFS IS USED FOR A FRACTION OF THE COARSE AGGREGATE, PROVIDE A TOTAL ASPHALT BINDER CONTENT GREATER THAN OR EQUAL TO 6.2 PERCENT. IF ACBFS MAKES UP 100% OF THE COARSE AGGREGATE, APPLY THE BINDER CONTENT REQUIREMENTS OF C&MS 442.

ITEM 618 - RUMBLE STRIPS, (ASPHALT CONCRETE), AS PER PLAN

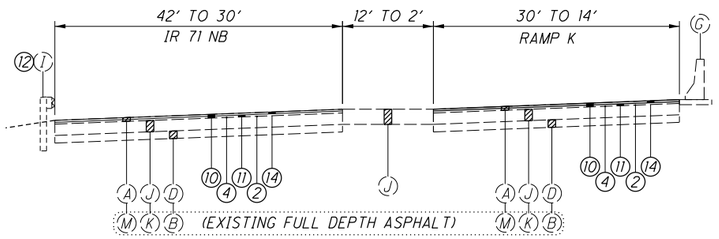
IN ADDITION TO THE REQUIREMENTS OF 618 AND SCD BP-9.1,RUMBLE STRIPS SHALL BE PLACED WITH A 5' OFFSET FROM THE EDGE OF PAVEMENT FOR BOTH THE MEDIAN AND OUTSIDE SHOULDERS IN PREPARATION FOR THE POTENTIAL USE OF THE SHOULDERS FOR TRANSIT.

ITEM 618, RUMBLE STRIPS, (ASPHALT CONCRETE), AS PER PLAN SHALL BE PAID FOR PER MILE INSTALLED.



RESURFACING SECTION - IR 71 SB & RAMP E

IR 71 SB STA 123+11 (END APPROACH SLAB) TO STA 125+42.12 (LYTLE TUNNEL)
IR 71 RAMP E STA 123+70 TO STA 127+10.45 (LYTLE TUNNEL)



RESURFACING SECTION - IR 71 NB & (RAMP K)

IR 71 NB STA 121+99 (END APPROACH SLAB) TO STA 127+10.45 (LYTLE TUNNEL)
IR 71 (RAMP K) STA 122+29 TO STA 127+10.45 (LYTLE TUNNEL)

CALCULATED JLG
CHECKED SCS

TYPICAL SECTION - IR 71 SB, RAMP E, IR 71 NB, RAMP K

HAM-71-1.97

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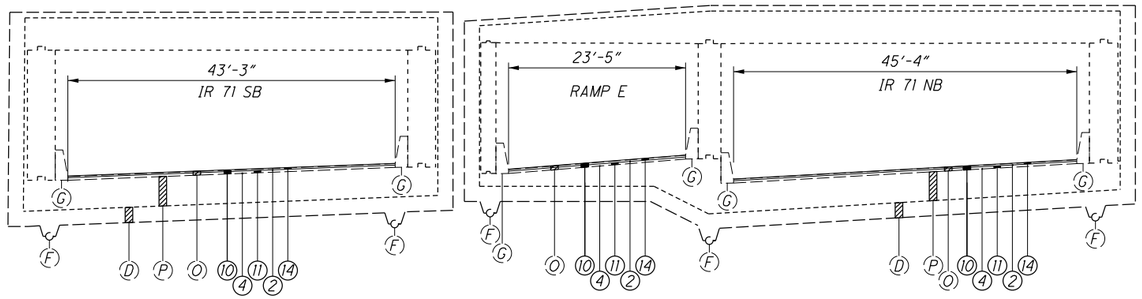
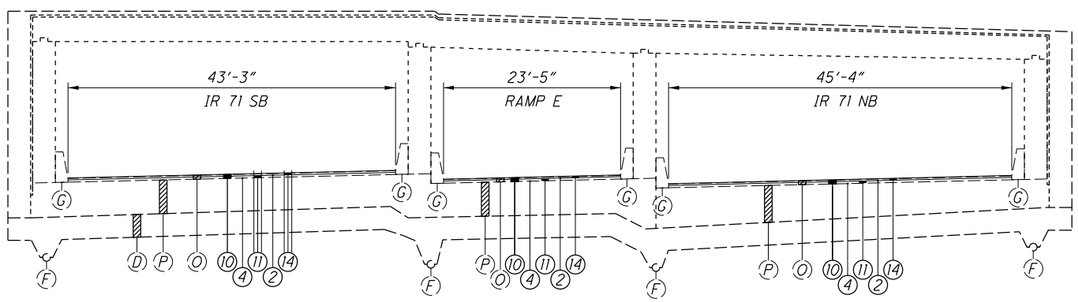


RESURFACING SECTION - LYTLE TUNNEL
IR 71 SB STA 125+42.12 TO STA 129+54.72
IR 71 RAMP E & IR 71 NB STA 127+10.45 TO STA 131+41.99



RESURFACING SECTION - LYTLE TUNNEL
IR 71 SB STA 129+54.72 TO STA 133+57.77
IR 71 RAMP E & IR 71 NB STA 131+41.99 TO STA 135+66.91

FOR LEGEND, SEE SHEET 7.

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TYPICAL SECTION - LYTLE TUNNEL

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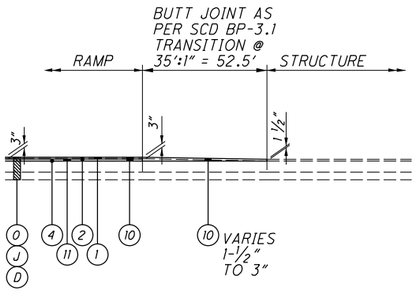


PAVEMENT TRANSITION AT STRUCTURES

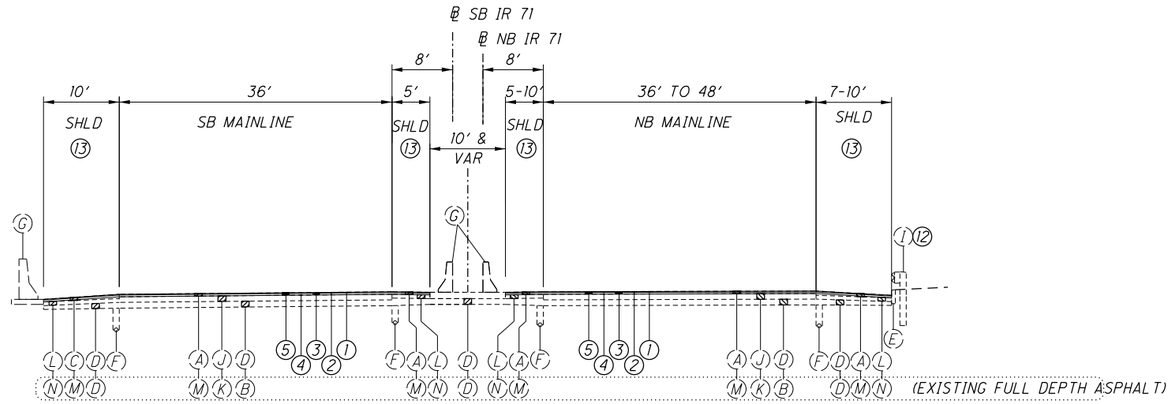
APPLIES TO:
RAMP K & RAMP L @ HAM-71-0804R
RAMP H @ HAM-71-0822R

RAMP TO MAINLINE PAVEMENT TRANSITION

AT RAMP GORES LISTED BELOW, WHERE THE RAMP PAVEMENT MEETS THE MAINLINE PAVEMENT, TRANSITION THE RAMP PAVEMENT THICKNESS FROM 3" TO 3 1/4" IN 9 FT.

RAMP GD STA 168+65.00
RAMP RB STA 181+98.00
RAMP RC STA 182+07.04
RAMP ME STA 304+63.20
RAMP MF STA 337+80.00
RAMP DB STA 373+32.00
RAMP DC STA 384+75.00
RAMP DE STA 385+35.31
RAMP A STA 305+98.50
RAMP B STA 306+64.93
RAMP D STA 326+86.30
RAMP C STA 331+67.27
RAMP E STA 15+20.82
RAMP F STA 4+13.00
RAMP J STA 24+80.00
RAMP I STA 10+39.12
RAMP H STA 0+89.69
RAMP G STA 3+30.41

FOR LEGEND, SEE SHEET 7.

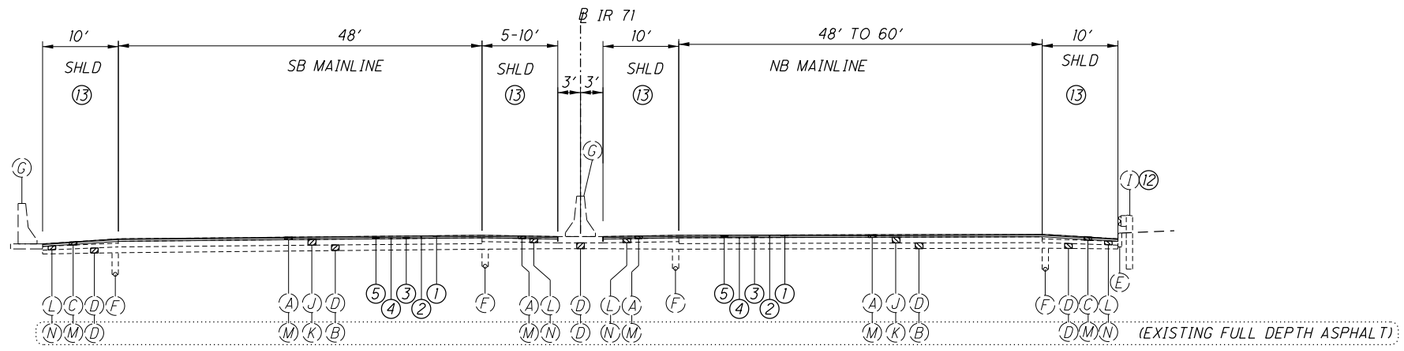


RESURFACING SECTION - IR 71

CENTERLINE: STA 162+71.24 TO STA 164+08.74, LT & RT (EXISTING FULL DEPTH ASPHALT)

SOUTHBOUND: STA 164+08.74 TO STA 186+25.25
SOUTHBOUND: STA 186+25.25 TO STA 187+62.75 (EXISTING FULL DEPTH ASPHALT)
EXCLUDING SOUTHBOUND HAM-71-0248L AND APPROACH SLABS STA 186+62.75 TO STA 195+67.75

NORTHBOUND: STA 164+08.74 TO STA 185+06.54
NORTHBOUND: STA 185+06.54 TO STA 186+44.40 (EXISTING FULL DEPTH ASPHALT)
EXCLUDING NORTHBOUND HAM-71-0248R AND APPROACH SLABS STA 186+44.40 TO STA 198+52.25



RESURFACING SECTION - IR 71

SOUTHBOUND: STA 195+67.75 TO STA 197+55.25 (EXISTING FULL DEPTH ASPHALT)
SOUTHBOUND: STA 197+55.25 TO STA 235+30.00

NORTHBOUND: STA 198+52.25 TO STA 199+89.75 (EXISTING FULL DEPTH ASPHALT)
NORTHBOUND: STA 199+89.75 TO STA 220+79.92

CALCULATED JLG
CHECKED SCS

TYPICAL SECTION

HAM-71-1.97

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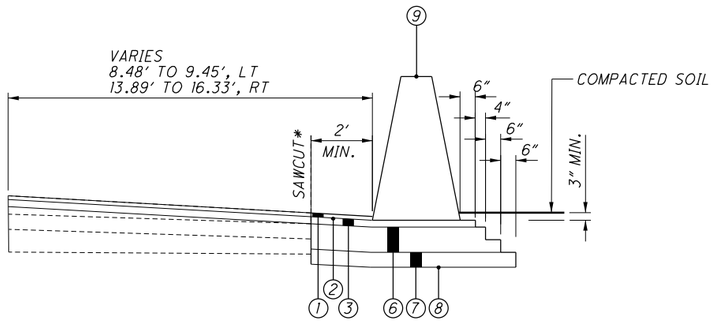
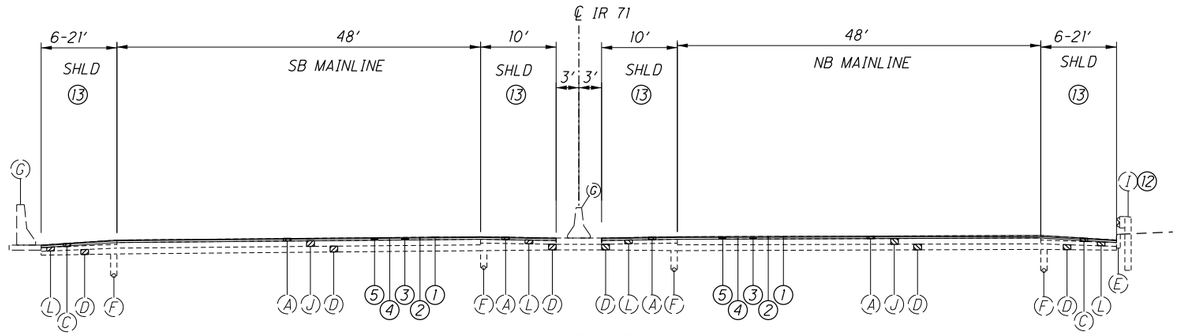


DETAIL A

FULL DEPTH ASPHALT PAVEMENT UNDER BARRIER
NORTHBOUND LT: STA 386+87.75 TO STA 387+47.75
NORTHBOUND RT: STA 388+53.86 TO STA 389+30.00
FOR ADDITIONAL DIMENSIONS SEE SHEET 89

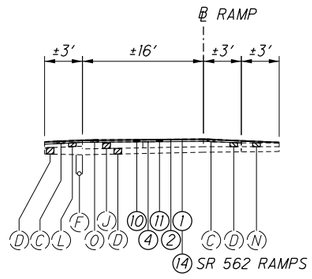
*THE EXISTING PAVEMENT EDGES SHALL BE SAW CUT TO LOCATE A SOUND PAVEMENT EDGE PER SEC. 203.04(E) OF THE CMS. FOR ESTIMATING PURPOSES, PAVEMENT CALCULATIONS INCLUDED IN THE PLAN SHOW THE SAWCUT LINE TO BE 2' FROM THE FACE OF PROPOSED BARRIER.



RESURFACING SECTION - IR 71

SOUTHBOUND: STA 297+00.00 TO STA 392+69.39 BK
SOUTHBOUND: STA 290+50.00 AH TO STA 356+26.18 BK

NORTHBOUND: STA 311+50.00 TO STA 392+69.39 BK
NORTHBOUND: STA 290+50.00 AH TO STA 356+26.18 BK



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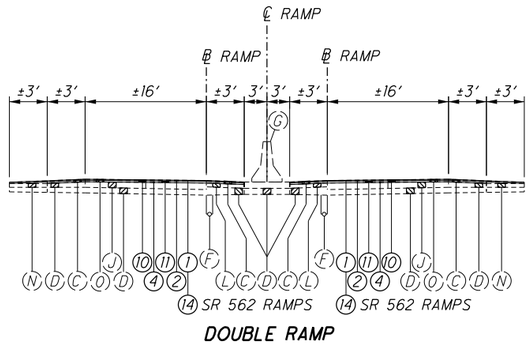

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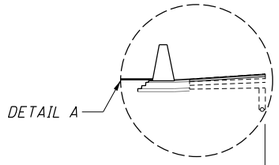
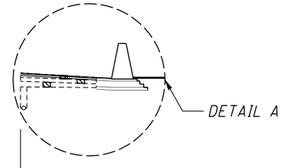
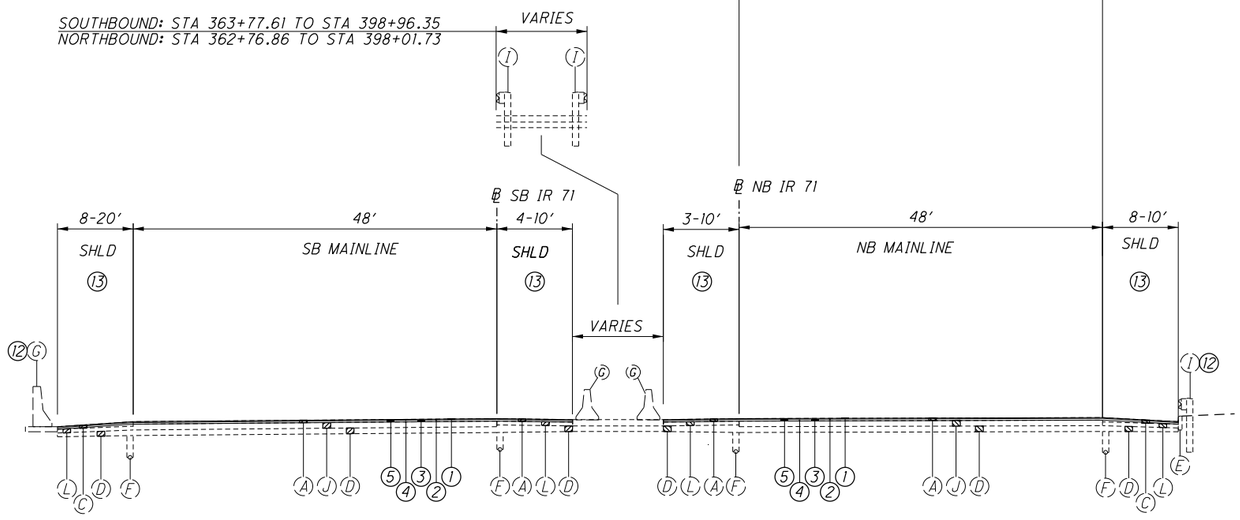




SOUTHBOUND: STA 363+77.61 TO STA 398+96.35
NORTHBOUND: STA 362+76.86 TO STA 398+01.73



RESURFACING SECTION - IR 71

SOUTHBOUND: STA 356+26.39 AH TO STA 398+96.35
NORTHBOUND: STA 356+26.39 AH TO STA 398+01.73

FOR LEGEND, SEE SHEET 7.

CALCULATED JLG
CHECKED SCS

TYPICAL SECTION

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UTILITIES

LISTED BELOW ARE ALL UTILITIES LOCATED WITHIN THE PROJECT CONSTRUCTION LIMITS TOGETHER WITH THEIR RESPECTIVE OWNERS:

DUKE ENERGY - ELECTRIC
139 EAST 4TH STREET, ROOM 467A
CINCINNATI, OH 45202
513-287-3852 (CRAIG HUTCHISON)
CRAIG.HUTCHISON@DUKE-ENERGY.COM

DUKE ENERGY - GAS
139 EAST 4TH STREET, ROOM 460A
CINCINNATI, OH 45202
513-287-1205 (KELSEY PACE)
KELSEY.PACE@DUKE-ENERGY.COM

TIME WARNER CABLE
11252 CORNELL PARK DRIVE
CINCINNATI, OH 45242
513-386-5499 (KENT RIEGER)
KENT.RIEGER@TWCABLE.COM

CINCINNATI METROPOLITAN SEWER DISTRICT
1600 GEST STREET
CINCINNATI, OH 45204
513-557-7188 (ROB FRANKLIN)
ROB.FRANKLIN@CINCINNATI-OH.GOV

GREATER CINCINNATI WATER WORKS
4747 SPRING GROVE AVE
CINCINNATI, OHIO 45232
513-557-5799 (JON HUNSEDER)
JON.HUNSEDER@GCWW.CINCINNATI-OH.GOV

TRAFFIC SURVEILLANCE:
ODOT OFFICE OF TRAFFIC OPERATIONS
1980 WEST BROAD STREET
MAIL STOP 5160
COLUMBUS, OH 43223
614-466-2168 (JASON YERAY)

TRAFFIC SIGNALS:
CITY HALL DIVISION OF TRAFFIC ENGINEERING
801 PLUM STREET, SUITE 320
CINCINNATI, OH 45202
513-352-5272 (ANDY CARTER)
ANDREW.CARTER@CINCINNATI-OH.GOV

PARKING COORDINATION
PROCTOR & GAMBLE - (JLL)
513-983-0097 (MICHELLE HENKE)

LIGHTING: CITY OF CINCINNATI
CITY HALL DIVISION OF TRAFFIC ENGINEERING
801 PLUM STREET, SUITE 320
CINCINNATI, OH 45202
513-352-4318 (JOHNSON HILL)
JOHNSON.HILL@CINCINNATI-OH.GOV

CINCINNATI BELL
221 EAST 4TH STREET BLDG 343
CINCINNATI, OH 45201
513-565-7043 (MARK CONNER)
MARK.CONNER@CINBELL.COM

CINCINNATI BELL AERIAL & PLACING
209 W. 7TH STREET BLD 121-900
CINCINNATI, OH 45202
513-566-5120 (DORIAN JOHNSON)
DORIAN.JOHNSON@CINBELL.COM

AT&T LONG DISTANCE
THAYER POWER & COMMUNICATION
950 FREEWAY DRIVE N.
COLUMBUS, OH 43229
614-431-9292 (CHRISTOPHER MCCLOSKEY)
CHRISMCCLOSKEY@THAYERPC.COM

LIGHTOWER FIBER NETWORKS
585-743-1730 (RICK WEISS)
RWEISS@LIGHTOWER.COM

LEVEL 3 COMMUNICATIONS
1025 ELDORADO BLVD SUITE 43C-420
BROOMFIELD, CO 80021
720-888-7280 (TIM BOYKIN)
TIM.BOYKIN@LEVEL3.COM
RELO@LEVEL3.COM

MCI/VERIZON
120 RAVINE ST
AKRON, OH 44303
330-253-8267 (AL GUEST)
ALLAN.GUEST@VERIZONBUSINESS.COM

XAVIER UNIVERSITY
SHEERAN@XAVIER.EDU (BOB SHEERAN)
FELDHAUSJI@XAVIER.EDU (JOSEPH FELDHAUS)

UTILITIES

THE LOCATION OF THE UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE AS OBTAINED FROM THE OWNERS AS REQUIRED BY SECTION 153.64 O.R.C.

UTILITY NOTIFICATION

THE OHIO DEPARTMENT OF TRANSPORTATION HAS UTILITY FACILITIES (HIGHWAY LIGHTING, TRAFFIC SIGNALS, AND ITS) WITHIN THE LIMITS OF THIS PROJECT.

IN ADDITION TO THE INFORMATION OUTLINED IN THE UTILITY NOTE OF THIS CONTRACT, THE CONTRACTOR SHALL TAKE THE FOLLOWING ACTION TO PROTECT ODOT'S FACILITIES DURING CONSTRUCTION:

HIGHWAY LIGHTING AND TRAFFIC SIGNALS:

EVEN THOUGH ODOT IS LISTED AS A MEMBER OF THE OHIO UTILITIES PROTECTION SERVICE (OUPS), THE CONTRACTOR ON THIS PROJECT IS REQUIRED TO CONTACT ODOT, DISTRICT 8 TRAFFIC MAINTENANCE DEPARTMENT DIRECTLY SO THAT THE ODOT UTILITIES LOCATED WITHIN THIS PROJECT ARE MARKED. THE CONTRACTOR SHALL NOTIFY DISTRICT 8 TRAFFIC MAINTENANCE AT 513-933-6689 AND THE PROJECT ENGINEER, FOURTEEN (14) CALENDAR DAYS IN ADVANCE OF ANY WORK, FOR THE NEED TO MARK ODOT OWNED UTILITIES.

ITS:

ITS FACILITIES AREN'T LISTED WITH OUPS, SO THE CONTRACTOR IS REQUIRED TO CONTACT ODOT CENTRAL OFFICE ITS LAB DIRECTLY SO THAT THE ODOT UTILITIES LOCATED WITHIN THIS PROJECT ARE MARKED. THE CONTRACTOR SHALL NOTIFY ODOT CENTRAL OFFICE ITS LAB AT THE CONTACT INFORMATION LISTED BELOW AND THE PROJECT ENGINEER, FOURTEEN (14) CALENDAR DAYS IN ADVANCE OF ANY WORK FOR THE NEED TO MARK ODOT OWNED UTILITIES.

CENTRAL OFFICE ITS LAB
614-387-4113 - PHONE
614-887-4134 - FAX
CEN.ITS.LAB@DOT.STATE.OH.US - EMAIL

THE ABOVE REQUIREMENTS ARE IN ADDITION TO SECTION 105.07 & 107.16 OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS AND THE UTILITY PROPOSAL NOTE.

THE CONTRACTOR SHALL NOTIFY OTHER UTILITIES THROUGH OUPS OR DIRECTLY A MINIMUM OF FORTY-EIGHT (48) HOURS IN ADVANCE OF ANY WORK.

THE COST FOR THE ABOVE DESCRIBED WORK IS INCIDENTAL TO THE OVERALL BID PRICE OF THE PROJECT.

EXISTING PLANS

EXISTING PLANS ENTITLED HAM-71-1.30 (2015) PID 87268; HAM-71-1.30-9.00 (1995); HAM-71-3.61 (1971); HAM-71-3.61 (1970); HAM-71-4.58 (1970); HAM-71-6.14 (1969); HAM-71-7.45 (1969); HAM-71-2.74 (1968); HAM-71-2.08 (1966); HAM-71-1.30 (1965) AND HAM-71-1.56-2.51 (1965); HAM-471-0.30 (1973) MAY BE INSPECTED IN THE ODOT DISTRICT 8 OFFICE IN LEBANON OR AT THE FOLLOWING LINK:

ftp://ftp.dot.state.oh.us/pub/Contracts/Attach/HAM-82975/

SURVEYING PARAMETERS

PRIMARY PROJECT CONTROL MONUMENTS GOVERN ALL POSITIONING ON ODOT PROJECTS. SEE SHEET ___ OF THE PLANS FOR A TABLE CONTAINING PROJECT CONTROL INFORMATION.

USE THE FOLLOWING PROJECT CONTROL, VERTICAL POSITIONING, AND HORIZONTAL POSITIONING PARAMETERS FOR ALL SURVEYING:

PROJECT CONTROL

POSITIONING METHOD: ODOT VRS
MONUMENT TYPE: TYPE B

VERTICAL POSITIONING

ORTHOMETRIC HEIGHT DATUM: NAVD 88
GEOID: GEOID 12A

HORIZONTAL POSITIONING

REFERENCE FRAME: NAD83
ELLIPSOID: GRS80
MAP PROJECTION: LAMBERT CONFORMAL CONIC
COORDINATE SYSTEM: OHIO STATE PLANE - SOUTH ZONE
COMBINED SCALE FACTOR: 1.0000000 (GRID)
ORIGIN OF COORDINATE
SYSTEM: 0,0

USE THE POSITIONING METHODS AND MONUMENT TYPE USED IN THE ORIGINAL SURVEY TO RESTORE ALL MONUMENTS RELATED TO PRIMARY PROJECT CONTROL THAT ARE DAMAGED OR DESTROYED BY CONSTRUCTION ACTIVITIES. RESTORE THE DAMAGED OR DESTROYED MONUMENTS IN ACCORDANCE WITH CMS 623.

UNITS ARE IN U.S. SURVEY FEET. USE THE FOLLOWING CONVERSION FACTOR: 1 METER = 3.280833333 U.S. SURVEY FEET.

WORK LIMITS

THE WORK LIMITS SHOWN ON THESE PLANS ARE FOR PHYSICAL CONSTRUCTION ONLY. PROVIDE THE INSTALLATION AND OPERATION OF ALL WORK ZONE TRAFFIC CONTROL AND WORK ZONE TRAFFIC CONTROL DEVICES REQUIRED BY THESE PLANS WHETHER INSIDE OR OUTSIDE THESE WORK LIMITS.

COORDINATION BETWEEN CONTRACTORS

AS PER CMS 105.08, THE CONTRACTOR MUST COORDINATE WITH THE CONTRACTORS FOR THE FOLLOWING ON-GOING PROJECTS: I-71 MARTIN LUTHER KING INTERCHANGE (PROJECT 13-3026), HAM-71-1.59 (PROJECT 16-0392); AND THE KYTC BRENT SPENCE BRIDGE REHABILITATION SCHEDULED IN 2017.

CONSTRUCTION NOTIFICATION

THE CONTRACTOR WILL ADVISE THE PROJECT ENGINEER A MINIMUM OF:

- TWENTY-ONE (21) DAYS PRIOR TO THE START OF CONSTRUCTION ACTIVITIES AND/OR ROAD CLOSURES.

- FOURTEEN (14) DAYS PRIOR TO LANE CLOSURES AND/OR SHIFTS IN TRAFFIC PATTERNS.

THE PROJECT ENGINEER WILL FORWARD THIS INFORMATION TO THE FOLLOWING:

- DISTRICT PUBLIC INFORMATION OFFICER (PIO) BY EMAIL AT D08.PIO@dot.ohio.gov

- DISTRICT PERMIT SECTION BY PHONE AT (513) 933-6577 OR EMAIL AT christopher.bass@dot.ohio.gov

- CENTRAL OFFICE SPECIAL HAUL PERMITS SECTION BY FAX AT (614) 728-4099 OR EMAIL AT hauling.permits@dot.ohio.gov

THE PIO WILL, IN TURN, NOTIFY THE PUBLIC, THE LOCAL EMERGENCY SERVICES, AFFECTED SCHOOLS AND BUSINESSES, AND ANY OTHER IMPACTED LOCAL PUBLIC AGENCY OF ANY OF THE ABOVE MENTIONED ITEMS, VIA MEDIA SOURCES.

CITY OF CINCINNATI PERMIT

A CITY OF CINCINNATI DEPARTMENT OF TRANSPORTATION AND ENGINEERING (DOTE) PERMIT IS REQUIRED PRIOR TO THE ODOT CONTRACTOR COMMENCING WORK IN THE CITY OF CINCINNATI'S PUBLIC RIGHT-OF-WAY. PERMIT APPLICATIONS FOR STREET USE, STREET BARRICADE, STREET OPENING, ETC. MAY BE MADE AT THE BUSINESS DEVELOPMENT AND PERMIT CENTER LOCATED AT 805 CENTRAL AVENUE, SUITE 500 CINCINNATI, OHIO 45202 OR AT ROOM 425, CITY HALL, 801 PLUM STREET CINCINNATI, OHIO 45202.

SEEDING AND MULCHING

THE FOLLOWING QUANTITIES ARE PROVIDED TO PROMOTE GROWTH AND CARE OF PERMANENT SEEDED AREAS:

659, SEEDING AND MULCHING, CLASS 3B 7,315 SQ. YD.

659, COMMERCIAL FERTILIZER 0.99 TON

659, LIME 1.51 ACRES

659, WATER 19.75 M. GAL.

SEEDING AND MULCHING SHALL BE APPLIED TO ALL AREAS OF EXPOSED SOIL BETWEEN THE RIGHT-OF-WAY LINES, AND WITHIN THE CONSTRUCTION LIMITS FOR AREAS OUTSIDE THE RIGHT-OF-WAY LINES COVERED BY WORK AGREEMENT OR SLOPE EASEMENT. QUANTITY CALCULATIONS FOR SEEDING AND MULCHING ARE BASED ON THESE LIMITS.

CALCULATED DPF
CHECKED BJF

GENERAL NOTES

HAM-71-1.97

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ITEM 254 - PAVEMENT PLANING

NO TRAFFIC IS ALLOWED ON A PLANED SURFACE, PLACE INTERMEDIATE COURSE OVER PAVEMENT PLANING PRIOR TO OPENING TO TRAFFIC.

ITEM 252 - FULL DEPTH RIGID PAVEMENT REMOVAL AND FLEXIBLE REPLACEMENT

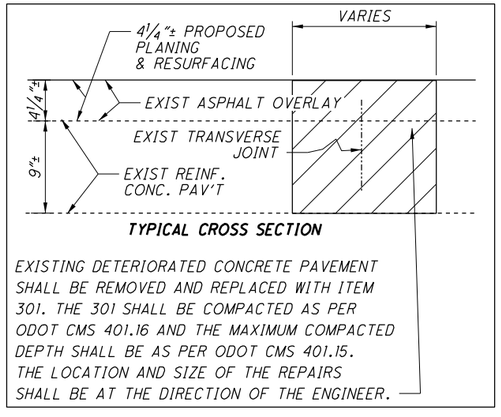
A QUANTITY OF THIS ITEM IS PROVIDED FOR USE AS DIRECTED BY THE ENGINEER. THIS ITEM SHALL CONSIST OF CUTTING AND REMOVING DETERIORATED CONCRETE PAVEMENT AND PLACING PAVEMENT REPAIR AS DETAILED ON THIS SHEET. THIS ITEM SHALL COMMENCE PRIOR TO MAINLINE PAVEMENT PLANING. REPAIR AREAS SHALL BE PLANED AND RESURFACED NO LATER THAN 2 WEEKS AFTER REPAIR IS COMPLETED.

IT IS NOT THE INTENT TO REPAIR EVERY DETERIORATED AREA WITHIN THE PROJECT. THE ENGINEER SHALL DETERMINE WHICH AREAS ARE TO BE REPAIRED.

PAYMENT SHALL BE BASED ON THE ACTUAL NUMBER OF CUBIC YARDS OF PAVEMENT REMOVED AND REPLACED TO THE LIMITS DESIGNATED BY THE ENGINEER. THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY:

252, FULL DEPTH RIGID PAVEMENT REMOVAL AND FLEXIBLE REPLACEMENT, 8,296 SY *
252, FULL DEPTH PAVEMENT SAWING, 49,777 FT *
*BREAKDOWN

BEGIN PROJECT TO STA. 235+30: 1754 SY & 10,526 FT.
STA. 297+00 TO STA. 356+26.39: 4706 SY & 28,233 FT.
STA. 356+2639 TO END PROJECT: 1836 SY & 11,018 FT.



TYPICAL CROSS SECTION

EXISTING DETERIORATED CONCRETE PAVEMENT SHALL BE REMOVED AND REPLACED WITH ITEM 301. THE 301 SHALL BE COMPACTED AS PER ODOT CMS 401.16 AND THE MAXIMUM COMPACTED DEPTH SHALL BE AS PER ODOT CMS 401.15. THE LOCATION AND SIZE OF THE REPAIRS SHALL BE AT THE DIRECTION OF THE ENGINEER.

ITEM 203 GRANULAR EMBANKMENT, AS PER PLAN

USE NUMBER 8 AGGREGATE CONSISTING OF CRUSHED CARBONATE STONE.

ITEM 622 - CONCRETE BARRIER, TYPE B1, AS PER PLAN

THIS ITEM SHALL CONSIST OF CONSTRUCTION OF A 50" TALL JERSEY SHAPED MEDIAN BARRIER (TYPE B50) AS PER THE DETAILS SHOWN ON SHEETS 234

ITEM 622 - BARRIER TRANSITION, AS PER PLAN

THIS ITEM SHALL CONSIST OF CONSTRUCTION OF A TRANSITION FROM JERSEY SHAPED BARRIER TO SINGLE SLOPE BARRIER AS PER THE DETAILS AND NOTES SHOWN ON SHEETS 89 AND 90.

REVIEW AND CLEANOUT OF EXISTING DRAINAGE FACILITIES

BEFORE ANY WORK IS STARTED ON THE PROJECT AND AGAIN BEFORE FINAL ACCEPTANCE BY THE STATE, REPRESENTATIVES OF THE STATE AND THE CONTRACTOR, ALONG WITH LOCAL REPRESENTATIVES, SHALL MAKE AN INSPECTION OF ALL EXISTING SEWERS WHICH ARE TO REMAIN IN SERVICE AND WHICH MAY BE AFFECTED BY THE WORK. THE CONDITION OF THE EXISTING CONDUITS AND THEIR APPURTENANCE SHALL BE DETERMINED FROM FIELD OBSERVATIONS. RECORDS OF THE INSPECTION SHALL BE KEPT IN WRITING BY THE STATE. AS PART OF THE INSPECTION, THE ENGINEER WILL NOTE DRAINAGE FACILITIES THAT ARE NOT FUNCTIONING DUE TO DEBRIS BUILDUP.

REMOVE ALL SEDIMENT AND DEBRIS FROM THE EXISTING DRAINAGE INLETS AND CONDUITS AS DIRECTED BY THE ENGINEER. ALL MATERIAL REMOVED SHALL BE DISPOSED OF AS PER 105.16 AND 105.17. ALL STORM SEWERS SHALL BE CLEANED OUT TO THE SATISFACTION OF THE ENGINEER.

ALL EXISTING STORM SEWERS INSPECTED INITIALLY BY THE ABOVE MENTIONED PARTIES SHALL BE MAINTAINED AND LEFT IN A PHYSICAL CONDITION REASONABLY COMPARABLE TO THAT DETERMINED BY THE ORIGINAL INSPECTION. ANY CHANGE IN THE CONDITION RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE CORRECTED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER.

CLEANOUT OF THE INLETS, CATCH BASINS AND STORM SEWERS SHALL BE PAID FOR AT THE UNIT PRICE BID FOR ITEMS AS LISTED BELOW. THIS PRICE SHALL INCLUDE THE COST FOR MATERIAL, EQUIPMENT, LABOR, PRE-CONSTRUCTION AND POST-CONSTRUCTION INSPECTIONS, TRAFFIC CONTROL AND ALL INCIDENTALS REQUIRED TO COMPLETE THE CLEANOUT. THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR THE ABOVE NOTED WORK:

ITEM 202 - SPECIAL: PIPE CLEANOUT, 24" AND UNDER 2091 FT.
ITEM 203 - ROADWAY, MISC.: MEDIAN INLET CLEANOUT, 35 EA.
ITEM 203 - ROADWAY, MISC.: CATCH BASIN CLEANOUT, 29 EA.

ITEM 203 - EMBANKMENT, AS PER PLAN

THE SOILS COMPRISING THE EXISTING SLOPE IN THE AREA OF THE REPAIR ARE ANTICIPATED TO BE HIGH IN MOISTURE CONTENT AND THE CONTRACTOR SHOULD EXPECT TO PROVIDE MEANS AND METHODS TO MOISTURE CONDITION THE SOIL TO ACHIEVE NECESSARY COMPACTION PER ITEM 203. ADDITIONALLY, THE SOILS IN THE SLOPE ARE ANTICIPATED TO CONTAIN A SIGNIFICANT AMOUNT OF SILT. GROUNDWATER WILL BE PRESENT IN THE SLOPE AND THE CONTRACTOR SHALL PROVIDE MEANS TO CONTROL GROUNDWATER DURING EXCAVATION AND SUBSEQUENT EMBANKMENT PLACEMENT. SMALLER COMPACTION AND CONSTRUCTION EQUIPMENT (SUCH HAS HAND COMPACTION EQUIPMENT) WILL BE NECESSARY IN THE UPPER PORTION OF THE SLOPE WHERE THE WIDTH OF THE FILL IS LESS THAN 8 FT. FROM THE BACK OF THE BENCH TO THE NEW EMBANKMENT FACE THE CONSULTANT SOILS INSPECTOR SHALL PROVIDE TESTING AND INSPECTION FOR ALL EMBANKMENT PLANS AS OUTLINED IN SS 878, HOWEVER, THE CONSULTANT SHALL TAKE AT LEAST 4 COMPACTION TESTS PER SUPPLEMENT 1015 PER LIFT OF FILL PLACED. PAYMENT FOR THE EMBANKMENT WORK SHALL BE INCLUDE ALL MATERIALS, EQUIPMENT AND LABOR NECESSARY TO ACHIEVE THE EMBANKMENT GRADES OUTLINED IN THE PROJECT PLANS. NO ADDITIONAL PAYMENT WILL BE CONSIDERED FOR SOIL MOISTURE CONDITIONING, GROUNDWATER CONTROL OR COMPACTION OF THE EMBANKMENT TO ACHIEVE THE FINAL GRADES.

CONNECTION BETWEEN EXISTING AND PROPOSED GUARDRAIL

WHEN IT IS NECESSARY TO SPLICE PROPOSED GUARDRAIL TO EXISTING GUARDRAIL, ONLY THE EXISTING GUARDRAIL SHALL BE CUT, DRILLED, OR PUNCHED. THE CONNECTION SHALL BE MADE USING A W-BEAM, BEAM SPLICE AS SHOWN IN AASHTO M 180-12, EXCEPT THE BEAM WASHERS ARE NOT TO BE USED. PAYMENT SHALL BE INCLUDED IN THE CONTRACT PRICE FOR THE RESPECTIVE GUARDRAIL ITEMS.

ITEM 606 - ANCHOR ASSEMBLY, MGS TYPE E

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING ANY OF THE GUARDRAIL END TERMINALS FOR TYPE MGS GUARDRAIL AS LISTED ON ROADWAY ENGINEERING'S WEB PAGE UNDER ROADSIDE SAFETY DEVICES FOR APPROVED GUARDRAIL END TREATMENTS. INSTALLATION SHALL BE AT THE LOCATIONS SPECIFIED IN THE PLANS, IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.

THE FACE OF THE TYPE E IMPACT HEAD SHALL BE COVERED WITH A SHEET OF TYPE G REFLECTIVE SHEETING, PER CMS 730.19.

REFER TO THE MANUFACTURER'S INSTRUCTIONS REGARDING THE INSTALLATION OF, AND THE GRADING AROUND THE FOUNDATION TUBES AND GROUND STRUT. THE TOP OF ANY FOUNDATION TUBE SHOULD BE LESS THAN 4 INCHES ABOVE THE GROUND. THE PLACEMENT OF THE FOUNDATION TUBES SHOULD BE AN APPROPRIATE DEPTH BELOW THE LEVEL LINE IN ORDER TO MAINTAIN THE FINISHED GUARDRAIL HEIGHT OF 31 INCHES FROM THE EDGE OF THE SHOULDER.

ON-SITE GRADING IS REQUIRED IF THE TOP OF THE FOUNDATION TUBES OR TOP OF THE GROUND STRUT DOES PROJECT MORE THAN 4 INCHES ABOVE THE GROUND LINE.

PAYMENT FOR THE ABOVE WORK SHALL BE MADE AT THE UNIT PRICE BID FOR ITEM 606, ANCHOR ASSEMBLY, MGS TYPE E, EACH, AND SHALL INCLUDE ALL LABOR, TOOLS, EQUIPMENT AND MATERIALS NECESSARY TO CONSTRUCT A COMPLETE AND FUNCTIONAL ANCHOR ASSEMBLY SYSTEM, INCLUDING ALL RELATED TRANSITIONS, REFLECTIVE SHEETING, HARDWARE, GRADING, EMBANKMENT AND EXCAVATION NOT SEPARATELY SPECIFIED, AS REQUIRED BY THE MANUFACTURER.

ITEM 606 - IMPACT ATTENUATOR, TYPE 3, (UNIDIRECTIONAL)

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING ANY OF THE TYPE 3 IMPACT ATTENUATORS AS LISTED ON THE OFFICE OF ROADWAY ENGINEERING'S WEB PAGE (REFER TO THE POSTED SHOP DRAWINGS FOR THE MOST CURRENT APPROVED PRODUCT MODELS). WHEN BI-DIRECTIONAL DESIGNS ARE SPECIFIED, THE CONTRACTOR SHALL SUPPLY APPROPRIATE TRANSITIONS. THE FACE OF THE IMPACT HEAD SHALL BE COVERED WITH TYPE G REFLECTIVE SHEETING, PER CMS 730.19.

PAYMENT FOR THE ABOVE WORK SHALL BE MADE AT THE UNIT PRICE BID FOR ITEM 606, IMPACT ATTENUATOR, TYPE 3 [(SPEED (IN MPH), HAZARD WIDTH (IN INCHES)), (UNIDIRECTIONAL OR BIDIRECTIONAL)], EACH, AND SHALL INCLUDE ALL LABOR,TOOLS, EQUIPMENT AND MATERIALS NECESSARY TO CONSTRUCT A COMPLETE AND FUNCTIONAL IMPACT ATTENUATOR SYSTEM, INCLUDING ALL RELATED BACKUPS/BACKSTOPS, TRANSITIONS, HARDWARE AND GRADING, NOT SEPARATELY SPECIFIED, AS REQUIRED BY THE MANUFACTURER. INSTALLATION SHALL BE AT THE LOCATIONS SPECIFIED IN THE PLANS, IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.

PROTECTION OF RIGHT-OF-WAY LANDSCAPING

PRIOR TO BEGINNING WORK, THE CONTRACTOR, THE PROJECT ENGINEER, AND A REPRESENTATIVE OF THE MAINTAINING AGENCY WILL REVIEW AND RECORD ALL LANDSCAPING ITEMS WITHIN THE RIGHT OF WAY (BOTH WITHIN AND OUTSIDE THE CONSTRUCTION LIMITS) A RECORD OF THIS REVIEW WILL BE KEPT IN THE PROJECT ENGINEERS FILES. PRIOR TO FINAL ACCEPTANCE, A FINAL REVIEW OF LANDSCAPING ITEMS WILL BE MADE.

CONSTRICT ALL ACTIVITIES, EQUIPMENT STORAGE, AND STAGING TO WITHIN THE CONSTRUCTION LIMITS. UNLESS OTHERWISE IDENTIFIED IN THE PLANS OR PROPOSAL, THE CONSTRUCTION LIMITS ARE IDENTIFIED AS 30 FEET FROM THE EDGE OF PAVEMENT.

SUBMIT A WRITTEN REQUEST TO THE PROJECT ENGINEER TO USE ANY AREA OUTSIDE THESE LIMITS. THE DOCUMENT SUBMITTED MUST CLEARLY IDENTIFY THE AREA AND EXPLAIN THE PROPOSED USE AND RESTORATION OF THE AREA. DISPOSAL OF WASTE MATERIAL AND CONSTRUCTION DEBRIS, EXCAVATION OF BORROW MATERIAL AND PLACEMENT OF PORTABLE PLANTS IS PROHIBITED. THE REQUEST MUST BE APPROVED, IN WRITING, BEFORE THE CONTRACTOR HAS PERMISSION TO USE THE AREA.

ANY ITEMS DAMAGED BEYOND THE CONSTRUCTION LIMITS AS DEFINED ABOVE WILL BE REPLACED IN KIND OR AS APPROVED BY THE PROJECT ENGINEER.

AIRWAY/HIGHWAY CLEARANCE FOR AIRPORTS AND HELIPORTS

THIS PROJECT HAS BEEN IDENTIFIED AS BEING WITHIN THE INFLUENCE AREA OF A PUBLIC USE AIRPORT OR HELIPORT. NO TEMPORARY STRUCTURES OR CONSTRUCTION EQUIPMENT AT MAXIMUM OPERATING HEIGHT SHALL EXCEED A HEIGHT OF 75 FEET. IF ANY TEMPORARY STRUCTURES OR CONSTRUCTION EQUIPMENT WILL EXCEED THIS HEIGHT, FURTHER COORDINATION WITH THE FEDERAL AVIATION ADMINISTRATION (FAA), AND ODOT OFFICE OF AVIATION, WILL BE NECESSARY PRIOR TO ERECTING SUCH TEMPORARY STRUCTURES OR OPERATING SUCH EQUIPMENT ON THE PROJECT. THE CONTRACTOR WILL BE REQUIRED TO SUBMIT FORM 7460-1 TO THE FAA. NOTIFY THE ODOT OFFICE OF AVIATION WHEN SUBMITTING AN FAA FORM 7460-1.

NO TEMPORARY STRUCTURES OR CONSTRUCTION EQUIPMENT SHALL EXCEED THE PERMISSIBLE HEIGHT, UNTIL A COPY OF THE FAA APPROVAL AND ODOT OFFICE OF AVIATION PERMIT HAS BEEN FURNISHED TO THE PROJECT ENGINEER.

EXPRESS PROCESSING CENTER
THE FEDERAL AVIATION ADMINISTRATION
SOUTHWEST REGIONAL OFFICE
AIR TRAFFIC AIRSPACE BRANCH ASW-520
2601 MEACHAN BLVD.
FORT WORTH, TX 76137-4298

OHIO DEPARTMENT OF TRANSPORTATION
OFFICE OF AVIATION
2829 WEST DUBLIN-GRANVILLE ROAD
COLUMBUS, OHIO 43235
614-387-2346

CALCULATED DPF
CHECKED BJF

GENERAL NOTES

HAM-71-1.97

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ITEM 614, MAINTAINING TRAFFIC (I-71)
ALL WORK ALONG I-71, SR 562 AND RAMPS NOT DETAILED TO BE DONE IN THE PHASING DESCRIBED BELOW SHALL ADHERE TO THE LANE VALUE CONTRACT TABLE (LVCT) ON SHEET 14. SEE SHEETS 58-64 FOR DETOURS FOR NOTED RAMP CLOSURES.

ALL WORK AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH C&MS 614 AND OTHER APPLICABLE PORTIONS OF THE SPECIFICATIONS, AS WELL AS THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. PAYMENT FOR ALL LABOR, EQUIPMENT AND MATERIALS SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE FOR ITEM 614, MAINTAINING TRAFFIC, UNLESS SEPARATELY ITEMIZED IN THE PLAN.

HAM-71-0197 AND HAM-71-0248 L/R
PRIOR TO PHASES 1, 1A, 2 & 2A CONSTRUCT REQUIRED PAVEMENT FOR MAINTAINING TRAFFIC (SHOULDER STRENGTHENING) UNDER LANE CLOSURES PER THE LVCT.

PHASE 1
SHIFT TRAFFIC TO THE OUTSIDE OF THE BRIDGES HAM-71-0197 AND HAM-71-0248 L/R AS SHOWN ON SHEETS 24-27. CLOSE THE ON- RAMP TO I-71 NORTH BOUND FROM READING ROAD (RAMP RD). THE RAMP MAY BE CLOSED TO TRAFFIC FOR A MAXIMUM OF 14 CONSECUTIVE DAYS DURING PHASE 1. FAILURE TO REOPEN THE RAMP TO A MINIMUM OF ONE 11 FT. LANE AND A MINIMUM OF A 2 FT. SHOULDER SHALL RESULT IN DISINCENTIVES AS PER THE AMOUNTS LISTED IN THE LCVT. REMOVE THE EXISTING CONCRETE OVERLAY BY HYDRODEMOLITION PER STANDARD PROCEDURES TO THE WIDTHS SHOWN ON THE PHASED TYPICAL SECTIONS ON SHEETS 21 AND 22. NORTH BOUND AND SOUTH BOUND WORK MAY BE COMPLETED SEPARATELY WITH A MAXIMUM OF 2 WEEKEND LANE CLOSURES PER DIRECTION.

PHASE 1A
PHASE 1A SHALL OCCUR OVER THE WEEKEND, FROM 10PM ON FRIDAY THRU 5AM ON MONDAY. CLOSE THE LEFT LANES AS SHOWN ON SHEETS 28-32. CLOSE THE ON-RAMP FROM READING ROAD/FLORENCE AVENUE TO SOUTHBOUND I-71. RAMP GD REMAINS CLOSED FROM PREVIOUS PHASE. CONTINUE REMOVAL OF THE EXISTING CONCRETE OVERLAY BY HYDRODEMOLITION TO THE WIDTHS SHOWN ON THE PHASED TYPICAL SECTIONS ON SHEET 21 AND 22 AND OVERLAY DECK TO THE TOTAL WIDTHS REMOVED IN PHASE 1 AND PHASE 1A. RESTORE TRAFFIC TO THE PHASE 1 CONFIGURATION BY 5AM MONDAY.

PHASE 2
SHIFT TRAFFIC TO THE MEDIAN SIDE OF THE BRIDGES HAM-71-0197 AND HAM-71-0248 L/R OVERLAID IN PHASES 1/1A AS SHOWN ON SHEETS 33-36. REMOVE THE EXISTING CONCRETE OVERLAY BY HYDRODEMOLITION TO THE WIDTHS SHOWN ON THE PHASED TYPICAL SECTIONS ON SHEETS 21 AND 22.

PHASE 2A
PHASE 2A SHALL OCCUR OVER THE WEEKEND, FROM 10PM ON FRIDAY THRU 5AM ON MONDAY. CLOSE THE RIGHT LANES AS SHOWN ON SHEETS 37-40. CONTINUE REMOVAL OF THE EXISTING CONCRETE OVERLAY BY HYDRODEMOLITION TO THE WIDTHS SHOWN ON THE PHASED TYPICAL SECTIONS ON SHEETS 21 AND 22 AND OVERLAY DECK TO THE TOTAL WIDTHS REMOVED IN PHASE 2 AND PHASE 2A. RESTORE TRAFFIC TO THE PHASE 2 CONFIGURATION BY 5AM MONDAY.

PHASE 2B
COMPLETE HYDRODEMOLITION AND OVERLAY ON THE RIGHT SIDE OF BOTH BRIDGES. SHIFT RAMP TRAFFIC TO PORTION OF OVERLAY COMPLETED IN PHASE 2, SEE SHEETS 41-44. THE ON-RAMP TO I-71 NORTH BOUND FROM I-471 (RAMP NPN) AND THE ON-RAMP TO I-71 NORTH BOUND FROM READING ROAD (RAMP GD) MAY BE CLOSED TO TRAFFIC FOR A MAXIMUM OF 1 WEEKEND TO COMPLETE OVERLAY DURING PHASE 2B; NOT CONCURRENTLY. FAILURE TO REOPEN THE RAMPS TO A MINIMUM OF ONE 11 FT. LANE AND A MINIMUM OF A 2 FT. SHOULDER SHALL RESULT IN DISINCENTIVES AS PER THE AMOUNTS LISTED IN THE LVCT.

HAM-71-0793L
PRIOR TO PHASES 1, 1A, 2 & 2A CONSTRUCT REQUIRED PAVEMENT FOR MAINTAINING TRAFFIC (SHOULDER STRENGTHENING) UNDER LANE VALUE CONTRACT TABLE (LVCT) ON SHEET 14. SEE SHEETS 58-64 FOR DETOURS FOR NOTED RAMP CLOSURES.

PHASE 1
TOTAL DURATION OF PHASE 1 AND PHASE 1A SHALL NOT EXCEED THE AMOUNT SHOWN ON THE LCVT. SHIFT S.B. AND S.B. ON-RAMP ADD-LANE TRAFFIC TO THE OUTSIDE OF BRIDGE HAM-71-0793L AS SHOWN ON SHEETS 45-47. REMOVE THE RIGHT (MEDIAN SIDE) OF EXISTING CONCRETE OVERLAY BY HYDRODEMOLITION TO THE WIDTHS SHOWN ON THE PHASED TYPICAL SECTIONS ON SHEET 23.

PHASE 1A
PHASE 1A SHALL OCCUR OVER THE WEEKEND, FROM 10PM ON FRIDAY THRU 5AM ON MONDAY. CLOSE THE LEFT LANE AS SHOWN ON SHEETS 48-50. CLOSE THE SOUTHBOUND ON-RAMP FROM RIDGE ROAD/KENNEDY AVENUE TO SOUTHBOUND I-71. CONTINUE REMOVAL OF THE EXISTING CONCRETE OVERLAY BY HYDRO-DEMOLITION TO THE WIDTHS SHOWN ON THE PHASED SECTIONS ON SHEET 23 AND OVERLAY DECK TO THE TOTAL WIDTHS REMOVED IN PHASE 1 AND PHASE 1A. WORK ON BRIDGE HAM-71-0822R (RAMP H OVER I-71 NB) SHALL OCCUR DURING THIS PHASE. RESTORE TRAFFIC TO THE PHASE 1 CONFIGURATION AND OPEN THE RAMP BY 5AM MONDAY. FAILURE TO REOPEN THE RAMP TO A MINIMUM OF ONE 11 FT. LANE AND A MINIMUM OF A 2 FT. SHOULDER SHALL RESULT IN DISINCENTIVES AS PER THE AMOUNTS LISTED IN THE LVCT.

PHASE 2
SHIFT TRAFFIC TO THE MEDIAN SIDE OF THE BRIDGE OVERLAID IN PHASES 1/1A AS SHOWN ON SHEETS 51-53. SOUTHBOUND ON-RAMP FROM RIDGE ROAD/KENNEDY AVENUE TO SOUTHBOUND I-71 IS OPEN. REMOVE THE EXISTING CONCRETE OVERLAY BY HYDRODEMOLITION TO THE WIDTHS SHOWN ON THE PHASED TYPICAL SECTIONS ON SHEET 23.

PHASE 2A
PHASE 2A SHALL OCCUR OVER THE WEEKEND, FROM 10PM ON FRIDAY THRU 5AM ON MONDAY. CLOSE THE RIGHT LANE AS SHOWN ON SHEETS 54-56. CONTINUE REMOVAL OF THE EXISTING CONCRETE OVERLAY BY HYDRODEMOLITION TO THE WIDTHS SHOWN ON THE PHASED TYPICAL SECTIONS ON SHEET 23 AND OVERLAY DECK TO THE TOTAL WIDTHS REMOVED IN PHASE 2 AND PHASE 2A. RESTORE TRAFFIC TO THE PHASE 2 CONFIGURATION BY 5AM MONDAY.

SLIDE REPAIR
SLIDE REPAIR WILL OCCUR ON THE RIGHT SIDE OF I-71 FROM STATION 323+50± TO STATION 332+00±. CLOSE SHOULDER WITH PB AND SETUP TRAFFIC CONTROL AS PER SHEET 57. AS REQUIRED TO DELIVER AND STAGE MATERIALS OR HAUL EXCAVATION, CLOSE THE RIGHT LANE AS PER S.C.D. MT-95.30. MAINTAIN TRAFFIC TO OFF-RAMP MF AS PER MT-98.20. CLOSURE OF THE RIGHT AUXILIARY LANE IS NOT SUBJECT TO THE PLCM OR LVCT.

BRIDGE HAM-71-0160
WORK IS OVER PRIVATE DRIVE AND PARKING LOTS OWNED BY PROCTER AND GAMBLE, CONTACT JONATHON RYSDON (RYSDON.JA@PG.COM) AND AMY PANGALLO (AMY.PANGALLO@ABM.COM) AT LEAST ONE WEEK IN ADVANCE OF THE WORK. ACCESS TO DELIVERY DOCKS MUST BE MAINTAINED AT ALL TIMES.

HAM-71-0197W
RAMP MAY BE CLOSED FROM 9PM TO 5AM FOR SEALING OF DECK.

HAM-71-0197N
RAMP MAY BE CLOSED FROM 9PM TO 5AM FOR COMPLETE INSTALLATION OF JOINT SEAL GLAND AND SEALING OF DECK.

HAM-71-0804R (RAMP K/RAMP L OVER I-71 NB)
RAMP K & L MAY BE CLOSED NON-CONCURRENTLY OVER TWO SEPARATE WEEKENDS ONLY, FROM 10PM ON FRIDAY THRU 5AM ON MONDAY TO COMPLETE THE WORK. FAILURE TO REOPEN THE RAMPS BY 5AM MONDAY TO A MINIMUM OF ONE 11 FT. LANE AND A MINIMUM OF A 2 FT. SHOULDER SHALL RESULT IN DISINCENTIVES AS PER THE AMOUNTS LISTED IN THE LVCT.

HAM-71-0843S (RAMP H OVER RIDGE)
RAMP MAY BE CLOSED OVER ONE WEEKEND ONLY, FROM 10PM ON FRIDAY THRU 5AM ON MONDAY TO COMPLETE THE WORK. FAILURE TO REOPEN THE RAMP BY 5AM MONDAY TO A MINIMUM OF ONE 11 FT. LANE AND A MINIMUM OF A 2 FT. SHOULDER SHALL RESULT IN DISINCENTIVES AS PER THE AMOUNTS LISTED IN THE LVCT.

HAM-71-0820S (RAMP G OVER DUCK CREEK)
RAMP MAY BE CLOSED FROM 9PM TO 5AM FOR SEALING OF DECK. THIS WORK IS TO BE INCLUDED IN THE SAME CLOSURE AS WORK ON HAM-71-0804R.

OVERHEAD BRIDGES
WORK ON THE FOLLOWING OVERHEAD BRIDGES SHALL BE UNDER LANE CLOSURES PER STANDARD DRAWING MT-95.31, PER THE RESTRICTIONS NOTED. HAM-22-0145,HAM-42-0264R, HAM-71-0603, HAM-22-0446, HAM-71-0675 & HAM-561-0314.

MAINTAINING TRAFFIC (CITY STREETS)
NO LANE CLOSURES ON CINCINNATI SURFACE STREETS ARE PERMITTED BETWEEN THE HOURS OF 6AM - 9AM AND 3PM - 6 PM. ONE LANE OF MULTILANE STREETS IN EACH DIRECTION SHALL BE OPEN AT ALL TIMES. THE CONTRACTOR SHALL NOTIFY THE CITY OF CINCINNATI, RIGHT OF WAY PERMITS - SHAWN PATTON; PHONE; 513-352-5287 AT LEAST 72 HOURS IN ADVANCE OF REQUIRED LANE CLOSURES ON CITY STREETS.

MAINTAINING PEDESTRIAN TRAFFIC (CITY STREETS)
MAINTAIN PEDESTRIAN TRAFFIC AT ALL TIMES ON SURFACE STREETS IF THE ENGINEER DETERMINES THE OVERHEAD WORK IS UNSAFE FOR PEDESTRIAN TRAFFIC UNDERNEATH THE BRIDGE, DETOUR PEDESTRIANS AS PER S.C.D MT-110.10. NOTIFY THE CITY OF CINCINNATI, SHAWN PATTON PHONE: 513-352-5287 AT LEAST 72 HOURS IN ADVANCE OF ESTABLISHING PEDESTRIAN DETOURS.

LANES OPEN DURING HOLIDAYS OR SPECIAL EVENTS (I-71 & RAMPS)
NO WORK SHALL BE PERFORMED AND ALL EXISTING LANES SHALL BE OPEN TO TRAFFIC DURING THE FOLLOWING DESIGNATED HOLIDAYS OR EVENTS:

CHRISTMAS	FOURTH OF JULY
NEW YEARS	LABOR DAY
MEMORIAL DAY	THANKSGIVING
EASTER	

THE PERIOD OF TIME THAT THE LANES ARE TO BE OPEN DEPENDS ON THE DAY OF THE WEEK ON WHICH THE HOLIDAY OR EVENT FALLS. THE FOLLOWING SCHEDULE SHALL BE USED TO DETERMINE THIS PERIOD:

DAY OF HOLIDAY OR EVENT	TIME ALL LANES MUST BE OPEN TO TRAFFIC
SUNDAY	12:00N FRIDAY THROUGH 6:00 AM MONDAY
MONDAY	12:00N FRIDAY THROUGH 6:00 AM TUESDAY
TUESDAY	12:00N MONDAY THROUGH 6:00 AM WEDNESDAY
WEDNESDAY	12:00N TUESDAY THROUGH 6:00 AM THURSDAY
THURSDAY	12:00N WEDNESDAY THROUGH 6:00 AM FRIDAY
THURSDAY (THANKSGIVING ONLY)	6:00 AM WEDNESDAY THROUGH 6:00 AM MONDAY
FRIDAY	12:00N THURSDAY THROUGH 6:00 AM MONDAY
SATURDAY	12:00N FRIDAY THROUGH 6:00 AM MONDAY

SHOULD THE CONTRACTOR FAIL TO MEET ANY OF THESE REQUIREMENTS, THE CONTRACTOR SHALL BE ASSESSED A DISINCENTIVE IN THE AMOUNT OF $125 FOR EACH MINUTE THE ABOVE DESCRIBED LANE CLOSURE RESTRICTIONS ARE VIOLATED.

BARRIER REPLACEMENT LOCATIONS

AT MEDIAN BARRIER REPLACEMENT LOCATIONS, PLACE PORTABLE BARRIER (PB) A 1'-0" OFFSET ALONG THE MEDIAN EDGE LINE. ON RAMPS, A 12'-0" MINIMUM LANE WIDTH SHALL BE USED, AND A 1'-0" OFFSET TO PB. TRANSITION PB PER S.C.D. MT-102.10 AND DELINEATE PER S.C.D. MT-101.70. PB SHALL REMAIN IN PLACE UNTIL SUCH TIME MEDIAN BARRIER IS REBUILT AND CURED.

THE FOLLOWING QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY :

ITEM 622 - PORTABLE BARRIER, 32" 2,100 FT
ITEM 614 - WORK ZONE IMPACT ATTENUATOR, UNIDIRECTIONAL, 14 EACH
ITEM 614 - OBJECT MARKER, 50 EACH
ITEM 614 - BARRIER REFLECTORS, 50 EACH
ITEM 614 - WORK ZONE EDGE LINE, CLASS I (WHITE), 0.28 MILE

LANES OPEN DURING HOLIDAYS OR SPECIAL EVENTS (CITY STREETS)

IN ADDITION TO THE HOLIDAYS LISTED ABOVE, NO WORK SHALL BE PERFORMED AND ALL EXISTING LANES ON CITY STREETS SHALL BE OPENED TO TRAFFIC AND PEDESTRIANS DURING THE FOLLOWING DESIGNATED EVENTS:

RIVERFEST (LABOR DAY FIREWORKS)
ST PATRICK'S DAY PARADE
RED'S OPENING DAY AND OPENING DAY PARADE

BOCKFEST 5K	WRANGLER RUN
HEART MINI MARATHON	SUPER HERO 5K
MS WALK	QUEEN BEE HALF MARATHON
FLYING PIG MARATHON WEEKEND	THANKSGIVING DAY RUN

DATES OF THE ABOVE EVENS WILL BE SUPPLIED AT THE PRE-CONSTRUCTION MEETING. REMAINDER OF THE REQUIREMENTS OF THE "LANES OPEN DURING HOLIDAYS OR SPECIAL EVENTS (I-71 & RAMPS)" NOTE APPLIES.

LANE CLOSURE/REDUCTION REQUIRED

LENGTH AND DURATION OF LANE CLOSURES AND RESTRICTIONS SHALL BE AT THE APPROVAL OF THE ENGINEER. IT IS THE INTENT TO MINIMIZE THE IMPACT TO THE TRAVELING PUBLIC. LANE CLOSURES OR RESTRICTIONS OVER SEGMENTS OF THE PROJECT IN WHICH NO WORK IS ANTICIPATED WITHIN A REASONABLE TIME FRAME, AS DETERMINED BY THE ENGINEER, SHALL NOT BE PERMITTED. THE LEVEL OF UTILIZATION OF MAINTENANCE OF TRAFFIC DEVICES SHALL BE COMMENSURATE WITH THE WORK IN PROGRESS.

NOTICE OF CLOSURE SIGN

NOTICE OF CLOSURE SIGNS, AS DETAILED IN THESE PLANS, SHALL BE ERECTED BY THE CONTRACTOR AT LEAST TWO WEEKS IN ADVANCE OF THE SCHEDULED ROAD OR RAMP CLOSURE. THE SIGNS SHALL BE ERECTED ON THE RIGHT-HAND SIDE OF THE ROAD/RAMP FACING TRAFFIC. THEY SHALL BE PLACED SO AS NOT TO INTERFERE WITH THE VISIBILITY OF ANY OTHER TRAFFIC CONTROL SIGNS. ON ROADWAYS, THEY SHOULD BE ERECTED AT THE POINT OF CLOSURE. THE SIGNS MAY BE ERECTED ANYWHERE ON RAMPS AS LONG AS THEY ARE VISIBLE TO THE MOTORISTS USING THE RAMP. ON ENTRANCE RAMPS, THE SIGN SHALL BE ERECTED WELL IN ADVANCE OF THE MERGE AREA TO AVOID DISTRACTING MOTORISTS.

RAMP WILL BE
CLOSED ----------
FOR XX DAYS
OHIO DEPT OF TRANSPORTATION

W20-H14-60

CALCULATED DPF CHECKED BJF

MAINTENANCE OF TRAFFIC GENERAL NOTES

HAM-71-1.97

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PERMITTED LANE CLOSURE TIMES

SHORT TERM LANE CLOSURES ARE THOSE WHICH ARE PERMITTED BY THE PERMITTED LANE CLOSURE NOTE. THESE TIMES SHALL NOT BE REVISED WITHOUT PRIOR APPROVAL FROM THE DISTRICT 8 WORK ZONE TRAFFIC CONTROL MANAGER. SHORT TERM LANE CLOSURES SHALL ONLY BE IMPLEMENTED WHEN WORK IS BEING CONTINUOUSLY PERFORMED IN THE LANE. THE CLOSURE SHALL BE REMOVED AS SOON AS POSSIBLE AFTER WORK HAS STOPPED. PERMITTED LANE CLOSURES SHALL ONLY BE ALLOWED DURING THE TIMES SPECIFIED IN THE LANE VALUE CONTRACT TABLE AND THE MAINTAINING TRAFFIC (CITY STREETS) NOTE INCLUDED IN THESE PLANS. NO LANE OR SHOULDER CLOSURE SHALL BE IN PLACE WHEN NO WORK IS BEING PERFORMED.

LANE VALUE CONTRACT TABLE

DESCRIPTION OF CRITICAL LANE/RAMP TO BE MAINTAINED	RESTRICTED TIME PERIOD	TIME UNIT	DISINCENTIVE $ PER TIME UNIT PER LANE
1 LANE CLOSED I-71 (SEE NOTE 3)	6AM - 8PM M-F 6AM - 7PM SAT/SUN	15 MIN	$1,875
2 LANES CLOSED I-71	5AM - 10PM M-F 6AM - 9PM SAT/SUN	15 MIN	$1,875
3 LANES CLOSED I-71 (4 LANE SECTION OR GREATER)	5AM - 11PM M-F SAT/SUN	15 MIN	$1,875
ALL RAMPS UNRESTRICTED AND OPEN TO TRAFFIC (SEE NOTE 4)	6AM - 8PM M-F 6AM - 7PM SAT/SUN	15 MIN	$1,200
ON-RAMP - I-471 TO I-71 N.B. (PHASE 2B)	5AM M - 9PM F	15 MIN	$2,500
ON-RAMP - READING ROAD TO I-71 N.B (PHASE 2B).	5AM M - 9PM F	15 MIN	$2,500
ON-RAMP - READING ROAD FLORENCE AVE. TO I-71 S.B.(PHASE 1A)	5AM M - 9PM F	15 MIN	$2,500
ON-RAMP RIDGE ROAD/KENNEDY TO I-71 S.B. (RAMP H)	5AM M - 9PM F	15 MIN	$2,500
WB SR 562 OVER I-71 NB (RAMPS G&L)	5AM M - 9PM F	15 MIN	$2,500
EB SR 562 OVER I-71 NB (RAMP K)	5AM M - 9PM F	15 MIN	$2,500
WB SR 562 TO NB I-71 UNDER I-71 SB (RAMP J)	5AM M - 9PM F	15 MIN	$2,500
ON-RAMP - READING ROAD TO I-71 N.B (PHASE1/1A)	14 DAYS	1 DAY	$2,500
TOTAL DURATION MOT PHASE 1 AND PHASE 1A - HAM-71-0793 L	12 DAYS	1 DAY	$2,500

NOTES

1) NO CLOSURES 2 HOURS BEFORE TO 2 HOURS AFTER EVENTS AT GREAT AMER. BALLPARK, US BANK ARENA, AND PAUL BROWN STADIUM. THIS RESTRICTION APPLIES TO ANY OTHER LOCAL VENUE GENERATING AN EVENT ATTENDANCE OF 10,000+

2) NO SHOULDER CLOSURES BETWEEN THE HOURS OF 6AM-9AM & 3PM-7PM M-F

3) A SINGLE LANE CLOSURE IN THE 2 LANE SECTION OF I-71 (FWW) IS TO FOLLOW THE 2 LANE CLOSURE TIMES

4) MAINTAIN A MINIMUM OF 1-11' LANE. MERGE RAMPS SHALL MAINTAIN THE EXISTING DSD; ADD-LANE RAMPS SHALL REMAIN ADD-LANES.

5) A MAXIMUM OF 1 RAMP MAY BE CLOSED AT A TIME

ROAD CLOSED SIGN

THE CONTRACTOR SHALL PROVIDE, ERECT AND MAINTAIN STANDARD 48 X 30 INCH ROAD CLOSED SIGNS, SIGN SUPPORTS, BARRICADES AND LIGHTS, AS DETAILED IN SCD MT-101.60 AT THE FOLLOWING LOCATIONS DURING PERIODS IN WHICH THE AFFECTED ROADS ARE CLOSED TO TRAFFIC.

READING ROAD ON-RAMP TO NB I-71 (RAMP GD): AT READING ROAD NB RAMP SPLIT
FLORENCE AVE/READING ROAD ON-RAMP TO SB I-71 (RAMPS RB/RF): AT RAMP INTERSECTIONS WITH EDEN PK. DRIVE
RAMP H: BEGIN RAMP @ BARROW/MILL RIDGE ROAD, & @ RAMP M INTERSECTION WITH RIDGE RD.
RAMP L: @ RAMP INTERSECTION WITH RIDGE RD.
RAMP G: @ RAMP GORE NB I-71
RAMP NPN (I-471 NB): @ RAMP GORE N.B. LIBERTY

ITEM 614, REPLACEMENT SIGN

FLATSHEET SIGNS FURNISHED BY THE CONTRACTOR IN ACCORDANCE WITH THE REQUIREMENTS OF THE PLANS, SPECIFICATIONS AND PROPOSAL WHICH BECOME DAMAGED BY TRAFFIC FOR REASONS BEYOND THE CONTROL OF THE CONTRACTOR SHALL BE REPLACED IN KIND WHEN ORDERED BY THE ENGINEER. REPLACEMENT SIGNS SHALL BE NEW. OTHER MATERIALS MAY BE IN USED, BUT GOOD, CONDITION SUBJECT TO APPROVAL BY THE ENGINEER.

PAYMENT FOR THE NEW SIGNS SHALL BE MADE AT THE CONTRACT PRICE PER EACH FOR ITEM 614, REPLACEMENT SIGN, AND SHALL INCLUDE THE COST OF REMOVING AND DISPOSING OF DAMAGED SIGNS, HARDWARE AND SUPPORTS, AND PROVIDING THE NECESSARY REPLACEMENT HARDWARE, SUPPORTS, ETC.

AN ESTIMATED QUANTITY OF 10 EACH HAS BEEN PROVIDED IN THE GENERAL SUMMARY.

DRUM REQUIREMENTS

IN ADDITION TO THE REQUIREMENTS OF THE PLANS, SPECIFICATION AND PROPOSAL, DRUMS FURNISHED BY THE CONTRACTOR SHALL BE NEW AND UNUSED AT THE TIME OF ARRIVAL ON THE PROJECT. ANY DRUMS BROUGHT ON THE PROJECT, WHICH HAVE PREVIOUSLY BEEN USED ELSEWHERE, WILL NOT BE ACCEPTED.

PAYMENT FOR DRUMS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR MAINTAINING TRAFFIC UNLESS SEPARATELY ITEMIZED.

ITEM 614, REPLACEMENT DRUM

DRUMS FURNISHED BY THE CONTRACTOR IN ACCORDANCE WITH THE REQUIREMENTS OF THE PLANS, SPECIFICATIONS AND PROPOSAL WHICH BECOME DAMAGED BY TRAFFIC FOR REASONS BEYOND THE CONTROL OF THE CONTRACTOR SHALL BE REPLACED IN KIND WHEN ORDERED BY THE ENGINEER. REPLACEMENT DRUMS SHALL BE NEW.

PAYMENT FOR THE NEW DRUMS SHALL BE MADE AT THE CONTRACT PRICE PER EACH FOR ITEM 614, REPLACEMENT DRUM, AND SHALL INCLUDE THE COST OF REMOVING AND DISPOSING OF THE DAMAGED DRUM, AND PROVIDING AND MAINTAINING THE REPLACEMENT DRUM IN ACCORDANCE WITH THE CONTRACT REQUIREMENTS FOR THE ORIGINAL DRUM.

AN ESTIMATED QUANTITY OF 100 EACH HAS BEEN PROVIDED IN THE GENERAL SUMMARY.

PATCHING RUMBLE STRIPS

THE CONTRACTOR SHALL MILL THE EXISTING RUMBLE STRIPS A WIDTH OF 3 FEET AT 1 ½ INCH DEPTH AND PAVE WITH 1 ½ INCH ITEM 448 - ASPHALT CONCRETE SURFACE COURSE, TYPE 1.

PAYMENT FOR ALL MATERIALS, LABOR AND EQUIPMENT SHALL BE INCLUDED FOR PAYMENT UNDER ITEM 614 - MAINTAINING TRAFFIC, MISC.: RUMBLE STRIP MILLED/FILLED 2,170 FT.

ITEM 614, WORK ZONE SPEED ZONES (WZSZS)

THE FOLLOWING WORK ZONE SPEED ZONE (WZSZ) SPEED LIMIT REVISION(S) HAVE BEEN APPROVED FOR USE ON THIS PROJECT WHEN WORK ZONE CONDITIONS AND FACTORS ARE MET AS DESCRIBED BELOW:

WZSZ	REVISION NUMBER	COUNTY & ROUTE	DIRECTION
WZ-	45048	HAM-71	NB/SB

POTENTIAL WZSZ LOCATIONS SHALL HAVE AN ORIGINAL (PRE-CONSTRUCTION) POSTED SPEED LIMIT OF =55 MPH, A QUALIFYING WORK ZONE CONDITION OF AT LEAST 0.5 MILE IN LENGTH, AN EXPECTED WORK DURATION OF AT LEAST THREE HOURS, AND A WORK ZONE CONDITION IN PLACE THAT REDUCES THE EXISTING FUNCTIONALITY OF THE TRAVEL LANES OR SHOULDERS (I.E., LANE CLOSURE, LANE SHIFT, CROSSOVER, CONTRAFLOW AND/OR SHOULDER CLOSURE). THE LENGTH OF THE WORK ZONE CONDITION IS MEASURED FROM THE BEGINNING OF THE TAPER FOR THE SUBJECT WORK ZONE CONDITION IMPACTING THE TRAVEL LANES AND/OR SHOULDER TO THE END OF THE DOWNSTREAM TAPER, WHERE DRIVERS ARE RETURNED TO TYPICAL ALIGNMENT. AN EXPECTED WORK DURATION OF AT LEAST THREE HOURS IS REQUIRED TO BALANCE THE ADDITIONAL EXPOSURE CREATED BY INSTALLING AND REMOVING WZSZ SIGNING WITH THE TIME NEEDED TO COMPLETE THE WORK.

IF THE WORK ZONE MEETS THESE MINIMUM CRITERIA, IT SHALL BE ANALYZED FURTHER USING TABLE 1 BELOW TO DETERMINE IF AND WHEN IT QUALIFIES FOR A SPEED LIMIT REDUCTION. DEPENDING ON THE ORIGINAL POSTED SPEED LIMIT, THE TYPE OF TEMPORARY TRAFFIC CONTROL USED, AND WHETHER OR NOT WORKERS ARE PRESENT, A WARRANTED WZSZ WILL VARY IN THE APPROVED SPEED LIMIT TO BE POSTED OVER TIME.

C&MS ITEM 614, PARAGRAPH 614.02(B), INDICATES THAT TWO DIRECTIONS OF A DIVIDIED HIGHWAY ARE CONSIDERED SEPARATE HIGHWAY SECTIONS. THEREFORE, IF THE WORK ON A MULTI-LANE DIVIDED HIGHWAY IS LIMITED TO ONLY ONE DIRECTION, A SPEED LIMIT REDUCTION IN THE DIRECTION OF THE WORK DOES NOT AUTOMATICALLY CONSTITUTE A SPEED LIMIT REDUCTION IN THE OPPOSITE DIRECTION. EACH DIRECTION SHALL BE ANALYZED INDEPENDENTLY FROM EACH OTHER.

ALL WZSZS FLUCTUATE BETWEEN TWO APPROVED REDUCED SPEED LIMITS OR BETWEEN AN APPROVED REDUCED SPEED LIMIT AND THE ORIGINAL POSTED SPEED LIMIT. ONLY ONE OF TWO SIGNING STRATEGIES SHALL BE USED TO IMPLEMENT A WZSZ. THE PRIMARY SIGNING STRATEGY USES DIGITAL SPEED LIMIT (DSL) SIGN ASSEMBLIES. THE SECONDARY STRATEGY USES TEMPORARY FLATSHEET SPEED LIMIT SIGNS (R2-1) FOR WHEN THERE ARE NO DSL SIGN ASSEMBLIES ON THE APPROVED LIST, OR DSL SIGN ASSEMBLIES ARE NOT AVAILABLE.

WZSZS USING DSL SIGN ASSEMBLIES SHALL BE IN ACCORDANCE WITH THIS NOTE, SUPPLEMENTAL SPECIFICATION (SS) 808, AND TRAFFIC SCD MT-104.10.

ONLY ONE WARRANTED SPEED LIMIT APPLIES AT ANY ONE TIME; SPEED LIMIT REDUCTIONS ARE NOT CUMULATIVE. WZSZS SHALL NOT BE USED FOR MOVING/MOBILE ACTIVITIES, AS DEFINED IN OMUTCD PART 6.

WHEN LOOKING UP THE WARRANTED WORK ZONE SPEED LIMITS, ALWAYS USE THE ORIGINAL, PRE-CONSTRUCTION, POSTED SPEED LIMIT. DO NOT USE A PRIOR OR CURRENT WORK ZONE SPEED LIMIT AS A LOOK UP VALUE IN THE TABLE. POSITIVE PROTECTION IS GENERALLY REGARDED AS PORTABLE BARRIER OR OTHER RIGID BARRIER IN USE ALONG THE WORK AREA WITHIN THE SUBJECT WARRANTED WORK ZONE CONDITION. WITHOUT POSITIVE PROTECTION IS GENERALLY REGARDED AS USING DRUMS, CONES, SHADOW VEHICLE, ETC., ALONG THE WORK AREA WITHIN THE SUBJECT WARRANTED WORK ZONE CONDITION. WORKERS ARE CONSIDERED AS BEING PRESENT WHEN ON-SITE, WORKING WITHIN THE SUBJECT WARRANTED WORK ZONE CONDITION. WHEN THE WORK ZONE CONDITION REDUCING THE EXISTING FUNCTIONALITY OF THE TRAVEL LANES OR SHOULDERS IS REMOVED, THE SPEED LIMIT DISPLAYED SHALL RETURN TO THE ORIGINAL POSTED SPEED LIMIT.

TABLE 1: WARRANTED WORK ZONE SPEED LIMITS (MPH) FOR WORK ZONES ON HIGH-SPEED (=55 MPH) MULTI-LANE HIGHWAYS

ORIGINAL POSTED SPEED LIMIT	WITH POSITIVE PROTECTION		WITHOUT POSITIVE PROTECTION	
	WORKERS PRESENT	WORKERS NOT PRESENT	WORKERS PRESENT	WORKERS NOT PRESENT
70	60	65	55	65
65	55	60	50	60
60	55	60	50	60
55	50	55	45	55

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY.

ITEM 614, DIGITAL SPEED LIMIT (DSL) SIGN ASSEMBLY
280 SIGN MNTH

ASSUMES 35 DSL SIGN ASSEMBLIES FOR 8 MONTHS

FLOODLIGHTING

FLOODLIGHTING OF THE WORK SITE FOR OPERATIONS CONDUCTED DURING NIGHTTIME PERIODS SHALL BE ACCOMPLISHED SO THAT THE LIGHTS DO NOT CAUSE GLARE TO THE DRIVERS ON THE ROADWAY. TO ENSURE THE ADEQUACY OF THE FLOODLIGHT PLACEMENT, THE CONTRACTOR AND THE ENGINEER SHALL DRIVE THROUGH THE WORK SITE EACH NIGHT WHEN THE LIGHTING IS IN PLACE AND OPERATIVE PRIOR TO COMMENCING ANY WORK. IF GLARE IS DETECTED, THE LIGHT PLACEMENT AND SHIELDING SHALL BE ADJUSTED TO THE SATISFACTION OF THE ENGINEER BEFORE WORK PROCEEDS.

PAYMENT FOR ALL LABOR, EQUIPMENT AND MATERIALS SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE FOR ITEM 614, MAINTAINING TRAFFIC.

ADVANCE WARNING SIGNS

THE ROAD WORK NEXT XX MILES (G20-1) SIGN AND END ROAD WORK (G20-2) SIGN SHALL BE INSTALLED AT THE PROJECT LIMITS IN ADVANCE OF THE TTC ZONE. THE DISTANCE DISPLAYED ON THE ROAD WORK NEXT XX MILES SIGN SHALL BE STATED TO THE NEAREST WHOLE MILE.

WORK ZONE MARKINGS

THE CONTRACTOR SHALL PLACE THE ASPHALT INTERMEDIATE COURSE AND ALL WORK ZONE PAVEMENT MARKINGS, INCLUDING WORK ZONE EDGE LINE, UPON COMPLETION OF THE PAVEMENT PLANING PRIOR TO OPENING THE ROADWAY TO TRAFFIC. THE CONTRACTOR SHALL PLACE ALL WORK ZONE PAVEMENT MARKINGS OR PERMANENT MARKINGS UPON COMPLETION OF THE ASPHALT SURFACE COURSE PRIOR TO OPENING THE ROADWAY TO TRAFFIC.

CALCULATED DPF CHECKED BJF

MAINTENANCE OF TRAFFIC GENERAL NOTES

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WORK ZONE INCREASED PENALTIES SIGN (R11-H5A)

R11-H5A-48 SIGNS SHALL BE FURNISHED, ERECTED, AND MAINTAINED IN GOOD CONDITION AND/OR REPLACED AS NECESSARY AND SUBSEQUENTLY REMOVED BY THE CONTRACTOR. SIGNS SHALL BE MOUNTED AT THE APPROPRIATE OFFSETS AND ELEVATIONS AS PRESCRIBED BY THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. THEY SHALL BE MAINTAINED ON SUPPORTS MEETING CURRENT SAFETY CRITERIA.

THE SIGNS MAY BE ERECTED OR UNCOVERED NO MORE THAN FOUR HOURS BEFORE THE ACTUAL START OF WORK. THE SIGNS SHALL BE REMOVED OR COVERED NO LATER THAN FOUR HOURS FOLLOWING RESTORATION OF ALL LANES TO TRAFFIC WITH NO RESTRICTIONS, OR SOONER AS DIRECTED BY THE ENGINEER. TEMPORARY SIGN COVERING AND UNCOVERING DUE TO TEMPORARY LANE RESTORATIONS SHALL BE GUIDED BY THE FOUR-HOUR LIMITATIONS STATED ABOVE. SUCH LANE RESTORATIONS SHOULD BE EXPECTED TO REMAIN IN EFFECT FOR 30 OR MORE CONSECUTIVE CALENDAR DAYS, SUCH AS DURING WINTER SHUTDOWNS.

(THE SIGNS ON THE MAINLINE SHALL BE DUAL MOUNTED UNLESS NOT PHYSICALLY POSSIBLE. THE FIRST SIGN SHALL BE PLACED BETWEEN THE ROAD WORK AHEAD (W20-1)SIGN AND THE NEXT SIGN IN THE SEQUENCE. SIGNS SHALL BE ERECTED ON EACH ENTRANCE RAMP AND EVERY 2 MILES THROUGH THE CONSTRUCTION WORK LIMITS. SIGNS ON THE MAINLINE SHALL BE R11-H5A-48. SIGNS USED ON THE RAMPS SHALL BE R11-H5A-24. R11-H5A-24 SIGNS MAY BE USED IN THE MEDIAN IN LIEU OF R11-H5A-48 SIGNS IF IT IS NOT PHYSICALLY POSSIBLE TO PROVIDE R11-H5A-48 SIGNS IN THE MEDIAN.)

THE CONTRACTOR MAY USE SIGNS AND SUPPORTS IN USED, BUT GOOD, CONDITION PROVIDED THE SIGNS MEET CURRENT ODOT SPECIFICATIONS. SIGN FACES SHALL BE RETROREFLECTORIZED WITH TYPE G SHEETING COMPLYING WITH THE REQUIREMENTS OF C&MS 730.19.

WORK ZONE INCREASED PENALITIES SIGNS AND SUPPORTS WILL BE MEASURED AS THE NUMBER OF SIGN INSTALLATIONS, INCLUDING THE SIGN AND NECESSARY SUPPORTS. IF A SIGN AND SUPPORT COMBINATION IS REMOVED AND REERECTED AT ANOTHER LOCATION AS DIRECTED BY THE ENGINEER, IT SHALL BE CONSIDERED ANOTHER UNIT.

PAYMENT FOR ACCEPTED QUANTITIES, COMPLETE, IN PLACE WILL BE MADE AT THE CONTRACT UNIT PRICE. PAYMENT SHALL BE FULL COMPENSATION FOR ALL MATERIALS, LABOR, INCIDENTALS AND EQUIPMENT FOR FURNISHING, ERECTING, MAINTAINING, COVERING DURING SUSPENSION OF WORK, AND REMOVAL OF THE SIGN AND SUPPORT.

ITEM 614, WORK ZONE INCREASED PENALITIES SIGN 35 EACH

ITEM 614, PORTABLE CHANGEABLE MESSAGE SIGNS, AS PER PLAN

THE CONTRACTOR SHALL FURNISH, INSTALL, MAINTAIN AND REMOVE, WHEN NO LONGER NEEDED, A CHANGEABLE MESSAGE SIGN. THE SIGN SHALL BE OF A TYPE SHOWN ON A LIST OF APPROVED PCMS UNITS AVAILABLE ON THE (OFFICE OF MATERIALS MANAGEMENT WEB PAGE). THE LIST CONTAINS CLASS A AND B UNITS WITH MINIMUM LEGIBILITY DISTANCES OF 800 FEET AND 650 FEET, RESPECTIVELY.

EACH SIGN SHALL BE TRAILER-MOUNTED AND EQUIPPED WITH A FUNCTIONAL DIMMING MECHANISM, TO DIM THE SIGN DURING DARKNESS, AND A TAMPER AND VANDAL PROOF ENCLOSURE. EACH SIGN SHALL BE PROVIDED WITH APPROPRIATE TRAINING AND OPERATION INSTRUCTIONS TO ENABLE ON-SITE PERSONNEL TO OPERATE AND TROUBLESHOOT THE UNIT. THE SIGN SHALL ALSO BE CAPABLE OF BEING POWERED BY AN ELECTRICAL SERVICE DROP FROM A LOCAL UTILITY COMPANY. THE PCMS SHALL BE DELINEATED IN ACCORDANCE WITH C&MS 614.03.

THE PROBABLE PCMS LOCATIONS AND WORK LIMITS FOR THOSE LOCATIONS ARE SHOWN ON SHEETS) OF THE PLAN. PLACEMENT, OPERATION, MAINTENANCE AND ALL ACTIVATION OF THE SIGNS BY THE CONTRACTOR SHALL BE AS DIRECTED BY THE ENGINEER. THE PCMS SHALL BE LOCATED IN A HIGHLY VISIBLE POSITION YET PROTECTED FROM TRAFFIC. THE CONTRACTOR SHALL, AT THE DIRECTION OF THE ENGINEER, RELOCATE THE PCMS TO IMPROVE VISIBILITY OR ACCOMMODATE CHANGED CONDITIONS. WHEN NOT IN USE, THE PCMS SHALL BE TURNED OFF. ADDITIONALLY, WHEN NOT IN USE FOR EXTENDED PERIODS OF TIME, THE PCMS SHALL BE TURNED AWAY FROM ALL TRAFFIC.

THE ENGINEER SHALL BE PROVIDED ACCESS TO EACH SIGN UNIT AND SHALL BE PROVIDED WITH APPROPRIATE TRAINING AND OPERATION INSTRUCTIONS TO ENABLE ODOT PERSONNEL TO OPERATE AND TROUBLESHOOT THE UNIT, AND TO REVISE SIGN MESSAGES, IF NECESSARY.

ALL MESSAGES TO BE DISPLAYED ON THE SIGN WILL BE PROVIDED BY THE ENGINEER. A LIST OF ALL REQUIRED PRE-PROGRAMMED MESSAGES WILL BE GIVEN TO THE CONTRACTOR AT THE PROJECT PRECONSTRUCTION CONFERENCE. THE SIGN SHALL HAVE THE CAPABILITY TO STORE UP TO 99 MESSAGES. MESSAGE MEMORY OR PRE-PROGRAMMED DISPLAYS SHALL NOT BE LOST AS A RESULT OF POWER FAILURES TO THE ON-BOARD COMPUTER. THE SIGN LEGEND SHALL BE CAPABLE OF BEING CHANGED IN THE FIELD. THREE-LINE PRESENTATION FORMATS WITH UP TO SIX MESSAGE PHASES SHALL BE SUPPORTED. PCMS FORMAT SHALL PERMIT THE COMPLETE MESSAGE FOR EACH PHASE TO BE READ AT LEAST TWICE. THE PCMS SHALL CONTAIN AN ACCURATE CLOCK AND PROGRAMMING LOGIC WHICH WILL ALLOW THE SIGN TO BE ACTIVATED, DEACTIVATED OR MESSAGES CHANGED AUTOMATICALLY AT DIFFERENT TIMES OF THE DAY FOR DIFFERENT DAYS OF THE WEEK.

THE PCMS UNIT SHALL BE MAINTAINED IN GOOD WORKING ORDER BY THE CONTRACTOR IN ACCORDANCE WITH THE PROVISIONS OF C&MS 614.07. THE CONTRACTOR SHALL, PRIOR TO ACTIVATING THE UNIT, MAKE ARRANGEMENTS, WITH AN AUTHORIZED SERVICE AGENT FOR THE PCMS, TO ASSURE PROMPT SERVICE IN THE EVENT OF FAILURE. ANY FAILURE SHALL NOT RESULT IN THE SIGN BEING OUT OF SERVICE FOR MORE THAN 12 HOURS, INCLUDING WEEKENDS. FAILURE TO COMPLY MAY RESULT IN AN ORDER TO STOP WORK AND OPEN ALL TRAFFIC LANES AND/OR IN THE DEPARTMENT TAKING APPROPRIATE ACTION TO SAFELY CONTROL TRAFFIC. THE ENTIRE COST TO CONTROL TRAFFIC, ACCRUED BY THE DEPARTMENT DUE TO THE CONTRACTOR'S NONCOMPLIANCE, WILL BE DEDUCTED FROM MONEYS DUE, OR TO BECOME DUE THE CONTRACTOR ON HIS CONTRACT.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR 24-HOUR-PER-DAY OPERATION AND MAINTENANCE OF THESE SIGNS ON THE PROJECT FOR THE DURATION OF THE PHASES WHEN THE PLAN REQUIRES THEIR USE.

PAYMENT FOR THE ABOVE DESCRIBED ITEM SHALL BE AT THE CONTRACT UNIT PRICE. PAYMENT SHALL INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, FUELS, LUBRICATING OILS, SOFTWARE, HARDWARE AND INCIDENTALS TO PERFORM THE ABOVE DESCRIBED WORK.

ITEM 614, PORTABLE CHANGEABLE MESSAGE SIGN, AS PER PLAN 120 SIGN MONTH

ASSUMING 10 PCMS SIGN(S) FOR 12 MONTH(S)

DELINEATION OF TEMPORARY AND PERMANENT GUARDRAIL

BARRIER REFLECTORS SHALL BE INSTALLED ON ALL TEMPORARY GUARDRAIL USED FOR TRAFFIC CONTROL AND ON ALL PERMANENT GUARDRAIL LOCATED WITHIN 5 FEET OF THE EDGE OF THE ADJACENT TRAVEL LANE. BARRIER REFLECTORS SHALL CONFORM TO C&MS 626.

OBJECT MARKERS SHALL BE INSTALLED ON ALL TEMPORARY AND PERMANENT GUARDRAIL LOCATED WITHIN 5 FEET OF THE EDGE OF THE ADJACENT TRAVEL LANE. GUARDRAIL-MOUNTING OF OBJECT MARKERS SHALL BE MADE BY INSTALLING THE OBJECT MARKERS ON THE EXTENSION BLOCKS RATHER THAN DIRECTLY ONTO THE GUARDRAIL ITSELF. OBJECT MARKERS SHALL CONFORM TO C&MS 614.03 AND THE SPACING SHALL BE APPROXIMATELY 50 FEET.

THE FOLLOWING ESTIMATED QUANITIES HAVE BEEN INCLUDED IN THE PLANS AND CARRIED TO THE GENERAL SUMMARY:

ITEM 614, BARRIER REFLECTOR, TYPE A - 36 EACH
ITEM 614, OBJECT MARKER, ONE WAY - 36 EACH

PAYMENT SHALL BE FULL COMPENSATION FOR ALL MATERIAL, LABOR, INCIDENTALS AND EQUIPMENT NECESSARY FOR FURNISHING, INSTALLING, MAINTAINING AND REMOVING THE ABOVE ITEM(S).

DELINEATION OF PORTABLE AND PERMANENT BARRIER

BARRIER REFLECTORS AND OBJECT MARKERS SHALL BE INSTALLED ON ALL PORTABLE BARRIER (PB) USED FOR TRAFFIC CONTROL AND ON PERMANENT CONCRETE BARRIER (INCLUDING BRIDGE PARAPETS) LOCATED WITHIN 5 FEET OF THE EDGE OF THE ADJACENT TRAVEL LANE.

BARRIER REFLECTORS SHALL CONFORM TO C&MS 626, EXCEPT THAT THE SPACING SHALL BE AS PER TRAFFIC SCD MT-101.70. OBJECT MARKERS AND THEIR INSTALLATION SHALL CONFORM TO C&MS 614.03 AND SCD MT-101.70. WHEN THE PB CONTAINS GLARE SCREEN, ONE SET OF THREE VERTICAL STRIPES OF SHEETING SHALL BE CONSIDERED EQUIVALENT TO AN OBJECT MARKER, ONE-WAY.

INCREASED BARRIER DELINEATION, AS SPECIFIED HEREIN, SHALL BE INSTALLED ON ALL PB AND CONCRETE PERMANENT BARRIER LOCATED WITHIN 5 FEET OF THE EDGE OF THE TRAVELED LANE ALONG TAPERS AND TRANSITION AREAS AND ALONG CURVES (OUTSIDE ONLY) WITH DEGREE OF CURVATURE GREATER THAN OR EQUAL TO 3 DEGREES.

THE INCREASED BARRIER DELINEATION SHALL CONSIST OF EITHER DELINEATION PANELS OR THE TRIPLE STACKING OF WORK ZONE BARRIER REFLECTORS.

DELINEATION PANELS SHALL CONSIST OF PANELS OF DELINEATION, APPROXIMATELY 34 INCHES LONG AND 6 INCHES WIDE AND SHALL BE "CRIMPED." PANELS SHALL BE INSTALLED AND SPACED PER TRAFFIC SCD MT-101.70.

TRIPLE-STACKED BARRIER REFLECTORS SHALL CONSIST OF ALIGNING THREE BARRIER REFLECTORS VERTICALLY, AT LOCATIONS WHERE A SINGLE BARRIER REFLECTOR WOULD BE OTHERWISE ATTACHED. THERE SHALL BE NO OPEN SPACE BETWEEN THE ADJACENT BARRIER REFLECTORS. THE TRIPLE-STACKED BARRIER REFLECTORS SHALL CONFORM TO C&MS 626, EXCEPT THAT THEY SHALL BE SPACED AND ALIGNED PER TRAFFIC SCD MT-101.70.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE PLANS AND CARRIED TO THE GENERAL SUMMARY:

ITEM 614, BARRIER REFLECTOR, TYPE B - 151 EACH
ITEM 614, OBJECT MARKER, ONE-WAY - 210 EACH
ITEM 614, INCREASED BARRIER DELINEATION - 4,530 FEET

PAYMENT SHALL BE FULL COMPENSATION FOR ALL MATERIAL, LABOR, INCIDENTALS AND EQUIPMENT NECESSARY FOR FURNISHING, INSTALLING, MAINTAINING AND REMOVING EACH OF THE ABOVE ITEMS.

ALONG RUNS OF INCREASED BARRIER DELINEATION WHERE THIS ITEM IS PROVIDED, THE QUANTITY SHALL BE MEASURED AS THE ENTIRE LENGTH OF THE RUN OF INCREASED BARRIER DELINEATION, INCLUDING THE SPACES BETWEEN THE INDIVIDUAL DELINEATION PANELS OR STACKS OF BARRIER REFLECTORS.

ITEM 614 - WORK ZONE RAISED PAVEMENT MARKER, AS PER PLAN

WORK ZONE RAISED PAVEMENT MARKERS, AS PER PLAN, AND THEIR INSTALLATION SHALL CONFORM TO C&MS 614 OR C&MS 621 AS SPECIFIED HEREIN.

RAISED PAVEMENT MARKERS IN USE DURING THE SNOW-PLOWING SEASON SHALL CONFORM TO 621.

RAISED PAVEMENT MARKERS IN USE DURING THE NON-SNOW-PLOW SEASON SHALL CONFORM TO EITHER 614 OR TO 621.

THE SNOW-PLOWING SEASON SHALL RUN FROM OCTOBER 15TH THROUGH APRIL 1ST

IF PROJECT DELAYS, NOT THE FAULT OF ODOT, CAUSE THE WORK TO EXTEND INTO THE SNOW-PLOWING SEASON, THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING WORK ZONE RAISED PAVEMENT MARKERS (WZRPMS) CONFORMING TO C&MS 614, WITH RAISED PAVEMENT MARKERS CONFORMING TO 621, AS DETERMINED BY THE ENGINEER, AT THE CONTRACTOR'S EXPENSE.

THIS ITEM SHALL INCLUDE PURCHASE, INSTALLATION AND REMOVAL OF ITEM 614 WORK ZONE RAISED PAVEMENT MARKER, AS PER PLAN, INCLUDING FILLING OF ANY DEPRESSIONS CREATED IN THE PAVEMENT AS PER C&MS 621.08.

THE FOLLOWING BID ITEMS SHOULD BE INCLUDED IN THE PLANS:

ITEM 614 WORK ZONE RAISED PAVEMENT MARKER, AS PER PLAN
4,674 EACH

PAYMENT FOR RESURFACING WITHIN THE TRANSITION AREA SHALL BE PAID FOR UNDER THE APPROPRIATE BID ITEMS FOR THE WORK REQUIRED, AS PROVIDED FOR IN THE PLANS.

ITEM 614 - WORK ZONE RAISED PAVEMENT MARKERS ON CONCRETE SURFACES

RAISED PAVEMENT MARKERS IN WORK ZONES, INSTALLED ON TO CONCRETE SURFACES, SHALL BE ITEM 614 WORK ZONE RAISED PAVEMENT MARKERS. WZRPMS ARE INTENDED FOR USE ONLY DURING THE NON-SNOW-PLOWING SEASON. WZRPMS SHALL NOT BE PROVIDED DURING THE SNOW-PLOWING SEASON.

THE SNOW-PLOWING SEASON SHALL RUN FROM OCTOBER 15TH THROUGH APRIL 1ST

WHERE A TEMPORARY ALIGNMENT WILL REMAIN IN USE THROUGH THE WINTER, THE WZRPMS SHALL BE REMOVED PRIOR TO THE BEGINNING OF THE SNOW-PLOWING SEASON AND REPLACED APPROXIMATELY APRIL 1, OR AS OTHERWISE DETERMINED BY THE ENGINEER.

THIS ITEM SHALL INCLUDE PURCHASE, INSTALLATION AND REMOVAL OF ITEM 614 WORK ZONE RAISED PAVEMENT MARKERS.

CALCULATED DPF CHECKED BJF

MAINTENANCE OF TRAFFIC GENERAL NOTES

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REDUCED VERTICAL CLEARANCE - HAM-71-0181 PEDESTRIAN BRIDGE

THE PROPOSED MAINTENANCE OF TRAFFIC SCHEME WILL PLACE TRAFFIC ON THE SHOULDER UNDER THE HAM-71-0181 OVERHEAD PEDESTRIAN BRIDGE. IT IS ANTICIPATED THAT THIS MAY REDUCE THE VERTICAL CLEARANCE OVER LIVE TRAFFIC TO APPROXIMATELY 14.24 FEET. NOTIFY THE ODOT OFFICE OF PERMITS (614-351-2300) 30 DAYS PRIOR TO MOVING TRAFFIC TO THE SHOULDER. DO NOT PLACE TRAFFIC ON THE SHOULDER UNTIL WRITTEN CONFIRMATION IS RECEIVED FROM THE OFFICE OF PERMITS INDICATING ALL ANNUAL AND INDIVIDUAL PERMITS HAVE EXPIRED OR BEEN CANCELLED. ERECT NEW VERTICAL CLEARANCE SIGNS AND NEW ADVANCED WARNING SIGNS AT LEAST 2 WEEKS PRIOR TO PLACING TRAFFIC ON THE SHOULDER. THE VERTICAL CLEARANCE SHALL BE MEASURED AT ITS PROPOSED MINIMUM VERTICAL CLEARANCE BY A REGISTERED SURVEYOR. THE POSTED VERTICAL CLEARANCE SIGN SHALL BE 3" LESS THAN THE ACTUAL MEASURED VERTICAL CLEARANCE AND IN ACCORDANCE WITH THE "OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES" AND THE "TRAFFIC ENGINEERING MANUAL".

PAYMENT FOR THIS WORK SHALL BE MADE UNDER ITEM 614-MAINTAINING TRAFFIC, MISC: VERTICAL CLEARANCE MEASUREMENTS.

SPEEDINFO DEVICES WITHIN PROJECT LIMITS

THE CONTRACTOR SHALL TAKE MEASURES TO MAINTAIN THE PROPER OPERATION OF ANY SPEEDINFO DEVICES WITHIN THE PROJECT LIMITS. THE DEVICES ARE DOPPLER RADAR UNITS WHICH LOOK LIKE CYLINDRICAL TUBES WITH SOLAR PANELS ATTACHED TO THEM. THE SENSORS ARE IMPLEMENTED ON ALL INTERSTATES STATEWIDE AND OTHER MAJOR US AND STATE ROUTES IN URBAN AREAS, GENERALLY SPACED BETWEEN 1 TO 2 MILES APART, AND INSTALLED ON ANY EXISTING ODOT INFRASTRUCTURE (TYPICALLY OVERHEAD TRUSSES, CANTILEVERS, GROUND-MOUNTED SIGN SUPPORTS, OR LIGHT POLES). ODOT WILL COORDINATE THE RELOCATION OF ANY DEVICES THAT MAY BE AFFECTED BY THE CONTRACTOR'S OPERATION. THE CONTRACTOR SHALL NOT REMOVE THE DEVICES THEMSELVES. THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER A MINIMUM OF TEN CALENDAR DAYS PRIOR TO PERFORMING ANY WORK WHICH REQUIRES DEVICE RELOCATION. THE PROJECT ENGINEER SHALL THEN NOTIFY SPEEDINFO, INC. AND THE ODOT OFFICE OF TRAFFIC OPERATIONS OF ANY DEVICES THAT REQUIRE RELOCATION. THE CONTRACTOR SHOULD BE AWARE THAT SINCE SPEED DATA IS STILL DESIRABLE TO ODOT, THE PROJECT ENGINEER WILL ATTEMPT TO INFORM SPEEDINFO, INC. OF NEWLY AVAILABLE INSTALL LOCATIONS FOR THE SENSORS TO BE RELOCATED TO, WITH MINIMAL DOWNTIME.

IF IMMEDIATE ATTENTION TO A SPEEDINFO SENSOR IS REQUIRED, THE CONTRACTOR MAY DIRECTLY CONTACT THE REGIONAL INSTALLER FOR SPEEDINFO, INC. FROM THE PROVIDED CONTACT INFORMATION. THE REGIONAL INSTALLER WOULD BE ABLE TO PROVIDE THE QUICKEST POSSIBLE ATTENTION TO THE SITUATION. IF THE REGIONAL INSTALLER CANNOT BE REACHED, THE LIST OF STATEWIDE CONTACTS SHOULD BE USED IN THE ORDER IT IS PRESENTED. AN EMAIL INFORMING ALL PARTIES OF THE SITUATION SHOULD ALSO BE SENT AT THE EARLIEST CONVENIENCE.

STATEWIDE CONTACTS:
CHARLIE ARMIGER, SPEEDINFO
Office: (408) 333-9960
Cell: (408) 425-4684
carmiger@speedinfo.com

BRYAN COMER, ODOT
(614) 387-1253
bryan.comer@dot.state.oh.us

JOHN MACADAM, ODOT
(614) 752-9695
john.macadam@dot.state.oh.us

LOCAL CONTACTS:
MATT SLUSHER, CAPITAL ELECTRIC
(937) 531-7518
mslusher@capitalelectric.com

JOE HUTSELL, CAPITAL ELECTRIC
(937) 604-5838
jhutsell@capitalelectric.com

ITEM 614 - LAW ENFORCEMENT OFFICER (WITH PATROL CAR) FOR ASSISTANCE DURING CONSTRUCTION OPERATIONS

USE OF LAW ENFORCEMENT OFFICERS (LEOS) BY CONTRACTORS OTHER THAN THE USES SPECIFIED BELOW WILL NOT BE PERMITTED AT PROJECT COST. LEOS SHOULD NOT BE USED WHERE THE OMUTCD INTENDS THAT FLAGGERS BE USED.

IN ADDITION TO THE REQUIREMENTS OF C&MS 614 AND THE OMUTCD, A UNIFORMED LEO WITH AN OFFICIAL PATROL CAR (CAR WITH TOP-MOUNTED EMERGENCY FLASHING LIGHTS AND COMPLETE MARKINGS OF THE APPROPRIATE LAW ENFORCEMENT AGENCY) SHALL BE PROVIDED FOR THE FOLLOWING TRAFFIC CONTROL TASKS:

- DURING THE ENTIRE ADVANCE PREPARATION AND CLOSURE SEQUENCE WHERE COMPLETE BLOCKAGE OF TRAFFIC IS REQUIRED.

IN ADDITION TO THE REQUIREMENT OF C&MS 614 AND THE OMUTCD, A UNIFORMED LEO WITH AN OFFICIAL PATROL CAR (CAR WITH TOP-MOUNTED EMERGENCY FLASHING LIGHTS AND COMPLETE MARKINGS OF THE APPROPRIATE LAW ENFORCEMENT AGENCY) SHOULD BE PROVIDED FOR THE FOLLOWING TRAFFIC CONTROL TASKS AS APPROVED BY THE ENGINEER:

- FOR LANE CLOSURES: DURING INITIAL SET-UP PERIODS, TEAR DOWN PERIODS, SUBSTANTIAL SHIFTS OF A CLOSURE POINT OR WHEN NEW LANE CLOSURE ARRANGEMENTS ARE INITIATED FOR LONG-TERM LANE CLOSURES/SHIFTS (FOR THE FIRST AND LAST DAY OF MAJOR CHANGES IN TRAFFIC CONTROL SETUP). IN GENERAL, LEOS SHOULD BE POSITIONED AT THE POINT OF LANE RESTRICTION OR ROAD CLOSURE AND TO MANUALLY CONTROL TRAFFIC MOVEMENTS THROUGH INTERSECTIONS IN WORK ZONES.

IN GENERAL, LEOS SHOULD BE POSITIONED IN ADVANCE OF AND ON THE SAME SIDE AS THE LANE RESTRICTION OR AT THE POINT OF ROAD CLOSURE, AND TO MANUALLY CONTROL TRAFFIC MOVEMENTS THROUGH SIGNALIZED INTERSECTIONS IN WORK ZONES.

LEOS SHOULD NOT FORGO THEIR TRAFFIC CONTROL RESPONSIBILITIES TO APPREHEND MOTORISTS FOR ROUTINE TRAFFIC VIOLATIONS. HOWEVER, IF A MOTORIST'S ACTIONS ARE CONSIDERED TO BE RECKLESS, THEN PURSUIT OF THE MOTORIST IS APPROPRIATE.

THE LEOS WORK AT THE DIRECTION OF THE CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE FOR SECURING THE SERVICES OF THE LEOS WITH THE APPROPRIATE AGENCIES AND COMMUNICATING THE INTENTIONS OF THE PLANS WITH RESPECT TO DUTIES OF THE LEOS. THE ENGINEER SHALL HAVE FINAL CONTROL OVER THE LEOS' DUTIES AND PLACEMENT, AND WILL RESOLVE ANY ISSUES THAT MAY ARISE BETWEEN THE TWO PARTIES.

THE LEO SHALL REPORT IN TO THE CONTRACTOR PRIOR TO THE START OF THE SHIFT, IN ORDER TO RECEIVE INSTRUCTIONS REGARDING SPECIFIC WORK ASSIGNMENTS DURING HIS/HER SHIFT. THE LEO IS EXPECTED TO STAY AT THE PROJECT SITE FOR THE ENTIRE DURATION OF HIS/HER SHIFT. THE LEO SHALL REPORT TO THE CONTRACTOR AT THE END OF HIS/HER SHIFT. ONCE THE LEO HAS COMPLETED THE DUTIES DESCRIBED ABOVE AND STILL HAS TIME REMAINING ON HIS/HER SHIFT, THE LEO MAY BE ASKED TO PATROL THROUGH THE WORK ZONE (WITH FLASHING LIGHTS OFF) OR BE PLACED AT A LOCATION TO DETER MOTORISTS FROM SPEEDING. SHOULD IT BE NECESSARY TO LEAVE THE PROJECT SITE, THE LEO SHALL NOTIFY THE ENGINEER. THE CONTRACTOR SHALL PROVIDE THE LEO WITH A TWO-WAY COMMUNICATION DEVICE WHICH SHALL BE RETURNED TO THE CONTRACTOR AT THE END OF HIS/HER SHIFT.

LEOS (WITH PATROL CAR) REQUIRED BY THE TRAFFIC MAINTENANCE TASKS ABOVE SHALL BE PAID FOR ON A UNIT PRICE (HOURLY) BASIS UNDER ITEM 614, LAW ENFORCEMENT OFFICER (WITH PATROL CAR) FOR ASSISTANCE. THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY.

ITEM 614, LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE 3,000 HOURS

THE HOURS PAID SHALL INCLUDE ANY MINIMUM SHOW-UP TIME REQUIRED BY THE LAW ENFORCEMENT AGENCY INVOLVED.

ANY ADDITIONAL COSTS (ADMINISTRATIVE OR OTHERWISE) INCURRED BY THE CONTRACTOR TO OBTAIN THE SERVICES OF AN LEO ARE INCLUDED WITH THE BID UNIT PRICE FOR ITEM 614, LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE.

TRUCK MOUNTED ATTENUATOR

WHEN THE CONTRACTOR IS SETTING/REMOVING SHORT TERM WORK ZONES, A TRUCK MOUNTED ATTENUATOR (TMA) MUST TRAIL THE OPERATION, INCLUDING SETTING THE ADVANCE WARNING SIGNS UP OR TAKING THEM DOWN. THIS SAME TRUCK MUST HAVE A TYPE B FLASHING ARROW PANEL MOUNTED ON IT FACING THE REAR OF THE TRUCK. THE CONTRACTOR SHALL USE A TMA FOR ANY APPLICATION WHERE THE OMUTCD OR STANDARD CONSTRUCTION DRAWING USES THE PHRASE "OPTIONAL" OR "WHEN SPECIFIED IN THE PLAN".

ITEM 614, WORK ZONE IMPACT ATTENUATOR FOR 24" WIDE HAZARDS (UNIDIRECTIONAL)

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING A NON-GATING IMPACT ATTENUATOR. FURNISH AN IMPACT ATTENUATOR FROM THE OFFICE OF ROADWAY ENGINEERING'S APPROVED LIST FOR WORK ZONE IMPACT ATTENUATORS, FROM THE ROADWAY STANDARDS WEB PAGE FOR ROADWAY STANDARDS WEB PAGE.

INSTALLATION SHALL BE AT THE LOCATIONS SPECIFIED IN THE PLANS IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.

THE CONTRACTOR SHALL REPAIR OR REPLACE A DAMAGED UNIT WITHIN 24 HOURS OF A DAMAGING IMPACT.

WHEN BIDIRECTIONAL DESIGNS ARE SPECIFIED, THE CONTRACTOR SHALL SUPPLY APPROPRIATE TRANSITIONS.

WHEN GATING IMPACT ATTENUATORS ARE DESIRED, THE CONTRACTOR SHALL SUBMIT DOCUMENTATION TO THE ENGINEER FOR ACCEPTANCE.

THE COST FOR THE ADDITIONAL BARRIER REQUIRED FOR A GATING IMPACT ATTENUATOR SHALL BE INCLUDED IN THE COST OF THE GATING IMPACT ATTENUATOR.

PAYMENT FOR THE ABOVE WORK SHALL BE MADE AT THE UNIT PRICE BID AND SHALL INCLUDE ALL LABOR, TOOLS, EQUIPMENT AND MATERIALS NECESSARY TO CONSTRUCT AND MAINTAIN A COMPLETE AND FUNCTIONAL IMPACT ATTENUATOR SYSTEM, INCLUDING ALL RELATED BACKUPS, TRANSITIONS, LEVELING PADS, HARDWARE AND GRADING, NOT SEPARATELY SPECIFIED, AS REQUIRED BY THE MANUFACTURER.

WORK ZONE GUARDRAIL CONSTRUCTION

THE GUARDRAIL SHALL BE TYPE MGS AS SPECIFIED IN ACCORDANCE WITH ITEM 606, EXCEPT THAT USED MATERIAL IN GOOD CONDITION WILL BE PERMITTED. PAYMENT FOR ALL MATERIALS, INCLUDING BRIDGE TERMINAL AND END TERMINAL ASSEMBLIES, REMOVAL AND RESTORATION SHALL BE MADE UNDER ITEM SPECIAL - WORK ZONE GUARDRAIL.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY.

ITEM 614, SPECIAL - WORK ZONE GUARDRAIL -- 187.5 L.F.
(SEE SHEETS 24 & 45 FOR LOCATIONS)

ITEM 615 - ROADS FOR MAINTAINING TRAFFIC, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF ITEM 615 AND C.M.S. SECTION 615.10, THIS ITEM SHALL INCLUDE THE REMOVAL, STORAGE AND SUBSEQUENT REPLACEMENT OF A LIGHT POLE AT STATION 184+50, RT, TO ACCOMMODATE CONSTRUCTION OF THE PAVEMENT FOR MAINTAINING TRAFFIC. PAYMENT FOR THE ABOVE WORK SHALL BE MADE AT THE UNIT PRICE BID FOR LUMP SUM - ROADS FOR MAINTAINING TRAFFIC, AS PER PLAN.

TEMPORARY PAVEMENT WEDGE

TEMPORARY PAVEMENT WEDGES SHALL BE PROVIDED AT ALL TIMES WHERE TRAFFIC IS REQUIRED TO TRAVEL FROM OR ONTO A PAVEMENT SURFACE OF A DIFFERENT ELEVATION. THE MINIMUM SLOPE OF THE TEMPORARY PAVEMENT WEDGE SHALL BE 3:1 ALONG LONGITUDINAL JOINTS AND 120:1 AT TRANSVERSE JOINTS. THESE WEDGES SHALL BE REMOVED PRIOR TO PLACING THE SPECIFIED PAVEMENT COURSE. PAYMENT FOR ALL WORK, MATERIALS, ETC. ASSOCIATED WITH THIS ITEM SHALL BE PAID FOR UNDER ITEM 614 MAINTAINING TRAFFIC LUMP SUM.

SHORT DURATION CLOSING OF THE HIGHWAY

THE FOLLOWING NOTES SHALL APPLY FOR THE ERECTION/REMOVAL OF SIGN TRUSSES.

1. FIVE CALENDAR DAYS PRIOR TO IMPLEMENTING THE SHORT DURATION CLOSING OF THE HIGHWAY THE CONTRACTOR SHALL PLACE A PORTABLE CHANGEABLE MESSAGE SIGN AT THE STRUCTURE IN THE DIRECTION THE ROAD IS TO BE CLOSED WITH THE MESSAGE:

I-71 CLOSES *DATE*	12 AM TO 4 AM

2. CLOSURES WILL ONLY BE PERMITTED FOR REMOVAL AND ERECTION OF SIGN TRUSSES AND WILL BE PERMITTED BETWEEN THE HOURS OF 12:00 MIDNIGHT AND 4:00 AM. THE MAXIMUM DURATION OF THE CLOSURE SHALL NOT EXCEED 15 MINUTES SUBJECT TO A DISINCENTIVE IN THE AMOUNT OF $1200.00 FOR EACH 5 MINUTES OF ADDITIONAL CLOSURE TIME. TRAFFIC SHALL BE COMPLETELY CLEARED BEFORE THE NEXT CLOSING.

3. THE CONTRACTOR SHALL IMPLEMENT THE TRAFFIC CONTROL CONTAINED IN STANDARD CONSTRUCTION DRAWING MT-99.60. IN THE EVENT THE CLOSURE OCCURS IN CLOSE PROXIMITY TO SYSTEM-SYSTEM INTERCHANGE, TRAFFIC CONTROL SHALL EXTEND ONTO ANY ENTERING DIVIDED HIGHWAY ACCORDING TO THE LIMITS PROVIDED IN MT-99.60.

4. THE CONTRACTOR SHALL FURNISH AND INSTALL TWO (2) WATCH FOR STOPPED TRAFFIC SIGNS (W3-H7-48) 1500 FEET UPSTREAM FROM THE ANTICIPATED BACKUP ON I-71. THE CONTRACTOR SHALL INSTALL ADDITIONAL WATCH FOR STOPPED TRAFFIC SIGNS EVERY 2000 FEET UPSTREAM FROM THE WATCH FOR STOPPED TRAFFIC SIGNS ON I-71 IF TRAFFIC BACKUPS REACH THE FIRST SET OF SIGNS. THE NEED FOR THESE SIGNS SHALL BE CONSTANTLY MONITORED BY THE CONTRACTOR. ALL WATCH FOR STOPPED TRAFFIC AND PREPARE TO STOP SIGNS SHALL BE EQUIPPED WITH TYPE B WARNING LIGHTS.

5. IN THE EVENT OF AN INCLEMENT WEATHER FORECAST (RAIN OR SNOW FORECAST AT 50% OR GREATER THE DAY THE EVENT WILL OCCUR IS DEFINED AS AN INCLEMENT FORECAST) THE CLOSURE SHALL NOT TAKE PLACE. THE ENGINEER WILL MAKE THE DETERMINATION BASED UPON THE WEATHER FORECAST PREDICTED BY THE NATIONAL WEATHER SERVICE.

6. ALTHOUGH THE PLANS CONTAIN BID ITEMS FOR LEOS AND PCMS, THEIR USE FOR THE SHORT DURATION CLOSING OF THE HIGHWAY IS CONSIDERED INCIDENTAL TO ITEM 614 MAINTAINING TRAFFIC IN ORDER TO LIMIT THE FREQUENCY OF CLOSURES TO THE MINIMUM NEEDED TO PERFORM THE WORK.

CALCULATED DPF CHECKED BJF

MAINTENANCE OF TRAFFIC GENERAL NOTES

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WORKSITE TRAFFIC SUPERVISOR

SUBJECT TO APPROVAL OF THE ENGINEER, THE CONTRACTOR SHALL EMPLOY AND IDENTIFY (SOMEONE OTHER THAN THE SUPERINTENDENT) A CERTIFIED WORKSITE TRAFFIC SUPERVISOR (WTS) BEFORE STARTING WORK IN THE FIELD. THE WTS SHALL BE CERTIFIED FROM ONE OF THE FOLLOWING ORGANIZATIONS:

1. AMERICAN TRAFFIC SAFETY SERVICE ASSOCIATION (ATSSA), PHONE NUMBER 1-800-272-8772, CERTIFIED TRAFFIC CONTROL SUPERVISOR (TCS).

2. NATIONAL HIGHWAY INSTITUTE, DESIGN AND OPERATION OF WORK ZONE TRAFFIC CONTROL, PHONE NUMBER 1-703-235-0500.

3. THE OHIO CONTRACTORS ASSOCIATION, TRAFFIC CONTROL SUPERVISOR (OCA/TCS) WORK ZONE CLASS, ONLY IF TAKEN AFTER MAY 5, 2004, PHONE NUMBER 1-800-229-1388.

4. OHIO LABORERS TRAINING, TRAFFIC CONTROL SUPERVISORS CLASS, PHONE NUMBER 1-740-599-7915.

A COPY OF EACH WTSS CERTIFICATION AND 24-HOUR CONTACT INFORMATION SHALL BE PROVIDED TO THE ENGINEER AT THE PRECONSTRUCTION CONFERENCE. IF THE DESIGNATED WTS WILL NOT BE AVAILABLE FULL TIME (24/7), THE CONTRACTOR MAY DESIGNATE AN ALTERNATE WTS TO BE AVAILABLE WHEN THE PRIMARY IS OFF DUTY. EACH WTS SHALL HAVE A WTS CERTIFICATION CONTAINING THE DATE OF ISSUE AND SHALL BE FROM ANY OF THE APPROVED ORGANIZATIONS. AT THE TIME OF THE PRECONSTRUCTION, THE WTS CERTIFICATION DATE OF ISSUE SHALL BE WITHIN 5 YEARS PRIOR TO THE ORIGINAL COMPLETETION DATE OF THE PROJECT.

THE WTS POSITION HAS THE RESPONSIBILITY OF MONITORING TRAFFIC CONTROL DEFICIENCIES FOR THE ENTIRE WORK ZONE. THE DUTIES OF THE WTS ARE AS FOLLOWS:

1. BE AVAILABLE ON A 24-HOUR PER DAY BASIS, AND BE ABLE TO BE ON SITE FOR ALL EMERGENCY TRAFFIC CONTROL NEEDS WITHIN ONE HOUR OF NOTIFICATION BY POLICE OR PROJECT STAFF AND BE PREPARED TO EFFECT CORRECTIVE MEASURES IMMEDIATELY ON EXISTING WORK ZONE TRAFFIC CONTROL DEVICES.

2. ATTEND PRECONSTRUCTION MEETING AND ALL PROJECT MEETINGS WHERE TRAFFIC CONTROL MANAGEMENT IS DISCUSSED.

3. BE AVAILABLE FOR MEETINGS OR DISCUSSIONS WITH THE ENGINEER UPON REQUEST OR WITHIN 36 HOURS.

4. Coordinate a Traffic Incident Management meeting each year before construction work begins with ODOT and the Safety Forces that will respond to incidents on the project. Items to be discussed will be the:

   a. Traffic Incident Management Plan (TIMP);

   b. Emergency Response and Notification;

   c. Project work/phasing concerns (e.g., ramp closures); and

   d. Responders concerns.

5. BE AWARE OF, AND COORDINATE IF NECESSARY, ALL TRAFFIC CONTROL OPERATIONS, INCLUDING THOSE OF SUBCONTRACTORS AND SUPPLIERS.

6. COORDINATE PROJECT ACTIVITIES WITH ALL LAW ENFORCEMENT OFFICERS (LEOS). A WTS SHALL ALSO BE THE MAIN CONTACT PERSON WITH THE LEOS WHILE THEY ARE ON THE PROJECT.

7. COORDINATE MEETINGS WITH ODOT PERSONNEL, LEOS AND OTHER APPLICABLE ENTITIES BEFORE EACH PLAN PHASE SWITCH TO DISCUSS WORK ZONE TRAFFIC CONTROL.

8. ENSURE COMPLIANCE WITH THE CONTRACT DOCUMENTS FOR SIGNS, BARRICADES, TEMPORARY CONCRETE BARRIER, PAVEMENT MARKINGS, PORTABLE MESSAGE SIGNS, AND OTHER TRAFFIC CONTROL DEVICES ON A DAILY BASIS; AND FACILITATE ANY CORRECTIVE ACTION NECESSARY.

9. NOTIFY THE CONTRACTOR OF THE NEED FOR CLEANING AND MAINTENANCE OF ALL TRAFFIC CONTROL DEVICES, INCLUDING THE COVERING AND REMOVAL OF INAPPLICABLE SIGNS.

10. INSPECT, EVALUATE, PROPOSE NECESSARY MODIFICATIONS TO, AND DOCUMENT THE EFFECTIVENESS OF, THE TRAFFIC CONTROL DEVICES AND/OR TRAFFIC OPERATIONS ON A DAILY BASIS (7 DAYS A WEEK). IN ADDITION, A WEEKLY NIGHT INSPECTION OF THE WORK ZONE SETUP FOR DAYTIME WORK OPERATIONS; AND ONE DAYTIME INSPECTION PER WEEK FOR NIGHTTIME PROJECTS. THIS SHALL INCLUDE (BUT NOT BE LIMITED TO) DOCUMENTATION ON THE FOLLOWING PROJECT EVENTS:

    A. INITIAL TRAFFIC CONTROL SETUP (DAY AND NIGHT REVIEW).

    B. DAILY TRAFFIC CONTROL SETUP AND REMOVAL.

    C. WHEN CONSTRUCTION STAGING CAUSES A CHANGE IN THE TRAFFIC CONTROL SETUP.

    D. CRASH OCCURRENCES WITHIN THE CONSTRUCTION AREA.

    E. REMOVAL OF TRAFFIC CONTROL DEVICES AT THE END OF A PHASE OR PROJECT.

    F. ALL OTHER EMERGENCY TRAFFIC CONTROL NEEDS.

11. COMPLETE THE DEPARTMENT APPROVED LONG TERM INSPECTION FORM (CA-D-8) AFTER EACH INSPECTION AS REQUIRED IN # 10 AND SUBMIT IT TO THE ENGINEER THE FOLLOWING WORK DAY. THESE REPORTS SHALL INCLUDE A CHECKLIST OF ALL TRAFFIC CONTROL MAINTENANCE ITEMS TO BE REVIEWED. A COPY OF THE FORM WILL BE PROVIDED AT THE PRE-CONSTRUCTION MEETING. ANY DEFICIENCIES OBSERVED SHALL BE NOTED, ALONG WITH RECOMMENDED CORRECTIVE ACTIONS AND THE DATES BY WHICH SUCH CORRECTIONS WERE, OR WILL BE, COMPLETED. A COPY OF THIS DOCUMENT CAN BE FOUND IN THE CURRENT REVISION OF THE DEPARTMENT OF TRANSPORTATION CONSTRUCTION INSPECTION FORMS MANUAL.

12. VERIFY THAT ALL FLAGGING OPERATIONS ARE BEING CONDUCTED PER THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

13. HAVE COPIES OF THE ODOT TEMPORARY TRAFFIC CONTROL MANUAL AND APPLICABLE STANDARDS AND SPECIFICATIONS INCLUDED IN THE CONTRACT DOCUMENTS AVAILABLE AT ALL TIMES ON THE PROJECT.

14. IDENTIFY AND CONTACT ALL POSSIBLE RESPONSE PERSONNEL; PREPLAN AND KEEP AN UPDATED ROSTER WITH PHONE NUMBERS:

    A. FEDERAL, STATE, AND LOCAL TRANSPORTATION AGENCIES (TRAFFIC MANAGEMENT CENTER);

    B. REGIONAL, COUNTY OR LOCAL 911 DISPATCH; AND

    C. TOWING AND RECOVERY PROVIDERS.

15. COMPLY WITH THE PROVISIONS OF OMUTCD CHAPTER 6I, CONTROL OF TRAFFIC THROUGH TRAFFIC INCIDENT MANAGEMENT AREAS.

16. PROPOSE A RESPONSE/ACTION PLAN TO:

    A. ESTABLISH ALTERNATE ROUTE PLANS PER THE PROVIDED ODOT PLAYBOOK;

    B. REMOVE TRAFFIC DEMAND FROM IMPACTED ROADWAY(S);

    C. DIVERT TRAFFIC TO ROUTES THAT CAN ACCOMMODATE DEMANDS;

    D. DETOUR TRAFFIC AWAY FROM SENSITIVE AREAS (SUCH AS SCHOOLS, HOSPITALS, ETC.);

    E. DISCUSS METHODS OF DETERMINING A STAGING AREA FOR RESPONDERS WITHIN OR NEAR THE CONSTRUCTION ZONE; AND

    F. DISCUSS METHODS OF DEVELOPING INGRESS AND EGRESS SITES WITHIN THE CONSTRUCTION ZONE.

    THE RESPONSE/ACTION PLAN SHALL BE SUBMITTED TO ODOT FOR ACCEPTANCE BEFORE THE CONTRACTOR S FIRST DAY OF WORK.

17. PERFORM, AT A MINIMUM, THE FOLLOWING FUNCTIONS IN INCIDENT DETECTION AND VERIFICATION:

    A. CALL 911/ NOTIFY TRAFFIC MANAAGEMENT CENTER AND PROVIDE THE FOLLOWING:

        I. LOCATION INCLUDING MILEPOST NUMBER AND DIRECTION OF TRAVEL.
        II. NUMBER AND TYPE OF VEHICLES INVOLVED.
        III. ESTIMATED EXTENT OF DAMAGE OR INJURY.
        IV. ESTIMATED NUMBER OF PATIENTS INVOLVED.
        V. ANY POTENTIAL HAZARDOUS CONDITIONS.
        VI. THE PLACARD NUMBER ON ANY HAZARDOUS MATERIALS PLACARD FROM A SAFE DISTANCE.

    B. INITIATE TRAFFIC MANAGEMENT / PROVIDE TRAFFIC CONTROL.

    C. ASSIST MOTORIST WITH DISABLED VEHICLES.

    D. RECOMMEND ROADWAY REPAIR NEEDS.

    E. PROVIDE REPAIR RESOURCES.

18. ATTEND POST-INCIDENT DEBRIEFINGS IF REQUIRED.

THE DEPARTMENT WILL DEDUCT THE PRORATED DAILY AMOUNT OF THE UNIT PRICE BID FOR THE WTS FOR ANY DAY ON WHICH THE CONTRACTOR FAILS TO PERFORM THE DUTIES SET FORTH ABOVE. SHOULD THE CONTRACTOR'S FAILURE TO PERFORM ANY OF THE DUTIES DESCRIBED ABOVE RESULT IN A MAINTENANCE OF TRAFFIC SAFETY ISSUE, THE DEPARTMENT WILL DEDUCT THE PRORATED DAILY AMOUNT FOR ITEM 614 MAINTENANCE OF TRAFFIC FROM THE CONTRACTOR'S NEXT SCHEDULED ESTIMATE.

IF THREE OR MORE FAILURES TO PERFORM THE DUTIES SET FORTH ABOVE OCCUR, THE WTS SHALL BE IMMEDIATELY REMOVED FROM THE WORK IN ACCORDANCE WITH C&MS 108.05.

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN INCLUDED FOR THE WORKSITE TRAFFIC SUPERVISOR:

ITEM 614 WORKSITE TRAFFIC SUPERVISOR 12 MONTHS

CALCULATED DPF CHECKED BJF

MAINTENANCE OF TRAFFIC GENERAL NOTES

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MAINTAINING TRAFFIC, MISC.: WELD INLET GRATE

WHEN SPECIFIED IN THE PLANS, THE CONTRACTOR SHALL SECURELY WELD AN INLET GRATE TO ITS FRAME, TO ENSURE THAT THE GRATE REMAINS ATTACHED TO ITS FRAME WHILE TRAFFIC IS MAINTAINED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING ANY TEMPORARY TRAFFIC CONTROL AS NECESSARY TO COMPLETE THIS WORK. IN ADDITION, THE INLET AND CATCH BASIN SHALL BE THOROUGHLY CLEANED PRIOR TO SHIFTING TRAFFIC FOR THE SB I-71 DETOUR.

PAYMENT FOR THIS ITEM SHALL INCLUDE ALL LABOR, MATERIALS, AND INCIDENTALS NECESSARY TO COMPLETE INLET CLEANING AND GRATE WELDING TO THE COMPLETE SATISFACTION OF THE ENGINEER. PAYMENT FOR ESTABLISHING A SEPARATE MAINTENANCE OF TRAFFIC SCHEME TO COMPLETE THIS OPERATION SHALL BE CONSIDERED INCIDENTAL TO AND INCLUDED WITH OTHER VARIOUS MAINTENANCE OF TRAFFIC BID ITEMS.

MAINTAINING TRAFFIC, MISC.: PLATE AND COVER MANHOLE

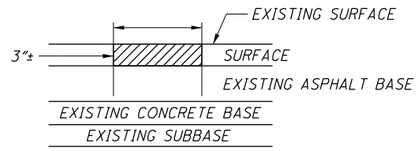
WHEN SPECIFIED IN THE PLANS, THE CONTRACTOR SHALL PLATE AND COVER AN EXISTING MANHOLE. THIS WORK SHALL INCLUDE REMOVAL OF THE TOP PORTION OF THE MANHOLE, STEEL PLATING THE TOP OF THE MANHOLE, AND COVERING THE PLATE WITH A MINIMUM OF 4 INCHES OF ASPHALT CONCRETE. THE RESULTING ASPHALT PATCH SHALL BE LEVEL WITH THE ADJACENT ASPHALT, AND SHALL BE CONSTRUCTED TO REDUCE OR ELIMINATE THE CHANCE OF POT HOLING. THE MEANS AND METHODS OF THIS OPERATION SHALL BE APPROVED BY THE ENGINEER, PRIOR TO BEGINNING WORK. AFTER THE DETOUR IS REMOVED, THE CONTRACTOR SHALL RESTORE THIS MANHOLE TO THE SAME CONDITION WHICH EXISTED AT THE INITIATION OF THE PROJECT.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND REMOVING ANY TEMPORARY TRAFFIC CONTROL AS NECESSARY TO COMPLETE THIS WORK.

PAYMENT FOR THIS ITEM SHALL INCLUDE ALL LABOR, MATERIALS, AND INCIDENTALS NECESSARY TO COMPLETE ITEM 614 MAINTAINING "TRAFFIC, MISC.: PLATE AND COVER MANHOLE" TO THE COMPLETE SATISFACTION OF THE ENGINEER. PAYMENT FOR ESTABLISHING A SEPARATE MAINTENANCE OF TRAFFIC SCHEME TO COMPLETE THIS OPERATION SHALL BE CONSIDERED INCIDENTAL TO AND INCLUDED WITH OTHER VARIOUS MAINTENANCE OF TRAFFIC BID ITEMS.

ITEM 251 - PARTIAL DEPTH PAVEMENT REPAIR, AS PER PLAN

AN ESTIMATED QUANTITY OF 3520 SQ YDS OF ITEM 251 - PARTIAL DEPTH PAVEMENT REPAIR HAS BEEN CARRIED TO THE GENERAL SUMMARY TO BE USED AS DIRECTED BY THE ENGINEER. THIS OPERATION SHALL BE PERFORMED FOLLOWING RESTORATION OF THE ROADWAY DUE TO THE SOUTHBOUND I-71 DETOUR ONLY TO REMOVE POTHOLES OR RAVELING CAUSED BY CHANGE OF MOT PATTERNS OR AS DIRECTED BY THE ENGINEER.



EXISTING DETERORATED ASPHALT SHALL BE REMOVED TO A MINIMUM DEPTH OF 3.0 INCHES OR AS DIRECTED BY THE ENGINEER AND REPLACED WITH ITEM 441 ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG 64-22. THE 441 SHALL BE COMPACTED AS PER 401.14 AND IN APPROXIMATELY EQUAL LAYERS. THE LOCATION AND SIZE OF THE REPAIRS SHALL BE DETERMINED BY THE ENGINEER.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY:

ITEM 251, PARTIAL DEPTH PAVEMENT REPAIR, AS PER PLAN: 3520 SQ YDS

TIME LIMITATIONS AND PROJECT COORDINATION

THERE ARE 3 MAJOR WORK SECTIONS WITHIN THIS PROJECT; NORTH OF MARTIN LUTHER KING DRIVE, SOUTH OF MARTIN LUTHER KING DRIVE AND KENTUCKY TRANSPORTATION CABINET (KYTC) COORDINATION WORK.

1. NORTH OF MARTIN LUTHER KING DRIVE; SLM 4.62 TO SLM 8.42:

ALL WORK INCLUDING BUT NOT LIMITED TO PERMANENT PAVEMENT MARKINGS AND PERMANENT RPMS IS TO BE COMPLETED BY THE INTERIM COMPLETION DATE OF NOVEMBER 15, 2017.

SHOULD THE CONTRACTOR FAIL TO MEET THE SPECIFIED INTERIM COMPLETION DATE, THE CONTRACTOR SHALL BE ASSESSED A DISINCENTIVE IN THE AMOUNT OF $1,400 FOR EACH CALENDAR DAY OF OVERRUN IN ACCORDANCE WITH C&MS 108.07.

2. SOUTH OF MARTIN LUTHER KING DRIVE; SLM 1.26 TO SLM 3.45:

PROPOSED WORK IN THIS SECTION SHALL NOT BEGIN UNTIL MARCH 1, 2018. ALL WORK INCLUDING BUT NOT LIMITED TO PERMANENT PAVEMENT MARKINGS AND PERMANENT RPMS IS TO BE COMPLETED BY THE FINAL COMPLETION DATE OF AUGUST 31, 2018.

3. KYTC COORDINATION WORK; SOUTHBOUND I-71 DETOUR (SHEETS 65B-65F):

KYTC HAS A REHAB PROJECT OF THE BRENT SPENCE BRIDGE THAT WILL REDUCE I-71/75 TO 2 LANES IN EACH DIRECTION FOR APPROXIMATELY 60 DAYS. DURING THIS TIME FRAME SOUTHBOUND I-71 WILL BE DETOURED TO I-471 AS SHOWN IN THESE PLANS (SHEETS 65B-65F). THE CONTRACTOR IS REQUIRED TO COORDINATE WITH THE KYTC PROJECT IN ORDER TO IMPLEMENT THE SOUTHBOUND I-71 DETOUR AT THE SAME TIME AS THE LONG TERM LANE CLOSURES ARE IMPLEMENTED BY KYTC. ADDITIONALLY, THE CONTRACTOR IS REQUIRED TO COORDINATE WITH THE KYTC PROJECT IN ORDER TO REMOVE THE SOUTHBOUND I-71 DETOUR AND RESTORE THE ROADWAY TO ITS EXISTING CONDITION AT THE SAME TIME LANES ARE OPENED ON I-71/75 BY KYTC.

CALCULATED MJH CHECKED BJF

NOTICE OF TRAFFIC GENERAL NOTES

MAINTENANCE

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REF. NO.	PHASE NO.	SHEET NO.	STATION FROM	STATION TO	SIDE	LENGTH	614 WORK ZONE EDGE LINE, CLASS I (WHITE) MILE	614 WORK ZONE EDGE LINE, CLASS I (YELLOW) MILE	614 WORK ZONE EDGE LINE, CLASS I, 740.06, TYPE I (WHITE) MILE	614 WORK ZONE EDGE LINE, CLASS I, 740.06, TYPE I (YELLOW) MILE	614 WORK ZONE CHANNELIZING LINE, CLASS I (WHITE) FEET	614 WORK ZONE CHANNELIZING LINE, CLASS I, 740.06, TYPE I (WHITE) FEET	614 WORK ZONE DOTTED LINE, CLASS I, (WHITE) FEET		614 OBJECT MARKER, ONE WAY EACH	614 BARRIER REFLECTOR, TYPE B EACH	614 WORK ZONE IMPACT ATTENUATOR, UNIDIRECTIONAL EACH	614 WORK ZONE RAISED PAVEMENT MARKER, AS PER PLAN (WHITE) EACH	614 WORK ZONE RAISED PAVEMENT MARKER, AS PER PLAN (YELLOW) EACH	622 PORTABLE BARRIER, 32" FT
CH1	1	24-25	144+40.00	174+45.00	NB	3005					3005							151	151	
CH2	1	24-25	144+40.00	174+45.00	NB	3005					3005							241		
CH3	1	24-27	149+45.00	209+00.00	SB	5955					5955							388		
CH4	1	24-27	149+45.00	209+00.00	SB	5955					5955							234	234	
CH5	1	25-27	178+50.00	214+15.00	NB	3565					3565							154	154	
CH6	1	25-27	178+50.00	214+15.00	NB	3565					3565							154		
CH7	1	25-27	178+50.00	214+15.00	NB	3565					3565							308		
DL1	1	24	147+55.00	151+85.00	NB	430							430							
DL2	1	25	161+30.00	170+50.00	NB	920							920							
DL3	1	25	165+00.00	169+60.00	SB	460							460							
DL4	1	25-27	198+35.00	209+00.00	SB	1065							1065							
EW1	1	24-25	151+85.00	161+30.00	NB	945	0.18													
EW2	1	25	152+45.00	165+00.00	SB	1255	0.24													
EW3	1	25	160+00.00	174+45.00	NB	1445	0.27													
EW4	1	25	165+20.00	173+00.00	SB	780	0.15													
EW5	1	26	181+72.00	220+00.00	NB	3828	0.73													
EW6	1	26	182+00.00	198+35.00	SB	1635	0.31													
EY1	1	24-25	147+40.00	171+45.00	NB	2405		0.46												
EY2	1	25	152+45.00	173+00.00	SB	2055		0.39												
EY3	1	25-26	181+72.00	211+15.00	NB	2943		0.56												
EY4	1	26	182+00.00	206+00.00	SB	2400		0.45												
	1A	29	159+06.00	162+41.00	SB	335				0.06										
	1A	29	159+78.00	163+01.00	NB	323				0.06										
	1A	30	186+40.00	198+51.00	NB	1211				0.23										
	1A	30	187+63.00	195+67.00	SB	804				0.15										
CH8	2	33-34	149+20.00	159+64.00	NB	1044					1044							94		
CH9	2	33-34	149+20.00	159+83.00	NB	1063					1063							47	47	
CH10	2	34	152+75.00	158+97.00	SB	622					622							88		
CH11	2	34	152+75.00	159+16.00	SB	641					641							44	44	
CH12	2	34	158+97.00	162+28.00	SB	331						331								
CH13	2	34	159+16.00	162+45.00	SB	329						329								
CH14	2	34	159+64.00	162+88.00	NB	324						324								
CH15	2	34	159+83.00	163+04.00	SB	321						321								
CH16	2	34	162+28.00	173+25.00	SB	1097					1097							74		
CH17	2	34	162+45.00	173+25.00	SB	1080					1080							44	44	
CH18	2	34	162+88.00	170+00.00	NB	712					712							47	47	
CH19	2	34	163+04.00	170+00.00	NB	696					696							75		
CH20	2	34	166+00.00	167+50.00	SB RAMP	200					200									
CH21	2	34-35	174+00.00	186+43.00	NB	1243					1243							38	24	
CH22	2	34-35	174+00.00	186+42.00	NB	1242					1242							38		
CH23	2	34-35	174+00.00	186+41.00	NB	1241					1241							76		
CH24	2	35	181+25.00	187+63.00	SB	638					638							88		
CH25	2	35	181+25.00	187+63.00	SB	638					638							44	44	
CH26	2	35	186+41.00	198+51.00	NB	1210						1210						104		
CH27	2	35	186+42.00	198+51.00	NB	1209						1209						52		
TOTALS CARRIED TO GENERAL SUMMARY							3.74		0.50		40772	3724	2875					3372		

SUMMARY OF TRAFFIC SUBSUMMARY 1 OF 3

MAINTENANCE

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CALCULATED CML CHECKED DPF

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REF. NO.	PHASE NO.	SHEET NO.	STATION FROM	STATION TO	SIDE	LENGTH	614 WORK ZONE EDGE LINE, CLASS I (WHITE) MILE	614 WORK ZONE EDGE LINE, CLASS I (YELLOW) MILE	614 WORK ZONE EDGE LINE, CLASS I, 740.06, TYPE 1 (WHITE) MILE	614 WORK ZONE EDGE LINE, CLASS I, 740.06, TYPE 1 (YELLOW) MILE	614 WORK ZONE CHANNELIZING LINE, CLASS I (WHITE) FEET	614 WORK ZONE CHANNELIZING LINE, CLASS I, 740.06, TYPE 1 (WHITE) FEET	614 WORK ZONE DOTTED LINE, CLASS I, (WHITE) FEET	614	614 OBJECT MARKER, ONE WAY EACH	614 BARRIER REFLECTOR, TYPE B EACH	614 WORK ZONE IMPACT ATTENUATOR, UNIDIRECTIONAL EACH	614 WORK ZONE RAISED PAVEMENT MARKER, AS PER PLAN (WHITE) EACH	614 WORK ZONE RAISED PAVEMENT MARKER, AS PER PLAN (YELLOW) EACH	622 PORTABLE BARRIER, 32" FT
CH28	2	35	186+43.00	198+51.00	NB	1208						1208						52	52	
CH29	2	35	187+63.00	195+66.00	SB	803						803								
CH30	2	35	187+63.00	195+66.00	SB	803						803								
CH31	2	35	195+66.00	206+25.00	SB	1059					1059							59		
CH32	2	35	195+66.00	206+25.00	SB	1059					1059							44	44	
CH33	2	35-36	198+51.00	206+40.00	NB	789					789									
CH34	2	35-36	198+51.00	206+40.00	NB	789					789									
CH35	2	35-36	198+51.00	206+40.00	NB	789					789									
CH36	2	35	199+80.00	201+25.00	SB RAMP	220					220									
CH37	2	35	199+80.00	206+25.00	SB RAMP	645					645							29		
CH38	2	35-36	203+40.00	206+40.00	NB	300					300									
DL5	2	34	166+37.00	169+00.00	NB	263							263							
DL6	2	34	167+50.00	170+25.00	SB	275							275							
DL7	2	34-35	174+00.00	179+82.00	NB	582							582							
EW7	2	33-34	149+66.00	166+37.00	NB	1671	0.32													
EW8	2	34	155+75.00	167+00.00	SB	1125	0.21													
EW9	2	34	156+69.00	169+00.00	NB RAMP	1231	0.23													
EW10	2	34	163+64.00	166+37.00	NB RAMP	273	0.05													
EW11	2	34-35	177+00.00	203+40.00	NB	2640	0.50													
EW12	2	35	183+84.00	203+40.00	READING RD RAMP	1956	0.37													
EW13	2	35	184+25.00	200+50.00	SB	1625	0.31													
EY5	2	34	152+00.00	159+46.00	NB	746		0.14												
EY6	2	34	155+75.00	159+34.00	SB	359		0.07												
EY7	2	34	156+69.00	163+64.00	NB RAMP	695		0.13												
EY8	2	34	159+34.00	162+62.00	SB	328				0.06										
EY9	2	34	159+46.00	162+72.00	NB	326				0.06										
EY10	2	34	162+62.00	170+25.00	SB	763		0.14												
EY11	2	34	162+72.00	167+00.00	NB	428		0.08												
EY12	2	34-35	177+00.00	180+10.00	NB RAMP	310		0.06												
EY13	2	35	179+82.00	186+44.00	NB	662		0.13												
EY14	2	35	183+80.00	203+40.00	READING RD RAMP	1960		0.37												
EY15	2	35	184+25.00	187+63.00	SB	338		0.06												
EY16	2	35	186+44.00	198+51.00	NB	1207				0.23										
EY17	2	35	187+63.00	195+66.00	SB	803				0.15										
EY18	2	35	195+66.00	203+25.00	SB	759		0.14												
EY19	2	35	198+51.00	203+40.00	NB	489		0.09												
	2A	38	158+78.00	162+14.00	SB	336			0.06											
	2A	38	159+99.00	163+20.00	NB	321			0.06											
	2A	39	186+39.00	198+52.00	NB	1213			0.23											
	2A	39	187+63.00	195+67.00	SB	804			0.15											
CH60	2B	42	160+45.00	163+26.00	NB RAMP	281						281								
CH61	2B	42	163+26.00	164+00.00	NB RAMP	74					74									
CH62	2B	42	163+75.00	164+00.00	NB	25					25									
CH63	2B	43	186+36.00	198+52.00	NB RAMP / NB	1216						1216								
CH64	2B	43	198+52.00	203+40.00	NB	488					488									
DL20	2B	42	164+00.00	169+00.00	NB	500							500							
EW30	2B	42	155+84.00	160+41.00	NB RAMP	457	0.09													
EW31	2B	42	160+41.00	163+42.00	NB RAMP	301			0.06											
EW32	2B	42	163+42.00	169+00.00	NB RAMP	558	0.11													
EW33	2B	43	184+18.00	186+36.00	NB RAMP	218	0.04													
EW34	2B	43	186+36.00	198+52.00	NB RAMP / NB	1216			0.23											
EW35	2B	43	198+52.00	203+40.00	NB	488	0.09													
TOTALS CARRIED TO GENERAL SUMMARY							3.73		1.29		6237	4311	1620		0	0	0	280		0

CALCULATED CML CHECKED DPF

MAINTENANCE OF TRAFFIC SUBSUMMARY 2 OF 3

HAM-71-1.34

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REF. NO.	PHASE NO.	SHEET NO.	STATION FROM	STATION TO	SIDE	LENGTH	614 WORK ZONE EDGE LINE, CLASS I (WHITE)	614 WORK ZONE EDGE LINE, CLASS I (YELLOW)	614 WORK ZONE EDGE LINE, CLASS I, 740.06, TYPE 1 (WHITE)	614 WORK ZONE EDGE LINE, CLASS I, 740.06, TYPE 1 (YELLOW)	614 WORK ZONE CHANNELIZING LINE, CLASS I (WHITE)	614 WORK ZONE CHANNELIZING LINE, CLASS I, 740.06, TYPE 1 (WHITE)	614 WORK ZONE DOTTED LINE, CLASS I, (WHITE)		614 OBJECT MARKER, ONE WAY	614 BARRIER REFLECTOR, TYPE B	614 WORK ZONE IMPACT ATTENUATOR, UNIDIRECTIONAL	614 WORK ZONE RAISED PAVEMENT MARKER, AS PER PLAN (WHITE)	614 WORK ZONE RAISED PAVEMENT MARKER, AS PER PLAN (YELLOW)	622 PORTABLE BARRIER, 32"
							MILE	MILE	MILE	MILE	FEET	FEET	FEET		EACH	EACH	EACH	EACH	EACH	FT
EY30	2B	42	155+84.00	160+25.00	NB RAMP	441		0.08												
EY31	2B	42	160+25.00	160+45.00	NB RAMP	20				0.01										
EY32	2B	43	184+56.00	186+36.00	NB RAMP	180		0.03												
EW14	1	57	317+00.00	335+80.00	NB	1880	0.36													
PB1	1	57	319+50.00	334+00.00	NB	1450									30	30	1			1450
CH39	1	45-46	364+00.00	394+00.00	SB	3000					3000							192		
CH40	1	45-46	364+00.00	394+00.00	SB	3000					3000							120	60	
CH41	1	45-46	364+00.00	383+33.00	SB	1933					1933							60	60	
CH42	1	45-46	381+00.00	383+33.00	SB	233					233									
DL8	1	46	384+70.00	393+00.00	SB	830							830							
EW15	1	45-46	367+00.00	384+70.00	SB	1770	0.34													
EW16	1	46	383+33.00	2+00.00	SB TO RAMP	367	0.07													
EW17	1	46	385+25.00	393+00.00	SB RAMP	975	0.18													
EY20	1	45-46	367+00.00	2+00.00	SB TO RAMP	2000		0.38												
EY21	1	46	383+33.00	391+00.00	SB	787		0.15												
	1A	48-49	373+17.00	379+76.00	SB	659						659								
	1A	48-49	373+25.00	379+91.00	SB	666				0.13										
CH43	2	51	364+00.00	373+18.00	SB	918					918							120		
CH44	2	51	364+00.00	373+26.00	SB	926					926							60		
CH45	2	51	364+00.00	373+34.00	SB	934					934							60	60	
CH46	2	52	373+18.00	379+73.00	SB	655						655								
CH47	2	52	373+26.00	379+88.00	SB	662						662								
CH48	2	52	373+34.00	380+02.00	SB	668						668								
CH49	2	52	379+73.00	394+00.00	SB	1427					1427							94		
CH50	2	52	379+88.00	394+00.00	SB	1412					1412							68	68	
CH51	2	52	380+02.00	383+33.00	SB TO RAMP	331					331									
CH52	2	52	383+33.00	1+50.00	SB	317					317									
CH53	2	52	385+56.00	387+00.00	SB	312					312									
DL9	2	52	387+00.00	393+00.00	SB	600							600							
					SB															
EW18	2	51	367+00.00	385+56.00	SB	1856	0.35													
EY22	2	51	367+00.00	373+42.00	SB	642		0.12												
EY23	2	52	373+42.00	380+17.00	SB	675				0.13										
EY24	2	52	380+17.00	383+62.00	SB	345		0.07												
EY25	2	52	385+00.00	391+00.00	SB	600		0.11												
	2A	54-55	373+08.00	379+59.00	SB	651			0.12											
TOTALS CARRIED TO GENERAL SUMMARY							2.24		0.39		14743	2644	1430		30	30	1	1022		1450

PHASE NO.	STATION FROM	STATION TO	AVG WIDTH	LENGTH	615 PAVEMENT FOR M.O.T., CLASS A
			FT	FT	SY
1	164+73.00	178+55.00	9.2	1382	1413
1	165+20.00	173+00.00	12.3	780	1066
1	181+72.00	185+06.00	13.5	334	501
1	182+00.00	186+28.00	11.5	428	547
1	199+90.00	204+77.00	11.0	487	595
2	164+00.00	170+25.00	6.3	625	438
2	164+10.00	167+00.00	6.0	290	193
2	183+07.00	185+06.00	10.0	199	221
2	184+25.00	186+26.00	5.3	201	118
2	197+55.00	203+25.00	10.8	570	684
2	199+90.00	203+40.00	10.3	350	401
1	367+00.00	373+00.00	9.3	600	620
1	379+33.00	382+78.00	10.3	345	395
1	385+00.00	393+00.00	8.3	800	738
2	367+00.00	373+39.00	10.3	639	731
2	380+08.00	383+62.00	7.8	354	307
2	385+00.00	391+00.00	7	600	467
TOTALS CARRIED TO GENERAL SUMMARY					9435

PHASE NO.	SIDE	LENGTH	614 CLASS III - PAINT WORK ZONE EDGE LINE, CLASS III PAINT (WHITE)	WORK ZONE EDGE LINE, CLASS III PAINT (YELLOW)	WORK ZONE LANE LINE, CLASS III PAINT (WHITE)	WORK ZONE CHANNELIZING LINE, CLASS III PAINT (WHITE)	WORK ZONE DOTTED LINE, CLASS III PAINT (WHITE)	WORK ZONE STOP LINE, CLASS III PAINT (WHITE)	WORK ZONE CROSSWALK LINE, CLASS III PAINT (WHITE)	WORK ZONE TRANSVERSE LINE, CLASS III PAINT	WORK ZONE ARROW, CLASS III PAINT
			MILE	MILE	MILE	FEET	FEET	FEET	FEET	FEET	EACH
PREMARKING			16.21	16.13	30.66	19675	16317	271	512	293	38
			32.34		30.66	19675	16317	271	512	293	38

CALCULATED CML
CHECKED DPF

MAINTENANCE OF TRAFFIC SUBSUMMARY 3 OF 3

HAM-71-1.34

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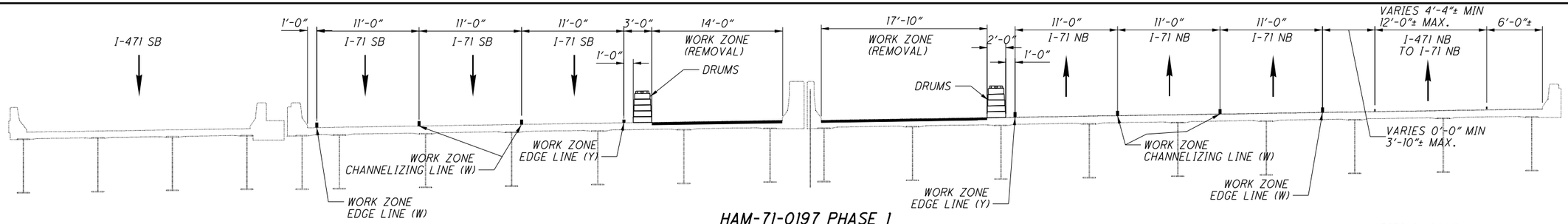
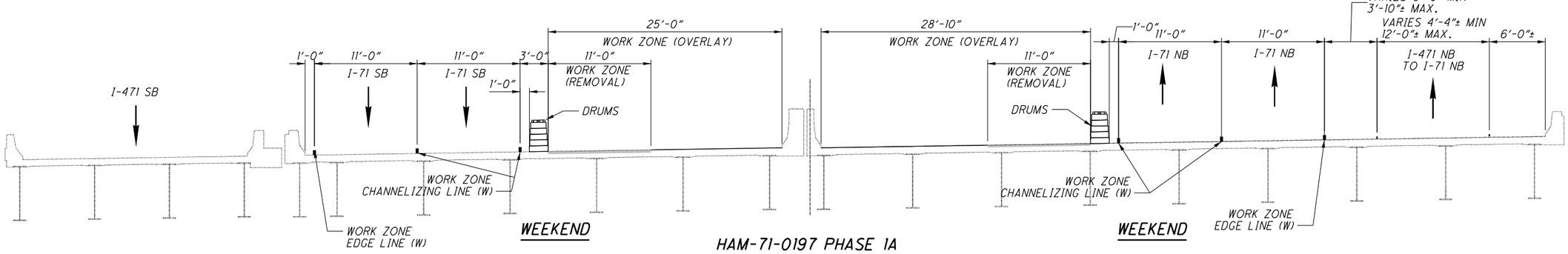
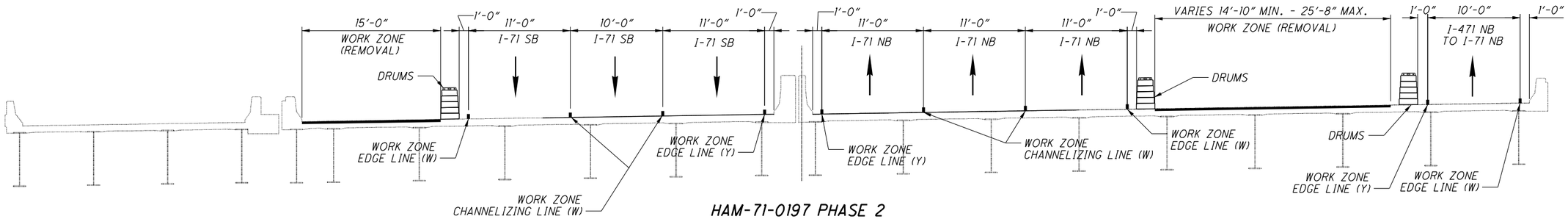


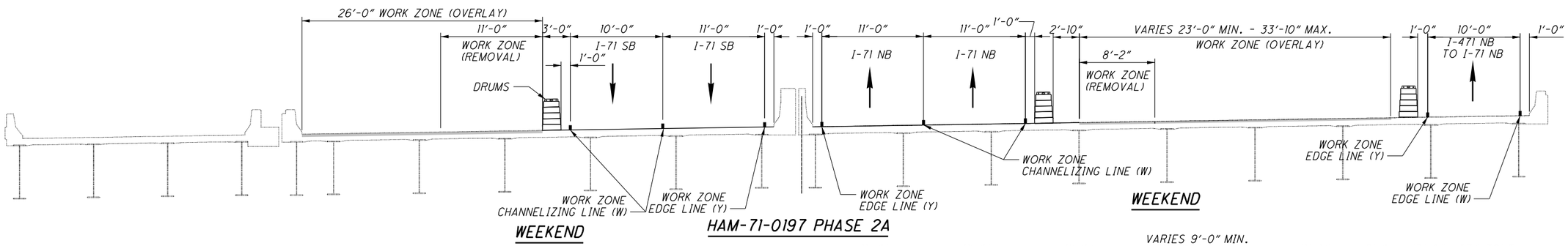
HAM-71-0197 PHASE 1



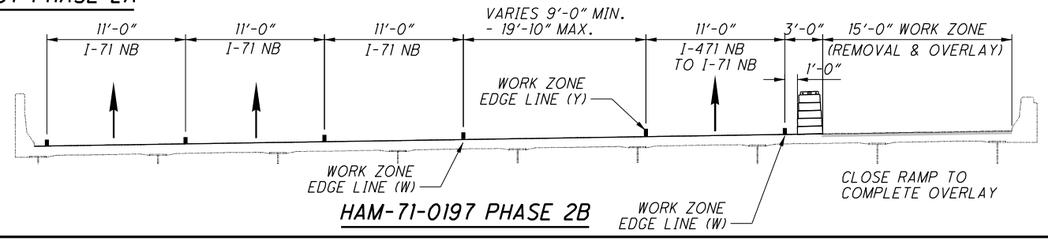
HAM-71-0197 PHASE 1A



HAM-71-0197 PHASE 2



HAM-71-0197 PHASE 2A



HAM-71-0197 PHASE 2B

NOTE: USE WORK ZONE MARKINGS 740.06, TYPE 1 (TAPE) ON DECKS, AND APPROACH SLABS AFTER OVERLAY

PHASED TYPICAL SECTIONS - HAM-71-0197L/R

HAM-71-1.97

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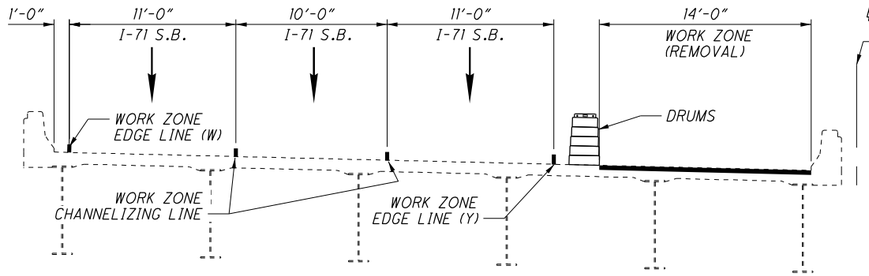
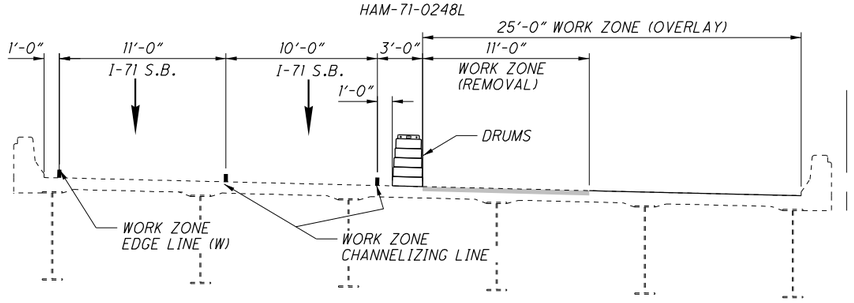


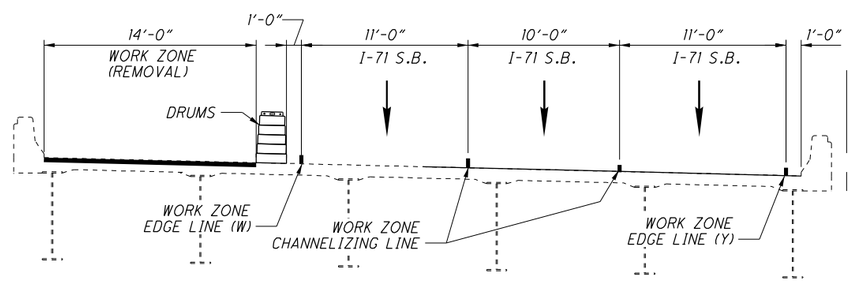
PHASE 1

HAM-71-0248L



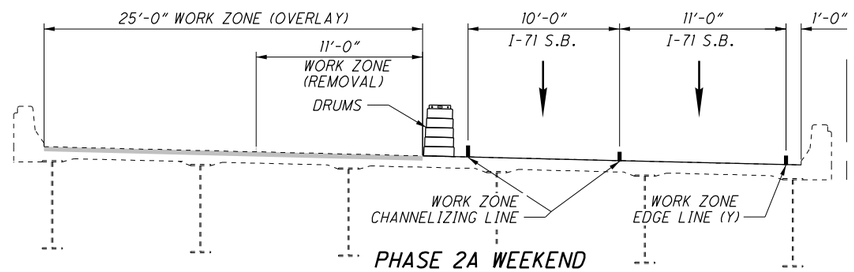
PHASE 1A WEEKEND

HAM-71-0248L



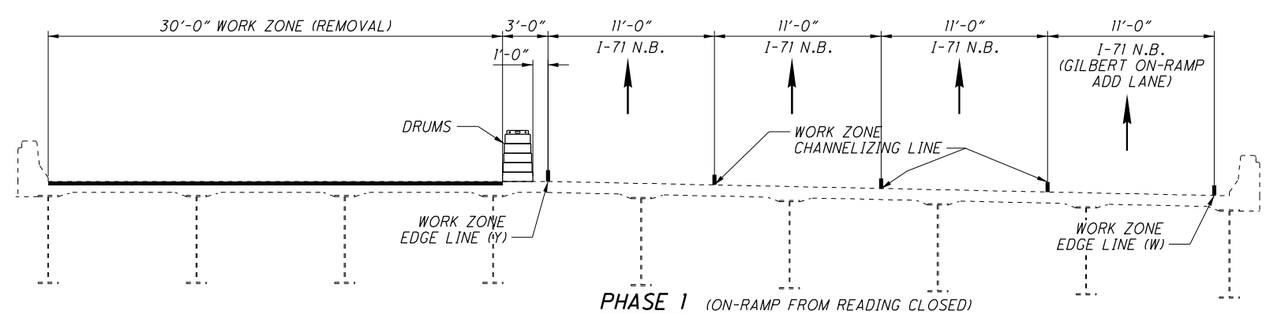
PHASE 2

HAM-71-0248L



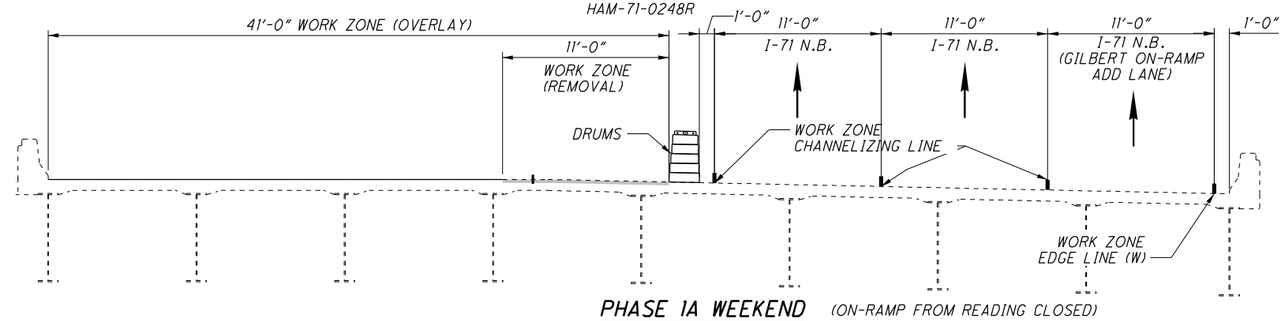
PHASE 2A WEEKEND

HAM-71-0248L



PHASE 1 (ON-RAMP FROM READING CLOSED)

HAM-71-0248R



PHASE 1A WEEKEND (ON-RAMP FROM READING CLOSED)

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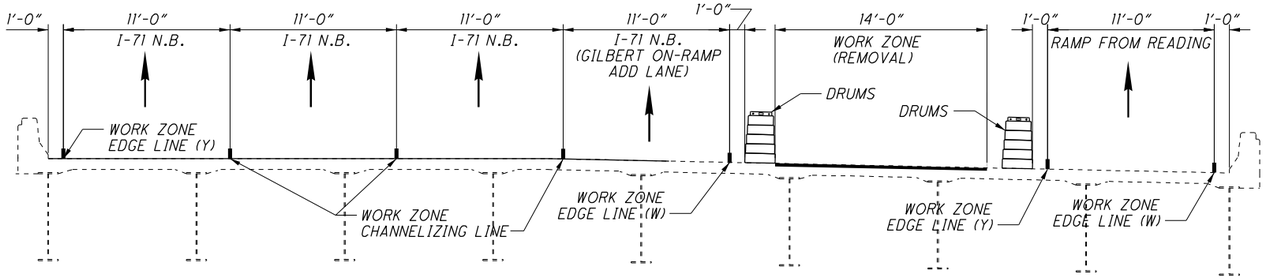
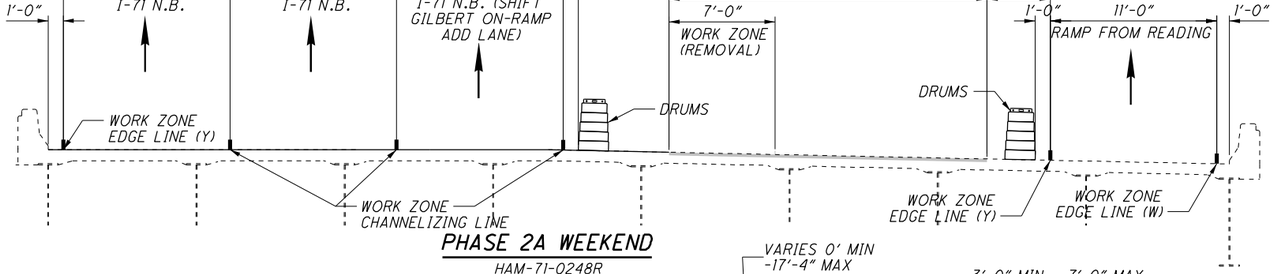


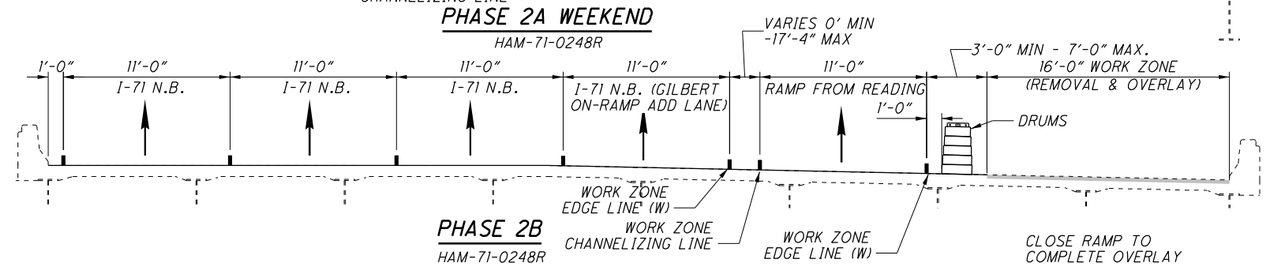
PHASE 2

HAM-71-0248R



PHASE 2A WEEKEND

HAM-71-0248R



PHASE 2B

HAM-71-0248R

NOTE: USE WORK ZONE MARKINGS 740.06, TYPE 1 (TAPE) ON DECKS, AND APPROACH SLABS AFTER OVERLAY

CALCULATED DPF
CHECKED BJF

PHASED TYPICAL SECTIONS - HAM-71-0248L/R

HAM-71-1.97

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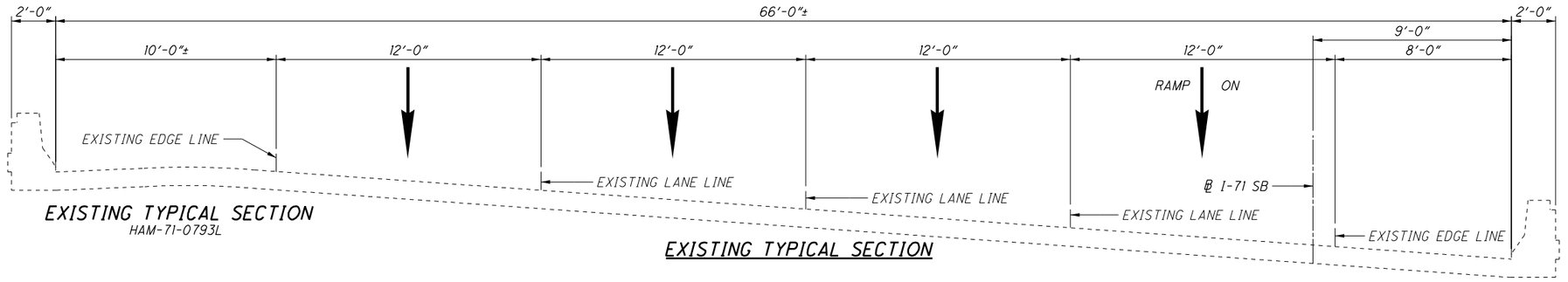
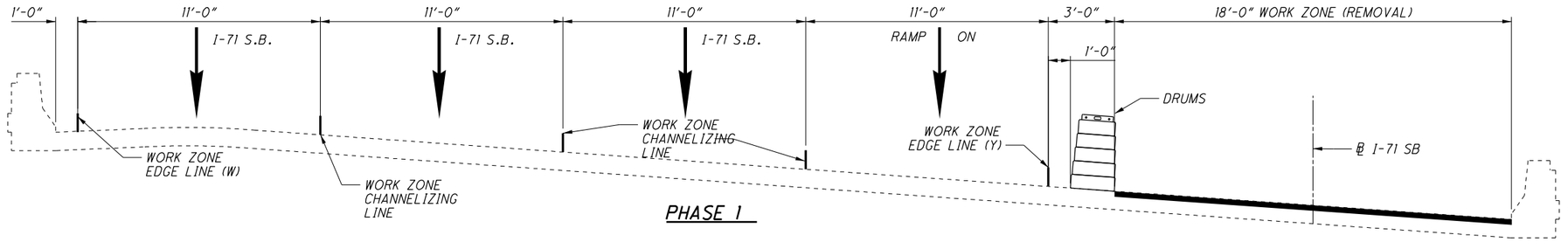
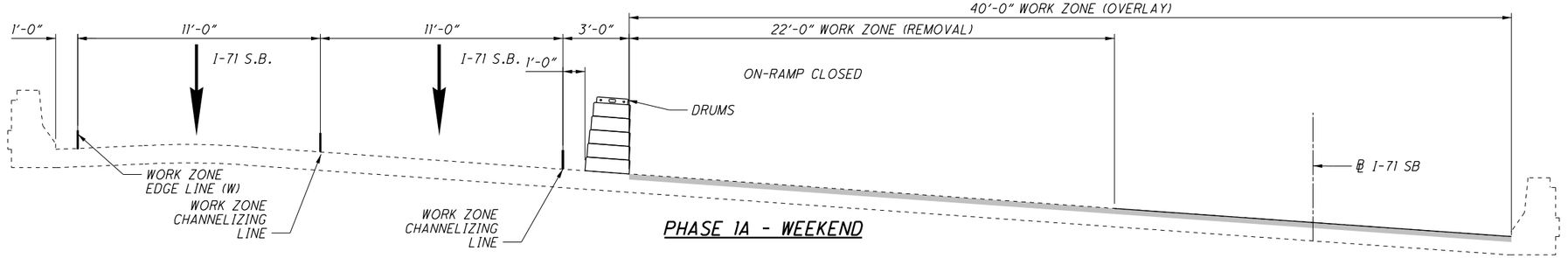


EXISTING TYPICAL SECTION
HAM-71-0793L

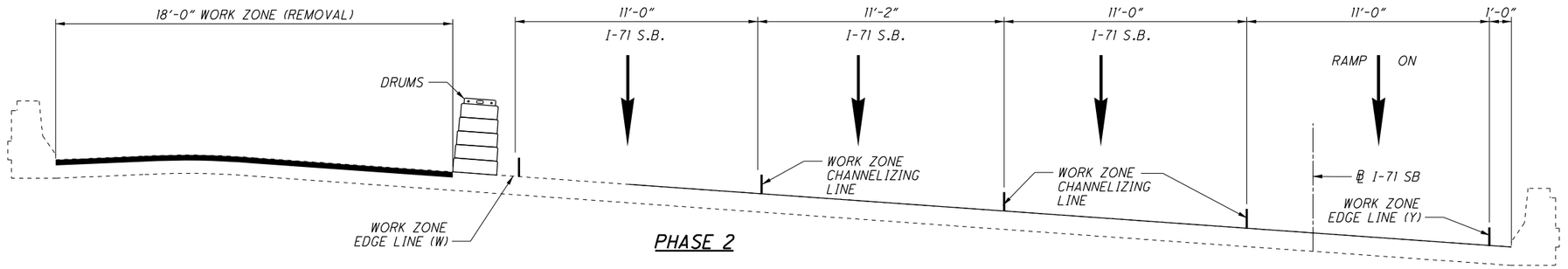
EXISTING TYPICAL SECTION



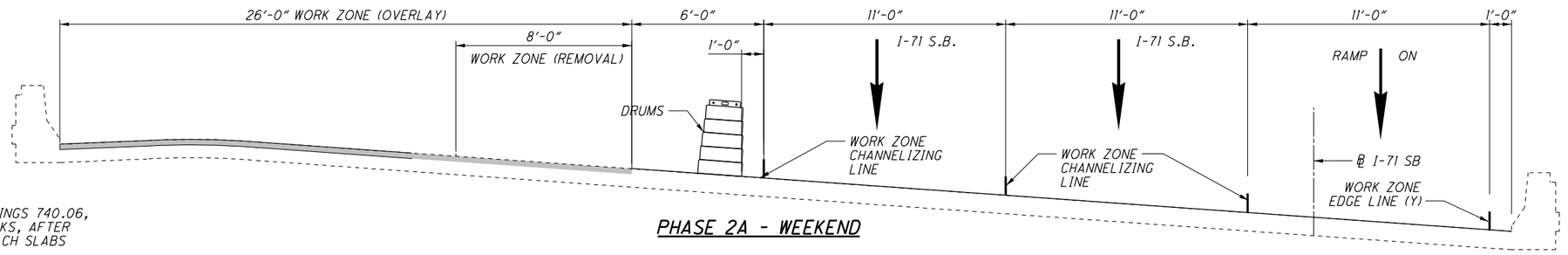
PHASE 1



PHASE 1A - WEEKEND



PHASE 2



PHASE 2A - WEEKEND

NOTE: USE WORK ZONE MARKINGS 740.06, TYPE 1 (TAPE) ON DECKS, AFTER OVERLAY AND APPROACH SLABS

CALCULATED DPF
CHECKED BJF

MAINTENANCE OF TRAFFIC - TYPICAL SECTIONS
HAM-71-0793L

HAM-71-1.97

23
292

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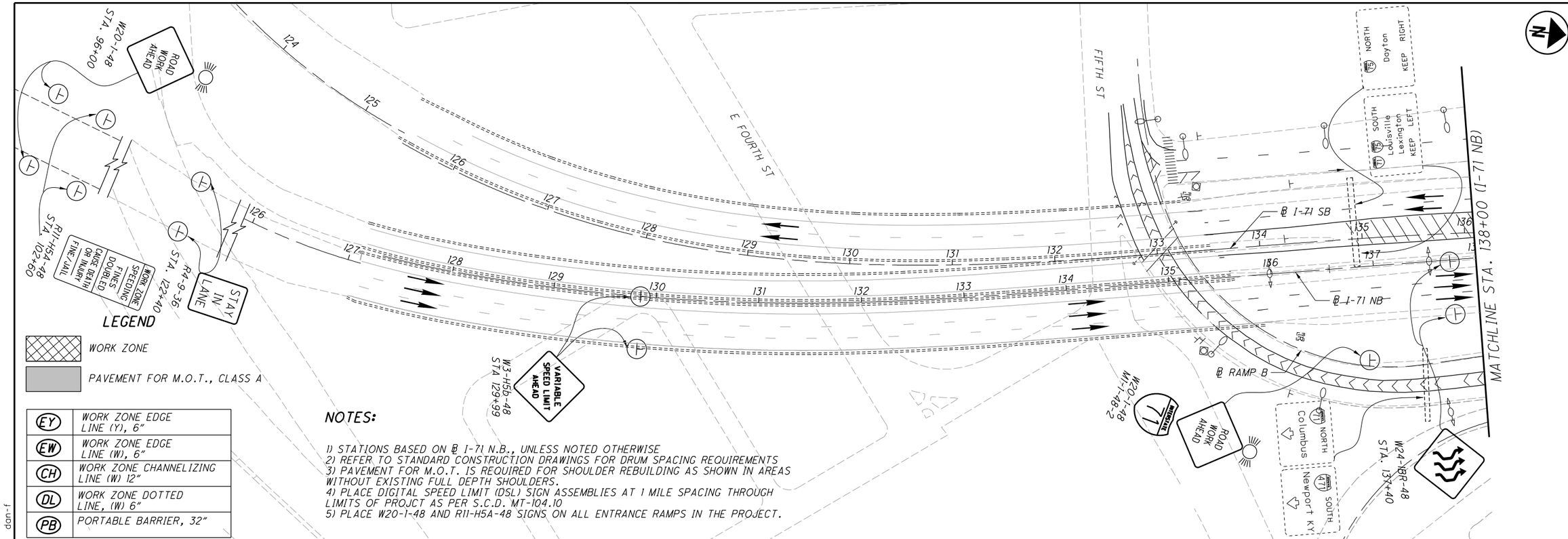


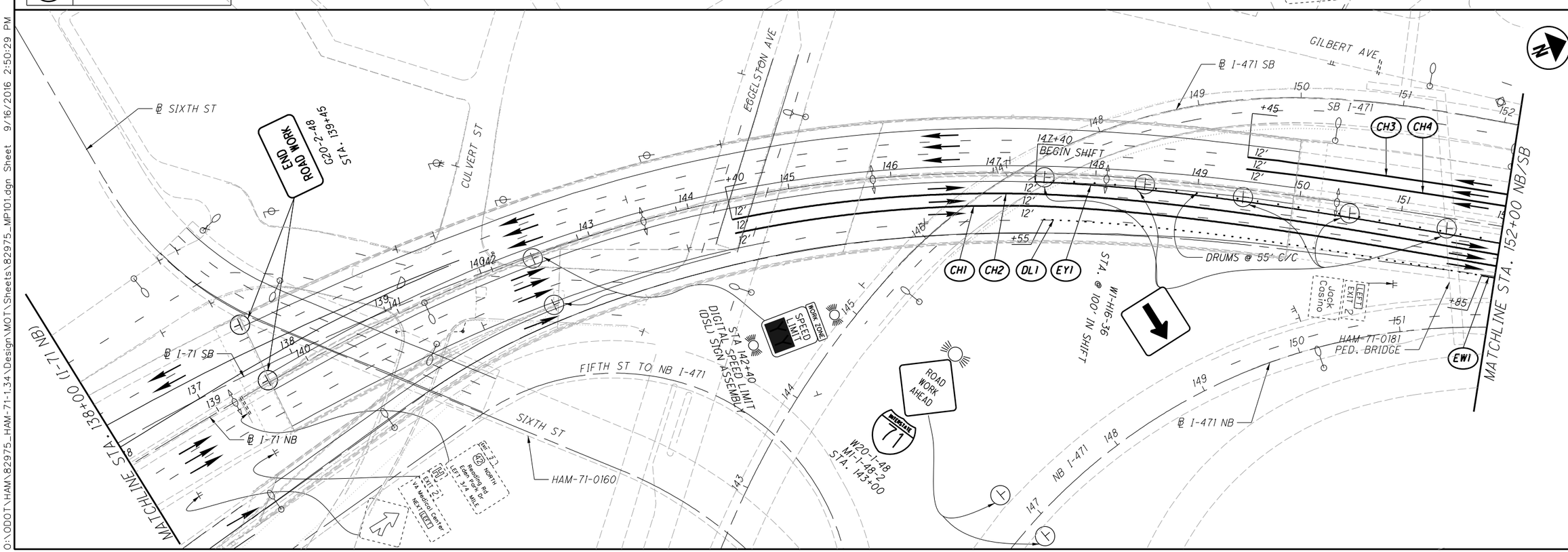
LEGEND

	WORK ZONE
	PAVEMENT FOR M.O.T., CLASS A

EY	WORK ZONE EDGE LINE (Y), 6"
EW	WORK ZONE EDGE LINE (W), 6"
CH	WORK ZONE CHANNELIZING LINE (W) 12"
DL	WORK ZONE DOTTED LINE, (W) 6"
PB	PORTABLE BARRIER, 32"

NOTES:

1) STATIONS BASED ON ℄ I-71 N.B., UNLESS NOTED OTHERWISE
2) REFER TO STANDARD CONSTRUCTION DRAWINGS FOR DRUM SPACING REQUIREMENTS
3) PAVEMENT FOR M.O.T. IS REQUIRED FOR SHOULDER REBUILDING AS SHOWN IN AREAS WITHOUT EXISTING FULL DEPTH SHOULDERS.
4) PLACE DIGITAL SPEED LIMIT (DSL) SIGN ASSEMBLIES AT 1 MILE SPACING THROUGH LIMITS OF PROJCT AS PER S.C.D. MT-104.10
5) PLACE W20-1-48 AND R11-H5A-48 SIGNS ON ALL ENTRANCE RAMPS IN THE PROJECT.



HORIZONTAL SCALE IN FEET 0 25 50 100

CALCULATED DPF
CHECKED BJF

MAINTENANCE OF TRAFFIC PLAN

PHASE 1 - STA. 124+00 TO STA. 152+00

HAM-71-1.97

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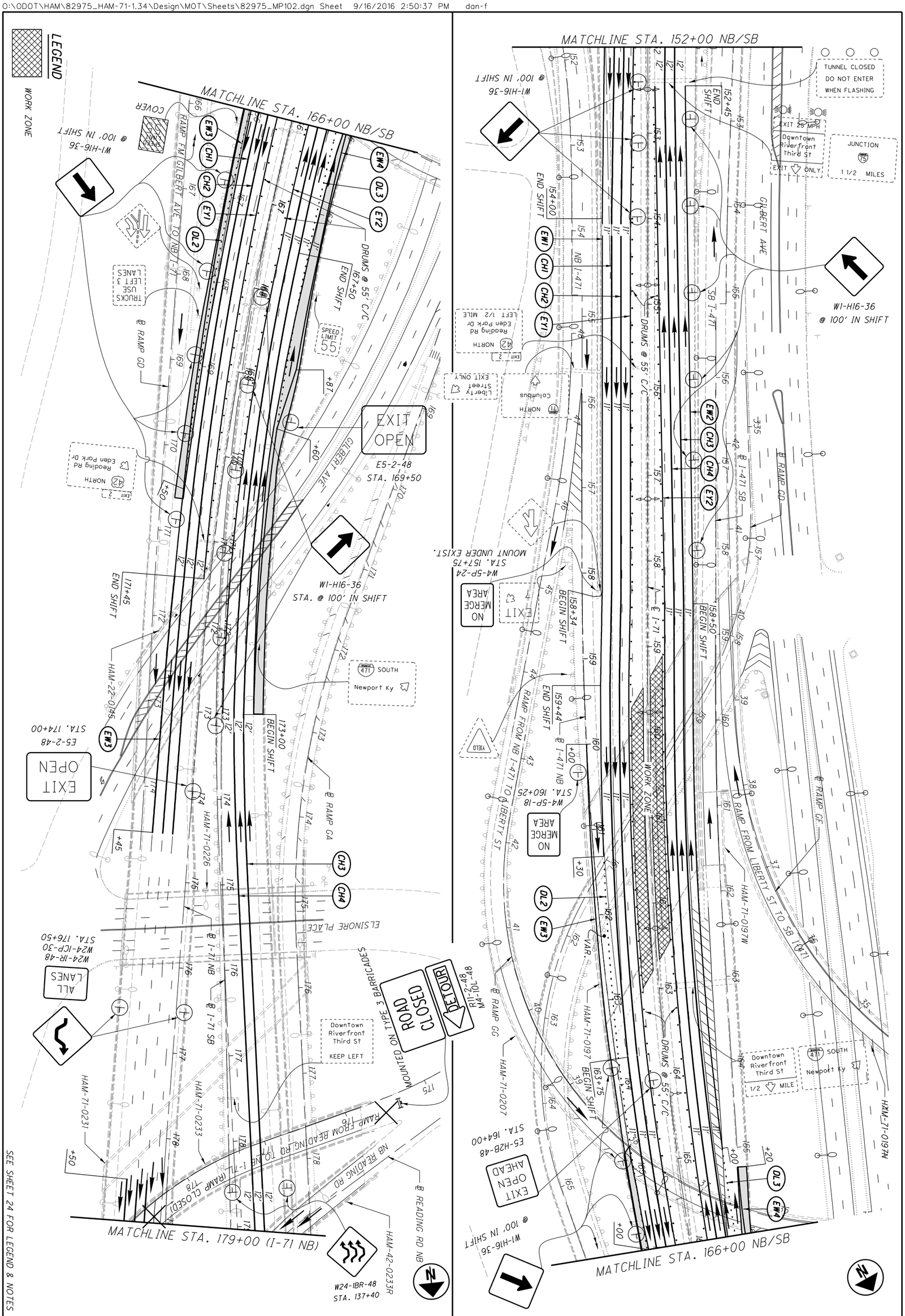
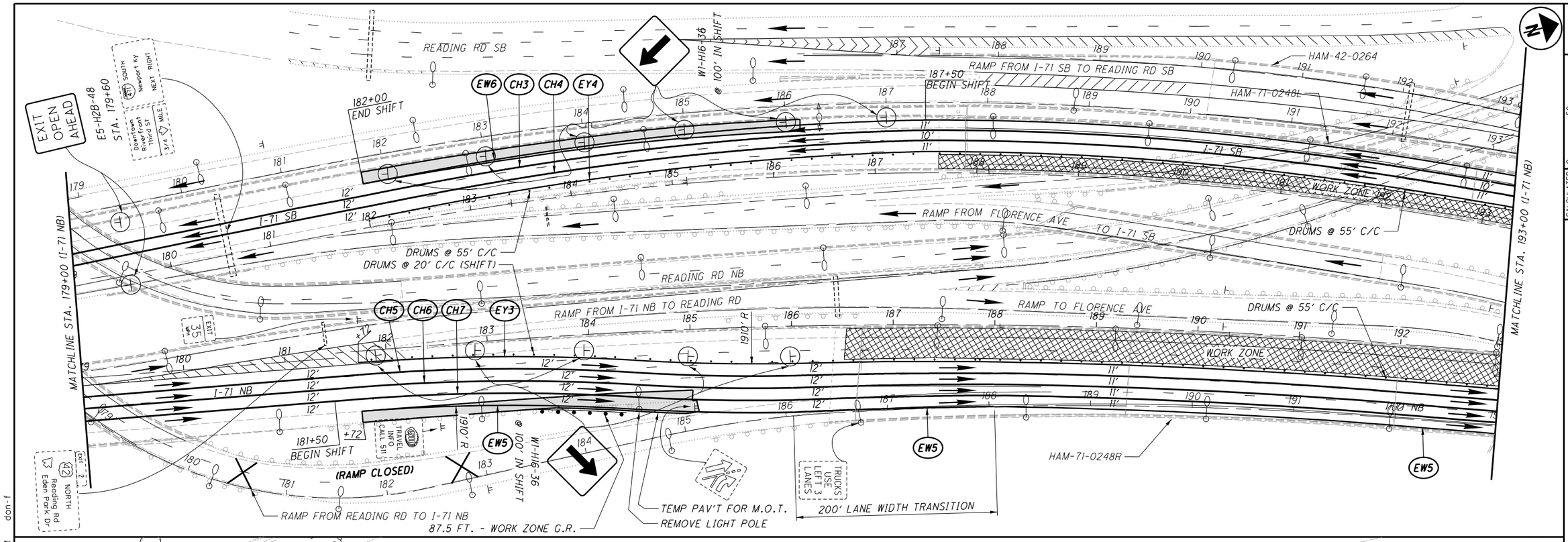


25 / 292	HAM-71-1.97	MAINTENANCE OF TRAFFIC PLAN PHASE 1 - STA. 152+00 TO STA. 179+00 (I-71 NB)	CALCULATED DPF CHECKED BJF	0 50 25 100 HORIZONTAL SCALE IN FEET



SEE SHEET 24 FOR LEGEND & NOTES

HORIZONTAL SCALE IN FEET 0 25 50 100

CALCULATED DPF
CHECKED BJF

MAINTENANCE OF TRAFFIC PLAN

PHASE 1 - STA. 179+00 TO STA. 206+00

HAM-71-1.97

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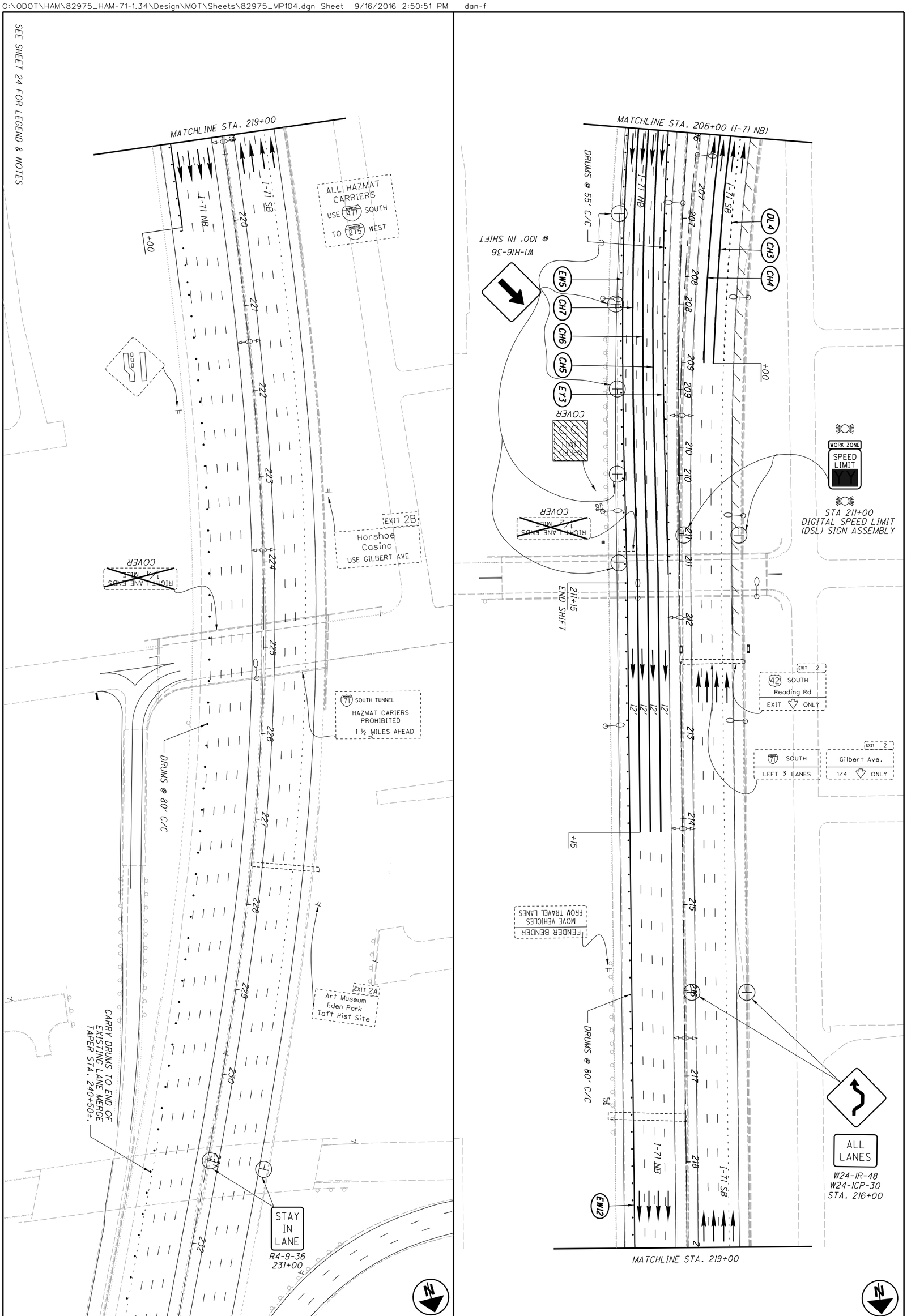
SEE SHEET 24 FOR LEGEND & NOTES



HAM-71-1.97

MAINTENANCE OF TRAFFIC PLAN

PHASE 1 - STA. 206+00 TO STA. 232+00

CALCULATED DPF
CHECKED BJF

0 25 50 100
HORIZONTAL SCALE IN FEET

MAINTENANCE OF TRAFFIC PLAN
PHASE 1A - LEAD IN SIGNAGE

CALCULATED DPF
CHECKED BJF

0 25 50 100
HORIZONTAL SCALE IN FEET

HAM-71-1.97

MATCHLINE STA. 127+00 (I-71 NB)

I.R.-71 SOUTHBOUND

I.R.-71 N.B.

660' SHIFT

660' LANE CLOSURE TAPER
330' TANGENT

SECOND STREET RAMP (OPEN)

DRUMS @ 40' c/c

DRUMS @ 80' c/c

DRUMS @ 55' c/c

W1-H16-36
@ 100' IN SHIFT

W1-4R-48
1,000 FT MIN. PRIOR TO SHIFT TAPER

W3-H56-48
1,750 FT MIN. PRIOR TO SHIFT TAPER

VARIABLE SPEED LIMIT AHEAD

R11-H5A-48
3,000 FT MIN. PRIOR TO SHIFT TAPER

WORK ZONE
SPEEDING FINES DOUBLED
CAUSE DEATH OR INJURY FINE/JAIL

750'

RIGHT LANE CLOSED AHEAD
W20-5-48

R4-9-36
2,500 FT MIN. PRIOR TO SHIFT TAPER

STAY IN LANE

W4-2R-48
1,000 FT MIN. PRIOR TO SHIFT TAPER

FLASHING ARROW BOARD

500' PRIOR TO SHIFT
DIGITAL SPEED LIMIT
(DSL) SIGN ASSEMBLY

SPEED LIMIT
WORK ZONE

ROAD WORK AHEAD
W20-1-48

TYPE A WARNING LIGHT

1 MILE

W16-3AP-30
5,140 FT MIN. PRIOR TO SHIFT TAPER

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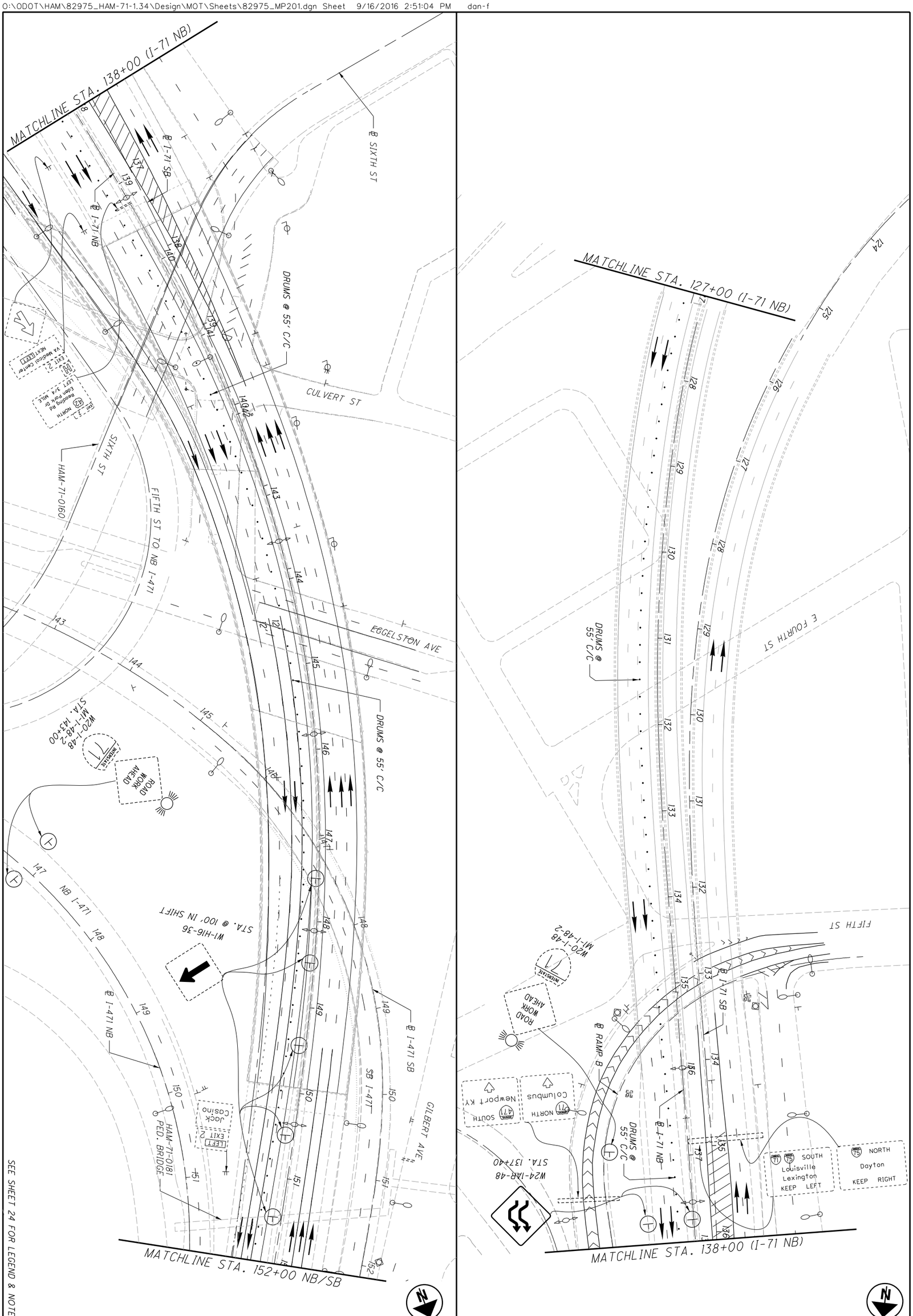


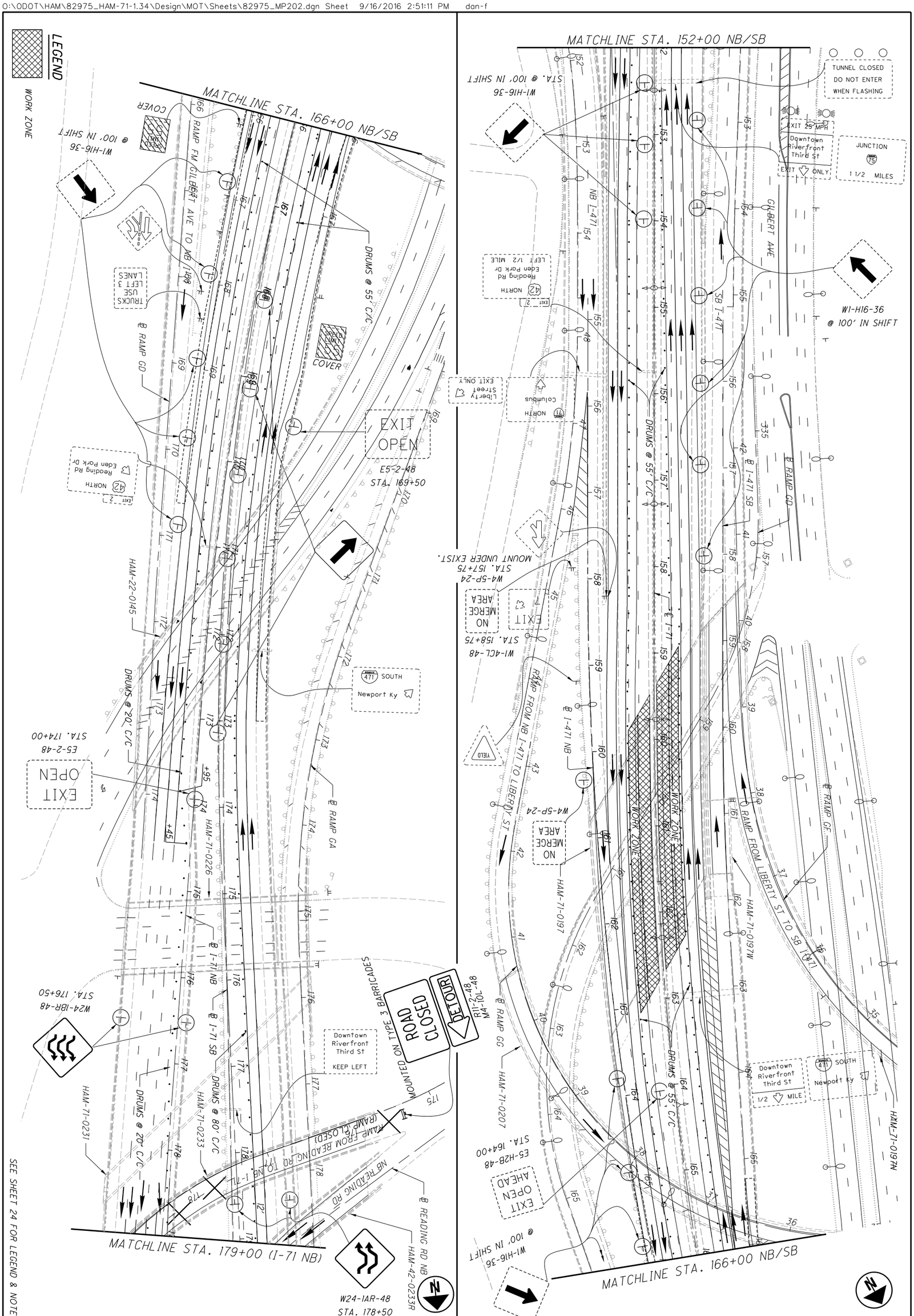
HAM-71-1.97

MAINTENANCE OF TRAFFIC PLAN

PHASE 1A - STA. 124+00 TO STA. 152+00

CALCULATED DPF
CHECKED BJF

0 50
25 100
HORIZONTAL SCALE IN FEET



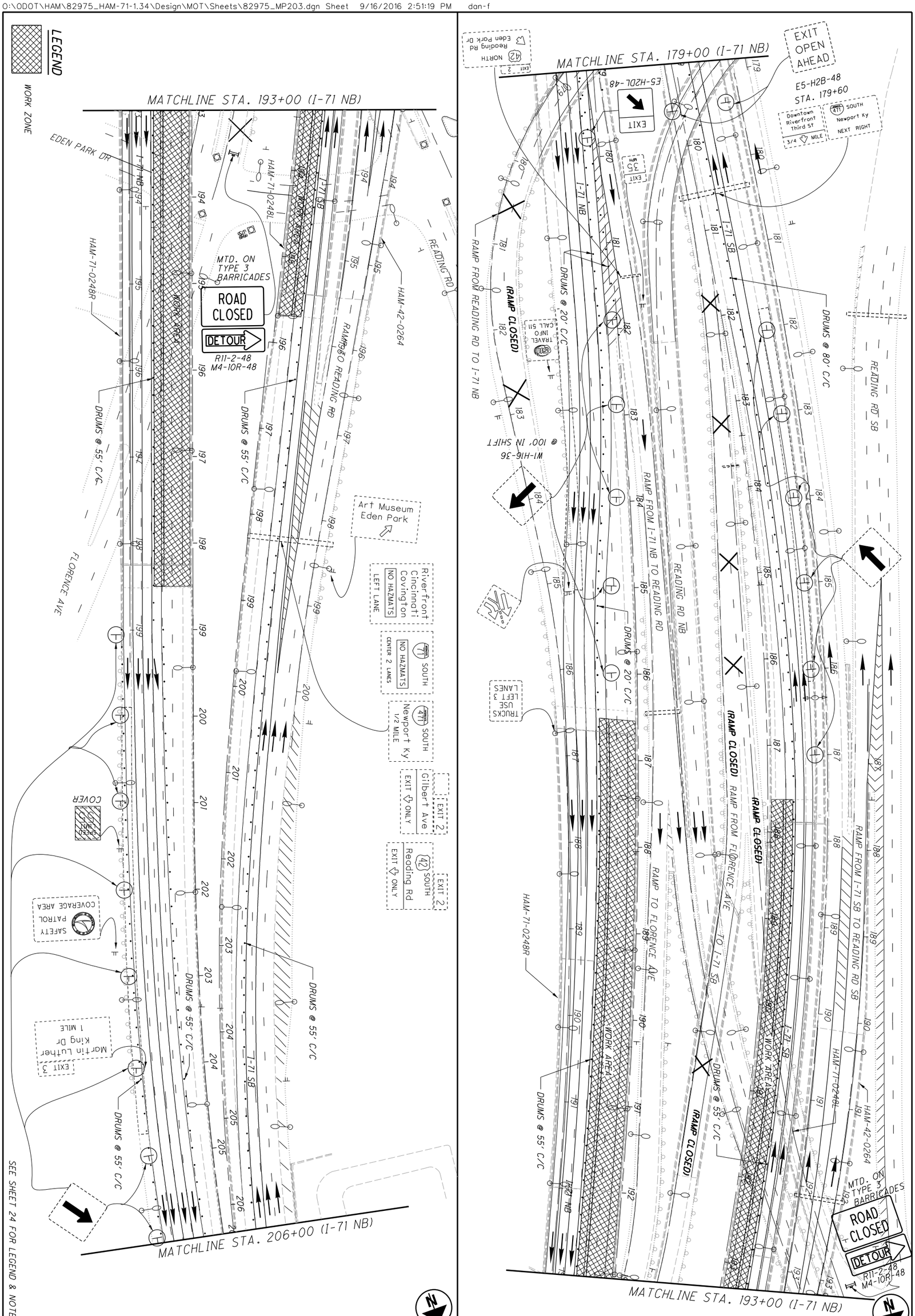
HAM-71-1.97

MAINTENANCE OF TRAFFIC PLAN

PHASE 1A - STA. 152+00 TO STA. 179+00 (I-71 NB)

CALCULATED DPF
CHECKED BJF

0 50
25 100
HORIZONTAL SCALE IN FEET



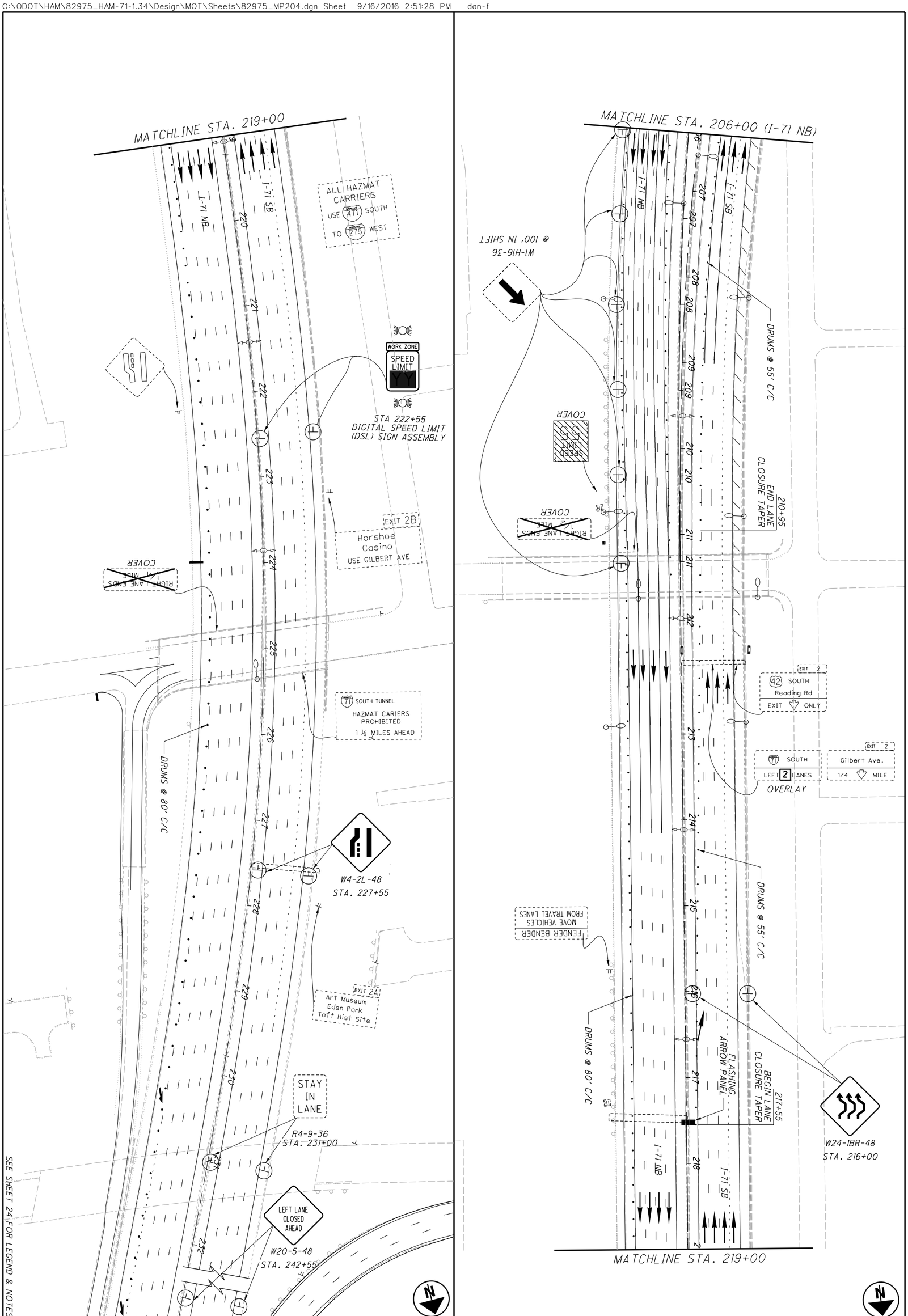
HAM-71-1.97

MAINTENANCE OF TRAFFIC PLAN

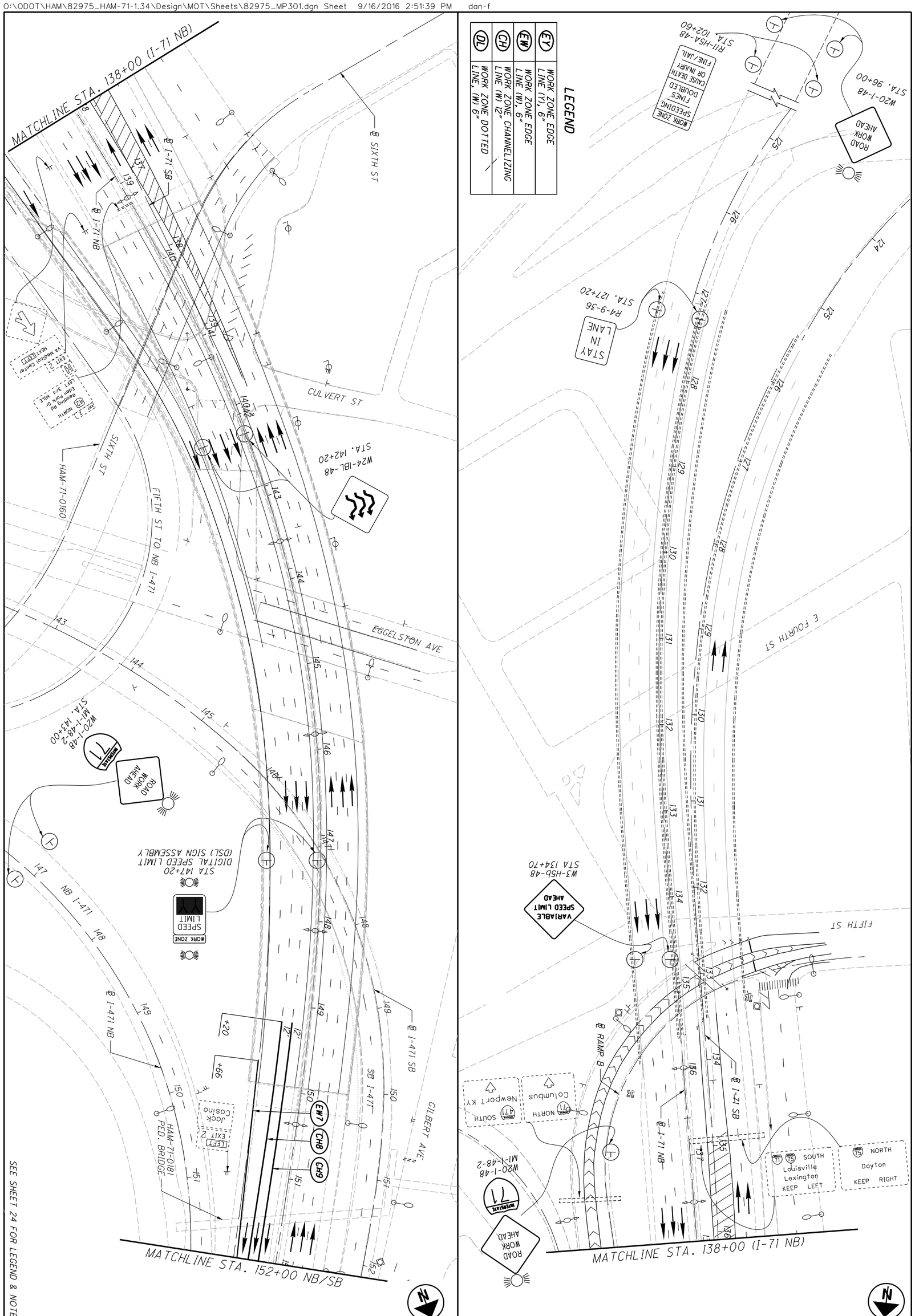
PHASE 1A - STA. 179+00 TO STA. 206+00

CALCULATED DPF
CHECKED BJF

0 25 50 100
HORIZONTAL SCALE IN FEET



32 / 292	HAM-71-1.97	MAINTENANCE OF TRAFFIC PLAN PHASE 1A - STA. 206+00 TO STA. 232+00	CALCULATED DPF CHECKED BJF 0 50 25 100 HORIZONTAL SCALE IN FEET



SEE SHEET 24 FOR LEGEND & NOTES

33
292

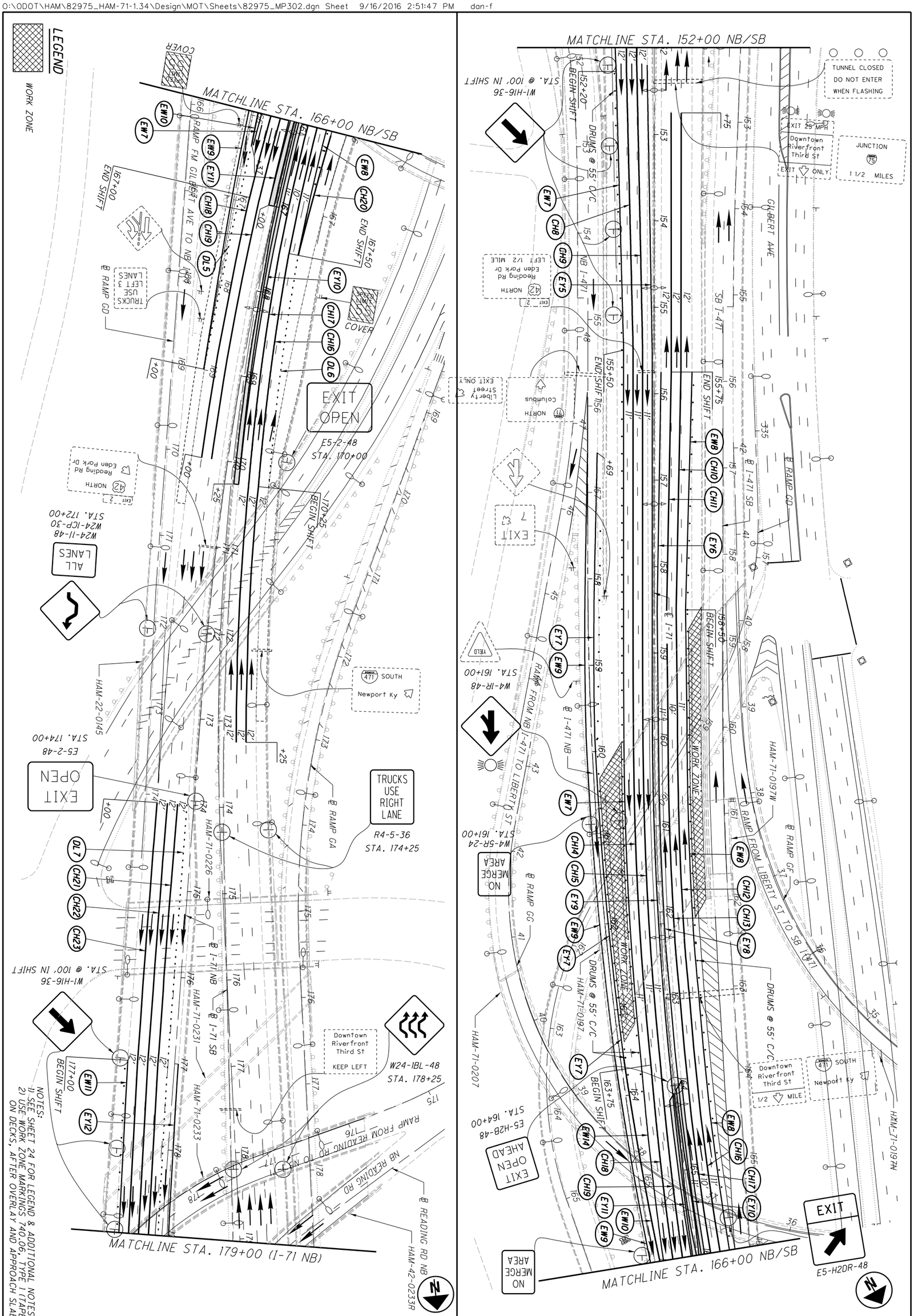
HAM-71-1.97

MAINTENANCE OF TRAFFIC PLAN

PHASE 2 - STA. 124+00 TO STA. 152+00

CALCULATED DPF
CHECKED BJF

0 50
25 100
HORIZONTAL SCALE IN FEET



34 / 292	HAM-71-1.97	MAINTENANCE OF TRAFFIC PLAN PHASE 2 - STA. 152+00 TO STA. 179+00 (I-71 NB)	CALCULATED DPF CHECKED BJF	0 50 25 100 HORIZONTAL SCALE IN FEET

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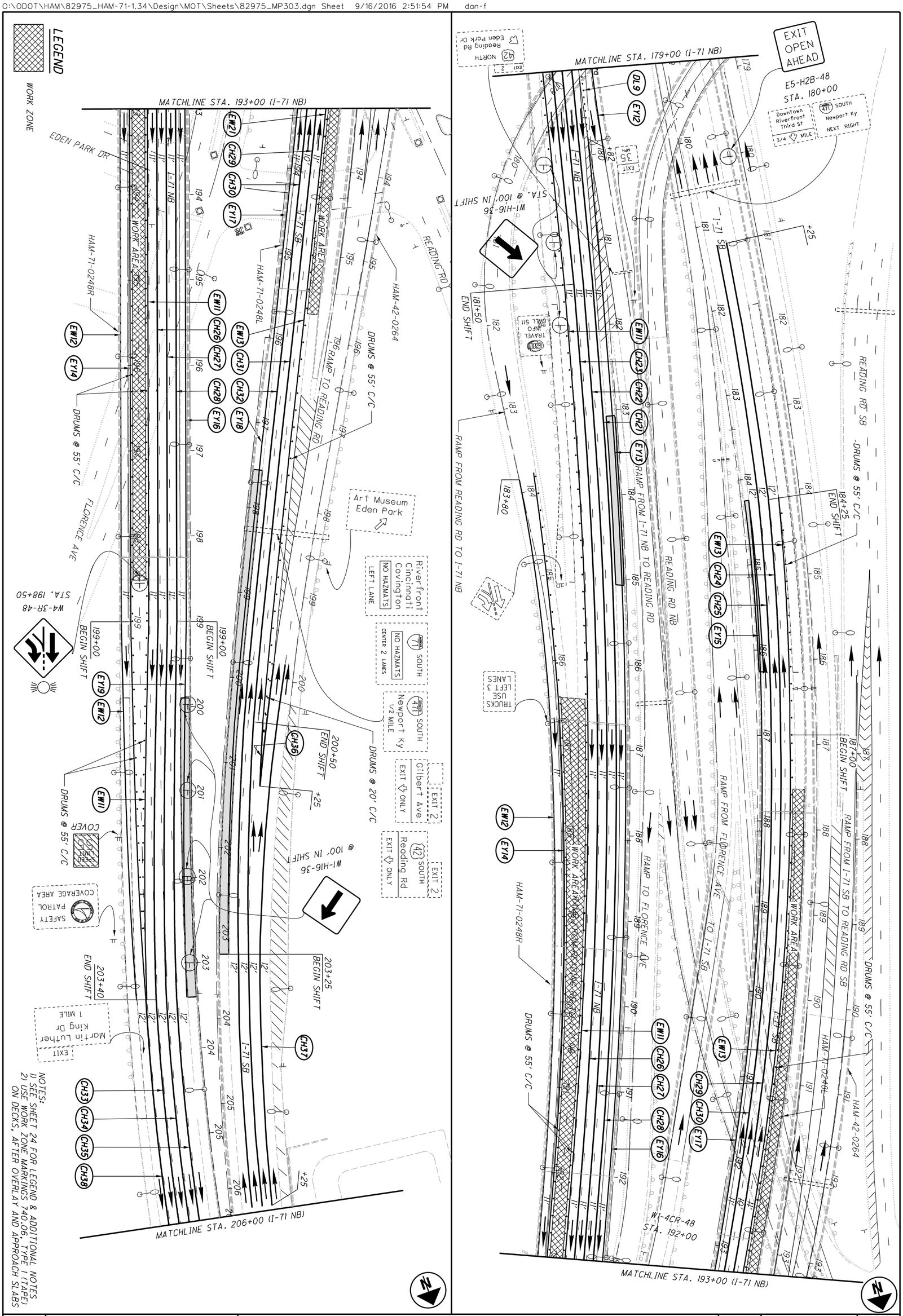
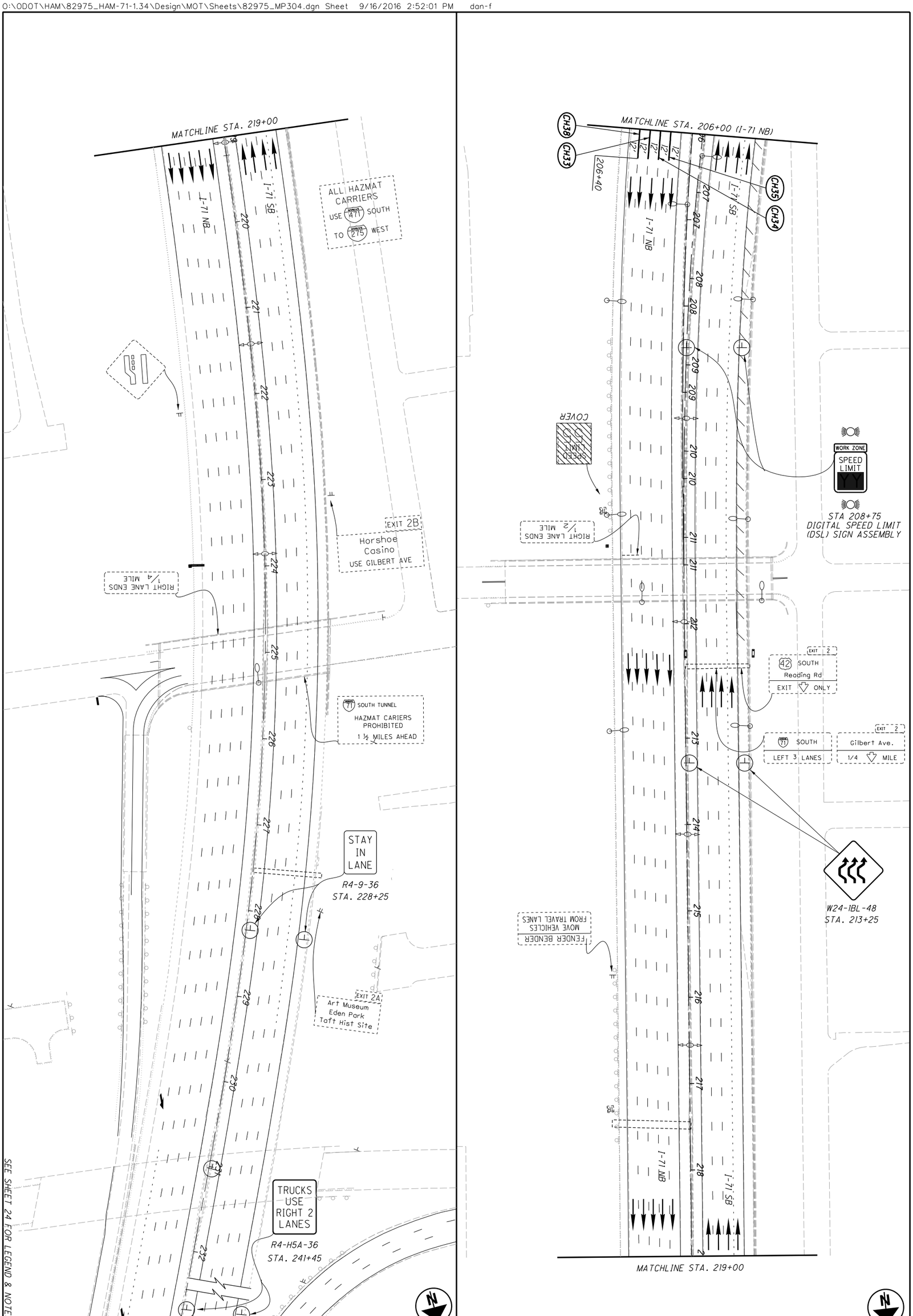
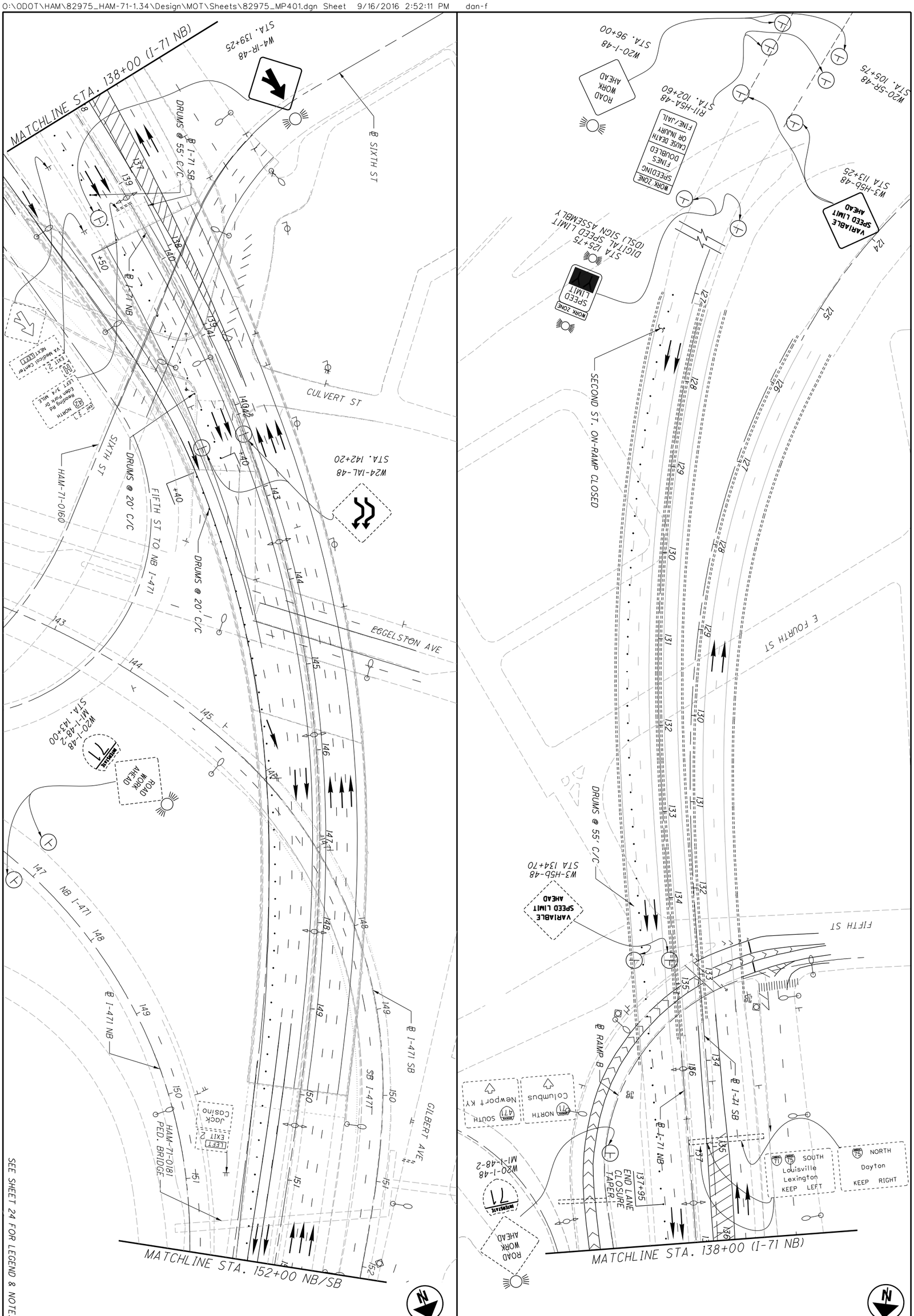


NOTES:
1) SEE SHEET 24 FOR LEGEND & ADDITIONAL NOTES
2) USE WORK ZONE MARKINGS 740.06, TYPE I (TAPE) ON DECKS, AFTER OVERLAY AND APPROACH SLABS

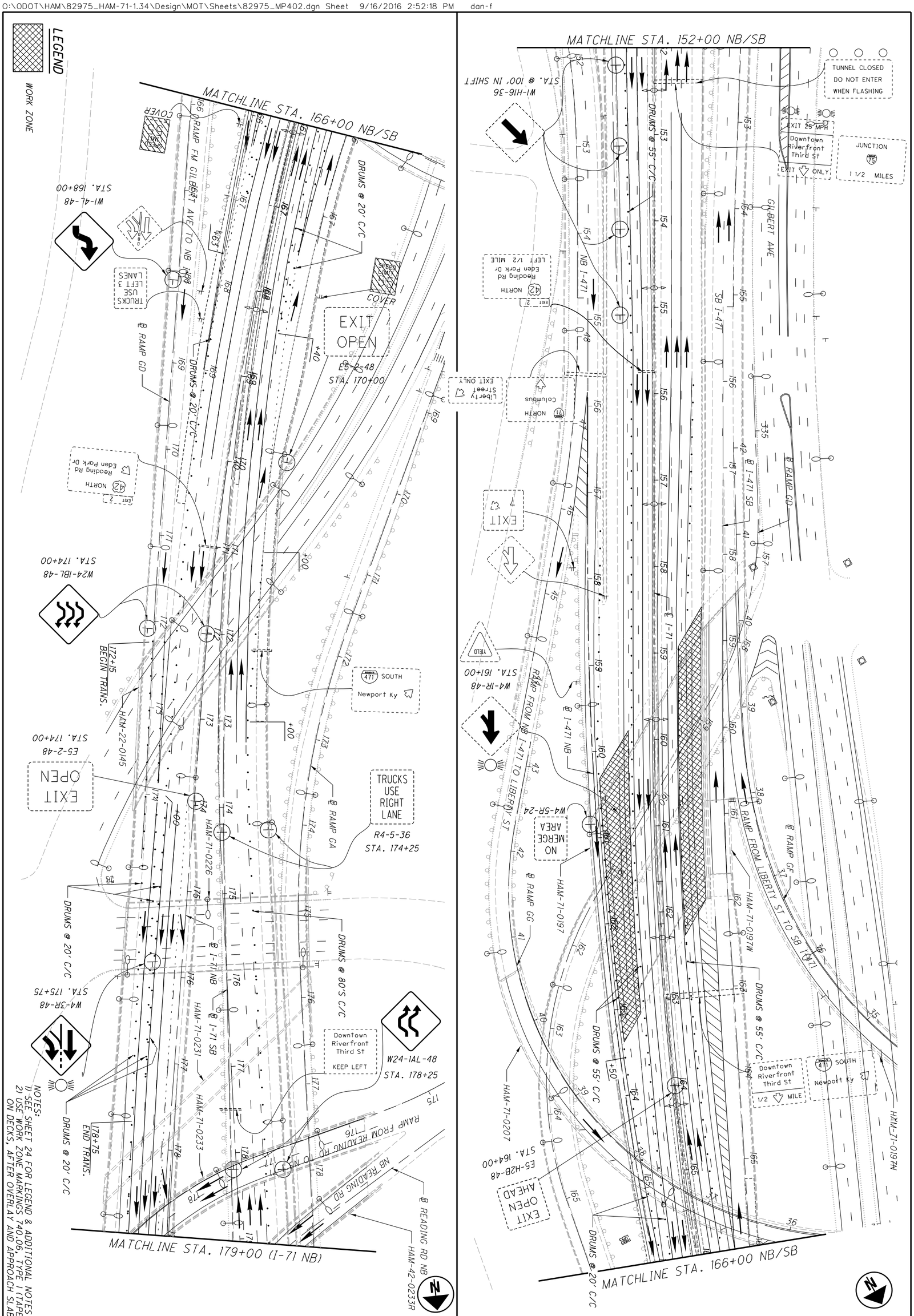
35 / 292	HAM-71-1.97	MAINTENANCE OF TRAFFIC PLAN PHASE 2 - STA. 179+00 TO STA. 206+00	CALCULATED DPF CHECKED BJF	0 25 50 100 HORIZONTAL SCALE IN FEET



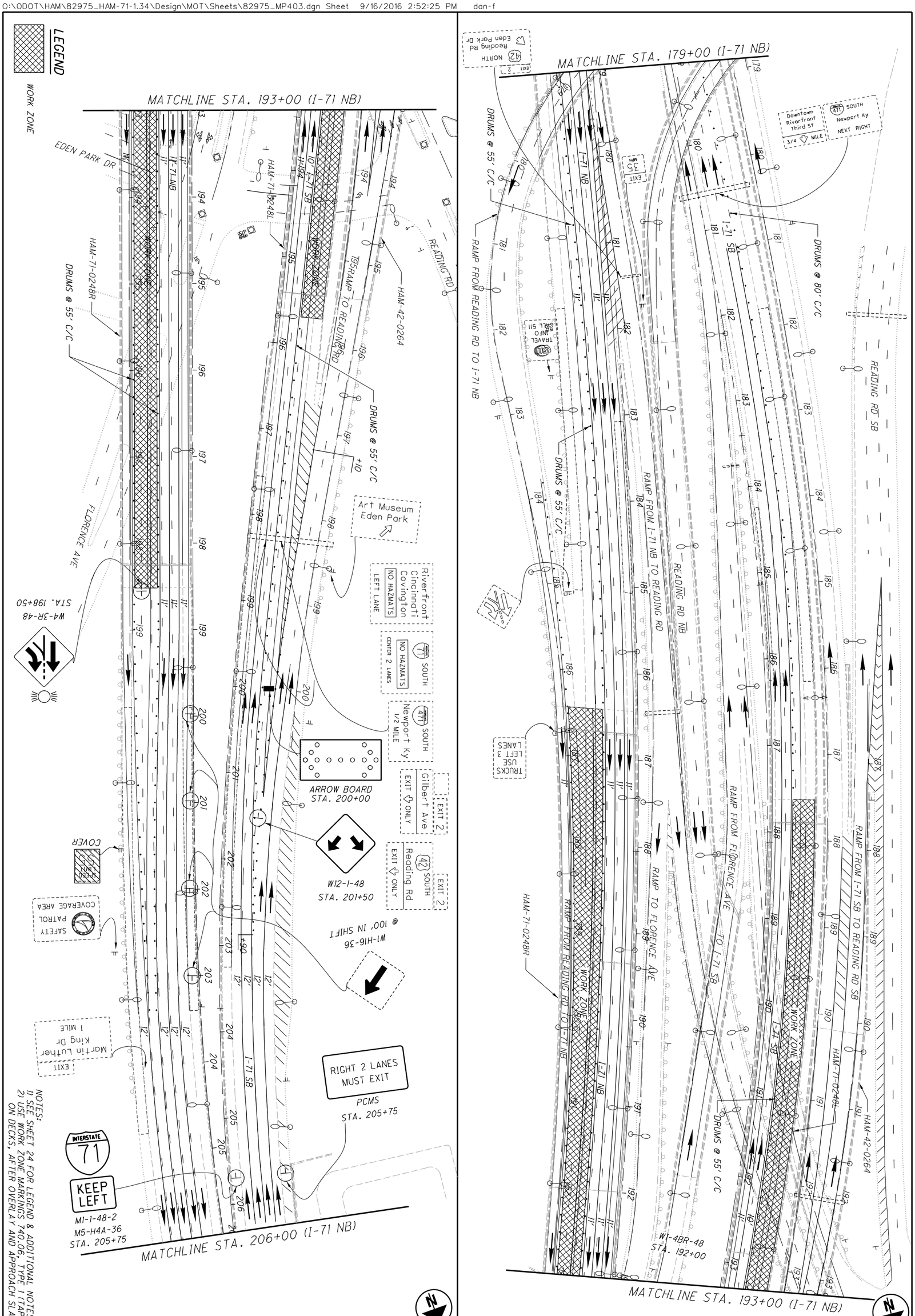
36 / 292	HAM-71-1.97	MAINTENANCE OF TRAFFIC PLAN PHASE 2 - STA. 206+00 TO STA. 232+00	CALCULATED DPF CHECKED BJF	0 50 25 100 HORIZONTAL SCALE IN FEET



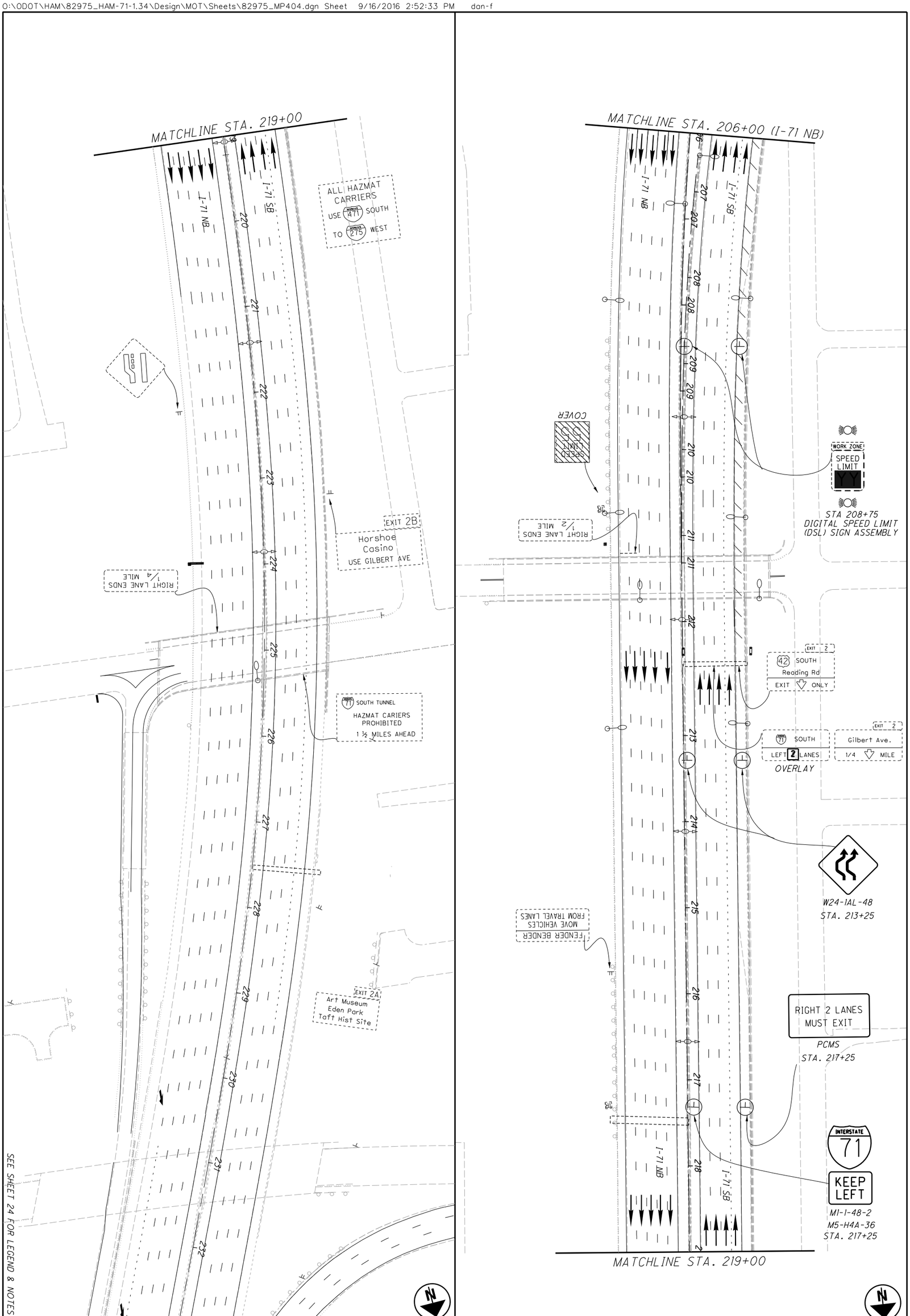
37 / 292	**HAM-71-1.97**	**MAINTENANCE OF TRAFFIC PLAN** **PHASE 2A - STA. 124+00 TO STA. 152+00**	CALCULATED DPF CHECKED BJF	0 50 25 100 HORIZONTAL SCALE IN FEET



38 / 292	HAM-71-1.97	MAINTENANCE OF TRAFFIC PLAN PHASE 2A - STA. 152+00 TO STA. 179+00 (I-71 NB)	CALCULATED DPF CHECKED BJF	0 50 25 100 HORIZONTAL SCALE IN FEET



39 / 292	HAM-71-1.97	MAINTENANCE OF TRAFFIC PLAN PHASE 2A - STA. 179+00 TO STA. 206+00	CALCULATED DPF CHECKED BJF	0 50 25 100 HORIZONTAL SCALE IN FEET



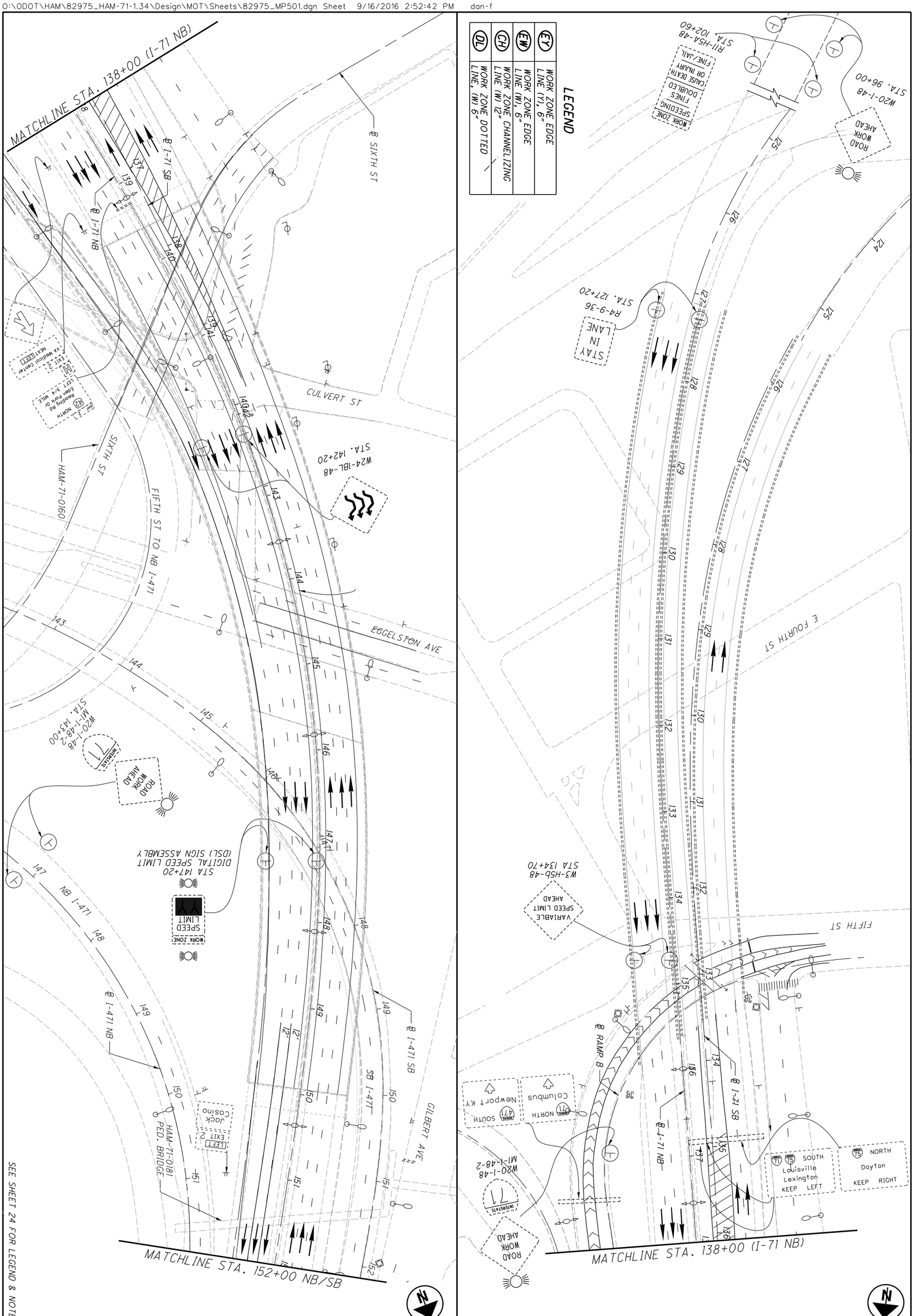
HAM-71-1.97

MAINTENANCE OF TRAFFIC PLAN

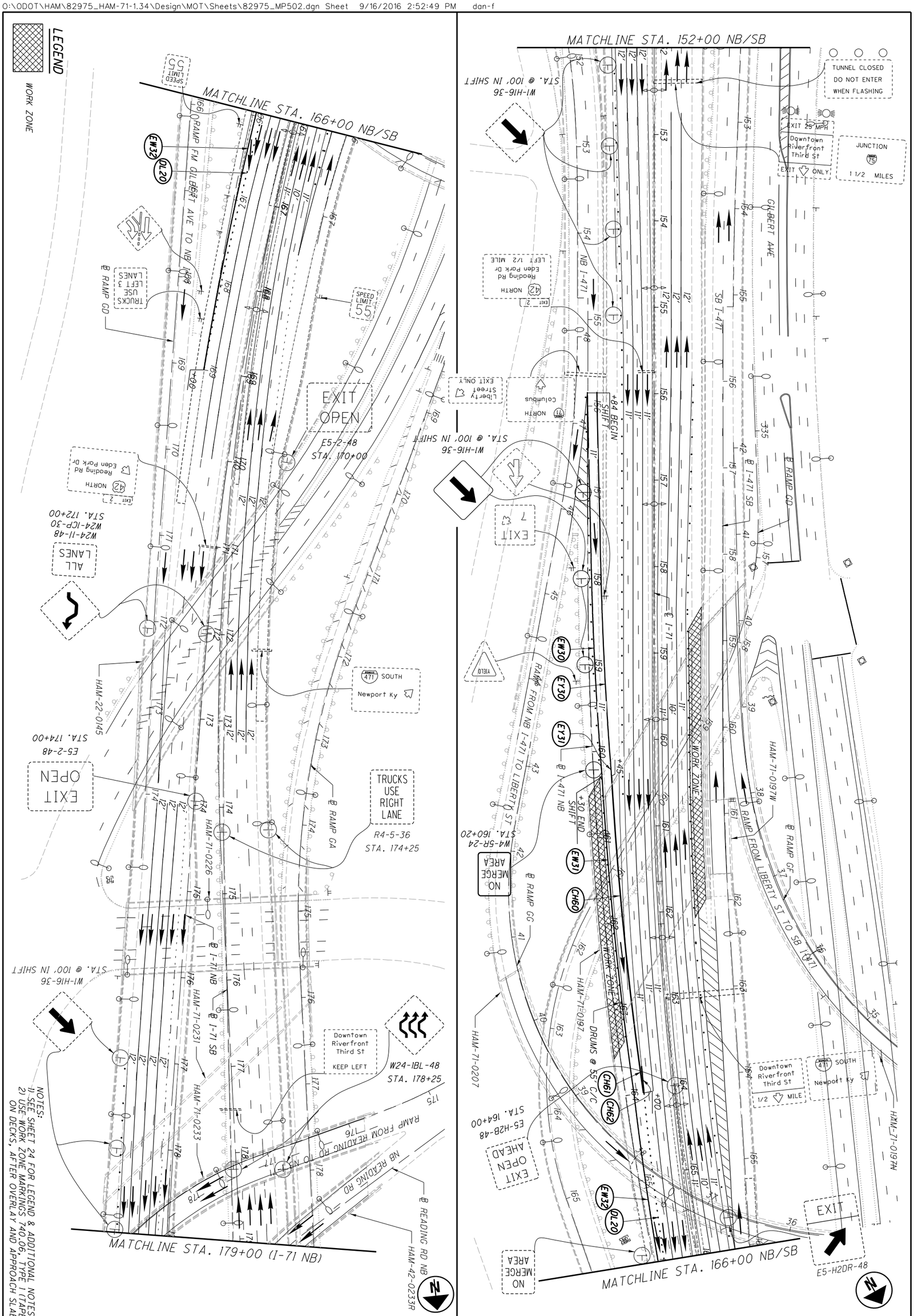
PHASE 2A - STA. 206+00 TO STA. 232+00

CALCULATED DPF
CHECKED BJF

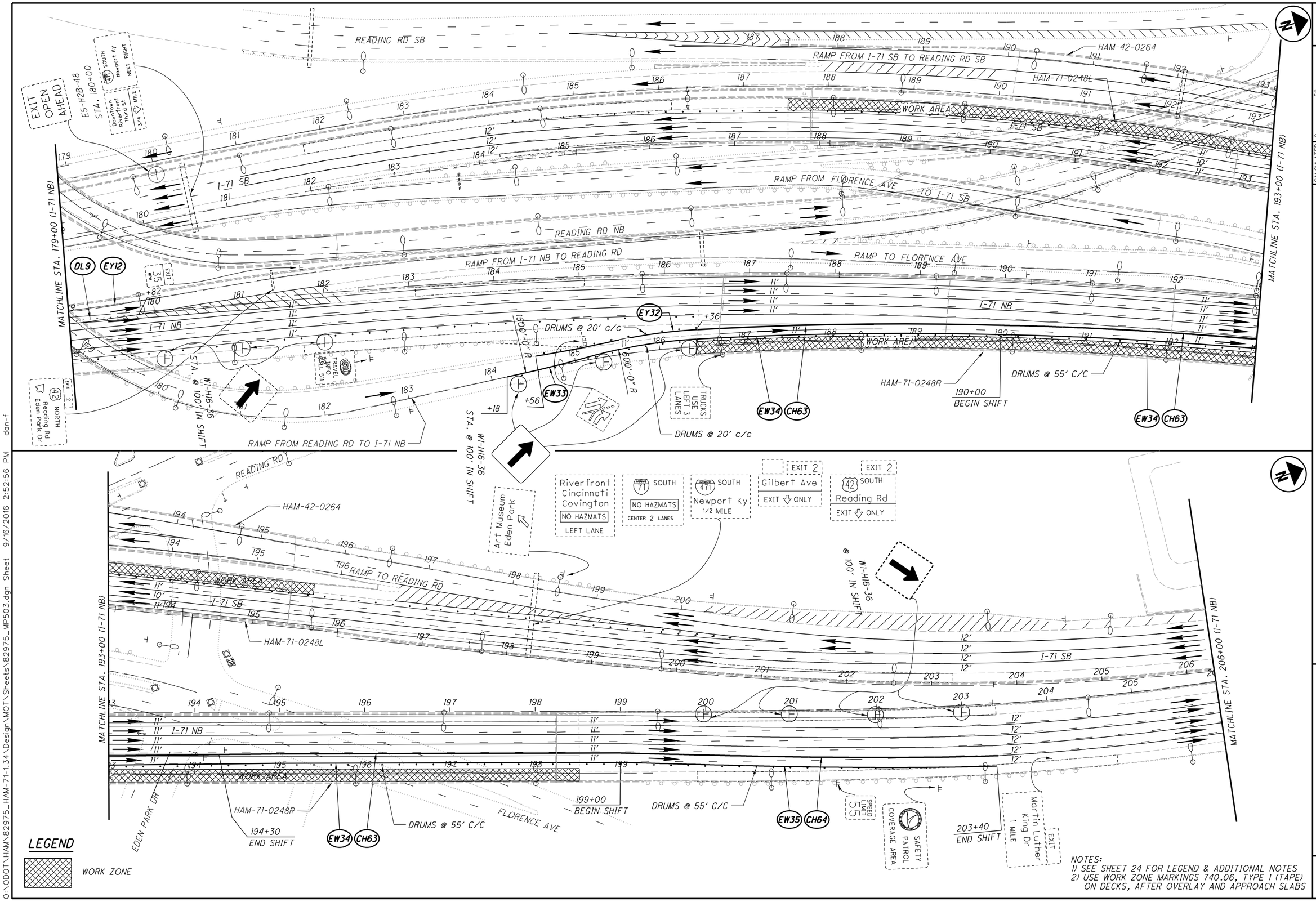
0 25 50 100
HORIZONTAL SCALE IN FEET



41 / 292	HAM-71-1.97	MAINTENANCE OF TRAFFIC PLAN PHASE 2B - STA. 124+00 TO STA. 152+00	CALCULATED DPF CHECKED BJF 0 50 / 25 100 HORIZONTAL SCALE IN FEET



42 / 292	HAM-71-1.97	MAINTENANCE OF TRAFFIC PLAN PHASE 2B - STA. 152+00 TO STA. 179+00 (I-71 NB)	CALCULATED DPF CHECKED BJF	0 50 25 100 HORIZONTAL SCALE IN FEET



LEGEND

WORK ZONE

NOTES:
1) SEE SHEET 24 FOR LEGEND & ADDITIONAL NOTES
2) USE WORK ZONE MARKINGS 740.06, TYPE 1 (TAPE) ON DECKS, AFTER OVERLAY AND APPROACH SLABS

HORIZONTAL SCALE IN FEET 0 25 50 100

CALCULATED DPF
CHECKED BJF

MAINTENANCE OF TRAFFIC PLAN
PHASE 2B - STA. 179+00 TO STA. 206+00

HAM-71-1.97

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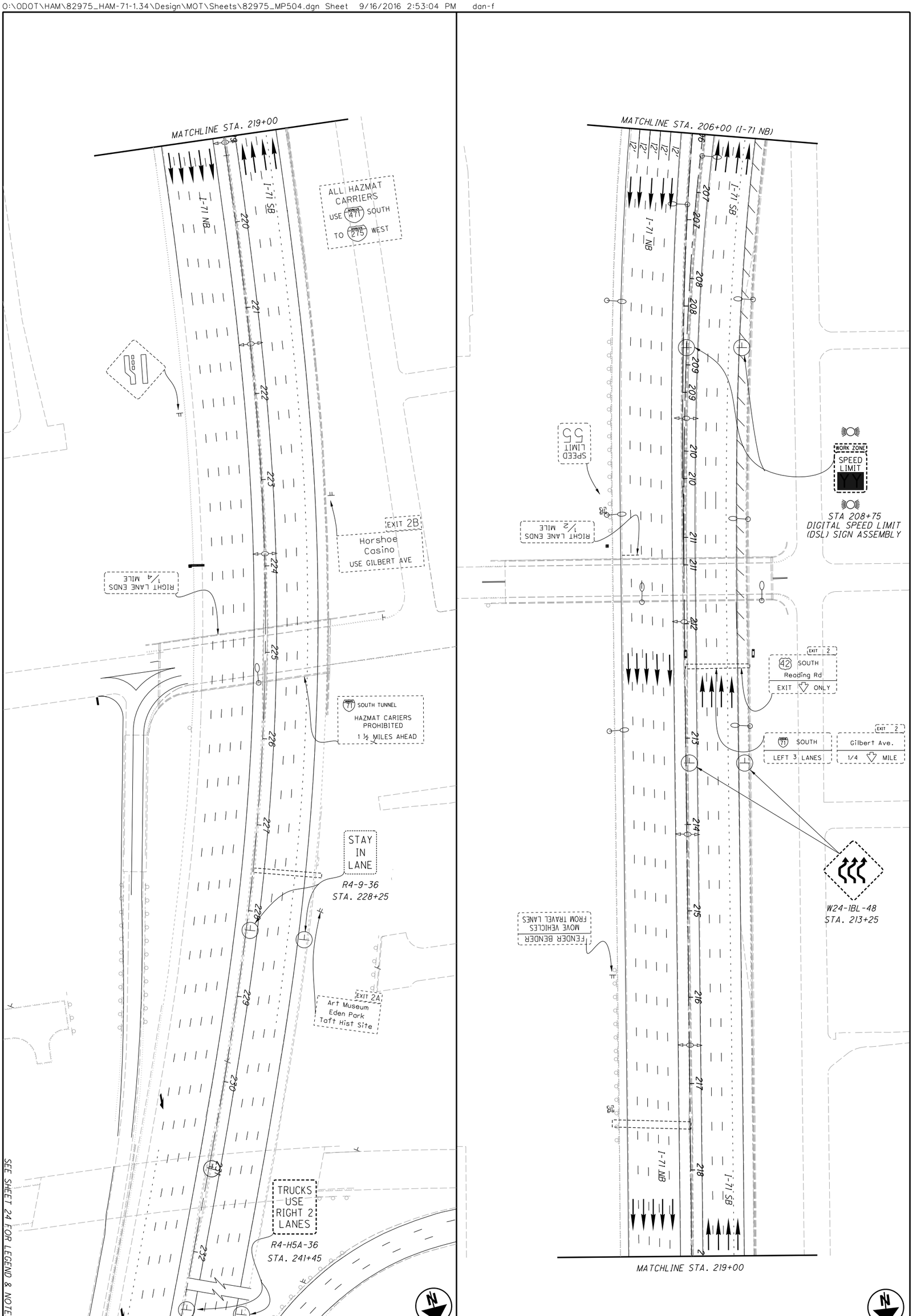


HAM-71-1.97

MAINTENANCE OF TRAFFIC PLAN

PHASE 2B - STA. 206+00 TO STA. 232+00

CALCULATED DPF
CHECKED BJF

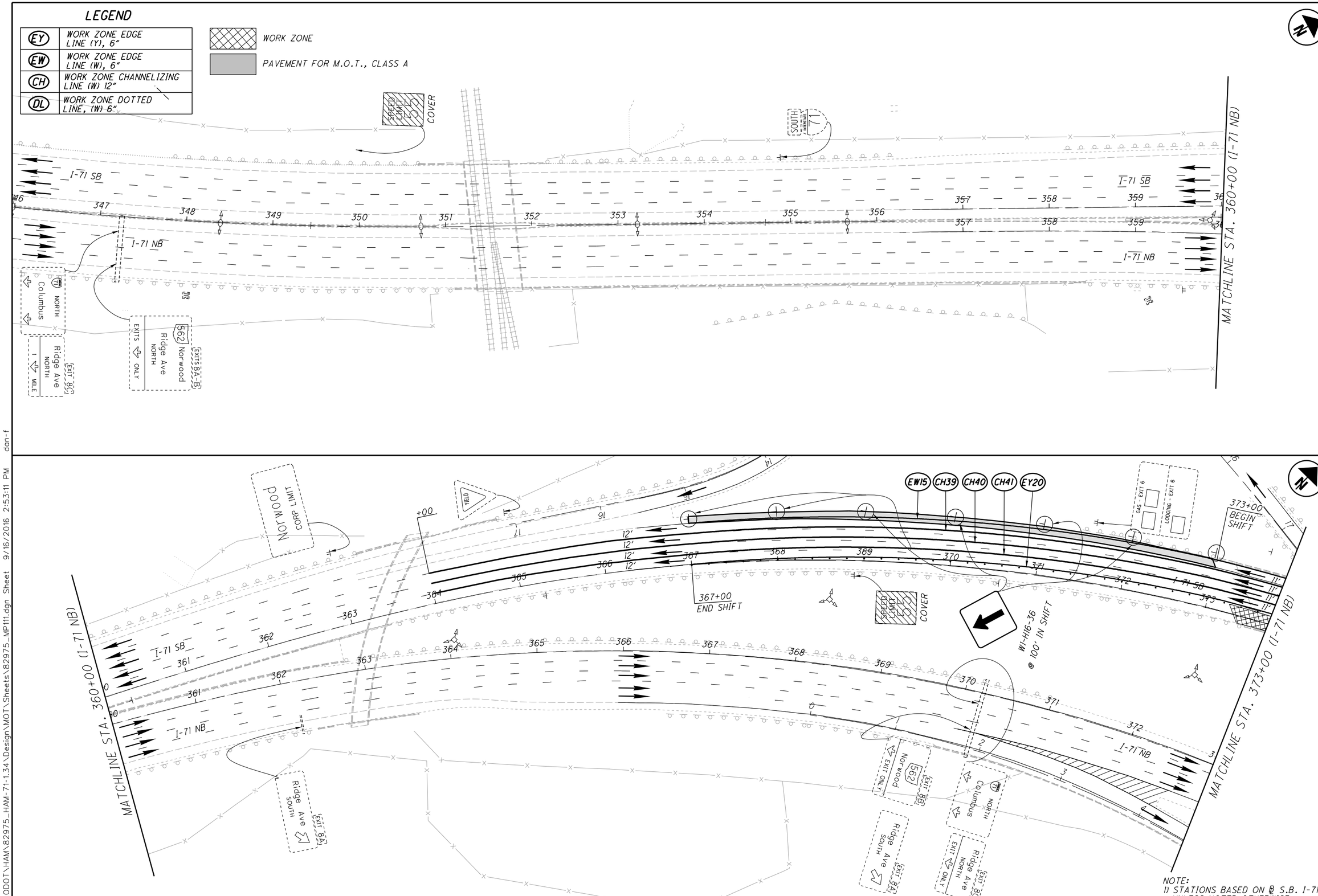
0 25 50 100
HORIZONTAL SCALE IN FEET

LEGEND

EY	WORK ZONE EDGE LINE (Y), 6"
EW	WORK ZONE EDGE LINE (W), 6"
CH	WORK ZONE CHANNELIZING LINE (W) 12"
DL	WORK ZONE DOTTED LINE, (W) 6"

WORK ZONE

PAVEMENT FOR M.O.T., CLASS A



NOTE:
1) STATIONS BASED ON ℄ S.B. I-71, UNLESS NOTED OTHERWISE

0 25 50 100
HORIZONTAL SCALE IN FEET

CALCULATED DPF
CHECKED BJF

MAINTENANCE OF TRAFFIC PLAN

PHASE 1 - STA. 346+00 TO STA. 373+00 NB

HAM-71-1.97

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RAMP K SR 562 EB TO RIDGE AVE
BRIDGE HAM-71-0793L
RAMP L - I-71 SB TO SR 562 WB
RAMP I - I-71 SB TO SR 562 WB
381+00 PC
EXIT 7
W4-3L-48 STA. 383+80
285+00 END SHIFT
+25 MEET EXIST.
EXIT 7 562 Norwood
EW17 DL8
DRUMS @ 20' C/C
I-71 SB
WORK ZONE
EW15 CH39 CH40 CH41 EY20
HAM-71-0788L
561 Edwards Rd Smith Rd 1 MILE
3666' R
CH42 +33
EY20 EY21 EW16
RAMP H - RIDGE AVE TO I-71 SB
W1-H16-36 STA. 100' IN SHIFT
2+00 MEET EXIST
RAMP J - SR 562 EB TO I-71 NB
HAM-71-0799R
MATCHLINE STA. 373+00 (I-71 NB)
MATCHLINE STA. 386+00 (I-71 NB)
I-71 NB
RAMP G - I-71 NB TO SR 562 WB
RAMP F - I-71 NB TO RIDGE AVE
RAMP B
RAMP G
EXIT 8B
NORTH Columbus
NORTH Columbus
EXIT 8C Ridge Ave NORTH EXIT ONLY
EXIT 8B 562 Norwood EXIT ONLY

DRUMS @ 20' C/C
EW17 DL8 CH39 CH40 EY23
EXIT OPEN
E5-2-48 STA. 393+00
SPEED LIMIT 55 COVER
WORK ZONE SPEED LIMIT XX
STA 396+00 DIGITAL SPEED LIMIT (DSL) SIGN ASSEMBLY
Cincinnati CORP LIMIT
HAM-71-0837
W1-H16-36 STA. 100' IN SHIFT
391+00 BEGIN SHIFT
W24-1R-48 STA. 3+00
HAM-71-0817R
ROAD WORK AHEAD
SOUTH Columbus
W20-1-48 MI-1-48-2
NOTE:
1) STATIONS BASED ON ℄ S.B. I-71, UNLESS NOTED OTHERWISE
2) SEE SHEET 45 FOR LEGEND & NOTES

HORIZONTAL SCALE IN FEET
0 25 50 100
CALCULATED DPF
CHECKED BJF

MAINTENANCE OF TRAFFIC PLAN
PHASE 1 - STA. 373+00 NB TO STA. 399+00 NB
HAM-71-1.97

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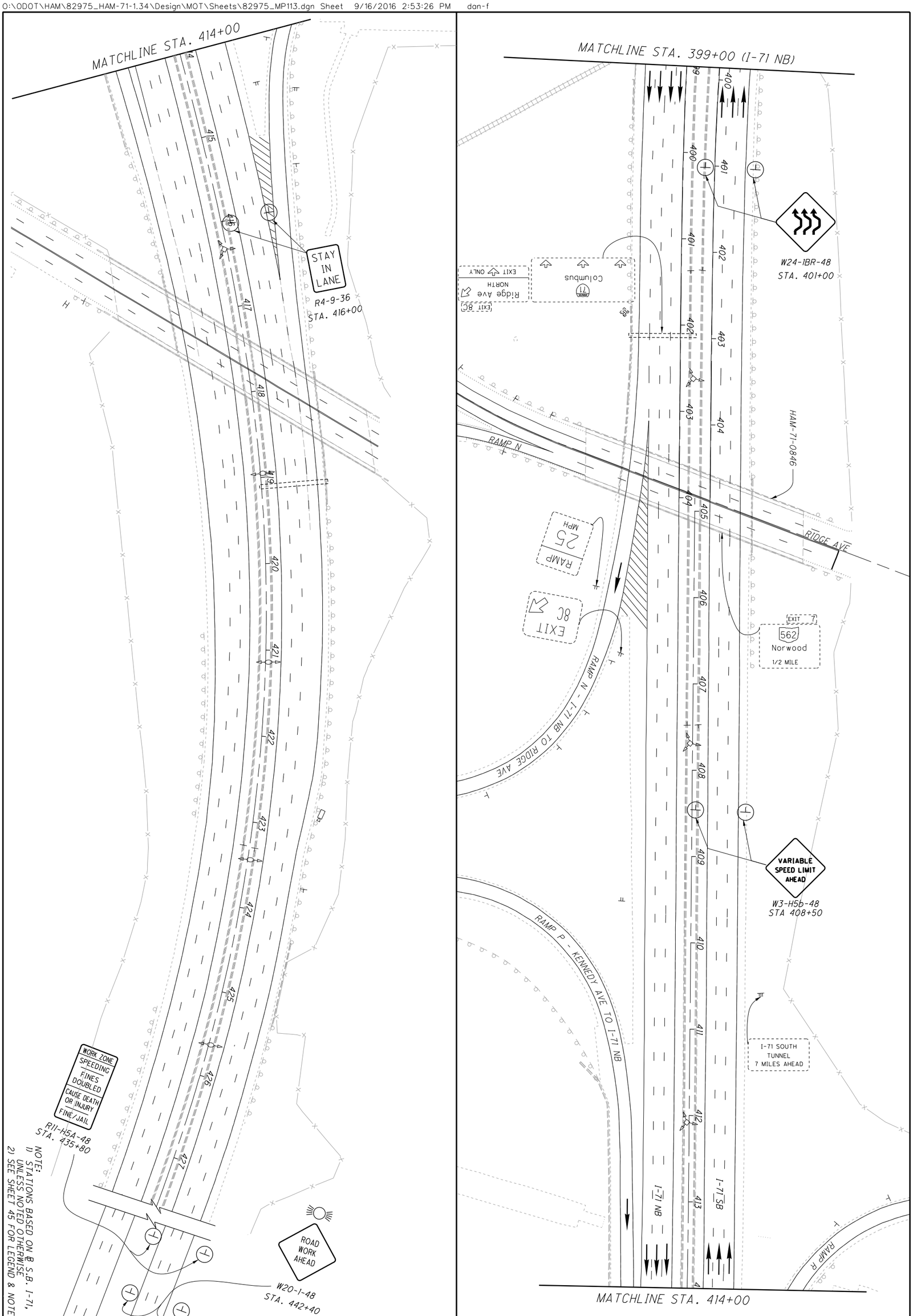

NOTE:
1) STATIONS BASED ON ℄ S.R. I-71, UNLESS NOTED OTHERWISE
2) SEE SHEET 45 FOR LEGEND & NOTES

HAM-71-1.97

MAINTENANCE OF TRAFFIC PLAN

PHASE 1 - STA. 399+00 NB TO STA. 443+00

CALCULATED DPF
CHECKED BJF

0 50
25 100
HORIZONTAL SCALE IN FEET

N

CALCULATED DPF
CHECKED BJF

HORIZONTAL SCALE IN FEET
0 25 50 100

MAINTENANCE OF TRAFFIC PLAN

PHASE 1A - STA. 346+00 TO STA. 373+00 NB

HAM-71-1.97

48
292

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RAMP K SR 562 EB TO RIDGE AVE
BRIDGE HAM-71-0793L
RAMP L - I-71 SB TO SR 562 WB
DRUMS @ 55' C/C
WORK ZONE
HAM-71-0788L
Edwards Rd
Smith Rd
1 MILE
RAMP J - SR 562 EB TO I-71 NB
HAM-71-0799R
RAMP I - I-71 SB TO SR 562 WB
EXIT 7
DRUMS @ 80' C/C
I-71 SB
RAMP
RIGHT LANE TO I-71 SB
COVER
WI-H16-36
STA. @ 100'
IN SHIFT
MATCHLINE STA. 373+00 (I-71 NB)
MATCHLINE STA. 386+00 (I-71 NB)
I-71 NB
RAMP F - I-71 NB TO RIDGE AVE
RAMP G - I-71 NB TO SR 562 WB
EXIT 8B
NORTH
Columbus
Ridge Ave
NORTH
EXIT ONLY
EXIT 8C
EXIT 8B
562
Norwood
EXIT ONLY

DRUMS @ 55' C/C
DRUMS @ 80' C/C
EXIT OPEN
E5-2-48
STA. 393+00
SPEED LIMIT LESS
COVER
WORK ZONE
SPEED LIMIT
STA 396+00
DIGITAL SPEED LIMIT
(DSL) SIGN ASSEMBLY
END LANE
CLOSURE TAPER
HAM-71-0837
Cincinnati
CORP LIMIT
MATCHLINE STA. 386+00 (I-71 NB)
MATCHLINE STA. 399+00 (I-71 NB)
I-71 SB
I-71 NB
RAMP CLOSED
WI-H16-36
STA. @ 100'
IN SHIFT
HAM-71-0817R
RAMP G
RAMP H
SOUTH
ROAD WORK AHEAD
INTERSTATE
WZ20-I-48
MI-I-48-2

NOTE:
1) STATIONS BASED ON ℄ S.B. I-71, UNLESS NOTED OTHERWISE
2) SEE SHEET 45 FOR LEGEND & NOTES

HORIZONTAL SCALE IN FEET
0 25 50 100
CALCULATED DPF
CHECKED BJF

MAINTENANCE OF TRAFFIC PLAN
PHASE 1A - STA. 373+00 NB TO STA. 399+00 NB
HAM-71-1.97
49
292

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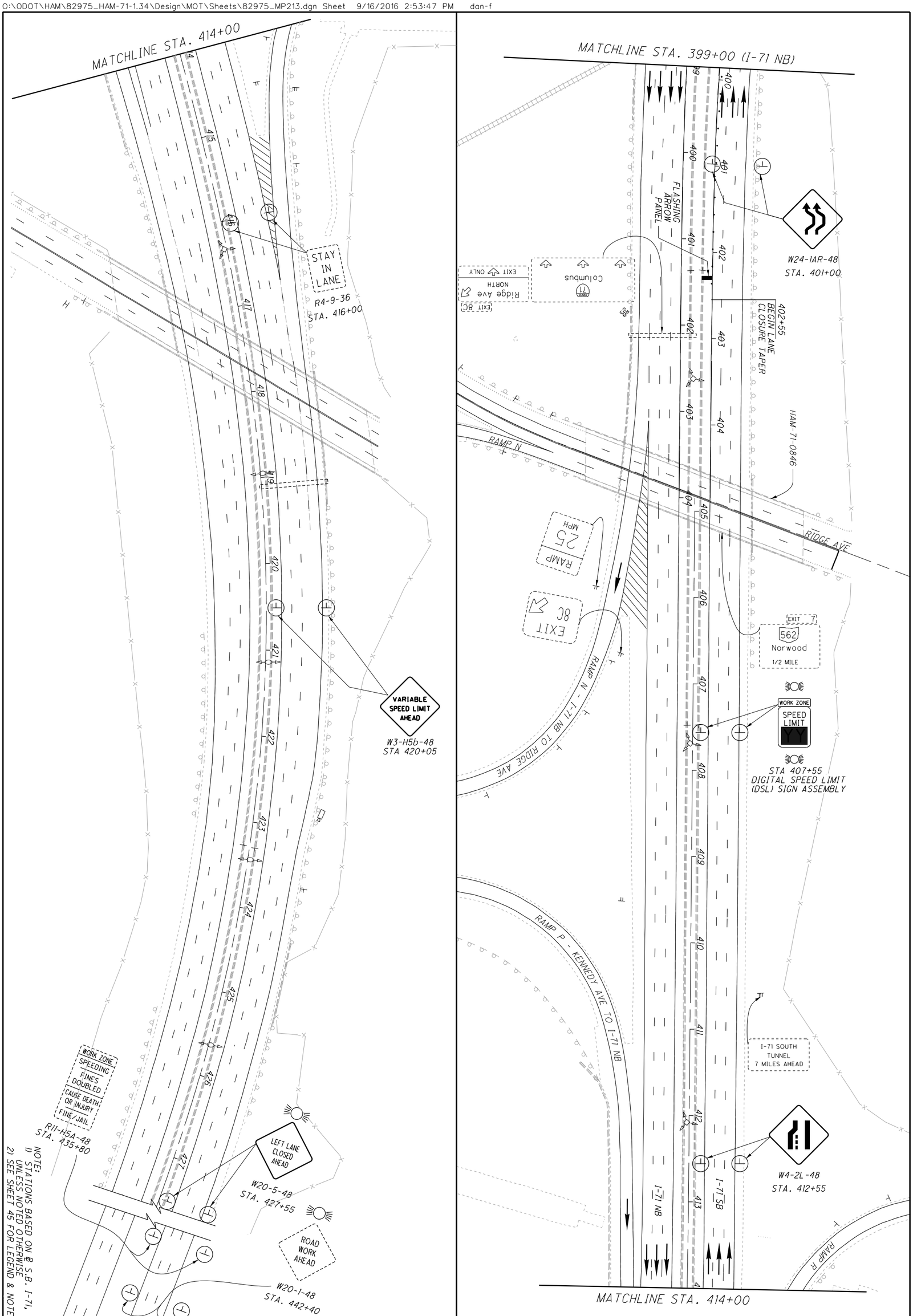
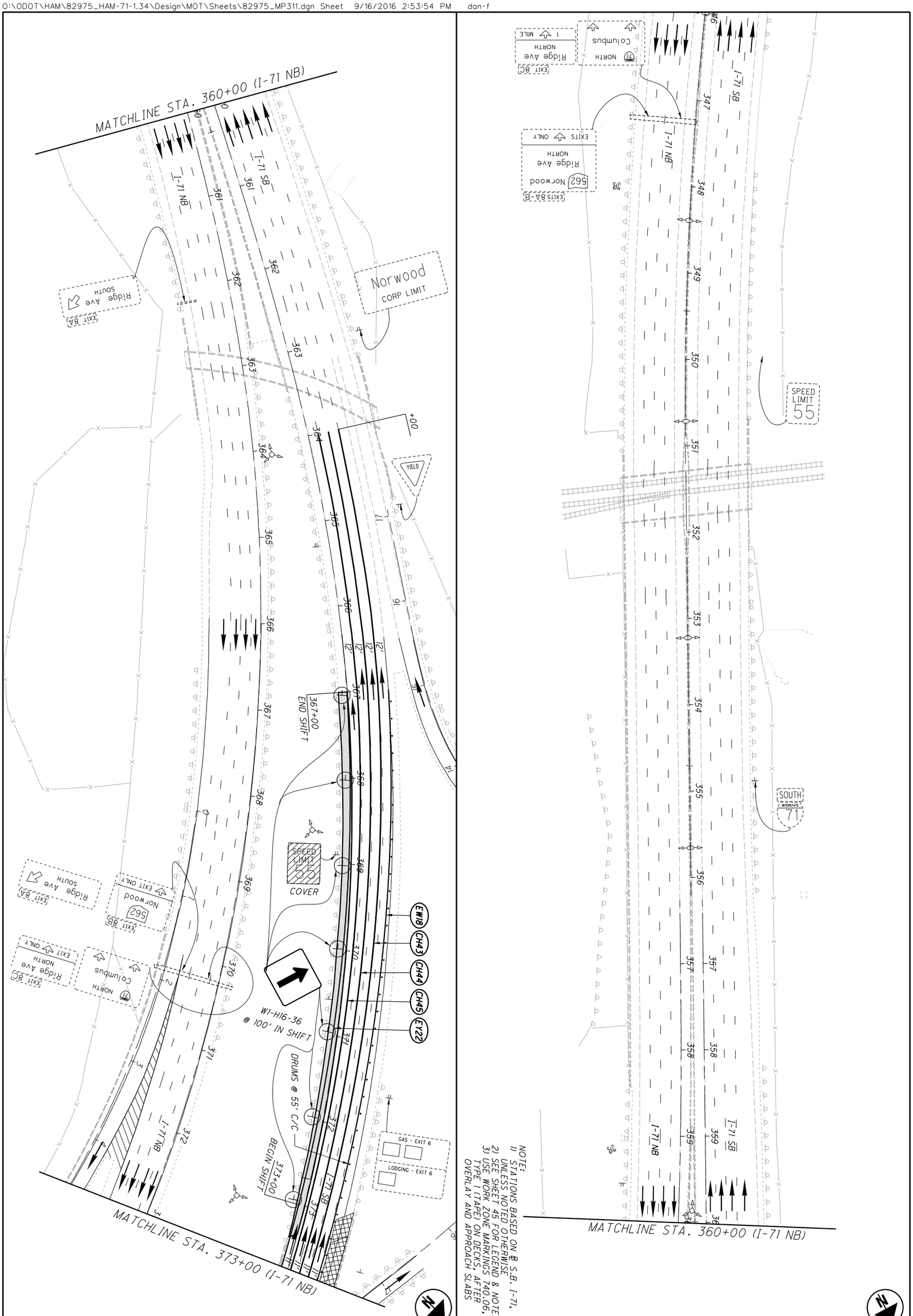


50 / 292	HAM-71-1.97	MAINTENANCE OF TRAFFIC PLAN PHASE 1A - STA. 399+00 NB TO STA. 443+00	CALCULATED DPF CHECKED BJF	0 50 25 100 HORIZONTAL SCALE IN FEET



51 / 292	HAM-71-1.97	MAINTENANCE OF TRAFFIC PLAN PHASE 2 - STA. 346+00 TO STA. 373+00 NB	CALCULATED DPF CHECKED BJF	0 50 100 25 HORIZONTAL SCALE IN FEET

RAMP K SR 562 EB TO RIDGE AVE
BRIDGE HAM-71-0793L
DRUMS @ 55' C/C
RAMP L - I-71 SB TO SR 562 WB
WORK ZONE
EW18 CH49 CH50 CH51 EY24
EW18 CH46 CH47 CH48 EY23
I-71 SB
HAM-71-0788L
561 Edwards Rd Smith Rd 1 MILE
RAMP J - SR 562 EB TO I-71 NB
HAM-71-0799R
MATCHLINE STA. 373+00 (I-71 NB)
I-71 NB
RAMP F - I-71 NB TO RIDGE AVE
RAMP G
RAMP I - I-71 SB TO SR 562 WB
EXIT 7
562 Norwood
DRUMS @ 20' C/C
CH53
+56
+62
383+33
END SHIFT
CH52
WI-H16-36 STA. @ 100' IN SHIFT
+00
EY25
RAMP H - RIDGE AVE TO I-71 SB
I+50 MEET EXIST.
100 FT. - WORK ZONE G.R.
MATCHLINE STA. 386+00 (I-71 NB)
RAMP G - I-71 NB TO SR 562 WB
EXIT 8B
NORTH Columbus
NORTH Columbus
EXIT 8C Ridge Ave NORTH EXIT ONLY
EXIT 8B 562 Norwood EXIT ONLY

100 FT. - WORK ZONE G.R.
DL9
I-71 SB
EXIT OPEN
E5-2-48
STA. 393+00
SPEED LIMIT 55 COVER
WORK ZONE SPEED LIMIT
STA 396+00 DIGITAL SPEED LIMIT (DSL) SIGN ASSEMBLY
Cincinnati CORP LIMIT
HAM-71-0837
+30
HAM-71-0817R
EY25 CH50 CH49
391+00 BEGIN SHIFT
MATCHLINE STA. 386+00 (I-71 NB)
I-71 NB
MATCHLINE STA. 399+00 (I-71 NB)
W24-1L-48 STA. 3+00
RAMP G
RAMP B
SOUTH
ROAD WORK AHEAD
INTERSTATE
W20-1-48 M1-1-48-2
Cincinnati CORP LIMIT

NOTE:
1) STATIONS BASED ON ℄ S.B. I-71, UNLESS NOTED OTHERWISE
2) SEE SHEET 45 FOR LEGEND & NOTES
3) USE WORK ZONE MARKINGS 740.06, TYPE I (TAPE) ON DECKS, AFTER OVERLAY AND APPROACH SLABS

HORIZONTAL SCALE IN FEET
0 25 50 100
CALCULATED DPF
CHECKED BJF

MAINTENANCE OF TRAFFIC PLAN
PHASE 2 - STA. 373+00 NB TO STA. 399+00 NB
HAM-71-1.97
52
292

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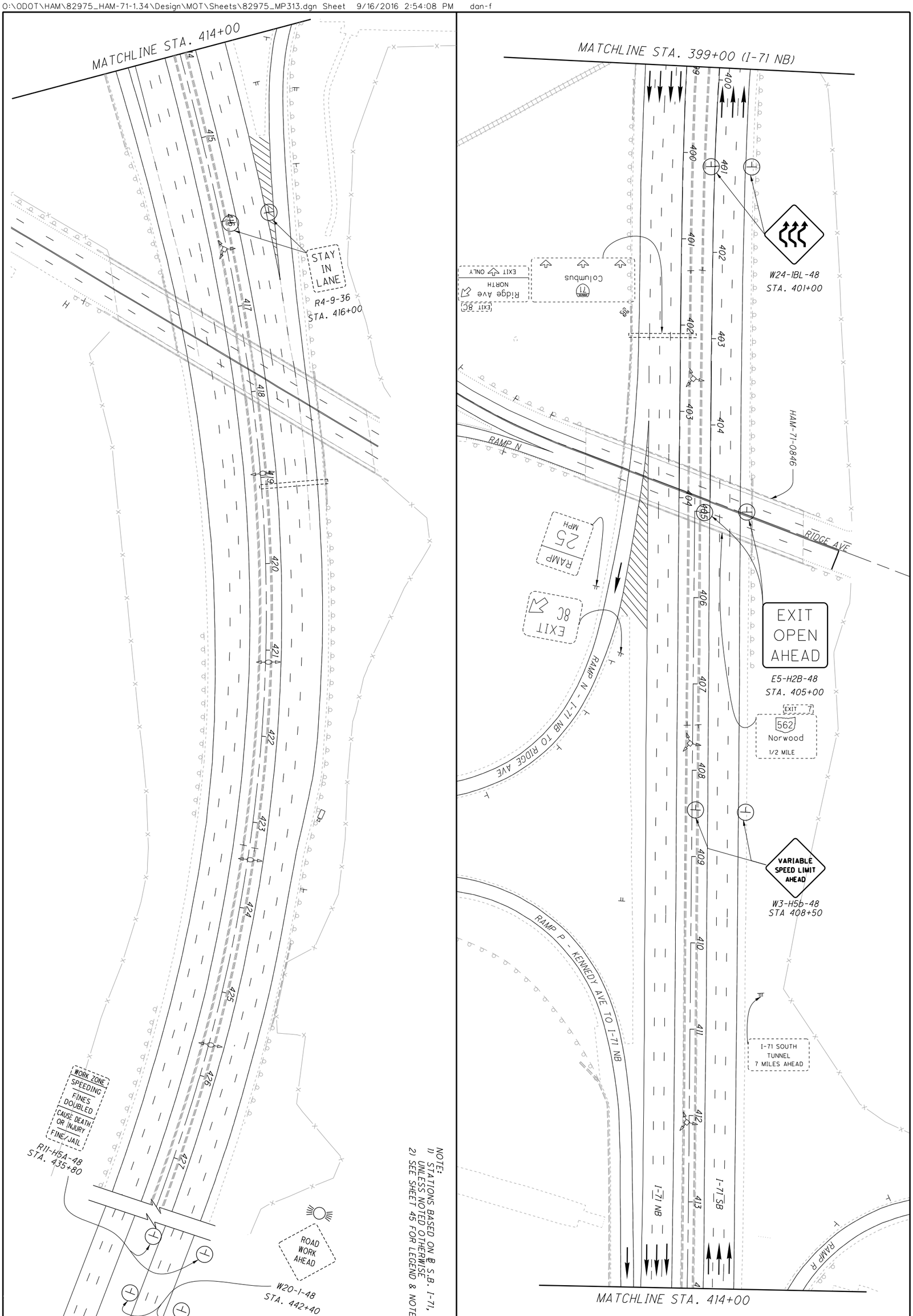

HAM-71-1.97

MAINTENANCE OF TRAFFIC PLAN

PHASE 2 - STA. 399+00 NB TO STA. 443+00

CALCULATED DPF
CHECKED BJF

0 50
25 100
HORIZONTAL SCALE IN FEET

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED DPF
CHECKED BJF

MAINTENANCE OF TRAFFIC PLAN

PHASE 2A - STA. 346+00 TO STA. 373+00 NB

HAM-71-1.97

54
292

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RAMP K SR 562 EB TO RIDGE AVE
BRIDGE HAM-71-0793L
RAMP L - I-71 SB TO SR 562 WB
WORK ZONE
DRUMS @ 55' C/C
RAMP I - I-71 SB TO SR 562 WB
EXIT 7
562 Norwood
DRUMS @ 20' C/C
HAM-71-0788L
561 Edwards Rd Smith Rd 1 MILE
I-71 SB
RAMP J - SR 562 EB TO I-71 NB
HAM-71-0799R
RAMP H - RIDGE AVE TO I-71 SB
W1-H16-36 STA. @ 100' IN SHIFT
MATCHLINE STA. 373+00 (I-71 NB)
MATCHLINE STA. 386+00 (I-71 NB)
I-71 NB
RAMP F - I-71 NB TO RIDGE AVE
RAMP G - I-71 NB TO SR 562 WB
EXIT 8B
NORTH Columbus
NORTH Columbus
EXIT 8C Ridge Ave NORTH EXIT ONLY
EXIT 8B 562 Norwood EXIT ONLY

MATCHLINE STA. 386+00 (I-71 NB)
DRUMS @ 20' C/C
EXIT
E5-H2DR-48 STA. 388+25
DRUMS @ 20' C/C
I-71 SB
EXIT OPEN
E5-2-48 STA. 393+80
SPEED LIMIT LED COVER
DRUMS @ 55' C/C
HAM-71-0837
Cincinnati CORP LIMIT
399+00 END LANE CLOSURE TAPER
MATCHLINE STA. 399+00 (I-71 NB)
HAM-71-0817R
I-71 NB
W24-1L-48 STA. 3+00
RAMP G
RAMP B
SOUTH
ROAD WORK AHEAD
W20-1-48 M1-1-48-2
Cincinnati CORP LIMIT

NOTE:
1) STATIONS BASED ON ℄ S.B. I-71, UNLESS NOTED OTHERWISE
2) SEE SHEET 45 FOR LEGEND & NOTES
3) USE WORK ZONE MARKINGS 740.06, TYPE I (TAPE) ON DECKS, AFTER OVERLAY AND APPROACH SLABS

HORIZONTAL SCALE IN FEET
0 25 50 100
CALCULATED DPF
CHECKED BJF

MAINTENANCE OF TRAFFIC PLAN
PHASE 2A - STA. 373+00 NB TO STA. 399+00 NB
HAM-71-1.97
55
292

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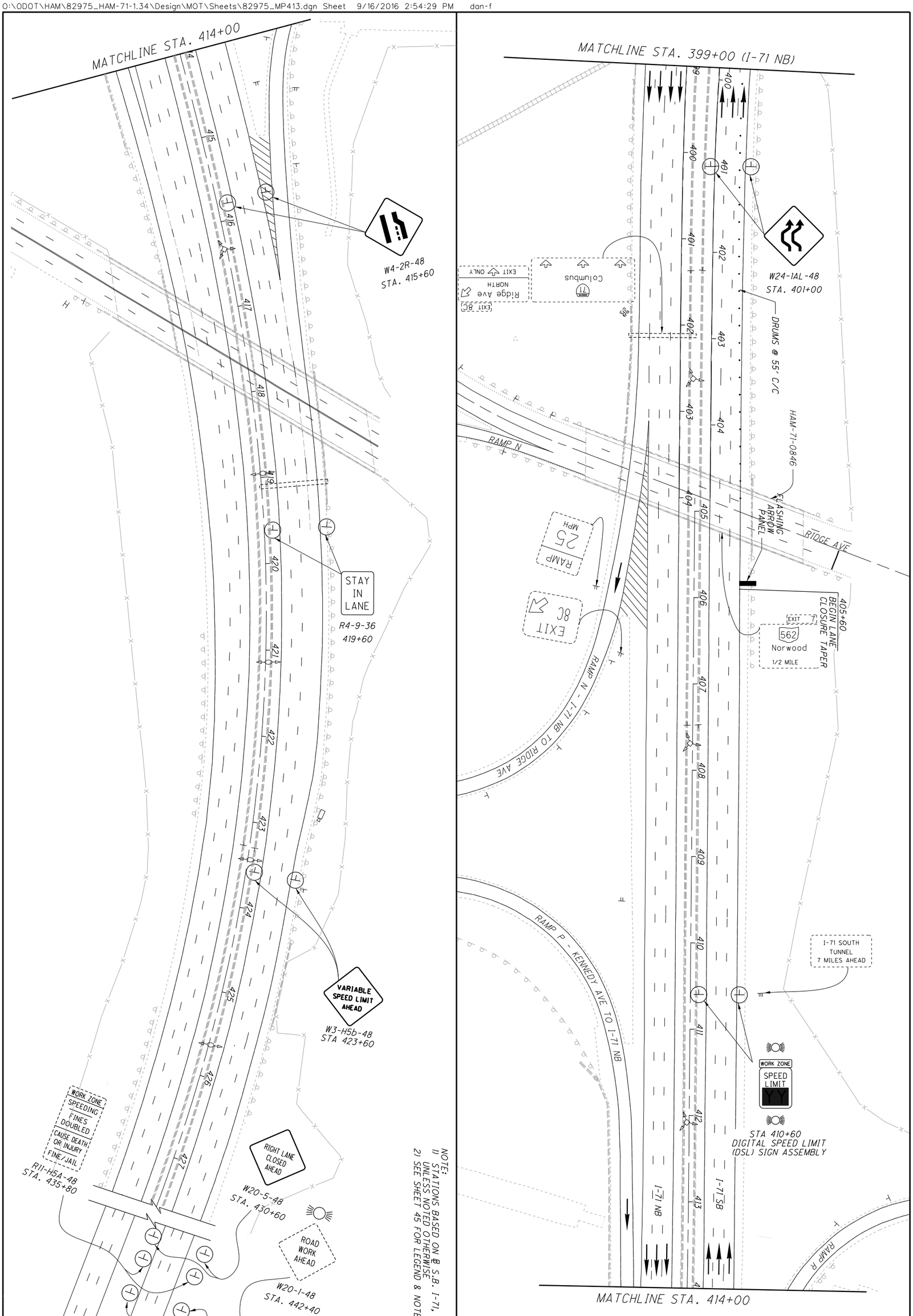


NOTE:
1) STATIONS BASED ON E.B. S.B. I-71, UNLESS NOTED OTHERWISE
2) SEE SHEET 45 FOR LEGEND & NOTES

HAM-71-1.97

MAINTENANCE OF TRAFFIC PLAN

PHASE 2A - STA. 399+00 NB TO STA. 443+00

CALCULATED DPF
CHECKED BJF

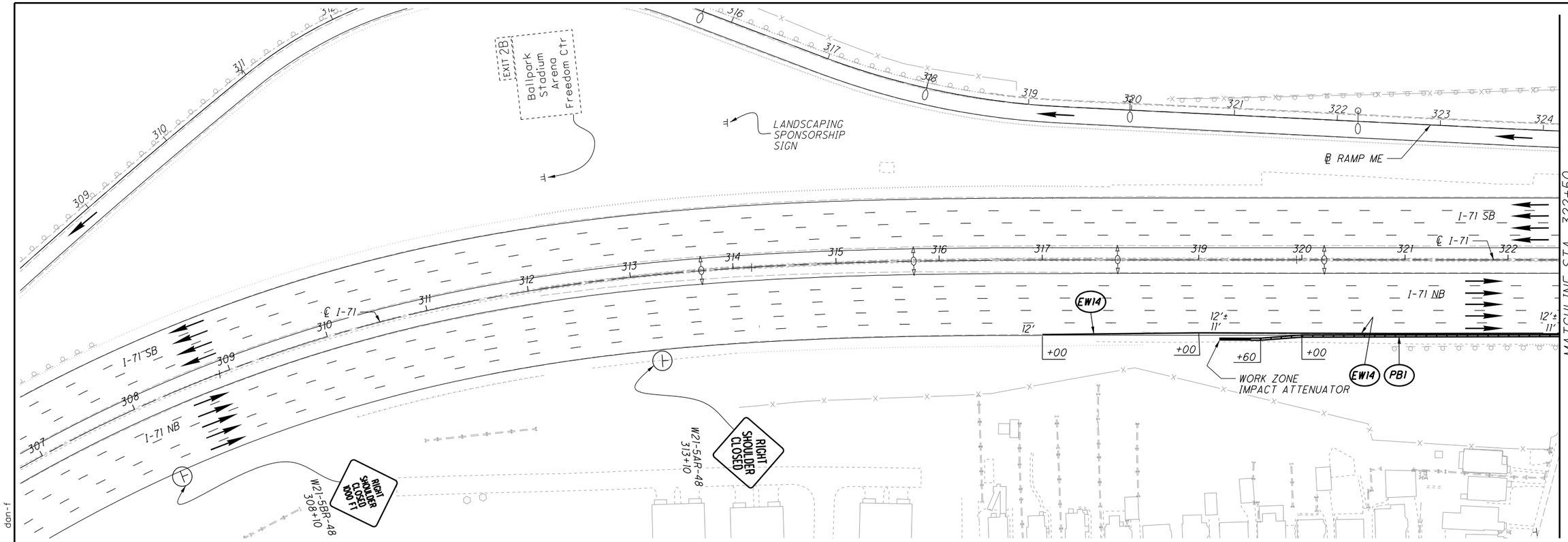
0 25 50 100
HORIZONTAL SCALE IN FEET

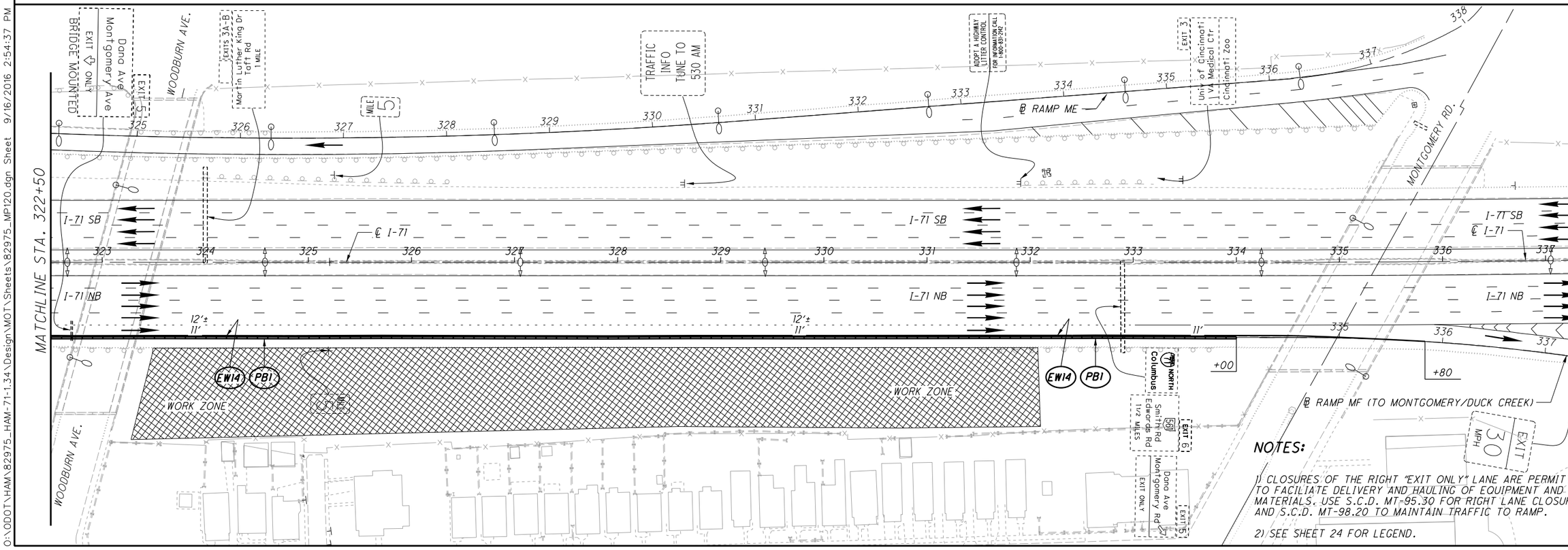
MAINTENANCE OF TRAFFIC PLAN - SLOPE REPAIRS
PHASE 1 - STA. 307+00 TO STA. 337+00

HAM-71-1.97

HORIZONTAL SCALE IN FEET: 0, 25, 50, 100

CALCULATED DPF
CHECKED BJF





NOTES:

1) CLOSURES OF THE RIGHT "EXIT ONLY" LANE ARE PERMITTED TO FACILIATE DELIVERY AND HAULING OF EQUIPMENT AND MATERIALS. USE S.C.D. MT-95.30 FOR RIGHT LANE CLOSURE AND S.C.D. MT-98.20 TO MAINTAIN TRAFFIC TO RAMP.

2) SEE SHEET 24 FOR LEGEND.

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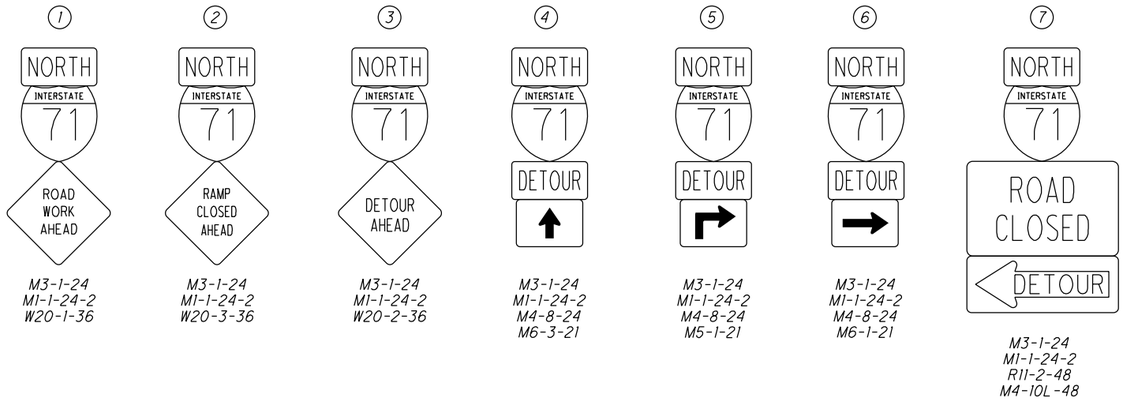

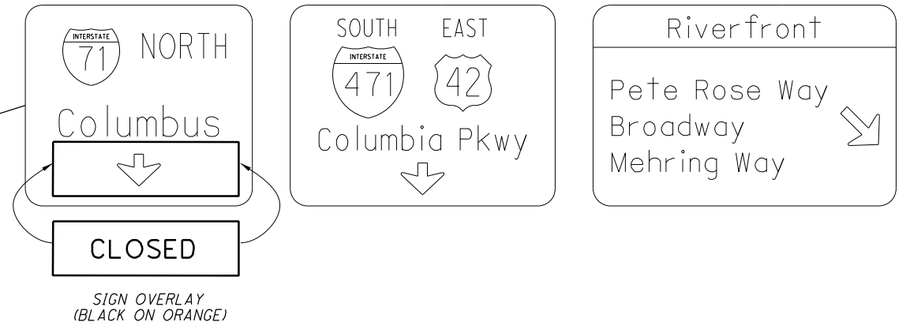

SIGN OVERLAY
(BLACK ON ORANGE)

NOTES:

1. ALL SIGN OVERLAYS TO BE BLACK ON ORANGE.
2. CONTRACTOR TO COVER EXISTING CONFLICTING SIGNS.
3. PORTABLE CHANGEABLE MESSAGE SIGN (S) WILL BE PLACED IN ADVANCE OF THE DETOUR SIGNS, WITH THE MESSAGES AS INDICATED AT AN APPROPRIATE LOCATION AS DETERMINED BY THE ENGINEER.
4. ALL WORK THIS SHEET TO BE INCLUDED IN THE LUMP SUM BID FOR ITEM 614 - DETOUR SIGNAGE.

CALCULATED CML
CHECKED DPF

DETOUR PLAN

HAM-71-1.97

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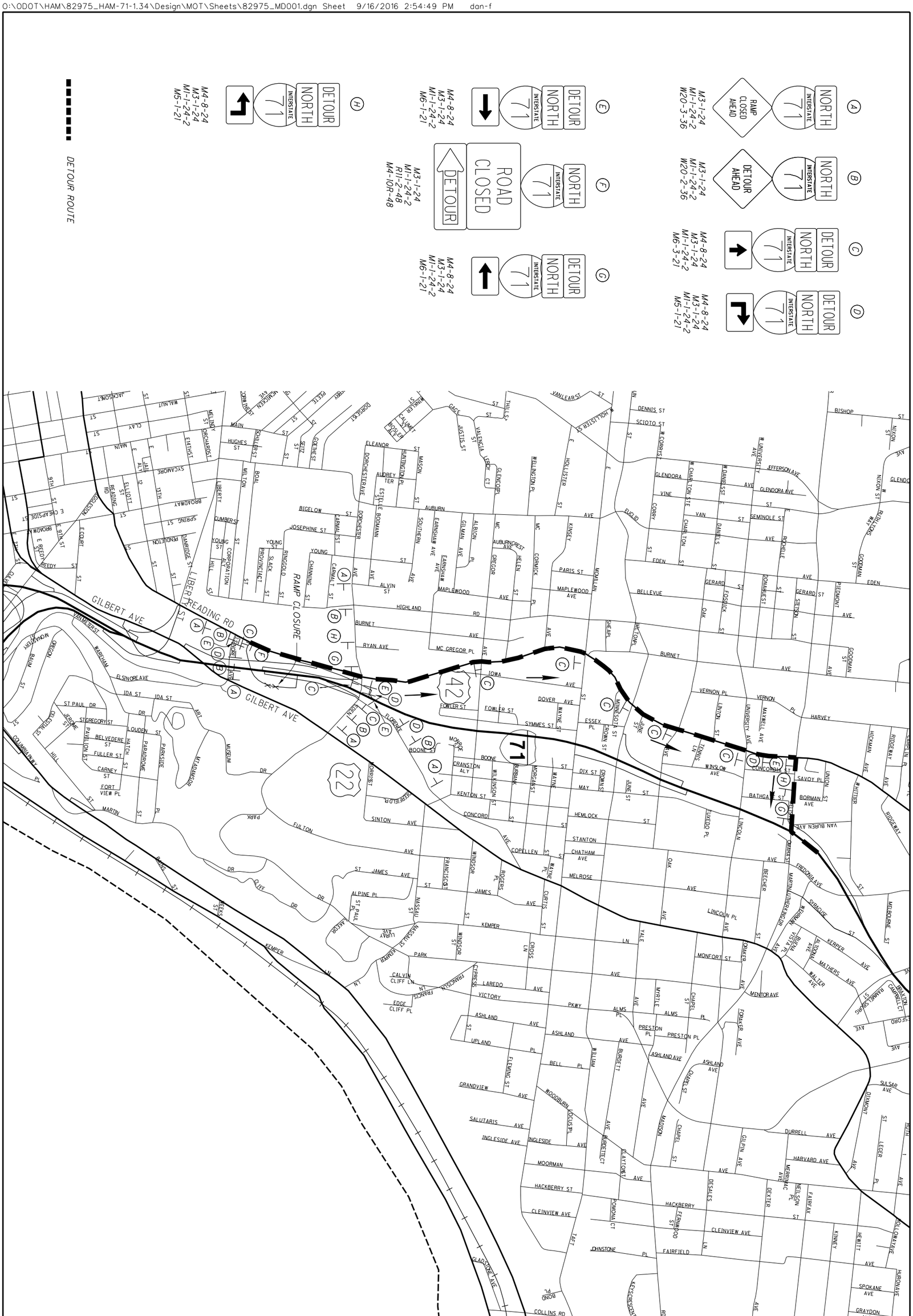

59 / 292	HAM-71-1.97	DETOUR PLAN RAMP RD - READING ROAD TO N.B. I-71	CALCULATED CML CHECKED DPF	0 600 300 1200 HORIZONTAL SCALE IN FEET

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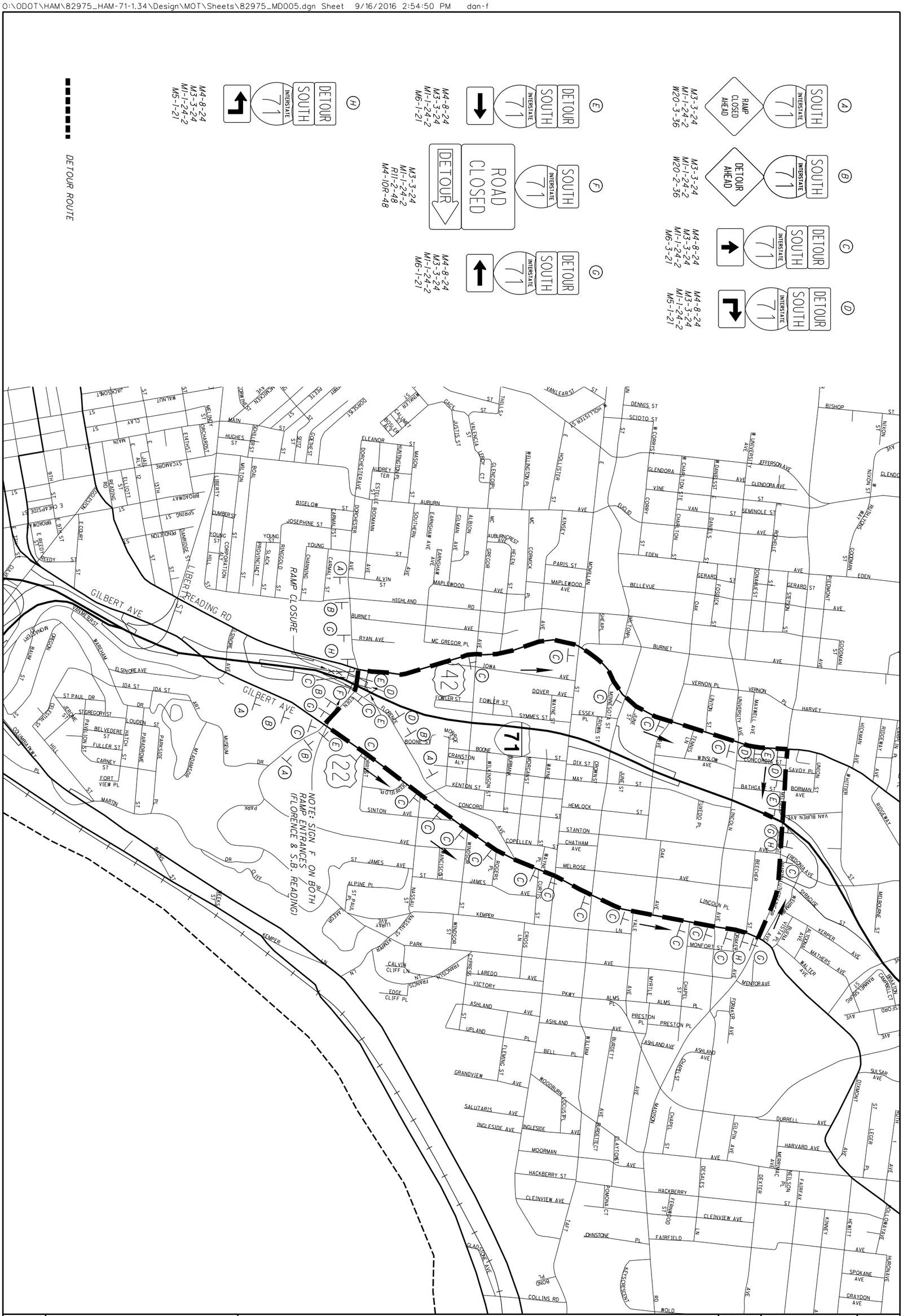
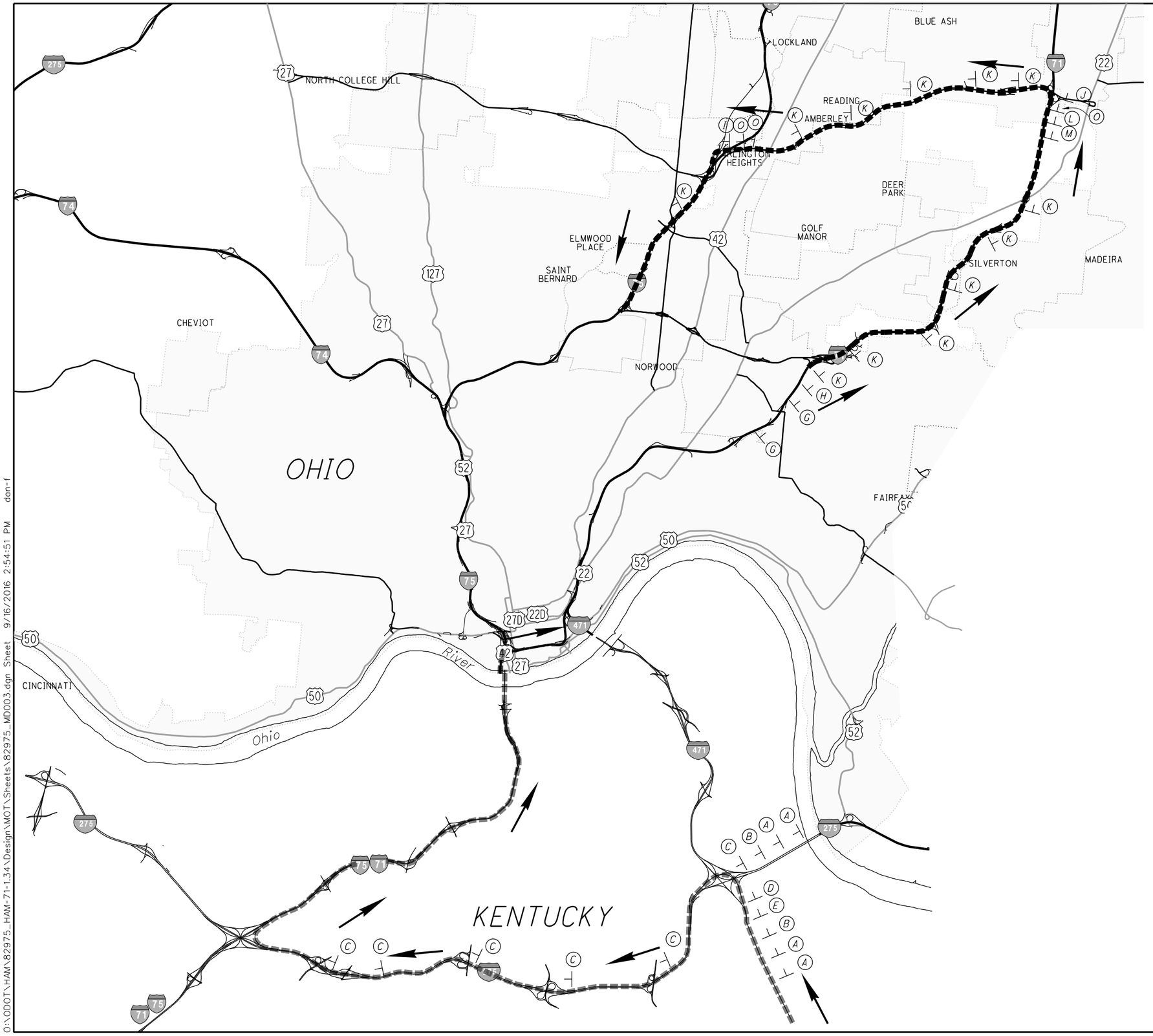


60 / 292	HAM-71-1.97	DETOUR PLAN RAMP RB - READING/FLORENCE TO S.B. I-71	CALCULATED CML CHECKED DPF	0 300 600 1200 HORIZONTAL SCALE IN FEET

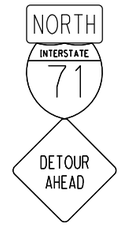


(A)

1. I-471 NORTH
2. RAMP CLOSED AT I-71 NORTH

PCMS

(B)



M3-1-24
M1-1-24-2
W20-2-36

(C)



M4-8-24
M3-1-24
M1-1-24-2
M6-3-21

(D)



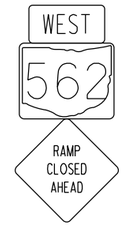
M4-8-24
M3-1-24
M1-1-24-2
M6-2-21

(E)



M4-8-24
M3-1-24
M1-1-24-2
M5-2-21

(G)



M3-4-24
M1-5-24-3
W20-3-36

(H)



M3-4-24
M1-5-24-3
W20-2-36

(I)



M4-8-24
M3-4-24
M1-5-24-3
M6-2-21

(J)



M4-8-24
M3-4-24
M1-5-24-3
M6-1-21

(K)



M4-8-24
M3-4-24
M1-5-24-3
M6-3-21

(L)



M4-8-24
M3-4-24
M1-5-24-3
M6-2-21

(M)



M4-8-24
M3-4-24
M1-5-24-3
M5-2-21

(O)



M4-8-24
M3-4-24
M1-5-24-3
M5-2-24

NOTES:

- RAMP G/L DETOUR (I-71 NB TO SR-562 WB CLOSED)
- HAM-71-0197 DETOUR (I-471 NB TO I-71 NB CLOSED)

HORIZONTAL SCALE IN FEET
0 2000 4000 8000

CALCULATED DPF
CHECKED BJF

DETOUR PLAN
NB I-471 TO N.B. I-71 AND N.B. I-71 TO S.R. 562

HAM-71-1.97

61
292

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DETOUR PLAN
RAMP H (NORWOOD LATERAL INTERCHANGE)

HAM-71-1.97

CALCULATED CML
CHECKED DPF

HORIZONTAL SCALE IN FEET
0 300 600 1200

RAMP H CLOSED

RAMP H CLOSED, I-71 S

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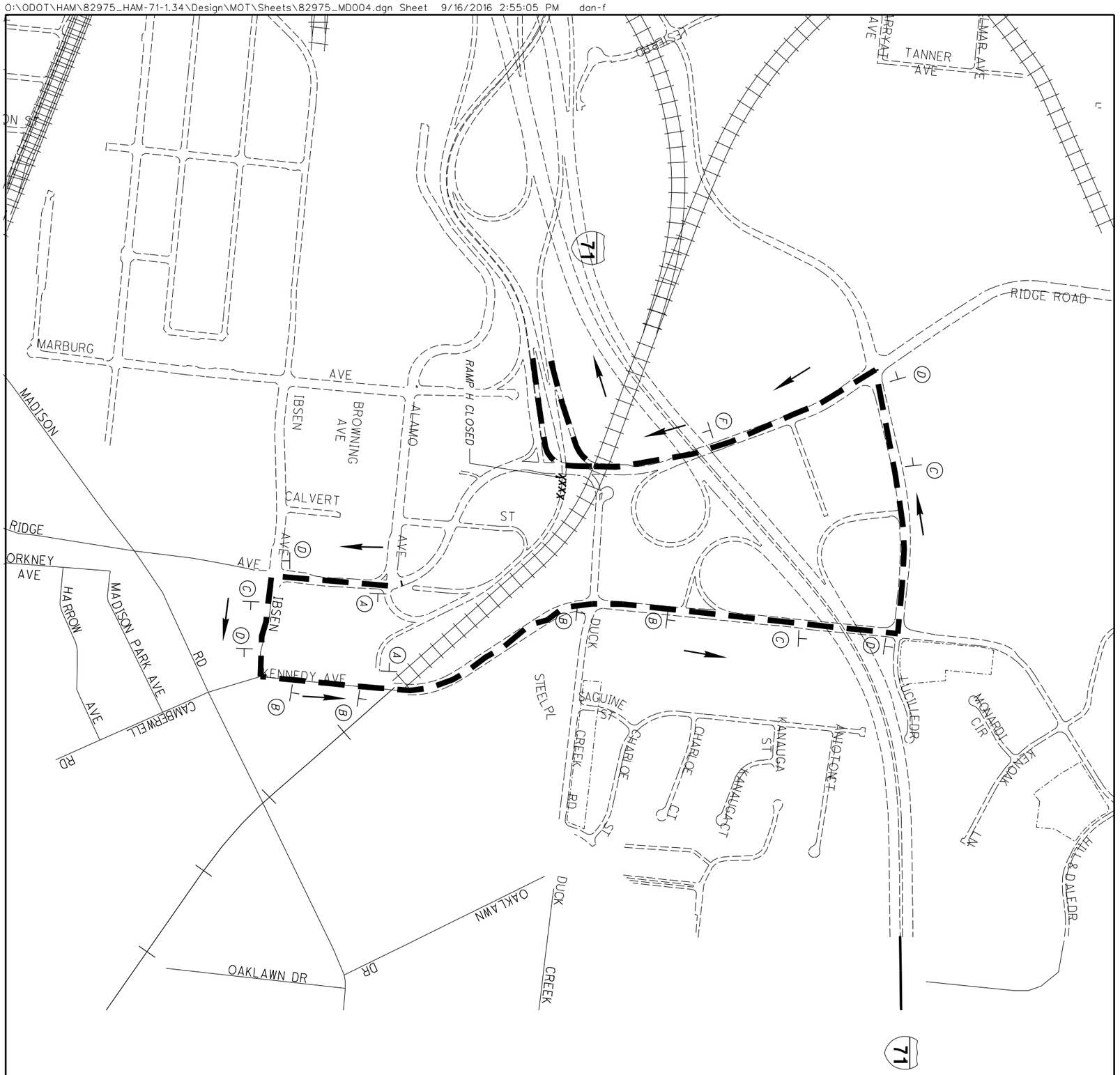
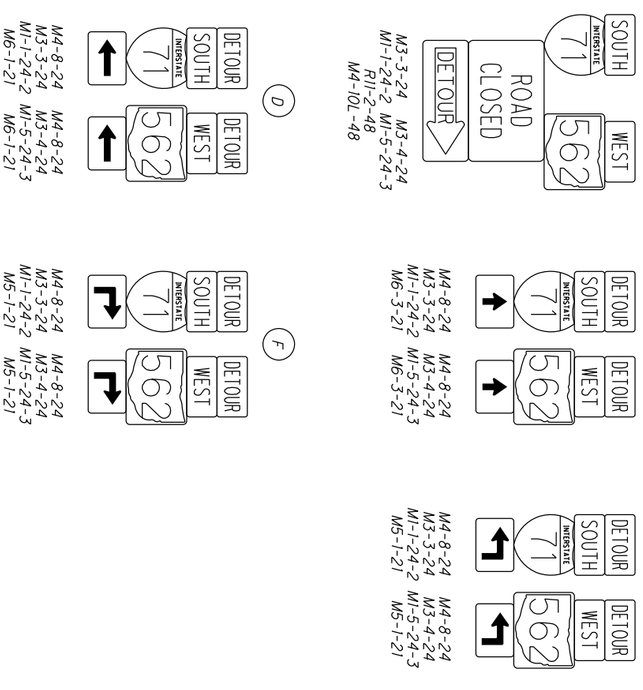
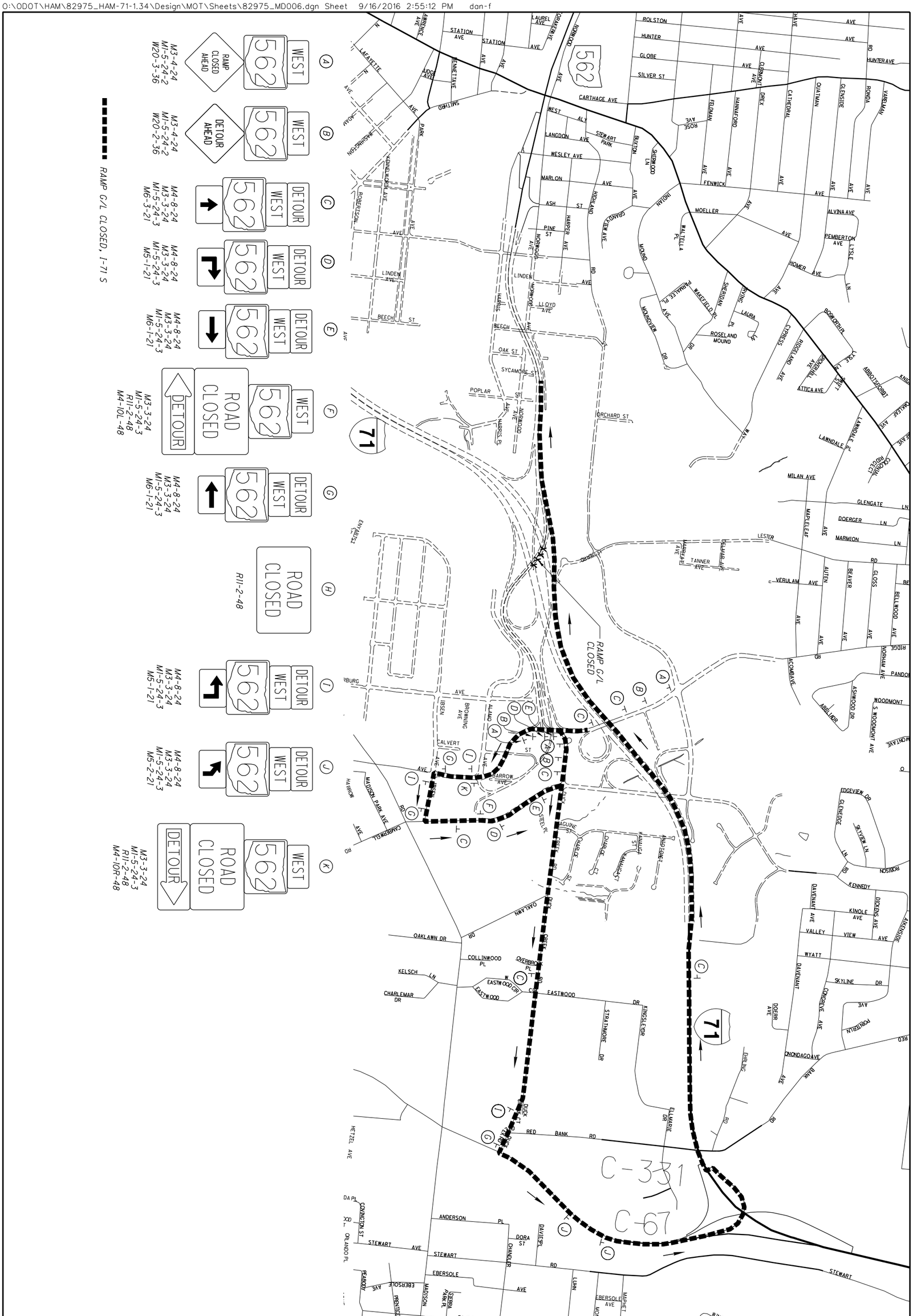


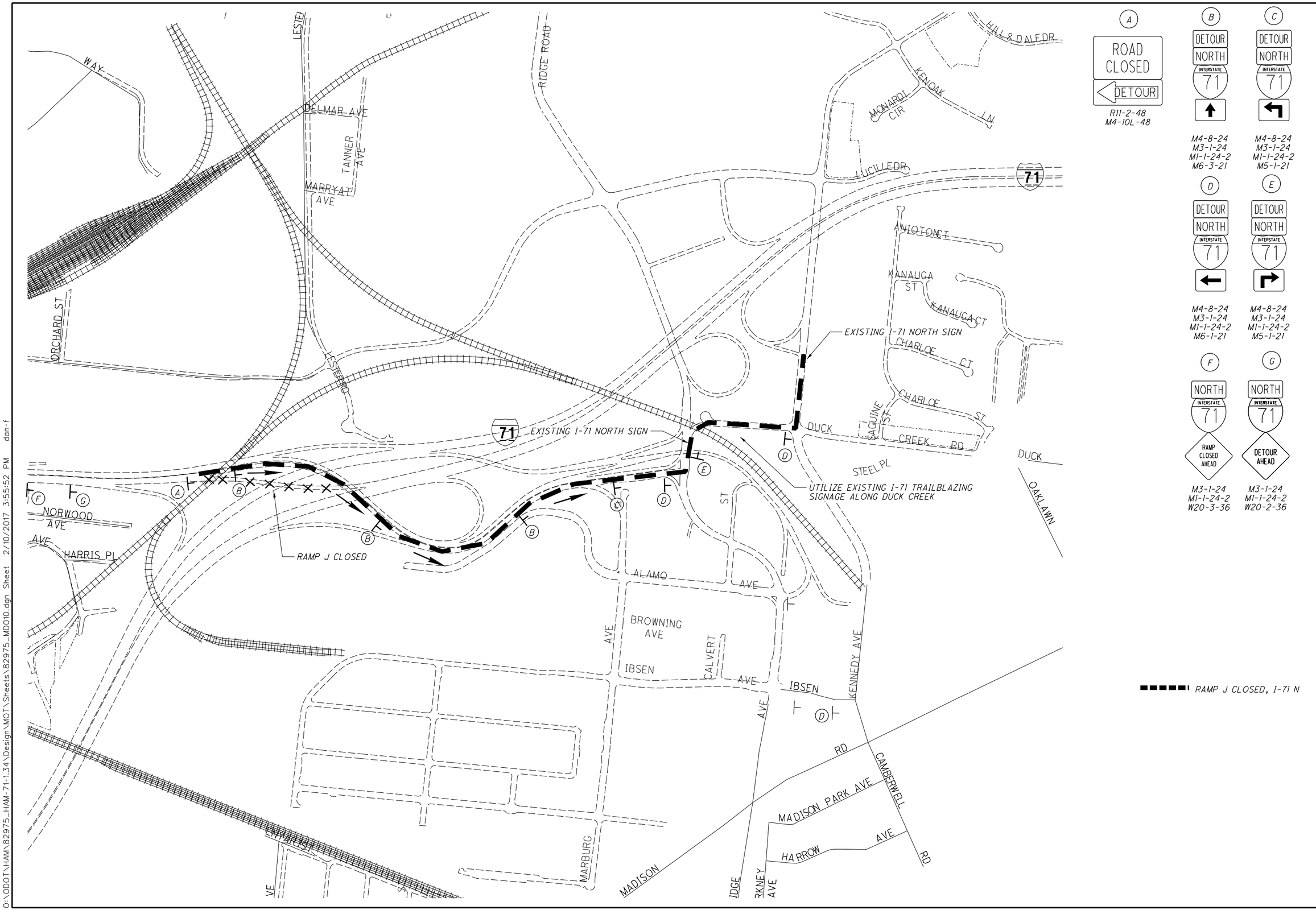
RAMP H CLOSED, I-71 S



63 292	**HAM-71-1.97**	**DETOUR PLAN** **RAMP H (NORWOOD LATERAL INTERCHANGE)**	CALCULATED CML CHECKED DPF	0 375 750 1500 HORIZONTAL SCALE IN FEET



64 / 292	HAM-71-1.97	DETOUR PLAN RAMP G/L (NORWOOD LATERAL INTERCHANGE)	CALCULATED CML CHECKED DPF	0 600 300 1200 HORIZONTAL SCALE IN FEET



0 375 750 1500
HORIZONTAL SCALE IN FEET

CALCULATED CML
CHECKED DPF

DETOUR PLAN
RAMP J (NORWOOD LATERAL INTERCHANGE)

HAM-71-1.97

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DETOUR PLAN
RAMP K (NORWOOD LATERAL INTERCHANGE)

HORIZONTAL SCALE IN FEET
0 300 600 1200

CALCULATED CML
CHECKED DPF

RAMP K CLOSED

RAMP CLOSED, I-71 S

(A) EAST 562 DETOUR AHEAD
M3-2-24
M1-5-24-3
W20-2-36

(A1) EAST 562 RAMP CLOSED AHEAD
M3-2-24
M1-5-24-2
W20-3-36

(B) DETOUR EAST 562
M4-8-24
M3-2-24
M1-5-24-3
M6-3-21

(C) DETOUR EAST 562
M4-8-24
M3-2-24
M1-5-24-3
M5-1-21

(D) DETOUR EAST 562
M4-8-24
M3-2-24
M1-5-24-3
M6-1-21

(E) EAST 562 ROAD CLOSED DETOUR
M3-2-24
M1-5-24-3
R11-2-48
M4-10R-48

(F) DETOUR EAST 562
M4-8-24
M3-2-24
M1-5-24-3
M5-1-21

(G) DETOUR EAST 562
M4-8-24
M3-2-24
M1-5-24-3
M6-1-21

(H) DETOUR EAST 562
M4-8-24
M3-2-24
M1-5-24-3
M5-2-21

HAM-71-1.97

65
292

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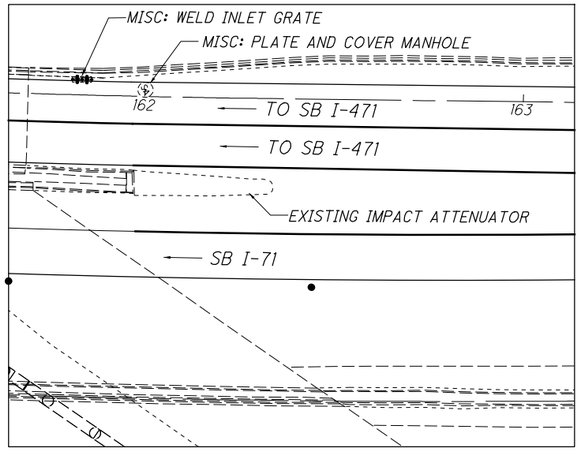
REF. NO.	SHEET	PHASE NO.	STATION FROM	STATION TO	614 WORK ZONE LANE LINE, CLASS I, 642 PAINT	WORK ZONE EDGE LINE (YELLOW), CLASS I, 642 PAINT	WORK ZONE EDGE LINE (WHITE), CLASS I, 642 PAINT	WORK ZONE CHANNELIZING LINE, CLASS I, 642 PAINT	WORK ZONE DOTTED LINE (WHITE), CLASS I 642 PAINT		MAINTAINING TRAFFIC, MISC.: WELD INLET GRATE	MAINTAINING TRAFFIC, MISC.: PLATE AND COVER MANHOLE											
					FEET	FEET	FEET	FEET	FEET		EACH	EACH										
LL1	65B	I-71 DETOUR	150+10	159+00	890																	
EY1	65B-65C		145+90	182+00		3610																
EY2	65C-65D		182+00	197+50		1550																
EW1	65B		149+50	159+75			1025															
EW2	65B-65C		160+80	170+00			920															
CH1	65B		157+90	160+80				290														
CH2	65B-65C		159+00	170+00				1100														
CH3	65B-65C		161+85	165+82				794														
CH4	65C		178+70	182+00				660														
DL1	65B		149+50	157+90					840													
DL2	65C		165+82	170+00					418													
DL3	65C		170+00	178+70					870													
DL4	65D		191+00	197+50					650													
MISC:	65B		161+60								1											
MISC:	65B		162+00									1										
				SUBTOTALS	890	5160	1945															
TOTALS CARRIED TO GENERAL SUMMARY					0.17 MI	1.35 MI		2844	2778		1	1										

CALCULATED MJH CHECKED KAE

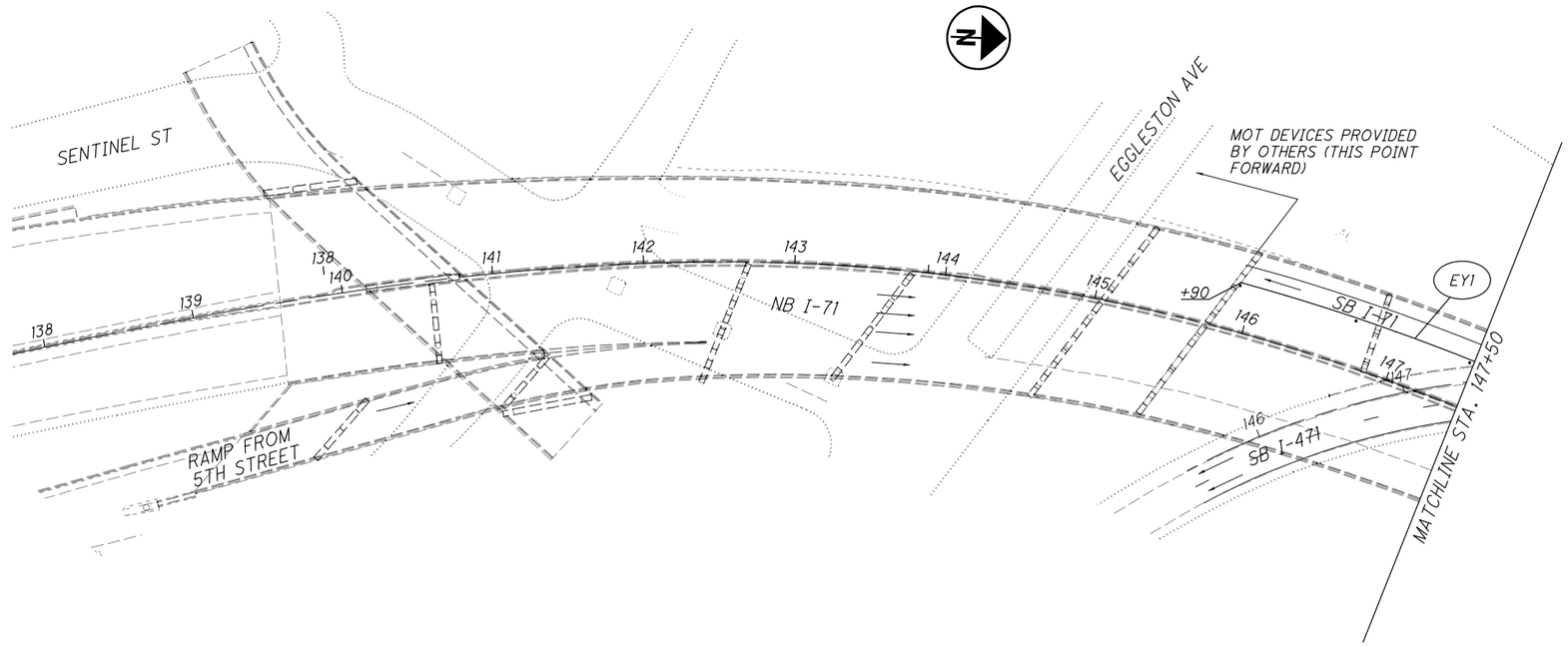
MAINTENANCE OF TRAFFIC - SB I-71 DETOUR QUANTITIES

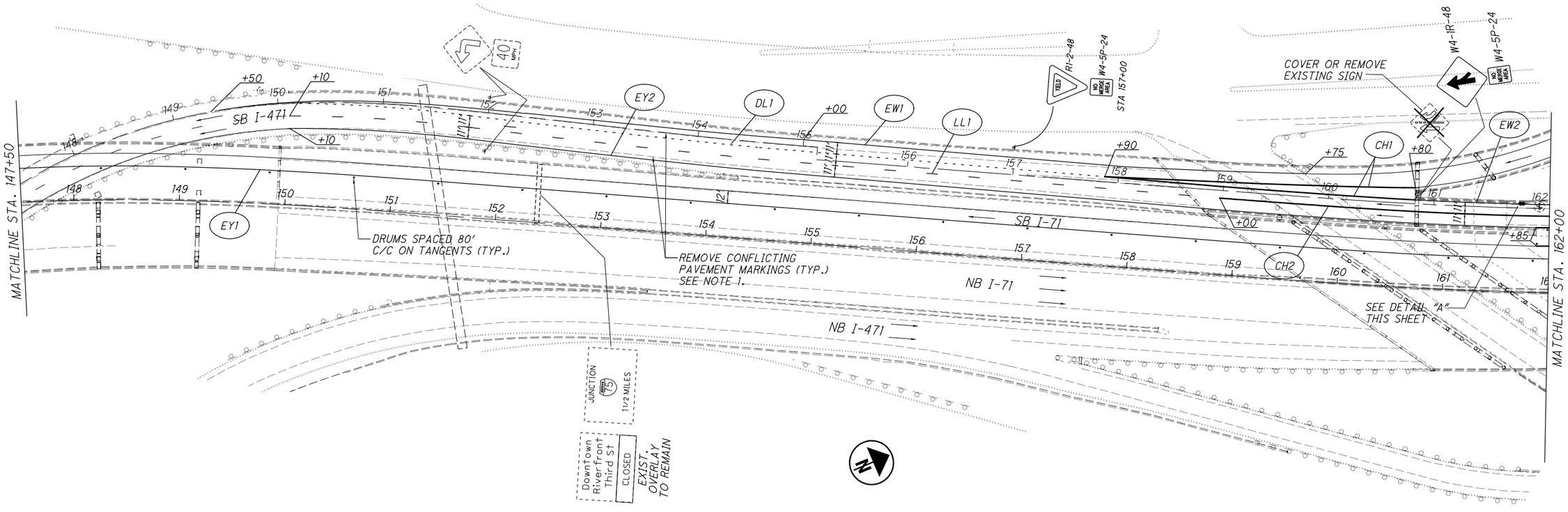
HAM-71-1.97

DETAIL "A"



NOTES:
1) ON ASPHALT SURFACES, THE CONTRACTOR MAY EITHER REMOVE CONFLICTING PAVEMENT MARKINGS (TYP.) OR RESURFACE THE SOUTHERN SECTION OF THE PROJECT AND INSTALL TEMPORARY PAVEMENT MARKINGS ON THE LEVELING ASPHALT COURSE. CONFLICTING PAVEMENT MARKINGS ON CONCRETE SURFACES SHALL BE REMOVED IN CONFORMANCE WITH CM&S 614.SEE MOT GENERAL NOTES FOR ADDITIONAL INFORMATION.





HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED MJH
CHECKED KAE

MAINTENANCE OF TRAFFIC - SB I-71 DETOUR
BEGIN PROJECT TO STA 162+00

HAM-71-1.97

65B
292

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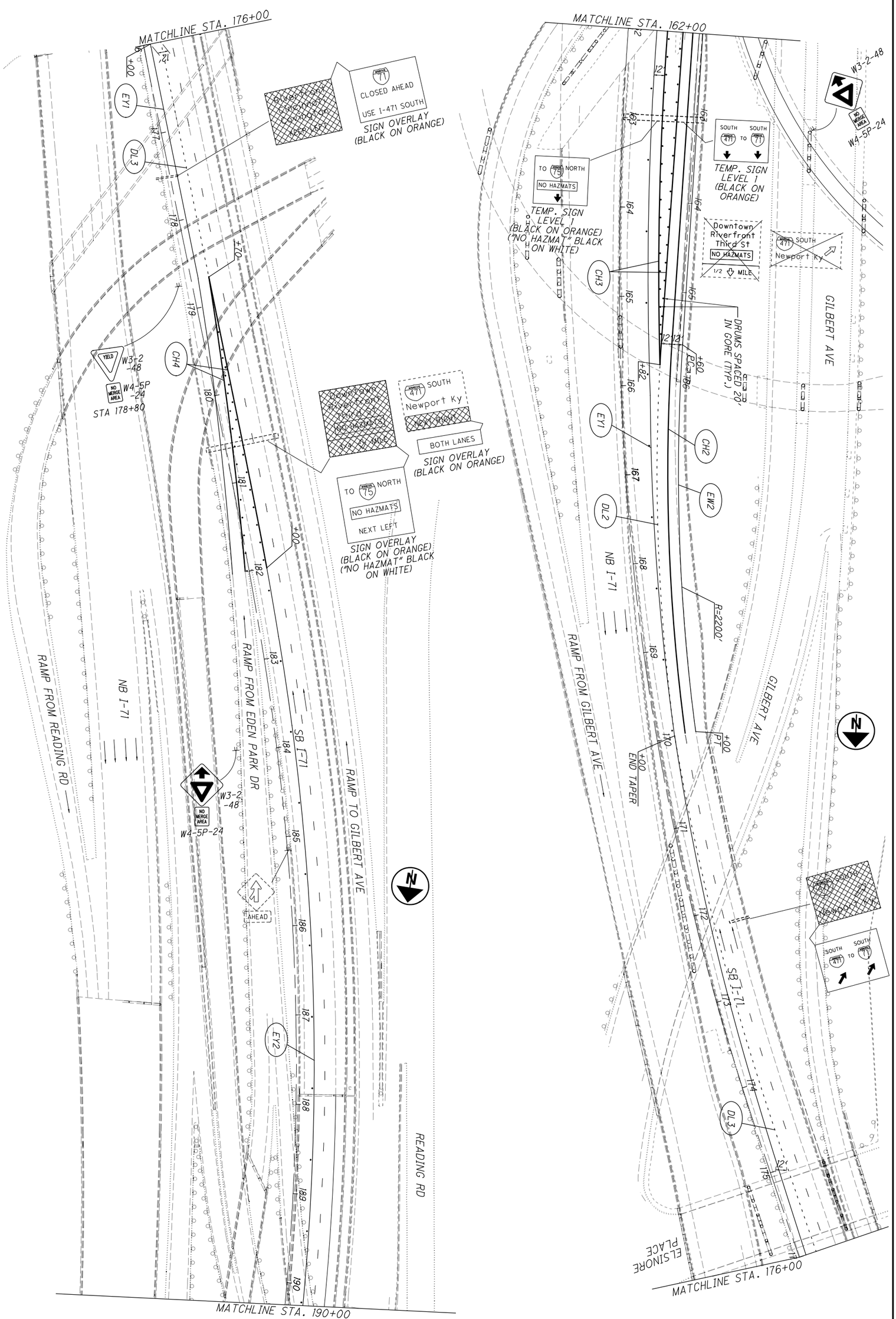

65C 292	HAM-71-1.97	MAINTENANCE OF TRAFFIC - SB I-71 DETOUR STA 162+00 TO STA 190+00	CALCULATED MJH CHECKED KAE	0 50 25 100 HORIZONTAL SCALE IN FEET

MAINTENANCE OF TRAFFIC - SB I-71 DETOUR
STA 190+00 TO STA 218+00

HAM-71-1.97

65D
292

CALCULATED MJH
CHECKED KAE

HORIZONTAL SCALE IN FEET
0 25 50 100

READING RD
MATCHLINE STA. 190+00
+00 BEGIN TAPER
EY2
EDEN PARK DR
SPEED LIMIT 45
R2-1-48 STA 195+50
DRUMS SPACED 55' C/C ON TAPERS (TYP.)
DL4
FLASHING ARROW PANEL
+50 END TAPER
SB I-71
NB I-71
GILBERT AVE
TO 75 NORTH
NO HAZMATS
NEXT LEFT
SIGN OVERLAY (BLACK ON ORANGE) ("NO HAZMAT" BLACK ON WHITE)
RIGHT TURN ONLY
NO HAZMATS
LEFT LANE
71 SOUTH
NO HAZMATS
CENTER LANES
471 SOUTH
Newport Ky
1/2 MILE
CLOSED AHEAD
USE I-471 SOUTH TO I-275 WEST
SIGN OVERLAY (BLACK ON ORANGE)
EXIT 2
Gilbert Ave
EXIT ONLY
EXIT 2
42 SOUTH
Reading Rd
EXIT ONLY
MATCHLINE STA. 204+00

MATCHLINE STA. 204+00
W4-2L-48 STA 206+50
VARIABLE SPEED LIMIT AHEAD
W3-H5B-48 STA. 226+30
71 SOUTH
EXIT LANE
DETOUR AHEAD
SIGN OVERLAY (BLACK ON ORANGE)
EXIT 2
Gilbert Ave
1/4 MILE
EXIT 2
42 SOUTH
Reading Rd
EXIT ONLY
SB I-71
NB I-71
MCGREGOR AVE
VARIABLE SPEED LIMIT AHEAD
W3-H5B-36 STA. 226+30 (MOUNT ON TRUSS UPRIGHT)
USE SMALLER SIGN SIZE IN MEDIAN
MATCHLINE STA. 218+00

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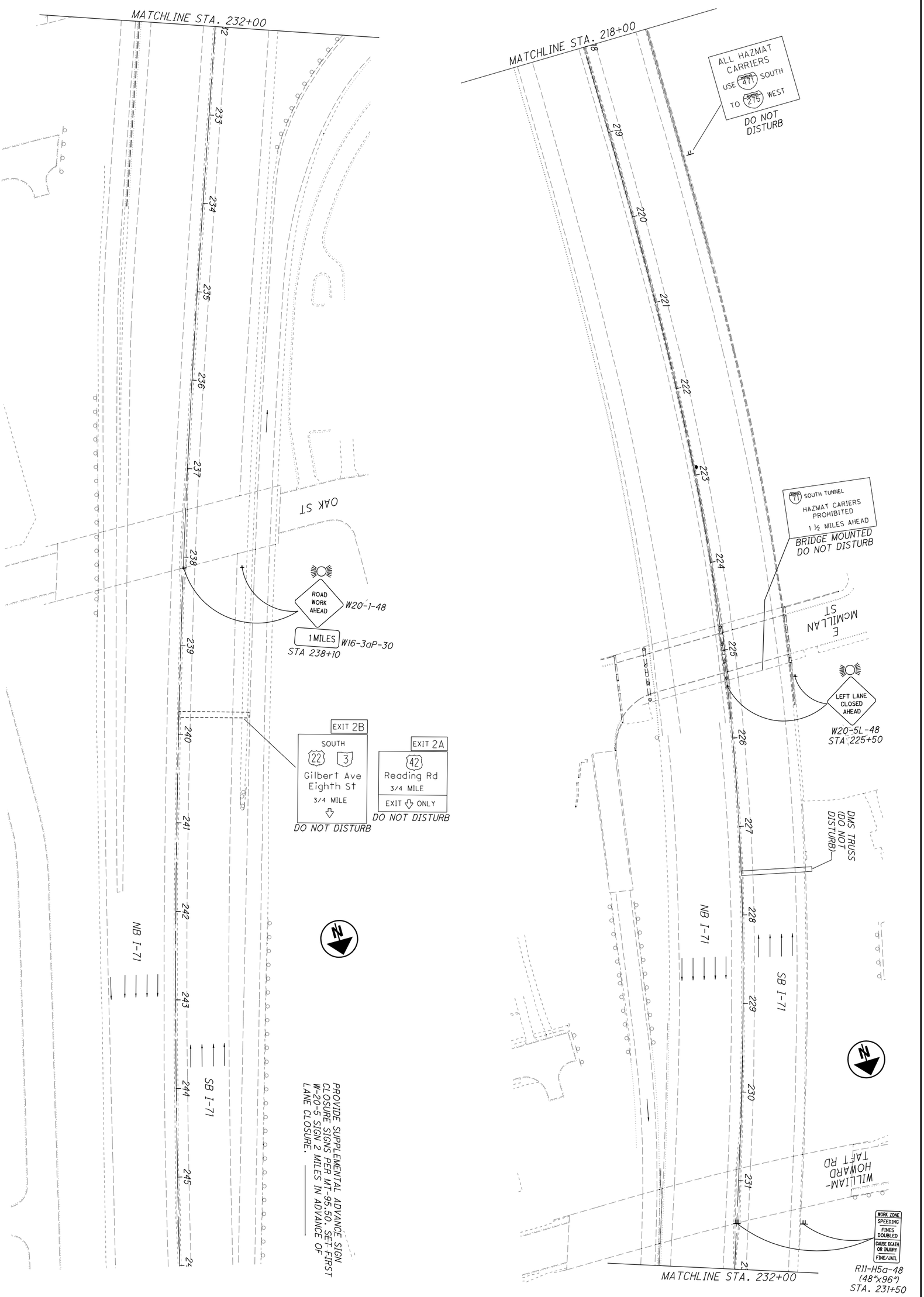
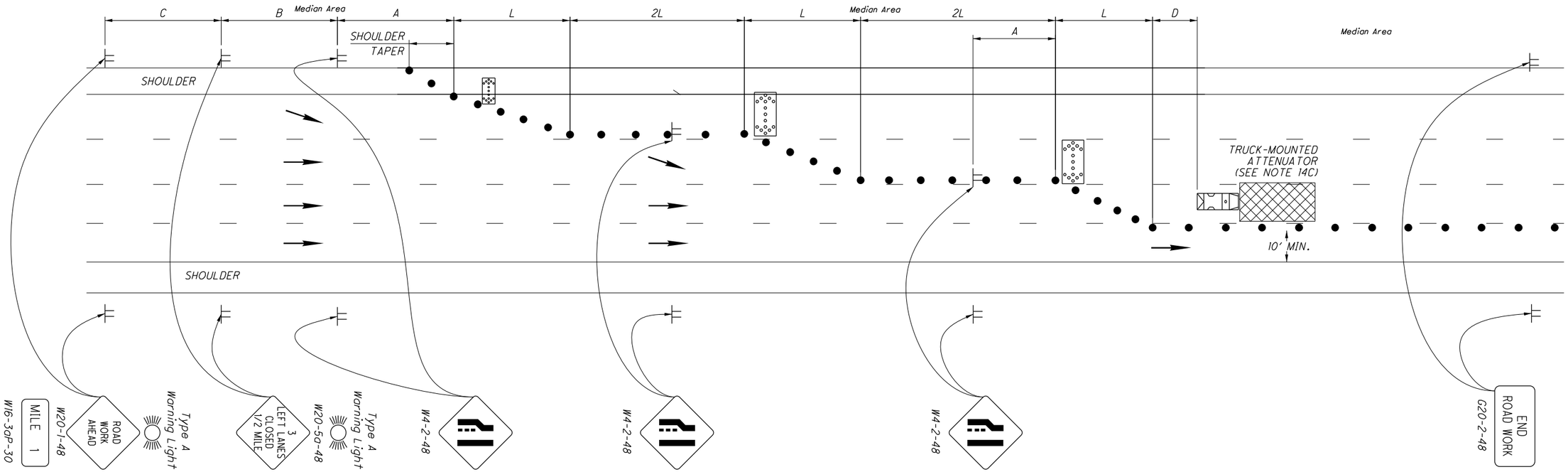


65E 292	HAM-71-1.97	MAINTENANCE OF TRAFFIC - SB I-71 DETOUR STA 218+00 TO STA 246+00	CALCULATED MJH / CHECKED KAE	0 25 50 100 HORIZONTAL SCALE IN FEET

MAINTENANCE OF TRAFFIC

TEMPORARY LEFT 3 LANE CLOSURE



NOTE 1: THE CONTRACTOR IS REQUIRED TO SUBMIT A DETAILED SCHEMATIC TO THE ENGINEER FOR APPROVAL IF CLOSING THE RIGHT 3 LANES AND/OR WHEN THE ADVANCE WARNING AREA DOES NOT CONFORM TO THIS DETAIL.

TABLE I (SIGN SPACING)

ROAD TYPE	DISTANCE BETWEEN SIGNS (FT)		
	A	B	C
MAJOR CONVENTIONAL	500	500	500
FREEWAY & EXPRESSWAY	1000	1500	2640

TABLE II

SPEED LIMIT (MPH)	MERGING TAPER RATE MINIMUM	SHOULDER TAPER RATE MINIMUM	MAXIMUM DRUM SPACING (FT)		BUFFER (D) (FT)
			TAPER SEC.	TANGENT SEC.	
25	11:1	4:1	25	40	155
30	15:1	5:1	30	40	200
35	21:1	7:1	35	40	250
40	27:1	9:1	40	80	305
45	45:1	15:1	45	80	360
50	50:1	17:1	50	80	425
55	55:1	19:1	55	80	495
60	60:1	20:1	60	120	570
65	65:1	22:1	65	120	645
70	70:1	24:1	70	120	730

LEGEND

WORK AREA

DRUMS/CONES

DIRECTION OF TRAVEL

SHADOW VEHICLE

FLASHING ARROW PANEL

CALCULATED XXX
CHECKED XXX

MAINTENANCE OF TRAFFIC - PLAN INSERT SHEET

HAM-71-1.97

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SHEET NUM.											PART.			ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
12	17A	73	74	76	94	96	97	116			01/IMS/PV	02/NHS/PV	05/IMS/OT						
																		ROADWAY	
											LS			201	11000	LS		CLEARING AND GRUBBING	
			41								41			202	23010	41	SY	PAVEMENT REMOVED, ASPHALT	
			100		10			410			520			202	30700	520	FT	CONCRETE BARRIER REMOVED	
					230						230			202	30701	230	FT	CONCRETE BARRIER REMOVED, AS PER PLAN	94
				34,138							26,455	7,683		202	38000	34,138	FT	GUARDRAIL REMOVED	
				51							42	9		202	42010	51	EACH	ANCHOR ASSEMBLY REMOVED, TYPE E	
				41							29	12		202	42040	41	EACH	ANCHOR ASSEMBLY REMOVED, TYPE T	
				87							63	24		202	47000	87	EACH	BRIDGE TERMINAL ASSEMBLY REMOVED	
				2							1	1		202	47800	2	EACH	IMPACT ATTENUATOR REMOVED	
			1								1			202	58100	1	EACH	CATCH BASIN REMOVED	
							17,304						17,304	203	10000	17,304	CY	EXCAVATION	
							15,865						15,865	203	20001	15,865	CY	EMBANKMENT, AS PER PLAN	12
							1,125						1,125	203	35001	1,125	CY	GRANULAR EMBANKMENT, AS PER PLAN	12
2,091											2,091			SPECIAL	20270110	2,091	FT	PIPE CLEANOUT, 24" AND UNDER	12
35											35			203	98600	35	EACH	ROADWAY, MISC.:MEDIAN INLET CLEANOUT	12
29											29			203	98600	29	EACH	ROADWAY, MISC.:CATCH BASIN CLEANOUT	12
		101									101			204	10000	101	SY	SUBGRADE COMPACTION	
							3,375						3,375	204	50100	3,375	SY	GEOTEXTILE FABRIC, 712.09, TYPE A	12
				30,512.5							23,462.5	7,050		606	15050	30,512.5	FT	GUARDRAIL, TYPE MGS	
				225							225			606	15150	225	FT	GUARDRAIL, TYPE MGS HALF POST SPACING	
				54							44	10		606	26150	54	EACH	ANCHOR ASSEMBLY, MGS TYPE E	
				44							31	13		606	26550	44	EACH	ANCHOR ASSEMBLY, MGS TYPE T	
				53							40	13		606	35002	53	EACH	MGS BRIDGE TERMINAL ASSEMBLY, TYPE 1	
				35							25	10		606	35102	35	EACH	MGS BRIDGE TERMINAL ASSEMBLY, TYPE 2	
				2							1	1		606	60040	2	EACH	IMPACT ATTENUATOR, TYPE 3 UNIDIRECTIONAL(60 MPH; W = 72 INCHES)	
			120								120			608	52000	120	SF	CURB RAMP	
			40								40			608	53020	40	SF	DETECTABLE WARNING	
			32								32			622	10100	32	FT	CONCRETE BARRIER, SINGLE SLOPE, TYPE B1	
			1								1			622	10201	1	EACH	BARRIER TRANSITION, AS PER PLAN	12
								330			330			622	23405	330	FT	CONCRETE BARRIER, TYPE B1, AS PER PLAN	12
					230						230			622	24001	230	FT	CONCRETE BARRIER, TYPE D, AS PER PLAN	94
			1								1			622	24850	1	EACH	CONCRETE BARRIER END SECTION, TYPE B1	
			3								3			622	25006	3	EACH	CONCRETE BARRIER, END ANCHORAGE, REINFORCED, TYPE B1	
					50						50			622	90000	50	FT	BARRIER, MISC.: EXTENSION OF BARRIER HEIGHT	94
						64					64			622	90000	64	FT	BARRIER, MISC.:REPLACEMENT OF BARRIER ON RETAINING WALL	96
					115						115			622	90000	115	FT	BARRIER, MISC.:BARRIER MISC.: REPLACEMENT OF BARRIER FOR PIER PROTECTION	94
											LS			878	25000	LS		INSPECTION AND COMPACTION TESTING OF UNBOUND MATERIALS	
																		EROSION CONTROL	
							7,315						7,315	659	00530	7,315	SY	SEEDING AND MULCHING, CLASS 3B	
							0.99						0.99	659	20000	0.99	TON	COMMERCIAL FERTILIZER	
							1.51						1.51	659	31000	1.51	ACRE	LIME	
							19.75						19.75	659	35000	19.75	MGAL	WATER	
											10,000			832	30000	10,000	EACH	EROSION CONTROL	
																		DRAINAGE	
							2,385						2,385	611	01400	2,385	FT	6" CONDUIT, TYPE E 707.31 (PERFORATED)	
							352						352	611	01500	352	FT	6" CONDUIT, TYPE F 707.33 (NON-PERFORATED)	
							21						21	611	01501	21	FT	6" CONDUIT, TYPE F, AS PER PLAN 707.33 (NON-PERFORATED)	97
			1								1			611	98150	1	EACH	CATCH BASIN, NO. 3	
																		PAVEMENT	
	3,250										3,250			251	01001	3,250	SY	PARTIAL DEPTH PAVEMENT REPAIR (441), AS PER PLAN	17A
8,296											8,296			252	01000	8,296	SY	FULL DEPTH RIGID PAVEMENT REMOVAL AND FLEXIBLE REPLACEMENT	
49,777											49,777			252	01500	49,777	FT	FULL DEPTH PAVEMENT SAWING	
		524,569									471,878	52,691		254	01000	524,569	SY	PAVEMENT PLANING, ASPHALT CONCRETE 3" & 4 1/4"	10
		25									25			302	46000	25	CY	ASPHALT CONCRETE BASE, PG64-22	
		17									17			304	20000	17	CY	AGGREGATE BASE	
		39,343									35,391	3,952		407	13900	39,343	GAL	TACK COAT, 702.13	
		26,230									23,595	2,635		407	20000	26,230	GAL	NON-TRACKING TACK COAT	

CALCULATED CML CHECKED DPF

GENERAL SUMMARY

HAM-71-1.97

6.6
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SHEET NUM.														PART.		ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
73	76	104	105	106	107	108	112	113	114	115	116	118	237	01/IMS/PV	02/NHS/PV						
905														655	250	442	10001	905	CY	ASPHALT CONCRETE SURFACE COURSE, 12.5 MM, TYPE A (446), AS PER PLAN	7
36,780														34,219	2,561	442	10100	36,780	CY	ASPHALT CONCRETE INTERMEDIATE COURSE, 19 MM, TYPE A (446)	
														24		609	26000	24	FT	CURB, TYPE 6	
19														19		618	40601	19	MILE	RUMBLE STRIPS, (ASPHALT CONCRETE), AS PER PLAN	7
20,953														19,009	1,944	806	00100	20,953	CY	ASPHALT CONCRETE SURFACE COURSE, 12.5MM, TYPE A	
																				TRAFFIC SURVEILLANCE	
													280	280		625	25400	280	FT	CONDUIT, 2", 725.04	
													280	280		625	25750	280	FT	CONDUIT, 4", MULTICELL, 725.20 , EPC-40	236
													280	280		625	29010	280	FT	TRENCH, 30" DEEP	
													4	4		625	30700	4	EACH	PULL BOX, 725.08, 18"	
													6	6		625	30711	6	EACH	PULL BOX, 725.08, 32", AS PER PLAN	236
													8	8		625	32001	8	EACH	GROUND ROD, AS PER PLAN	236
													100	100		632	62810	100	FT	INTERCONNECT CABLE, MISC.:CATEGORY 5E CABLE, OUTDOOR RATED	236
													7	7		632	90400	7	EACH	SIGNALIZATION, MISC.:CCTV CAMERA REMOVED FOR STORAGE	236
													7	7		632	90400	7	EACH	SIGNALIZATION, MISC.:CCTV POLE REMOVED	236
													8	8		633	67200	8	EACH	CONTROLLER WORK PAD	
													8	8		809	60000	8	EACH	CCTV IP-CAMERA SYSTEM, DOME-TYPE	
													8	8		809	61000	8	EACH	CCTV CONCRETE POLE WITH LOWERING UNIT, 70 FEET	
																				TRAFFIC CONTROL	
	300														300	620	70010	300	FT	DELINEATOR, MISC.:LINEAR DELINEATION SYSTEM	
			665	755	567	363								1,987	363	621	00100	2,350	EACH	RPM	
		1,706												1,530	176	621	54000	1,706	EACH	RAISED PAVEMENT MARKER REMOVED	
											12			12		625	00450	12	EACH	CONNECTION, FUSED PULL APART	
											12			12		625	00460	12	EACH	CONNECTION, UNFUSED PULL APART	
											4			4		625	00480	4	EACH	CONNECTION, UNFUSED PERMANENT	
											2,930			2,930		625	23200	2,930	FT	NO. 4 AWG 2400 VOLT DISTRIBUTION CABLE	
											1,400			1,400		625	25910	1,400	FT	CONDUIT CLEANED AND CABLES REMOVED	
								14	17	36				67		625	32000	67	EACH	GROUND ROD	
											14			14		625	75800	14	EACH	DISCONNECT CIRCUIT	
	408										8			317	99	626	00100	416	EACH	BARRIER REFLECTOR	
							1,881.2					201		2,082.2		630	03100	2,082.2	FT	GROUND MOUNTED SUPPORT, NO. 3 POST	
											134.3			134.3		630	06500	134.3	FT	GROUND MOUNTED STRUCTURAL BEAM SUPPORT, W6X9	
											41.7			41.7		630	07000	41.7	FT	GROUND MOUNTED STRUCTURAL BEAM SUPPORT, W8X18	
											119.3			119.3		630	07600	119.3	FT	GROUND MOUNTED STRUCTURAL BEAM SUPPORT, W10X12	
							285							285		630	08004	285	FT	ONE WAY SUPPORT, NO. 3 POST	
							81							81		630	08600	81	EACH	SIGN POST REFLECTOR	
											16			16		630	09000	16	EACH	BREAKAWAY STRUCTURAL BEAM CONNECTION	
										15				15		630	20300	15	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-12.30, DESIGN 3	
										2				2		630	20400	2	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-12.30, DESIGN 4	
								1						1		630	20500	1	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-12.30, DESIGN 5	
									1	1				2		630	20600	2	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-12.30, DESIGN 6	
									1					1		630	20800	1	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-12.30, DESIGN 8	
								3						3		630	20900	3	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-12.30, DESIGN 9	
								3	1	1				5		630	21000	5	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-12.30, DESIGN 10	
								1						1		630	21200	1	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-12.30, DESIGN 12	
										2				2		630	31200	2	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-9.10, DESIGN 2	
								1		3				4		630	35500	4	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-7.65, DESIGN 6	
								2	5	4				11		630	45500	11	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-7.65, DESIGN 8	
									1					1		630	66500	1	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-15.115	
										1				1		630	74500	1	EACH	OVERHEAD SIGN SUPPORT, MISC.:TYPE 12.30, SPECIAL DESIGN	104
									1					1		630	74500	1	EACH	OVERHEAD SIGN SUPPORT, MISC.:TYPE TC-7.65, SPECIAL DESIGN	104
										1				1		630	77200	1	EACH	OVERPASS STRUCTURE MOUNTED SIGN SUPPORT, TYPE TC-18.26, DESIGN 2	
							2							2		630	79000	2	EACH	SIGN HANGER ASSEMBLY, SPAN WIRE	
							11							11		630	79500	11	EACH	SIGN SUPPORT ASSEMBLY, POLE MOUNTED	
							1,361	49.5		18.3		1,042.5		2,471.3		630	80100	2,471.3	SF	SIGN, FLAT SHEET	

CALCULATED MJH
CHECKED KAE

GENERAL SUMMARY

HAM-71-1.97

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SHEET NUM.													PART.			ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
104	105	106	107	108	109	110	113	114	115	116	118	250	01/IMS/PV	02/NHS/PV	05/IMS/OT						
										396			396			630	80200	396	SF	SIGN, GROUND MOUNTED EXTRUSHEET	
							2,571	3,405	3,421.5				9,397.5			630	80228	9,397.5	EACH	SIGN, OVERHEAD EXTRUSHEET	
								138					138			630	80400	138	SF	SIGN, PERMANENT OVERLAY	
											68		68			630	81020	68	EACH	CONCRETE MEDIAN BARRIER SIGN BRACKET	
							4	6	2				12			630	84010	12	EACH	CONCRETE BARRIER MEDIAN OVERHEAD SIGN SUPPORT FOUNDATION, TYPE TC-21.50	104
										16			16			630	84500	16	EACH	GROUND MOUNTED STRUCTURAL BEAM SUPPORT FOUNDATION	
							10	11	34				55			630	84511	55	EACH	RIGID OVERHEAD SIGN SUPPORT FOUNDATION, AS PER PLAN	103
					120						152		272			630	84900	272	EACH	REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL	
					11								11			630	85400	11	EACH	REMOVAL OF GROUND MOUNTED MAJOR SIGN AND DISPOSAL	
					131						20		151			630	86002	151	EACH	REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL	
					32								32			630	86102	32	EACH	REMOVAL OF GROUND MOUNTED STRUCTURAL BEAM SUPPORT AND DISPOSAL	
						3							3			630	86310	3	EACH	REMOVAL OF STRUCTURE MOUNTED SIGN AND DISPOSAL	
						3							3			630	87100	3	EACH	REMOVAL OF OVERHEAD MOUNTED SIGN AND REERECTION	
						111							111			630	87400	111	EACH	REMOVAL OF OVERHEAD MOUNTED SIGN AND DISPOSAL	
					36						1		37			630	87500	37	EACH	REMOVAL OF POLE MOUNTED SIGN AND DISPOSAL	
					3								3			630	87520	3	EACH	REMOVAL OF POLE MOUNTED SIGN AND REERECTION	
						1							1			630	89704	1	EACH	REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-16.21	
						23							23			630	89706	23	EACH	REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-12.30	
						1							1			630	89800	1	EACH	REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-9.10	
						17							17			630	89802	17	EACH	REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-7.65	
						1							1			630	89810	1	EACH	REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-17.10	
						1							1			630	89902	1	EACH	REMOVAL OF MISCELLANEOUS TRAFFIC CONTROL ITEM: MONOTUBE SIGN SUPPORT	103
						1							1			630	89902	1	EACH	REMOVAL OF MISCELLANEOUS TRAFFIC CONTROL ITEM: CURVE WARNING SIGN WITH FLASHING BEACON	103
						6							6			630	89902	6	EACH	REMOVAL OF MISCELLANEOUS TRAFFIC CONTROL ITEM: SIGN BRACKETS ON COMBINATION SIGN POLE	104
											67		67			630	89902	67	EACH	REMOVAL OF MISCELLANEOUS TRAFFIC CONTROL ITEM: MEDIAN BARRIER SIGN BRACKET	104
						1							1			630	97700	1	EACH	SIGNING, MISC.:REMOVAL OF OVERHEAD FLASHING SIGN AND REERECTION	103
									1				1			630	97700	1	EACH	SIGNING, MISC.:FLASHING WARNING SIGN	103
						28				17			45			631	97700	45	EACH	SIGN LIGHTING MISC.:REMOVE SIGN SERVICE	104
13													13			632	26501	13	EACH	DETECTOR LOOP, AS PER PLAN	104
13													13			632	27200	13	EACH	LOOP DETECTOR TIE IN	
	8.87	9.82	6.88	5.54									25.57	5.54		644	00104	31.11	MILE	EDGE LINE, 6"	
	12.68	13.34	1.19	0.5									27.21	0.5		644	00204	27.71	MILE	LANE LINE, 6"	
	6,260	8,498	3,357	4,382									18,115	4,382		644	00404	22,497	FT	CHANNELIZING LINE, 12"	
			247	24									247	24		644	00500	271	FT	STOP LINE	
			495	42									495	42		644	00600	537	FT	CROSSWALK LINE	
			293										293			644	00700	293	FT	TRANSVERSE/DIAGONAL LINE	
	283	194	149	164									626	164		644	00720	790	FT	CHEVRON MARKING	
			31	9									31	9		644	01300	40	EACH	LANE ARROW	
			9	3									9	3		644	01360	12	EACH	WRONG WAY ARROW	
	1,671	5,039	157	1,458									6,867	1,458		644	01510	8,325	FT	DOTTED LINE, 6"	
	7,494	2,530											10,024			644	01520	10,024	FT	DOTTED LINE, 12"	
	0.58	0.83	0.15	0.54									1.56	0.54		646	10010	2.1	MILE	EDGE LINE, 6"	
	0.98	0.95											1.93			646	10110	1.93	MILE	LANE LINE, 6"	
	510												510			646	10310	510	FT	CHANNELIZING LINE, 12"	
	48												48			646	20504	48	FT	DOTTED LINE, 6"	
																				LANDSCAPING	
												5			5	661	40080	5	EACH	DECIDUOUS TREE, 2" CALIPER CRATAEGUS VIRDUS "WINTER KING" (WINTER KING HAWTHORNE)	
												15			15	661	50080	15	EACH	EVERGREEN TREE, 4' HEIGHT JUNIPERUS VIRGINIANA "BURKII" (BURK EASTERN RED CEDAR)	
												40			40	661	50080	40	EACH	EVERGREEN TREE, 4' HEIGHT PICEA ABIES (NORWAY SPRUCE)	
												5			5	661	50080	5	EACH	EVERGREEN TREE, 4' HEIGHT PICEA PUNGENS (GREEN COLORADO SPRUCE)	
												1.62			1.62	661	99910	1.62	ACRE	PLANTING, MISC.: WILDFLOWER SEEDING AND MULCHING MIX 5-B	250

CALCULATED MJH
CHECKED KAE

GENERAL SUMMARY

HAM-71-1.97

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SHEET NUM.	PART. 03/IMS/BR	PART. 04/IMS/BR	ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
							STRUCTURE REPAIR (HAM-71-0160 SFN 3106616)	
	24		513	95030	24	EACH	STRUCTURAL STEEL, MISC.:2" STRESS RELIEF HOLE RETROFIT	251
	24		514	20001	24	SF	FIELD PAINTING OF DAMAGED STRUCTURAL STEEL, AS PER PLAN	252
							STRUCTURE REPAIR (HAM-71-0197 SFN: 3106667)	
		LS	202	11203	LS		PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN	251
		30	510	10000	30	EACH	DOWEL HOLES WITH NONSHRINK, NONMETALLIC GROUT	
		500	514	00050	500	SF	SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL	
		500	514	00056	500	SF	FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT	
		500	514	00060	500	SF	FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT	
		500	514	00066	500	SF	FIELD PAINTING STRUCTURAL STEEL, FINISH COAT	
		1	514	00504	1	MNHR	GRINDING FINS, TEARS, SLIVERS ON EXISTING STRUCTURAL STEEL	
		1	514	10000	1	EACH	FINAL INSPECTION REPAIR	
		483	516	01300	483	FT	ELASTOMERIC STRIP SEAL WITHOUT STEEL EXTRUSIONS	
		16	516	44201	16	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), AS PER PLAN (10"x1'-2"x3.13")	258
		15	516	44201	15	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), AS PER PLAN (11"x1'-2"x3.25")	258
		LS	516	47001	LS		JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN	252
		LS	518	63300	LS		STRUCTURE DRAINAGE, MISC.: SCUPPER AND DRAINAGE PIPE CLEAN OUT	252
		LS	518	63300	LS		STRUCTURE DRAINAGE, MISC.: CLEAN COMBINED SEWER	256
		900	SPECIAL	51911710	900	SY	PATCHING CONCRETE STRUCTURE PARTIAL DEPTH CONCRETE DECK REPAIRS, AS PER PLAN	253
		2	625	10500	2	EACH	LIGHT POLE, MISC.: REMOVE AND REINSTALL LIGHT POLE	252
		4,404	848	20000	4,404	SY	SURFACE PREPARATION USING HYDRODEMOLITION	
		3,695	848	10200	3,695	SY	SUPERPLASTICIZED DENSE CONCRETE OVERLAY USING HYDRODEMOLITION 2 3/4" THICK	
		709	848	10200	709	SY	SUPERPLASTICIZED DENSE CONCRETE OVERLAY USING HYDRODEMOLITION 1 3/4" THICK	
		132	848	30200	132	CY	SUPERPLASTICIZED DENSE CONCRETE OVERLAY (VARIABLE THICKNESS), MATERIAL ONLY	
		380	848	50000	380	SY	HAND CHIPPING	
		LS	848	50100	LS		TEST SLAB	
		4,404	848	50320	4,404	SY	EXISTING CONCRETE OVERLAY REMOVED 1 3/4" THICK	
		3,802	848	50340	3,802	SY	REMOVAL OF DEBONDED OR DETERIORATED EXISTING VARIABLE THICKNESS CONCRETE OVERLAY	
							STRUCTURE REPAIR (HAM-71-0197N SFN 3100790)	
		1,520	512	73500	1,520	SY	TREATING CONCRETE BRIDGE DECKS WITH GRAVITY FED RESIN	
		28	516	01300	28	FT	ELASTOMERIC STRIP SEAL WITHOUT STEEL EXTRUSIONS	
		LS	518	63300	LS		STRUCTURE DRAINAGE, MISC.: SCUPPER AND DRAINAGE PIPE CLEAN OUT	252
							STRUCTURE REPAIR (HAM-71-0197W SFN 3106659)	
		1,384	512	73500	1,384	SY	TREATING CONCRETE BRIDGE DECKS WITH GRAVITY FED RESIN	
		LS	518	63300	LS		STRUCTURE DRAINAGE, MISC.: SCUPPER AND DRAINAGE PIPE CLEAN OUT	252
		1	519	12300	1	SY	PATCHING CONCRETE BRIDGE DECK - TYPE B	
							STRUCTURE REPAIR (HAM-22-0145 SFN: 3100812)	
		62	512	10100	62	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	
		2,575	512	73500	2,575	SY	TREATING CONCRETE BRIDGE DECKS WITH GRAVITY FED RESIN	
		1,115	519	11101	1,115	SF	PATCHING CONCRETE STRUCTURE, AS PER PLAN	252
		LS	518	63300	LS		STRUCTURE DRAINAGE, MISC.: SCUPPER AND DRAINAGE PIPE CLEAN OUT	252
		596	607	39900	596	FT	VANDAL PROTECTION FENCE, 6' STRAIGHT, COATED FABRIC	
							STRUCTURE REPAIR (HAM-71-0248L SFN: 3106780)	
		LS	511	81200	LS		CONCRETE, MISC.:PRESSURE WASH CONCRETE SUBSTRUCTURE	262
		LS	513	95020	LS		STRUCTURAL STEEL, MISC.:PRESSURE WASH STRUCTURAL STEEL	262
		12	513	95030	12	EACH	STRUCTURAL STEEL, MISC.:2" STRESS RELIEF HOLE RETROFIT	269
		12	514	20001	12	SF	FIELD PAINTING OF DAMAGED STRUCTURAL STEEL, AS PER PLAN	252
		162	516	01300	162	FT	ELASTOMERIC STRIP SEAL WITHOUT STEEL EXTRUSIONS	
		LS	518	63300	LS		STRUCTURE DRAINAGE, MISC.:SCUPPER AND DRAINAGE PIPE CLEAN OUT	252
		1,070	SPECIAL	51911710	1,070	SY	PATCHING CONCRETE STRUCTURE PARTIAL DEPTH CONCRETE DECK REPAIRS, AS PER PLAN	253
		4,472	848	20000	4,472	SY	SURFACE PREPARATION USING HYDRODEMOLITION	
		4,194	848	10200	4,194	SY	SUPERPLASTICIZED DENSE CONCRETE OVERLAY USING HYDRODEMOLITION2 3/4" THICK	
		278	848	10200	278	SY	SUPERPLASTICIZED DENSE CONCRETE OVERLAY USING HYDRODEMOLITION1 3/4" THICK	
		146	848	30200	146	CY	SUPERPLASTICIZED DENSE CONCRETE OVERLAY (VARIABLE THICKNESS), MATERIAL ONLY	

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GENERAL SUMMARY

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SHEET NUM.	PART. 03/IMS/BR	PART. 04/IMS/BR	ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
		419	848	50000	419	SY	HAND CHIPPING	
		LS	848	50100	LS		TEST SLAB	
		4,472	848	50320	4,472	SY	EXISTING CONCRETE OVERLAY REMOVEDI 3/4" THICK	
		4,194	848	50340	4,194	SY	REMOVAL OF DEBONDED OR DETERIORATED EXISTING VARIABLE THICKNESS CONCRETE OVERLAY	
							STRUCTURE REPAIR (HAM-71-0248R SFN: 3106802)	
	916		202	98400	916	SF	REMOVAL MISC.:REMOVE GRAFFITI	270
	LS		511	81200	LS		CONCRETE, MISC.: PRESSURE WASH CONCRETE SUBSTRUCTURE	270
	97		512	10101	97	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN	251
	12		513	95000	12	FT	STRUCTURAL STEEL, MISC.: GRINDING PER FOOT, AS PER PLAN	251
	LS		513	95020	LS		STRUCTURAL STEEL, MISC.: PRESSURE WASH STRUCTURAL STEEL	270
	72		513	95030	72	EACH	STRUCTURAL STEEL, MISC.: 2" STRESS RELIEF HOLE RETROFIT	273
	2		513	95030	2	EACH	STRUCTURAL STEEL, MISC.:FILLET WELD CRACK RETROFIT	251
	72		514	20001	72	SF	FIELD PAINTING OF DAMAGED STRUCTURAL STEEL, AS PER PLAN	252
	LS		518	63300	LS		STRUCTURE DRAINAGE, MISC.: SCUPPER AND DRAINAGE PIPE CLEAN OUT	252
	1,600		SPECIAL	51911710	1,600	SY	PATCHING CONCRETE STRUCTURE PARTIAL DEPTH CONCRETE DECK REPAIRS, AS PER PLAN	253
	10,706		848	20000	10,706	SY	SURFACE PREPARATION USING HYDRODEMOLITION	
	10,270		848	10200	10,270	SY	SUPERPLASTICIZED DENSE CONCRETE OVERLAY USING HYDRODEMOLITION 2 3/4" THICK	
	436		848	10200	436	SY	SUPERPLASTICIZED DENSE CONCRETE OVERLAY USING HYDRODEMOLITION 1 3/4" THICK	
	360		848	30200	360	CY	SUPERPLASTICIZED DENSE CONCRETE OVERLAY (VARIABLE THICKNESS), MATERIAL ONLY	
	1,038		848	50000	1,038	SY	HAND CHIPPING	
	LS		848	50100	LS		TEST SLAB	
	10,706		848	50320	10,706	SY	EXISTING CONCRETE OVERLAY REMOVED 1 3/4" THICK	
	10,381		848	50340	10,381	SY	REMOVAL OF DEBONDED OR DETERIORATED EXISTING VARIABLE THICKNESS CONCRETE OVERLAY	
							STRUCTURE REPAIR (HAM-42-0264R SFN: 3101223)	
		LS	511	81200	LS		CONCRETE, MISC.:REPLACE CONCRETE PILASTERS	276
		32	513	95030	32	EACH	STRUCTURAL STEEL, MISC.:2" STRESS RELIEF HOLE RETROFIT	275
		1	513	95030	1	EACH	STRUCTURAL STEEL, MISC.:FILLET WELD CRACK RETROFIT	251
		32	514	20001	32	SF	FIELD PAINTING OF DAMAGED STRUCTURAL STEEL, AS PER PLAN	252
							STRUCTURE REPAIR (HAM-22-0446 SFN 3100839)	
		262	519	11101	262	SF	PATCHING CONCRETE STRUCTURE, AS PER PLAN	252
							STRUCTURE REPAIR (HAM-71-0603 SFN 3114716)	
		174	519	11101	174	SF	PATCHING CONCRETE STRUCTURE, AS PER PLAN	252
							STRUCTURE REPAIR (HAM-71-0675 SFN: 3114813)	
		1,438	519	11101	1,438	SF	PATCHING CONCRETE STRUCTURE, AS PER PLAN	252
		275	607	39930	275	FT	VANDAL PROTECTION FENCE, 12' CURVED, COATED FABRIC	
							STRUCTURE REPAIR (HAM-561-0314 SFN: 3113663)	
		1,370	519	11101	1,370	SF	PATCHING CONCRETE STRUCTURE, AS PER PLAN	252
		279	607	39930	279	FT	VANDAL PROTECTION FENCE, 12' CURVED, COATED FABRIC	
							STRUCTURE REPAIR (HAM-71-0793L SFN: 3115038)	
		LS	201	11001	LS		CLEARING AND GRUBBING, AS PER PLAN	251
		LS	202	11203	LS		PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN	251
		32	510	10000	32	EACH	DOWEL HOLES WITH NONSHRINK, NONMETALLIC GROUT	
		4,145	512	10100	4,145	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	
		90,684	514	00050	90,684	SF	SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL	
		90,684	514	00056	90,684	SF	FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT	
		90,684	514	00060	90,684	SF	FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT	
		90,684	514	00066	90,684	SF	FIELD PAINTING STRUCTURAL STEEL, FINISH COAT	
		82	514	00504	82	MNHR	GRINDING FINS, TEARS, SLIVERS ON EXISTING STRUCTURAL STEEL	
		33	514	10000	33	EACH	FINAL INSPECTION REPAIR	

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GENERAL SUMMARY

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SHEET NUM.	PART. 03/IMS/BR	PART. 04/IMS/BR	ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
		8	516	44201	8	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), AS PER PLAN(1'-0"x1'-3"x3.95")	285
		8	516	44401	8	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), AS PER PLAN(1'-0"x1'-3"x5.96")	284
		LS	516	47001	LS		JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN	252
		LS	518	63300	LS		STRUCTURE DRAINAGE, MISC.: SCUPPER AND DRAINAGE PIPE CLEAN OUT	252
		4	519	11101	4	SF	PATCHING CONCRETE STRUCTURE, AS PER PLAN	252
		11	601	21001	11	SY	CONCRETE SLOPE PROTECTION, AS PER PLAN	252
		4,885	848	20000	4,885	SY	SURFACE PREPARATION USING HYDRODEMOLITION	
		4,885	848	10200	4,885	SY	SUPERPLASTICIZED DENSE CONCRETE OVERLAY USING HYDRODEMOLITION 2 3/4" THICK	
		170	848	30200	170	CY	SUPERPLASTICIZED DENSE CONCRETE OVERLAY (VARIABLE THICKNESS), MATERIAL ONLY	
		7	848	50000	7	SY	HAND CHIPPING	
		LS	848	50100	LS		TEST SLAB	
		4,886	848	50320	4,886	SY	EXISTING CONCRETE OVERLAY REMOVED 1 3/4" THICK	
		70	848	50340	70	SY	REMOVAL OF DEBONDED OR DETERIORATED EXISTING VARIABLE THICKNESS CONCRETE OVERLAY	
							STRUCTURE REPAIR (HAM-71-0804R SFN: 3115062)	
		LS	202	11203	LS		PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN	251
		32	510	10000	32	EACH	DOWEL HOLES WITH NONSHRINK, NONMETALLIC GROUT	
		1,932	512	10100	1,932	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	
		8	516	44101	8	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), AS PER PLAN (11"x1'-3"x2.66")	287
		8	516	44201	8	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), AS PER PLAN (11"x1'-3"x3.53")	287
		LS	516	47001	LS		JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN	252
		LS	518	63300	LS		STRUCTURE DRAINAGE, MISC.: SCUPPER AND DRAINAGE PIPE CLEAN OUT	252
		1,967	848	20000	1,967	SY	SURFACE PREPARATION USING HYDRODEMOLITION	
		1,967	848	10200	1,967	SY	SUPERPLASTICIZED DENSE CONCRETE OVERLAY USING HYDRODEMOLITION 2 3/4" THICK	
		68	848	30200	68	CY	SUPERPLASTICIZED DENSE CONCRETE OVERLAY (VARIABLE THICKNESS), MATERIAL ONLY	
		2	848	50000	2	SY	HAND CHIPPING	
		LS	848	50100	LS		TEST SLAB	
		178	848	50300	178	SY	WEARING COURSE REMOVED, ASPHALT	
		1,790	848	50320	1,790	SY	EXISTING CONCRETE OVERLAY REMOVED 1 3/4" THICK	
		22	848	50340	22	SY	REMOVAL OF DEBONDED OR DETERIORATED EXISTING VARIABLE THICKNESS CONCRETE OVERLAY	
							STRUCTURE REPAIR (HAM-71-0820S SFN: 3115119)	
		255	512	73500	255	SY	TREATING CONCRETE BRIDGE DECKS WITH GRAVITY FED RESIN	
		LS	518	63300	LS		STRUCTURE DRAINAGE, MISC.: SCUPPER AND DRAINAGE PIPE CLEAN OUT	252
							STRUCTURE REPAIR (HAM-71-0822R SFN: 3115135)	
		LS	201	11001	LS		CLEARING AND GRUBBING, AS PER PLAN	252
		1,179	512	73500	1,179	SY	TREATING CONCRETE BRIDGE DECKS WITH GRAVITY FED RESIN	
		LS	518	63300	LS		STRUCTURE DRAINAGE, MISC.: SCUPPER AND DRAINAGE PIPE CLEAN OUT	251
		68	843	50000	68	SF	PATCHING CONCRETE STRUCTURES WITH TROWELABLE MORTAR	
							STRUCTURE REPAIR (HAM-71-0843S SFN: 3115224)	
		633	512	10100	633	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	
		LS	518	63300	LS		STRUCTURE DRAINAGE, MISC.:SCUPPER AND DRAINAGE PIPE CLEAN OUT	252
		630	848	20000	630	SY	SURFACE PREPARATION USING HYDRODEMOLITION	
		630	848	10200	630	SY	SUPERPLASTICIZED DENSE CONCRETE OVERLAY USING HYDRODEMOLITION2 3/4" THICK	
		22	848	30200	22	CY	SUPERPLASTICIZED DENSE CONCRETE OVERLAY (VARIABLE THICKNESS), MATERIAL ONLY	
		63	848	50000	63	SY	HAND CHIPPING	
		LS	848	50100	LS		TEST SLAB	
		630	848	50320	630	SY	EXISTING CONCRETE OVERLAY REMOVEDI 3/4" THICK	
		93	848	50340	93	SY	REMOVAL OF DEBONDED OR DETERIORATED EXISTING VARIABLE THICKNESS CONCRETE OVERLAY	

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GENERAL SUMMARY

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SHEET NUM.											PART.			ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
13	14	15	16	17	18	19	20	65A	253		01/IMS/PV								
																		MAINTENANCE OF TRAFFIC	
			3,000						360		3,360			614	11110	3,360	HOUR	LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE	16
				12							12			614	11500	12	MNTH	WORKSITE TRAFFIC SUPERVISOR	17
		4,530									4,530			614	11630	4,530	FT	INCREASED BARRIER DELINEATION	15
			187.5								187.5			SPECIAL	61412200	187.5	FT	WORK ZONE GUARDRAIL	16
14							1				15			614	12336	15	EACH	WORK ZONE IMPACT ATTENUATOR (UNIDIRECTIONAL)	
											LS			614	12420	LS		DETOUR SIGNING	
		35									35			614	12484	35	EACH	WORK ZONE INCREASED PENALTIES SIGN	15
	10										10			614	12500	10	EACH	REPLACEMENT SIGN	14
	100										100			614	12600	100	EACH	REPLACEMENT DRUM	14
					3,372	280	1,022				4,674			614	12801	4,674	EACH	WORK ZONE RAISED PAVEMENT MARKER, AS PER PLAN	15
											250			614	13000	250	CY	ASPHALT CONCRETE FOR MAINTAINING TRAFFIC	
50		151					30				231			614	13100	231	EACH	BARRIER REFLECTOR	
50		210					30				290			614	13350	290	EACH	OBJECT MARKER, ONE WAY	
								1			1			614	18000	1	EACH	MAINTAINING TRAFFIC, MISC.: WELD INLET GRATE	17A
								1			1			614	18000	1	EACH	MAINTAINING TRAFFIC, MISC.: PLATE AND COVER MANHOLE	17A
									3		3			614	18000	3	EACH	MAINTAINING TRAFFIC, MISC.: FULL DEPTH REPAIR MOT (1 LANE INTERSTATE CLOSURE)	253
									3		3			614	18000	3	EACH	MAINTAINING TRAFFIC, MISC.: FULL DEPTH REPAIR MOT (2 LANE INTERSTATE CLOSURE)	253
									3		3			614	18000	3	EACH	MAINTAINING TRAFFIC, MISC.: FULL DEPTH REPAIR MOT (RAMP CLOSURE)	253
			LS								LS			614	18002	LS		MAINTAINING TRAFFIC, MISC.: VERTICAL CLEARANCE MEASUREMENTS	16
	2,170										2,170			614	18030	2,170	FT	MAINTAINING TRAFFIC, MISC.: RUMBLE STRIP MILLED/FILLED	14
		120									120			614	18601	120	SNMT	PORTABLE CHANGEABLE MESSAGE SIGN, AS PER PLAN	15
	280										280			614	18700	280	SNMT	DIGITAL SPEED LIMIT (DSL) SIGN ASSEMBLY	14
								0.17			0.17			614	20100	0.17	MILE	WORK ZONE LANE LINE, CLASS I, 642 PAINT	
							30.66				30.66			614	20550	30.66	MILE	WORK ZONE LANE LINE, CLASS III, 642 PAINT	
0.28					3.74	3.73	2.24				9.99			614	22000	9.99	MILE	WORK ZONE EDGE LINE, CLASS I	
								1.35			1.35			614	22100	1.35	MILE	WORK ZONE EDGE LINE, CLASS I, 642 PAINT	
					0.5	1.29	0.39				2.18			614	22200	2.18	MILE	WORK ZONE EDGE LINE, CLASS I, 740.06, TYPE I	
							32.34				32.34			614	22350	32.34	MILE	WORK ZONE EDGE LINE, CLASS III, 642 PAINT	
					40,772	6,237	14,743				61,752			614	23000	61,752	FT	WORK ZONE CHANNELIZING LINE, CLASS I	
								2,844			2,844			614	23200	2,844	FT	WORK ZONE CHANNELIZING LINE, CLASS I, 642 PAINT	
					3,724	4,311	2,644				10,679			614	23400	10,679	FT	WORK ZONE CHANNELIZING LINE, CLASS I, 740.06, TYPE I	
							19,675				19,675			614	23680	19,675	FT	WORK ZONE CHANNELIZING LINE, CLASS III, 642 PAINT	
					2,875	1,620	1,430				5,925			614	24000	5,925	FT	WORK ZONE DOTTED LINE, CLASS I	
								2,778			2,778			614	24200	2,778	FT	WORK ZONE DOTTED LINE, CLASS I, 642 PAINT	
							16,317				16,317			614	24610	16,317	FT	WORK ZONE DOTTED LINE, CLASS III, 642 PAINT	
							293				293			614	25620	293	FT	WORK ZONE TRANSVERSE/DIAGONAL LINE, CLASS III, 642 PAINT	
							271				271			614	26610	271	FT	WORK ZONE STOP LINE, CLASS III, 642 PAINT	
							512				512			614	27620	512	FT	WORK ZONE CROSSWALK LINE, CLASS III, 642 PAINT	
							38				38			614	30650	38	EACH	WORK ZONE ARROW, CLASS III, 642 PAINT	
											LS			615	10001	LS		ROADS FOR MAINTAINING TRAFFIC, AS PER PLAN	16
							9,435				9,435			615	20000	9,435	SY	PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A	
2,100							1,450				3,550			622	41000	3,550	FT	PORTABLE BARRIER, 32"	
																		INCIDENTALS	
											LS			614	11000	LS		MAINTAINING TRAFFIC	
											LS			623	10000	LS		CONSTRUCTION LAYOUT STAKES AND SURVEYING	
											LS			624	10000	LS		MOBILIZATION	

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GENERAL SUMMARY

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REF. NO.	SHEET NO.	STATION FROM	STATION TO	SIDE	CADD GENERATED AREA			204 SUBGRADE COMPACTION		254 PAVEMENT PLANING, ASPHALT CONCRETE (4 1/4" DEPTH)	254 PAVEMENT PLANING, ASPHALT CONCRETE (3" DEPTH)	302 10" ASPHALT CONCRETE BASE, PG64-22	304 6" AGGREGATE BASE		407 TACK COAT, 702.13 (0.075 GAL/SY)	407 NON-TRACKING TACK COAT (0.05 GAL/SY)	442 1 1/2" ASPHALT CONCRETE SURFACE COURSE, 12.5 MM, TYPE A, (446), PG76-22M, APP	806 1 1/2" ASPHALT CONCRETE SURFACE COURSE, 12.5 MM, TYPE A	442 2 3/4" ASPHALT CONCRETE INTERMEDIATE COURSE, 19 MM, TYPE A, (446)	442 1 3/4" ASPHALT CONCRETE INTERMEDIATE COURSE, 19 MM, TYPE A, (446)		618 RUMBLE STRIPS, (ASPHALT CONCRETE), AS PER PLAN
					SF			SY		SY	SY	CY	CY		GAL	GAL	CY	CY	CY	CY		MI
		EXTENDED RESURFACING AREA																				
		IR 71 SB			8639						960				72	48	40			47		
		RAMP E			7923						880				66	44	37			43		
		IR 71 NB & RAMP K			31262						3474				261	174	145			169		
		TUNNEL - RESURFACING AREA																				
		IR 71 SB			33967						3774				283	189	157			183		
		RAMP E			19650						2183				164	109	91			106		
		IR 71 NB & RAMP K			39883						4431				332	222	185			215		
		MAINLINE 71 - RESURFACING AREA																				
		162+71.24	187+62.75		327185					36354					2727	1818		1515	2777			
		195+67.75	235+30.00		470691					52299					3922	2615		2179	3995			
		297+00.00	356+26.18		2293534					254837					19113	12742		10618	19467			
		356+26.39	398+96.35		561729					62414					4681	3121		2601	4768			
					WIDTH																	
	89	386+87.75	387+47.75	LT	6.65			44.3					7.4									
		386+87.75	387+47.75	LT	5.90							10.9										
		386+87.75	387+47.75	LT	5.31														2.7			
		386+87.75	387+47.75	LT	2.00											0.7		0.6				
		388+53.86	389+30.00	RT	6.65			56.3					9.4									
		388+53.86	389+30.00	RT	5.90							13.9										
		388+53.86	389+30.00	RT	5.31														3.4			
		388+53.86	389+30.00	RT	2.00											0.8		0.7				
		IR 71 RAMPS RESURFACING AREA			SF																	
		GD			42809						4757				357	238		198		231		
		RD			18125						2014				151	101		84		98		
		RB / RF			40491						4499				337	225		187		219		
		NB RR / RC / RE			71837						7982				599	399		333		388		
		ME			95913						10657				799	533		444		518		
		MF			20762						2307				173	115		96		112		
		DA / DC			32435						3604				270	180		150		175		
		DB			28357						3151				236	158		131		153		
		DE			42697						4744				356	237		198		231		
		A / AR			16864						1874				141	94		78		91		
		B			13356						1484				111	74		62		72		
		C			9838						1093				82	55		46		53		
		D			18952						2106				158	105		88		102		
		SR 562 RAMPS RESURFACING AREA																				
		E			19326						2147				161	107		89		104		
		I / L			80436						8937				670	447		372		434		
		J / K			87410						9712				728	486		405		472		
		H3			10690						1188				89	59		49		58		
		T/F/H/H1/G/M/U			276358						30706				2303	1535		1279		1493		
		HIGH FRICTION SUFACE COURSE																				
	88		RAMP G		31750												147	-147				
	87, 88		RAMPS F & T		22160												103	-103				
		IR 71 MAINLINE LIMITS																				
		160+00.00	400+00.00																			18.9
			SUBTOTAL IR 71 (01/IMS/PV)					101		471878		25	17		35391	23595	655	19009	34219			19
			SUBTOTAL SR 562 (02/NHS/PV)							52691					3952	2635	250	1944	2561			
TOTALS CARRIED TO GENERAL SUMMARY								101		524569		25	17		39343	26230	905	20953	36780			19

CALCULATED JLG
CHECKED SCS

PAVEMENT CALCULATIONS

HAM-71-1.97

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REF. NO.	SHEET NO.	STATION FROM	STATION TO	SIDE	202 PAVEMENT REMOVED, ASPHALT		202 CONCRETE BARRIER REMOVED	202 CATCH BASIN REMOVED		608 CURB RAMP	608 DETECTABLE WARNING	609 CURB, TYPE 6		611 CATCH BASIN, NO. 3			622 CONCRETE BARRIER, SINGLE SLOPE, TYPE B1	622 BARRIER TRANSITION, AS PER PLAN	622 CONCRETE BARRIER END SECTION, TYPE B1	622 CONCRETE BARRIER, END ANCHORAGE, REINFORCED, TYPE B1		
					SY		FT	EACH		SF	SF	FT		EACH			FT	EACH	EACH	EACH		
B1	89	386+87.75	387+47.75	LT	21													1		2		
R1	89	386+87.75	387+47.75	LT			60															
B2	89	388+53.86	389+30.00	RT	20												32		1	1		
R2	89	388+78.68	389+17.59	RT			40															
CR01	82	RAMP MF	344+00 ±	RT							8											
CR02	82	RAMP MF	344+00 ±	LT							8											
CR03	85	RAMP A	311+65 ±	LT						24												
CR04	85	RAMP A	311+65 ±	RT						24												
CR05	85	RAMP AR	311+16 ±	LT						24		12										
CR06	85	RAMP AR	310+90 ±	RT						24												
CR07	85	RAMP B	310+86 ±	LT						24												
CR08	85	311+28.00	310+86 ±	RT							8											
CR09	88	RAMP T / RIDGE	50+48 ±	RT							8											
CR10	88	RAMP T / RIDGE	50+70 ±	RT							8											
DR1	82	323+13.00	323+25.00	RT				1				12		1								
TOTALS CARRIED TO GENERAL SUMMARY					41		100	1		120	40	24		1			32	1	1	3		

CALCULATED JLG
CHECKED SCS

ROADWAY SUBSUMMARY

HAM-71-1.97

74
292

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REF. NO.	SHEET NO.	ALIGNMENT	STATION FROM	STATION TO	SIDE			202 GUARDRAIL REMOVED FT		202 ANCHOR ASSEMBLY REMOVED, TYPE E EACH	202 ANCHOR ASSEMBLY REMOVED, TYPE T EACH		202 BRIDGE TERMINAL ASSEMBLY REMOVED EACH	202 IMPACT ATTENUATOR REMOVED EACH		606 GUARDRAIL, TYPE MGS FT	606 GUARDRAIL, TYPE MGS HALF POST SPACING FT	606 ANCHOR ASSEMBLY, MGS TYPE E EACH	606 ANCHOR ASSEMBLY, MGS TYPE T EACH	606 MGS BRIDGE TERMINAL ASSEMBLY, TYPE 1 EACH	606 MGS BRIDGE TERMINAL ASSEMBLY, TYPE 2 EACH	606 IMPACT ATTENUATOR, TYPE 3 (UNIDIRECTIONAL) EACH	620 DELINEATOR, MISC.; LINEAR DELINEATION SYSTEM FT	626 BARRIER REFLECTOR EACH
GR01	77	IR71 NB	122+20	124+08	LT			186					2			162.5				1	1			3
GR02	77	IR71 SB	123+25	125+38	LT			203					1			175.0				1	1			3
GR03	77	IR71 SB	122+84	125+38	RT			255					1			225.0				1	1			3
GR04	78	IR71 NB	165+28	167+49	RT			224			1		1			212.5			1		1			3
GR05	78	IR71 SB	173+56	178+48	LT			494		1			1			425.0		1		1				5
GR06	77-78	RAMP RB	180+78	188+38	RT			759					2			737.5				1	1			8
GR07	78	RAMP RD	179+48	180+76	RT			126			1		1			112.5			1		1			2
GR08	78	RAMP RD	180+07	182+50	LT			224			1		1			212.5			1		1			3
GR09	77-78	IR71 NB	181+28	184+42	RT			312			1		1			300.0			1		1			4
GR10	79	IR71 SB	184+41	185+16	LT			162			1		1			150.0			1		1			3
GR11	79	RAMP RF	183+53	185+56	RT			203		1	1					112.5	25.0	1	1					2
GR12	79	RAMP RD	185+17	185+43	RT			125		1			1			50.0		1		1				2
GR101	79	RAMP RE	184+94	187+37	RT											175.0		1	1					3
GR13	79	RAMP RC	188+07	193+68	RT			535			1			1		512.5			1			1		6
GR14	79	RAMP RE	188+31	192+94	LT			468			1					450.0			1					6
GR15	79	RAMP RB	192+14	193+47	RT			136		1			1			62.5		1		1				2
GR16	79	RAMP RB	188+46	188+82	RT			37			1		1			25.0			1		1			1
GR17	79	RAMP RF	188+49	189+22	LT			73			1		1			62.5			1		1			2
GR18	79	RAMP RF	187+60	192+99	RT			537		1	1					450.0	25.0	1	1					6
GR19	79	READING	27+05	31+52	LT			447			1		1			412.5	25.0		1		1			5
GR20	79	RAMP RA	195+57	200+58	LT			355		1			1			425.0		1		1				5
GR21	79	IR71 NB	199+25	204+31	RT			511			1		1			500.0			1		1			6
GR22	79	IR71 NB	208+38	211+11	RT			228		1	1					212.5		1	1					3
GR23	80	IR71 NB	215+66	217+69	RT			203		1	1					137.5		1	1					2
GR102	81	IR71 SB	314+68	316+41	LT											112.5		1	1					2
GR24	82	IR71 NB	320+87	323+41	RT			255		1	1					162.5	25.0	1	1					3
GR25	82	RAMP ME	324+90	326+28	LT			139		1			1			62.5		1		1				2
GR26	82	IR71 SB	323+96	323+36	LT			240		1	1					175.0		1	1					3
GR27	82	IR71 NB	331+50	333+78	RT			228		1	1					162.5		1	1					3
GR28	82	IR71 SB	331+92	333+80	LT			128		1	1					125.0		1	1					2
GR29	83	IR71 NB	351+92	354+16	RT			228		1	1					162.5		1	1					3
GR30	83	IR71 SB	353+78	374+06	LT			1973		1	1					1912.5		1	1					20
GR31	83	IR71 NB	372+87	374+60	RT			156		1			1			100.0		1		1				2
GR32	83	RAMP DB	382+69	383+66	LT			106		1			1			37.5		1		1				1
GR33	83-84	IR71 SB	375+34	380+32	LT			497					2			475.0				1	1			6
GR34	84	RMP DE / 71	377+72	292+79	LT			1729					2			1700.0				1	1			18
GR35	84	IR71 SB	381+27	383+30	LT			206		1			1			125.0		1		1				2
GR36	84	IR71 NB	379+56	381+95	RT			203		1	1					175.0		1	1					3
GR37	84	RAMP DC	380+08	382+00	RT			192		1			1			125.0		1		1				2
GR38	84	IR71 NB	293+49	294+79	LT			131		1			1			50.0		1		1				2
GR39	84-85	IR71 SB / A	293+26	309+24	LT			1592		1			1			1487.5	25.0	1		1				16
GR40	84-85	IR71 NB / B	295+31	305+02	RT			972					2			925.0	25.0			1	1			10
GR41	85	IR71 NB	309+35	310+38	RT			106		1			1			37.5		1		1				1
GR42	85	IR71 SB	311+59	314+52	LT			283		1			1			212.5		1		1				3
GR43	85	IR71 NB	319+89	320+84	RT			97		1			1			25.0		1		1				1
GR44	85	IR71 SB	321+68	322+89	LT			128		1			1			50.0		1		1				2
GR45	85	RAMP D	321+50	326+78	LT			528		1	1					462.5		1	1					6
GR46	85	IR71 NB	326+71	329+13	RT			215		1	1					175.0		1	1					3
GR47	85	IR71 SB	328+69	330+72	LT			208		1			1			137.5		1		1				2
GR48	86	IR71 NB	337+73	340+00	RT			231		1			1			162.5		1		1				3
GR49	86	IR71 SB	342+62	346+37	LT			370		1			1			300.0		1		1				4
GR50	86	IR71 NB	346+11	351+10	RT			506		1			1			412.5	25.0	1		1				5
GR51	86	IR71 SB	347+78	350+69	LT			286			1		1			275.0			1		1			4
GR52	86	IR71 SB	352+15	356+20	LT			405		1			1			337.5		1		1				4
GR53	86-87	IR71 NB	358+43	362+27	RT			376					2			337.5	25.0			1	1			4
TOTALS THIS SHEET								19517		33	25		44	1		17300.0	200.0	35	27	28	18	1		230

CALCULATED JLG
CHECKED SCS

ROADWAY SUBSUMMARY

HAM-71-1.97

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REF. NO.	SHEET NO.	ALIGNMENT	STATION FROM	STATION TO	SIDE			202 GUARDRAIL REMOVED		202 ANCHOR ASSEMBLY REMOVED, TYPE E	202 ANCHOR ASSEMBLY REMOVED, TYPE T		202 BRIDGE TERMINAL ASSEMBLY REMOVED	202 IMPACT ATTENUATOR REMOVED		606 GUARDRAIL, TYPE MGS	606 GUARDRAIL, TYPE MGS HALF POST SPACING	606 ANCHOR ASSEMBLY, MGS TYPE E	606 ANCHOR ASSEMBLY, MGS TYPE T	606 MGS BRIDGE TERMINAL ASSEMBLY, TYPE 1	606 MGS BRIDGE TERMINAL ASSEMBLY, TYPE 2	606 IMPACT ATTENUATOR, TYPE 3 (UNIDIRECTIONAL)	620 DELINEATOR, MISC.; LINEAR DELINEATION SYSTEM	626 BARRIER REFLECTOR
								FT		EACH	EACH		EACH	EACH		FT	FT	EACH	EACH	EACH	EACH	EACH	FT	EACH
GR54	87	IR71 SB	371+45	373+02	LT			162			1		1			150.0			1		1			3
GR55	87	IR71 SB	363+45	373+48	RT			997					2			975.0				1	1			11
GR56	87	IR71 NB	362+75	371+03	LT			833			1		1			800.0	25.0		1		1			9
GR57	87	IR71 NB	366+46	369+76	RT			318		1			1			250.0		1		1				4
GR64	87	IR71 SB	379+25	380+22	LT			100					2			75.0				1	1			2
GR65	87	IR71 NB	377+36	378+41	LT			105		1			1			37.5		1		1				1
GR66	87	IR71SB	377+29	378+98	RT			167		1			1			100.0		1		1				2
GR67	87	IR71 NB	380+02	380+90	RT			104			1		1			100.0			1		1			2
GR68	87-88	IR71SB	380+74	382+40	LT			168		1			1			100.0		1		1				2
GR69	87-88	71SB / H	380+26	2+10	RT			683					2			662.5				1	1			8
GR74	88	I / 71SB	12+43	393+67	LT			809		1			1			737.5		1		1				8
GR75	88	IR71SB	386+50	398+96	RT			1249			1		1			1225.0			1		1			13
GR76	88	IR71 NB	395+19	398+02	LT			281		1			1			212.5		1		1				3
GR77	88	IR71 NB	393+03	398+08	RT			519		1			1			450.0		1		1				6
GR78	88	IR71 NB	382+55	384+17	LT			162		1			1			100.0		1		1				2
GR103	88	IR71 NB	385+93	388+54	RT			281		1			1			187.5		1		1				3
END 71 NB / 71 SB MAINLINE QUANTITIES																								
BEGIN SR 562 RAMP QUANTITIES																								
GR104	87	RAMP E	10+50	12+00	LT																		150	
GR58	87	RAMP E	10+65	364+84	RT			646		1			1			575.0		1		1				7
GR59	87	RAMP J	14+26	18+46	RT			420			1		1			412.5			1		1			5
GR60	87	RAMP K	14+25	15+25	RT			100			1		1			87.5			1					2
GR60	87	RAMP J	14+00	24+05	LT			981			1			1		975.0			1			1		11
GR61	87	RAMP K	19+38	22+54	RT			305		1			1			375.0		1		1				5
GR62	87	RAMP L	21+30	23+11	LT			187			1		1			175.0			1		1			3
GR63	87	RAMP J	21+23	24+26	RT			303		1	1					250.0		1	1					4
GR70	87	RAMP K/T	26+09	28+66	RT			160			1		1			150.0			1		1			3
GR71	87-88	RAMP L/T	26+48	32+61	LT			499		1			1			425.0		1		1				5
GR72	87-88	RAMP F/T	10+41	34+62	RT			768		1			1			700.0		1		1				8
GR73	88	RAMP I	10+10	11+99	LT			189					2			162.5				1	1			3
GR79	88	RAMP H1	1+43	2+40	LT			100			1		1			87.5			1		1			2
GR80	88	RAMP H2	6+95	11+55	LT			456		1			1			387.5		1		1				5
GR81	88	RAMP H2	6+75	8+99	RT			230		1			1			162.5		1		1				3
GR82	88	71NB / G	381+12	1+76	RT			335			1		1			275.0			1	1				4
GR105	88	RAMP G	4+05	5+45	LT																		150	
GR83	88	RAMP G	2+46	5+31	RT			278					2			250.0				1	1			4
GR84	88	RAMP G	6+19	6+78	RL			58			1		1			50.0			1		1			2
GR85	88	RAMP G	6+24	7+18	LT			103			1		1			100.0			1		1			2
GR86	88	RAMP M	3+74	5+18	LT			164			2					137.5			2					2
GR87	88	RAMP H	16+03	17+81	RT			178					2			150.0				1	1			3
GR88	88	RAMP H1	5+77	7+49	RT			173					2			150.0				1	1			3
GR89	88	RAMP H3	19+80	23+89	RT			406		1			1			337.5		1		1				4
GR90	88	RAMP H3	19+79	26+05	LT			644		1			1			575.0		1		1				7
GR105	88	RAMP T	47+75	48+75	RT											100.0		1	1					2
TOTALS FROM PREVIOUS SHEET								19517		33	25		44	1		17300.0	200.0	35	27	28	18	1		230
71 NB / 71 SB MAINLINE TOTALS THIS SHEET								6938		9	4		19			6162.5	25.0	9	4	12	7			79
SUBTOTALS (01/IMS/PV)								26455		42	29		63	1		23462.5	225.0	44	31	40	25	1		309
SR 562 RAMP ONLY SUBTOTALS (02/NHS/PV)								7683		9	12		24	1		7050.0		10	13	13	10	1	300	99
TOTALS CARRIED TO GENERAL SUMMARY								34138		51	41		87	2		30512.5	225.0	54	44	53	35	2	300	408

CALCULATED JLG
CHECKED SCS

ROADWAY SUBSUMMARY

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LEGEND

PLANE AND PAVE 4 1/4" LIMITS (MAINLINE)
RAMP PLANE (3") AND PAVE (3 1/4") LIMITS
LYTLE TUNNEL PLANE (3") AND PAVE (3 1/4") LIMITS
HIGH FRICTION SURFACE COURSE

PVTR = PAVEMENT TRANSITION

* = MEET EXISTING WITH BUTT JOINT PER BP-3.1

CROSS REFERENCES	
SHEET NO	DESCRIPTION
7 - 10	TYPICAL SECTIONS
251 - 292	STRUCTURE PLANS

BEGIN PLANE & RESURFACING
IR 71 NB STA 121+94*

BEGIN PLANE & RESURFACING
IR 71 NB STA 122+29 (RAMP K)*

BEGIN PLANE & RESURFACING
RAMP E STA 123+70*

BEGIN PLANE & RESURFACING
IR 71 SB STA 123+11*

BEGIN PLANE & RESURFACING
LYTLE TUNNEL

IR 71 NB STA 135+64.20,*
END PLANE & RESURFACING
SUSPEND HAM-71-1.97,
MEET HAM-71-1.59

EQUATION:
STA 142+27.27 ℄ IR 71 SB BK =
STA 144+15.70 ℄ IR 71 NB BK =
STA 144+15.70 ℄ IR 71 AH

BROADWAY ST
E 3RD ST
E 4TH ST
E 5TH ST
E 6TH ST
CULVERT ST
EGGLESTON AVE
COLUMBIA PARKWAY
US 50
SB GILBERT AVE
NB GILBERT AVE
GR01
GR02
GR03
LYTLE TUNNEL
RAMP K
RAMP E
RAMP B
IR 71 SB
IR 71 NB
℄ IR 71
℄ IR 71 SB
℄ IR 71 NB
℄ RAMP IR 471 SB
℄ RAMP IR 471 NB
IR 471 SB
NB IR 471
HAM-71-0159
HAM-71-0160
HAM-71-0154
OVER IR 71
HAM-71-0158
BRIDGE
120
125
130
135
140
145
150

N

HORIZONTAL SCALE IN FEET
0 50 100 200

CALCULATED JLG
CHECKED SCS

PLAN - IR 71
BEGIN PROJECT TO 153+08.87

HAM-71-1.97

7.7
292

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HAM-71-0197N

BEGIN PROJECT
STA 159+40.79
SLM 1.97

HAM-71-0197W

HAM-71-0197

HAM-22-0145

HAM-71-0207
(NO WORK)

HAM-42-0235R
NO WORK

HAM-71-0233
NO WORK

HAM-71-0226
NO WORK

HAM-71-0231
ABANDONED R/R BRIDGE
NO WORK

EQUATION:
STA 335+87.27 NB BK=
STA 156+40.79 NB AH

EQUATION:
STA 166+12.27 ℄ BK=
STA 166+12.27 NB AH
STA 166+12.27 SB AH

EQUATION:
STA 181+50.00 NB BK=
STA 181+50.00 NB AH

STA 157+05.00 RAMP GD
BEGIN PLANE & RESURFACING *

STA 181+98 RAMP RB
BEGIN PLANE & RESURFACING *

STA 20+56.50 *
BEGIN NB READING RD
RAMP PLANE & RESURFACING

STA 183+00 SB IR 71
MATCH LINE

STA 182+07.04 NB IR 71
BEGIN PLANE & RESURFACING
RAMP RC

STA 162+71.24
END APPROACH SLAB
BEGIN PLANE & RESURFACING

STA 164+08.74
END EXISTING FULL DEPTH ASPHALT

STA 168+65.00 RAMP GD
END PLANE & RESURFACING

STA 179+41.73 RAMP RD
BEGIN PLANE & RESURFACING

℄ RAMP GF
℄ RAMP GG1
℄ RAMP GG2
℄ RAMP GD
℄ RAMP GA1
℄ RAMP GA2
℄ RAMP RB
℄ RAMP RC
℄ RAMP RD
℄ IR 71
℄ IR 471 SB
℄ IR 471 NB
℄ IR 71 SB
℄ IR 71 NB

LIBERTY STREET
GILBERT AVE
⇐ SB GILBERT AVE
NB GILBERT AVE ⇒
TO LIBERTY STREET
VAN METER AVE
NB READING ROAD
15 ℄ READING RD
ELSINORE AVE
TO IR 71 NB
TO IR 71 NB

GR04
GR05
GR06
GR07
GR08
GR09

CROSS REFERENCES	
SHEET NO	DESCRIPTION
7 - 10	TYPICAL SECTIONS
77	LEGEND
89-96	CONCRETE BARRIER DETAILS
251 - 292	STRUCTURE PLANS

HORIZONTAL SCALE IN FEET
0 50 100 200

CALCULATED JLG
CHECKED SCS

PLAN - IR 71
STA 153+08.87 TO STA 183+00.00

HAM-71-1.97

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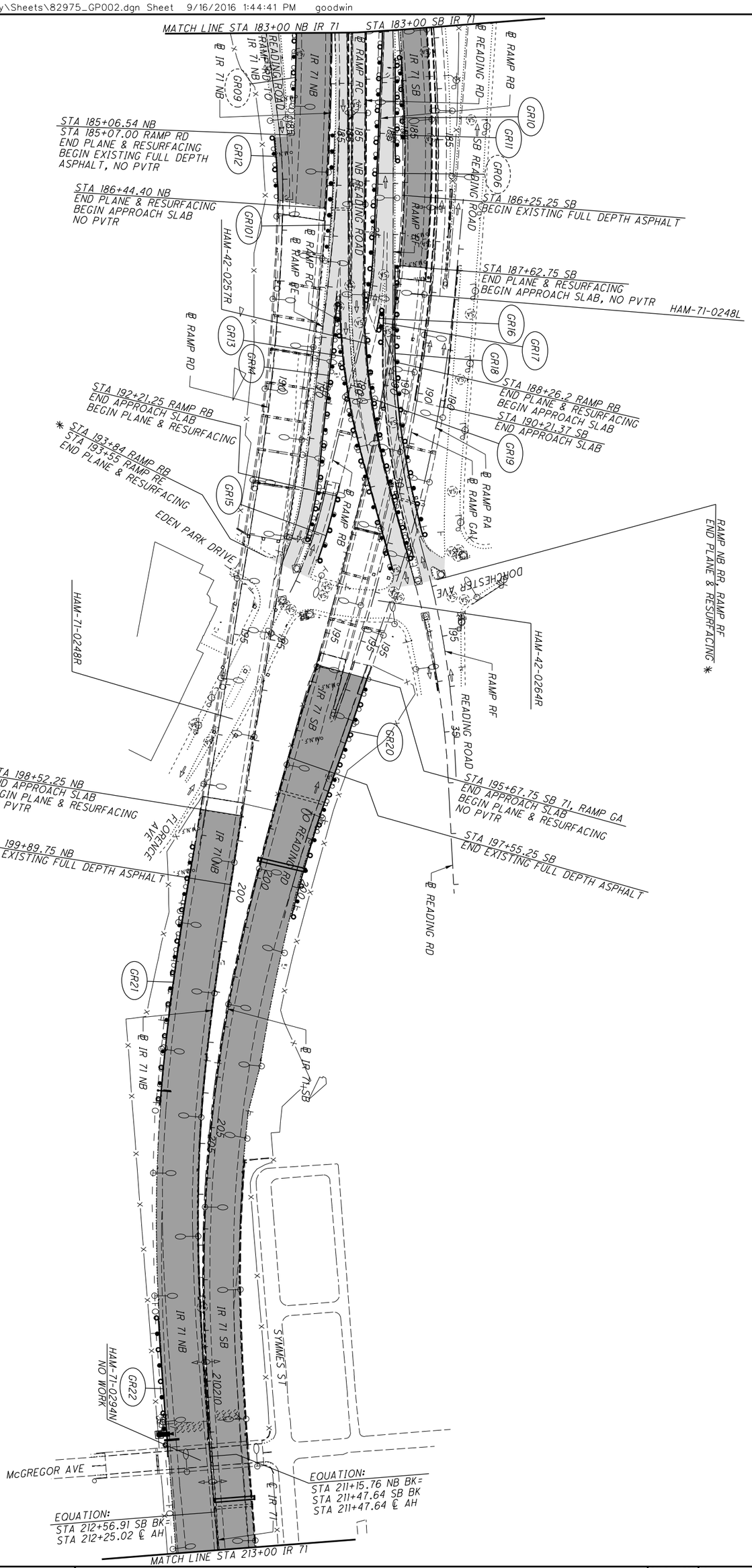


CROSS REFERENCES	
SHEET NO	DESCRIPTION
7 -10	TYPICAL SECTIONS
77	LEGEND
103-235	TRAFFIC PLANS
251 - 292	STRUCTURE PLANS

79
292

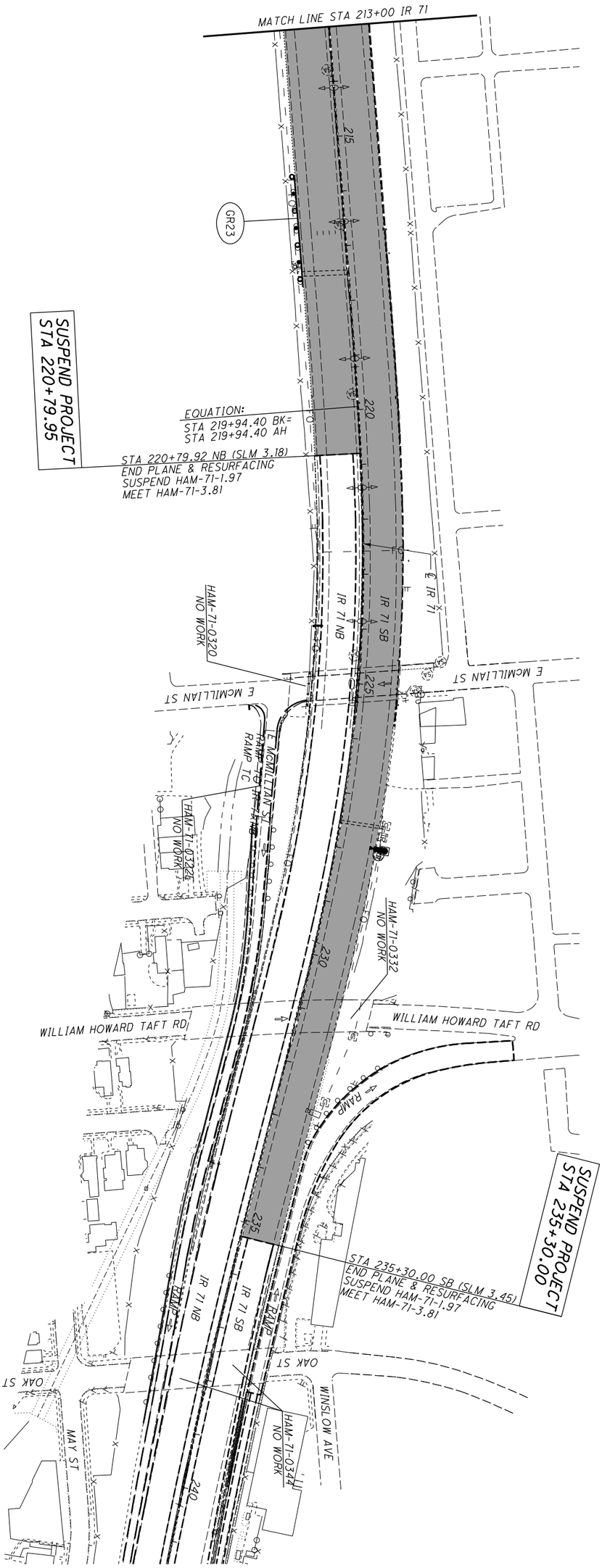
HAM-71-1.97

PLAN - IR 71
STA 183+00 TO STA 213+00

CALCULATED JLG
CHECKED SCS

0 50 100 200
HORIZONTAL SCALE IN FEET

N



CROSS REFERENCES	
SHEET NO	DESCRIPTION
7 -10	TYPICAL SECTIONS
77	LEGEND

HAM-71-1.97

PLAN - IR 71
STA 213+00.00 TO SUSPEND WORK

CALCULATED JLG
CHECKED SCS

0 50 100 200
HORIZONTAL SCALE IN FEET

N

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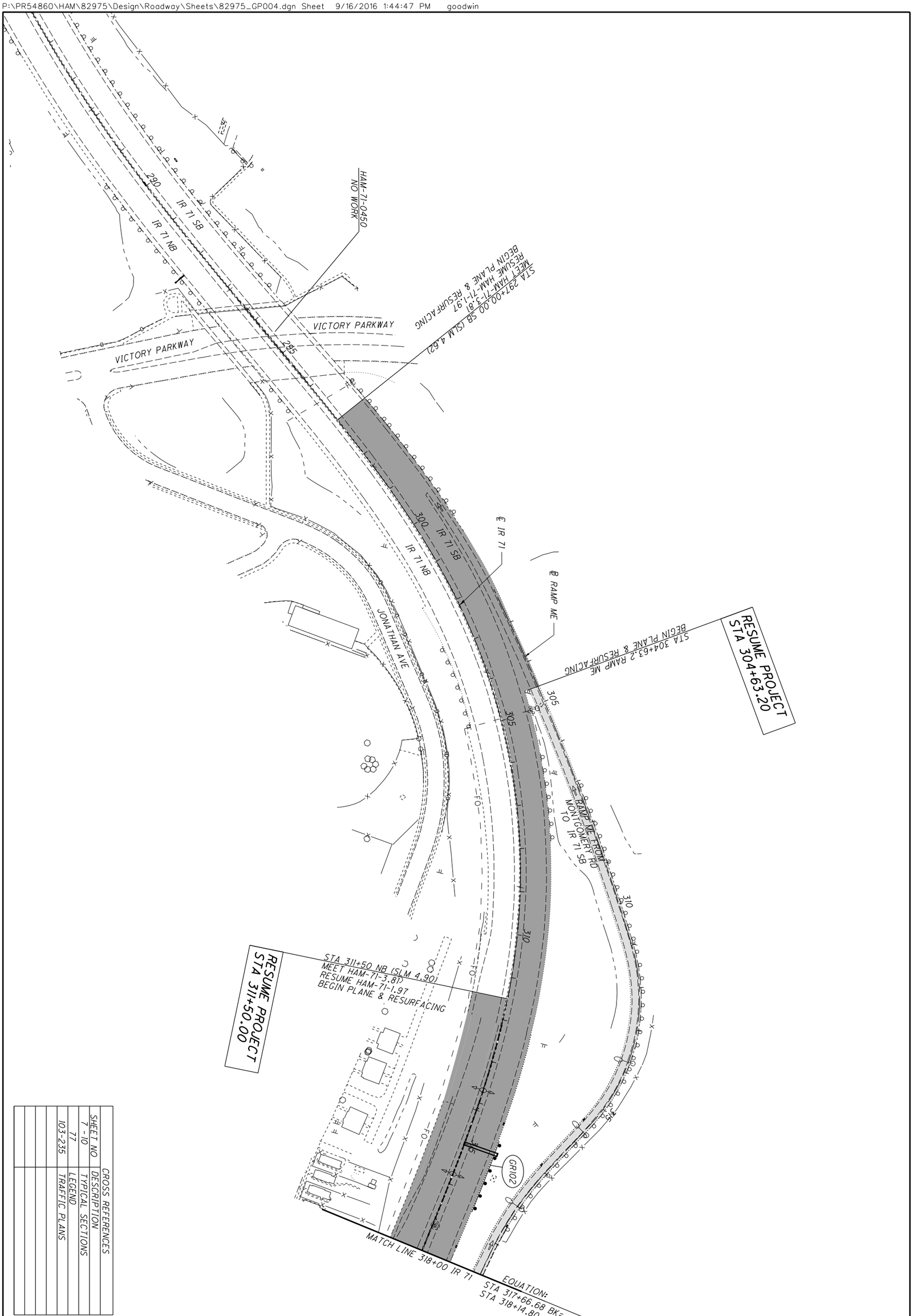

CROSS REFERENCES	
DESCRIPTION	SHEET NO
TYPICAL SECTIONS	7 - 10
LEGEND	77
TRAFFIC PLANS	103-235

81
292

HAM-71-1.97

PLAN - IR 71
RESUME WORK TO STA 318+00.00

CALCULATED JLG
CHECKED SCS

0 50 100 200
HORIZONTAL SCALE IN FEET

N

EQUATION:
STA 317+66.68 BK=
STA 318+14.80 AH

MATCH LINE 318+00 IR 71

BREWSTER AVE

WOODBURN AVE

HAM-71-0505
NO WORK

GR25

GR26

℄ IR 71

℄ RAMP ME

GR28

STA 337+60 RAMP ME *
END PLANE & RESURFACING

MONTGOMERY RD (US 22)

HAM-71-0551
NO WORK

TRIMBLE AVE

RAMP ME TO IR 71 SB

320 325 330 335 340 345

IR 71 SB

IR 71 NB

SLOPE REPAIR LIMITS

GR24

GR27

HAM-22-0446

JONATHAN AVE

340 TO DUCK CREEK RD

℄ RAMP MF

STA 337+80 RAMP MF
BEGIN PLANE & RESURFACING

* STA 344+06 RAMP MF
END PLANE & RESURFACING

DUCK CREEK RD

CR01

CR02

DR1
EX CB3 TO BE REPLACED
EX GRATE 699.00
15" INV 696.08

MATCH LINE 348+00 IR 71

CROSS REFERENCES	
SHEET NO	DESCRIPTION
7 - 10	TYPICAL SECTIONS
77	LEGEND
97-102	SLOPE REPAIR
251 - 292	STRUCTURE PLANS

HORIZONTAL SCALE IN FEET
0 50 100 200

CALCULATED JLG
CHECKED SCS

PLAN - IR 71
STA 318+00 TO STA 348+00

HAM-71-1.97

82
292

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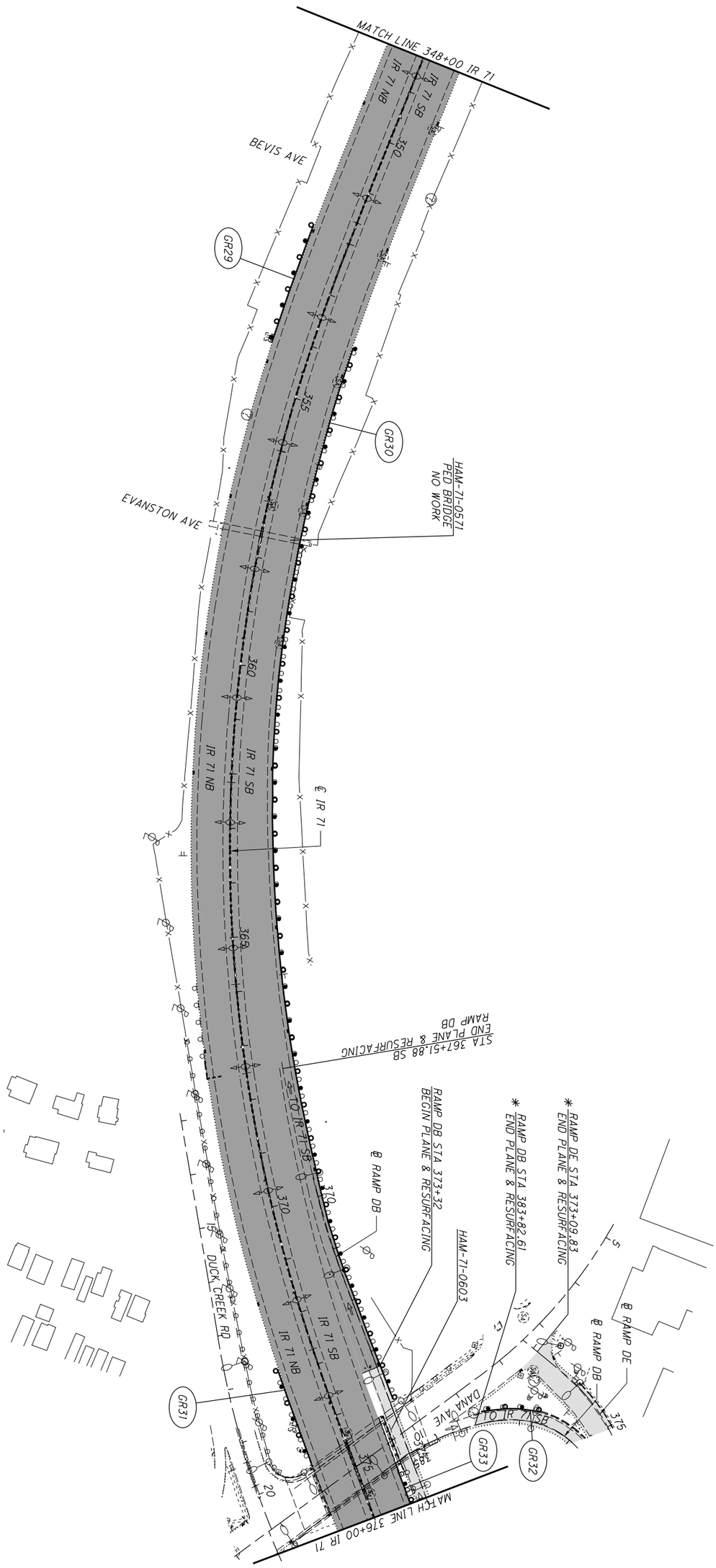
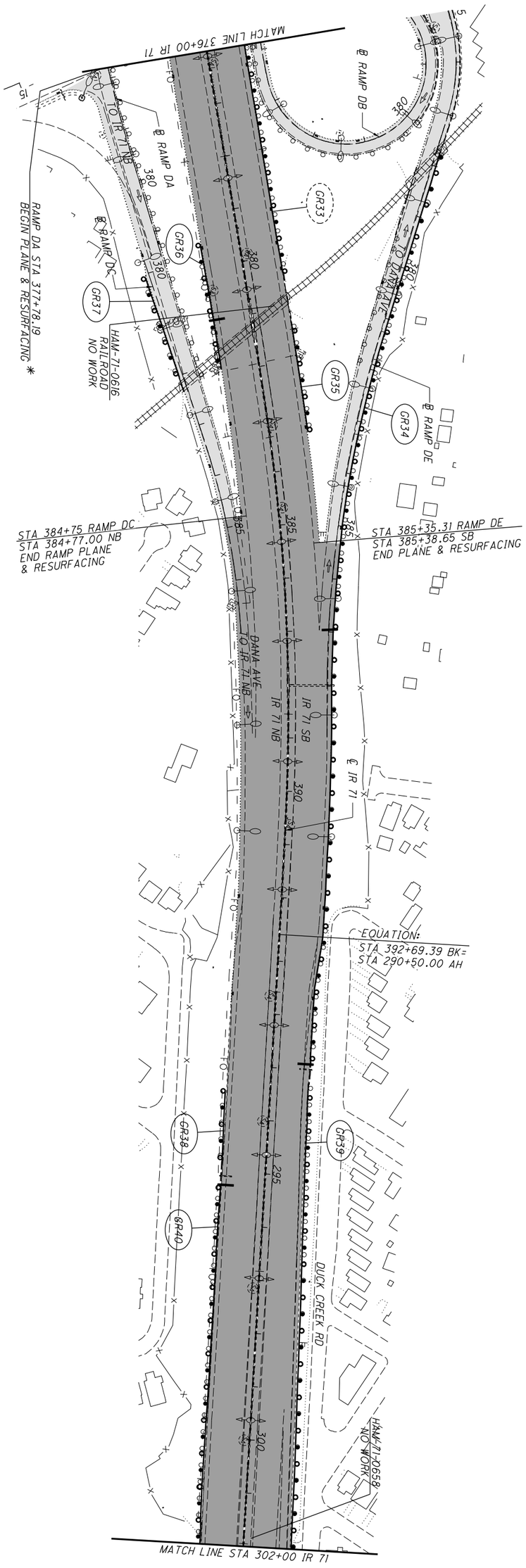


CROSS REFERENCES	
SHEET NO	DESCRIPTION
7 - 10	TYPICAL SECTIONS
77	LEGEND
251 - 292	STRUCTURE PLANS

83 / 292	HAM-71-1.97	PLAN - IR 71 STA 348+00 TO STA 376+00

CALCULATED JLG
CHECKED SCS
0 50 100 200
HORIZONTAL SCALE IN FEET



CROSS REFERENCES

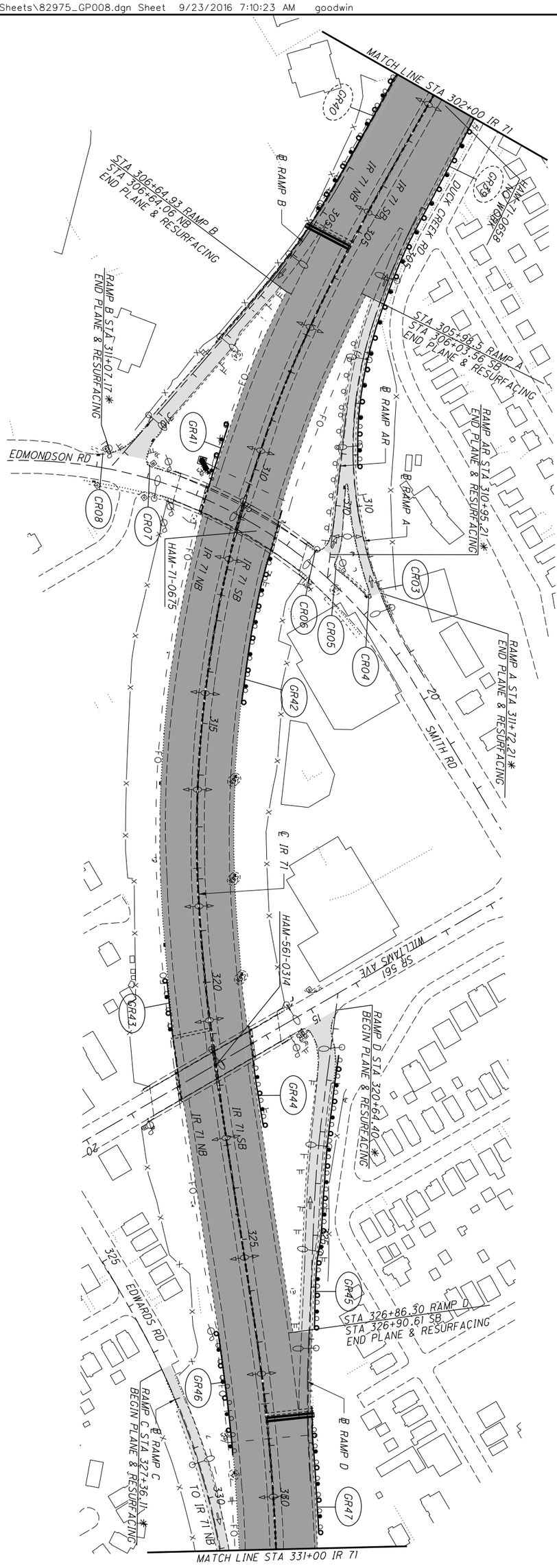
SHEET NO	DESCRIPTION
7 -10	TYPICAL SECTIONS
77	LEGEND

84 / 292	HAM-71-1.97	PLAN - IR 71 STA 376+00 TO STA 392+69.39BK STA 290+50 AH TO STA 302+00

CALCULATED JLG
CHECKED SCS

0 50 100 200
HORIZONTAL SCALE IN FEET

P:\PR54860\HAM\82975\Design\Roadway\Sheets\82975_GP008.dgn Sheet 9/23/2016 7:10:23 AM goodwin



CROSS REFERENCES	
SHEET NO	DESCRIPTION
7 -10	TYPICAL SECTIONS
77	LEGEND
251 - 292	STRUCTURE PLANS

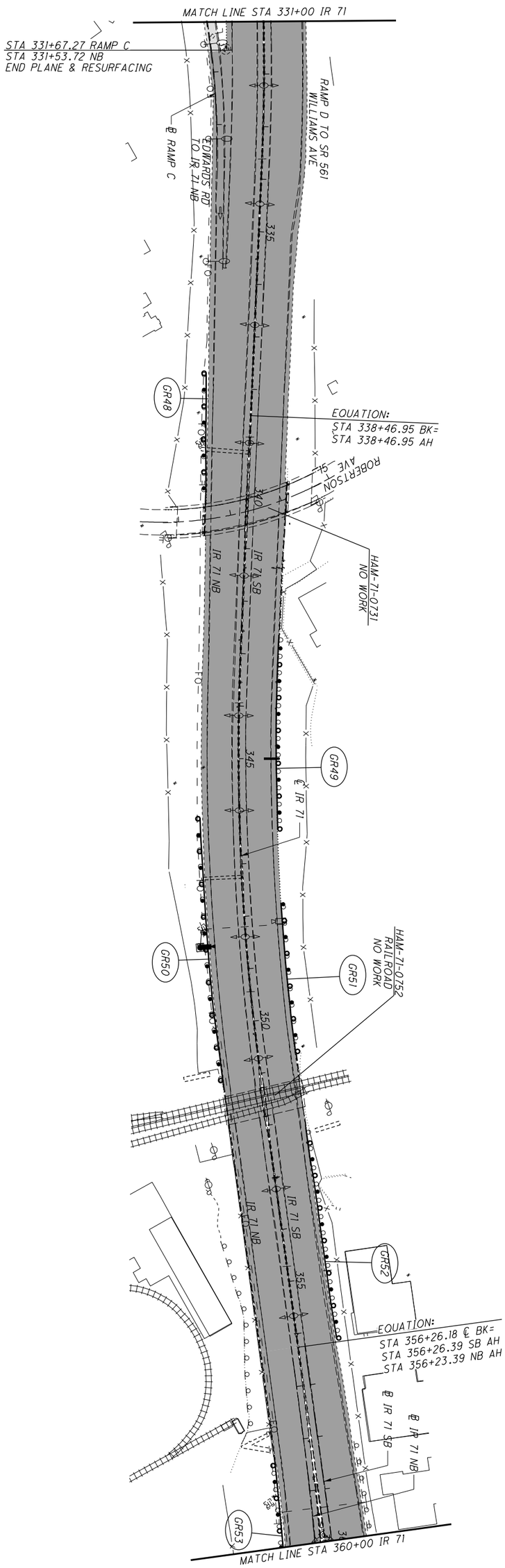
85
292

HAM-71-1.97

PLAN - IR 71
STA 302+00 TO STA 331+00

CALCULATED JLG
CHECKED SCS

0 50 100 200
HORIZONTAL SCALE IN FEET



CROSS REFERENCES	
SHEET NO	DESCRIPTION
7 -10	TYPICAL SECTIONS
77	LEGEND
251 - 292	STRUCTURE PLANS

HAM-71-1.97

PLAN - IR 71
STA 331+00 TO STA 360+00

CALCULATED JLG
CHECKED SCS

0 50 100 200
HORIZONTAL SCALE IN FEET

CROSS REFERENCES	
SHEET NO	DESCRIPTION
7 - 10	TYPICAL SECTIONS
77	LEGEND
251 - 292	STRUCTURE PLANS

HORIZONTAL SCALE IN FEET
0 50 100 200

CALCULATED JLG
CHECKED SCS

PLAN - IR 71
STA 360+00 TO STA 382+00

HAM-71-1.97

87
292

P:\PR54860\HAM\82975\Design\Roadway\Sheets\82975_GP010.dgn Sheet 9/23/2016 7:10:31 AM goodwin

END PROJECT
STA 398+96.35 (SB)
STA 398+01.73 (NB)
SLM 8.42

STA 398+96.35 SB * END SB PLANE & RESURFACING

HAM-71-0842
RAILROAD
NO WORK

RIDGE RD

STA 6+50.23 RAMP M *
END PLANE & RESURFACING

STA 7+38.29 RAMP H1
STA 17+68.12 RAMP H
END PLANE & RESURFACING

STA 398+01.73 NB * END PLANE & RESURFACING

DUCK CREEK RD

HAM-71-0843S

STA 19+89.04 RAMP H3
BEGIN PLANE & RESURFACING

STA 24+06.54 RAMP H3 *
END PLANE & RESURFACING

RAMP T
END PLANE & RESURFACING

STA 50+98.81 RAMP T *
END PLANE & RESURFACING

RAMP T *
END PLANE & RESURFACING

STA 6+63.50 RAMP H
END STRUCURE HAM-71-08.22R
BEGIN PLANE & RESURFACING

STA 2+43.43 RAMP H
END PLANE & RESURFACING
BEGIN STRUCTURE HAM-71-08.22R

STA 383+32.88 SB
STA 0+89.69 RAMP H
END ML PLANE & RESURFACING
BEGIN RAMP H PLANE & RESURFACING

EQUATION:
STA 383+32.88 SB BK =
STA 383+32.88 SB AH

STA 383+32.88 SB
STA 10+39.12 RAMP I
END RAMP I PLANE & RESURFACING
BEGIN ML PLANE & RESURFACING

STA 5+23.92 RAMP G
END PLANE & RESURFACING
BEGIN APPROACH SLAB

STA 6+32.02 RAMP G
END APPROACH SLAB
BEGIN PLANE & RESURFACING

STA 385+50.00 NB
END ML PLANE & RESURFACING
BEGIN RAMP G PLANE & RESURFACING

STA 337+30.41 RAMP G
END RAMP G PLANE & RESURFACING

EQUATION:
STA 385+00.00 NB BK =
STA 385+00.00 LT NB AH
12.00

STA 4+07.00 RAMP U *
END PLANE & RESURFACING

MATCH LINE STA 382+00 SB IR 71
MATCH LINE STA 381+00 NB IR 71

RAMP I TO SR 562 WB

TO SR 562 WB

HAM-71-0822R
HAM-71-0820S

IR 71 SB
IR 71 NB

℄ RAMP I
℄ RAMP H
℄ RAMP G
℄ RAMP F
℄ RAMP M
℄ RAMP H1
℄ RAMP T
℄ RAMP U
℄ RAMP H3

GR68 GR73 GR74 GR75 GR76 GR77 GR78 GR79 GR80 GR81 GR82 GR83 GR84 GR85 GR86 GR87 GR88 GR89 GR90 GR69 GR71 GR72 GR105 GR103 CR09 CR10

MARBURG AVE

RIDGE RD

CROSS REFERENCES	
SHEET NO	DESCRIPTION
7 - 10	TYPICAL SECTIONS
77	LEGEND
89	BARRIER DETAILS
251 - 292	STRUCTURE PLANS

HORIZONTAL SCALE IN FEET
0 50 100 200

CALCULATED JLG
CHECKED SCS

PLAN - IR 71
STA 381+00.00 TO HAM71-8.42

HAM-71-1.97

88
292

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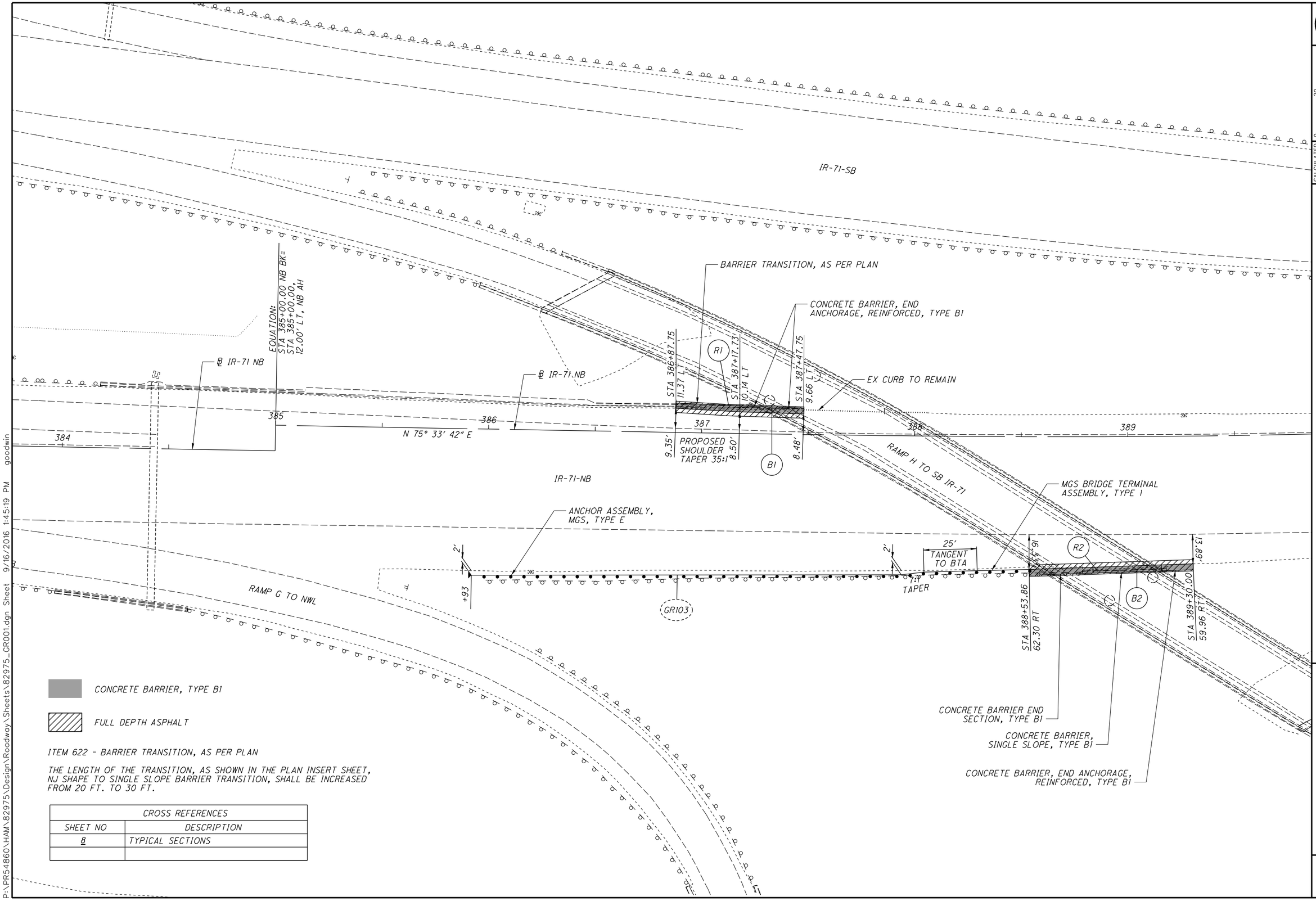


CONCRETE BARRIER, TYPE B1

FULL DEPTH ASPHALT

ITEM 622 - BARRIER TRANSITION, AS PER PLAN

THE LENGTH OF THE TRANSITION, AS SHOWN IN THE PLAN INSERT SHEET, NJ SHAPE TO SINGLE SLOPE BARRIER TRANSITION, SHALL BE INCREASED FROM 20 FT. TO 30 FT.

CROSS REFERENCES	
SHEET NO	DESCRIPTION
8	TYPICAL SECTIONS

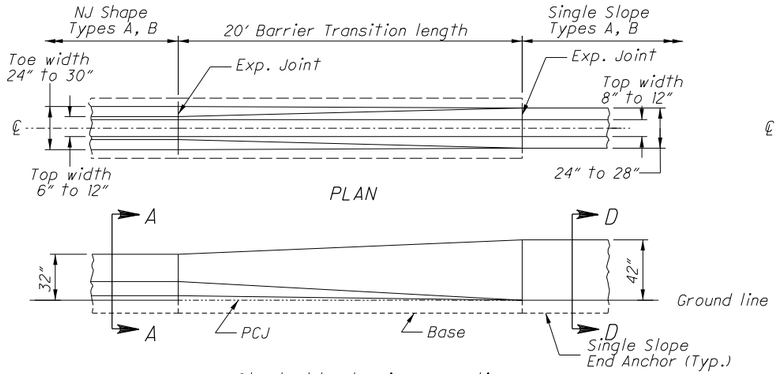
HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED JLG
CHECKED SCS

BARRIER DETAILS - IR 71 PLAN

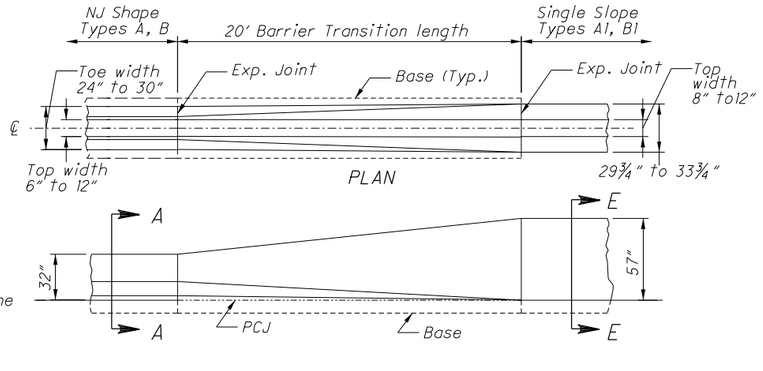
HAM-71-1.97

P:\PR54860\HAM\82975\Design\Roadway\Sheets\82975_GR001.dgn Sheet 9/16/2016 1:45:19 PM goodwin



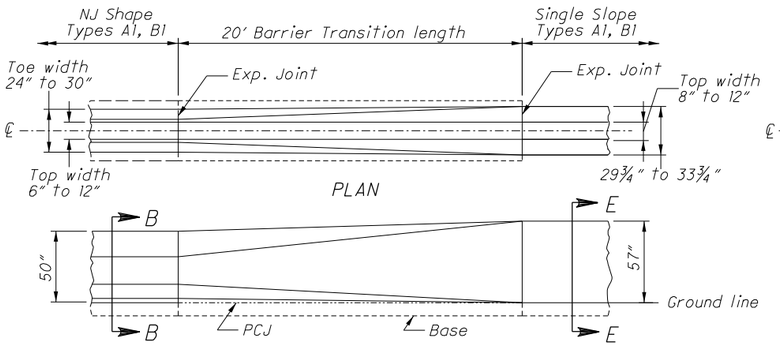
Standard low barrier connection

ELEVATION



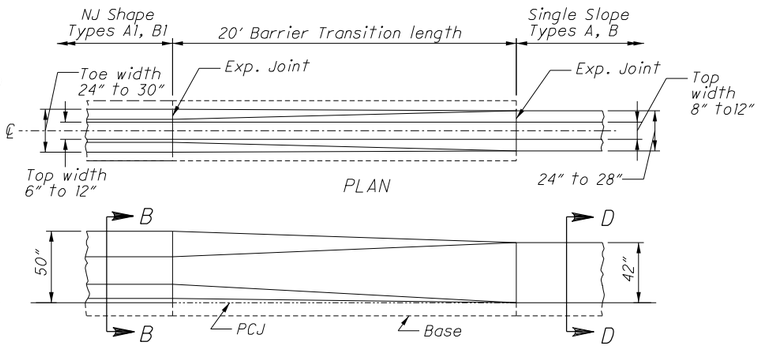
Atypical use

ELEVATION



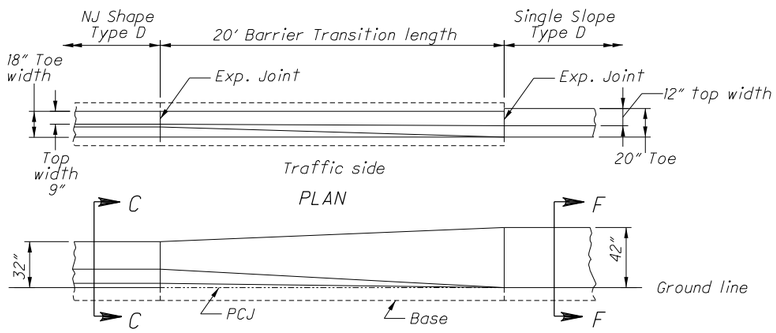
Standard tall barrier connection

ELEVATION



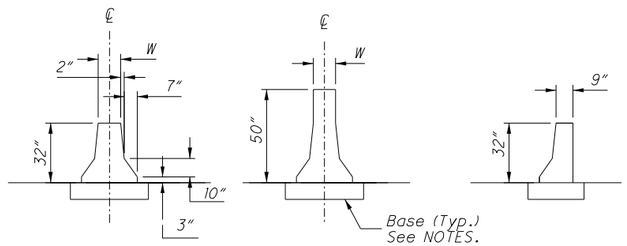
Atypical use

ELEVATION



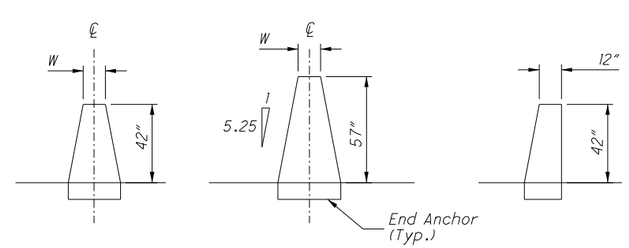
Standard Roadside barrier connection

ELEVATION



NJ SHAPE SECTIONS

See Plan Insert sheets for specific NJ Shape Concrete barrier details.



SINGLE SLOPE SECTIONS

See SCD RM-4.3 and RM-4.5 for specific Single Slope concrete barrier details.

NOTES

GENERAL: This insert details the Barrier Transition, to connect existing NJ Concrete Barrier (safety shape) to a new run of Single Slope Concrete Barrier at locations shown on the plans. For NJ barrier shape and other details see the respective plan insert sheets. For Single Slope barrier details, see SCD RM-4.3 (RM-4.5 for Type D).

ADJACENT CONCRETE BARRIER RUNS: Remove any tapered end sections, Impact attenuators, or other guardrail hardware from existing barrier end. The barrier to barrier transition is not intended to be used at transition sections (those shown on SCD RM-4.4), Inlets, or on Type C or C1 Barrier. If proposed adjacent single slope barrier is Type A or A1, the Barrier Transiton should contain horizontal reinforcing steel similiar to that required in the respective single slope barrier. Reinforcement is not shown and should be detailed separately. The adjacent single slope end should be terminated with a reinforced End Anchor as detailed on the SCDs.

BARRIER FACE TRANSITION: To prevent vehicle snagging, a smooth transition from the safety shape face to the single slope face is made over a 20' length. The actual shape of the Transition is dependent on both the adjacent NJ barrier and the single slope barrier Types, as detailed on the plans. The contractor and Engineer will agree on a construction method to ensure a smooth barrier face.

MATERIALS: Materials are same for those shown on RM-4.3 and RM-4.5, except that cast-in-place is the only acceptable method. Edges may be chamfered or radiused as shown on those drawings.

CONCRETE BASE: Construct base as shown on the NJ shape insert sheets, including the methods detailing the footing joint, Permissible Construction Joint (PCJ), and Dowelling requirements. The width of the base matches the existing NJ barrier.

JOINTS: Construct joints as shown on respective barrier drawings.

RACEWAYS: When specified, place raceway(s) to match raceway elevation in adjoining segments. Place to obtain maximum concrete cover.

METRIC UNITS: Refer to respective barrier drawings or inserts for metric dimensions.

PAYMENT: This Barrier Transiton shall include all material and labor needed to construct this 20' section, including any raceways, reinforcing steel, dowels and other necessary incidentals. Payment shall be made at the unit price for Item 622 - Barrier Transition, Each.

OFFICE OF ROADWAY ENGINEERING

DESIGNED . REVIEWED .

REVISION DATE 10/20/2006 CHECKED .

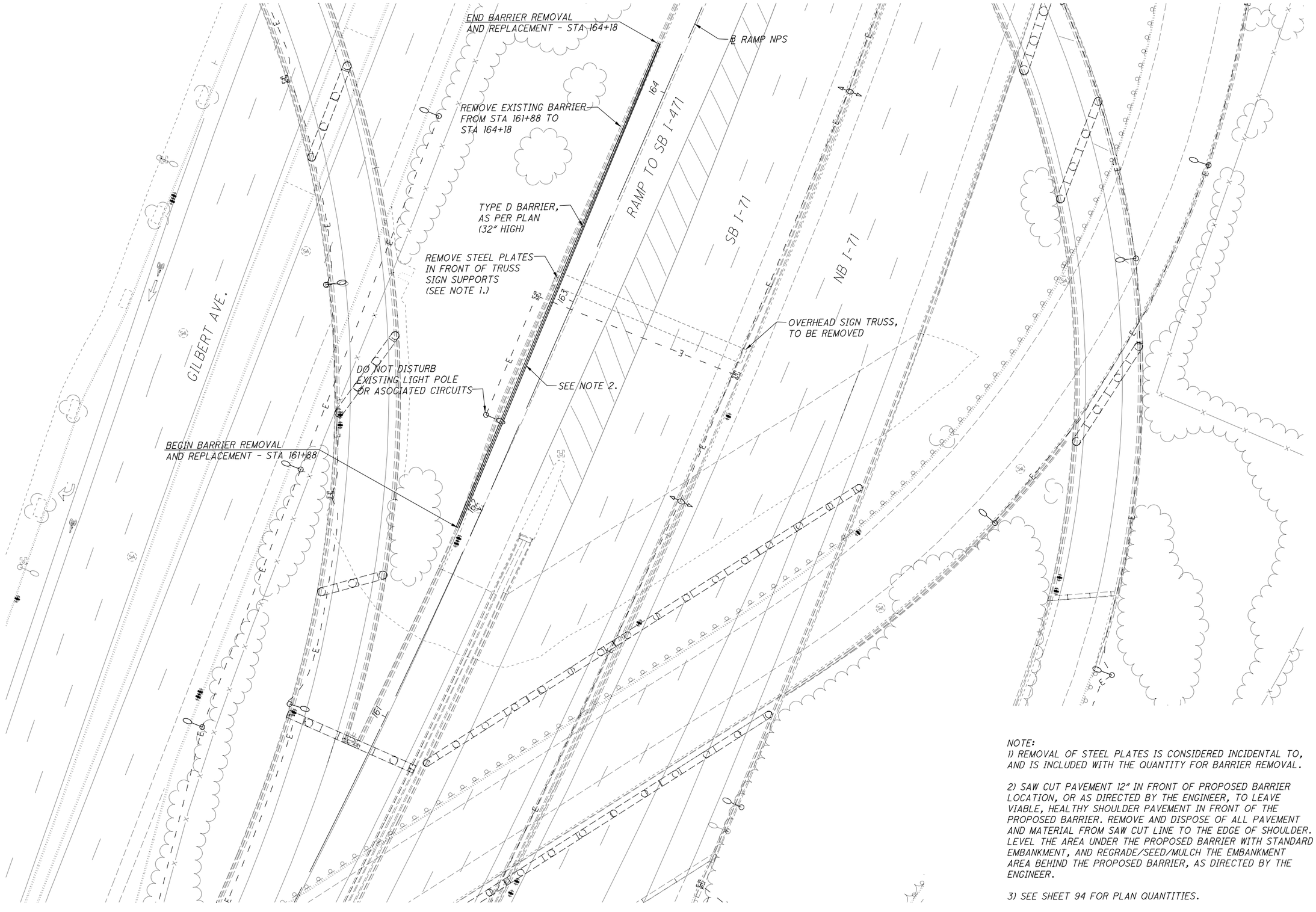
PLAN INSERT SHEET

NJ SHAPE TO SINGLE SLOPE BARRIER TRANSITION

HAM-71-1.97

1 / 1

90
292



NOTE:
1) REMOVAL OF STEEL PLATES IS CONSIDERED INCIDENTAL TO, AND IS INCLUDED WITH THE QUANTITY FOR BARRIER REMOVAL.

2) SAW CUT PAVEMENT 12" IN FRONT OF PROPOSED BARRIER LOCATION, OR AS DIRECTED BY THE ENGINEER, TO LEAVE VIABLE, HEALTHY SHOULDER PAVEMENT IN FRONT OF THE PROPOSED BARRIER. REMOVE AND DISPOSE OF ALL PAVEMENT AND MATERIAL FROM SAW CUT LINE TO THE EDGE OF SHOULDER. LEVEL THE AREA UNDER THE PROPOSED BARRIER WITH STANDARD EMBANKMENT, AND REGRADE/SEED/MULCH THE EMBANKMENT AREA BEHIND THE PROPOSED BARRIER, AS DIRECTED BY THE ENGINEER.

3) SEE SHEET 94 FOR PLAN QUANTITIES.

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED MJH
CHECKED KAE

BARRIER TRANSITION DETAIL
RAMP NPS - STA 161+88 TO STA 164+18

HAM-71-1.97

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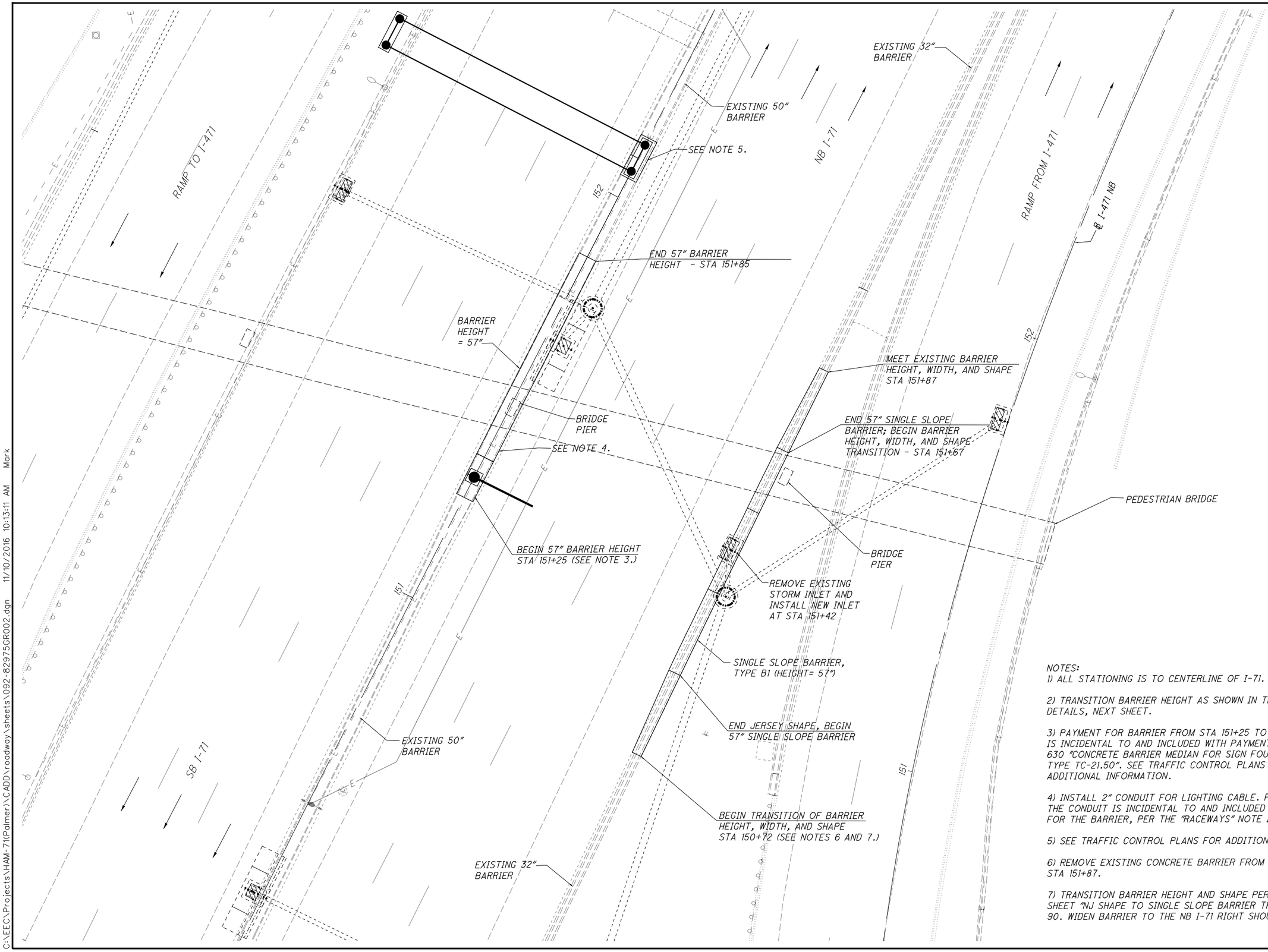

NOTES:

1) ALL STATIONING IS TO CENTERLINE OF I-71.

2) TRANSITION BARRIER HEIGHT AS SHOWN IN THE PLAN DETAILS, NEXT SHEET.

3) PAYMENT FOR BARRIER FROM STA 151+25 TO STA 151+35 IS INCIDENTAL TO AND INCLUDED WITH PAYMENT FOR ITEM 630 "CONCRETE BARRIER MEDIAN FOR SIGN FOUNDATION, TYPE TC-21.50". SEE TRAFFIC CONTROL PLANS FOR ADDITIONAL INFORMATION.

4) INSTALL 2" CONDUIT FOR LIGHTING CABLE. PAYMENT FOR THE CONDUIT IS INCIDENTAL TO AND INCLUDED WITH PAYMENT FOR THE BARRIER, PER THE "RACEWAYS" NOTE IN SCD RM-4.4.

5) SEE TRAFFIC CONTROL PLANS FOR ADDITIONAL INFORMATION.

6) REMOVE EXISTING CONCRETE BARRIER FROM STA 150+72 TO STA 151+87.

7) TRANSITION BARRIER HEIGHT AND SHAPE PER PLAN INSERT SHEET "NJ SHAPE TO SINGLE SLOPE BARRIER TRANSITION", SHEET 90. WIDEN BARRIER TO THE NB I-71 RIGHT SHOULDER SIDE, ONLY.

HORIZONTAL SCALE IN FEET
0 5 10 20

CALCULATED MJH
CHECKED KAE

BARRIER TRANSITION DETAIL
BARRIER FOR I-71 BRIDGE PIERS

HAM-71-1.97

92
292

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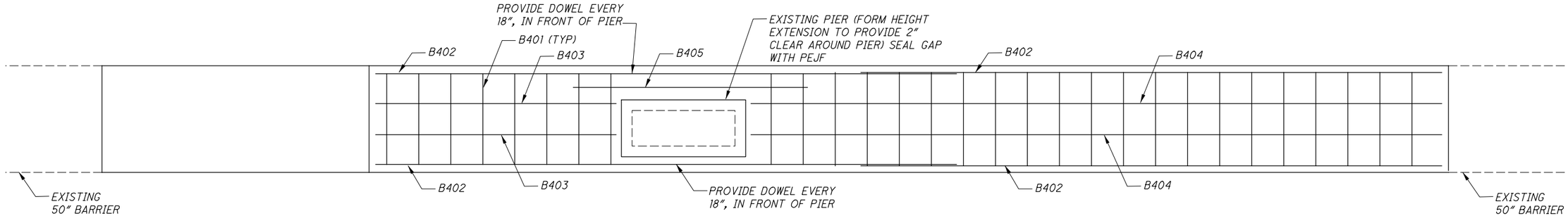
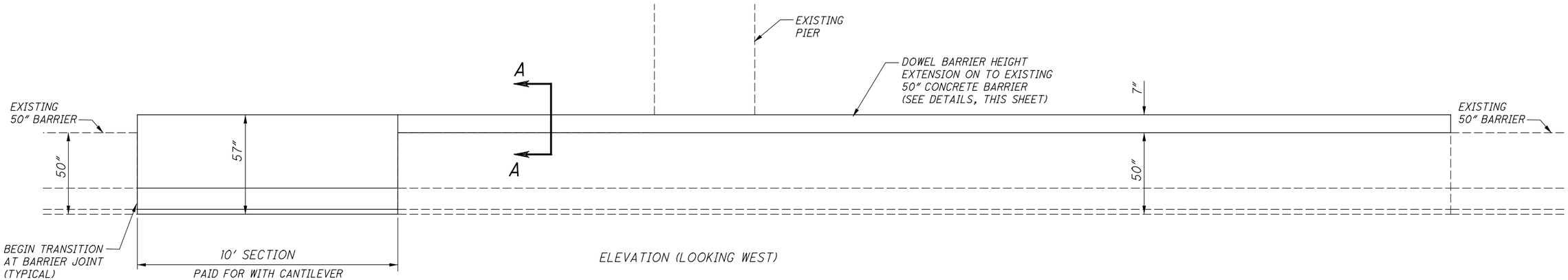
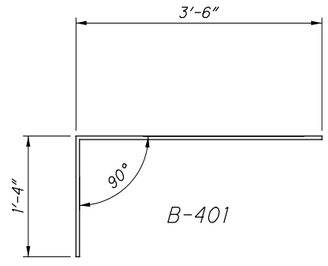
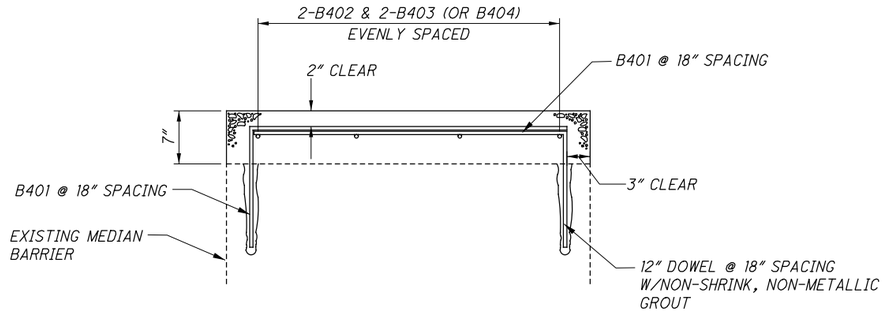


PLAN VIEW



ELEVATION (LOOKING WEST)





SECTION A-A

BAR MARK	NO. OF BAR	LENGTH OF BAR	WEIGHT
B401	58	4'-7"	178 LB
B402	4	27.5'	80 LB
B403	2	11.5'	15 LB
B404	2	32.5'	43 LB
B405	1	12'	8 LB

324 LB, TOTAL (FOR INFORMATION ONLY)

CALCULATED MJH CHECKED KAE

BARRIER HEIGHT EXTENSION DETAILS

HAM-71-1.97

93
292

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ITEM 202 - CONCRETE BARRIER REMOVED, AS PER PLAN

THIS ITEM SHALL CONSIST OF REMOVING A PORTION OF CONCRETE BARRIER, AS SHOWN IN THE PLAN ON SHEET 91. SAW CUTTING OF THE SHOULDER PAVEMENT AND REMOVAL AND DISPOSAL OF THE PAVEMENT FROM THE SAW CUT LINE TO THE EDGE OF SHOULDER SHALL BE INCLUDED WITH THIS ITEM. THE CONTRACTOR SHALL COMPLETE ALL WORK AS DIRECTED BY THE ENGINEER.

ITEM 622 - CONCRETE BARRIER TYPE D, AS PER PLAN

THIS ITEM SHALL CONSIST OF CONSTRUCTION OF A JERSEY SHAPED MEDIAN BARRIER (TYPE D) AS PER THE DETAILS SHOWN ON SHEET 234. THE BARRIER HEIGHT SHALL BE AS SPECIFIED IN THE PLANS.

REGRADING THE AREA IN PREPARATION FOR THE NEW BARRIER, RESTORATION (REPLACEMENT IN-KIND) OF THE SHOULDER PAVEMENT BETWEEN THE EDGE OF THE SAW CUT LINE, AND REGRADING/SEEDING/MULCHING OF THE AREA ADJACENT TO THE PROPOSED BARRIER SHALL BE CONSIDERED INCIDENTAL TO AND INCLUDED WITH THIS ITEM. THE CONTRACTOR SHALL COMPLETE ALL WORK AS DIRECTED BY THE ENGINEER.

ITEM 622 - BARRIER MISC.: EXTENSION OF BARRIER HEIGHT

THE CONTRACTOR SHALL EXTEND THE BARRIER HEIGHT ON THE CENTER I-71 MEDIAN BARRIER AS SHOWN ON SHEETS 92 AND 93, TO PROVIDE 57" HIGH BARRIER IN FRONT OF THE PEDESTRIAN BRIDGE PIER. THE CONTRACTOR IS ADVISED THAT THE TOP WIDTH OF THE BARRIER WILL VARY. THE CONTRACTOR SHALL PROVIDE THE BARRIER HEIGHT EXTENSION FOR THE FULL WIDTH OF THE TOP OF THE BARRIER. THE EXTENSION SHALL BE PROVIDED IN CONFORMANCE WITH THE PLAN DETAILS.

PAYMENT FOR THIS ITEM SHALL INCLUDE ALL LABOR, MATERIALS, AND INCIDENTALS REQUIRED TO RAISE THE HEIGHT OF THE BARRIER, IN PLACE AND ACCEPTED.

ITEM 622 - BARRIER MISC.: REPLACEMENT OF BARRIER FOR PIER PROTECTION

THE CONTRACTOR SHALL REMOVE THE EXISTING CONCRETE BARRIER ALONG THE RIGHT SHOULDER OF I-71, AND REPLACE IT WITH 57" TALL TYPE B1 SINGLE SLOPE BARRIER AS SHOWN ON SHEET 92, FOR PURPOSES OF IMPROVING PROTECTION AROUND THE PEDESTRIAN BRIDGE PIERS. THE WORK SHALL INCLUDE, BUT NOT BE LIMITED TO:

1) REMOVING A PORTION OF CONCRETE BARRIER, AS SHOWN IN THE PLAN.
2) SAW CUTTING OF THE SHOULDER PAVEMENT AND REMOVAL AND DISPOSAL OF THE PAVEMENT;
3) REMOVAL AND DISPOSAL OF THE EXISTING INLET AND CONDUIT (NOT REUSED);
4) INSTALLATION OF A NEW NO. 4 INLET, PER STANDARD DRAWING I-2.4, AND RECONNECTION OF THE EXITING OUTLET PIPE TO THE PROPOSED INLET;
5) INSTALLATION OF TYPE B1 BARRIER WITHIN THE LIMITS SHOWN IN THE PLAN, INCLUDING ALL APPLICABLE TRANSITIONS; AND,
6) RECONSTRUCTION OF THE SHOULDER IN THE VICINITY OF THE BARRIER, AS NECESSARY TO RESTORE A SMOOTH DRIVABLE SURFACE.

THE CONTRACTOR SHALL COMPLETE ALL WORK IN CONFORMANCE WITH APPLICABLE CM&S, STANDARD DRAWING, AND PLAN DETAILS, AS DIRECTED BY THE ENGINEER.

PAYMENT FOR THIS ITEM SHALL INCLUDE ALL LABOR, MATERIALS, AND INCIDENTALS REQUIRED TO REMOVE AND REPLACE THE BARRIER AS SHOWN IN THE PLAN, IN PLACE AND ACCEPTED.

QUANTITIES TO GENERAL SUMMARY (ROADWAY SECTION)

ITEM	DESCRIPTION	QUANTITIES FROM SHEET:			TOTAL
		91	92		
202	CONCRETE BARRIER REMOVED		10		10 FT
202	CONCRETE BARRIER REMOVED, AS PER PLAN	230			230 FT
622	CONCRETE BARRIER, TYPE D, AS PER PLAN	230			230 FT
622	CONCRETE BARRIER, MISC.: EXTENSION OF BARRIER HEIGHT		50		50 FT
622	CONCRETE BARRIER, MISC.: REPLACEMENT OF BARRIER FOR PIER PROTECTION		115		115 FT

CALCULATED MJH CHECKED KAE

BARRIER TRANSITION DETAILS

HAM-71-1.97

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℄ I-471 SB

I-471 SB

HAM-71-0181
PEDESTRIAN BRIDGE

ST Sta. 152+36.11

PIER 4 HAM-71-0181

EXISTING BARRIER

EXISTING BARRIER

BEGIN BARRIER RETROFIT
STA. 151+20, 54.0' LT

PROPOSED OVERHEAD
SIGN TRUSS LOCATION
(SEE SIGNING PLANS)

END BARRIER RETROFIT
STA. 151+84, 54.0' LT

I-71 SB

I-71 SB

EXISTING OVERHEAD SIGN TRUSS
TO BE REPLACED

℄ I-71

℄ I-71

PCC Sta. 150+69.94

PT Sta. 151+69.94

I-71 NB

I-71 NB

PT Sta. 151+69.89

151

152

153

HORIZONTAL
SCALE IN FEET
0 5 10 20

CALCULATED CEJ
CHECKED BJF

PLAN VIEW
I-71 SB ROADWAY BARRIER MODIFICATION

HAM-71-1.97

95
292

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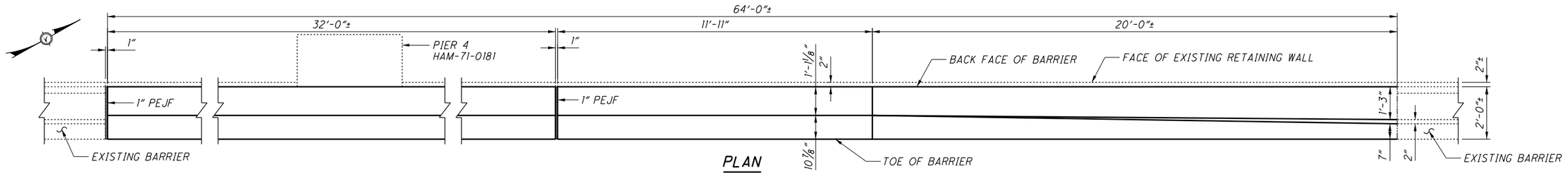
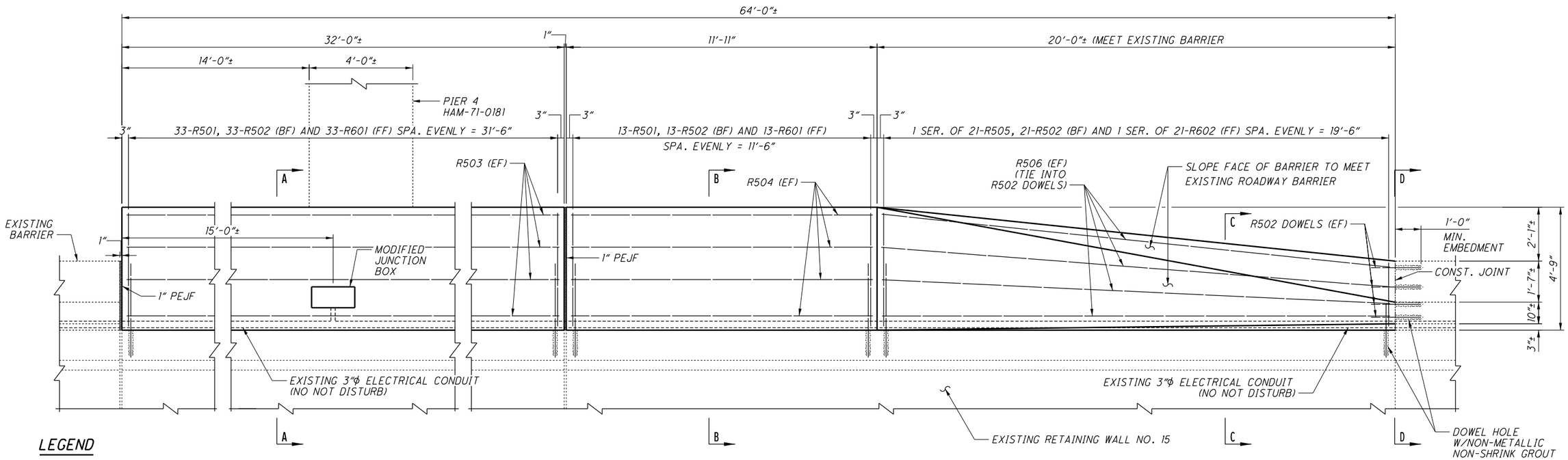


PLAN



LEGEND

FF = FRONT FACE
BF = BACK FACE
EF = EACH FACE
PEJF = PREFORMED EXPANSION JOINT FILLER

ELEVATION

FRONT FACE OF BARRIER LOOKING WEST

ITEM 622 BARRIER, MISC.: REPLACEMENT OF BARRIER ON RETAINING WALL

THIS ITEM SHALL CONSIST OF THE REMOVAL AND REPLACEMENT OF CONCRETE BARRIER ON A CONCRETE RETAINING WALL AS SHOWN ON SHEETS 95 THRU 96A. THE WORK INCLUDED FOR PAYMENT UNDER THIS NOTE SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:

1.REMOVAL OF A PORTION OF THE EXISTING CONCRETE BARRIER.

2.DRILLING AND GROUTING OF DOWELS AND INSTALLATION OF REINFORCING STEEL.

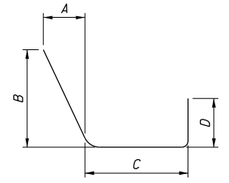
3.EXTENSION OF EXISTING JUNCTION BOX. PLACEMENT OF PREFORMED EXPANSION JOINT FILLER.

4.PLACEMENT AND FINISH OF BARRIER CONCRETE.

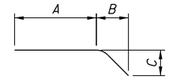
PAYMENT FOR THIS ITEM SHALL INCLUDE ALL LABOR, MATERIALS, AND INCIDENTALS REQUIRED TO REMOVE AND REPLACE THE BARRIER AS SHOWN IN THE PLANS. PAYMENT SHALL BE MADE ON A PER FOOT BASIS FOR ITEM 622 BARRIER, MISC.: REPLACEMENT OF BARRIER ON RETAINING WALL. A QUANTITY OF 64 LINEAL FEET HAS BEEN CARRIED TO THE GENERAL SUMMARY FOR THIS ITEM.

REINFORCING STEEL LIST

MARK	NUMBER TOTAL	LENGTH	WEIGHT (LBS.)	TYPE	DIMENSIONS A	B	C	D	E	R	INC.
BARRIER MODIFICATION											
R501	46	9'-3"	444	10	0'-10"	4'-6"	0'-9"	4'-1"			
R502	75	3'-0"	235	STR							
R503	8	31'-8"	264	STR							
R504	8	12'-0"	100	STR							
	1	5'-1"			0'-3"	2'-4"	0'-11"	2'-0"			
R505	SER. OF	TO	157	10	TO	TO	TO	TO			2 1/2"
	21	9'-3"			0'-10"	4'-6"	0'-9"	4'-1"			
R506	8	21'-9"	181	STR							
R601	46	3'-7"	248	19	2'-0"	1'-3"	1'-0"				
	1	2'-9"			1'-3"	0'-9"	1'-5"				
R602	SER. OF	TO	100	19	TO	TO	TO				1/2"
	21	3'-7"			2'-0"	1'-3"	1'-0"				
TOTAL	1729										



TYPE-10



TYPE-19

NOTE:

1) FOR SECTION VIEWS SEE SHEET 96A

CALCULATED CEJ
CHECKED BJF

I-71 SB ROADWAY BARRIER MODIFICATION DETAILS

HAM-71-1.97

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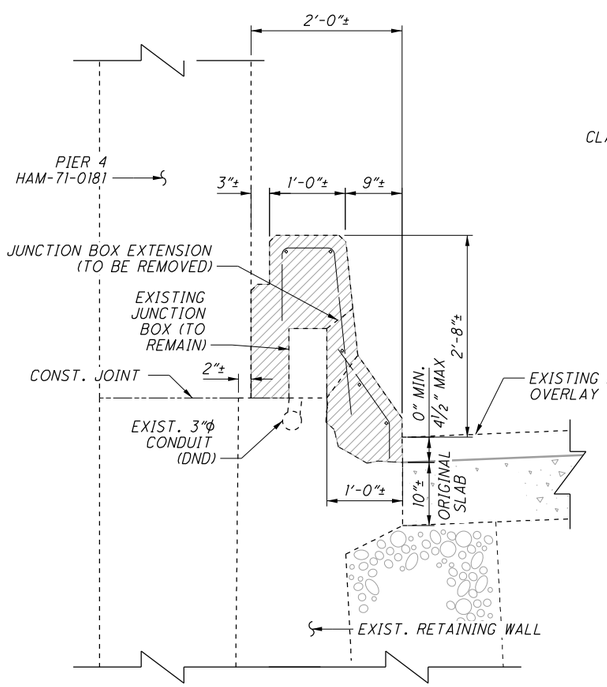
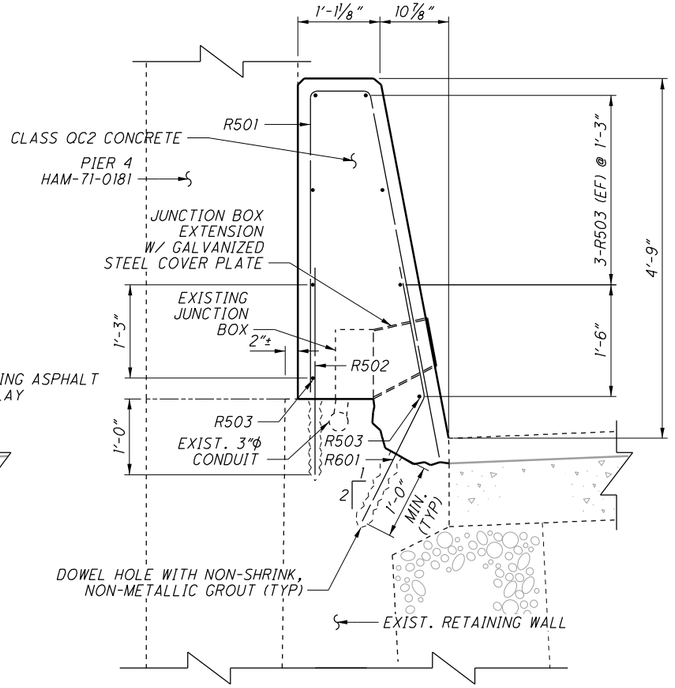
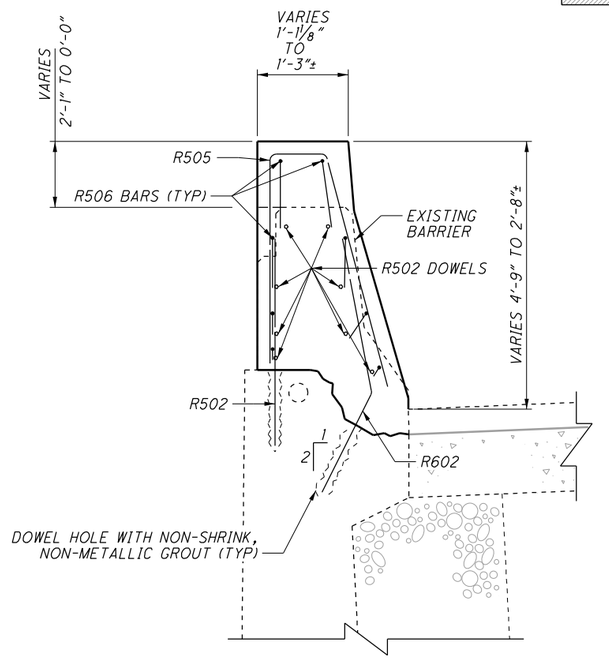


REMOVAL DETAIL

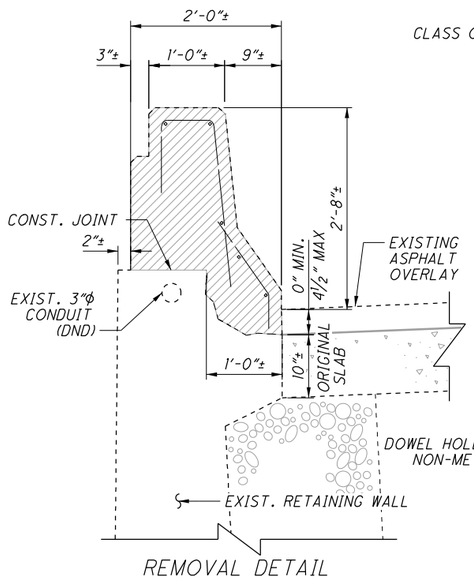


BARRIER DETAIL

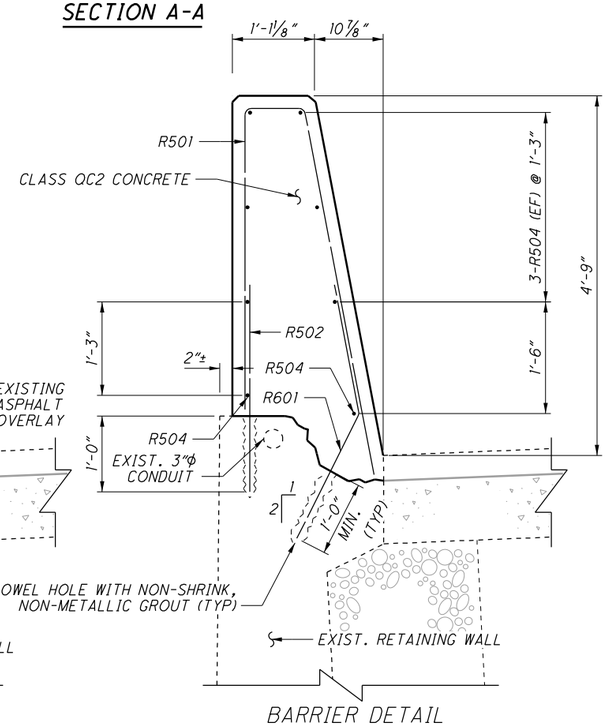


SECTION C-C

SECTION A-A

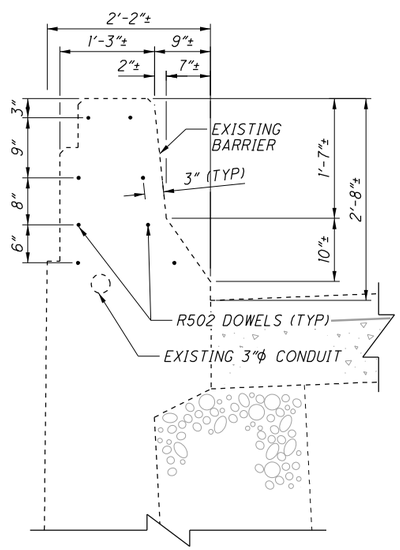


REMOVAL DETAIL



BARRIER DETAIL

SECTION B-B



SECTION D-D

CALCULATED CEJ
CHECKED BJF

I-71 SB ROADWAY BARRIER MODIFICATION DETAILS

HAM-71-1.97

96A
292

scott-w

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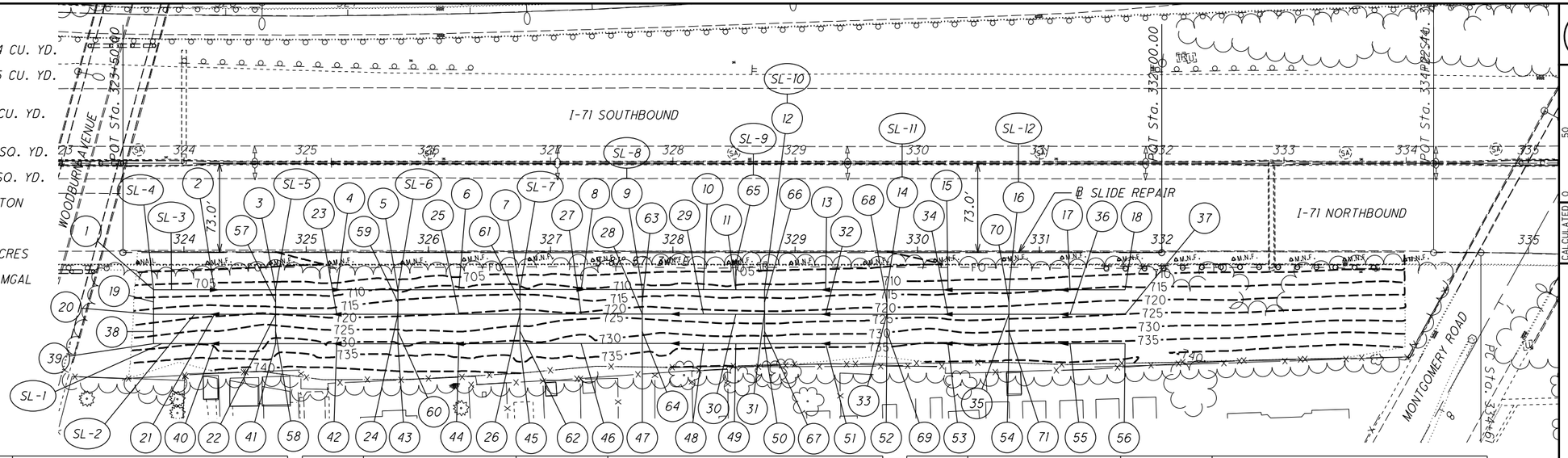
SLIDE REPAIR AREA

203 - EXCAVATION	= 17,304 CU. YD.
203 - EMBANKMENT, AS PER PLAN	= 15,865 CU. YD.
203 - GRANULAR EMBANKMENT, APP (NO. 8 AGGREGATE)	= 1,125 CU. YD.
204 - GEOTEXTILE FABRIC, 712.09, TYPE A	= 3375 SQ. YD.
659 - SEEDING AND MULCHING	= 7315 SQ. YD.
659 - COMMERCIAL FERTILIZER	= 0.99 TON
7315 SQ. YD. X 1 TON/7410 SQ. YD.	
659 - LIME	= 1.51 ACRES
659 - WATER	= 19.75 MGAL
7315 SQ. YD. X 0.0027 MGAL/SQ. YD.	



HORIZONTAL SCALE IN FEET (0, 25, 50, 100)

CALCULATED KAE | CHECKED MJH

PIPE DATA TABLE

POINT	STATION / OFFSET	INVERT	PIPE RUNS
1	323+75, 30.5' RT.	702.20'	
2	324+25, 30.5' RT.	701.95'	ITEM 611, 50 LF - 6" CONDUIT TYPE E
3	324+75, 30.5' RT.	701.70'	ITEM 611, 50 LF - 6" CONDUIT TYPE E
4	325+25, 30.5' RT.	701.45'	ITEM 611, 50 LF - 6" CONDUIT TYPE E
5	325+75, 30.5' RT.	701.20'	ITEM 611, 50 LF - 6" CONDUIT TYPE E
6	326+25, 30.5' RT.	700.95'	ITEM 611, 50 LF - 6" CONDUIT TYPE E
7	326+75, 30.25' RT.	700.70'	ITEM 611, 50 LF - 6" CONDUIT TYPE E
8	327+25, 30.25' RT.	700.45'	ITEM 611, 50 LF - 6" CONDUIT TYPE E
9	327+75, 30.25' RT.	700.20'	ITEM 611, 50 LF - 6" CONDUIT TYPE E
10	328+25, 30.25' RT.	699.95'	ITEM 611, 26.5 LF - 6" CONDUIT TYPE E
11	328+51.51, 30.25' RT.	699.80'	ITEM 611, 23.5 LF - 6" CONDUIT TYPE E
12	328+75, 30.4' RT.	700.10'	ITEM 611, 50 LF - 6" CONDUIT TYPE E
13	329+25, 30.4' RT.	700.60'	ITEM 611, 50 LF - 6" CONDUIT TYPE E
14	329+75, 30.4' RT.	701.05'	ITEM 611, 50 LF - 6" CONDUIT TYPE E
15	330+25, 30.4' RT.	701.55'	ITEM 611, 50 LF - 6" CONDUIT TYPE E
16	330+75, 30.4' RT.	702.05'	ITEM 611, 50 LF - 6" CONDUIT TYPE E
17	331+25, 30.4' RT.	702.60'	ITEM 611, 45 LF - 6" CONDUIT TYPE E
18	331+70, 30.4' RT.	703.05'	-
19	323+75, 40.5' RT.	705.10'	-
20	323+75, 50.5' RT.	705.20'	ITEM 611, 50 LF - 6" CONDUIT TYPE E
21	324+25, 50.5' RT.	705.70'	ITEM 611, 50 LF - 6" CONDUIT TYPE E
22	324+75, 50.5' RT.	706.20'	ITEM 611, 50 LF - 6" CONDUIT TYPE E
23	325+25, 50.5' RT.	706.70'	ITEM 611, 50 LF - 6" CONDUIT TYPE E
24	325+75, 50.5' RT.	707.20'	ITEM 611, 50 LF - 6" CONDUIT TYPE E
25	326+25, 50.5' RT.	707.70'	ITEM 611, 50 LF - 6" CONDUIT TYPE E
26	326+75, 50.25' RT.	708.20'	ITEM 611, 50 LF - 6" CONDUIT TYPE E
27	327+25, 50.25' RT.	708.70'	ITEM 611, 50 LF - 6" CONDUIT TYPE E
28	327+75, 50.25' RT.	709.20'	ITEM 611, 50 LF - 6" CONDUIT TYPE E
29	328+25, 50.25' RT.	709.70'	ITEM 611, 26.5 LF - 6" CONDUIT TYPE E
30	328+51.51, 50.25' RT.	709.90'	ITEM 611, 23.5 LF - 6" CONDUIT TYPE E
31	328+75, 50.4' RT.	710.20'	

POINT	STATION / OFFSET	INVERT	PIPE RUNS
32	329+25, 50.4' RT.	710.70'	ITEM 611, 50 LF - 6" CONDUIT TYPE E
33	329+75, 50.4' RT.	711.20'	ITEM 611, 50 LF - 6" CONDUIT TYPE E
34	330+25, 50.4' RT.	711.70'	ITEM 611, 50 LF - 6" CONDUIT TYPE E
35	330+75, 50.4' RT.	712.20'	ITEM 611, 50 LF - 6" CONDUIT TYPE E
36	331+25, 50.4' RT.	712.70'	ITEM 611, 50 LF - 6" CONDUIT TYPE E
37	331+70, 50.4' RT.	713.20'	ITEM 611, 45 LF - 6" CONDUIT TYPE E
38	323+75, 64.5' RT.	719.10'	-
39	323+75, 74.5' RT.	719.20'	-
40	324+25, 74.5' RT.	719.70'	ITEM 611, 50 LF - 6" CONDUIT TYPE E
41	324+75, 74.5' RT.	720.20'	ITEM 611, 50 LF - 6" CONDUIT TYPE E
42	325+25, 74.5' RT.	720.70'	ITEM 611, 50 LF - 6" CONDUIT TYPE E
43	325+75, 74.5' RT.	721.20'	ITEM 611, 50 LF - 6" CONDUIT TYPE E
44	326+25, 74.5' RT.	721.70'	ITEM 611, 50 LF - 6" CONDUIT TYPE E

POINT	STATION / OFFSET	INVERT	PIPE RUNS
45	326+75, 74.25' RT.	722.20'	ITEM 611, 50 LF - 6" CONDUIT TYPE E
46	327+25, 74.25' RT.	722.70'	ITEM 611, 50 LF - 6" CONDUIT TYPE E
47	327+75, 74.25' RT.	723.20'	ITEM 611, 50 LF - 6" CONDUIT TYPE E
48	328+25, 74.25' RT.	723.70'	ITEM 611, 26.5 LF - 6" CONDUIT TYPE E
49	328+51.51, 74.25' RT.	723.90'	ITEM 611, 23.5 LF - 6" CONDUIT TYPE E
50	328+75, 74.4' RT.	724.20'	ITEM 611, 50 LF - 6" CONDUIT TYPE E
51	329+25, 74.4' RT.	724.70'	ITEM 611, 50 LF - 6" CONDUIT TYPE E
52	329+75, 74.4' RT.	725.20'	ITEM 611, 50 LF - 6" CONDUIT TYPE E
53	330+25, 74.4' RT.	725.70'	ITEM 611, 50 LF - 6" CONDUIT TYPE E
54	330+75, 74.4' RT.	726.20'	ITEM 611, 50 LF - 6" CONDUIT TYPE E
55	331+25, 74.4' RT.	726.70'	ITEM 611, 50 LF - 6" CONDUIT TYPE E
56	331+70, 74.4' RT.	727.20'	ITEM 611, 45 LF - 6" CONDUIT TYPE E

REF. NO.	STATION	STATION	203 EXCAVATION CU. YD.	203 EMBANKMENT, AS PER PLAN CU. YD.	203 GRANULAR EMBANKMENT, APP (NO. 8 AGGREGATE) CU. YD.	204 GEOTEXTILE FABRIC, 712.09 TYPE A SQ. YD.	611 6" CONDUIT, TYPE E 707.31 (PERFORATED) FT.	611 6" CONDUIT, TYPE F 707.33 (NON-PERFORATED) FT.	611 6" CONDUIT TYPE F 707.33 (NON-PERFORATED), APP FT.	659 SEEDING AND MULCHING, CLASS 3B SQ. YD.	659 COMMERCIAL FERTILIZER TON	659 LIME ACRE	659 WATER MGAL	FOR INFO. ONLY 6" ELBOW AND TEES EACH
SL-1	323+75	331+70					795							
SL-2	323+75	331+70					795							
SL-3	323+75	331+70					795							
SL-4	323+75	323+75						44						5
SL-5	324+75	324+75						44						5
SL-6	325+75	325+75						44						5
SL-7	326+75	326+75						44						5
SL-8	327+75	327+75						44						5
SL-9	328+51.51	328+51.51							20.5					1
SL-10	328+75	328+75						44						5
SL-11	329+75	329+75						44						5
SL-12	330+75	330+75						44						5
			17304	15865	1125	3375				7315	0.99	1.51	19.75	
TOTALS CARRIED TO GENERAL SUMMARY			17304	15865	1125	3375	2385	352	20.5	7315	0.99	1.51	19.75	

PLAN SLIDE REPAIR
STA. 323+75 TO STA. 331+70

HAM-71-1.97

97
292

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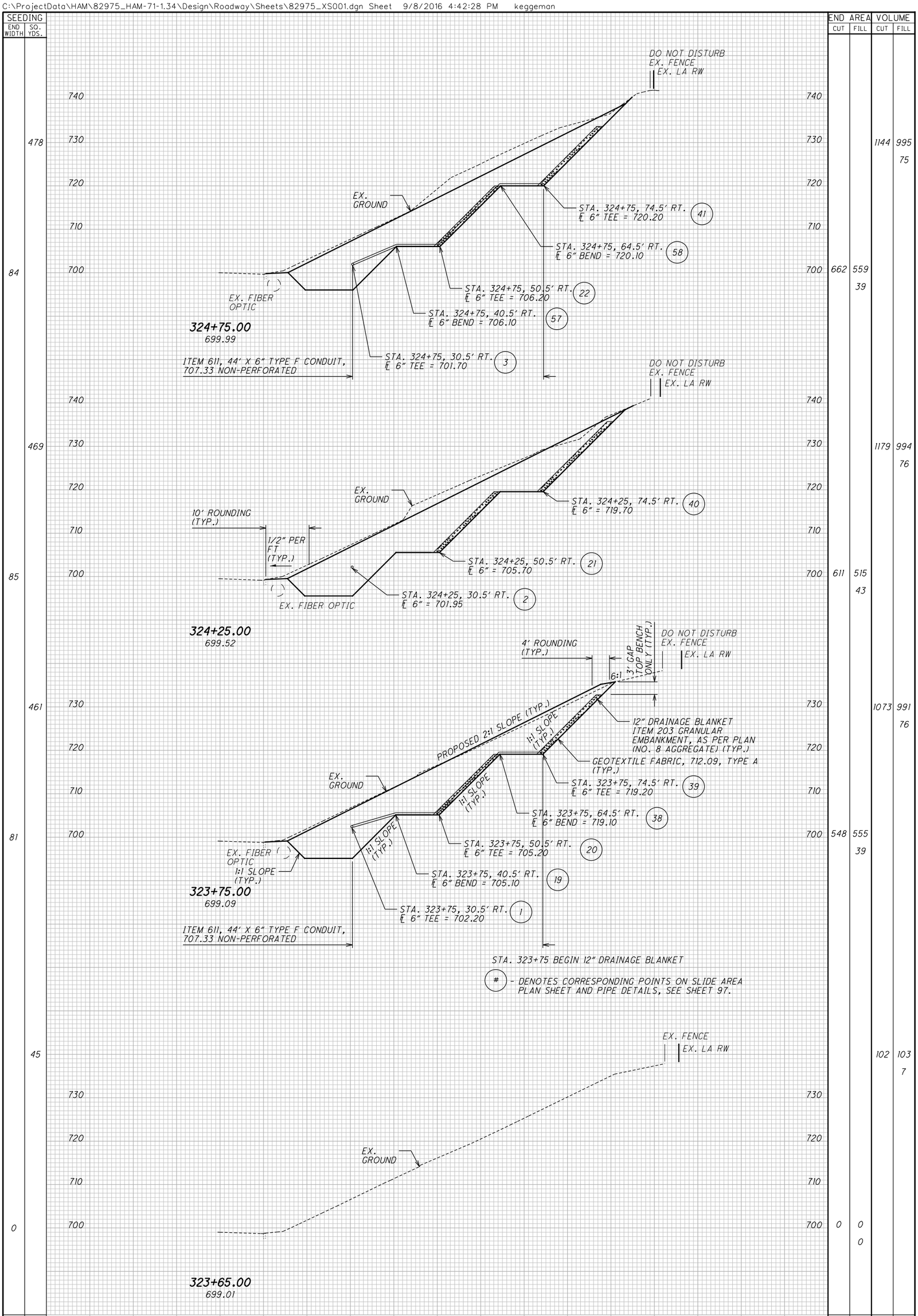

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HAM-71-1.97

CROSS SECTIONS
STA. 323+65.00 TO STA. 324+75.00

CALCULATED KAE
CHECKED MJH

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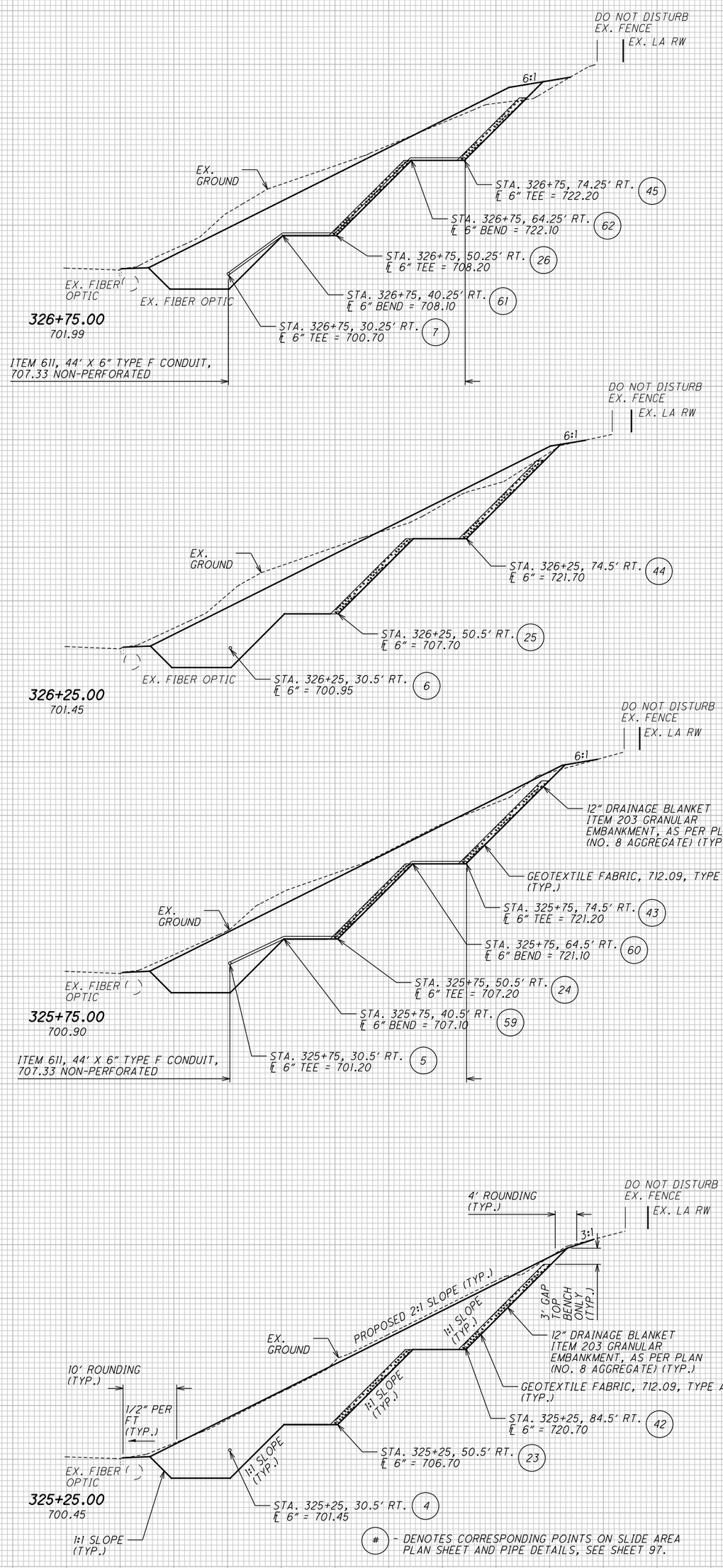
SEEDING END WIDTH	SEEDING SQ. YDS.	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
	84	609	557		
			36		
	453			1106	982
					65
	86	590	517		
			41		
	472			1110	994
					71
	88	603	562		
			42		
	483			1105	999
					77
	88	574	516		
			42		
	489			1090	998
					78



292 99

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CROSS SECTIONS
STA. 325+25.00 TO STA. 326+75.00

CALCULATED KAE
CHECKED MJH

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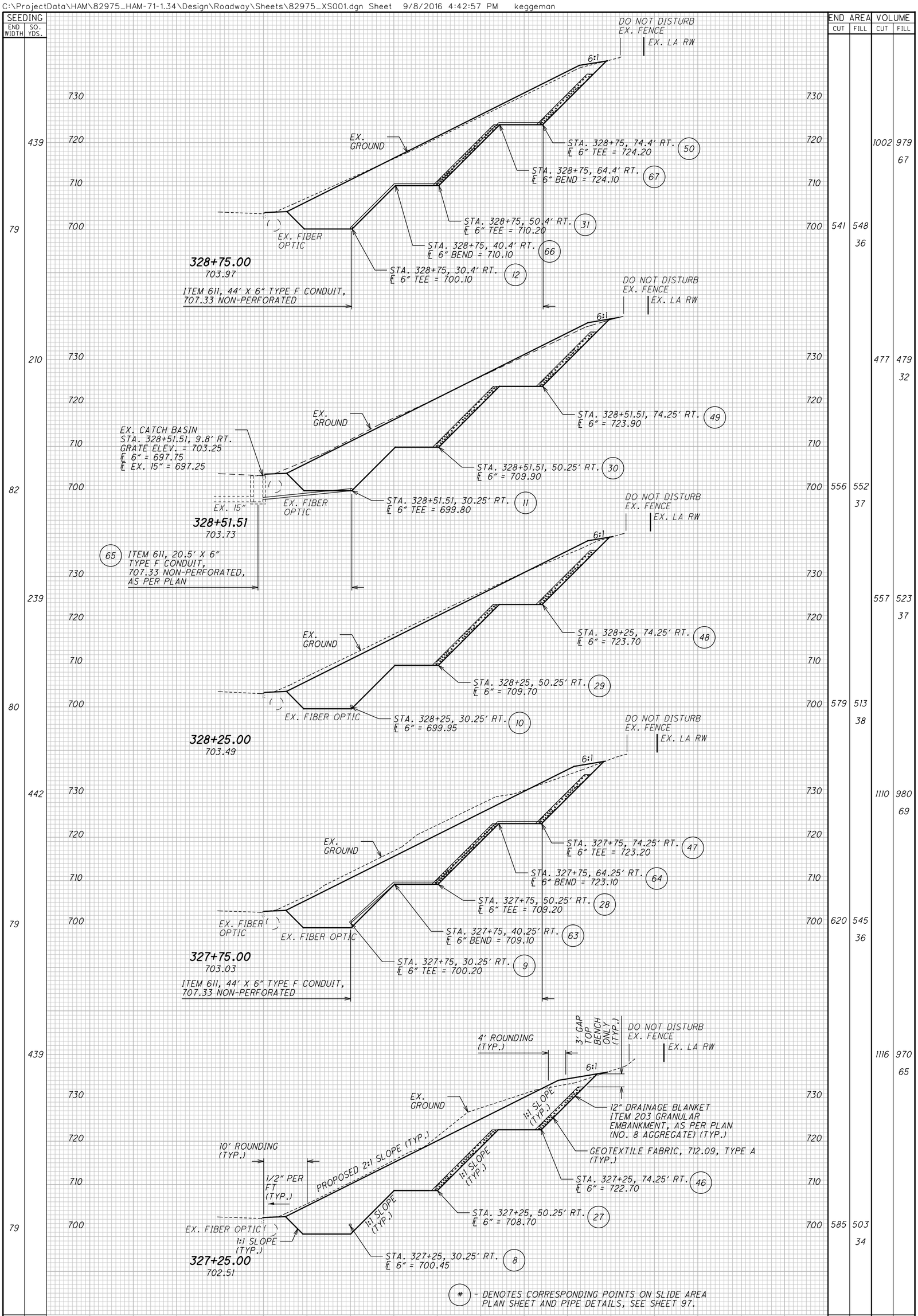

292 / 100	HAM-71-1.97	CROSS SECTIONS STA. 327+25.00 TO STA. 328+75.00	CALCULATED KAE CHECKED MJH

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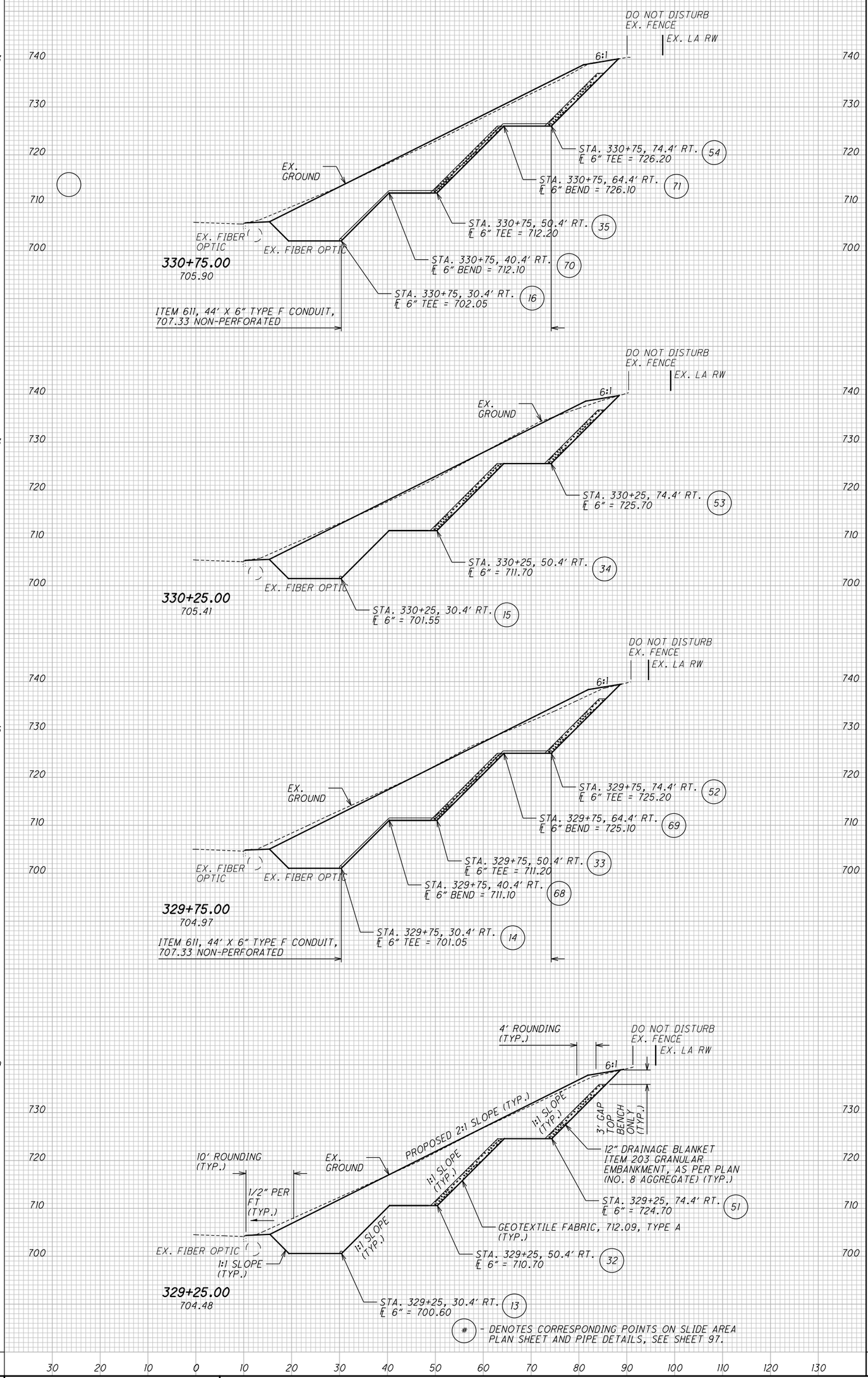
SEEDING END WIDTH	SEEDING SQ. YDS.	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
	433			1003	969
					64
78		534	544		
			35		
	433			1000	975
					66
78		546	509		
			36		
	436			1019	978
					67
79		554	547		
			36		
	439			1014	978
					67
79		541	509		
			36		



101 292	HAM-71-1.97	CROSS SECTIONS STA. 329+25.00 TO STA. 330+75.00	CALCULATED KAE CHECKED MJH

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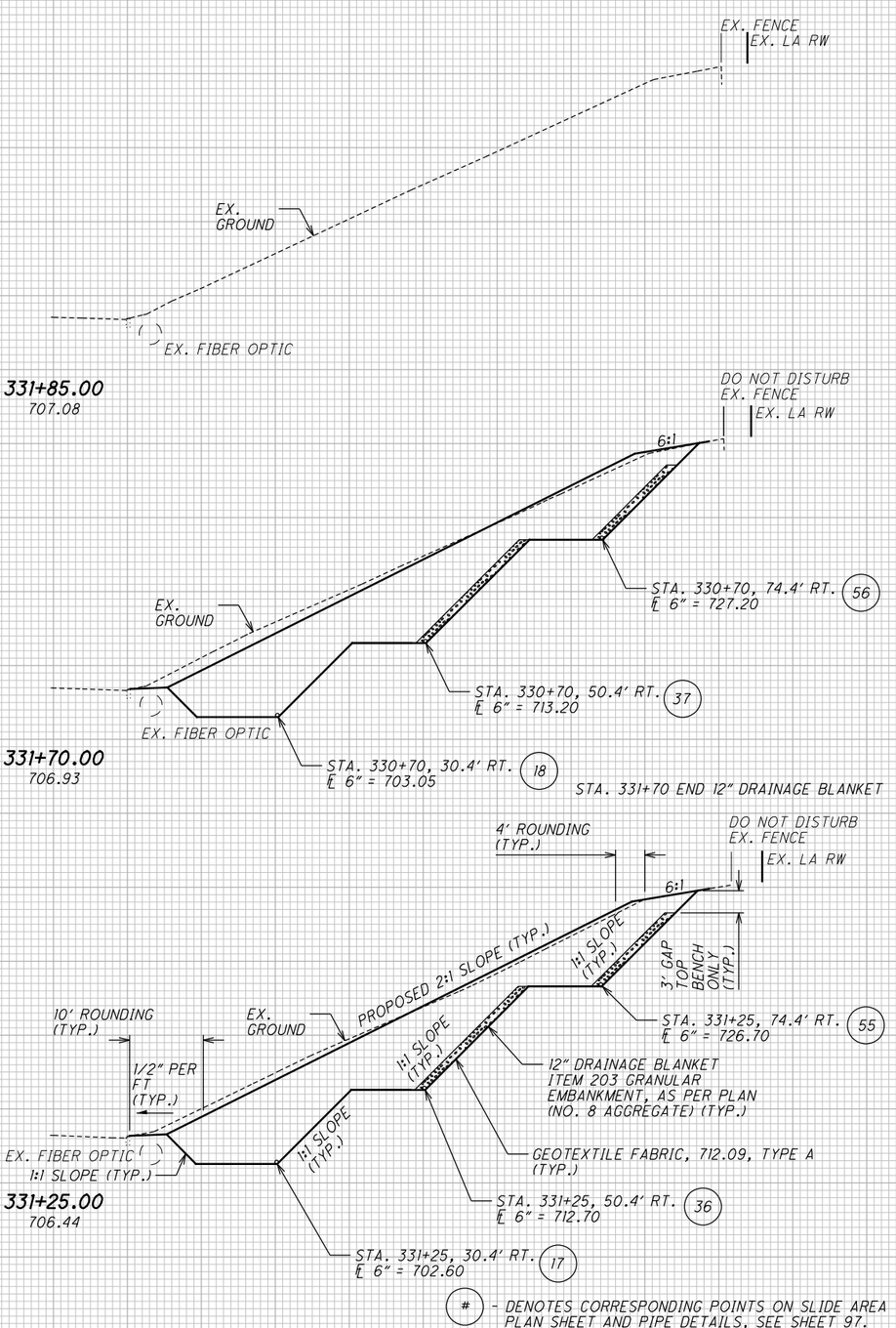
SEEDING		END AREA		VOLUME	
END WIDTH	SQ. YDS.	CUT	FILL	CUT	FILL
0		0	0		
			0		
	65			160	140
					9
78		575	503		
			34		
	390			937	838
					57
78		549	502		
			34		



292 / 102	HAM-71-1.97	CROSS SECTIONS STA. 331+25.00 TO STA. 331+85.00	CALCULATED KAE CHECKED MJH

PERMANENT PAVEMENT MARKINGS

THE CONTRACTOR SHALL RECORD THE LOCATIONS OF ALL PAVEMENT MARKINGS AND RAISED PAVEMENT MARKERS BEFORE THE START OF THE RESURFACING OPERATION. THIS WILL BE NECESSARY TO ASSURE CORRECT REPLACEMENT OF MARKINGS. ALL PAVEMENT MARKINGS SHALL BE RESTRIPED IN THEIR CURRENT LOCATION, EXCEPT OFF-RAMPS FROM I-71, WHICH SHALL BE RESTRIPED IN CONFORMANCE WITH FIGURE 3B-9 OF THE OMUTCD, AND AS SHOWN IN THE PLANS. RAISED PAVEMENT MARKERS ON OFF-RAMPS SHALL BE PLACED IN CONFORMANCE WITH STANDARD CONSTRUCTION DRAWING TC-73.20. MINIMUM LANE WIDTH ON MAINLINE PAVEMENT SHALL BE 12'.

PAYMENT FOR THE WORK NECESSARY TO RECORD CURRENT PAVEMENT LOCATIONS TO RESTRIPE IN ACCORDANCE WITH THE PLAN WILL BE CONSIDERED INCIDENTAL TO AND INCLUDED WITH EACH RESPECTIVE PAVEMENT MARKING ITEM.

REFERENCE LOCATION SIGNS

THE LOCATION OF REFERENCE LOCATION SIGNS ON THE PLANS ARE APPROXIMATE AND A MORE PRECISE LOCATION WILL BE PROVIDED BY THE DEPARTMENT. THE CONTRACTOR SHALL NOTIFY THE ENGINEER AT LEAST 30 DAYS IN ADVANCE OF THE PLANNED DATE OF REFERENCE LOCATION SIGN INSTALLATION. THE ENGINEER WILL CONTACT THE OFFICE OF TECHNICAL SERVICES WHICH WILL LOCATE THE LONGITUDINAL POSITION OF REFERENCE LOCATION SIGNS BY MEANS OF A PAINT MARK ON THE PAVEMENT EDGE. ALTERNATE MARKS WILL NOT BE PROVIDED ON DIVIDED HIGHWAYS AND THE CONTRACTOR SHALL SET REFERENCE LOCATION SIGNS FOR THE OPPOSITE ROADWAY ACROSS FROM THE PROVIDED MARK. DELINEATORS WHOSE NORMAL POSITION FALLS WITHIN 50 FEET OF A REFERENCE LOCATION SIGN SHALL BE OMITTED.

RIGID OVERHEAD SIGN SUPPORT FOUNDATION, AS PER PLAN

PRIOR TO ORDERING OVERHEAD SIGN SUPPORTS, THE CONTRACTOR SHALL FIELD VERIFY THAT THE PROPOSED LOCATION IS CLEAR FROM OVERHEAD AND UNDERGROUND UTILITY CONFLICTS. IN ADDITION TO CONTACTING OUPS FOR UTILITY FIELD MARKINGS, THE CONTRACTOR SHALL ALSO CONTACT ODOT, THE CITY OF CINCINNATI, AND THE CITY OF NORWOOD TO REQUEST FIELD MARKING OF ANY PUBLIC UNDERGROUND UTILITIES (E.G., LIGHTING AND ARTIMIS FACILITIES). THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR IDENTIFYING UTILITY CONFLICTS, AND COORDINATING REMOVAL OR RELOCATION OF UTILITIES WITH THE AFFECTED UTILITY COMPANIES, AS NECESSARY TO INSTALL THE PROPOSED OVERHEAD SIGNS.

THE CONTRACTOR SHALL NOT ORDER SIGN SUPPORTS UNTIL THE FOUNDATION LOCATION HAS BEEN CLEARED FROM POTENTIAL CONFLICTS, AND WRITTEN APPROVAL IS GRANTED BY THE ENGINEER.

PAYMENT FOR ITEM 630 "RIGID OVERHEAD SIGN SUPPORT FOUNDATION, AS PER PLAN" SHALL BE MADE FOR EACH , INCLUDING ALL LABOR, MATERIAL, AND INCIDENTALS AS REQUIRED TO INSTALL THE PROPOSED SIGN FOUNDATION.

MODIFICATION OF BARRIER WALL ASSEMBLY

EXISTING BARRIER WALL ASSEMBLIES DETAILED IN THE NOW-RESCINDED TRAFFIC SCD TC-21.41, PROVIDE A 3-INCH HIGH CLEARANCE BELOW THE BOTTOM OF THE STEEL WALL PLATES FOR THE DRAINAGE OF WATER AWAY FROM THE SIGN SUPPORT FOUNDATION AND FOR VENTILATION.

ASPHALT CONCRETE SHALL BE PLACED AND COMPACTED AROUND THE SIGN SUPPORT FOUNDATION SO THAT NO WATER WILL BE TRAPPED IN THIS AREA WHEN ALL PROJECT WORK IS COMPLETED. IF THE RESURFACING OF THE SHOULDERS REDUCES THE CLEARANCE TO LESS THAN 2 INCHES THE FOLLOWING SHALL BE DONE:
1. REMOVE THE STEEL WALL PLATES;
2. REMOVE, BY SAWING, CUTTING OR GRINDING, ENOUGH MATERIAL FROM THE BOTTOM OF THE STEEL WALL PLATES AND THE CENTER BULKHEAD TO PROVIDE A 3-INCH CLEARANCE FROM THE FINISHED ASPHALT;
3. PAINT THE CUT EDGES AND ANY DAMAGED GALVANIZED AREAS WITH TWO COATS OF ZINC-RICH PAINT; AND
4. REINSTALL THE STEEL WALL PLATES IN THEIR PROPER POSITIONS, USING NEW BOLTS, NUTS AND WASHERS.

PAYMENT FOR THIS WORK SHALL BE CONSIDERED INCIDENTAL TO AND INCLUDED WITH THE VARIOUS BID ITEMS.

ITEM 630 SIGNING, MISC.: REMOVAL OF OVERHEAD FLASHING SIGN AND REERECTION

THIS ITEM SHALL INCLUDE REMOVAL OF AN EXISTING OVERHEAD FLASHING SIGN, AND REERECTION ONTO THE PROPOSED TRUSS. THE EXISTING SIGN FLASHER CONTROL UNIT, DISCONNECT SWITCH, AND ALL ASSOCIATED WIRING MAY BE REUSED. THE POWER FOR THE EXISTING FLASHING SIGN WILL BE INSTALLED IN CONNECTION WITH THE HAM-71-1.59 PROJECT. THE WIRING WILL EXTEND EITHER IN THE CENTER MEDIAN, OR WILL BE INSTALLED IN AN EXTERNAL CONDUIT SYSTEM AT THE OPTION OF THAT CONTRACTOR. THE POWER CABLE WILL EXTEND FROM TUNNEL POWER SYSTEM AT THE LYTLE TUNNEL TO THE EXISTING SIGN LOCATION. THE CONTRACTOR FOR THIS PROJECT SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING A CONDUIT PATHWAY, TO RECONNECT THE POWER CABLE TO THE PROPOSED SIGN LOCATION.

PAYMENT FOR ITEM 630 "SIGNING, MISC.: REMOVAL OF OVERHEAD FLASHING SIGN AND REERECTION" SHALL BE FOR EACH FLASHING SIGN REERECTED, INCLUDING ALL CONDUITS, RISERS, MOUNTING HARDWARE, ATTACHMENT HARDWARE, AND INCIDENTALS AS REQUIRED TO MAKE THE NEW INSTALLATION FULLY OPERATIONAL.

ITEM 630 REMOVAL OF MISC. TRAFFIC CONTROL ITEM: MONOTUBE SIGN SUPPORT

THIS ITEM SHALL INCLUDE REMOVAL AND DISPOSAL OF A MONOTUBE SIGN SUPPORT. THE SUPPORT AND FOUNDATIONS SHALL BE REMOVED AND DISPOSED OF IN CONFORMANCE WITH 630.12.

PAYMENT FOR ITEM 630 "REMOVAL OF MISC. TRAFFIC CONTROL ITEM: MONOTUBE SIGN SUPPORT" SHALL BE MADE FOR EACH MONOTUBE SUPPORT REMOVED.

ITEM 630 REMOVAL OF MISC. TRAFFIC CONTROL ITEM: CURVE WARNING SIGN WITH FLASHING BEACON

THIS ITEM SHALL INCLUDE REMOVAL AND DISPOSAL OF AN OVERHEAD MOUNTED CURVE WARNING SIGN AND FLASHING BEACON, AS SHOWN IN THE PLAN. THE CONTRACTOR SHALL REMOVE ALL ASSOCIATED WIRING AND EQUIPMENT INCLUDING THE POWER SERVICE, FLASHER CONTROLLER, HARDWARE, ETC. ALL MATERIAL REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR, AND SHALL BE PROPERLY DISPOSED OF OFF OF THE PROJECT SITE.

PAYMENT FOR ITEM 630 "REMOVAL OF MISC. TRAFFIC CONTROL ITEM: CURVE WARNING SIGN WITH FLASHING BEACON" SHALL BE MADE FOR EACH , INCLUDING ALL LABOR, MATERIAL, AND INCIDENTALS TO COMPLETELY REMOVE THESE ITEMS.

ITEM 630 SIGNING, MISC.: FLASHING WARNING SIGN

FLASHING WARNING SIGNS SHALL CONFORM TO THE FOLLOWING SPECIFICATION: ALL SIGNS SHALL CONFORM TO APPLICABLE ODOT AND OMUTCD STANDARDS. FABRICATE, FURNISH AND INSTALL SOLAR POWERED LIGHT EMITTING DIODE (LED), EMBEDDED WARNING SIGNS CONSISTING OF EMBEDDED LED LIGHTS, AND SOLAR PANELS AND BATTERIES FOR EACH SIGN. THIS SOLAR LED EMBEDDED WARNING SIGN FUNCTION IS TO WARN MOTORISTS OF A 25 MPH CURVE.

PROVIDE SIGN WITH EMBEDDED LED LIGHTS. PROVIDE HIGH POWERED 1 W LEDS WIRED IN A MANNER THAT ALL LEDS CONTINUE TO FLASH IN THE EVENT OF FAILURE OF AN INDIVIDUAL LED. SIGN MUST OUTPUT 550 CANDELAS AT DAYTIME PEAK ENSURING SIGN IS DAYLIGHT VISIBLE. PROVIDE LEDS THAT HAVE DIMMING CAPABILITIES AND AUTOMATICALLY ADJUST FLASH BRIGHTNESS TO VARYING LIGHT CONDITIONS. PROVIDE SOLAR PANELS AND BATTERIES SIZED TO ALLOW SYSTEM TO WORK AS NEEDED 24 HR. PER DAY. UNLESS OTHERWISE NOTED, SYSTEM MUST BE PROVIDED WITH SOLAR PANELS BY THE MANUFACTURER. UNLESS OTHERWISE NOTED. BATTERIES MUST BE PROVIDED BY THE MANUFACTURER, AND SHOULD BE INSTALLED IN A BOX MOUNTED ON THE SUPPORT POLE, PER MANUFACTURER RECOMMENDATIONS.

PAYMENT WILL BE MADE AT THE UNIT BID PRICE FOR EACH SIGN, AND SHALL INCLUDE ALL LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS REQUIRED TO COMPLETE THE WORK.

PLACEMENT AND REMOVAL OF SIGN FOUNDATIONS AND PULL BOXES IN SIDEWALK AREAS

WHEN SIGN FOUNDATIONS AND/OR PULL BOXES ARE REMOVED OR PLACED IN SIDEWALK AREAS, THE AFFECTED SIDEWALK SHALL BE REMOVED AND RESTORED IN COMPLETE PANELS, AS DESCRIBED BELOW.

* ALL CONCRETE WALK REMOVED SHALL BE REMOVED TO AN EXISTING JOINT, LEAVING A CLEAN EDGE. SAW CUTTING IN CONCRETE SIDEWALK OR REMOVAL OF PARTIAL PANELS WILL NOT BE PERMITTED.
* CONCRETE WALK RESTORATION SHALL BE DONE IN COMPLETE PANELS.
* JOINTS SHALL BE PLACED TO ALIGN WITH ADJACENT JOINTS, AND IN PATTERNS AS EXISTED PRIOR TO WALK REMOVAL.
* RESTORATION OF THE SIDEWALK AT LOCATION OH-21 WILL REQUIRE NEW PAVERS. THE CONTRACTOR MAY PURCHASE EXACT REPLACEMENT PAVERS FROM THE CITY OF CINCINNATI RIGHT-OF-WAY DIVISION, CONTACT DIEGO JORDON. THE PAVERS SHALL BE INSTALLED IN A MANNER CONSISTENT WITH THE EXISTING PAVEMENTS, USING A METHOD AS APPROVED BY THE ENGINEER.

PHOTOGRAPHS
THE CONTRACTOR SHALL PHOTOGRAPH ALL WALKS REMOVED IN ORDER TO REESTABLISH THE PREVIOUS JOINT OR PAVER PATTERNS UPON RESTORATION OF THE WALK.

PAYMENT FOR THIS WORK SHALL BE CONSIDERED INCIDENTAL TO AND INCLUDED WITH THE VARIOUS BID ITEMS.

SIGN POSTS IN SIDEWALK

WHEN SIGN POSTS ARE INSTALLED IN EXISTING SIDEWALK, THE CONTRACTOR SHALL CORE DRILL THE SIDEWALK, WITH A DIAMETER BIT THAT ALLOWS THE SIGN POST TO BE INSTALLED THOUGH THE SIDEWALK SURFACE. FOLLOWING INSTALLATION OF THE SIGN POST, THE CONTRACTOR SHALL SAND-FILL THE DISTURBED AREA, AND ADD GROUT FOR THE TOP ONE INCH OF THE SURFACE.

WHEN EXISTING SIGN POSTS ARE REMOVED IN SIDEWALK AREAS, THE CONTRACTOR SHALL REMOVE AND REPLACE THE AFFECTED SIDEWALK IN COMPLETE PANELS, AS DESCRIBED IN THE NOTE ABOVE

PAYMENT FOR THIS WORK SHALL BE CONSIDERED INCIDENTAL TO AND INCLUDED WITH THE VARIOUS BID ITEMS.

CALCULATED MJH CHECKED KAE

TRAFFIC CONTROL GENERAL NOTES

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REMOVAL OF MISC. TRAFFIC CONTROL ITEM.: SIGN BRACKETS ON COMBINATION SIGN POLE

WHEN OVERHEAD SIGNS ARE BEING REMOVED FROM EXISTING POLES WHICH SERVE OTHER PURPOSES (E.G. LIGHTING, TRAFFIC SIGNALS, ETC.) THE POLE SHALL BE LEFT IN PLACE. THE EXISTING BRACKETS USED TO ATTACH THE OVERHEAD SIGNS SHALL BE REMOVED AND PROPERLY DISPOSED OF BY THE CONTRACTOR. IN THE EVENT THAT BRACKET ARMS NEED TO BE PHYSICALLY CUT OFF, THE CONTRACTOR SHALL TAKE CARE TO ENSURE THAT THE POLE SUPPORT IS NOT DAMAGED. THIS ITEM SHALL ALSO INCLUDE CLOSING ANY RESULTING OPENINGS IN THE POLE, PROVIDING A WEATHER TIGHT SEAL. THE CONTRACTOR SHALL USE BLIND-HALF COUPLINGS OR OTHER MEANS AS APPROVED BY THE ENGINEER TO SEAL ALL RESULTING OPENINGS, INCLUDING OPENINGS FOR DISCONNECT SWITCHES OR CABLE WEATHERHEADS.

PAYMENT WILL BE MADE AT THE UNIT BID PRICE FOR EACH "REMOVAL OF MISC. TRAFFIC CONTROL ITEM.: SIGN BRACKETS ON COMBINATION SIGN POLE" AND SHALL INCLUDE ALL LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS REQUIRED TO COMPLETE THE WORK.

ITEM 631 SIGN LIGHTING, MISC.: REMOVE SIGN SERVICE

REMOVAL OF SIGN LIGHTING SHALL INCLUDE REMOVAL OF ALL LUMINAIRES, GLARE SHIELDS, SUPPORT ARMS, AND WRING, AND PROPERLY DISPOSING OF THIS MATERIAL OFF OF THE PROJECT SITE. REMOVAL OF SIGN WIRING SHALL EXTEND FROM THE LUMINAIRE(S) TO THE DISCONNECT SWITCH, AND SIGN SERVICE FROM THE DISCONNECT SWITCH TO THE NEXT CONNECTION IN THE CIRCUIT. DISCONNECTION OF THE EXISTING CIRCUIT SHALL BE MADE IN CONFORMANCE WITH C&MS 625.21 (E).

THE CIRCUIT INFORMATION CONTAINED IN THE PLAN WAS EXTRACTED FROM RECORD DRAWINGS. PRIOR TO DISCONNECTING THE CIRCUIT, THE CONTRACTOR SHALL FIELD VERIFY THE SERVICE DISCONNECT POINT. ADJUSTMENTS TO THE DISCONNECT POINT, WHICH ARE DIFFERENT THAN WHAT IS SHOWN IN THE PLAN, SHALL BE APPROVED BY THE ENGINEER PRIOR TO DISCONNECTING THE CIRCUIT.

ALL PULL BOXES WHICH ARE ABANDONED AS A RESULT OF THIS WORK SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR. PULL BOXES REMOVED IN SIDEWALK AREAS SHALL BE REMOVED IN ACCORDANCE WITH C&MS 625.22. IF A PULL BOX IS REMOVED IN A SIDEWALK AREA, THE AFFECTED SIDEWALK PANEL(S) SHALL BE REMOVED AND REPLACED IN ACCORDANCE WITH THE PLAN NOTE "PLACEMENT AND REMOVAL OF SIGN FOUNDATIONS AND PULL BOXES IN SIDEWALK AREAS" (PREVIOUS SHEET).

AT LOCATIONS WHERE THE SIGN POLE WILL REMAIN IN PLACE, THE CONTRACTOR SHALL REMOVE THE EXISTING DISCONNECT SWITCH AND SEAL THE RESULTANT OPENING ON THE SIGN SUPPORT. THE HOLE SHALL BE CAPPED AND SEALED WITH A BLIND HALF COUPLING OR OTHER METHOD AS APPROVED BY THE ENGINEER. ALL FIXED SUPPORT ARMS AND GLARE SHIELDS FOR LUMINAIRES SHALL BE REMOVED FROM THE SIGN SUPPORT, IN CONFORMANCE WITH 625.21.

MATERIALS REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR, AND SHALL BE PROPERLY DISPOSED OF, OFF OF THE PROJECT SITE.

PAYMENT WILL BE MADE AT THE UNIT BID PRICE FOR ITEM 631 "SIGN LIGHTING MISC.: REMOVE SIGN SERVICE" FOR EACH SIGN SUPPORT, AND SHALL INCLUDE ALL LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS REQUIRED TO REMOVE SIGN SERVICE FROM ALL THE SIGNS MOUNTED TO THE SIGN SUPPORT, AS DESCRIBED IN THIS NOTE.

ITEM 630 REMOVAL OF MISC. TRAFFIC CONTROL ITEM: MEDIAN BARRIER SIGN BRACKET

THIS ITEM SHALL INCLUDE REMOVAL AND DISPOSAL OF A SIGN SUPPORT BRACKET MOUNTED ON A CONCRETE BARRIER.

PAYMENT FOR ITEM 630 "REMOVAL OF MISC. TRAFFIC CONTROL ITEM: MEDIAN BARRIER SIGN BRACKET" SHALL BE FOR EACH MEDIAN MOUNTED SUPPORT REMOVED.

MILE MARKER SIGNS

MILE MARKER SIGNS (D10-5) SHALL BE WHITE TEXT ON BLUE BACKGROUND.

ITEM 632 DETECTOR LOOP, AS PER PLAN

ALL PROPOSED STOP LINE INDUCTANCE DETECTOR LOOPS, AS SHOWN IN THE TRAFFIC CONTROL PLANS, SHALL BE THE POWERHEAD CONFIGURATION AS SHOWN ON TC-82.10. THE WIDTH SHALL BE AS SPECIFIED ON TC-82.10 AND THE LENGTH SHALL MATCH EXISTING. THE LOCATION OF THESE LOOPS SHALL BE SUCH THAT THE POWERHEAD IS LOCATED AT THE STOP LINE, NOT PASSED IT.

PAYMENT FOR ITEM 632 "DETECTOR LOOP, AS PER PLAN" SHALL BE MADE AT THE CONTRACT UNIT PRICE, IN PLACE, TESTED, AND ACCEPTED.

REPLACEMENT DETECTOR LOOPS

PRIOR TO THE PLANING OPERATION, THE LOCATION OF THE EXISTING LOOP DETECTORS SHALL BE RECORDED SO THAT THE REPLACEMENT LOOPS CAN BE REINSTALLED AT THE PROPER LOCATIONS. THE NEW LOOP DETECTORS SHALL BE CONNECTED TO THE LEAD-IN CABLE WITH PROPER CONNECTION KITS AND TESTED TO MAKE CERTAIN THAT THEY ARE OPERATIONAL.

ALL PROPOSED STOP LINE INDUCTANCE DETECTOR LOOPS, AS SHOWN IN THE TRAFFIC CONTROL PLANS, SHALL BE THE POWERHEAD CONFIGURATION SHOWN ON TC-82.10. THE WIDTH SHALL BE AS SPECIFIED ON TC-82.10 AND THE LENGTH SHALL MATCH EXISTING. THE LOCATION OF THESE LOOPS SHALL BE SUCH THAT THE POWERHEAD IS LOCATED AT THE STOP LINE, NOT PASSED IT.

THE CONTRACTOR SHALL NOTIFY THE ODOT DISTRICT 8 TRAFFIC DEPARTMENT A MINIMUM OF 3 DAYS IN ADVANCE OF ANY LOOP DETECTOR INSTALLATIONS TO PERMIT TIME FOR LOOP LOCATION ADJUSTMENTS AND SPECIFY THE LENGTH OF THE LOOPS, IF NEEDED.

THE FOLLOWING TRAFFIC SIGNAL LOOPS WILL BE IMPACTED WITH THE RESURFACING OPERATION, AND SHALL BE REPLACED WITH THIS PROJECT:
* *SHEET 116 - RAMP MF - TWO (2) LOOPS*
* *SHEET 119 - RAMP DE - THREE (3) LOOPS*
* *SHEET 122 - RAMP B - TWO (2) LOOPS*
* *SHEET 125 - RAMP D - TWO (2) LOOPS*
* *SHEET 146 - RAMP RE - TWO (2) LOOPS*
* *SHEET 146 - RAMP RC2 - TWO (2) LOOPS*

THE FOLLOWING QUANTITIES OF DETECTOR LOOPS AND LOOP DETECTOR TIE-INS HAVE BEEN CARRIED TO THE GENERAL SUMMARY.

ITEM 632- DETECTOR LOOP, AS PER PLAN 13 EACH
ITEM 632- LOOP DETECTOR TIE-IN 13 EACH

ITEM 630 CONCRETE BARRIER MEDIAN OVERHEAD SIGN SUPPORT FOUNDATION, TYPE TC-21.50, AS PER PLAN

THE MEDIAN FOUNDATION SHALL BE PLACED IN CONFORMANCE WITH APPLICABLE STANDARD CONSTRUCTION DRAWINGS, EXCEPT THAT THE SHAPE OF THE BARRIER WILL BE JERSEY TYPE. THE HEIGHT AND WIDTH OF THE BARRIER SHALL BE SHAPED TO ACCOMMODATE THE SIGN SUPPORT FOUNDATIONS, AND SHALL ALSO BE SHAPED TO MATCH THE DIMENSIONS/SHAPE OF THE ADJACENT BARRIER.

PAYMENT FOR ITEM 630 "CONCRETE BARRIER MEDIAN OVERHEAD SIGN SUPPORT FOUNDATION, TYPE TC-21.50, AS PER PLAN" SHALL BE MADE AT THE CONTRACT UNIT PRICE, IN PLACE, AND ACCEPTED BY THE ENGINEER.

ITEM 630 OVERHEAD SIGN SUPPORT, MISC.: (BY TYPE) SPECIAL DESIGN

IN ADDITION TO THE REQUIREMENTS OF CM&S 630 AND APPLICABLE STANDARD DRAWINGS, THE CONTRACTOR SHALL FURNISH AND INSTALL A SIGN SUPPORT TRUSS PER THE REQUIREMENTS OF THIS SPECIFICATION.

THE CONTRACTOR SHALL PREPARE AND SUBMIT FOR APPROVAL A SPECIAL SIGN DESIGN. THE DESIGN SHALL MEET AASHTO REQUIREMENTS FOR A DESIGN WIND SPEED OF 90 MPH. THE SHOP DRAWINGS AND CALCULATIONS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL, PRIOR TO ORDERING THE SUPPORT. THE DESIGN SHALL INCLUDE THE SUPPORT, FOUNDATIONS, POLE DATA, BASE PLATES, AND ANCHOR BOLTS. THE CALCULATIONS SHALL BE SEALED AND SIGNED BY A PROFESSIONAL ENGINEER, REGISTERED IN THE STATE OF OHIO.

PAYMENT FOR ITEM 630 "OVERHEAD SIGN SUPPORT, MISC.: (BY TYPE) SPECIAL DESIGN" SHALL BE MADE AT THE CONTRACT UNIT PRICE, IN PLACE AND ACCEPTED. THE FOUNDATION WILL BE MEASURED SEPARATELY. HOWEVER, THIS ITEM SHALL INCLUDE THE ADDITIONAL LABOR, MATERIALS, AND EQUIPMENT AS REQUIRED TO DESIGN AND CONSTRUCT THE SPECIAL FOUNDATION.

REMOVAL OF RAISED PAVEMENT MARKERS

THE FOLLOWING QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY FOR PURPOSES OF REMOVING RAISED PAVEMENT MARKERS IN THE PROPOSED RESURFACING AREA:

ITEM 621 RAISED PAVEMENT MARKER REMOVED 1706 EACH

RAISED PAVEMENT MARKERS ON BRIDGE DECKS ARE EXISTING TO REMAIN. THE CONTRACTOR SHALL NOT DISTURB RPM'S ON BRIDGE DECK SURFACES.

CALCULATED MJH CHECKED KAE

TRAFFIC CONTROL GENERAL NOTES

HAM-71-1.97

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SHEET NO.	REFERENCE NO.	ALIGNMENT	STATION FROM	STATION TO	SIDE	621 RPM WHITE EACH	621 RPM WHITE/RED EACH	621 SPACING	644 EDGE LINE, 6", (WHITE) FT	644 EDGE LINE, 6", (YELLOW) FT	644 LANE LINE, 6" FT	644 CHANNELIZING LINE, 12" FT	644 CHEVRON MARKING FT	644 DOTTED LINE, 6" FT	644 DOTTED LINE, 12" FT	646 EDGE LINE, 6" (WHITE) FT	646 EDGE LINE, 6" (YELLOW) FT	646 LANE LINE, 6" FT	646 CHANNELIZING LINE, 12" FT	646 DOTTED LINE, 6" FT	MARKINGS ON BRIDGES HAM-71-0197 FT	MARKINGS ON BRIDGES HAM-71-0248R FT		
122-123	WE-1	NB I-71	160+58	168+58	RT				472							328					328			
123	WE-2		168+58	185+04	RT				1646															
123-125	WE-3		185+04	220+80	RT				2368							1207						1207		
122-123	YE-1		159+58	182+05	RT					1919							328				328			
123-125	YE-2		182+05	220+80	RT					2668							1207					1207		
122-125	LL-1		160+00	220+80	RT	38		120			4545							1535			328	1207		
122-125	LL-2		160+00	220+80	RT	38		120			4545							1535			328	1207		
123-125	LL-3		173+61	220+80	RT	29		120			3512							1207				1207		
123-125	LL-4		189+67	220+80	RT	19		120			2228							885				885		
122-123	CH-1		160+18	162+85	RT														267		267			
122-123	CH-2		160+42	162+85	RT														243		243			
123	CH-3		168+58	173+61	RT							503												
	CH-4		168+58	173+61	RT		13	40				503												
	CH-5		179+24	182+05	RT		7	40				281												
	CH-6		179+24	182+05	RT		7	40				281												
	CH-7		185+04	189+67	RT							463												
	CH-8		185+04	189+67	RT		12	40				463												
	DW-1		162+85	167+90	RT									457						48	48			
	DW-2		173+73	179+24	RT									551										
127-129	WE-4		311+50	337+75	RT				2625															
129-132	WE-5		337+75	384+76	RT				4701															
132-134	WE-6		384+76	392+69	RT				793															
134-136	WE-6		290+50	306+67	RT				1617															
135-140	WE-7		306+67	331+53	RT				2486															
140-142	WE-8		331+53	372+55	RT				4102															
142-143	WE-9		372+55	385+49	RT				1294															
143-144	WE-10		385+49	398+00	RT				1251															
127-134	YE-3		311+50	392+69	RT					8119														
134-142	YE-3		290+50	378+82	RT					8832														
142-144	YE-4		378+82	398+00	RT					1918														
127-134	LL-5		311+50	392+69	RT	68		120			8119													
134-144	LL-5		290+50	398+00	RT	90		120			10750													
127-134	LL-6		311+50	392+69	RT	68		120			8119													
134-144	LL-6		290+50	384+00	RT	78		120			9350													
127-134	LL-7		311+50	392+69	RT	68		120			8119													
134-140	LL-7		290+50	350+72	RT	51		120			6022													
141	LL-8		367+20	369+83	RT						263													
143-144	LL-9		384+00	398+00	RT	12		120			1400													
129	CH-9		333+00	335+92	RT							292												
129	CH-10		335+92	337+75	RT		10	40				366												
132,134	CH-11		384+76	390+10	RT							534												
132,134	CH-12		384+76	390+10	RT		14	40				534												
135	CH-13		305+40	306+67	RT		8	40				254												
140	CH-14		331+53	335+72	RT							419												
140	CH-15		331+53	335+72	RT		11	40				419												
141-142	CH-16		369+83	372+55	RT		14	40				544												
143	CH-17		383+47	385+49	RT		10	40				404												
129	CV-1		335+92	337+75	RT								101											
135	CV-2		305+40	306+67	RT								74											
143	CV-3		383+47	385+49	RT								108											
140	DW-3		335+72	342+35	RT									663										
128-129	WDW-1		322+30	333+00	RT										1070									
134	WDW-2		390+10	392+69	RT										259									
134-136	WDW-2		290+50	305+40	RT										1490									
140-143	WDW-3		350+72	383+47	RT										3275									
143-144	WDW-4		384+00	398+00											1400									
		SUB-TOTAL				559	106		23355	23456	66972					1535	1535	5162						
TOTALS CARRIED TO GENERAL SUMMARY						665			8.87 (MI)		12.68 (MI)	6260	283	1671	7494	0.58 (MI)		0.98 (MI)	510	48				

CALCULATED MJH
CHECKED KAE

PAVEMENT MARKING SUBSUMMARY - NB I-71

HAM-71-1.97

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SHEET NO.	REFERENCE NO.	ALIGNMENT	STATION FROM	STATION TO	SIDE	621 RPM WHITE EACH	621 RPM WHITE/RED EACH	621 SPACING	644 EDGE LINE, 6", (WHITE) FT	644 EDGE LINE, 6", (YELLOW) FT	644 LANE LINE, 6" FT	644 CHANNELIZING LINE, 12" FT	644 CHEVRON MARKING FT	644 DOTTED LINE, 6" FT	644 DOTTED LINE, 12" FT	646 EDGE LINE, 6" (WHITE) FT	646 EDGE LINE, 6" (YELLOW) FT	646 LANE LINE, 6" FT	646 CHANNELIZING LINE, 12" FT	646 DOTTED LINE, 6" FT	MARKINGS ON BRIDGES HAM-71-0197 FT	MARKINGS ON BRIDGES HAM-71-0248L FT	MARKINGS ON BRIDGES HAM-71-0793L FT	MARKINGS ON BRIDGES FT
122-123	WE-11	SB I-71	158+75	162+08	LT				5							328					328			
122-124	WE-12		161+84	196+41	LT				2250							1207						1207		
124-125	WE-13		195+66	235+30	LT				3964															
122-123	YE-5		159+32	182+00	LT					1940							328				328			
123-125	YE-6		182+00	235+30	LT					4123							1207					1207		
124	YE-7		195+66	196+41	LT					75														
122-125	LL-10		159+00	235+30	LT	51		120			6095							1535			328	1207		
122-125	LL-11		159+30	235+30	LT	51		120			6065							1535			328	1207		
125	LL-12		229+30	235+30	LT	5		120			600													
122-123	CH-18		161+84	166+09	LT		11	40				425												
123	CH-19		162+08	166+09	LT		10	40				401												
124	CH-20		196+41	199+99	LT		18	40				716												
124	CH-21		195+66	204+00	LT		21	40				834												
123	CH-22		178+78	182+00	LT		9	40				322												
123	CH-23		178+78	182+00	LT							322												
124	CV-4		196+41	199+99	LT								105											
123	DW-4		166+09	169+97	LT									388										
123	DW-5		172+69	178+78	LT									609										
124-124	WDW-5		204+00	229+30	LT										2530									
126-127	WE-14		297+00	304+61	LT				761															
127-132	WE-15		304+52	374+15	LT				6963															
132	WE-16		374+30	385+40	LT				1110															
132-134	WE-17		385+40	392+69	LT				729															
134-135	WE-17		290+50	306+05	LT				1555															
135-138	WE-18		306+05	326+90	LT				2085															
138-141	WE-19		326+90	366+80	LT				3990															
141-142	WE-20		366+80	383+39	LT				1003							656								656
142-144	WE-21		383+39	398+96	LT				1557															
126-134	YE-8		297+00	392+69	LT					9569														
134-143	YE-8		290+50	385+85	LT					8879							656							656
143-144	YE-9		385+85	398+96	LT					1311														
126-134	LL-13		297+00	392+69	LT	160		120			19138													
134-144	LL-13		290+50	398+96	LT	182		120			20380							1312						1312
126-134	LL-14		297+00	392+69	LT	80		120			9569													
134-142	LL-14		290+50	382+77	LT	72		120			8571							656						656
126-127	CH-24		300+00	304+52	LT		12	40				452												
126-127	CH-25		300+00	304+52	LT							452												
131-132	CH-26		367+50	374+30	LT		17	40				680												
131-132	CH-27		367+50	374+30	LT							680												
132	CH-28		385+40	387+04	LT		9	40				328												
135	CH-29		301+68	306+05	LT		11	40				437												
135	CH-30		301+68	306+05	LT							437												
138	CH-31		326+90	328+40	LT		8	40				300												
141	CH-32		363+60	366+80	LT		8	40				320												
141	CH-33		363+60	366+80	LT							320												
142-143	CH-34		382+77	385+85	LT		8	40				308												
142-143	CH-35		382+77	385+85	LT							308												
142-143	CH-36		383+39	385+67	LT		12	40				456												
143-144	CV-4		383+39	385+67	LT								89											
131	DW-6		359+63	367+50	LT									787										
132-134	DW-7		387+04	392+69	LT									565										
134	DW-7		290+50	291+59	LT									109										
134-135	DW-8		293+63	301+68	LT									805										
138,140	DW-9		328+40	335+08	LT									668										
140-141	DW-10		355+25	363+60	LT									835										
143	DW-11		385+67	392+28	LT									661										
		SUB-TOTAL				601	154		25972	25897	70418					2191	2191	5038						
TO GENERAL SUMMARY						755			9.82 (MI)		13.34 (MI)	8498	194	5039	2530		0.83 (MI)		0.95 (MI)					

CALCULATED MJH
CHECKED KAE

PAVEMENT MARKING SUBSUMMARY - SB I-71

HAM-71-1.97

SHEET NO.	REFERENCE NO.	ALIGNMENT	STATION FROM	STATION TO	SIDE	621 RPM WHITE EACH	621 RPM WHITE/RED EACH	621 RPM YELLOW/RED EACH	644 SPACING	644 EDGE LINE, 6", (WHITE) FT	644 EDGE LINE, 6", (YELLOW) FT	644 LANE LINE, 6" FT	644 CHANNELIZING LINE, 12" FT	644 STOP LINE FT	644 CROSSWALK LINE FT	644 TRANSVERSE/ DIAGONAL LINE FT	644 CHEVRON MARKING FT	644 LANE ARROW EACH	644 WRONG WAY ARROW EACH	644 DOTTED LINE, 6" FT	646 EDGE LINE, 6" (WHITE) FT	646 EDGE LINE, 6" (YELLOW) FT		
127-129	WE-22	RAMP ME	304+61	337+76	ON					3315														
127-129	YE-10	↓	304+61	337+76	RT			42	80		3315													
128-129	LL-15	↓	333+00	337+76	RT							476												
128	TY-1	↓	CADD	MEASURED	RT											293								
129	WE-23	RAMP MF	337+75	344+01	ON		13		40/80	626														
129	YE-11	↓	337+75	343+90	LT			13	40/80		615													
129	WWA	↓	339+00																1					
130	CH-37	↓	341+00	343+90	LT		8		40				290					6						
130	SL-1	↓	CADD	MEASURED	-									36										
130	CW-1	↓	CADD	MEASURED	-										105									
132	WE-24	RAMP DB	374+15	383+83	ON					968														
↓	YE-12	RAMP DB	374+15	383+83	LT			13	80		968													
↓	WE-25	RAMP DA/DC	378+00	384+85	L/ON					856														
↓	YE-13	↓	378+00	384+85	L/R			11	80		856													
↓	LL-16	↓	378+00	380+60	L/R							431												
↓	WE-26	RAMP DE	373+20	385+34	ON		21		40/80	1214														
↓	YE-14	↓	373+20	385+34	RT			21	40/80		1214													
↓	LL-17	↓	378+00	381+00	RT		4		80			300												
↓	WWA	↓	380+50																2					
133	CH-38	↓	373+20	375+00	RT		5		40				180					2						
133	CH-39	↓	373+20	378+00	RT		11		40/80				480					6						
133	SL-2	↓	CADD	MEASURED	-									50										
135	WE-27	RAMP B	306+67	311+19	ON		12		40	452														
135	WWA	↓	307+50																1					
135	YE-15	↓	306+67	311+19	LT			11	40		452													
136	CH-40	↓	308+52	311+00	LT		7		40				248					6						
136	CH-41	↓	310+49	311+00	LT		2		40				51											
136	SL-3	↓	CADD	MEASURED	-									39										
136	CW-2	↓	CADD	MEASURED	-										160									
136	CV-5	↓	CADD	MEASURED	-												34							
135	WE-28	RAMP A1	305+97	311+70	ON					573														
137	WE-29	RAMP A2	309+60	311+08	LT					148														
135	YE-16	RAMP A1/A2	305+97	311+08	LT			7	80		511													
137	YE-17	RAMP A1	309+60	311+70	RT			4	80		210													
↓	CH-42	RAMP A2	309+33	309+60	LT								54											
↓	CW-3	RAMP A1	CADD	MEASURED	-										32									
↓	CW-4	RAMP A2	CADD	MEASURED	-										83									
138	WE-30	RAMP D	320+67	326+90	R/ON		13		40/80	623									1					
↓	YE-18	↓	321+08	326+90	RT			13	40/80		623													
↓	WWA	↓	326+00																					
138,140	WE-30A	RAMP C	327+40	331+61	ON					421														
138,140	YE-18A		327+40	331+61	RT			6	80		421													
139	CH-43		321+08	324+50	RT		9		40				342					6						
↓	SL-4		CADD	MEASURED	-									40										
↓	CW-5		CADD	MEASURED	-										115									
121	VAR	I-71 TUNNEL				41	22	15		3510	3560	3250	850											
158	VAR	RAMP GD						13	80	1156	1003		190				115							
159	VAR	RAMP RD						7	80	523	512	190												
162	VAR	EDEN PK RAMPS					146	77		3843	3848	1620	672	82				5	4	157	375	402		
		SUB-TOTAL				41	273	253		18228	18108	6267									375	402		
TOTALS CARRIED TO GENERAL SUMMARY							**567**				**6.88 (MI)**	1.19 (MI)	**3357**	247	495	293	149	**31**	9	157	0.15 (MI)			

CALCULATED MJH
CHECKED KAE

PAVEMENT MARKING SUBSUMMARY - RAMPS

HAM-71-1.97

SHEET NO.	REFERENCE NO.	ALIGNMENT	STATION		621				644											646		MARKINGS ON BRIDGES			
					RPM WHITE	RPM WHITE/RED	RPM YELLOW/RED	SPACING	EDGE LINE, 6", (WHITE)	EDGE LINE, 6", (YELLOW)	LANE LINE, 6"	CHANNELIZING LINE, 12"	STOP LINE	CROSSWALK LINE	TRANSVERSE/ DIAGONAL LINE	CHEVRON MARKING	LANE ARROW	WRONG WAY ARROW	DOTTED LINE, 6"	EDGE LINE, 6" (WHITE)	EDGE LINE, 6" (YELLOW)	HAM-71-0804R	HAM-71-0822R	HAM-71-0843S	HAM-71-0820S
			FROM	TO	EACH	EACH	EACH		FT	FT	FT	FT	FT	FT	FT	FT	EACH	EACH	FT	FT	FT	FT	FT	FT	FT
141	WE-31	RAMP E	7+41	15+20					779																
141	YE-18	RAMP E	7+41	15+20			10	80		779															
141-142	WE-32	RAMP J	7+41	24+80					1739																
142	YE-19	↓	14+28	24+80			14	80		1052															
141	LL-18	↓	8+50	10+64							214														
141-142	CH-44	↓	10+64	14+28		10		40				364													
141-142	CV-6	↓	CADD MEASURED													164									
142-143	CH-45	▼	24+80	28+96		21		40				832													
142	WE-33	RAMP K	14+23	26+52					879											350		350			
141-142	YE-20	RAMP K	7+39	26+52			20	80		1563											350	350			
141-142	WE-34	RAMP L	7+41	18+37					1096																
142	WE-35	↓	18+37	26+52					465											350		350			
141-142	YE-21	↓	7+41	26+52						1561											350	350			
141-142	LL-19	↓	7+41	15+97	8			120			856														
142	CH-46	▼	15+97	18+37		12		40				480													
142	WE-36	RAMP I	1+92	10+40					848																
142	YE-22	RAMP I	1+92	10+40			11	80		848															
143	WE-37	RAMP H/H3	0+84	12+40					698											458			458		
144	WE-38	↓	14+37	24+06					794											175				175	
143-144	YE-23	↓	0+84	14+03			11	80		861											458		458		
144	CH-47	↓	14+03	16+38		12		40				470													
143	DW-12	▼	7+00	12+40															540						
142-143	WE-39	RAMP T	27+52	45+06		22		80	1754																
142-143	WE-40	↓	27+52	34+25					673																
143	WE-41	↓	34+25	44+49					1024																
143-144	WE-42	↓	45+06	50+75		15		40	569																
143-144	WE-43	↓	44+49	51+03					654																
144	WE-44	↓	50+16	50+88		2		40	72																
142-144	YE-24	↓	27+52	50+88			35	40/80		2336															
142-144	YE-25	↓	27+52	51+03			30	80		2351															
144	YE-26	↓	50+16	50+75						59															
143-144	LL-20	↓	32+00	47+50		20		80			1550														
142-143	CH-48	↓	30+60	32+00		8		40				280													
143	CH-49	↓	32+50	34+25		5		40				175													
143	CH-50	↓	32+50	34+25								175													
143	CH-51	↓	44+46	45+06		4		40				120													
143	CH-52	↓	42+40	44+49								209													
143	CH-53	↓	42+40	44+49		6		40				209													
144	CH-54	↓	47+50	50+88		17		40				676					9								
144	SL-5	↓	CADD MEASURED										24												
144	CW-6	↓	CADD MEASURED											42											
142-143	DW-13	↓	27+82	32+50															468						
143	DW-14	↓	37+90	42+40															450						
143	WWA	▼	45+50															2							
143-144	WE-45	RAMP H1	1+54	3+77					223																
144	YE-27	RAMP H1	1+54	8+74			8	80		610											110			110	
144	YE-28	RAMP H3	19+00	24+06			6	80		441											65			65	
142	WE-46	RAMP F	4+14	13+80		13		80	966																
142	YE-29	RAMP F	4+14	13+80			13	80		966															
143	WE-47	RAMP G	3+39	9+55					526											90					90
143	YE-30	RAMP G	3+39	9+55			7	80		526											90				90
143-144	WE-48	RAMP M	0+00	6+51					651																
144	YE-31	↓	1+96	6+51			6	80		455															
13-144	CH-55	↓	0+00	1+96								196													
143-144	CH-56	▼	0+00	1+96		5		40				196													
143	WE-49	RAMP U	2+00	4+07		6		40	207																
143	YE-32	RAMP U	2+00	4+07			6	40		207															
143	WWA	RAMP U	2+50															1							
		SUB-TOTAL			8	178	177		14617	14615	2620									1423	1423				
TO GENERAL SUMMARY					**363**				**5.54 (MI)**		**0.50 (MI)**	**4382**	**24**	**42**		**164**	**9**	**3**	**1458**	**0.54 (MI)**					

CALCULATED MJH
CHECKED KAE

PAVEMENT MARKING SUBSUMMARY - SR 562 RAMPS

HAM-71-1.97

SHEET NO.	REFERENCE NO.	LOCATION	STATION	630						
				REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL	REMOVAL OF GROUND MOUNTED MAJOR SIGN AND DISPOSAL	REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL	REMOVAL OF GROUND MOUNTED STRUCTURAL BEAM SUPPORT AND DISPOSAL	REMOVAL OF POLE MOUNTED SIGN AND DISPOSAL	REMOVAL OF POLE MOUNTED SIGN AND REERECTION	
				EACH	EACH	EACH	EACH	EACH	EACH	
122	RG-1	NB I-71	139+25	2	1		2			
122	RG-2	〃	151+02	1	1		2			
123	RG-3	〃	166+17	1		2				
〃	RG-4	〃	168+03	1		2				
〃	RG-5	〃	182+48	1		2				
〃	RG-6	↓	184+90	1		2				
〃	RG-7	SB I-71	185+10	2		2				
↓	RG-8	〃	167+90	1		2				
124	RG-9	〃	198+58		1		2			
124	RG-10	〃	200+35	1		2				
124	RG-11	〃	204+20	1		2				
125	RG-12	〃	223+20	1	1		2			
125	RG-13	〃	227+90	1	1		2			
127	RG-14	〃	306+50		1		4			
127	RG-15	↓	312+25	1	1		2			
127	RG-16	RAMP ME	311+00	1		1				
128	RG-17	〃	329+64	1		1				
〃	RG-18	〃	330+40	1		1				
〃	RG-19	〃	331+74	1		2				
〃	RG-20	↓	333+00	1		2				
〃	RG-21	SB I-71	328+65	1		2				
↓	RG-22	〃	331+90	1		2				
129	RG-23	RAMP MF	337+36	1		2				
〃	RG-24	〃	338+00	1			2			
〃	RG-25	〃	338+95	1		2				
↓	RG-26	〃	339+88		1		2			
130	RG-27	〃	341+36					1		
〃	RG-28	〃	341+36					1		
〃	RG-29	〃	342+03	2		2				
↓	RG-30	↓	343+80	3		2				
129	RG-31	RAMP ME	334+90	1		2				
131	RG-32	NB I-71	346+80	1		2				
〃	RG-33	NB I-71	367+40					2		
〃	RG-34	SB I-71	352+00	1		2				
〃	RG-35	〃	360+41	2		1				
↓	RG-36	〃	367+37	1		1				
132	RG-37	〃	375+40	1		2				
〃	RG-38	↓	381+40	1		2				
〃	RG-39	RAMP DC	378+29	2		2				
〃	RG-40	〃	379+48	1		2		1		
〃	RG-41	〃	380+71	1		1				
〃	RG-42	NB I-71	381+63	1		2				
〃	RG-43	NB I-71	383+17	1		2				
〃	RG-44	RAMP DE	378+24	1		1				
〃	RG-45	〃	378+84	1		1				
〃	RG-46	〃	381+22	2		2				
〃	RG-47	〃	381+79	2		1				
〃	RG-48	〃	383+18	1		1				
↓	RG-49	〃	385+11	1			2			
133	RG-50	〃	373+33	6		4				
〃	RG-51	〃	373+92	1		2				
〃	RG-52	〃	374+29	1		1				
〃	RG-53	↓	374+47	2		2				
↓	RG-54	RAMP DB	380+70	1		1				
134	RG-55	SB I-71	298+10	1	1		2			
135	RG-56	SB I-71	302+18	1		2				
〃	RG-57	NB I-71	306+80	1			2			
〃	RG-58	NB I-71	309+67	1		2				
↓	RG-59	RAMP B	307+10	1		1				
TOTALS - COLUMN "A"				68	9	77	26	5		

SHEET NO.	REFERENCE NO.	LOCATION	STATION	630						
				REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL	REMOVAL OF GROUND MOUNTED MAJOR SIGN AND DISPOSAL	REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL	REMOVAL OF GROUND MOUNTED STRUCTURAL BEAM SUPPORT AND DISPOSAL	REMOVAL OF POLE MOUNTED SIGN AND DISPOSAL	REMOVAL OF POLE MOUNTED SIGN AND REERECTION	
				EACH	EACH	EACH	EACH	EACH	EACH	
135	RG-60	SB I-71	307+65	1		2				
135	RG-61	SB I-71	312+08	1		2				
136	RG-62	RAMP B	308+52	2		2				
〃	RG-63	〃	308+59	2		2				
〃	RG-64	〃	308+59	1	1		2			
〃	RG-65	〃	310+12					1		
↓	RG-66	↓	310+97	3		2				
137	RG-67	RAMP A1	309+59	1		1				
↓	RG-68	RAMP A2	310+68	1		1				
〃	RG-69	RAMP A1	311+52	1		1				
138	RG-70	SB I-71	322+57	1		2				
〃	RG-71	RAMP C	326+40	1			1			
〃	RG-72	RAMP D	326+73	1			1			
〃	RG-73	〃	326+32	1		2				
↓	RG-74	〃	325+42		1		2			
139	RG-75	〃	320+85	1		2				
〃	RG-76	〃	321+15	3		2				
〃	RG-77	〃	322+10	4		4				
〃	RG-78	〃	323+46	4		2				
↓	RG-79	↓	324+48	2		4				
140	RG-80	NB I-71	330+00	1		2				
〃	RG-81	NB I-71	333+47	1		2				
〃	RG-82	NB I-71	339+90	1		2				
〃	RG-83	NB I-71	343+48	2		1				
〃	RG-84	SB I-71	349+95	1		2				
↓	RG-85	SB I-71	354+89	2		1				
159	RG-86	READING RD	OH-28						1	
〃	RG-87	RAMP RD	180+20					1		
↓	RG-88	RAMP RD	181+50					1		
160	RG-89	RAMP RE	186+40					2		
〃	RG-90	〃	188+45	1		2				
〃	RG-91	〃	189+40	2		1				
〃	RG-92	↓	190+22	2		2				
〃	RG-93	EDEN PK DR	SIGN RO-31						2	
〃	RG-94	EDEN PK DR	SIGN RO-32					1		
↓	RG-95	RAMP RA	SIGN RO-33					1		
161	RG-96	DORCHESTER	@ RAMP RF					3		
〃	RG-97	〃	@ READING					3		
〃	RG-98	〃	@ RAMP RF					1		
〃	RG-99	〃	@ RAMP RC2					2		
〃	RG-100	↓	@ RAMP RC2					1		
〃	RG-101	EDEN PK DR	@ RAMP RC2	1		2				
〃	RG-102	〃	FLORENCE AVE					3		
〃	RG-103	〃	FLORENCE AVE					2		
〃	RG-104	↓	FLORENCE AVE					1		
〃	RG-105	RAMP RF	STA 192+90	3		1				
〃	RG-106	RAMP RC2	STA 29+35					1		
〃	RG-107	RAMP RC2	STA 29+60	1		1				
〃	RG-108	RAMP RC2	STA 31+90	1		1				
↓	RG-109	RAMP RE	193+25	1		1				
163	RG-110	READING RD	N. OF EDEN PARK					2		
〃	RG-111	〃	N. OF EDEN PARK					1		
〃	RG-112	〃	N. OF EDEN PARK					2		
↓	RG-113	↓	N. OF EDEN PARK					2		
166	RG-114	WILLIAMS AV	W. OF I-71	1		2				
TOTAL - THIS COLUMN				52	2	54	6	31	3	
TOTAL - COLUMN "A"				68	9	77	26	5		
TO GENERAL SUMMARY				**120**	**11**	**131**	**32**	**36**	**3**	

CALCULATED MJH
CHECKED KAE

GROUND MOUNTED SIGN REMOVAL SUBSUMMARY

HAM-71-1.97

SHEET NO.	REFERENCE NO.	LOCATION	STATION	630												631								
				REMOVAL OF STRUCTURE MOUNTED SIGN AND DISPOSAL	REMOVAL OF OVERHEAD MOUNTED SIGN AND REERECTION	REMOVAL OF OVERHEAD MOUNTED SIGN AND DISPOSAL	REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-16.21	REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-12.30	REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-9.10	REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-7.65	REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-17.10	REMOVAL OF MISC. TRAFFIC CONTROL ITEM.: MONOTUBE SIGN SUPPORT	REMOVAL OF MISC. TRAFFIC CONTROL ITEM.: CURVE WARNING SIGN WITH FLASHING BEACON	REMOVAL OF MISC. TRAFFIC CONTROL ITEM.: SIGN BRACKETS ON COMBINATION POLE	SIGNING, MISC.: REMOVAL OF OVERHEAD FLASHING SIGN AND REERECTION	SIGN LIGHTING, MISC.: REMOVE SIGN SERVICE							
				EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH								
122	RO-1	NB I-71	139+23			2										SEE SHEET 103								
	RO-2	NB I-71	158+00			2																		
	RO-3	SB I-71	152+39			2				1					1									
123	RO-4	NB I-71	171+00			2		1																
	RO-5	NB I-71	181+40			2		1																
	RO-6	SB I-71	163+00		1	1				1														
	RO-7		172+10			1		1																
	RO-8		177+49			1		1																
	RO-9		180+58		1	1				1														
124	RO-10	NB I-71	210+95	1																				
	RO-11	SB I-71	198+22		1	7				1														
	RO-12	SB I-71	212+18			6				1														
128	RO-13	NB I-71	332+75	2																				
129	RO-14	NB I-71	332+90			5				1														
130	RO-15	RAMP MF	341+45			2					1													
131	RO-16	NB I-71	367+50			2		1																
134	RO-17	NB I-71	295+03			2		1																
	RO-18	SB I-71	388+03			3				1														
	RO-19	SB I-71	293+01			2		1																
135	RO-20	NB I-71	305+25			3				1														
138	RO-21	SB I-71	328+40			4				1														
140	RO-22	SB I-71	341+32			2		1																
154	RO-23	E. 5TH ST	WEST OF SENTINAL ST			4				1						1								
154	RO-24	E. 5TH ST	RAMP SPLT			2				1						1								
157	RO-25	I-471	155+64			3				1														
157	RO-26	GILBERT	S OF COURT ST			1		1								1								
157	RO-27	GILBERT	N. OF NB ON-RAMP			1			1							1								
159	RO-28	READING	N. OF LIBERTY ST			3				1						1								
159	RO-29	READING	NB I-71 RAMP SPLT			2						1				1								
160	RO-30	RAMP RC	187+00			2				1						1								
	RO-31	EDEN PK DR	EAST OF I-71			1		1								1								
	RO-32	EDEN PK DR	WEST OF READING			1		1								1								
	RO-33	SB I-71	GILBERT/READING			3				1						1								
161	RO-34	EDEN PK DR	FLORENCE AVE			3																		
161	RO-35	RAMP RB	EDEN PARK DR			3																		
163	RO-36	READING	N. OF EDEN PARK DR			3				1						1								
163	RO-37	READING	N. OF EDEN PARK DR			2				1				1		1								
164	RO-38	MONTGOM.	S. OF DUCK CREEK DR			1		1								1								
	RO-39	MONTGOM.	NB ON-RAMP			2									1	1								
	RO-40	MONTGOM.	N. OF NB ON-RAMP			1		1								1								
165	RO-41	DUCK CR.	W. OF DANA AVE			1		1								1								
	RO-42	DANA AVE	S. OF I-71			1		1								1								
	RO-43	DANA AVE	SW. OF NB ON-RAMP			1		1								1								
	RO-44	DANA AVE	SE. OF NB ON-RAMP			1		1																
	RO-45	DANA AVE	S. OF LOOP RAMP			1		1								1								
	RO-46	DANA AVE	N. OF I-71			1		1																
166	RO-47	EDMONDS.	AT EDWARDS			1									1	1								
	RO-48	EDMONDS.	E. OF I-71			1		1								1								
	RO-49	EDMONDS.	SB I-71 ON-RAMP			1									1	1								
	RO-50	EDMONDS.	N. OF I-71			1									1	1								
	RO-51	SMITH RD	SE. OF WILLIAMS AVE			2		1								1								
	RO-52	WILLIAMS	SW OF SMITH RD			1		1								1								
	RO-53	SMITH RD	N. OF WILLIAMS			1		1								1								
	RO-54	WILLIAMS	SB I-71 OFF-RAMP			1									1	1								
	RO-55	WILLIAMS	NW. OF EDWARDS			2									1	1								
144	RO-56	RAMP T	48+50			4	1																	
TO GENERAL SUMMARY				3	3	111	1	23	1	17	1	1	1	6	1	28								

CALCULATED MJH
CHECKED KAE

OVERHEAD MOUNTED SIGN REMOVAL SUBSUMMARY

HAM-71-1.97

SHEET NO.	REFERENCE NO.	LOCATION	STATION	SIGN CODE	SIZE	630 GROUND MOUNTED SUPPORT, NO. 3 POST	630 ONE WAY SIGN SUPPORT, NO. 3 POST	630 SIGN POST REFLECTOR	630 SIGN SUPPORT ASSEMBLY, POLE MOUNTED	630 SIGN, FLAT SHEET
						FT	FT	EACH	EACH	SF
123	SN-01	NB I-71	166+00	R2-1	48"x60"	15.5/15.5				20
	SN-02		168+00	W4-3R	48"x48"	16.1/16.1				16
	SN-03		184+82	W4-3R	48"x48"	16.1/16.1				16
	SN-04	SB I-71	185+00	W4-1L	48"x48"	16.1/16.1				16
124	SN-05		200+00	W13-2	48"x60"	15.5/15.5				20
124	SN-06		204+50	D14-H4	48"x30"	13.0/13.0				10
127	SN-07	RAMP ME	310+50	D10-H5A	30"x30"	13.0				6.3
	SN-08		318+50	W1-2	36"x36"	15.2				9
	SN-08		318+50	W13-1P	18"x18"					2.3
128	SN-09		329+00	D10-H5A	30"x30"	13				6.3
	SN-10		333+00	W4-2R	36"x36"	14.7				9
	SN-11		333+00	W4-2R	36"x36"	14.7				9
	SN-12	NB I-71	330+00	W13-2	48"x60"	15.5/15.5				20
129	SN-13	RAMP ME	336+00	W9-1R	36"x36"	14.7				9
	SN-14	RAMP ME	336+60	R5-H10e	36"x30"	13.0				7.5
	SN-15	SB I-71	342+00	D14-H4	48"x30"	13.0/13.0				10
	SN-16	RAMP MF	336+50	W13-3	48"x60"	15.5/15.5				20
	SN-17		336+50	W1-6R	60"x30"	13.0/13.0		2		12.5
130	SN-18		340+50	R3-H8bd	30"x30"	13.0				6.3
	SN-19		340+50	R3-H8bd	30"x30"	13.0				6.3
	SN-20		341+00	R5-1A	36"x24"	13.0/13.0		4		6
	SN-20			R5-1A	36"x24"					6
	SN-21			R5-1A	36"x24"	13.0/13.0		4		6
	SN-21			R5-1A	36"x24"					6
	SN-22		341+50	W3-3	36"x36"	14.7				9
	SN-23		341+50	W3-3	36"x36"	14.7				9
	SN-24		343+84	R5-1	36"x36"		13.5/15.0	2		9
				R6-1L	54"x18"					6.8
				R6-1R	54"x18"					6.8
	SN-25			R5-1	36"x36"		13.5/15.0	2		9
				R6-1L	54"x18"					6.8
				R6-1R	54"x18"					6.8
131	SN-26	SB I-71	354+00	R2-1	48"x60"	15.5/15.5				20
	SN-27		361+00	M3-3	36"x18"	12.0				4.5
	SN-27		361+00	M1-1	36"x36"					9
132	SN-28		375+47	W4-1R	48"x48"	16.1/16.1				16
	SN-29		381+49	I-H2a	72"x36"	13.5/13.5				18
	SN-30	NB I-71	380+50	W12-2	48"x48"	16.1/16.1				16
	SN-30			W16-3AP	30"x12"					2.5
	SN-31			W12-2	36"x36"				1	9
	SN-31			W16-3AP	30"x12"					2.5
	SN-32		381+42	I-H2a	72"x36"	13.5/13.5				18
	SN-33	RAMP ME	378+50	R5-H10e	36"x30"	13.0				7.5
	SN-34	RAMP DA	379+00	W9-1R	36"x36"	14.7				9
	SN-35		379+00	W9-1R	36"x36"	14.7				9
	SN-36		380+50	D10-H5A	30"x30"	13.0				6.3
	SN-37		380+60	W4-2R	36"x36"	14.7				9
	SN-38		380+60	W4-2R	36"x36"	14.7				9
	SN-39		383+87	W4-3R	48"x48"	16.1/16.1				16
	SN-40	RAMP DE	378+15	R5-1A	36"x24"	13.0/13.0		4		6
	SN-40		378+15	R5-1A	36"x24"					6
	SN-41		378+00	R5-1A	36"x24"	13.0/13.0		4		6
	SN-41		378+00	R5-1A	36"x24"					6
	SN-42		378+20	W3-3	36"x36"	14.1				9
	SN-43		379+50	D10-H5A	30"x30"	13.0				6.3
TOTALS - COLUMN "A"						862.2	57	22	1	539

SHEET NO.	REFERENCE NO.	LOCATION	STATION	SIGN CODE	SIZE	630 GROUND MOUNTED SUPPORT, NO. 3 POST	630 ONE WAY SIGN SUPPORT, NO. 3 POST	630 SIGN POST REFLECTOR	630 SIGN SUPPORT ASSEMBLY, POLE MOUNTED	630 SIGN, FLAT SHEET
						FT	FT	EACH	EACH	SF
133	SN-44	RAMP DE	381+00	R3-H8bj	30"x30"	13.0				6.3
	SN-45		381+00	R3-H8bj	30"x30"	13.0				6.3
	SN-46		382+00	W1-2	36"x36"	15.2				9
	SN-46		382+00	W13-1P	18"x18"					2.3
	SN-47	RAMP RE	383+50	D1-H15	120"x24"	12.5/12.5				20
	SN-48	RAMP DE	373+25	R5-1	36"x36"		13.5/15.0	2		9
				R6-1L	54"x18"					6.8
				R6-1R	54"x18"					6.8
	SN-49			R5-1	36"x36"		13.5/15.0	2		9
				R6-1L	54"x18"					6.8
				R6-1R	54"x18"					6.8
	SN-50		374+00	R5-1A	36"x24"	13.0/13.0		4		6
	SN-50			R5-1A	36"x24"					6
	SN-51			D14-H4	48"x30"	13.0/13.0				10
	SN-52		374+70	R3-H8a	48"x30"	13.0/13.0		4		10
				R5-1A	36"x24"					6
				R5-1A	36"x24"					6
	SN-53	RAMP ME	384+00	R5-H10e	36"x30"	13.0				7.5
	SN-54	RAMP DB	379+50	D10-H5A	30"x30"	13.0				6.3
135	SN-55	NB I-71	310+00	R2-1	48"x60"	15.5/15.5				20
	SN-56	SB I-71	307+69	W4-1R	48"x48"	16.1/16.1				16
	SN-57	RAMP A1	308+00	D10-H5A	30"x30"	13.0				6.3
136	SN-58	RAMP B	308+30	R5-1A	36"x24"	13.0/13.0		4		6
	SN-58			R5-1A	36"x24"					6
	SN-59			R5-1A	36"x24"	13.0/13.0		4		6
	SN-59			R5-1A	36"x24"					6
	SN-60		309+00	R3-H8a	48"x30"	13.0				10
	SN-61		309+00	R3-H8a	48"x30"	13.0				10
	SN-62		310+00	D14-H4	48"x30"	13.0/13.0				10
	SN-63		310+78	R5-1	36"x36"		13.5/15.0	2		9
				R6-1L	54"x18"					6.8
				R6-1R	54"x18"					6.8
	SN-64		311+05	R5-1	36"x36"		13.5/15.0	2		9
				R6-1L	54"x18"					6.8
				R6-1R	54"x18"					6.8
137	SN-65	RAMP A1	309+85	R1-2	30"x30"	13.0		1		3.1
	SN-66	RAMP A1	311+60	R5-H10e	36"x30"	13.0				7.5
	SN-67	RAMP A2	310+69	R5-H10e	36"x30"	13.0				7.5
138	SN-67A	RAMP C	327+55	R5-H10e	36"x30"	13.0		1		7.5
139	SN-68	RAMP D	320+85	R5-1	36"x36"		13.5/15.0	2		9
				R6-1L	54"x18"					6.8
				R6-1R	54"x18"					6.8
	SN-69		321+20	R5-1	36"x36"		13.5/15.0	2		9
				R6-1L	54"x18"					6.8
				R6-1R	54"x18"					6.8
	SN-70		322+00	R3-H8a	42"x30"	13.0/13.0				8.8
	SN-71		322+00	R3-H8a	42"x30"	13.0/13.0				8.8
	SN-72		322+50	D14-H4	48"x30"	13.0/13.0				10
	SN-73		323+40	R5-1A	36"x24"	13.0/13.0		4		6
	SN-73			R5-1A	36"x24"					6
	SN-74			R5-1A	36"x24"	13.0/13.0		4		6
	SN-74			R5-1A	36"x24"					6
	SN-75		323+50	W3-3	36"x36"	14.6				9
	SN-76		323+50	W3-3	36"x36"	14.6				9
	SN-77		324+40	R3-H8bt	42"x30"	13.0/13.0				8.8
	SN-78		324+40	R3-H8bt	42"x30"	13.0/13.0				8.8
TOTALS - COLUMN "B"						613.7	171.0	37		445

CALCULATED MJH
CHECKED KAE

MINOR SIGNING SUBSUMMARY

HAM-71-1.97

SHEET NO.	REFERENCE NO.	LOCATION	STATION	SIGN CODE	SIZE	630 GROUND MOUNTED SUPPORT, NO. 3 POST (FT)	630 ONE WAY SIGN SUPPORT, NO. 3 POST (FT)	630 SIGN POST REFLECTOR (EACH)	630 SIGN HANGER ASSEMBLY, SPAN WIRE (EACH)	630 SIGN SUPPORT ASSEMBLY, POLE MOUNTED (EACH)	630 SIGN, FLAT SHEET (SF)
140	SN-79	NB I-71	330+50	W4-1R	48"x48"	16.1/16.1					16
	SN-80	NB I-71	348+00	R2-1	48"x60"	15.5/15.5					20
	SN-81	SB I-71	348+00	R2-1	48"x60"	15.5/15.5					20
	SN-82		354+00	M3-3	36"x18"	12.0					4.5
	SN-82		354+00	M1-1	36"x36"						9
159	SN-83	RAMP RD	180+20	W9-1R	36"x36"					1	9
159	SN-84	RAMP RD	181+50	W4-2R	36"x36"					1	9
160	SN-85	RAMP RE	187+00	R5-1A	36"x24"					1	6
	SN-85			R5-1A	36"x24"						6
	SN-86			R5-1A	36"x24"					1	6
	SN-86			R5-1A	36"x24"						6
	SN-87		188+50	W3-3	36"x36"	14.6					9
	SN-88		190+50	R5-1A	36"x24"	13.0/13.0		4			6
	SN-88			R5-1A	36"x24"						6
	SN-89			R5-1A	36"x24"	13.0/13.0		4			6
	SN-89			R5-1A	36"x24"						6
161	SN-90	DORCHESTER	READING	M3-3	24"x12"					1	2
				M1-4	24"x24"						4
				M6-2	21"x15"						2.2
	SN-91			M3-3	24"x12"					1	2
				M1-1	24"x24"						4
				M6-2	21"x15"						2.2
	SN-92			M3-3	24"x12"	14.8					2
				M1-1	24"x24"						4
				M6-2A	21"x15"						2.2
	SN-93	EDEN PK DR	FLORENCE	M3-3	24"x12"				1		2
				M1-1	24"x24"						4
				M6-1	21"x15"						2.2
	SN-94	RAMP RF	378+50	R5-H10e	36"x30"	13.0					7.5
	SN-95		192+85	M3-3	24"x12"	11.5					2
				M1-1	24"x24"						4
				M6-1	21"x15"						2.2
	SN-96	RAMP RC2	29+55	R5-1A	36"x24"	13.0/13.0		4			6
	SN-96			R5-1A	36"x24"						6
	SN-97			R5-1A	36"x24"	13.0/13.0		4			6
	SN-97			R5-1A	36"x24"						6
	SN-98		32+08	R5-1	36"x36"		13.5/15.0	2			9
				R6-1L	54"x18"						6.8
				R6-1R	54"x18"						6.8
	SN-99		32+19	R4-7	24"x36"					1	6
				M3-3	24"x12"						2
				M1-1	24"x24"						4
				M6-3	21"x15"						2.2
	SN-100		32+11	R5-1	36"x36"	13.5		1			9
	SN-101	RAMP RB	193+78	M3-3	24"x12"	14.8					2
				M1-1	24"x24"						4
				M6-2A	21"x15"						2.2
	SN-102		193+80	R4-7	24"x36"					1	6
				M3-3	24"x12"						2
				M1-1	24"x24"						4
				M6-2A	21"x15"						2.2
	SN-103		EDEN PK DR	M3-3	24"x12"				1		2
				M1-1	24"x24"						4
				M6-3	21"x15"						2.2
TOTALS - COLUMN "C"						292.3	28.5	19	2	8	293

SHEET NO.	REFERENCE NO.	LOCATION	STATION	SIGN CODE	SIZE	630 GROUND MOUNTED SUPPORT, NO. 3 POST (FT)	630 ONE WAY SUPPORT, NO. 3 POST (FT)	630 SIGN POST REFLECTOR (EACH)	630 SIGN HANGER ASSEMBLY, SPAN WIRE (EACH)	630 SIGN SUPPORT ASSEMBLY, POLE MOUNTED (EACH)	630 SIGN, FLAT SHEET (SF)
161	SN-104	RAMP RE	193+35	R5-1	36"x36"		13.5/15.0	2			9
				R6-1L	54"x18"						6.8
				R6-1R	54"x18"						6.8
	SN-105		193+47	R5-1	36"x36"	13.5		1			9
	SN-106	RAMP RB	193+60	R5-H10e	36"x30"	13.0					7.5
164	SN-107	MONTGOMERY	S OF DUCK CREEK	M4-5	24"x12"	13.0/13.0				1	2
				M3-1	24"x12"						2
				M1-1	24"x24"						4
				M5-1	21"x15"						2.2
	SN-108			M4-5	24"x12"	13.0/13.0				1	2
				M3-1	24"x12"						2
				M1-1	24"x24"						4
				M6-1	21"x15"						2.2
166	SN-109	WILLIAMS	W. OF SMITH	M3-3	24"x12"	11.5					2
				M1-1	24"x24"						4
				M6-1	21"x15"						2.2
	SN-110	SMITH	N. OF WILLIAMS	M3-3	24"x12"	11.5					2
				M1-4	24"x24"						4
				M6-3	21"x15"						2.2
	SN-111	EDWARDS	S. OF WILLIAMS	M3-1	24"x12"	11.5					2
				M1-4	24"x24"						4
				M6-3	21"x15"						2.2
TOTAL - THIS COLUMN						113.0	28.5	3		2	25
TOTAL - COLUMN "A" (PREV. SHEET)						862.2	57.0	22		1	539
TOTAL - COLUMN "B" (PREV. SHEET)						613.7	171.0	37			445
TOTAL - COLUMN "C"						292.3	28.5	19	2	8	293
TO GENERAL SUMMARY						**1881.2**	**285.0**	**81**	**2**	**11**	**1361**

CALCULATED MJH
CHECKED KAE

MINOR SIGNING SUBSUMMARY

HAM-71-1.97

| SIGNING SHEET NO. | REFERENCE NO. | LOCATION | STATION | 625 | 630 | | |

SHEET NO.	REFERENCE NO.	LOCATION	STATION	625	630																													
				GROUND ROD		OVERHEAD SIGN SUPPORT, TYPE TC-12.30, DESIGN 6	OVERHEAD SIGN SUPPORT, TYPE TC-12.30, DESIGN 8	OVERHEAD SIGN SUPPORT, TYPE TC-12.30, DESIGN 10		OVERHEAD SIGN SUPPORT, TYPE TC-7.65, DESIGN 8	OVERHEAD SIGN SUPPORT, TYPE TC-15.115	OVERHEAD SIGN SUPPORT, MISC.: TYPE TC-7.65, SPECIAL DESIGN	SIGN, OVERHEAD EXTRUSHEET	SIGN, PERMANENT OVERLAY	CONCRETE BARRIER MEDIAN SIGN SUPPORT FOUNDATION, TYPE TC-21.50, AS PER PLAN	RIGID OVERHEAD SIGN SUPPORT FOUNDATION, AS PER PLAN																		
				EACH		EACH	EACH	EACH		EACH	EACH	EACH	SQ FT	SQ FT	EACH	EACH																		
140	OH-11	SB I-71	345+00	1				1								1																		
	M-15												180																					
	E1-H5P												17.5																					
138	OH-12		328+50	2						1					1	1																		
	M-16												78																					
	E1-H5P												17.5																					
	M-17												180																					
	E1-H5P												17.5																					
134	OH-13		292+90	1		1										1																		
	M-18												78																					
	E1-H5P												17.5																					
132	OH-14		387+00	1			1									1																		
	M-19												66																					
	E1-H5P												17.5																					
127	OH-15		315+00	2						1					1	1																		
	M-20												220																					
	I-5												6.25																					
	M-21												153																					
	E1-H5P												20																					
	M-22												105																					
	E1-H5P												20																					
124	OH-16		212+35	2						1					1	1																		
	M-23												135																					
	E1-H5P												20																					
	I-5												6.25																					
	M-24												195																					
	E1-H5P												20																					
	M-25												165																					
	E1-H5P												20																					
	OH-17		199+65	2							1				1	1																		
	E1-H5P												40.5																					
	OV-1													57.5																				
	M-27												135																					
	I-5												6.25																					
	E1-H5P												20																					
	M-28												195																					
	E1-H5P												20																					
	M-29												165																					
	E1-H5P												20																					
123	OH-18		180+55	2						1						2																		
	E1-H5P												40.5																					
	OV-2													80.5																				
	M-31												187																					
	M-32												135																					
	I-5												6.25																					
	E1-H5P												20																					
	OH-19		166+65	2						1					1	1																		
	E1-H5P												40.5																					
	M-34												187																					
	M-35												150																					
	I-5												6.25																					
	E1-H5P												20																					
122	OH-20		152+10	2								1			1	1																		
	M-36												135																					
	E1-H5P												40.5																					
	M-37												80																					
TOTALS TO GENERAL SUMMARY				17		1	1	1		5	1	1	3405	138	6	11																		

CALCULATED MJH
CHECKED KAE

OVERHEAD SIGNING SUBSUMMARY- SB I-71

HAM-71-1.97

SHEET NO.	REFERENCE NO.	LOCATION	625	630																						
			GROUND ROD	OVERHEAD SIGN SUPPORT, TYPE TC-12.30, DESIGN 3	OVERHEAD SIGN SUPPORT, TYPE TC-12.30, DESIGN 4	OVERHEAD SIGN SUPPORT, TYPE TC-12.30, DESIGN 6	OVERHEAD SIGN SUPPORT, TYPE TC-12.30, DESIGN 10	OVERHEAD SIGN SUPPORT, TYPE TC-9.10, DESIGN 2	OVERHEAD SIGN SUPPORT, TYPE TC-7.65, DESIGN 6	OVERHEAD SIGN SUPPORT, TYPE TC-7.65, DESIGN 8	OVERHEAD SIGN SUPPORT, MISC.: TYPE TC-12.30, SPECIAL DESIGN	OVERPASS STRUCTURE MOUNTED SIGN SUPPORT, TYPE TC-18.26, DESIGN 2	SIGN, FLAT SHEET	SIGN, OVERHEAD EXTRUSHEET	CONCRETE BARRIER MEDIAN SIGN SUPPORT FOUNDATION, TYPE TC-21.50, AS PER PLAN	RIGID OVERHEAD SIGN SUPPORT FOUNDATION, AS PER PLAN	SIGNING, MISC.: FLASHING WARNING SIGN								
			EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	SQ FT	SQ FT	EACH	EACH	EACH									
156	OH-21	E 5TH STREET, WEST OF SENTINEL ST	2							1							2									
	M-39													50												
	M-40													63												
	M-41													70												
	M-42													105												
	OH-22	NB I-71 / SB I-471 RAMP SPLIT	2						1								2									
	M-43													63												
	M-44													70												
157	OH-23	NB I-71, STA 156+00	1								1				1											
	M-45													130												
	M-46													115.5												
	OH-24/M-47	GILBERT AVE SOUTH OF COURT ST	1	1										40			1									
	OH-25/M-48	GILBERT AVE AT NB I-71 ON-RAMP	1					1						60			1									
159	OH-26	READING ROAD NORTH OF E LIBERTY ST	2							1							2									
	M-49													77												
	M-50													91												
	M-51													91												
	OH-27	READING ROAD / NB I-71 RAMP SPLIT	2							1							2									
	M-52													98												
	M-53													98												
160	OH-28	READING ROAD / EDEN PARK DR RAMP SPLIT	2						1						1		1									
	M-54													60												
	M-55													60												
	OH-29/M-56	EDEN PARK DRIVE UNDER I-71										1		63												
	OH-30/M-57	DORCHESTER AVE WEST OF READING ROAD	1	1										54			1									
	OH-31	READING ROAD/GILBERT AVE RAMP SPLIT	2						1								2									
	M-58													215												
	M-59													170												
163	OH-32	SB READING RD NORTH OF EDEN PARK DR	2							1							2									
	M-60													48												
	CURVE WARNING												18.3													
	M-61													44												
	M-62													35												
	M-63													98												
	OH-33/M-64	READING RD NORTH OF EDEN PARK DR	1		1									40			1	1								
164	OH-34/M-65	MONTGOMERY RD SOUTH OF DUCK CREEK RD	1		1									72			1									
	OH-35/M-66/67	MONTGOMERY RD AT SB I-71 RAMPS	1	1										126			1									
	OH-36/M-68	MONTGOMERY RD NORTH OF CLARION AVE	1	1										54			1									
165	OH-37/M-69	DANA AVE SOUTH OF GRIGG AVE	1			1								72			1									
	OH-38/M-70	DANA AVE AT NB I-71 ON-RAMP	1				1							77			1									
	OH-39/M-71	DAVA AVE AT NB I-71 ON-RAMP	1	1										63			1									
	OH-40/M-72	DANA AVE AT SB I-71 ON-RAMP	1	1										60			1									
	OH-41/M-73	DANA AVE WEST OF FLORAL AVE	1	1										54			1									
	OH-42/M-74	DUCK CREEK RD WEST OF DANA AVE	1	1										63			1									
168	OH-43/M-75/76	EDWARDS RD AT EDMONSON RD	1					1						126			1									
	OH-44/M-77	EDMONDSON RD WEST OF GARLAND AVE	1	1										54			1									
	OH-45/M-78	EDMONDSON RD AT SB I-71 ON-RAMP	1	1										54			1									
	OH-46/M-79	SB EDMONDSON RD AT SB I-71 ON-RAMP	1	1										60			1									
	OH-47/M-80/81	NB SMITH ROAD AT WILLIAMS RD	1	1										126			1									
	OH-48/M-82	SB SMITH RD NORTH OF MELROSE AVE	1	1										72			1									
	OH-49/M-83	WILLIAMS AVE AT NB I-71 OFF-RAMP	1	1										54			1									
	OH-50/M-84/85	WILLIAMS AVENUE AT NB ON-RAMP	1	1										126			1									
TOTALS - COLUMN "A"			36	15	2	1	1	2	3	4	1	1	18.3	3421.5	2	34	1									

CALCULATED MJH
CHECKED KAE

OVERHEAD SIGNING SUBSUMMARY - SIDEROADS

HAM-71-1.97

BEAM MOUNTED SIGNING QUANTITIES

SHEET NO.	REFERENCE NO.	LOCATION	STATION		630															
					GROUND MOUNTED STRUCTURAL BEAM SUPPORT, W6X9	GROUND MOUNTED STRUCTURAL BEAM SUPPORT, W8X18	GROUND MOUNTED STRUCTURAL BEAM SUPPORT, W10X12	BREAKAWAY STRUCTURAL BEAM CONNECTION		SIGN, GROUND MOUNTED EXTRUSHEET	GROUND MOUNTED STRUCTURAL BEAM SUPPORT FOUNDATION									
					EACH	EACH	EACH	EACH		SQ FT	EACH									
129	GM-1	NB I-71	337+95		17.0/17.0			2		30	2									
129	GM-2	NB I-71	339+50				21.4/7.5	2		40	2									
135	GM-3	NB I-71	306+85		16.8/16.8			2		30	2									
136	GM-4	NB I-71	308+50				21.4/20.6	2		63	2									
138	GM-5	SB I-71	326+65		17.0/17.0			2		30	2									
138	GM-6	SB I-71	326+00				17.4/21.0	2		63	2									
138	GM-7	SB I-71	317+00			22.9/18.8		2		84	2									
132	GM-8	SB I-71	387+00		16.3/16.4			2		30	2									
TOTALS TO GENERAL SUMMARY					134.3	41.7	119.3	16		396	16									

BARRIER AND LIGHTING QUANTITIES

SHEET NO.	PROPOSED SIGN REFERENCE NO.(S)	REMOVAL REFERENCE CODE(S)	LOCATION		202	622						625						626	631		
					CONCRETE BARRIER REMOVED	CONCRETE BARRIER, TYPE BI, AS PER PLAN						CONNECTION, FUSED PULL-APART	CONNECTION, UNFUSED PULL-APART	CONNECTION, UNFUSED PERMANENT	NO.4 AWG 5000 VOLT DISTRIBUTION CABLE	CONDUIT CLEANED AND CABLES REMOVED	DISCONNECT CIRCUIT	BARRIER REFLECTOR	SIGN LIGHTING, MISC.: REMOVE SIGN SERVICE		
					FT	FT						EACH	EACH	EACH	FT	FT	EACH	EACH	EACH		
145	OH-20	RO-3	I-71 - STA 150+50 TO 152+50		10							2	2		420	200	2		1		
146	OH-21	RO-6	I-71 - STA 162+50 TO 168+50		90	80						2	2		440	210	2		1		
147	-	RO-4,5,7,8,9	I-71 - STA 171+00 TO 182+00																5		
148	OH-4	RO-10,11,12	I-71 - STA 162+50 TO 168+50															3	3		
149	OH-17	-	I-71 - STA 313+00 TO 316+00		90	80						2	2		430	205	2	3			
150	OH-22	RO-14	I-71 - STA 331+00 TO 334+00		60	50						2	2		430	205	2		1		
151	-	RO-16,17,18	I-71 - STA 387+00 TO 296+00																3		
152	OH-10	RO-19	I-71 - STA 304+00 TO 307+50		60	50						2	2		390	190	2		1		
153	OH-14	RO-21	I-71 - STA 317+50 TO 330+50		60	50						2	2	4	820	390	4		1		
154	-	RO-22	I-71 - STA 171+00 TO 182+00																1		
155	OH-29	-	RAMP RC - 186+00 TO 188+00		30	20												2			
179A	OH-10A	-	RAMP T - 48+45 TO 48+55		10																
TOTALS TO GENERAL SUMMARY					410	330						12	12	4	2930	1400	14	8	17		

CALCULATED MJH
CHECKED KAE

BEAM MOUNTED SIGNING AND LIGHTING/BARRIER SUBSUMMARY

HAM-71-1.97

SHEET NO.	SIGN CODE	I-71 MILE MARKER LEGEND			APPROXIMATE STATION	630							
						GROUND MOUNTED SUPPORT, NO. 3 POST	SIGN, FLAT SHEET	CONCRETE MEDIAN BARRIER SIGN BRACKET	REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL	REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL	REMOVAL OF POLE MOUNTED SIGN AND DISPOSAL	REMOVAL OF MISC. TRAFFIC CONTROL ITEM: MEDIAN BARRIER SIGN BRACKET
		MILE	MILE	TENTH		FT	SF	EACH	EACH	EACH	EACH	EACH
122	D10-5	N	1	4	136+50		7.5	1	1			1
		S	1	4			7.5		1			
		N	1	5	141+20		7.5	1	1			1
		S	1	5			7.5		1			
		N	1	6	146+05		7.5	1	1			1
		S	1	6			7.5	1	1			1
		N	1	7	151+10		7.5	1	1			1
		S	1	7			7.5		1			
		N	1	8	156+30		7.5	1	1			1
		S	1	8			7.5		1			
		N	1	9	161+55		7.5	1	1			1
		S	1	9			7.5		1			
123	D10-2	N	2	-	166+95				1	1		
	D10-2	S	2	-					1	1		
	D10-5	N	2	0	166+95		7.5	1	1			1
		S	2	0			7.5		1			
		N	2	1	171+95		7.5	1	1			1
		S	2	1	171+90		7.5	1	1			1
		N	2	2	177+20		7.5	1	1			1
		S	2	2	177+50		7.5				1	
		N	2	3	182+90		7.5	1	1			1
		S	2	3	183+20	15.5	7.5		1	1		
		N	2	4	188+10		7.5	1	1			1
		S	2	4	188+10		7.5	1	1			1
124		N	2	5	192+95		7.5	1	1			1
		S	2	5	193+20		7.5	1	1			1
		N	2	6	198+50		7.5	1	1			1
		S	2	6	199+05	15.5	7.5	1	1	1		
		N	2	7	203+40	15.5	7.5		1	1		
		S	2	7	203+80	15.5	7.5		1	1		
		N	2	8	208+60		7.5	1	1			1
		S	2	8			7.5		1			
		N	2	9	213+90		7.5	1	1			1
		S	2	9			7.5		1			
125	D10-5	N	3	0	219+10		7.5	1	1			1
		S	3	0			7.5		1			
		N	3	1	224+50		7.5	1	1			1
		S	3	1			7.5		1			
		N	3	2	229+80		7.5	1	1			1
		S	3	2			7.5		1			
		N	3	3	235+10		7.5	1	1			1
		S	3	3			7.5		1			
		N	3	4	240+35		7.5	1	1			1
		S	3	4			7.5		1			
		N	3	5	245+60		7.5	1	1			1
		S	3	5			7.5		1			
NOT SHOWN		N	3	6	251+00		7.5	1	1			1
		S	3	6			7.5		1			
		N	3	7	256+10		7.5	1	1			1
		S	3	7			7.5		1			
		N	3	8	261+20		7.5	1	1			1
		S	3	8			7.5		1			
		N	3	9	266+60		7.5	1	1			1
		S	3	9			7.5		1			
	D10-2	N	4	-	272+00				1	1		
	D10-2	S	4	-					1	1		
	D10-5	N	4	0	272+00		7.5	1	1			1
	D10-5	S	4	0			7.5		1			
COLUMN "A" - TO NEXT SHEET						62	405	31	57	7	1	30

SHEET NO.	SIGN CODE	I-71 MILE MARKER LEGEND			APPROXIMATE STATION	630						
						GROUND MOUNTED SUPPORT, NO. 3 POST	SIGN, FLAT SHEET	CONCRETE MEDIAN BARRIER SIGN BRACKET	REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL	REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL	REMOVAL OF POLE MOUNTED SIGN AND DISPOSAL	REMOVAL OF MISC. TRAFFIC CONTROL ITEM: MEDIAN BARRIER SIGN BRACKET
		MILE	MILE	TENTH		FT	SF	EACH	EACH	EACH	EACH	EACH
NOT SHOWN	D10-5	N	4	1	277+15		7.5	1	1			1
		S	4	1			7.5		1			
		N	4	2	282+60		7.5	1	1			1
		S	4	2			7.5		1			
		N	4	3	287+90		7.5	1	1			1
		S	4	3			7.5		1			
126		N	4	4	293+10		7.5	1	1			1
		S	4	4			7.5		1			
		N	4	5	298+40		7.5	1	1			1
		S	4	5			7.5		1			
127		N	4	6	303+90		7.5	1	1			1
		S	4	6			7.5		1			
		N	4	7	308+95		7.5	1	1			1
		S	4	7			7.5		1			
		N	4	8	314+10		7.5	1	1			1
		S	4	8			7.5		1			
128		N	4	9	319+95		7.5	1	1			1
		S	4	9			7.5		1			
	D10-2	N	5	-	325+20				1	1		
	D10-2	S	5	-					1	1		
	D10-5	N	5	0	325+20		7.5	1	1			1
		S	5	0			7.5		1			
		N	5	1	330+70		7.5	1	1			1
		S	5	1			7.5		1			
129		N	5	2	336+10		7.5	1	1			1
		S	5	2			7.5		1			
		N	5	3	340+95		7.5	1	1			1
		S	5	3			7.5		1			
131		N	5	4	346+35		7.5	1	1			1
		S	5	4			7.5		1			
		N	5	5	351+65		7.5	1	1			1
		S	5	5			7.5		1			
		N	5	6	356+90		7.5	1	1			1
		S	5	6			7.5		1			
		N	5	7	362+10		7.5	1	1			1
		S	5	7			7.5		1			
		N	5	8	367+60		7.5	1	1			1
		S	5	8			7.5		1			
		N	5	9	372+75		7.5	1	1			1
		S	5	9			7.5		1			
132	D10-2	N	6	-	378+10				1	1		
	D10-2	S	6	-					1	1		
	D10-5	N	6	0	378+10		7.5	1	1			1
		S	6	0			7.5		1			
		N	6	1	383+20		7.5	1	1			1
		S	6	1			7.5		1			
134		N	6	2	388+40		7.5	1	1			1
		S	6	2			7.5		1			
		N	6	3	291+65		7.5	1	1			1
		S	6	3			7.5		1			
		N	6	4	296+75		7.5	1	1			1
		S	6	4			7.5		1			
135		N	6	5	301+95		7.5	1	1			1
		S	6	5			7.5		1			
		N	6	6	307+20		7.5	1	1			1
		S	6	6			7.5		1			
		N	6	7	312+50		7.5	1	1			1
		S	6	7			7.5		1			
COLUMN "B" - TO NEXT SHEET							405	27	58	4	0	27

CALCULATED MJH
CHECKED KAE

SIGNING SUBSUMMARY - MILE POST MARKERS

HAM-71-1.97

117
292

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I-71 MILE MARKER LEGEND

SHEET NO.	SIGN CODE	MILE	MILE	TENTH	APPROXIMATE STATION	630 GROUND MOUNTED SUPPORT, NO. 3 POST	630 SIGN, FLAT SHEET	630 CONCRETE MEDIAN BARRIER SIGN BRACKET	630 REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL	630 REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL	630 REMOVAL OF POLE MOUNTED SIGN AND DISPOSAL	630 REMOVAL OF MISC. TRAFFIC CONTROL ITEM: MEDIAN BARRIER SIGN BRACKET
		MILE	MILE	TENTH		FT	SF	EACH	EACH	EACH	EACH	EACH
138	D10-5	N	6	8	317+80		7.5	1	1			1
		S	6	8			7.5		1			
		N	6	9	323+20		7.5	1	1			1
		S	6	9			7.5		1			
	D10-2	N	7	-	328+20				1	1		
	D10-2	S	7	-					1	1		
	D10-5	N	7	0	328+20		7.5	1	1			1
		S	7	0			7.5		1			
140		N	7	1	333+60		7.5	1	1			1
		S	7	1			7.5		1			
		N	7	2	338+90		7.5	1	1			1
		S	7	2			7.5		1			
		N	7	3	343+95		7.5	1	1			1
		S	7	3			7.5		1			
		N	7	4	349+50		7.5	1	1			1
		S	7	4			7.5		1			
		N	7	5	354+60		7.5	1	1			1
		S	7	5			7.5		1			
141		N	7	6	360+00		7.5	1	1			1
		S	7	6			7.5	1	1			1
		N	7	7	365+30	15.5	7.5		1	1		
		S	7	7		15.5	7.5		1	1		
"DO NOT MOW" SIGNS												
135	R24-H2				314+50	10.0	1.5		1	1		
135	R24-H2				316+00	10.0	1.5		1	1		
	R24-H2				317+20	10.0	1.5		1	1		
	R24-H2				318+70	10.0	1.5		1	1		
	R24-H2				320+60	10.0	1.5		1	1		
TOTALS - THIS COLUMN						81	232.5	10	37	9		10
TOTALS - THIS COLUMN "A" (PREV. SHEET)						62	405	31	57	7	1	30
TOTALS - THIS COLUMN "B" (PREV. SHEET)						58	405	27	58	4		27
TOTALS - TO GENERAL SUMMARY						**201**	**1042.5**	**68**	**152**	**20**	**1**	**67**

CALCULATED MJH
CHECKED KAE

SIGNING SUBSUMMARY - MILE POST MARKERS

HAM-71-1.97

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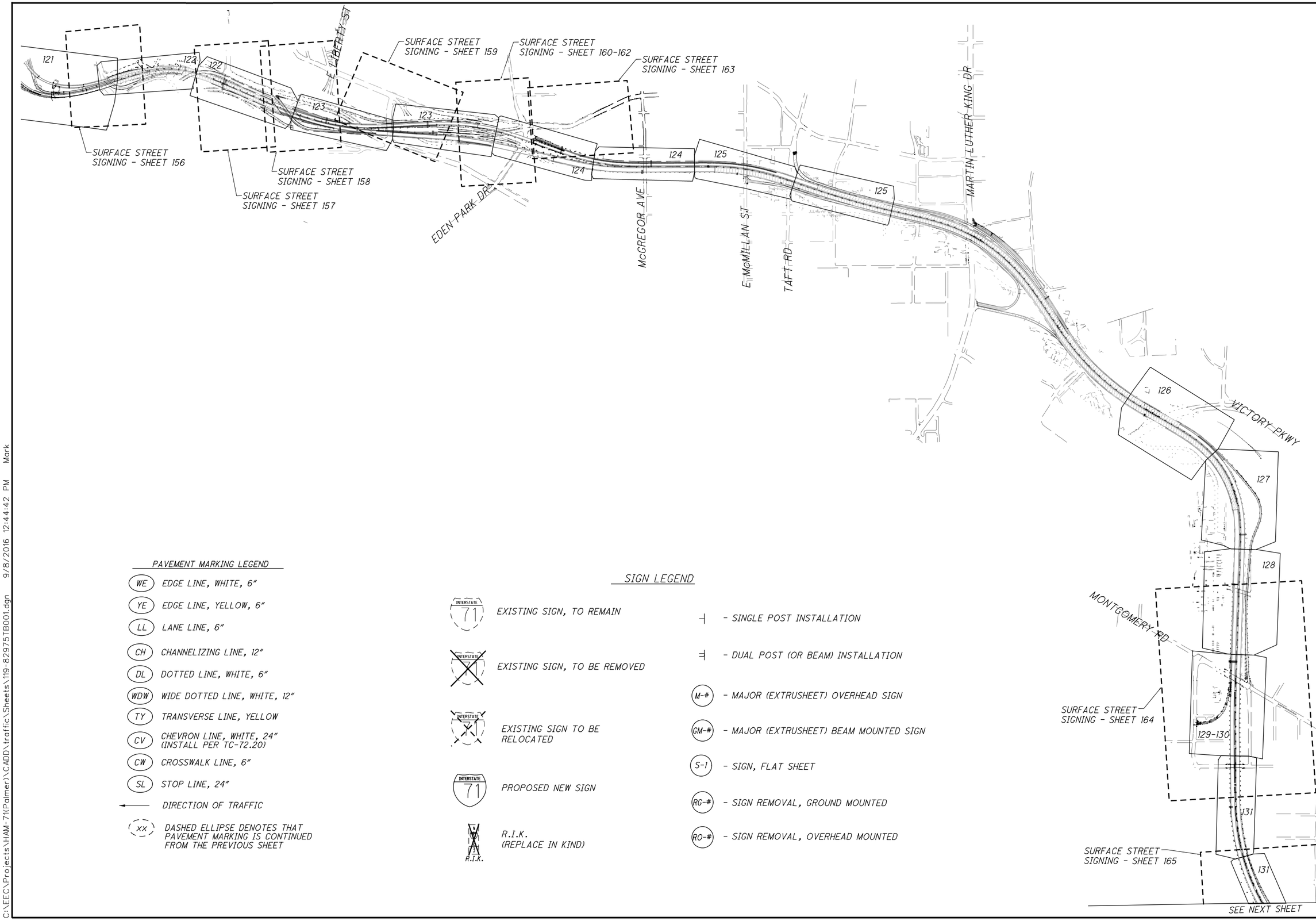

PAVEMENT MARKING LEGEND

- WE — EDGE LINE, WHITE, 6″
- YE — EDGE LINE, YELLOW, 6″
- LL — LANE LINE, 6″
- CH — CHANNELIZING LINE, 12″
- DL — DOTTED LINE, WHITE, 6″
- WDW — WIDE DOTTED LINE, WHITE, 12″
- TY — TRANSVERSE LINE, YELLOW
- CV — CHEVRON LINE, WHITE, 24″ (INSTALL PER TC-72.20)
- CW — CROSSWALK LINE, 6″
- SL — STOP LINE, 24″
- DIRECTION OF TRAFFIC
- (XX) — DASHED ELLIPSE DENOTES THAT PAVEMENT MARKING IS CONTINUED FROM THE PREVIOUS SHEET

SIGN LEGEND

- INTERSTATE 71 — EXISTING SIGN, TO REMAIN
- INTERSTATE 71 — EXISTING SIGN, TO BE REMOVED
- INTERSTATE 71 — EXISTING SIGN TO BE RELOCATED
- INTERSTATE 71 — PROPOSED NEW SIGN
- R.I.K. — R.I.K. (REPLACE IN KIND)
- ┤ — SINGLE POST INSTALLATION
- ⫤ — DUAL POST (OR BEAM) INSTALLATION
- M-# — MAJOR (EXTRUSHEET) OVERHEAD SIGN
- GM-# — MAJOR (EXTRUSHEET) BEAM MOUNTED SIGN
- S-1 — SIGN, FLAT SHEET
- RG-# — SIGN REMOVAL, GROUND MOUNTED
- RO-# — SIGN REMOVAL, OVERHEAD MOUNTED

HORIZONTAL SCALE IN FEET
0 250 500 1000

CALCULATED MJH
CHECKED KAE

TRAFFIC CONTROL PLAN
I-71 SCHEMATIC PLAN

HAM-71-1.97

119
292

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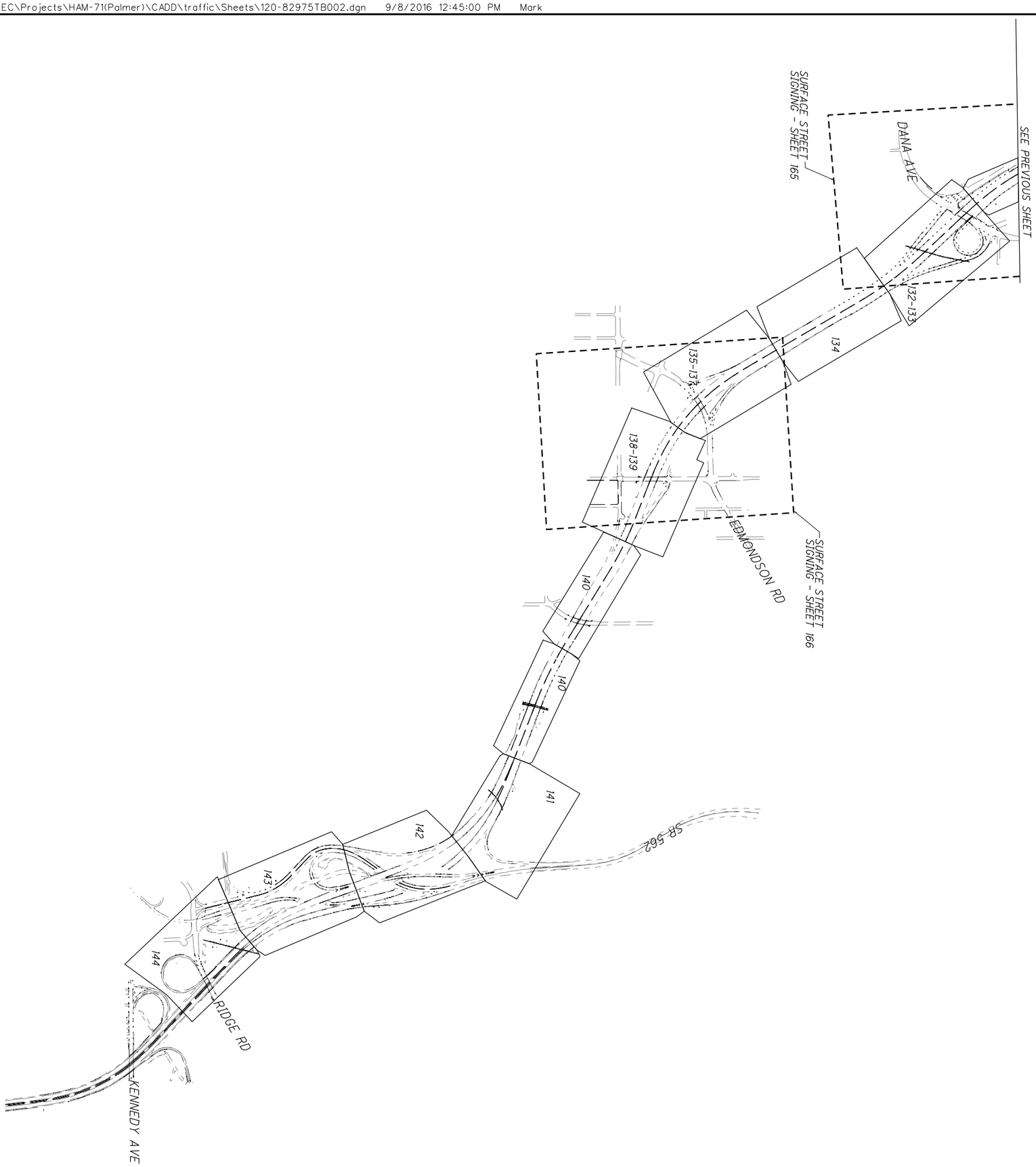
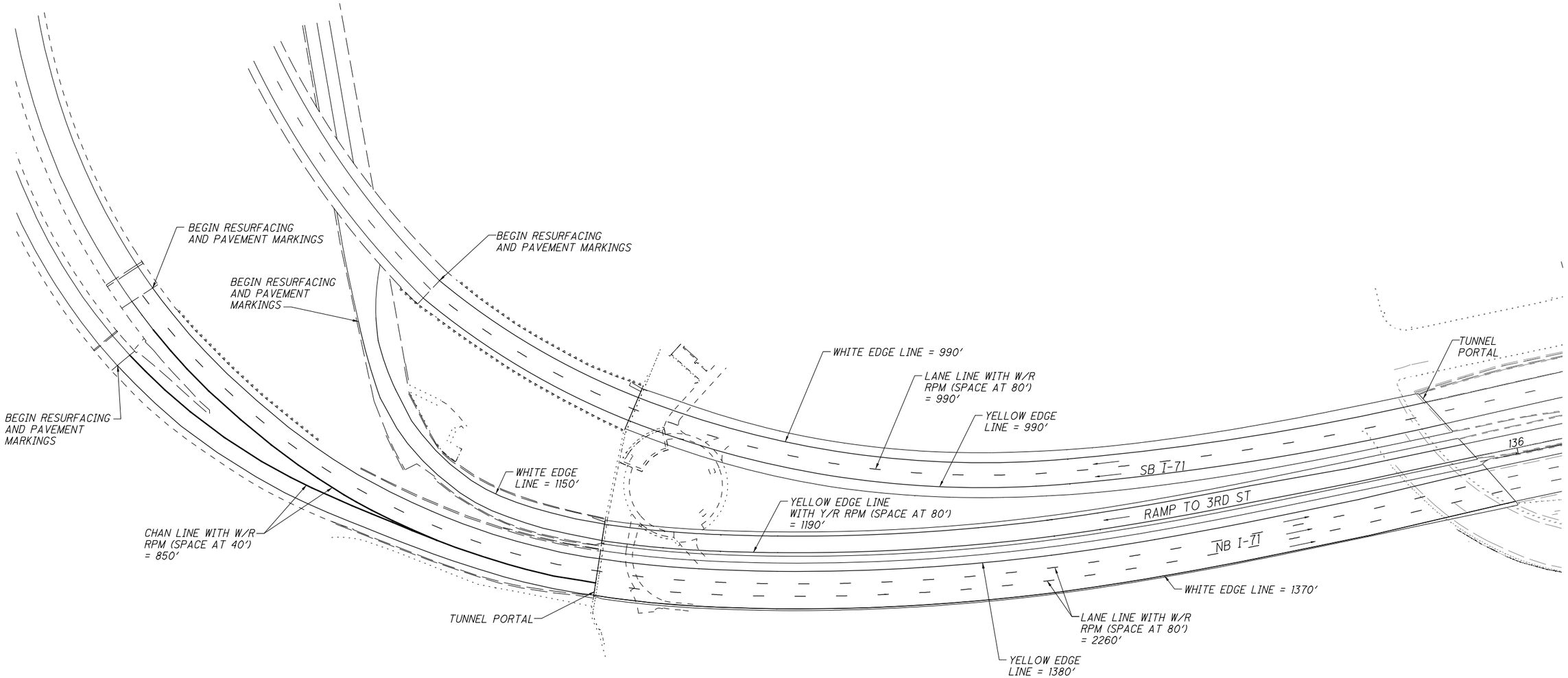


120 / 292	HAM-71-1.97	TRAFFIC CONTROL PLAN I-71 SCHEMATIC PLAN (CONT.)	CALCULATED MJH CHECKED KAE	0 500 250 1000 HORIZONTAL SCALE IN FEET



STRIPING QUANTITIES

WHITE EDGE LINE - 3510'
YELLOW EDGE LINE - 3560'
LANE LINE - 3250'
CHAN LINE - 850'
RPM (W) - 41
RPM (W/R) - 22
RPM (Y/R) - 15

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED MJH
CHECKED KAE

TRAFFIC CONTROL PLAN - I-71 PAVEMENT MARKINGS IN TUNNEL

HAM-71-1.97

121
292

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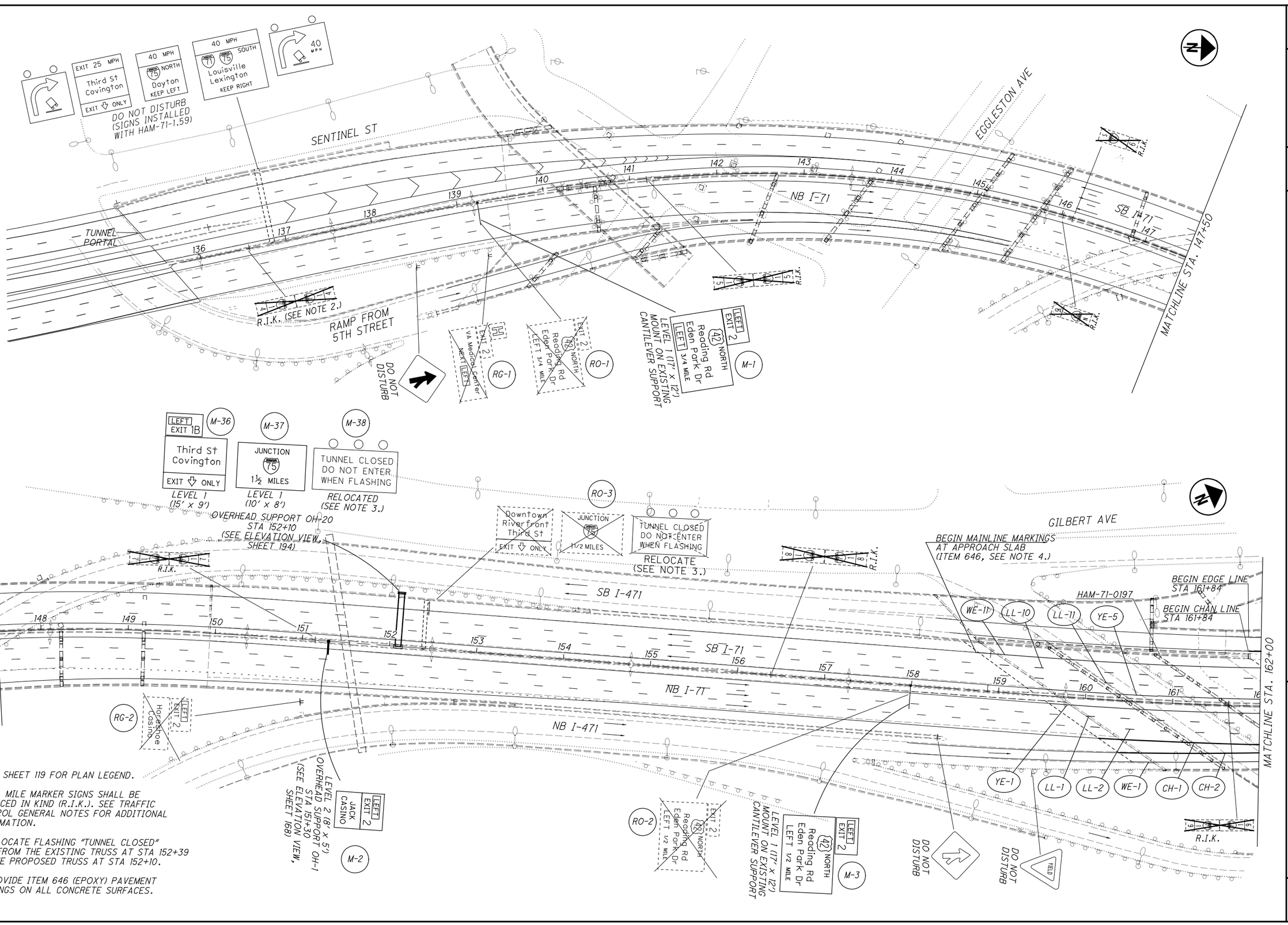

NOTE:
1) SEE SHEET 119 FOR PLAN LEGEND.

2) ALL MILE MARKER SIGNS SHALL BE REPLACED IN KIND (R.I.K.). SEE TRAFFIC CONTROL GENERAL NOTES FOR ADDITIONAL INFORMATION.

3) RELOCATE FLASHING "TUNNEL CLOSED" SIGN FROM THE EXISTING TRUSS AT STA 152+39 TO THE PROPOSED TRUSS AT STA 152+10.

4) PROVIDE ITEM 646 (EPOXY) PAVEMENT MARKINGS ON ALL CONCRETE SURFACES.

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED MJH
CHECKED KAE

TRAFFIC CONTROL PLAN - I-71
BEGIN PROJECT TO STA 162+00

HAM-71-1.97

122
292

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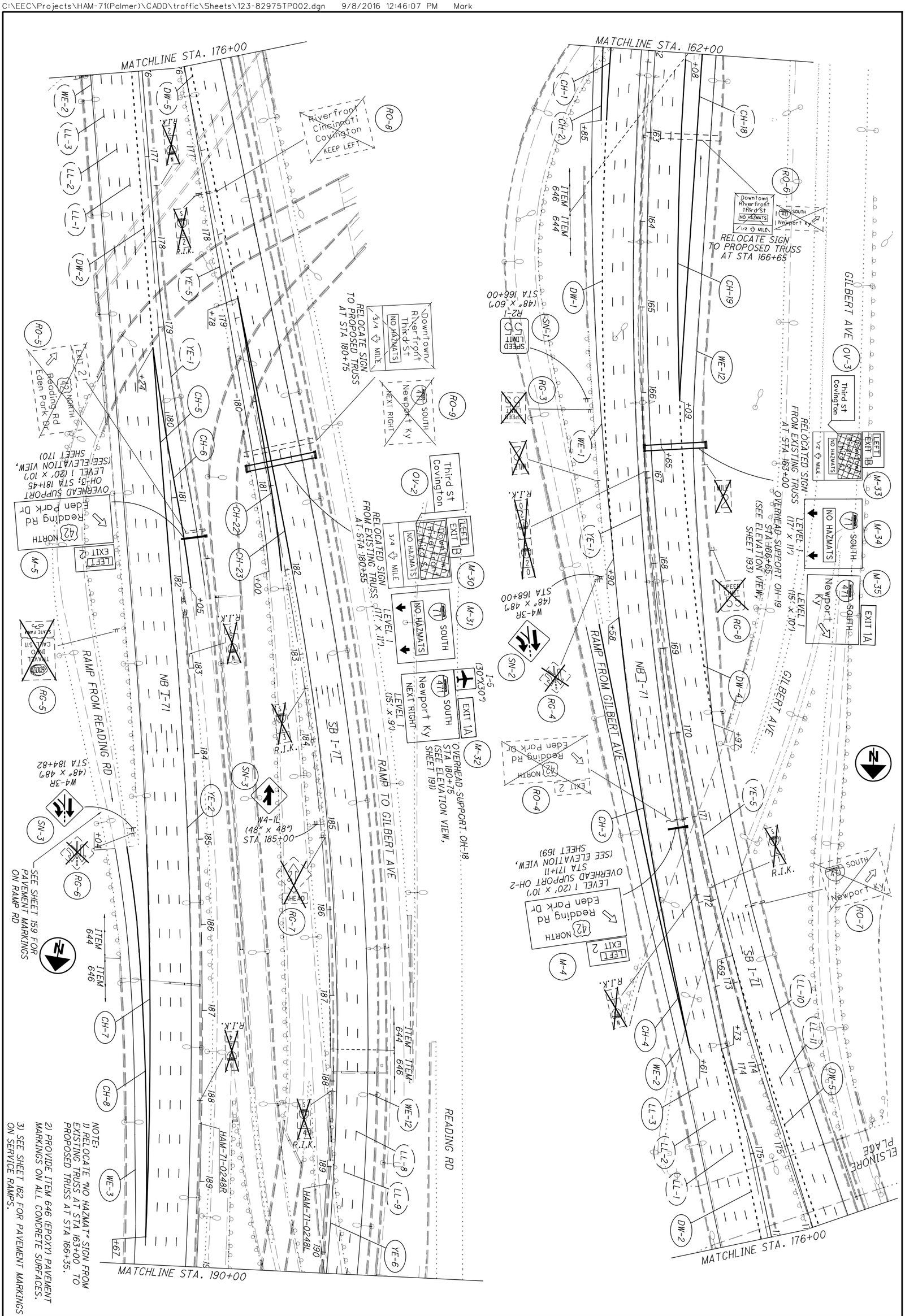
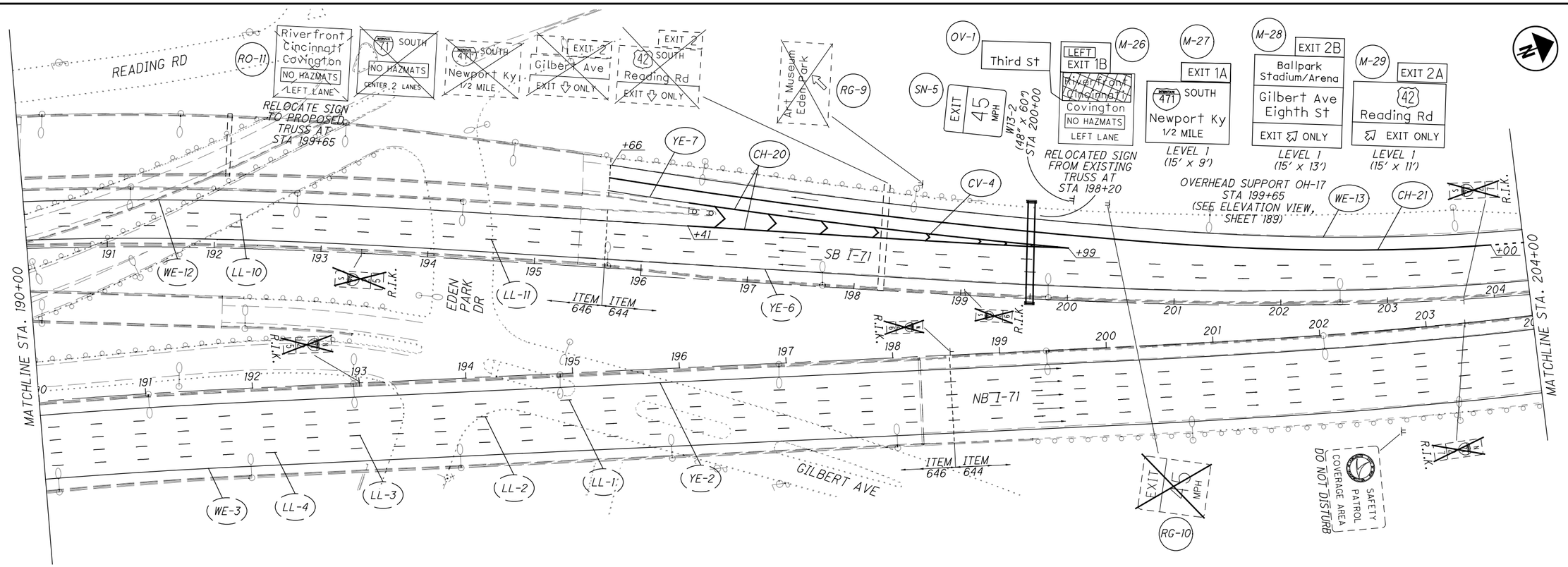
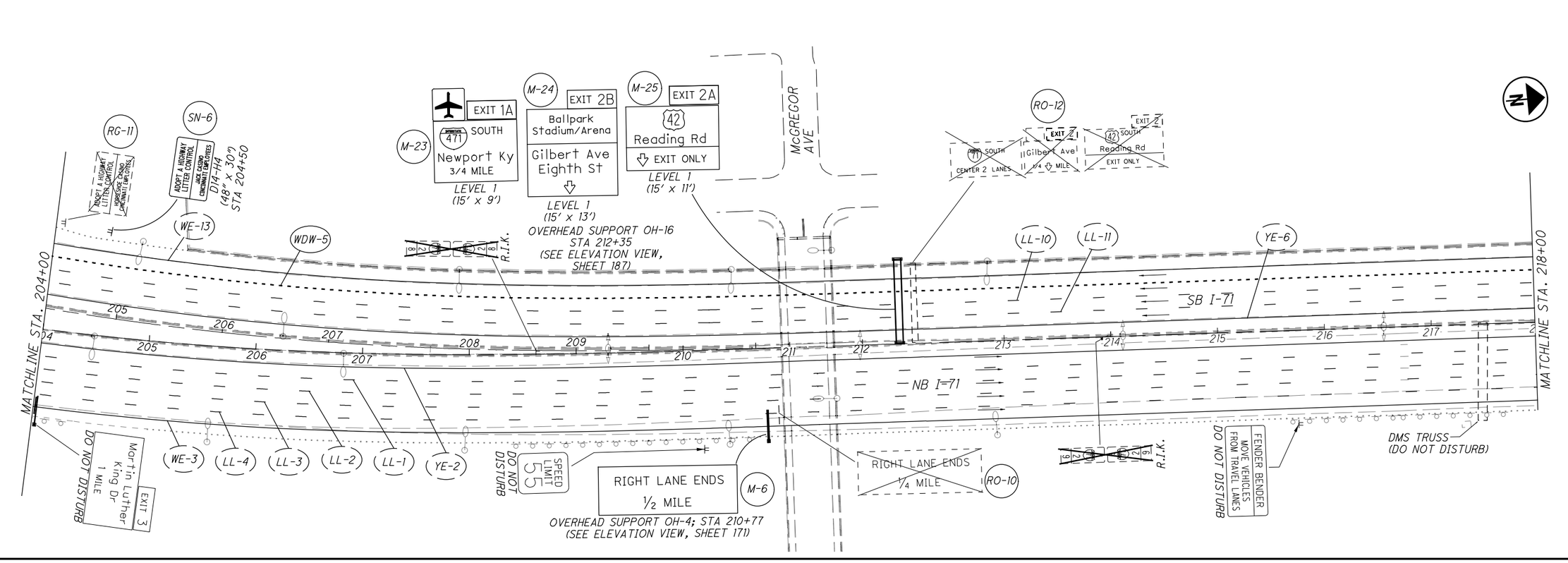


NOTE:
1) RELOCATE "NO HAZMAT" SIGN FROM EXISTING TRUSS AT STA 163+00 TO PROPOSED TRUSS AT STA 166+35.
2) PROVIDE ITEM 646 (EPOXY) PAVEMENT MARKINGS ON ALL CONCRETE SURFACES.
3) SEE SHEET 162 FOR PAVEMENT MARKINGS ON SERVICE RAMPS.

123 / 292	HAM-71-1.97	TRAFFIC CONTROL PLAN - I-71 STA 162+00 TO STA 190+00	CALCULATED MJH CHECKED KAE	0 25 50 100 HORIZONTAL SCALE IN FEET





HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED MJH
CHECKED KAE

TRAFFIC CONTROL PLAN - I-71
STA 190+00 TO STA 218+00

HAM-71-1.97

124
292

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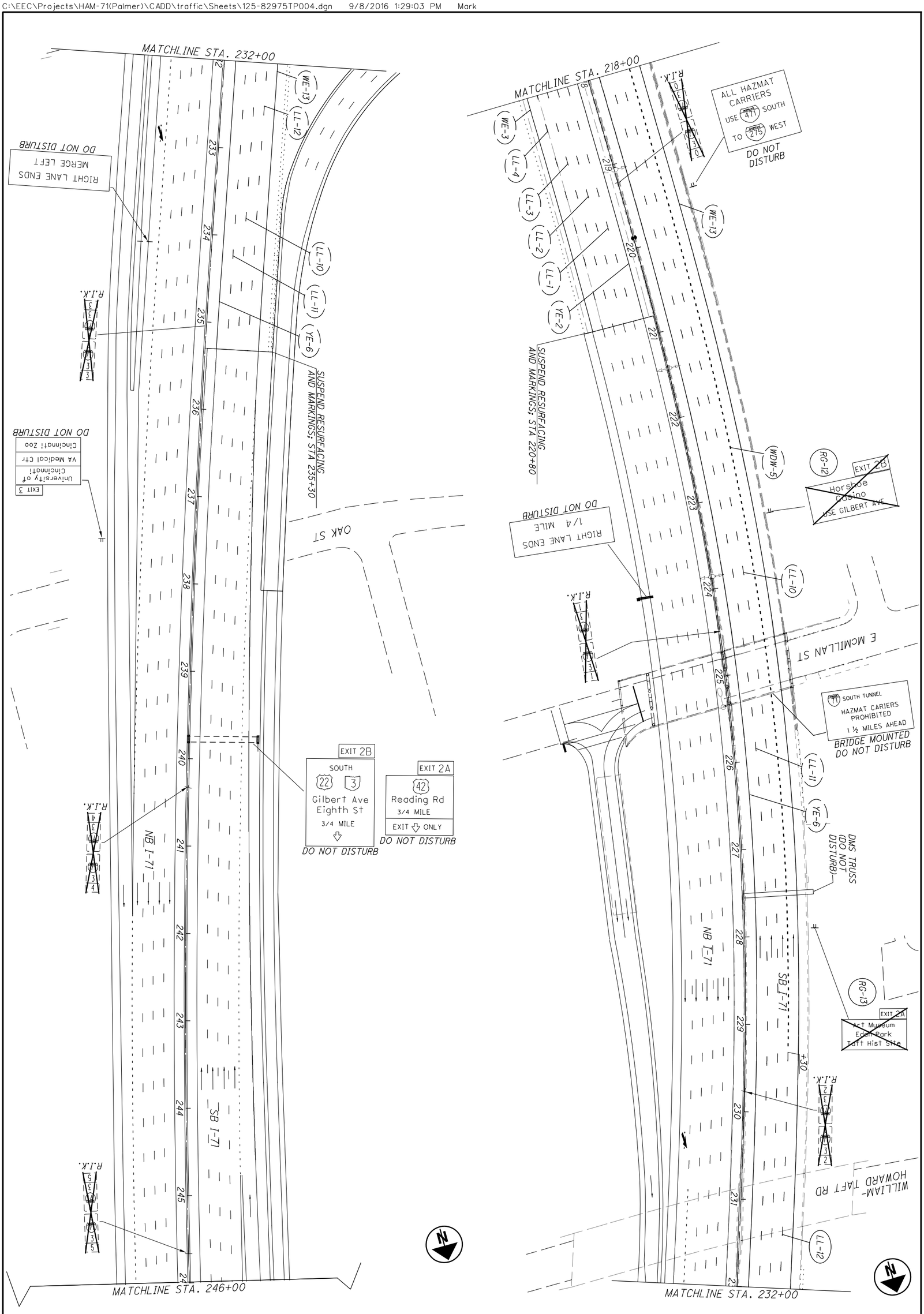

125 292	HAM-71-1.97	TRAFFIC CONTROL PLAN - I-71 STA 218+00 TO STA 246+00	CALCULATED MJH CHECKED KAE	0 50 25 100 HORIZONTAL SCALE IN FEET

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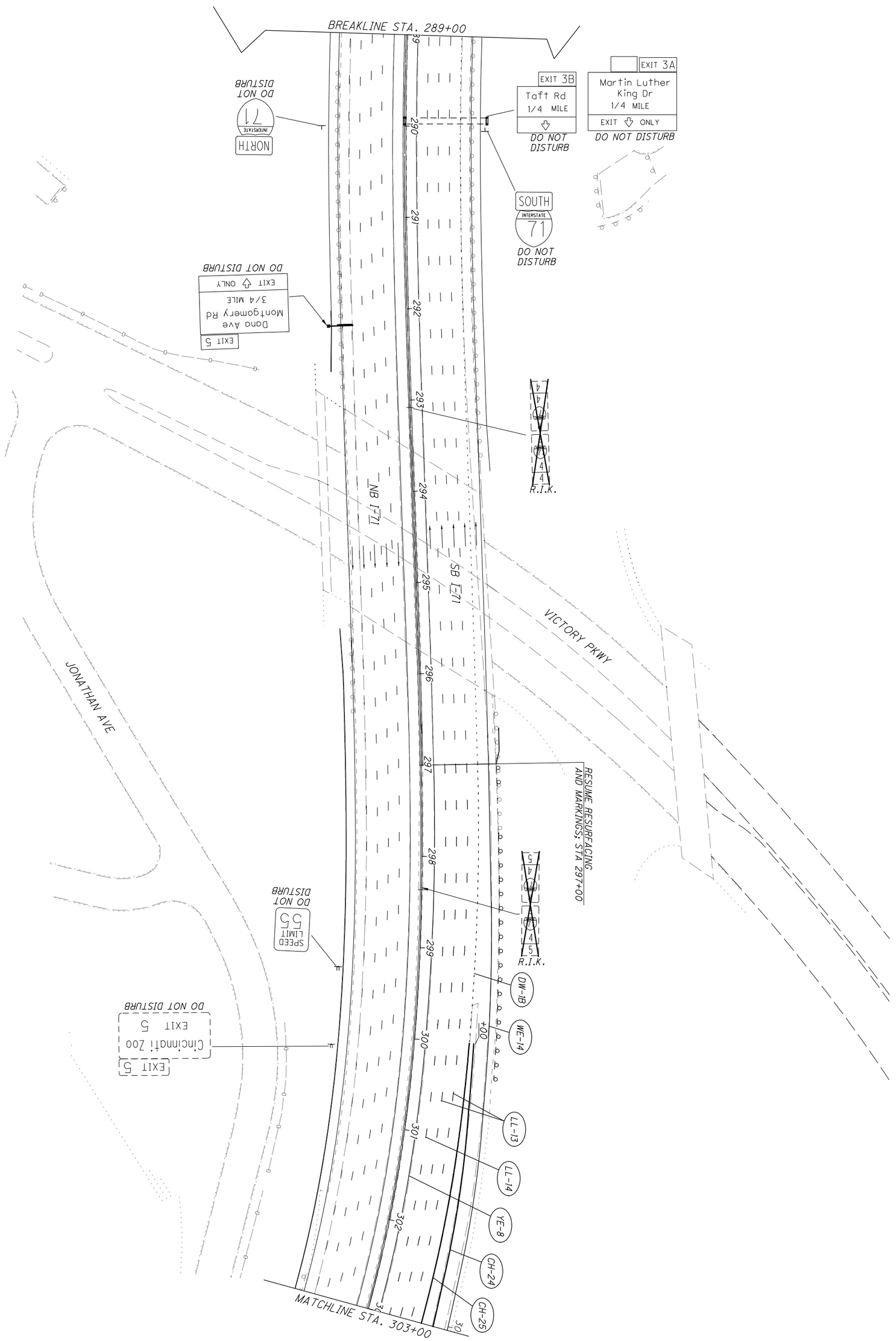
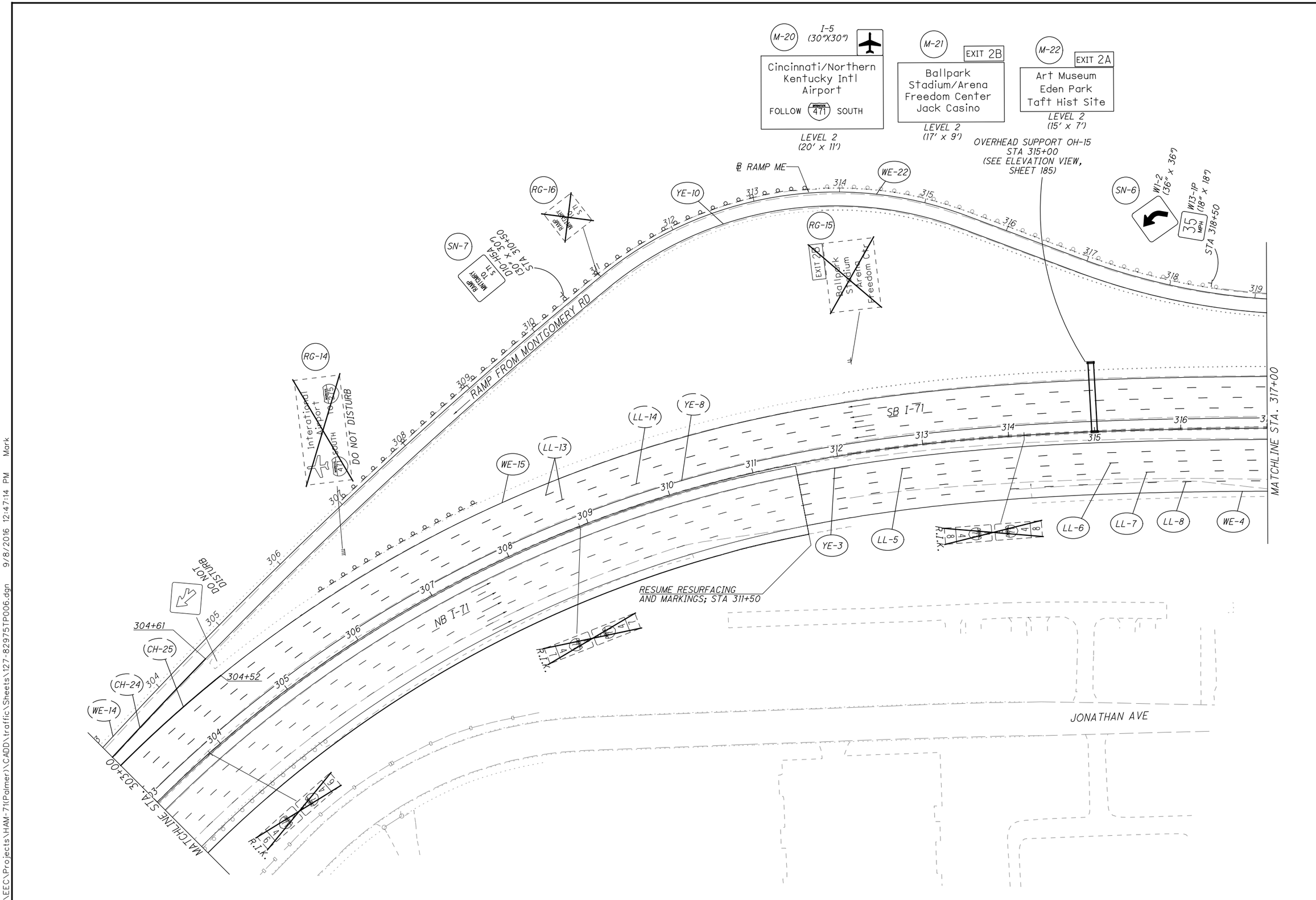


126 / 292	HAM-71-1.97	TRAFFIC CONTROL PLAN - I-71 STA 289+00 TO STA 303+00	CALCULATED MJH CHECKED KAE	0 50 25 100 HORIZONTAL SCALE IN FEET



HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED MJH
CHECKED KAE

TRAFFIC CONTROL PLAN - I-71
STA 303+00 TO STA 317+00

HAM-71-1.97

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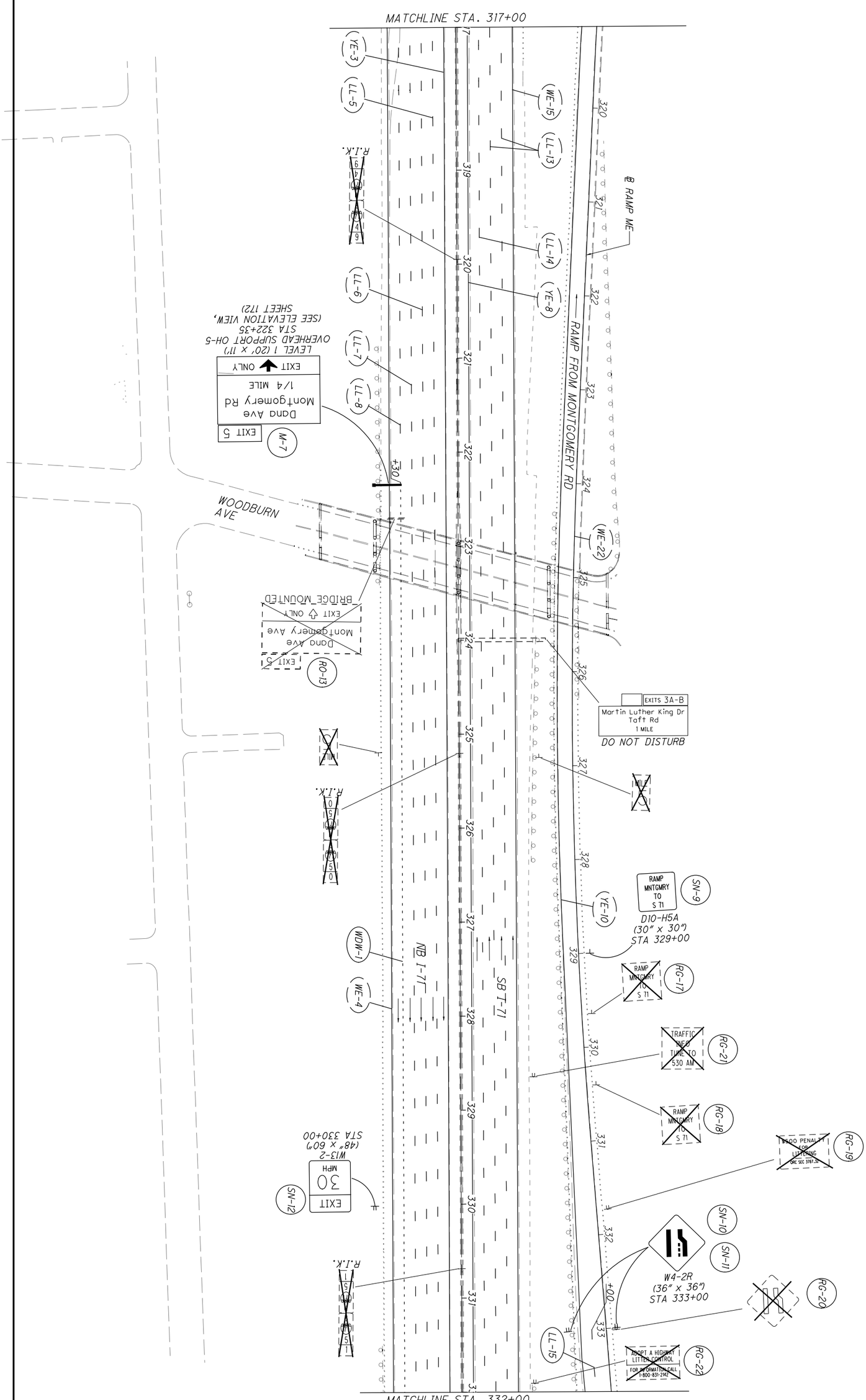

128 / 292	HAM-71-1.97	TRAFFIC CONTROL PLAN - I-71 STA 317+00 TO STA 332+00	CALCULATED MJH CHECKED KAE	0 50 25 100 HORIZONTAL SCALE IN FEET

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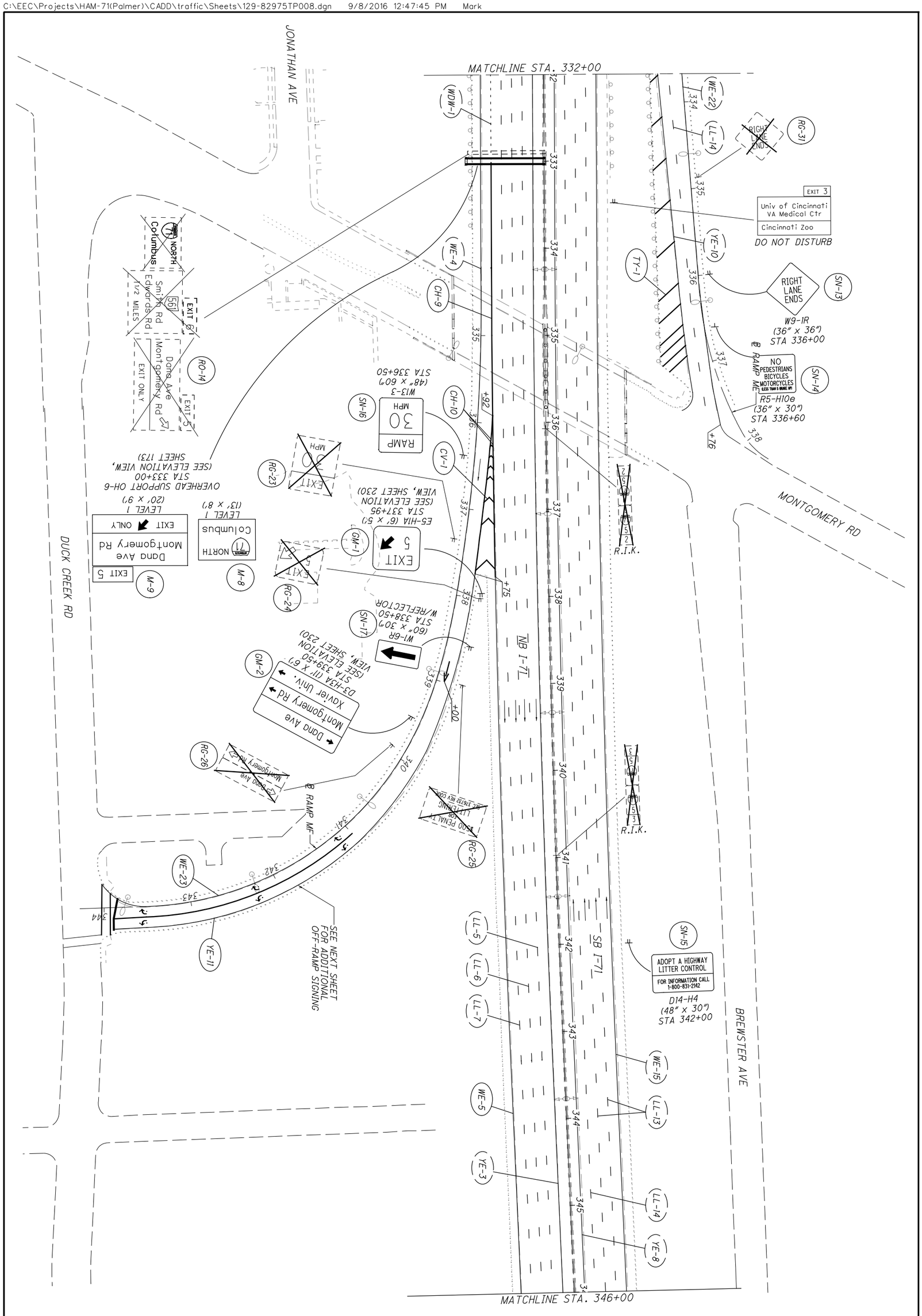
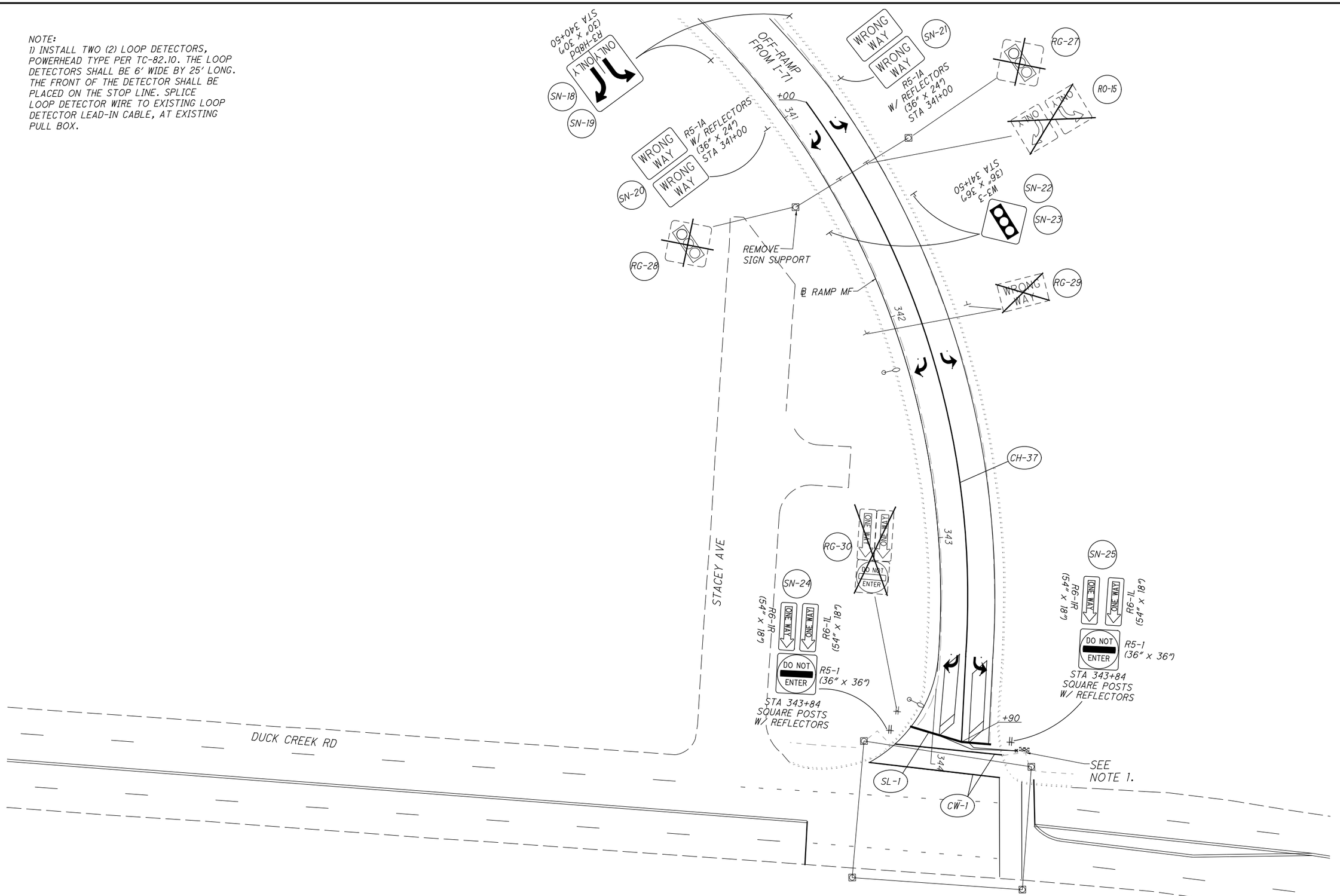


129 / 292	HAM-71-1.97	TRAFFIC CONTROL PLAN - I-71 STA 317+00 TO STA 346+00	CALCULATED MJH CHECKED KAE	0 50 25 100 HORIZONTAL SCALE IN FEET

NOTE:
1) INSTALL TWO (2) LOOP DETECTORS, POWERHEAD TYPE PER TC-82.10. THE LOOP DETECTORS SHALL BE 6' WIDE BY 25' LONG. THE FRONT OF THE DETECTOR SHALL BE PLACED ON THE STOP LINE. SPLICE LOOP DETECTOR WIRE TO EXISTING LOOP DETECTOR LEAD-IN CABLE, AT EXISTING PULL BOX.



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HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED MJH
CHECKED KAE

TRAFFIC CONTROL PLAN - OFF-RAMP DETAILS
DUCK CREEK RD (MONTGOMERY ROAD)

HAM-71-1.97

130
292

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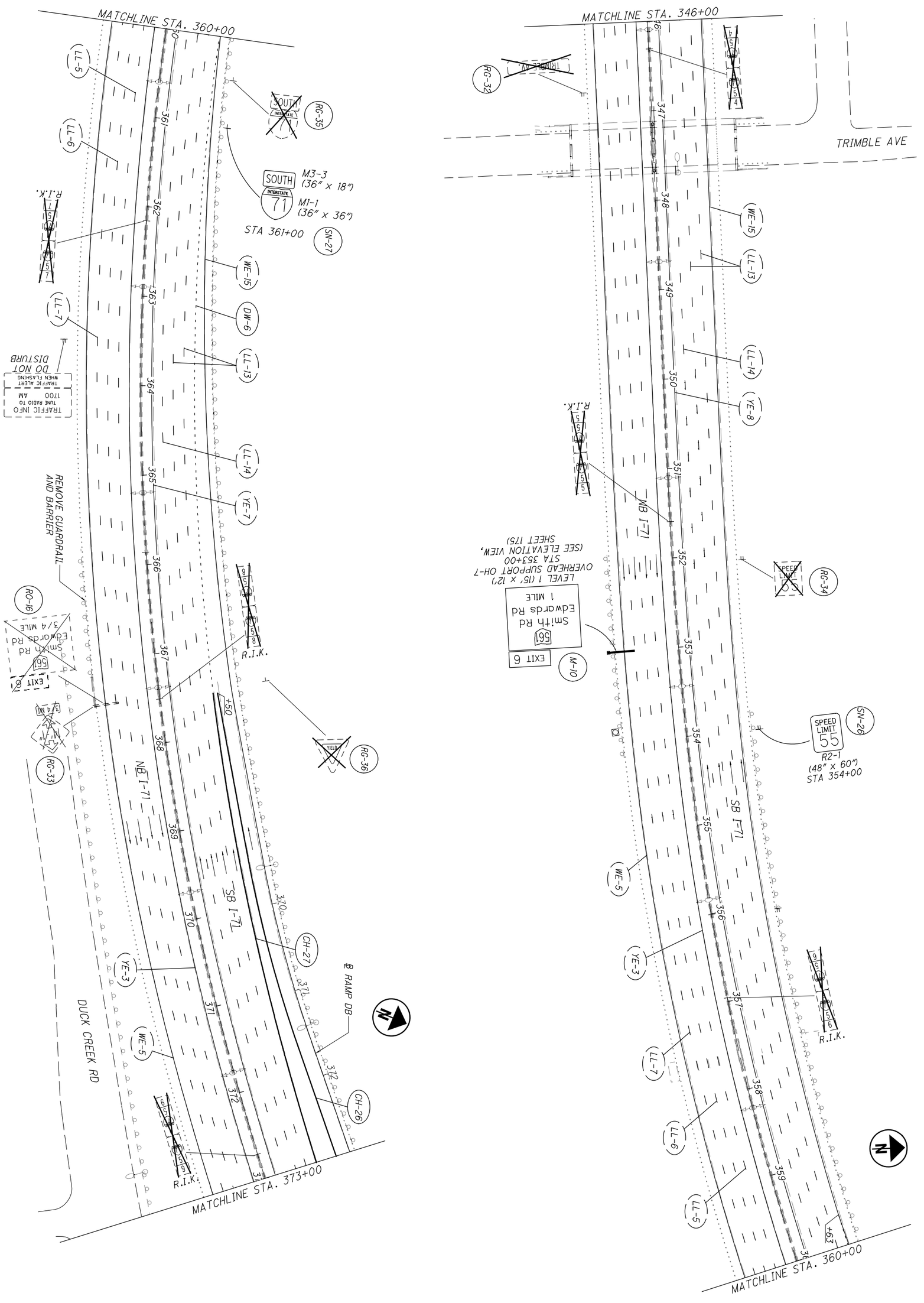

131 / 292	HAM-71-1.97	TRAFFIC CONTROL PLAN - I-71 STA 346+00 TO STA 373+00	CALCULATED MJH CHECKED KAE	0 50 25 100 HORIZONTAL SCALE IN FEET

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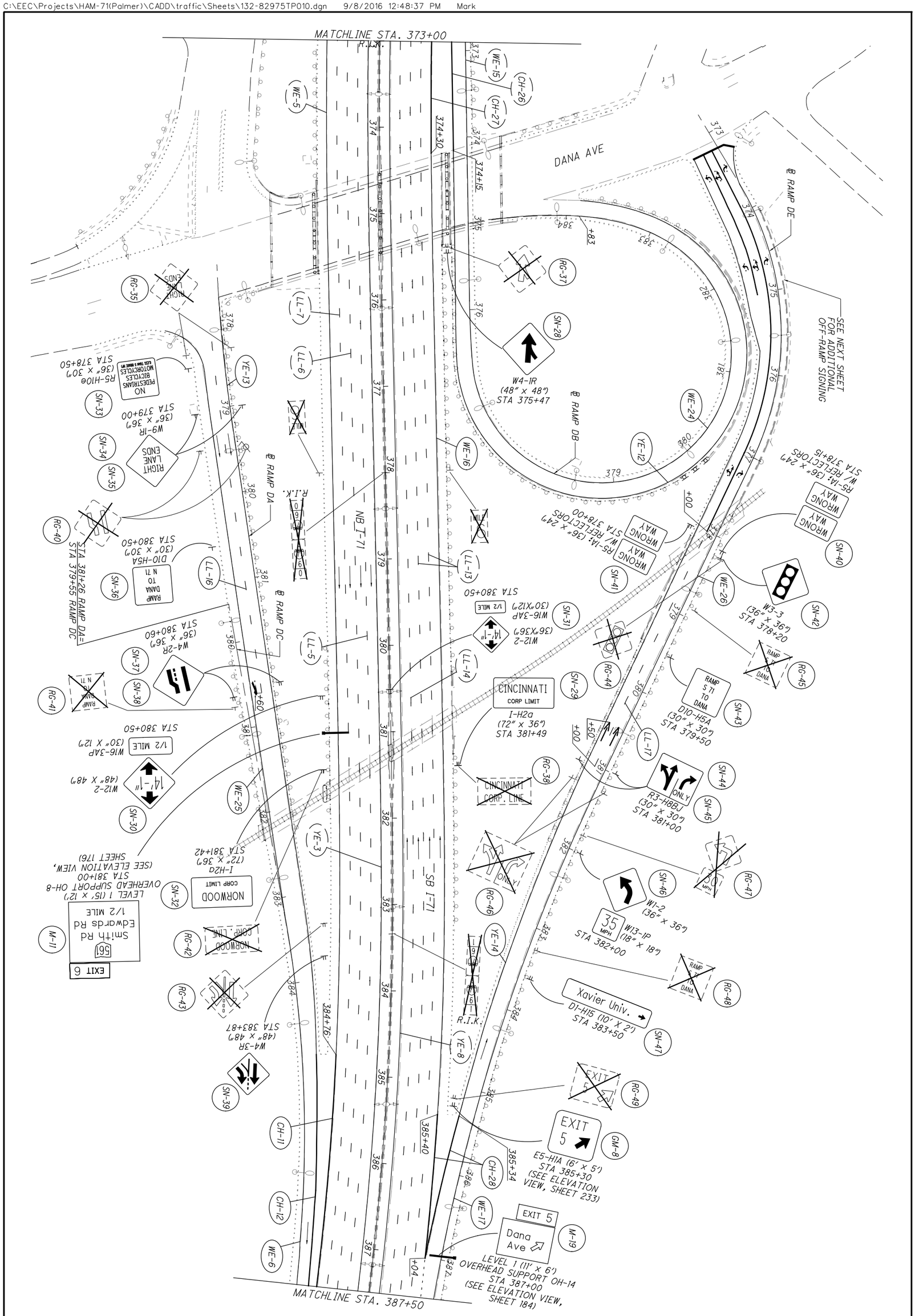
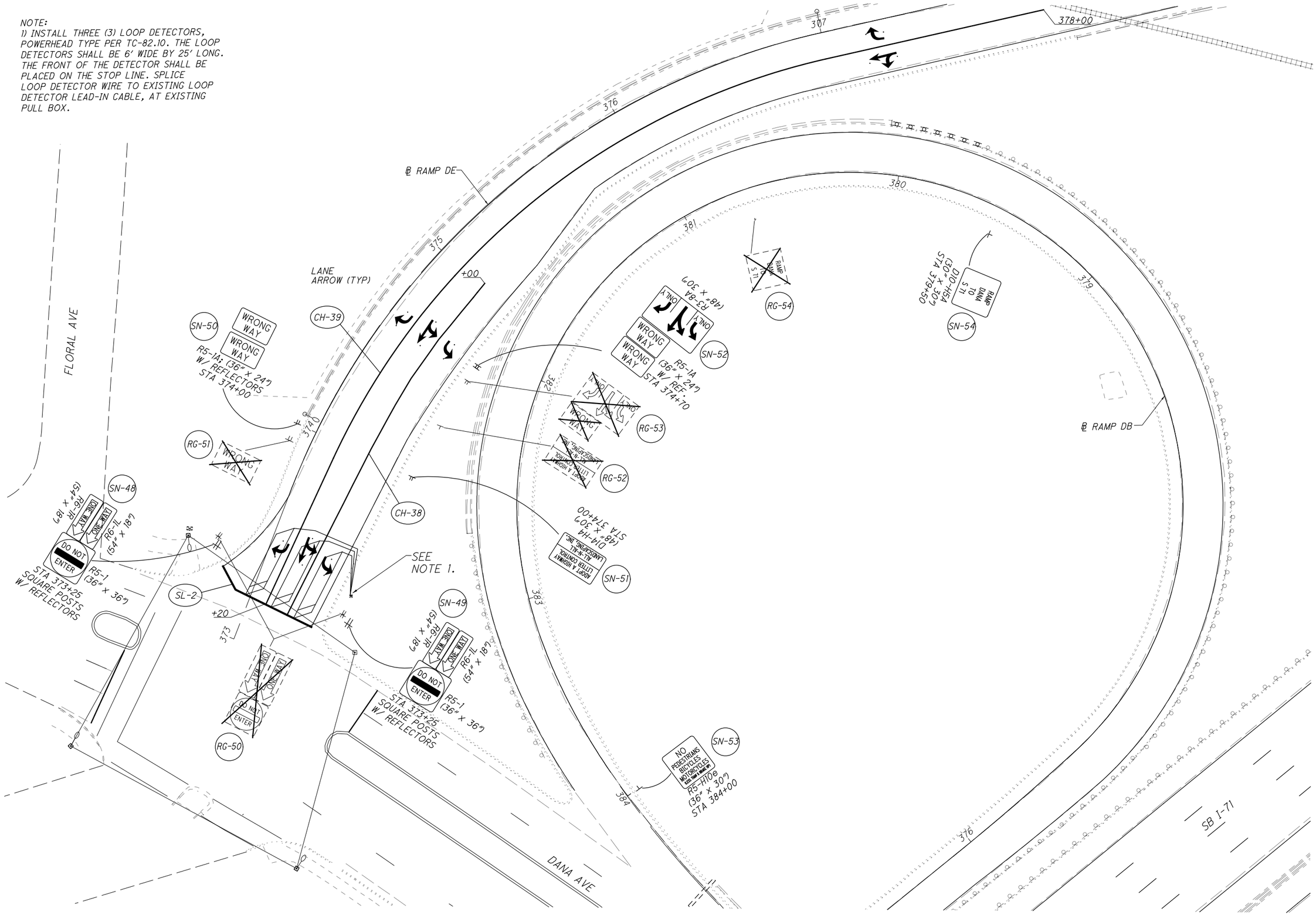


132 292	HAM-71-1.97	TRAFFIC CONTROL PLAN - I-71 STA 373+00 TO STA 387+50	CALCULATED MJH CHECKED KAE	0 50 25 100 HORIZONTAL SCALE IN FEET

NOTE:
1) INSTALL THREE (3) LOOP DETECTORS, POWERHEAD TYPE PER TC-82.10. THE LOOP DETECTORS SHALL BE 6' WIDE BY 25' LONG. THE FRONT OF THE DETECTOR SHALL BE PLACED ON THE STOP LINE. SPLICE LOOP DETECTOR WIRE TO EXISTING LOOP DETECTOR LEAD-IN CABLE, AT EXISTING PULL BOX.



HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED MJH
CHECKED KAE

TRAFFIC CONTROL PLAN - OFF-RAMP DETAILS
SB OFF-RAMP TO DANA AVE

HAM-71-1.97

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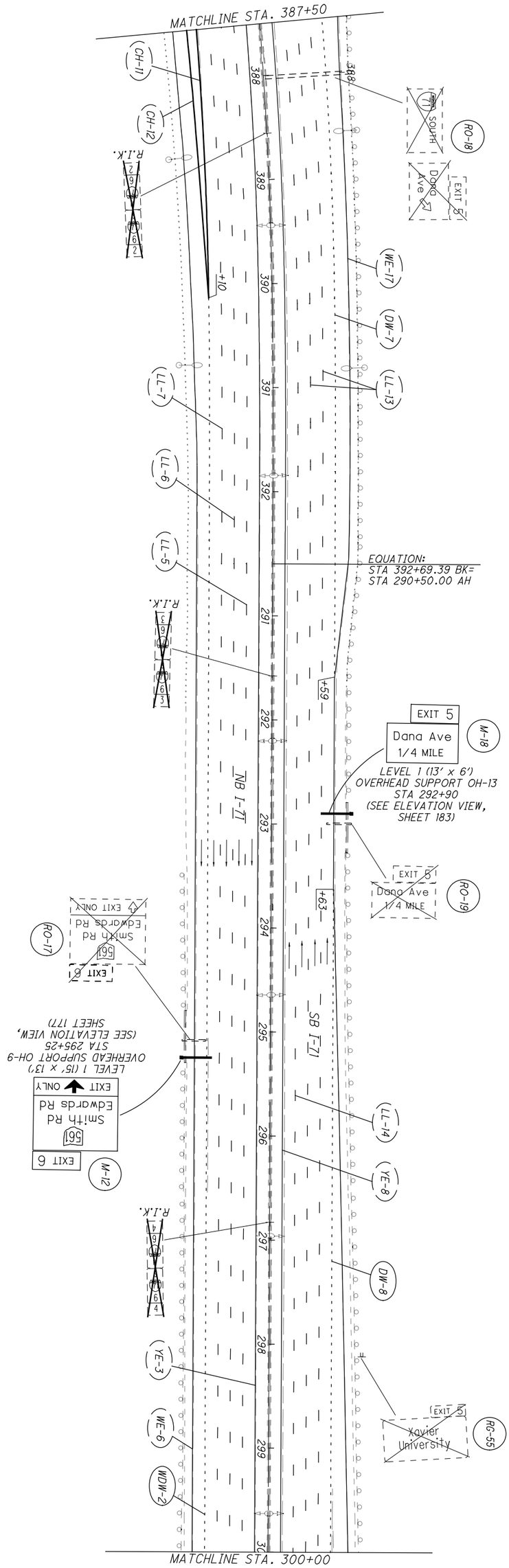

134 / 292	HAM-71-1.97	TRAFFIC CONTROL PLAN - I-71 STA 387+50 TO STA 300+00	CALCULATED MJH CHECKED KAE	0 50 25 100 HORIZONTAL SCALE IN FEET

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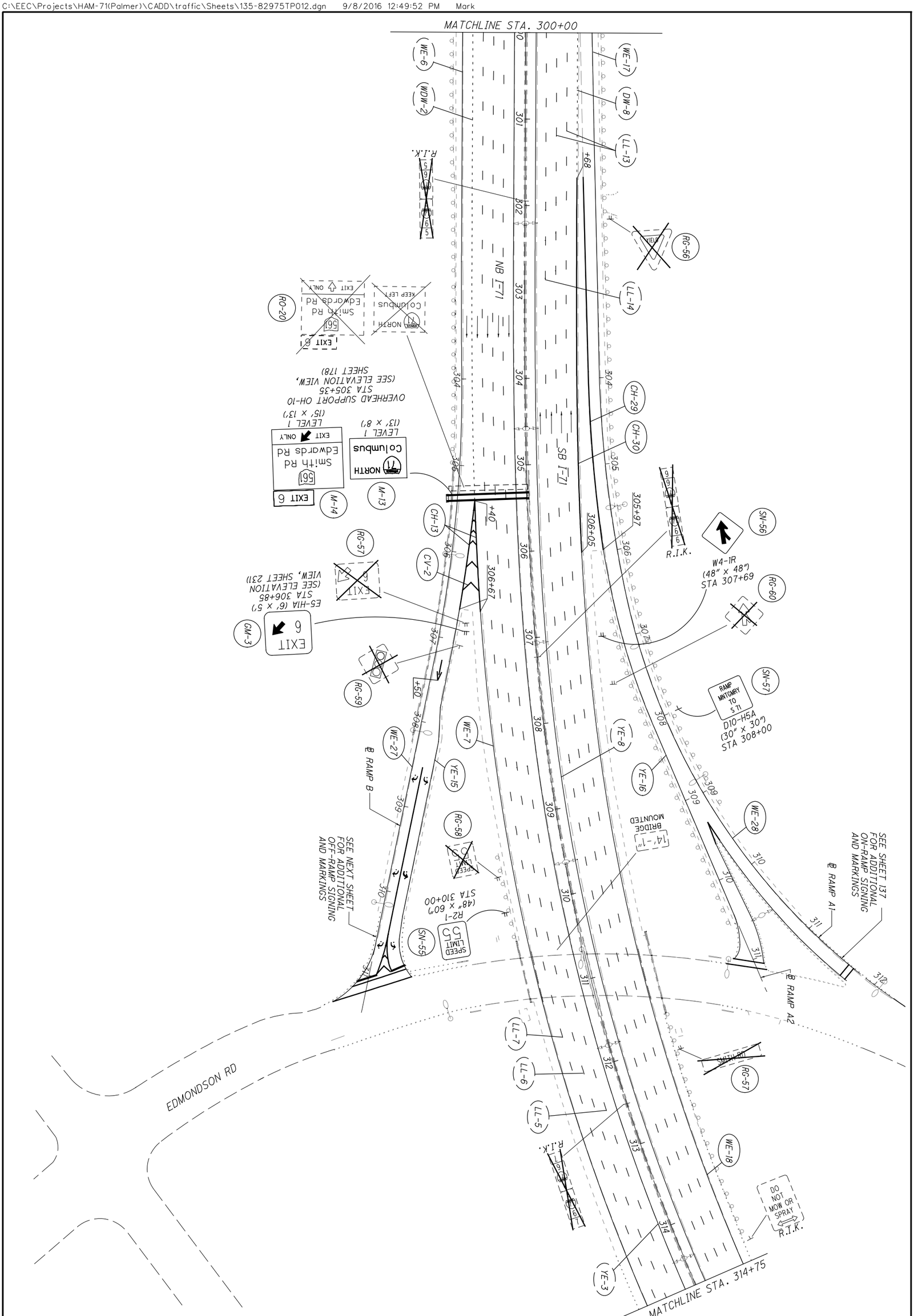
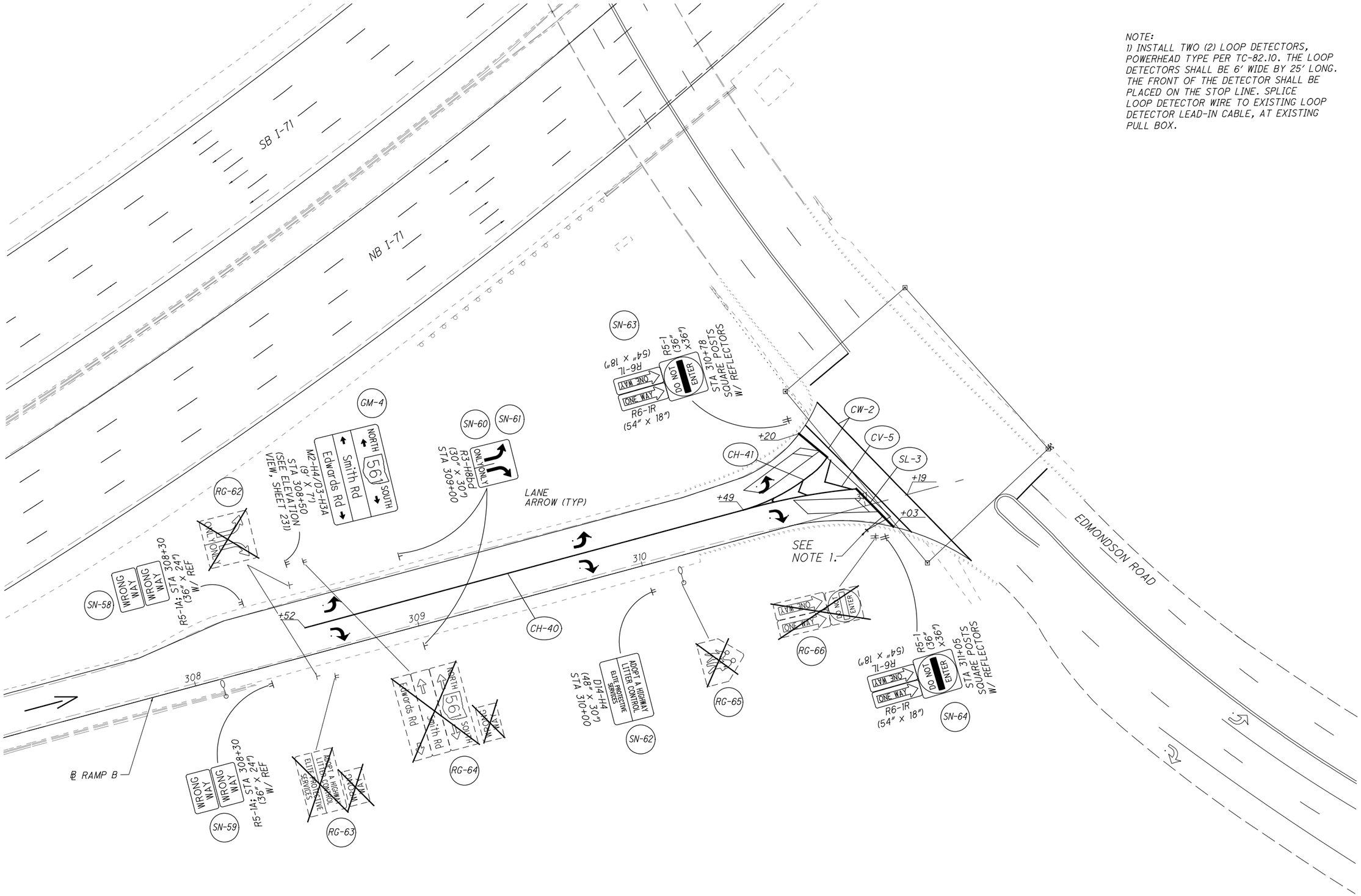


135 / 292	HAM-71-1.97	TRAFFIC CONTROL PLAN - I-71 STA 300+00 TO STA 314+75	CALCULATED MJH CHECKED KAE	0 50 25 100 HORIZONTAL SCALE IN FEET



NOTE:
1) INSTALL TWO (2) LOOP DETECTORS, POWERHEAD TYPE PER TC-82.10. THE LOOP DETECTORS SHALL BE 6' WIDE BY 25' LONG. THE FRONT OF THE DETECTOR SHALL BE PLACED ON THE STOP LINE. SPLICE LOOP DETECTOR WIRE TO EXISTING LOOP DETECTOR LEAD-IN CABLE, AT EXISTING PULL BOX.

N

0 10 20 40
HORIZONTAL SCALE IN FEET

CALCULATED MJH
CHECKED KAE

TRAFFIC CONTROL PLAN - OFF-RAMP DETAILS
EDMONDSON ROAD

HAM-71-1.97

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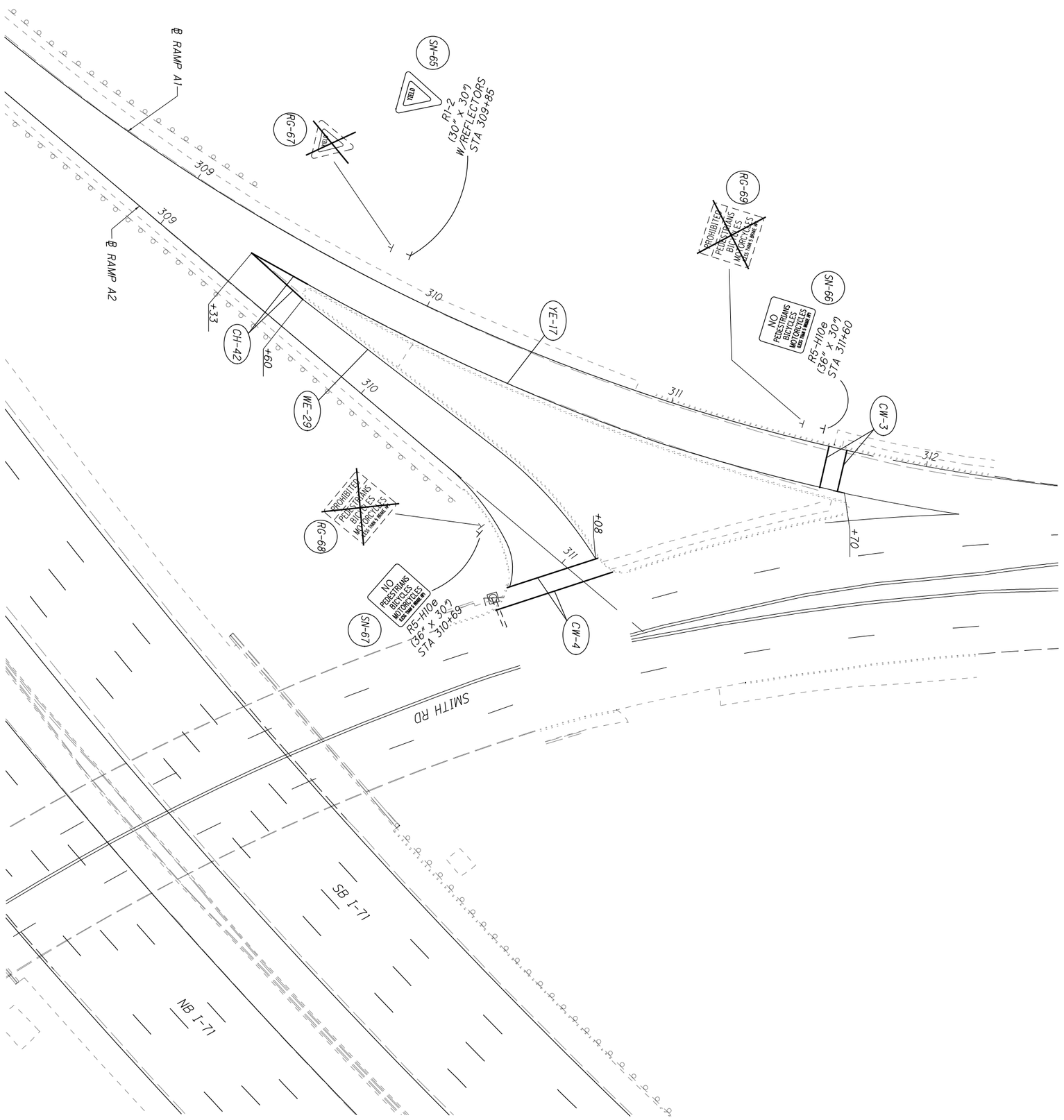

137 / 292	HAM-71-1.97	TRAFFIC CONTROL PLAN - ON-RAMP DETAILS ON-RAMP FROM SMITH RD	CALCULATED MJH CHECKED KAE	0 10 20 40 HORIZONTAL SCALE IN FEET

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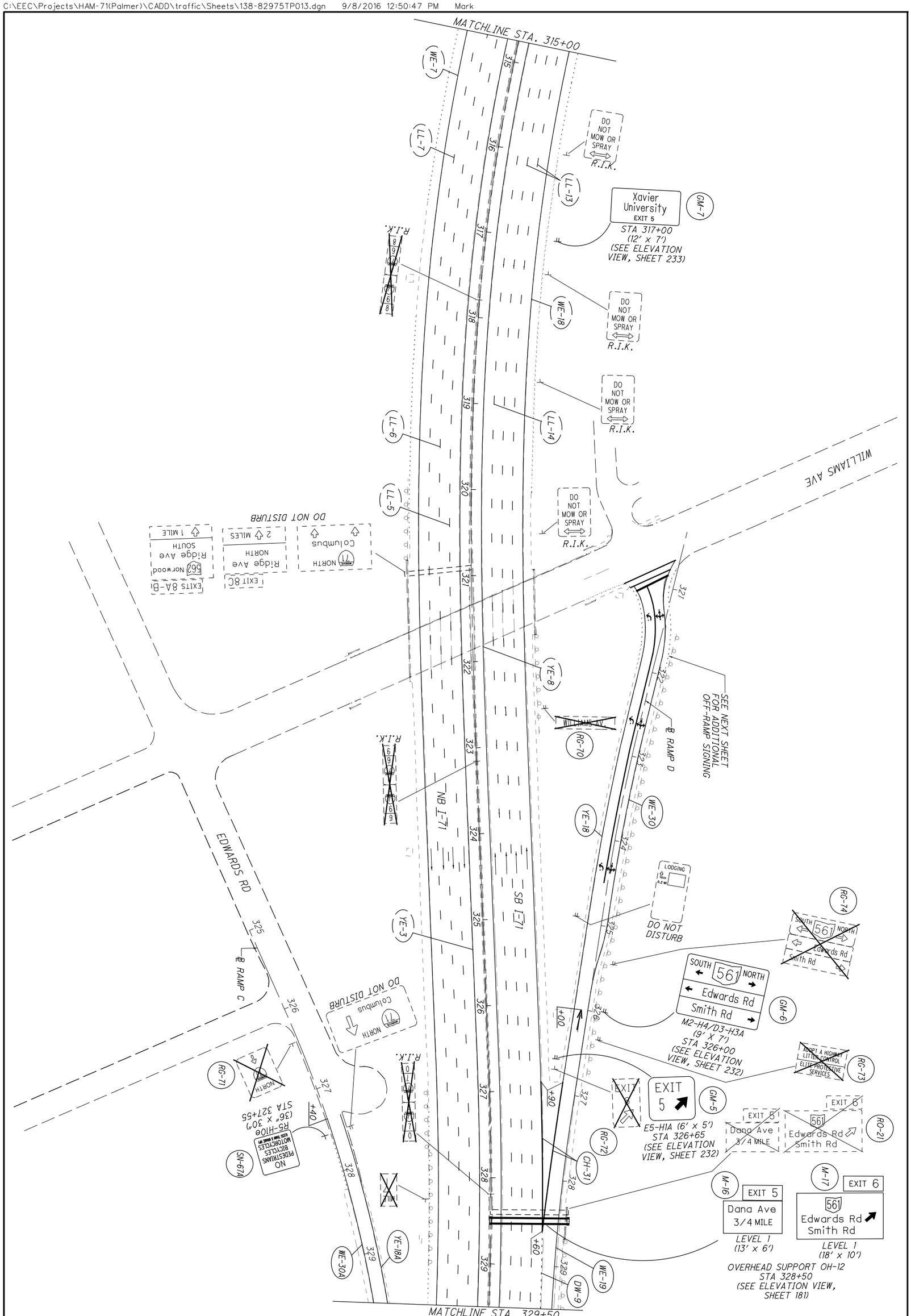

138 / 292	HAM-71-1.97	TRAFFIC CONTROL PLAN - I-71 STA 314+75 TO STA 329+50	CALCULATED MJH CHECKED KAE	0 50 25 100 HORIZONTAL SCALE IN FEET

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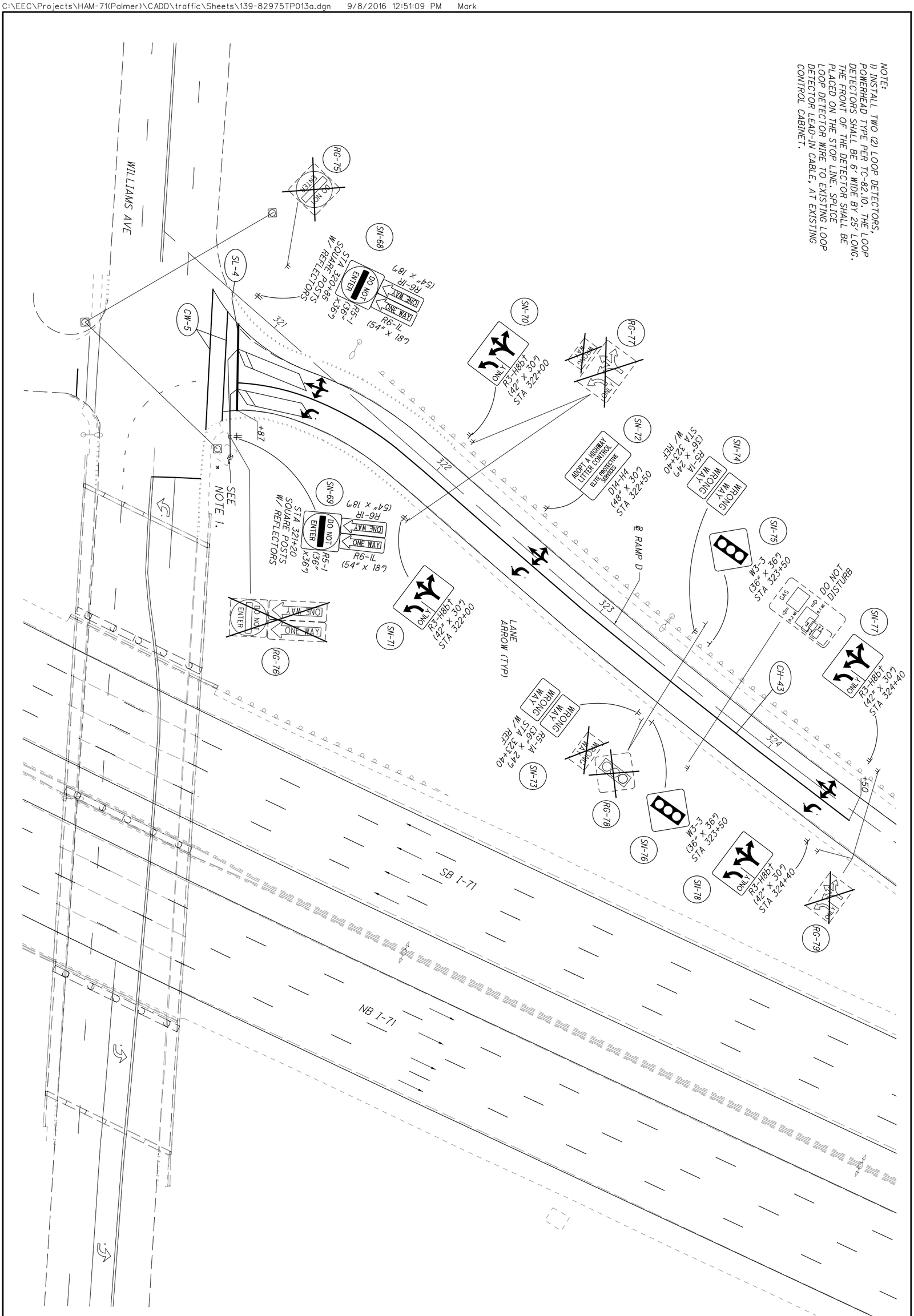

139 / 292	HAM-71-1.97	TRAFFIC CONTROL PLAN - OFF-RAMP DETAILS WILLIAMS AVENUE	CALCULATED MJH CHECKED KAE	0 10 20 40 HORIZONTAL SCALE IN FEET	N

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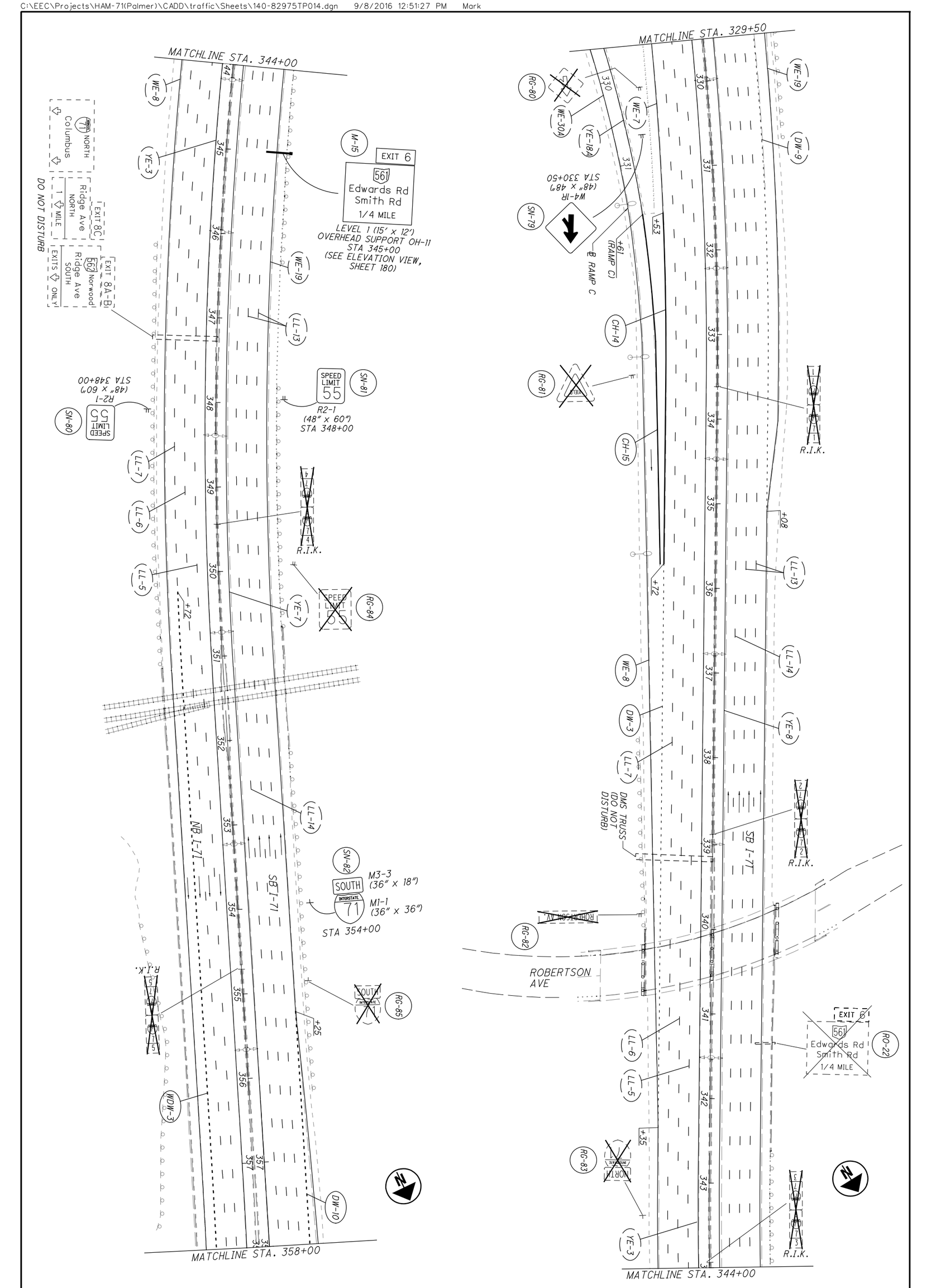

140 / 292	HAM-71-1.97	TRAFFIC CONTROL PLAN - I-71 STA 329-50 TO STA 358+00	CALCULATED MJH CHECKED KAE	0 25 50 100 HORIZONTAL SCALE IN FEET

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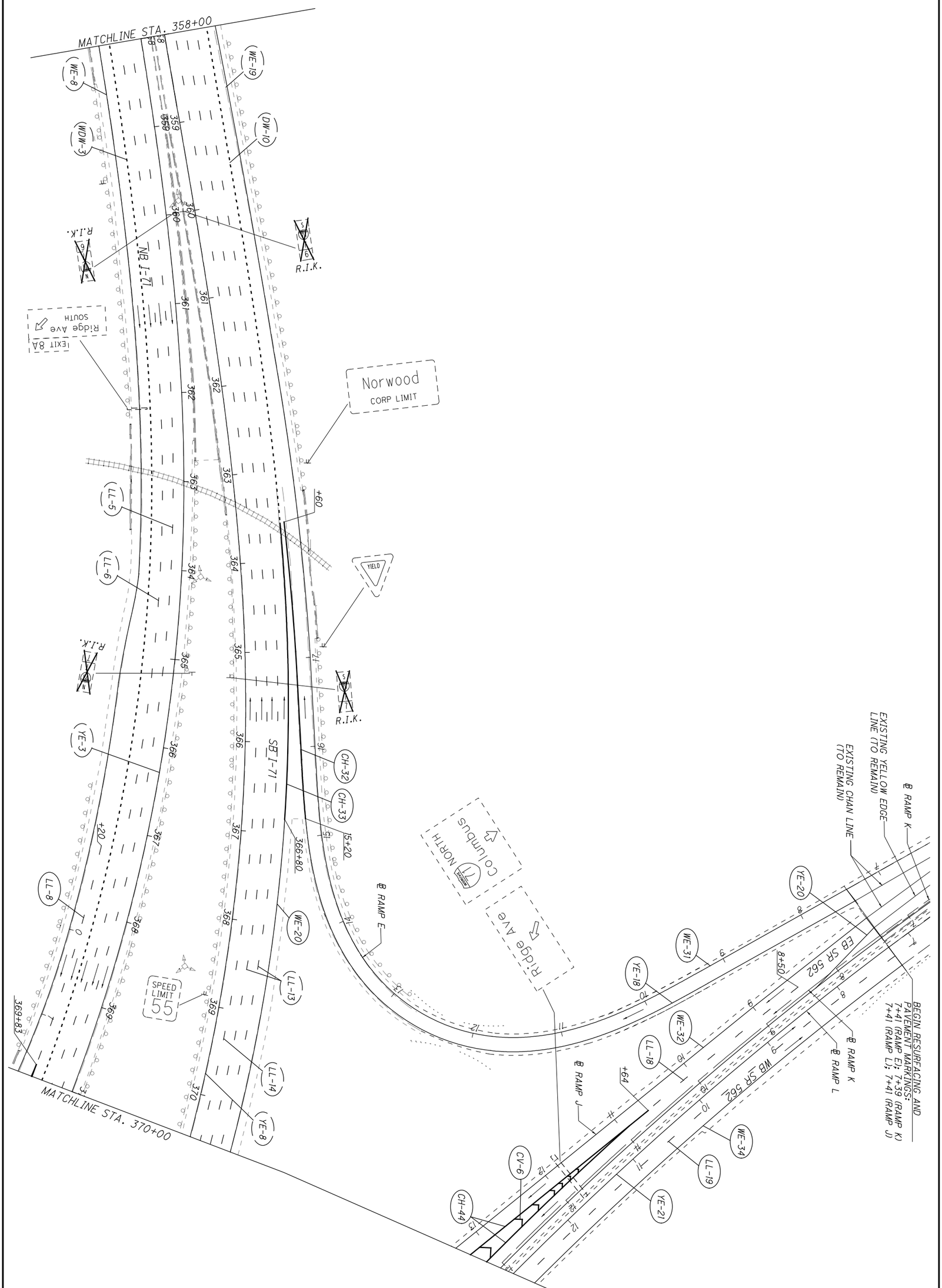

141 / 292	HAM-71-1.97	TRAFFIC CONTROL PLAN - I-71 STA 358+00 TO STA 370+00	CALCULATED MJH CHECKED KAE	0 50 25 100 HORIZONTAL SCALE IN FEET	N

TRAFFIC CONTROL PLAN - I-71
STA 370-00 TO STA 383+00

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED MJH
CHECKED KAE

HAM-71-1.97

142
292

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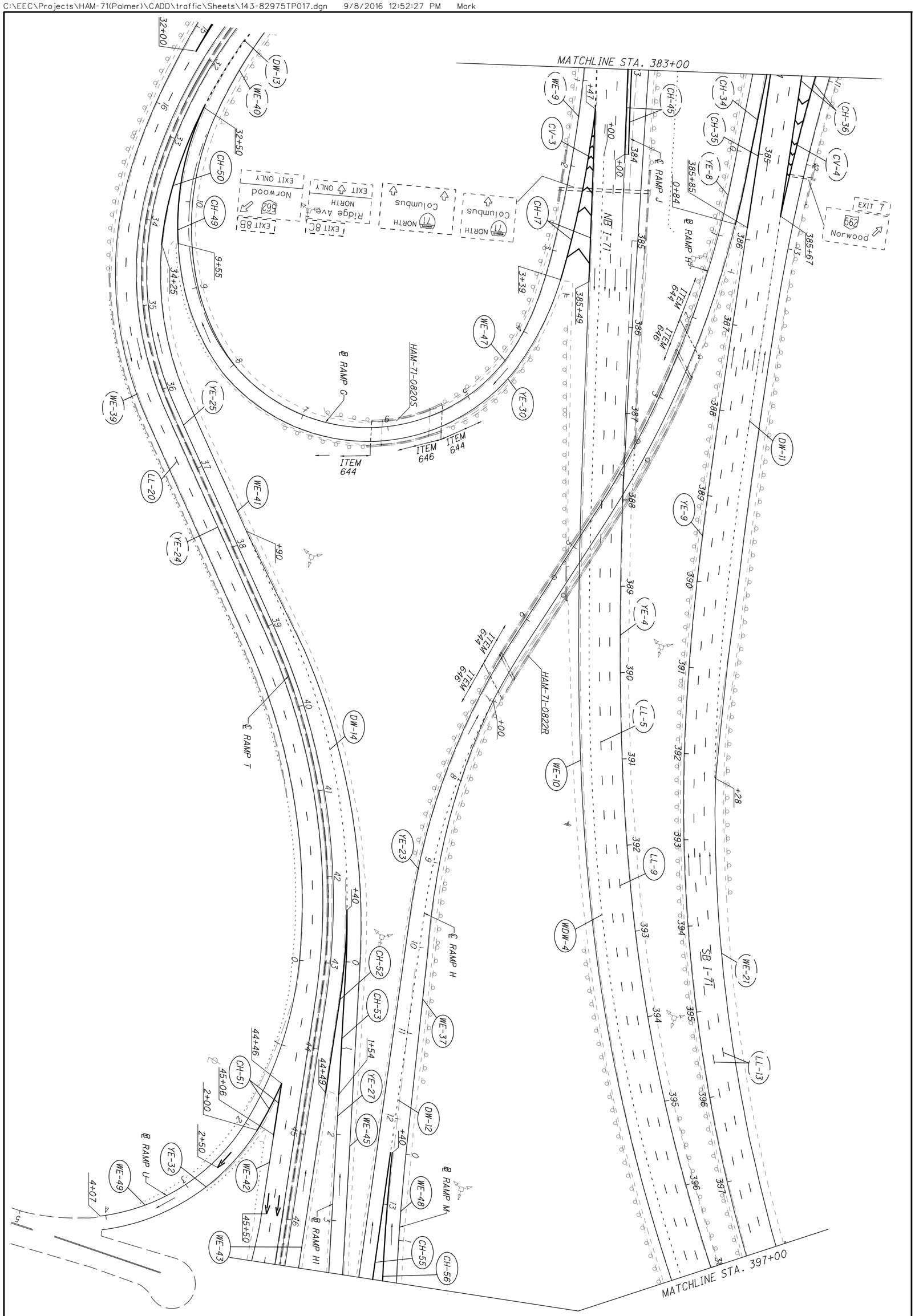

143 292	HAM-71-1.97	TRAFFIC CONTROL PLAN STA 383+00 TO STA 397+00	CALCULATED MJH / CHECKED KAE	0 50 25 100 HORIZONTAL SCALE IN FEET

TRAFFIC CONTROL PLAN
STA 397+00 TO END PROJECT

HAM-71-1.97

144
292

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED MJH
CHECKED KAE

END RESURFACING AND PAVEMENT MARKINGS STA 398+96

END RESURFACING AND PAVEMENT MARKINGS STA 398+00

SB I-71

NB I-71

MATCHLINE STA 397+00

Columbus

DO NOT DISTURB

EXIT 8C Ridge Ave NORTH EXIT ONLY DO NOT DISTURB

RIDGE RD

℄ RAMP M

℄ RAMP H

℄ RAMP H1

℄ RAMP T

℄ RAMP H3

ITEM 644 ITEM 646

ITEM 646 ITEM 644

HAM-71-0843S

STA 8+74 RAMP H1 = STA 19+00 RAMP H3

LANE ARROW (TYP)

M2-H10 (MOD) (66" x 36") — SN-112 — RIDGE AVE NORTH ONLY

M2-H10 (MOD) (66" x 36") — SN-113 — DUCK CREEK RD ONLY

M2-H10 (MOD) (66" x 36") — SN-114 — RIDGE AVE SOUTH ONLY

OVERHEAD SUPPORT OH-10A
STA 48+50
(SEE ELEVATION VIEW, SHEET 179A)

YE-9 LL-13 WE-21 YE-4 LL-9 LL-5 WDW-4 WE-10 CH-56 CH-55 WE-48 YE-31 CH-47 YE-27 YE-25 WE-43 LL-20 YE-24 WE-42 RO-56 CH-54 YE-26 CW-6 WE-44 SL-5 WE-38 YE-28

1+96 14+37 14+03 3+77 16+38 +51 +03 +88 +50 +74 +16 +75 +06

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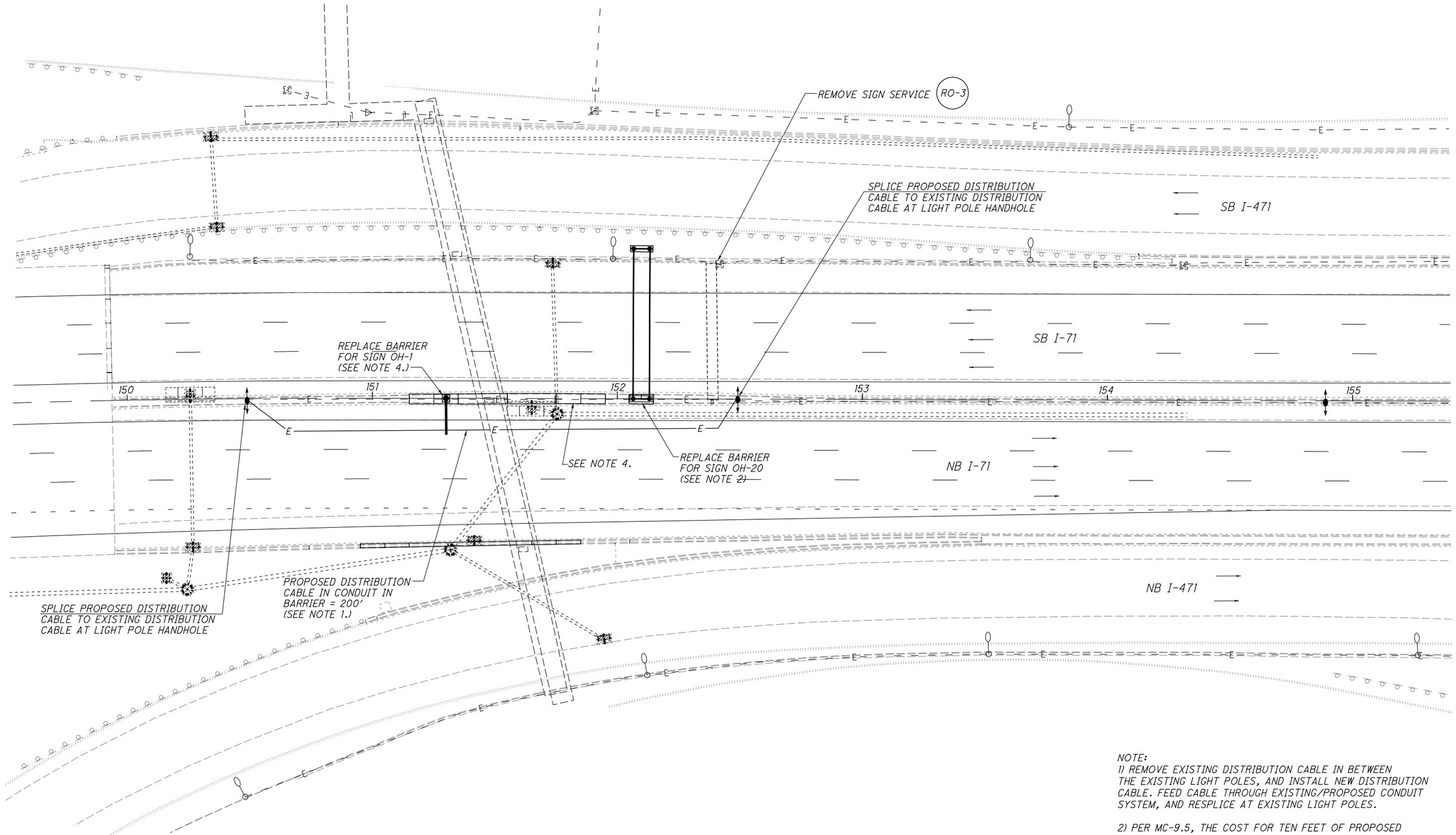

QUANTITIES

ITEM 202 - CONCRETE BARRIER REMOVED	10 FT
ITEM 625 - CONNECTION FUSED PULL APART	2 EACH
ITEM 625 - CONNECTION UNFUSED PULL APART	2 EACH
ITEM 625 - NO. 4 AWG 5000 VOLT DISTRIBUTION CABLE	420 FT
ITEM 625 - CONDUIT CLEANED AND CABLE REMOVED	200 FT
ITEM 625 - DISCONNECT CIRCUIT	2 EACH
ITEM 631 - SIGN LIGHTING, MISC.: REMOVE SIGN SERVICE	1 EACH

NOTE:

1) REMOVE EXISTING DISTRIBUTION CABLE IN BETWEEN THE EXISTING LIGHT POLES, AND INSTALL NEW DISTRIBUTION CABLE. FEED CABLE THROUGH EXISTING/PROPOSED CONDUIT SYSTEM, AND RESPLICE AT EXISTING LIGHT POLES.

2) PER MC-9.5, THE COST FOR TEN FEET OF PROPOSED CONCRETE BARRIER, WHICH IS CENTERED ON THE PROPOSED SIGN SUPPORT FOUNDATION, IS PAID FOR WITH ITEM 630 "CONCRETE BARRIER MEDIAN SIGN SUPPORT FOUNDATION, TYPE TC-21.50".

3) INSTALL A PVC CONDUIT OF THE SAME SIZE, AS REMOVED FROM THE EXISTING BARRIER. (PER MC-9.3 "RACEWAYS" NOTE, THE COST OF PROVIDING AND INSTALLING THE CONDUIT IS INCIDENTAL TO THE COST OF THE CONCRETE BARRIER.) RECONNECT THE PROPOSED CONDUIT TO THE EXISTING CONDUIT SYSTEM.

4) SEE SHEET 92 FOR BARRIER MODIFICATION PLAN.

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED MJH
CHECKED KAE

TRAFFIC CONTROL - BARRIER AND LIGHTING
STA 150+00 TO STA 153+00

HAM-71-1.97

145
292

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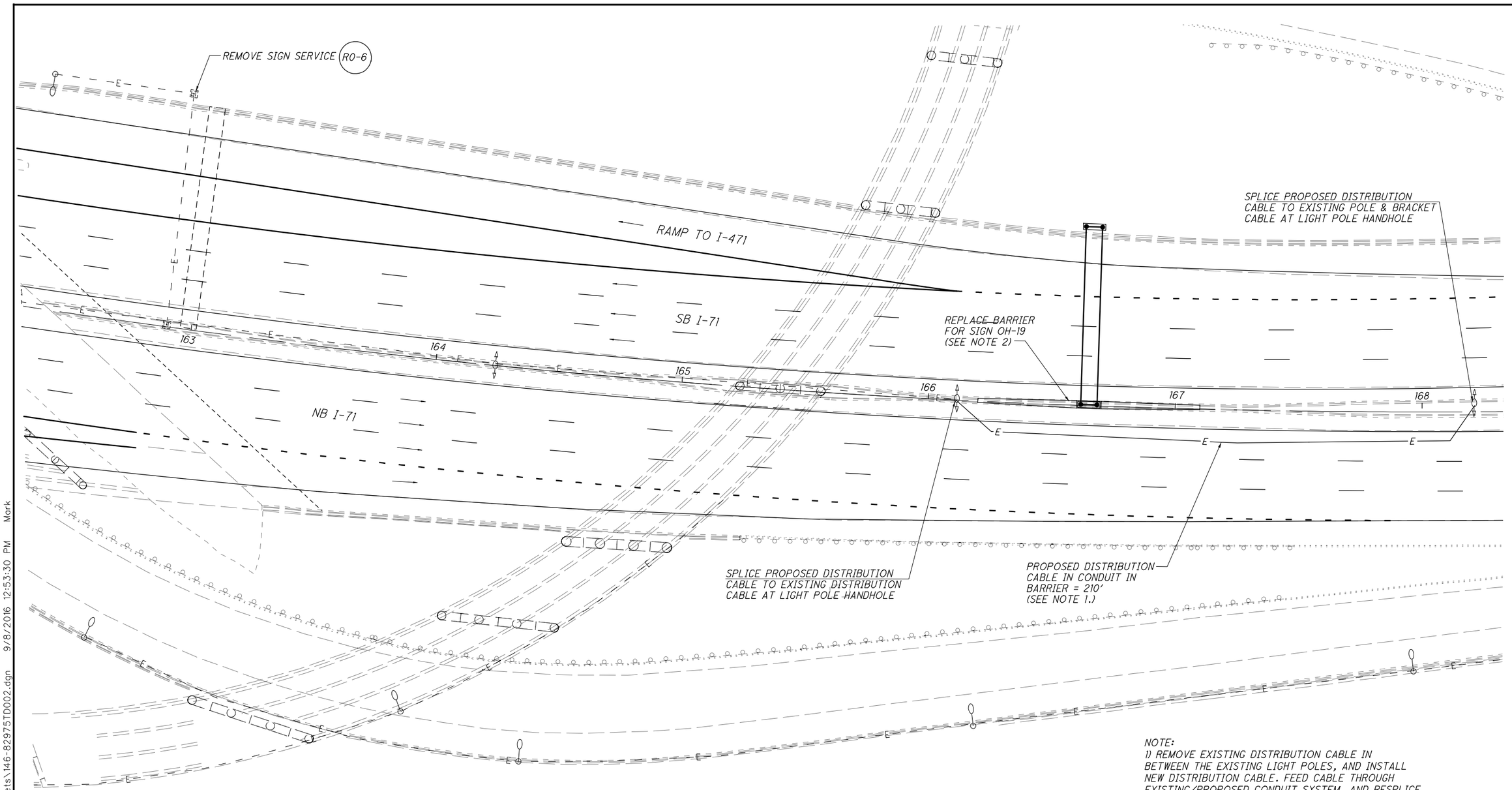

QUANTITIES

ITEM 202 - CONCRETE BARRIER REMOVED	90 FT
ITEM 622 - CONCRETE BARRIER,TYPE B1, AS PER PLAN	80 FT
ITEM 625 - CONNECTION FUSED PULL APART	2 EACH
ITEM 625 - CONNECTION UNFUSED PULL APART	2 EACH
ITEM 625 - NO. 4 AWG 5000 VOLT DISTRIBUTION CABLE	440 FT
ITEM 625 - CONDUIT CLEANED AND CABLE REMOVED	210 FT
ITEM 625 - DISCONNECT CIRCUIT	2 EACH
ITEM 631 - SIGN LIGHTING, MISC.: REMOVE SIGN SERVICE	1 EACH

NOTE:

1) REMOVE EXISTING DISTRIBUTION CABLE IN BETWEEN THE EXISTING LIGHT POLES, AND INSTALL NEW DISTRIBUTION CABLE. FEED CABLE THROUGH EXISTING/PROPOSED CONDUIT SYSTEM, AND RESPLICE AT EXISTING LIGHT POLES.

2) REMOVE AND REPLACE EXISTING CONCRETE MEDIAN BARRIER IN COMPLETE SECTIONS, IN BETWEEN EXISTING MEDIAN BARRIER JOINTS. PROVIDE A CONCRETE BARRIER TRANSITION IN CONFORMANCE WITH ARCHIVED STANDARD DRAWING MC-9.4 (SEE SHEET 235) TO ACCOMMODATE THE PROPOSED SIGN TRUSS FOUNDATION. INSTALL PVC CONDUIT(S) OF THE SAME SIZE, AS REMOVED FROM THE EXISTING BARRIER, AND RECONNECT TO THE EXISTING CONDUIT SYSTEM. SEE SHEET 234 FOR STANDARD JERSEY SHAPE BARRIER DETAILS.

3) PER MC-9.5, THE COST FOR TEN FEET OF PROPOSED CONCRETE BARRIER, WHICH IS CENTERED ON THE PROPOSED SIGN SUPPORT FOUNDATION, IS PAID FOR WITH ITEM 630 "CONCRETE BARRIER MEDIAN SIGN SUPPORT FOUNDATION, TYPE TC-21.50, AS PER PLAN". PER MC-9.3 "RACEWAYS" NOTE, THE COST OF PROVIDING AND INSTALLING THE CONDUIT IS INCIDENTAL TO THE COST OF THE CONCRETE BARRIER.

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED MJH
CHECKED KAE

TRAFFIC CONTROL - BARRIER AND LIGHTING
STA 162+50 TO STA 168+50

HAM-71-1.97

146
292

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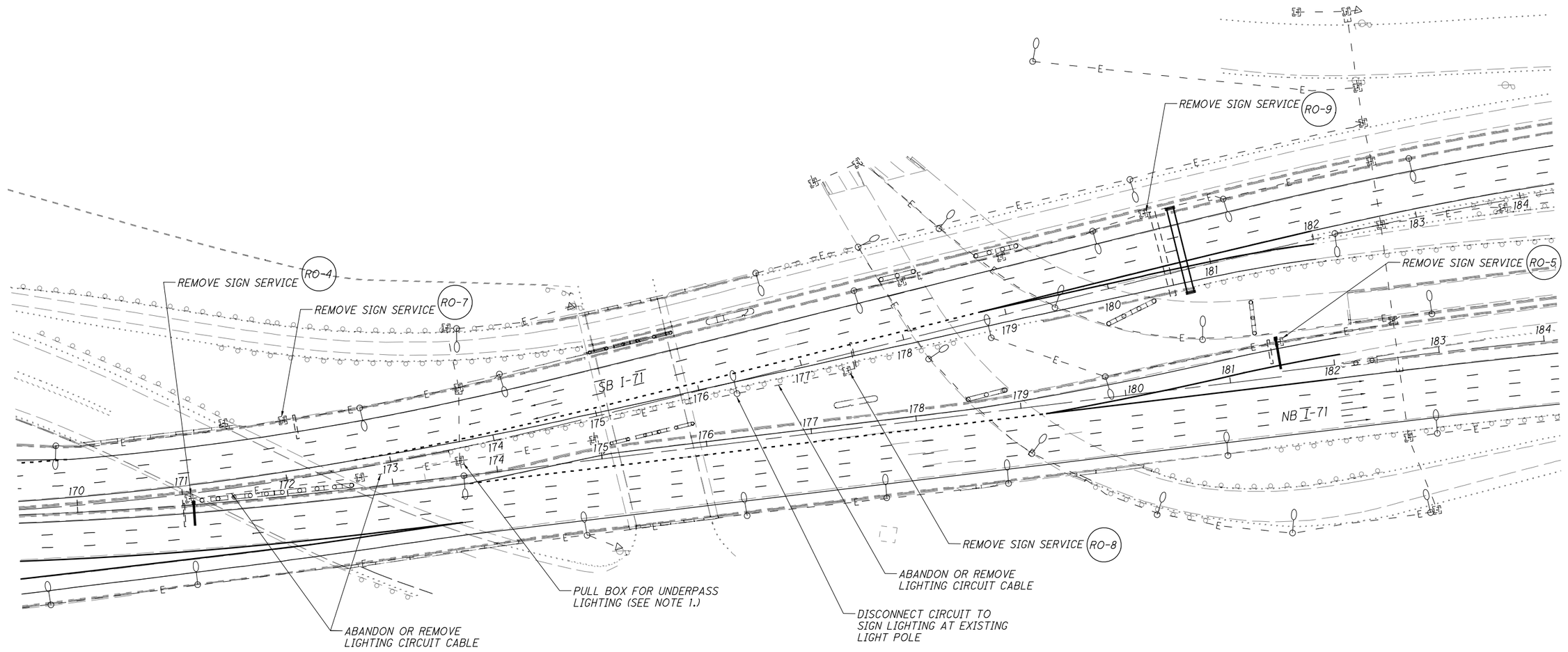

QUANTITIES

ITEM 631 - SIGN LIGHTING, MISC.: REMOVE SIGN SERVICE 5 EACH

NOTES:

1) DISCONNECT POWER TO SIGN LIGHTING AT EXISTING PULL BOX. THE SPLICE TO THE EXISTING UNDERPASS LIGHTING SHALL REMAIN OPERATIONAL.

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED MJH
CHECKED KAE

TRAFFIC CONTROL - BARRIER AND LIGHTING
STA 171+00 TO STA 182+00

HAM-71-1.97

147
292

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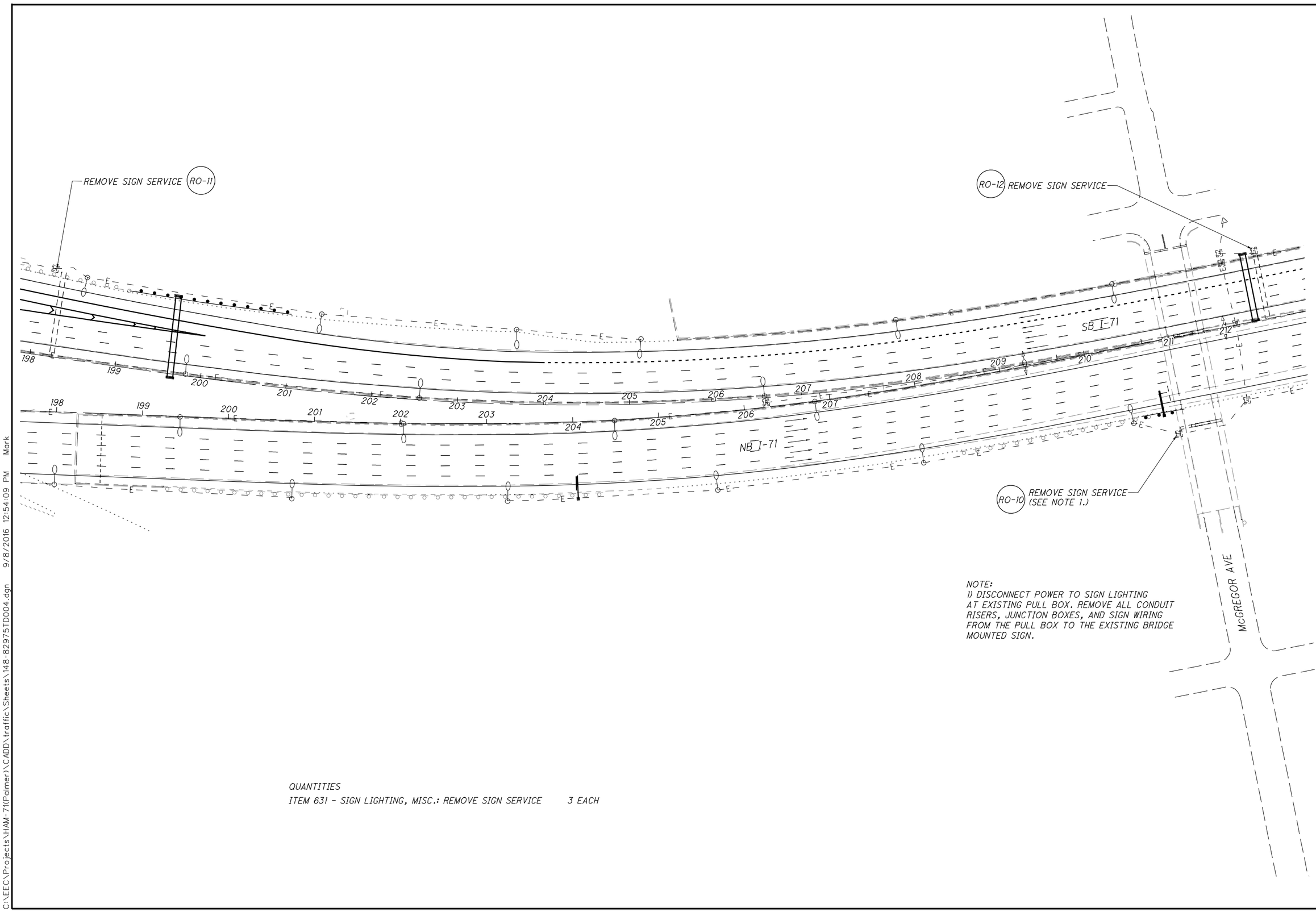

NOTE:
1) DISCONNECT POWER TO SIGN LIGHTING AT EXISTING PULL BOX. REMOVE ALL CONDUIT RISERS, JUNCTION BOXES, AND SIGN WIRING FROM THE PULL BOX TO THE EXISTING BRIDGE MOUNTED SIGN.

QUANTITIES

ITEM 631 - SIGN LIGHTING, MISC.: REMOVE SIGN SERVICE	3 EACH

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED MJH
CHECKED KAE

TRAFFIC CONTROL - BARRIER AND LIGHTING
STA 198+00 TO STA 213+00

HAM-71-1.97

148
292

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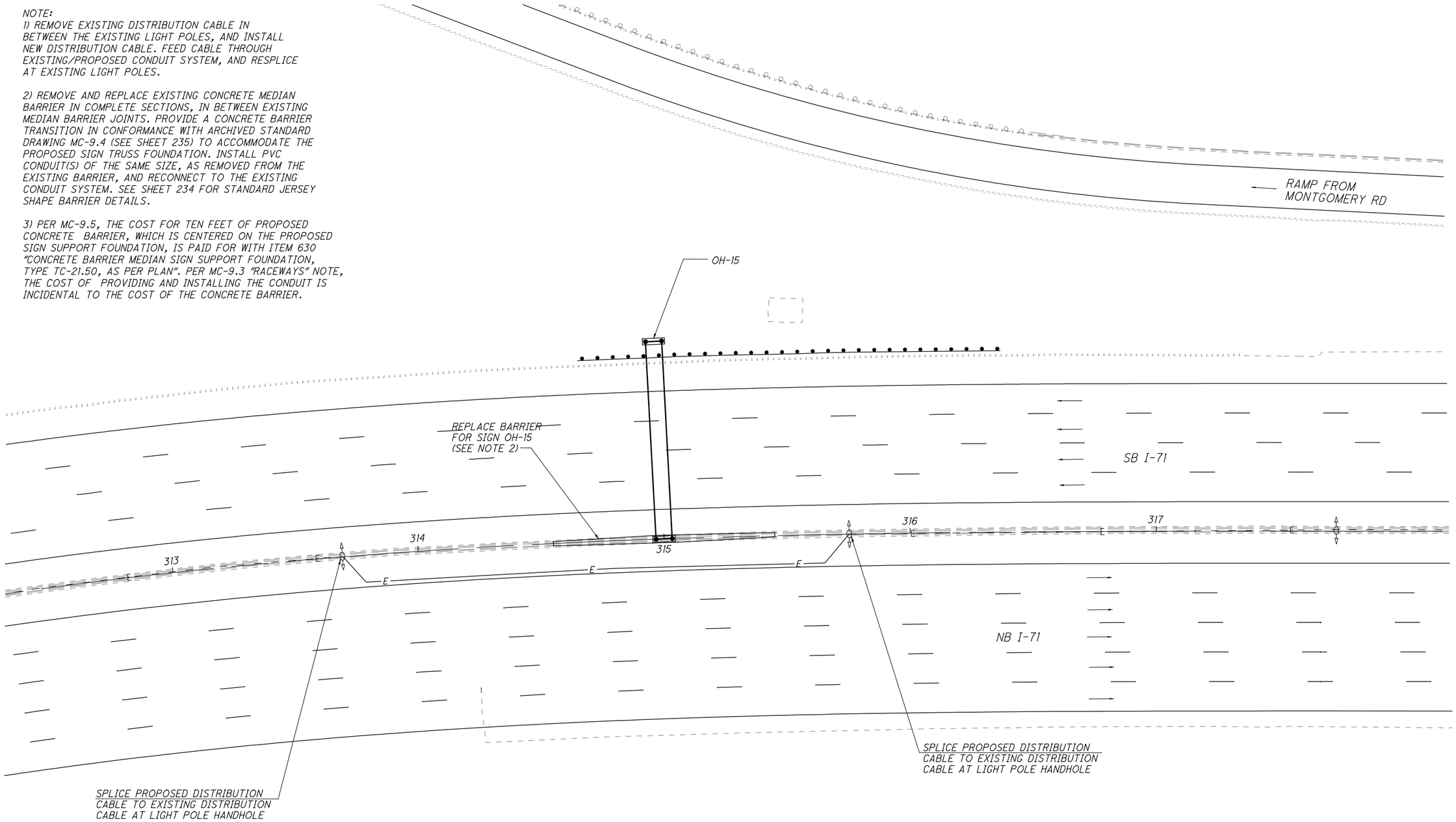
NOTE:
1) REMOVE EXISTING DISTRIBUTION CABLE IN BETWEEN THE EXISTING LIGHT POLES, AND INSTALL NEW DISTRIBUTION CABLE. FEED CABLE THROUGH EXISTING/PROPOSED CONDUIT SYSTEM, AND RESPLICE AT EXISTING LIGHT POLES.

2) REMOVE AND REPLACE EXISTING CONCRETE MEDIAN BARRIER IN COMPLETE SECTIONS, IN BETWEEN EXISTING MEDIAN BARRIER JOINTS. PROVIDE A CONCRETE BARRIER TRANSITION IN CONFORMANCE WITH ARCHIVED STANDARD DRAWING MC-9.4 (SEE SHEET 235) TO ACCOMMODATE THE PROPOSED SIGN TRUSS FOUNDATION. INSTALL PVC CONDUIT(S) OF THE SAME SIZE, AS REMOVED FROM THE EXISTING BARRIER, AND RECONNECT TO THE EXISTING CONDUIT SYSTEM. SEE SHEET 234 FOR STANDARD JERSEY SHAPE BARRIER DETAILS.

3) PER MC-9.5, THE COST FOR TEN FEET OF PROPOSED CONCRETE BARRIER, WHICH IS CENTERED ON THE PROPOSED SIGN SUPPORT FOUNDATION, IS PAID FOR WITH ITEM 630 "CONCRETE BARRIER MEDIAN SIGN SUPPORT FOUNDATION, TYPE TC-21.50, AS PER PLAN". PER MC-9.3 "RACEWAYS" NOTE, THE COST OF PROVIDING AND INSTALLING THE CONDUIT IS INCIDENTAL TO THE COST OF THE CONCRETE BARRIER.



QUANTITIES

ITEM 202 - CONCRETE BARRIER REMOVED	90 FT
ITEM 622 - CONCRETE BARRIER,TYPE B1, AS PER PLAN	80 FT
ITEM 625 - CONNECTION FUSED PULL APART	2 EACH
ITEM 625 - CONNECTION UNFUSED PULL APART	2 EACH
ITEM 625 - NO. 4 AWG 5000 VOLT DISTRIBUTION CABLE	430 FT
ITEM 625 - CONDUIT CLEANED AND CABLE REMOVED	205 FT
ITEM 625 - DISCONNECT CIRCUIT	2 EACH

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED MJH
CHECKED KAE

TRAFFIC CONTROL - BARRIER AND LIGHTING
STA 313+00 TO STA 316+00

HAM-71-1.97

149
292

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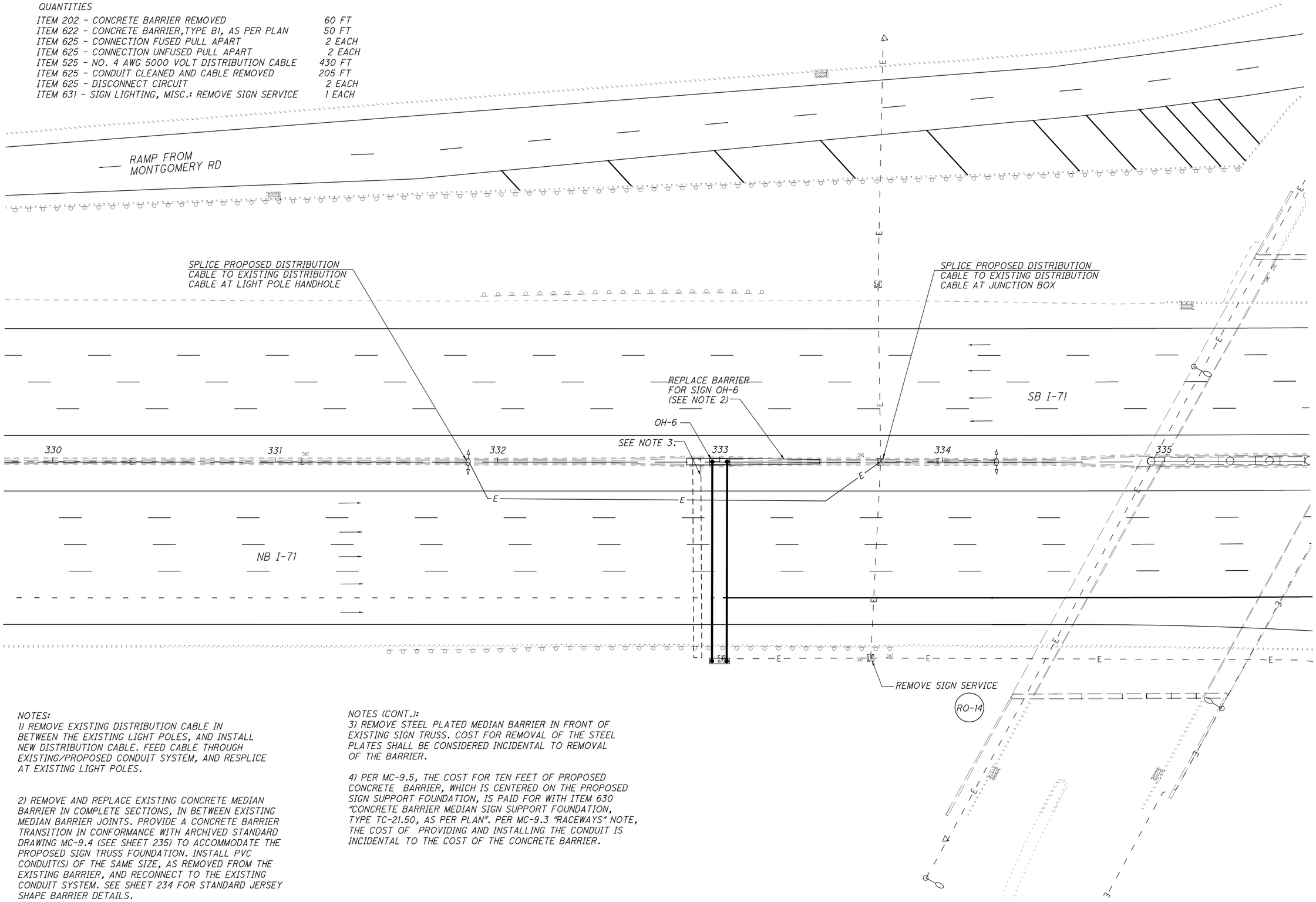
QUANTITIES

ITEM 202 - CONCRETE BARRIER REMOVED	60 FT
ITEM 622 - CONCRETE BARRIER,TYPE B1, AS PER PLAN	50 FT
ITEM 625 - CONNECTION FUSED PULL APART	2 EACH
ITEM 625 - CONNECTION UNFUSED PULL APART	2 EACH
ITEM 525 - NO. 4 AWG 5000 VOLT DISTRIBUTION CABLE	430 FT
ITEM 625 - CONDUIT CLEANED AND CABLE REMOVED	205 FT
ITEM 625 - DISCONNECT CIRCUIT	2 EACH
ITEM 631 - SIGN LIGHTING, MISC.: REMOVE SIGN SERVICE	1 EACH



NOTES:
1) REMOVE EXISTING DISTRIBUTION CABLE IN BETWEEN THE EXISTING LIGHT POLES, AND INSTALL NEW DISTRIBUTION CABLE. FEED CABLE THROUGH EXISTING/PROPOSED CONDUIT SYSTEM, AND RESPLICE AT EXISTING LIGHT POLES.

2) REMOVE AND REPLACE EXISTING CONCRETE MEDIAN BARRIER IN COMPLETE SECTIONS, IN BETWEEN EXISTING MEDIAN BARRIER JOINTS. PROVIDE A CONCRETE BARRIER TRANSITION IN CONFORMANCE WITH ARCHIVED STANDARD DRAWING MC-9.4 (SEE SHEET 235) TO ACCOMMODATE THE PROPOSED SIGN TRUSS FOUNDATION. INSTALL PVC CONDUIT(S) OF THE SAME SIZE, AS REMOVED FROM THE EXISTING BARRIER, AND RECONNECT TO THE EXISTING CONDUIT SYSTEM. SEE SHEET 234 FOR STANDARD JERSEY SHAPE BARRIER DETAILS.

NOTES (CONT.):
3) REMOVE STEEL PLATED MEDIAN BARRIER IN FRONT OF EXISTING SIGN TRUSS. COST FOR REMOVAL OF THE STEEL PLATES SHALL BE CONSIDERED INCIDENTAL TO REMOVAL OF THE BARRIER.

4) PER MC-9.5, THE COST FOR TEN FEET OF PROPOSED CONCRETE BARRIER, WHICH IS CENTERED ON THE PROPOSED SIGN SUPPORT FOUNDATION, IS PAID FOR WITH ITEM 630 "CONCRETE BARRIER MEDIAN SIGN SUPPORT FOUNDATION, TYPE TC-21.50, AS PER PLAN". PER MC-9.3 "RACEWAYS" NOTE, THE COST OF PROVIDING AND INSTALLING THE CONDUIT IS INCIDENTAL TO THE COST OF THE CONCRETE BARRIER.

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED MJH
CHECKED KAE

TRAFFIC CONTROL - BARRIER AND LIGHTING
STA 331+00 TO STA 334+00

HAM-71-1.97

150
292

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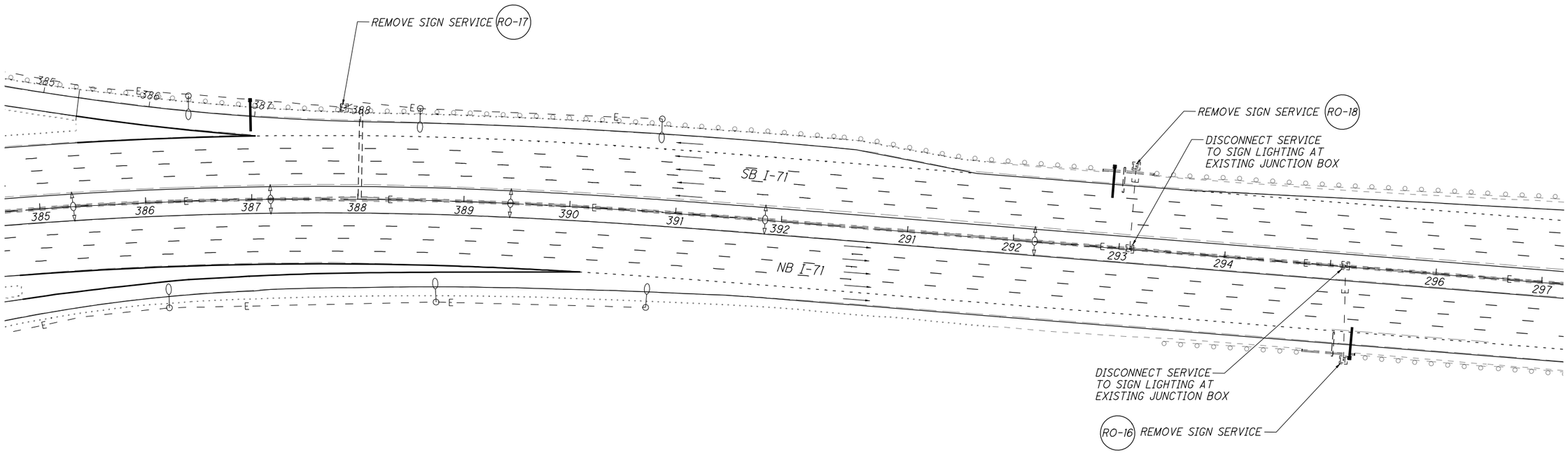

QUANTITIES

ITEM 631 - SIGN LIGHTING, MISC.: REMOVE SIGN SERVICE 3 EACH

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED MJH
CHECKED KAE

TRAFFIC CONTROL - BARRIER AND LIGHTING
STA 387+00 TO STA 296+00

HAM-71-1.97

151
292

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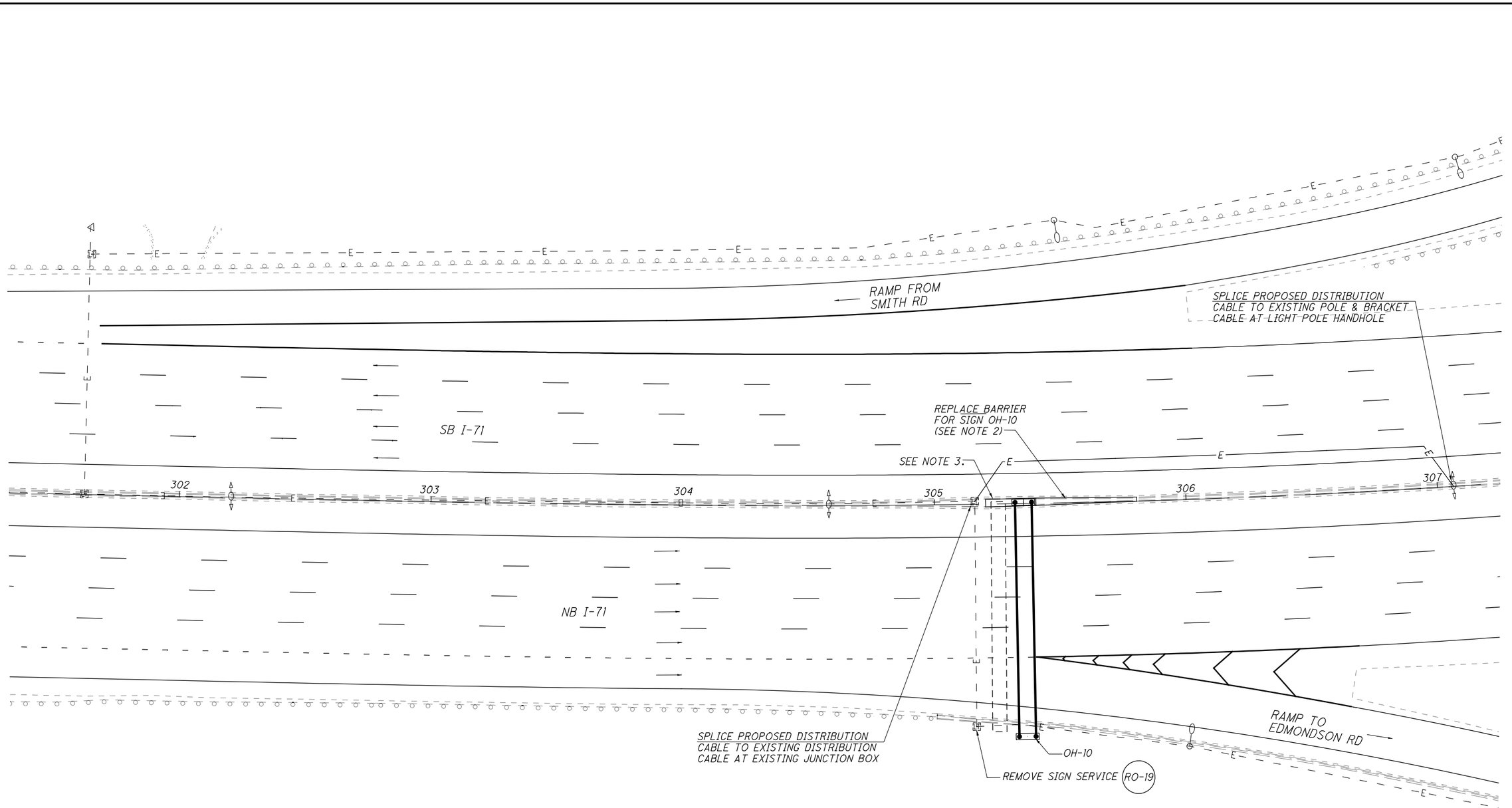

NOTE:
1) REMOVE EXISTING DISTRIBUTION CABLE IN BETWEEN THE EXISTING LIGHT POLES, AND INSTALL NEW DISTRIBUTION CABLE. FEED CABLE THROUGH EXISTING/PROPOSED CONDUIT SYSTEM, AND RESPLICE AT EXISTING LIGHT POLES.

2) REMOVE AND REPLACE EXISTING CONCRETE MEDIAN BARRIER IN COMPLETE SECTIONS, IN BETWEEN EXISTING MEDIAN BARRIER JOINTS. PROVIDE A CONCRETE BARRIER TRANSITION IN CONFORMANCE WITH ARCHIVED STANDARD DRAWING MC-9.4 (SEE SHEET 235) TO ACCOMMODATE THE PROPOSED SIGN TRUSS FOUNDATION. INSTALL PVC CONDUIT(S) OF THE SAME SIZE, AS REMOVED FROM THE EXISTING BARRIER, AND RECONNECT TO THE EXISTING CONDUIT SYSTEM. SEE SHEET 234 FOR STANDARD JERSEY SHAPE BARRIER DETAILS.

NOTE:
3) REMOVE STEEL PLATED MEDIAN BARRIER IN FRONT OF EXISTING SIGN TRUSS. COST FOR REMOVAL OF THE STEEL PLATES SHALL BE CONSIDERED INCIDENTAL TO REMOVAL OF THE BARRIER.

4) PER MC-9.5, THE COST FOR TEN FEET OF PROPOSED CONCRETE BARRIER, WHICH IS CENTERED ON THE PROPOSED SIGN SUPPORT FOUNDATION, IS PAID FOR WITH ITEM 630 "CONCRETE BARRIER MEDIAN SIGN SUPPORT FOUNDATION, TYPE TC-21.50, AS PER PLAN". PER MC-9.3 "RACEWAYS" NOTE, THE COST OF PROVIDING AND INSTALLING THE CONDUIT IS INCIDENTAL TO THE COST OF THE CONCRETE BARRIER.

QUANTITIES

ITEM 202 - CONCRETE BARRIER REMOVED	60 FT
ITEM 622 - CONCRETE BARRIER,TYPE B1, AS PER PLAN	50 FT
ITEM 625 - CONNECTION FUSED PULL APART	2 EACH
ITEM 625 - CONNECTION UNFUSED PULL APART	2 EACH
ITEM 525 - NO. 4 AWG 5000 VOLT DISTRIBUTION CABLE	390 FT
ITEM 625 - CONDUIT CLEANED AND CABLE REMOVED	190 FT
ITEM 625 - DISCONNECT CIRCUIT	2 EACH
ITEM 631 - SIGN LIGHTING, MISC.: REMOVE SIGN SERVICE	1 EACH

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED MJH
CHECKED KAE

TRAFFIC CONTROL - BARRIER AND LIGHTING
STA 304+00 TO STA 307+50

HAM-71-1.97

152
292

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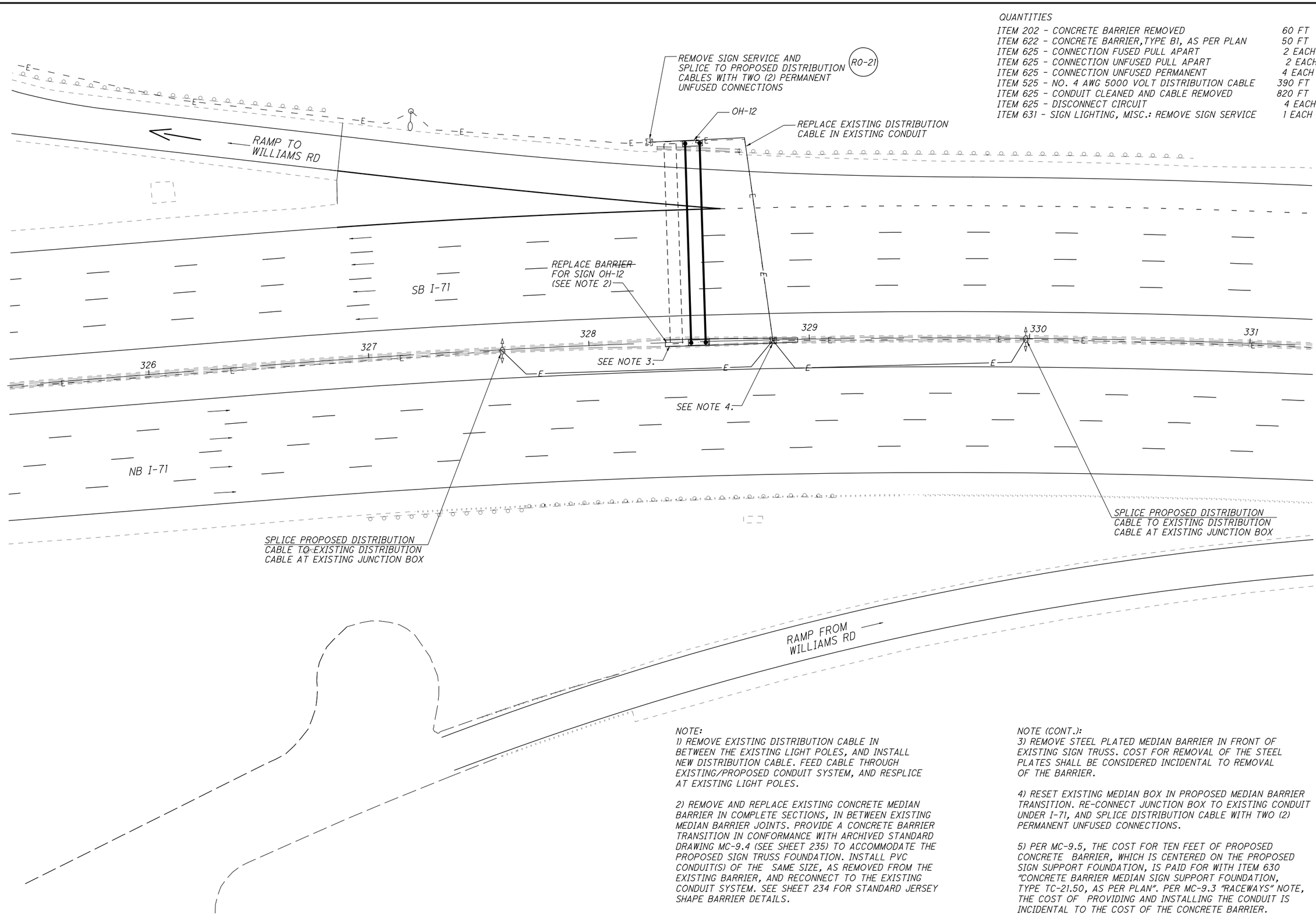

QUANTITIES

ITEM 202 - CONCRETE BARRIER REMOVED	60 FT
ITEM 622 - CONCRETE BARRIER,TYPE B1, AS PER PLAN	50 FT
ITEM 625 - CONNECTION FUSED PULL APART	2 EACH
ITEM 625 - CONNECTION UNFUSED PULL APART	2 EACH
ITEM 625 - CONNECTION UNFUSED PERMANENT	4 EACH
ITEM 525 - NO. 4 AWG 5000 VOLT DISTRIBUTION CABLE	390 FT
ITEM 625 - CONDUIT CLEANED AND CABLE REMOVED	820 FT
ITEM 625 - DISCONNECT CIRCUIT	4 EACH
ITEM 631 - SIGN LIGHTING, MISC.: REMOVE SIGN SERVICE	1 EACH

NOTE:
1) REMOVE EXISTING DISTRIBUTION CABLE IN BETWEEN THE EXISTING LIGHT POLES, AND INSTALL NEW DISTRIBUTION CABLE. FEED CABLE THROUGH EXISTING/PROPOSED CONDUIT SYSTEM, AND RESPLICE AT EXISTING LIGHT POLES.

2) REMOVE AND REPLACE EXISTING CONCRETE MEDIAN BARRIER IN COMPLETE SECTIONS, IN BETWEEN EXISTING MEDIAN BARRIER JOINTS. PROVIDE A CONCRETE BARRIER TRANSITION IN CONFORMANCE WITH ARCHIVED STANDARD DRAWING MC-9.4 (SEE SHEET 235) TO ACCOMMODATE THE PROPOSED SIGN TRUSS FOUNDATION. INSTALL PVC CONDUIT(S) OF THE SAME SIZE, AS REMOVED FROM THE EXISTING BARRIER, AND RECONNECT TO THE EXISTING CONDUIT SYSTEM. SEE SHEET 234 FOR STANDARD JERSEY SHAPE BARRIER DETAILS.

NOTE (CONT.):
3) REMOVE STEEL PLATED MEDIAN BARRIER IN FRONT OF EXISTING SIGN TRUSS. COST FOR REMOVAL OF THE STEEL PLATES SHALL BE CONSIDERED INCIDENTAL TO REMOVAL OF THE BARRIER.

4) RESET EXISTING MEDIAN BOX IN PROPOSED MEDIAN BARRIER TRANSITION. RE-CONNECT JUNCTION BOX TO EXISTING CONDUIT UNDER I-71, AND SPLICE DISTRIBUTION CABLE WITH TWO (2) PERMANENT UNFUSED CONNECTIONS.

5) PER MC-9.5, THE COST FOR TEN FEET OF PROPOSED CONCRETE BARRIER, WHICH IS CENTERED ON THE PROPOSED SIGN SUPPORT FOUNDATION, IS PAID FOR WITH ITEM 630 "CONCRETE BARRIER MEDIAN SIGN SUPPORT FOUNDATION, TYPE TC-21.50, AS PER PLAN". PER MC-9.3 "RACEWAYS" NOTE, THE COST OF PROVIDING AND INSTALLING THE CONDUIT IS INCIDENTAL TO THE COST OF THE CONCRETE BARRIER.

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED MJH
CHECKED KAE

TRAFFIC CONTROL - BARRIER AND LIGHTING
STA 327+50 TO STA 330+00

HAM-71-1.97

153
292

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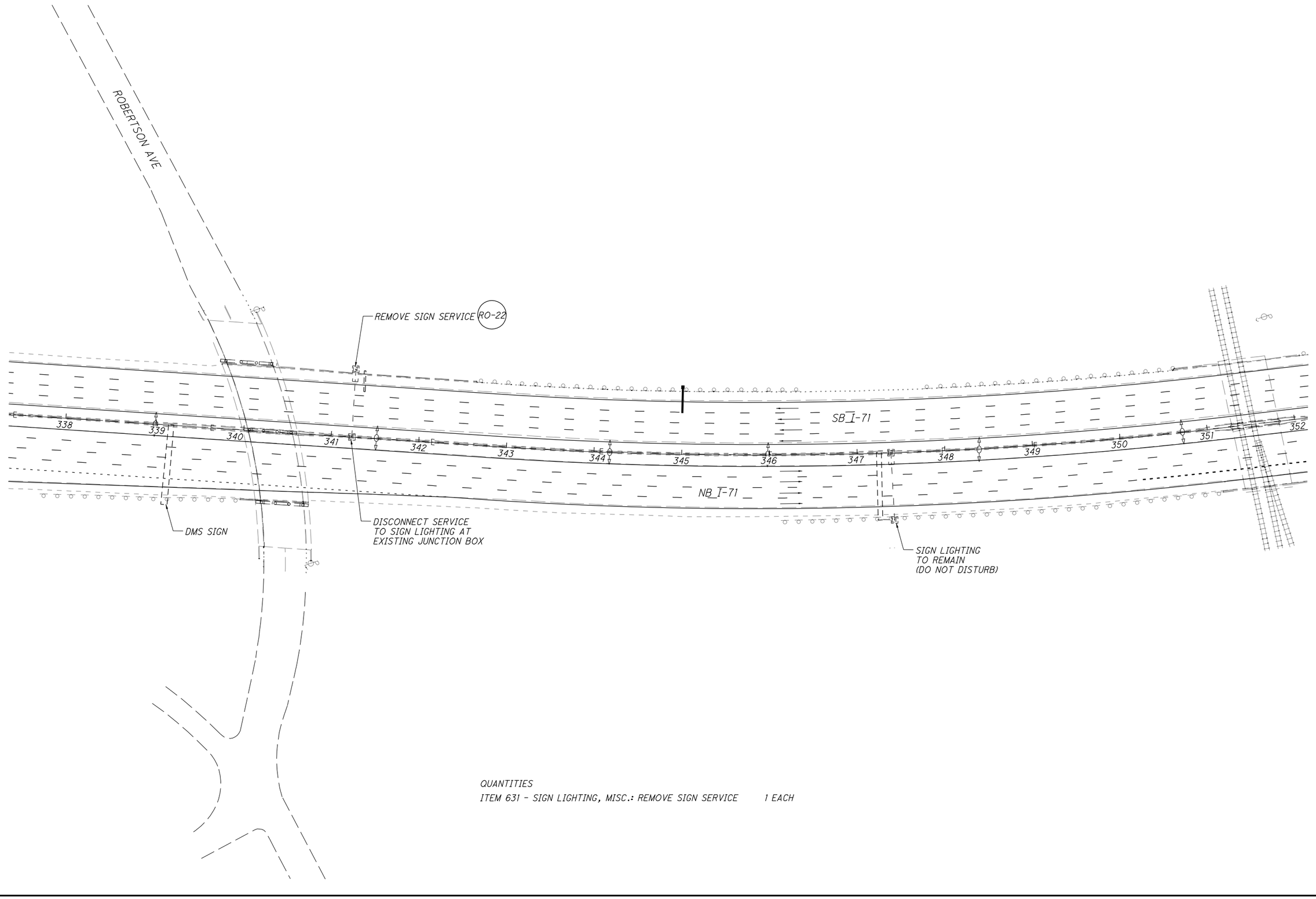

QUANTITIES

ITEM 631 - SIGN LIGHTING, MISC.: REMOVE SIGN SERVICE 1 EACH

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED MJH
CHECKED KAE

TRAFFIC CONTROL - BARRIER AND LIGHTING
STA 341+00 TO STA 342+00

HAM-71-1.97

154
292

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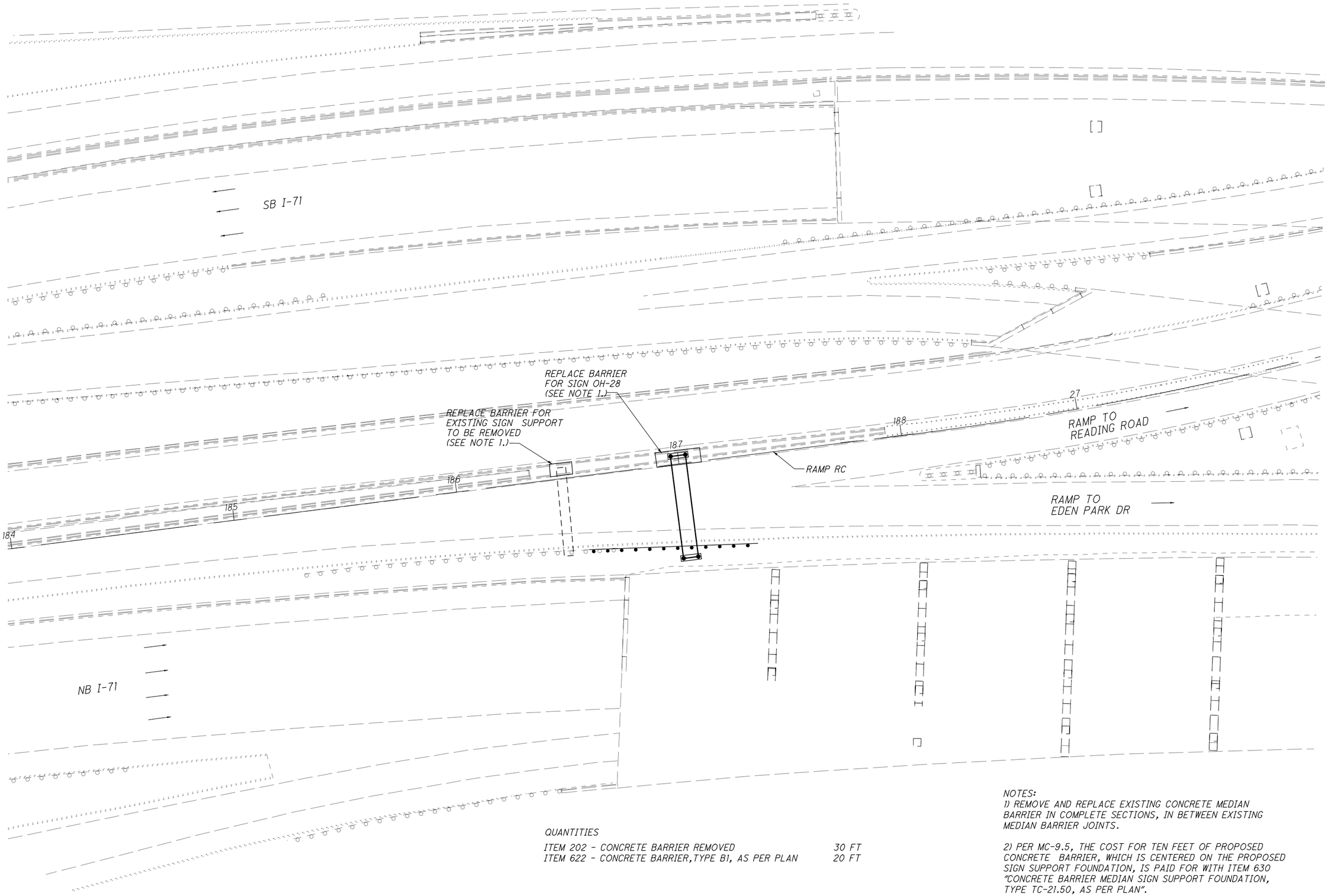

QUANTITIES

ITEM 202 - CONCRETE BARRIER REMOVED	30 FT
ITEM 622 - CONCRETE BARRIER,TYPE B1, AS PER PLAN	20 FT

NOTES:

1) REMOVE AND REPLACE EXISTING CONCRETE MEDIAN BARRIER IN COMPLETE SECTIONS, IN BETWEEN EXISTING MEDIAN BARRIER JOINTS.

2) PER MC-9.5, THE COST FOR TEN FEET OF PROPOSED CONCRETE BARRIER, WHICH IS CENTERED ON THE PROPOSED SIGN SUPPORT FOUNDATION, IS PAID FOR WITH ITEM 630 "CONCRETE BARRIER MEDIAN SIGN SUPPORT FOUNDATION, TYPE TC-21.50, AS PER PLAN".

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED MJH
CHECKED KAE

TRAFFIC CONTROL - BARRIER AND LIGHTING
RAMP RC - STA 186+00 TO STA 188+00

HAM-71-1.97

155
292

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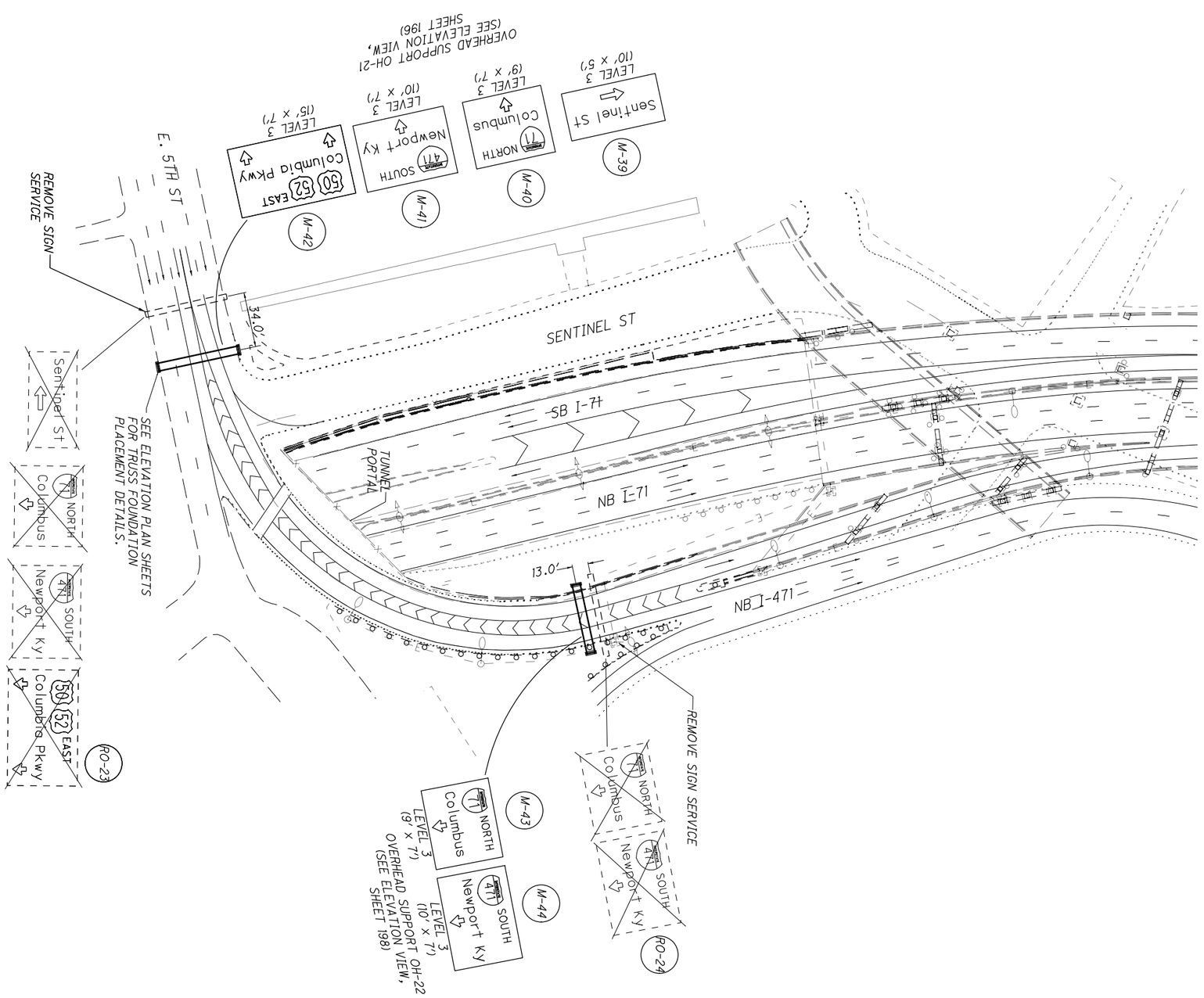

156 / 292	HAM-71-1.97	TRAFFIC CONTROL PLAN - SURFACE STREETS E 5TH STREET ENTRANCE RAMP	CALCULATED MJH CHECKED KAE	0 50 25 100 HORIZONTAL SCALE IN FEET

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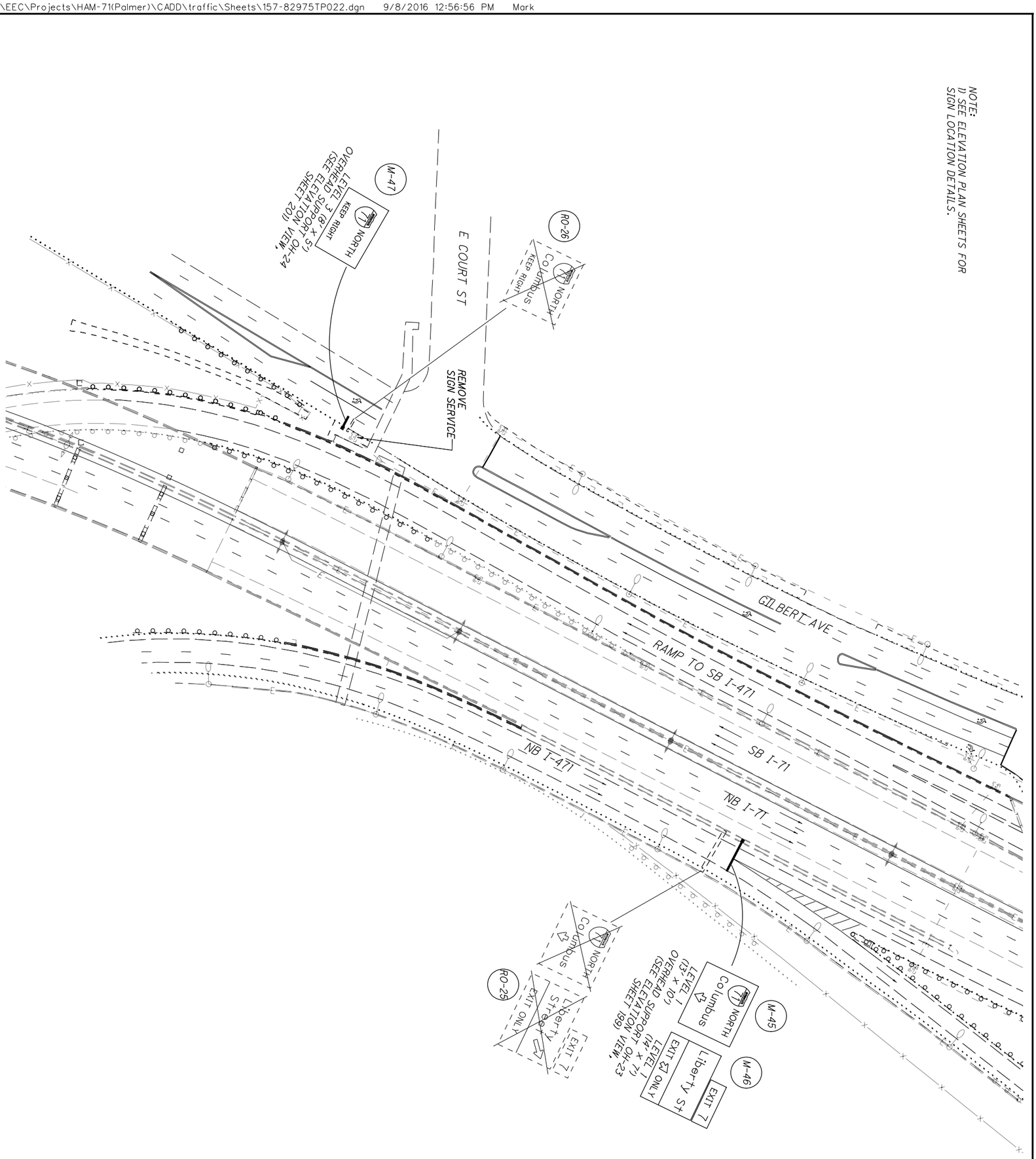
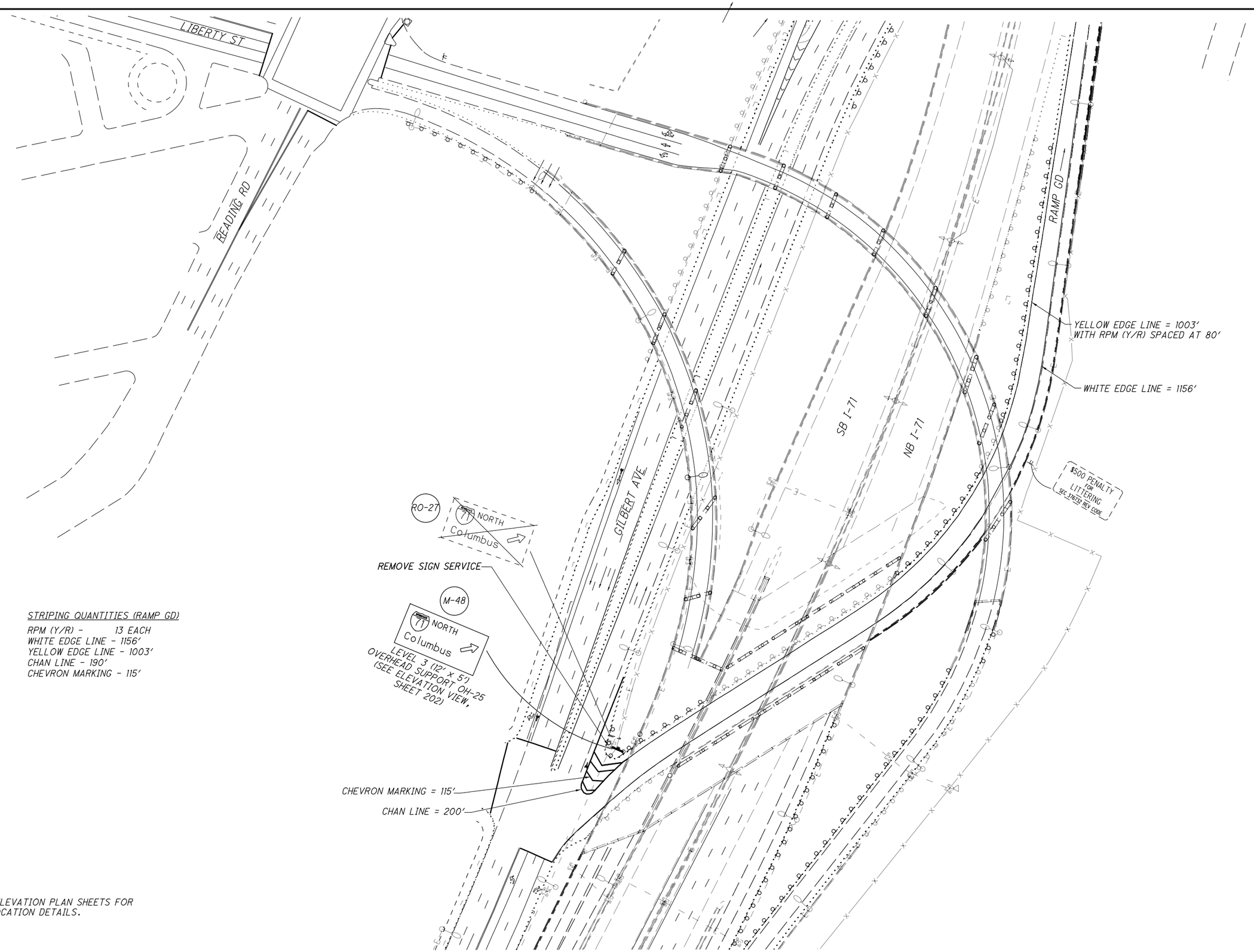


157 / 292	HAM-71-1.97	TRAFFIC CONTROL PLAN - SURFACE STREETS GILBERT AVE & I-471	CALCULATED MJH CHECKED KAE	0 50 25 100 HORIZONTAL SCALE IN FEET



STRIPING QUANTITIES (RAMP GD)

RPM (Y/R) - 13 EACH
WHITE EDGE LINE - 1156'
YELLOW EDGE LINE - 1003'
CHAN LINE - 190'
CHEVRON MARKING - 115'

NOTE:
1) SEE ELEVATION PLAN SHEETS FOR SIGN LOCATION DETAILS.

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED MJH
CHECKED KAE

TRAFFIC CONTROL PLAN - SURFACE STREETS
GILBERT AVE & RAMP GD

HAM-71-1.97

158
292

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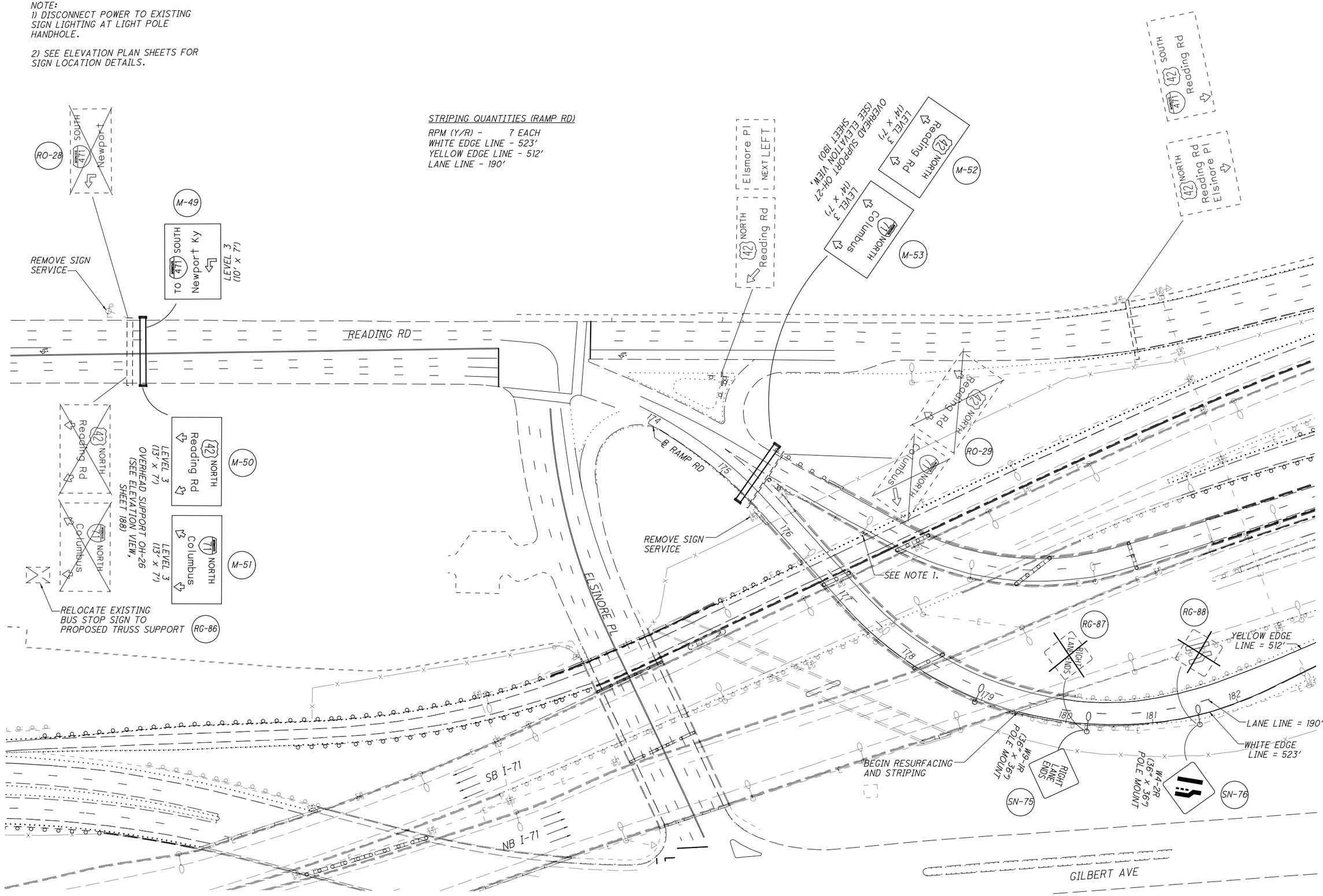
NOTE:
1) DISCONNECT POWER TO EXISTING SIGN LIGHTING AT LIGHT POLE HANDHOLE.

2) SEE ELEVATION PLAN SHEETS FOR SIGN LOCATION DETAILS.

STRIPING QUANTITIES (RAMP RD)

RPM (Y/R) - 7 EACH
WHITE EDGE LINE - 523'
YELLOW EDGE LINE - 512'
LANE LINE - 190'



0 25 50 100
HORIZONTAL SCALE IN FEET

CALCULATED MJH
CHECKED KAE

TRAFFIC CONTROL PLAN - SURFACE STREETS
READING ROAD AT E LIBERTY ST

HAM-71-1.97

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TRAFFIC CONTROL PLAN - SURFACE STREETS
READING RD AT EDEN PARK DR

HAM-71-1.97

160
292

CALCULATED MJH
CHECKED KAE

HORIZONTAL SCALE IN FEET
0 25 50 100

SEE NEXT SHEET FOR INTERSECTION SIGNING DETAILS

DORCHESTER AVE.

M-57
LEVEL 3 (9' x 6')
OVERHEAD SUPPORT OH-30
(SEE ELEVATION VIEW, SHEET 208)
71 SOUTH
Louisville
SECOND RIGHT

REMOVE SIGN SERVICE

DISCONNECT POWER TO EXISTING SIGN LIGHTING AT LIGHT POLE HANDHOLE.

RG-95
REMOVE SIGN SERVICE

DISCONNECT POWER TO EXISTING SIGN LIGHTING AT EXISTING PULL BOX.

M-56
71 SOUTH
Louisville
LEVEL 3 (9' x 7')
BRIDGE MOUNTED
OVERHEAD SUPPORT OH-29
(SEE SHEET 207)

REMOVE SIGN SERVICE

RO-31
71 SOUTH
KEEP LEFT

RG-93

RELOCATE "SIGNAL AHEAD" SIGN AND "NO PARKING" SIGN FROM CANTILEVER UPRIGHT TO ADJACENT POWER POLE

RG-94
RO-32
71 SOUTH
SECOND RIGHT

OVERHEAD SUPPORT OH-31
MOUNT ON EXISTING FOUNDATIONS (SEE NOTE 1)
(SEE ELEVATION VIEW, SHEET 209)

LEVEL 1 (15' x 10')
42 Reading Rd
EXIT 2A

LEVEL 1 (15' x 13')
Gilbert Ave
Eighth St
Ballpark Stadium/Arena
EXIT 2B

M-59
M-58

RO-33
42 Reading Rd
Stadium Coliseum
Gilbert Ave

RAMP RE
RAMP RA
RAMP RC
RAMP RG
SB READING RD
NB READING RD
SB I-71
NB I-71
193
192
191
190
189
188
187
186

RG-92
RG-91
RG-90
RG-89

R5-1A (36" x 24") W/ REFLECTORS STA 190+50
WRONG WAY
SN-88
SN-89

SN-87
W3-3 (36" x 36") STA 188+50

SN-85
WRONG WAY

M-54
42 NORTH
Reading Rd
LEVEL 3 (12' x 5')
OVERHEAD SUPPORT OH-28
STA 187+00 (RAMP RC)
(SEE ELEVATION VIEW, SHEET 206)

M-55
Eden Park Dr
Dorchester Ave
LEVEL 3 (15' x 4')

SN-86
WRONG WAY

MOUNT TWO "WRONG WAY" (R-51A - 36" X 24") SIGNS ON EACH UPRIGHT, FACING SB

RO-30
42 NORTH
Reading Rd
Eden Park Dr
Dorchester Ave

EDEN PARK DR.
GILBERT AVE
MEDICAL CENTER

NOTE:
1) SEE ELEVATION PLAN SHEETS FOR SIGN LOCATION DETAILS.

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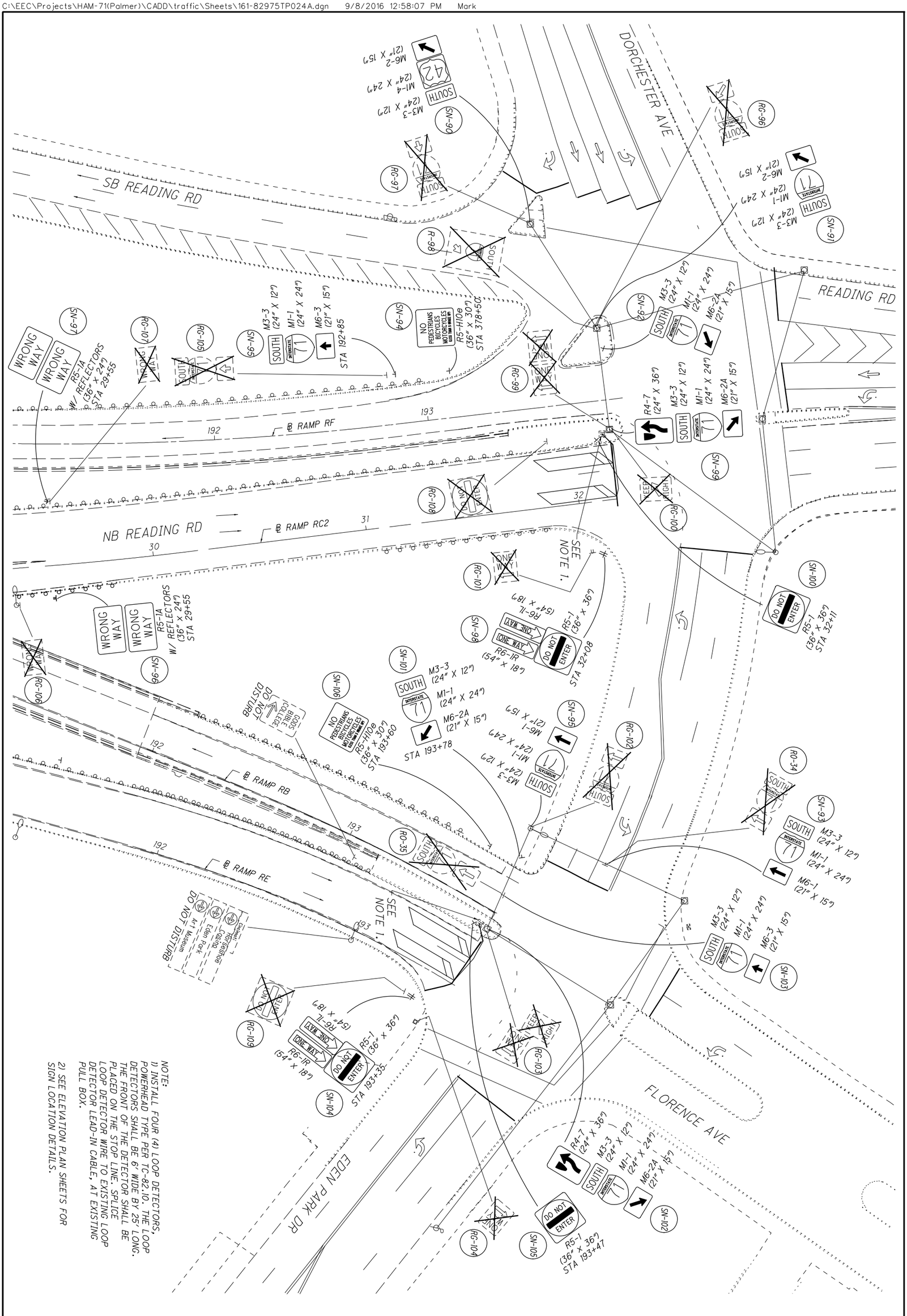


NOTE:
1) INSTALL FOUR (4) LOOP DETECTORS, POWERHEAD TYPE PER TC-82.10. THE LOOP DETECTORS SHALL BE 6' WIDE BY 25' LONG. THE FRONT OF THE DETECTOR SHALL BE PLACED ON THE STOP LINE. SPLICE LOOP DETECTOR WIRE TO EXISTING LOOP DETECTOR LEAD-IN CABLE, AT EXISTING PULL BOX.
2) SEE ELEVATION PLAN SHEETS FOR SIGN LOCATION DETAILS.

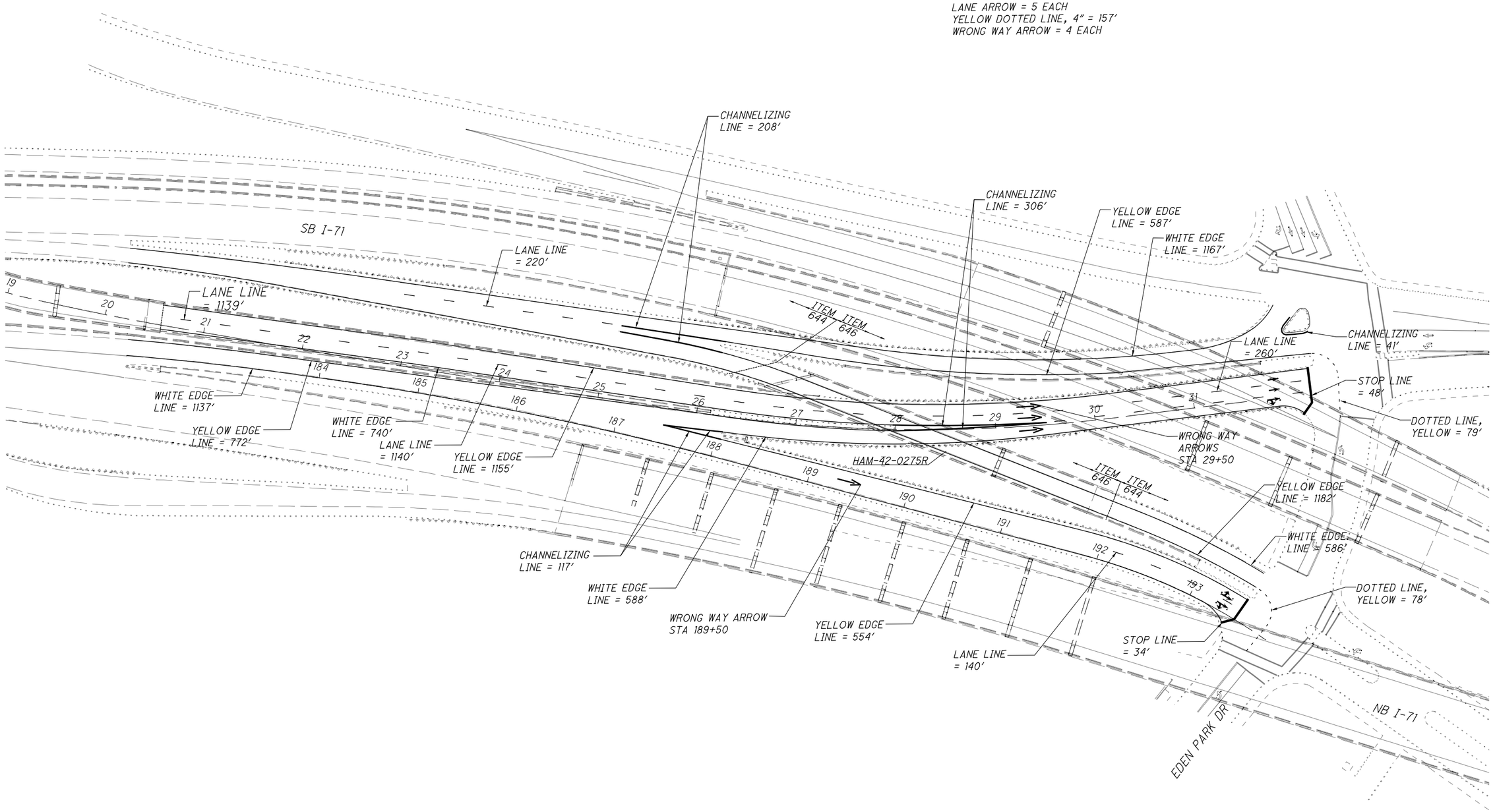
161 / 292	HAM-71-1.97	TRAFFIC CONTROL PLAN - SURFACE STREETS READING RD AT EDEN PARK DR	CALCULATED MJH CHECKED KAE	0 10 20 40 HORIZONTAL SCALE IN FEET

PAVEMENT MARKING QUANTITIES:

ITEM 644
RPM WHITE/RED = 146 EACH
RPM YELLOW/RED = 77 EACH

ITEM 644
WHITE EDGE LINE, 6" = 3843'
YELLOW EDGE LINE, 6" = 3848'
LANE LINE , 6" = 1620'
CHANNELIZING LINE, 12" = 672'
STOP LINE = 82'
LANE ARROW = 5 EACH
YELLOW DOTTED LINE, 4" = 157'
WRONG WAY ARROW = 4 EACH

ITEM 646
WHITE EDGE LINE, 6" = 375'
YELLOW EDGE LINE, 6" = 402'



N

0 25 50 100
HORIZONTAL SCALE IN FEET

CALCULATED MJH
CHECKED KAE

TRAFFIC CONTROL PLAN - SURFACE STREETS
STRIPING FOR RAMPS TO EDEN PARK DR

HAM-71-1.97

162
292

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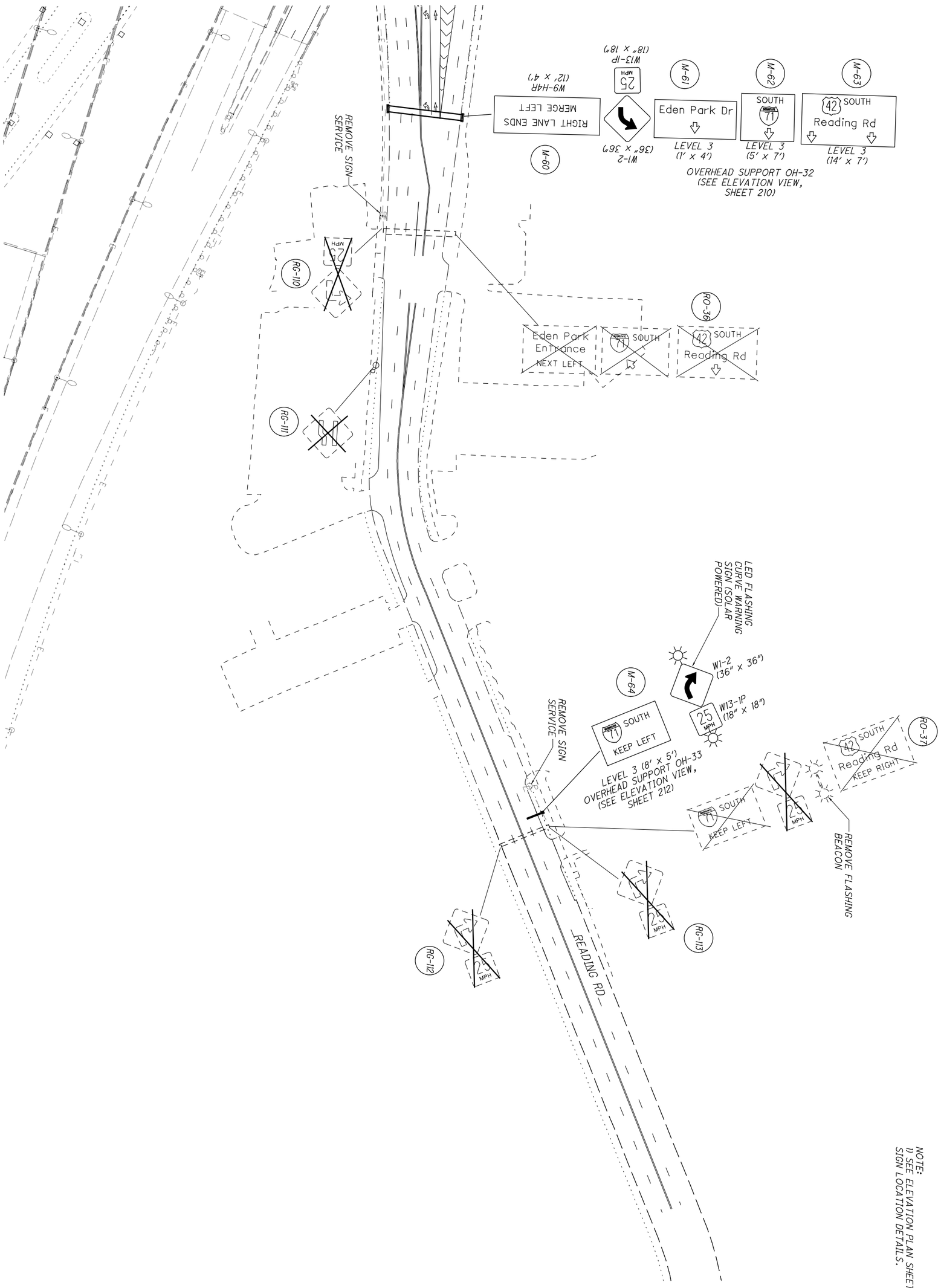

NOTE:
1) SEE ELEVATION PLAN SHEETS FOR SIGN LOCATION DETAILS.

163 / 292	HAM-71-1.97	TRAFFIC CONTROL PLAN - SURFACE STREETS READING ROAD NORTH OF EDEN PARK	CALCULATED MJH CHECKED KAE	0 50 25 100 HORIZONTAL SCALE IN FEET

NOTE:
1) SEE ELEVATION PLAN SHEETS FOR SIGN LOCATION DETAILS.

MONTGOMERY RD
RUTLAND AVE
CLARION AVE
BREWSTER AVE
SB I-71
NB I-71
JONATHON AVE
TRIMBLE AVE.
DUCK CREEK RD

M-68
Louisville
SOUTH
KEEP RIGHT
LEVEL 3 (9' x 6') OVERHEAD SUPPORT OH-36 (SEE ELEVATION VIEW, SHEET 21S)

R0-40
Louisville
SOUTH
KEEP RIGHT

REMOVE SIGN SERVICE

M-67
M-66
Louisville
SOUTH
Louisville
LEVEL 3 (9' x 7') OVERHEAD SUPPORT OH-35 (SEE ELEVATION VIEW, SHEET 21A)

R0-39
Louisville
SOUTH
Louisville

REMOVE SIGN SERVICE

DISCONNECT POWER TO EXISTING SIGN LIGHTING AT EXISTING PULL BOX

REMOVE SIGN SERVICE
SOUTH
KEEP LEFT
71
NORTH
R0-38

SN-108
TO
M4-5 (24"x12")
NORTH
M3-1 (24"x12")
AHEAD
71
M1-1 (24"x24")
M6-1 (21"x15")

SN-107
TO
M4-5 (24"x12")
NORTH
M3-1 (24"x12")
AHEAD
71
M1-1 (24"x24")
M5-1 (21"x15")

M-65
71
SOUTH
Louisville
KEEP LEFT
LEVEL 3 (9' x 6') OVERHEAD SUPPORT OH-34 (SEE ELEVATION VIEW, SHEET 21S)

HORIZONTAL SCALE IN FEET
0 50 100 200

CALCULATED MJH
CHECKED KAE

TRAFFIC CONTROL PLAN - SURFACE STREETS
MONTGOMERY ROAD

HAM-71-1.97

164
292

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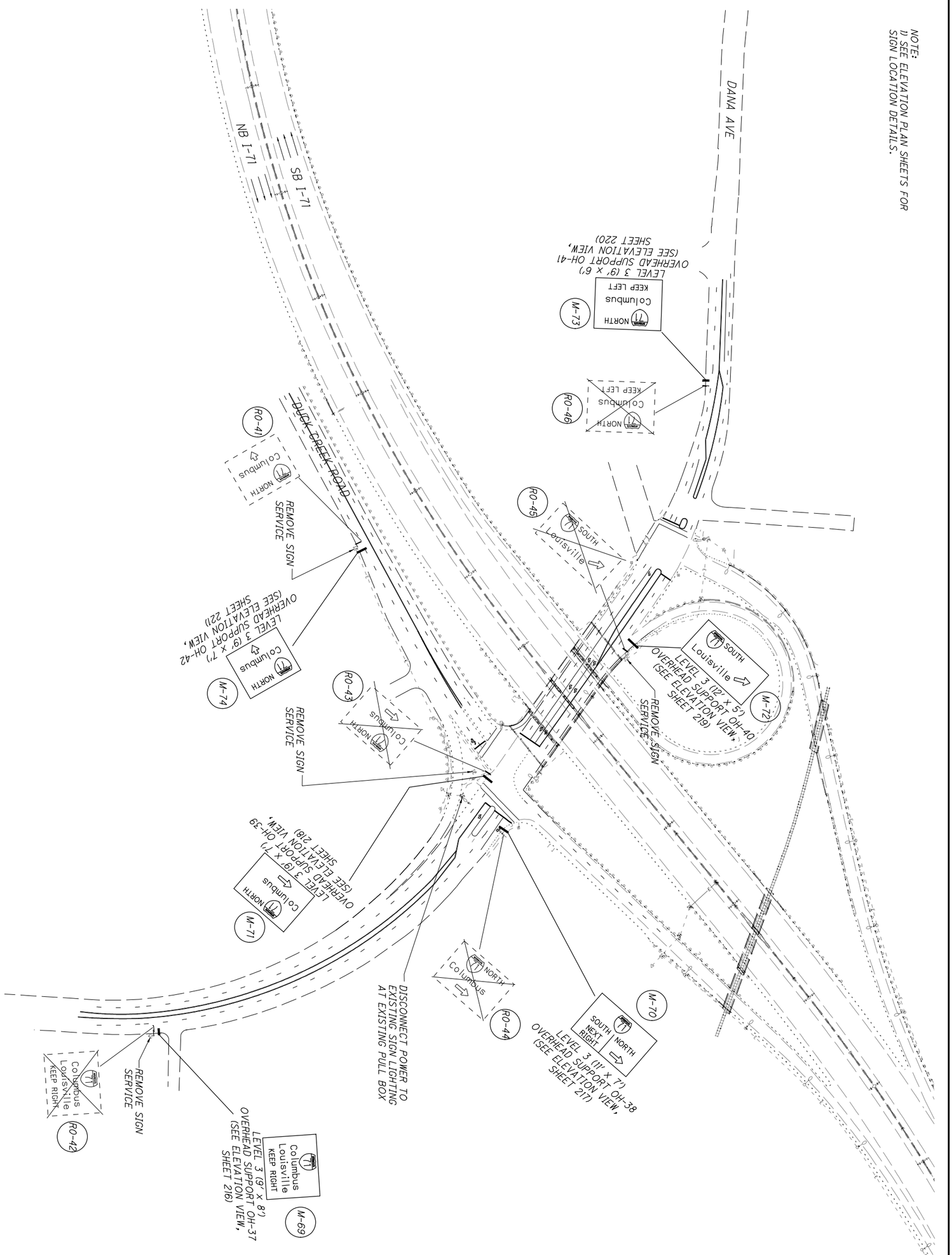

165 / 292	HAM-71-1.97	TRAFFIC CONTROL PLAN - SURFACE STREETS DANA AVENUE	CALCULATED MJH CHECKED KAE	0 50 100 200 HORIZONTAL SCALE IN FEET

TRAFFIC CONTROL PLAN - SURFACE STREETS
WILLIAMS AVE/ EDMONDSON RD

HAM-71-1.97

CALCULATED MJH
CHECKED KAE

HORIZONTAL SCALE IN FEET
0 50 100 200

166
292

NOTE:
1) SEE ELEVATION PLAN SHEETS FOR SIGN LOCATION DETAILS.

REMOVE SIGN SERVICE

WILLIAMS AVE

SMITH RD

EDWARDS RD

EDMONDSON RD

SB I-71

NB I-71

ABANDON CIRCUIT

DISCONNECT POWER TO EXISTING SIGN LIGHTING (FOR RO-50 AND RO-51) AT EXISTING PULL BOX

DISCONNECT POWER TO EXISTING SIGN LIGHTING (RO-46) AT EXISTING LIGHT POLE

DISCONNECT POWER TO EXISTING SIGN LIGHTING (FOR RO-44 AND RO-45) AT EXISTING LIGHT POLE

LEVEL 3 (9' x 7') OVERHEAD SUPPORT OH-47 (SEE ELEVATION VIEW, SHEET 226)

LEVEL 3 (9' x 6') OVERHEAD SUPPORT OH-49 (SEE ELEVATION VIEW, SHEET 213)

LEVEL 3 (9' x 7') OVERHEAD SUPPORT OH-50 (SEE ELEVATION VIEW, SHEET 214)

LEVEL 3 (9' x 6') OVERHEAD SUPPORT OH-45 (SEE ELEVATION VIEW, SHEET 224)

LEVEL 3 (9' x 6') OVERHEAD SUPPORT OH-44 (SEE ELEVATION VIEW, SHEET 223)

LEVEL 3 (9' x 7') OVERHEAD SUPPORT OH-43 (SEE ELEVATION VIEW, SHEET 222)

LEVEL 3 (12' x 6') OVERHEAD SUPPORT OH-48 (SEE ELEVATION VIEW, SHEET 227)

LEVEL 3 (12' x 5') OVERHEAD SUPPORT OH-46 (SEE ELEVATION VIEW, SHEET 225)

SN-109: M6-1 (21"x15"), M1-1 (24"x24"), M3-3 (24"x12")

SN-110: M1-1 (24"x24"), M3-3 (24"x12"), M6-3 (21"x15")

SN-111: M3-1 (24"x12"), M1-1 (24"x24"), M6-3 (21"x15")

M-75 M-76 M-77 M-78 M-79 M-80 M-81 M-82 M-83 M-84 M-85

RO-44 RO-45 RO-46 RO-47 RO-48 RO-49 RO-50 RO-51 RO-52 RO-53 RO-54 RO-55 RG-114

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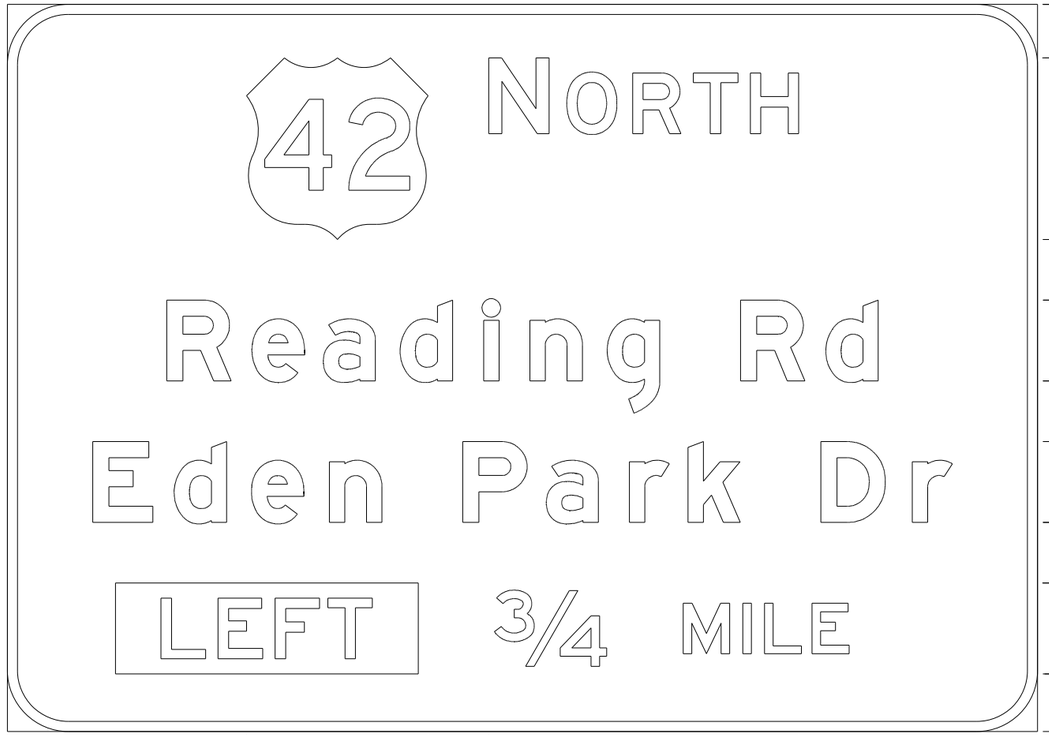
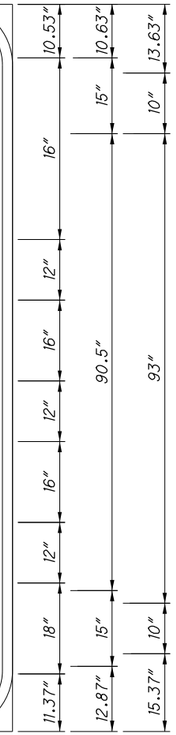
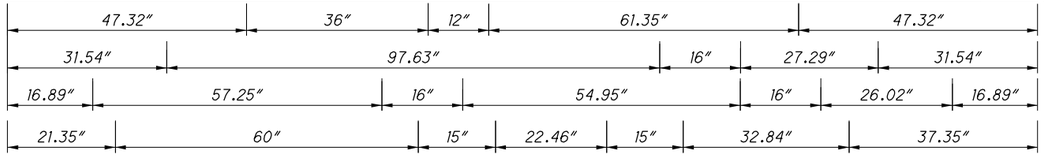
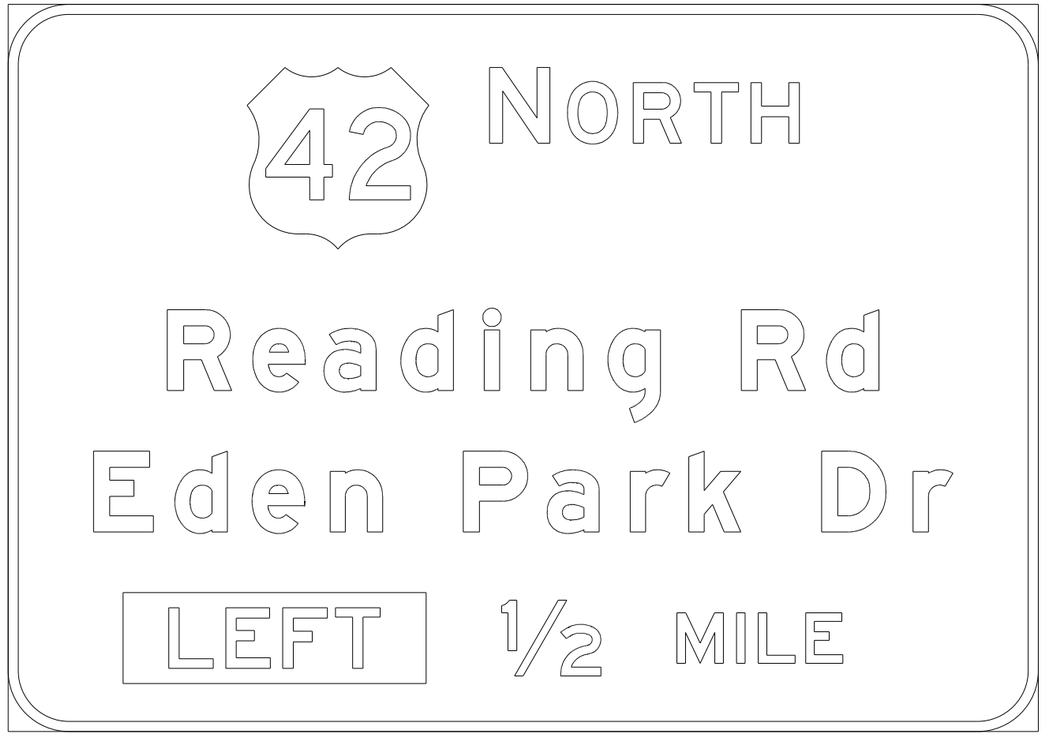
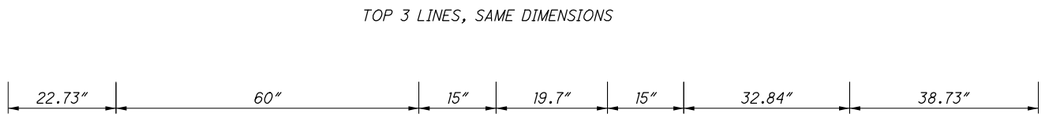








TOP 3 LINES, SAME DIMENSIONS



6" RADIUS, 2" BORDER, WHITE ON GREEN
"Reading Rd" AND "Eden Park Dr" E MOD
"NORTH" AND "3/4 MILE" E

42	N	O	R	T	H
47.32	95.32	110.76	123.79	135.83	147.12

R	e	a	d	i	n	g	R	d
31.54	48.43	62.55	77.76	94.29	103.47	118.77	145.17	162.06

E	d	e	n	P	a	r	k	D	r
16.89	33.01	48.32	63.74	90.14	106.73	123.17	134.79	161.09	179.21

▭	1/2	M	I	L	E
21.35	96.35	133.81	145.60	149.90	159.30

6" RADIUS, 2" BORDER, WHITE ON GREEN
"Reading Rd" AND "Eden Park Dr" E MOD
"NORTH" AND "1/2 MILE" E

42	N	O	R	T	H
47.32	95.32	110.76	123.79	135.83	147.12

R	e	a	d	i	n	g	R	d
31.54	48.43	62.55	77.76	94.29	103.47	118.77	145.17	162.06

E	d	e	n	P	a	r	k	D	r
16.89	33.01	48.32	63.74	90.14	106.73	123.17	134.79	161.09	179.21

▭	1/2	M	I	L	E
22.73	97.73	132.43	144.23	148.52	157.93

SIGN FABRICATION DETAILS
SIGNS M-1 AND M-3

HAM-71-1.97

167
292

CALCULATED MJH
CHECKED KAE

0 2.5 5 10
HORIZONTAL SCALE IN FEET

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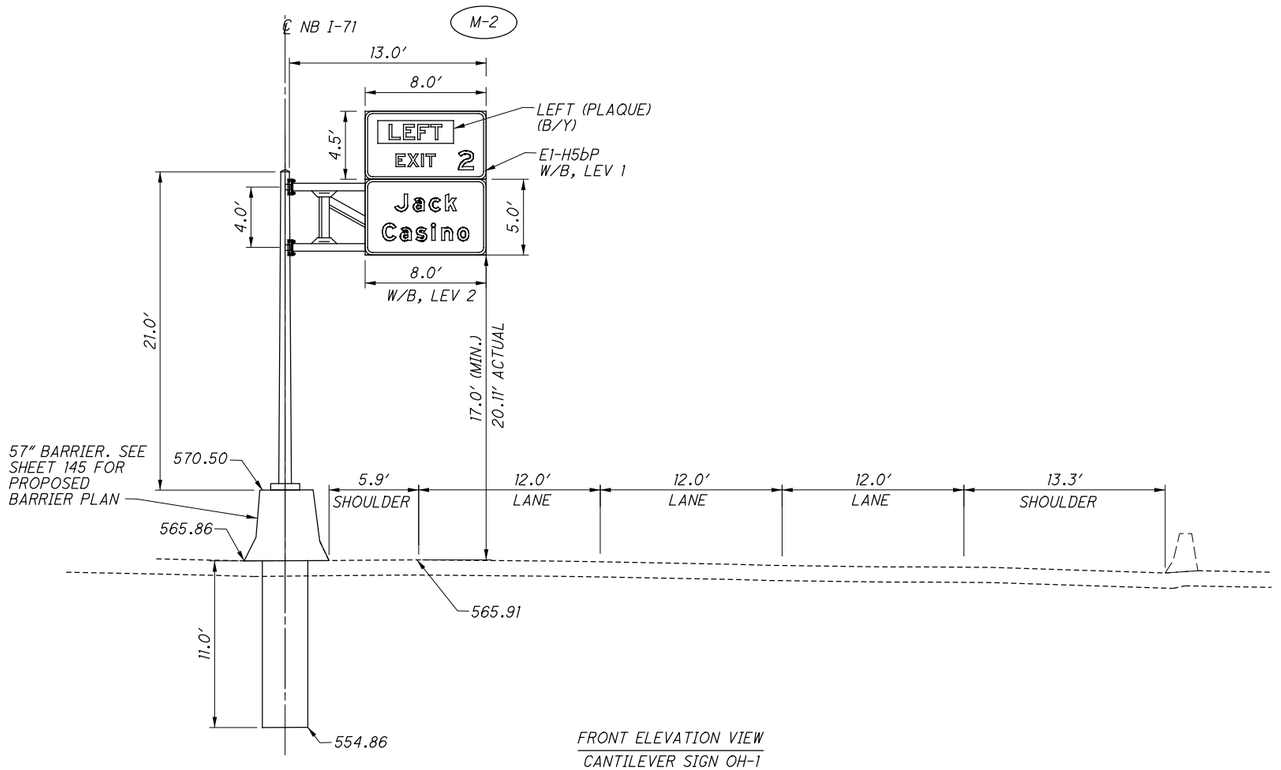
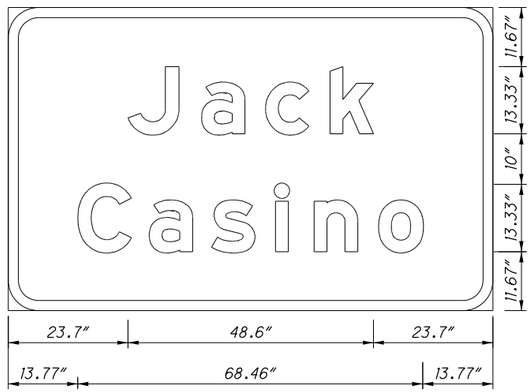


FRONT ELEVATION VIEW

CANTILEVER SIGN OH-1
I-71 NORTHBOUND
STA. 151+30
LOOKING NORTH
TC-12.30, DESIGN 5

SIGN FABRICATION DETAILS



6″ RADIUS, 2″ BORDER, WHITE ON BROWN
"JACK" AND "CASINO" E MOD

J	a	c	k
23.70	38.28	50.95	63.72

C	a	s	i	n	o
13.77	27.93	40.25	52.92	60.57	73.32

CALCULATED MJH
CHECKED KAE

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CANTILEVER SIGN OH-1
NB I-71 - STA 151+30

HAM-71-1.97

168
292

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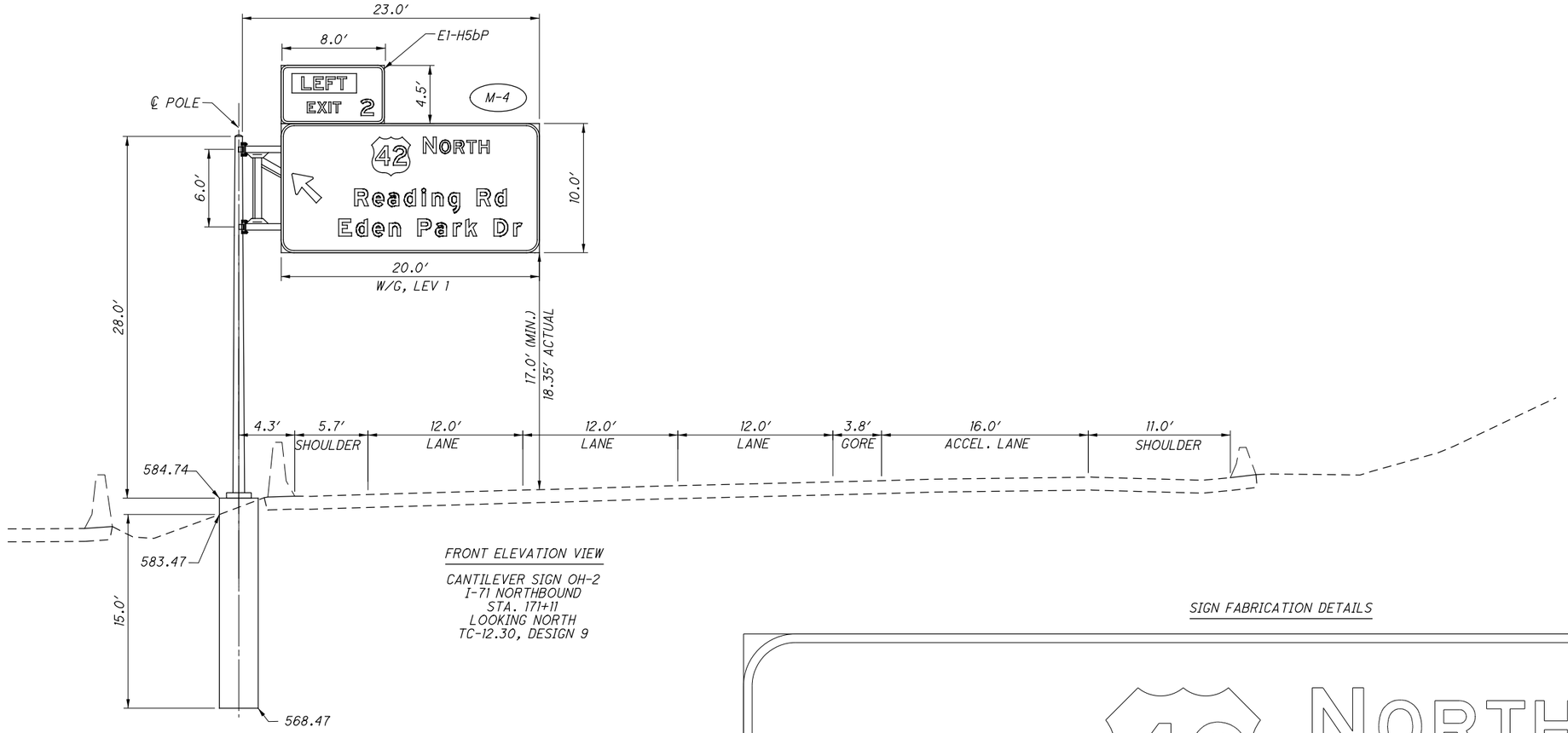
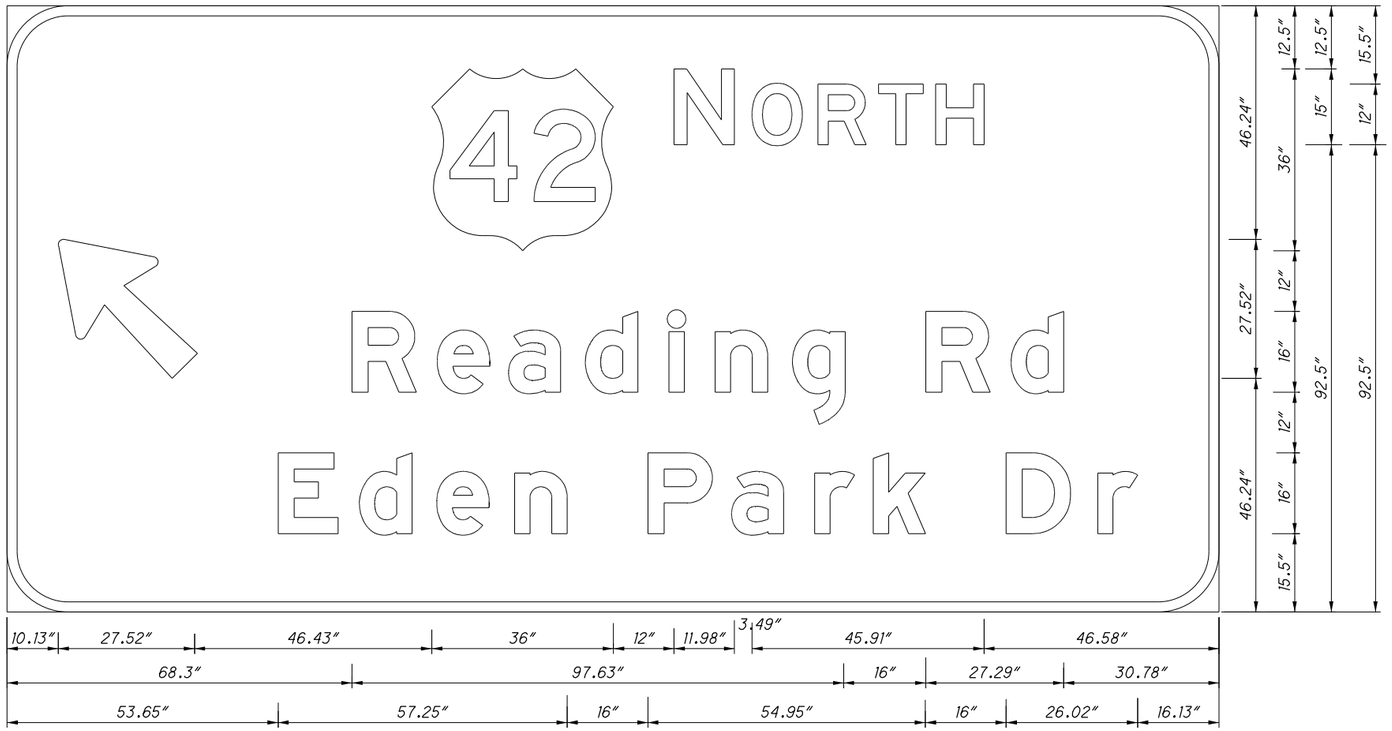


FRONT ELEVATION VIEW

CANTILEVER SIGN OH-2
I-71 NORTHBOUND
STA. 171+11
LOOKING NORTH
TC-12.30, DESIGN 9

SIGN FABRICATION DETAILS



12″ RADIUS, 2″ BORDER, WHITE ON GREEN
ARROW A-1, 135°, "NORTH" E, "Reading Rd" and "Eden Park Dr" E MOD

42	N	O	R	T	H
84.08	132.08	147.53	160.56	172.59	183.88

R	e	a	d	i	n	g	R	d
68.30	85.19	99.31	114.52	131.05	140.23	155.53	181.93	198.82

E	d	e	n	P	a	r	k	D	r
53.65	69.77	85.08	100.50	126.90	143.49	159.93	171.55	197.85	215.97

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED M.JH
CHECKED KAE

CANTILEVER SIGN OH-2
NB I-71 - STA 171+11

HAM-71-1.97

169
292

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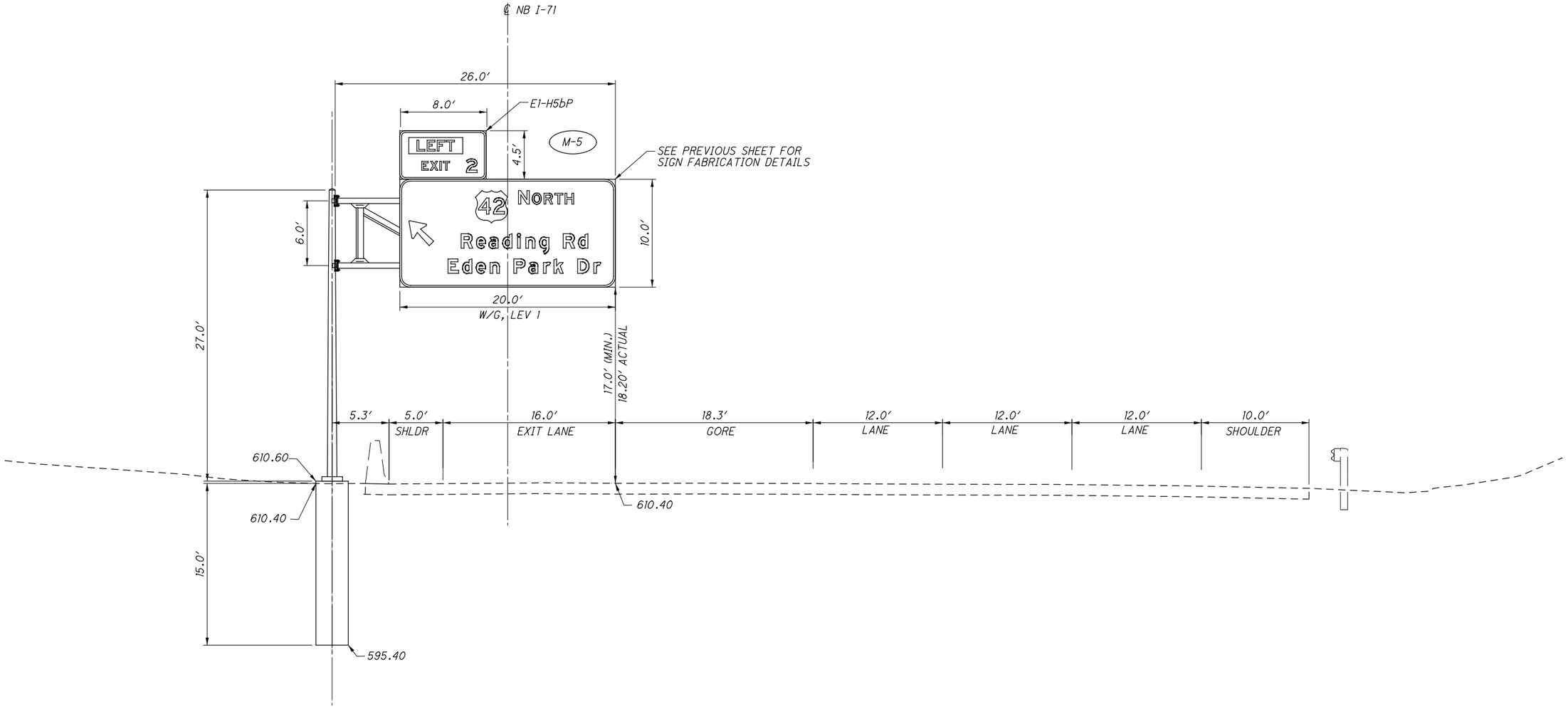

CANTILEVER SIGN OH-3
I-71 NORTHBOUND
STA. 181+45
LOOKING NORTH
TC-12.30, DESIGN 10

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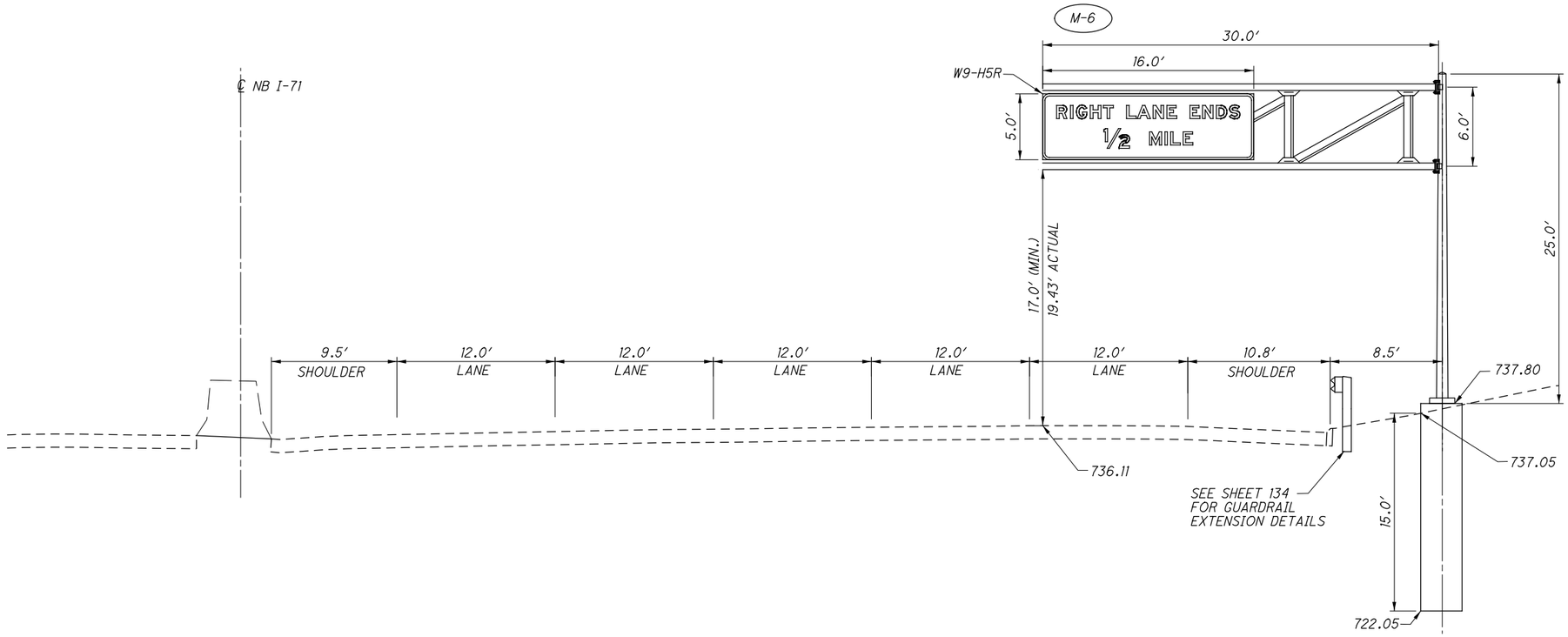
CALCULATED MJH
CHECKED KAE

0 2.5 5 10
HORIZONTAL SCALE IN FEET

CANTILEVER SIGN OH-3
NB I-71 - STA 181+45

HAM-71-1.97

170
292



FRONT ELEVATION VIEW

CANTILEVER SIGN OH-4
I-71 NORTHBOUND
STA. 210+77
LOOKING NORTH
TC-12.30, DESIGN 10

CANTILEVER SIGN OH-4
NB I-71 - STA 210+77

CALCULATED M.JH
CHECKED KAE

HORIZONTAL SCALE IN FEET
0 2.5 5 10

HAM-71-1.97

171
292

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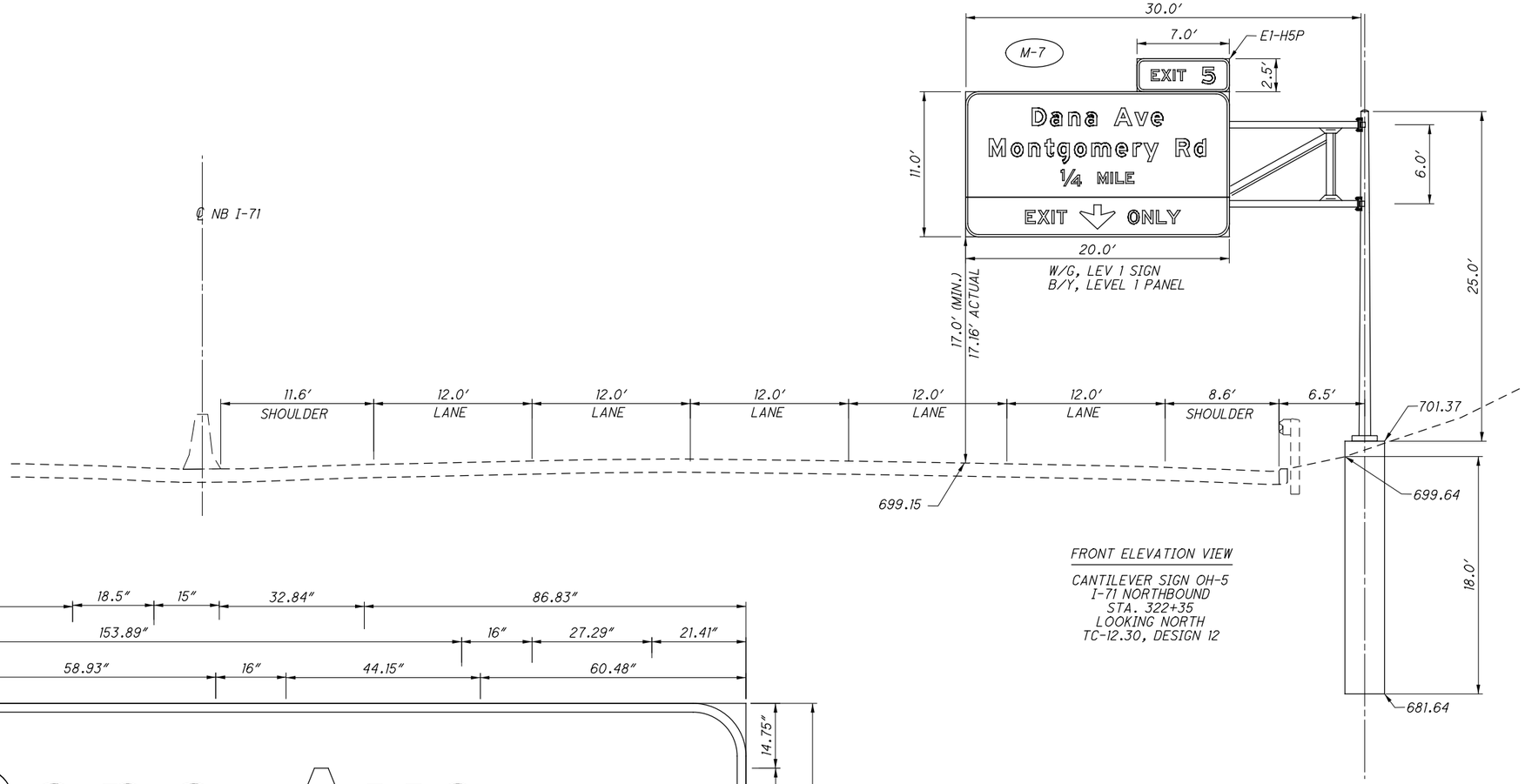

FRONT ELEVATION VIEW

CANTILEVER SIGN OH-5
I-71 NORTHBOUND
STA. 322+35
LOOKING NORTH
TC-12.30, DESIGN 12



12″ RADIUS, 2″ BORDER, WHITE ON GREEN SIGN
"Montgomery Ave" and "Dana Ave" E MOD
BLACK OY YELLOW PANEL
DOWN ARROW C-1, 270°, "EXIT" and "ONLY" E

D	a	n	a	A	v	e
60.46	77.35	93.78	109.09	135.38	153.92	169.14

M	o	n	†	g	o	m	e	r	y	R	d
21.41	41.65	57.25	72.13	83.87	99.17	114.77	136.86	152.29	162.20	191.30	206.19

1/4	M	I	L	E
86.83	120.33	132.13	136.42	145.83

E	X	I	T	⇩	O	N	L	Y
54.58	65.86	78.65	83.18	104.00	148.00	161.03	173.68	183.32

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED M.JH
CHECKED KAE

CANTILEVER SIGN OH-5
NB I-71 - STA 322+35

HAM-71-1.97

172
292

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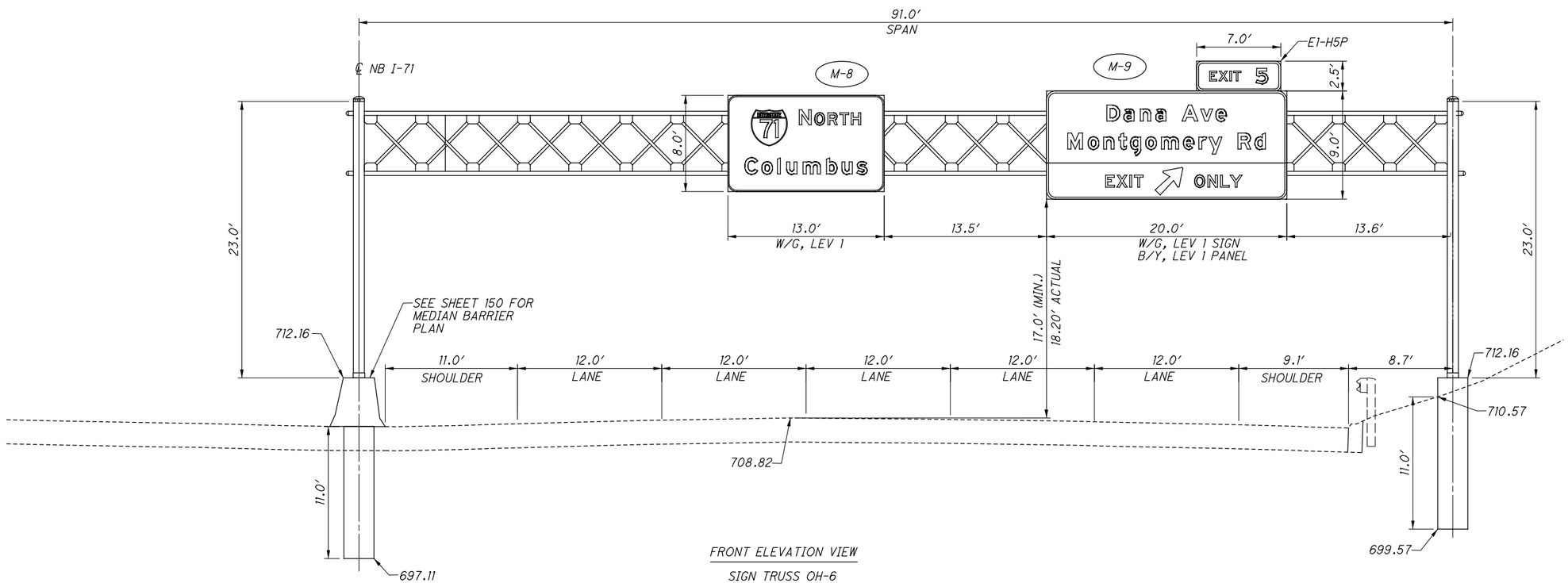

FRONT ELEVATION VIEW

SIGN TRUSS OH-6
I-71 NORTHBOUND
STA. 333+00
LOOKING NORTH
TC-7.65, DESIGN 8 ALUMINUM TRUSS

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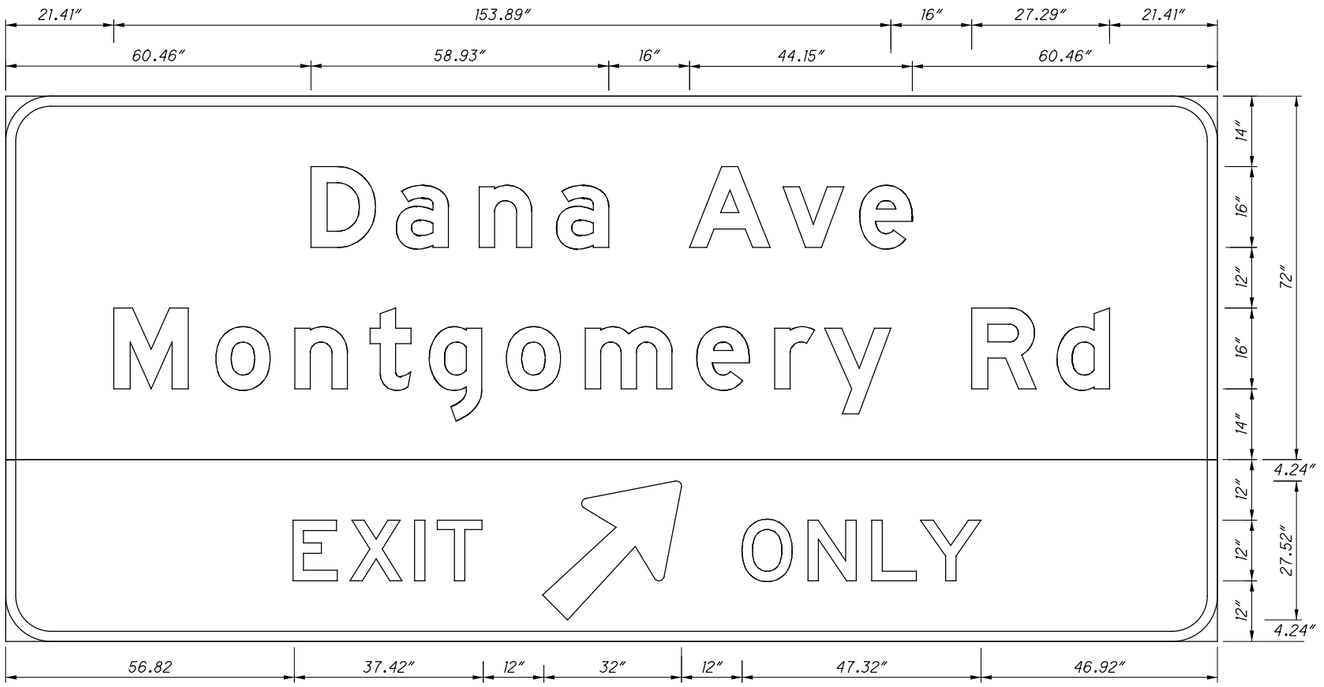
HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED M.JH
CHECKED KAE

SIGN TRUSS OH-6
NB I-71 - STA 333+00

HAM-71-1.97

173
292

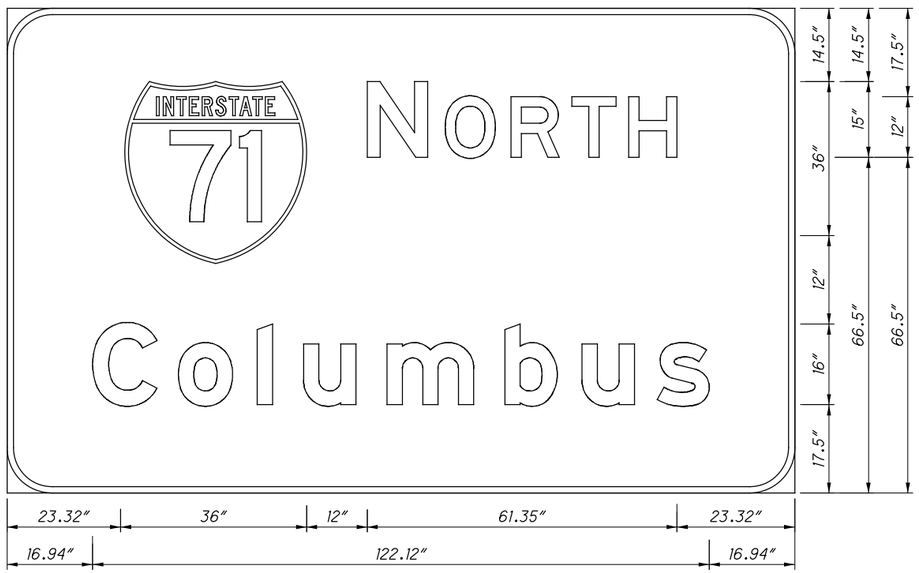


12" RADIUS, 2" BORDER, WHITE ON GREEN SIGN
"Montgomery Ave" and "Dana Ave" E MOD
BLACK ON YELLOW PANEL
ARROW A-1, 45°, "EXIT" and "ONLY" E

D	a	n	a	A	v	e
60.46	77.35	93.78	109.09	135.38	153.92	169.14

M	o	n	t	g	o	m	e	r	y	R	d
21.41	41.65	57.25	72.13	83.87	99.17	114.77	136.86	152.29	162.20	191.30	208.19

E	X	I	T	⇗	O	N	L	Y
56.82	68.10	80.89	85.42	106.24	145.76	158.79	171.45	181.08



9" RADIUS, 2" BORDER, WHITE ON GREEN SIGN
"NORTH" E; "Columbus" E MOD

71	N	O	R	T	H
23.32	71.32	86.76	99.79	111.83	123.12

C	o	l	u	m	b	u	s
16.94	33.94	49.54	58.71	75.25	98.57	113.87	128.76

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED MJH
CHECKED KAE

SIGN FABRICATION DETAILS - OH-6
NB I-71 - STA 333+00

HAM-71-1.97

174
292

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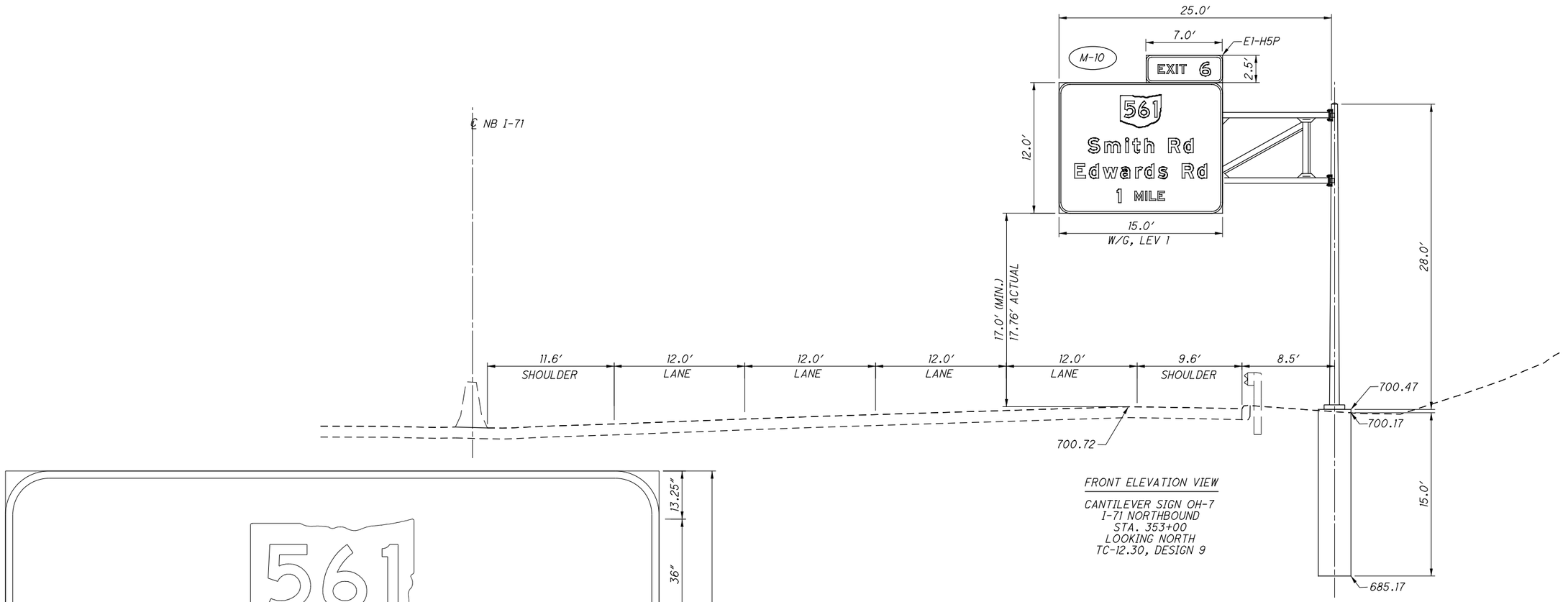
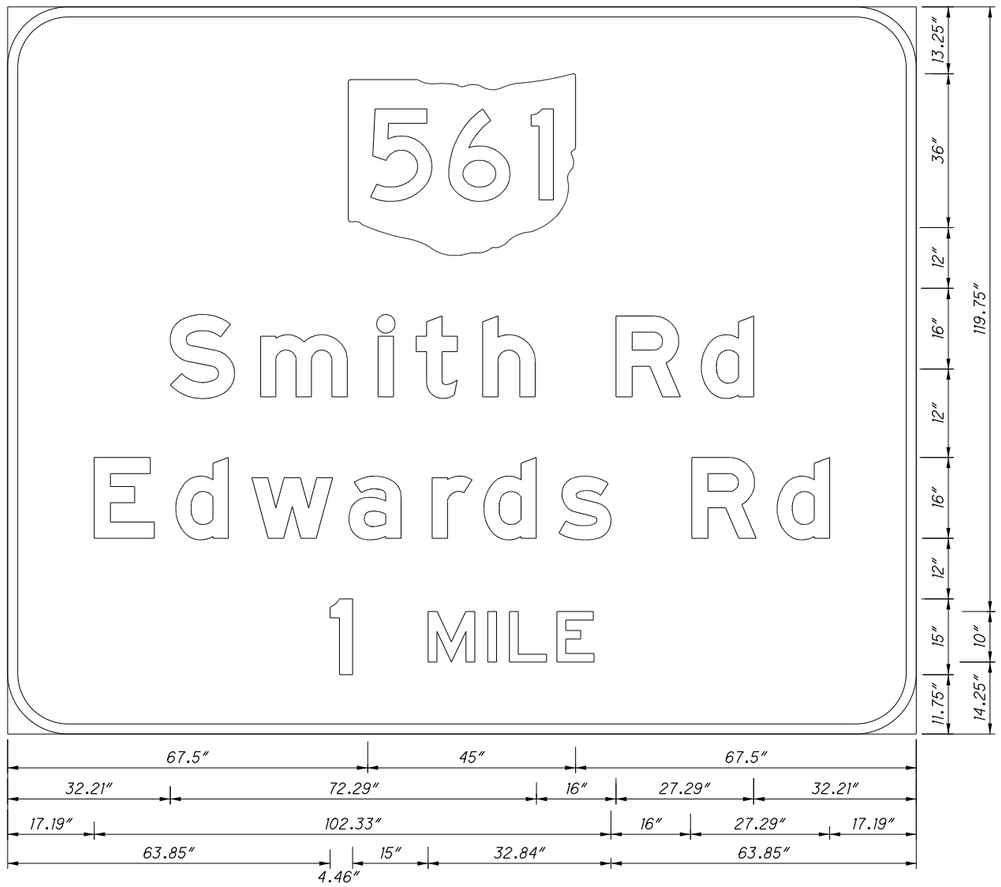


FRONT ELEVATION VIEW

CANTILEVER SIGN OH-7
I-71 NORTHBOUND
STA. 353+00
LOOKING NORTH
TC-12.30, DESIGN 9



12″ RADIUS, 2″ BORDER, WHITE ON GREEN SIGN
"Smith Rd" and "Edwards Rd" E MOD; "1 MILE" E

561
67.50

S	m	i	t	h	R	d
32.21	50.09	73.41	80.94	94.10	120.50	137.39

E	d	w	a	r	d	s	R	d
17.19	33.32	48.38	67.64	84.07	94.33	109.22	135.52	152.41

l	M	I	L	E
63.85	83.81	95.10	99.40	108.80

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED M.JH
CHECKED KAE

CANTILEVER SIGN OH-7
NB I-71 - STA 353+00

HAM-71-1.97

175
292

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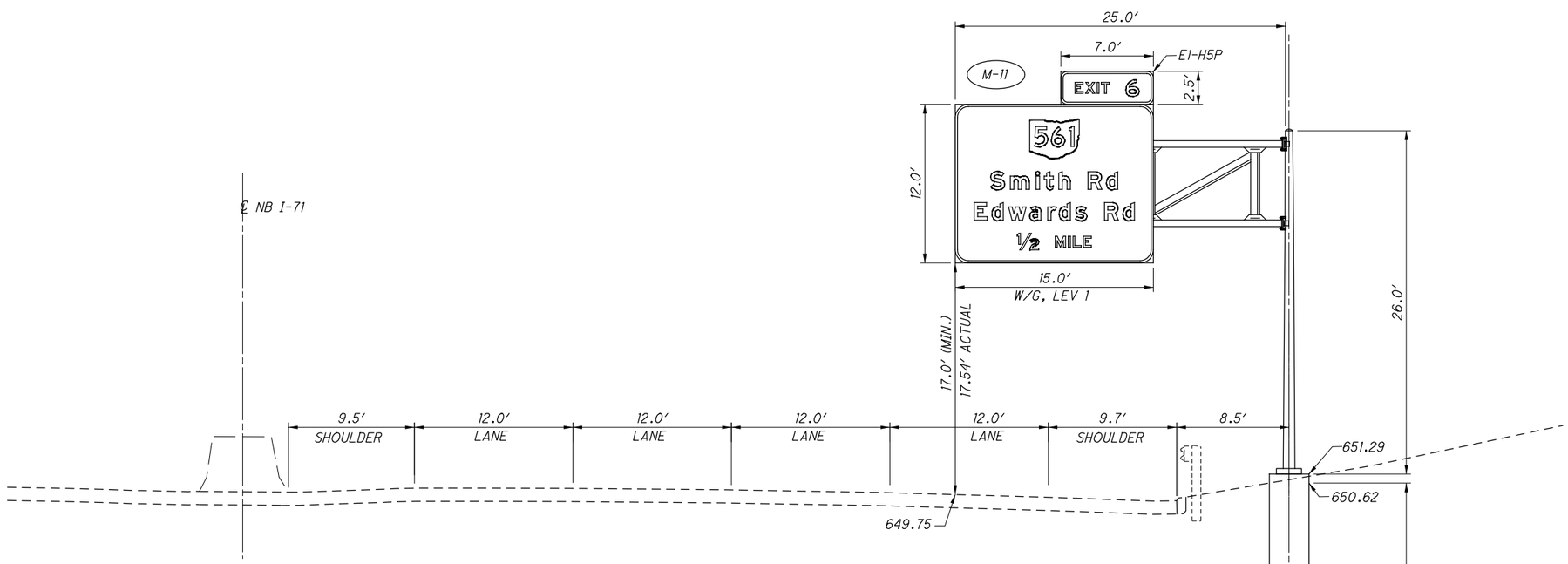
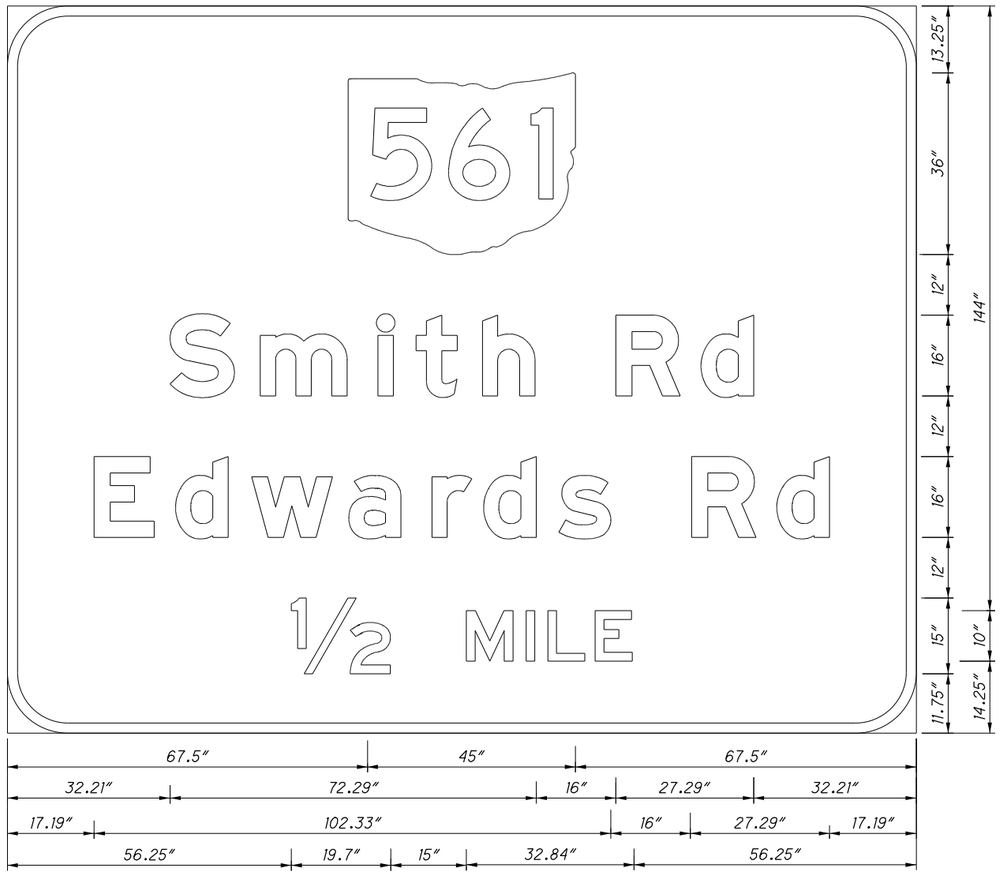


FRONT ELEVATION VIEW

CANTILEVER SIGN OH-8
I-71 NORTHBOUND
STA. 381+00
LOOKING NORTH
TC-12.30, DESIGN 9



12″ RADIUS, 2″ BORDER, WHITE ON GREEN SIGN
"Smith Rd" and "Edwards Rd" E MOD; "1/2 MILE" E

561
67.50

S	m	i	t	h	R	d
32.21	50.09	73.41	80.94	94.10	120.50	137.39

E	d	w	a	r	d	s	R	d
17.19	33.32	48.38	67.64	84.07	94.33	109.22	135.52	152.41

1/2	M	I	L	E
56.23	90.93	102.73	107.02	116.43

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED M.JH
CHECKED KAE

CANTILEVER SIGN OH-8
NB I-71 - STA 381+00

HAM-71-1.97

176
292

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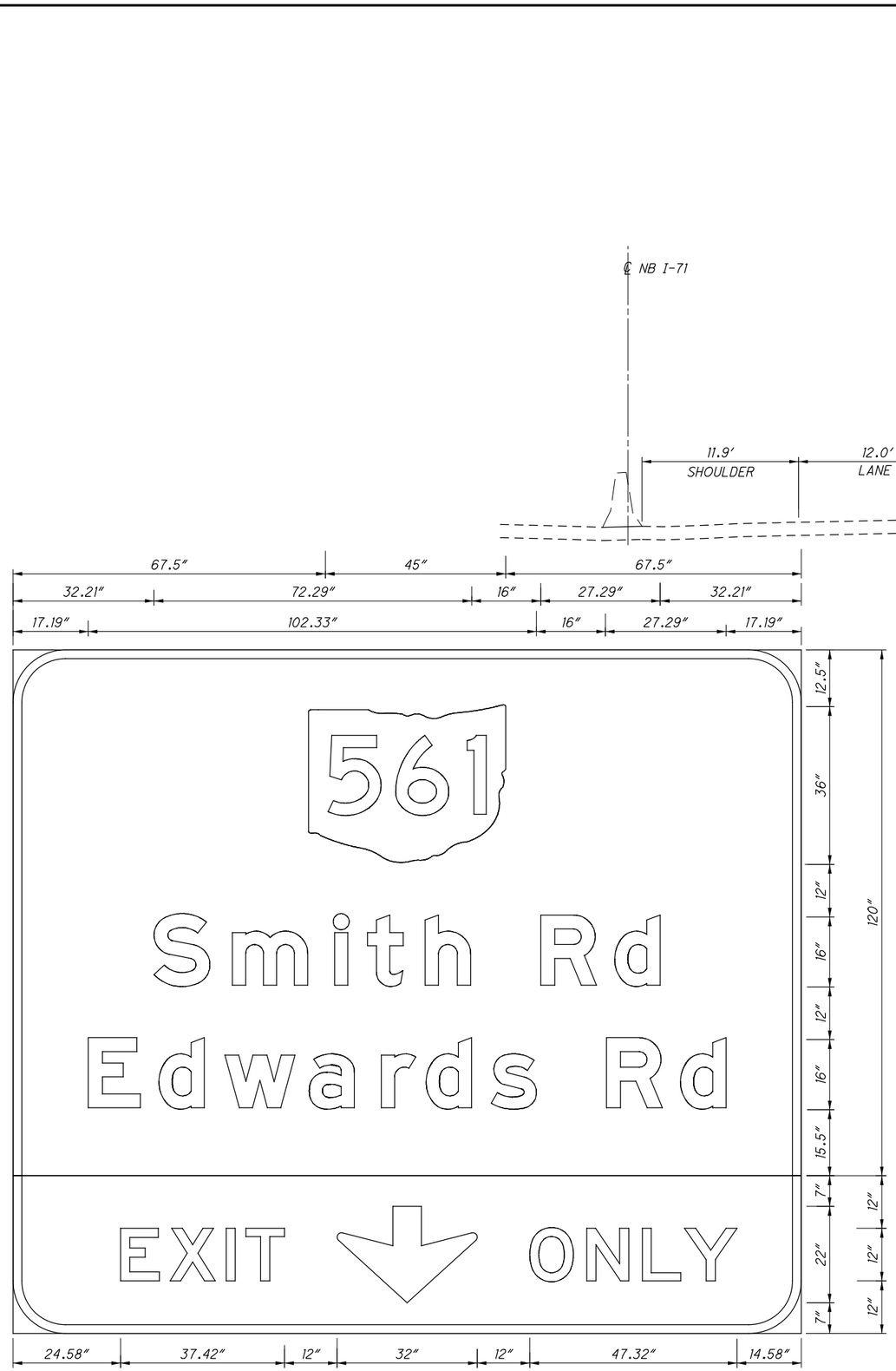

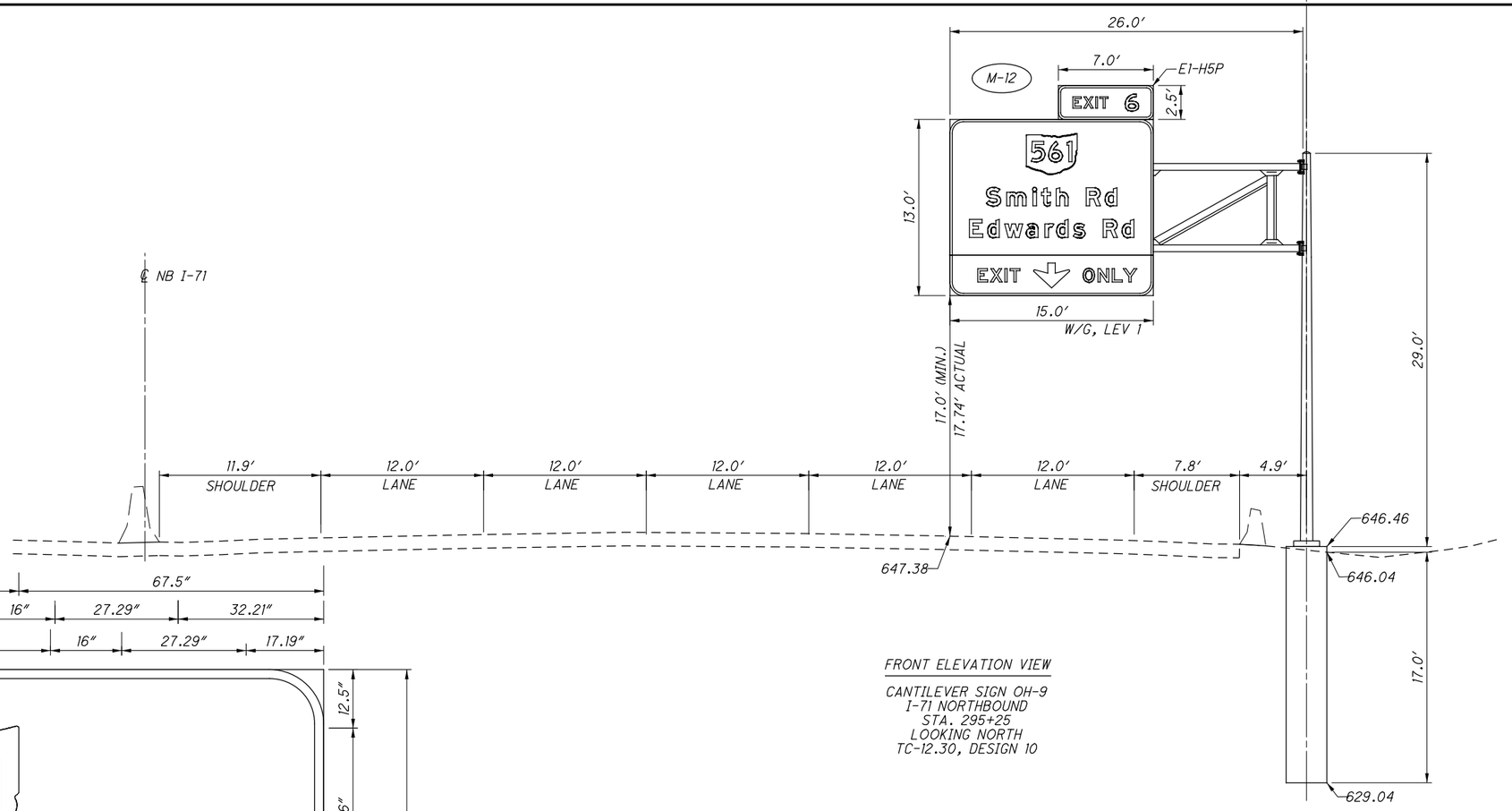

FRONT ELEVATION VIEW

CANTILEVER SIGN OH-9
I-71 NORTHBOUND
STA. 295+25
LOOKING NORTH
TC-12.30, DESIGN 10

12″ RADIUS, 2″ BORDER, WHITE ON GREEN SIGN
"Smith Rd" and "Edwards Rd" E MOD
BLACK OY YELLOW PANEL
DOWN ARROW C-1, 270°, "EXIT" and "ONLY" E

S	m	i	t	h	R	d
32.21	50.09	73.41	80.94	94.10	120.50	137.39

E	d	w	a	r	d	s	R	d
17.19	33.32	48.38	67.64	84.07	94.33	109.22	135.52	152.41

E	X	I	T	⇩	O	N	L	Y
24.58	35.86	48.65	53.18	74.00	118.00	131.03	143.68	153.32

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED M.JH
CHECKED KAE

CANTILEVER SIGN OH-9
NB I-71 - STA 295+25

HAM-71-1.97

177
292

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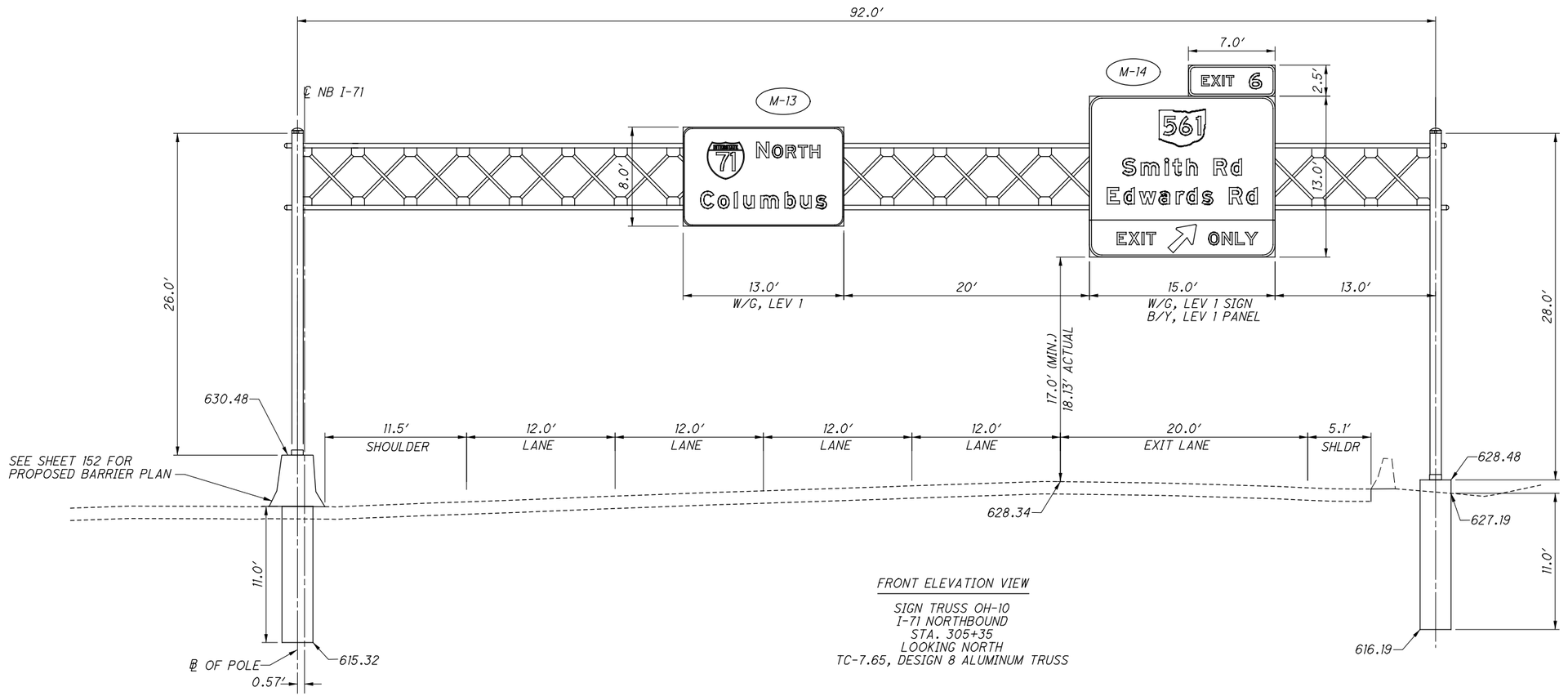

FRONT ELEVATION VIEW

SIGN TRUSS OH-10
I-71 NORTHBOUND
STA. 305+35
LOOKING NORTH
TC-7.65, DESIGN 8 ALUMINUM TRUSS

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED M.JH
CHECKED KAE

SIGN TRUSS OH-10
NB I-71 - STA 305+35

HAM-71-1.97

178
292

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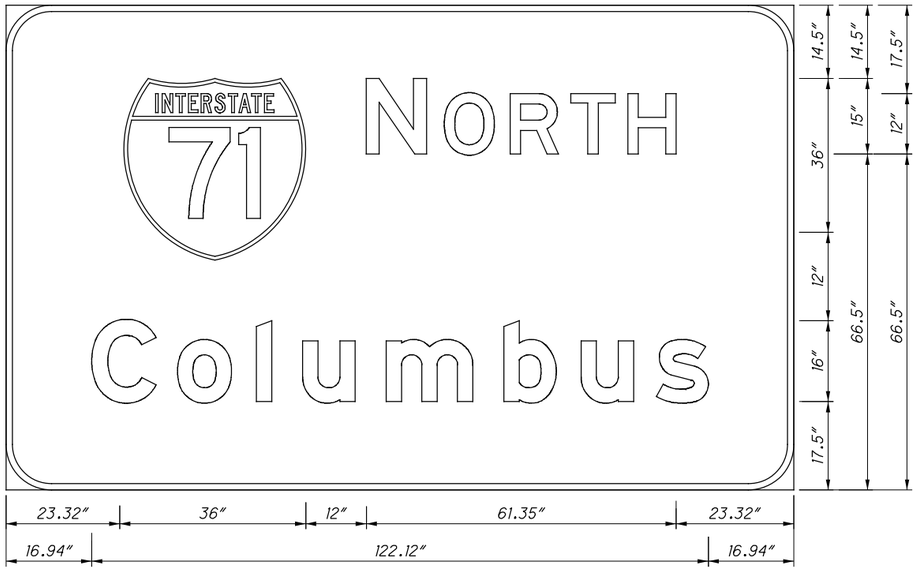
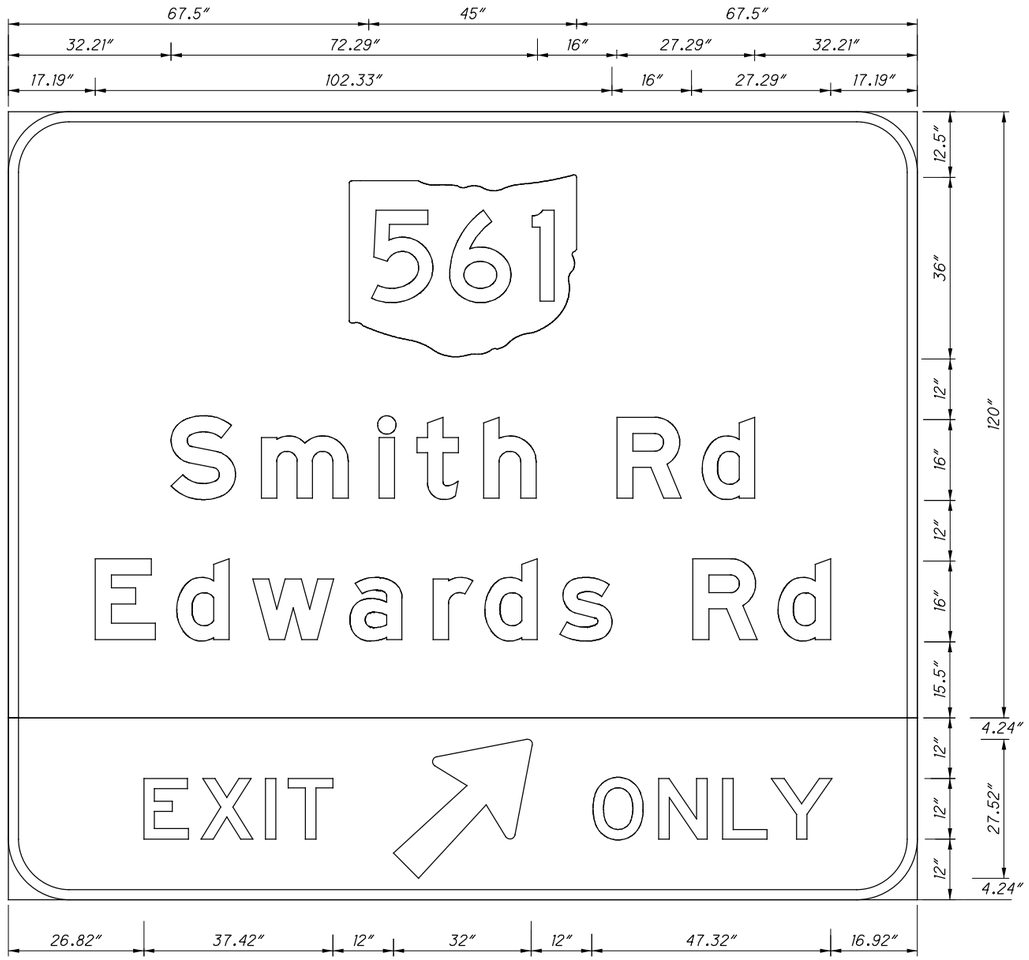


9″ RADIUS, 2″ BORDER, WHITE ON GREEN SIGN
"NORTH" E; "Columbus" E MOD

71	N	O	R	T	H
23.32	71.32	86.76	99.79	111.83	123.12

C	o	l	u	m	b	u	s
16.94	33.94	49.54	58.71	75.25	98.57	113.87	128.76



12″ RADIUS, 2″ BORDER, WHITE ON GREEN SIGN
"Smith Rd" and "Edwards Rd" E MOD;
BLACK ON YELLOW PANEL
ARROW A-1, 45°, "EXIT" and "ONLY" E

561
67.50

S	m	i	t	h	R	d
32.21	50.09	73.41	80.94	94.10	120.50	137.39

E	d	w	a	r	d	s	R	d
17.19	33.32	48.38	67.64	84.07	94.33	109.22	135.52	152.41

E	X	I	T	↗	O	N	L	Y
26.82	38.10	50.89	55.42	76.24	115.76	128.79	141.45	151.08

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED MJH
CHECKED KAE

SIGN FABRICATION DETAILS - OH-10
NB I-71 - STA 305+35

HAM-71-1.97

179
292

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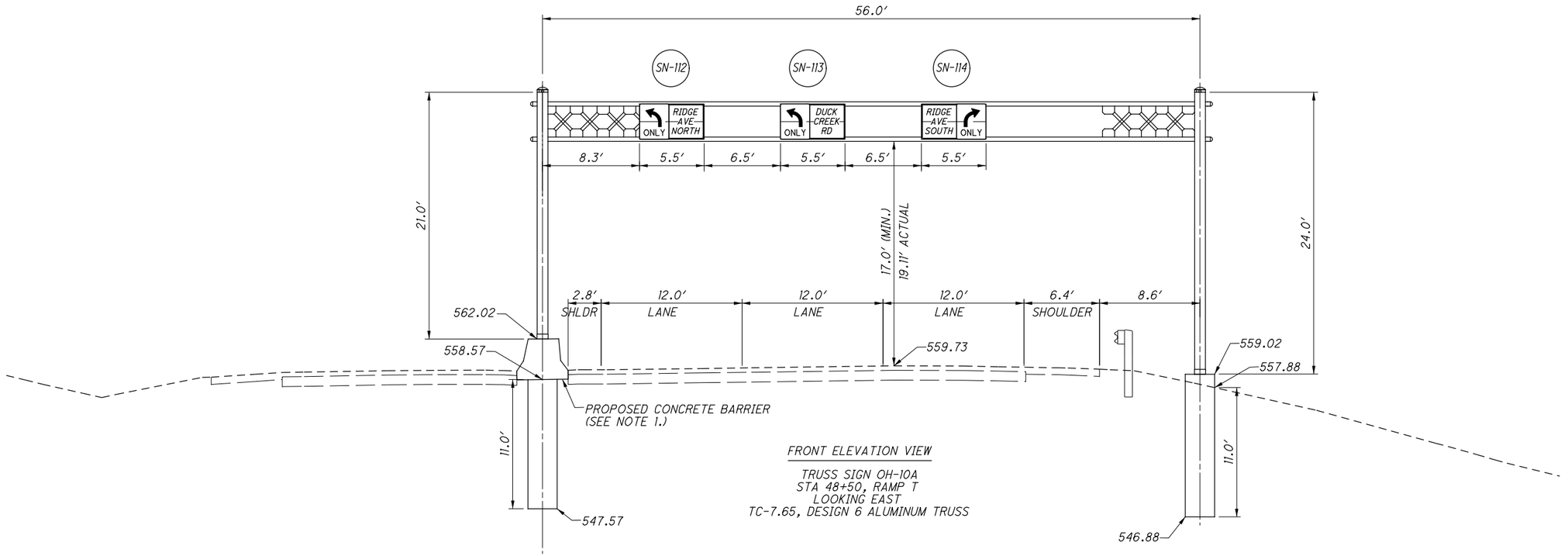
NOTES:
1) PER MC-9.5, THE COST FOR THE TEN FEET OF PROPOSED CONCRETE BARRIER, IS PAID FOR WITH ITEM 630. THE CONTRACTOR SHALL MATCH SIZE AND SHAPE OF THE PROPOSED BARRIER WITH THE SIZE AND SHAPE OF THE ADJACENT CONCRETE BARRIER (WHICH IS EXISTING TO REMAIN).

2) A QUANTITY OF TEN FEET OF BARRIER REMOVAL HAS BEEN CARRIED TO THE SUBSUMMARY. THIS WORK INCLUDES REMOVAL AND DISPOSAL OF THE EXISTING STEEL MEDIAN PLATES AT THE PROPOSED SIGN LOCATION.



FRONT ELEVATION VIEW

TRUSS SIGN OH-10A
STA 48+50, RAMP T
LOOKING EAST
TC-7.65, DESIGN 6 ALUMINUM TRUSS

0 2.5 5 10
HORIZONTAL SCALE IN FEET

CALCULATED MJH
CHECKED KAE

TRUSS SIGN OH-10A
RAMP T - STA 48+50

HAM-71-1.97

179A
292

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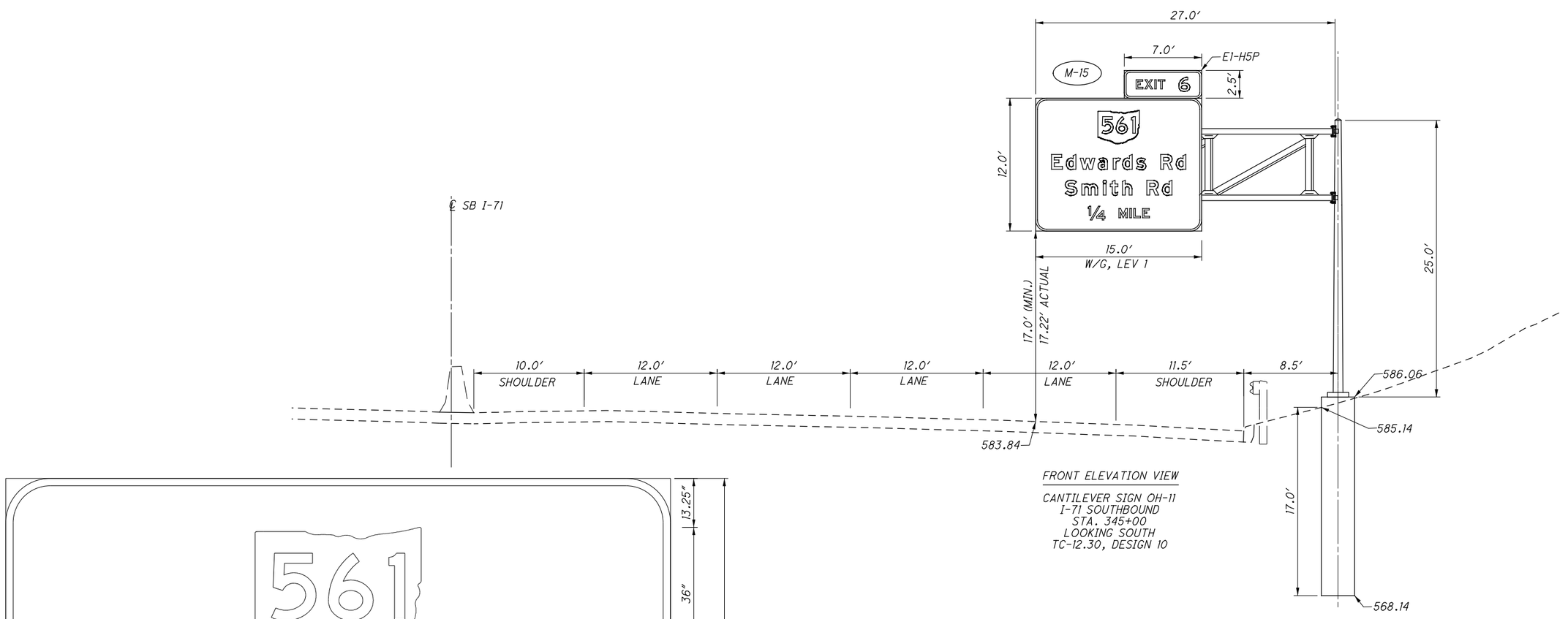
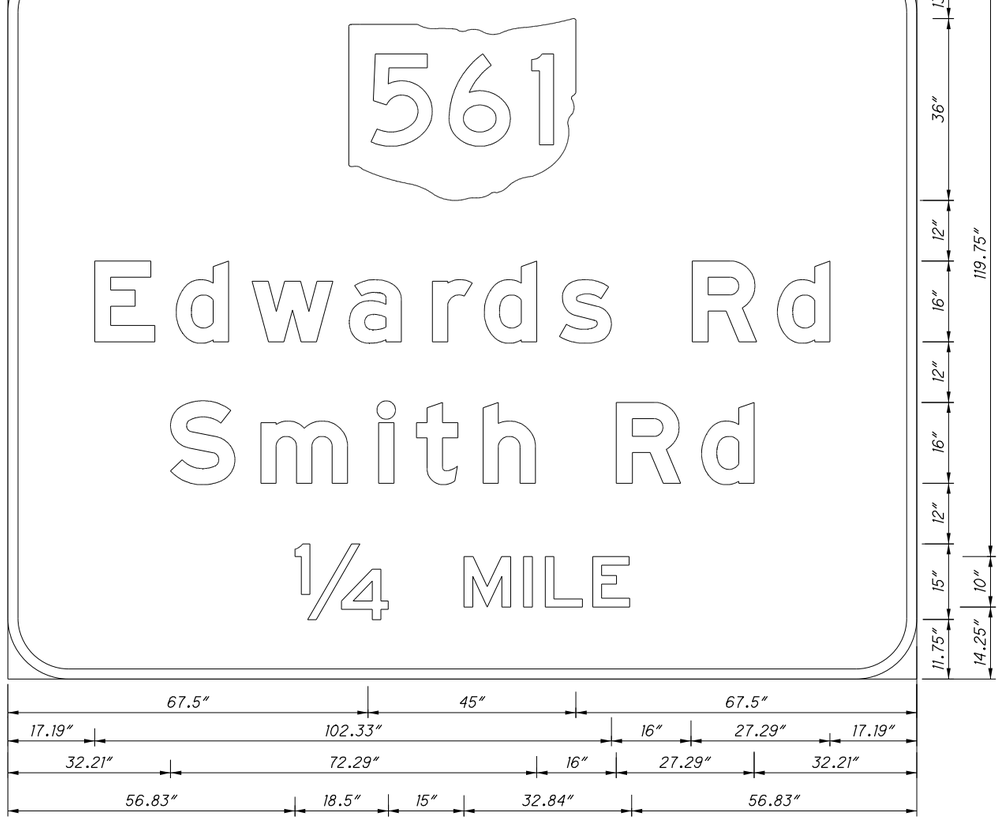


FRONT ELEVATION VIEW

CANTILEVER SIGN OH-11
I-71 SOUTHBOUND
STA. 345+00
LOOKING SOUTH
TC-12.30, DESIGN 10



12″ RADIUS, 2″ BORDER, WHITE ON GREEN SIGN
"Smith Rd" and "Edwards Rd" E MOD; "1/4 MILE" E

541
67.50

E	d	w	a	r	d	s	R	d
17.19	33.32	48.38	67.64	84.07	94.33	109.22	135.52	152.41

S	m	i	t	h	R	d
32.21	50.09	73.41	80.94	94.10	120.50	137.39

1/4	M	I	L	E
56.83	90.33	102.13	106.42	115.83

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED M.JH
CHECKED KAE

CANTILEVER SIGN OH-11
SB I-71 - STA 345+00

HAM-71-1.97

180
292

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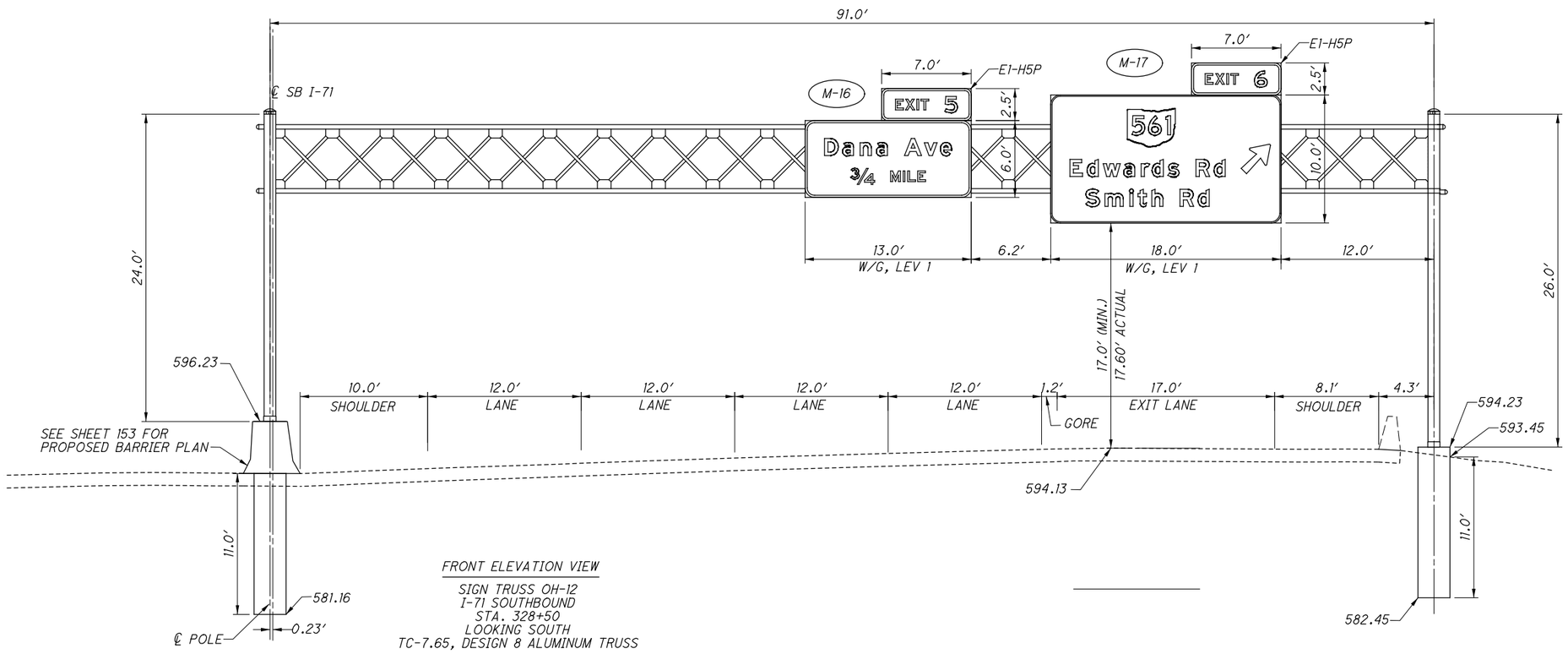

FRONT ELEVATION VIEW

SIGN TRUSS OH-12
I-71 SOUTHBOUND
STA. 328+50
LOOKING SOUTH
TC-7.65, DESIGN 8 ALUMINUM TRUSS

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED M.JH
CHECKED KAE

SIGN TRUSS OH-12
SB I-71 - STA 328+50

HAM-71-1.97

181
292

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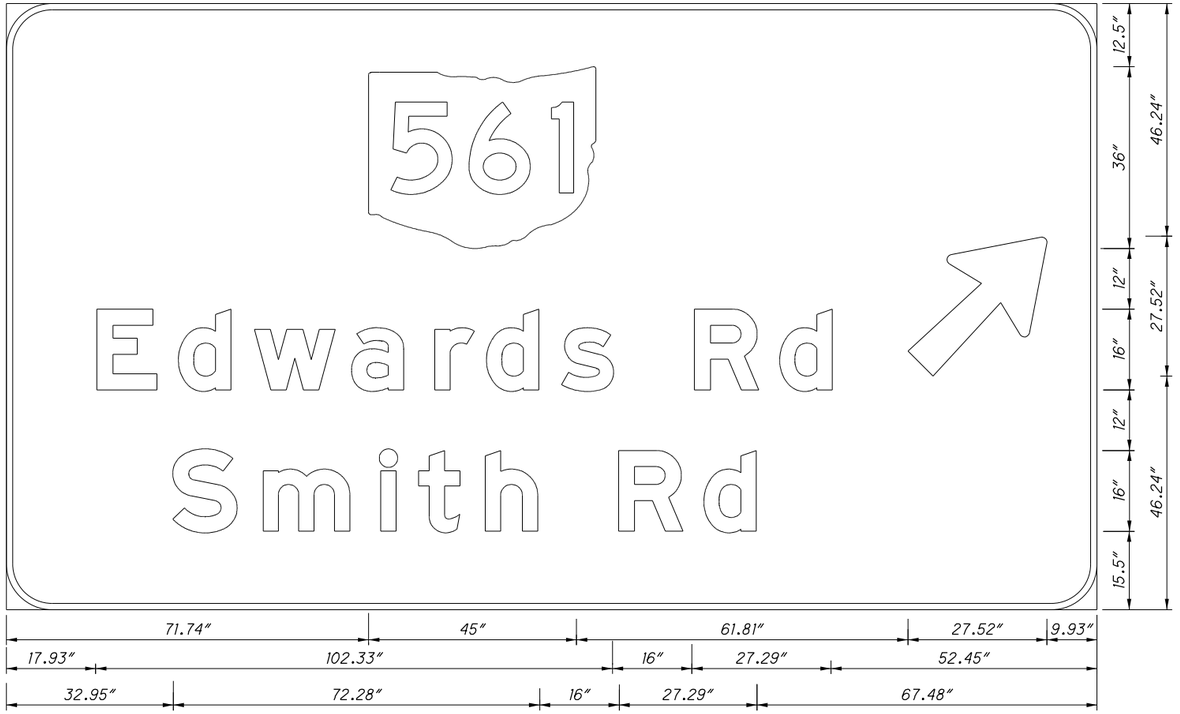
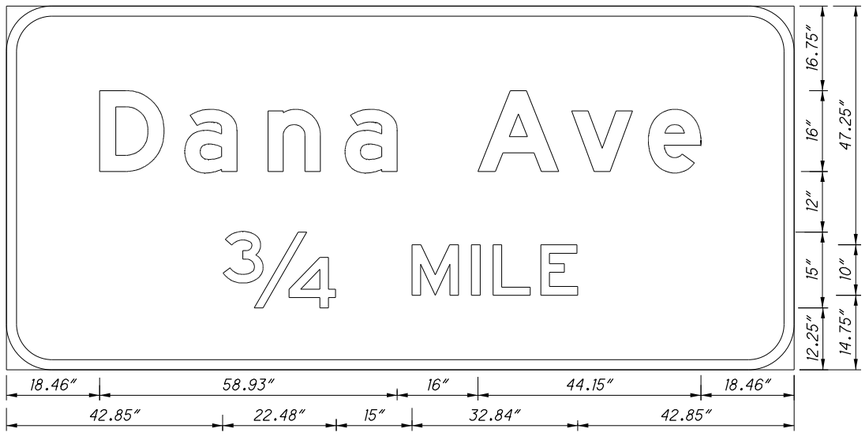


12″ RADIUS, 2″ BORDER, WHITE ON GREEN SIGN
"Smith Rd" and "Edwards Rd" E MOD;
ARROW A-1, 45

561	
71.74	178.55

E	d	w	a	r	d	s	R	d
17.93	34.06	49.12	68.38	84.81	95.07	109.95	136.26	153.15

S	m	i	t	h	R	d
32.95	50.83	74.15	81.67	94.83	121.23	138.12



9″ RADIUS, 2″ BORDER, WHITE ON GREEN SIGN
"Dana Ave" E MOD; "¾ MILE" E

D	a	n	a	A	v	e
18.46	35.35	51.78	67.09	93.39	111.92	127.14

3/4	M	I	L	E
42.85	80.31	92.10	96.40	105.80

SIGN FABRICATION DETAILS - OH-12
SB I-71 - STA 328+50

HAM-71-1.97

182
292

CALCULATED MJH
CHECKED KAE

HORIZONTAL SCALE IN FEET
0 2.5 5 10

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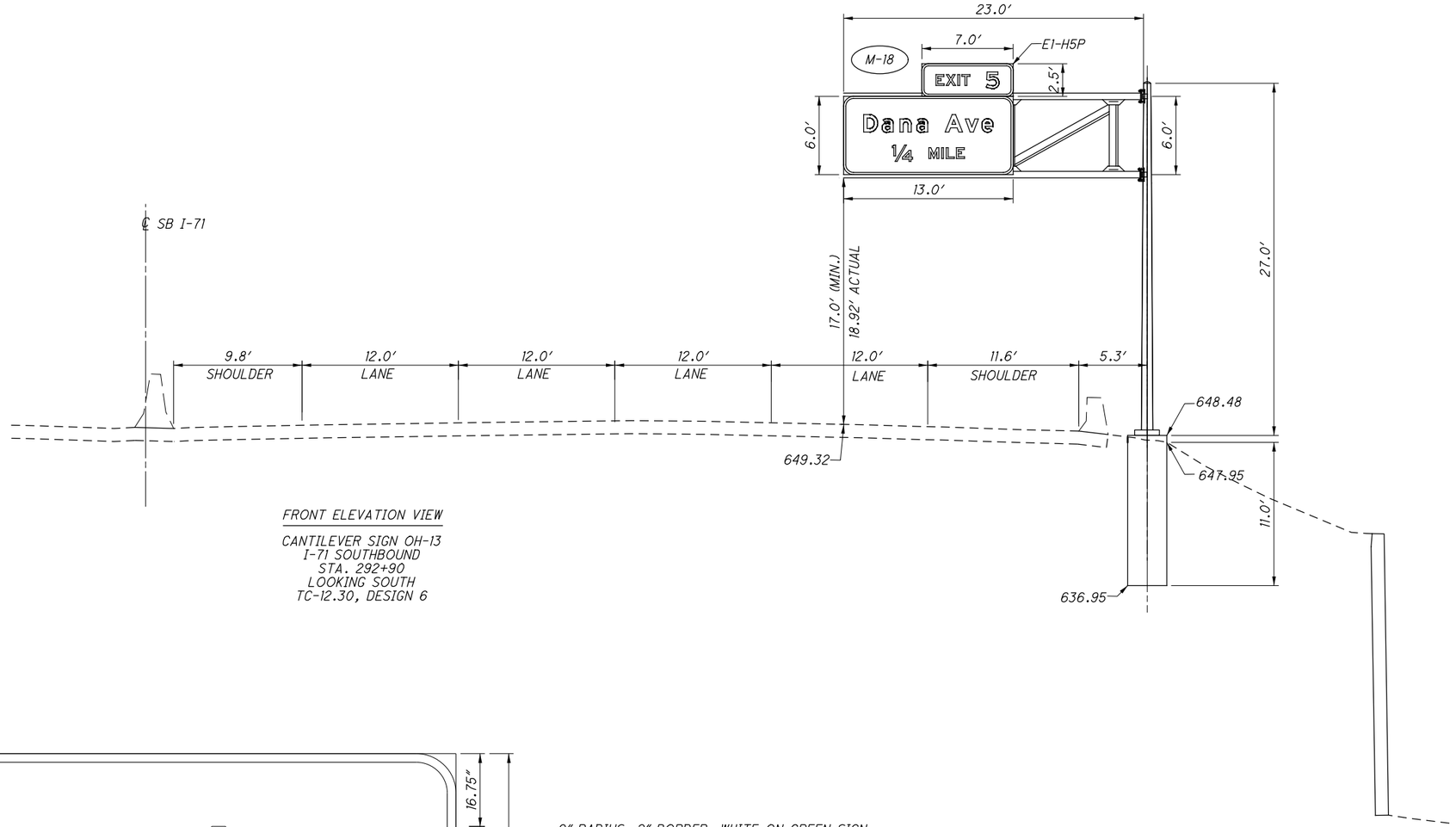
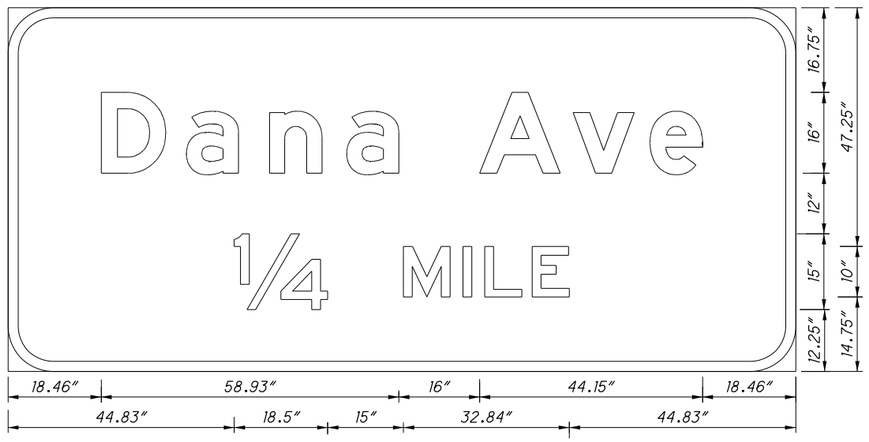


FRONT ELEVATION VIEW

CANTILEVER SIGN OH-13
I-71 SOUTHBOUND
STA. 292+90
LOOKING SOUTH
TC-12.30, DESIGN 6



9″ RADIUS, 2″ BORDER, WHITE ON GREEN SIGN
"Dana Ave" E MOD; "1/4 MILE" E

D	a	n	a	A	v	e
18.46	35.35	51.78	67.09	93.39	111.92	127.14

1/4	M	I	L	E
44.83	78.33	90.13	94.42	103.83

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED M.JH
CHECKED KAE

CANTILEVER SIGN OH-13
SB I-71 - STA 292+90

HAM-71-1.97

183
292

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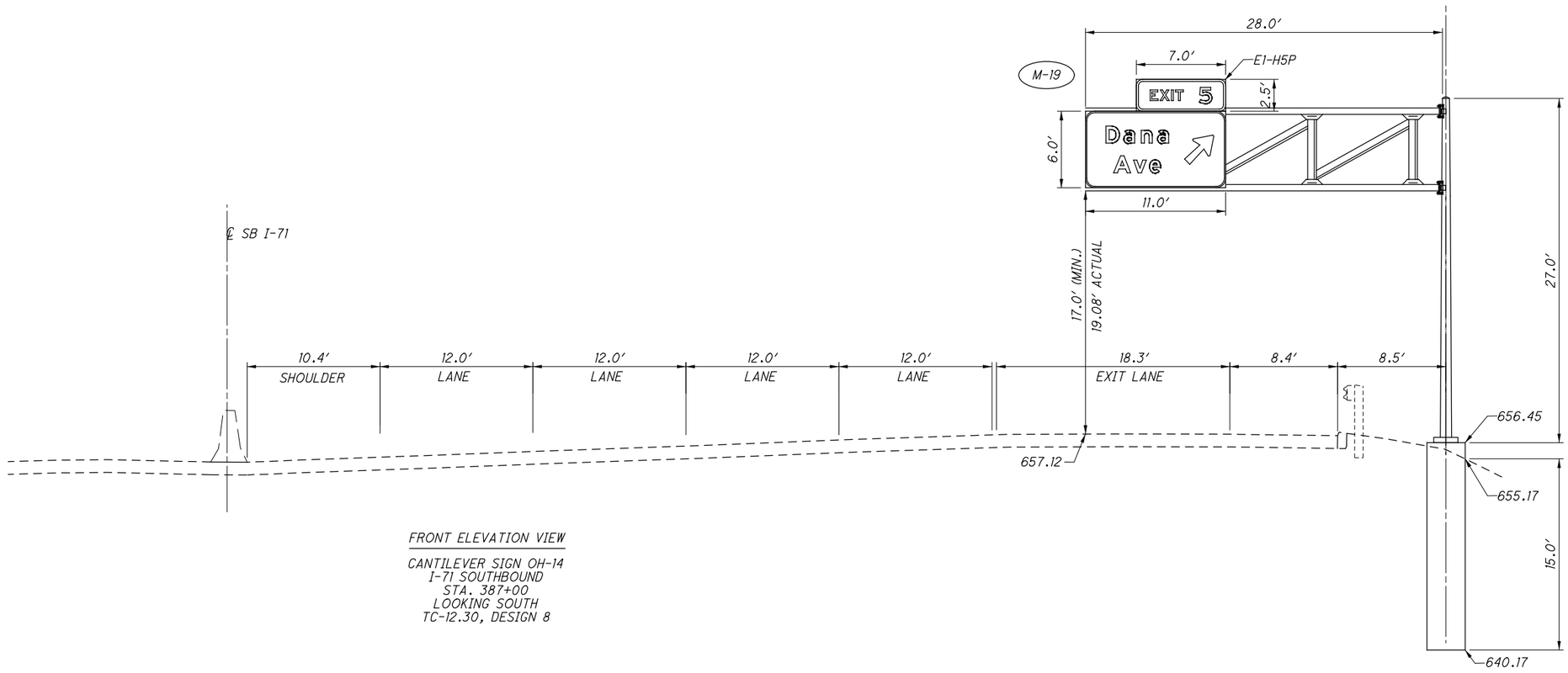
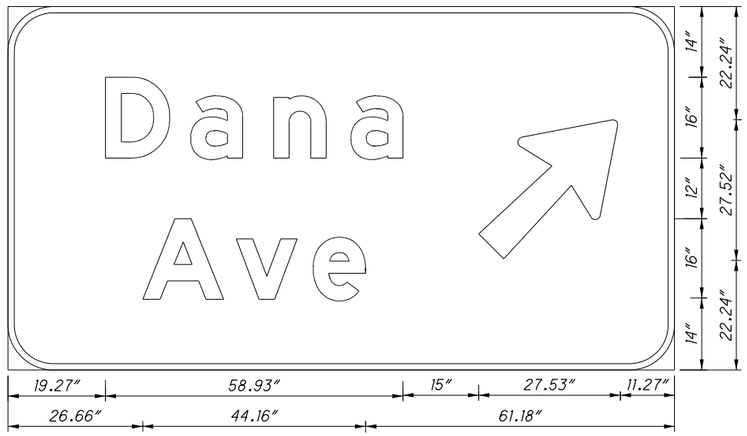


FRONT ELEVATION VIEW

CANTILEVER SIGN OH-14
I-71 SOUTHBOUND
STA. 387+00
LOOKING SOUTH
TC-12.30, DESIGN 8



9″ RADIUS, 2″ BORDER, WHITE ON GREEN SIGN
"Dana Ave" E MOD
ARROW A-1, 45

D	a	n	a	⇗
19.27	36.16	52.60	67.90	93.20

A	v	e
26.66	45.20	60.42

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED M.JH
CHECKED KAE

CANTILEVER SIGN OH-14
SB I-71 - STA 387+00

HAM-71-1.97

184
292

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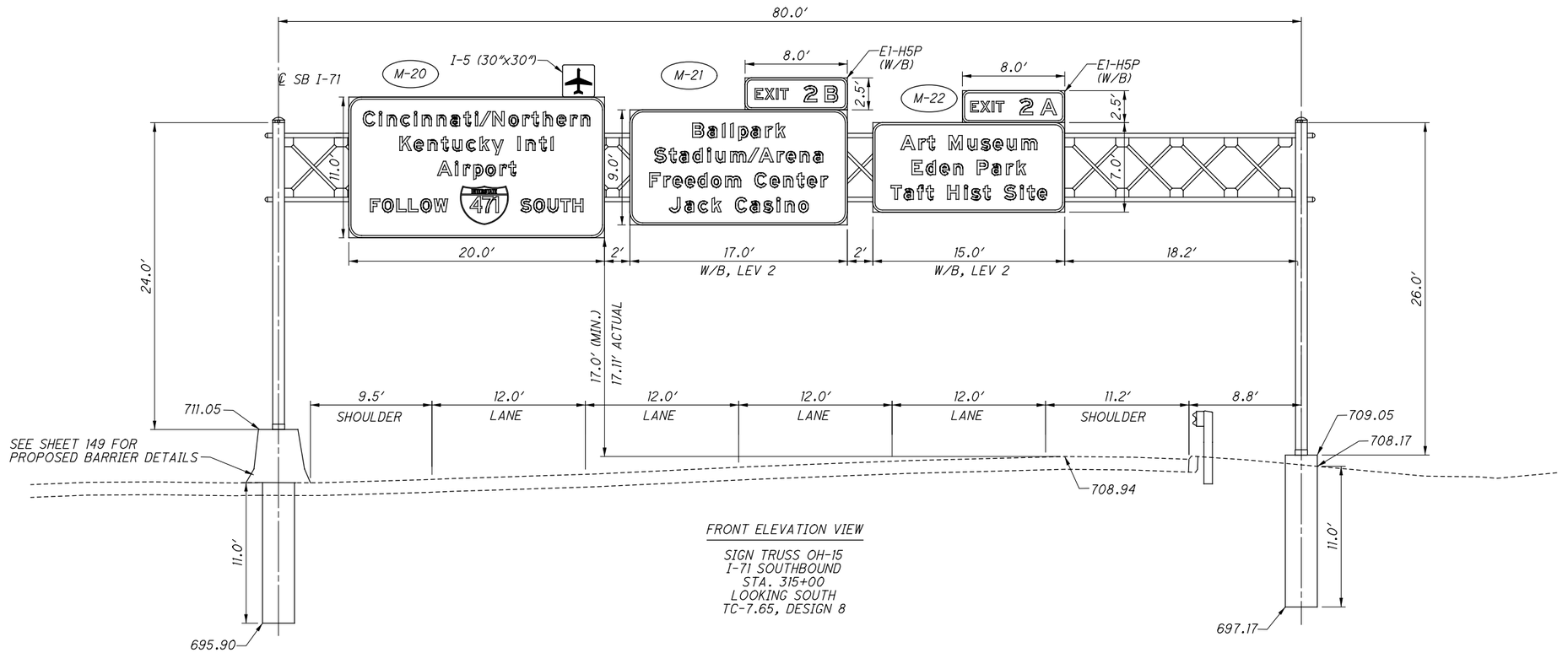
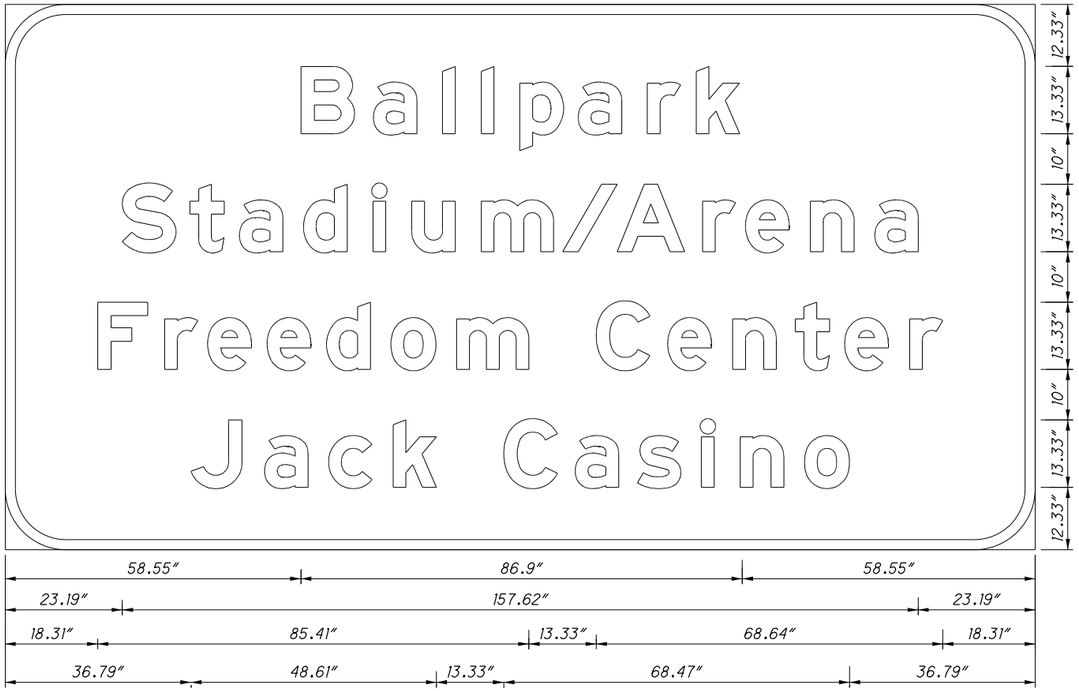


FRONT ELEVATION VIEW

SIGN TRUSS OH-15
I-71 SOUTHBOUND
STA. 315+00
LOOKING SOUTH
TC-7.65, DESIGN 8



NOTE:
1) SEE NEXT SHEET FOR ADDITIONAL SIGN FABRICATION DETAILS.

12″ RADIUS, 2″ BORDER, WHITE ON BROWN
ALL LETTERS - FONT E MOD

B	a	l	l	P	a	r	k						
58.55	72.93	86.62	94.27	101.92	113.48	127.18	136.86						
S	t	a	d	i	u	m	/	A	e	e	n	a	
23.19	36.62	48.40	59.07	72.85	80.49	94.27	110.42	121.20	138.07	146.62	159.47	172.23	
F	r	e	e	d	o	m	C	e	n	t	e	r	
18.31	31.56	40.11	51.88	63.64	76.40	89.40	117.05	131.21	144.07	158.47	166.25	179.10	
J	A	C	K	C	a	s	i	n	o				
36.79	51.37	64.05	76.82	98.74	112.90	125.22	137.89	145.54	158.29				

SIGN TRUSS OH-15
SB I-71 - STA 315+00

HAM-71-1.34

185
292

CALCULATED M.JH
CHECKED KAE

HORIZONTAL SCALE IN FEET
0 2.5 5 10

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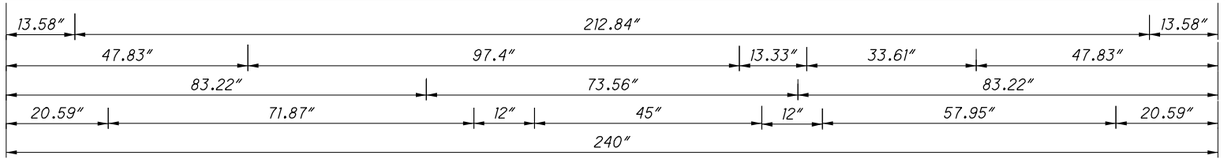
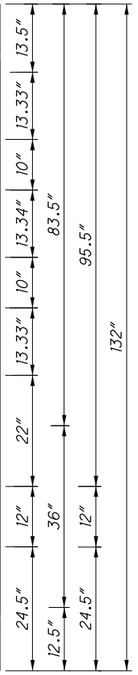




12″ RADIUS, 2″ BORDER, WHITE ON GREEN
"Cincinnati/Northern Kentucky Intl Airport" E MOD
"FOLLOW" and "SOUTH" E

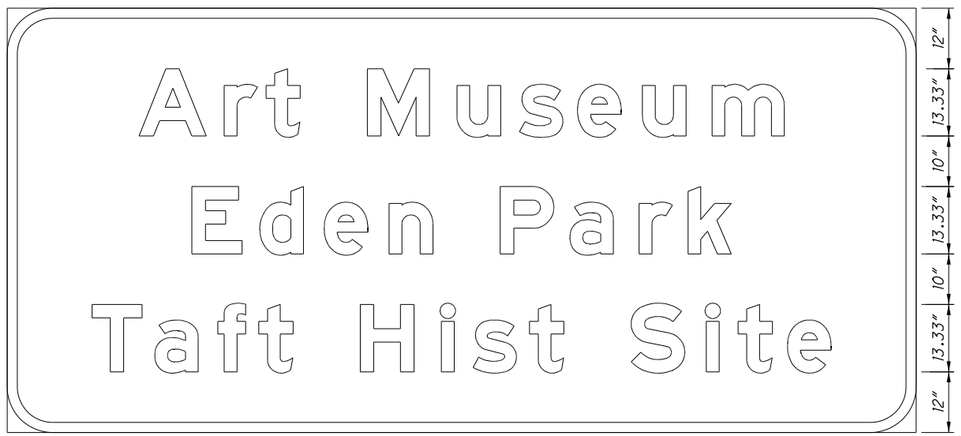
C	i	n	c	i	n	n	a	t	i	/	
13.58	28.58	35.98	48.74	61.51	68.91	82.69	95.45	107.77	118.74	122.86	

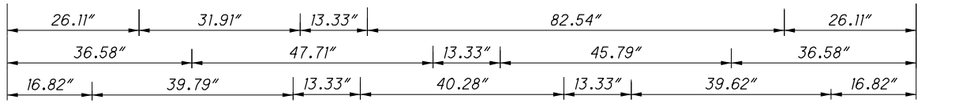
N	o	r	t	h	e	r	n	
135.03	150.23	163.23	171.49	182.46	195.21	208.07	217.75	

K	e	n	t	u	c	k	y	I	n	t	l	
47.83	61.36	74.21	86.62	97.58	110.34	123.11	134.31	158.56	166.27	178.87	189.64	

A	i	r	p	o	r	t	
83.22	100.09	107.49	117.18	128.74	141.74	150.00	

F	O	L	L	O	W	[FM]	S	O	U	T	H	
20.59	31.88	44.91	56.20	67.48	79.89	104.46	161.46	173.49	186.52	198.56	209.84	





12″ RADIUS, 2″ BORDER, WHITE ON BROWN
"Art Museum" and "Eden Park" and "Taft Hist Site" E MOD

A	r	t	M	u	s	e	u	m				
26.11	42.96	51.24	71.35	89.05	101.46	112.94	125.80	139.58				

E	d	e	n	P	a	r	k					
36.58	50.02	62.77	75.63	97.63	111.45	125.15	134.83					

T	a	f	t	H	i	s	t	S	i	t	e	
16.82	29.23	41.70	49.83	69.95	85.98	82.25	103.45	123.56	138.46	144.74	154.52	

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED M.JH
CHECKED KAE

SIGN FABRICATION DETAILS - OH-15
SB I-71 - STA 315+00

HAM-71-1.97

186
292

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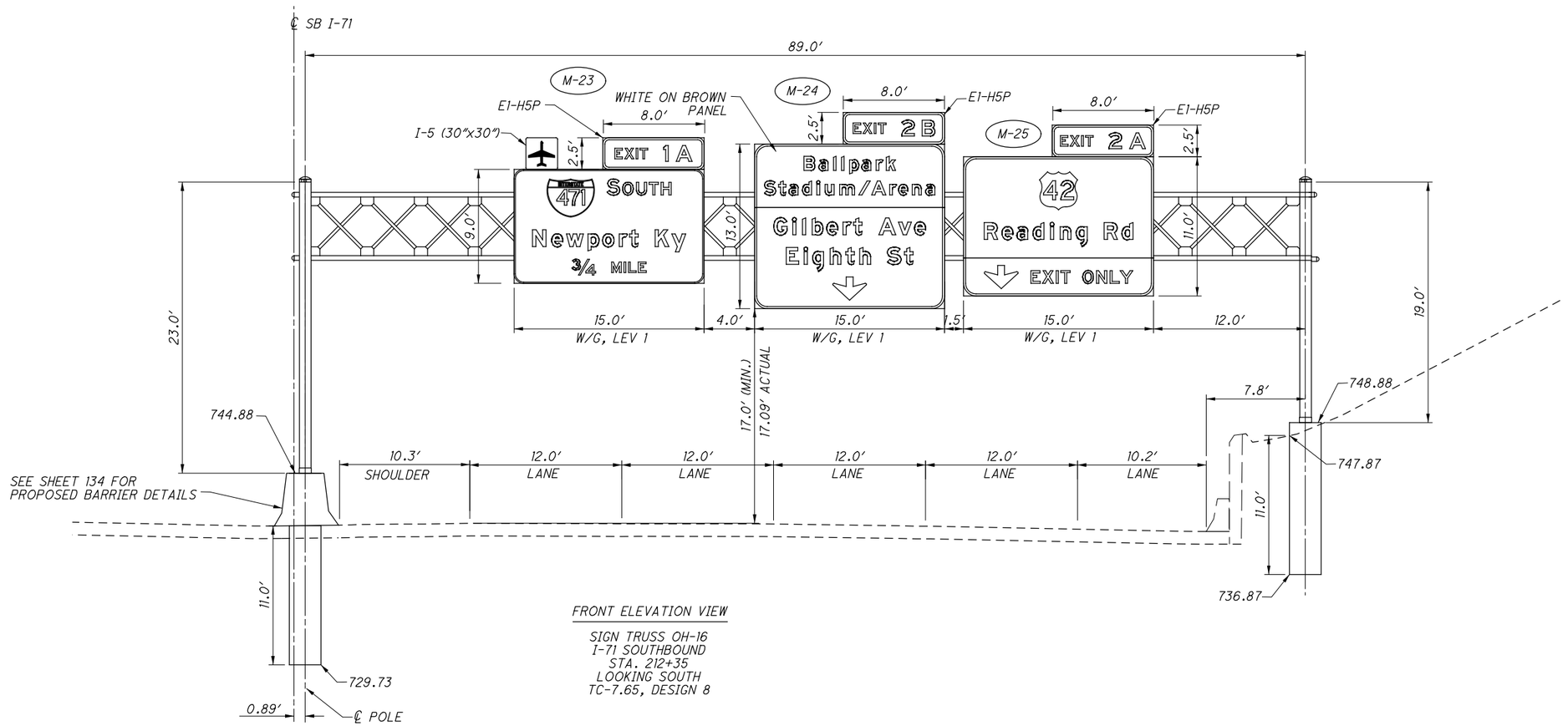
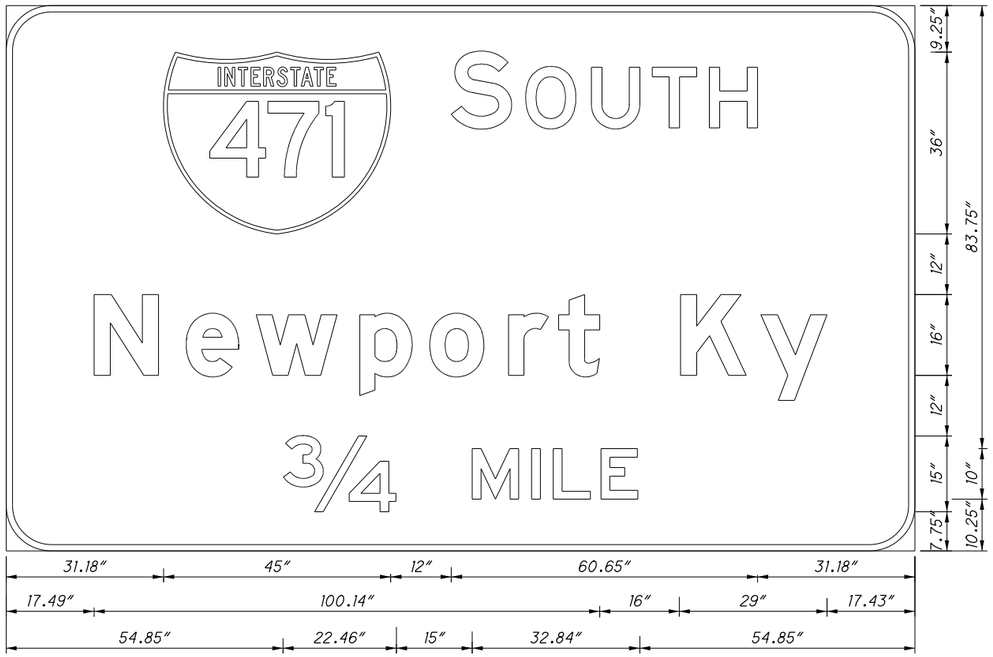


FRONT ELEVATION VIEW

SIGN TRUSS OH-16
I-71 SOUTHBOUND
STA. 212+35
LOOKING SOUTH
TC-7.65, DESIGN 8



12″ RADIUS, 2″ BORDER, WHITE ON GREEN SIGN
"SOUTH" E; "Newport Ky" E MOD; "3/4 MILE" E

31.18	S 88.18	O 102.91	U 115.94	T 127.98	H 139.26				
N 17.43	e 35.67	w 49.55	p 70.04	o 83.92	r 99.52	† 109.43	K 133.57	y 149.46	
3/4 54.85	M 92.31	I 104.10	L 106.40	E 117.80					

NOTE:
1) SEE NEXT SHEET FOR ADDITIONAL SIGN FABRICATION DETAILS.

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED M.JH
CHECKED KAE

SIGN TRUSS OH-16
SB I-71 - STA 212+35

HAM-71-1.97

187
292

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12″ RADIUS, 2″ BORDER, WHITE ON BROWN SIGN
"Ballpark" and "Stadium/Arena" E MOD
12″ RADIUS, 2″ BORDER, WHITE ON GREEN SIGN
"Gilbert Ave" and "Eighth St" E MOD
DOWN ARROW C-1, 270°

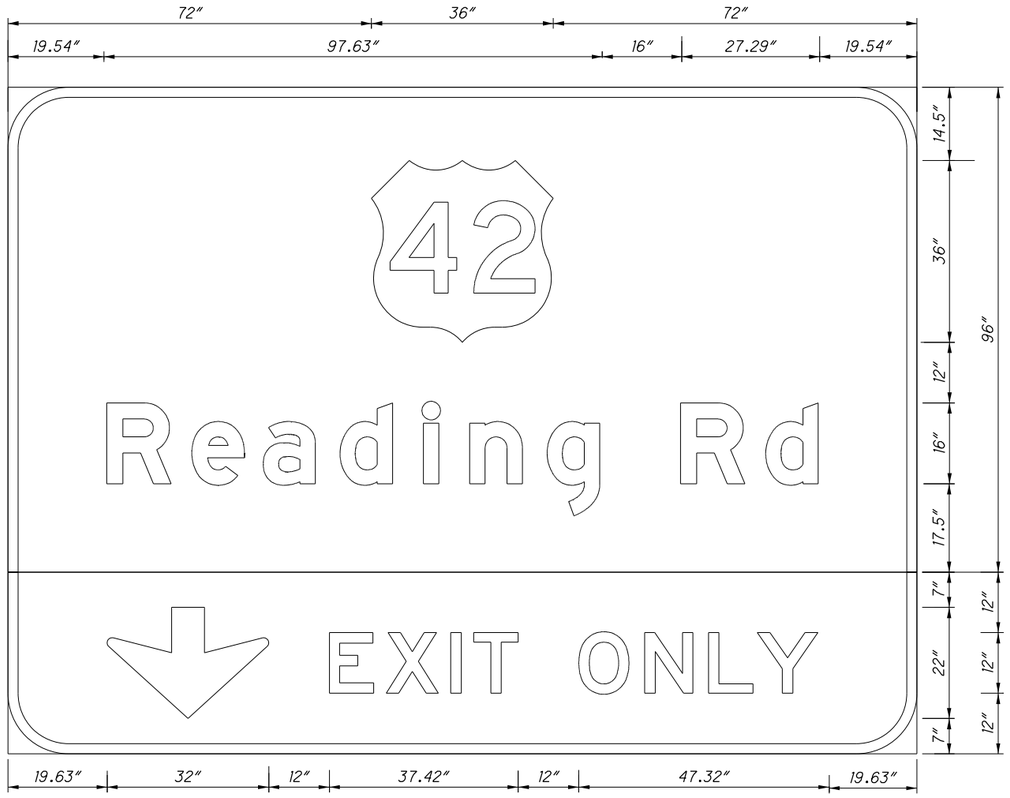
B	a	l	l	p	a	r	k
46.55	60.93	74.62	82.27	89.92	101.48	115.18	124.86

S	t	a	d	i	u	m	/	A	r	e	n	a
9.36	22.78	32.56	45.23	59.01	66.66	80.44	98.76	111.03	127.90	136.45	149.30	162.06

G	i	l	b	e	r	t	A	v	e
18.07	36.07	45.25	54.42	68.30	83.73	93.64	117.77	136.31	151.53

E	i	g	h	t	h	S	t
29.85	46.98	54.92	71.46	86.34	99.51	125.91	142.02

⇩
74.00



12″ RADIUS, 2″ BORDER, WHITE ON GREEN SIGN
"Reading Rd" E MOD
BLACK ON YELLOW PANEL
DOWN ARROW C-1, 270°, "EXIT" and "ONLY" E

R	e	a	d	i	n	g	R	d
19.54	36.43	50.55	65.76	82.29	91.47	106.77	133.17	150.06

⇩	E	X	I	T	O	N	L	Y
19.63	63.63	74.91	87.70	92.23	113.05	126.08	136.73	146.37

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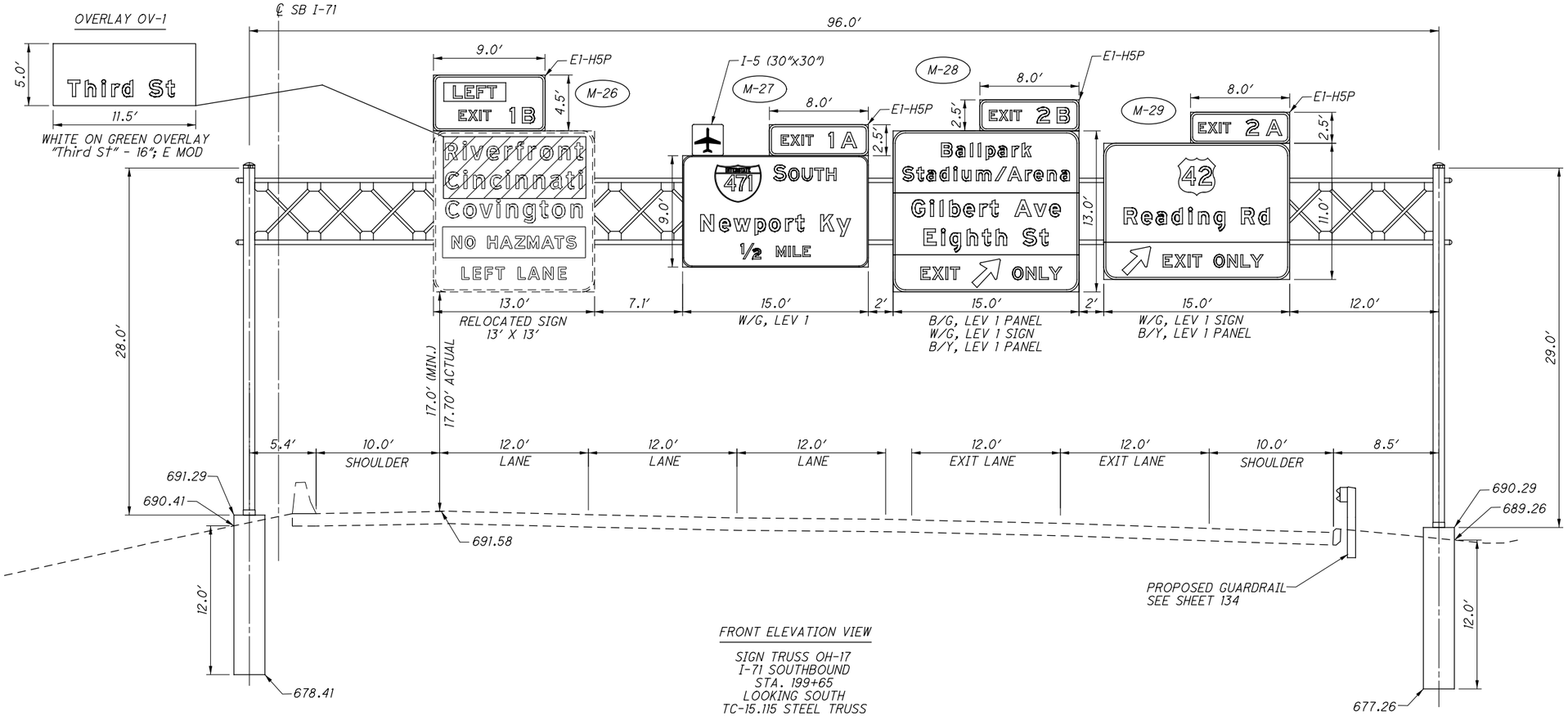
HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED MJH
CHECKED KAE

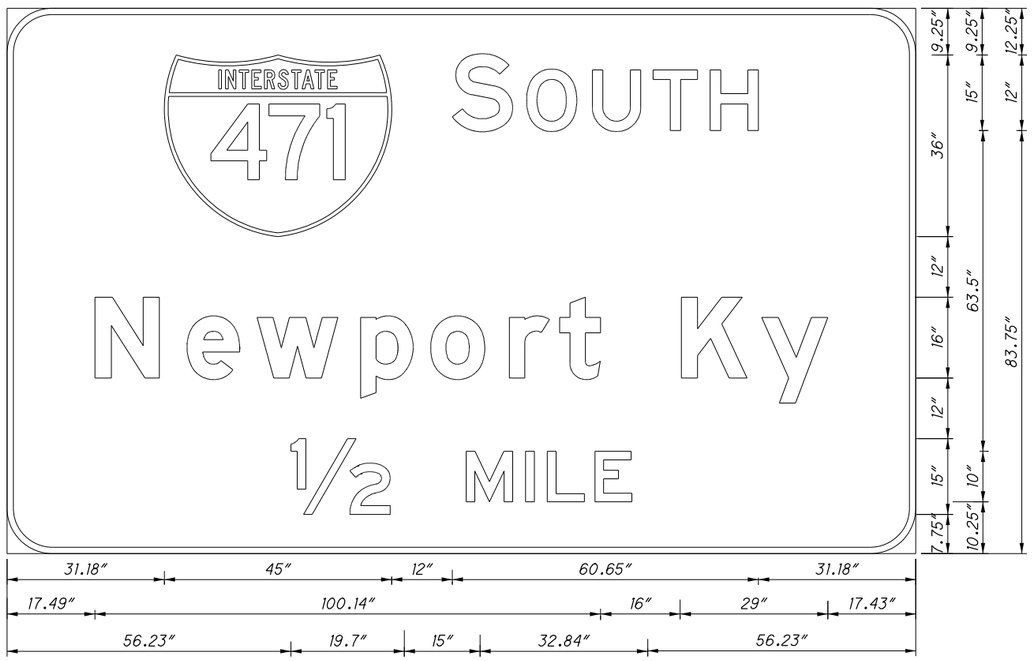
SIGN FABRICATION DETAILS - OH-16
SB I-71 - STA 212+35

HAM-71-1.97



FRONT ELEVATION VIEW

SIGN TRUSS OH-17
I-71 SOUTHBOUND
STA. 199+65
LOOKING SOUTH
TC-15.115 STEEL TRUSS



12″ RADIUS, 2″ BORDER, WHITE ON GREEN SIGN
"SOUTH" E; "Newport Ky" E MOD; "3/4 MILE" E

M	S	O	U	T	H
31.18	88.18	102.91	115.94	127.98	139.26

N	e	w	p	o	r	†	K	y
17.43	35.67	49.55	70.04	83.92	99.52	109.43	133.57	149.46

1/2	M	I	L	E
56.23	90.93	102.73	107.02	116.43

NOTE:
1) SEE NEXT SHEET FOR ADDITIONAL SIGN FABRICATION DETAILS.

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED M.JH
CHECKED KAE

SIGN TRUSS OH-17
SB I-71 - STA 199+65

HAM-71-1.97

189
292

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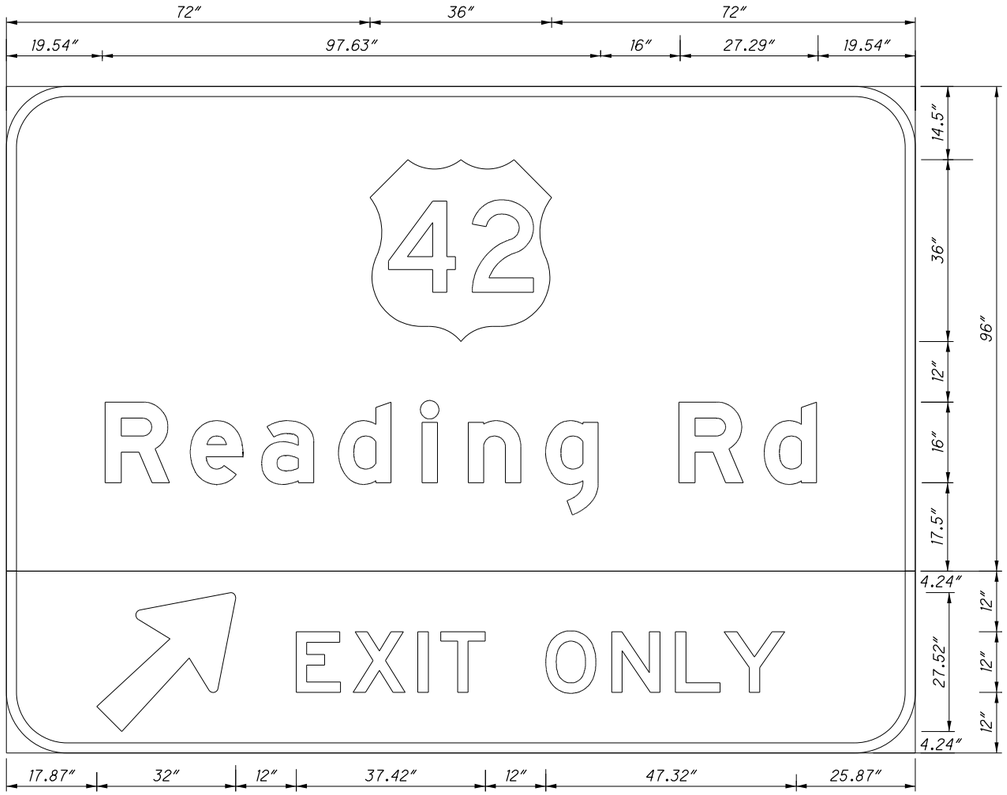

12″ RADIUS, 2″ BORDER, WHITE ON GREEN SIGN
"Reading Rd" E MOD
BLACK ON YELLOW PANEL
ARROW A-1, 45°, "EXIT" and "ONLY" E

R	e	a	d	i	n	g	R	d
19.54	36.43	50.55	65.76	82.29	91.47	106.77	133.17	150.06

⇗	E	X	I	T	O	N	L	Y
17.87	57.39	68.67	81.46	86.00	106.81	119.84	132.50	142.13



12″ RADIUS, 2″ BORDER, WHITE ON BROWN SIGN
"Ballpark", "Stadium", "/" and "Arena" E MOD
WHITE ON GREEN SIGN
"Gilbert Ave" and "Eighth St" E MOD
BLACK ON YELLOW PANEL
ARROW A-1, 45°, "EXIT" and "ONLY" E

B	a	l	l	p	a	r	k
46.55	60.93	74.62	82.27	89.92	101.48	115.18	124.86

S	t	a	d	i	u	m	/	A	r	e	n	a
9.36	22.78	32.56	45.23	59.01	66.66	80.44	98.76	111.03	127.90	136.45	149.30	162.06

G	i	l	b	e	r	t	A	v	e
18.07	36.07	45.25	54.42	68.30	83.73	93.64	117.77	136.31	151.53

E	i	g	h	t	h	S	t
29.85	46.98	54.92	71.46	86.34	99.51	125.91	142.02

E	X	I	T	⇗	O	N	L	Y
26.82	38.10	50.89	55.42	76.24	115.76	128.79	141.45	151.08

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED MJH
CHECKED KAE

SIGN FABRICATION DETAILS - OH-17
SB I-71 - STA 199+65

HAM-71-1.97

190
292

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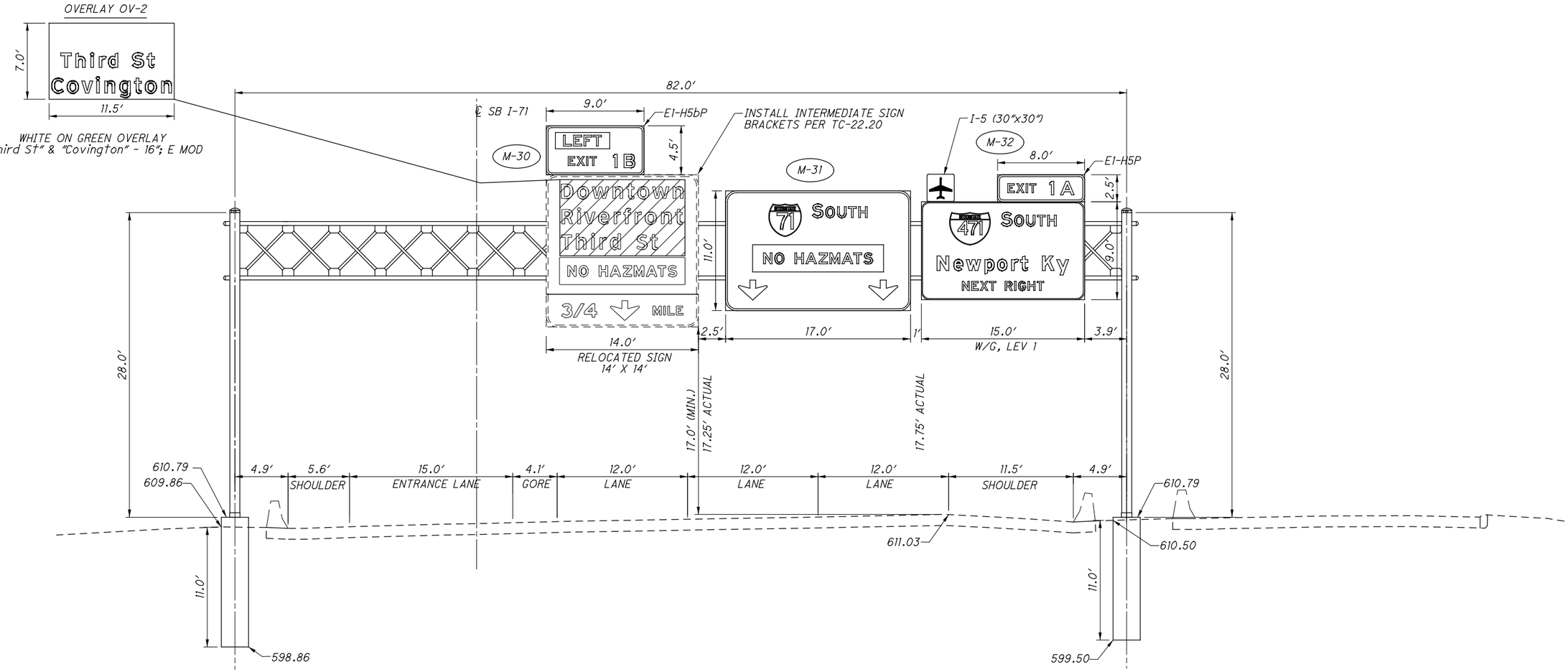

FRONT ELEVATION VIEW

SIGN TRUSS OH-18
I-71 SOUTHBOUND
STA. 180+75
LOOKING SOUTH
TC-7.65, DESIGN 8 ALUMINUM TRUSS

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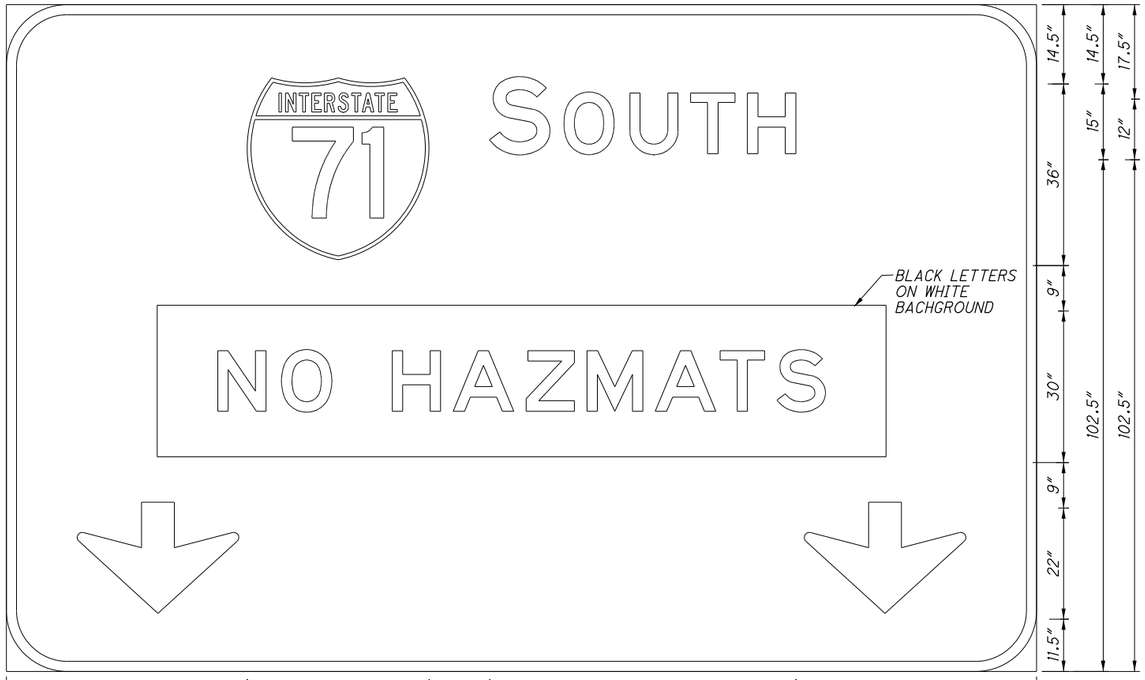
HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED MJH
CHECKED KAE

SIGN TRUSS OH-18
SB I-71 - STA 180+75

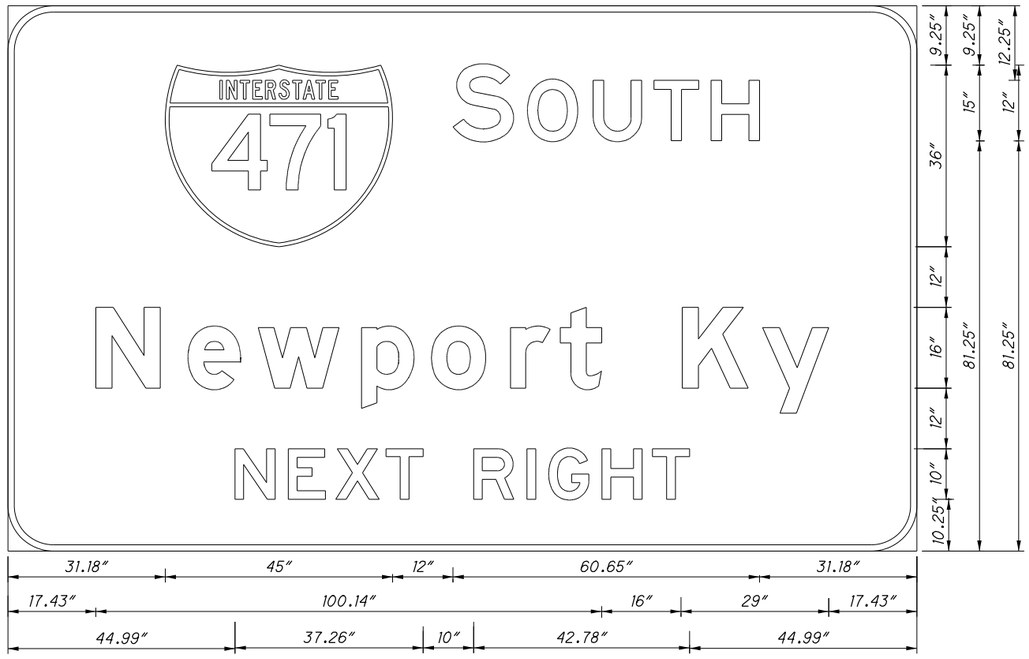
HAM-71-1.97

191
292



12″ RADIUS, 2″ BORDER, WHITE ON GREEN SIGN
"SOUTH" E;
DOWN ARROW C-1, 270°

71	S	O	U	T	H
47.68	95.68	110.41	123.44	135.48	146.76



12″ RADIUS, 2″ BORDER, WHITE ON GREEN SIGN
"SOUTH" E; "Newport Ky" E MOD; "NEXT RIGHT" E

471	S	O	U	T	H
31.18	88.18	102.91	115.94	127.98	139.26

N	e	w	p	o	r	†	K	y
17.43	35.67	49.55	70.04	83.92	99.52	109.43	133.57	149.46

N	E	X	T	R	I	G	H	T
44.99	55.53	64.94	74.91	92.25	102.80	107.09	117.64	127.67

SIGN FABRICATION DETAILS - OH-18
SB I-71 - STA 180+75

HAM-71-1.97

CALCULATED MJH
CHECKED KAE

HORIZONTAL SCALE IN FEET
0 2.5 5 10

192
292

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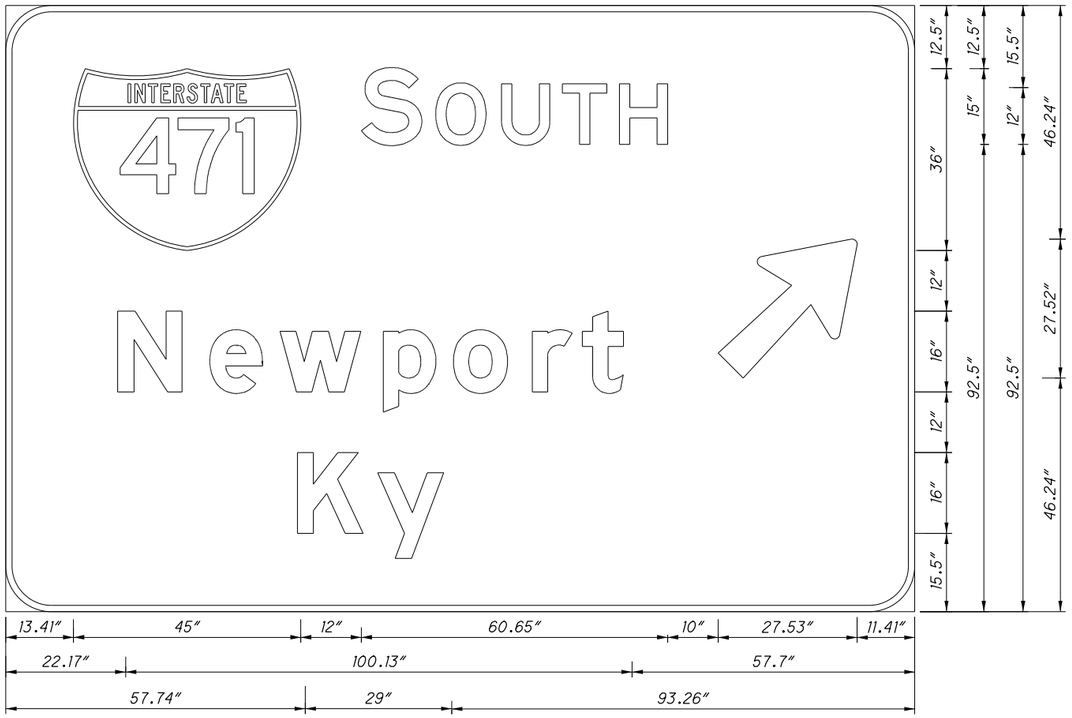
OVERLAY OV-3



WHITE ON GREEN OVERLAY
"Third St" & "Covington" - 16"; E MOD

FRONT ELEVATION VIEW

SIGN TRUSS OH-19
I-71 SOUTHBOUND
STA. 166+65
LOOKING SOUTH
TC-7.65, DESIGN 8 ALUMINUM TRUSS



12" RADIUS, 2" BORDER, WHITE ON GREEN SIGN
"SOUTH" E; "Newport" and "Ky" E MOD
ARROW A-1, 45°

13.41	S 70.41	O 85.15	U 98.18	T 110.21	H 121.50	
N 22.17	e 40.41	w 54.29	p 74.78	o 88.66	r 104.26	t 114.17
K 57.74	y 73.63					

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED MJH
CHECKED KAE

SIGN TRUSS OH-19
SB I-71 - STA 166+65

HAM-71-1.97

193
292

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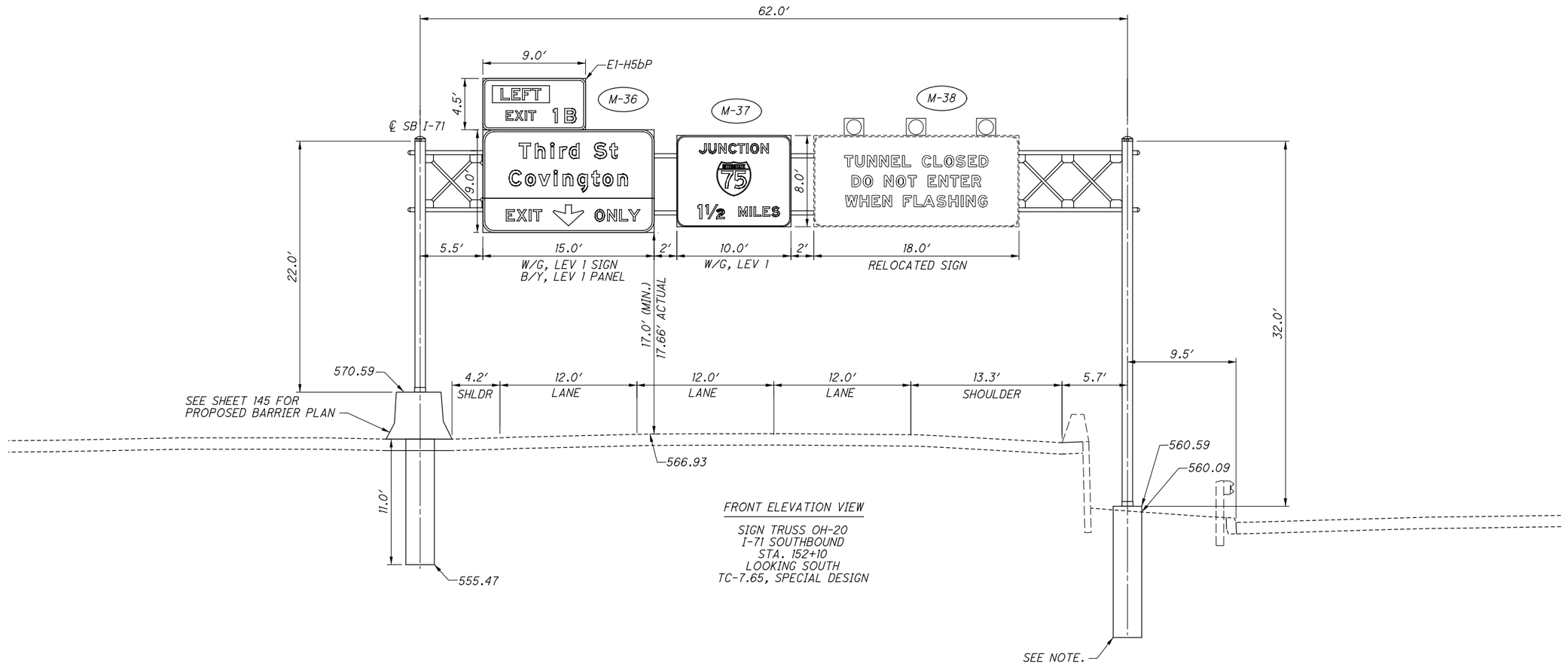

FRONT ELEVATION VIEW

SIGN TRUSS OH-20
I-71 SOUTHBOUND
STA. 152+10
LOOKING SOUTH
TC-7.65, SPECIAL DESIGN

NOTE:
1) A SPECIAL FOUNDATION DESIGN IS REQUIRED.
SEE TRAFFIC CONTROL GENERAL NOTES.

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED M.J.H
CHECKED K.A.E

SIGN TRUSS OH-20
I-71 - STA 152+10
SB I-71

HAM-71-1.97

194
292

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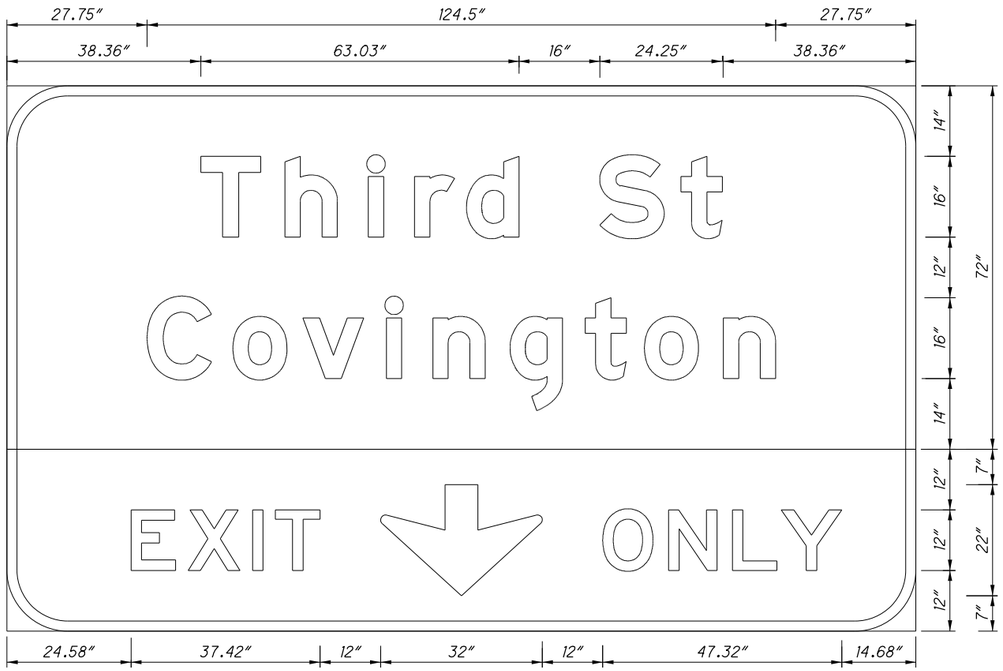
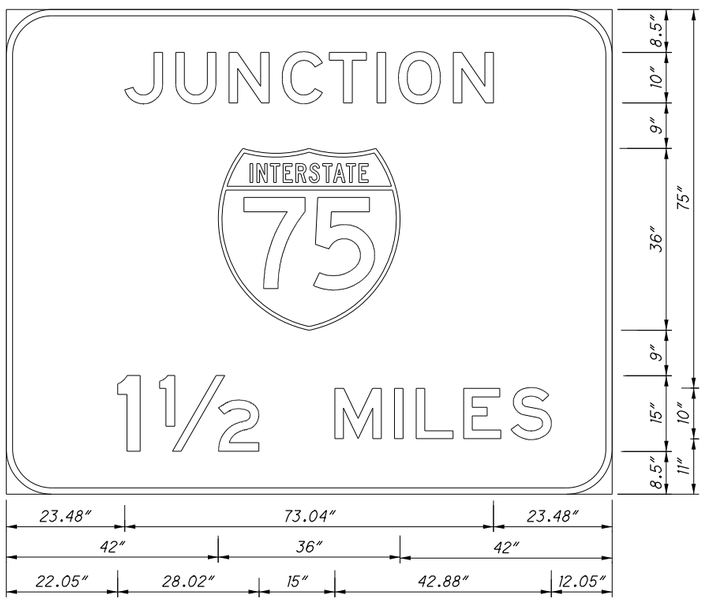


12″ RADIUS, 2″ BORDER, WHITE ON GREEN SIGN
"Covington" AND "Third ST" E MOD
BLACK ON YELLOW PANEL
DOWN ARROW C-1, 270°, "EXIT" and "ONLY" E

T	h	i	r	d	S	t
38.36	55.03	71.56	80.74	90.99	117.38	133.50

C	o	v	i	n	g	t	o	n
27.75	44.75	58.58	75.15	84.32	99.63	114.51	126.25	141.85

E	X	I	T	⇩	O	N	L	Y
24.58	35.88	48.65	53.18	74.00	118.00	131.03	143.68	153.32



9″ RADIUS, 2″ BORDER, WHITE ON GREEN SIGN
"JUNCTION" AND "1½ Miles" E

J	U	N	C	T	I	O	N
23.48	33.56	44.10	54.65	63.99	73.40	77.69	88.55

1	1/2	M	I	L	E	S
22.05	30.37	65.07	76.87	81.17	90.57	99.98

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED MJH
CHECKED KAE

SIGN FABRICATION DETAILS - OH-20

SB I-71 - STA 151+66

HAM-71-1.97

195
292

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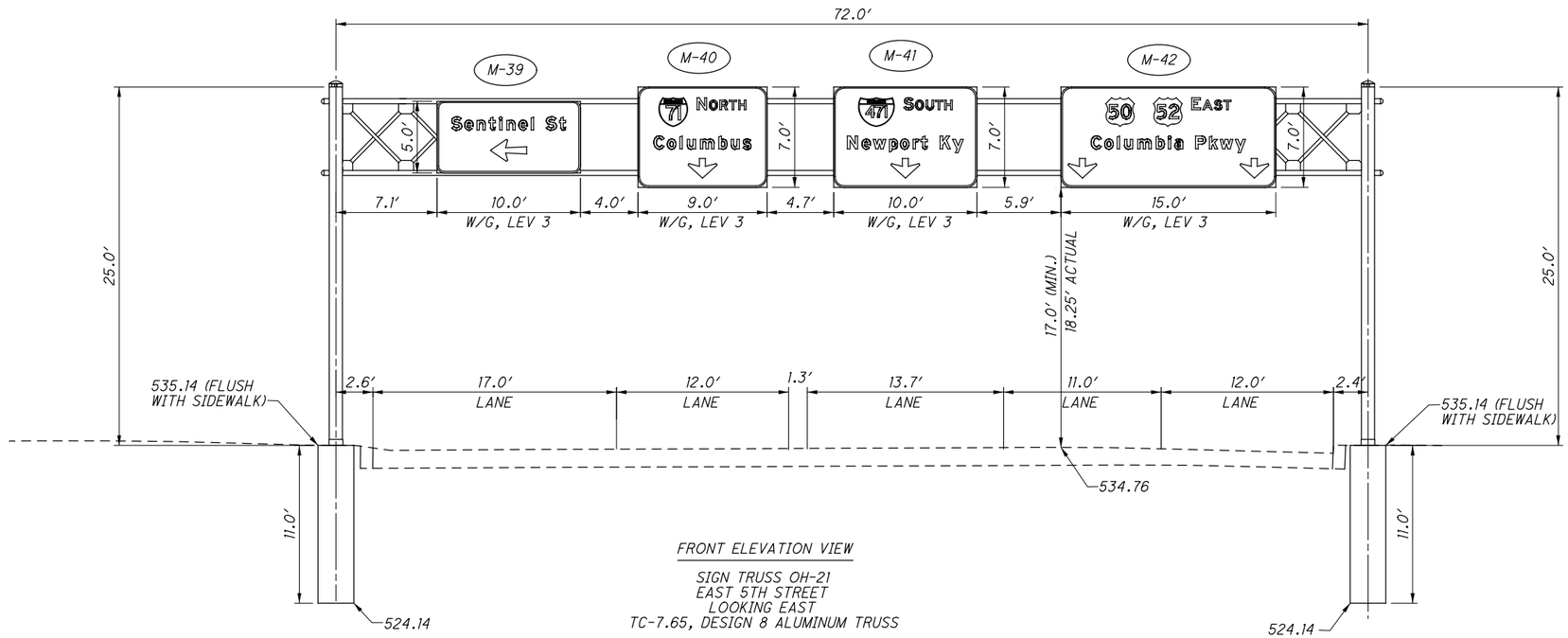
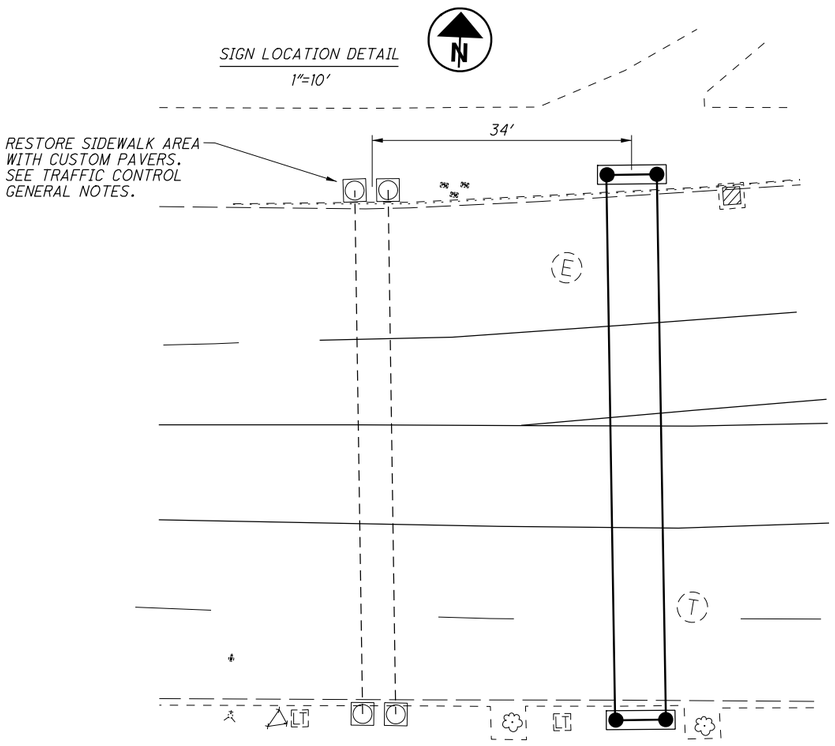


FRONT ELEVATION VIEW

SIGN TRUSS OH-21
EAST 5TH STREET
LOOKING EAST
TC-7.65, DESIGN 8 ALUMINUM TRUSS



HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED MJH
CHECKED KAE

SIGN TRUSS OH-21
EAST 5TH ST, WEST OF SENTINEL ST

HAM-71-1.97

196
292

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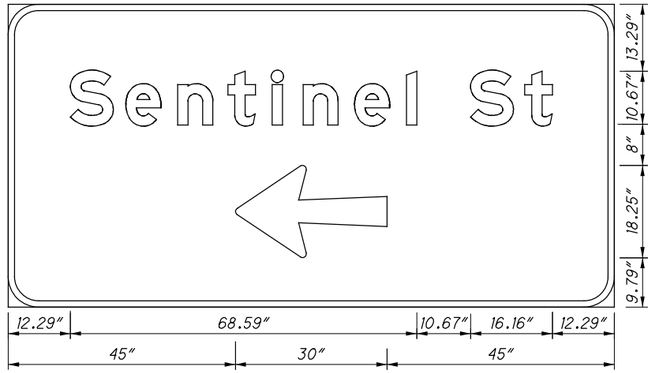
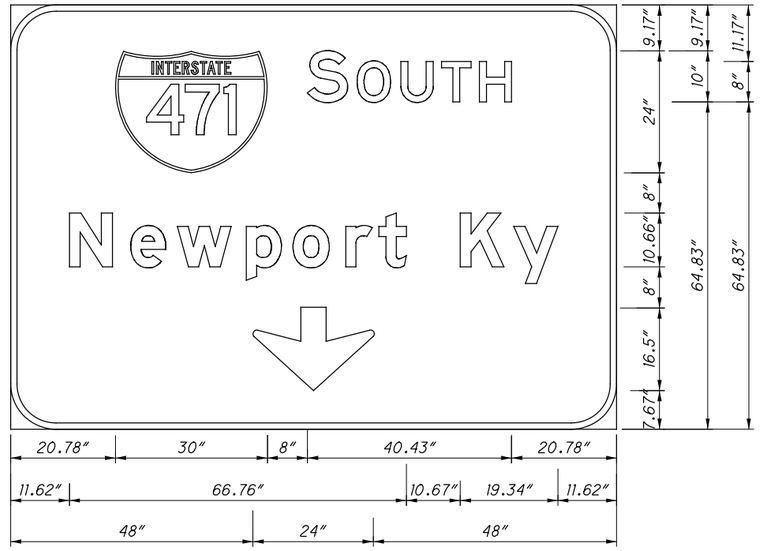


6″ RADIUS, 1.25″ BORDER, WHITE ON GREEN
"Sentinel St" E MOD; ARROW A-3 180°

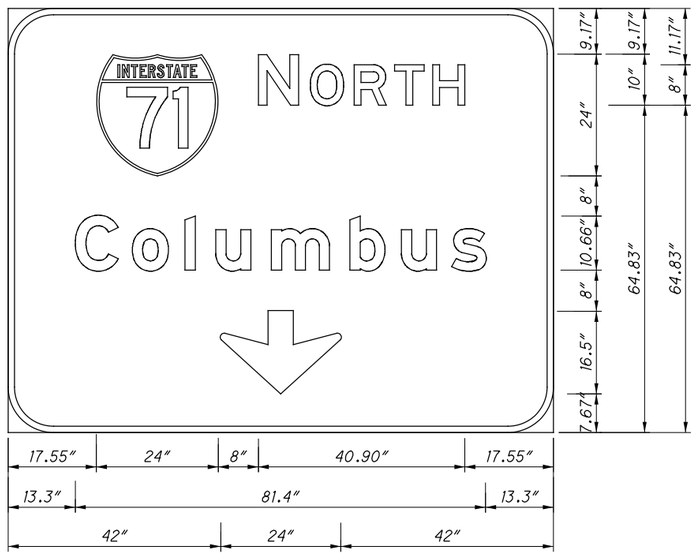
S	e	n	t	i	n	e	l	S	t
12.29	23.27	33.55	43.48	52.25	58.37	68.57	78.85	91.55	102.29



9″ RADIUS, 1.25″ BORDER, WHITE ON GREEN
"SOUTH" E; "Newport Ky" E MOD
DOWN ARROW C-2, 270°

471	S	O	U	T	H
20.78	58.78	66.64	77.30	85.32	92.84

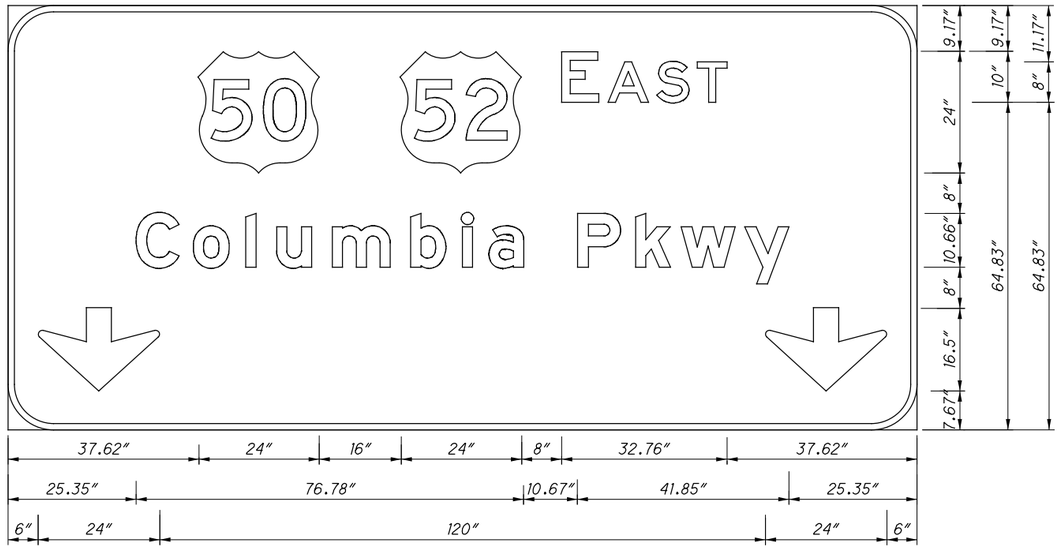
N	e	w	p	o	r	t	K	y
11.62	23.78	33.03	46.69	55.94	66.35	72.95	89.04	99.64



9″ RADIUS, 1.25″ BORDER, WHITE ON GREEN
"NORTH" E; "Columbus" E MOD
DOWN ARROW C-2, 270°

71	N	O	R	T	H
17.55	49.55	59.84	68.53	52.25	84.08

C	o	l	u	m	b	u	s
13.30	24.63	35.03	41.14	52.17	67.71	77.91	87.84



9″ RADIUS, 1.25″ BORDER, WHITE ON GREEN
"EAST" E; "Columbia Pkwy" E MOD
DOWN ARROW C-2, 270°

50	52	E	A	S	T
37.62	77.62	109.62	118.83	128.48	136.50

C	o	l	u	m	b	i	a	P	k	w	y
25.35	36.68	47.08	53.20	64.22	79.76	89.97	95.26	112.80	124.29	133.32	145.91

HORIZONTAL SCALE IN INCHES
0 7.5 15 30

CALCULATED MJH
CHECKED KAE

SIGN FABRICATION DETAILS - OH-21
EAST 5TH ST, WEST OF SENTINEL ST

HAM-71-1.97

197
292

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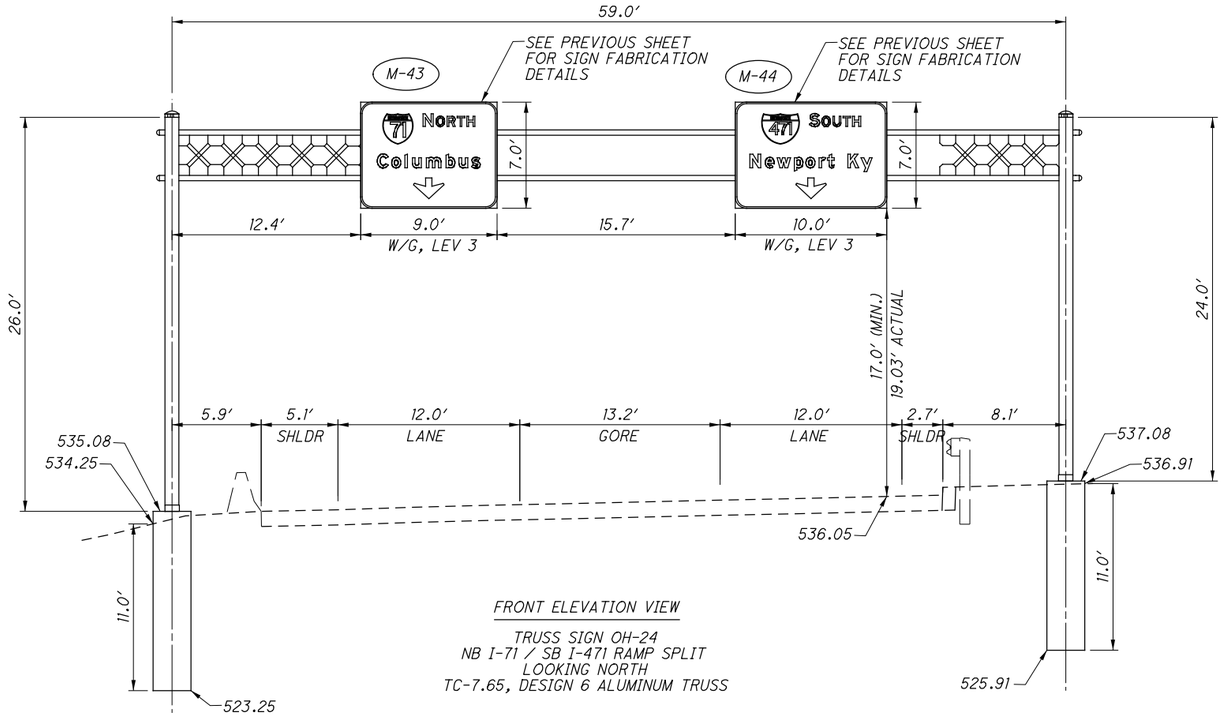

FRONT ELEVATION VIEW

TRUSS SIGN OH-24
NB I-71 / SB I-471 RAMP SPLIT
LOOKING NORTH
TC-7.65, DESIGN 6 ALUMINUM TRUSS

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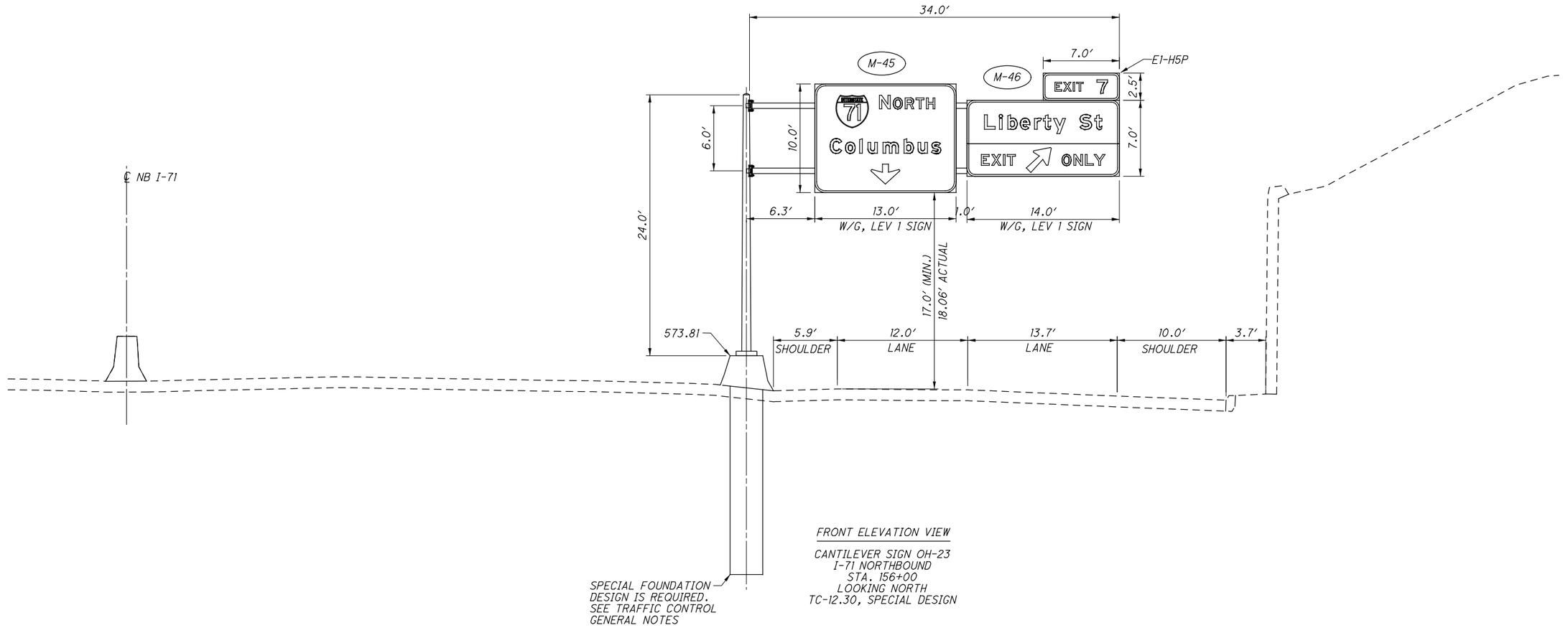
CALCULATED MJH
CHECKED KAE

HORIZONTAL SCALE IN FEET
0 2.5 5 10

TRUSS SIGN OH-22
NB I-71 / SB I-471 RAMP SPLIT

HAM-71-1.97

198
292



FRONT ELEVATION VIEW

CANTILEVER SIGN OH-23
I-71 NORTHBOUND
STA. 156+00
LOOKING NORTH
TC-12.30, SPECIAL DESIGN

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED MJH
CHECKED KAE

CANTILEVER SIGN OH-23
NB I-71 - STA 156+00

HAM-71-1.97

199
292

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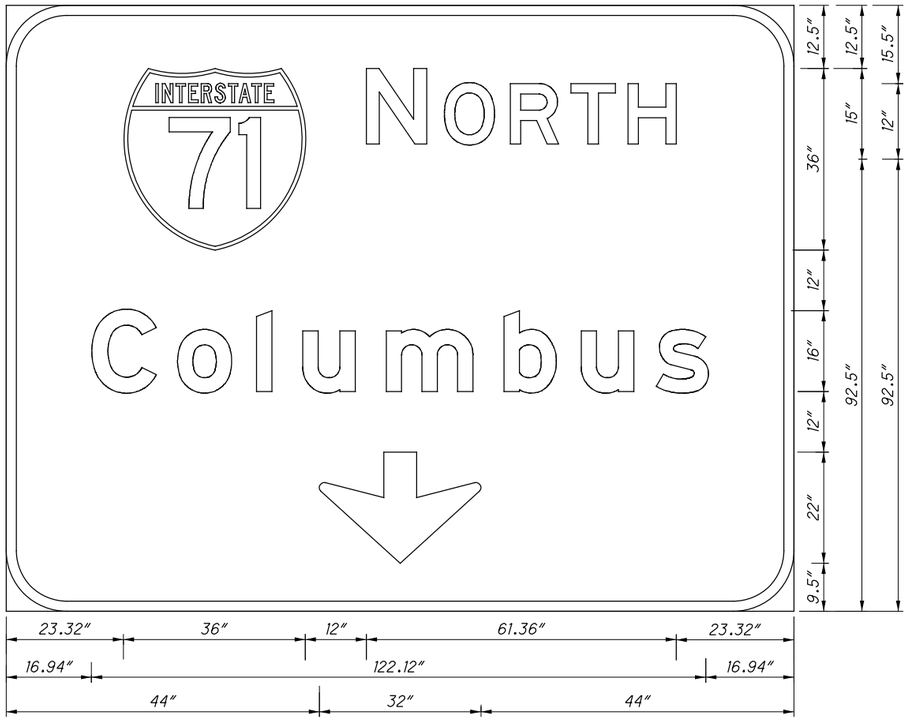
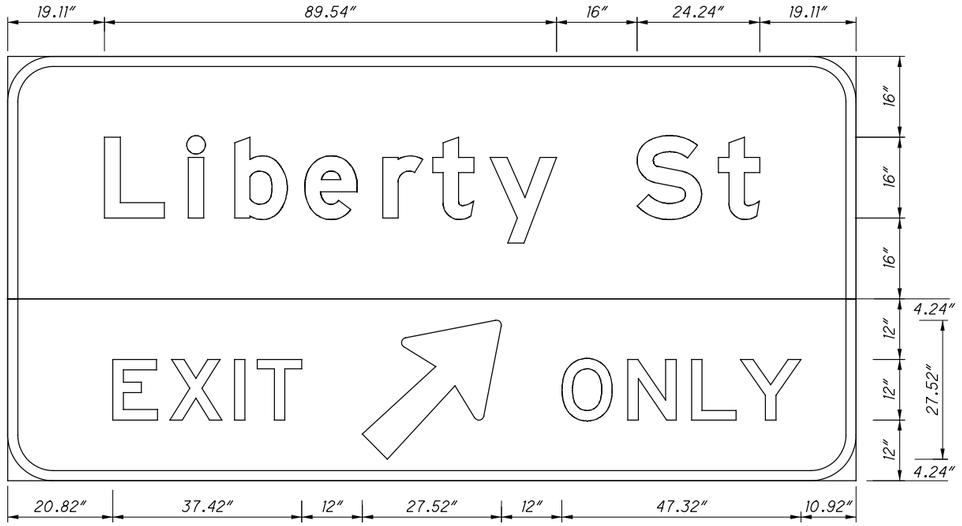


12″ RADIUS, 2″ BORDER, WHITE ON GREEN SIGN
"NORTH" E; "Columbus" E MOD
DOWN ARROW C-1, 270°

71	N	O	R	T	H
23.32	71.32	86.76	99.79	111.83	123.12

C	o	l	u	m	b	u	s
16.94	33.94	49.54	58.71	75.25	98.57	113.87	128.76



9″ RADIUS, 2″ BORDER, WHITE ON GREEN SIGN
"Liberty St" E MOD
BLACK ON YELLOW PANEL
ARROW A-1, 45°, "EXIT" and "ONLY" E

L	i	b	e	r	t	y	S	S
19.11	35.77	44.95	58.83	74.25	84.16	95.54	124.65	140.76

E	X	I	T	⇗	O	N	L	Y
20.82	32.10	44.89	49.42	70.24	109.76	122.79	135.45	145.08

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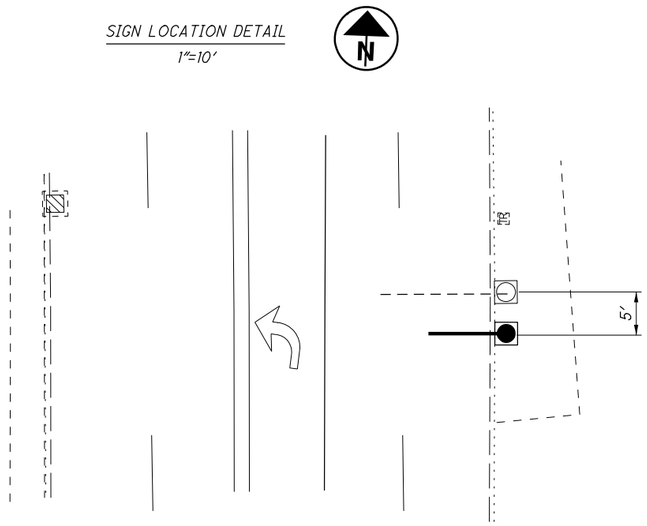
HORIZONTAL SCALE IN FEET
0 2.5 5 10

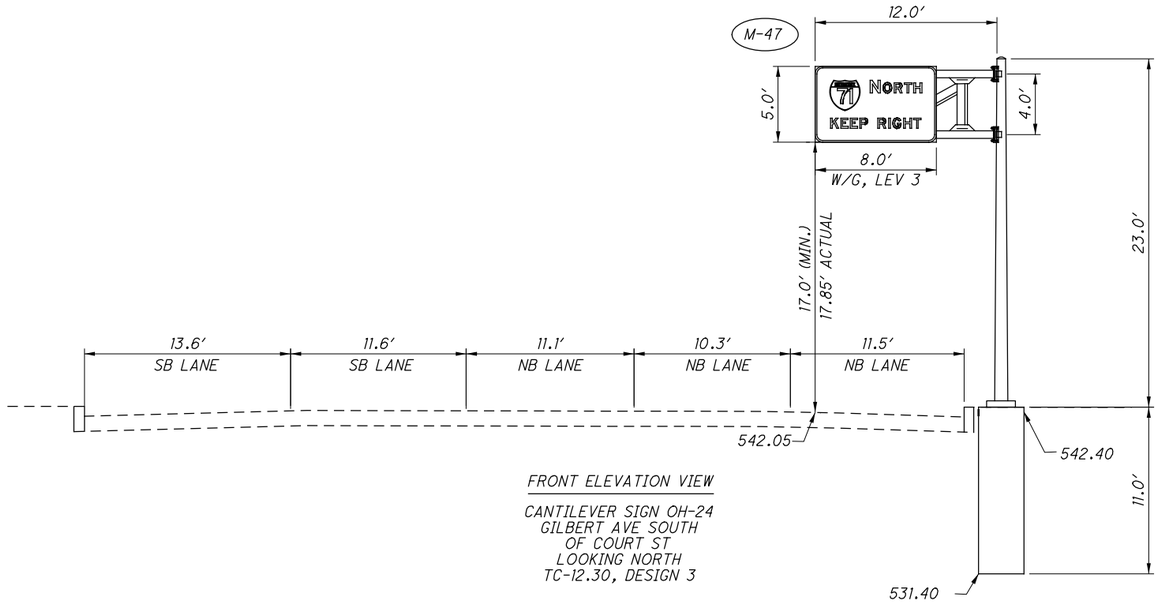
CALCULATED MJH
CHECKED KAE

SIGN FABRICATION DETAILS - OH-23
NB I-71 - STA 156+00

HAM-71-1.97

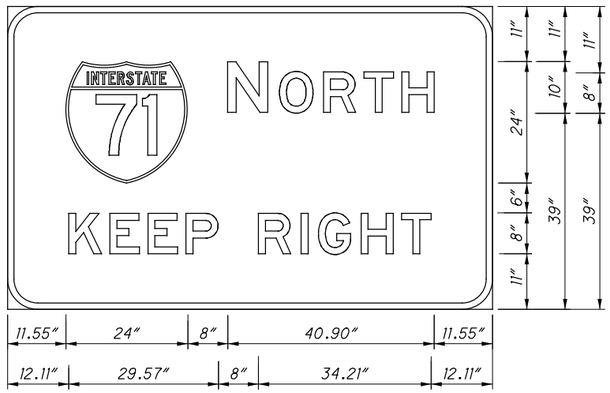
200
292





FRONT ELEVATION VIEW

CANTILEVER SIGN OH-24
GILBERT AVE SOUTH
OF COURT ST
LOOKING NORTH
TC-12.30, DESIGN 3



6" RADIUS, 1.25" BORDER, WHITE ON GREEN
"NORTH" AND "KEEP RIGHT" E MOD

	N	O	R	T	H
11.55	43.78	53.84	62.53	70.56	78.08

K	E	E	P	R	I	G	H	T
12.11	20.26	27.78	35.30	49.68	58.12	61.55	69.99	78.01

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED M.JH
CHECKED KAE

CANTILEVER SIGN OH-24
GILBERT AVE SOUTH OF COURT ST

HAM-71-1.97

201
292

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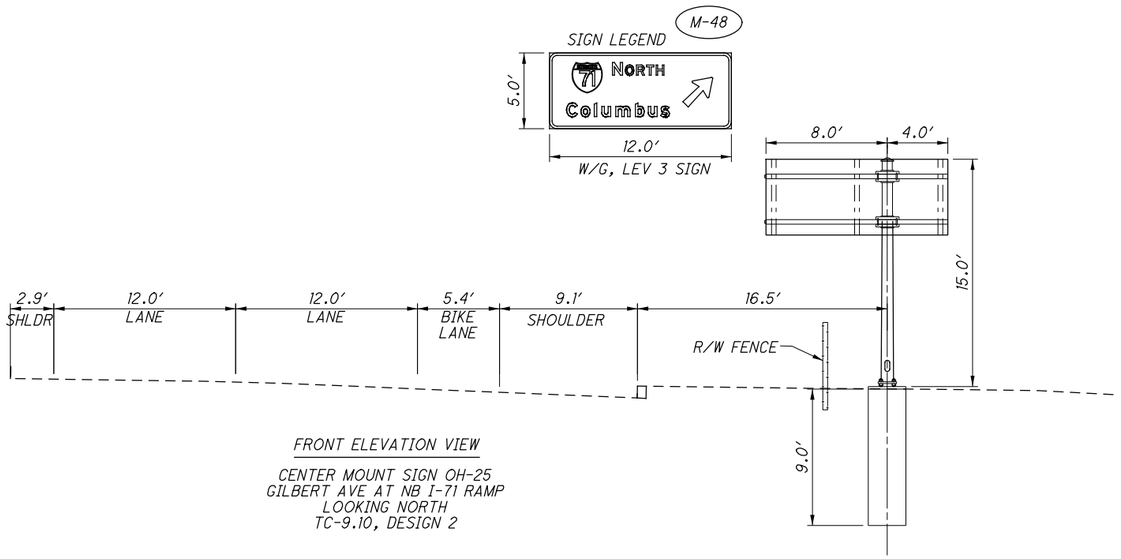
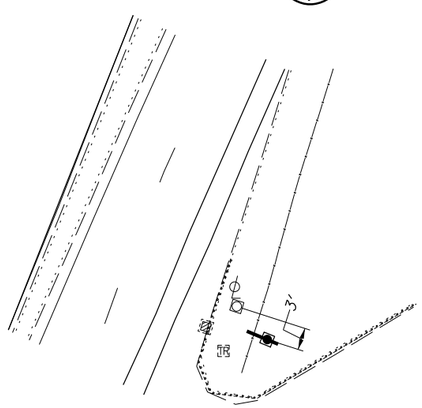
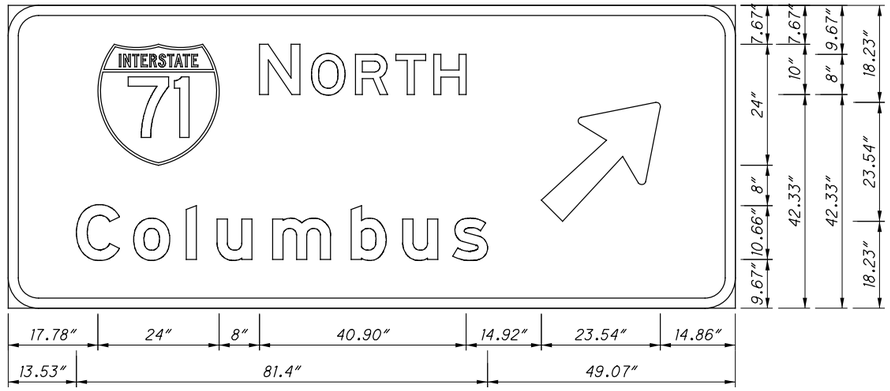


FRONT ELEVATION VIEW

CENTER MOUNT SIGN OH-25
GILBERT AVE AT NB I-71 RAMP
LOOKING NORTH
TC-9.10, DESIGN 2

SIGN PLACEMENT DETAIL





6″ RADIUS, 1.25″ BORDER, WHITE ON GREEN SIGN
"NORTH" E; "Columbus" E MOD
ARROW A-3, 45°

71	N	O	R	T	H
17.78	49.78	60.07	68.76	76.79	84.31

C	o	l	u	m	b	u	s
13.53	24.86	35.26	41.37	52.40	67.94	78.14	88.07

CENTER MOUNT SIGN OH-25
GILBERT AVE AT NB I-71 RAMP

CALCULATED M.JH
CHECKED KAE

0 2.5 5 10
HORIZONTAL SCALE IN FEET

HAM-71-1.97

202
292

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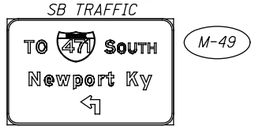
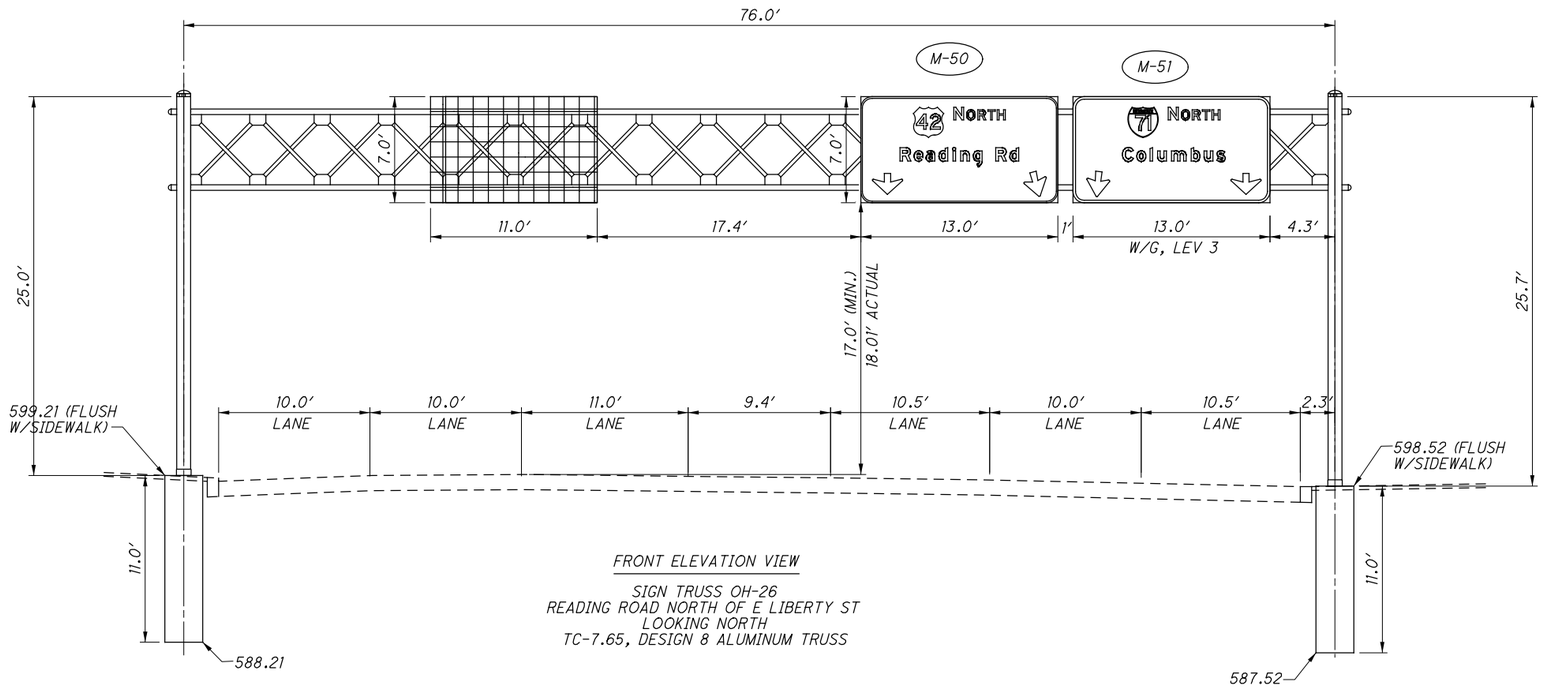
MOUNT SIGN FACING
SB TRAFFIC



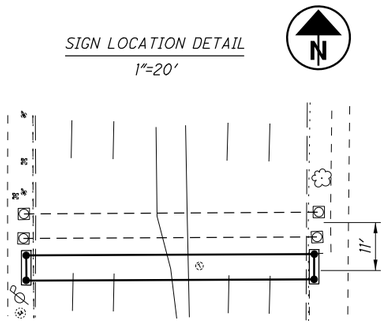
M-49



FRONT ELEVATION VIEW

SIGN TRUSS OH-26
READING ROAD NORTH OF E LIBERTY ST
LOOKING NORTH
TC-7.65, DESIGN 8 ALUMINUM TRUSS

SIGN LOCATION DETAIL
1"=20'



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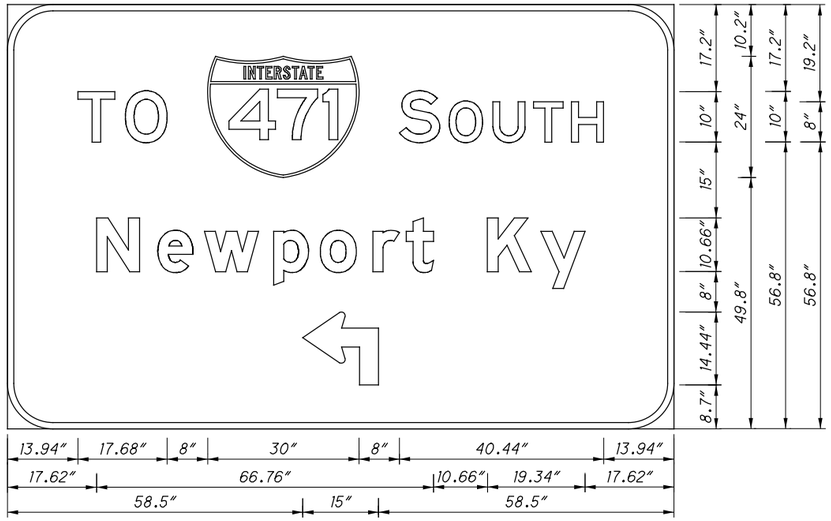
CALCULATED M.JH
CHECKED KAE

HORIZONTAL SCALE IN FEET
0 2.5 5 10

SIGN TRUSS OH-26
READING ROAD NORTH OF E LIBERTY ST

HAM-71-1.97

203
292

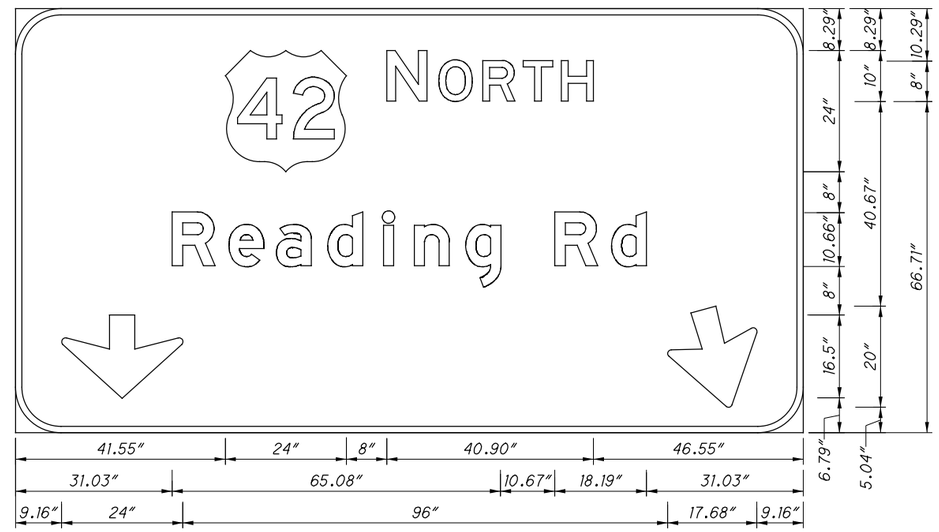


9" RADIUS, 1.25" BORDER, WHITE ON GREEN
"TO" and "SOUTH" E; "Newport Ky" E MOD
ADVANCED TURN ARROW, 90°

T	O	71	S	O	U	T	H
13.94	23.34	39.62	77.62	87.45	96.14	104.16	111.69

N	e	w	p	o	r	t	K	y
17.62	29.78	39.03	52.69	61.94	72.35	78.95	95.04	105.64

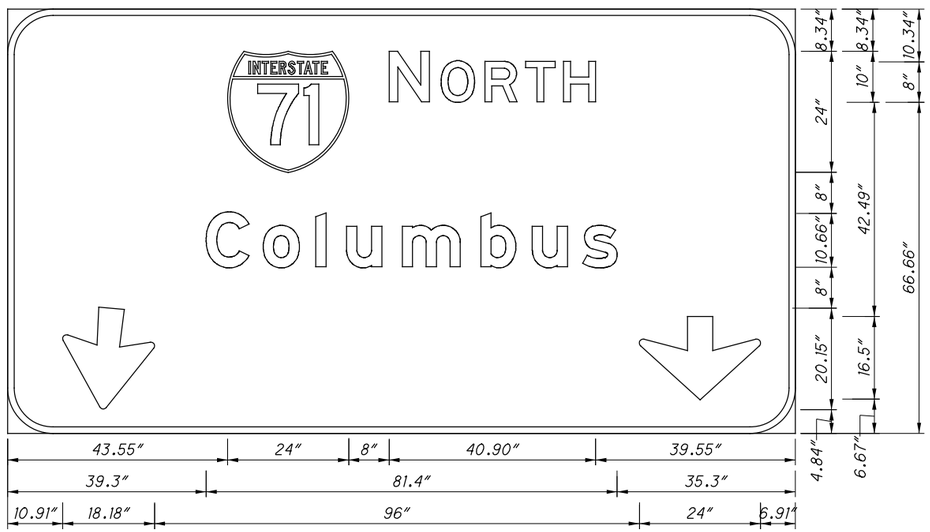
58.50



9" RADIUS, 1.25" BORDER, WHITE ON GREEN
"NORTH" E; "Reading Rd" E MOD
DOWN ARROW C-3, 270°; ARROW B-3, 290°

42	N	O	R	T	H
41.55	73.55	83.84	92.53	100.56	108.08

R	e	a	d	i	n	g	R	d
31.03	42.29	51.70	61.84	72.86	79.98	89.18	106.78	118.04



9" RADIUS, 1.25" BORDER, WHITE ON GREEN
"NORTH" E; "Columbus" E MOD
DOWN ARROW B-3, 250°; C-3, 270°

71	N	O	R	T	H
43.55	75.55	85.84	94.53	102.56	110.08

C	o	l	u	m	b	u	s
39.30	50.63	61.03	67.14	78.17	93.71	103.91	113.84

SIGN FABRICATION DETAILS - OH-26
READING ROAD NORTH OF E LIBERTY ST

HAM-71-1.97

CALCULATED MJH
CHECKED KAE

HORIZONTAL SCALE IN FEET
0 2.5 5 10

204
292

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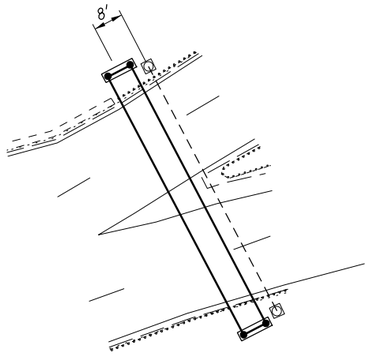
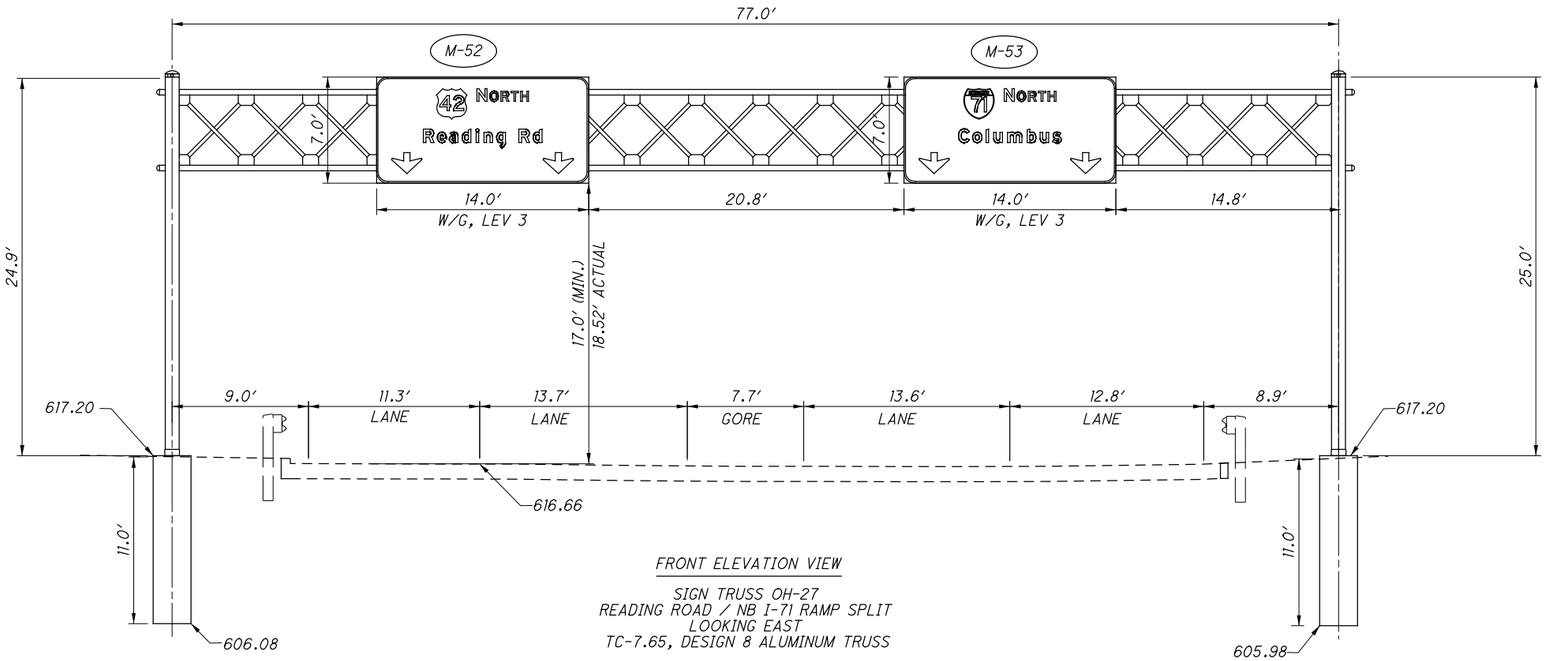
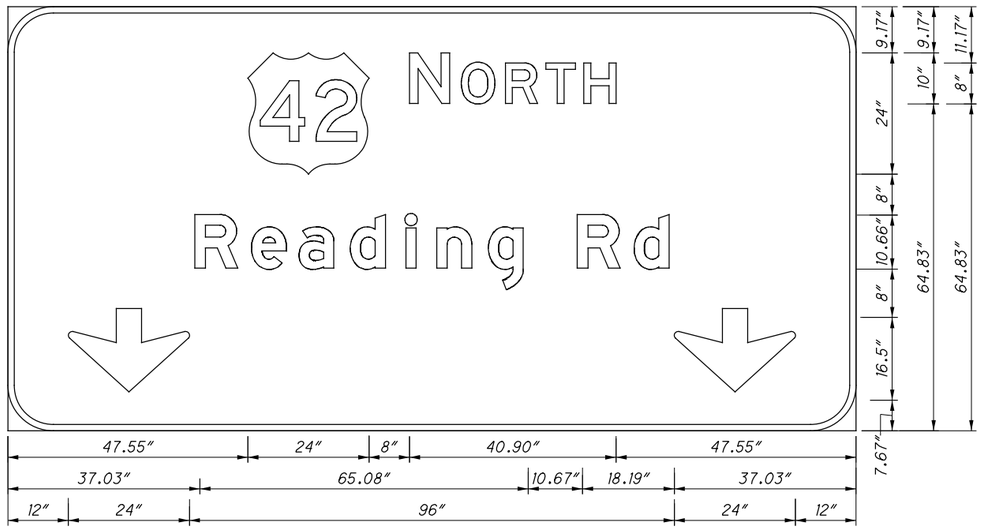
SIGN LOCATION DETAIL
1"=20'





FRONT ELEVATION VIEW

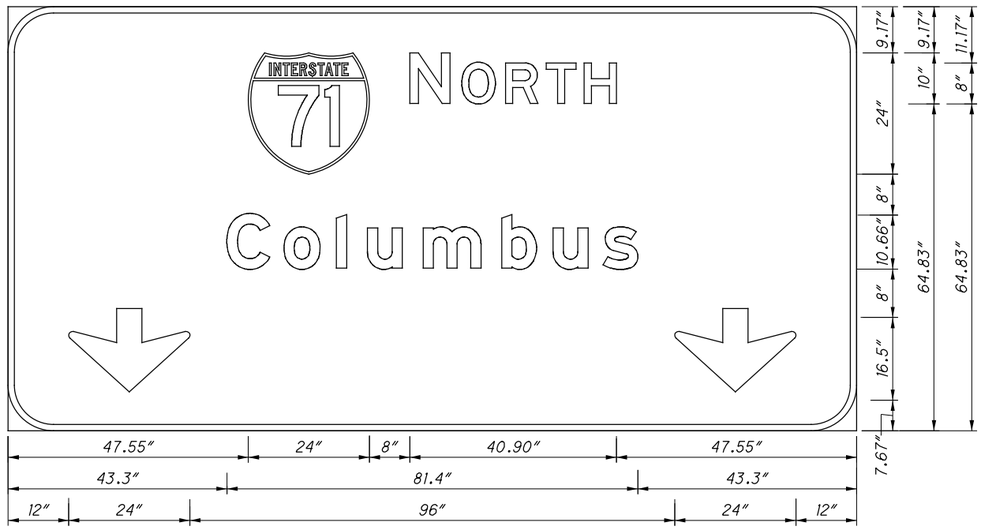
SIGN TRUSS OH-27
READING ROAD / NB I-71 RAMP SPLIT
LOOKING EAST
TC-7.65, DESIGN 8 ALUMINUM TRUSS



9" RADIUS, 1.25" BORDER, WHITE ON GREEN
"NORTH" E; "Reading Rd" E MOD
DOWN ARROW C-3, 270°

42	N	O	R	T	H
47.55	79.55	89.84	98.53	106.56	114.08

R	e	a	d	i	n	g	R	d
37.03	48.29	57.70	67.84	78.86	85.98	95.18	112.78	124.04



9" RADIUS, 1.25" BORDER, WHITE ON GREEN
"NORTH" E; "Columbus" E MOD
DOWN ARROW C-3, 270°

71	N	O	R	T	H
47.55	79.55	89.84	98.53	82.25	114.08

C	o	l	u	m	b	u	s
43.30	54.63	65.03	71.14	82.17	97.71	107.91	117.84

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED MJH
CHECKED KAE

SIGN TRUSS OH-27
READING ROAD / NB I-71 RAMP SPLIT

HAM-71-1.97

205
292

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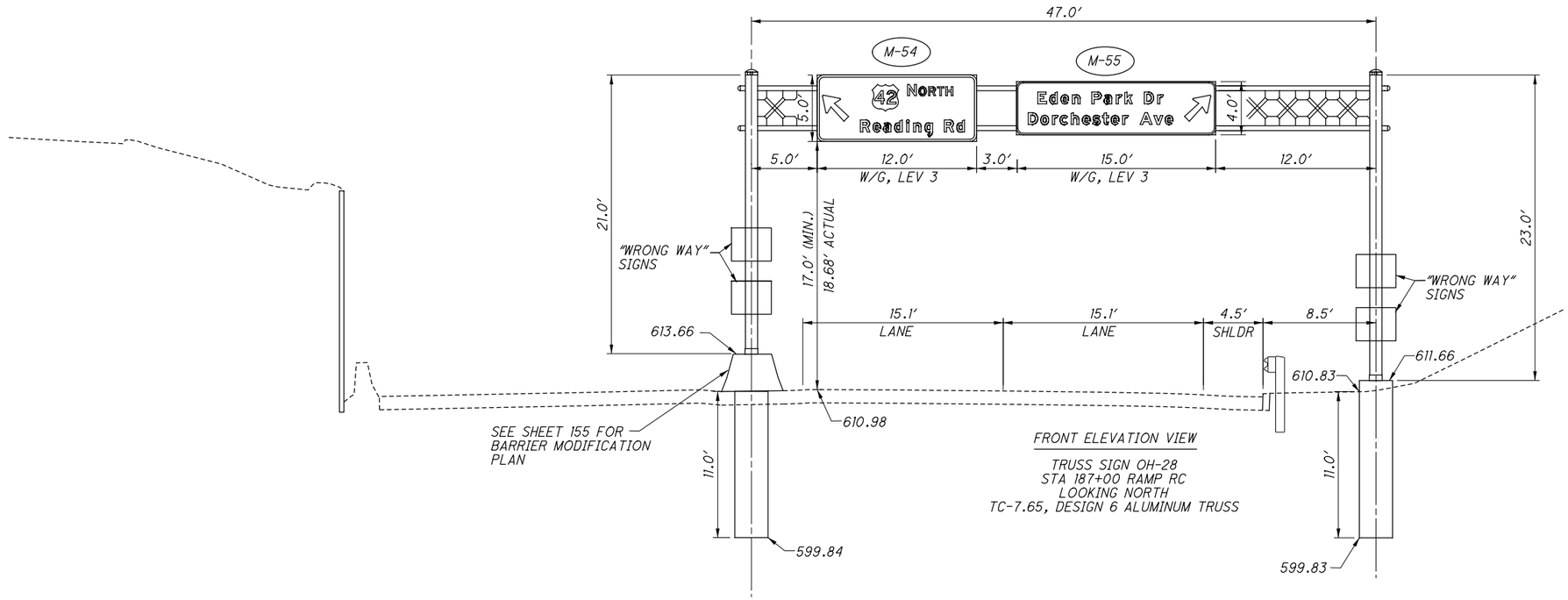
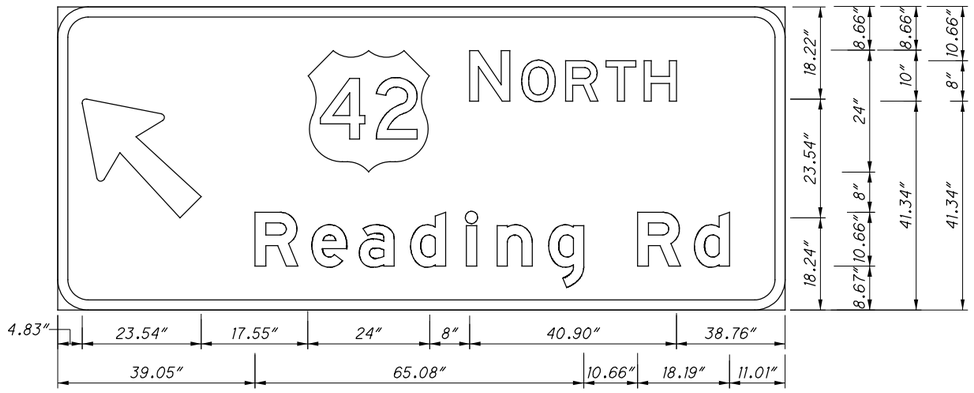


FRONT ELEVATION VIEW

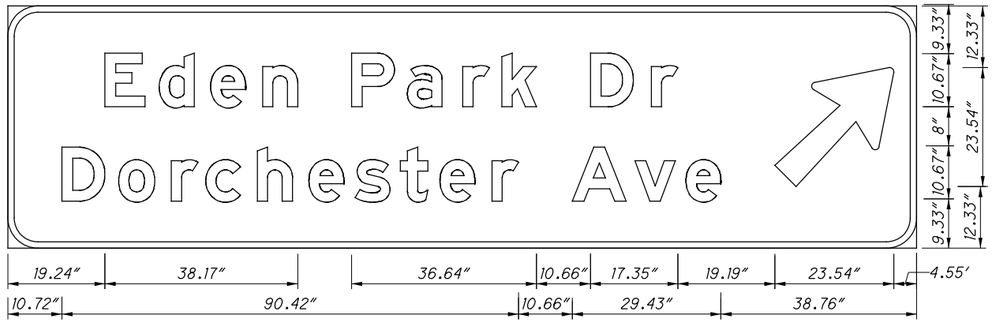
TRUSS SIGN OH-28
STA 187+00 RAMP RC
LOOKING NORTH
TC-7.65, DESIGN 6 ALUMINUM TRUSS



6″ RADIUS, 1.25″ BORDER, WHITE ON GREEN
"NORTH" E; "Reading Rd" E MOD
ARROW A-3, 135°

42	N	O	R	T	H
49.57	81.57	91.86	100.55	108.58	116.10

R	e	a	d	i	n	g	R	d
39.05	50.31	59.72	68.86	80.88	87.00	97.20	114.80	126.06



6″ RADIUS, 1.25″ BORDER, WHITE ON GREEN
"Eden Park Dr" AND "Dorchester Ave" E MOD;
ARROW A-3, 45°

E	d	e	n	P	a	r	k	D	r
19.24	29.99	40.19	50.47	68.07	79.13	90.09	97.84	115.37	127.45

D	o	r	c	h	e	s	t	e	r	A	v	e
10.72	21.98	32.38	39.21	49.43	59.63	68.81	77.77	85.59	95.87	111.81	124.16	134.31

Mark

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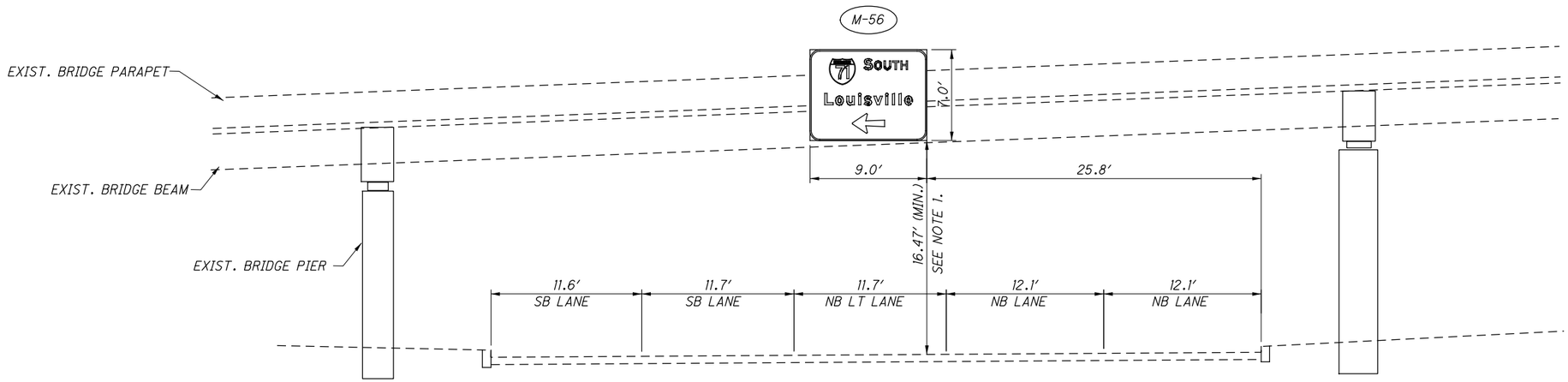
HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED MJH
CHECKED KAE

TRUSS SIGN OH-28
READING RD \ EDEN PARK DR RAMP SPLIT

HAM-71-1.97

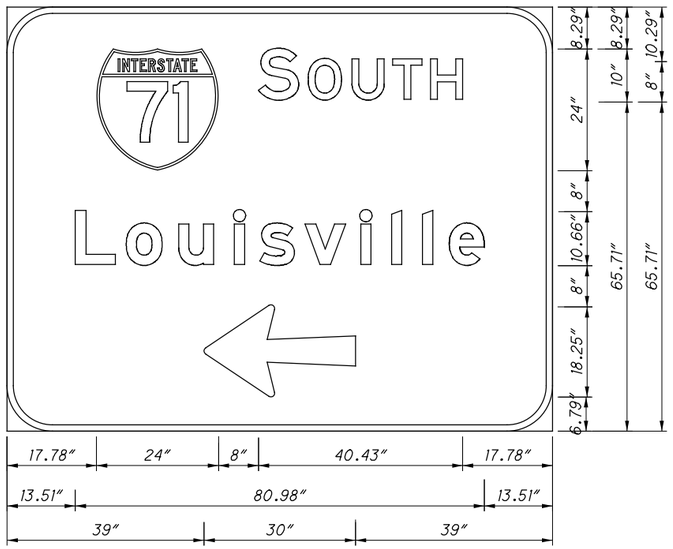
206
292



NOTE:
1) THE GEOMETRY OF THE SIGN ELEVATION VIEW IS BASED ON INFORMATION PROVIDED IN THE ORIGINAL DESIGN PLANS (HAM-71-3.08, DESIGNED IN 1966). THE CONTRACTOR SHALL MOUNT THE SIGN TO ENSURE THAT THE EXISTING VERTICAL CLEARANCE UNDER THE BRIDGE IS NOT REDUCED.

FRONT ELEVATION VIEW

TRUSS SIGN OH-29
EDEN PARK UNDER I-71
LOOKING WEST
TC-18.26, DESIGN 2



9" RADIUS, 1.25" BORDER, WHITE ON GREEN
"SOUTH" E; "Louisville" E MOD
ARROW A-3, 180°

	S	O	U	T	H
17.78	49.78	59.61	68.30	76.32	83.84

L	o	u	i	s	v	i	l	l	e
13.51	23.59	33.99	45.01	50.03	58.98	70.03	76.15	82.26	87.56

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED MJH
CHECKED KAE

TRUSS SIGN OH-29
EDEN PARK DRIVE UNDER I-71

HAM-71-1.97

207
292

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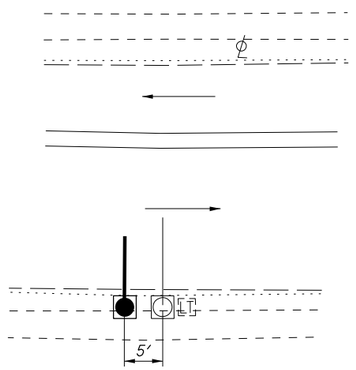
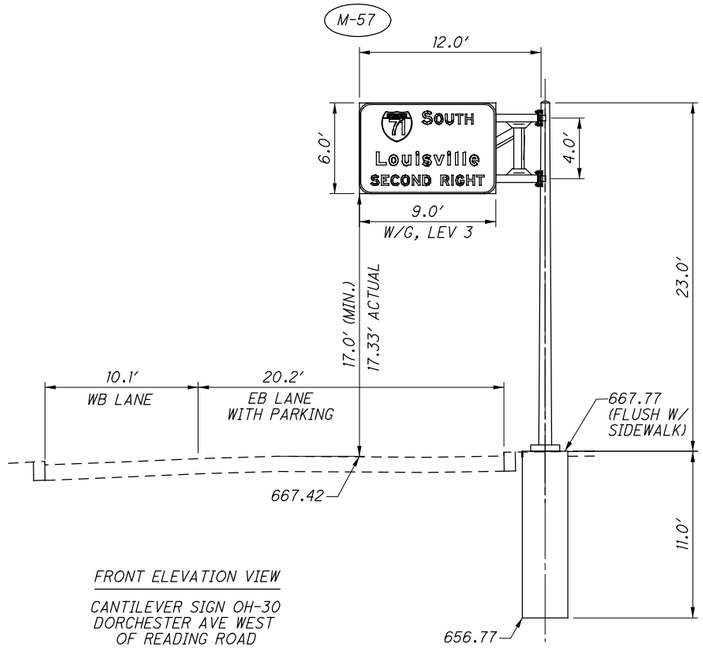
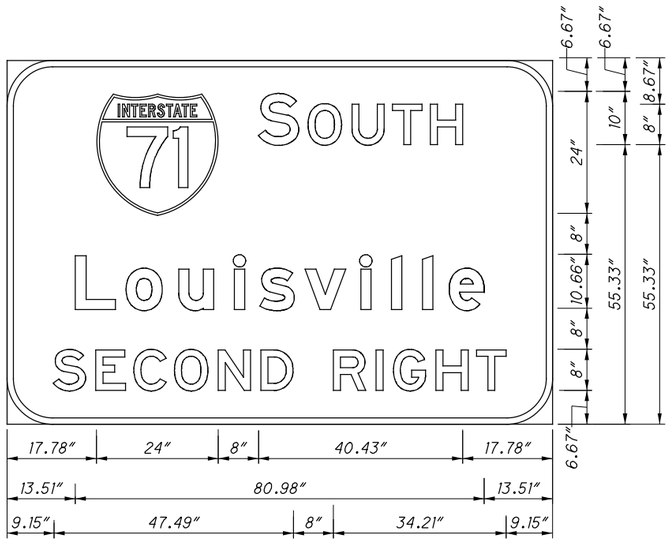
SIGN LOCATION DETAIL
1"=10'





FRONT ELEVATION VIEW

CANTILEVER SIGN OH-30
DORCHESTER AVE WEST
OF READING ROAD
LOOKING EAST
TC-12.30, DESIGN 3



9" RADIUS, 1.25" BORDER, WHITE ON GREEN
"SOUTH" AND "SECOND RIGHT" E; "Louisville" E MOD

17.78	S 49.78	O 59.61	U 68.30	T 76.32	H 83.84

L 13.51	o 23.59	u 33.99	i 45.01	s 50.03	v 58.98	i 70.03	l 76.15	l 82.26	e 87.56

S 9.15	E 17.59	C 25.11	O 33.14	N 41.82	D 50.26	R 64.64	I 73.07	G 76.51	H 84.95	T 92.97

CALCULATED M.JH
CHECKED KAE

0 2.5 5 10
HORIZONTAL SCALE IN FEET

CANTILEVER SIGN OH-30
DORCHESTER AVE WEST OF READING ROAD

HAM-71-1.97

208
292

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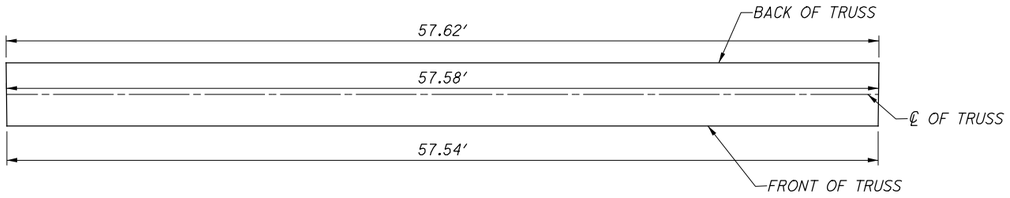
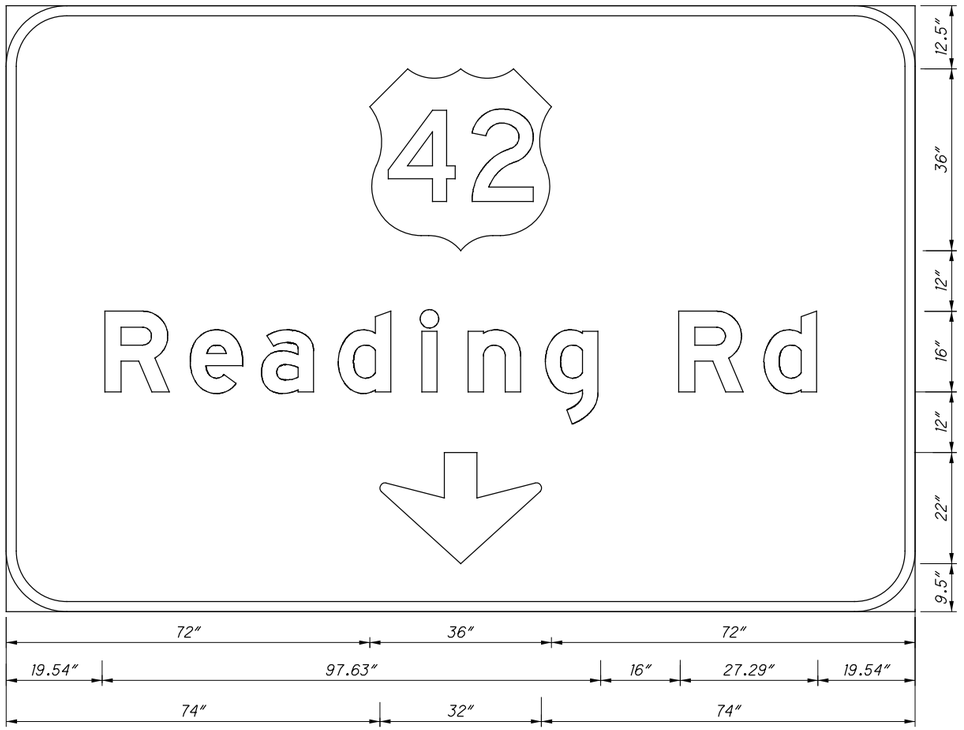
TRUSS GEOMETRY - PLAN VIEW



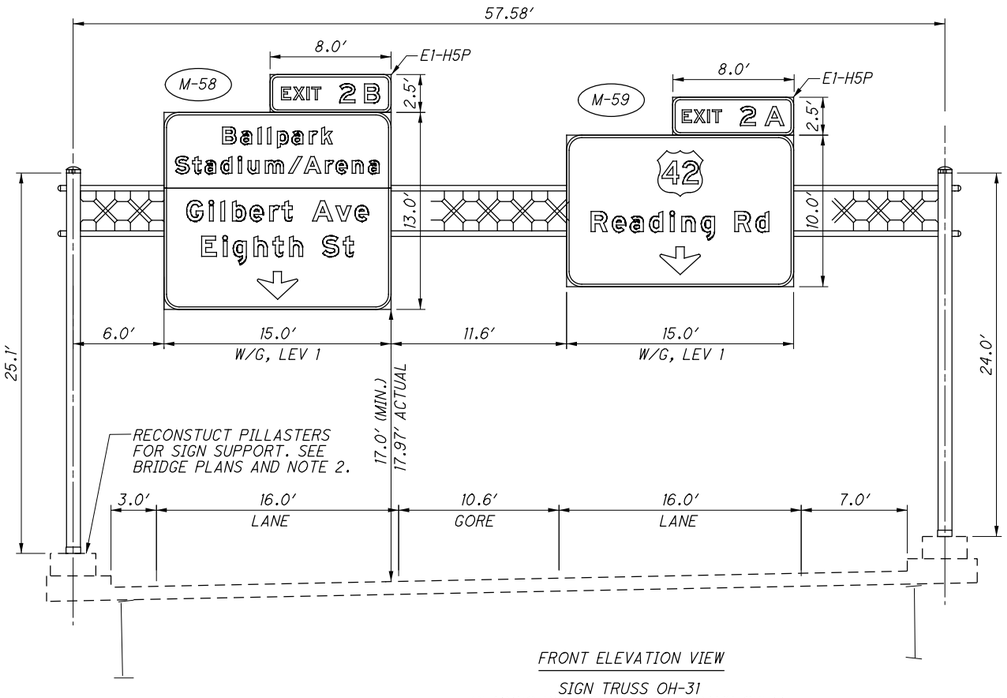
NOTE:
1) THE GEOMETRY OF THE PROPOSED SIGN TRUSS IS BASED ON INFORMATION PROVIDED IN THE ORIGINAL DESIGN PLANS (HAM-71-3.08, DESIGNED IN 1966). THE CONTRACTOR SHALL FIELD VERIFY ALL TRUSS GEOMETRY, SPACING, AND ANCHOR BOLT DIMENSIONS TO ENSURE THE PROPOSED TRUSS WILL FIT WITH THE ANCHOR BOLTS, AS INSTALLED.

2) SIGN MAY BE DOWN FOR A MAXIMUM OF 21 CONSECUTIVE CALENDAR DAYS. SEE MOT PLANS FOR ADDITIONAL INFORMATION.



12″ RADIUS, 2″ BORDER, WHITE ON GREEN SIGN
"Reading Rd" E MOD
DOWN ARROW C-1, 270°

R	e	a	d	i	n	g	R	d
19.54	36.43	50.55	65.76	82.29	91.47	106.77	133.17	150.06



FRONT ELEVATION VIEW

SIGN TRUSS OH-31
READING RD / GILBERT AVE RAMP SPLIT
LOOKING SOUTH
TC-7.65, DESIGN 6 ALUMINUM TRUSS

NOTES FOR SIGN M-58:
1) INSTALL INTERMEDIATE SIGN BRACKETS, PER TC-22.20.

2) SEE SHEET 188 FOR SIGN LAYOUT DETAILS.

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED MJH
CHECKED KAE

SIGN TRUSS OH-31
READING RD / GILBERT AVE RAMP SPLIT

HAM-71-1.97

209
292

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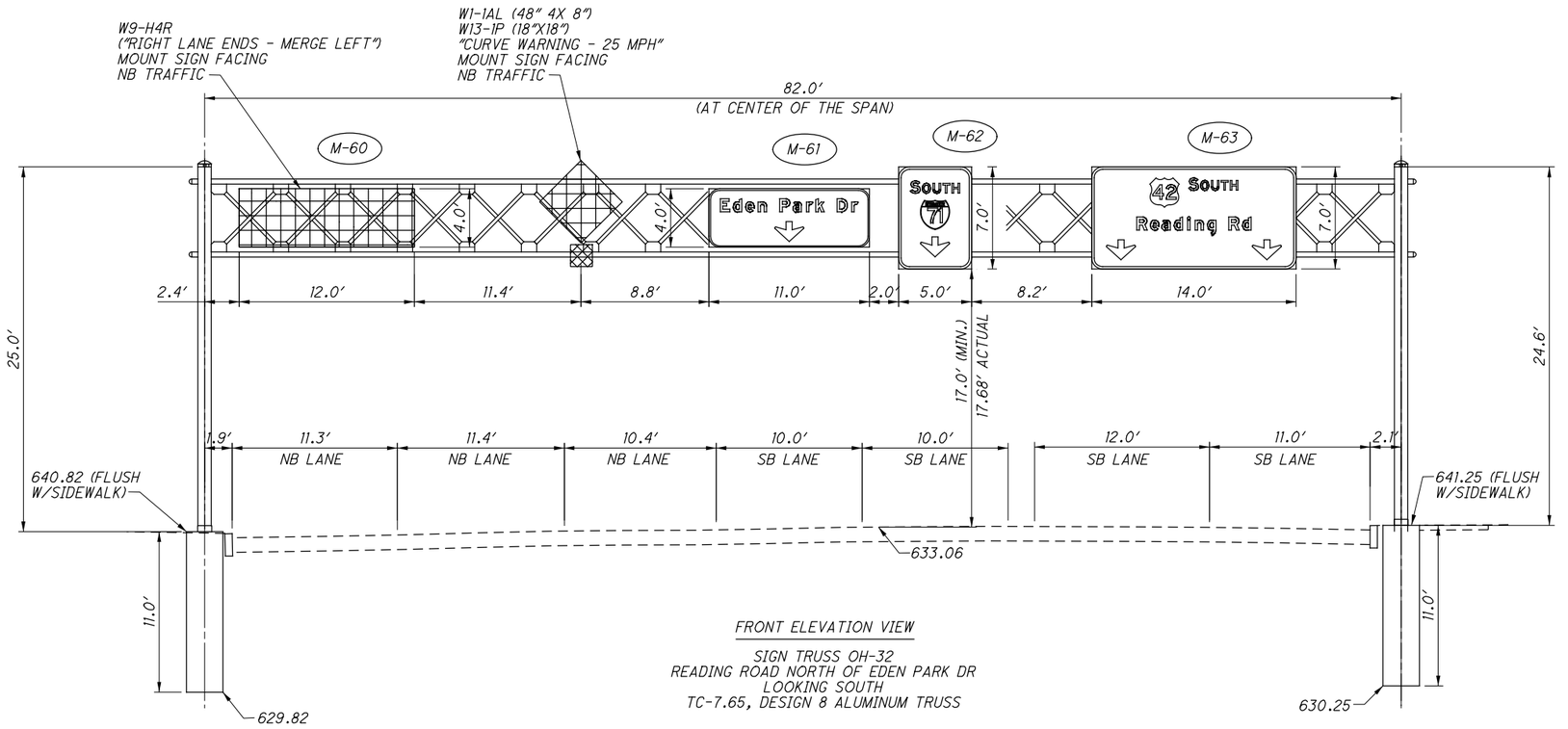
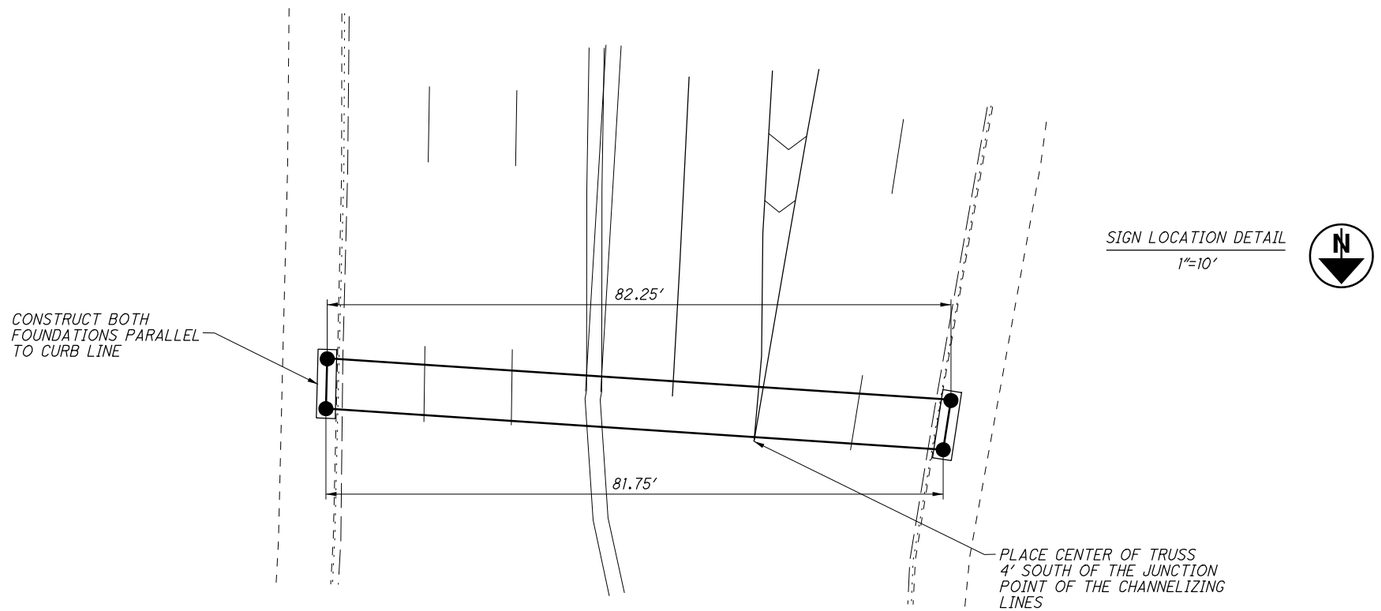


FRONT ELEVATION VIEW

SIGN TRUSS OH-32
READING ROAD NORTH OF EDEN PARK DR
LOOKING SOUTH
TC-7.65, DESIGN 8 ALUMINUM TRUSS



SIGN LOCATION DETAIL

1"=10'

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED MJH
CHECKED KAE

TRUSS SIGN OH-32
SB READING RD, NORTH OF EDEN PARK DR

HAM-71-1.97

210
292

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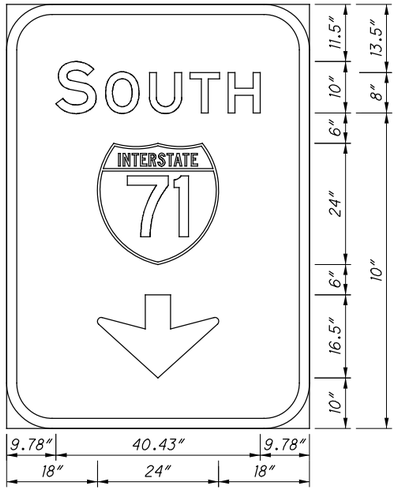
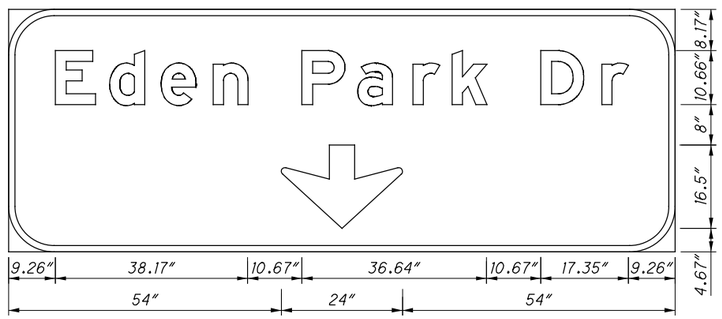


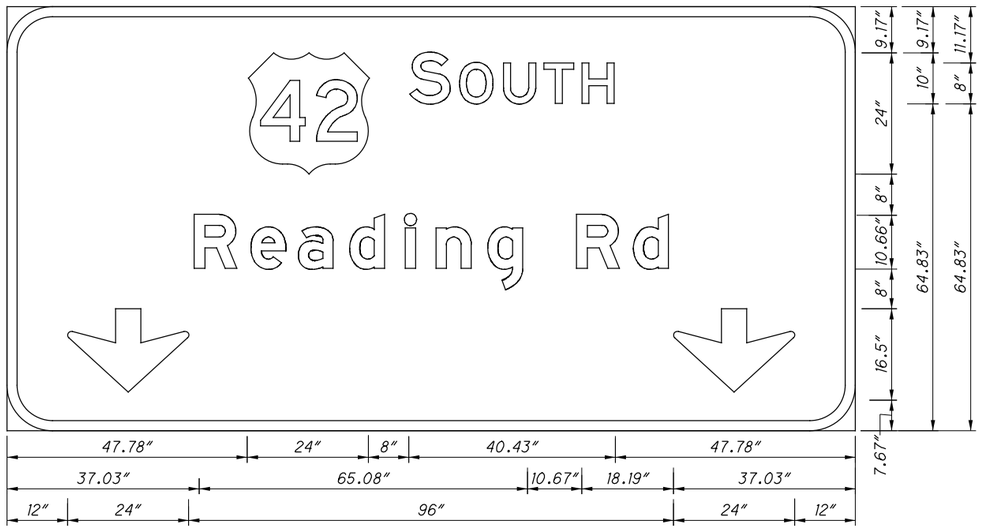
9″ RADIUS, 1.25″ BORDER, WHITE ON GREEN
"SOUTH"; E
DOWN ARROW C-3, 270°

S	O	U	T	H
9.78	19.61	28.30	36.32	43.84



6″ RADIUS, 1.25″ BORDER, WHITE ON GREEN
"Eden Park Dr" E MOD
DOWN ARROW C-3, 270°

E	d	e	n	P	a	r	k	D	r
9.26	20.01	30.21	40.49	58.09	69.15	80.11	87.86	105.39	117.47



9″ RADIUS, 1.25″ BORDER, WHITE ON GREEN
"SOUTH" E; "Reading Rd" E MOD
DOWN ARROW C-3, 270°

42	S	O	U	T	H
47.78	79.78	89.61	98.30	106.32	113.84

R	e	a	d	i	n	g	R	d
37.03	48.29	57.70	67.84	78.86	84.98	95.18	112.78	124.04

SIGN FABRIACATION DETAILS - OH-32
READING RD - NORTH OF EDEN PARK DR

HAM-71-1.97

CALCULATED MJH
CHECKED KAE

HORIZONTAL SCALE IN FEET
0 2.5 5 10

211
292

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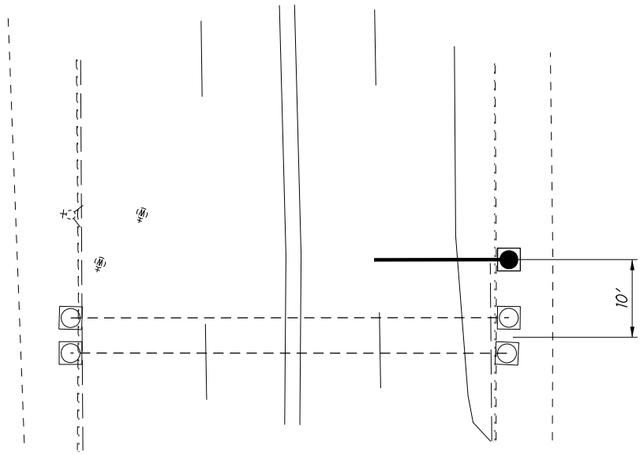
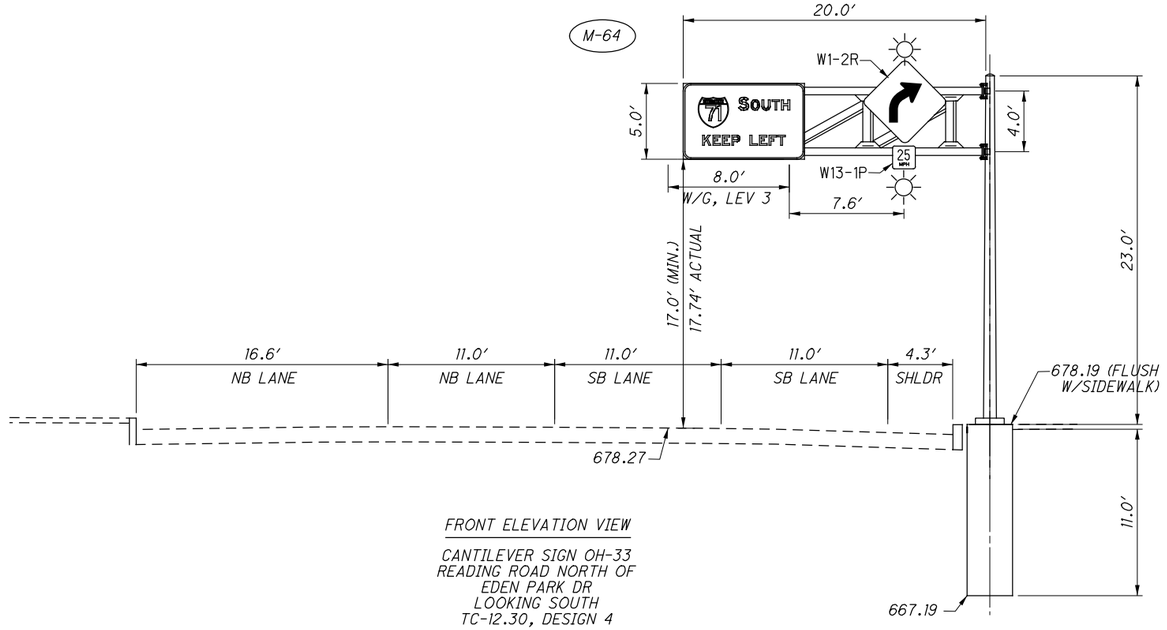
SIGN LOCATION DETAIL

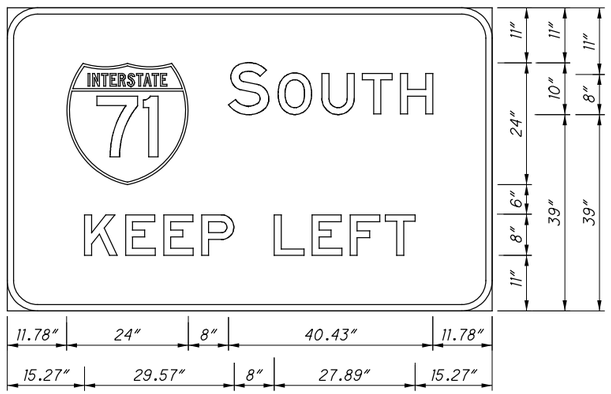
1"=10'





FRONT ELEVATION VIEW

CANTILEVER SIGN OH-33
READING ROAD NORTH OF
EDEN PARK DR
LOOKING SOUTH
TC-12.30, DESIGN 4



6" RADIUS, 1.25" BORDER, WHITE ON GREEN
"SOUTH" AND "KEEP LEFT" E

11.78	S 43.78	O 53.61	U 62.30	T 70.32	H 77.84

K 15.27	E 23.41	E 30.94	P 38.46	L 52.84	E 60.36	F 67.88	T 74.86

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED MJH
CHECKED KAE

CANTILEVER SIGN OH-33
READING ROAD NORTH OF EDEN PARK DR

HAM-71-1.97

212
292

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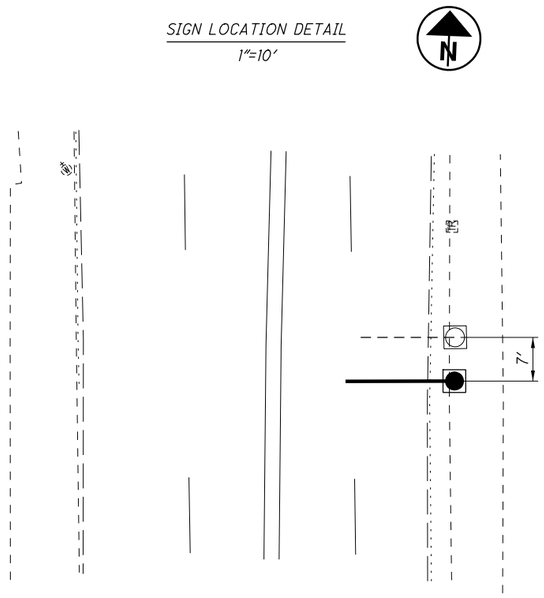
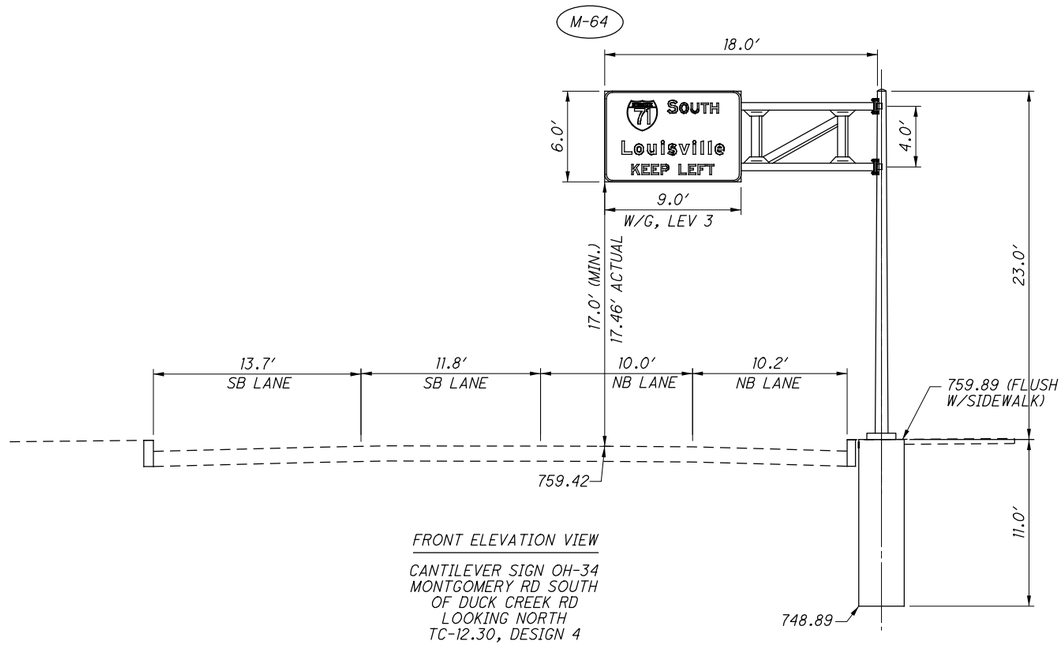
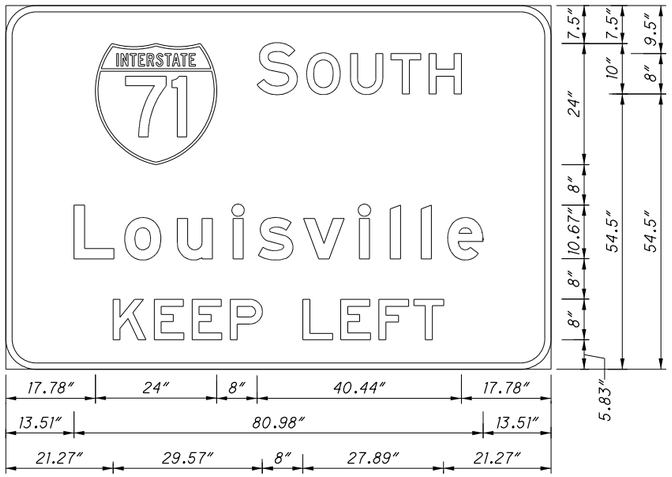
SIGN LOCATION DETAIL
1"=10'





FRONT ELEVATION VIEW

CANTILEVER SIGN OH-34
MONTGOMERY RD SOUTH
OF DUCK CREEK RD
LOOKING NORTH
TC-12.30, DESIGN 4



6" RADIUS, 1.25" BORDER, WHITE ON GREEN
"SOUTH" AND "Louisville" AND "KEEP LEFT" E

71	S	O	U	T	H
17.78	49.78	59.61	68.30	76.32	83.84

L	o	u	i	s	v	i	l	l	e
13.51	23.59	33.99	45.01	50.03	58.98	70.03	76.15	82.26	87.56

K	E	E	P	L	E	F	T
21.27	29.41	36.94	44.46	58.84	66.36	73.88	80.86

0 2.5 5 10
HORIZONTAL SCALE IN FEET

CALCULATED MJH
CHECKED KAE

CANTILEVER SIGN OH-34
MONTGOMERY RD SOUTH OF DUCK CREEK RD

HAM-71-1.97

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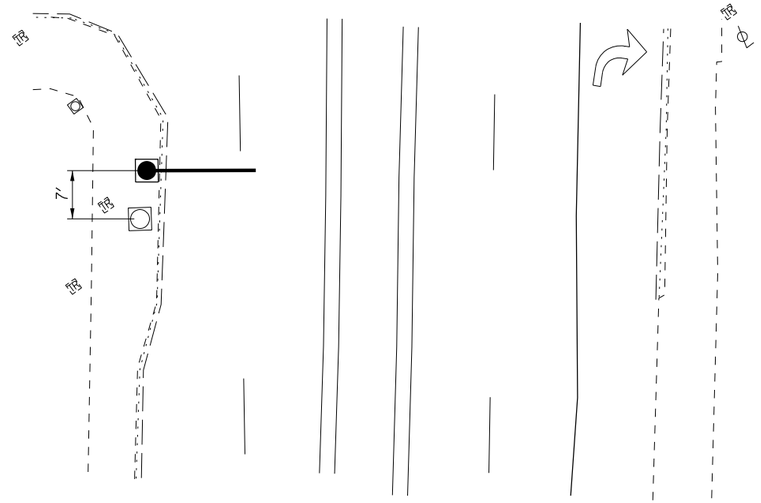
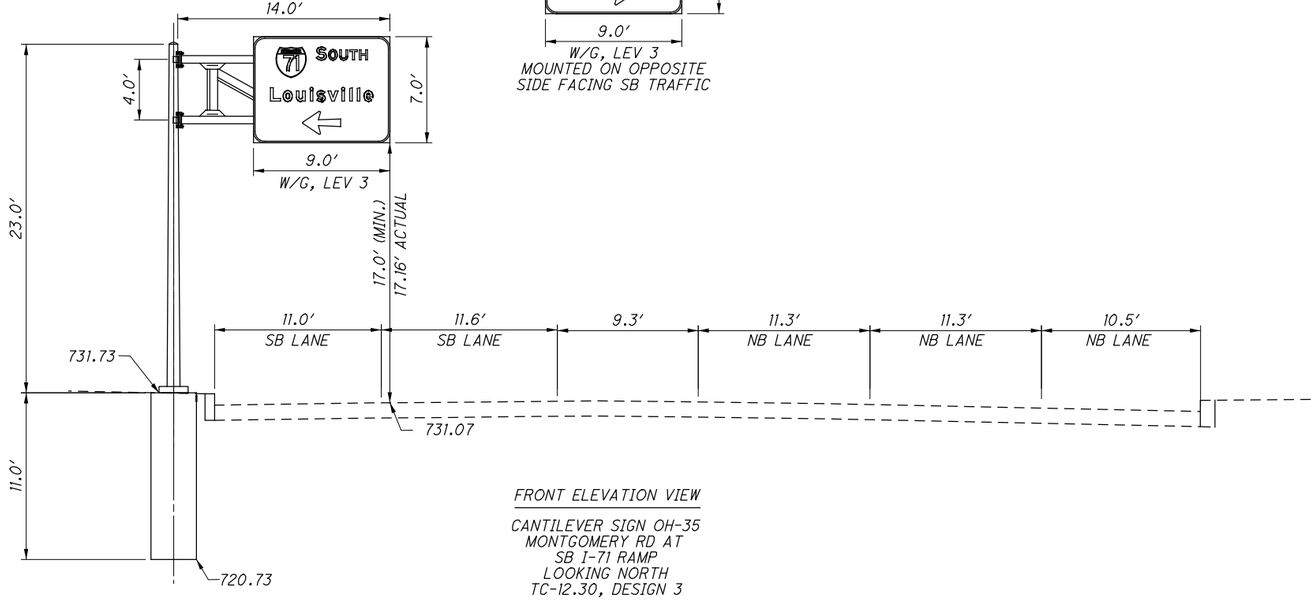
SIGN LOCATION DETAIL
1"=10'

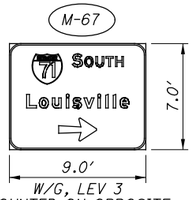




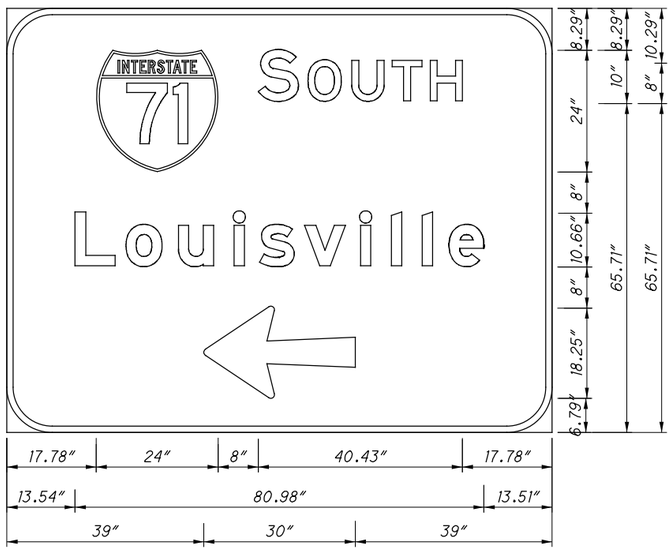
FRONT ELEVATION VIEW

CANTILEVER SIGN OH-35
MONTGOMERY RD AT
SB I-71 RAMP
LOOKING NORTH
TC-12.30, DESIGN 3

M-67



W/G, LEV 3
MOUNTED ON OPPOSITE
SIDE FACING SB TRAFFIC



9" RADIUS, 1.25" BORDER, WHITE ON GREEN
"SOUTH" E; "Louisville" E MOD
ARROW A-3, 180°

17.78	S 49.78	O 59.61	U 68.30	T 76.32	H 83.84

L 13.51	o 23.59	u 33.99	i 45.01	s 50.03	v 58.98	i 70.03	l 76.15	l 82.26	e 87.56

CALCULATED M.JH
CHECKED KAE

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CANTILEVER SIGN OH-35
MONTGOMERY RD AT SB I-71 RAMP

HAM-71-1.97

214
292

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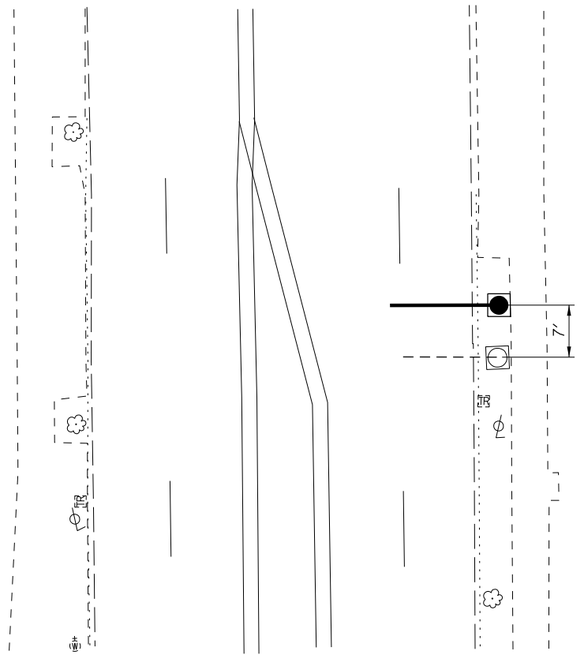
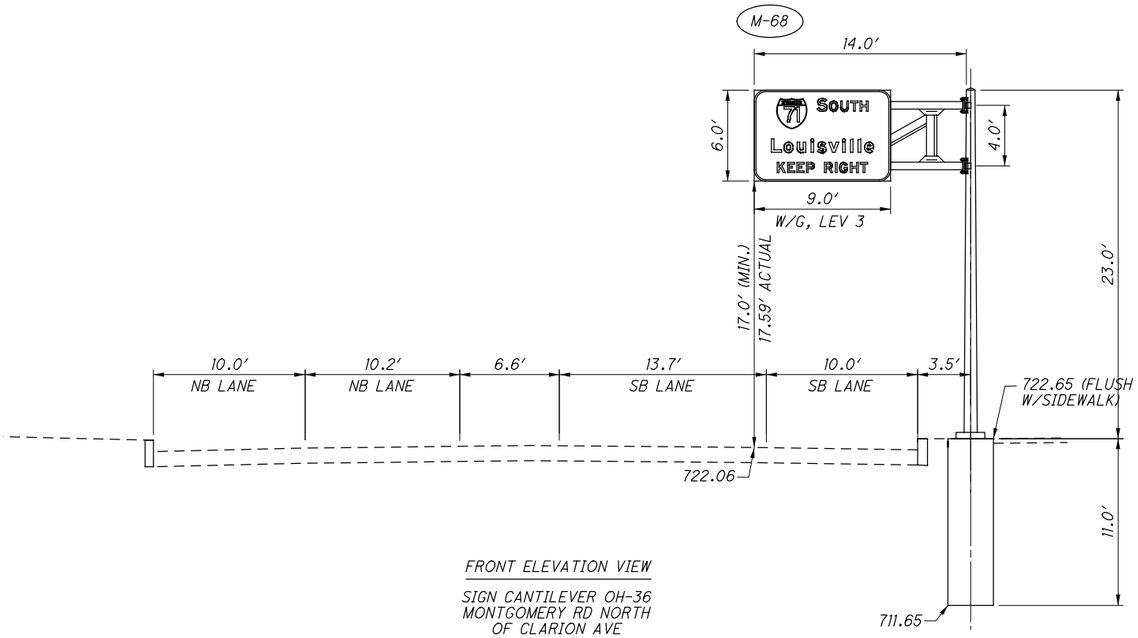
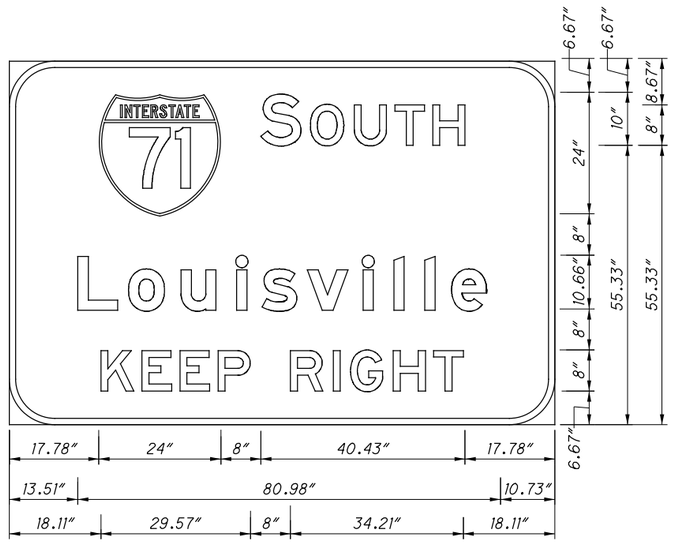
SIGN LOCATION DETAIL
1"=10'





FRONT ELEVATION VIEW

SIGN CANTILEVER OH-36
MONTGOMERY RD NORTH
OF CLARION AVE
LOOKING SOUTH
TC-12.30, DESIGN 3



9" RADIUS, 1.25" BORDER, WHITE ON GREEN
"SOUTH" AND "KEEP RIGHT" E; "Louisville" E MOD

17.78	S 49.78	O 59.61	U 68.30	T 76.32	H 83.84

L 13.51	o 23.59	u 33.99	i 45.01	s 50.03	v 59.98	i 70.03	l 76.15	l 82.26	e 87.56

K 18.11	E 26.26	E 33.78	P 41.30	R 55.68	I 64.12	G 67.55	H 75.99	T 84.01

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED MJH
CHECKED KAE

CANTILEVER SIGN OH-36
MONTGOMERY RD NORTH OF CLARION AVE

HAM-71-1.97

215
292

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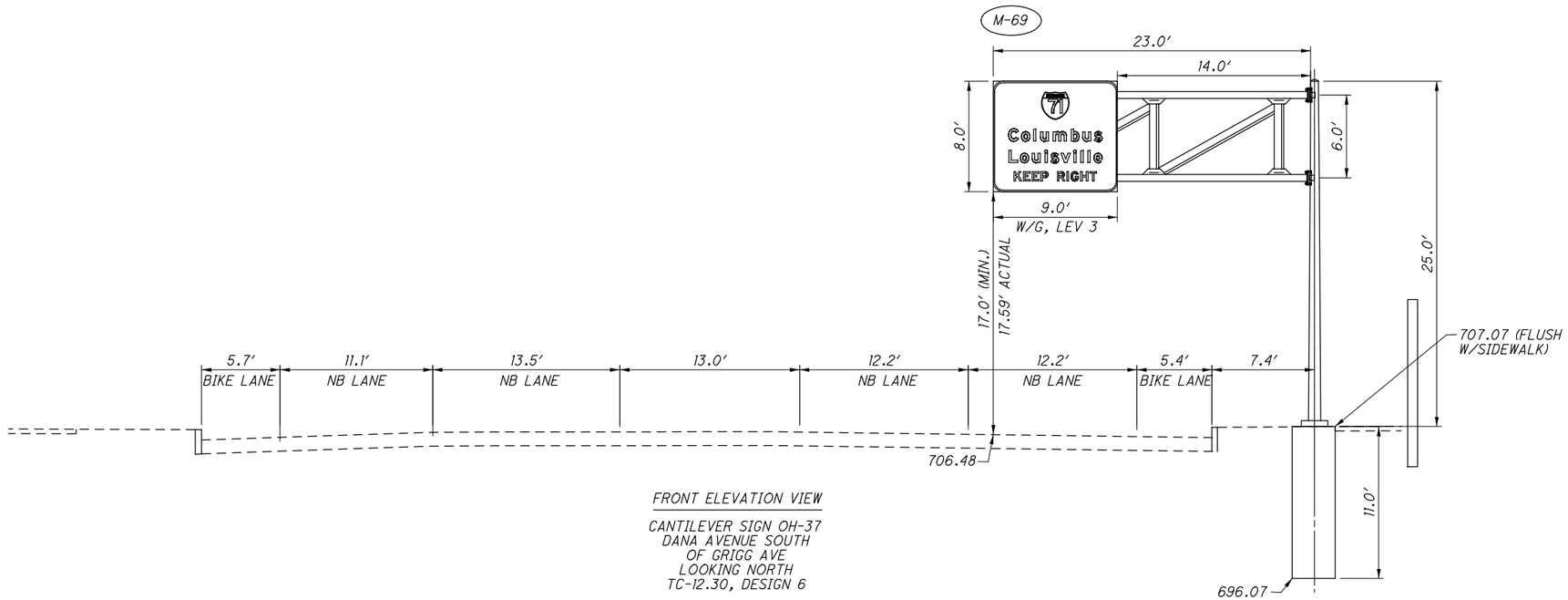

FRONT ELEVATION VIEW

CANTILEVER SIGN OH-37
DANA AVENUE SOUTH
OF GRIGG AVE
LOOKING NORTH
TC-12.30, DESIGN 6



9″ RADIUS, 1.25″ BORDER, WHITE ON GREEN
"KEEP RIGHT" E;
"Columbus" AND "Louisville" E MOD

C	o	l	u	m	b	u	s
13.30	24.63	35.03	41.14	52.17	67.71	77.91	87.84

L	o	u	i	s	v	i	l	l	e
13.51	23.59	33.99	45.01	50.03	59.98	70.03	76.15	82.26	87.56

K	E	E	P	R	I	G	H	T
18.11	26.26	33.78	41.30	55.68	64.12	67.55	75.99	84.01

SIGN LOCATION DETAIL
1″=10′



HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED M.JH
CHECKED KAE

CANTILEVER SIGN OH-37
DANA AVENUE SOUTH OF GRIGG AVE

HAM-71-1.97

216
292

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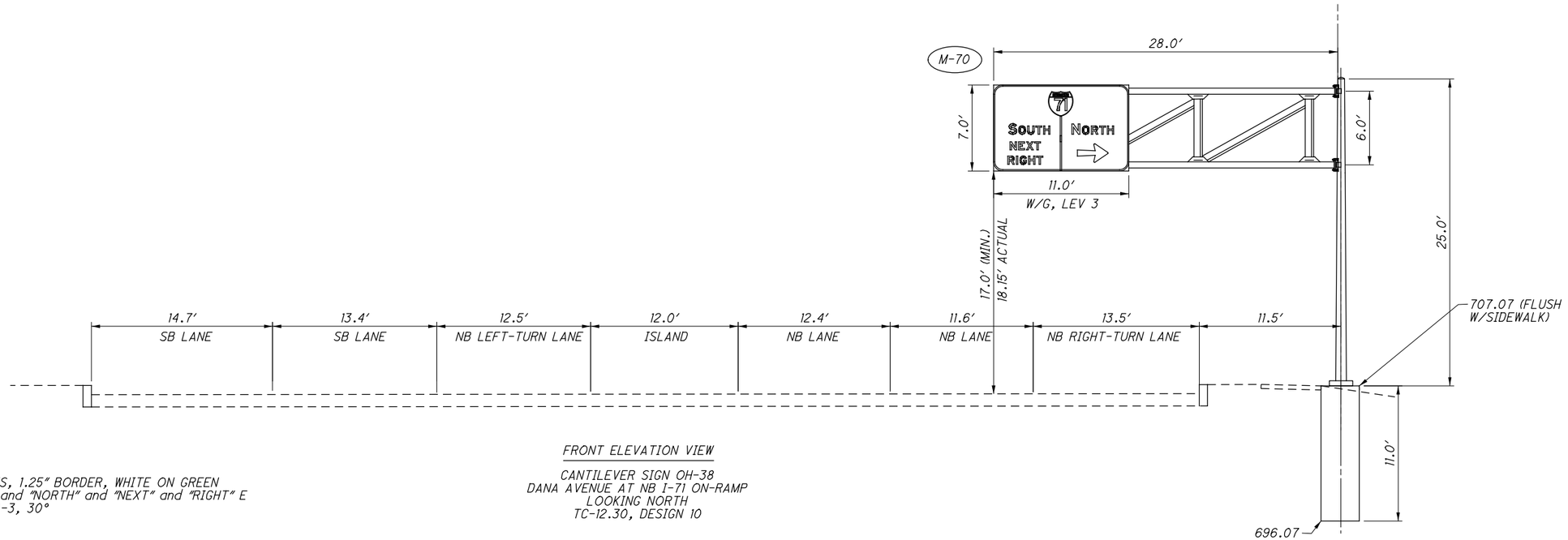


FRONT ELEVATION VIEW

CANTILEVER SIGN OH-38
DANA AVENUE AT NB I-71 ON-RAMP
LOOKING NORTH
TC-12.30, DESIGN 10

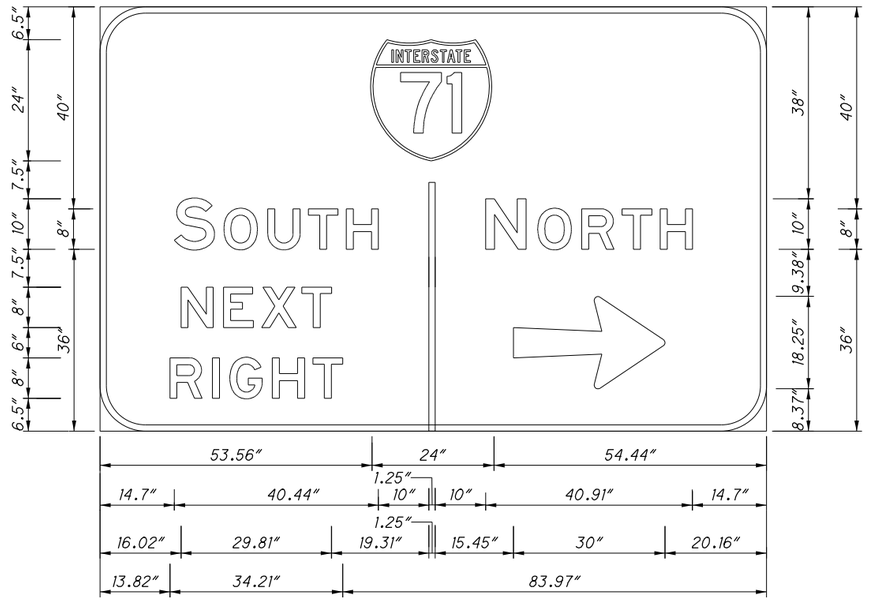
9″ RADIUS, 1.25″ BORDER, WHITE ON GREEN
"SOUTH" and "NORTH" and "NEXT" and "RIGHT" E
ARROW A-3, 30°

53.56

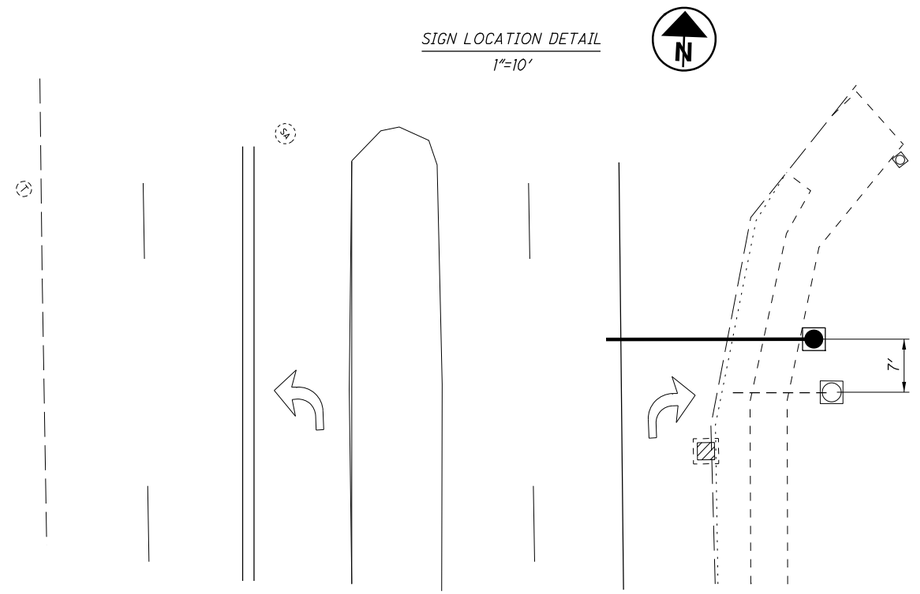
S	O	U	T	H	|	N	O	R	T	H
14.70	24.53	33.21	41.24	48.76	65.14	76.39	86.69	95.37	103.40	110.92

N	E	X	T	|	⇨
16.02	24.45	31.98	39.95	65.14	81.84

R	I	G	H	T
13.82	22.25	25.69	34.13	42.15



SIGN LOCATION DETAIL
1″=10′



HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED MJH
CHECKED KAE

CANTILEVER SIGN OH-38
DANA AVENUE AT NB I-71 ON-RAMP

HAM-71-1.97

217
292

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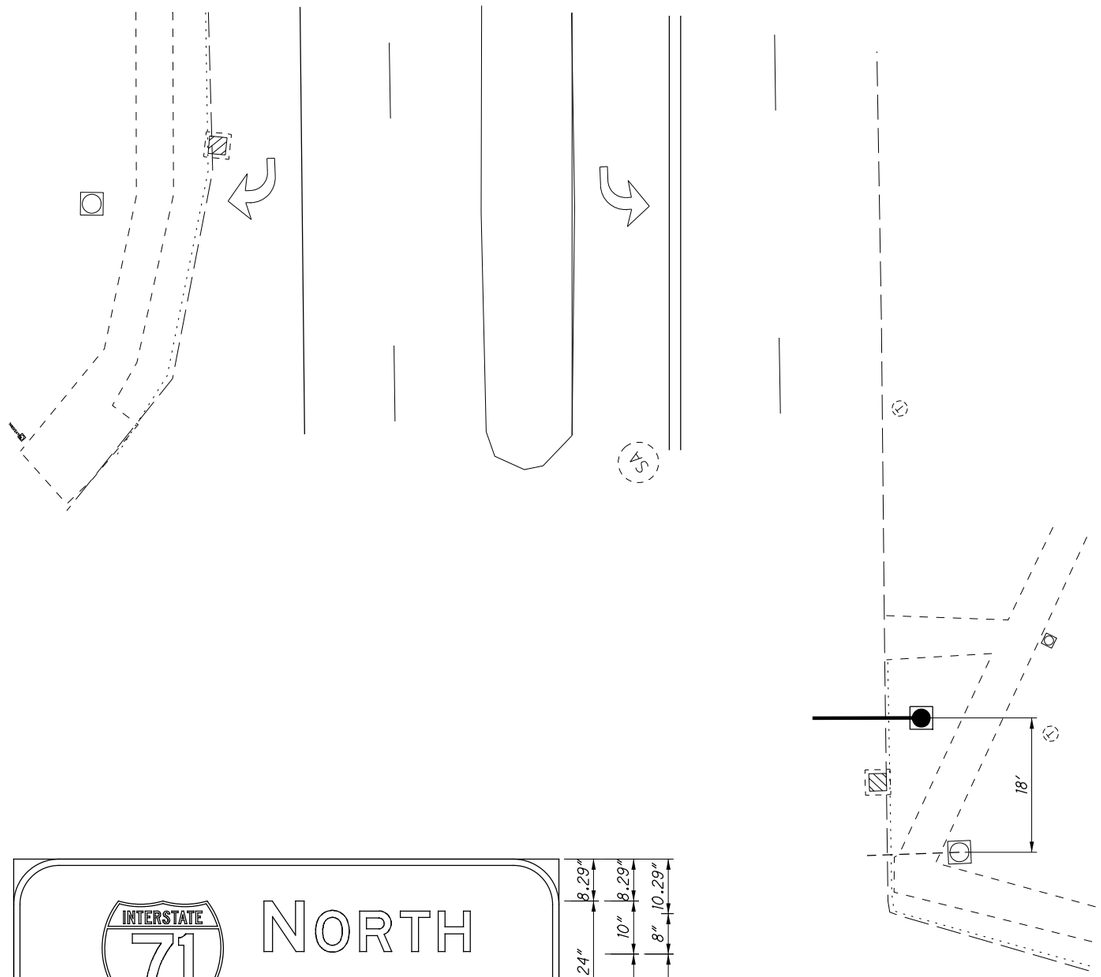
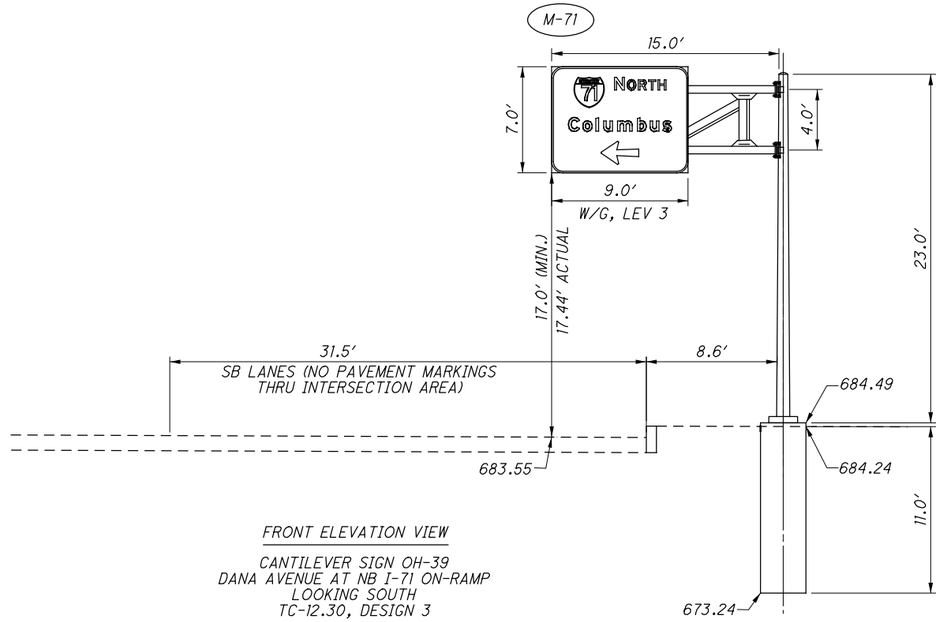
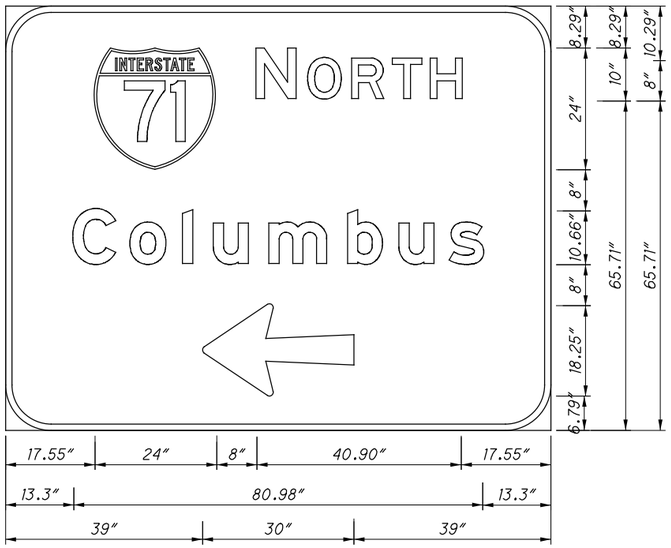
SIGN LOCATION DETAIL
1"=10'





FRONT ELEVATION VIEW

CANTILEVER SIGN OH-39
DANA AVENUE AT NB I-71 ON-RAMP
LOOKING SOUTH
TC-12.30, DESIGN 3



9" RADIUS, 1.25" BORDER, WHITE ON GREEN
"NORTH" E; "Columbus" E MOD
ARROW A-3, 180°

17.55	N 49.55	O 59.84	R 68.53	T 76.56	H 84.08

C 13.30	o 24.63	l 35.03	u 41.14	m 52.14	b 67.71	u 77.91	s 87.84

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED MJH
CHECKED KAE

CANTILEVER SIGN OH-39
DANA AVENUE AT NB I-71 ON-RAMP

HAM-71-1.97

218
292

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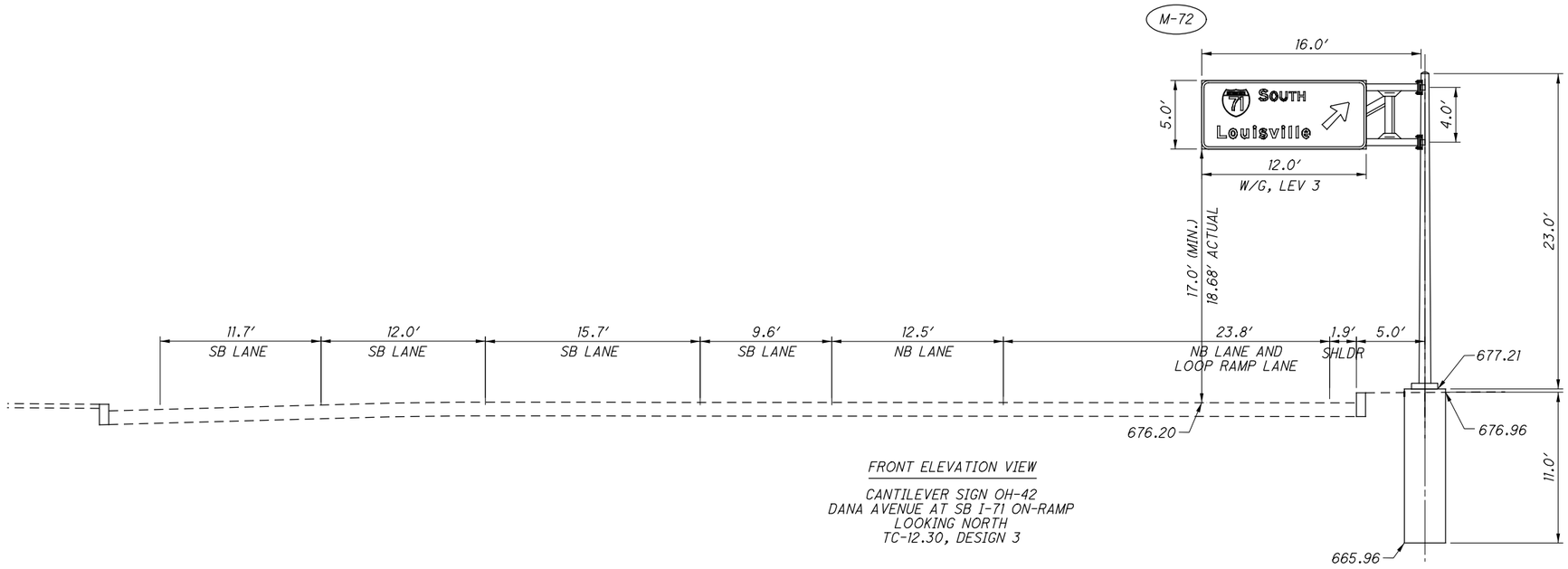
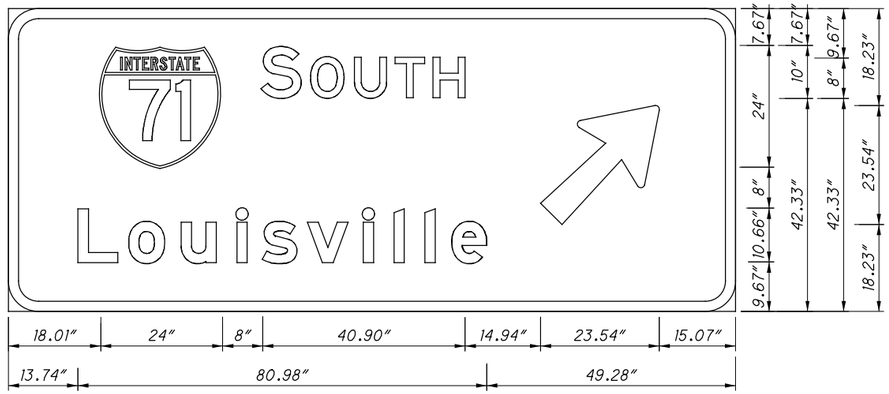


FRONT ELEVATION VIEW

CANTILEVER SIGN OH-42
DANA AVENUE AT SB I-71 ON-RAMP
LOOKING NORTH
TC-12.30, DESIGN 3

SIGN LOCATION DETAIL
1″=10′





9″ RADIUS, 1.25″ BORDER, WHITE ON GREEN
"SOUTH" E; "Louisville" E MOD
ARROW A-3, 45°

71	S	O	U	T	H
18.01	50.01	59.84	68.53	76.55	84.07

L	o	u	i	s	v	i	l	l	e
13.74	23.82	34.22	45.24	50.26	59.21	70.26	76.38	82.49	87.79

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED M.JH
CHECKED KAE

CANTILEVER SIGN OH-40
DANA AVENUE AT SB I-71 ON-RAMP

HAM-71-1.97

219
292

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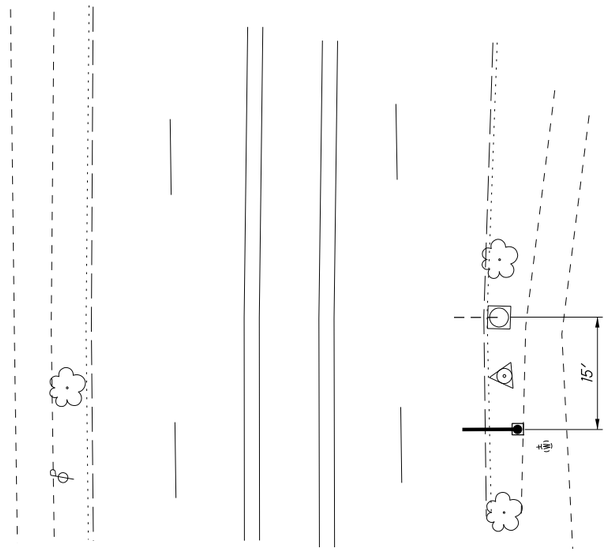
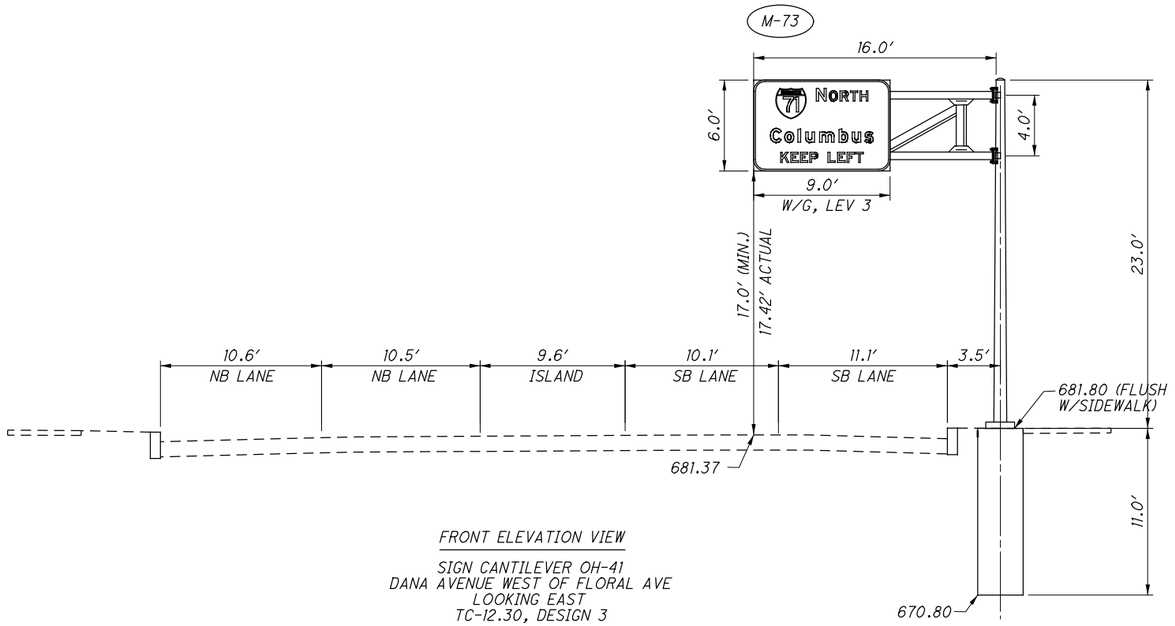
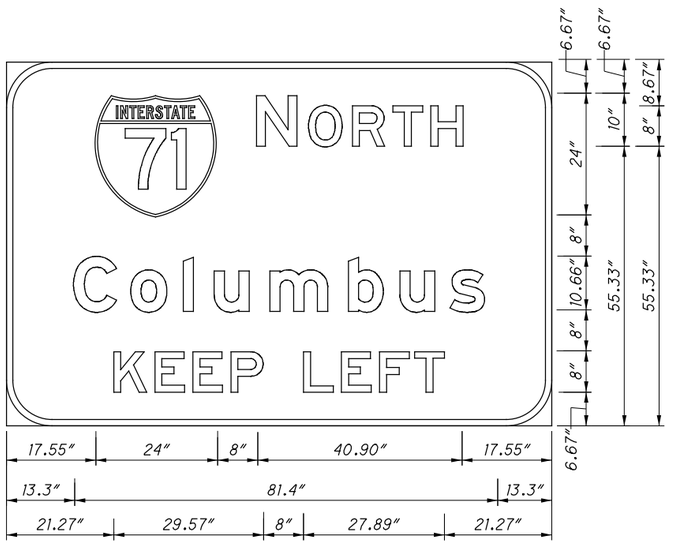
SIGN LOCATION DETAIL
1"=10'





FRONT ELEVATION VIEW

SIGN CANTILEVER OH-41
DANA AVENUE WEST OF FLORAL AVE
LOOKING EAST
TC-12.30, DESIGN 3



9" RADIUS, 1.25" BORDER, WHITE ON GREEN
"NORTH" AND "KEEP LEFT" E; "Columbus" E MOD

	N	O	R	T	H
17.55	49.55	59.84	68.53	76.56	84.08

C	o	l	u	m	b	u	s
13.30	24.63	35.03	41.14	52.17	67.71	77.91	87.84

K	E	E	P	L	E	F	T
21.27	29.41	36.94	44.46	58.84	66.36	73.88	80.86

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED M.JH
CHECKED KAE

CANTILEVER SIGN OH-41
DANA AVENUE WEST OF FLORAL AVE

HAM-71-1.97

220
292

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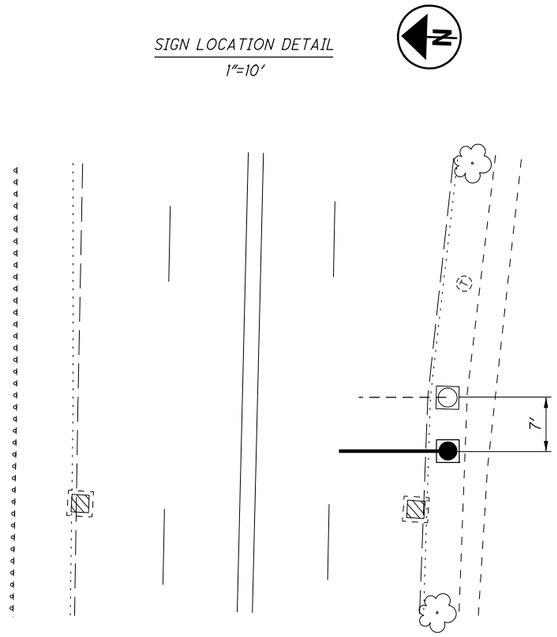
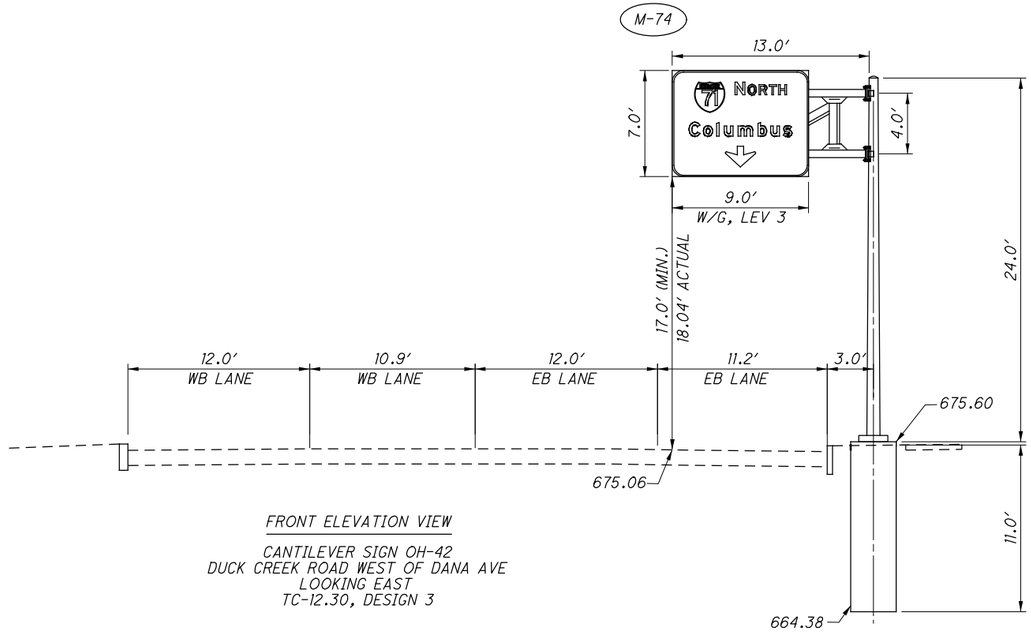
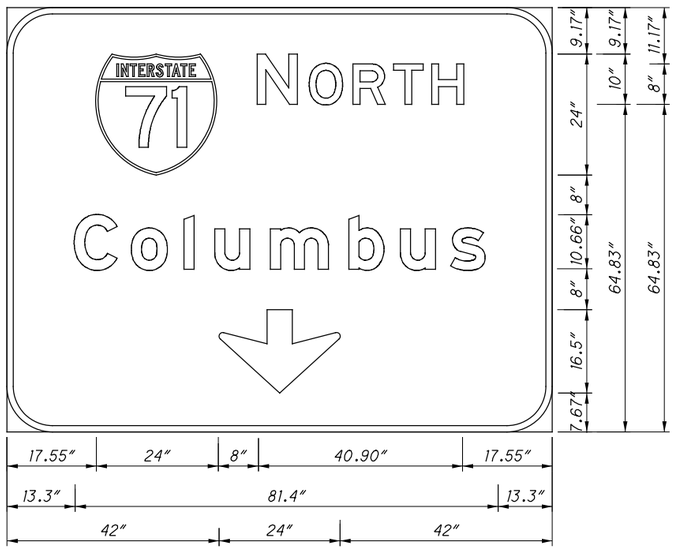




FRONT ELEVATION VIEW

CANTILEVER SIGN OH-42
DUCK CREEK ROAD WEST OF DANA AVE
LOOKING EAST
TC-12.30, DESIGN 3



9" RADIUS, 1.25" BORDER, WHITE ON GREEN
"NORTH" E; "Columbus" E MOD
DOWN ARROW C-3 - 270°

	N	O	R	T	H
17.55	49.55	59.84	68.53	76.56	84.08

C	o	l	u	m	b	u	s
13.30	24.63	35.03	41.14	52.17	67.71	77.91	87.84

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED M.JH
CHECKED KAE

CANTILEVER SIGN OH-42
DUCK CREEK ROAD WEST OF DANA AVE

HAM-71-1.97

221
292

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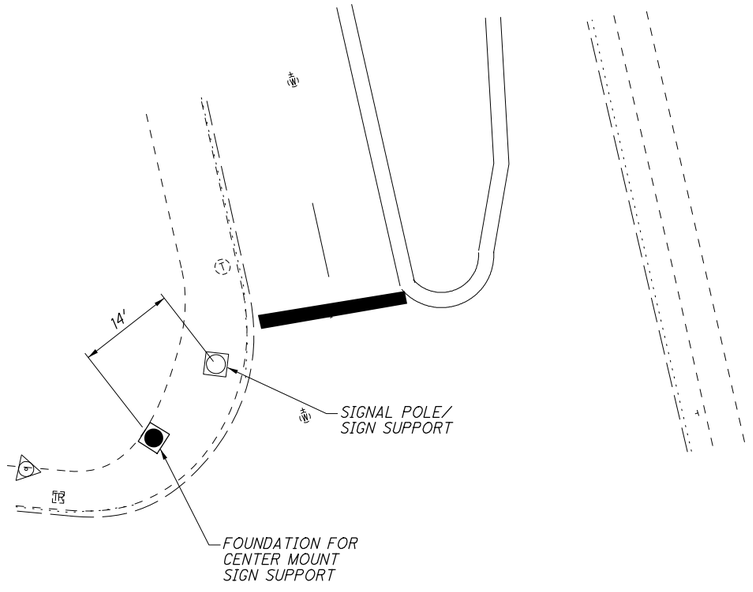
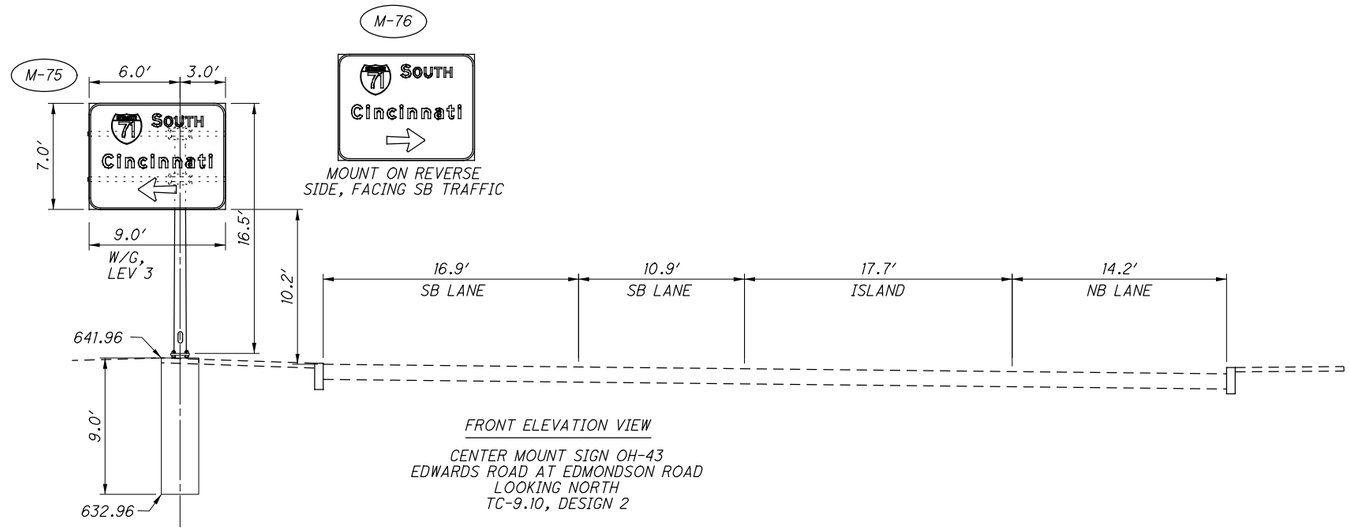
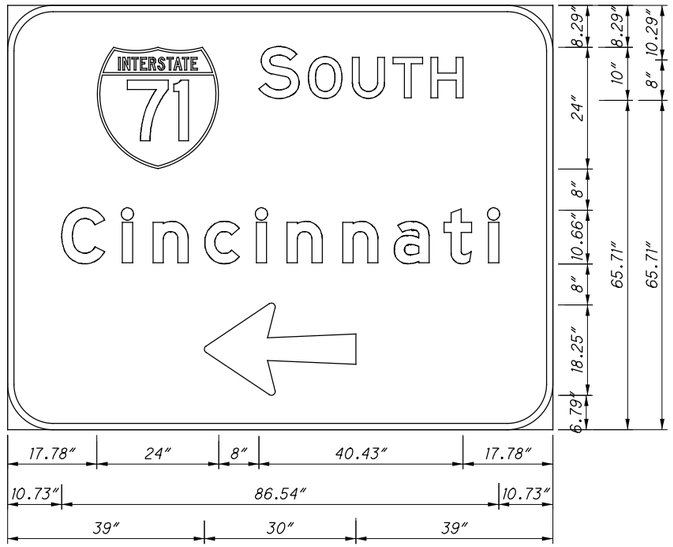




FRONT ELEVATION VIEW

CENTER MOUNT SIGN OH-43
EDWARDS ROAD AT EDMONDSON ROAD
LOOKING NORTH
TC-9.10, DESIGN 2



9" RADIUS, 1.25" BORDER, WHITE ON GREEN
"SOUTH" E; "Cincinnati" E MOD
ARROW A-3, 180°

71	S	O	U	T	H
17.78	49.78	59.61	68.30	76.32	83.84

C	i	n	c	i	n	n	a	t	i
10.73	22.73	28.85	39.05	49.27	53.38	66.41	76.61	86.47	95.24

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED M.JH
CHECKED KAE

CENTER MOUNT SIGN OH-43
EDWARDS ROAD AT EDMONDSON ROAD

HAM-71-1.97

222
292

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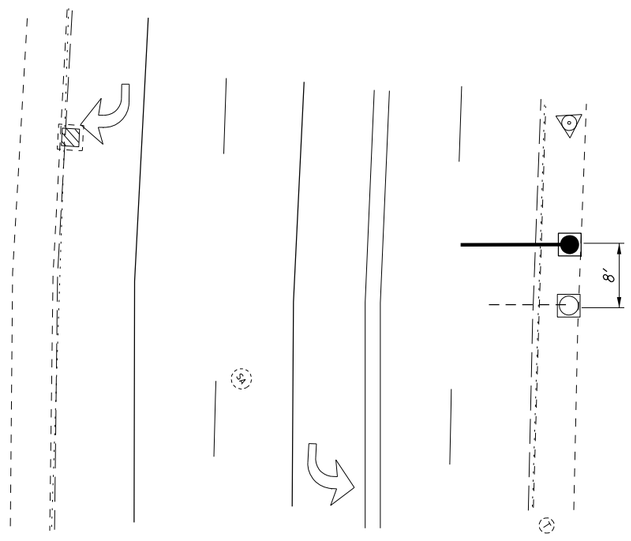
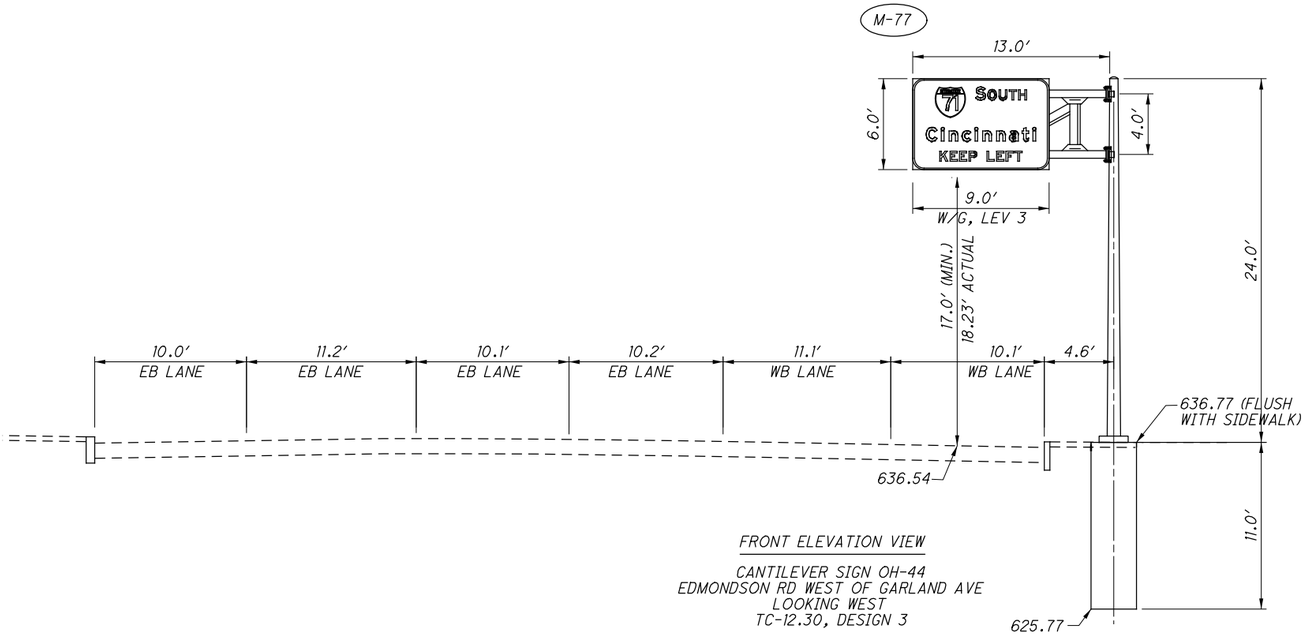
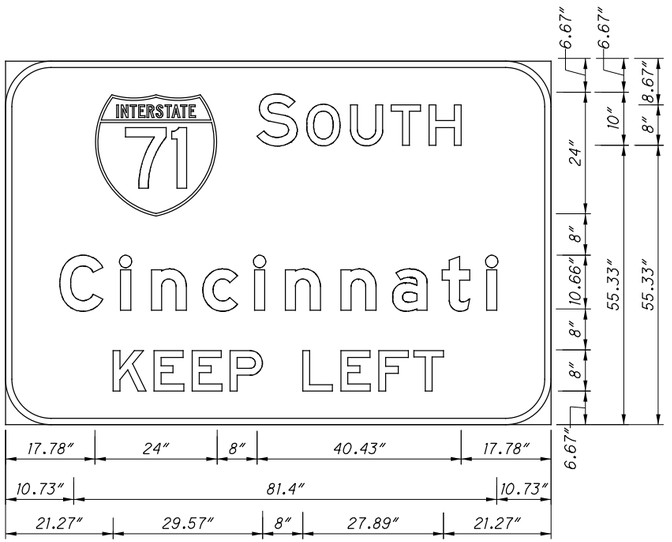
SIGN LOCATION DETAIL
1"=10'





FRONT ELEVATION VIEW

CANTILEVER SIGN OH-44
EDMONDSON RD WEST OF GARLAND AVE
LOOKING WEST
TC-12.30, DESIGN 3



9" RADIUS, 1.25" BORDER, WHITE ON GREEN
"SOUTH" AND "KEEP LEFT" E; "Cincinnati" E MOD

17.78	S 49.78	O 59.61	U 68.30	T 76.32	H 83.84

C 10.73	i 22.73	n 28.85	c 39.05	i 49.27	n 55.38	n 66.41	a 76.61	t 86.47	i 95.24

K 21.27	E 29.41	E 36.94	P 44.46	L 58.84	E 66.36	F 73.88	T 80.86

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED M.JH
CHECKED KAE

CANTILEVER SIGN OH-44
EDMONDSON RD WEST OF GARLAND AVE

HAM-71-1.97

223
292

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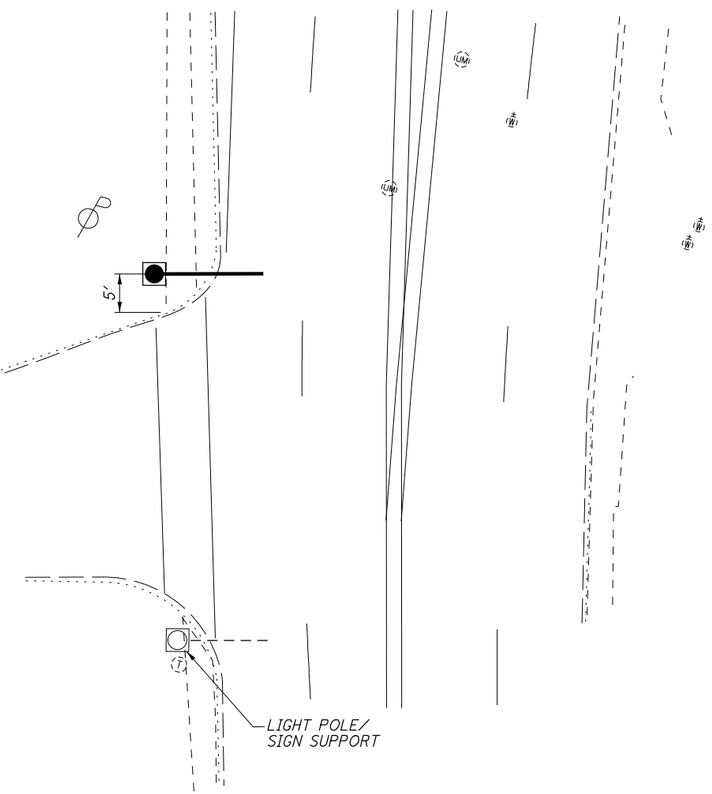
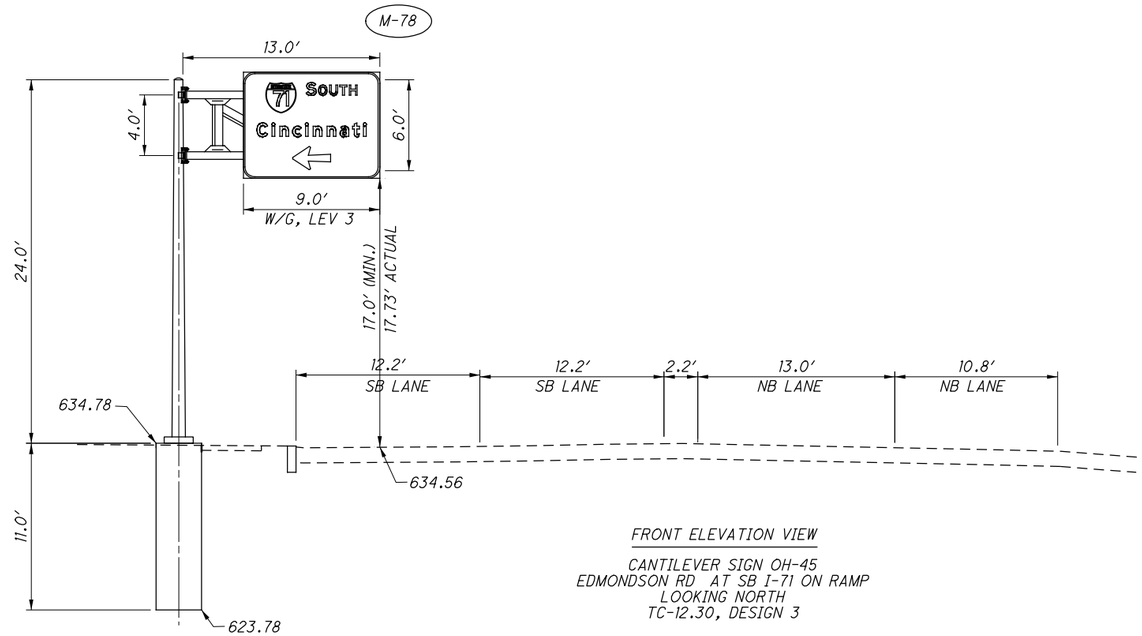
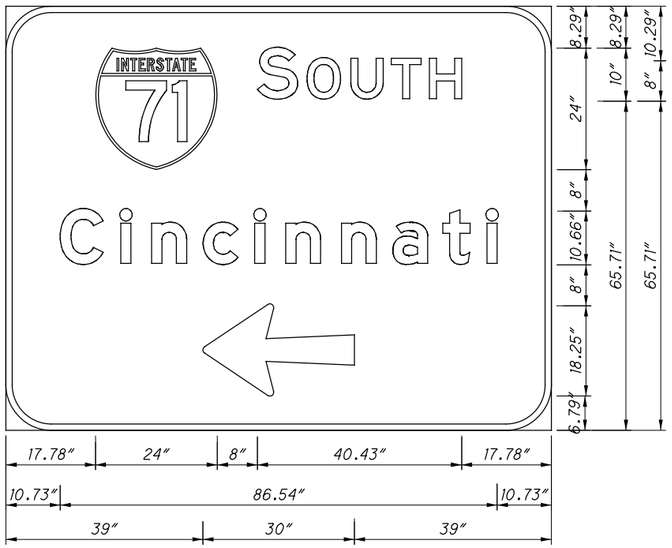
SIGN LOCATION DETAIL
1"=10'





FRONT ELEVATION VIEW

CANTILEVER SIGN OH-45
EDMONDSON RD AT SB I-71 ON RAMP
LOOKING NORTH
TC-12.30, DESIGN 3



9" RADIUS, 1.25" BORDER, WHITE ON GREEN
"SOUTH" E; "Cincinnati" E MOD
ARROW A-3, 180°

17.78	S 49.78	O 59.61	U 68.30	T 76.32	H 83.84

C 10.73	i 22.73	n 28.85	c 39.05	i 49.27	n 53.38	n 66.41	a 76.61	t 86.47	i 95.24

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED MJH
CHECKED KAE

CANTILEVER SIGN OH-45
EDMONDSON RD AT SB I-71 ON RAMP

HAM-71-1.97

224
292

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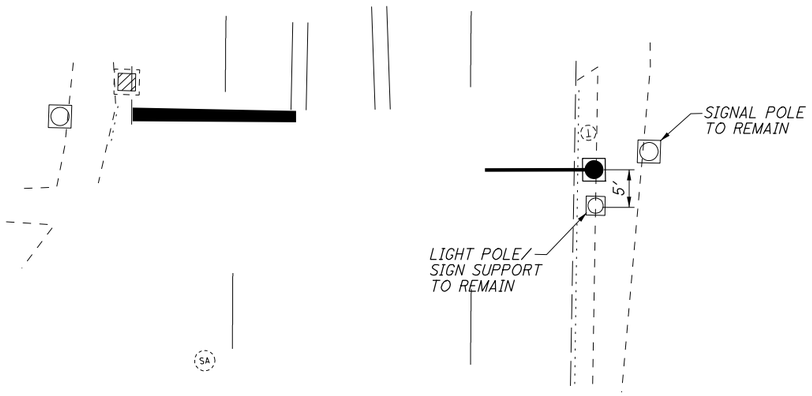
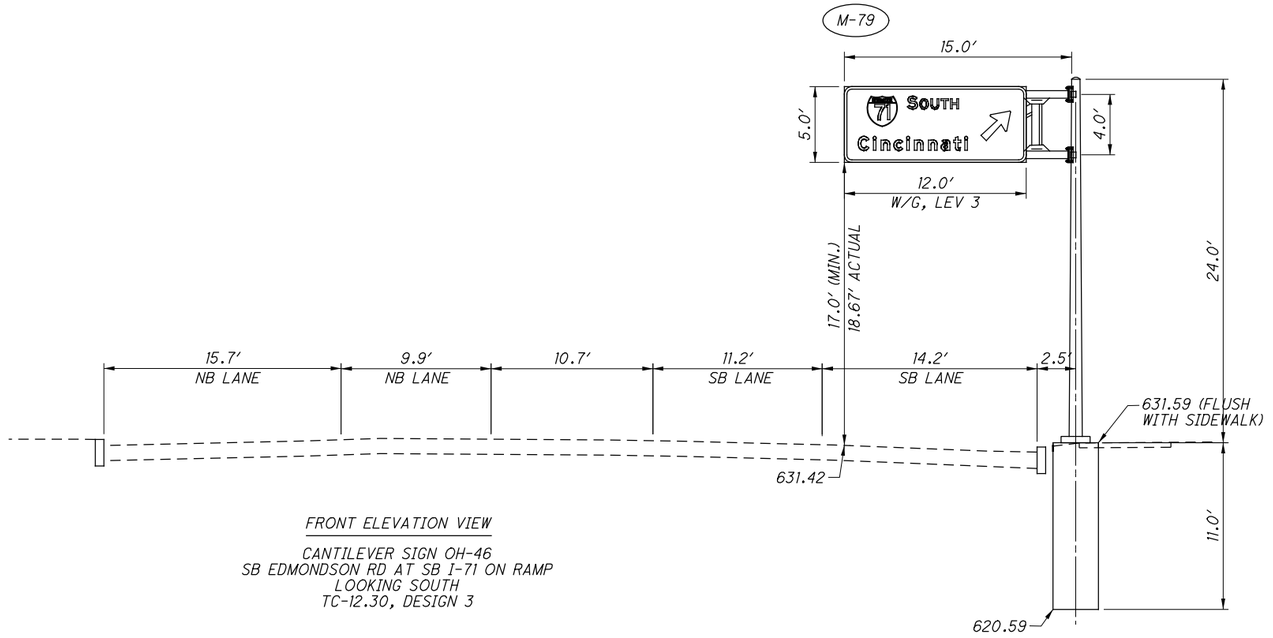
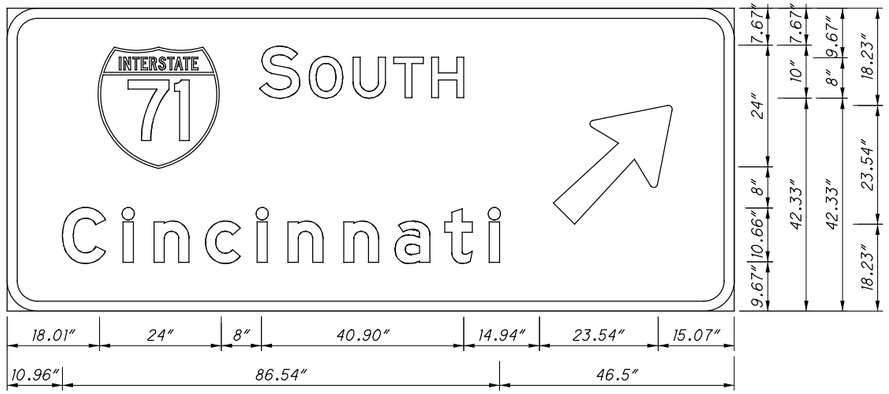
SIGN LOCATION DETAIL
1"=10'





FRONT ELEVATION VIEW

CANTILEVER SIGN OH-46
SB EDMONDSON RD AT SB I-71 ON RAMP
LOOKING SOUTH
TC-12.30, DESIGN 3



9" RADIUS, 1.25" BORDER, WHITE ON GREEN
"SOUTH" E; "Cincinnati" E MOD
ARROW A-3, 45°

18.01	S 50.01	O 59.84	U 68.53	T 76.55	H 84.07

C 10.96	i 2.96	n 29.08	c 39.28	i 49.50	n 55.61	n 66.64	a 76.84	t 86.70	i 95.47

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED M.JH
CHECKED KAE

CANTILEVER SIGN OH-46
SB EDMONDSON RD AT SB I-71 ON RAMP

HAM-71-1.97

225
292

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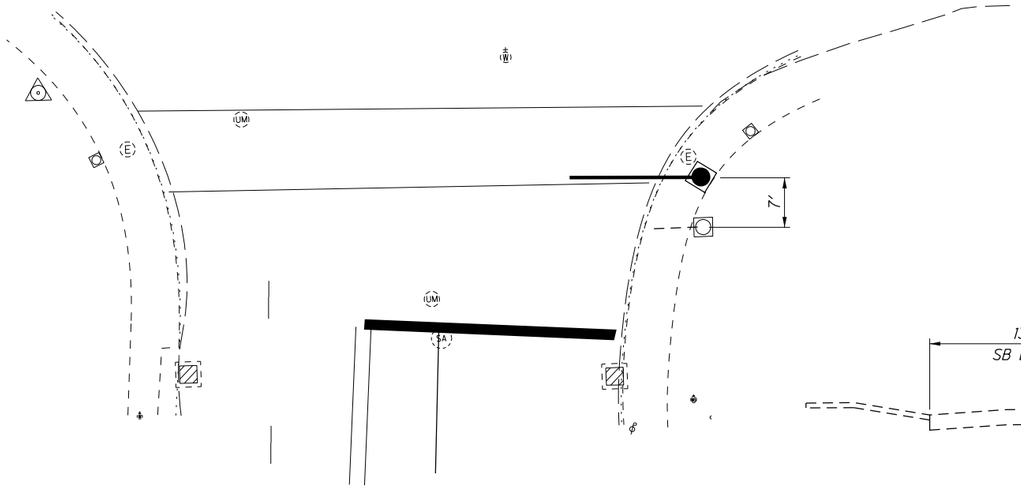
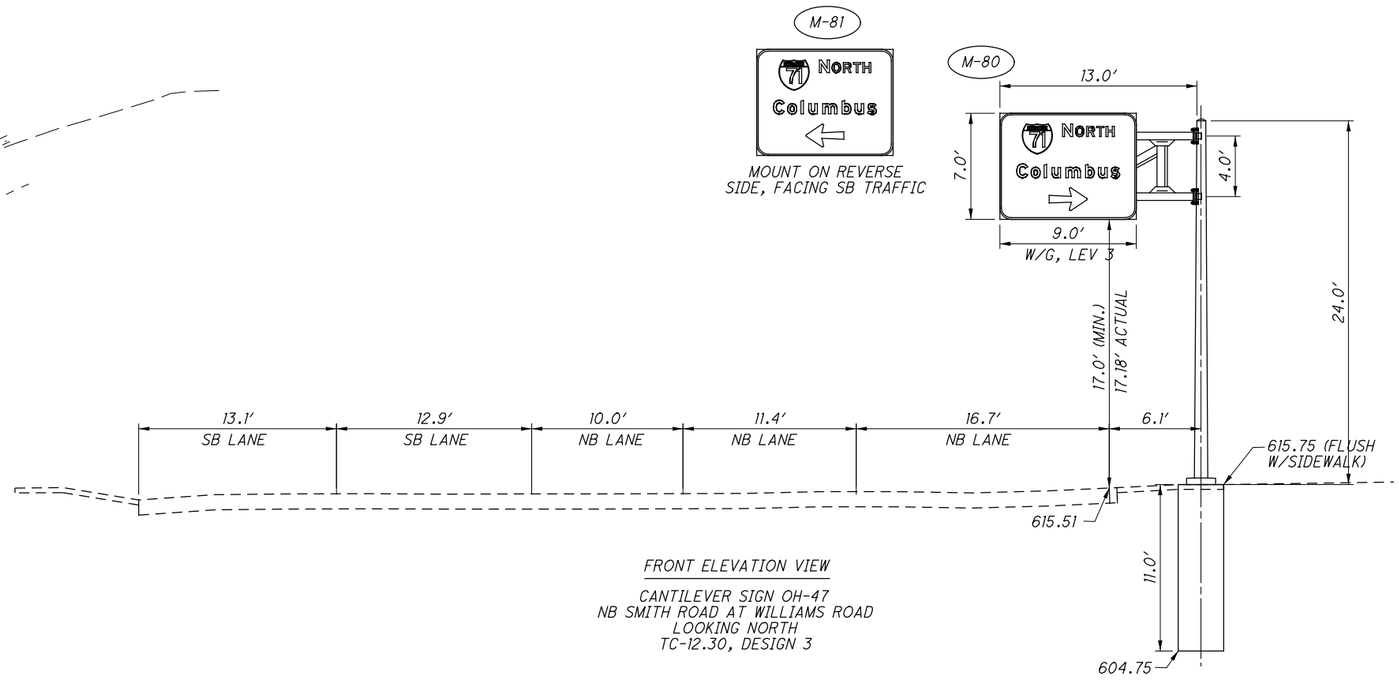
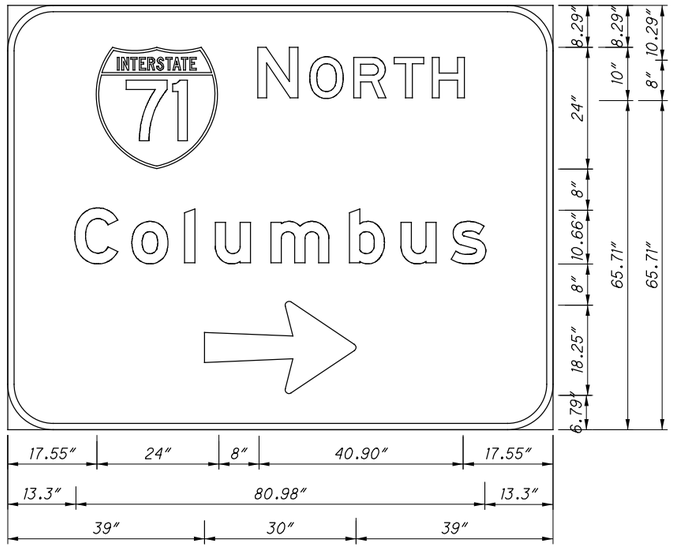
SIGN LOCATION DETAIL
1"=10'





FRONT ELEVATION VIEW

CANTILEVER SIGN OH-47
NB SMITH ROAD AT WILLIAMS ROAD
LOOKING NORTH
TC-12.30, DESIGN 3



9" RADIUS, 1.25" BORDER, WHITE ON GREEN
"NORTH" E; "Columbus" E MOD
ARROW A-3, 0°

71	N	O	R	T	H
17.55	49.55	59.84	68.53	76.56	84.08

C	o	l	u	m	b	u	s
13.30	24.63	35.03	41.14	52.14	67.71	77.91	87.84

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED M.JH
CHECKED KAE

CANTILEVER SIGN OH-47
NB SMITH ROAD AT WILLIAMS ROAD

HAM-71-1.97

226
292

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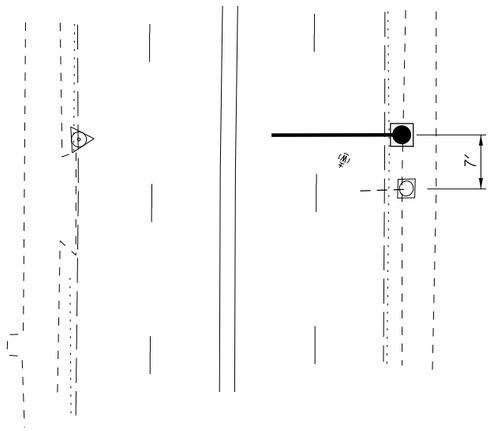
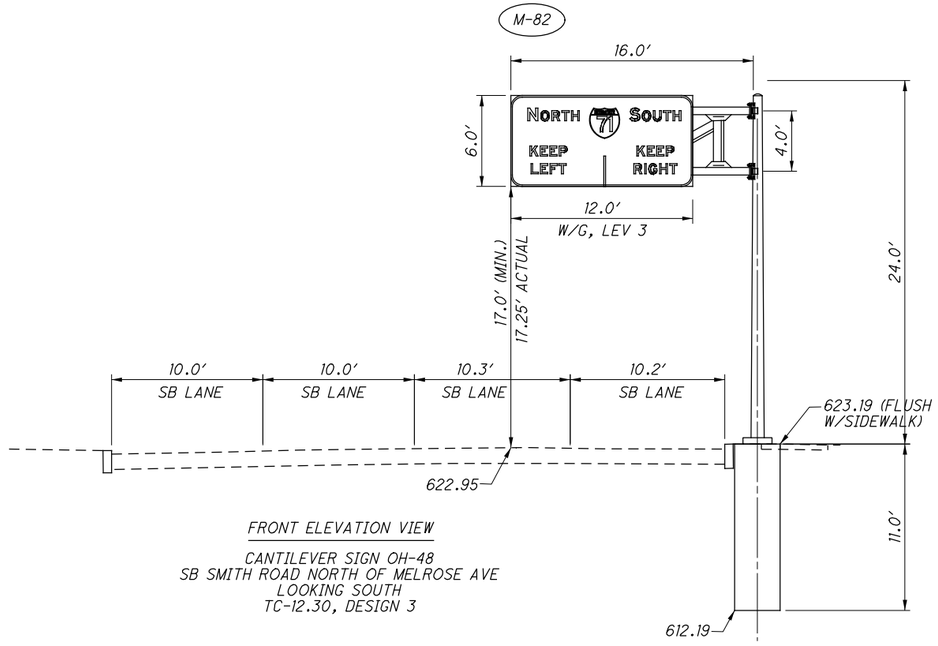
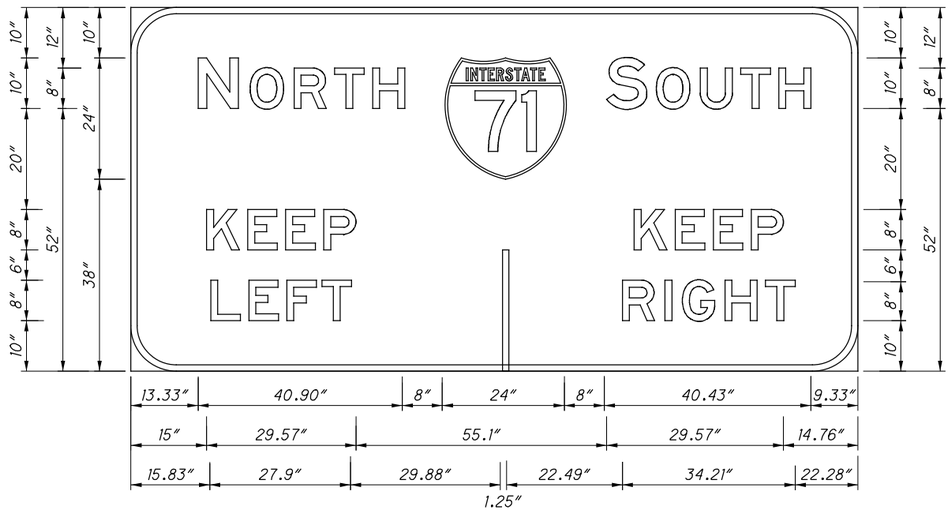
SIGN LOCATION DETAIL
1"=10'





FRONT ELEVATION VIEW

CANTILEVER SIGN OH-48
SB SMITH ROAD NORTH OF MELROSE AVE
LOOKING SOUTH
TC-12.30, DESIGN 3



9" RADIUS, 1.25" BORDER, WHITE ON GREEN
"NORTH", "SOUTH" AND "KEEP LEFT" E

N	O	R	T	H	71	S	O	U	T	H
13.33	23.15	31.84	39.87	47.39	61.76	93.76	104.06	112.75	120.77	128.30

K	E	E	P	K	E	E	P
15.00	23.14	30.67	38.19	99.67	107.82	115.34	122.86

L	E	F	T	I	R	I	G	H	T
15.83	23.36	30.88	37.85	73.61	97.35	105.79	109.22	117.66	125.08

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED MJH
CHECKED KAE

CANTILEVER SIGN OH-48
SB SMITH ROAD NORTH OF MELROSE AVE

HAM-71-1.97

227
292

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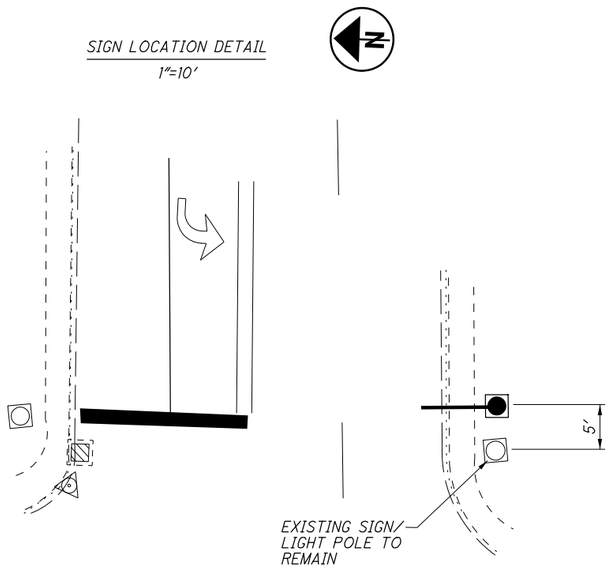
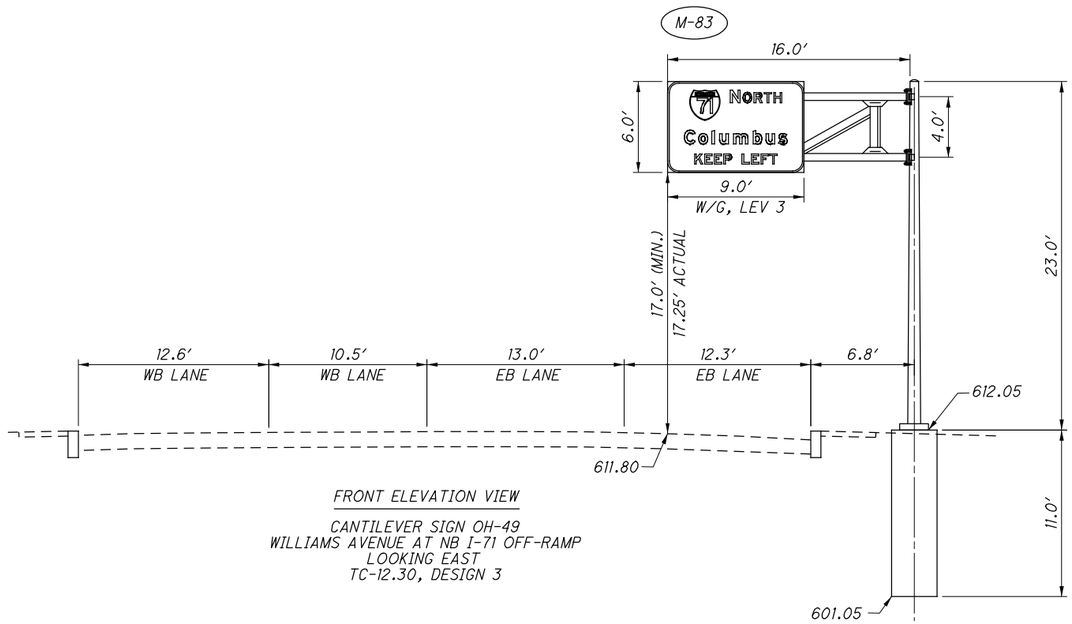
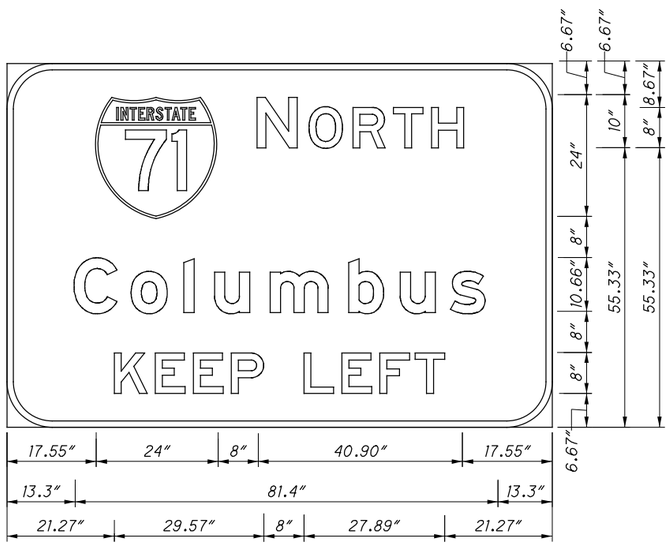




FRONT ELEVATION VIEW

CANTILEVER SIGN OH-49
WILLIAMS AVENUE AT NB I-71 OFF-RAMP
LOOKING EAST
TC-12.30, DESIGN 3



9" RADIUS, 1.25" BORDER, WHITE ON GREEN
"NORTH" AND "KEEP LEFT" E; "Columbus" E MOD

71	N	O	R	T	H
17.55	49.55	59.84	68.53	76.56	84.08

C	o	l	u	m	b	u	s
13.30	24.63	35.03	41.14	52.17	67.71	77.91	87.84

K	E	E	P	L	E	F	T
21.27	29.41	36.94	44.46	58.84	66.36	73.88	80.86

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED M.JH
CHECKED KAE

CANTILEVER SIGN OH-49
WILLIAMS AVENUE AT NB I-71 OFF-RAMP

HAM-71-1.97

228
292

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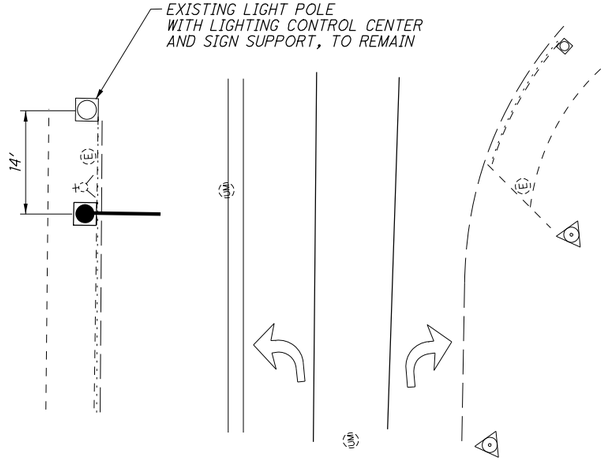
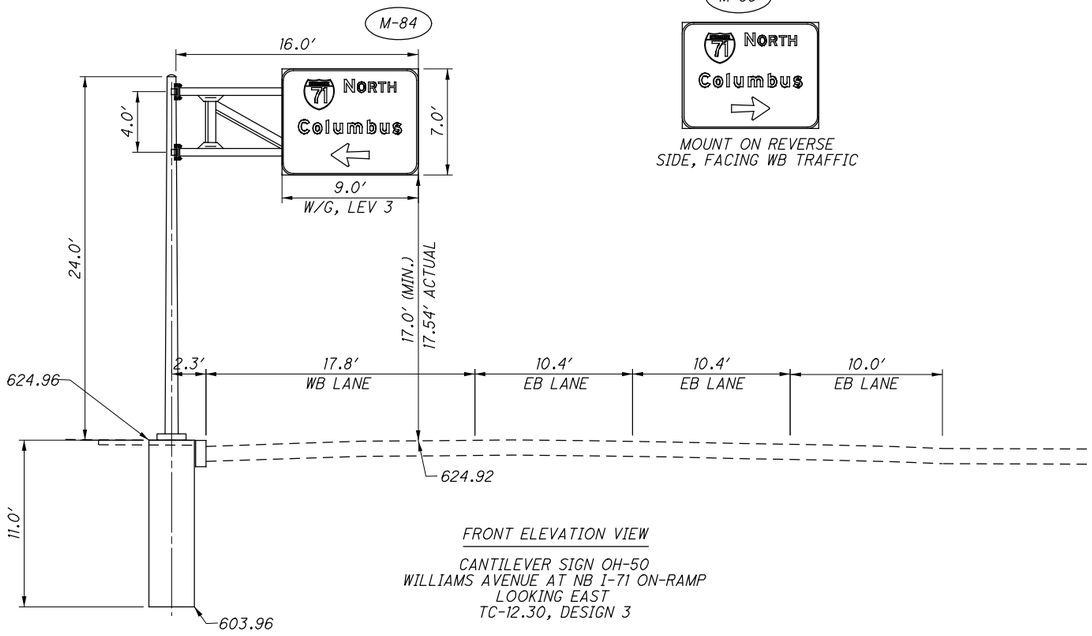
SIGN LOCATION DETAIL
1"=10'

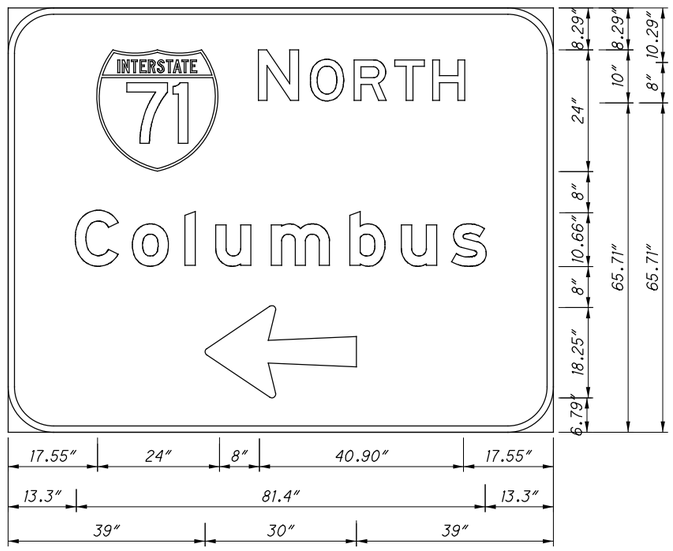




FRONT ELEVATION VIEW

CANTILEVER SIGN OH-50
WILLIAMS AVENUE AT NB I-71 ON-RAMP
LOOKING EAST
TC-12.30, DESIGN 3

MOUNT ON REVERSE
SIDE, FACING WB TRAFFIC



9" RADIUS, 1.25" BORDER, WHITE ON GREEN
"NORTH" E; "Columbus" E MOD
ARROW A-3, 180°

	N	O	R	T	H
17.55	49.55	59.84	68.53	76.56	84.08

C	o	l	u	m	b	u	s
13.30	24.63	35.03	41.14	52.14	67.71	77.91	87.84

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED M.JH
CHECKED KAE

CANTILEVER SIGN OH-50
WILLIAMS AVENUE AT NB I-71 ON-RAMP

HAM-71-1.97

229
292

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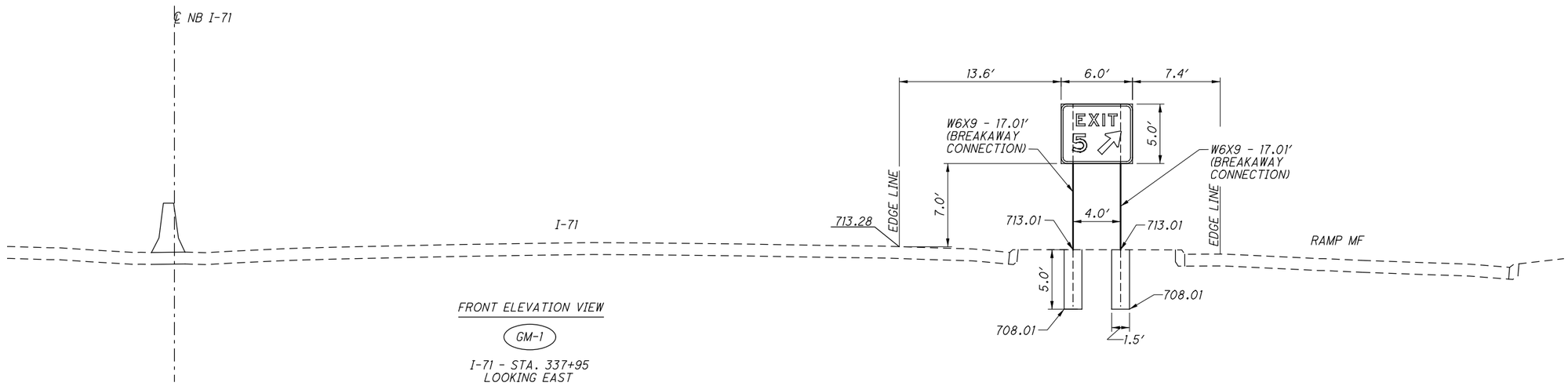
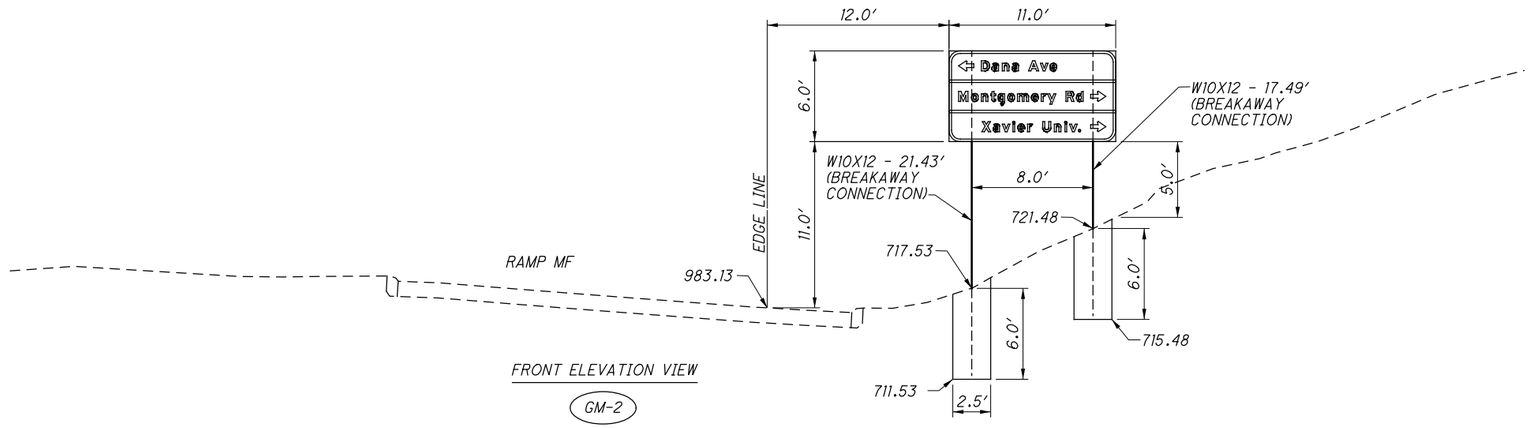


FRONT ELEVATION VIEW

GM-1

I-71 - STA. 337+95
LOOKING EAST



FRONT ELEVATION VIEW

GM-2

RAMP MF - STA. 339+50
LOOKING EAST

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED MJH
CHECKED KAE

GROUND MOUNTED SIGN ELEVATIONS
SIGNS GM-1 AND GM-2

HAM-71-1.97

230
292

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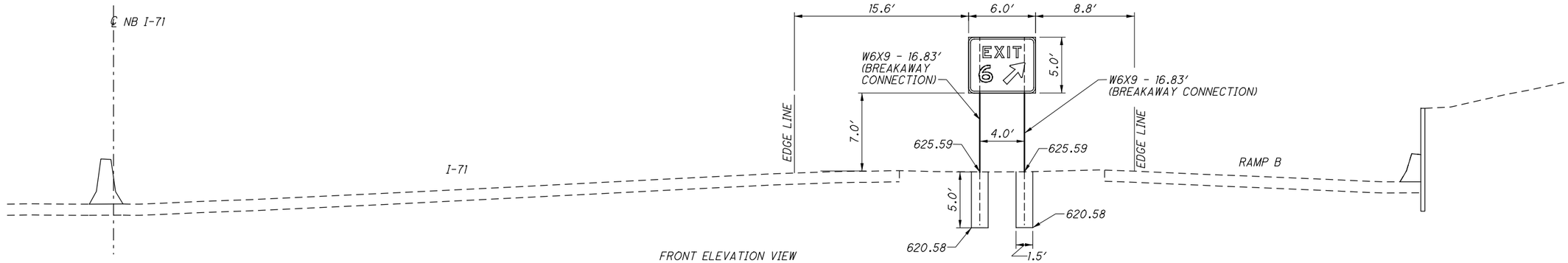
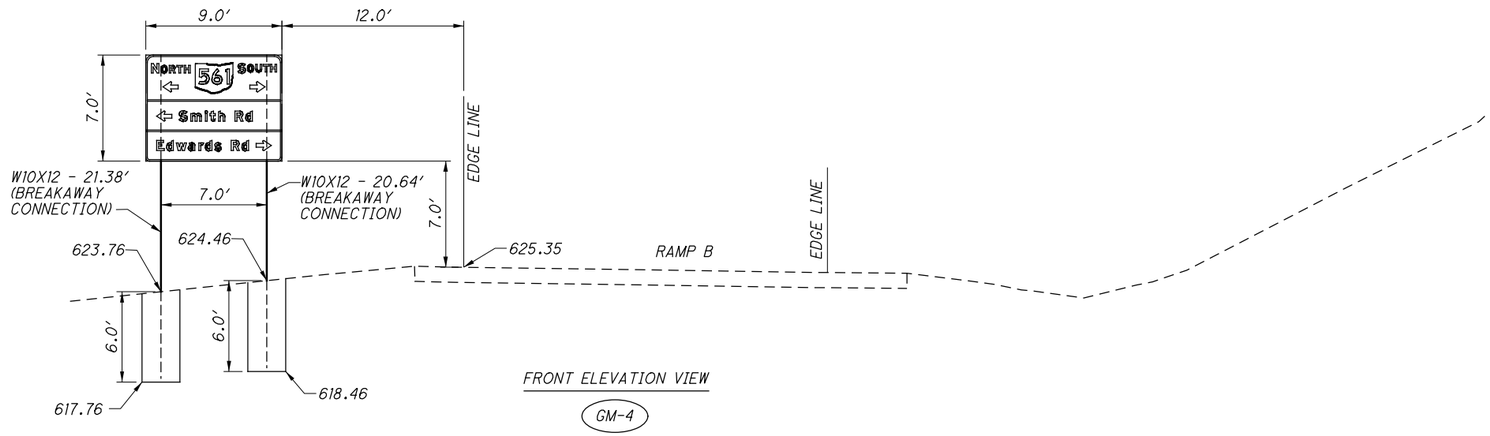


FRONT ELEVATION VIEW

GM-3

NB I-71 - STA. 306+85
LOOKING NORTH



FRONT ELEVATION VIEW

GM-4

RAMP B - STA. 308+50
LOOKING NORTH

GROUND MOUNTED SIGN ELEVATIONS
SIGNS GM-3 AND GM-4

HAM-71-1.97

231
292

HORIZONTAL
SCALE IN FEET
0 2.5 5 10

CALCULATED M.JH
CHECKED KAE

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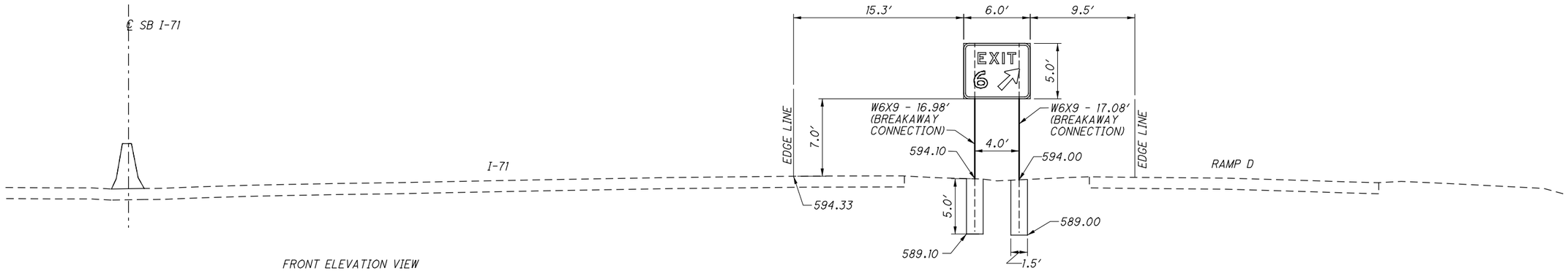
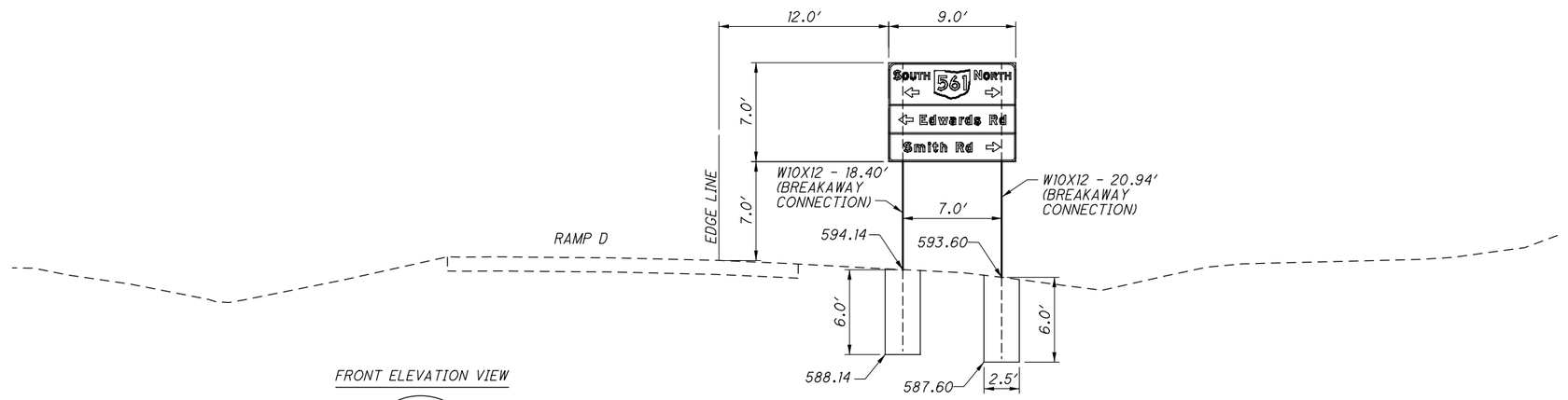


FRONT ELEVATION VIEW

GM-5

SB I-71 - STA. 326+65
LOOKING SOUTH



FRONT ELEVATION VIEW

GM-6

RAMP D - STA. 326+00
LOOKING SOUTH

GROUND MOUNTED SIGN ELEVATIONS
SIGNS GM-5 AND GM-6

CALCULATED M.JH
CHECKED KAE

0 2.5 5 10
HORIZONTAL
SCALE IN FEET

HAM-71-1.97

232
292

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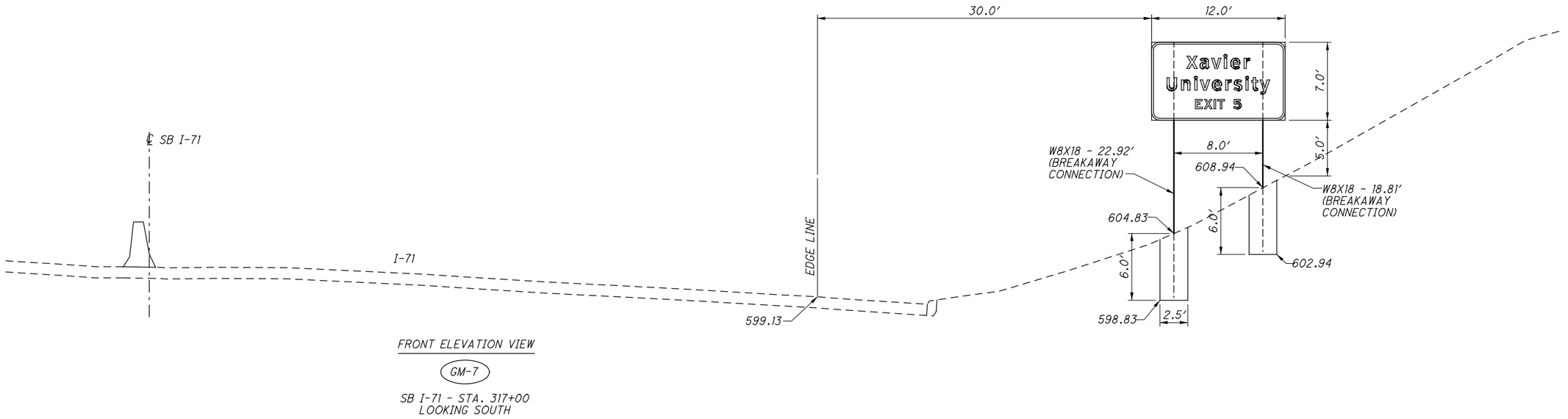
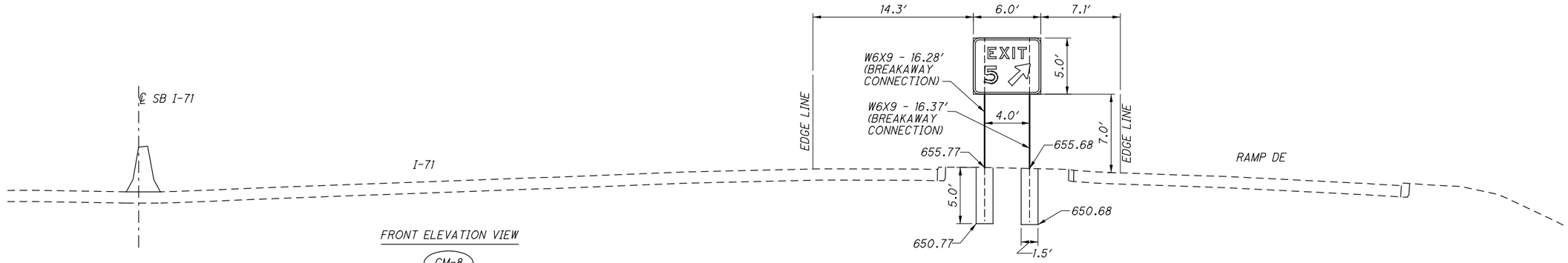


FRONT ELEVATION VIEW

GM-7

SB I-71 - STA. 317+00
LOOKING SOUTH



FRONT ELEVATION VIEW

GM-8

SB I-71 - STA. 385+30
LOOKING SOUTH

GROUND MOUNTED SIGN ELEVATIONS SIGNS GM-7 AND GM-8

HORIZONTAL SCALE IN FEET
0 2.5 5 10

CALCULATED M.JH
CHECKED KAE

HAM-71-1.97

233
292

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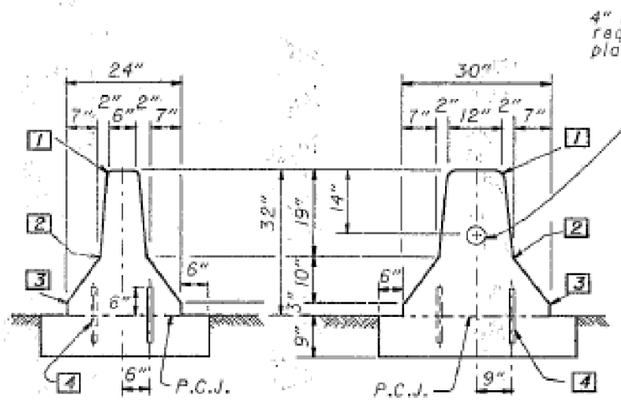
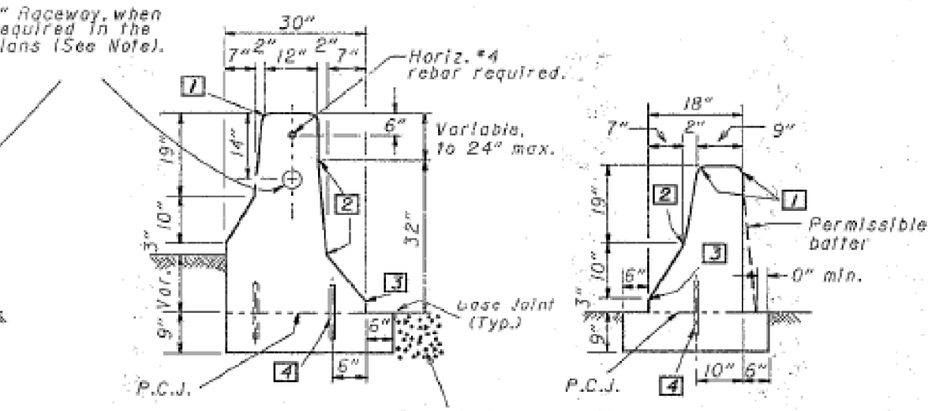


TYPE A



TYPE B

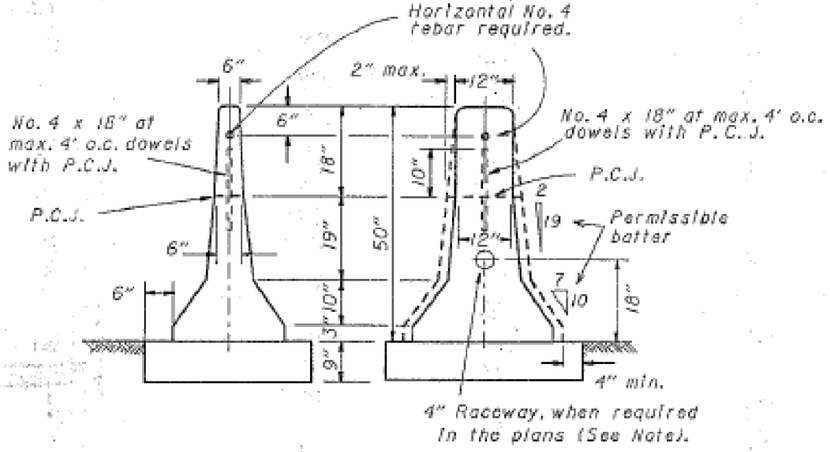
TYPE C

TYPE D

NORMAL SECTIONS

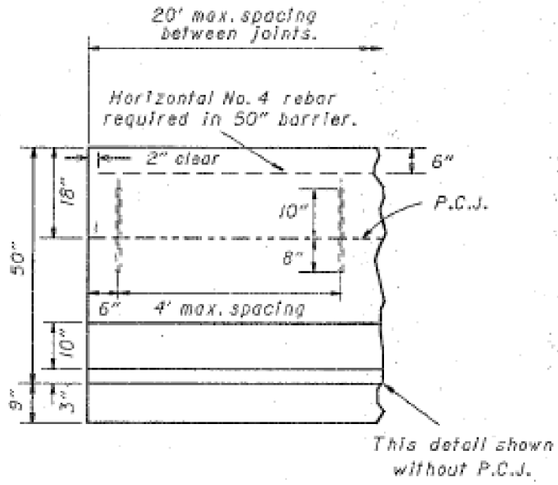
LEGEND

1. 1" Radius or 3/4" chamfer.
2. Permissible 10" radius.
3. Permissible 1" radius.
4. No. 8 epoxy coated deformed steel bars, 12" long, spaced 4" between successive bars on a staggered (except Type D) pattern. Omit dowels when top is constructed integral with the base.

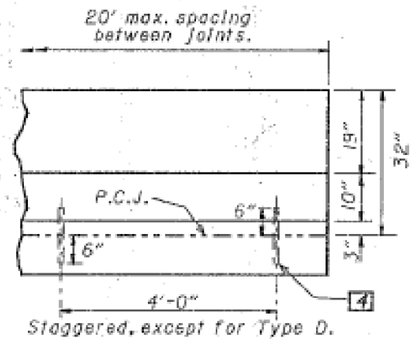


TYPE A50 TYPE B50

50" BARRIERS - TYPICAL SECTIONS



50" BARRIER



32" BARRIER

BARRIER ELEVATIONS

NOTES

JOINTS: Unsealed contraction joints spaced at 20' max. shall be constructed throughout the run of Concrete Barrier except that expansion joints shall be used at the center line of and around each bridge pier column and on either side of overhead sign supports, inlets and light pole foundations. If inlet top is slip formed, the expansion joints adjacent to it may be omitted.

Contraction joints may be constructed with metal inserts inside the forms, preformed full width joint filler, a grooving tool, or by sawing. Inserts, tooled or sawed joints shall have a 3" minimum depth. All joints shall be constructed for the full height of the barrier including the base. Sawing shall be done as soon as curing will allow, to prevent spalling.

BASE JOINTS: The vertical walls between the barrier base and a concrete pavement or concrete base shall be provided with a sealed, grooved joint as shown on Std. Const. Dwg. BP-2.1. Sealing material shall conform with CMS 705.04.

P.C.J. = Permissible Construction Joint

MEASUREMENT: 622 Concrete Barrier, Including transitions and pier sections as per Standard Const. Drawing MC-9.4, is paid for in linear feet as one of the four types (A,B,C or D) or as Type A50 and B50, (for 50" high barrier), with appropriate deductions for other items such as:

604 I-3 Median Inlet	20 Lin. Ft.
625 Light pole foundation or pullbox	2.5 Lin. Ft.
630 Overhead sign support foundation	10 Lin. Ft.
630 Barrier wall assembly	10 Lin. Ft.

50 INCH HIGH BARRIER shall be built in locations specified in the plans. Construct the lower 32" of the barrier and the barrier base using the same dimensions as shown in the corresponding Normal Section. The upper 18" may be constructed integral with the bottom, or separately with No. 4 rebar dowels at 4' foot maximum spacing. Start and end dowels 6" from barrier contraction joints.

RACEWAY: The contractor shall insure that the electrical raceway is clear of internal obstructions. Cost of the 4 inch polyvinyl chloride raceway and No. 10 AWG copper-clad or aluminum-clad wire if needed for future installation of circuits shall be included in the unit cost per lineal foot for item 622, Concrete Barrier.

STATION MARKING shall be impressed in the "green" concrete on both sides at the top of the barrier if specified in the plans; which cost shall be incidental to the unit cost per linear foot bid for item 622, Concrete Barrier.

BUREAU OF LOCATION AND DESIGN
OHIO DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER

DATE 10-30-92

STANDARD CONSTRUCTION DRAWING MC-9.3

APPROVED E. K. Hull ENGR., L & D

CALCULATED MJH CHECKED KAE

BARRIER DETAILS - NJ SHAPE

HAM-71-1.97

234 292

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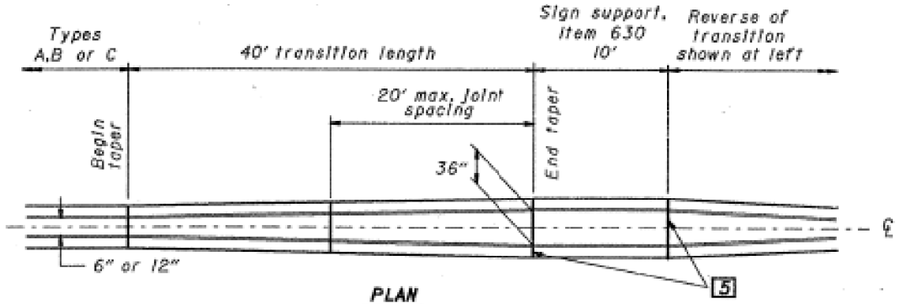
NOTE

STANDARD BARRIERS: Types A, B, or C concrete barriers shall be constructed as per Std. Const. Drwg. MC-9.3 or as detailed in the plans.

LEGEND

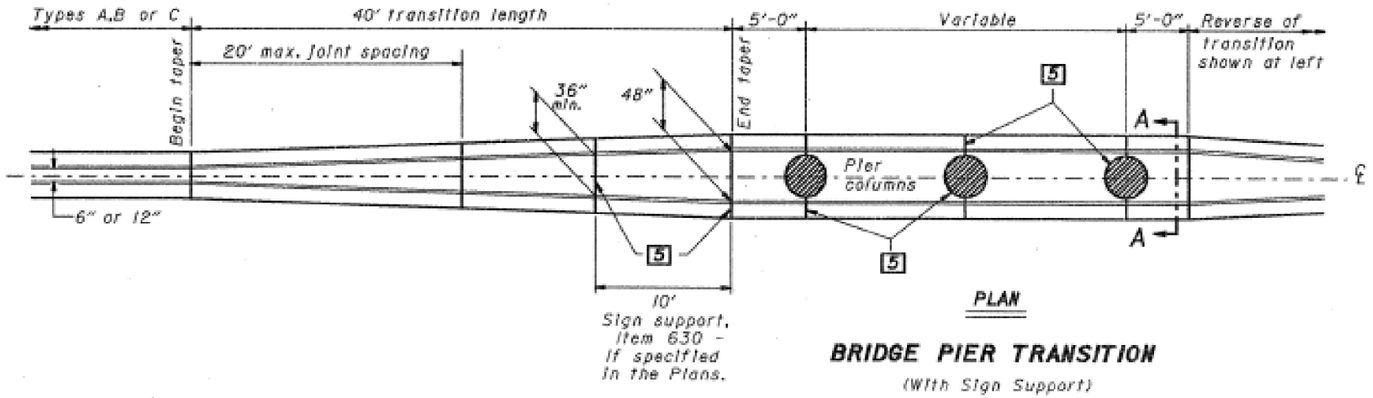
1. 1" Radius or 3/4" chamfer.
2. Permissible 10" radius.
3. Permissible 1" radius.
4. No. 8 epoxy coated deformed steel bars, 12" long, spaced 2' between successive bars on a staggered (except Type D) pattern. Dowel bars shall begin 4' from the leading edge of the End Terminal. Omit dowels when top is constructed integral with the base.
5. Expansion Joint, 3/4" min. Preformed Filler 705.03.



PLAN

SIGN SUPPORT TRANSITION

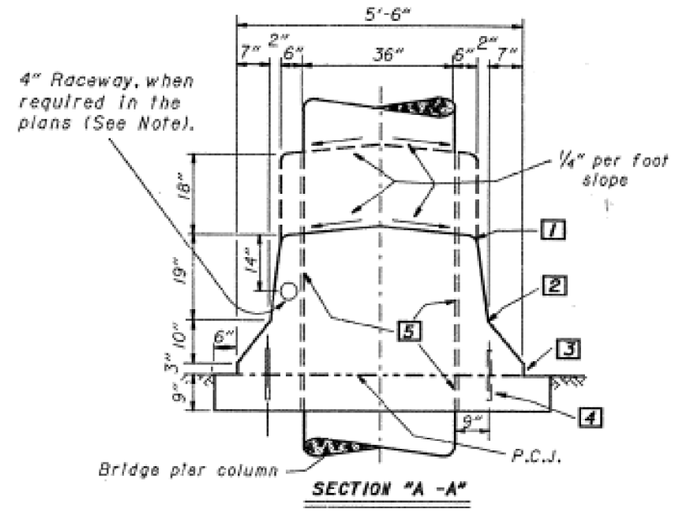
(For 50" barriers, the upper 18" varies from 6" or 12" width to 36" width.)



PLAN

BRIDGE PIER TRANSITION

(With Sign Support)



SECTION "A -A"

BUREAU OF LOCATION AND DESIGN OHIO DEPARTMENT OF TRANSPORTATION	
CONCRETE BARRIER TRANSITIONS	DATE 10-30-92
STANDARD CONSTRUCTION DRAWING **MC-9.4**	
APPROVED W.K. Hitchcock ENGR., L & D	

CALCULATED MJH CHECKED KAE

BARRIER DETAILS - NJ SHAPE

HAM-71-1.97

235
292

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CCTV INSTALLATIONS

THE CONTRACTOR SHALL FURNISH AND INSTALL THIS ITEM ACCORDING TO ODOT SUPPLEMENTAL SPECIFICATION 809, AS WELL AS ANY STANDARD CONSTRUCTION DRAWINGS NOTED ON THE PLANS.

ITEM 625E25920: CONDUIT 4" MULTI-CELL SCHEDULE 40 & SCHEDULE 80, 725.20

DESCRIPTION
THIS CONDUIT IS INTENDED FOR THE USE IN UNDERGROUND SITUATIONS REQUIRING MORE THAN ONE SINGLE CONDUIT. THIS INCLUDES THE MAIN CONDUIT RACEWAY ALONG THE FREEWAY, CONNECTION FROM PULL BOXES TO THE ROAD SIDE CABINETS AND FOR RUNS OF CONDUIT FOR MULTIPLE PURPOSES, E.G., AT RAMP METER INSTALLATIONS, FOR LOOP LEAD-IN CABLE, SIGNALS CABLE FOR RAMP METER DISPLAYS, SIGNAL CABLE FOR RAMP METER SIGNING FLASHERS & ILLUMINATION AND POWER. THE CONTRACTOR SHALL PLUG ALL UNUSED CELLS WITH CONDUIT CAPS TO ASSURE AIR AND WATER INTEGRITY OF EACH INDIVIDUAL INNERDUCT.

MATERIALS
THE TRAFFIC SURVEILLANCE RACEWAY SHALL CONSIST OF A FACTORY-ASSEMBLED SYSTEM OF FOUR (4) INNERDUCTS ASSEMBLED WITHIN A PROTECTIVE OUTER DUCT. THE INNERDUCTS SHALL BE NOMINAL 1.25 INCH INSIDE DIAMETER, TYPE DB PVC PER NEMA TC-8 WITH A BELL INSERTION DEPTH OF 1.75 INCHES MINIMUM. THE OUTER DUCT SHALL BE NOMINAL 4 INCH (INSIDE DIAMETER), SCHEDULE 40 PVC. CARLON TYPE SCHEDULE 40 AND 80 OR APPROVED EQUIVALENT. THE COUPLING SHALL BE DESIGNED IN A MANNER TO PERMIT EASY FIELD ASSEMBLY. THE COUPLING SHALL BE MARKED OR KEYED IN A MANNER TO ENSURE THE INNERDUCTS ARE PROPERLY ALIGNED, ANY COLOR CODES ARE CONTINUED AND THE ADJOINING SECTION IS INSERTED TO THE PROPER DEPTH IN THE BELL. ALL KEYS AND/OR MARKINGS SHALL BE VISIBLE AFTER ASSEMBLY TO ALLOW THE INSPECTION OF EACH JOINT FOR PROPER ASSEMBLY BEFORE BURIAL. THE SEALING SYSTEM SHALL BE DESIGNED TO ASSURE AIR INTEGRITYOF EACH INDIVIDUAL INNERDUCT AND WATER INTEGRITY OF THE ENTIRE SYSTEM.

WHERE INNERDUCT(S) WITHIN A MULTI-CELL DUCT ARE TO REMAIN EMPTY, ONE ¼-INCH NYLON ROPE SHALL BE INSTALLED IN EACH OF THE OPEN INNERDUCTS, THE ROPE WILL REMAIN TO BE USED FOR A FUTURE CABLE INSTALLATION. ALSO, EACH INNERDUCT SHALL BE PLUGGED TO MAINTAIN THE AIR AND WATER INTEGRITY. IN ADDITION, THE OUTER DUCT SHALL BE CAPPED TO MAINTAIN THE AIR AND WATER INTEGRITY OF THE ENTIRE SYSTEM.

INSTALLED IN TRENCH
INSTALLATION WILL BE IN 30-INCH DEEP TRENCH, EXCEPT AS NOTED ON THE PLANS.

ALL JOINTS WILL BE JOINED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS, IN ORDER TO PROVIDE AN AIR-TIGHT ENCLOSURE OF THE INTERIOR DUCTS AND A WATER-TIGHT ENCLOSURE OF THE OUTER DUCT. ALL MULTI-CELL CONDUIT INSTALLED OUTSIDE OF THE ROADWAY IN TRENCH SHALL BE SCHEDULE 40 UNLESS DIRECTED BY THE ODOT ENGINEER TO USE SCHEDULE 80 FOR USE IN WELL-TRAVELED VEHICULAR AREAS.

INSTALLED UNDER ROADWAY
INSTALLATION WILL BE AT LEAST 30 INCHES DEEP JACKED OR DRILLED UNDER PAVEMENT, EXCEPT AS NOTED ON THE PLANS.

ALL JOINTS WILL BE JOINED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS, IN ORDER TO PROVIDE AN AIR-TIGHT ENCLOSURE OF THE INTERIOR DUCTS AND A WATER-TIGHT ENCLOSURE OF THE OUTER DUCT. ALL MULTI-CELL CONDUIT INSTALLED UNDER THE ROADWAY SHALL BE SCHEDULE 80.

METHOD OF MEASUREMENT
THE CONDUIT WILL BE MEASURED BY THE AMOUNT OF CONDUIT IN FEET FURNISHED AND INSTALLED OF EACH TYPE SCHEDULE 40 OR 80 MEASURED FROM CENTER-TO-CENTER OF PULL BOXES, FOUNDATION, ETC., AND WILL INCLUDE ALL FITTINGS AND APPURTENANCES, JOINTS, BENDS, GROUNDS AND CONCRETE ENCASEMENT WHERE SPECIFIED.

THE TRENCH WILL BE MEASURED BY THE NUMBER OF FEET OF TRENCH COMPLETED AS PER C&MS 625.21.

BASIS OF PAYMENT
THE PAYMENT FOR THESE ITEMS WILL BE MADE FOR THE ACCEPTED LINER FOOT QUANTITIES AT THE CONTRACT BID PRICE.

TRACER WIRE

TRACER WIRE SHALL BE INSTALLED IN ONE OF THE MULTI-CELL INNERDUCTS IN ALL CONDUIT RUNS. TRACER WIRE SHALL BE NO SMALLER THAN #12 AWG WIRE. THE WIRE SHALL BE HDPE INSULATED, ORANGE IN COLOR, AND CONSTRUCTED OF COPPER CLAD STEEL. APPROXIMATELY 10 FEET OF SLACK OF THE TRACER WIRE SHALL BE LEFT INSIDE THE ADJACENT PULL BOXES CONNECTING THE CONDUIT RUNS. IN SITUATIONS WHERE A TYPE 2 FIBER OPTIC CABLE MARKER IS TO BE INSTALLED IN CONJUNCTION WITH THE TRACER WIRE, THE TRACER WIRE SHALL BE RUN THROUGH THE MARKER AND CONNECTED TO TERMINALS AT THE TOP OF THE MARKER.

PAYMENT FOR ALL TRACER WIRE SHALL BE INCLUDED IN THE BID ITEM FOR THE CONDUIT PAY ITEMS.

PULL BOX, 725.08, 32", AS PER PLAN

CONSTRUCT PULL BOX AS PER STANDARD CONSTRUCTION DRAWING ITS-14.11

GROUND ROD, AS PER PLAN

THE CONTRACTOR SHALL INSTALL AND TEST GROUND RODS PER ODOT CMS. FOR THIS PURPOSE ALL ITS INSTALLATIONS SHALL MATCH THE SAME GROUNDING REQUIREMENTS OF A TRAFFIC SIGNAL.

ITS DOWNTIMES

CONTRACTOR SHALL REFERENCE ODOT SUPPLEMENTAL SPECIFICATION 809 FOR ITS DEVICE DOWNTIMES AND FOLLOW THEM ACCORDINGLY.

ITEM 632E62810: INTERCONNECT CABLE, MISC.: CATEGORY 5E CABLE, OUTDOOR RATED

GENERAL DESCRIPTION
THE CONTRACTOR SHALL FURNISH AND INSTALL A CATEGORY 5E OUTSIDE PLANT ETHERNET CABLE THAT MEETS THE FOLLOWING MINIMUM SPECIFICATIONS:

- FOOTAGE MARKINGS: EVERY 3 FEET
- ARMOR: HELICALLY APPLIED 12MM ALUMINUM WITH INNER JACKET
- CONDUCTOR INSULATION: POLYOLEFIN
- JACKET: UV AND ABRASION RESISTANT POLYETHYLENE
- CONDUCTORS: 24 AWG SOLID BARE ANNEALED COPPER
- CABLE DIAMETER: MAXIMUM 0.35 INCHES
- FLOODING COMPOUND: WATERPROOF GEL
- MINIMUM BEND RADIUS: 1.0 INCH
- MAXIMUM PULLING FORCE: 25 POUNDS
- SHIELDED
- TEMPERATURE RATING
  - INSTALLATION: -30 TO +60 C
  - OPERATION: -45 TO +80 C
- COLOR CODE
  - PAIR 1: BLUE-WHITE/BLUE
  - PAIR 2: ORANGE-WHITE/ORANGE
  - PAIR 3: GREEN-WHITE/GREEN
  - PAIR 4: BROWN-WHITE/BROWN

THE CONTRACTOR SHALL INSTALL CABLE AS SHOWN IN THE PLANS, OR AS DIRECTED BY THE ENGINEER, LEAVING 10 FEET OF SLACK IN EACH PULL BOX. THE CABLE SHALL BE TERMINATE WITH RJ-45 CONNECTORS AND WIRED PER TIA/EIA 568-B.

METHOD OF MEASUREMENT
MEASUREMENT WILL BE MADE AS FOLLOWS: ITEM 632E62810: INTERCONNECT CABLE, MISC.: CATEGORY 5E CABLE, OUTDOOR RATED, FURNISHED AND INSTALLED IN PLACE, COMPLETE AND ACCEPTED BY THE ENGINEER.

BASIS OF PAYMENT
THE PAYMENT FOR THIS ITEM WILL BE MADE FOR THE ACCEPTED QUANTITIES AT THE CONTRACT UNIT PRICE.

UNIT OF PAYMENT
FEET

SIGNALIZATION MISC.; CCTV POLE REMOVED

WHERE INDICATED ON THE PLANS, REMOVE EXISTING CCTV POLES. POLE TO BECOME PROPERTY OF THE CONTRACTOR OR PROPERLY DISPOSED OF. PAYMENT FOR THIS WORK WILL BE MADE PER EACH AT THE UNIT BID PRICE.

SIGNALIZATION MISC.; CCTV CAMERA REMOVED FOR STORAGE

WHERE INDICATED ON THE PLANS, REMOVE EXISTING CCTV CAMERA FOR RE-USE. RETRUN CAMERA TO CENTRAL OFFICE ITS LAB:

614-387-4113 - PHONE
614-887-4134 - FAX
CEN.ITS.LAB@DOT.STATE.OH.US EMAIL

PAYMENT FOR THIS WORK WILL BE MADE PER EACH AT THE UNIT BID PRICE.

CALCULATED DPF
CHECKED BJF

ITS GENERAL NOTES

HAM-71-1.97

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SITE NO.	LOCATION	625							632				633		804			809		
		CONDUIT, 2" 725.04	CONDUIT, 4", MULTICELL, 725.20 , EPC-40	PULL BOX, 725.08, 18"	PULL BOX, 725.08, 32", AS PER PLAN	TRENCH, 30" DEEP	GROUND ROD, AS PER PLAN		INTERCONNECT CABLE, MISC.: CATEGORY 5E CABLE, OUTDOOR RATED		SIGNALIZATION MISC.: CCTV CAMERA REMOVED FOR STORAGE	SIGNALIZATION MISC.: CCTV POLE REMOVED	CONTROLLER WORKPAD					CCTV CONCRETE POLE WITH LOWERING UNIT, 70 FT	CCTV IP-CAMERA SYSTEM, DOME TYPE	
		FEET	FEET	EACH	EACH	FEET	EACH		FEET		EACH	EACH	EACH					EACH	EACH	
1	I-71 AT GILBERT AVE	20	20			20	1						1					1	1	
2	I-71 AT MCGREGOR AVE	40	40			40	1				1	1	1					1	1	
3	I-71 AT TAFT RD	50	50		1	50	1				1	1	1					1	1	
4	I-71 AT MONTGOMERY RD	30	30			30	1				1	1	1					1	1	
5	I-71 AT DANA AVE	30	30			30	1				1	1	1					1	1	
6	I-71 AT SMITH/EDMONDSON RD	20	20			20	1				1	1	1					1	1	
7	I-71	40	40			40	1				1	1	1					1	1	
8	I-71 AT SR-562	50	50		1	50	1				1	1	1					1	1	
	CONTINGENCY ITEMS			4	4				100											
		280	280	4	6	280	8		100		7	7	8					8	8	

CALCULATED DPF
CHECKED BJF

ITS SUBSUMMARY

HAM-71-1.97

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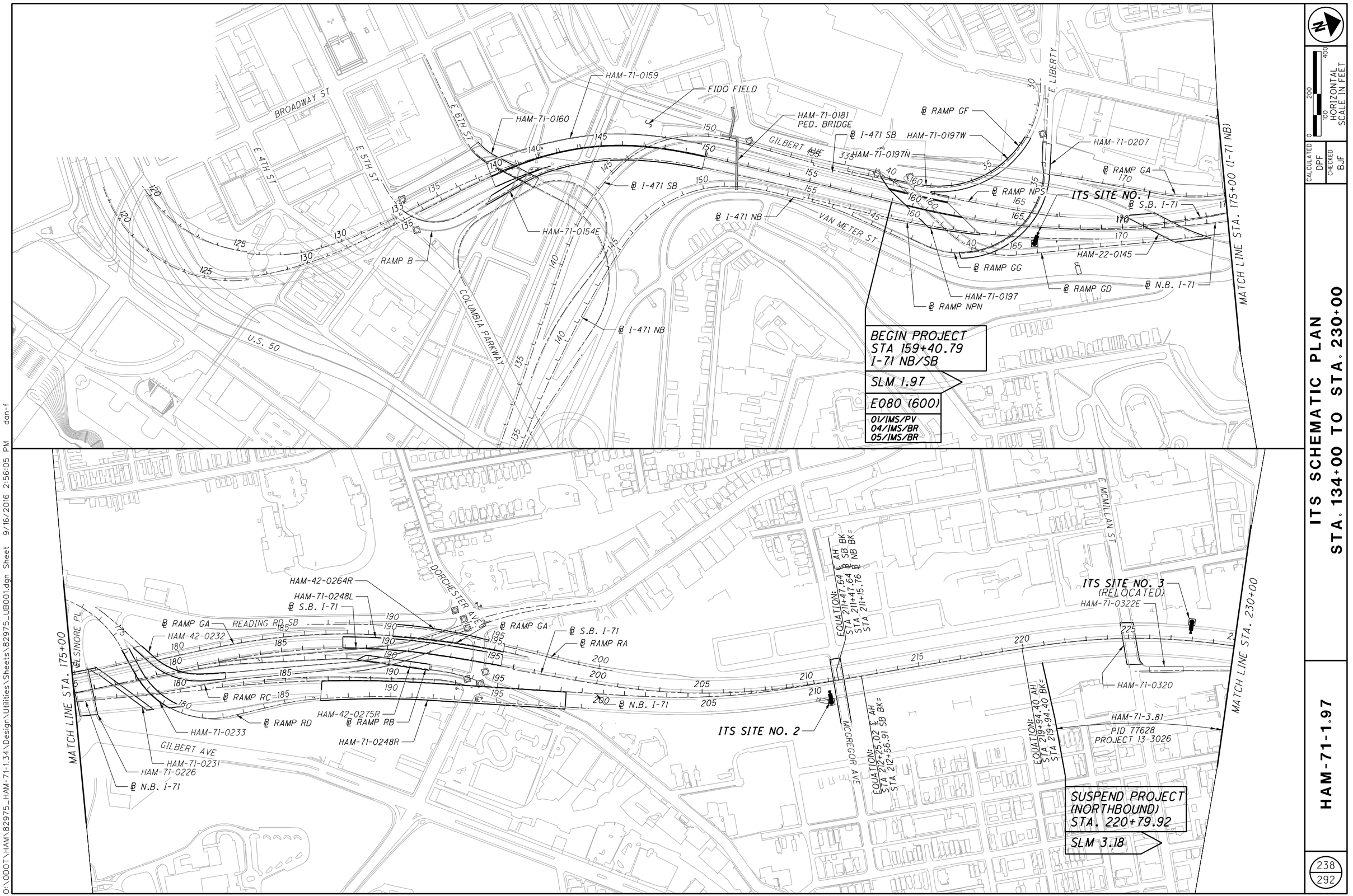

HORIZONTAL SCALE IN FEET
0 100 200 400

CALCULATED DPF
CHECKED BJF

ITS SCHEMATIC PLAN
STA. 134+00 TO STA. 230+00

HAM-71-1.97

238
292

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SUSPEND PROJECT
(SOUTHBOUND)
STA. 235+30.00
SLM 3.45

ITS SITE NO. 3 - RELOCATED
(EXIST LOCATION)

MAINTAIN EXIST CCTV

HAM-71-3.81 PID 77628 PROJECT: 13-3026

WILLIAM HOWARD TAFT RD

OAK ST

LINCOLN AVE

MARTIN LUTHER KING DR

FREEDONIA AVE

BLAIR AVE

HAM-71-0344

HAM-71-0332

MATCH LINE STA. 230+00

MATCH LINE STA. 285+00

RESUME PROJECT
(SOUTHBOUND)
STA. 297+00.00
SLM 4.62

MAINTAIN EXIST CCTV

℄ RAMP ME

HAM-71-0450

HAM-71-0505

VICTORY PKWY

JONATHAN AVE

EQUATION:
STA 317+66.68 BK=
STA 318+14.80 AH

WOODBURN AVE

DANA AVE.

MONTGOMERY RD

HAM-22-0446

ITS SITE
NO. 4

RESUME PROJECT
(NORTHBOUND)
STA. 311+50.00
SLM 4.90

℄ MONTGOMERY ROAD (US22/SR3)

℄ RAMP MF

MATCH LINE STA. 285+00

MATCH LINE STA. 345+00

HORIZONTAL SCALE IN FEET
0 100 200 400

CALCULATED DPF
CHECKED BJF

ITS SCHEMATIC PLAN
STA. 230+00 TO STA. 345+00

HAM-71-1.97

239
292

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MATCH LINE STA. 345+00

HAM-71-0551

℄ TRIMBLE AVE.

HAM-71-0571
PED. BRIDGE

℄ DANA AVE

NORWOOD
CINCINNATI

℄ RAMP DE

℄ RAMP DB

ITS SITE
NO. 5

HAM-71-0603

℄ DUCK CREEK RD.

HAM-71-0616

EQUATION:
STA 392+69.39 BK=
STA 290+50.00 AH

℄ RAMP DC

℄ RAMP DA

℄ DANA AVE

MATCH LINE STA. 300+00

MATCH LINE STA. 300+00

HAM-71-0658
UNDERPASS CULVERT

℄ SMITH ROAD

SMITH RD

℄ RAMP A1

℄ RAMP A2

HAM-71-0675

℄ WILLIAMS AVE

℄ RAMP B

ITS SITE
NO. 6

HAM-561-0314

℄ EDMONDSON ROAD

EDMONSON RD

EDWARDS ROAD

WILLIAMS AVE

℄ RAMP D

℄ RAMP C

℄ ROBERTSON AVE

HAM-71-0731

HAM-71-0752

ITS SITE
NO. 7

ROBERTSON AVE

MATCH LINE STA. 355+00

HORIZONTAL
SCALE IN FEET
0 100 200 400

CALCULATED DPF
CHECKED BJF

ITS SCHEMATIC PLAN
STA. 345+00 TO STA. 355+00

HAM-71-1.97

240
292

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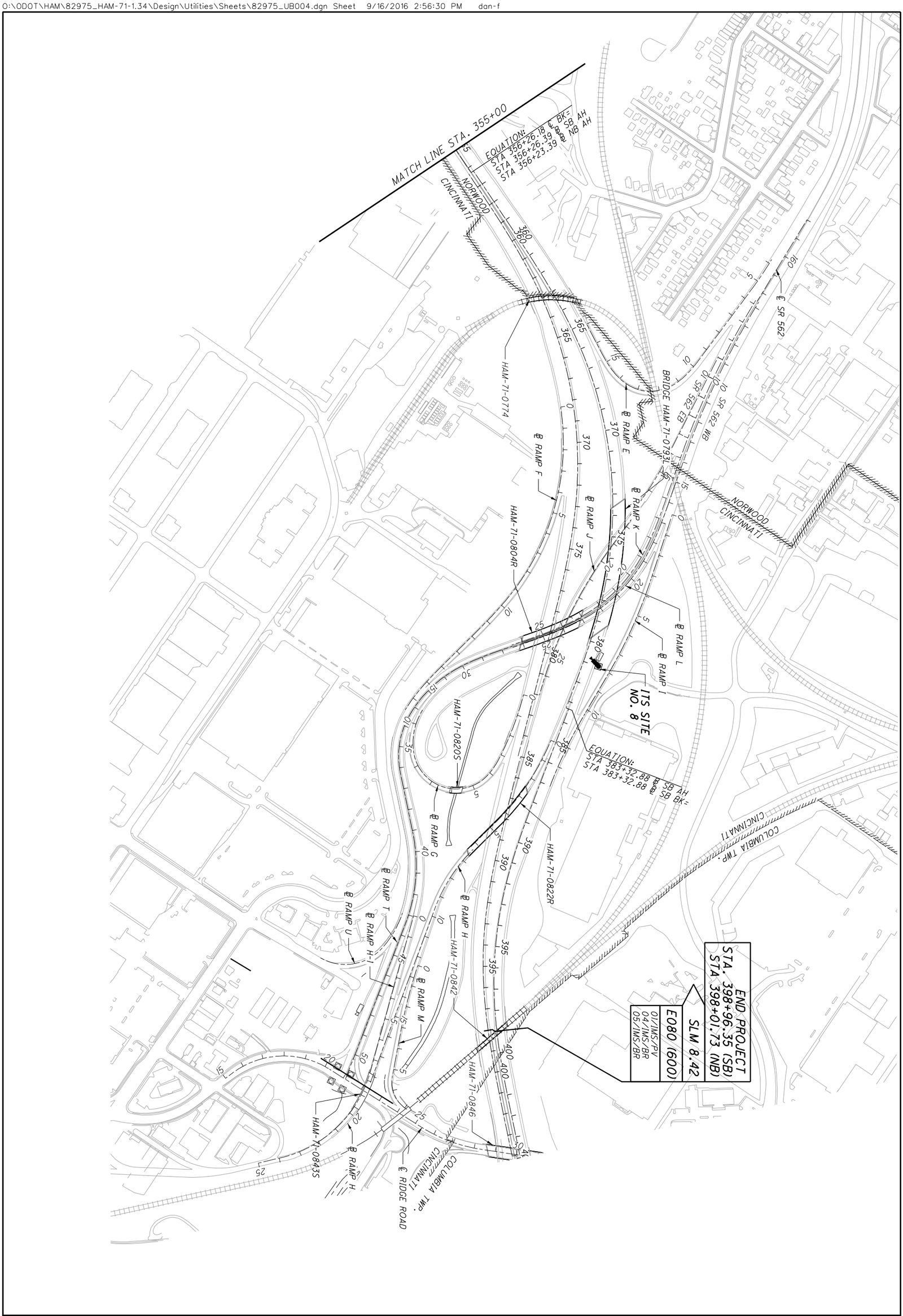
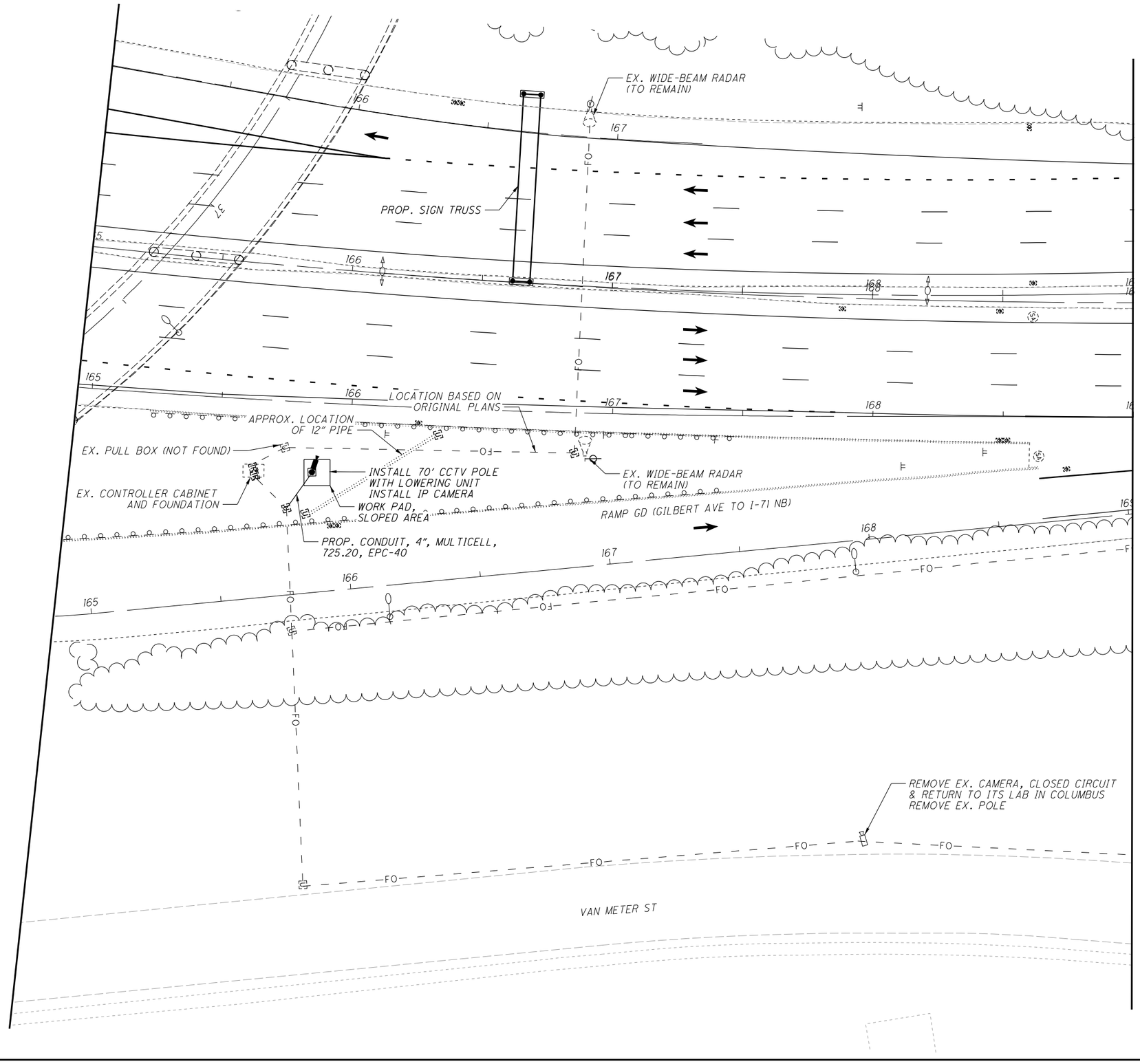


241 / 292	HAM-71-1.97	ITS SCHEMATIC PLAN STA. 355+00 TO STA. 405+00	CALCULATED DPF CHECKED BJF	0 200 100 400 HORIZONTAL SCALE IN FEET



NOTES:
1. FOR CONTRACTOR UTILITY LOCATE RESPONSIBILITY, SEE GENERAL NOTES, SHEET 11/292.
2. A CONTINGENCY CONDUIT QUANTITY IS INCLUDED TO ALLOW FLEXIBILITY IN LOCATION OF POLE.
3. EARTHWORK NECESSARY TO CONSTRUCT WORK PAD IS INCIDENTAL TO WORK PAD PAY ITEM.
4. CCTV COMPOSITE CABLE FROM CAMERA AT TOP OF POLE TO CABINET IS INCIDENTAL TO THE CCTV POLE PAY ITEM.

SCOPE OF WORK:
1. REMOVE EXISTING POLE. RETURN CAMERA TO ODOT CENTRAL OFFICE ITS LAB.
2. INSTALL NEW CAMERA, POLE, AND WORK PAD. REUSE EXISTING POWER SERVICE.
3. ADJUST LOCATION OF PROPOSED POLE AS NECESSARY TO AVOID EXISTING UTILITIES.

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED DPF
CHECKED BJF

ITS SITE NO. 1: - I-71 AND GILBERT AVE

HAM-71-1.97

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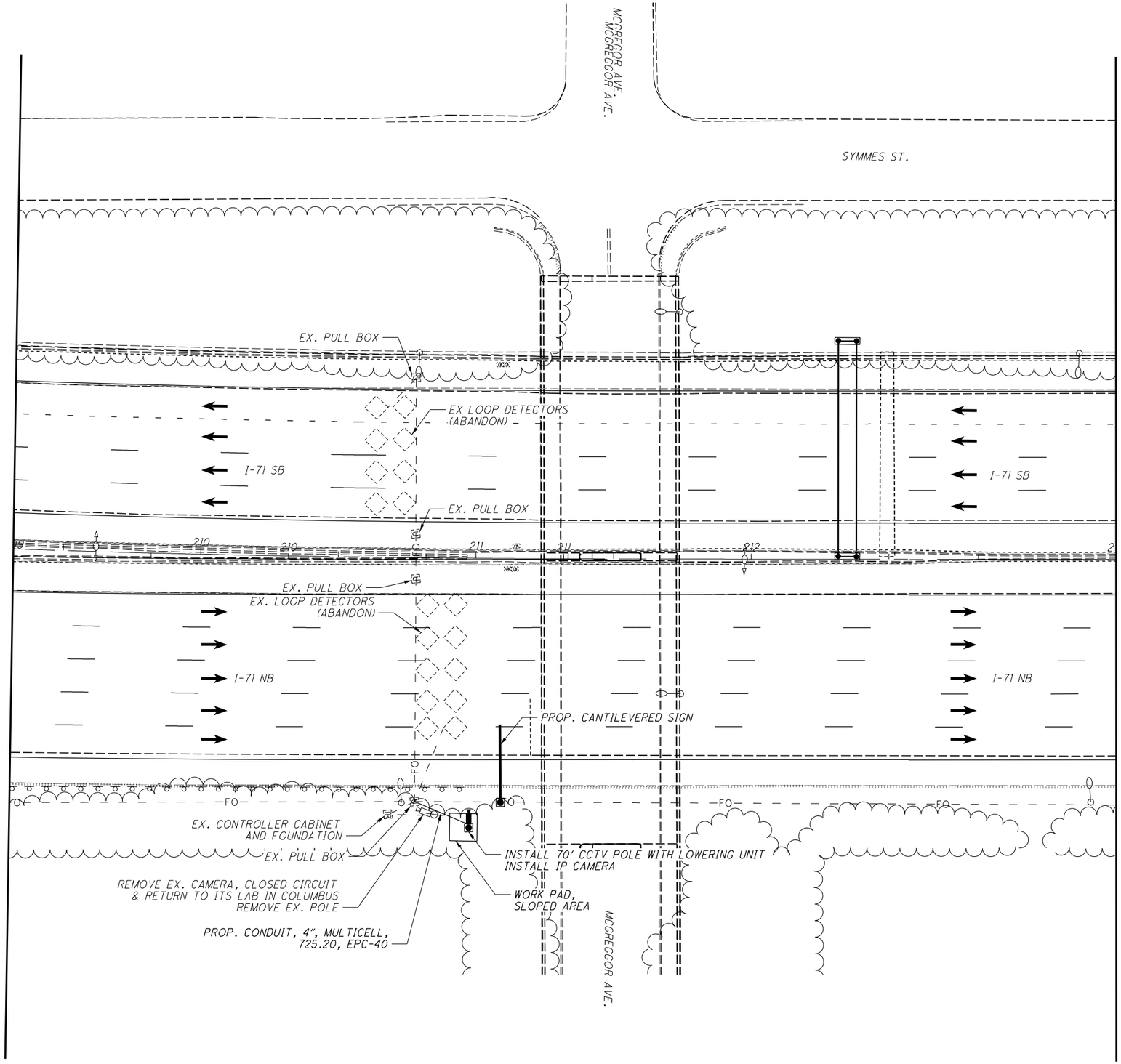

NOTES:
1. FOR CONTRACTOR UTILITY LOCATE RESPONSIBILITY, SEE GENERAL NOTES, SHEET 11/292.
2. A CONTINGENCY CONDUIT QUANTITY IS INCLUDED TO ALLOW FLEXIBILITY IN LOCATION OF POLE.
3. EARTHWORK NECESSARY TO CONSTRUCT WORK PAD IS INCIDENTAL TO WORK PAD PAY ITEM.
4. CCTV COMPOSITE CABLE FROM CAMERA AT TOP OF POLE TO CABINET IS INCIDENTAL TO THE CCTV POLE PAY ITEM.

SCOPE OF WORK:
1. REMOVE EXISTING POLE. RETURN CAMERA TO ODOT CENTRAL OFFICE ITS LAB.
2. INSTALL NEW CAMERA, POLE, AND WORK PAD. REUSE EXISTING POWER SERVICE.
3. ADJUST LOCATION OF PROPOSED POLE AS NECESSARY TO AVOID EXISTING UTILITIES.

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HORIZONTAL SCALE IN FEET

CALCULATED DPF
CHECKED BJF

ITS SITE NO. 2: I-71 AT MCGREGOR AVE

HAM-71-1.97

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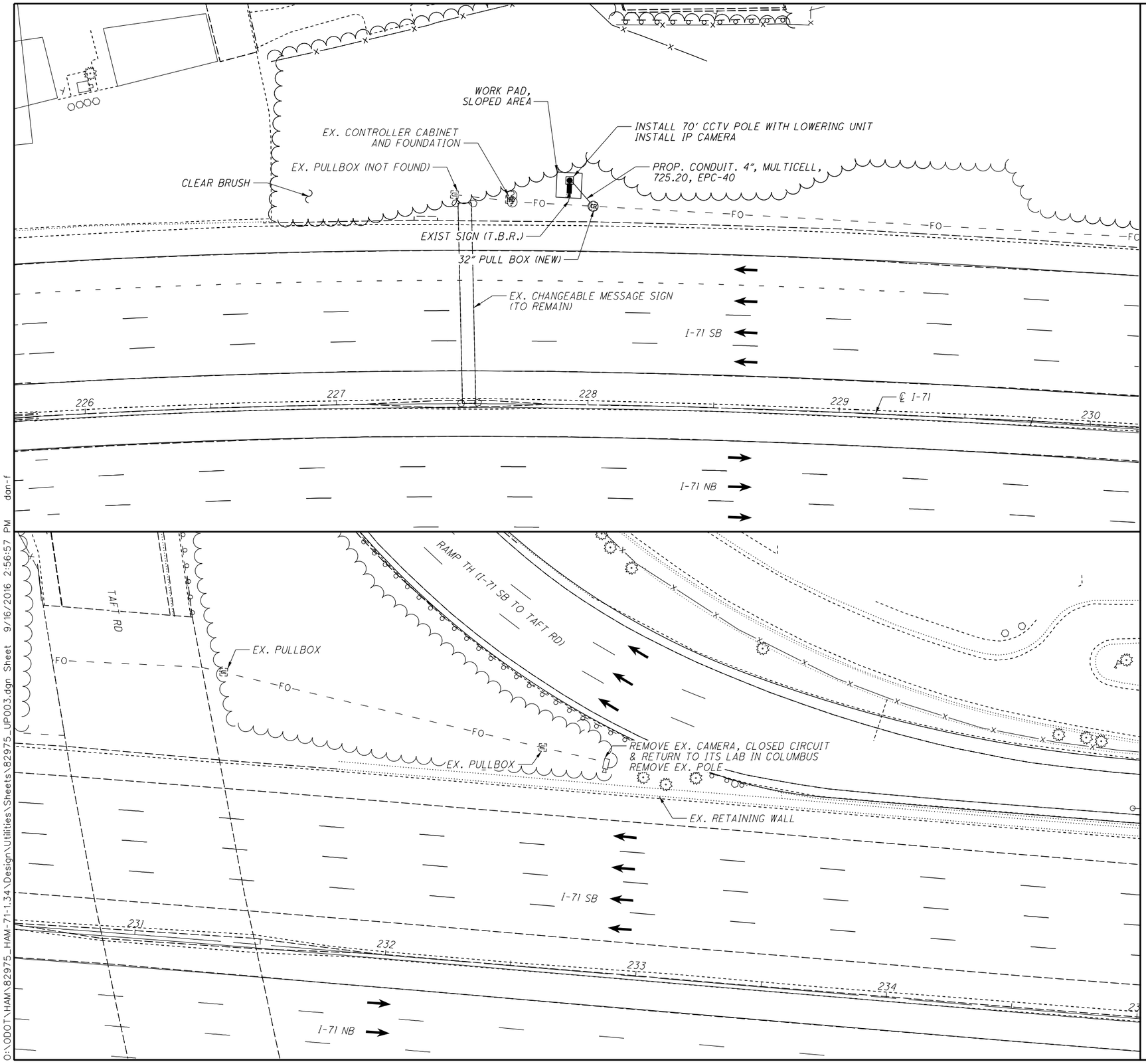

NOTES:
1. FOR CONTRACTOR UTILITY LOCATE RESPONSIBILITY, SEE GENERAL NOTES, SHEET 11/292.
2. A CONTINGENCY CONDUIT QUANTITY IS INCLUDED TO ALLOW FLEXIBILITY IN LOCATION OF POLE.
3. EARTHWORK NECESSARY TO CONSTRUCT WORK PAD IS INCIDENTAL TO WORK PAD PAY ITEM.
4. CCTV COMPOSITE CABLE FROM CAMERA AT TOP OF POLE TO CABINET IS INCIDENTAL TO THE CCTV POLE PAY ITEM.

SCOPE OF WORK:
1. REMOVE EXISTING POLE. RETURN CAMERA TO ODOT CENTRAL OFFICE ITS LAB.
2. INSTALL NEW CAMERA, POLE, AND WORK PAD. REUSE EXISTING POWER SERVICE.
3. ADJUST LOCATION OF PROPOSED POLE AS NECESSARY TO AVOID EXISTING UTILITIES.
4. REPLACE PULL BOX WITH 32" PULL BOX AS SHOWN.

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED DPF
CHECKED BJF

ITS SITE NO. 3: I-71 AT TAFT RD

HAM-71-1.97

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EX. CONTROLLER CABINET AND FOUNDATION

EX. PULL BOX

WORK PAD, SLOPED AREA

INSTALL 70' CCTV POLE WITH LOWERING UNIT
INSTALL IP CAMERA

EX. PULLBOX (NOT FOUND)

PROP. CONDUIT, 4", MULTICELL, 725.20, EPC-40

EX. WIDE BEAM RADAR (TO REMAIN)

I-71 SB

I-71 NB

MONTGOMERY RD.

PROP. SIGN TRUSS

RAMP MF (NB I-71 TO DUCK CREEK RD)

EX. PULLBOX

REMOVE EX. CAMERA, CLOSED CIRCUIT & RETURN TO ITS LAB IN COLUMBUS
REMOVE EX. POLE

EX. PULL BOX

I-71 SB

MONTGOMERY RD.

I-71 NB

RAMP MF (NB I-71 TO DUCK CREEK RD)

NOTES:
1. FOR CONTRACTOR UTILITY LOCATE RESPONSIBILITY, SEE GENERAL NOTES, SHEET 11/292.
2. A CONTINGENCY CONDUIT QUANTITY IS INCLUDED TO ALLOW FLEXIBILITY IN LOCATION OF POLE.
3. EARTHWORK NECESSARY TO CONSTRUCT WORK PAD IS INCIDENTAL TO WORK PAD PAY ITEM.
4. CCTV COMPOSITE CABLE FROM CAMERA AT TOP OF POLE TO CABINET IS INCIDENTAL TO THE CCTV POLE PAY ITEM.

SCOPE OF WORK:
1. REMOVE EXISTING POLE. RETURN CAMERA TO ODOT CENTRAL OFFICE ITS LAB.
2. INSTALL NEW CAMERA, POLE, AND WORK PAD. REUSE EXISTING POWER SERVICE.
3. ADJUST LOCATION OF PROPOSED POLE AS NECESSARY TO AVOID EXISTING UTILITIES.

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED DPF
CHECKED BJF

ITS SITE NO. 4: I-71 AT MONTGOMERY RD

HAM-71-1.97

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NOTES:
1. FOR CONTRACTOR UTILITY LOCATE RESPONSIBILITY, SEE GENERAL NOTES, SHEET 11/292.
2. A CONTINGENCY CONDUIT QUANTITY IS INCLUDED TO ALLOW FLEXIBILITY IN LOCATION OF POLE.
3. EARTHWORK NECESSARY TO CONSTRUCT WORK PAD IS INCIDENTAL TO WORK PAD PAY ITEM.
4. CCTV COMPOSITE CABLE FROM CAMERA AT TOP OF POLE TO CABINET IS INCIDENTAL TO THE CCTV POLE PAY ITEM.

SCOPE OF WORK:
1. REMOVE EXISTING POLE. RETURN CAMERA TO ODOT CENTRAL OFFICE ITS LAB.
2. INSTALL NEW CAMERA, POLE, AND WORK PAD. REUSE EXISTING POWER SERVICE.
3. ADJUST LOCATION OF PROPOSED POLE AS NECESSARY TO AVOID EXISTING UTILITIES.

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED DPF
CHECKED BJF

ITS SITE NO. 5: I-71 AT DANA AVE

HAM-71-1.97

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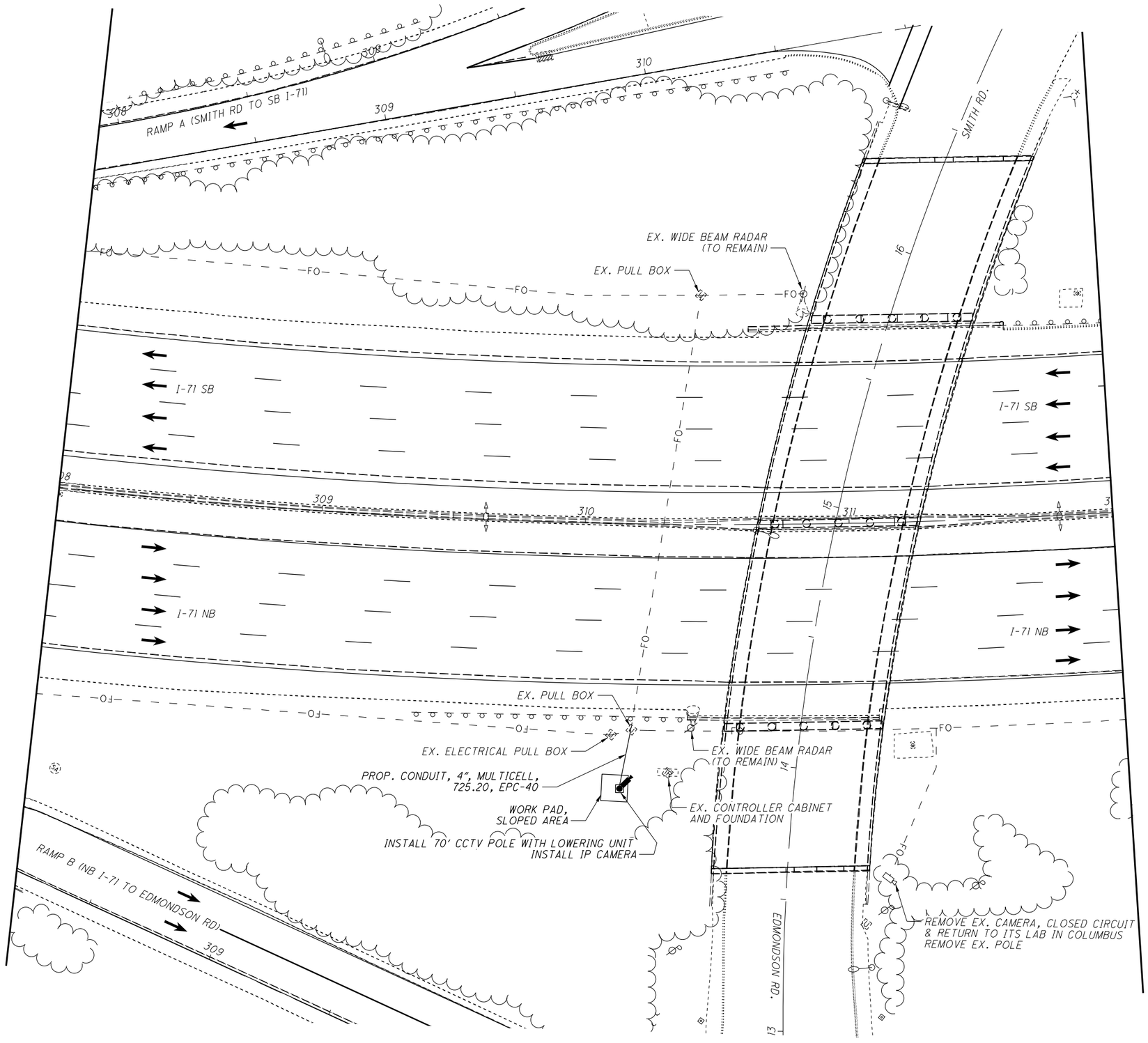

NOTES:
1. FOR CONTRACTOR UTILITY LOCATE RESPONSIBILITY, SEE GENERAL NOTES, SHEET 11/292.
2. A CONTINGENCY CONDUIT QUANTITY IS INCLUDED TO ALLOW FLEXIBILITY IN LOCATION OF POLE.
3. EARTHWORK NECESSARY TO CONSTRUCT WORK PAD IS INCIDENTAL TO WORK PAD PAY ITEM.
4. CCTV COMPOSITE CABLE FROM CAMERA AT TOP OF POLE TO CABINET IS INCIDENTAL TO THE CCTV POLE PAY ITEM.

SCOPE OF WORK:
1. REMOVE EXISTING POLE. RETURN CAMERA TO ODOT CENTRAL OFFICE ITS LAB.
2. INSTALL NEW CAMERA, POLE, AND WORK PAD. REUSE EXISTING POWER SERVICE.
3. ADJUST LOCATION OF PROPOSED POLE AS NECESSARY TO AVOID EXISTING UTILITIES.

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED DPF
CHECKED BJF

HAM-71-1.97 ITS SITE NO. 6: I-71 AT SMITH/EDMONDSON RD

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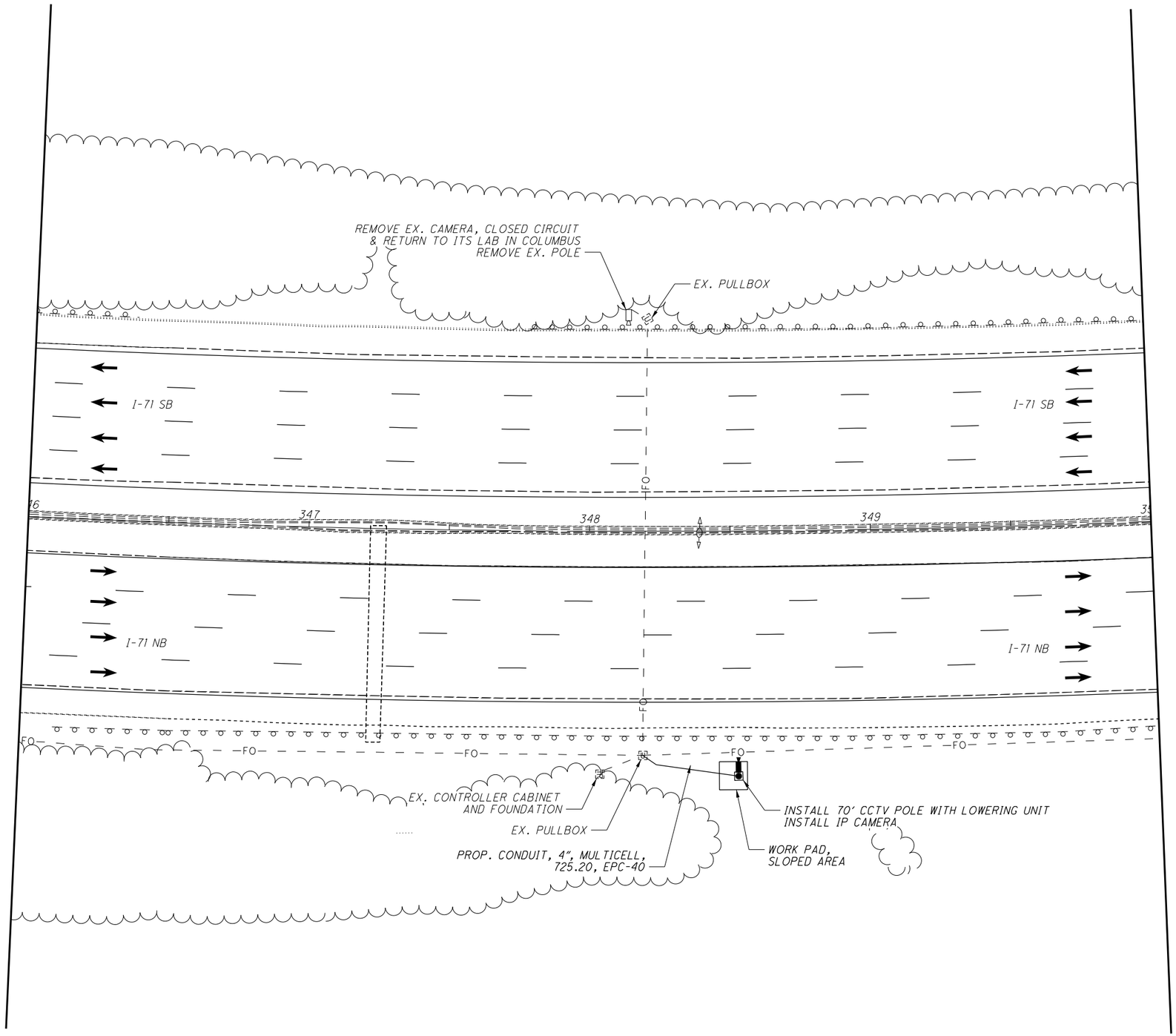
NOTES:
1. FOR CONTRACTOR UTILITY LOCATE RESPONSIBILITY, SEE GENERAL NOTES, SHEET 11/292.
2. A CONTINGENCY CONDUIT QUANTITY IS INCLUDED TO ALLOW FLEXIBILITY IN LOCATION OF POLE.
3. EARTHWORK NECESSARY TO CONSTRUCT WORK PAD IS INCIDENTAL TO WORK PAD PAY ITEM.
4. CCTV COMPOSITE CABLE FROM CAMERA AT TOP OF POLE TO CABINET IS INCIDENTAL TO THE CCTV POLE PAY ITEM.

SCOPE OF WORK:
1. REMOVE EXISTING POLE. RETURN CAMERA TO ODOT CENTRAL OFFICE ITS LAB.
2. INSTALL NEW CAMERA, POLE, AND WORK PAD. REUSE EXISTING POWER SERVICE.
3. ADJUST LOCATION OF PROPOSED POLE AS NECESSARY TO AVOID EXISTING UTILITIES.



HORIZONTAL SCALE IN FEET
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ITS SITE NO. 7

HAM-71-1.97

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SCOPE OF WORK:
1. REMOVE EXISTING POLE. RETURN CAMERA TO ODOT CENTRAL OFFICE ITS LAB.
2. INSTALL NEW CAMERA, POLE, AND WORK PAD. REUSE EXISTING POWER SERVICE.
3. ADJUST LOCATION OF PROPOSED POLE AS NECESSARY TO AVOID EXISTING UTILITIES.
4. REPLACE PULL BOX WITH 32" PULL BOX AS SHOWN

NOTES:
1. FOR CONTRACTOR UTILITY LOCATE RESPONSIBILITY, SEE GENERAL NOTES, SHEET 11/292.
2. A CONTINGENCY CONDUIT QUANTITY IS INCLUDED TO ALLOW FLEXIBILITY IN LOCATION OF POLE.
3. EARTHWORK NECESSARY TO CONSTRUCT WORK PAD IS INCIDENTAL TO WORK PAD PAY ITEM.
4. CCTV COMPOSITE CABLE FROM CAMERA AT TOP OF POLE TO CABINET IS INCIDENTAL TO THE CCTV POLE PAY ITEM.

REMOVE EX. CAMERA, CLOSED CIRCUIT & RETURN TO ITS LAB IN COLUMBUS
REMOVE EX. POLE
REPLACE EX. w/ 32" PULL BOX
PROP. CONDUIT, 4", MULTICELL, 725.20, EPC-40
EX. CONTROLLER CABINET AND FOUNDATION
EX. WIDE BEAM RADAR (TO REMAIN)
EX. PULL BOX
INSTALL 70' CCTV POLE WITH LOWERING UNIT
INSTALL IP CAMERA
WORK PAD, SLOPED AREA
EXIST SIGN
EX. LOOP DETECTOR (ABANDON)
EX. PULL BOX
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HORIZONTAL SCALE IN FEET
0 10 20 40
CALCULATED DPF
CHECKED BJF

ITS SITE NO. 8: I-71 AT SR-562

HAM-71-1.97

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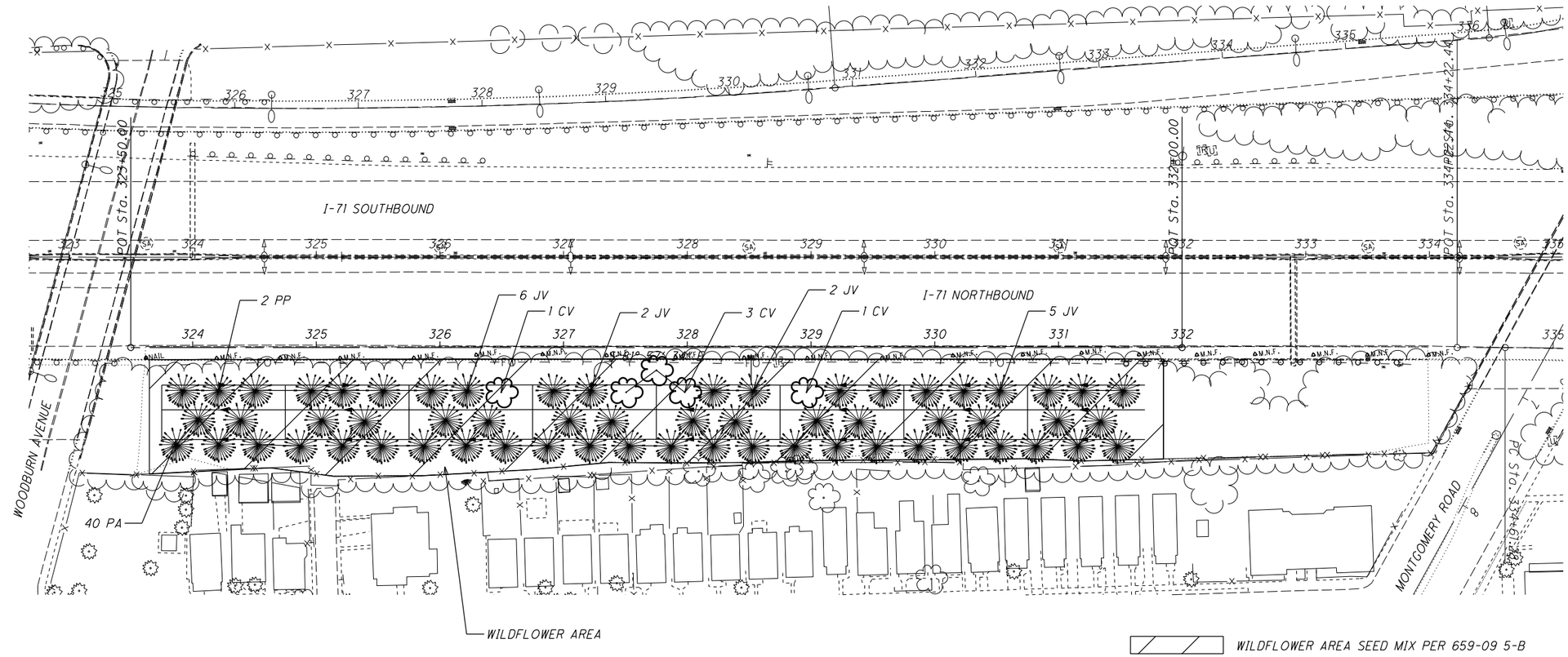

SUB-SUMMARY

ITEM	UNIT	DESCRIPTION	QTY.	KEY	COMMON NAME	COND.
661	EACH	DECIDUOUS TREE, 2" CALIPER, CRATAEGUS VIRDUS " WINTER KING"	5	CV	WINTER KING HAWTHORNE	B&B 16" MIN.
661	EACH	EVERGREEN TREE, 4' HEIGHT JUNIPERUS VIRGINIANA "BURKII"	15	JV	BURK EASTERN RED CEDAR	B&B 14" MIN.
661	EACH	EVERGREEN TREE, 4' HEIGHT PICEA ABIES	40	PA	NORWAY SPRUCE	B&B 14" MIN.
661	EACH	EVERGREEN TREE, 4' HEIGHT PICEA PUNGENS	5	PP	GREEN COLORADO SPRUCE	B&B 14" MIN.
661	ACRE	PLANTING, MISC:	1.62		WILDFLOWER SEEDING AND MULCHING MIX 5-B	
QUANTITIES CARRIED TO GENERAL SUMMARY						

HORIZONTAL SCALE IN FEET
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CALCULATED KAE
CHECKED MJH

LANDSCAPE PLAN FOR SLOPE REPAIR STA. 323+75 TO STA. 331+70

HAM-71-1.97

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GENERAL NOTES:

REFER TO THE FOLLOWING STANDARD BRIDGE DRAWINGS:

VPF-1-90 REVISED 7-17-15

AND TO THE FOLLOWING SUPPLEMENTAL SPECIFICATIONS:

843 DATED 4-18-2003
848 DATED 7-15-2016

DESIGN LOADING: HS-20 LIVE LOAD

DESIGN DATA:

CLASS QC1 CONCRETE (SUBSTRUCTURE)
- COMPRESSIVE STRENGTH 4.0 KSI
CLASS QC2 CONCRETE (SUPERSTRUCTURE AND PARAPET)
- COMPRESSIVE STRENGTH 4.5 KSI

REINFORCING STEEL - MINIMUM YIELD STRENGTH 60 KSI

DESIGN SPECIFICATIONS

DESIGN SPECIFICATIONS: THIS STRUCTURE CONFORMS TO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 2002, AND THE ODOT BRIDGE DESIGN MANUAL

ELASTOMERIC BEARINGS CONFORM TO THE REQUIREMENTS OF THE AASHTO LRFD DBRDGE DESIGN SPECIFICATIONS, 2012, SECTION 14.

MAINTENANCE OF TRAFFIC:

TRAFFIC SHALL BE MAINTAINED DURING BRIDGE CONSTRUCTION. BRIDGES MUST BE BUILT IN ACCORDANCE WITH MAINTENANCE OF TRAFFIC PLANS AND GENERAL NOTES.

EXISTING STRUCTURE PLANS:

CONSTRUCTION PLANS FOR THE EXISTING BRIDGES ARE ON FILE AT THE DEPARTMENT OF TRANSPORTATION, DISTRICT 8 OFFICE, 505 SOUTH STATE ROUTE 741, LEBANON, OHIO AND ARE AVAILABLE FOR REFERENCE.

EXISTING STRUCTURE VERIFICATION:

THE DETAILS SHOWN IN THESE PLANS ARE BASED ON DIMENSIONS OBTAINED FROM EXISTING DRAWING OF THE STRUCTURE AND/OR FIELD OBSERVATIONS. CONSEQUENTLY, THE DIMENSIONS AND DETAILS WITHIN THESE PROPOSED DRAWINGS SHALL BE CONSIDERED TENTATIVE AND APPROXIMATE. THE CONTRACTOR SHALL REFER TO CMS SECTIONS 102.05 AND 105.02. DIMENSIONS OF EXISTING STRUCTURES SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO FABRICATION OF MATERIALS.

UTILITY LINES:

THE UTILITY(IES) SHALL BEAR ALL EXPENSES INVOLVED IN RELOCATION (INSTALLING) THE AFFECTED UTILITY LINES. THE CONTRACTOR AND UTILITY(IES) ARE TO COOPERATE BY ARRANGING THEIR WORK IN SUCH A MANNER THAT INCONVENIENCE TO EITHER WILL BE HELD TO A MINIMUM.

SEALER FINISH COLOR:

THE COLOR FOR ITEM 512 - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE) SHALL BE FEDERAL COLOR NUMBER 17778, LIGHT NEUTRAL.

BRIDGE PAINTING COLOR:

BRIDGE HAM-71-0197 SHALL MATCH EXISTING COLOR
BRIDGE HAM-71-0793L SHALL BE FEDERAL COLOR NUMBER 14277, GREEN

ITEM 201, CLEARING AND GRUBBING, AS PER PLAN

DESCRIPTION:
THIS WORK CONSISTS OF THE REMOVAL OF EXISTING DEBRIS AND VEGETATION WITHIN 20 FOOT OF EACH SIDE OF THE EXISTING BRIDGE FOR THE FULL LENGTH OF THE STRUCTURE, INCLUDING THE APPROACH SLAB LIMITS. ITEMS REMOVED SHALL BE HAULED TO A PROPER DISPOSAL SITE. PERFORM ALL WORK IN A MANNER THAT WILL NOT DAMAGE THE EXISTING SLOPE PROTECTION.

PAYMENT:
THE DEPARTMENT WILL MEASURE THE QUANTITY OF REMOVALS ON A LUMP SUM BASIS. THE DEPARTMENT WILL PAY FOR THE ACCEPTED QUANTITIES OF REMOVALS AT THE CONTRACT PRICE FOR ITEM 201 - CLEARING AND GRUBBING, AS PER PLAN.

ITEM 202, PORTIONS OF STRUCTURE REMOVED OVER 20' SPAN, AS PER PLAN

DESCRIPTION:
THIS WORK CONSISTS OF THE REMOVAL OF THE EXISTING BEARINGS AND OTHER APPURTENANCES FROM STEEL GIRDERS. WELD REMNANTS ON EXISTING GIRDERS AND BEAMS SHALL BE GROUND FLUSH WITH THE ADJACENT SURFACES. CUT OFF ANCHOR RODS FLUSH WITH SURROUNDING SURFACES. THE PROVISIONS OF ITEM 202 APPLY EXCEPT AS SPECIFIED BY THE FOLLOWING NOTES. PERFORM WORK CAREFULLY DURING REMOVALS TO PROTECT PORTIONS OF SUCH SYSTEMS THAT ARE TO BE SALVAGED AND INCORPORATED INTO THE PROPOSED STRUCTURE.

THIS ITEM SHALL INCLUDE THE ELEMENTS INDICATED IN THE PLANS AND GENERAL NOTES AND THAT ARE NOT SEPARATELY LISTED FOR PAYMENT. ITEMS TO BE REMOVED INCLUDE ALL EXISTING MATERIALS BEING REPLACED BY NEW CONSTRUCTION AND MISCELLANEOUS ITEMS THAT ARE NOT SHOWN TO BE INCORPORATED INTO THE FINAL CONSTRUCTION AND ARE DIRECTED TO BE REMOVED BY THE ENGINEER. THE METHOD OF REMOVAL SHALL BE APPROVED BY THE ENGINEER. PERFORM ALL WORK IN A MANNER THAT WILL NOT CUT, ELONGATE OR DAMAGE THE EXISTING STRUCTURE TO BE PRESERVED. BLAST CLEAN STRIP SEAL STEEL EXTRUSIONS PRIOR TO INSTALLING THE NEW SEALS. SUBMIT CONSTRUCTION PLANS ACCORDING TO CMS 501.05.

PAYMENT:
THE DEPARTMENT WILL MEASURE THE QUANTITY OF REMOVALS ON A LUMP SUM BASIS. THE DEPARTMENT WILL PAY FOR THE ACCEPTED QUANTITIES OF REMOVALS AT THE CONTRACT PRICE FOR ITEM 202 - PORTIONS OF STRUCTURE REMOVED OVER 20' SPAN, AS PER PLAN.

ITEM 512, SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN

THIS WORK CONSISTS OF THE REMOVAL OF EXISTING GRAFFITI FROM THE REAR ABUTMENT & WINGWALLS OF BRIDGE HAM-71-0248R AND RESEALING ABUTMENT FACE WITH EPOXY URETHANE SEALER.

PERFORM WORK CAREFULLY DURING REMOVALS TO PROTECT ADJACENT PROPERTIES AND TRAFFIC. METHOD OF REMOVAL MAY INCLUDE, CHEMICAL SOLVENTS, WATER BLASTING OR LIGHT SANDBLASTING, AS APPROVED BY THE ENGINEER.

PAYMENT:
THE DEPARTMENT WILL INCLUDED THE COST OF REMOVALS IN THE UNIT COST FOR ITEM 512 - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE), AS PER PLAN

ITEM 513 - STRUCTURAL STEEL, MISC.: 2" STRESS RELIEF HOLE RETROFIT

THIS WORK SHALL CONSIST OF THE FOLLOWING SEQUENCE OF OPERATIONS:

1. DRILL A 2-INCH DIAMETER HOLE THROUGH THE DIAPHRAGM AT THE LOCATION SHOWN OR AS DIRECTED BY THE ENGINEER.

2. MAKE THE VERTICAL AND HORIZONTAL CUTS THROUGH THE DIAPHRAGM AS SHOWN, BEING CAREFUL TO CUT FAR ENOUGH AWAY FROM THE GIRDER WEB AND FLANGE TO AVOID ANY UNDERCUT OR GOUGING FROM THE CUTTING OPERATION. REMOVE AND DISCARD THE PORTION OF THE DIAPHRAGM.

ALL CUTTING IS TO BE DONE BY EITHER THE OXYGEN CUTTING OR THE AIR CARBON ARC PROCESS. CUTTING MAY BE DONE MANUALLY PROVIDED A GUIDE IS USED AND A STRAIGHT CUT IS ATTAINED. IF OXYGEN CUTTING IS USED THE CUT SHALL BE MADE IN SUCH A LOCATION THAT THE DIAPHRAGM IS SEVERED, AND NOT AT A LOCATION WHERE THE CUT WOULD EXTEND INTO THE FILLET WELDS. IF AIR CARBON ARC IS USED THE CUTS SHALL BE MADE NO CLOSER TO THE WEB OR FLANGE THAT 1/8". WITH WHATEVER PROCESS IS USED THE CONTRACTOR SHALL DEMONSTRATE TO THE ENGINEER PRIOR TO THE START OF THE WORK THAT HE CAN ACCOMPLISH THE WORK WITHOUT DAMAGE TO THE GIRDER WEBS AND FLANGES.

3. AFTER DISCARDING THE REMOVED PORTION OF THE DIAPHRAGM, IMMEDIATELY GRIND THE SURFACES OF THE CUTS. THE GRINDING IS TO REMOVE ANY LARGE SURFACE IRREGULARITIES.

4. IF THE RESULTING HOLE OF STEPS 1 THROUGH 3 DID NOT TOUCH THE FACE OF THE WEB THE HOLE SHALL BE GROUND SO THAT A 1-INCH MINIMUM RADIUS FROM THE HOLE TO THE FACE OF THE WEB RESULTS. GRIND ANY REMAINING FILLET WELDS AND DIAPHRAGM SO THAT THE RESULTING SURFACES OF THE WEB AND FLANGE ARE SMOOTH. TAKE CARE THAT THE FULL THICKNESS OF BOTH THE WEB AND FLANGE ARE MAINTAINED AND NO UNDERCUT, GOUGING OR OVER GRINDING TAKES PLACE. DO NOT GOUGE THE WEB OR FLANGE.

5. CLEAN AND NDT THE RETROFIT AREA OUTLINED IN THE PLANS AND DESCRIBED IN PENCIL ABRASIVE BLASTING, GRINDING AND NDT. PERFORM UIT IN REMAINING DIAPHRAGM WELDS BETWEEN THE DRILLED HOLE AND THE GIRDER BOTTOM FLANGE TIE PLATE.

PAYMENT FOR ALL WORK NOTED ABOVE WILL BE MADE AT THE CONTRACT PRICE BID UNDER:

ITEM	UNIT	DESCRIPTION
513	EACH	STRUCTURAL STEEL, MISC.: 2" STRESS RELIEF HOLE RETROFIT

PAINT EXPOSED STEEL IN ACCODANCE WITH ITEM 514 FIELD PAINTING OF DAMAGED STRUCTURAL STEEL, AS PER PLAN.

ITEM 513 - STRUCTURAL STEEL, MISC.: FILLET WELD CRACK RETROFIT

THIS WORK SHALL CONSIST OF REMOVING AND REWELDING CRACKS IN THE FILLET WELDS, WHICH WERE USED TO ATTACH THE STIFFENERS TO THE WEBS DURING THE FABRICATION OF THE BOX GIRDER, ACCORDING TO THE PLANS AND AS DIRECTED BY THE ENGINEER.

PERFORM PENCIL ABRASIVE BLASTING AND NDT TO DELINEATE THE CRACK. FILLET WELD CRACKS SHALL BE REMOVED BY GRINDING THE WELD MATERIAL TO A SMOOTH FINISH FLUSH WITH THE SURFACE OF THE PIER CAP WEB AND STIFFENER WITHOUT CUTTING OR GOUGING THE STRUCTURAL STEEL PLATES. PREPARE SURFACES AND REWELD AS SHOWN IN THE DETAIL.

THE ACCEPTED NUMBER OF RETROFITS AS DESCRIBED ABOVE SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE PER WELD RETROFITTED. THE PRICE AND PAYMENT SHALL BE FULL COMPENSATION FOR FURNISHING ALL LABOR, MATERIAL, EQUIPMENT AND INCIDENTALS NECESSARY TO REPAIR EACH CRACK. PAYMENT FOR ALL WORK NOTED ABOVE WILL BE MADE AT TECH CONTRACT PRICE BID UNDER:

ITEM	UNIT	DESCRIPTION
513	EACH	STRUCTURAL STEEL, MISC.: FILLET WELD CRACK RETROFIT

PAINT EXPOSED STEEL IN ACCODANCE WITH ITEM 514 FIELD PAINTING OF DAMAGED STRUCTURAL STEEL, AS PER PLAN.

ITEM 513-STRUCTURAL STEEL, MISC.: GRINDING PER FOOT, AS PER PLAN

FILLET WELDS SHALL BE REMOVED BY GRINDING THE WELD MATERIAL TO A SMOOTH FINISH FLUSH WITH THE SURFACE OF THE PIER CAP BOTTOM FLANGE WITHOUT CUTTING OR GOUGING THE STRUCTURAL STEEL PLATE. THE REMAINING PORTIONS OF THE KNEE BRACES SHALL BE COMPLETELY REMOVED FROM THE BOTTOM FLANGE. GRINDING DIRECTION SHALL BE PARALLEL TO THE LENGTH OF THE BOX GIRDER PIER CAP.

PAINT EXPOSED STEEL ON THE BOTTOM FLANGE PLATE IN ACCODANCE WITH ITEM 514 FIELD PAINTING OF DAMAGED STRUCTURAL STEEL, AS PER PLAN.

PAYMENT FOR THIS WORK SHALL INCLUDE ALL EQUIPMENT, TOOLS, LABOR AND MATERIALS NECESSARY TO PERFORM THIS TASK. REMAINING KNEE BRACES ARE ATTACHED TO THE PIER CAP BOTTOM FLANGE BY FILLET WELDS 5"± IN LENGTH ALONG BOTH SIDES. THE ESTIMATED QUANTITY FOR THIS PAY ITEM INCLUDES WELD LENGTHS ON BOTH SIDES OF THE KNEE BRACES.

PENCIL ABRASIVE BLASTING, GRINDING AND NDT

THE PENCIL ABRASIVE BLASTING REFERRED TO IN THE VARIOUS NOTES AND REPAIR ITEMS IN THESE PLANS SHALL CONFORM TO THE FOLLOWING:

1. CLEAN THE DESIGNATED AREA BY PENCIL ABRASIVE BLASTING THE PAINT AND/OR RUST FROM THE STEEL SURFACE. CLEANED AREAS SHALL BE AT LEAST 4 INCHES WIDE ALONG EACH SIDE OF A SUSPECTED CRACK LOCATION UNLESS OTHERWISE SHOWN IN THE PLANS.

2. THE ENGINEER, ACCOMPANIED BY THE CONTRACTOR, SHALL CAREFULLY VISUALLY INSPECT THE CLEANED AREA. GRINDING MAY BE DIRECTED BY THE ENGINEER TO ENHANCE THE INVESTIGATION FOR CRACK PRESENCE. ALL GRINDING MUST BE DONE CAUTIONSLY, ESPECIALLY IN TENSION ZONES. THE GRINDING MOTION SHALL BE PARALLEL TO THE FLANGE EDGE.

3. NON-DESTRUCTIVE TEST (NDT) THE AREA USING MAGNETIC PARTICLE EXAMINATION AND/OR DYE PENETRATION SO THAT THE ENGINEER MAY FURTHER INSPECT THE CRACKS.

4. PERFORM STEP 1 THROUGH 3 ON THE OTHER SIDE OF THIS LOCATION.

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DESIGN AGENCY
BURGESS & NIPLE
312 PLUM ST. CINCINNATI OH

DESIGNED SJA | DRAWN SJA | REVIEWED JSB 8/31/2016 | DATE | CHECKED XAC | REVISED XXX | STRUCTURE FILE NUMBER COMBINED

COMMON GENERAL NOTES 1
COMBINED FOR ALL STRUCTURES
HAM-71-1.97

HAM-71-1.97
PID No. 82975

GENERAL NOTES: (CONTINUED)

ULTRASONIC IMPACT TREATMENT:

1. DESCRIPTION: THIS WORK SHALL CONSIST OF APPLYING ULTROSONIC IMPACT TREATMENT (UIT) TO FATIGUE PRONE WELDED DETAILS AS INDICATED IN THE PLANS.

2. UIT CONTRACTOR QUALIFICATIONS: THE CONTRACTOR SHALL ENGAGE A FIRM COMPETENT AND PROFICIENT IN THE USE OF ULTRASONIC IMPACT TREATMENT. THE UIT FIRM SHALL HAVE HAD EXPERIENCE WITH SIMILAR TYPES OF WORK ON TREATMENT OF BRIDGE DETAILS IN PREVIOUS PROJECTS. THE LIST OF PROJECTS, THEIR LOCATIONS, KEY PERSONNEL DIRECTLY INVOLVED IN PERFORMANCE AND SUPERVISION OF THE WORK AND THE NAME OF A CURRENT CONTACT PERSON FOR EACH OF THE PROJECTS SHALL BE SUBMITTED FOR APPROVAL BY THE ENGINEER.

3. EQUIPMENT REQUIREMENTS: THE UIT FIRM SHALL FURNISH COMPLETE UIT TOOLING REQUIREMENTS, INCLUDING, BUT NOT LIMITED TO 1 ELECTRONIC CONTROL UNITS WITH POWER SOURCE, 1 UIT TOOLS, ALL REQUIRED TOOL TIP SETS; ADDITIONAL TREATMENT PINS, AS REQUIRED; CLOSED CIRCUIT COOLING SYSTEM; COMPLETE SET OF EXTENSION CABLES AND COOLING HOSES; ALL NECESSARY ADJUSTMENT AND MAINTENANCE TOOLS FOR THE UIT SYSTEM; AND ALL EQUIPMENT CONSUMABLES REQUIRED DURING THE APPLICATION OF UIT. THE UIT SHALL BE PERFORMED USING EQUIPMENT WITH A FREQUENCY OF EITHER 27 KHZ OR 36 KHZ, USING A POWER OUTPUT RATING OF AT MINIMUM 800 WATTS.

THE CONTRACTOR SHALL FURNISH ALL NECESSARY SAFETY EQUIPMENT, INCLUDING, BUT NOT LIMITED TO, SAFETY HARNESSES, VESTS, GLASSES, EARPLUGS, ETC. THE CONTRACTOR SHALL FURNISH ALL NECESSARY PERMITS, MEANS OF ACCESS, TRAFFIC CONTROL, AND 110 V, 60 HZ, 3 HW AC WITH A MINIMUM OF THREE OUTLETS POWER SUPPLY.

4. TRAINING: IF THE CONTRACTOR'S PERSONNEL ARE NOT TRAINED OPERATORS PREVIOUSLY CERTIFIED BY THE UIT FIRM, THEN THE UIT FIRM SHALL PROVIDE TRAINING FOR THE CONTRACTOR'S PERSONNEL. THE TRAINING INCLUDES THE SETUP OF ALL NECESSARY EQUIPMENT, AND THE ESTABLISHMENT OF QUALITY CONTROL PROCEDURES. SPECIFICALLY, THE UIT FIRM SHALL PROVIDE:

A. A TECHNICAL PROCEDURE MANUAL DEFINING THE TREATMENT METHODOLOGY AND PARAMETERS FOR THE SUCCESSFUL OPERATION OF THE TOOL TO ACHIEVE THE DESIRED RESULTS.

B. A TECHNICAL PROCEDURE INSPECTION GUIDE COVERING THE DETAILS OF THE QUALITY ASSURANCE PROGRAM TO BE CONDUCTED TO ENSURE THAT THE TREATMENT METHODOLOGY HAS BEEN APPLIED IN ACCORDANCE WI TH THE INSTRUCTIONS GIVEN IN THE TECHNICAL PROCEDURE MANUAL.

C. UIT TREATMENT TRAINING OF CONTRACTOR PERSONNEL. A MINIMUM OF TWO INDIVIDUALS SHALL BE TRAINED ON-SITE WITH A COMPREHENSIVE TRAINING PROGRAM ON THE GENERAL OPERATION OF THE TOOL AND THE GUIDELINES FOR THE TECHNICAL TREATMENT APPLICATION FOR THIS PROJECT.

D. QUALITY INSPECTION TRAINING OF CONTRACTOR PERSONNEL. A MINIMUM OF TWO INDIVIDUALS, OTHER THAN THOSE APPLYING THE TREATMENT, SHALL BE TRAINED TO CARRY OUT COMPLETE AND THOROUGH INSPECTIONS OF THE TREATMENT BEING UNDERTAKEN.

THE CONTRACTOR SHALL FURNISH ADEQUATE PERSONNEL ASSIGNED TO THE UIT WORK.

5. PROCEDURES: PRIOR TO THE APPLICATION OF UIT THE WELDS MUST BE INSPECTED. ANY CRACKS NOT IDENTIFIED IN THE PLANS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO UIT TREATMENT. ANY WELD DEFECTS OR CRACKS AT OR NEAR THE WELD MUST BE REPAIRED PRIOR TO TREATMENT.

UNLESS OTHERWISE RECOMMENDED BY THE MANUFACTURER, THE FOLLOWING SHALL APPLY IN THE APPLICATION OF UIT:

THE AXIS OF THE UIT IMPACTING PINS DURING APPLICATION SHOULD BE HELD PERPENDICULAR TO THE DIRECTION OF TRAVEL. THE TOOL MUST BE CONTINUOUSLY ADJUSTED TO ENSURE THE PERPENDICULAR ORIENTATION TO THE DIRECTION OF TRAVEL IS MAINTAINED. ALL PIN TIPS SHOULD MAKE CONTACT WITH THE WELD TOE SIMULTANEOUSLY. DURING TREATMENT, THE TOOL SHALL NOT REMAIN STATIONARY FOR AN EXTENDED PERIOD OF TIME. THE APPLICATION OF UIT SHALL INCLUDE TREATMENT OF AN ADDITIONAL AREA OF ½" AROUND THE ENTIRE DEFECT. ON STITCH WELDED AREAS, EACH DEFECT SHALL BE CONSIDERED A SEPARATE DEFECT. RATE OF TRAVEL OF THE TOOL IS APPROXIMATELY 2 FEET PER MINUTE FOR FULL EFFECT.

ITEM 514 - FIELD PAINTING OF DAMAGED STRUCTURAL STEEL, AS PER PLAN:

THIS ITEM CONSISTS OF FIELD PAINTING DAMAGED STRUCTURAL STEEL BY PERFORMING SURFACE PREPARATION AND APPLYING A TWO-COAT PAINT SYSTEM TO THE UNCOATED STEEL AND FEATHERED REMOVAL AREAS OF EXISTING COATINGS.

CMS 514.06 THROUGH 514.10 APPLY. REMOVE EXISTING PAINT COATING TO CONTRACT LIMITS OR AS DIRECTED BY THE ENGINEER ACCORDING TO SSPC-SP 15, COMMERCIAL GRADE POWER TOOL CLEANING, OR EQUAL AS SHOWN ON THE PICTORIAL SURFACE PREPARATION STANDARDS FOR PAINTING STEEL SURFACES SHOWN IN SSPC-VIS 3. THE ENGINEER WILL USE THE SSPC-VIS 3 TO DETERMINE THE ACCEPTANCE OF THE COMMERCIAL GRADE POWER TOOL CLEANING. FEATHER THE EXISTING PAINT TO EXPOSE A MINIMUM OF ½ INCH (13 MM) OF EACH COAT. CONTAIN AND DISPOSE OF WASTE GENERATED BY THE CLEANING ACCORDING TO CMS 514.13.D.

ROUND ALL EXPOSED CORNERS OF MAIN MATERIAL AS NECESSARY TO ACHIEVE A 1/16 INCH RADIUS [1.6 MM] OR EQUIVALENT FLAT SURFACE AT A 45 DEGREE ANGLE.

APPLY THE PRIME AND INTERMEDIATE COATS OF THE SPECIFIED THREE-COAT PAINT SYSTEM, CMS 708.02, ACCORDING TO CMS 514.15, 514.16, 514.17, AND 514.20 TO CONTRACT LIMITS OR AS DIRECTED BY THE ENGINEER. TINT THE INTERMEDIATE COAT TO APPROXIMATELY THE SAME COLOR AS THE EXISTING FINISH COLOR. MATCH THE COLOR TO THE ENGINEERS SATISFACTION. THE ENGINEER WILL DETERMINE THE PRIME COAT THICKNESS; PRIME AND INTERMEDIATE COAT THICKNESS USING A TYPE 2 MAGNETIC GAGE AT SPOT LOCATIONS. EACH COAT OF PAINT SHALL MEET THE MINIMUM DRY FILM THICKNESS REQUIREMENTS OF CMS 514.20. APPLY PAINT AS FOLLOWS:

A. APPLY THE PRIME COAT ONLY TO THE SURFACE OF THE BARE STEEL AND THE EXISTING PRIME COAT EXPOSED BY FEATHERING. DO NOT APPLY THE PRIME COAT TO THE ADJACENT INTERMEDIATE COAT.

B. APPLY THE INTERMEDIATE COAT ONLY TO THE NEW PRIME COAT AND THE EXISTING INTERMEDIATE COAT EXPOSED BY FEATHERING. DO NOT APPLY THE INTERMEDIATE COAT TO THE ADJACENT FINISH COAT.

AT THE PERIMETER OF THE REPAIR AREA, APPLY THE PRIME AND INTERMEDIATE COATS USING A BRUSH. APPLY THE FINISH COAT USING EITHER BRUSH OR SPRAY. IN LIEU OF BRUSHING THE USE OF MASKING AREAS NOT TO BE COATED AND SPRAY TO FEATHERED REMOVAL LINES MAY BE PERFORMED.

BLEND REPAIR AREAS WITH THE ADJACENT COATING AND PROVIDE A FINISHED SURFACE IN THE PATCHED AREAS THAT IS SMOOTH AND HAS AN EVEN PROFILE WITH THE ADJACENT SURFACE.

THE DEPARTMENT WILL MEASURE FIELD PAINTING OF DAMAGED STRUCTURAL STEEL, AS PER PLAN BY THE NUMBER OF SQUARE FEET (SQUARE METERS) OF STRUCTURAL STEEL PAINTED. ALL REQUIREMENTS OF THIS SPECIFICATION ARE CONSIDERED INCIDENTAL TO THE WORK. THE DEPARTMENT WILL DETERMINE THE SURFACE AREA BY TAKING EXACT FIELD MEASUREMENTS OF ALL PAINTED SURFACES AND CALCULATIONS.

DEPARTMENT WILL PAY FOR ACCEPTED QUANTITIES AT THE CONTRACT PRICE FOR:

ITEM	UNIT	DESCRIPTION
514	SQUARE FEET	FIELD PAINTING OF DAMAGED STRUCTURAL STEEL, AS PER PLAN

ITEM 516, JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN

THIS WORK CONSISTS OF RAISING OR RE-POSITIONING EXISTING STRUCTURES TO THE DIMENSIONS AND REQUIREMENTS DEFINED IN THE PROJECT PLANS. SUBMIT CONSTRUCTION PLANS IN ACCORDANCE WITH CMS 501.05.

IF, DURING THE JACKING OPERATIONS, CRACKING OF THE CONCRETE SUPERSTRUCTURE, SEPARATION OF THE CONCRETE DECK FROM THE STEEL STRINGERS, OR OTHER DAMAGE TO THE STRUCTURE IS VISUALLY OBSERVED, IMMEDIATELY CEASE THE JACKING OPERATION AND INSTALL SUPPORTS TO THE SATISFACTION OF THE ENGINEER. ANALYZE THE DAMAGE AND SUBMIT A METHOD OF CORRECTION TO THE ENGINEER FOR APPROVAL. EPOXY INJECT ALL BEAMS THAT SEPARATE FROM THE DECK FOR THE DISTANCE OF THE SEPARATION IN ACCORDANCE WITH CMS 512.07. THE DEPARTMENT WILL NOT PAY FOR THE COST OF THIS EPOXY INJECTION OR OTHER REQUIRED REPAIRS.

THE BRIDGE BEARINGS SHALL BE FULLY SEATED AT ALL CONTACT AREAS. IF FULL SEATING IS NOT ATTAINED, SUBMIT A REPAIR PLAN TO THE ENGINEER. THE DEPARTMENT WILL NOT PAY FOR THE REPAIR COSTS TO ENSURE FULL SEATING ON BEARINGS.

THE DEPARTMENT WILL MEASURE THIS WORK ON A LUMP SUM BASIS.

THE DEPARTMENT WILL PAY FOR THE ACCEPTED QUANTITIES AT THE CONTRACT PRICE FOR ITEM 516, JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN.

ITEM 516 - ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), AS PER PLAN.

THIS WORK SHALL INCLUDE FABRICATION AND INSTALLATION OF ELASTOMERIC BEARINGS TO REPLACE THE EXISTING ABUTMENT BEARINGS. THE UNIT PRICE BID SHALL INCLUDE ALL MATERIALS, LABOR, TESTING, AND INCIDENTALS NECESSARY TO FURNISH AND INSTALL LAMINATED ELASTOMERIC BEARINGS. PAYMENT WILL BE MADE AT THE CONTRACT UNIT PRICE BID FOR ITEM 516 - ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), AS PER PLAN.

SEE FOLLOWING BRIDGE DRAWINGS FOR BEARING DETAILS:

HAM-71-0197
HAM-71-0793L
HAM-71-0804R

ITEM 518 - STRUCTURE DRAINAGE, MISC.: SCUPPER AND DRAINAGE PIPE CLEAN OUT

THIS WORK SHALL CONSIST OF REMOVING SEDIMENT AND DEBRIS FROM THE EXISTING SCUPPERS AND STRUCTURE DRAINAGE PIPES, TO PROVIDE POSITIVE DRAINAGE FLOW THROUGH THE SYSTEM. ALL MATERIAL REMOVED FROM THE SCUPPERS AND PIPES SHALL BE DISPOSED OF BY THE CONTRACTOR. PIPES SHALL BE CLEANED TO THE FIRST MANHOLE FOR SCUPPERS IN A CLOSED STRUCTURE DRAINAGE SYSTEM.

ITEM 519 - PATCHING CONCRETE STRUCTURES, AS PER PLAN

PRIOR TO THE SURFACE CLEANING SPECIFIED IN 519.04 AND WITHIN 24 HOURS OF PLACING PATCHING MATERIAL, BLAST CLEAN ALL SURFACES TO BE PATCHED INCLUDING THE EXPOSED REINFORCING STEEL. ACCEPTABLE METHODS INCLUDE HIGH-PRESSURE WATER BLASTING WITH OR WITHOUT ABRASIVES IN THE WATER, ABRASIVE BLASTING WITH CONTAINMENT, OR VACUUM ABRASIVE BLASTING. ABRASIVES MUST CONTAIN LESS THAN 1% SILICA.

ITEM 601 - CONCRETE SLOPE PROTECTION, AS PER PLAN

THIS ITEM PROVIDES FOR THE REPAIR OF THE EXISTING CONCRETE SLOPE PROTECTION IN AREAS WHERE THE EXISTING CONCRETE HAS BEEN WASHED OUT OR UNDERMINED. THE EXISTING CONCRETE SHALL BE REMOVED AS DIRECTED BY THE ENGINEER, THE VOID UNDERNEATH FILLED WITH GRANULAR BASE MATERIAL, AND THE CONCRETE REPLACED WITH CLASS QC1 CONCRETE. ALL WORK SHALL CONFORM TO ITEM 601. LOCATIONS WHERE THIS WORK IS TO BE PERFORMED SHALL BE DETERMINED BY THE ENGINEER. PAYMENT SHALL INCLUDE ALL LABOR, EQUIPMENT AND MATERIAL NEEDED TO COMPLETE THE WORK.

ITEM 625, LIGHT POLE, MISC.: REMOVAL AND REINSTALLATION OF EXISTING LIGHT POLES

THIS WORK CONSISTS OF THE REMOVAL OF TWO EXISTING HIGHWAY LIGHT POLES MOUNTED ON TOP OF THE MEDIAN BARRIER OF THE HAM-71-0197 BRIDGE SO THAT FINISHING MATCHING SUPPORTS CAN BE INSTALLED TO PERFORM BRIDGE DECK OVERLAYS. EXISTING POLES AND FIXTURES SHALL BE CAREFULLY REMOVED AND STORED FOR RE-USE. EXISTING WIRING SHALL BE RE-CONNECTED WHILE POLES ARE REMOVED AS NECESSARY TO CONTINUE LIGHTING BEYOND THE BRIDGE.

PAYMENT:
THE DEPARTMENT WILL INCLUDED THE COST OF REMOVALS, WIRING AND RE-INSTALLATION OF EXISTING LIGHT POLES AND FIXTURES IN THE UNIT COST FOR ITEM 625 - REMOVAL AND REINSTALLATION OF EXISTING LIGHT POLES.

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312 PLUM ST. CINCINNATI OH

DESIGNED	DRAWN	REVIEWED	DATE
XAC	XAC	JSB	5/27/2016
CHECKED	REVISED	STRUCTURE FILE NUMBER	
SJA	XXX	COMBINED	

COMMON GENERAL NOTES 2
COMBINED FOR ALL STRUCTURES
HAM-71-1.97

HAM-71-1.97
PID No. 82975

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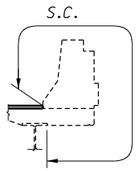
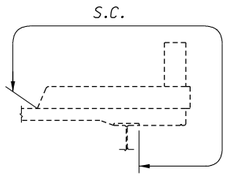
GENERAL NOTES: (CONTINUED)

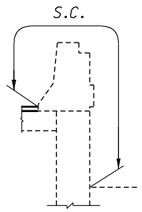


SUPERSTRUCTURE

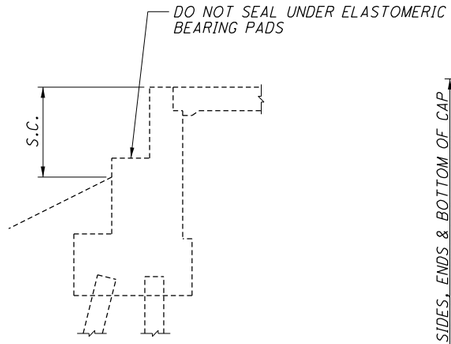


SUPERSTRUCTURE W/ SIDEWALK

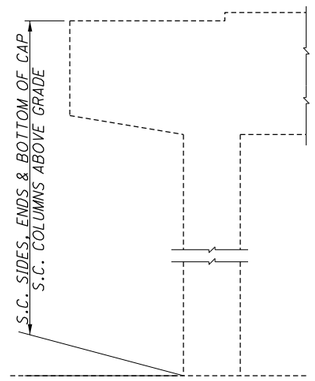
(RAILING AND FENCE NOT SHOWN)



WINGWALLS



ABUTMENTS



PIERS

SEALING OF CONCRETE SURFACES

S.C. = LIMITS OF ITEM 512 - SEALING CONCRETE SURFACES (EPOXY-URETHANE)

ITEM 519 SPECIAL - PARTIAL DEPTH CONCRETE DECK REPAIRS, AS PER PLAN

THIS WORK INCLUDES PARTIAL DEPTH REPAIRS ON STRUCTURES HAM-71-0197 AND HAM-71-0248 L/R OF THE DETERIORATED PORTIONS OF THE CONCRETE DECK THAT CONSISTS OF A NOMINAL 9" DECK WITH 1.75" OVERLAY. THE CONTRACTOR WILL HAVE 30 DAYS FROM NOTIFICATION BY THE ENGINEER TO PERFORM THIS WORK. THE CONTRACTOR IS TO PERFORM THE PARTIAL DEPTH REPAIRS AT THE LOCATIONS DIRECTED BY THE ENGINEER PER THIS NOTE.

THE CONTRACTOR IS TO SETUP MAINTENANCE OF TRAFFIC FOR EACH PARTIAL DEPTH REPAIR OPERATION IN CONFORMANCE WITH THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (CURRENT EDITION), THE ODOT MAINTAINING TRAFFIC STANDARD CONSTRUCTION DRAWINGS, AND THE ODOT CONSTRUCTION AND MATERIAL SPECIFICATION. PARTIAL DEPTH BRIDGE DECK REPAIRS WILL REQUIRE ONE AND TWO LANE INTERSTATE CLOSURES, AND RAMP CLOSURES. THESE CLOSURES ARE TO COMPLY WITH THE MAINTENANCE OF TRAFFIC RESTRICTIONS SET FORTH AND CONTAINED IN THESE PLANS.

THE FOLLOWING ITEMS HAVE BEEN CARRIED TO THE GENERAL SUMMARY FOR THE MAINTENANCE OF TRAFFIC REQUIRED TO PERFORM THE DECK REPAIRS:

ITEM 614 MAINTAINING TRAFFIC, MISC.: FULL DEPTH REPAIR MOT (1 LANE INTERSTATE CLOSURE) - 3 EACH

ITEM 614 MAINTAINING TRAFFIC, MISC.: FULL DEPTH REPAIR MOT (2 LANE INTERSTATE CLOSURE) - 3 EACH

ITEM 614 MAINTAINING TRAFFIC, MISC.: FULL DEPTH REPAIR MOT (RAMP CLOSURE) - 3 EACH

ITEM 614 LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE - 360 HOURS

THE DETERIORATED CONCRETE SURFACE SHALL BE REMOVED TO A MINIMUM DEPTH OF 1" BELOW THE TOP MAT OF REINFORCING STEEL BY CHIPPING, HYDRO DEMOLITION (PER SUPPLEMENTAL SPEC 848), OR IN CASES WHICH CHIPPING OR HYDRO DEMOLITION CAN ABSOLUTELY NOT REMOVE THE CONCRETE DECK, POWER DRIVEN SCARIFIERS MAY BE USED. CHIPPING HAMMERS SHALL NOT BE HEAVIER THAN THE NOMINAL 35 POUND CLASS AND SHALL BE OPERATED AT AN ANGLE OF LESS THAN 45 DEGREES WITH RESPECT TO THE SURFACE OF THE DECK. CONCRETE SHALL BE REMOVED IN A MANNER THAT PREVENTS CUTTING, ELONGATING, OR DAMAGING, THE REINFORCING STEEL. WHILE REMOVING THE CONCRETE, ADEQUATELY SUPPORT ANY REINFORCEMENT THAT IS LOOSENED, AND TIE IT BACK INTO PLACE. ANY REINFORCEMENT THAT IS DAMAGED DURING THE REMOVAL OF CONCRETE SHALL BE REPLACED.

AFTER REMOVING ALL OF THE DISINTEGRATED AND LOOSE CONCRETE, PROPERLY SHAPE THE AREA WHERE PARTIAL DEPTH CONCRETE WILL BE PLACED. THOROUGHLY CLEAN THE SURFACE OF THE AREA IN WHICH CONCRETE WILL BE PLACED AND ALL EXPOSED REINFORCING STEEL OF ALL DIRT, DUST, OR OTHER FOREIGN MATERIALS WITH WATER, AIR UNDER PRESSURE, OR ANY OTHER METHOD THAT PRODUCES SATISFACTORY RESULTS, AS DETERMINED BY THE ENGINEER. BEFORE PLACING THE CONCRETE, ALLOW THE SURFACE TO DRY TO A DAMP CONDITION.

PLACE AND FINISH QC FS CONCRETE ACCORDING TO ITEM 519. HAND VIBRATORS ARE TO BE USED TO ENSURE UNIFORM PLACEMENT. REMOVE ANY FORMS USED WITHIN 24 HOURS OF THE PLACEMENT OF CONCRETE, AND FINISH ALL EXPOSED SURFACES BY RUBBING TO MATCH THE SURROUNDING CONCRETE. OPEN THE ROADWAY TO TRAFFIC ACCORDING TO ITEM 255.08.

ALL LABOR, EQUIPMENT, AND MATERIALS NECESSARY TO PERFORM THE ABOVE REFERENCED PARTIAL DEPTH CONCRETE DECK REPAIR WORK SHALL BE INCLUDED IN THE GENERAL SUMMARY AS THE FOLLOWING ITEM:

ITEM 519 SPECIAL - PARTIAL DEPTH CONCRETE DECK REPAIRS, AS PER PLAN - 3570 SQ YDS

(HAM-71-0197 900 SY)
(HAM-71-0248 L 1070 SY)
(HAM-71-0248 R 1600 SY)

BRIDGE WORK WITHIN PROJECT HAM-71-1.97	
BRIDGE NUMBER	STRUCTURE FILE NUMBER
HAM-71-0181	3106632
HAM-71-0197	3106667
HAM-71-0197W	3106659
HAM-71-0197N	3100790
HAM-22-0145	3100812
HAM-71-0248L	3106780
HAM-71-0248R	3106802
HAM-42-0264R	3101223
HAM-71-0675	3114813
HAM-561-0314	3113663
HAM-71-0793L	3115038
HAM-71-0804R	3115062
HAM-71-0820S	3115119
HAM-71-0822R	3115135
HAM-71-0843S	3115224

DESIGN AGENCY
BURGESS & NIPLE
312 PLUM ST. CINCINNATI OH

DESIGNED	DRAWN	REVIEWED	DATE
XAC	XAC	JSB	8/31/2016
CHECKED	REVISED	STRUCTURE FILE NUMBER	
SJA	XXX	COMBINED	

COMMON GENERAL NOTES 3
COMBINED FOR ALL STRUCTURES
HAM-71-1.97

HAM-71-1.97
PID No. 82975

3 / 3

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292

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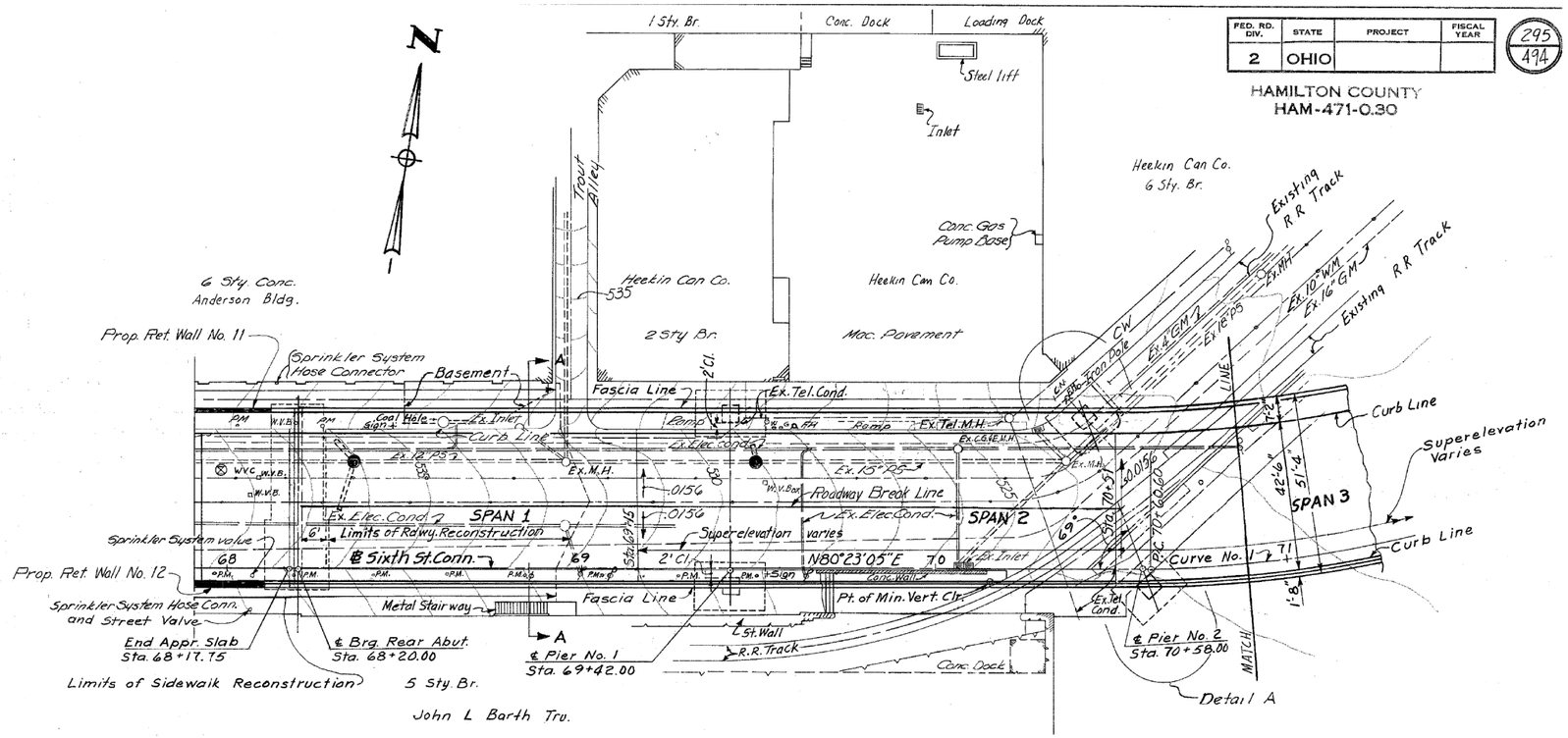
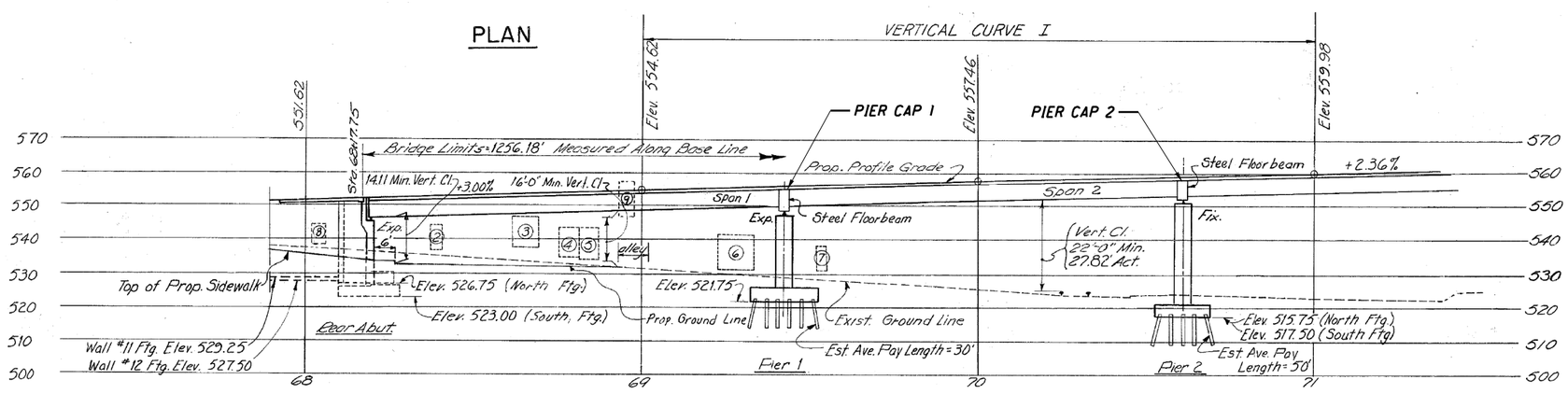
FED. RD. DIV.	STATE	PROJECT	FISCAL YEAR
2	OHIO		

295
494

HAMILTON COUNTY
HAM-471-0.30



PLAN



EXISTING STRUCTURE

TYPE: CONTINUOUS WELDED PLATE GIRDER WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE

SPANS: VARIES

ROADWAY: 42'-6" F/F CURBS WITH A 6" CURB, RIGHT AND A 6'-0" SIDEWALK, LEFT

LIVE LOADING: HS 20-44 AND THE INTERSTATE ALTERNATE LOADING

WEARING SURFACE: 2½" MICROSILICA MODIFIED CONCRETE OVERLAY

SKEW: VARIES

APPROACH SLABS: AS-1-81 (25'-0" LONG)

ALIGNMENT: VARIES

SUPERELEVATION: VARIES

STRUCTURAL FILE NUMBER: 3106616

DATE BUILT: 1976

DISPOSITION: TO BE REPAIRED

PROPOSED STRUCTURE

TYPE: CONTINUOUS WELDED PLATE GIRDER WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE

SPANS: VARIES

ROADWAY: 42'-6" F/F CURBS WITH A 6" CURB, RIGHT AND A 6'-0" SIDEWALK, LEFT

LIVE LOADING: HS 20-44 AND THE INTERSTATE ALTERNATE LOADING

WEARING SURFACE: 2½" MICROSILICA MODIFIED CONCRETE OVERLAY

SKEW: VARIES

APPROACH SLABS: AS-1-81 (25'-0" LONG)

ALIGNMENT: VARIES

SUPERELEVATION: VARIES

COORDINATES: LATITUDE 39° 06' 13" N
LONGITUDE 84° 30' 20" W

DESIGN AGENCY
PALMER ENGINEERING
8350 E. KEMPER RD. - SUITE B
CINCINNATI, OH 45249
CHICAGO • DAYTON • HOUSTON • LOS ANGELES • NEW ORLEANS • PHILADELPHIA • PITTSBURGH • ORLANDO

DESIGNED	DRAWN	REVIEWED	DATE
SDW	SDW	BJF	7/15/2016
CHECKED	REVISED	STRUCTURE FILE NUMBER	
SDW	XXX	3106616	

GENERAL PLAN
BRIDGE NO. HAM-71-0160
SIXTH STREET RAMP OVER SENTINEL ST., EGGLESTON AVE., AND I-471 S.B.

HAM-71-1.97
PID No. 82975

1/2

254/292

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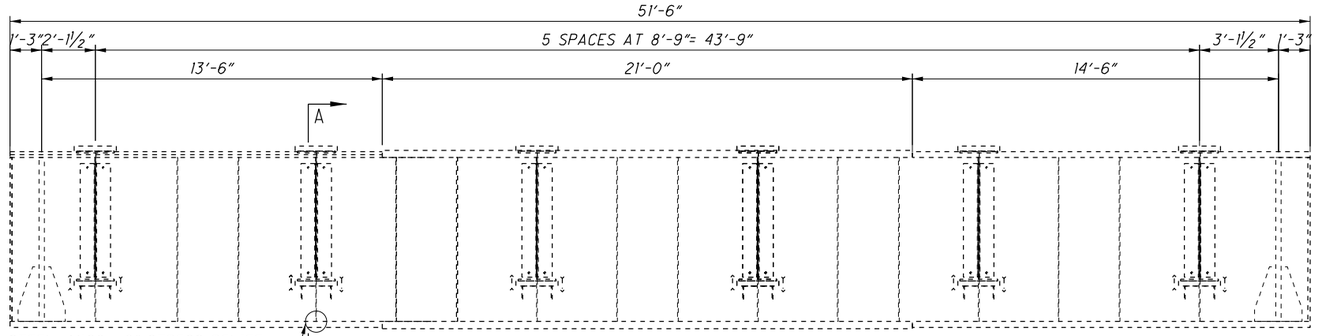
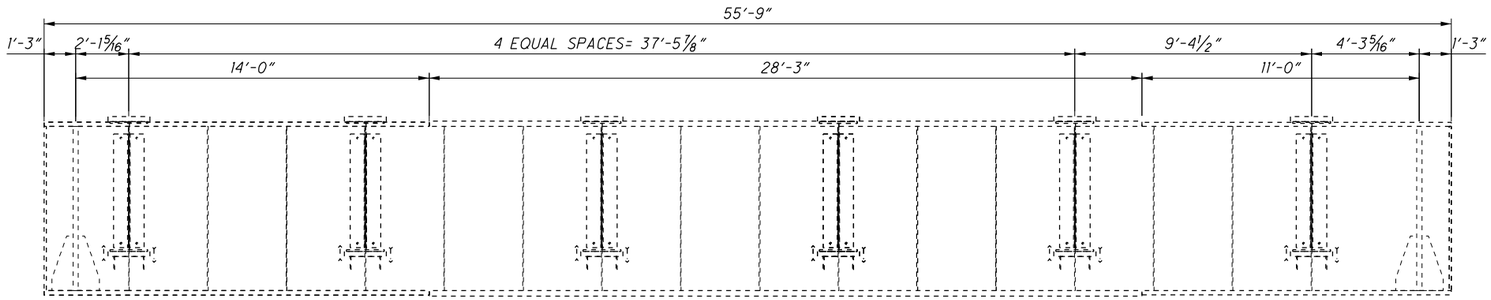
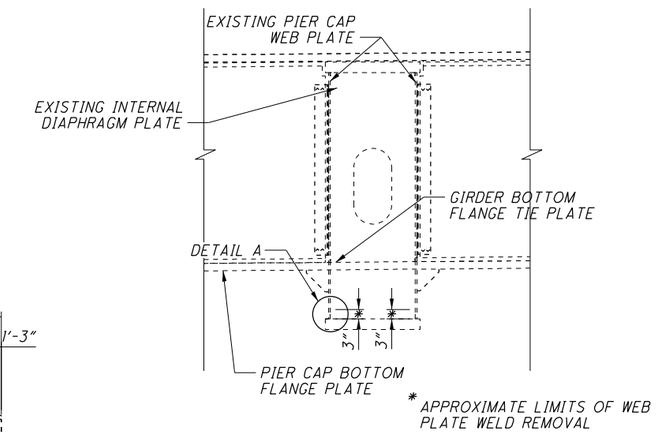


ITEM 513 STRUCTURAL STEEL, MISC.: 2" STRESS RELIEF HOLE RETROFIT (TYPICAL) AT GIRDER DIAPHRAGMS ADJACENT TO DRILLED HOLE AND SAWCUT STRESS RELIEF RETROFITS IN PIER CAP WEB

PIER CAP 1 ELEVATION



PIER CAP 2 ELEVATION



SECTION A-A

PROPOSED WORK

1) RETROFIT STEEL PIER CAPS WITH WELD REMOVAL AT GIRDER DIAPHRAGMS

ITEM 513 STRUCTURAL STEEL, MISC.: 2" STRESS RELIEF HOLE RETROFIT

PERFORM THE REPAIRS DESCRIBED BELOW AT ALL GIRDER DIAPHRAGMS AT PIERS 1 AND 2:

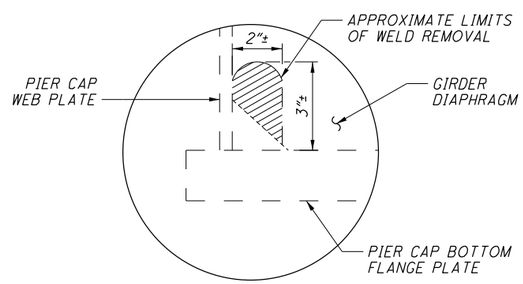
PIER CAP 1 - 12 LOCATIONS
PIER CAP 2 - 12 LOCATIONS

REPAIR PROCEDURE:

1) DRILL A 2"ϕ HOLE THROUGH TO REMOVE THE WELD BETWEEN THE PIER CAP WEB PLATE AND THE GIRDER DIAPHRAGM AT ALL EXISTING STRESS RELIEF RETROFIT LOCATIONS. ELONGATE THE HOLE VERTICALLY DOWN TO THE BOTTOM OF THE WELD. GRIND THE WEB SURFACE SMOOTH TO REMOVE WELD MATERIAL. DO NOT DISTURB THE WELD BETWEEN THE CAP BOTTOM FLANGE AND THE WEB PLATE.

2) TREAT THE REMAINING DIAPHRAGM WELD BETWEEN THE DRILLED HOLE AND THE GIRDER BOTTOM FLANGE TIE PLATE AT ALL LOCATIONS WITH ULTRASONIC IMPACT TREATMENT (UIT). SEE THE SPECIAL PROVISION FOR ULTRASONIC IMPACT TREATMENT FOR REQUIREMENTS OF THE PROCEDURE. THE COST OF THE LABOR AND EQUIPMENT ASSOCIATED WITH THIS WORK IS INCIDENTAL TO THIS PAY ITEM.

3) PAINT ALL RETROFITTED/UIT TREATED AREAS IN ACCORDANCE WITH ITEM 514-FIELD PAINTING OF DAMAGED STRUCTURAL STEEL, AS PER PLAN.



DETAIL A

DESIGN AGENCY
PALMER ENGINEERING
8350 E. KEMPER RD. - SUITE B
CINCINNATI, OH 45249
PHONE: 513-489-9000 FAX: 513-489-9001
CHICAGO • ALBANY • MIDDLETOWN • SOUTH CAROLINA • CHICAGO • CALIFORNIA • COLORADO

DESIGNED	DRAWN	REVIEWED	DATE
SDW	EI	BJF	5/30/2016
CHECKED	REVISED	STRUCTURE FILE NUMBER	
SDW		3106616	

PIER CAP DETAILS - STRESS RELIEF RETROFIT REPAIRS
BRIDGE NO. HAM-71-0160
SIXTH STREET RAMP OVER SENTINEL ST., EGGLESTON AVE., AND I-471 S.B.

HAM-71-1.97
PID No. 82975

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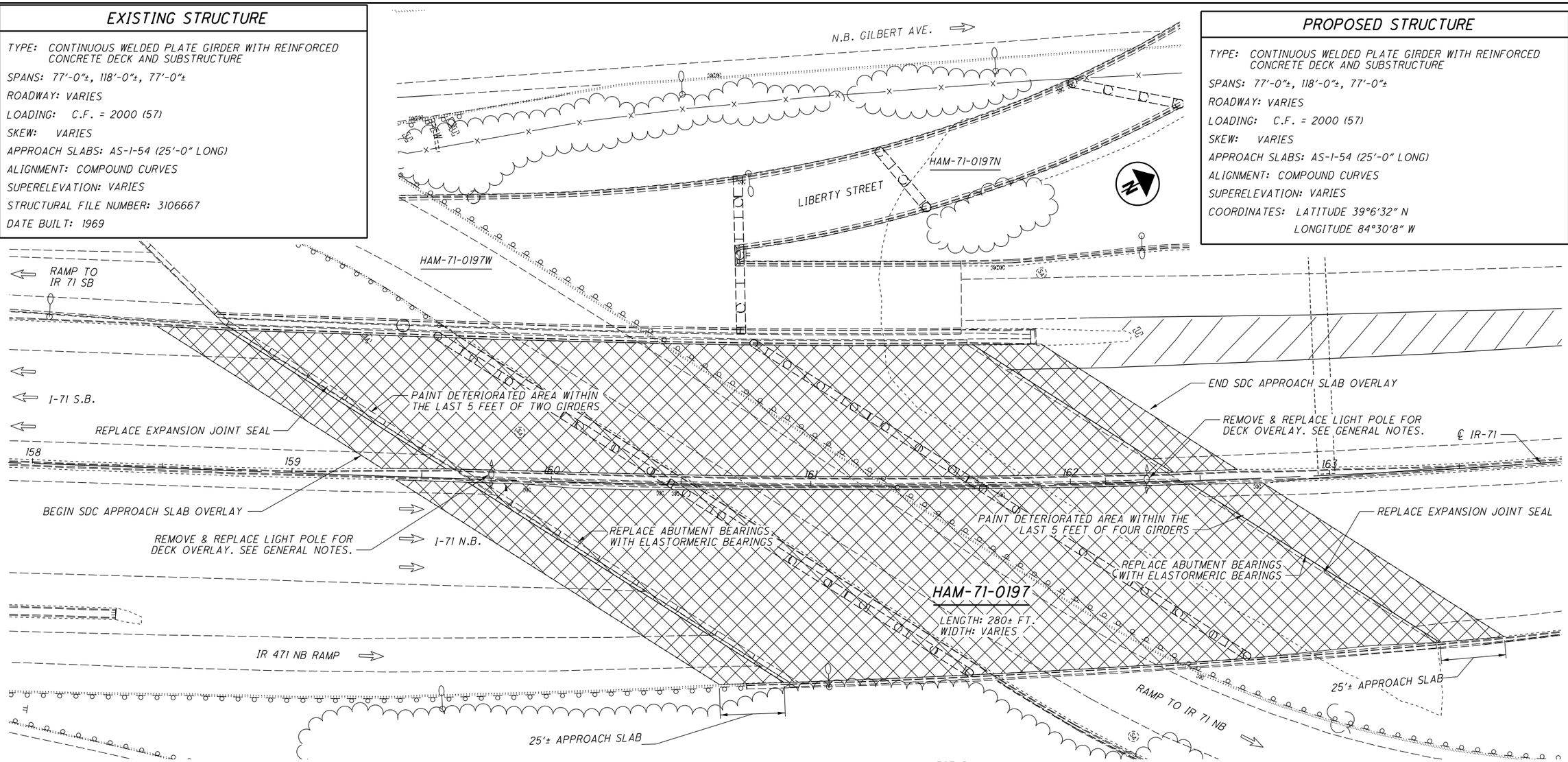
EXISTING STRUCTURE

TYPE: CONTINUOUS WELDED PLATE GIRDER WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE
SPANS: 77'-0"±, 118'-0"±, 77'-0"±
ROADWAY: VARIES
LOADING: C.F. = 2000 (57)
SKEW: VARIES
APPROACH SLABS: AS-1-54 (25'-0" LONG)
ALIGNMENT: COMPOUND CURVES
SUPERELEVATION: VARIES
STRUCTURAL FILE NUMBER: 3106667
DATE BUILT: 1969

PROPOSED STRUCTURE

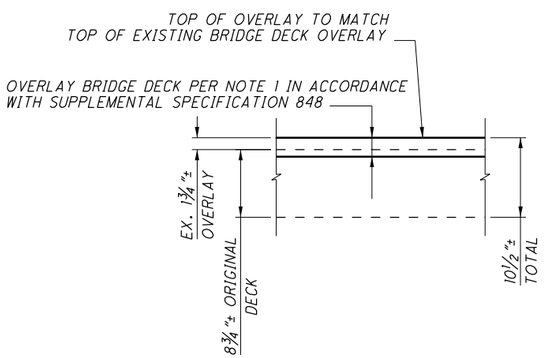
TYPE: CONTINUOUS WELDED PLATE GIRDER WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE
SPANS: 77'-0"±, 118'-0"±, 77'-0"±
ROADWAY: VARIES
LOADING: C.F. = 2000 (57)
SKEW: VARIES
APPROACH SLABS: AS-1-54 (25'-0" LONG)
ALIGNMENT: COMPOUND CURVES
SUPERELEVATION: VARIES
COORDINATES: LATITUDE 39°6'32" N
LONGITUDE 84°30'8" W



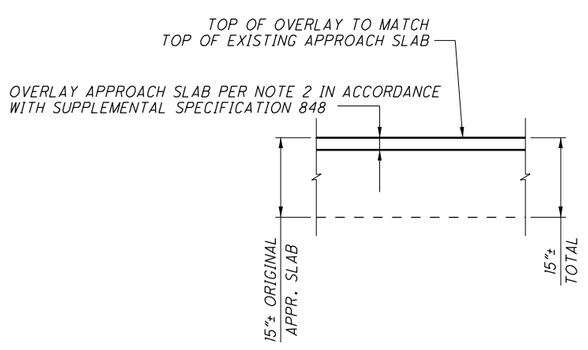
PLAN

LEGEND

SUPERPLASTICIZED DENSE CONCRETE (SDC) OVERLAY



DECK SLAB OVERLAY DETAIL



APPROACH SLAB OVERLAY DETAIL

PROPOSED WORK:

1. REMOVE EXISTING 1¾" LATEX MODIFIED CONCRETE (LMC) WEARING SURFACE AND 1" OF THE ORIGINAL DECK USING HYDRODEMOLITION AND REPLACE WITH 2¾" THICK SUPERPLASTICIZED DENSE CONCRETE (SDC).
2. REMOVE 1¾" OF THE ORIGINAL APPROACH SLAB AND TOP OF BACKWALL USING HYDRODEMOLITION AND REPLACE WITH 1¾" OF SUPERPLASTICIZED DENSE CONCRETE (SDC).
3. REPLACE THE TORN EXPANSION JOINT STRIP SEAL AT THE SOUTHBOUND REAR AND NORTHBOUND FORWARD EXPANSION JOINTS. EXISTING JOINT SEAL WAS VERIFIED IN THE FIELD TO BE A D.S. BROWN #A2R-400 SYSTEM.
4. REPLACE THE EXISTING ABUTMENT BEARINGS WITH ELASTOMERIC BEARINGS.
5. PAINT DETERIORATED AREAS, PER OZEU SPECIFICATIONS, WITHIN THE LAST 5 FEET OF THE GIRDER ENDS AT LOCATIONS SHOWN IN PLANS. COLOR TO MATCH EXISTING.
6. CLEAN EXISTING DRAINAGE SYSTEM TO THE FIRST MANHOLE, BOTH ON THE STRUCTURE AND BELOW THE GROUND.
7. CLEAN COMBINED SEWER ALONG THE RAMP ALONG THE EAST SIDE OF THE BRIDGE IN SPAN 1.
8. ALL WORK WILL BE PERFORMED IN ACCORDANCE WITH MAINTENANCE OF TRAFFIC PLANS AND NOTES.

DESIGN AGENCY
BURGESS & NIPLE
312 PLUM ST. CINCINNATI OH

DESIGNED	DRAWN	REVIEWED	DATE
XAC	XAC	JSB	8/31/2016
CHECKED	REVISED	STRUCTURE FILE NUMBER	
SJA	XXX	3106667	

GENERAL PLAN
HAM-71-0197
I-71 OVER RAMP FROM US 22 TO NB I-71

HAM-71-1.97
PID No. 82975

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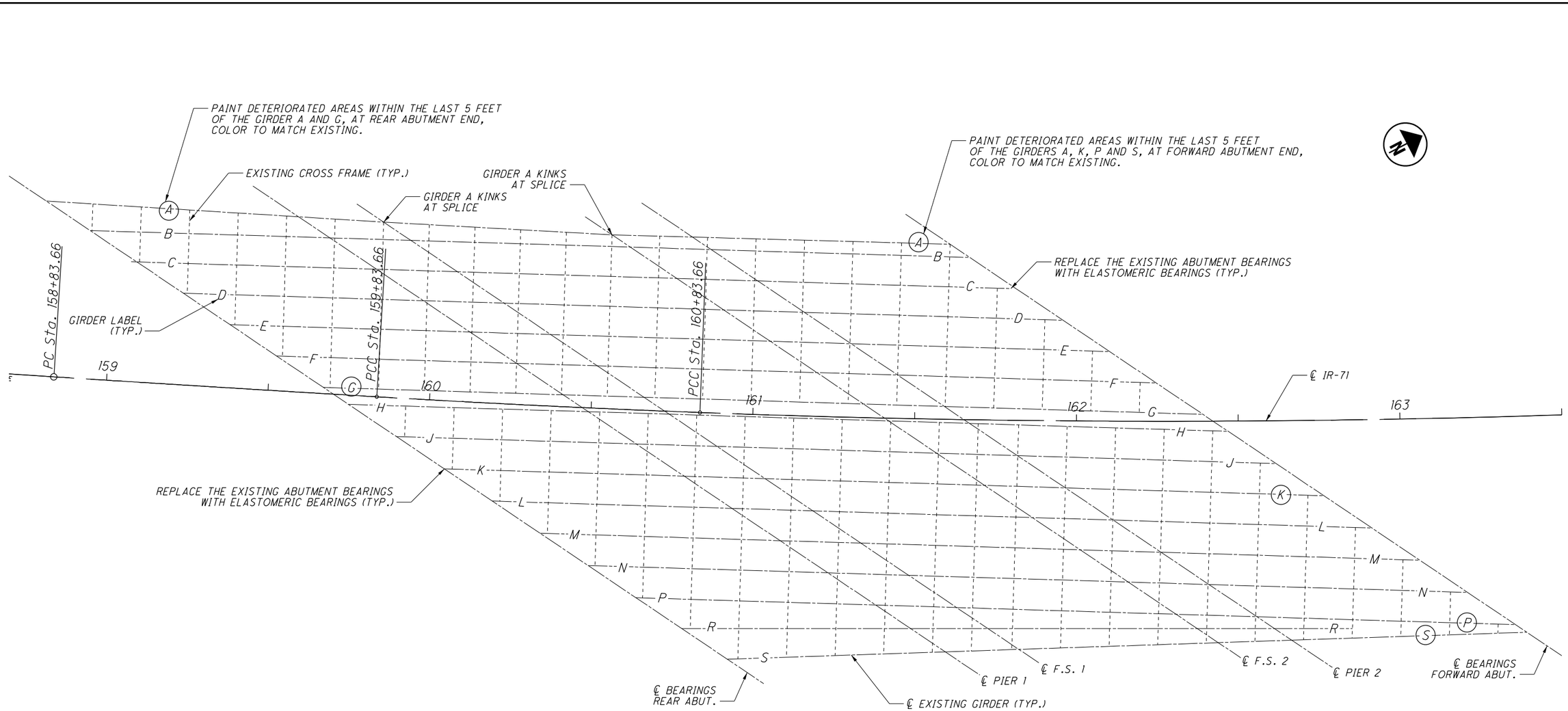

FRAMING PLAN

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DESIGN AGENCY
BURGESS & NIPLE
312 PLUM ST. CINCINNATI OH

DESIGNED	DRAWN	REVIEWED	DATE
SJA	SJA	JSB	8/31/2016

CHECKED	REVISED	STRUCTURE FILE NUMBER
XAC	XXX	310667

FRAMING PLAN
HAM-71-0197
I-71 OVER RAMP FROM US 22 TO NB I-71

HAM-71-1.97
PID No. 82975

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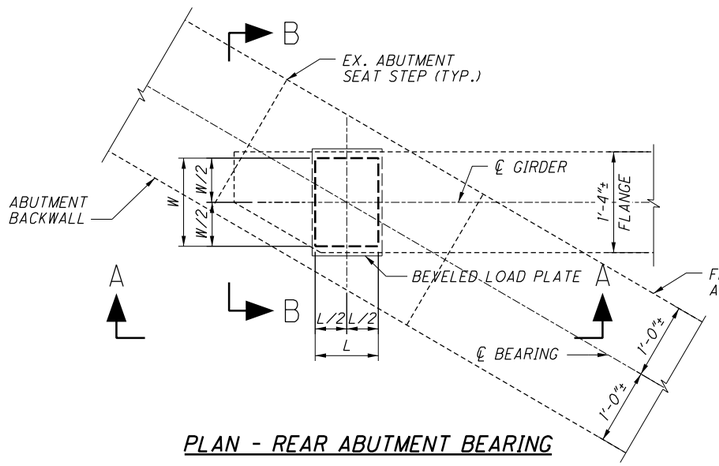
LAMINATED ELASTOMERIC BEARINGS

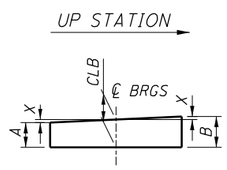
	BEARING DIMENSIONS							STEEL LOAD PLATES	REACTIONS		MAX. SERVICE
LOCATION	L	W	ti	te	tL	T	N	LENGTH x WIDTH x THICKNESS	DL	LL	DESIGN LOAD
REAR ABUTMENT (EXP.)	0'-10"	1'-2"	0.40"	0.28"	0.0747"	3.13"	6	0'-11" x 1'-5" X VARIES	49 KIPS	59 KIPS	108 KIPS

ti = THICKNESS OF INTERNAL LAMINATE
te = THICKNESS OF EXTERNAL LAMINATE
T = TOTAL THICKNESS OF ELASTOMERIC BEARING

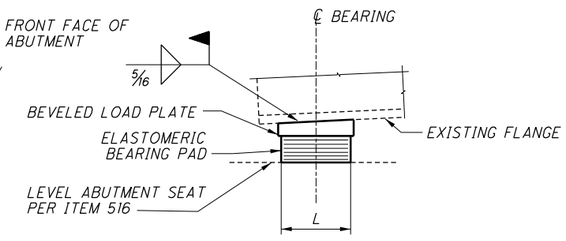
N = NO. INTERNAL ELASTOMERIC LAYERS
tL = INTERNAL STEEL LAMINATE THICKNESS
DUROMETER OF ELASTOMER = 50 DUROMETER
LOAD PLATE THICKNESS IS MEASURED AT CENTERLINE OF BEARINGS.



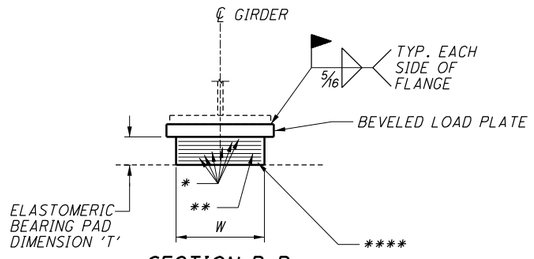
PLAN - REAR ABUTMENT BEARING



LOAD PLATE BEVEL DETAIL



SECTION A-A



SECTION B-B

LEGEND:

* = 'N' INTERNAL ELASTOMER LAYERS

** = (N-1) INTERNAL STEEL LAMINATES THICKNESS = 0.0747"

**** = EXTERNAL ELASTOMER LAYER

BEVEL PLATE DIMENSIONS***

GIRDER	REAR ABUTMENT			
	A = CLB -X	B = CLB +X	CLB	X
A	1 11/16" ±	2 " ±	1 13/16" ±	3/16" ±
B	1 7/8 " ±	2 3/16" ±	2 1/16" ±	3/16" ±
C	1 15/16" ±	2 1/8 " ±	2 " ±	1/8" ±
D	1 13/16" ±	2 1/4 " ±	2 " ±	1/4" ±
E	1 3/4 " ±	2 1/8 " ±	1 15/16" ±	3/8" ±
F	2 1/16" ±	2 5/16" ±	2 3/16" ±	1/8" ±
G	1 3/4 " ±	2 5/16" ±	2 1/16" ±	5/16" ±
H	2 " ±	2 3/8 " ±	2 3/16" ±	3/16" ±
J	2 1/8 " ±	2 5/16" ±	2 1/4 " ±	1/8" ±
K	2 " ±	2 3/16" ±	2 1/8 " ±	1/8" ±
L	1 11/16" ±	2 3/16" ±	1 15/16" ±	1/4" ±
M	1 9/16" ±	2 " ±	1 3/4 " ±	1/4" ±
N	1 7/8 " ±	2 1/4 " ±	2 1/16" ±	3/16" ±
P	1 7/8 " ±	2 1/16" ±	1 15/16" ±	1/8" ±
R	1 7/8 " ±	2 3/16" ±	2 "	3/16"
S	1 3/4 " ±	2 1/16" ±	1 15/16" ±	3/16" ±

*** DIMENSIONS SHOWN ABOVE ARE APPROXIMATE. FIELD VERIFY EXISTING BEARING DIMENSION PRIOR TO FABRICATION. SOME GIRDER SEATS ARE NOT LEVEL AND WILL REQUIRE CONCRETE REPAIR PER ITEM 516 PRIOR TO SETTING NEW BEARINGS. THE CONTRACTOR IS TO ASSURE THAT HIS MODIFIED BEAM SEAT ELEVATIONS ARE IN AGREEMENT WITH HIS SUPPLIED BEARING HEIGHTS.

THE CONTRACTOR IS REQUIRED TO MEASURE THE EXISTING BOTTOM OF BEAM AND BEAM SEAT ELEVATIONS PRIOR TO THE JACKING OPERATIONS. THE CONTRACTOR IS TO SUBMIT THE ELEVATIONS TO SCOTT KRAMER, DISTRICT 8 BRIDGE DESIGN ENGINEER PRIOR TO THE JACKING OPERATIONS. APPROVAL OF THE ELEVATIONS IS NOT REQUIRED. THE CONTRACTOR IS TO VERIFY THE CENTER OF BEARING HEIGHT BY SUBTRACTING THE EXISTING BEAM SEAT ELEVATION FROM THE EXISTING BOTTOM OF BEAM ELEVATION AT THE BEARING CENTERLINE.

THE BEVELED LOAD PLATE THICKNESS IS A CONTRACTORS CALCULATED DIMENSION AND ANY SHIMS NEEDED AS A RESULT OF THE CONTRACTOR'S ERROR WILL BE AT THE CONTRACTOR'S EXPENSE AND WILL NEED TO BE APPROVED BY THE DISTRICT 8 BRIDGE DESIGN ENGINEER.

FIELD MEASUREMENTS USED TO CALCULATE BEVEL DIMENSIONS ABOVE WERE BASED ON EXISTING CONDITIONS AND DO NOT ACCOUNT FOR PROPOSED LEVEL BEAM SEATS.

NOTES:

1. EACH BEARING ASSEMBLY SHALL BE SHOP MARKED WITH THE FOLLOWING INFORMATION: TOP, FORWARD STATION DIRECTION, LOCATION (REAR ABUTMENT, FORWARD ABUTMENT) AND GIRDER NAME. ALL MARKS SHALL BE PERMANENT AND BE VISIBLE AFTER THE BEARING IS INSTALLED.

2. ELASTOMERIC BEARINGS:
THE ELASTOMER SHALL HAVE A HARDNESS OF 50 DUROMETER. THE BEARINGS WERE DESIGNED IN ACCORDANCE WITH SECTION 14.7.6 (METHOD A) OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS. THE LONG-TERM COMPRESSION PROOF LOAD TEST (AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, DIVISION II, SECTION 18.7.2.6) IS NOT REQUIRED.

3. STEEL MATERIALS:
ANCHOR RODS SHALL BE ASTM F1554, GRADE 55, GALVANIZED ACCORDING TO 711.02.

4. THE STEEL LOAD PLATES AND MASONRY PLATES SHALL BE ASTM A709- GRADE 50 OR 50W STRUCTURAL STEEL AND BE CLEANED AND COATED. SURFACE PREPARATION AND PRIMING SHALL BE DONE IN THE SHOP AND BE INCLUDED IN THE PRICE BID FOR BEARINGS. FIELD COATS SHALL BE PER ITEM 514 AND ALSO INCLUDED IN THE PRICE BID FOR BEARINGS. FINISH PAINT COLOR TO MATCH EXISTING GIRDERS.

STEEL LOAD PLATE AND MASONRY PLATE (FORWARD ABUTMENT ONLY) SHALL BE BONDED BY VULCANIZATION TO THE ELASTOMER DURING THE MOLDING PROCESS.

5. BASIS OF PAYMENT: THE UNIT PRICE BID SHALL INCLUDE ALL MATERIALS, LABOR, TESTING, STEEL LOAD PLATES , MASONRY PLATES, ANCHOR RODS AND INCIDENTALS NECESSARY TO FURNISH AND INSTALL LAMINATED ELASTOMERIC BEARINGS. PAYMENT WILL BE MADE AT THE CONTRACT UNIT PRICE BID FOR ITEM 516 - ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), AS PER PLAN.

DESIGN AGENCY
BURGESS & NIPLE
312 PLUM ST. CINCINNATI OH

DESIGNED	DRAWN	REVIEWED	DATE
XAC	XAC	JSB	8/31/2016
CHECKED	REVISED	STRUCTURE FILE NUMBER	
SJA	XXX	310667	

REAR ABUTMENT BEARING DETAILS

HAM-71-0197
I-71 OVER RAMP FROM US 22 TO NB I-71

HAM-71-1.97
PID No. 82975

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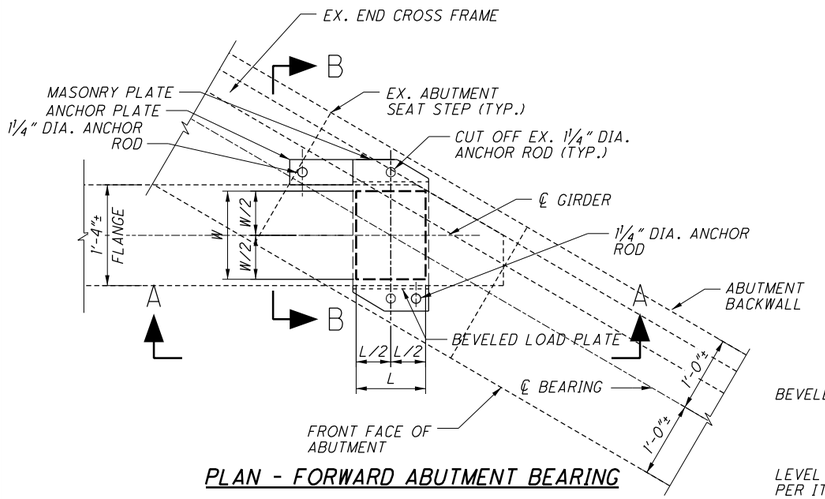
LAMINATED ELASTOMERIC BEARINGS

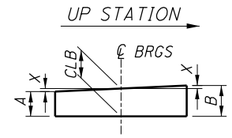
	BEARING DIMENSIONS							STEEL LOAD PLATES	REACTIONS		MAX. SERVICE
LOCATION	L	W	ti	te	tL	T	N	LENGTH x WIDTH x THICKNESS	DL	LL	DESIGN LOAD
FORWARD ABUTMENT (EXP.)	0'-11"	1'-2"	0.40"	NONE	0.0747"	3.25"	7	1'-0" x 1'-5" x VARIES	56 KIPS	60 KIPS	116 KIPS

ti = THICKNESS OF INTERNAL LAMINATE
te = THICKNESS OF EXTERNAL LAMINATE
T = TOTAL THICKNESS OF ELASTOMERIC BEARING

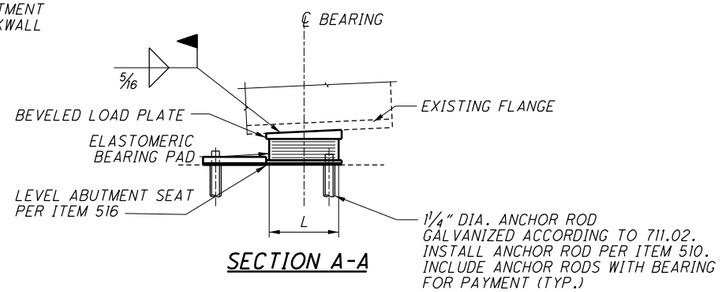
N = NO. INTERNAL ELASTOMERIC LAYERS
tL = INTERNAL STEEL LAMINATE THICKNESS
DUROMETER OF ELASTOMER = 50 DUROMETER
LOAD PLATE THICKNESS IS MEASURED AT CENTERLINE OF BEARINGS.



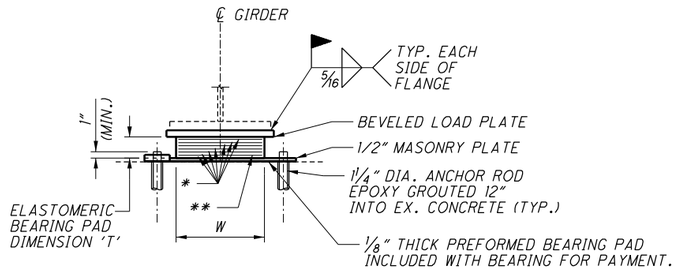
PLAN - FORWARD ABUTMENT BEARING



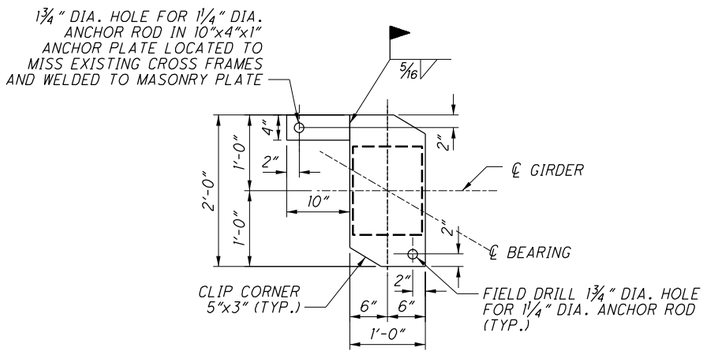
LOAD PLATE BEVEL DETAIL



SECTION A-A



SECTION B-B



PLAN - FORWARD ABUTMENT MASONRY PLATE

BEVEL PLATE DIMENSIONS ***

GIRDER	FORWARD ABUTMENT			
	A = CLB -X	B = CLB +X	CLB	X
A	2 1/4" ±	2 1/4" ±	2 1/4" ±	0" ±
B	1 13/16" ±	1 3/4" ±	1 3/4" ±	0" ±
C	1 1/4" ±	1 5/16" ±	1 5/16" ±	1/16" ±
D	1 1/8" ±	1 3/16" ±	1 3/16" ±	1/16" ±
E	1 3/16" ±	1 7/16" ±	1 5/16" ±	1/8" ±
F	1 1/8" ±	1 7/16" ±	1 5/16" ±	3/16" ±
G	1 3/8" ±	1 3/8" ±	1 3/8" ±	0" ±
H	3 5/16" ±	3 3/8" ±	3 3/8" ±	0" ±
J	1 3/8" ±	1 7/16" ±	1 7/16" ±	1/16" ±
K	1 5/16" ±	1 3/8" ±	1 5/16" ±	1/16" ±
L	1 1/8" ±	1 1/4" ±	1 3/16" ±	1/16" ±
M	1 3/8" ±	1 1/4" ±	1 5/16" ±	- 1/16" ±
N	1 3/16" ±	1 1/8" ±	1 3/16" ±	- 1/16" ±
P	1 1/4" ±	1 1/8" ±	1 3/16" ±	- 1/16" ±
R	N/A	N/A	N/A	N/A
S	1 1/2" ±	1 3/16" ±	1 5/16" ±	- 3/16" ±

*** DIMENSIONS SHOWN ARE APPROXIMATE. FIELD VERIFY EXISTING BEARING DIMENSION PRIOR TO FABRICATION. SOME GIRDER SEATS ARE NOT LEVEL AND WILL REQUIRE CONCRETE REPAIR PER ITEM 516 PRIOR TO SETTING NEW BEARINGS. THE CONTRACTOR IS TO ASSURE THAT HIS MODIFIED BEAM SEAT ELEVATIONS ARE IN AGREEMENT WITH HIS SUPPLIED BEARING HEIGHTS.

THE CONTRACTOR IS REQUIRED TO MEASURE THE EXISTING BOTTOM OF BEAM AND BEAM SEAT ELEVATIONS PRIOR TO THE JACKING OPERATIONS. THE CONTRACTOR IS TO SUBMIT THE ELEVATIONS TO SCOTT KRAMER, DISTRICT 8 BRIDGE DESIGN ENGINEER PRIOR TO THE JACKING OPERATIONS. APPROVAL OF THE ELEVATIONS IS NOT REQUIRED. THE CONTRACTOR IS TO VERIFY THE CENTER OF BEARING HEIGHT BY SUBTRACTING THE EXISTING BEAM SEAT ELEVATION FROM THE EXISTING BOTTOM OF BEAM ELEVATION AT THE BEARING CENTERLINE.

THE BEVELED LOAD PLATE THICKNESS IS A CONTRACTORS CALCULATED DIMENSION AND ANY SHIMS NEEDED AS A RESULT OF THE CONTRACTOR'S ERROR WILL BE AT THE CONTRACTOR'S EXPENSE AND WILL NEED TO BE APPROVED BY THE DISTRICT 8 BRIDGE DESIGN ENGINEER.

FIELD MEASUREMENTS USED TO CALCULATE BEVEL DIMENSIONS ABOVE WERE BASED ON EXISTING CONDITIONS AND DO NOT ACCOUNT FOR PROPOSED LEVEL BEAM SEATS.

LEGEND:

* = 'N' INTERNAL ELASTOMER LAYERS

** = (N-1) INTERNAL STEEL LAMINATES THICKNESS = 0.0747"

NOTES:

SEE SHEET 3 OF 4 FOR ADDITIONAL NOTES.

DESIGN AGENCY
BURGESS & NIPLE
312 PLUM ST. CINCINNATI OH

DESIGNED	DRAWN	REVIEWED	DATE
XAC	XAC	JSB	8/31/2016
CHECKED	REVISED	STRUCTURE FILE NUMBER	
SJA	2/8/17	3106667	

FORWARD ABUTMENT BEARING DETAILS
HAM-71-0197
I-71 OVER RAMP FROM US 22 TO NB I-71

HAM-71-1.97
PID No. 82975

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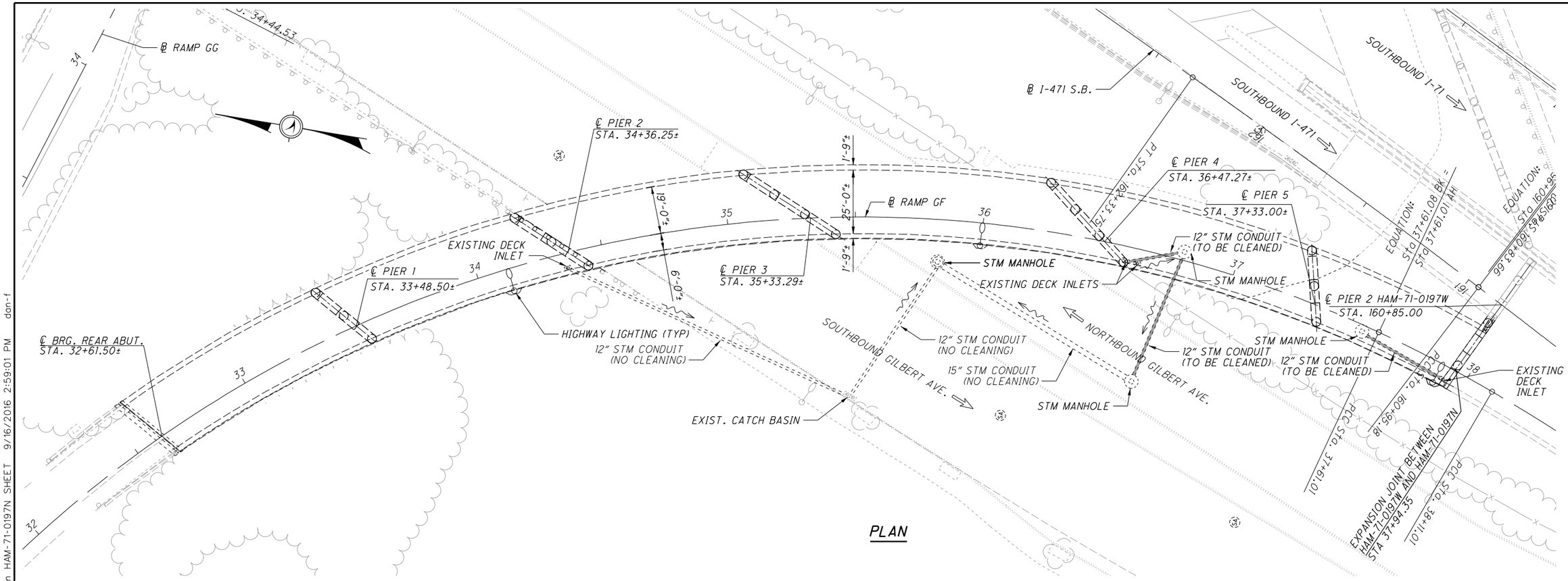
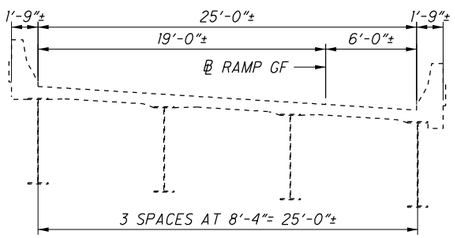


PLAN



TYPICAL SECTION

PROPOSED WORK

1) REPLACE TORN EXPANSION JOINT SEAL (BETWEEN HAM-71-0197N AND HAM-71-0197W USING DS BROWN A2R-400 STRIP SEAL OR SIMILAR. EXISTING GLAND WAS FIELD VERIFIED AS DS BROWN A2R-400.

2) SEAL WEARING SURFACE WITH GFR.

3) CLEAN EXISTING DRAINAGE SYSTEM FROM THE DECK INLETS TO THE FIRST MANHOLE

EXISTING STRUCTURE

TYPE: CONTINUOUS STEEL PLATE GIRDERS WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE

SPANS: 87'-0", 87'-9", 96'-0½", 114'-11¾", 85'-8¾", AND 59'-3 1/4"

ROADWAY: 25'-0"± TOE/TOE PARAPET

LIVE LOADING: HS 20-44 AND THE INTERSTATE ALTERNATE LOADING

SKEW: VARIES

WEARING SURFACE: 2¼" MICROSILICA MODIFIED CONCRETE OVERLAY

APPROACH SLABS: AS-1-67 (25'-0" LONG)

ALIGNMENT: VARIES

SUPERELEVATION: VARIES

STRUCTURAL FILE NUMBER: 3100790

DATE BUILT: 1976

DISPOSITION: MINOR REPAIRS

PROPOSED STRUCTURE

TYPE: CONTINUOUS STEEL PLATE GIRDERS WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE

SPANS: 87'-0", 87'-9", 96'-0½", 114'-11¾", 85'-8¾", AND 59'-3 1/4"

ROADWAY: 25'-0"± TOE/TOE PARAPET

LIVE LOADING: HS 20-44 AND THE INTERSTATE ALTERNATE LOADING

SKEW: VARIES

WEARING SURFACE: 2¼" MICROSILICA MODIFIED CONCRETE OVERLAY

APPROACH SLABS: AS-1-67 (25'-0" LONG)

ALIGNMENT: VARIES

SUPERELEVATION: VARIES

COORDINATES: LATITUDE 39° 06' 36" N
LONGITUDE 84° 30' 09" W

DESIGN AGENCY
Palmer ENGINEERING
PALMER ENGINEERING
CINCINNATI, OH 45249

DESIGNED	DRAWN	REVIEWED	DATE
SDW	EI	BJF	5/30/2016
CHECKED	REVISED	STRUCTURE FILE NUMBER	
CEJ	XXX	3100790	

HAMILTON COUNTY
STA. 32+31.3±
STA. 37+94.0±

GENERAL PLAN
BRIDGE NO. HAM-71-0197N
RAMP GF OVER GILBERT AVE.

HAM-71-1.97
PID No. 82975

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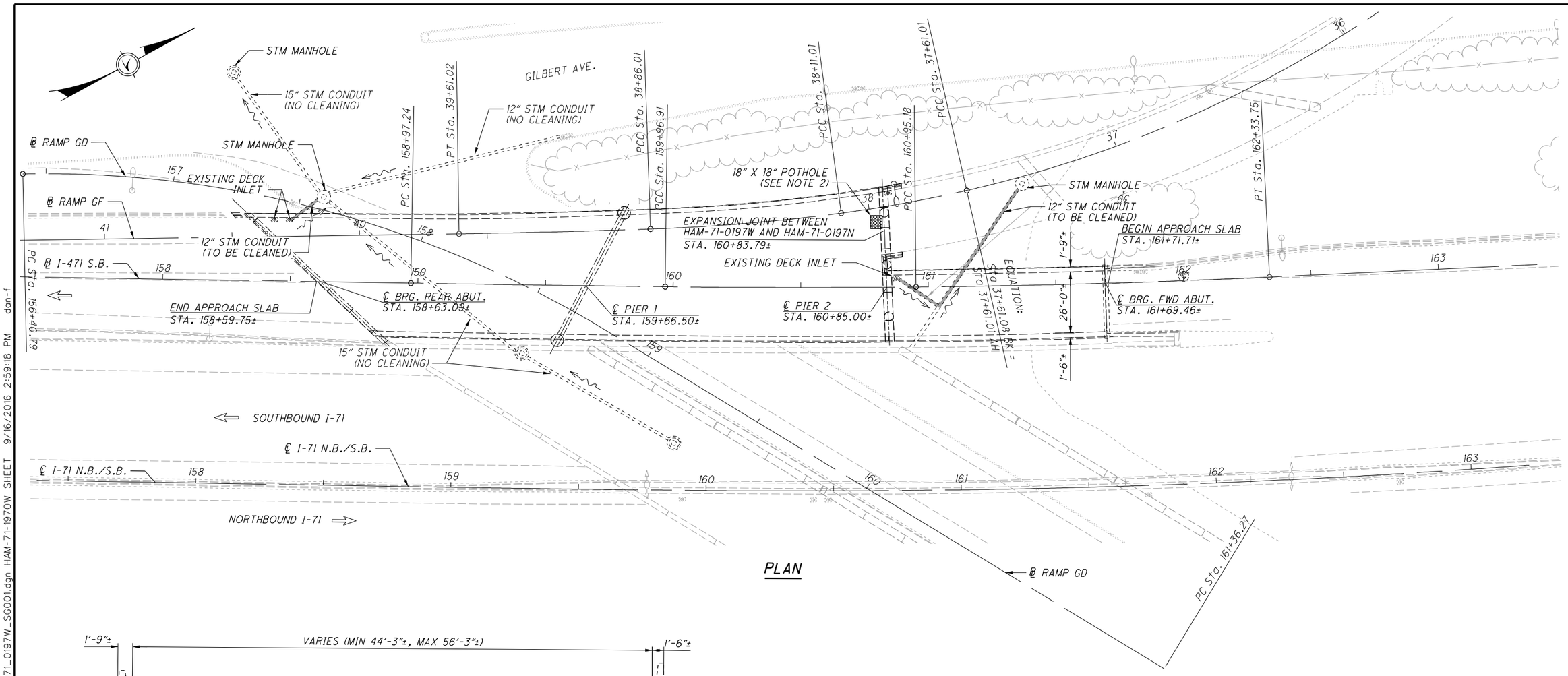
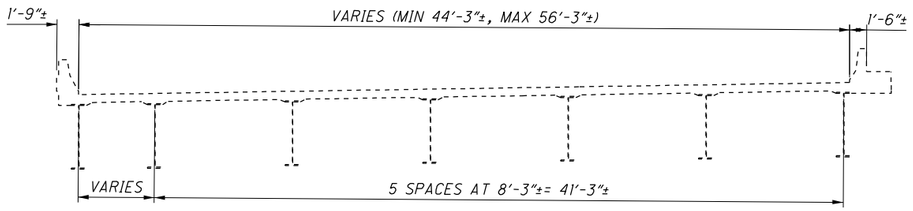


PLAN



TYPICAL SECTION (SPANS 1 AND 2)

PROPOSED WORK

1) CLEAN EXISTING DRAINAGE SYSTEM FROM THE DECK INLETS TO THE FIRST MANHOLE.

2) PATCH SMALL POTHOLE (APPROXIMATELY 18"X18") NEAR THE EXPANSION JOINT AT HAM-71-0197N WITH ITEM 519 PATCHING.

3) SEAL WEARING SURFACE WITH GFR.

EXISTING STRUCTURE

TYPE:	CONTINUOUS STEEL PLATE GIRDERS (SPAN 1 & 2) SIMPLE SPAN STEEL GIRDER (SPAN 3) WITH WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE
SPANS:	103'-5", 118'-6", & 84'-5½" C/C BRGS
ROADWAY:	VARIES
LIVE LOADING:	HS 20-44 AND THE INTERSTATE ALTERNATE LOADING
SKEW:	VARIES
WEARING SURFACE:	2¼" MICROSILICA MODIFIED CONCRETE OVERLAY
APPROACH SLABS:	AS-1-67 (25'0" LONG)
ALIGNMENT:	VARIES
SUPERELEVATION:	VARIES
STRUCTURAL FILE NUMBER:	3106659
DATE BUILT:	1976
DISPOSITION:	MINOR REPAIRS

PROPOSED STRUCTURE

TYPE:	CONTINUOUS STEEL PLATE GIRDERS (SPAN 1 & 2) SIMPLE SPAN STEEL GIRDER (SPAN 3) WITH WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE
SPANS:	103'-5", 118'-6", & 84'-5½" C/C BRGS
ROADWAY:	VARIES
LIVE LOADING:	HS 20-44 AND THE INTERSTATE ALTERNATE LOADING
SKEW:	VARIES
WEARING SURFACE:	2¼" MICROSILICA MODIFIED CONCRETE OVERLAY
APPROACH SLABS:	AS-1-67 (25'0" LONG)
ALIGNMENT:	VARIES
SUPERELEVATION:	VARIES
COORDINATES:	LATITUDE 39° 06' 33" N LONGITUDE 84° 30' 07" W

DESIGN AGENCY
Palmer ENGINEERING
PALMER ENGINEERING
8995 E. KEMPER RD - SUITE B
CINCINNATI, OH 45249
CINCINNATI • AKRON • COLUMBUS • CLEVELAND

DESIGNED	DRAWN	REVIEWED	DATE
SDW	EI	BJF	5/30/2016
CHECKED	REVISED	STRUCTURE FILE NUMBER	
CEJ	XXX	3106659	

HAMILTON COUNTY
STA. 158+59.75
STA. 161+71.71

GENERAL PLAN
BRIDGE NO. HAM-71-0197W
I-471 S.B. OVER RAMP RD

HAM-71-1.97
PID No. 82975

1 / 1

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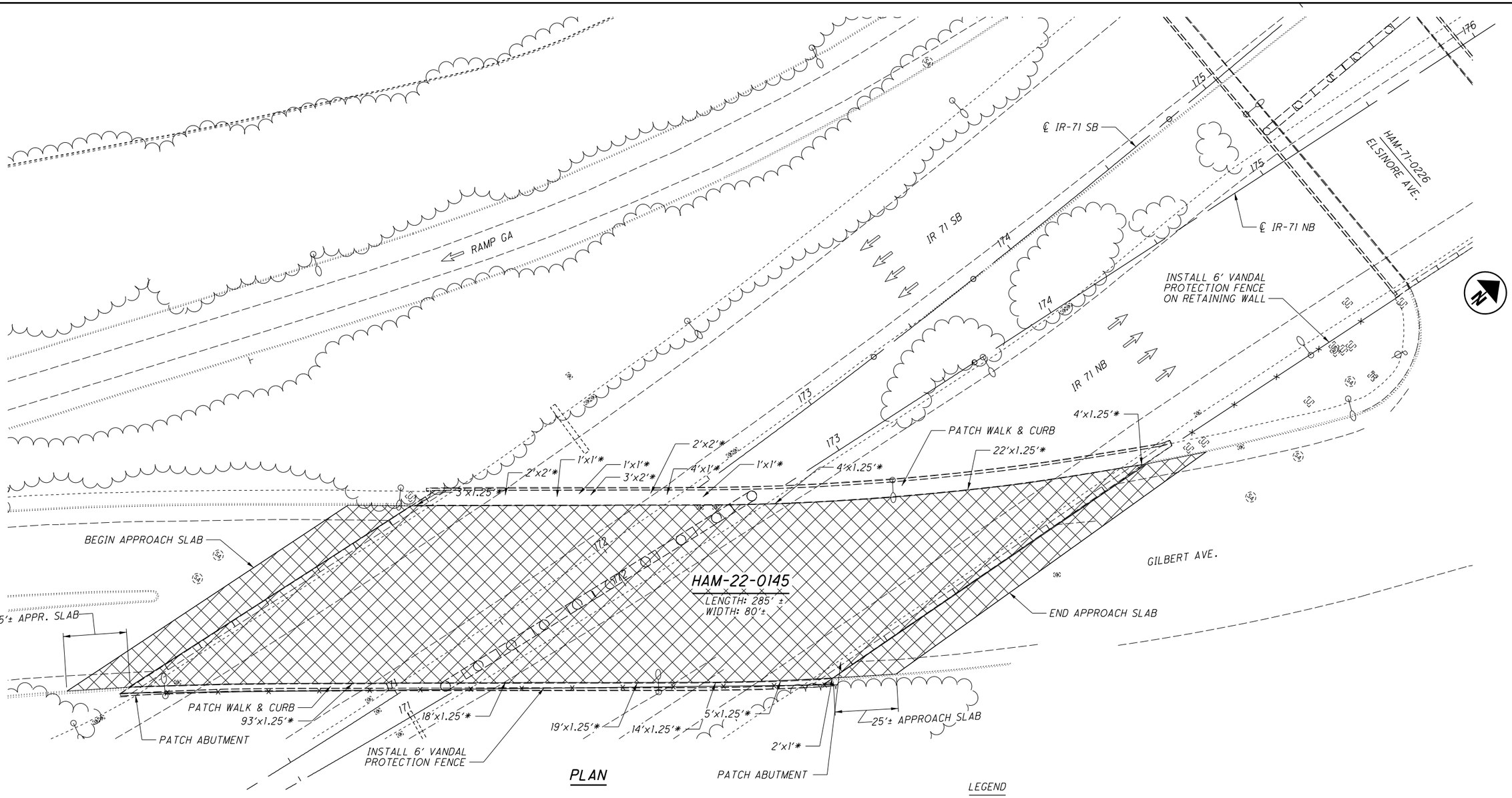

PLAN

EXISTING STRUCTURE

TYPE: CONTINUOUS WELDED PLATE GIRDER WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE
SPANS: VARIES
ROADWAY: 70'-0"± F/F CURB
LOADING: C.F. = 2000 (57)
SKEW: VARIES
APPROACH SLABS: AS-1-54 (25'-0" LONG)
ALIGNMENT: VARIES
SUPERELEVATION: VARIES
STRUCTURAL FILE NUMBER: 3100812
DATE BUILT: 1966

PROPOSED STRUCTURE

TYPE: CONTINUOUS WELDED PLATE GIRDER WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE
SPANS: VARIES
ROADWAY: 70'-0"± F/F CURB
LOADING: C.F. = 2000 (57)
SKEW: VARIES
APPROACH SLABS: AS-1-54 (25'-0" LONG)
ALIGNMENT: VARIES
SUPERELEVATION: VARIES
COORDINATES: LATITUDE 39°6'43" N
LONGITUDE 84°30'4" W

LEGEND

= SEAL BRIDGE DECK AND APPROACH SLABS WITH GRAVITY FED RESIN (GFR)

* = APPROXIMATE LIMITS OF ITEM 519 - PATCHING CONCRETE STRUCTURE

PROPOSED WORK:

1. SEAL THE WEARING SURFACE OF THE DECK AND APPROACH SLABS SURFACE WITH GRAVITY FED RESIN.
2. PATCH APPROXIAMATELY 243.5 SQUARE FT. OF THE DELAMINATED PORTIONS OF THE SIDEWALK/CURB AS SHOWN IN PLANS. 2 x 243.5 = 487 SQUARE FT. OF PATCHING IS INCLUDED IN THE ESTIMATED QUANTITIES.
3. PATCH DELAMINATED AREAS OF THE SUBSTRUCTURE WITH 519 PATCHING AS SHOWN IN PLANS.
4. SEAL PATCHED AREAS OF THE SUBSTRUCTURE AND SIDEWALK/PARAPET WITH EPOXY URETHANE SEALER.
5. CLEAN EXISTING DRAINAGE SYSTEM TO THE FIRST MANHOLE, BOTH ON THE STRUCTURE AND BELOW GROUND.
6. INSTALL 6 FT. TALL VANDAL PROTECTION FENCE TO THE RIGHT (SOUTH) PARAPET.
   INSTALL FENCING ALONG THE I-71 EAST RETAINING WALL FROM THE HAM-22-0145 STRUCTURE TO THE HAM-71-0226 STRUCTURE
   INSTALL FENCING ALONG THE I-71 EAST RETAINING WALL FROM THE HAM-71-0226 STRUCTURE TO THE HAM-71-0231 (ABANDONED RAILROAD) STRUCTURE.

DESIGN AGENCY
BURGESS & NIPLE
312 PLUM ST. CINCINNATI OH

DESIGNED	DRAWN	REVIEWED	DATE
SJA	SJA	JSB	8/31/2016
CHECKED	REVISED	STRUCTURE FILE NUMBER	
XAC	XXX	3100812	

GENERAL PLAN 1
HAM-22-0145
US 22 OVER I-71

HAM-71-1.97
PID No. 82975

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HAM-71-0231

ABANDONED R/R BRIDGE

HAM-71-0226

INSTALL 6' VANDAL PROTECTION FENCE

EAST RETAINING WALL

IR 71 SB

IR 71 NB

ELSINORE PL.

GILBERT AVE.

VAN METER AVE.

HAM-22-0145

LENGTH: 285' ±
WIDTH: 80'±

DESIGN AGENCY
BURGESS & NIPLE
312 PLUM ST. CINCINNATI OH

DESIGNED	DRAWN	REVIEWED	DATE
SJA	SJA	JSB	8/31/2016
CHECKED	REVISED	STRUCTURE FILE NUMBER	
XAC	XXX	3100812	

GENERAL PLAN 2
HAM-22-0145
US 22 OVER I-71

HAM-71-1.97
PID No. 82975

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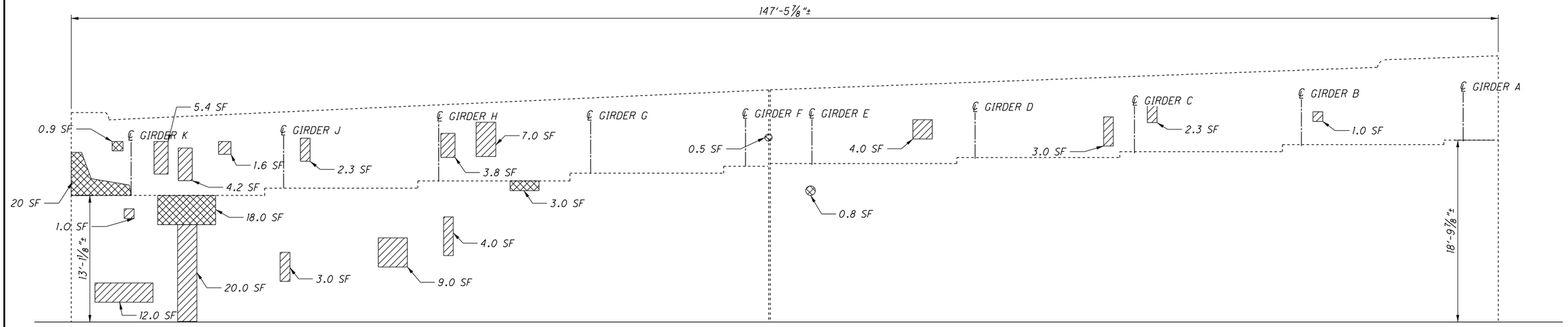
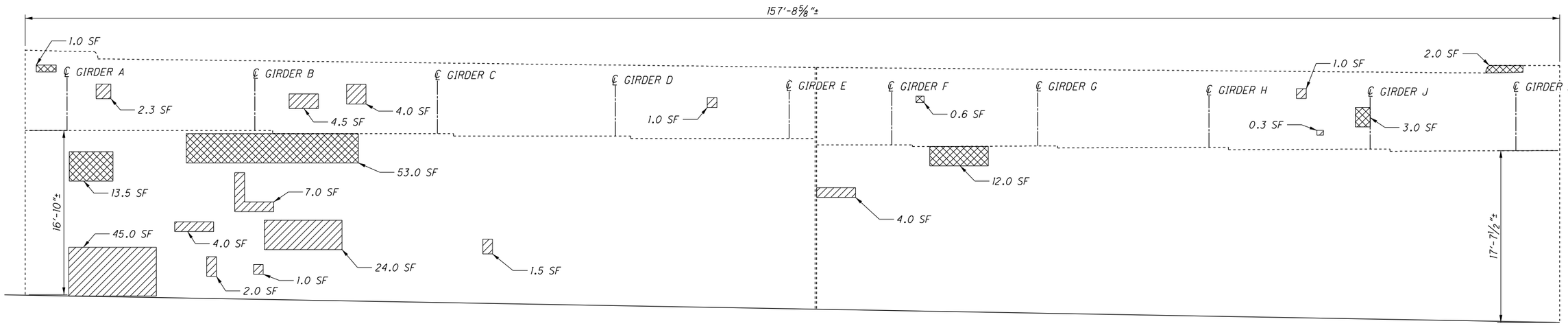


REAR (WEST) ABUTMENT ELEVATION

FOOTING NOT SHOWN



FORWARD (EAST) ABUTMENT ELEVATION

FOOTING NOT SHOWN

LEGEND:

SF = SQUARE FEET

= APPROXIMATE LIMITS SPALLING CONCRETE

= APPROXIMATE LIMITS OF DELAMINATED CONCRETE

NOTES:

1. REPAIR APPROXIMATELY 314 SQUARE FEET OF DELAMINATED AND SPALLING AREAS OF THE ABUTMENTS BY PATCHING CONCRETE IN ACCORDANCE WITH ITEM 519 SPECIFICATIONS. 2 x 314 = 628 SQUARE FEET WAS INCLUDED IN THE ESTIMATED QUANTITIES.
2. ABUTMENT ELEVATIONS ARE SHOWN WITH APPROXIMATE PATCHING BASED ON SOUNDINGS.

DESIGN AGENCY
BURGESS & NIPLE
312 PLUM ST. CINCINNATI OH

DESIGNED	DRAWN	REVIEWED	DATE
SJA	SJA	JSB	8/31/2016
CHECKED	REVISED	STRUCTURE FILE NUMBER	
XAC	XXX	3100812	

ABUTMENT ELEVATIONS
HAM-22-0145
US 22 OVER I-71

HAM-71-1.97
PID No. 82975

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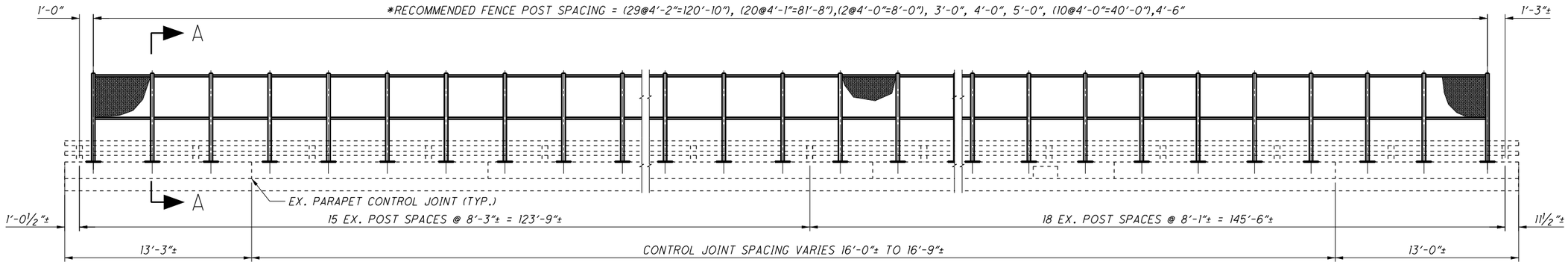
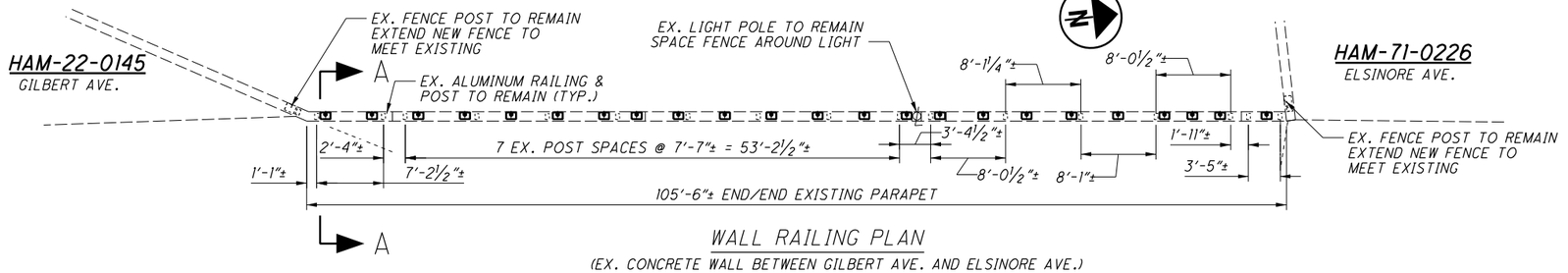


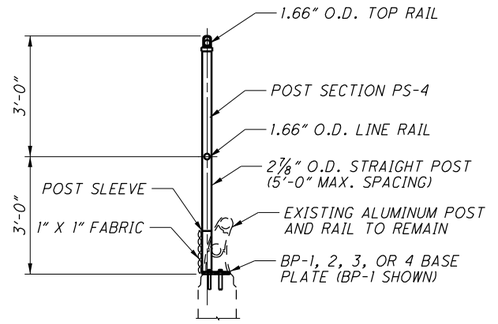
SOUTH PARAPET RAILING ELEVATION

(VIEW LOOKING SOUTH FROM BRIDGE DECK)
HAM-22-0145



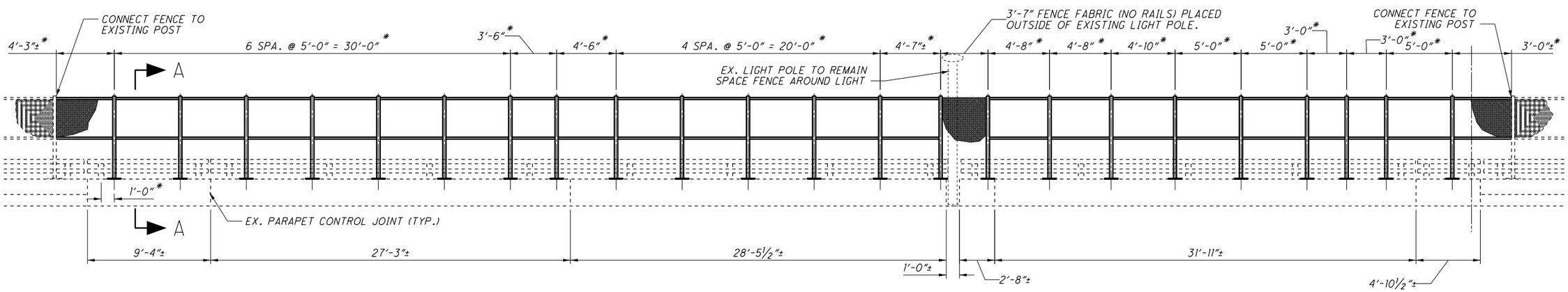
WALL RAILING PLAN

(EX. CONCRETE WALL BETWEEN GILBERT AVE. AND ELSINORE AVE.)



SECTION A-A

(6' STRAIGHT FENCE)



EAST RETAINING WALL RAILING ELEVATION

(EX. CONCRETE WALL BETWEEN
GILBERT AVE. AND ELSINORE AVE.)

LEGEND:

* = CONTRACTOR MAY USE A DIFFERENT FENCE POST SPACING AS LONG AS THE MAXIMUM SPACING IS 5'-0" AND THE BASE PLATES CLEAR THE EXISTING RAILING POSTS BY AT LEAST 2" IN ACCORDANCE WITH STANDARD DRAWING VPF-1-90 .

EX. = EXISTING

NOTES:

1. SEE STANDARD DRAWING VPF-1-90 FOR VANDAL PROTECTION FENCE DETAILS.
2. EXISTING ALUMINUM BRIDGE RAILING TO REMAIN. SPACE FENCING POSTS TO CLEAR EXISTING RAILING POST AND PARAPET CONTROL JOINT LOCATIONS. DIMENSIONS SHOWN ARE APPROXIMATE AND SHALL BE VERIFIED BY CONTRACTOR PRIOR TO FENCE FABRICATION.

DESIGN AGENCY
BURGESS & NIPLE
312 PLUM ST. CINCINNATI OH

DESIGNED	DRAWN	REVIEWED	DATE
SJA	SJA	JSB	8/31/2016
CHECKED	REVISED	STRUCTURE FILE NUMBER	
XAC	XXX	3100812	

RAILING DETAILS 1
HAM-22-0145
US 22 OVER I-71

HAM-71-1.97
PID No. 82975

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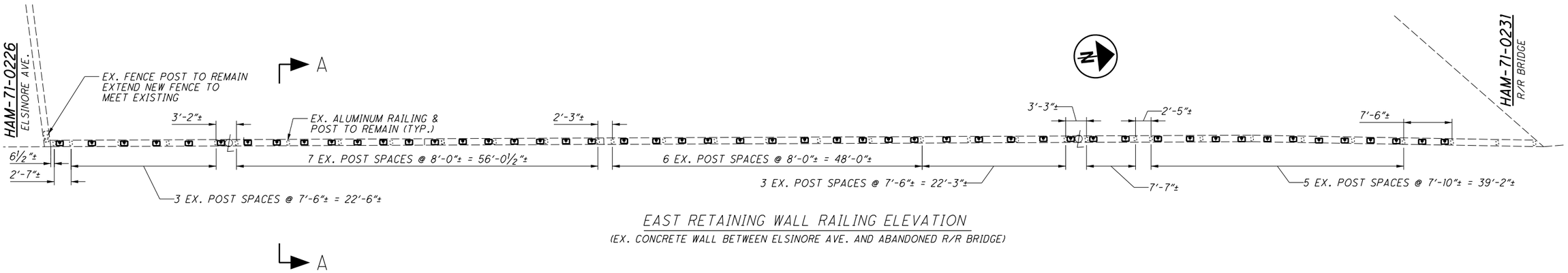
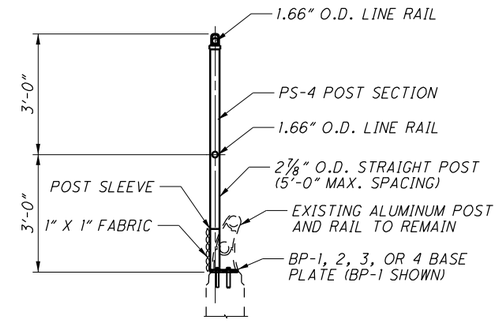


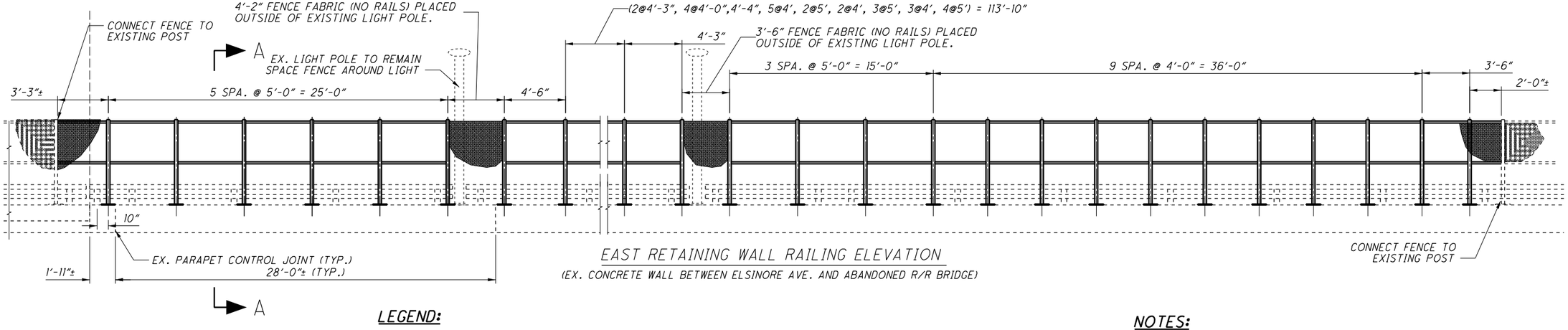
EAST RETAINING WALL RAILING ELEVATION

(EX. CONCRETE WALL BETWEEN ELSINORE AVE. AND ABANDONED R/R BRIDGE)



SECTION A-A

(6' STRAIGHT FENCE)



EAST RETAINING WALL RAILING ELEVATION

(EX. CONCRETE WALL BETWEEN ELSINORE AVE. AND ABANDONED R/R BRIDGE)

LEGEND:

* = CONTRACTOR MAY USE A DIFFERENT FENCE POST SPACING AS LONG AS THE MAXIMUM SPACING IS 5'-0" AND THE BASE PLATES CLEAR THE EXISTING RAILING POSTS BY AT LEAST 2" IN ACCORDANCE WITH STANDARD DRAWING VPF-1-90 .

EX. = EXISTING

NOTES:

1. SEE STANDARD DRAWING VPF-1-90 FOR VANDAL PROTECTION FENCE DETAILS.
2. EXISTING ALUMINUM BRIDGE RAILING TO REMAIN. SPACE FENCING POSTS TO CLEAR EXISTING RAILING POST AND PARAPET CONTROL JOINT LOCATIONS. DIMENSIONS SHOWN ARE APPROXIMATE AND SHALL BE VERIFIED BY CONTRACTOR PRIOR TO FENCE FABRICATION.

DESIGN AGENCY
BURGESS & NIPLE
312 PLUM ST. CINCINNATI OH

DESIGNED	DRAWN	REVIEWED	DATE
SJA	SJA	JSB	8/31/2016
CHECKED	REVISED	STRUCTURE FILE NUMBER	
XAC	XXX	3100812	

RAILING DETAILS 2

HAM-22-0145
US 22 OVER I-71

HAM-71-1.97
PID No. 82975

5 / 5

266
292

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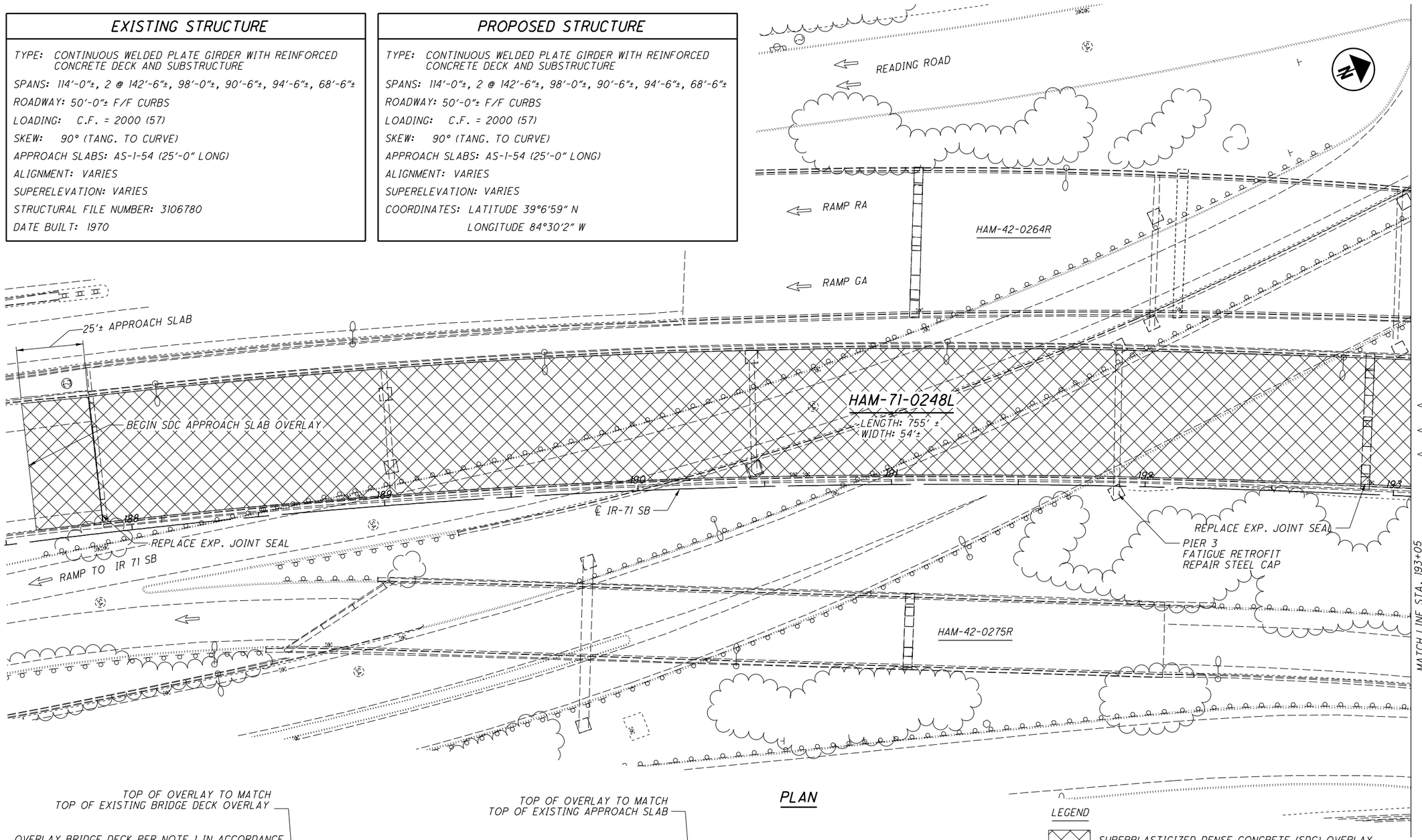
EXISTING STRUCTURE

TYPE: CONTINUOUS WELDED PLATE GIRDER WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE
SPANS: 114'-0"±, 2 @ 142'-6"±, 98'-0"±, 90'-6"±, 94'-6"±, 68'-6"±
ROADWAY: 50'-0"± F/F CURBS
LOADING: C.F. = 2000 (57)
SKEW: 90° (TANG. TO CURVE)
APPROACH SLABS: AS-1-54 (25'-0" LONG)
ALIGNMENT: VARIES
SUPERELEVATION: VARIES
STRUCTURAL FILE NUMBER: 3106780
DATE BUILT: 1970

PROPOSED STRUCTURE

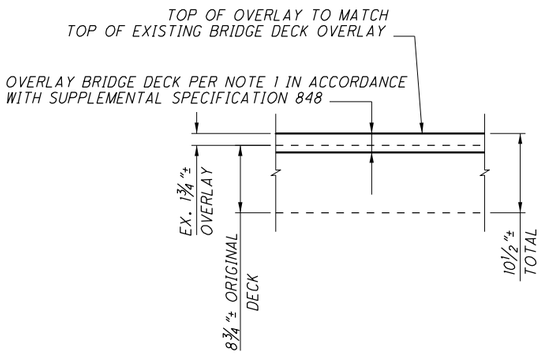
TYPE: CONTINUOUS WELDED PLATE GIRDER WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE
SPANS: 114'-0"±, 2 @ 142'-6"±, 98'-0"±, 90'-6"±, 94'-6"±, 68'-6"±
ROADWAY: 50'-0"± F/F CURBS
LOADING: C.F. = 2000 (57)
SKEW: 90° (TANG. TO CURVE)
APPROACH SLABS: AS-1-54 (25'-0" LONG)
ALIGNMENT: VARIES
SUPERELEVATION: VARIES
COORDINATES: LATITUDE 39°6'59" N
LONGITUDE 84°30'2" W



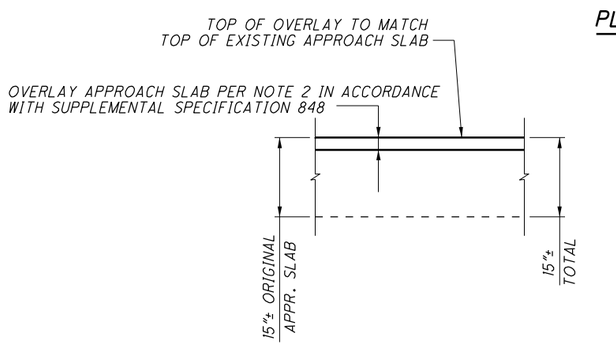
PLAN

LEGEND

SUPERPLASTICIZED DENSE CONCRETE (SDC) OVERLAY



DECK SLAB OVERLAY DETAIL



APPROACH SLAB OVERLAY DETAIL

PROPOSED WORK:

1. REMOVE EXISTING 1¾" LATEX MODIFIED CONCRETE (LMC) WEARING SURFACE AND 1" OF THE ORIGINAL DECK USING HYDRODEMOLITION AND REPLACE WITH 2¾" THICK SUPERPLASTICIZED DENSE CONCRETE (SDC).
2. REMOVE 1¾" OF THE ORIGINAL APPROACH SLAB AND TOP OF BACKWALL USING HYDRODEMOLITION AND REPLACE WITH 1¾" OF SUPERPLASTICIZED DENSE CONCRETE (SDC).
3. REPLACE THE TORN EXPANSION JOINT SEAL AT THE REAR EXPANSION JOINT AND THE INTERMEDIATE EXPANSION JOINT. JOINT SEAL = D.S. BROWN #SE-400 OR APPROVED EQUAL.
4. CLEAN EXISTING DRAINAGE SYSTEM TO THE FIRST MANHOLE, BOTH ON THE STRUCTURE AND BELOW THE GROUND.
5. PRESSURE WASH BEAM SEATS, BACKWALLS, AND STRUCTURAL STEEL WITHIN 10 FEET OF ABUTMENT EXPANSION JOINTS.
6. REPAIR FATIGUE CRACKS IN PIER 3 STEEL PIER CAP.
7. ALL WORK WILL BE PERFORMED IN ACCORDANCE WITH MAINTENANCE OF TRAFFIC PLANS AND NOTES.

DESIGN AGENCY
BURGESS & NIPLE
312 PLUM ST. CINCINNATI OH

DESIGNED	DRAWN	REVIEWED	DATE
SJA	SJA	JSB	8/31/2016
CHECKED	REVISED	STRUCTURE FILE NUMBER	
XAC	XXX	3106780	

GENERAL PLAN - 1
HAM-71-0248L
I-71 SB OVER NB US 42 AND EDEN PARK DRIVE

HAM-71-1.97
PID No. 82975

1 / 3

267
292

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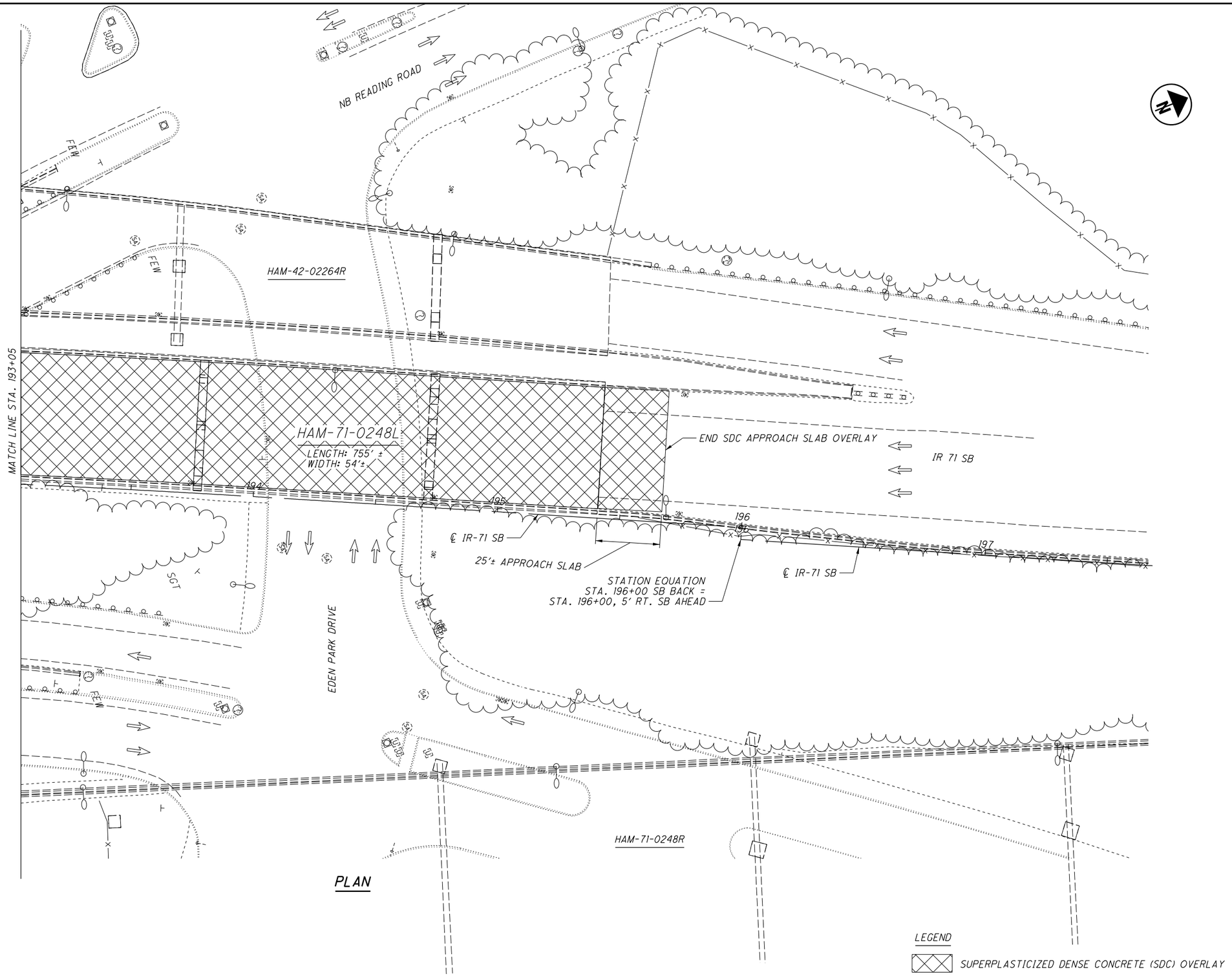

PLAN

LEGEND

SUPERPLASTICIZED DENSE CONCRETE (SDC) OVERLAY

DESIGNED SJA	DRAWN SJA	REVIEWED JSB	DATE 8/31/2016
CHECKED XAC	REVISED XXX	STRUCTURE FILE NUMBER 3106780	

DESIGN AGENCY
BURGESS & NIPLE
312 PLUM ST. CINCINNATI OH

GENERAL PLAN -2
HAM-71-0248L
I-71 SB OVER NB US 42 AND EDEN PARK DRIVE

HAM-71-1.97
PID No. 82975

2 / 3

268
292

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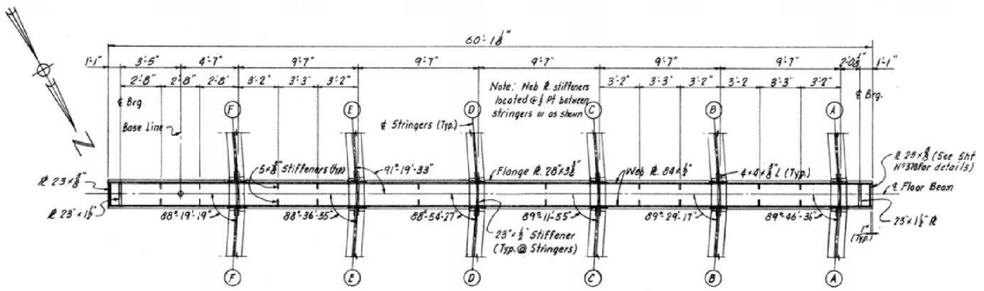
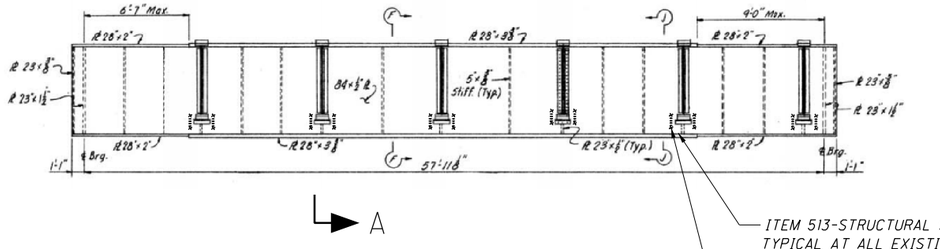


SECTION C-C - PIER Nº 3

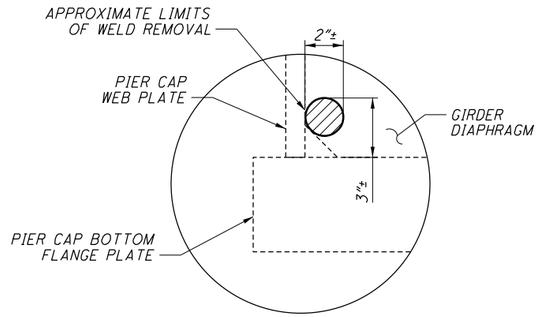


PIER CAP ELEVATION

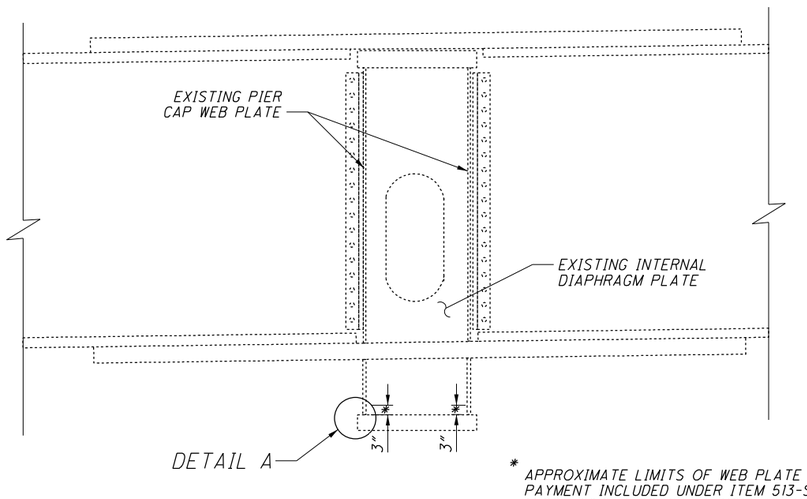
PIER 3

ITEM 513-STRUCTURAL STEEL, MISC.: 2" STRESS RELIEF HOLE RETROFIT TYPICAL AT ALL EXISTING STRESS RELIEF RETROFIT LOCATIONS (DOG-BONE REPAIRS) DONE PREVIOUSLY.

EXISTING STRESS RELIEF RETROFIT LOCATIONS (DOG-BONE REPAIRS) DONE PREVIOUSLY.



DETAIL A



* APPROXIMATE LIMITS OF WEB PLATE WELD REMOVAL. PAYMENT INCLUDED UNDER ITEM 513-STRUCTURAL STEEL, MISC.: 2" STRESS RELIEF HOLE RETROFIT.

SECTION A-A

ITEM 513-STRUCTURAL STEEL, MISC.: 2" STRESS RELIEF HOLE RETROFIT

PERFORM THE REPAIRS DESCRIBED BELOW AT 12 LOCATIONS AT PIERS 3.

REPAIR PROCEDURE:
1) DRILL A 2" DIA. HOLE THROUGH THE GIRDER DIAPHRAGM TO REMOVE THE WELD BETWEEN THE PIER CAP WEB PLATE AND THE GIRDER DIAPHRAGM AT ALL EXISTING STRESS RELIEF RETROFIT LOCATIONS. ELONGATE THE HOLE VERTICALLY DOWN TO THE BOTTOM OF THE WELD. GRIND THE WEB SURFACE SMOOTH TO REMOVE WELD MATERIAL. DO NOT DISTURB THE WELD BETWEEN THE CAP BOTTOM FLANGE AND THE WEB PLATE.

2) TREAT THE REMAINING DIAPHRAGM WELD BETWEEN THE DRILLED HOLE AND THE GIRDER BOTTOM FLANGE TIE PLATE AT ALL LOCATIONS WITH ULTRASONIC IMPACT TREATMENT (UIT). SEE GENERAL NOTES FOR ULTRASONIC IMPACT TREATMENT FOR REQUIREMENTS OF THE PROCEDURE. THE COST OF THE LABOR AND EQUIPMENT ASSOCIATED WITH THIS WORK IS INCIDENTAL TO ITEM 513-STRUCTURAL STEEL, MISC.: 2" STRESS RELIEF HOLE RETROFIT.

3) PAINT ALL RETROFITTED/UIT TREATED AREAS PER ITEM 514 - FIELD PAINTING OF DAMAGED STRUCTURAL STEEL, AS PER PLAN

DESIGN AGENCY
BURGESS & NIPLE
312 PLUM ST. CINCINNATI OH

DESIGNED	DRAWN	REVIEWED	DATE	STRUCTURE FILE NUMBER
SJA	SJA	JSB	8/31/2016	3106780
CHECKED	REVISED			
XAC	XXX			

PIER CAP RETROFIT DETAILS

HAM-42-0248L
I-71 SB OVER NB US 42 AND EDEN PARK DRIVE

HAM-71-1.97
PID No. 82975

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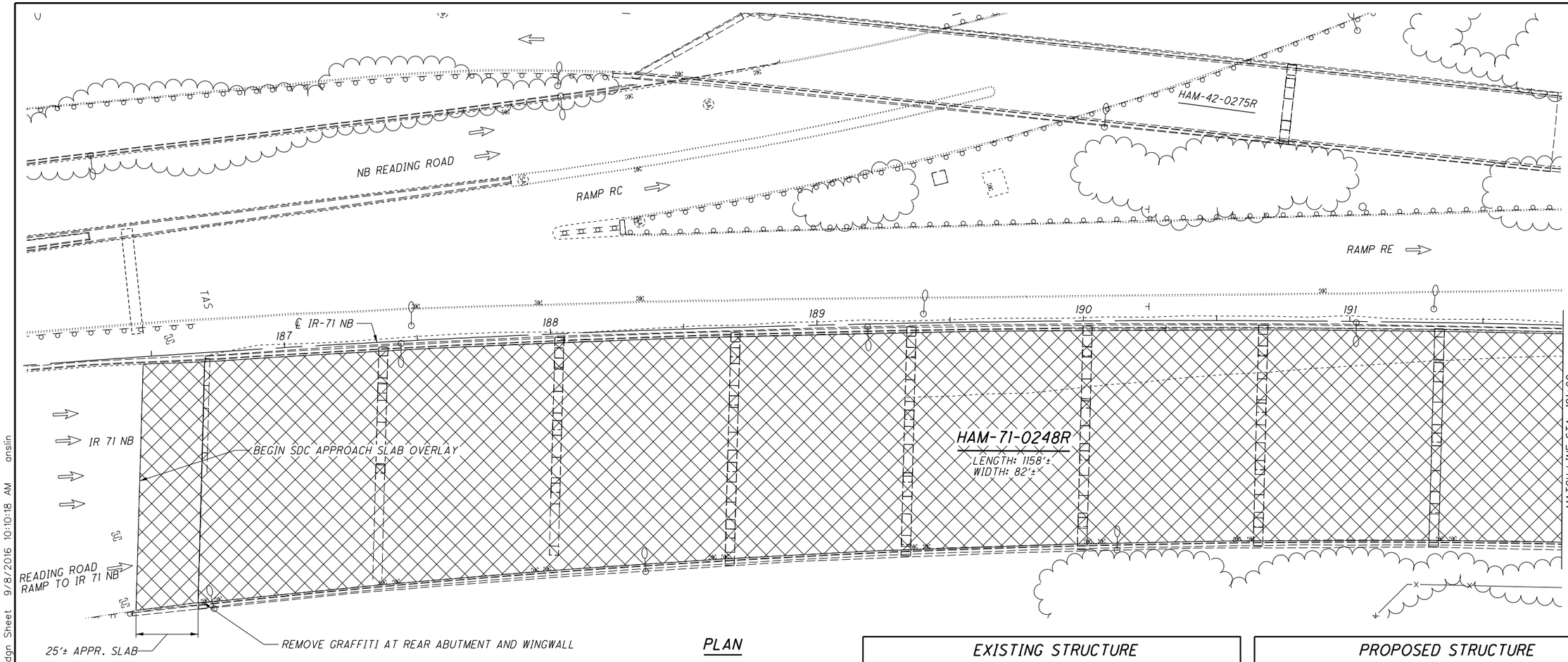
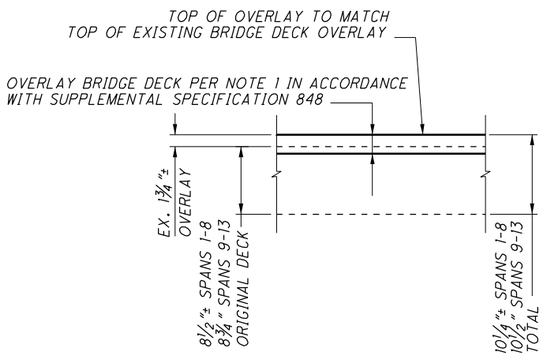


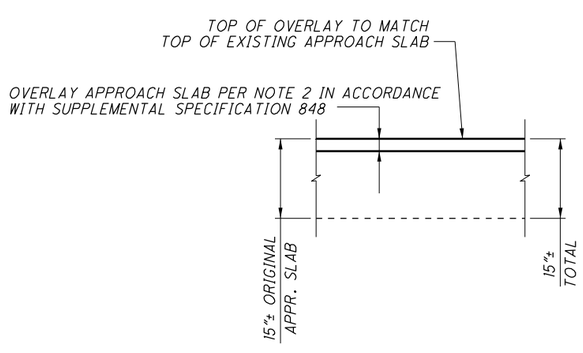
PLAN

LEGEND

SUPERPLASTICIZED DENSE CONCRETE (SDC) OVERLAY



DECK SLAB OVERLAY DETAIL



APPROACH SLAB OVERLAY DETAIL

EXISTING STRUCTURE

TYPE: CONTINUOUS ROLLED BEAM AND WELDED PLATE GIRDERS WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE

SPANS: 66'-0"± (SPANS 1 THRU 8), 107'-0"± (SPAN 9), 134'-0"± (SPAN 10) AND 128'-0"± (SPAN 11 THRU 13)

ROADWAY: VARIES, 80'-0"± MIN. F/F PARAPET

LOADING: C.F. = 2000 (57)

SKEW: 0°

APPROACH SLABS: AS-1-54 (25'-0" LONG)

ALIGNMENT: VARIES

SUPERELEVATION: VARIES

STRUCTURAL FILE NUMBER: 3106802

DATE BUILT: 1972

PROPOSED STRUCTURE

TYPE: CONTINUOUS ROLLED BEAM AND WELDED PLATE GIRDERS WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE

SPANS: 66'-0"± (SPANS 1 THRU 8), 107'-0"± (SPAN 9), 134'-0"± (SPAN 10) AND 128'-0"± (SPAN 11 THRU 13)

ROADWAY: VARIES, 80'-0"± MIN. F/F PARAPET

LOADING: C.F. = 2000 (57)

SKEW: 0°

APPROACH SLABS: AS-1-54 (25'-0" LONG)

ALIGNMENT: VARIES

SUPERELEVATION: VARIES

COORDINATES: LATITUDE 39°6'58" N
LONGITUDE 84°29'59" W

PROPOSED WORK:

1. REMOVE EXISTING 1¾" LATEX MODIFIED CONCRETE (LMC) WEARING SURFACE AND 1" OF THE ORIGINAL DECK USING HYDRODEMOLITION AND REPLACE WITH 2¾" THICK SUPERPLASTICIZED DENSE CONCRETE (SDC).
2. REMOVE 1¾" OF THE ORIGINAL APPROACH SLAB AND TOP OF BACKWALL USING HYDRODEMOLITION AND REPLACE WITH 1¾" OF SUPERPLASTICIZED DENSE CONCRETE (SDC).
3. CLEAN EXISTING DRAINAGE SYSTEM TO THE FIRST MANHOLE, BOTH ON THE STRUCTURE AND BELOW GROUND.
4. PRESSURE WASH BEAM SEATS, BACKWALLS, AND STRUCTURAL STEEL WITHIN 10 FEET OF ABUTMENT EXPANSION JOINTS.
5. REMOVE GRAFFITI AT REAR ABUTMENT AND WINGWALL. RESEAL ABUTMENT FACE WITH EPOXY URETHANE SEALER (SEE GENERAL NOTES).
6. RETROFIT FATIGUE CRACKS IN PIER 9, 10, 11 & 12 STEEL PIER CAPS.
7. ALL WORK WILL BE PERFORMED IN ACCORDANCE WITH MAINTENANCE OF TRAFFIC PLANS AND NOTES.

DESIGN AGENCY
BURGESS & NIPLE
312 PLUM ST. CINCINNATI OH

DESIGNED	DRAWN	REVIEWED	DATE
SJA	SJA	JSB	8/31/2016
CHECKED	REVISED	STRUCTURE FILE NUMBER	
XAC	XXX	3106802	

GENERAL PLAN - 1

HAM-71-0248R
I-71 NB OVER EDEN PARK ENTRANCE AND FLORENCE AVE

HAM-71-1.97
PID No. 82975

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PLAN

LEGEND

SUPERPLASTICIZED DENSE CONCRETE (SDC) OVERLAY

DESIGN AGENCY
BURGESS & NIPLE
312 PLUM ST. CINCINNATI OH

DESIGNED	DRAWN	REVIEWED	DATE
SJA	SJA	JSB	8/31/2016
CHECKED	REVISED	STRUCTURE FILE NUMBER	
XAC	XXX	3106802	

GENERAL PLAN -2
HAM-71-0248R
I-71 NB OVER EDEN PARK ENTRANCE AND FLORENCE AVE

HAM-71-1.97
PID No. 82975

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PLAN

LEGEND

SUPERPLASTICIZED DENSE CONCRETE (SDC) OVERLAY

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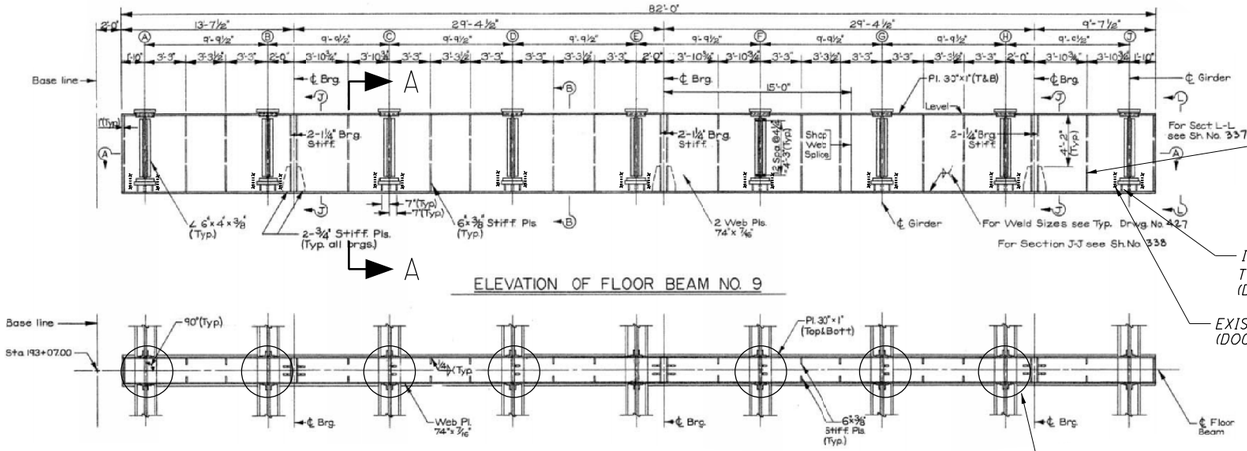
DESIGN AGENCY
BURGESS & NIPLE
312 PLUM ST. CINCINNATI OH

DESIGNED	DRAWN	REVIEWED	DATE
SJA	SJA	JSB	8/31/2016
CHECKED	REVISED	STRUCTURE FILE NUMBER	
XAC	XXX	3106802	

GENERAL PLAN -3
HAM-71-0248R
I-71 NB OVER EDEN PARK ENTRANCE AND FLORENCE AVE

HAM-71-1.97
PID No. 82975



PIER CAP ELEVATION

PIER 9 SHOWN

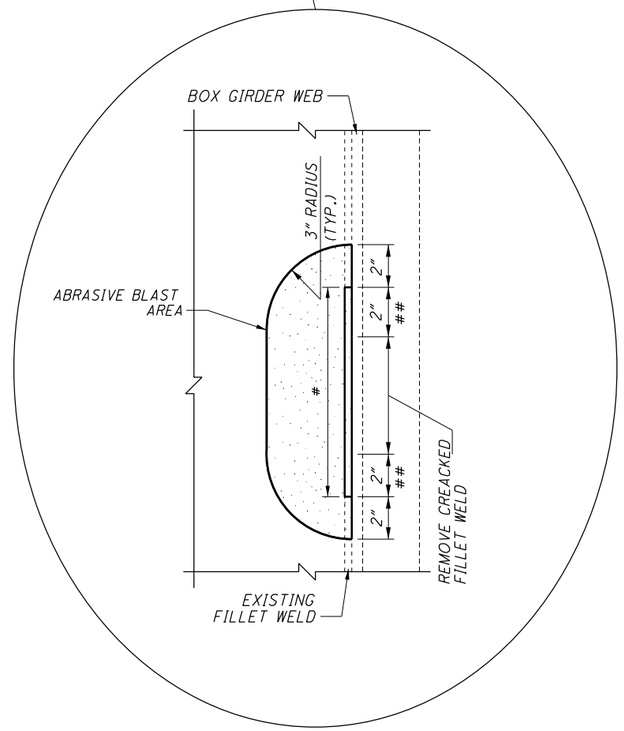
PIERS 10, 11 AND 12 SIMILAR

REMOVE AND REPLACE TWO CRACKS IN THE SOUTH WEB STIFFENER FILLET WELD ON PIER CAP 9. PAYMENT SHALL BE INCLUDED WITH ITEM 513-STRUCTURAL STEEL, MISC.: FILLET WELD CRACK RETROFIT. SEE GENERAL NOTES FOR REPAIR PROCEDURE.

ITEM 513-STRUCTURAL STEEL, MISC.: 2" STRESS RELIEF HOLE RETROFIT TYPICAL AT ALL EXISTING STRESS RELIEF RETROFIT LOCATIONS (DOG-BONE REPAIRS) DONE PREVIOUSLY.

EXISTING STRESS RELIEF RETROFIT LOCATIONS (DOG-BONE REPAIRS) DONE PREVIOUSLY.

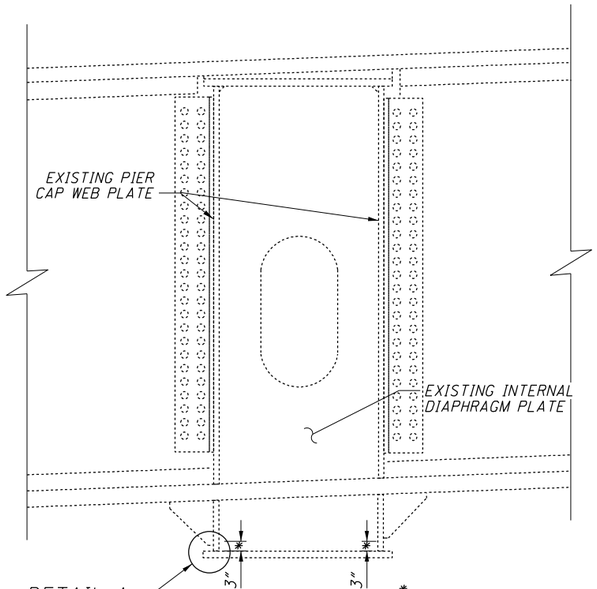
REMOVE FILLET WELDS THAT ATTACH THE REMAINS OF KNEE BRACES TO THE BOTTOM FLANGE PLATE OF PIER CAP 10 AT THE DIAPHRAGMS OF GIRDERS A, B, C, D, F, G AND H (2 KNEE BRACE ATTACHMENTS AT EACH DIAPHRAGM) IN ACCORDANCE WITH ITEM 513 -STRUCTURAL STEEL, MISC.: GRINDING PER FOOT, AS PER PLAN



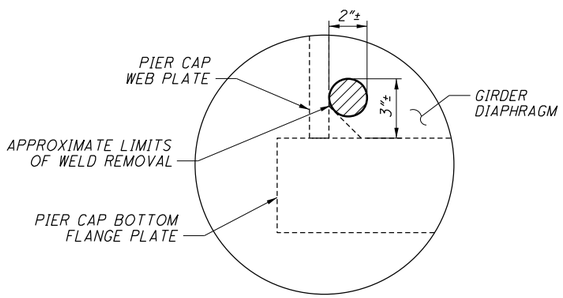
FILLET WELD CRACK RETROFIT DETAILS

(INSIDE ELEVATION)

 # = PROVIDE NEW FILLET WELD
= REMELT EXISTING FILLET WELD AND INCORPORATE IN THE NEW WELD



SECTION A-A



DETAIL A

* *APPROXIMATE LIMITS OF WEB PLATE WELD REMOVAL. PAYMENT INCLUDED UNDER ITEM 513-STRUCTURAL STEEL, MISC.: 2" STRESS RELIEF HOLE RETROFIT.*

ITEM 513-STRUCTURAL STEEL, MISC.: 2" STRESS RELIEF HOLE RETROFIT

PERFORM THE REPAIRS DESCRIBED BELOW AT PIERS 9-12.

PIER 9 - 18 LOCATIONS
PIER 10 - 20 LOCATIONS
PIER 11 - 16 LOCATIONS
PIER 12 - 18 LOCATIONS

SEE GENERAL NOTES FOR REPAIR PROCEDURE:

DESIGN AGENCY
BURGESS & NIPLE
312 PLUM ST. CINCINNATI OH

DESIGNED	DRAWN	REVIEWED	DATE
SJA	SJA	JSB	8/31/2016
CHECKED	REVISED	STRUCTURE FILE NUMBER	
XAC	XXX	3106802	

PIER CAP RETROFIT DETAILS
HAM-71-0248R
I-71 NB OVER EDEN PARK ENTRANCE AND FLORENCE AVE

HAM-71-1.97
PID No. 82975

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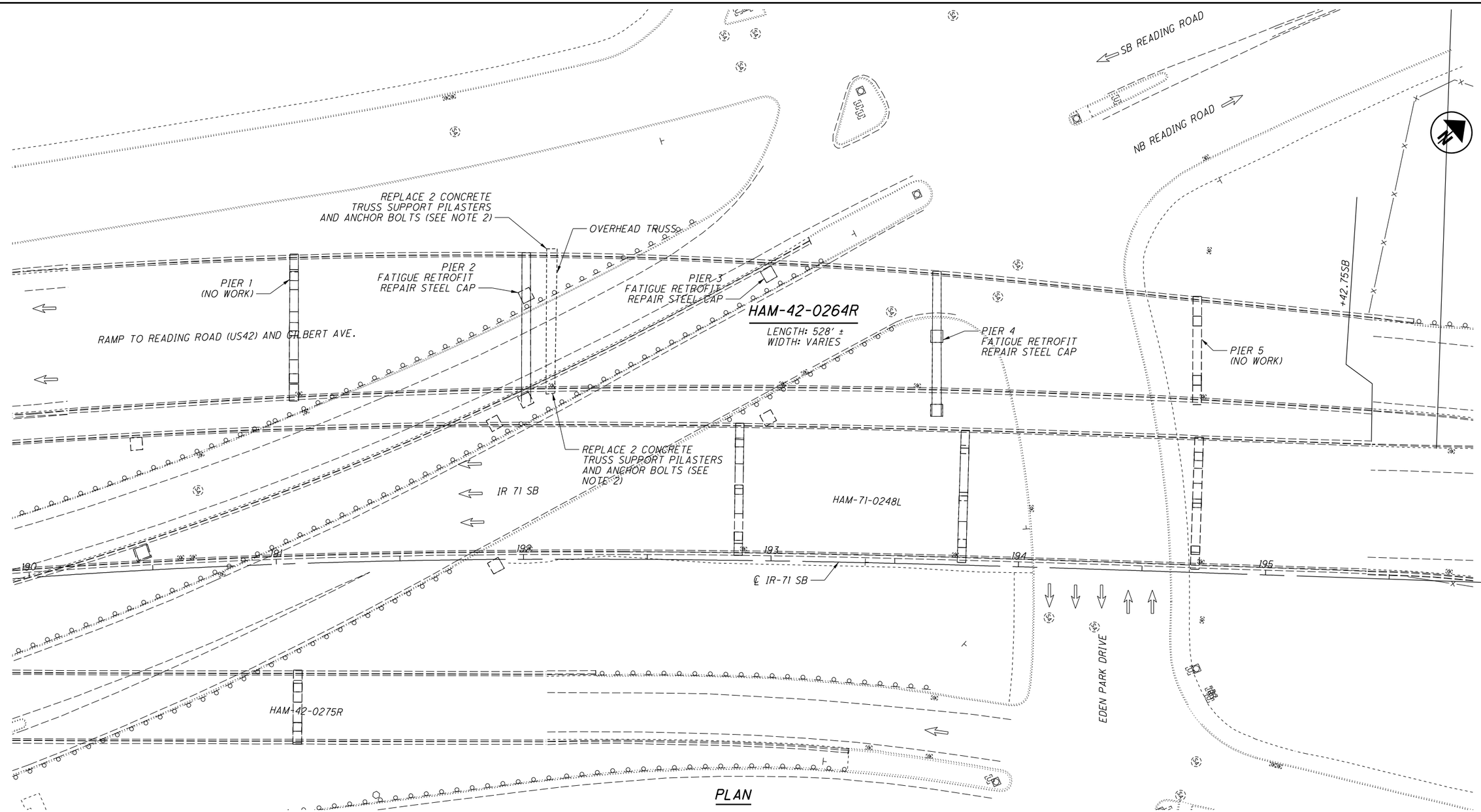

PLAN

EXISTING STRUCTURE

TYPE: CONTINUOUS WELDED PLATE GIRDER WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE

SPANS: 90'-6"±, 94'-0"±, 98'-0"±, 68'-0"±, 105'-6"±, 69'-10½"±

ROADWAY: VARIES

LOADING: C.F. = 2000 (57)

SKEW: VARIES

APPROACH SLABS: AS-1-54 (25'-0" LONG)

ALIGNMENT: VARIES

SUPERELEVATION: VARIES

STRUCTURAL FILE NUMBER: 3101223

DATE BUILT: 1969

PROPOSED STRUCTURE

TYPE: CONTINUOUS WELDED PLATE GIRDER WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE

SPANS: 90'-6"±, 94'-0"±, 98'-0"±, 68'-0"±, 105'-6"±, 69'-10½"±

ROADWAY: VARIES

LOADING: C.F. = 2000 (57)

SKEW: VARIES

APPROACH SLABS: AS-1-54 (25'-0" LONG)

ALIGNMENT: VARIES

SUPERELEVATION: VARIES

COORDINATES: LATITUDE 39°7'2" N
LONGITUDE 84°30'2" W

PROPOSED WORK:

1. REPAIR FATIGUE CRACKS IN PIER 2, 3 & 4 STEEL CAPS.
2. REPLACE 4 CONCRETE TRUSS SUPPORT PILASTERS AND ANCHOR BOLTS. SEAL CONCRETE SURFACES OF NEW PILASTERS. THE 4 EXISTING STEEL SUPPORT BRACKETS BELOW PILASTERS ARE TO BE RE-USED.

DESIGN AGENCY
BURGESS & NIPLE
312 PLUM ST. CINCINNATI OH

DESIGNED	DRAWN	REVIEWED	DATE
SJA	SJA	JSB	8/31/2016
CHECKED	REVISED	STRUCTURE FILE NUMBER	
XAC	XXX	3101223	

GENERAL PLAN
HAM-42-0264R
RAMP FROM I-71 SB TO SB US42/US22 OVER US 42 NB

HAM-71-1.97
PID No. 82975

1 / 3

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292

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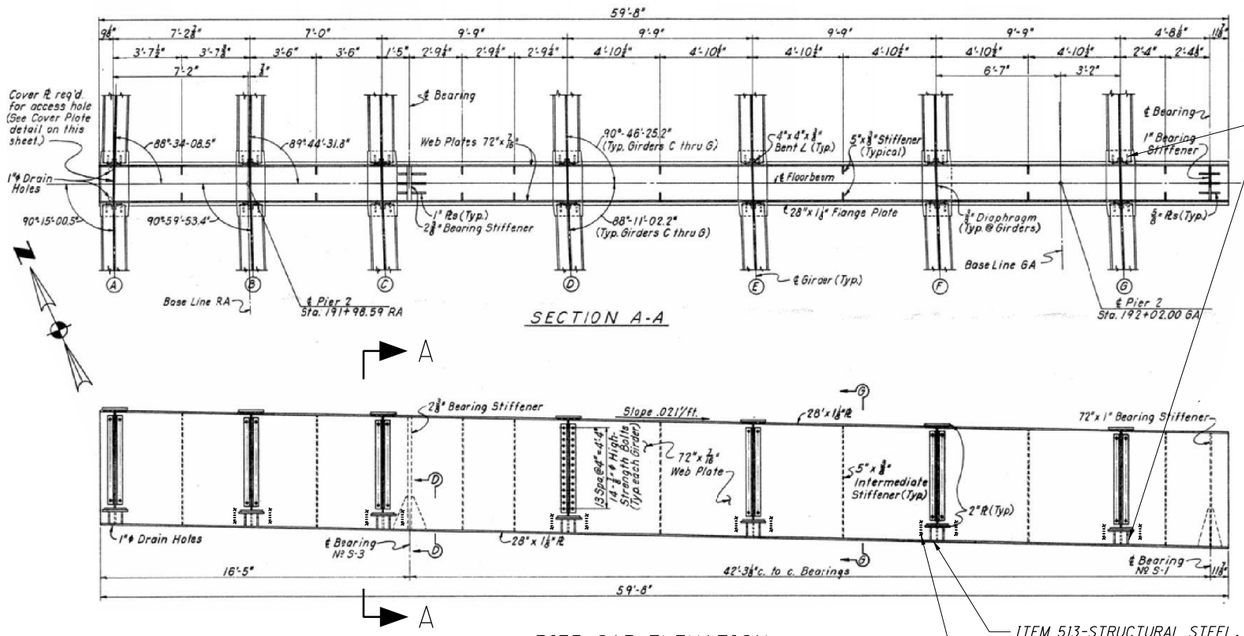
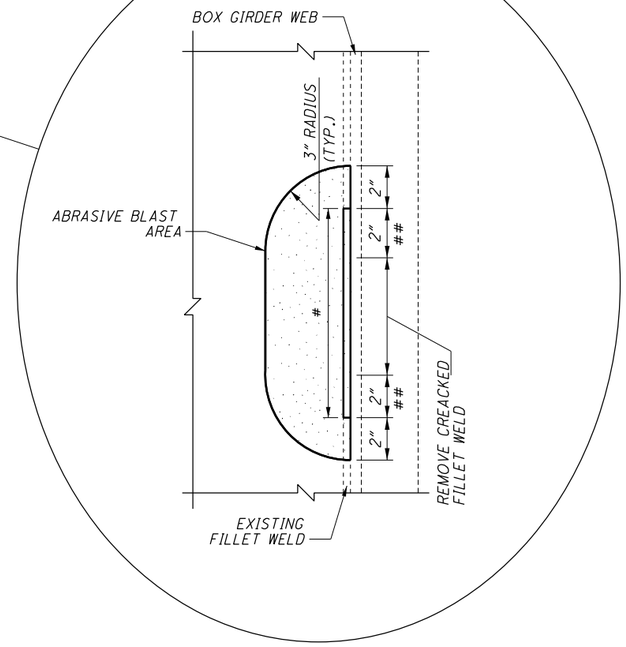


REMOVE AND REPLACE ONE CRACK IN FILLET WELD BETWEEN EAST GIRDER G KNEE BRACE AND NORTH WEB OF PIER CAP 2 PAYMENT SHALL BE INCLUDED WITH ITEM 513-STRUCTURAL STEEL, MISC.: FILLET WELD CRACK RETROFIT. SEE GENERAL NOTES FOR REPAIR PROCEDURE.

ITEM 513-STRUCTURAL STEEL, MISC.: 2" STRESS RELIEF HOLE RETROFIT TYPICAL AT ALL EXISTING STRESS RELIEF RETROFIT LOCATIONS (DOG-BONE REPAIRS) DONE PREVIOUSLY.

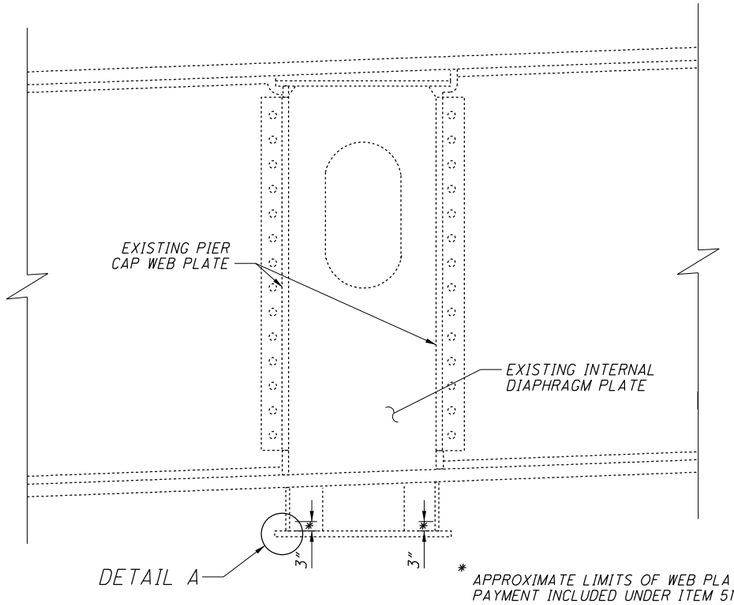
EXISTING STRESS RELIEF RETROFIT LOCATIONS (DOG-BONE REPAIRS) DONE PREVIOUSLY.



FILLET WELD CRACK RETROFIT DETAILS

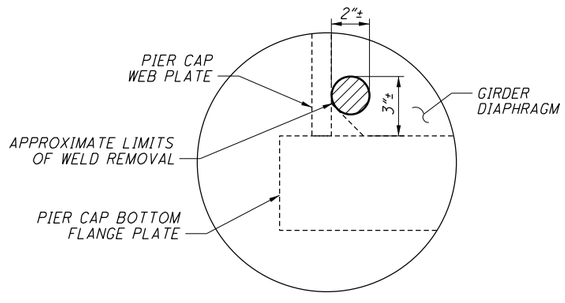
(INSIDE ELEVATION)

\# = PROVIDE NEW FILLET WELD
\## = REMELT EXISTING FILLET WELD AND INCORPORATE IN THE NEW WELD



* APPROXIMATE LIMITS OF WEB PLATE WELD REMOVAL. PAYMENT INCLUDED UNDER ITEM 513-STRUCTURAL STEEL, MISC.: 2" STRESS RELIEF HOLE RETROFIT.

SECTION A-A



DETAIL A

ITEM 513-STRUCTURAL STEEL, MISC.: 2" STRESS RELIEF HOLE RETROFIT

PERFORM THE REPAIRS DESCRIBED BELOW AT PIERS 2, 3 & 4.

PIER 2 - 12 LOCATIONS
PIER 3 - 10 LOCATIONS
PIER 4 - 10 LOCATIONS

SEE GENERAL NOTES FOR REPAIR PROCEDURE.

DESIGN AGENCY
BURGESS & NIPLE
312 PLUM ST. CINCINNATI OH

DESIGNED	DRAWN	REVIEWED	DATE
SJA	SJA	JSB	8/31/2016
CHECKED	REVISED	STRUCTURE FILE NUMBER	
XAC	XXX	3101223	

PIER CAP RETROFIT DETAILS

HAM-42-0264R

RAMP FROM I-71 SB TO SB US42/US22 OVER US 42 NB

HAM-71-1.97

PID No. 82975

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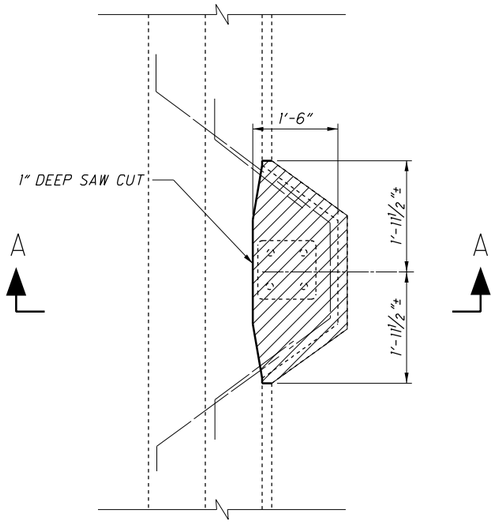
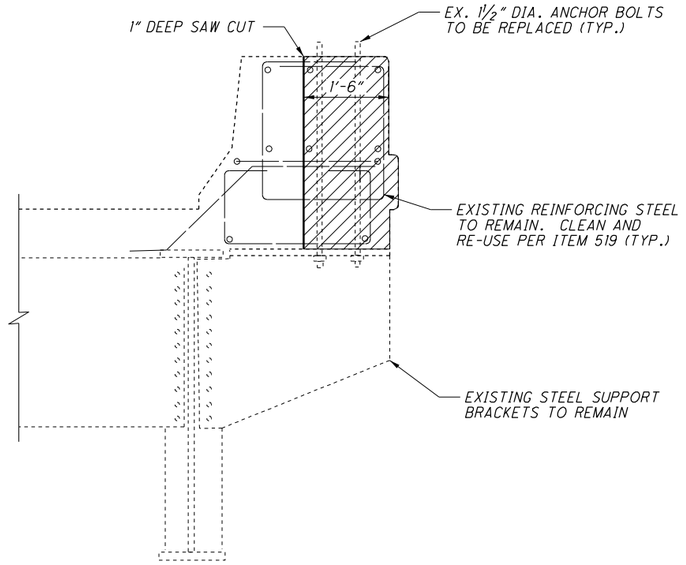


REMOVAL PLAN

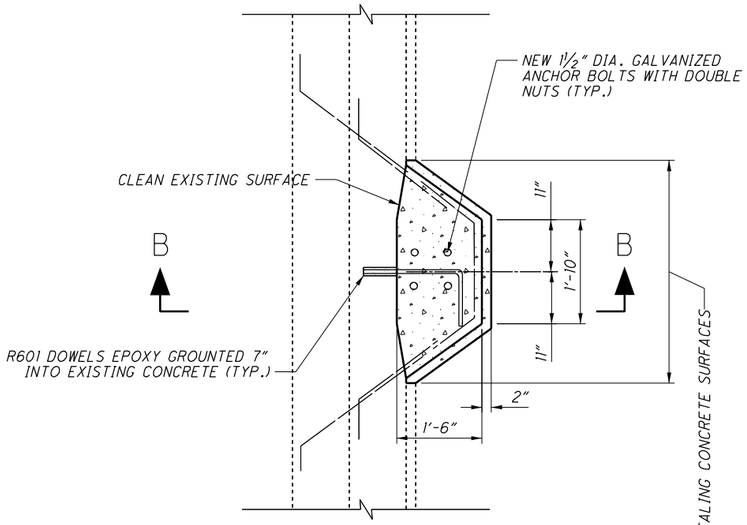


SECTION A-A

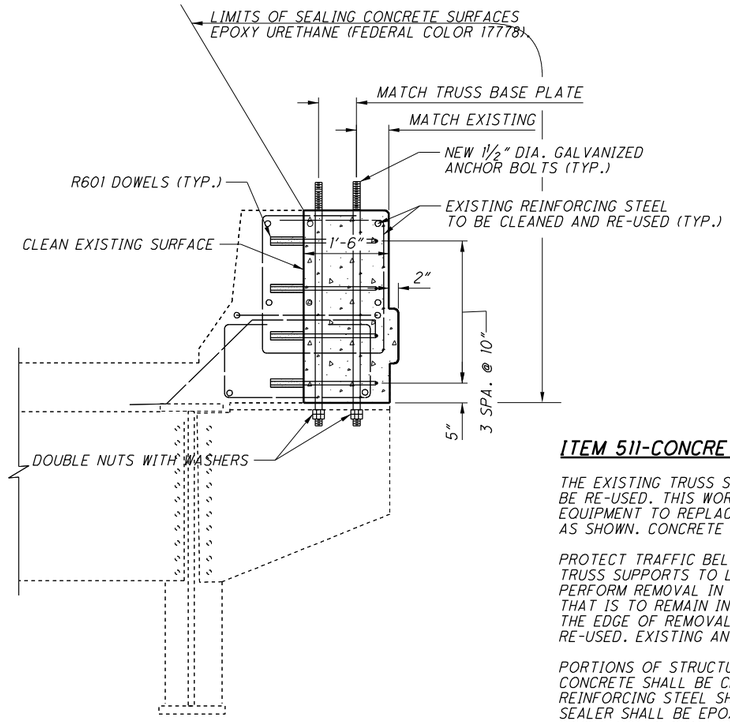
LEGEND:

= LIMITS OF EXISTING CONCRETE REMOVAL

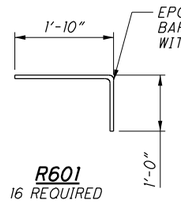
= LIMITS OF NEW CONCRETE



REPAIR PLAN



SECTION B-B



R601
16 REQUIRED

ITEM 511-CONCRETE, MISC.: REPLACE CONCRETE PILASTERS

THE EXISTING TRUSS SUPPORT ANCHOR BOLTS ARE RUSTED TO A POINT THEY CANNOT BE RE-USED. THIS WORK CONSISTS OF FURNISHING ALL NECESSARY LABOR, MATERIALS AND EQUIPMENT TO REPLACE THE EXISTING 16 ANCHOR BOLTS AND 4 CONCRETE PILASTERS AS SHOWN. CONCRETE PILASTER DIMENSIONS TO MATCH THE EXISTING STRUCTURE.

PROTECT TRAFFIC BELOW STRUCTURE BEFORE REMOVALS. REMOVE EXISTING CONCRETE TRUSS SUPPORTS TO LIMITS SHOWN AFTER SAW-CUTTING PERIMETER 1" DEEP. PERFORM REMOVAL IN SUCH A MANNER AS NOT TO DAMAGE OR SHATTER THE CONCRETE THAT IS TO REMAIN IN PLACE. MAKE SQUARE OR SLIGHTLY UNDER CUT SHOULDERS AT THE EDGE OF REMOVAL AREAS. EXISTING REINFORCING STEEL IS TO BE CLEANED AND RE-USED. EXISTING ANCHOR BOLTS SHALL BE REPLACED.

PORTIONS OF STRUCTURE REMOVED SHALL BE PER ITEM 202
CONCRETE SHALL BE CLASS QC2, BRIDGE DECK (PARAPET) PER ITEM 511.
REINFORCING STEEL SHALL BE EPOXY COATED GRADE 60 PER ITEM 509.
SEALER SHALL BE EPOXY URETHANE PER ITEM 512.
DOWEL HOLES SHALL BE PER ITEM 510.
GALVANIZED ANCHOR BOLTS, WASHERS AND NUTS SHALL BE PER ITEM 630.

THE COST OF ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO PERFORM WORK SHOWN ON THIS SHEET SHALL BE INCLUDED IN THE LUMP SUM PAYMENT FOR ITEM 511 - CONCRETE, MISC.: REPLACE CONCRETE PILASTERS

DESIGN AGENCY
BURGESS & NIPLE
312 PLUM ST. CINCINNATI OH

DESIGNED	DRAWN	REVIEWED	DATE
SJA	SJA	JSB	8/31/2016
CHECKED	REVISED	STRUCTURE FILE NUMBER	
XAC	XXX	3101223	

LIGHT PILASTER REPLACEMENT DETAILS
HAM-42-0264R
RAMP FROM I-71 SB TO SB US42/US22 OVER US 42 NB

HAM-71-1.97
PID No. 82975

3 / 3

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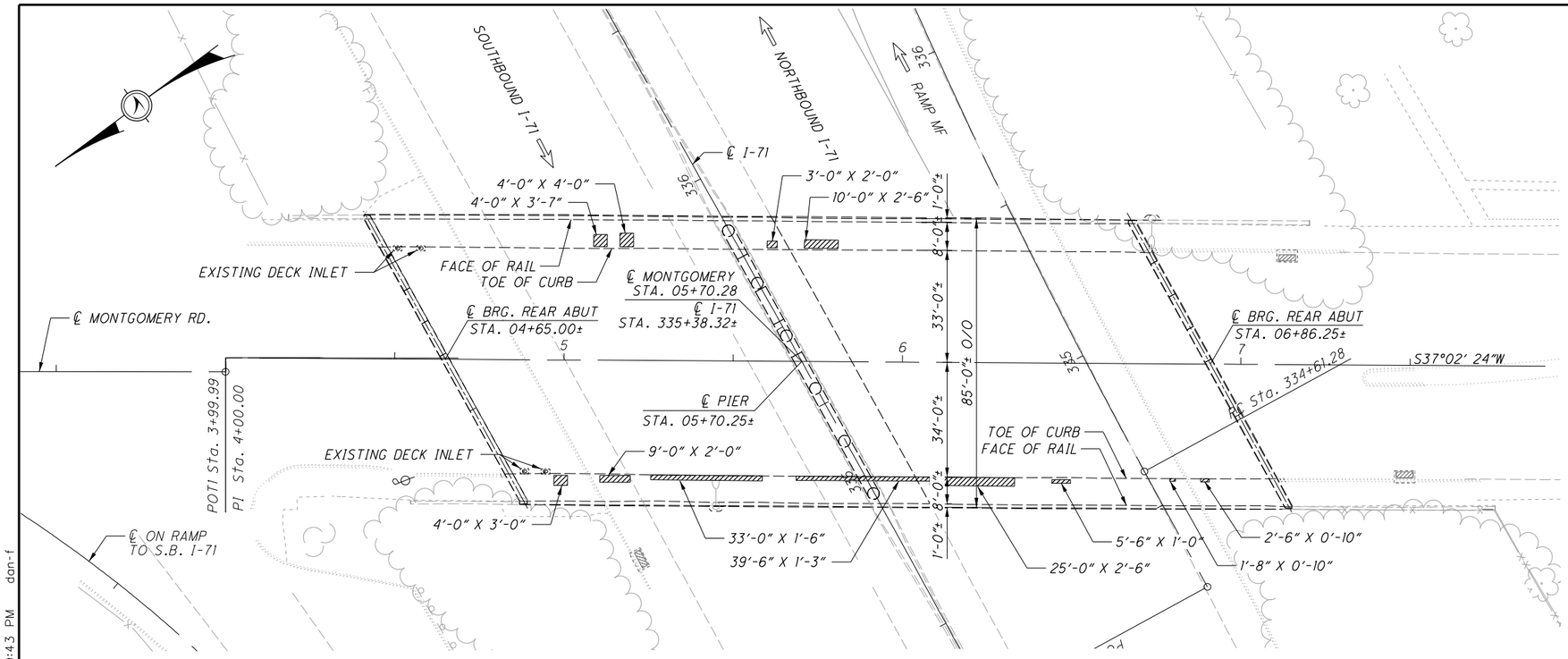
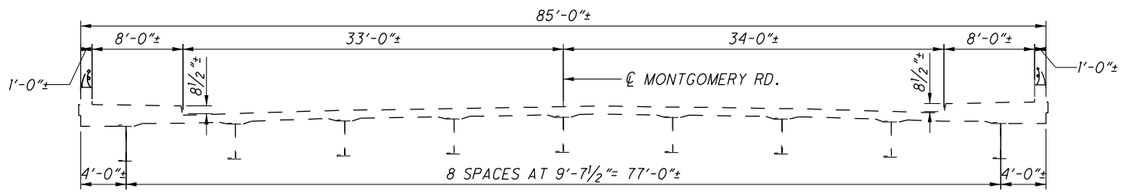


PLAN



TYPICAL SECTION

PROPOSED WORK

1) REPAIR DETERIORATED PORTIONS OF CURBS AND SIDEWALKS ON THE DECK AND APPROACH SLABS USING 519 PATCHING.

LEGEND

ITEM 519 - PATCHING CONCRETE STRUCTURES, AS PER PLAN

EXISTING STRUCTURE

TYPE:	CONTINUOUS STEEL PLATE GIRDERS WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE
SPANS:	105'-3" AND 121'-3" C/C BEARINGS
ROADWAY:	67'-0" TOE/TOE CURBS WITH 8'-0" SIDEWALKS (BOTH SIDES)
LIVE LOADING:	HS 20-44
SKEW:	29°17'22"
WEARING SURFACE:	1¾" MICROSILICA MODIFIED CONCRETE OVERLAY
APPROACH SLABS:	AS-1-67 (30'0" LONG)
ALIGNMENT:	TANGENT
CROWN:	0.016 AND 0.032
STRUCTURAL FILE NUMBER:	3100839
DATE BUILT:	1972
DISPOSITION:	MINOR REPAIR

PROPOSED STRUCTURE

TYPE:	CONTINUOUS STEEL PLATE GIRDERS WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE
SPANS:	105'-3" AND 121'-3" C/C BEARINGS
ROADWAY:	67'-0" TOE/TOE CURBS WITH 8'-0" SIDEWALKS (BOTH SIDES)
LIVE LOADING:	HS 20-44
SKEW:	29°17'22"
WEARING SURFACE:	1¾" MICROSILICA MODIFIED CONCRETE OVERLAY
APPROACH SLABS:	AS-1-67 (30'0" LONG)
ALIGNMENT:	TANGENT
CROWN:	0.016 AND 0.032
COORDINATES:	LATITUDE 39° 08' 36" N
	LONGITUDE 84° 28' 14" W

DESIGN AGENCY
PALMER ENGINEERING
5500 CT. KEMPER RD. - SUITE B
CINCINNATI, OH 45249
ENGINEERING CINCINNATI, LLC

DESIGNED	DRAWN	REVIEWED	DATE
SDW	EI	BJF	05/30/16
CHECKED	REVISED	STRUCTURE FILE NUMBER	
CEJ	XXX	3100839	

HAMILTON COUNTY
STA. 4+63.00±
STA. 6+88.25±

GENERAL PLAN
BRIDGE HAM-22-0446
MONTGOMERY AVE. OVER I-71

HAM-71-1.97
PID No. 82975

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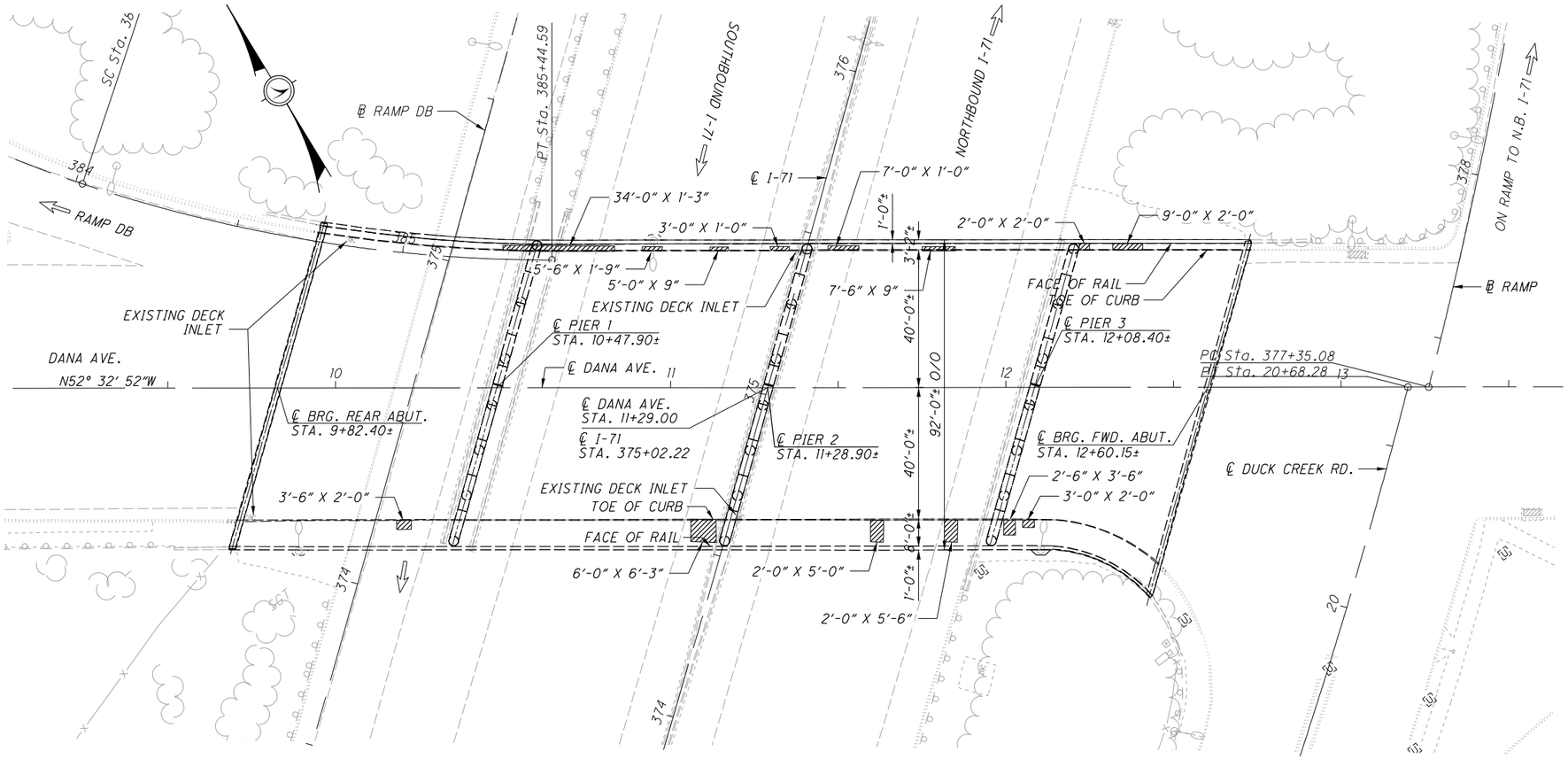
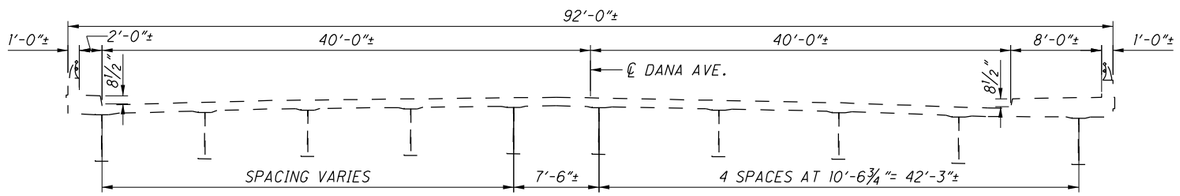


PLAN



TYPICAL SECTION

PROPOSED WORK

1) REPAIR DETERIORATED PORTIONS OF CURBS AND SIDEWALKS ON THE DECK AND APPROACH SLABS USING 519 PATCHING.

LEGEND

ITEM 519 - PATCHING CONCRETE STRUCTURES, AS PER PLAN

EXISTING STRUCTURE

TYPE: CONTINUOUS STEEL PLATE GIRDERS WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE

SPANS: 65'-6", 81'-0", 79'-6" AND 51'-9" C/C BEARINGS ALONG ℄ DANA AVENUE

ROADWAY: 80'-0" TOE TO TOE CURBS MIN. WITH 2'-0" SAFETY CURB, LEFT AND 8'-0", RIGHT

LIVE LOADING: HS 20-44

SKEW: 15°48'59"

WEARING SURFACE: 1¾" MICROSILICA MODIFIED CONCRETE OVERLAY

APPROACH SLABS: AS-1-67 (25'0" LONG)

ALIGNMENT: TANGENT

CROWN: 0.016 AND 0.032

STRUCTURAL FILE NUMBER: 3114716

DATE BUILT: 1972

DISPOSITION: MINOR REPAIR

PROPOSED STRUCTURE

TYPE: CONTINUOUS STEEL PLATE GIRDERS WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE

SPANS: 65'-6", 81'-0", 79'-6" AND 51'-9" C/C BEARINGS ALONG ℄ DANA AVENUE

ROADWAY: 80'-0" TOE TO TOE CURBS MIN. WITH 2'-0" SAFETY CURB, LEFT AND 8'-0", RIGHT

LIVE LOADING: HS 20-44

SKEW: 15°48'59"

WEARING SURFACE: 1¾" MICROSILICA MODIFIED CONCRETE OVERLAY

APPROACH SLABS: AS-1-67 (25'0" LONG)

ALIGNMENT: TANGENT

CROWN: 0.016 AND 0.032

COORDINATES: LATITUDE 39° 08' 41" N
LONGITUDE 84° 27' 26" W

DESIGN AGENCY
Palmer ENGINEERING
PALMER ENGINEERING
8350 E. KEMPER RD - SUITE B
CINCINNATI, OH 45249
ENGINEERING • ENVIRONMENTAL • SURVEYING • SOLUTIONS
CINCINNATI • MASON • WILLIAMSBURG • MILWAUKEE

DESIGNED	DRAWN	REVIEWED	DATE
SDW	EI	BJF	05/30/16
CHECKED	REVISED	STRUCTURE FILE NUMBER	
CEJ	XXX	3114716	

COUNTY
STA. 9+81.4±
STA. 12+61.2±

GENERAL PLAN
BRIDGE NO: HAM-71-0603
DANA AVE. OVER I-71

HAM-71-1.97
PID No. 82975

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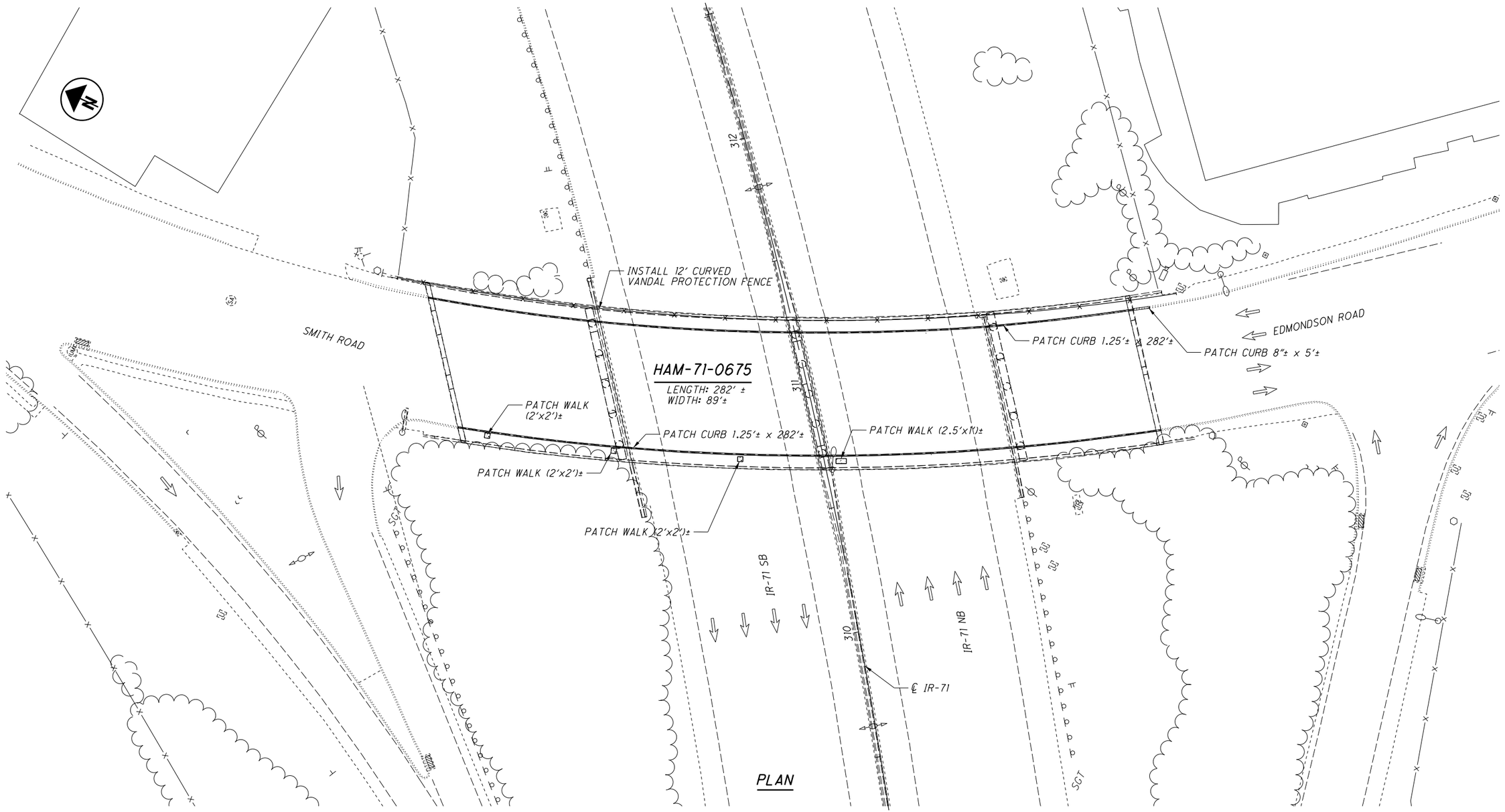

PLAN

EXISTING STRUCTURE

TYPE: CONTINUOUS ROLLED BEAM WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE
SPANS: 55'-0"±, 78'-0"±, 80'-3"± AND 64'-0"±
ROADWAY: 48'-0"± F/F CURBS
LOADING: C.F. = 2000 (57)
SKEW: 13°31'56" RF
APPROACH SLABS: AS-1-67 (25'-0" LONG)
ALIGNMENT: 6°30' CURVE RIGHT
SUPERELEVATION: VARIES
STRUCTURAL FILE NUMBER: 3114813
DATE BUILT: 1972

PROPOSED STRUCTURE

TYPE: CONTINUOUS ROLLED BEAM WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE
SPANS: 55'-0"±, 78'-0"±, 80'-3"± AND 64'-0"±
ROADWAY: 48'-0"± F/F CURBS
LOADING: C.F. = 2000 (57)
SKEW: 13°31'56" RF
APPROACH SLABS: AS-1-67 (25'-0" LONG)
ALIGNMENT: 6°30' CURVE RIGHT
SUPERELEVATION: VARIES
COORDINATES: LATITUDE 39°9'0" N
LONGITUDE 84°26'45" W

LEGEND:

= REPAIR CONCRETE PER ITEM 519-PATCHING CONCRETE STRUCTURES.

PROPOSED WORK:

1. INSTALL 12 FT. TALL CURVED VANDAL PROTECTION FENCE ON THE EAST SIDE OF THE BRIDGE.
2. REPAIR APPROXIMATELY 719 SQUARE FT. OF SIDEWALK AND CURB PER ITEM 519-PATCHING CONCRETE STRUCTURES. 2 x 719 = 1438 SQUARE FT. IS INCLUDED IN THE ESTIMATED QUANTITIES.

DESIGN AGENCY
BURGESS & NIPLE
312 PLUM ST. CINCINNATI OH

DESIGNED	DRAWN	REVIEWED	DATE
XAC	XAC	JSB	5/27/2016
CHECKED	REVISED	STRUCTURE FILE NUMBER	
SJA	XXX	3114813	

GENERAL PLAN
HAM-71-0675
SMITH-EDMONDSON RD OVER I-71

HAM-71-1.97
PID No. 82975

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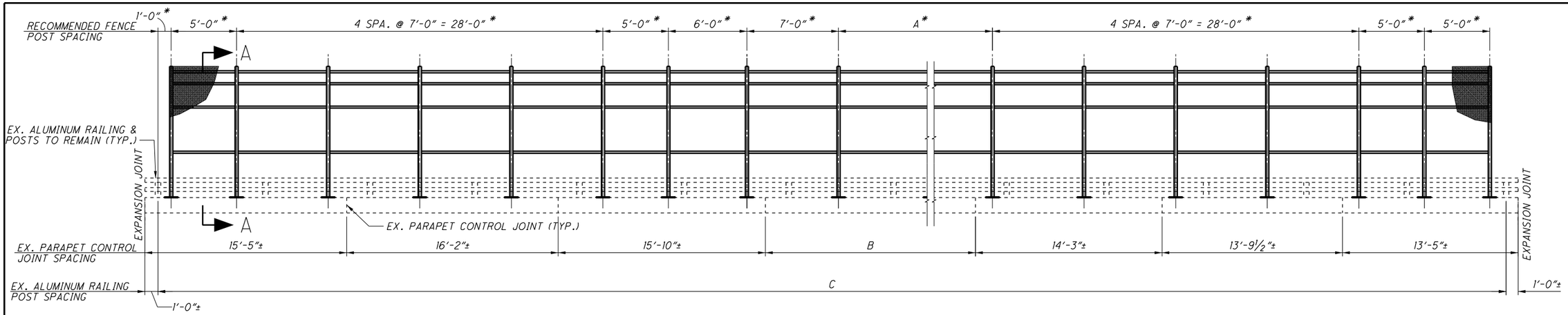


NORTH RAILING ELEVATION

(VIEW LOOKING NORTH FROM BRIDGE DECK)

LEGEND:

* = CONTRACTOR MAY USE A DIFFERENT FENCE POST SPACING AS LONG AS THE MAXIMUM SPACING IS 7'-0" AND THE BASE PLATES CLEAR THE EXISTING RAILING POSTS BY AT LEAST 2" IN ACCORDANCE WITH STANDARD DRAWING VPF-1-90 .

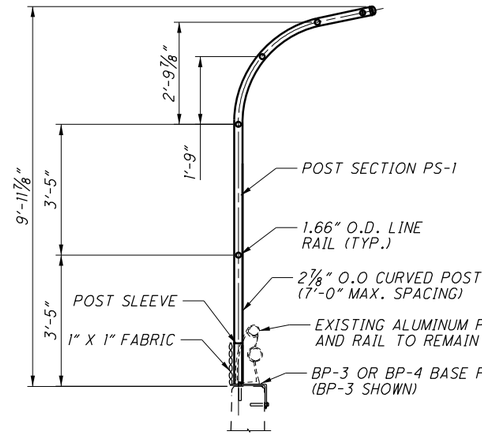
EX. = EXISTING

SPA. = SPACES

A = (2 @ 7'-0",5'-0", 6'-0", 3 @ 7'-0",5'-0", 6'-0", 3 @ 7'-0",5'-0", 6'-0", 3 @ 7'-0",5'-0", 6'-0", 3 @ 7'-0",5'-0", 6'-0", 4@7', 5'-0")

B = (16'-1", 15'-10", 16'-4", 15'-11", 16'-1",15'-11",16'-2½", 15'-9½", 16'-3", 15'-10", 16'-2½", 13'-10")±

C = (25 @ 8'-0",8'-1", 7'-11", 5@7'-7½", 7'-8", 7'-8", 7'-7")±



SECTION A-A

(12' CURVED FENCE PER VPF-1-90)

NOTES:

1. SEE STANDARD DRAWING VPF-1-90 FOR VANDAL PROTECTION FENCE DETAILS.
2. EXISTING ALUMINUM BRIDGE RAILING TO REMAIN. SPACE FENCING POSTS TO CLEAR EXISTING RAILING POST AND PARAPET CONTROL JOINT LOCATIONS. DIMENSIONS SHOWN ARE APPROXIMATE AND SHALL BE VERIFIED BY CONTRACTOR PRIOR TO FENCE FABRICATION.

DESIGN AGENCY
BURGESS & NIPLE
312 PLUM ST. CINCINNATI OH

DESIGNED	DRAWN	REVIEWED	DATE
SJA	SJA	JSB	8/31/2016
CHECKED	REVISED	STRUCTURE FILE NUMBER	
XAC	XXX	3114813	

RAILING DETAILS
HAM-71-0675
SMITH-EDMONDSON RD OVER I-71

HAM-71-1.97
PID No. 82975

2 / 2

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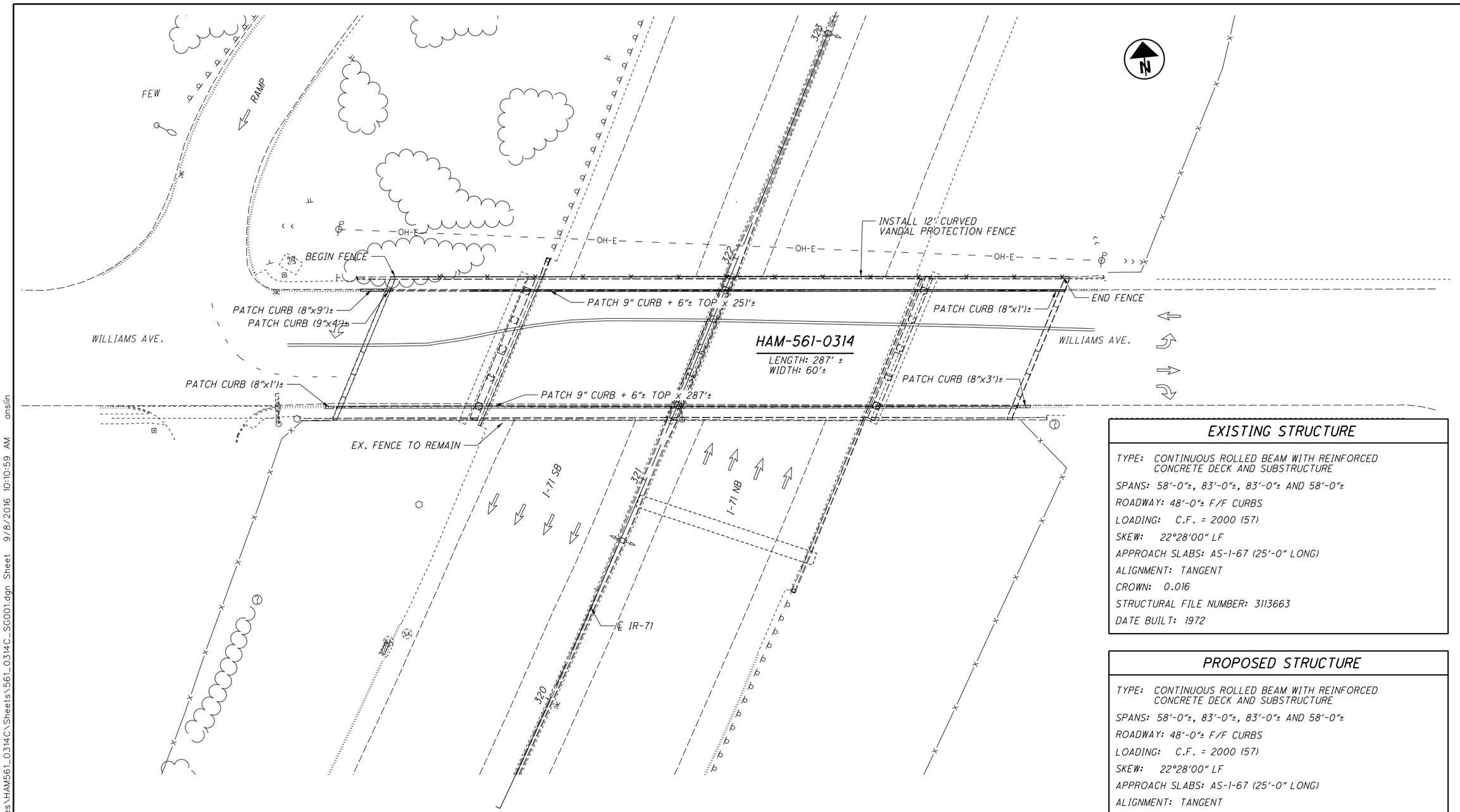

EXISTING STRUCTURE

TYPE: CONTINUOUS ROLLED BEAM WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE
SPANS: 58'-0"±, 83'-0"±, 83'-0"± AND 58'-0"±
ROADWAY: 48'-0"± F/F CURBS
LOADING: C.F. = 2000 (57)
SKEW: 22°28'00" LF
APPROACH SLABS: AS-1-67 (25'-0" LONG)
ALIGNMENT: TANGENT
CROWN: 0.016
STRUCTURAL FILE NUMBER: 3113663
DATE BUILT: 1972

PROPOSED STRUCTURE

TYPE: CONTINUOUS ROLLED BEAM WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE
SPANS: 58'-0"±, 83'-0"±, 83'-0"± AND 58'-0"±
ROADWAY: 48'-0"± F/F CURBS
LOADING: C.F. = 2000 (57)
SKEW: 22°28'00" LF
APPROACH SLABS: AS-1-67 (25'-0" LONG)
ALIGNMENT: TANGENT
CROWN: 0.016
COORDINATES: LATITUDE 39° 09' 09" N
LONGITUDE 84° 26' 37" W

LEGEND:

= REPAIR CONCRETE PER ITEM 519-PATCHING CONCRETE STRUCTURES.

PROPOSED WORK:

1. INSTALL 12 FT. TALL CURVED VANDAL PROTECTION FENCE ON THE NORTH SIDE OF THE BRIDGE.
2. REPAIR APPROXIMATELY 685 SQUARE FEET CURB AND SIDEWALK WITH 519-PATCHING CONCRETE STRUCTURES. 2 x 685 = 1370 SQUARE FEET WAS INCLUDED IN THE ESTIMATED QUANTITIES.

DESIGN AGENCY
BURGESS & NIPLE
312 PLUM ST. CINCINNATI OH

DESIGNED	DRAWN	REVIEWED	DATE
SJA	SJA	JSB	5/27/2016
CHECKED	REVISED	STRUCTURE FILE NUMBER	
XAC	XXX	3113663	

GENERAL PLAN
HAM-561-0314
SR 561 (SMITH/EDMONDSON RD) OVER I-71

HAM-71-1.97
PID No. 82975

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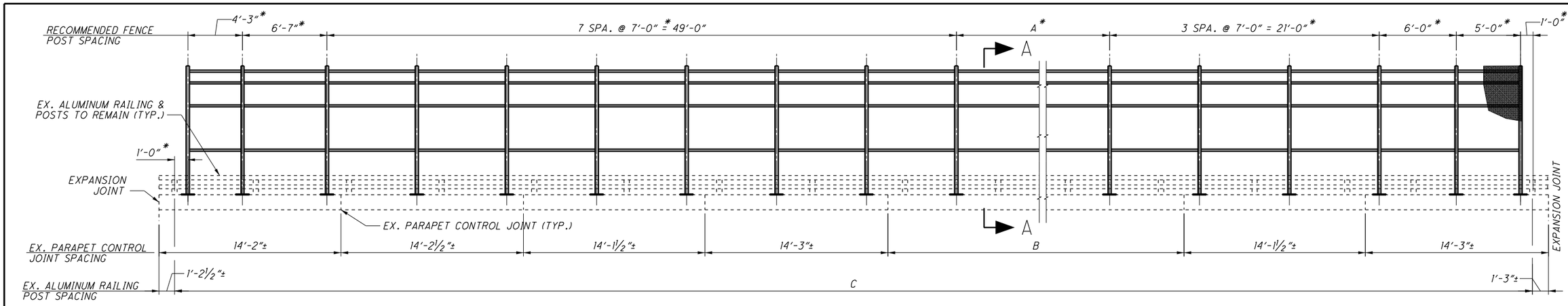


NORTH RAILING ELEVATION

(VIEW LOOKING NORTH FROM BRIDGE DECK)

LEGEND:

* = CONTRACTOR MAY USE A DIFFERENT FENCE POST SPACING AS LONG AS THE MAXIMUM SPACING IS 7'-0" AND THE BASE PLATES CLEAR THE EXISTING RAILING POSTS BY AT LEAST 2" IN ACCORDANCE WITH STANDARD DRAWING VPF-1-90 .

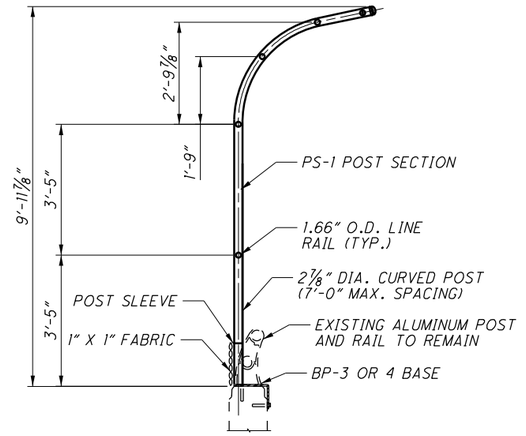
EX. = EXISTING

SPA. = SPACES

A = (13 @ 7'-0",5'-0", 13 @ 7'-0")

B = (14'-0½", 14'-2 1/2", 14'-1", 14'-2 1/2", 14'-0½", 5@14'-2", 14'-1", 14'-3", 14'-1½", 14'-3")±

C = (7'- 2½", 7'-3", 4@7'-2½", 7'-3", 7'-2½", 7'-3", 5@7'-2½", 6'-2½", 8'-3", 7'-2½", 7'-2", 5@ 7'-2½", 2@7'-3", 7'-2½", 7'-3", 2@7'-2½", 2@7'-3", 7'-2", 5@7'-3", 5'-2", 9'-3")±



SECTION A-A

(12' CURVED FENCE PER VPF-1-90)

NOTES:

1. SEE STANDARD DRAWING VPF-1-90 FOR VANDAL PROTECTION FENCE DETAILS.
2. EXISTING ALUMINUM BRIDGE RAILING TO REMAIN. SPACE FENCING POSTS TO CLEAR EXISTING RAILING POST AND PARAPET CONTROL JOINT LOCATIONS. DIMENSIONS SHOWN ARE APPROXIMATE AND SHALL BE VERIFIED BY CONTRACTOR PRIOR TO FENCE FABRICATION.

DESIGN AGENCY
BURGESS & NIPLE
312 PLUM ST. CINCINNATI OH

DESIGNED	DRAWN	REVIEWED	DATE
SJA	SJA	JSB	5/27/2016
CHECKED	REVISED	STRUCTURE FILE NUMBER	
XAC	XXX	3113663	

RAILING DETAILS

HAM-561-0314

SR 561 (SMITH/EDMONDSON RD) OVER I-71

HAM-71-1.97

PID No. 82975

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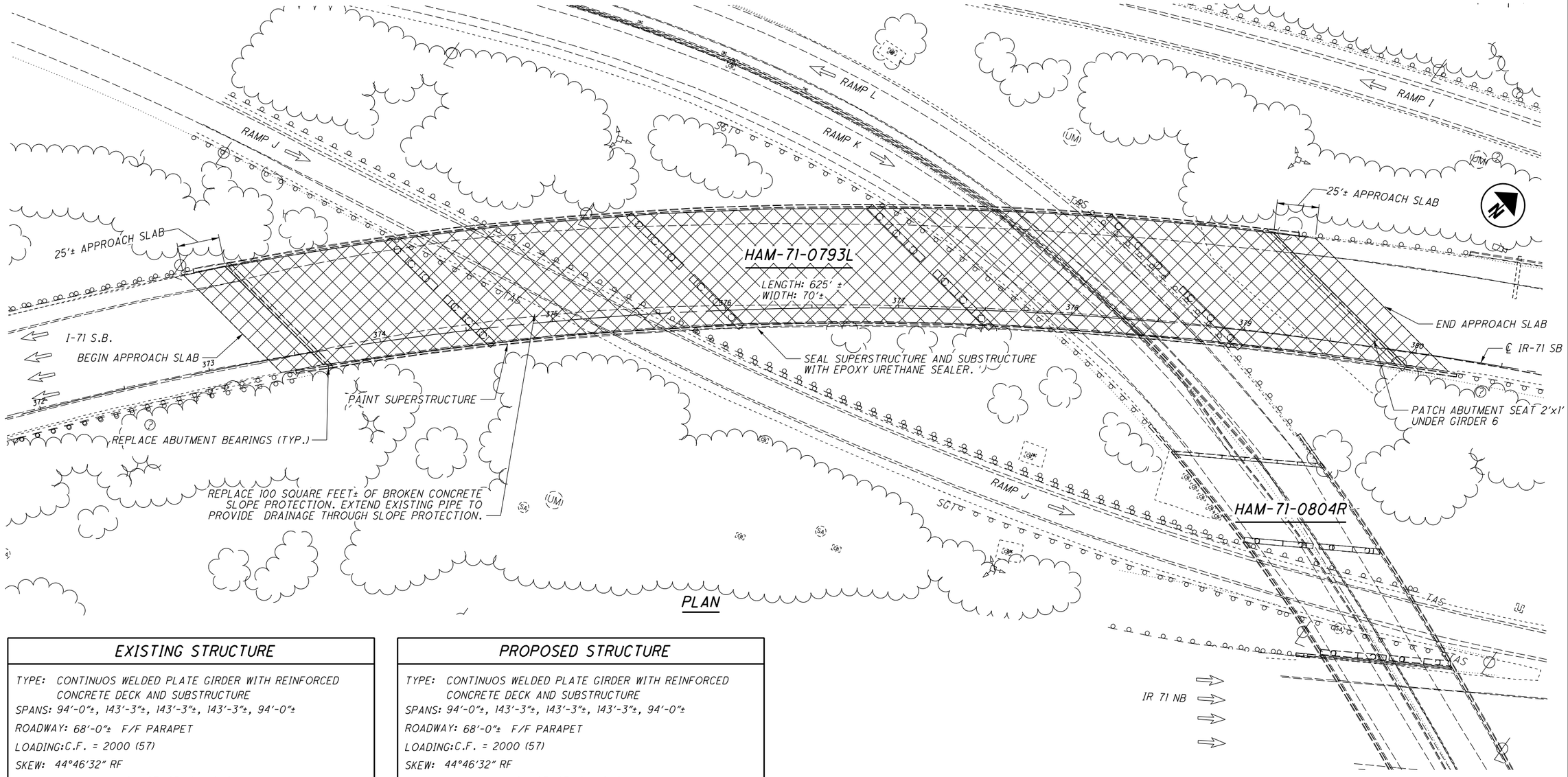
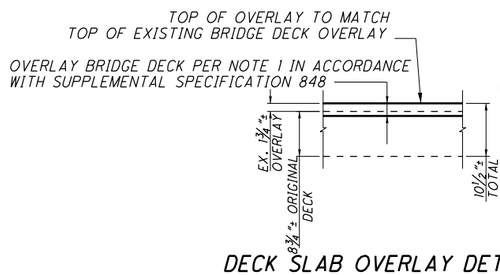


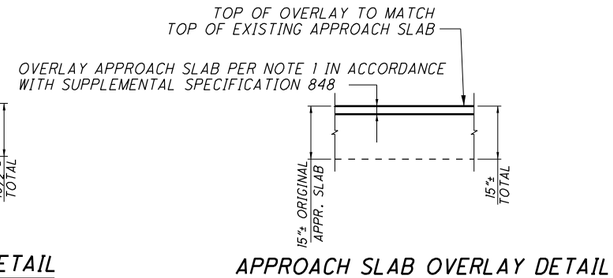
PLAN

EXISTING STRUCTURE
TYPE: CONTINUOS WELDED PLATE GIRDER WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE
SPANS: 94'-0"±, 143'-3"±, 143'-3"±, 143'-3"±, 94'-0"±
ROADWAY: 68'-0"± F/F PARAPET
LOADING:C.F. = 2000 (57)
SKEW: 44°46'32" RF
APPROACH SLABS: AS-1-67 (25'-0" LONG)
ALIGNMENT: 3° CURVE AND 550' SPIRAL
SUPERELEVATION: VARIES, 0.071 MAX.
STRUCTURAL FILE NUMBER: 3115038
DATE BUILT: 1972

PROPOSED STRUCTURE
TYPE: CONTINUOS WELDED PLATE GIRDER WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE
SPANS: 94'-0"±, 143'-3"±, 143'-3"±, 143'-3"±, 94'-0"±
ROADWAY: 68'-0"± F/F PARAPET
LOADING:C.F. = 2000 (57)
SKEW: 44°46'32" RF
APPROACH SLABS: AS-1-67 (25'-0" LONG)
ALIGNMENT: 3° CURVE AND 550' SPIRAL
SUPERELEVATION: VARIES, 0.071 MAX.
COORDINATES: LATITUDE 39°9'51" N
LONGITUDE 84°26'1" W



DECK SLAB OVERLAY DETAIL



APPROACH SLAB OVERLAY DETAIL

LEGEND

SUPERPLASTICIZED DENSE CONCRETE (SDC) OVERLAY.

PROPOSED WORK:

1. REMOVE EXISTING 1¾" MICROSILICA CONCRETE (MSC) WEARING SURFACE AND 1" OF THE ORIGINAL DECK AND APPROACH SLABS USING HYDRODEMOLITION AND REPLACE WITH 2¾" THICK SUPERPLASTICIZED DENSE CONCRETE (SDC).
2. REPLACE ABUTMENT BEARINGS WITH ELASTOMERIC BEARINGS.
3. PAINT ALL STRUCTURAL STEEL USING OZEU SPECIFICATIONS.
4. SEAL SUPERSTRUCTURE AND SUBSTRUCTURE WITH EPOXY URETHANE SEALER.
5. CLEAN EXISTING DRAINAGE SYSTEM TO THE FIRST MANHOLE, BOTH ON THE STRUCTURE AND BELOW THE GROUND.
6. REMOVE VEGETATION / TREES UNDER BRIDGE AND WITHIN 20 FEET OF STRUCTURE.
7. REPLACE BROKEN CONCRETE SLOPE PROTECTION AT FORWARD ABUTMENT. EXTEND EXISTING PIPE TO PROVIDE DRAINAGE THROUGH SLOPE PROTECTION.
8. ALL WORK WILL BE PERFORMED IN ACCORDANCE WITH MAINTENANCE OF TRAFFIC PLANS AND NOTES.

DESIGN AGENCY
BURGESS & NIPLE
312 PLUM ST. CINCINNATI OH

DESIGNED	DRAWN	REVIEWED	DATE
SJA	SJA	JSB	8/31/2016
CHECKED	REVISED	STRUCTURE FILE NUMBER	
XAC	XXX	3115038	

GENERAL PLAN
HAM-71-0793L
SB I-71 OVER RAMPS TO SR 562

HAM-71-1.97
PID No. 82975

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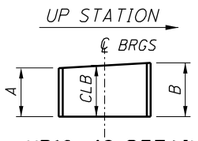
LAMINATED ELASTOMERIC BEARINGS

	BEARING DIMENSIONS							STEEL LOAD PLATES	REACTIONS		MAX. SERVICE
LOCATION	L	W	ti	te	tL	T	N	LENGTH x WIDTH x THICKNESS	DL	LL	DESIGN LOAD
REAR ABUTMENT (EXP.)	1'-0"	1'-3"	0.68"	NONE	0.0747"	5.96"	8	TOP = 0'-11" x 1'-9" X 3/4"	68 KIPS	62 KIPS	130 KIPS
								BOTTOM = 1'-1" x 1'-4" x 1½"			

ti = THICKNESS OF INTERNAL LAMINATE
te = THICKNESS OF EXTERNAL LAMINATE
T = TOTAL THICKNESS OF ELASTOMERIC BEARING

N = NO. INTERNAL ELASTOMERIC LAYERS
tL = INTERNAL STEEL LAMINATE THICKNESS
DUROMETER OF ELASTOMER = 50 DUROMETER
LOAD PLATE THICKNESS IS MEASURED AT CENTERLINE OF BEARINGS.



HP10x42 DETAIL

HP POST DIMENSIONS***

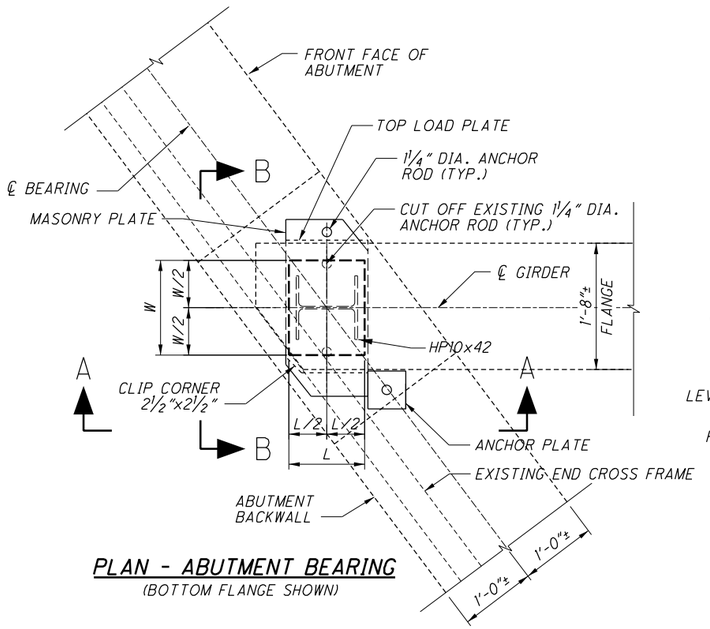
GIRDER	REAR ABUTMENT		
	A	B	CLB
G1	3 13/16" ±	3 7/8 " ±	3 7/8 " ±
G2	3 15/16" ±	3 15/16" ±	3 15/16" ±
G3	4 5/16" ±	4 3/16" ±	4 1/4 " ±
G4	3 9/16" ±	3 5/8 " ±	3 9/16" ±
G5	3 13/16" ±	3 3/4 " ±	3 3/4 " ±
G6	3 1/2 " ±	3 9/16" ±	3 9/16" ±
G7	3 7/16" ±	3 7/16" ±	3 7/16" ±
G8	3 1/4 " ±	3 3/4 " ±	3 1/2 " ±

*** DIMENSIONS SHOWN ARE APPROXIMATE. FIELD VERIFY EXISTING BEARING DIMENSION PRIOR TO FABRICATION. SUPPLY THE HP POST LONGER THAN REQUIRED FOR FIELD FIT -UP MODIFICATIONS. MODIFY THE HP POST BY GRINDING AS REQUIRED TO FIT EXISTING CONDITIONS. THE CONTRACTOR IS TO ASSURE THAT HIS MODIFIED BEAM SEAT ELEVATIONS ARE IN AGREEMENT WITH HIS SUPPLIED BEARING HEIGHTS.

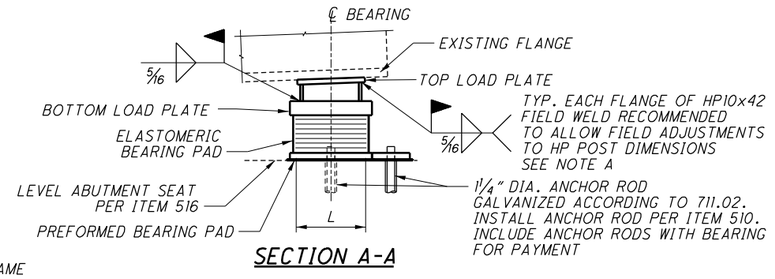
THE CONTRACTOR IS REQUIRED TO MEASURE THE EXISTING BOTTOM OF BEAM AND BEAM SEAT ELEVATIONS PRIOR TO THE JACKING OPERATIONS. THE CONTRACTOR IS TO SUBMIT THE ELEVATIONS TO SCOTT KRAMER, DISTRICT 8 BRIDGE DESIGN ENGINEER PRIOR TO THE JACKING OPERATIONS. APPROVAL OF THE ELEVATIONS IS NOT REQUIRED. THE CONTRACTOR IS TO VERIFY THE CENTER OF BEARING HEIGHT BY SUBTRACTING FROM THE EXISTING BOTTOM OF BEAM ELEVATION AT THE BEARING CENTERLINE THE EXISTING BEAM SEAT ELEVATION.

THE HP POST IS A CONTRACTORS CALCULATED DIMENSION AND ANY SHIMS NEEDED AS A RESULT OF THE CONTRACTOR'S ERROR WILL BE AT THE CONTRACTOR'S EXPENSE AND WILL NEED TO BE APPROVED BY THE DISTRICT 8 BRIDGE DESIGN ENGINEER.

FIELD MEASUREMENTS USED TO CALCULATE HP POST DIMENSIONS ABOVE WERE BASED ON EXISTING CONDITIONS AND DO NOT ACCOUNT FOR PROPOSED LEVEL BEAM SEATS.

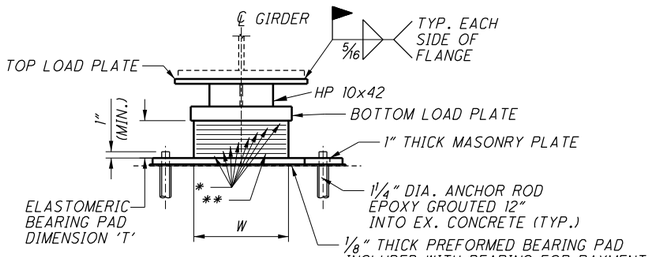


PLAN - ABUTMENT BEARING
(BOTTOM FLANGE SHOWN)

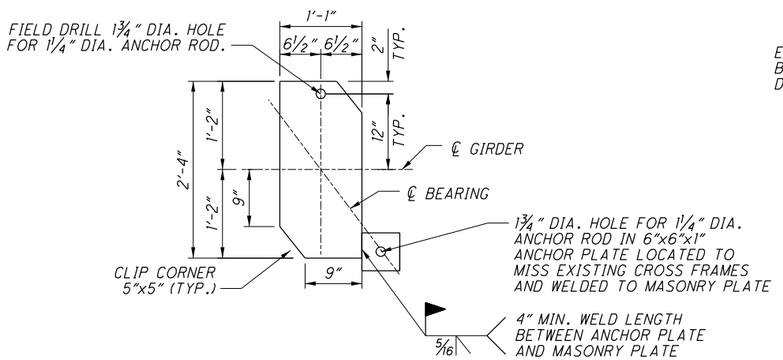


SECTION A-A

NOTE A: FIELD WELD THE HP SECTION TO THE TOP LOAD PLATE WITH THE HP SECTION AND TOP PLATE INVERTED SO THE FIELD WELD CAN BE PERFORMED IN THE DOWN HAND POSITION BEFORE FINAL INSTALLATION



SECTION B-B



PLAN - MASONRY PLATE

LEGEND:

* = 'N' INTERNAL ELASTOMER LAYERS

** = (N-1) INTERNAL STEEL LAMINATES THICKNESS = 0.0747"

G1 = NORTH MOST GIRDER

NOTES:

1. EACH BEARING ASSEMBLY SHALL BE SHOP MARKED WITH THE FOLLOWING INFORMATION: TOP, FORWARD STATION DIRECTION, LOCATION (REAR ABUTMENT) AND GIRDER NUMBER. ALL MARKS SHALL BE PERMANENT AND BE VISIBLE AFTER THE BEARING IS INSTALLED.

2. ELASTOMERIC BEARINGS:
THE ELASTOMER SHALL HAVE A HARDNESS OF 60 DUROMETER. THE BEARINGS WERE DESIGNED IN ACCORDANCE WITH SECTION 14.7.5 (METHOD B) OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS. PERFORM THE LONG-TERM COMPRESSION PROOF LOAD TEST IN ACCORDANCE WITH THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, DIVISION II, SECTION 18.7.2.6 AND 17.8.4.5.

3. STEEL MATERIALS:
ANCHOR RODS SHALL BE ASTM F1554, GRADE 55, GALVANIZED ACCORDING TO 711.02.

THE STEEL LOAD PLATES, MASONRY PLATES, ANCHOR PLATES AND HP10x42 SUPPORT PEDESTALS SHALL BE ASTM A709- GRADE 50 OR 50W STRUCTURAL STEEL AND BE CLEANED AND COATED. SURFACE PREPARATION AND PRIMING SHALL BE DONE IN THE SHOP AND BE INCLUDED IN THE PRICE BID FOR BEARINGS. FIELD COATS SHALL BE IN ACCORDANCE WITH ITEM 514 AND INCLUDED IN THE PRICE BID FOR ITEM 514.

4. THE BOTTOM STEEL LOAD PLATE AND MASONRY PLATE SHALL BE BONDED BY VULCANIZATION TO THE ELASTOMER DURING THE MOLDING PROCESS.

5. BASIS OF PAYMENT: THE UNIT PRICE BID SHALL INCLUDE ALL MATERIALS, LABOR, TESTING, STEEL LOAD PLATES, MASONRY PLATES, ANCHOR RODS, ~~DOWEL HOLES~~, HP SUPPORT PEDESTALS AND INCIDENTALS NECESSARY TO FURNISH AND INSTALL LAMINATED ELASTOMERIC BEARINGS. PAYMENT WILL BE MADE AT THE CONTRACT UNIT PRICE BID FOR ITEM 516 - ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), AS PER PLAN.

DESIGN AGENCY
BURGESS & NIPLE
312 PLUM ST. CINCINNATI OH

DESIGNED	DRAWN	REVIEWED	DATE
XAC	XAC	JSB	8/31/2016
CHECKED	REVISED	STRUCTURE FILE NUMBER	
SJA	XXX	3115038	

REAR ABUTMENT BEARING DETAILS
HAM-71-0793L
SB I-71 OVER RAMPS TO SR 562

HAM-71-1.97
PID No. 82975

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284
292

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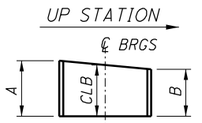
LAMINATED ELASTOMERIC BEARINGS											
	BEARING DIMENSIONS							STEEL LOAD PLATES	REACTIONS		MAX. SERVICE
LOCATION	L	W	ti	te	tL	T	N	LENGTH x WIDTH x THICKNESS	DL	LL	DESIGN LOAD
FORWARD ABUTMENT (EXP.)	1'-0"	1'-3"	½"	NONE	0.0747"	3.95"	7	TOP = 0'-11" x 1'-9" X ¾"	68 KIPS	62 KIPS	130 KIPS
								BOTTOM = 1'-1" x 1'-4" x 1½"			

ti = THICKNESS OF INTERNAL LAMINATE
te = THICKNESS OF EXTERNAL LAMINATE
T = TOTAL THICKNESS OF ELASTOMERIC BEARING

N = NO. INTERNAL ELASTOMERIC LAYERS
tL = INTERNAL STEEL LAMINATE THICKNESS
DUROMETER OF ELASTOMER = 50 DUROMETER
LOAD PLATE THICKNESS IS MEASURED AT CENTERLINE OF BEARINGS.



HP10x42 DETAIL

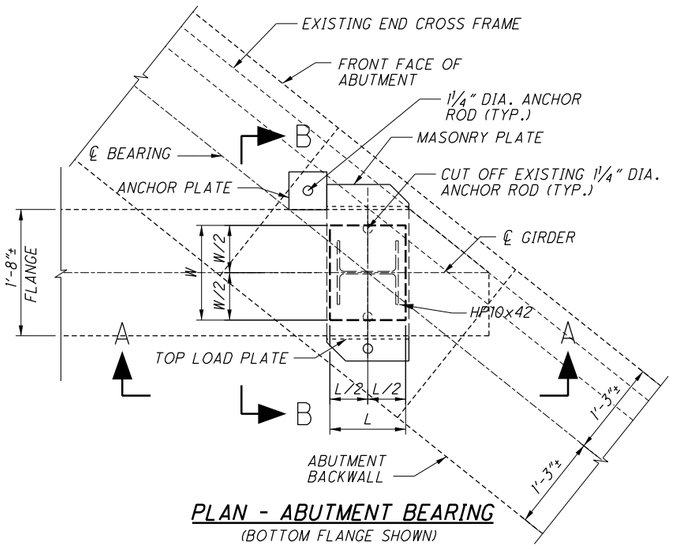
HP POST DIMENSIONS ***			
GIRDER	FORWARD ABUTMENT		
	A	B	CLB
G1	6 1/8" ±	5 9/16" ±	5 7/8" ±
G2	6 7/16" ±	5 11/16" ±	6 1/16" ±
G3	6 1/4" ±	5 3/4" ±	6" ±
G4	5 13/16" ±	5 3/8" ±	5 9/16" ±
G5	5 7/8" ±	5 1/4" ±	5 9/16" ±
G6	6 3/16" ±	5 9/16" ±	5 7/8" ±
G7	6 3/8" ±	5 7/8" ±	6 1/8" ±
G8	6 5/8" ±	6 1/8" ±	6 3/8" ±

*** DIMENSIONS SHOWN ARE APPROXIMATE. FIELD VERIFY EXISTING BEARING DIMENSION PRIOR TO FABRICATION. SUPPLY THE HP POST LONGER THAN REQUIRED FOR FIELD FIT -UP MODIFICATIONS. MODIFY THE HP POST BY GRINDING AS REQUIRED TO FIT EXISTING CONDITIONS. THE CONTRACTOR IS TO ASSURE THAT HIS MODIFIED BEAM SEAT ELEVATIONS ARE IN AGREEMENT WITH HIS SUPPLIED BEARING HEIGHTS.

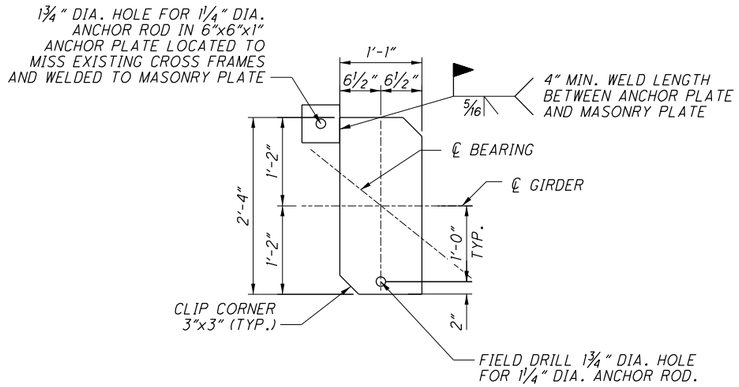
THE CONTRACTOR IS REQUIRED TO MEASURE THE EXISTING BOTTOM OF BEAM AND BEAM SEAT ELEVATIONS PRIOR TO THE JACKING OPERATIONS. THE CONTRACTOR IS TO SUBMIT THE ELEVATIONS TO SCOTT KRAMER, DISTRICT 8 BRIDGE DESIGN ENGINEER PRIOR TO THE JACKING OPERATIONS. APPROVAL OF THE ELEVATIONS IS NOT REQUIRED. THE CONTRACTOR IS TO VERIFY THE CENTER OF BEARING HEIGHT BY SUBTRACTING FROM THE EXISTING BOTTOM OF BEAM ELEVATION AT THE BEARING CENTERLINE THE EXISTING BEAM SEAT ELEVATION.

THE HP POST IS A CONTRACTORS CALCULATED DIMENSION AND ANY SHIMS NEEDED AS A RESULT OF THE CONTRACTOR'S ERROR WILL BE AT THE CONTRACTOR'S EXPENSE AND WILL NEED TO BE APPROVED BY THE DISTRICT 8 BRIDGE DESIGN ENGINEER.

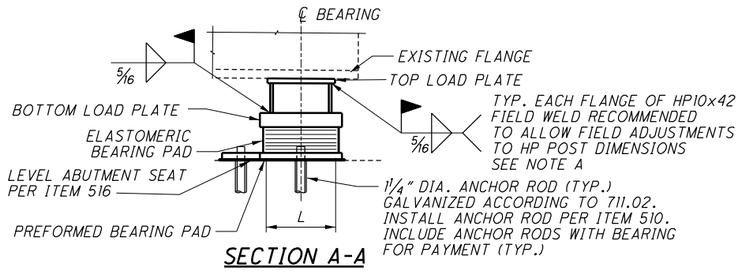
FIELD MEASUREMENTS USED TO CALCULATE HP POST DIMENSIONS ABOVE WERE BASED ON EXISTING CONDITIONS AND DO NOT ACCOUNT FOR PROPOSED LEVEL BEAM SEATS.



PLAN - ABUTMENT BEARING
(BOTTOM FLANGE SHOWN)

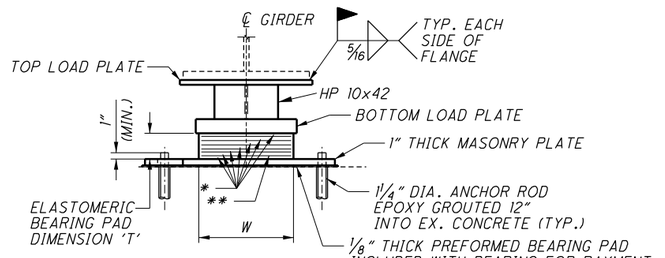


PLAN - MASONRY PLATE



SECTION A-A

NOTE A: FIELD WELD THE HP SECTION TO THE TOP LOAD PLATE WITH THE HP SECTION AND TOP PLATE INVERTED SO THE FIELD WELD CAN BE PERFORMED IN THE DOWN HAND POSITION BEFORE FINAL INSTALLATION



SECTION B-B

LEGEND:

* = 'N' INTERNAL ELASTOMER LAYERS

** = (N-1) INTERNAL STEEL LAMINATES THICKNESS = 0.0747"

G1 = NORTH MOST GIRDER

NOTES:

1. EACH BEARING ASSEMBLY SHALL BE SHOP MARKED WITH THE FOLLOWING INFORMATION: TOP, FORWARD STATION DIRECTION, LOCATION (FORWARD ABUTMENT) AND GIRDER NUMBER. ALL MARKS SHALL BE PERMANENT AND BE VISIBLE AFTER THE BEARING IS INSTALLED.

2. ELASTOMERIC BEARINGS:
THE ELASTOMER SHALL HAVE A HARDNESS OF 50 DUROMETER. THE BEARINGS WERE DESIGNED IN ACCORDANCE WITH SECTION 14.7.6 (METHOD A) OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS. THE LONG- TERM COMPRESSION PROOF LOAD TEST (AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, DIVISION II, SECTION 18.7.2.6) IS NOT REQUIRED.

3. STEEL MATERIALS:
ANCHOR RODS SHALL BE ASTM F1554, GRADE 55, GALVANIZED ACCORDING TO 711.02.

THE STEEL LOAD PLATES, MASONRY PLATES, ANCHOR PLATES AND HP10x42 SUPPORT PEDESTALS SHALL BE ASTM A709- GRADE 50 OR 50W STRUCTURAL STEEL AND BE CLEANED AND COATED. SURFACE PREPARATION AND PRIMING SHALL BE DONE IN THE SHOP AND BE INCLUDED IN THE PRICE BID FOR BEARINGS. FIELD COATS SHALL BE IN ACCORDANCE WITH ITEM 514 AND INCLUDED IN THE PRICE BID FOR ITEM 514.

4. THE BOTTOM STEEL LOAD PLATE AND MASONRY PLATE SHALL BE BONDED BY VULCANIZATION TO THE ELASTOMER DURING THE MOLDING PROCESS.

5. BASIS OF PAYMENT: THE UNIT PRICE BID SHALL INCLUDE ALL MATERIALS, LABOR, TESTING, STEEL LOAD PLATES, MASONRY PLATES, ANCHOR RODS, ~~DOWEL HOLES~~, HP SUPPORT PEDESTALS AND INCIDENTALS NECESSARY TO FURNISH AND INSTALL LAMINATED ELASTOMERIC BEARINGS. PAYMENT WILL BE MADE AT THE CONTRACT UNIT PRICE BID FOR ITEM 516 - ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), AS PER PLAN.

DESIGN AGENCY
BURGESS & NIPLE
312 PLUM ST. CINCINNATI OH

DESIGNED	DRAWN	REVIEWED	DATE
XAC	XAC	JSB	8/31/2016
CHECKED	REVISED	STRUCTURE FILE NUMBER	
SJA	XXX	3115038	

FORWARD ABUTMENT BEARING DETAILS
HAM-71-0793L
SB I-71 OVER RAMPS TO SR 562

HAM-71-1.97
PID No. 82975

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285
292

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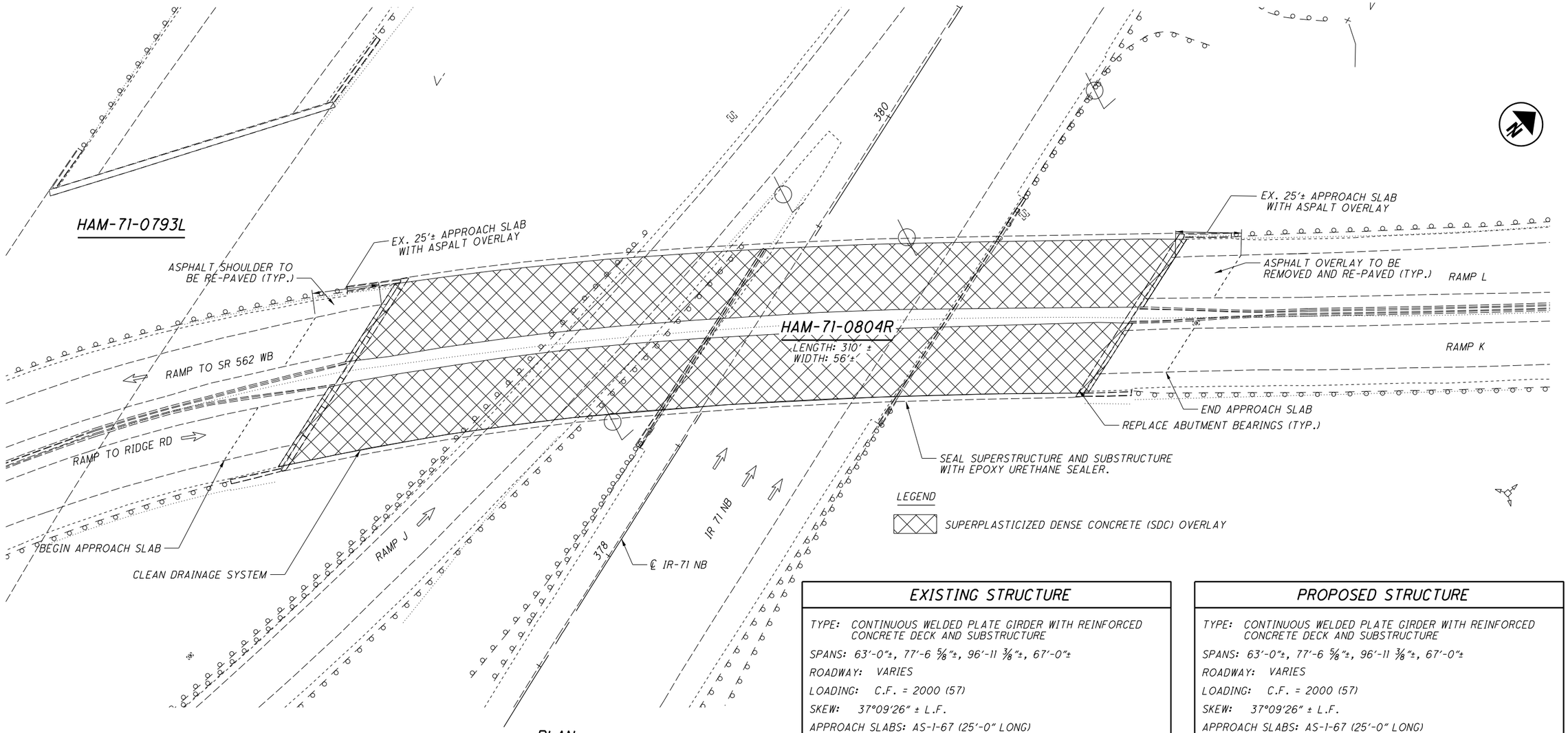
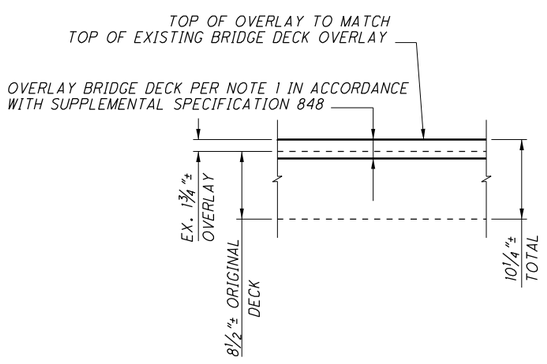


PLAN



DECK SLAB OVERLAY DETAIL

EXISTING STRUCTURE

TYPE: CONTINUOUS WELDED PLATE GIRDER WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE
SPANS: 63'-0"±, 77'-6 5/8"±, 96'-11 3/8"±, 67'-0"±
ROADWAY: VARIES
LOADING: C.F. = 2000 (57)
SKEW: 37°09'26" ± L.F.
APPROACH SLABS: AS-1-67 (25'-0" LONG)
ALIGNMENT: 400' SPIRAL (Dc = 8°0'0") RT
SUPERELEVATION: VARIES, 0.08333 MAX.
STRUCTURAL FILE NUMBER: 3115062
DATE BUILT: 1972

PROPOSED STRUCTURE

TYPE: CONTINUOUS WELDED PLATE GIRDER WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE
SPANS: 63'-0"±, 77'-6 5/8"±, 96'-11 3/8"±, 67'-0"±
ROADWAY: VARIES
LOADING: C.F. = 2000 (57)
SKEW: 37°09'26" ± L.F.
APPROACH SLABS: AS-1-67 (25'-0" LONG)
ALIGNMENT: 400' SPIRAL (Dc = 8°0'0") RT
SUPERELEVATION: VARIES, 0.08333 MAX.
COORDINATES: LATITUDE 39°9'52" N
LONGITUDE 84°25'53" W

PROPOSED WORK:

1. REMOVE EXISTING 1 ¾" MICROSILICA CONCRETE (MSC) WEARING SURFACE AND 1" OF THE ORIGINAL DECK AND REPLACE WITH 2 ¾" THICK SUPERPLASTICIZED DENSE CONCRETE (SDC).
2. REPLACE ABUTMENT BEARINGS WITH ELASTOMERIC BEARINGS.
3. CLEAN EXISTING DRAINAGE SYSTEM TO THE FIRST MANHOLE, BOTH ON THE STRUCTURE AND BELOW GROUND.
4. SEAL SUPERSTRUCTURE AND SUBSTRUCTURE WITH EPOXY URETHANE SEALER.
5. ALL WORK WILL BE PERFORMED IN ACCORDANCE WITH MAINTENANCE OF TRAFFIC PLANS AND NOTES.

DESIGN AGENCY
BURGESS & NIPLE
312 PLUM ST. CINCINNATI OH

DESIGNED	DRAWN	REVIEWED	DATE
SJA	SJA	JSB	8/31/2016
CHECKED	REVISED	STRUCTURE FILE NUMBER	
XAC	XXX	3115062	

GENERAL PLAN
HAM-71-0804R
RAMPS TO SR 562 OVER I-71 NB AND RAMPS

HAM-71-1.97
PID No. 82975

1 / 3

286
292

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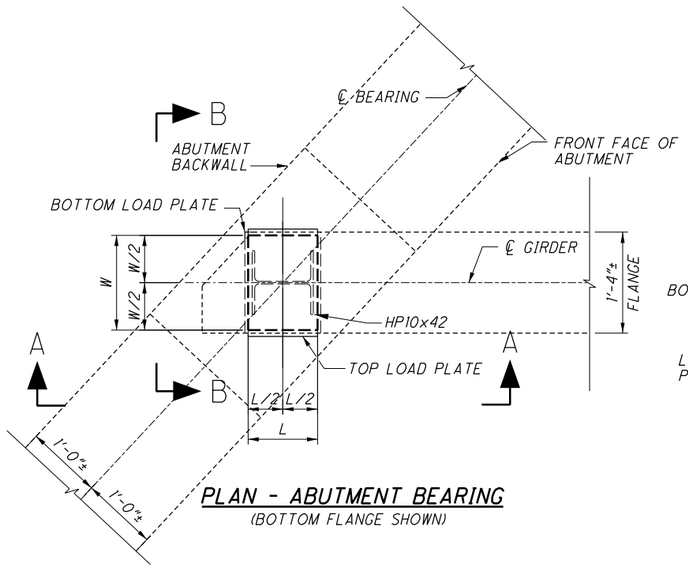
LAMINATED ELASTOMERIC BEARINGS

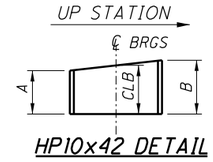
	BEARING DIMENSIONS							STEEL LOAD PLATES	REACTIONS		MAX. SERVICE
LOCATION	L	W	ti	te	tL	T	N	LENGTH x WIDTH x THICKNESS	DL	LL	DESIGN LOAD
REAR ABUTMENTS (EXP.)	0'-11"	1'-3"	0.46"	0.32	0.0747"	3.53"	6	TOP = 0'-11" x 1'-5" X 3/4"	66 KIPS	58 KIPS	124 KIPS
								BOTTOM = 1'-0" x 1'-4" x 1 1/2"			

ti = THICKNESS OF INTERNAL LAMINATE
te = THICKNESS OF EXTERNAL LAMINATE
T = TOTAL THICKNESS OF ELASTOMERIC BEARING

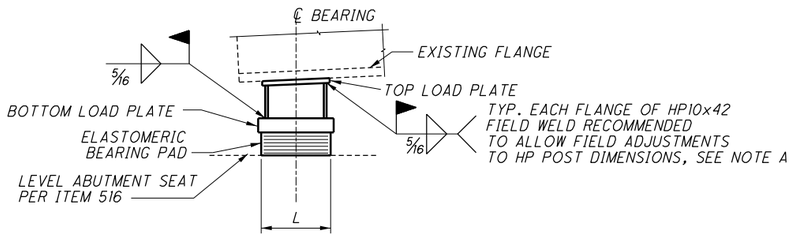
N = NO. INTERNAL ELASTOMERIC LAYERS
tL = INTERNAL STEEL LAMINATE THICKNESS
DUROMETER OF ELASTOMER = 50 DUROMETER
LOAD PLATE THICKNESS IS MEASURED AT CENTERLINE OF BEARINGS.



PLAN - ABUTMENT BEARING
(BOTTOM FLANGE SHOWN)

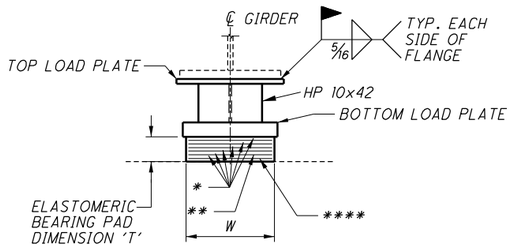


HP10x42 DETAIL



SECTION A-A

NOTE A: FIELD WELD THE HP SECTION TO THE TOP LOAD PLATE WITH THE HP SECTION AND TOP PLATE INVERTED SO THE FIELD WELD CAN BE PERFORMED IN THE DOWN HAND POSITION BEFORE FINAL INSTALLATION



SECTION B-B

HP POST DIMENSIONS ***

GIRDER	REAR ABUTMENT		
	A	B	CLB
G1	7 9/16" ±	8 3/16" ±	7 7/8" ±
G2	8 3/8" ±	8 9/16" ±	8 1/2" ±
G3	8 3/16" ±	8 1/2" ±	8 3/8" ±
G4	8 1/8" ±	8 7/16" ±	8 5/16" ±
G5	8 1/8" ±	8 3/8" ±	8 1/4" ±
G6	8 1/8" ±	8 1/2" ±	8 5/16" ±
G7	8 1/16" ±	8 7/16" ±	8 1/4" ±
G8	8 1/4" ±	8 5/8" ±	8 7/16" ±

*** DIMENSIONS SHOWN ARE APPROXIMATE. FIELD VERIFY EXISTING BEARING DIMENSION PRIOR TO FABRICATION. SUPPLY THE HP POST LONGER THAN REQUIRED FOR FIELD FIT -UP MODIFICATIONS. MODIFY THE HP POST BY GRINDING AS REQUIRED TO FIT EXISTING CONDITIONS. THE CONTRACTOR IS TO ASSURE THAT HIS MODIFIED BEAM SEAT ELEVATIONS ARE IN AGREEMENT WITH HIS SUPPLIED BEARING HEIGHTS.

THE CONTRACTOR IS REQUIRED TO MEASURE THE EXISTING BOTTOM OF BEAM AND BEAM SEAT ELEVATIONS PRIOR TO THE JACKING OPERATIONS. THE CONTRACTOR IS TO SUBMIT THE ELEVATIONS TO SCOTT KRAMER, DISTRICT 8 BRIDGE DESIGN ENGINEER PRIOR TO THE JACKING OPERATIONS. APPROVAL OF THE ELEVATIONS IS NOT REQUIRED. THE CONTRACTOR IS TO VERIFY THE CENTER OF BEARING HEIGHT BY SUBTRACTING FROM THE EXISTING BOTTOM OF BEAM ELEVATION AT THE BEARING CENTERLINE THE EXISTING BEAM SEAT ELEVATION.

THE HP POST IS A CONTRACTORS CALCULATED DIMENSION AND ANY SHIMS NEEDED AS A RESULT OF THE CONTRACTOR'S ERROR WILL BE AT THE CONTRACTOR'S EXPENSE AND WILL NEED TO BE APPROVED BY THE DISTRICT 8 BRIDGE DESIGN ENGINEER.

FIELD MEASUREMENTS USED TO CALCULATE HP POST DIMENSIONS ABOVE WERE BASED ON EXISTING CONDITIONS AND DO NOT ACCOUNT FOR PROPOSED LEVEL BEAM SEATS.

NOTES:

1. EACH BEARING ASSEMBLY SHALL BE SHOP MARKED WITH THE FOLLOWING INFORMATION: TOP, FORWARD STATION DIRECTION, LOCATION (REAR ABUTMENT) AND GIRDER NUMBER. ALL MARKS SHALL BE PERMANENT AND BE VISIBLE AFTER THE BEARING IS INSTALLED.
2. ELASTOMERIC BEARINGS:
   THE ELASTOMER SHALL HAVE A HARDNESS OF 50 DUROMETER. THE BEARINGS WERE DESIGNED IN ACCORDANCE WITH SECTION 14.7.6 (METHOD A) OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS. THE LONG- TERM COMPRESSION PROOF LOAD TEST (AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, DIVISION II, SECTION 18.7.2.6) IS NOT REQUIRED.
3. THE STEEL LOAD PLATES AND HP10x42 SUPPORT PEDESTALS SHALL BE ASTM A709- GRADE 50 OR 50W STRUCTURAL STEEL AND BE CLEANED AND COATED. SURFACE PREPARATION AND PRIMING SHALL BE DONE IN THE SHOP AND BE INCLUDED IN THE PRICE BID FOR BEARINGS. FIELD COATS SHALL BE IN ACCORDANCE WITH ITEM 514 AND INCLUDED IN THE PRICE BID FOR ITEM 514.
4. THE STEEL LOAD PLATE SHALL BE BONDED BY VULCANIZATION TO THE ELASTOMER DURING THE MOLDING PROCESS.
5. BASIS OF PAYMENT: THE UNIT PRICE BID SHALL INCLUDE ALL MATERIALS, LABOR, TESTING, STEEL LOAD PLATES, HP SUPPORT PEDESTALS AND INCIDENTALS NECESSARY TO FURNISH AND INSTALL LAMINATED ELASTOMERIC BEARINGS. PAYMENT WILL BE MADE AT THE CONTRACT UNIT PRICE BID FPER EACH OR ITEM 516 - ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), AS PER PLAN.

LEGEND:

*	=	'N' INTERNAL ELASTOMER LAYERS
**	=	(N-1) INTERNAL STEEL LAMINATES THICKNESS = 0.0747"
****	=	EXTERNAL ELASTOMER LAYER
G1	=	NORTH MOST GIRDER

DESIGN AGENCY
BURGESS & NIPLE
312 PLUM ST. CINCINNATI OH

DESIGNED	DRAWN	REVIEWED	DATE
XAC	XAC	JSB	8/31/2016
CHECKED	REVISED	STRUCTURE FILE NUMBER	
SJA	XXX	3115062	

REAR ABUTMENT BEARING DETAILS
HAM-71-0804R
RAMPS TO SR 562 OVER I-71 NB AND RAMPS

HAM-71-1.97
PID No. 82975

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LAMINATED ELASTOMERIC BEARINGS											
	BEARING DIMENSIONS							STEEL LOAD PLATES	REACTIONS		MAX. SERVICE
LOCATION	L	W	ti	te	tL	T	N	LENGTH x WIDTH x THICKNESS	DL	LL	DESIGN LOAD
FWD. ABUTMENTS (EXP.)	0'-11"	1'-3"	0.46"	NONE	0.0747"	2.60"	5	TOP = 0'-11" x 1'-5" X 3/4"	60 KIPS	58 KIPS	118 KIPS
								BOTTOM = 1'-0" x 1'-4" x 1 1/2"			

ti = THICKNESS OF INTERNAL LAMINATE
te = THICKNESS OF EXTERNAL LAMINATE
T = TOTAL THICKNESS OF ELASTOMERIC BEARING

N = NO. INTERNAL ELASTOMERIC LAYERS
tL = INTERNAL STEEL LAMINATE THICKNESS
DUROMETER OF ELASTOMER = 50 DUROMETER
LOAD PLATE THICKNESS IS MEASURED AT CENTERLINE OF BEARINGS.

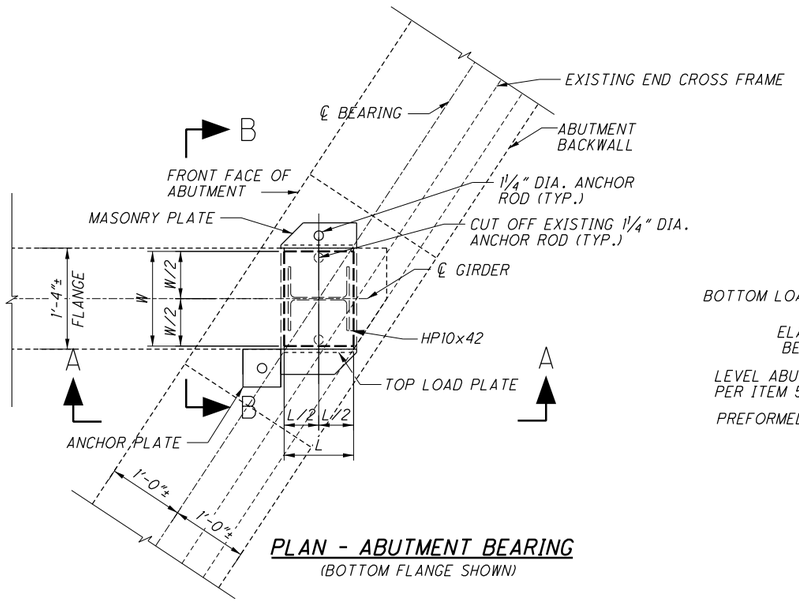
HP POST DIMENSIONS ***			
GIRDER	FORWARD ABUTMENT		
	A	B	CLB
G1	8 1/16" ±	8 1/8" ±	8 1/16" ±
G2	8 1/8" ±	8 3/16" ±	8 3/16" ±
G3	8" ±	8" ±	8" ±
G4	7 15/16" ±	7 13/16" ±	7 7/8" ±
G5	8 1/16" ±	7 15/16" ±	8" ±
G6	8 1/8" ±	7 15/16" ±	8" ±
G7	8 3/16" ±	8 1/16" ±	8 1/8" ±
G8	8 1/16" ±	7 3/4" ±	7 7/8" ±

*** DIMENSIONS SHOWN ARE APPROXIMATE. FIELD VERIFY EXISTING BEARING DIMENSION PRIOR TO FABRICATION. SUPPLY THE HP POST LONGER THAN REQUIRED FOR FIELD FIT -UP MODIFICATIONS. MODIFY THE HP POST BY GRINDING AS REQUIRED TO FIT EXISTING CONDITIONS. THE CONTRACTOR IS TO ASSURE THAT HIS MODIFIED BEAM SEAT ELEVATIONS ARE IN AGREEMENT WITH HIS SUPPLIED BEARING HEIGHTS.

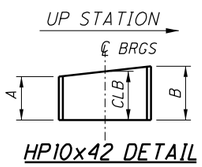
THE CONTRACTOR IS REQUIRED TO MEASURE THE EXISTING BOTTOM OF BEAM AND BEAM SEAT ELEVATIONS PRIOR TO THE JACKING OPERATIONS. THE CONTRACTOR IS TO SUBMIT THE ELEVATIONS TO SCOTT KRAMER, DISTRICT 8 BRIDGE DESIGN ENGINEER PRIOR TO THE JACKING OPERATIONS. APPROVAL OF THE ELEVATIONS IS NOT REQUIRED. THE CONTRACTOR IS TO VERIFY THE CENTER OF BEARING HEIGHT BY SUBTRACTING FROM THE EXISTING BOTTOM OF BEAM ELEVATION AT THE BEARING CENTERLINE THE EXISTING BEAM SEAT ELEVATION.

THE HP POST IS A CONTRACTORS CALCULATED DIMENSION AND ANY SHIMS NEEDED AS A RESULT OF THE CONTRACTOR'S ERROR WILL BE AT THE CONTRACTOR'S EXPENSE AND WILL NEED TO BE APPROVED BY THE DISTRICT 8 BRIDGE DESIGN ENGINEER.

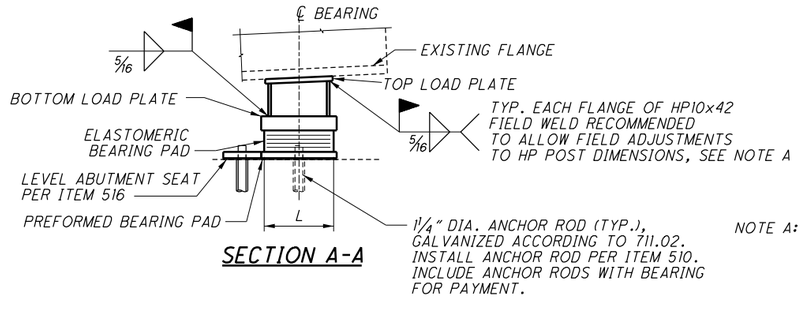
FIELD MEASUREMENTS USED TO CALCULATE HP POST DIMENSIONS ABOVE WERE BASED ON EXISTING CONDITIONS AND DO NOT ACCOUNT FOR PROPOSED LEVEL BEAM SEATS.



PLAN - ABUTMENT BEARING
(BOTTOM FLANGE SHOWN)

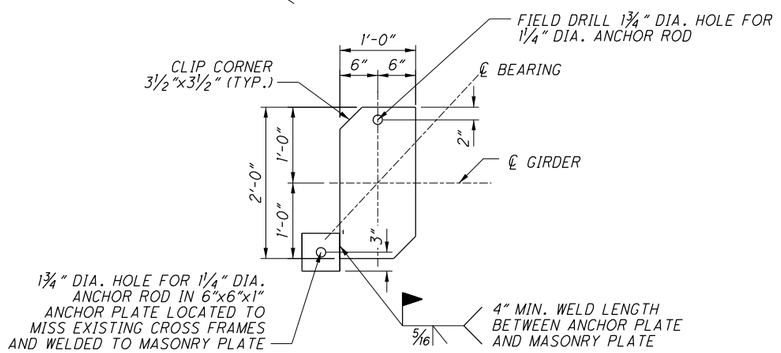


HP10x42 DETAIL

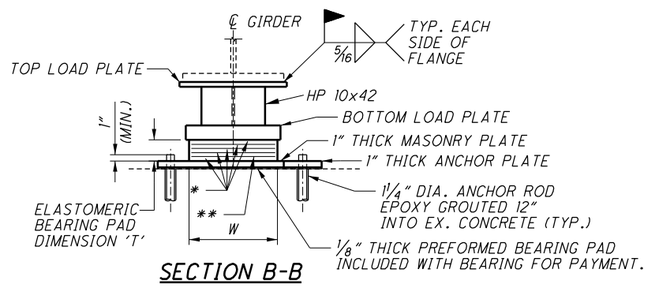


SECTION A-A

NOTE A: FIELD WELD THE HP SECTION TO THE TOP LOAD PLATE WITH THE HP SECTION AND TOP PLATE INVERTED SO THE FIELD WELD CAN BE PERFORMED IN THE DOWN HAND POSITION BEFORE FINAL INSTALLATION



PLAN - MASONRY PLATE



SECTION B-B

LEGEND:

* = 'N' INTERNAL ELASTOMER LAYERS

** = (N-1) INTERNAL STEEL LAMINATES THICKNESS = 0.0747"

G1 = NORTH MOST GIRDER

NOTES:

1. EACH BEARING ASSEMBLY SHALL BE SHOP MARKED WITH THE FOLLOWING INFORMATION: TOP, FORWARD STATION DIRECTION, LOCATION (FORWARD ABUTMENT) AND GIRDER NUMBER. ALL MARKS SHALL BE PERMANENT AND BE VISIBLE AFTER THE BEARING IS INSTALLED.

2. ELASTOMERIC BEARINGS:
THE ELASTOMER SHALL HAVE A HARDNESS OF 50 DUROMETER. THE BEARINGS WERE DESIGNED IN ACCORDANCE WITH SECTION 14.7.6 (METHOD A) OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS. THE LONG- TERM COMPRESSION PROOF LOAD TEST (AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, DIVISION II, SECTION 18.7.2.6) IS NOT REQUIRED.

3. STEEL MATERIALS:
ANCHOR RODS SHALL BE ASTM F1554, GRADE 55, GALVANIZED ACCORDING TO 711.02.

THE STEEL LOAD PLATES, MASONRY PLATES, ANCHOR PLATES AND HP10x42 SUPPORT PEDESTALS SHALL BE ASTM A709- GRADE 50 OR 50W STRUCTURAL STEEL AND BE CLEANED AND COATED. SURFACE PREPARATION AND PRIMING SHALL BE DONE IN THE SHOP AND BE INCLUDED IN THE PRICE BID FOR BEARINGS. FIELD COATS SHALL BE IN ACCORDANCE WITH ITEM 514 AND INCLUDED IN THE PRICE BID FOR ITEM 514.

4. THE BOTTOM STEEL LOAD PLATE AND MASONRY PLATE SHALL BE BONDED BY VULCANIZATION TO THE ELASTOMER DURING THE MOLDING PROCESS.

5. BASIS OF PAYMENT: THE UNIT PRICE BID SHALL INCLUDE ALL MATERIALS, LABOR, TESTING, STEEL LOAD PLATES, MASONRY PLATES, ANCHOR RODS, ~~DOWEL HOLES,~~ HP SUPPORT PEDESTALS AND INCIDENTALS NECESSARY TO FURNISH AND INSTALL LAMINATED ELASTOMERIC BEARINGS. PAYMENT WILL BE MADE AT THE CONTRACT UNIT PRICE BID PER EACH FOR ITEM 516 - ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), AS PER PLAN.

DESIGN AGENCY
BURGESS & NIPLE
312 PLUM ST. CINCINNATI OH

DESIGNED	DRAWN	REVIEWED	DATE
XAC	XAC	JSB	8/31/2016
CHECKED	REVISED	STRUCTURE FILE NUMBER	
SJA	XXX	3115062	

FORWARD ABUTMENT BEARING DETAILS
HAM-71-0804R
RAMPS TO SR 562 OVER I-71 NB AND RAMPS

HAM-71-1.97
PID No. 82975

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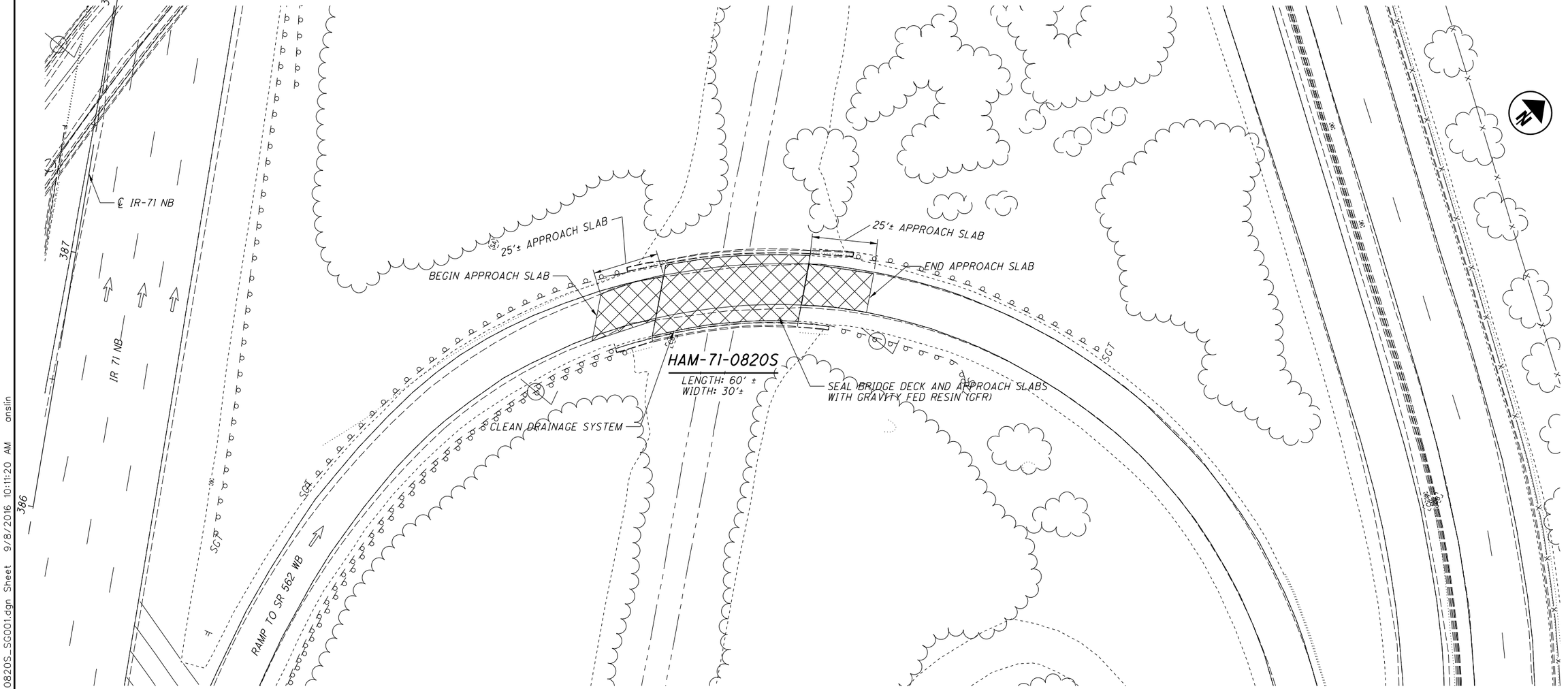

PLAN

EXISTING STRUCTURE

TYPE: SIMPLE SPAN ROLLED BEAM WITH REINFORCED CONCERET DECK AND SUBSTRUCTURE
SPANS: 55'-6"±
ROADWAY: 28'-0"± F/F OF PARAPETS
LOADING: C.F. = 2000 (57)
SKEW: 15°35'03" ± L.F.
APPROACH SLABS: AS-1-67 (25'-0" LONG)
ALIGNMENT: 28°30'00" CURVE RIGHT
SUPERELEVATION: 0.083
STRUCTURAL FILE NUMBER: 3115119
DATE BUILT: 1971

PROPOSED STRUCTURE

TYPE: SIMPLE SPAN ROLLED BEAM WITH REINFORCED CONCERET DECK AND SUBSTRUCTURE
SPANS: 55'-6"±
ROADWAY: 28'-0"± F/F OF PARAPETS
LOADING: C.F. = 2000 (57)
SKEW: 15°35'03" ± L.F.
APPROACH SLABS: AS-1-67 (25'-0" LONG)
ALIGNMENT: 28°30'00" CURVE RIGHT
SUPERELEVATION: 0.083
COORDINATES: LATITUDE 39°9'52" N
LONGITUDE 84°25'42" W

LEGEND

SEAL BRIDGE DECK AND APPROACH SLABS WITH GRAVITY FED RESIN (GFR)

PROPOSED WORK:

1. SEAL THE WEARING SURFACE OF THE DECK AND APPROACH SLABS SURFACE WITH GRAVITY FED RESIN.
2. CLEAN EXISTING DRAINAGE SYSTEM, BOTH ON THE STRUCTURE AND BELOW THE GROUND.
3. ALL WORK WILL BE PERFORMED IN ACCORDANCE WITH MAINTENANCE OF TRAFFIC PLANS AND NOTES.

DESIGN AGENCY
BURGESS & NIPLE
312 PLUM ST. CINCINNATI OH

DESIGNED	DRAWN	REVIEWED	DATE
SJA	SJA	JSB	8/31/2016
CHECKED	REVISED	STRUCTURE FILE NUMBER	
XAC	XXX	3115119	

GENERAL PLAN
HAM-71-0820S
RAMP FROM NB I-71 TO WB SR 562 OVER DUCK CREEK

HAM-71-1.97
PID No. 82975

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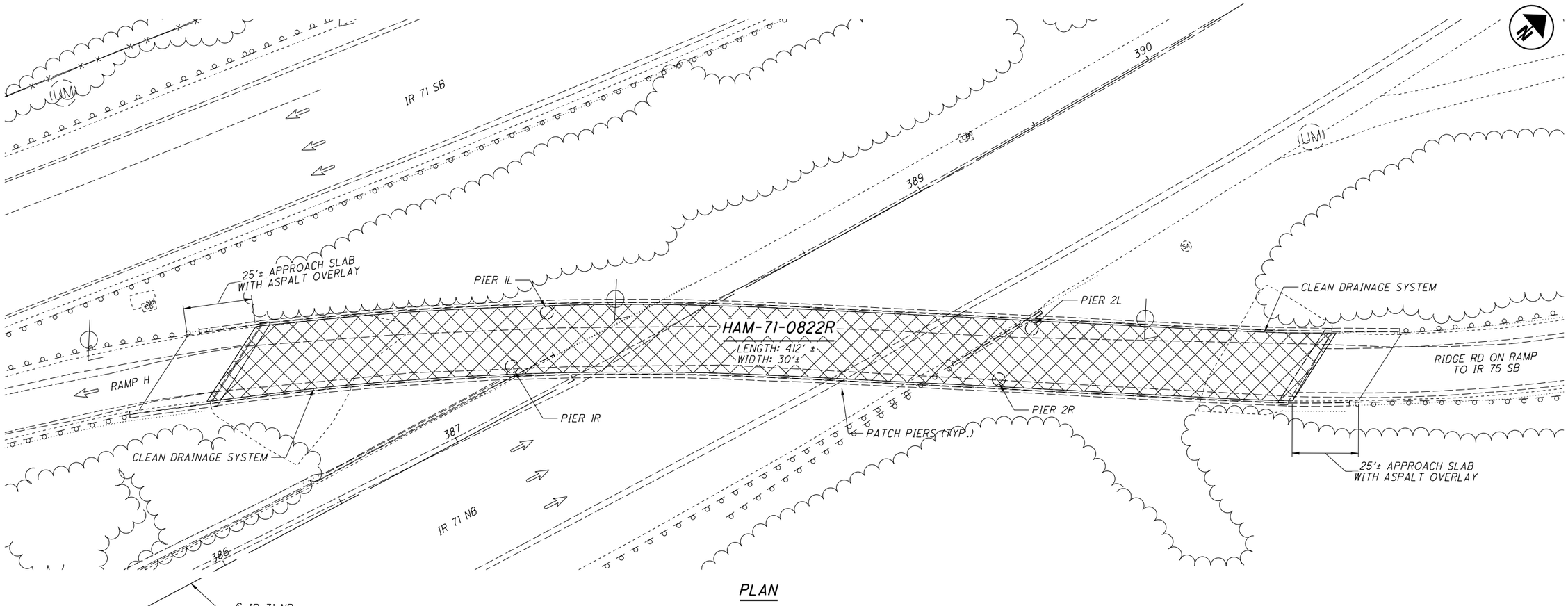

PLAN

EXISTING STRUCTURE

TYPE: CONTINUOUS WELDED PLATE GIRDER WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE
SPANS: 110'-0"±, 185'-0"±, 110'-0"±
ROADWAY: 26'-0"± F/F OF PARAPETS
LOADING: C.F. = 2000 (57)
SKEW: 30°0'0" ± L.F.
APPROACH SLABS: AS-1-67 SPECIAL (25'-0" LONG)
ALIGNMENT: 23°0'0" CURVE RIGHT, 24°59'49" CURVE LEFT
SUPERELEVATION: VARIES
STRUCTURAL FILE NUMBER: 3115135
DATE BUILT: 1972

PROPOSED STRUCTURE

TYPE: CONTINUOUS WELDED PLATE GIRDER WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE
SPANS: 110'-0"±, 185'-0"±, 110'-0"±
ROADWAY: 26'-0"± F/F OF PARAPETS
LOADING: C.F. = 2000 (57)
SKEW: 30°0'0" ± L.F.
APPROACH SLABS: AS-1-67 SPECIAL (25'-0" LONG)
ALIGNMENT: 23°0'0" CURVE RIGHT, 24°59'49" CURVE LEFT
SUPERELEVATION: VARIES
COORDINATES: LATITUDE 39°9'54" N
LONGITUDE 84°25'41" W

LEGEND

SEAL BRIDGE DECK AND APPROACH SLABS WITH GRAVITY FED RESIN (GFR)

PROPOSED WORK:

1. SEAL THE WEARING SURFACE OF THE DECK SLAB SURFACE WITH GRAVITY FED RESIN.
2. PATCH APPROXIMATELY 2 SQUARE FT. OF THE PIERS WITH TROWELABLE MORTAR. 4 SQUARE FT. OF PATCHING IS INCLUDED THE ESTIMATED QUANTITIES.
3. CLEAN EXISTING DRAINAGE SYSTEM BOTH ON THE STRUCTURE AND BELOW GROUND.
4. REMOVE VEGETATION WITHIN 20 FEET OF STRUCTURE.
5. ALL WORK WILL BE PERFORMED IN ACCORDANCE WITH MAINTENANCE OF TRAFFIC PLANS AND NOTES.

DESIGN AGENCY
BURGESS & NIPLE
312 PLUM ST. CINCINNATI OH

DESIGNED	DRAWN	REVIEWED	DATE
SJA	SJA	JSB	8/31/2016
CHECKED	REVISED	STRUCTURE FILE NUMBER	
XAC	XXX	3115135	

GENERAL PLAN
HAM-71-0822R
RAMP FROM RIDGE ROAD TO SB I-71 OVER NB I-71

HAM-71-1.97
PID No. 82975

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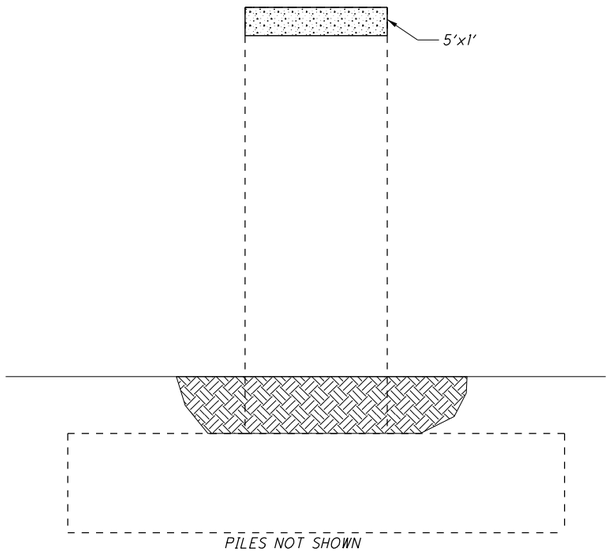
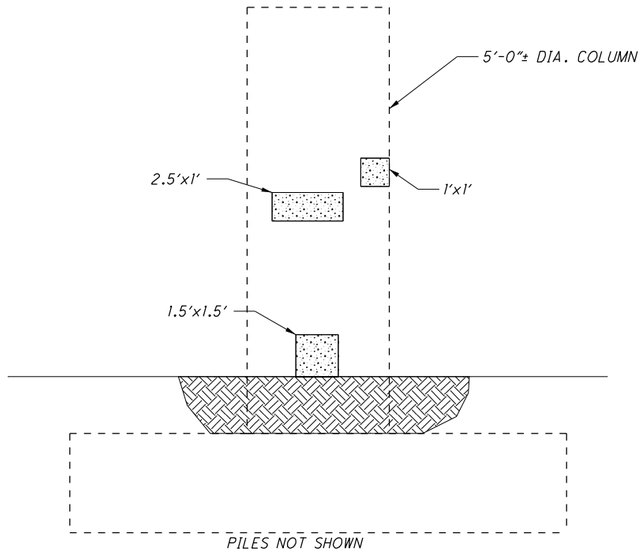
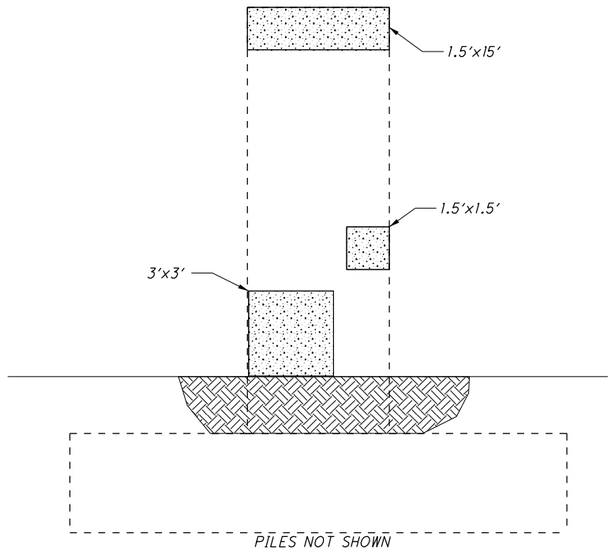


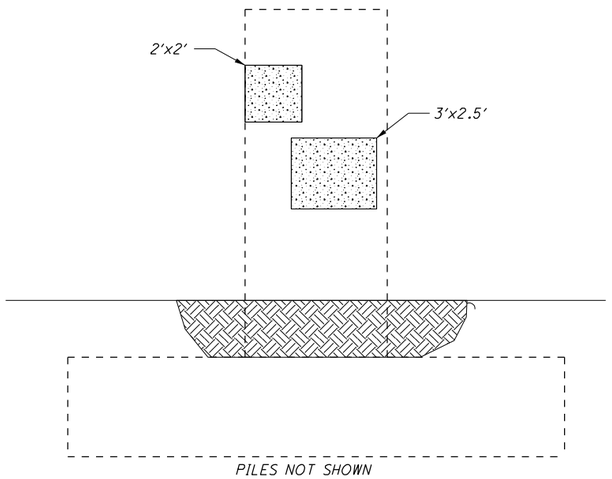
PIER 1L ELEVATION
SOUTH FACE - LOOKING NORTH



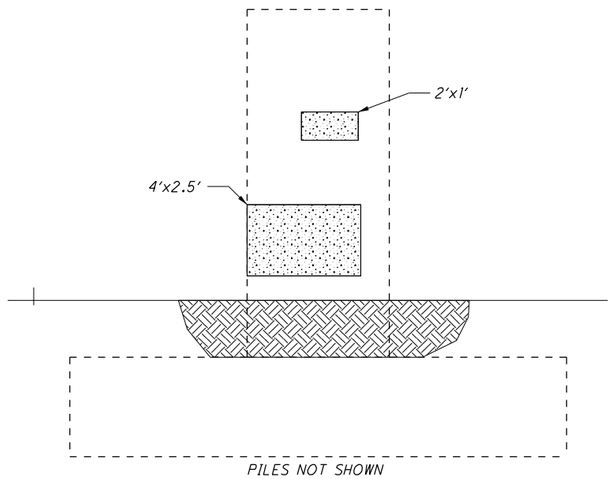
PIER 1L ELEVATION
EAST FACE - LOOKING WEST



PIER 1R ELEVATION
SOUTH FACE - LOOKING NORTH



PIER 2L ELEVATION
SOUTH FACE - LOOKING NORTH



PIER 2R ELEVATION
WEST FACE - LOOKING EAST

LEGEND:

= APPROXIMATE LIMITS OF PATCHING PIERS WITH TROWELABLE MORTAR.

NOTES:

1. SOUND EXISTING PIER COLUMNS WITH A STEEL ROD OR HAMMER TO DETERMINE LIMITS OF DELAMINATION. REPLACE UNSOUND AREAS BY PATCHING WITH TROWELABLE MORTAR IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 843.
2. VISUALLY INSPECT NEW PATCHES FOR CRACKING AND SOUND PATCHES BY LIGHTLY TAPPING THE AREA WITH A STEEL ROD OR HAMMER. MEASURE AND REPLACE UNSOUND AREAS.

DESIGN AGENCY
BURGESS & NIPLE
312 PLUM ST. CINCINNATI OH

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SJA	SJA	JSB	8/31/2016
CHECKED	REVISED	STRUCTURE FILE NUMBER	
XAC	XXX	3115135	

PIER PATCHING DETAILS

HAM-71-0822R
RAMP FROM RIDGE ROAD TO SB I-71 OVER NB I-71

HAM-71-1.97
PID No. 82975

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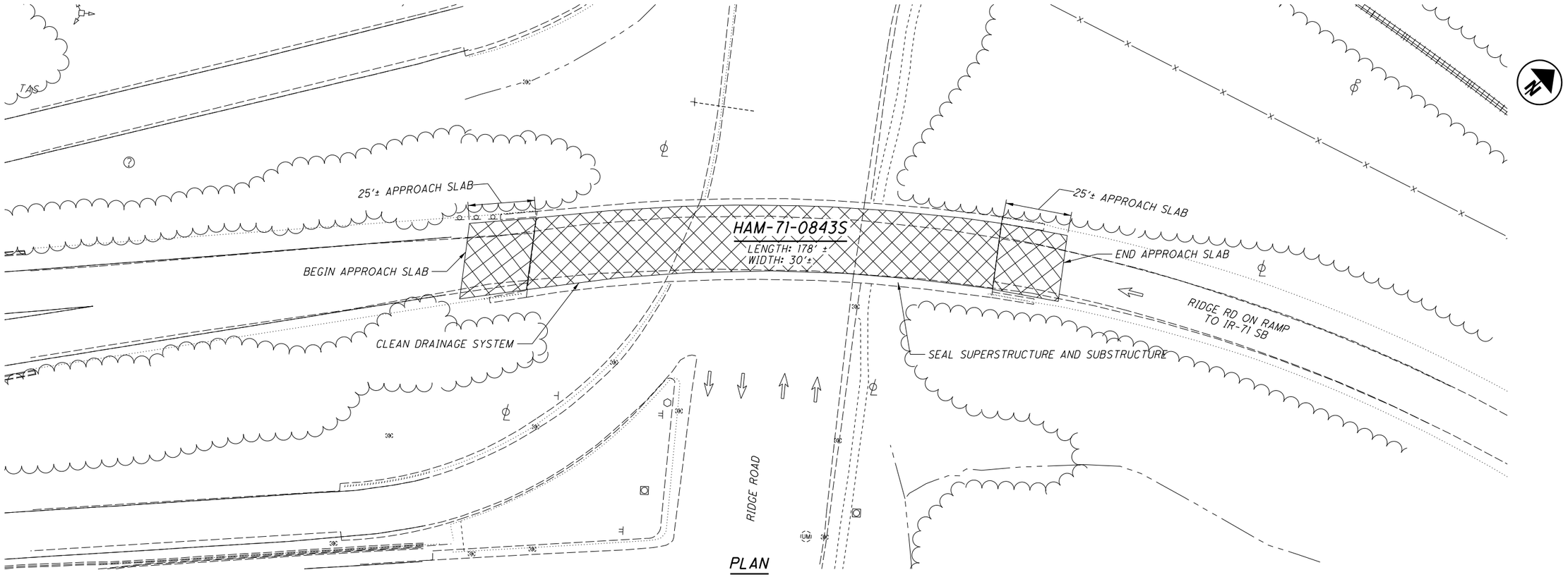
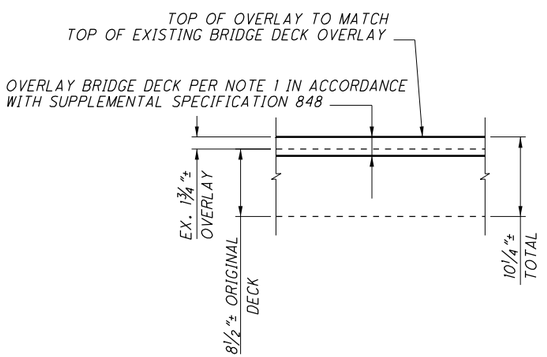
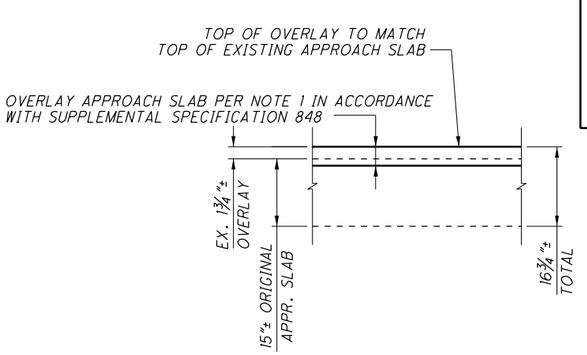


PLAN



DECK SLAB OVERLAY DETAIL



APPROACH SLAB OVERLAY DETAIL

EXISTING STRUCTURE

TYPE: CANTILEVERED WELDED PLATE GIRDER END SPANS WITH WELDED PLATE GIRDER CENTER SPAN AND REINFORCED CONCRETE DECK AND SUBSTRUCTURE

SPANS: 41'-0"±, 91'-0"±, 41'-0"±

ROADWAY: VARIES, 28'-0"± MIN. F/F OF PARAPETS

LOADING: C.F. = 2000 (57)

SKEW: 7°22'30" ± L.F.

APPROACH SLABS: AS-1-67 (25'-0" LONG)

ALIGNMENT: TANGENT AND 10°0'0" CURVE RIGHT

SUPERELEVATION: VARIES, 0.083 MAX.

STRUCTURAL FILE NUMBER: 3115224

DATE BUILT: 1972

PROPOSED STRUCTURE

TYPE: CANTILEVERED WELDED PLATE GIRDER END SPANS WITH WELDED PLATE GIRDER CENTER SPAN AND REINFORCED CONCRETE DECK AND SUBSTRUCTURE

SPANS: 41'-0"±, 91'-0"±, 41'-0"±

ROADWAY: VARIES, 28'-0"± MIN. F/F OF PARAPETS

LOADING: C.F. = 2000 (57)

SKEW: 7°22'30" ± L.F.

APPROACH SLABS: AS-1-67 (25'-0" LONG)

ALIGNMENT: TANGENT AND 10°0'0" CURVE RIGHT

SUPERELEVATION: VARIES, 0.083 MAX.

COORDINATES: LATITUDE 39°10'1" N
LONGITUDE 84°25'24" W

LEGEND

SUPERPLASTICIZED DENSE CONCRETE (SDC) OVERLAY

PROPOSED WORK:

1. REMOVE EXISTING 1¾" MICROSILICA CONCRETE (MSC) WEARING SURFACE AND 1" OF THE ORIGINAL DECK AND APPROACH SLABS USING HYDRODEMOLITION AND REPLACE WITH 2¾" THICK SUPERPLASTICIZED DENSE CONCRETE (SDC).
2. CLEAN EXISTING DRAINAGE SYSTEM TO THE FIRST MANHOLE, BOTH ON THE STRUCTURE AND BELOW THE GROUND.
3. SEAL SUPERSTRUCTURE AND SUBSTRUCTURE WITH EPOXY URETHANE SEALER.
4. ALL WORK WILL BE PERFORMED IN ACCORDANCE WITH MAINTENANCE OF TRAFFIC PLANS AND NOTES.

DESIGN AGENCY
BURGESS & NIPLE
312 PLUM ST. CINCINNATI OH

DESIGNED	DRAWN	REVIEWED	DATE
SJA	SJA	JSB	8/31/2016
CHECKED	REVISED	STRUCTURE FILE NUMBER	
XAC	XXX	3115224	

GENERAL PLAN
HAM-71-0843S
RAMP TO I-71 SB OVER RIDGE RD.

HAM-71-1.97
PID No. 82975

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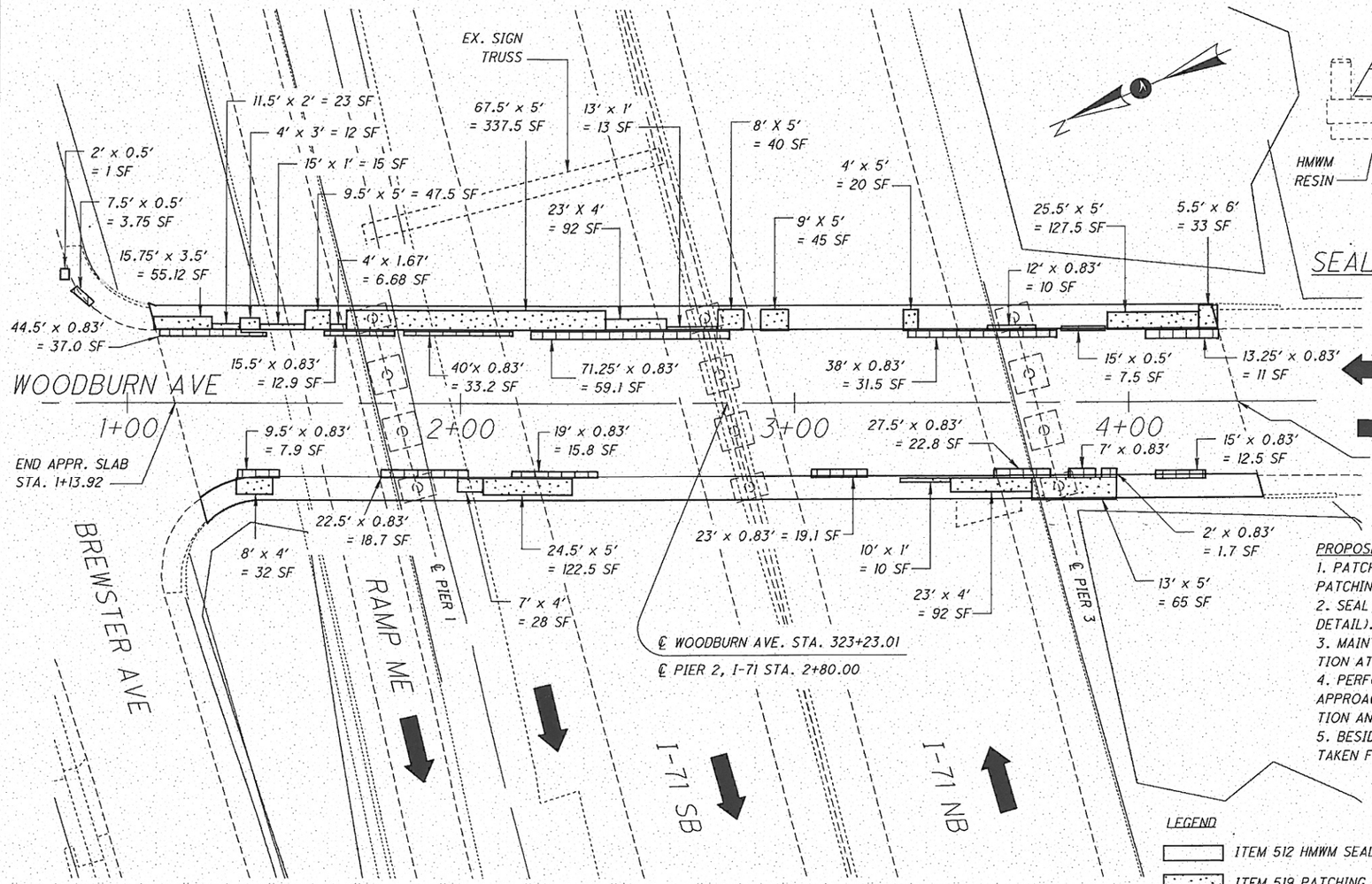
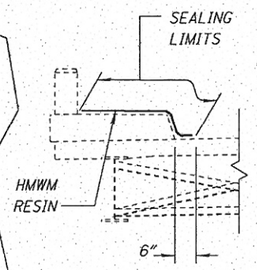
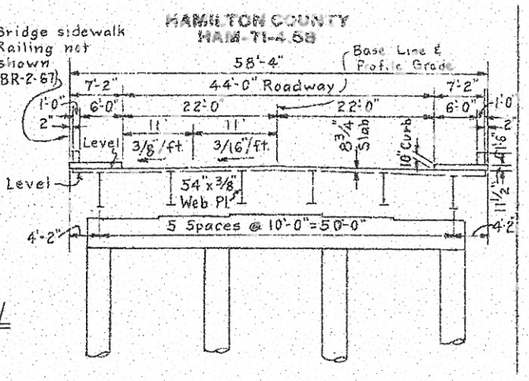


PLAN



SEALING DETAIL



TYPICAL SECTION

CURVE DATA

RAMP VB CURVE NO 2 VB

P.I.	=	322+74.02 VB
P.C.	=	318+23.79 VB
P.T.	=	327+23.79 VB
Δ	=	4°-30'
D	=	0°-30'
R	=	11459.16
T	=	450.23
L	=	900'

RAMP ME CURVE NO 4 ME

P.I.	=	323+65.80 ME
P.C.	=	327+26.27 ME
P.T.	=	330+85.80 ME
Δ	=	7°-12'-00"
D	=	1°-00'
R	=	5729.58
T	=	360.47
L	=	720.00

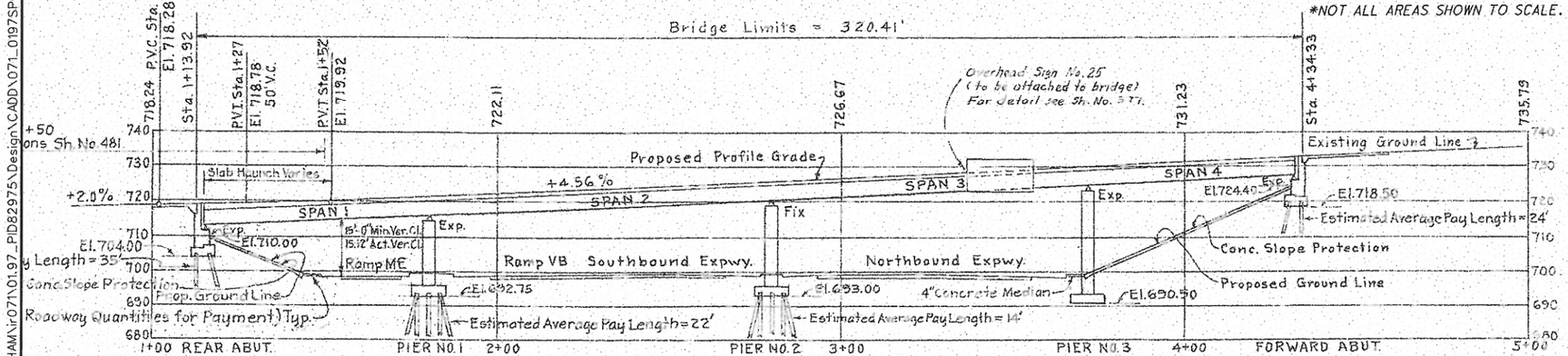
PROPOSED WORK

1. PATCH CURB AND WALK ON BRIDGE PER ITEM 519 PATCHING, AS PER PLAN.
2. SEAL WALK PER ITEM 512 HMWM RESIN (SEE SEALING DETAIL).
3. MAINTAIN ONE LANE OF TRAFFIC IN EACH DIRECTION AT ALL TIMES.
4. PERFORM CLEARING AND GRUBBING AT SIDEWALKS APPROACHAING BRIDGE TO REMOVE EXCESS VEGETATION AND PROVIDE A CLEAR WALK PATH.
5. BESIDES PROPOSED WORK, ALL OTHER DETAILS TAKEN FROM ARCHIVE PLANS.

LEGEND

- ITEM 512 HMWM SEALING = 525 SY
- ITEM 519 PATCHING (WALK) = 1234 SF*
- ITEM 519 PATCHING (CURB) = 294 SF*

*NOT ALL AREAS SHOWN TO SCALE.



PROFILE

(ALONG ℄ WOODBURN AVE.)

All Piling 12 BP 53 Steel H Piles

PROPOSED STRUCTURE

Type: Continuous Steel Plate Girders with Reinforced Concrete Deck and Substructure.
Spans: 64'-6", 99'-3", 92'-0" and 60'-0" c/c Bearings along ℄ Prop. Woodburn Ave.
Roadway: 44'-0" f/f Curbs with 6'-0" Sidewalks.
Skew: 15° RF
Live Loading: HS 20-44
Wearing Surface: 1" Monolithic Concrete
Approach Slabs: AS-1-67 (See Plan for Rear Abut., 25'-0" Long Forward Abut)
Alignment: Tangent

For Bench Marks see Sheet No. 54
Traffic Count, 1986 ADT = 5800 (Both Directions)
Abutments and Piers are parallel.

H & E Sh. No. 34-1

HAZELET & ERDAL
CONSULTING ENGINEERS
CINCINNATI, OHIO

SITE PLAN
BRIDGE No. HAM-71-0483
WOODBURN AVE.
H&E BRIDGE No. 34

DESIGNED	DRAWN	TRACED	CHECKED	NO. OF SHEETS	REVISED
	JCL	RJS	ADH	2	

DESIGN AGENCY
STATE OF OHIO
DEPT. OF TRANSPORTATION
DISTRICT 8 BRIDGE DEPT.

DESIGNED	DRAWN	REVIEWED	DATE
PJL	PJL	CAH	

CHECKED	REVISED	STRUCTURE FILE NUMBER
CAH		3114600

BRIDGE GENERAL PLAN
BRIDGE NO. HAM-71-0505
WOODBURN AVE. OVER I-71

HAM-71-1.97
PID No. 82975

01/02

292A
292

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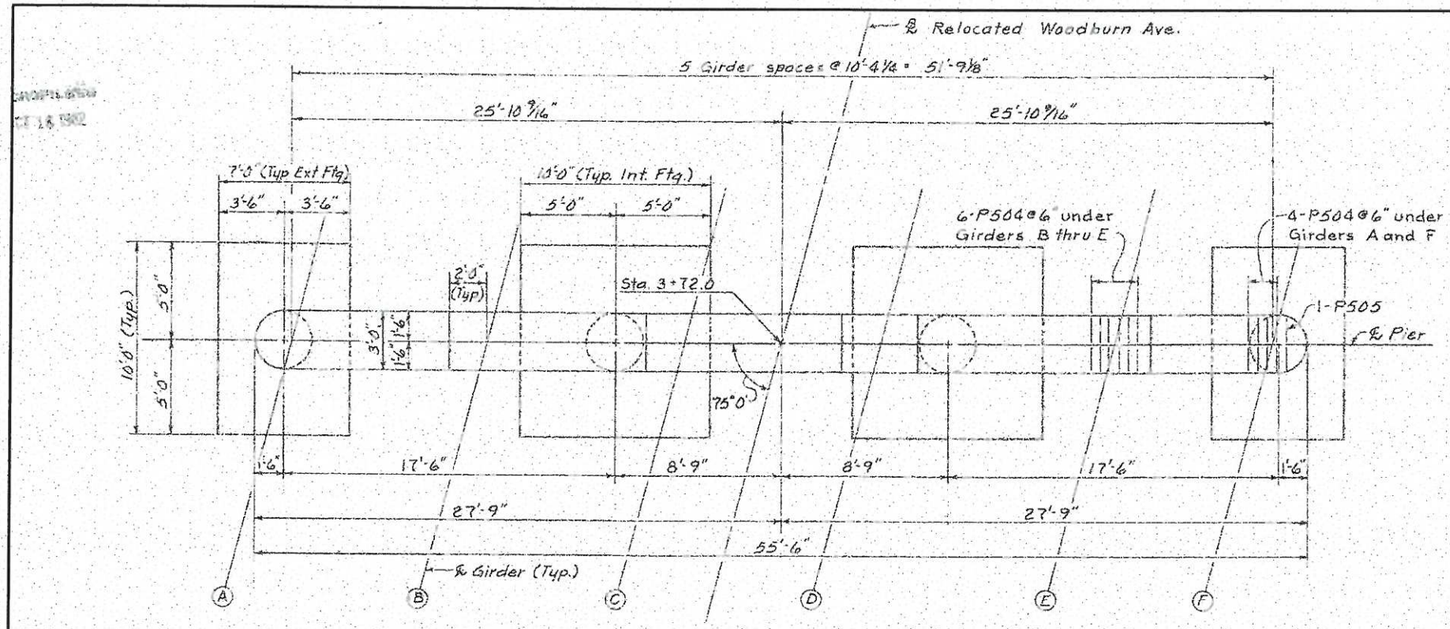
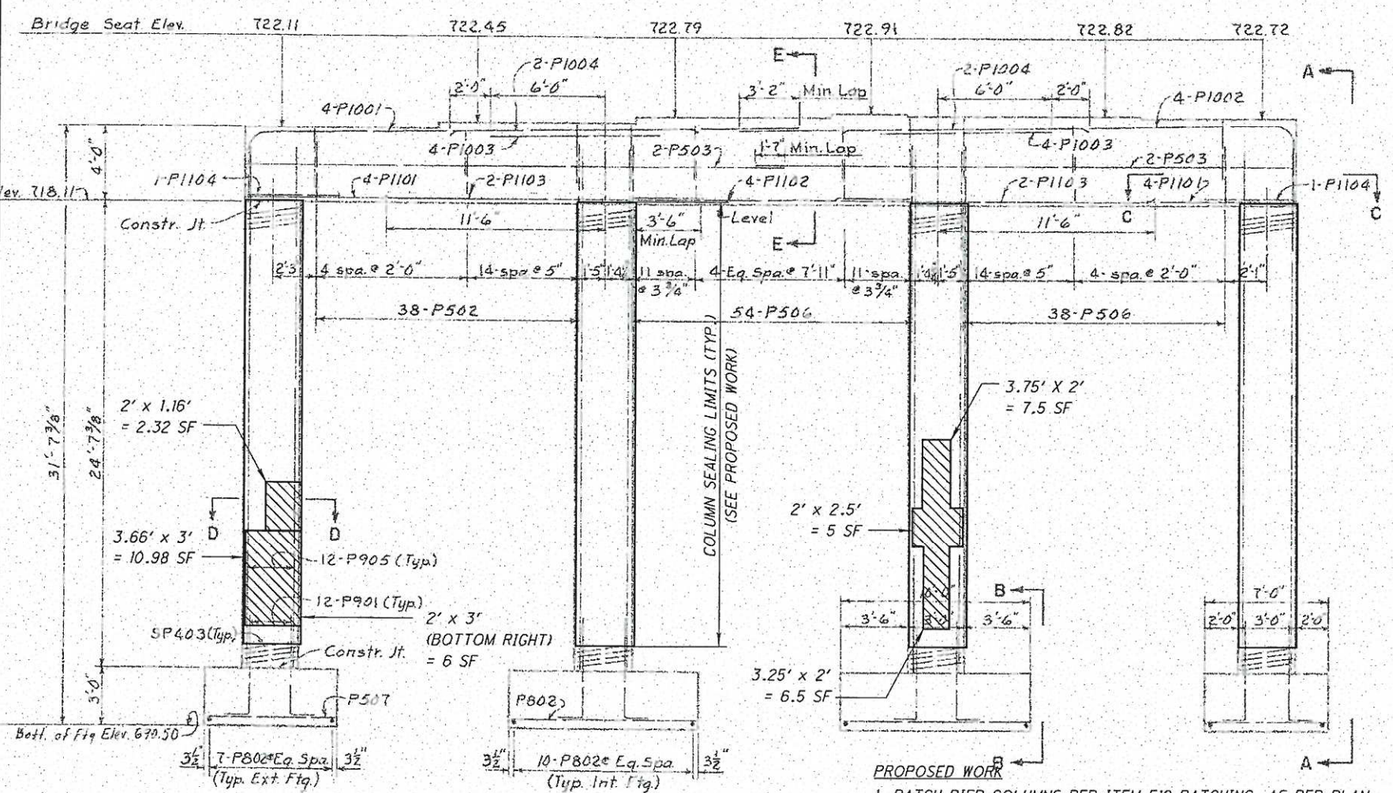


PLAN



ELEVATION

ITEM 519 PATCHING (COLUMNS) = 38 SF

ITEM 512 EPOXY SEALING = 100 SY

PROPOSED WORK

1. PATCH PIER COLUMNS PER ITEM 519 PATCHING, AS PER PLAN.
2. SEAL ENTIRE SURFACE AREA OF COLUMNS FROM BOTTOM OF PIER CAP TO TOP OF CONCRETE SLOPE PROTECTION.
2. MAINTAIN TRAFFIC ON I-71 PER THE LANE VALUE CONTRACT TABLE (SEE MAINTENANCE OF TRAFFIC GENERAL NOTES).

EXISTING STRUCTURE VERIFICATION

DETAILS AND DIMENSIONS SHOWN ON THESE PLANS PERTAINING TO THE EXISTING STRUCTURE HAVE BEEN OBTAINED FROM PLANS OF THE EXISTING STRUCTURE AND FORM FIELD OBSERVATIONS AND MEASUREMENTS. CONSEQUENTLY, THEY ARE INDICATIVE OF THE EXISTING STRUCTURE AND THE PROPOSED WORK BUT THEY SHALL BE CONSIDERED TENTATIVE AND APPROXIMATE. THE CONTRACTOR IS REFERRED TO CMS SECTIONS 102.05, 105.02, AND 513.04.

BASE CONTRACT BID PRICES UPON A RECOGNITION OF THE UNCERTAINTIES DESCRIBED ABOVE AND UPON A PREBID EXAMINATION OF THE EXISTING STRUCTURE. HOWEVER, THE DEPARTMENT WILL PAY FOR ALL PROJECT WORK BASED UPON ACTUAL DETAILS AND DIMENSIONS THAT HAVE BEEN VERIFIED IN THE FIELD.

STATE OF OHIO
CHRISTOPHER A. HOWARD
E-62429
REGISTERED
PROFESSIONAL ENGINEER

Christopher A. Howard

FOR SHEETS 292A & 292B

ITEM 519 - PATCHING CONCRETE STRUCTURES, AS PER PLAN

THIS ITEM IS TO BE USED TO PATCH AREAS OF DETERIORATED CONCRETE OVER 3" THICK. THE FOLLOWING ESTIMATED QUANTITIES ARE PROVIDED:

4282 SF TOTAL FOR WALK ON BRIDGE DECK AND PIER NO. 3 COLUMNS.

AREAS OF DETERIORATED CONCRETE TO BE REPAIRED SHALL BE MARKED BY THE PROJECT ENGINEER. MATERIALS SHOULD NOT BE ORDERED UNTIL THE AREAS FOR REPAIR HAVE BEEN MARKED.

PRIOR TO THE SURFACE CLEANING SPECIFIED IN 519.04 AND WITHIN 24 HOURS OF PLACING PATCHING MATERIAL, BLAST CLEAN ALL SURFACES TO BE PATCHED INCLUDING THE EXPOSED REINFORCING STEEL. ACCEPTABLE METHODS INCLUDE HIGH-PRESSURE WATER BLASTING WITH OR WITHOUT ABRASIVES IN THE WATER, ABRASIVE BLASTING WITH CONTAINMENT, OR VACUUM ABRASIVE BLASTING.

ITEM 512 - SEALING OF CONCRETE SURFACES, (EPOXY-URETHANE)

SEAL PIER NO. 3 COLUMNS AS DETAILED IN THE PLANS WITH EPOXY-URETHANE. THE COLOR SHALL BE FEDERAL COLOR NO. 16515.

EXISTING PLANS

EXISTING PLANS ENTITLED HAM-71-4.58, CITY OF CINCINNATI, CITY OF NORWOOD, HAMILTON COUNTY, MAY BE INSPECTED IN THE ODOT DISTRICT 8 OFFICE IN LEBANON, OHIO.

CLEARING AND GRUBBING, AS PER PLAN

PERFORM CLEARING AND GRUBBING AT SIDEWALKS APPROACHING BRIDGE TO REMOVE EXCESS VEGETATION AND PROVIDE A CLEAR WALK PATH. ALTHOUGH THERE ARE NO TREES OR STUMPS SPECIFICALLY MARKED FOR REMOVAL WITHIN THE LIMITS OF THE PROJECT, A LUMP SUM QUANTITY HAS BEEN INCLUDED IN THE ESTIMATED QUANTITIES FOR ITEM 201, CLEARING AND GRUBBING, AS PER PLAN. ALL PROVISIONS AS SET FORTH IN THE SPECIFICATIONS UNDER THIS ITEM SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 201, CLEARING AND GRUBBING, AS PER PLAN.

ESTIMATED QUANTITIES

ITEM	EXTENSION	TOTAL	UNIT	DESCRIPTION	SUPER	PIERS	SHEET
201	11001	LS		CLEARING AND GRUBBING, AS PER PLAN			2
512	10100	100	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)		100	2
512	10300	525	SY	SEALING CONCRETE BRIDGE DECKS WITH HMWM RESIN	525		1
519	11101	1566	SF	PATCHING CONCRETE STRUCTURE, AS PER PLAN	1528	38	1-2

DESIGN AGENCY
STATE OF OHIO
DEPT. OF TRANSPORTATION
DISTRICT 8 BRIDGE DEPT.

DESIGNED	DRAWN	REVISED	DATE
PJL	PJL	CAH	
CHECKED	REVISED	STRUCTURE FILE NUMBER	
CAH		3114600	

PIER NO. 3 DETAILS AND ESTIMATED QUANTITIES

BRIDGE NO. HAM-71-0505
WOODBURN AVE. OVER I-71

HAM-71-1.97
PID No. 82975

02/02

292B
292

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FED. RD. DIV.	STATE	PROJECT	FISCAL YEAR
2	OHIO		

HAM-71-1.30

1/5

FED. NO. I-71-1(25)02

Note: Information shown by this subgrade profile was obtained solely for use in establishing design controls for the project. The State of Ohio does not guarantee the accuracy of this data and it is not to be construed as part of the plans governing construction of the project.

Elev. 390 ?

R-3-1

Elev. 538.7

19	
44	Br. sandy gravel, trace silt
26	
11	
10	Br. coarse & fine sand, some silt trace gravel
17	Br. silty sand, some gravel, silt layers
32	Br. sandy gravel, little silt
32	
25	
29	Br. gravelly sand, little silt
15	
23	Br. coarse & fine sand, little silt trace gravel

Elev. 508.7-30'

R-11-1

Elev. 534.6'

	0.6' Pavement
7	Clay, gravel, cinders, brick (fill)
3	Br. & gr. silty clay, cinders, brick frag. (fil)
3	Br. & gr. silt, little sand, cinders (fill)
7	Br. sandy gravel, trace silt,
14	
13	Br. gravelly sand, trace silt
15	
20	
29	Br. sandy gravel, little silt
19	Br. gravelly sand, trace silt
21	Br. fine sand
21	
18	Br. sandy silt, silt layers
WL 12	
12	Br. silt, trace sand
18	Gr. silt & clay, trace sand, silt layers
16	
13	Gr. silt, trace sand, silt & sand layers
12	
13	Gr. silt & clay, silt layers
18	Br. & gr. clay, trace sand
21	
15	Br. & gr. fine sand
19	Br. & gr. fine sand, little clay, some silt, silty clay layers
17	
18	
21	
19	Gr. sandy silt, fine sand layers
23	
21	
26	
24	Gr. silt, little sand, sand layers
78	Br. & gr. sandy gravel, little silt limestone frag.
199	Br. gravelly sand, little clay, trace silt, limestone frag.
224	
92% Rec.	98% gr. shale 2% limestone

Elev. 391.6'-143'

R-12-1

Elev. 525.5

12	Blacktop, sand, gravel, concrete (fill)
6	Br. sandy clay, gravel, cinders
12	brick frag. (fill)
6	
7	
7	
4	Br. & gr. sandy silt, little gravel
5	cinders, brick frag. (fill)
5	
5	
8	
7	
8	Gr. silt & clay, some sand, little gravel
WL 20	cinders, brick frag. (fill)
21	Br. sandy silt, trace gravel
16	Br. gravelly sand, trace silt
	Br. sandy gravel, trace silt
13	
16	Br. gravelly sand, trace silt
18	
29	Br. sandy gravel, trace silt
18	
15	Gr. silt & clay, trace sand, silt lenses
	Gr. silt & clay, little sand, trace gravel, silt & sand lenses
14	
19	Gr. sandy silt, trace gravel, sand layers
	Br. & gr. silt & clay, trace sand, silt lenses
36	Gr. fine sand, little silt, trace gravel
14	Gr. silt & clay, trace sand, silt & sand lenses
16	Gr. sandy silt, sand layers
20	Br. & gr. silty clay, trace sand silt & sand layers
16	
20	Br. & gr. silt & clay, little sand silt & sand layers
17	Gr. fine sand
36	
99	Gr. fine & coarse sand, some silt, some gravel, limestone frag.
151	Br. & gr. sandy gravel, little silt, rock frag.
38% Rec.	62% gr. & br. shale 38% limestone

Elev. 397.5-128'

HAZELET & ERDAL
CONSULTING ENGINEERS
CINCINNATI, OHIO

LOG OF BORINGS

SHEET 1 of 1

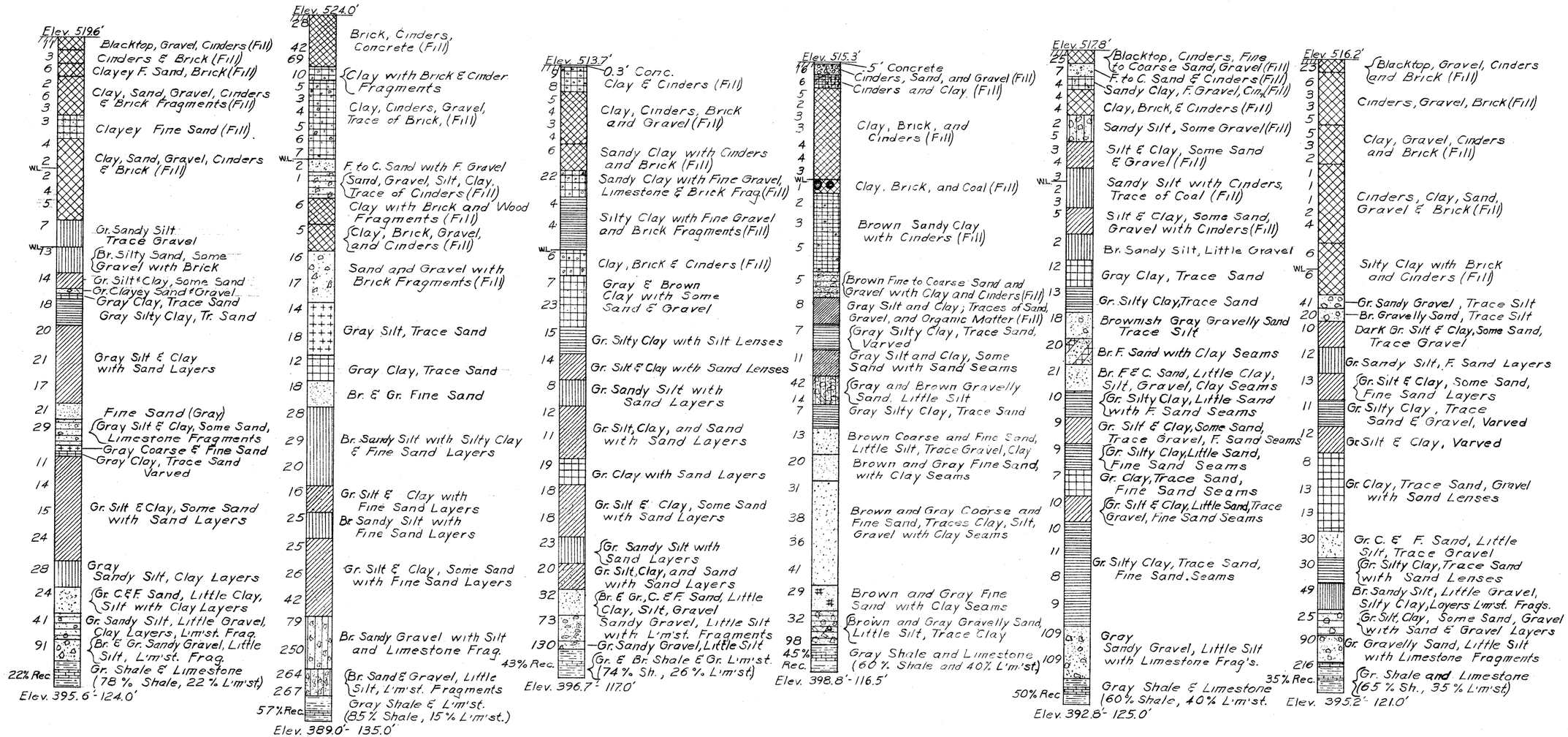
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
	ALT		GNW	JHO 3/22/65	

MICROFILMED
OCT 18 1982

FED. RD. DIV.	STATE	PROJECT	FISCAL YEAR
2	OHIO		

2/5

HAM-71-1.30



ELEV. 375

BORING NO. B6-1 | BORING NO. B6-2 | BORING NO. B6-3 | BORING NO. B6-4 | BORING NO. B6-5 | BORING NO. B6-6

NOTE:
FIGURES AT LEFT OF BORINGS INDICATE NUMBER OF HAMMER BLOWS PER FOOT OF PENETRATION OF 2" O. D. SPLIT SPOON SAMPLER WITH 140 LB. HAMMER AND 30" FALL.

HAZELET & ERDAL
CONSULTING ENGINEERS
CINCINNATI, OHIO

LOG OF BORINGS
BRIDGE NO. HAM-71-0135

SHEET 1 OF 4

H. & E. BRIDGE NO. 6

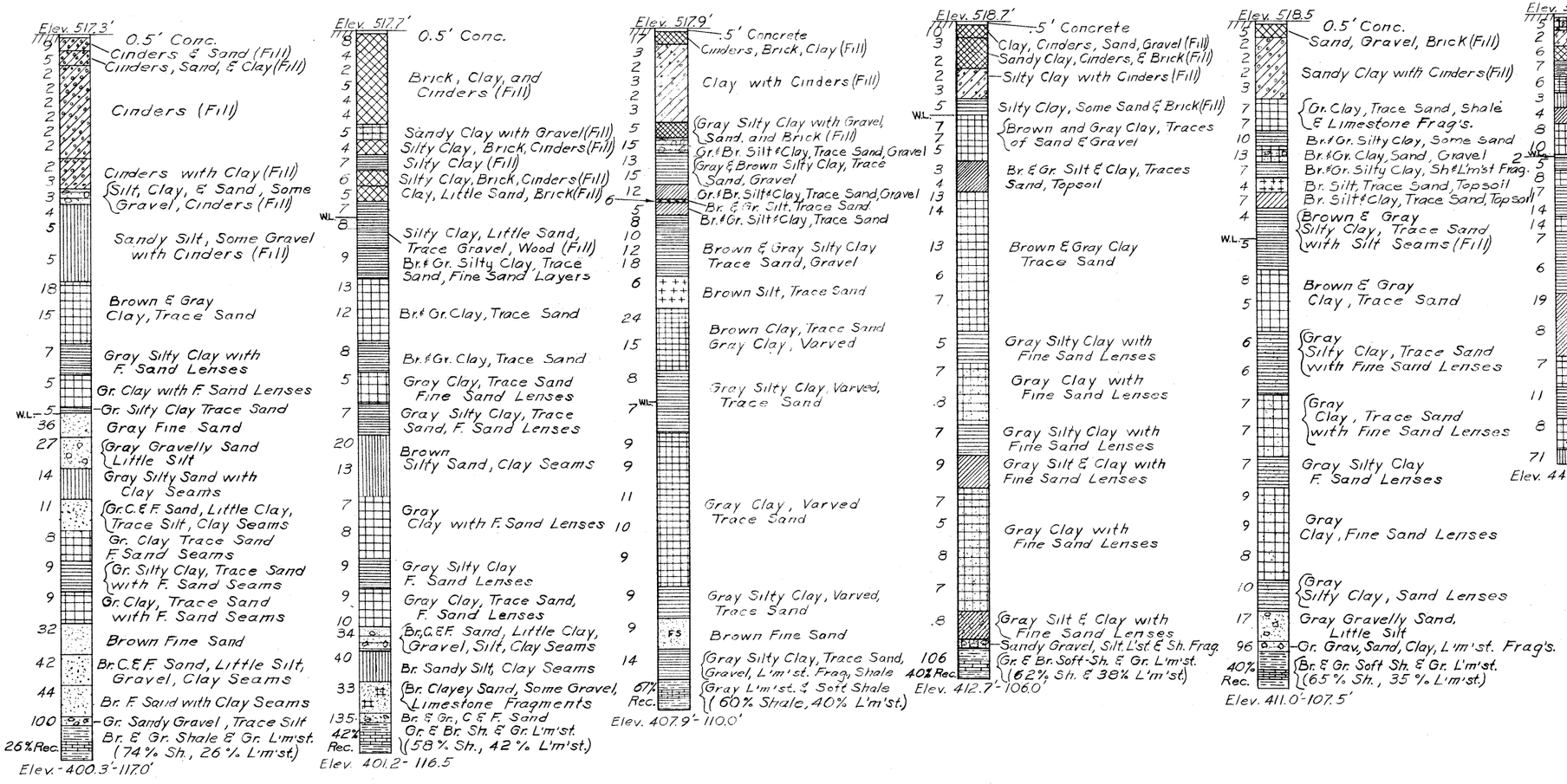
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
	L.B.K.		G.N.W.	JHO 3/22/65	

MICROFILMED
OCT 18 1982

FED. RD. DIV.	STATE	PROJECT	FISCAL YEAR
2	OHIO		

3/5

HAM-71-1.80



ELEV. 375

BORING NO. B6-8 | BORING NO. B6-9 | BORING NO. B6-12 | BORING NO. B6-13 | BORING NO. B6-14 | BORING NO. B6-16

Borings B6-7, B6-10, B6-11 and B6-15 Were Not Drilled.

HAZELET & ERDAL
CONSULTING ENGINEERS
CINCINNATI, OHIO

LOG OF BORINGS
BRIDGE NO. HAM-71-0135
SHEET 2 OF 4

H & E. BRIDGE NO. 6

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
	L.B.K.		G.N.W.	JHO 3/22/65	

MICROFILMED
OCT 18 1982

FED. RD. DIV.	STATE	PROJECT	FISCAL YEAR
2	OHIO		

4/5

HAM-71-1.30

Elev. 520.3'

2	Cinders & Brick (Fill)
2	Br. Clay & Sand (Fill)
2	Sandy Clay, Fine Gravel (Fill)
3	Sandy Clay with Cinders, Coal (Fill)
WL. 4	
3	Sandy Clay, Cinders, Org. Mat. (Fill)
4	Br. & Gr. Silty Clay, Trace Sand
5	Organic Matter, Gravel
5	Br. & Or. Silt & Clay, Some Sand
6	Br. & Gr. Silty Clay,
9	Little Sand
11	Br. & Gr. Silt & Clay, Some Sand,
18	Gravel with L'm'st. Fragments
9	Gr. Clay, Trace Sand,
	Fine Sand Lenses
7	
16	Gr. Silty Clay, Little Sand
	Fine Sand Lenses
12	Gr. Clay with Silt Seams
9	Gr. Silty Clay, Trace Sand,
	Fine Sand Lenses
7	Gr. Clay, Trace Sand, F.S. Lenses
26	Gr. Silt & Clay, Sand,
21	Gravel, Limestone
	Gr. Silty Clay Trace Sand
158	Gr. Weathered Shale
58% Rec.	Gr. Shale & Limestone

Elev. 439.8'-80.5' (93% Sh., 7% L'm'st.)

Elev. 520.0'

6	Cinders, Gravel, Sand (Fill)
6	Sandy Clay & Brick (Fill)
4	Sandy Clay & Cinders (Fill)
3	Gr. & Br. Silt & Clay, Trace
5	Sand, Little Gravel
8	Silty Clay, Little Sand, Gravel
9	Gr. & Br. Silt, Clay, Gravel,
16	Little Sand
17	Br. & Gr. Clay, Trace Sand, Gravel
13	Gray & Brown Silty Clay
9	Trace Sand
9	Gray
7	Clay, Varved, Trace of Sand
9	Gr. Silty Clay, Varved
9	Gr. Sandy Silt, Varved
16	Gr. Silty Clay, Trace Sand
WL. 34	
45	Gr. Clayey Sand, Gravel
46	Gr. Silty Clay, Trace Sand,
	Some Gravel
158	Gr. Clay, Trace Sand, Gravel
85% Rec.	with Limestone Frag.
	Gr. Shale

Elev. 454.0'-66.0'

Elev. 521.5'

5	Cinders, Clay, Sand,
8	& Gravel (Fill)
9	Clay, Brick, Cinders,
5	& Sand (Fill)
WL. 2	Clay & Wood (Fill)
2	Sandy Clay with Brick
9	& Organic Material (Fill)
13	Br. & Gr. Clay, Trace Sand, Gravel
14	Brown and Gray Silty
14	Clay, Trace Sand
13	Br. & Gr. Silt & Clay, Trace Sand
15	Br. & Gr. Clay, Trace Sand, Gravel
6	Gr. Silty Clay, Trace Sand
	Fine Sand Lenses
8	Gr. Clay, Fine Sand Lenses
47	Gr. Sandy Silt, Gravel, L'm'st. & Sh.
71	Gr. Silt & Clay, Traces Sand, Gravel
	L'm'st. & Shale Frag.
73% Rec.	Gr. & Br. Shale & L'm'st.
	(99% Sh. 1% L'm'st.)

Elev. 471.5'-50'

Elev. 522.8'

15	F. to C. Sand, Gravel, Brick (Fill)
5	Gr. & Br. Silty Clay, Sand & Gravel
5	(Fill)
6	Br. & Gr. Silty Clay, Trace Sand, Gravel
24	Br. & Gr. Clay, Trace Sand
16	Br. & Gr. Silty Clay, Trace Sand, Grav.
24	Br. & Gr. Silt & Clay, little Sand, Gravel
25	
21	Gr. & Br. Silty Clay, Trace Sand,
WL. 29	Gravel, L'm'st. & Sh. Frag.
109	
90% Rec.	Gr. Shale & Limestone
	(90% Sh. - 10% L'm'st.)
65% Rec.	

Elev. 486.3'-36.5'

Elev. 526.7'

4	Cinders & Clay (Fill)
5	Br. Silt, Trace Sand & Gravel
10	Br. & Gr. Clay Trace Sand
27	Br. & Gr. Silty Clay, Trace Sand, Gravel
11	Br. & Gr. Silt & Clay, little Sand,
39	Gravel, L'm'st. Frag.
35	
24	
19	
22	Br. & Gr. Silty Clay, little Sand
22	Gravel, L'm'st. Frag.
33	
15	Gr. & Br. Clay, Sand, L'm'st Frag.
26	Gr. Silty Clay, little Sand
	Gr. Weathered Shale
57% Rec.	Gr. Shale - 99% (1% L'm'st.)

Elev. 487.7'-39.0'

Elev. 521.5'

7-30	Sandy Clay, Gravel (Fill)
138	Gr. & Br. Clay, Trace Sand
	Gray Shale & Limestone
72% Rec.	(80% Sh., 20% L'm'st.; Average)
73% Rec.	

Elev. 508.0'-13.5'

ELEV. 400

BORING NO. B6-17 | BORING NO. B6-18 | BORING NO. B6-19 | BORING NO. B6-20 | BORING NO. B6-21 | BORING NO. B6-22

HAZELET & ERDAL
CONSULTING ENGINEERS
CINCINNATI, OHIO

LOG OF BORINGS
BRIDGE NO. HAM-71-0135
SHEET 3 OF 4

H. & E. BRIDGE NO. 6

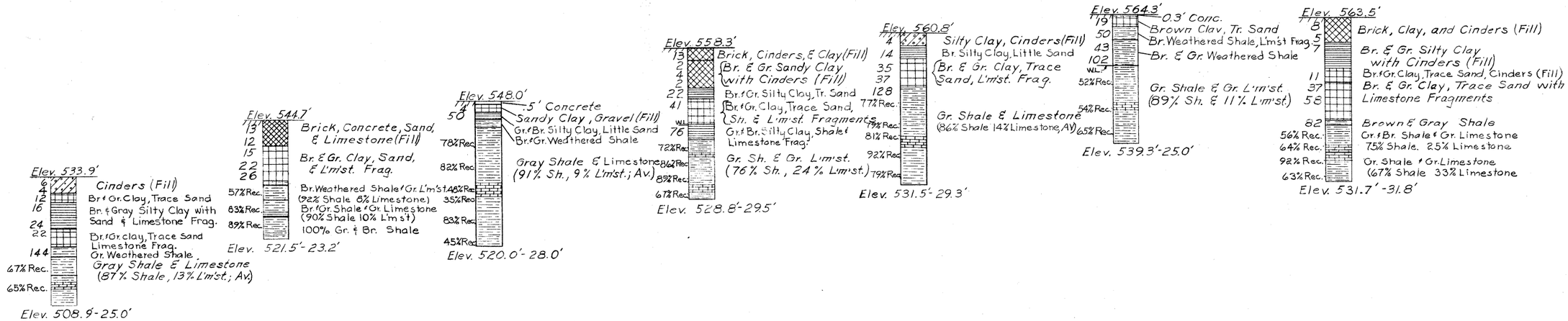
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
	L.B.K.		GNW	JHO 3/22/65	

MICROFILMED
OCT 18 1982

FED. RD. DIV.	STATE	PROJECT	FISCAL YEAR
2	OHIO		

5/5

HAM-71-1.30



ELEV. 425

BORING NO. B6-23 | BORING NO. B6-24 | BORING NO. B6-25 | BORING NO. B6-26 | BORING NO. B6-27 | BORING NO. B6-28 | BORING NO. R15-1

HAZELET & ERDAL
CONSULTING ENGINEERS
CINCINNATI, OHIO

LOG OF BORINGS
BRIDGE NO. HAM-71-0135

SHEET 4 OF 4

H. & E. BRIDGE NO. 6

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
	L.B.K.		G.N.W.	JHO 3/22/65	

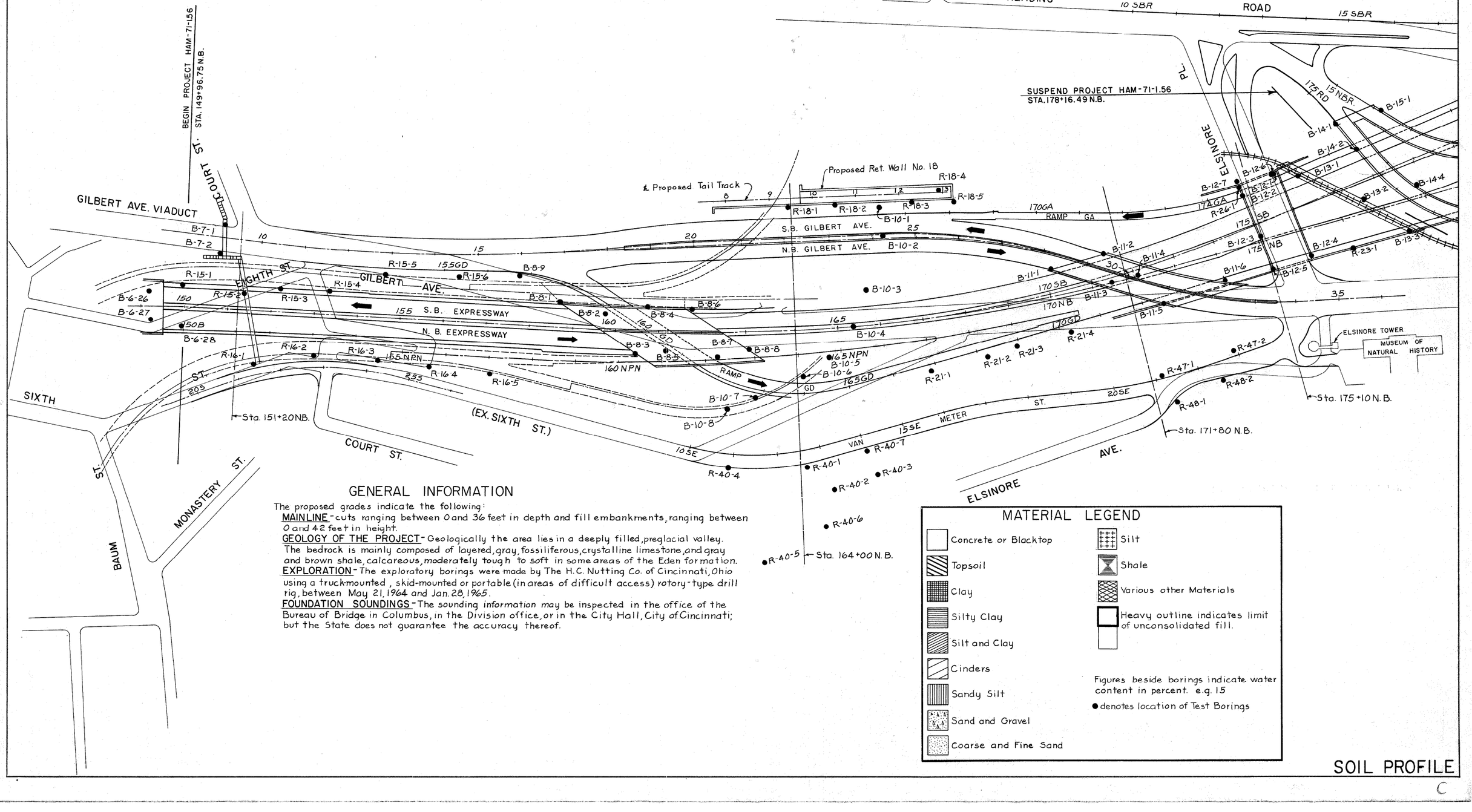
FED. RD. DIV.	STATE	PROJECT	FISCAL YEAR
2	OHIO		

1/20

HAMILTON COUNTY
HAM-71-(1.56) (2.51)

Block 205 I-20

Note: Information shown by this subgrade profile was obtained solely for use in establishing design controls for the project. The State of Ohio does not guarantee the accuracy of this data and it is not to be construed as a part of the plans governing construction of the project.



GENERAL INFORMATION

The proposed grades indicate the following:

MAINLINE - cuts ranging between 0 and 36 feet in depth and fill embankments, ranging between 0 and 42 feet in height.

GEOLOGY OF THE PROJECT - Geologically the area lies in a deeply filled, preglacial valley. The bedrock is mainly composed of layered, gray, fossiliferous, crystalline limestone, and gray and brown shale, calcareous, moderately tough to soft in some areas of the Eden formation.

EXPLORATION - The exploratory borings were made by The H.C. Nutting Co. of Cincinnati, Ohio using a truck-mounted, skid-mounted or portable (in areas of difficult access) rotory-type drill rig, between May 21, 1964 and Jan. 28, 1965.

FOUNDATION SOUNDINGS - The sounding information may be inspected in the office of the Bureau of Bridge in Columbus, in the Division office, or in the City Hall, City of Cincinnati; but the State does not guarantee the accuracy thereof.

MATERIAL LEGEND

- Concrete or Blacktop
- Topsoil
- Clay
- Silty Clay
- Silt and Clay
- Cinders
- Sandy Silt
- Sand and Gravel
- Coarse and Fine Sand
- Silt
- Shale
- Various other Materials
- Heavy outline indicates limit of unconsolidated fill.

Figures beside borings indicate water content in percent. e.g. 15

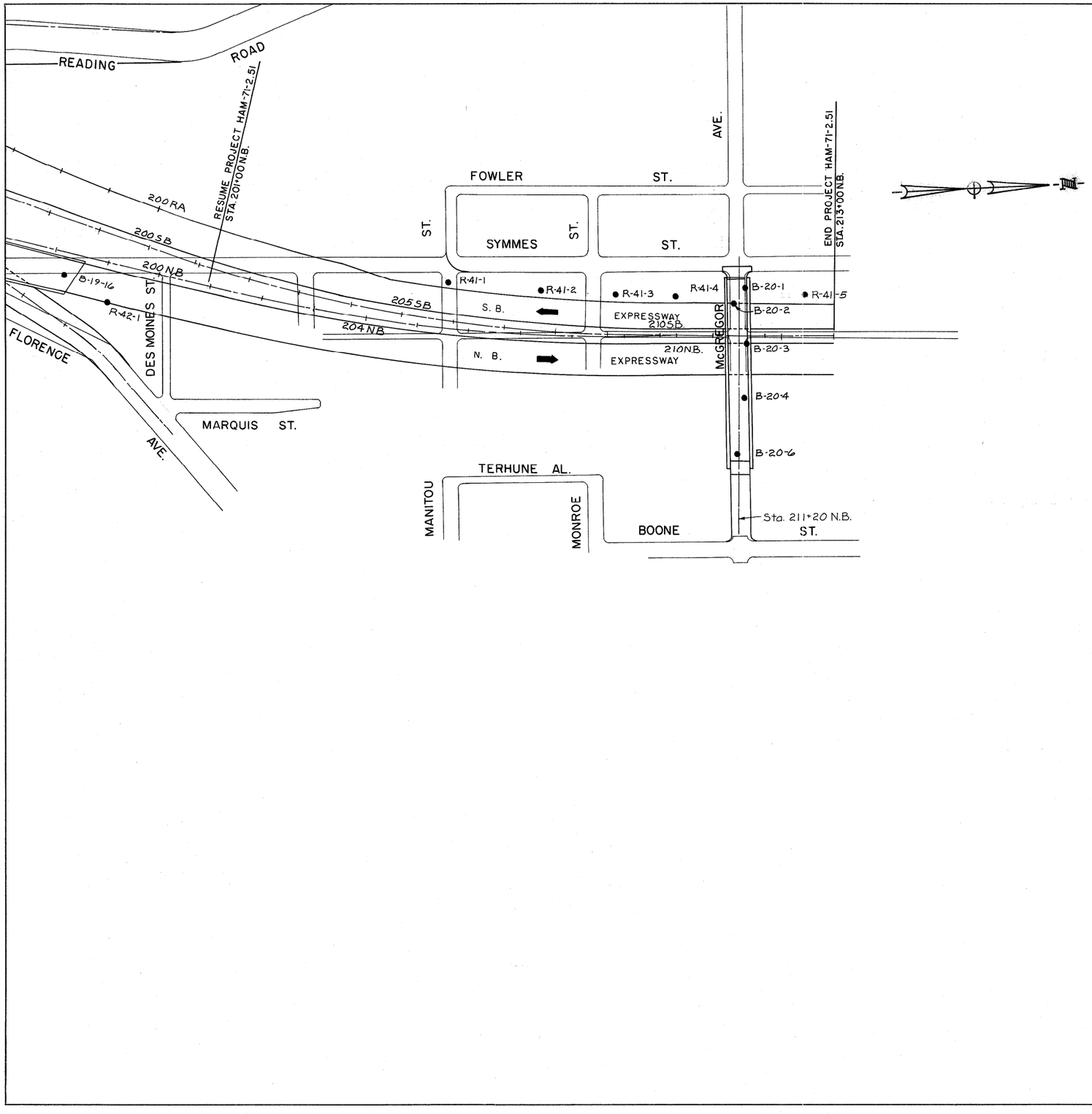
● denotes location of Test Borings

SOIL PROFILE

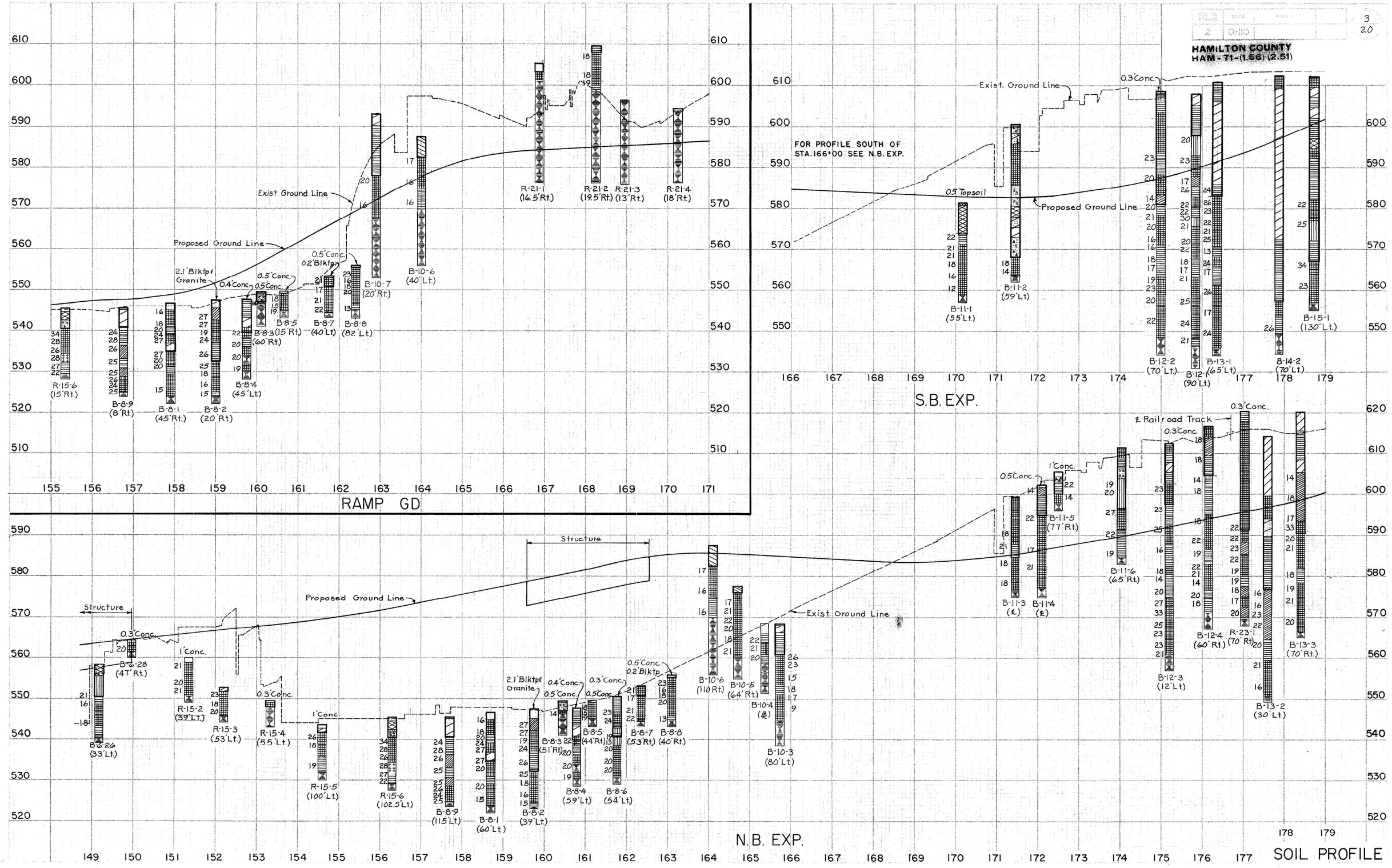
FED. RD. DIV.	STATE	PROJECT	FISCAL YEAR
2	OHIO		

2
20

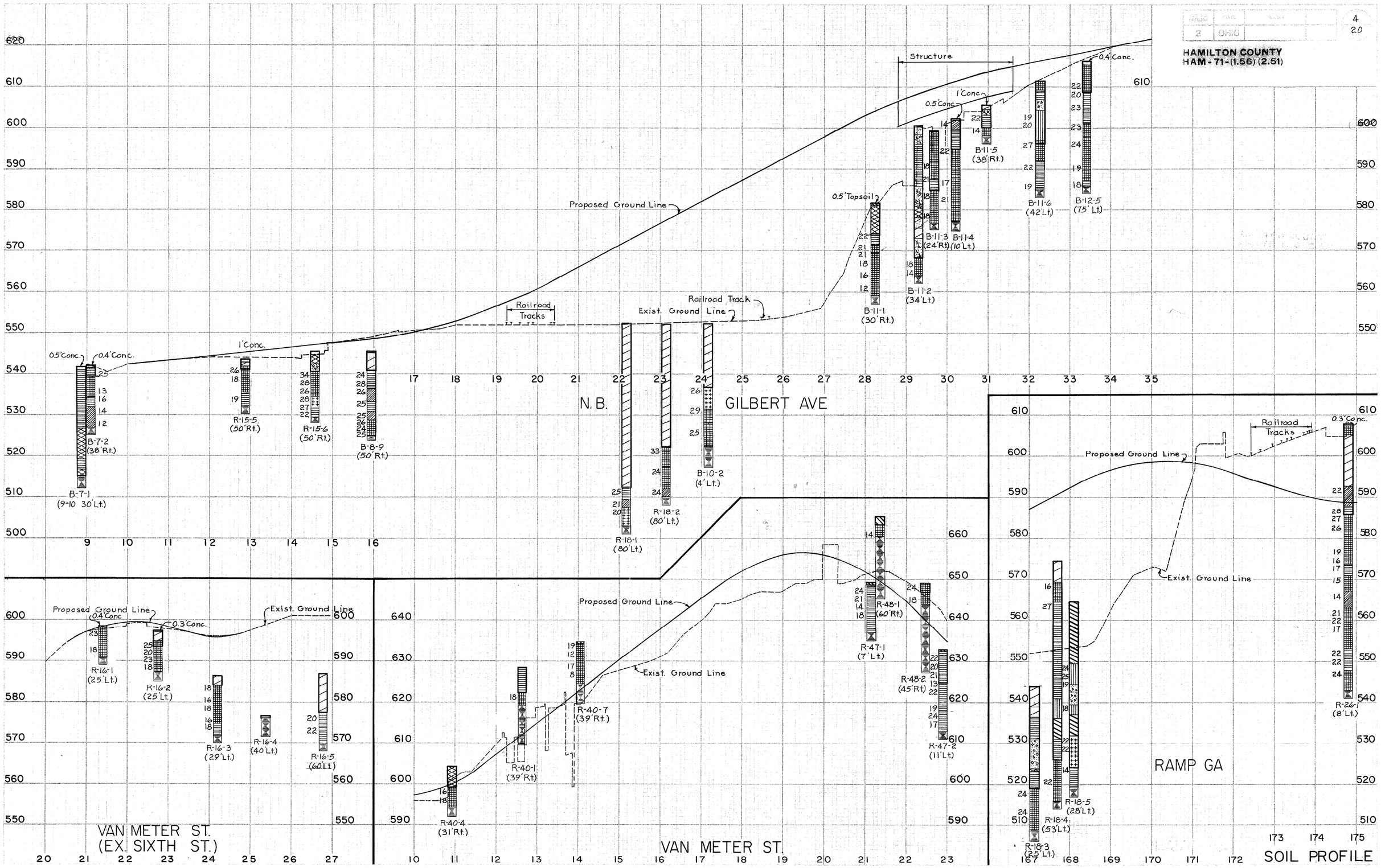
HAMILTON COUNTY
HAM-71-(1.56) (2.51)



SOIL PROFILE



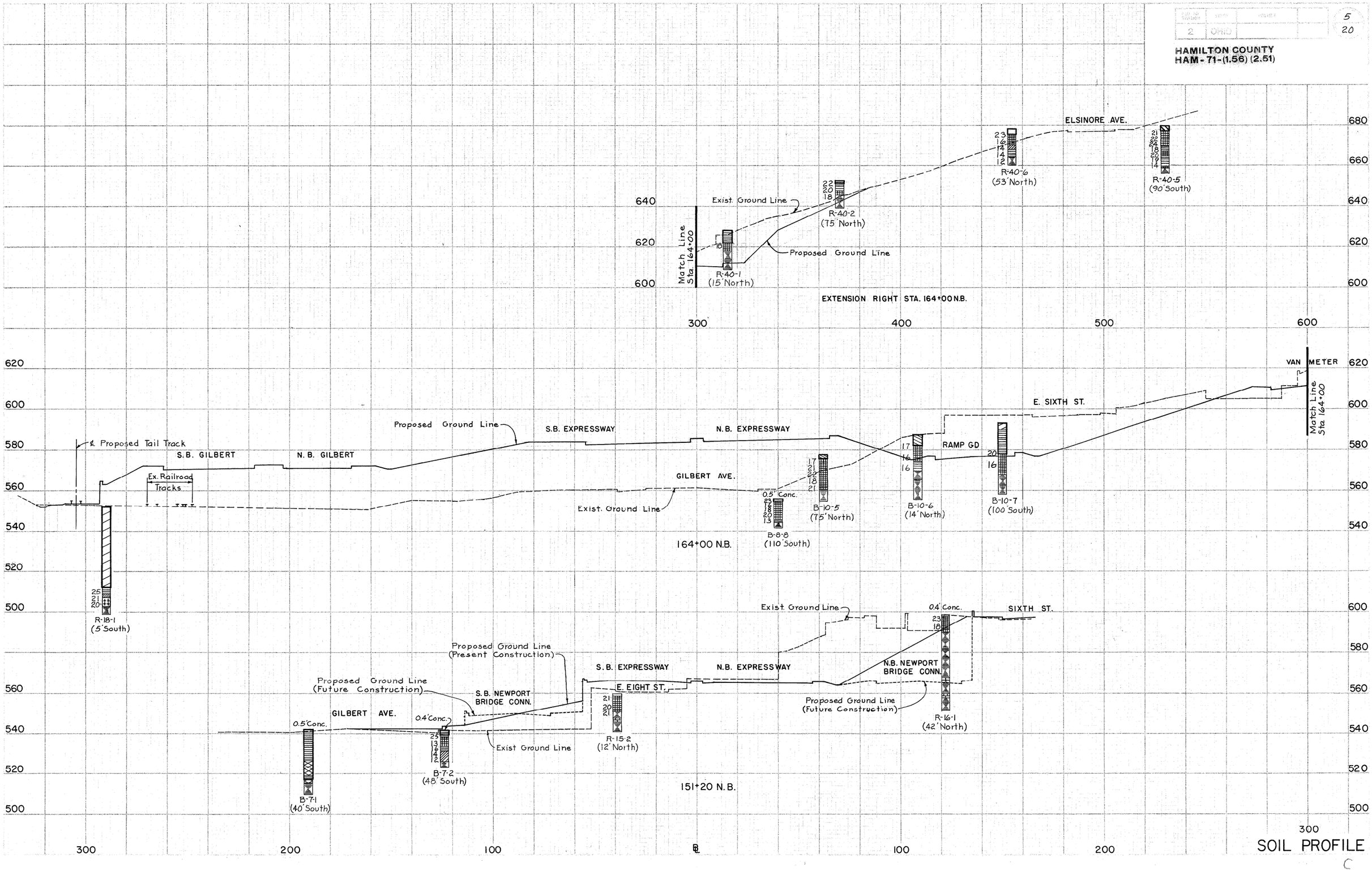
HAMILTON COUNTY
HAM-71-(1.56) (2.51)
3
20
RAMP GD
Exist Ground Line
Proposed Ground Line
2.1' Blktp & Granite
0.4' Conc.
0.5' Conc.
0.2' Blktp
R-15-6 (15' Rt.)
B-8-9 (8' Rt.)
B-8-1 (45' Rt.)
B-8-2 (20' Rt.)
B-8-3 (60' Rt.)
B-8-4 (45' Lt.)
B-8-5 (15' Rt.)
B-8-7 (40' Lt.)
B-8-8 (82' Lt.)
B-10-7 (20' Rt.)
B-10-6 (40' Lt.)
R-21-1 (16.5' Rt.)
R-21-2 (19.5' Rt.)
R-21-3 (13' Rt.)
R-21-4 (18' Rt.)
S.B. EXP.
FOR PROFILE SOUTH OF STA. 166+00 SEE N.B. EXP.
0.5' Topsoil
Exist. Ground Line
Proposed Ground Line
0.3' Conc.
B-11-1 (55' Lt.)
B-11-2 (59' Lt.)
B-12-2 (70' Lt.)
B-12-1 (90' Lt.)
B-13-1 (65' Lt.)
B-14-2 (70' Lt.)
B-15-1 (130' Lt.)
N.B. EXP.
Structure
Proposed Ground Line
Exist. Ground Line
0.3' Conc.
1' Conc.
B-6-28 (47' Rt.)
B-6-26 (33' Lt.)
R-15-2 (39' Lt.)
R-15-3 (53' Lt.)
R-15-4 (55' Lt.)
R-15-5 (100' Lt.)
R-15-6 (102.5' Lt.)
B-8-9 (115' Lt.)
B-8-1 (60' Lt.)
B-8-2 (39' Lt.)
B-8-3 (51' Rt.)
B-8-4 (59' Lt.)
B-8-5 (44' Rt.)
B-8-6 (54' Lt.)
B-8-7 (53' Rt.)
B-8-8 (40' Rt.)
B-10-6 (110' Rt.)
B-10-5 (64' Rt.)
B-10-4 (℄)
B-10-3 (80' Lt.)
B-11-3 (℄)
B-11-4 (℄)
B-11-5 (77' Rt.)
B-11-6 (65' Rt.)
B-12-3 (12' Lt.)
B-12-4 (60' Rt.)
R-23-1 (70' Rt.)
B-13-2 (30' Lt.)
B-13-3 (70' Rt.)
℄ Railroad Track
SOIL PROFILE



HAMILTON COUNTY
HAM-71-(1.56) (2.51)
Structure
Proposed Ground Line
Railroad Tracks
Railroad Track
Exist. Ground Line
N.B.
GILBERT AVE
0.5'Conc.
0.4'Conc.
1'Conc.
0.5'Topsoil
B-7-1 (9+10 30'Lt.)
B-7-2 (38'Rt.)
R-15-5 (50'Rt.)
R-15-6 (50'Rt.)
B-8-9 (50'Rt.)
R-18-1 (80'Lt.)
R-18-2 (80'Lt.)
B-10-2 (4'Lt.)
B-11-1 (30'Rt.)
B-11-2 (34'Lt.)
B-11-3 (24'Rt.)
B-11-4 (10'Lt.)
B-11-5 (38'Rt.)
B-11-6 (42'Lt.)
B-12-5 (75'Lt.)
VAN METER ST.
(EX. SIXTH ST.)
R-16-1 (25'Lt.)
R-16-2 (25'Lt.)
R-16-3 (29'Lt.)
R-16-4 (40'Lt.)
R-16-5 (60'Lt.)
0.3'Conc.
VAN METER ST.
R-40-4 (31'Rt.)
R-40-1 (39'Rt.)
R-40-7 (39'Rt.)
R-47-1 (7'Lt.)
R-48-1 (60'Rt.)
R-48-2 (45'Rt.)
R-47-2 (11'Lt.)
RAMP GA
R-18-3 (25'Lt.)
R-18-4 (53'Lt.)
R-18-5 (28'Lt.)
R-26-1 (8'Lt.)
SOIL PROFILE

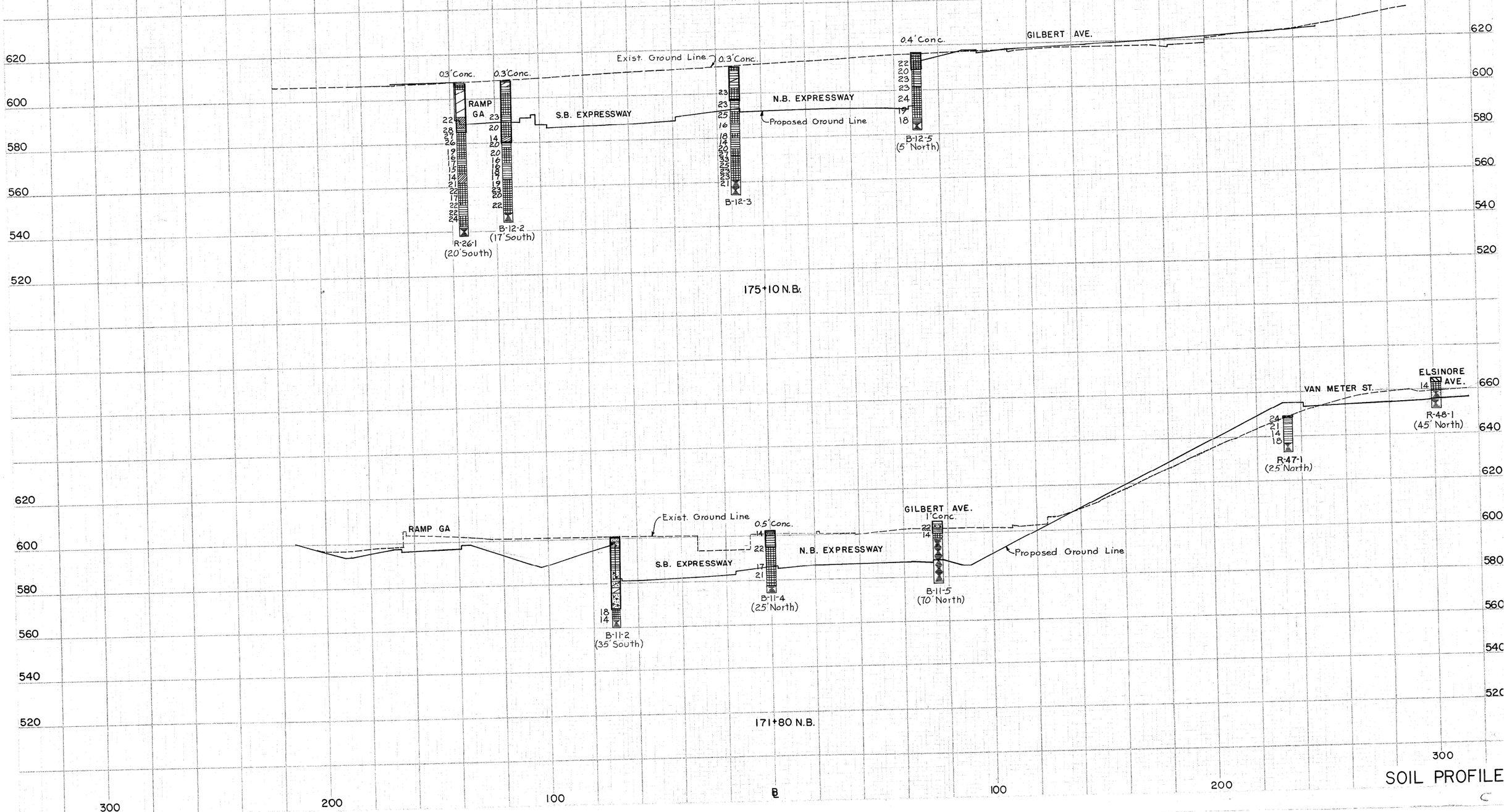
				5
2	OHIO			20

HAMILTON COUNTY
HAM - 71 - (1.56) (2.51)



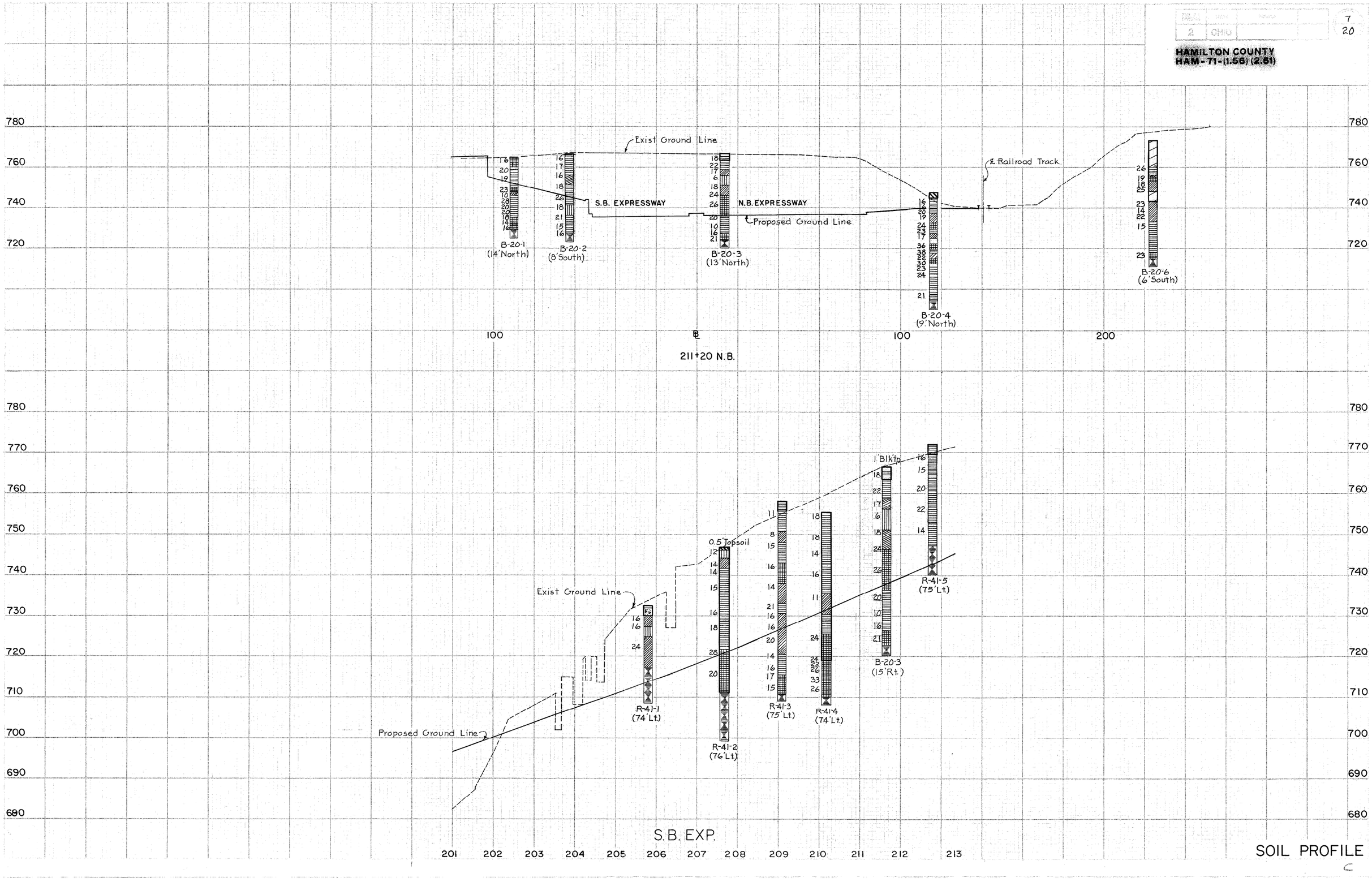
SOIL PROFILE

HAMILTON COUNTY
HAM-71-(1.56) (2.51)



SOIL PROFILE

HAMILTON COUNTY
HAM-71-(1.56) (2.61)

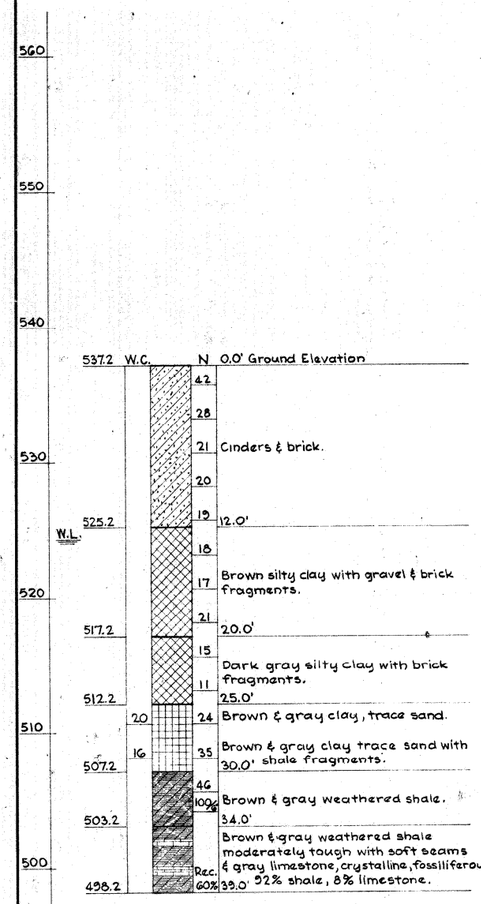


SOIL PROFILE

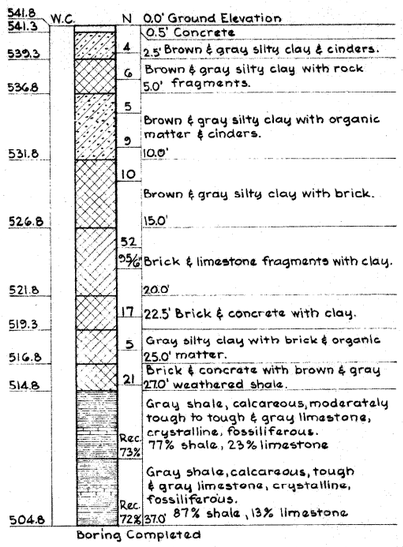
FED. RD. DIV.	STATE	PROJECT	FISCAL YEAR
2	OHIO		

7A 20

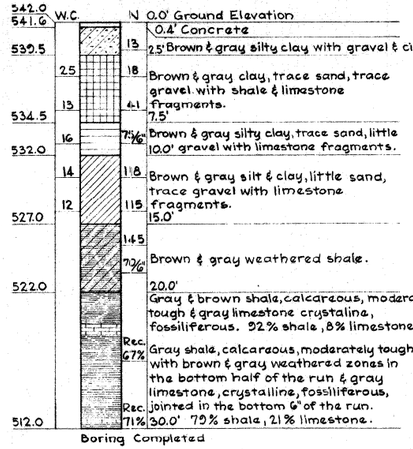
HAMILTON COUNTY
HAM-71-(1.56)(2.51)



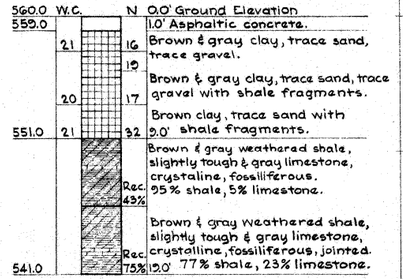
BORING B-7-3
22' S. OF S. CURB E. COURT ST.
78' W. OF W. CURB GILBERT AVE.



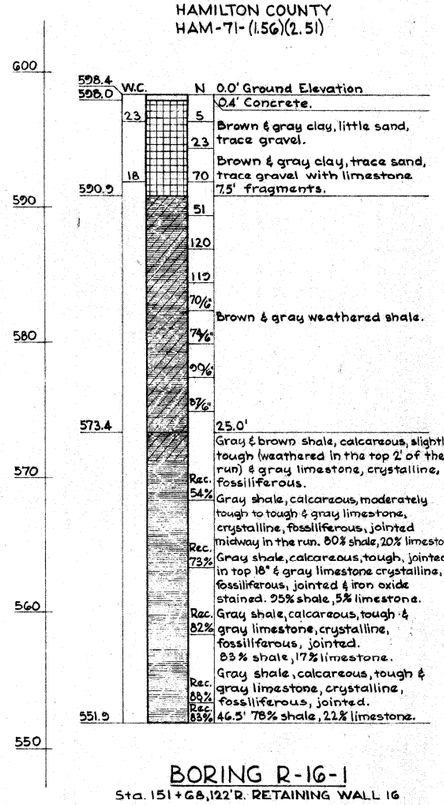
BORING B-7-1
Sta. 150+86, 191' L.



BORING B-7-2
Sta. 150+75, 124' L.



BORING R-15-2
Sta. 151+38, 39' L.



BORING R-16-1
Sta. 151+68, 122' R. RETAINING WALL 16

NOTE: Borings taken between July 20, 1964 & September 9, 1964.

N- Column of figures indicates number of blows required to drive 2" O.D. Split Spoon the last 12" of a sample run using 140 lb. weight falling 30 inches.

Panm Core Burrel was used for the last 5 Ft. of each boring.

W.C. = Column of figures indicates moisture content of sample in per cent of dry weight.

Description of material is based on laboratory test data and visual examination. Representative samples only were tested.

Modifying discriptions in per cent of dry weight: trace 1-10%; little 10-20%; some 20-35%; and 35-50%.

W.L. = Water level reading ~ immediate.

For location of borings see Sheet No. 332

CITY OF CINCINNATI
DEPARTMENT OF PUBLIC WORKS
DIVISION OF ENGINEERING

LOG OF BORINGS

BRIDGE NO. HAM-71-0157
I-71 UNDER PEDESTRIAN CROSSING AT COURT ST.

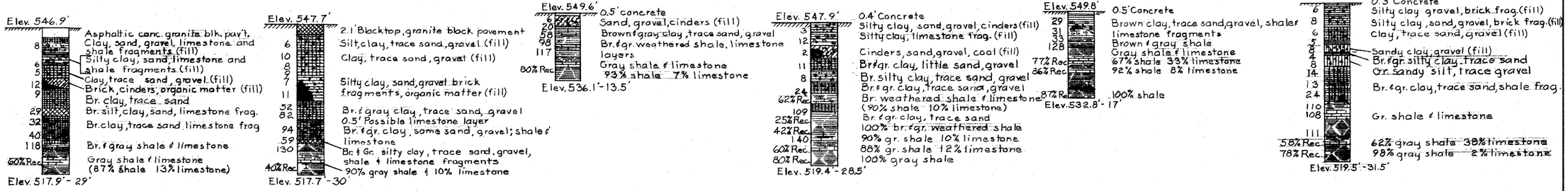
CINCY BRIDGE NO. 7

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
	J.D.A.		W.W.	W.W	3-8-65	

FED. RD. DIV.	STATE	PROJECT	FISCAL YEAR
2	OHIO		

8
20

HAMILTON COUNTY
HAM-71-(1.56) (2.51)



B-8-1 B-8-2 B-8-3 B-8-4 B-8-5 B-8-6

HAZELET & ERDAL
CONSULTING ENGINEERS
CINCINNATI, OHIO

LOG OF BORINGS

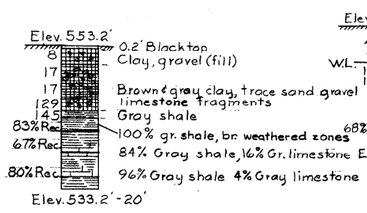
SHEET 1 of 13

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
	A.L.T.		G.N.W.	JHO 5/18/65	

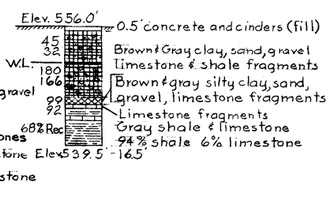
FED. RD. DIV.	STATE	PROJECT	FISCAL YEAR
2	OHIO		

9
20

HAMILTON COUNTY
HAM-71-(1.56)(2.51)

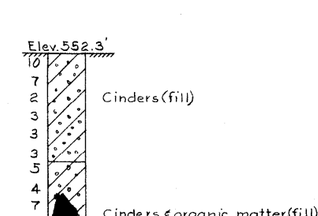


B-8-7

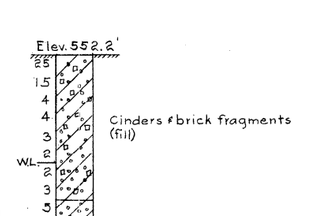


B-8-8

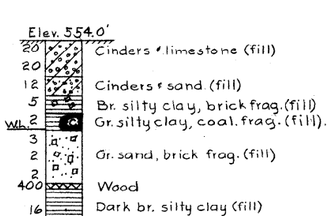
For Boring B-8-9 see Sheet 10 of 13



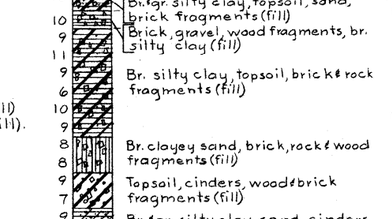
R-18-1



R-18-2



R-18-3



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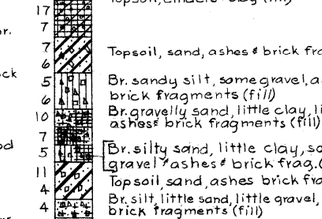


R-18-5

Elev. 500'

Elev. 500'

HAZELET & ERDAL
CONSULTING ENGINEERS
CINCINNATI, OHIO

LOG OF BORINGS

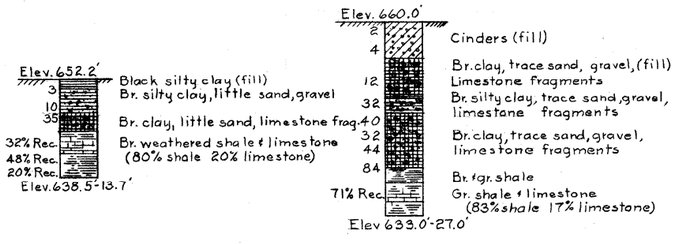
SHEET 2 of 13

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
	ALT		G.N.W.	JHO 5/18/65	

FED. RD. DIV.	STATE	PROJECT	FISCAL YEAR
2	OHIO		

10
20

HAMILTON COUNTY
HAM-71-(1.56) (2.51)



Note: A 35" hammer was used on Borings R-40-1, R-40-2, and R-40-7. Blow counts shown on these borings have been changed to equivalent 140" blow counts.
(one 140 lb. blow = four 35 lb. blows)

HAZELET & ERDAL
CONSULTING ENGINEERS
CINCINNATI, OHIO

LOG OF BORINGS

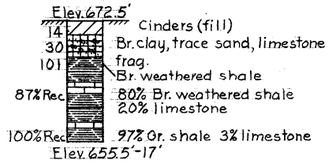
SHEET 3 of 13

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
	A.L.T.		G.N.W.	JHO 5/18/65	

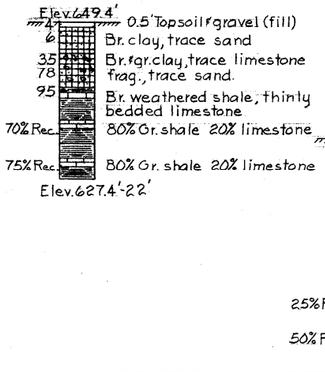
FED. RD. DIV.	STATE	PROJECT	FISCAL YEAR
2	OHIO		

11
20

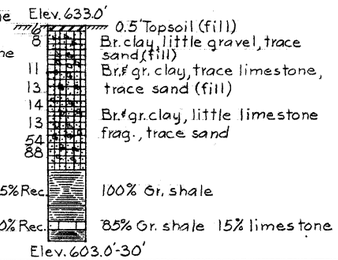
HAMILTON COUNTY
HAM-71-(1.56) (2.51)



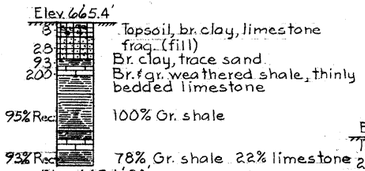
R-42-1



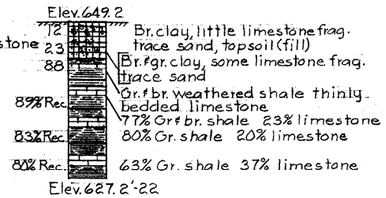
R-47-1



R-47-2



R-48-1



R-48-2

Elev. 600

Elev. 600

HAZELET & ERDAL
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CINCINNATI, OHIO

LOG OF BORINGS

SHEET 4 of 13

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
	A.L.T.		GNW	JHO 5/18/65	

FED. RD. DIV.	STATE	PROJECT	FISCAL YEAR
2	OHIO		

12
20

HAMILTON COUNTY
HAM-71-(1.56) (2.51)

Elev. 551.9'

7	
4	
3	Cinders & brick (fill)
3	
12	
6	
4	Cinders & coal (fill)
9	
8	
9	
46	Br. fgr. silt & clay, trace sand
85% Rec.	60% br. & gr. shale 40% gr. limestone

Elev. 519.4'-32.5'

Elev. 552.3

16	Brick, cinders, coal (fill)
2	
7	Brich, cinders, coal (fill)
9	
7	
4	Br. & dark gr. silt trace sand, gravel
30	Br. clay & gravel, trace sand Limestone layer
49	Br. clay, trace sand, gravel
79% Rec.	97% gr. shale 3% limestone

Elev. 517.3-35'

Elev. 568.6'

24	0.3' Asphaltic concrete Cinders, gravel (fill)
4	Silty clay, brick, cinders (fill)
11	
11	
8	Br. clay, sand, gravel, shale fragments
16	
30	Br. silty clay, sand, gravel, shale fragments
60	
52	Br. & gr. clay, sand, shale frag.
83% Rec.	90% gr. & br. shale 10% limestone

Elev. 539.6'-29'

Elev. 568.8'

	Pavement
	Br. & gr. silty clay, trace sand & gravel
30	Br. & gr. clay, trace sand
64	Br. & gr. silty clay, little sand
58	trace gravel, limestone frag. 99% Rec.
	Br. weathered shale
57% Rec.	98% gr. shale 2% gr. limestone

Elev. 551.8'-17'

Elev. 577.8'

11	Topsoil, br. silty clay (fill)
22	
41	Br. clay, trace sand, shale fragments
29	
33	Br. clay, trace sand little gravel, shale fragments
43	
26	Gray shale 79% gr. shale 21% gr. limestone

Elev. 555.4'-22.4'

Elev. 587.5'

10	
21	Topsoil, cinders, brick fragments (fill)
25	
31	Brown clay, trace sand
56	
50	Br. silty clay, trace sand
103	
101	Br. & gr. shale
192	Gr. Shale
82% Rec.	92% gr. shale 8% gr. limestone
90% Rec.	80% gr. shale 20% gr. limestone
100% Rec.	100% gr. shale

Elev. 556.0'-31.5'

Elev. 593.0'

7	Brick, cinders, clay (fill)
6	Silty clay, brick, cinders (fill)
10	Silty clay, cinders (fill)
5	
9	Silty clay, cinders, brick frag. (fill)
12	
57	Br. & gr. clay, sand, gravel, limestone fragments
144	Br. & gr. weathered shale
204	
55% Rec.	75% gr. shale 25% limestone
82% Rec.	79% gr. shale 21% limestone

Elev. 553.0'-40'

Elev. 500'

Elev. 500'

B-10-1 | B-10-2 | B-10-3 | B-10-4 | B-10-5 | B-10-6 | B-10-7

For Boring B-10-8 see Sheet 10 of 13

HAZELET & ERDAL
CONSULTING ENGINEERS
CINCINNATI, OHIO

LOG OF BORINGS

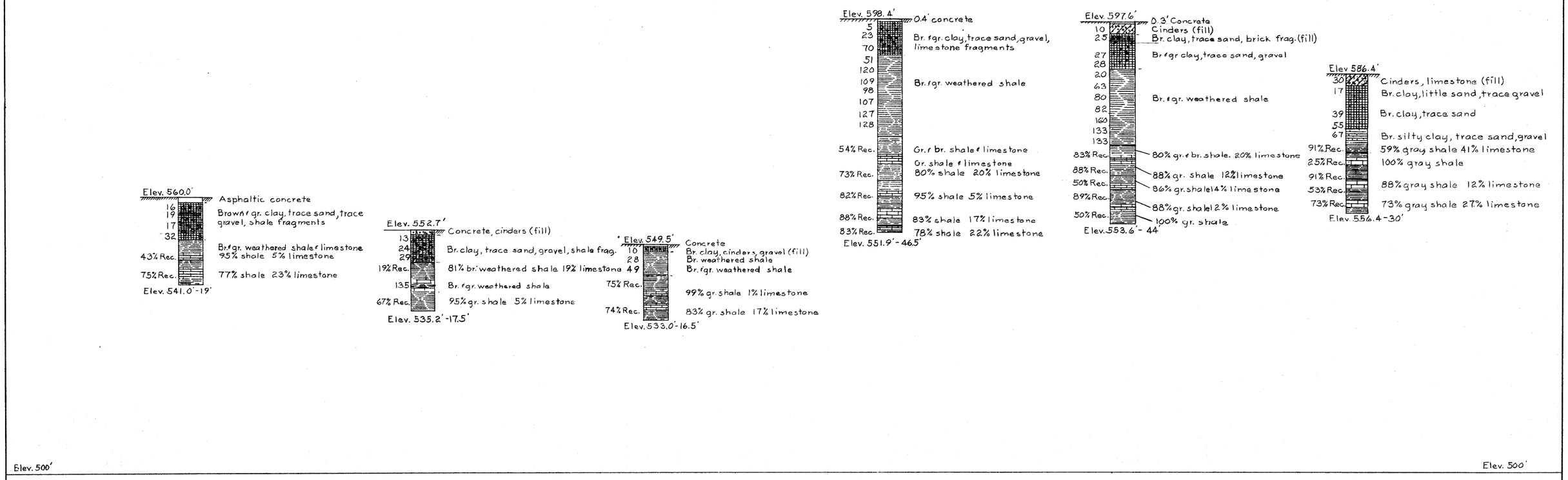
SHEET 5 of 13

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
	ALT		G.N.W.	JHO 5/18/65	

FED. RD. DIV.	STATE	PROJECT	FISCAL YEAR
2	OHIO		

13/20

HAMILTON COUNTY
HAM-71-(1.56) (2.51)



HAZELET & ERDAL
CONSULTING ENGINEERS
CINCINNATI, OHIO

LOG OF BORINGS

SHEET 6 of 13

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
	A.L.T.		G.N.W.	JHO 5/18/65	

FED. RD. DIV.	STATE	PROJECT	FISCAL YEAR
2	OHIO		

14
20

HAMILTON COUNTY
HAM-71-(1.56) (2.51)

Elev. 605.3'
11 Cinders, topsoil, brick (fill)
48 Br. clay, trace sand, trace gravel, shale & limestone fragments
43 Br. weathered shale
60% Rec. Br. & gr. weathered shale (trace limestone)
17% Rec. 99% br. & gr. weathered shale 1% limestone
31% Rec. 92% br. & gr. weathered shale 8% limestone
80% Rec. 95% gr. shale 5% gr. limestone
54% Rec. 95% gr. shale 5% gr. limestone
Elev. 576.3'-29'

R-21-1

Elev. 609.7'
7 Gr. silty clay topsoil & cinders (fill)
26 Br. clay, trace sand, trace gravel,
31 shale & limestone fragments.
46 Br. & gr. clay, trace sand, shale & limestone fragments
60 Br. silty clay, little sand, shale & limestone fragments
53% Rec. 97% gr. shale 3% gr. limestone
63% Rec. 95% gr. shale 5% gr. limestone
51% Rec. 84% gr. shale 16% gr. limestone
75% Rec. 100% gr. shale
60% Rec. 100% gr. shale
Elev. 576.2'-33.5'

R-21-2

Elev. 596.5'
18 Brown weathered shale, limestone fragments
75 Br. & gr. shale, limestone frag.
70 42% Br. & gr. weathered shale 38% limestone
83% Rec. 100% gray shale
90% Rec. 86% gray shale 14% limestone
89% Rec. 100% gray shale
91% Rec. 94% gray shale 6% limestone
100% Rec.
Elev. 576.0'-20.5'

R-21-3

Elev. 594.3'
13 Cinders (fill)
89 Br. & gray weathered shale
97 Gray shale
171
80% Rec. 94% gray shale 6% limestone
61% Rec. 98% gray shale 2% limestone
Elev. 576.3'-18'

R-21-4

Elev. 581.5'
7 Topsoil
7 Clayey sand, brick fragments (fill)
7 Clayey sand, coal fragments (fill)
12 Br. silty clay, little sand
13 Br. & gr. clay, trace sand
47 Br. & gr. clay, trace sand, shale frag.
46 Br. & gr. clay, little sand
48 Brown weathered shale
72% Rec. 94% gr. shale 6% limestone
Elev. 551.5'-30'

B-11-1

Elev. 600.7'
12 Blacktop, sand, gravel and brick (fill)
4 Sand, cinders and brick (fill)
4 Sand, clay, concrete, brick (fill)
4 Sand, clay, trace cinders (fill)
10
9 Sand, gravel and brick (fill)
6 Brick fragments (fill)
4 Sand, cinders, and clay (fill)
4 Cinders (fill)
6 Sand, gravel and cinders (fill)
22 Brown & gray clay, trace sand,
117 shale fragments
143 Brown and gray weathered shale
72% Rec. 90% gray shale 10% limestone
Elev. 555.7'-45'

Elev. 550

B-11-2

Note: A 70# hammer was used on Borings R-21-1 and R-21-2. Blow counts shown on these borings have been changed to equivalent 140# blow counts. (one 140 lb blow = two 70 lb. blows)

HAZELET & ERDAL
CONSULTING ENGINEERS
CINCINNATI, OHIO

LOG OF BORINGS

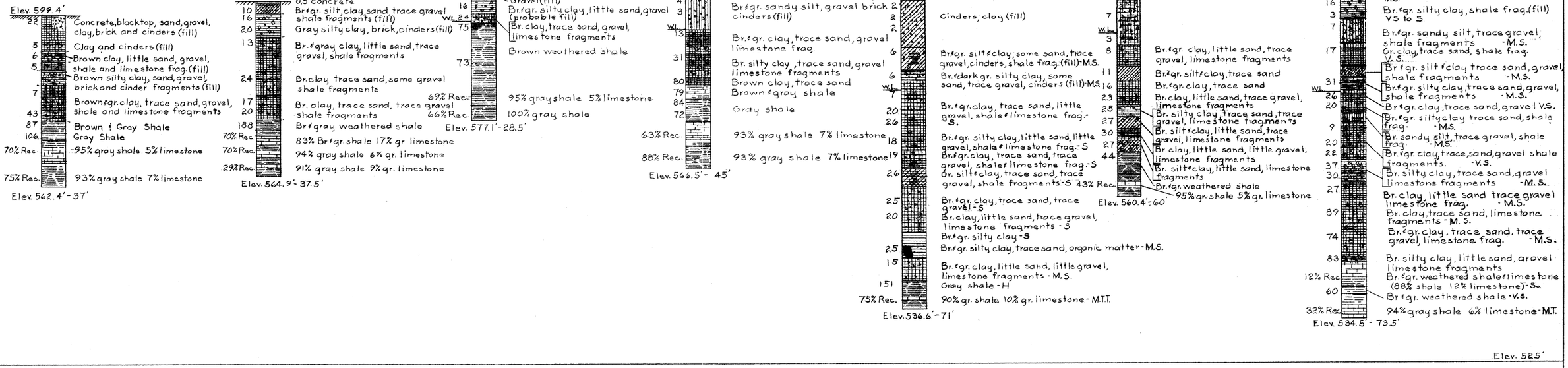
SHEET 7 of 13

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
	ALT		GNW	JHO 5/18/65	

FED. RD. DIV.	STATE	PROJECT	FISCAL YEAR
2	OHIO		

15
20

HAMILTON COUNTY
HAM-71-(1.56) (2.51)



B-11-3 B-11-4 B-11-5 B-11-6 R-26-1 R-23-1 B-12-1

Note: M.S. denotes medium stiff
V.S. denotes very stiff
Sa. denotes soft
S. denotes stiff
H. denotes hard
M.T. denotes moderately tough
M.T.T. denotes moderately tough to tough

HAZELET & ERDAL
CONSULTING ENGINEERS
CINCINNATI, OHIO

LOG OF BORINGS

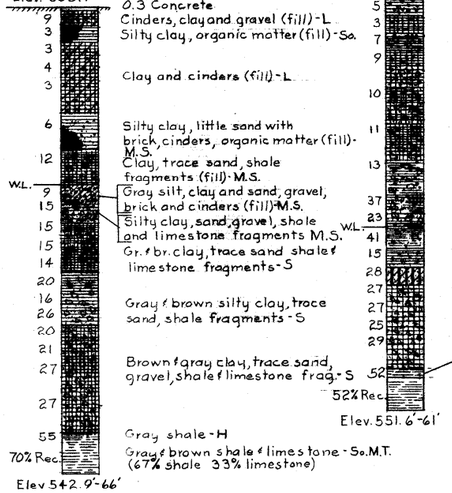
SHEET 8 of 13

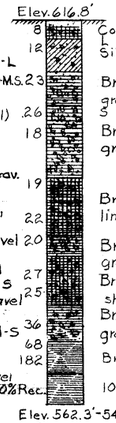
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
	A.L.T.		G.N.W.	JHO 5/18/65	

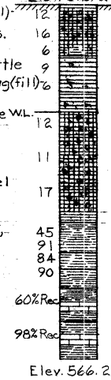
FED. RD. DIV.	STATE	PROJECT	FISCAL YEAR
2	OHIO		

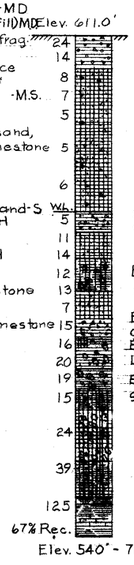
16
20

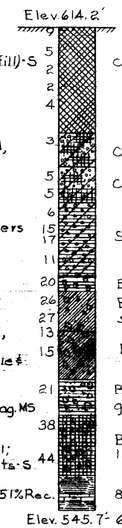
HAMILTON COUNTY
HAM-71-(1.56)(2.51)

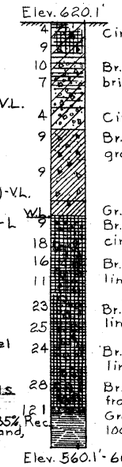












Elev. 525'

Elev. 525'

B-12-2

B-12-3

B-12-4

B-12-5

For Borings B-12-6 and B-12-7 see sheet No. 11 of 13

B-13-1

B-13-2

B-13-3

Note: V.S. denotes very stiff
M.S. denotes medium stiff
M.D. denotes medium dense
V.L. denotes very loose
L. denotes loose
S. denotes stiff
So denotes soft
T. denotes tough
M.T. denotes moderately tough
So.M.T. denotes soft to moderately tough

HAZELET & ERDAL
CONSULTING ENGINEERS
CINCINNATI, OHIO

LOG OF BORINGS

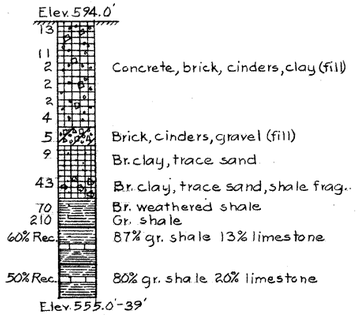
SHEET 9 of 13

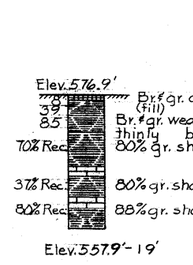
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
	A.L.T.		G.N.W.	JHO 5/18/65	

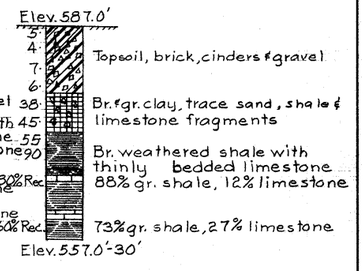
FED. RD. DIV.	STATE	PROJECT	FISCAL YEAR
2	OHIO		

17
20

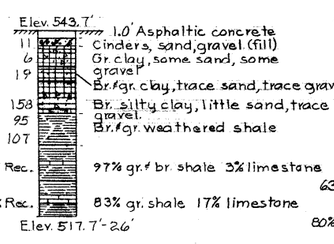
HAMILTON COUNTY
HAM-71-(1.56)(2.51)

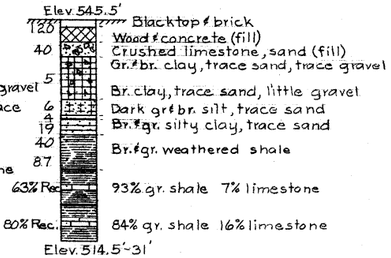












Elev. 500

Elev. 500

B-8-9 B-10-8 R-15-5 R-15-6 R-16-4 R-16-5

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CINCINNATI, OHIO

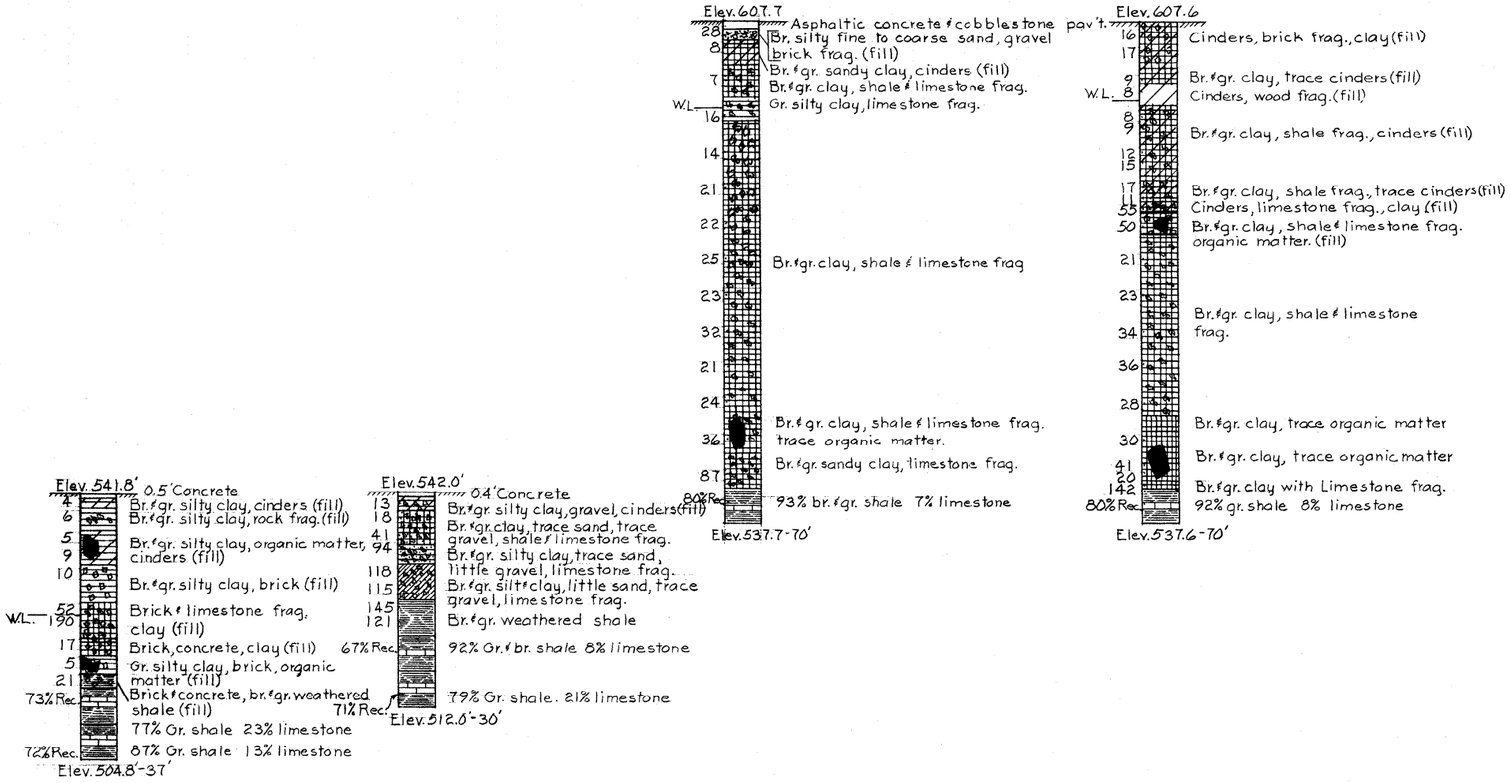
LOG OF BORING
SHEET 10 of 13

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
	ALT		GNW	JHO 5/18/65	

FED. RD. DIV.	STATE	PROJECT	FISCAL YEAR
2	OHIO		

18
20

HAMILTON COUNTY
HAM-71-(1.56)(2.51)



B-7-1 B-7-2 B-12-6 B-12-7

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CINCINNATI, OHIO

LOG OF BORINGS

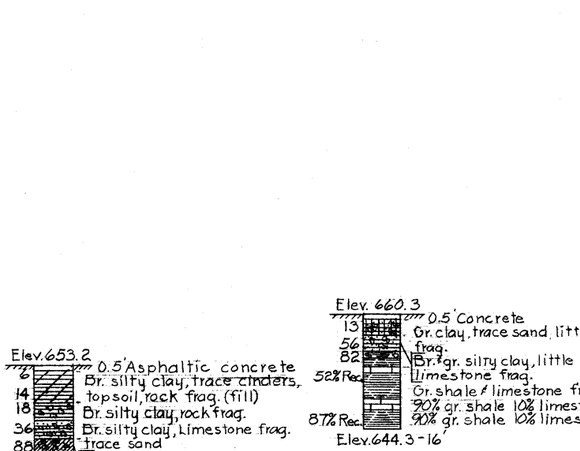
SHEET 11 of 13

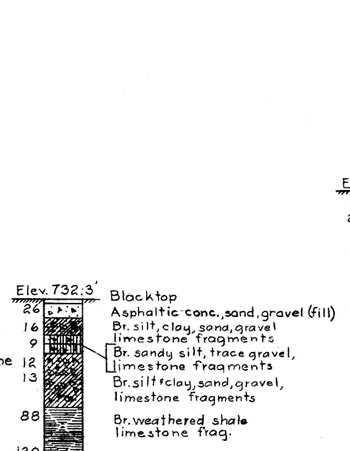
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
	ALT.		GNW	JHO 5/18/65	

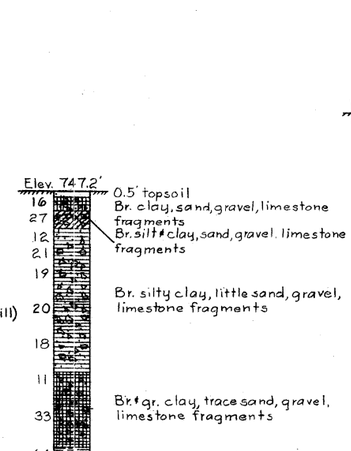
FED. RD. DIV.	STATE	PROJECT	FISCAL YEAR
2	OHIO		

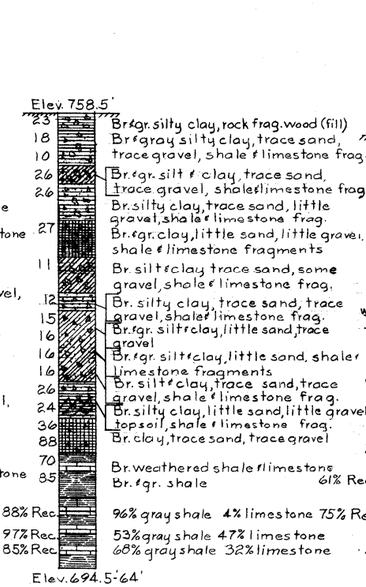
19
20

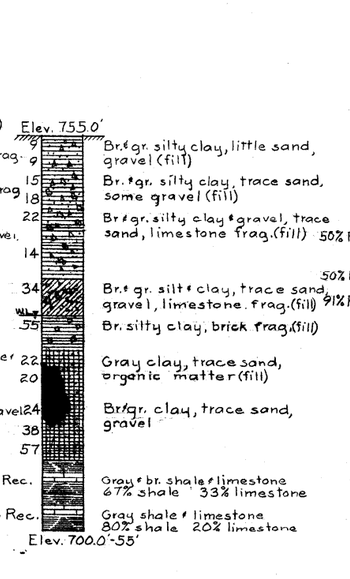
HAMILTON COUNTY
HAM-71-(1.56) (2.51)

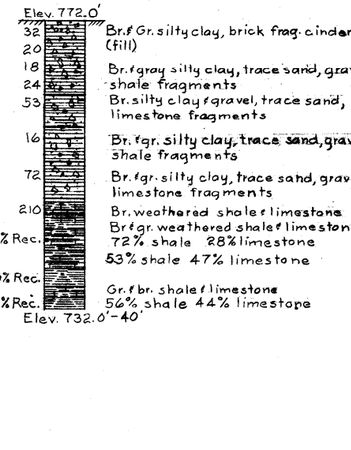












Elev. 680'

Elev. 680'

Elev. 600

B-19-15 B-19-16 R-41-1 R-41-2 R-41-3 R-41-4 R-41-5

HAZELET & ERDAL
CONSULTING ENGINEERS
CINCINNATI, OHIO

LOG OF BORINGS

SHEET 12 of 13

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
	ALT		G.N.W.	JJH 5/20/65	

FED. RD. DIV.	STATE	PROJECT	FISCAL YEAR
2	OHIO		20/20

HAMILTON COUNTY
HAM-71-(1.56)(2.51)

Elev 765.7'

19	Br.&gr. clay, gravel, trace sand limestone fragments
11	
11	
12	Br. & gr. silty clay, little sand, gravel,
20	limestone fragments.
11	Br.&gr. clay, sand, gravel, limestone frag.
	Br. silt & clay, sand, limestone frag.
13	Br.&gr. silty clay, sand, gravel, limestone fragments
16	
24	Br.&gr. silty clay, trace sand, gravel,
109	limestone fragments
65	
210	Br. & gr. clay, trace sand, gravel
119	limestone frag.
	Br.&gr. weathered shale
89% Rec.	70% gray shale 30% limestone

Elev. 720.7'-45'

Elev. 766.2'

24	Asphaltic concrete
17	Br.&gr. silty clay rock frag.
12	Br.&gr. silty clay, trace sand, gravel
13	limestone fragments
10	Br silt & clay, little sand, gravel,
	limestone fragments
10	Br. silty clay, trace sand, gravel,
10	limestone fragments
10	Br.&gr. sandy silt, little sand, gravel,
	limestone fragments
15	Br.&gr. silty clay, trace sand, gravel,
	limestone fragments
51	Br.&gr. clay, trace sand, gravel,
57	limestone fragments
139	Br.&gr. silty clay, trace sand, gravel,
131	limestone fragments
133	Br.&gr. weathered shale
81% Rec.	50% br.&gr. shale 50% limestone
78% Rec.	68% gray shale 32% limestone

Elev. 709.2'-57'

Elev. 766.2'

17	1' Blacktop and brick
21	Br. silty clay, shale & limestone frag. (fill)
12	Br.&gr. silty clay, little sand, little
	gravel, shale & limestone fragments
17	Br.&gr. silt & clay, little sand, little gravel
17	shale & limestone fragments
	Br. sandy silt, some gravel, shale &
	limestone fragments
22	Br. silt, clay, gravel, little sand,
	shale & limestone fragments
WL. 20	Br.&gr. clay, trace sand, little gravel,
8	shale & limestone fragments
	Br.&gr. clay, trace sand, shale &
16	limestone fragments
	Br. silty clay, little sand, some gravel
47	shale & limestone fragments
42	Br.&gr. silty clay little sand,
	shale & limestone fragments
47	Br. clay, trace sand, trace gravel
140	shale & limestone fragments
	Br.&gr. weathered shale
32% Rec.	62% br.&gr. weathered shale 38%
	limestone
62% Rec.	62% br.&gr. weathered shale 38%
	limestone

Elev. 710.2'-56'

Elev. 747.8'

9	Topsoil, cinders (fill)
43	Br.&gr. silty clay, little sand
31	some gravel, rock fragments
13	Br.&gray silty clay, little sand
16	little gravel, shale fragments
	Br.&gray silt & clay, little sand
	some gravel, organic matter,
12	rock fragments
8	Br.&gr. clay, trace sand, little gravel,
7	organic matter, rock fragments
7	Br.&gr. silty clay, trace sand, trace gravel,
2	topsoil
3	Br.&gr. silt & clay, little sand, trace gravel,
9	topsoil
12	Gr. clay, trace sand, organic matter
11	Gr. silty clay, trace sand, organic matter
	Br.&gr. silt & clay, trace sand, organic
.11	matter
	Br. clay, trace sand
42	Br.&gr. silty clay, little sand, little gravel,
	topsoil
	Br.&gray silty clay, trace sand, organic
58	matter
80% Rec.	Br.&gray silty clay, trace sand
	55% gray shale 45% gr. limestone

Elev 689.8'-58'

Elev. 773.2'

2	
8	Cinders, topsoil, clay, brick, concrete
3	(Fill)
7	
4	
9	Br.&gr. silty clay, little sand, some gravel
	cinders, top soil, brick, concrete (fill)
9	Br.&gr. silt, clay, little sand, little
48	gravel, cinders, topsoil, brick, conc. (Fill)
11	Br.&gr. shale & clay (fill)
11	Br.&gr. silt & clay, some sand, little gravel,
12	shale fragments (fill)
6	Br.&gr. silt, clay, gravel, little sand,
	weathered shale. (fill)
13	Cinders (fill)
17	Br.&gr. silt, clay, gravel, little sand
	shale & limestone fragments
40	
19	Br.&gr. silty clay, trace sand, some
	gravel, limestone & shale fragments
13	Br.&gr. silty clay, shale & limestone
	fragments
62	
12	Brown & gray clay, trace sand
62% Rec.	55% br. weathered shale 45% limestone
63% Rec.	66% gray shale, 34% limestone

Elev. 709.8'-63'

Elev. 700'

Elev. 700'

B-20-1 B-20-2 B-20-3 B-20-4 B-20-6

HAZELET & ERDAL
CONSULTING ENGINEERS
CINCINNATI, OHIO

LOG OF BORINGS

SHEET 13 of 13

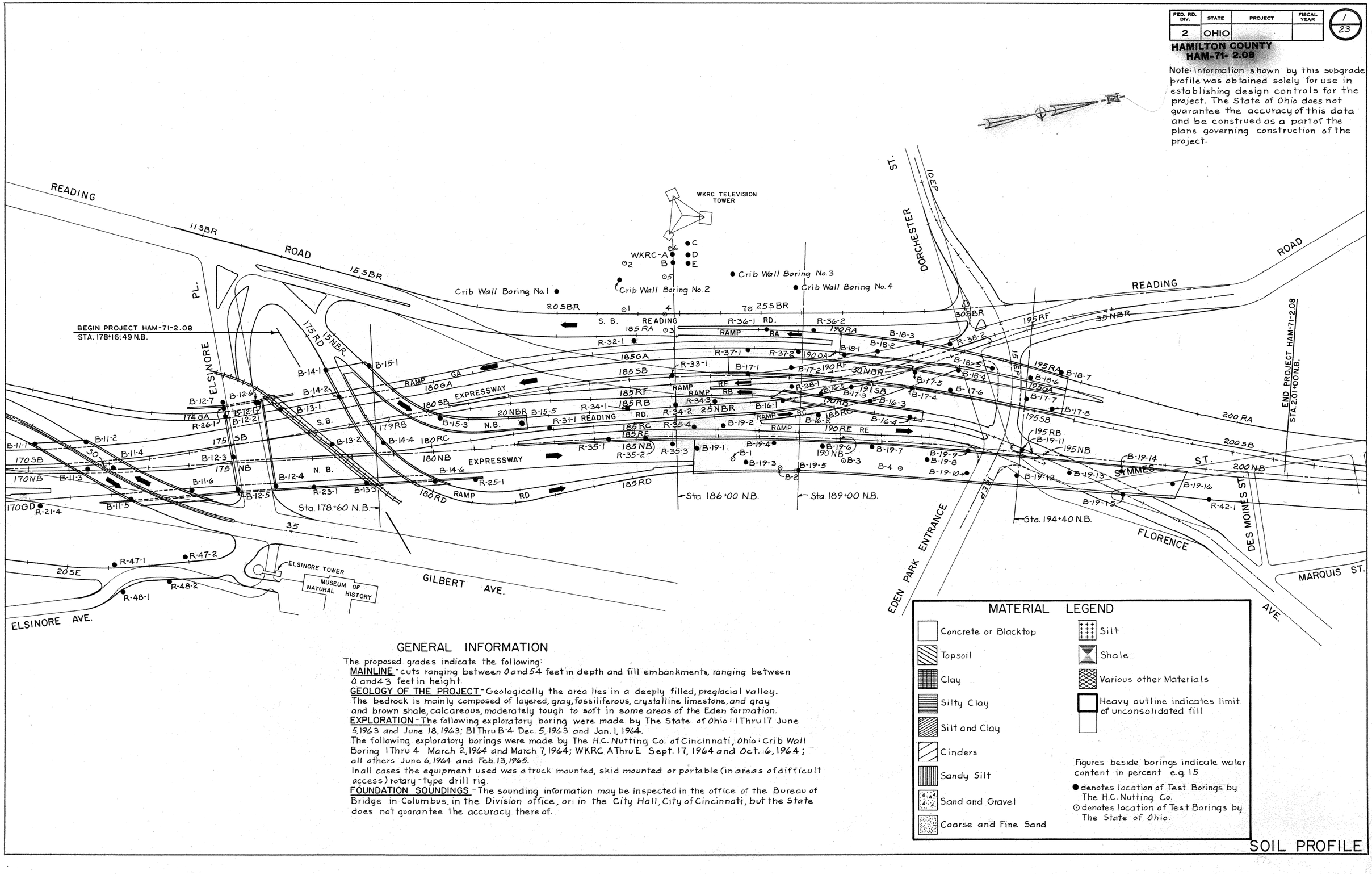
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
	ALT		G.N.W.	JHo 5/20/65	

FED. RD. DIV.	STATE	PROJECT	FISCAL YEAR
2	OHIO		

1/23

HAMILTON COUNTY
HAM-71- 2.08

Note: Information shown by this subgrade profile was obtained solely for use in establishing design controls for the project. The State of Ohio does not guarantee the accuracy of this data and be construed as a part of the plans governing construction of the project.



GENERAL INFORMATION

The proposed grades indicate the following:

MAINLINE - cuts ranging between 0 and 54 feet in depth and fill embankments, ranging between 0 and 43 feet in height.

GEOLOGY OF THE PROJECT - Geologically the area lies in a deeply filled, preglacial valley. The bedrock is mainly composed of layered, gray, fossiliferous, crystalline limestone, and gray and brown shale, calcareous, moderately tough to soft in some areas of the Eden formation.

EXPLORATION - The following exploratory boring were made by The State of Ohio: 1 Thru 17 June 5, 1963 and June 18, 1963; B1 Thru B-4 Dec. 5, 1963 and Jan. 1, 1964.
The following exploratory borings were made by The H.C. Nutting Co. of Cincinnati, Ohio: Crib Wall Boring 1 Thru 4 March 2, 1964 and March 7, 1964; WKRC A Thru E Sept. 17, 1964 and Oct. 6, 1964; all others June 6, 1964 and Feb. 13, 1965.
In all cases the equipment used was a truck mounted, skid mounted or portable (in areas of difficult access) rotary-type drill rig.

FOUNDATION SOUNDINGS - The sounding information may be inspected in the office of the Bureau of Bridge in Columbus, in the Division office, or in the City Hall, City of Cincinnati, but the State does not guarantee the accuracy there of.

MATERIAL LEGEND

- Concrete or Blacktop
- Topsoil
- Clay
- Silty Clay
- Silt and Clay
- Cinders
- Sandy Silt
- Sand and Gravel
- Coarse and Fine Sand
- Silt
- Shale
- Various other Materials
- Heavy outline indicates limit of unconsolidated fill

Figures beside borings indicate water content in percent e.g. 15

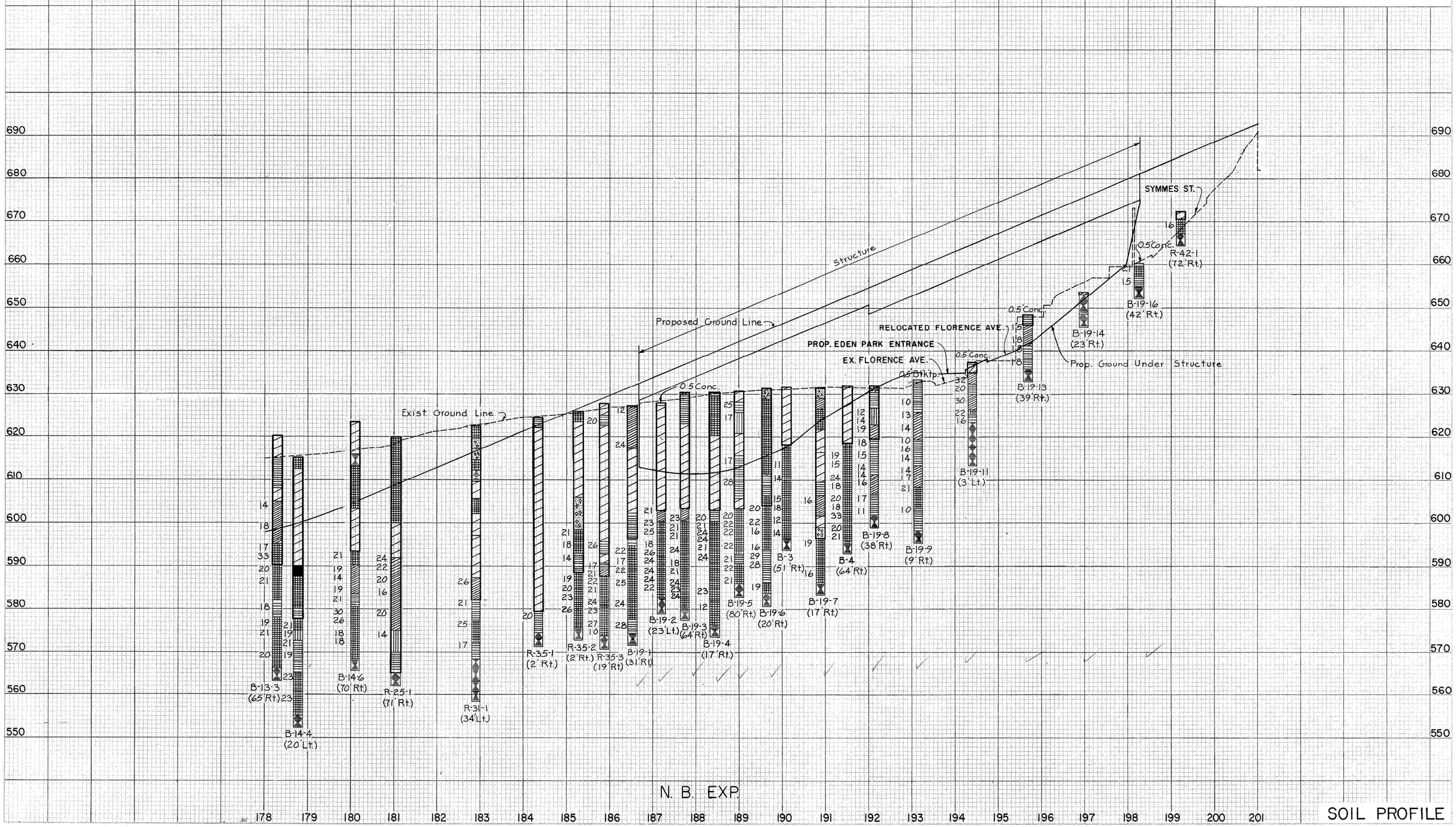
● denotes location of Test Borings by The H.C. Nutting Co.
⊙ denotes location of Test Borings by The State of Ohio.

SOIL PROFILE

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

2
23

HAMILTON COUNTY
HAM-71- 2.08

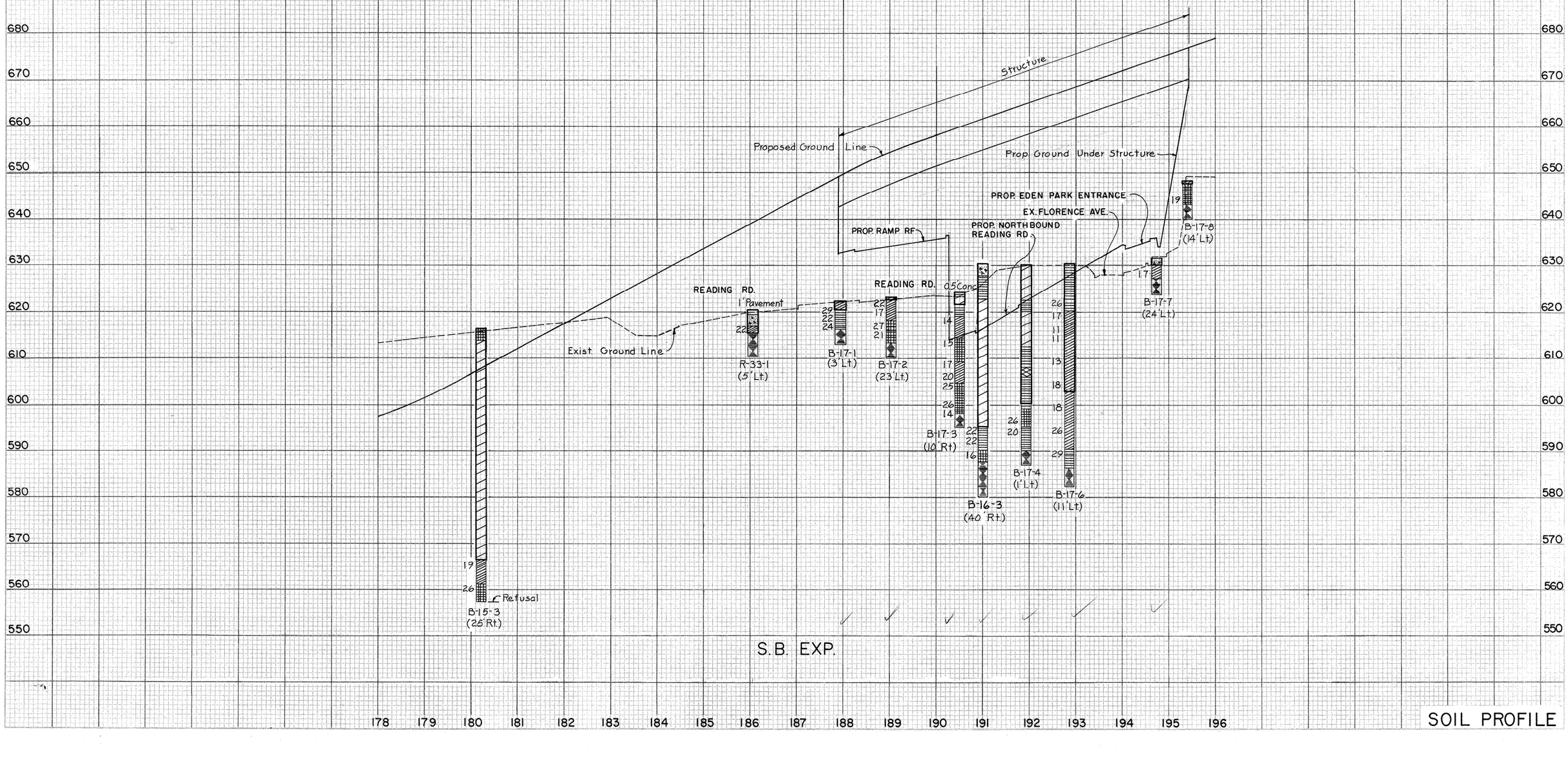


SOIL PROFILE

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

3
23

HAMILTON COUNTY
HAM-71- 2.08



SOIL PROFILE

FED. HD. DIVISION	STATE	PROJECT	
2	OHIO		

4
23

HAMILTON COUNTY
HAM-71- 2.08

680
670
660
650
640
630
620
610
600
590
580
570
560
550

Proposed Ground Line

Exist. Ground Line

READING RD.

R-32-1
(28' Lt.)

R-37-1
(4' Rt.)

R-37-2
(4' Rt.)

B-18-1
(5' Rt.)

B-18-2
(15' Lt.)

B-18-3
(45' Lt.)

B-18-4
(10' Rt.)

B-18-5
(10' Lt.)

B-18-6
(5' Lt.)

B-18-7
(35' Lt.)

B-15-1
(62' Lt.)

B-14-2
(10' Rt.)

READING RD.

0.5' Topsoil 0.3' Conc. 0.5' Conc.

FLORENCE AVE.

1' Conc. 0.3' Conc. 0.5' Conc.

RAMP GA

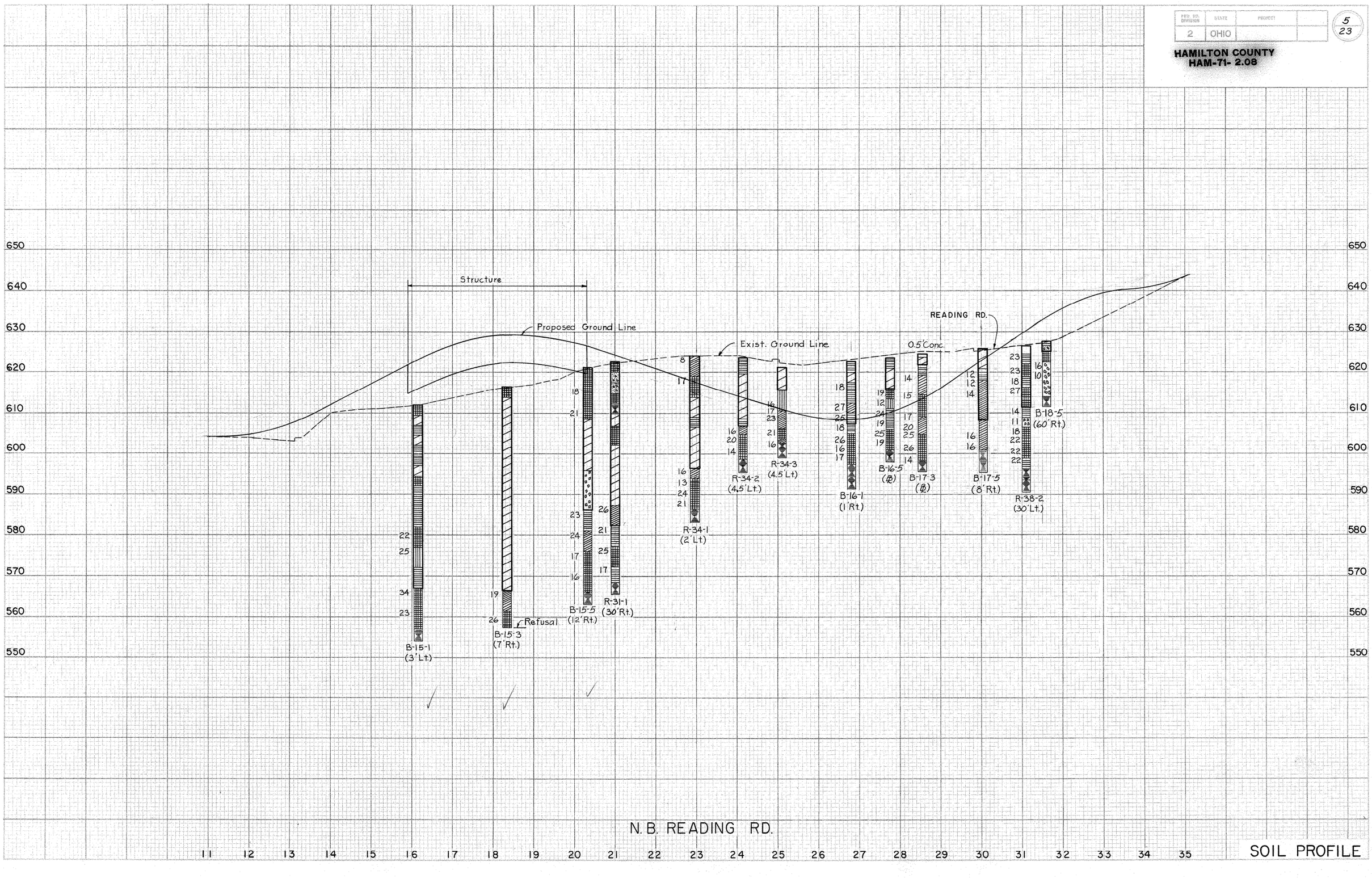
177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196

SOIL PROFILE

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

5
23

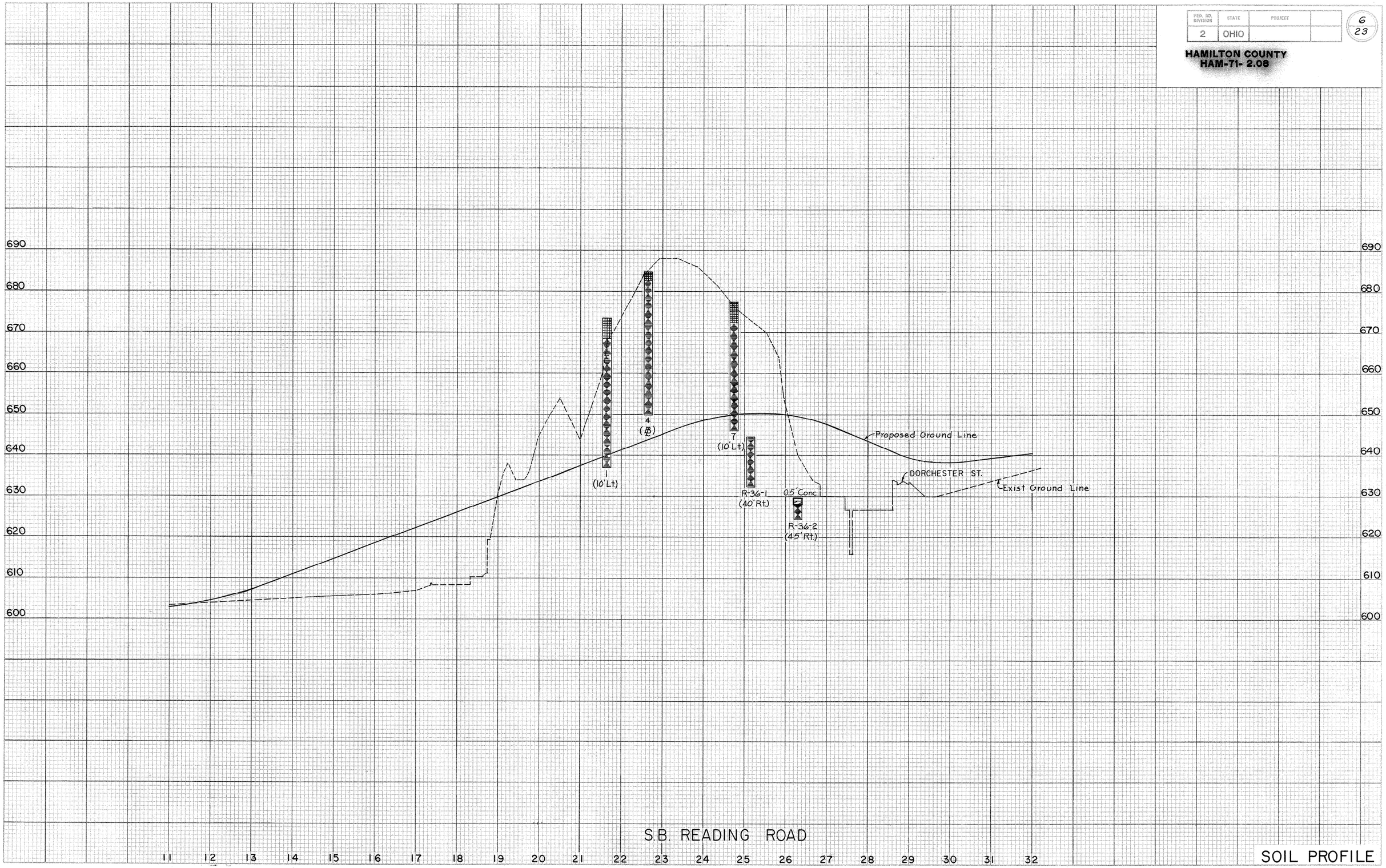
HAMILTON COUNTY
HAM-71- 2.08



FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

6
23

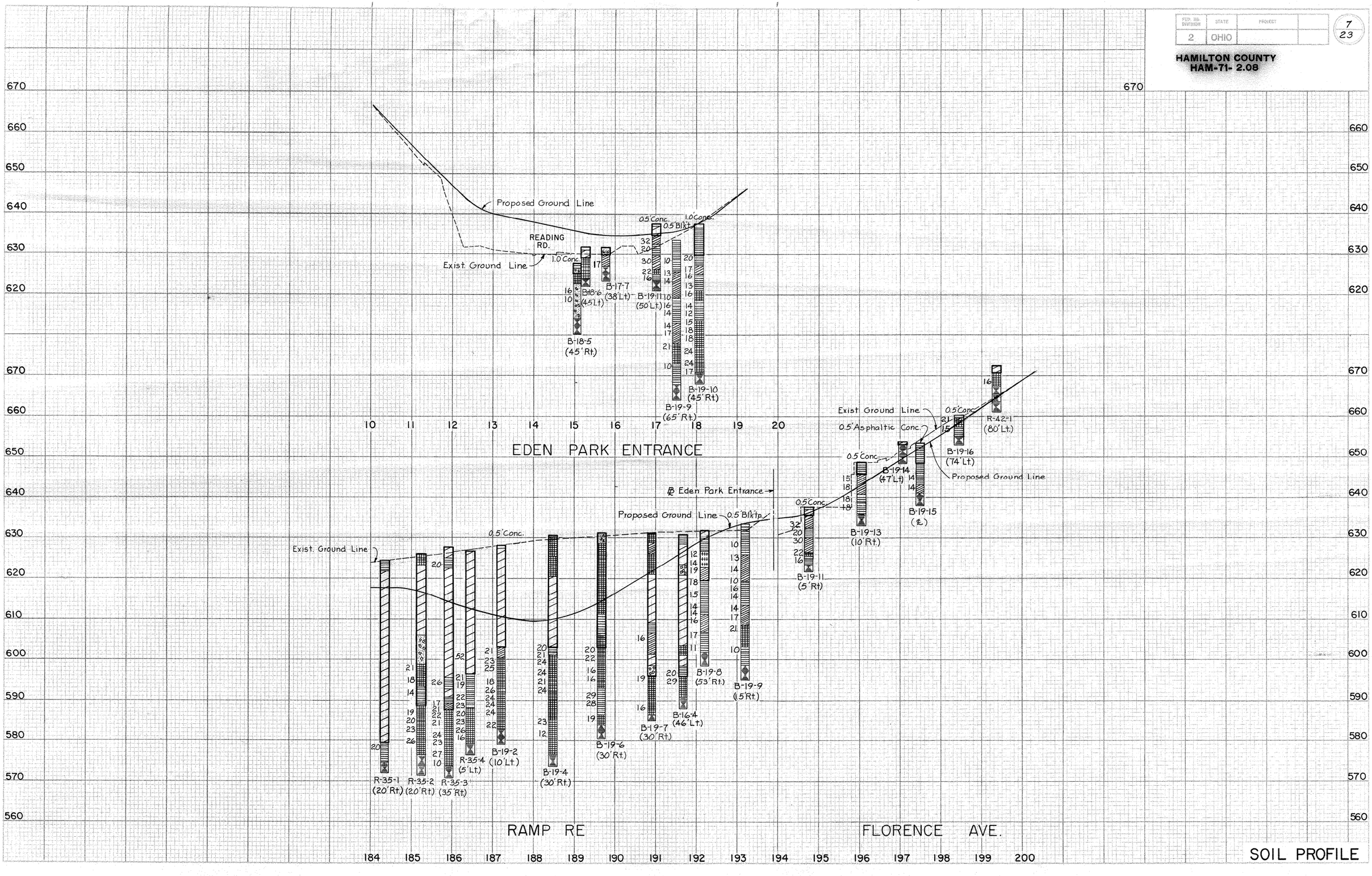
HAMILTON COUNTY
HAM-71- 2.08



FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

7
23

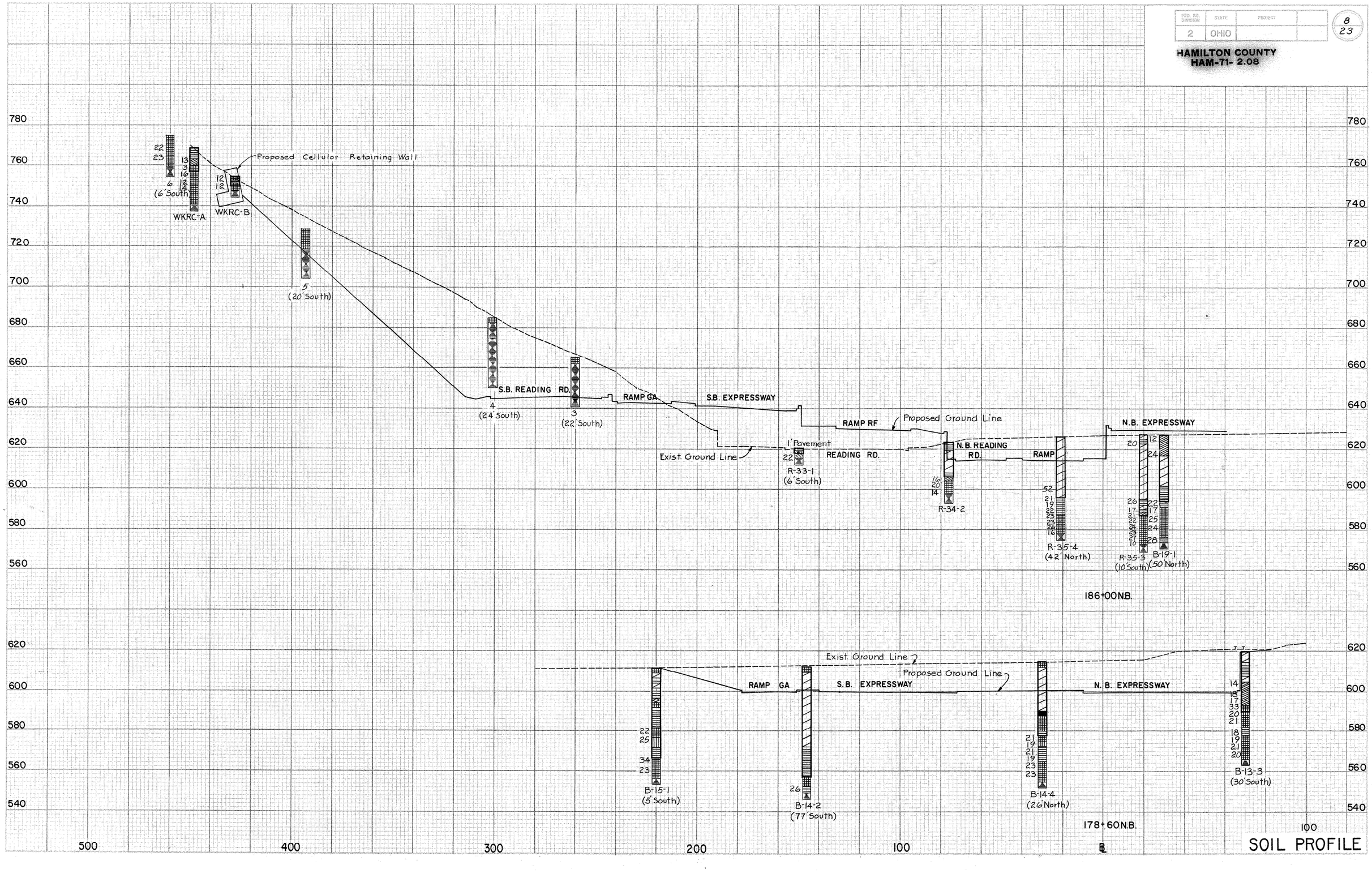
HAMILTON COUNTY
HAM-71- 2.08



FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

8
23

HAMILTON COUNTY
HAM-71- 2.08

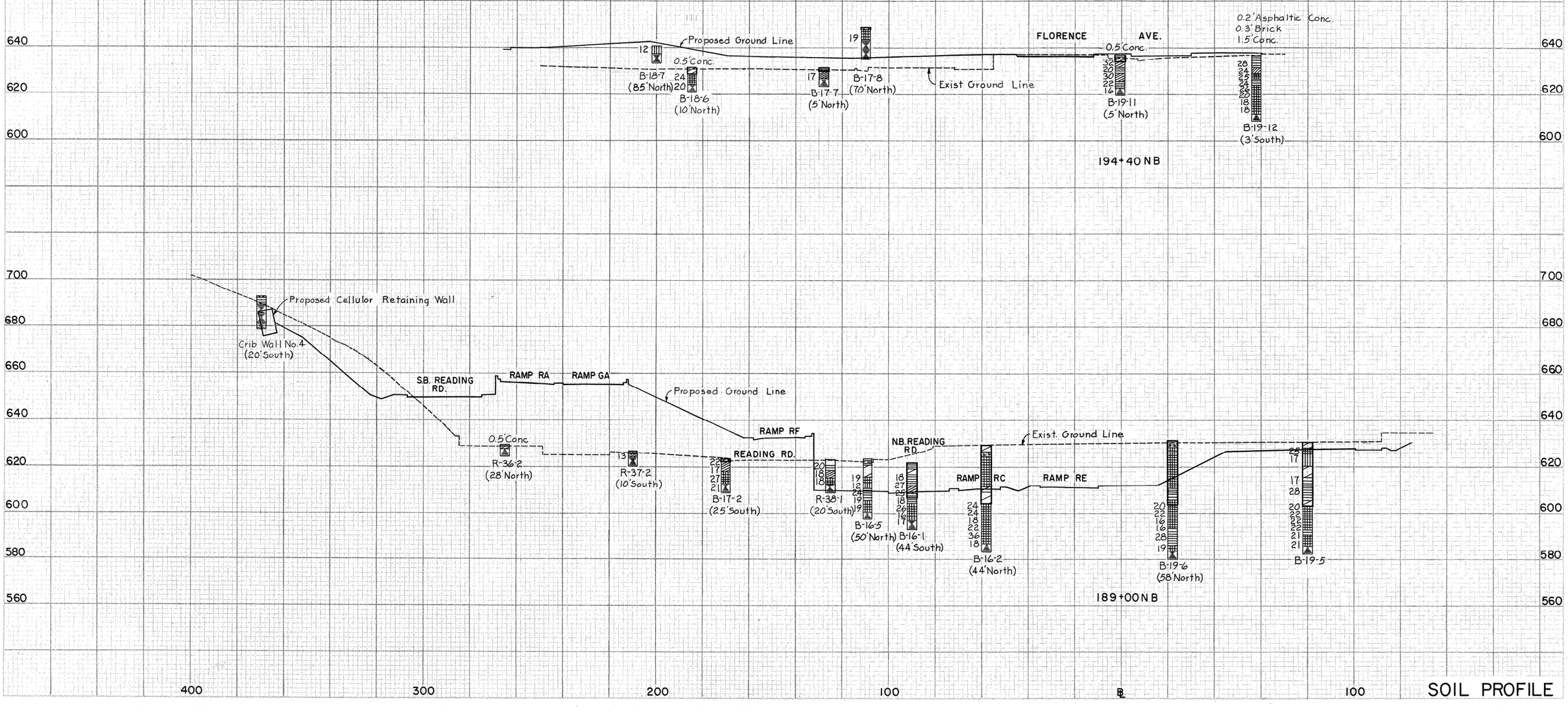


SOIL PROFILE

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

9
23

HAMILTON COUNTY
HAM-71- 2.08



SOIL PROFILE

MICROFILMED
SEP 16 1982

FED. RD. DIV.	STATE	PROJECT	FISCAL YEAR
2	OHIO		

10
23

HAMILTON COUNTY
HAM-71- 2.08

B-14-1

Elev. 611.6'

14	Sandy clay, gravel (fill)
4	Cinders, brick (fill)
10	Cinders, brick, clay (fill)
6	
14	Cinders, rock fragments (fill)
20	Sand, rock fragments (fill)
6	
5	Cinders, brick, wood, lime clay, organic matter (fill)
9	
13	
3	Cinders, clay (fill)
4	
WL 2	Cinders, rock fragments (fill)
7	Cinders, clay (fill)
15	
19	
14	Silty clay, rock fragments (fill)
112	Silty clay, rock fragments brick, cinders (fill)
38% Rec.	90% gr. shale 10% limestone
90% Rec.	87% gr. shale 13% limestone

Elev. 538.6'- 73'

B-14-2

Elev. 612.2'

31	Clay, gravel (fill)
5	
10	
10	
9	
7	Cinders, clay (fill)
6	
5	
5	
2	
4	Cinders, clay, glass organic matter. (fill)
6	
4	
WL 4	
23	
6	Silty clay organic matter wood, sand, gravel (fill)
15	
31	Br. f gr. Clay, limestone frag.
15	Br. & Gr. Silty clay, sand, gravel limestone fragments
33% Rec.	Gr. shale & limestone (75% shale 25% limestone)

Elev. 544.2'- 68'

B-14-4

Elev. 615.1'

26	Sandy clay, gravel, cinders (fill)
2	
2	
2	
1	Cinders, organic matter, clay (fill)
2	
3	
2	
6	Organic matter (fill)
7	
17	Clay, wood, brick, organic clay, organic matter. (fill)
21	
WL 16	Silty clay, sand, gravel, brick frag. (fill)
10	Br & gr. clay, trace sand, gravel
21	Gr. sandy silt, trace gravel, shale & limestone fragments
20	
28	Br & gr. silty clay, sand, gravel limestone fragments
17	
20	Br. & gr clay, trace sand, gravel, limestone fragments, topsoil
200	Br. weathered shale & limestone
77% Rec.	80% gr. shale 20% limestone

Elev. 549.6'- 65.5'

B-14-6

Elev. 623.5'

15	Cinders, sand, gravel, brick frag. (fill)
17	
13	Gr. weathered shale & brick frag (fill)
13	Clay, cinders, brick fragments (fill)
11	
7	Cinders, brick, clay, sand, gravel (fill)
7	
7	
9	Br. & gr. clay, trace sand, trace gravel, shale & limestone frag.
26	Br. & gr. silt & clay, little sand, trace gravel, shale fragments
16	Gr. silt & clay, little sand, some gravel, shale & limestone frag
14	Br. & gr. silty clay, trace sand, shale & limestone fragments
13	Gr. clay, trace sand, limestone frag.
26	Br. & gr. clay, trace sand, limestone frag.
37	Br. clay, trace sand
102	Gray shale
83% Rec.	95% gr. shale 5% gr. limestone

Elev 562.5'-61'

R-25-1

Elev. 620.0'

14	
11	
9	Clay, sand, cinders, brick (fill)
6	
11	
13	
8	
7	
5	Cinders & clay (fill)
7	
WL 13	Br. & gr. silt & clay, little sand, trace gravel, shale fragments (fill)
15	
18	
19	Br. & gr. silt & clay, little sand, trace gravel, shale & limestone frag. (fill)
19	
17	Gr. sandy silt & gravel, limestone frag. (fill)
13	Silty clay, concrete, brick frag. (fill)
156	Gr. shale
63% Rec.	89% gr. shale 11% gr limestone

Elev. 559.5'-60.5'

Elev. 525'

B-14-1 B-14-2 B-14-4 B-14-6 R-25-1

HAZELET & ERDAL
CONSULTING ENGINEERS
CINCINNATI, OHIO

LOG OF BORINGS

SHEET 1 of 14

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
	A.L.T.		G.N.W.	JHO 7/8/65	

MICROFILMED
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2	OHIO		

11/23

HAMILTON COUNTY
HAM-71-2.08

Elev. 612'

17	Sandy clay, cinders, brick (fill)
5	Cinders (fill)
6	Silty clay, cinders (fill)
4	Cinders (fill)
WL 5	Silty clay, cinders (fill)
17	Silty clay, cinders (fill)
21	Wood, brick, cinders (fill)
13	Brick, clay (fill)
10	
10	Silty clay, cinders, brick (fill)
6	
10	Clay, little sand (fill)
6	Sandy silt, metal fragments (fill)
14	Silty clay (fill)
17	Br. f gr. clay, little sand, gravel
13	
91	Br. f gr. weathered shale
	80% gr. shale 20% limestone

Elev. 549'- 63'

B-15-1

Elev. 616.5

12	Clay, fine gravel, cinders (fill)
3	
2	Cinders, clay, rock frag. (fill)
5	
7	Cinders, clay, organic matter (fill)
3	
8	Cinder, wood (fill)
6	
5	Cinders, clay, organic matter (fill)
8	
4	Cinders, brick, organic matter. (fill)
6	
4	Cinders, clay, organic matter (fill)
6	
WL 2	
4	Cinders clay, rock frag. (fill)
23	Br. f gr. elastic silt, clay some sand
	gravel. limestone frag., fine sand layers
37	Br. f gr. clayey sand f gravel, limestone frag.
	Refusal

Elev. 557.5-59'

B-15-3

Elev. 621.1'

19	Sandy clay, cinders (fill)
5	
6	Clay, trace sand, gravel, limestone
9	fragments (fill)
6	
7	
4	Cinders (fill)
4	
7	
9	
6	Brick (fill)
5	
WL 2	
14	Br f gr. silty clay, trace sand,
	limestone frag.
11	Br. f gr silt f clay, little sand
	limestone fragments
23	
49	Br. clay, trace sand, gravel,
	limestone frag.
88	Br. f gr. weathered shale
	79% gr. shale 21% limestone

Elev. 556.1'-65'

B-15-5

Elev. 622.5'

29	Clay, brick, cinders (fill)
9	Sand, gravel, cinders, clay, brick frag. (fill)
11	Sand, gravel, brick (fill)
6	Clay, cinders, brick (fill)
14	Weather shale, cinders (fill)
6	Cinders, sand, organic matter (fill)
5	
5	Clay f cinders (fill)
4	Cinders f organic matter (fill)
4	
4	
4	Cinders (fill)
4	
12	Dark gr. silt f clay, trace sand, trace
	gravel, cinders (fill)
22	Br. f gr. silty clay, trace sand
25	Br. clay, little sand, little gravel,
	limestone fragments
28	Br. silty clay, trace sand, trace
	gravel, limestone fragments
39	Br f gr. weathered shale
81% Rec.	80% gr. shale 20% gr. limestone

Elev. 558.5'-64'

R-31-1

Elev. 550

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SHEET 2 of 14

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FED. RD. DIV.	STATE	PROJECT	FISCAL YEAR
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HAMILTON COUNTY
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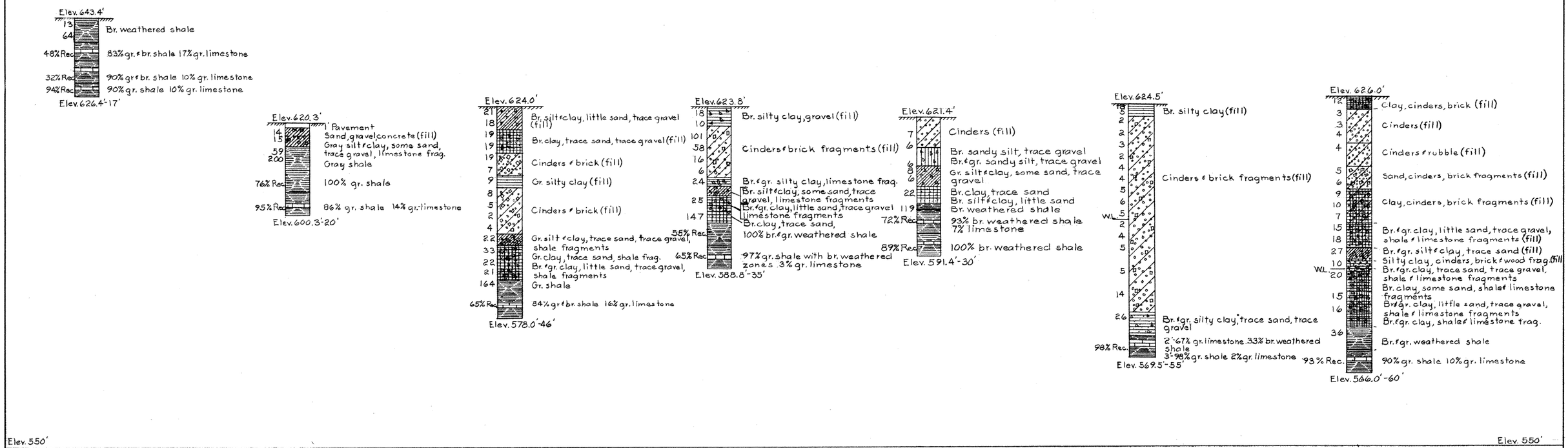
SEP 16 1982



Note: A 35 lb hammer was used on Boring R-32-1. Blow counts shown on this boring have been changed to equivalent 140 lb. blow counts.
(one 140 lb. blow = four 35 lb. blows)

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CINCINNATI, OHIO

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SHEET 3 of 14

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
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2	OHIO		

13
23

HAMILTON COUNTY
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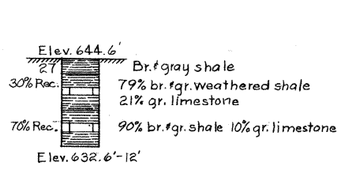
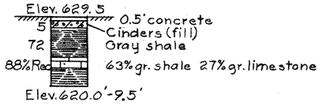
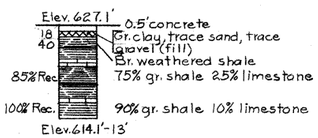


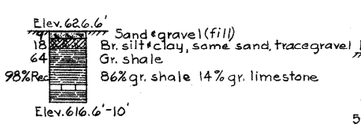
R-36-1



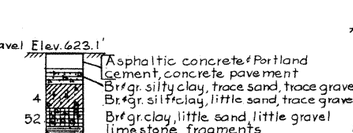
R-36-2



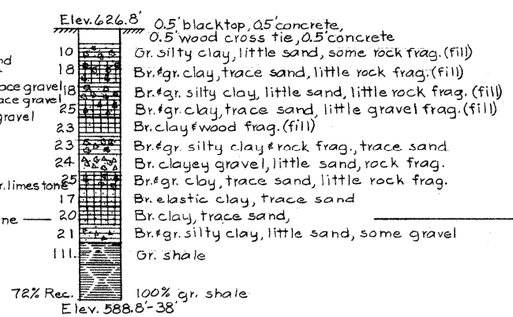
R-37-1



R-37-2



R-38-1



R-38-2

Elev. 600 — Elev. 600

Note: A 35# hammer was used on Boring R-36-1. Blow counts shown on this boring have been changed to equivalent 140# blow counts.
(one 140 lb. blow = four 35lb blows)

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HAMILTON COUNTY
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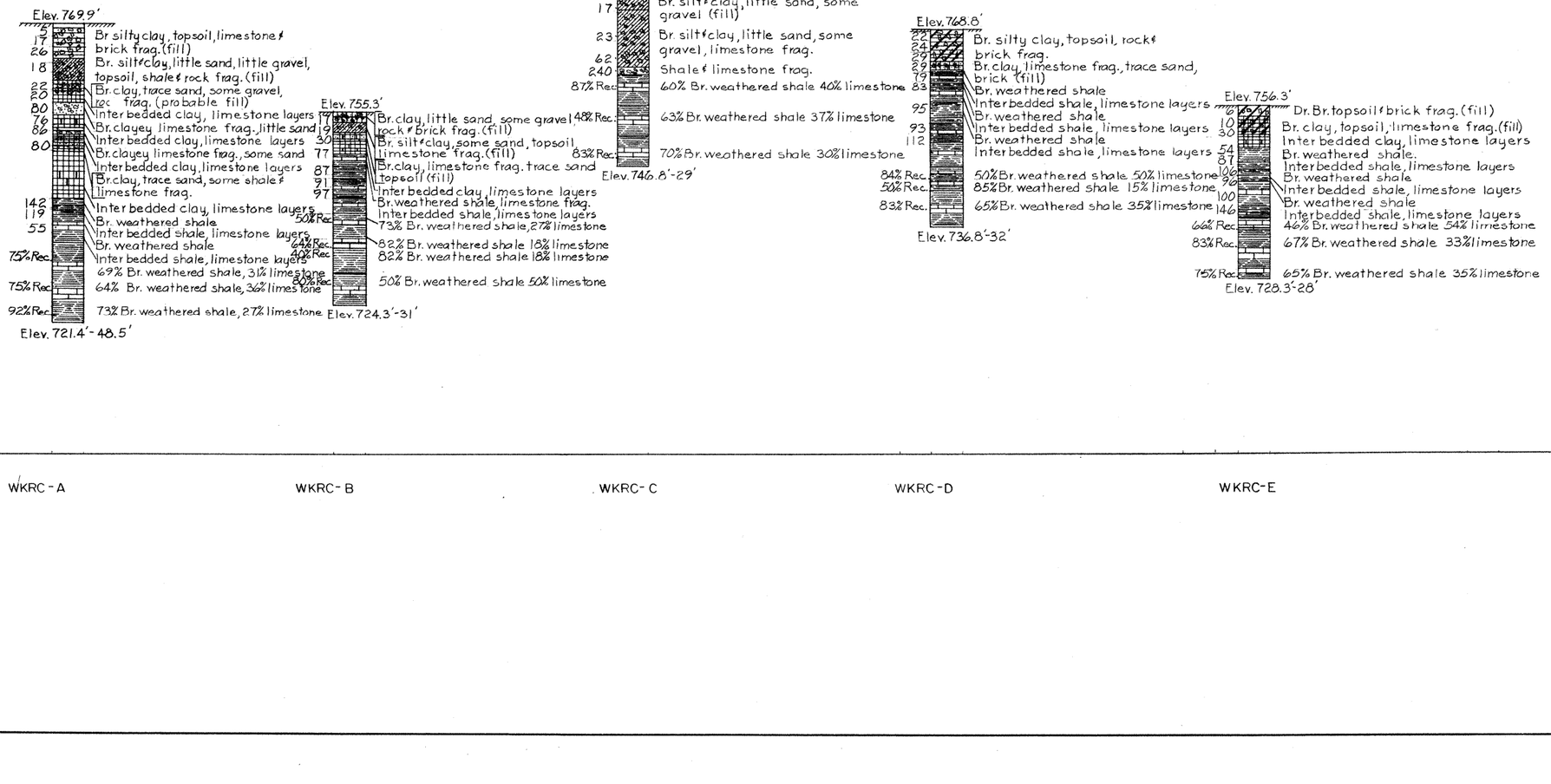

WKRC - A

WKRC - B

WKRC - C

WKRC - D

WKRC - E

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DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
	ALT.		GNW	JAO 7/8/65	

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2	OHIO		

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23

HAMILTON COUNTY
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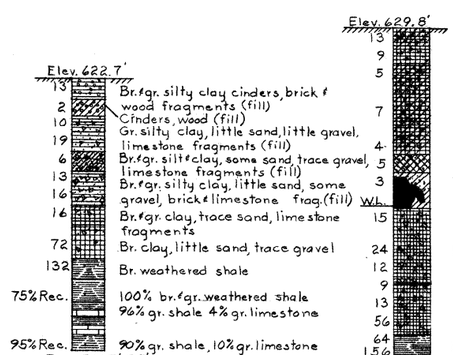

Elev. 550'

Elev. 550'

B-16-1 B-16-2 B-16-3 B-16-4 B-16-5 B-17-1 B-17-2

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	ALT		G.N.W.	JHO 7/8/65	

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2	OHIO		

16
23

HAMILTON COUNTY
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Elev. 624.2'

20	0.5' concrete
25	Cinders, brick (fill)
35	Br. silty clay, limestone & shale frag
18	Br. & gr. silt & clay, little sand, trace gravel, shale & limestone frag.
23	Br. & gr. clay, trace sand, shale & limestone fragments
26	Br. silt & clay, little sand, some gravel, shale & limestone fragments
14	Br. & gr. silt & clay, little sand, trace gravel
20	shale & limestone fragments
20	Br. & gr. clay, little sand, trace gravel
W.L. 19	shale & limestone fragments
	Br. & gr. clay, trace sand
	Br. & gr. weathered shale
82% Rec.	100% br. & gr. weathered shale
	78% gr. shale 22% gr. limestone

Elev. 590.7'-33.5'

Elev. 630.1'

8	Cinders, sand, brick fragments (fill)
20	
10	
4	Gr. silty clay (fill)
12	Cinders, brick fragments (fill)
9	
35	Br. silty clay, cinders (fill)
21	
18	Wood fragments (fill)
8	Br. & gr. silty clay, wood frag. (fill)
36	Br. & gr. silty clay
W.L. 18	Br. & gr. clayey gravel, some
23	sand, limestone fragments
25	
40	Br. silty clay, gravel, little sand, limestone fragments
112	Gr. shale
50% Rec.	Gr. shale, limestone

Elev. 581.1'-49'

Elev. 625.8'

18	Cinders, brick, sand (fill)
8	Br. & gr. silty clay, trace sand, trace
11	gravel, brick fragments (fill)
21	Br. & gr. silt & clay, little sand, trace gravel (fill)
22	Br. silt & clay, trace sand (fill)
14	Br. silt & clay, trace sand, brick frag. (fill)
16	Br. silt & clay, trace sand, limestone fragments
25	Br. & gr. silt & clay, some sand, some gravel, limestone frag.
84% Rec.	78% br. & gr. weathered shale 22% limestone

Elev. 595.8'-30'

Elev 630.4'

18	Br. silty clay, cinders, gravel, brick fragments (fill)
15	
17	
30	Br. & gr. silty clay, trace sand, little gravel, limestone frag. (fill)
28	
42	Br. & gr. silt & clay, trace sand, some gravel, limestone frag. (fill)
57	
29	
W.L. 30	
31	
29	Br. & gr. silt & clay, little sand, little gravel, limestone frag. cinders (fill)
47	Br. & gr. silt & clay
67	Dark gr. silt & clay, some sand, some gravel, limestone fragments
42	Br. & gr. silt & clay, little sand, some gravel, limestone fragments
27	Br. & gr. silty clay, gravel, little sand
72% Rec.	Gr. shale, limestone

Elev 581.4'-49'

Elev. 631.7'

5	Blacktop, sand, gravel (fill)
89	Br. silt & clay, little sand
	Br. weathered shale
55% Rec.	78% gr. shale 22% gr. limestone
98% Rec.	100% gr. shale

Elev. 613.7'-18'

Elev. 648.4'

8	Cinders (fill)
19	Br. & gr. clay, trace sand
47	Gr. shale
72% Rec.	78% gr. shale 22% gr. limestone

Elev. 635.4'-13'

Elev. 625.7'

8	0.5' topsoil
11	Br. silty clay, little sand, little gravel, shale & limestone fragments
12	Br. clay, trace sand, shale & limestone fragments
78	Gr. shale
82% Rec.	93% gr. shale 7% gr. limestone

Elev 610.7'-15'

Elev. 550'

Elev. 550'

B-17-3 B-17-4 B-17-5 B-17-6 B-17-7 B-17-8 B-18-1

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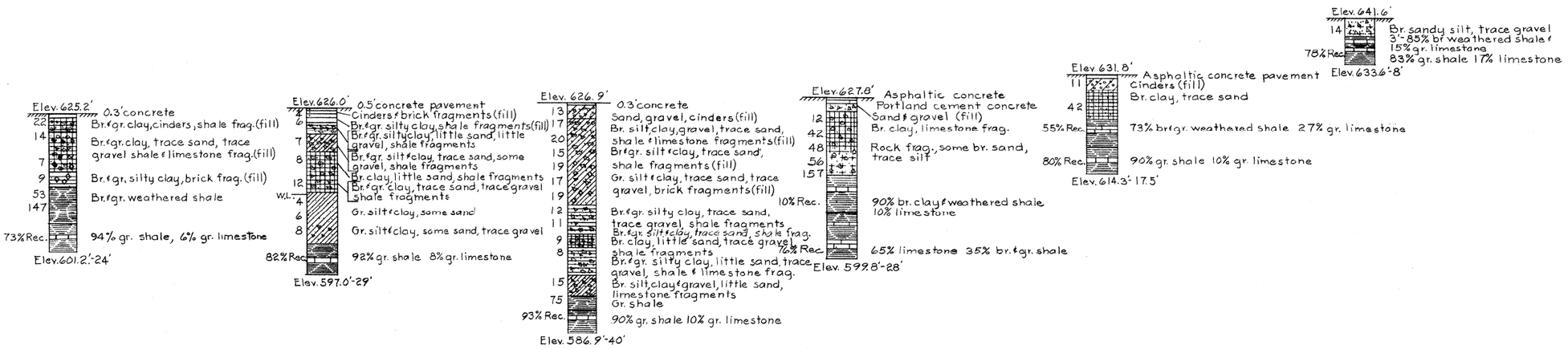

B-18-2 B-18-3 B-18-4 B-18-5 B-18-6 B-18-7

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CINCINNATI, OHIO

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HAMILTON COUNTY
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Elev. 627.2'

14	Br. silt & clay, sand, trace gravel, cinders (fill)
5	
12	Br. silty clay, cinders (fill)
13	Br. & gr. silt & clay, some sand, little gravel, cinders (fill)
4	
4	
6	Cinders, brick & wood frag. (fill)
4	
2	
5	
5	Br. & gr. silty clay, cinders (fill)
10	
16	Gr. silty clay, trace sand, trace shale & limestone frag.
12	
22	Gr. clay, trace sand, shale & limestone frag.
18	Br. & gr. clay, trace sand, trace shale & limestone frag.
16	Br. clay, trace sand, shale & limestone frag.
15	Br. & gr. clay, trace sand, trace shale & limestone frag.
17	Br. & gr. silty clay, little sand, trace shale & limestone frag.
169	Gr. shale
100% Rec.	95% gr. shale 5% limestone

Elev. 564.2'-63'

Elev. 628.0'

13	0.5' concrete
14	
13	
36	
6	Cinders, brick, wood fragments (fill)
4	
5	
8	
7	
8	
6	
12	Gr. silt & clay, little sand, trace gravel
32	Br. & gr. clay, little sand, tr. gravel
24	Br. & gr. clay, trace sand
14	Dark br. & gr. clay, trace sand
19	Br. & gr. clay, trace sand
17	Br. & gr. clay & gravel, little sand, limestone fragments
26	
146	Br. & gr. weathered shale
90% Rec.	97% gr. shale 3% limestone

Elev. 574.0'-54'

Elev. 630.2'

24	Topsoil
25	Br. silty clay, cinders & brick fragments (fill)
16	
11	
23	
28	
10	Cinders, brick & wood frag. (fill)
9	
6	
5	
6	
16	Gr. silt & clay, some sand, little shale & limestone frag.
18	Br. & gr. clay, trace sand, shale & limestone frag.
16	Br. clay, trace sand, shale & limestone frag.
15	Br. & gr. clay, little sand, trace shale & limestone frag.
15	
22	
9	
WL 12	
18	Br. clay, trace sand
130	Br. & gr. shale
60% Rec.	100% gr. shale

Elev. 571.2'-59'

Elev. 630.2'

13	Blacktop, gravel, clay, cinders (fill)
7	Clay, gravel, cinders, brick (fill)
5	Clay & cinders (fill)
8	
4	Cinders (fill)
6	
WL 7	
14	Cinders & clay (fill)
12	Br. & gr. silty clay, little sand, limestone frag.
11	Br. clay, trace sand, little gravel limestone frag.
12	
17	
11	
98	Clay, limestone frag.
	Gr. clay, trace sand
42% Rec.	97% Gr. shale 3% limestone

Elev. 571.2'-59'

Elev. 630.9'

16	Cinders, clay, gravel (fill)
12	Br. & gr. clay, little sand, some gravel, brick fragments (fill)
6	Br. & gr. sandy silt, little gravel, cinders (fill)
6	Cinders, gravel, wood, clay (fill)
10	Br. & gr. silty clay & gravel, trace sand, limestone fragments (fill)
6	Br. & gr. silty clay, little sand, some gravel, limestone fragment (fill)
WL 2	
14	Cinders (fill)
15	Br. & gr. clay, trace sand, trace gravel
11	Br. clay, trace sand
	Br. clay, trace sand, trace gravel, limestone fragments
21	Br. clay, trace sand, little gravel limestone fragments
25	Br. silty clay, trace sand, limestone fragments
67	Br. clay, trace sand, trace gravel, limestone fragments
	Gr. shale
41% Rec.	92% gr. shale 8% gr. limestone

Elev. 575.9'-55'

Elev. 631.2'

18	Sand, gravel, coal (fill)
9	
10	
14	Clay, sand, cinders, gravel (fill)
8	
7	Silty clay, sand layers (fill)
7	Silty clay, cinders, sand (fill)
WL 12	Brick, clay, cinders (fill)
24	
20	Br. & Gr. Clay, trace sand, gravel & shale fragments
27	
20	
21	Br. & gr. silty clay, sand, gravel, organic matter, limestone fragments
38	
103	Br. & gr. clay, trace sand, limestone frag.
50% Rec.	Gr. shale
75% Rec.	96% gr. shale 4% limestone

Elev. 576.7'-54.5'

Elev. 631.6'

14	Sand, gravel, clay (fill)
9	Clay, silt, sand, gravel (fill)
3	Clay, gravel, cinders (fill)
2	Organic matter, cinders (fill)
2	
4	Cinders, clay, rock fragments (fill)
12	Gr. silty clay, cinders brick frag. (fill)
	Gr. silt & clay, little sand, some gravel, rock & brick frag. (fill)
WL 11	
8	Cinders, brick fragments
14	Brick fragments (fill)
17	Br. & gr. clay, little sand, little gravel limestone fragments
51	Br. & gr. clay, trace sand
80% Rec.	80% gr. shale 20% limestone

Elev. 581.6'-50'

Elev. 550'

Elev. 550'

B-19-1 B-19-2 B-19-3 B-19-4 B-19-5 B-19-6 B-19-7

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DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
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19
23

HAMILTON COUNTY
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Elev. 632.0'
15 Gravel & cinders (fill)
13 Br. & gr. silty clay, cinders & brick frag. (fill)
10 Br. sandy silt, little gravel, limestone fragments (fill)
18 Br. & gr. silt & clay, some sand, little gravel, brick & limestone frag. (fill)
15 Br. & gr. silty clay, little sand, little
24 gravel, limestone frag.
30 Br. & gr. silty clay, trace sand
WL 35 Br. & gr. silt & clay, trace sand, trace gravel,
28 Br. & gr. silty clay, little sand, trace gravel, shale frag.
41 Gr. shale
100% Rec 95% gr. shale 5% gr. limestone
66% Rec 86% gr. shale 14% gr. limestone 88% Rec
Elev. 590.0'-42'

Elev. 633.3'
6 0.5' blacktop
Br. silty clay, limestone frag.
18 Br. silty clay, some sand little gravel
40 limestone fragments
18 Br. silt & clay, some sand, little gravel,
30 limestone fragments
22 Br. silty clay, some sand,
23 Br. & gr. silty clay, trace sand
36 Gr. silt & clay, little sand
49 Br. silt & clay, trace sand
40 Br. clay, little sand
24 Br. silty clay, some sand, trace
35 gravel, limestone fragments
Gr. shale
84% gr. shale 16% gr. limestone 100% Rec
Elev. 590.3'-43'

Elev. 637.3'
14 1.0' concrete
9 Br. silty clay, cinders & gravel (fill)
20 Br. silty clay, little sand, some
14 gravel, limestone frag.
Br. silt & clay, little sand, trace gravel
20 Br. silty clay, trace sand, some gravel
19 Br. & gr. silty clay, little sand, little
22 gravel, limestone frag. 68% Rec.
31 Br. & gr. clay, little sand, little gravel,
19 limestone frag.
Br. & gr. silty clay, little sand,
23 limestone frag.
19 Br. & gr. clay, trace sand, some gravel,
19 limestone fragments
22 Gr. clay, trace sand, limestone
20 frag.
Dark br. clay, trace sand, trace gravel organic matter
43% Rec Br. elastic clay, little sand, little gravel
Gr. clay
77% br. & gr. weathered shale
23% gr. limestone
98% gr. shale 2% gr. limestone
Elev. 591.3'-46'

Elev. 637.5'
14 0.5' Concrete
10 Cinders (fill)
14 Br. & gr. silt & clay little sand, little gravel
13 Br. & gr. silt & clay, little sand, some gravel, topsoil
18 Br. clay, trace sand, little shale & limestone frag.
Br. silty clay, little sand, little shale & limestone frag.
80% br. & gr. weathered shale 20% limestone
93% Rec. 89% gr. shale 11% limestone
Elev. 613.5'-24'

Elev. 637.3'
0.2' asphaltic concrete
0.3' red brick
1.5' concrete
12 Br. & gr. silty clay, some sand, little gravel
26 Br. silt & clay, little sand, tr. gravel
20 Br. clay, little sand, tr. gravel
24 Br. & gr. silty clay, some sand, gravel
20 Br. clay, trace sand
Br. clay, little sand, limestone
34 frag.
39 Br. clay, trace sand, trace limestone
117 frag.
20% Rec Br. & gr. clay, little sand trace limestone frag.
92% gr. & br. shale 8% limestone
60% Rec 100% gr. shale
Elev. 602.3'-35'

Elev. 648.5
14 0.5' concrete
12 Gr. silty clay & cinders (fill)
8 Br. & gr. silty & clay, trace sand trace gravel,
14 Br. & gr. silty clay, gravel, little
24 sand
16 Br. & gr. silty clay, little sand, some
Gr. shale & limestone frag.
53% Rec 81% gr. shale 19% limestone
73% Rec 70% gr. shale 30% limestone
Elev. 625.0'-23.5'

Elev. 653.7'
7 Cinders & gravel (fill)
47 Br. & gr. weathered shale, limestone frag.
83 Gr. shale
100% Rec 100% gr. shale
88% Rec 80% gr. shale 20% limestone
Elev. 638.7'-15'

Elev. 550

Elev. 550'

B-19-8 B-19-9 B-19-10 B-19-11 B-19-12 B-19-13 B-19-14

HAZELET & ERDAL
CONSULTING ENGINEERS
CINCINNATI, OHIO

LOG OF BORINGS

SHEET 10 of 14

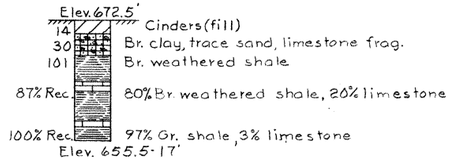
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
	ALT		GNW	JHO 7/8/65	

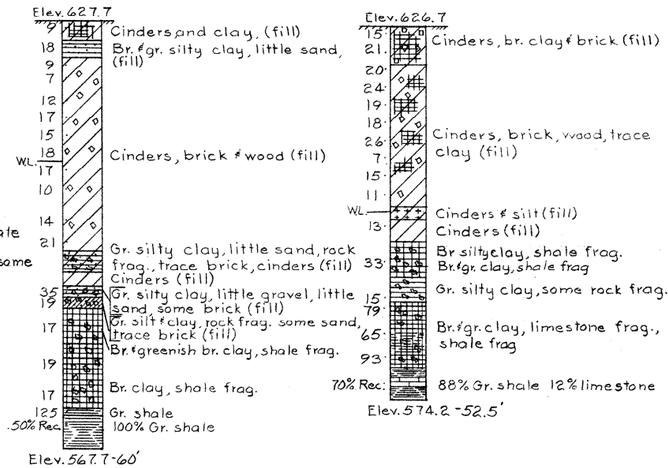
MICROFILMED
SEP 16 1982

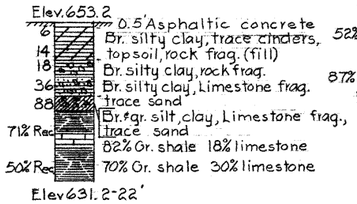
FED. RD. DIV.	STATE	PROJECT	FISCAL YEAR
2	OHIO		

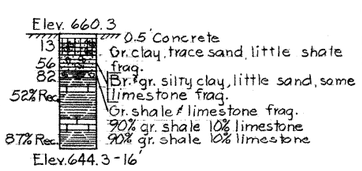
20
23

HAMILTON COUNTY
HAM-71-2.08









Elev. 600

Elev. 550

Elev. 550

B-19-15 B-19-16 R-35-3 R-35-4 R-42-1

HAZELET & ERDAL
CONSULTING ENGINEERS
CINCINNATI, OHIO

LOG OF BORINGS

SHEET 11 of 14

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
	ALT		G.N.W.	JH5 7/8/65	

MICROFILMED
SEP 16 1982

FED. RD. DIV.	STATE	PROJECT	FISCAL YEAR
2	OHIO		

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23

HAMILTON COUNTY
HAM-71-2.08

BORING NO. B-1

Elev. 629.8

9 14 17 8 8 10 9 16	28.5' Fill material – Cinders, ashes, brick bats, stone fragments with brown clayey silt.
27 7 18	6.5' Gray and brown clay with some stone fragments.
15 17 13	5' Gray clay.
19 27	2.5' Brownish grey gravelly clay.
14 20	7.5' Greenish gray clay with some stone fragments.
Top of 23 Rock	2.5' Brown sandy clay with some stone fragments.
Elev. 569.8	7.5' Shale, gray, soft to firm, calcareous, moderately fissile, in beds .05' to 1.0' thick, and separated by soft clay seams, with limestone interbeds (bluish gray, hard, dense, 0.3' thick, comprising 10% of the interval). Core loss 53%.

Elev. 525.0

BORING NO. B-2

Elev. 630.7

13 10 8 10 6 7 20	26' Fill material – Cinders, ashes, brick bats, stone fragments with little gray silty clay.
29 19 20 8 11	14' Brown clay.
25	2' Mottled brown and gray silt and clay.
Top of Rock	3.5' Brownish Gray Clay.
	3' Clay shale, gray, extremely weathered.
Elev. 575.7	6.5' Clay shale, gray, soft to firm, calcareous, subfissile to fissile, in beds 0.6' thick, and separated by soft clay seams, with few limestone interbeds (0.3' thick, comprising 5% of the interval) and few fossils. Core loss 47%.

Elev. 525.0

BORING NO. B-3

Elev 631.7

9 10 12 11 8	13.5' Fill material - Brownish gray silty clay with cinders, brick bats and stone fragments.
16 13	14' Brownish gray clay with some stone fragments.
25 16	2.5' Brown and gray clayey sand with some stone fragments.
31	5' Gray clay with some stone fragments.
Top of 36 Rock	2.5' Limestone, gray, fossiliferous, coorsely-crystalline, in beds 0.1' to 0.4' thick, hard. Core loss 4%.
	2.5' Clay, mottled greenish-gray to gray, calcareous, with few fossils. Core loss 95%.
	5' Limestone, gray, fossiliferous, coorsely-crystaline, in beds 0.5' to 0.2' thick, hard, jointed in part, with calcareous clay seams. Core loss 13%.
Elev. 581.7	3' Shale, gray, argillocebus, slightly calcareous, fissile, firm, crumbly in part. Core loss 96%.

Elev. 525.0

BORING NO. B-4

Elev. 632.0

21 15 11	13.5' Fill material - brick bats, cinders with brown clayey silt.
12 16	4.0' Brown and gray clay with some stone fragments.
18	2.5' Brown and gray silt and clay.
14 12	7.5' Brownish gray clay with little stone fragments.
22 16	2.5' Brown and gray clay.
15 30	2.5' Brown and gray clay and stone fragments.
Top of Rock	3.5' Brown clay.
Elev. 587.0	1.5' Shale, brown, argillaceous, with clay seams, calcareous with few thin limestone beds, medium-firm, fissile, weathered. Core loss 28%.
	7.5' Shale, gray argillaceous, calcareous, fossiliferous with clay seams, fissile, firm to medium-firm with few limestone interbeds (gray, hard, fossiliferous, max. 0.3' thick, comprising 8% of the interval). Core loss 40%.

Elev. 525.0

Note:
Figures at left of Borings indicate number of hammer blows per foot of penetration of 2" split spoon sampler with 140 lb. hammer and 30" fall.

HAZELET & ERDAL
CONSULTING ENGINEERS
CINCINNATI, OHIO

LOG OF BORINGS

SHEET 12 of 14

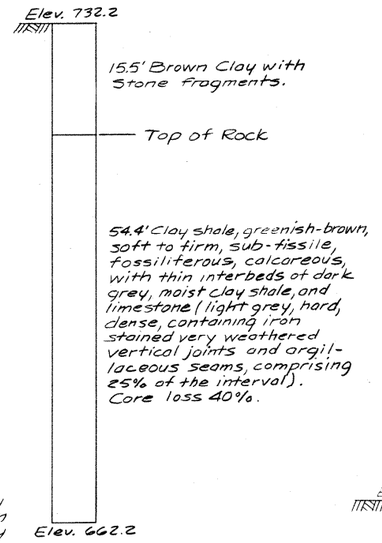
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
	T.L.Z. 2-66A		JHO	JHO 7/8/65	

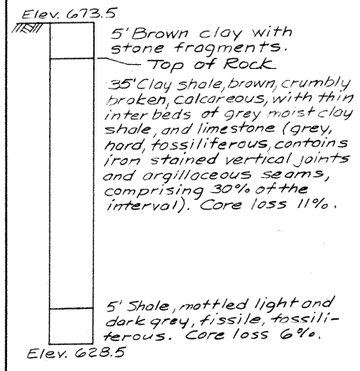
MICROFILMED
SEP 16 1982

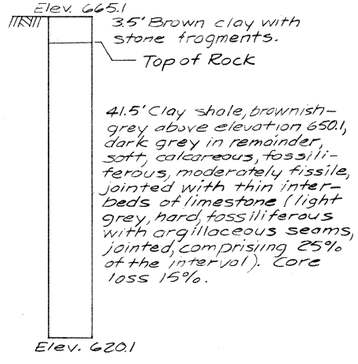
FED. RD. DIV.	STATE	PROJECT	FISCAL YEAR
2	OHIO		

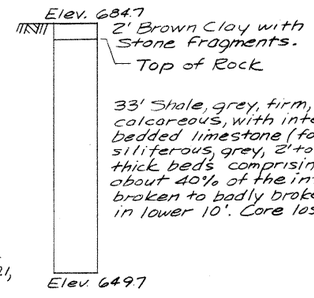
22
23

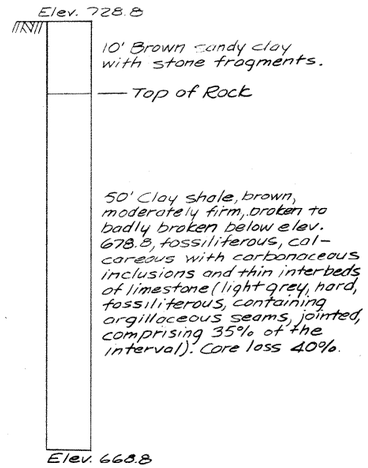
HAMILTON COUNTY
HAM-71- 2.08

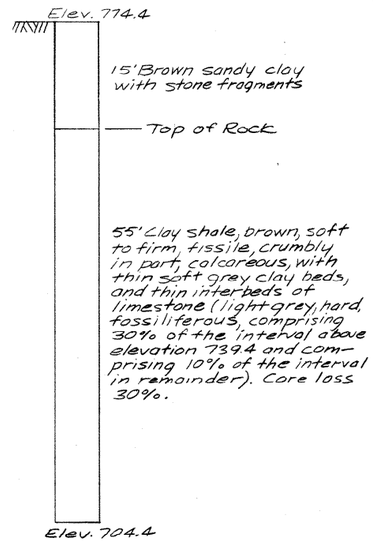


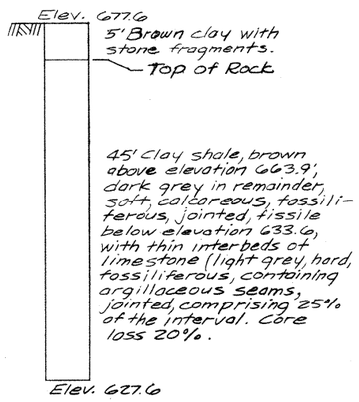












Elev. 615.0

Elev. 615.0

BORING NO. 1S

BORING NO. 2S

BORING NO. 3S

BORING NO. 4S

BORING NO. 5S

BORING NO. 6S

BORING NO. 7S

Borings drilled by the State of Ohio, Department of Highways.

HAZELET & ERDAL
CONSULTING ENGINEERS
CINCINNATI, OHIO

LOG OF BORINGS

SHEET 13 of 14

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
	TLZ 9-5-63		B.O.G. 1-13-64	JHO 7/8/65	

MICROFILMED
SEP 16 1982

FED. RD. DIV.	STATE	PROJECT	FISCAL YEAR
2	OHIO		

23/23

HAMILTON COUNTY
HAM-71-2.08

Elev. 705.7
5
7
42
33% Rec.
67% Rec.
Elev. 692.0

1.5' Topsoil and brown and gray silty clay (fill) very moist - soft
2' Brown and gray silty clay with limestone fragments, moist - stiff
2.5' Brown weathered shale with limestone fragments, moist - hard
5' Layered brown weathered shale and gray fossiliferous limestone approx. 20 to 25% limestone in ½" to 4½" layers
2.7' Layered brown weathered shale and gray fossiliferous limestone, approx. 45% to 50% limestone in ½" to 4½ in layers

Elev. 726.3
10
15
24
46% Rec.
25% Rec.
33% Rec.
Elev. 712.3

1.5' Topsoil and brown and gray silty clay (fill) moist - medium stiff
2' Brown and gray silty clay with limestone fragments, moist - stiff
1' Brown weathered shale with limestone fragments, moist - hard
4' Layered brown weathered shale and gray fossiliferous limestone, approx. 15 to 20% limestone in ½" to 3" layers
2' Layered brown weathered shale and gray fossiliferous limestone, approx 10 to 15% limestone in 1" to 1½" layers
3.5' Layered brown weathered shale and gray fossiliferous limestone, approx. 10 to 15% limestone in ½" to 2" layers

Elev. 692.7
2
8
106
33% Rec.
52% Rec.
78% Rec.
Elev. 678.7

0.5' Topsoil, moist - medium stiff
2.5' Brown and gray silty clay with limestone fragments moist - hard
2' Brown weathered shale with limestone fragments, moist - hard
2.5' Layered brown weathered shale and gray fossiliferous limestone approx. 25 to 30% limestone in ½" to 2' layers
3.5' Layered brown weathered shale and gray fossiliferous limestone, approx 40 to 45% limestone in ½" to 4½" layers
3' Layered brown weathered shale, brown and gray shale and fossiliferous limestone approx. 30 to 35% limestone in ½" to 3" layers

Elev. 666.1
7
12
44
60% Rec.
75% Rec.
100% Rec.
Elev. 650.1

1.5' Topsoil and brown and gray silty clay with rock fragments (fill) moist - medium stiff.
1.5' Brown and gray silty clay with limestone fragments, moist - stiff
3.3' Brown weathered shale with limestone fragments, moist - hard
2.7' Layered brown weathered shale and gray fossiliferous limestone, approx. 5% limestone in ½" layers
4' Layered brown weathered shale and gray fossiliferous limestone approx. 10 to 15% limestone in ½" to 2" layers soft gray silty clay layer approx. 2" thick at bottom of run.
3' Layered brown shale, gray shale and fossiliferous limestone approx. 15 to 20% limestone in ½" to 1" layers

Elev. 625.0

Elev. 625.0

CRIB WALL BORING No. 1

CRIB WALL BORING No. 2

CRIB WALL BORING No. 3

CRIB WALL BORING No. 4

Notes:
Figures at left of boring indicate number of hammer blows per foot of penetration of 2" split spoon sampler with 401b. hammer and 30" fall.

Borings made by H.C. Nutting Co.

HAZELET & ERDAL
CONSULTING ENGINEERS
CINCINNATI, OHIO

LOG OF BORINGS

SHEET 14 of 14

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
	T.L.Z. 3-22-65		GNW	JHO 7/8/65	

SOIL PROFILE
HAMILTON COUNTY
HAM-71-3.61

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
CINCINNATI, OHIO 45226

1/32

1/12

NOTE : INFORMATION SHOWN BY THIS SUBGRADE PROFILE WAS OBTAINED SOLELY FOR USE IN ESTABLISHED DESIGN CONTROLS FOR THE PROJECT. THE STATE OF OHIO DOES NOT GUARANTEE THE ACCURACY OF THIS DATA AND IT IS NOT TO BE CONSTRUED AS A PART OF THE PLANS GOVERNING CONSTRUCTION OF THE PROJECT.

GENERAL INFORMATION

INTRODUCTION

THE PROJECT CONSISTS OF A 0.97 MILE SEGMENT OF THE NORTHEAST EXPRESSWAY (HAM-71-3.61), STARTING AT A POINT APPROXIMATELY 250 FT. NORTH OF MELISH AVENUE ABOUT 100 FT. EAST OF ITS INTERSECTION WITH VAN NUREN AVENUE AND EXTENDING IN A GENERALLY EASTERLY DIRECTION TO A POINT APPROXIMATELY 1250 FT. WEST OF WOODBURN AVENUE, ALL IN THE CITY OF CINCINNATI, OHIO. IN ADDITION TO THE MAIN ROADWAY, THE PROJECT INCLUDES RAMPS "VA", APPROXIMATELY 1350 FT. LONG, "VB" (IN PART), APPROXIMATELY 1400 FT. LONG, "VC", APPROXIMATELY 1200 FT. LONG, "VD", APPROXIMATELY 1100 FT. LONG AND "VE" (IN PART) APPROXIMATELY 900 FT. LONG. ALSO INCLUDED ARE THE GILBERT-BLAIR CONNECTION, APPROXIMATELY 2100 FT. LONG, AND THE FOLLOWING STREET RELOCATIONS: WHITTIER AVENUE, APPROXIMATELY 500 FT. LONG, FREDONIA AVENUE, APPROXIMATELY 1200 FT. LONG, GILBERT AVENUE, APPROXIMATELY 1900 FT. LONG, VICTORY PARKWAY, APPROXIMATELY 2500 FT. LONG, AND JOHNATHON AVENUE, APPROXIMATELY 2100 FT. LONG.

THE MAXIMUM PROPOSED CUTS AND FILLS ARE SHOWN IN THE PROJECT INDEX ON THIS SHEET.

GEOLOGY AND OBSERVATIONS OF THE PROJECT

THE ALIGNMENT IS LOCATED ON THE DISSECTED LEXINGTON PENEPLIN WITHIN THE BORDER OF THE ILLINOIAN DRIFT. THE OVERBURDEN NORMALLY CONSISTS OF RELATIVELY THIN CLAYEY TILL AND PLASTIC RESIDUAL SOIL DERIVED LARGELY FROM RELATIVELY LOCAL SHALE AND LIMESTONE TERRAINS. THE BEDROCK IS COMPOSED OF CALCAREOUS SHALES AND INTERBEDDED THIN LIMESTONES OF ORDOVICIAN AGE. RATHER DEEP PREGLACIAL VALLEYS FILLED WITH TILL, LAKE BED AND SOME OUTWASH DEPOSITS ARE FOUND IN THE AREA.

THE AREA HAS BEEN PRIMARILY RESIDENTIAL BUT INCLUDES SOME COMMERCIAL ACTIVITY. THERE IS EVIDENCE OF RATHER SUBSTANTIAL AMOUNT OF PREVIOUS GRADING IN SOME SECTIONS.

EXPLORATION

THIS ROADWAY PROFILE HAS BEEN PREPARED USING SELECTED TEST BORINGS MADE FOR STRUCTURE FOUNDATION INVESTIGATIONS FOR BRIDGES AND RETAINING WALLS SUPPLEMENTED BY ROADWAY BORINGS USING SKID AND TRUCK-MOUNTED MECHANICAL HOLLOW STEM AUGERS WITH SPLIT SPOON SAMPLING. THE STRUCTURE BORINGS WERE DRILLED IN SEPTEMBER AND OCTOBER, 1965 AND MARCH THROUGH SEPTEMBER 1968. THE SUPPLEMENTAL ROADWAY BORINGS WERE MADE BETWEEN JUNE AND SEPTEMBER 1967 AND AUGUST THROUGH SEPTEMBER 1968. THE SAMPLING AND TESTING WERE ACCOMPLISHED IN ACCORDANCE WITH THE CRITERIA OF THE OHIO DEPARTMENT OF HIGHWAYS. ONLY THE TESTS PERFORMED ON SAMPLES OBTAINED IN ROADWAY BORINGS ARE INCLUDED IN THIS REPORT. THE TESTS PERFORMED ON SAMPLES OBTAINED IN THE STRUCTURE BORINGS WERE PRESENTED PREVIOUSLY IN THE STRUCTURE FOUNDATION REPORTS.

THE SELECTED STRUCTURE BORINGS USED IN PREPARING THE ROADWAY SOIL PROFILES ARE SHOWN ON THE PLAN, IDENTIFIED AS INDICATED ON THE LEGEND. THE SUBSURFACE CONDITIONS INDICATED AT THESE BORINGS HAVE BEEN REPRESENTED ON THE PROFILE, USING APPROPIATE SYMBOLS AS SHOWN ON THE LEGEND.

INVESTIGATIONAL FINDINGS

FROM THE BEGINNING OF THE PROJECT AT STATION 259 TO ABOUT STATION 274, SOME 500 FT. EAST OF EXISTING FREDONIA AVENUE, THE PROPOSED GRADE LINE FALLS FROM ABOUT 745 TO 715 AND IS IN A RATHER DEEP CUT, HAVING A MAXIMUM DEPTH OF ABOUT 50 FT. IN THE VICINITY OF STATION 265+50 AND 266. THE BORINGS INDICATE 2 TO 4 FT. OF FILLS TO BE PRESENT LOCALLY IN THIS SECTION. THE 10 TO 25 FT. THICK OVERBURDEN CONSISTS LARGELY OF SILTY CLAY (A-6b) AND PLASTIC CLAY (A-7-6). BETWEEN STATIONS 259 AND 272 THE PROPOSED GRADE WILL FALL BELOW THE TOP OF ROCK, WITH A MAXIMUM ROCK CUT OF ABOUT 20 FT. BETWEEN STATIONS 265 AND 269.

FROM STATION 274 TO 299, THE PROPOSED GRADE WILL BE ON FILL, HAVING A MAXIMUM HEIGHT OF ABOUT 45 FT. IN THE VICINITY OF VICTORY PARKWAY, STATION 295. ESSENTIALLY ALL OF THE BORINGS IN THIS SECTION PENETRATED OLD FILLS, GENERALLY 1 TO 2 FT. THICK; HOWEVER A 20 FT. FILL, COMPOSED OF A MIXTURE OF SILT, CLAY, CINDERS AND SOME WOOD WAS ENCOUNTERED AT ABOUT STATION 281+50. APPROXIMATELY 15 FT. OF OLD FILL, LARGELY OF CLEAN SOILS, WAS ENCOUNTERED IN THE VALLEY CENTERED AT ABOUT STATION 284. THE OLD FILLS ARE GENERALLY UNDER LAIN BY 5 TO 10 FT. OR MORE OF LEAN CLAYS, A-6 SOILS, AND SOME PLASTIC CLAY (A-7-6). BETWEEN APPROXIMATELY STATIONS 291 AND 296, THE VALLEY BOTTOM ON WHICH VICTORY PARKWAY IS LOCATED, THE OLD FILLS ARE UNDER LAIN BY UP TO 25 FT. OF SOFT TO MEDIUM STIFF GLACIALLAKE BED DEPOSITS CONSISTING LARGELY OF SANDY SILT AND SILT, A-4 SOILS AND SOME CLAYS, A-6 SOILS. ADDITIONAL BORINGS WERE MADE IN THIS AREA TO OBTAIN UNDISTURBED SAMPLES SO THAT SPECIAL STUDIES CAN BE MADE OF THE AMOUNT OF SETTLEMENT THAT CAN BE EXPECTED DUE TO CONSOLIDATION OF THE FOUNDATION SOILS AND THE EFFECT THAT THE SETTLEMENT WILL HAVE ON THE PROPOSED CONSTRUCTION.

BETWEEN STATIONS 299 AND 310, THE END OF THE PROJECT, THE PROPOSED GRADE LINE WILL BE IN CUT, LEAVING A MAXIMUM DEPTH OF 35 FT. AT STATION 302. THE 5 TO 15 FT. UNDISTURBED OVERBURDEN CONSISTS OF LEAN TO PLASTIC CLAYS, A-6 AND A-7-6 SOILS AND LESSER AMOUNTS OF SANDY SILT, A-4a SOIL. THE PROPOSED GRADE LINE WILL FALL BELOW THE TOP OF ROCK PRACTICALLY THE ENTIRE LENGTH OF THIS SECTION, WITH A MAXIMUM ROCK CUT OF ABOUT 25 FT. AT STATION 304 AT WHICH POINT THE TOP OF ROCK IS VERY CLOSE TO THE EXISTING GRADE.

EXCEPT FOR ABOUT 450 FT. OF FILL, STATION 284 TO 288+50, RAMP "VC" WILL BE CONSTRUCTED IN CUT. THE MAXIMUM HEIGHT OF FILL WILL BE ON THE ORDER OF 10 FT. THE BORING IN THE FILL SECTION INDICATES 15 FT. OF OLD FILL, CONSISTING OF CLEAN A-6a AND A-6b SOILS, UNDERLAIN BY 5 FT. OF SILTY CLAY (A-6b) ON PLASTIC CLAY (A-7-6). WITHIN THE CUT SECTION, STATIONS 288+50 TO 296+00, THE PROPOSED GRADE WILL FALL BELOW THE EXISTING IRREGULAR GROUND SURFACE, WITH THE MAXIMUM CUT OF 30 FT. OCCURRING AT STATION 295. IN THIS SECTION, THE BORINGS INDICATE 17 TO 30 FT. OF OLD FILL COMPOSED LARGELY OF SILT AND CLAY (A-6a) AND LEAN SILTY CLAY (A-6-b) WITH SOME MIXED GRAVEL AND CINDERS ENCOUNTERED ABOVE AND BELOW THE NEW GRADE AT STATION 290.
WITHIN THE CUT, THE NEW GRADE WILL FALL ON SILTY CLAY (A-6b) FILL AT 290 AND 25 FT. OF UNDISTURBED SILT AT 296.

RAMP "VB", WHICH IN GENERAL IS PARALLEL TO THE EXPRESSWAY CENTERLINE, WILL BE CONSTRUCTED IN CUT EXCEPT FOR TWO GULLY CROSSINGS. WITHIN THE CUT, THE NEW GRADE LINE WILL FALL 12 TO 45 FT. BELOW THE EXISTING GROUND LINE. THE BORINGS INDICATE THAT, EXCEPT FOR A SHORT SECTION IN THE VICINITY OF STATION 299 WHERE THE GRADELINE WILL FALL SOME 30 FT. BELOW THE TOP OF ROCK, THE SUBGRADE WILL BE FOUNDED IN OVERBURDEN CONSISTING LARGELY OF SILT AND CLAY (A-6a) AND SANDY SILT (A-4a).

BETWEEN STATIONS 289 AND 296, RAMP "VA" WILL BE CONSTRUCTED IN FILL, HAVING A MAXIMUM HEIGHT OF ABOUT 30 FT. THE BORINGS IN THIS SECTION INDICATE THAT THE FILL WILL BE PLACED ON SILTS (A-4a AND A-4b) AND LEAN CLAYS, A-6 SOILS. BETWEEN STATIONS 296 AND 304, THE PROPOSED GRADE WILL FALL BELOW THE EXISTING GROUND SURFACE, WITH A MAXIMUM CUT OF 35 FT. AT STATION 304. THE BORINGS IN THIS SECTION INDICATE LEAN SILTY CLAY (A-6 SOILS) OLD FILL OF 12 FT. THE BORINGS INDICATE THAT THE NEW GRADE WILL FALL ON SILTY CLAY (A-6b), PLASTIC CLAY (A-7-6) AND HIGHLY WEATHERED SHALE. AHEAD OF STATION 300, IT IS ANTICIPATED THAT THE NEW GRADE WILL BE BELOW THE TOP OF ROCK.

RAMP "VD" WILL BE CONSTRUCTED ESSENTIALLY IN CUT, WITH THE MAXIMUM CUT ON THE ORDER OF 20 FT. THE BORINGS INDICATE 1 TO 5 FT. OF OLD FILL IN THIS AREA CONSISTING LARGELY OF CINDERS, CLAY AND GRAVEL. THE BORINGS ALSO INDICATE THAT THE PROPOSED GRADE WILL FALL IN GENERAL IN THE UNDERLYING GLACIAL TILL, A-4 SOILS. IN THE VICINITY OF STATION 284, IT IS ANTICIPATED THAT A SHALLOW ROCK CUT WILL BE ENCOUNTERED.

LEGEND FOR PROJECT - AVERAGE RESULTS OF TESTS — 232 SAMPLES TESTED

DESCRIPTION	H.R.B CLASS	OHIO CLASS	% AGG	% C. SAND	% F. SAND	% SILT	% CLAY	LIQUID LIMIT	PLASTICITY INDEX	WATER CONTENT	SAMPLES TESTED
Gravel and stone fragments with sand.	A-1-b (0)	A-1-b	30	36	16	-18-		17	2	16	2
Coarse and fine sand.	------	A-3a	11	12	42	21	14	17	3	22	1
Gravel and stone fragments with sand, silt and clay.	A-2-6 (1)	A-2-6	54	8	7	19	12	30	12	22	1
Gravel and stone fragments with sand, silt and clay.	A-2-7 (3)	A-2-7	56	6	4	12	22	42	25	20	1
Sandy silt.	A-4 (4)	A-4a	16	9	17	34	24	24	8	16	48
Silt.	A-4 (8)	A-4b	4	1	7	60	28	26	6	22	14
Silt & clay.	A-6 (7)	A-6a	14	6	12	38	30	30	12	16	69
Silty clay.	A-6 (11)	A-6b	8	4	8	36	44	38	18	20	60
Elastic clay.	A-7-5 (15)	A-7-5	0	4	5	42	49	53	22	22	2
Clay.	A-7-6 (14)	A-7-6	7	4	7	34	48	45	24	20	34

Topsoil and/or sod.	VISUAL	CLASSIFICATION
Random fill.	VISUAL	CLASSIFICATION
Weathered shale with limestone layers.	VISUAL	CLASSIFICATION
Weathered shale.	VISUAL	CLASSIFICATION
Shale.	VISUAL	CLASSIFICATION
Limestone.	VISUAL	CLASSIFICATION

- Roadway boring - plan view.
- Structure boring - plan view.
- TR Top of rock.
- Water content nearly epual to or greater than liquid limit.

  Note: Figures besides borings indicate water content in percent e.g. 25.
- W——— Free water.
- ▼——— Static water level.
- Existing fill material plotted to vertical scale only - profile.
- (X/Y) Number of blows for Standard Penetration test. X= Number of blows for first 6 inches. Y= Number of blows for second 6 inches.
- Auger boring plotted to vertical scale only - profile.
- Core boring plotted to vertical scale only - profile.
- ☒ Press (Shelby Tube) sample.

THE FREDONIA AVENUE RELOCATION WILL BE CONSTRUCTED IN CUT. THE CUTS WILL BE ON THE ORDER OF ABOUT 5 FT. EXCEPT AT THE BRIDGE OVER THE EXPRESSWAY, STATIONS 8+50 TO 12+25, WHERE A CUT OF ABOUT 25 FT. WILL BE REQUIRED. THE BORINGS INDICATE THAT THE PROPOSED GRADE LINE WILL FALL LARGELY ON SILT AND CLAY (A-6a), HOWEVER IN THE VICINITY OF STATION 18 THE PROPOSED GRADE WILL BE FOUNDED ON ABOUT 10 FT. OF OLD FILL COMPOSED OF CINDERS, CLAY AND SOME BRICK.

THE PROPOSED GRADE LINE OF THE GILBERT AVENUE RELOCATION WILL BE LARGELY IDENTICAL TO THAT OF THE EXISTING GROUND LINE, HOWEVER, THE NEW GRADE LINE WILL FALL BELOW THE EXISTING GROUND LINE BETWEEN STATIONS 16 AND 24, WITH A MAXIMUM CUT OF 10 FT. OCCURRING AT ABOUT STATION 21+50. THE BORINGS IN THE CUT AREA INDICATE THAT THE NEW GRADE WILL FALL IN PLASTIC CLAY (A-7-6) JUST ABOVE THE TOP OF ROCK.

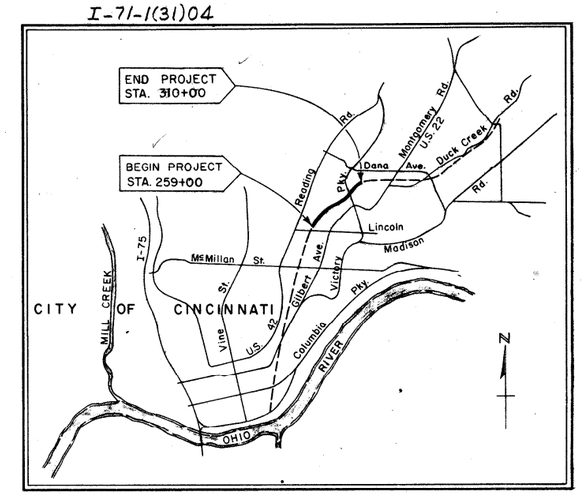
BETWEEN STATIONS 4 AND 15+50, THE PROPOSED GRADE OF THE JONATHAN AVENUE RELOCATION WILL BE CONSTRUCTED ESSENTIALLY IN SHALLOW CUT, WITH A MAXIMUM CUT OF ABOUT 7 FT. WITHIN THIS SECTION, THE BORINGS INDICATE THAT THE NEW GRADE WILL FALL ON THE UNDERLYING SILT (A-4a) AND SILT AND CLAY (A-6a). AHEAD OF STATION 15+50, THE RELOCATION WILL BE CONSTRUCTED IN FILL, LEAVING A MAXIMUM HEIGHT OF 25 TO 30 FT. AT THE GULLY CROSSINGS NEAR STATIONS 17 AND 22. IN THE FILL SECTION, THE BORINGS INDICATE APPROXIMATELY 5 FT. OF OLD FILL IN THE BOTTOMS OF THE GULLIES. IN THIS SECTION THE UNDISTURBED SOILS CONSIST PRIMARILY OF SILT AND CLAY, A-6a SOIL UNDERLAIN BY WEATHERED SHALE AND LEAN SILTY CLAY (A-6b).

THE SUBGRADE OF THE VICTORY PARKWAY RELOCATION WILL BE CONSTRUCTED IN FILL, HAVING A MAXIMUM HEIGHT OF ABOUT 30 FT. THE BORINGS INDICATE THAT OLD FILLS UP TO ABOUT 15 FT. THICK OCCUR LOCALLY. THE OLD FILLS CONSIST PREDOMINATELY OF SILT AND CLAY (A-6a) AND LEAN SILTY CLAY (A-6b). PREDOMINATELY, THE PROPOSED FILL WILL BE CONSTRUCTED ON APPROXIMATELY 5 TO 10 FT. OF UNDISTURBED SILTY CLAY (A-6b). IN THE VICINITY OF STATIONS 19 TO 21, THE LATTER SOIL IS UNDERLAIN BY 15 TO 25 FT. OF SOFT TO MEDIUM STIFF GLACIALLAKE BED DEPOSITS, A-6 SOILS CONTAINING TRACES OF ORGANIC MATTER.

THE WHITTIER AVENUE RELOCATION WILL BE CONSTRUCTED IN CUT, LEAVING A MAXIMUM DEPTH OF ABOUT 11 FT. THE BORINGS INDICATE THAT THE NEW GRADE WILL FALL ON SANDY SILT (A-4a), SILT AND CLAY (A-6a) AND HIGHLY WEATHERED SHALE CONTAINING VARIABLE AMOUNTS OF THIN LIMESTONE BEDS.

APPROXIMATELY ONE-THIRD OF THE GILBERT AVENUE - BLAIR AVENUE CONNECTION (STATIONS 8+75 TO 16+75) WILL BE OCCUPIED BY THE PROPOSED BRIDGE OVER THE EXPRESSWAY, FOUNDATION CONDITIONS OF WHICH HAVE BEEN REPORTED ELSEWHERE. BETWEEN STATIONS 5+75 AND 8+75, THE PROPOSED GRADE WILL FALL 6 TO 8 FT. BELOW THE EXISTING GROUND LINE AND THE BORINGS INDICATE THAT THE NEW GRADE WILL FALL ON SILT AND CLAY A-6a SOIL. FROM ABOUT STATION 16+75 TO 20, THE NEW GRADE WILL BE ON FILL HAVING A MAXIMUM HEIGHT OF ABOUT 25 FT. ADJACENT TO THE BRIDGE ABUTMENT. HERE THE BORINGS INDICATE THE FILL WILL REST ON ABOUT 5 FT. OF SILTY OR PLASTIC CLAY, A-6b OR A-7-6 SOILS OVER HIGHLY WEATHERED SHALE. BETWEEN STATIONS 21 AND 26, THE PROPOSED GRADE LINE WILL FALL BELOW THE EXISTING GROUND LINE AND A MAXIMUM CUT OF 25 FT. WILL BE ENCOUNTERED. THE BORING AT STATION 23+50 INDICATES THAT THE NEW GRADE WILL FALL ABOUT 13 FT. BELOW THE TOP OF ROCK.

I-71-1(31)04



LOCATION MAP

PROJECT INDEX

STATIONS FROM — TO	PLAN VIEW SHEET	PROFILE SHEET	CUT (MAX.)	FILL EMB. (MAX.)
NORTHEAST EXPRESSWAY I-71				
259+00 - 310+00	4,5	6,7	54'	47'
FREDONIA AVE. RELOC.				
7+00 - 21+00	4	8	6'	—
GILBERT AVE. RELOC.				
11+00 - 29+00	4,5	10	10'	—
GILBERT-BLAIR CONNECTION				
4+00 - 27+00	4	8	26'	30'
JONATHAN AVE. RELOC.				
5+00 - 25+00	5	9	8'	30'
VICTORY PARKWAY RELOC.				
5+00 - 31+00	5	9	32'	30'
WHITTIER AVE. RELOC.				
6+00 - 10+00	4	11	14'	—
RAMP "VA"				
282+00 - 297+00	4,5	11	12'	10'
RAMP "VB"				
294+00 - 316+00	5	12	50'	18'
RAMP "VC"				
289+00 - 304+00	5	11	25'	30'
RAMP "VD"				
282+00 - 293+00	4,5	12	21'	24'

Rev. 6-16-71

SOIL PROFILE
HAMILTON COUNTY
HAM-71-3.61

(2/32) (2/12)

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
CINCINNATI, OHIO 45226

SUMMARY OF SOIL TEST DATA

NOTE: NP SHOWN IN LIQUID LIMIT AND PLASTICITY INDEX COLUMNS INDICATES THAT THE MATERIAL IS NON-PLASTIC

NORTHEAST EXPRESSWAY (I-71)

Station	Offset	Sample Depth From	Sample Depth To	Stratum Depth From	Stratum Depth To	% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC	SHTL Class
202+00	CL	0.0	1.5	0.0	5.0	2	6	10	45	31	25	6	17	A-4a(8)
		5.0	6.5	5.0	10.0	5	5	12	32	46	30	18	19	A-6b(11)
		10.0	11.5	10.0	15.0	2	4	15	37	42	38	21	19	A-6b(12)
		15.0	16.5	15.0	17.5	8	4	6	40	42	39	18	24	A-6b(11)
		17.5	17.7	17.5	19.0	Brown weathered shale								Visual
		19.0	20.0	19.0	20.0	Gray and brown shale								Visual
						Refusal at 20-ft. Boring Completed								
207+00	CL	0.0	1.0	0.0	1.0	Topsoil								Visual
		1.0	1.5	1.0	5.0	2	2	4	54	38	30	10	22	A-6b(10)
		5.0	6.5	5.0	7.5	7	3	11	41	38	24	8	16	A-4a(8)
		7.5	9.0	7.5	10.0	10	4	11	27	42	45	25	20	A-7-6(12)
		10.0	11.5	10.0	12.0	5	4	14	35	42	36	16	16	A-6b(11)
		15.0	16.5	10.0	17.0	10	4	14	34	38	35	18	17	A-6b(11)
		17.5	19.0	17.0	20.0	12	4	5	30	47	52	29	18	A-7-6(18)
		20.0	21.5	20.0	25.0	12	2	2	41	43	41	18	37	A-7-6(11)
		25.0	26.0	25.0	26.0	Brown weathered shale								
						Refusal at 26-ft. Boring Completed								
271+00	CL	0.0	1.5	0.0	2.5	Cinders and clay								Visual(Fill)
		2.5	4.0	2.5	5.0	4	5	11	38	42	35	10	18	A-6b(11)
		5.0	6.5	5.0	7.5	6	4	10	45	35	29	10	18	A-4a(8)
		7.5	9.0	7.5	10.0	19	7	15	31	30	31	14	16	A-6a(6)
		10.0	11.5	10.0	15.0	34	7	12	25	22	29	12	14	A-6a(5)
		15.0	16.0	15.0	16.0	20	8	12	32	28	27	11	20	A-6a(6)
		16.0	16.5	16.0	16.5	Brown weathered shale and limestone								Visual
						Refusal at 16.5-ft. Boring Completed								
275+00	CL	0.0	1.5	0.0	2.0	1	3	7	39	50	44	24	14	A-7-6(14) (Fill)
		5.0	6.5	2.0	10.0	11	8	14	35	32	31	15	14	A-6a(8)
		10.0	11.5	10.0	15.0	12	14	13	35	26	27	10	11	A-4a(5)
		15.0	16.5	15.0	22.0	12	10	15	35	28	26	10	11	A-4a(5)
		20.5	22.0	15.0	22.0	15	10	14	34	27	26	10	13	A-4a(5)
						Boring Completed								
276+00	CL	0.0	1.0	0.0	1.0	Blacktop, gravel (pavement)								Visual
		1.0	2.5	1.0	4.0	24	4	9	28	35	42	23	20	A-7-6(13) (Fill)
		5.0	6.5	4.0	7.0	31	3	5	29	32	36	15	17	A-6a(7)
		9.0	10.0	7.0	10.0	28	4	6	30	32	37	16	19	A-6b(7)
						Boring Completed								
284+00	CL	0.0	1.5	0.0	2.0	3	7	10	38	42	41	19	10	A-7-6(13) (Fill)
		2.5	4.0	2.0	5.0	6	5	7	38	50	44	23	13	A-7-6(14)
		5.0	6.5	5.0	8.5	23	4	6	25	42	43	22	11	A-7-6(11)
						Refusal at 8.5', Boring Completed								
288+00	CL	0.0	1.5	0.0	2.5	Brown clay gravel and cinders (Fill)								Visual
		2.5	4.0	2.5	5.0	14	3	3	42	38	38	16	17	A-6b(10)
		5.0	6.5	5.0	7.5	16	12	8	35	29	33	12	14	A-6a(7)
		7.5	9.0	7.5	9.0	Brown and gray weathered shale								Visual
		9.0	10.0	9.0	10.0	Brown and gray weathered shale and limestone fragments								Visual
						Boring Completed								
292+00	CL	0.0	0.5	0.0	0.5	Topsoil								Visual
		0.5	1.5	0.0	2.5	21	5	11	29	34	39	20	17	A-6b(9)
		2.5	4.0	2.5	5.0	15	5	12	40	28	31	12	21	A-6a(8)
		5.0	6.5	5.0	7.5	26	10	22	22	20	29	10	22	A-4a(1)
		7.5	9.0	7.5	10.0	21	10	14	29	26	27	10	19	A-4a(4)
		10.0	11.5	10.0	12.5	21	4	12	36	27	32	14	20	A-6a(7)
		12.5	14.0	12.5	17.5	11	0	0	65	24	25	7	26	A-4b(8)
		15.0	16.5	12.5	17.5	1	0	0	66	33	26	8	26	A-4b(8)
		17.5	19.0	17.5	20.0	12	12	35	19	22	23	8	24	A-4a(1)
		20.0	21.5	20.0	22.5	7	10	29	32	22	27	9	24	A-4a(4)
		22.5	24.0	22.5	25.0	0	4	1	50	45	39	18	26	A-6b(11)
		25.0	26.5	25.0	26.5	1	2	2	30	65	45	19	22	A-7-6(12)
						Boring Completed								
292+56	22' Lt.	0.0	1.5	0.0	5.0	14	9	15	28	24	29	12	8	A-6a(5) (Fill)
		5.0	7.0	5.0	15.0	27	14	9	15	28	27	10	18	A-4a(1)
		10.0	12.0	5.0	15.0	26	6	11	31	26	26	10	17	A-4a(4)
		15.0	17.0	15.0	17.0	34	4	5	27	30	29	13	22	A-6a(5)
		17.0	18.5	17.0	20.0	2	2	2	27	67	37	18	34	A-6b(10)
		20.0	22.0	20.0	22.0	0	1	34	36	29	22	7	23	A-4a(6)
		22.0	23.5	22.0	25.0	0	2	19	48	31	32	12	31	A-6a(9)
		25.0	27.0	25.0	30.0	0	0	5	32	63	36	17	33	A-6b(10)
		30.0	32.0	30.0	35.0	0	0	3	66	31	26	8	28	A-4b(8)
		35.0	37.0	35.0	40.0	0	0	2	23	75	39	18	30	A-6b(10)
		40.0	41.0	40.0	41.0	0	0	2	33	65	42	20	21	A-7-6 (11)
		41.0	42.0	41.0	45.5	Gray shale								Visual
						Boring Completed								
293+30	52' Lt.	0.0	0.5	0.0	0.5	Topsoil and gray sandy clay								Visual (Fill)
		0.5	1.5	0.5	2.5	17	8	13	34	28	28	12	11	A-6a(6) (Fill)
		2.5	4.0	2.5	5.0	18	6	11	35	30	18	11	16	A-6a(6) (Fill)
		5.0	7.0	5.0	10.0	15	7	16	39	23	20	9	15	A-4a(5)
		10.0	12.0	10.0	15.0	23	14	22	23	18	21	6	13	A-4a(1)
		15.0	17.0	15.0	20.0	21	13	16	32	18	19	6	12	A-4a(3)
		20.0	22.0	20.0	25.0	0	0	1	36	63	38	17	29	A-6b(10)
		25.0	27.0	25.0	30.0	0	0	8	58	34	29	11	36	A-6a(9)
		30.0	32.0	30.0	35.0	0	2	6	62	30	29	8	30	A-4b(8)
		35.0	37.0	35.0	37.0	10	3	43	32	12	18	4	18	A-4a(2)
		37.0	38.5	37.0	38.5	27	20	11	-12-				19	A-1b(0)
		40.0	42.0	38.5	45.0	2	3	4	25	66	40	20	28	A-6b(12)
		45.0	47.0	45.0	50.0	0	0	1	67	32	32	11	30	A-6a(9)
		50.0	51.5	50.0	53.0	2	2	3	34	59	36	16	20	A-6b(10)
						Refusal at 53.0 ft. Boring Completed								
297+00	CL	0.0	1.5	0.0	1.5	8	7	11	33	41	42	22	18	A-7-6(13) (Fill)
		2.5	4.0	1.5	4.0	11	7	5	37	40	44	27	21	A-7-6(16)
		5.0	6.5	4.0	7.0	2	4	5	38	51	41	20	20	A-7-6(12)
		7.0	8.5	7.0	9.0	0	2	2	35	61	45	21	16	A-7-6(15)
		9.0	10.5	9.0	12.5	Brown weathered shale and limestone								Visual
		12.0	12.2	9.0	12.5	Brown weathered shale and limestone								Visual
						Refusal at 12.5', Boring Completed								
301+00	CL	0.0	1.0	0.0	1.0	Topsoil								Visual
		1.0	1.5	1.0	2.5	1	1	8	32	58	46	21	16	A-7-6(13)
		2.5	4.0	2.5	5.0	10	8	12	30	40	29	11	13	A-6a(7)
		5.0	6.5	5.0	10.0	8	10	14	36	32	32	15	13	A-6a(9)
		10.0	11.5	10.0	14.0	12	10	17	33	28	25	10	11	A-4a(5)
		12.5	14.0	10.0	14.0	18	10	15	31	26	23	8	11	A-4a(5)
						Refusal at 14.5', Boring Completed								

SUMMARY OF SOIL TEST DATA

NOTE: NP SHOWN IN LIQUID LIMIT AND PLASTICITY INDEX COLUMNS INDICATES THAT THE MATERIAL IS NON-PLASTIC

Station	Offset	Sample Depth From	Sample Depth To	Stratum Depth From	Stratum Depth To	% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC	SHTL Class
Northeast Expressway (I-71)														
305+00	CL	0.0	1.5	0.0	2.5	Brown weathered shale and limestone								Visual
		1.5	2.5	0.0	2.5	Brown weathered shale and limestone								Visual
						Refusal at 2.5', Boring Completed								
309+00	CL	0.0	1.0	0.0	1.0	1	6	11	39	43	35	15	11	A-6a(10) (Fill)
		2.5	4.0	1.0	5.0	1	4	15	30	50	42	22	18	A-7-6(13)
		5.0	6.0	5.0	6.0	Brown weathered shale, hard								Visual
						Refusal at 6', Boring Completed								
Fredonia Avenue														
15+00	CL	0.0	0.5	0.0	0.5	Clay and brick								Visual (Fill)
		0.5	1.5	0.0	5.0	1	1	5	55	38	32	12	23	A-6a(9)
		5.0	6.5	5.0	7.5	1	2	8	53	36	31	14	16	A-6a(10)
		10.0	11.5	7.5	14.0	15	5	10	23	49	48	28	24	A-7-6(17)
		14.0	15.0	14.0	15.0	16	1	0	65	18	26	5	22	A-4b(8)
						Boring Completed								
16+00	CL	0.0	1.5	0.0	12.5	Cinders, clay, some brick.								Visual (Fill)
		5.0	6.5	0.0	12.5	Cinders, clay, some brick								Visual (Fill)
		10.0	11.5	0.0	12.5	Cinders, clay, some brick								Visual (Fill)
		12.5	14.0	12.5	15.0	32	7	11	25	25	29	13	16	A-6a(4)
		15.0	16.5	15.0	17.5	14	10	14	30	32	26	9	17	A-4a(5)
		17.5	19.0	17.5	21.5	19	9	14	32	26	27	10	17	A-4a(5)
						Boring Completed								
Relocated Gilbert Avenue														
21+60	CL	0.0	1.0	0.0	1.0	Topsoil								Visual (Fill)
		1.0	6.0	1.0	9.0	16	3	4	36	41	39	18	15	A-6b(11)
		9.0	11.0	9.0	11.0	6	2	4	32	56	46	30	12	A-7-6(17)
						Refusal at 11'., Boring Completed								
Gilbert Avenue-Blair Avenue Connection														
7+15	CL	0.0	1.5	0.0	5.0	0	5	13	40	42	38	20	15	A-6b(12)
		2.5	4.0	0.0	5.0	4	7	11	34	44	38	22	12	A-6b(12)
		5.0	6.5	5.0	10.0	8	10	12	36	34	30	15	12	A-6a(9)
		10.0	11.5	10.0	12.5	19	9	14	33	25	27	12	13	A-6a(5)
		15.0	16.5	12.5	17.5	18	9	14	41	18	28	14	15	A-6a(6)
		17.5	19.0	17.5	19.0	31	8	12	29	20	29	13	10	A-6a(4)
						Boring Completed								
19+00	CL	0.0	1.0	0.0	1.0	Topsoil								Visual
		1.0	1.5	1.0	5.0	0	10	4	40	46	40	21	21	A-6b(12)
		5.0	5.5	5.0	6.5	Brown weathered shale and limestone								Visual
						Refusal at 6.5', Boring Completed								
25+50	CL	0.0	1.5	0.0	5.0	0	2	2	60	36	36	17	14	A-6b(11)
		5.0	6.5	5.0	10.0	0	2	6	42	50	51	20	19	A-7-5(14)
		10.0	10.5	10.0	12.0	Brown and gray weathered shale and limestone								Visual
						Refusal at 12', Boring Completed								
Jonathan Avenue														
8+00	CL	0.0	1.0	0.0	1.0	Topsoil								Visual
		1.0	1.5	1.0	3.0	5	7	6	45	37	30	10	9	A-4a(8)
						Boring Completed. Refusal @ 3-ft.								
12+00	CL	0.0	0.5	0.0	0.5	Topsoil								Visual
		0.5	1.5	0.0	2.5	0	4	13	49	34	32	13	14	A-6a(9)
		2.5	4.0	2.5	7.5	0	1	10	44	45	43	22	18	A-7-6(13)
		5.0	6.5	2.5	7.5	0	1	10	46	43	41	20	22	A-7-6(12)
		7.5	9.0	7.5	10.0	6	1	4	55	34	28	10	19	A-4b(8)
						Boring Completed								
15+00	20' Rt.	0.0	0.5	0.0	0.5	Topsoil								Visual
		0.5	1.5	0.5	2.5	0	1	7	41	51	38	17	13	A-6b(11)
		2.5	4.0	2.5	5.0	7	5	6	37	45	37	17	21	A-6b(11)
		5.0	6.5	5.0	10.0	25	10	11	39	15	27	10	14	A-4a(4)
		10.0	11.5	10.0	12.5	13	5	8	44	30	28	12	16	A-6a(9)
		12.5	14.0	12.5	15.5	16	7	7	36	34	29	13	16	A-6a(8)
		15.5	17.0	15.5	17.0	19	5	5	32	39	37	16	16	A-6b(9)
						Boring Completed								
17+00	CL	0.0	1.5	0.0	2.5	Brown clay, some cinders, stiff								Visual (Fill)
		2.5	4.0	2.5	5.0	4	2	5	42	47	25	4	17	A-4a(8) (Fill)
		5.0	6.5	5.0	7.0	0	4	5	44	47	36	15	18	A-6a(10)
		8.5	10.0	7.0	10.0	Brown weathered shale, moist-hard								
						Boring Completed								
20+00	CL	0.0	0.5	0.0	0.5	Topsoil								Visual
		0.5	1.5	0.5	5.0	0	1	2	55	42	38	18	13	A-6b(11)
		5.0	6.5	5.0	8.5	1	4	10	26	59	70	42	25	A-7-6(20)
		8.5	10.0	8.5	10.0	3	8	14	34	41	39	19	14	A-6b(11)
						Boring Completed								
22+25	CL	0.0	1.5	0.0	4.5	7	5	8	43	37	31	11	12	A-6a(8) (Fill)
		2.5	4.0	0.0	4.5	3	5	13	37	42	32	13	15	A-6a(9) (Fill)
		5.0	6.5	4.5	9.0	10	8	12	28	42	40	20	17	A-6b(11)
		9.0	10.5	9.0	10.5	17	13	15	28	27	24	9	11	A-4a(4)
						Boring Completed								

SUMMARY OF SOIL TEST DATA

NOTE: NP SHOWN IN LIQUID LIMIT AND PLASTICITY INDEX COLUMNS INDICATES THAT THE MATERIAL IS NON-PLASTIC

Station	Offset	Sample Depth From	Sample Depth To	Stratum Depth From	Stratum Depth To	% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC	SHTL Class
Victory Parkway														
9+00	CL	0.0	1.0	0.0	1.0	Cinders and gravel								Visual (Fill)
		1.0	5.0	1.0	5.0	0	2	3	38	57	38	20	18	A-6b(12)
		5.0	7.0	5.0	10.0	2	2	2	40	54	39	22	14	A-6b(12)
						Boring Completed								
11+43	73' Rt	0.0	1.5	0.0	5.0	28	8	11	28	25	31	14	16	A-6a (5) (Fill)
		5.0	7.0	5.0	10.0	9	6	18	44	23	28	8	22	A-4a (6) (Fill)
		10.0	12.0	10.0	12.0	20	6	17	38	19	22	9	38	A-4a (4) (Fill)
		12.0	13.5	12.0	15.0	1	1	0	37	61	35	17	17	A-6b (11) (Fill)
		15.0	17.0	15.0	19.5	19	6	6	43	26	29	11	17	A-6a (7)
		19.5	21.0	19.5	24.5	28	3	2	28	39	39	18	20	A-6b (9)
		24.5	26.0	24.5	26.5	Brown weathered shale with limestone fragments								Visual
						Refusal at 26.5 ft. Boring Completed								
11+58	157' Rt	0.0	1.0	0.0	1.0	21	7	13	32	27	30	12	14	A-6a (6) (Fill)
		2.5	4.0	1.0	6.5	14	10	18	27	31	31	14	18	A-6a (6)
		7.0	8.5	6.5	10.0	30	9	14	29	18	25	10	14	A-4a (2)
		10.0	12.0	10.0	20.0	24	7	12	34	23	25	10	13	A-4a (4)
		15.0	17.0	10.0	20.0	10	13	32	24	24	23	8	13	A-4a (4)
		20.0	22.0	20.0	25.0	0	0	2	44	54	33	13	24	A-6a (9)
		25.0	27.0	25.0	27.0	11	12	42	21	14	17	3	22	A-3a (0)
		27.0	28.5	27.0	32.0	0	0	4	64	32	28	8	29	A-4b (8)
		30.0	32.0	27.0	32.0	0	1	1	64	34	32	8	15	A-4b (8)
		32.0	33.5	32.0	35.0	0	2	4	57	37	34	11	35	A-6a (8)
		35.0	36.5	35.0	40.0	29	4	6	22	39	38	20	20	A-6b (9)
		40.0	41.5	40.0	41.5	Gray shale								Visual
						Refusal at 41.5 ft. Boring Completed								
13+00	CL	0.0	1.0	0.0	1.0	16	6	10	36	32	39	16	13	A-6b(10)
		1.0	5.0	1.0	5.0	10	6	12	34	38	36	20	15	A-6b(11)
		5.0	8.0	5.0	8.0	8	6	17	35	34	34	19	14	A-6b(10)
		8.0	10.0	8.0	10.0	5	4	16	41	36	34	5	24	A-4a(8)
						Boring Completed								
13+98	2' Lt.	0.0	0.5	0.0	0.5	Topsoil and gray sandy clay								Visual (Fill)
		0.5	1.5	0.5	2.5	7	6	21	37	29	26	10	16	A-4a(6) (Fill)
		5.0	7.0	2.5	7.0	8	9	14	34	35	36	16	15	A-6b(10)
		7.0	8.5	7.0	10.0	17	7	16	31	29	33	14	26	A-6a(7)
		10.0	12.0	10.0	20.0	23	7	12	35	23	24	9	14	A-4a(5)
		15.0	17.0	10.0	20.0	20	22	19	23	16	18	5	13	A-4a(3)
		20.0	22.0	20.0	22.0	5	5	12	53	25	21	5	16	A-4b(8)
		22.0	23.5	22.0	25.0	0	2	1	27	70	40	20	32	A-6b(12)
		25.0	27.0	25.0	27.0	0	0	2	54	44	32	13	23	A-6a(9)
		27.0	28.5	27.0	30.0	32	16	6	25	21	30	13	15	A-6a(3)
		30.0	32.0	30.0	35.0	0	2	10	61	27	36	7	36	A-4b(8)
		35.0	36.5	35.0	40.0	32	22	22	14	10	17	2	14	A-1b(0)
		40.0	41.5	40.0	44.5	54	8	7	19	12	30	12	22	A-2-6 (1)
						Refusal at 44 ft. Boring Completed								
17+00	CL	0.0	0.5	0.0	0.5	6	10	15	43	26	40	19	16	A-6b(10)
		0.5	1.5	0.5	7.0	14	7	10	37	32	34	16	18	A-6b(9)
		6.0	7.0	0.5	7.0	2	5	7	38	48	37	21	19	A-6b(12)
						Boring Completed. Refusal at 7'								
22+00	CL	0.0	0.5	0.0	0.5	Topsoil								
		0.5	1.5	0.5	8.0	4	4	10	40	42	40	22	20	A-6b(12)
		4.5	5.5	0.5	8.0	8	4	9	37	42	40	23	22	A-6b(13)
		8.0	10.0	8.0	10.0	24	16	21	23	16	30	14	20	A-6a(2)
						Boring Completed								
26+00	CL	0.0	1.0	0.0	1.0	Topsoil								Visual
		1.0	5.0	1.0	5.0	4	5	12	44	35	36	18	18	A-6b(11)
		5.0	10.0	5.0	10.0	11	7	12	35	35	34	19	17	A-6b(10)
		10.0	12.0	10.0	12.0	7	5	10	38	40	37	20	18	A-6b(12)
		12.0	15.0	12.0	15.0	30	13	16	23	18	41	13	36	A-7-6(2)
						Boring Completed								
30+00	CL	0.0	0.4	0.0	0.4	Concrete								Visual
		0.4	5.0	0.4	5.0	32	7	11	28	22	26	10	14	A-4a(3) (Fill)
		5.0	8.0	5.0	8.0	19	7	12	31	31	29	13	16	A-6a(6) (Fill)
		8.0	13.0	8.0	13.0	0	2	4	52	42	38	17	25	A-6b(11)
		13.0	18.0	13.0	18.0	2	4	17	47	30	28	12	24	A-6a(9)
		18.0	19.5	18.0	19.5	12	6	8	30	44	38	19	15	A-6b(11)
						Refusal at 19.5', Boring Completed								
Whittier Avenue														
8+00	CL	0.0	1.5	0.0	2.5	4	8	7	48	33	30	11	18	A-6a(8)
		2.5	4.0	2.5	5.0	0	5	4	43	48	55	25	26	A-7-5(17)
		5.0	6.5	5.0	7.0	4	6	6	39	45	42	19	27	A-7-6(12)
						Refusal at 7', Boring Completed								

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SOIL PROFILE
HAMILTON COUNTY
HAM-71-3.61

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THE H.C. NUTTING COMPANY.
SOIL ENGINEERS
CINCINNATI, OHIO 45226

3/12

SUMMARY OF SOIL TEST DATA

NOTE: NP SHOWN IN LIQUID LIMIT AND PLASTICITY INDEX COLUMNS INDICATES THAT THE MATERIAL IS NON-PLASTIC

Station	Offset	Sample Depth From	Sample Depth To	Stratum Depth From	Stratum Depth To	% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC	SHTL Class
RAMP VA														
286+00	BL	0.0	2.0	0.0	5.0	32	6	4	26	32	37	18	16	A-6b(8)(FILL)
		2.0	5.0	0.0	5.0	17	8	10	28	37	40	21	20	A-6b(10)(FILL)
		5.0	10.0	5.0	10.0	32	7	9	36	16	40	20	26	A-6b(7)(FILL)
		10.0	15.0	10.0	15.0	5	4	5	53	33	34	14	25	A-6a(10)(FILL)
		15.0	20.0	15.0	20.0	1	7	10	26	56	39	16	20	A-6b(10)
		20.0	25.0	20.0	25.0	0	4	2	39	55	42	23	15	A-7-6(15)
						BORING COMPLETED								
RAMP VA														
290+00	BL	0.0	5.0	0.0	5.0	CINDERS AND GRAVEL								VISUAL(FILL)
		5.0	10.0	5.0	10.0	30	7	8	32	23	32	12	22	A-6a(5)(FILL)
		10.0	15.0	10.0	20.0	5	10	9	36	40	38	17	24	A-6b(11)(FILL)
		15.0	20.0	10.0	20.0	7	6	11	37	39	34	17	20	A-6b(11)(FILL)
		20.0	25.0	20.0	30.0	CINDERS AND GRAVEL, WET								VISUAL(FILL)
		25.0	30.0	20.0	30.0	CINDERS AND GRAVEL, WET								VISUAL(FILL)
		30.0	35.0	30.0	35.0	2	5	5	34	58	52	27	30	A-7-6(17)
						BORING COMPLETED								
RAMP VB														
299+00	BL	0.0	1.5	0.0	1.5	2	6	22	44	26	30	10	15	A-4a(7)
		2.5	4.0	1.5	4.0	19	6	12	25	38	40	22	17	A-6b(10)
		5.0	6.5	4.0	10.0	1	3	4	42	50	42	22	14	A-7-6(13)*
		10.0	11.5	10.0	12.5	31	8	9	19	33	41	21	12	A-7-6(7)*
		12.5	14.0	12.5	16.5	21	7	6	30	36	42	24	13	A-7-6(12)*
						BORING COMPLETED								
RAMP VB														
302+00	BL	0.0	1.5	0.0	1.5	TOPSOIL								VISUAL
		2.5	4.0	1.5	5.0	15	3	4	32	46	44	25	16	A-7-6(15)
		5.0	6.5	5.0	9.0	0	6	27	42	25	25	11	16	A-6a(6)
		10.0	11.5	9.0	20.0	0	4	6	42	48	45	25	22	A-7-6(15)
		15.0	16.5	9.0	20.0	0	0	1	27	72	46	28	30	A-7-6(16)
		20.0	21.5	20.0	25.0	0	2	2	32	64	40	22	20	A-6b(12)
		25.0	26.5	25.0	35.0	BROWN WEATHERED SHALE AND LIMESTONE								VISUAL
		30.0	31.5	25.0	35.0	BROWN WEATHERED SHALE AND LIMESTONE								VISUAL
		35.0	36.5	25.0	41.5	GRAY WEATHERED SHALE AND LIMESTONE								VISUAL
		40.0	41.5	25.0	41.5	GRAY WEATHERED SHALE AND LIMESTONE								VISUAL
						BORING COMPLETED								
RAMP VB														
305+00	BL	0.0	1.5	0.0	2.5	TOPSOIL								VISUAL(FILL)
		2.5	4.0	2.5	4.0	0	2	3	66	29	33	7	12	A-4b(8)
		5.0	6.5	4.0	9.0	0	0	2	58	40	37	18	14	A-6b(11)
		10.0	11.5	9.0	15.0	0	2	5	41	52	44	24	13	A-7-6(14)
		15.0	16.5	15.0	20.0	13	7	13	36	31	28	13	12	A-6a(7)
		20.0	21.5	20.0	25.0	18	8	12	33	29	28	13	12	A-6a(6)
		22.5	24.0	20.0	25.0	16	8	12	40	24	27	11	13	A-6a(6)
		25.0	26.5	25.0	34.0	25	9	12	33	23	28	13	15	A-6a(5)
		30.0	31.5	25.0	34.0	20	10	14	30	26	26	13	13	A-6a(5)
		32.5	34.0	25.0	34.0	22	10	12	30	26	25	12	12	A-6a(5)
		35.0	36.5	34.0	37.5	11	9	14	35	31	25	12	14	A-6a(7)
		37.5	39.0	37.5	40.0	20	8	12	32	28	27	14	13	A-6a(6)
		40.0	41.5	40.0	44.0	30	8	12	27	23	25	12	16	A-6a(4)
		45.0	46.5	44.0	47.5	22	9	12	31	26	25	12	15	A-6a(5)
		47.5	49.0	47.5	50.0	19	7	10	35	29	28	14	16	A-6a(7)
						BORING COMPLETED								
RAMP VB														
311+00	BL	0.0	1.5	0.0	2.5	1	6	7	55	31	36	12	15	A-6a(9)(FILL)
		2.5	4.0	2.5	5.0	3	7	13	23	54	27	11	15	A-6a(8)
		5.0	6.5	5.0	7.5	0	4	10	33	53	59	35	26	A-7-6(20)
		7.5	9.0	7.5	10.0	1	4	13	33	49	43	22	23	A-7-6(13)
		10.0	11.5	10.0	15.0	19	11	15	32	23	25	8	14	A-4a(4)
		15.0	16.5	15.0	17.5	18	10	13	33	26	26	10	13	A-4a(5)
		17.5	19.0	17.5	19.0	15	11	7	42	25	26	8	27	A-4a(6)
		19.0	20.0	19.0	20.0	30	16	16	24	14	22	6	18	A-4a(1)
						BORING COMPLETED								
RAMP VB														
313+00	BL	0.0	1.0	0.0	1.0	TOPSOIL, WET - SOFT								VISUAL
						REFUSAL AT 1', BORING COMPLETED								

* WEATHERED SHALE AND LIMESTONE LAYERS

SUMMARY OF SOIL TEST DATA

NOTE: NP SHOWN IN LIQUID LIMIT AND PLASTICITY INDEX COLUMNS INDICATES THAT THE MATERIAL IS NON-PLASTIC

Station	Offset	Sample Depth From	Sample Depth To	Stratum Depth From	Stratum Depth To	% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC	SHTL Class
RAMP VC														
292+60	BL	0.0	1.0	0.0	1.0	TOPSOIL								VISUAL
		1.0	5.0	1.0	5.0	10	3	25	46	16	21	6	8	A-4a(5)
		5.0	10.0	5.0	10.0	0	0	24	61	15		NP	6	A-4b(8)
		10.0	15.0	10.0	15.0	11	10	17	38	24	24	11	11	A-6a(6)
		15.0	20.0	15.0	20.0	8	1	13	51	27	22	7	14	A-4b(8)
		20.0	25.0	20.0	27.0	14	8	14	40	24	22	8	14	A-4a(6)
						BORING COMPLETED								
RAMP VC														
296+00	BL	0.0	5.0	0.0	2.0	CINDERS, SAND AND GRAVEL								VISUAL(FILL)
		2.0	4.0	2.0	4.0	13	7	8	36	36	34	19	16	A-6b(11)
		4.0	6.0	4.0	10.0	14	5	8	37	36	31	13	17	A-6a(9)
		6.0	10.0	4.0	10.0	9	7	11	39	32	27	14	14	A-6a(9)
						BORING COMPLETED								
RAMP VC														
300+00	BL	0.0	2.0	0.0	5.0	14	10	15	42	19	28	14	8	A-6a(6)(FILL)
		2.0	5.0	0.0	5.0	17	7	13	35	28	28	12	11	A-6a(6)(FILL)
		5.0	10.0	5.0	12.0	1	6	13	42	38	32	18	22	A-6b(11)(FILL)
		10.0	11.5	5.0	12.0	9	4	12	34	41	37	17	31	A-6b(11)(FILL)
		12.5	14.0	12.0	15.0	5	5	5	43	42	40	22	21	A-6b(12)
		15.0	16.5	15.0	17.5	0	3	3	43	51	41	25	17	A-7-6(13)
		17.5	18.5	17.5	19.2	56	6	4	12	22	42	25	20	A-2-7(5)*
						REFUSAL AT 19.2', BORING COMPLETED								
RAMP VD														
288+00	BL	0.0	1.0	0.0	1.0	CINDERS, BRICK AND GRAVEL								VISUAL(FILL)
		1.0	5.0	1.0	5.0	10	4	7	35	44	40	20	22	A-6b(12)(FILL)
		5.0	7.0	5.0	7.0	3	2	6	39	50	37	18	20	A-6b(11)
		7.0	10.0	7.0	10.0	5	5	10	49	31	28	11	16	A-6a(8)
		10.0	15.0	10.0	15.0	4	11	21	36	28	25	10	13	A-4a(6)
		15.0	20.0	15.0	20.0	20	6	10	36	28	29	13	14	A-6a(7)
		20.0	25.0	20.0	25.0	38	7	11	26	18	22	8	12	A-4a(2)
		25.0	28.0	25.0	28.0	22	10	16	31	21	22	8	12	A-4a(3)
						BORING COMPLETED								
RAMP VD														
291+00	BL	0.0	1.0	0.0	1.0	CINDERS AND GRAVEL								VISUAL(FILL)
		1.0	5.0	1.0	5.0	4	2	14	46	34	25	11	21	A-6a(8)
		5.0	10.0	5.0	10.0	0	0	18	54	28	23	9	22	A-4b(8)
		10.0	15.0	10.0	15.0	15	7	18	37	23	24	10	18	A-4a(5)
		15.0	20.0	15.0	20.0	11	9	15	39	26	24	11	15	A-6a(6)
		20.0	25.0	20.0	30.0	24	11	17	28	20	22	10	12	A-4a(3)
		25.0	30.0	20.0	30.0	18	11	17	32	22	21	9	14	A-4a(4)
						BORING COMPLETED								

* WEATHERED SHALE AND LIMESTONE LAYERS

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SOIL PROFILE
HAMILTON COUNTY
HAM-71-3.61

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
CINCINNATI, OHIO 45226

4/32
4/12

Begin project HAM-71-3.61
Station 259+00

WHITTER AVE. RELOCATION

FREDONIA AVE. RELOCATION

CONSTRUCTION ℄ NORTHEAST EXPRESSWAY (I-71)

GILBERT AVE. RELOCATION

GILBERT-BLAIR CONNECTION

MATCH LINE

Van Buren Ave.
Whittier St.
Penn. R. R.
Fredonia Ave.
Melbourne St.
Dellway St.
Ridgeway Ave.
Blair Ave.
Melish Ave.
Wehrman Ave.
Syracuse Ave.
Kerper Ave.
Buena Vista Place
Altoona St.
Walter St.
Mathers St.
Rommelsburg St.
Beresford Ave.
Gilbert Ave.

260 265 270 275 280 285 RAMP VA 285 285 RAMP VD

9 10 15 20 25

N

SCALE: 1" = 100'

Rev-6-16-71

SOIL PROFILE
HAMILTON COUNTY
HAM-71-3.61

THE H.C. NUTTING COMPANY
SOIL ENGINEERS
CINCINNATI, OHIO 45226

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SCALE: 1" = 100'

MATCH LINE

Cleveland Ave.

Beresford Ave.

RAMP VA ℄

RAMP VD ℄

VICTORY PARKWAY RELOCATION ℄

CONSTRUCTION ℄ NORTHEAST EXPRESSWAY (I-71)

Parkway

Penn. R. R.

RAMP VB ℄

RAMP VC ℄

RAMP ME

Gaff Ave.

Johathon Ave.

Gilbert Ave.

JOHNATHON AVE. ℄ RELOCATION

Sulsar St.

290 295 296 300 305 310 25 30 20 15 10 5

End project HAM-71-3.61
Station 310+00

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SOIL PROFILE
HAMILTON COUNTY
HAM-71-3.61

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
CINCINNATI, OHIO 45226

6/32
6/12

790
780
770
760
750
740
730
720
710
700
690
680
670
660
650

257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289

Existing ground line.

℄ WEHRMAN ST.

17
19
19
24
TR
Refusal

℄ PENN. R.R.

86' Lt.
Rubble, Clay & Cinders
TR
A.
B.
C.

℄
TS+1.0'
22
16
20
16
17
18
37
TR
Refusal

℄ FREDONIA AVE.

10' Lt.
0.4' concrete
24
16
30
12
TR
A.
B.
C.
D.
E.

℄
Cinders & clay
18
18
16
14
20
TR
Refusal

℄
14
14
11
11
13

℄ SYRACUSE ST.

℄ MELBOURNE

Proposed grade line.

℄
Blacktop & gravel.
20
17
19

2' Rt.
22
16
Rubble, Cinders & Wood
25
24
28
W
TR
Tough gray SHALE, with 1 to 2" beds of gray LIMESTONE at top (Approx. 95% SHALE). Core loss 8%.

℄
10
13
11
Refusal

℄
Clay, gravel & cinders
17
14
TR

A. Shale & Limestone interbedded brown & gray (approx. 50% shale 50% limestone) Shale medium tough weathered; Limestone in 1/4" to 4" beds. Core Loss 17%.

B. Shale & Limestone interbedded gray (approx. 50% shale 50% limestone) Shale soft to tough limestone in 1/2" to 1" beds. Core Loss 6%.

C. Shale & Limestone interbedded gray (approx. 65% shale 35% limestone) Shale soft to tough limestone in 1/2" to 5-1/2" beds. No Core Loss.

A. Shale & Limestone interbedded brown & gray (approx. 75% shale 25% limestone) Shale soft & rubby to tough, weathered; Limestone in 1/2" to 3-1/2" beds. Core Loss 54%

B. Shale & Limestone interbedded brown & gray (approx 65% shale 35% limestone) Shale medium tough to tough; Limestone in 1" to 6" beds. Core Loss 14%.

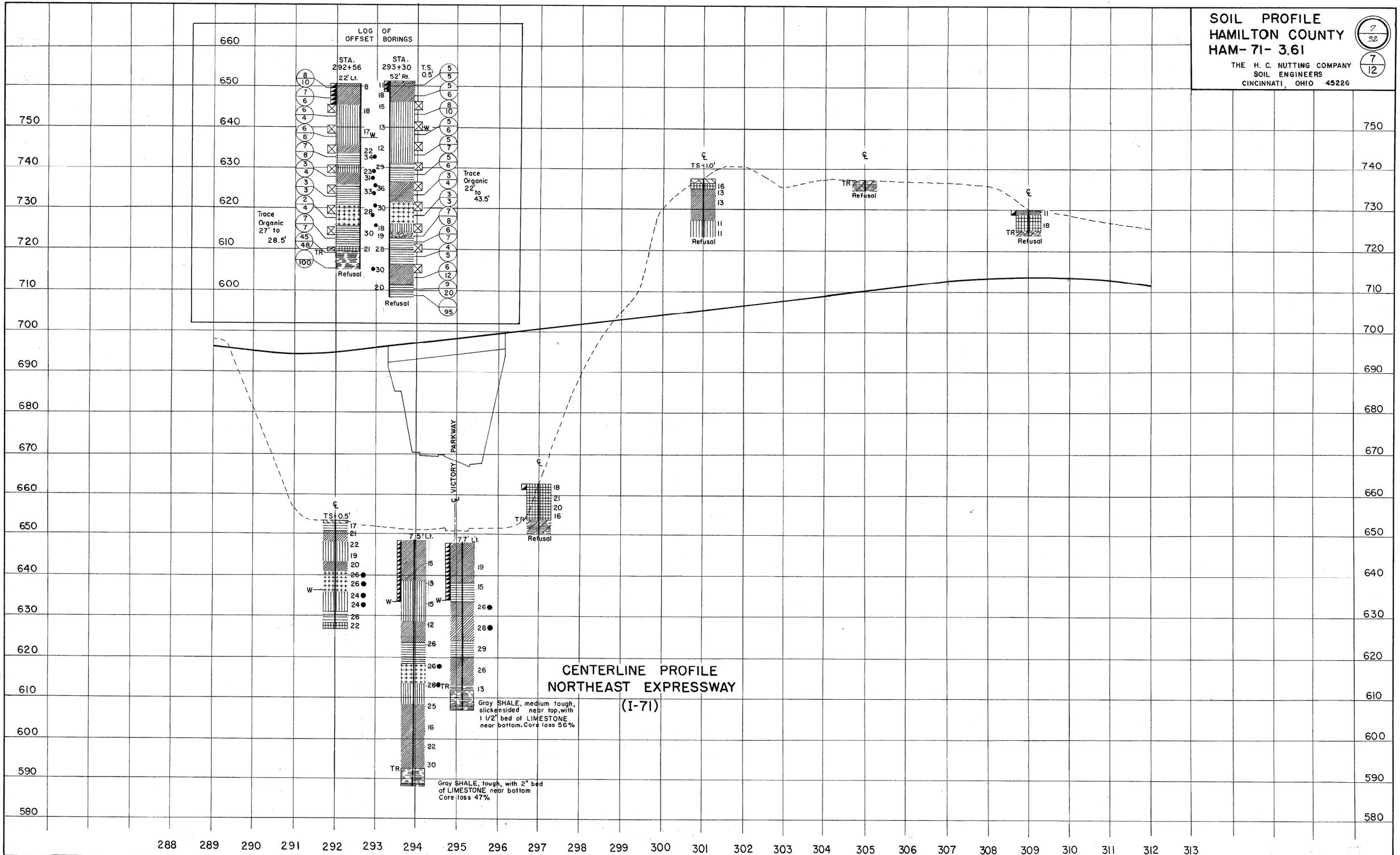
C. Shale & Limestone interbedded gray (approx 70% shale 30% limestone) Shale rubbly to tough. Limestone in 1-1/2" to 4" beds. No Core Loss.

D. Shale & Limestone interbedded brown & gray (approx. 65% shale 35% limestone) Shale rubbly to tough limestone in 1" to 4" beds. Core Loss 10%.

E. Shale & Limestone interbedded gray some brown (approx. 65% shale 35% limestone) shale tough limestone in 1" to 5" beds. Core Loss 10%.

CENTERLINE PROFILE
NORTHEAST EXPRESSWAY
(I-71)

Rev. 6-16-71

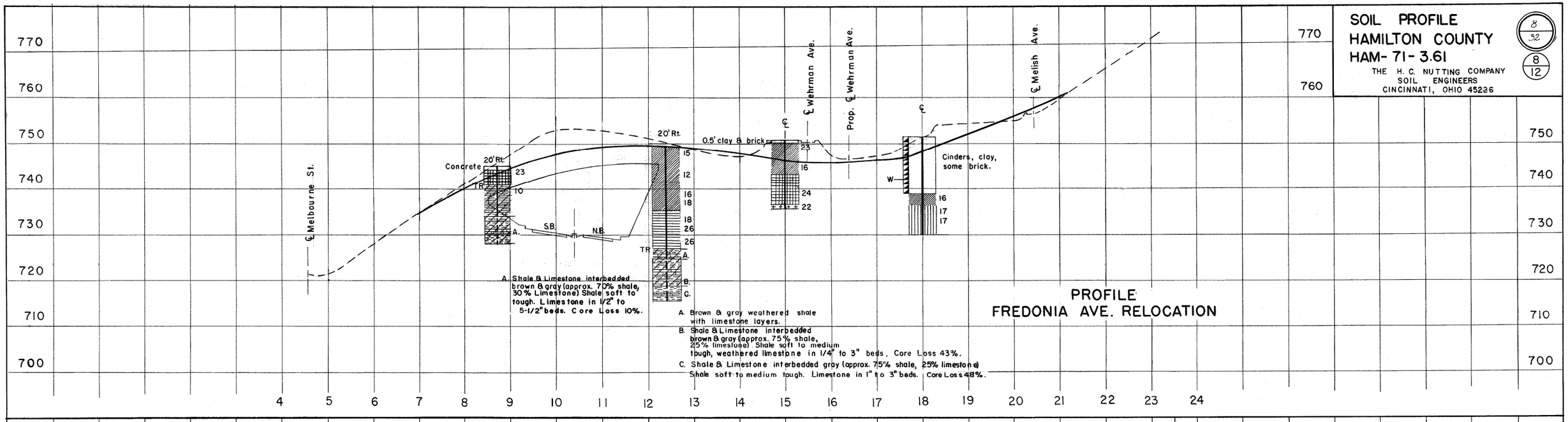

SOIL PROFILE
HAMILTON COUNTY
HAM-71-3.61
THE H. C. NUTTING COMPANY
SOIL ENGINEERS
CINCINNATI, OHIO 45226
7/32
7/12
LOG OF OFFSET BORINGS
STA. 292+56 22' Lt.
STA. 293+30 52' Rt.
T.S. 0.5'
Trace Organic 27' to 28.5'
Trace Organic 22' to 43.5'
Refusal
TS=1.0'
TS=0.5'
7.5' Lt.
7.7' Lt.
VICTORY PARKWAY
Gray SHALE, medium tough, slickensided near top, with 1 1/2" bed of LIMESTONE near bottom. Core loss 56%
Gray SHALE, tough, with 2" bed of LIMESTONE near bottom Core loss 47%
CENTERLINE PROFILE
NORTHEAST EXPRESSWAY
(I-71)
288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313

Rev-6-16-71

SOIL PROFILE
HAMILTON COUNTY
HAM- 71- 3.61

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
CINCINNATI, OHIO 45226

8/32
8/12



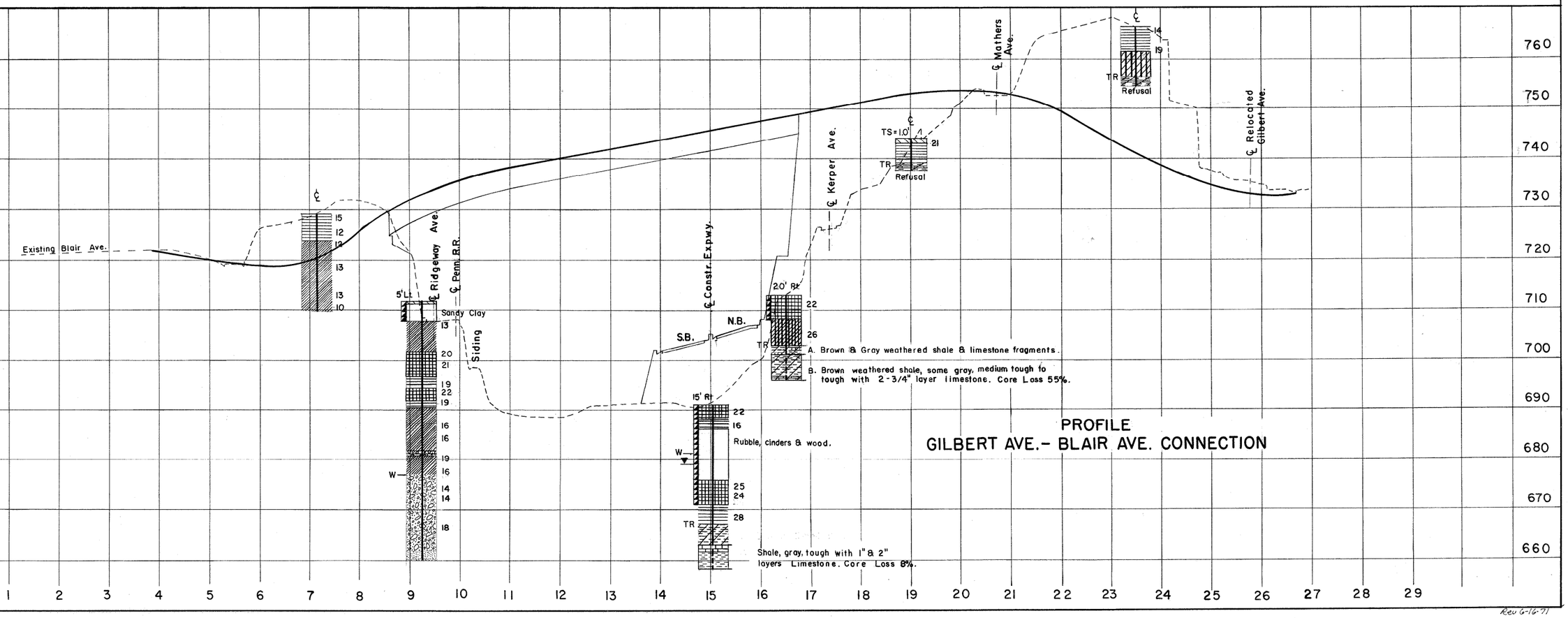
A. Shale & Limestone interbedded brown & gray (approx. 70% shale, 30% Limestone) Shale soft to tough. Limestone in 1/2" to 5-1/2" beds. Core Loss 10%.

A. Brown & gray weathered shale with limestone layers.

B. Shale & Limestone interbedded brown & gray (approx. 75% shale, 25% limestone). Shale soft to medium tough, weathered limestone in 1/4" to 3" beds. Core Loss 43%.

C. Shale & Limestone interbedded gray (approx. 75% shale, 25% limestone) Shale soft to medium tough. Limestone in 1" to 3" beds. Core Loss 48%.

PROFILE
FREDONIA AVE. RELOCATION



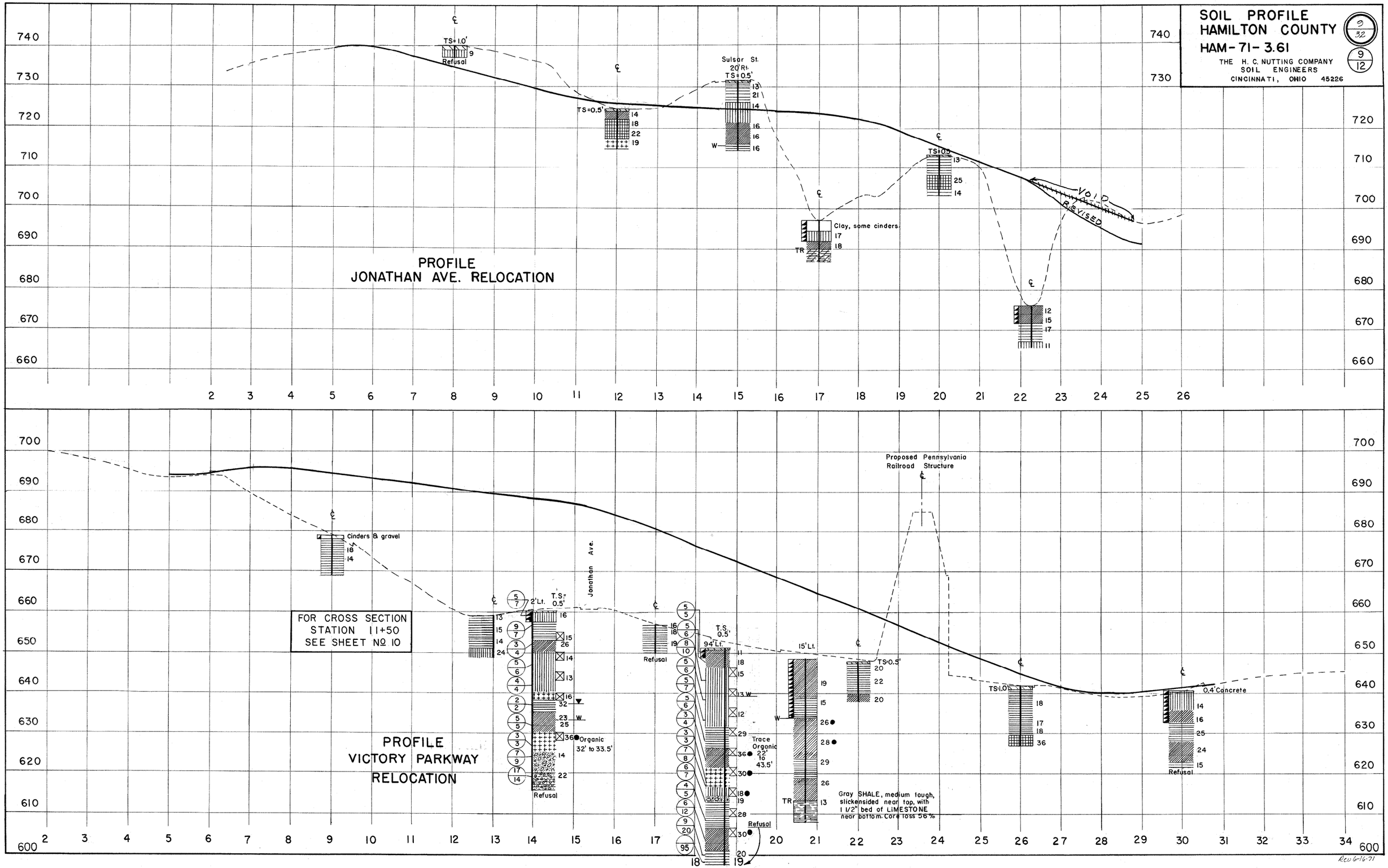
A. Brown & Gray weathered shale & limestone fragments.

B. Brown weathered shale, some gray, medium tough to tough with 2-3/4" layer limestone. Core Loss 55%.

Shale, gray, tough with 1" & 2" layers Limestone. Core Loss 8%.

PROFILE
GILBERT AVE.- BLAIR AVE. CONNECTION

Rev 6-16-71


SOIL PROFILE
HAMILTON COUNTY
HAM-71-3.61
THE H. C. NUTTING COMPANY
SOIL ENGINEERS
CINCINNATI, OHIO 45226
9/32
9/12
PROFILE
JONATHAN AVE. RELOCATION
TS=1.0'
Refusal
TS=0.5'
Sulsar St.
20' Rt.
TS=0.5'
Clay, some cinders.
TR
VOID
REVISED
PROFILE
VICTORY PARKWAY
RELOCATION
Cinders & gravel
Jonathan Ave.
FOR CROSS SECTION
STATION 11+50
SEE SHEET No 10
2' Lt.
T.S. 0.5'
Organic
32' to 33.5'
Refusal
94' Lt.
Trace Organic
22' to 43.5'
15' Lt.
Proposed Pennsylvania
Railroad Structure
TS=0.5'
TS=1.0'
0.4' Concrete
Gray SHALE, medium tough, slickensided near top, with 1 1/2" bed of LIMESTONE near bottom. Core loss 56%
Rev 6-16-71

SOIL PROFILE
HAMILTON COUNTY
HAM-71-3.61

10/32

10/12

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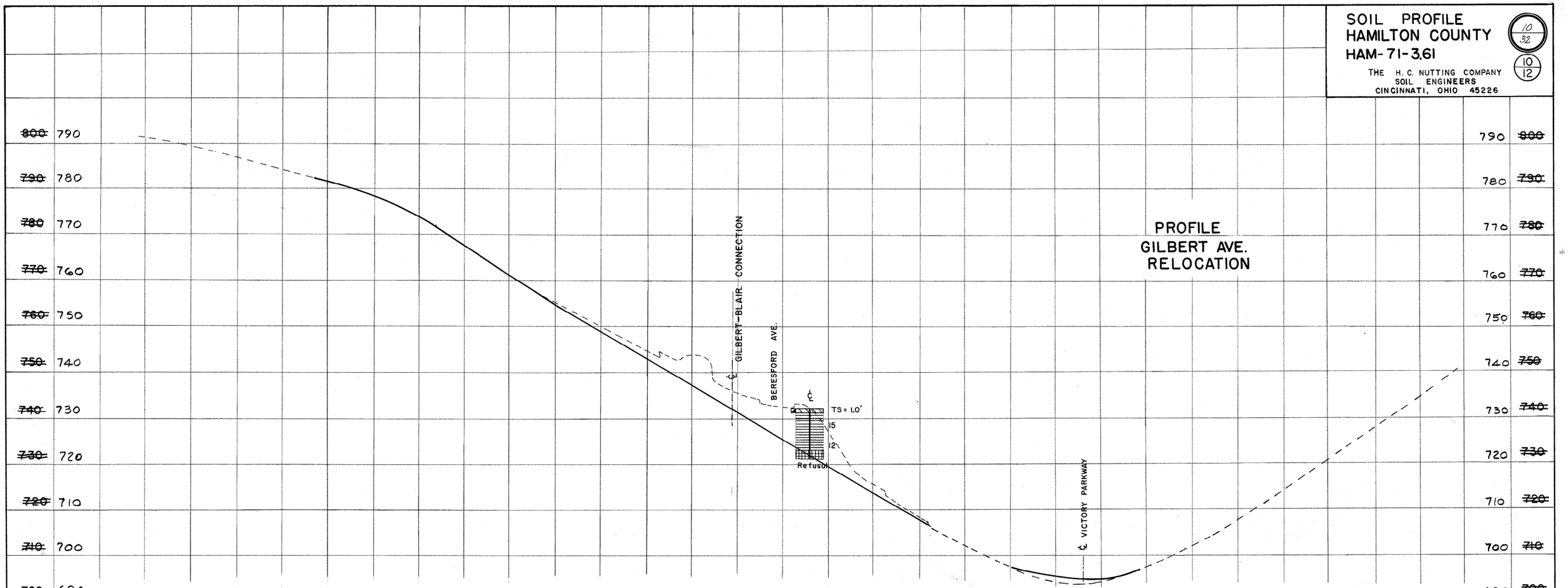
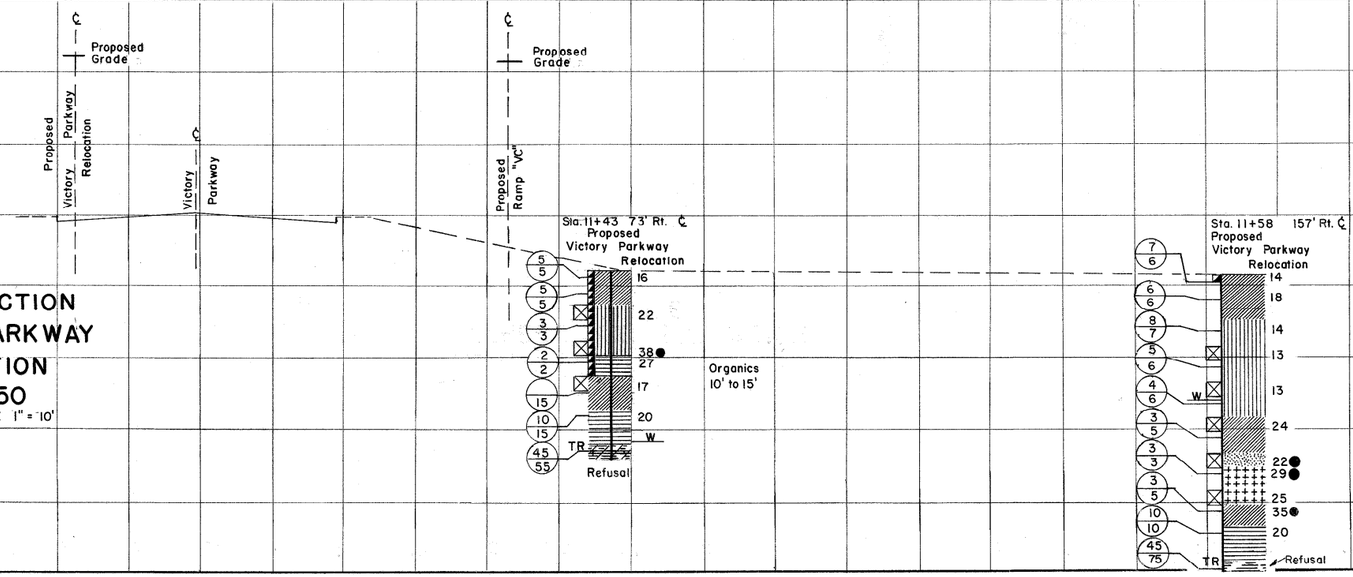
SOIL ENGINEERS
CINCINNATI, OHIO 45226

PROFILE
GILBERT AVE.
RELOCATION



CROSS SECTION
VICTORY PARKWAY
RELOCATION
STA. 11+50
CROSS SECTION SCALE: 1" = 10'

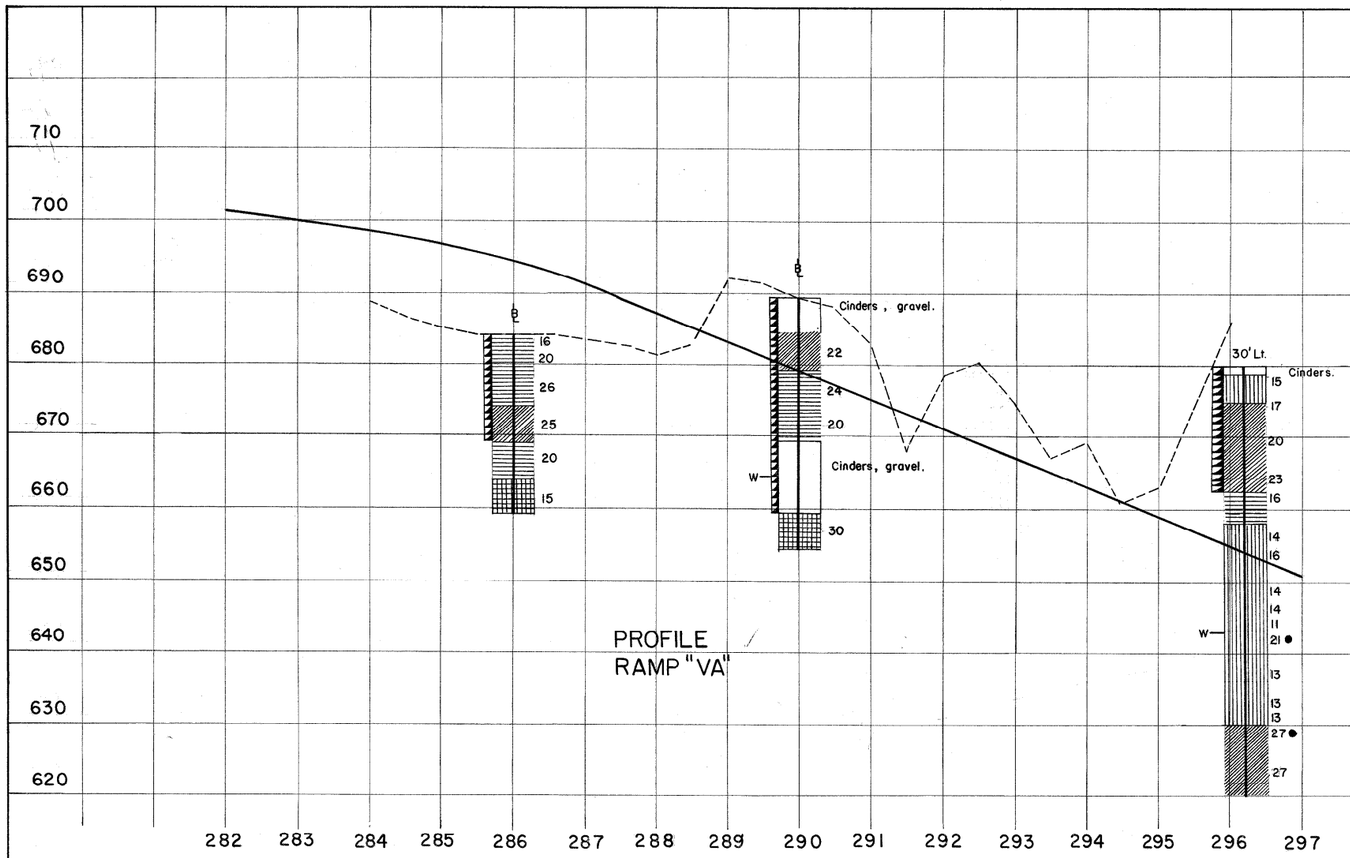


Rev. 6-16-71

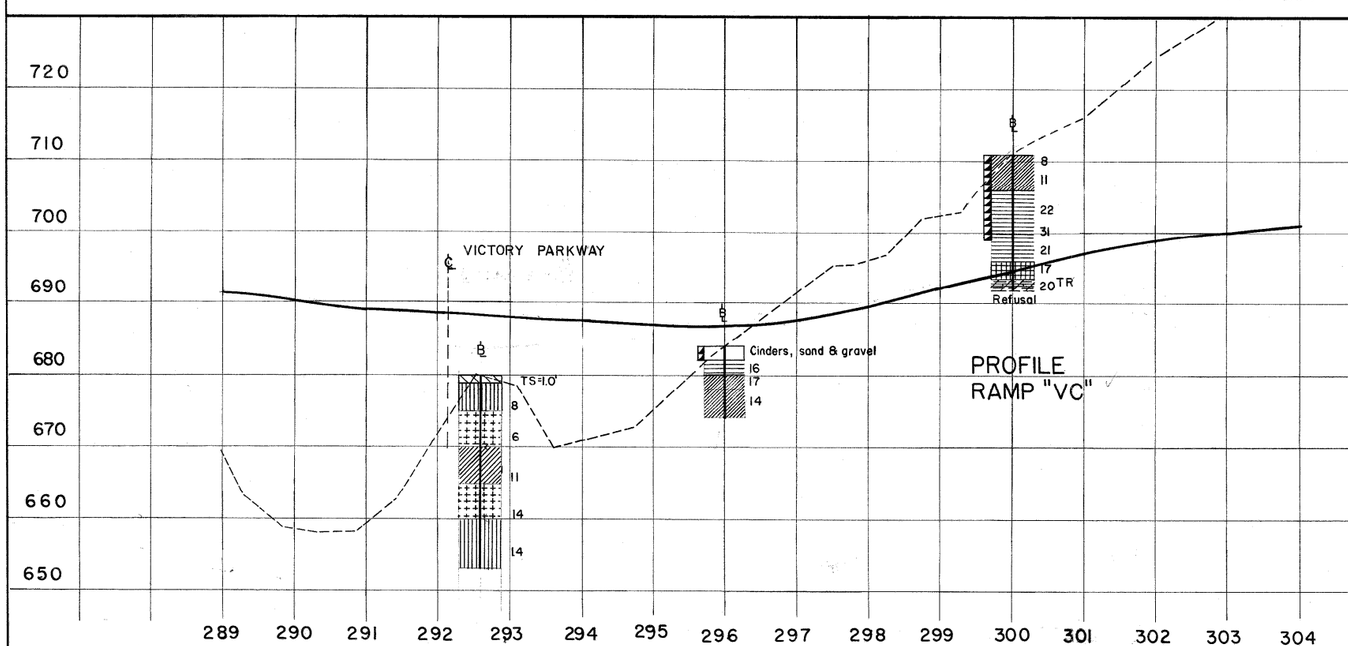
SOIL PROFILE
HAMILTON COUNTY
HAM - 71 - 3.61

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
CINCINNATI, OHIO

11/32
11/12



PROFILE
RAMP "VA"



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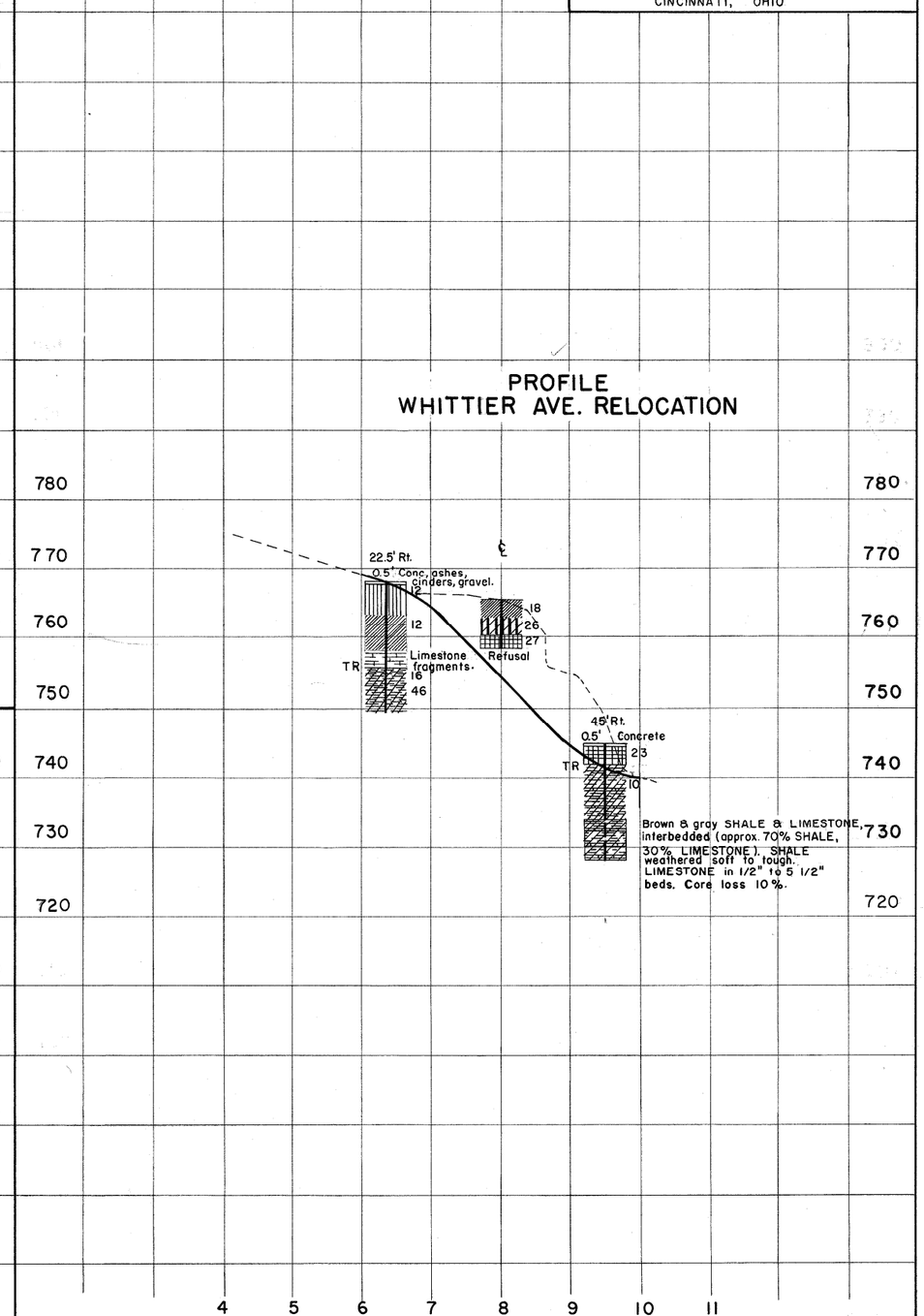
RAMP "VC"



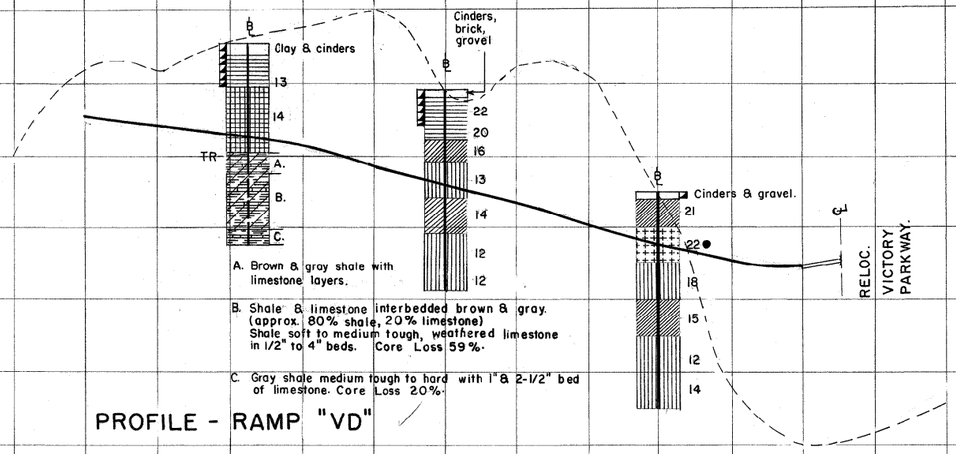
PROFILE
WHITTIER AVE. RELOCATION

Rev. 6-16-71

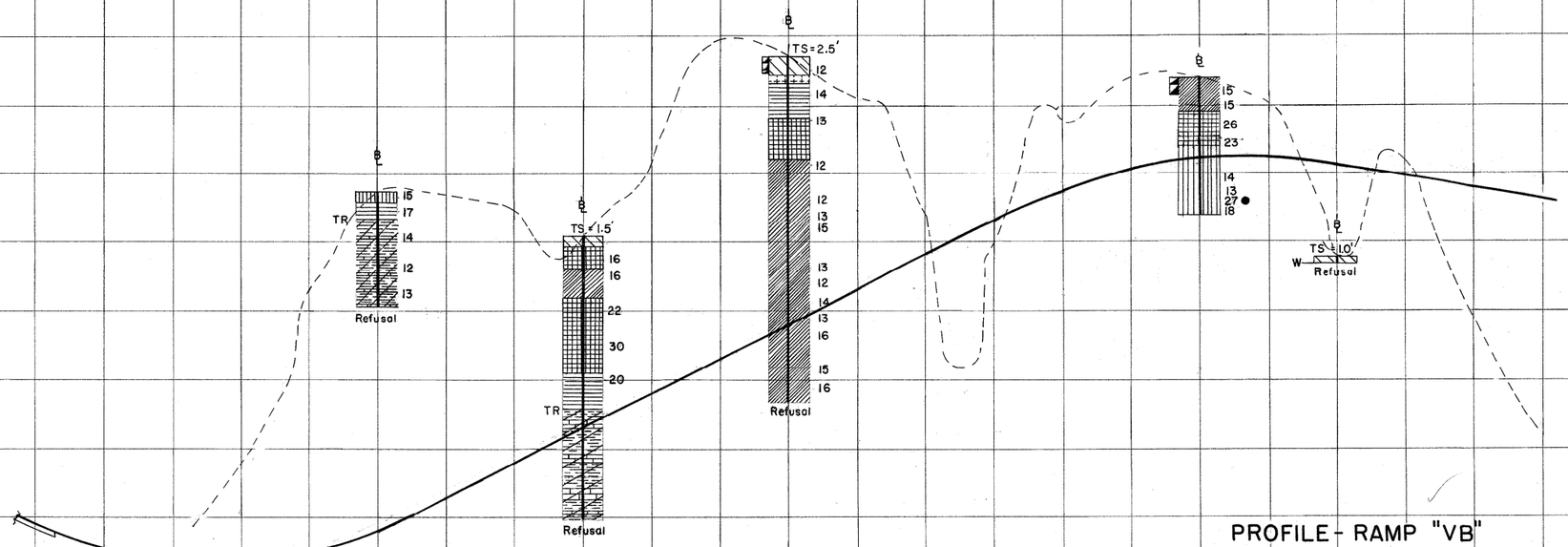
SOIL PROFILE
HAMILTON COUNTY
HAM-71-3.61

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
CINCINNATI, OHIO 45226

12/32
12/12



PROFILE - RAMP "VD"



PROFILE - RAMP "VB"

Rev-6-16-58

HAMILTON COUNTY
HAM-71-3.61

(13) (32) (1/20)

LOG OF BORING

DATE STARTED 10-6-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 10-6-65 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None
BORING NUMBER R-1-2 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER HRS. Backfilled
STATION & OFFSET 278+17, 86'Right SURFACE ELEVATION 717.7

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
717.7	0		Blacktop and concrete									
717.2	2	11-21-35	Brown and gray silty clay, weathered shale and limestone fragments, moist - hard	1	Visual							
713.7	4	24-33-51	do do do	2	19	2	3	36	40	38	19	16
708.7	6 8	48%	Interbedded brown weathered shale and gray limestone (approx. 70% shale, 30% limestone). Shale possible soft to medium tough, fossiliferous, calcareous; limestone occurs in 1/2" to 7" layers, fossiliferous, shaly to impure crystalline, hard. Fracture exhibited at approx. 7.5'.									
	10 12	% Recovery	Boring Completed									

LOG OF BORING

DATE STARTED 10-5-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 10-5-65 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None
BORING NUMBER R-19-1 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER HRS. Backfilled
STATION & OFFSET 280+73, 206' Right SURFACE ELEVATION 722.9

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
722.9	0											
720.4	2	3-2-4	Cinders	1	Visual							
	4	6-8-9	Brown and gray gravelly silty clay, (fill) moist - medium stiff	2	22	6	4	29	39	40	22	17
	6	7-8-8	Brown and gray silty clay, (fill) moist - medium stiff	3	Visual							
	8	9-10-11	do do do	4	1	6	8	34	51	46	28	16
	10	3-4-6	Brown and gray silty clay with cinders, (fill) moist - medium stiff	5	Visual							
708.9	12 14	5-6-7	do do do	6	17	9	9	23	42	38	20	16
	16	5-6-7	Brown and gray silty clay, moist - medium stiff	7	0	8	3	48	41	34	16	21
703.9	18 20	5-6-9	do do do	8	13	2	2	36	47	45	23	22
	22	36-63	Brown and gray shale and limestone fragments	9	Visual							
700.4	24 26	68%	Interbedded gray weathered shale, (some brown) and gray limestone (approx. 60% shale and 40% limestone in recovery). Shale possibly soft to medium tough, calcareous. Limestone thin bedded occurring in 1/2" to 4" layers, fossiliferous, crystalline.									
695.4	28 30	% Recovery	Boring Completed									

LOG OF BORING

DATE STARTED 10-4-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 10-4-65 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None
BORING NUMBER R-3-1 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER HRS. Backfilled Sidewalk
STATION & OFFSET 281+98.25'Right SURFACE ELEVATION 730.1

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
730.1	0											
	2	6-7-11	Brown silty clay with weathered shale, moist - stiff	1	0	1	4	41	54	44	24	18
	4	14-22-20	Brown silty clay with weathered shale and limestone fragments, moist - stiff	2	3	3	6	40	48	39	20	20
725.1	6	7-7-10	Brown fat clay with weathered shale, moist - stiff	3	0	2	4	40	54	55	34	28
722.6	8	11-21-30	Brown silty clay with weathered shale and limestone fragments, moist - very stiff	4	19	3	4	36	38	37	18	18
720.1	10	45-65	Brown and gray weathered shale	5	Visual							
719.1	12 14 16 18 20	76%	Interbedded brown weathered shale (some gray) and gray limestone (approx. 80% shale, 20% limestone). Shale possible soft to tough, non-fossiliferous to fossiliferous, calcareous, limestone occurs in 1" to 4" layers, fossiliferous, crystalline, hard. Fracture exhibited at approx. 16.7'.									
709.1	22 24	% Recovery	Boring Completed									

Foundation Boring Sheet No FB-1

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-71-3.61
Melish Ave. to Victory Parkway
SEC.

BORING DATA

REVIEWED BY CRL DATE 1/20/66

Rev. 6-16-71

HAMILTON COUNTY
HAM-71-3.61

LOG OF BORING Order No. 99.990 JH 10-23-68

DATE STARTED 6-27-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 6-27-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None
BORING NUMBER R-4-1 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 1 HRS. 5' (754.0')
STATION & OFFSET 16+96, Gilbert Avenue, 45'Left, Northeast Exw, HAM 71-3.61 SURFACE ELEVATION 759.0'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
759.0	0											
	2	5-7-7	BROWN SILTY CLAY,(FILL) MOIST - STIFF	1	14	9	6	39	32	45	23	17
	4											
754.0	6	10-15-56	BROWN SILTY CLAY, MOIST - STIFF	2	10	6	4	44	36	41	20	23
	8											
749.0	10											
	12	40%	INTERBEDDED LIGHT BROWN WEATHERED SHALE AND LIGHT GRAY LIMESTONE, APPROX.65% SHALE, 35% LIMESTONE, (RECOVERY PRIMARILY LIMESTONE). SHALE ASSUMED CALCAREOUS, NON-FOSSILIFEROUS, PROBABLE SOFT TO MEDIUM TOUGH. LIMESTONE OCCURS IN 1" TO 4½" LAYERS, IS CRYSTALLINE, FOSSILIFEROUS, HARD; HIGH-ANGLE JOINT WITH IRON-OXIDE STAINING EXHIBITED NEAR TOP OF RECOVERY.									
744.0	14											
	16											
	18	30%	INTERBEDDED LIGHT BROWN WEATHERED SHALE AND LIGHT GRAY LIMESTONE, APPROX.80% SHALE, 20% LIMESTONE, (RECOVERY PRIMARILY LIMESTONE). SHALE ASSUMED CALCAREOUS, NON-FOSSILIFEROUS, PROBABLE SOFT TO MEDIUM TOUGH. LIMESTONE OCCURS IN 3/8"TO 2-3/8"LAYERS, IS CRYSTALLINE, FOSSILIFEROUS, HARD.									
740.0	20											
	22	% RECOVERY	BORING COMPLETED									

LOG OF BORING Order No. 99.990 JH 10-23-68

DATE STARTED 6-27-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 6-27-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None
BORING NUMBER R-4-2 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 1' HRS. 6' (751.2')
STATION & OFFSET 18+25 Gilbert Avenue, 57'Left, Northeast Exwy, HAM 71-3.61 SURFACE ELEVATION 757.2'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
757.2	0											
	2	4-7-8	BROWN SILTY CLAY,(FILL) MOIST - STIFF	1	0	2	2	61	35	34	16	20
	4											
752.2	6	12-17-21	BROWN SILTY CLAY, WITH STONE FRAGMENTS, MOIST - VERY STIFF	2	27	3	4	37	29	36	18	13
749.7	8	29-72	BROWN SILTY CLAY AND STONE FRAGMENTS, MOIST - VERY STIFF	3	56	4	1	17	22	40	22	14
747.2	10											
745.2	12	15-25-63	BROWN SILTY CLAY, MOIST - VERY STIFF	4	0	1	3	42	54	45	26	14
	14											
	16	50%	INTERBEDDED LIGHT BROWN (TRACE LIGHT GRAY) WEATHERED SHALE AND LIGHT GRAY LIMESTONE, APPROX.75% SHALE, 25% LIMESTONE. SHALE CALCAREOUS, NON-FOSSILIFEROUS TO FOSSILIFEROUS, TOUGH TO HARD, SOME PROBABLE SOFT TO MEDIUM TOUGH. LIMESTONE OCCURS IN 3/4" TO 5-1/2"LAYERS, IS CRYSTALLINE, TRACE SHALY, FOSSILIFEROUS, HARD; HIGH-ANGLE JOINTING WITH IRON-OXIDE STAINING EXHIBITED AT BOTTOM OF RECOVERY FROM 12' TO 17', AND NEAR CENTER AND AT BOTTOM OF RECOVERY FROM 17' TO 22'.									
	18											
	20	60%										
735.2	22											
	24	% RECOVERY	BORING COMPLETED									
	26											

LOG OF BORING Order No. 99.990 JH 11-21-68

DATE STARTED 6-4-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 6-4-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None
BORING NUMBER R-5-2 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER BACKFILLED HRS.
STATION & OFFSET 304+32, Northeast Exwy, 99'Right, HAM 71-3.61 SURFACE ELEVATION 736.7'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
736.7	0											
735.7			BLACKTOP AND GRAVEL	1	VISUAL							
	2	21-24-57	BROWN AND GRAY WEATHERED SHALE AND LIMESTONE FRAGMENTS, DRY - HARD	2	VISUAL							
	4	60	DO DO DO									
	6	54-85	DO DO DO	3	VISUAL							
	8											
	10	125	DO DO DO	4	VISUAL							
	12											
723.2	14											
	16	87%	INTERBEDDED LIGHT BROWN WEATHERED SHALE AND LIGHT GRAY LIMESTONE, APPROX.75% SHALE, 25% LIMESTONE, SHALE CALCAREOUS, NON-FOSSILIFEROUS, TOUGH, TRACE MEDIUM TOUGH, LIMESTONE OCCURS WELL DISTRIBUTED IN 1" TO 5½" LAYERS, IS CRYSTALLINE, FOSSILIFEROUS, HARD: HIGH-ANGLE JOINTING EXHIBITED AT CENTER AND BOTTOM OF RECOVERY.									
718.2	18											
716.7	20	100%	INTERBEDDED LIGHT GRAY LIMESTONE AND LIGHT GRAY SHALE (TRACE LIGHT BROWN),APPROX.50% LIMESTONE, 45% SHALE, LIMESTONE OCCURS IN 1½" TO 4½" LAYERS, IS SHALY AND FINE-GRAINED, FOSSILIFEROUS, HARD. SHALE CALCAREOUS, NON-FOSSILIFEROUS, MEDIUM TOUGH TO TOUGH.									
	22	70%	INTERBEDDED LIGHT BROWN (TRACE LIGHT GRAY) WEATHERED SHALE AND GRAY LIMESTONE, APPROX.85% SHALE, 15% LIMESTONE. SHALE CALCAREOUS, NON-FOSSILIFEROUS TO FOSSILIFEROUS, MEDIUM TOUGH TO TOUGH. LIMESTONE OCCURS WELL DISTRIBUTED IN 1" TO 3" LAYERS, IS CRYSTALLINE AND SHALY, FOSSILIFEROUS, HARD.									
711.7	24											
	26	95%	LIGHT GRAY SHALE (SOME LIGHT BROWN) WITH LIGHT GRAY LIMESTONE, APPROX.90% SHALE, 10% LIMESTONE. SHALE CALCAREOUS, NON-FOSSILIFEROUS TO FOSSILIFEROUS, MEDIUM TOUGH TO TOUGH. LIMESTONE OCCURS IN 1" TO 2-3/4"LAYERS, IS CRYSTALLINE AND SHALY, FOSSILIFEROUS, HARD.									
706.7	28											
	30											
	32	100%	INTERBEDDED LIGHT BROWN AND LIGHT GRAY WEATHERED SHALE AND LIGHT GRAY LIMESTONE, APPROX.55% SHALE, 45% LIMESTONE. SHALE CALCAREOUSL, FOSSILIFEROUS, MEDIUM TOUGH TO TOUGH. LIMESTONE OCCURS CLOSELY-PACKED PRIMARILY IN TOP-HALF OF RECOVERY IN 1-3/4" TO 11"LAYERS, IS SHALY, SOME CRYSTALLINE, FOSSILIFEROUS, HARD.									
701.7	34											
	36											
	38	95%	INTERBEDDED LIGHT GRAY (TRACE LIGHT BROWN) SHALE AND LIGHT GRAY LIMESTONE, APPROX.70% SHALE, 30% LIMESTONE. SHALE CALCAREOUS, NON-FOSSILIFEROUS TO FOSSILIFEROUS,MEDIUM TOUGH TO TOUGH. LIMESTONE OCCURS CLOSELY-PACKED PRIMARILY IN CENTER PORTION OF RECOVERY IN 1" TO 2½"LAYERS, IS CRYSTALLINE, TRACE SHALY, FOSSILIFEROUS, HARD;ALL LAYERS DISPLAY HIGH-ANGLE JOINTING WITH IRON-OXIDE STAINING.									
696.7	40											
	42	83%	LIGHT GRAY SHALE, CALCAREOUS, NON-FOSSILIFEROUS TO TRACE FOSSILIFEROUS, TOUGH (TRACE PROBABLE SOFT NEAR CENTER). THIN (1") LIGHT GRAY LIMESTONE LAYER,CRYSTALLINE, FOSSILIFEROUS, HARD, JOINTED,OCCURS.									
693.7	44											
	45	% RECOVERY	BORING COMPLETED									

LOG OF BORING Order No. 99.990 JH 11-21-68

DATE STARTED 3-15-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 3-27-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE Could not tell
BORING NUMBER R-8-1 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER HRS.
STATION & OFFSET 21+77, Victory Parkway, 137'Left, Northeast Exwy,HAM 71-3.61 SURFACE ELEVATION 675.8'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
675.8	0											
	2	2-3-3	BROWN SANDY SILTY CLAY WITH LIMESTONE FRAGMENTS,(FILL) MOIST - STIFF	1	18	14	18	27	23	30	13	28
673.3	4	6-6-11	BROWN GRAVELLY, SILTY CLAY, MOIST - MEDIUM STIFF	2	17	6	13	31	33	28	12	17
	6	5-3-3	DO DO	3	VISUAL - NO RECOVERY							
	8	6-7-12	BROWN SANDY, SILTY CLAY, MOIST - STIFF	4	10	7	13	32	38	30	14	11
	10											
	12	12-15-22	DO DO	5	9	9	13	35	34	29	13	16
	14	14-18-29	DO DO	6	7	9	14	36	34	24	10	23
	16	13-16-20	DO DO	7	14	7	13	36	30	23	8	13
658.3	18											
655.8	20	3-10-20	BROWN SANDY SILTY CLAY WITH ROCK FRAGMENTS, VERY MOIST - MEDIUM STIFF	8	35	12	10	23	20	22	8	17
	22	3-4-6	BROWN SANDY SILTY CLAY, MOIST - STIFF	9	14	7	13	35	31	22	8	13
653.3	24	4-6-10	BROWN AND GRAY SILTY CLAY, MOIST - MEDIUM STIFF	10	8	6	10	40	36	25	10	16
650.8	26	7-7-7	BROWN GRAVELLY, SANDY CLAY, MOIST - MEDIUM STIFF	11	VISUAL - INSUFFICIENT SAMPLE							
	28											
645.8	30											
	32	3-4-10	GRAY FINE TO MEDIUM SAND, WET - DENSE	12	5	75	12	-8-				18

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
640.8	34											
	36	8-8-10	GRAY SANDY SILTY CLAY, MOIST - MEDIUM STIFF	13	10	8	12	33	37	23	9	18
635.8	38											
	40	6-8-9	GRAY GRAVELLY, SANDY CLAYEY SILT, MOIST - STIFF	14	18	9	14	33	26	21	7	15
630.8	42											
	44	5-7-8	GRAY SILTY CLAY, VERY MOIST - MEDIUM STIFF	15	6	4	5	41	44	30	13	23
627.8	46											
	48	5-6-8	GRAY SILTY CLAY, TRACE ORGANICS, MOIST - MEDIUM STIFF	16	0	2	5	49	44	34	16	25
	50											
	52	6-7-9	DO DO DO	17	0	3	3	47	47	36	18	27
	54											
615.8	56											
	58	5-5-6	GRAY SILTY CLAY, MOIST - MEDIUM STIFF	18	0	0	0	35	65	42	22	31
	60											
610.8	62	8-7-8	GRAY SILTY SAND, WET - MEDIUM DENSE	19	0	9	50	25	16	17	3	20
	64											
605.8	66	10-12-15	GRAY SILTY CLAY,(VARVED) MOIST - MEDIUM STIFF	20	5	5	7	36	47	31	12	21
	68											
	70											
	72											
	74											
	76	7-10-12	GRAY SILTY CLAY, MOIST - MEDIUM STIFF	21	4	5	7	30	54	36	19	18
	78											
	80											
	82	7-10-11	DO DO	22	0	3	4	50	43	33	12	27
	84											
590.8	86	15-21-27	GRAY WEATHERED SHALE	23	VISUAL - INSUFFICIENT							
588.8	88		LAYERED GRAY SHALE									
	90	77%										
583.8	92											
	94	% RECOVERY	BORING COMPLETED									

Foundation Boring Sheet No FB-2

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
CITY OF CINCINNATI, OHIO
NORTHEAST EXPRESSWAY HAM-71-3.61
BORING No. R-4-1 R-5-2
R-4-2 R-8-1

BORING DATA

REVIEWED BY CRL DATE 12/19/68

Rev-6-16-71

HAMILTON COUNTY
HAM-71-3.61

LOG OF BORING Order No. 99.990, 9-24-68 JH

DATE STARTED 6-5-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 6-5-68 CASING: LENGTH ____ DIA. ____ IMMEDIATE None
BORING NUMBER R-5-1 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER Backfilled HRS. ____
STATION & OFFSET 302+48, 106' Right, Northeast Exwy, HAM 71-3.61 SURFACE ELEVATION 727.4'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
727.4	0											
726.4	2	16-54-59	Blacktop and gravel	Visual								
	4		Brown highly weathered SHALE with limestone fragments, slightly moist - hard	1	24	3	6	33	34	35	16	15
722.4	6	34-74	Brown highly weathered SHALE, slightly moist - hard	2	0	2	8	46	44	34	15	13
	8											
	10	46-55	do do do	3	0	5	4	46	45	36	16	13
714.9	12											
	14	100%	Interbedded light brown weathered SHALE and light gray limestone, approx. 60% shale, 40% limestone, shale calcareous, non-fossiliferous, some probable soft to medium tough. Distributed in 1-1/4" to 5" layers, is crystalline, fossiliferous, hard; most layers exhibit high-angle jointing with iron-oxide staining.									
711.4	16											
	18	100%	Interbedded light brown and light gray weathered SHALE and light gray limestone, approx. 65% shale, 35% limestone. Shale calcareous, non-fossiliferous to fossiliferous, medium tough to tough. Limestone occurs essentially well distributed, occasionally closely-packed. in 1/2" to 6" layers, is crystalline and shaly, trace fine-grained, fossiliferous, hard; high-angle jointing with iron-oxide staining displayed at approx. 17.5', 17.9', 18.8', 21.4', 26.4' & 29.4'.									
	20											
	22											
	24	90%										
	26											
	28	100%										
697.4	30											
	32	90%	Light gray SHALE, calcareous, non-fossiliferous to fossiliferous, tough to hard, thin (3/4") light gray limestone layer, crystalline and shaly, fossiliferous, hard, jointed, occurs at bottom of recovery.									
692.4	34											
	36	% Recovery	Boring Completed									

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
733.5	10											
	12	44%	Interbedded light brown weathered SHALE and light gray limestone, approx. 75% shale, 25% limestone. Shale calcareous, non-fossiliferous, probable soft to medium tough. Limestone occurs well distributed in 1/2" to 4-1/2" layers, is crystalline, fossiliferous, hard; high-angle jointing with iron-oxide staining exhibited near top and center of recovery from 10' to 12.5', approx. at 15', and near top and center of recovery from 17.5' to 22'.									
	14											
	16	70%										
	18											
	20	66%										
	22											
719.5	24											
	26	100%	Interbedded light gray SHALE and light gray limestone, approx. 75% shale, 25% limestone. Shale calcareous, non-fossiliferous to trace fossiliferous, medium tough to tough. Limestone occurs well distributed in 1/2" to 2" layers, is crystalline, fossiliferous, hard; high-angle joint with iron-oxide staining displayed at approx. 27'.									
716.0	28											
	30	78%	Interbedded light brown and light gray weathered SHALE and light gray limestone, approx. 75% shale, 25% limestone. Shale calcareous, non-fossiliferous to trace fossiliferous, probable soft to medium tough. Limestone occurs well distributed in 1/2" to 4-1/2" layers, is crystalline, some shaly, trace fine-grained, fossiliferous, hard; high-angle jointing with iron-oxide staining exhibited 1.5' from top and at bottom of recovery from 27.5' to 32.5'; and near center of recovery from 32.5' to 37.5'.									
	32											
	34	50%										
	36											
706.0	38											
	40	43%	Interbedded light brown and light gray weathered SHALE and light gray limestone, approx. 55% shale, 45% limestone (entire recovery essentially limestone), shale assumed calcareous, non-fossiliferous, soft to medium tough. Limestone occurs in 3/4" to 2-3/4" layers, is crystalline and fine-grained, fossiliferous; hard; most layers display high-angle jointing with iron-oxide staining.									
701.0	42											
	44	35%	Interbedded light gray (trace light brown) SHALE and light gray limestone, approx. 85% shale, 15% limestone, shale calcareous, trace fossiliferous, possible soft to medium tough. Limestone occurs in 2-1/4" layers, is crystalline, trace shaly, fossiliferous, hard; high-angle joint with iron-oxide staining indicated at top of recovery.									
697.0	46											
	48	% Recovery	Boring Completed									
	50											

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
641.5	32											
	34	10-12-18	Brown gravelly, sandy silty clay, moist - stiff	14	16	10	17	29	28	25	11	14
639.0	36	9-10-10	Brown sandy, clayey silt, moist - stiff	15	13	12	22	30	23	20	7	14
636.5	38	4-5-8	Brown clayey silt, moist - medium stiff	16	4	4	9	64	19	21	4	14
634.0	40											
	42	6-7-9	Gray gravelly, sandy, clayey silt, trace organics, moist - medium stiff	17	16	11	17	31	25	20	7	12
	44	4-6-6	do do do	18	18	12	16	31	23	20	7	14
629.0	46	5-6-7	Gray silty clay, trace organic, moist - medium stiff	19	0	2	2	48	48	30	12	22
	48	4-6-5	do do do	20	Visual							
	50	6-4-5	do do do	21	0	2	4	51	43	30	12	28
	52											
	54	5-6-6	do do do	22	Visual							
	56	4-4-5	do do do	23	0	1	0	36	63	40	20	31
	58	4-5-5	do do do	24	Visual							
614.0	60											
	62	6-5-6	Greenish gray silty clay, moist - medium stiff	25	0	3	4	42	51	34	17	24
	64	5-6-5	do do do	26	Visual							
609.0	66	4-5-5	Gray silty clay, (varved) trace of organics, moist - medium stiff	27	2	5	8	42	43	30	14	31
	68											
604.0	70											
	72	57-95	Gray shale	28	Visual							
602.0	74	81%	Layered gray shale, calcareous, tough to hard and gray fossiliferous limestone, jointed, approx. 10% limestone in 1" to 2" pieces.									
	76											
597.0	78	% Recovery	Boring Completed									
	80											

LOG OF BORING Order No. 99.990, 9-23-68 JH

DATE STARTED 3-9-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 3-10-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 30' (644')
BORING NUMBER R-7-1 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 2 HRS. 55' (619.0')
STATION & OFFSET 23+65, Victory Parkway, 85' Left, Northeast Exwy, HAM 71-3.61 SURFACE ELEVATION 674.0'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
674.0	0											
	2	4-7-10	Brown sandy silty clay, broken stone fragments and cinders (fill) moist - stiff	1	12	10	16	26	36	28	12	13
	4	6-8-8	do do do	2	Visual							
	6	5-7-10	do do do	3	15	10	15	32	28	24	9	12
	8	8-8-11	do do do	4	Visual							
	10											
	12	5-6-8	do do do	5	8	9	14	37	32	25	11	14
	14	6-8-8	do do do	6	Visual							
	16	7-4-7	do do do	7	19	10	15	30	26	24	10	15
	18	4-4-6	do do do	8	Visual							
	20	7-19-8	do do do	9	10	11	16	32	31	25	10	20
	22											
	24	5-6-6	do do do	10	Visual							
649.0	26	9-15-17	Brown silty clay, moist - stiff	11	1	3	10	31	55	43	23	24
	28	10-16-20	do do	12	3	7	12	31	47	36	20	23
644.0	30											
	32	9-11-19	Brown sandy silty clay, moist - stiff	13	11	12	15	30	32	27	13	6

LOG OF BORING Order No. 99.990, 9-24-68 JH.

DATE STARTED 6-3-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 6-4-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None
BORING NUMBER R-5-3 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER Backfilled HRS. ____
STATION & OFFSET 306+06, 95' Right, Northeast Exwy, HAM 71-3.61 SURFACE ELEVATION 743.5'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
743.5	0											
742.5	2	2-4-7	Brown gravelly, clayey silty sand, trace cinders, (fill) very moist - medium stiff	1	25	16	13	25	21	26	7	63
	4	8-11-19	Brown gravelly, sandy silty clay, moist - medium stiff	2	21	8	12	18	41	34	14	18
738.5	6	38-80	do do do	3	Visual							
	8	55-70	Brown highly weathered SHALE, moist - very stiff	4	0	6	7	42	45	36	16	18
			do do do	5	Visual							

Foundation Boring Sheet No FB-3

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
CITY OF CINCINNATI
NORTHEAST EXPRESSWAY HAM 71-3.61
BORING No. R-5-1 R-7-1
R-5-3

BORING DATA

REVIEWED BY CRL DATE 1/9/69

Rev-6-16-71

LOG OF BORING

Order No. 99.990 JH 7-1-68

DATE STARTED 2-23-68 SAMPLER: TYPE Split Spoon DIA. 2"OD WATER ELEVATION
DATE COMPLETED 2-23-68 CASING: LENGTH None DIA. IMMEDIATE
BORING NUMBER R-6-3 CORE BARREL: TYPE NXM SIZE 2-1/8"ID AFTER HRS.

STATION & OFFSET 13+44 Rockdale, 44' Left SURFACE ELEVATION 649.5'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
649.5	0											
	2	9-4-3	Brown sandy, silty clay, (FILL), moist - medium stiff	1	9	7	15	30	39	38	20	21
644.5	4	3-3-2	do do do	2	Visual							
	6	3-3-6	Brown sandy, silty clay, moist - medium stiff	3	10	10	14	32	34	27	12	17
642.0	8											
	10	10-10-12	Brown gravelly, clayey silty sand, moist - stiff	4	24	16	22	17	21	21	7	11
639.5	10											
	12	9-9-13	Brown and gray sandy, silty clay, moist - stiff	5	10	12	18	32	28	23	9	12
637.0	12											
	14	7-7-10	Brown and gray gravelly clayey sand, moist - stiff	6	23	12	17	22	26	23	9	13
634.5	14											
	16	3-3-7	Gray gravelly, sandy silty clay, moist - stiff	7	20	10	14	29	27	21	8	14
632.0	18											
	20	4-6-8	Gray sandy, clayey silt, moist - stiff	8	12	14	18	32	24	18	5	12
629.5	20											
	22	5-6-8	Gray gravelly, sandy clayey silt, moist - stiff	9	20	12	18	29	21	19	7	12
627.0	22											
626.0	24	4-5	Gray clayey silt, moist - stiff	10	10	10	7	36	27	20	7	14
	8		Dark gray silty clay with some organic matter and silt seams, moist - medium stiff	10A	0	2	2	66	30	30	11	24
	26	3-4-8	do do do	11	0	3	3	54	40	35	16	24
622.0	28											
	30	3-4-8	Gray sandy, clayey silt, wet - soft	12	0	4	42	34	20	23	5	27
619.5	32	4-6-10	Gray silty clay, (varved) moist - medium stiff	13	0	0	1	38	61	36	18	24
	34											
	36	3-4-5	Gray silty clay, very moist - medium stiff	14	0	0	1	34	65	41	21	35
	38											
	40											
	42	3-3-6	Gray silty clay, very moist - soft	15	0	1	0	45	54	33	14	30
	44											
	46	3-5-7	do do	16	0	1	5	54	40	28	10	26
	48											
559.5	50											
	52	2-3-6	Gray silty clay, trace organic, moist - medium stiff	17	0	1	3	57	39	31	13	20
554.5	54											
	56	5-8-11	Gray silty clay, moist - medium stiff	18	1	3	2	30	64	36	17	24
	58											
	60	4-5-7	Gray silty clay, moist - stiff	19	0	7	5	35	53	32	15	22
	62											
584.5	64											
	66	3-5-9	Greenish gray silty clay, moist - stiff	20	1	1	8	46	44	30	14	20
579.5	68											
	70											
	72	6-9-12	Gray silty clay, moist - stiff	21	2	2	4	48	44	28	10	20
574.5	74											
	76	7-13-19	Greenish gray silty clay, moist - very stiff	22	0	2	9	37	52	35	18	20
	78											
569.5	80	50-135	Gray shale	23	Visual							
	82											
	84											
564.0	86	200	Gray shale	24	Visual							
	88	87%	Layered gray shale, medium tough to tough									
559.5	90											
	92	% Recovery	Boring Completed									

LOG OF BORING

Order No. 99.990 JH 7-1-68

DATE STARTED 3-5-68 SAMPLER: TYPE Split Spoon DIA. 2"OD, WATER ELEVATION
DATE COMPLETED 3-8-68 CASING: LENGTH HSA DIA. 3.5"ID, IMMEDIATE Could not tell
BORING NUMBER R-6-2 CORE BARREL: TYPE NXM SIZE 2-1/8"ID AFTER HRS.

STATION & OFFSET 12+33 Rockdale, 44' Left SURFACE ELEVATION 658.3

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
658.3	0											
	2	3-3-5	Brown silty clay with some topsoil and rock fragments, (FILL), moist - stiff	1	Visual							
653.3	4	4-4-8	do do do	2	24	7	11	29	29	25	10	13
	6	3-4-7	Brown and gray gravelly sandy, clayey silt, moist - medium stiff	3	24	10	14	30	22	20	6	14
	8											
646.3	10	2-2-4	do do do	4	No sample in jar							
	12	2-4-7	Gray sandy, silty clay, moist - medium stiff	5	13	9	13	34	31	21	8	14
	14	3-4-8	do do do	6	Visual							
	16	3-3-6	do do do	7	13	8	12	35	32	22	8	13
640.8	18											
	20	5-7-10	Gray gravelly, sandy, clayey silt, moist - medium stiff	8	17	10	17	33	23	20	7	13
638.3	22	7-5-8	Gray gravelly, sandy, silty clay, moist - medium stiff	9	20	9	13	31	27	23	10	13
	24	5-4-7	do do do	10	14	11	15	31	29	23	10	14
633.3	26	5-5-8	Gray gravelly, sandy, clayey silt, moist - medium stiff	11	20	9	15	34	22	19	7	14
630.8	28	6-5-7	Gray silty clay, trace of organics, moist - medium stiff	12	11	5	6	40	38	30	13	27
	30	4-4-6	do do do	13	0	1	4	52	43	31	14	24
625.8	32											
	34	9-10-12	Gray silt, wet - soft	14	10	1	10	57	22	20	2	25
623.3	36	3-4-7	Gray silty clay, moist - medium stiff	15	0	0	1	50	49	30	12	24
	38											
	40	10-7-9	do do	16	0	0	0	50	50	20	12	16
	42											
	44											
	46	3-3-6	do do	17	0	0	1	37	62	40	20	29
	48											
	50											
	52	4-4-8	Gray silty clay, (varved) moist - medium stiff	18	0	0	4	52	44	28	10	22
	54											
	56	6-8-10	do do do	19	1	1	3	27	68	85	15	26
	58											
	60											
	62	5-5-10	do do do	10	1	2	7	48	42	33	16	22
	64											
593.3	66	17-21-45	Greenish gray silty clay, moist - stiff	21	0	1	2	31	66	44	23	20
	68											
588.3	70											
	72		Layered brown and gray shale, soft with one 1/2" gray limestone layer at the bottom of the run									
	74	30%										
583.3	76	% Recovery	Boring Completed									
	78											
	80											

HAMILTON COUNTY
HAM-71-3.61

16/32

4/20

LOG OF BORING

Order No. 99.990 JH 7-1-68

DATE STARTED 2-27-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 3-4-68 CASING: LENGTH HSA DIA. 3.5"ID IMMEDIATE
BORING NUMBER R-6-1 CORE BARREL: TYPE NXM SIZE 2-1/8"ID AFTER 24 HRS. 643.5 (5')

STATION & OFFSET 11+23, Rockdale, 44' Left SURFACE ELEVATION 648.5

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
648.5	0											
	2	10-6-5	Brown sandy silty clay, (FILL) moist - medium stiff	1	4	7	13	39	37	36	18	20
644.5	4	10-8-8	do do do	2	Visual							
	6	7-7-8	Gray gravelly, sandy silty clay, moist - stiff	3	18	9	14	35	24	23	10	14
	8											
638.5	10	7-5-5	do do do	4	Visual							
	12	4-5-4	Brown and gray sandy, clayey silt, very moist - medium stiff	5	10	7	25	41	17	18	5	14
636.0	14	4-3-7	Gray gravelly, sandy clayey silt, very moist - medium stiff	6	18	9	16	35	22	19	6	14
	16	3-3-4	do do do	7	Visual							
631.0	18											
	20	3-2-4	Gray silty clay with organic, very moist - soft	8	6	4	5	54	31	29	12	24
628.5	22	4-4-9	Gray silt with organic, wet - soft	9	1	1	1	67	30	20	2	30
626.0	24	4-4-8	Gray silty clay, moist - medium stiff	10	0	2	0	43	55	34	16	25
	26	2-2-4	Gray silty clay, moist - soft	11	0	2	1	40	57	35	18	32
621.0	28											
	30	4-4-8	Bluish gray silty clay, moist - medium stiff	12	4	4	9	39	44	29	13	26
618.5	32	5-7-10	Gray silty clay, very moist - medium stiff	13	0	3	9	46	42	30	14	22
	34											
613.5	36	17-29	Gray soft shale, moist - very stiff	14	11	2	1	32	54	38	18	18
612.5	62		Gray shale and limestone	14A	Visual							
610.0	38											
	40		Layered gray shale, medium tough and gray fossiliferous limestone, approx. 10% limestone in 1/2" to 3-1/2" pieces.									
	42	70%										
605.0	44	% Recovery	Boring Completed									
	46											
	48											
	50											

Foundation Boring Sheet No FB-4

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
NORTHEAST EXPRESSWAY I-71-1(33)
HAM-71-3.61

PROJ. NO. 0534

BORING DATA

		REVIEWED BY	DATE
		C.R.L	7/24/68

Rev-6-16-71

LOG OF BORING — Order No. 99.990 9-23-68 JH

DATE STARTED 3-8-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 3-8-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None
BORING NUMBER R-7-2 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER Backfilled Upon HRS. Completion
STATION & OFFSET 24+71 Victory Parkway, 74'Left, Northeast Exwy. HAM 71-3.61 SURFACE ELEVATION 652.0'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
652.0	0											
	2	4-6-7	Brown sandy silty clay with cinders and broken rock, (FILL) moist - stiff	1	8	6	14	32	40	30	14	16
	4	4-6-11	DO DO DO	2	Visual							
647.0	6	6-9-13	Brown gravelly silty CLAY, moist - stiff	3	17	5	9	27	42	36	19	24
644.5	8	10-15-22	Brown silty CLAY with limestone fragments, moist - hard	4	33	5	11	24	27	32	17	13
643.0 / 642.0	10	18-29	Brown clayey silty SAND with limestone fragments, moist - hard	5	17	16	25	23	19	19	7	5
	12	37-40-45	Brown and gray sandy, clayey SILT with limestone fragments, moist - hard	6	15	8	18	33	26	22	7	9
639.5	14	11-13-18	Brown gravelly silty CLAY, moist - very stiff	7	26	5	7	24	38	33	16	18
637.0	16	13	Bluish gray silty CLAY, moist - very stiff	8	8	3	3	34	52	34	14	17
		16-15	DO DO DO	9	Visual							
634.5	18	23-31-46	Brown highly weathered SHALE, moist - very stiff	10	2	2	2	34	60	40	18	17
632.0	20, 22	18-23-29	Gray SHALE	11	Visual							
	24	53-90	DO DO	12	Visual							
627.0	26	50%	Layered gray SHALE, medium tough									
	28	75%										
624.0	30, 32	100%	Layered gray SHALE, calcareous, tough and gray fossiliferous limestone, jointed, approx. 25 to 30% limestone in 3/4" to 5" pieces.									
620.0	34	100%	Layered gray SHALE, calcareous, tough									
617.0	36, 38	% Recovery	Boring Completed									

LOG OF BORING — Order No. 99.990, 9-25-68 JH

DATE STARTED 7-2-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 7-9-68 CASING: LENGTH None DIA. IMMEDIATE Unable to determine
BORING NUMBER R-11-2 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER Backfilled HRS.
STATION & OFFSET 296+81, Ramp "VB", 42'Right, Northeast Exwy. HAM 71-3.61 SURFACE ELEVATION 674.3'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
674.3	0											
	2, 4	7-60	Dark brown sandy silty CLAY, moist - stiff	1	2	6	16	40	36	46	21	18
669.3	6, 8, 10	8-11-11	Brown and gray highly weathered SHALE, moist - very stiff	2	3	1	2	40	54	43	21	18
664.3		60-120	Gray and brown SHALE	3	Visual							
663.3	12, 14, 16	50%	Interbedded light brown (trace light gray) weathered SHALE and light gray limestone, approx. 80% shale, 20% limestone. Shale calcareous, non-fossiliferous to fossiliferous, medium tough, trace hard. Limestone occurs in 1" to 3" layers, is crystalline, trace fine-grained, fossiliferous, hard; high-angle jointing with iron-oxide staining exhibited near center and at bottom of recovery.									
657.3	18, 20	85%	Interbedded light gray SHALE and light gray limestone, approx. 85% shale, 15% limestone. Shale calcareous, non-fossiliferous to fossiliferous, tough to hard; trace light brown displayed at approx. 23', ready-parting along bedding planes exhibited last 1.3' of recovery. Limestone occurs well distributed in 3/4" to 2-7/8" layers, is crystalline and fine-grained, fossiliferous, hard; some layers exhibit high-angle jointing with iron-oxide staining.									
	22, 24, 26	73%										
	28, 30	95%										
643.3	32, 34	% Recovery	Boring Completed									

LOG OF BORING — Order No. 99.990, 9-25-68 JH

DATE STARTED 7-12-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 7-12-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None
BORING NUMBER R-11-1 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 1 HRS. 5.7' (641.7')
STATION & OFFSET 295+29, Ramp "VB", 46'Right Northeast Exwy. HAM 71-3.61 SURFACE ELEVATION 647.4'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
647.4	0											
	2	17-9-10	Brown sandy, silty clay, trace cinders, (FILL) slightly moist - very stiff	1	18	10	11	11	50	41	18	13
644.9	4	6-8-9	Brown sandy, silty clay, (FILL) moist - stiff	2	2	13	21	26	38	36	17	17
642.4	6	16-17-17	Brown and gray silty CLAY with broken stone fragments, moist - very stiff	3	17	4	6	32	41	43	20	16
639.9	8	15-13-16	Brown and gray highly weathered SHALE, moist - very stiff	4	2	1	1	35	61	49	24	15
637.4	10	35-75	Gray SHALE	5	Visual							
636.4	12, 14, 16	45%	Interbedded light gray SHALE and light gray limestone, approx. 85% shale, 15% limestone. Shale calcareous, non-fossiliferous to fossiliferous, medium tough to tough, some hard. Limestone occurs in 1/2" to 4-1/4" layers, is crystalline and fine-grained, trace shaly, fossiliferous, hard; high-angle joint with iron-oxide staining exhibited near center of recovery from 16' to 21'.									
	18, 20	63%										
626.4	22, 24	% Recovery	Boring Completed									

LOG OF BORING — Order No. 99.990 9-23-68 JH

DATE STARTED 3-15-68 SAMPLER: TYPE Split Spoon DIA. 2" O.D. WATER ELEVATION
DATE COMPLETED 3-15-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 25' (654')
BORING NUMBER R-14-1 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 2 HRS. Caved @ 40' dry
STATION & OFFSET 22+61, Victory Parkway, 136'Left Northeast Exwy. HAM 71-3.61 SURFACE ELEVATION 679.0'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
679.0	0											
	2	8-7-7	Brown sandy silty clay with organic, (FILL) moist - stiff	1	13	9	14	31	33	28	12	17
	4	4-5-5	DO DO DO	2	Visual							
	6	3-4-5	Brown sandy, silty clay with organic, (FILL) moist - medium stiff	3	14	8	12	34	32	28	12	19
	8	4-5-5	DO DO DO	4	Visual							
669.0	10, 12	3-2-5	Black sandy, clayey gravel, (FILL) wet - soft	5	51	13	13	12	11	25	7	27
666.5	14	4-2-2	Brown and gray sandy silty clay, (FILL) trace organics, wet - soft	6	9	7	22	31	31	26	12	30
664.0	16	5-6-7	Brown and gray lean clay, (FILL) moist - medium stiff	7	5	2	9	35	49	42	24	25
	18	6-7-7	DO DO DO	8	Visual							
659.0	20, 22	5-7-9	Brown sandy silty clay, (FILL) moist - medium stiff	9	7	11	19	31	32	26	12	16
656.5	24	7-8-10	Brown silty SAND, wet - medium dense	10	1	4	60	25	10		NP	17
654.0	26	9-10-17	DO DO DO	11	Visual							
	28	10-10-12	DO DO DO	12	0	2	62	28	8		NP	16
649.0	30, 32	6-9-10	Gray sandy silty CLAY, moist - medium stiff	13	12	10	14	33	31	22	8	18
	34, 36, 38	7-8-7	DO DO	14	13	9	15	38	25	21	8	20
639.0	40, 42, 44	4-6-8	Gray gravelly sandy silty CLAY, with organic, moist - medium stiff	15	15	9	14	32	30	22	8	13
634.0	46, 48	4-5-7	Gray sandy clayey SILT, moist - medium stiff	16	13	10	17	35	25	20	6	13
629.0	50, 52, 54	4-5-6	Greenish-gray silty CLAY, trace of organics, moist - medium stiff	17	0	2	2	51	45	29	11	22
624.0	56, 58, 60	6-5-6	Gray silty CLAY, trace organics, moist - medium stiff	18	0	0	2	43	55	34	15	24
	62, 64	4-5-5	DO DO DO	19	0	0	3	40	57	35	16	34
614.0	66, 68	6-7-7	Gray silty CLAY, (varved) moist - medium stiff	20	0	0	1	49	50	33	15	27
609.0	70, 72, 74	4-5-2	Gray clayey SILT with fine sand layers, moist - medium stiff	21	0	0	12	58	30	23	7	22
	76, 78	3-5-8	DO DO DO	22	13	8	20	34	25	22	7	26
599.0	80, 82	10-29-53	Gray sandy silty CLAY with rock fragments, moist - medium stiff	23	21	17	12	27	23	26	10	23
597.0	84, 86	30%	Gray and brown CLAY, hard and gray fossiliferous limestone, jointed, broken, approx. 20% limestone in 1" to 5½" pieces.									
592.0	88, 90	% Recovery	Boring Completed									

Foundation Boring Sheet No. FB-5

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
CITY OF CINCINNATI
NORTHEAST EXPRESSWAY HAM 71-3.61
BORING No. R-7-2 R-11-2
R-11-1 R-14-1

BORING DATA

REVIEWED BY C.R.L. DATE 1/22/69

Rev-6-16-71

LOG OF BORING

Order No. 99,990 JH 11-21-68

DATE STARTED 5-3-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 5-15-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None
BORING NUMBER R-9-3 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER Backfilled Upon HRS. Completion
STATION & OFFSET 20+87, Victory Parkway, 254'Left, Northeast Expy. HAM 71-3.61 SURFACE ELEVATION 694.0'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
694.0	0											
691.5	2	2-2-3	Dark brown and brown sandy, silty clay, (FILL) moist - medium stiff	1	3	5	15	41	36	36	15	22
689.0	4	3-4-5	Brown silty clay, (FILL) moist - medium stiff	2	8	5	13	32	42	50	28	24
	6	3-3-5	Brown gravelly, sandy, silty clay, very moist - soft	3	18	10	15	33	24	27	11	18
	8	4-4-6	Brown gravelly, sandy, silty clay, moist - medium stiff	4	16	10	14	36	24	27	11	14
	10											
	12	3-4-5	do do do	5	24	10	16	30	20	25	10	15
	14	4-8-10	Brown gravelly, sandy silty clay, moist - stiff	6	24	10	14	30	22	25	10	13
676.5	16	8-6-10	do do	7	25	9	14	29	23	26	10	13
	18	8-5-6	Gray gravelly sandy silty clay, moist - medium stiff	8	15	10	15	34	25	23	8	14
	20											
	22	5-6-8	Gray gravelly, sandy silty clay, very moist - medium stiff	9	20	14	14	31	21	34	19	14
	24	14-6-9	do do do	10	28	7	10	35	20	25	9	13
	26	6-8-8	do do do	11	24	16	10	30	20	24	8	14
	28											
664.0	30	6-7-8	do do do	12	Visual							
	32	3-4-5	Gray sandy silty clay, very moist - medium stiff	13	1	9	14	42	34	25	9	15
659.0	34											
	36	5-6-8	Gray gravelly sandy silty clay, very moist - medium stiff	14	19	8	15	37	21	21	8	13
	38											
	40											
	42	8-10-15	do do do	15	14	9	13	40	24	22	8	15
	44											
	46	8-6-8	do do do	16	Visual							
644.0	48											
	50											
	52	10-45-35	Gray gravelly sandy, clayey silt, very moist - medium stiff	17	22	12	13	34	19	22	7	12
	54											
	56	10-25-30	do do do	18	Visual - No Recovery							
	58											
	60											
	62	7-8-16	do do do	19	Visual - No Recovery							
629.0	64											
	66	10-10-15	Gray sandy clay, moist - medium stiff	20	Visual - No Recovery							
	68											
	70											
	72	10-15-20	do do	21	Visual - No Recovery							
	74											
	76	6-6-10	do do	22	Visual - No Recovery							
	78											
	80											
	82	11-11-16	do do	23	Visual - No Recovery							
609.0	84											
	86	25-100	Gray Shale, moist - hard	24	Visual - No Recovery							
604.0	88											
	90											
	92	50%	Interbedded light gray Shale and light gray Limestone, approx. 85% shale, 15% limestone, Shale calcareous, non-fossiliferous to fossiliferous, medium tough to tough, Limestone occurs in 2" and 7-1/4" layers, is crystalline and shaly, fossiliferous, hard.									
	94											
599.0	96	% Recovery	Boring Completed									
	98											

LOG OF BORING

Order No. 99,990 JH 10-23-68

DATE STARTED 6-18-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 6-20-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None
BORING NUMBER R-10-1 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER Backfilled Upon HRS. Completion
STATION & OFFSET 25+99, Victory Parkway, 58'Rt. Northeast Expy. HAM 71-3.61 SURFACE ELEVATION 651.3'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
651.3	0											
648.8	2	4-4-5	Brown silty clay with rock fragments, (FILL) moist - stiff	1	14	10	9	27	40	41	23	25
646.3	4	8-8-10	Brown and gray sandy silty clay with rock fragments, (FILL) moist - stiff	2	14	8	12	34	32	29	12	11
643.8	6	5-5-9	Brown gravelly silty clay with rock fragments, (FILL) moist - medium stiff	3	31	7	6	25	31	39	18	18
641.3	8	10-15-20	Brown and gray silty clay with rock fragments, (FILL) moist - medium stiff	4	8	6	6	35	45	38	18	18
638.8	10	8-10-14	Brown and gray gravelly, silty clay with rock fragments, (FILL) moist - stiff	5	20	4	4	27	45	52	28	21
636.3	12	25-20-20	Brown gravelly, silty clay with rock fragments, (FILL) moist - stiff	6	22	4	4	24	46	48	24	25
	14											
	16	6-8-12	Brown sandy silty clay, moist - stiff	7	2	8	24	44	22	36	14	26
631.3	18											
	20											
	22	18%	Interbedded light gray Shale and light gray Limestone, approx. 80% shale, 20% limestone (entire recovery limestone). Shale assumed calcareous, trace fossiliferous, probable soft to medium tough. Limestone occurs in 1" to 2-1/2" layers, is crystalline, fossiliferous, hard; High-angle jointing with some iron-oxide staining exhibited primarily in top-half of recovery.									
626.3	24											
	26	100%	Interbedded light gray Shale and light gray Limestone, approx. 80% shale, 20% limestone, Shale calcareous, non-fossiliferous to fossiliferous, tough, Limestone occurs well distributed in 3/8" to 4-3/4" layers, is crystalline, fossiliferous, hard.									
621.3	28											
	30											
	32	% Recovery	Boring Completed									
	34											

Foundation Boring Sheet No FB-6

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
CITY of CINCINNATI, OHIO
NORTHEAST EXPRESSWAY HAM-71-3.61
BORING No. R-9-3
R-10-1

BORING DATA

REVIEWED BY CRL DATE 12/19/68

ECU 6-16-71

LOG OF BORING Order No. 99.990 JH 10-2-68

DATE STARTED 7-10-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 7-12-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE Unable to determine
BORING NUMBER R-11-3 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER ____ HRS. ____
STATION & OFFSET 298+83, Ramp "VB", 42'Rt. Northeast Exwy, HAM 71-3.61 SURFACE ELEVATION 711.8

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
711.8	0											
710.3	2	5-7-8	Brown sandy, silty clay.(TOPSOIL) dry - very stiff	1	0	7	19	37	37	35	17	12
	4	7-8-8	Brown gravelly, sandy silty clay, moist - very stiff	2	22	7	15	30	26	24	10	12
706.3	6											
	8	8-12-14	Brown sandy, clayey gravel, moist - medium dense	3	36	8	10	25	21	25	8	14
701.8	10											
	12	8-17-14	Brown gravelly, silty clay, moist - very stiff	4	29	6	8	27	30	32	17	11
696.8	14											
	16	65%	Interbedded light brown weathered shale and light gray limestone, approx. 85% shale 15% limestone. Shale calcareous, non-fossiliferous to trace fossiliferous, soft to medium tough. Limestone occurs in 1" to 4" layers, is crystalline, trace fine-grained, fossiliferous, hard; high-angle jointing with some iron-oxide staining exhibited in most layers.									
	18	35%										
	20											
	22	13%										
	24											
	26	36%										
	28											
681.8	30	22%										
	32	95%	Interbedded light gray limestone and light brown (trace gray) weathered shale, approx. 50% limestone, 50% shale. Limestone occurs essentially closely-packed in 1" to 7" layers, is crystalline and shaly, fossiliferous, hard; high-angle joint displayed at approx. 51°. Shale calcareous, trace fossiliferous to fossiliferous, medium tough, some tough, trace soft.									
	34											
	36	74%										
674.8	38											
	40	100%	Interbedded light brown and light gray weathered shale and light gray limestone, approx. 60% shale, 40% limestone. Shale calcareous, trace fossiliferous to fossiliferous, essentially medium tough. Limestone occurs closely-packed in 1" to 3" layers, is crystalline, some shaly, fossiliferous, hard; high-angle joint with iron-oxide staining exhibited near center of recovery from 38.5' to 42'.									
669.8	42	70%										
	44		Interbedded light gray shale (some brown) and light gray limestone, approx. 85% shale, 15% limestone. Shale calcareous, non-fossiliferous to fossiliferous, tough (some probable soft to medium tough). Limestone occurs within last 1½' of recovery in 1" to 2½" layers, is crystalline, fossiliferous, hard; some high-angle jointing with iron-oxide staining displayed.									
	46	64%										
664.8	48											
	50	67%	Light gray shale, calcareous, non-fossiliferous, tough (some probable soft to medium tough).									
660.3	52											
	54		Interbedded light gray (and brown) shale and gray limestone, approx. 80% shale, 20% limestone (entire recovery essentially limestone). Shale assumed calcareous, non-fossiliferous to trace fossiliferous, probable soft to medium tough. Limestone occurs in 1" to 4" layers, is shaly and crystalline, fossiliferous, hard.									
655.3	56	20%										
	58		Light gray shale, calcareous, non-fossiliferous to fossiliferous, tough, some probable medium tough									
	60	82%										
650.3	62											
	64	94%	Interbedded light gray shale and light gray limestone, approx. 70% shale, 30% limestone. Shale calcareous, trace fossiliferous to fossiliferous, tough. Limestone occurs closely-packed near center of recovery in 1-3/4" to 5-1/2" layers, is crystalline, some shaly, fossiliferous, hard.									
646.8	66	% Recovery	Boring Completed									
	68											

LOG OF BORING Order No. 99.990 JH 10-22-68

DATE STARTED 7-16-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 7-11-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE Unable to Determine
BORING NUMBER R-12-1 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER Backfilled Upon HRS. Completion
STATION & OFFSET 244+05, Victory Parkway, 85'Right, Northeast Exwy, HAM 71-3.61 SURFACE ELEVATION 665.7'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
665.7	0											
	2	3-4-5	Rubble fill	1	Visual							
	4											
660.7	6											
	8	8-8-8	Brown sandy silty, (fill) moist- stiff	2	4	6	37	34	19	19	1	7
655.7	10											
	12	5-8-13	Brown gravelly, silty clay.(fill) moist - medium stiff	3	22	5	11	34	28	28	11	20
	14											
650.7	16											
	18	5-6-7	Brown silty clay,(fill) moist - medium stiff	4	10	7	5	33	45	43	21	22
	20											
643.7	22	4-5-6	do do	5	Insufficient sample							
	24	6-6-7	Gray sandy silty clay, moist - medium stiff	6	0	11	17	43	29	30	13	22
	26	6-6-6	do do	7	3	8	21	43	25	30	11	19
638.2	28											
636.2	30	5-10-20	Brown and gray silty clay, moist - very stiff	8	0	7	4	32	57	41	22	18
635.2	50		Gray shale	9	Visual							
633.7	32	50%	Interbedded light gray shale and light gray limestone, approx. 80% shale, 20% limestone. Shale calcareous, non-fossiliferous, probable soft to medium tough. Limestone occurs in 1-1/2" layers, is crystalline, fossiliferous, hard. and exhibits high-angle jointing with iron-oxide staining.									
	34											
	36	40%	Light gray shale with light gray limestone, approx. 80% shale, 20% limestone. Shale calcareous, non-fossiliferous to trace fossiliferous; medium tough to tough. Limestone occurs in bottom-half of recovery in 1-1/2" to 3" layers, is crystalline, some shaly, fossiliferous, hard; high-angle joint with some iron-oxide staining displayed within last 6" of run.									
628.7	38											
	40	63%	Light gray shale with light gray limestone, approx. 90% shale, 10% limestone. Shale calcareous, non-fossiliferous to fossiliferous, medium tough to tough. Limestone occurs within top 10" of recovery in 1/2" to 3" layers, is crystalline, fossiliferous, hard.									
625.2	42											
	44	% Recovery	Boring Completed									
	46											

LOG OF BORING Order No. 99.990 JH 10-22-68

DATE STARTED 8-26-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 8-26-68 CASING: LENGTH HSA DIA. 3.375"I.D. IMMEDIATE None
BORING NUMBER R-12-2 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER Backfilled Upon HRS. Co-pletion
STATION & OFFSET 247+76 Victory Parkway, 174'Rt. Northeast Exwy, HAM 71-3.61 SURFACE ELEVATION 662.1'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
662.1	0											
661.6	1	3	Gray sandy silty clay, moist - medium stiff	1	7	8	21	46	23	28	14	19
659.6	2	3-3	Brown sandy silty clay, moist - medium stiff	2	14	6	15	33	32	35	18	15
	4	6-7-8	Brown silty fat clay, moist - very stiff	3	0	4	6	31	59	53	30	20
657.1	6											
	8	8-9-10	Brown silty clay, moist - very stiff	4	0	4	4	43	49	42	22	15
652.1	10											
	12	50	Brown and gray weathered shale with limestone fragments, moist - hard	5	21	4	3	32	40	42	22	18
648.6	13	50	Gray weathered shale, moist - hard	6	0	2	2	49	47	38	19	9
648.1	14											
	16	93%	Light gray shale with light gray limestone, approx. 90% shale, 10% limestone. Shale calcareous, non-fossiliferous to fossiliferous, tough; thin (1/2") probable soft seams exhibited, at approx. 14.8', 16.5', 16.7', and 17'. Limestone occurs well distributed in 3/8" to -1/4" layers, is crystalline, is crystalline, trace fine-grained, fossiliferous, hard; all layers display high-angle jointing with iron-oxide staining.									
	18											
643.1	20											
	22	100%	Light gray shale (trace light brown) shale last 4-1/2" of recovery) calcareous, non-fossiliferous to fossiliferous, tough to hard, thin (1/4"to 1") light gray limestone layers, crystalline, fossiliferous, hard. occur near center and bottom of recovery; all layers exhibit high-angle jointing with iron-oxide staining.									
638.1	24											
	26	% Recovery	Boring Completed									

Foundation Boring Sheet No. FB-7

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
CITY OF CINCINNATI, OHIO
NORTHEAST EXPRESSWAY HAM-71-3.61
BORING No. R-11-3 R-12-2
R-12-1

BORING DATA

REVIEWED BY C.R.L. DATE 12/19/68

Rev. 6/6/71

LOG OF BORING Order No. 99.990 JH 10-22-68

DATE STARTED 8-30-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 8-30-68 CASING: LENGTH 3.5"I.D. DIA. 3.5"I.D. IMMEDIATE None
BORING NUMBER R-13-1 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 1 HRS. 29' (683.4')
STATION & OFFSET 7+22 Blair Avenue, 130'Left, Northeast Expy, HAM 71-3.61 SURFACE ELEVATION 712.4'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
712.4	0											
711.9			CONCRETE									
	2	4-5-5	CINDERS,(FILL)	1	VISUAL							
709.9	4	6-7-6	BROWN AND GRAY GRAVELLY, SANDY, SILTY CLAY,(FILL) MOIST - MEDIUM STIFF	2	24	8	13	45	10	26	11	15
707.4	6	6-12-18	BROWN AND GRAY GRAVELLY, SANDY, SILTY CLAY, MOIST - VERY STIFF	3	22	9	14	33	22	26	12	11
704.9	8	9-15-16	BROWN SANDY, SILTY CLAY, MOIST	4	17	9	15	35	24	27	12	12
702.4	10	7-12-19	GRAY SILTY CLAY,(VARVED) MOIST - STIFF	5	2	2	4	33	59	37	21	19
	12	10-14-16	DO DO	6	0	2	2	37	59	37	20	19
	14	8-11-20	DO DO	7	1	3	5	39	52	36	19	19
694.9	16	10-12-17	GRAY SILTY CLAY, MOIST - STIFF	8	5	2	3	44	46	35	18	19
	18	7-7-9	DO DO	9	6	2	3	42	47	34	17	19
	20											
	22											
	24											
	26	6-7-9	GRAY SILTY CLAY, MOIST - MEDIUM STIFF	10	14	6	8	47	25	23	9	16
	28											
682.4	30											
	32	5-4-8	GRAY SANDY, CLAYEY SILT, MOIST- SOFT	11	16	13	11	44	16	20	5	21
	34											
677.4	36	7-8-7	GRAY SILTY CLAY, MOIST - MEDIUM STIFF	12	12	5	11	47	25	22	8	17
	38											
672.4	40											
	42	5-6-8	GRAY SANDY SILTY CLAY, MOIST - MEDIUM STIFF	13	15	9	18	35	23	21	9	13
	44											
	46	6-7-8	DO DO	14	14	8	12	38	28	24	11	12
	48											
662.4	50											
	52	4-6-8	GRAY GRAVELLY, SANDY,SILTY CLAY, MOIST - MEDIUM STIFF	15	20	8	12	33	27	25	11	22
	54											
	56	7-7-9	DO DO DO	16	38	6	10	28	18	21	7	14
	58											
652.4	60											
	62	27-19-30	BROWN AND GRAY SILTY CLAY, MOIST - STIFF	17	5	10	4	37	44	42	27	18
	64											
647.4	66	18-17-21	BROWN AND GRAY GRAVELLY SILTY CLAY, MOIST - VERY STIFF	18	31	5	3	28	33	40	22	18
644.4	68											
	70	60%	LIGHT GRAY SHALE WITH LIGHT GRAY LIMESTONE, APPROX.90% SHALE, 10% LIMESTONE. SHALE CALCAREOUS, NON-FOSSILIFEROUS TO TRACE FOSSILIFEROUS, TOUGH. LIMESTONE OCCURS AT TOP OF RECOVERY IN 1-1/4" TO 2-1/4" LAYERS, IS CRYSTALLINE, FOSSILIFEROUS, HARD; HIGH-ANGLE JOINT WITH IRON-OXIDE STAINING EXHIBITED NEAR TOP OF RUN.										
	72											
639.4	74	% RECOVERY	BORING COMPLETED									
	76											

LOG OF BORING Order No. 99.990 JH 10-24-68

DATE STARTED 6-24-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 6-24-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None
BORING NUMBER R-16-1 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 2 HRS. 15'(713.8')
STATION & OFFSET 300+86, Northeast Expy, 286'Right, Northeast Expy.HAM 71-3.61 SURFACE ELEVATION 728.8'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
728.8	0											
	2	2-3-4	BROWN MOTTLED CLAYEY SILT, MOIST - MEDIUM STIFF	1	0	2	4	66	28	27	8	17
	4											
723.8	6	4-7-8	BROWN MOTTLED SANDY, SILTY CLAY, MOIST - STIFF	2	0	3	20	40	37	36	18	22
	8	2-3-3	DO DO	3	0	4	16	50	30	34	17	21
	10	3-5-6	DO DO	4	0	4	14	34	48	40	22	20
716.3	12											
	14	5-6-7	BROWN MOTTLED GRAVELLY, SANDY SILTY CLAY, MOIST - STIFF	5	19	8	14	32	27	28	13	15
713.8	16	2-5-6	BROWN AND GRAY GRAVELLY, SANDY SILTY CLAY, MOIST - STIFF	6	16	8	12	31	33	31	14	16
	18	5-7-13	DO DO DO	7	17	9	16	35	23	26	10	13
	20	27	DO DO DO	8	INSUFFICIENT SAMPLE							
708.3	22											
	24	24%	INTERBEDDED LIGHT BROWN WEATHERED SHALE AND LIGHT GRAY LIMESTONE, APPROX.75% SHALE, 25% LIMESTONE, (ENTIRE RECOVERY LIMESTONE). SHALE ASSUMED CALCAREOUS, NON-FOSSILIFEROUS, PROBABLE SOFT TO MEDIUM TOUGH. LIMESTONE OCCURS IN 3/4" TO 7"LAYERS, IS CRYSTALLINE, FOSSILIFEROUS, HARD.									
703.3	26											
	28	18%	LIGHT BROWN WEATHERED SHALE WITH LIGHT GRAY LIMESTONE, APPROX.95% SHALE, 5% LIMESTONE. SHALE CALCAREOUS, NON-FOSSILIFEROUS TO TRACE FOSSILIFEROUS, SOFT TO MEDIUM TOUGH. LIMESTONE OCCURS IN 3/4" TO 2-1/4"LAYERS, IS CRYSTALLINE, FOSSILIFEROUS, HARD.									
698.3	30											
	32	% RECOVERY	BORING COMPLETED									
	34											

LOG OF BORING Order No. 99.990 JH 11-21-68

DATE STARTED 7-19-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 7-19-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None
BORING NUMBER R-16-5 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 1 HRS. 5' (736.1)
STATION & OFFSET 307+19, Northeast Expy., 235'Right, HAM 71-3.61 SURFACE ELEVATION 741.1'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
741.1	0											
740.6			CONCRETE									
	2	27-43-56	BROWN HIGHLY WEATHERED SHALE AND BROKEN LIMESTONE FRAGMENTS, VERY STIFF TO HARD	1	VISUAL							
	4											
	6	54-74	DO DO DO	2	VISUAL							
	8											
731.1	10											
	12	56%	INTERBEDDED LIGHT BROWN WEATHERED SHALE AND LIGHT GRAY LIMESTONE, APPROX.65% SHALE, 35% LIMESTONE, SHALE CALCAREOUS, TRACE FOSSILIFEROUS, PROBABLE SOFT TO MEDIUM TOUGH. LIMESTONE OCCURS IN 3/4" TO 5-1/4"LAYERS, IS CRYSTALLINE, SOME SHALY, FOSSILIFEROUS, HARD; HIGH-ANGLE JOINTING WITH IRON-OXIDE STAINING EXHIBITED WITHIN TOP 1' OF RECOVERY.									
	14											
726.1	16											
	18	60%	INTERBEDDED LIGHT BROWN (CHANGING TO LIGHT GRAY LAST 7"OF RECOVERY) WEATHERED SHALE AND LIGHT GRAY LIMESTONE, APPROX.85% SHALE, 15% LIMESTONE. SHALE CALCAREOUS, NON-FOSSILIFEROUS, MEDIUM TOUGH TO TOUGH, SOME PROBABLE SOFT. LIMESTONE OCCURS IN 1" TO 4"LAYERS, IS CRYSTALLINE, FOSSILIFEROUS,HARD; HIGH-ANGLE JOINT DISPLAYED AT TOP OF RECOVERY.									
721.1	20											
	22	% RECOVERY	BORING COMPLETED									
	24											

Foundation Boring Sheet No. 8

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
CITY OF CINCINNATI, OHIO
NORTHEAST EXPRESSWAY HAM-71-3.61
BORING No. R-13-1 R-16-5
R-16-1

BORING DATA

REVIEWED BY C.R.L. DATE 12/19/68

Rev. 6-16-71

LOG OF BORING

DATE STARTED 10-1-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 10-1-65 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 682.8
BORING NUMBER R-15-1 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER HRS. Backfilled
STATION & OFFSET 277+44, 106'Left SURFACE ELEVATION 701.8

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
701.8	0											
	2	2-3-3	Clay, brick, wood, limestone boulders and cinders, (fill)	1	Visual							
	4											
	6	2-1-2	do do do	2	Visual							
	8	1-1-2	do do do	3	Visual							
	10											
	12	3-3-4	do do do	4	Visual							
689.3												
	14	4-6-8	Brown sandy, silty clay with some brick, (fill) moist - stiff	5	14	8	14	38	26	29	13	14
686.8	16	3-3-4	Brown sandy lean clay, little gravel and sand lenses, moist - medium stiff	6	11	9	14	26	40	30	14	16
684.3	18	2-2-3	Gray gravelly, silty clay and wood, moist - medium stiff	7	15	3	9	39	34	38	16	24
681.8	20											
	22	4-5-9	Gray silty clay, trace organic matter and rock fragments moist - medium stiff	8	29	5	9	31	26	36	14	22
679.3		126										
	24		Brown and gray clay and limestone layers, moist.	9	Visual							
676.8	26											
	28	36%	Brown and gray weathered shale with gray limestone layers, (approx. 90% shale, 10% limestone). Shale medium tough to hard, calcareous; limestone occurs in 3/4" to 4"layers fossiliferous to non-fossiliferous, crystalline to fine-grained, hard. Fracturing, with iron-oxide staining, exhibited at top of section; also possible fracturing indicated near bottom.									
671.8	30											
	32	% Recovery	Boring Completed									
	34											
	36											

LOG OF BORING

DATE STARTED 10-1-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 10-2-65 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 671.3
BORING NUMBER R-15-2 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER HRS. Backfilled
STATION & OFFSET 279+91, 113'Left SURFACE ELEVATION 698.3

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
698.3	0											
	2	4-5-6	Clay, cinders and brick, (fill)	1	Visual							
693.3	4											
	6	4-6-6	Gray sandy clay, cinders and wood, (fill) moist - medium stiff	2	51	12	9	14	14	35	15	18
690.8	8	5-6-6	Gray silty clay and highly weathered shale, (fill) moist - stiff	3	11	4	2	29	54	41	21	13
688.3	10											
	12	8-9-11	Gray silty clay with weathered shale and limestone fragments, (fill) moist - stiff	4	38	8	4	20	30	37	18	14
	14	4-4-7	do do do	5	11	4	2	39	44	37	17	15
	16	8-11-7	do do do	6	2	2	1	39	56	39	20	12
	18	6-7-8	do do do	7	39	3	1	20	37	42	22	10
678.3	20											
	22	4-4-6	Brown and gray sandy silty clay, little gravel, moist - medium stiff	8	19	11	17	33	20	25	7	20
675.8	24	11-15-16	Brown and gray lean clay with limestone fragments, moist - stiff	9	15	3	4	29	49	49	30	22
673.3	26	10-15-27	Brown and gray silty clay with limestone fragments, moist - very stiff	10	12	0	1	34	53	41	22	17
	28											
668.3	30											
666.8	32	27-44-72	Gray shale and limestone fragments	11			Visual					
	34	42%	Gray and brown weathered shale and gray limestone layers, (approx. 85% shale, 15% limestone), Shale soft to tough, trace fossils, calcareous. Limestone occurs in 1" to 3-1/4" layers, fossiliferous, impure-crystalline to crystalline, hard, fracturing exhibited near approx. center of run.									
	36											
661.8	38	% Recovery	Boring Completed									

HAMILTON COUNTY
HAM-71-3.61

21
32
9
20

LOG OF BORING

DATE STARTED 10-4-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 10-5-65 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None
BORING NUMBER R-20-1 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER HRS. Backfilled
STATION & OFFSET 263+73, 180'Left SURFACE ELEVATION 788.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
788.0	0											
787.0	2	2-4	Brown silty clay, (fill) moist - stiff	1	1	2	4	57	36	35	12	14
	4	6	Brown silty clay, moist - very stiff	2	Visual							
	6	7-8-11	do do	3	2	1	2	30	65	58	33	21
	8											
778.0	10											
	12	20-16-17	Brown silty clay, weathered shale and limestone fragments, moist - very stiff	4	21	2	5	32	40	50	28	15
773.0	14											
	16		Interbedded brown weathered shale (some gray) and gray limestone (approx. 60% shale, 40% limestone in recovery). Shale possible soft to tough, calcareous. Limestone occurs in 1/2" to 6" layers, fossiliferous, shaly-crystalline to crystalline, hard. Fracturing and broken condition exhibited at approx. 16.0', 20.5', 24.5', 26.0' and 29.5'.									
	18											
	20											
	22	63%										
	24											
	26											
	26											
758.0	30											
	32		Interbedded gray shale and gray limestone (approx. 75% shale, 25% limestone). Shale medium tough to tough, non-calcareous to calcareous. Limestone occurs in 1/2" to 2" layers, fossiliferous, crystalline, hard.									
	34	83%										
753.0	36											
	38	89%	Interbedded gray limestone and gray shale (approx. 55% limestone, 45% shale). Limestone occurs in 1/2"to 6" layers, fossiliferous to non-fossiliferous, shaly-crystalline to fine-grained, hard. Shale essentially tough, calcareous. Fracturing exhibited at approx. 37.0' and 37.5'.									
750.0	40	% Recovery	Boring Completed									

LOG OF BORING

DATE STARTED 10-4-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 10-4-65 CASING: LENGTH None DIA. IMMEDIATE None
BORING NUMBER R-1-1 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER HRS. Backfilled
STATION & OFFSET 276+81, 85'Right SURFACE ELEVATION 707.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
707.0	0											
705.5	2	6-8-9	Brown lean clay, trace brick and coal, (fill) dry - stiff	1	13	7	9	35	36	47	27	14
	4	12-22-36	Brown silty clay, weathered shale and limestone layers, moist - very stiff	2	2	6	4	40	48	41	22	16
701.0	6	34	do do do	3	Visual							
	8		Interbedded brown weathered shale and gray limestone, (approx. 55% shale and 45% limestone in recovery) shale soft, calcareous, badly broken to remolded. Limestone thin bedded in 1/4" to 3" layers, fossiliferous, crystalline, oxidized, hard.									
	10	51%										
	12											
693.0	14	44%										
	16	% Recovery	Boring Completed									

Foundation Boring Sh No FB-9

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-71-3.61
Melish Ave. to Victory Parkway

BORING DATA

		REVIEWED BY	DATE
		C.R.L.	1/20/66

Rev. 6-16-71

LOG OF BORING Order No. 99,990, 9-25-68 JH

DATE STARTED 7-22-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 7-22-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None
BORING NUMBER R-16-2 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 1 HRS. 12' (724.6')
STATION & OFFSET 302+41, 228'Rt., Northeast Exwy, HAM 71-3.61 SURFACE ELEVATION 736.6'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
736.6	0											
	2	7-9-11	DARK BROWN GRAVELLY, SANDY, CLAYEY SILT, TRACE CINDERS, (FILL) MOIST - STIFF	1	20	11	9	37	23	40	13	20
731.6	4											
	6	4-6-10	BROWN SILTY CLAY, MOIST - VERY STIFF	2	0	4	5	51	40	38	18	16
726.6	8											
	10	7-12-10	MOTTLED BROWN AND GRAY SILTY CLAY, MOIST - STIFF	3	4	4	12	36	44	40	20	24
724.1	12											
	14	5-6-9	BROWN SILTY CLAY, MOIST - STIFF	4	4	4	14	38	40	34	16	18
	16	6-8-10	DO DO	5	0	4	8	38	50	45	21	21
	18	11-12-16	DO DO	6	0	0	2	50	48	36	15	16
716.6	20	38-68	BROWN HIGHLY WEATHERED SHALE, SLIGHTLY MOIST - HARD	7	6	2	3	40	49	35	14	16
	22											
	24											
711.6		95	BROWN WEATHERED SHALE AND LIMESTONE FRAGMENTS	8	Visual							
711.1	26											
	28	40%	INTERBEDDED LIGHT BROWN WEATHERED SHALE AND LIGHT GRAY LIMESTONE, APPROX. 65% SHALE, 35% LIMESTONE (RECOVERY PRIMARILY LIMESTONE). SHALE ASSUMED CALCAREOUS. TRACE FOSSILIFEROUS, SOFT TO MEDIUM TOUGH. LIMESTONE OCCURS IN 1/2" TO 6-1/2" LAYERS, IS CRYSTALLINE AND SHALY, FOSSILIFEROUS, HARD									
706.1	30											
	32											
	34	80%	INTERBEDDED LIGHT BROWN AND LIGHT GRAY WEATHERED SHALE AND LIGHT GRAY LIMESTONE, APPROX. 75% SHALE, 25% LIMESTONE. SHALE CALCAREOUS, NON-FOSSILIFEROUS, PROBABLE SOFT TO TOUGH. LIMESTONE OCCURS WELL DISTRIBUTED IN 1" TO 5" LAYERS, IS CRYSTALLINE, FOSSILIFEROUS, HARD; HIGH-ANGLE JOINTING INDICATED NEAR CENTER OF RECOVERY.									
701.1	36											
		% Recovery	BORING COMPLETED									

LOG OF BORING Order No. 99,990, 9-25-68 JH

DATE STARTED 7-23-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 7-23-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None
BORING NUMBER R-16-3 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 1 HRS. 6' (731.4)
STATION & OFFSET 303+69, 212'Rt., Northeast Exwy, HAM 71-3.61 SURFACE ELEVATION 737.4

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
737.4	0											
736.4		7-9	TOPSOIL, MOIST - STIFF	1	Visual							
	2	68	BROWN HIGHLY WEATHERED SHALE AND BROKEN LIMESTONE FRAGMENTS MOIST - HARD	2	32	9	4	30	25	31	12	15
732.4	4											
	6											
	8	33%	INTERBEDDED LIGHT BROWN WEATHERED SHALE AND LIGHT GRAY LIMESTONE, APPROX. 70% SHALE, 30% LIMESTONE. SHALE CALCAREOUS, NON-FOSSILIFEROUS, PROBABLE SOFT TO TOUGH. LIMESTONE OCCURS WELL DISTRIBUTED IN 1/2" TO 5-1/2" LAYERS, IS CRYSTALLINE, FOSSILIFEROUS, HARD; HIGH ANGLE JOINTING WITH IRON-OXIDE STAINING EXHIBITED TOP HALF OF RECOVERY FROM 5' TO 10', AND WITHIN FIRST 1' OF RECOVERY FROM 10' TO 15'.									
	10											
	12											
	14	60%										
722.4	16											
	18	% Recovery	BORING COMPLETED									

LOG OF BORING Order No.99,990, 9-24-68 JH

DATE STARTED 7-23-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 7-23-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None
BORING NUMBER R-16-4 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 1 HRS. 5' (737.2)
STATION & OFFSET 305+51, 199'Rt., Northeast Exwy, HAM 71-3.61 SURFACE ELEVATION 742.2'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
742.2	0											
741.2		7-10	TOPSOIL	1	Visual							
	2	58	BROWN SILTY CLAY WITH LIMESTONE FRAGMENTS, MOIST - VERY STIFF	2	4	2	4	39	51	31	9	15
	4											
736.7	6											
	8	34%	INTERBEDDED LIGHT BROWN WEATHERED SHALE AND LIGHT GRAY LIMESTONE, APPROX. 65% SHALE, 35% LIMESTONE (RECOVERY ESSENTIALLY LIMESTONE). SHALE ASSUMED CALCAREOUS, NON-FOSSILIFEROUS, PROBABLE SOFT TO MEDIUM TOUGH. LIMESTONE OCCURS IN 1" TO 7" LAYERS, IS CRYSTALLINE, FOSSILIFEROUS HARD; HIGH ANGLE JOINT WITH IRON-OXIDE STAINING EXHIBITED NEAR CENTER OF RECOVERY.									
	10											
731.7	12	% Recovery	BORING COMPLETED									
	14											

Foundation Boring Sheet No FB-10

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
CITY OF CINCINNATI
NORTHEAST EXPRESSWAY HAM 71-3.61
BORING No. R-16-2 R-16-4
R-16-3

BORING DATA

REVIEWED BY CRL | DATE 1 22 69

Rev. 6-16-71

HAMILTON COUNTY
HAM-71-3.61

23
32
11
20

LOG OF BORING Order No. 99.990 9-20-68 JH

DATE STARTED 3-18-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 3-18-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None
BORING NUMBER R-17-1 CORE BARREL: TYPE SIZE AFTER 1 HRS. None
STATION & OFFSET 7+27 Whittier, 26'Right Northeast Exwy, HAM 71-3.61 SURFACE ELEVATION 764.0'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
764.0	0		~~Concrete~~									
~~763.5~~												
761.5	2	4-7-6	Cinders, (FILL) moist - medium dense	1	Visual							
	4	5-4-5	Brown silty clay with broken stone fragments, (FILL) moist - stiff	2	2	4	14	33	47	39	20	24
	6	4-7-6	do do do	3	8	7	11	31	43	36	18	19
	8											
		8-10-9	Brown silty clay with broken stone fragments and trace of brick, (FILL) moist - stiff	4	Visual							
754.0	10											
	12	10-11-13	Brown silty clay, moist - stiff	5	0	1	3	35	61	43	23	25
	14	10-12-16	do do	6	Visual							
	16	9-10-11	Brown silty clay, moist - very stiff	7	0	1	3	33	63	41	22	23
	18											
	20	8-9-10	do do	8	Visual							
	22	7-10-13	Brown silty clay, moist - stiff	9	0	0	4	35	61	43	25	24
739.0	24											
	26	8-12-18	Brown sandy silty clay, moist - very stiff	10	0	7	14	25	54	44	24	26
	28											
734.0	30	85	~~Refusal~~									
	32		Boring Completed									

LOG OF BORING Order No. 99.990 9-23-68 JH

DATE STARTED 3-18-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 3-18-68 CASING: LENGTH HSA DIA. 2.25"I.D. IMMEDIATE None
BORING NUMBER R-17-2 CORE BARREL: TYPE SIZE AFTER Backfilled Upon HRS Completion
STATION & OFFSET 6+36 Whittier St., 22.5'Right Northeast Exwy, HAM 71-3.61 SURFACE ELEVATION 768.0'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
768.0	0											
767.5			Concrete, ashes, cinders & gravel, (FILL) moist - loose	1	Visual							
	2	2-6-8	Brown sandy silty clay, moist - very stiff	2	9	11	16	33	31	23	9	12
763.0	4	6-13-15	do do	3	Visual							
	6	4-12-13	Brown gravelly, sandy lean clay, moist - very stiff	4	23	9	14	30	24	25	11	12
	8	6-16-26	do do do	5	Visual							
758.0	10											
	12	Auger	Limestone fragments	6	Visual							
755.5	14	10-15-16	Brown highly weathered shale with limestone fragments, moist - very stiff	7	20	3	5	37	35	35	16	16
753.0	16	10-12	Brown silty clay with limestone fragments, moist - medium	8	20	3	10	14	53	58	23	46
	18	55	do do do /stiff	9	Insufficient sample							
750.5		40-27	Brown weathered shale	10	Visual							
749.5	20											
	22		Boring Completed									

Foundation Boring Sheet No. FB-11

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
CITY OF CINCINNATI, OHIO
NORTHEAST EXPRESSWAY HAM-71-3.61
BORING No. R-17-1
R-17-2

BORING DATA

		REVIEWED BY	DATE
		CRL	12/19/68

Rev. 6-16-71

HAMILTON COUNTY
HAM-71-3.61

(24/32) (12/20)

LOG OF BORING

DATE STARTED 9-23-65 SAMPLER: TYPE Split Spoon DIA. 2" O.D. WATER ELEVATION
DATE COMPLETED 9-24-65 CASING: LENGTH HSA DIA. 3.5" I.D. IMMEDIATE None
BORING NUMBER R-2-2 CORE BARREL: TYPE NXM SIZE 2 1/8" I.D. AFTER HRS. Backfilled

STATION & OFFSET 281+93, 123' Right SURFACE ELEVATION 721.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
721.0	0											
	2	4-11-16	Rubble fill- concrete and clay	1	Visual							
717.0	4											
715.5	6	4-6-8	Brown fat clay, moist - stiff	2	0	1	3	32	64	60	39	24
713.5	8	10-13-14	Brown silty clay and limestone fragments, moist - stiff	3	21	11	7	21	40	50	32	24
710.5	10	42%	Interbedded brown silty clay with limestone fragments and gray limestone (approx. 80% clay, 20% layered Limestone) Clay moist, stiff, slightly calcareous to *	Visual								
708.5	12	11-23-35	Brown silty clay, moist - stiff	4	6	6	3	35	50	40	20	18
706.0	14	16-25-36	Brown silty clay with highly weathered shale, moist - stiff	5	0	2	2	40	56	43	22	22
704.7	16	83%	Brown silty clay with limestone fragments, moist - stiff, calcareous, with 1-1/2" layer fractured limestone, fossiliferous and crystalline									
701.0	18	77%	Brown weathered shale, soft to tough calcareous, with three limestone layers (3/4" to 1-1/4") Last 16" of section. Limestone fine-grained to crystalline, non-fossiliferous to fossiliferous, hard. (Poor recovery from 19.0'-20.0')									
696.0	20	52%	Interbedded brown and gray weathered shale and gray limestone (approx. 85% shale, 15% Limestone). Shale medium tough to tough, calcareous, non-fossiliferous to fossiliferous; limestone occurs in 1" to 2" layers. fine grained to impure - crystalline. non- fossiliferous to fossiliferous, hard. Fracturing exhibited at top and bottom of section.									
	22											
	24											
	26		* calcareous, limestone occurs in 1-1/2" to 4" layers, fossiliferous, impure crystalline, exhibits fracturing and iron-oxide staining									
	28		% Recovery									
			Boring completed									

LOG OF BORING

DATE STARTED 10-5-65 SAMPLER: TYPE Split Spoon DIA. 2" O.D. WATER ELEVATION
DATE COMPLETED 10-6-65 CASING: LENGTH None DIA. None IMMEDIATE None
BORING NUMBER R-2-3 CORE BARREL: TYPE NXM SIZE 2 1/8" I.D. AFTER HRS. Backfilled

STATION & OFFSET 283+94, 98' Right SURFACE ELEVATION 715.7

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
715.7	0											
713.2	2	2	Topsoil	1A	Visual							
		2-4	Brown sandy clay, moist - medium stiff	1B	Visual							
	4											
710.7												
709.7	6	11-36	Brown sandy lean clay with highly weathered shale, moist very stiff	2	0	3	5	39	53	44	24	10
	8											
	10	50%	Interbedded brown weathered shale and gray and brown limestone (approx. 55% shale and 45% Limestone in recovery). Shale soft, calcareous, badly broken. Limestone thin bedded in 1/2" to 4" layers, fossiliferous, crystalline, hard.									
703.7	12											
	14	50%	Interbedded gray weathered shale (trace of brown) and gray limestone, (approx. 75% shale and 25% limestone in recovery). Shale soft to medium tough, calcareous, mostly broken to remolded, sparcely fossiliferous. Limestone thin bedded in 1" to 4" layers, fossiliferous, hard crystalline, with evidence of high angle joint at 799± joint surfaces oxidized.									
	16											
698.7	18	70%	Gray shale possibly soft to medium tough, broken to remolded, checks on drying.									
695.7	20											
			% Recovery									
			Boring completed									

LOG OF BORING

DATE STARTED 10-4-65 SAMPLER: TYPE Split Spoon DIA. 2" O.D. WATER ELEVATION
DATE COMPLETED 10-4-65 CASING: LENGTH None DIA. IMMEDIATE None
BORING NUMBER R-2-4 CORE BARREL: TYPE NXM SIZE 2-1/8" I.D. AFTER HRS. Backfilled

STATION & OFFSET 285+07, 114' Right SURFACE ELEVATION 715.5

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
715.5	0											
714.0	2	3-6-6	Rubble (fill) clay and cinders	1	Visual							
	4											
709.5	6	10-50	Brown lean clay (fill) moist - very stiff	2	13	7	12	34	34	32	16	13
	8	10-15-30	Brown silty clay with pieces and layers of limestone, moist - very stiff	3	Visual							
	10	12-15-20	do do do	4	28	4	4	26	38	44	23	14
	12											
	14											
701.0	16	15-30-65	Brown and gray shale with limestone layers	5	Visual							
697.5	18	80	do do do	6	Visual							
	20		Interbedded brown and gray weathered shale and gray limestone (approx. 80% shale, 20% limestone) Shale soft to medium tough, non-fossiliferous to fossiliferous. calcareous; limestone occurs in 1/2" to 4" layers, fossiliferous, impure fine-grained, shaley crystalline and crystalline, hard. Fracturing with iron-oxide staining exhibited near top of section with broken condition (possible fracturing) near bottom. (Poor recovery - assuming lost material to be shale										
	22	41%										
	24											
689.5	26											
687.5	28	80%	Gray shale, medium tough to hard, calcareous with 1" and 2-1/2" layer of gray limestone, trace fossils, fine-grained, hard. Fracturing exhibited at approx. 26.8. Broken condition at top of section - possible fracturing indicated.									
	30											
			%Recovery									
			Boring completed									

LOG OF BORING

DATE STARTED 9-24-65 SAMPLER: TYPE Split Spoon DIA. 2" O.D. WATER ELEVATION
DATE COMPLETED 9-25-65 CASING: LENGTH HSA DIA. 3.5" I.D. IMMEDIATE None
BORING NUMBER B 27-1 CORE BARREL: TYPE NXM SIZE 2 1/8" I.D. AFTER HRS. Backfilled

STATION & OFFSET 262+83, 89' Right SURFACE ELEVATION 753.1

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
753.1	0											
	2	3-6-11	Cinders (fill)	1	Visual							
749.1	4											
	6	65 %	Interbedded brown and gray weathered shale and gray limestone (approx. 55% shale and 45% limestone in recovery). Shale soft to tough, calcareous. Limestone thin bedded, occuring in 1/2" to 7" layers, fossiliferous, shaley crystalline to crystalline, hard.									
	8											
	10	60%										
742.1	12	100%	Interbedded gray weathered shale (some gray) and gray limestone (trace of brown) (approx. 70% shale and 30% limestone.) Shale medium tough to tough, calcareous. Limestone thin bedded in 1/4" to 6" layers, fossiliferous, slight shaly crystalline to crystalline, hard, with high angle joints at 736 and 734, joint surfaces oxidized.									
	14											
	16											
	18	100%										
734.1	20											
	22	100%	Interbedded gray shale and gray limestone (approx. 55% shale and 45% limestone), Shale tough to very tough, calcareous. Limestone thin bedded in 1/4" to 6" layers fossiliferous, slightly shaley-crystalline to crystalline, hard with closed high angle joint at 729.									
	24											
728.1	26											
	28	100%	Interbedded gray shale and gray limestone (approx. 70% shale and 30% limestone), Shale very tough, mostly calcareous. Limestone thin bedded in 1/4" to 4" layers, fossiliferous, slightly shaley crystalline to crystalline, hard.									
722.6	30											
721.6	32	100%	Gray shale very tough, calcareous. Interbedded gray shale and gray limestone (approx. 65% shale and 35% limestone). Shale very tough, calcareous, sparcely fossiliferous. Limestone thin bedded in 1/4" to 4" layers, fossiliferous, shaley - crystalline to crystalline, hard.									
	34											
	36	100%										
715.6			% Recovery									
			Boring completed									

LOG OF BORING

DATE STARTED 9-25-65 SAMPLER: TYPE Split Spoon DIA. 2" O.D. WATER ELEVATION
DATE COMPLETED 9-25-65 CASING: LENGTH HSA DIA. 3.5" I.D. IMMEDIATE None
BORING NUMBER B 27-3 CORE BARREL: TYPE NXM SIZE 2 1/8" I.D. AFTER HRS. Backfilled

STATION & OFFSET 264+91, 88' Left SURFACE ELEVATION 749.7

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
749.7	0											
	2	6-17-23	Rubble (fill) clay and cinders	1	Visual							
745.2	4											
743.7	6	83%	Interbedded brown and gray weathered shale and gray limestone (approx. 50% shale, 50% limestone) shale medium tough, calcareous; limestone occurs in 1/4" to 4" layers, fossiliferous shaly crystalline to crystalline, hard.									
	8											
	10	94%	Interbedded gray shale and gray limestone (approx. 50% shale 50% limestone) shale possible soft to hard, calcareous; limestone occurs in 1/2" to 1" layers, fossiliferous, impure crystalline, crystalline and shaly fine grained, hard. Fracturing exhibited at approx. 8.5', 11.8' & 12.1' gray-brown shale layers (3/4" to 1-1/2') also in evidence.									
	12											
	14											
735.2	16											
	18		Interbedded gray shale and gray limestone (approx. 65% shale 35% limestone), Shale possible soft to hard, calcareous; limestone occurs in 1/2" to 5-1/2" layers, non-fossiliferous to fossiliferous, shaly crystalline, crystalline and impure fine-grained hard. Fracturing exhibited at approx. 16.5', 16.8', 18.1', 18.5', 19.3' 25.7, 27.8', 28.3 & 28.8									
	20											
	22											
	24	100%										
	26											
	28											
	30											
719.2	32		% Recovery									
	34		Boring completed									

LOG OF BORING

DATE STARTED 10-1-65 SAMPLER: TYPE Split Spoon DIA. 2" O.D. WATER ELEVATION
DATE COMPLETED 10-2-65 CASING: LENGTH None DIA. IMMEDIATE None
BORING NUMBER B 28-1 CORE BARREL: TYPE NXM SIZE 2 1/8" I.D. AFTER HRS.

STATION & OFFSET 267+92, 142' right SURFACE ELEVATION 749.3

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
749.3	0											
	2	4-9-9	Brown gravelly, sandy silty clay, moist very stiff	1	14	9	15	36	26	26	11	15
	4	8-10-9	do do do	2	Visual							
	6	8-9-12	do do do	3	22	9	13	30	26	27	12	12
	8											
738.3	10	23-12-11	do do do	4	29	7	12	29	23	27	12	16
	12	5-5-6	Gray gravelly lean clay - very moist	5	28	6	9	31	26	26	12	18
	14											
	16	3-4-3	Gray lean clay, little gravel, very moist-medium stiff	6	12	6	8	40	34	33	17	18
	18	3-3-5	Gray lean clay, trace of gravel, very moist - medium stiff	7	9	9	9	39	34	31	14	26
	20	11-8-9	Gray lean clay, trace of gravel, moist stiff	8	2	4	3	47	44	36	18	26
727.3	22			9A		Visual						
		30		9B		Visual						
725.3	24	45	Brown and gray weathered shale with limestone layers									
	26		Interbedded brown weathered shale and gray limestone (approx. 75% shale, 25% limestone). Shale tough to hard, calcareous, limestone occurs in 1/4" to 3" layers. Fossiliferous. impure crystalline to crystalline, hard. Fracturing exhibited approx. near center and bottom of section.									
	28	57%										
719.3	30											
	32	52%	Interbedded gray shale and gray limestone (approx. 75% shale 25% limestone). Shale tough to hard, calcareous. Limestone occurs in 1" to 3" layers, fossiliferous crystalline and fine grained trace, fossils hard. Fracturing exhibited at top, near center and near bottom of run									
715.3	34		% Recovery									
	36		Boring completed									
	38											

Foundation Boring Sheet No FB-12

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM.-71-3.61
SEC. Melish Ave. to Victory Pky.

BORING DATA

		REVIEWED BY	DATE
		C.R.L.	2/11/66

Rev. 6-6-71

HAMILTON COUNTY
HAM-71-3.61

25/32 13/20

LOG OF BORING

DATE STARTED 9-21-65 SAMPLER: TYPE Split Spoon DIA. 2" O. D. WATER ELEVATION
DATE COMPLETED 9-21-65 CASING: LENGTH None DIA. IMMEDIATE None-Lost water at 14'
BORING NUMBER B 28-3 CORE BARREL: TYPE NXM SIZE 2 1/8" I. D. AFTER HRS. Backfilled

STATION & OFFSET 269+07, 10' Left SURFACE ELEVATION 754.8

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
754.8	0		Concrete Walk	Visual								
752.3	2	4-4-6	Brown silty clay and cinders, (fill) moist - medium stiff	1	25	5	7	33	30	37	17	24
	4	4-7-8	Brown silty clay with weathered shale, moist -stiff	2	0	2	4	40	54	48	24	16
	6	6-9-14	do do do	3	0	4	4	47	45	41	20	30
	8											
	10											
744.3												
742.3	12	25-60	Brown silty clay with weathered shale and limestone layers, dry - very stiff	4	26	8	5	32	29	33	15	12
	14		Interbedded brown weathered shale and gray weathered limestone, exhibiting fracture throughout (appox. 75% shale, 25% limestone) shale soft & rubbly to tough, slightly calcareous to calcareous,									
	16	46%	trace fossils; limestone occurs in 1/2" to 3-1/2" layers, fossiliferous and crystalline, hard.									
736.3	18											
	20		Interbedded brown weathered shale, some gray and gray limestone (approx. 65% shale, 35% limestone) Shale essentially tough, calcareous, limestone occurs in 1" to 6" layers, fossiliferous									
	22	86%	and crystalline grading into fine grained near bottom of section hard. Some fracturing in evidence last 1/3 of section.									
730.0	24											
727.7	26	100%	Interbedded gray shale and gray limestone (approx. 70% shale 30% limestone). Shale rubbly to tough, calcareous, trace fossils; limestone occurs in 1-1/2" to 4" layers, fine grained non-fossiliferous, impure, to crystalline fossiliferous, hard. Some fracturing with iron-oxide staining exhibited 18" from top of section.									
	28	90%										
	30		Interbedded brown weathered shale, some gray and gray limestone (approx. 65% shale 35% Limestone). Shale rubbly to tough calcareous fossiliferous; limestone occurs in 1" to 4" layers,									
723.1	32		fossiliferous and crystalline, hard. Fracturing exhibited throughout section.									
	34	90%	Interbedded gray shale, some brown weathered and gray limestone (approx. 65% shale 35 % Limestone). Shale essentially tough apparent 1-1/2" soft seam 1-1/2' from bottom of section,									
	36		calcareous trace fossils, limestone occurs in 1" to 5" layers, fine grained impure crystalline									
	38		and crystalline fossiliferous, hard. Some fracturing exhibited 5" and 28" from top of									
	40		section. Possible jo inting 46" from top of section									
	42											
710.3	44											
	46		% Recovery									
	48		Boring completed									

LOG OF BORING

DATE STARTED 10-5-65 SAMPLER: TYPE Split Spoon DIA. 2" O. D. WATER ELEVATION
DATE COMPLETED 10-6-65 CASING: LENGTH HSA DIA. 3. 5" I. D. IMMEDIATE None
BORING NUMBER B 29-2 CORE BARREL: TYPE NXM SIZE 2-1/8" I. D. AFTER HRS. Backfilled

STATION & OFFSET 15+84 on CL SURFACE ELEVATION 697.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
697.0	0											
	2	4-5-6	Brown silty clay, cinders and brick (fill) moist - medium stiff	1	16	4	39	6	35	38	19	22
694.5	4	3-8-11	Rubble(fill) with cinders and brick, moist - medium dense	2	Visual							
	6	6-8-11	do do do	3	Visual							
689.5	8											
	10	7-9-10	Brown silty clay (fill) moist - medium stiff	4	2	6	5	37	50	45	24	19
	12	7-11-11	do do do	5	8	6	6	33	47	47	27	18
683.0	14	4-6-7	do do do	6	7	5	5	35	48	31	12	19
681.0	16	21-70	Gray weathered shale and limestone fragments	7	Visual							
	18		Interbedded brown weathered shale and gray limestone (approx. 80% shale, 20% limestone)									
	20	20%	Limestone only in recovery; occurs in 3/4" to 3" layers, fossiliferous, crystalline, hard									
676.0	22											
	24	83%	Layered gray shale and gray limestone (approx. 80% shale, 20% limestone) Shale tough to hard, non-fossiliferous to fossiliferous, calcareous; limestone occurs in 3/4: to 5" layers, fossiliferous, crystalline hard. Fracture exhibited at bottom of run .									
671.0	26											
	28		% Recovery									
	36		Boring completed									

LOG OF BORING

DATE STARTED 9-23-65 SAMPLER: TYPE Split Spoon DIA. 2" O. D. WATER ELEVATION
DATE COMPLETED 9-23-65 CASING: LENGTH None DIA. IMMEDIATE None
BORING NUMBER B 28-5 CORE BARREL: TYPE NXM SIZE 2 1/8" I. D. AFTER HRS. Backfilled

STATION & OFFSET 269+93, 152' left SURFACE ELEVATION 744.9

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
744.9	0											
744.4			Concrete	Visual								
	2	2-2-2	Brown lean clay, moist - medium stiff	1	0	4	3	39	54	50	28	23
741.9	4											
	6	37-79	Brown lean clay with highly weathered shale and limestone layers, dry - very stiff	2	38	7	5	24	26	33	16	10
735.9	8											
	10	75		3	Visual							
733.9			Brown weathered shale									
	12		Interbedded brown and gray weathered shale and gray limestone (approx. 70% shale, 30%									
	14	90%	limestone) Shale soft to tough, calcareous trace fossils. Limestone occurs in 1/2" to 5-1/2"									
	16		layers, impure fine grained, impure cyrstalline and crystalline, fossiliferous, hard. Fracture									
727.9			zone exhibited 30" to 35" from top of section with iron-oxide staining									
	18	% Recovery										
	20		Boring completed									

LOG OF BORING

DATE STARTED 9-27-65 SAMPLER: TYPE Split Spoon DIA. 2" O. D. WATER ELEVATION
DATE COMPLETED 9-27-65 CASING: LENGTH HSA DIA. 3.5" I. D. IMMEDIATE 681.4 (10')
BORING NUMBER B-29 - 3 CORE BARREL: TYPE NXM SIZE 2-1/8" I. D. AFTER 7 days 679.4 (12.0)

STATION & OFFSET 15+04, 15' Right SURFACE ELEVATION 691.4

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
691.4	0											
	2	2-4-7	Brown and black silty clay, rock and wood (fill) moist - medium stiff	1	33	7	6	24	30	44	24	22
688.9	4	5-6-9	Brown silty clay, rock and wood (fill), moist - stiff	2	12	7	7	37	37	39	20	16
686.4	6	3-5-6	Rubble (fill) - cinders and wood	3	Visual							
	8	2-3-3	do do do	4	Visual							
	10											
	12	1-1-1	do do do	5	Visual							
676.4	14	2-3-2	do do do	6	Visual							
	16	3-2-3	Brown silty clay (fill) moist - medium stiff	7	11	4	4	34	47	41	20	25
673.9	18	3-4- 3	Brown and gray silty clay (fill) , moist - medium stiff	8	2	5	5	35	53	42	22	24
671.4	20											
	22	3-3-5	Brown and gray silty clay, moist - medium stiff	9	14	4	4	35	43	39	19	28
667.4	24											
	26	11-19-3i	Gray weathered shale	10	Visual							
663.4	28											
	30		Layered gray shale with 1" and 2" layers gray limestone at top of run (Approx. 95% shale,									
	32	92%	5% limestone) Shale tough, calcareous, trace fossils, possible rubbly layer at 31. 0' Limestone									
658.4	34		fine grained - hard									
	36	% Recovery										
			Boring completed									

LOG OF BORING

DATE STARTED 10-4-65 SAMPLER: TYPE Split Spoon DIA. 2" O. D. WATER ELEVATION
DATE COMPLETED 14-4-65 CASING: LENGTH HSA DIA. 3. 5" I. D. IMMEDIATE None
BORING NUMBER B 29-1 CORE BARREL: TYPE NXM SIZE 2 1/8" I. D. AFTER HRS.

STATION & OFFSET 16+50, 20' Right SURFACE ELEVATION 713.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
713.0	0											
	2	3-4-7	Brown silty clay, rock and brick (fill) moist - medium stiff	1	8	0	9	43	40	42	21	22
	4	5-6-5	do do do	2	Visual							
708.0	6											
	8	3-9-14	Brown silty clay, trace limestone fragments, moist - stiff	3	4	2	4	32	58	52	31	26
703.5	10		do do do	S-1	Visual							
701.0	12	19-26-46	Brown and gray weathered shale and limestone fragments	4	Visual							
	14		Brown weathered shale, some gray, medium tough to tough, trace fossils, calcareous with									
	16	45%	2-3/4" layer gray limestone, fossiliferous, crystalline, fractured hard, at bottom of recovery .									
696.0	18	% Recovery										
	20		Boring completed									

LOG OF BORING

DATE STARTED 9-27-65 SAMPLER: TYPE Split Spoon DIA. 2" OD WATER ELEVATION
DATE COMPLETED 9-27-65 CASING: LENGTH HSA DIA. 3.5" I. D. IMMEDIATE None
BORING NUMBER B 29- 4 CORE BARREL: TYPE NXM SIZE 2 1/8" I. D. AFTER 7 days HRS. Caved dry at 4.0'

STATION & OFFSET 13+74, 28' Left SURFACE ELEVATION 689.7

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
689.7	0											
	2	3-4-6	Brown silty clay (fill), moist - medium stiff	1	0	4	7	50	39	35	17	22
	4	16-24-31	do do do	2	Visual							
	6	8-7-8	Brown silty clay and rock (fill), moist - medium stiff	3	26	4	3	26	41	42	22	19
	8	3-4-3	do do do	4	13	4	5	29	49	50	29	29
	10											
	12	3 -4-3	do do do	5	10	4	5	32	49	48	28	22
677.2	14	11-13-15	Brown and gray silty clay with weathered shale and limestone fragments, moist - stiff	6	22	2	2	29	45	44	24	18
	16	8-9-9	do do do	7	19	4	5	28	44	41	21	19
672.2	18	12-17-25	Brown and gray silty clay, moist - stiff	8	4	2	1	37	56	41	23	12
669.7	20											
	22	15-15-23	Brown and gray weathered shale	9	Visual							
	24											
664.7	26											
662.2	28	57%	Interbedded brown and gray weathered shale and gray limestone (approx. 75% shale, 25% limestone) Shale rubbly to tough, calcareous and fossiliferous. Limestone occurs in 1" to 2 1/4" layers,									
	30	100%	fossiliferous and crystalline. exhibiting fracture.									
659.7	32		Gray shale and gray limestone (approx. 90% shale , 10% limestone) Shale tough to hard, calcareous, non-fossiliferous to highly fossiliferous, limestone occurs in 3-1/2 " layer at top of section, fossiliferous and crystalline, hard.									
		% Recovery										
			Boring completed									

Foundation Boring Sheet No. FB-13

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO HAM.-71-3.61
SEC Melish Ave. to Victory Pky.

BORING DATA

		REVIEWED BY	DATE
		CRL	2/11/66

Rev. 6-16-71

LOG OF BORING Order No. 99.990 JH 10-22-68

DATE STARTED 4-26-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 4-26-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None
BORING NUMBER B-29-5 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER Backfilled Upon HRS. Completion
STATION & OFFSET 12+96, 77' Left, Blair Avenue, Northeast Exwy, HAM 71-3.61 SURFACE ELEVATION 690.8'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
690.8	0											
	2	10-13-15	Brown clayey silty gravel, trace cinders and small brick fragments, (FILL) moist - very stiff	1	35	9	8	22	26	35	17	19
	4											
685.8												
	6	5-7-9	Brown silty clay, moist - stiff	2	0	2	2	40	56	36	18	20
	8											
		10-12-15	do do	3	Visual							
	10											
	12	5-7-10	Brown silty clay, moist - very stiff	4	4	4	8	38	46	32	17	15
	14	8-12-15	do do	5	Visual							
	16	8-12-14	Brown silty clay, moist - stiff	6	1	2	4	47	46	30	14	18
	18											
		8-10-11	Brown silty clay, moist - medium stiff	7	0	0	1	34	65	42	23	24
670.8	20											
	22	10-40-100	Gray and brown clay, moist - medium stiff	8	0	0	4	17	79	36	14	28
668.3												
	24		Light brown weathered SHALE with light gray limestone, approx. 90% shale, 10% limestone (entire recovery limestone). Shale assumed calcareous, non-fossiliferous, probable soft to medium tough. Limestone occurs in 1/2" to 2-3/4" layers, is crystalline, fossiliferous, hard; high-angle jointing indicated.									
	26	10%										
663.3	28											
	30		Light brown (trace light gray) weathered SHALE with light gray limestone, approx. 80% shale, 20% limestone. Shale calcareous, non-fossiliferous, soft to medium tough, trace tough. Limestone occurs primarily within top 10" of run in 1/2" to 9-1/4" layers, is crystalline, fossiliferous, hard.									
	32	40%										
658.3	34	% Recovery	Boring Completed									
	36											

	34											
	36	7-7-8	do do	13	11	10	17	34	28	24	11	13
	38											
	40											
	42	5-7-9	do do	14	5	16	21	32	26	22	10	14
	44											
643.2												
	46	7-13-14	Gray clayey SAND, moist - medium dense	15	0	22	34	17	27	22	10	12
	48											
638.2	50											
	52	9-10-13	Bluish gray silty clay, moist - medium stiff	16	0	0	2	46	92	34	16	23
	54											
633.2												
	56	5-7-7	Gray silty clay, moist - medium stiff	17	0	0	2	65	33	32	13	24
	58											
628.2	60											
	62	10-10-12	Gray silty clay, (varved) moist - medium stiff	18	0	2	2	31	65	38	20	24
	64											
623.2												
	66	25-26-40	Gray and bluish gray silty clay, moist - hard	19	6	3	4	33	54	41	25	15
	68											
618.2	70											
616.7	72	100	Gray SHALE	20	Visual							
	74	88%	Light gray SHALE with light gray limestone, approx. 80% shale, 20% limestone. Shale calcareous, trace fossiliferous, tough; high-angle joint indicated 8" from bottom of recovery. Limestone occurs primarily within top 12" of recovery in 3/4" to 6-1/2" layers, is crystalline, trace shaly, fossiliferous, hard.									
611.7	76	% Recovery	Boring Completed									
	78											
	80											

HAMILTON COUNTY
HAM-71-3.61

26/32 14/20

	32											
	34											
672.0	36	4-10-15	Gray and brown silty clay, moist - medium stiff	13	8	2	14	39	37	26	10	19
	38											
667.0	40											
	42	10-7-10	Gray sandy, silty clay, moist - medium stiff	14	12	10	16	30	32	22	8	16
	44											
662.0	46	5-10-14	Gray gravelly, silty clay, moist - medium stiff	15	20	7	11	35	27	24	9	16
	48											
657.0	50											
	52	5-11-13	Gray gravelly, sandy, silty clay, moist - medium stiff	16	15	11	15	34	25	22	8	15
	54											
652.0	56											
	58	8-12-18	Gray sandy clayey silt, moist - stiff	17	0	32	16	31	21	19	6	12
647.0	60											
	62	10-13-20	Gray silty clay, moist - medium stiff	18	13	6	7	33	41	30	13	18
	64											
	66	40-36-26	do do	19	Insufficient Sample							
	68											
637.0	70											
	72	9-8-14	Gray silty clay, trace organics, moist - medium stiff	20	4	8	2	42	44	34	15	24
	74											
632.0	76	10-12-14	Gray sandy, silty clay, trace organics, moist - soft	21	14	7	13	40	26	28	10	25
	78											
627.0	80											
	82	12-40-35	Bluish gray silty clay, moist - stiff	22	24	6	1	23	46	39	19	18
622.0	84											
	86		Interbedded light gray SHALE and light gray limestone, approx. 85% shale, 15% limestone. Shale calcareous, non-fossiliferous to fossiliferous, medium tough to tough. Limestone occurs in 1/4" to 2-1/4" layers, is crystalline and shaly, fossiliferous, hard; most layers exhibit high-angle jointing.									
	88	38%										
617.0	90											
	92	% Recovery	Boring Completed									

LOG OF BORING Order No. 99.990, JH 10-22-68

DATE STARTED 4-24-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 4-25-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 50' (638.2')
BORING NUMBER B-29-7 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 1 DAY 30' (658.2')
STATION & OFFSET 11+37, Blair Avenue, 9'Left, Northeast Exwy, HAM 71-3.61 SURFACE ELEVATION 688.2'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
688.2	0											
	2	7-7-9	Cinders, sand, gravel and clay, (FILL)	1	Visual							
	4											
683.2												
	6	5-7-8	Brown and gray silty clay, (FILL) moist - medium stiff	2	2	3	7	55	33	36	16	28
	8											
		5-5-7	do do do	3	Visual							
678.2	10											
676.2	12	3-3-5	Brown and bluish gray silty clay, (FILL) moist - medium stiff	4	0	5	7	49	39	35	16	20
	14	3-3-6	Brown and gray sandy silty clay, (FILL) moist - medium stiff	5	0	21	16	23	40	32	16	20
	16	3-6-5	do do do	6	Visual							
670.7	18											
668.2	20	4-5-8	Brown and gray gravelly, sandy, silty clay, (FILL) moist-stiff	7	20	9	14	32	25	28	12	14
665.7	22	13-20-21	Dark brown and gray sandy, silty gravel with cinders, (FILL) moist - medium stiff	8	40	14	14	18	14	35	9	18
	24	7-5-5	Dark gray and brown sandy, silty gravel with cinders, (FILL) very moist - soft	9	40	10	12	22	16	23	4	24
663.2	26	7-9-11	Brown sandy, silty clay, moist- stiff	10	0	10	15	41	34	28	13	16
660.7	28	5-7-9	Gray silty clay, moist - stiff	11	0	6	10	43	41	28	14	14
658.2	30	7-7-9	Gray sandy silty clay, moist - medium stiff	12	4	8	13	40	35	25	11	14
	32											

LOG OF BORING Order No. 99.990, JH 10-2-68

DATE STARTED 6-7-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 6-7-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE Unable to determine
BORING NUMBER B-29-9 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER Backfilled Upon HRS. Completion
STATION & OFFSET 9+96, Gilbert-Blair, 28'Rt., Northeast Exwy, HAM 71-3.61 SURFACE ELEVATION 707.0'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
707.0	0											
	2	1-2-3	Cinders, (FILL) moist - loose	1	Visual							
	4	2-3-5	do do	2	Visual							
702.0												
	6	5-3-7	Brown and gray silty clay, moist - medium stiff	3	Insufficient Sample							
	8											
697.0	10											
	12	6-6-7	Brown silty clay, moist - medium stiff	4	1	4	14	32	49	47	25	27
694.5	14	9-10-12	Mottled brown and gray silty clay, moist - stiff	5	1	2	1	33	63	51	26	26
	16	9-10-14	do do do	6	Insufficient Sample							
689.5	18											
	20	14-16-24	Brown gravelly, sandy silty clay, very wet - soft	7	16	21	11	20	32	36	18	32
687.0	22	7-12-15	Brown silty clay, moist - stiff	8	10	6	10	33	41	31	14	18
684.5	24	15-12-14	Brown sandy silty clay, moist - stiff	9	11	8	15	33	33	28	12	18
682.0	26	10-10-15	Brown clayey silt, moist - stiff	10	14	4	11	46	25	21	5	21
679.5	28	10-18-19	Brown silt, moist - stiff	11	9	2	17	55	17	19	2	19
677.0	30	10-14-15	Brown sandy, silty clay moist - stiff	12	11	11	17	32	29	26	11	13
	32											

Foundation Boring Sheet No. 14

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
CITY OF CINCINNATI, OHIO
NORTHEAST EXPRESSWAY HAM-71-3.61
BORING No. B-29-5 B-29-9
B-29-7

BORING DATA

REVIEWED BY C.R.L. DATE 12/19/68

Rev. 6-16-71

LOG OF BORING

DATE STARTED 9-27-65 SAMPLER: TYPE Split Spoon DIA. 2" O. D. WATER ELEVATION
DATE COMPLETED 9-27-65 CASING: LENGTH HSA DIA. 3.5" I. D. IMMEDIATE none
BORING NUMBER B 29-6 CORE BARREL: TYPE NXM SIZE 2 1/8" I. D. AFTER HRS. Backfilled

STATION & OFFSET 12+16, 27' Left SURFACE ELEVATION 688.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
688.0	0											
	2	39-29-19	Brown and gray clayey gravel and rock (fill) moist -stiff	1	70	10	3	5	12	Insufficient Sample		8
683.0	4	26-36-6	do do do	2	Visual							
	6	20-14-10	Brown and gray clayey sand and gravel with rock (fill) moist - stiff	3	47	5	8	19	21	39	18	15
680.5	8											
679.0		9-11-14	Brown silty clay (fill) moist - stiff	4	1	3	14	40	42	40	19	20
	10											
	12	9-13-15	Brown and gray silty clay , moist - stiff	5	2	4	7	40	47	33	16	18
	14	10-14-14	do do do	6	8	6	11	37	38	29	14	14
	16	8-9-14	do do do	7	7	7	12	39	35	28	13	14
	18	10-11-14	do do do	8	11	7	11	35	36	28	13	14
668.0	20											
666.0	22	9-14-15	Brown and gray gravelly silty clay, moist - stiff	9	20	7	11	36	26	25	10	15
	24	8-9-13	Gray sandy, silty clay, moist - medium stiff	10	11	9	16	34	30	22	9	12
663.0	26	7-8-9	Gray gravelly silty clay, moist - medium stiff	11	18	5	10	35	32	26	11	12
	28											
658.0	30											
	32	4-5-7	Gray silty clay, moist - medium stiff	12	6	3	5	40	46	31	16	17
	34											
	36	5-6-7	Gray silty clay, moist - medium stiff	13	10	7	11	42	30	24	10	14
649.0	38											
	40											
	42	16-24-35	Brown and gray lean clay, moist -very stiff	14	0	1	1	28	70	46	27	18
644.0	44											
	46	26-40-53	Brown and gray weathered shale with limestone fragments	15	Visual							
640.5	48											
639.2	50	100%	Brown and gray weathered shale and gray limestone (approx. 90% shale, 10% limestone). Shale medium tough to tough, calcareous, fossiliferous to highly fossiliferous; limestone ocurs in 1-1/2" layer at top of section, Fossiliferous & impure cyrstalline, hard									
	52	75%	Interbedded gray shale and gray limestone (approx. 70% shale, 30% limestone). Shale rubbly to tough calcareous, fossiliferous; limestone occurs in 1/2" to 2" layers, fossiliferous, impure crystalline to crystalline, hard.									
635.5	54											
	56	% Recovery										
	58		Boring completed									
	60											

LOG OF BORING

DATE STARTED 9-29-65 SAMPLER: TYPE Split Spoon DIA. 2" O. D. WATER ELEVATION
DATE COMPLETED 9-30-65 CASING: LENGTH HSA DIA. 3.5" I. D. IMMEDIATE 668.0 (22.0)
BORING NUMBER B 29-8 CORE BARREL: TYPE NXM SIZE 2 1/8" I. D. AFTER 4 days 668.0 (22.0)

STATION & OFFSET 10+70, 27' Left SURFACE ELEVATION 690.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
690.0	0											
	2	8-10-12	Rubble fill- clay, gravel and brick	1	Visual							
685.0	4											
	6	2-3-3	Brown and gray silty clay (fill) moist - medium stiff	2	1	4	6	47	42	36	18	22
	8	2-3-3	Brown and gray silty clay with coal (fill) moist stiff	3	22	10	13	28	27	35	16	22
680.0	10											
677.5	12	3-4-4	Brown silty clay (fill) moist - stiff	4	5	5	12	39	39	34	17	19
677.0			Brown sandy silty clay (fill) moist - stiff	5	6	9	12	34	39	38	19	18
	14	10-10	Brown silty clay with weathered shale (fill) moist -very stiff	6	0	2	2	49	47	36	15	14
675.0	16											
	18	3-4-4	Brown silty clay (fill) , moist - stiff	7	4	6	12	34	44	39	22	21
672.5	20	3-5-8	Brown silty clay with weathered shale (fill) moist - stiff	8	1	1	5	40	53	39	18	16
669.0		5-4	do do do	9	1	4	6	45	44	36	16	18
667.5	22	3	Gray silty clay, moist - medium stiff	10	Visual							
	24	2-5-10	Brown gravelly, sandy silty clay, moist - medium stiff	11	17	7	13	34	29	27	12	16
665.0	26											
	28	5-8-11	Brown sandy, silty clay, moist - stiff	12	10	9	13	37	31	26	12	14
660.0	30											
	32	6-8-8	Brown and gray sandy silty clay moist - stiff	13	13	8	13	36	30	24	9	14
655.0	34											
	36	4-5-7	Gray sandy, silty clay, moist - stiff	14	11	7	13	37	32	23	9	18
650.0	38											
	40											
	42	5-7-8	Brown clayey, gravelly sand, moist - medium stiff	15	15	19	21	27	18	18	6	11
645.0	44											
	46	5-7-11	Gray silty clay, moist - stiff	16	2	6	6	44	42	28	10	20
640.0	48											
	50											
	52	5-6-7	Gray gravelly sandy, silty clay, moist - medium stiff	17	15	9	14	36	26	22	8	10
635.0	54											
	56	5-8-10	Dark gray sandy, silty clay, moist - medium stiff	18	4	5	15	36	40	31	16	20
630.0	58											
	60											
	62	4-4-6	Gray sandy , clayey silt, wet - medium dense	19	3	4	42	33	18	20	6	25
625.0	64											
	66	8-11-14	Gray silty clay, moist - stiff	20	2	2	2	28	66	41	16	22
620.0	68											
	70											
	72	3-5-8	Gray silty clay, moist - medium stiff	21	0	1	2	51	46	35	15	38
	74											
614.0	76	14-27	Gray silty clay, moist - very stiff	22	0	1	0	33	66	41	21	17
	78	42	Gray silty clay, weathered shale, moist - hard	23	Visual							
610.0	80											
609.5		100	Gray shale	24	Visual							
	82	22%	Gray shale , medium tough to tough, fossiliferous & calcareous with 2-1/2" gray limestone layer, slightly fossiliferous, crystalline hard exhibiting fracture at bottom of run (Poor recovery - assuming lost material to be shale.)									
	84											
604.5	86	% Recovery										
	88		Boring completed									

LOG OF BORING

HAMILTON COUNTY
HAM-71-3.61

DATE STARTED 10-8-65 SAMPLER: TYPE Split Spoon DIA. 2" O. D. WATER ELEVATION
DATE COMPLETED 10-13-65 CASING: LENGTH DIA. 4" O. D. IMMEDIATE 677.0 (35.0)
BORING NUMBER B 29-10 CORE BARREL: TYPE NXM SIZE 2 1/8" I. D. AFTER HRS.

STATION & OFFSET 9+24, 5' Left of C.L. SURFACE ELEVATION 712.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
712.0	0											
711.5		1	Topsoil	1A	Visual							
	2	2-3	Brown sandy clay, moist - stiff	1B	Visual							
708.0	4											
	6	7-9-12	Brown sandy, silty clay, moist - very stiff	2	12	12	13	33	30	29	14	13
	8											
702.0	10											
699.5	12	7-12-16	Brown and gray silty clay, moist - very stiff	3	0	0	1	27	72	41	21	20
	14	12-14-18	Brown and gray sandy, silty clay, moist - very stiff	4	0	8	13	39	40	44	24	21
697.0	16	12-17-20	Brown and gray silty clay, moist - very stiff	5	0	0	1	42	57	36	18	19
	18	10-13-16	do do do	6	0	1	1	32	66	50	29	22
	20	8-10-14	do do do	7	6	3	6	37	48	33	16	19
689.5	22											
	24	8-9-10	Gray silty clay, moist - medium stiff	8	Visual							
	26	7-9-9	do do do	9	10	0	1	21	68	28	13	16
	28	6-8-9	do do do	10	10	8	11	34	37	27	13	16
682.0	30											
681.0		4-6	Brown clayey sand and gravel, very moist - medium dense	11A	36	21	5	9	26	18	21	19
	32	8	Gray silty clay, moist - stiff	11B	5	9	10	34	38		14	16
677.0	34											
	36	10-10-14	Brown gravelly, silty sand, wet - medium dense	12	16	59	9	-16-		-	-	14
672.0	38											
	40											
	42	26-38-39	Brown fine to coarse sand wet - dense	13	26	25	40	-9-			-	14
	44											
	46	13-14-13	do do do	14	27	65	3	-5-			-	18
662.0	48											
	50											
	52	14-18-18	Gray fine to medium sand, wet - dense	15	3	37	48		-12-			38*
657.0	54											
	56	14-15-14	Brown silty clay, very moist - stiff	16	14	11	4	27	44	41	24	16
653.0	58											
	60											
	62	12-18-27	Gray gravelly, silty sand, very moist - dense	17	30	34	10	-26-			-	12
	64											
	66	12-22-36	do do do	18	Visual							
644.0	68											
	70	16-22-47	Brown silty clay, moist, very stiff	19	0	4	2	29	65	44	24	21
640.5	72											
	74	67%	Gray shale , medium tough to tough non-fossilifferous to fossiliferous, calcareous with 1/4" and 2" layer gray, impure fine-grained limestone, fossiliferous, hard, brown weathered shale zone exhibited at bottom of recovery; possible fracture indicated .									
635.5	76											
	78	%Recovery										
	80		Boring completed									

* Wash sample

Foundation Boring Sheet No. FB-15

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM.-71-3.61
SEC. Melish Ave. to Victory Pky.

BORING DATA

		REVIEWED BY C.R.L.	DATE 2/11/66

Rev. 6-16-71

LOG OF BORING Order No. 99.990 9-23-68 JH

DATE STARTED 3-9-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 3-10-68 CASING: LENGTH HSA DIA. 2-1/8"I.D. IMMEDIATE 37' (643')
BORING NUMBER B-30-1 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER Backfilled Upon HRS. Completion
STATION & OFFSET 22+88 Victory Parkway, 96'Left Northeast Exwy, HAM 71-3.61 SURFACE ELEVATION 680'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
680.0	0											
679.0		4-6	CINDERS, (FILL)	1	Visual							
	2	30	BROWN SANDY, SILTY CLAY WITH BROKEN ROCK,(FILL) MOIST - MEDIUM STIFF	2	16	9	13	31	31	24	9	15
	4	5-6-7	DO DO DO	3	Visual							
675.0	6	6-7-6	BROWN SILTY CLAY,(FILL) MOIST - MEDIUM STIFF	4	11	6	8	35	40	30	14	17
	8	4-6-7	DO DO	5	Visual							
670.0	10											
	12	5-6-6	BROWN SILTY CLAY,(FILL) MOIST - MEDIUM STIFF	6	11	8	12	31	38	32	15	20
667.5	14	2-3-4	BROWN SILTY CLAY,(FILL) MOIST - MEDIUM STIFF	7	Visual							
	16	6-7-7	DO DO	8	4	4	9	38	45	31	14	23
662.5	18	6-7-6	BROWN AND GRAY SILTY CLAY, MOIST - STIFF	9	3	6	13	37	41	33	16	16
	20	9-11-13	DO DO	10	Visual							
658.0	22											
	24	10-12-14	BROWN GRAVELLY, SANDY, SILTY CLAY, MOIST - VERY STIFF	11	18	8	13	33	28	24	8	14
655.0	26	11-14-16	BROWN SANDY, SILTY CLAY, MOIST - STIFF	12	14	8	14	34	30	24	14	16
	28	10-15-17	DO DO	13	Visual							
650.0	30											
	32	6-7-8	GRAY SANDY SILTY CLAY, MOIST - MEDIUM STIFF	14	14	10	15	34	27	21	8	14
647.5	34	6-8-8	GRAY SANDY CLAYEY SILT, MOIST - MEDIUM STIFF	15	12	10	15	35	28	20	7	14
645.0	36	5-6-8	GRAY CLAYEY, SANDY GRAVEL, MOIST - MEDIUM DENSE	16	35	12	12	24	17	19	6	11
642.5	38	4-6-7	GRAY GRAVELLY CLAYEY SILT WITH SAND SEAMS, MOIST MEDIUM STIFF	17	29	17	16	19	19	20	7	21
	40	4-6-7	DO DO DO	18	Visual							
637.5	42											
	44	5-6-7	GRAY SANDY CLAYEY SILT, MOIST - MEDIUM STIFF	19	11	9	14	37	29	20	7	13
	46	7-8-8	DO DO	20	9	10	16	34	31	20	7	13
632.5	48	6-6-7	GRAY GRAVELLY SANDY CLAYEY SILT, MOIST - MEDIUM STIFF	21	15	9	16	26	34	17	5	13
630.0	50											
	52	5-5-5	GRAY SILTY CLAY TRACE ORGANICS, MOIST - MEDIUM STIFF	22	0	1	4	56	37	23	11	27
	54	5-6-8	DO DO DO	23	Visual							
	56	5-6-7	DO DO DO	24	0	1	4	41	54	34	15	27
	58											
	60											
	62	4-6-6	DO DO DO	25	0	0	1	59	40	34	19	29
	64											
	66	5-6-7	DO DO DO	26	0	1	2	60	37	26	8	25
	68											
610.0	70											
		4-6-7	GRAY SILTY CLAY, MOIST - STIFF	27	0	0	0	56	44	29	10	27
606.0	74											
	76	47%	LAYERED GRAY AND BROWN WEATHERED SHALE, SOFT WITH ONE, 6" GRAY FOSSILIFEROUS LIMESTONE LAYER AT THE TOP OF THE RUN									
601.0	78											
600.0	80	100%	LAYERED GRAY SHALE, MEDIUM TOUGH									
	82	100%	LAYERED GRAY SHALE, CALCAREOUS, TOUGH, JOINTED IN THE BOTTOM 1/2" OF THE RUN AND GRAY FOSSILIFEROUS LIMESTONE, APPROX. 10 TO 15% LIMESTONE IN 1/2" TO 5½" PIECES.									
595.0	84											
	86	% Recovery	BORING COMPLETED									
	88											

LOG OF BORING Order No.99.990 JH 9-23-68

DATE STARTED 5-17-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 5-17-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 25' (659.6)
BORING NUMBER B-30-2 CORE BARREL: TYPE SIZE AFTER Backfilled HRS.
STATION & OFFSET 23+71 Victory Parkway, 13'Lt. Northeast Exwy, HAM 71-3.61 SURFACE ELEVATION 684.6'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
684.6	0											
	2	4-3-8	CINDERS, CLAY AND ROCK,(FILL) DRY - MEDIUM DENSE	1	Visual							
	4	4-3-5	DO DO DO	2	Visual							
679.6	6	9-3-5	BROWN SILTY SAND, TRACE CINDERS,(FILL) MOIST - LOOSE	3	13	13	29	31	14	21	4	16
	8	4-5-5		4	Empty Jar							
674.6	10											
	12	9-6-6	BROWN SILTY CLAYEY SAND,(FILL) MOIST - MEDIUM DENSE	5	14	15	28	30	13	21	6	17
	14	4-5-6	BROWN SILTY CLAYEY SAND, TRACE BRICK FRAGMENTS,(FILL) MOIST - MEDIUM DENSE	6	11	14	25	35	15	21	5	17
669.6	16	3-5-6	BROWN CLAYEY SILT,(FILL) MOIST - MEDIUM DENSE	7	11	1	4	66	18	22	7	18
667.1	18	4-4-6	BROWN SILTY SAND,(FILL) MOIST - LOOSE	8	6	11	46	27	10		NP	17
	20	15-5-6	BROWN SILTY SAND,(FILL) VERY MOIST - MEDIUM DENSE	9	11	14	36	28	11		NP	18
662.1	22											
	24	2-3-3	BROWN SILTY SAND,(FILL) MOIST - VERY LOOSE	10	3	7	45	14	31		NP	18
659.6	26	3-2-3	BROWN SILTY SAND,(FILL) MOIST - VERY LOOSE	11	12	5	41	29	13	18	2	16
657.1	28	50-50	GRAVEL, STONE, CINDERS, (RUBBLE FILL) DRY - DENSE	12	Visual							
	30	65-90-35	DO DO DO	13	Visual							
	32											
	34	21-15-20	DO DO DO	14	Visual							
	36	20-18-15	DO DO DO	15	Visual							
	38	22-22-20	DO DO DO	16	Visual							
644.1	40											
	42	21-23	VOID	17								
	44		VOID	18								
	46		VOID	19								
636.6	48		REFUSAL									
	50		BORING COMPLETED									
			REFUSAL ON BRIDGE FOOTING @ 48-FT.									

HAMILTON COUNTY
HAM-71-3.61

(28/32) (16/20)

LOG OF BORING Order No. 99,990, 9-24-68 JH

DATE STARTED 7-12-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 7-12-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None
BORING NUMBER B-31-3 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 1 HRS. 6' (641.6)
STATION & OFFSET 296+42, 81'Left Northeast Exwy, HAM 71-3.61 SURFACE ELEVATION 647.6'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
647.6	0											
	2	4-4-5	BROWN SILTY CLAY, MOIST - MEDIUM STIFF	1	2	5	7	52	34	43	17	13
	4											
642.6	6	12-14-12	BROWN AND GRAY GRAVELLY, SILTY CLAY, MOIST - VERY STIFF	2	16	5	10	28	41	39	19	12
	8											
637.6	10											
	12	16-17-18	BROWN AND GRAY SILTY, SANDY GRAVEL WITH LIMESTONE FRAGMENTS, MOIST - MEDIUM STIFF	3	38	14	13	13	22	38	18	22
633.6	14											
631.6	16	38-63	GRAY SHALE	4	Visual							
	18	36%	INTERBEDDED LIGHT GRAY SHALE AND LIGHT GRAY LIMESTONE. APPROX. 85% SHALE, 15% LIMESTONE. SHALE CALCAREOUS, FOSSILIFEROUS, PROBABLE MEDIUM TOUGH TO TOUGH. LIMESTONE OCCURS IN 1" TO 2" LAYERS, IS CRYSTALLINE, FOSSILIFEROUS, HARD; ALL LAYERS INDICATE HIGH-ANGLE JOINTING.									
	20											
626.6	22	% Recovery	BORING COMPLETED									
	24											
	26											

Foundation Boring Sheet No. FB-16

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
CITY OF CINCINNATI, OHIO
NORTHEAST EXPRESSWAY HAM-71-3.61
BORING No. B-30-1 B-30-2 B-31-3

BORING DATA

REVIEWED BY CRL | DATE 12/19/68

rev. 6-16-71

LOG OF BORING Order No. 99.990 JH 10-22-68

DATE STARTED 6-24-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 6-26-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE Unable to determine
BORING NUMBER B-32-2 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER ____ HRS. ____
STATION & OFFSET 293+77, Ramp VA, 21'Left, Northeast Exwy, HAM 71-3.61 SURFACE ELEVATION 680.2'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
680.2	0											
	2	3-4-6	Dark brown sandy silty clay, (FILL) moist - stiff	1	0	5	15	44	36	37	13	19
675.2	4											
	6	4-4-5	Brown sandy silty clay, moist - medium stiff	2	13	9	12	32	34	32	14	17
	8											
	10	8-8-12	do do	3	13	13	13	32	29	28	12	17
	12											
	14											
	16	8-10-8	do do	4	9	12	12	38	29	27	11	16
662.7	18											
	20	10-8-11	Gray sandy clayey silt, moist - medium stiff	5	8	8	12	48	24	22	7	13
660.2	22	6-6-7	Brown and gray clayey gravel, moist - medium dense	6	41	7	10	25	17	24	9	17
657.7	24	8-7-7	Brown and gray gravelly, sandy silty clay, moist - medium stiff	7	20	10	13	36	21	23	8	16
655.2	26	6-6-6	Gray sandy silty clay, moist - medium stiff	8	17	9	13	37	24	23	9	13
	28	8-6-6	do do	9	Visual							
650.2	30	8-8-7	Gray gravelly sandy silty clay, moist - medium stiff	20	Visual							
	32											
	34											
	36	5-5-10	do do do	11	27	10	12	30	21	23	9	12
	38											
640.2	40											
	42	4-6-10	Gray sandy clayey silt, moist - stiff	12	18	9	16	36	21	20	7	13
	44											
635.2	46	8-4-9	Gray sandy silty clay, moist - medium stiff	13	18	11	14	36	21	24	10	16
	48											
630.2	50											
	52	8-8-9	Gray sandy clayey gravel, moist - medium stiff	14	40	11	10	22	17	22	8	15
	54											
625.2	56	9-11-15	Gray silty clay, moist - medium stiff	15	0	4	5	42	49	36	18	20
	58											
	60											
	62	10-11-12	do do	16	No Recovery							
	64											
	66	10-9-16	do do	17	0	3	3	58	36	30	12	27
	68											
	70											
	72	10-15-20	Gray silty clay, moist - stiff	18	0	2	3	23	72	38	19	23
	74											
	76	11-12-17	do do	19	12	7	8	34	39	28	12	21
	78											
600.2	80											
	82	20-50-75	Gray shale and limestone	20	No Recovery							
	84											
595.2	86											
	88	40%	Light gray shale, calcareous, non-fossiliferous, medium tough to tough, some probable soft. Two thin (1/2" and 1") light gray limestone layers, crystalline, fossiliferous, hard, jointed, occur near center of recovery.									
590.2	90	% Recovery	Boring Completed									
	92											
	94											
647.7	32											
	34	6-7-7	Gray gravelly, sandy silty clay, moist - stiff	12	17	10	12	37	24	26	10	10
	36	4-5-6	Gray gravelly, sandy silty clay, moist - medium stiff	13	16	11	16	36	21	24	9	14
	38											
640.2	40											
	42	6-8-9	Gray gravelly, clayey silt, moist - medium stiff	14	27	4	9	33	27	20	6	13
	44											
635.2	46	12-16-19	Bluish gray silty clay, moist - medium stiff	15	11	3	5	37	44	40	20	23
	48											
630.2	50	63	Gray shale	16	Visual							
629.7	52											
	54	84%	Interbedded light gray shale and light gray limestone, approx. 85% shale, 15% limestone. Shale calcareous, non-fossiliferous to trace fossiliferous, tough to hard. Limestone occurs well distributed in 1/2" to 2-1/4" layers, is crystalline and shaly, fossiliferous, hard; high-angle jointing exhibited near top and near center of recovery.									
624.7	56											
	58	% Recovery	Boring Completed									
	60											

LOG OF BORING Order No. 99.990, 9-27-68 JH

DATE STARTED 7-16-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 7-17-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 22.5' (657.7')
BORING NUMBER B-33-2 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 1 HRS. 9' (671.2')
STATION & OFFSET 297+09, Ramp VC, 11'Right, Northeast Exwy, HAM 71-3.61 SURFACE ELEVATION 680.2'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
680.2	0											
	2	3-8-8	Brown and gray silty clay, moist - stiff	1	0	0	1	52	47	33	14	20
675.2	4											
673.2	6	4-6-7	Brown and gray gravelly fat clay, moist - stiff	2	24	4	5	20	47	67	42	32
	8	6-5-4	Brown sandy, silty clay, moist - medium stiff	3	9	9	12	35	35	32	15	25
670.2	10											
	12	5-6-6	Brown gravelly sandy, silty clay, moist - stiff	4	16	11	13	29	31	30	14	19
	14											
665.2	16											
	18	4-4-3	Gray silty clay, moist - medium stiff	5	10	8	11	37	34	26	10	14
662.7	20	6-10-16	Gray gravelly, silty clay, moist - medium stiff	6	19	7	10	35	29	28	12	16
	22	12-15-19	Gray gravelly, silty clay, moist - stiff	7	36	8	11	27	18	24	9	12
657.7	24	7-8-8	Gray fine to coarse sand with silt lenses, wet - medium dense	8	10	21	43	-26-				11
655.2	26	4-5-7	Gray silty, sandy gravel, wet - medium dense	9	47	20	19	-14-				19
652.7	28	5-5-7	Gray gravelly, sandy silty clay, moist - stiff	10	25	13	17	26	19	23	8	12
650.2	30	10-9-8	Gray gravelly, silty clay, moist - medium stiff	11	32	7	9	28	24	29	12	17
	32											

Foundation Boring Sheet No. FB-17

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
CITY OF CINCINNATI, OHIO
NORTHEAST EXPRESSWAY HAM-71-3.61
BORING No. B-32-2
B-33-2

BORING DATA

REVIEWED BY C.R.L. DATE 12/19/68

Rev. 6-16-71

HAMILTON COUNTY
HAM-71-3.61

LOG OF BORING Order No. 99.990, 11-6-68 JH

DATE STARTED 7-18-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 7-19-68 CASING: LENGTH None DIA. IMMEDIATE 684.7'
BORING NUMBER B-33-4 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER Backfilled Upon HRS. Completion
STATION & OFFSET 297+10, Ramp "VC", 63' Left, Northeast Exwy, HAM 71-3.61 SURFACE ELEVATION 684.7'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
684.7	0	1		1	Visual							
684.2	2	3-4	Brown gravelly, silty clay, moist - stiff	1A	27	8	10	29	26	32	16	14
682.2	4	13-20-17	Brown sandy clay with limestone fragments and floaters, moist - very stiff	2	12	11	15	36	26	26	11	8
	6	50	do do do	3	Visual							
	8	8-12-14	do do do	4	16	9	13	35	27	27	12	13
	10											
	12	9-12-16	do do do	5	25	9	13	30	23	26	12	12
	14	7-9-11	do do do	6	32	9	9	25	25	31	15	18
	16	8-11-16	do do do	7	39	9	8	22	22	30	14	15
	18	7-8-8	do do do	8	Visual							
664.7	20											
	22	4-6-10	Gray gravelly, sandy clay, moist - stiff	9	23	11	16	30	20	22	10	9
	24	3-4-4	Gray gravelly, sandy clay, moist - medium stiff	10	18	8	13	33	28	25	11	15
659.7	26	3-3-4	Gray sandy clay, moist - medium stiff	11	13	9	14	36	28	25	11	15
	28											
	30											
	32	4-5-6	do do	12	13	10	14	40	23	22	7	9
649.7	34											
	36	3-4-6	Gray silty clay, moist - stiff	13	0	4	4	42	50	40	22	24
	38											
	40											
	42	12-20-36	Gray silty clay, moist - hard	14	7	7	6	26	54	37	16	20
639.7	44											
	46		Interbedded light gray shale and light gray limestone, approx. 85% shale, 15% limestone. Shale calcareous, trace fossiliferous to fossiliferous, medium tough to tough, some probable soft near bottom of recovery. Limestone occurs in 1" to 2" layers, is crystalline, fossiliferous, hard.									
	48	50%										
634.7	50											
	52	% Recovery	Boring Completed									
	54											

LOG OF BORING Order No. 99.990, 11-6-68 JH

DATE STARTED 10-1-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 10-4-68 CASING: LENGTH HSA DIA. 2.25"I.D. IMMEDIATE None
BORING NUMBER B-41-1 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER Backfilled Upon HRS. Completion
STATION & OFFSET 306+98, Ramp ME, 5' Left, Northeast Exwy., HAM 71-3.61 SURFACE ELEVATION 710.1'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
710.1	0											
	2	4-8-13	Brown clayey silt, moist - stiff	1	6	4	7	51	32	28	7	14
707.6	4	8-10-14	Brown silty clay, moist - stiff	2	0	3	9	39	49	44	22	17
706.1	6	20-30-45	Brown clayey gravel, moist - stiff	3	45	11	8	20	16	29	15	12
	8	45-40-40	do do	4	Visual							
701.1	10											
	12	20-15-40	Brown gravelly, silty clay, moist - very stiff	5	19	3	4	30	44	42	20	8
	14	40-45-50	do do	6	Visual							
695.1	16	45-55-140	Gray gravelly, silty clay, moist - very stiff	7	32	5	2	32	29	33	13	14
692.6	18	75-100-150	Gray shale	8	Visual							
689.6	20	150	do	9	Visual							
	22	30%	Layered gray shale and limestone									
	24											
684.6	26											
	28	% Recovery	Boring Completed									

LOG OF BORING Order No. 99.990 9-23-68 JH

DATE STARTED 7-31-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 7-31-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 35' (680.8')
BORING NUMBER B-41-3 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 1 HRS. 13' (702.8)
STATION & OFFSET 310+74, Ramp ME, 2' Right, Northeast Exwy, HAM 71-3.61 SURFACE ELEVATION 715.8'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
715.8'	0											
	2	5-7-8	Brown silty clay, moist - stiff	1	4	5	9	45	37	36	16	16
	4											
	6	6-9-12	Brown silty clay, moist - medium stiff	2	0	0	10	56	34	29	10	20
	8											
	10											
	12	10-9-15	Brown silty clay, moist - stiff	3	5	4	10	39	42	34	16	17
	14	8-10-18	Brown silty clay, moist - very stiff	4	0	5	9	52	34	29	10	17
	16	9-10-10	Brown silty clay, moist - stiff	5	19	7	10	31	33	28	10	13
698.3	18	6-10-16	Brown sandy, silty clay, moist - stiff	6	10	10	13	36	31	30	13	11
695.8	20	9-10-12	Gray sandy, silty clay, moist - stiff	7	13	11	15	33	28	22	8	12
693.3	22	8-11-13	Gray silty clay, moist - stiff	8	10	7	12	37	34	24	10	14
690.8	24	4-5-7	Gray gravelly, sandy clayey silt, moist - medium stiff	9	15	9	15	36	25	20	6	14
688.3	26	4-5-6	do do do	10	19	9	14	34	24	22	8	15
685.8	28	6-7-7	Gray sandy silty clay, moist - medium stiff	11	14	8	13	37	28	22	8	15
	30											
	32											
680.8	34	19-18-25	Brown silty clay with broken stone fragments, moist - stiff	12	23	6	4	31	36	28	9	19
675.8	36											
674.8	38	35-36	Brown highly weathered shale with limestone fragments,	13	58	9	5	13	15	30	12	15
	40											
	42	30%	Interbedded light brown, weathered shale and light gray limestone, approx. 75% shale, 25% limestone. Shale calcareous, non-fossiliferous, soft to possible medium tough. Limestone occurs in 3/4" to 3-3/4" layers, is crystalline, some shaly, fossiliferous, hard. Most layers exhibit high-angle jointing with some iron-oxide staining. (Recovery essentially limestone)									
669.8	44											
	46											
	48	% Recovery	Boring Completed									
	50											

LOG OF BORING Order No, 99.990 9-23-68 JH

DATE STARTED 7-31-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 7-31-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None
BORING NUMBER B-41-2 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 1 HRS. 10 (710.5)
STATION & OFFSET 310+09 Ramp ME, 19' Rt., Northeast Exwy, HAM 71-3.61 SURFACE ELEVATION 720.5'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
720.5	0											
	2	6-4-7	Brown silty clay, moist - very stiff	1	0	2	8	45	45	36	18	17
715.5	4											
	6	8-9-10	Brown sandy silty clay, moist - very stiff	2	12	7	13	36	32	31	16	12
	8											
	10											
	12	11-10-12	do do	3	13	8	13	38	28	29	13	13
	14											
705.5	16	7-15-20	Brown and gray gravelly, silty clay, moist - very stiff	4	19	6	11	30	34	29	14	14
	18											
700.5	20											
	22	9-10-10	Gray sandy clayey silt, moist - stiff	5	14	10	16	34	26	21	6	12
	24	8-9-11	do do	6	11	9	15	39	26	22	8	11
695.5	26	45-71	Gray and brown weathered shale, moist - very stiff	7	0	2	1	37	60	45	20	14
694.5	28	15%	Layered light brown (trace light gray) weathered shale and light gray limestone. Approx. 90% shale. 10% limestone, shale calcareous, non-fossiliferous, probable soft to medium tough. Limestone occurs in 7/8" to 2-3/4" layers, is fine-grained, non-fossiliferous to trace fossiliferous, hard; high-angle jointing with iron-oxide staining exhibited in most layers.									
	30											
	32											
	34	17%										
684.5	36											
	38	% Recovery	Boring Completed									
	40											

Foundation Boring Sheet No. FB-18

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
CITY OF CINCINNATI, OHIO
NORTHEAST EXPRESSWAY HAM-71-3.61
BORING No. B-33-4 B-41-2
B-41-1 B-41-3

BORING DATA

		REVIEWED BY	DATE
		CRL	12/19/68

Rev. 6-16-71

LOG OF BORING Order No. 99.990 JH 10-23-68

DATE STARTED 6-4-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 6-4-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE Could not tell
BORING NUMBER B-30-3 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER Backfilled Upon HRS. Completion
STATION & OFFSET 24+71, Victory Parkway, 62'Right, Northeast Expwy, HAM 71-3.61 SURFACE ELEVATION 684.0'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
684.0	0											
	2	1-1	Cinders, brick, (rubble FILL)	1	Visual							
	4	2-2-2	do do	2	Visual							
	6	1-1-1	do do	3	Visual							
	8											
	10	3-2-2	do do	4	Visual							
	12	2-3-2	do do	5	Visual							
	14	3-4-3	do do	6	Visual							
	16	3-4-4	do do	7	Visual							
666.5	18											
	20	4-3-4	Brown silty sand, trace of brick and cinders, (FILL) moist - loose	8	6	10	38	31	15		NP	14
	22	6-4-4	do do do	9	5	7	54	24	10		NP	15
	24	6-5-5	do do do	10	Insufficient sample							
	26	2-3-3	do do do	11	2	6	53	29	10		NP	18
	28	3-3-4	do do do	12	0	7	55	9	29		NP	18
649.0	30											
	32											
	34											
	36	6-6-7	Brown sandy silty clay, moist - medium stiff	13	10	9	12	32	37	34	16	20
644.0	38											
	40											
	42	5-6-6	Brown and gray sandy silty clay, trace of organics, moist - medium stiff	14	8	8	13	39	32	30	12	21
	44	7-7-8	do do do	15	Visual							
639.0	46	5-10-20	Brown and gray clayey GRAVEL, moist - medium stiff	16	62	6	6	8	18	45	23	33
636.5	48											
		35-20-40	Brown and gray silty clay, moist - very stiff	17	12	2	2	37	47	39	17	19
634.0	50											
	52		Light gray SHALE, calcareous, trace fossiliferous to fossiliferous, probable soft to tough. Thin (3/4" & 2") light gray limestone layers, crystalline, fossiliferous, hard, jointed, occurs near center and at top of recovery, respectively.									
	54	35%										
629.0												
	56		Light gray SHALE with light gray limestone layers, approx. 85% shale, 15% limestone. Shale calcareous, non-fossiliferous, medium tough to tough. Limestone occurs at top and bottom of recovery in 1/2" to 3-1/2" layers, is crystalline, fossiliferous, hard; bottom layer exhibits high-angle joint.								
	58	60%										
624.0	60											
	62	% Recovery	Boring Completed									
	64											

LOG OF BORING Order No. 99.990 JH 10-2-68

DATE STARTED 7-9-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 7-9-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 15' (633.4')
BORING NUMBER B-31-1 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 3 HRS. 16' (632.4)
STATION & OFFSET 293+95, 75'Left., Northeast Expwy, HAM 71-3.61 SURFACE ELEVATION 648.4'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
648.4	0											
	2	27-10-12	Brown silty sand and gravel, (FILL) moist - stiff	1	Insufficient sample							
	4											
	6	4-6-6	do do do	2	26	6	20	28	20	29	12	15
638.4	8											
	10	5-6-8	Brown sandy silty clay, (FILL) moist - stiff	3	15	9	16	37	23	23	8	13
633.4	12											
	14											
	16	4-4-5	Gray sandy, silty clay, moist - medium stiff	4	14	7	14	38	27	23	8	15
	18											
	20											
	22	2-3-4	do do	5	0	7	13	37	43	28	12	12
623.4	24											
	26	3-2-3	Gray silty clay, moist - medium stiff	6	0	0	2	54	44	36	16	26
	28											
	30											
	32	2-2-3	do do	7	0	5	13	53	29	28	8	26
613.4	34											
	36	3-2-4	Gray clayey SILT, moist - medium stiff	8	0	0	3	71	26	26	5	28
608.4	38											
	40											
	42	7-8-10	Gray silty clay, moist - medium stiff	9	0	3	10	44	43	32	14	25
	44											
	46	8-8-9	do do	10	0	6	9	39	46	32	15	16
598.4	48											
	50											
	52	9-12-11	Gray clayey GRAVEL, moist - medium dense	11	47	9	7	19	18	32	14	22
593.4	54											
592.9	55		Gray silty clay, moist - stiff	12	0	2	3	45	50	35	13	30
	56		Light gray SHALE, calcareous, non-fossiliferous to trace fossiliferous, essentially tough, trace possible soft indicated at top of recovery, 2" light gray limestone layer, crystalline,									
	58	53%										
587.9	60		fossiliferous, hard, jointed, occurs approx. 10" from bottom of recovery.									
	62	% Recovery	Boring Completed									
	64											

LOG OF BORING Order No. 99.990 JH 10-2-68

DATE STARTED 7-9-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 7-9-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 14.5' (633.5)
BORING NUMBER B-31-2 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 1 HRS. 6' (642.0)
STATION & OFFSET 295+14, 77'Left, Northeast Expwy, HAM 71-3.61 SURFACE ELEVATION 648.0'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
648.0	0											
	2	15-18-12	Brown silty clay, brick, (FILL) moist - medium stiff	1	Insufficient sample							
	4											
	6	3-2-3	do do	2	11	6	5	46	32	30	15	19
638.0	8											
	10											
	12	4-3-5	Brown clayey, sandy gravel, (FILL) moist - loose	3	30	8	13	24	25	30	16	15
633.5	14											
	16	3-3-4	Gray silty clay, moist - medium stiff	4	0	2	8	60	30	29	12	26
	18											
	20											
	22	3-2-2	do do	5	0	2	6	55	37	31	11	28
	24											
	26	2-2-3	do do	6	0	0	2	42	56	38	18	29
	28											
	30											
	32	3-4-5	do do	7	2	0	2	43	53	37	15	26
613.0	34											
612.0	36	27-75	Gray SHALE, dry - hard	8	0	2	2	38	58	43	21	13
	38		Light gray SHALE, calcareous, non-fossiliferous to fossiliferous, medium tough, some tough; some probable soft indicated at top of recovery; some tilting of bedding planes and remold condition exhibited, and slickensides displayed, approx. 6" from top of recovery; Movement indicated 1½" light gray limestone layer, crystalline, fossiliferous hard, occurs 3½" from bottom of recovery.									
	40	44%										
607.0	42											
	44	% Recovery	Boring Completed									

Foundation Boring Sheet No FB-19

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
CITY OF CINCINNATI, OHIO
NORTHEAST EXPRESSWAY HAM-71-3.61
BORING No. B-30-3 B-31-2
B-31-1

BORING DATA

		REVIEWED BY	DATE
		C.R.L.	12/19/68

Rev. 6-16-71

HAMILTON COUNTY
HAM-71-3.61

LOG OF BORING Order No. 99.990, 9-25-68 JH

DATE STARTED 7-30-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 7-30-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 20' (702.4')
BORING NUMBER B-41-4 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 1 HRS. 23' (699.4)

STATION & OFFSET 311+65, Ramp ME, 14'Rt, Northeast Exwy, HAM 71-3.61 SURFACE ELEVATION 722.4

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
722.4	0											
	2	5-5-6	Brown and gray silty clay, moist - medium stiff	1	0	1	2	57	40	37	18	28
717.4	4											
	6	6-7-7	Brown silty clay, moist - stiff	2	0	4	6	35	55	50	30	27
	8	5-6-7	do do	3	0	2	7	27	64	60	34	25
712.4	10											
	12	9-10-15	Brown gravelly silty clay, moist - very stiff	4	15	8	13	36	28	28	11	12
709.9	14	11-12-17	Brown and gray sandy silty clay, moist - very stiff	5	9	12	14	37	28	29	12	12
707.9	16	16-18-27	Brown gravelly silty clay, moist - very stiff	6	27	7	11	34	21	27	10	24
704.9	18	15-19-21	Brown and gray sandy silty clay, moist - very stiff	7	8	9	14	41	28	26	9	14
702.4	20											
	22	6-10-16	Brown and gray gravelly, silty clay, moist - stiff	8	20	6	9	36	29	28	11	16
699.9	24	9-11-18	Brown and gray sandy silty clay, moist - stiff	9	5	8	14	42	31	24	9	16
	26	10-16-21	Brown and gray sandy silty clay, moist - very stiff	10	9	11	15	35	30	27	10	11
	28											
692.4	30											
	32	6-10-14	Gray sandy clayey silt, moist - medium stiff	11	8	8	13	46	25	22	7	16
687.4	34											
	36	8-9-11	Gray gravelly, sandy silty clay, moist - medium stiff	12	19	9	14	38	20	22	8	12
	38											
	40	7-8-11	do do do	13	14	9	12	36	29	25	10	17
	42											
677.4	44											
	46	6-10-12	Gray silty sand with clay seams, wet - medium dense	14	2	8	54	18	18		NP	20
672.4	48											
	50	5-7-9	Gray silty sand, wet - medium dense	15	0	7	63	16	14		NP	24
667.4	52											
	54											
	56	8-12-10	Gray silty clay, moist - stiff	16	0	0	1	27	72	39	18	18
662.4	58											
	60	16-29-40	Gray and brown silty clay, moist- very stiff	17	13	1	1	33	52	40	18	18
657.4	62											
656.4	64											
	66	38-60	Gray shale	18	Visual							
	68	30%	Light gray shale, calcareous, non-fossiliferous to fossiliferous, tough to hard; some soft indicated top 2" of recovery.									
651.4	70											
	72	% Recovery	Boring Completed									
	74											

LOG OF BORING Order No. 99.990 JH 10-22-68

DATE STARTED 6-28-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 6-28-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 25' (626.3')
BORING NUMBER B-42-1 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 1 HRS. 12' (639.3')

STATION & OFFSET 292+71, Northeast Exwy, 93.0'Right, Northeast Exwy, HAM 71-3.61 SURFACE ELEVATION 651.3'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
651.3	0											
	2	7-4-5	Dark brown sandy silty clay, (FILL) moist - stiff	1	3	8	17	50	22	50	30	13
646.3	4	4-5-5	do do do	2	Visual							
	6	3-3-4	Brown silty clay, (FILL) moist - very stiff	3	8	7	12	35	38	36	20	19
643.8	8	8-8-11	Brown and gray sandy silty clay, with gravel, moist -stiff	4	19	8	14	35	24	24	10	14
	10											
	12	7-9-10	Brown and gray sandy silty clay with gravel, moist - medium stiff	5	12	10	16	36	26	24	11	14
638.8	14	4-5-6	Gray sandy silty clay, very moist - medium stiff	6	9	11	14	41	25	21	9	14
636.3	16	3-5-4	Gray silty clay, very moist - soft	7	14	9	8	32	37	28	14	22
	18											
	20	2-3-3	do do	8	Visual							
	22	2-3-4	do do	9	0	0	2	27	71	44	25	31
	24											
626.3	26	2-2-2	Dark gray clay, with silt lenses, very moist - soft	10	0	2	4	45	49	32	16	30
	28											
621.3	30											
	32	1-2-4	Dark gray silty clay, very moist - soft	11	0	2	14	53	31	29	12	27
616.3	34											
	36	6-9-9	Gray clayey gravel with sand seams, wet - medium dense	12	54	13	9	9	15	28	14	17
	38											
611.3	40											
	42	3-6-7	Gray silty clay, moist - soft	13	0	2	5	44	49	36	17	29
	44											
	46	4-6-8	Gray silty clay, very moist - soft	14	0	0	2	39	59	37	19	35
601.3	48											
	50	5-7-9	Gray and bluish gray silty clay, very moist - soft	15	6	4	6	35	49	33	16	34
598.3	52											
	54											
	56	60%	Light gray shale with light gray limestone, approx. 90% shale, 10% limestone. Shale calcareous, non-fossiliferous, tough to hard. Limestone occurs within top-half of recovery in 1/2" to 2-1/4" layers, is crystalline, fossiliferous, hard; all layers exhibit jointing.									
593.3	58											
	60	% Recovery	Boring Completed									

LOG OF BORING Order No. 99,990, 9-27-68 JH

DATE STARTED 7-16-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 7-16-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None
BORING NUMBER B-42-2 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 1 HRS. 12' (644.7')

STATION & OFFSET 295+20, 98'Rt., Northeast Exwy., HAM 71-3.61 SURFACE ELEVATION 656.7'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
656.7	0											
	2	2-4-7	Brown sandy silty clay, moist - stiff	1	11	7	13	32	37	37	20	22
651.7	4											
	6	5-6-7	Brown sandy, clayey silt, moist - stiff	2	0	10	18	48	24	23	6	16
	8											
646.7	10											
	12	6-7-8	Brown gravelly, silty clay, moist - stiff	3	28	7	12	33	20	25	8	16
	14											
641.7	16	5-6-6	Gray gravelly, silty clay, moist - stiff	4	37	5	7	27	24	29	13	18
	18											
636.7	20											
	22	4-7-8	Gray silty clay, moist - stiff	5	0	2	6	52	40	36	18	20
631.7	24											
	26	4-5-7	Gray gravelly, sandy silty clay, moist - stiff.	6	18	12	9	29	32	36	18	24
	28											
626.7	30											
624.7	32	12-27-43	Gray shale	7	Visual							
	34	16%	Light brown and light gray weathered shale and light gray limestone, approx. 85% shale, 15% limestone, (Recovery primarily limestone). Shale assumed calcareous, probable soft to medium tough. Limestone occurs in 1-1/2" to 3" layers, is crystalline, some shaly, fossiliferous, hard.									
	36											
619.7	38											
	40	% Recovery	Boring Completed									

Foundation Boring Sheet No FB-20

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
CITY OF CINCINNATI, OHIO
NORTHEAST EXPRESSWAY HAM-71-3.61
BORING No. B-41-4 B-42-4
B-42-1

BORING DATA

REVIEWED BY C.R.L. DATE 12/19/68

Rev. 6-16-71

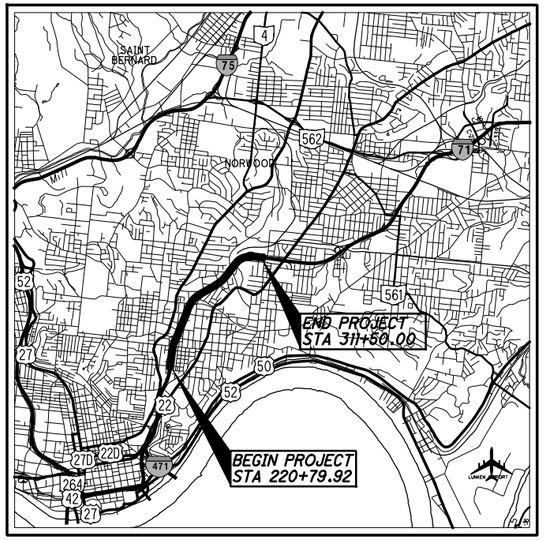
LEGEND

	DESCRIPTION	ODOT CLASS	CLASSIFIED MECH./VISUAL	
	GRAVEL/STONE FRAGMENTS	*A-1-a*	*4*	*5*
	GRAVEL/STONE FRAGMENTS WITH SAND	*A-1-b*	*5*	*25*
	GRAVEL/STONE FRAGMENTS WITH SAND & SILT	*A-2-4*	*3*	*5*
	GRAVEL/STONE FRAGMENTS WITH SAND, SILT & CLAY	*A-2-6*	*1*	*5*
	COARSE AND FINE SAND	*A-3a*	*0*	*2*
	SANDY SILT	*A-4a*	*20*	*33*
	SILT	*A-4b*	*4*	*1*
	SILT AND CLAY	*A-6a*	*79*	*88*
	SILTY CLAY	*A-6b*	*45*	*52*
	ELASTIC CLAY	*A-7-5*	*1*	*0*
	CLAY	*A-7-6*	*49*	*72*
	ORGANIC SILT	*A-8a*	*0*	*1*
		TOTAL	*211*	*289*

	UNCONTROLLED FILL (UCF)	*VISUAL*
	WEATHERED SHALE	*VISUAL*
	WEATHERED INTERBEDDED SHALE AND LIMESTONE	*VISUAL*
	SHALE	*VISUAL*
	INTERBEDDED SHALE AND LIMESTONE	*VISUAL*

	HISTORIC BORING DESCRIPTIONS	ODOT CLASS	CLASSIFIED MECH./VISUAL	
	GRAVEL/STONE FRAGMENTS	*A-1-a*	*1*	*0*
	GRAVEL/STONE FRAGMENTS WITH SAND	*A-1-b*	*0*	*1*
	SANDY SILT	*A-4a*	*21*	*7*
	SILT	*A-4b*	*6*	*1*
	SILT AND CLAY	*A-6a*	*61*	*13*
	SILTY CLAY	*A-6b*	*80*	*11*
	CLAY	*A-7-6*	*89*	*9*
	ORGANIC CLAY	*A-8b*	*1*	*0*
	UNCONTROLLED FILL (UCF)	*VISUAL*	*0*	*34*
		TOTAL	*259*	*76*

	PAVEMENT OR BASE = X = APPROXIMATE THICKNESS	*VISUAL*
	SOD AND TOPSOIL = X = APPROXIMATE THICKNESS	*VISUAL*
	EXPLORATION LOCATION - PLAN VIEW.	
	HISTORIC BORING LOCATION - PLAN VIEW - HAM-71-2.74, HAM-71-3.61	
	DRIVE SAMPLE AND/OR ROCK CORE BORING PLOTTED TO VERTICAL SCALE ONLY. HORIZONTAL BAR INDICATES A CHANGE IN STRATIGRAPHY.	
WC	INDICATES WATER CONTENT IN PERCENT.	
N_{60}	INDICATES STANDARD PENETRATION RESISTANCE NORMALIZED TO 60% DRILL ROD ENERGY RATIO.	
X/Y/Z	NUMBER OF BLOWS FOR STANDARD PENETRATION TEST (SPT): X= NUMBER OF BLOWS FOR FIRST 6 INCHES. Y= NUMBER OF BLOWS FOR SECOND 6 INCHES. Z= NUMBER OF BLOWS FOR THIRD 6 INCHES.	
	INDICATES STATIC WATER ELEVATION.	
W	INDICATES FREE WATER ELEVATION.	
●	INDICATES A PLASTIC MATERIAL WITH A MOISTURE CONTENT EQUAL TO OR GREATER THAN THE LIQUID LIMIT MINUS 3.	
⊖	INDICATES A NON-PLASTIC MATERIAL WITH A MOISTURE CONTENT GREATER THAN 25 % OR GREATER THAN 19 % WITH A WET APPEARANCE.	
*	INDICATES A SAMPLE TAKEN WITHIN 3 FT OF PROPOSED GRADE.	
SS	INDICATES A SPLIT SPOON SAMPLE.	
ST	INDICATES A SHELBY TUBE SAMPLE.	
NP	INDICATES A NON-PLASTIC SAMPLE.	
TR	INDICATES THE TOP OF ROCK	



LOCATION MAP
SCALE IN MILES
0 1 2 3 4

PARTICLE SIZE DEFINITIONS

12"	3"	2.0 mm	0.42 mm	0.074 mm	0.005 mm
BOULDERS |	COBBLES |	GRAVEL |	COARSE SAND |	FINE SAND |	SILT | CLAY
		No. 10 SIEVE	No. 40 SIEVE	No. 200 SIEVE	

RECON. - SPR, DMV 5/8/14
DRILLING - THELEN, 5/13/14 - 6/06/14
DRAWN - JTB, 1/5/15 - 4/21/15
REVIEWED - DAF, 4/21/15 - 4/24/15

DESIGN AGENCY
HDR ENGINEERING, INC.
9987 CARVER ROAD, SUITE 200
CINCINNATI, OHIO 45242
513-984-7500

PID NO. 77628

SOIL PROFILE

HAM-71-3.81

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INDEX OF SHEETS							
LOCATION FROM STA. TO STA.	PLAN VIEW SHEET	PROFILE SHEET	CROSS-SECTION SHEET	CUT MAX.		FILL EMB. MAX.	
IR-71							
220+00 - 223+50	59	59			FT		FT
223+50 - 235+50	60	60			FT		FT
235+50 - 247+50	61	61			FT		FT
247+50 - 259+50	62	62			FT		FT
259+50 - 271+50	63	63			FT		FT
271+50 - 238+50	64	64			FT		FT
283+50 - 259+50	65	65			FT		FT
259+50 - 307+50	66	66			FT		FT
307+50 - 317+00	67	67			FT		FT
231+50 & 233+50			79		FT		FT
237+50 & 240+00			80		FT		FT
243+00 & 245+27.04			81		FT		FT
252+26.56 & 253+66.11			82	18	FT		FT
255+05.50 & 258+36.00			83	22	FT		FT
266+58.05 & 269+02.49			84	20	FT	12	FT
284+00 & 285+00			85		FT		FT
RAMP A							
357+66 - 370+00	68	68		23	FT	38	FT
370+00 - 375+32	69	69			FT	59	FT
373+37.16			86		FT	50	FT
RAMP B							
463+64 - 471+00	70	70			FT	49	FT
471+00 - 478+10	71	71			FT	27	FT
465+50.00			86		FT	50	FT
469+00 & 473+00			87	10	FT	44	FT
MLK DRIVE							
84+00 - 98+00	72	72			FT		FT
105+60 - 120+00	73	73			FT		FT
95+50 & 108+00			88		FT	17	FT
110+50			89		FT	15	FT
READING ROAD							
304+89.25 - 319+00.00	74	74			FT		FT
319+00.00 - 327+30.95	75	75			FT		FT
GILBERT AVENUE							
52+00 - 66+00	76	76			FT		FT
LINCOLN AVENUE							
12+00 - 23+00	77	77			FT		FT
STANTON AVENUE							
10+00 - 20+00	78	78		8	FT	24	FT

DRAWN JTB
CHECKED DMV

SOIL PROFILE
INDEX SHEET

HAM-71-3.81

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PROJECT DESCRIPTION

THE HAM-71-3.81 PROJECT CONSISTS OF A NEW IR-71 INTERCHANGE AT MARTIN LUTHER KING (MLK) DRIVE AND OTHER ASSOCIATED IMPROVEMENTS. SPECIFIC IMPROVEMENTS IN THE VICINITY OF THE PROPOSED INTERCHANGE WILL INCLUDE A NEW EXIT RAMP FROM SOUTHBOUND IR-71 TO MLK DRIVE, EXTENDING AND REALIGNING THE EXISTING SOUTHBOUND IR-71 EXIT RAMP TO WILLIAM HOWARD TAFT ROAD, A NEW ENTRANCE RAMP TO SOUTHBOUND IR-71 FROM MLK DRIVE, A NEW EXIT RAMP FROM NORTHBOUND IR-71 TO MLK DRIVE, AND A NEW ENTRANCE RAMP TO NORTHBOUND IR-71 FROM MLK DRIVE. ADDITIONAL IMPROVEMENTS WITHIN THE DEFINED PROJECT LIMITS ALSO INCLUDE THE WIDENING OF THE EXISTING ENTRANCE RAMP TO NORTHBOUND IR-71 FROM E. MCMILLAN STREET, REPLACEMENT OF PORTIONS OF THE EXISTING PAVEMENT ALONG THE IR-71 CORRIDOR, AND WIDENING AND/OR REALIGNMENT OF THE LOCAL ROADS THAT PROVIDE ACCESS TO THE PROPOSED MLK INTERCHANGE. THREE (3) EXISTING BRIDGE STRUCTURES, IDENTIFIED AS HAM-71-0381 (MLK DRIVE OVER IR-71), HAM-71-0322E (RAMP F BRIDGE), AND HAM-71-0450 (IR-71 BRIDGE OVER VICTORY PARKWAY), WILL BE WIDENED. ONE (1) BRIDGE STRUCTURE, IDENTIFIED AS HAM-71-0396 (STANTON AVENUE BRIDGE OVER IR-71) WILL BE REPLACED AND ONE (1) NEW BRIDGE STRUCTURE, IDENTIFIED AS HAM-71-0402E (RAMP A BRIDGE OVER STANTON AVENUE), WILL BE CONSTRUCTED. AS PART OF THE ROADWAY IMPROVEMENTS, NEW EMBANKMENTS IN COMBINATION WITH FOURTEEN (14) RETAINING WALLS WILL BE CONSTRUCTED.

HISTORIC RECORDS

TWO PREVIOUS GEOTECHNICAL EXPLORATION PROGRAMS (HAM-71-2.74 IN 1965 AND 1967 AND HAM-71-3.61 IN 1965, AND 1967 1968) WERE PERFORMED WITHIN THE PROJECT LIMITS. THESE PROGRAMS WERE PERFORMED IN SUPPORT OF THE INITIAL CONSTRUCTION OF I-71 AND CONSISTED OF VARIOUS STRUCTURE AND ROADWAY-TYPE BORINGS.

GEOLOGY

THE PROJECT LIES WITHIN THE ILLINOIAN TILL PLAIN OF THE CENTRAL LOWLAND PHYSIOGRAPHIC PROVINCE OF SOUTHWEST OHIO, AND IS CHARACTERIZED BY ROLLING GLACIAL UPLANDS AND STEEP HILLSIDES ALONG THE MAJOR RIVERS AND STREAMS. THE UPLANDS CONSIST PRIMARILY OF INTERBEDDED SHALE AND LIMESTONE OF LATE ORDOVICIAN AGE, AND TYPICALLY ARE COVERED BY A RELATIVELY THIN MANTLE OF GLACIAL TILL AND IN SOME AREAS, LAKEBED CLAYS. THE BROAD VALLEYS GENERALLY CONSIST OF DEEPLY ENTRENCHED, BURIED VALLEYS AS A RESULT OF POSSIBLE UPLIFTING AFTER RETREAT OF THE PRE-ILLINOIAN ICE SHEET AND SUBSEQUENT GLACIATION OF THE REGION. LOCALLY, THE SITE IS SITUATED WITHIN THE UPLANDS BETWEEN TWO BROAD TRIBUTARIES OF THE OHIO RIVER, THE MILL CREEK TO THE EAST AND THE LITTLE MIAMI RIVER TO THE WEST BOTH OF WHICH EVENTUALLY DRAIN TO THE OHIO RIVER. THE BEDROCK WITHIN THE PROJECT AREA BELONGS TO THE MIAMITOWN SHALE AND FAIRVIEW FORMATIONS UNDIVIDED, OF THE ORDOVICIAN AGE, WITHIN THE SOUTHERN REACHES OF THE PROJECT, TRANSITIONING TO THE KOPE FORMATION IN THE VICINITY OF THE DEEP BURIED VALLEY THAT RUNS ALONG VICTORY PARKWAY.

THE MIAMITOWN SHALE AND FAIRVIEW FORMATIONS UNDIVIDED CONSIST OF INTERBEDDED SHALE AND LIMESTONE. THE MIAMITOWN SHALE IS TYPICALLY GRAY TO BLUISH-GRAY THAT WEATHERS TO A YELLOWISH-GRAY AND CONSISTS OF BOTH SHALE AND MUDSTONE WITH GENERALLY INSIGNIFICANT LIMESTONE INTERBEDS. THE FAIRVIEW FORMATION GENERALLY CONSISTS OF RELATIVELY EQUAL PROPORTIONS OF THIN-BEDDED, FINE TO COARSE SKELETAL LIMESTONE AND GRAY, THIN BEDDED SHALES AND SILTSTONES. THE UNDERLYING KOPE FORMATION IS PRIMARILY COMPRISED OF THIN TO THICKLY BEDDED, CALCAREOUS AND ARGILLACEOUS SHALE WITH OCCASIONAL FINE-GRAINED LIMESTONE AND SILTSTONE INTERBEDS. THE SHALE CONSISTS OF APPROXIMATELY 80 PERCENT OF THE FORMATION AND IS TYPICALLY GRAY TO BLUISH-GRAY THAT WEATHERS TO A LIGHTER GRAY OR YELLOWISH-GRAY.

RECONNAISSANCE

A GEOTECHNICAL SITE RECONNAISSANCE WAS PERFORMED BY HDR GEOTECHNICAL ENGINEERS PRIOR TO AND DURING THE COURSE OF THE EXPLORATION. THE LAND USE IN THE PROJECT AREA IS PREDOMINANTLY URBAN COMMERCIAL WITH SOME INDUSTRIAL AND RESIDENTIAL PROPERTIES AND INCLUDES SOME VACANT LOTS AND PROPERTIES. THE RECONNAISSANCE CONSISTED OF OBSERVATIONS MADE WHILE WALKING ALONG OR IN THE VICINITY OF THE PROPOSED STRUCTURES AND ALIGNMENTS WHILE NOTING ANY EXISTING FEATURES THAT WOULD IMPACT THE PROPOSED CONSTRUCTION. FEATURES SUCH AS LANDSLIDES OR CREEP, ROCK EXPOSURES, SOFT OR WET SOILS, SEEPS, AND SURFACE DRAINAGE WERE NOTED AS WELL AS ANY EXISTING STRUCTURES AND/OR STOCKPILES THAT WOULD NEED TO BE DEMOLISHED OR HAULED OFF SITE. DETAILS OF VARIOUS PROJECT AREAS ARE DESCRIBED BELOW.

I-71 MAINLINE
IN GENERAL, THE EXISTING I-71 MAINLINE APPEARED TO BE IN FAIR CONDITION WITH OCCASIONAL TRANSVERSE PAVEMENT CRACKS AND RANDOM ISOLATED POTHOLES. IN GENERAL, IT SHOULD BE NOTED THAT THE INSIDE SHOULDERS OF I-71 WILL BE COMPLETELY REMOVED AND REPLACED WITH A NEW PAVEMENT SECTION.

RAMPS A AND B
AN EXISTING JUNKYARD AREA IS POSITIONED ACROSS RELATIVELY FLAT, GRAVEL-COVERED TERRAIN AND CONSISTS OF OLD, USED AND RUN-DOWN AUTOMOBILES, DEMOLITION DEBRIS, DEMOLISHED TRAILERS, ETC. AN EXISTING STOCKPILE OF FILL MATERIALS APPROXIMATELY 25 TO 30 FEET IN HEIGHT AND COVERING AN AREA NO LESS THAN 100 FEET IN PLAN DIMENSIONS WAS OBSERVED ADJACENT TO THIS JUNKYARD AREA. SEVERAL ONE-STORY, COMMERCIAL AND/OR STORAGE MASONRY BLOCK/BRICK BUILDINGS WERE OBSERVED ON BOTH SIDES OF SYRACUSE STREET ALONG WITH AN EXISTING PAVED BASKETBALL COURT BEYOND THE NORTH END OF SYRACUSE. THE VAST MAJORITY OF THE STORAGE BUILDINGS ALONG THE EAST SIDE OF SYRACUSE EXHIBITED CRACKING AND/OR SEPARATION IN THE MORTAR JOINTS. AN EXISTING CLEARED BENCH WAS OBSERVED IN THE EMBANKMENT SLOPE SUPPORTING MLK DRIVE WITH A SLOPE GRADIENT OF APPROXIMATELY 2H:1V (HORIZONTAL TO VERTICAL) UPSLOPE OF THE BENCH AND 1H:1V DOWNSLOPE OF THE BENCH.

WALLS E1 (E1A, E1B, E1C, E1D) AND D1A
THE EXISTING CUT SLOPE FROM JUST NORTH OF OAK STREET TO LINCOLN AVENUE WAS FAIRLY WELL VEGETATED WITH SMALL TREES, SMALL SHRUBS, AND UNDEGROWTH FROM NEAR MID SLOPE TO SLOPE CREST AND GRAY SHALE AND LIMESTONE BEDROCK EXPOSED NEAR THE TOE. THE EXISTING CUT SLOPE BETWEEN LINCOLN AVENUE AND MELISH PLACE APPEARED TO BE FAIRLY WELL VEGETATED WITH SIMILAR SIZE TREES AND BRUSH. NO EVIDENCE OF PRIOR SLOPE MOVEMENT WAS OBSERVED. NO EVIDENCE OF DRAINAGE ISSUES WERE NOTED.

WALLS C1A, C2A, E3A
WITH THE EXCEPTION OF A PATCH BETWEEN RAMP E STA. 758+00 AND STA. 760+00, THE EXISTING CUT SLOPE WAS VERY WELL VEGETATED WITH SMALL TREES AND DENSE UNDERBRUSH. THERE WAS AN EXISTING, VACANT, ASPHALT-PAVED PARKING LOT NEAR THE SLOPE CREST BETWEEN RAMP C STA. 658+00 AND STA. 659+00 WITH TALL WEEDS AND GRASS EXTRUDING FROM THE EXPOSED CRACKS. IN THIS LOT, THERE APPEARED TO BE AN OLD CONCRETE SLAB NEAR THE NORTHERN PORTION OF THE LOT ESTIMATED TO BE APPROXIMATELY $90\frac{5}{32}$ LONG BY $45\frac{5}{32}$ WIDE WITH COLUMN SUPPORTS SEVERED AT SLAB LEVEL AND TALL WEEDS EXTRUDING FROM THE JOINTS AND CRACKS. AN EXISTING RAILROAD BRIDGE ABUTMENT WAS PRESENT AT RAMP E STA. 765+00. THE SLOPE GRADIENTS APPEAR TO BE RATHER STEEP BETWEEN RAMP E STA. 766+00 AND STA. 768+50, BETWEEN 1H:1V AND 2H:1V. NEITHER BEDROCK EXPOSURES NOR EVIDENCE OF PRIOR SLOPE MOVEMENT WAS OBSERVED.

WALL C3A
AN EXISTING CAST-IN-PLACE CONCRETE RETAINING WALL WAS OBSERVED IMMEDIATELY ADJACENT TO WHITTIER AVENUE ON THE DOWNSLOPE SIDE OF THE ROAD FROM ROUGHLY WHITTIER STA. 53+00 TO 55+00 WITH DENSE VEGETATION IMMEDIATELY DOWNSLOPE OF THE WALL.

WALL C3B
RELATIVELY DENSE TREES AND UNDERGROWTH WAS PRESENT NEAR THE SLOPE CREST, AND MAJORITY OF THE SLOPE FACE DOWNSLOPE WAS COVERED WITH GRASS. AN EXISTING LANDSLIDE APPROXIMATELY 100 FEET OR SO IN WIDTH WAS OBSERVED SLIGHTLY UPSLOPE OF RAMP C STA. 672+50 (APPROXIMATELY 10 TO 15 FEET LEFT OF RAMP C CENTERLINE). AT THE TIME OF THE SITE RECONNAISSANCE, THE SLIDE DID NOT APPEAR TO IMPACT THE ROADWAY OR THE SHOULDER.

WALL C3C
GRASS COVERED THE SLOPE IMMEDIATELY WEST OF SB I-71. NO EVIDENCE OF PRIOR SLOPE MOVEMENT, SEEPS, OR BEDROCK EXPOSURES WAS OBSERVED.

WALL A1A
THE CUT SLOPE JUST EAST OF NB I-71 WAS COVERED WITH SMALL TREES, DENSE BRUSH, AND UNDERGROWTH FROM MIDSLOPE TO THE SLOPE CREST THEN GRASS-COVERED FROM MIDSLOPE TO THE SLOPE TOE. THE STEEPNESS OF THE EXISTING SLOPE RANGED FROM 1.5 TO 2.0H:1V. EXISTING UNDERGROUND FIBER OPTIC UTILITY CONDUIT WAS MARKED NEAR THE EXISTING SLOPE TOE. AN EXISTING RAILROAD BRIDGE ABUTMENT WAS OBSERVED AT RAMP A STA. 362+50. AN EXISTING ASPHALT-PAVED PARKING LOT WAS POSITIONED IMMEDIATELY UPSLOPE OF THIS PROPOSED WALL.

WALL A2A
THE CUT SLOPE JUST EAST OF NB I-71 WAS SIMILARLY COVERED WITH THE VEGETATION OBSERVED ALONG THE WALL A1A ALIGNMENT. THE STEEPNESS OF THE EXISTING SLOPE IS APPROXIMATELY 1.5H:1V. IMMEDIATELY NORTH OF THE RAILROAD BRIDGE ABUTMENT WAS A FLAT, GRASS-COVERED VACANT LOT.

WALL A3A
THIS WALL ALIGNMENT WILL BE SUPPORTED ON OVER 40 FEET OF EMBANKMENT FILL AND WILL PROVIDE GRADE SEPARATION BETWEEN RAMPS A AND B. THE TERRAIN IN THE VICINITY OF THIS WALL CONSISTED OF A TERRACED, HEAVILY VEGETATED SLOPE WHERE THE EXISTING HORIZONTAL BENCH EXTENDED FROM FREDONIA AVENUE TO THE SOUTHERN END OF THE WALL A3A ALIGNMENT. THE SLOPE GRADIENT UPSLOPE OF THE BENCH WAS APPROXIMATELY 2H:1V, BUT DOWNSLOPE OF THE BENCH WAS CLOSER TO 1H:1V. SIGNS OF MINOR SLOUGHING AND/OR CREEP WAS OBSERVED ALONG THE DOWNSLOPE BENCH, BUT DID NOT APPEAR TO IMPACT WEHRMAN AVENUE BELOW.

BRIDGE NO. HAM-71-0381
THE OBSERVATIONS MADE WHILE ON SITE DID NOT INDICATE THE PRESENCE OF ANY OBVIOUS GEOTECHNICAL RELATED CONCERNS BASED ON THE FEATURES VISIBLE AT THE TIME OF OUR SITE RECONNAISSANCE.

BRIDGE NO. HAM-71-0396
THE OBSERVATIONS MADE WHILE ON SITE DID NOT INDICATE THE PRESENCE OF ANY OBVIOUS GEOTECHNICAL RELATED CONCERNS BASED ON THE FEATURES VISIBLE AT THE TIME OF OUR SITE RECONNAISSANCE. BASED ON A CURSORY REVIEW OF THE ORIGINAL I-71 CONSTRUCTION PLANS AND OUR UNDERSTANDING THAT A ROCK CUT WAS MADE IN THE VICINITY OF THE PROPOSED STANTON BRIDGE, IT WAS ANTICIPATED THAT BEDROCK EXPOSURES ON EITHER SIDE OF I-71 MAY BE VISIBLE. HOWEVER, DUE TO THE WEATHERING OF THE SHALE BEDROCK, BEDROCK EXPOSURES WERE NOT OBSERVED.

BRIDGE NO. HAM-71-0322E
THE OBSERVATIONS MADE DURING THE RECONNAISSANCE INDICATED THAT THE PROPOSED RAMP F BRIDGE WIDENING WOULD ENCROACH ONTO A VERY STEEPLY SLOPING BEDROCK CUT THAT DROPS APPROXIMATELY 25 FEET IN ELEVATION. THE TERRAIN WAS MODERATELY WOODED WITH A COUPLE OF ISOLATED SOURCES OF SEEPAGE FROM THE EXPOSED BEDROCK SLOPE FACE OPPOSITE THAT SUPPORTING THE EXISTING RAMP F FOUNDATIONS.

BRIDGE NO. HAM-71-0402E
THE BRIDGE WAS IN A FAIRLY WOODED AREA OF THE PROJECT SITE IMMEDIATELY BEHIND AN EXISTING SALVAGE YARD. THE OBSERVATIONS MADE WHILE ON SITE DID NOT INDICATE THE PRESENCE OF ANY OBVIOUS GEOTECHNICAL RELATED CONCERNS BASED ON THE FEATURES VISIBLE AT THE TIME OF OUR SITE RECONNAISSANCE.

BRIDGE NO. HAM-71-0450
THE OBSERVATIONS MADE WHILE ON SITE DID NOT INDICATE THE PRESENCE OF ANY OBVIOUS GEOTECHNICAL RELATED CONCERNS BASED ON THE FEATURES VISIBLE AT THE TIME OF OUR SITE RECONNAISSANCE.

LOCAL ROADS
THE AREAS OF THE PROPOSED WIDENINGS DID NOT EXHIBIT SIGN OF SLOPE INSTABILITY OR ANY OTHER GEOTECHNICAL CONCERNS THAT WOULD BE DETRIMENTAL TO THE PROPOSED ROADWAY IMPROVEMENTS.

SUBSURFACE EXPLORATION

A TOTAL OF 85 SOIL BORINGS WERE DRILLED BY THELEN ASSOCIATES, INC. (THELEN) BETWEEN MAY 12, 2014 AND JUNE 6, 2014 TO ASSESS THE SUBSURFACE CONDITIONS WITHIN THE HAM-71-3.81 PROJECT LIMITS. OF THE 85 BORINGS, 55 TEST BORINGS WERE DRILLED WITH A CME-55 TRACK RIG ADVANCING EITHER 3.5-INCH SOLID STEM AUGERS (SSA) OR 3-⁎-INCH INTERNAL HOLLOW STEM AUGERS TO EITHER THE TOP OF BEDROCK OR BOTTOM OF BOREHOLE. THE AUTOMATIC HAMMER FOR THE CME-55 TRACK RIG WAS CALIBRATED ON JULY 21, 2013, AND HAD A DRILL ROD ENERGY RATIO OF 88.5%. THE REMAINING BORINGS WERE DRILLED WITH A CME 550-X ATV RIG ADVANCING 3-⁎-INCH INTERNAL HOLLOW STEM AUGERS TO EITHER THE TOP OF BEDROCK OR BOTTOM OF BOREHOLE. THE AUTOMATIC HAMMER FOR THE CME-550-X ATV RIG WAS CALIBRATED ON AUGUST 2, 2013, AND HAD A DRILL ROD ENERGY RATIO OF 91.6%. IN BORINGS WHERE BEDROCK CORING WAS REQUIRED, THE SAMPLING OF THE BEDROCK WAS PERFORMED IN GENERAL ACCORDANCE WITH THE $\frac{7}{32}$STANDARD PRACTICE FOR ROCK CORE DRILLING AND SAMPLING OF ROCK FOR SITE INVESTIGATION$\frac{9}{32}$, ASTM D 2113, USING AN NQ-SIZE DOUBLE TUBE-SWIVEL BARREL WITH A DIAMOND BIT. FOUR (4) TEST PITS WERE ALSO PERFORMED ALONG RAMP A AND RAMP B GENERALLY BETWEEN STATIONS 370+00 AND 374+75 (RAMP A) AND STATIONS 464+75 AND 469+50 (RAMP B). THE TEST PITS WERE EXCAVATED WITH A KOMATSU PC 200LC TRACK HOE BY KOKOSING CONSTRUCTION CO. (KOKOSING) UNDER THE GENERAL SUPERVISION OF AN HDR GEOTECHNICAL ENGINEER ON OCTOBER 15 AND 22, 2014.

EXPLORATION FINDINGS

GENERAL
A BURIED VALLEY THAT WAS PREVIOUSLY FILLED WAS PRESENT IN THE AREA OF RAMPS A AND B AND THE EAST END OF THE HAM-71-0381 (MLK) BRIDGE. THE FILL IN THIS AREA GENERALLY CONSISTED OF COHESIVE SOIL AND CONSTRUCTION DEBRIS. DEEP FILLED VALLEYS WITH ASSOCIATED DEEPER BEDROCK WERE ALSO ENCOUNTERED NEAR THE VICTORY PARKWAY BRIDGE AND IN THE AREA AROUND THE MLK BRIDGE. NATURAL SOILS IN THE FILLED VALLEY AREAS CONSISTED OF GLACIAL TILL, LACUSTRINE AND RESIDUAL SOILS. BEDROCK WAS GENERALLY SHALLOW ALONG THE MAJORITY OF THE MAINLINE IR-71. ADDITIONAL DETAILS OF THE EXPLORATION FINDINGS ARE INCLUDED IN THE FOLLOWING PARAGRAPHS.

MAINLINE IR-71, RAMPS, WALLS AND BRIDGES
THE MAJORITY OF THE BORINGS DRILLED ALONG THE IR-71 MAINLINE AND SOME RETAINING WALL LOCATIONS WERE DRILLED THROUGH THE PAVED SHOULDER AND ENCOUNTERED A PAVEMENT SECTION RANGING IN THICKNESS FROM 12 TO 20.5 INCHES.

FILL WAS ENCOUNTERED IN MOST OF THE IR-71 MAINLINE PAVEMENT SUBGRADE BORINGS; BORINGS PERFORMED FOR RAMPS A AND B; RAMPS C, D AND E NORTH OF LINCOLN AVENUE, AND MOST OF THE BRIDGE BORINGS. THE FILL MATERIALS GENERALLY CONSISTED OF SILT AND CLAY (A-6a), SILTY CLAY (A-6b), CLAY (A-7-6), AND SANDY SILT (A-4a), WITH GRAVEL/STONE FRAGMENTS WITH SAND, SILT, AND/OR CLAY (A-1-b, A-2-4, A-2-6), AND COARSE AND FINE SAND (A-3a) ENCOUNTERED TO A LESSER EXTENT. THE FILL WAS ENCOUNTERED TO DEPTHS OF UP TO 31.5 FEET WITH THE DEEPER FILL LOCATED: IN THE AREA OF RAMPS A AND B AT THE EXISTING EAST MLK EMBANKMENT; AT THE WEST END OF THE MLK BRIDGE; THE HAM-71-0450 (VICTORY PARKWAY) BRIDGE; AND, WALL A3A. RUBBLE FILL CONSISTING OF CONSTRUCTION MATERIALS WITH BRICKS, CONCRETE, ASPHALT, CINDERS, WOOD AND METAL WAS ENCOUNTERED IN THE AREA OF RAMPS A AND B, INCLUDING WALL A3A AND BELOW THE EAST END OF THE MLK BRIDGE. ORGANIC SILT (A-8a) WAS ALSO ENCOUNTERED AT WALL A3A.

DRAWN JTB | CHECKED DMV

SOIL PROFILE
GENERAL NOTES

HAM-71-3.81

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GLACIAL TILL WAS ENCOUNTERED BELOW THE FILL IN SOME OF THE RAMP A AND RAMP B BORINGS WITH A THICKNESS OF 4 TO 18 FEET. GLACIAL TILL WAS PRESENT AT SEVERAL OF THE RETAINING WALL BORINGS WITH A THICKNESS GENERALLY LESS THAN 5 FEET. THICKER GLACIAL TILL, UP TO 20 FEET THICK, WAS ENCOUNTERED IN SOME BORINGS PERFORMED IN THE AREA OF RETAINING WALLS A3A, C1A, C2A, C3A, C3B, C3C AND E3A. THE GLACIAL TILL CONSISTED OF CLAY (A-7-6), SILT AND CLAY (A-6a), AND SILTY CLAY (A-6b) WITH OCCASIONAL SEAMS OF SILT (A-4b). BELOW THE GLACIAL TILL, SOFT TO STIFF LACUSTRINE SOILS WERE FOUND AT: THE RAMP A AND RAMP B BORINGS; HAM-71-0381 AND HAM-71-0450C BRIDGE BORINGS; AND, WALL A3A, C1A, C2A, C3B, C3C, D1A AND E3A BORINGS. THESE SOILS WERE APPROXIMATELY 8.5 TO 27.5 FEET THICK AND CONSISTED OF SANDY SILT (A-4a), SILT AND CLAY (A-6a), SILTY CLAY (A-6b), AND CLAY (A-7-6).

NATIVE, COHESIVE SOIL (RESIDUUM) WAS ENCOUNTERED BENEATH THE EXISTING PAVEMENT, FILL AND/OR GLACIAL TILL AND LACUSTRINE SOILS IN SOME OF THE BORINGS, GENERALLY IN THE OLD VALLEY AREAS. THE LACUSTRINE SOILS CONSISTED OF SILTY CLAY (A-6b), SILT AND CLAY (A-6a), CLAY (A-7-6), AND SANDY SILT (A-4a) WITH VARIOUS SECONDARY PROPORTIONS OF GRAVEL, SAND, SILT AND/OR CLAY. AT A FEW BORINGS GRAVEL AND/OR STONE FRAGMENTS WITH SAND (A-1-b) WAS PRESENT IMMEDIATELY ABOVE BEDROCK. THE RESIDUUM RANGED FROM 1.5 FEET TO 19 FEET THICK AND GENERALLY EXHIBITED A GRADUAL TRANSITION FROM RESIDUAL SOILS TO HIGHLY/COMPLETELY WEATHERED BEDROCK.

WEATHERED TO UNWEATHERED INTERBEDDED SHALE AND LIMESTONE BEDROCK WAS ENCOUNTERED AT DEPTHS RANGING FROM LESS THAN 1 TO 51 FEET BELOW EXISTING GROUND SURFACE. DEEP ROCK WAS ENCOUNTERED IN THE DEEP EXISTING FILL AREAS ALONG RAMPS A AND B (ELEVATION 749 TO 674, GENERALLY SLOPING FROM SOUTH TO NORTH) AND AT THE VICTORY PARKWAY BRIDGE (HAM-71-0450C) AT ELEVATIONS RANGING FROM 593 TO 619. BEDROCK WAS ENCOUNTERED AT WALLS C1A, C2A AND E3A (ELEVATION 745 TO 714), WALL C3A (ELEVATION 733 TO 757), WALL C3B (ELEVATION 713 TO 703), WALL C3C (ELEVATION 703 TO 686). BEDROCK BELOW THE PLANNED RAMP E RETAINING WALLS RANGED FROM ELEVATION 756 TO 788. BEDROCK WAS ENCOUNTERED AT ELEVATIONS RANGING FROM 737 TO 766 AT THE MLK BRIDGE AND IN HISTORIC BORINGS AT THE RAMP F BRIDGE (HAM-71-0322E) AT ELEVATIONS 792 AND 821.

WHERE WATER WAS ENCOUNTERED, THE WATER LEVELS WERE MEASURED AT DEPTHS OF 8 TO 47.5 FEET.

LOCAL ROADS

ONE BORING WAS DRILLED THROUGH THE EXISTING MLK DRIVE PAVEMENT. AT THIS BORING, THE PAVEMENT INCLUDED 5 INCHES OF ASPHALT CONCRETE OVER 6 INCHES OF PORTLAND CEMENT CONCRETE AND 6 INCHES OF CRUSHED AGGREGATE BASE. ONE BORING DRILLED THROUGH READING ROAD ENCOUNTERED 10 INCHES OF PORTLAND CEMENT CONCRETE PAVEMENT WITH NO BASE. TWO BORINGS DRILLED WITHIN EXISTING GILBERT AVENUE ENCOUNTERED DIFFERENT PAVEMENT SECTIONS. ONE BORING ENCOUNTERED 4 INCHES OF ASPHALT CONCRETE OVER 8 INCHES OF PORTLAND CEMENT CONCRETE AND ONE BORING ENCOUNTERED 12 INCHES OF PORTLAND CEMENT CONCRETE. ALL OTHER BORINGS WERE DRILLED THROUGH EXISTING PARKING LOT PAVEMENT OR TOPSOIL.

EXISTING EMBANKMENT FILL OR GENERAL FILL WAS PRESENT TO DEPTHS OF 12 TO 25.5 FEET ON MLK DRIVE. FIVE FEET OF FILL WAS ENCOUTNERED AT ONE BORING AT LINCOLN AND TO THE TERMINATION DEPTH OF 10 FEET AT FOUR OF THE READING ROAD BORINGS. A TOTAL OF 3 TO 12 FEET OF FILL WAS MEASURED AT THE GILBERT AVENUE BORINGS AND 1.5 TO 1.7 FEET OF FILL AT TWO BORINGS AT STANTON AVENUE. THE FILL GENERALLY CONSISTED OF SILT AND CLAY (A-6a), SILTY CLAY (A-6b), AND CLAY (A-7-6) WITH OCCASIONAL SEAMS OR POCKETS OF SANDY SILT (A-4a), GRAVEL/STONE FRAGMENTS WITH SAND AND SILT (A-2-4), GRAVEL/STONE FRAGMENTS WITH SAND (A-1-b), ORGANIC SILT (A-8a), AND UNCONTROLLED FILL (UCF).

LACUSTRINE SOILS WERE ENCOUTNERED: TO DEPTHS OF 1.5 TO 7 FEET AT TWO BORINGS AT MLK DRIVE; TO DEPTHS OF 6 TO 8 FEET AT TWO BORINGS AT READING ROAD; AND, TO 12 TO 13.5 FEET AT TWO BORINGS AT GILBERT AVENUE. THE SOILS CONSISTED OF SILTY CLAY AND CLAY (A-6b AND A-7-6).

RESIDUUM WAS ENCOUNTERED AT: TWO BORINGS DRILLED FOR MLK DRIVE TO DEPTHS OF 10 TO 20.6 FEET; TWO BORINGS FOR GILBERT AVENUE TO DEPTHS OF 7 TO 8.7 FEET; AND, ONE BORING FOR STANTON AVENUE TO A DEPTH OF 28 FEET. THE RESIDUUM TYPICALLY CONSISTED OF SILT AND CLAY (A-6a), CLAY (A-7-6), AND SANDY SILT (A-4a)

WEATHERED TO UNWEATHERED, INTERBEDDED SHALE AND LIMESTONE BEDROCK WAS ENCOUNTERED NEAR THE TOE OF THE PROPOSED MLK DRIVE EMBANKMENT WIDENING IN THREE BORINGS AT DEPTHS RANGING FROM 15.2 TO 20.6 FEET BELOW EXISTING GROUND SURFACE (ELEVATION 707 TO 754) AND AT A DEPTH OF 28 FEET (ELEVATION 704) AT ONE BORING AT STANTON AVENUE.

ALL BUT ONE BORING WAS DRY DURING AND UPON COMPLETION OF DRILLING. ONE BORING PERFORMED AT STANTON AVENUE ENCOUNTERED WATER AT A DEPTH OF 18 FEET.

SPECIFICATIONS

THIS GEOTECHNICAL EXPLORATION WAS PERFORMED IN ACCORDANCE WITH THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, OFFICE OF GEOTECHNICAL ENGINEERING, SPECIFICATIONS FOR GEOTECHNICAL EXPLORATIONS, DATED JULY 2014.

DRAWN JTB | CHECKED DMV

SOIL PROFILE
GENERAL NOTES

HAM-71-3.81

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SUMMARY OF SOIL TEST DATA
IR 71

EXPLORATION NO. STATION & OFFSET	FROM		TO	SAMPLE ID	% REC	% GR	% CS	% FS	% SILT	% CLAY	LL	PL	PI	% WC	ODOT CLASS (GI)
B-001-0-14	1.1	-	1.6	SS-1	80				AGGREGATE BASE					-	A-1-b (VISUAL) *
STA. 221+50, 5 RT	1.6	-	2.6			2	3	4	41	50	39	22	17	21	A-6b (11) *
416204.341 N	2.6	-	4.1	SS-2	39	BRN GRAVEL STONE FRAGMENTS WITH SAND, SILT, AND CLAY								20	A-2-6 (VISUAL)
1401994.470 E	4.1	-	5.6	SS-3	50	14	8	6	33	39	40	21	19	22	A-6b (11)
	5.6	-	7.1	SS-4	50				SAME AS SS-3					25	A-6b (VISUAL)
B-002-0-14	0.7	-	1.2	SS-1	61				AGGREGATE BASE					-	A-1-b (VISUAL) *
STA. 225+50, 5 RT	1.2	-	2.2			52	12	7	14	15	30	19	11	16	A-2-6 (0) *
416594.681 N	2.2	-	3.2	SS-2	100	41	30	17	9	3	NP	NP	NP	26	A-1-b (0) *
1402077.320 E	3.7	-	5.2	SS-3	100	61	17	9	8	5	NP	NP	NP	13	A-1-a (0)
	5.2	-	6.7	SS-4	100				SAME AS SS-3					13	A-1-a (VISUAL)
B-003-0-14	0.7	-	1.2	SS-1	89				AGGREGATE BASE					-	A-1-b (VISUAL) *
STA. 229+50, 5 RT	1.2	-	2.2			6	4	7	32	51	43	22	21	22	A-7-6 (13) *
416970.211 N	2.2	-	2.7	SS-2	100				SHALE, GRAY					5	Rock (VISUAL) *
1402212.429 E	3.7	-	4.1	SS-3	0				SHALE, GRAY					-	Rock (VISUAL)
B-004-0-14	0.7	-	1	SS-1	80				AGGREGATE BASE					-	A-1-b (VISUAL) *
STA. 233+50, 5 RT	1	-	2			41	14	7	15	23	33	19	14	24	A-6a (2) *
417334.355 N	2.2	-	2.6	SS-2	100				SHALE, GRAY					3	Rock (VISUAL) *
1402377.563 E	3.7	-	4.5	SS-3	110				SAME AS SS-2					6	Rock (VISUAL)
	5.2	-	5.5	SS-4	88				SAME AS SS-2					10	Rock (VISUAL)
B-005-0-14	0.7	-	1.2	SS-1	72				AGGREGATE BASE					-	A-1-b (VISUAL) *
STA. 237+35, 5 RT	1.2	-	2.2			39	10	6	21	24	20	19	1	14	A-4a (2) *
471685.464 N	2.2	-	3.7	SS-2	72	33	11	7	25	24	29	19	10	16	A-4a (3)
1402535.748 E	3.7	-	5.2	SS-3	72			GRAY AND BROWN, SILTY CLAY						11	A-6b (VISUAL)
	5.2	-	6.7	SS-4	72				SAME AS SS-3					12	A-6b (VISUAL)
B-006-0-14	1	-	2.08	SS-1	77	32	11	7	26	24	-	-	-	12	A-4a (VISUAL) *
STA. 241+54, 84 RT	2.5	-	4	SS-2	100				SHALE, GRAY					9	Rock (VISUAL)
418044.059 N	4	-	5.5	SS-3	117				SAME AS SS-2					4	Rock (VISUAL)
1402769.107 E	5.5	-	6.6	SS-4	100				SAME AS SS-2					8	Rock (VISUAL)
B-007-0-14	0.7	-	1.3	SS-1	72				AGGREGATE BASE					-	A-1-b (VISUAL) *
STA. 245+55, 5 RT	1.3	-	2.2			8	10	9	32	41	38	21	17	19	A-6b (10) *
418448.693 N	2.2	-	2.95	SS-2	39	GRAVEL AND/OR STONE FRGMNTS WITH SAND SILT AND CLAY								11	A-2-6 (VISUAL)
1402836.078 E	3.7	-	5.2	SS-3	61	20	11	8	34	27	29	19	10	13	A-4a (5)
	5.2	-	6.7	SS-4	100				SAME AS SS-3					12	A-4a (VISUAL)
B-008-0-14	0.7	-	1.4	SS-1	61				AGGREGATE BASE					-	A-1-b (VISUAL) *
STA. 249+20, 5 RT	1.4	-	2.2			19	19	10	22	30	-	-	-	18	A-6a (VISUAL) *
418793.506 N	2.2	-	3.7	SS-2	72	21	7	5	33	34	34	20	14	16	A-6a (8)
1402955.885 E	3.7	-	5.2	SS-3	19				SAME AS SS-2					18	A-6a (VISUAL)
	5.2	-	5.6	SS-4	76				SAME AS SS-2					-	A-6a (VISUAL)
	5.6	-	6.62						SHALE, GRAY					9	Rock (VISUAL)
B-009-0-14	0.6	-	1.1	SS-1	61				AGGREGATE BASE					-	A-1-a (VISUAL) *
STA. 257+32, 5 RT	1.1	-	2			31	13	9	23	24	32	20	12	18	A-6a (3) *
419528.628 N	2.1	-	3.6	SS-2	78	58	15	8	11	8	28	19	9	19	A-2-4 (0)
1403292.498 E	3.6	-	4.7	SS-3A	100				SAME AS SS-2					14	A-2-4 (VISUAL)
	4.7	-	5.1	SS-3B		32	9	8	24	27	35	21	14	23	A-6a (5)
	5.1	-	5.4	SS-4	88	BRN, SILT AND CLAY, SOME GRAVEL, LITTLE SAND, MOIST (FILL)								23	A-6a (VISUAL)
B-010-0-14	0.8	-	1.3	SS-1	72				AGGREGATE BASE					-	A-1-b (VISUAL) *
STA. 265+25, 5 RT	1.3	-	2.3			3	8	5	51	33	30	20	10	10	A-4b (8) *
420101.520 N	2.3	-	2.5	SS-2	75				SHALE, GRAY					-	A-4b (VISUAL) *
1403832.776 E	2.5	-	3.8						SAME AS SS-2					11	Rock (VISUAL)
	3.8	-	4.6	SS-3	133				SHALE, GRAY					8	Rock (VISUAL)
	5.3	-	6.8	SS-4	100				SAME AS SS-3					10	Rock (VISUAL)
B-011-0-14	0.7	-	1.1	SS-1	78				AGGREGATE BASE					-	A-1-b (VISUAL) *
STA. 273+25, 5 LT	1.1	-	2.2						SAME AS SS-2					15	A-6a (VISUAL) *
420515.435 N	2.2	-	3.7	SS-2	78	15	7	8	36	34	33	21	12	16	A-6a (8)
1404516.033 E	3.7	-	5.2	SS-3	61				SAME AS SS-2					15	A-6a (VISUAL)
	5.2	-	6.7	SS-4	78	12	11	15	33	29	27	18	9	14	A-4a (5)

SUMMARY OF SOIL TEST DATA
IR 71

EXPLORATION NO. STATION & OFFSET	FROM		TO	SAMPLE ID	% REC	% GR	% CS	% FS	% SILT	% CLAY	LL	PL	PI	% WC	ODOT CLASS (GI)
B-012-0-14	0.7	-	1.2	SS-1	61				AGGREGATE BASE					-	A-1-b (VISUAL) *
STA. 277+25, 5 LT	1.2	-	2.2				6	9	8	37	40	32	18	14	16	A-6a (10) *
420706.497 N	2.2	-	3.7	SS-2	89	3	5	11	36	45	38	20	18	20	A-6b (11) *
1404867.199 E	3.7	-	5.2	SS-3	100				SAME AS SS-2					19	A-6b (VISUAL)
	5.2	-	6.7	SS-4	100				SAME AS SS-2					18	A-6b (VISUAL)
B-013-0-14	1.3	-	1.7	SS-1	61				AGGREGATE BASE					-	A-1-b (VISUAL) *
STA. 281+00, 70 LT	1.7	-	2.8						SAME AS SS-2					14	A-6b (VISUAL) *
420962.785 N	2.8	-	4.3	SS-2	100	4	5	10	36	45	40	20	20	20	A-6b (12)
1405142.627 E	4.3	-	5.8	SS-3	100	15	6	9	29	41	40	22	18	22	A-6b (10)
	5.8	-	7.3	SS-4	100				SAME AS SS-3					26	A-6b (VISUAL)
B-014-0-14	0.7	-	1	SS-1	61				AGGREGATE BASE					-	A-1-b (VISUAL) *
STA. 285+00, 5 LT	1	-	2.2						SAME AS SS-2					15	A-6a (VISUAL) *
421165.590 N	2.2	-	3.7	SS-2	100	18	7	6	34	35	35	21	14	16	A-6a (8)
1405487.940 E	3.7	-	5.2	SS-3	100	9	6	12	34	39	37	21	16	18	A-6b (10)
	5.2	-	6.7	SS-4	100				SAME AS SS-3					19	A-6b (VISUAL)
B-015-0-14	0.8	-	1.2	SS-1	67				AGGREGATE BASE					-	A-1-b (VISUAL) *
STA. 289+00, 70 LT	1.2	-	2.3				32	13	8	22	25	31	19	12	15	A-6a (3) *
421497.877 N	2.3	-	3.8	SS-2	6				SAME AS SS-1					11	A-6a (VISUAL)
1405711.453 E	3.8	-	5.3	SS-3	86	0	12	9	35	44	38	22	16	17	A-6b (10)
	5.3	-	6.8	SS-4	100				SAME AS SS-3					18	A-6b (VISUAL)
B-016-0-14	0.9	-	1.2	SS-1	53				AGGREGATE BASE					-	A-1-b (VISUAL) *
STA. 293+00, 68 LT	1.2	-	2.4						SAME AS SS-2					15	A-6a (VISUAL) *
421810.950 N	2.4	-	3.32	SS-2	100	9	10	10	35	36	35	21	14	16	A-6a (9)
1405952.987 E	3.9	-	5.4	SS-3	100	20	7	5	32	36	32	20	12	14	A-6a (7)
	5.4	-	6.9	SS-4	100				SAME AS SS-3					18	A-6a (VISUAL)
B-017-0-14	0.6	-	1.1	SS-1	61				AGGREGATE BASE					-	A-1-b (VISUAL) *
STA. 297+01, 68 RT	1.1	-	2.1						SAME AS SS-2					12	A-6a (VISUAL) *
422053.914 N	2.1	-	3.6	SS-2	100	2	7	7	42	42	36	21	15	16	A-6a (10)
1406298.810 E	3.6	-	5.1	SS-3	100	11	7	8	33	41	39	21	18	16	A-6b (11)
	5.1	-	6.6	SS-4	61				SAME AS SS-3					16	A-6b (VISUAL)
B-018-0-14	0.9	-	1.4	SS-1	78				AGGREGATE BASE					-	A-1-b (VISUAL) *
STA. 301+00, 5 LT	1.4	-	2.4			14	3	7	34	42	40	24	16	16	A-6b (10) *
422400.654 N	2.4	-	3.9	SS-2	72	2	3	5	37	53	42	24	18	14	A-7-6 (12)
1406500.759 E	3.9	-	5.4	SS-3	100	SHALE, BROWN, HIGHLY TO MODERATELY WEATHERED								17	Rock (VISUAL)
	5.4	-	6.9	SS-4	100				SAME AS SS-3					14	Rock (VISUAL)
B-019-0-14	0.8	-	1.3	SS-1	67				AGGREGATE BASE					-	A-1-b (VISUAL) *
STA. 305+07, 72 RT	1.3	-	2.3			11	10	6	30	43	-	-	-	13	A-6b (VISUAL) *
422575.243 N	2.3	-	3.13	SS-2	95				SHALE, GRAY					10	Rock (VISUAL)
1406864.699 E	3.8	-	5.3	SS-3	100				SAME AS SS-2					12	Rock (VISUAL)
	5.3	-	6.8	SS-4	100				SAME AS SS-2					18	Rock (VISUAL)
B-020-0-14	1	-	1.4	SS-1	53				AGGREGATE BASE					-	A-1-b (VISUAL) *
STA. 309+00, 70 RT	1.4	-	2.5			54	8	6	5	27	-	-	-	14	A-2-6 (VISUAL) *
422707.245 N	2.5	-	3	SS-2	100	SHALE, BRN, HIGHLY TO MODERATELY WEATHERED								10	Rock (VISUAL)
1407212.498 E	4	-	5.3	SS-3	100				SAME AS SS-2					12	Rock (VISUAL)
	5.5	-	6.5	SS-4	100				SAME AS SS-2					15	Rock (VISUAL)
B-034-0-14	0.7	-	1.1	SS-1	53				AGGREGATE BASE					-	A-1-b (VISUAL) *
STA. 256+50, 78 LT	1.1	-	2.2			12	12	14	30	32	27	17	10	14	A-4a (5) *
1403178.235 E	2.5	-	4	SS-2		14	12	14	30	30	27	17	10	11	A-4a (5)
419502.381 N	5	-	6	SS-3A	53				SAME AS SS-2B					17	A-4a (VISUAL)
	6	-	6.5	SS-3B					GRAY, COARSE AND FINE SAND					9	A-3a (VISUAL)
	7.5	-	9	SS-4	47	4	7	11	22	56	50	19	31	24	A-7-6 (18)
	10	-	11.5	SS-5	13				SAME AS ST-1					16	A-6a (VISUAL)
	12.5	-	14	SS-6	100				SAME AS ST-1					19	A-6a (VISUAL)
	15	-	16.5	SS-7	100				SAME AS ST-1					16	A-6a (VISUAL)
	17.5	-	19.5	ST-1	100	3	5	10	44	38	29	18	11	21	A-6a (8)
	19.5	-	21	SS-8	67				SAME AS ST-1					25	A-6a (VISUAL)
	25	-	26.5	SS-9	100				SAME AS ST-1					18	A-6a (VISUAL)
	30	-	31.5	SS-10	100	3	3	5	44	45	34	21	13	22	A-6a (9)
	35	-	36.5	SS-11	33				SAME AS SS-10					22	A-6a (VISUAL)
	40	-	40.58	SS-12	100				SHALE, GRAY, FISSILE					10	Rock (VISUAL)

DRAWN JTB | CHECKED SPR

SOIL PROFILE

SUMMARY OF SOIL TEST DATA

HAM-71-3.81

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SUMMARY OF SOIL TEST DATA
IR 71

EXPLORATION NO. STATION & OFFSET	FROM		TO	SAMPLE ID	% REC	% GR	% CS	% FS	% SILT	% CLAY	LL	PL	PI	% WC	ODOT CLASS (GI)
B-042-0-14	0	-	0.5	SS-1A	71	16	14	17	26	27	27	18	9	14	A-4a (4)
STA. 271+10, 80 LT	0.5	-	1.42	SS-1B		65	14	7	8	6	19	17	2	14	A-1-a (0)
420480.413 N	2.5	-	3.92	SS-2	106	6	1	2	47	44	34	20	14	13	A-6a (10)
1404290.792 E	5	-	5.5	SS-3	100	SHALE, BROWN, HIGHLY TO MODERATELY WEATHERED								12	Rock (VISUAL)
	7.5	-	8.75	SS-4	96	SAME AS SS-3								13	Rock (VISUAL)
	10	-	10.83	SS-5	0	SAME AS SS-3								-	Rock (VISUAL)
	12.5	-	13.33	SS-6		SHALE, GRAY, SLIGHTLY WEATHERED								7	Rock (VISUAL)
B-059-0-14	0	-	1.5	SS-1	53	SHALE, BROWN, MODERATLEY WEATHERED								17	Rock (VISUAL)
STA. 270+00, 109 RT	2.5	-	4	SS-2	100	SAME AS SS-1								20	Rock (VISUAL)
420262.095 N	5	-	5.75	SS-3	80	SAME AS SS-1								14	Rock (VISUAL)
1404284.345 E	7.5	-	8.83	SS-4	53	SAME AS SS-1								13	Rock (VISUAL)
	10	-	11.5	SS-5	100	SAME AS SS-1								17	Rock (VISUAL)
	12.5	-	13.5	SS-6	100	SAME AS SS-1								13	Rock (VISUAL)
	15	-	16	SS-7	100	SAME AS SS-1								15	Rock (VISUAL)
	17.5	-	19	SS-8	100	SAME AS SS-1								13	Rock (VISUAL)
B-078-0-14	0	-	1.5	SS-1	60	SAME AS SS-2								18	A-6b (VISUAL)
STA. 294+00, 110, RT	2.5	-	4	SS-2	67	40	9	9	19	23	35	18	17	13	A-6b (3)
421787.241 N	5	-	6.5	SS-3	13	SAME AS SS-2								11	A-6b (VISUAL)
1406155.761 E	7.5	-	8.42	SS-4	55	11	6	8	36	39	33	18	15	19	A-6a (10)
	10	-	11.5	SS-5	93	SAME AS SS-9								14	A-6b (VISUAL)
	12.5	-	14	SS-6	93	SAME AS SS-9								12	A-6b (VISUAL)
	15	-	16.5	SS-7	73	SAME AS SS-9								16	A-6b (VISUAL)
	17.5	-	19	SS-8	100	SAME AS SS-9								16	A-6b (VISUAL)
	20	-	21.5	SS-9	87	4	4	7	41	44	37	19	18	15	A-6b (11)
	25	-	26.5	SS-10	53	SAME AS SS-9								16	A-6b (VISUAL)
	30	-	31.5	SS-11	13	SAME AS SS-9								11	A-6b (VISUAL)
	35	-	36.5	SS-12	47	SAME AS SS-9								13	A-6b (VISUAL)
	40	-	41.5	SS-13	13	SAME AS SS-9								12	A-6b (VISUAL)
	45	-	47	ST-1	100	5	6	21	34	34	27	15	12	27	A-6a (7)
	47	-	48.5	SS-14	100	3	5	27	34	31	-	-	-	-	A-4a (VISUAL)
	50	-	51.5	SS-15	100	0	1	5	50	44	34	20	14	27	A-6a (10)
	55	-	56.5	SS-16	100	0	3	6	56	35	32	21	11	27	A-6a (8)
	60	-	61.5	SS-17	100	0	1	1	39	59	38	22	16	29	A-6b (10)
	64	-	64.8	ST-2	100	31	15	11	24	19	27	17	10	24	A-4a (2)
	64.8	-	66.3	SS-18	47	SAME AS ST-2								19	A-4a (VISUAL)
	70	-	70.8	SS-19	100	SHALE, GRAY								12	Rock (VISUAL)
B-079-0-14	0	-	1.5	SS-1	75	SAME AS SS-2								16	A-6a (VISUAL)
STA. 295+55, 115 LT	2.5	-	4	SS-2	87	5	7	14	37	37	34	19	15	16	A-6a (10)
422044.918 N	5	-	6.5	SS-3	80	SAME AS SS-2								18	A-6a (VISUAL)
1406064.825 E	7.5	-	9	SS-4	100	1	2	9	37	51	46	20	26	24	A-7-6 (16)
	10	-	11.5	SS-5	100	SAME AS ST-1								15	A-6a (VISUAL)
	12.5	-	14	SS-6	100	SAME AS ST-1								12	A-6a (VISUAL)
	15	-	17	ST-1	54	12	8	14	31	35	33	18	15	15	A-6a (8)
	17	-	18.5	SS-7	60	7	4	7	33	49	42	31	11	24	A-7-5 (9)
	20	-	21.5	SS-8	100	3	3	14	42	38	33	19	14	19	A-6a (10)
	25	-	26.5	SS-9	100	1	4	40	34	21	22	20	2	18	A-4a (4)
	30	-	31.5	SS-10	100	2	4	15	40	39	32	17	15	19	A-6a (10)
	35	-	36.5	SS-11	100	0	0	6	58	36	31	22	9	28	A-4b (8)
	40	-	41.5	SS-12	100	0	0	3	39	58	39	22	17	31	A-6b (11)
	45	-	45.7	ST-2	100	0	0	1	35	64	45	26	19	19	A-7-6 (13)
	45.7	-	46.5	SS-13	100	SHALE, GRAY, WEATHERED								19	Rock (VISUAL)
	47	-	47.1	SS-14	100	SAME AS SS-13								14	Rock (VISUAL)

SUMMARY OF SOIL TEST DATA
LINCOLN AVENUE

EXPLORATION NO. STATION & OFFSET	FROM		TO	SAMPLE ID	% REC	% GR	% CS	% FS	% SILT	% CLAY	LL	PL	PI	% WC	ODOT CLASS (GI)
B-074-0-14	0.5	-	2	SS-1	72	8	5	3	33	51	40	25	15	22	A-6a (10) *
STA. 18+32, 34 LT	2	-	3.5	SS-2	72	4	3	7	32	54	47	22	25	24	A-7-6 (15)
418941.759 N	3.5	-	5	SS-3	81	SAME AS SS-2								28	A-7-6 (VISUAL)
1402298.340 E	5	-	6.5	SS-4	89	SAME AS SS-5								25	A-6b (VISUAL)
	6.5	-	8	SS-5	100	0	2	7	49	42	37	19	18	19	A-6b (11)

SUMMARY OF SOIL TEST DATA
LINCOLN AVENUE

EXPLORATION NO. STATION & OFFSET	FROM		TO	SAMPLE ID	% REC	% GR	% CS	% FS	% SILT	% CLAY	LL	PL	PI	% WC	ODOT CLASS (GI)
B-075-0-14	0	-	1.5	SS-1	67	11	9	14	36	30	32	20	12	16	A-6a (7) *
STA. 20+50, 30 LT	1.5	-	3	SS-2	100	7	4	7	31	51	45	22	23	19	A-7-6 (14)
418915.084 N	3	-	4.5	SS-3	61	SAME AS SS-2								24	A-7-6 (VISUAL)
1402514.739 E	4.5	-	6	SS-4	100	SAME AS SS-2								22	A-7-6 (VISUAL)

SUMMARY OF SOIL TEST DATA
MARTIN LUTHER KING DRIVE

EXPLORATION NO. STATION & OFFSET	FROM		TO	SAMPLE ID	% REC	% GR	% CS	% FS	% SILT	% CLAY	LL	PL	PI	% WC	ODOT CLASS (GI)
B-060-0-14	0	-	1.5	SS-1	94	2	4	11	24	59	61	26	35	28	A-7-6 (20) *
STA. 84+50, 43 LT	1.5	-	3	SS-2	100	4	4	12	39	41	34	18	16	15	A-6b (10) *
419726.572 N	3	-	4.5	SS-3	100	SAME AS SS-2								16	A-6b (VISUAL)
1401761.725 E	4.5	-	6	SS-4	100	5	8	12	38	37	31	22	9	13	A-4a (8)
B-061-0-14	1	-	2.5	SS-1	100	0	3	12	32	53	50	23	27	21	A-7-6 (17) *
STA. 88+50, 50 LT	2.5	-	4	SS-2	89	SAME AS SS-1								27	A-7-6 (VISUAL)
419686.601 N	4	-	5.5	SS-3	100	SAME AS SS-4								21	A-7-6 (VISUAL)
1402154.188 E	5.5	-	7	SS-4	100	14	1	3	23	59	57	26	31	25	A-7-6 (19)
	8.5	-	10	SS-5	89	SAME AS SS-4								15	A-7-6 (VISUAL)
B-062-0-14	0	-	1.5	SS-1	75	58	11	4	16	11	-	-	-	16	A-1-b (VISUAL) *
STA. 91+50, 50 LT	1.5	-	2.33	SS-2	70	8	19	15	33	25	35	22	13	23	A-6a (6) *
419665.625 N	3	-	4.5	SS-3	100	SAME AS SS-2								15	A-6a (VISUAL)
1402452.922 E	4.5	-	6	SS-4	100	SAME AS SS-2								19	A-6a (VISUAL)
B-063-0-14	1	-	2.5	SS-1	81	20	9	8	30	33	35	18	17	17	A-6b (8) *
STA. 95+75, 8 LT	2.5	-	4	SS-2	61	10	8	9	34	39	39	20	19	17	A-6b (11)
419594.256 N	4	-	5.5	SS-3	100	SAME AS SS-2								18	A-6b (VISUAL)
1402873.987 E	5.5	-	7	SS-4	89	SAME AS SS-2								15	A-6b (VISUAL)
	7.5	-	9	SS-5	100	SAME AS SS-8								21	A-7-6 (VISUAL)
	10	-	11.5	SS-6	100	SAME AS SS-8								13	A-7-6 (VISUAL)
	12.5	-	14	SS-7	100	SAME AS SS-8								14	A-7-6 (VISUAL)
	15	-	16.5	SS-8	100	10	11	10	31	38	42	20	22	19	A-7-6 (12)
	17.5	-	19	SS-9	100	SAME AS SS-8								18	A-7-6 (VISUAL)
	20	-	21.5	SS-10	100	SAME AS SS-8								25	A-7-6 (VISUAL)
	25	-	26.5	SS-11	100	SAME AS ST-1								24	A-7-6 (VISUAL)
	30	-	31.5	SS-12	100	SAME AS ST-1								26	A-7-6 (VISUAL)
	31.5	-	32.83	ST-1	100	0	1	5	37	57	51	23	28	24	A-7-6 (17)
B-063-1-14	1	-	2.5	SS-1	81	15	31	16	6	32	30	18	12	17	A-6a (1)
STA. 95+38, 100 LT	2.5	-	4	SS-2	100	SAME AS SS-1								15	A-6a (VISUAL)
419688.600 N	4	-	5.5	SS-3	100	SAME AS SS-4								14	A-6a (VISUAL)
1402843.456 E	5.5	-	7	SS-4	100	8	6	8	43	35	36	21	15	20	A-6a (10)
	8.5	-	10	SS-5	100	4	1	2	44	49	42	22	20	17	A-7-6 (12)
	15	-	16.5	SS-6	50	SAME AS SS-5								19	A-7-6 (VISUAL)
	20	-	21.5	SS-7	100	SHALE, GRAY AND TAN, MODERATELY TO HIGHLY WEATHERED								15	Rock (VISUAL)
	23.5	-	23.5	SS-8		SAME AS SS-7								-	Rock (VISUAL)
B-064-0-14	0.6	-	2.1	SS-1	73	66	20	6	5	3	-	-	-	15	A-2-4 (VISUAL)
STA. 103+15, 67 LT	2.5	-	4	SS-2	53	SAME AS SS-1								15	A-2-4 (VISUAL)
419594.819 N	5	-	6.5	SS-3	73	60	15	13	8	4	NP	NP	NP	15	A-1-a (0)
1403615.812 E	7.5	-	9	SS-4	73	16	17	18	27	22	34	22	12	22	A-6a (3)
	10	-	11	SS-5A	100	SAME AS SS-4								26	A-6a (VISUAL)
	11	-	11.5	SS-5B		17	10	12	32	29	37	20	17	26	A-6b (8)
	12.5	-	14	SS-6	100	24	20	17	23	16	29	24	5	28	A-4a (1)
	15	-	16.5	SS-7	13	SAME AS SS-6								30	A-4a (VISUAL)
	17.5	-	19	SS-8	0	SAME AS SS-6								-	A-4a (VISUAL)
	20	-	21.5	SS-9	100	SAME AS ST-1								21	A-6b (VISUAL)
	23	-	25	ST-1	50	1	3	7	43	46	39	20	19	18	A-6b (12)
	25	-	26.5	SS-10	80	SAME AS ST-1								22	A-6b (VISUAL)
	30	-	30.42	SS-11	100	27	17	7	23	26	37	22	15	52	A-6a (5)
	35.3	-	35.63	SS-12	100	SHALE, GRAY, VERY WEAK								11	Rock (VISUAL)

DRAWN JTB | CHECKED SPR

SOIL PROFILE
SUMMARY OF SOIL TEST DATA

HAM-71-3.81

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SUMMARY OF SOIL TEST DATA
MARTIN LUTHER KING DRIVE

EXPLORATION NO. / STATION & OFFSET	FROM		TO	SAMPLE ID	% REC	% GR	% CS	% FS	% SILT	% CLAY	LL	PL	PI	% WC	ODOT CLASS (GI)
B-065-0-14	0	-	1.5	SS-1	61	18	14	10	27	31	35	21	14	18	A-6a (6) *
STA. 106+00, 35 LT	1.5	-	3	SS-2	67	11	7	9	36	37	39	21	18	16	A-6b (11) *
419543.629 N	3	-	4.5	SS-3	0				SAME AS SS-2					-	A-6b (VISUAL)
1403897.946 E	4.5	-	6	SS-4	100				SAME AS SS-2					20	A-6b (VISUAL)
	6	-	7.5	SS-5	56				SAME AS SS-2					20	A-6b (VISUAL)
	7.5	-	8.25	SS-6A	100				SAME AS SS-2					17	A-6b (VISUAL)
	8.25	-	9	SS-6B		22	36	13	17	12	18	17	1	7	A-2-4 (0)
	9	-	9.75	SS-7A	89				SAME AS SS-6B					14	A-2-4 (VISUAL)
	9.75	-	10.5	SS-7B		7	9	12	38	34	33	19	14	16	A-6a (9)
B-066-0-14	0	-	1.5	SS-1	67	13	10	9	35	33	34	19	15	12	A-6a (9) *
STA. 110+49, 28 LT	1.5	-	3	SS-2	50	12	8	11	33	36	36	19	17	16	A-6b (10) *
419473.811 N	3	-	4.5	SS-3	100				SAME AS SS-2					18	A-6b (VISUAL)
1404347.012 E	4.5	-	6	SS-4	100	22	9	9	30	30	33	19	14	16	A-6a (7)
	7.5	-	9	SS-5		27	11	9	26	27	35	21	14	13	A-6a (5)
	10	-	11.5	SS-6	61				SAME AS SS-7					18	A-6b (VISUAL)
	12.5	-	14	SS-7	100	9	7	12	34	38	37	20	17	18	A-6b (10)
	15	-	16.5	SS-8	22				SAME AS SS-7					19	A-6b (VISUAL)
	17.5	-	19	SS-9	100				SAME AS SS-7					18	A-6b (VISUAL)
	20	-	21	SS-10	67				SAME AS SS-7					28	A-6b (VISUAL)
	25	-	26.5	SS-11	100				SAME AS SS-7					18	A-6b (VISUAL)
	30	-	31.5	SS-12	94				SAME AS SS-7					19	A-6b (VISUAL)
B-067-0-14	0	-	1.5	SS-1	92	23	24	11	19	23	29	18	11	11	A-6a (2) *
STA. 114+49, 29 LT	1.5	-	3	SS-2	17				SAME AS SS-1					17	A-6a (VISUAL) *
419330.568 N	3	-	4.5	SS-3	100	9	6	9	35	41	41	21	20	18	A-7-6 (12)
1404723.793 E	4.5	-	6	SS-4	89				SAME AS SS-3					19	A-7-6 (VISUAL)
B-068-0-14	0	-	1.5	SS-1	78	22	16	17	22	23	30	25	5	13	A-4a (2) *
STA. 117+09, 45 LT	1.5	-	2.5	SS-2A	81				SAME AS SS-1					-	A-4a (VISUAL) *
419240.733 N	2.5	-	3	SS-2B		BLACK AND BRN, UNCONTROLLED FILL, SOME SAND AND CLAY								46	UCF (VISUAL)
1404969.049 E	3	-	4.5	SS-3	44	40	8	5	17	30	38	21	17	16	A-6b (5)
	4.5	-	6	SS-4	44	35	13	7	17	28	34	19	15	17	A-6a (4)
	6	-	7.5	SS-5	44				SAME AS SS-4					15	A-6a (VISUAL)
	7.5	-	9	SS-6	50				SAME AS SS-4					22	A-6a (VISUAL)
	9	-	10.5	SS-7	67				SAME AS SS-4					27	A-6a (VISUAL)
	10.5	-	12	SS-8	72				SAME AS SS-4					23	A-6a (VISUAL)
	12	-	13.5	SS-9	72	1	2	7	56	34	38	22	16	29	A-6b (10)

SUMMARY OF SOIL TEST DATA
RAMP A

EXPLORATION NO. / STATION & OFFSET	FROM		TO	SAMPLE ID	% REC	% GR	% CS	% FS	% SILT	% CLAY	LL	PL	PI	% WC	ODOT CLASS (GI)
B-046-0-14	0.7	-	2.2	SS-1	44	13	10	7	32	38	42	20	22	22	A-7-6 (12) *
STA. 359+50, 1 LT	2.5	-	3.5	SS-2	100				SHALE, GRAY, UNWEATHERED					7	Rock (VISUAL)
419663.884 N															
1403482.098 E															
B-047-0-14	0.8	-	2.3	SS-1	60	28	4	4	39	25	30	18	12	8	A-6a (7) *
STA. 361+00, 11 LT	2.3	-	3.22	SS-2	76				SHALE, GRAY					-	Rock (VISUAL)
419777.307 N	3.8	-	4.55	SS-3	107				SAME AS SS-2					11	Rock (VISUAL)
1403581.613 E	5.3	-	6.3	SS-4	100				SAME AS SS-2					9	Rock (VISUAL)
B-048-0-14	0	-	1.5	SS-1	80	30	7	8	28	27	31	19	12	10	A-6a (5)
STA. 364+00, 20 RT	2.5	-	4	SS-2	80				SHALE, BROWN, MODERATELY WEATHERED					14	Rock (VISUAL)
419943.015 N	5	-	5.75	SS-3	120				SAME AS SS-2					16	Rock (VISUAL)
1403834.023 E	7.5	-	7.75	SS-4	0				SAME AS SS-2					-	Rock (VISUAL)
	10	-	10.58	SS-5	86				SAME AS SS-2					10	Rock (VISUAL)
	12.5	-	12.58	SS-6	0				SAME AS SS-2					-	Rock (VISUAL)
	15	-	15.5	SS-7	100				SHALE, GRAY, MODERATELY WEATHERED					12	Rock (VISUAL)
	17.5	-	18.33	SS-8	96				SHALE, GRAY, UNWEATHERED					12	Rock (VISUAL)
B-049-0-14	0	-	1.5	SS-1	73	15	8	10	28	39	38	22	16	22	A-6b (9)
STA. 365+50, 24 LT	2.5	-	4	SS-2	80	33	43	18	3	3	NP	NP	NP	5	A-1-b (0)
420071.037 N	5	-	6.5	SS-3	100				SAME AS SS-2					8	A-1-b (VISUAL)
1403925.159 E															

SUMMARY OF SOIL TEST DATA
RAMP A

EXPLORATION NO. / STATION & OFFSET	FROM		TO	SAMPLE ID	% REC	% GR	% CS	% FS	% SILT	% CLAY	LL	PL	PI	% WC	ODOT CLASS (GI)
B-049A-0-14	0.7	-	2.2	SS-1	80				SHALE, GRAY					14	Rock (VISUAL)
STA. 365+50, 31 LT	2.5	-	2.92	SS-2	100				SAME AS SS-1					6	Rock (VISUAL)
420076.713 N															
1403921.062 E															
B-050-0-14	0	-	1.5	SS-1	61	8	9	14	38	31	41	25	16	17	A-7-6 (9)
STA. 369+00, 45 RT	2.5	-	4	SS-2	72	4	5	15	34	42	42	23	19	16	A-7-6 (12)
420028.356 N	5	-	6.5	SS-3	56				SAME AS SS-2					24	A-7-6 (VISUAL)
1404232.164 E	7.5	-	9	SS-4	56	13	7	16	35	29	35	20	15	19	A-6a (8)
	10	-	11.5	SS-5	100	4	6	14	39	37	39	20	19	19	A-6b (12)
	12.5	-	14	SS-6	100				SAME AS SS-5					15	A-6b (VISUAL)
	15	-	16.5	SS-7	100				SAME AS SS-5					12	A-6b (VISUAL)
	17.5	-	19	SS-8	56				GRAY AND TAN, SANDY SILT, SOME CLAY, LITTLE GRAVEL					16	A-4a (VISUAL)
	20	-	21.5	SS-9	56				SAME AS ST-1					15	A-4a (VISUAL)
	22	-	24	ST-1	100	11	7	15	38	29	23	16	7	15	A-4a (6)
	24	-	25.5	SS-10	61				SAME AS ST-1					17	A-4a (VISUAL)
	27.5	-	29	SS-11	100				SAME AS ST-1					28	A-4a (VISUAL)
	30	-	31.5	SS-12	100				SAME AS ST-1					34	A-4a (VISUAL)
	35	-	36.5	SS-13	33				SAME AS ST-1					24	A-4a (VISUAL)
	40	-	41.5	SS-14	100	0	0	1	44	55	40	23	17	17	A-6b (11)
	44.9	-	44.94	SS-15	100				INTERBEDDED SHALE AND LIMESTONE					-	Rock (VISUAL)
B-051-0-14	0	-	1.5	SS-1	53	16	11	12	29	32	38	21	17	15	A-6b (8)
STA. 369+25, 50 LT	2.5	-	4	SS-2					SAME AS SS-6					12	A-4a (VISUAL)
420080.383 N	5	-	6.5	SS-3	67				SAME AS SS-6					15	A-4a (VISUAL)
1404315.410 E	7.5	-	9	SS-4	100				SAME AS SS-6					21	A-4a (VISUAL)
	10	-	11.5	SS-5	100				SAME AS SS-6					13	A-4a (VISUAL)
	12.5	-	14	SS-6	100	16	9	14	30	31	27	17	10	12	A-4a (5)
	15	-	16.5	SS-7	100				SAME AS SS-6					15	A-4a (VISUAL)
	17.5	-	19	SS-8	47				SAME AS SS-6					14	A-4a (VISUAL)
	20	-	21.5	SS-9	100				SAME AS ST-1					20	A-7-6 (VISUAL)
	22	-	24	ST-1	90	0	0	0	23	77	47	24	23	21	A-7-6 (15)
	24	-	25.5	SS-10	100				SAME AS ST-1					28	A-7-6 (VISUAL)
	30	-	31.5	SS-11	20				SAME AS ST-1					19	A-7-6 (VISUAL)
	35	-	36.5	SS-12	13				LIMESTONE, GRAY					6	Rock (VISUAL)
	40	-	40.4	SS-13	100				INTERBEDDED SHALE AND LIMESTONE					3	Rock (VISUAL)
B-053-0-14	1	-	2.5	SS-1	67				SAME AS ST-1					17	A-7-6 (VISUAL)
STA. 373+34, 89 RT	2.5	-	4	SS-2	100				SAME AS ST-1					26	A-7-6 (VISUAL)
419690.465 N	5	-	6.5	SS-3	100				SAME AS ST-1					26	A-7-6 (VISUAL)
1404198.772 E	7.5	-	9	SS-4	100				SAME AS ST-1					25	A-7-6 (VISUAL)
	10	-	11.5	SS-5	75				SAME AS ST-1					25	A-7-6 (VISUAL)
	11.5	-	12.83	ST-1	100	15	4	5	33	43	42	22	20	20	A-7-6 (12)
	13.5	-	15	SS-6	11				SAME AS ST-1					24	A-7-6 (VISUAL)
	15	-	16.5	SS-7	78				SAME AS ST-1					25	A-7-6 (VISUAL)
	17.5	-	19	SS-8	61				DARK GRAY, CLAY, SOME SILT					19	A-7-6 (VISUAL)
	20	-	20.58	SS-9	100	0	0	0	33	67	44	24	20	10	A-7-6 (13)
	25	-	25.17	SS-10	100				SHALE, MODERATELY WEATHERED					22	Rock (VISUAL)
B-054-0-14	0	-	1.5	SS-1	40	38	12	10	20	20	48	29	19	16	A-7-6 (3)
STA. 369+67, 1 LT	2.5	-	4	SS-2	20				SAME AS SS-1					10	A-7-6 (VISUAL)
420013.547 N	5	-	6.5	SS-3	100				SAME AS SS-5					14	A-6a (VISUAL)
1404306.364 E	7.5	-	9	SS-4	0				SAME AS SS-5					-	A-6a (VISUAL)
	10	-	11.5	SS-5	100	5	9	15	42	29	30	18	12	15	A-6a (8)
	12.5	-	13	SS-6A	100				SAME AS SS-5					13	A-6a (VISUAL)
	13	-	13.33	SS-6B					BROWN, COARSE AND FINE SAND					14	A-3a (VISUAL)
	13.33	-	14	SS-6C					SAME AS SS-5					-	A-6a (VISUAL)
	15	-	16.5	SS-7	87				SAME AS SS-5					15	A-6a (VISUAL)
	17.5	-	19	SS-8	100	0	0	0	21	79	46	23	23	19	A-7-6 (14)
	20	-	21.5	SS-9	0				SAME AS SS-8					-	A-7-6 (VISUAL)
	25	-	26.5	SS-10					SAME AS SS-8					30	A-7-6 (VISUAL)
	30	-	31.5	SS-11	100				SAME AS SS-8					28	A-7-6 (VISUAL)
	35	-	36.5	SS-12	33				SAME AS SS-8					25	A-7-6 (VISUAL)
	40	-	40.58	SS-13	100				SHALE, GRAY, UNWEATHERED					8	Rock (VISUAL)

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SOIL PROFILE

SUMMARY OF SOIL TEST DATA

HAM-71-3.81

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SUMMARY OF SOIL TEST DATA
RAMP B

EXPLORATION NO. / STATION & OFFSET	FROM		TO	SAMPLE ID	% REC	% GR	% CS	% FS	% SILT	% CLAY	LL	PL	PI	% WC	ODOT CLASS (GI)
B-052-0-14	0	-	1.5	SS-1	60				SAME AS SS-2					22	A-7-6 (VISUAL)
STA. 465+00, 75 RT	2.5	-	4	SS-2	83	20	12	10	25	33	41	20	21	19	A-7-6 (9)
419576.475 N	5	-	6.5	SS-3	13				SAME AS SS-2					22	A-7-6 (VISUAL)
1404384.325 E	7.5	-	9	SS-4	73	36	11	14	22	17	-	-	-	30	A-4a (VISUAL)
	10	-	11.5	SS-5	40	7	6	13	34	40	38	21	17	24	A-6b (11)
	12.5	-	14	SS-6	33	ORGANIC SILT, SOME GRAVEL, ASH, CINDERS, WOOD DEBRIS								47	A-8a (VISUAL)
	15	-	15.42	SS-7	96	SHALE, GRAY, WEATHERED								10	Rock (VISUAL)
	17.5	-	18.17	SS-8	105	SAME AS SS-7								10	Rock (VISUAL)
B-054-1-14	0	-	1.5	SS-1	33	SILTY CLAY, SOME SND & GRVL, TRACE ASPHLT DEBRIS (FILL)								21	A-6b (VISUAL)
STA. 469+03, 135 RT	2.5	-	4	SS-2	60	7	2	3	43	45	47	25	22	20	A-7-6 (14)
419937.861 N	5	-	6.5	SS-3	13				SAME AS SS-2					7	A-7-6 (VISUAL)
1404567.085 E	7.5	-	8.83	SS-4	100	SHALE, BROWN, HIGHLY TO MODERATELY WEATHERED								16	Rock (VISUAL)
	10	-	11.25	SS-5	100	SAME AS SS-4								12	Rock (VISUAL)
B-055-0-14	0	-	1.5	SS-1	7				SAME AS SS-2					16	A-7-6 (VISUAL)
STA. 473+00, 43 LT	2.5	-	4	SS-2	67	13	9	8	29	41	44	22	22	24	A-7-6 (13)
420360.836 N	5	-	6.5	SS-3	53				SAME AS SS-2					24	A-7-6 (VISUAL)
1404574.852 E	7.5	-	9	SS-4	60				SAME AS SS-2					25	A-7-6 (VISUAL)
	10	-	11.5	SS-5	60				SAME AS SS-2					22	A-7-6 (VISUAL)
	12.5	-	14	SS-6	80				SAME AS SS-2					21	A-7-6 (VISUAL)
	15	-	16.5	SS-7	73	73	11	5	7	4	-	-	-	17	A-2-6 (VISUAL)
	17.5	-	19	SS-8	93	13	8	15	32	32	37	22	15	21	A-6a (8)
	20	-	21.5	SS-9	0				SAME AS SS-8					-	A-6a (VISUAL)
	25	-	26.5	SS-10	0				SAME AS SS-8					-	A-6a (VISUAL)
	30	-	31.5	SS-11	100	8	8	16	41	27	28	16	12	15	A-6a (7)
	35	-	36.5	SS-12	80	0	0	0	30	70	47	24	23	21	A-7-6 (15)
	40	-	41.5	SS-13	100	0	0	0	33	67	43	22	21	28	A-7-6 (13)
	45	-	46.5	SS-14	100	1	3	5	40	51	34	20	14	24	A-6a (10)
	50	-	51	SS-15A	80				SAME AS SS-14					19	A-6a (VISUAL)
	51	-	51.25	SS-15B		SHALE, BROWNISH-GRAY TO GRAY								-	Rock (VISUAL)
	52.5	-	53.25	SS-16	100	SAME AS SS-15B								9	Rock (VISUAL)
B-055-1-14	0	-	1.5	SS-1	75	17	11	12	31	29	34	19	15	14	A-6a (7)
STA. 473+00, 165 RT	2.5	-	4	SS-2	100	UNCONTROLLED FILL, CINDERS AND BRICK FRAGMENTS								26	UCF (VISUAL)
420240.581 N	5	-	6	SS-3A	89	SAME AS SS-2								-	UCF (VISUAL)
1404744.259 E	6	-	6.5	SS-3B		SAME AS ST-1								20	A-7-6 (VISUAL)
	6.5	-	8.5	ST-1	100	1	2	12	30	55	55	22	33	23	A-7-6 (19)
	8.5	-	10	SS-4	94	0	1	1	11	87	57	27	30	23	A-7-6 (19)
	10	-	11	SS-5A	100	SAME AS SS-4								26	A-7-6 (VISUAL)
	11	-	11.5	SS-5B		SAME AS ST-2								25	A-6a (VISUAL)
	11.5	-	12.5	ST-2	100	0	1	2	57	40	30	18	12	27	A-6a (9)
	12.5	-	14	SS-6	33	SAME AS ST-2								24	A-6a (VISUAL)
	15	-	15.5	SS-7	33	GRAVEL, AND/OR STONE FRAGMENTS WITH SAND								-	A-1-b (VISUAL)
	17.5	-	18.5	SS-8	100	SHALE, GRAY, SEVERLY WEATHERED								-	Rock (VISUAL)
B-056-0-14	0	-	1.5	SS-1	93				SAME AS SS-2					13	A-6a (VISUAL)
STA. 476+30, 25 RT	2.5	-	4	SS-2	87	17	10	9	33	31	34	20	14	15	A-6a (7)
420554.567 N	5	-	5.5	SS-3	33				SAME AS SS-2					8	A-6a (VISUAL)
1404852.104 E	7.5	-	9	SS-4	87	0	0	2	28	70	63	28	35	24	A-7-6 (20)
	10	-	11.5	SS-5	100	SAME AS SS-4								22	A-7-6 (VISUAL)
	12.5	-	14	SS-6	93	SHALE, OLIVE-BRN, HIGHLY TO MOD. WEATHERED, VERY WEAK								14	Rock (VISUAL)
	15	-	15.5	SS-7	100	SAME AS SS-6								14	Rock (VISUAL)
	17.5	-	19	SS-8	100	SAME AS SS-6								18	Rock (VISUAL)
	20	-	20.4	SS-9	100	SAME AS SS-6								-	Rock (VISUAL)
	22.5	-	23.3	SS-10	56	SAME AS SS-6								5	Rock (VISUAL)
	25	-	25.2	SS-11	0	SHALE, GRAY, VERY WEAK								-	Rock (VISUAL)

SUMMARY OF SOIL TEST DATA
RAMP C

EXPLORATION NO. / STATION & OFFSET	FROM		TO	SAMPLE ID	% REC	% GR	% CS	% FS	% SILT	% CLAY	LL	PL	PI	% WC	ODOT CLASS (GI)
B-036-0-14	0.17	-	1.5	SS-1		7	8	13	35	37	30	17	13	15	A-6a (9)
STA. 658+05, 20 LT	2.5	-	4	SS-2	100				SAME AS SS-3					14	A-6a (VISUAL)
419746.573 N	5	-	6.5	SS-3	100	13	9	14	34	30	29	16	13	14	A-6a (7)
1403213.356 E	7.5	-	9	SS-4	100				SAME AS SS-3					15	A-6a (VISUAL)
	10	-	11.5	SS-5	100				SAME AS SS-3					14	A-6a (VISUAL)
	12.5	-	14	SS-6	100				SAME AS SS-3					14	A-6a (VISUAL)
	15	-	16.5	SS-7	100	8	8	15	36	33	30	16	14	14	A-6a (8)
	17.5	-	19	SS-8	39				SAME AS SS-7					20	A-6a (VISUAL)
	20	-	21.5	SS-9	100	4	5	6	34	51	48	22	26	-	A-7-6 (16)
	25	-	26.5	SS-10	67				SAME AS ST-1					26	A-6b (VISUAL)
	30	-	31	ST-1	100	22	9	8	25	36	36	18	18	22	A-6b (8)
	31	-	31.8	SS-11A	100				SAME AS ST-1					20	A-6b (VISUAL)
	31.8	-	32.5	SS-11B		23	8	8	33	28	32	18	14	18	A-6a (7)
	35	-	36.5	SS-12	100				SAME AS SS-11B					18	A-6a (VISUAL)
	40	-	40.3	SS-13	100				SHALE, GRAY, VERY WEAK					5	Rock (VISUAL)
B-038-0-14	0	-	1.5	SS-1	78	8	15	10	43	24	37	26	11	15	A-6a (7)
STA. 660+98, 22 LT	2.5	-	4	SS-2	17				SAME AS SS-1					-	A-6a (VISUAL)
419970.516 N	5	-	6.5	SS-3	100				SAME AS ST-1					22	A-7-6 (VISUAL)
1403406.874 E	6.5	-	8.5	ST-1	92	0	1	5	45	49	44	21	23	22	A-7-6 (14)
	8.5	-	10	SS-4	100				SAME AS ST-1					16	A-7-6 (VISUAL)
	10	-	11.5	SS-5	100	0	6	7	35	52	54	25	29	21	A-7-6 (18)
	12.5	-	14	SS-6	100	0	4	7	51	38	36	21	15	14	A-6a (10)
	15	-	15.92	SS-7	100				SAME AS SS-6A					14	A-6a (VISUAL)
	17.5	-	18.08	SS-8	100				SHALE, GRAY, MODERATELY WEATHERED					9	Rock (VISUAL)
	20	-	20.67	SS-9	100				SHALE, BROWN, WEATHERED					13	Rock (VISUAL)
	25	-	25.1	SS-10	100				SAME AS SS-9					-	Rock (VISUAL)
B-043-0-14	0	-	1.5	SS-1	73	9	9	16	37	29	29	17	12	14	A-6a (7)
STA. 672+65, 12 LT	2.5	-	4	SS-2	67	1	1	3	72	23	30	20	10	-	A-4b (8)
420581.452 N	5	-	6.5	SS-3	87				SAME AS SS-4					27	A-7-6 (VISUAL)
1404399.422 E	7.5	-	9	SS-4	100	2	3	4	40	51	42	24	18	-	A-7-6 (12)
	10	-	11.5	SS-5	20				SAME AS SS-4					18	A-7-6 (VISUAL)
	12.5	-	14	SS-6	80				SHALE, BROWN, HIGHLY WEATHERED					17	Rock (VISUAL)
	15	-	16.5	SS-7	67	0	1	2	19	78	68	25	43	36	A-7-6 (20)
	17.5	-	19	SS-8	100				SHALE, BROWN, HIGHLY WEATHERED					20	Rock (VISUAL)
	20	-	21.5	SS-9	100				SHALE, OLIVE-BROWN, MODERATELY WEATHERED					16	Rock (VISUAL)
	25	-	26.5	SS-10	100				SAME AS SS-9					14	Rock (VISUAL)
	30	-	30.5	SS-11	100				SHALE, GRAY, UNWEATHERED					9	Rock (VISUAL)
B-044-0-14	0	-	1.5	SS-1	67	28	9	12	27	24	34	20	14	15	A-6a (5)
STA. 673+99, 20 LT	2.5	-	4	SS-2	73				SAME AS ST-1					16	A-4a (VISUAL)
420646.637 N	5	-	6.5	SS-3	100				SAME AS ST-1					20	A-4a (VISUAL)
1404516.773 E	7.5	-	9.5	ST-1	83	9	9	15	37	30	30	21	9	15	A-4a (6)
	9.5	-	11	SS-4	100				SAME AS ST-1					15	A-4a (VISUAL)
	12.5	-	14	SS-5	100				SAME AS ST-1					15	A-4a (VISUAL)
	15	-	16.5	SS-6	100				SAME AS ST-1					15	A-4a (VISUAL)
	17.5	-	19	SS-7	100				SAME AS ST-2					13	A-4a (VISUAL)
	20	-	22	ST-2	100	14	9	15	35	27	23	15	8	13	A-4a (5)
	22	-	23.5	SS-8	27				SAME AS ST-2					14	A-4a (VISUAL)
	25	-	26.2	SS-9A	100				SAME AS ST-2					13	A-4a (VISUAL)
	26.2	-	26.5	SS-9B		56	19	8	10	7	20	17	3	12	A-1-b (0)
	30	-	31.5	SS-10	100	0	1	0	42	57	47	23	24	26	A-7-6 (15)
	35	-	36.5	SS-11	100	BLUISH-GRAY, CLAY, "AND" SILT, TRCE SAND								17	A-7-6 (VISUAL)
	40	-	40.83	SS-12	100	SHALE, OLIVE-BROWN, MODERATELY WEATHERED								14	Rock (VISUAL)
B-045-0-14	0	-	1.5	SS-1	67				SAME AS SS-2					22	A-6b (VISUAL)
STA. 675+49, 12 LT	2.5	-	4	SS-2	100	8	5	14	35	38	37	20	17	20	A-6b (10)
420704.318 N	5	-	6.5	SS-3	53				SAME AS SS-2					22	A-6b (VISUAL)
1404655.469 E	7.5	-	9	SS-4	67				SAME AS SS-2					20	A-6b (VISUAL)
	10	-	11.3	SS-5	80				SAME AS SS-2					16	A-6b (VISUAL)
	11.3	-	11.5	-					SAME AS SS-6					-	A-6a (VISUAL)
	12.5	-	14	SS-6	100	4	7	15	41	33	30	18	12	16	A-6a (9)
	15	-	16.5	SS-7	100	0	0	0	48	52	31	19	12	21	A-6a (9)
	17.5	-	19	SS-8	100				SAME AS ST-1					21	A-6a (VISUAL)
	20	-	22	ST-1	100	1	0	0	41	58	33	19	14	18	A-6a (10)
	22	-	23.5	SS-9	100				GRAY, CLAY, VARVED					23	A-7-6 (VISUAL)
	25	-	26.5	SS-10	100				GRAY, CLAY					29	A-7-6 (VISUAL)
	30	-	31.5	SS-11	100				SAME AS SS-10					30	A-7-6 (VISUAL)

DRAWN JTB | CHECKED SPR

SOIL PROFILE

SUMMARY OF SOIL TEST DATA

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SUMMARY OF SOIL TEST DATA
RAMP D

EXPLORATION NO. / STATION & OFFSET	FROM		TO	SAMPLE ID	% REC	% GR	% CS	% FS	% SILT	% CLAY	LL	PL	PI	% WC	ODOT CLASS (GI)
B-031-0-14	0.7	-	1.1	SS-1A	40	AGGREGATE BASE								-	A-1-a (VISUAL)
STA. 552+09, 20 RT	1.1	-	2.2	SS-1B		BROWN, SILT AND CLAY, LITTLE GRAVEL, TRACE SAND								15	A-6a (VISUAL)
419092.786 N	2.5	-	2.8	SS-2	100	SHALE, BROWN, MODERATELY WEATHERED								14	Rock (VISUAL)
1402975.841 E	5	-	5.5	SS-3	100	SAME AS SS-2								12	Rock (VISUAL)
B-032-0-14	0	-	1.5	SS-1	60	25	12	9	26	28	32	19	13	15	A-6a (5)
STA. 553+49, 18 RT	1.5	-	3	SS-2	73	SAME AS SS-1								15	A-6a (VISUAL)
419222.768 N	3	-	4.5	SS-3	100	6	9	12	31	42	32	17	15	19	A-6a (10)
1403024.707 E	4.5	-	6	SS-4	67	SHALE, GRAY AND BROWN, MODERATELY WEATHERED								14	Rock (VISUAL)
B-033-0-14	0	-	1.5	SS-1	33	8	8	12	35	37	33	19	14	16	A-6a (9)
STA. 554+99, 11 RT	2.5	-	4	SS-2	13	SAME AS ST-1								17	A-6a (VISUAL)
419360.226 N	5	-	6.5	SS-3	87	SAME AS ST-1								24	A-6a (VISUAL)
1403082.542 E	7.5	-	9	SS-4	100	SAME AS ST-1								22	A-6a (VISUAL)
	10	-	12	ST-1		2	4	8	40	46	35	20	15	24	A-6a (10)
	12	-	13.5	SS-5	0	SAME AS ST-1								-	A-6a (VISUAL)
	15	-	16.5	SS-6	0	SAME AS ST-1								-	A-6a (VISUAL)
	17.5	-	19	SS-7	93	4	2	2	35	57	37	23	14	25	A-6a (10)
	20	-	21.5	SS-8	7	SAME AS SS-7								-	A-6a (VISUAL)
	25	-	26.5	SS-9	47	5	4	3	47	41	32	20	12	19	A-6a (9)
	30	-	30.42	SS-10	48	SHALE, GRAY, MODERATELY WEATHERED								20	Rock (VISUAL)
	31	-	32	SS-11	100	SAME AS SS-10								14	Rock (VISUAL)

RAMP E

EXPLORATION NO. / STATION & OFFSET	FROM		TO	SAMPLE ID	% REC	% GR	% CS	% FS	% SILT	% CLAY	LL	PL	PI	% WC	ODOT CLASS (GI)
B-024-0-14	0	-	1.5	SS-1	80	SHALE, GRAY, MODERATELY TO SLIGHTLY WEATHERED								15	Rock (VISUAL)
STA. 741+89, 36 LT	2.5	-	3.1	SS-2	100	SAME AS SS-1								10	Rock (VISUAL)
418220.232 N															
1402612.349 E															
B-025-0-14	0	-	1.5	SS-1	89	SHALE, GRAY, MODERATELY WEATHERED								12	Rock (VISUAL)
STA. 743+34, 29 LT	2.5	-	2.8	SS-2	100	SAME AS SS-1								13	Rock (VISUAL)
418354.438 N															
1402666.604 E															
B-026-0-14	0	-	1.5	SS-1	100	SHALE, GRAY, SLIGHTLY WEATHERED								16	Rock (VISUAL)
STA. 744+84, 28 LT	2.5	-	3.5	SS-2	100	SAME AS SS-1								8	Rock (VISUAL)
418495.912 N															
1402715.724 E															
B-027-0-14	0	-	1.5	SS-1	80	2	5	16	45	32	26	16	10	23	A-4a (8)
STA. 746+34, 52 LT	2.5	-	4	SS-2	100	SAME AS SS-1								20	A-4a (VISUAL)
418645.159 N	5	-	6.5	SS-3	100	SAME AS ST-1								29	A-7-6 (VISUAL)
1402740.447 E	7.5	-	9	SS-4	100	SAME AS ST-1								22	A-7-6 (VISUAL)
	10	-	12	ST-1	67	7	4	10	26	53	50	24	26	23	A-7-6 (16)
	12	-	12.5	SS-5A	80	SAME AS ST-1								27	A-7-6 (VISUAL)
	12.5	-	13.5	SS-5B		SHALE, BROWN TO OLIVE-BROWN, WEATHERED								19	Rock (VISUAL)
	15	-	15.8	SS-6	100	SHALE, GRAY								-	Rock (VISUAL)
B-028-0-14	0	-	1.5	SS-1	78	74	8	5	6	7	-	-	-	18	A-1-a (VISUAL)
STA. 750+32, 66 LT	2.5	-	4	SS-2		41	9	5	17	28	42	21	21	20	A-7-6 (5)
419029.121 N	5	-	6	SS-3		SHALE, DARK GRAY, SEVERELY WEATHERED								5	Rock (VISUAL)
1402844.946 E	7.5	-	8	SS-4		SAME AS SS-3								5	Rock (VISUAL)
	10	-	10.67	SS-5		SAME AS SS-3								9	Rock (VISUAL)

RAMP E

EXPLORATION NO. / STATION & OFFSET	FROM		TO	SAMPLE ID	% REC	% GR	% CS	% FS	% SILT	% CLAY	LL	PL	PI	% WC	ODOT CLASS (GI)
B-029-0-14	0	-	1.5	SS-1	94	SAME AS SS-2								20	A-6b (VISUAL)
STA. 751+84, 38 LT	2.5	-	4	SS-2	81	4	4	5	41	46	40	20	20	19	A-6b (12)
419166.872 N	5	-	6.5	SS-3	83	SAME AS SS-2								27	A-6b (VISUAL)
1402919.588 E	7.5	-	9	SS-4	78	72	12	7	5	4	NP	NP	NP	5	A-1-a (0)
	10	-	11.5	SS-5	83	12	18	9	28	33	35	19	16	17	A-6b (8)
	12.5	-	13.5	SS-6	75	SHALE, BROWN AND GRAY, SEVERELY WEATHERED								6	Rock (VISUAL)
	15	-	16.5	SS-7	100	SAME AS SS-8								16	A-6a (VISUAL)
	17.5	-	19	SS-8	100	1	2	5	50	42	33	19	14	13	A-6a (10)
	20	-	21.5	SS-9	100	SAME AS SS-8								12	A-6a (VISUAL)
	25	-	25.25	SS-10	100	SAME AS SS-8								9	A-6a (VISUAL)
	29	-	29.25	SS-11	100	SHALE, TAN, SEVERELY WEATHERED, LIMESTONE FRAGMENTS								9	Rock (VISUAL)
B-030-0-14	0	-	1.5	SS-1	100	SAME AS SS-2								14	A-6a (VISUAL)
STA. 753+31, 22 LT	2.5	-	4	SS-2	67	7	8	14	35	36	32	17	15	17	A-6a (9)
419298.896 N	5	-	6.5	SS-3	72	SAME AS ST-1								21	A-7-6 (VISUAL)
1402992.033 E	6.5	-	8.5	ST-1	100	0	0	2	43	55	41	21	20	20	A-7-6 (12)
	8.5	-	10	SS-4	78	SAME AS ST-1								26	A-7-6 (VISUAL)
	10	-	11.5	SS-5	100	SAME AS ST-1								21	A-7-6 (VISUAL)
	12.5	-	14	SS-6	72	0	1	2	51	46	38	22	16	12	A-6b (10)
	15	-	16.5	SS-7	100	20	4	3	41	32	36	21	15	13	A-6a (10)
	17.5	-	17.5	SS-8		SAME AS SS-7								-	A-6a (VISUAL)
	20	-	21.5	SS-9	100	SAME AS SS-7								16	A-6a (VISUAL)
	25	-	25.1	SS-10	0	INTERBEDDED SHALE AND LIMESTONE								-	Rock (VISUAL)
B-035-0-14	0.5	-	1	SS-1A	89	GRAVEL								-	A-1-a (VISUAL)
STA. 757+05, 13 LT	1	-	1.5	SS-1B		SAME AS ST-1								16	A-6a (VISUAL)
419616.941 N	2.5	-	4	SS-2	100	SAME AS ST-1								14	A-6a (VISUAL)
1403194.880 E	5	-	6.5	SS-3	100	SAME AS ST-1								14	A-6a (VISUAL) *
	6.5	-	8.5	ST-1	88	5	10	15	37	33	32	18	14	14	A-6a (9)
	8.5	-	10	SS-4	100	SAME AS ST-1								14	A-6a (VISUAL)
	10	-	11.5	SS-5	94	SAME AS ST-1								19	A-6a (VISUAL)
	12.5	-	14	SS-6	89	SAME AS ST-2								27	A-6a (VISUAL)
	15	-	17	ST-2	100	1	3	6	53	37	35	21	14	22	A-6a (10)
	17	-	18.5	SS-7	78	SAME AS ST-2								23	A-6a (VISUAL)
	20	-	21.5	SS-8	22	SAME AS ST-2								22	A-6a (VISUAL)
	21.5	-	23	ST-3	100	2	5	9	51	33	31	18	13	22	A-6a (9)
	23	-	24.5	SS-9	100	SAME AS ST-3								24	A-6a (VISUAL)
	25	-	26.5	SS-10	89	SAME AS ST-3								20	A-6a (VISUAL)
	30	-	31.5	SS-11	100	SAME AS ST-3								16	A-6a (VISUAL)
	35	-	35.17	SS-12	100	SHALE, GRAY								15	Rock (VISUAL)
B-037-0-14	0	-	0.75	SS-1	100	28	8	6	27	31	39	22	17	20	A-6b (7)
STA. 759+59, 8 RT	2.5	-	3.17	SS-2	100	SHALE, GRAY, SLIGHTLY WEATHERED								8	Rock (VISUAL)
419800.849 N															
1403371.799 E															
B-039-0-14	0	-	1.5	SS-1	87	28	10	8	23	31	36	20	16	15	A-6b (6)
STA. 762+85, 7 RT	2.5	-	3	SS-2	100	SHALE, GRAY, SLIGHTLY WEATHERED								5	Rock (VISUAL)
420027.169 N															
14036303.670 E															
B-040-0-14	1	-	2.5	SS-1	67	8	13	8	33	38	31	19	12	16	A-6a (8)
STA. 766+35, 6 RT	2.5	-	4	SS-2	40	18	8	4	35	35	33	22	11	14	A-6a (7)
420238.092 N	5	-	6.5	SS-3	80	SHALE, GRAY, HIGHLY TO MODERATLY WEATHERED								11	Rock (VISUAL)
1403881.926 E	7.5	-	9	SS-4	73	SAME AS SS-3								8	Rock (VISUAL)
	10	-	10.1	SS-5	100	SAME AS SS-3								6	Rock (VISUAL)
B-040-1-14	0	-	1.5	SS-1	100	5	3	4	44	44	36	20	16	16	A-6b (10)
STA. 766+31, 62 LT	2.5	-	4	SS-2	100	SHALE, BROWN, SEVERELY WEATHERED								14	Rock (VISUAL)
420291.588 N															
1403840.571 E															
B-041-0-14	1	-	2.5	SS-1	67	42	37	14	3	4	14	15	NP	11	A-1-b (0)
STA. 768+82, 5 RT	2.5	-	4	SS-2	67	32	48	16	1	3	15	NP	NP	5	A-1-b (0)
420371.294 N	4	-	5.5	SS-3	67	6	7	4	40	43	34	22	12	18	A-6a (9)
1404089.456 E	5.5	-	6.25	SS-4	80	SAME AS SS-3								19	A-6a (VISUAL)
	6.25	-	7			SAME AS SS-3								19	A-6a (VISUAL)
	7.5	-	9	SS-5	100	SHALE, GRAY, SLIGHTLY WEATHERED								8	Rock (VISUAL)
	10	-	10.1	SS-6	100	INTERBEDDED SHALE AND LIMESTONE								-	Rock (VISUAL)

DRAWN JTB | CHECKED SPR

SOIL PROFILE

SUMMARY OF SOIL TEST DATA

HAM-71-3.81

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SUMMARY OF SOIL TEST DATA
RAMP E

EXPLORATION NO. / STATION & OFFSET	FROM		TO	SAMPLE ID	% REC	% GR	% CS	% FS	% SILT	% CLAY	LL	PL	PI	% WC	ODOT CLASS (GI)
B-041-1-14	0	-	1.5	SS-1	100	1	8	11	47	33	32	22	10	12	A-4a (8)
STA. 768+85, 70 LT	2.5	-	3.42	SS-2	100				SAME AS SS-1					13	A-4a (VISUAL)
420437.386 N	5	-	6.5	SS-3	100				SAME AS SS-1					12	A-4a (VISUAL)
1404054.860 E	7.5	-	8.5	SS-4	100				SAME AS SS-1					12	A-4a (VISUAL)
	10	-	10.5	SS-5	100	3	6	10	49	32	32	19	13	11	A-6a (9)
	12.5	-	12.75	SS-6	100	62	11	8	9	10	-	-	-	18	A-2-6 (VISUAL)
	15	-	15.58	SS-7	100		SHALE, DARK GRAY, SEVERELY WEATHERED							-	Rock (VISUAL)
	17.5	-	18	SS-8	100				SAME AS SS-7					-	Rock (VISUAL)
	20	-	20.33	SS-9	100				SAME AS SS-7					-	Rock (VISUAL)

RAMP F

EXPLORATION NO. / STATION & OFFSET	FROM		TO	SAMPLE ID	% REC	% GR	% CS	% FS	% SILT	% CLAY	LL	PL	PI	% WC	ODOT CLASS (GI)
B-022-0-14	0	-	1.5	SS-1	33	33	23	10	18	16	26	18	8	13	A-2-4 (0)
STA. 831+72, 34 LT	2.5	-	3.5	SS-2A	78				SAME AS SS-1					-	A-2-4 (VISUAL)
417148.189 N	3.5	-	4	SS-2B		6	14	6	43	31	29	17	12	13	A-6a (9)
1402366.169 E															
B-023-0-14	0	-	1.5	SS-1	56	44	6	7	31	12	23	16	7	12	A-4a (2)
STA. 832+87, 34 LT	2.5	-	3	SS-2A	100	11	10	5	42	32	28	18	10	11	A-4a (8)
417253.112 N	3	-	3.42	SS-2B			SHALE, GRAY, HIGHLY WEATHERED							-	Rock (VISUAL)
1402414.634 E															

STANTON AVENUE

EXPLORATION NO. / STATION & OFFSET	FROM		TO	SAMPLE ID	% REC	% GR	% CS	% FS	% SILT	% CLAY	LL	PL	PI	% WC	ODOT CLASS (GI)
B-042-1-14	0	-	1.5	SS-1	53				SAME AS SS-2					17	A-7-6 (VISUAL)
STA.22+71, 29 RT	2.5	-	4	SS-2	73	0	2	3	41	54	51	24	27	20	A-7-6 (17)
420558.563 N	5	-	6.5	SS-3	87				SAME AS SS-4					11	A-6b (VISUAL)
1404221.926 E	7.5	-	9	SS-4	100	0	2	7	47	44	37	21	16	13	A-6b (10)
	10	-	10.4	SS-5	100		SHALE, BROWN TO OLIVE BROWN, MODERATELY WEATHERED							10	Rock (VISUAL)
	12.5	-	13.17	SS-6	100				SAME AS SS-5					12	Rock (VISUAL)
	15	-	15.3	SS-7	0				SAME AS SS-5					-	Rock (VISUAL)
	17.5	-	18.2	SS-8	100				SAME AS SS-5					14	Rock (VISUAL)
	20	-	20.9	SS-9	56				SAME AS SS-5					7	Rock (VISUAL)
	25	-	26	SS-10	100				SAME AS SS-5					12	Rock (VISUAL)
	30	-	30.8	SS-11	100				SAME AS SS-5					10	Rock (VISUAL)
	35	-	35.3	SS-12	100				SAME AS SS-5					7	Rock (VISUAL)
B-057-0-14	0	-	1.5	SS-1	100	4	7	14	35	40	40	20	20	12	A-6b (12) *
STA. 13+57, 5 RT	1.5	-	3	SS-2	67	0	3	11	49	37	31	20	11	17	A-6a (8) *
419828.826 N	3	-	4.5	SS-3	73				SAME AS SS-2					18	A-6a (VISUAL)
1403995.977 E	4.5	-	6	SS-4	100				SAME AS SS-2					21	A-6a (VISUAL)
B-058-0-14	0	-	1.5	SS-1	67	12	10	20	29	29	39	24	15	16	A-6a (7)
STA. 18+61, 24 LT	1.5	-	3	SS-2	73	1	1	4	58	36	29	20	9	20	A-4b (8)
420176.317 N	3	-	4.5	SS-3	67	0	1	3	54	42	40	22	18	23	A-6b (11)
1404320.267 E	4.5	-	6	SS-4	87				SAME AS SS-3					20	A-6b (VISUAL)
	7.5	-	9	SS-5	87				SAME AS SS-6					17	A-7-6 (VISUAL)
	10	-	11.5	SS-6	87	1	3	14	35	47	42	21	21	20	A-7-6 (13)
	12.5	-	14	SS-7	100				SAME AS SS-6					19	A-7-6 (VISUAL)
	15	-	16.5	SS-8	73				SAME AS SS-6					19	A-7-6 (VISUAL)
	17.5	-	19	SS-9	27				SAME AS SS-6					21	A-7-6 (VISUAL)
	20	-	21.5	SS-10	93	4	2	2	44	48	37	21	16	18	A-6b (10)
	25	-	26.5	SS-11	53	3	3	2	41	51	39	23	16	16	A-6b (10)
	30	-	31.5	SS-12	100		SHALE, BRN TO OLIVE-BRN AND GRAY							15	Rock (VISUAL)

READING ROAD

EXPLORATION NO. / STATION & OFFSET	FROM		TO	SAMPLE ID	% REC	% GR	% CS	% FS	% SILT	% CLAY	LL	PL	PI	% WC	ODOT CLASS (GI)
B-069-0-14	0.5	-	2	SS-1	72	2	3	3	36	56	49	24	25	26	A-7-6 (16) *
STA. 307+75, 41 LT	2	-	3.5	SS-2	61	0	2	3	39	56	52	22	30	19	A-7-6 (18)
418777.412 N	3.5	-	5	SS-3	100				SAME AS SS-2					27	A-7-6 (VISUAL)
1402057.104 E	5	-	6.5	SS-4	83				SAME AS SS-2					22	A-7-6 (VISUAL)
	6.5	-	8	SS-5	100				SAME AS SS-2					21	A-7-6 (VISUAL)
B-070-0-14	0.5	-	1.25	SS-1A	89				UNCONTROLLED FILL (CINDERS)					25	UCF (VISUAL) *
STA. 311+75, 35 RT	1.25	-	2	SS-1B		4	5	3	41	47	41	22	19	23	A-7-6 (12) *
419138.279 N	2	-	3.5	SS-2	72	14	3	4	33	46	43	21	22	30	A-7-6 (13)
1402249.743 E	3.5	-	5	SS-3	100				SAME AS SS-2					25	A-7-6 (VISUAL)
	5	-	6.5	SS-4	100				SAME AS SS-2					22	A-7-6 (VISUAL)
B-071-0-14	0.9	-	2.4	SS-1	78	2	2	5	32	59	44	22	22	25	A-7-6 (14) *
STA. 315+50, 15 RT	2.4	-	3.9	SS-2	61	6	3	4	30	57	49	21	28	27	A-7-6 (17)
419518.351 N	3.9	-	5.4	SS-3	100				SAME AS SS-2					25	A-7-6 (VISUAL)
1402265.321 E	5.4	-	5.98	SS-4	100				SAME AS SS-2					30	A-7-6 (VISUAL)
	8.5	-	10	SS-5	100				SAME AS SS-2					21	A-7-6 (VISUAL)
B-072-0-14	1	-	2.5	SS-1	67	27	5	4	26	38	38	23	15	20	A-6a (8) *
STA. 321+25, 35 LT	2.5	-	4	SS-2	67				SAME AS SS-1					19	A-6a (VISUAL)
420097.077 N	4	-	4.75	SS-3	11				SAME AS SS-1					6	A-6a (VISUAL)
1402273.696 E	5.5	-	7	SS-4	100	26	6	8	26	34	42	21	21	23	A-7-6 (10)
	8.5	-	9	SS-5	50				STONE FRAGMENTS WITH SAND					-	A-1-b (VISUAL)
B-073-0-14	0.2	-	1.7	SS-1	56	57	23	10	7	3	-	-	-	4	A-1-b (VISUAL) *
STA. 325+25, 30 LT	1.7	-	3.2	SS-2	56				SAME AS SS-1					24	A-1-b (VISUAL) *
420474.591 N	3.2	-	4.7	SS-3		6	9	16	42	27	29	17	12	16	A-6a (8)
1402423.346 E	4.7	-	6.2	SS-4	100				SAME AS SS-3					16	A-6a (VISUAL)

GILBERT AVENUE

EXPLORATION NO., STATION & OFFSET	FROM		TO	SAMPLE ID	% REC	% GR	% CS	% FS	% SILT	% CLAY	LL	PL	PI	% WC	ODOT CLASS (GI)
B-076-0-14	1	-	2.5	SS-1	83	17	8	5	28	42	38	26	12	24	A-6a (8) *
STA. 56+17, 30 LT	2.5	-	4	SS-2	94	14	6	4	31	45	40	22	18	26	A-6b (11)
418895.208 N	4	-	4.5	SS-3	100		GRAY, SILTY CLAY, LITTLE SAND, LITTLE GRAVEL							9	A-6a (VISUAL)
1404768.525 E	5.5	-	5.58	SS-4	0				SAME AS SS-3					-	A-6a (VISUAL)
	8.5	-	8.67	SS-5	100				SAME AS SS-3					2	A-6a (VISUAL)
B-077-0-14	1	-	2.5	SS-1	67	11	16	13	25	35	40	21	19	28	A-6b (9) *
STA. 58+52, 27 LT	2.5	-	3	SS-2A	100				SAME AS SS-1					-	A-6b (VISUAL) *
419124.246 N	3	-	4	SS-2B	-	3	2	5	26	64	62	26	36	26	A-7-6 (20)
1404838.660 E	4	-	5.5	SS-3	100				SAME AS SS-2B					20	A-7-6 (VISUAL)
	5.5	-	7	SS-4	56				SAME AS SS-2B					16	A-7-6 (VISUAL)

DRAWN JTB | CHECKED SPR

SUMMARY OF SOIL TEST DATA
SOIL PROFILE

HAM-71-3.81

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SUMMARY OF HISTORIC SOIL TEST DATA
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EXPLORATION NO. STATION & OFFSET	FROM	TO	SAMPLE ID	% GR	% CS	% FS	% SILT	% CLAY	LL	PL	PI	% WC	ODOT CLASS (GI)
B-021-2-65	0.00	1.50	SS-1	20	10	8	40	22	31	21	10	26	A-4a (5)
STA. 225+33, CL	5.00	6.50	SS-2	4	2	4	36	54	41	20	21	25	A-7-6 (13)
	10.00	11.50	SS-3	7	5	3	35	50	42	20	22	20	A-7-6 (13)
	15.00	16.50	SS-4	11	4	5	36	44	38	18	20	21	A-6b (12)
	20.00	21.50	SS-5	4	5	5	37	49	41	19	22	27	A-7-6 (13)
	25.00	26.50	SS-6	3	3	3	36	55	50	21	29	26	A-7-6 (17)
	30.00	31.50	SS-7	3	1	3	63	30	42	26	16	37	A-7-6 (11)
B-022-1-65	0.00	1.50	SS-1	1	1	3	65	30	33	18	15	16	A-6a (10)
STA. 226+10, 7.5 LT	5.00	6.50	SS-2	19	7	8	40	26	34	18	16	12	A-6b (9)
	10.00	11.50	SS-3	CONCRETE, CINDERS AND CLAY, (FILL)									UCF (VISUAL)
	15.00	16.50	SS-4	SAME AS SS-3									UCF (VISUAL)
	20.00	21.50	SS-5	5	6	11	38	40	36	16	20	29	A-6b (12)
	24.00	25.50	SS-6	4	6	10	42	38	38	16	22	30	A-6b (12)
	25.50	27.00	SS-7	4	3	4	35	54	48	19	29	24	A-7-6 (12)
	28.00	29.50	SS-8	BROWN AND GRAY WEATHERED SHALE									
B-022-2-65	0.00	1.00	SS-1A	TOPSOIL									
STA. 226+63.5, 7 LT	1.00	1.50	SS-1B	SAME AS SS-2									A-7-6 (VISUAL)
	1.50	3.00	SS-2	1	4	5	42	48	44	19	25	12	A-7-6 (15)
	5.00	6.50	SS-3	CINDERS AND CLAY, (FILL)									UCF (VISUAL)
	10.00	11.00	SS-4A	0	0	2	36	62	55	23	32	24	A-7-6 (19)
	11.00	11.50	SS-4B	SAME AS SAMPLE SS-5									A-6a (VISUAL)
	15.00	16.50	SS-5	43	15	6	16	20	32	17	15	15	A-6a (1)
B-001-0-67	0.00	1.50	SS-1	CINDERS, ROCK AND CLAY, (FILL)									UCF (VISUAL)
STA. 227+00, CL	2.50	4.00	SS-2	20	3	5	32	40	36	20	16	16	A-6b (9)
	5.00	6.50	SS-3	11	4	6	30	49	49	22	27	28	A-7-6 (17)
	7.50	9.00	SS-4	16	7	4	30	43	41	20	21	21	A-7-6 (12)
	10.00	11.00	SS-5	BROWN WEATHERED SHALE AND LIMESTONE									ROCK (VISUAL)
R-014-1-65	0.50	2.00	SS-1	0	2	3	23	72	73	22	51	21	A-7-6(20)
STA. 227+75.5, 10 LT	5.00	6.50	SS-2	0	1	5	26	68	60	24	36	30	A-7-6(20)
	7.50	9.00	SS-3	GRAY WEATHERED SHALE AND LIMESTONE									ROCK (VISUAL)
	10.00	10.50	SS-4	SAME AS SS-4									ROCK (VISUAL)
B-023-3-65	0.50	2.00	SS-1	49	22	15	10	4	NP	NP	NP	8	A-1-a (0)
STA. 230+83.5, 16 LT	2.00	3.50	SS-2	41	8	7	18	26	43	22	21	24	A-7-6 (5)
	5.00	6.50	SS-3	55	9	5	11	20	34	18	16	17	A-6b (1)
	7.00	8.00	SS-4	GRAY SHALE									ROCK (VISUAL)
B-023-4-65	0.40	1.90	SS-1	0	4	12	44	40	33	18	15	18	A-6a (10)
STA. 231+79.5, 118 RT	5.00	6.50	SS-2	2	1	3	25	69	67	26	41	28	A-7-6 (20)
	10.00	11.50	SS-3	27	3	4	19	47	52	23	29	34	A-7-6 (16)
	12.50	14.00	SS-4	0	2	4	34	60	48	23	25	35	A-7-6 (18)
	15.00	16.50	SS-5	0	1	2	35	62	46	24	22	26	A-7-6 (14)
B-006-1-65	0.50	1.50		CINDERS (FILL)									UCF (VISUAL)
STA. 233+60, 116.5 RT	1.50	2.00	SS-1	0	4	8	42	46	37	18	19	14	A-6b (12)
	5.00	6.50	SS-2	0	3	7	56	34	31	19	12	19	A-6a (9)
	10.00	11.50	SS-3	5	6	7	26	56	50	24	26	28	A-7-6 (16)
	13.50	14.50	SS-4	0	1	1	40	58	37	21	16	19	A-6b (10)
B-003-0-67	0.00	1.50	SS-1	2	4	8	38	48	42	21	21	37	A-7-6 (12)
STA. 233+65, CL	4.00	5.50	SS-2	0	10	6	35	49	39	17	22	17	A-6b (13)
	6.50	8.00	SS-3	4	4	6	40	46	40	17	23	18	A-6b (12)
	10.50	12.00	SS-4	10	7	6	27	50	65	25	40	28	A-7-6-(20)
	13.00	14.50	SS-5	49	10	4	13	24	46	22	24	35	A-7-6 (5)
	15.00	15.50	SS-6	BROWN AND GRAY SHALE									ROCK (VISUAL)
R-008-4-65	0.00	1.50	SS-1	11	18	11	30	30	38	18	20	11	A-6b (9)
STA. 237+27, 76' LT	5.00	6.50	SS-2	0	4	10	44	42	35	18	17	20	A-6b (11)
	10.00	11.00	SS-3	0	3	4	20	73	62	24	38	19	A-7-6 (20)
	11.00	11.50	SS-4	21	8	5	22	44	47	19	28	27	A-7-6 (14)
	15.00	16.50	SS-5	60	12	4	10	14	30	15	15	15	A-2-6 (0)
	20.00	21.00	SS-6	SAME AS SS-5									ROCK (VISUAL)

SUMMARY OF HISTORIC SOIL TEST DATA
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EXPLORATION NO. STATION & OFFSET	FROM	TO	SAMPLE ID	% GR	% CS	% FS	% SILT	% CLAY	LL	PL	PI	% WC	ODOT CLASS (GI)
B-024-2-65	1.00	2.50	SS-1	GRAY CLAY, (FILL)								-	A-6b (VISUAL)
STA. 237+52, CL	2.50	4.00	SS-2	41	11	2	16	30	37	19	18	26	A-6b (5)
	5.00	6.50	SS-3	30	6	2	25	37	40	18	22	32	A-6b (10)
	7.50	8.00	SS-4	SAME AS SS-3								-	A-6b (VISUAL)
	8.00	9.00	SS-5	1	3	7	42	47	36	18	18	28	A-6b (11)
	10.00	11.50	SS-6	34	13	6	15	32	43	20	23	26	A-7-6 (7)
	12.50	14.00	SS-7	SAME AS SS-6								-	A-7-6 (VISUAL)
	15.00	16.50	SS-8	0	1	17	40	42	31	16	15	20	A-6a (10)
	17.50	19.00	SS-9	SAME AS SS-8								-	A-6a (VISUAL)
	20.00	21.00	SS-10	29	17	7	19	28	36	17	19	18	A-6b (5)
R-008-5-65	0.50	2.00	SS-1	9	4	7	37	43	41	19	22	22	A-7-6 (13)
STA. 239+86, 79' LT	5.00	6.50	SS-2	2	4	10	38	46	37	19	18	23	A-6b (11)
	10.00	11.50	SS-3	0	1	7	49	43	56	16	40	20	A-7-6 (19)
	15.00	16.00	SS-4	38	4	6	18	34	44	19	25	17	A-7-6 (9)
B-004-0-67	0.00	1.50	SS-1	CLAY AND CINDERS (FILL)									UCF (VISUAL)
STA. 240+00, CL	2.50	4.00	SS-2	2	5	3	54	36	36	23	13	24	A-6a (9)
	7.50	9.00	SS-3	15	6	9	29	41	44	20	24	26	A-7-6 (14)
	12.00	13.50	SS-4	2	4	4	38	52	50	24	26	22	A-7-6 (16)
	14.50	16.00	SS-5	0	1	3	42	54	43	22	21	22	A-7-6 (13)
R-010-1-65	0.00	1.50	SS-1	15	11	12	28	34	37	19	18	12	A-6b (9)
STA. 241+58, 89' RT	2.50	4.00	SS-2	0	3	8	57	32	26	18	8	11	A-4b (8)
	5.00	6.50	SS-3	3	6	12	42	37	26	16	10	14	A-4a (8)
	10.00	11.50	SS-4	1	3	11	30	55	51	20	31	17	A-7-6 (18)
	15.00	16.50	SS-5	SAME AS SS-4									
R-010-2-65	0.50	1.00	SS-1	CINDERS (FILL)									UCF (VISUAL)
STA. 243+23, 80' RT	1.00	2.00	SS-2	8	5	2	35	50	38	20	18	16	A-6b (11)
	5.00	6.00	SS-3	57	13	5	11	14	28	16	12	10	A-2-6 (0)
B-006-0-67	0.00	1.50	SS-1	0	2	4	43	51	58	26	32	32	A-7-6 (20)
STA. 243+50, CL	2.50	4.00	SS-2	18	6	6	30	40	52	22	30	29	A-7-6 (17)
	5.00	6.50	SS-3	8	1	3	34	54	45	21	24	19	A-7-6 (14)
	10.00	11.50	SS-4	17	6	3	32	42	36	18	18	15	A-6b (11)
B-008-0-67	0.00	1.50	SS-1	CLAY, CINDERS, GLASS AND ROCK (FILL)									UCF (VISUAL)
STA. 249+00, CL	2.50	4.00	SS-2	1	3	8	36	52	52	22	30	31	A-7-6 (18)
	5.00	6.50	SS-3	4	1	4	32	59	75	26	49	26	A-7-6 (20)
	7.50	9.00	SS-4	13	3	4	32	48	59	23	36	24	A-7-6 (20)
	10.00	11.50	SS-5	0	2	4	40	54	40	20	20	18	A-6-b (12)
	12.00	13.00	SS-6	BROWN WEATHERED SHALE									ROCK (VISUAL)
B-009-0-67	0.00	1.50	SS-1	9	3	5	54	29	42	26	16	29	A-7-6 (10)
STA. 252+00, CL	2.50	4.00	SS-2	0	2	4	28	66	73	27	46	33	A-7-6 (20)
	5.00	6.50	SS-3	1	3	3	43	50	40	19	21	17	A-6b (12)
	10.00	11.50	SS-4	1	3	4	32	60	61	27	34	31	A-7-6 (20)
	15.00	15.50	SS-5	BROWN WEATHERED SHALE									
B-010-0-67	0.00	1.50	SS-1	14	8	13	31	34	38	20	18	18	A-6b (9)
STA. 255+00, CL	5.00	6.50	SS-2	7	13	15	34	31	30	14	16	15	A-6b (8)
	10.00	11.50	SS-3	8	8	12	35	37	31	16	15	16	A-6a (10)
	12.50	14.00	SS-4	11	10	12	34	33	29	16	13	15	A-6a (7)
	15.00	16.50	SS-5	6	6	11	37	40	32	16	16	24	A-6b (10)
	17.50	19.00	SS-6	10	9	13	38	30	25	16	9	16	A-4a (7)
	20.50	22.00	SS-7	6	8	12	41	33	26	15	11	15	A-6a (8)
B-011-0-67	0.00	1.50	SS-1	CINDERS (FILL)									UCF (VISUAL)
STA. 258+50, CL	2.50	4.00	SS-2	CINDERS (FILL)									UCF (VISUAL)
	5.00	6.00	SS-3	27	4	4	33	32	40	22	18	17	A-6b (9)
B-017-0-67	0.00	1.50	SS-1	2	6	10	45	31	25	17	8	17	A-4A (8)
STA. 262+00, CL	5.00	6.50	SS-2	5	5	12	32	46	36	18	18	19	A-6b (11)
	10.00	11.50	SS-3	2	4	15	37	42	38	17	21	19	A-6b (12)
	15.00	16.50	SS-4	8	4	6	40	42	39	21	18	24	A-6b (11)
	17.50	17.70	SS-5	BROWN WEATHERED SHALE									ROCK (VISUAL)
	19.00	20.00	SS-6	GRAY AND BROWN SHALE									ROCK (VISUAL)

DRAWN JTB | CHECKED SPR

SOIL PROFILE

SUMMARY OF SOIL TEST DATA

HAM-71-3.81

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SUMMARY OF HISTORIC SOIL TEST DATA
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EXPLORATION NO. STATION & OFFSET	FROM	TO	SAMPLE ID	% GR	% CS	% FS	% SILT	% CLAY	LL	PL	PI	% WC	ODOT CLASS (GI)
B-021-2-65	0.00	1.50	SS-1	20	10	8	40	22	31	21	10	26	A-4a (5)
STA. 225+33, CL	5.00	6.50	SS-2	4	2	4	36	54	41	20	21	25	A-7-6 (13)
	10.00	11.50	SS-3	7	5	3	35	50	42	20	22	20	A-7-6 (13)
	15.00	16.50	SS-4	11	4	5	36	44	38	18	20	21	A-6b (12)
	20.00	21.50	SS-5	4	5	5	37	49	41	19	22	27	A-7-6 (13)
	25.00	26.50	SS-6	3	3	3	36	55	50	21	29	26	A-7-6 (17)
	30.00	31.50	SS-7	3	1	3	63	30	42	26	16	37	A-7-6 (11)
B-022-1-65	0.00	1.50	SS-1	1	1	3	65	30	33	18	15	16	A-6a (10)
STA. 226+10, 7.5 LT	5.00	6.50	SS-2	19	7	8	40	26	34	18	16	12	A-6b (9)
	10.00	11.50	SS-3	CONCRETE, CINDERS AND CLAY, (FILL)									UCF (VISUAL)
	15.00	16.50	SS-4	SAME AS SS-3									UCF (VISUAL)
	20.00	21.50	SS-5	5	6	11	38	40	36	16	20	29	A-6b (12)
	24.00	25.50	SS-6	4	6	10	42	38	38	16	22	30	A-6b (12)
	25.50	27.00	SS-7	4	3	4	35	54	48	19	29	24	A-7-6 (12)
	28.00	29.50	SS-8	BROWN AND GRAY WEATHERED SHALE									
B-022-2-65	0.00	1.00	SS-1A	TOPSOIL									
STA. 226+63.5, 7 LT	1.00	1.50	SS-1B	SAME AS SS-2									A-7-6 (VISUAL)
	1.50	3.00	SS-2	1	4	5	42	48	44	19	25	12	A-7-6 (15)
	5.00	6.50	SS-3	CINDERS AND CLAY, (FILL)									UCF (VISUAL)
	10.00	11.00	SS-4A	0	0	2	36	62	55	23	32	24	A-7-6 (19)
	11.00	11.50	SS-4B	SAME AS SAMPLE SS-5									A-6a (VISUAL)
	15.00	16.50	SS-5	43	15	6	16	20	32	17	15	15	A-6a (1)
B-001-0-67	0.00	1.50	SS-1	CINDERS, ROCK AND CLAY, (FILL)									UCF (VISUAL)
STA. 227+00, CL	2.50	4.00	SS-2	20	3	5	32	40	36	20	16	16	A-6b (9)
	5.00	6.50	SS-3	11	4	6	30	49	49	22	27	28	A-7-6 (17)
	7.50	9.00	SS-4	16	7	4	30	43	41	20	21	21	A-7-6 (12)
	10.00	11.00	SS-5	BROWN WEATHERED SHALE AND LIMESTONE									ROCK (VISUAL)
R-014-1-65	0.50	2.00	SS-1	0	2	3	23	72	73	22	51	21	A-7-6(20)
STA. 227+75.5, 10 LT	5.00	6.50	SS-2	0	1	5	26	68	60	24	36	30	A-7-6(20)
	7.50	9.00	SS-3	GRAY WEATHERED SHALE AND LIMESTONE									ROCK (VISUAL)
	10.00	10.50	SS-4	SAME AS SS-4									ROCK (VISUAL)
B-023-3-65	0.50	2.00	SS-1	49	22	15	10	4	NP	NP	NP	8	A-1-a (0)
STA. 230+83.5, 16 LT	2.00	3.50	SS-2	41	8	7	18	26	43	22	21	24	A-7-6 (5)
	5.00	6.50	SS-3	55	9	5	11	20	34	18	16	17	A-6b (1)
	7.00	8.00	SS-4	GRAY SHALE									ROCK (VISUAL)
B-023-4-65	0.40	1.90	SS-1	0	4	12	44	40	33	18	15	18	A-6a (10)
STA. 231+79.5, 118 RT	5.00	6.50	SS-2	2	1	3	25	69	67	26	41	28	A-7-6 (20)
	10.00	11.50	SS-3	27	3	4	19	47	52	23	29	34	A-7-6 (16)
	12.50	14.00	SS-4	0	2	4	34	60	48	23	25	35	A-7-6 (18)
	15.00	16.50	SS-5	0	1	2	35	62	46	24	22	26	A-7-6 (14)
B-006-1-65	0.50	1.50		CINDERS (FILL)									UCF (VISUAL)
STA. 233+60, 116.5 RT	1.50	2.00	SS-1	0	4	8	42	46	37	18	19	14	A-6b (12)
	5.00	6.50	SS-2	0	3	7	56	34	31	19	12	19	A-6a (9)
	10.00	11.50	SS-3	5	6	7	26	56	50	24	26	28	A-7-6 (16)
	13.50	14.50	SS-4	0	1	1	40	58	37	21	16	19	A-6b (10)
B-003-0-67	0.00	1.50	SS-1	2	4	8	38	48	42	21	21	37	A-7-6 (12)
STA. 233+65, CL	4.00	5.50	SS-2	0	10	6	35	49	39	17	22	17	A-6b (13)
	6.50	8.00	SS-3	4	4	6	40	46	40	17	23	18	A-6b (12)
	10.50	12.00	SS-4	10	7	6	27	50	65	25	40	28	A-7-6-(20)
	13.00	14.50	SS-5	49	10	4	13	24	46	22	24	35	A-7-6 (5)
	15.00	15.50	SS-6	BROWN AND GRAY SHALE									ROCK (VISUAL)
R-008-4-65	0.00	1.50	SS-1	11	18	11	30	30	38	18	20	11	A-6b (9)
STA. 237+27, 76' LT	5.00	6.50	SS-2	0	4	10	44	42	35	18	17	20	A-6b (11)
	10.00	11.00	SS-3	0	3	4	20	73	62	24	38	19	A-7-6 (20)
	11.00	11.50	SS-4	21	8	5	22	44	47	19	28	27	A-7-6 (14)
	15.00	16.50	SS-5	60	12	4	10	14	30	15	15	15	A-2-6 (0)
	20.00	21.00	SS-6	SAME AS SS-5									ROCK (VISUAL)

SUMMARY OF HISTORIC SOIL TEST DATA
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EXPLORATION NO. STATION & OFFSET	FROM	TO	SAMPLE ID	% GR	% CS	% FS	% SILT	% CLAY	LL	PL	PI	% WC	ODOT CLASS (GI)
B-027-1-65	0	1.5	SS-1	CINDERS (FILL)									UCF (VISUAL)
STA. 262+83, 89 RT													
B-018-0-67	0	1	SS-1A	TOPSOIL									VISUAL
STA. 267+00, CL	1	1.5	SS-1B	2	2	4	54	38	36	20	16	22	A-6b (10)
	5	6.5	SS-2	7	9	11	41	32	24	16	8	16	A-4a (8)
	7.5	9	SS-3	16	4	11	27	42	43	20	23	20	A-7-6 (12)
	10	11.5	SS-4	5	4	14	35	42	36	18	18	16	A-6b (11)
	15	16.5	SS-5	10	4	14	34	38	35	17	18	17	A-6b (11)
	17.5	19	SS-6	14	4	5	30	47	52	23	29	18	A-7-6 (18)
	20	21.5	SS-7	12	2	2	41	43	41	23	18	37	A-7-6 (11)
	25	26	SS-8	BROWN WEATHERED SHALE									ROCK (VISUAL)
B-028-1-65	0	1.5	SS-1	14	9	15	36	26	26	15	11	15	A-6a (6)
STA. 267+92, 142 RT	2.5	4	SS-2	SAME AS SS-1									A-6a (VISUAL)
	5	6.5	SS-3	22	9	13	30	26	27	15	12	12	A-6a (5)
	9.5	11	SS-4	29	7	12	29	23	27	15	12	16	A-6a (4)
	11	12.5	SS-5	28	6	9	31	26	26	14	12	18	A-6a (5)
	15	16.5	SS-6	12	6	8	40	34	33	16	17	18	A-6b (11)
	17	18.5	SS-7	9	9	9	39	34	31	17	14	26	A-6a (9)
	19.5	21	SS-8	2	4	3	47	44	36	18	18	26	A-6b (11)
	22	22.5	SS-9A	BRN AND GR WEATHERED SHALE WITH LIMESTONE LAYERS									ROCK (VISUAL)
	22.5	23	SS-9B	SAME AS SS-9A									ROCK (VISUAL)
B-028-3-65	0.4	1.9	SS-1	25	5	7	33	30	37	20	17	24	A-6b (8)
STA. 269+07, 10 LT	2.5	4	SS-2	0	2	4	40	54	48	24	24	16	A-7-6 (15)
	5.5	7	SS-3	0	4	4	47	45	41	21	20	30	A-7-6 (12)
	10.5	11.5	SS-4	26	8	5	32	29	33	18	15	12	A-6a (7)
B-020-0-67	0.00	1.50	SS-1	CINDERS AND CLAY									UCF (VISUAL)
STA. 271+00, CL	2.50	4.00	SS-2	4	5	11	38	42	35	19	16	18	A-6b (11)
	5.00	6.50	SS-3	6	4	10	45	35	29	19	10	18	A-4a (8)
	7.50	9.00	SS-4	19	7	13	31	30	31	17	14	16	A-6a (6)
	10.00	11.50	SS-5	34	7	12	25	22	29	17	12	14	A-6a (3)
	15.00	16.00	SS-6	20	8	12	32	28	27	16	11	20	A-6a (6)
	16.00	16.50	SS-7	BROWN WEATHERED SHALE AND LIMESTONE									ROCK (VISUAL)
B-021-0-67	0.00	1.50	SS-1	1	3	7	39	50	44	20	24	14	A-7-6 (14)
STA. 273+00, CL	5.00	6.50	SS-2	11	8	14	35	32	31	16	15	14	A-6a (8)
	10.00	11.50	SS-3	12	14	13	35	26	27	17	10	11	A-4a (5)
	15.00	16.50	SS-4	12	10	15	35	28	26	16	10	11	A-4a (5)
	20.50	22.00	SS-5	15	10	14	34	27	26	16	10	13	A-4a (5)
B-022-0-67	0	1		BLACKTOP, GRAVEL (PAVEMENT)									VISUAL
STA. 276+00, CL	1.00	2.50	SS-1	24	4	9	28	35	42	19	23	20	A-7-6 (13)
	5.00	6.50	SS-2	31	3	5	29	32	36	21	15	17	A-6a (7)
	9.00	10.00	SS-3	28	4	6	30	32	37	21	16	19	A-6b (7)
B-029-3-65	0	1.5	SS-1	33	7	6	24	30	44	20	24	22	A-7-6 (10)
STA. 281+58, CL	2.5	4	SS-2	12	7	7	37	37	39	19	20	16	A-6B (12)
	5	6.5	SS-3	RUBBLE (FILL) - CINDERS AND WOOD									UCF (VISUAL)
	7.5	9	SS-4	SAME AS SS-3									UCF (VISUAL)
	10	11.5	SS-5	SAME AS SS-3									UCF (VISUAL)
	12.5	14	SS-6	SAME AS SS-3									UCF (VISUAL)
	15	16.5	SS-7	11	4	4	34	47	41	21	20	25	A-7-6 (12)
	17.5	19	SS-8	2	5	5	35	53	42	20	22	24	A-7-6 (13)
	20	21.5	SS-9	14	4	4	35	43	39	20	19	28	A-6b (12)
	25	26.5	SS-10	GRAY WEATHERED SHALE									ROCK (VISUAL)
B-024-0-67	0.00	1.50	SS-1	3	7	10	38	42	41	22	19	10	A-7-6 (13)
STA. 284+00, CL	2.50	4.00	SS-2	0	5	7	38	50	44	21	23	13	A-7-6 (14)
	5.00	6.50	SS-3	23	4	6	25	42	43	21	22	11	A-7-6 (11)
B-036-0-67	0.00	1.50	SS-1	BROWN CLAY GRAVEL AND CINDERS (FILL)									VISUAL
STA. 288+00, CL	2.50	4.00	SS-2	14	3	3	42	38	38	22	16	17	A-6b (10)
	5.00	6.50	SS-3	16	12	8	35	29	33	21	12	14	A-6a (7)
	7.50	9.00	SS-4	BROWN AND GRAY WEATHERED SHALE									ROCK (VISUAL)
	9.00	10.00	SS-5	BRN AND GR WEATHERED SHALE AND LIMESTONE FRAGMENTS									ROCK (VISUAL)

DRAWN JTB | CHECKED SPR

SOIL PROFILE

SUMMARY OF SOIL TEST DATA

HAM-71-3.81

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SUMMARY OF HISTORIC SOIL TEST DATA
IR 71

EXPLORATION NO. STATION & OFFSET	FROM	TO	SAMPLE ID	% GR	% CS	% FS	% SILT	% CLAY	LL	PL	PI	% WC	ODOT CLASS (GI)
B-032-0-67	0.00	1.00	SS-1A				TOPSOIL						VISUAL
STA. 301+00, CL	1.00	1.50	SS-1B	1	1	8	32	58	46	25	21	16	A-7-6 (13)
	2.50	4.00	SS-2	10	8	12	30	40	29	18	11	13	A-6a (7)
	5.00	6.50	SS-3	8	10	14	36	32	32	17	15	13	A-6a (9)
	10.00	11.50	SS-4	12	10	17	33	28	25	15	10	11	A-4a (5)
	12.50	14.00	SS-5	18	10	15	31	26	23	15	8	11	A-4a (5)
B-034-0-67	0.00	1.50	SS-1				BROWN WEATHERED SHALE AND LIMESTONE						ROCK (VISUAL)
STA. 305+00, CL	1.50	2.50	SS-2				BROWN WEATHERED SHALE AND LIMESTONE						ROCK (VISUAL)
B-041-1-68	0.00	1.50	SS-1	6	4	7	51	32	28	21	7	14	A-4b (8)
STA. 308+98, 5 LT	2.50	4.00	SS-2	0	3	9	39	49	44	22	22	17	A-7-6 (14)
	5.00	6.50	SS-3	45	11	8	20	16	29	14	15	12	A-6a (1)
	7.50	9.00	SS-4				SAME AS SS-3					-	A-6a (VISUAL)
	10.00	11.50	SS-5	19	3	4	30	44	42	22	20	8	A-7-6 (12)
	12.50	14.00	SS-6				SAME AS SS-5					-	A-7-6 (VISUAL)
	15.00	16.50	SS-7	32	5	2	32	29	33	20	13	14	A-6a (6)
	17.50	19.00	SS-8				GRAY SHALE					-	ROCK (VISUAL)
	20.00	20.50	SS-9				SAME AS SS-8					-	ROCK (VISUAL)
B-035-0-67	0.00	1.00	SS-1	1	6	11	39	43	35	20	15	11	A-6a (10)
STA. 309+00, CL	2.50	4.00	SS-2	1	4	15	30	50	42	20	22	18	A-7-6 (13)
	5.00	6.00	SS-3				BROWN WEATHERED SHALE					-	ROCK (VISUAL)

SUMMARY OF HISTORIC SOIL TEST DATA
FREDONIA AVENUE

EXPLORATION NO. STATION & OFFSET	FROM	TO	SAMPLE ID	% GR	% CS	% FS	% SILT	% CLAY	LL	PL	PI	% WC	ODOT CLASS (GI)
B-015-0-67	0.00	1.50	SS-1				CINDERS, CLAY, SOME BRICK						UCF (VISUAL)
STA. 18+00, CL	5.00	6.50	SS-2				CINDERS, CLAY, SOME BRICK						UCF (VISUAL)
	10.00	11.50	SS-3				CINDERS, CLAY, SOME BRICK						UCF (VISUAL)
	12.50	14.00	SS-4	32	7	11	25	25	29	16	13	16	A-6a (4)
	15.00	16.50	SS-5	14	10	14	30	32	26	17	9	17	A-4a (5)
	17.50	19.00	SS-6	19	9	14	32	26	27	17	10	17	A-4a (5)
B-016-0-67	0.00	0.50	SS-1A				CLAY AND BRICK						VISUAL
STA. 18+00, CL	0.50	1.50	SS-1B	1	1	5	55	38	32	20	12	23	A-6a (9)
	5.00	6.50	SS-2	1	2	8	53	36	31	17	14	16	A-6a (10)
	10.00	11.50	SS-3	13	5	10	23	49	48	20	28	24	A-7-6 (17)
	14.00	15.00	SS-4	16	1	0	65	18	26	21	5	22	A-4b (8)

SUMMARY OF HISTORIC SOIL TEST DATA
MLK DRIVE

EXPLORATION NO. STATION & OFFSET	FROM	TO	SAMPLE ID	% GR	% CS	% FS	% SILT	% CLAY	LL	PL	PI	% WC	ODOT CLASS (GI)
B-012-0-67	0.00	1.50	SS-1				CINDERS AND BRICK						VISUAL
STA. 106+30, 13.4' RT	5.00	6.50	SS-2	4	2	5	57	32	33	22	11	26	A-6a (9)
	7.50	9.00	SS-3	7	13	8	38	34	31	19	12	20	A-6a (9)
	10.00	11.50	SS-4	4	7	4	41	44	36	20	16	19	A-6b (10)
	15.00	16.50	SS-5	2	2	4	37	55	46	22	24	28	A-7-6 (14)
	20.00	21.50	SS-6	7	4	9	73	7	40	21	19	26	A-6b (12)
	21.50	22.50	SS-7				GRAY SHALE AND LIMESTONE						VISUAL
B-013-0-67	0.00	1.50	SS-1				CINDERS, SAND, ROCKS						VISUAL
STA. 108+07, 11' RT	2.50	4.00	SS-2				CINDERS, SAND, ROCKS						VISUAL
	5.00	6.50	SS-3				CINDERS, SAND, ROCKS						VISUAL
	7.50	9.00	SS-4	0	4	14	49	33	21	17	4	21	A-4a (8)

DRAWN JTB
CHECKED SPR

SOIL PROFILE
SUMMARY OF SOIL TEST DATA

HAM-71-3.81

13
175

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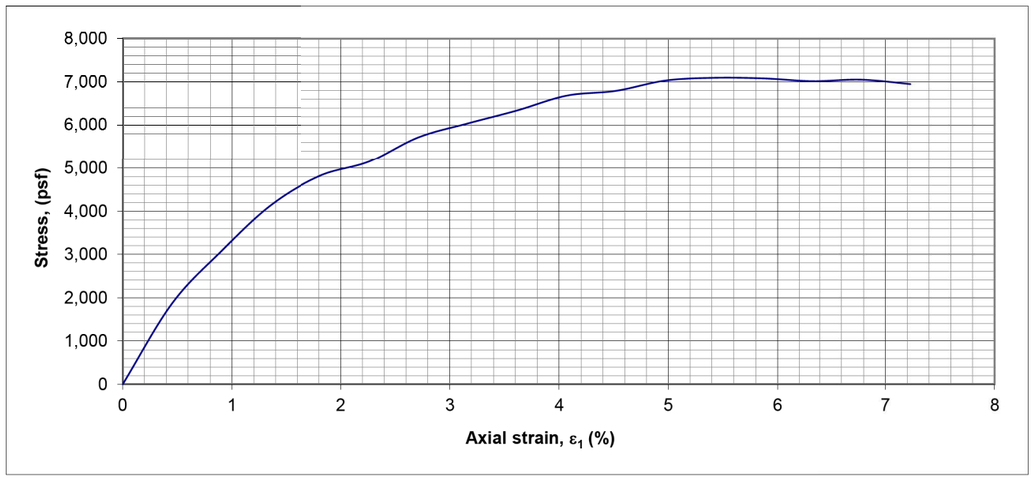
UNCONFINED COMPRESSIVE STRENGTH OF COHESIVE SOILS
ASTM D2166

CLIENT : HDR Engineering, Inc.
DATE: 7/2/2014
PROJECT NO.: 140358N
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

BORING NO.: 027-0-14 (Ramp E Sta. 746+34, 52' Lt.) SAMPLE NO.: ST-1 DEPTH (ft.): 10.0-12.0
SAMPLE OBTAINED BY: Shelby Tube CONDITION: Undisturbed
SAMPLE DESCRIPTION: Very stiff, brown, trace gray, CLAY, some silt, little sand, trace gravel, trace black oxide concretions, moist (RESIDUUM)
LIQUID LIMIT (%): 50 PLASTIC LIMIT (%): 24 PLASTICITY INDEX (%): 26 ODOT: A-7-6 (16)
GRAVEL (%): 7.0 SAND (%): 14.0 SILT (%): 26.0 CLAY (%): 53.0
SPECIFIC GRAVITY OF SOLIDS: 2.7 (Per ASTM D854) LOAD CELL NO.: 1059

SAMPLE DATA	
DIAMETER (in.):	2.82
HEIGHT (in.):	5.53
HEIGHT TO DIAMETER RATIO:	1.96
WET UNIT WEIGHT (pcf):	134.0
DRY UNIT WEIGHT (pcf):	110.6
VOID RATIO:	0.52
MOISTURE CONTENT (%)*:	21.2
DEGREE OF SATURATION (%):	100

FAILURE DATA	
AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**1.1**
AXIAL STRAIN AT FAILURE (%):	**5.4**
TIME TO FAILURE (min.):	**5.8**
UNCONFINED COMPRESSIVE STRENGTH, q_u (psf):	**7,100**
UNDRAINED SHEAR STRENGTH, s_u (psf):	**3,550**
SENSITIVITY, S_t:	**-**



REMARKS :

*Moisture content determined after shear from entire sample.

UNCONFINED COMPRESSIVE STRENGTH OF COHESIVE SOILS
ASTM D2166

BORING NO.: 027-0-14 (Ramp E Sta. 746+34, 52' Lt.)
SAMPLE NO.: ST-1
DEPTH (ft.): 10.0-12.0

FAILURE SHAPE


FRONT VIEW


RIGHT SIDE VIEW


LEFT SIDE VIEW


BACK VIEW

DRAWN JTB CHECKED SPR

SOIL PROFILE
LABORATORY TEST DATA

HAM-71-3.81

14
175

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UNCONFINED COMPRESSIVE STRENGTH OF COHESIVE SOILS
ASTM D2166

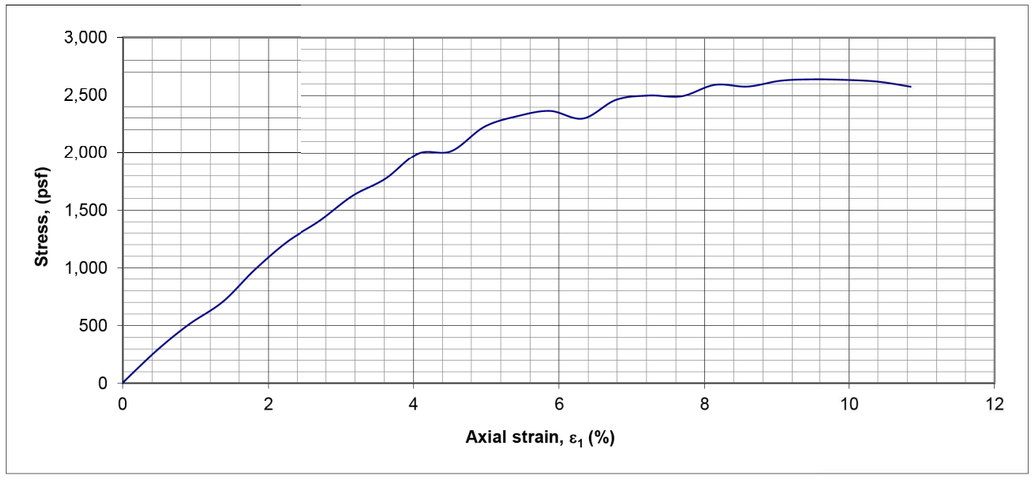
CLIENT : HDR Engineering, Inc.
DATE: 6/2/2014
PROJECT NO.: 140358N
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

BORING NO.: 034-0-14 (SR-71 Sta. 256+50, 78' Lt.) SAMPLE NO.: ST-1B DEPTH (ft.): 18.0-18.5
SAMPLE OBTAINED BY: Shelby Tube CONDITION: Undisturbed
SAMPLE DESCRIPTION: Stiff, gray, SILT AND CLAY, little sand, trace gravel, moist

LIQUID LIMIT (%): 29 PLASTIC LIMIT (%): 18 PLASTICITY INDEX (%): 11 ODOT: A-6a (8)
GRAVEL (%): 3.0 SAND (%): 15.0 SILT (%): 44.0 CLAY (%): 38.0
SPECIFIC GRAVITY OF SOLIDS: 2.696 (Per ASTM D854) LOAD CELL NO.: 1059

SAMPLE DATA	
DIAMETER (in.):	2.81
HEIGHT (in.):	5.53
HEIGHT TO DIAMETER RATIO:	1.97
WET UNIT WEIGHT (pcf):	136.2
DRY UNIT WEIGHT (pcf):	113.3
VOID RATIO:	0.48
MOISTURE CONTENT (%)*:	20.2
DEGREE OF SATURATION (%):	100

FAILURE DATA	
AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**1.1**
AXIAL STRAIN AT FAILURE (%):	**9.5**
TIME TO FAILURE (min.):	**10.2**
UNCONFINED COMPRESSIVE STRENGTH, q_u (psf):	**2,640**
UNDRAINED SHEAR STRENGTH, s_u (psf):	**1,320**
SENSITIVITY, S_t:	**-**



REMARKS :

*Moisture content determined after shear from entire sample.

UNCONFINED COMPRESSIVE STRENGTH OF COHESIVE SOILS
ASTM D2166

BORING NO.: 034-0-14 (SR-71 Sta. 256+50, 78' Lt.)
SAMPLE NO.: ST-1B
DEPTH (ft.): 18.0-18.5

FAILURE SHAPE


FRONT VIEW


RIGHT SIDE VIEW


LEFT SIDE VIEW


BACK VIEW

DRAWN JTB CHECKED SPR

SOIL PROFILE
LABORATORY TEST DATA

HAM-71-3.81

15
175

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UNCONFINED COMPRESSIVE STRENGTH OF COHESIVE SOILS
ASTM D2166

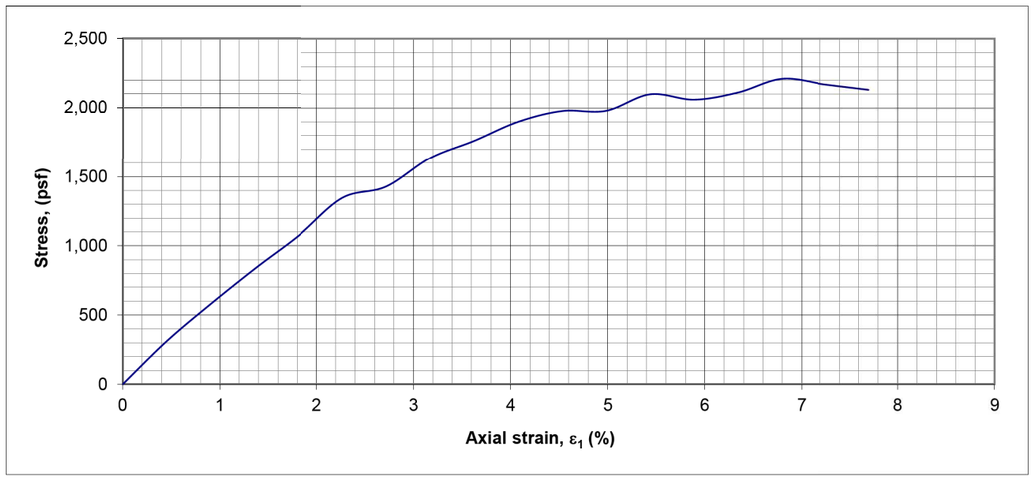
CLIENT : HDR Engineering, Inc.
DATE: 6/2/2014
PROJECT NO.: 140358N
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

BORING NO.: 035-0-14 (Ramp E Sta. 757+05, 13' Lt.) SAMPLE NO.: ST-2 DEPTH (ft.): 16.2-16.7
SAMPLE OBTAINED BY: Shelby Tube CONDITION: Undisturbed
SAMPLE DESCRIPTION: Stiff, brown, SILT AND CLAY, trace to little sand, trace gravel, moist

LIQUID LIMIT (%): 35 PLASTIC LIMIT (%): 21 PLASTICITY INDEX (%): 14 ODOT: A-6a (10)
GRAVEL (%): 1.0 SAND (%): 9.0 SILT (%): 53.0 CLAY (%): 37.0
SPECIFIC GRAVITY OF SOLIDS: 2.641 (Per ASTM D854) LOAD CELL NO.: 1059

SAMPLE DATA	
DIAMETER (in.):	2.79
HEIGHT (in.):	5.52
HEIGHT TO DIAMETER RATIO:	1.97
WET UNIT WEIGHT (pcf):	133.0
DRY UNIT WEIGHT (pcf):	108.8
VOID RATIO:	0.52
MOISTURE CONTENT (%)*:	22.2
DEGREE OF SATURATION (%):	100

FAILURE DATA	
AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**1.1**
AXIAL STRAIN AT FAILURE (%):	**6.8**
TIME TO FAILURE (min.):	**7.4**
UNCONFINED COMPRESSIVE STRENGTH, q_u (psf):	**2,210**
UNDRAINED SHEAR STRENGTH, s_u (psf):	**1,105**
SENSITIVITY, S_t:	**-**



REMARKS :

*Moisture content determined after shear from entire sample.

UNCONFINED COMPRESSIVE STRENGTH OF COHESIVE SOILS
ASTM D2166

BORING NO.: 035-0-14 (Ramp E Sta. 757+05, 13' Lt.)
SAMPLE NO.: ST-2
DEPTH (ft.): 16.2-16.7

FAILURE SHAPE


FRONT VIEW


RIGHT SIDE VIEW


LEFT SIDE VIEW


BACK VIEW

DRAWN JTB CHECKED SPR

SOIL PROFILE
LABORATORY TEST DATA

HAM-71-3.81

16
175

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UNCONFINED COMPRESSIVE STRENGTH OF COHESIVE SOILS
ASTM D2166

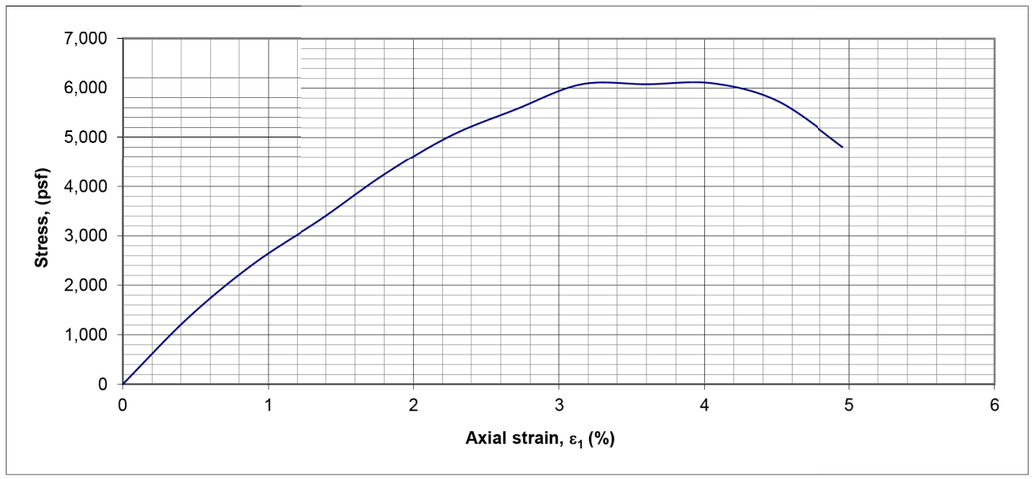
CLIENT : HDR Engineering, Inc.
DATE: 6/2/2014
PROJECT NO.: 140358N
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

BORING NO.: 038-0-14 (Ramp C Sta. 660+98, 22' Lt.) SAMPLE NO.: ST-1 DEPTH (ft.): 7.2-7.7
SAMPLE OBTAINED BY: Shelby Tube CONDITION: Undisturbed
SAMPLE DESCRIPTION: Very stiff, brown, CLAY, "and" silt, trace to little sand, damp

LIQUID LIMIT (%): 44 PLASTIC LIMIT (%): 21 PLASTICITY INDEX (%): 23 ODOT: A-7-6 (14)
GRAVEL (%): 0.0 SAND (%): 6.0 SILT (%): 45.0 CLAY (%): 49.0
SPECIFIC GRAVITY OF SOLIDS: 2.633 (Per ASTM D854) LOAD CELL NO.: 1059

SAMPLE DATA	
DIAMETER (in.):	2.81
HEIGHT (in.):	5.55
HEIGHT TO DIAMETER RATIO:	1.98
WET UNIT WEIGHT (pcf):	135.4
DRY UNIT WEIGHT (pcf):	113.7
VOID RATIO:	0.44
MOISTURE CONTENT (%)*:	19.0
DEGREE OF SATURATION (%):	100

FAILURE DATA	
AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**1.1**
AXIAL STRAIN AT FAILURE (%):	**4.1**
TIME TO FAILURE (min.):	**4.4**
UNCONFINED COMPRESSIVE STRENGTH, q_u (psf):	**6,100**
UNDRAINED SHEAR STRENGTH, s_u (psf):	**3,050**
SENSITIVITY, S_t:	**-**



REMARKS :

*Moisture content determined after shear from entire sample.

UNCONFINED COMPRESSIVE STRENGTH OF COHESIVE SOILS
ASTM D2166

BORING NO.: 038-0-14 (Ramp C Sta. 660+98, 22' Lt.)
SAMPLE NO.: ST-1
DEPTH (ft.): 7.2-7.7

FAILURE SHAPE


FRONT VIEW


RIGHT SIDE VIEW


LEFT SIDE VIEW


BACK VIEW

DRAWN JTB CHECKED SPR

SOIL PROFILE
LABORATORY TEST DATA

HAM-71-3.81

17
175

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UNCONFINED COMPRESSIVE STRENGTH OF COHESIVE SOILS
ASTM D2166

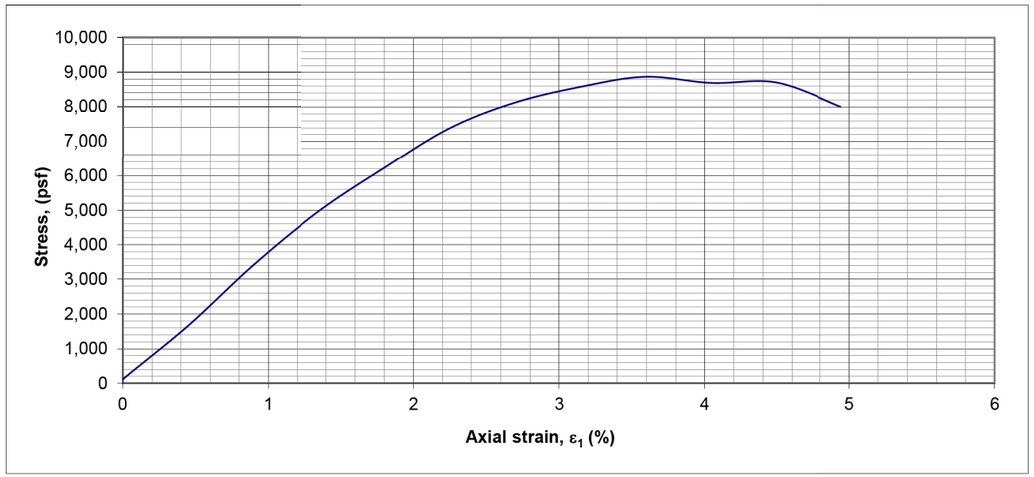
CLIENT : HDR Enginerring, Inc.
DATE: 6/2/2014
PROJECT NO.: 140358N
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

BORING NO.: 044-0-14 (Ramp C Sta. 673+99, 20' Lt.) SAMPLE NO.: ST-1 DEPTH (ft.): 8.1-8.6
SAMPLE OBTAINED BY: Shelby Tube CONDITION: Undisturbed
SAMPLE DESCRIPTION: Hard, brown to orange-brown, SANDY SILT, some clay, trace gravel, moist

LIQUID LIMIT (%): 30 PLASTIC LIMIT (%): 21 PLASTICITY INDEX (%): 9 ODOT: A-4a (6)
GRAVEL (%): 9.0 SAND (%): 24.0 SILT (%): 37.0 CLAY (%): 30.0
SPECIFIC GRAVITY OF SOLIDS: 2.689 (Per ASTM D854) LOAD CELL NO.: 1059

SAMPLE DATA	
DIAMETER (in.):	2.82
HEIGHT (in.):	5.56
HEIGHT TO DIAMETER RATIO:	1.97
WET UNIT WEIGHT (pcf):	142.4
DRY UNIT WEIGHT (pcf):	124.7
VOID RATIO:	0.35
MOISTURE CONTENT (%)*:	14.2
DEGREE OF SATURATION (%):	100

FAILURE DATA	
AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**1.1**
AXIAL STRAIN AT FAILURE (%):	**3.6**
TIME TO FAILURE (min.):	**3.9**
UNCONFINED COMPRESSIVE STRENGTH, q_u (psf):	**8,870**
UNDRAINED SHEAR STRENGTH, s_u (psf):	**4,435**
SENSITIVITY, S_t:	**-**



REMARKS :

*Moisture content determined after shear from entire sample.

UNCONFINED COMPRESSIVE STRENGTH OF COHESIVE SOILS
ASTM D2166

BORING NO.: 044-0-14 (Ramp C Sta. 673+99, 20' Lt.)
SAMPLE NO.: ST-1
DEPTH (ft.): 8.1-8.6

FAILURE SHAPE


FRONT VIEW


RIGHT SIDE VIEW


LEFT SIDE VIEW


BACK VIEW

DRAWN JTB CHECKED SPR

SOIL PROFILE
LABORATORY TEST DATA

HAM-71-3.81

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UNCONFINED COMPRESSIVE STRENGTH OF COHESIVE SOILS
ASTM D2166

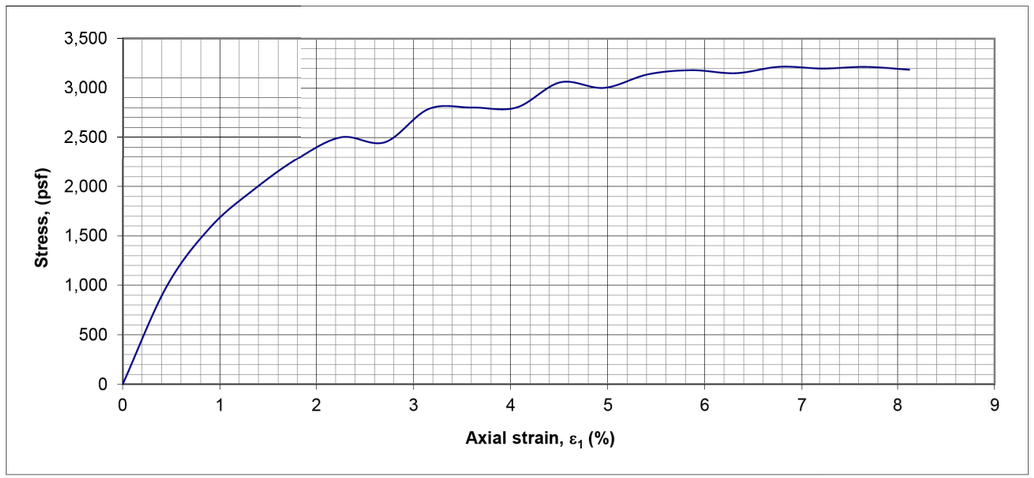
CLIENT : HDR Engineering, Inc.
DATE: 6/2/2014
PROJECT NO.: 140358N
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

BORING NO.: 064-0-14 (MLK Dr. Sta. 103+15, 67' Lt.) SAMPLE NO.: ST-1 DEPTH (ft.): 23.3-23.8
SAMPLE OBTAINED BY: Shelby Tube CONDITION: Undisturbed
SAMPLE DESCRIPTION: Stiff, mottled brown and gray, SILTY CLAY, little sand, trace gravel

LIQUID LIMIT (%): 39 PLASTIC LIMIT (%): 20 PLASTICITY INDEX (%): 19 ODOT: A-6b (12)
GRAVEL (%): 1.0 SAND (%): 10.0 SILT (%): 43.0 CLAY (%): 46.0
SPECIFIC GRAVITY OF SOLIDS: 2.675 (Per ASTM D854) LOAD CELL NO.: 1059

SAMPLE DATA	
DIAMETER (in.):	2.81
HEIGHT (in.):	5.54
HEIGHT TO DIAMETER RATIO:	1.97
WET UNIT WEIGHT (pcf):	137.4
DRY UNIT WEIGHT (pcf):	116.9
VOID RATIO:	0.43
MOISTURE CONTENT (%)*:	17.5
DEGREE OF SATURATION (%):	100

FAILURE DATA	
AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**1.1**
AXIAL STRAIN AT FAILURE (%):	**6.8**
TIME TO FAILURE (min.):	**7.3**
UNCONFINED COMPRESSIVE STRENGTH, q_u (psf):	**3,220**
UNDRAINED SHEAR STRENGTH, s_u (psf):	**1,610**
SENSITIVITY, S_t:	**-**



REMARKS :

*Moisture content determined after shear from entire sample.

UNCONFINED COMPRESSIVE STRENGTH OF COHESIVE SOILS
ASTM D2166

BORING NO.: 064-0-14 (MLK Dr. Sta. 103+15, 67' Lt.)
SAMPLE NO.: ST-1
DEPTH (ft.): 23.3-23.8

FAILURE SHAPE


FRONT VIEW


RIGHT SIDE VIEW


LEFT SIDE VIEW


BACK VIEW

DRAWN JTB CHECKED SPR

SOIL PROFILE
LABORATORY TEST DATA

HAM-71-3.81

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UNCONFINED COMPRESSIVE STRENGTH OF COHESIVE SOILS
ASTM D2166

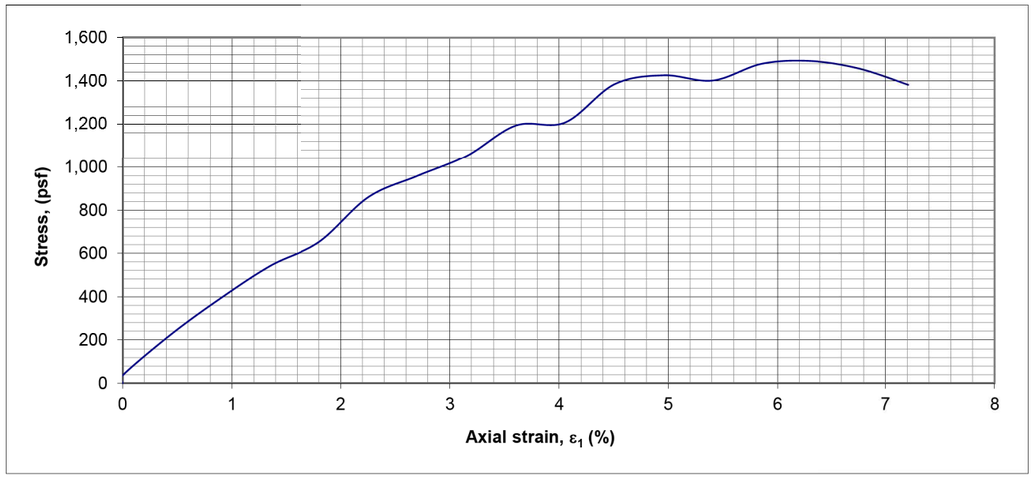
CLIENT : HDR Engineering, Inc.
DATE: 6/2/2014
PROJECT NO.: 140358N
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

BORING NO.: 078-0-14 (I-71 Sta. 294+00, 110' Rt.) SAMPLE NO.: ST-1 DEPTH (ft.): 45.0-45.5
SAMPLE OBTAINED BY: Shelby Tube CONDITION: Undisturbed
SAMPLE DESCRIPTION: Medium stiff, gray, SILT AND CLAY, some sand, trace gravel, moist

LIQUID LIMIT (%): 27 PLASTIC LIMIT (%): 15 PLASTICITY INDEX (%): 12 ODOT: A-6a (7)
GRAVEL (%): 5.0 SAND (%): 27.0 SILT (%): 34.0 CLAY (%): 34.0
SPECIFIC GRAVITY OF SOLIDS: 2.633 (Per ASTM D854) LOAD CELL NO.: 1059

SAMPLE DATA	
DIAMETER (in.):	2.82
HEIGHT (in.):	5.55
HEIGHT TO DIAMETER RATIO:	1.97
WET UNIT WEIGHT (pcf):	134.9
DRY UNIT WEIGHT (pcf):	111.9
VOID RATIO:	0.47
MOISTURE CONTENT (%)*:	20.5
DEGREE OF SATURATION (%):	100

FAILURE DATA	
AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**1.1**
AXIAL STRAIN AT FAILURE (%):	**6.3**
TIME TO FAILURE (min.):	**6.8**
UNCONFINED COMPRESSIVE STRENGTH, q_u (psf):	**1,490**
UNDRAINED SHEAR STRENGTH, s_u (psf):	**745**
SENSITIVITY, S_t:	**-**



REMARKS :

*Moisture content determined after shear from entire sample.

UNCONFINED COMPRESSIVE STRENGTH OF COHESIVE SOILS
ASTM D2166

BORING NO.: 078-0-14 (I-71 Sta. 294+00, 110' Rt.)
SAMPLE NO.: ST-1
DEPTH (ft.): 45.0-45.5

FAILURE SHAPE


FRONT VIEW


RIGHT SIDE VIEW


LEFT SIDE VIEW


BACK VIEW

SOIL PROFILE
LABORATORY TEST DATA
HAM-71-3.81

DRAWN JTB CHECKED SPR

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UNCONFINED COMPRESSIVE STRENGTH OF COHESIVE SOILS
ASTM D2166

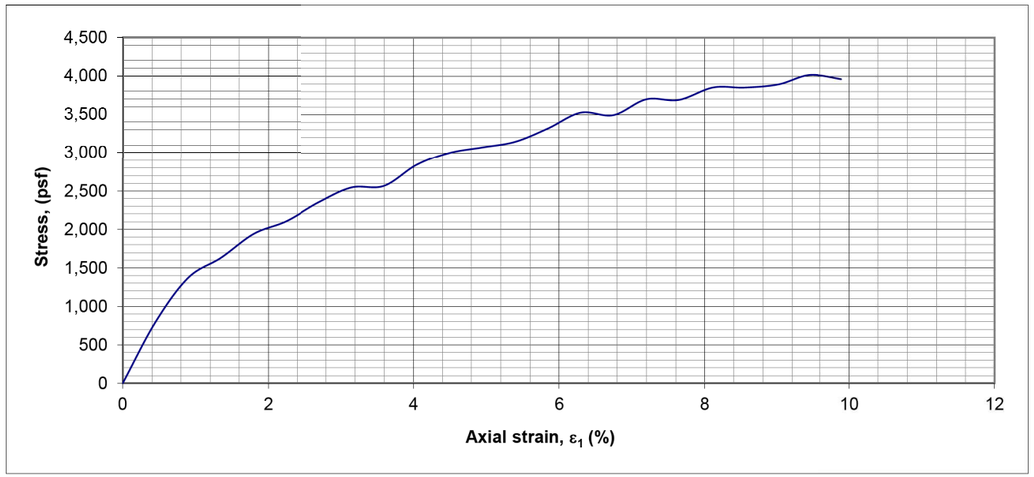
CLIENT : HDR Engineering, Inc.
DATE: 6/2/2014
PROJECT NO.: 140358N
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

BORING NO.: 079-0-14 (I-71 Sta. 295+55, 115' Lt.) SAMPLE NO.: ST-1 DEPTH (ft.): 15.2-15.7
SAMPLE OBTAINED BY: Shelby Tube CONDITION: Undisturbed
SAMPLE DESCRIPTION: Very stiff, brown and gray, SILT AND CLAY, some sand, little gravel, moist (FILL)

LIQUID LIMIT (%): 33 PLASTIC LIMIT (%): 18 PLASTICITY INDEX (%): 15 ODOT: A-6a (8)
GRAVEL (%): 12.0 SAND (%): 22.0 SILT (%): 31.0 CLAY (%): 35.0
SPECIFIC GRAVITY OF SOLIDS: 2.661 (Per ASTM D854) LOAD CELL NO.: 1059

SAMPLE DATA	
DIAMETER (in.):	2.81
HEIGHT (in.):	5.56
HEIGHT TO DIAMETER RATIO:	1.98
WET UNIT WEIGHT (pcf):	140.8
DRY UNIT WEIGHT (pcf):	120.9
VOID RATIO:	0.37
MOISTURE CONTENT (%)*:	16.5
DEGREE OF SATURATION (%):	100

FAILURE DATA	
AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**1.1**
AXIAL STRAIN AT FAILURE (%):	**9.4**
TIME TO FAILURE (min.):	**10.2**
UNCONFINED COMPRESSIVE STRENGTH, q_u (psf):	**4,020**
UNDRAINED SHEAR STRENGTH, s_u (psf):	**2,010**
SENSITIVITY, S_t:	**-**



REMARKS :

*Moisture content determined after shear from entire sample.

UNCONFINED COMPRESSIVE STRENGTH OF COHESIVE SOILS
ASTM D2166

BORING NO.: 079-0-14 (I-71 Sta. 295+55, 115' Lt.)
SAMPLE NO.: ST-1
DEPTH (ft.): 15.2-15.7

FAILURE SHAPE


FRONT VIEW


RIGHT SIDE VIEW


LEFT SIDE VIEW


BACK VIEW

DRAWN JTB CHECKED SPR

SOIL PROFILE
LABORATORY TEST DATA

HAM-71-3.81

21
175

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ONE-DIMENSIONAL CONSOLIDATION PROPERTIES OF SOILS USING INCREMENTAL LOADING
ASTM D2435

CLIENT : HDR Engineering, Inc.
PROJECT NO.: 140358N
DATE: 5/29/2014
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

BORING NO.: 034-0-14 (SR-71 Sta. 256+50, 78' Lt.) SAMPLE NO.: ST-1 DEPTH (ft.): 17.5-19.5
SAMPLE OBTAINED BY: Shelby Tube CONDITION: Undisturbed
SAMPLE DESCRIPTION: Medium stiff, gray, SILT AND CLAY, little sand, trace gravel, moist

LIQUID LIMIT (%): 29 PLASTIC LIMIT (%): 18 PLASTICITY INDEX (%): 11 ODOT: A-6a (8)
GRAVEL (%): 3.0 SAND (%): 15.0 SILT (%): 44.0 CLAY (%): 38.0
SPECIFIC GRAVITY OF SOLIDS: 2.696 (Per ASTM D854)

SAMPLE DATA

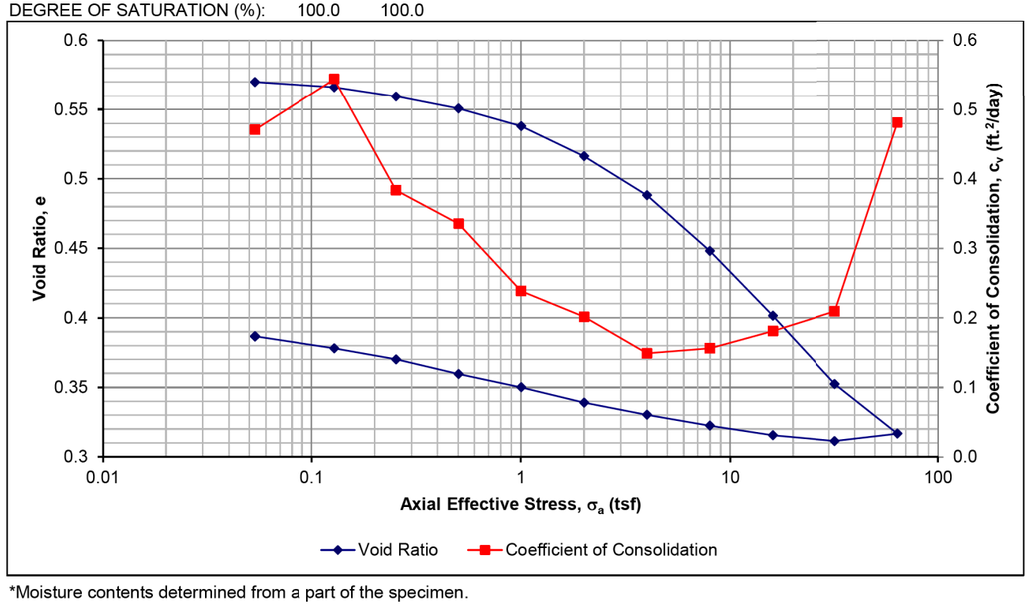
	INITIAL	FINAL
DIAMETER (in.):	2.499	-
HEIGHT (in.):	1.000	0.882
FINAL HEIGHT DIFFERENTIAL (in.):	-	0.000
HEIGHT TO DIAMETER RATIO:	2.50	
AVERAGE MOISTURE CONTENT OF TRIMMINGS (%):	20.62	-
MOISTURE CONTENT (%)*:	21.79	16.91
WET UNIT WEIGHT (pcf):	130.4	141.9
DRY UNIT WEIGHT (pcf):	107.1	121.4
VOID RATIO:	0.57	0.39
DEGREE OF SATURATION (%):	100.0	100.0

EQUIPMENT DATA

APPARATUS:	1064 Conbel (SN 726)
TECHNICIAN:	I. Ivanov
TEST METHOD:	B
c_v INTERPRETATION METHOD:	1

CONSOLIDATION DATA

COMPRESSION INDEX, C_c:	0.16
RECOMPRESSION INDEX, C_r:	0.04
PRECONSOLIDATION PRESSURE, σ_{pc} (tsf):	2.40



*Moisture contents determined from a part of the specimen.

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ONE-DIMENSIONAL CONSOLIDATION PROPERTIES OF SOILS USING INCREMENTAL LOADING
ASTM D2435

CLIENT : HDR Engineering, Inc.
PROJECT NO.: 140358N
DATE: 6/3/2014
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

BORING NO.: 036-0-14 (Ramp C Sta. 658+05, 20' Lt.) SAMPLE NO.: ST-1 DEPTH (ft.): 30.0-31.0
SAMPLE OBTAINED BY: Shelby Tube CONDITION: Undisturbed
SAMPLE DESCRIPTION: Stiff, blue-gray, SILTY CLAY, some gravel, little sand, damp to moist (LACUSTRINE)

LIQUID LIMIT (%): 36 PLASTIC LIMIT (%): 18 PLASTICITY INDEX (%): 18 ODOT: A-6b (8)
GRAVEL (%): 22.0 SAND (%): 17.0 SILT (%): 25.0 CLAY (%): 36.0
SPECIFIC GRAVITY OF SOLIDS: 2.63 (Per ASTM D854)

SAMPLE DATA

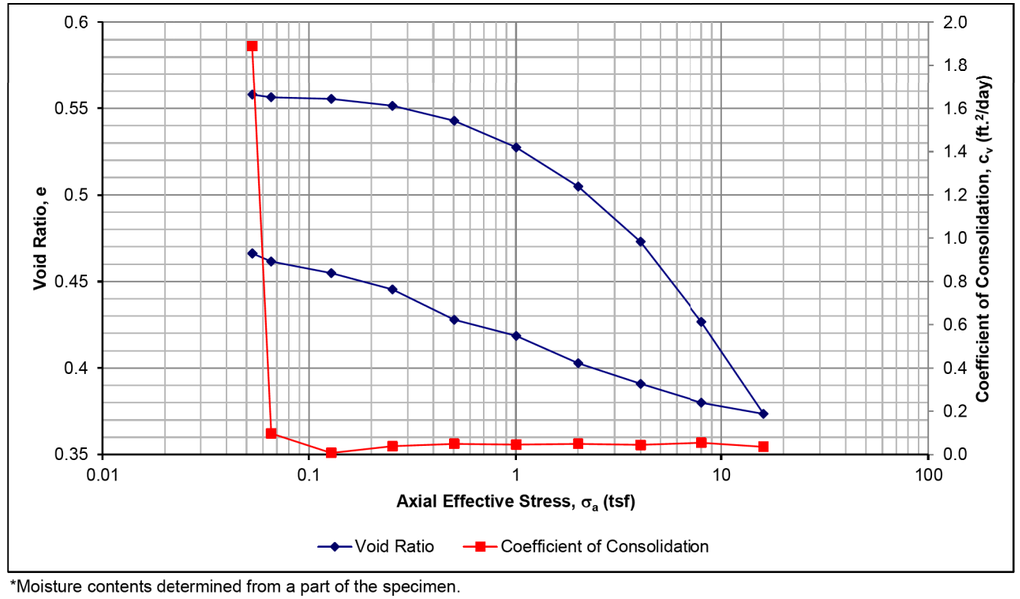
	INITIAL	FINAL
DIAMETER (in.):	2.500	-
HEIGHT (in.):	0.996	0.938
FINAL HEIGHT DIFFERENTIAL (in.):	-	0.000
HEIGHT TO DIAMETER RATIO:	2.51	
AVERAGE MOISTURE CONTENT OF TRIMMINGS (%):	21.12	-
MOISTURE CONTENT (%)*:	23.56	20.96
WET UNIT WEIGHT (pcf):	130.3	135.4
DRY UNIT WEIGHT (pcf):	105.5	112.0
VOID RATIO:	0.56	0.47
DEGREE OF SATURATION (%):	100.0	100.0

EQUIPMENT DATA

APPARATUS:	Soiltest C-280 (SN8810-A)
TECHNICIAN:	SD
TEST METHOD:	B
c_v INTERPRETATION METHOD:	1

CONSOLIDATION DATA

COMPRESSION INDEX, C_c:	0.21
RECOMPRESSION INDEX, C_r:	0.04
PRECONSOLIDATION PRESSURE, σ_{pc} (tsf):	2.30



*Moisture contents determined from a part of the specimen.

DRAWN JTB CHECKED SPR

SOIL PROFILE
LABORATORY TEST DATA

HAM-71-3.81

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ONE-DIMENSIONAL CONSOLIDATION PROPERTIES OF SOILS USING INCREMENTAL LOADING
ASTM D2435

DATE: 6/3/2014

CLIENT : HDR Engineering, Inc.
PROJECT NO.: 140358N
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

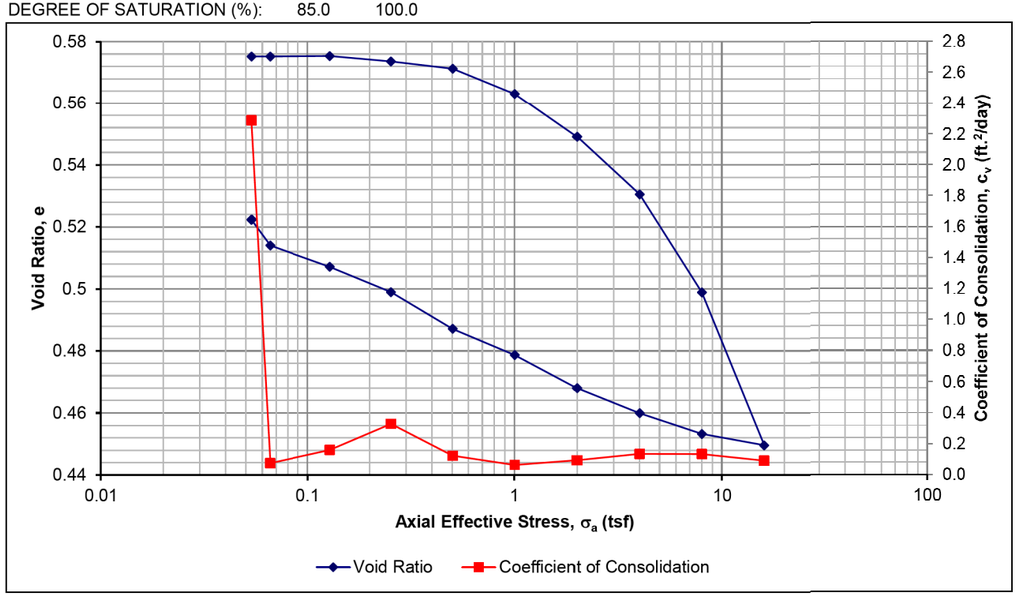
BORING NO.: 038-0-14 (Ramp C Sta. 660+98, 22' Lt.) SAMPLE NO.: ST-1 DEPTH (ft.): 6.5-8.5
SAMPLE OBTAINED BY: Shelby Tube CONDITION: Undisturbed
SAMPLE DESCRIPTION: Very stiff to hard, brown CLAY, "and" silt, trace to little sand, damp

LIQUID LIMIT (%): 44 PLASTIC LIMIT (%): 21 PLASTICITY INDEX (%): 23 ODOT: A-7-6 (14)
GRAVEL (%): 0.0 SAND (%): 6.0 SILT (%): 45.0 CLAY (%): 49.0
SPECIFIC GRAVITY OF SOLIDS: 2.633 (Per ASTM D854)

SAMPLE DATA	INITIAL	FINAL
DIAMETER (in.):	2.500	-
HEIGHT (in.):	1.075	1.042
FINAL HEIGHT DIFFERENTIAL (in.):	-	0.000
HEIGHT TO DIAMETER RATIO:	2.33	
AVERAGE MOISTURE CONTENT OF TRIMMINGS (%):	14.96	-
MOISTURE CONTENT (%)*:	18.40	22.37
WET UNIT WEIGHT (pcf):	123.9	132.1
DRY UNIT WEIGHT (pcf):	104.7	108.0
VOID RATIO:	0.57	0.52
DEGREE OF SATURATION (%):	85.0	100.0

EQUIPMENT DATA	
APPARATUS:	Soiltest C-280 (SN8810-A)
TECHNICIAN:	SD
TEST METHOD:	B
c_v INTERPRETATION METHOD:	1

CONSOLIDATION DATA	
COMPRESSION INDEX, C_c:	0.19
RECOMPRESSION INDEX, C_r:	0.03
PRECONSOLIDATION PRESSURE, σ_{pc} (tsf):	4.20



*Moisture contents determined from a part of the specimen.

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ONE-DIMENSIONAL CONSOLIDATION PROPERTIES OF SOILS USING INCREMENTAL LOADING
ASTM D2435

DATE: 6/3/2014

CLIENT : HDR Engineering, Inc.
PROJECT NO.: 140358N
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

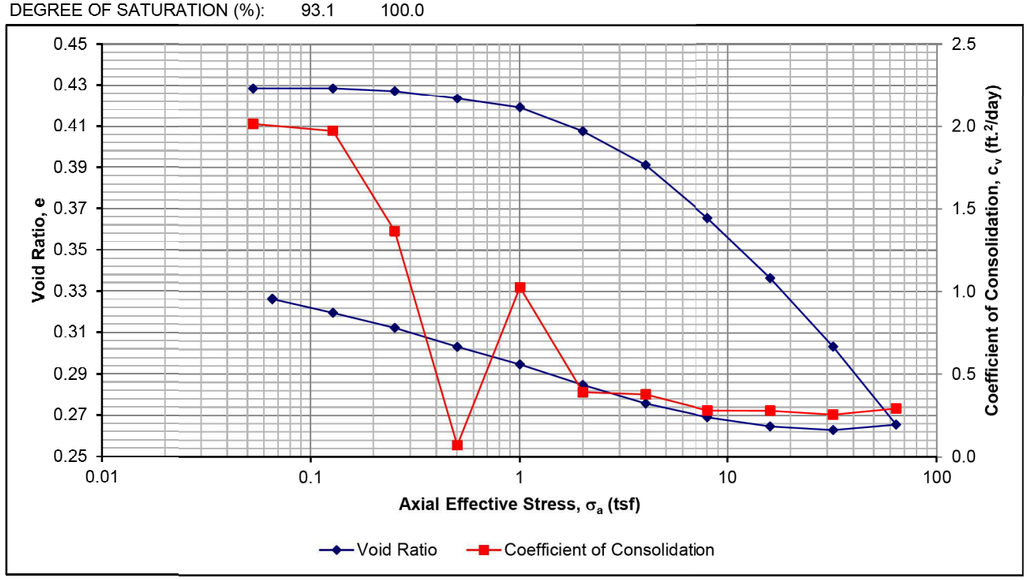
BORING NO.: 044-0-14 (Ramp C Sta. 673+99, 20' Lt.) SAMPLE NO.: ST-1 DEPTH (ft.): 7.5-8.0
SAMPLE OBTAINED BY: Shelby Tube CONDITION: Undisturbed
SAMPLE DESCRIPTION: Hard, brown to orange-brown, SANDY SILT, some clay, trace gravel, moist

LIQUID LIMIT (%): 30 PLASTIC LIMIT (%): 21 PLASTICITY INDEX (%): 9 ODOT: A-4a (6)
GRAVEL (%): 9.0 SAND (%): 24.0 SILT (%): 37.0 CLAY (%): 30.0
SPECIFIC GRAVITY OF SOLIDS: 2.689 (Per ASTM D854)

SAMPLE DATA	INITIAL	FINAL
DIAMETER (in.):	2.501	-
HEIGHT (in.):	0.999	0.929
FINAL HEIGHT DIFFERENTIAL (in.):	-	0.000
HEIGHT TO DIAMETER RATIO:	2.50	
AVERAGE MOISTURE CONTENT OF TRIMMINGS (%):	12.68	-
MOISTURE CONTENT (%)*:	14.77	13.88
WET UNIT WEIGHT (pcf):	135.0	144.1
DRY UNIT WEIGHT (pcf):	117.7	126.6
VOID RATIO:	0.43	0.33
DEGREE OF SATURATION (%):	93.1	100.0

EQUIPMENT DATA	
APPARATUS:	Soiltest C-280 (SN8810-A)
TECHNICIAN:	I. Ivanov
TEST METHOD:	B
c_v INTERPRETATION METHOD:	1

CONSOLIDATION DATA	
COMPRESSION INDEX, C_c:	0.13
RECOMPRESSION INDEX, C_r:	0.03
PRECONSOLIDATICN PRESSURE, σ_{pc} (tsf):	4.50



*Moisture contents determined from a part of the specimen.

DRAWN JTB CHECKED SPR

SOIL PROFILE
LABORATORY TEST DATA

HAM-71-3.81

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ONE-DIMENSIONAL CONSOLIDATION PROPERTIES OF SOILS USING INCREMENTAL LOADING
ASTM D2435

DATE: 7/3/2014

CLIENT : HDR Engineering, Inc.
PROJECT NO.: 140358N
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

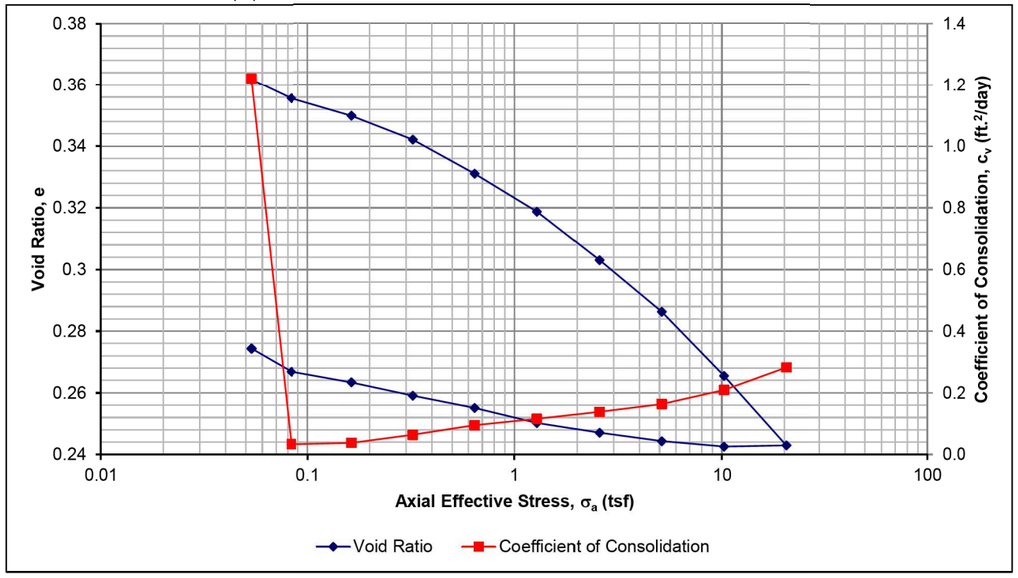
BORING NO.: 050-0-14 (Ramp A Sta. 369+00, 45' Rt.) SAMPLE NO.: ST-1B DEPTH (ft.): 22.5-23.0
SAMPLE OBTAINED BY: Shelby Tube CONDITION: Undisturbed
SAMPLE DESCRIPTION: Soft to medium stiff, tan and gray, SANDY SILT, some clay, little gravel, moist to wet

LIQUID LIMIT (%): 23 PLASTIC LIMIT (%): 16 PLASTICITY INDEX (%): 7 ODCT: A-4a (6)
GRAVEL (%): 11.0 SAND (%): 22.0 SILT (%): 38.0 CLAY (%): 29.0
SPECIFIC GRAVITY OF SOLIDS: 2.715 (Per ASTM D854)

SAMPLE DATA	INITIAL	FINAL
DIAMETER (in.):	2.500	-
HEIGHT (in.):	1.000	0.933
FINAL HEIGHT DIFFERENTIAL (in.):	-	0.000
HEIGHT TO DIAMETER RATIO:	2.50	
AVERAGE MOISTURE CONTENT OF TRIMMINGS (%):	13.14	-
MOISTURE CONTENT (%)*:	13.72	11.53
WET UNIT WEIGHT (pcf):	141.2	148.3
DRY UNIT WEIGHT (pcf):	124.2	133.0
VOID RATIO:	0.36	0.27
DEGREE OF SATURATION (%):	100.0	100.0

EQUIPMENT DATA	
APPARATUS:	Soiltest C-280 (SN8810-B)
TECHNICIAN:	I. Ivanov
TEST METHOD:	B
c_v INTERPRETATION METHOD:	1

CONSOLIDATION DATA	
COMPRESSION INDEX, C_c:	0.09
RECOMPRESSION INDEX, C_r:	0.01
PRECONSOLIDATION PRESSURE, σ_{pc} (tsf):	1.80



*Moisture contents determined from a part of the specimen.

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ONE-DIMENSIONAL CONSOLIDATION PROPERTIES OF SOILS USING INCREMENTAL LOADING
ASTM D2435

DATE: 6/7/2014

CLIENT : HDR Engineering, Inc.
PROJECT NO.: 140358N
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

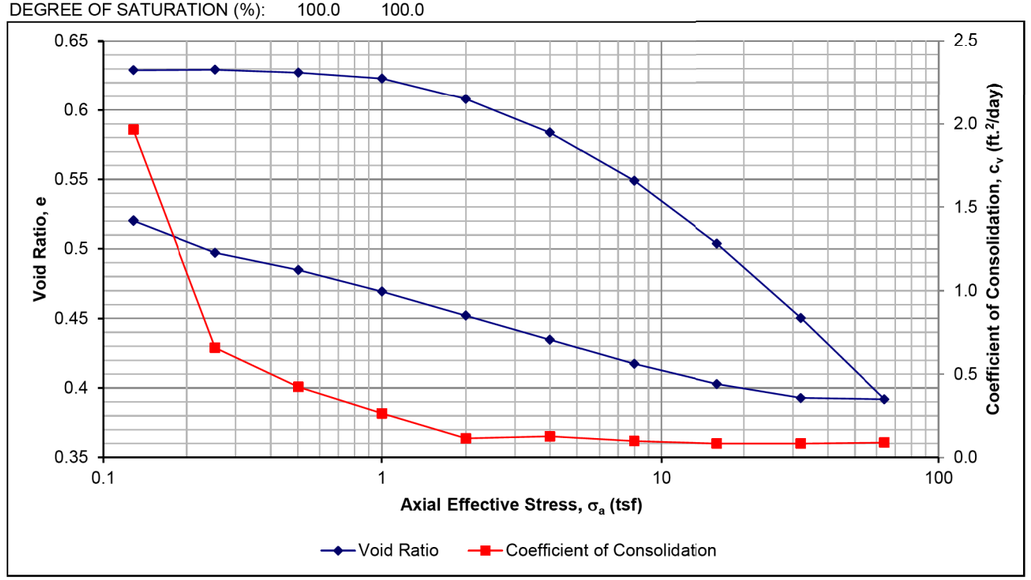
BORING NO.: 053-0-14 (Ramp A Sta. 373+34, 89' Rt.) SAMPLE NO.: ST-1 DEPTH (ft.): 11.5-13.5
SAMPLE OBTAINED BY: Shelby Tube CONDITION: Undisturbed
SAMPLE DESCRIPTION: Soft, blue-gray, CLAY, some silt, little gravel, trace sand, wet (FILL)

LIQUID LIMIT (%): 42 PLASTIC LIMIT (%): 22 PLASTICITY INDEX (%): 20 ODOT: A-7-6 (12)
GRAVEL (%): 15 SAND (%): 9 SILT (%): 33 CLAY (%): 43
SPECIFIC GRAVITY OF SOLIDS: 2.638 (Per ASTM D854)

SAMPLE DATA	INITIAL	FINAL
DIAMETER (in.):	2.500	-
HEIGHT (in.):	0.999	0.931
FINAL HEIGHT DIFFERENTIAL (in.):	-	0.000
HEIGHT TO DIAMETER RATIO:	2.50	
AVERAGE MOISTURE CONTENT OF TRIMMINGS (%):	20.38	-
MOISTURE CONTENT (%)*:	25.40	23.05
WET UNIT WEIGHT (pcf):	126.7	133.3
DRY UNIT WEIGHT (pcf):	101.0	108.3
VOID RATIO:	0.63	0.52
DEGREE OF SATURATION (%):	100.0	100.0

EQUIPMENT DATA	
APPARATUS:	Soiltest C-280 (SN8810-B)
TECHNICIAN:	I. Ivanov
TEST METHOD:	B
c_v INTERPRETATION METHOD:	1

CONSOLIDATION DATA	
COMPRESSION INDEX, C_c:	0.20
RECOMPRESSION INDEX, C_r:	0.06
PRECONSOLIDATION PRESSURE, σ_{pc} (tsf):	5.60



*Moisture contents determined from a part of the specimen.

DRAWN JTB CHECKED SPR

SOIL PROFILE
LABORATORY TEST DATA

HAM-71-3.81

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CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

CLIENT : HDR Enginerring, Inc.
PROJECT NO.: 140358N
DATE: 5/24/2014
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

BORING NO.: 033-0-14 (Ramp D Sta. 554+99, 11' Rt.) SAMPLE NO.: ST-1B DEPTH (ft.): 10.5-11.0
SAMPLE OBTAINED BY: Shelby Tube CONDITION: Undisturbed
SAMPLE DESCRIPTION: Soft to medium stiff, gray, SILT AND CLAY, little sand, trace gravel, moist

LIQUID LIMIT (%): 35 PLASTIC LIMIT (%): 20 PLASTICITY INDEX (%): 15 ODOT: A-6a (10)
GRAVEL (%): 2.0 SAND (%): 12.0 SILT (%): 40.0 CLAY (%): 46.0
SPECIFIC GRAVITY OF SOLIDS: 2.683 (Per ASTM D854) LOAD CELL NO.: 1008

SAMPLE DATA (INITIAL/AFTER CONSOLIDATION)

	INITIAL	AFTER
DIAMETER (in.):	2.80	2.77
HEIGHT (in.):	5.53	5.52
HEIGHT TO DIAMETER RATIO:	1.98	1.99
WET UNIT WEIGHT (pcf):	135.3	138.2
DRY UNIT WEIGHT (pcf):	110.9	113.4
VOID RATIO:	0.51	0.48
MOISTURE CONTENT (%)*:	21.9	21.9
DEGREE OF SATURATION (%):	100	100

SATURATION & CONSOLIDATION DATA

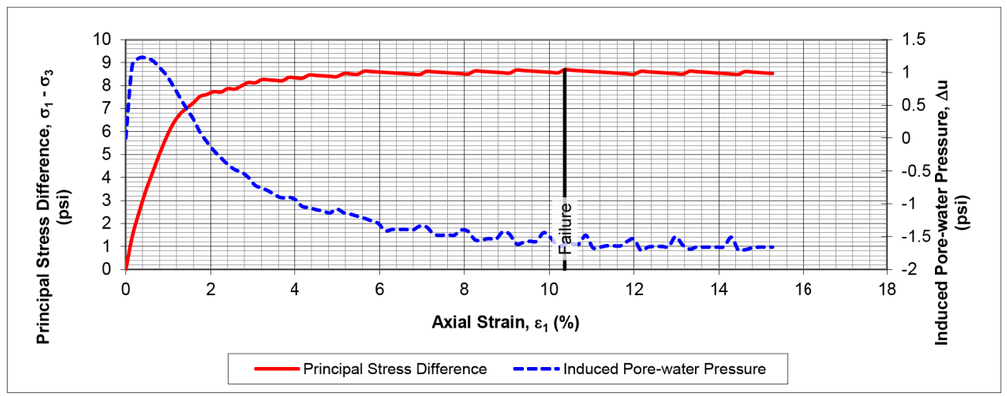
SATURATION METHOD:	Wet Method
PORE PRESSURE PARAMETER B:	0.95
TOTAL BACK PRESSURE (psi):	8.1
EFFECTIVE CONSOLIDATION PRESSURE (psi):	5
CROSS-SECTIONAL AREA AFTER CONSOLIDATION ($in.^2$)**:	6.02
TIME TO 50% PRIMARY CONSOLIDATION, t_{50} (min.):	N/A

FAILURE DATA***

AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**0.016**
AXIAL STRAIN AT FAILURE (%):	**10.4**
PRINCIPAL STRESS DIFFERENCE AT FAILURE, $\sigma_1 - \sigma_3$ (psi):	**8.7**
EFFECTIVE MINOR PRINCIPAL STRESS AT FAILURE, σ_3' (psi):	**5.8**
EFFECTIVE MAJOR PRINCIPAL STRESS AT FAILURE, σ_1' (psi):	**14.5**
INDUCED PORE-WATER PRESSURE AT FAILURE, Δu (psi):	**-1.6**

SOIL STRENGTH PARAMETERS

COHESION, c (psf):	**0**
FRICTION ANGLE, ϕ (°):	**27.6**

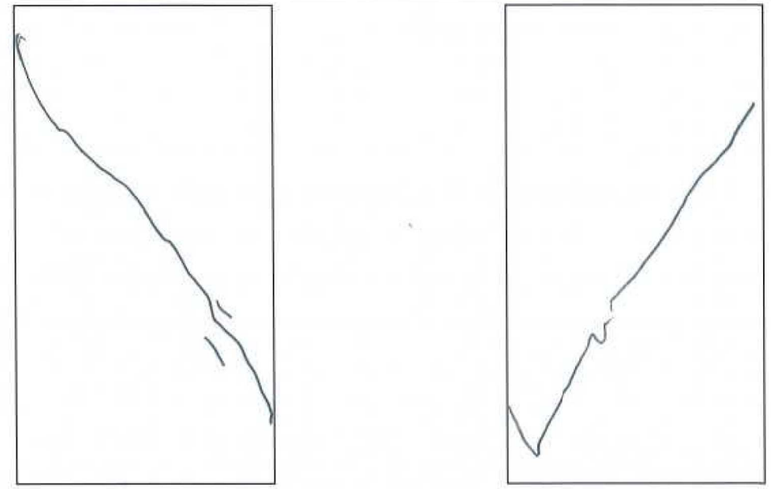


* Initial moisture content determined from sample cuttings. Final moisture content determined from entire sample.
** Cross-sectional area after consolidation determined from Method A.
*** Failure Criterion: Maximum principal stress difference. Failure stress values have been corrected for both filter strip and membrane effects.

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

BORING NO.: 033-0-14 (Ramp D Sta. 554+99, 11' Rt.)
SAMPLE NO.: ST-1B
DEPTH (ft.): 10.5-11.0

FAILURE SHAPE



FRONT VIEW SIDE VIEW

DRAWN JTB CHECKED SPR

SOIL PROFILE & LABORATORY TEST DATA

HAM-71-3.81

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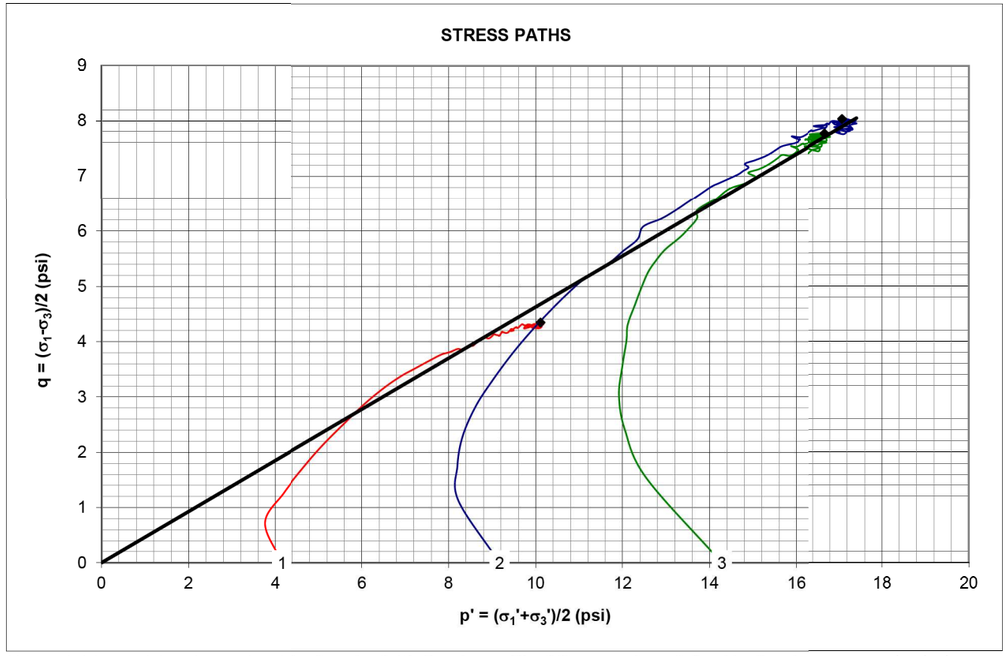
CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

BORING NO.: 033-0-14 (Ramp D Sta. 554+99, 11' Rt.)
SAMPLE NO.: ST-1B
DEPTH (ft.): 10.5-11.0



Note: $\sin(\phi) = \tan(\alpha)$ and $c = m/\cos(\phi)$, where $\tan(\alpha)$ is the slope of the failure envelope defined by the p'-q curves and m is the y-intercept.

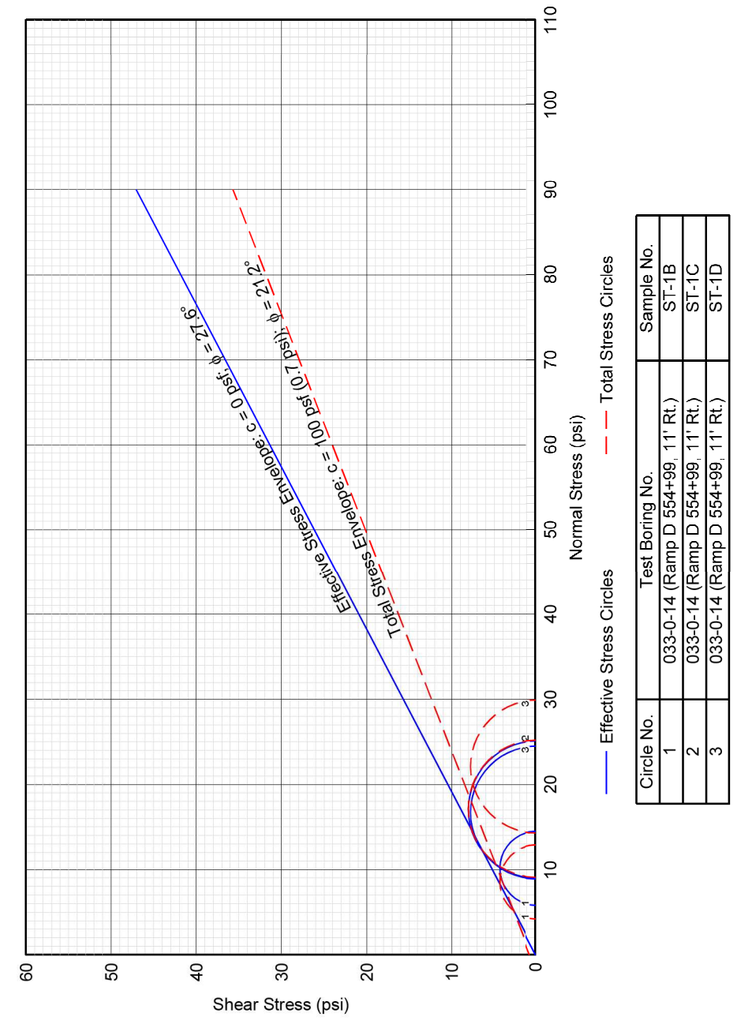
Stress Path Curve No.	Test Boring No.	Sample No.
1	033-0-14 (Ramp D Sta. 554+99, 11' Rt.)	ST-1B
2	033-0-14 (Ramp D Sta. 554+99, 11' Rt.)	ST-1C
3	033-0-14 (Ramp D Sta. 554+99, 11' Rt.)	ST-1D

REMARKS :

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

BORING NO.: 033-0-14 (Ramp D Sta. 554+99, 11' Rt.)
SAMPLE NO.: ST-1B
DEPTH (ft.): 10.5-11.0

MOHR'S CIRCLES



Circle No.	Test Boring No.	Sample No.
1	033-0-14 (Ramp D 554+99, 11' Rt.)	ST-1B
2	033-0-14 (Ramp D 554+99, 11' Rt.)	ST-1C
3	033-0-14 (Ramp D 554+99, 11' Rt.)	ST-1D

DRAWN JTB CHECKED SPR

SOIL PROFILE
LABORATORY TEST DATA

HAM-71-3.81

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CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

CLIENT : HDR Engineering, Inc.
PROJECT NO.: 140358N
DATE: 5/24/2014
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

BORING NO.: 033-0-14 (Ramp D Sta. 554+99, 11' Rt.) SAMPLE NO.: ST-1C DEPTH (ft.): 11.0-11.5
SAMPLE OBTAINED BY: Shelby Tube CONDITION: Undisturbed
SAMPLE DESCRIPTION: Soft to medium stiff, gray, SILT AND CLAY, little sand, trace gravel, moist

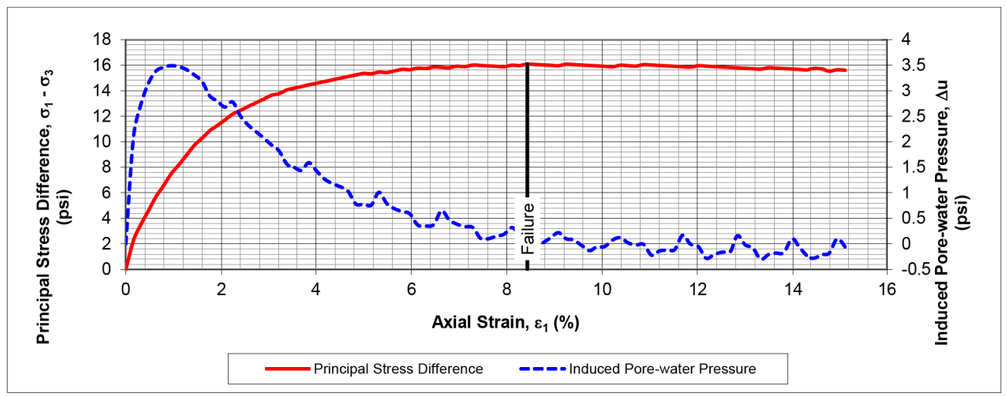
LIQUID LIMIT (%): 35 PLASTIC LIMIT (%): 20 PLASTICITY INDEX (%): 15 ODOT: A-6a (10)
GRAVEL (%): 2.0 SAND (%): 12.0 SILT (%): 40.0 CLAY (%): 46.0
SPECIFIC GRAVITY OF SOLIDS: 2.683 (Per ASTM D854) LOAD CELL NO.: 1008

SAMPLE DATA (INITIAL/AFTER CONSOLIDATION)	INITIAL	AFTER
DIAMETER (in.):	2.80	2.78
HEIGHT (in.):	5.53	5.51
HEIGHT TO DIAMETER RATIO:	1.98	1.98
WET UNIT WEIGHT (pcf):	135.7	137.9
DRY UNIT WEIGHT (pcf):	111.8	113.8
VOID RATIO:	0.50	0.47
MOISTURE CONTENT (%)*:	21.3	21.1
DEGREE OF SATURATION (%):	100	100

SATURATION & CONSOLIDATION DATA	
SATURATION METHOD:	Wet Method
PORE PRESSURE PARAMETER B:	0.95
TOTAL BACK PRESSURE (psi):	13.1
EFFECTIVE CONSOLIDATION PRESSURE (psi):	10
CROSS-SECTIONAL AREA AFTER CONSOLIDATION ($in.^2$)**:	6.07
TIME TO 50% PRIMARY CONSOLIDATION, t_{50} (min.):	N/A

FAILURE DATA***	
AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**0.016**
AXIAL STRAIN AT FAILURE (%):	**8.4**
PRINCIPAL STRESS DIFFERENCE AT FAILURE, $\sigma_1 - \sigma_3$ (psi):	**16.1**
EFFECTIVE MINOR PRINCIPAL STRESS AT FAILURE, σ_3' (psi):	**9.0**
EFFECTIVE MAJOR PRINCIPAL STRESS AT FAILURE, σ_1' (psi):	**25.1**
INDUCED PORE-WATER PRESSURE AT FAILURE, Δu (psi):	**0.1**

SOIL STRENGTH PARAMETERS	
COHESION, c (psf):	**0**
FRICTION ANGLE, ϕ (°):	**27.6**

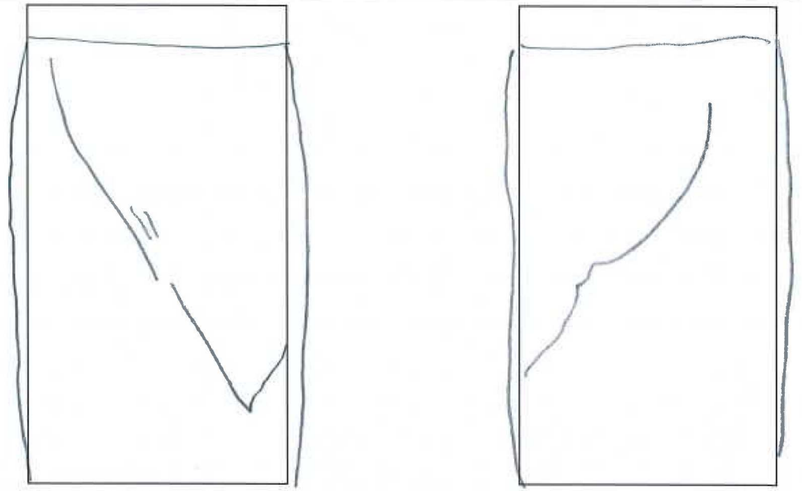


* Initial moisture content determined from sample cuttings. Final moisture content determined from entire sample.
** Cross-sectional area after consolidation determined from Method A.
*** Failure Criterion: Maximum principal stress difference. Failure stress values have been corrected for both filter strip and membrane effects.

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

BORING NO.: 033-0-14 (Ramp D Sta. 554+99, 11' Rt.)
SAMPLE NO.: ST-1C
DEPTH (ft.): 11.0-11.5

FAILURE SHAPE



FRONT VIEW SIDE VIEW

DRAWN JTB CHECKED SPR

SOIL PROFILE
LABORATORY TEST DATA

HAM-71-3.81

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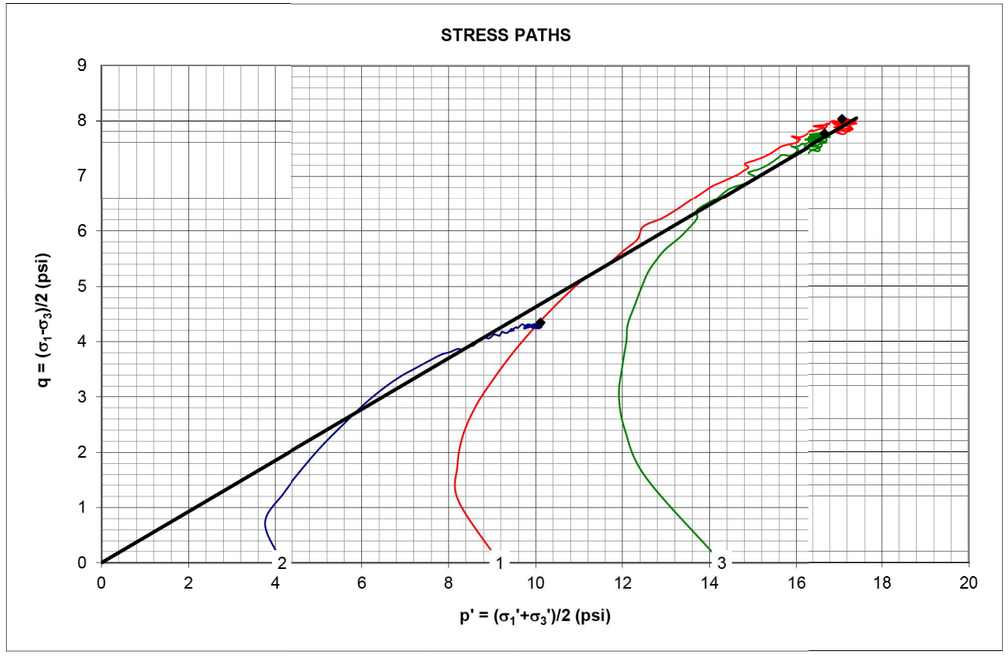
CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

BORING NO.: 033-0-14 (Ramp D Sta. 554+99, 11' Rt.)
SAMPLE NO.: ST-1C
DEPTH (ft.): 11.0-11.5



Note: $\sin(\phi) = \tan(\alpha)$ and $c = m/\cos(\phi)$, where $\tan(\alpha)$ is the slope of the failure envelope defined by the p'-q curves and m is the y-intercept.

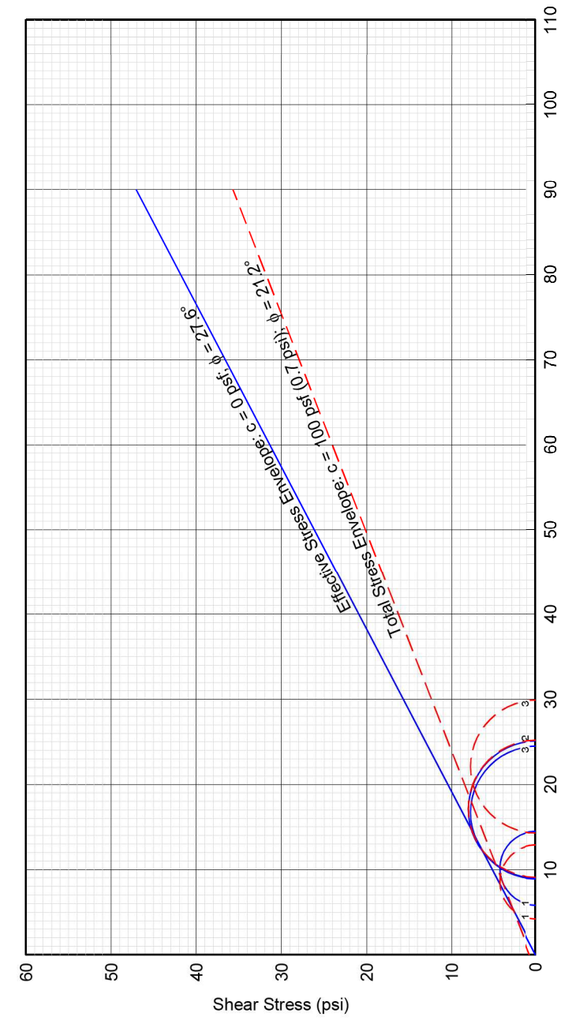
Stress Path Curve No.	Test Boring No.	Sample No.
1	033-0-14 (Ramp D Sta. 554+99, 11' Rt.)	ST-1C
2	033-0-14 (Ramp D Sta. 554+99, 11' Rt.)	ST-1B
3	033-0-14 (Ramp D Sta. 554+99, 11' Rt.)	ST-1D

REMARKS :

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

BORING NO.: 033-0-14 (Ramp D Sta. 554+99, 11' Rt.)
SAMPLE NO.: ST-1C
DEPTH (ft.): 11.0-11.5

MOHR'S CIRCLES



Circle No.	Test Boring No.	Sample No.
1	033-0-14 (Ramp D 554+99, 11' Rt.)	ST-1B
2	033-0-14 (Ramp D 554+99, 11' Rt.)	ST-1C
3	033-0-14 (Ramp D 554+99, 11' Rt.)	ST-1D

DRAWN JTB CHECKED SPR

SOIL PROFILE
LABORATORY TEST DATA

HAM-71-3.81

28
175

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CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

CLIENT : HDR Engineering, Inc.
PROJECT NO.: 140358N
DATE: 5/24/2014
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

BORING NO.: 033-0-14 (Ramp D Sta. 554+99, 11' Rt.) SAMPLE NO.: ST-1D DEPTH (ft.): 11.5-12.0
SAMPLE OBTAINED BY: Shelby Tube CONDITION: Undisturbed
SAMPLE DESCRIPTION: Soft to medium stiff, gray, SILT AND CLAY, little sand, trace gravel, moist

LIQUID LIMIT (%): 35 PLASTIC LIMIT (%): 20 PLASTICITY INDEX (%): 15 ODOT: A-6a (10)
GRAVEL (%): 2.0 SAND (%): 12.0 SILT (%): 40.0 CLAY (%): 46.0
SPECIFIC GRAVITY OF SOLIDS: 2.683 (Per ASTM D854) LOAD CELL NO.: 1008

SAMPLE DATA (INITIAL/AFTER CONSOLIDATION)

	INITIAL	AFTER
DIAMETER (in.):	2.80	2.78
HEIGHT (in.):	5.54	5.50
HEIGHT TO DIAMETER RATIO:	1.97	1.98
WET UNIT WEIGHT (pcf):	133.7	135.2
DRY UNIT WEIGHT (pcf):	109.4	111.8
VOID RATIO:	0.53	0.50
MOISTURE CONTENT (%)*:	22.2	21.0
DEGREE OF SATURATION (%):	100	100

SATURATION & CONSOLIDATION DATA

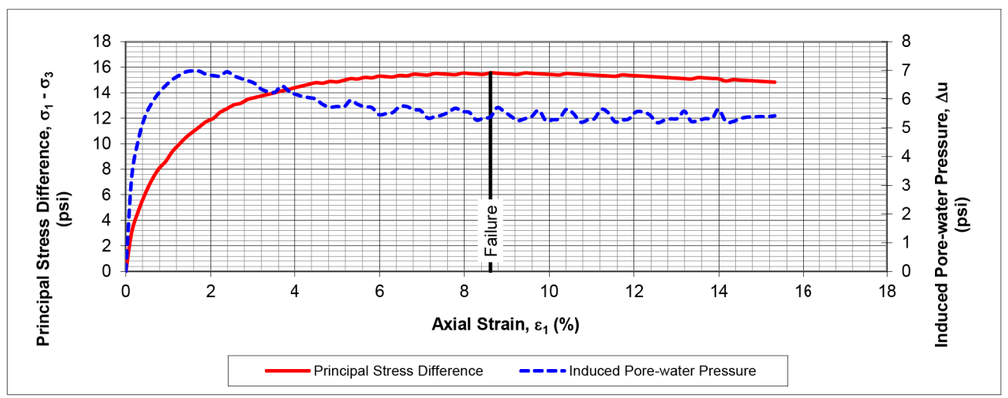
SATURATION METHOD:	Wet Method
PORE PRESSURE PARAMETER B:	0.95
TOTAL BACK PRESSURE (psi):	13
EFFECTIVE CONSOLIDATION PRESSURE (psi):	15
CROSS-SECTIONAL AREA AFTER CONSOLIDATION ($in.^2$)**:	6.09
TIME TO 50% PRIMARY CONSOLIDATION, t_{50} (min.):	N/A

FAILURE DATA***

AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**0.016**
AXIAL STRAIN AT FAILURE (%):	**8.6**
PRINCIPAL STRESS DIFFERENCE AT FAILURE, $\sigma_1 - \sigma_3$ (psi):	**15.6**
EFFECTIVE MINOR PRINCIPAL STRESS AT FAILURE, σ_3' (psi):	**8.9**
EFFECTIVE MAJOR PRINCIPAL STRESS AT FAILURE, σ_1' (psi):	**24.5**
INDUCED PORE-WATER PRESSURE AT FAILURE, Δu (psi):	**5.4**

SOIL STRENGTH PARAMETERS

COHESION, c (psf):	**0**
FRICTION ANGLE, ϕ (°):	**27.6**

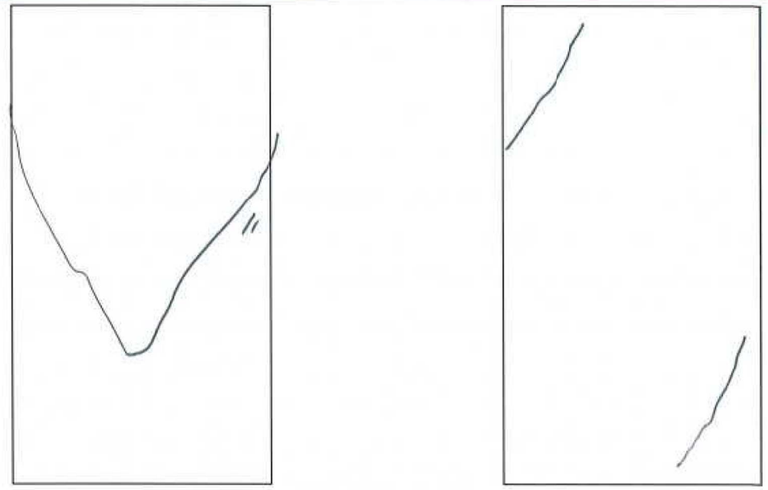


* Initial moisture content determined from sample cuttings. Final moisture content determined from entire sample.
** Cross-sectional area after consolidation determined from Method A.
*** Failure Criterion: Maximum principal stress difference. Failure stress values have been corrected for both filter strip and membrane effects.

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

BORING NO.: 033-0-14 (Ramp D Sta. 554+99, 11' Rt.)
SAMPLE NO.: ST-1D
DEPTH (ft.): 11.5-12.0

FAILURE SHAPE



FRONT VIEW SIDE VIEW

DRAWN JTB CHECKED SPR

SOIL PROFILE
LABORATORY TEST DATA

HAM-71-3.81

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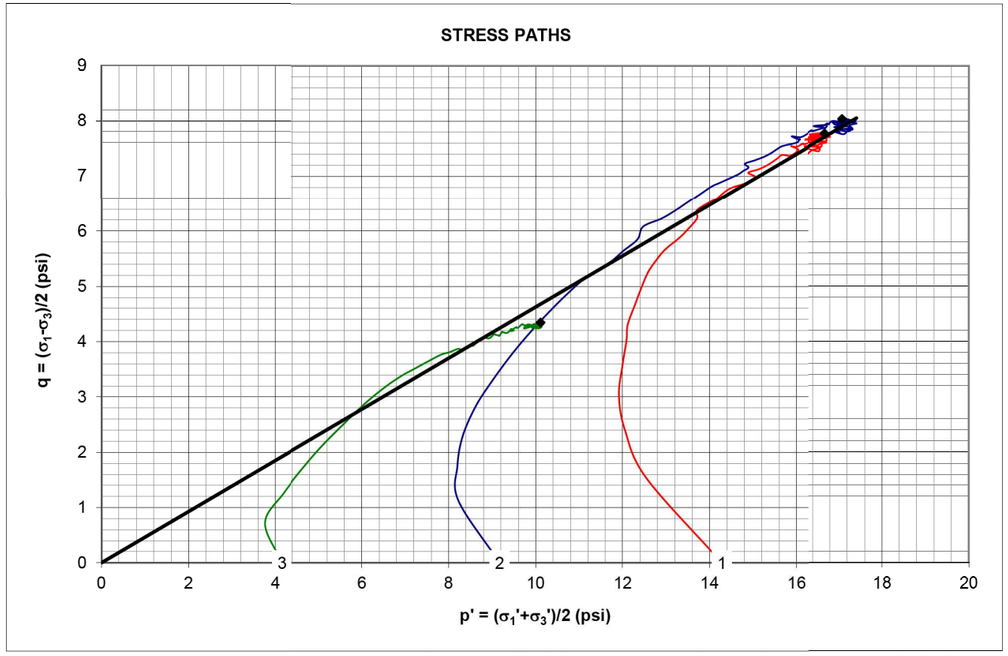
CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

BORING NO.: 033-0-14 (Ramp D Sta. 554+99, 11' Rt.)
SAMPLE NO.: ST-1D
DEPTH (ft.): 11.5-12.0



Note: $\sin(\phi) = \tan(\alpha)$ and $c = m/\cos(\phi)$, where $\tan(\alpha)$ is the slope of the failure envelope defined by the p'-q curves and m is the y-intercept.

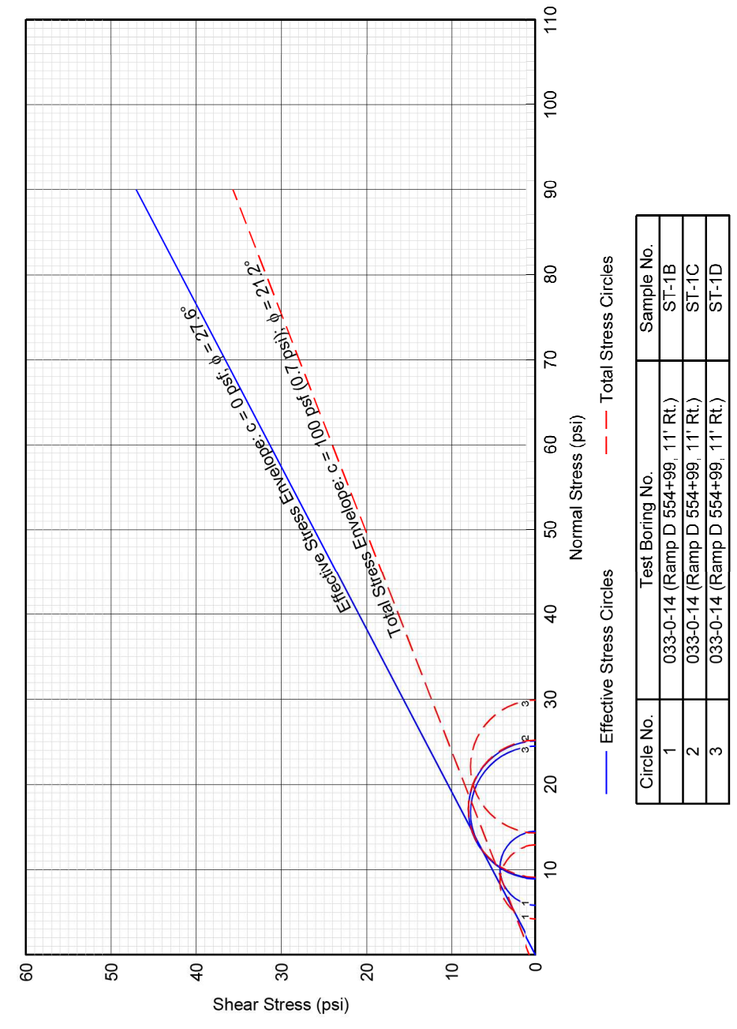
Stress Path Curve No.	Test Boring No.	Sample No.
1	033-0-14 (Ramp D Sta. 554+99, 11' Rt.)	ST-1D
2	033-0-14 (Ramp D Sta. 554+99, 11' Rt.)	ST-1C
3	033-0-14 (Ramp D Sta. 554+99, 11' Rt.)	ST-1B

REMARKS :

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

BORING NO.: 033-0-14 (Ramp D Sta. 554+99, 11' Rt.)
SAMPLE NO.: ST-1D
DEPTH (ft.): 11.5-12.0

MOHR'S CIRCLES



Circle No.	Test Boring No.	Sample No.
1	033-0-14 (Ramp D 554+99, 11' Rt.)	ST-1B
2	033-0-14 (Ramp D 554+99, 11' Rt.)	ST-1C
3	033-0-14 (Ramp D 554+99, 11' Rt.)	ST-1D

DRAWN JTB CHECKED SPR

SOIL PROFILE
LABORATORY TEST DATA

HAM-71-3.81

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CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

CLIENT : HDR Engineering, Inc.
PROJECT NO.: 140358N
DATE: 5/30/2014
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

BORING NO.: 035-0-14 (Ramp E Sta. 757+05, 13' Lt.) SAMPLE NO.: ST-1 DEPTH (ft.): 7.0-7.5
SAMPLE OBTAINED BY: Shelby Tube CONDITION: Undisturbed
SAMPLE DESCRIPTION: Very stiff to hard, brown, SILT AND CLAY, some sand, trace gravel, damp to moist

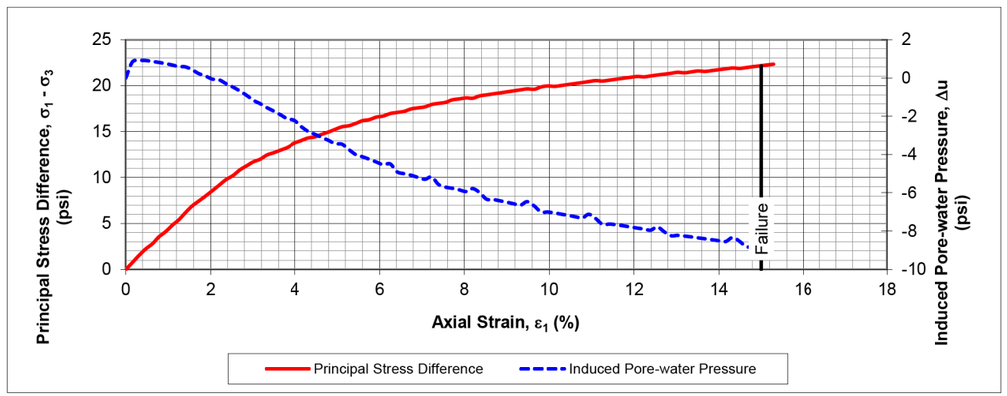
LIQUID LIMIT (%): 32 PLASTIC LIMIT (%): 18 PLASTICITY INDEX (%): 14 ODOT: A-6a (9)
GRAVEL (%): 5.0 SAND (%): 25.0 SILT (%): 37.0 CLAY (%): 33.0
SPECIFIC GRAVITY OF SOLIDS: 2.694 (Per ASTM D854) LOAD CELL NO.: 1008

SAMPLE DATA (INITIAL/AFTER CONSOLIDATION)	INITIAL	AFTER
DIAMETER (in.):	2.82	2.82
HEIGHT (in.):	5.56	5.55
HEIGHT TO DIAMETER RATIO:	1.97	1.97
WET UNIT WEIGHT (pcf):	137.2	145.8
DRY UNIT WEIGHT (pcf):	122.5	123.1
VOID RATIO:	0.37	0.37
MOISTURE CONTENT (%)*:	12.0	18.4
DEGREE OF SATURATION (%):	87	100

SATURATION & CONSOLIDATION DATA	
SATURATION METHOD:	Wet Method
PORE PRESSURE PARAMETER B:	0.95
TOTAL BACK PRESSURE (psi):	23.1
EFFECTIVE CONSOLIDATION PRESSURE (psi):	3
CROSS-SECTIONAL AREA AFTER CONSOLIDATION ($in.^2$)**:	6.24
TIME TO 50% PRIMARY CONSOLIDATION, t_{50} (min.):	N/A

FAILURE DATA***	
AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**0.016**
AXIAL STRAIN AT FAILURE (%):	**15.0**
PRINCIPAL STRESS DIFFERENCE AT FAILURE, $\sigma_1 - \sigma_3$ (psi):	**22.1**
EFFECTIVE MINOR PRINCIPAL STRESS AT FAILURE, σ_3' (psi):	**11.1**
EFFECTIVE MAJOR PRINCIPAL STRESS AT FAILURE, σ_1' (psi):	**33.2**
INDUCED PORE-WATER PRESSURE AT FAILURE, Δu (psi):	**-8.8**

SOIL STRENGTH PARAMETERS	
COHESION, c (psf):	**0**
FRICTION ANGLE, ϕ (°):	**31.0**

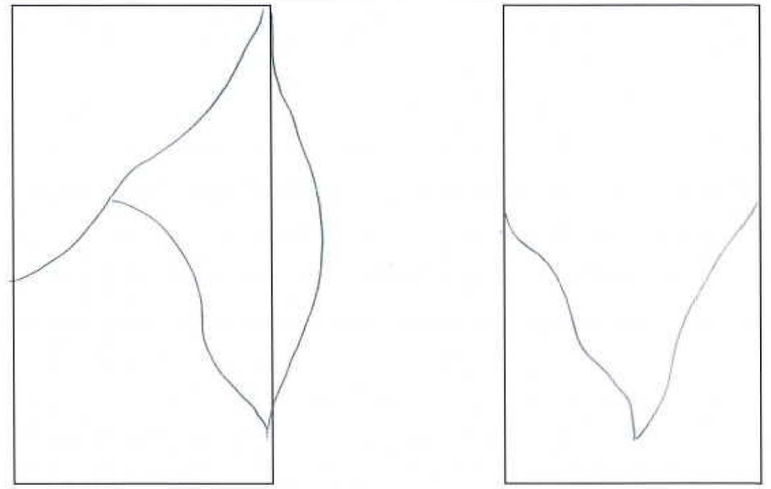


* Initial moisture content determined from sample cuttings. Final moisture content determined from entire sample.
** Cross-sectional area after consolidation determined from Method A.
*** Failure Criterion: 15% axial strain. Failure stress values have been corrected for both filter strip and membrane effects.

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

BORING NO.: 035-0-14 (Ramp E Sta. 757+05, 13' Lt.)
SAMPLE NO.: ST-1
DEPTH (ft.): 7.0-7.5

FAILURE SHAPE



FRONT VIEW SIDE VIEW

DRAWN JTB CHECKED SPR
SOIL PROFILE
LABORATORY TEST DATA
HAM-71-3.81
31
175
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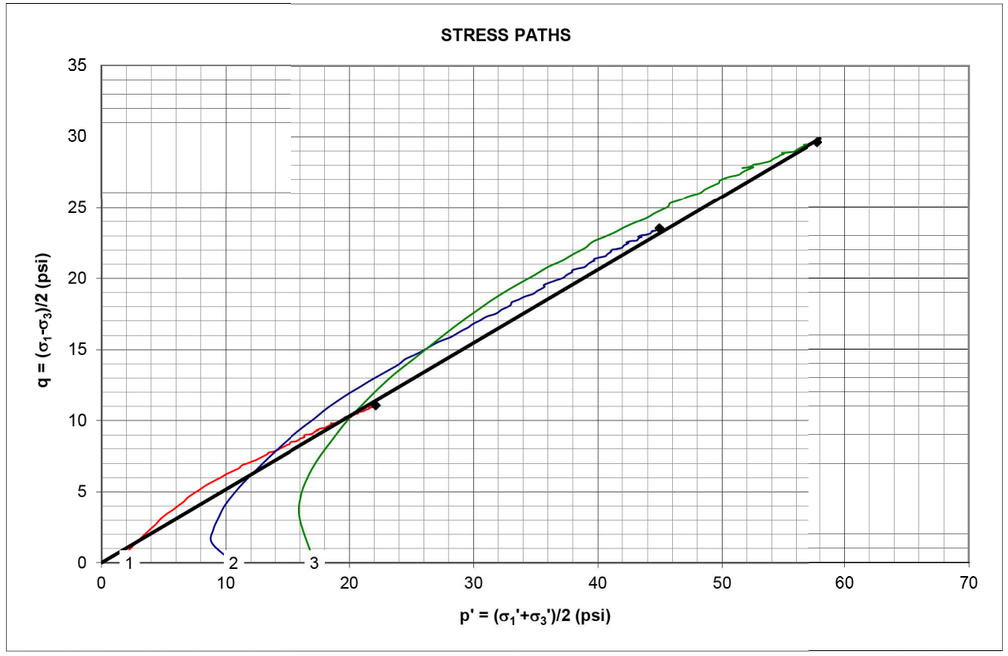
CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

BORING NO.: 035-0-14 (Ramp E Sta. 757+05, 13' Lt.)
SAMPLE NO.: ST-1
DEPTH (ft.): 7.0-7.5



Note: $\sin(\phi) = \tan(\alpha)$ and $c = m/\cos(\phi)$, where $\tan(\alpha)$ is the slope of the failure envelope defined by the p'-q curves and m is the y-intercept.

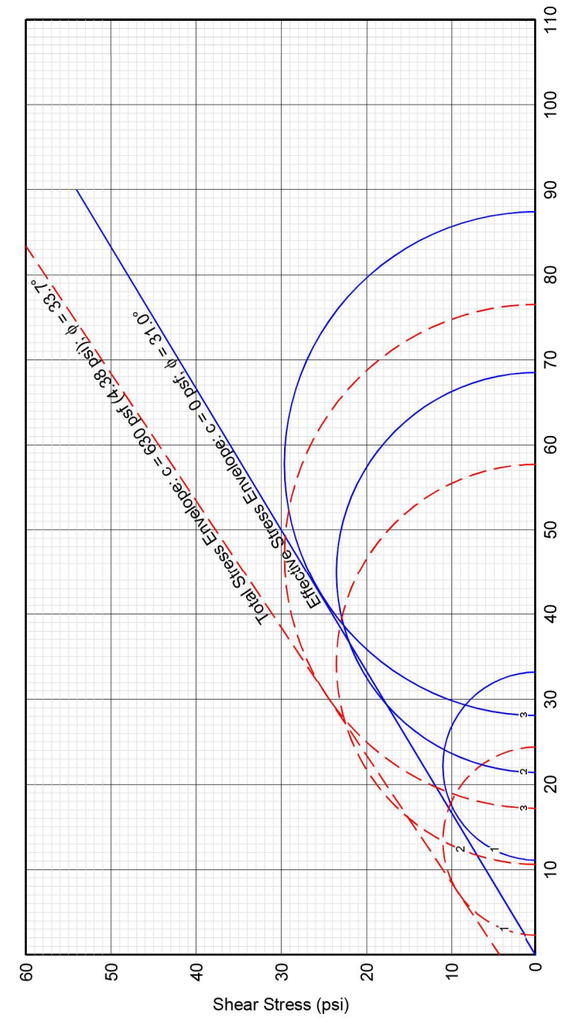
Stress Path Curve No.	Test Boring No.	Sample No.
1	035-0-14 (Ramp E Sta. 757+05, 13' Lt.)	ST-1
2	035-0-14 (Ramp E Sta. 757+05, 13' Lt.)	ST-1
3	035-0-14 (Ramp E Sta. 757+05, 13' Lt.)	ST-1

REMARKS :

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

BORING NO.: 035-0-14 (Ramp E Sta. 757+05, 13' Lt.)
SAMPLE NO.: ST-1
DEPTH (ft.): 7.0-7.5

MOHR'S CIRCLES



Circle No.	Test Boring No.	Sample No.
1	035-0-14 (Ramp E 757+05, 13' Lt.)	ST-1
2	035-0-14 (Ramp E 757+05, 13' Lt.)	ST-1
3	035-0-14 (Ramp E 757+05, 13' Lt.)	ST-1

DRAWN JTB
CHECKED SPR

SOIL PROFILE
LABORATORY TEST DATA

HAM-71-3.81

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Dayton, Ohio

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

CLIENT : HDR Engineering, Inc.
PROJECT NO.: 140358N
DATE: 5/30/2014
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

BORING NO.: 035-0-14 (Ramp E Sta. 757+05, 13' Lt.) SAMPLE NO.: ST-1 DEPTH (ft.): 7.5-8.0
SAMPLE OBTAINED BY: Shelby Tube CONDITION: Undisturbed
SAMPLE DESCRIPTION: Very stiff to hard, brown, SILT AND CLAY, some sand, trace gravel, damp to moist

LIQUID LIMIT (%): 32 PLASTIC LIMIT (%): 18 PLASTICITY INDEX (%): 14 ODOT: A-6a (9)
GRAVEL (%): 5.0 SAND (%): 25.0 SILT (%): 37.0 CLAY (%): 33.0
SPECIFIC GRAVITY OF SOLIDS: 2.694 (Per ASTM D854) LOAD CELL NO.: 1008

SAMPLE DATA (INITIAL/AFTER CONSOLIDATION)

	INITIAL	AFTER
DIAMETER (in.):	2.81	2.78
HEIGHT (in.):	5.55	5.52
HEIGHT TO DIAMETER RATIO:	1.97	1.99
WET UNIT WEIGHT (pcf):	142.0	150.7
DRY UNIT WEIGHT (pcf):	126.8	130.7
VOID RATIO:	0.33	0.29
MOISTURE CONTENT (%)*:	12.0	15.3
DEGREE OF SATURATION (%):	99	100

SATURATION & CONSOLIDATION DATA

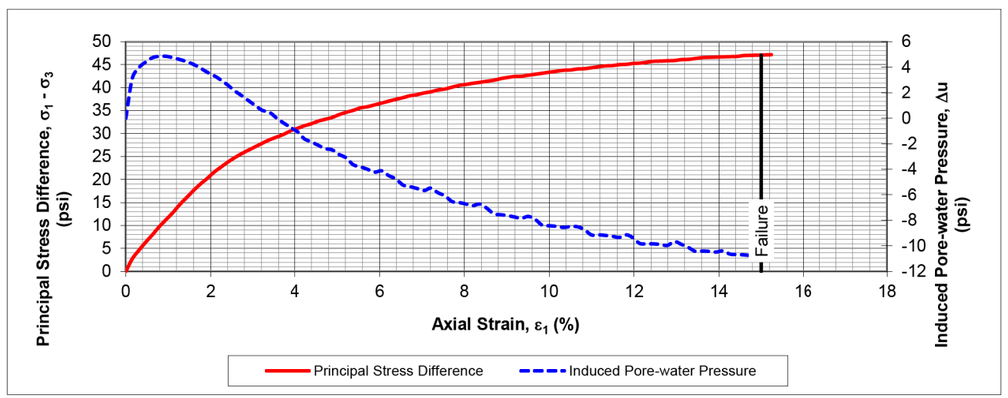
SATURATION METHOD:	Wet Method
PORE PRESSURE PARAMETER B:	0.95
TOTAL BACK PRESSURE (psi):	23.1
EFFECTIVE CONSOLIDATION PRESSURE (psi):	11
CROSS-SECTIONAL AREA AFTER CONSOLIDATION ($in.^2$)**:	6.05
TIME TO 50% PRIMARY CONSOLIDATION, t_{50} (min.):	N/A

FAILURE DATA***

AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**0.016**
AXIAL STRAIN AT FAILURE (%):	**15.0**
PRINCIPAL STRESS DIFFERENCE AT FAILURE, $\sigma_1 - \sigma_3$ (psi):	**47.1**
EFFECTIVE MINOR PRINCIPAL STRESS AT FAILURE, σ_3' (psi):	**21.4**
EFFECTIVE MAJOR PRINCIPAL STRESS AT FAILURE, σ_1' (psi):	**68.5**
INDUCED PORE-WATER PRESSURE AT FAILURE, Δu (psi):	**-10.8**

SOIL STRENGTH PARAMETERS

COHESION, c (psf):	**0**
FRICTION ANGLE, ϕ (°):	**31.0**

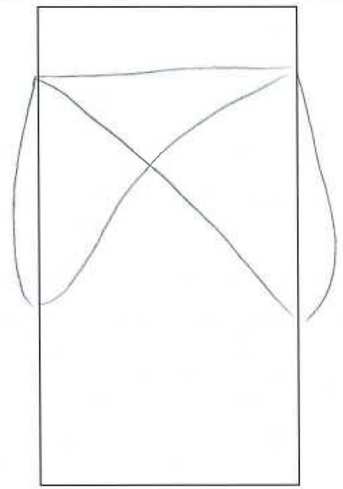


* Initial moisture content determined from sample cuttings. Final moisture content determined from entire sample.
** Cross-sectional area after consolidation determined from Method A.
*** Failure Criterion: 15% axial strain. Failure stress values have been corrected for both filter strip and membrane effects.

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

BORING NO.: 035-0-14 (Ramp E Sta. 757+05, 13' Lt.)
SAMPLE NO.: ST-1
DEPTH (ft.): 7.5-8.0

FAILURE SHAPE



FRONT VIEW



SIDE VIEW

DRAWN JTB CHECKED SPR

SOIL PROFILE
LABORATORY TEST DATA

HAM-71-3.81

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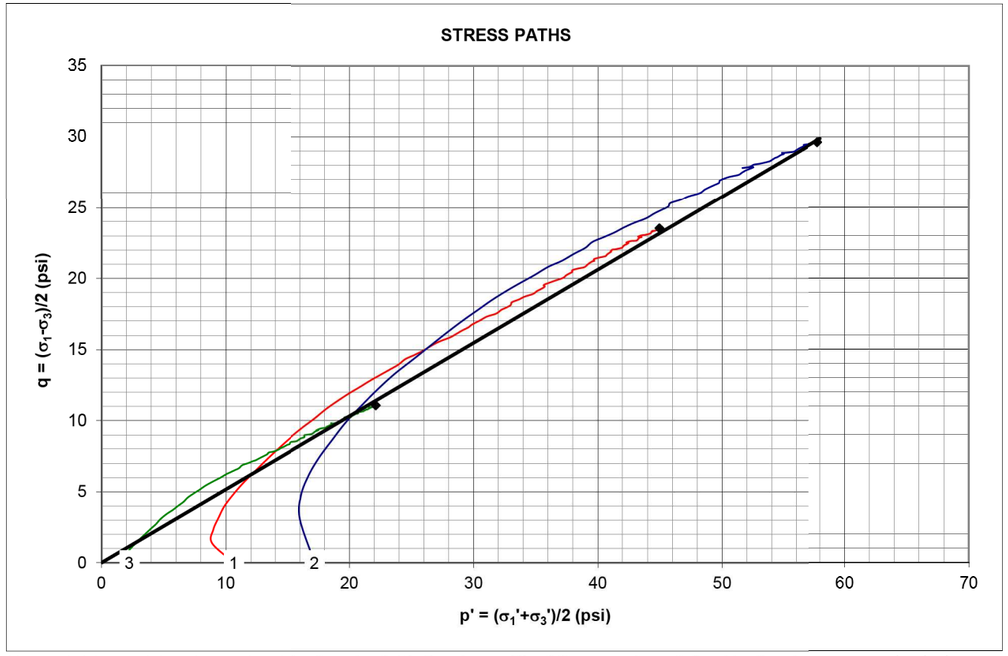
CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

BORING NO.: 035-0-14 (Ramp E Sta. 757+05, 13' Lt.)
SAMPLE NO.: ST-1
DEPTH (ft.): 7.5-8.0



Note: $\sin(\phi) = \tan(\alpha)$ and $c = m/\cos(\phi)$, where $\tan(\alpha)$ is the slope of the failure envelope defined by the p'-q curves and m is the y-intercept.

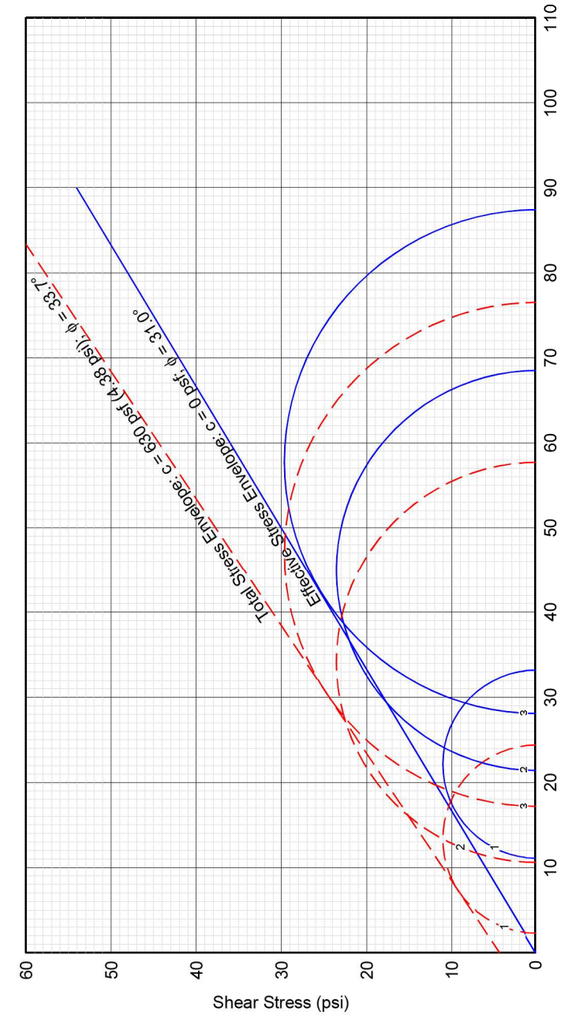
Stress Path Curve No.	Test Boring No.	Sample No.
1	035-0-14 (Ramp E Sta. 757+05, 13' Lt.)	ST-1
2	035-0-14 (Ramp E Sta. 757+05, 13' Lt.)	ST-1
3	035-0-14 (Ramp E Sta. 757+05, 13' Lt.)	ST-1

REMARKS :

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

BORING NO.: 035-0-14 (Ramp E Sta. 757+05, 13' Lt.)
SAMPLE NO.: ST-1
DEPTH (ft.): 7.5-8.0

MOHR'S CIRCLES



Circle No.	Test Boring No.	Sample No.
1	035-0-14 (Ramp E 757+05, 13' Lt.)	ST-1
2	035-0-14 (Ramp E 757+05, 13' Lt.)	ST-1
3	035-0-14 (Ramp E 757+05, 13' Lt.)	ST-1

DRAWN JTB CHECKED SPR

SOIL PROFILE
LABORATORY TEST DATA

HAM-71-3.81

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CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

CLIENT : HDR Engineering, Inc.
PROJECT NO.: 140358N
DATE: 5/30/2014
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

BORING NO.: 035-0-14 (Ramp E Sta. 757+05, 13' Lt.) SAMPLE NO.: ST-1 DEPTH (ft.): 8.0-8.5
SAMPLE OBTAINED BY: Shelby Tube CONDITION: Undisturbed
SAMPLE DESCRIPTION: Very stiff to hard, brown, SILT AND CLAY, some sand, trace gravel, damp to moist

LIQUID LIMIT (%): 32 PLASTIC LIMIT (%): 18 PLASTICITY INDEX (%): 14 ODOT: A-6a (9)
GRAVEL (%): 5.0 SAND (%): 25.0 SILT (%): 37.0 CLAY (%): 33.0
SPECIFIC GRAVITY OF SOLIDS: 2.694 (Per ASTM D854) LOAD CELL NO.: 1008

SAMPLE DATA (INITIAL/AFTER CONSOLIDATION)

	INITIAL	AFTER
DIAMETER (in.):	2.82	2.79
HEIGHT (in.):	5.55	5.52
HEIGHT TO DIAMETER RATIO:	1.97	1.97
WET UNIT WEIGHT (pcf):	142.4	149.9
DRY UNIT WEIGHT (pcf):	127.2	130.5
VOID RATIO:	0.32	0.29
MOISTURE CONTENT (%)*:	12.0	14.9
DEGREE OF SATURATION (%):	100	100

SATURATION & CONSOLIDATION DATA

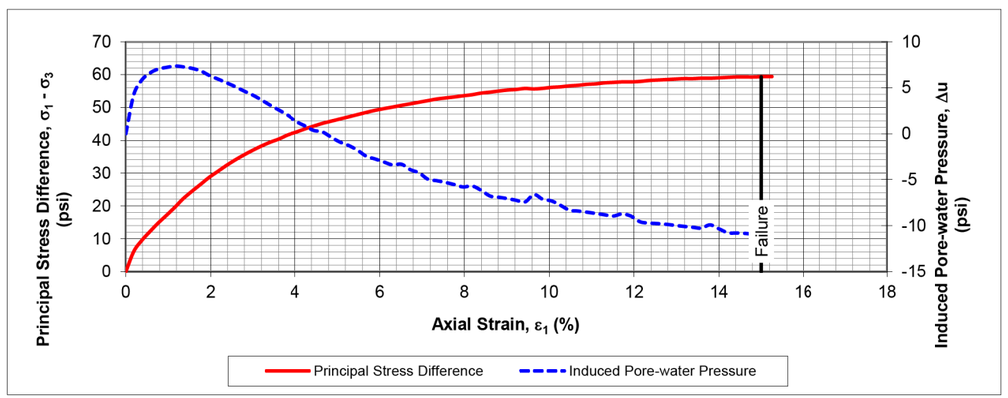
SATURATION METHOD:	Wet Method
PORE PRESSURE PARAMETER B:	0.95
TOTAL BACK PRESSURE (psi):	23.05
EFFECTIVE CONSOLIDATION PRESSURE (psi):	18
CROSS-SECTIONAL AREA AFTER CONSOLIDATION ($in.^2$)**:	6.13
TIME TO 50% PRIMARY CONSOLIDATION, t_{50} (min.):	N/A

FAILURE DATA***

AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**0.021**
AXIAL STRAIN AT FAILURE (%):	**15.0**
PRINCIPAL STRESS DIFFERENCE AT FAILURE, $\sigma_1 - \sigma_3$ (psi):	**59.3**
EFFECTIVE MINOR PRINCIPAL STRESS AT FAILURE, σ_3' (psi):	**28.1**
EFFECTIVE MAJOR PRINCIPAL STRESS AT FAILURE, σ_1' (psi):	**87.4**
INDUCED PORE-WATER PRESSURE AT FAILURE, Δu (psi):	**-10.9**

SOIL STRENGTH PARAMETERS

COHESION, c (psf):	**0**
FRICTION ANGLE, ϕ (°):	**31.0**

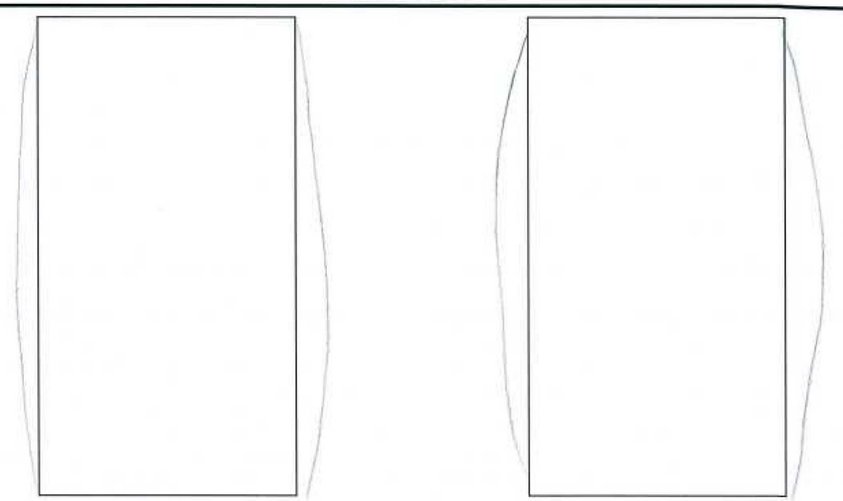


* Initial moisture content determined from sample cuttings. Final moisture content determined from entire sample.
** Cross-sectional area after consolidation determined from Method A.
*** Failure Criterion: 15% axial strain. Failure stress values have been corrected for both filter strip and membrane effects.

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

BORING NO.: 035-0-14 (Ramp E Sta. 757+05, 13' Lt.)
SAMPLE NO.: ST-1
DEPTH (ft.): 8.0-8.5

FAILURE SHAPE



FRONT VIEW SIDE VIEW

DRAWN JTB CHECKED SPR

SOIL PROFILE
LABORATORY TEST DATA

HAM-71-3.81

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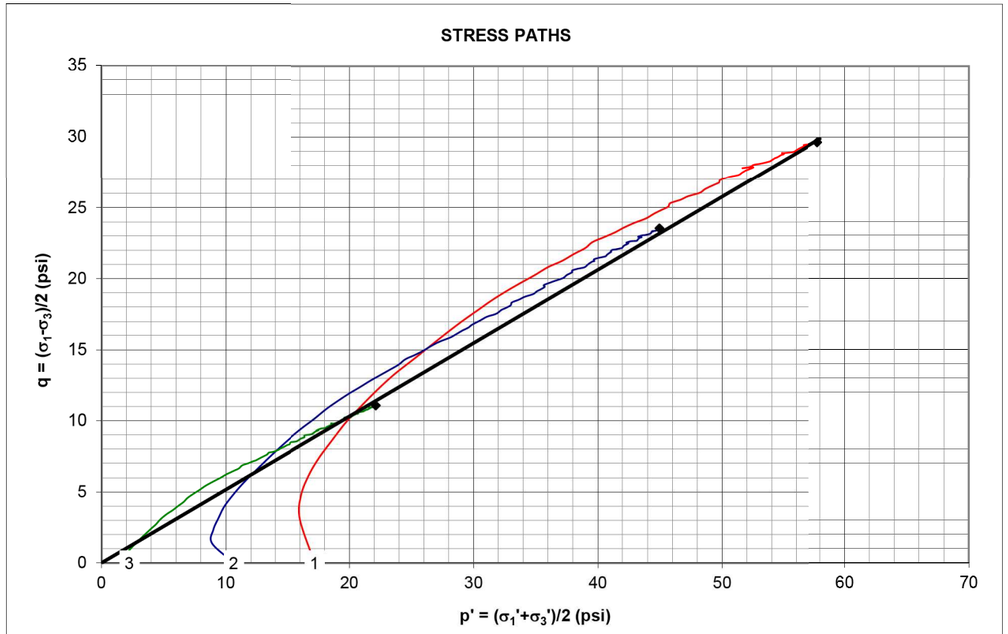
CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

BORING NO.: 035-0-14 (Ramp E Sta. 757+05, 13' Lt.)
SAMPLE NO.: ST-1
DEPTH (ft.): 8.0-8.5



Note: $\sin(\phi) = \tan(\alpha)$ and $c = m/\cos(\phi)$, where $\tan(\alpha)$ is the slope of the failure envelope defined by the p'-q curves and m is the y-intercept.

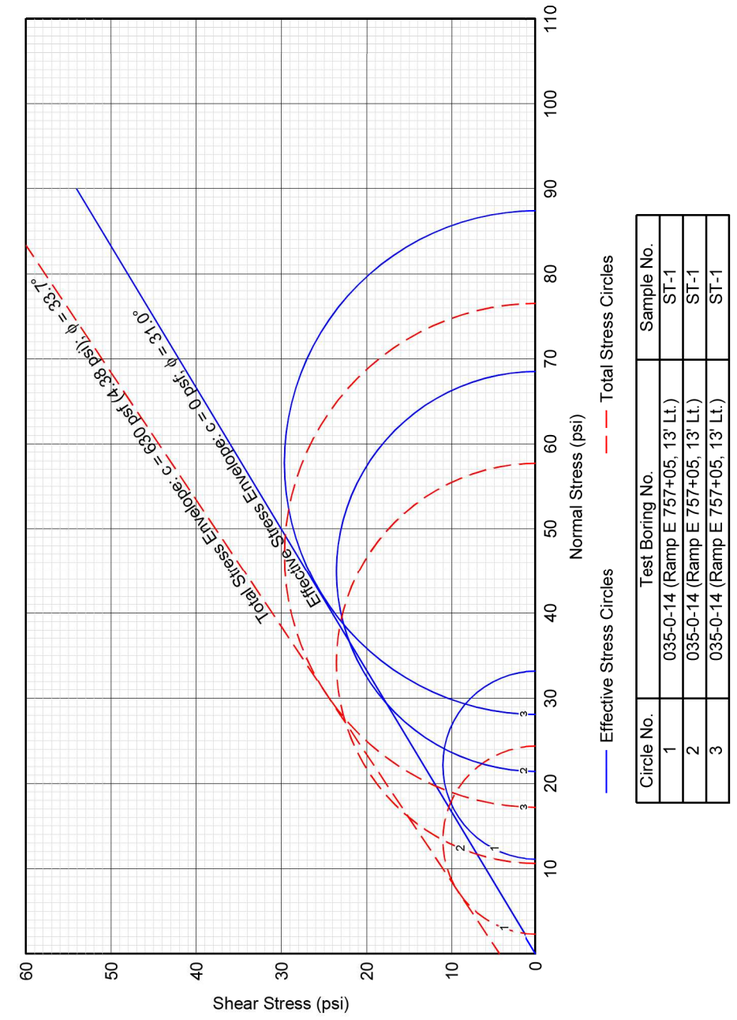
Stress Path Curve No.	Test Boring No.	Sample No.
1	035-0-14 (Ramp E Sta. 757+05, 13' Lt.)	ST-1
2	035-0-14 (Ramp E Sta. 757+05, 13' Lt.)	ST-1
3	035-0-14 (Ramp E Sta. 757+05, 13' Lt.)	ST-1

REMARKS :

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

BORING NO.: 035-0-14 (Ramp E Sta. 757+05, 13' Lt.)
SAMPLE NO.: ST-1
DEPTH (ft.): 8.0-8.5

MOHR'S CIRCLES



Circle No.	Test Boring No.	Sample No.
1	035-0-14 (Ramp E 757+05, 13' Lt.)	ST-1
2	035-0-14 (Ramp E 757+05, 13' Lt.)	ST-1
3	035-0-14 (Ramp E 757+05, 13' Lt.)	ST-1

DRAWN JTB CHECKED SPR

SOIL PROFILE
LABORATORY TEST DATA

HAM-71-3.81

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CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

CLIENT : HDR Engineering, Inc.
DATE: 6/2/2014
PROJECT NO.: 140358N
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

BORING NO.: 035-0-14 (Ramp E Sta. 757+05, 13' Lt.) SAMPLE NO.: ST-3A DEPTH (ft.): 21.5-22.0
SAMPLE OBTAINED BY: Shelby Tube CONDITION: Undisturbed
SAMPLE DESCRIPTION: Medium stiff to stiff, gray, SILT AND CLAY, trace to little sand, trace gravel, moist

LIQUID LIMIT (%): 31 PLASTIC LIMIT (%): 18 PLASTICITY INDEX (%): 13 ODOT: A-6a (9)
GRAVEL (%): 2.0 SAND (%): 14.0 SILT (%): 51.0 CLAY (%): 33.0
SPECIFIC GRAVITY OF SOLIDS: 2.647 (Per ASTM D854) LOAD CELL NO.: 1008

SAMPLE DATA (INITIAL/AFTER CONSOLIDATION)

	INITIAL	AFTER
DIAMETER (in.):	2.79	2.75
HEIGHT (in.):	5.52	5.49
HEIGHT TO DIAMETER RATIO:	1.98	2.00
WET UNIT WEIGHT (pcf):	126.6	133.9
DRY UNIT WEIGHT (pcf):	103.6	107.0
VOID RATIO:	0.59	0.54
MOISTURE CONTENT (%)*:	22.2	25.1
DEGREE OF SATURATION (%):	99	100

SATURATION & CONSOLIDATION DATA

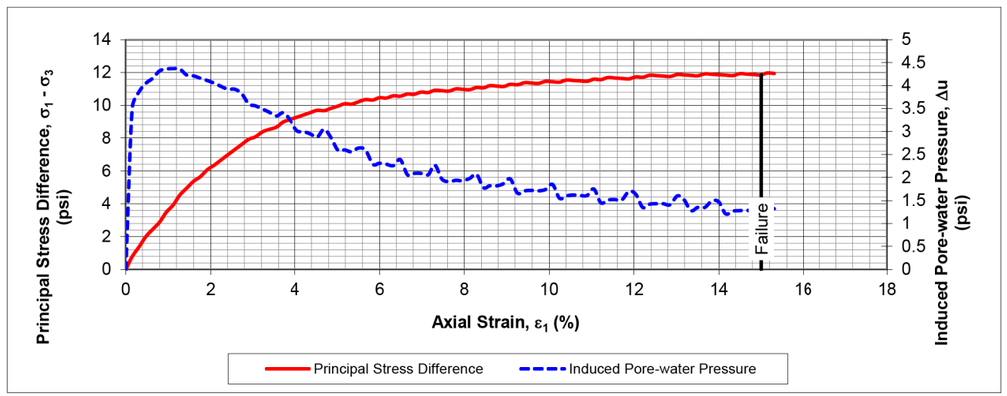
SATURATION METHOD:	Wet Method
PORE PRESSURE PARAMETER B:	0.95
TOTAL BACK PRESSURE (psi):	13.1
EFFECTIVE CONSOLIDATION PRESSURE (psi):	9
CROSS-SECTIONAL AREA AFTER CONSOLIDATION ($in.^2$)**:	5.93
TIME TO 50% PRIMARY CONSOLIDATION, t_{50} (min.):	N/A

FAILURE DATA***

AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**0.016**
AXIAL STRAIN AT FAILURE (%):	**15.0**
PRINCIPAL STRESS DIFFERENCE AT FAILURE, $\sigma_1 - \sigma_3$ (psi):	**11.8**
EFFECTIVE MINOR PRINCIPAL STRESS AT FAILURE, σ_3' (psi):	**6.9**
EFFECTIVE MAJOR PRINCIPAL STRESS AT FAILURE, σ_1' (psi):	**18.7**
INDUCED PORE-WATER PRESSURE AT FAILURE, Δu (psi):	**1.5**

SOIL STRENGTH PARAMETERS

COHESION, c (psf):	**0**
FRICTION ANGLE, ϕ (°):	**28.4**

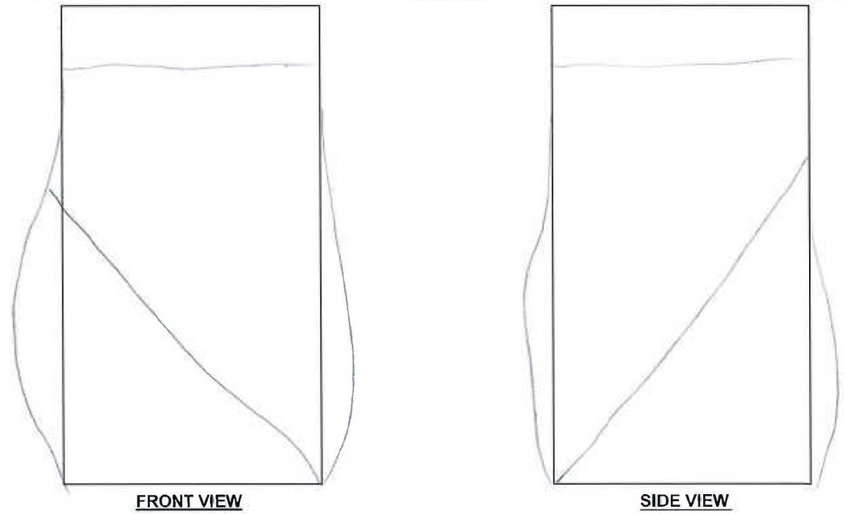


* Initial moisture content determined from sample cuttings. Final moisture content determined from entire sample.
** Cross-sectional area after consolidation determined from Method A.
*** Failure Criterion: 15% axial strain. Failure stress values have been corrected for both filter strip and membrane effects.

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

BORING NO.: 035-0-14 (Ramp E Sta. 757+05, 13' Lt.)
SAMPLE NO.: ST-3A
DEPTH (ft.): 21.5-22.0

FAILURE SHAPE



FRONT VIEW SIDE VIEW

DRAWN JTB CHECKED SPR

SOIL PROFILE
LABORATORY TEST DATA

HAM-71-3.81

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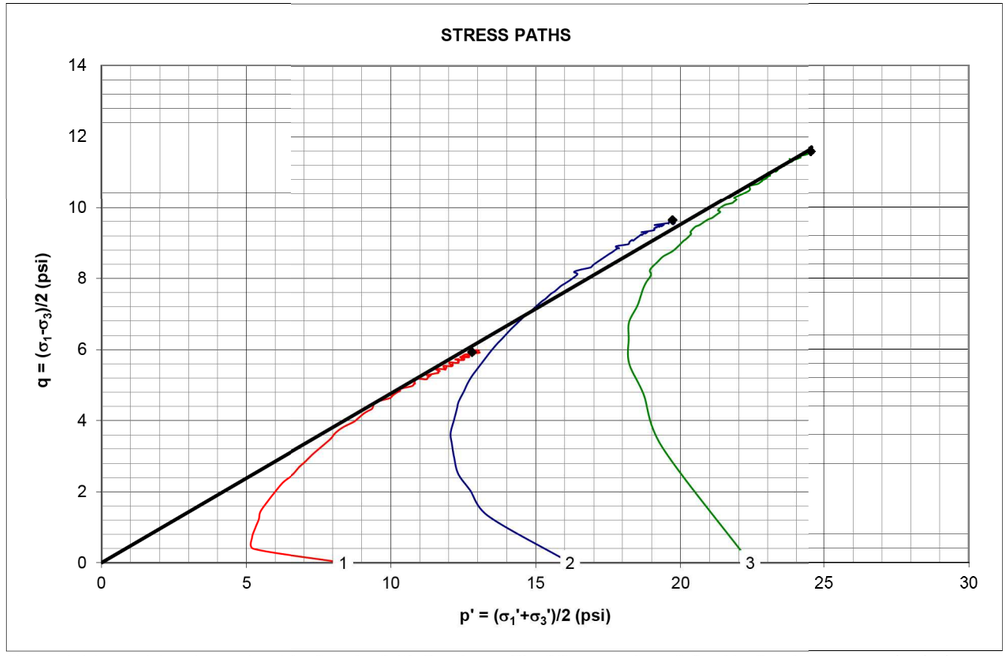
CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

BORING NO.: 035-0-14 (Ramp E Sta. 757+05, 13' Lt.)
SAMPLE NO.: ST-3A
DEPTH (ft.): 21.5-22.0



Note: $\sin(\phi) = \tan(\alpha)$ and $c = m/\cos(\phi)$, where $\tan(\alpha)$ is the slope of the failure envelope defined by the p'-q curves and m is the y-intercept.

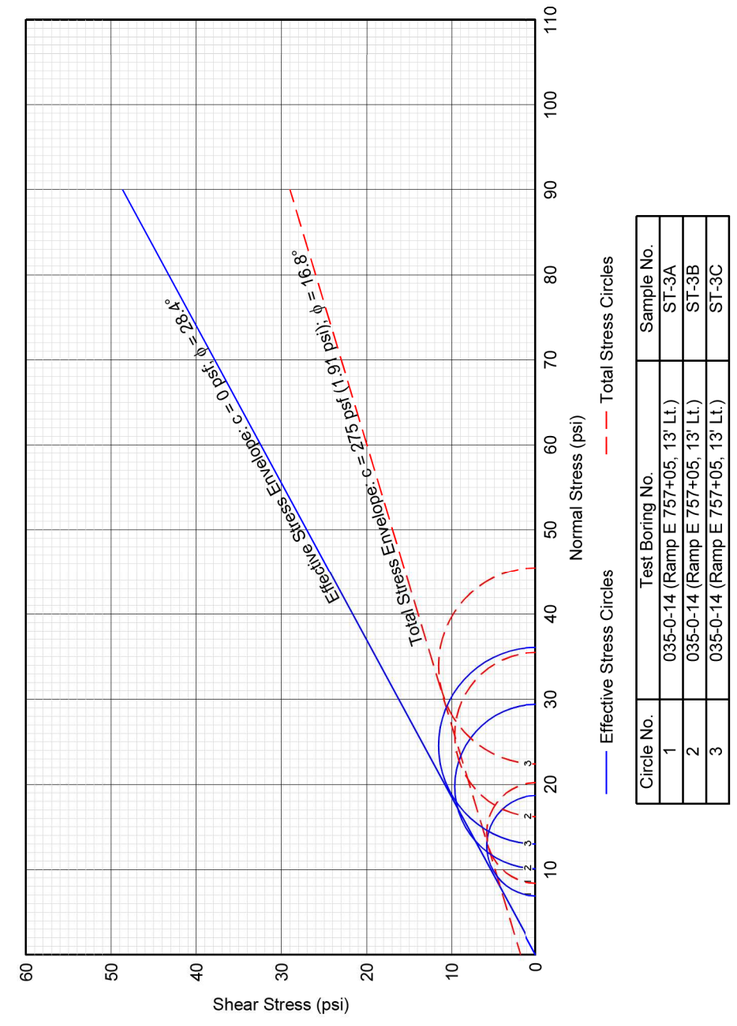
Stress Path Curve No.	Test Boring No.	Sample No.
1	035-0-14 (Ramp E Sta. 757+05, 13' Lt.)	ST-3A
2	035-0-14 (Ramp E Sta. 757+05, 13' Lt.)	ST-3B
3	035-0-14 (Ramp E Sta. 757+05, 13' Lt.)	ST-3C

REMARKS :

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

BORING NO.: 035-0-14 (Ramp E Sta. 757+05, 13' Lt.)
SAMPLE NO.: ST-3A
DEPTH (ft.): 21.5-22.0

MOHR'S CIRCLES



Circle No.	Test Boring No.	Sample No.
1	035-0-14 (Ramp E 757+05, 13' Lt.)	ST-3A
2	035-0-14 (Ramp E 757+05, 13' Lt.)	ST-3B
3	035-0-14 (Ramp E 757+05, 13' Lt.)	ST-3C

DRAWN JTB CHECKED SPR

SOIL PROFILE
LABORATORY TEST DATA

HAM-71-3.81

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CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

CLIENT : HDR Engineering, Inc.
PROJECT NO.: 140358N
DATE: 6/2/2014
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

BORING NO.: 035-0-14 (Ramp E Sta. 757+05, 13' Lt.) SAMPLE NO.: ST-3B DEPTH (ft.): 22.0-22.5
SAMPLE OBTAINED BY: Shelby Tube CONDITION: Undisturbed
SAMPLE DESCRIPTION: Medium stiff to stiff, gray, SILT AND CLAY, trace to little sand, trace gravel, moist

LIQUID LIMIT (%): 31 PLASTIC LIMIT (%): 18 PLASTICITY INDEX (%): 13 ODOT: A-6a (9)
GRAVEL (%): 2.0 SAND (%): 14.0 SILT (%): 51.0 CLAY (%): 33.0
SPECIFIC GRAVITY OF SOLIDS: 2.647 (Per ASTM D854) LOAD CELL NO.: 1008

SAMPLE DATA (INITIAL/AFTER CONSOLIDATION)

	INITIAL	AFTER
DIAMETER (in.):	2.79	2.75
HEIGHT (in.):	5.54	5.50
HEIGHT TO DIAMETER RATIO:	1.98	2.00
WET UNIT WEIGHT (pcf):	126.9	134.2
DRY UNIT WEIGHT (pcf):	103.8	107.5
VOID RATIO:	0.59	0.54
MOISTURE CONTENT (%)*:	22.2	24.9
DEGREE OF SATURATION (%):	99	100

SATURATION & CONSOLIDATION DATA

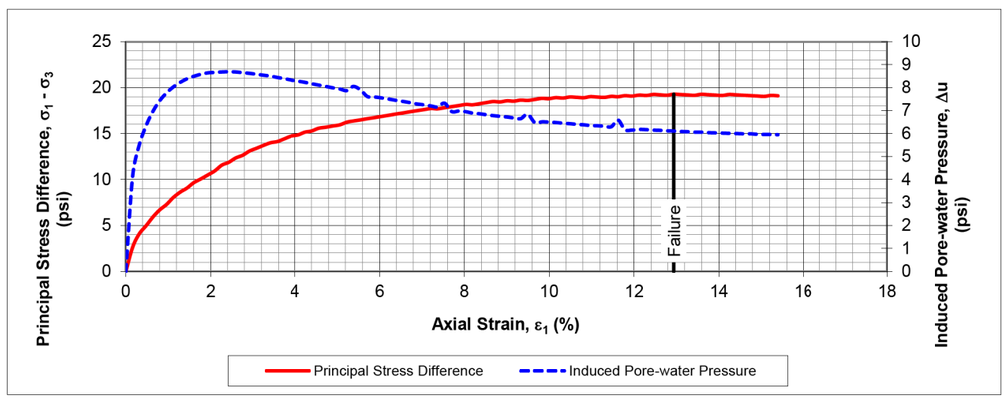
SATURATION METHOD:	Wet Method
PORE PRESSURE PARAMETER B:	0.95
TOTAL BACK PRESSURE (psi):	18
EFFECTIVE CONSOLIDATION PRESSURE (psi):	17
CROSS-SECTIONAL AREA AFTER CONSOLIDATION ($in.^2$)**:	5.96
TIME TO 50% PRIMARY CONSOLIDATION, t_{50} (min.):	N/A

FAILURE DATA***

AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**0.016**
AXIAL STRAIN AT FAILURE (%):	**12.9**
PRINCIPAL STRESS DIFFERENCE AT FAILURE, $\sigma_1 - \sigma_3$ (psi):	**19.3**
EFFECTIVE MINOR PRINCIPAL STRESS AT FAILURE, σ_3' (psi):	**10.1**
EFFECTIVE MAJOR PRINCIPAL STRESS AT FAILURE, σ_1' (psi):	**29.4**
INDUCED PORE-WATER PRESSURE AT FAILURE, Δu (psi):	**6.1**

SOIL STRENGTH PARAMETERS

COHESION, c (psf):	**0**
FRICTION ANGLE, ϕ (°):	**28.4**

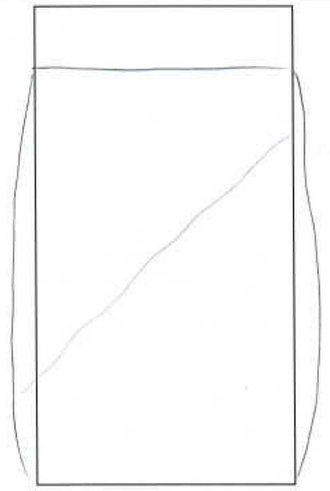


* Initial moisture content determined from sample cuttings. Final moisture content determined from entire sample.
** Cross-sectional area after consolidation determined from Method A.
*** Failure Criterion: Maximum principal stress difference. Failure stress values have been corrected for both filter strip and membrane effects.

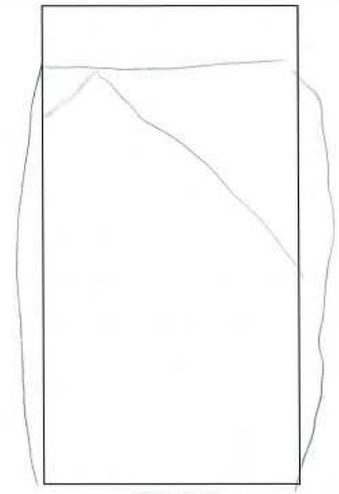
CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

BORING NO.: 035-0-14 (Ramp E Sta. 757+05, 13' Lt.)
SAMPLE NO.: ST-3B
DEPTH (ft.): 22.0-22.5

FAILURE SHAPE



FRONT VIEW



SIDE VIEW

DRAWN JTB CHECKED SPR

SOIL PROFILE
LABORATORY TEST DATA

HAM-71-3.81

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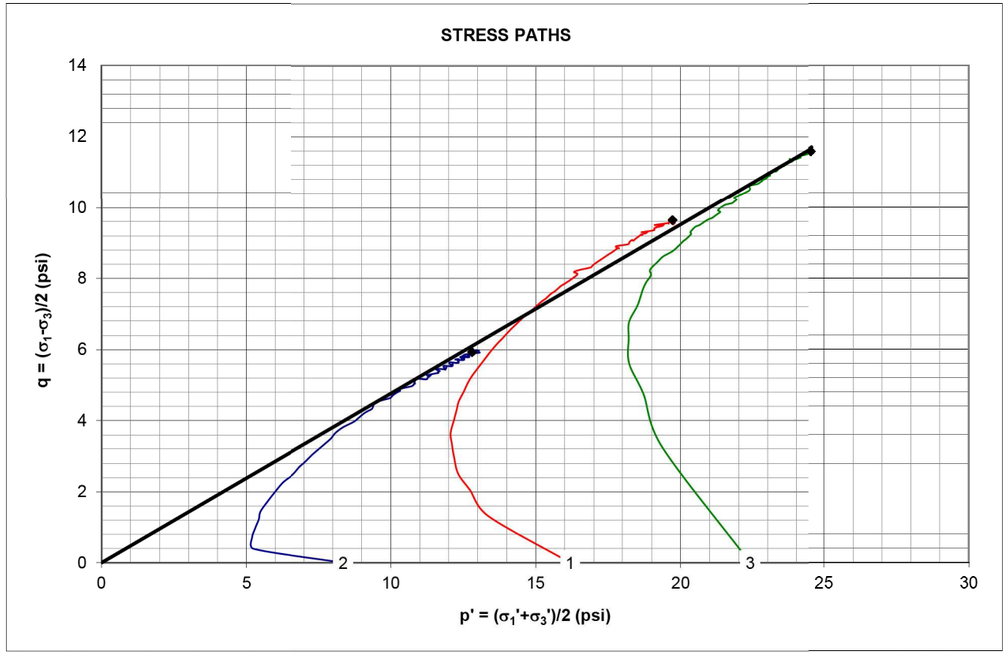
CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

BORING NO.: 035-0-14 (Ramp E Sta. 757+05, 13' Lt.)
SAMPLE NO.: ST-3B
DEPTH (ft.): 22.0-22.5



Note: $\sin(\phi) = \tan(\alpha)$ and $c = m/\cos(\phi)$, where $\tan(\alpha)$ is the slope of the failure envelope defined by the p'-q curves and m is the y-intercept.

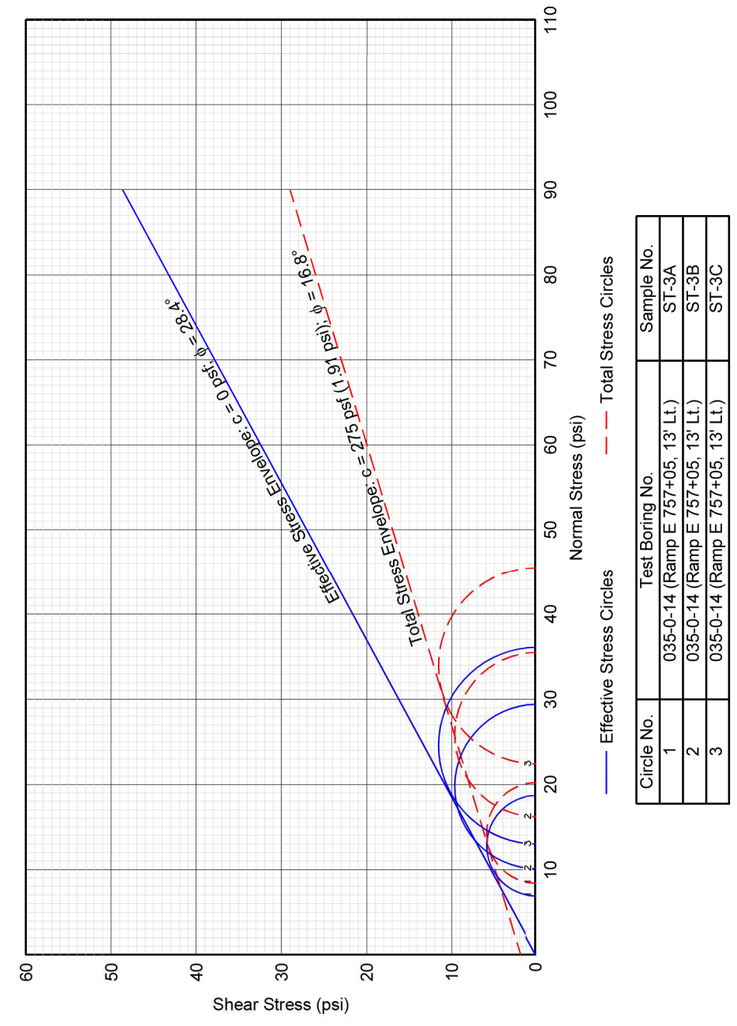
Stress Path Curve No.	Test Boring No.	Sample No.
1	035-0-14 (Ramp E Sta. 757+05, 13' Lt.)	ST-3B
2	035-0-14 (Ramp E Sta. 757+05, 13' Lt.)	ST-3A
3	035-0-14 (Ramp E Sta. 757+05, 13' Lt.)	ST-3C

REMARKS :

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

BORING NO.: 035-0-14 (Ramp E Sta. 757+05, 13' Lt.)
SAMPLE NO.: ST-3B
DEPTH (ft.): 22.0-22.5

MOHR'S CIRCLES



Circle No.	Test Boring No.	Sample No.
1	035-0-14 (Ramp E 757+05, 13' Lt.)	ST-3A
2	035-0-14 (Ramp E 757+05, 13' Lt.)	ST-3B
3	035-0-14 (Ramp E 757+05, 13' Lt.)	ST-3C

DRAWN JTB CHECKED SPR

SOIL PROFILE
LABORATORY TEST DATA

HAM-71-3.81

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CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

CLIENT : HDR Engineering, Inc.
DATE: 6/2/2014
PROJECT NO.: 140358N
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

BORING NO.: 035-0-14 (Ramp E Sta. 757+05, 13' Lt.) SAMPLE NO.: ST-3C DEPTH (ft.): 22.5-23.0
SAMPLE OBTAINED BY: Shelby Tube CONDITION: Undisturbed
SAMPLE DESCRIPTION: Medium stiff to stiff, gray, SILT AND CLAY, trace to little sand, trace gravel, moist

LIQUID LIMIT (%): 31 PLASTIC LIMIT (%): 18 PLASTICITY INDEX (%): 13 ODOT: A-6a (9)
GRAVEL (%): 2.0 SAND (%): 14.0 SILT (%): 51.0 CLAY (%): 33.0
SPECIFIC GRAVITY OF SOLIDS: 2.647 (Per ASTM D854) LOAD CELL NO.: 1008

SAMPLE DATA (INITIAL/AFTER CONSOLIDATION)

	INITIAL	AFTER
DIAMETER (in.):	2.80	2.74
HEIGHT (in.):	5.53	5.48
HEIGHT TO DIAMETER RATIO:	1.98	2.00
WET UNIT WEIGHT (pcf):	136.3	137.7
DRY UNIT WEIGHT (pcf):	111.5	117.4
VOID RATIO:	0.48	0.41
MOISTURE CONTENT (%)*:	22.2	17.3
DEGREE OF SATURATION (%):	100	100

SATURATION & CONSOLIDATION DATA

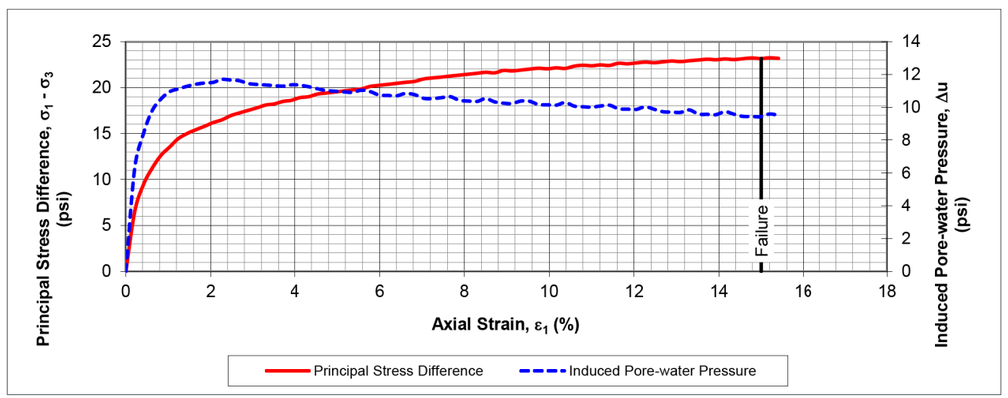
SATURATION METHOD:	Wet Method
PORE PRESSURE PARAMETER B:	0.94
TOTAL BACK PRESSURE (psi):	23.1
EFFECTIVE CONSOLIDATION PRESSURE (psi):	23
CROSS-SECTIONAL AREA AFTER CONSOLIDATION ($in.^2$)**:	5.90
TIME TO 50% PRIMARY CONSOLIDATION, t_{50} (min.):	N/A

FAILURE DATA***

AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**0.021**
AXIAL STRAIN AT FAILURE (%):	**15.0**
PRINCIPAL STRESS DIFFERENCE AT FAILURE, $\sigma_1 - \sigma_3$ (psi):	**23.2**
EFFECTIVE MINOR PRINCIPAL STRESS AT FAILURE, σ_3' (psi):	**13.0**
EFFECTIVE MAJOR PRINCIPAL STRESS AT FAILURE, σ_1' (psi):	**36.1**
INDUCED PORE-WATER PRESSURE AT FAILURE, Δu (psi):	**9.4**

SOIL STRENGTH PARAMETERS

COHESION, c (psf):	**0**
FRICTION ANGLE, ϕ (°):	**28.4**

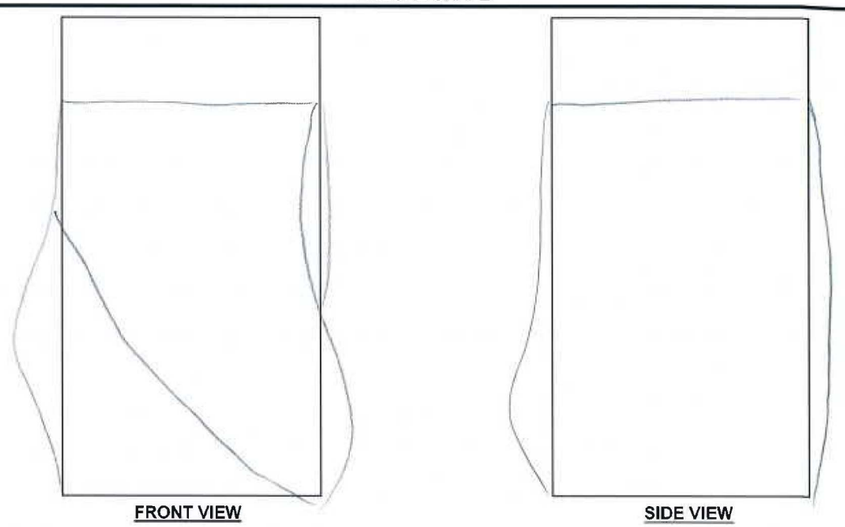


* Initial moisture content determined from sample cuttings. Final moisture content determined from entire sample.
** Cross-sectional area after consolidation determined from Method A.
*** Failure Criterion: 15% axial strain. Failure stress values have been corrected for both filter strip and membrane effects.

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

BORING NO.: 035-0-14 (Ramp E Sta. 757+05, 13' Lt.)
SAMPLE NO.: ST-3C
DEPTH (ft.): 22.5-23.0

FAILURE SHAPE



FRONT VIEW SIDE VIEW

DRAWN JTB CHECKED SPR

SOIL PROFILE
LABORATORY TEST DATA

HAM-71-3.81

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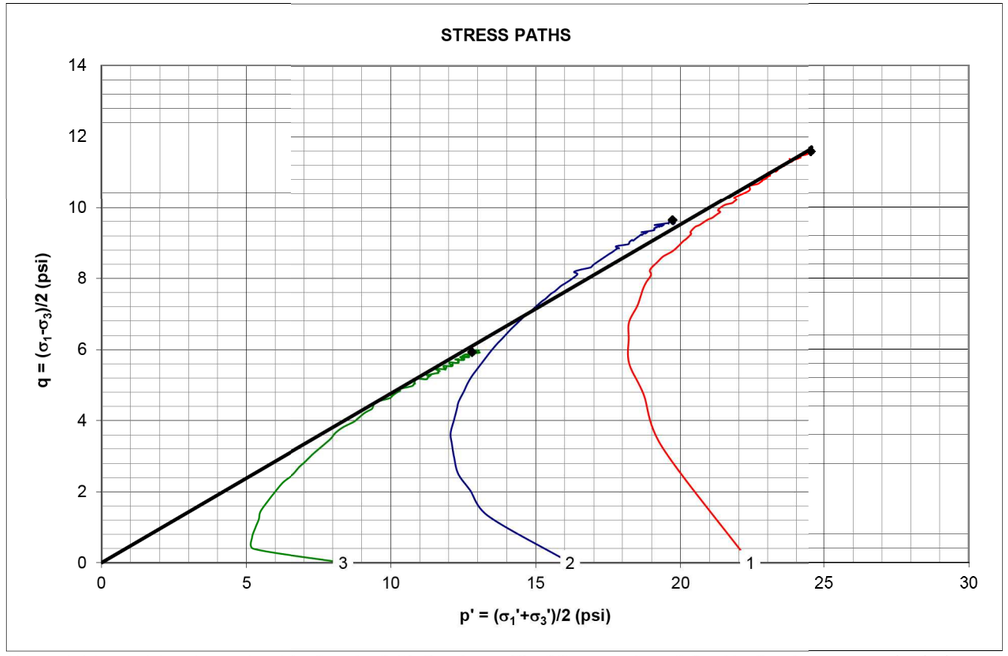
CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

BORING NO.: 035-0-14 (Ramp E Sta. 757+05, 13' Lt.)
SAMPLE NO.: ST-3C
DEPTH (ft.): 22.5-23.0



Note: $\sin(\phi) = \tan(\alpha)$ and $c = m/\cos(\phi)$, where $\tan(\alpha)$ is the slope of the failure envelope defined by the p'-q curves and m is the y-intercept.

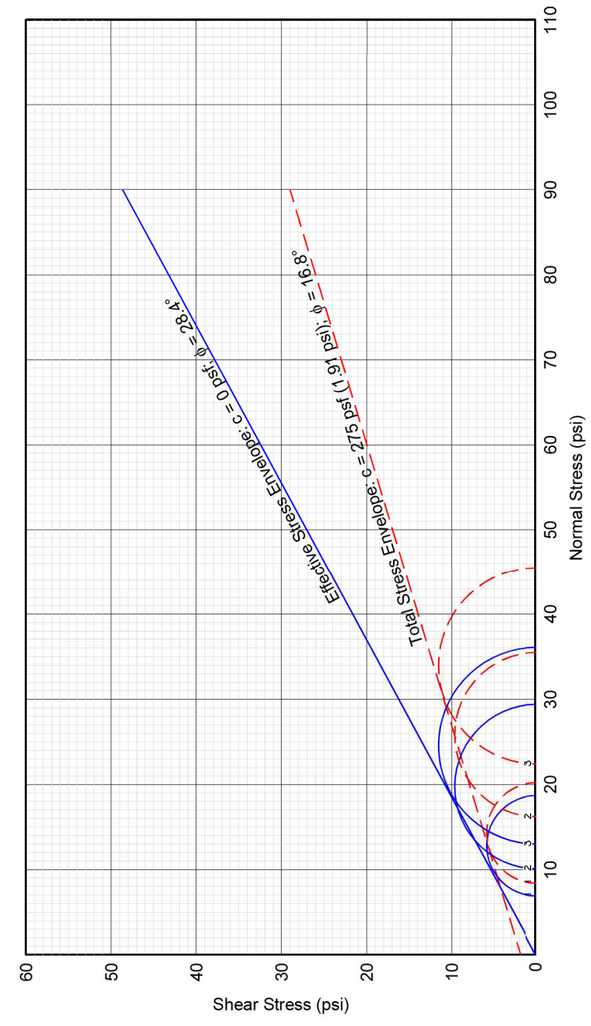
Stress Path Curve No.	Test Boring No.	Sample No.
1	035-0-14 (Ramp E Sta. 757+05, 13' Lt.)	ST-3C
2	035-0-14 (Ramp E Sta. 757+05, 13' Lt.)	ST-3B
3	035-0-14 (Ramp E Sta. 757+05, 13' Lt.)	ST-3A

REMARKS :

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

BORING NO.: 035-0-14 (Ramp E Sta. 757+05, 13' Lt.)
SAMPLE NO.: ST-3C
DEPTH (ft.): 22.5-23.0

MOHR'S CIRCLES



— Effective Stress Circles — — Total Stress Circles

Circle No.	Test Boring No.	Sample No.
1	035-0-14 (Ramp E 757+05, 13' Lt.)	ST-3A
2	035-0-14 (Ramp E 757+05, 13' Lt.)	ST-3B
3	035-0-14 (Ramp E 757+05, 13' Lt.)	ST-3C

DRAWN JTB CHECKED SPR

SOIL PROFILE
LABORATORY TEST DATA

HAM-71-3.81

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CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

CLIENT : HDR Engineering, Inc.
PROJECT NO.: 140358N
DATE: 6/2/2014
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

BORING NO.: 045-0-14 (Ramp C Sta. 675+49, 12' Lt.) SAMPLE NO.: ST-1B DEPTH (ft.): 20.5-21.0
SAMPLE OBTAINED BY: Shelby Tube CONDITION: Undisturbed
SAMPLE DESCRIPTION: Very stiff, gray, SILT AND CLAY, trace gravel

LIQUID LIMIT (%): 33 PLASTIC LIMIT (%): 19 PLASTICITY INDEX (%): 14 ODOT: A-6a (10)
GRAVEL (%): 1.0 SAND (%): 0.0 SILT (%): 41.0 CLAY (%): 58.0
SPECIFIC GRAVITY OF SOLIDS: 2.728 (Per ASTM D854) LOAD CELL NO.: 1008

SAMPLE DATA (INITIAL/AFTER CONSOLIDATION)

	INITIAL	AFTER
DIAMETER (in.):	2.82	2.80
HEIGHT (in.):	5.54	5.53
HEIGHT TO DIAMETER RATIO:	1.96	1.97
WET UNIT WEIGHT (pcf):	135.7	139.6
DRY UNIT WEIGHT (pcf):	113.1	114.6
VOID RATIO:	0.50	0.49
MOISTURE CONTENT (%)*:	20.0	21.8
DEGREE OF SATURATION (%):	100	100

SATURATION & CONSOLIDATION DATA

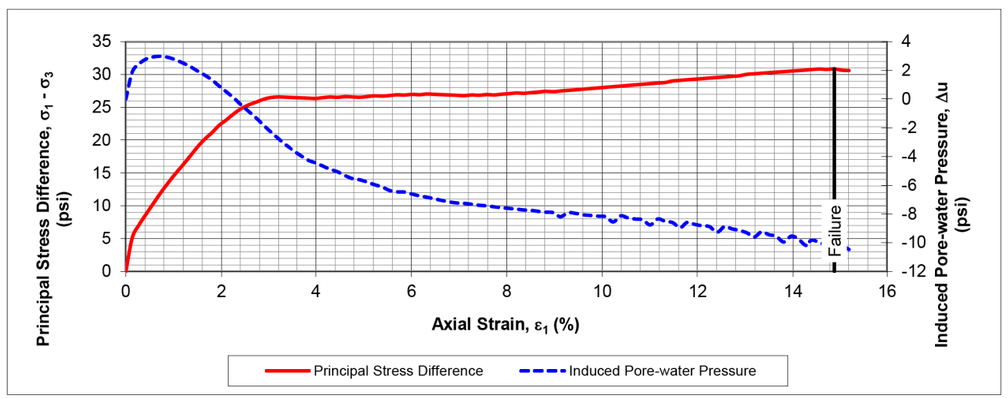
SATURATION METHOD:	Wet Method
PORE PRESSURE PARAMETER B:	0.95
TOTAL BACK PRESSURE (psi):	23
EFFECTIVE CONSOLIDATION PRESSURE (psi):	7
CROSS-SECTIONAL AREA AFTER CONSOLIDATION ($in.^2$)**:	6.17
TIME TO 50% PRIMARY CONSOLIDATION, t_{50} (min.):	N/A

FAILURE DATA***

AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**0.016**
AXIAL STRAIN AT FAILURE (%):	**14.9**
PRINCIPAL STRESS DIFFERENCE AT FAILURE, $\sigma_1 - \sigma_3$ (psi):	**30.9**
EFFECTIVE MINOR PRINCIPAL STRESS AT FAILURE, σ_3' (psi):	**16.7**
EFFECTIVE MAJOR PRINCIPAL STRESS AT FAILURE, σ_1' (psi):	**47.5**
INDUCED PORE-WATER PRESSURE AT FAILURE, Δu (psi):	**-10.6**

SOIL STRENGTH PARAMETERS

COHESION, c (psf):	**0**
FRICTION ANGLE, ϕ (°):	**27.0**

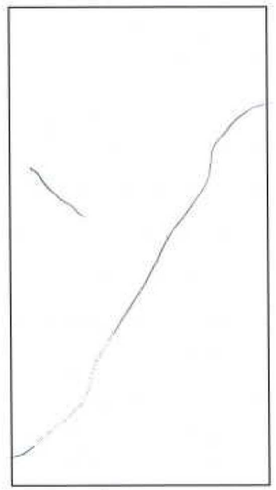


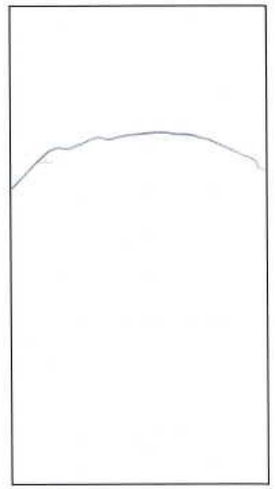
* Initial moisture content determined from sample cuttings. Final moisture content determined from entire sample.
** Cross-sectional area after consolidation determined from Method A.
*** Failure Criterion: Maximum principal stress difference. Failure stress values have been corrected for both filter strip and membrane effects.

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

BORING NO.: 045-0-14 (Ramp C Sta. 675+49, 12' Lt.)
SAMPLE NO.: ST-1B
DEPTH (ft.): 20.5-21.0

FAILURE SHAPE


FRONT VIEW


SIDE VIEW

DRAWN JTB CHECKED SPR

SOIL PROFILE
LABORATORY TEST DATA

HAM-71-3.81

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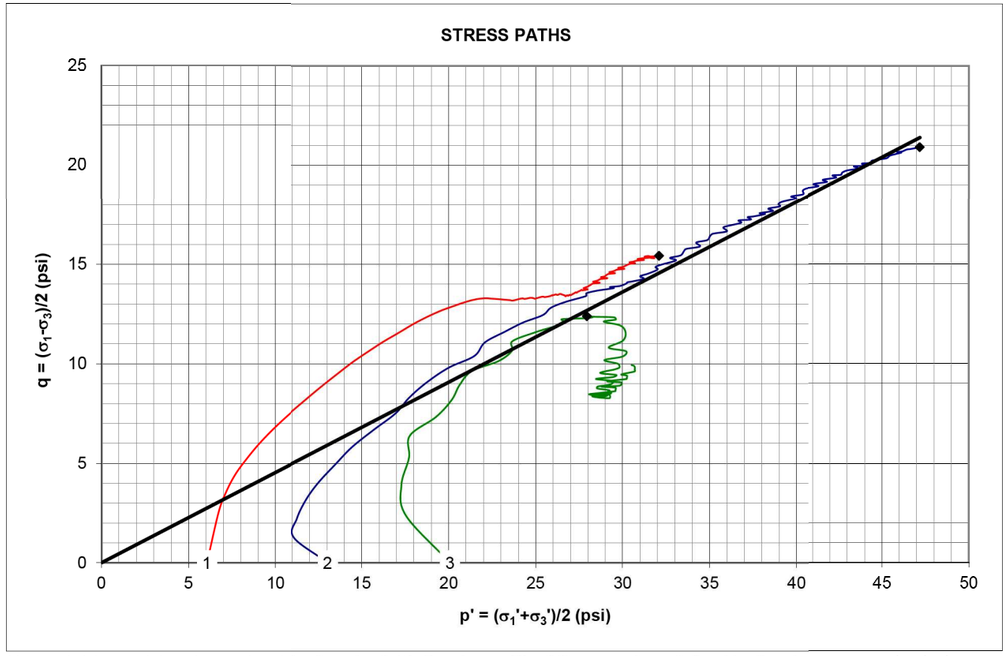
CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

BORING NO.: 045-0-14 (Ramp C Sta. 675+49, 12' Lt.)
SAMPLE NO.: ST-1B
DEPTH (ft.): 20.5-21.0



Note: $\sin(\phi) = \tan(\alpha)$ and $c = m/\cos(\phi)$, where $\tan(\alpha)$ is the slope of the failure envelope defined by the p'-q curves and m is the y-intercept.

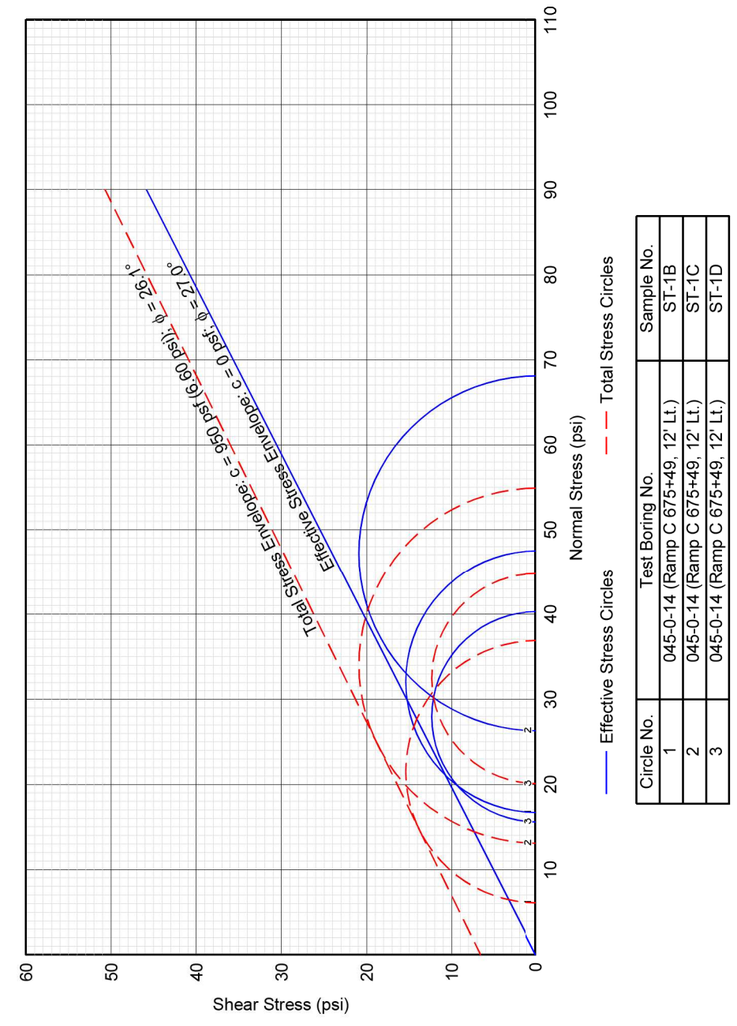
Stress Path Curve No.	Test Boring No.	Sample No.
1	045-0-14 (Ramp C Sta. 675+49, 12' Lt.)	ST-1B
2	045-0-14 (Ramp C Sta. 675+49, 12' Lt.)	ST-1C
3	045-0-14 (Ramp C Sta. 675+49, 12' Lt.)	ST-1D

REMARKS :

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

BORING NO.: 045-0-14 (Ramp C Sta. 675+49, 12' Lt.)
SAMPLE NO.: ST-1B
DEPTH (ft.): 20.5-21.0

MOHR'S CIRCLES



— Total Stress Circles
— Effective Stress Circles

Circle No.	Test Boring No.	Sample No.
1	045-0-14 (Ramp C 675+49, 12' Lt.)	ST-1B
2	045-0-14 (Ramp C 675+49, 12' Lt.)	ST-1C
3	045-0-14 (Ramp C 675+49, 12' Lt.)	ST-1D

DRAWN JTB
CHECKED SPR

SOIL PROFILE
LABORATORY TEST DATA

HAM-71-3.81

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CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

CLIENT : HDR Engineering, Inc.
PROJECT NO.: 140358N
DATE: 6/3/2014
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

BORING NO.: 045-0-14 (Ramp C Sta. 675+49, 12' Lt.) SAMPLE NO.: ST-1C DEPTH (ft.): 21.0-21.5
SAMPLE OBTAINED BY: Shelby Tube CONDITION: Undisturbed
SAMPLE DESCRIPTION: Very stiff, gray, SILT AND CLAY, trace gravel

LIQUID LIMIT (%): 33 PLASTIC LIMIT (%): 19 PLASTICITY INDEX (%): 14 ODOT: A-6a (10)
GRAVEL (%): 1.0 SAND (%): 0.0 SILT (%): 41.0 CLAY (%): 58.0
SPECIFIC GRAVITY OF SOLIDS: 2.728 (Per ASTM D854) LOAD CELL NO.: 1008

SAMPLE DATA (INITIAL/AFTER CONSOLIDATION)

	INITIAL	AFTER
DIAMETER (in.):	2.82	2.79
HEIGHT (in.):	5.54	5.51
HEIGHT TO DIAMETER RATIO:	1.97	1.97
WET UNIT WEIGHT (pcf):	137.8	141.0
DRY UNIT WEIGHT (pcf):	115.1	118.0
VOID RATIO:	0.48	0.44
MOISTURE CONTENT (%)*:	19.7	19.4
DEGREE OF SATURATION (%):	100	100

SATURATION & CONSOLIDATION DATA

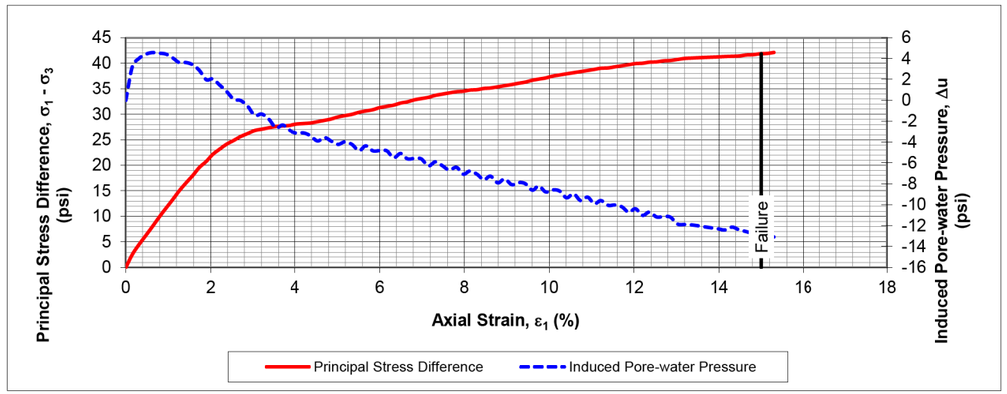
SATURATION METHOD:	Wet Method
PORE PRESSURE PARAMETER B:	0.96
TOTAL BACK PRESSURE (psi):	18.1
EFFECTIVE CONSOLIDATION PRESSURE (psi):	14
CROSS-SECTIONAL AREA AFTER CONSOLIDATION ($in.^2$)**:	6.13
TIME TO 50% PRIMARY CONSOLIDATION, t_{50} (min.):	N/A

FAILURE DATA***

AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**0.016**
AXIAL STRAIN AT FAILURE (%):	**15.0**
PRINCIPAL STRESS DIFFERENCE AT FAILURE, $\sigma_1 - \sigma_3$ (psi):	**41.8**
EFFECTIVE MINOR PRINCIPAL STRESS AT FAILURE, σ_3' (psi):	**26.3**
EFFECTIVE MAJOR PRINCIPAL STRESS AT FAILURE, σ_1' (psi):	**68.1**
INDUCED PORE-WATER PRESSURE AT FAILURE, Δu (psi):	**-13.2**

SOIL STRENGTH PARAMETERS

COHESION, c (psf):	**0**
FRICTION ANGLE, ϕ (°):	**27.0**

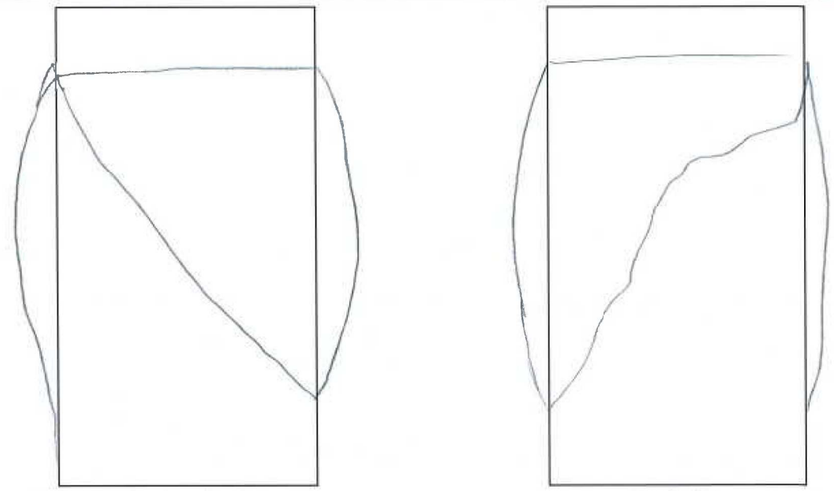


* Initial moisture content determined from sample cuttings. Final moisture content determined from entire sample.
** Cross-sectional area after consolidation determined from Method A.
*** Failure Criterion: 15% axial strain. Failure stress values have been corrected for both filter strip and membrane effects.

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

BORING NO.: 045-0-14 (Ramp C Sta. 675+49, 12' Lt.)
SAMPLE NO.: ST-1C
DEPTH (ft.): 21.0-21.5

FAILURE SHAPE

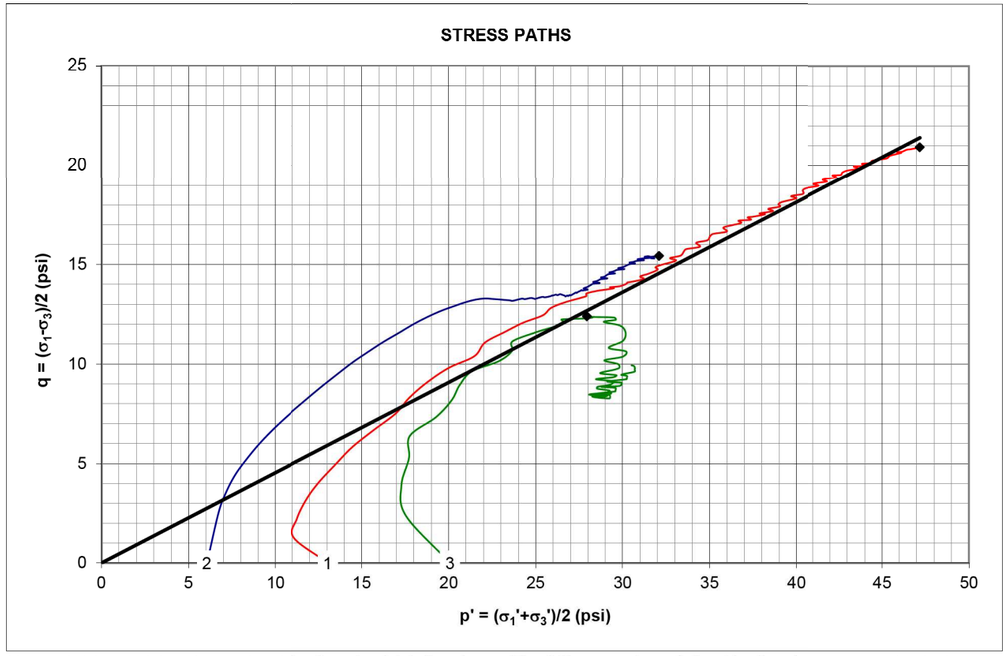


FRONT VIEW SIDE VIEW

DRAWN JTB CHECKED SPR
SOIL PROFILE
LABORATORY TEST DATA
HAM-71-3.81
45
175
c:\pwworking\pitt\d0885895\T76282D032.dgn 4/21/2015 10:26:24 AM jbudner

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

BORING NO.: 045-0-14 (Ramp C Sta. 675+49, 12' Lt.)
SAMPLE NO.: ST-1C
DEPTH (ft.): 21.0-21.5



Note: $\sin(\phi) = \tan(\alpha)$ and $c = m/\cos(\phi)$, where $\tan(\alpha)$ is the slope of the failure envelope defined by the p'-q curves and m is the y-intercept.

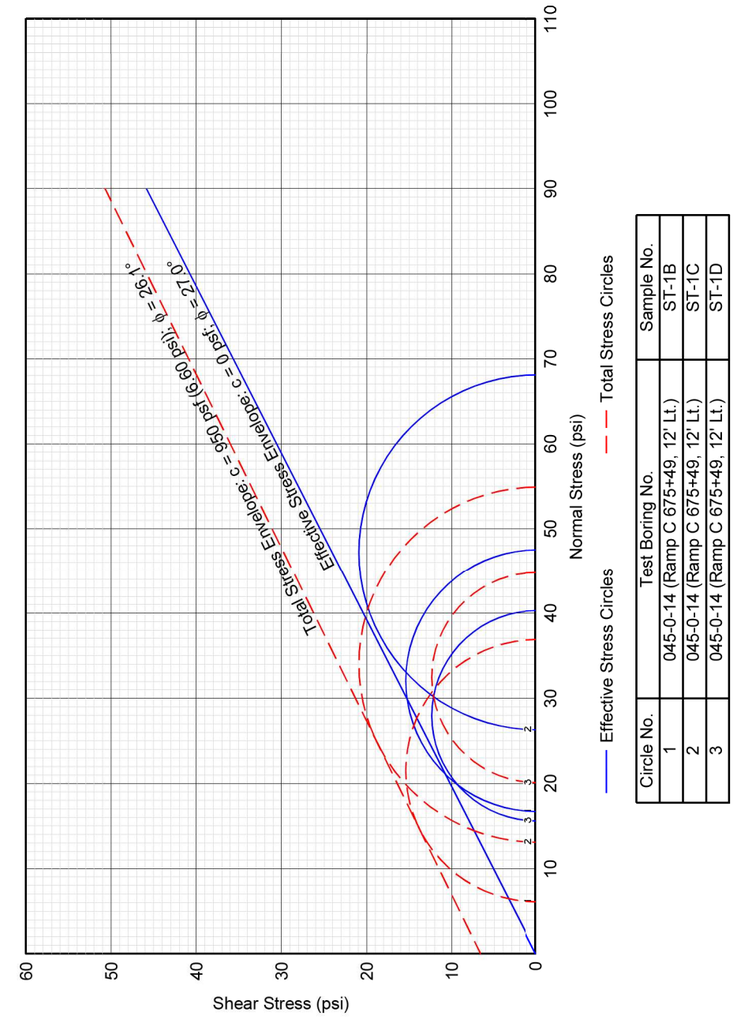
Stress Path Curve No.	Test Boring No.	Sample No.
1	045-0-14 (Ramp C Sta. 675+49, 12' Lt.)	ST-1C
2	045-0-14 (Ramp C Sta. 675+49, 12' Lt.)	ST-1B
3	045-0-14 (Ramp C Sta. 675+49, 12' Lt.)	ST-1D

REMARKS :

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

BORING NO.: 045-0-14 (Ramp C Sta. 675+49, 12' Lt.)
SAMPLE NO.: ST-1C
DEPTH (ft.): 21.0-21.5

MOHR'S CIRCLES



Circle No.	Test Boring No.	Sample No.
1	045-0-14 (Ramp C 675+49, 12' Lt.)	ST-1B
2	045-0-14 (Ramp C 675+49, 12' Lt.)	ST-1C
3	045-0-14 (Ramp C 675+49, 12' Lt.)	ST-1D

DRAWN JTB CHECKED SPR

SOIL PROFILE
LABORATORY TEST DATA

HAM-71-3.81

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CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

CLIENT : HDR Engineering, Inc.
PROJECT NO.: 140358N
DATE: 6/5/2014
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

BORING NO.: 045-0-14 (Ramp C Sta. 675+49, 12' Lt.) SAMPLE NO.: ST-1D DEPTH (ft.): 21.5-22.0
SAMPLE OBTAINED BY: Shelby Tube CONDITION: Undisturbed
SAMPLE DESCRIPTION: Very stiff, gray, SILT AND CLAY, trace gravel

LIQUID LIMIT (%): 33 PLASTIC LIMIT (%): 19 PLASTICITY INDEX (%): 14 ODOT: A-6a (10)
GRAVEL (%): 1.0 SAND (%): 0.0 SILT (%): 41.0 CLAY (%): 58.0
SPECIFIC GRAVITY OF SOLIDS: 2.728 (Per ASTM D854) LOAD CELL NO.: 1008

SAMPLE DATA (INITIAL/AFTER CONSOLIDATION)

	INITIAL	AFTER
DIAMETER (in.):	2.81	2.76
HEIGHT (in.):	5.54	5.52
HEIGHT TO DIAMETER RATIO:	1.97	2.00
WET UNIT WEIGHT (pcf):	134.0	140.6
DRY UNIT WEIGHT (pcf):	110.6	115.0
VOID RATIO:	0.54	0.48
MOISTURE CONTENT (%)*:	21.2	22.3
DEGREE OF SATURATION (%):	100	100

SATURATION & CONSOLIDATION DATA

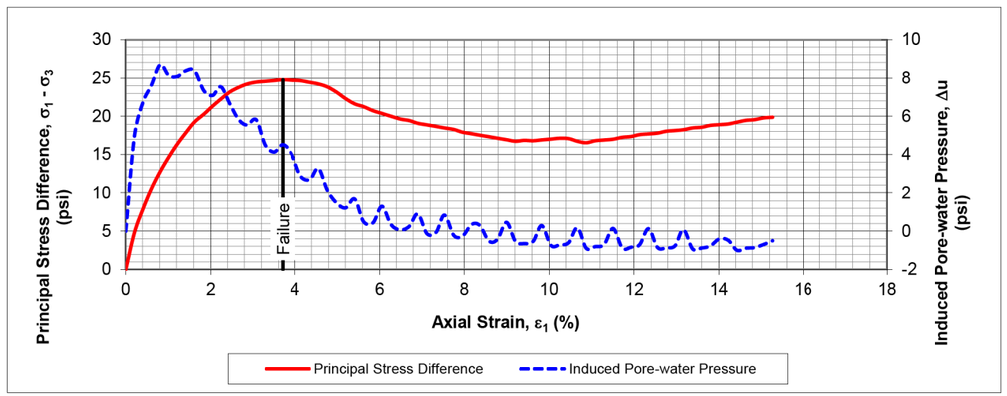
SATURATION METHOD:	Wet Method
PORE PRESSURE PARAMETER B:	0.95
TOTAL BACK PRESSURE (psi):	23.15
EFFECTIVE CONSOLIDATION PRESSURE (psi):	21
CROSS-SECTIONAL AREA AFTER CONSOLIDATION ($in.^2$)**:	6.00
TIME TO 50% PRIMARY CONSOLIDATION, t_{50} (min.):	N/A

FAILURE DATA***

AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**0.021**
AXIAL STRAIN AT FAILURE (%):	**3.7**
PRINCIPAL STRESS DIFFERENCE AT FAILURE, $\sigma_1 - \sigma_3$ (psi):	**24.8**
EFFECTIVE MINOR PRINCIPAL STRESS AT FAILURE, σ_3' (psi):	**15.6**
EFFECTIVE MAJOR PRINCIPAL STRESS AT FAILURE, σ_1' (psi):	**40.3**
INDUCED PORE-WATER PRESSURE AT FAILURE, Δu (psi):	**4.5**

SOIL STRENGTH PARAMETERS

COHESION, c (psf):	**0**
FRICTION ANGLE, ϕ (°):	**27.0**

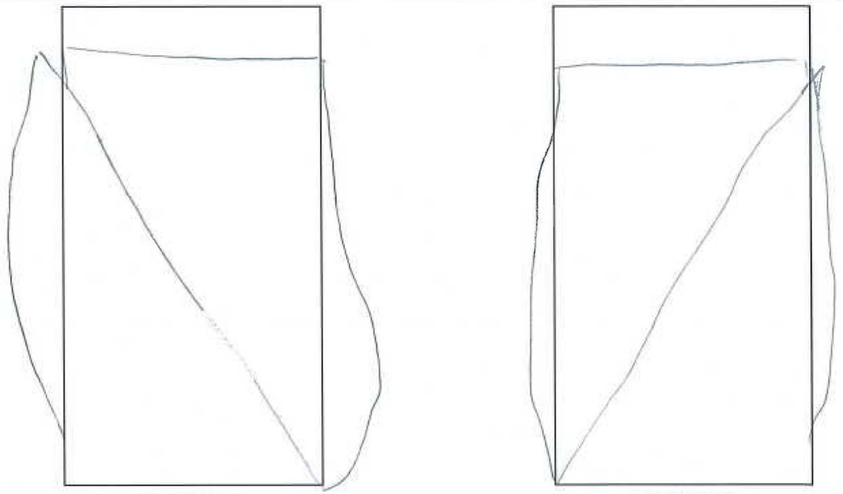


* Initial moisture content determined from sample cuttings. Final moisture content determined from entire sample.
** Cross-sectional area after consolidation determined from Method A.
*** Failure Criterion: Maximum principal stress difference. Failure stress values have been corrected for both filter strip and membrane effects.

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

BORING NO.: 045-0-14 (Ramp C Sta. 675+49, 12' Lt.)
SAMPLE NO.: ST-1D
DEPTH (ft.): 21.5-22.0

FAILURE SHAPE



FRONT VIEW SIDE VIEW

DRAWN JTB CHECKED SPR

SOIL PROFILE
LABORATORY TEST DATA

HAM-71-3.81

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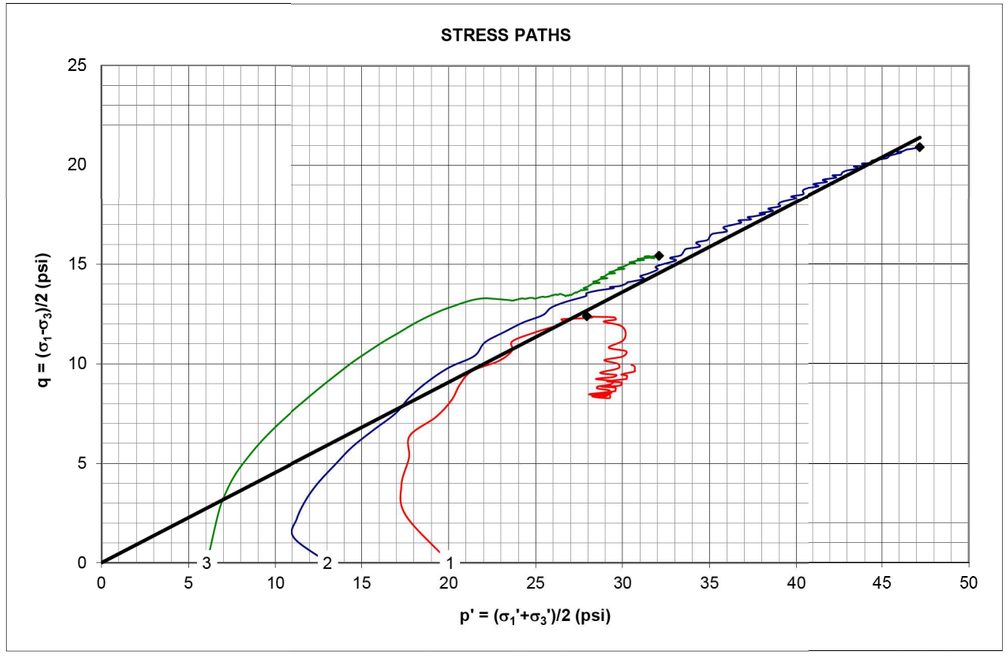
CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

BORING NO.: 045-0-14 (Ramp C Sta. 675+49, 12' Lt.)
SAMPLE NO.: ST-1D
DEPTH (ft.): 21.5-22.0



Note: $\sin(\phi) = \tan(\alpha)$ and $c = m/\cos(\phi)$, where $\tan(\alpha)$ is the slope of the failure envelope defined by the p'-q curves and m is the y-intercept.

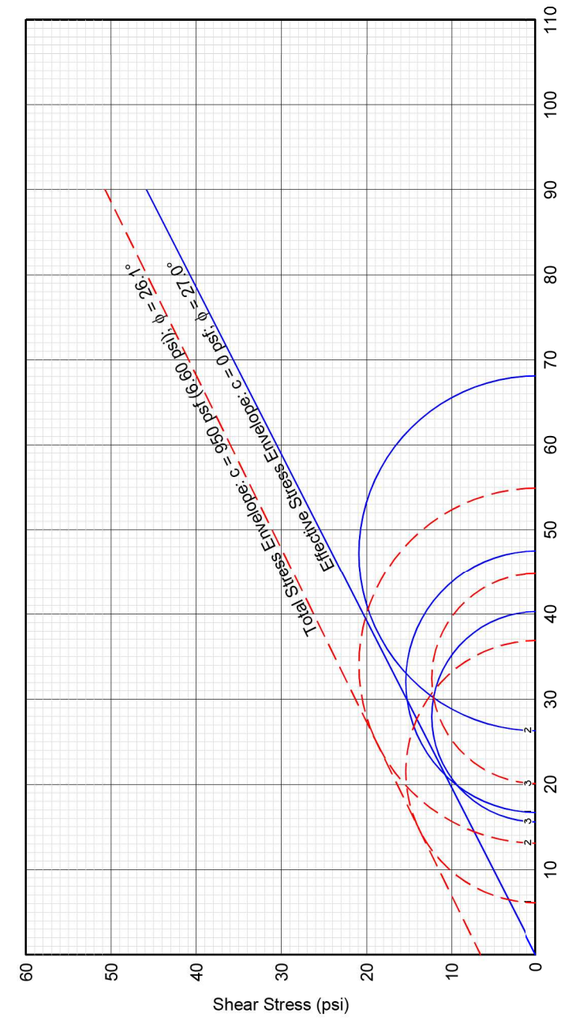
Stress Path Curve No.	Test Boring No.	Sample No.
1	045-0-14 (Ramp C Sta. 675+49, 12' Lt.)	ST-1D
2	045-0-14 (Ramp C Sta. 675+49, 12' Lt.)	ST-1C
3	045-0-14 (Ramp C Sta. 675+49, 12' Lt.)	ST-1B

REMARKS :

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST FOR COHESIVE SOILS
ASTM D4767

BORING NO.: 045-0-14 (Ramp C Sta. 675+49, 12' Lt.)
SAMPLE NO.: ST-1D
DEPTH (ft.): 21.5-22.0

MOHR'S CIRCLES



— Total Stress Circles
— Effective Stress Circles

Circle No.	Test Boring No.	Sample No.
1	045-0-14 (Ramp C 675+49, 12' Lt.)	ST-1B
2	045-0-14 (Ramp C 675+49, 12' Lt.)	ST-1C
3	045-0-14 (Ramp C 675+49, 12' Lt.)	ST-1D

DRAWN JTB
CHECKED SPR

SOIL PROFILE
LABORATORY TEST DATA

HAM-71-3.81

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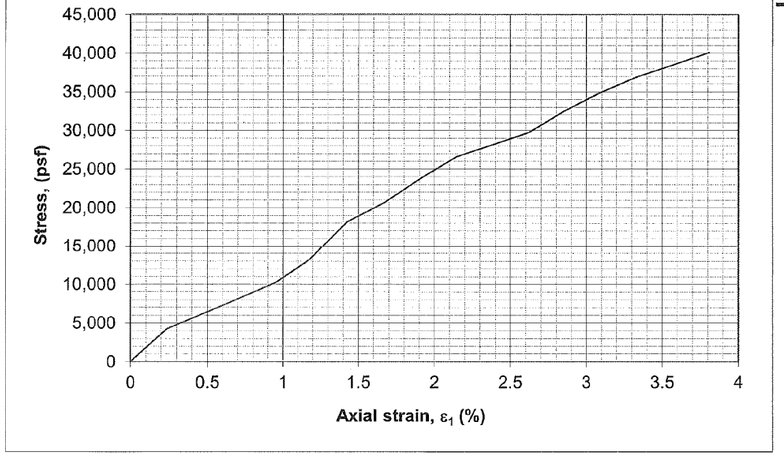
UNIAXIAL COMPRESSIVE STRENGTH OF INTACT ROCK CORE
ASTM D7012 - METHOD C

CLIENT : HDR Engineering, Inc. DATE: 6/13/2014
PROJECT NO.: 140358N
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

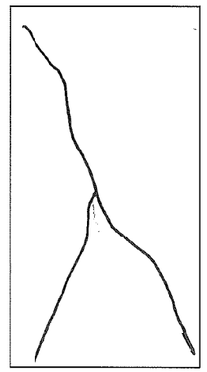
BORING NO.: 024-0-14 (Ramp E Sta. 741+89, 36' Lt.) SAMPLE NO.: NQ-2 DEPTH (ft.): 7.8-8.3
SAMPLE DESCRIPTION: SHALE, gray, slightly to moderately weathered, very weak
BEDROCK FORMATION: Miamitown Shale and Fairview Formation (Undivided)
LOAD DIRECTION: 90° to Lithology TEST TEMPERATURE (°F): 70
COMPRESSION APPARATUS.: Forney QC-200-08

SAMPLE DATA	
DIAMETER (in.):	1.82
HEIGHT (in.):	4.20
HEIGHT TO DIAMETER RATIO:	2.3
DRY UNIT WEIGHT (pcf):	143.5
MOISTURE CONTENT (%):	6.9

FAILURE DATA	
AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**1.0**
TIME TO FAILURE (min.):	**4.0**
AXIAL STRAIN AT FAILURE (%):	**3.8**
UNIAXIAL COMPRESSIVE STRENGTH, q_u (ksf):	**40.1**
UNIAXIAL COMPRESSIVE STRENGTH, q_u (psi):	**278.0**



FAILURE SHAPE



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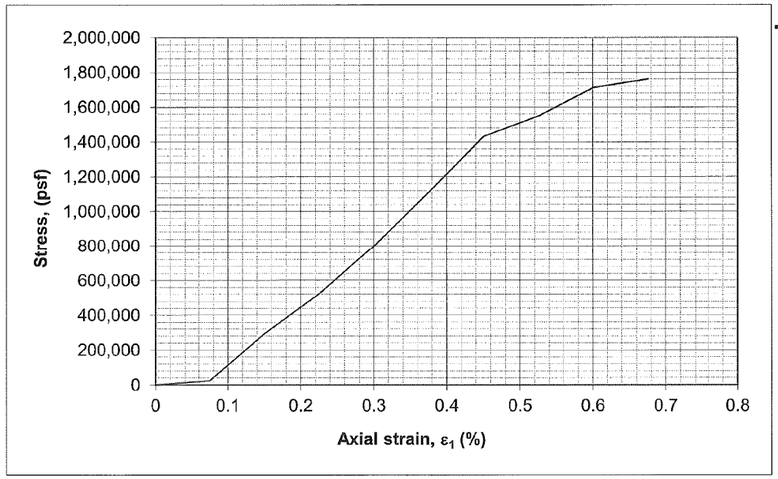
UNIAXIAL COMPRESSIVE STRENGTH OF INTACT ROCK CORE
ASTM D7012 - METHOD C

CLIENT : HDR Engineering, Inc. DATE: 6/12/2014
PROJECT NO.: 140358N
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

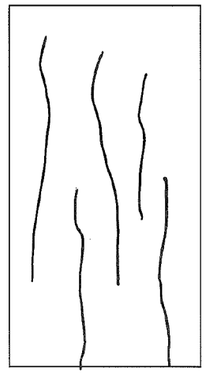
BORING NO.: 027-0-14 (Ramp E Sta. 746+34, 52' Lt.) SAMPLE NO.: NQ-3 DEPTH (ft.): 31.2-31.7
SAMPLE DESCRIPTION: LIMESTONE, gray, unweathered, strong, slightly rough, thin bedded, fossiliferous, occasional shale partings
BEDROCK FORMATION: Miamitown Shale and Fairview Formation (Undivided)
LOAD DIRECTION: 90° to Lithology TEST TEMPERATURE (°F): 70
COMPRESSION APPARATUS.: Forney QC-200-08

SAMPLE DATA	
DIAMETER (in.):	1.87
HEIGHT (in.):	4.00
HEIGHT TO DIAMETER RATIO:	2.1
DRY UNIT WEIGHT (pcf):	167.8
MOISTURE CONTENT (%):	0.4

FAILURE DATA	
AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**0.2**
TIME TO FAILURE (min.):	**3.5**
AXIAL STRAIN AT FAILURE (%):	**0.7**
UNIAXIAL COMPRESSIVE STRENGTH, q_u (ksf):	**1,760.0**
UNIAXIAL COMPRESSIVE STRENGTH, q_u (psi):	**12,200.0**



FAILURE SHAPE



REMARKS :

DRAWN JTB CHECKED SPR

SOIL PROFILE
LABORATORY TEST DATA

HAM-71-3.81

49
175

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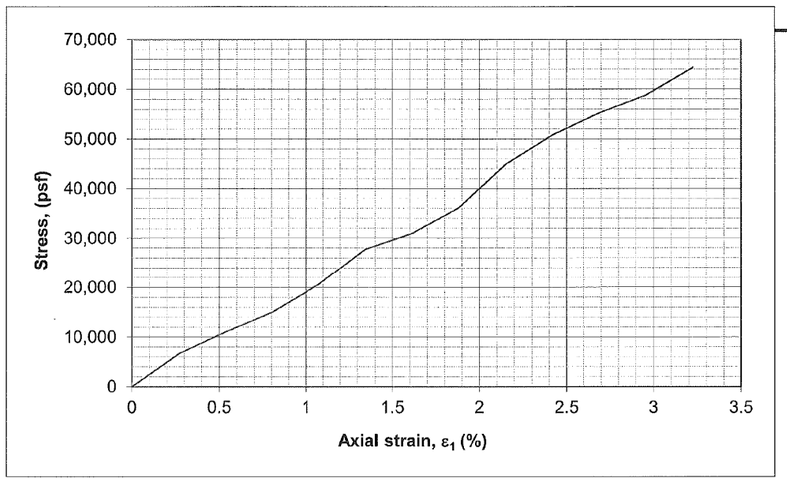
UNIAXIAL COMPRESSIVE STRENGTH OF INTACT ROCK CORE
ASTM D7012 - METHOD C

CLIENT : HDR Engineering, Inc. DATE: 6/2/2014
PROJECT NO.: 140358N
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

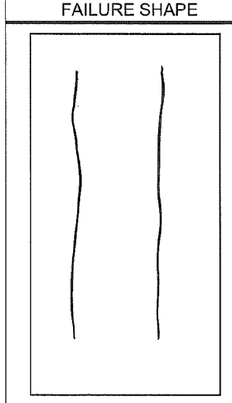
BORING NO.: 029-0-14 (Ramp E Sta. 751+84, 38' Lt.) SAMPLE NO.: NQ-2 DEPTH (ft.): 34.3-34.7
SAMPLE DESCRIPTION: SHALE, tan and gray, highly to slightly weathered, very weak, very thin to thin bedded
BEDROCK FORMATION: Miamitown Shale and Fairview Formation (Undivided)
LOAD DIRECTION: 90° to Lithology TEST TEMPERATURE (°F): 70
COMPRESSION APPARATUS.: Forney QC-200-08

SAMPLE DATA	
DIAMETER (in.):	1.82
HEIGHT (in.):	3.72
HEIGHT TO DIAMETER RATIO:	2.0
DRY UNIT WEIGHT (pcf):	144.1
MOISTURE CONTENT (%):	6.1

FAILURE DATA	
AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**1.3**
TIME TO FAILURE (min.):	**2.5**
AXIAL STRAIN AT FAILURE (%):	**3.2**
UNIAXIAL COMPRESSIVE STRENGTH, q_u (ksf):	**64.4**
UNIAXIAL COMPRESSIVE STRENGTH, q_u (psi):	**447.0**



FAILURE SHAPE



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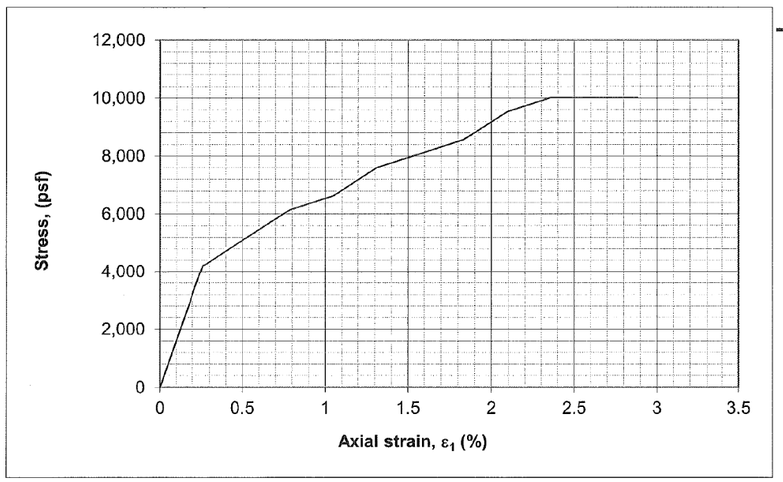
UNIAXIAL COMPRESSIVE STRENGTH OF INTACT ROCK CORE
ASTM D7012 - METHOD C

CLIENT : HDR Engineering, Inc. DATE: 6/12/2014
PROJECT NO.: 140358N
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

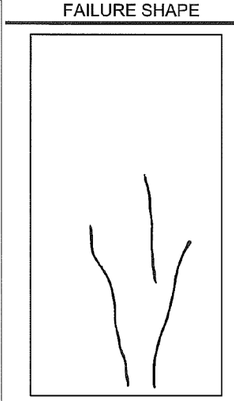
BORING NO.: 030-0-14 (Ramp E Sta. 753+31, 22' Lt.) SAMPLE NO.: NQ-1 DEPTH (ft.): 28.4-28.9
SAMPLE DESCRIPTION: SHALE, gray and tan, severely to slightly weathered, very weak, very thin to thin bedded
BEDROCK FORMATION: Miamitown Shale and Fairview Formation (Undivided)
LOAD DIRECTION: 90° to Lithology TEST TEMPERATURE (°F): 70
COMPRESSION APPARATUS.: Forney QC-200-08

SAMPLE DATA	
DIAMETER (in.):	1.65
HEIGHT (in.):	3.82
HEIGHT TO DIAMETER RATIO:	2.3
DRY UNIT WEIGHT (pcf):	123.0
MOISTURE CONTENT (%):	14.8

FAILURE DATA	
AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**0.9**
TIME TO FAILURE (min.):	**2.7**
AXIAL STRAIN AT FAILURE (%):	**2.4**
UNIAXIAL COMPRESSIVE STRENGTH, q_u (ksf):	**10.0**
UNIAXIAL COMPRESSIVE STRENGTH, q_u (psi):	**69.5**



FAILURE SHAPE



REMARKS :

DRAWN JTB CHECKED SPR

SOIL PROFILE
LABORATORY TEST DATA

HAM-71-3.81

50
175

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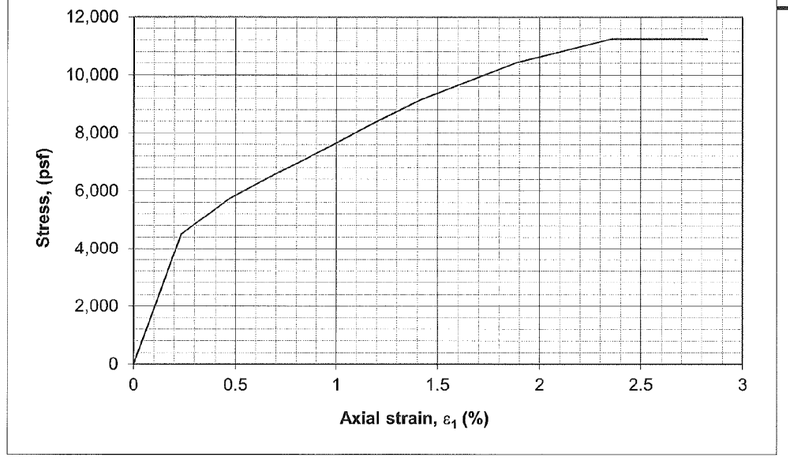
UNIAXIAL COMPRESSIVE STRENGTH OF INTACT ROCK CORE
ASTM D7012 - METHOD C

CLIENT : HDR Engineering, Inc. DATE: 5/22/2014
PROJECT NO.: 140358N
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

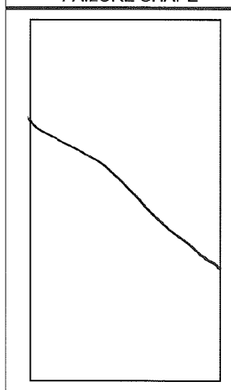
BORING NO.: 034-0-14 (SR-71 Sta. 256+50, 78' Lt.) SAMPLE NO.: NQ-2 DEPTH (ft.): 42.6-43.1
SAMPLE DESCRIPTION: SHALE, gray, unweathered to slightly weathered, very weak, thin bedded
BEDROCK FORMATION: Miamitown Shale and Fairview Formation (Undivided)
LOAD DIRECTION: 90° to Lithology TEST TEMPERATURE (°F): 70
COMPRESSION APPARATUS.: Forney QC-200-08

SAMPLE DATA	
DIAMETER (in.):	1.77
HEIGHT (in.):	4.25
HEIGHT TO DIAMETER RATIO:	2.4
DRY UNIT WEIGHT (pcf):	139.9
MOISTURE CONTENT (%):	10.7

FAILURE DATA	
AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**0.9**
TIME TO FAILURE (min.):	**2.5**
AXIAL STRAIN AT FAILURE (%):	**2.4**
UNIAXIAL COMPRESSIVE STRENGTH, q_u (ksf):	**11.2**
UNIAXIAL COMPRESSIVE STRENGTH, q_u (psi):	**78.0**



FAILURE SHAPE



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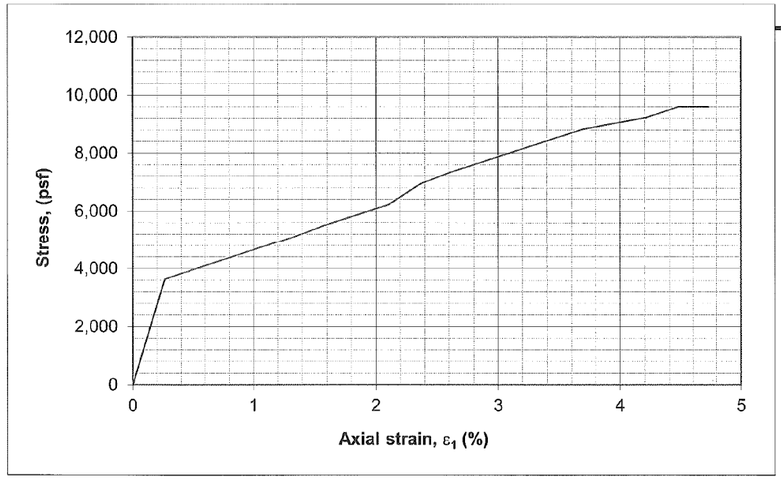
UNIAXIAL COMPRESSIVE STRENGTH OF INTACT ROCK CORE
ASTM D7012 - METHOD C

CLIENT : HDR Engineering, Inc. DATE: 6/2/2014
PROJECT NO.: 140358N
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

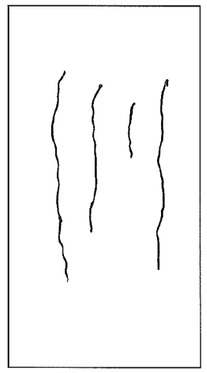
BORING NO.: 035-0-14 (Ramp E Sta. 757+05, 13' Lt.) SAMPLE NO.: NQ-2 DEPTH (ft.): 44.1-44.7
SAMPLE DESCRIPTION: SHALE, gray, severely to moderately weathered, very weak, very thin to thin bedded, highly to moderately fractured, slightly rough to very rough
BEDROCK FORMATION: Miamitown Shale and Fairview Formation (Undivided)
LOAD DIRECTION: 90° to Lithology TEST TEMPERATURE (°F): 70
COMPRESSION APPARATUS.: Forney QC-200-08

SAMPLE DATA	
DIAMETER (in.):	1.88
HEIGHT (in.):	3.80
HEIGHT TO DIAMETER RATIO:	2.0
DRY UNIT WEIGHT (pcf):	131.0
MOISTURE CONTENT (%):	9.4

FAILURE DATA	
AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**1.2**
TIME TO FAILURE (min.):	**3.8**
AXIAL STRAIN AT FAILURE (%):	**4.5**
UNIAXIAL COMPRESSIVE STRENGTH, q_u (ksf):	**9.6**
UNIAXIAL COMPRESSIVE STRENGTH, q_u (psi):	**66.6**



FAILURE SHAPE



REMARKS :

DRAWN JTB CHECKED SPR

SOIL PROFILE
LABORATORY TEST DATA

HAM-71-3.81

51
175

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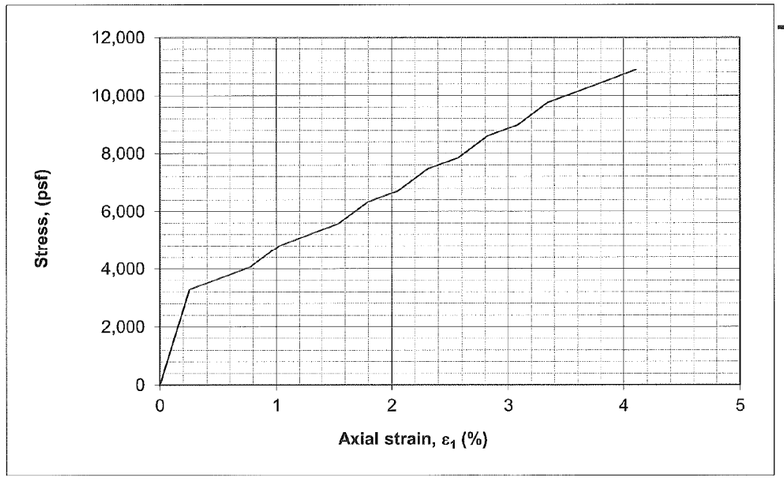
UNIAXIAL COMPRESSIVE STRENGTH OF INTACT ROCK CORE
ASTM D7012 - METHOD C

CLIENT : HDR Engineering, Inc. DATE: 6/12/2014
PROJECT NO.: 140358N
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

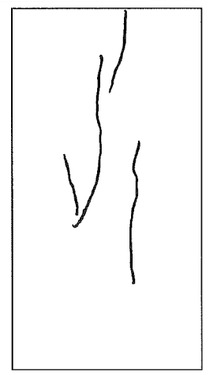
BORING NO.: 040-1-14 (Ramp E Sta. 766+31, 62' Lt.) SAMPLE NO.: NQ-2 DEPTH (ft.): 8.3-8.8
SAMPLE DESCRIPTION: SHALE, brown, severely to highly weathered, very weak, slightly rough, very thin to medium bedded, fractured to moderately fractured
BEDROCK FORMATION: Miamitown Shale and Fairview Formation (Undivided)
LOAD DIRECTION: 90° to Lithology TEST TEMPERATURE (°F): 70
COMPRESSION APPARATUS.: Forney QC-200-08

SAMPLE DATA	
DIAMETER (in.):	1.86
HEIGHT (in.):	3.89
HEIGHT TO DIAMETER RATIO:	2.1
DRY UNIT WEIGHT (pcf):	121.6
MOISTURE CONTENT (%):	13.8

FAILURE DATA	
AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**1.3**
TIME TO FAILURE (min.):	**3.2**
AXIAL STRAIN AT FAILURE (%):	**4.1**
UNIAXIAL COMPRESSIVE STRENGTH, q_u (ksf):	**10.9**
UNIAXIAL COMPRESSIVE STRENGTH, q_u (psi):	**75.6**



FAILURE SHAPE



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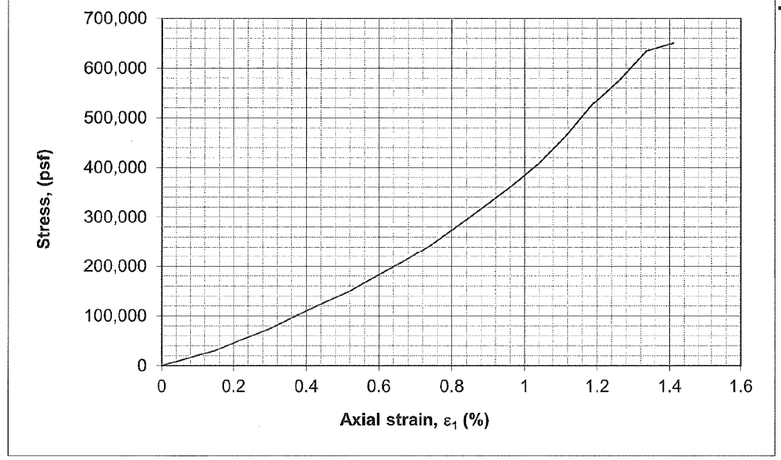
UNIAXIAL COMPRESSIVE STRENGTH OF INTACT ROCK CORE
ASTM D7012 - METHOD C

CLIENT : HDR Engineering, Inc. DATE: 6/12/2014
PROJECT NO.: 140358N
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

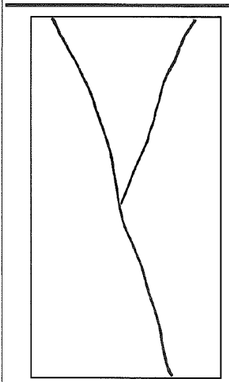
BORING NO.: 041-1-14 (Ramp E Sta. 768+85, 70' Lt.) SAMPLE NO.: NQ-1 DEPTH (ft.): 30.0-30.5
SAMPLE DESCRIPTION: LIMESTONE, gray, highly to slightly weathered, moderately strong, very thin to thin bedded
BEDROCK FORMATION: Miamitown Shale and Fairview Formation (Undivided)
LOAD DIRECTION: 90° to Lithology TEST TEMPERATURE (°F): 70
COMPRESSION APPARATUS.: Forney QC-200-08

SAMPLE DATA	
DIAMETER (in.):	1.86
HEIGHT (in.):	4.04
HEIGHT TO DIAMETER RATIO:	2.2
DRY UNIT WEIGHT (pcf):	157.7
MOISTURE CONTENT (%):	2.7

FAILURE DATA	
AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**0.3**
TIME TO FAILURE (min.):	**4.7**
AXIAL STRAIN AT FAILURE (%):	**1.4**
UNIAXIAL COMPRESSIVE STRENGTH, q_u (ksf):	**651.0**
UNIAXIAL COMPRESSIVE STRENGTH, q_u (psi):	**4,520.0**



FAILURE SHAPE



REMARKS :

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DRAWN JTB CHECKED SPR

SOIL PROFILE
LABORATORY TEST DATA

HAM-71-3.81

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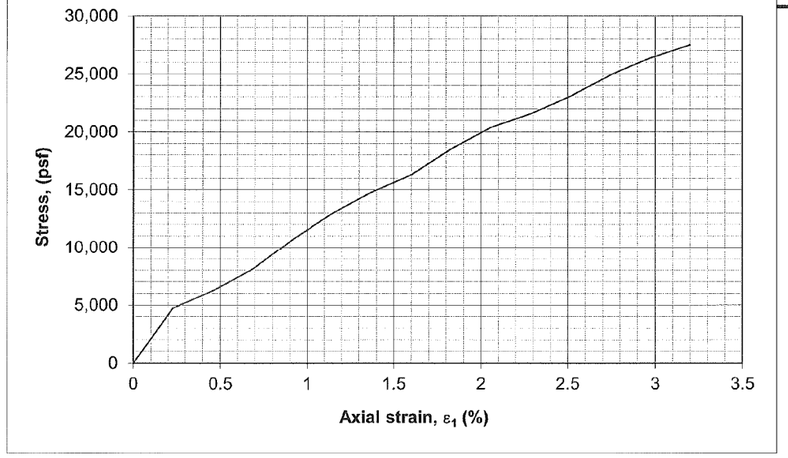
UNIAXIAL COMPRESSIVE STRENGTH OF INTACT ROCK CORE
ASTM D7012 - METHOD C

CLIENT : HDR Engineering, Inc. DATE: 5/22/2014
PROJECT NO.: 140358N
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

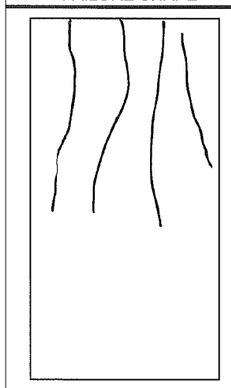
BORING NO.: 042-0-14 (SR-71 Sta. 271+10, 80' Lt.) SAMPLE NO.: NQ-2 DEPTH (ft.): 19.3-19.7
SAMPLE DESCRIPTION: SHALE, gray, slightly weathered, very weak, medium bedded, fissile
BEDROCK FORMATION: Miamitown Shale and Fairview Formation (Undivided)
LOAD DIRECTION: 90° to Lithology TEST TEMPERATURE (°F): 70
COMPRESSION APPARATUS.: Forney QC-200-08

SAMPLE DATA	
DIAMETER (in.):	1.88
HEIGHT (in.):	4.38
HEIGHT TO DIAMETER RATIO:	2.3
DRY UNIT WEIGHT (pcf):	138.7
MOISTURE CONTENT (%):	8.7

FAILURE DATA	
AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**0.9**
TIME TO FAILURE (min.):	**3.5**
AXIAL STRAIN AT FAILURE (%):	**3.2**
UNIAXIAL COMPRESSIVE STRENGTH, q_u (ksf):	**27.5**
UNIAXIAL COMPRESSIVE STRENGTH, q_u (psi):	**191.0**



FAILURE SHAPE



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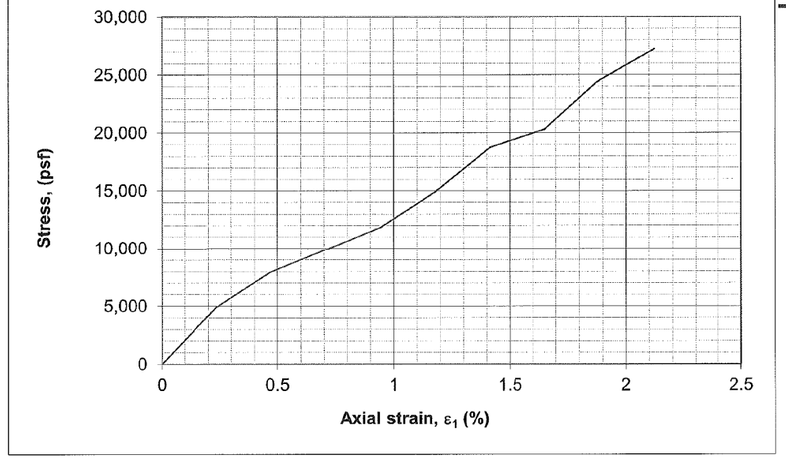
UNIAXIAL COMPRESSIVE STRENGTH OF INTACT ROCK CORE
ASTM D7012 - METHOD C

CLIENT : HDR Engineering, Inc. DATE: 6/12/2014
PROJECT NO.: 140358N
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

BORING NO.: 042-1-14 (Stanton Ave. Sta. 22+71, 29' Lt.) SAMPLE NO.: NQ-1 DEPTH (ft.): 36.0-36.4
SAMPLE DESCRIPTION: SHALE, brown, moderately weathered, very weak, thick bedded, rough joints, slightly fractured
BEDROCK FORMATION: Miamitown Shale and Fairview Formation (Undivided)
LOAD DIRECTION: 90° to Lithology TEST TEMPERATURE (°F): 70
COMPRESSION APPARATUS.: Forney QC-200-08

SAMPLE DATA	
DIAMETER (in.):	1.85
HEIGHT (in.):	4.24
HEIGHT TO DIAMETER RATIO:	2.3
DRY UNIT WEIGHT (pcf):	132.7
MOISTURE CONTENT (%):	9.9

FAILURE DATA	
AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**0.9**
TIME TO FAILURE (min.):	**2.2**
AXIAL STRAIN AT FAILURE (%):	**2.1**
UNIAXIAL COMPRESSIVE STRENGTH, q_u (ksf):	**27.2**
UNIAXIAL COMPRESSIVE STRENGTH, q_u (psi):	**189.0**



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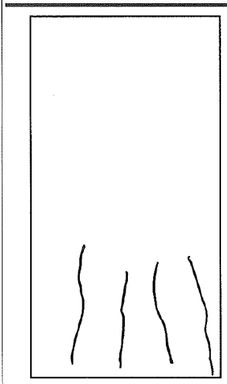

REMARKS :

DRAWN JTB CHECKED SPR

SOIL PROFILE
LABORATORY TEST DATA

HAM-71-3.81

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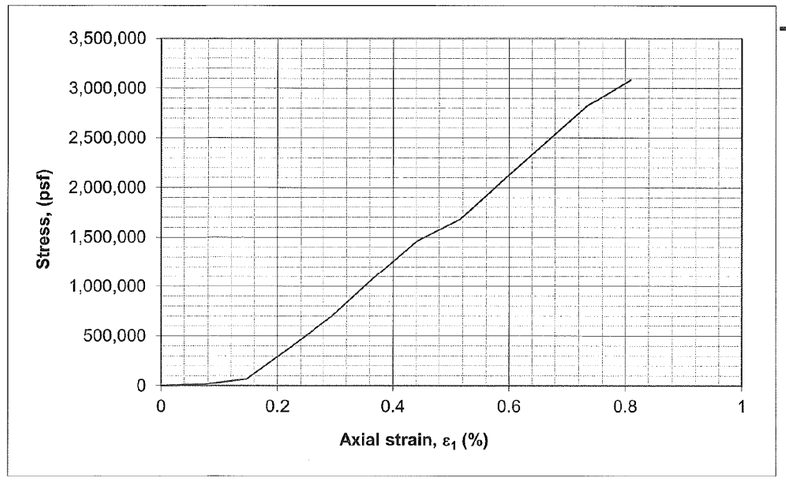
UNIAXIAL COMPRESSIVE STRENGTH OF INTACT ROCK CORE
ASTM D7012 - METHOD C

CLIENT : HDR Engineering, Inc. DATE: 6/13/2014
PROJECT NO.: 140358N
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

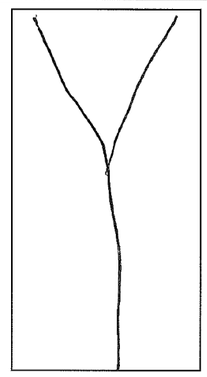
BORING NO.: 042-1-14 (Stanton Ave. Sta. 22+71, 29' Lt.) SAMPLE NO.: NQ-2 DEPTH (ft.): 40.8-41.5
SAMPLE DESCRIPTION: LIMESTONE, gray, unweathered, very strong, thin bedded, fossiliferous
BEDROCK FORMATION: Miamitown Shale and Fairview Formation (Undivided)
LOAD DIRECTION: 90° to Lithology TEST TEMPERATURE (°F): 70
COMPRESSION APPARATUS.: Forney QC-200-08

SAMPLE DATA	
DIAMETER (in.):	1.87
HEIGHT (in.):	4.08
HEIGHT TO DIAMETER RATIO:	2.2
DRY UNIT WEIGHT (pcf):	168.3
MOISTURE CONTENT (%):	0.2

FAILURE DATA	
AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**0.2**
TIME TO FAILURE (min.):	**3.5**
AXIAL STRAIN AT FAILURE (%):	**0.8**
UNIAXIAL COMPRESSIVE STRENGTH, q_u (ksf):	**3,080.0**
UNIAXIAL COMPRESSIVE STRENGTH, q_u (psi):	**21,400.0**



FAILURE SHAPE



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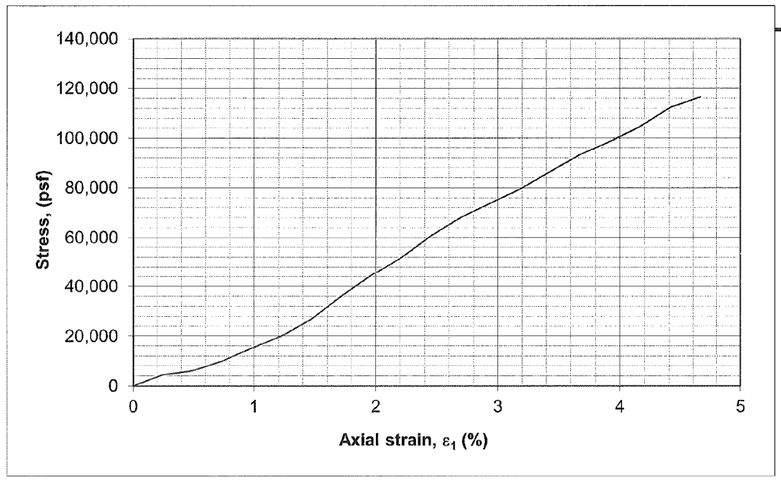
UNIAXIAL COMPRESSIVE STRENGTH OF INTACT ROCK CORE
ASTM D7012 - METHOD C

CLIENT : HDR Engineering, Inc. DATE: 6/2/2014
PROJECT NO.: 140358N
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

BORING NO.: 043-0-14 (Ramp C Sta. 672+65, 12' Lt.) SAMPLE NO.: NQ-1 DEPTH (ft.): 32.0-32.4
SAMPLE DESCRIPTION: SHALE, gray, unweathered to slightly weathered, weak, medium bedded
BEDROCK FORMATION: Miamitown Shale and Fairview Formation (Undivided)
LOAD DIRECTION: 90° to Lithology TEST TEMPERATURE (°F): 70
COMPRESSION APPARATUS.: Forney QC-200-08

SAMPLE DATA	
DIAMETER (in.):	1.86
HEIGHT (in.):	4.08
HEIGHT TO DIAMETER RATIO:	2.2
DRY UNIT WEIGHT (pcf):	144.9
MOISTURE CONTENT (%):	5.3

FAILURE DATA	
AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**1.1**
TIME TO FAILURE (min.):	**4.3**
AXIAL STRAIN AT FAILURE (%):	**4.7**
UNIAXIAL COMPRESSIVE STRENGTH, q_u (ksf):	**117.0**
UNIAXIAL COMPRESSIVE STRENGTH, q_u (psi):	**809.0**



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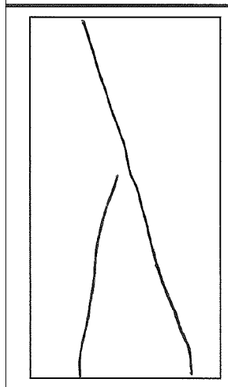

REMARKS :

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SOIL PROFILE
LABORATORY TEST DATA

HAM-71-3.81

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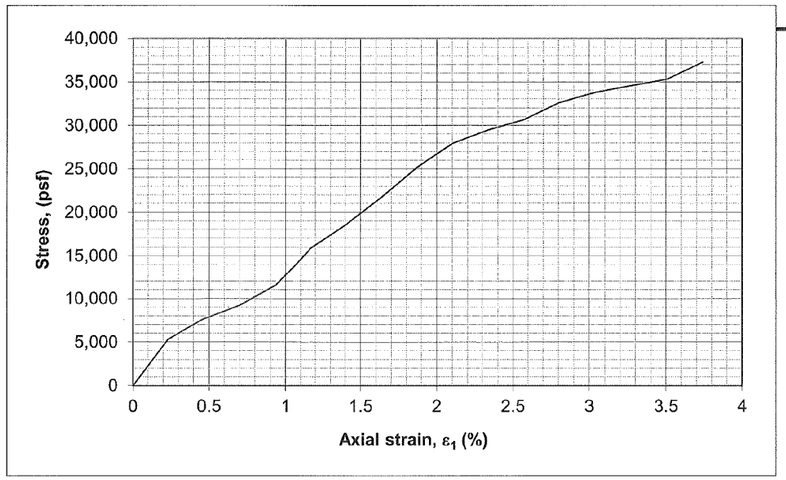
UNIAXIAL COMPRESSIVE STRENGTH OF INTACT ROCK CORE
ASTM D7012 - METHOD C

CLIENT : HDR Engineering, Inc. DATE: 6/2/2014
PROJECT NO.: 140358N
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

BORING NO.: 047-0-14 (Ramp A Sta. 361+00, 11' Lt.) SAMPLE NO.: NQ-1 DEPTH (ft.): 9.1-9.4
SAMPLE DESCRIPTION: SHALE, gray, unweathered, very weak, medium bedded
BEDROCK FORMATION: Miamitown Shale and Fairview Formation (Undivided)
LOAD DIRECTION: 90° to Lithology TEST TEMPERATURE (°F): 70
COMPRESSION APPARATUS.: Forney QC-200-08

SAMPLE DATA	
DIAMETER (in.):	1.84
HEIGHT (in.):	4.28
HEIGHT TO DIAMETER RATIO:	2.3
DRY UNIT WEIGHT (pcf):	149.9
MOISTURE CONTENT (%):	5.5

FAILURE DATA	
AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**1.2**
TIME TO FAILURE (min.):	**3.0**
AXIAL STRAIN AT FAILURE (%):	**3.7**
UNIAXIAL COMPRESSIVE STRENGTH, q_u (ksf):	**37.3**
UNIAXIAL COMPRESSIVE STRENGTH, q_u (psi):	**259.0**



FAILURE SHAPE

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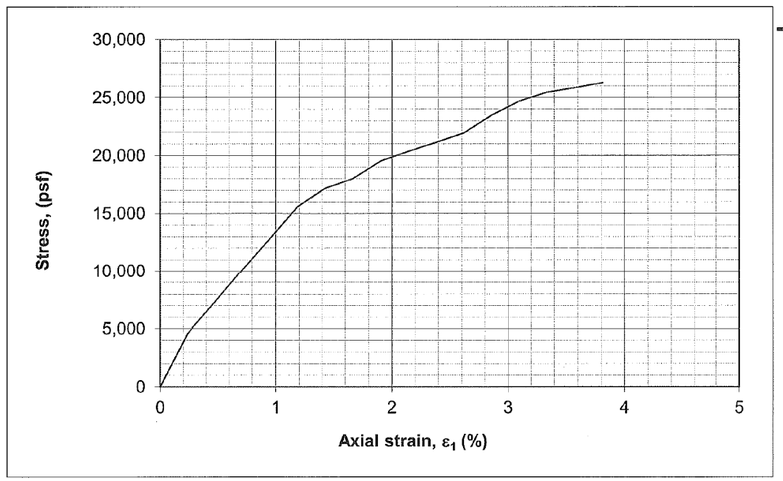
UNIAXIAL COMPRESSIVE STRENGTH OF INTACT ROCK CORE
ASTM D7012 - METHOD C

CLIENT : HDR Engineering, Inc. DATE: 6/13/2014
PROJECT NO.: 140358N
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

BORING NO.: 050-0-14 (Ramp A Sta. 369+00, 45' Rt.) SAMPLE NO.: NQ-1 DEPTH (ft.): 51.0-51.5
SAMPLE DESCRIPTION: SHALE, gray, slightly to moderately weathered, very weak, very thin to medium bedded
BEDROCK FORMATION: Miamitown Shale and Fairview Formation (Undivided)
LOAD DIRECTION: 90° to Lithology TEST TEMPERATURE (°F): 70
COMPRESSION APPARATUS.: Forney QC-200-08

SAMPLE DATA	
DIAMETER (in.):	1.83
HEIGHT (in.):	4.20
HEIGHT TO DIAMETER RATIO:	2.3
DRY UNIT WEIGHT (pcf):	140.6
MOISTURE CONTENT (%):	8.1

FAILURE DATA	
AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**0.8**
TIME TO FAILURE (min.):	**4.5**
AXIAL STRAIN AT FAILURE (%):	**3.8**
UNIAXIAL COMPRESSIVE STRENGTH, q_u (ksf):	**26.3**
UNIAXIAL COMPRESSIVE STRENGTH, q_u (psi):	**182.0**



FAILURE SHAPE

REMARKS :

DRAWN JTB CHECKED SPR

SOIL PROFILE
LABORATORY TEST DATA

HAM-71-3.81

55
175

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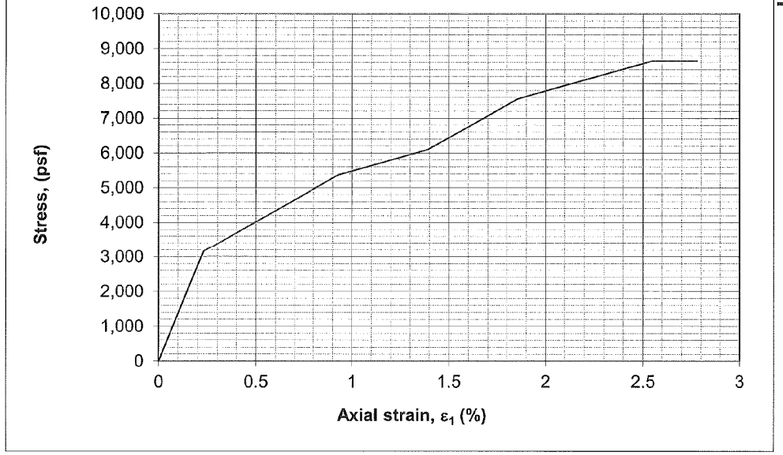
UNIAXIAL COMPRESSIVE STRENGTH OF INTACT ROCK CORE
ASTM D7012 - METHOD C

CLIENT : HDR Engineering, Inc. DATE: 6/12/2014
PROJECT NO.: 140358N
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

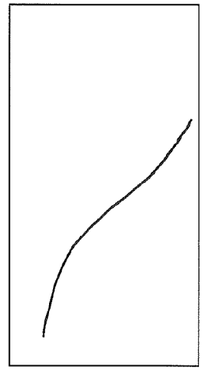
BORING NO.: 051-0-14 (Ramp A Sta. 369+25, 50' Lt.) SAMPLE NO.: NQ-2 DEPTH (ft.): 44.1-45.2
SAMPLE DESCRIPTION: SHALE, gray, slight to moderately weathered, very weak, very thin to thin bedded
BEDROCK FORMATION: Miamitown Shale and Fairview Formation (Undivided)
LOAD DIRECTION: 90° to Lithology TEST TEMPERATURE (°F): 70
COMPRESSION APPARATUS.: Forney QC-200-08

SAMPLE DATA	
DIAMETER (in.):	1.90
HEIGHT (in.):	4.32
HEIGHT TO DIAMETER RATIO:	2.3
DRY UNIT WEIGHT (pcf):	140.2
MOISTURE CONTENT (%):	9.8

FAILURE DATA	
AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**0.9**
TIME TO FAILURE (min.):	**2.8**
AXIAL STRAIN AT FAILURE (%):	**2.5**
UNIAXIAL COMPRESSIVE STRENGTH, q_u (ksf):	**8.7**
UNIAXIAL COMPRESSIVE STRENGTH, q_u (psi):	**60.1**



FAILURE SHAPE



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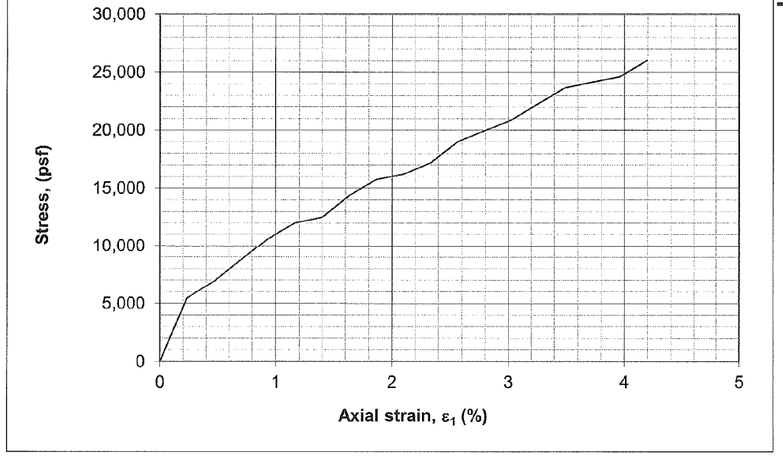
UNIAXIAL COMPRESSIVE STRENGTH OF INTACT ROCK CORE
ASTM D7012 - METHOD C

CLIENT : HDR Engineering, Inc. DATE: 6/12/2014
PROJECT NO.: 140358N
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

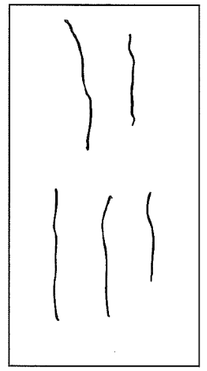
BORING NO.: 059-0-14 (SR-71 Sta. 270+00, 109' Rt.) SAMPLE NO.: NQ-1 DEPTH (ft.): 21.4-21.8
SAMPLE DESCRIPTION: SHALE, gray, unweathered to moderately weathered, very weak, thin bedded, fissile
BEDROCK FORMATION: Miamitown Shale and Fairview Formation (Undivided)
LOAD DIRECTION: 90° to Lithology TEST TEMPERATURE (°F): 70
COMPRESSION APPARATUS.: Forney QC-200-08

SAMPLE DATA	
DIAMETER (in.):	1.68
HEIGHT (in.):	4.29
HEIGHT TO DIAMETER RATIO:	2.6
DRY UNIT WEIGHT (pcf):	131.9
MOISTURE CONTENT (%):	12.1

FAILURE DATA	
AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**1.1**
TIME TO FAILURE (min.):	**3.7**
AXIAL STRAIN AT FAILURE (%):	**4.2**
UNIAXIAL COMPRESSIVE STRENGTH, q_u (ksf):	**26.0**
UNIAXIAL COMPRESSIVE STRENGTH, q_u (psi):	**181.0**



FAILURE SHAPE



REMARKS :

DRAWN JTB CHECKED SPR

SOIL PROFILE
LABORATORY TEST DATA

HAM-71-3.81

56
175

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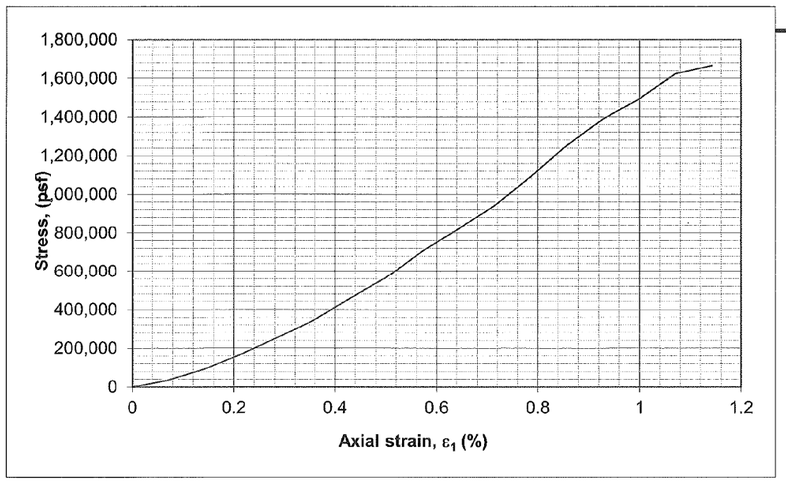
UNIAXIAL COMPRESSIVE STRENGTH OF INTACT ROCK CORE
ASTM D7012 - METHOD C

CLIENT : HDR Engineering, Inc. DATE: 6/2/2014
PROJECT NO.: 140358N
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

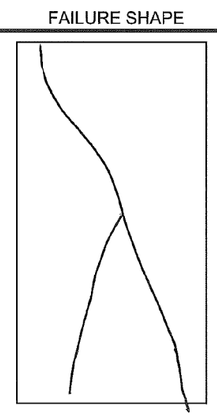
BORING NO.: 064-0-14 (MLK Dr. Sta. 103+15, 67' Lt.) SAMPLE NO.: NQ-1 DEPTH (ft.): 40.5-41.2
SAMPLE DESCRIPTION: LIMESTONE, gray, unweathered, strong, medium bedded
BEDROCK FORMATION: Miamitown Shale and Fairview Formation (Undivided)
LOAD DIRECTION: 90° to Lithology TEST TEMPERATURE (°F): 70
COMPRESSION APPARATUS.: Forney QC-200-08

SAMPLE DATA	
DIAMETER (in.):	1.87
HEIGHT (in.):	4.20
HEIGHT TO DIAMETER RATIO:	2.3
DRY UNIT WEIGHT (pcf):	159.0
MOISTURE CONTENT (%):	2.3

FAILURE DATA	
AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**0.3**
TIME TO FAILURE (min.):	**3.5**
AXIAL STRAIN AT FAILURE (%):	**1.1**
UNIAXIAL COMPRESSIVE STRENGTH, q_u (ksf):	**1,670.0**
UNIAXIAL COMPRESSIVE STRENGTH, q_u (psi):	**11,600.0**



FAILURE SHAPE



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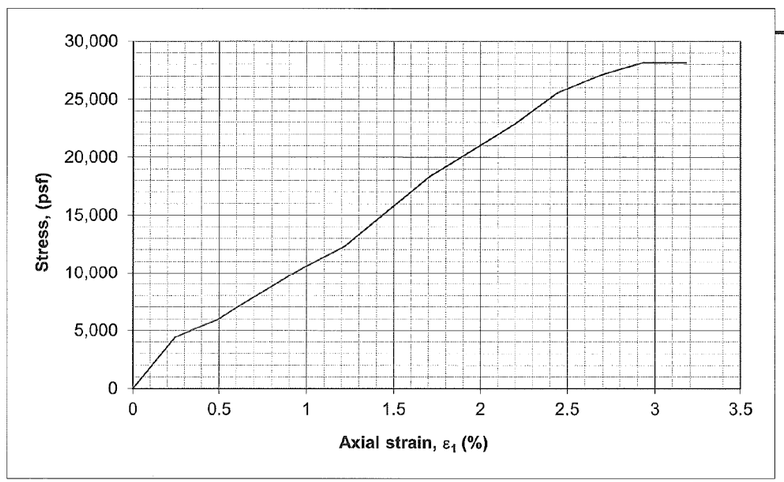
UNIAXIAL COMPRESSIVE STRENGTH OF INTACT ROCK CORE
ASTM D7012 - METHOD C

CLIENT : HDR Engineering, Inc. DATE: 6/2/2014
PROJECT NO.: 140358N
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

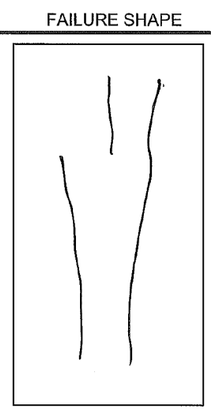
BORING NO.: 064-0-14 (MLK Dr. Sta. 103+15, 67' Lt.) SAMPLE NO.: NQ-1 DEPTH (ft.): 38.0-38.6
SAMPLE DESCRIPTION: SHALE, gray, unweathered to slightly weathered, very weak, medium bedded
BEDROCK FORMATION: Miamitown Shale and Fairview Formation (Undivided)
LOAD DIRECTION: 90° to Lithology TEST TEMPERATURE (°F): 70
COMPRESSION APPARATUS.: Forney QC-200-08

SAMPLE DATA	
DIAMETER (in.):	1.87
HEIGHT (in.):	4.09
HEIGHT TO DIAMETER RATIO:	2.2
DRY UNIT WEIGHT (pcf):	132.2
MOISTURE CONTENT (%):	7.2

FAILURE DATA	
AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**0.8**
TIME TO FAILURE (min.):	**3.7**
AXIAL STRAIN AT FAILURE (%):	**2.9**
UNIAXIAL COMPRESSIVE STRENGTH, q_u (ksf):	**28.2**
UNIAXIAL COMPRESSIVE STRENGTH, q_u (psi):	**196.0**



FAILURE SHAPE



REMARKS :

DRAWN JTB CHECKED SPR

SOIL PROFILE
LABORATORY TEST DATA

HAM-71-3.81

57
175

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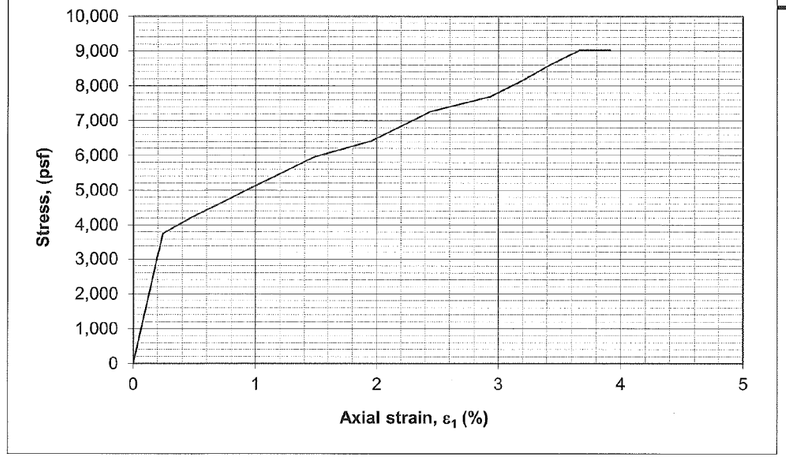
UNIAXIAL COMPRESSIVE STRENGTH OF INTACT ROCK CORE
ASTM D7012 - METHOD C

CLIENT : HDR Engineering, Inc. DATE: 6/2/2014
PROJECT NO.: 140358N
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

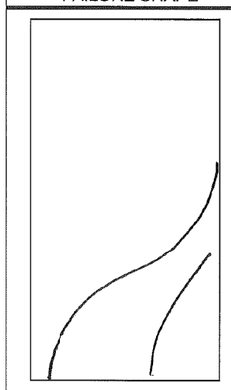
BORING NO.: 078-0-14 (I-71 Sta. 294+00, 110' Rt.) SAMPLE NO.: NQ-2 DEPTH (ft.): 72.0-72.8
SAMPLE DESCRIPTION: SHALE, gray, unweathered, very weak, thick bedded, argillaceous
BEDROCK FORMATION: Kope Formation
LOAD DIRECTION: 90° to Lithology TEST TEMPERATURE (°F): 70
COMPRESSION APPARATUS.: Forney QC-200-08

SAMPLE DATA	
DIAMETER (in.):	1.74
HEIGHT (in.):	4.09
HEIGHT TO DIAMETER RATIO:	2.4
DRY UNIT WEIGHT (pcf):	130.4
MOISTURE CONTENT (%):	12.7

FAILURE DATA	
AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**1.3**
TIME TO FAILURE (min.):	**2.8**
AXIAL STRAIN AT FAILURE (%):	**3.7**
UNIAXIAL COMPRESSIVE STRENGTH, q_u (ksf):	**9.0**
UNIAXIAL COMPRESSIVE STRENGTH, q_u (psi):	**62.7**



FAILURE SHAPE



REMARKS :

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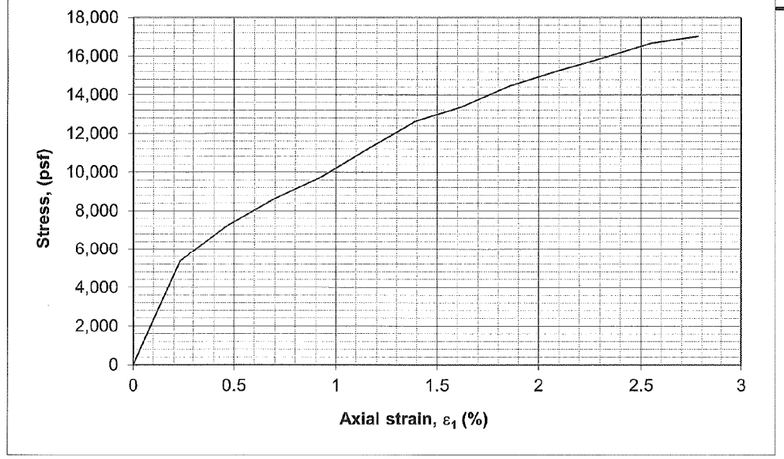
UNIAXIAL COMPRESSIVE STRENGTH OF INTACT ROCK CORE
ASTM D7012 - METHOD C

CLIENT : HDR Engineering, Inc. DATE: 6/2/2014
PROJECT NO.: 140358N
PROJECT: I-71 and MLK New Interchange (ODOT Project: HAM-71-3.81/ODOT PID: 77628)
LOCATION: Cincinnati, Ohio

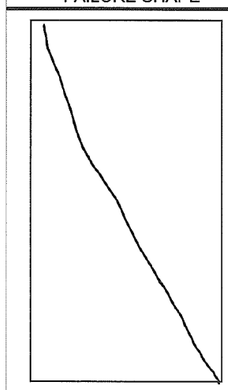
BORING NO.: 079-0-14 (I-71 295+55, 115' Lt.) SAMPLE NO.: NQ-1 DEPTH (ft.): 48.5-48.9
SAMPLE DESCRIPTION: SHALE, gray, unweathered to slightly weathered, very weak, thick bedded
BEDROCK FORMATION: Kope Formation
LOAD DIRECTION: 90° to Lithology TEST TEMPERATURE (°F): 70
COMPRESSION APPARATUS.: Forney QC-200-08

SAMPLE DATA	
DIAMETER (in.):	1.90
HEIGHT (in.):	4.32
HEIGHT TO DIAMETER RATIO:	2.3
DRY UNIT WEIGHT (pcf):	131.3
MOISTURE CONTENT (%):	11.4

FAILURE DATA	
AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**0.9**
TIME TO FAILURE (min.):	**3.0**
AXIAL STRAIN AT FAILURE (%):	**2.8**
UNIAXIAL COMPRESSIVE STRENGTH, q_u (ksf):	**17.0**
UNIAXIAL COMPRESSIVE STRENGTH, q_u (psi):	**118.0**



FAILURE SHAPE



REMARKS :

DRAWN JTB CHECKED SPR

SOIL PROFILE
LABORATORY TEST DATA

HAM-71-3.81

58
175

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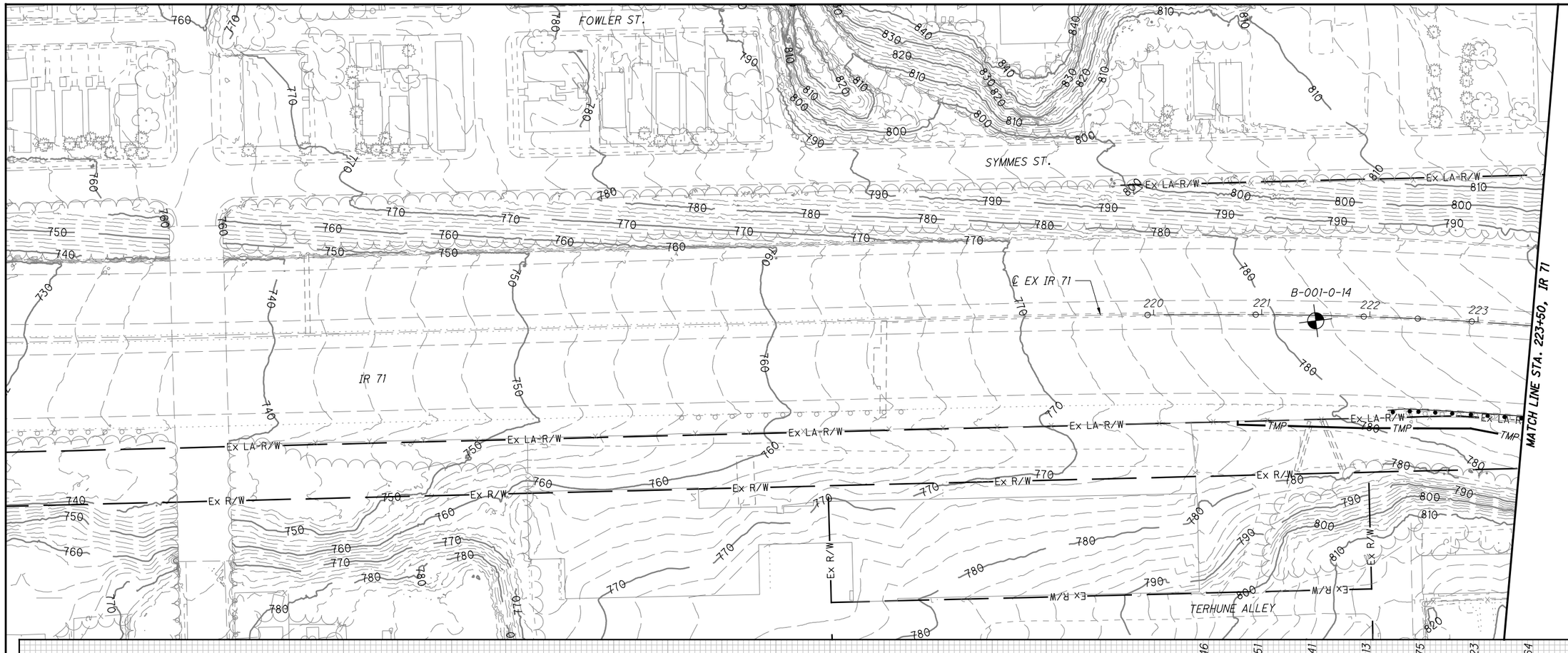


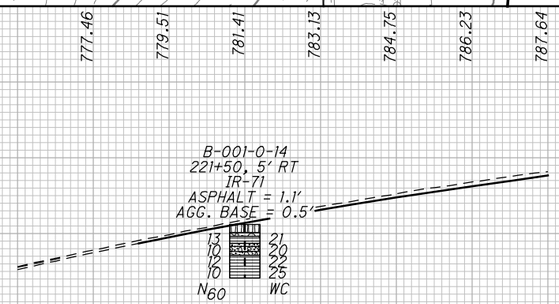
B-022-1-65
(EL 795.0 - 790.0, 31.0' - 36.0')
CORE RECOVERY = 96%
(EL 795.0 - 794.8, 31.0' - 31.2') LIMESTONE, GRAY, FINE GRAINED, THIN-BEDDED, FOSSILIFEROUS, HARD, WEATHERED
(EL 794.8 - 793.5, 31.2' - 32.5') SHALE, LIGHT BROWN, 2" TO 7" PIECES, AVERAGING 6", WITH SHRINKAGE CRACKS AFTER DRYING, SOFT, WEATHERED
(EL 793.5 - 792.0, 32.5' - 34') LIMESTONE, GRAY, THIN BEDDED, 1-1/2" TO 3-1/2" PIECES, AVERAGING 2", FINE GRAINED, FOSSILIFEROUS, IMPURE, WEATHERED, BRITTLE TO HARD
(EL 792.0 - 790.0, 34.0' - 36.0') INTERBEDDED SHALE AND LIMESTONE, GRAY, (APPROX. 75% SHALE AND 25% LIMESTONE), SHALE 1" TO 2" PIECES, TRACE BROKEN TO FRAGMENTED, MEDIUM TOUGH; LIMESTONE THIN BEDDED, 1/2" TO 4" BEDS, AVERAGING 1-1/2", FINE GRAINED, FOSSILIFEROUS, HARD

(EL 790.0 - 785.0, 36.0' - 41.0')
CORE RECOVERY = 100%
(EL 790.0 - 788.2, 36.0' - 37.8') INTERBEDDED SHALE AND LIMESTONE, GRAY, (APPROX. 75% SHALE AND 25% LIMESTONE), SHALE 1" TO 2" PIECES, TRACE BROKEN TO FRAGMENTED, MEDIUM TOUGH; LIMESTONE THIN BEDDED, 1/2" TO 4" BEDS, AVERAGING 1-1/2", FINE GRAINED, FOSSILIFEROUS, HARD
(EL 788.2 - 787.6, 37.8' - 38.4') LIMESTONE, GRAY, THIN BEDDED, ONE 1" & ONE 6" BED, FINE GRAINED, HARD
(EL 787.6 - 787.0, 38.4' - 39.0') SHALE, GRAY, 1/2" TO 2-1/2" PIECES AVG. 1" HIGHLY FOSSILIFEROUS, HARD W/ 1-1/2" BED OF GRAY LIMESTONE NEAR BOTTOM
(EL 787.0 - 786.2, 39.0' - 39.8') LIMESTONE, GRAY, THIN-BEDDED, 1" TO 4" BEDS AVG. 3", FINE GRAINED, FOSSILIFEROUS, HARD, W/ HIGH ANGLE JOINT
(EL 786.2 - 785.0, 39.8' - 41.0') SHALE, GRAY, 3/4" TO 3" PIECES, AVERAGING 1-1/2" FOSSILIFEROUS, HARD

B-024-2-65
(EL 783.6 - 778.6, 25.0' - 30.0')
CORE RECOVERY = 93%
(EL 783.6 - 782.9, 25.0' - 25.7') SHALE, GRAY, 1/4" TO 4" PIECES, AVERAGING 1-1/4", SOFT, WEATHERED
(EL 782.9 - 779.6, 25.7' - 29.0') LIMESTONE, GRAY, THIN BEDDED, 1/2" TO 3 1/2" BEDS, AVERAGING 2", FINE GRAINED, IMPURE, FOSSILIFEROUS, HARD, WITH HEAVY IRREGULAR THIN SEAMS OF GRAY SHALE
(EL 779.6 - 778.6, 29.0' - 30.0') SHALE, GRAY, 1/4" TO 3" PIECES, AVERAGING 1", CALCAREOUS, TOUGH, WITH 1" BEDS OF FINE GRAINED, HARD, GRAY LIMESTONE NEAR MIDDLE

(EL778.6 - 773.6, 30.0' - 35.0')
CORE RECOVERY = 93%
(EL 778.6 - 778.4, 30.0' - 30.2') SHALE, GRAY, 1/4" TO 3" PIECES, AVERAGING 1", CALCAREOUS, TOUGH, WITH 1" BEDS OF FINE GRAINED, HARD, GRAY LIMESTONE NEAR MIDDLE
(EL 778.4 - 777.8, 30.2' - 30.8') LIMESTONE, GRAY, THIN BEDDED, 2" AND 5" BEDS, FINE GRAINED, IMPURE, FOSSILIFEROUS, HARD
(EL 777.8 - 776.3, 30.8' - 32.3') SHALE, GRAY, 1/2" TO3-1/2" PIECES AVERAGING 2", CALCAREOUS, TOUGH
(EL 776.3 - 775.8, 32.3' - 32.8') LIMESTONE, GRAY, THIN BEDDED (ONE 5" BED), FINE GRAINED, IMPURE FOSSILIFEROUS, HARD
(EL 775.8 - 775.1, 32.8' - 33.5') SHALE, GRAY, 2-1/2" TO 3" PIECES, TOUGH, VERY FOSSILIFEROUS
(EL 775.1 - 774.5, 33.5' - 34.1') LIMESTONE, GRAY, THIN BEDDED, 2" TO 3" BEDS, FINE GRAINED, IMPURE, HARD, FOSSILIFEROUS, WITH MANY SEAMS OF HARD FOSSILIFEROUS GRAY SHALE
(EL 774.5 - 773.6, 34.1' - 35.0') INTERBEDDED SHALE AND LIMESTONE, GRAY, (APPROX. 50% SHALE AND 50% LIMESTONE); SHALE 1" TO 1-1/2" PIECES, HARD, LIMESTONE, THIN BEDDED, 2" TO 2-1/2" BEDS, FINE GRAINED, IMPURE, HARD

B-029-3-65
(EL 663.4 - 658.4, 28.0' - 33.0')
CORE RECOVERY = 92%
(EL 663.4 - 658.4, 28.0' - 33.0') SHALE, GRAY, WITH 1" AND 2" LAYERS GRAY LIMESTONE AT TOP OF RUN, (APPROX. 95% SHALE, 5% LIMESTONE) SHALE, TOUGH, CALCAREOUS, TRACE FOSSILS, POSSIBLE RUBBLY LAYER AT 31.0', LIMESTONE, FINE GRAINED - HARD



SOIL PROFILE
STA. 220+00 TO STA. 223+50 IR 71

HAM-71-3.81

DRAWN JTB CHECKED DMV

HORIZONTAL SCALE IN FEET
0 25 50 100

59
175

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60 / 175	/	HAM-71-3.81	SOIL PROFILE STA. 223+50 TO STA. 235+50 IR 71	DRAWN JTB CHECKED DMV	0 50 25 100 HORIZONTAL SCALE IN FEET	N

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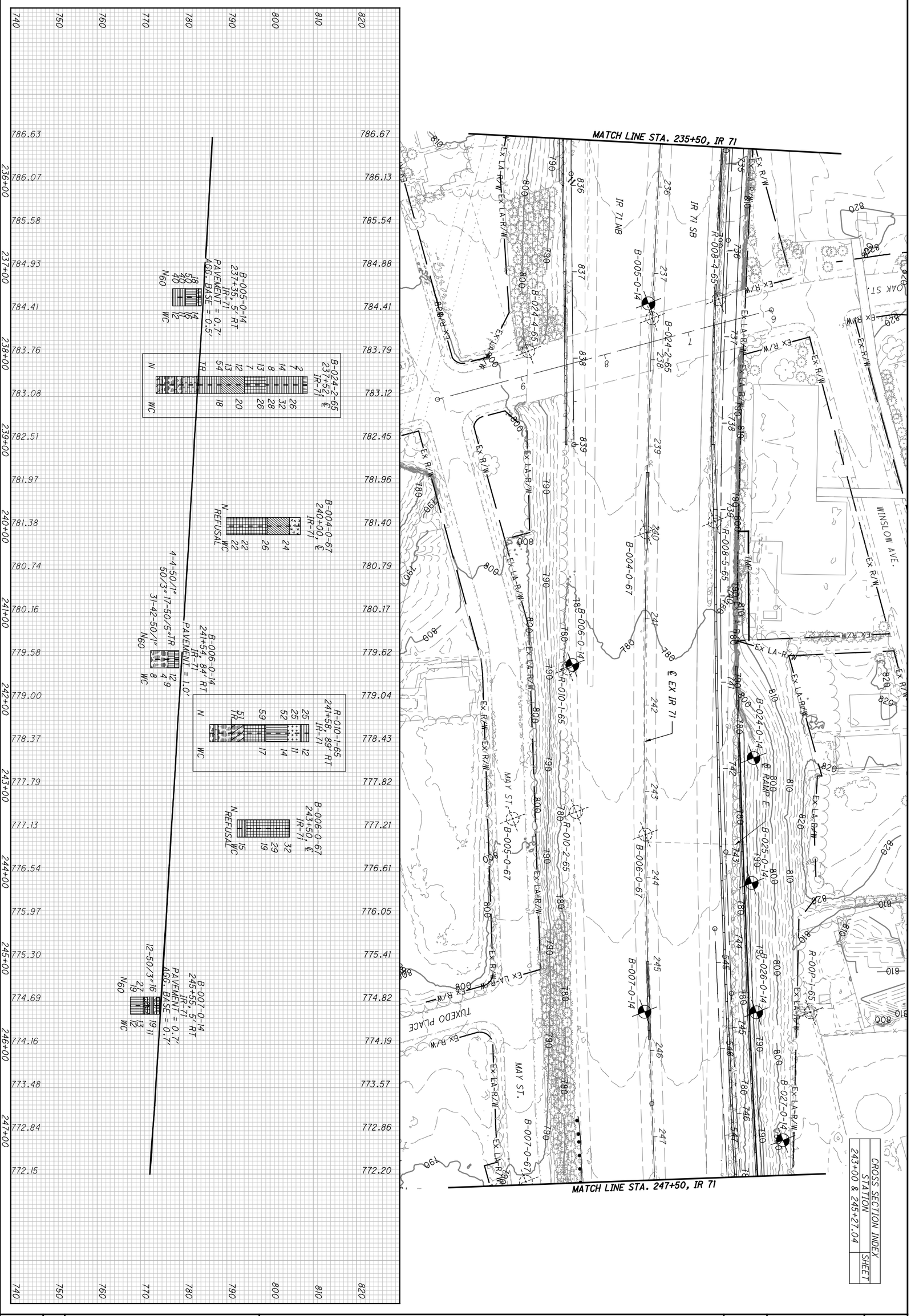

61 / 175	HAM-71-3.81	SOIL PROFILE STA. 235+50 TO STA. 247+50 IR 71	DRAWN JTB CHECKED DMV	0 25 50 100 HORIZONTAL SCALE IN FEET

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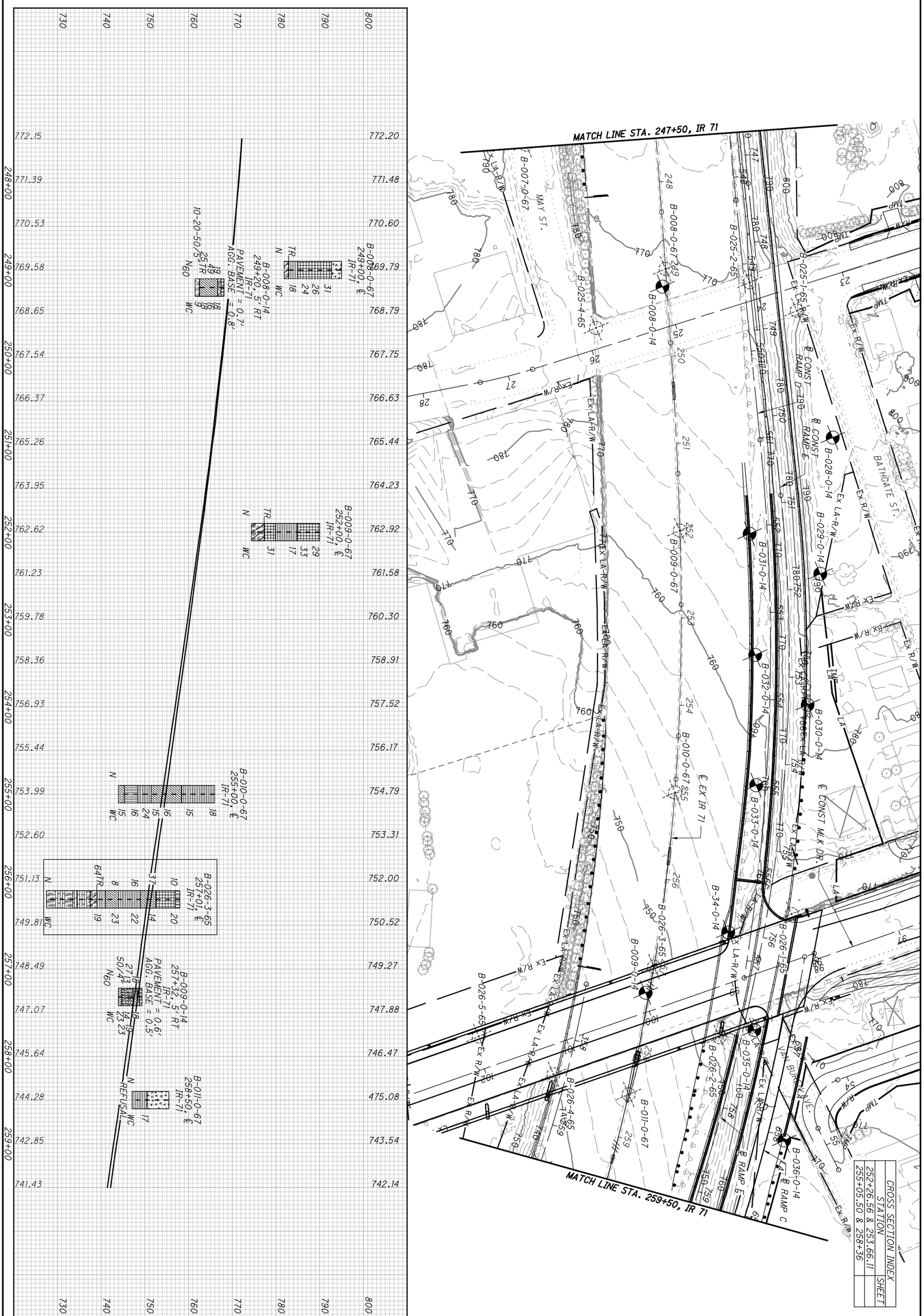

62 / 175	/	HAM-71-3.81	SOIL PROFILE STA. 247+50 TO STA. 259+50 IR 71	DRAWN JTB CHECKED DMV	0 50 25 100 HORIZONTAL SCALE IN FEET

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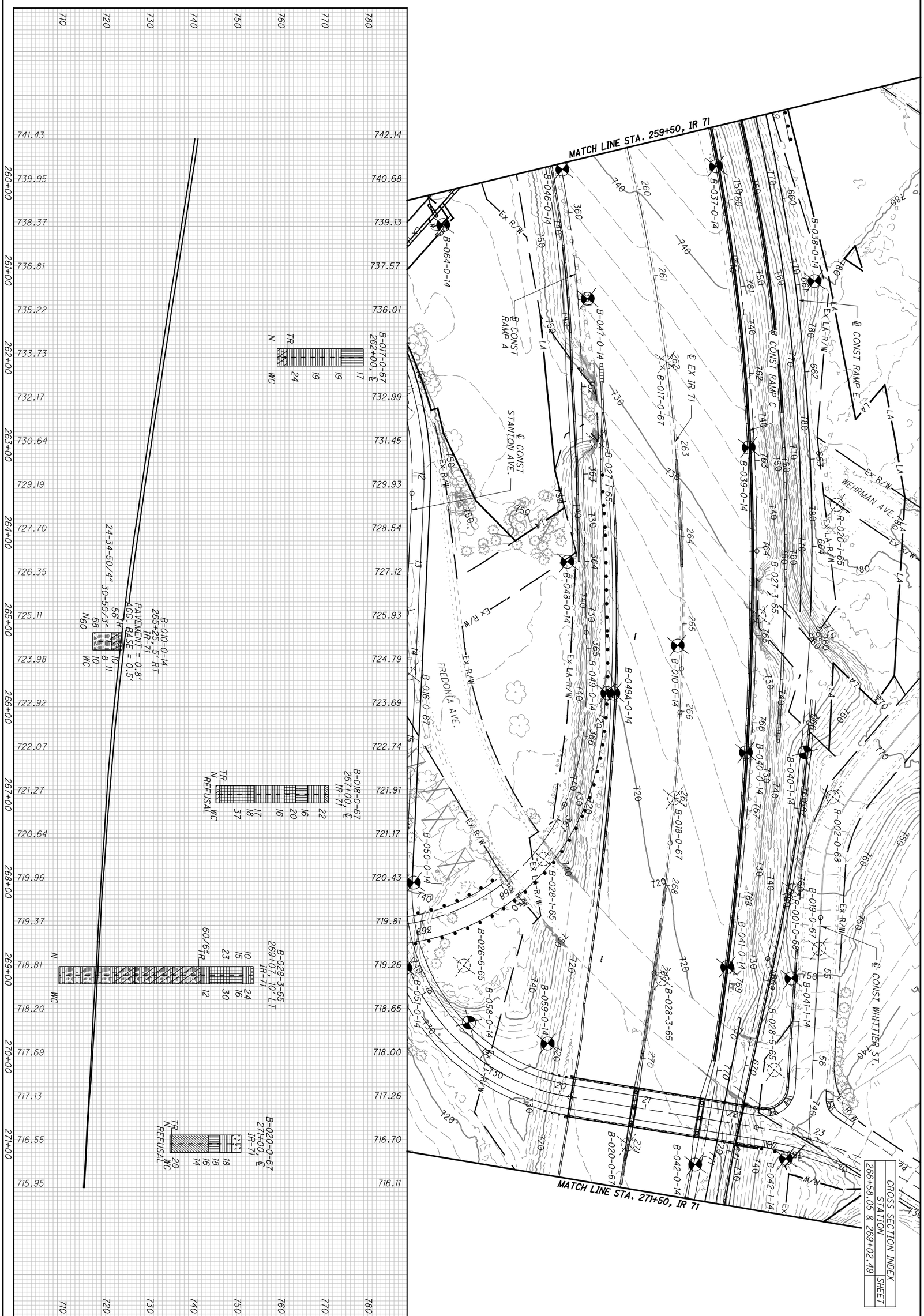

63
175

HAM-71-3.81

SOIL PROFILE
STA. 259+50 TO STA. 271+50 IR 71

DRAWN JTB
CHECKED DMV

0 50
25 100
HORIZONTAL SCALE IN FEET

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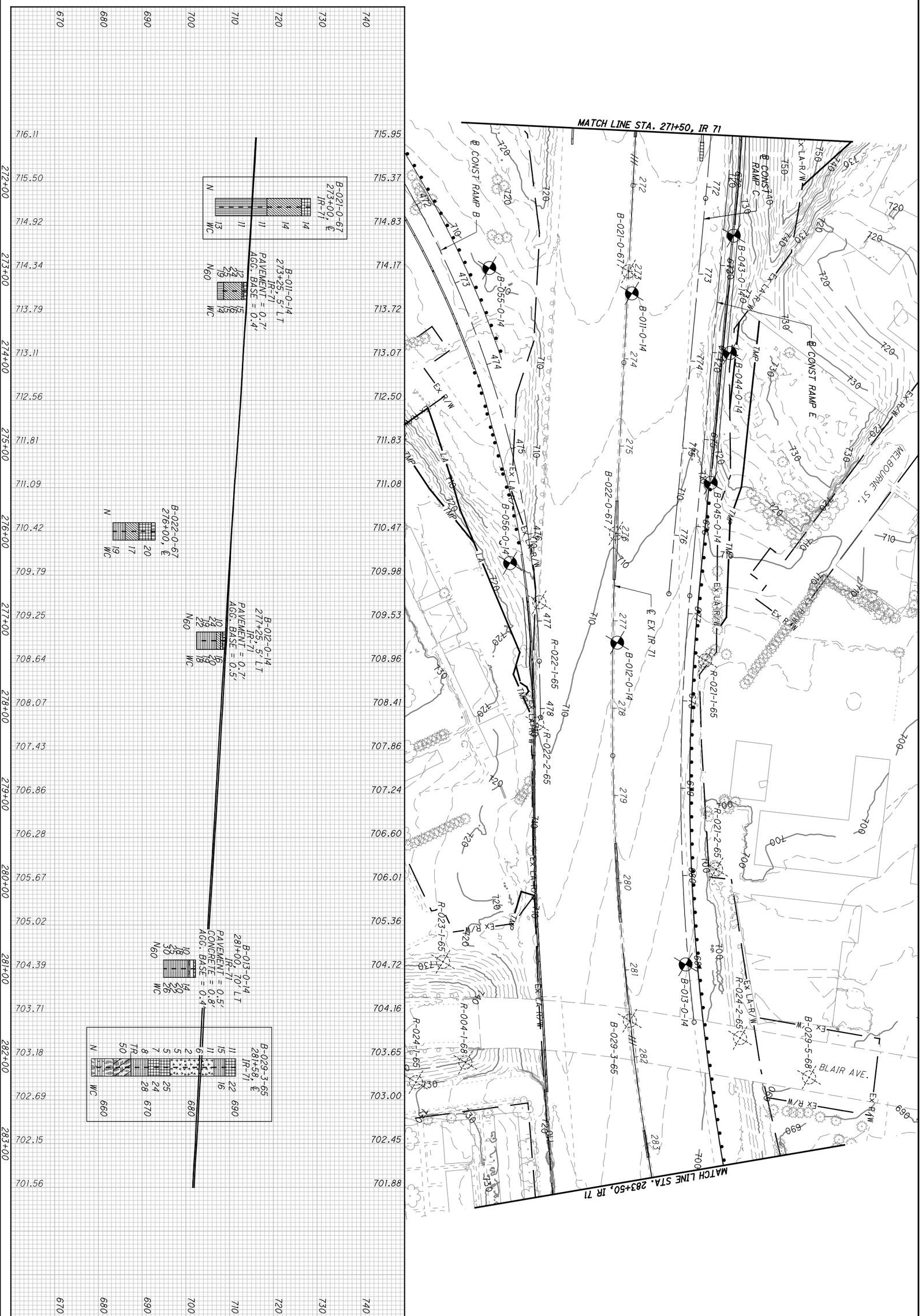

64 / 175	HAM-71-3.81	SOIL PROFILE STA. 271+50 TO STA. 283+50 IR 71	DRAWN JTB CHECKED DMV	0 50 25 100 HORIZONTAL SCALE IN FEET	

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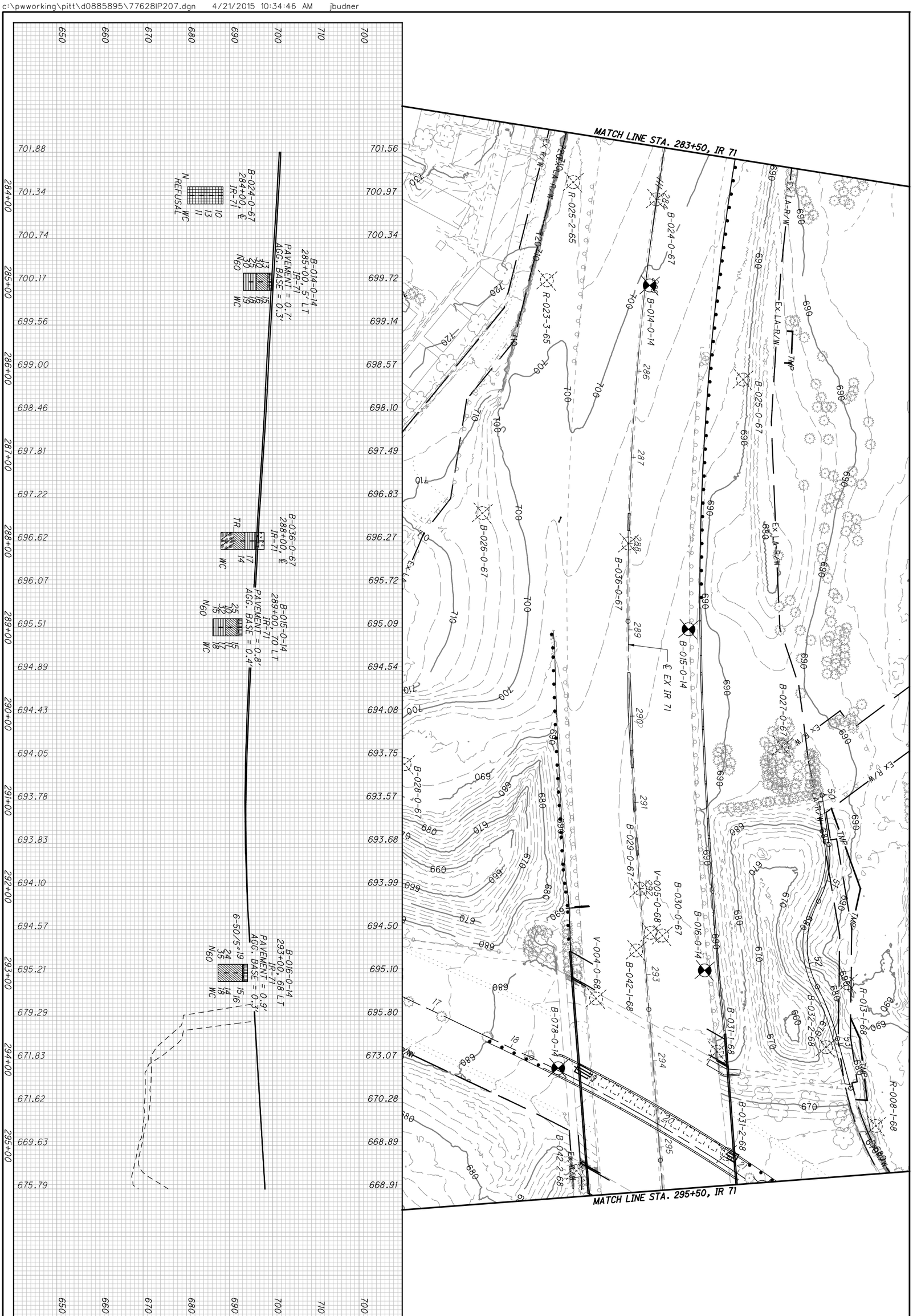

65 / 175	/	HAM-71-3.81	SOIL PROFILE STA. 283+50 TO STA. 295+50 IR 71	DRAWN JTB CHECKED DMV	0 50 25 100 HORIZONTAL SCALE IN FEET

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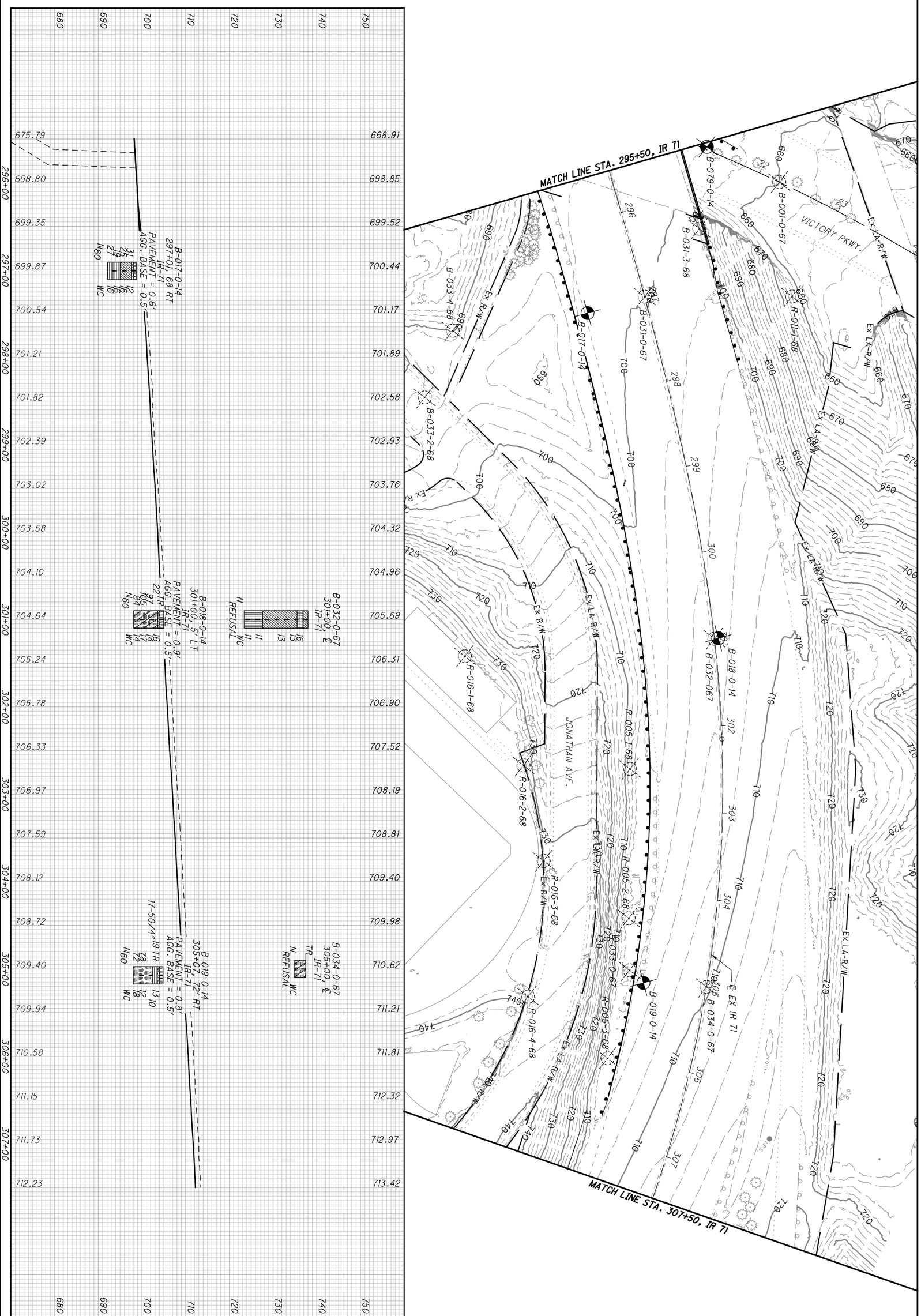

66 / 175	HAM-71-3.81	SOIL PROFILE STA. 295+50 TO STA. 307+50 IR 71	DRAWN JTB CHECKED DMV	0 50 25 100 HORIZONTAL SCALE IN FEET	

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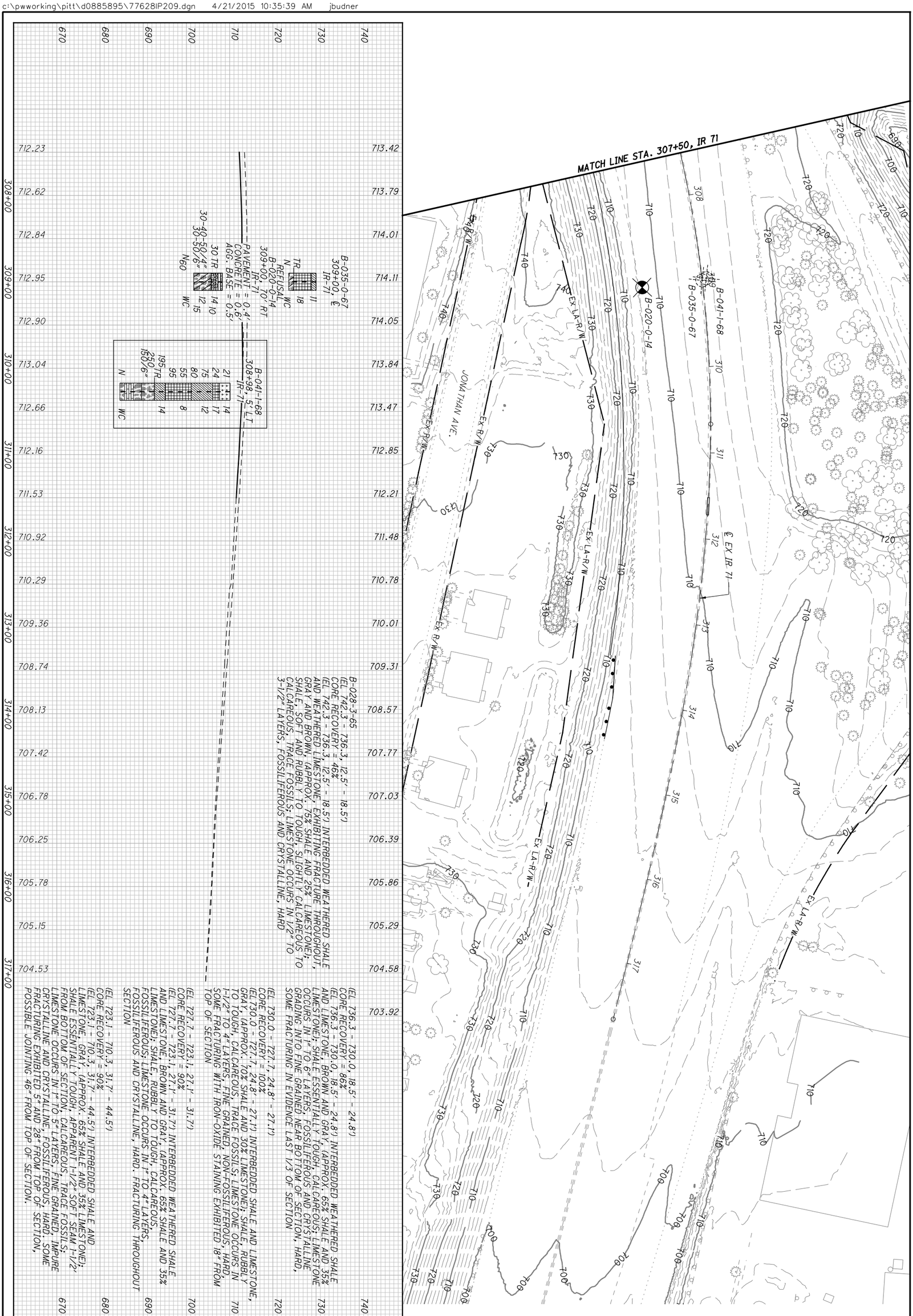
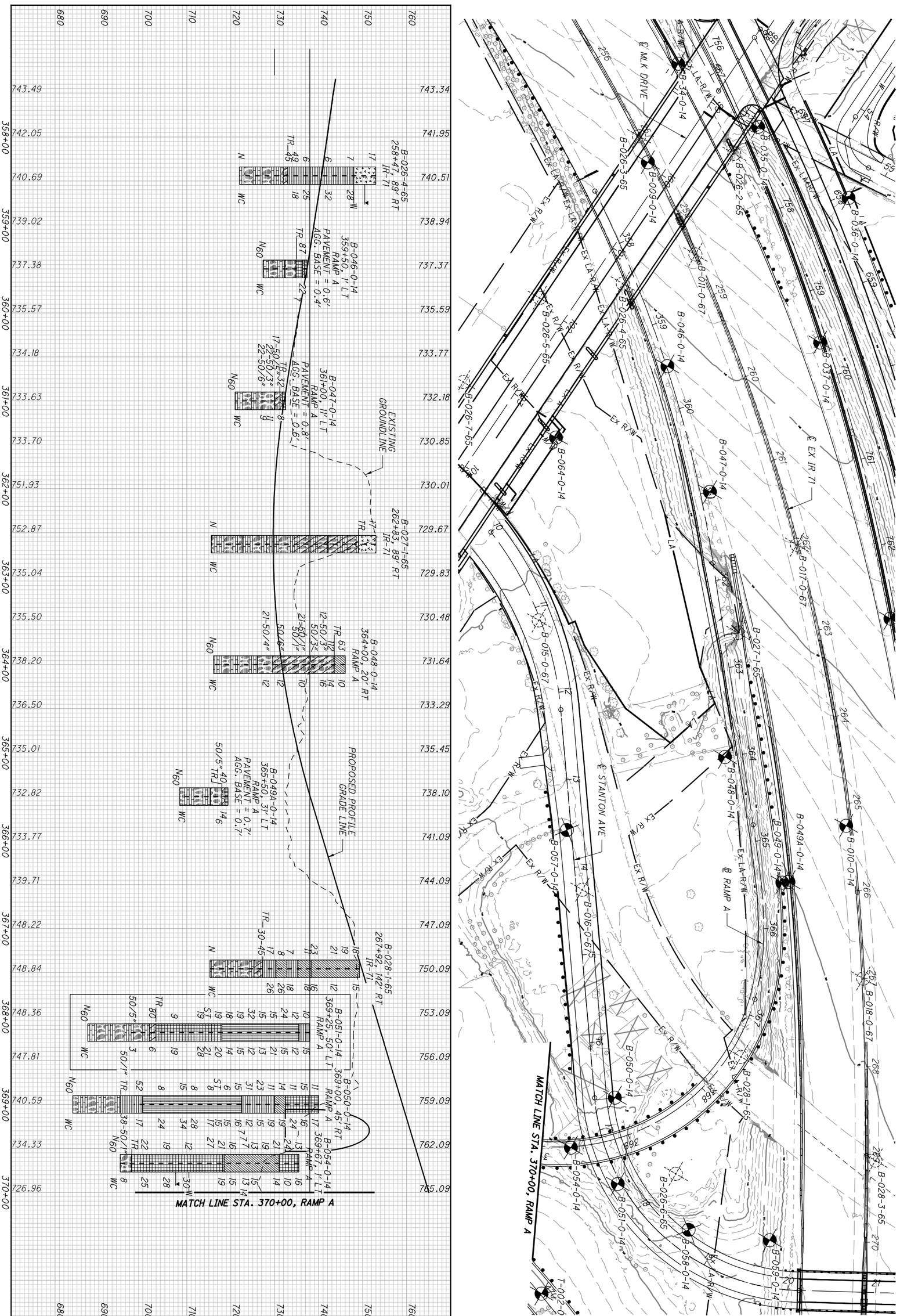
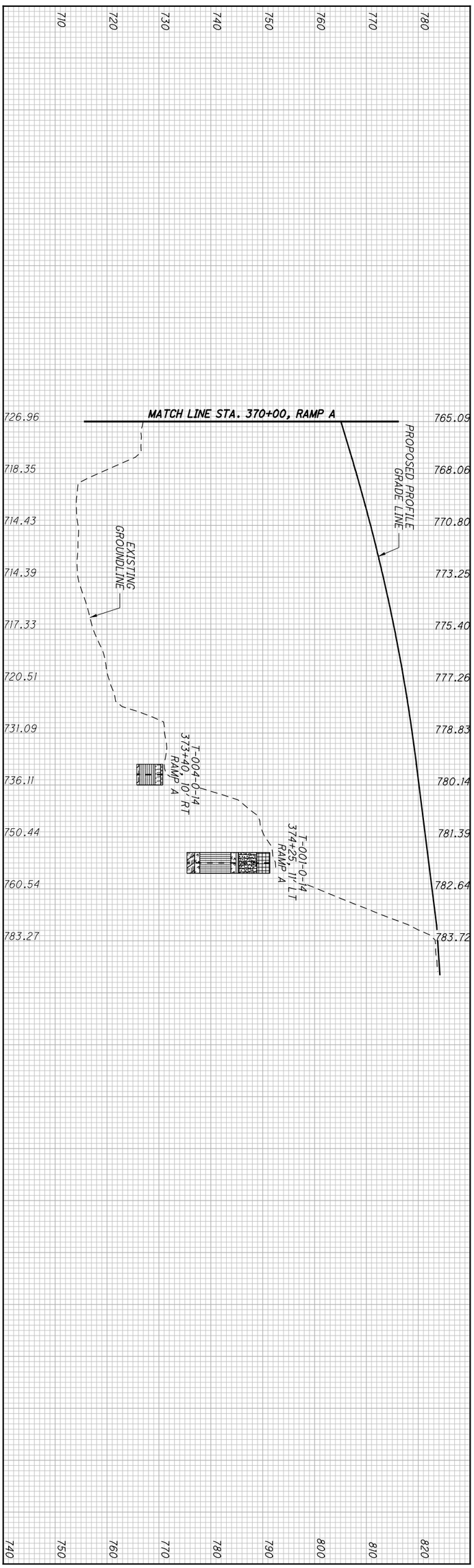
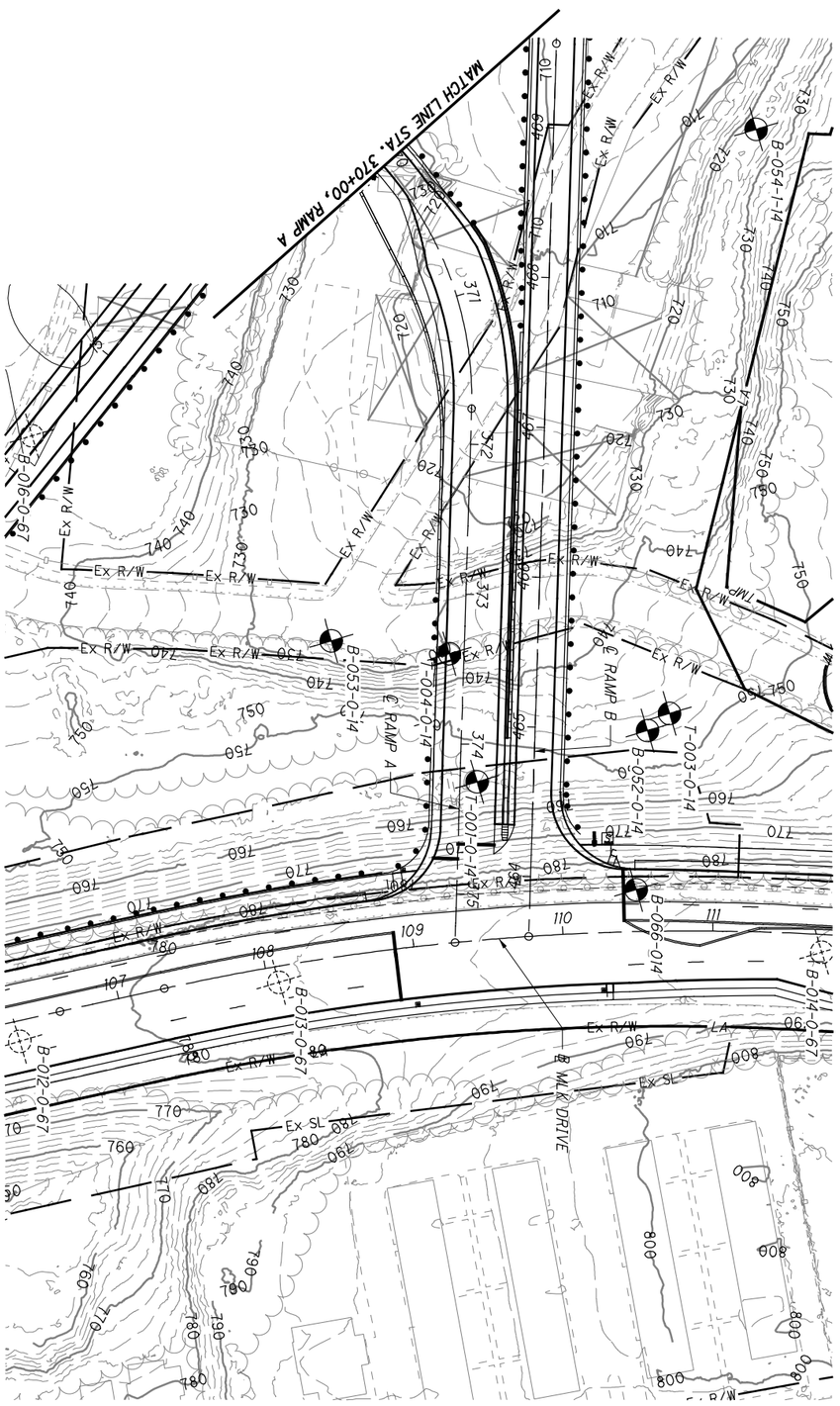


67 / 175	/	HAM-71-3.81	SOIL PROFILE STA. 307+50 TO STA. 317+00 IR 71	DRAWN JTB CHECKED DMV	0 50 25 100 HORIZONTAL SCALE IN FEET

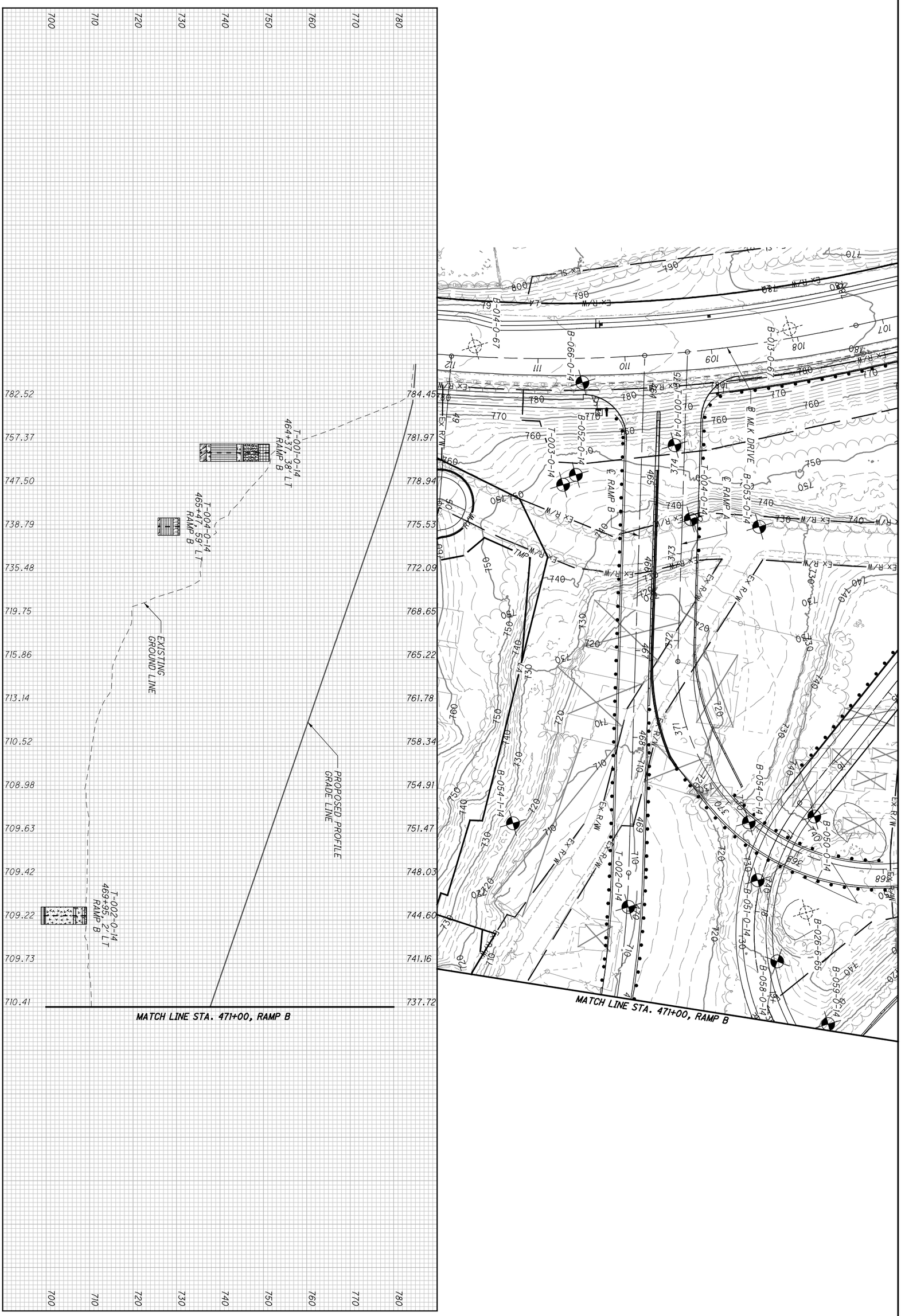


68 / 175		HAM-71-3.81	SOIL PROFILE RAMP A STA. 357+66 TO STA. 370+00	DRAWN JTB CHECKED SPR	0 50 25 100 HORIZONTAL SCALE IN FEET





69 / 175	HAM-71-3.81	SOIL PROFILE RAMP A STA. 370+00 TO STA. 375+32	DRAWN JTB CHECKED DMV	0 50 25 100 HORIZONTAL SCALE IN FEET	N



70 / 175	HAM-71-3.81	SOIL PROFILE RAMP B STA. 463+64 TO STA. 471+00	DRAWN JTB CHECKED SPR	0 50 25 100 HORIZONTAL SCALE IN FEET	N

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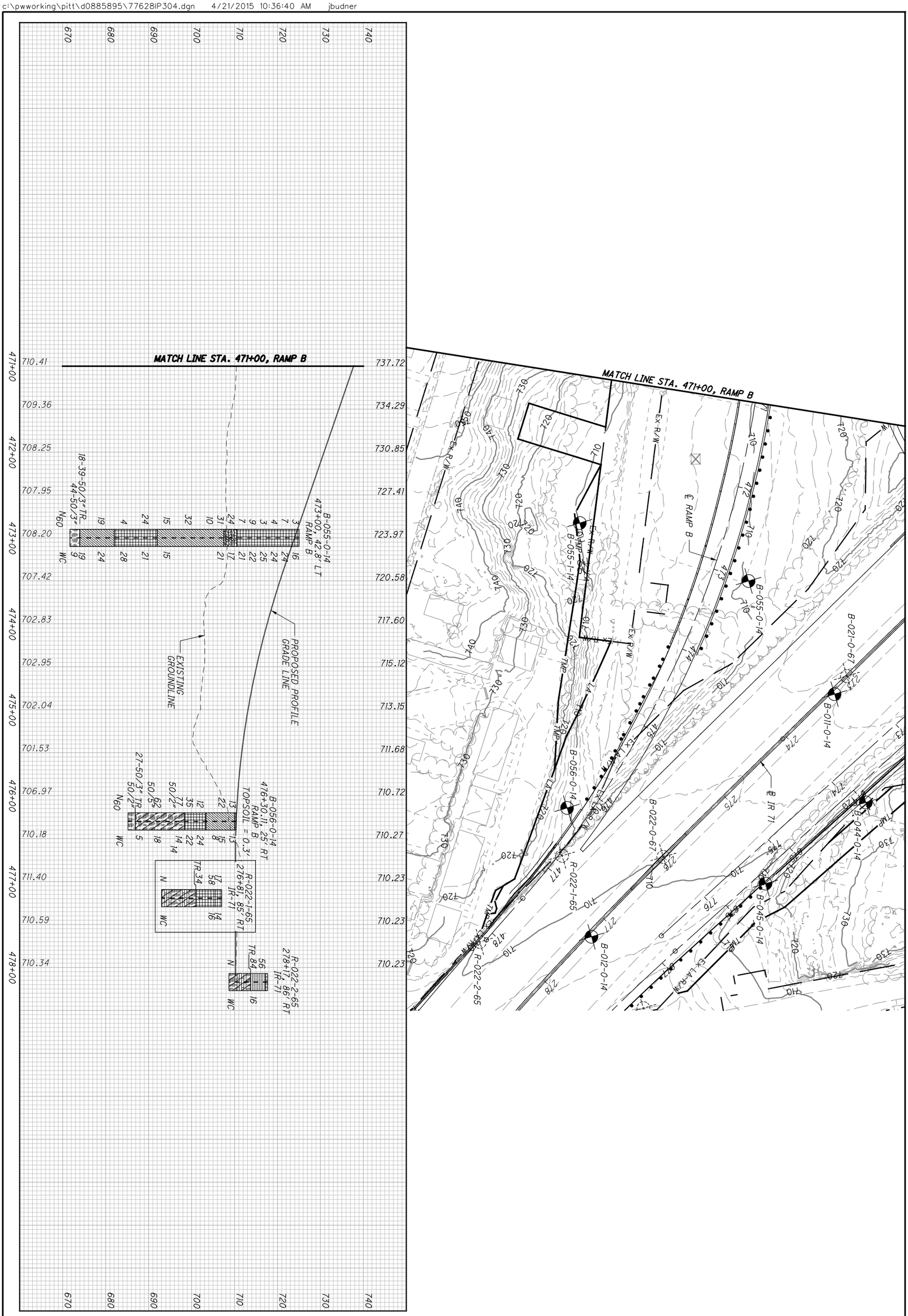

71 / 175	HAM-71-3.81	SOIL PROFILE RAMP B STA. 471+00 TO STA. 478+10	DRAWN JTB CHECKED SPR	0 25 50 100 HORIZONTAL SCALE IN FEET

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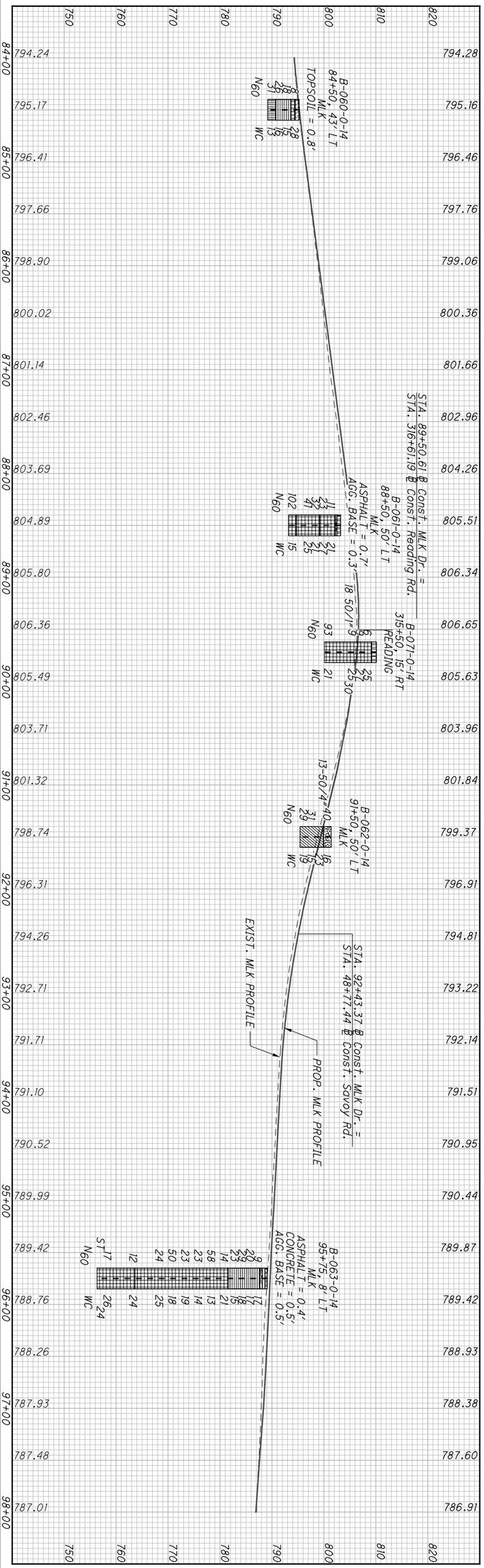

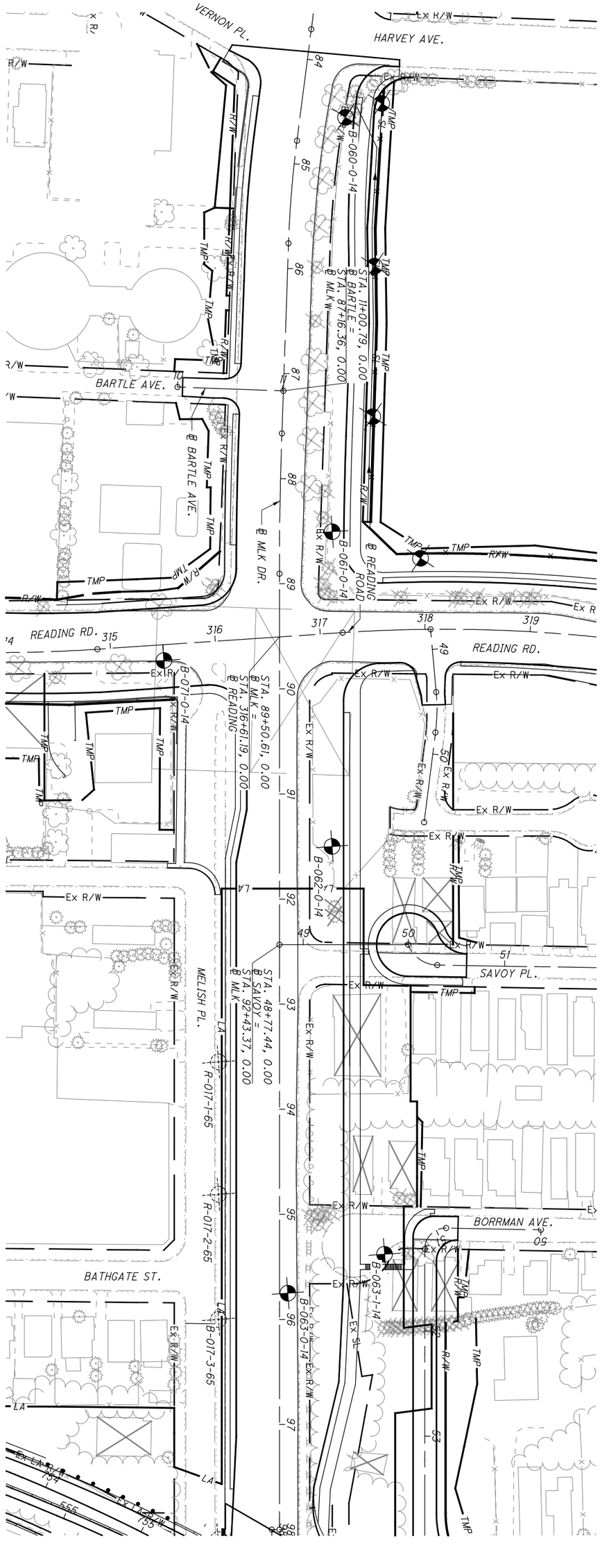

72 / 175		HAM-71-3.81	SOIL PROFILE STA. 84+00 TO STA. 98+00 MLK DRIVE	DRAWN JTB CHECKED SPR	0 50 25 100 HORIZONTAL SCALE IN FEET

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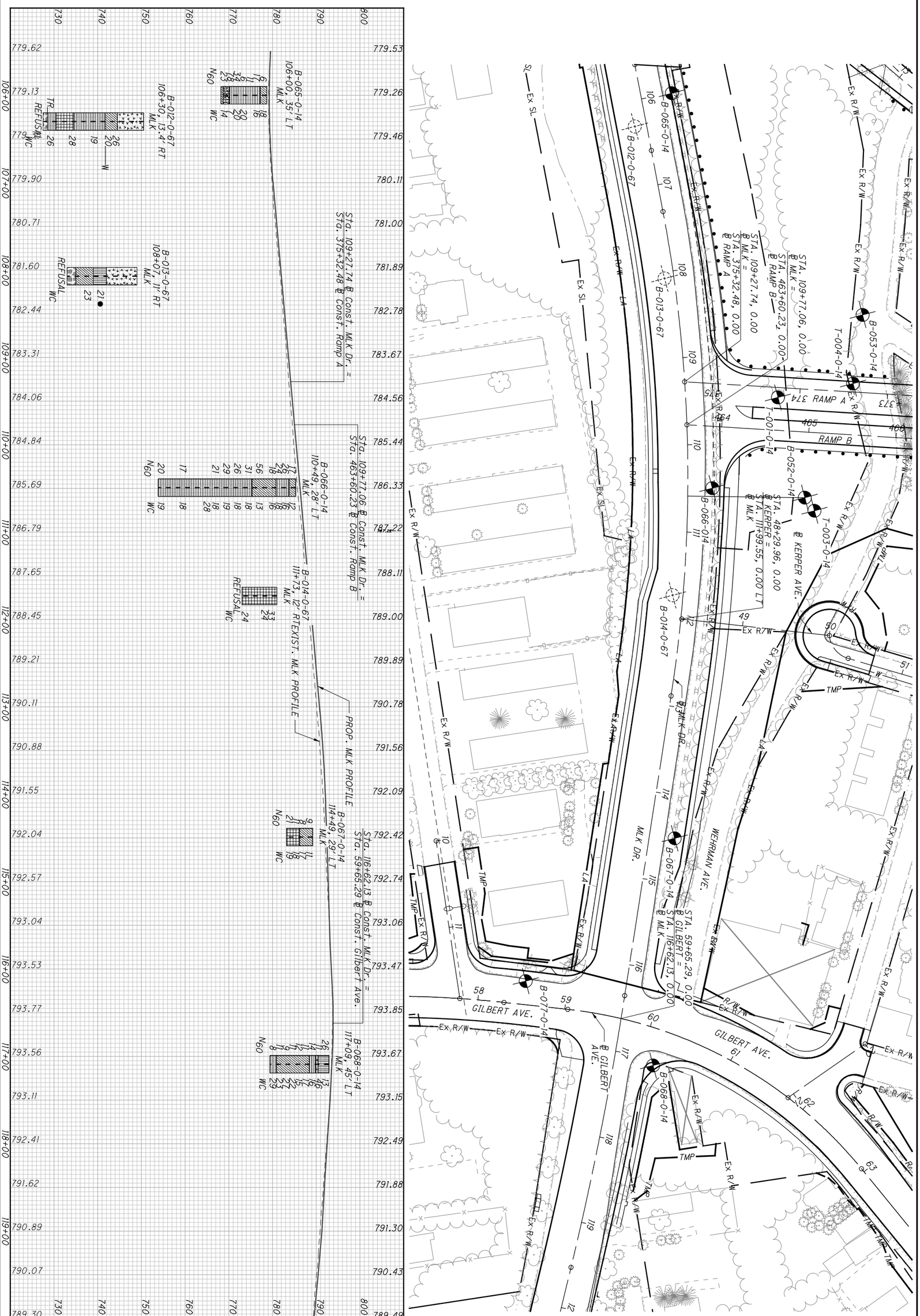

HAM-71-3.81

SOIL PROFILE
STA. 105+60 TO STA 120+00 MLK DRIVE

DRAWN JTB
CHECKED SPR

0 50
25 100
HORIZONTAL SCALE IN FEET

N

73
175

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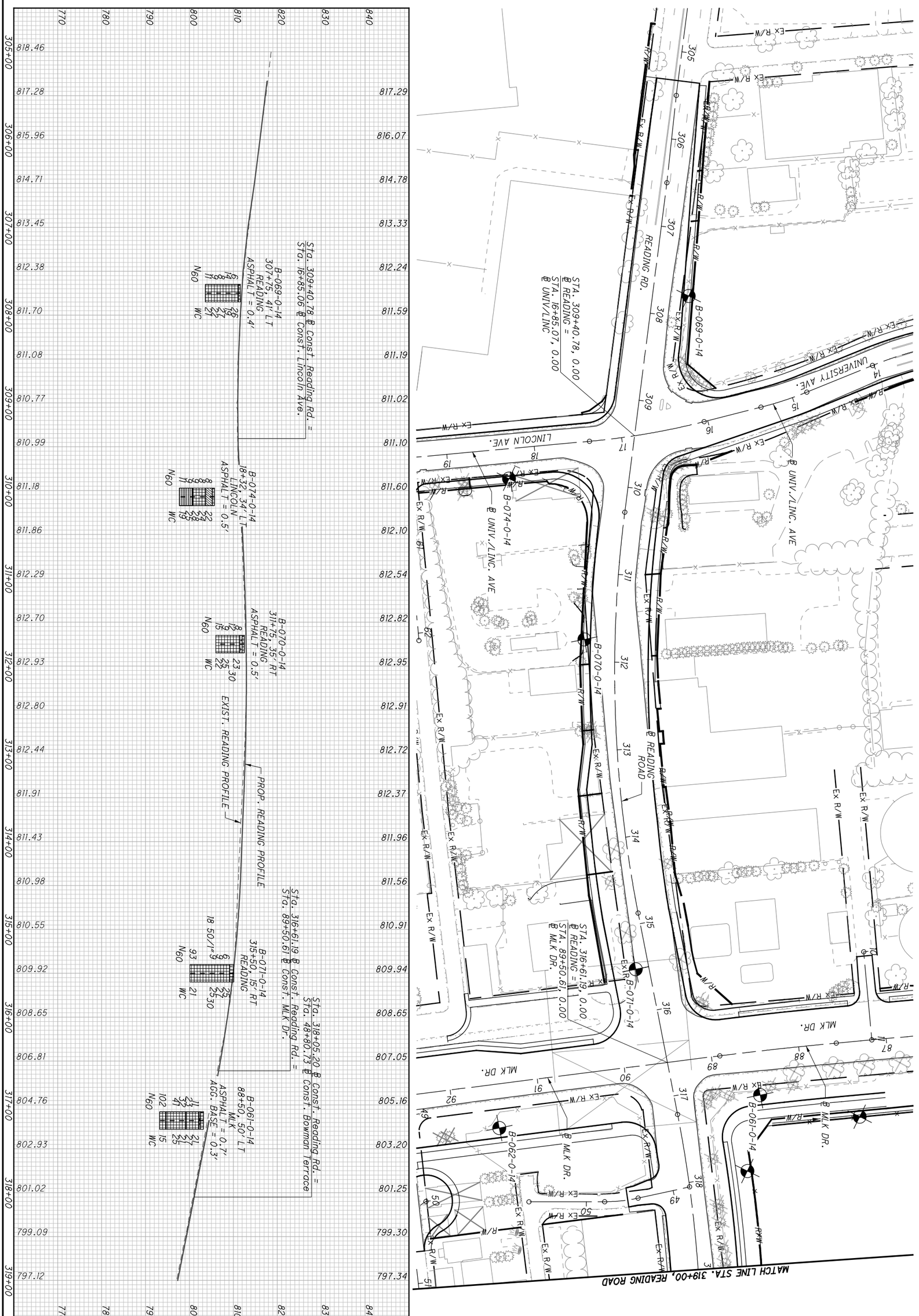

74 / 175	/	HAM-71-3.81	SOIL PROFILE STA. 304+89.25 TO STA. 319+00 READING ROAD	DRAWN JTB CHECKED SPR	0 50 25 100 HORIZONTAL SCALE IN FEET	N

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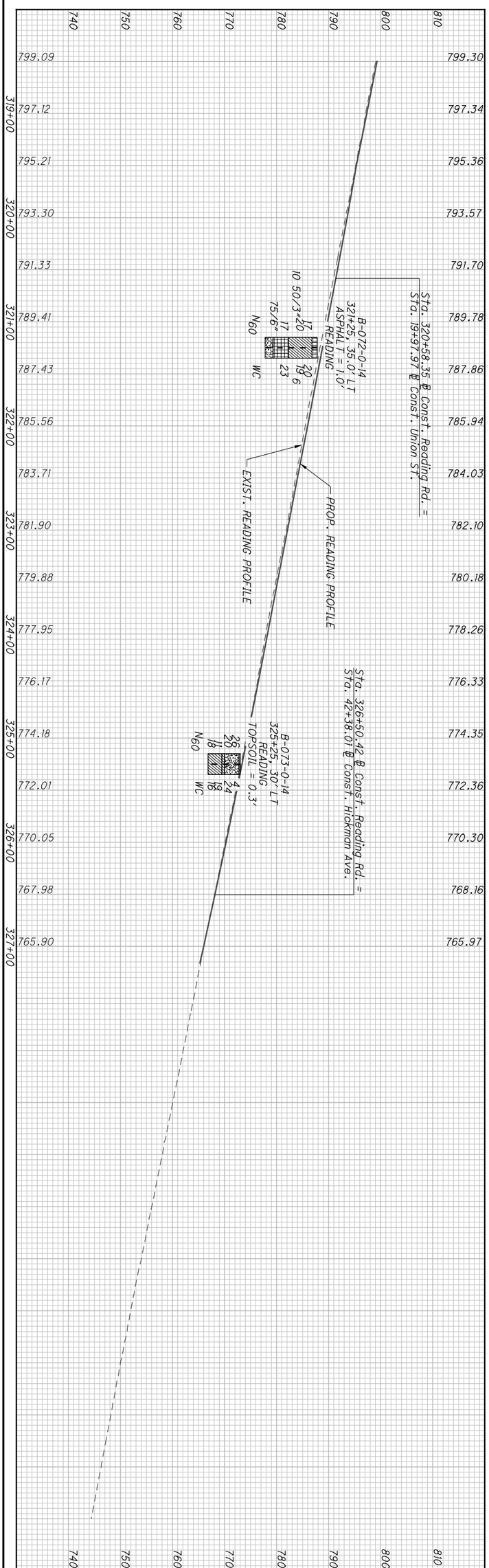

75 / 175	/	HAM-71-3.81	SOIL PROFILE STA. 319+00 TO STA. 327+30.95 READING ROAD	DRAWN JTB CHECKED SPR	0 50 25 100 HORIZONTAL SCALE IN FEET

SOIL PROFILE
STA. 52+00 TO STA. 66+00 GILBERT AVE.

HORIZONTAL SCALE IN FEET: 0, 25, 50, 100

DRAWN JTB | CHECKED SPR

HAM-71-3.81

76 / 175

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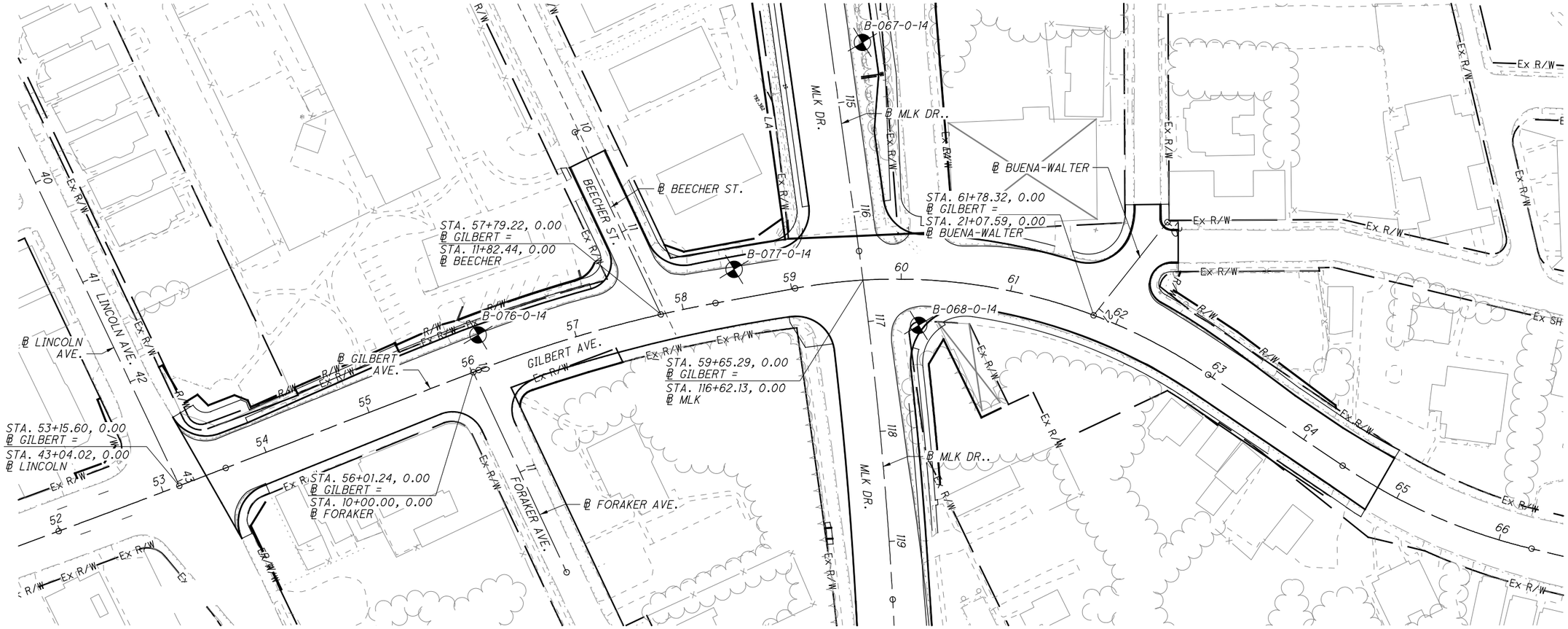

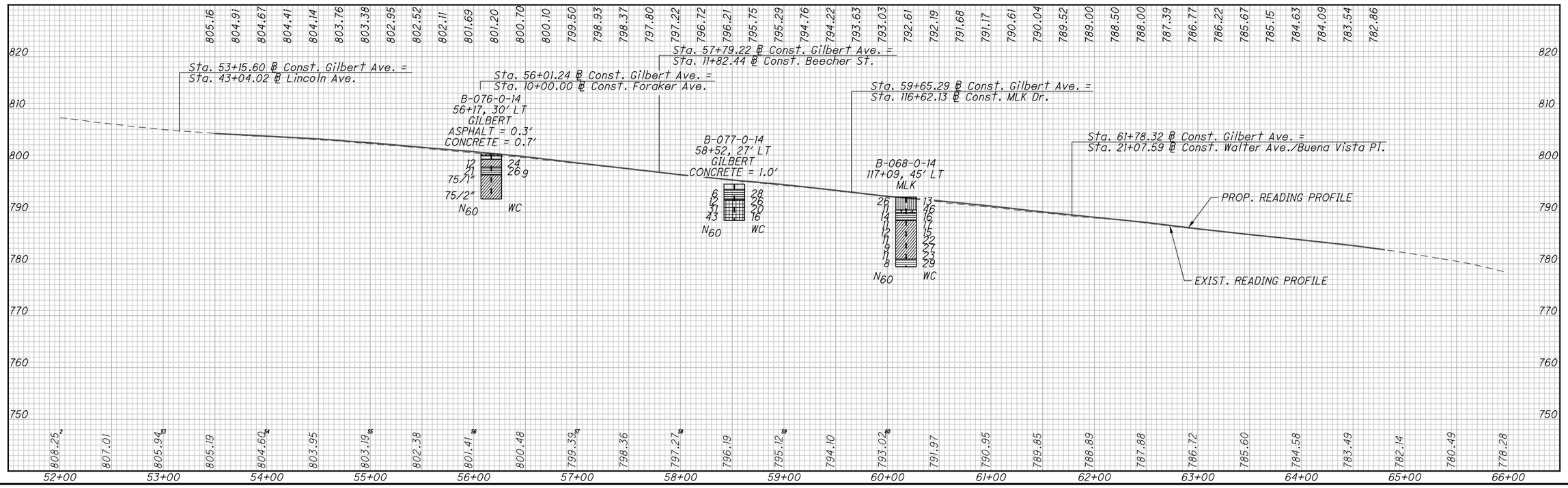

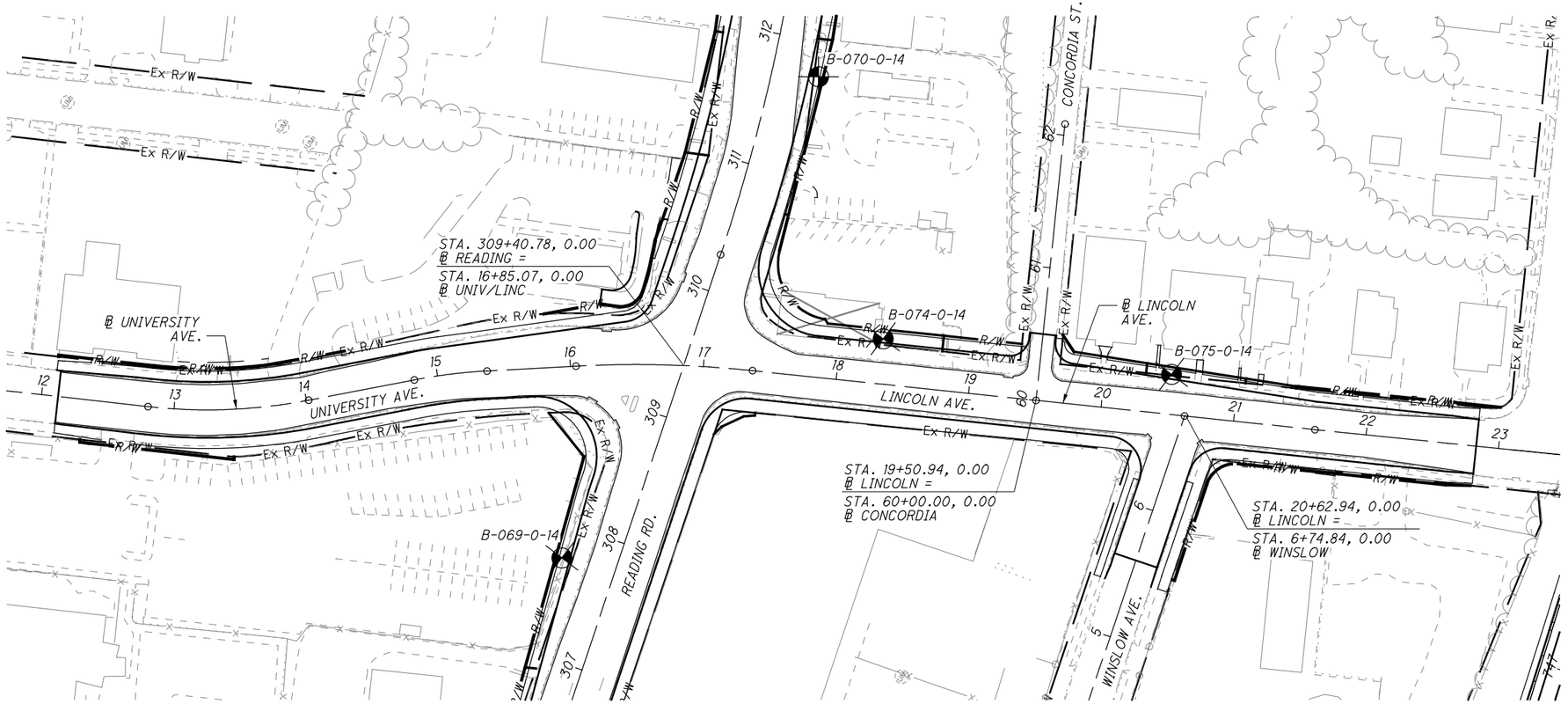

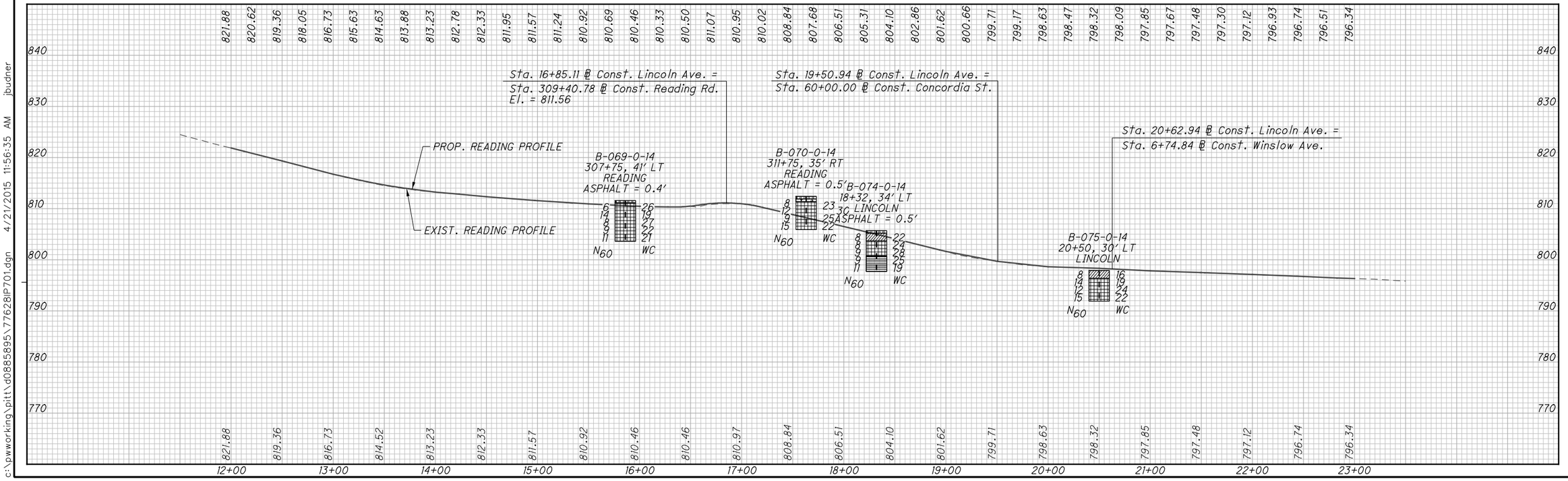

HORIZONTAL SCALE IN FEET
0 25 50 100

DRAWN JTB
CHECKED SPR

SOIL PROFILE
STA. 12+00 TO STA. 23+00 LINCOLN AVE.

HAM-71-3.81

77
175

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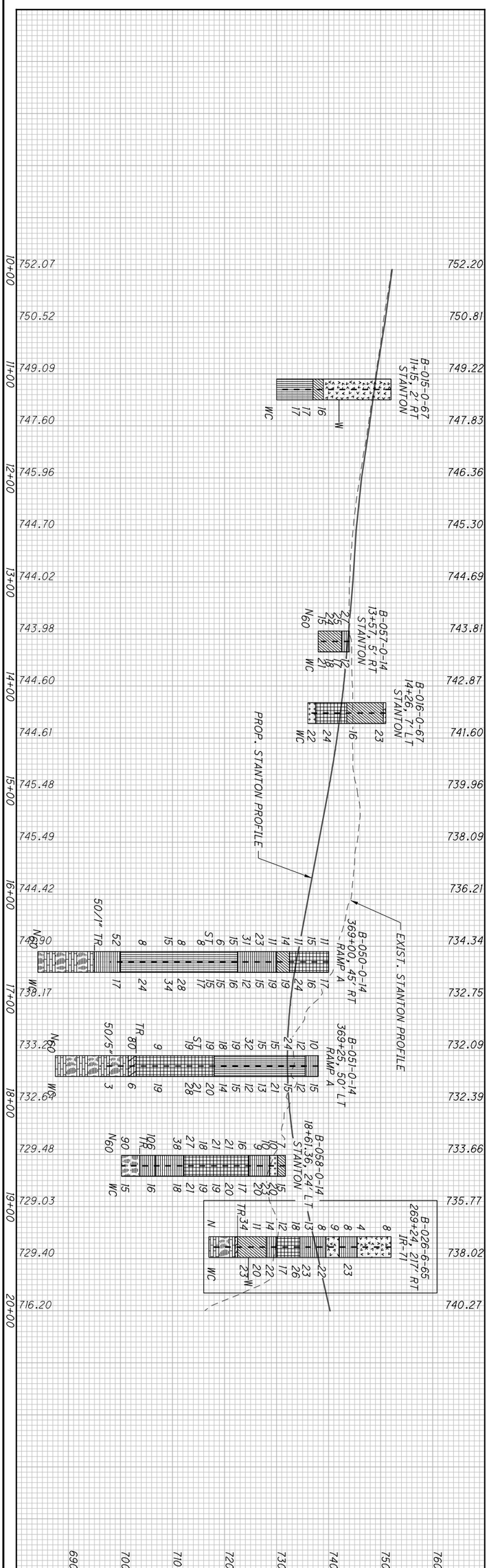

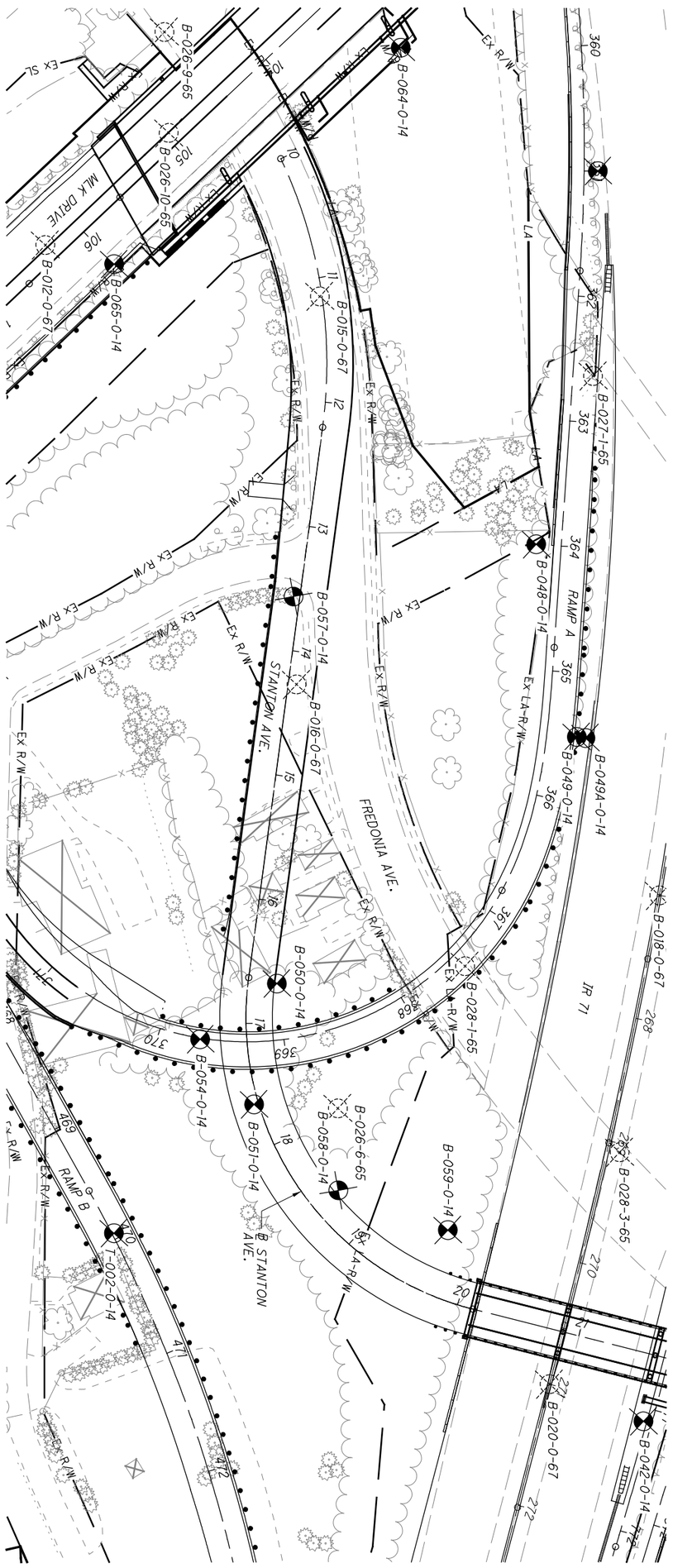

78 / 175	/	HAM-71-3.81	SOIL PROFILE STA. 10+00 TO STA. 20+00 STANTON AVE.	DRAWN JTB CHECKED SPR	0 50 25 100 HORIZONTAL SCALE IN FEET

R-006-1-65
(EL 797.5 - 793.0, 15.0' - 19.5')
CORE RECOVERY = 70%
(EL 797.5 - 795.0, 15.0' - 17.5') SHALE, GRAY, 1/4" TO 2-1/2" PIECES, AVERAGING 1", CRUSHED ZONE AT BOTTOM, MEDIUM TOUGH, WITH SOME EVIDENCE OF SHRINKAGE CRACKS AFTER DRYING, WEATHERED
(EL 795.0 - 793.0, 17.5' - 19.5') SHALE, GRAY, 1" TO 3" PIECES, AVERAGING 2", CRUSHED ZONE AT BOTTOM, MEDIUM TOUGH, HIGHLY FOSSILIFEROUS, TRACE 1" BEDS OF HARD GRAY LIMESTONE
(EL 793.0 - 788.0, 19.5' - 24.5')
CORE RECOVERY = 100%
(EL 793.0 - 788.0, 19.5' - 24.5') INTERBEDDED SHALE AND LIMESTONE, GRAY, (APPROX. 70% SHALE AND 30% LIMESTONE); SHALE, 1/4" TO 3" PIECES AND THIN FRAGMENTED ZONES, MEDIUM TOUGH, FOSSILIFEROUS, LIMESTONE THIN BEDDED, 1" TO 4" BEDS, AVERAGING 1-1/2", IMPURE, FOSSILIFEROUS

℄ EX IR-71

B-004-0-14
233+50, 5' RT
IR-71
ASPHALT = 0.7'
AGG. BASE = 0.3'

TR 3-5-50/3" 50/5" 24 3
36-50/4" 50/4" 6 10
N60 WC

789.07
233+50.00
789.07
I-71

B-023-0-14
832+87, 34' LT
RAMP F
ASPHALT = 0.25'

33-50/5" TR 6 12
11
N60 WC

SHALE, GRAY, HIGHLY WEATHERED

INTERBEDDED SHALE (50%) AND LIMESTONE (50%), SHALE, GRAY, HIGHLY TO SLIGHTLY WEATHERED, VERY WEAK, VERY THIN TO THIN BEDDED; LIMESTONE, GRAY, SLIGHTLY, WEATHERED, MODERATELY STRONG TO STRONG, VERY THIN TO MEDIUM BEDDED, HIGHLY TO MODERATELY FRACTURED, SLIGHTLY TO VERY ROUGH, RQD=67%

789.16
833+45.26
789.02
RAMP F

℄ RAMP F

R-006-1-65
233+60, 116.5' RT
IR-71

TR 11 14
17 19
17 28
96 19
N WC

EX LA-R/W

B-023-4-65
(EL 803.8 - 798.8, 18.0' - 23.0')
CORE RECOVERY = 46%
(EL 803.8 - 799.8, 18.0' - 22.0') INTERBEDDED SHALE AND LIMESTONE, BROWN AND GRAY, (APPROX. 75% SHALE AND 25% LIMESTONE); SHALE FRAGMENTED TO PULVERIZED, SOFT, WEATHERED; LIMESTONE, THIN BEDDED, 1/2" TO 3-1/2" BEDS, MOSTLY BROKEN, FINE GRAINED, IMPURE, FOSSILIFEROUS, HARD, JOINTED, JOINT SURFACES OXIDIZED
(EL 799.8 - 798.8, 22.0' - 23.0') SHALE, GRAY, 1/2" TO 3-1/2" PIECES AVERAGING 1-1/2", MEDIUM TOUGH

(EL 798.8 - 793.8, 23.0' - 28.0')
CORE RECOVERY = 70%
(EL 798.8 - 793.8, 23.0' - 28.0') INTERBEDDED SHALE AND LIMESTONE, GRAY, (APPROX. 75% SHALE AND 25% LIMESTONE); SHALE BROKEN TO PULVERIZED, FOSSILIFEROUS IN UPPER HALF; LIMESTONE THIN BEDDED, 1" TO 2-1/2" BEDS, FINE GRAINED, IMPURE, FOSSILIFEROUS, HARD, WEATHERED ZONE AT TOP JOINT

(EL 793.8 - 788.8, 28.0' - 33.0')
CORE RECOVERY = 87%
(EL 793.8 - 793.4, 28.0' - 28.4) INTERBEDDED SHALE AND LIMESTONE, GRAY, (APPROX. 75% SHALE AND 25% LIMESTONE); SHALE BROKEN TO PULVERIZED, FOSSILIFEROUS IN UPPER HALF; LIMESTONE THIN BEDDED, 1" TO 2-1/2" BEDS, FINE GRAINED, IMPURE, FOSSILIFEROUS, HARD, WEATHERED ZONE AT TOP JOINT

(EL 793.4 - 791.9, 28.4' - 29.9') SHALE, GRAY, 1" TO 2-1/2" PIECES, TOUGH
(EL 791.9 - 788.8, 29.9' - 33.0') INTERBEDDED LIMESTONE AND SHALE, GRAY, (APPROX. 85% LIMESTONE AND 15% SHALE); LIMESTONE THIN BEDDED, 1/2" TO 4" BEDS AVERAGING 1-1/2", FINE GRAINED, IMPURE, HARD, FOSSILIFEROUS, SHALE, 1/4" TO 1" PIECES FORMING IRREGULAR PARTINGS BETWEEN LIMESTONE BEDS, TOUGH

(EL 788.8 - 783.8, 33.0' - 38.0')
CORE RECOVERY = 95%
(EL 788.8 - 785.3, 33.0' - 36.5') INTERBEDDED SHALE AND LIMESTONE, GRAY, (APPROX. 85% SHALE AND 15% LIMESTONE); SHALE, 1" TO 3" PIECES, AVERAGING 2", TOUGH; LIMESTONE THIN BEDDED, 1/4" TO 3" BEDS, AVERAGING 1", FINE GRAINED, IMPURE, HARD, FOSSILIFEROUS
(EL 785.3 - 783.8, 36.5'-38.0') LIMESTONE, GRAY, THIN BEDDED, 1" TO 4" BEDS, AVERAGING 2", FINE GRAINED, IMPURE, HARD FOSSILIFEROUS

(EL 783.8 - 780.8, 38.0' - 41.0')
CORE RECOVERY = 97%
(EL 783.8 - 783.3, 38.0' - 38.5') LIMESTONE, GRAY, THIN BEDDED, 1" TO 4" BEDS, AVERAGING 2", FINE GRAINED, IMPURE, HARD FOSSILIFEROUS
(EL 783.3 - 780.8, 38.5' - 41.0') INTERBEDDED SHALE AND LIMESTONE, GRAY, (APPROX. 75% SHALE AND 25% LIMESTONE); SHALE, 1/4" TO 2-1/2", PIECES, AVERAGING 1-1/4", TOUGH TO VERY TOUGH; LIMESTONE THIN BEDDED, 1/4" TO 2-1/2" BEDS, AVERAGING 1" FINE GRAINED, IMPURE, HARD, FOSSILIFEROUS

℄ EX IR-71

B-022-0-14
831+72, 34' LT
RAMP F
ASPHALT = 0.25'

TR 35 12 13
4 13
N60 WC

791.43
231+50.00
791.43
I-71

℄ RAMP F

B-023-4-65
231+79.5, 118.5' RT
IR-71

10 18
W (24 hrs.)
11 28
14 34
13 35
15 26
TR
N WC

797.41
831+45.49
797.69
RAMP F

840 830 820 810 800 790 780 770 760 850 840 830 820 810 800 790 780 770

110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170

HORIZONTAL SCALE IN FEET
0 5 10 20

DRAWN JTB
CHECKED SPR

SOIL PROFILE
IR-71 CROSS SECTIONS STA. 231+50 & 233+50

HAM-71-3.81

79
175

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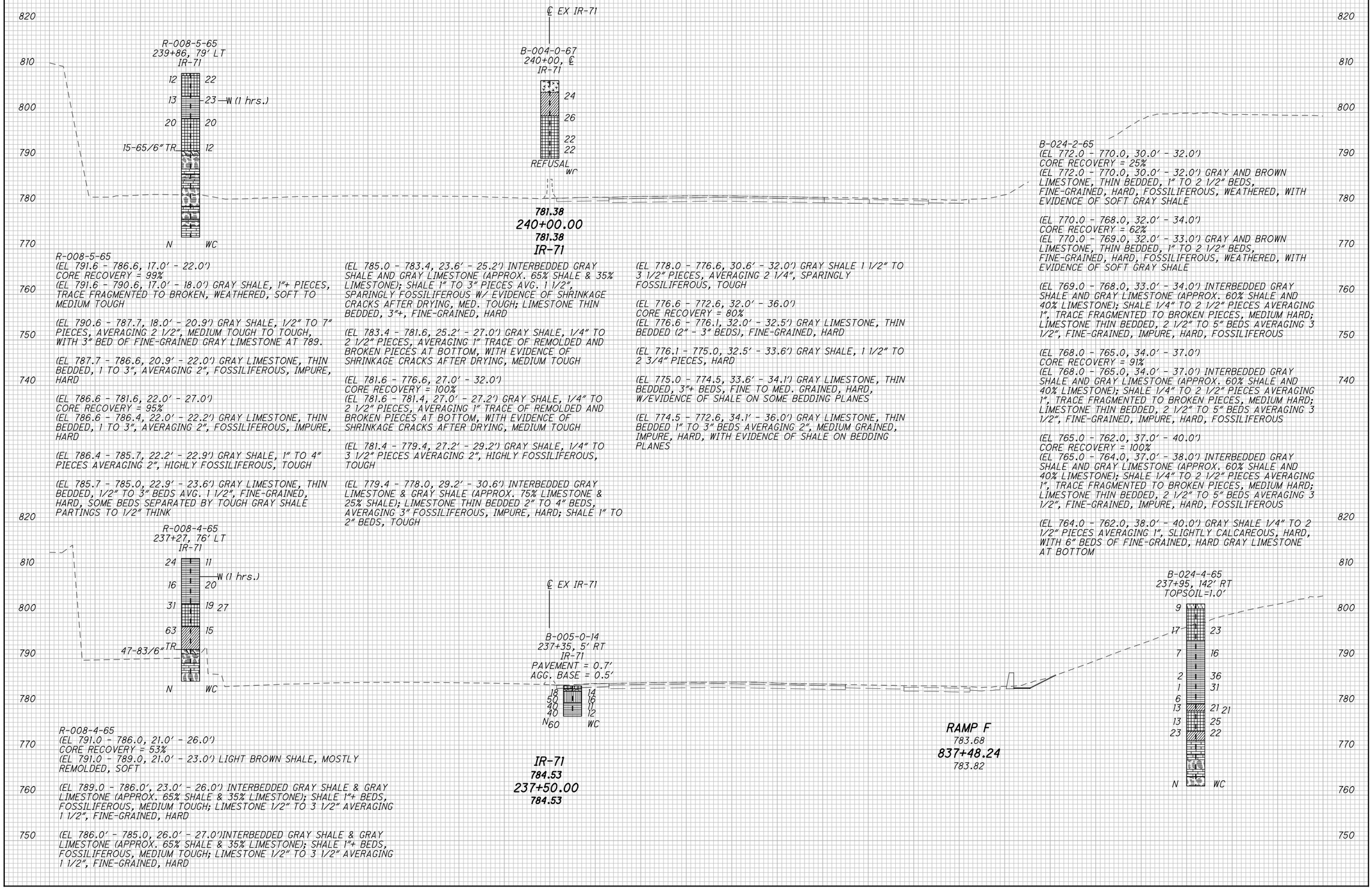

0 5 10 20 HORIZONTAL SCALE IN FEET

DRAWN JTB CHECKED SPR

SOIL PROFILE
IR-71 CROSS SECTIONS STA. 237+50 & 240+00
HAM-71-3.81

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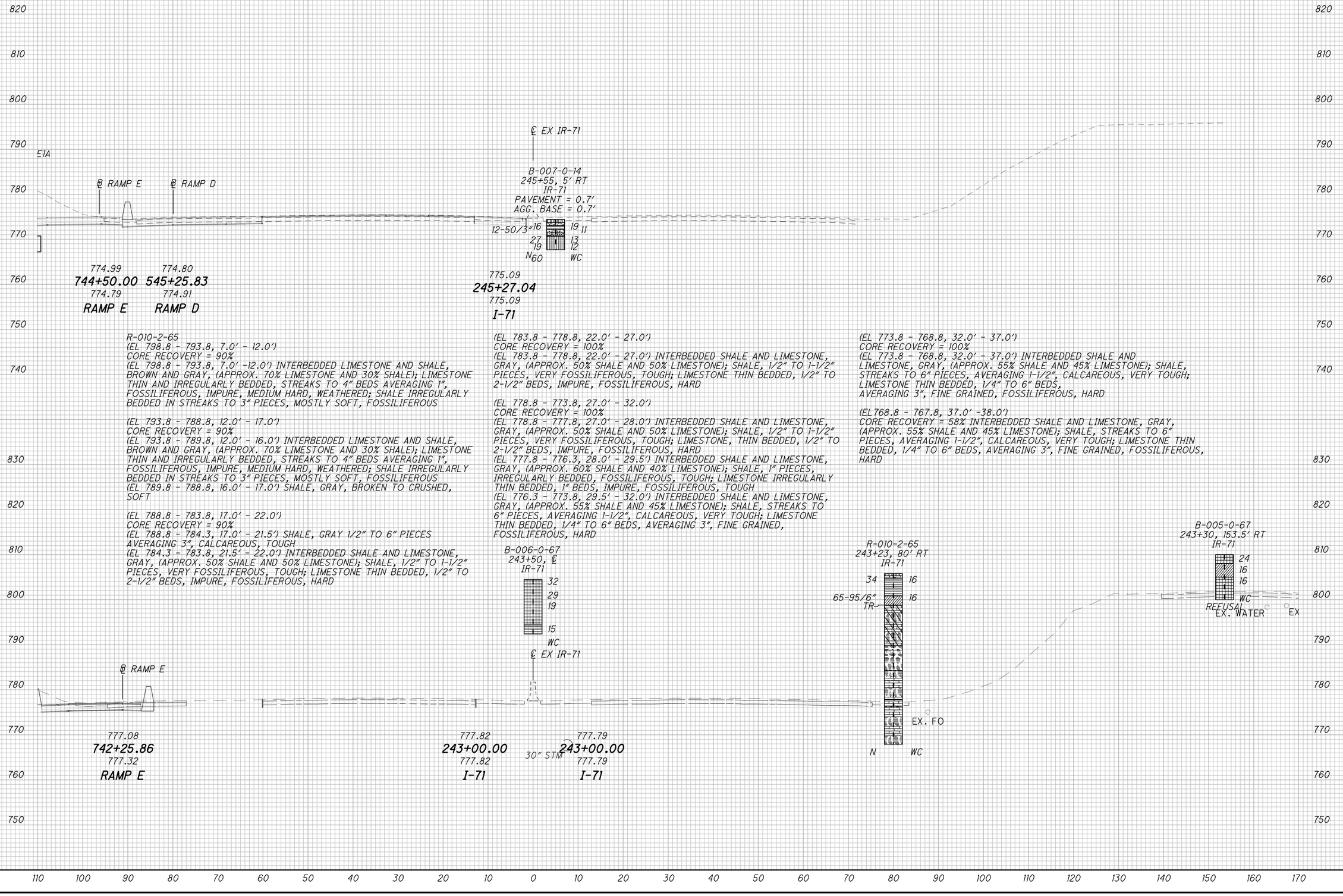

HORIZONTAL SCALE IN FEET
0 5 10 20

DRAWN JTB
CHECKED SPR

SOIL PROFILE
SECTIONS STA. 243+00 & 245+27.04
IR-71 CROSS SEC

HAM-71-3.81

81
175

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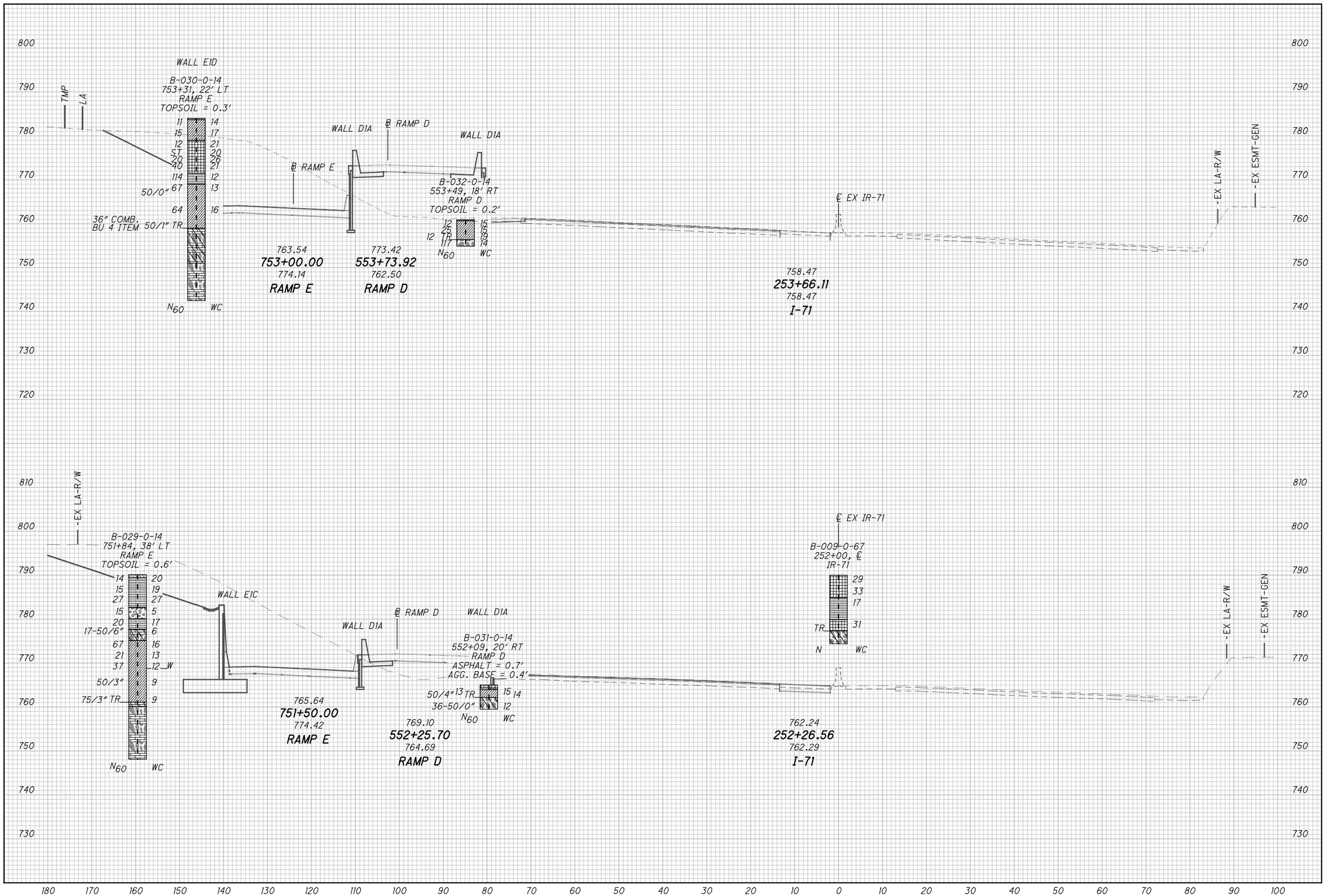

HORIZONTAL SCALE IN FEET
0 5 10 20

DRAWN JTB
CHECKED SPR

SOIL PROFILE
IR-71 CROSS SECTIONS STA. 252+26.56 & 253+66.11

HAM-71-3.81

7

82
175

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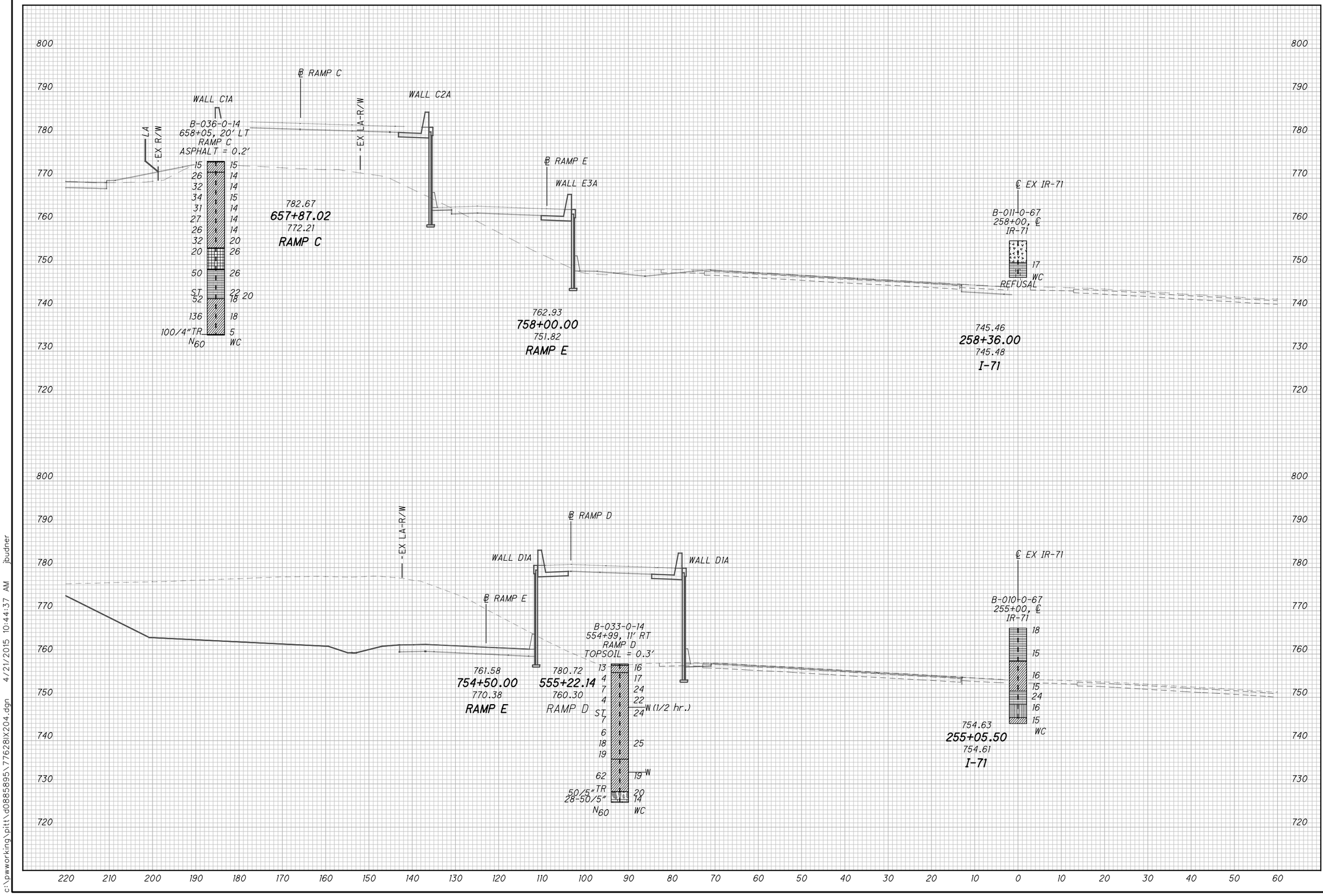

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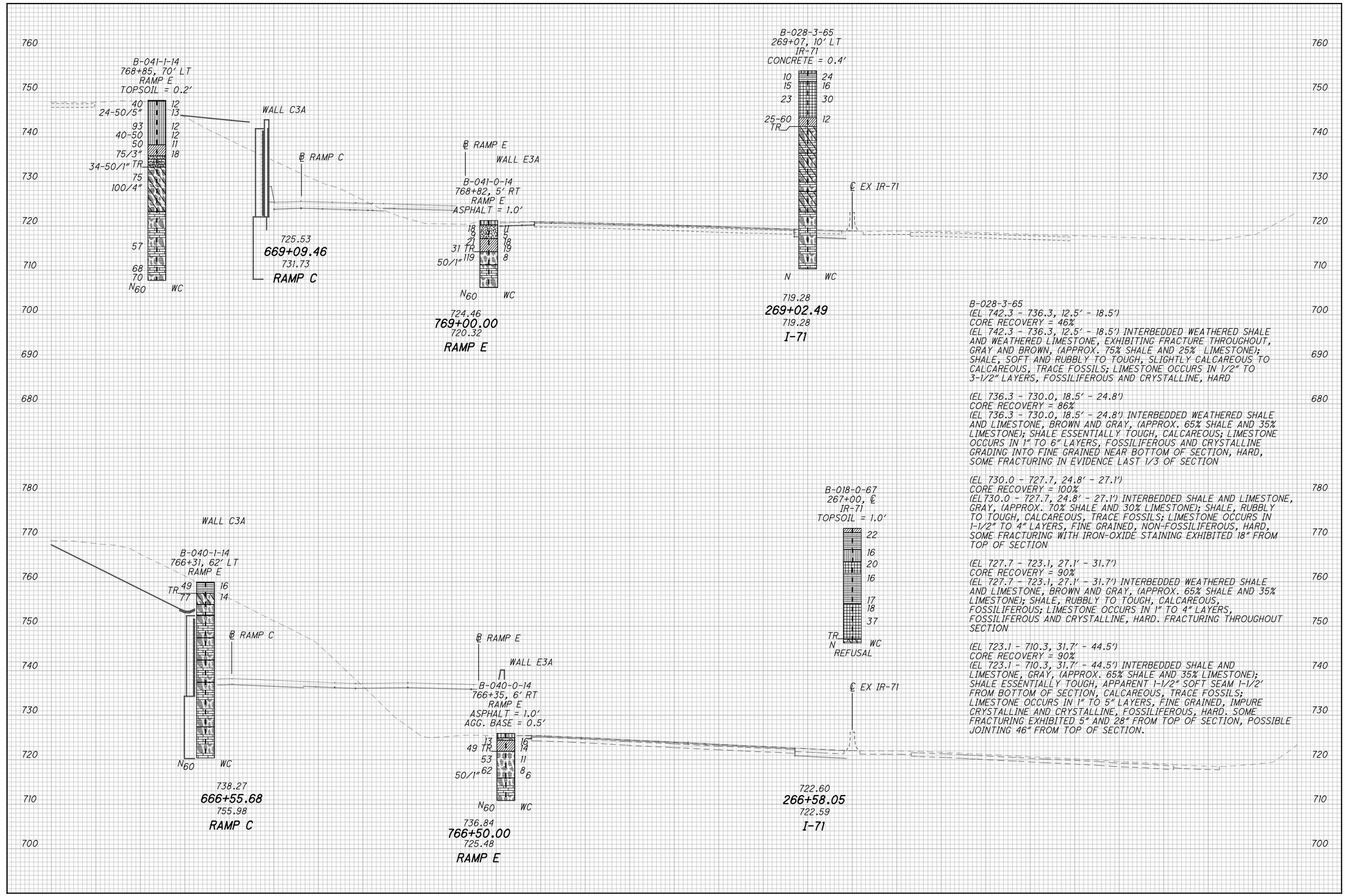
0 5 10 20
HORIZONTAL SCALE IN FEET

DRAWN JTB | CHECKED SPR

SOIL PROFILE
IR-71 CROSS SECTIONS STA. 255+05.50 & 258+36

HAM-71-3.81

83
175



HORIZONTAL SCALE IN FEET
0 5 10 20

DRAWN JTB
CHECKED SPR

SOIL PROFILE
IR-71 CROSS SECTIONS STA. 266+58.05 & 269+02.49

HAM-71-3.81

84
175

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720
710
700
690
680
670
660
650
640

B-025-0-67
286+00, 123.0' LT
IR-71
16
20
26
25
20
15
WC

℄ EX IR-71

B-014-0-14
285+00, 5' LT
IR-71
PAVEMENT = 0.7'
AGG. BASE = 0.3'
13 15
30 16
25 18
30 19
N WC

699.72
285+00.00
699.71
IR-71

R-023-3-65
285+07, 114' RT
IR-71
12
10-50/6" 13
45
35 14
TR
95
80/6"
N WC

R-023-3-65
(EL 697.5 - 689.5, 18.0' - 26.0')
CORE RECOVERY 41%
(EL 697.5 - 689.5, 18.0' - 26.0') INTERBEDDED BROWN AND GRAY WEATHERED SHALE AND GRAY LIMESTONE (APPROX. 80% SHALE 20% LIMESTONE) SHALE SOFT TO MEDIUM TOUGH, NON-FOSSILIFEROUS TO FOSSILIFEROUS, CALCAREOUS; LIMESTONE OCCURS IN 1/2" TO 4" LAYERS, FOSSILIFEROUS, IMPURE FINE-GRAINED, SHALEY CRYSTALLINE AND CRYSTALLINE, HARD. FRACTURING WITH IRON-OXIDE STAINING EXHIBITED NEAR TOP OF SECTION WITH BROKEN CONDITION (POSSIBLE FRACTURING) NEAR BOTTOM. (POOR RECOVERY - ASSUMING LOST MATERIAL TO BE SHALE

(EL 689.5 - 687.5, 26.0' - 28.0')
CORE RECOVERY 80%
(EL 689.5 - 687.5, 26.0' - 28.0') GRAY SHALE, MEDIUM TOUGH TO HARD, CALCAREOUS WITH 1" AND 2 1/2" LAYER OF GRAY LIMESTONE, TRACE FOSSILS, FINE-GRAINED, HARD. FRACTURING EXHIBITED AT APPROX. 26.8'. BROKEN CONDITION AT TOP OF SECTION - POSSIBLE FRACTURING INDICATED

720
710
700
690
680
670
660
650
640

R-025-2-65
283+94, 98' RT
IR-71
6
11-36/6" 10
TR
N WC

℄ EX IR-71

B-024-0-67
284+00, ℄
IR-71
10
13
11
N WC

700.97
284+00.00
700.96
IR-71

R-025-2-65
(EL 709.7 - 704.7, 6.0' - 11.0')
CORE RECOVERY = 50%
(EL. 709.7 - 704.7, 6.0' - 11.0') INTERBEDDED BROWN WEATHERED SHALE AND GRAY AND BROWN LIMESTONE (APPROX. 55% SHALE AND 45% LIMESTONE IN RECOVERY). SHALE SOFT, CALCAREOUS, BADLY BROKEN. LIMESTONE THIN BEDDED IN 1/2" TO 4" LAYERS, FOSSILIFEROUS, CRYSTALLINE, HARD.

(EL 704.7 - 699.7, 11.0' -16.0')
CORE RECOVERY = 50%
(EL. 704.7 - 703.7, 11.0' - 12.0') INTERBEDDED BROWN WEATHERED SHALE AND GRAY AND BROWN LIMESTONE (APPROX. 55% SHALE AND 45% LIMESTONE IN RECOVERY). SHALE SOFT, CALCAREOUS, BADLY BROKEN. LIMESTONE THIN BEDDED IN 1/2" TO 4" LAYERS, FOSSILIFEROUS, CRYSTALLINE, HARD.

(EL 703.7 - 699.7, 12.0' - 16.0') INTERBEDDED GRAY WEATHERED SHALE (TRACE OF BROWN) AND GRAY LIMESTONE, (APPROX. 75% SHALE AND 25% LIMESTONE IN RECOVERY). SHALE SOFT TO MEDIUM TOUGH, CALCAREOUS, MOSTLY BROKEN TO REMOLDED, SPARCELY FOSSILIFEROUS. LIMESTONE THIN BEDDED IN 1" TO 4" LAYERS, FOSSILIFEROUS, HARD CRYSTALLINE, WITH EVIDENCE OF HIGH ANGLE JOINT AT 799+ JOINT SURFACES OXIDIZED.

(EL 699.7 - 695.7, 16.0' - 20.0')
CORE RECOVERY = 70%
(EL 699.7 - 698.7, 16.0' - 17.0') INTERBEDDED GRAY WEATHERED SHALE (TRACE OF BROWN) AND GRAY LIMESTONE, (APPROX. 75% SHALE AND 25% LIMESTONE IN RECOVERY). SHALE SOFT TO MEDIUM TOUGH, CALCAREOUS, MOSTLY BROKEN TO REMOLDED, SPARCELY FOSSILIFEROUS. LIMESTONE THIN BEDDED IN 1" TO 4" LAYERS, FOSSILIFEROUS, HARD CRYSTALLINE, WITH EVIDENCE OF HIGH ANGLE JOINT AT 799+ JOINT SURFACES OXIDIZED.

(EL 698.7 - 695.7, 17.0' - 20.0') GRAY SHALE POSSIBLY SOFT TO MEDIUM TOUGH, BROKEN TO REMOLDED, CHECKS ON DRYING.

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

HORIZONTAL SCALE IN FEET
0 5 10 20

DRAWN JTB
CHECKED SPR

SOIL PROFILE
IR-71 CROSS SECTIONS STA. 284+00 & 285+00

HAM-71-3.81

7

85
175

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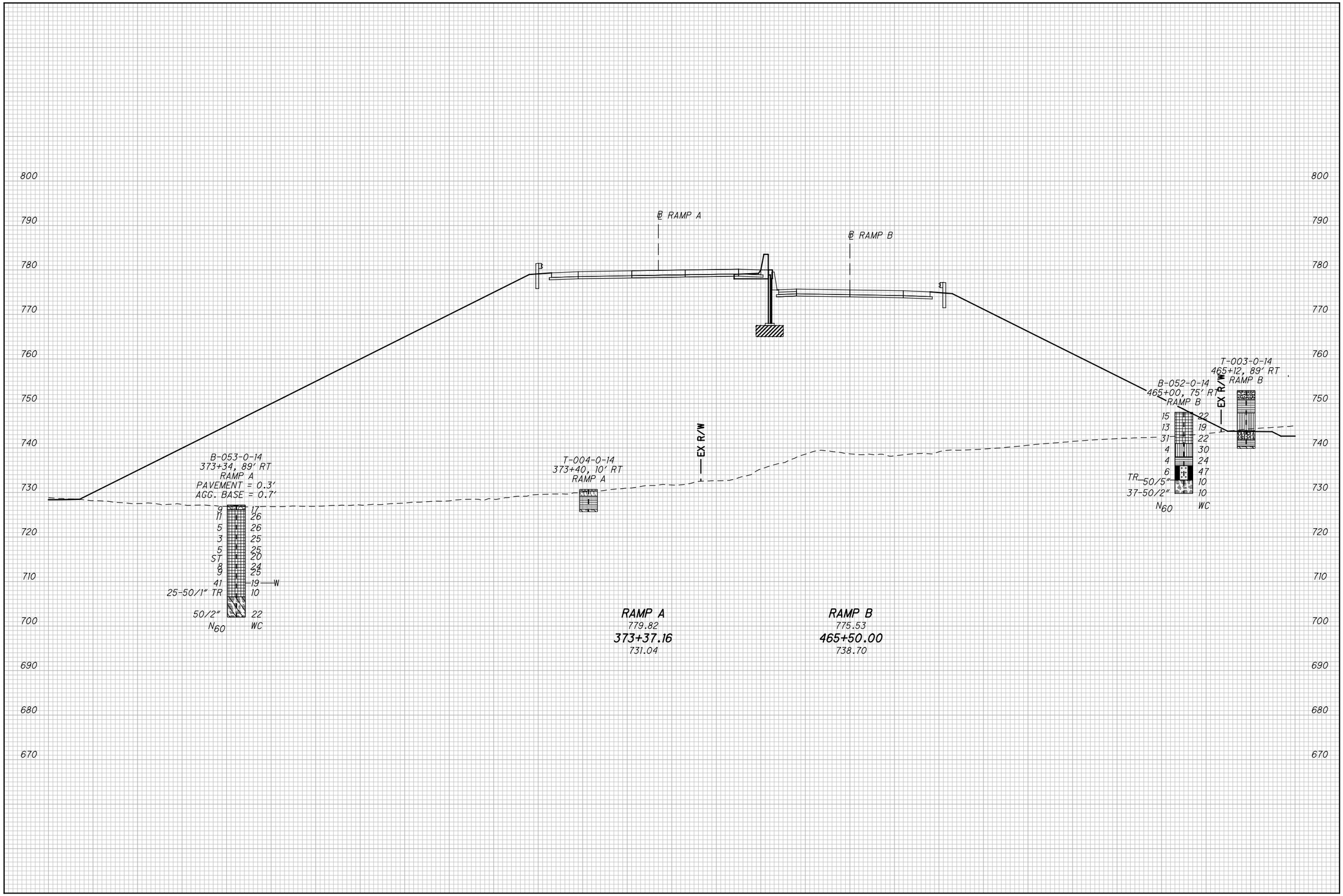

HORIZONTAL SCALE IN FEET
0 5 10 20

DRAWN JTB
CHECKED SPR

SOIL PROFILE
RAMP A STA. 373+37.16, RAMP B STA. 465+50.00

HAM-71-3.81

7

86
175

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HORIZONTAL SCALE IN FEET
0 5 10 20

DRAWN JTB
CHECKED SPR

SOIL PROFILE
RAMP B CROSS SECTIONS STA. 469+00 & STA. 473+00

HAM-71-3.81

87
175

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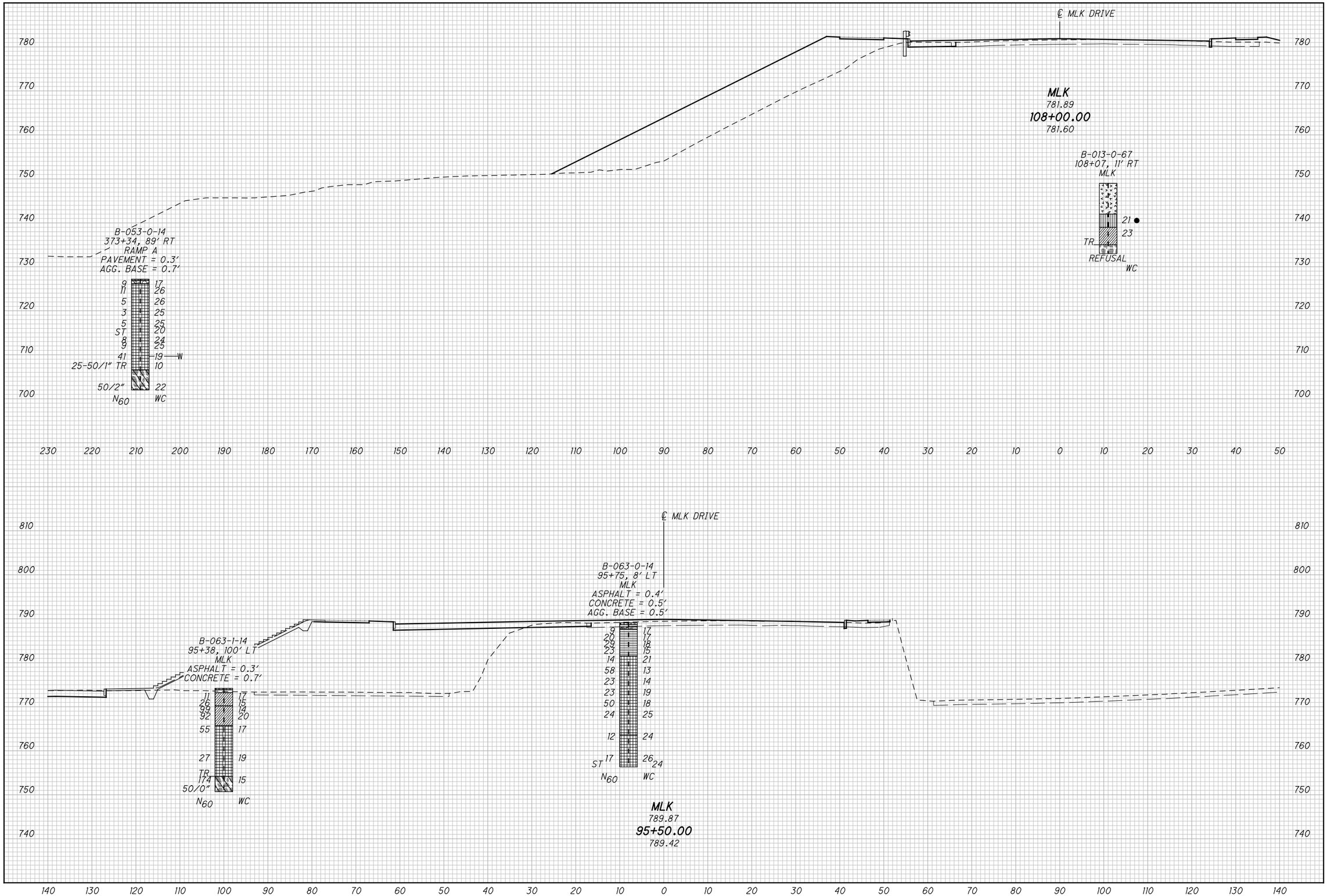

HORIZONTAL SCALE IN FEET
0 5 10 20

DRAWN JTB
CHECKED SPR

SOIL PROFILE
MLK DRIVE CROSS SECTIONS STA. 95+50 & 108+00

HAM-71-3.81

7

88
175

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800
790
780
770
760
750
740
730
720

℄ MLK DRIVE

B-066-0-14
110+49, 28' LT
MLK

17	12
26	16
24	18
18	16
56	13
31	18
26	18
29	19
21	18
8-65/6"	28
17	18
20	19
N_{60}	WC

MLK
786.33
110+50.00
785.69

B-052-0-14
465+00, 75' RT
RAMP B

15	22
13	19
31	22
4	30
4	24
6	47
TR-50/5"	10
37-50/2"	10
N_{60}	WC

200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80

HORIZONTAL SCALE IN FEET
0 5 10 20

DRAWN JTB
CHECKED SPR

SOIL PROFILE
MLK DRIVE CROSS SECTION STA. 110+50

HAM-71-3.81

7

89
175

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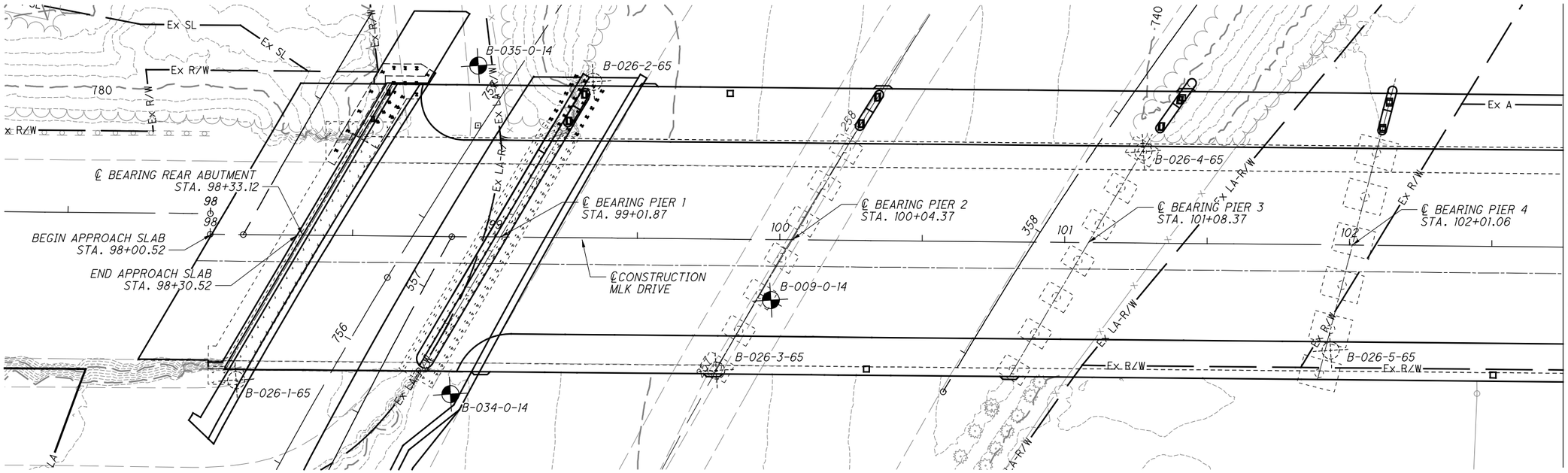

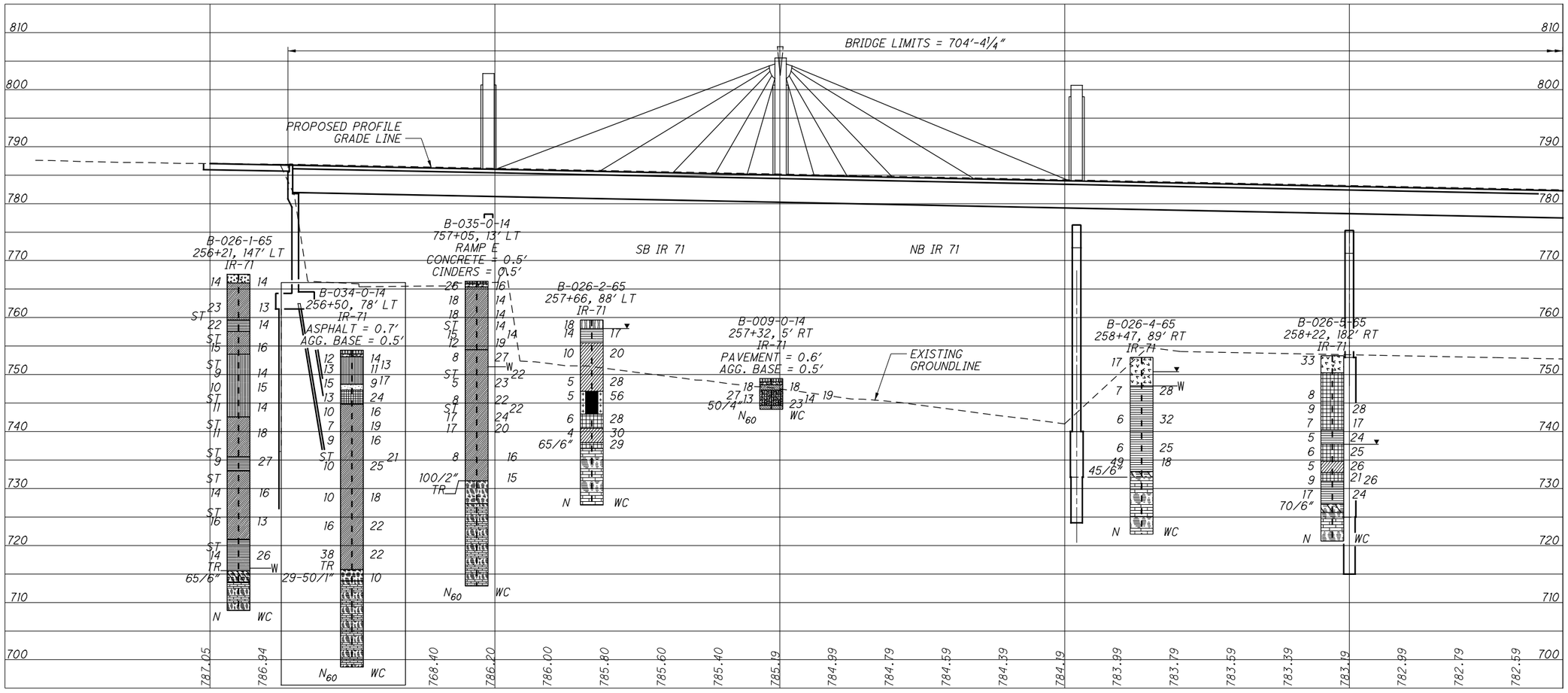

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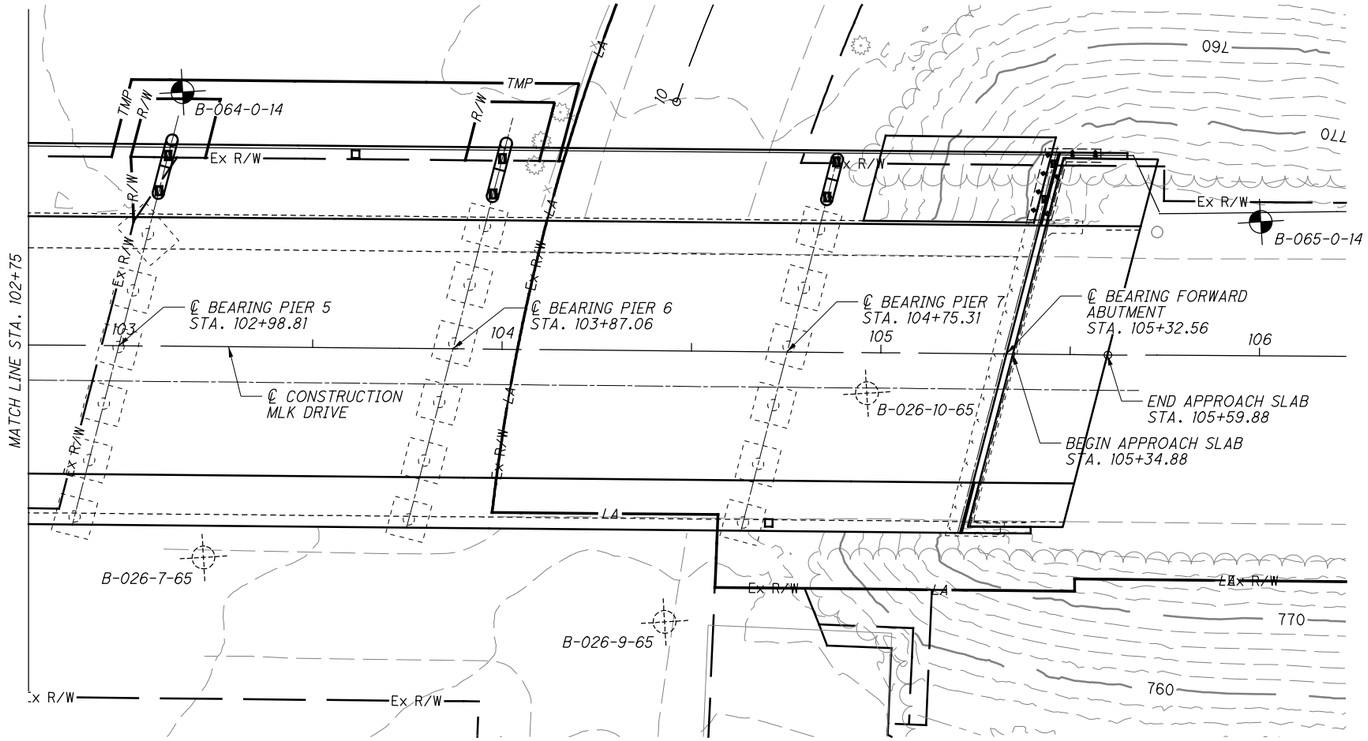
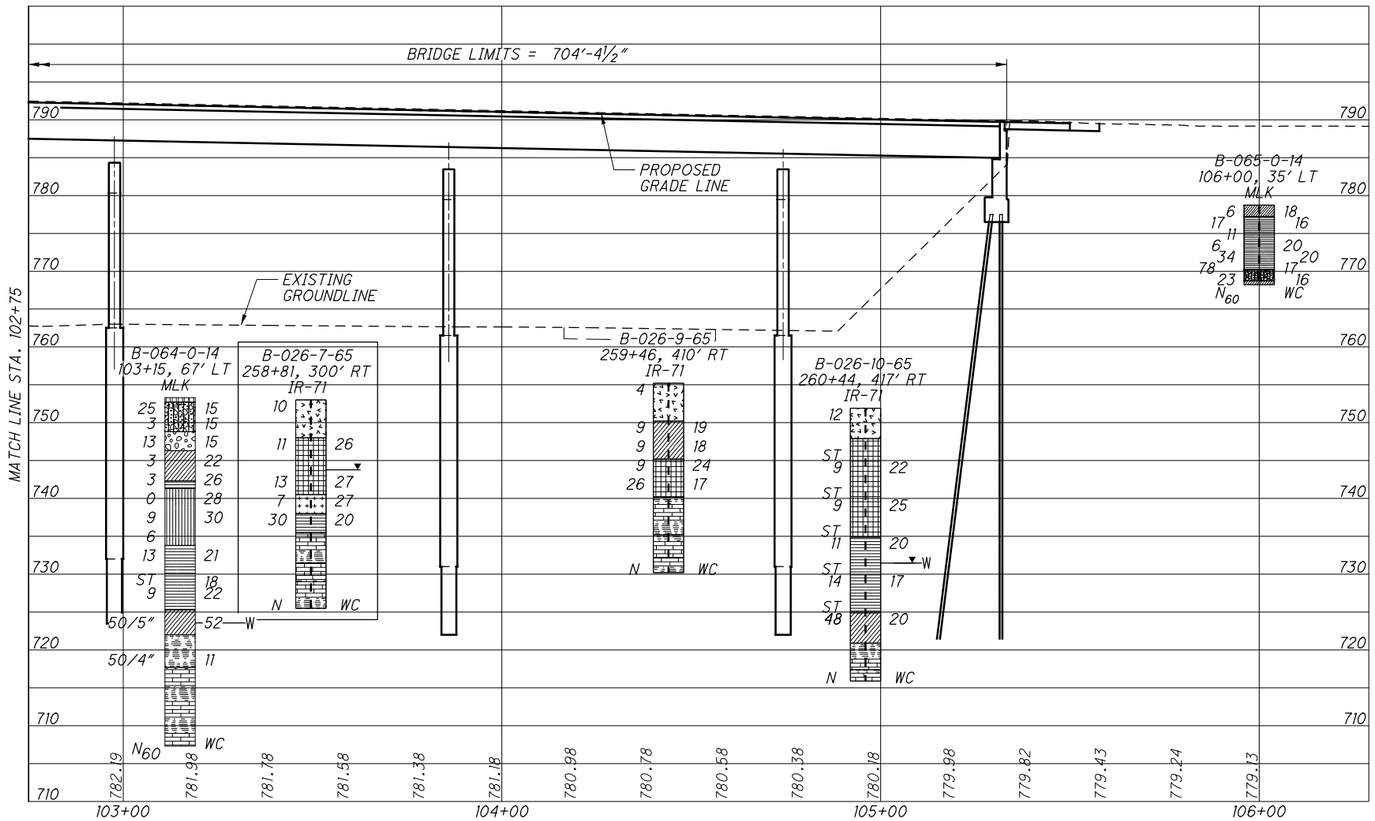
HORIZONTAL SCALE IN FEET
0 10 20 40

DRAWN JTB CHECKED SPR

STRUCTURE FOUNDATION EXPLORATION
BRIDGE NO. HAM-71-0381C (MLK DRIVE OVER IR 71)

HAM-71-3.81





STRUCTURE FOUNDATION EXPLORATION

BRIDGE NO. HAM-71-0381C (MLK DRIVE OVER IR 71)

HAM-71-3.81

DRAWN JTB CHECKED SPR

HORIZONTAL SCALE IN FEET

0 10 20 40

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PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / J. SMITH	DRILL RIG: CME 55 TRACK - TA	STATION / OFFSET: 257+32, 5 RT	EXPLORATION ID B-009-0-14
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: HDR / S. REED	HAMMER: CME AUTOMATIC	ALIGNMENT: IR-71	
PID: 77628 BR ID:	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 7/21/13	ELEVATION: 749.3 (MSL) EOB: 5.4 ft.	PAGE 1 OF 1
START: 5/13/14 END: 5/13/14	SAMPLING METHOD: SPT	ENERGY RATIO (%): 88.5	COORD: 419528.628 N, 1403292.498 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 749.3	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
7" ASPHALT PAVEMENT	748.7																	
6" AGGREGATE BASE	748.2																	
VERY STIFF, BROWN AND GRAY, **SILT AND CLAY**, SOME SAND, SOME GRAVEL, MOIST (FILL)	747.3	1	5 5 7	18	61	SS-1	3.25	31	13	9	23	24	32	20	12	18	A-6a (3)	
@1.1', 300 ppm soluble sulfate		2	6 6 12	27	78	SS-2	-	58	15	8	11	8	28	19	9	19	A-2-4 (0)	
VERY STIFF, BROWN AND GRAY, **GRAVEL AND/OR STONE FRAGMENTS WITH SAND AND SILT**, TRACE CLAY, MOIST (FILL)	744.6	3	7 6 3	13	100	SS-3A SS-3B	-	-	-	-	-	-	-	-	-	14	A-2-4 (V)	
MEDIUM STIFF TO STIFF, BROWN, **SILT AND CLAY**, SOME GRAVEL, LITTLE SAND, MOIST (FILL)	743.9	4	50/4"	-	88	SS-4	0.50	32	9	8	24	27	35	21	14	23	A-6a (5)	
	EOB	5														23	A-6a (V)	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 12/15/14 13:25 - C:\PWWORKING\PITT\D1020532\20140608_HAM-71-3.81_ROADWAY_UPDATED.GPJ

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PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / J. SMITH	DRILL RIG: CME 55 TRACK - TA	STATION / OFFSET: 256+50, 78 LT	EXPLORATION ID B-034-0-14
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: HDR / S. REED	HAMMER: CME AUTOMATIC	ALIGNMENT: IR-71	
PID: 77628 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 7/21/13	ELEVATION: 754.3 (MSL) EOB: 55.7 ft.	PAGE 1 OF 1
START: 5/16/14 END: 5/16/14	SAMPLING METHOD: SPT/ST/NQ	ENERGY RATIO (%): 88.5	COORD: 419502.381 N, 1403178.235 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 754.3	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
8" ASPHALT PAVEMENT	753.6																	
6" AGGREGATE BASE	753.2						-	-	-	-	-	-	-	-	-	-	A-1-b (V)	
VERY STIFF, BROWN AND GRAY, **SANDY SILT**, SOME CLAY, LITTLE GRAVEL, DAMP (FILL)			4 3 5	12	53	SS-1	3.50	12	12	14	30	32	27	17	10	14	A-4a (5)	
			7 5 4	13	60	SS-2A	-	-	-	-	-	-	-	-	-	13	A-4a (V)	
						SS-2B	4.50	14	12	14	30	30	27	17	10	11	A-4a (5)	
			4 6 4	15	53	SS-3A	0.75	-	-	-	-	-	-	-	-	17	A-4a (V)	
	748.3					SS-3B	-	-	-	-	-	-	-	-	-	9	A-3a (V)	
LOOSE, GRAY, **COARSE AND FINE SAND**, MOIST (FILL)	747.3																	
STIFF, GRAY AND OLIVE BROWN (MOTTLED), **CLAY**, SOME SILT, LITTLE SAND, TRACE STONE FRAGMENTS, MOIST			8 4 5	13	47	SS-4	1.25	4	7	11	22	56	50	19	31	24	A-7-6 (18)	
	744.8																	
MEDIUM STIFF, GRAY, **SILT AND CLAY**, LITTLE SAND, TRACE GRAVEL, MOIST @18.0 - Qu (ST-1) = 2640 psf @ 30' - trace sand			2 3 4	10	13	SS-5	1.00	-	-	-	-	-	-	-	-	16	A-6a (V)	
			1 2 3	7	100	SS-6	0.50	-	-	-	-	-	-	-	-	19	A-6a (V)	
			2 3 3	9	100	SS-7	0.50	-	-	-	-	-	-	-	-	16	A-6a (V)	
					100	ST-1	3.50	3	5	10	44	38	29	18	11	21	A-6a (8)	
			4 3 4	10	67	SS-8	0.50	-	-	-	-	-	-	-	-	25	A-6a (V)	
			2 3 4	10	100	SS-9	0.50	-	-	-	-	-	-	-	-	18	A-6a (V)	
			3 4 7	16	100	SS-10	1.25	3	3	5	44	45	34	21	13	22	A-6a (9)	
			17 15 11	38	33	SS-11	0.75	-	-	-	-	-	-	-	-	22	A-6a (V)	
	715.8	TR																
SHALE, GRAY, FISSILE. (BEDROCK)	713.8		29 50/1"	-	100	SS-12	-	-	-	-	-	-	-	-	-	10	Rock (V)	
INTERBEDDED SHALE (64%) AND LIMESTONE (36%), RQD 83%; **SHALE**, GRAY, UNWEATHERED TO SLIGHTLY WEATHERED, VERY WEAK, THIN BEDDED; **LIMESTONE**, GRAY, UNWEATHERED, MODERATELY STRONG TO STRONG, THIN TO MEDIUM BEDDED. (BEDROCK) @42.6' - Qu (NQ-2) = 78 psi			73		100	NQ-1											CORE	
			86		100	NQ-2											CORE	
			84		100	NQ-3											CORE	
	698.6	EOB																

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 15 BAGS BENTONITE CHIPS

STANDARD ODOT SOIL BORING LOG (11 X 17) OH DOT.GDT - 2/9/15 23:05 - C:\PWWORKING\PITT\D1025182\20140608_HAM-71-3.81_STRUCTURES_UPDATED.GPJ

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PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / LW	DRILL RIG: CME 550X ATV - TA	STATION / OFFSET: 757+05, 13 LT	EXPLORATION ID B-035-0-14
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: HDR / D. MATCHISON	HAMMER: CME AUTOMATIC	ALIGNMENT: RAMP E	
PID: 77628 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 8/2/13	ELEVATION: 766.4 (MSL) EOB: 53.5 ft.	PAGE 1 OF 1
START: 5/20/14 END: 5/20/14	SAMPLING METHOD: SPT/ST/NQ	ENERGY RATIO (%): 91.6	COORD: 419616.941 N, 1403194.880 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
6" CONCRETE	765.9																	
6" CINDERS	765.4		50 9 8	26	89	SS-1	-	-	-	-	-	-	-	-	-	-	A-1-a (V)	
VERY STIFF TO HARD, BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, DAMP TO MOIST							-	-	-	-	-	-	-	-	-	16	A-6a (V)	
@7' - 8.5', c' = 0 psf, phi' = 31 degrees			3 5 7	18	100	SS-2	4.00	-	-	-	-	-	-	-	-	14	A-6a (V)	
@10' - Noted mineral concretions and orange oxidation			6 5 7	18	100	SS-3	4.00	-	-	-	-	-	-	-	-	14	A-6a (V)	
					88	ST-1	-	5	10	15	37	33	32	18	14	14	A-6a (9)	
			3 4 6	15	100	SS-4	4.50	-	-	-	-	-	-	-	-	14	A-6a (V)	
			3 4 4	12	94	SS-5	4.00	-	-	-	-	-	-	-	-	19	A-6a (V)	
	754.4																	
MEDIUM STIFF TO STIFF, BROWN, **SILT AND CLAY**, TRACE TO LITTLE SAND, TRACE GRAVEL, MOIST			2 2 3	8	89	SS-6	2.00	-	-	-	-	-	-	-	-	27	A-6a (V)	
@16.2' - 16.7'; Qu (ST-2) = 2210 psf																		
@20' - Noted color change to gray		W																
@21.5' - 23.0', c' = 0 psf, phi' = 28.4 degrees					100	ST-2	1.50	1	3	6	53	37	35	21	14	22	A-6a (10)	
@25' - Noted deposits of blue-green high plasticity clay			2 1 2	5	78	SS-7	2.00	-	-	-	-	-	-	-	-	23	A-6a (V)	
			2 2 3	8	22	SS-8	1.00	-	-	-	-	-	-	-	-	22	A-6a (V)	
					100	ST-3	1.00	2	5	9	51	33	31	18	13	22	A-6a (9)	
			8 5 6	17	100	SS-9	0.50	-	-	-	-	-	-	-	-	24	A-6a (V)	
			8 5 6	17	89	SS-10	1.00	-	-	-	-	-	-	-	-	20	A-6a (V)	
	731.4	TR																
SHALE, GRAY. (BEDROCK)			100/2"	-	100	SS-12	-	-	-	-	-	-	-	-	-	15	Rock (V)	
	727.4																	
INTERBEDDED SHALE (70%) AND LIMESTONE (30%), RQD 19%; **SHALE**, GRAY, SLIGHTLY TO MODERATELY WEATHERED, VERY WEAK, VERY THIN TO THIN BEDDED; **LIMESTONE**, GRAY, MODERATELY STRONG TO STRONG, THIN BEDDED, CRYSTALLINE, HIGHLY TO MODERATELY FRACTURED, SLIGHTLY ROUGH TO VERY ROUGH.			18		50	NQ-1											CORE	
@ 44.1' - 44.7' = 66.6 psi			40		100	NQ-2											CORE	
			0		42	NQ-3											CORE	
	712.9	EOB																

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: 50 LB. BENTONITE POWDER; 376 LB. CEMENT; 50 GAL. WATER

STANDARD ODOT SOIL BORING LOG (11 X 17) OH DOT.GDT - 2/9/15 22:48 - C:\PWWORKING\PITT\D1025182\20140608_HAM-71-3.81_STRUCTURES_UPDATED.GPJ

PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / LW	DRILL RIG: CME 550X ATV - TA	STATION / OFFSET: 106+00, 35 LT	EXPLORATION ID B-065-0-14
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: HDR / M. BATTEN	HAMMER: CME AUTOMATIC	ALIGNMENT: MLK	
PID: 77628 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 8/2/13	ELEVATION: 778.7 (MSL) EOB: 10.5 ft.	PAGE 1 OF 1
START: 5/27/14 END: 5/27/14	SAMPLING METHOD: SPT	ENERGY RATIO (%): 91.6	COORD: 419543.629 N, 1403897.946 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 778.7	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
MEDIUM STIFF, TAN AND GRAY, **SILT AND CLAY**, SOME SAND, LITTLE GRAVEL, CONTAINS ORGANICS, MOIST (FILL)	777.2	1	3 2 2	6	61	SS-1	0.75	18	14	10	27	31	35	21	14	18	A-6a (6)	
@ 0' - 593 ppm soluble sulfate		2	4 5 6	17	67	SS-2	3.00	11	7	9	36	37	39	21	18	16	A-6b (11)	
MEDIUM STIFF TO STIFF, TAN AND GRAY, **SILTY CLAY**, LITTLE SAND, LITTLE GRAVEL (FILL)		3	4 3 4	11	0	SS-3	-	-	-	-	-	-	-	-	-	-	A-6b (V)	
large stone fragments at 6'		4																
		5	3 2 2	6	100	SS-4	2.00	-	-	-	-	-	-	-	-	20	A-6b (V)	
		6																
		7	4 17 5	34	56	SS-5	0.50	-	-	-	-	-	-	-	-	20	A-6b (V)	
	770.2	8	3 5 46	78	100	SS-6A SS-6B	0.25 -	-	-	-	-	-	-	-	-	17	A-6b (V)	
LOOSE, GRAY, **GRAVEL AND/OR STONE FRAGMENTS WITH SAND AND SILT**, LITTLE CLAY, CONTAINS ASPHALT, WET (FILL)	768.8	9						22	36	13	17	12	18	17	1	7	A-2-4 (0)	
	768.2	10	3 4 11	23	89	SS-7A SS-7B	- 2.00	- 7	- 9	- 12	- 38	- 34	- 33	- 19	- 14	14 16	A-2-4 (V) A-6a (9)	
VERY STIFF, TAN AND GRAY, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, MOIST		EOB																

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: AUGER CUTTINGS MIXED WITH 0.5 BAG BENTONITE CHIPS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 1/16/15 12:02 - C:\PWWORKING\PITT\D1020532\20140608_HAM-71-3.81_ROADWAY_UPDATED.GPJ

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Redesignated B-026-1-65

LOG OF BORING

MICROFILMED
SEP 20 1982

DATE STARTED 9-20-65 SAMPLER: TYPE Split Spoon DIA. 2" O.D. WATER ELEVATION
DATE COMPLETED 9-20-65 CASING: LENGTH None DIA. IMMEDIATE 52' (715.6)
BORING NUMBER B-26-1 CORE BARREL: TYPE NXM SIZE 2-1/8" I.D. AFTER HRS. Backfilled

STATION & OFFSET 256+21, 147' Left SURFACE ELEVATION 767.6

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
767.6	0											
~~767.3~~			Concrete	Visual								
766.1	2	2-7	Rubble fill, cinders	1	Visual							
		7	Brown gravelly lean clay, moist - medium stiff	2	35	9	9	23	24	32	15	14
	4											
762.6												
	6	7-8-15	Brown and gray gravelly sandy lean clay, moist - very stiff	3	24	7	13	28	28	28	13	13
	8	ST		S-1								
	10	8-9-13	do do do	4	30	7	11	26	26	34	20	14
	12	ST		S-2								
753.6	14	5-7-8	do do do	5	19	9	13	32	27	27	12	16
	16	ST		S-3								
	18	3-4-5	Gray gravelly, sandy, silty clay, moist - medium stiff	6	17	10	13	34	26	23	9	14
	20	3-4-6	do do do	7	20	8	13	32	27	24	10	15
	22	ST		S-4								
	24	4-5-6	Gray sandy silty clay, moist - medium stiff	8	12	10	14	33	31	25	10	14
	26	ST		S-5								
	28	3-4-7	do do do	9	14	8	14	35	29	25	11	18
	30											
735.6	32	ST		S-6								
	34	5-4-5	Gravy lean clay, trace organics, moist - medium stiff	10	11	6	7	42	34	33	16	27
733.1	36	ST		S-7								
	38	5-7-7	Gray gravelly, sandy lean clay, moist -medium stiff	11	16	10	13	32	29	25	12	16
	40											
726.1	42	ST		S-8								
	44	5-7-9	Gray gravelly, silty clay, moist - medium stiff	12	16	6	11	37	30	26	12	13
721.1	46											
	48	ST		S-9								
	50	4-7-7	Dark gray silty clay, slightly organics, moist - medium stiff	13	0	0	1	54	45	39	20	26
715.6	52											
713.6	54	22-65	Gray shale	14	Visual							
	56		Interbedded gray shale and limestone (approx. 60% shale, 40% limestone), shale soft and rubbly to tough, slightly calcareous to calcareous soft shale seam in evidence near center of run. Limestone occurs in 1/2" to 5-1/2" layers, fine-grained non-fossiliferous to crystalline fossiliferous, hard.										
	58	87%										
708.6	60	% Recovery	Boring Completed									

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Redesignated B-026-2-65

LOG OF BORING

DATE STARTED 9-17-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 9-17-65 CASING: LENGTH None DIA. IMMEDIATE
BORING NUMBER B-26-2 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER 4 DAYS 1' (758.6)

STATION & OFFSET 257+66, 88'Left SURFACE ELEVATION 759.6

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
759.6	0											
758.1	2	6-8-10	Rubble fill, gravel and cinders	1	Visual							
	4	7-7-7	Brown lean clay, moist - stiff	2	8	5	8	40	39	39	23	17
	6	5-5-5	Brown sandy lean clay, moist - stiff	3	9	8	13	37	33	30	15	20
749.6	8											
	10	2-2-3	Brown silty clay, moist - medium stiff	4	0	1	2	60	37	33	15	28
747.1	12											
	14	2-2-3	Dark gray organic silt, moist - soft	5	0	2	0	77	21	38	8	56
743.1	16											
	18	2-3-3	Gray gravelly lean clay, moist - medium stiff	6	26	1	2	28	43	45	27	28
740.6	20	2-2-2	Gray silty clay, trace organic, moist - soft	7	0	1	1	65	33	35	12	30
738.1	22	7	Gray lean clay, moist - soft	8	1	1	2	38	58	47	30	29
737.6		65	Gray shale	9	Visual							
737.1	24		Interbedded gray shale and gray limestone (approx. 65% shale, 35% limestone); shale essentially medium tough to tough, with possible soft seams in areas of fracture; calcareous, limestone occurs in 1/2" to 4" layers, fossiliferous and crystalline, hard, with fracturing indicated at top and bottom of section, and 20" from bottom. (Poor recovery in first 5' of run).									
	26	80%										
	28											
	30	93%										
727.1	32											
	34	% Recovery	Boring Completed									

Redesignated B-026-3-65

LOG OF BORING

DATE STARTED 9-22-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 9-22-65 CASING: LENGTH None DIA. IMMEDIATE 17' (741.1)
BORING NUMBER B-26-3 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER HRS. Backfilled

STATION & OFFSET 257+01, on Centerline SURFACE ELEVATION 758.1

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
758.1	0		Concrete									
757.6		2	Rubble, fill, cinders	1	Visual							
757.1	2	3-7	Brown silty clay, moist - stiff	2	1	2	8	31	58	51	31	20
	4											
752.6	6	6-10-27	Brown sandy lean clay, moist - stiff	3	6	8	14	40	32	31	15	14
	8											
749.1	10	6-7-9	Brown silty clay, moist - stiff	4	0	4	6	45	45	38	20	22
	12											
744.1	14	3-4-4	Brown and gray silty clay, very moist - medium stiff	5	0	1	2	71	26	29	9	23
741.1	16											
	18	4-12	Gray silty clay, moist - medium stiff	6	0	3	2	42	53	37	20	19
739.1	20	52	Gray shale	7	Visual							
737.6	22	67%	Interbedded gray shale and gray limestone (approx. 55% shale, 45% limestone); shale, medium tough to tough, calcareous, limestone occurs in 1/2" to 5" layers, fossiliferous and crystalline, hard, some iron-oxide staining exhibited near top of run									
734.6	24	25%	Gray shale and gray limestone, (approx. 75% shale, 25% limestone), poor recovery--3"layer limestone recovered, fossiliferous and crystalline, hard. Fracturing in evidence									
733.6	26											
	28	88%	Interbedded gray shale and gray limestone, (approx. 60% shale, 40% limestone); Poor recovery from 28.5 to 29.5', approx. 30%. Shale essentially tough, calcareous; limestone occurs in 1/2" to 5"layers, fossiliferous and crystalline, hard. Fracturing exhibited at approx. 28.0 and 29.5'.									
	30	33%										
727.6		100%										
	32	% Recovery	Boring Completed									
	34											

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MASTER COPY
HAM-71-2.74

6
26
6
19

Redesignated B-026-4-65

LOG OF BORING

DATE STARTED 9-16-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 9-17-65 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 5' (748.0)
BORING NUMBER B-26-4 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER 10 DAYS 1.8'(751.2)

STATION & OFFSET 258+47, 89'Right SURFACE ELEVATION 753.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
753.0	0											
	2	4-6-11	Rubble, fill , cinders	1	Visual							
	4											
748.0	6	3-3-4	Brown silty clay, some cinders, (fill) moist - medium stiff	2	10	10	9	33	38	35	17	28
	8											
743.0	10											
	12	3-4-2	Brown and gray silty clay, (fill) moist - medium stiff	3	8	6	8	34	44	39	22	32
	14											
	16	1-2-4	do do do	4	1	1	3	45	50	39	20	25
736.0	18	5-9-40	Brown silty clay, moist - stiff	5	4	2	2	50	42	33	16	18
733.0	20											
732.0		45	Brown and gray weathered shale	6	Visual							
	22		Interbedded gray shale and gray limestone (approx. 60%shale, 40% limestone), shale essentially tough, some hard, calcareous, and fossiliferous; limestone occurs in 1/2'to 5" layers, fossiliferous and impure-crystalline, hard, small fracture with iron-oxide staining exhibited at approx. 23.0'.									
	24	80%										
	26											
	28	100%										
	30											
722.0												
	32	% Recovery	Boring Completed									

Redesignated B-026-5-65

LOG OF BORING

DATE STARTED 9-16-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 9-17-65 CASING: LENGTH None DIA. IMMEDIATE 25' (728.3)
BORING NUMBER B-26-5 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER 4 DAYS 15.5'(737.8)

STATION & OFFSET 258+22, 182'Right SURFACE ELEVATION 753.3

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
753.3	0											
	2	11-15-18	Rubble, fill cinders, brick	1	Visual							
750.3	4											
	6											
	8	5-4-4	Brown lean clay with rock fragments and limestone boulder, (fill) moist - stiff	2	Visual							
	10	35-4-5	do do do	3	2	6	11	32	49	45	26	28
739.3	12	2-3-4	Brown lean clay with rock fragments, (fill) moist - medium stiff	4	1	4	12	34	49	42	24	17
	14											
	16	2-2-3	do do do	5	4	6	12	32	46	40	22	24
	18	2-2-4	do do do	6	1	4	12	36	47	44	27	25
734.8	20	2-2-3	Gray and brown silty clay, trace organic, (fill) moist - medium stiff	7	0	1	2	60	37	30	13	26
731.3	22	2-4	Brown and gray lean clay, (fill) moist - medium stiff	8	1	3	10	30	56	48	30	21
		5	Gray silty clay, moist - medium stiff	9	2	3	5	51	39	37	16	26
	24	8-9-8	Gray silty clay, moist - stiff	10	3	5	7	44	41	34	16	24
727.3	26											
		20-70	Gray shale	11		Visual						
725.8	28											
	30		Interbedded gray shale and gray limestone (approx. 65% shale, 35% limestone); shale, tough to hard, calcareous, somewhat fossiliferous; limestone occurs in 3/4" to 6" layers, crystalline and fine-grained, fossiliferous, hard									
	32	90%										
720.8	34	% Recovery	Boring Completed									

FOUNDATION BORING SHEET NO. FB-6

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Redesignated B-026-7-65

LOG OF BORING

DATE STARTED 9-23-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 9-23-65 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None
BORING NUMBER B-26-7 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER 4 DAYS 9.0'(744.0)

STATION & OFFSET 258+81, 300'Right SURFACE ELEVATION 753.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
753.0	0											
	2	3-6-4	Rubble fill, cinders	1	Visual							
748.0	4											
	6	3-4-7	Brown silty clay with rock fragments, (fill) moist - medium stiff	2	1	2	8	32	57	50	32	26
743.0	8											
	10	3-8-5	Brown lean clay with some cinders, (fill) moist - medium stiff	3	17	4	9	31	39	46	28	27
740.5	12											
	14	3-3-4	Brown silt, moist - medium stiff	4	0	2	8	58	32	23	2	27
738.0	16											
	18	9-14-16	Brown silty clay with rock fragments, moist - stiff	5	24	7	5	34	30	36	18	20
735.5	20	80%	Interbedded brown weathered shale and gray limestone, (approx. 75% shale, 25% limestone); shale medium tough to tough, calcareous; limestone occurs in 1/2"to 3-1/2"layers, fossiliferous and impure crystalline, hard									
731.5	22											
729.0	24											
	26	100%	Interbedded gray limestone and gray and brown weathered shale, (approx. 55% limestone, 45% shale); shale rubbly to tough, calcareous; soft seam (1") in evidence at 22.7'. Limestone occurs in 1/2"to 4" layers, fossiliferous, impure crystalline to crystalline, hard. Fracturing exhibited at 22.5' and 22.8'									
725.5	28											
	30		Interbedded gray shale and gray limestone, (approx. 65% shale, 35% limestone), shale medium tough to tough, calcareous; limestone occurs in 3/4" to 5-1/2"layers, fossiliferous, impure crystalline to crystalline, hard.									
		% Recovery	Boring Completed									

Redesignated B-026-9-65

LOG OF BORING

DATE STARTED 9-17-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 9-17-65 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None
BORING NUMBER B-26-9 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER _____ HRS. _____

STATION & OFFSET 259+46, 410'Right SURFACE ELEVATION 755.2

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
755.2	0											
	2	1-2-2	Clay and cinders, (fill) moist -	1	Visual							
	4											
750.2	6	4-5-4	Gray silty clay with some broken limestone, (fill) moist - medium stiff	2	15	4	4	41	36	33	15	19
	8	4-5-4	Gray and brown silty clay with some broken limestone, moist - medium stiff	3	23	5	3	39	30	32	15	18
745.2	10											
743.2	12	2-4-5	Brown silty clay, (fill) moist - medium stiff	4	0	1	2	35	62	59	36	24
	14	7-15-11	Brown and gray silty clay with limestone fragments, moist - stiff	5	22	4	3	29	42	48	26	17
740.2	16											
	18	60%	Interbedded brown highly weathered shale and gray limestone, (approx. 65% shale, 35% limestone), shale soft to medium tough, calcareous; limestone occurs in 1" to 7-1/2" layers, fossiliferous, impure-crystalline, hard. Fracturing, with iron-oxide staining, exhibited in bottom-half of run.									
735.2	20											
	22	67%	Interbedded brown and gray weathered shale and gray limestone (approx. 65% shale, 35% limestone); shale medium tough to tough, calcareous; limestone occurs in 1-1/2" to 6" layers, fossiliferous, impure-crystalline, hard. Fracture exhibited at top of section.									
732.2	24											
730.2	26	100%	Interbedded gray limestone and gray shale, (approx. 60% limestone, 40% shale). Shale essentially tough, calcareous; limestone occurs in 1/4" to 6" layers, trace fossiliferous, impure-crystalline to crystalline, hard. Possible fracturing at bottom of section.									
	28											
	30	% Recovery	Boring Completed									
	32											
	34											

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Redesignated B-026-10-65

LOG OF BORING

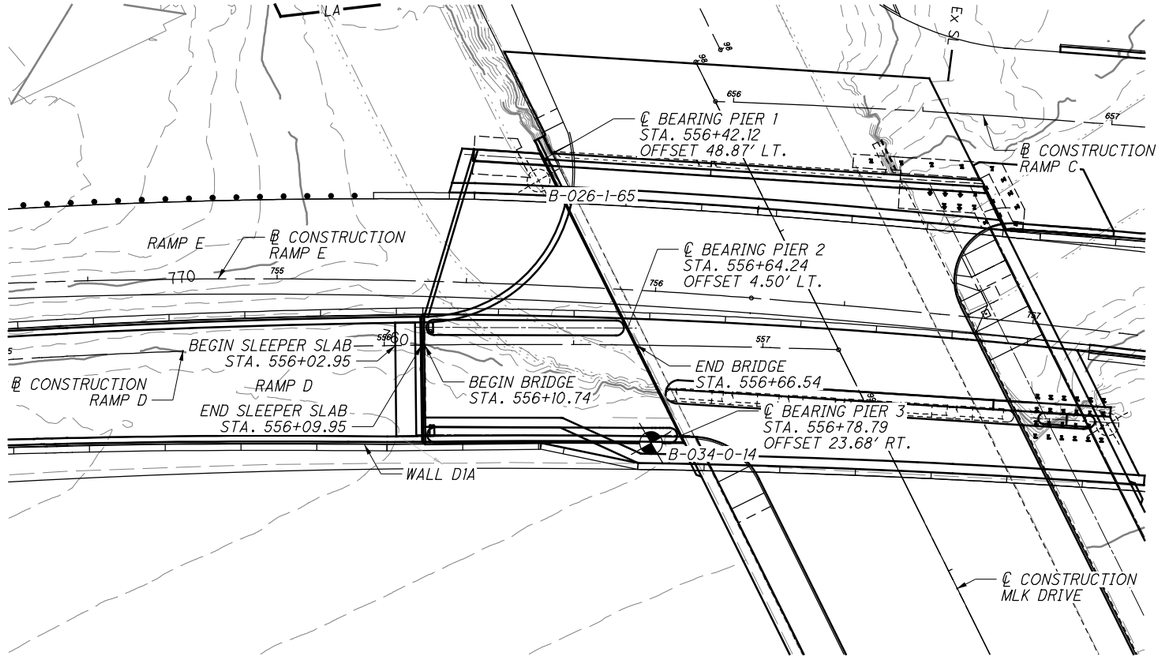
DATE STARTED 9-20-65 SAMPLER: TYPE SS DIA. 2" O.D. WATER ELEVATION

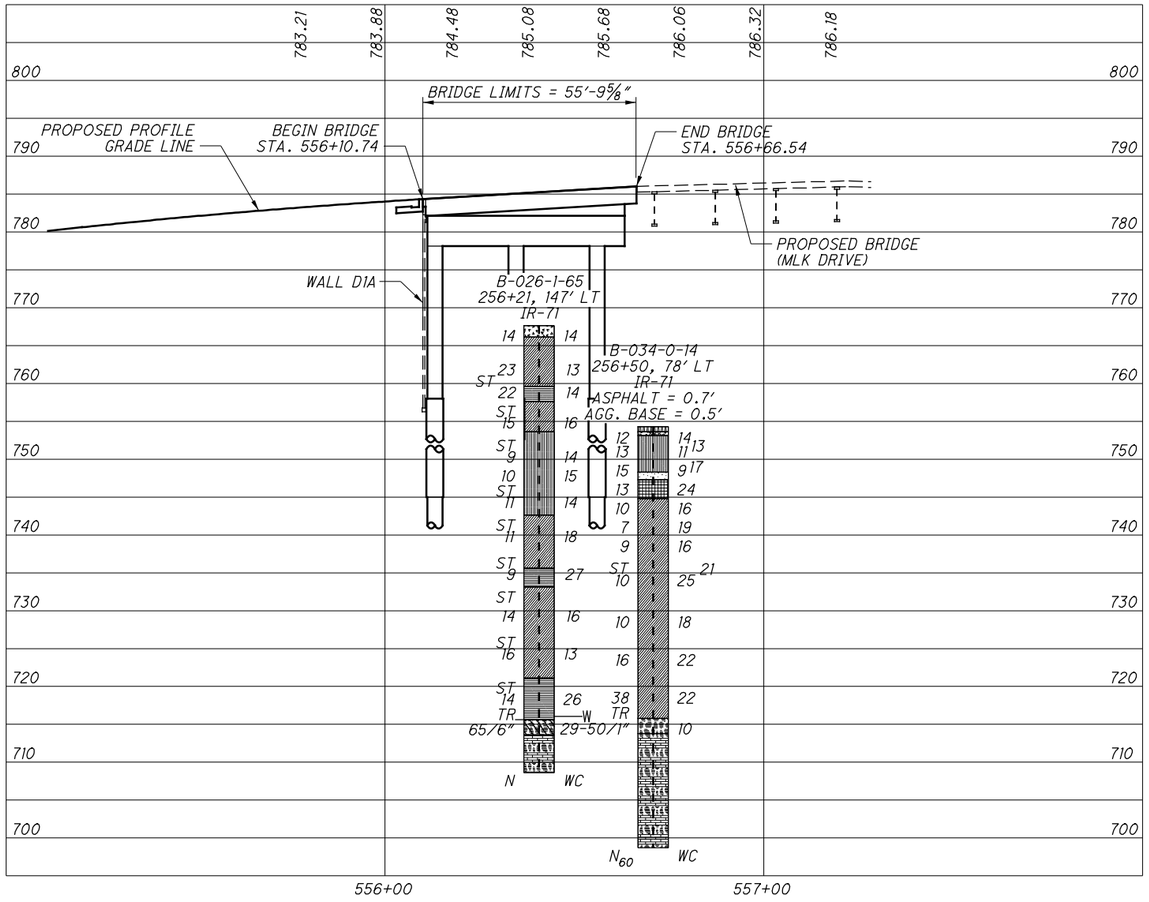
DATE COMPLETED 9-23-65 CASING: LENGTH HS A DIA. 3.5" I.D. IMMEDIATE 20' (731.9)

BORING NUMBER B 26-10 CORE BARREL: TYPE NXM SIZE 2 1/8" I.D. AFTER 4 days 20' (731.9)

STATION & OFFSET 260+44, 417' Right SURFACE ELEVATION 751.9

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
751.9	0											
	2	4-6-6	Rubble fill, cinders	1	Visual							
747.9	4											
	6	ST		S 1								
	8	3-4-5	Brown lean clay (fill) with some broken rock, moist - medium stiff	2	19	3	4	32	42	46	26	22
	10											
	12	ST		S 2								
	14	3-3-6	Brown and gray lean clay with shale fragments, trace of cinders (fill) moist - medium stiff	3	25	5	4	29	37	45	26	25
	16											
	18	ST 4-6-5	Gray and brown silty clay with shale and rock fragments, (fill) moist - medium stiff	S 3 4	23	3	4	35	35	36	17	20
	20											
	22	ST		S 4								
	24	8-6-8	Gray silty clay with shale fragments (fill) moist - medium stiff	5	7	4	3	50	36	33	16	17
	26											
724.9		ST		S 5								
	28	8-28-20	Brown and gray silty clay and limestone fragments (fill), moist - medium stiff	6	14	8	5	40	33	34	15	20
	30											
720.9	32		Interbedded brown highly weathered shale and gray limestone (approx. 90% shale, 10% limestone) Shale soft to medium tough, calcareous; limestone occurs in 1/2" to 1-1/2" layers, fossiliferous and impure crystalline, hard									
	34	43%										
717.4												
715.9	36	100%	Interbedded gray limestone and gray shale (approx 60% limestone, 40% shale) Shale tough, calcareous; limestone occurs in 1/4" to 2-1/2" layers, fossiliferous and impure crystalline, hard, fracturing exhibited at top of section.									
	38	% Recovery										
	40		Boring completed									





HORIZONTAL SCALE IN FEET
0 10 20 40

DRAWN JTB
CHECKED SPR

STRUCTURE FOUNDATION EXPLORATION
BRIDGE NO. HAM-71-0381W (RAMP D OVER IR 71)

HAM-71-3.81

101
175

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PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / J. SMITH	DRILL RIG: CME 55 TRACK - TA	STATION / OFFSET: 256+50, 78 LT	EXPLORATION ID B-034-0-14
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: HDR / S. REED	HAMMER: CME AUTOMATIC	ALIGNMENT: IR-71	
PID: 77628 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 7/21/13	ELEVATION: 754.3 (MSL) EOB: 55.7 ft.	PAGE 1 OF 1
START: 5/16/14 END: 5/16/14	SAMPLING METHOD: SPT/ST/NQ	ENERGY RATIO (%): 88.5	COORD: 419502.381 N, 1403178.235 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 754.3	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
8" ASPHALT PAVEMENT	753.6																	
6" AGGREGATE BASE	753.2						-	-	-	-	-	-	-	-	-	-	A-1-b (V)	
VERY STIFF, BROWN AND GRAY, **SANDY SILT**, SOME CLAY, LITTLE GRAVEL, DAMP (FILL)		1	4 3 5	12	53	SS-1	3.50	12	12	14	30	32	27	17	10	14	A-4a (5)	
		3	7 5 4	13	60	SS-2A	-	-	-	-	-	-	-	-	-	13	A-4a (V)	
						SS-2B	4.50	14	12	14	30	30	27	17	10	11	A-4a (5)	
		5	4 6 4	15	53	SS-3A	0.75	-	-	-	-	-	-	-	-	17	A-4a (V)	
	748.3					SS-3B	-	-	-	-	-	-	-	-	-	9	A-3a (V)	
LOOSE, GRAY, **COARSE AND FINE SAND**, MOIST (FILL)	747.3																	
STIFF, GRAY AND OLIVE BROWN (MOTTLED), **CLAY**, SOME SILT, LITTLE SAND, TRACE STONE FRAGMENTS, MOIST		8	8 4 5	13	47	SS-4	1.25	4	7	11	22	56	50	19	31	24	A-7-6 (18)	
	744.8																	
MEDIUM STIFF, GRAY, **SILT AND CLAY**, LITTLE SAND, TRACE GRAVEL, MOIST		10	2 3 4	10	13	SS-5	1.00	-	-	-	-	-	-	-	-	16	A-6a (V)	
@18.0 - Qu (ST-1) = 2640 psf		13	1 2 3	7	100	SS-6	0.50	-	-	-	-	-	-	-	-	19	A-6a (V)	
@ 30' - trace sand		15	2 3 3	9	100	SS-7	0.50	-	-	-	-	-	-	-	-	16	A-6a (V)	
		18			100	ST-1	3.50	3	5	10	44	38	29	18	11	21	A-6a (8)	
		20	4 3 4	10	67	SS-8	0.50	-	-	-	-	-	-	-	-	25	A-6a (V)	
		25	2 3 4	10	100	SS-9	0.50	-	-	-	-	-	-	-	-	18	A-6a (V)	
		30	3 4 7	16	100	SS-10	1.25	3	3	5	44	45	34	21	13	22	A-6a (9)	
		35	17 15 11	38	33	SS-11	0.75	-	-	-	-	-	-	-	-	22	A-6a (V)	
	715.8																	
SHALE, GRAY, FISSILE. (BEDROCK)		TR																
	713.8	40	29 50/1"	-	100	SS-12	-	-	-	-	-	-	-	-	-	10	Rock (V)	
INTERBEDDED SHALE (64%) AND LIMESTONE (36%), RQD 83%; **SHALE**, GRAY, UNWEATHERED TO SLIGHTLY WEATHERED, VERY WEAK, THIN BEDDED; **LIMESTONE**, GRAY, UNWEATHERED, MODERATELY STRONG TO STRONG, THIN TO MEDIUM BEDDED. (BEDROCK)		41	73		100	NQ-1											CORE	
@42.6' - Qu (NQ-2) = 78 psi		44	86		100	NQ-2											CORE	
		51	84		100	NQ-3											CORE	
	698.6																	
		EOB																

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 15 BAGS BENTONITE CHIPS

STANDARD ODOT SOIL BORING LOG (11 X 17) OH DOT.GDT - 2/9/15 23:05 - C:\PWWORKING\PITT\D1025182\20140608_HAM-71-3.81_STRUCTURES_UPDATED.GPJ

102 175	HAM-71-3.81	STRUCTURE FOUNDATION EXPLORATION BRIDGE NO. HAM-71-0381W (RAMP D OVER IR 71)	DRAWN AFS CHECKED DMV

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Redesignated B-026-1-65

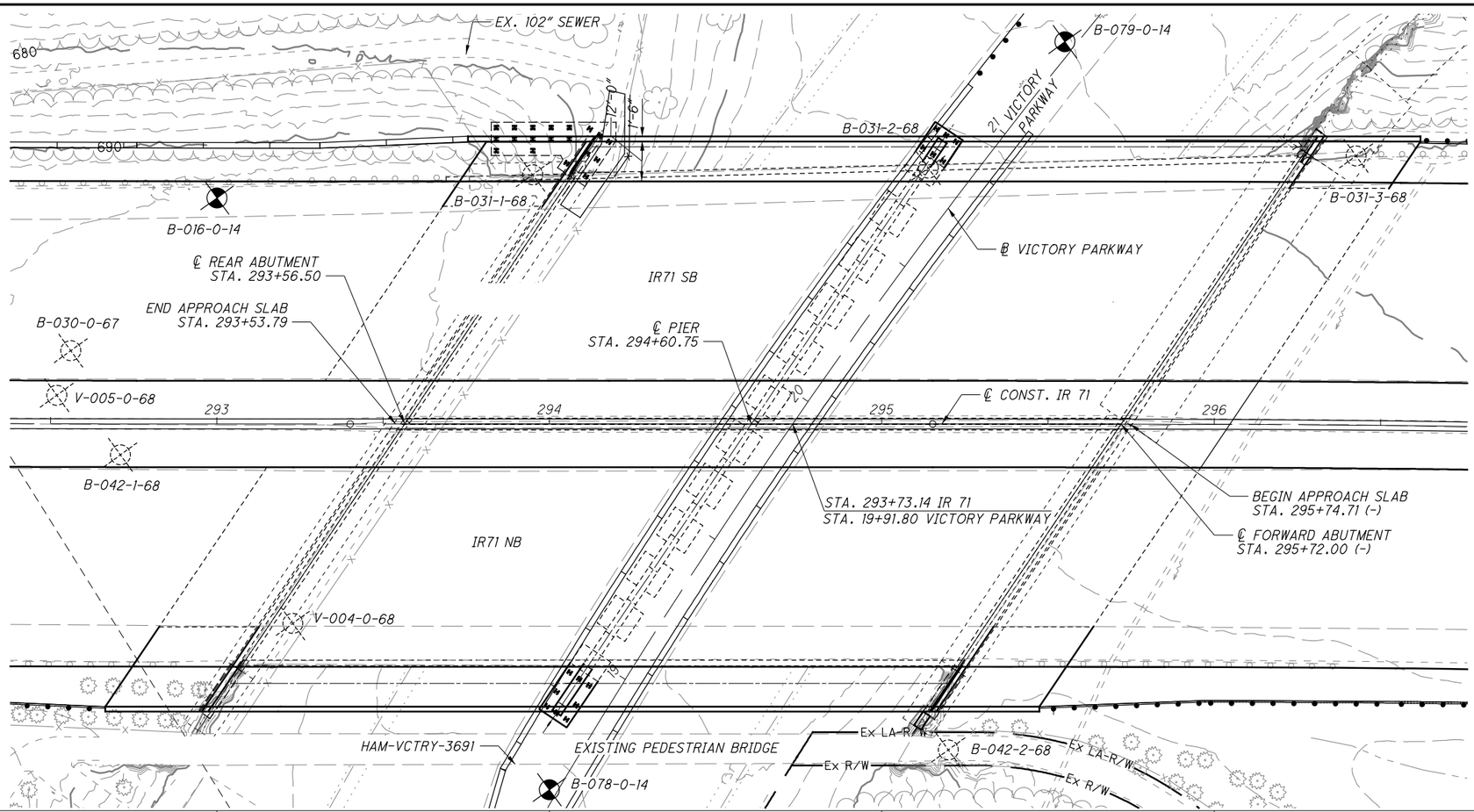
LOG OF BORING

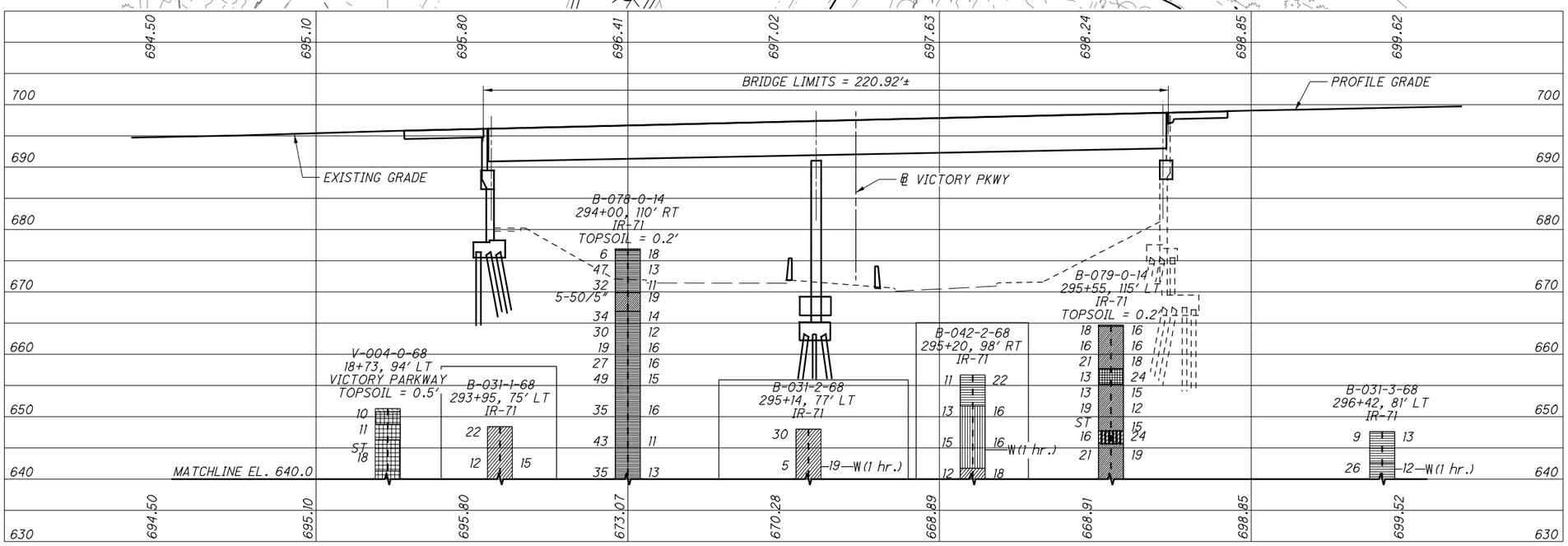
MICROFILMED
SEP 20 1982

DATE STARTED 9-20-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 9-20-65 CASING: LENGTH None DIA. IMMEDIATE 52' (715.6)
BORING NUMBER B-26-1 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER HRS. Backfilled

STATION & OFFSET 256+21, 147' Left SURFACE ELEVATION 767.6

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
767.6	0											
~~767.3~~			Concrete	Visual								
766.1		2-7	Rubble fill, cinders	1	Visual							
	2	7	Brown gravelly lean clay, moist - medium stiff	2	35	9	9	23	24	32	15	14
	4											
762.6												
	6	7-8-15	Brown and gray gravelly sandy lean clay, moist - very stiff	3	24	7	13	28	28	28	13	13
	8	ST		S-1								
	10	8-9-13	do do do	4	30	7	11	26	26	34	20	14
	12	ST		S-2								
753.6	14	5-7-8	do do do	5	19	9	13	32	27	27	12	16
	16	ST		S-3								
	18	3-4-5	Gray gravelly, sandy, silty clay, moist - medium stiff	6	17	10	13	34	26	23	9	14
	20	3-4-6	do do do	7	20	8	13	32	27	24	10	15
	22	ST		S-4								
	24	4-5-6	Gray sandy silty clay, moist - medium stiff	8	12	10	14	33	31	25	10	14
	26	ST		S-5								
	28	3-4-7	do do do	9	14	8	14	35	29	25	11	18
	30											
	32	ST		S-6								
735.6	34	5-4-5	Gravy lean clay, trace organics, moist - medium stiff	10	11	6	7	42	34	33	16	27
733.1	36	ST		S-7								
	38	5-7-7	Gray gravelly, sandy lean clay, moist -medium stiff	11	16	10	13	32	29	25	12	16
	40											
726.1	42	ST		S-8								
	44	5-7-9	Gray gravelly, silty clay, moist - medium stiff	12	16	6	11	37	30	26	12	13
721.1	46											
	48	ST		S-9								
	50	4-7-7	Dark gray silty clay, slightly organics, moist - medium stiff	13	0	0	1	54	45	39	20	26
715.6	52											
713.6	54	22-65	Gray shale	14	Visual							
	56		Interbedded gray shale and limestone (approx. 60% shale, 40% limestone), shale soft and rubbly to tough, slightly calcareous to calcareous soft shale seam in evidence near center of run. Limestone occurs in 1/2" to 5-1/2"layers, fine-grained non-fossiliferous to crystalline fossiliferous, hard.										
	58	87%										
708.6	60	% Recovery	Boring Completed									





STRUCTURE FOUNDATION EXPLORATION

BRIDGE NO. HAM-71-0450C (IR 71 OVER VICTORY PARKWAY

HAM-71-3.81

DRAWN JTB CHECKED SPR

HORIZONTAL SCALE IN FEET
0 10 20 40

104
175

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694.50 695.10 695.80 696.41 697.02 697.63 698.24 698.85 699.62

V-004-0-68
18+73, 94' LT
VICTORY PARKWAY
TOPSOIL = 0.5'

B-031-1-68
293+95, 75' LT
IR-71

B-078-0-14
294+00, 110' RT
IR-71
TOPSOIL = 0.2'

B-031-2-68
295+14, 77' LT

B-042-2-68
295+20, 98' RT

B-079-0-14
295+55, 115' LT
IR-71
TOPSOIL = 0.2'

B-031-3-68
296+42, 81' LT

MATCHLINE EL. 640.0

640 630 620 610 600 590 580 570

95/6" TR / REFUSAL
N WC

53/6"
N WC

16-50/4"
N_{60} WC

27-75/6" TR
N WC

25-50/4" TR
N_{60} WC

38-63/6" TR
N WC

694.50 695.10 695.80 673.07 670.28 668.89 668.91 698.85 699.52

293+00 294+00 295+00 296+00

HORIZONTAL SCALE IN FEET
0 10 20 40

DRAWN JTB
CHECKED SPR

STRUCTURE FOUNDATION EXPLORATION
BRIDGE NO. HAM-71-0450C (IR 71 OVER VICTORY PARKWAY

HAM-71-3.81

105
175

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PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / J. SMITH	DRILL RIG: CME 55 TRACK - TA	STATION / OFFSET: 294+00, 110 RT
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: HDR / S. REED	HAMMER: CME AUTOMATIC	ALIGNMENT: IR-71
PID: 77628 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 7/21/13	ELEVATION: 676.9 (MSL) EOB: 81.0 ft.
START: 5/22/14 END: 5/22/14	SAMPLING METHOD: SPT/ST/NQ	ENERGY RATIO (%): 88.5	COORD: 421787.241 N, 1406155.761 E

EXPLORATION ID B-078-0-14

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
TOPSOIL	676.7		3 3 1	6	60	SS-1	3.50	-	-	-	-	-	-	-	-	18	A-6b (V)	
STIFF TO VERY STIFF, BROWN, **SILTY CLAY**, "AND" GRAVEL, LITTLE SAND, STONE AND BRICK FRAGMENTS, MOIST (FILL)		2.5	13 20 12	47	67	SS-2	4.5+	40	9	9	19	23	35	18	17	13	A-6b (3)	
	669.9	5.0	17 12 10	32	13	SS-3	2.00	-	-	-	-	-	-	-	-	11	A-6b (V)	
MEDIUM STIFF, BLUE-GRAY, **SILT AND CLAY**, LITTLE SAND, LITTLE GRAVEL, MOIST (FILL)		7.5	5 50/5"	-	55	SS-4	0.50	11	6	8	36	39	33	18	15	19	A-6a (10)	
	666.9	10.0	8 11 12	34	93	SS-5	4.5+	-	-	-	-	-	-	-	-	14	A-6b (V)	
VERY STIFF TO HARD, BROWN AND GRAY, **SILTY CLAY**, LITTLE SAND, TRACE GRAVEL, OCCASIONAL LIMESTONE AND SHALE FRAGMENTS, DAMP @25' - dark gray and black		12.5	5 9 11	30	93	SS-6	4.5+	-	-	-	-	-	-	-	-	12	A-6b (V)	
@40' - stiff		15.0	5 5 8	19	73	SS-7	2.50	-	-	-	-	-	-	-	-	16	A-6b (V)	
		17.5	6 8 10	27	100	SS-8	2.50	-	-	-	-	-	-	-	-	16	A-6b (V)	
		20.0	40 20 13	49	87	SS-9	3.25	4	4	7	41	44	37	19	18	15	A-6b (11)	
		22.5																
		25.0	8 10 14	35	53	SS-10	3.10	-	-	-	-	-	-	-	-	16	A-6b (V)	
		27.5																
		30.0	15 15 14	43	13	SS-11	-	-	-	-	-	-	-	-	-	11	A-6b (V)	
		32.5																
		35.0	6 10 14	35	47	SS-12	3.50	-	-	-	-	-	-	-	-	13	A-6b (V)	
		37.5																
		40.0	3 3 6	13	13	SS-13	1.75	-	-	-	-	-	-	-	-	12	A-6b (V)	
	634.9	42.5																
SOFT TO MEDIUM STIFF, GRAY, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, MOIST (LACUSTRINE)		45.0			100	ST-1	-	5	6	21	34	34	27	15	12	27	A-6a (7)	
	629.9		W															
SOFT TO MEDIUM STIFF, GRAY, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, MOIST TO WET (LACUSTRINE)		47.5	3 3 2	7	100	SS-14	0.25	3	5	27	34	31	-	-	-	-	A-4a (V)	
	626.9	50.0	1 1 2	4	100	SS-15	0.25	0	1	5	50	44	34	20	14	27	A-6a (10)	
SOFT, GRAY, **SILT AND CLAY**, TRACE SAND, SLIGHT TO OCCASIONAL VARVES, WET (LACUSTRINE)		52.5																
		55.0	2 2 2	6	100	SS-16	0.25	0	3	6	56	35	32	21	11	27	A-6a (8)	
	618.9	57.5																
SOFT, GRAY, **SILTY CLAY**, TRACE SAND, VARVED, WET (LACUSTRINE)		60.0	2 2 3	7	100	SS-17	0.25	0	1	1	39	59	38	22	16	29	A-6b (10)	
	614.9	62.5																
VERY STIFF, GREENISH GRAY, **SANDY SILT**, SOME GRAVEL, LITTLE CLAY, MOIST					100	ST-2	1.00	31	15	11	24	19	27	17	10	24	A-4a (2)	
		65.0	8 10 13	34	47	SS-18	3.00	-	-	-	-	-	-	-	-	19	A-4a (V)	
	608.4	67.5	TR															
SHALE, GRAY. (BEDROCK)																		
	606.1	70.0	16 50/4"	-	100	SS-19	-	-	-	-	-	-	-	-	-	12	Rock (V)	
SHALE, GRAY, UNWEATHERED, VERY WEAK, THICK BEDDED, ARGILLACEOUS; RQD 74%. (BEDROCK)			67		100	NQ-1											CORE	
@ 72' - 72', QU = 62.7 psi		72.5																
@ 73.7' - 74.2' - limestone seam		75.0																
@ 79.0' - 79.2' - limestone seam		77.5	75		100	NQ-2											CORE	
	595.9	80.0	EOB															

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 100 LB. BENTONITE POWDER; BACKFILLED WITH 376 LB. CEMENT; MIXED 75 GAL. WATER

STANDARD ODOT SOIL BORING LOG (11 X 17) - OH DOT.GDT - 2/12/15 10:16 - C:\PWWORKING\PITT\D1025182\20140608_HAM-71-3.81_STRUCTURES_UPDATED.GPJ

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PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / M. LOZIER	DRILL RIG: CME 55 TRACK - TA	STATION / OFFSET: 295+55, 115 LT	EXPLORATION ID B-079-0-14
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: HDR / S. REED	HAMMER: CME AUTOMATIC	ALIGNMENT: IR-71	
PID: 77628 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 7/21/13	ELEVATION: 664.7 (MSL) EOB: 57.0 ft.	PAGE 1 OF 1
START: 5/23/14 END: 5/23/14	SAMPLING METHOD: SPT/ST/NQ	ENERGY RATIO (%): 88.5	COORD: 422044.918 N, 1406064.825 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
TOPSOIL	664.5																	
VERY STIFF, BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, MOIST (FILL)			3 5 7	18	75	SS-1	4.5+	-	-	-	-	-	-	-	-	16	A-6a (V)	
			5 6 5	16	87	SS-2	3.50	5	7	14	37	37	34	19	15	16	A-6a (10)	
			6 6 8	21	80	SS-3	4.00	-	-	-	-	-	-	-	-	18	A-6a (V)	
	657.7																	
STIFF, BROWN, **CLAY**, "AND" SILT, LITTLE SAND, TRACE GRAVEL, BRICK FRAGMENTS, MOIST (FILL)			2 3 6	13	100	SS-4	1.60	1	2	9	37	51	46	20	26	24	A-7-6 (16)	
	655.2																	
STIFF TO VERY STIFF, BROWN AND GRAY, **SILT AND CLAY**, SOME SAND, LITTLE GRAVEL, MOIST (FILL)			2 3 6	13	100	SS-5	2.50	-	-	-	-	-	-	-	-	15	A-6a (V)	
			3 7 6	19	100	SS-6	3.25	-	-	-	-	-	-	-	-	12	A-6a (V)	
					54	ST-1	1.25	12	8	14	31	35	33	18	15	15	A-6a (8)	
	647.7																	
MEDIUM STIFF, GREENISH-GRAY, **ELASTIC CLAY**, SOME SILT, LITTLE SAND, TRACE GRAVEL, MOIST (FILL)			4 5 6	16	60	SS-7	0.25	7	4	7	33	49	42	31	11	24	A-7-5 (9)	
	645.7																	
STIFF, BROWN, TRACE GRAY, **SILT AND CLAY**, LITTLE SAND, TRACE GRAVEL, MOIST			8 6 8	21	100	SS-8	1.50	3	3	14	42	38	33	19	14	19	A-6a (10)	
	639.7																	
MEDIUM STIFF, GRAY, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, MOIST (LACUSTRINE)		W	4 6 5	16	100	SS-9	0.50	1	4	40	34	21	22	20	2	18	A-4a (4)	
	636.7																	
STIFF, GRAY, **SILT AND CLAY**, LITTLE SAND, TRACE GRAVEL, MOIST TO WET (LACUSTRINE)		▼	4 5 10	22	100	SS-10	1.25	2	4	15	40	39	32	17	15	19	A-6a (10)	
	631.7																	
MEDIUM STIFF, GRAY, **SILT**, "AND" CLAY, TRACE SAND, VARVED, MOIST TO WET (LACUSTRINE)			0 6 3	13	100	SS-11	0.75	0	0	6	58	36	31	22	9	28	A-4b (8)	
	626.7																	
MEDIUM STIFF, GRAY, **SILTY CLAY**, TRACE SAND, VARVED, MOIST TO WET (LACUSTRINE)			0 1 4	7	100	SS-12	0.75	0	0	3	39	58	39	22	17	31	A-6b (11)	
	619.5																	
VERY STIFF, GRAY, **CLAY**, "AND" SILT, TRACE SAND, MOIST (LACUSTRINE)	619.0	TR			100	ST-2	-	0	0	1	35	64	45	26	19	19	A-7-6 (13)	
SHALE, GRAY, WEATHERED. (BEDROCK)	617.6		25 50/4"	-	100	SS-13	-	-	-	-	-	-	-	-	-	19	Rock (V)	
SHALE, GRAY, UNWEATHERED TO SLIGHTLY WEATHERED, VERY WEAK, THICK BEDDED, INTACT; RQD 79%. (BEDROCK)			65/1"	-	100	SS-14	-	-	-	-	-	-	-	-	-	14	Rock (V)	
@ 47.1' - 47.3' - limestone seam			100		100	NQ-1											CORE	
@ 48.5' 48.0', QU = 118 psi																		
@ 50.4' - 50.5' - limestone seam			61		100	NQ-2											CORE	
	607.7	EOB																

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED BENTONITE GROUT

STANDARD ODOT SOIL BORING LOG (11 X 17) OH DOT.GDT - 2/12/15 10:18 - C:\PWWORKING\PITT\D1025182\20140608_HAM-71-3.81_STRUCTURES_UPDATED.GPJ

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HAM-71-3.81

STRUCTURE FOUNDATION EXPLORATION

BRIDGE NO. HAM-71-0450C (IR 71 OVER VICTORY PARKWAY)

DRAWN AFS

CHECKED DMV

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Redesignated B-031-1-68

LOG OF BORING Order No. 99,990 JH 10-2-68

DATE STARTED 7-9-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 7-9-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 15' (633.4')
BORING NUMBER B-31-1 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 3 HRS. 16' (632.4)

STATION & OFFSET 293+95, 75'Left., Northeast Exwy, HAM 71-3.61 SURFACE ELEVATION 648.4'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
648.4	0											
	2	27-10-12	BROWN SILTY SAND AND GRAVEL, (FILL) MOIST - STIFF	1	INSUFFICIENT SAMPLE							
	4											
	6	4-6-6	DO DO DO	2	26	6	20	28	20	29	12	15
638.4	8											
	10											
	12	5-6-8	BROWN SANDY SILTY CLAY, (FILL) MOIST - STIFF	3	15	9	16	37	23	23	8	13
633.4	14											
	16	4-4-5	GRAY SANDY, SILTY CLAY, MOIST - MEDIUM STIFF	4	14	7	14	38	27	23	8	15
	18											
	20											
	22	2-3-4	DO DO	5	0	7	13	37	43	28	12	12
623.4	24											
	26	3-2-3	GRAY SILTY CLAY, MOIST - MEDIUM STIFF	6	0	0	2	54	44	36	16	26
	28											
	30											
	32	2-2-3	DO DO	7	0	5	13	53	29	28	8	26
	34											
613.4												
	36	3-2-4	GRAY CLAYEY SILT, MOIST - MEDIUM STIFF	8	0	0	3	71	26	26	5	28
608.4	38											
	40											
	42	7-8-10	GRAY SILTY CLAY, MOIST - MEDIUM STIFF	9	0	3	10	44	43	32	14	25
	44											
	46	8-8-9	DO DO	10	0	6	9	39	46	32	15	16
598.4	48											
	50											
	52	9-12-11	GRAY CLAYEY GRAVEL, MOIST - MEDIUM DENSE	11	47	9	7	19	18	32	14	22
593.4	54											
592.9	56	53	GRAY SILTY CLAY, MOIST - STIFF	12	0	2	3	45	50	35	13	30
	58	55%	LIGHT GRAY SHALE, CALCAREOUS, NON-FOSSILIFEROUS TO TRACE FOSSILIFEROUS, ESSENTIALLY TOUGH, TRACE POSSIBLE SOFT INDICATED AT TOP OF RECOVERY. 2" LIGHT GRAY LIMESTONE LAYER, CRYSTALLINE, FOSSILIFEROUS, HARD, JOINTED, OCCURS APPROX. 10" FROM BOTTOM OF RECOVERY.									
587.9	60											
	62	% Recovery	BORING COMPLETED									
	64											

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Redesignated B-031-2-68

LOG OF BORING

ORDER No. 99.990 JH 10-2-68

DATE STARTED 7-9-68 SAMPLER: TYPE SPLIT SPOON DIA. 2"O.D. WATER ELEVATION

DATE COMPLETED 7-9-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 14.5' (633.5)

BORING NUMBER B-31-2 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 1 HRS. 6' (642.0)

STATION & OFFSET 295+14, 77' LEFT, NORTHEAST EXWY, HAM 71-3.61 SURFACE ELEVATION 648.0'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
648.0	0											
	2	15-18-12	BROWN SILTY CLAY, BRICK, (FILL) MOIST - MEDIUM STIFF	1	INSUFFICIENT SAMPLE							
	4											
	6	3-2-3	DO DO	2	11	6	5	46	32	30	15	19
638.0	8											
	10											
	12	4-3-5	BROWN CLAYEY, SANDY GRAVEL, (FILL) MOIST - LOOSE	3	30	8	13	24	25	30	16	15
633.5	14											
	16	3-3-4	GRAY SILTY CLAY, MOIST - MEDIUM STIFF	4	0	2	8	60	30	29	12	26
	18											
	20											
	22	3-2-2	DO DO	5	0	2	6	55	37	31	11	28
	24											
	26	2-2-3	DO DO	6	0	0	2	42	56	38	18	29
	28											
	30											
	32	3-4-5	DO DO	7	2	0	2	43	53	37	15	26
	34											
613.0												
612.0	36	27-75	GRAY SHALE, DRY - HARD	8	0	2	2	38	58	43	21	13
	38	44%	LIGHT GRAY SHALE, CALCAREOUS, NON-FOSSILIFEROUS TO FOSSILIFEROUS, MEDIUM TOUGH, SOME TOUGH; SOME PROBABLE SOFT INDICATED AT TOP OF RECOVERY; SOME TILTING OF BEDDING PLANES AND REMOLD CONDITION EXHIBITED, AND SLICKENSIDES DISPLAYED, APPROX. 6" FROM TOP OF RECOVERY; MOVEMENT INDICATED 1½"									
	40											
607.0			LIGHT GRAY LIMESTONE LAYER, CRYSTALLINE, FOSSILIFEROUS HARD, OCCURS 3½" FROM BOTTOM OF RECOVERY.									
	42	% RECOVERY	BORING COMPLETED									
	44											

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Redesignated B-031-3-68

LOG OF BORING

ORDER No. 99,990, 9-24-68 JH

DATE STARTED 7-12-68 SAMPLER: TYPE SPLIT SPOON DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 7-12-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE NONE
BORING NUMBER B-31-3 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 1 HRS. 6' (641.6)

STATION & OFFSET 296+42, 81'LEFT NORTHEAST EXWY, HAM 71-3.61 SURFACE ELEVATION 647.6'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
647.6	0											
	2	4-4-5	BROWN SILTY CLAY, MOIST - MEDIUM STIFF	1	2	5	7	52	34	43	17	13
	4											
642.6	6	12-14-12	BROWN AND GRAY GRAVELLY, SILTY CLAY, MOIST - VERY STIFF	2	16	5	10	28	41	39	19	12
	8											
637.6	10											
	12	16-17-18	BROWN AND GRAY SILTY, SANDY GRAVEL WITH LIMESTONE FRAGMENTS, MOIST - MEDIUM STIFF	3	38	14	13	13	22	38	18	22
633.6	14											
631.6	16	38-63	GRAY SHALE	4	VISUAL							
	18	36%	INTERBEDDED LIGHT GRAY SHALE AND LIGHT GRAY LIMESTONE, APPROX. 85% SHALE, 15% LIMESTONE, SHALE CALCAREOUS, FOSSILIFEROUS, PROBABLE MEDIUM TOUGH TO TOUGH. LIMESTONE OCCURS IN 1" TO 2" LAYERS, IS CRYSTALLINE, FOSSILIFEROUS, HARD; ALL LAYERS INDICATE HIGH-ANGLE JOINTING.									
626.6	20											
	22	% RECOVERY	BORING COMPLETED									
	24											
	26											

Redesignated B-042-2-68

LOG OF BORING

ORDER No. 99,990, 9-27-68 JH

DATE STARTED 7-16-68 SAMPLER: TYPE SPLIT SPOON DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 7-16-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE NONE
BORING NUMBER B-42-2 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 1 HRS. 12' (644.7')

STATION & OFFSET 295+20, 98'Rt., NORTHEAST EXWY., HAM 71-3.61 SURFACE ELEVATION 656.7'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
656.7	0											
	2	2-4-7	BROWN SANDY SILTY CLAY, MOIST - STIFF	1	11	7	13	32	37	37	20	22
	4											
651.7	6	5-6-7	BROWN SANDY, CLAYEY SILT, MOIST - STIFF	2	0	10	18	48	24	23	6	16
	8											
646.7	10											
	12	6-7-8	BROWN GRAVELLY, SILTY CLAY, MOIST - STIFF	3	28	7	12	33	20	25	8	16
	14											
641.7	16	5-6-6	GRAY GRAVELLY, SILTY CLAY, MOIST - STIFF	4	37	5	7	27	24	29	13	18
	18											
636.7	20											
	22	4-7-8	GRAY SILTY CLAY, MOIST - STIFF	5	0	2	6	52	40	36	18	20
	24											
631.7	26	4-5-7	GRAY GRAVELLY, SANDY SILTY CLAY, MOIST - STIFF.	6	18	12	9	29	32	36	18	24
	28											
626.7	30											
624.7	32	12-27-43	GRAY SHALE	7	VISUAL							
	34	16%	LIGHT BROWN AND LIGHT GRAY WEATHERED SHALE AND LIGHT GRAY LIMESTONE, APPROX. 85% SHALE, 15% LIMESTONE, (RECOVERY PRIMARILY LIMESTONE). SHALE ASSUMED CALCAREOUS, PROBABLE SOFT TO MEDIUM TOUGH. LIMESTONE OCCURS IN 1-1/2" TO 3" LAYERS, IS CRYSTALLINE, SOME SHALY, FOSSILIFEROUS, HARD.									
	36											
619.7	38	% RECOVERY	BORING COMPLETED									
	40											

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Form No. 504—10-68

THE H. C. NUTTING COMPANY
TESTING ENGINEERS AND SOIL CONSULTANTS • SINCE 1921
4120 AIRPORT ROAD • CINCINNATI, OHIO 45226 • TEL. 513-321-5816

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11-18-68 jh

FIELD TEST BORING REPORT

Redesignated V-004-0-68

CLIENT City of Cincinnati, Ohio ORDER No. 99.990

PROJECT Northeast Expressway I-71-1(33) HAM 71-3.61 HOLE No. VP-4

LOCATION Station 18+73 Victory Parkway, 94'Left

DRILLER J.D. Martin DRILL No. 21 DATE STARTED 11-6-68

ELEVATION REFERENCE 651.3' DATE COMPLETED 11-8-68

CASING: DIAMETER 3.5"I.D. Hollow Stem Augers HAMMER WT. ____ FALL ____

SAMPLER: DIAMETER & TYPE 2"O.D. Split Spoon HAMMER WT. 140# FALL 30"

DEPTH TO WATER: IMMEDIATE 12' UPON COMPLETION 14'

DEPTH TO WATER ____ DAYS AFTER COMPLETION Backfilled-Upon Completion WATER USED IN DRILLING From 37'

ELEVATION	DEPTH		DESCRIPTION OF MATERIALS	SAMPLE No.	SAMPLE DEPTH	TYPE OF SAMPLE	BLOWS PER 6" ON SAMPLER (or % Core Rec.)	Recovery
651.3'	0'							
		0.5'	Topsoil and gray sandy clay, moist - medium stiff	1	0-0.5	SS	3	4"
650.8	0.5'			2	0.5-1.5	SS	5-5	12"
		2'	Brown sandy clay with gravel, (fill) moist - stiff					
648.8	2.5'			3	2.5-4	SS	5-5-6	10"
		2.5'	Brown sandy clay with gravel, moist - stiff					
646.3	5'			S1	5-7	ST		20"
		5'	Brown and gray sandy clay with gravel, moist - stiff	4	7-8.5	SS	7-8-10	2"
641.3	10'			S2	10-12'	ST		24"
		5'	Gray sandy clay with gravel, moist - medium stiff	5	12-13.5	SS	3-5-6	17"
636.3	15'			S3	15-17	ST		24"
		5'	Gray sandy clay with gravel and sand lenses, moist - medium stiff	6	17-18.5	SS	3-5-7	17"
631.3	20'			S4	20-22	ST		24"

REMARKS:

Samples recovered from this test boring are available for inspection, which is strongly recommended. The company assumes no responsibility for interpretations made by others of load bearing, stability, excavating or other physical characteristics of materials penetrated in the boring.

Respectfully submitted,
THE H. C. NUTTING CO.
By

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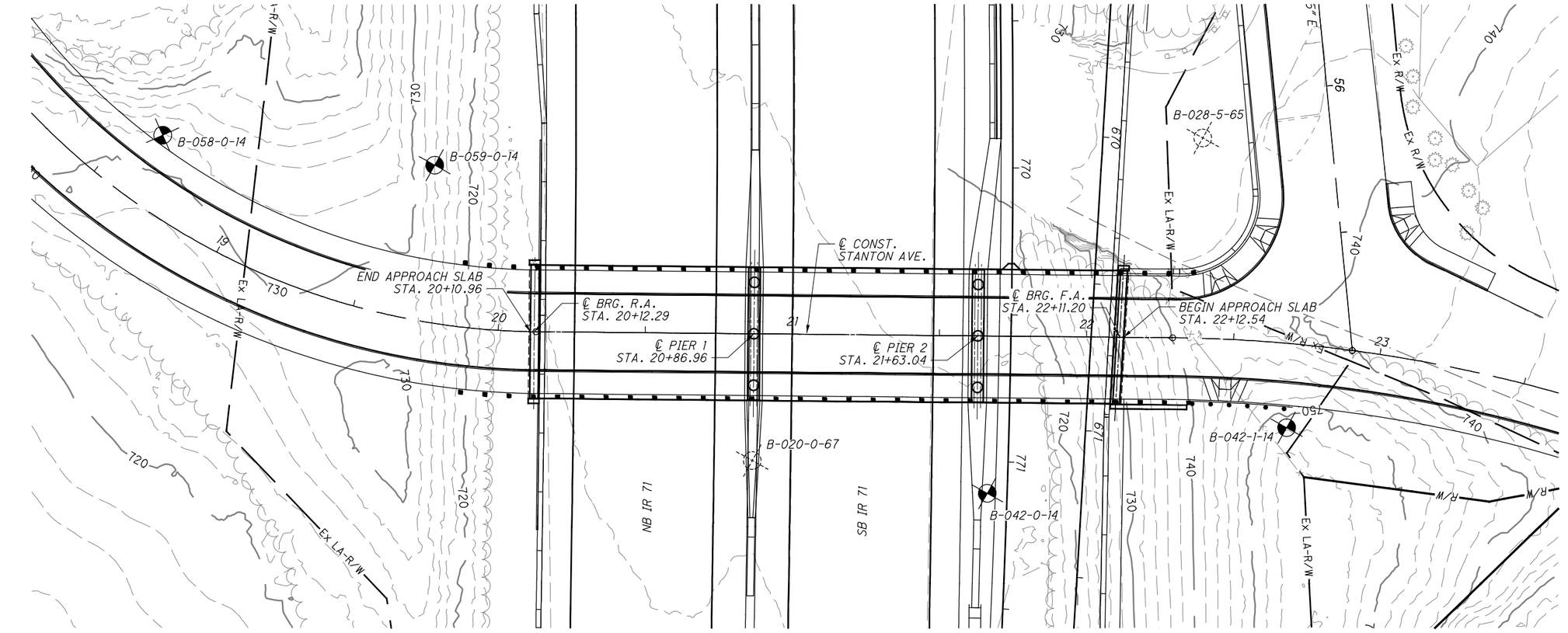
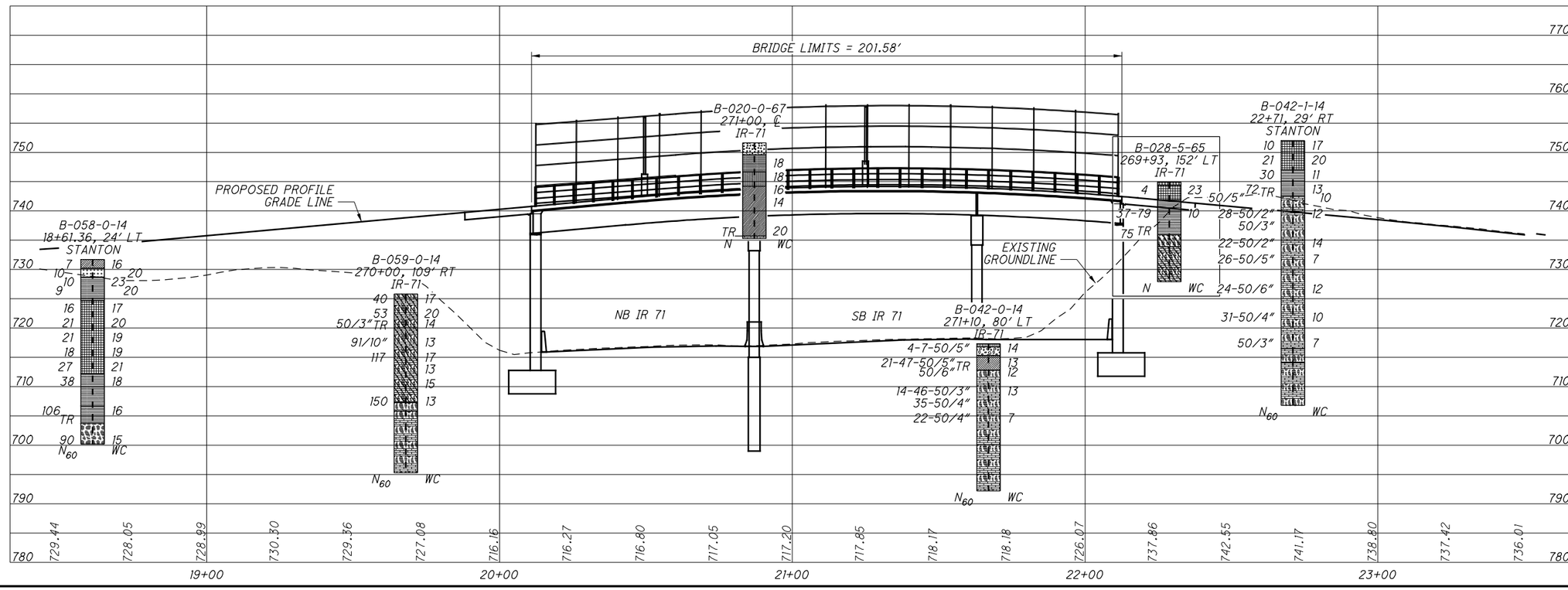
Form 504A—10-58

PROJECT Northeast Expressway I-71-1(33), HAM 71-3.61 HOLE No. VP-4

ELEVATION	DEPTH	DESCRIPTION OF MATERIALS	SAMPLE No.	SAMPLE DEPTH	TYPE OF SAMPLE	BLOWS PER 6" ON SAMPLER or % Core Rec.	Recovery
631.3'	20'						
		5' Gray sandy clay with sand and gravel layers, moist - medium stiff	7	22-23.5	SS	3-5-6	17"
			S5	25-27	ST		24"
626.3	25'						
		12' Gray silty clay with sand lenses, moist - medium stiff	8	27-28.5	SS	2-3-4	18"
			S6	30-32	ST		24"
			9	32-33.5	SS	2-3-3	18"
			S7	35-37	ST		24"
614.3	37'		10	37-38.5	SS	5-7-8	18"
		1.5' Gray coarse sand, wet - medium dense					
612.8	38.5'		11	38.5-40	SS	5-6-7	15"
		11.5' Gray silty clay, moist - medium stiff	S8	40-42	ST		24"
			12	42-43.5	SS	3-4-5	18"
			S9	45-47	ST		24"
			13	47-48.5	SS	5-6-12	18"
601.3	50'		14	50-51.5	SS	7-9-20	16"
		2.5' Gray silty clay with gravel and rock fragments, moist - stiff to very stiff					
598.8	52.5'		15	52.5-53	SS	95	6"
		0.5' Gray shale and limestone layers, moist - hard					
598.3	53'						
		Refusal at 53'.					
		Boring Completed					

cc: Ohio State Highway Dept.Testing Lab.
Hazelet & Erdal





HORIZONTAL SCALE IN FEET
0 10 20 40

DRAWN JTB
CHECKED SPR

STRUCTURE FOUNDATION EXPLORATION
BRIDGE NO. HAM-71-0396C (STANTON AVE. OVER IR 71)

HAM-71-3.81

113
175

c:\pwworking\pitt\d0885895\T76282P013.dgn 4/21/2015 10:52:34 AM jbudner

PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / J. SMITH	DRILL RIG: CME 55 TRACK - TA	STATION / OFFSET: 271+10, 80 LT	EXPLORATION ID B-042-0-14
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: HDR / S. REED	HAMMER: CME AUTOMATIC	ALIGNMENT: IR-71	
PID: 77628 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 7/21/13	ELEVATION: 717.3 (MSL) EOB: 25.1 ft.	PAGE 1 OF 1
START: 5/15/14 END: 5/15/14	SAMPLING METHOD: SPT / NQ	ENERGY RATIO (%): 88.5	COORD: 420480.413 N, 1404290.792 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 717.3	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
VERY STIFF, BROWN, **SANDY SILT**, SOME CLAY, LITTLE GRAVEL, MOIST (FILL)	716.8	1	4 7 50/5"	-	71	SS-1A SS-1B	3.50 -	16 65	14 14	17 7	26 8	27 6	27 19	18 17	9 2	14 14	A-4a (4) A-1-a (0)	
DENSE, BROWN, **GRAVEL AND/OR STONE FRAGMENTS**, TRACE SILT, TRACE CLAY, MOIST	715.3	2																
HARD, BROWN, **SILT AND CLAY**, TRACE GRAVEL, TRACE SAND, MOIST	712.8	3 4	21 47 50/5"	-	106	SS-2	-	6	1	2	47	44	34	20	14	13	A-6a (10)	
SHALE, BROWN, HIGHLY TO MODERATELY WEATHERED. (BEDROCK)	TR	5	50	-	100	SS-3	-	-	-	-	-	-	-	-	-	12	Rock (V)	
interbedded with LIMESTONE		6 7 8	14 46 50/3"	-	96	SS-4	-	-	-	-	-	-	-	-	-	13	Rock (V)	
		9 10	35 50/4"	-	0	SS-5	-	-	-	-	-	-	-	-	-	-	Rock (V)	
	705.3	11 12																
SHALE, GRAY, SLIGHTLY WEATHERED. (BEDROCK)		13	22 50/4"	-	-	SS-6	-	-	-	-	-	-	-	-	-	7	Rock (V)	
interbedded with LIMESTONE	702.3	14 15																
INTERBEDDED SHALE (57%) AND LIMESTONE (43%), RQD 40%; **SHALE**, GRAY, SLIGHTLY WEATHERED, VERY WEAK, MEDIUM BEDDED, FISSILE; **LIMESTONE**, GRAY, SLIGHTLY WEATHERED, VERY STRONG, THIN BEDDED. (BEDROCK)		16	0		100	NQ-1											CORE	
@ 19.3'-19.7'; Qu (NQ-2) = 191 psi		17 18 19 20 21 22	52		100	NQ-2											CORE	
@ 20.2' - 20.3' - vertical fracture																		
@ 23.1' - 23.45' - vertical fracture		23 24	50		100	NQ-3											CORE	
	692.2	EOB 25																

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 6 BAGS BENTONITE CHIPS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 12/15/14 13:54 - C:\PWWORKING\PITT\D1025162\20140608_HAM-71-3.81_STRUCTURES_UPDATED.GPJ

PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / M. LOZIER	DRILL RIG: CME 55 TRACK - TA	STATION / OFFSET: 22+71, 29 RT	EXPLORATION ID B-042-1-14
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: HDR / S. REED	HAMMER: CME AUTOMATIC	ALIGNMENT: STANTON	
PID: 77628 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 7/21/13	ELEVATION: 752.0 (MSL) EOB: 45.2 ft.	PAGE 1 OF 1
START: 6/2/14 END: 6/2/14	SAMPLING METHOD: SPT / NQ	ENERGY RATIO (%): 88.5	COORD: 420558.563 N, 1404221.926 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
STIFF TO VERY STIFF, BROWN, **CLAY**, "AND" SILT, TRACE SAND, MOIST	752.0		2 3 4	10	53	SS-1	2.00	-	-	-	-	-	-	-	-	17	A-7-6 (V)	
			4 6 8	21	73	SS-2	4.5+	0	2	3	41	54	51	24	27	20	A-7-6 (17)	
VERY STIFF TO HARD, BROWN, **SILTY CLAY**, TRACE SAND (RESIDUUM)	747.0		8 10 10	30	87	SS-3	-	-	-	-	-	-	-	-	-	11	A-6b (V)	
Bedding planes noted			14 31 18	72	100	SS-4	-	0	2	7	47	44	37	21	16	13	A-6b (10)	
SHALE, BROWN TO OLIVE BROWN, MODERATELY WEATHERED. (BEDROCK)	742.5	TR	50/5"	-	100	SS-5	-	-	-	-	-	-	-	-	-	10	Rock (V)	
with interbedded limestone layers			28 50/2"	-	100	SS-6	-	-	-	-	-	-	-	-	-	12	Rock (V)	
Augerable Rock			50/3"	-	0	SS-7	-	-	-	-	-	-	-	-	-	-	Rock (V)	
			22 50/2"	-	100	SS-8	-	-	-	-	-	-	-	-	-	14	Rock (V)	
			26 50/5"	-	56	SS-9	-	-	-	-	-	-	-	-	-	7	Rock (V)	
			24 50	-	100	SS-10	-	-	-	-	-	-	-	-	-	12	Rock (V)	
			31 50/4"	-	100	SS-11	-	-	-	-	-	-	-	-	-	10	Rock (V)	
	716.5		50/3"	-	100	SS-12	-	-	-	-	-	-	-	-	-	7	Rock (V)	
INTERBEDDED SHALE (60%) AND LIMESTONE (40%), RQD 85%; **SHALE**, BROWN, MODERATELY WEATHERED, VERY WEAK, THICK BEDDED; **LIMESTONE**, GRAY, UNWEATHERED, VERY STRONG, THIN BEDDED, FOSSILIFEROUS, SLIGHTLY FRACTURED, ROUGH JOINTS. @36.0' - 36.4'; Qu(NQ-1) = 189.0 psi	714.1		79		96	NQ-1											CORE	
@37.5' - Fractured																		
INTERBEDDED SHALE (76%) AND LIMESTONE (24%), RQD 70%; **SHALE**, GRAY AND BROWN, UNWEATHERED TO SLIGHTLY WEATHERED, VERY WEAK, MEDIUM TO THICK BEDDED, SLIGHTLY ROUGH JOINTS; **LIMESTONE**, GRAY, UNWEATHERED, VERY STRONG, THIN BEDDED, FOSSILIFEROUS.																		
@40.8'-41.5'; Qu(NQ-2) = 21,400.0 psi																		
@ 42.3' - Fractured			79		100	NQ-2											CORE	
	706.8	EOB																

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 50 LB. BENTONITE POWDER; BACKFILLED WITH 282 LB. CEMENT; BACKFILLED WITH 55 GAL. WATER

STANDARD ODOT SOIL BORING LOG (11 X 17) OH DOT.GDT - 2/11/15 21:58 - C:\PWWORKING\PITT\D1025182\20140608_HAM-71-3.81_STRUCTURES_UPDATED.GPJ

PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / M. LOZIER	DRILL RIG: CME 55 TRACK - TA	STATION / OFFSET: 18+61, 24 LT	EXPLORATION ID B-058-0-14
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: HDR / S. REED	HAMMER: CME AUTOMATIC	ALIGNMENT: STANTON	
PID: 77628 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 7/21/13	ELEVATION: 731.7 (MSL) EOB: 31.5 ft.	PAGE 1 OF 1
START: 5/30/14 END: 5/30/14	SAMPLING METHOD: SPT	ENERGY RATIO (%): 88.5	COORD: 420176.317 N, 1404320.267 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
MEDIUM STIFF TO STIFF, BROWN, **SILT AND CLAY**, SOME SAND, LITTLE GRAVEL, WITH ASPHALT AND GLASS DEBRIS, MOIST (FILL) @ 0', 13 ppm soluble sulfate	731.7		2 2 3	7	67	SS-1	-	12	10	20	29	29	39	24	15	16	A-6a (7)	
STIFF, BROWN, **SILT**, "AND" CLAY, TRACE SAND, TRACE GRAVEL, MOIST	730.2		2 3 4	10	73	SS-2	1.50	1	1	4	58	36	29	20	9	20	A-4b (8)	
STIFF, MOTTLED BROWN WITH GRAY, **SILTY CLAY**, TRACE SAND, MOIST	728.7		2 3 4	10	67	SS-3	1.50	0	1	3	54	42	40	22	18	23	A-6b (11)	
			2 2 4	9	87	SS-4	2.50	-	-	-	-	-	-	-	-	20	A-6b (V)	
STIFF, MOTTLED BROWN WITH GRAY, **CLAY**, SOME SILT, LITTLE SAND, TRACE GRAVEL, MOIST Below 10' - black oxide concretions	724.7		3 5 6	16	87	SS-5	2.50	-	-	-	-	-	-	-	-	17	A-7-6 (V)	
			4 5 9	21	87	SS-6	3.75	1	3	14	35	47	42	21	21	20	A-7-6 (13)	
			4 6 8	21	100	SS-7	3.50	-	-	-	-	-	-	-	-	19	A-7-6 (V)	
			3 4 8	18	73	SS-8	2.50	-	-	-	-	-	-	-	-	19	A-7-6 (V)	
			9 9 9	27	27	SS-9	1.50	-	-	-	-	-	-	-	-	21	A-7-6 (V)	
VERY STIFF TO HARD, GREENISH BLUE AND GRAY, **SILTY CLAY**, TRACE SAND, TRACE GRAVEL (LIMESTONE FRAGMENTS), MOIST	712.2		4 18 8	38	93	SS-10	3.75	4	2	2	44	48	37	21	16	18	A-6b (10)	
HARD, BROWN AND GRAY, **SILTY CLAY**, TRACE SAND, TRACE GRAVEL (LIMESTONE FRAGMENTS), MOIST (RESIDUUM) Trace Bedding Planes Noted	706.7		18 30 42	106	53	SS-11	4.5+	3	3	2	41	51	39	23	16	16	A-6b (10)	
SHALE, BROWN TO OLIVE-BROWN AND GRAY, MODERATELY WEATHERED. (BEDROCK)	703.7	TR																
	700.2	EOB	10 25 36	90	100	SS-12	-	-	-	-	-	-	-	-	-	15	Rock (V)	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (11 X 17) OH DOT.GDT - 2/12/15 09:58 - C:\PWWORKING\PITT\D1020532\20140608_HAM-71-3.81_ROADWAY_UPDATED.GPJ

c:\pwworking\pitt\d0885895\77628ZL020.dgn 4/21/2015 10:54:21 AM jbudner

PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / M. LOZIER	DRILL RIG: CME 55 TRACK - TA	STATION / OFFSET: 270+00, 109 RT	EXPLORATION ID B-059-0-14
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: HDR / S. REED	HAMMER: CME AUTOMATIC	ALIGNMENT: IR-71	
PID: 77628 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 7/21/13	ELEVATION: 725.8 (MSL) EOB: 30.4 ft.	PAGE 1 OF 1
START: 5/30/14 END: 5/30/14	SAMPLING METHOD: SPT / NQ	ENERGY RATIO (%): 88.5	COORD: 420262.095 N, 1404284.345 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
SHALE, BROWN, MODERATELY WEATHERED. (BEDROCK)	725.8		6 7 20	40	53	SS-1	-	-	-	-	-	-	-	-	-	17	Rock (V)	
interbedded with LIMESTONE			9 15 21	53	100	SS-2	-	-	-	-	-	-	-	-	-	20	Rock (V)	
		TR	13 50/3"	-	80	SS-3	-	-	-	-	-	-	-	-	-	14	Rock (V)	
			22 41 50/4"	-	53	SS-4	-	-	-	-	-	-	-	-	-	13	Rock (V)	
			8 29 50	117	100	SS-5	-	-	-	-	-	-	-	-	-	17	Rock (V)	
			34 50	-	100	SS-6	-	-	-	-	-	-	-	-	-	13	Rock (V)	
			21 50	-	100	SS-7	-	-	-	-	-	-	-	-	-	15	Rock (V)	
	707.3		16 52 50	150	100	SS-8	-	-	-	-	-	-	-	-	-	13	Rock (V)	
SHALE, GRAY. (BEDROCK)	705.8																	
interbedded with LIMESTONE			40		76	NQ-1											CORE	
INTERBEDDED SHALE (63%) AND LIMESTONE (37%), RQD 63%; **SHALE**, GRAY, UNWEATHERED TO MODERATELY WEATHERED, VERY WEAK, THIN BEDDED, FISSILE; **LIMESTONE**, GRAY, UNWEATHERED, MODERATELY STRONG TO STRONG, THIN TO MEDIUM BEDDED, FOSSILIFEROUS. (BEDROCK)			71		100	NQ-2											CORE	
@21.4'-21.8'; Qu(NQ-1) = 181.0 psi	695.4	EOB																

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 50 LB. BENTONITE POWDER; 188 LB. CEMENT; 75 GAL. WATER

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 2/2/15 14:04 - C:\PWWORKING\PITT\D1025182\20140808_HAM-71-3.81_STRUCTURES_UPDATED.GPJ

Redesignated B-028-5-65

LOG OF BORING

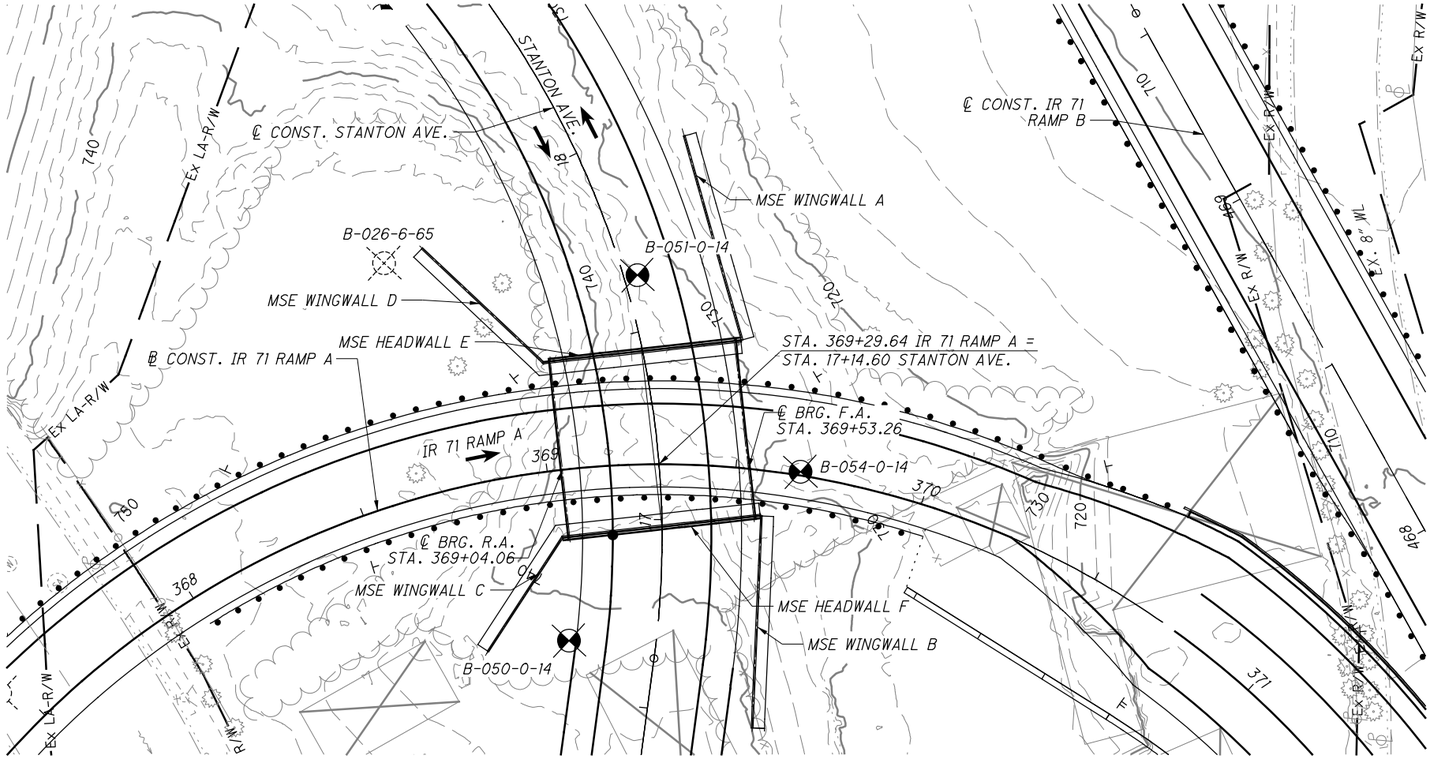
DATE STARTED 9-23-65 SAMPLER: TYPE Split Spoon DIA. 2" O.D. WATER ELEVATION

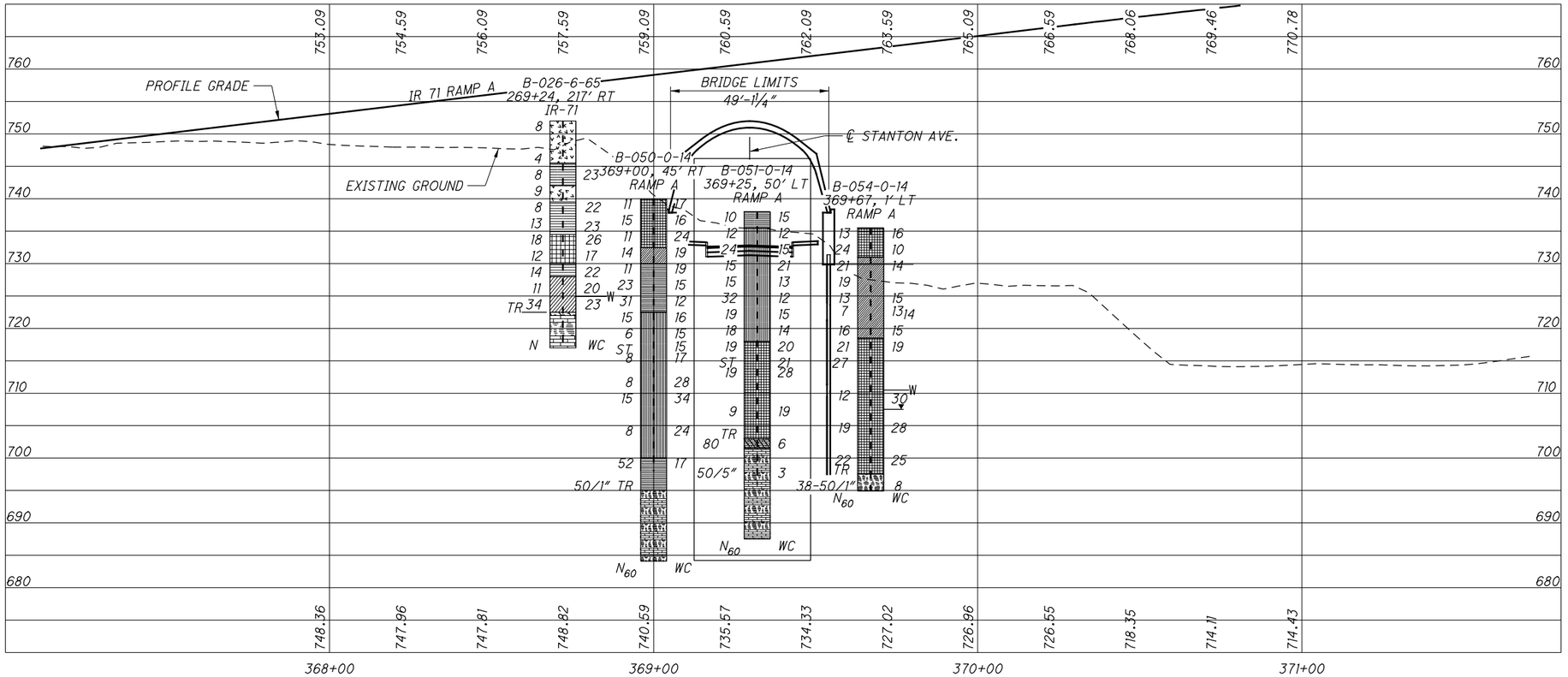
DATE COMPLETED 9-23-65 CASING: LENGTH None DIA. IMMEDIATE None

BORING NUMBER B 28-5 CORE BARREL: TYPE NXM SIZE 2 1/8" I.D. AFTER HRS. Backfilled

STATION & OFFSET 269+93, 152' left SURFACE ELEVATION 744.9

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
744.9	0											
744.4			Concrete	Visual								
	2	2-2-2	Brown lean clay, moist - medium stiff	1	0	4	3	39	54	50	28	23
741.9	4											
	6	37-79	Brown lean clay with highly weathered shale and limestone layers, dry - very stiff	2	38	7	5	24	26	33	16	10
735.9	8											
	10	75		3	Visual							
733.9			Brown weathered shale									
	12		Interbedded brown and gray weathered shale and gray limestone (approx. 70% shale, 30% limestone) Shale soft to tough, calcareous trace fossils. Limestone occurs in 1/2" to 5-1/2" layers, impure fine grained, impure cyrstalline and crystalline, fossiliferous, hard. Fracture zone exhibited 30" to 35" from top of section with iron-oxide staining									
	14	90%										
	16											
727.9	18	% Recovery										
	20		Boring completed									





HORIZONTAL SCALE IN FEET
0 10 20 40

DRAWN JTB
CHECKED SPR

STRUCTURE FOUNDATION EXPLORATION
BRIDGE NO. HAM-71-0402E (RAMP A BRIDGE OVER STANTON AVE.)

HAM-71-3.81

118
175

c:\pwworking\pitt\d0885895\77628ZP022.dgn 4/21/2015 10:54:56 AM jbudner

PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / LW	DRILL RIG: CME 550X ATV - TA	STATION / OFFSET: 369+00, 45 RT	EXPLORATION ID B-050-0-14
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: HDR / M. BATTEN	HAMMER: CME AUTOMATIC	ALIGNMENT: RAMP A	
PID: 77628 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 8/2/13	ELEVATION: 740.0 (MSL) EOB: 55.9 ft.	PAGE 1 OF 1
START: 6/2/14 END: 6/2/14	SAMPLING METHOD: SPT/ST/NQ	ENERGY RATIO (%): 91.6	COORD: 420028.356 N, 1404232.164 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
MEDIUM STIFF, BLACK AND TAN, **CLAY**, "AND" SILT, SOME SAND, TRACE GRAVEL, MOIST (FILL)	740.0		4 3 4	11	61	SS-1	2.50	8	9	14	38	31	41	25	16	17	A-7-6 (9)	
STIFF, TAN, **CLAY**, SOME SILT, LITTLE SAND, TRACE GRAVEL, CONTAINS WOOD FRAGMENTS, MOIST (FILL)	737.5		4 5 5	15	72	SS-2	3.50	4	5	15	34	42	42	23	19	16	A-7-6 (12)	
@ 5' - medium stiff			3 3 4	11	56	SS-3	2.00	-	-	-	-	-	-	-	-	24	A-7-6 (V)	
MEDIUM STIFF, DARK GRAY, **SILT AND CLAY**, SOME SAND, LITTLE GRAVEL, MOIST (FILL)	732.5		2 4 5	14	56	SS-4	1.75	13	7	16	35	29	35	20	15	19	A-6a (8)	
STIFF TO VERY STIFF, TAN AND GRAY, **SILTY CLAY**, LITTLE SAND, TRACE GRAVEL, CONTAINS BRICK FRAGMENTS, MOIST TO DAMP (FILL)	730.0		2 3 4	11	100	SS-5	2.50	4	6	14	39	37	39	20	19	19	A-6b (12)	
			5 6 9	23	100	SS-6	3.50	-	-	-	-	-	-	-	-	15	A-6b (V)	
			8 9 11	31	100	SS-7	4.50	-	-	-	-	-	-	-	-	12	A-6b (V)	
STIFF TO VERY STIFF, GRAY AND TAN, **SANDY SILT**, SOME CLAY, LITTLE GRAVEL, MOIST TO WET @24' - gray and blue	722.5		5 5 5	15	56	SS-8	4.50	-	-	-	-	-	-	-	-	16	A-4a (V)	
SOFT TO MEDIUM STIFF, TAN AND GRAY, **SANDY SILT**, SOME CLAY, LITTLE GRAVEL, MOIST TO WET (LACUSTRINE)	720.0		2 2 2	6	56	SS-9	1.50	-	-	-	-	-	-	-	-	15	A-4a (V)	
					100	ST-1	0.75	11	7	15	38	29	23	16	7	15	A-4a (6)	
			2 2 3	8	61	SS-10	0.50	-	-	-	-	-	-	-	-	17	A-4a (V)	
			2 3 2	8	100	SS-11A	1.50	-	-	-	-	-	-	-	-	28	A-4a (V)	
						SS-11B	0.25	-	-	-	-	-	-	-	-	-	A-4a (V)	
			3 4 6	15	100	SS-12	3.00	-	-	-	-	-	-	-	-	34	A-4a (V)	
			2 2 3	8	33	SS-13	1.75	-	-	-	-	-	-	-	-	24	A-4a (V)	
VERY STIFF TO HARD, GRAY, **SILTY CLAY**, TRACE SAND, DAMP (RESIDUUM)	700.0		10 12 22	52	100	SS-14A	4.50	0	0	1	44	55	40	23	17	17	A-6b (11)	
						SS-14B	2.25	-	-	-	-	-	-	-	-	-	A-6b (V)	
INTERBEDDED SHALE (54%) AND LIMESTONE (46%), RQD 74%; **SHALE**, GRAY, SLIGHTLY TO MODERATELY WEATHERED, VERY WEAK, VERY THIN TO MEDIUM BEDDED; **LIMESTONE**, GRAY, SLIGHTLY TO MODERATELY WEATHERED, MODERATELY STRONG TO STRONG, ROUGH, VERY THIN TO THIN BEDDED, SLIGHTLY FRACTURED, SLIGHTLY ROUGH TO VERY ROUGH.	695.0	TR	50/1"	-	100	SS-15	-	-	-	-	-	-	-	-	-	-	Rock (V)	
@ 51.0-51.5; Qu =182 psi			75		100	NQ-1											CORE	
			71		100	NQ-2											CORE	
	684.1	EOB																

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: AUGER CUTTINGS MIXED WITH 1 BAG BENTONITE CHIPS

STANDARD ODOT SOIL BORING LOG (11 X 17) OH DOT.GDT - 2/11/15 22:14 - C:\PWWORKING\PITT\D1025182\20140608_HAM-71-3.81_STRUCTURES_UPDATED.GPJ

175 / 119	HAM-71-3.81	STRUCTUIRE FOUNDATION EXPLORATION BRIDGE NO. HAM-71-0402E (RAMP A BRIDGE OVER STANTON AVE.)	DRAWN AFS CHECKED DMV

PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / M. LOZIER	DRILL RIG: CME 55 TRACK - TA	STATION / OFFSET: 369+25, 50 LT	EXPLORATION ID B-051-0-14
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: HDR / REED/BATTEN	HAMMER: CME AUTOMATIC	ALIGNMENT: RAMP A	
PID: 77628 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 7/21/13	ELEVATION: 738.0 (MSL) EOB: 50.5 ft.	PAGE 1 OF 1
START: 6/2/14 END: 6/3/14	SAMPLING METHOD: SPT/ST/NQ	ENERGY RATIO (%): 88.5	COORD: 420080.383 N, 1404315.410 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
MEDIUM STIFF TO STIFF, BROWN, **SILTY CLAY**, SOME SAND, LITTLE GRAVEL, TRACE WOOD, BRICK, AND ASPHALT, DAMP (FILL)	738.0		3 4 3	10	53	SS-1	1.00	16	11	12	29	32	38	21	17	15	A-6b (8)	
	735.5																	
STIFF TO VERY STIFF, BROWN AND GRAY, **SANDY SILT**, SOME CLAY, LITTLE GRAVEL, SOME ASPHALT AND WOOD FRAGMENTS, MOIST (FILL)			4 4 4	12	-	SS-2	2.00	-	-	-	-	-	-	-	-	12	A-4a (V)	
@ 7.5' - black and dark gray																		
@ 12.5' - trace cinders			11 9 7	24	67	SS-3	1.75	-	-	-	-	-	-	-	-	15	A-4a (V)	
@ 15' - trace cinders																		
			4 4 6	15	100	SS-4	3.25	-	-	-	-	-	-	-	-	21	A-4a (V)	
			4 4 6	15	100	SS-5	4.00	-	-	-	-	-	-	-	-	13	A-4a (V)	
			6 13 9	32	100	SS-6	2.75	16	9	14	30	31	27	17	10	12	A-4a (5)	
			5 6 7	19	100	SS-7	4.5+	-	-	-	-	-	-	-	-	15	A-4a (V)	
			4 5 7	18	47	SS-8	1.50	-	-	-	-	-	-	-	-	14	A-4a (V)	
	718.0																	
STIFF, GRAY, **CLAY**, SOME SILT, TRACE SHELL FRAGMENTS, MOIST (LACUSTRINE)			3 4 9	19	100	SS-9	1.50	-	-	-	-	-	-	-	-	20	A-7-6 (V)	
					90	ST-1	3.50	0	0	0	23	77	47	24	23	21	A-7-6 (15)	
			3 6 7	19	100	SS-10	1.50	-	-	-	-	-	-	-	-	28	A-7-6 (V)	
	703.0	TR																
LIMESTONE, GRAY, LIMESTONE FRAGMENTS.	701.5		9 39 15	80	13	SS-12	-	-	-	-	-	-	-	-	-	6	Rock (V)	
INTERBEDDED SHALE (65%) AND LIMESTONE (35%); **SHALE**, GRAY, SLIGHTLY TO MODERATELY WEATHERED, VERY WEAK, VERY THIN TO THIN BEDDED; **LIMESTONE**, GRAY, MODERATELY STRONG TO STRONG, ROUGH, THIN BEDDED, MODERATELY FRACTURED, SLIGHTLY ROUGH TO VERY ROUGH.			2 3 3	9	20	SS-11	1.75	-	-	-	-	-	-	-	-	19	A-7-6 (V)	
@ 44.1-45.2'; Qu = 60.1 psi			50/5"	-	100	SS-13	-	-	-	-	-	-	-	-	-	3	Rock (V)	
			65		90	NQ-1											CORE	
			66		99	NQ-2											CORE	
	687.5	EOB																

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: AUGER CUTTINGS MIXED WITH 1 BAG BENTONITE CHIPS

STANDARD ODOT SOIL BORING LOG (11 X 17) OH DOT.GDT - 2/12/15 09:38 - C:\PWWORKING\PITT\D1025182\20140608_HAM-71-3.81_STRUCTURES_UPDATED.GPJ

PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / M. LOZIER	DRILL RIG: CME 55 TRACK - TA	STATION / OFFSET: 369+67, 1 LT	EXPLORATION ID B-054-0-14
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: HDR / S. REED	HAMMER: CME AUTOMATIC	ALIGNMENT: RAMP A	
PID: 77628 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 7/21/13	ELEVATION: 735.5 (MSL) EOB: 40.6 ft.	PAGE 1 OF 1
START: 5/30/14 END: 5/30/14	SAMPLING METHOD: SPT	ENERGY RATIO (%): 88.5	COORD: 420013.547 N, 1404306.364 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
STIFF TO VERY STIFF, BROWN, **CLAY**, "AND" GRAVEL, SOME SAND, SOME SILT, POLYSTYRENE, ROOTS AND ASPHALT DEBRIS, DAMP (FILL)	735.5		2 4 5	13	40	SS-1	-	38	12	10	20	20	48	29	19	16	A-7-6 (3)	
			9 8 8	24	20	SS-2	-	-	-	-	-	-	-	-	-	10	A-7-6 (V)	
STIFF TO VERY STIFF, BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, DAMP @13' - 4" sand seam	731.0		6 6 8	21	100	SS-3	4.50	-	-	-	-	-	-	-	-	14	A-6a (V)	
			5 6 7	19	0	SS-4	-	-	-	-	-	-	-	-	-	-	A-6a (V)	
			4 4 5	13	100	SS-5	3.50	5	9	15	42	29	30	18	12	15	A-6a (8)	
			2 2 3	7	100	SS-6A	1.50	-	-	-	-	-	-	-	-	13	A-6a (V)	
						SS-6B	-	-	-	-	-	-	-	-	-	14	A-3a (V)	
						SS-6C	-	-	-	-	-	-	-	-	-	-	A-6a (V)	
			3 4 7	16	87	SS-7	2.50	-	-	-	-	-	-	-	-	15	A-6a (V)	
STIFF TO VERY STIFF, GRAY, **CLAY**, SOME SILT, SLIGHTLY VARVED, MOIST @25.5' - soft seam	718.5		5 6 8	21	100	SS-8	3.50	0	0	0	21	79	46	23	23	19	A-7-6 (14)	
			4 6 12	27	0	SS-9	-	-	-	-	-	-	-	-	-	-	A-7-6 (V)	
		W					2.25	-	-	-	-	-	-	-	-	-	A-7-6 (V)	
			3 3 5	12	100	SS-10A												
						SS-10B	0.25	-	-	-	-	-	-	-	-	30	A-7-6 (V)	
		▼																
			3 5 8	19	100	SS-11	1.25	-	-	-	-	-	-	-	-	28	A-7-6 (V)	
			5 5 10	22	33	SS-12	0.50	-	-	-	-	-	-	-	-	25	A-7-6 (V)	
SHALE, GRAY, UNWEATHERED. (BEDROCK)	697.5	TR																
	694.9	EOB	38 50/1"	-	100	SS-13	-	-	-	-	-	-	-	-	-	8	Rock (V)	

NOTES: CAVED @ 14' UPON REMOVAL OF AUGER, BENTONITE CHIPS BACKFILL DUE TO CAVE IN

ABANDONMENT METHODS, MATERIALS, QUANTITIES: AUGER CUTTINGS MIXED WITH 7 BAGS BENTONITE CHIPS

STANDARD ODOT SOIL BORING LOG (11 X 17) OH DOT.GDT - 2/12/15 09:46 - C:\PWWORKING\PITT\D1020532\20140608_HAM-71-3.81_ROADWAY_UPDATED.GPJ

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Redesignated B-026-6-65

LOG OF BORING

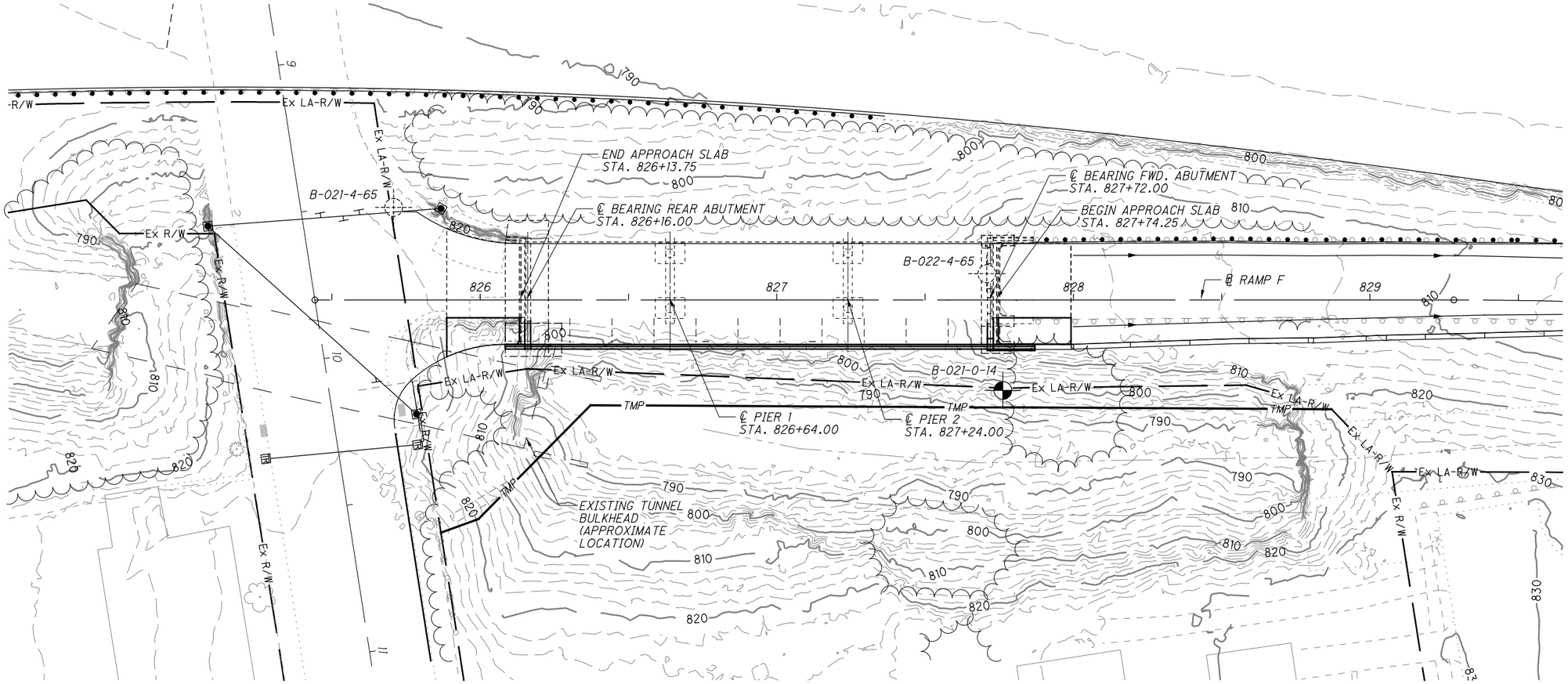
DATE STARTED 9-17-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION

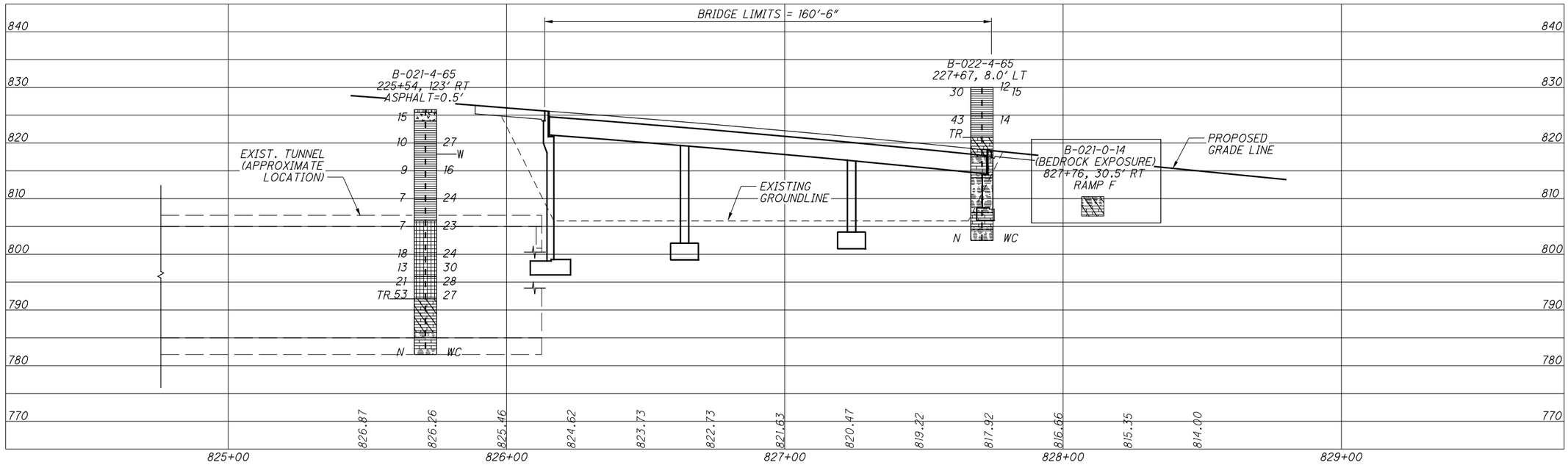
DATE COMPLETED 9-17-65 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 27' (725.0)

BORING NUMBER B-26-6 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER _____ HRS. Backfilled

STATION & OFFSET 269+24, 217'Right SURFACE ELEVATION 752.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
752.0	0											
	2	2-2-6	Rubble, fill clay and cinders	1	Visual							
	4											
	6	3-2-2	do do do	2	Visual							
744.5	8	3-4-4	Brown and gray silty clay, (fill) moist - medium stiff	3	16	9	9	33	33	36	18	23
742.0	10											
739.5	12	3-4-5	Rubble, (fill) cinders and some clay	4	Visual							
	14	3-4-4	Brown and gray silty clay with rock fragments, (fill) moist - medium stiff	5	6	4	5	39	46	39	20	22
	16	4-5-8	Brown silty clay with rock fragments, (fill) moist - medium stiff	6	13	6	6	35	40	40	22	23
734.5	18	6-7-11	Brown silty clay with rock fragments, (fill) moist - stiff	7	4	2	5	29	60	52	30	26
732.0	20											
730.0	22	4-5-7	Brown lean clay with highly weathered shale, (fill) moist - stiff	8	0	2	8	33	57	48	27	17
728.0	24	5-7-7	Gray and brown silty clay with rock fragments, (fill) moist - stiff	9	8	4	3	39	46	36	18	22
	26	5-5-6	Gray and brown sandy lean clay with rock fragments, (fill) moist - medium stiff	10	7	10	30	32	21	27	12	20
	28											
722.5		3-4-30	Gray and brown sandy lean clay with rock fragments, (fill) very moist - medium stiff	11	22	12	22	26	18	28	13	23
722.0	30		Gray shale with rock fragments									
	32		Interbedded gray shale and gray limestone (approx. 70% shale, 30% limestone), shale tough to hard, calcareous, essentially non-fossiliferous. Apparent soft shale seam (1") at top									
	34	94%	of run. Limestone occurs in 1/2" to 4" layers, fossiliferous and impure crystalline, hard.									
717.0												
	36	% Recovery	Boring Completed									
	38											





STRUCTURE FOUNDATION EXPLORATION
BRIDGE NO. HAM-71-0322E (RAMP F)

DRAWN JTB
CHECKED SPR

HORIZONTAL SCALE IN FEET
0 10 20 40

HAM-71-3.81

123
175

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Redesignated B-021-4-65

LOG OF BORING

DATE STARTED 8-1-65 SAMPLER: TYPE Split Spoon DIA. 2"O. D. WATER ELEVATION
DATE COMPLETED 8-1-65 CASING: LENGTH _____ DIA. _____ IMMEDIATE None
BORING NUMBER B-21-4 CORE BARREL: TYPE NXM SIZE 2-1/8"I. D. AFTER 1 HRS. 8'

STATION & OFFSET 225+54, 123'Rt. SURFACE ELEVATION 826.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
826.0	0											
825.5			Blacktop	Visual								
824.0	2	7-6-9	Cinders, (fill)	1	Visual							
	4											
	6	4-4-6	Brown silty clay, (fill) moist - medium stiff	2	6	4	3	37	50	40	20	27
	8											
	10											
	12	3-4-5	Brown and gray silty clay with stone fragments, (fill) moist - medium stiff	3	25	5	3	26	41	39	20	16
	14											
	16	6-3-4	Brown and gray silty clay with stone fragments, (fill) moist - medium stiff	4	20	5	3	30	42	40	21	24
	18											
	20											
	22	3-3-4	Brown and gray lean clay with stone fragments, (fill) wet - soft	5	16	4	4	29	47	45	25	29
	24											
	26	7-8-10	Brown and gray silty clay with stone fragments, (fill) very moist - medium stiff	6	17	3	4	28	48	42	23	24
798.5	28											
		5-6-7	Brown and gray lean clay, trace topsoil, moist - medium stiff	7	3	3	5	36	53	44	26	30
796.0	30											
	32	7-10-11	Brown and gray silty clay, moist - stiff	8	6	4	2	34	54	43	21	28
792.0	34	41-32-21	Brown and gray fat clay with limestone fragments, moist - stiff	9	58	4	2	25	11	55	34	27
	36		Gray and brown limestone, thin bedded, 1/2-2-1/2"beds trace broken fine-grained fossiliferous, medium hard, weathered with evidence of soft brown shale.									
788.5	38	38%										
787.0			Gray limestone, thin bedded, 1/2 to 3-1/2"beds averaging 2", fine-grained, fossiliferous, impure hard, with evidence of gray shale									
	40											
	42	100%	Interbedded gray shale and gray limestone (approx. 65% shale & 35% limestone);shale, 1/4" to 3-1/2"pieces, some broken pieces, medium tough;limestone, thin bedded, 1 to 4"beds, averaging 2", fine grained, impure, fossiliferous, hard									
782.0	44											
		% Recovery	Boring Completed									
	46											
	48											

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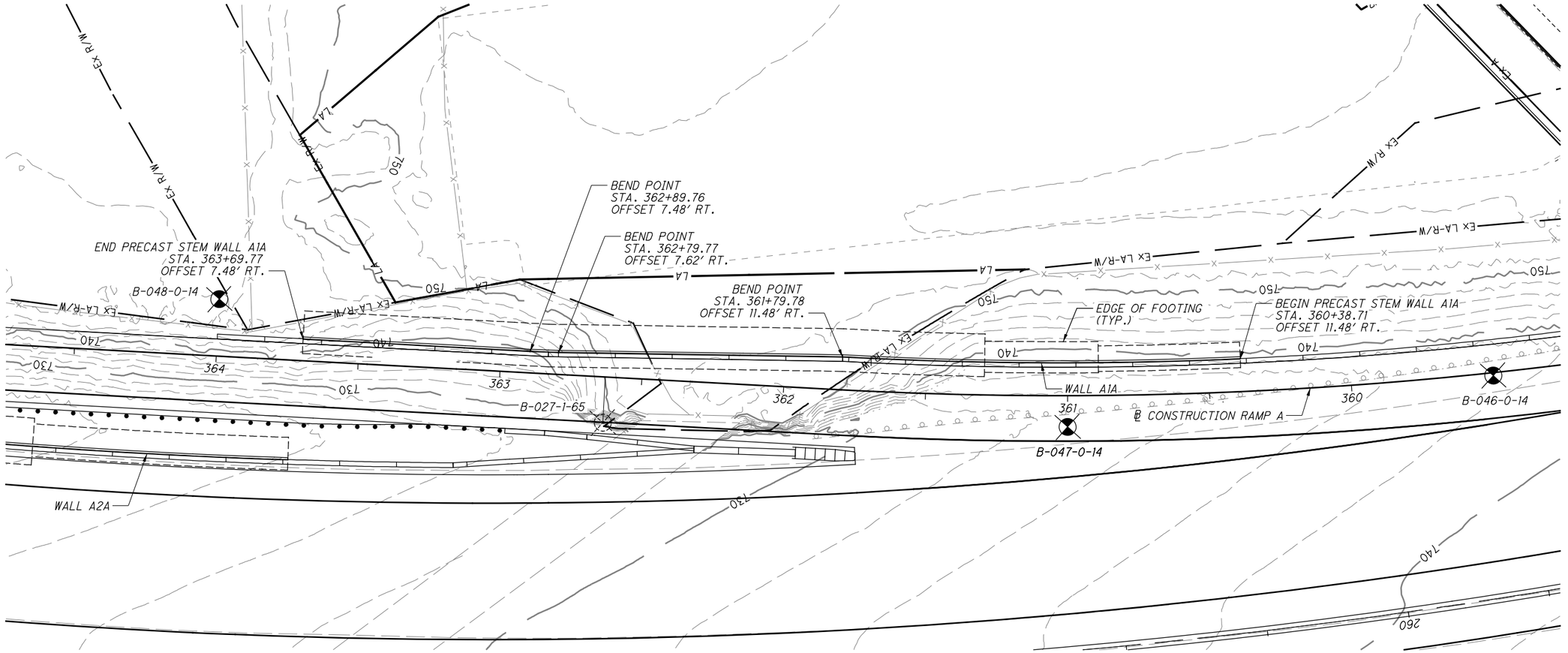
Redesignated B-022-4-65

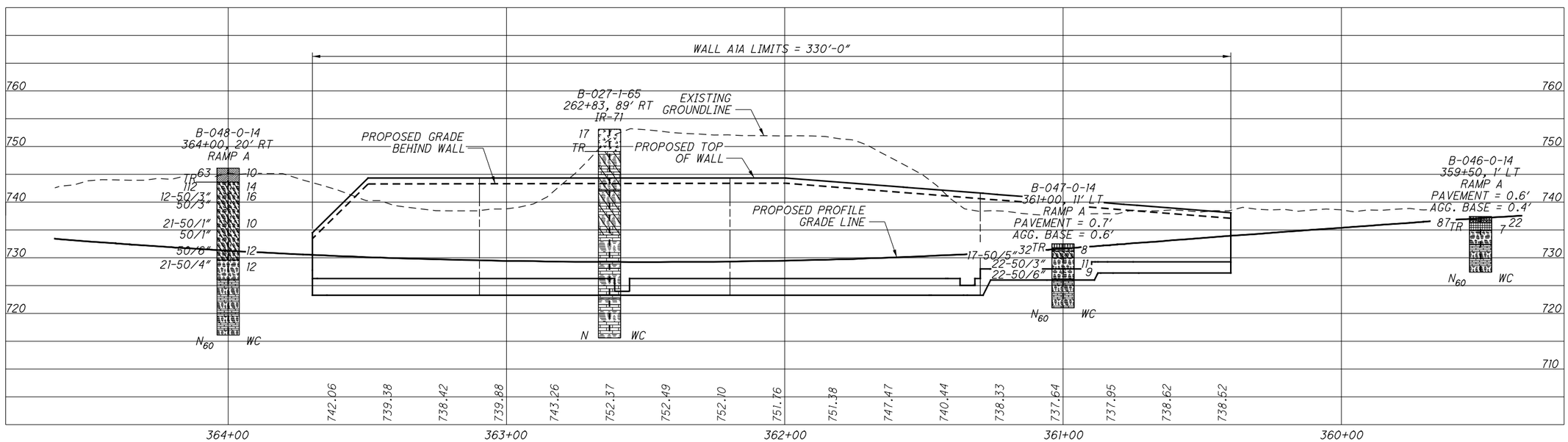
LOG OF BORING

DATE STARTED 8-16-65 SAMPLER: TYPE Split Spoon DIA. 2"O. D. WATER ELEVATION
DATE COMPLETED 8-16-65 CASING: LENGTH HSA DIA. 3.5"I. D. IMMEDIATE None
BORING NUMBER B-22-4 CORE BARREL: TYPE NXM SIZE 2-1/8"I. D. AFTER ____ HRS. Backfilled

STATION & OFFSET 227+67, TC. 8'Lt. of Centerline SURFACE ELEVATION 830.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
830.0	0											
829.5		10	Brown lean clay, (fill) moist - stiff	1	0	2	1	61	36	34	18	12
	2	13-17	Brown lean clay, slightly moist - very stiff	2	0	1	3	55	41	40	22	15
825.5	4											
	6	15-19-24	Brown lean clay with limestone fragments, moist - hard	3	21	9	5	38	27	40	22	14
821.0	8											
	10		Brown and gray limestone, thin bedded, 1/2 to 3"beds, averaging 1", highly fossiliferous(fossil hash), fossils poorly cemented, frequently separated by films of shale, porous, mostly brittle, weathered, with evidence of high angle joint at 819, with evidence of thin seams of weathered brown shale									
817.5	12	92%										
	14	45%	Interbedded gray shale and gray limestone (approx. 65% shale and 35% limestone); shale mostly broken, highly fossiliferous, soft to medium tough, weathered, with evidence of shrinkage cracks, on drying; limestone thin bedded, 1 to 3"beds, averaging 1-3/4", fossiliferous, impure, hard									
813.8	16	95%										
	18		Gray calcareous shale, 1 to 7"pieces, averaging 4", trace broken near top and middle, tough, with 1/2 to 2"beds of fine-grained gray limestone at 812.5, 811 & 808.									
	20	98%										
807.5	22											
	24		Interbedded gray shale and gray limestone(approx. 75% shale & 25% limestone); shale 1/2 to 3" pieces averaging 1", trace broken pieces, highly fossiliferous, medium tough, limestone thin-bedded, 1/2 to 3-1/2"beds, averaging 2", fine-grained, fossiliferous, impure, hard									
804.5	26		Interbedded gray limestone and gray shale(approx. 70% limestone & 30% shale), limestone thin bedded 1-3"beds, averaging 2-1/2", fine-grained, sparingly calcareous, hard, with high angle joint in bottom foot, joints surface strained slightly with iron oxide.									
802.5	28	98%										
		% Recovery	Boring Completed									
	30											
	32											





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HORIZONTAL SCALE IN FEET
0 10 20 40

DRAWN JTB
CHECKED SPR

STRUCTURE FOUNDATION EXPLORATION
WALL A1A (PRECAST STEM WALL)

HAM-71-3.81

PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / J. SMITH	DRILL RIG: CME 55 TRACK - TA	STATION / OFFSET: 359+50, 1 LT	EXPLORATION ID B-046-0-14
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: HDR / S. REED	HAMMER: CME AUTOMATIC	ALIGNMENT: RAMP A	
PID: 77628 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 7/21/13	ELEVATION: 737.4 (MSL) EOB: 10.0 ft.	PAGE 1 OF 1
START: 5/22/14 END: 5/22/14	SAMPLING METHOD: SPT/NQ	ENERGY RATIO (%): 88.5	COORD: 419663.884 N, 1403482.098 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 737.4	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
ASPHALT	736.8																	
AGGREGATE BASE	736.4																	
VERY STIFF, BROWN, **CLAY**, SOME SILT, LITTLE SAND, LITTLE GRAVEL, MOIST	734.9	TR	7 9 50	87	44	SS-1	2.25	13	10	7	32	38	42	20	22	22	A-7-6 (12)	
SHALE, GRAY, UNWEATHERED. (BEDROCK)	732.4		34 50	-	100	SS-2	-	-	-	-	-	-	-	-	-	7	Rock (V)	
INTERBEDDED SHALE (60%) AND LIMESTONE (40%), RQD 49%; **SHALE**, GRAY, UNWEATHERED, VERY WEAK; **LIMESTONE**, GRAY, SLIGHTLY WEATHERED, MODERATELY STRONG TO STRONG. @ 5.5 - 5.6' - vertical fracture	727.4	EOB	49		100	NQ-1											CORE	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH BENTONITE CHIPS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 12/15/14 13:55 - C:\PWWORKING\PITT\D1025182\20140608_HAM-71-3.81_STRUCTURES_UPDATED.GPJ

PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / J. SMITH	DRILL RIG: CME 55 TRACK - TA	STATION / OFFSET: 361+00, 11 LT	EXPLORATION ID B-047-0-14	
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: HDR / S. REED	HAMMER: CME AUTOMATIC	ALIGNMENT: RAMP A		
PID: 77628 BR ID:	DRILLING METHOD: 3.5" SSA / NQ	CALIBRATION DATE: 7/21/13	ELEVATION: 732.5 (MSL) EOB: 11.5 ft.	PAGE 1 OF 1	
START: 5/22/14 END: 5/22/14	SAMPLING METHOD: SPT / NQ	ENERGY RATIO (%): 88.5	COORD: 419777.307 N, 1403581.613 E		

MATERIAL DESCRIPTION AND NOTES	ELEV. 732.5	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
9" ASPHALT PAVEMENT	731.8																	
7" AGGREGATE BASE	731.2	TR	7 3 19	32	60	SS-1	-	28	4	4	39	25	30	18	12	8	A-6a (7)	
SHALE, BROWNISH-GRAY, MODERATELY WEATHERED. (BEDROCK)	730.0		17 50/5"	-	76	SS-2	-	-	-	-	-	-	-	-	-	-	Rock (V)	
SHALE, GRAY. (BEDROCK)			22 50/3"	-	107	SS-3	-	-	-	-	-	-	-	-	-	11	Rock (V)	
	726.2		22 50	-	100	SS-4	-	-	-	-	-	-	-	-	-	9	Rock (V)	
INTERBEDDED SHALE (67%) AND LIMESTONE (33%), RQD 68%; **SHALE**, GRAY, UNWEATHERED, VERY WEAK, MEDIUM BEDDED; **LIMESTONE**, GRAY, UNWEATHERED, MODERATELY STRONG TO STRONG, MEDIUM BEDDED. (BEDROCK)	721.0	EOB	69		100	NQ-1											CORE	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: MIXED WITH 3 BAG BENTONITE CHIPS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 12/15/14 13:55 - C:\PWWORKING\PITT\D1025182\20140608_HAM-71-3.81_STRUCTURES_UPDATED.GPJ

PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / M. LOZIER	DRILL RIG: CME 55 TRACK - TA	STATION / OFFSET: 364+00, 20.0 RT	EXPLORATION ID B-048-0-14
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: HDR / S. REED	HAMMER: CME AUTOMATIC	ALIGNMENT: RAMP A	
PID: 77628 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 7/21/13	ELEVATION: 746.1 (MSL) EOB: 30.0 ft.	PAGE 1 OF 1
START: 5/28/14 END: 5/28/14	SAMPLING METHOD: SPT / NQ	ENERGY RATIO (%): 88.5	COORD: 419943.015 N, 1403834.023 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
VERY STIFF TO HARD, BROWN, **SILT AND CLAY**, SOME GRAVEL, LITTLE SAND	746.1		3 21 22	63	80	SS-1	4.50	30	7	8	28	27	31	19	12	10	A-6a (5)	
	743.6	TR																
SHALE, BROWN, MODERATELY WEATHERED. (BEDROCK)			19 43 33	112	80	SS-2	-	-	-	-	-	-	-	-	-	14	Rock (V)	
			12 50/3"	-	120	SS-3	-	-	-	-	-	-	-	-	-	16	Rock (V)	
			50/3"	-	0	SS-4	-	-	-	-	-	-	-	-	-	-	Rock (V)	
			21 50/1"	-	86	SS-5	-	-	-	-	-	-	-	-	-	10	Rock (V)	
			50/1"	-	0	SS-6	-	-	-	-	-	-	-	-	-	-	Rock (V)	
	731.1																	
SHALE, GRAY, MODERATELY WEATHERED. (BEDROCK)	729.6		50	-	100	SS-7	-	-	-	-	-	-	-	-	-	12	Rock (V)	
SHALE, GRAY, UNWEATHERED. (BEDROCK)			21 50/4"	-	96	SS-8	-	-	-	-	-	-	-	-	-	12	Rock (V)	
	726.1																	
INTERBEDDED SHALE (60%) AND LIMESTONE (40%), RQD 52%; **SHALE**, GRAY, UNWEATHERED, VERY WEAK, MEDIUM BEDDED, FISSILE; **LIMESTONE**, GRAY, UNWEATHERED, MODERATELY STRONG TO STRONG, THIN BEDDED, FOSSILIFEROUS, SLIGHTLY FRACTURED TO INTACT WITH SLIGHTLY ROUGH FRACTURE SURFACES. (BEDROCK)			54		100	NQ-1											CORE	
			52		100	NQ-2											CORE	
	716.1	EOB																

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: 75 LB. BENTONITE POWDER; 188 LB. CEMENT; 50 GAL. WATER

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 4/16/15 14:00 - C:\PWWORKING\PITTD\102518220140608_HAM-71-3.81_STRUCTURES_UPDATED.GPJ

c:\pwworking\pitt\d0885895\77628ZL026b.dgn 4/21/2015 10:57:22 AM jbudner

Redesignated B-027-1-65

LOG OF BORING

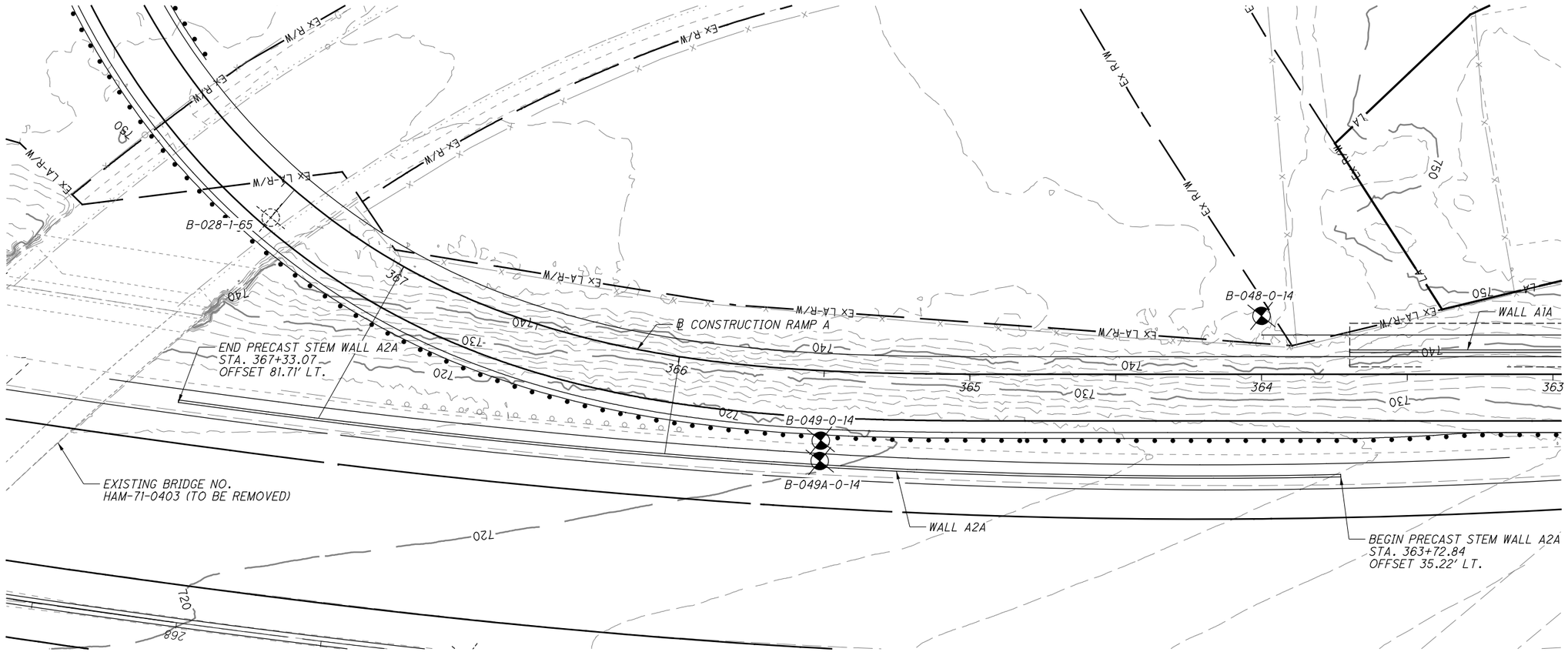
DATE STARTED 9-24-65 SAMPLER: TYPE Split Spoon DIA. 2" O. D. WATER ELEVATION

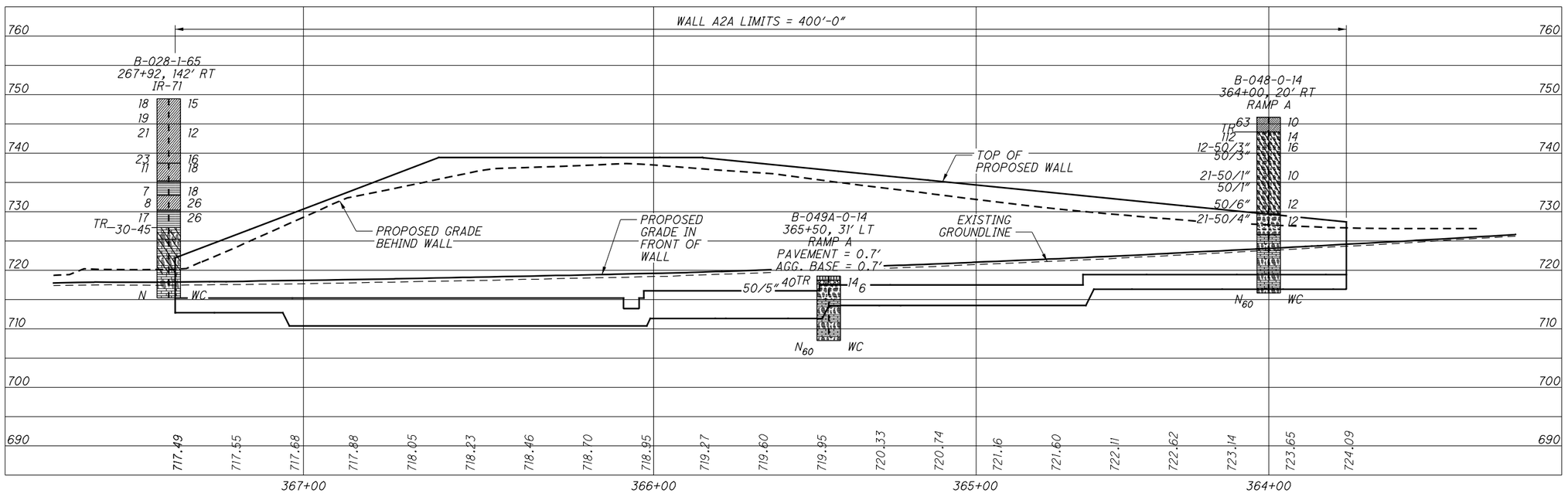
DATE COMPLETED 9-25-65 CASING: LENGTH HSA DIA. 3.5" I. D. IMMEDIATE None

BORING NUMBER B 27-1 CORE BARREL: TYPE NXM SIZE 2 1/8" I. D. AFTER _____ HRS. Backfilled

STATION & OFFSET 262+83, 89' Right SURFACE ELEVATION 753.1

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
753.1	0											
	2	3-6-11	Cinders (fill)	1	Visual							
749.1	4											
	6	65 %	Interbedded brown and gray weathered shale and gray limestone(approx. 55% shale and 45% limestone in recovery). Shale soft to tough, calcareous. Limestone thin bedded, occuring in 1/2" to 7" layers, fossiliferous, shaley crystalline to crystalline, hard.									
	8											
	10	60%										
742.1												
	12	100%	Interbedded gray weathered shale (some gray) and gray limestone (trace of brown) (approx. 70% shale and 30% limestone.) Shale medium tough to tough, calcareous. Limestone thin bedded in 1/4" to 6" layers, fossiliferous, slight shaly crystalline to crystalline, hard, with high angle joints at 736 and 734, joint surfaces oxidized.									
	14											
	16											
	18	100%										
734.1												
	20		Interbedded gray shale and gray limestone (approx. 55% shale and 45% limestone). Shale tough to very tough, calcareous. Limestone thin bedded in 1/4" to 6"layers fossiliferous, slightly shaley-crystalline to crystalline, hard with closed high angle joint at 729.									
	22											
	24	100%										
728.1												
	26		Interbedded gray shale and gray limestone(approx. 70% shale and 30% limestone). Shale very tough, mostly calcareous. Limestone thin bedded in 1/4" to 4" layers, fossiliferous, slightly shaley crystalline to crystalline, hard.									
	28	100%										
	30											
722.6												
721.6			Gray shale very tough, calcareous.									
	32		Interbedded gray shale and gray limestone (approx. 65% shale and 35% limestone). Shale very tough, calcareous, sparcely fossiliferous. Limestone thin bedded in 1/4" to 4"layers, fossiliferous, shaley - crystalline to crystalline, hard.									
	34	100%										
	36											
715.6		100%										
		% Recovery										
			Boring completed									





STRUCTURE FOUNDATION EXPLORATION
WALL A2A (PRECAST STEM WALL)

HORIZONTAL SCALE IN FEET
0 10 20 40

DRAWN JTB
CHECKED SPR

HAM-71-3.81

130
175

c:\pwworking\pitt\d0885895\77628ZP015.dgn 4/21/2015 10:57:44 AM jbudner

PROJECT: HAM-71-3.81 | DRILLING FIRM / OPERATOR: THELEN / M. LOZIER | DRILL RIG: CME 55 TRACK - TA | STATION / OFFSET: 364+00, 20 RT | EXPLORATION ID B-048-0-14
TYPE: STRUCTURE | SAMPLING FIRM / LOGGER: HDR / S. REED | HAMMER: CME AUTOMATIC | ALIGNMENT: RAMP A
PID: 77628 BR ID: | DRILLING METHOD: 3.25" HSA | CALIBRATION DATE: 7/21/13 | ELEVATION: 746.1 (MSL) EOB: 30.0 ft. | PAGE 1 OF 1
START: 5/28/14 END: 5/28/14 | SAMPLING METHOD: SPT / NQ | ENERGY RATIO (%): 88.5 | COORD: 419943.015 N, 1403834.023 E

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
VERY STIFF TO HARD, BROWN, **SILT AND CLAY**, SOME GRAVEL, LITTLE SAND	746.1		3 21 22	63	80	SS-1	4.50	30	7	8	28	27	31	19	12	10	A-6a (5)	
	743.6	TR																
SHALE, BROWN, MODERATELY WEATHERED. (BEDROCK)			19 43 33	112	80	SS-2	-	-	-	-	-	-	-	-	-	14	Rock (V)	
			12 50/3"	-	120	SS-3	-	-	-	-	-	-	-	-	-	16	Rock (V)	
			50/3"	-	0	SS-4	-	-	-	-	-	-	-	-	-	-	Rock (V)	
			21 50/1"	-	86	SS-5	-	-	-	-	-	-	-	-	-	10	Rock (V)	
			50/1"	-	0	SS-6	-	-	-	-	-	-	-	-	-	-	Rock (V)	
	731.1																	
SHALE, GRAY, MODERATELY WEATHERED. (BEDROCK)	729.6		50	-	100	SS-7	-	-	-	-	-	-	-	-	-	12	Rock (V)	
SHALE, GRAY, UNWEATHERED. (BEDROCK)	726.1		21 50/4"	-	96	SS-8	-	-	-	-	-	-	-	-	-	12	Rock (V)	
INTERBEDDED SHALE (60%) AND LIMESTONE (40%), RQD 52%; **SHALE**, GRAY, UNWEATHERED, VERY WEAK, MEDIUM BEDDED, FISSILE; **LIMESTONE**, GRAY, UNWEATHERED, MODERATELY STRONG TO STRONG, THIN BEDDED, FOSSILIFEROUS, SLIGHTLY FRACTURED TO INTACT WITH SLIGHTLY ROUGH FRACTURE SURFACES. (BEDROCK)			54		100	NQ-1											CORE	
			52		100	NQ-2											CORE	
	716.1	EOB																

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: 75 LB. BENTONITE POWDER; 188 LB. CEMENT; 50 GAL. WATER

PROJECT: HAM-71-3.81 | DRILLING FIRM / OPERATOR: THELEN / J. SMITH | DRILL RIG: CME 55 TRACK - TA | STATION / OFFSET: 365+50, 31 LT | EXPLORATION ID B-049A-0-14
TYPE: STRUCTURE | SAMPLING FIRM / LOGGER: HDR / S. REED | HAMMER: CME AUTOMATIC | ALIGNMENT: RAMP A
PID: 77628 BR ID: | DRILLING METHOD: 3.5" SSA | CALIBRATION DATE: 7/21/13 | ELEVATION: 719.0 (MSL) EOB: 11.0 ft. | PAGE 1 OF 1
START: 5/22/14 END: 5/22/14 | SAMPLING METHOD: SPT / NQ | ENERGY RATIO (%): 88.5 | COORD: 420076.713 N, 1403921.062 E

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
ASPHALT	718.3																	
AGGREGATE BASE	717.6	TR																
SHALE, GRAY. (BEDROCK)			11 6 21	40	80	SS-1	-	-	-	-	-	-	-	-	-	14	Rock (V)	
			50/5"	-	100	SS-2	-	-	-	-	-	-	-	-	-	6	Rock (V)	
	715.0																	
INTERBEDDED SHALE (81%) AND LIMESTONE (19%), RQD 42%; **SHALE**, GRAY, UNWEATHERED, VERY WEAK, MEDIUM BEDDED; **LIMESTONE**, GRAY, UNWEATHERED, MODERATELY STRONG TO STRONG, MEDIUM BEDDED, VERY FRACTURED 4.8'-5.2'.			36		70	NQ-1											CORE	
			58		100	NQ-2											CORE	
	708.0	EOB																

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: AUGER CUTTINGS MIXED WITH BENTONITE CHIPS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 12/15/14 13:55 - C:\PWWORKING\PITT\D1025182\20140608_HAM-71-3.81_STRUCTURES_UPDATED.GPJ

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Redesignated B-028-1-65

LOG OF BORING

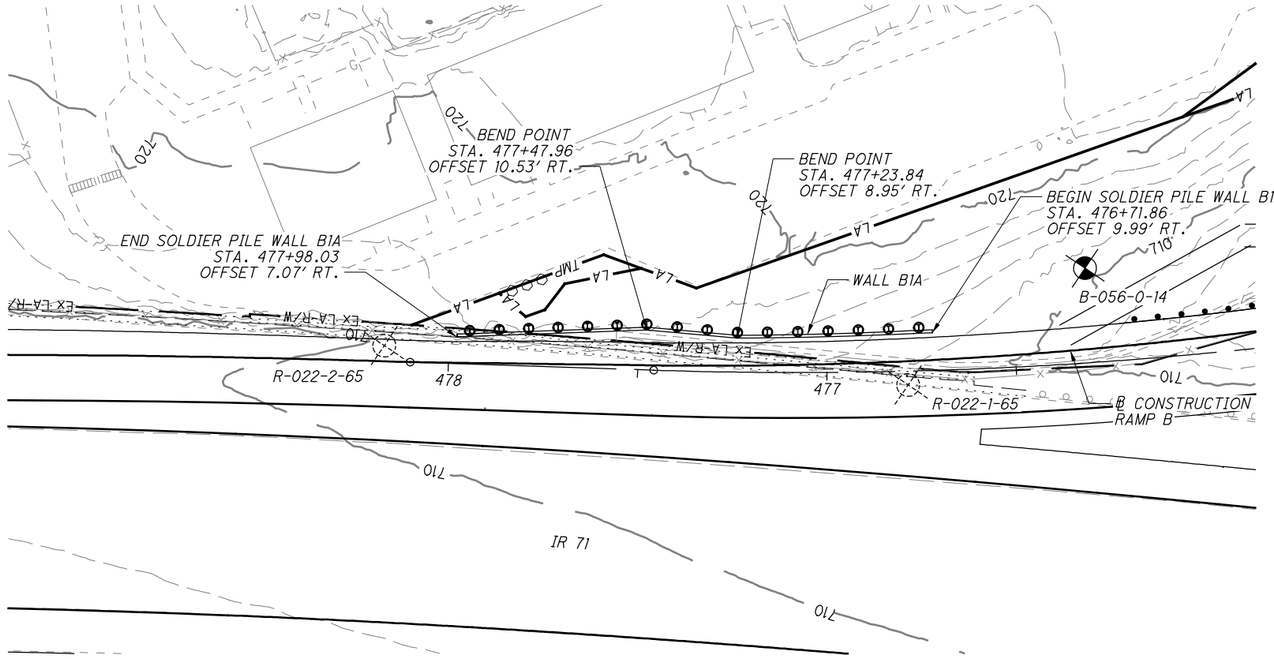
DATE STARTED 10-1-65 SAMPLER: TYPE Split Spoon DIA. 2" O.D. WATER ELEVATION

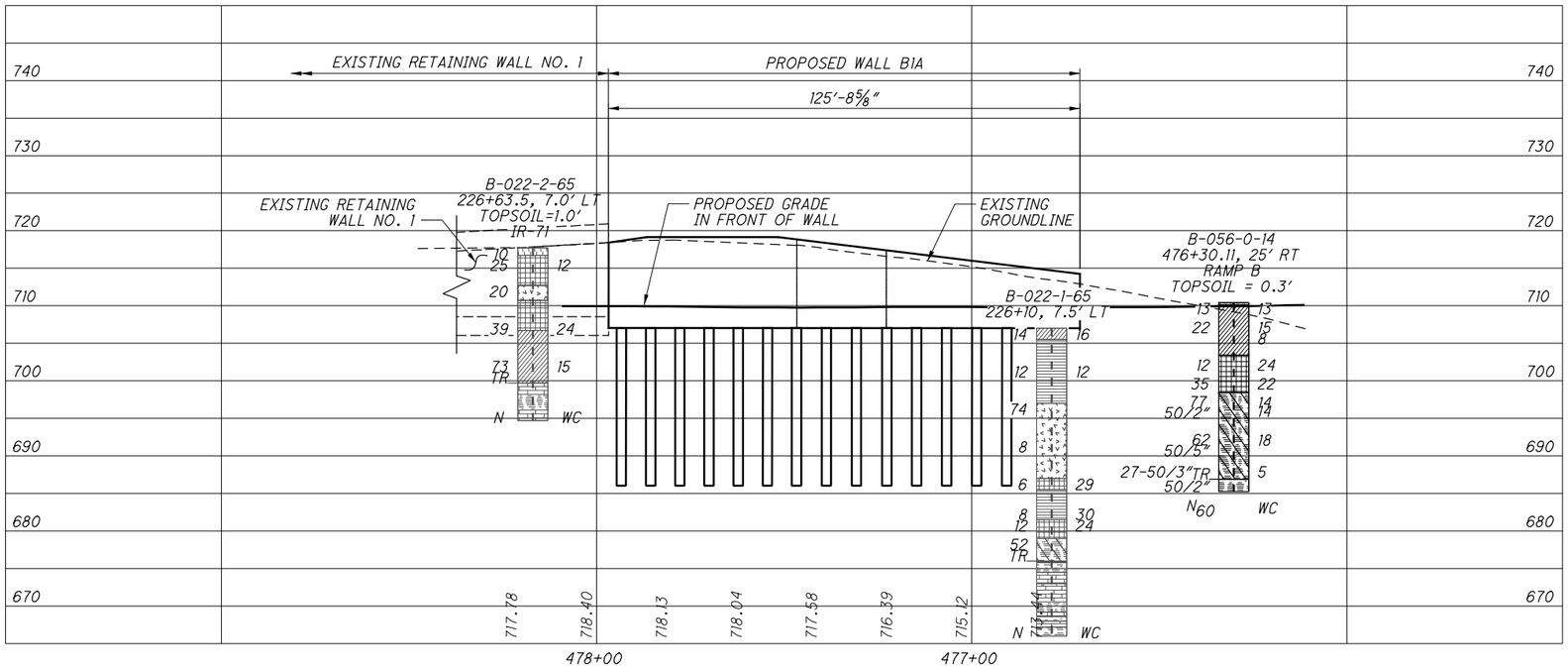
DATE COMPLETED 10-2-65 CASING: LENGTH None DIA. _____ IMMEDIATE None

BORING NUMBER B 28-1 CORE BARREL: TYPE NXM SIZE 2 1/8" I.D. AFTER _____ HRS. _____

STATION & OFFSET 267+92, 142' right SURFACE ELEVATION 749.3

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
749.3	0											
	2	4-9-9	Brown gravelly, sandy silty clay, moist very stiff	1	14	9	15	36	26	26	11	15
	4	8-10-9	do do do	2	Visual							
	6	8-9-12	do do do	3	22	9	13	30	26	27	12	12
	8											
	10											
738.3		23-12-11	do do do	4	29	7	12	29	23	27	12	16
	12	5-5-6	Gray gravelly lean clay - very moist	5	28	6	9	31	26	26	12	18
	14											
	16	3-4-3	Gray lean clay, little gravel, very moist-medium stiff	6	12	6	8	40	34	33	17	18
	18	3-3-5	Gray lean clay, trace of gravel, very moist - medium stiff	7	9	9	9	39	34	31	14	26
	20											
	22	11-8-9	Gray lean clay, trace of gravel, moist stiff	8	2	4	3	47	44	36	18	26
727.3		30		9 A		Visual						
		45		9 B		Visual						
725.3	24		Brown and gray weathered shale with limestone layers									
	26	57%	Interbedded brown weathered shale and gray limestone (approx. 75% shale, 25% limestone). Shale tough to hard, calcareous, limestone occurs in 1/4" to 3" layers. Fossiliferous. impure crystalline to crystalline, hard. Fracturing exhibited approx. near center and bottom of section.									
	28											
719.3	30											
	32	52%	Interbedded gray shale and gray limestone (approx. 75% shale 25% limestone). Shale tough to hard, calcareous. Limestone occurs in 1" to 3" layers, fossiliferous crystalline and fine grained trace, fossils hard. Fracturing exhibited at top, near center and near bottom of run									
715.3	34											
	36	% Recovery										
	38		Boring completed									





STRUCTURE FOUNDATION EXPLORATION
WALL B1A (SOLDIER PILE WALL)

HAM-71-3.81

133
175

HORIZONTAL SCALE IN FEET
0 10 20 40

DRAWN JTB
CHECKED DMV

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PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / M. LOZIER	DRILL RIG: CME 55 TRACK - TA	STATION / OFFSET: 476+30, 25 RT	EXPLORATION ID B-056-0-14
TYPE: DRAIN PIPE	SAMPLING FIRM / LOGGER: HDR / S. REED	HAMMER: CME AUTOMATIC	ALIGNMENT: RAMP B	
PID: 77628 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 7/21/13	ELEVATION: 710.4 (MSL) EOB: 25.2 ft.	PAGE 1 OF 1
START: 5/29/14 END: 5/29/14	SAMPLING METHOD: SPT	ENERGY RATIO (%): 88.5	COORD: 420554.567 N, 1404852.104 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
TOPSOIL	710.1																	
VERY STIFF TO HARD, BROWN, **SILT AND CLAY**, LITTLE SAND, LITTLE GRAVEL (LIMESTONE FRAGMENTS), POSSIBLE SEWER BACKFILL, DAMP (FILL)			3 4 5	13	93	SS-1	4.00	-	-	-	-	-	-	-	-	13	A-6a (V)	
			7 7 8	22	87	SS-2	2.00	17	10	9	33	31	34	20	14	15	A-6a (7)	
			54	-	33	SS-3	2.25	-	-	-	-	-	-	-	-	8	A-6a (V)	
	703.4																	
VERY STIFF, BROWN, **CLAY**, SOME SILT, TRACE SAND, MOIST			2 3 5	12	87	SS-4	2.50	0	0	2	28	70	63	28	35	24	A-7-6 (20)	
			5 9 15	35	100	SS-5	2.75	-	-	-	-	-	-	-	-	22	A-7-6 (V)	
	698.4	TR																
SHALE, OLIVE-BROWN, HIGHLY TO MODERATELY WEATHERED, VERY WEAK. (BEDROCK)			11 20 32	77	93	SS-6	-	-	-	-	-	-	-	-	-	14	Rock (V)	
			50/2"	-	100	SS-7	-	-	-	-	-	-	-	-	-	14	Rock (V)	
			13 21 21	62	100	SS-8	-	-	-	-	-	-	-	-	-	18	Rock (V)	
			50/5"	-	100	SS-9	-	-	-	-	-	-	-	-	-	-	Rock (V)	
	686.9		27 50/3"	-	56	SS-10	-	-	-	-	-	-	-	-	-	5	Rock (V)	
SHALE, GRAY, VERY WEAK. (BEDROCK)	685.2	EOB	50/2"	-	0	SS-11	-	-	-	-	-	-	-	-	-	-	Rock (V)	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH AUGER CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 12/16/14 13:00 - C:\PWWORKING\PITT\D1067323\20140801_HAM-71-3.81_UTILITY.GPJ

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Redesignated B-022-1-65

LOG OF BORING

DATE STARTED 8-16-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 8-17-65 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 14.5
BORING NUMBER B-22-1 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER HRS. Backfilled

STATION & OFFSET 226+10, T.C. 7.5'Lt. of Centerline SURFACE ELEVATION 826.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
826.0	0											
	2	3-6-8	Brown clayey silt, (fill) moist - stiff	1	1	1	3	65	30	33	15	16
	4											
	6	8-7-9	Brown clayey silt, trace cinders, (fill) dry - medium stiff	2	19	7	8	40	26	34	16	12
	8											
816.0	10											
	12	12-35-39	Concrete, cinders and clay, (fill) wet - soft	3		Visual						
	14											
	16	3-4-4	Concrete, cinders and clay, (fill) wet - soft	4		Visual						
	18											
806.0	20											
	22	2-3-3	Brown and gray lean clay, wet - soft	5	5	6	11	38	40	36	20	28
	24											
	26	2-3-5	Brown and gray lean clay, wet - soft	6	4	6	10	42	38	38	22	30
798.0	28	6-8-4	Brown and gray lean clay, moist - stiff	7	4	3	4	35	54	48	29	24
	30	14-17-35	Brown and gray weathered shale	8		Visual						
795.0												
794.8	32		Gray limestone fine grained, thin-bedded, fossiliferous, hard, weathered									
793.5			Light brown shale, 2 to 7"pieces, averaging 6", with shrinkage cracks after drying, soft, weathered									
792.0	34	96%	Gray limestone, thin bedded, 1-1/2 to 3-1/2"pieces, averaging 2", fine-grained, fossiliferous, impure, weathered, brittle to hard									
	36		Interbedded gray shale and limestone (approx. 75% shale and 25% limestone), shale 1 to 2" pieces, trace broken to fragmented, medium tough; limestone thin bedded, 1/2 to 4"beds, averaging 1-1/2", fine-grained, fossiliferous, hard									
788.2	38											
787.6			Gray limestone, thin bedded one-1"& one 6"bed, fine-grained, hard									
787.0			Gray shale, 1/2 to 2-1/2"pieces avg. 1", highly fossiliferous, hard, w/1-1/2"bed of gray limestone near*									
786.2	40	100%	Gray limestone, thin-bedded, 1 to 4"beds avg. 3", fine-grained, fossiliferous, hard, w/high angle /joint									
785.0			Gray shale, 3/4 to 3"pieces, averaging 1-1/2", fossiliferous, hard.									
	42	% Recovery	Boring Completed /*bottom									

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Redesignated B-022-2-65

LOG OF BORING

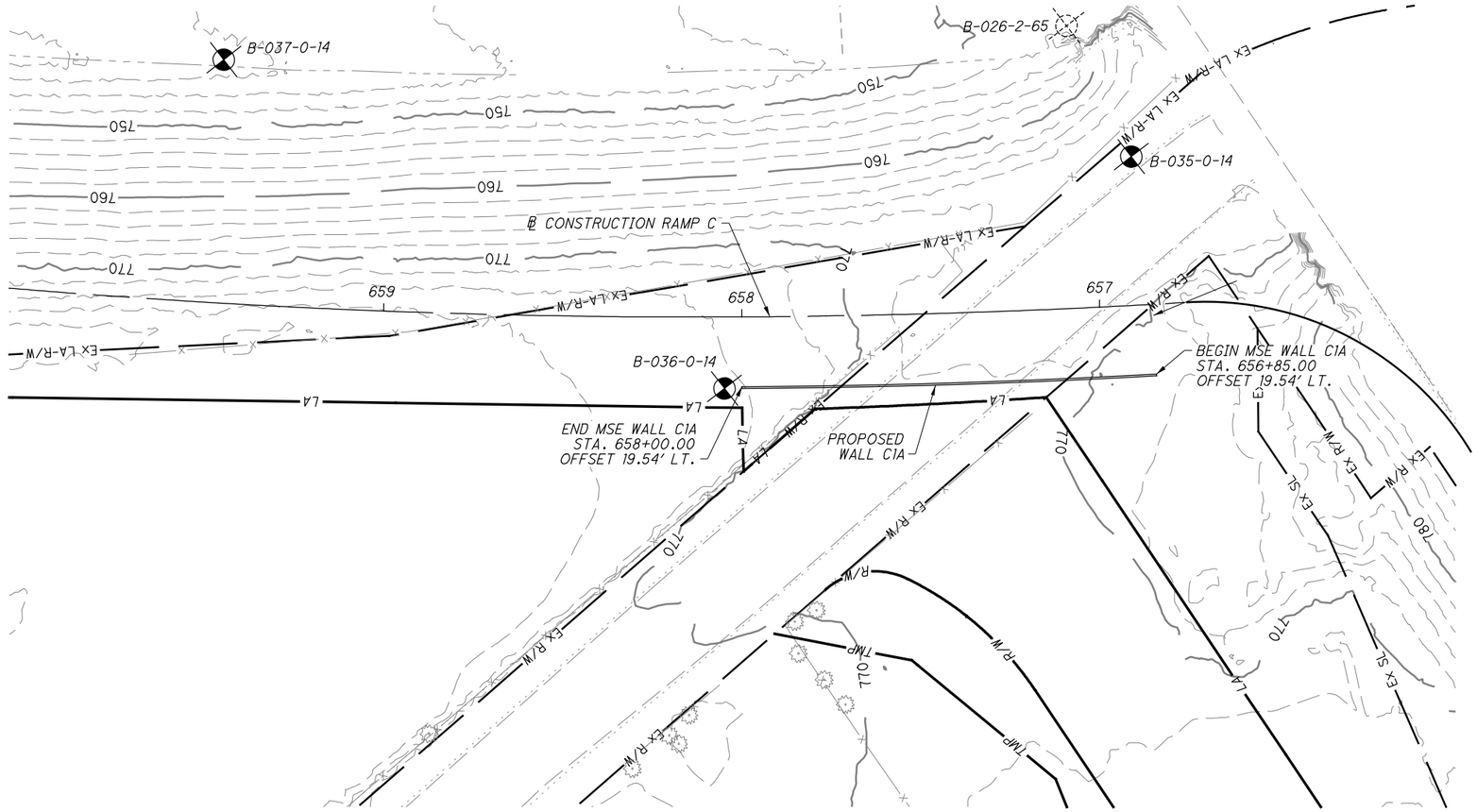
DATE STARTED 8-18-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION

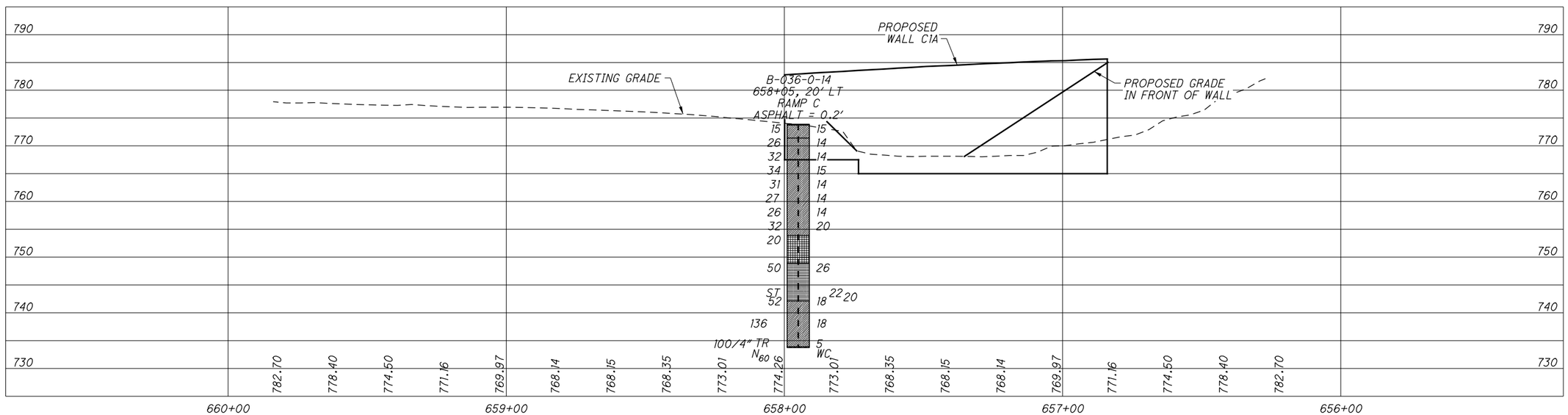
DATE COMPLETED 8-19-65 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None

BORING NUMBER B-22-2 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER 24 HRS. 12'

STATION & OFFSET 226+63.5 TC, 7.0'Lt. SURFACE ELEVATION 820.3

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
820.3	0											
819.3		3-5	Topsoil, (fill)	1A	Visual							
	2	5	Brown lean clay, (fill) moist - stiff	1B	Visual							
		8-12-13	Brown lean clay, (fill) moist - stiff	2	1	4	5	42	48	44	25	12
	4											
815.3												
	6	8-10-10	Cinders and clay, (fill) moist - stiff	3	Visual							
813.3												
	8											
	10											
809.3		10-16	Mottled brown fat clay, moist- stiff	4A	0	0	2	36	62	55	32	24
	12	23	Brown and gray silty clay and limestone, moist -very stiff	4B	Visual							
	14											
	16	16-18-55	Brown and gray silty clay and limestone, moist - very stiff	5	43	15	6	16	20	32	15	15
802.3	18											
	20		Interbedded gray shale and gray limestone (approx. 50% shale and 50% limestone); shale 1/2 to 2" pieces, some broken, medium tough; limestone thinbedded, 1/2 to 3" beds averaging 1-1/2", fine-grained, fossiliferous, impure, hard									
		71%										
	22											
797.3												
	24	% Recovery	Boring Completed									
	26											
	23											





STRUCTURE FOUNDATION EXPLORATION
WALL C1A (MSE WALL)

HAM-71-3.81

DRAWN JTB
CHECKED DMV

HORIZONTAL SCALE IN FEET
0 10 20 40

137
175

c:\pwworking\pitt\d0885895\T76282P001.dgn 4/21/2015 10:59:11 AM jbudner

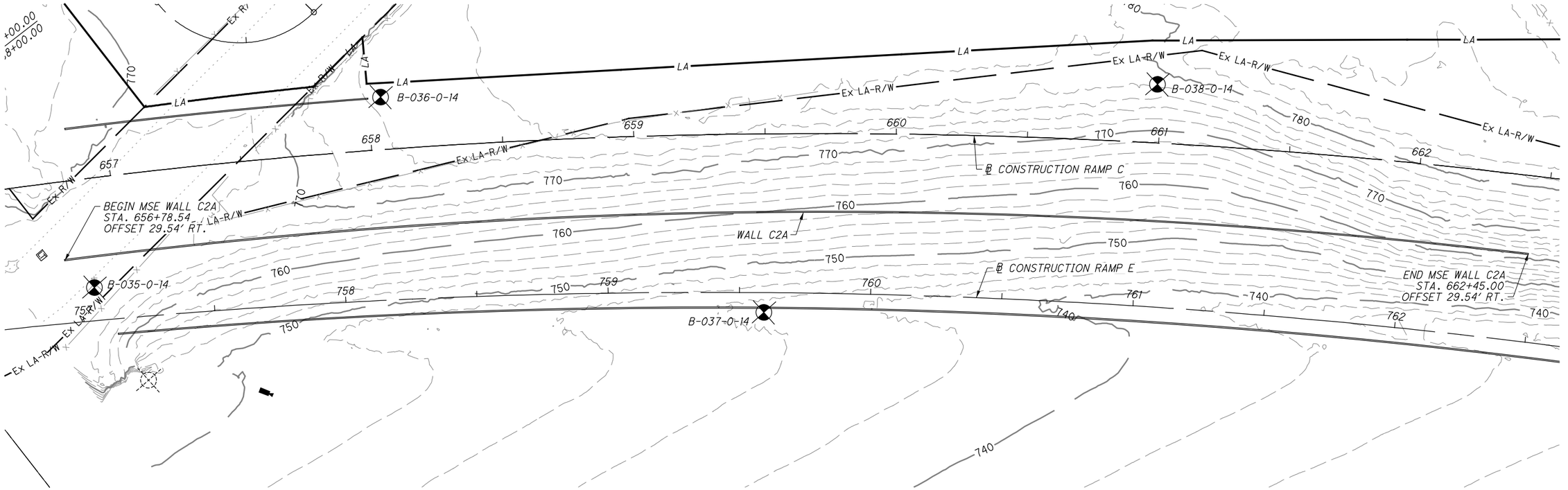
PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / LW	DRILL RIG: CME 550X ATV - TA	STATION / OFFSET: 658+05, 20 LT	EXPLORATION ID B-036-0-14
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: HDR / D. MATCHISON	HAMMER: CME AUTOMATIC	ALIGNMENT: RAMP C	
PID: 77628 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 8/2/13	ELEVATION: 773.9 (MSL) EOB: 40.3 ft.	PAGE 1 OF 1
START: 5/20/14 END: 5/20/14	SAMPLING METHOD: SPT / ST	ENERGY RATIO (%): 91.6	COORD: 419746.573 N, 1403213.356 E	

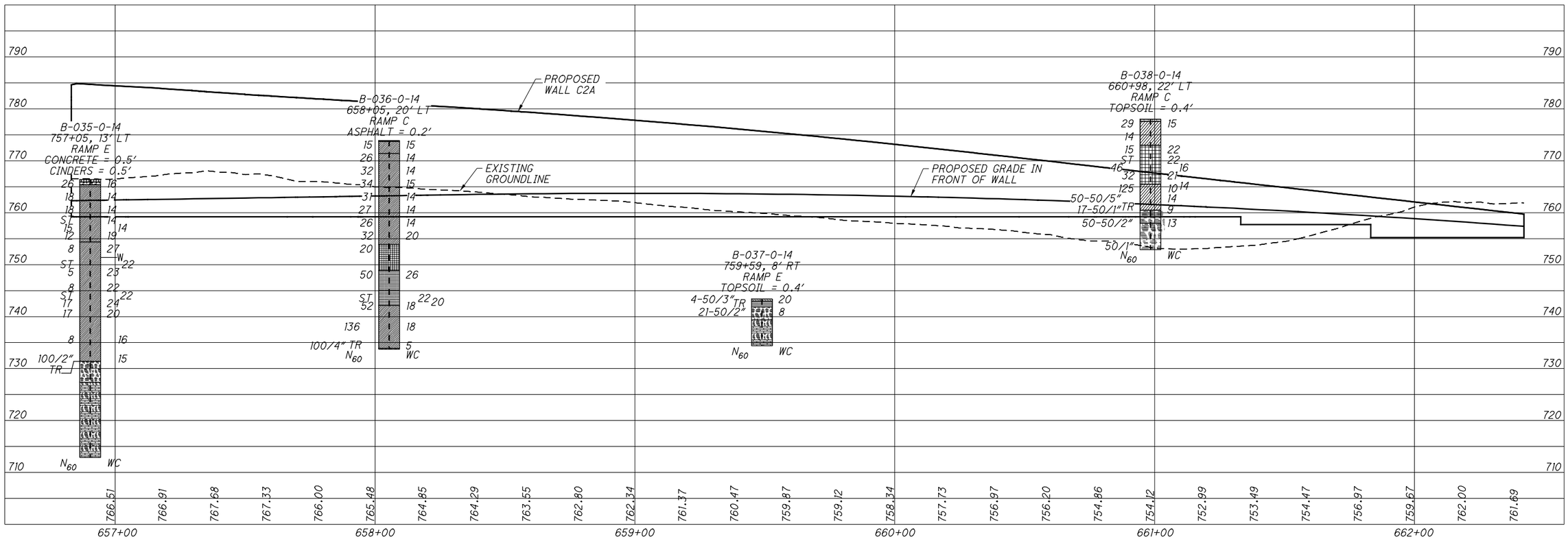
MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
2" ASPHALT	773.7						-	-	-	-	-	-	-	-	-	-		
STIFF TO VERY STIFF, BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, DAMP (FILL)	771.4		8 5 5	15	44	SS-1	3.50	7	8	13	35	37	30	17	13	15	A-6a (9)	
VERY STIFF, BROWN, **SILT AND CLAY**, SOME SAND, LITTLE GRAVEL, DAMP (GLACIAL TILL) @ 15' - trace gravel			5 8 9	26	100	SS-2	4.00	-	-	-	-	-	-	-	-	14	A-6a (V)	
			5 10 11	32	100	SS-3	4.00	13	9	14	34	30	29	16	13	14	A-6a (7)	
			7 10 12	34	100	SS-4	4.00	-	-	-	-	-	-	-	-	15	A-6a (V)	
			6 9 11	31	100	SS-5	4.00	-	-	-	-	-	-	-	-	14	A-6a (V)	
			5 8 10	27	100	SS-6	4.00	-	-	-	-	-	-	-	-	14	A-6a (V)	
			7 9 8	26	100	SS-7	4.00	8	8	15	36	33	30	16	14	14	A-6a (8)	
			9 10 11	32	39	SS-8	4.00	-	-	-	-	-	-	-	-	20	A-6a (V)	
	753.9																	
VERY STIFF, BROWN, **CLAY**, SOME SILT, LTTLE SAND, TRACE GRAVEL, DAMP TO MOIST	748.9		5 4 9	20	100	SS-9	2.50	4	5	6	34	51	48	22	26	26	A-7-6 (16)	
STIFF TO VERY STIFF, BLUE-GRAY, **SILTY CLAY**, SOME GRAVEL, LITTLE SAND, DAMP TO MOIST (LACUSTRINE)			11 28 5	50	67	SS-10	1.00	-	-	-	-	-	-	-	-	26	A-6b (V)	
					100	ST-1	2.50	22	9	8	25	36	36	18	18	22	A-6b (8)	
	742.1		7 16 18	52	100	SS-11A SS-11B	1.00 / -	-	-	-	-	-	-	-	-	20	A-6b (V)	
STIFF, BROWN, **SILT AND CLAY**, SOME GRAVEL, LITTLE SAND, DAMP @ 35' - hard								23	8	8	33	28	32	18	14	18	A-6a (7)	
			7 24 65	136	100	SS-12	-	-	-	-	-	-	-	-	-	18	A-6a (V)	
	733.9																	
SHALE, GRAY, VERY WEAK. (BEDROCK)	733.6	TR EOB	100/4"	-	100	SS-13	-	-	-	-	-	-	-	-	-	5	Rock (V)	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH AUGER CUTTINGS

STANDARD ODOT SOIL BORING LOG (11 X 17) - OH DOT.GDT - 2/26/15 09:06 - C:\PWWORKING\PITT\D1025182\20140608_HAM-71-3.81_STRUCTURES_UPDATED.GPJ





STRUCTURE FOUNDATION EXPLORATION
WALL C2A (MSE WALL)

DRAWN JTB
CHECKED DMV

HORIZONTAL SCALE IN FEET
0 10 20 40

HAM-71-3.81

139
175

c:\pwworking\pitt\d0885895\77628ZP002.dgn 4/21/2015 10:59:35 AM jbudner

PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / LW	DRILL RIG: CME 550X ATV - TA	STATION / OFFSET: 757+05, 13 LT	EXPLORATION ID B-035-0-14
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: HDR / D. MATCHISON	HAMMER: CME AUTOMATIC	ALIGNMENT: RAMP E	
PID: 77628 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 8/2/13	ELEVATION: 766.4 (MSL) EOB: 53.5 ft.	PAGE 1 OF 1
START: 5/20/14 END: 5/20/14	SAMPLING METHOD: SPT/ST/NQ	ENERGY RATIO (%): 91.6	COORD: 419616.941 N, 1403194.880 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
6" CONCRETE	765.9																	
6" CINDERS	765.4																	
VERY STIFF TO HARD, BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, DAMP TO MOIST			50 9 8	26	89	SS-1	-	-	-	-	-	-	-	-	-	-	A-1-a (V)	
							-	-	-	-	-	-	-	-	-	16	A-6a (V)	
@7' - 8.5', c' = 0 psf, phi' = 31 degrees			3 5 7	18	100	SS-2	4.00	-	-	-	-	-	-	-	-	14	A-6a (V)	
@10' - Noted mineral concretions and orange oxidation			6 5 7	18	100	SS-3	4.00	-	-	-	-	-	-	-	-	14	A-6a (V)	
					88	ST-1	-	5	10	15	37	33	32	18	14	14	A-6a (9)	
			3 4 6	15	100	SS-4	4.50	-	-	-	-	-	-	-	-	14	A-6a (V)	
			3 4 4	12	94	SS-5	4.00	-	-	-	-	-	-	-	-	19	A-6a (V)	
	754.4																	
MEDIUM STIFF TO STIFF, BROWN, **SILT AND CLAY**, TRACE TO LITTLE SAND, TRACE GRAVEL, MOIST			2 2 3	8	89	SS-6	2.00	-	-	-	-	-	-	-	-	27	A-6a (V)	
@16.2' - 16.7'; Qu (ST-2) = 2210 psf																		
@20' - Noted color change to gray		W																
@21.5' - 23.0', c' = 0 psf, phi' = 28.4 degrees					100	ST-2	1.50	1	3	6	53	37	35	21	14	22	A-6a (10)	
@25' - Noted deposits of blue-green high plasticity clay			2 1 2	5	78	SS-7	2.00	-	-	-	-	-	-	-	-	23	A-6a (V)	
			2 2 3	8	22	SS-8	1.00	-	-	-	-	-	-	-	-	22	A-6a (V)	
					100	ST-3	1.00	2	5	9	51	33	31	18	13	22	A-6a (9)	
			8 5 6	17	100	SS-9	0.50	-	-	-	-	-	-	-	-	24	A-6a (V)	
			8 5 6	17	89	SS-10	1.00	-	-	-	-	-	-	-	-	20	A-6a (V)	
	731.4	TR																
SHALE, GRAY. (BEDROCK)			100/2"	-	100	SS-12	-	-	-	-	-	-	-	-	-	15	Rock (V)	
	727.4																	
INTERBEDDED SHALE (70%) AND LIMESTONE (30%), RQD 19%; **SHALE**, GRAY, SLIGHTLY TO MODERATELY WEATHERED, VERY WEAK, VERY THIN TO THIN BEDDED; **LIMESTONE**, GRAY, MODERATELY STRONG TO STRONG, THIN BEDDED, CRYSTALLINE, HIGHLY TO MODERATELY FRACTURED, SLIGHTLY ROUGH TO VERY ROUGH.			18		50	NQ-1											CORE	
@ 44.1' - 44.7' = 66.6 psi			40		100	NQ-2											CORE	
			0		42	NQ-3											CORE	
	712.9	EOB																

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: 50 LB. BENTONITE POWDER; 376 LB. CEMENT; 50 GAL. WATER

STANDARD ODOT SOIL BORING LOG (11 X 17) OH DOT.GDT - 2/9/15 22:48 - C:\PWWORKING\PITT\D1025182\20140608_HAM-71-3.81_STRUCTURES_UPDATED.GPJ

c:\pwworking\pitt\d0885895\77628ZL032.dgn 4/23/2015 11:13:48 AM jbudner

PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / LW	DRILL RIG: CME 550X ATV - TA	STATION / OFFSET: 658+05, 20 LT	EXPLORATION ID B-036-0-14
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: HDR / D. MATCHISON	HAMMER: CME AUTOMATIC	ALIGNMENT: RAMP C	
PID: 77628 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 8/2/13	ELEVATION: 773.9 (MSL) EOB: 40.3 ft.	PAGE 1 OF 1
START: 5/20/14 END: 5/20/14	SAMPLING METHOD: SPT / ST	ENERGY RATIO (%): 91.6	COORD: 419746.573 N, 1403213.356 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 773.9	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
2" ASPHALT	773.7							-	-	-	-	-	-	-	-	-		
STIFF TO VERY STIFF, BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, DAMP (FILL)		1	8 5 5	15	44	SS-1	3.50	7	8	13	35	37	30	17	13	15	A-6a (9)	
	771.4	2																
VERY STIFF, BROWN, **SILT AND CLAY**, SOME SAND, LITTLE GRAVEL, DAMP (GLACIAL TILL)		3	5 8 9	26	100	SS-2	4.00	-	-	-	-	-	-	-	-	14	A-6a (V)	
@ 15' - trace gravel		4																
		5																
		6	5 10 11	32	100	SS-3	4.00	13	9	14	34	30	29	16	13	14	A-6a (7)	
		7																
		8	7 10 12	34	100	SS-4	4.00	-	-	-	-	-	-	-	-	15	A-6a (V)	
		9																
		10																
		11	6 9 11	31	100	SS-5	4.00	-	-	-	-	-	-	-	-	14	A-6a (V)	
		12																
		13	5 8 10	27	100	SS-6	4.00	-	-	-	-	-	-	-	-	14	A-6a (V)	
		14																
		15																
		16	7 9 8	26	100	SS-7	4.00	8	8	15	36	33	30	16	14	14	A-6a (8)	
		17																
		18	9 10 11	32	39	SS-8	4.00	-	-	-	-	-	-	-	-	20	A-6a (V)	
	753.9	19																
VERY STIFF, BROWN, **CLAY**, SOME SILT, LTTLE SAND, TRACE GRAVEL, DAMP TO MOIST		20																
		21	5 4 9	20	100	SS-9	2.50	4	5	6	34	51	48	22	26	-	A-7-6 (16)	
		22																
		23																
		24																
	748.9	25																
STIFF TO VERY STIFF, BLUE-GRAY, **SILTY CLAY**, SOME GRAVEL, LITTLE SAND, DAMP TO MOIST (LACUSTRINE)		26	11 28 5	50	67	SS-10	1.00	-	-	-	-	-	-	-	-	26	A-6b (V)	
		27																
		28																
		29																
		30			100	ST-1	2.50	22	9	8	25	36	36	18	18	22	A-6b (8)	
	742.1	31	7 16 18	52	100	SS-11A	1.00	-	-	-	-	-	-	-	-	20	A-6b (V)	
STIFF, BROWN, **SILT AND CLAY**, SOME GRAVEL, LITTLE SAND, DAMP		32				SS-11B	-	23	8	8	33	28	32	18	14	18	A-6a (7)	
@ 35' - hard		33																
		34																
		35																
		36	7 24 65	136	100	SS-12	-	-	-	-	-	-	-	-	-	18	A-6a (V)	
		37																
		38																
		39																
	733.9	40																
SHALE, GRAY, VERY WEAK. (BEDROCK)	733.6	TR EOB	100/4"	-	100	SS-13	-	-	-	-	-	-	-	-	-	5	Rock (V)	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH AUGER CUTTINGS

STANDARD ODOT SOIL BORING LOG (11 X 17) OH DOT.GDT - 2/9/15 22:49 - C:\PWWORKING\PITT\D1025182\20140608_HAM-71-3.81_STRUCTURES_UPDATED.GPJ

PROJECT: HAM-71-3.81 | DRILLING FIRM / OPERATOR: THELEN / J. SMITH | DRILL RIG: CME 55 TRACK - TA | STATION / OFFSET: 759+59.38, 7.5 RT | EXPLORATION ID B-037-0-14
TYPE: STRUCTURE | SAMPLING FIRM / LOGGER: HDR / S. REED | HAMMER: CME AUTOMATIC | ALIGNMENT: RAMP E
PID: 77628 BR ID: | DRILLING METHOD: 3.25" HSA | CALIBRATION DATE: 7/21/13 | ELEVATION: 743.4 (MSL) EOB: 9.0 ft. | PAGE 1 OF 1
START: 5/16/14 END: 5/16/14 | SAMPLING METHOD: SPT / NQ | ENERGY RATIO (%): 88.5 | COORD: 419800.849 N, 1403371.799 E

MATERIAL DESCRIPTION AND NOTES	ELEV. 743.4	DEPTHS	SPT/RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
TOPSOIL	743.0		4 50/3"	-	100	SS-1	1.50	28	8	6	27	31	39	22	17	20	A-6b (7)	
STIFF, BROWN AND GRAY, **SILTY CLAY**, SOME GRAVEL, LITTLE SAND, OCCASIONAL COBBLES, MOIST (FILL)	741.9	TR																
SHALE, GRAY, SLIGHTLY WEATHERED. (BEDROCK)			21 50/2"	-	100	SS-2	-	-	-	-	-	-	-	-	-	8	Rock (V)	
	739.4																	
INTERBEDDED SHALE (63%) AND LIMESTONE (37%), RQD 46%; **SHALE**, GRAY, SLIGHTLY WEATHERED, VERY WEAK, THIN TO MEDIUM BEDDED; **LIMESTONE**, GRAY, SLIGHTLY WEATHERED, MODERATELY STRONG TO STRONG, THIN TO MEDIUM BEDDED, SLIGHTLY FRACTURED. (BEDROCK)			42		100	NQ-1											CORE	
@ 5.2' - 5.5' - vertical fracture @ 6.5' - 6.8' - vertical fracture @ 8.6' - 8.75' - vertical fracture	734.4	EOB	52		100	NQ-2											CORE	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 3 BAGS BENTONITE CHIPS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 4/17/15 11:29 - C:\PWWORKING\PITTD\102518220140608_HAM-71-3.81_STRUCTURES_UPDATED.GPJ

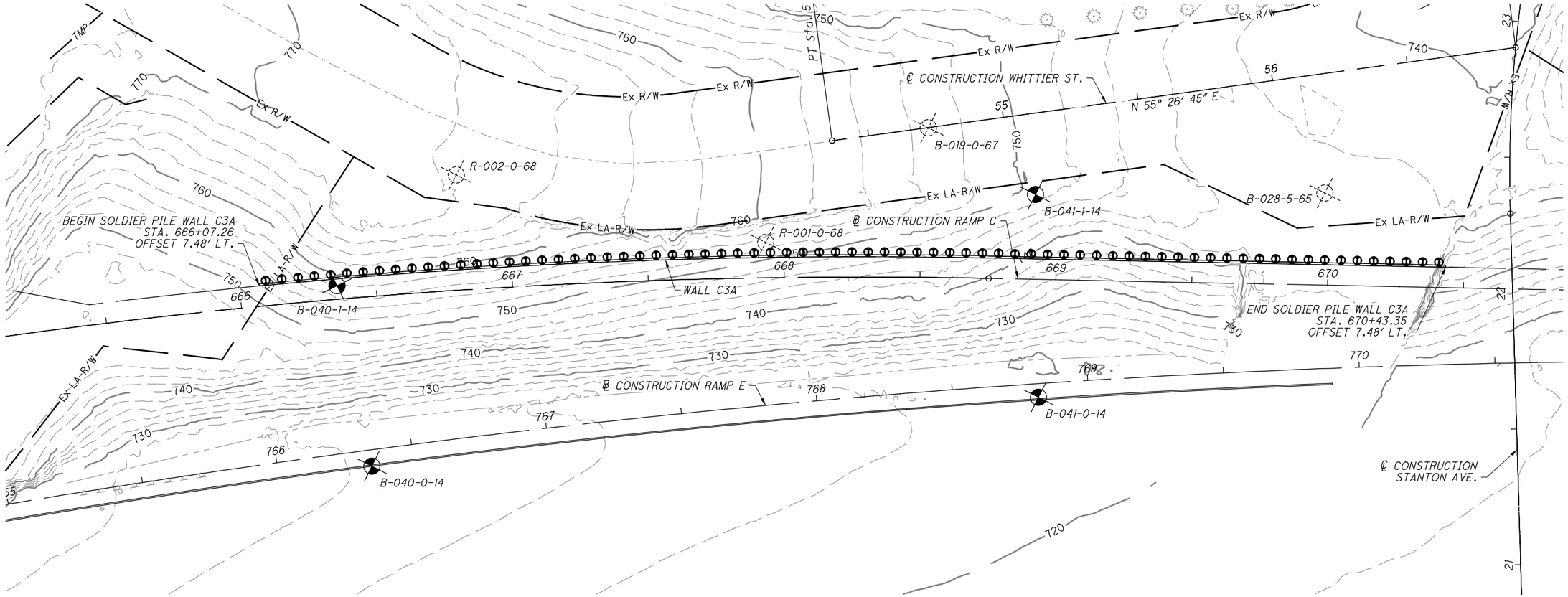
PROJECT: HAM-71-3.81 | DRILLING FIRM / OPERATOR: THELEN / LW | DRILL RIG: CME 550X ATV - TA | STATION / OFFSET: 660+98, 22 LT | EXPLORATION ID B-038-0-14
TYPE: STRUCTURE | SAMPLING FIRM / LOGGER: HDR / D. MATCHISON | HAMMER: CME AUTOMATIC | ALIGNMENT: RAMP C
PID: 77628 BR ID: | DRILLING METHOD: 3.25" HSA | CALIBRATION DATE: 8/2/13 | ELEVATION: 778.0 (MSL) EOB: 25.1 ft. | PAGE 1 OF 1
START: 5/19/14 END: 5/19/14 | SAMPLING METHOD: SPT / ST | ENERGY RATIO (%): 91.6 | COORD: 419970.516 N, 1403406.874 E

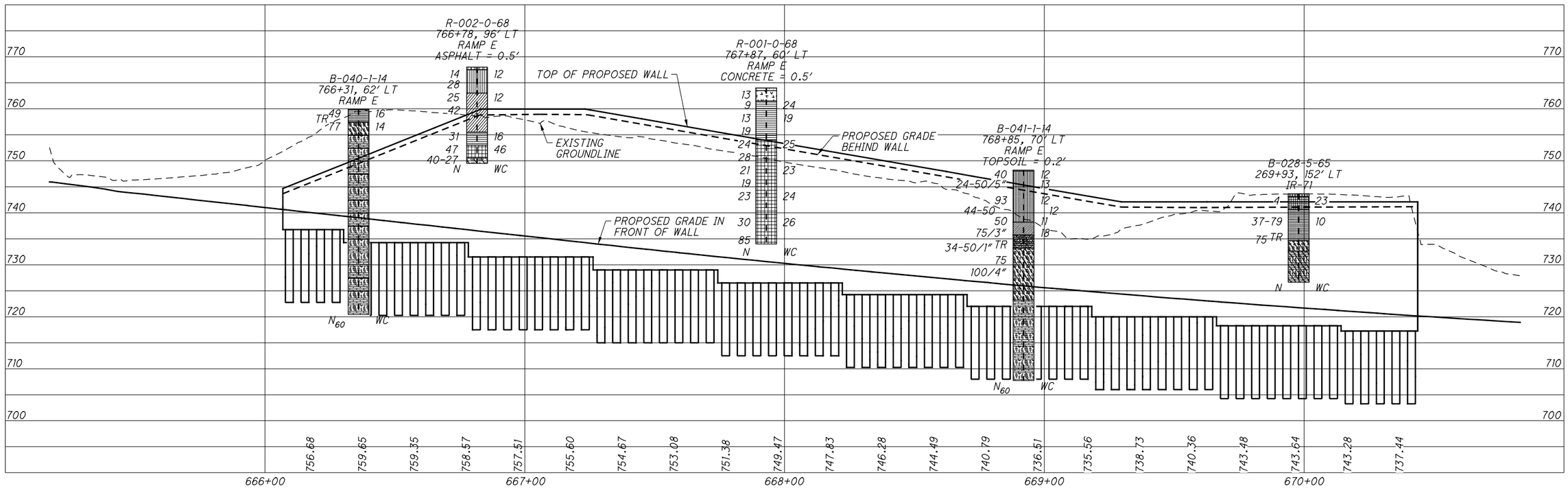
MATERIAL DESCRIPTION AND NOTES	ELEV. 778.0	DEPTHS	SPT/RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
TOPSOIL	777.6		3 4 15	29	78	SS-1	-	8	15	10	43	24	37	26	11	15	A-6a (7)	
STIFF TO VERY STIFF, BLACK, TRACE BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, ASPHALT AND COAL FRAGMENTS, DAMP (FILL)			3 4 5	14	17	SS-2	-	-	-	-	-	-	-	-	-	-	A-6a (V)	
	773.0																	
VERY STIFF TO HARD, BROWN, **CLAY**, "AND" SILT, TRACE TO LITTLE SAND, DAMP			3 5 5	15	100	SS-3	2.00	-	-	-	-	-	-	-	-	22	A-7-6 (V)	
@7.2' - 7.7'; Qu = 6100 psf					92	ST-1	3.50	0	1	5	45	49	44	21	23	22	A-7-6 (14)	
			11 15 15	46	100	SS-4	4.00	-	-	-	-	-	-	-	-	16	A-7-6 (V)	
			5 8 13	32	100	SS-5	3.00	0	6	7	35	52	54	25	29	21	A-7-6 (18)	
	765.5																	
HARD, BROWN, **SILT AND CLAY**, LITTLE SAND, OCCASIONAL LIMESTONE FRAGMENTS, DAMP (RESIDUUM)			7 40 42	125	100	SS-6A SS-6B	4.50 4.50	0 -	4 -	7 -	51 -	38 -	36 -	21 -	15 -	14 10	A-6a (10) A-6a (V)	
			50 50/5"	-	100	SS-7	4.50	-	-	-	-	-	-	-	-	14	A-6a (V)	
	760.5	TR																
SHALE, GRAY, MODERATELY WEATHERED. (BEDROCK)			17 50/1"	-	100	SS-8	-	-	-	-	-	-	-	-	-	9	Rock (V)	
	758.0																	
SHALE, BROWN, WEATHERED. (BEDROCK)			50 50/2"	-	100	SS-9	-	-	-	-	-	-	-	-	-	13	Rock (V)	
	752.9	EOB	50/1"	-	100	SS-10	-	-	-	-	-	-	-	-	-	-	Rock (V)	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 12/15/14 13:54 - C:\PWWORKING\PITTD\102518220140608_HAM-71-3.81_STRUCTURES_UPDATED.GPJ





HORIZONTAL SCALE IN FEET
0 10 20 40

DRAWN JTB
CHECKED DMV

STRUCTURE FOUNDATION EXPLORATION
WALL C3A (SOLDIER PILE WALL)

HAM-71-3.81

143
175

c:\pwworking\pitt\d0885895\T76282P003.dgn 4/21/2015 11:00:25 AM jbudner

c:\pwworking\pitt\d0885895\77628ZL034.dgn 4/21/2015 11:00:34 AM jbudner

PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / M. LOZIER	DRILL RIG: CME 55 TRACK - TA	STATION / OFFSET: 766+31, 62 LT	EXPLORATION ID B-040-1-14
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: HDR / M. BATTEN	HAMMER: CME AUTOMATIC	ALIGNMENT: RAMP E	
PID: 77628 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 7/21/13	ELEVATION: 759.9 (MSL) EOB: 39.5 ft.	PAGE 1 OF 1
START: 6/4/14 END: 6/4/14	SAMPLING METHOD: SPT / NQ	ENERGY RATIO (%): 88.5	COORD: 420291.588 N, 1403840.571 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
HARD, BROWN, **SILTY CLAY**, TRACE SAND, TRACE GRAVEL, DAMP (RESIDUUM)	759.9		6 7 26	49	100	SS-1	4.5+	5	3	4	44	44	36	20	16	16	A-6b (10)	
	757.4	TR																
SHALE, BROWN, SEVERELY WEATHERED. (BEDROCK)			32 21 31	77	100	SS-2	4.5+	-	-	-	-	-	-	-	-	14	Rock (V)	
	754.9																	
INTERBEDDED SHALE (75%) AND LIMESTONE (25%), RQD 12%; **SHALE**, BROWN, SEVERELY TO HIGHLY WEATHERED, VERY WEAK, VERY THIN TO MEDIUM BEDDED; **LIMESTONE**, GRAY, UNWEATHERED, MODERATELY STRONG, ROUGH, VERY THIN TO THIN BEDDED, FRACTURED TO MODERATELY FRACTURED.	752.4		12		48	NQ-1											CORE	
INTERBEDDED SHALE (50%) AND LIMESTONE (50%), RQD 48%; **SHALE**, BROWN, SEVERELY TO HIGHLY WEATHERED, VERY WEAK, VERY THIN TO MEDIUM BEDDED; **LIMESTONE**, GRAY, UNWEATHERED, MODERATELY STRONG, ROUGH, VERY THIN TO THIN BEDDED, FRACTURED TO MODERATELY FRACTURED. @ 8.3-8.8', Qu (NQ-2) = 75.6 psi	747.4		48		94	NQ-2											CORE	
INTERBEDDED SHALE (68%) AND LIMESTONE (32%), RQD 6%; **SHALE**, BROWN, SEVERELY TO HIGHLY WEATHERED, VERY WEAK, VERY THIN TO MEDIUM BEDDED; **LIMESTONE**, GRAY, UNWEATHERED, MODERATELY STRONG, ROUGH, VERY THIN TO THIN BEDDED, FRACTURED TO MODERATELY FRACTURED.	742.4		6		48	NQ-3											CORE	
INTERBEDDED SHALE (45%) AND LIMESTONE (55%), RQD 74%; **SHALE**, GRAY, MODERATELY WEATHERED, VERY WEAK; **LIMESTONE**, GRAY, UNWEATHERED, MODERATELY STRONG.	737.4		74		100	NQ-4											CORE	
INTERBEDDED SHALE (58%) AND LIMESTONE (42%), RQD 46%; **SHALE**, GRAY, MODERATELY WEATHERED, VERY WEAK; **LIMESTONE**, GRAY, UNWEATHERED, MODERATELY STRONG.	727.4		46		96	NQ-5											CORE	
INTERBEDDED SHALE (81%) AND LIMESTONE (19%), RQD 56%; **SHALE**, GRAY, MODERATELY WEATHERED, VERY WEAK; **LIMESTONE**, GRAY, UNWEATHERED, MODERATELY STRONG, SLIGHTLY FRACTURED.	720.4	EOB	56		100	NQ-6											CORE	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH AUGER CUTTINGS

STANDARD ODOT SOIL BORING LOG (11 X 17) OH DOT.GDT - 2/11/15 21:49 - C:\PWWORKING\PITT\D1025182\20140608_HAM-71-3.81_STRUCTURES_UPDATED.GPJ

PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / LW	DRILL RIG: CME 550X ATV - TA	STATION / OFFSET: 768+85, 70 LT	EXPLORATION ID B-041-1-14
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: HDR / M. BATTEN	HAMMER: CME AUTOMATIC	ALIGNMENT: RAMP E	
PID: 77628 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 8/2/13	ELEVATION: 748.2 (MSL) EOB: 40.5 ft.	PAGE 1 OF 1
START: 5/22/14 END: 5/22/14	SAMPLING METHOD: SPT / NQ	ENERGY RATIO (%): 91.6	COORD: 420437.386 N, 1404054.860 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
TOPSOIL	748.0																	
VERY STIFF, TAN, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, DAMP @3' - 5', weathered shale fragments			4 15 11	40	100	SS-1	1.25	1	8	11	47	33	32	22	10	12	A-4a (8)	
			24 50/5"	-	100	SS-2	4.5+	-	-	-	-	-	-	-	-	13	A-4a (V)	
			8 21 40	93	100	SS-3	4.5+	-	-	-	-	-	-	-	-	12	A-4a (V)	
			44 50	-	100	SS-4	4.5+	-	-	-	-	-	-	-	-	12	A-4a (V)	
HARD, TAN AND GRAY, **SILT AND CLAY**, LITTLE SAND, TRACE GRAVEL	738.2		50	-	100	SS-5	1.75	3	6	10	49	32	32	19	13	11	A-6a (9)	
HARD, TAN AND BROWN, **GRAVEL AND/OR STONE FRAGMENTS WITH SAND, SILT, AND CLAY**, CONTAINS LIMESTONE FRAGMENTS	735.7		75/3"	-	100	SS-6	0.75	62	11	8	9	10	-	-	-	18	A-2-6 (V)	
SHALE, DARK GRAY, SEVERLY WEATHERED, VERY WEAK, HIGHLY FRACTURED. (BEDROCK)	733.2	TR	34 50/1"	-	100	SS-7	4.5+	-	-	-	-	-	-	-	-	-	Rock (V)	
			75	-	100	SS-8	-	-	-	-	-	-	-	-	-	-	Rock (V)	
			100/4"	-	100	SS-9	-	-	-	-	-	-	-	-	-	-	Rock (V)	
INTERBEDDED SHALE (67%) AND LIMESTONE (33%); **SHALE**, GRAY WITH OCCASIONAL TAN, HIGHLY TO SLIGHTLY WEATHERED, VERY WEAK, VERY THICK TO MEDIUM BEDDED; **LIMESTONE**, GRAY, HIGHLY TO SLIGHTLY WEATHERED, MODERATELY STRONG, VERY THIN TO THIN BEDDED, HIGHLY TO MODERATELY FRACTURED, SLIGHTLY TO VERY ROUGH. @ 30.0' - 30.5'; Qu (NQ-1) = 4520.0 psi	723.2		57		90	NQ-1											CORE	
			68		90	NQ-2											CORE	
			70		100	NQ-3											CORE	
	707.7	EOB																

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: AUGER CUTTINGS; MIXED WITH .5 BAG BENTONITE CHIPS

STANDARD ODOT SOIL BORING LOG (11 X 17) OH DOT.GDT - 2/11/15 21:54 - C:\PWWORKING\PITT\D1025182\20140608_HAM-71-3.81_STRUCTURES_UPDATED.GPJ

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Redesignated B-028-5-65

LOG OF BORING

DATE STARTED 9-23-65 SAMPLER: TYPE Split Spoon DIA. 2" O.D. WATER ELEVATION
DATE COMPLETED 9-23-65 CASING: LENGTH None DIA. IMMEDIATE None
BORING NUMBER B 28-5 CORE BARREL: TYPE NXM SIZE 2 1/8" I.D. AFTER HRS. Backfilled

STATION & OFFSET 269+93, 152' left SURFACE ELEVATION 744.9

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
744.9	0											
744.4			Concrete	Visual								
	2	2-2-2	Brown lean clay, moist - medium stiff	1	0	4	3	39	54	50	28	23
741.9	4											
	6	37-79	Brown lean clay with highly weathered shale and limestone layers, dry - very stiff	2	38	7	5	24	26	33	16	10
735.9	8											
	10	75		3	Visual							
733.9			Brown weathered shale									
	12		Interbedded brown and gray weathered shale and gray limestone (approx. 70% shale, 30% limestone) Shale soft to tough, calcareous trace fossils. Limestone occurs in 1/2" to 5-1/2" layers, impure fine grained, impure cyrstalline and crystalline, fossiliferous, hard. Fracture zone exhibited 30" to 35" from top of section with iron-oxide staining									
	14	90%										
	16											
727.9	18	% Recovery										
	20		Boring completed									

Redesignated R-001-0-68

LOG OF BORING ORDER No. 99.990 9-20-68 JH

DATE STARTED 3-18-68 SAMPLER: TYPE SPLIT SPOON DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 3-18-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE NONE
BORING NUMBER R-17-1 CORE BARREL: TYPE SIZE AFTER 1 HRS. NONE

STATION & OFFSET 7+27 WHITTIER, 26'RIGHT NORTHEAST EXWY. HAM 71-3.61 SURFACE ELEVATION 764.0'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
764.0	0											
763.5			CONCRETE									
761.5	2	4-7-6	CINDERS, (FILL) MOIST - MEDIUM DENSE	1	VISUAL							
	4	5-4-5	BROWN SILTY CLAY WITH BROKEN STONE FRAGMENTS, (FILL) MOIST - STIFF	2	2	4	14	33	47	39	20	24
	6	4-7-6	DO DO DO	3	8	7	11	31	43	36	18	19
	8	8-10-9	BROWN SILTY CLAY WITH BROKEN STONE FRAGMENTS AND TRACE OF BRICK, (FILL) MOIST - STIFF	4	VISUAL							
754.0	10											
	12	10-11-13	BROWN SILTY CLAY, MOIST - STIFF	5	0	1	3	35	61	43	23	25
	14	10-12-16	DO DO	6	VISUAL							
	16	9-10-11	BROWN SILTY CLAY, MOIST - VERY STIFF	7	0	1	3	33	63	41	22	23
	18	8-9-10	DO DO	8	VISUAL							
	20											
	22	7-10-13	BROWN SILTY CLAY, MOIST - STIFF	9	0	0	4	35	61	43	25	24
	24											
739.0												
	26	8-12-18	BROWN SANDY SILTY CLAY, MOIST - VERY STIFF	10	0	7	14	25	54	44	24	26
	28											
734.0	30	85	REFUSAL									
	32		BORING COMPLETED									

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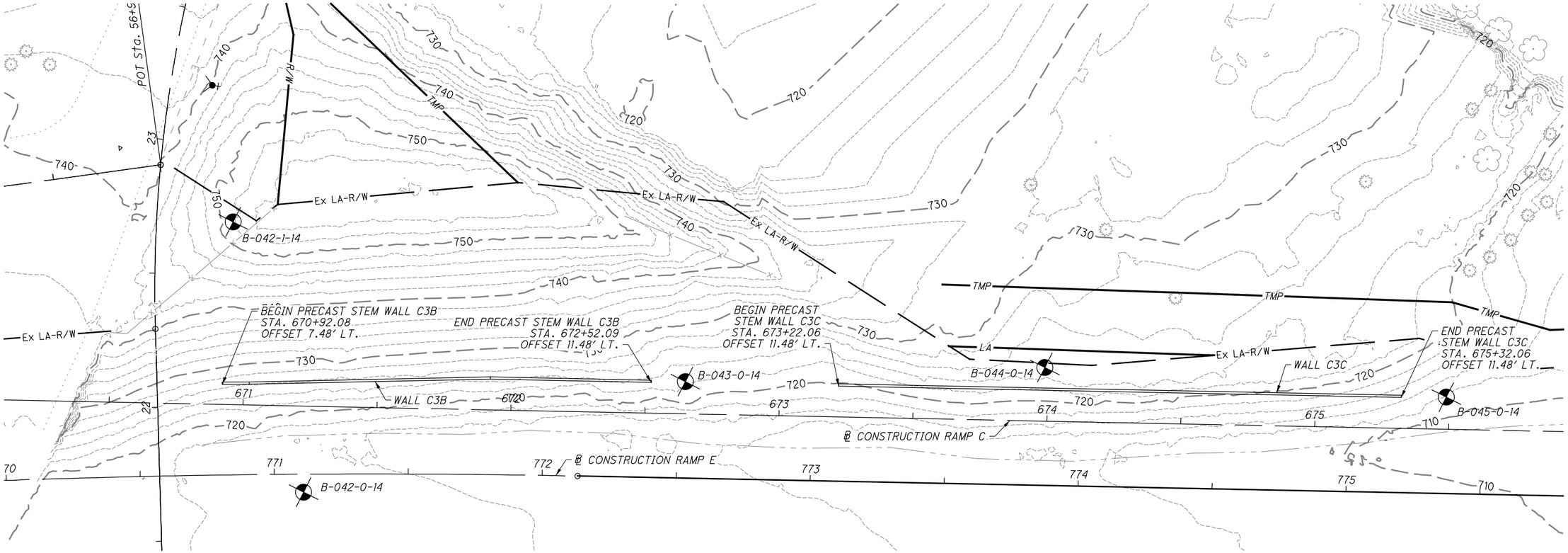
Redesignated R-002-0-68

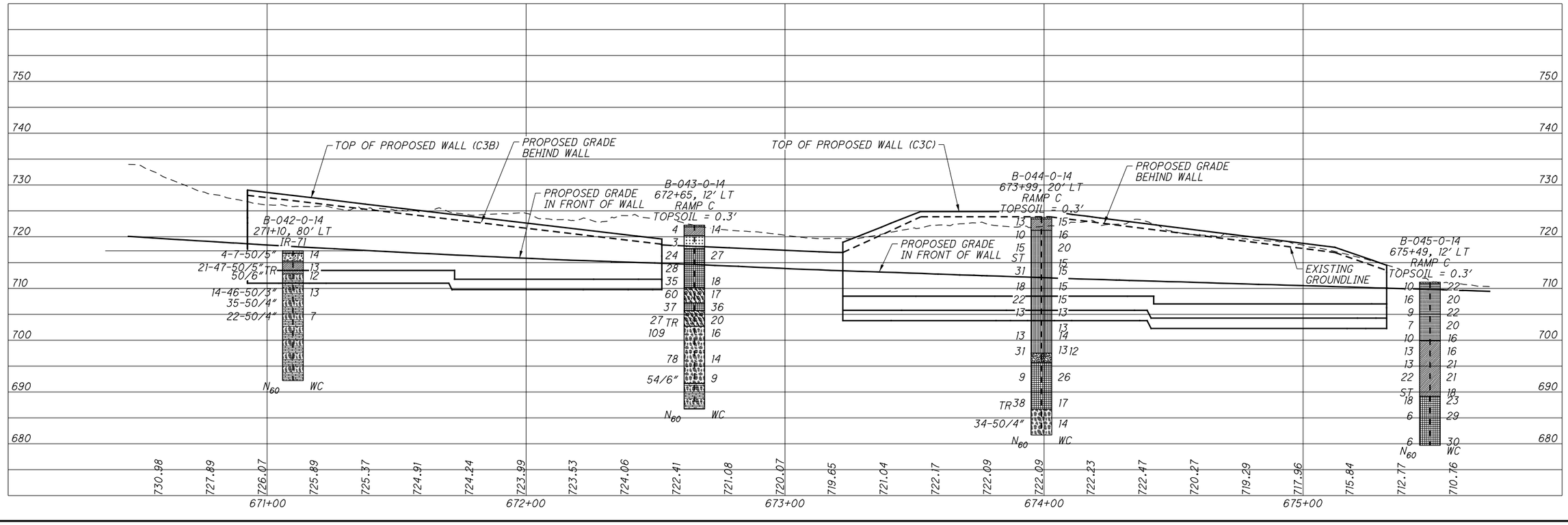
LOG OF BORING Order No. 99.990 9-23-68 JH

DATE STARTED 3-18-68 SAMPLER: TYPE SPLIT SPOON DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 3-18-68 CASING: LENGTH HSA DIA. 2.25"I.D. IMMEDIATE NONE
BORING NUMBER R-17-2 CORE BARREL: TYPE _____ SIZE _____ AFTER BACKFILLED UPON HRS COMPLETION

STATION & OFFSET 6+36 WHITTIER ST., 22.5'RIGHT NORTHEAST EXWY. HAM 71-3.61 SURFACE ELEVATION 768.0'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
768.0	0											
767.5			CONCRETE, ASHES, CINDERS & GRAVEL (FILL) MOIST - LOOSE	1	VISUAL							
	2	2-6-8	BROWN SANDY SILTY CLAY, MOIST - VERY STIFF	2	9	11	16	33	31	23	9	12
	4	6-13-15	DO DO	3	VISUAL							
763.0												
	6	4-12-13	BROWN GRAVELLY, SANDY LEAN CLAY, MOIST - VERY STIFF	4	23	9	14	30	24	25	11	12
	8	6-16-26	DO DO DO	5	VISUAL							
758.0	10											
	12	AUGER	LIMESTONE FRAGMENTS	6	VISUAL							
755.5												
	14	10-15-16	BROWN HIGHLY WEATHERED SHALE WITH LIMESTONE FRAGMENTS, MOIST - VERY STIFF	7	20	3	5	37	35	35	16	16
753.0												
	16	10-12	BROWN SILTY CLAY WITH LIMESTONE FRAGMENTS, MOIST - MEDIUM	8	20	3	10	14	53	58	23	46
		35	DO DO DO /STIFF	9	INSUFFICIENT SAMPLE							
750.5	18											
749.5		40-27	BROWN WEATHERED SHALE	10	VISUAL							
	20		BORING COMPLETED									
	22											





HORIZONTAL SCALE IN FEET
0 10 20 40

DRAWN JTB
CHECKED DMV

STRUCTURE FOUNDATION EXPLORATION
WALL C3B AND C3C (PRECAST STEM WALLS)

HAM-71-3.81

148
175

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PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / J. SMITH	DRILL RIG: CME 55 TRACK - TA	STATION / OFFSET: 271+10, 80 LT	EXPLORATION ID B-042-0-14
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: HDR / S. REED	HAMMER: CME AUTOMATIC	ALIGNMENT: IR-71	
PID: 77628 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 7/21/13	ELEVATION: 717.3 (MSL) EOB: 25.1 ft.	PAGE 1 OF 1
START: 5/15/14 END: 5/15/14	SAMPLING METHOD: SPT / NQ	ENERGY RATIO (%): 88.5	COORD: 420480.413 N, 1404290.792 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
	717.3																	
VERY STIFF, BROWN, **SANDY SILT**, SOME CLAY, LITTLE GRAVEL, MOIST (FILL)	716.8		4 7 50/5"	-	71	SS-1A SS-1B	3.50 -	16 65	14 14	17 7	26 8	27 6	27 19	18 17	9 2	14 14	A-4a (4) A-1-a (0)	
DENSE, BROWN, **GRAVEL AND/OR STONE FRAGMENTS**, TRACE SILT, TRACE CLAY, MOIST	715.3																	
HARD, BROWN, **SILT AND CLAY**, TRACE GRAVEL, TRACE SAND, MOIST	712.8		21 47 50/5"	-	106	SS-2	-	6	1	2	47	44	34	20	14	13	A-6a (10)	
SHALE, BROWN, HIGHLY TO MODERATELY WEATHERED. (BEDROCK) interbedded with LIMESTONE		TR	50	-	100	SS-3	-	-	-	-	-	-	-	-	-	12	Rock (V)	
			14 46 50/3"	-	96	SS-4	-	-	-	-	-	-	-	-	-	13	Rock (V)	
			35 50/4"	-	0	SS-5	-	-	-	-	-	-	-	-	-	-	Rock (V)	
SHALE, GRAY, SLIGHTLY WEATHERED. (BEDROCK) interbedded with LIMESTONE	705.3		22 50/4"	-	-	SS-6	-	-	-	-	-	-	-	-	-	7	Rock (V)	
INTERBEDDED SHALE (57%) AND LIMESTONE (43%), RQD 40%; **SHALE**, GRAY, SLIGHTLY WEATHERED, VERY WEAK, MEDIUM BEDDED, FISSILE; **LIMESTONE**, GRAY, SLIGHTLY WEATHERED, VERY STRONG, THIN BEDDED. (BEDROCK) @ 19.3'-19.7'; Qu (NQ-2) = 191 psi @ 20.2' - 20.3' - vertical fracture @ 23.1' - 23.45' - vertical fracture	702.3		0		100	NQ-1											CORE	
			52		100	NQ-2											CORE	
			50		100	NQ-3											CORE	
	692.2	EOB																

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 6 BAGS BENTONITE CHIPS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 12/15/14 13:54 - C:\PWWORKING\PITT\D1025182\20140608_HAM-71-3.81 - STRUCTURES_UPDATED.GPJ

HAM-71-3.81

STRUCTURE FOUNDATION EXPLORATION

WALL C3B AND C3C (PRECAST STEM WALL)

DRAWN AFS

CHECKED DMV

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PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / J. SMITH	DRILL RIG: CME 55 TRACK - TA	STATION / OFFSET: 672+65, 12 LT	EXPLORATION ID B-043-0-14
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: HDR / S. REED	HAMMER: CME AUTOMATIC	ALIGNMENT: RAMP C	
PID: 77628 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 7/21/13	ELEVATION: 722.2 (MSL) EOB: 35.5 ft.	PAGE 1 OF 1
START: 5/21/14 END: 5/21/14	SAMPLING METHOD: SPT / NQ	ENERGY RATIO (%): 88.5	COORD: 420581.452 N, 1404399.422 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
TOPSOIL	722.2																	
VERY STIFF, BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, TRACE ROOTS, MOIST	721.9		2 2 1	4	73	SS-1	2.75	9	9	16	37	29	29	17	12	14	A-6a (7)	
MEDIUM STIFF, BROWN AND GRAY, **SILT**, SOME CLAY, TRACE SAND, TRACE GRAVEL, MOIST	720.2		1 1 1	3	67	SS-2	0.50	1	1	3	72	23	30	20	10	-	A-4b (8)	
STIFF TO VERY STIFF, BROWN AND GRAY, **CLAY**, "AND" SILT, TRACE SAND, TRACE GRAVEL, MOIST	717.7		6 7 9	24	87	SS-3A SS-3B	1.25	-	-	-	-	-	-	-	-	27	A-7-6 (V)	
							2.25	-	-	-	-	-	-	-	-	27	A-7-6 (V)	
			6 7 12	28	100	SS-4A SS-4B	4.10	2	3	4	40	51	42	24	18	-	A-7-6 (12)	
			12 10 14	35	20	SS-5	2.50	-	-	-	-	-	-	-	-	18	A-7-6 (V)	
SHALE, BROWN, HIGHLY WEATHERED.	710.2		11 18 23	60	80	SS-6	4.5+	-	-	-	-	-	-	-	-	17	Rock (V)	
SOFT, ORANGE BROWN, **CLAY**, TRACE SAND, LITTLE SILT, MOIST TO WET (CLAY SEAM)	707.2		3 9 16	37	67	SS-7	0.25	0	1	2	19	78	68	25	43	36	A-7-6 (20)	
SHALE, BROWN, HIGHLY WEATHERED.	705.7		3 5 13	27	100	SS-8	4.5+	-	-	-	-	-	-	-	-	20	Rock (V)	
SHALE, OLIVE-BROWN, MODERATELY WEATHERED. (BEDROCK)	702.7	TR																
interbedded with LIMESTONE			18 33 41	109	100	SS-9	-	-	-	-	-	-	-	-	-	16	Rock (V)	
SHALE, GRAY, UNWEATHERED. (BEDROCK)	694.2		8 18 35	78	100	SS-10	-	-	-	-	-	-	-	-	-	14	Rock (V)	
INTERBEDDED SHALE (81%) AND LIMESTONE (19%), RQD 40%; **SHALE**, GRAY, UNWEATHERED TO SLIGHTLY WEATHERED, WEAK, MEDIUM BEDDED; **LIMESTONE**, GRAY, UNWEATHERED TO SLIGHTLY WEATHERED, STRONG, MEDIUM BEDDED. @33.1' - 33.25' - Vertical Fracture @ 32.0'-32.4'; Qu(NQ-1) = 809.0 psi	691.7		54	-	100	SS-11	-	-	-	-	-	-	-	-	-	9	Rock (V)	
	686.7	EOB	40		90	NQ-1											CORE	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: AUGER CUTTINGS MIXED WITH BENTONITE CHIPS

STANDARD ODOT SOIL BORING LOG (11 X 17) OH DOT.GDT - 2/11/15 22:00 - C:\PWWORKING\PITT\D1025182\20140608_HAM-71-3.81_STRUCTURES_UPDATED.GPJ

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PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / J. SMITH	DRILL RIG: CME 55 TRACK - TA	STATION / OFFSET: 673+99, 20 LT	EXPLORATION ID B-044-0-14
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: HDR / S. REED	HAMMER: CME AUTOMATIC	ALIGNMENT: RAMP C	
PID: 77628 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 7/21/13	ELEVATION: 723.7 (MSL) EOB: 42.0 ft.	PAGE 1 OF 1
START: 5/20/14 END: 5/20/14	SAMPLING METHOD: SPT / ST	ENERGY RATIO (%): 88.5	COORD: 420646.637 N, 1404516.773 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 723.7	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
TOPSOIL	723.4																	
STIFF TO VERY STIFF, BROWN, **SILT AND CLAY**, SOME GRAVEL, SOME SAND, MOIST (FILL)	721.2		2 4 5	13	67	SS-1	1.50	28	9	12	27	24	34	20	14	15	A-6a (5)	
STIFF TO VERY STIFF, BROWN TO ORANGE-BROWN, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, MOIST @7.5' - hard @8.1' - 8.6', QU = 8870 psf			2 3 4	10	73	SS-2	2.50	-	-	-	-	-	-	-	-	16	A-4a (V)	
			3 4 6	15	100	SS-3	1.75	-	-	-	-	-	-	-	-	20	A-4a (V)	
					83	ST-1	4.50	9	9	15	37	30	30	21	9	15	A-4a (6)	
			7 10 11	31	100	SS-4	4.50	-	-	-	-	-	-	-	-	15	A-4a (V)	
			5 5 7	18	100	SS-5	3.25	-	-	-	-	-	-	-	-	15	A-4a (V)	
			3 6 9	22	100	SS-6	4.5+	-	-	-	-	-	-	-	-	15	A-4a (V)	
STIFF, GRAY, **SANDY SILT**, SOME CLAY, LITTLE GRAVEL, MOIST (LACUSTRINE)	706.7		3 4 5	13	100	SS-7	1.50	-	-	-	-	-	-	-	-	13	A-4a (V)	
					100	ST-2	1.00	14	9	15	35	27	23	15	8	13	A-4a (5)	
			4 4 5	13	27	SS-8	1.00	-	-	-	-	-	-	-	-	14	A-4a (V)	
			3 9 12	31	100	SS-9A SS-9B	0.75 -	- 56	- 19	- 8	- 10	- 7	- 20	- 17	- 3	13 12	A-4a (V) A-1-b (0)	
MEDIUM DENSE, GRAY, **GRAVEL AND/OR STONE FRAGMENTS WITH SAND**, LITTLE SILT, TRACE CLAY, WET	697.5																	
MEDIUM STIFF, GRAY, **CLAY**, "AND" SILT, TRACE SAND, MOIST (LACUSTRINE)	695.7		2 3 3	9	100	SS-10	0.75	0	1	0	42	57	47	23	24	26	A-7-6 (15)	
VERY STIFF TO HARD, BLUISH-GRAY, **CLAY**, "AND" SILT, TRACE SAND, MOIST (RESIDUUM)	690.7		6 11 15	38	100	SS-11	4.00	-	-	-	-	-	-	-	-	17	A-7-6 (V)	
SHALE, OLIVE-BROWN, MODERATELY WEATHERED. (BEDROCK)	686.7	TR																
			34 50/4"	-	100	SS-12	-	-	-	-	-	-	-	-	-	14	Rock (V)	
	681.7	EOB																

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: AUGER CUTTINGS MIXED WITH BENTONITE CHIPS

STANDARD ODOT SOIL BORING LOG (11 X 17) OH DOT.GDT - 2/11/15 22:05 - C:\PWWORKING\PITT\D1025182\20140608_HAM-71-3.81_STRUCTURES_UPDATED.GPJ

c:\pwworking\pitt\d0885895\77628ZL054.dgn 4/23/2015 11:15:08 AM jbudner

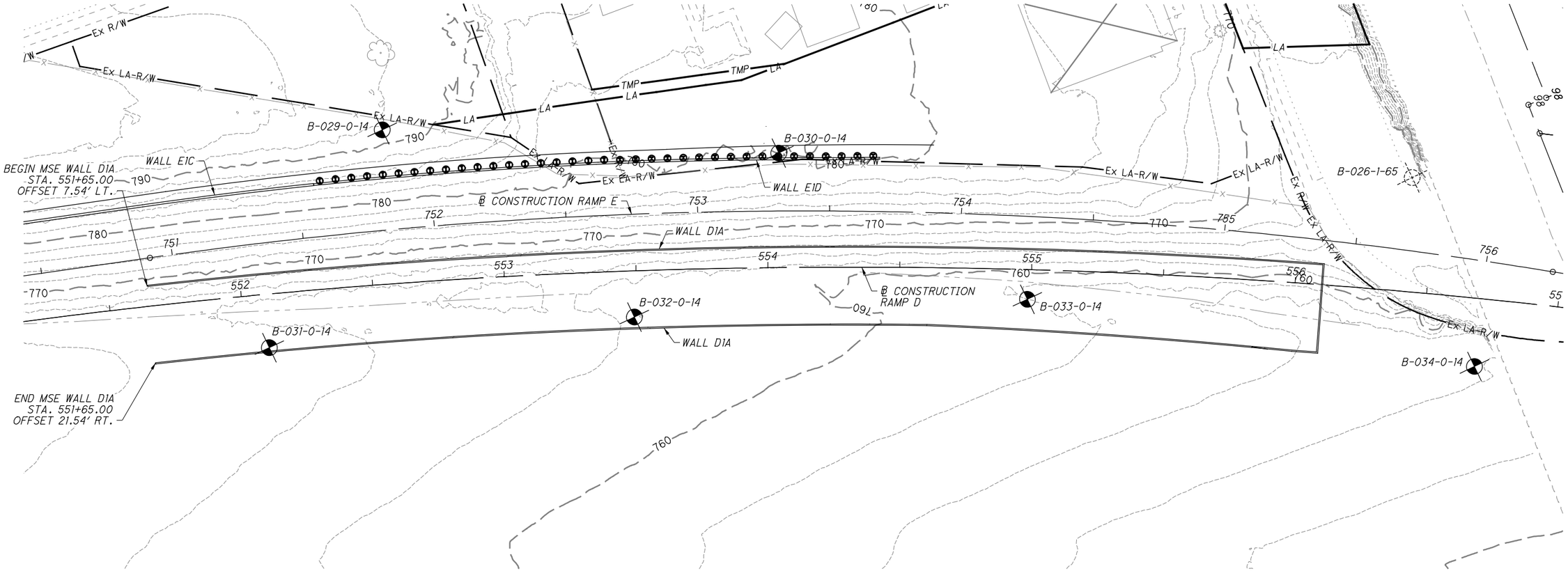
PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / J. SMITH	DRILL RIG: CME 55 TRACK - TA	STATION / OFFSET: 675+49, 12 LT	EXPLORATION ID B-045-0-14
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: HDR / S. REED	HAMMER: CME AUTOMATIC	ALIGNMENT: RAMP C	
PID: 77628 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 7/21/13	ELEVATION: 711.2 (MSL) EOB: 31.5 ft.	PAGE 1 OF 1
START: 5/21/14 END: 5/21/14	SAMPLING METHOD: SPT / ST	ENERGY RATIO (%): 88.5	COORD: 420704.318 N, 1404655.469 E	

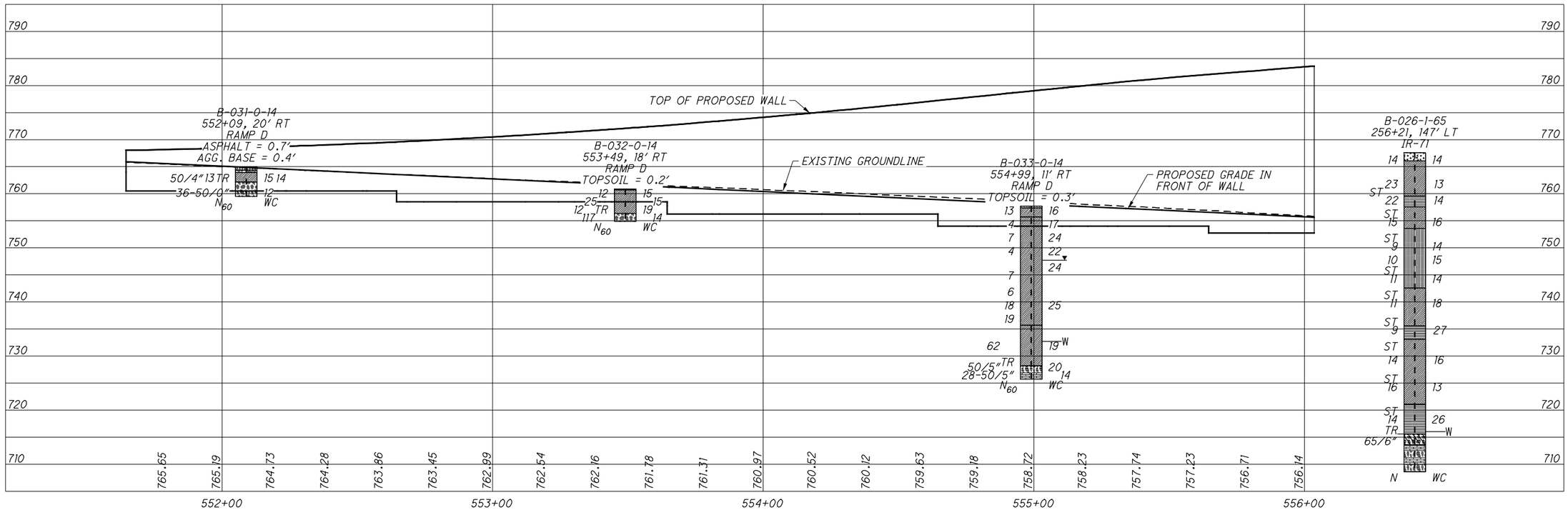
MATERIAL DESCRIPTION AND NOTES	ELEV. 711.2	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
4" TOPSOIL	710.9																	
MEDIUM STIFF TO STIFF, BROWN, **SILTY CLAY**, LITTLE SAND, TRACE GRAVEL (TILL)			2 4 3	10	67	SS-1	0.75	-	-	-	-	-	-	-	-	22	A-6b (V)	
			3 5 6	16	100	SS-2	2.75	8	5	14	35	38	37	20	17	20	A-6b (10)	
			2 3 3	9	53	SS-3	1.25	-	-	-	-	-	-	-	-	22	A-6b (V)	
			3 2 3	7	67	SS-4	0.75	-	-	-	-	-	-	-	-	20	A-6b (V)	
			2 3 4	10	80	SS-5	1.25	-	-	-	-	-	-	-	-	16	A-6b (V)	
	699.9						-	-	-	-	-	-	-	-	-	-	A-6a (V)	
VERY STIFF, BROWN, **SILT AND CLAY**, SOME TO TRACE SAND, TRACE GRAVEL (TILL)			3 4 5	13	100	SS-6	4.00	4	7	15	41	33	30	18	12	16	A-6a (9)	
			3 4 5	13	100	SS-7	2.50	0	0	0	48	52	31	19	12	21	A-6a (9)	
	694.2																	
VERY STIFF, GRAY, **SILT AND CLAY**, TRACE GRAVEL			3 6 9	22	100	SS-8	3.50	-	-	-	-	-	-	-	-	21	A-6a (V)	
					100	ST-1	4.00	1	0	0	41	58	33	19	14	18	A-6a (10)	
	689.2																	
VERY STIFF, GRAY, **CLAY**, VARVED (LACUSTRINE)			4 5 7	18	100	SS-9	1.25	-	-	-	-	-	-	-	-	23	A-7-6 (V)	
	686.2																	
SOFT, GRAY, **CLAY** (LACUSTRINE)			1 2 2	6	100	SS-10	0.25	-	-	-	-	-	-	-	-	29	A-7-6 (V)	
			1 2 2	6	100	SS-11	0.25	-	-	-	-	-	-	-	-	30	A-7-6 (V)	
	679.7	EOB																

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (11 X 17) OH DOT.GDT - 2/11/15 22:08 - C:\PWWORKING\PITT\D1025182\20140608_HAM-71-3.81_STRUCTURES_UPDATED.GPJ





c:\pwworking\pitt\d0885895\77628ZP005.dgn 4/21/2015 11:02:36 AM jbudner

HORIZONTAL SCALE IN FEET
0 10 20 40

DRAWN JTB CHECKED DMV

STRUCTURE FOUNDATION EXPLORATION
WALL D1A (MSE WALL)

HAM-71-3.81

153
175

c:\pwworking\pitt\d0885895\77628ZL038.dgn 4/21/2015 11:02:42 AM jbudner

PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / J. SMITH	DRILL RIG: CME 55 TRACK - TA	STATION / OFFSET: 552+09, 20 RT	EXPLORATION ID B-031-0-14
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: HDR / S. REED	HAMMER: CME AUTOMATIC	ALIGNMENT: RAMP D	
PID: 77628 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 7/21/13	ELEVATION: 765.0 (MSL) EOB: 5.5 ft.	PAGE 1 OF 1
START: 5/17/14 END: 5/17/14	SAMPLING METHOD: SPT	ENERGY RATIO (%): 88.5	COORD: 419092.786 N, 1402975.841 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 765.0	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
8" ASPHALT	764.3																	
5" AGGREGATE BASE	763.9	1	7				-	-	-	-	-	-	-	-	-	-	A-1-a (V)	
VERY STIFF, BROWN, **SILT AND CLAY**, LITTLE GRAVEL, TRACE SAND	762.2	2	4 5	13	40	SS-1	3.00	-	-	-	-	-	-	-	-	15	A-6a (V)	
		TR 3	50/4"	-	100	SS-2	-	-	-	-	-	-	-	-	-	14	Rock (V)	
SHALE, BROWN, MODERATELY WEATHERED. (BEDROCK)		4																
	759.5	EOB 5	36 50/0"	-	100	SS-3	-	-	-	-	-	-	-	-	-	12	Rock (V)	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH AUGER CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 2/25/15 18:44 - C:\PWWORKING\PITTD\10251822\20140608_HAM-71-3.81_STRUCTURES_UPDATED.GPJ

PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / J. SMITH	DRILL RIG: CME 55 TRACK - TA	STATION / OFFSET: 553+49, 18 RT	EXPLORATION ID B-032-0-14
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: HDR / S. REED	HAMMER: CME AUTOMATIC	ALIGNMENT: RAMP D	
PID: 77628 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 7/21/13	ELEVATION: 760.9 (MSL) EOB: 6.0 ft.	PAGE 1 OF 1
START: 5/17/14 END: 5/17/14	SAMPLING METHOD: SPT	ENERGY RATIO (%): 88.5	COORD: 419222.768 N, 1403024.707 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 760.9	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
TOPSOIL	760.7																	
VERY STIFF TO HARD, BROWN, **SILT AND CLAY**, LITTLE GRAVEL, MOIST		1	4 4 4	12	60	SS-1	4.00	25	12	9	26	28	32	19	13	15	A-6a (5)	
		2	4 7 10	25	73	SS-2	4.50	-	-	-	-	-	-	-	-	15	A-6a (V)	
		3	3 3 5	12	100	SS-3	2.00	6	9	12	31	42	32	17	15	19	A-6a (10)	
	756.4	TR 4																
SHALE, GRAY AND BROWN, MODERATELY WEATHERED. (BEDROCK)		5	16 27 52	117	67	SS-4	-	-	-	-	-	-	-	-	-	14	Rock (V)	
	754.9	EOB 6																

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 10/9/14 12:50 - C:\PWWORKING\PITTD\10205320\20140608_HAM-71-3.81_ROADWAY_UPDATED.GPJ

c:\pwworking\pitt\d0885895\77628ZL039.dgn 4/21/2015 11:02:54 AM jbudner

PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / J. SMITH	DRILL RIG: CME 55 TRACK - TA	STATION / OFFSET: 554+99, 11 RT	EXPLORATION ID B-033-0-14
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: HDR / S. REED	HAMMER: CME AUTOMATIC	ALIGNMENT: RAMP D	
PID: 77628 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 7/21/13	ELEVATION: 757.7 (MSL) EOB: 32.0 ft.	PAGE 1 OF 1
START: 5/16/14 END: 5/17/14	SAMPLING METHOD: SPT / ST	ENERGY RATIO (%): 88.5	COORD: 419360.226 N, 1403082.542 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 757.7	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
TOPSOIL	757.4																	
VERY STIFF, BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, MOIST		1	2 4 5	13	33	SS-1	2.00	8	8	12	35	37	33	19	14	16	A-6a (9)	
	755.7	2																
SOFT TO MEDIUM STIFF, BROWN, **SILT AND CLAY**, LITTLE TO TRACE SAND, TRACE GRAVEL, MOIST		3	1 1 2	4	13	SS-2	1.00	-	-	-	-	-	-	-	-	17	A-6a (V)	
@4.5'; Color changed to gray		4																
@ 10.5'-12.0, c' = 0, phi' = 27.6		5																
		6	1 2 3	7	87	SS-3	0.25	-	-	-	-	-	-	-	-	24	A-6a (V)	
		7																
		8	1 1 2	4	100	SS-4	0.25	-	-	-	-	-	-	-	-	22	A-6a (V)	
		9																
		10 ▼			-	ST-1	0.50	2	4	8	40	46	35	20	15	24	A-6a (10)	
		11																
		12																
		13	1 2 3	7	0	SS-5	-	-	-	-	-	-	-	-	-	-	A-6a (V)	
		14																
		15																
		16	1 2 2	6	0	SS-6	-	-	-	-	-	-	-	-	-	-	A-6a (V)	
		17																
		18	8 6 6	18	93	SS-7	0.50	4	2	2	35	57	37	23	14	25	A-6a (10)	
		19																
		20																
		21	7 5 8	19	7	SS-8	-	-	-	-	-	-	-	-	-	-	A-6a (V)	
	735.7	22																
VERY STIFF TO HARD, GRAY, **SILT AND CLAY**, TRACE SAND, TRACE GRAVEL, MOIST		23																
		24																
		25 W																
		26	12 31 11	62	47	SS-9	4.00	5	4	3	47	41	32	20	12	19	A-6a (9)	
		27																
		28																
		29																
	728.2	30 TR																
SHALE, GRAY, MODERATELY WEATHERED. (BEDROCK)			50/5"	-	48	SS-10	2.50	-	-	-	-	-	-	-	-	20	Rock (V)	
interbedded with limestone		31																
	725.7	32 EOB	28 50/5"	-	100	SS-11	-	-	-	-	-	-	-	-	-	14	Rock (V)	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 10 BAGS BENTONITE CHIPS

STANDARD ODOT SOIL BORING LOG (11 X 17) OH DOT.GDT - 2/9/15 22:56 - C:\PWWORKING\PITT\D1025182\20140608_HAM-71-3.81_STRUCTURES_UPDATED.GPJ



STRUCTURE FOUNDATION EXPLORATION
WALL E1A (PRECAST STEM WALL)

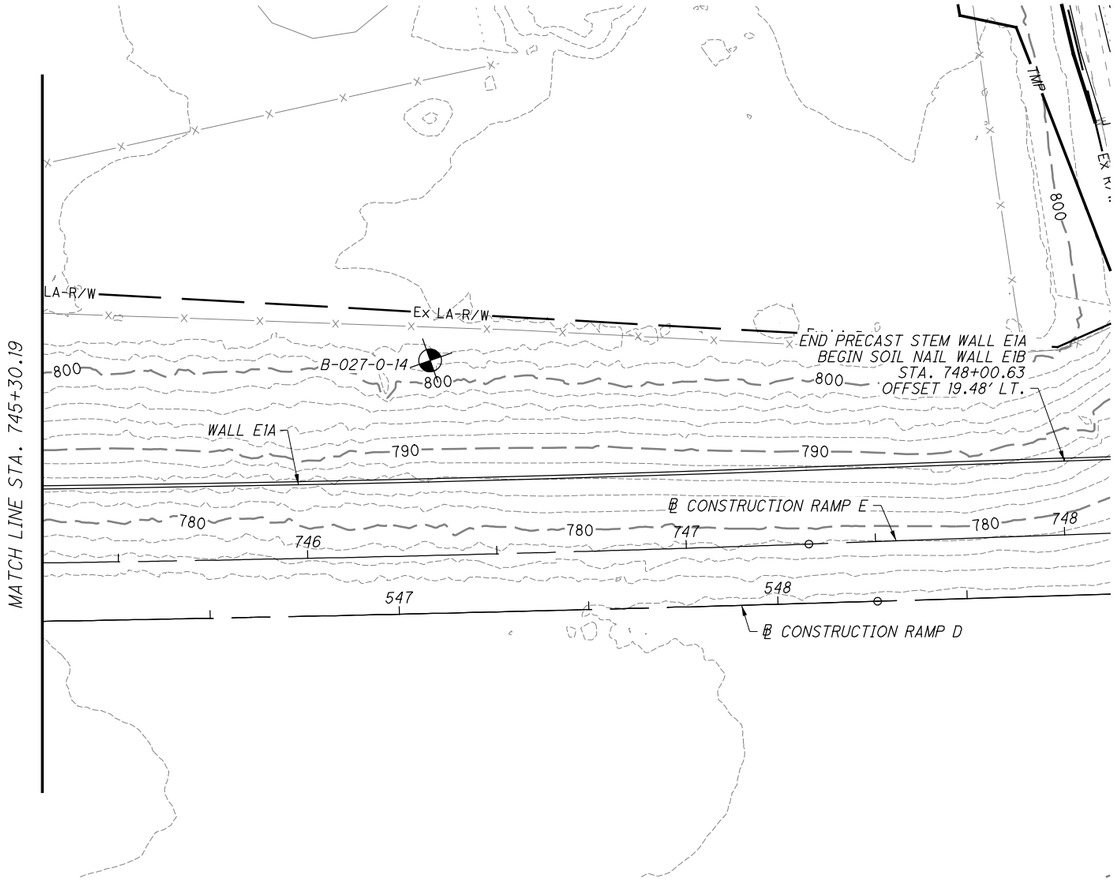
HAM-71-3.81

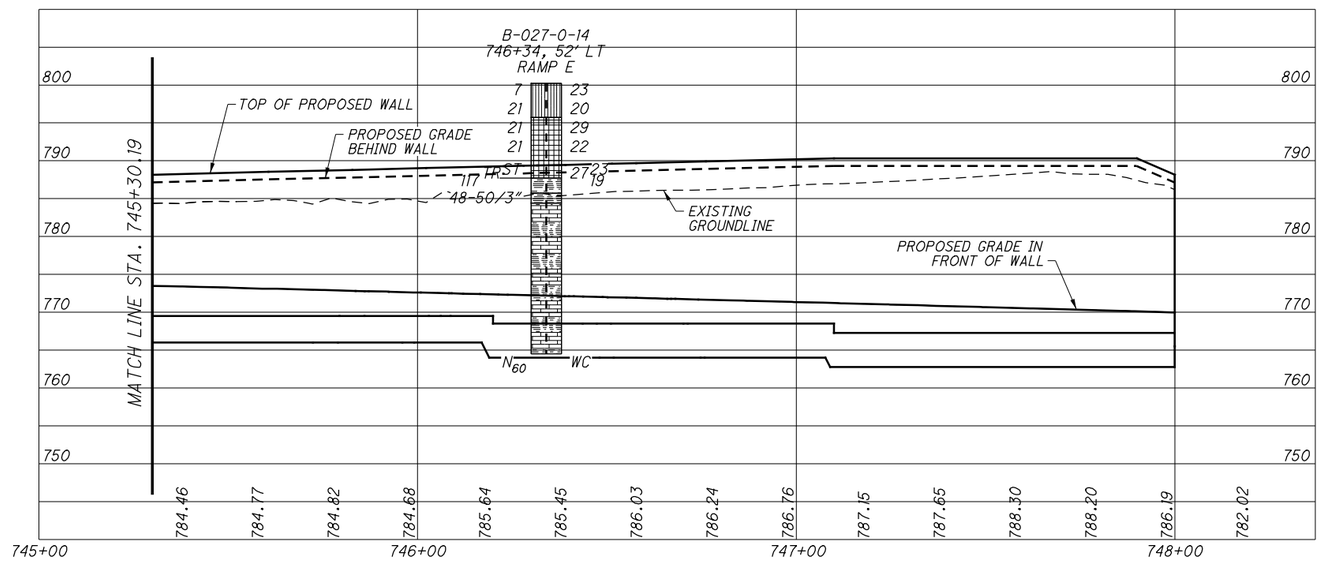
156
175

DRAWN JTB
CHECKED DMV

HORIZONTAL SCALE IN FEET
0 10 20 40

c:\pwworking\pitt\d0885895\T76282P006.dgn 4/21/2015 11:03:14 AM jbudner





STRUCTURE FOUNDATION EXPLORATION
WALL E1A (PRECAST STEM WALL)

HAM-71-3.81

DRAWN JTB
CHECKED DMV

HORIZONTAL SCALE IN FEET
0 10 20 40

157
175

c:\pwworking\pitt\d0885895\T76282P007.dgn 4/21/2015 11:03:28 AM jbudner

PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / M. LOZIER	DRILL RIG: CME 55 TRACK - TA	STATION / OFFSET: 741+89, 36 LT	EXPLORATION ID B-024-0-14
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: HDR / M. BATTEN	HAMMER: CME AUTOMATIC	ALIGNMENT: RAMP E	
PID: 77628 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 7/21/13	ELEVATION: 785.0 (MSL) EOB: 17.3 ft.	PAGE 1 OF 1
START: 6/5/14 END: 6/5/14	SAMPLING METHOD: SPT / NQ	ENERGY RATIO (%): 88.5	COORD: 418220.232 N, 1402612.349 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 785.0	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
SHALE, GRAY, MODERATELY TO SLIGHTLY WEATHERED.		1	2 3 4	10	80	SS-1	4.5+	-	-	-	-	-	-	-	-	15	Rock (V)	
		2																
		TR 3	17 50/1"	-	100	SS-2	-	-	-	-	-	-	-	-	-	10	Rock (V)	
	780.0	4																
INTERBEDDED SHALE (55%) AND LIMESTONE (45%), RQD 65%; **SHALE**, GRAY, SLIGHTLY TO MODERATELY WEATHERED, VERY WEAK; **LIMESTONE**, GRAY, SLIGHTLY WEATHERED, STRONG, VERY THIN TO THIN BEDDED, FOSSILIFEROUS, SLIGHTLY TO MODERATELY FRACTURED, SLIGHTLY TO VERY ROUGH.		5																
		6 7	48		100	NQ-1											CORE	
@ 7.8'-8.3'; Qu (NQ-2) = 278 psi		8 9 10 11 12 13 14 15 16	69		100	NQ-2											CORE	
	767.7	EOB 17																

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH AUGER CUTTINGS; MIXED WITH BENTONITE CHIPS

PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / M. LOZIER	DRILL RIG: CME 55 TRACK - TA	STATION / OFFSET: 743+34, 29 LT	EXPLORATION ID B-025-0-14
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: HDR / M. BATTEN	HAMMER: CME AUTOMATIC	ALIGNMENT: RAMP E	
PID: 77628 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 7/21/13	ELEVATION: 784.6 (MSL) EOB: 20.6 ft.	PAGE 1 OF 1
START: 6/5/14 END: 6/5/14	SAMPLING METHOD: SPT / NQ	ENERGY RATIO (%): 88.5	COORD: 418354.438 N, 1402666.604 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 784.6	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
SHALE, GRAY, MODERATELY WEATHERED.		1	2 15 12	40	89	SS-1	-	-	-	-	-	-	-	-	-	12	Rock (V)	
		2 TR																
		3	50/5"	-	100	SS-2	-	-	-	-	-	-	-	-	-	13	Rock (V)	
	779.6	4																
INTERBEDDED SHALE (55%) AND LIMESTONE (45%); **SHALE**, GRAY, SLIGHTLY TO MODERATELY WEATHERED, VERY WEAK, VERY THIN TO MEDIUM BEDDED; **LIMESTONE**, GRAY, UNWEATHERED, STRONG, VERY THIN TO THIN BEDDED, SLIGHTLY TO MODERATELY FRACTURED, SLIGHTLY TO VERY ROUGH.		5																
		6 7	84		100	NQ-1											CORE	
		8 9 10 11 12	60		100	NQ-2											CORE	
		13 14 15 16 17 18 19	83		100	NQ-3											CORE	
	764.0	EOB 20																

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH BENTONITE CHIPS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 12/15/14 13:54 - C:\PWWORKING\PITT\D1025182\20140608_HAM-71-3.81_STRUCTURES_UPDATED.GPJ

PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / M. LOZIER	DRILL RIG: CME 55 TRACK - TA	STATION / OFFSET: 744+84, 28 LT	EXPLORATION ID B-026-0-14
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: HDR / S. REED	HAMMER: CME AUTOMATIC	ALIGNMENT: RAMP E	
PID: 77628 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 7/21/13	ELEVATION: 785.3 (MSL) EOB: 20.1 ft.	PAGE 1 OF 1
START: 6/6/14 END: 6/6/14	SAMPLING METHOD: SPT / NQ	ENERGY RATIO (%): 88.5	COORD: 418495.912 N, 1402715.724 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
SHALE, GRAY, SLIGHTLY WEATHERED.	785.3		3 4 10	21	100	SS-1	1.50	-	-	-	-	-	-	-	-	16	Rock (V)	
		TR	24 16 50/0"	-	100	SS-2	1.00	-	-	-	-	-	-	-	-	8	Rock (V)	
INTERBEDDED SHALE (60%) AND LIMESTONE (40%), RQD 79%; **SHALE**, GRAY, UNWEATHERED, VERY WEAK, THIN BEDDED, FISSILE; **LIMESTONE**, GRAY, UNWEATHERED, STRONG, ROUGH, THIN TO MEDIUM BEDDED, FOSSILIFEROUS, INTACT, OCCASIONAL SHALE PARTINGS. @ 5.0' - 5.2' - moderately rough fractures	780.3		17		91	NQ-1											CORE	
			82		100	NQ-2											CORE	
			94		100	NQ-3											CORE	
	765.2	EOB																

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH AUGER CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 12/15/14 13:54 - C:\PWWORKING\PITT\D1025182\D0140608_HAM-71-3.81_STRUCTURES_UPDATED.GPJ

175 159	HAM-71-3.81	STRUCTURE FOUNDATION EXPLORATION WALL E1A (PRECASET STEM WALL)	DRAWN AFS CHECKED DMV

c:\pwworking\pitt\d0885895\77628ZL042.dgn 4/21/2015 11:04:06 AM jbudner

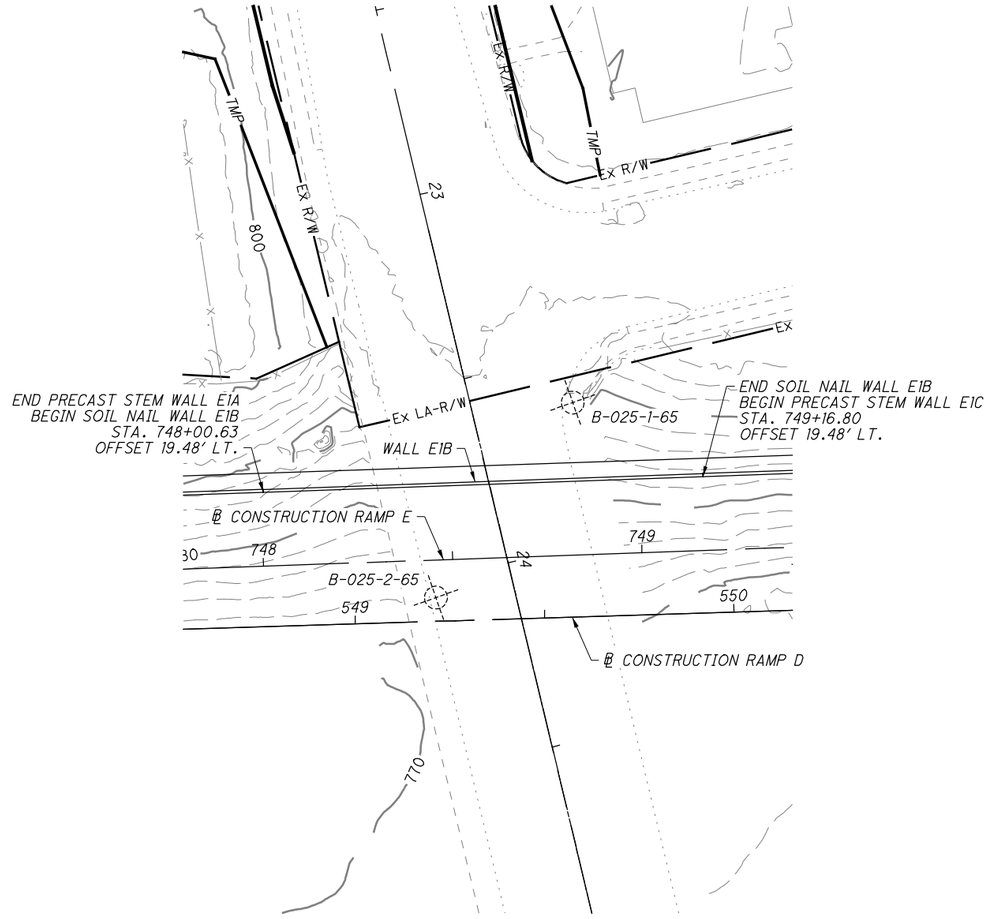
PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / M. LOZIER	DRILL RIG: CME 55 TRACK - TA	STATION / OFFSET: 746+34, 52 LT	EXPLORATION ID B-027-0-14
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: HDR / S. REED	HAMMER: CME AUTOMATIC	ALIGNMENT: RAMP E	
PID: 77628 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 7/21/13	ELEVATION: 800.2 (MSL) EOB: 35.7 ft.	PAGE 1 OF 1
START: 6/6/14 END: 6/6/14	SAMPLING METHOD: SPT/ST/NQ	ENERGY RATIO (%): 88.5	COORD: 418645.159 N, 1402740.447 E	

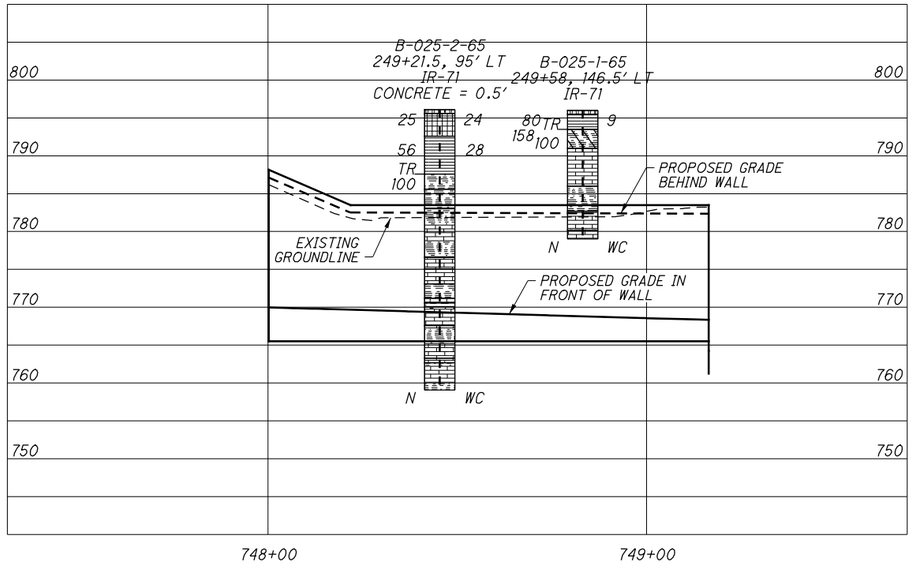
MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
STIFF TO VERY STIFF, MOTTLED BROWN, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, TRACE BLACK OXIDE CONCRETIONS, MOIST	800.2		2 2 3	7	80	SS-1	2.00	2	5	16	45	32	26	16	10	23	A-4a (8)	
			7 6 8	21	100	SS-2	4.25	-	-	-	-	-	-	-	-	20	A-4a (V)	
VERY STIFF, BROWN, TRACE GRAY, **CLAY**, SOME SILT, LITTLE SAND, TRACE GRAVEL, TRACE BLACK OXIDE CONCRETIONS, MOIST (RESIDUUM)	795.7																	
@10', QU (ST-1) = 7100 psf			5 6 8	21	100	SS-3	2.00	-	-	-	-	-	-	-	-	29	A-7-6 (V)	
			3 6 8	21	100	SS-4	3.75	-	-	-	-	-	-	-	-	22	A-7-6 (V)	
					67	ST-1	2.75	7	4	10	26	53	50	24	26	23	A-7-6 (16)	
	787.7	TR					4.00	-	-	-	-	-	-	-	-	27	A-7-6 (V)	
SHALE, BROWN TO OLIVE-BROWN, WEATHERED. (BEDROCK)			6 38 41	117	80	SS-5A SS-5B	-	-	-	-	-	-	-	-	-	19	Rock (V)	
	785.7																	
SHALE, GRAY. (BEDROCK)	784.4		48 50/3"	-	100	SS-6	-	-	-	-	-	-	-	-	-	-	Rock (V)	
INTERBEDDED SHALE (62%) AND LIMESTONE (38%), RQD 61%; **SHALE**, GRAY, UNWEATHERED, VERY WEAK, THIN TO MEDIUM BEDDED, FISSILE, INTACT TO SLIGHTLY FRACTURED; **LIMESTONE**, GRAY, UNWEATHERED, STRONG, SLIGHTLY ROUGH, THIN BEDDED, FOSSILIFEROUS, OCCASIONAL SHALE PARTINGS. (BEDROCK)			58		100	NQ-1											CORE	
@ 31.2' - 31.7', QU = 12,200 psi			59		100	NQ-2											CORE	
			66		100	NQ-3											CORE	
	764.5	EOB																

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH AUGER CUTTINGS

STANDARD ODOT SOIL BORING LOG (11 X 17) - OH DOT.GDT - 2/9/15 22:26 - C:\PWWORKING\PITT\D1025182\20140608_HAM-71-3.81_STRUCTURES_UPDATED.GPJ





HORIZONTAL SCALE IN FEET
0 10 20 40

DRAWN JTB
CHECKED DMV

STRUCTURE FOUNDATION EXPLORATION
WALL E1B (SOIL NAIL WALL)

HAM-71-3.81

161
175

c:\pwworking\pitt\d0885895\77628ZP008.dgn 4/21/2015 11:04:25 AM jbudner

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Redesignated B-025-1-65

LOG OF BORING

Date Started 8-3-65 Sampler: Type Split Spoon Dia. 2"O.D. Water Elevation
Date Completed 8-3-65 Casing: Length HSA Dia. 4"O.D. Immediate None
Boring Number B-25-1 Core Barrel: Type NXM Size 2-1/8"I.D. After ____ Hrs. Backfilled
Station & Offset 249+58.5, 146.5'Lt. Surface Elevation 796.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
796.0	0											
795.5			Concrete, gravel and cinders									
793.5	2	17-42-38	Brown and gray clay and limestone fragments, dry - hard	1	50	5	3	15	27	36	18	9
	4	34-61-97	Brown and gray weathered shale,	2	Visual							
791.0		100		3								
	6	54%	Gray limestone, thin-bedded, 1 to 3"beds averaging 1-1/2", trace broken pieces, fine-grained, weathered, hard, with evidence of soft gray shale on bedding planes.									
	8											
786.0	10	50%										
	12	83%	Gray shale, 1 to 3"pieces averaging 1-1/2", calcareous, tough, with evidence of shrinkage cracks after drying.									
782.7	14		Interbedded gray shale and gray limestone(approx. 60% shale & 40% limestone);shale 1 to 2"pieces trace broken pieces, brittle to medium tough, highly fossiliferous; limestone thin bedded, 2"+beds, fine-grained, hard, fossiliferous									
780.2	16	88%	Interbedded gray shale & gray limestone(approx. 50% shale & 50% limestone);shale 3"pieces, very tough, calcareous; limestone 1 to 3"beds averaging 2", fine-grained, impure, hard									
779.0	18	% Recovery	Boring Completed									
	20											

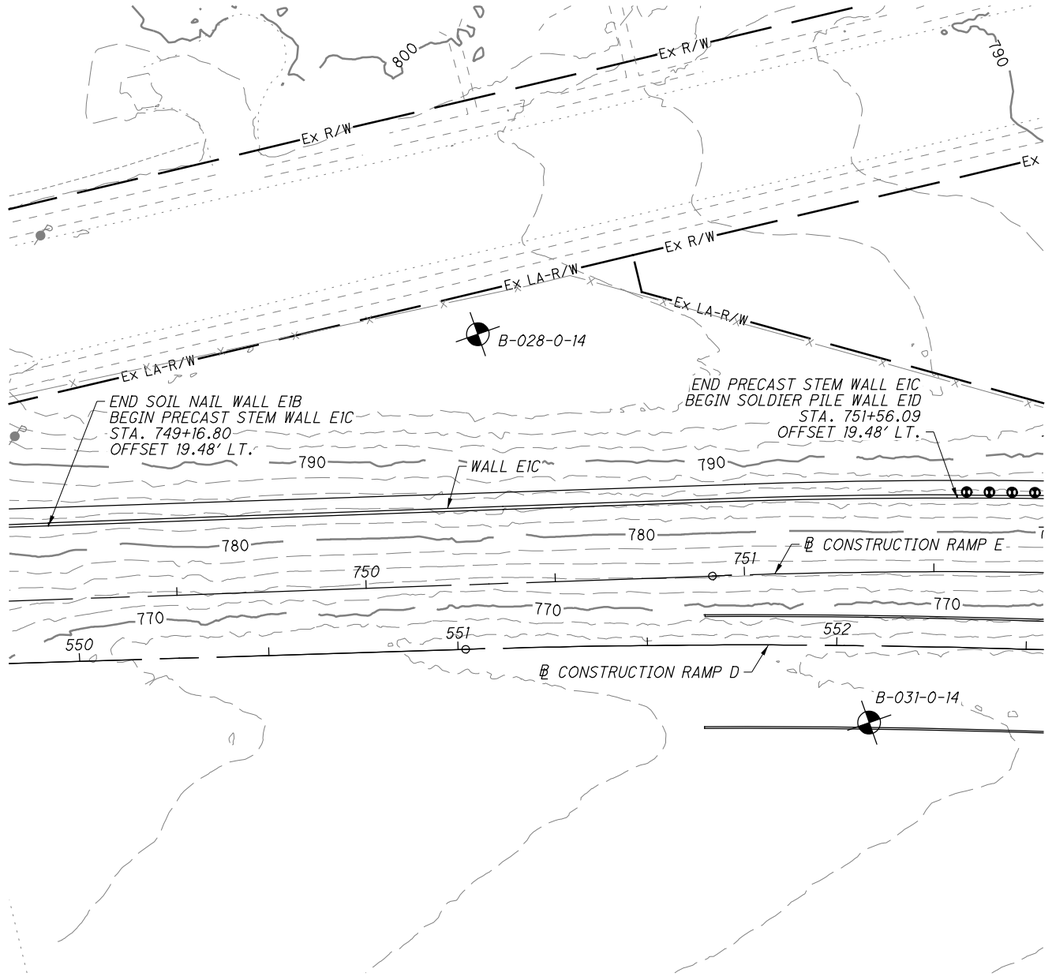
Redesignated B-025-2-65

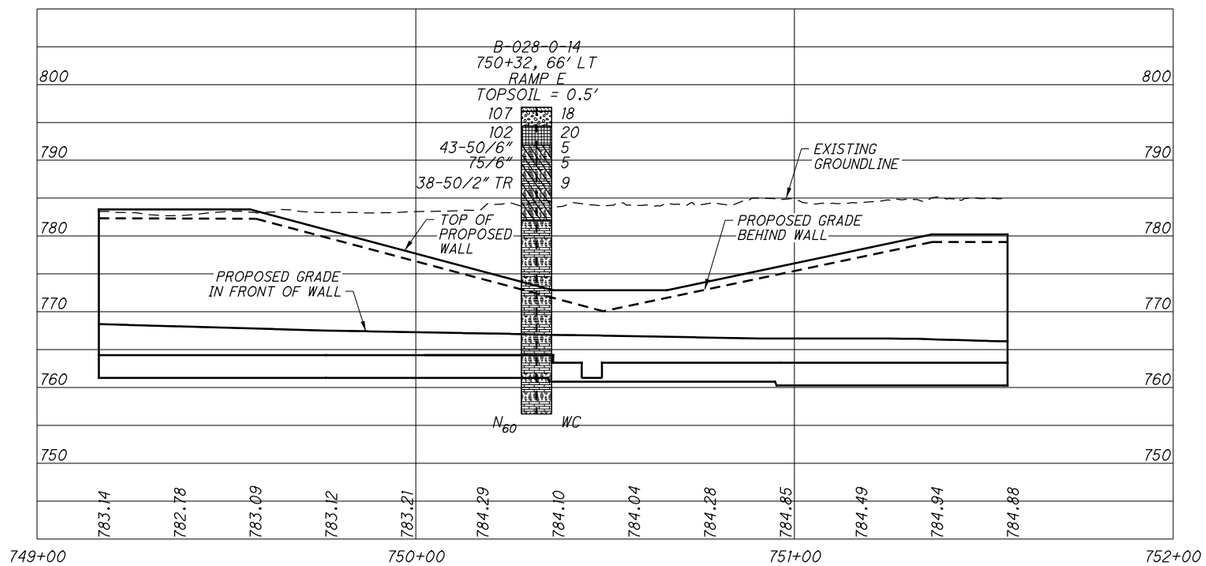
LOG OF BORING

DATE STARTED 7-27-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 7-28-65 CASING: LENGTH HSA DIA. 3.375"I.D. IMMEDIATE None
BORING NUMBER B-25-2 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER 1/2 HRS. Backfilled

STATION & OFFSET 249+21.5, 95'Lt. SURFACE ELEVATION 796.1

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
796.1	0											
795.6		2	Concrete	1	Visual							
795.1			Concrete and cinders, (fill)									
	2	10-15	Brown silty clay with limestone fragments, moist - very stiff	2	25	17	6	19	33	44	23	24
	4											
	6	15-17-39	Brown silty clay with limestone fragments, moist - very stiff	3	34	4	2	22	38	32	16	28
787.6	8											
785.6	10	100	Gray shale, medium tough	4	Visual							
	12	100%	Gray shale, 1/2 to 5"pieces, averaging 2", medium tough, sparcely fossiliferous									
783.1	14		Interbedded gray shale & limestone (approx. 75% shale & 25% limestone);shale 1/2 to 4"pieces averaging 2", medium tough, very fossiliferous;limestone, thin bedded, 1/2 to 3"beds, averaging 1-1/2", bedding planes irregularly undulating, fine-grained, impure, fossiliferous, hard									
780.1	16											
	18	100%	Interbedded gray shale and limestone (approx. 90% shale & 10% limestone);shale, 1 to 7"pieces averaging 4", tough, sparcely fossiliferous;limestone, thin bedded, 1 to 4"beds averaging 2-1/2", fine grained, impure, fossiliferous, hard									
776.6	20		Gray limestone, thin bedded 1/2 to 4"beds averaging 1-1/2", beds separated by shale partings, fine grained, impure, fossiliferous, hard									
775.1	22	90%	Interbedded gray limestone & shale(approx. 85% limestone & 15% shale);limestone thin bedded, 2-1/2 to 4"beds, fine-grained, impure, fossiliferous, hard;shale 1/4 to 3/4"pieces, tough, sparcely fossiliferous									
773.1	24		Gray shale, 1 to 5"pieces averaging 2", tough, with two 1"beds of hard gray limestone near bottom									
771.2												
770.6	26		Gray limestone, thin bedded 2 & 5-1/2"beds, fine-grained, impure, fossiliferous, hard									
770.1			Gray shale, 1-2"pieces, some broken, medium tough									
	28	100%	Interbedded gray limestone & shale(approx. 55% limestone & 45% shale);limestone, thin bedded, 1 to 4"beds averaging 2-1/2", fine-grained, impure, fossiliferous, hard, with high angle joint at bottom joint surfaces coated w/iron oxide;shale 1/2 to 2"pieces averaging 1", fossiliferous, tough									
767.6	30		Interbedded gray shale and limestone(approx. 75% shale and 25% limestone);shale 1/4 to 5"pieces averaging 1-1/2"trace broken pieces, tough, sparcely fossiliferous;limestone thin bedded, 1 to 2-1/2"beds, fine-grained, impure, fossiliferous, hard									
	32											
768.3												
762.7	34	100%	Gray limestone, thin bedded (one 7"bed), fine-grained, impure, fossiliferous, hard									
	36		Interbedded gray shale and limestone (approx. 60% shale and 40% limestone); shale 1/4"to 4" pieces averaging 2", trace broken pieces tough, sparcely. fossiliferous, limestone thin bedded, 1/4" to 4"beds averaging 1-1/2", fine-grained, impure, fossiliferous, hard									
759.1		100%										
	38	% Recovery	Boring Completed									
	40											





HORIZONTAL SCALE IN FEET
0 10 20 40

DRAWN JTB
CHECKED DMV

STRUCTURE FOUNDATION EXPLORATION
WALL E1C (PRECAST STEM WALL)

HAM-71-3.81

163
175

c:\pwworking\pitt\d0885895\T76282P009.dgn 4/21/2015 11:05:10 AM jbudner

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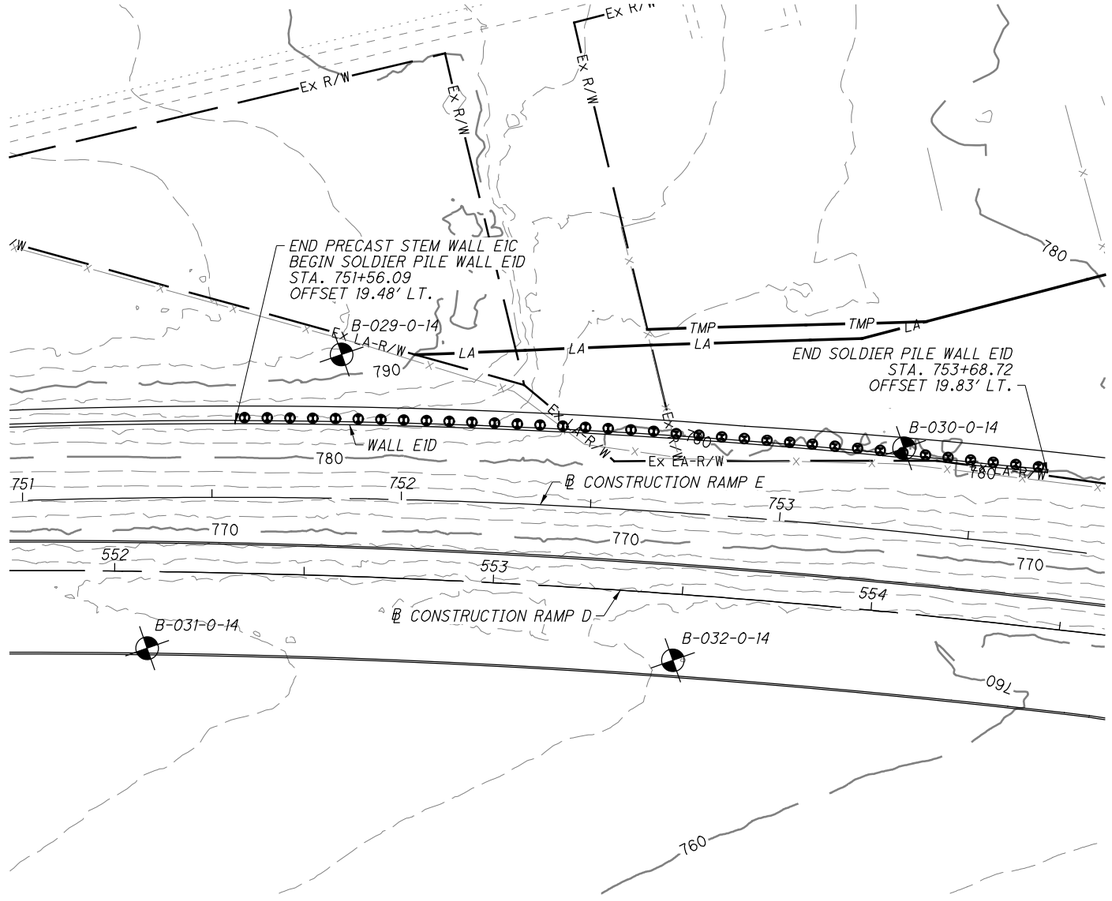
PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / LW	DRILL RIG: CME 550X ATV - TA	STATION / OFFSET: 750+32, 66 LT	EXPLORATION ID B-028-0-14
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: HDR / M. BATTEN	HAMMER: CME AUTOMATIC	ALIGNMENT: RAMP E	
PID: 77628 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 8/2/13	ELEVATION: 797.0 (MSL) EOB: 40.5 ft.	PAGE 1 OF 1
START: 5/21/14 END: 5/21/14	SAMPLING METHOD: SPT / NQ	ENERGY RATIO (%): 91.6	COORD: 419029.121 N, 1402844.946 E	

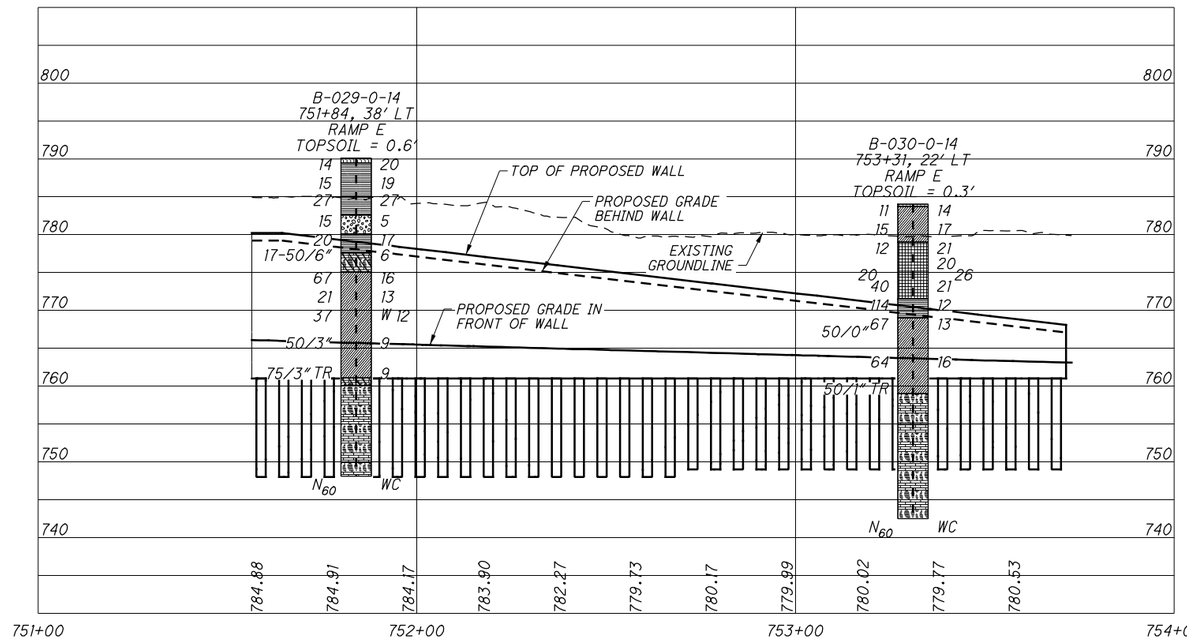
MATERIAL DESCRIPTION AND NOTES	ELEV. 797.0	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
TOPSOIL	796.5																	
DENSE, GRAY, **GRAVEL AND/OR STONE FRAGMENTS** LITTLE SAND, TRACE SILT, TRACE CLAY, DRY (FILL)	794.5		14 49 21	107	78	SS-1	-	74	8	5	6	7	-	-	-	18	A-1-a (V)	
HARD, TAN BROWN, **CLAY**, "AND" GRAVEL, LITTLE SAND, LITTLE SILT, DAMP	792.0		17 49 18	102	-	SS-2	3.50	41	9	5	17	28	42	21	21	20	A-7-6 (5)	
SHALE, DARK GRAY, SEVERLY WEATHERED. (BEDROCK) interbedded with LIMESTONE			43 50	-	-	SS-3	4.50	-	-	-	-	-	-	-	-	5	Rock (V)	
			75	-	-	SS-4	4.50	-	-	-	-	-	-	-	-	5	Rock (V)	
		TR	38 50/2"	-	-	SS-5	3.00	-	-	-	-	-	-	-	-	9	Rock (V)	
INTERBEDDED SHALE (55%) AND LIMESTONE (45%) RQD 56%; **SHALE**, GRAY AND BROWN, HIGHLY TO SLIGHTLY WEATHERED, VERY WEAK, VERY THIN TO THIN BEDDED; **LIMESTONE**, GRAY, UNWEATHERED TO SLIGHTLY WEATHERED, STRONG, VERY THIN TO THIN BEDDED, HIGHLY TO MODERATELY FRACTURED, SLIGHTLY TO VERY ROUGH.	782.0		48		94	NQ-1											CORE	
			74		100	NQ-2											CORE	
			48		100	NQ-3											CORE	
			60		100	NQ-4											CORE	
INTERBEDDED SHALE (60%) AND LIMESTONE (40%) RQD 100%; **SHALE**, GRAY, HIGHLY TO SLIGHTLY WEATHERED, VERY WEAK, THIN BEDDED; **LIMESTONE**, GRAY, UNWEATHERED, STRONG, THIN BEDDED, HIGHLY TO MODERATELY FRACTURED, SLIGHTLY TO VERY ROUGH.	758.5		100		100	NQ-5											CORE	
	756.5	EOB																

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH AUGER CUTTINGS; MIXED WITH 1.5 BAGS BENTONITE CHIPS

STANDARD ODOT SOIL BORING LOG (11 X 17) - OH DOT.GDT - 2/9/15 22:35 - C:\PWWORKING\PITT\D1025182\20140608_HAM-71-3.81_STRUCTURES_UPDATED.GPJ





STRUCTURE FOUNDATION EXPLORATION
WALL E1D (SOLDIER PILE WALL)

HAM-71-3.81

165
175

HORIZONTAL SCALE IN FEET
0 10 20 40

DRAWN JTB
CHECKED DMV

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PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / LW	DRILL RIG: CME 550X ATV - TA	STATION / OFFSET: 751+84, 38 LT	EXPLORATION ID B-029-0-14
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: HDR / M. BATTEN	HAMMER: CME AUTOMATIC	ALIGNMENT: RAMP E	
PID: 77628 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 8/2/13	ELEVATION: 790.1 (MSL) EOB: 42.0 ft.	PAGE 1 OF 1
START: 5/21/14 END: 5/21/14	SAMPLING METHOD: SPT / NQ	ENERGY RATIO (%): 91.6	COORD: 419166.872 N, 1402919.588 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
TOPSOIL	789.5																	
STIFF TO VERY STIFF, TAN AND GRAY, **SILTY CLAY**, TRACE SAND, TRACE GRAVEL, DAMP			3 4 5	14	94	SS-1	3.75	-	-	-	-	-	-	-	-	20	A-6b (V)	
			5 5 5	15	81	SS-2	4.00	4	4	5	41	46	40	20	20	19	A-6b (12)	
			8 10 8	27	83	SS-3	2.50	-	-	-	-	-	-	-	-	27	A-6b (V)	
MEDIUM DENSE, **GRAVEL AND/OR STONE FRAGMENTS**, LITTLE SAND, TRACE SILT, TRACE CLAY, MOIST	782.6		5 5 5	15	78	SS-4	-	72	12	7	5	4	NP	NP	NP	5	A-1-a (0)	
STIFF, TAN AND BROWN, **SILTY CLAY**, SOME SAND, LITTLE GRAVEL, MOIST	780.1		4 5 8	20	83	SS-5	1.75	12	18	9	28	33	35	19	16	17	A-6b (8)	
SHALE, BROWN AND GRAY, SEVERELY WEATHERED. interbedded with LIMESTONE	777.6		17 50	-	75	SS-6	-	-	-	-	-	-	-	-	-	6	Rock (V)	
HARD, TAN AND GRAY, **SILT AND CLAY**, TRACE SAND, TRACE GRAVEL, MOIST @ 17.5' - stiff @ 21.3' - wet	775.1		10 17 27	67	100	SS-7	4.5+	-	-	-	-	-	-	-	-	16	A-6a (V)	
			3 7 7	21	100	SS-8	4.50	1	2	5	50	42	33	19	14	13	A-6a (10)	
		W	17 16 8	37	100	SS-9	2.50	-	-	-	-	-	-	-	-	12	A-6a (V)	
			50/3"	-	100	SS-10	0.50	-	-	-	-	-	-	-	-	9	A-6a (V)	
	761.1	TR	75/3"	-	100	SS-11	-	-	-	-	-	-	-	-	-	9	Rock (V)	
SHALE, TAN, SEVERELY WEATHERED, LIMESTONE FRAGMENTS.	760.1																	
INTERBEDDED SHALE (60%) AND LIMESTONE (40%), RQD 57%; **SHALE**, TAN AND GRAY, HIGHLY TO SLIGHTLY WEATHERED, VERY WEAK, VERY THIN TO THIN BEDDED; **LIMESTONE**, GRAY, UNWEATHERED, MODERATELY STRONG TO STRONG, VERY THIN TO THIN BEDDED, HIGHLY TO MODERATELY FRACTURED, SLIGHTLY TO VERY ROUGH. @34.3'-34.7'; Qu (NQ-2) = 447.0 psi @34.5' and 39.5' - Medium Bedding of Shale			35		95	NQ-1											CORE	
			48		88	NQ-2											CORE	
			75		100	NQ-3											CORE	
	748.1	EOB																

NOTES: BACKFILLED WITH BENTONITE CHIPS UP TO WATER ELEVATION AND BENTONITE-GROUT ABOVE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH BENTONITE CHIPS; PUMPED BENTONITE GROUT

STANDARD ODOT SOIL BORING LOG (11 X 17) OH DOT.GDT - 2/9/15 22:40 - C:\PWWORKING\PITT\D1025182\20140608_HAM-71-3.81_STRUCTURES_UPDATED.GPJ

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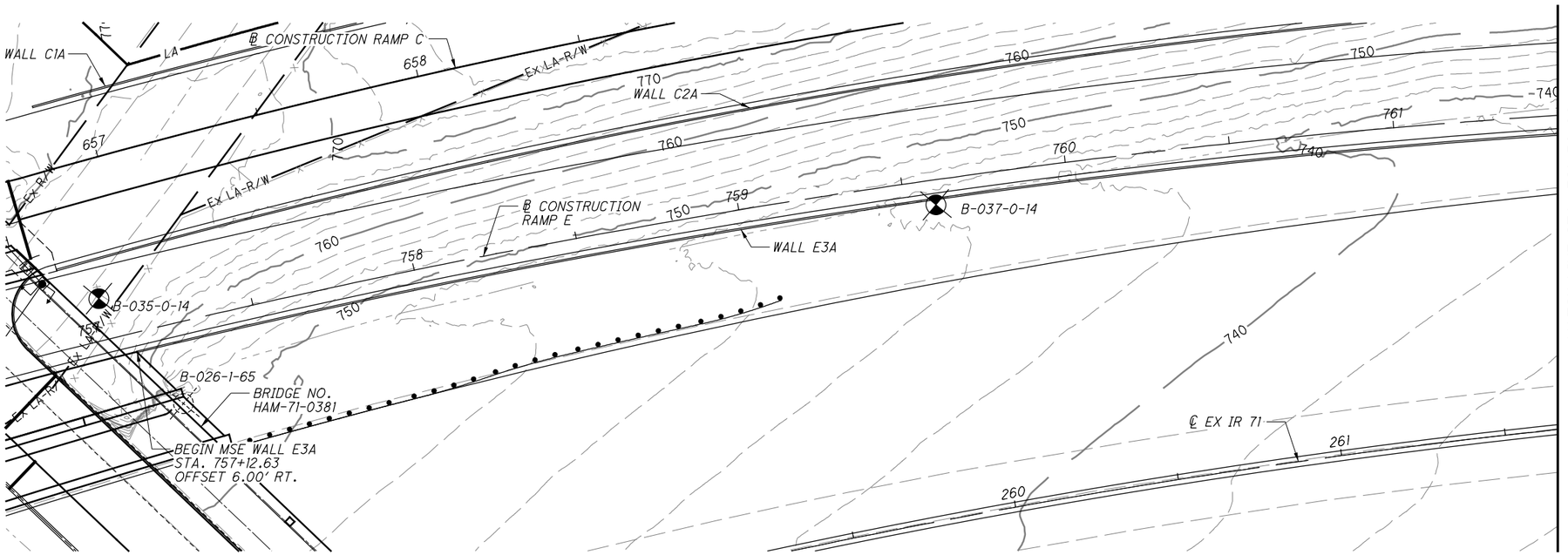
PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / LW	DRILL RIG: CME 550X ATV - TA	STATION / OFFSET: 753+31, 22 LT	EXPLORATION ID B-030-0-14
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: HDR / M. BATTEN	HAMMER: CME AUTOMATIC	ALIGNMENT: RAMP E	
PID: 77628 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 8/2/13	ELEVATION: 784.0 (MSL) EOB: 41.5 ft.	PAGE 1 OF 1
START: 5/23/14 END: 5/23/14	SAMPLING METHOD: SPT/ST/NQ	ENERGY RATIO (%): 91.6	COORD: 419298.896 N, 1402992.033 E	

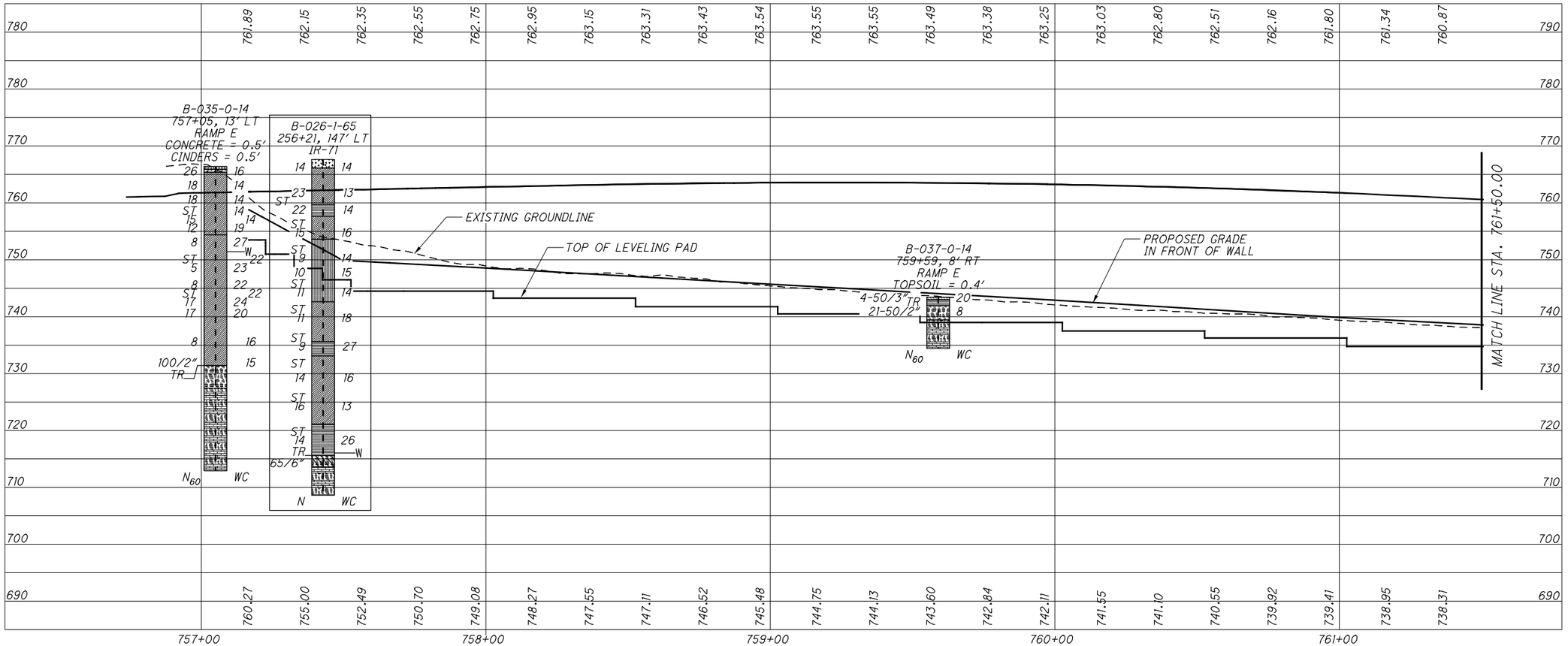
MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
TOPSOIL	783.7																	
STIFF, TAN AND GRAY, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, MOIST (FILL)			3 3 4	11	100	SS-1	2.75	-	-	-	-	-	-	-	-	14	A-6a (V)	
	779.0		4 4 6	15	67	SS-2	4.50	7	8	14	35	36	32	17	15	17	A-6a (9)	
MEDIUM STIFF, GRAY, **CLAY**, "AND" SILT, TRACE SAND, MOIST (FILL)			8 4 4	12	72	SS-3	2.75	-	-	-	-	-	-	-	-	21	A-7-6 (V)	
					100	ST-1	3.25	0	0	2	43	55	41	21	20	20	A-7-6 (12)	
			4 5 8	20	78	SS-4	3.75	-	-	-	-	-	-	-	-	26	A-7-6 (V)	
			3 5 21	40	100	SS-5	3.00	-	-	-	-	-	-	-	-	21	A-7-6 (V)	
	771.5																	
HARD, TAN-BROWN, **SILTY CLAY**, TRACE SAND, MOIST (RESIDUUM) @ 8.5' - 12.5'; Contains Limestone Fragments			31 25 50	114	72	SS-6	4.50	0	1	2	51	46	38	22	16	12	A-6b (10)	
	769.0																	
HARD, TAN-BROWN, **SILT AND CLAY**, SOME GRAVEL, TRACE SAND, MOIST (RESIDUUM) @20'; Color Change to Gray-Tan			16 22 22	67	100	SS-7	2.75	20	4	3	41	32	36	21	15	13	A-6a (10)	
			50/0"	-		SS-8	-	-	-	-	-	-	-	-	-	-	A-6a (V)	
			21 23 19	64	100	SS-9	4.5+	-	-	-	-	-	-	-	-	16	A-6a (V)	
	759.0	TR																
INTERBEDDED SHALE (50%) AND LIMESTONE (50%), RQD 42%; **SHALE**, GRAY AND TAN, SEVERELY TO SLIGHTLY WEATHERED, VERY WEAK, VERY THIN TO THIN BEDDED; **LIMESTONE**, GRAY, SLIGHTLY WEATHERED, MODERATELY STRONG TO STRONG, VERY THIN TO THIN BEDDED, HIGHLY TO MODERATELY FRACTURED, SLIGHTLY TO VERY ROUGH. @ 28.4' - 28.9', QU = 69.5 psi			50/1"	-	0	SS-10	-	-	-	-	-	-	-	-	-	-	Rock (V)	
			42		80	NQ-1											CORE	
	751.0																	
INTERBEDDED SHALE (50%) AND LIMESTONE (50%), RQD 64%; **SHALE**, GRAY, SLIGHTLY WEATHERED, VERY WEAK, VERY THIN TO THIN BEDDED; **LIMESTONE**, GRAY, UNWEATHERED, MODERATELY STRONG TO STRONG, VERY THIN TO THIN BEDDED.			64		100	NQ-2											CORE	
	742.5	EOB																

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH AUGER CUTTINGS; MIXED WITH 2 BAGS BENTONITE CHIPS

STANDARD ODOT SOIL BORING LOG (11 X 17) - OH DOT.GDT - 2/25/15 19:20 - C:\PWWORKING\PITT\D1025182\20140608_HAM-71-3.81_STRUCTURES_UPDATED.GPJ





STRUCTURE FOUNDATION EXPLORATION
WALL E3A (MSE WALL)

HAM-71-3.81

DRAWN JTB
CHECKED SPR

HORIZONTAL SCALE IN FEET
0 10 20 40

168
175

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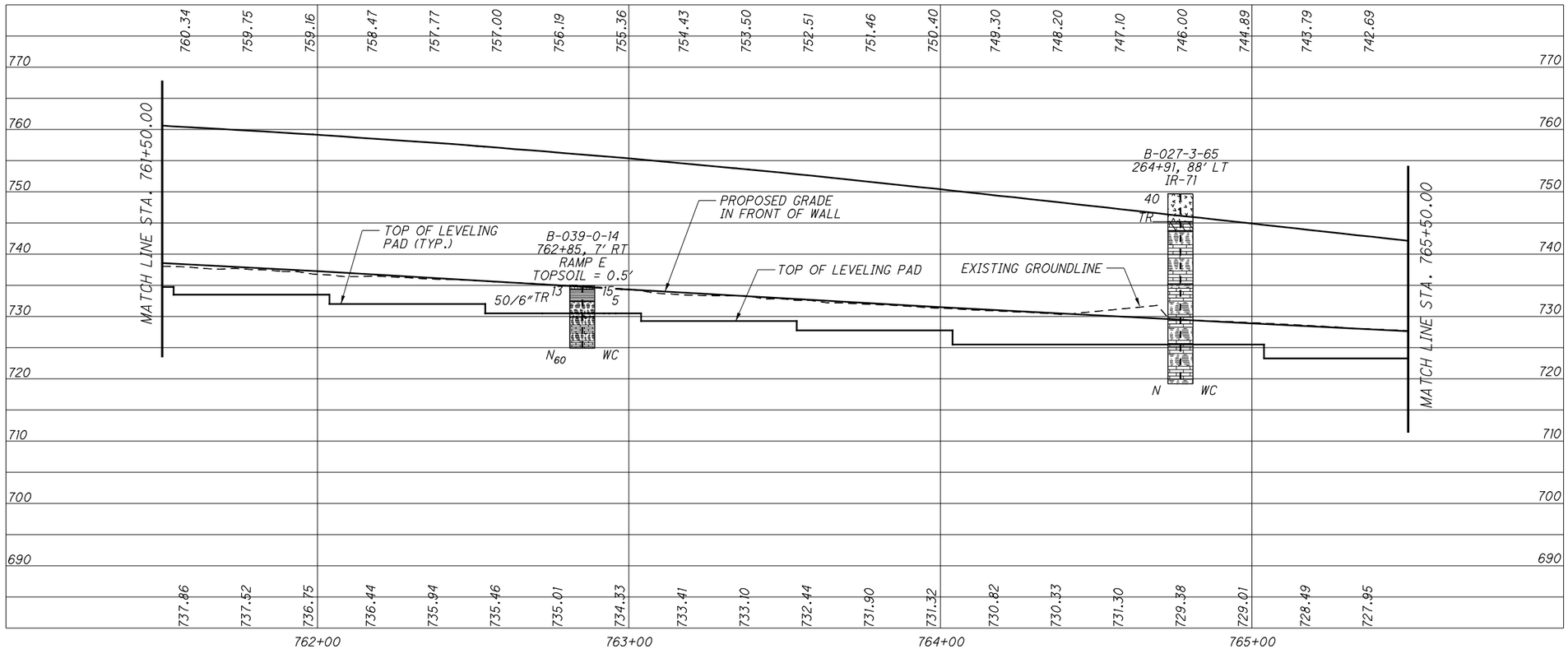

STRUCTURE FOUNDATION EXPLORATION
WALL E3A (MSE WALL)

DRAWN JTB
CHECKED SPR

HORIZONTAL SCALE IN FEET
0 10 20 40

HAM-71-3.81

169
175

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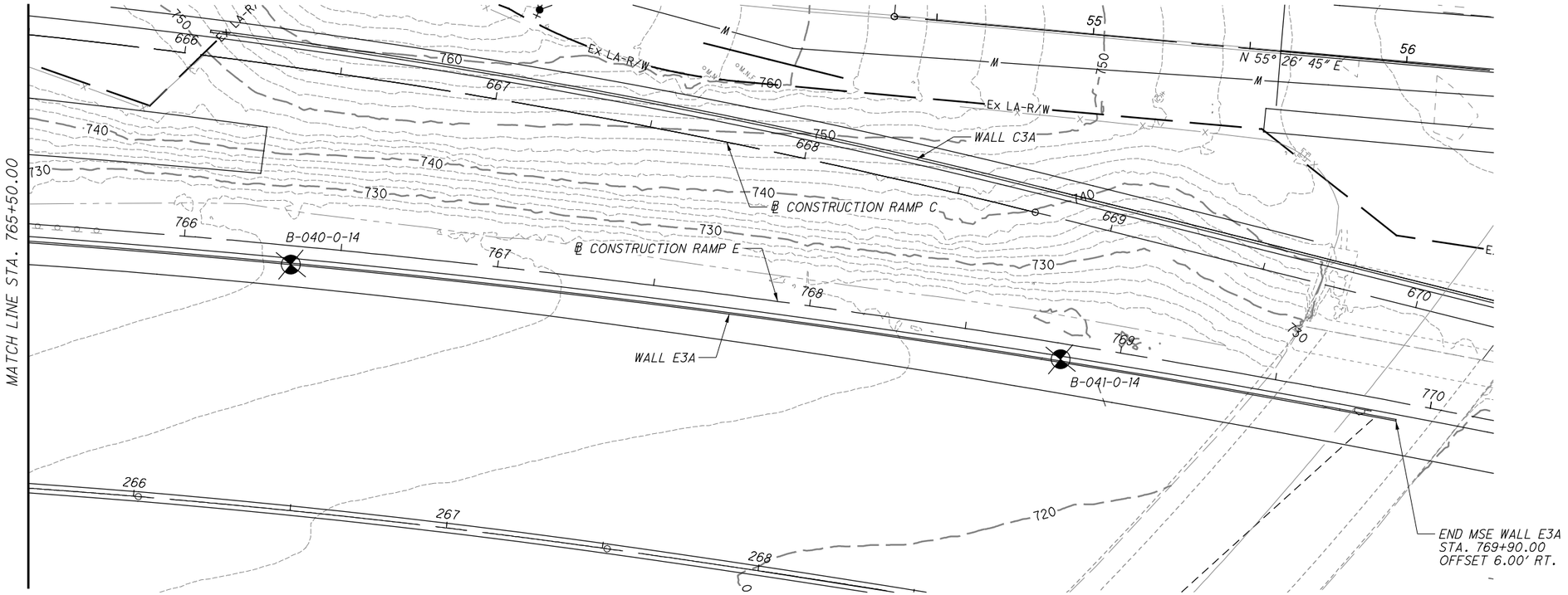

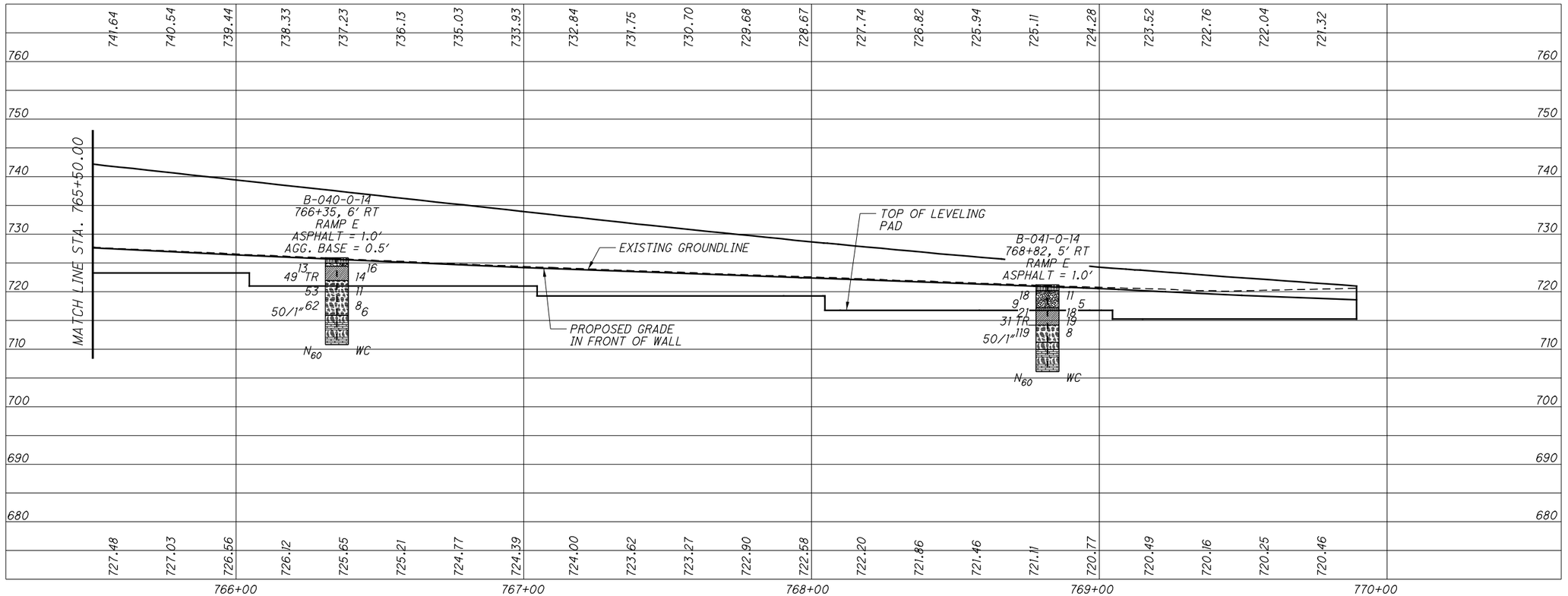

HORIZONTAL SCALE IN FEET

DRAWN JTB CHECKED SPR

STRUCTURE FOUNDATION EXPLORATION
WALL E3A (MSE WALL)

HAM-71-3.81

170
175

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PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / LW	DRILL RIG: CME 550X ATV - TA	STATION / OFFSET: 757+05, 13 LT	EXPLORATION ID B-035-0-14
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: HDR / D. MATCHISON	HAMMER: CME AUTOMATIC	ALIGNMENT: RAMP E	
PID: 77628 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 8/2/13	ELEVATION: 766.4 (MSL) EOB: 53.5 ft.	PAGE 1 OF 1
START: 5/20/14 END: 5/20/14	SAMPLING METHOD: SPT/ST/NQ	ENERGY RATIO (%): 91.6	COORD: 419616.941 N, 1403194.880 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
6" CONCRETE	765.9																	
6" CINDERS	765.4																	
VERY STIFF TO HARD, BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, DAMP TO MOIST			50 9 8	26	89	SS-1	-	-	-	-	-	-	-	-	-	-	A-1-a (V)	
							-	-	-	-	-	-	-	-	-	16	A-6a (V)	
@7' - 8.5', c' = 0 psf, phi' = 31 degrees			3 5 7	18	100	SS-2	4.00	-	-	-	-	-	-	-	-	14	A-6a (V)	
@10' - Noted mineral concretions and orange oxidation			6 5 7	18	100	SS-3	4.00	-	-	-	-	-	-	-	-	14	A-6a (V)	
					88	ST-1	-	5	10	15	37	33	32	18	14	14	A-6a (9)	
			3 4 6	15	100	SS-4	4.50	-	-	-	-	-	-	-	-	14	A-6a (V)	
			3 4 4	12	94	SS-5	4.00	-	-	-	-	-	-	-	-	19	A-6a (V)	
	754.4																	
MEDIUM STIFF TO STIFF, BROWN, **SILT AND CLAY**, TRACE TO LITTLE SAND, TRACE GRAVEL, MOIST			2 2 3	8	89	SS-6	2.00	-	-	-	-	-	-	-	-	27	A-6a (V)	
@16.2' - 16.7'; Qu (ST-2) = 2210 psf																		
@20' - Noted color change to gray		W																
@21.5' - 23.0', c' = 0 psf, phi' = 28.4 degrees					100	ST-2	1.50	1	3	6	53	37	35	21	14	22	A-6a (10)	
@25' - Noted deposits of blue-green high plasticity clay			2 1 2	5	78	SS-7	2.00	-	-	-	-	-	-	-	-	23	A-6a (V)	
			2 2 3	8	22	SS-8	1.00	-	-	-	-	-	-	-	-	22	A-6a (V)	
					100	ST-3	1.00	2	5	9	51	33	31	18	13	22	A-6a (9)	
			8 5 6	17	100	SS-9	0.50	-	-	-	-	-	-	-	-	24	A-6a (V)	
			8 5 6	17	89	SS-10	1.00	-	-	-	-	-	-	-	-	20	A-6a (V)	
	731.4	TR																
SHALE, GRAY. (BEDROCK)			100/2"	-	100	SS-12	-	-	-	-	-	-	-	-	-	15	Rock (V)	
	727.4																	
INTERBEDDED SHALE (70%) AND LIMESTONE (30%), RQD 19%; **SHALE**, GRAY, SLIGHTLY TO MODERATELY WEATHERED, VERY WEAK, VERY THIN TO THIN BEDDED; **LIMESTONE**, GRAY, MODERATELY STRONG TO STRONG, THIN BEDDED, CRYSTALLINE, HIGHLY TO MODERATELY FRACTURED, SLIGHTLY ROUGH TO VERY ROUGH.				18	50	NQ-1											CORE	
@ 44.1' - 44.7' = 66.6 psi				40	100	NQ-2											CORE	
				0	42	NQ-3											CORE	
	712.9	EOB																

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: 50 LB. BENTONITE POWDER; 376 LB. CEMENT; 50 GAL. WATER

STANDARD ODOT SOIL BORING LOG (11 X 17) OH DOT.GDT - 2/9/15 22:48 - C:\PWWORKING\PITT\D1025182\20140608_HAM-71-3.81_STRUCTURES_UPDATED.GPJ

PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / J. SMITH	DRILL RIG: CME 55 TRACK - TA	STATION / OFFSET: 759+59, 8 RT	EXPLORATION ID B-037-0-14
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: HDR / S. REED	HAMMER: CME AUTOMATIC	ALIGNMENT: RAMP E	
PID: 77628 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 7/21/13	ELEVATION: 743.4 (MSL) EOB: 9.0 ft.	PAGE 1 OF 1
START: 5/16/14 END: 5/16/14	SAMPLING METHOD: SPT / NQ	ENERGY RATIO (%): 88.5	COORD: 419800.849 N, 1403371.799 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 743.4	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
TOPSOIL	743.0		4 50/3"	-	100	SS-1	1.50	28	8	6	27	31	39	22	17	20	A-6b (7)	
STIFF, BROWN AND GRAY, **SILTY CLAY**, SOME GRAVEL, LITTLE SAND, OCCASIONAL COBBLES, MOIST (FILL)	741.9	TR 1																
SHALE, GRAY, SLIGHTLY WEATHERED. (BEDROCK)		2																
		3	21 50/2"	-	100	SS-2	-	-	-	-	-	-	-	-	-	8	Rock (V)	
	739.4	4																
INTERBEDDED SHALE (63%) AND LIMESTONE (37%), RQD 46%; **SHALE**, GRAY, SLIGHTLY WEATHERED, VERY WEAK, THIN TO MEDIUM BEDDED; **LIMESTONE**, GRAY, SLIGHTLY WEATHERED, MODERATELY STRONG TO STRONG, THIN TO MEDIUM BEDDED, SLIGHTLY FRACTURED. (BEDROCK)		5 6 7	42		100	NQ-1											CORE	
@ 5.2' - 5.5' - vertical fracture @ 6.5' - 6.8' - vertical fracture @ 8.6' - 8.75' - vertical fracture	734.4	EOB 8 9	52		100	NQ-2											CORE	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 3 BAGS BENTONITE CHIPS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 12/15/14 13:54 - C:\PWWORKING\PITT\D1025182\20140608_HAM-71-3.81_STRUCTURES_UPDATED.GPJ

PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / J. SMITH	DRILL RIG: CME 55 TRACK - TA	STATION / OFFSET: 762+85, 7 RT	EXPLORATION ID B-039-0-14
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: HDR / S. REED	HAMMER: CME AUTOMATIC	ALIGNMENT: RAMP E	
PID: 77628 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 7/21/13	ELEVATION: 734.9 (MSL) EOB: 10.0 ft.	PAGE 1 OF 1
START: 5/16/14 END: 5/16/14	SAMPLING METHOD: SPT / NQ	ENERGY RATIO (%): 88.5	COORD: 420027.169 N, 14036303.670 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 734.9	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
TOPSOIL	734.4		5 5 4	13	87	SS-1	3.75	28	10	8	23	31	36	20	16	15	A-6b (6)	
VERY STIFF, BROWN AND DARK BROWN, **SILTY CLAY**, SOME GRAVEL, LITTLE SAND, MOIST (FILL)	732.4	TR 1 2																
SHALE, GRAY, SLIGHTLY WEATHERED. (BEDROCK)		3	50	-	100	SS-2	-	-	-	-	-	-	-	-	-	5	Rock (V)	
Augerable Rock	729.9	4 5																
INTERBEDDED SHALE (85%) AND LIMESTONE (15%), RQD 56%; **SHALE**, GRAY, SLIGHTLY WEATHERED, VERY WEAK, MEDIUM BEDDED; **LIMESTONE**, GRAY, UNWEATHERED, MODERATELY STRONG TO STRONG, THIN BEDDED. (BEDROCK)		6 7 8	56		100	NQ-1											CORE	
	724.9	EOB 9 10																

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH 3 BAGS BENTONITE CHIPS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 12/15/14 13:54 - C:\PWWORKING\PITT\D1025182\20140608_HAM-71-3.81_STRUCTURES_UPDATED.GPJ

PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / J. SMITH	DRILL RIG: CME 55 TRACK - TA	STATION / OFFSET: 766+35, 6 RT	EXPLORATION ID B-040-0-14
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: HDR / S. REED	HAMMER: CME AUTOMATIC	ALIGNMENT: RAMP E	
PID: 77628 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 7/21/13	ELEVATION: 725.9 (MSL) EOB: 15.1 ft.	PAGE 1 OF 1
START: 5/15/14 END: 5/16/14	SAMPLING METHOD: SPT / NQ	ENERGY RATIO (%): 88.5	COORD: 420238.092 N, 1403881.926 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 725.9	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)	HOLE SEALED
12" ASPHALT	724.9																	
6" AGGREGATE BASE	724.4																	
STIFF TO VERY STIFF, GRAY, TRACE BROWN, **SILT AND CLAY**, SOME TO LITTLE SAND, TRACE TO LITTLE GRAVEL, MOIST	721.9	TR	5 3 6	13	67	SS-1	2.25	8	13	8	33	38	31	19	12	16	A-6a (8)	
			5 13 20	49	40	SS-2	-	18	8	4	35	35	33	22	11	14	A-6a (7)	
SHALE, GRAY, HIGHLY TO MODERATELY WEATHERED. (BEDROCK)			13 16 20	53	80	SS-3	-	-	-	-	-	-	-	-	-	11	Rock (V)	
			25 13 29	62	73	SS-4	-	-	-	-	-	-	-	-	-	8	Rock (V)	
	715.8		50/1"	-	100	SS-5	-	-	-	-	-	-	-	-	-	6	Rock (V)	
INTERBEDDED SHALE (66%) AND LIMESTONE (34%), RQD 11%; **SHALE**, GRAY, MODERATELY WEATHERED, VERY WEAK, THIN BEDDED; **LIMESTONE**, GRAY, MODERATELY WEATHERED, MODERATELY STRONG TO STRONG, THIN BEDDED, MODERATELY TO SLIGHTLY FRACTURED. (BEDROCK)			0		86	NQ-1											CORE	
			32		100	NQ-2											CORE	
	710.8	EOB																

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED ASPHALT PATCH; BACKFILLED WITH 5 BAGS BENTONITE CHIPS

PROJECT: HAM-71-3.81	DRILLING FIRM / OPERATOR: THELEN / J. SMITH	DRILL RIG: CME 55 TRACK - TA	STATION / OFFSET: 768+82, 5 RT	EXPLORATION ID B-041-0-14
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: HDR / S. REED	HAMMER: CME AUTOMATIC	ALIGNMENT: RAMP E	
PID: 77628 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 7/21/13	ELEVATION: 721.2 (MSL) EOB: 15.1 ft.	PAGE 1 OF 1
START: 5/15/14 END: 5/15/14	SAMPLING METHOD: SPT / NQ	ENERGY RATIO (%): 88.5	COORD: 420371.294 N, 1404089.456 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 721.2	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
12" ASPHALT	720.2																	
MEDIUM DENSE, BROWN, **GRAVEL AND/OR STONE FRAGMENTS WITH SAND**, TRACE CLAY AND SILT, MOIST (FILL)			4 6 6	18	67	SS-1	-	42	37	14	3	4	14	15	NP	11	A-1-b (0)	
@ 1.0', 1540 ppm soluble sulfate	717.1		3 3 3	9	67	SS-2A SS-2B	-	32	48	16	1	3	15	NP	NP	5	A-1-b (0)	
VERY STIFF, GRAY, **SILT AND CLAY**, LITTLE SAND, TRACE GRAVEL, DAMP (RESIDUUM)			6 11 3	21	67	SS-3	3.00	6	7	4	40	43	34	22	12	18	A-6a (9)	
			3 9 12	31	80	SS-4	1.25	-	-	-	-	-	-	-	-	19	A-6a (V)	
	714.2	TR					4.50	-	-	-	-	-	-	-	-	19	A-6a (V)	
SHALE, GRAY, SLIGHTLY WEATHERED. (BEDROCK)			36 38 43	119	100	SS-5	-	-	-	-	-	-	-	-	-	8	Rock (V)	
	711.2		50/1"	-	100	SS-6	-	-	-	-	-	-	-	-	-	-	Rock (V)	
INTERBEDDED SHALE (65%) AND LIMESTONE (35%), RQD 82%; **SHALE**, GRAY, UNWEATHERED, VERY WEAK, THIN TO MEDIUM BEDDED; **LIMESTONE**, GRAY, UNWEATHERED, MODERATELY STRONG, THIN BEDDED, FOSSILIFEROUS.			63		92	NQ-1											CORE	
			100		100	NQ-2											CORE	
	706.1	EOB																

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: ASPHALT PATCH; BACKFILLED WITH 4 BAGS BENTONITE CHIPS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 12/15/14 13:54 - C:\PWWORKING\PITTD1025182\20140608_HAM-71-3.81_STRUCTURES_UPDATED.GPJ

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Redesignated B-026-1-65

MICROFILMED
SEP 20 1982

LOG OF BORING

DATE STARTED 9-20-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 9-20-65 CASING: LENGTH None DIA. IMMEDIATE 52' (715.6)
BORING NUMBER B-26-1 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER HRS. Backfilled
STATION & OFFSET 256+21, 147' Left SURFACE ELEVATION 767.6

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
767.6	0			Visual								
~~767.3~~			Concrete									
766.1	2	2-7	Rubble fill, cinders	1	Visual							
		7	Brown gravelly lean clay, moist - medium stiff	2	35	9	9	23	24	32	15	14
	4											
762.6												
	6	7-8-15	Brown and gray gravelly sandy lean clay, moist - very stiff	3	24	7	13	28	28	28	13	13
	8	ST		S-1								
	10	8-9-13	do do do	4	30	7	11	26	26	34	20	14
	12	ST		S-2								
753.6	14	5-7-8	do do do	5	19	9	13	32	27	27	12	16
	16	ST		S-3								
	18	3-4-5	Gray gravelly, sandy, silty clay, moist - medium stiff	6	17	10	13	34	26	23	9	14
	20	3-4-6	do do do	7	20	8	13	32	27	24	10	15
	22	ST		S-4								
	24	4-5-6	Gray sandy silty clay, moist - medium stiff	8	12	10	14	33	31	25	10	14
	26	ST		S-5								
	28	3-4-7	do do do	9	14	8	14	35	29	25	11	18
	30											
	32	ST		S-6								
735.6	34	5-4-5	Gravy lean clay, trace organics, moist - medium stiff	10	11	6	7	42	34	33	16	27
733.1	36	ST		S-7								
	38	5-7-7	Gray gravelly, sandy lean clay, moist -medium stiff	11	16	10	13	32	29	25	12	16
	40											
	42	ST		S-8								
725.1	44	5-7-9	Gray gravelly, silty clay, moist - medium stiff	12	16	6	11	37	30	26	12	13
721.1	46											
	48	ST		S-9								
	50	4-7-7	Dark gray silty clay, slightly organics, moist - medium stiff	13	0	0	1	54	45	39	20	26
715.6	52											
713.6	54	22-65	Gray shale	14	Visual							
	56	87%	Interbedded gray shale and limestone (approx. 60% shale, 40% limestone), shale soft and rubbly to tough, slightly calcareous to calcareous soft shale seam in evidence near center of run. Limestone occurs in 1/2" to 5-1/2"layers, fine-grained non-fossiliferous to crystalline fossiliferous, hard.									
	58											
708.6	60	% Recovery	Boring Completed									

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Redesignated B-027-3-65

LOG OF BORING

DATE STARTED 9-25-65 SAMPLER: TYPE Split Spoon DIA. 2" O. D. WATER ELEVATION
DATE COMPLETED 9-25-65 CASING: LENGTH HSA DIA. 3.5" I. D. IMMEDIATE None
BORING NUMBER B 27-3 CORE BARREL: TYPE NXM SIZE 2 1/8" I. D. AFTER _____ HRS. Backfilled

STATION & OFFSET 264+91, 88' Left SURFACE ELEVATION 749.7

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
749.7	0											
	2	6-17-23	Rubble (fill) clay and cinders	1	Visual							
	4											
745.2												
743.7	6	83%	Interbedded brown and gray weathered shale and gray limestone (approx. 50% shale, 50% limestone) shale medium tough, calcareous; limestone occurs in 1/4" to 4" layers, fossiliferous shaly crystalline to crystalline, hard.									
	8											
	10	94%	Interbedded gray shale and gray limestone (approx. 50% shale 50% limestone) shale possible soft to hard, calcareous; limestone occurs in 1/2" to 1" layers, fossiliferous, impure crystalline, crystalline and shaly fine grained, hard. Fracturing exhibited at approx. 8.5', 11.8' & 12.1' gray-brown shale layers (3/4" to 1-1/2") also in evidence.									
	12											
735.2	14											
	16		Interbedded gray shale and gray limestone (approx. 65% shale 35% limestone), Shale possible soft to hard, calcareous; limestone occurs in 1/2" to 5-1/2" layers, non-fossiliferous to fossiliferous, shaly crystalline, crystalline and impure, fine-grained hard. Fracturing exhibited at approx. 16.5', 16.8', 18.1', 18.5', 19.3' 25.7, 27.8', 28,3 & 28.8									
	18											
	20											
	22											
	24	100%										
	26											
	28											
719.2	30											
	32	% Recovery										
	34		Boring completed									

MICROFILMED
OCT 20 1982

~~Roll 386~~ Roll 657 1-32

HAMILTON COUNTY
HAM-71-4.58

LOG OF BORING

1-11-68 VM

DATE STARTED 12-1-67 SAMPLER: TYPE S.S. DIA. 2" O.D. WATER ELEVATION
DATE COMPLETED 12-2-67 CASING: LENGTH HSA DIA. 2.25" I.D. IMMEDIATE 647.3 (28')
BORING NUMBER R-1-1 CORE BARREL: TYPE SIZE AFTER BACKFILLED HRS.
STATION & OFFSET 374+11 DE, 9' Lt., N. E. Expy, I-71-1 (33) HAM 71-4.58 E. OF VICTORY PKWY. TO BURWOOD, PROJ. No. 0534 SURFACE ELEVATION 675.3

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
675.3	0											
	2	2-2-10	BROWN CLAY AND TOPSOIL, (FILL), MOIST-MEDIUM STIFF	1	VISUAL							
673.3	4	6-8-16	BROWN SILTY CLAY, DRY-VERY STIFF	2	0	2	9	56	33	36	16	12
670.3	6	8-11-14	BROWN SANDY, SILTY CLAY, MOIST - VERY STIFF	3	2	8	14	34	42	30	12	12
	8											
	10	10-13-18	DO DO DO	4	2	11	15	38	34	39	18	18
	12	7-8-11	BROWN SANDY, SILTY CLAY, MOIST - STIFF	5	5	5	18	35	37	40	20	16
662.8	14	12-17-24	BROWN SANDY, CLAYEY SILT, DRY - VERY STIFF	6	9	10	20	39	22	23	7	7
660.3	16	12-15-17	BROWN SANDY, SILTY CLAY, MOIST - VERY STIFF	7	12	12	16	35	25	24	8	12
657.8	18	10-17-20	BROWN AND GRAY SANDY CLAYEY SILT, MOIST - VERY STIFF	8	10	10	16	38	26	24	7	14
655.3	20											
	22	6-7-8	GRAY GRAVELLY SANDY CLAYEY SILT, MOIST - STIFF	9	22	10	13	35	20	20	6	12
	24	5-6-7	DO DO DO	10	16	11	15	36	22	21	7	12
650.3	26	6-7-7	GRAY SANDY, CLAYEY SILT, MOIST - STIFF	11	14	9	15	38	24	20	6	14
647.8	28	10-13-18	GRAY GRAVELLY SANDY SILTY CLAY, MOIST - VERY STIFF	12	15	10	14	35	26	23	8	14
	30											
	32	13-13-16	DO DO DO	13	20	10	15	29	26	23	8	14
640.3	34											
	36	13-16-18	GRAY SANDY, SILTY CLAY, MOIST - VERY STIFF	14	10	8	15	34	33	25	10	14
	38											
	40											
	42	11-14-17	DO DO DO	15	10	10	13	33	34	25	10	14
	44											
	46	15-16-20	DO DO DO	16	10	12	15	31	32	24	9	12
	48											
625.3	50											
	52	12-16-24	GRAY CLAYEY SILT, MOIST - STIFF	17	6	6	10	46	32	22	6	14
	54											
620.3	56											
	58	15-18-21	BROWN AND GRAY CLAYEY GRAVEL WITH SAND SEAMS	18	35	11	11	29	14	21	5	13
	60											
613.8	62	11-16-17	DO DO DO	19	VISUAL							
	64		BORING COMPLETED									
	66											
	68											
	70											

LOG OF BORING

1-11-68 VM

DATE STARTED 12-4-67 SAMPLER: TYPE S.S. DIA. 2" O.D. WATER ELEVATION
DATE COMPLETED 12-5-67 CASING: LENGTH HSA DIA. 3.5" I.D. IMMEDIATE 676.3 (1')
BORING NUMBER R-1-2 CORE BARREL: TYPE SIZE AFTER BACKFILLED HRS.
STATION & OFFSET 374+90 DE, 9' Lt., N. E. Expy, I-71-1 (33) HAM 71-4.58 E. OF VICTORY PKWY. TO BURWOOD, PROJ. No. 0534 SURFACE ELEVATION 677.3

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
677.3	0											
676.3	2	39-61	BASE MATERIAL (PARKING LOT)	1	VISUAL							
	4		BROWN AND GRAY SILTY CLAY, VERY MOIST - MEDIUM STIFF	2	4	9	10	48	29	27	9	22
672.3	6	8-11-14	BROWN SANDY SILTY CLAY, MOIST - STIFF	3	3	7	13	33	44	42	21	26
	8											
667.3	10											
664.8	12	2-3-3	BROWN GRAVELLY, SILTY CLAY, MOIST - MEDIUM STIFF	4	19	10	14	26	31	34	16	28
662.3	14	3-4-5	BROWN SANDY FAT CLAY, MOIST - MEDIUM STIFF	5	3	14	24	17	42	52	30	28
659.8	16	12-18-23	BROWN CLAYEY SAND AND GRAVEL, MOIST - DENSE	6	28	14	18	24	16	22	6	16
657.3	18	6-6-7	GRAY SANDY SILT, MOIST - STIFF	7	12	12	15	38	23	18	4	13
654.8	20	4-4-7	GRAY SANDY CLAYEY SILT, MOIST - STIFF	8	13	12	15	37	23	20	6	13
652.3	22	3-4-5	GRAY GRAVELLY SANDY CLAYEY SILT, MOIST - STIFF	9	16	11	14	37	22	20	5	13
	24											
	26	3-4-8	GRAY SANDY, CLAYEY SILT, MOIST - STIFF	10	11	11	15	37	26	21	6	15
	28	3-5-4	DO DO DO	11	VISUAL							
	30	5-9-15	DO DO DO	12	9	11	22	32	26	21	7	13
644.8	32											
	34	9-12-18	GRAY SANDY, SILTY CLAY, MOIST - VERY STIFF	13	8	8	16	40	28	24	8	14
639.8	36											
	38	9-17-18	GRAY GRAVELLY SANDY SILTY CLAY, MOIST - VERY STIFF	14	20	9	13	33	25	24	10	12
634.8	40											
	42											
	44	12-14-17	GRAY GRAVELLY SANDY CLAYEY SILT MOIST - VERY STIFF	15	22	9	15	36	18	22	7	12
	46											
	48	11-14-18	DO DO DO	16	16	12	16	34	22	21	7	12
	50											
	52											
	54	13-18-22	DO DO DO	17	16	10	16	37	21	19	5	11
	56											
	58	17-19-23	DO DO DO	18	22	10	15	35	18	19	6	10
	60											
	62											
614.3	64	21-18-24	DO DO DO	19	15	12	15	35	23	19	5	12
	66		BORING COMPLETED									
	68											
	70											

LOG OF BORING

1-11-68 VM

DATE STARTED 12-5-67 SAMPLER: TYPE S.S. DIA. 2" O.D. WATER ELEVATION First Seam @ 658.0 (18')
DATE COMPLETED 12-6-67 CASING: LENGTH HSA DIA. 3.5" I.D. IMMEDIATE Second Seam @ 621.0 (55')
BORING NUMBER R-1-3 CORE BARREL: TYPE SIZE AFTER BACKFILLED HRS.
STATION & OFFSET 375+98 DE, 9' Lt., N.E. Expy, I-71-1 (33) HAM 71-4.58 E. OF VICTORY PKWY. TO BURWOOD, PROJ. No. 0534 SURFACE ELEVATION 676.0'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
676.0	0		CONCRETE SLAB									
675.5	2	5-5-5	BROWN SILTY CLAY, MOIST - STIFF	1	VISUAL							
	4	6-7-9	DO DO DO	2	0	2	7	43	48	65	38	28
671.0	6	2-5-7	BROWN GRAVELLY, SANDY, SILTY CLAY, MOIST - STIFF	3	23	11	14	28	24	30	12	15
	8											
	10											
	12	18-24-19	BROWN GRAVELLY, SANDY, SILTY CLAY, MOIST - VERY STIFF	4	36	10	12	26	16	25	9	14
661.0	14											
658.0	16	15-18-30	BROWN & GRAY GRAVELLY, SANDY, CLAYEY SILT, MOIST - VERY STIFF	5	19	11	14	41	15	20	5	10
656.0	18	10-16-16	GRAY CLAYEY SAND & GRAVEL, VERY MOIST - DENSE	6	28	10	12	31	19	20	6	14
653.5	20	9-14-16	GRAY SILTY CLAY (VARVED), MOIST - STIFF	7	1	2	2	33	62	36	14	25
651.0	22	7-9-10	GRAY CLAYEY SAND & GRAVEL, VERY MOIST - DENSE	8	27	12	14	31	16	19	5	14
648.5	24	8-7-11	GRAY SANDY, CLAYEY SILT, VERY MOIST - STIFF	9	11	12	15	40	22	20	6	13
646.0	26	5-5-6	GRAY SANDY, SILTY CLAY, MOIST - STIFF	10	12	11	15	14	48	20	6	15
643.5	28	4-5-5	GRAY SANDY, CLAYEY SILT, MOIST - STIFF	11	11	13	16	37	23	20	6	12
	30											
	32											
641.0	34	9-14-17	GRAY GRAVELLY, SILTY CLAY, MOIST - VERY STIFF	12	18	8	11	31	32	24	9	15
638.5	36	12-16-19	GRAY SILTY CLAY, MOIST - VERY STIFF	13	6	8	11	36	39	25	11	14
	38	16-20-23	GRAY GRAVELLY, SANDY, SILTY CLAY, MOIST - VERY STIFF	14	17	9	13	34	27	21	8	10
	40											
	42	14-18-20	DO DO DO	15	16	8	13	33	30	23	9	12
	44											
631.0	46	11-16-17	GRAY, CLAYEY SILT, MOIST - VERY STIFF	16	11	6	12	50	21	19	4	19
	48											
626.0	50											
	52	13-14-19	GRAY SANDY, CLAYEY SILT, MOIST - VERY STIFF	17	8	9	13	48	22	20	4	14
	54											
621.0	56											
	58	18-22-23	BROWN SILTY SAND, WET - DENSE	18	7	49	30	-14-				18
	60											
613.5	62	16-19-20	DO DO DO	19	8	39	25	-28-				14
	64		BORING COMPLETED									
	66											
	68											
	70											

Foundation Boring Sheet No. FB-1.

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
BORING NO. R-1-1, R-1-2, R-1-3.
NORTHEAST EXPRESSWAY I-71-1 (33)
HAM. 71-4.58
EAST OF VICTORY PARKWAY TO BURWOOD
PROJECT NO. 0534

BORING DATA

		REVIEWED BY	DATE
		C.R.L.	1/23/68

MICROFILMED
OCT 20 1982

LOG OF BORING

1/12/68/PS

DATE STARTED 12/2/67 SAMPLER: TYPE SS DIA. 2" OD WATER ELEVATION
DATE COMPLETED 12/3/67 CASING: LENGTH HSA DIA. 3.5" ID IMMEDIATE 623.7 (50')
BORING NUMBER R-1-4 CORE BARREL: TYPE SIZE AFTER BACKFILLED HRS.
STATION & OFFSET 376 + 60 DE, 9' LEFT SURFACE ELEVATION 673.7'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
673.7	0		CONCRETE									
672.7	1		~~BROWN CLAY, SOME CINDERS (FILL) MOIST - MEDIUM STIFF~~	1	VISUAL							
672.2	2	5	BROWN SILTY CLAY, VERY MOIST - SOFT	2	0	3	5	58	34	32	12	27
	3	3-4										
668.7	4											
	5											
	6	4-5-7	BROWN SILTY CLAY, MOIST - STIFF	3	4	5	14	35	42	35	17	29
	7											
	8											
663.7	9											
	10	9-11-16	BROWN SANDY, CLAYEY SILT, MOIST - STIFF	4	12	11	17	37	23	22	7	13
	11											
	12											
	13											
	14											
657.7	15	14-17	BROWN SANDY, CLAYEY SILT, MOIST - VERY STIFF	5	11	13	16	36	24	21	6	13
	16	15	GRAY GRAVELLY, SANDY SILT, MOIST - VERY STIFF	6	25	13	13	32	17	20	5	12
	17											
	18											
653.7	19											
	20	6-7-9	GRAY GRAVELLY, SANDY, CLAYEY SILT, MOIST - STIFF	7	16	10	14	36	24	22	8	13
	21											
	22											
	23											
	24	6-7-7	DO DO DO	8	19	9	13	35	24	21	6	14
648.7	25											
	26	6-6-7	GRAY SANDY, CLAYEY SILT, MOIST - STIFF	9	7	11	16	40	26	21	6	13
646.2	27											
	28	5-6-6	GRAY SILTY CLAY, MOIST - VERY STIFF	10	VISUAL							
	29											
	30											
	31											
	32	9-19-23	DO DO DO	11	6	8	10	41	35	25	8	18
641.2	33											
	34	18-21-26	GRAY SANDY, SILTY CLAY, MOIST - VERY STIFF	12	8	6	14	38	34	24	8	17
638.7	35											
	36	11-16-18	GRAY GRAVELLY, SANDY, SILTY CLAY, MOIST - VERY STIFF	13	17	8	12	34	29	24	10	16
636.2	37											
	38	10-14-16	GRAY, SANDY, SILTY CLAY, MOIST - VERY STIFF	14	5	9	12	37	37	26	10	16
633.7	39											
	40											
	41	14-17-18	GRAY CLAYEY SILT, MOIST - VERY STIFF	15	14	7	12	45	22	20	4	13
	42											
	43											
	44											
628.7	45											
	46	11-16-20	GRAY GRAVELLY, SANDY SILT, MOIST - VERY STIFF	16	21	5	10	46	18	20	4	14
	47											
	48											
	49											
623.7	50											
	51	13-18-23	BROWN FINE TO MEDIUM SAND, WET - DENSE	17	1	28	63	-8-				20
	52											
	53											
	54											
	55											
	56	14-17-20	DO DO DO	18	2	34	56	-8-				20
	57											
	58											
	59											
613.7	60											
612.2	61	19-31-29	BROWN SILTY SAND, WET - VERY DENSE	10	5	38	45	-12-				16
	62		BORING COMPLETED									
	63											
	64											
	65											
	66											
	67											
	68											
	69											
	70											

Foundation Boring Sheet No. FB-2.

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
BORING NO. R-1-4.
NORTHEAST EXPRESSWAY I-71-1 (33)
HAM. 71-4.58
EAST OF VICTORY PARKWAY TO BURWOOD
PROJECT NO. 0534

BORING DATA

		REVIEWED BY	DATE
		C.R.L.	1/23/68

MICROFILMED
OCT 20 1982

3
32

HAMILTON COUNTY
HAM-71-4.58

LOG OF BORING Order No. 99,990 JH 10-22-68

DATE STARTED 8-1-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 8-1-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 34' (677.4)
BORING NUMBER R-3-1 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 1 HRS. 25'(686.4')
STATION & OFFSET 319+01 Ramp ME, 6'Left, Northeast Exwy, HAM 71-4.58 SURFACE ELEVATION 711.4'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
711.4	0											
	2	7-9-12	Brown sandy silty clay with limestone fragments, (FILL) moist - stiff	1	17	10	16	30	27	28	14	13
706.4	4											
	6	2-3-3	Brown silty clay, moist - medium stiff	2	0	3	5	58	34	31	12	21
701.4	8											
	10	7-8-9	Brown sandy silty clay, moist - stiff	3	13	10	17	32	28	29	15	14
696.4	12	8-8-10	do do	4	12	11	18	32	27	26	13	13
693.9	14	7-10-11	Brown clayey gravel, moist - stiff	5	43	7	9	22	19	26	12	13
691.4	16	6-8-12	Brown gravelly sandy silty clay, moist - stiff	6	33	9	12	25	21	25	10	12
688.9	18	9-12-18	Brown sandy silty clay with limestone fragments, moist - stiff	7	18	10	16	30	26	25	11	14
	20	12-13-19	Brown gravelly, sandy silty clay, moist - stiff	8	27	8	13	29	23	27	12	14
684.4	22	7-12-18	do do	9	21	8	15	31	25	26	12	14
	24	9-11-15	Brown silty clay, moist - stiff	10	10	7	12	33	38	34	18	19
	26	12-17-25	do do	11	17	4	6	51	22	28	11	19
	28											
	30	3-5-9	do do	12	13	7	10	41	29	30	14	19
671.4	32											
	34	4-9-11	Brown silty sand, moist - medium dense	13	2	4	55	27	12		NP	22
666.4	36											
	38	3-5-7	Gray silty clay, moist - stiff	14	6	6	10	32	46	37	21	15
	40											
	42	6-14-20	do do	15	3	3	2	29	63	50	29	22
666.4	44											
	46	43%	Interbedded light brown and light gray weathered shale and light gray limestone, approx. 85% shale, 15% limestone. Shale calcareous, trace fossiliferous to fossiliferous, medium tough to tough. Limestone occurs in 1-1/4" to 4-1/4" layers, is crystalline, fossiliferous, hard; high-angle joint with trace iron-oxide staining exhibited near top of recovery.									
651.4	48											
	50	% Recovery	Boring Completed									

LOG OF BORING Order No. 99,990 JH 11-21-68

DATE STARTED 8-6-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 8-6-68 CASING. LENGTH HSA DIA. 3.25"I.D. IMMEDIATE 25' (686.7')
BORING NUMBER R-3-2 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER Backfilled Upon HRS. Completion
STATION & OFFSET 319+92, Ramp ME, 14'Left, Northeast Exwy, HAM 71-4.58 SURFACE ELEVATION 711.7'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
711.7	0			1	Visual							
710.7	2	3-5	Topsoil and clay.(FILL)									
	4	6	Brown gravelly, clayey sand, moist - stiff	2	25	11	16	27	21	24	11	11
706.7	6	8-11-14	Gray gravelly sandy, silty clay, moist - stiff	3	22	10	15	30	23	22	10	11
	8											
	10	8-9-13	do do	4	30	8	13	29	20	23	11	12
	12	7-11-14	do do	5	26	9	15	28	22	22	9	12
696.7	14											
	16	11-14-16	Gray sandy silty clay, moist - stiff	6	12	11	16	37	24	21	9	97
694.2	18	8-9-9		7	Insufficient sample							
	20											
	22	8-9-10	Gray silty clay with limestone fragments, moist - stiff	8	10	2	5	41	42	51	31	27
	24	9-11-15	do do do	9	16	5	5	37	37	37	23	18
686.7	26	30-17-18	Brown and gray silty clay and limestone fragments, moist - stiff	10	34	4	4	28	30	37	20	19
	28											
	30	13-14-16	do do do	11	12	5	5	39	39	34	17	22
	32	23-41-47	do do do	12	15	3	5	40	37	35	19	18
	34	71-53	Brown and gray silty clay and limestone fragments, moist - very stiff	13	38	4	5	25	28	36	21	18
676.7	36	33-57-69	Brown and gray silty clay, moist - very stiff	14	0	3	1	48	48	36	15	17
	38											
	40	40-46-65	do do	15	0	0	2	42	56	46	22	19
666.7	42											
	44	65-85	Brown shale	16	Visual							
	46											
661.7	48											
	50	30%	Layered brown and gray weathered shale and limestone layers, approx. 5% limestone in 1/2" to 3" layers.									
656.7	52											
	54											
	56	% Recovery	Boring Completed									
	58											

LOG OF BORING Order No. 99,990 JH 10-22-68

DATE STARTED 8-5-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 8-5-68 CASING: LENGTH HSA DIA. 3.25"I.D. IMMEDIATE 43.5' (674.4')
BORING NUMBER R-3-3 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER Backfilled Upon HRS. Completion
STATION & OFFSET 320+98 Ramp ME, 8'Left Northeast Exwy, HAM 71-4.58 SURFACE ELEVATION 717.9'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
717.9	0											
716.9			Block, concrete and gravel		Visual							
	2	6-8-11	Brown and gray gravelly sandy silty clay, moist- stiff	1	22	9	15	31	23	25	9	18
712.9	4											
	6	11-13-16	Brown and gray sandy silty clay, moist - stiff	2	14	12	15	30	29	25	10	12
707.9	8											
	10	7-8-9	Brown and gray sandy clayey silt, moist - stiff	3	16	10	16	36	22	22	8	11
702.9	12											
	14	9-16-18	Gray gravelly, sandy clayey silt, moist - stiff	4	22	10	15	35	18	20	6	14
697.9	16											
	18											
695.9	20	10-13-17	Brown and gray sandy silty clay, moist - stiff	5	14	9	14	30	33	33	15	18
692.9	22	13-15-15	Brown and gray gravelly silty clay with limestone fragments moist - very stiff	6	21	8	10	39	22	34	15	16
	24	23-51-30	Brown and gray clayey gravel with limestone fragments, moist - very stiff	7	55	5	4	13	23	45	26	26
690.4	26	30-31-39	Brown and gray fat clay with limestone fragments, moist - very stiff	8	15	9	3	18	55	70	42	26
	28	76	do do do	9	Visual							
685.4	30											
	32	23-85	Brown and gray clayey gravel with limestone fragments, moist - very stiff	10	42	5	3	16	34	54	32	13
682.9	34	8-11-13	Brown and gray silty clay, moist - very stiff	11	1	3	4	46	46	37	17	15
680.9	36	45-81	Brown and gray weathered shale with limestone layers, moist - stiff	12	16	1	2	34	47	42	20	17
	38	43-77	do do do	13	0	0	1	36	63	48	24	15
	40											
	42											
	44	120	do do do	14	0	0	2	48	50	39	19	20
667.9	46											
	48											
	50		Light brown and gray weathered shale with light gray limestone, approx. 95% shale, 5% limestone. Shale calcareous, trace fossiliferous, soft to medium tough. Limestone occurs in 1/2" to 1-1/2" layers, is crystalline, fossiliferous, hard.									
	52											
	54	27%										
662.9	56	% Recovery	Boring Completed									
	58											

Foundation Boring Sheet No. FB-3.

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
CITY OF CINCINNATI
NORTHEAST EXPRESSWAY HAM 71-4.58
BORING No. R-3-1 R-3-3
R-3-2

BORING DATA

REVIEWED BY C.R.L. DATE 1/9/69

MICROFILMED
OCT 20 1982

HAMILTON COUNTY
HAM-71-4.58

LOG OF BORING

Order No. 99.990, 9-25-68 JH

DATE STARTED 8-9-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 8-9-68 CASING: LENGTH HSA DIA. 3.375"I.D. IMMEDIATE 32.5' (686.7')
BORING NUMBER R-3-4 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER Backfilled Upon HRS. Completion

STATION & OFFSET 322+85, Ramp ME, 8' Left, Northeast Expy, HAM 71-4.58 SURFACE ELEVATION 719.2'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
719.2	0											
718.2	1	2-3	DARK BROWN AND GRAY GRAVELLY,SILTY CLAY,(FILL) MOIST-MEDIUM	1	20	8	10	37	25	34	13	25
716.7	2	5	BROWN SANDY LEAN CLAY, MOIST - STIFF /STIFF	2	4	9	12	35	40	41	23	22
	4	8-6-6	BROWN AND GRAY LEAN CLAY, MOIST - VERY STIFF	3	SAMPLE	DESTROYED						
	6	5-5-5	DO DO	4	0	4	14	35	47	43	24	23
	8											
709.2	10											
	12	7-11-15	BROWN AND GRAY GRAVELLY, SANDY SILTY CLAY, MOIST - VERY STIFF	5	21	11	16	30	22	24	10	11
704.2	14											
	16	9-7-9	GRAY AND BROWN GRAVELLY, SANDY SILTY CLAY WITH ROCK FRAGMENTS, MOIST - STIFF	6	33	8	13	27	19	24	9	14
699.2	18											
	20	5-6-8	GRAY SANDY, SILTY CLAY, MOIST - MEDIUM STIFF	7	11	8	12	39	30	24	8	14
	22											
	24											
	26	6-8-9	DO DO	8	13	10	16	35	26	21	7	14
	28											
689.2	30	7-8-10	DO DO	9	12	11	16	37	24	22	8	12
	32	4-6-8	GRAY GRAVELLY, SANDY, CLAYEY SILT, MOIST - MEDIUM STIFF	10	17	9	16	35	23	20	6	13
686.7												
685.2	34	5-6-8	GRAY AND GREENISH GRAY GRAVELLY, SILTY CLAY, MOIST - MEDIUM STIFF	11	27	6	8	33	26	28	11	20
682.2	36	6-10-12	BROWN AND GRAY LEAN CLAY, MOIST - STIFF	12	13	5	8	39	35	32	16	18
	38	8-11-13	BROWN AND GRAY GRAVELLY LEAN CLAY, MOIST - STIFF	13	15	7	10	31	37	36	19	18
679.2	40											
	42	7-10-11	BROWN AND GRAY LEAN CLAY, MOIST- STIFF	14	7	4	7	41	41	32	17	17
676.7	44	8-10-12	BROWN SILTY CLAY, MOIST - STIFF	15	12	3	5	44	36	30	13	16
674.2	46	4-5-6	BROWN AND GRAY CLAY,(VARVED) MOIST - STIFF	16	0	0	1	9	90	58	30	34
671.7	48	3-4-4	GRAY SILTY CLAY, VERY MOIST - SOFT	17	0	0	0	71	29	27	9	30
670.2	50	11-13-23	BLUISH GRAY SILTY CLAY, MOIST - VERY STIFF	18	0	2	0	39	59	40	20	15
	52											
	54											
664.2	56											
662.7		18-35-51	GREENISH GRAY HIGHLY WEATHERED SHALE, MOIST - HARD	19	0	0	0	37	63	45	22	16
	58		INTERBEDDED LIGHT BROWN WEATHERED SHALE AND LIGHT GRAY LIMESTONE, APPROX. 85% SHALE, 15% LIMESTONE. SHALE CALCAREOUS, NON-FOSSILIFEROUS TO FOSSILIFEROUS, ESSENTIALLY MEDIUM TOUGH (TRACE POSSIBLE SOFT). LIMESTONE OCCURS PRIMARILY WITHIN TOP 2-FT. OF RECOVERY IN 1" TO 4" LAYERS, IS CRYSTALLINE, TRACE SHALY, FOSSILIFEROUS, HARD.										
	60	85%										
657.7	62											
	64	% Recovery	Boring Completed									

LOG OF BORING

Order No. 99.990 JH 10-22-68

DATE STARTED 8-2-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 8-2-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 20' (699.9')
BORING NUMBER R-3-5 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 1 HRS. 23' (696.9')

STATION & OFFSET 323+89, Ramp ME, 10' Left, Northeast Expy, HAM 71-4.58 SURFACE ELEVATION 719.9'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
719.9	0											
718.4	2	4-3-2	CINDERS,(FILL)	1	VISUAL							
	4											
	6	8-10-10	BROWN SANDY SILTY CLAY, MOIST - STIFF	2	4	7	15	39	35	33	16	21
	8											
709.9	10											
	12	9-15-22	BROWN GRAVELLY SANDY CLAY, MOIST - STIFF	3	34	9	13	27	17	23	9	11
704.9	14											
	16	8-12-15	GRAY SANDY SILTY CLAY, MOIST - STIFF	4	8	11	16	40	25	23	9	11
	18											
699.9	20											
	22	7-14-16	BROWN SANDY GRAVEL, MOIST - DENSE	5	70	18	7	-5-				9
	24											
	26	6-8-10	DO DO	6	70	15	7	-8-				7
	28											
689.9	30	3-4-7	DO DO	7	66	16	8	-10-				8
	32	4-6-6	BROWN SILTY SANDY GRAVEL, MOIST - DENSE	8	46	34	7	-13-				14
687.9	34	3-2-3	GRAY SILTY CLAY, MOIST - MEDIUM STIFF	9	0	2	1	65	32	32	11	33
684.9	36	2-2-3	GRAY SANDY SILTY CLAY, MOIST - MEDIUM STIFF	10	11	11	16	40	22	25	8	21
682.4	38	2-3-5	GRAY SILTY CLAY, MOIST - MEDIUM STIFF	11	7	3	4	54	32	38	18	26
679.9	40	2-2-4	GRAY GRAVELLY SILTY CLAY, MOIST - MEDIUM STIFF	12	26	4	8	39	23	37	19	26
677.4	42	3-4-5	GRAY SILTY CLAY, MOIST - MEDIUM STIFF	13	0	1	5	59	35	40	18	26
	44	6-7-8	DO DO	14	0	1	7	57	35	36	17	25
	46											
	48											
669.9	50	4-5-5	GRAY GRAVELLY SILTY CLAY, MOIST - STIFF	15	23	5	10	31	31	31	14	17
	52											
	54											
664.9	56	7-9-10	GRAY AND BROWN SILTY CLAY WITH BROKEN STONE FRAGMENTS, MOIST - STIFF	16	13	5	8	41	33	29	15	16
	58											
	60	10-15-18	DO DO DO	17	3	1	1	31	64	44	23	17
	62											
	64											
	66	14-20-40	DO DO DO	18	7	2	2	35	54	41	23	18
	68											
	70											
649.4	60		DO DO DO	19	INSUFFICIENT SAMPLE							
	72		INTERBEDDED LIGHT GRAY SHALE AND LIGHT GRAY LIMESTONE, APPROX. 80% SHALE, 20% LIMESTONE. SHALE CALCAREOUS, NON-FOSSILIFEROUS, PROBABLE SOFT TO MEDIUM TOUGH, TRACE TOUGH. LIMESTONE OCCURS IN 1" TO 4-3/4" LAYERS, IS CRYSTALLINE, FOSSILIFEROUS, HARD.										
	74	34%										
644.4	76											
	78	% Recovery	Boring Completed									

LOG OF BORING

Order No. 99.990, 10-22-68 JH

DATE STARTED 9-11-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 9-11-68 CASING: LENGTH HSA DIA. 2.25"I.D. IMMEDIATE None
BORING NUMBER R-4-1 CORE BARREL: TYPE SIZE AFTER Backfilled Upon HRS. Completion

STATION & OFFSET 350+57.5, Northeast Expy, 137' Left, Northeast Expy, HAM 71-4.58 SURFACE ELEVATION 720.7'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
720.7	0											
719.2	2	10-6-5	BROWN AND GRAY GRAVELLY, SILTY CLAY, TRACE OF CINDERS, (FILL) MOIST - MEDIUM STIFF	1	23	8	10	30	29	33	17	16
	4											
	6	7-15-15	BROWN AND GRAY SILTY CLAY WITH LIMESTONE FRAGMENTS, MOIST - STIFF	2	9	5	11	35	40	39	23	17
	8	14-16-23	DO DO DO	3	VISUAL							
710.7	10											
	12	18-24-33	BROWN AND GRAY GRAVELLY, SILTY CLAY, MOIST - STIFF	4	24	7	10	28	31	33	18	14
	14	19-24-30	DO DO DO	5	29	11	12	26	22	30	15	13
705.7	16	18-30-45	BROWN AND GRAY SANDY SILTY CLAY WITH LIMESTONE FRAGMENTS, MOIST - VERY STIFF	6	17	11	16	33	23	26	12	11
	18	20-30-40	DO DO DO	7	VISUAL							
	20	20-30-35	DO DO DO	8	12	8	15	37	28	27	13	12
696.7	24	20-30-30	DO DO DO	9	VISUAL							
	26	11-35-55	BROWN AND GRAY GRAVELLY SILTY CLAY, MOIST - STIFF	10	26	5	9	29	31	32	17	16
	28											
	30											
	33	30-40-50	DO DO DO	11	26	5	9	29	31	31	16	14
	34											
685.7	36	30-40-60	GRAY SANDY SILTY CLAY WITH LIMESTONE FRAGMENTS, MOIST - VERY STIFF	12	16	7	22	33	22	23	11	13
684.2	38											
	40		Boring Completed									

Foundation Boring Sheet No. FB-4.

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
CITY OF CINCINNATI
NORTHEAST EXPRESSWAY HAM 71-4.58
BORING No. R-3-4 R-4-1
R-3-5

BORING DATA

		REVIEWED BY	DATE
		CRL	1/9/69

MICROFILMED
OCT 20 1982

HAMILTON COUNTY
HAM-71-4.58

LOG OF BORING Order No. 99,990 JH 10-22-68

DATE STARTED 9-9-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 9-11-68 CASING: LENGTH HSA DIA. 2.25"I.D. IMMEDIATE None
BORING NUMBER R-5-1 CORE BARREL: TYPE SIZE AFTER Backfilled Upon HRS. Completion
STATION & OFFSET 5+16 Duck Creek Road, 31'Right, Northeast Expy, HAM 71-4.58 SURFACE ELEVATION 683.2'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
683.2	0											
	2	3-3-4	BROWN SANDY SILTY CLAY WITH LIMESTONE FRAGMENTS, (FILL) MOIST - MEDIUM STIFF	1	18	8	13	25	26	36	18	16
			BROWN SANDY SILTY CLAY WITH LIMESTONE FRAGMENTS, (FILL) MOIST - VERY STIFF	1A	17	8	14	36	25	27	13	11
678.2	4											
	6	3-13-13	BROWN SANDY SILTY CLAY, MOIST - STIFF	2	10	8	15	36	31	26	12	13
673.2	8											
	10	6-11-19	BROWN AND GRAY GRAVELLY SANDY, SILTY CLAY, MOIST - STIFF	3	33	6	13	26	22	25	12	11
668.2	12											
	14											
	16	6-7-10	GRAY SANDY SILTY CLAY, MOIST - MEDIUM STIFF	4	17	10	19	32	22	22	10	13
	18	7-8-9	DO DO	5	15	10	19	33	23	22	10	12
	20											
	22	7-8-11	DO DO	6	12	10	18	36	24	23	11	13
	24	15-20-25	DO DO	7	19	8	15	34	24	25	12	13
	26	50	DO DO	8	No Recovery							
655.7	28											
654.2		12-18-30	GRAY SANDY CLAYEY GRAVEL, MOIST - VERY DENSE	9	44	9	13	21	13	21	9	10
	30	25-25-30	BROWN GRAVELLY SILTY SAND, MOIST - VERY DENSE	10	21	8	40	21	10		NP	15
651.2	32											
	34	25-30-45	BROWN SILTY SANDY GRAVEL, MOIST - VERY DENSE	11	50	18	16	-16-				5
	36	34-35-35	DO DO	12	44	22	17	-17-				5
543.2	38											
	40											
	42	15-25-30	BROWN SILTY SAND, MOIST - DENSE	13	6	15	58	-21-				6
638.2	44											
	46	16-20-25	BROWN SILTY GRAVELLY SAND, MOIST - DENSE	14	38	13	36	-13-				5
	48											
	50											
630.7	52	15-20-30	DO DO	15	26	13	35	18	8		NP	9
	54		BORING COMPLETED									
	56											

LOG OF BORING Order No. 99,990, 9-27-68 JH

DATE STARTED 8-15-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 8-15-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 50' (633.0)
BORING NUMBER R-5-2 CORE BARREL: TYPE SIZE AFTER 24 HRS. Caved @ 48'/Dry
STATION & OFFSET 7+02 Duck Creek 32'Right, Northeast Expy, HAM 71-4.58 SURFACE ELEVATION 683.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
683.0'	0											
680.5	2	4-7-9	BROWN SANDY CLAYEY GRAVEL, MOIST - STIFF	1	36	6	13	23	22	27	11	14
	4	5-6-8	BROWN GRAVELLY, SANDY SILTY CLAY, MOIST - STIFF	2	Visual							
	6	9-10-12	DO DO	3	25	7	14	30	24	24	10	15
673.0	8	8-11-13	DO DO	4	Visual							
	10											
670.5	12	10-15-20	BROWN GRAVEELY SANDY CLAYEY SILT, MOIST - STIFF	5	16	11	19	32	22	21	7	10
668.0	14	17-18-25	BROWN GRAVELLY, SILTY SAND, MOIST - VERY STIFF	6	30	14	23	24	9	17	3	11
	16											
665.5	18	10-18-21	ROCK FRAGMENTS	7	Visual							
	20	9-16-19	BROWN GRAVELLY SANDY SILTY CLAY, MOIST - STIFF	8	36	6	11	26	21	26	11	13
	22	16-19-25	BROWN GRAVELLY SANDY SILTY CLAY, MOIST - VERY STIFF	9	31	6	13	27	23	24	10	12
	24	11-15-20	DO DO DO	10	Visual							
	26	12-17-20	DO DO DO	11	17	8	15	33	27	25	13	13
	28	10-18-35	DO DO DO	12	Visual							
	30											
650.5	32	17-21-33	DO DO DO	13	22	11	17	29	21	27	14	12
648.0	34	10-15-19	BROWN SILTY SAND, MOIST - DENSE	14	9	17	45	19	10		NP	6
	36	12-17-16	BROWN SANDY SILT WITH FINE SAND LAYERS, MOIST - DENSE	15	0	2	32	52	14	20	4	21
643.0	38											
	40											
	42	13-16-19	BROWN FINE SAND, MOIST - DENSE	16	0	9	80	-11-				4
638.0	44											
	46	11-17-20	BROWN SILTY SAND, MOIST - DENSE	17	11	27	50	-12-				5
633.0	48											
	50											
	52	15-18-23	BROWN FINE TO COARSE SAND, MOIST - DENSE	18	0	26	66	-8-				19
626.5	54											
	56	8-15-25	DO DO	19	1	54	40	-5-				23
	58		BORING COMPLETED									
	60											

LOG OF BORING Order No. 99,990, 11-6-68 JH

DATE STARTED 8-12-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 8-12-68 CASING: LENGTH HSA DIA. 3.25"I.D. IMMEDIATE None
BORING NUMBER R-6-1 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER Backfilled Upon HRS. Completion
STATION & OFFSET 13+38, Duck Creek Road, 62'Right, Northeast Expy, HAM 71-4.58 SURFACE ELEVATION 693.6'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
693.6	0											
693.1	2		DARK BROWN SILTY CLAY, (FILL) MOIST - MEDIUM STIFF	1	5	11	8	47	29	29	11	24
		2-2	BROWN SILTY CLAY, MOIST - MEDIUM STIFF	2	0	8	11	38	43	36	18	22
	4	4-6-8	DO DO DO	3	Visual							
688.6	6	3-3-5	BROWN SANDY CLAY, MOIST - STIFF	4	0	4	16	37	43	37	20	25
	8	4-6-7	DO DO	5	Visual							
	10	10-11-11	DO DO	6	5	8	13	47	27	25	9	14
	12											
	14	5-9-10	BROWN SANDY CLAY, MOIST - VERY STIFF	7	14	9	13	36	28	27	12	14
678.6	16	6-7-8	BROWN CLAYEY SAND, MOIST - VERY STIFF	8	7	7	64	5	17	30	13	16
676.1	18											
	20	5-7-10	GRAY AND BROWN SANDY CLAY WITH LIMESTONE FRAGMENTS, MOIST - VERY STIFF	9	15	10	15	31	29	24	9	15
	22	13-15-11	DO DO DO	10	47	7	11	19	16	22	8	10
671.1	24	8-9-12	GRAY SILTY CLAY, MOIST - VERY STIFF	11	0	4	7	46	43	28	13	14
668.6	26	8-12-15	GRAY SANDY CLAY, MOIST - VERY STIFF	12	12	7	16	35	30	24	11	12
	28	10-14-16	DO DO	13	12	8	15	32	33	26	12	12
663.6	30											
	32	6-9-10	GRAY GRAVELLY, SANDY CLAY, MOIST - STIFF	14	19	7	14	31	29	27	14	14
	34											
	36	5-7-9	GRAY GRAVELLY SANDY CLAY, MOIST - MEDIUM STIFF	15	15	11	14	34	26	24	12	12
653.6	38											
	40											
	42	7-11-25	GRAY SANDY CLAY WITH GRAVEL AND SAND LAYERS, MOIST - VERY STIFF	16	26	15	19	25	15	17	6	10
648.6	44											
	46	8-10-12	GRAY GRAVELLY, SANDY CLAY, MOIST - STIFF	17	18	9	17	32	24	22	8	12
	48											
643.6	50											
642.6		6-9	GREENISH GRAY SILTY CLAY, MOIST - MEDIUM STIFF	18	8	5	7	39	41	31	16	21
	52	7	GRAY SILTY CLAY AND BOULDERS, MOIST - HARD	19	Visual							
	54											
	56	115-22-35	DO DO	20	17	5	6	24	48	42	22	24
636.1	58											
	60	38%	INTERBEDDED LIGHT BROWN WEATHERED SHALE AND LIGHT GRAY LIMESTONE, APPROX. 85% SHALE, 15% LIMESTONE. SHALE CALCAREOUS, TRACE FOSSILIFEROUS, SOFT TO MEDIUM TOUGH. LIMESTONE OCCURS IN 3/4" TO 2-1/2" LAYERS, IS CRYSTALLINE, FOSSILIFEROUS, HARD; LAYER AT BOTTOM OF RECOVERY EXHIBITS HIGH-ANGLE JOINT WITH IRON-OXIDE STAINING.										
	62											
631.1	64	% Recovery	BORING COMPLETED									
	66											

Foundation Boring Sheet No. FB-5.

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
CITY OF CINCINNATI
NORTHEAST EXPRESSWAY HAM71-4.58
BORING No. R-5-1 R-6-1
R-5-2

BORING DATA

		REVIEWED BY	DATE
		C.R.L.	1/22/69

MICROFILMED
OCT 20 1982

HAMILTON COUNTY
HAM-71-4.58

LOG OF BORING Order No. 99.990 JH 11-21-68

DATE STARTED 8-14-68 SAMPLER: TYPE SPLIT SPOON DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 8-14-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE NONE
BORING NUMBER R-7-1 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 1 DAY 6'(736.0')
STATION & OFFSET 343+58, NORTHEAST EXWY, 120'RIGHT, HAM 71-4.58 SURFACE ELEVATION 742.0'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
742.0	0		CONCRETE AND CINDERS	VISUAL								
741.5	2	7-5-6	BROWN SILTY CLAY, MOIST - STIFF	1	0	2	6	55	37	40	21	23
	4	5-6-7	DO DO	2	VISUAL							
737.0	6	6-6-8	BROWN SANDY, SILTY CLAY, MOIST - STIFF	3	0	7	13	36	44	40	20	20
	8											
732.0	10											
	12	3-4-5	BROWN SILTY CLAY, MOIST - STIFF	4	0	4	15	29	52	48	27	20
	14	4-5-6	DO DO	5	0	3	9	36	52	40	22	21
727.0	16	5-6-6	BROWN SANDY SILTY CLAY, MOIST - STIFF	6	0	6	14	37	43	36	18	19
724.5	18	5-6-8	BROWN SILTY CLAY, MOIST - VERY STIFF	7	0	0	2	42	56	40	18	22
722.0	20	45-81	BROWN SILTY CLAY WITH BROKEN LIMESTONE FRAGMENTS.	8	11	2	3	36	48	40	18	13
721.0	22	40%	INTERBEDDED LIGHT BROWN WEATHERED SHALE AND LIGHT GRAY LIMESTONE, APPROX.85% SHALE, 15% LIMESTONE. SHALE CALCAREOUS, TRACE FOSSILIFEROUS, PROBABLE SOFT TO MEDIUM TOUGH. LIMESTONE OCCURS IN 3/4" TO 5-1/2" LAYERS, IS CRYSTALLINE, FOSSILIFEROUS, HARD.									
716.0	24											
	26											
	28	% RECOVERY	BORING COMPLETED									
	30											

LOG OF BORING Order No. 99.990 JH 10-1-68

DATE STARTED 8-13-68 SAMPLER: TYPE SPLIT SPOON DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 8-13-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE NONE
BORING NUMBER R-7-2 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 1 HRS. 5' (739.3')
STATION & OFFSET 342+71, 128'RIGHT, NORTHEAST EXWY. HAM 71-4.58 SURFACE ELEVATION 744.3'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
744.3	0											
	2	5-7-8	BROWN SILTY CLAY, MOIST - MEDIUM STIFF	1	0	5	5	57	33	30	11	22
739.3	4											
	6	10-15-19	BROWN SANDY, SILTY CLAY, MOIST - VERY STIFF	2	0	10	10	43	37	34	17	16
736.8	8	9-14-17	BROWN SILTY CLAY, MOIST - VERY STIFF	3	4	8	10	40	38	35	17	16
734.3	10	15-12-20	BROWN AND GRAY SANDY, LEAN CLAY WITH BROKEN STONE FRAGMENTS	4	11	11	14	36	28	30	15	14
	12		MOIST - VERY STIFF									
	14	16-18-21	DO DO DO	5	27	10	13	29	21	26	12	12
729.3	16	19-21-32	BROWN AND GRAY SILTY CLAY, MOIST - STIFF	6	0	4	7	47	42	37	20	20
726.8	18	12-11-14	BROWN AND GRAY SANDY, SILTY CLAY, MOIST - STIFF	7	10	8	13	41	28	26	12	12
724.3	20	12-13-15	BROWN FAT CLAY WITH BROKEN STONE FRAGMENTS, MOIST - VERY STIFF	8	12	3	5	29	51	52	30	20
721.8	22	13-16-31	BROWN SANDY LEAN CLAY, WITH BROKEN STONE FRAGMENTS, MOIST - VERY STIFF	9	14	14	8	30	34	36	19	13
719.3	24	18-29-56	BROWN LEAN CLAY WITH BROKEN STONE FRATMENTS, MOIST - VERY STIFF	10	11	5	7	35	42	37	20	16
716.8	26	27-53-68	BROWN SILTY CLAY, MOIST - VERY STIFF	11	0	1	2	36	61	44	22	14
714.3	28											
	30	20%	INTERBEDDED LIGHT BROWN WEATHERED SHALE AND LIGHT GRAY LIMESTONE, APPROX. 80% SHALE, 20% LIMESTONE (ENTIRE RECOVERY ESSENTIALLY LIMESTONE). SHALE ASSUMED CALCAREOUS, NON-FOSSILIFEROUS TO TRACE FOSSILIFEROUS, PROBABLE SOFT TO MEDIUM TOUGH. LIMESTONE OCCURS IN 1" TO 2½" LAYERS, IS CRYSTALLINE, FOSSILIFEROUS, HARD; HIGH-ANGLE JOINTING WITH IRON-OXIDE STAINING EXHIBITED IN MOST LAYERS.									
709.3	32											
	34											
	36	% RECOVERY	BORING COMPLETED									
	38											

Foundation Boring Sheet No. FB-6.

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
CITY OF CINCINNATI
NORTHEAST EXPRESSWAY HAM-71-4.58
BORING No. R-7-1
R-7-2

BORING DATA

		REVIEWED BY	DATE
		C.R.L.	1/8/69

MICROFILMED
OCT 20 1982

LOG OF BORING

2/8/68/PS

DATE STARTED 12/8/67 SAMPLER: TYPE S.S. DIA. 2" O.D. WATER ELEVATION
DATE COMPLETED 12/9/67 CASING: LENGTH HSA DIA. 2.25" I.D. IMMEDIATE 645.5' (20')
BORING NUMBER R-8-1 CORE BARREL: TYPE SIZE AFTER BACKFILLED HRS.
STATION & OFFSET 8+78 DUCK CREEK RD. 34' RIGHT SURFACE ELEVATION 665.5

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
665.5	0		~~CONCRETE~~									
~~665.0~~	2	5-6-7	BROWN SANDY, CLAYEY SILT, MOIST - VERY STIFF	1	12	12	20	36	20	22	7	12
660.5	4											
	6	11-18-23	GRAY SANDY SILT, MOIST - VERY STIFF	2	12	10	24	41	13	17	3	12
658.0	8											
		14-16-19	GRAY SANDY SILT WITH GRAVEL AND LIMESTONE FRAGMENTS, MOIST - VERY STIFF	3	34	6	13	31	16	21	7	18
655.5	10											
	12	12-18-18	GRAY SANDY, SILTY CLAY, MOIST - VERY STIFF	4	14	10	16	36	24	22	10	11
	14	16-20-23	DO DO DO	5	VISUAL							
650.5	16	9-8-9	BROWN FINE TO MEDIUM SAND, MOIST - MEDIUM DENSE	6	11	31	50	-8				22
648.0	18											
	20	8-8-10	BROWN SILTY SAND AND GRAVEL, MOIST - MEDIUM DENSE	7	33	43	8	-16				8
643.0	22	8-9-10	BROWN SILTY SAND AND GRAVEL, WET - MEDIUM DENSE	8	39	35	10	-16				15
	24	7-9-9	BROWN SILTY CLAY, MOIST - VERY STIFF	9	1	2	15	40	42	30	13	23
640.5	26	9-11-13	BROWN FINE TO MEDIUM SAND, MOIST - MEDIUM DENSE	10	3	78	9	-10				9
	28											
	30											
	32	13-16-19	BROWN FINE TO MEDIUM SAND, MOIST - DENSE	11	7	64	24	-5				18
630.5	34											
	36	14-18-22	BROWN SILTY SAND, MOIST - DENSE	12	4	37	44	-15				15
	38											
625.5	40											
	42	8-9-9	GRAY SILT, WET - MEDIUM DENSE	13	0	0	5	80	15		NP	22
	44											
	46	9-8-11	DO DO DO	14	0	0	7	73	20		NP	21
	48											
615.5	50											
	52	11-14-19	GRAY SILTY SAND, WET - DENSE	15	0	0	78	-22				23
	54											
610.5	56											
	58	9-16-17	GRAY FINE SAND, WET - DENSE	16	0	0	99	-1				24
605.5	60											
	62	14-18-19	GRAY SILT, WET - DENSE	17	0	0	12	76	12		NP	24
	64											
600.5	66											
	68	13-17-19	GRAY CLAYEY SILT, MOIST - STIFF	18	0	0	1	67	32	25	5	23
~~595.5~~	70											
	72	15-18-20	GRAY SILTY CLAY, MOIST - VERY STIFF	19	0	0	2	44	54	28	8	19
590.5	74											
	76	14-16-19	GRAY CLAYEY SILT, MOIST - STIFF	20	0	0	1	63	36	26	7	20
	78											
	80											
584.0	82	13-15-18	DO DO DO	21	1	1	1	61	36	24	5	20
	84		BORING COMPLETED									

LOG OF BORING

2/8/68/PS

DATE STARTED 12/10/67 SAMPLER: TYPE S.S. DIA. 2" O.D. WATER ELEVATION
DATE COMPLETED 12/12/67 CASING: LENGTH HSA DIA. 2.25" I.D. IMMEDIATE 646.5 (40')
BORING NUMBER R-10-1 CORE BARREL: TYPE SIZE AFTER BACKFILLED HRS.
STATION & OFFSET 4+32 CLAYLAND 13' LEFT SURFACE ELEVATION 686.5

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
686.5	0											
	2	2-3-4	BROWN SILTY CLAY, TRACE CINDERS, (FILL), MOIST - MEDIUM STIFF	1	2	7	11	41	39	36	16	27
681.5	4											
	6	4-3-3	BROWN SILTY CLAY, (FILL), MOIST - MEDIUM STIFF	2	2	3	5	56	34	32	12	26
	8											
		3-5-6	DO DO DO	3	VISUAL							
676.5	10											
	12	14-19-22	BROWN AND GRAY SILTY CLAY, MOIST - HARD	4	13	8	10	31	38	33	14	9
674.0	14	13-15-17	RAY AND BROWN SANDY, SILTY CLAY, MOIST - VERY STIFF	5	14	7	17	34	28	23	8	12
	16	12-16-18	DO DO DO	6	VISUAL							
669.0	18											
	20	12-18-17	GRAY SANDY, SILTY CLAY, MOIST - STIFF	7	9	10	17	34	30	23	8	12
666.5	22	13-15-17	GRAY SILTY CLAY, MOIST - STIFF	8	9	7	11	35	38	26	10	15
	24	12-16-21	DO DO	9	VISUAL							
661.5	26	12-15-18	GRAY GRAVELLY SANDY, CLAYEY SILT, MOIST - STIFF	10	18	11	15	34	22	20	6	10
	28											
	30											
	32	13-14-19	DO DO DO	11	16	10	24	22	28	21	7	12
	34											
	36	12-15-17	DO DO DO	12	16	10	16	34	24	20	6	12
	38											
646.5	40											
645.0	42	13-16-19	GRAY SILTY SAND, WET - DENSE	13	1	1	50	41	7		NP	19
	44		BORING COMPLETED									
	46											
	48											
	50											

LOG OF BORING

2-8-68 PS

DATE STARTED 12-1-67 SAMPLER: TYPE S.S. DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 12-1-67 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE NONE
BORING NUMBER R-10-2 CORE BARREL: TYPE NXM SIZE 2-1/8" I.D. AFTER BACKFILLED HRS.
STATION & OFFSET 2+26 CLAYLAND 19'LEFT SURFACE ELEVATION 687.1

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
687.1	0											
686.1		5-7	TOPSOIL, ASH AND CINDERS, (FILL) MOIST - STIFF	1	VISUAL							
	2	16	BROWN SANDY SILTY CLAY WITH SMALL FLOATERS AND LAYERS OF LIMESTONE, MOIST - STIFF	2	27	9	13	23	28	27	12	12
682.1	4											
	6	28-39-61	BROWN HIGHLY WEATHERED SHALE, MOIST - HARD	3	14	4	2	39	41	36	14	18
678.6	8											
677.1	10	66%	LAYERED BROWN WEATHERED SHALE, MEDIUM TOUGH AND GRAY FOSSILIFEROUS LIMESTONE, JOINTED, APPROX. 25 TO 30% LIMESTONE IN 1" AND 2" PIECES									
	12											
	14	50%	LAYERED GRAY AND BROWN SHALE, MEDIUM TOUGH AND GRAY FOSSILIFEROUS LIMESTONE, JOINTED, APPROX. 15 TO 20% LIMESTONE IN 1/2" TO 2" PIECES.									
672.1	16	4 RECOVERY	BORING COMPLETED									
	18											
	20											

Foundation Boring Sheet No. FB-7.

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
BORING Nº R-8-1, R-10-1, R-10-2.
NORTHEAST EXPRESSWAY I-71-1 (33)
HAM. 71 – 4.58
EAST OF VICTORY PARKWAY TO BURWOOD
PROJECT Nº 0534

BORING DATA

		REVIEWED BY	DATE
		C.R.L	2/28/68

MICROFILMED
OCT 20 1982

LOG OF BORING

Order No. 99.990 JH 6-28-68

DATE STARTED 2-15-68 SAMPLER: TYPE Split Spoon DIA. 2"OD WATER ELEVATION
DATE COMPLETED 2-24-68 CASING: LENGTH H.S.A. DIA. 3.5"ID IMMEDIATE
BORING NUMBER R-9-1 CORE BARREL: TYPE NXM SIZE 2-1/8"ID AFTER Backfilled HRS.
STATION & OFFSET 14+76, Dana Avenue, 91.5' Rt. SURFACE ELEVATION 676.5'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
676.5	0											
675.0			Blacktop and base material	1	Visual							
	2	5-3-3	Gray silty clay, (FILL) moist - medium stiff									
	4											
		3-2-5	do do do	2	1	5	13	43	38	31	15	24
670.0	6											
	8	7-8-9	Brown and gray sandy, silty clay, moist - stiff	3	10	14	17	29	30	25	11	15
	10	10-9-9	do do do	4	Visual							
	12	7-9-11	do do do	5	Visual							
662.5	14											
660.0	16	14-11-11	Brown and gray gravelly, clayey SAND, moist - very stiff	6	30	13	19	15	23	23	10	12
	18	7-9-14	Gray gravelly, sandy silty CLAY, moist - very stiff	7	26	9	13	27	25	23	11	12
	20											
		5-7-18	do do do	8	28	8	12	24	28	24	12	12
	22											
	24	7-12-15	do do do	9	22	10	14	29	25	21	9	12
	26	11-14-18	do do do	10	Visual							
	28											
	30											
645.0	32	11-18-22	do do do	11	17	11	15	32	25	20	8	11
643.5			Brown sandy silty CLAY, gravel and cobbles, moist - stiff									
642.5	34	50%		12	2	4	3	29	62	41	21	
641.5		22-31	Brown silty CLAY, moist - very stiff	13	Visual							
	36	65	Brown weathered SHALE									
	38	31-58-79	do do	14	Visual							
	40											
634.5	42											
		60%	Layered brown and gray weathered SHALE and limestone layers									
632.0	44											
	46	30%	Layered brown and gray weathered SHALE, soft and gray fossiliferous limestone, one 2-3/4" limestone layer at the bottom									
	48											
627.0	50											
625.5		33%	Layered brown and gray weathered SHALE, soft and gray fossiliferous limestone, jointed, approx. 10% limestone in 1/2" to 2" pieces									
	52											
	54	16%	Layered brown and gray weathered SHALE, soft and gray fossiliferous limestone, jointed, approx. 100% of core recovery is limestone									
621.5												
620.5	56	66%	Layered gray SHALE soft and gray fossiliferous limestone, jointed, approx. 30 to 35% limestone in 1/2" to 2 1/2" pieces									
618.5	58	42%	Layered gray SHALE, soft and gray fossiliferous limestone									
616.5	60	66%	Layered gray SHALE, medium tough and gray fossiliferous limestone, jointed, approx. 20 to 25% limestone in 1/2" to 3" pieces									
614.5	62	83%	Layered gray SHALE, medium tough and gray fossiliferous limestone, jointed, approx. 20 to 25% limestone in 2" to 2-1/2" pieces.									
		% Recovery										
			Boring Completed									

LOG OF BORING

Order No. 99.990 6-28-68 JH

DATE STARTED 2-24-68 SAMPLER: TYPE Split Spoon DIA. 2"OD WATER ELEVATION
DATE COMPLETED 2-25-68 CASING: LENGTH HSA DIA. 3.5"ID IMMEDIATE 612.0 (10')
BORING NUMBER R-11-1 CORE BARREL: TYPE SIZE AFTER Backfilled HRS.
STATION & OFFSET 392+07, 133' Left SURFACE ELEVATION 622.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
622.0	0											
		6-4-3	Brown sandy clay, concrete and rock, (FILL) moist - medium stiff	1	Visual							
619.5	2											
	4	3-4-5	Brown clayey, silty sand, (FILL) moist - medium stiff	2	8	13	30	32	17	22	6	21
617.0												
616.0	6	6-8	Black clay, mud and cinders, (FILL) moist - dense	3	Visual							
			Brown sandy gravel, moist - medium dense to loose	4	Visual							
	8	2-4-8	do do do	5	52	22	19	-7-				11
612.0	10											
		13-17-20	Gray silt, moist - dense	6	0	1	9	76	14		NP	18
609.5	12											
	14	15-16-17	Gray sandy silt, moist - dense	7	0	2	20	66	12		NP	20
607.0												
604.5	16	11-15-18	Gray silt, wet - dense	8	1	1	9	80	9		NP	21
	18	15-17-20	Gray sandy silt, moist - dense	9	0	1	24	65	10		NP	22
	20											
		11-13-15	Gray sandy silt, wet - medium dense	10	0	0	14	79	7		NP	24
	22											
	24	10-14-17	Gray sandy silt, wet - dense	11	0	1	15	74	10		NP	21
	26	11-13-15	Gray sandy silt, wet - medium dense	12	0	1	33	56	10		NP	21
	28											
592.0	30											
		14-19	Gray silt, moist - dense	13	2	3	4	69	22	21	2	20
	32	23	do do	14	Visual							
	34											
	36	15-19-21	Gray silt, wet - dense	15	1	1	2	74	22	21	3	22
	38											
582.0	40											
		13-17-23	Gray sandy, silty clay, moist - very stiff	16	11	9	17	38	25	21	9	13
	42											
	44											
	46	12-16-19	Gray sandy, silty clay, moist- very stiff	17	6	11	19	38	26	20	8	12
	48											
572.0	50											
		22-31-46	Gray silt, moist - very dense	18	3	1	6	70	20		NP	23
	52											
	54											
	56	28-40-58	do do	19	0	0	3	85	12		NP	22
	58											
562.0	60											
560.5	62	16-23-30	Gray clayey silt, moist - very stiff	20	1	0	2	72	25	25	5	20
			Boring Completed									
	64											
	66											
	68											
	70											

Foundation Boring Sheet No. FB-8.

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
NORTHEAST EXPRESSWAY I-71-1(33)
HAM 71-4.58
EAST OF VICTORY PARKWAY TO BURWOOD
PROJ. NO. 0534

BORING DATA

		REVIEWED BY	DATE
		C.R.L.	7/24/68

MICROFILMED
OCT 20 1982

LOG OF BORING Order No. 99,990, 9-25-68 JH

DATE STARTED 5-17-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 5-17-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 40' (693.4)
BORING NUMBER B-34-1 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 24 HRS. 17' (716.4)
STATION & OFFSET 322+74, 147'Right, Northeast Expy, HAM 71-4.58 SURFACE ELEVATION 733.4'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
733.4	0											
	2	7-7-9	Mottled brown sandy silty clay, moist - stiff	1	14	15	12	31	28	35	16	17
728.4	4											
	6	10-11-11	Brown sandy silty clay, moist - very stiff	2	11	10	15	38	26	26	12	13
723.4	8											
	10											
	12	9-11-10	Brown and gray gravelly, sandy silty clay, moist - stiff	3	20	10	15	31	24	26	12	14
	14											
	16	6-12-12	do do do	4	20	11	16	30	23	24	10	12
714.4	18											
	20	7-9-10	Gray gravelly silty clay, moist- stiff	5	17	8	11	37	27	23	8	12
710.9	22											
	24	9-9-12	Gray sandy silty clay, moist - stiff	6	10	9	12	47	22	24	10	13
	26	6-7-10	do do	7	9	7	17	40	27	21	8	14
705.9	28	8-8-12	Gray gravelly silty clay, very moist - medium stiff	8	18	7	9	38	28	26	11	16
703.4	30	6-10-10	Bluish gray gravelly silty clay, moist - stiff	9	16	0	1	25	58	30	8	22
700.9	32											
	34	11-12-15	Blue and gray silty clay, moist - very stiff	10	0	0	0	31	69	48	26	24
	36	9-11-13	do do	11	0	2	2	44	52	38	16	20
695.9	38	32-41-44	Brown highly weathered shale and limestone, moist - hard	12	8	5	4	43	40	38	18	15
693.4	40	79	Brown weathered shale	13	Visual							
692.9	42		Interbedded light gray limestone and light brown weathered shale, approx. 60% limestone, 40% shale. Limestone occurs in 1"to 5"layers, is fine-grained, shaly, & crystalline, fossiliferous, hard; high-angle joint exhibited near top of recovery. Shale calcareous, non-fossiliferous, probable soft to medium tough.									
690.1	44	100%										
687.9	46		Interbedded gray limestone and light gray shale (trace light brown), approx. 50% limestone, 50% shale. Limestone occurs in 1/2"to 4"layers, is crystalline, trace shaly, fossiliferous, hard, Shale calcareous, non-fossiliferous to trace fossiliferous, medium tough.									
	48											
	50	% Recovery	Boring Completed									

LOG OF BORING Order No. 99,990, 10-9-68 JH

DATE STARTED 5-17-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 5-17-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 40' (693.3)
BORING NUMBER B-34-2 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 24 HRS. 16' (717.3')
STATION & OFFSET 323+02, 88'Rt, Northeast Expy, HAM 1-71-4.58 SURFACE ELEVATION 733.3

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
733.3	0											
	2	4-6-6	Brown silty clay, moist - stiff	1	Visual							
	4	7-8-10	do do	2	Visual							
	6	6-7-11	do do	3	1	6	11	39	43	38	20	24
725.8	8	9-12-13	Brown sandy, silty clay, moist - stiff	4	1	6	14	35	44	42	23	20
	10											
720.8	12	6-10-10	do do	5	9	11	16	38	26	25	9	12
	14	9-10-12	Brown gravelly, sandy, silty clay, moist - stiff	6	Visual							
	16	6-8-11	do do	7	16	9	16	35	24	23	9	12
715.8	18											
713.3	20	7-9-10	Gray sandy, clayey silt, moist - stiff	8	12	10	18	38	22	19	6	10
	22	20-21-19	Gray gravelly, sandy silty clay, moist - very stiff	9	16	8	12	37	27	24	9	10
710.8	24	7-10-11	Gray gravelly, sandy, clayey silt, moist - very stiff	10	Visual							
	26	6-8-15	do do do	11	15	8	12	38	27	22	4	15
	28	7-7-15	do do do	12	Visual							
703.3	30											
	32	6-8-9	Gray clayey silt, some wood, moist - medium stiff	13	7	6	13	50	24	23	7	18
	34	5-6-8	do do	14	Visual							
698.3	36	10-15-21	Gray gravelly, silty clay, moist - stiff	15	21	7	5	24	43	41	21	17
	38											
693.3	40											
	42	6-35-48	Brown silty clay with limestone fragments, moist - stiff	16	Visual							
690.8	44	39-47	Brown weathered shale and limestone	17	Visual							
688.3	46		Interbedded light brown weathered shale and light gray limestone, approx. 85% shale, 15% limestone (entire recovery limestone). Shale assumed calcareous, trace fossiliferous, probable soft to medium tough. Limestone occurs in 3/4"to 3-1/4" layers, is crystalline, fossiliferous, hard; some high-angle jointing with iron-oxide staining exhibited.									
	48	10%										
	50											
681.3	52		Light gray shale, calcareous, non-fossiliferous, tough, trace hard. Recovery capped by 3" light gray limestone layer, crystalline, fossiliferous, hard and displaying high-angle joint.									
	54	60%										
678.3	56	% Recovery	Boring Completed									
	58											

LOG OF BORING Order No. 99,990, 9-27-68 JH

DATE STARTED 5-20-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 5-20-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 15' (713.6')
BORING NUMBER B-34-3 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 2 HRS. 14' (714.6')
STATION & OFFSET 322+98, C.L., Northeast Expy, HAM 71-4.58 SURFACE ELEVATION 728.6'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
728.6	0											
	2	10-9-11	Brown silty clay, trace brick fragments and glass, (FILL) moist - stiff	1	9	4	7	48	32	58	39	18
723.6	4											
	6	9-9-10	Light brown silty clay, moist - medium stiff	2	12	7	11	37	33	36	17	23
718.6	8											
	10											
	12	10-11-10	Light brown gravelly, sandy, silty clay, moist - medium stiff	3	18	12	16	30	24	24	9	13
	14											
	16	9-10-11	do do do	4	19	12	17	30	22	23	10	14
708.6	18											
	20											
	22	41-27-19	Gray gravelly, sandy clay, moist - stiff	5	16	14	16	32	22	•		12
703.6	24											
	26	9-12-15	Gray clayey silt, moist - stiff	6	7	7	2	60	24	22	7	12
	28											
698.6	30											
	32	5-7-12	Gray gravelly, sandy, silty clay, moist - medium stiff	7	16	9	16	33	26	24	9	13
	34											
693.6	36	6-6-8	Gray silty clay with organics, very moist - medium stiff	8	0	0	1	71	28	32	11	31
691.1	38	3-4-5	Greenish gray silty clay, trace of organics, very moist - medium dense	9	0	4	1	55	40	35	14	26
	40											
	42	4-5-6	do do do	10	0	3	4	51	42	45	22	33
	44	6-7-6	do do do	11	0	2	4	49	45	43	21	27
683.6	46	90	Gray and brown highly weathered shale, moist - very stiff	12	Visual							
	48	17-32-60	do do do	13	0	2	5	43	50	36	16	19
678.6	50											
677.6		32-57	Brown and gray highly weathered shale, moist - hard	14	0	1	0	33	66	48	23	15
	52		Light brown and light gray weathered shale with light gray limestone layers, approx. 90% shale, 10% limestone, Shale calcareous, non-fossiliferous to trace fossiliferous, medium tough; some probable soft; High-angle joint exhibited top 1' of recovery. Limestone occurs primarily near center of section in 1" to 5½" layers, is crystalline, some fine-grained, fossiliferous, hard.									
	54	60%										
	56											
	58	68%										
667.6	60											
	62	% Recovery	Boring Completed									
	64											

Foundation Boring Sheet No. FB-9.

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
CITY OF CINCINNATI
NORTHEAST EXPRESSWAY HAM 71-4.58
BORING No. B-34-1 B-34-3
B-34-2

BORING DATA

		REVIEWED BY	DATE
		CRL	1/9/69

MICROFILMED
OCT 20 1982

LOG OF BORING ORDER No. 99.990, 9-24-68 JH

DATE STARTED 5-28-68 SAMPLER: TYPE SPLIT SPOON DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 5-28-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 9.5', (714.7')
BORING NUMBER B-34-4 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER BACKFILLED HRS.
STATION & OFFSET 323+73.5 97'LT. NORTHEAST EXWY. HAM 71-4.58 SURFACE ELEVATION 724.2'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
724.2	0											
	2	2-4-6	BROWN SILTY CLAY, (FILL) MOIST - MEDIUM STIFF	1	5	9	9	45	32	36	17	30
	4	6-7-8	DO DO	2	VISUAL							
717.7	6	4-5-7	BROWN SILTY CLAY, TRACE WOOD, (FILL) MOIST - MEDIUM STIFF	3	3	4	9	38	46	46	26	25
714.2	8–10	6-6-8	BROWN SILTY CLAY, MOIST - MEDIUM STIFF	4	0	5	13	51	31	30	11	27
709.2	12–14	13-16-20	BROWN GRAVELLY, SANDY SILTY CLAY, MOIST - STIFF	5	27	8	12	30	23	28	13	12
704.2	16–20	19-13-18	BROWN SANDY SILTY CLAY, MOIST - MEDIUM STIFF	6	5	14	20	35	26	25	11	13
699.2	22–24	15-13-14	GRAY AND BROWN GRAVELLY SILTY CLAY WITH SAND SEAMS, VERY MOIST - MEDIUM STIFF	7	17	11	14	35	23	24	10	18
694.2	26–30	7-10-15	GRAY GRAVELLY, CLAYEY SILT WITH SAND SEAMS, MOIST - MEDIUM STIFF	8	24	10	14	32	20	21	7	12
	32	19-10-6	GRAY CLAYEY SANDY GRAVEL WITH ROCK FRAGMENTS, WET - MEDIUM DENSE	9	51	13	7	18	11	23	8	21
689.2	34											
684.2	36–40	11-12-14	GREENISH GRAY SILTY CLAY, MOIST - MEDIUM STIFF	10	0	4	13	41	42	42	23	24
	42	10-14-16	GREENISH GRAY SILTY CLAY WITH LIMESTONE FRAGMENTS, MOIST - STIFF	11	32	8	9	24	27	32	15	18
679.2	44	15-16-18	DO DO DO	12	23	8	9	28	32	34	17	16
676.7	46	24-140	BROWN SILTY CLAY WITH LIMESTONE FRAGMENTS, MOIST - STIFF	13	14	7	8	33	38	43	23	23
	48–50	9-11-12	BROWN AND GRAY SILTY CLAY, (VARVED) MOIST - STIFF	14	0	0	1	15	84	52	26	40
671.7	52	10-13-14	BROWN AND GRAY FAT CLAY, (VARVED) MOIST - VERY STIFF	15	0	0	0	7	93	66	36	36
	54	31-60	BROWN AND GRAY SHALE	16	VISUAL							
	56	48-68	DO DO	17	VISUAL							
	58	90	DO DO	18	VISUAL							
664.2	60											
661.7	62	100%	INTERBEDDED LIGHT BROWN (TRACE LIGHT GRAY) WEATHERED SHALE AND LIGHT GRAY LIMESTONE, APPROX. 65% SHALE, 35% LIMESTONE. SHALE CALCAREOUS, NON-FOSSILIFEROUS, MEDIUM TOUGH. LIMESTONE OCCURS PRIMARILY IN BOTTOM-HALF OF SECTION IN 3/4" TO 4" LAYERS, IS CRYSTALLINE, FOSSILIFEROUS, HARD.									
659.2	64		LIGHT GRAY SHALE, CALCAREOUS, NON-FOSSILIFEROUS TO FOSSILIFEROUS, TOUGH TO HARD. THIN (1/2") LIGHT GRAY LIMESTONE LAYER, CRYSTALLINE, FOSSILIFEROUS, HARD, OCCURS AT APPROX. 64'.									
	66–68	% RECOVERY	BORING COMPLETED									

LOG OF BORING ORDER No. 99.990, 9-27-68 JH

DATE STARTED 5-29-68 SAMPLER: TYPE SPLIT SPOON DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 5-29-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 25.0' (697.7')
BORING NUMBER B-34-5 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER BACKFILLED HRS.
STATION & OFFSET 323+45, 159'LEFT, NORTHEAST EXWY. HAM 71-4.58 SURFACE ELEVATION 722.7'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
722.7	0											
720.2	2	2-4-4	BROWN SILTY CLAY, (FILL) MOIST - MEDIUM STIFF	1	3	8	10	42	37	36	21	20
	4	4-6-7	BROWN AND GRAY LEAN CLAY, MOIST - MEDIUM STIFF	2	9	5	13	33	40	41	26	22
	6	3-4-6	DO DO	3	2	8	10	42	38	34	19	23
712.7	8–10	6-7-8	DO DO	4	VISUAL							
	12–14	11-16-17	BROWN AND GRAY GRAVELLY, SANDY SILTY CLAY, MOIST - STIFF	5	31	10	15	24	20	23	10	12
	16	18-21-23	DO DO DO	6	27	10	15	28	20	18	6	12
702.7	18–20	14-17-18	DO DO DO	7	28	12	16	31	13	22	9	13
700.2	22	8-11-13	GRAY GRAVELLY, SANDY SILTY CLAY, MOIST - STIFF	8	16	8	14	35	27	24	10	15
697.7	24	10-11-13	GREENISH GRAY GRAVELLY FAT CLAY, MOIST - STIFF	9	22	2	4	21	51	59	40	32
695.7	26	11-13-16	GREENISH GRAY SANDY SILTY CLAY, MOIST - STIFF	10	10	10	13	38	29	26	12	28
692.7	28–30	9-11-14	GRAY SILTY CLAY, MOIST - STIFF	11	12	7	10	35	36	22	10	12
690.2	32	11-12-14	GRAY GRAVELLY SANDY CLAYEY SILT, MOIST - MEDIUM STIFF	12	22	12	16	30	20	14	2	16
687.7	34	9-11-18	GRAY SILTY SAND, VERY MOIST - MEDIUM DENSE	13	10	22	33	22	13	16	4	15
685.2	36	6-6-7	GREENISH BLUE AND GRAY GRAVELLY, SILTY CLAY, VERY MOIST - SOFT	14	16	8	6	46	24	31	11	28
682.7	38–40	5-7-9	GREENISH BLUE AND GRAY SILTY CLAY, TRACE ORGANICS, VERY MOIST - MEDIUM STIFF	15	0	1	3	56	40	36	15	28
677.7	42–44	8-16-18	BLUISH GRAY GRAVELLY SILTY CLAY, MOIST - STIFF	16	35	5	6	23	31	37	21	19
673.7	46–48	11-13-16	BLUISH-GREENISH GRAY SANDY, SILTY CLAY WITH LIMESTONE FRAGMENTS, MOIST - STIFF	17	19	8	12	28	33	29	14	17
	50–54	13-17-18	GREENISH-GRAY SILTY CLAY, MOIST - STIFF	18	10	9	7	32	42	38	20	17
	56–58	14-15-17	DO DO	19	SAMPLE DESTROYED							
	60–64	15-24-18	DO DO	20	0	1	1	32	66	48	27	20
657.7	66–68	23-31-40	BLUISH GRAY SILTY CLAY, MOIST - STIFF	21	0	2	2	34	62	40	18	21
652.7	70											
650.2	72	90%	LIGHT BROWN AND GRAY WEATHERED SHALE, CALCAREOUS, NON-FOSSILIFEROUS TO FOSSILIFEROUS, MEDIUM TOUGH TO SOME POSSIBLE TOUGH. TWO LIMESTONE LAYERS (½"&1½"), CRYSTALLINE, FOSSILIFEROUS, HARD; OCCUR AT CENTER OF SECTION AND 8" FROM TOP OF SECTION, RESPECTIVELY.									
647.7	74–76		INTERBEDDED LIGHT GRAY LIMESTONE AND LIGHT GRAY SHALE, APPROX. 60% LIMESTONE, 40% SHALE. LIMESTONE OCCURS CLOSELY PACKED IN 3/4" TO 4" LAYERS, IS CRYSTALLINE AND SHALY, FOSSILIFEROUS, HARD; HIGH-ANGLE JOINTING EXHIBITED AT BOTTOM OF SECTION. SHALE CALCAREOUS, NON-FOSSILIFEROUS, TOUGH (SOME PROBABLE SOFT), WITH READY-PARTING ALONG BEDDING PLANES INDICATED.									
	78–80	% RECOVERY	BORING COMPLETED									

LOG OF BORING ORDER No. 99.990, 9-27-68 JH

DATE STARTED 5-22-68 SAMPLER: TYPE SPLIT SPOON DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 5-22-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE NONE
BORING NUMBER B-35-1 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 1 HRS. 15' (729.0')
STATION & OFFSET 334+07, 153'RT. NORTHEAST EXWY. HAM 71-4.58 SURFACE ELEVATION 744.0'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
744.0	0											
742.0	2	3-3-5	DARK BROWN SILTY CLAY, (FILL) MOIST - MEDIUM STIFF	1	0	5	4	60	31	34	8	22
	4–8	5-5-8	BROWN SANDY SILTY CLAY WITH LIMESTONE FRAGMENTS, MOIST- STIFF	2*	VISUAL					42	23	24
729.0	10–14	6-12-18	BROWN SANDY SILTY CLAY WITH LIMESTONE FRAGMENTS, MOIST - VERY STIFF	3	3	14	16	34	33	32	16	12
	16–18	5-8-33	GRAY GRAVELLY SANDY SILTY CLAY WITH BROKEN STONE FRAGMENTS, MOIST - VERY STIFF	4*	VISUAL							10
	20	7-11-15	DO DO DO	5	38	7	12	27	16	21	8	10
721.5	22	8-14-17	DO DO DO	6	31	12	13	24	20	21	7	10
719.0	24	3-4-3	DARK GRAY LEAN CLAY WITH ORGANICS, VERY MOIST - SOFT	7	0	1	2	59	38	32	18	30
716.5	26	3-4-3	DARK GRAY CLAYEY SILT WITH ORGANICS, VERY MOIST - SOFT	8	0	1	0	69	30	34	6	34
714.0	28–30	3-5-7	GREENISH GRAY SANDY, SILTY CLAY, MOIST - MEDIUM STIFF	9	0	14	10	20	56	40	21	25
711.5	32	3-5-8	GREENISH GRAY LEAN CLAY, MOIST - MEDIUM STIFF	10	2	4	2	42	50	42	25	24
709.0	34	7-13-17	GREENISH BROWN AND GRAY SILTY CLAY WITH BROKEN STONE FRAGMENTS, MOIST - STIFF	11	18	5	3	40	34	35	17	18
704.0	36–40	6-12-18	GREENISH BROWN AND GRAY HIGHLY WEATHERED SHALE, MOIST - VERY STIFF	12	4	6	2	35	53	44	23	17
703.5		70	BROWN WEATHERED SHALE AND LIMESTONE FRAGMENTS	13	INSUFFICIENT SAMPLES							
698.5	42–46	53%	INTERBEDDED LIGHT BROWN WEATHERED SHALE AND LIGHT GRAY LIMESTONE, APPROX. 75% SHALE, 25% LIMESTONE. SHALE CALCAREOUS, NON-FOSSILIFEROUS TO FOSSILIFEROUS, POSSIBLE SOFT TO MEDIUM TOUGH. LIMESTONE OCCURS IN 3/4" TO 7" LAYERS, IS CRYSTALLINE AND FINE-GRAINED, TRACE SHALY, FOSSILIFEROUS, HARD; HIGH-ANGLE JOINT WITH IRON-OXIDE STAINING EXHIBITED AT TOP OF RECOVERY.									
	48–50	% RECOVERY	BORING COMPLETED									

* SAMPLE DESTROYED

Foundation Boring Sheet No. FB-10.

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
CITY OF CINCINNATI
NORTHEAST EXPRESSWAY HAM 71-4.58
BORING No. B-34-4 B-35-1
B-34-5

BORING DATA

REVIEWED BY C.R.L. DATE 12/13/68

MICROFILMED
OCT 20 1982

HAMILTON COUNTY
HAM-71-4.58

LOG OF BORING Order No. 99.990, 9-24-68 JH

DATE STARTED 5-21-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 5-21-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None
BORING NUMBER B-35-2 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 2' HRS. 24.5'(714.7')
STATION & OFFSET 335+19, 90'Right, Northeast Exwy, HAM 71-4.58 SURFACE ELEVATION 739.2'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
739.2	0											
	2	3-3-4	Brown silty CLAY, moist - medium stiff	1	0	2	4	58	36	36	15	20
734.2	4											
	6	6-8-9	Brown sandy, silty CLAY, moist - very stiff	2	4	6	15	29	46	40	20	20
729.2	8											
	10	6-18-29	Light brown and gray silty CLAY, moist - hard	3	9	7	4	31	49	46	22	23
724.2	12											
	14											
	16	9-12-10	Brown silty CLAY with limestone fragments, moist - hard	4	49	5	3	19	24	38	19	17
719.2	18											
	20											
	22	31-20-38	Brown highly weathered SHALE, moist - hard	5	7	2	1	40	50	40	16	16
714.2	24											
	26		Interbedded light brown weathered SHALE and light gray limestone, approx. 60% shale, 40% limestone, Shale calcareous, fossiliferous, probable soft to medium tough. Limestone occurs in 3/4" to 7-1/2" layers, is crystalline, fine-grained and shaly, fossiliferous, hard; high-angle jointing with iron-oxide staining occurs within top half of recovery.									
	28	45%										
709.2	30											
	32		Interbedded light brown weathered SHALE and light gray limestone, approx. 80% shale, 20% limestone, Shale calcareous, fossiliferous, probable soft to medium tough. Limestone occurs in 1" to 3-3/4" layers, is crystalline, fossiliferous, hard.									
	34	30%										
704.2	36											
	38	10%	Light brown and light gray weathered SHALE with light gray limestone layers, approx. 90% shale, 10% limestone (entire recovery essentially limestone). Shale assumed calcareous, fossiliferous, soft to medium tough. Limestone occurs in 1/2" to 3" layers, is crystalline, fossiliferous, hard.									
699.2	40											
	42	% Recovery	Boring Completed									

LOG OF BORING Order No. 99.990, 9-24-68 JH

DATE STARTED 5-21-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 5-21-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None
BORING NUMBER B-35-3 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 1' HRS. 17' (720')
STATION & OFFSET Station 334+91, 7'Right, Northeast Exwy, HAM 71-4.58 SURFACE ELEVATION 737.0'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
737.0	0		Concrete and gravel (Fill)	Visual								
736.5	2	8-9-11	Dark brown silty CLAY, moist - stiff	1	0	5	12	29	54	51	28	20
732.0	4											
	6	10-15-18	Brown gravelly, sandy clayey SILT, moist - very stiff	2	22	12	18	30	18	22	8	12
727.0	8											
	10	8-14-10	Brown gravelly, silty CLAY, moist - very stiff	3	27	5	8	28	32	35	19	21
722.0	12											
	14											
	16	14-17-21	Brown silty CLAY, moist - very stiff	4	2	5	6	32	55	44	24	12
717.0	18											
	20											
	22	18-20-24	Brown highly weathered SHALE, moist - hard	5	7	1	2	44	46	38	18	14
712.0	24											
	26		Interbedded light brown weathered SHALE and light gray limestone, approx. 80% shale, 20% limestone, Shale calcareous, non-fossiliferous to fossiliferous, probable soft to possible tough. Limestone occurs in 1/2" to 2-7/8" layers, is crystalline and fine-grained, fossiliferous, hard; high-angle jointing with iron-oxide staining exhibited in most layers.									
	28	40%										
	30											
705.0	32	21%										
	34		Interbedded light brown and light gray weathered SHALE and light gray limestone, approx. 85% shale, 15% limestone shale calcareous, trace fossiliferous to fossiliferous, medium tough to tough. Limestone occurs well distributed in 1" to 4" layers, is crystalline and fine-grained, trace shaly, fossiliferous, hard.									
	36	80%										
700.0	38											
	40	% Recovery	Boring Completed									

LOG OF BORING Order No. 99.990, 9-24-68 JH

DATE STARTED 5-27-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 5-27-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None
BORING NUMBER B-35-4 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER Backfilled HRS.
STATION & OFFSET 336+10, 75'Left, Northeast Exwy, HAM 71-4.58 SURFACE ELEVATION 732.3'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
732.3	0											
731.3			Concrete and gravel	Visual								
	2	6-9-14	Light brown and gray silty CLAY, moist - stiff	1	0	5	8	35	52	51	26	20
	4	7-11-16	do do do	2	Visual							
	6	11-14-19	Brown and gray silty CLAY, moist - very stiff	3	0	4	5	46	45	40	18	17
	8											
722.3	10	10-15-16	do do do	4	Visual							
	12	23-39-49	Brown highly weathered SHALE, moist - hard	5	0	2	4	46	48	41	21	13
	14	40-56-68	do do do	6	Visual							
717.3	16											
	18	30%	Interbedded light brown weathered SHALE and light gray limestone, approx. 80% shale, 20% limestone, Shale calcareous, non-fossiliferous, probable soft to medium tough. Limestone occurs in 1" to 2-1/4" layers, is crystalline, fossiliferous, hard; most layers exhibit high-angle jointing with iron-oxide staining.									
712.3	20											
	22		Interbedded light brown weathered shale and light gray limestone, approx. 75% shale 25% limestone, Shale calcareous, non-fossiliferous, medium tough to possible tough, with thin (1/2" to 1") probable soft seams within bottom 1.8' of recovery. Limestone occurs well distributed in 1/2" to 3-3/4" layers, is crystalline and fine-grained, trace shaly, fossiliferous, hard; most layers display high-angle jointing with iron-oxide staining.									
	24	70%										
707.3	26											
	28	% Recovery	Boring Completed									
	30		Note: Lost all water at 16'.									

LOG OF BORING Order No. 99,990, 9-25-68 JH

DATE STARTED 5-27-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 5-27-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None
BORING NUMBER B-35-5 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER Backfilled HRS.
STATION & OFFSET 335+72, 129'Lt., Northeast Exwy, HAM 71-4.58 SURFACE ELEVATION 731.0'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
731.0	0											
	2	2-3-4	Brown silty clay, (FILL) moist - medium stiff	1	9	7	12	39	33	34	15	24
	4	3-4-6	do do	2	Visual							
724.5	6	6-7-9	do do	3	1	4	13	49	33	30	8	24
	8	8-14-13	Brown and gray clayey SILT, moist - stiff	4	0	2	3	80	15	51	28	29
721.0	10											
	12	23-35-46	Brown and gray highly weathered SHALE, moist - hard	5	1	3	6	39	51	43	24	16
718.5	14	70	Brown SHALE	6	Visual							
	16	33-61	do	7	Visual							
	18	115	do	8	Visual							
711.0	20											
	22		Interbedded light brown and light gray weathered SHALE and gray limestone, approx. 75% shale, 25% limestone, Shale calcareous, non-fossiliferous, probable soft to tough. Limestone occurs well distributed in 5/8" to 3-1/2" layers, is crystalline and fine-grained, fossiliferous, hard; high-angle jointing indicated at top of recovery.									
	24	62%										
706.0	26											
	28	37%	Interbedded light gray (some possible light brown) SHALE and gray limestone, approx. 85% shale, 15% limestone, Shale calcareous, trace fossiliferous, probable soft to tough. Limestone occurs in 3/4" to 5-1/2" layers, is crystalline and fine-grained, fossiliferous, hard.									
701.0	30											
	32	% Recovery	Boring Completed									
	34											

Foundation Boring Sheet No. FB-11.

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
CITY OF CINCINNATI
NORTHEAST EXPRESSWAY HAM 71-4.58
BORING No. B-35-2 B-35-4
B-35-3 B-35-5

BORING DATA

		REVIEWED BY	DATE
		CRL	1/22/69

MICROFILMED
OCT 20 1982

HAMILTON COUNTY
HAM-71-4.58

(12/32)

LOG OF BORING

DATE STARTED 12-29-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 12-29-65 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None
BORING NUMBER B-36-1 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER HRS. Backfilled
STATION & OFFSET 347+22, 148' Left SURFACE ELEVATION 730.5

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
730.5	0		Concrete Walk									
730.0					Visual							
729.0	2	2-2	Cinder, (fill)	1	Visual							
	4	4	Brown silty clay, moist - stiff	2	2	2	8	25	63	56	32	27
725.5												
	6	15-43-16	Brown silty clay with 1/4" to 1" limestone layers, moist - hard	3	0	2	3	37	58	47	22	18
	8											
720.5	10											
		15-70	Brown weathered shale	4	Visual							
718.5	12											
	14		Interbedded brown, some gray, weathered shale and gray limestone, approx. 70% shale, 30% limestone. Shale essentially fossiliferous, calcareous, medium tough to tough, with possible soft seams at approx. 15.2' and 18.0'. Limestone occurs in 1/4" to 4-3/8" layers, crystalline, some fine-grained, fossiliferous, hard. Fracturing exhibited at approx. 13.7', 15.0', 17.0', 19.2', 20.0' and 21.5'. Fracture-faces of limestone indicate some solution activity.									
	16	87%										
	18											
	20	78%										
708.5	22											
	24	% Recovery	Boring Completed									
	26											

LOG OF BORING

DATE STARTED 12-29-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 12-29-65 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None
BORING NUMBER B-36-2 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER HRS. Backfilled
STATION & OFFSET 347+72, 90' Left SURFACE ELEVATION 732.0'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
732.0	0											
731.0		2-2	Rubble, (fill)	1	Visual							
	2	4	Brown silty clay, moist - medium stiff	2	0	2	2	56	40	38	19	24
727.0	4											
	6	10-11-11	Brown lean clay, moist - very stiff	3	4	3	9	34	50	45	25	20
722.0	8											
	10											
	12	12-15-22	Brown lean clay and highly weathered shale, with 1/4" to 1" limestone layers, moist - hard	4	8	3	4	33	52	50	28	20
717.0	14											
	16	5-3-14	Brown weathered shale with 1/2" to 1" limestone layers, moist - medium stiff to hard	5	Visual							
713.0	18											
	20		Interbedded brown weathered shale and gray limestone, approx. 60% shale, 30% limestone. Shale calcareous, possible soft to tough. Limestone occurs in 3/4" to 4" layers, crystalline, fossiliferous, hard. Fracturing exhibited throughout most of recovery.									
	22	40%										
708.0	24											
	26		Interbedded gray and brown weathered shale and gray limestone, approx. 75% shale, 25% limestone. Shale somewhat fossiliferous calcareous, possible soft to tough. Limestone occurs in 1/2" to 1-1/2" layers, fine-grained to crystalline, fossiliferous, hard. Fracturing with iron-oxide staining exhibited approx. 1'-1-1/2' from top of recovery. Broken condition and fracturing observed last 9" of recovery.									
	28	63%										
703.5	30											
	32	96%	Interbedded gray shale, some brown and gray limestone, approx. 60% shale, 40% limestone. Shale trace fossiliferous to fossiliferous, slightly calcareous to calcareous, medium tough to tough. Limestone occurs in 1/2"to 5-1/2"layers, shaly-crystalline, crystalline and fine-grained fossiliferous, hard. Fracture with iron-oxide staining exhibited at approx. 32.0'.									
699.5	34	% Recovery	Boring Completed									

LOG OF BORING

DATE STARTED 12-30-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 1-3-66 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None
BORING NUMBER B-36-3 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER HRS. Backfilled
STATION & OFFSET 347+21, 7' Left SURFACE ELEVATION 727.6

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
727.6	0											
727.1			Concrete Walk		Visual							
	2	3-4-7	Brown and gray sandy lean clay, moist - stiff	1	3	5	16	24	52	39	21	20
	4											
	6	9-11-15	Brown and gray sandy lean clay, moist - very stiff	2	5	6	19	22	48	37	22	17
	8											
717.6	10											
716.6		45	Brown silty clay, moist - very stiff	3	Visual							
	12		Interbedded brown weathered shale and gray limestone, approx. 50% shale, 50% limestone in recovery. Shale calcareous, fossiliferous, possible soft to tough. Limestone occurs in 3/4" to 5-1/2" layers, fossiliferous, crystallinc to impure-crystalline, hard. Fracturing, displaying solution activities, exhibited and indicated throughout most of section.									
	14	72%										
	16											
	18	10%										
	20											
	22	78%										
	24	58%										
	26											
700.1	28											
		% Recovery	Boring Completed									

LOG OF BORING

DATE STARTED 2-3-66 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 2-3-66 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 708.0 (18')
BORING NUMBER B-36-4 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER HRS. Backfilled
STATION & OFFSET 347+57, 66' Right SURFACE ELEVATION 726.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
726.0	0											
725.5			Concrete Walk									
	2	3-4-4	Cinders and clay, (fill)	1	Visual							
	4	3-3-4	do do	2	Visual							
721.0	6	3-5-3	Brown clayey sand and gravel, trace cinders, (fill) moist - medium stiff	3	48	7	8	15	22	33	16	19
	8											
716.0	10											
	12	4-9-12	Brown sandy silty clay, moist - stiff	4	13	9	12	28	38	31	15	17
	14											
711.0	16	9-18-25	Brown and gray clayey silt with rock fragments, moist - dense	5	13	5	11	46	25	23	6	13
	18											
706.0	20											
	22	5-5-6	Gray gravelly, sandy clayey silt, trace wood, moist - stiff	6	19	10	17	33	21	20	6	14
703.5	24	5-4-6	Gray sandy, silty clay, trace organic, moist - stiff	7	13	7	12	41	27	26	8	18
701.0	26	4-6-7	Gray lean clay, moist - stiff	8	6	5	9	40	40	33	18	18
698.5	28	9-8-13	Gray sandy, silty clay, moist - stiff	9	14	11	15	32	28	21	8	13
696.0	30	9-11-25	Gray and brown silty clay, moist - very stiff	10	5	4	3	34	54	43	23	21
693.5	32	9-14-17	Brown and gray clay and highly weathered shale, moist - very stiff	11	1	3	2	39	55	40	19	19
691.0	34	12-20-50	Brown weathered shale	12		Visual						
689.5	36		Brown weathered shale and gray limestone; very poor recovery- approx. 50% shale, 50% limestone in recovery. Shale calcareous, soft to medium tough. Limestone occurs possibly in layers of 3/4" to 3", impure-crystalline, fossiliferous, hard; limestone exhibits fracture and iron-oxide staining.									
	38	20%										
684.5	40											
683.5	42	27-100	Brown and gray shale									
	44	70%	Interbedded gray shale and limestone, approx. 70% shale, 30% limestone. Shale somewhat fossiliferous, calcareous, medium tough to hard. Two-inch brown shale layer at approx. 43.8'. Limestone occurs in 1" to 7" layers, fine-grained to crystalline, fossiliferous, hard. Fractures with iron-oxide stains occur at approx. 44.5' and 46.5'.									
	46											
678.5	48											
	50	% Recovery	Boring Completed									

LOG OF BORING

DATE STARTED 1-14-66 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 1-14-66 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 700.0' (25)
BORING NUMBER B-36-5 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER HRS. Backfilled
STATION & OFFSET 347+17, 136' Right SURFACE ELEVATION 725.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
725.0	0											
724.5			Concrete Walk									
724.0	2		Brick and cinders, (fill)	1	Visual							
	4	4-8	Brown silty clay with rock fragments, moist - stiff	2	30	7	8	25	30	33	16	16
720.0	6	5-11-17	Brown and gray gravelly, sandy silty clay, moist - very stiff	3	17	8	12	30	33	32	16	14
717.2	8	75	do do do	4	21	8	12	32	27	28	12	13
	10		Brown sandy clay and limestone boulders, moist - hard									
712.2	12											
	14	14-16-20	Brown gravelly sandy clay, moist - very stiff	5	17	15	19	24	25	26	11	12
710.0	16	10-14-17	Gray and brown sandy, silty clay, moist - very stiff	6	11	11	16	38	24	26	11	12
707.5	18	7-8-10	Gray sandy, clayey silt, moist - stiff	7	10	11	16	37	26	23	7	14
705.0	20	7-9-12	Gray sandy, clayey silt, trace wood, moist - stiff	8	15	10	16	37	22	21	7	12
	22	6-6-6	do do do	9	12	8	13	36	31	25	10	19
700.0	24	5-14	Gray gravelly, silty sand, wet - medium dense	10	25	26	31	-18-				14
699.0	26		Gray gravelly, silty clay, moist - stiff	11	18	6	12	35	29	24	10	12
	28	7-10-13	Gray silty clay, moist - stiff	12	7	6	10	37	40	34	19	15
695.0	30											
	32	7-10-15	Gray lean clay, moist - stiff	13	12	3	6	29	50	44	27	17
	34											
	36	12-13-15	Gray gravelly, sandy lean clay, moist - stiff	14	16	8	16	29	31	28	14	20
	38											
685.0	40	10-11-11	Gray silty clay, trace organics, moist - stiff	15	1	1	2	46	50	27	10	25
681.4	42											
680.0	44	100%	Gray-brown silty clay with fine rock fragments and fossils, moist - stiff to hard, with 4" limestone floater at top of section and 3-3/4" floater at bottom; 2-1/2" section of limestone occurs at center of run in oblique position.									
	46	16-17-33										
	48		Gray silty clay with limestone fragments,	16	22	5	3	30	40	39	21	23
676.5	50		Interbedded weathered shale and gray limestone. Recovery poor; essentially limestone, occuring in 3/8" to 4" layers, crystalline, fossiliferous, hard, exhibiting fracture at bottom of recovery. Shale calcareous, possible soft to medium tough.									
674.0	52	48%										
	54	94%	Brown weathered shale, grading into gray shale at approx. 52.5' with 5" layer gray limestone at top of section, and 7-1/2" layer at bottom. Shale calcareous, medium tough to tough and exhibits somewhat ready-parting along bedding planes. Limestone crystalline. fossiliferous, hard.									
670.5	56											
	58	% Recovery	Boring Completed									

Foundation Boring Sheet No. FB-12.

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-71-4.58
Montgomery Rd. to Burwood Ave.
SEC.

BORING DATA

		REVIEWED BY	DATE
		C.R.L	4/25/66

MICROFILMED
OCT 20 1982

LOG OF BORING

DATE STARTED 12-21-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 12-21-65 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 682.5 (17.0')
BORING NUMBER B-37-1 CORE BARREL: TYPE None SIZE AFTER HRS. Backfilled
STATION & OFFSET 357+70, 73'Left SURFACE ELEVATION 699.5

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
699.5	0											
699.0			Concrete Walk									
	2	4-7-7	Brown sandy, silty clay with rock fragments, moist - stiff	1	17	8	13	32	30	29	13	15
	4											
	6	8-9-15	Brown sandy, silty clay with rock fragments, moist - very stiff	2	18	10	15	32	25	23	9	12
	8											
	10											
	12	11-14-20	do do do	3	18	10	15	31	26	26	10	14
	14											
	16	22-16-18	do do do	4	14	10	14	34	28	27	11	13
682.0	18											
		8-7-7	Gray silty clay with rock fragments, moist - stiff	5	18	6	12	36	28	23	8	14
679.5	20											
	22	4-7-9	Gray gravelly, sandy, silty clay, moist - stiff	6	17	8	12	35	28	22	8	14
677.0												
676.0	24	4-7	Gray gravelly, silty clay, moist - stiff	7	25	-	1	50	24	22	8	14
		10	Gray sandy, silty clay, moist - medium stiff	8	0	10	16	11	63	33	15	21
674.5	26											
		18-23-25	Gray silty, sandy gravel, wet - dense	9	51	19	12	-18-		—		9
672.0	28											
		20-22-25	Gray gravelly, sandy clay and rock fragments and cinders, moist - hard	10	39	9	12	21	19	23	10	13
	30											
		15-25-30	do do do	11	42	6	10	22	20	23	10	14
667.0	32											
	34	10-12-18	Gray gravelly, sandy, silty clay, moist - stiff	12	22	8	15	31	24	23	10	13
	36	12-17-23	do do do	13	29	7	14	28	22	23	10	13
	38											
659.5	40											
		18-16-30	Brown clayey sand and gravel, moist - hard	14	42	10	12	20	16	25	9	14
654.5	42											
	44											
	46	15-18-20	Brown sand and gravel, wet - dense	15	47	35	11	-7-		—		11
649.5	48											
	50											
	52	20-22-25	Brown sandy gravel, wet - dense	16	66	17	5	-12-		—		6
644.5	54											
643.0	56	20-40-45	Brown silty, gravelly sand, dry - very dense	17	29	15	30	-26-		—		6
	58		Boring Completed									

LOG OF BORING

DATE STARTED 12-27-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 12-29-65 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 679.0 (23.0')
BORING NUMBER B-37-2 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER HRS. Backfilled
STATION & OFFSET 357+00, 3'Right SURFACE ELEVATION 702.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
702.0	0											
		2-2-2	Gray and brown silty clay, traces cinders and brick, (fill) moist - medium stiff	1	19	7	11	35	28	34	12	24
699.5	2											
	4	3-2-4	Brown silty clay, moist - medium stiff	2	0	2	6	45	47	38	12	20
	6	4-5-7	do do do	3	0	2	4	56	38	30	11	18
	8											
692.0	10											
		5-7-10	Brown lean clay, moist - stiff	4	7	3	12	32	46	44	26	21
689.5	12											
	14	5-6-8	Brown sandy, silty clay, moist - stiff	5	15	8	14	33	30	28	12	15
	16	9-12-13	do do do	6	5	7	14	37	37	30	14	12
684.5	18											
		7-9-13	Brown and gray gravelly, sandy, silty clay, moist - very stiff	7	23	8	15	26	28	25	9	16
682.0	20											
	22	6-6-8	Gray sandy, silty clay, trace organic, moist - medium stiff	8	14	9	15	34	28	22	8	13
	24	6-7-9	do do do	9	17	7	14	34	28	23	9	14
677.0												
676.0	26	3-3	Gray silty clay, moist - medium stiff	10	2	0	2	31	65	35	16	27
674.5			Dark gray clayey silt, trace organic, moist - medium stiff	11	0	4	5	72	19	32	5	34
	28	6-15-12	Gray sandy, silty clay with limestone boulders, moist - stiff	12	22	6	15	30	27	23	9	14
	30	9-16-19	do do do	13	14	8	15	34	29	25	10	14
	32											
	34	12-15-19	do do do	14	18	8	14	32	28	26	12	13
667.0	36											
		8-14-11	Gray gravelly, sandy silt, moist - stiff	15	22	6	30	25	17	16	4	11
	38											
662.0	40											
	42	8-11-15	Gray gravelly, sandy clay, moist - stiff	16	32	10	14	24	20	22	9	10
657.0	44											
	46	17-17-35	Brown gravelly, sandy clay with limestone boulders, moist - hard	17	46	8	6	18	22	36	16	16
652.0	48											
	50											
	52	24-17-17	Brown silty, sandy gravel, moist - dense	18	54	14	10	15	7	19	4	11
647.0	54											
	56	15-17-26	Brown silty sand, moist - dense	19	13	31	42	-14-		—		4
642.0	58											
	60											
	62	26-24-21	Brown silty, sandy gravel with limestone boulders, moist - dense	20	59	14	11	-16-		—		5
637.0	64											
	66	12-14-16	Brown silty sand, moist - dense	21	0	1	66	-33-		—		12
	68											
632.0	70											
	72	7-12-12	Gray silty sand with silt seams, wet - medium dense	22	0	2	51	39	8		NP	24
	74											
627.0	76											
		6-9-16	Gray silt, wet - medium dense	23	0	0	18	73	9		NP	21
	78											
622.0	80											
620.0	82	17-32-47	Brown and gray weathered shale	24	Visual							
	84	88%	Brown weathered shale, fossiliferous, calcareous, medium tough to tough. Possible soft seam 1.7' from top of recovery. Jointing and/or fracture exhibited throughout most of run. Two limestone layers, 2-1/8" and 7/8", crystalline and fossiliferous, hard, occurs at approx. 83.5' and 83.8' respectively.									
	86											
615.0	88	% Recovery	Boring Completed									
	90											

LOG OF BORING

DATE STARTED 12-22-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 12-27-65 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 683.0 (13.5')
BORING NUMBER B-37-3 CORE BARREL: TYPE None SIZE AFTER HRS. Backfilled
STATION & OFFSET 357+44, 73.5'Right SURFACE ELEVATION 696.5

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
696.5	0											
696.0			Concrete Walk		Visual							
	2	3-10-11	Brown sandy, silty clay with rock fragments, moist - very stiff	1	24	8	15	33	20	26	12	13
	4											
691.5												
	6	7-9-9	Brown and gray silty clay with rock fragments, moist - very stiff	2	23	6	11	33	27	31	15	15
689.0	8											
		6-7-13	Brown and gray silty clay, moist - very stiff	3	16	7	12	35	30	30	14	14
	10											
		7-10-13	do do do	4	Visual							
684.0	12											
	14	8-8-10	Brown sandy, clayey silt, wet - soft	5	16	9	12	46	17	20	2	22
681.5												
	16	9-12-14	Brown clayey sand and gravel with rock fragments, moist - stiff	6	50	9	11	18	12	22	9	10
679.0	18											
678.0		9-11	Brown and gray gravelly, sandy clay, moist - stiff	7	18	7	15	35	25	24	10	13
	20	15	Gray gravelly, sandy clay, moist - stiff	8	20	7	15	34	24	22	9	13
	22	8-11-14	do do do	9	14	7	15	36	28	23	10	13
	24	8-12-18	do do do	10	15	8	15	39	23	21	8	13
	26	8-10-10	do do do	11	14	8	14	34	30	29	16	12
	28											
666.5	30											
		12-28-60	Brown silty clay, moist - hard	12	14	10	17	32	27	28	12	14
661.5	32											
	34											
	36	6-9-12	Gray gravelly, sandy clay, moist - medium stiff	13	30	8	12	29	21	21	8	13
	38											
656.5	40											
	42	33-27-22	Brown silty, sandy gravel and limestone fragments, moist - dense	14	64	17	7	-12-		—		3
651.5	44											
	46	15-19-23	Brown silty, gravelly sand, moist - dense	15	29	21	28	-22-		—		4
	48											
646.5	50											
	52	20-16-22	Brown gravelly sand, moist - dense	16	27	47	16	-10-		—		3
	54											
641.5	56	24-30-22	Brown silty sand and gravel, moist - dense	17	41	36	9	-14-		—		5
	58											
636.5	60											
	62	12-15-20	Gray fine sand with silt seams, moist - dense	18	0	0	54	40	6		NP	16
	64											
631.5	66	8-10-20	Gray silty sand, wet - dense	19	0	1	86	-13-		—		22
	68											
626.5	70											
625.0	72	9-16-19	Gray sandy silt, wet - dense	20	0	0	38	56	6		NP	24
			Boring Completed									

HAMILTON COUNTY
HAM-71-4.58

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Foundation Boring Sheet No. FB-13.

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-71-4.58
Montgomery Rd. to Burwood Ave.
SEC.

BORING DATA

		REVIEWED BY	DATE
		C.R.L.	4/25/66

MICROFILMED
OCT 20 1982

LOG OF BORING

DATE STARTED 1-6-66 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 1-7-66 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 626.3' (10')
BORING NUMBER B-38-1 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER 48 HRS. Caved @ 7', /dry
STATION & OFFSET 375+05, 138' Left SURFACE ELEVATION 636.3

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
636.3	0											
635.3	2	2-2	Topsoil	1	Visual							
		2	Brown gravelly, clayey sand, moist - medium stiff	2	24	9	23	29	15	27	9	20
631.3	4	4-5-10	do do do	3	Visual							
	6	6-6-7	Brown fine to medium sand, moist - medium dense	4	3	39	47	-11-				7
626.3	8											
	10											
	12	7-12-15	Brown silty sand, wet - medium dense	5	0	4	79	-17-				19
	14											
	16	4-7-9	do do do	6	0	1	85	-14-				25
	18											
	20											
	22	4-5-7	Brown silty sand with silt lenses, wet - medium dense	7	1	4	70	-25-				23
	24											
	26	5-7-9	Brown silty sand, wet - medium dense	8	0	4	80	-16-				23
606.3	28											
	30											
	32	6-11-13	Gray sandy silt, wet - medium dense	9	0	0	41	53	6		NP	23
601.3	34											
	36	7-9-11	Gray clayey silt, moist - medium stiff	10	0	0	4	66	30	21	4	22
	38											
	40											
	42	9-11-14	do do do	11	0	1	1	58	40	24	5	21
591.3	44											
	46	6-7-9	Gray silty clay, moist - stiff	12	11	3	7	29	50	28	11	18
586.3	48											
	50											
	52	10-20-35	Brown weathered shale	13	Visual							
	54											
580.3	56	20-70	do do	14	Visual							
	58											
	60	65%	Brown weathered shale (first 15"of recovery) grading into gray shale for remainder of recovery; trace fossiliferous, calcareous, possible soft to tough. Two fractured limestone layers, 1/2" & 1", crystalline and fossiliferous, hard, occur 9" & 15" respectively from top of recovery; one 3/4"layer, fractured, occurs 6" from bottom of recovery. High-angle joint in shale displayed near center.									
575.3	62											
	64	% Recovery	Boring Completed									

LOG OF BORING

DATE STARTED 1-4-66 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 1-6-66 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 627.6' (9.5')
BORING NUMBER B-38-2 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER 24 HRS. 628.1 (9')
STATION & OFFSET 374+34, 71' Left SURFACE ELEVATION 637.1

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
637.1	0											
	2	11-6-11	Brown silty sand and gravel, (fill) moist - stiff	1	46	12	16	19	7	26	9	15
634.6	4	7-7-8	Brown sandy, silty clay, (fill) moist - stiff	2	4	4	27	43	22	34	14	18
632.1	6	12-7-4	Brown gravelly, silty sand, (fill) moist - medium stiff	3	37	12	23	20	8	24	9	17
629.6	8	2-2-2	Brown fine to medium sand, wet - loose	4	5	57	31	-7-				22
627.1	10											
	12	2-5-7	Brown silty sand, wet - medium dense	5	0	4	61	-35-				25
	14	8-9-9	Brown silty sand, moist - medium dense	6	1	9	73	-17-				20
622.1	16	4-4-5	Brown fine sand, wet - loose	7	1	7	83	-9-				28
619.6	18	5-8-9	Brown silty sand, wet - medium dense	8	0	4	80	-16-				25
	20	7-13-18	Brown silty sand, moist - dense	9	0	0	70	25	5		NP	23
	22											
612.1	24											
	26	6-6-10	Gray silt with clay lenses, moist - soft	10	0	1	1	68	30	25	3	27
607.1	28											
	30											
	32	17-27-40	Brown weathered shale	11			Visual					
604.1	34	40-100	do do	12			Visual					
602.1	34	62%	Brown weathered shale, calcareous, trace fossiliferous, possible soft to tough.									
599.1	38	69%	Interbedded brown weathered shale and gray limestone, approx. 70% shale, 30% limestone in recovery. Shale calcareous, fossiliferous, possible soft to tough. Limestone occurs in 1/2"to 4-1/2"layers, fossiliferous, crystalline, hard. Fracturing exhibited throughout most of recovery.									
	40	% Recovery	Boring Completed									

LOG OF BORING

DATE STARTED 1-7-66 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 1-7-66 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 623.2' (15')
BORING NUMBER B-38-3 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER 48 HRS. 627.2 (11')
STATION & OFFSET 375+38 4'R SURFACE ELEVATION 638.2

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
638.2	0											
	2	2-2-3	Clay and cinders, (fill)	1	Visual							
636.7	4	6-6-5	Brown silty clay, rock fragments and cinders, (fill) moist - medium stiff	2	12	5	8	45	30	29	10	20
633.2	6	3-3-4	Brown silty clay, (fill) very moist - soft	3	1	4	6	49	40	33	14	30
	8											
628.2	10											
	12	3-3-8	Mottled brown silty clay, moist - medium stiff	4	8	4	12	30	46	53	34	23
623.2	14											
	16	6-6-9	Brown fine sand, wet - medium dense	5	0	7	87	-6-				25
618.2	18											
	20	7-13-17	Brown silty sand, wet- dense	6	0	0	88	-12-				25
	22											
613.2	24											
	26	7-13-16	Gray sandy silt, moist - dense	7	0	0	24	69	7		NP	18
608.2	28											
607.2	30	5-6	Gray clayey silt, moist - stiff	8	6	4	6	48	36	24	8	17
	32	10	Brown weathered shale	9	Visual							
	34											
601.7	36	20-45-75	do do	10	Visual							
	38											
	40	58%	Layered brown weathered shale and gray limestone, approx. 70% shale, 30% limestone in recovery. Shale somewhat fossiliferous, calcareous, soft to medium tough. Limestone occurs in 3/4" to 4-3/4" layers, crystalline, fossiliferous, hard. Fracturing exhibited at top of recovery, 14" and 24" from top, and at bottom.									
596.7	42											
	44	% Reocvery	Boring Completed									

LOG OF BORING

HAMILTON COUNTY
HAM-71-4.58
14/32

DATE STARTED 1-10-66 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 1-11-66 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 641.2 (28)
BORING NUMBER B-38-5 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER HRS. Backfilled
STATION & OFFSET 375+69, 139' Right SURFACE ELEVATION 669.2

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
669.2	0											
668.7	2		Topsoil	1	Visual							
		2-3	Brown sandy, silty clay, (fill) moist - medium stiff	2	4	6	16	31	43	40	22	24
666.7	4	7-9-9	Brown sandy lean clay, moist - stiff	3	2	4	16	31	47	49	30	26
664.2	6	6-7-10	Brown sandy, silty clay, moist - stiff	4	8	9	15	41	27	26	10	14
	8											
659.2	10											
	12	4-5-7	Brown sandy clay with limestone fragments, moist - medium stiff	5	24	9	18	28	21	24	11	11
654.2	14											
	16	6-9-12	Gray gravelly, sandy, silty clay, moist - stiff	6	18	8	15	31	28	26	12	13
	18											
	20											
	22	6-10-12	do do do	7	19	9	14	32	26	24	10	11
644.2	24											
	26	15-17-17	Brown clayey gravel and cobbles, moist - hard	8	63	4	3	18	12	28	11	15
639.2	28											
	30											
	32	7-12-13	Brown silty sand and gravel and cobbles, moist - medium dense	9	50	14	14	15	7	20	4	10
634.2	34											
	36	11-17-19	Brown silty sand, moist - dense	10	1	4	78	-17-				5
629.2	38											
	40											
	42	11-13-19	Brown fine sand, moist - dense	11	0	5	84	-11-				11
624.2	44											
	46	6-9-13	Brown silty sand, moist - medium dense	12	0	2	86	-12-				24
619.2	48											
	50											
	52	7-13-19	Gray silty sand, moist - medium dense	13	0	0	57	-43-				18
614.2	54											
	56	9-13-17	Gray gravelly, silty clay, moist - stiff	14	30	6	8	32	24	27	10	26
609.2	58											
	60	20-35-46	Brown and gray weathered shale	15			Visual					
	62											
	64											
	66	35-45-43	do do	16			Visual					
	68											
599.2	70											
598.2	72	55-100	Gray weathered shale	17	Visual							
	74	32%	Layered gray and brown shale and gray limestone, approx. 75% shale, 25% limestone in recovery. Shale trace fossiliferous, calcareous, possible soft to tough. Limestone occurs in 7/8" to 1-1/2"layers, crystalline, fossiliferous, hard. Limestone layers display fracturing.									
593.2	76											
	78	% Recovery	Boring Completed									

Foundation Boring Sheet No. FB-14.

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-71-4.58
Montgomery Rd. to Burwood Ave.
SEC.

BORING DATA

		REVIEWED BY	DATE
		C.R.L.	4/25/66

MICROFILMED
OCT 20 1982

HAMILTON COUNTY
HAM-71-4.58

LOG OF BORING

DATE STARTED 2-21-66 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 2-22-66 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 655' (24')
BORING NUMBER B-39-1 CORE BARREL: TYPE SIZE AFTER HRS. Backfilled
STATION & OFFSET 377+58 DE. 10' Left of Centerline SURFACE ELEVATION 679.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
679.0	0											
	2	4-2-2	Coal and cinders, (fill)	1	Visual							
674.0	4											
	6	ST	Brown gravelly, silty clay, moist - medium stiff	S1	15	7	8	39	31	36	17	25
	8	3-3-4	do do do	2	17	7	11	33	32	32	16	18
669.0	10											
667.0	12	ST	Brown sandy, silty clay, moist - medium stiff	S2	7	6	14	44	29	29	13	20
	14	2-3-3	Brown silty clay, moist - medium stiff	3	0	2	5	62	31	31	10	26
664.0												
662.0	16	ST	Brown sandy lean clay, moist - stiff	S3	7	9	14	32	38	35	18	20
	18	8-10-12	Brown sandy silt, moist - stiff	4	6	3	12	34	45		NP	21
659.0	20											
657.0	22	ST	Brown silty clay, moist - stiff	S4	7	4	12	32	45	44	25	22
	24	3-3-3	Brown clayey sand, very moist - soft	5	5	11	45	14	25	29	14	25
654.0												
	26	9-8-9	Brown silty sand, wet - medium dense	6	4	11	45	30	10		NP	20
	28											
649.0	30											
647.0	32	ST	Gray silty clay, moist - stiff	S5	14	4	9	31	42	31	15	16
	34	9-12-12	Gray gravelly silty clay, moist - medium stiff	7	18	6	11	30	35	29	13	17
644.0												
	36	5-7-10	Gray silty clay, very moist - medium stiff	8	13	6	13	32	36	28	12	18
641.5	38	5	Gray sandy, silty clay, moist - medium stiff	9	13	7	13	34	33	28	12	16
		23-40	Gray sandy, silty clay, moist - hard	10	12	7	15	41	25	23	8	11
639.0	40											
	42	19-21-22	Gray clayey silt, moist - hard	11	14	3	12	52	19	21	3	14
636.5												
	44	16-21-25	Brown gravelly, sandy silt, moist - dense	12	17	8	15	46	14	21	3	15
634.0												
	46	17-18-20	Brown fine to medium sand, moist - dense	13	9	55	27	-9-				4
631.5	48											
		14-16-16	Brown fine to coarse sand, moist - dense	14	17	48	24	-11-				9
629.0	50											
	52	10-14-16	Brown fine to medium sand, wet - dense	15	1	29	60	-10-				18
	54											
624.0												
	56	12-15-16	Brown fine to coarse sand, wet - dense	16	26	38	27	-9-				15
	58											
619.0	60											
	62	12-20-20	Brown silty sand, wet - dense	17	11	51	24	-14-				14
	64											
614.0												
	66	17-15-16	Brown gravelly sand, wet - dense	18	20	38	38	-4-				12
	68											
609.0	70											
607.5	72	15-19-21	Brown fine to medium sand, wet - dense	19	1	72	19	-8-				15
			Boring Completed									

LOG OF BORING

DATE STARTED 1-26-66 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 1-27-66 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 624.0' (50')
BORING NUMBER B-39-2 CORE BARREL: TYPE SIZE AFTER HRS. Backfilled
STATION & OFFSET 378+52, D.E., 36' Right of Centerline SURFACE ELEVATION 674.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
674.0	0											
	2	2-3-3	Cinders, (fill)	1	Visual							
670.5	4	3-3		2	Visual							
669.0		3	Brown sandy lean clay, (probable fill) moist - medium stiff	3	2	5	18	40	35	32	16	18
667.0	6	ST	Brown and gray silty clay, (probable fill) moist - stiff	S1	4	5	9	47	35	34	14	18
	8	5-7-11	Brown gravelly, sandy lean clay, (probable fill) moist - medium stiff	4	17	7	14	32	30	32	17	13
664.0	10											
		ST	Mottled brown and gray gravelly, sandy lean clay,									
662.0	12		(probable fill) moist - stiff	S2	24	5	17	23	31	37	20	25
	14	6-7-7	Brown sandy lean clay, (probable fill) moist - stiff	5	6	3	21	39	31	33	17	18
659.0												
657.0	16	ST	Mottled brown and gray lean clay, (probable fill) moist - stiff	S3	7	5	11	38	39	34	16	16
656.0	18	5-9	Brown gravelly silty clay, (probable fill) moist - stiff	6	18	5	10	28	39	45	27	12
		9	Brown and gray silty clay, moist - stiff	7	0	1	4	62	33	31	9	20
654.0	20											
	22	ST	Brown and gray sandy, silty clay, moist - very stiff	S4	4	8	19	40	29	25	9	16
	24	7-12-15	Brown and gray sandy silty clay, moist - stiff	8	1	9	22	36	32	23	8	15
649.0												
	26	7-8-9	Brown and gray sandy lean clay, moist - stiff	9	5	5	24	31	35	32	17	20
646.5	28											
		8-12-17	Brown and gray gravelly, sandy, silty clay, moist - very stiff	10	23	12	17	26	22	24	10	12
644.0	30											
	32	ST	Brown and gray gravelly, silty clay, moist - very stiff	S5	19	5	11	30	35	32	15	13
642.0												
	34	1-2-2	Brown silt, wet - loose	11	2	1	6	74	17		NP	30
639.0	36	4-4-4	Brown silty sand, moist - loose	12	5	65	18	-12-				10
	38	2-2-4	do do	13	12	57	15	-13-				12
634.0	40											
	42	ST	Brown fine to coarse sand, moist - medium dense	S6	Visual							
	44	8-10-12	do do do	14	19	52	20	-9-				5
629.0												
	46	9-14-18	Brown fine to medium sand, moist - dense	15	9	54	30	-7-				12
	48											
624.0	50											
	52	ST	Brown gravelly sand, wet - dense	S7	Visual							
	54	13-21-25	do do	16	23	38	29	-10-				12
	56	14-16-17	do do	17	34	38	17	-11-				11
	58											
614.0	60											
	62	15-19-25	Brown fine to medium sand, wet - dense	18	8	37	46	-9-				17
609.0	64											
	66	8-15-18	Gray sandy silt with sand seams, moist - dense	19	0	1	31	57	11		NP	16
604.0	68											
	70											
	72	14-18-23	Gray silt, wet - dense	20	0	0	4	68	28	21	2	20
599.0	74											
597.5	76	11-16-22	Gray silty sand, wet - dense	21	1	4	60	29	6		NP	19
	78		Boring Completed									
	80											

Foundation Boring Sheet No. FB-15.

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-71-4.58
Montgomery Rd. to Burwood Ave.
SEC.

BORING DATA

		REVIEWED BY	DATE
		C.R.L.	4/25/66

MICROFILMED
OCT 20 1982

LOG OF BORING

DATE STARTED 1-16-66 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 1-17-66 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 627' (5')
BORING NUMBER B-40-1 CORE BARREL: TYPE SIZE AFTER HRS. Backfilled
STATION & OFFSET 380+50, 123' Left SURFACE ELEVATION 632.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
632.0	0											
	2	7-8-10	Cinders and clay, (fill)	1	Visual							
	4	4-5-6	do do	2	Visual							
627.0	6	1-2-2	Brown sandy clayey silt, wet - soft	3	9	12	33	30	16	22	6	24
622.0	10	5-8-11	Brown fine to medium sand, wet - medium dense	4	0	23	71	-6-				23
	12											
	14											
	16	9-14-15	do do do	5	0	18	73	-9-				20
612.0	18											
	20											
	22	10-11-13	Gray fine to medium sand, wet - medium dense	6	1	14	77	-8-				18
607.0	24											
	26	10-13-16	Gray sandy silt, wet - medium dense	7	0	0	41	53	6		NP	20
	28											
	30											
	32	12-14-16	do do do	8	0	0	41	51	8		NP	21
597.0	34											
	36	4-5-6	Gray silty clay, wet - soft	9	0	0	1	46	53	29	10	24
	38											
	40	5-9-13	Gray silty clay, very moist - medium stiff	10	0	0	4	54	42	24	8	18
587.0	42											
	44											
	46	11-12-11	Gray silt, moist - medium dense	11	1	0	5	74	20		NP	24
	48											
	50											
	52	8-14-15	do do	12	1	1	1	62	35	24	4	22
577.0	54											
	56	5-9-11	Gray silty clay, moist - stiff	13	2	1	3	30	64	38	18	21
	58											
572.0	60											
	62	5-9-11	Gray silt, wet - medium dense	14	0	0	1	71	28	26	2	27
	64											
	66	4-6-10	do do	15	0	0	0	72	28	25	3	24
	68											
	70											
	72	4-8-11	do do	16	0	0	4	74	22	24	2	24
557.0	74											
	76	5-9-16	Dark gray silty sand, wet - medium dense	17	0	0	57	36	7		NP	28
552.0	78											
	80											
	82	5-7-11	Gray silty clay, moist - medium stiff	18	0	0	1	57	42	28	8	27
547.0	84											
	86	6-13-18	Gray silt, moist - dense	19	0	0	2	65	33	25	3	26
	88											

BORING NUMBER B-40-1 (CONTINUED)

	90											
	92	7-12-19	Gray silt, wet - dense	20	0	0	0	80	20		NP	29
537.0	94											
	96	6-12-20	Gray clayey silt, moist - dense	21	0	0	0	68	32	29	5	24
	98											
	100											
	102	7-12-21	do do	22	0	0	0	58	42	30	6	25
527.0	104											
	106	8-13-20	Gray silty clay, moist - dense	23	0	0	0	32	68	34	11	25
	108											
522.0	110											
	112	7-12-22	Gray clayey silt, moist - medium stiff	24	0	0	1	61	38	30	6	26
517.0	114											
515.5	116	8-12-22	Gray silty clay, moist - stiff	25	0	0	0	33	67	38	18	24
	118		Boring Completed									
	120											

HAMILTON COUNTY
HAM-71-4.58

LOG OF BORING

DATE STARTED 1-13-66 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 1-13-66 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 625.0' (6')
BORING NUMBER B-40-2 CORE BARREL: TYPE SIZE AFTER HRS. Backfilled
STATION & OFFSET 380+71.5, 54' Left SURFACE ELEVATION 631.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
631.0	0											
630.0	2	2-2	Coal, cinders and clay, (fill) moist - soft	1	Visual							
	3		Brown silty clay, trace cinders, (fill) very moist -soft	2	2	4	8	54	32	27	8	26
626.0	4											
	6	1-1-1	Gray silty, clayey sand, (fill) wet - very loose	3	12	11	34	21	22	20	6	24
621.0	8											
	10											
	12	2-2-2	Gray and brown silty gravel, (fill) wet - soft	4	53	5	7	23	12	21	7	23
616.0	14											
	16	3-5-9	Brown and gray silty sand, wet - medium dense	5	1	11	76	-12-		—		24
611.0	18											
	20											
	22	9-11-11	Gray silty sand, wet - medium dense	6	0	1	70	-29-		—		22
606.0	24											
	26	7-9-10	Gray sandy silt, wet - medium dense	7	0	1	36	53	10		NP	20
	28											
601.0	30											
	32	7-8-11	Gray silt, wet - medium dense	8	2	1	17	66	14		NP	23
	34											
596.0	36	8-12-15	Gray silt, moist - medium stiff	9	0	0	14	54	32	19	3	22
	38											
591.0	40											
	42	6-8-10	Gray sandy silt, moist - medium stiff	10	0	0	27	54	19		NP	21
586.0	44											
	46	6-8-12	Gray silt, moist - medium dense	11	2	1	11	74	12		NP	20
581.0	48											
	50											
	52	5-7-9	Gray clayey silt, moist - medium dense	12	4	1	2	57	36	24	4	24
576.0	54											
	56	6-9-12	Gray lean clay, moist - stiff	13	6	3	5	34	52	35	18	21
571.0	58											
	60											
	62	7-11-12	Gray silt, very moist - medium dense	14	0	0	0	73	27	24	2	23
	64											
	66	6-9-12	Gray silt, moist - medium dense	15	2	2	3	63	30	23	2	24
	68											
	70											
559.5	72	4-6-9	Gray silt, very moist - medium dense	16	0	0	4	76	20		NP	26
	74		Boring Completed									

Foundation Boring Sheet No. FB-16.

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-71-4.58
Montgomery Rd. to Burwood Ave.
SEC.

BORING DATA

		REVIEWED BY	DATE
		C.R.L.	4/25/66

MICROFILMED
OCT 20 1982

LOG OF BORING

DATE STARTED 1-26-66 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 2-3-66 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 610' (65')
BORING NUMBER B-40-4 CORE BARREL: TYPE SIZE AFTER HRS. Backfilled
STATION & OFFSET 381+57, 80' Right SURFACE ELEVATION 675.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
675.0	0											
	2	4-1-1	Cinders, gravel and coal, (fill) very moist - soft	1	Visual							
	4	1-1-2	do do do	2	Visual							
	6	1-1-1	do do do	3	Visual							
665.0	8 10	1-1-1	do do do	4	Visual							
662.5	12	2-3-4	Brown gravelly, lean clay, (fill) very moist - soft	5	21	6	8	33	32	37	20	22
660.0	14	3-3-4	Brown sandy, silty clay, (fill) very moist - soft	6	2	6	9	42	41	34	16	23
	16	2-2-3	Brown sandy lean clay, (fill) very moist - soft	7	6	6	9	42	37	38	20	26
655.0	18 20	3-3-4	do do do	8	Visual							
	22	2-3-3	Brown gravelly, sandy lean clay, (fill) wet- soft	9	19	12	11	31	27	32	15	27
650.0	24											
	26	2-2-3	Brown silty clay, (fill) wet - soft	10	7	7	12	40	34	39	21	26
646.5	28											
	30	76	Clay and wood, (fill) wet - soft	11	Visual							
642.5	32	3-3-4	do do	12	Visual							
640.0	34	3-3-4	Gray and brown sandy lean clay, moist - medium stiff	13	1	5	16	36	42	48	29	25
	36	4-5-7	Gray and brown sandy, silty clay, wet - soft	14	8	7	14	38	33	28	12	25
637.5	38											
	40	6-7-7	Brown and gray sandy silty clay, wet - soft	15	5	5	15	38	37	40	21	23
635.0	42	7-7-7	Brown clayey sand, moist - medium dense	16	14	38	21	5	22	40	22	16
632.5	44	5-4-3	Brown silty sand, moist - loose	17	5	25	48	3	19		NP	17
	46	5-6-6	Brown silty sand, moist - medium dense	18	3	31	46	5	15		NP	16
627.5	48	6-7-6	Brown gravelly, silty sand, moist - moist - medium dense	19	27	31	27	5	10		NP	16
625.0	50	5-6-6	Brown clayey sand, wet - medium dense	20	7	33	37	5	18	25	9	22
622.5	52											
	54	14-13-13	Brown silty sand, moist - medium dense	21	5	13	61	-21-				12
	56	30-26-30	Brown silty sand, moist - very dense	22	1	18	63	-18-				14
	58											
	60											
	62	17-20-27	Brown silty sand, moist - dense	23	3	25	58	-14-				14
610.0	64											
	66	16-19-28	Gray silty sand, wet - dense	24	1	10	71	-18-				18
605.0	68 70											
	72	14-16-19	Gray sandy silt, wet - dense	25	0	0	45	47	8		NP	20
	74											
	76	15-16-19	do do	26	0	1	44	45	10		NP	17
595.0	78 80											
	82	16-16-18	Gray silty clay, moist - stiff	27	0	0	3	41	56	27	10	28
590.0	84											
588.5	86	16-17-19	Gray clayey silt, moist - stiff	28	0	0	0	65	35	24	4	21
	88		Boring Completed									
	90											

LOG OF BORING

DATE STARTED 1-25-66 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 1-25-66 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 627' (50')
BORING NUMBER B-40-5 CORE BARREL: TYPE SIZE AFTER HRS. Backfilled
STATION & OFFSET 382+18, 147' Right SURFACE ELEVATION 677.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
677.0	0											
676.5		5	Topsoil	1	Visual							
	2	2-2	Brown silty clay, moist - medium stiff	2	10	7	10	40	33	36	18	21
672.0	4											
	6	5-7-11	Brown and gray gravelly, lean clay, moist - stiff	3	15	4	15	31	35	38	20	21
667.0	8 10											
	12	14-17-25	Brown and gray gravelly, sandy lean clay, moist -very stiff	4	19	10	15	28	28	29	14	11
	14											
	16	12-16-22	do do do	5	34	6	12	26	22	25	11	11
657.0	18 20											
	22	7-11-15	Brown clayey silt, moist - stiff	6	10	5	11	52	22	22	5	14
652.0	24											
	26	7-13-14	Brown silt, moist - medium dense	7	8	5	12	58	17		NP	15
	28											
646.0	30	3-7	Brown silt, wet - medium dense	8	6	1	8	72	13		NP	29
644.5	32	10	Brown fine to coarse sand and gravel, moist - medium dense	9	49	19	23	-9-				7
	34	6-8-10	Brown fine to medium sand, moist - medium dense	10	2	16	73	-9-				5
639.5	36	5-8-11	do do do	11	1	24	65	-10-				5
	38	6-8-11	Brown silty sand, moist - medium dense	12	3	34	50	-13-				4
637.0	40											
	42	5-10-13	Brown fine to medium sand, moist - medium dense	13	4	54	31	-11-				5
634.5	44	6-10-13	Brown silty sand, moist - medium dense	14	2	40	45	-13-				5
	46	8-13-15	do do do	15	1	33	54	-12-				5
	48	8-9-12	do do do	16	0	7	79	-14-				12
627.0	50											
	52	7-9-16	Brown fine to medium sand, wet - medium dense	17	1	27	64	-8-				22
624.5	54	10-15-19	Brown silty sand, wet - dense	18	3	17	64	-18-				16
	56	8-18-20	do do	19	0	15	69	-16-				17
	58											
617.0	60											
616.0		15-22	Brown fine to medium sand, wet - dense	20	0	17	73	-10-				19
	62	36	Gray silty sand, wet - very dense	21	0	7	69	-24-				19
612.0	64											
	66	8-16-19	Gray sandy silt, wet - dense	22	0	0	29	63	8		NP	22
	68 70											
	72	14-24-25	do do	23	0	0	38	52	10		NP	19
	74											
	76	10-16-23	do do	24	1	0	32	57	10		NP	22
	78											
	80	11-15-17	do do	25	2	1	21	67	9		NP	19
	82											
	84											
592.0												
590.5	86	11-14-18	Gray clayey silt, wet - dense	26	1	1	2	63	33	22	4	21
	88		Boring Completed									

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HAMILTON COUNTY
HAM-71-4.58

Foundation Boring Sheet No. FB-17.

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-71-4.58
Montgomery Rd. to Burwood Ave.
SEC.

BORING DATA

		REVIEWED BY	DATE
		C.R.L.	4/25/66

MICROFILMED
OCT 20 1982

HAMILTON COUNTY
HAM-71-4.58

LOG OF BORING

DATE STARTED 1-24-66 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 1-24-66 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 628' (50')
BORING NUMBER B-40-6 CORE BARREL: TYPE None SIZE AFTER HRS. Backfilled

STATION & OFFSET 382+23, 192.5' Right SURFACE ELEVATION 678.0'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
678.0	0											
677.0		1-1	Cinders, (fill) moist - very loose	1	Visual							
	2	1	Brown gravelly, sandy, silty clay, very moist - soft	2	17	8	14	35	26	26	11	20
	4											
673.0												
	6	6-8-11	Brown and gray lean clay, moist - stiff	3	0	1	12	48	39	35	18	19
	8											
668.0	10											
	12	8-12-17	Brown sandy lean clay, moist - stiff	4	14	8	14	32	32	28	13	15
	14											
663.0												
	16	10-17-18	Brown gravelly, clayey silt, moist - very stiff	5	25	6	12	38	19	22	5	14
660.5	18											
		8-9-9	Brown clayey silt, moist - very stiff	6	11	6	11	50	22	22	5	22
	20											
		6-9-8	do do do	7	10	4	14	52	20	21	4	17
655.5	22											
	24	4-4-5	Brown fine to medium sand, moist - loose	8	2	50	40	-8-				10
	26	10-12-15	Brown fine to medium sand, moist - medium dense	9	8	62	22	-8-				5
650.5	28											
		18-18-25	Brown silty sand, moist - dense	10	15	33	38	-14-				6
648.0	30											
647.0		7-11	Brown sandy silt, wet - medium dense	11	4	1	26	60	9		NP	25
	32	14	Brown fine to medium sand, moist - medium dense	12	3	39	46	-12-				6
	34	6-10-11	do do do	13	4	66	21	-9-				5
	36	7-8-10	do do do	14	7	53	29	-11-				6
	35											
		7-8-10	do do do	15	3	51	39	-7-				6
	40											
		6-8-10	do do do	16	4	61	24	-11-				5
	42											
633.0	44											
	46	10-11-12	Brown fine to coarse sand, moist - medium dense	17	15	29	45	-11-				5
	48											
628.0	50											
		6-8-12	Brown silty sand, wet - medium dense	18	1	32	54	-13-				22
	52											
623.0	54											
	56	6-12-19	Brown fine to medium sand, wet - dense	19	0	14	76	-10-				21
	58											
618.0	60											
		12-21-35	Gray silty sand, wet - very dense	20	0	11	68	-21-				18
	62											
613.0	64											
	66	9-13-20	Gray sandy silt, wet - very dense	21	0	0	30	63	7		NP	20
	68											
608.0	70											
		10-22-26	Gray silty sand, wet - dense	22	0	0	53	41	6		NP	19
	72											
603.0	74											
	76	10-14-21	Gray silt, wet - dense	23	0	0	17	65	18		NP	22
	78											
598.0	30											
	82	25-19-25	Gray gravelly silt, moist - dense	24	20	3	8	46	23	20	3	20
	84											
593.0	86											
591.5		12-16-20	Gray clayey silt, moist - stiff	25	9	6	15	42	28	22	7	15
	88		Boring Completed									

Foundation Boring Sheet No. FB-18.

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-71-4.58
Montgomery Rd. to Burwood Ave.
SEC.

BORING DATA

		REVIEWED BY	DATE
		C.R.L	4/25/66

MICROFILMED
OCT 20 1982

LOG OF BORING

DATE STARTED 1-14-66 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 1-14-66 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 617.4', (7.5')
BORING NUMBER B-43-1 CORE BARREL: TYPE SIZE AFTER HRS. Backfilled
STATION & OFFSET 388+90, 26'Right SURFACE ELEVATION 624.9

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
624.9	0											
		3-5-5	Clay and cinders, (fill) moist - medium stiff	1	Visual							
	2											
	4											
619.9												
	6	7-9-13	Brown sandy gravel, moist - medium dense	2	64	12	12	-12-				7
617.4	8											
		5-6-6	Gray sandy silt, wet - medium dense	3	0	0	28	66	6		NP	25
614.9	10											
		5-7-12	Gray silty sand, wet - medium dense	4	0	0	66	30	4		NP	22
612.4	12											
		6-7-13	Gray sandy silt, wet - medium dense	5	0	0	30	64	6		NP	20
	14											
	16	10-17-19	Gray sandy silt, wet - dense	6	0	0	37	55	8		NP	23
	18											
	20											
		10-9-12	Gray sandy silt, wet - medium dense	7	0	0	20	71	9		NP	22
	22											
	24											
	26	12-13-15	do do do	8	0	2	22	68	8		NP	20
	28											
594.9	30											
593.4	32	6-10-14	Gray silt, wet - medium dense	9	0	0	4	85	11		NP	25
			Boring Completed									

LOG OF BORING

DATE STARTED 1-12-66 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 1-14-66 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 616.3 (7')
BORING NUMBER B-43-2 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER HRS. Backfilled
STATION & OFFSET 389+37, 10.5' Right SURFACE ELEVATION 623.3

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
623.3	0											
		2-2-3	Topsoil and brown clay, (fill) moist - medium stiff	1	Visual							
620.8	2											
	4	4-4-5	Brown sandy, silty clay, moist - medium stiff	2	0	0	38	40	22	25	9	20
618.3												
	6	12-25-22	Gravel and sandstone boulders, (fill)	3	Visual							
615.8	8											
		5-7-8	Gray sandy silt, wet - medium dense	4	0	0	19	71	10		NP	24
	10											
		5-7-8	do do	5	0	0	34	58	8		NP	22
	12											
	14	5-7-7	do do	6	0	0	22	70	8		NP	23
608.3												
	16	4-6-9	Gray silty sand, wet - medium dense	7	0	0	69	-31-				30
605.8	18											
		7-17-19	Gray sandy silt, wet - dense	8	0	0	20	66	14		NP	23
603.3	20											
	22	13-15-15	Gray silt, wet - dense	9	4	1	15	67	13		NP	21
	24	8-10-20	Gray silt, moist - dense	10	2	1	11	76	10		NP	22
	26	8-11-16	Gray silt, wet - medium dense	11	1	0	5	81	13		NP	20
	28											
	30											
	32	8-11-12	do do	12	0	0	17	73	10		NP	24
	34											
588.3												
	36	7-8-12	Gray silt with clay seams, wet - medium dense	13	5	2	1	63	29	21	1	25
	38											
583.3	40											
	42	7-12-14	Gray silty clay, moist - stiff	14	10	7	10	44	29	24	9	15
	44											
578.3												
	46	7-10-15	Gray sandy, silty clay, moist - stiff	15	10	8	15	41	26	22	7	13
	48											
573.3	50											
	52	5-7-10	Gray silt, moist - stiff	16	4	2	10	55	29	20	3	18
	54											
568.3												
	56	4-6-7	Gray clayey silt, moist - medium stiff	17	2	2	6	52	38	24	6	23
	58											
563.3	60											
	62	5-5-7	Gray silt, moist - medium dense	18	0	0	2	79	19	22	1	24
	64											
558.3												
	66	4-4-6	Gray silty clay, very moist - medium stiff	19	0	0	1	54	45	27	7	27
	68											
553.3	70											
	72	4-8-10	Gray silt, very moist - medium dense	20	0	0	4	69	27	23	2	28
	74											
548.3												
	76	14-18-24	Gray clayey silt with gravel and rock fragments, moist - very stiff	21	40	9	6	29	16	23	5	12
	78											
543.3	80											
	82	35-58-130	Brown weathered shale	22	Visual							
	84											
538.3												
	86	23%	Entire recovery essentially limestone, possible 1" to 4" layers, fractured and broken throughout, exhibiting iron-oxide staining. Limestone crystalline, fossiliferous, hard. Very poor recovery.									
	88											
533.3	90											
		% Recovery	Boring Completed									

LOG OF BORING

DATE STARTED 1-18-66 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 1-18-66 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 610.5 (12.5')
BORING NUMBER B-43-4 CORE BARREL: TYPE SIZE AFTER HRS. Backfilled
STATION & OFFSET 390+79, 72'Left SURFACE ELEVATION 623.0'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
623.0	0											
		2-2-3	Topsoil and clay, (fill)	1	Visual							
620.5	2											
	4	3-3-5	Brown sandy, silty clay, moist - medium stiff	2	5	5	25	29	36	36	16	22
618.0												
	6	4-4-4	Brown sandy silt, wet - loose	3	2	2	24	70	2		NP	29
615.5	8											
		4-6-9	Brown and gray silt, wet - medium dense	4	0	1	17	72	10		NP	26
613.0	10											
		4-7-8	Gray silt, wet - medium dense	5	0	0	9	78	13		NP	22
610.5	12											
	14	7-8-10	Gray sandy silt, wet - medium dense	6	0	0	20	72	8		NP	20
	16	7-11-12	do do	7	0	0	20	62	18		NP	23
605.5	18											
		9-15-15	Gray silty, wet - loose	8	0	1	7	82	10		NP	20
603.0	20											
		5-9-10	Gray clayey silt, wet - medium dense	9	0	1	2	66	31	21	4	21
	22											
	24											
598.0												
	26	4-12-17	Gray silt, wet - dense	10	2	0	12	77	9		NP	22
	28											
	30											
591.5	32	7-14-20	do do	11	0	1	3	80	16		NP	23
			Boring Completed									

HAMILTON COUNTY
HAM-71-4.58
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Foundation Boring Sheet No. FB-19.

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-71-4.58
Montgomery Rd. to Burwood Ave.
SEC.

BORING DATA

		REVIEWED BY	DATE
		C.R.L.	4/25/66

SOIL PROFILE
HAMILTON COUNTY
HAM-71-4.58

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
CINCINNATI, OHIO 45226

2.0
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NOTE: INFORMATION SHOWN BY THIS SUBGRADE PROFILE WAS OBTAINED SOLELY FOR USE IN ESTABLISHING DESIGN CONTROLS FOR THE PROJECT. THE STATE OF OHIO DOES NOT GUARANTEE THE ACCURACY OF THIS DATA, AND IT IS NOT TO BE CONSTRUED AS A PART OF THE PLANS GOVERNING CONSTRUCTION OF THE PROJECT.

GENERAL INFORMATION

INTRODUCTION

THE PROJECT CONSISTS OF A 1.57 MILE SEGMENT OF THE NORTHEAST EXPRESSWAY STARTING AT A POINT APPROXIMATELY 1250-FT. EAST OF EXISTING WOODBURN AVENUE AND EXTENDING IN A GENERALLY EASTERLY DIRECTION TO A POINT APPROXIMATELY 300-FT. EAST, NORTHEAST OF EXISTING BURWOOD AVENUE, ALL IN THE CITY OF CINCINNATI, OHIO. IN ADDITION TO THE MAIN ROADWAY, THE PROJECT INCLUDES RAMPS ME, APPROXIMATELY 1050-FT. LONG, DC APPROXIMATELY 1200-FT. LONG, DB AND DE, EACH APPROXIMATELY 1300-FT. LONG AND MF, APPROXIMATELY 2200-FT. LONG, DUCK CREEK ROAD RELOCATION, APPROXIMATELY 2100-FT. LONG AND DANA-OBSERVATORY CONNECTOR, APPROXIMATELY 4200-FT. LONG.

THE MAXIMUM PROPOSED CUTS AND FILLS ARE SHOWN IN THE PROJECT INDEX ON THIS SHEET.

GEOLOGY AND OBSERVATIONS OF THE PROJECT

THE ALIGNMENT IS LOCATED ON THE DISSECTED LEXINGTON PENEPLAIN, WITHIN THE BORDER OF THE ILLINOIAN DRIFT. THE OVERBURDEN NORMALLY CONSISTS OF RELATIVELY THIN CLAYEY TILL AND PLASTIC RESIDUAL SOIL. THE BEDROCK IS THINLY BEDDED SHALE AND LIMESTONE OF ORDOVICIAN AGE. RATHER DEEP PREGLACIAL VALLEYS FILLED WITH TILL AND SUBORDINATE AMOUNTS OF LAKE AND OUTWASH DEPOSITS ARE FOUND IN THE AREA.

THE AREA HAS BEEN PRIMARILY RESIDENTIAL BUT INCLUDES SOME COMMERCIAL ACTIVITY. THERE IS EVIDENCE OF MODERATE AMOUNTS OF PREVIOUS GRADING IS SOME SECTIONS.

EXPLORATION

THIS ROADWAY SOIL PROFILE HAS BEEN PREPARED USING SELECTED TEST BORINGS MADE FOR STRUCTURE FOUNDATION INVESTIGATIONS FOR BRIDGES AND RETAINING WALLS SUPPLEMENTED BY ROADWAY BORINGS USING SKID AND TRUCK-MOUNTED MECHANICAL HOLLOW STEM AUGERS WITH SPLIT SPOON SAMPLING., THE STRUCTURE BORINGS WERE DRILLED DURING DECEMBER 1965 THROUGH FEBRUARY 1966, MARCH 1968, AND AUGUST THROUGH SEPTEMBER 1968. THE SUPPLEMENTARY ROADWAY BORINGS WERE MADE BETWEEN JUNE AND SEPTEMBER 1967 AND AUGUST AND SEPTEMBER 1968. THE SAMPLING AND TESTING WAS ACCOMPLISHED IN ACCORDANCE WITH THE CRITERIA OF THE OHIO DEPARTMENT OF HIGHWAYS. ONLY THE TESTS PERFORMED ON SAMPLES OBTAINED IN THE ROADWAY BORINGS ARE INCLUDED IN THIS REPORT. THE TESTS PERFORMED ON SAMPLES OBTAINED IN THE STRUCTURE BORINGS WERE PRESENTED PREVIOUSLY IN THE STRUCTURE FOUNDATION REPORTS.

THE SELECTED STRUCTURE BORINGS USED IN PREPARING THE ROADWAY SOIL PROFILE ARE SHOWN ON THE PLAN, IDENTIFIED AS INDICATED ON THE LEGEND. THE SUBSURFACE CONDITIONS INDICATED AT THESE BORINGS HAVE BEEN REPRESENTED ON THE PROFILE, USING APPROPRIATE SYMBOLS AS SHOWN ON THE LEGEND.

INVESTIGATIONAL FINDINGS

FROM THE BEGINNING OF THE PROJECT AT STATION 310 TO STATION 323, ABOUT 100-FT. EAST OF EXISTING WOODBURN AVENUE, THE PROPOSED GRADE LINE FALLS FROM ABOUT 714 TO 699. EXCEPT AT THE VALLEY CROSSING, CENTERED AT 315+25, IN WHICH APPROXIMATELY 34-FT. OF FILL WILL BE REQUIRED, THE PROPOSED GRADE LINE OCCURS AT AN AVERAGE DEPTH OF 21-FT. BELOW THE EXISTING GROUND LINE. THE BORINGS IN THIS SECTION SHOW ABOUT 2-FT. OF OLD FILL. THE BORINGS INDICATE THAT THE SUBGRADE WILL GENERALLY BE IN UNDERLYING SILT AND CLAY (A-6a), WITH A SHORT SECTION ADJACENT TO WOODBURN AVENUE FALLING BELOW THE TOP OF ROCK.

FROM STATION 323 TO 360, ABOUT 200-FT. EAST OF EXISTING EVANSTON AVENUE, THE PROPOSED GRADE LINE IS IN A MODERATELY DEEP CUT, READING A MAXIMUM DEPTH OF 35-FT. IN THE VICINITY OF STATIONS 326 TO 333, THE BORINGS IN THIS SECTION INDICATE OLD FILLS UP TO 16-FT. DEEP OCCUR LOCALLY IN THIS SECTION. FROM ABOUT STATION 324 TO 345 AND 350 TO 360 THE SUBGRADE WILL GENERALLY BE IN SILT AND CLAY (A-6a), SILTY CLAY (A-6b) AND CLAY (A-7-6) WITH SOME AREAS OF SANDY SILT (A-4a) AND SILT (A-4b). BETWEEN ABOUT STATIONS 325 TO 324 AND 345 TO 350, THE PROPOSED GRADE WILL FALL BELOW THE TOP OF ROCK. WITH A MAXIMUM ROCK CUT OF 15-FT. AT STATION 346.

FROM STATION 360 TO 392+69, THE END OF THE PROJECT LOCATED SOME 300-FT. EAST OF EXISTING BURWOOD AVENUE, THE PROPOSED GRADE LINE WILL BE ON FILL, HAVING A MAXIMUM HEIGHT OF ABOUT 28-FT. AT STATION 380. IN THIS SECTION, THE BORINGS INDICATE 2 TO 7-FT. OF OLD FILL, PREDOMINATNLY CONSISTING OF HETEROGENEOUS MIXTURES OF CLAY, CINDERS AND ROCK FRAGMENTS. THE OLD FILLS ARE GENERALLY UNDERLAIN BY 5 TO 10-FT. OF SILT AND CLAY (A-6a) AND LESSER AMOUNTS OF SILTY CLAY (A-6b), BELOW WHICH OCCUR OUTWASH DEPOSITS RANGING FROM SAND (A-3 AND A-3a) TO GRAVEL (A-2-4 AND A-1-b).

RAMPS "DC" AND "MF", WHICH IN GENERAL PARALLEL THE EXPRESSWAY CENTERLINE, WILL BE ENTIRELY IN CUT AND EXCEPT FOR A SHORT SECTION IN THE VICINITY OF 375 ON RAMP "DC", WHERE THE PROPOSED GRADE LINE WILL FALL 10-FT. BELOW THE TOP OF ROCK, THE SUBGRADES OF THESE RAMPS WILL BE FOUNDED IN OVERBURDEN. THE EXISTING GRADE IS BLANKETED BY 2 TO 25-FT. OF OLD FILL. IN THE VICINITY OF STATION 338, RAMP "MF", THE PROPOSED GRADE WILL FALL WITHIN THE OLD FILL. HERE, THE SUBGRADE WILL REST ON ABOUT 8-FT. RUBBLE, CINDERS, GLASS, BRICK, GRAVEL AND CLAY UNDERLAIN BY AN ADDITIONAL 10-FT. OF FILL LARGELY COMPOSED OF SILT AND CLAY (A-6a) AND SILTY CLAY (A-6b). AT STATION 377, THE PROPOSED GRADE WILL REST ON ABOUT 5-FT. OF OLD FILL CONSISTING OF SILT AND CLAY (A-6a) AND SANDY SILT (A-4a).

BOTH THE DANA-OBSERVATORY CONNECTOR AND DUCK CREEK ROAD RELOCATION WILL BE CONSTRUCTED PRIMARILY IN FILL. THE BORINGS INDICATE THAT OLD FILLS OCCUR ON BOTH OF THESE ELEMENTS, WITH THE GREASTEST THICKNESSES, UP TO 10-FT., OCCURRING IN THE EXISTING BOTTOMS OF TRIBUTARY VALLEYS AND TO A LESS DEGREE IN LOCAL SWALES. THESE OLD FILLS CONSIST LARGELY OF SANDY SILT (A-4a) AND SILT AND CLAY (A-6a). THE INTERMEDIATE UPLAND AREAS APPEAR TO BE COVERED ESSENTIALLY CONTINUOUSLY WITH A 2 TO 4-FT. DEPOSIT OF OLD FILL COMPOSED OF MIXTURES OF CLAY, BRICK AND GRAVEL. LOCALLY, THE PROPOSED GRADE LINE WOULD FALL ON THE THIN OLD FILLS. ON DANA-OBSERVATORY CONNECTOR, THE PROPOSED GRADE WILL FALL FOR SHORT DISTANCES ON 4-FT. AND 2-FT. SILT AND CLAY (A-6a) FILLS AT STATION 15 AND 19.

WITH THE EXCEPTION OF ABOUT 1000-FT., STATION 308 TO 318, OF FILL, RAMP "ME" WILL BE CONSTRUCTED IN CUT. WITHIN THE CUT SECTIONS, THE PROPOSED GRADE OCCURS AT AN AVERAGE DEPTH OF 18-FT. BELOW THE EXISTING GROUND LINE. THE BORINGS INDICATE THAT THE SUBGRADE WILL GENERALLY BE IN THE UNDERLYING SILT AND CLAY (A-6a) AND SANDY SILT (A-4a). SOME ROCK EXCAVATION MAY BE ENCOUNTERED BETWEEN STATIONS 305 AND 307. THE FILL BETWEEN STATION 308 AND 318 WILL AVERAGE ABOUT 16-FT. AND INCLUDES A FILL OF 41-FT. IN THE VALLEY AT 314+50.

THE SUBGRADE OF RAMP "DB" WILL CONSTRUCTED LARGELY IN FILL. THE BORINGS INDICATE THAT THIS AREA IS COVERED BY 2 TO 4-FT. OF FILL, WHICH INCREASES TO ABOUT 20-FT. AT STATION 377, WHERE IT CONSISTS OF ABOUT 7-FT. OF SILT AND CLAY (A-6a) OVER 5-FT. OF MIXED CINDERS, CLAY AND GRAVEL UNDERLAIN BY 2-1/2-FT. OF SILTY CLAY (A-6b) AND 7-1/2-FT. OF SANDY SILT (A-4a). AT THIS STATION, A FILL OF ABOUT 6-FT. WILL BE REQUIRED. THE SUBGRADE IN THE CUT SECTION, STATION 379 TO 382, WILL FALL ABOUT AT AN AVERAGE DEPTH OF 9-FT. BELOW THE EXISTING GROUND LINE. THE BORINGS INDICATE THAT THE SUBGRADE IN THE CUT SECTION WILL CONSIST OF RELATIVELY WET SANDY SILT (A-4a).

THE PROPOSED GRADE LINE OF RAMP "DE" WILL BE APPROXIMATELY EQUALLY DISTRIBUTED BETWEEN CUT AND FILL. HERE AGAIN THE EXISTING GROUND LINE IS BLANKETED BY 1 TO 5-FT. OF FILL PRIMARILY COMPOSED OF MIXTURES OF CINDERS, CLAY, SAND AND GRAVEL. THE BORINGS IN THE CUT SECTIONS, STATIONS 374+25 TO 379+50, INDICATE THAT THE PROPOSED GRADE WILL FALL AT AN AVERAGE DEPTH OF 16-FT. BELOW THE EXISTING GROUND LINE WITH A MAXIMUM CUT OF ABOUT 27-FT. AT STATION 379. THE PROPOSED SUBGRADE IN CUT WILL FALL IN SILT AND CLAY (A-6a) AND SILTY CLAY (A-6b). FILLS, STATION 373 TO 374 AND 379+50 TO 384 WILL AVERAGE ABOUT 15-FT. IN HEIGHT, AND THE BORINGS INDICATE THAT 5-FT. OF OLD FILL, CONSISTING OF CINDERS, CLAY AND COAL, UNDERLAIN BY OUTWASH GRAVEL (A-1-a) CAN BE ANTICIPATED IN THE VICINITY OF STATION 383.

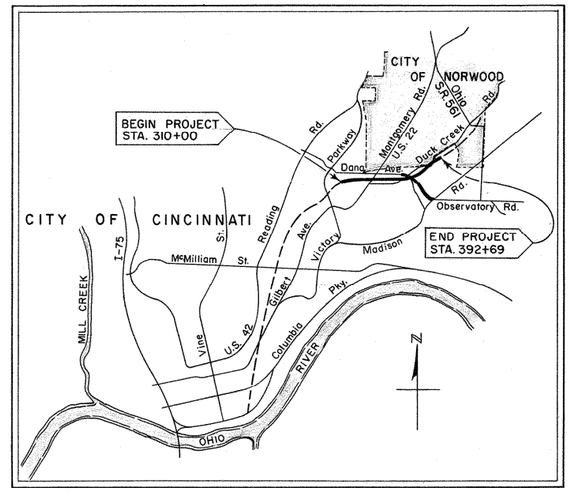
LEGEND FOR PROJECT - AVERAGE RESULTS OF TESTS — 268 SAMPLES TESTED

DESCRIPTION	H.R.B. CLASS	OHIO CLASS	% AGG.	% C. SAND	% F. SAND	% SILT	% CLAY	LIQUID LIMIT	PLASTICITY INDEX	WATER CONTENT	SAMPLES TESTED
Gravel.	A-1-a (0)	A-1-a	54	17	14	9	6	21	5	10	1
Gravel and / or stone fragments with sand.	A-1-b (0)	A-1-b	26	38	24	——12——		21	5	12	8
F.S. Fine sand.	A-3 (0)	A-3	0	9	82	——9——		NP	NP	23	1
Coarse and fine sand.	----	A-3a	4	14	62	——20——		NP	NP	18	9
Gravel or stone fragments with sand and silt.	A-2-4 (0)	A-2-4	31	13	28	17	11	27	9	16	2
Sandy silt.	A-4 (5)	A-4a	14	10	15	35	26	23	8	15	85
Silt.	A-4 (8)	A-4b	2	3	9	59	27	27	7	21	16
Silt and clay.	A-6 (8)	A-6a	7	7	12	39	35	31	13	18	71
Silty clay.	A-6 (10)	A-6b	6	6	12	36	40	36	18	19	36
Elastic clay.	A-7-5 (15)	A-7-5	4	6	8	37	45	64	31	27	2
Clay.	A-7-6 (14)	A-7-6	5	5	8	34	48	47	24	21	37
Random fill.	VISUAL CLASSIFICATION										
Weathered shale.	VISUAL CLASSIFICATION										
Weathered limestone.	VISUAL CLASSIFICATION										
Topsoil.	VISUAL CLASSIFICATION										

- Roadway boring — plan view.
- Structure boring — plan view.
- Water content nearly equal to or greater than liquid limit.

Note: Figures beside borings indicate water content in percent. e.g. 14.

- W——— Free water.
- ▼——— Static water.
- Existing fill material plotted to vertical scale only — profile.
- Auger boring plotted to vertical scale only — profile.
- Core boring plotted to vertical scale only — profile.



LOCATION MAP

PROJECT INDEX

STATIONS FROM — TO	PLAN VIEW SHEET	PROFILE SHEET	CUT (MAX.)	FILL EMB. (MAX.)
NORTHEAST EXPRESSWAY				
310+00 - 392+69	4,5,6	7,8,9	35'	32'
RAMP "DB"				
371+20 - 384+00	6	10	10'	30'
RAMP "DC"				
375+00 - 387+00	6	11	25'	10'
RAMP "DE"				
372+50 - 385+75	6	10	27'	25'
RAMP "ME"	4	12	27'	40'
RAMP "MF"				
334+00 - 344+50	4	10	32'	—
DUCK CREEK RD. RELOCATION.				
1+00 - 21+00	5,6	11	21'	32'
DANA OBSERVATORY CONNECTOR				
1+00 - 42+00	6	13	15'	35'

SOIL PROFILE
HAMILTON COUNTY
HAM-71 - 4.58

21/32

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
CINCINNATI, OHIO 45226

2/13

SUMMARY OF SOIL TEST DATA

NOTE: NP shown in Liquid Limit and Plasticity Index columns indicates that the material is non-plastic

Northeast Expressway

Station	Offset	Sample Depth From	Sample Depth To	Stratum Depth From	Stratum Depth To	% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC	SHTL Class
312+45	75'Lt.	0.0	0.5	0.0	0.5	Topsoil								Visual
		0.5	1.5	0.5	2.0	0	5	8	42	45	37	17	16	A-6b(11) (FILL)
		2.5	4.0	2.0	5.0	2	2	7	35	54	52	29	18	A-7-6(18)
		5.0	6.5	5.0	10.0	5	12	13	37	33	28	11	13	A-6a(7)
		10.0	11.5	10.0	15.0	15	11	14	31	29	26	11	13	A-6a(5)
		15.0	16.5	15.0	19.0	20	10	12	30	28	21	7	11	A-4a(4)
						Boring Completed								
313+00	75'Lt.	0.0	1.5	0.0	2.0	Brown clay and topsoil								Visual (FILL)
		2.5	4.0	2.0	5.0	5	7	13	39	36	33	14	20	A-6a(10)
		5.0	6.5	5.0	10.0	2	6	12	37	43	34	15	19	A-6a(10)
		10.0	11.5	10.0	15.0	12	14	19	29	26	27	12	16	A-6a(5)
		15.0	16.5	15.0	17.5	33	9	11	26	21	24	9	12	A-4a(2)
		17.5	19.0	17.5	19.0	15	11	15	32	27	24	10	12	A-4a(5)
						Boring Completed								
315+00	72'Lt.	0.0	1.5	0.0	2.0	6	9	16	42	27	34	12	13	A-6a(8) (FILL)
		5.0	6.5	2.0	7.5	8	8	9	31	44	38	21	14	A-6b(12)
		7.5	8.5	7.5	8.5	13	6	8	31	42	37	19	15	A-6b(11)
						Refusal @ 8.5' Boring Completed								
317+50	72'Lt.	0.0	1.5	0.0	2.0	Topsoil,								Visual (FILL)
		2.5	4.0	2.0	5.0	0	4	17	33	46	45	28	16	A-7-6(16)
		7.5	9.0	5.0	10.0	5	11	17	34	33	27	12	12	A-6a(7)
		12.5	14.0	10.0	15.0	0	13	20	35	32	23	9	12	A-4a(5)
		17.5	19.0	15.0	20.0	21	10	15	27	27	25	11	12	A-6a(4)
		20.0	21.5	20.0	28.0	14	12	14	30	30	26	11	16	A-6a(5)
		23.5	25.0	20.0	28.0	17	9	12	32	30	26	11	16	A-6a(6)
						Boring Completed								
322+00	52'Lt.	0.0	1.5	0.0	2.0	0	6	8	45	41	35	14	16	A-6a(10) (FILL)
		2.5	4.0	2.0	5.0	0	4	11	28	57	48	24	22	A-7-6(15)
		5.0	6.5	5.0	10.0	16	11	17	30	26	25	10	12	A-4a(4)
		10.0	11.5	10.0	20.0	18	12	14	30	26	25	11	13	A-6a(4)
						Refusal @ 20', Boring Completed								
325+66	35'Lt.	0.0	0.5	0.0	0.5	Topsoil, brick and cinders								Visual (FILL)
		0.5	1.5	0.5	7.0	0	4	6	56	34	29	14	18	A-6a(10)
		5.0	6.5	0.5	7.0	7	11	11	37	34	29	11	18	A-6a(8)
		7.5	9.0	7.0	10.0	14	10	12	34	30	29	12	14	A-6a(7)
		10.0	11.5	10.0	12.5	7	10	9	41	33	27	8	22	A-4a(8)
		12.5	14.0	12.5	15.0	18	10	15	31	26	26	10	17	A-4a(5)
		15.0	16.5	15.0	17.5	19	12	15	30	24	20	6	45	A-4a(4)
		17.5	19.0	17.5	22.5	27	12	14	26	21	19	5	11	A-4a(2)
		20.0	21.5	17.5	22.5	19	11	14	34	22	20	5	10	A-4a(4)
		22.5	24.0	22.5	25.0	16	7	11	37	29	22	6	14	A-4a(6)
		25.0	26.5	25.0	27.5	8	10	12	40	30	20	5	16	A-4a(7)
		27.5	29.0	27.5	32.5	14	13	5	28	40	35	16	18	A-6b(9)
		30.0	31.5	27.5	32.5	9	14	3	32	42	35	16	18	A-6b(10)
		32.5	34.0	32.5	35.0	14	9	10	49	18	22	5	24	A-4a(7)
		35.0	36.5	35.0	40.0	0	4	3	48	45	33	13	20	A-6a(9)
		40.0	41.5	40.0	42.5	6	6	3	29	56	43	21	27	A-7-6(12)
						Refusal @ 42.5', Boring Completed								
329+78	15'Lt.	0.0	1.5	0.0	2.5	4	5	6	32	53	54	31	17	A-7-6(19) (FILL)
		5.0	6.5	2.5	7.5	4	4	8	27	57	39	18	25	A-6b(11) (FILL)
		7.5	9.0	7.5	10.0	5	5	12	30	48	45	23	21	A-7-6(14) (FILL)
		10.0	11.5	10.0	15.0	0	3	7	53	37	33	12	27	A-6a(9)
		15.0	16.5	15.0	17.5	12	24	18	16	30	48	25	20	A-7-6(7)
		17.5	19.0	17.5	25.0	17	12	19	33	19	24	8	11	A-4a(3)
		20.0	21.5	17.5	25.0	25	11	16	27	21	24	10	11	A-4a(3)
		25.0	26.5	25.0	32.5	9	9	12	39	31	24	9	11	A-4a(7)
		30.0	31.5	25.0	32.5	12	9	12	37	30	24	9	13	A-4a(7)
		32.5	34.0	32.5	35.0	9	7	11	40	33	25	9	16	A-4a(8)
		35.0	36.5	35.0	37.5	0	2	4	72	22	31	8	30	A-4b(8)
		37.5	39.0	37.5	40.0	0	1	1	45	53	42	21	32	A-7-6(12)
		40.0	41.5	40.0	41.5	1	2	6	41	50	37	17	24	A-6b(11)
		41.5	43.0	41.5	43.0	9	5	6	30	50	42	20	18	A-7-6(12)
						Boring Completed								
333+50	CL	0.0	0.5	0.0	0.5	Blacktop and gravel								Visual
		0.5	2.0	0.5	2.0	Coarse gravel								Visual (Fill)
		2.5	4.0	2.0	4.0	20	7	11	32	30	35	18	19	A-6b(8)
		5.0	6.5	4.0	7.5	0	16	11	49	24	35	18	17	A-6b(10)
		7.5	9.0	7.5	20.0	19	9	22	33	17	22	9	12	A-4a(3)
		10.0	11.5	7.5	20.0	36	10	13	24	17	23	10	12	A-4a(1)
		12.5	14.0	7.5	20.0	38	8	15	26	13	20	8	10	A-4a(1)
		15.0	16.5	7.5	20.0	36	9	13	27	15	21	9	10	A-4a(1)
		17.5	19.0	7.5	20.0	27	9	14	31	19	22	10	10	A-4a(3)
		20.0	21.5	20.0	22.5	28	8	13	31	20	24	11	12	A-6a(3)
		22.5	24.0	22.5	25.0	35	8	12	27	18	22	9	13	A-4a(2)
		25.0	26.5	25.0	27.5	0	2	5	47	46	32	16	18	A-6b(10)
		27.5	29.0	27.5	30.0	0	2	4	25	60	49	32	28	A-7-6(18)
		30.0	31.5	30.0	32.5	42	6	6	20	26	18	4	19	A-4a(2)
		32.5	34.0	32.5	38.5	52	6	4	17	21	35	20	18	A-6b(3)
		35.0	36.5	32.5	38.5	0	0	2	58	40	36	20	26	A-6b(12)
		38.5	40.0	38.5	40.0	0	2	1	40	57	63	40	22	A-7-6(20)
						Boring Completed								

SUMMARY OF SOIL TEST DATA

NOTE: NP shown in Liquid Limit and Plasticity Index columns indicates that the material is non-plastic

Northeast Expressway

Station	Offset	Sample Depth From	Sample Depth To	Stratum Depth From	Stratum Depth To	% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC	SHTL Class
338+00	CL	0.0	1.5	0.0	2.5	11	8	14	33	34	36	17	18	A-6b(9) (FILL)
		2.5	4.0	2.5	5.0	Brown clay, brick, some cinders								Visual (FILL)
		5.0	6.5	5.0	7.5	1	4	7	42	46	47	25	23	A-7-6(15) (FILL)
		7.5	9.0	7.5	10.0	Cinders and clay,								Visual (FILL)
		10.0	11.5	10.0	15.0	8	7	19	30	36	36	16	33	A-6b(9)
		15.0	16.5	15.0	17.5	1	6	13	46	34	31	13	21	A-6a(9)
		17.5	19.0	17.5	20.0	1	3	8	55	33	37	12	27	A-6a(9)
		20.0	21.5	20.0	22.5	0	1	3	58	38	37	17	28	A-6b(11)
		22.5	24.0	22.5	24.0	49	8	5	20	18	36	14	28	A-6a(2)
						Boring Completed								
342+00	CL	0.0	1.5	0.0	2.0	2	11	7	49	31	34	13	10	A-6a(9) (FILL)
		2.5	4.0	2.0	5.0	0	2	4	52	42	38	20	18	A-6b(12)
		5.0	6.5	5.0	10.0	1	4	15	32	48	54	28	24	A-7-6(18)
		10.0	11.5	10.0	20.0	13	7	9	32	39	33	15	14	A-6a(9)
		15.0	16.5	10.0	20.0	11	8	11	35	35	29	13	15	A-6a(9)
		20.0	21.5	20.0	24.0	0	1	4	26	69	80	49	31	A-7-5(20)
		25.0	26.5	24.0	28.5	17	7	6	32	38	41	21	16	A-7-6(12)
						Refusal @ 28.5', Boring Completed								
346+00	CL	0.0	1.5	0.0	2.0	10	4	4	68	14	33	12	18	A-6a(9) (FILL)
		2.5	4.0	2.0	5.0	0	6	10	45	39	30	12	16	A-6a(9)
		5.0	6.5	5.0	10.0	0	1	2	26	71	71	43	25	A-7-6(20)
		10.0	11.5	10.0	12.5	1	2	2	42	53	40	20	11	A-6b(12)
		12.5	13.5	12.5	13.5	0	4	6	37	53	51	27	15	A-7-6(17)
						Refusal at 13.5', Boring Completed								
350+00	CL	0.0	1.5	0.0	2.0	0	4	4	57	35	34	14	20	A-6a(10) (FILL)
		2.5	4.0	2.0	5.0	0	2	4	51	43	44	20	26	A-7-6(13)
		5.0	6.5	5.0	10.0	2	8	12	38	40	34	14	12	A-6a(10)
		10.0	11.5	10.0	15.0	13	7	13	33	34	31	13	22	A-6a(7)
		15.0	16.5	15.0	20.0	28	16	9	27	20	48	26	12	A-7-6(9)
						Refusal @ 20.1', Boring Completed								
353+85	CL	0.0	1.5	0.0	2.0	0	2	4	61	33	32	10	21	A-4b(8) (FILL)
		5.0	6.5	2.0	10.0	2	4	7	51	36	51	24	17	A-7-6(16)
		10.0	11.5	10.0	15.0	16	2	15	45	22	26	10	13	A-4a(6)
		15.0	16.5	15.0	17.5	19	12	17	30	22	23	8	11	A-4a(3)
		17.5	19.0	17.5	20.0	9	12	15	39	25	25	8	13	A-4a(6)
		20.0	21.5	20.0	24.0	12	11	14	39	24	20	6	12	A-4a(6)
						Boring Completed								
358+90	CL	0.0	1.5	0.0	7.5	1	8	13	36	42	34	12	19	A-6a(9) (FILL)
		5.0	6.5	0.0	7.5	1	4	11	49	35	35	12	19	A-6a(9) (FILL)
		7.5	9.0	7.5	10.0	1	5	13	33	48	42	19	18	A-7-6(12)
		11.5	13.0	10.0	13.0	13	11	14	32	30	26	9	12	A-4a(5)
						Boring Completed								
362+00	CL	0.0	1.5	0.0	1.5	8	10	12	49	21	47	13	22	A-7-5(9)
		2.5	4.0	1.5	5.0	38	13	20	16	13	27	9	14	A-2-4(0)
		5.0	6.5	5.0	10.0	48	9	7	13	23	47	23	18	A-7-6(3)
						Boring Completed								
366+00	CL	0.0	1.5	0.0	2.5	Topsoil, clay and rock fragments								Visual (FILL)
		2.5	4.0	2.5	5.0	6	5	15	32	42	40	18	14	A-6b(11)
		5.0	6.5	5.0	9.5	0	2	33	38	27	26	10	21	A-4a(6)
		10.0	11.5	9.5	11.5	42	24	17	9	8	21	5	11	A-1-b(0)
						Boring Completed								
370+00	CL	0.0	1.5	0.0	7.5	Brown clay, gravel, rock & glass								Visual (FILL)
		2.5	4.0	0.0	7.5	Brown clay, gravel, rock & glass								Visual (FILL)
		7.5	9.0	7.5	10.0	6	49	38	-7-				6	A-1-b(0)
		10.0	11.5	10.0	16.0	1	12	72	-15-				18	A-3a(0)
		15.0	16.5	10.0	16.5	0	17	63	-20-				19	A-3a(0)
						Boring Completed								
374+00	CL	0.0	1.5	0.0	2.0	Topsoil, dry								Visual (FILL)
		2.5	4.0	2.0	4.0	15	11	14	31	29	25	8	8	A-4a(5) (FILL)
		5.0	6.5	4.0	10.0	14	8	15	32	31	25	9	11	A-4a(6)
		9.0	10.0	4.0	10.0	8	10	6	33	33	24	9	16	A-4a(6)
						Boring Completed								
378+00	CL	0.0	1.5	0.0	2.5	Brown clay, blacktop, cinders,								Visual (FILL)
		2.5	4.0	2.5	10.0	2	7	11	43	37	33	13	20	A-6a(9) (FILL)
		5.0	6.5	2.5	10.0	2	7	9	47	35	31	12	29	A-6a(9) (FILL)
		10.0	11.5	10.0	12.5	3	4	10	43	40	37	17	28	A-6b(11) (FILL)
		12.5	14.0	12.5	15.0	32	40	23	-5-				18	A-1b(0)
		15.0	16.5	15.0	16.5	0	4	78	-18-				20	A-3a(0)
						Boring Completed								
382+00	CL	0.0	1.5	0.0	2.5	21	16	23	23	17	23	7	14	A-4a(1) (FILL)
		2.5	4.0	2.5	7.5	11	9	17	36	27	37	14	17	A-6a(7)
		5.0	6.5	2.5	7.5	2	7	22	38	31	34	14	15	A-6a(8)
		7.5	9.0	7.5	10.0	0	5	82	-13-				26	A-3a(0)
		10.0	11.5	10.0	12.5	0	5	69	-26-				26	A-3a(0)
		12.5	14.0	12.5	14.0	0	9	82	-9-				23	A-3(0)
						Boring Completed								

SUMMARY OF SOIL TEST DATA

NOTE: NP shown in Liquid Limit and Plasticity Index columns indicates that the material is non-plastic

Northeast Expressway

Station	Offset	Sample Depth From	Sample Depth To	Stratum Depth From	Stratum Depth To	% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC	SHTL Class
386+00	CL	0.0	1.5	0.0	7.0	Topsoil, clay and cinders,								Visual (FILL)
		2.5	4.0	0.0	7.0	Topsoil, clay and cinders,								Visual (FILL)
		5.0	6.5	0.0	7.0	Topsoil, clay and cinders,								Visual (FILL)
		7.5	9.0	7.0	9.0	14	47	32	-7-				20	A-1-b(0)
		9.0	10.0	9.0	10.0	0	0	17	72	11		NP	21	A-4b(8)
						Boring Completed								
390+00	CL	0.0	1.5	0.0	4.0	7	9	14	38	32	30	11	14	A-6a(7) (FILL)
		5.0	6.5	4.0	7.5	47	18	12	15	8		NP	12	A-1-b(0)
		7.5	9.0	7.5	10.0	10	3	22	53	12		NP	24	A-4b(8)
						Boring Completed								
391+50	CL	0.0	1.5	0.0	2.0	1	5	16	30	48	38	19	16	A-6b(12) (FILL)
		2.5	4.0	2.0	5.0	1	9	16	30	44	36	15	16	A-6a(10)
		5.0	6.5	5.0	9.0	17	9	14	28	32	26	10	14	A-4a(5)
		9.0	10.0	9.0	10.0	14	11	16	29	30	23	9	11	A-4a(5)
						Boring Completed								

SUMMARY OF SOIL TEST DATA

NOTE: NP shown in Liquid Limit and Plasticity Index columns indicates that the material is non-plastic

Ramp "DB"

Station	Offset	Sample Depth From	Sample Depth To	Stratum Depth From	Stratum Depth To	% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC	SHTL Class
377+00	CL	0.0	1.5	0.0	5.0	23	8	11	33	25	28	11	10	A-6a(5) (Fill)
		5.0	6.5	5.0	7.5	8	5	7	36	44	32	12	18	A-6a(9) (Fill)
		7.5	9.0	7.5	10.0	Brown clay, gravel and cinders								Visual (Fill)
		10.0	11.5	10.0	12.5	3	7	13	32	45	38	18	24	A-6b (11) (Fill)
		12.5	14.0	12.5	20.0	10	12	17	32	29	25	8	21	A-4a (5) (Fill)
		15.0	16.5	12.5	20.0	8	14	15	37	26	27	8	16	A-4a (5) (Fill)
		17.5	19.0	12.5	20.0	11	8	20	37	24	25	6	22	A-4a (5) (Fill)
		20.0	21.5	20.0	21.5	8	27	48	-17-				16	A-3a (0)
						Boring Completed								
380+00	CL	0.0	0.5	0.0	0.5	Concrete								
		0.5	2.5	0.5	3.5	Cinders, brick and clay, moist								Visual (Fill)
		2.5	3.5	0.5	3.5	Cinders, brick and clay, moist								Visual (Fill)
		3.5	4.0	3.5	4.5	0	2	6	56	36	28	9	24	A-4b (8)
		4.5	6.0	4.5	7.0	0	2	4	61	33	28	9	28	A-4b (8)
		7.0	8.5	7.0	9.0	0	2	5	58	35	32	12	26	A-6a (9)
		9.5	11.0	9.0	12.0	3	6	21	40	30	22	6	16	A-4a (7)
		12.0	13.5	12.0	14.5	12	10	19	24	35	38	17	18	A-6b (8)
		14.5	16.0	14.5	17.0	14	5	10	29	42	30	11	18	A-6a (8)
		17.0	18.5	17.0	19.5	6	8	13	38	35	24	9	14	A-4a (8)
		19.5	21.0	19.5	21.0	8	5	11	57	19	21	6	17	A-4b (8)
						Boring Completed								
383+00	CL	0.0	1.5	0.0	2.0	5	8	18	33	36	32	14	14	A-6a (8) (Fill)
		2.5	4.0	2.0	5.0	3	8	26	32	31	31	14	20	A-6a (7)
		5.0	6.5	5.0	7.5	1	6	26	25	42	33	17	16	A-6b (8)
		7.5	9.0	7.5	10.0	0	15	39	14	32	31	15	22	A-6b (4)
		10.0	11.5	10.0	11.5	3	6	20	28	43	29	13	16	A-6a (8)
						Boring Completed								

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THE H. C. NUTTING COMPANY
SOIL ENGINEERS
CINCINNATI, OHIO 45226

SUMMARY OF SOIL TEST DATA

NOTE: NP shown in Liquid Limit and Plasticity Index columns indicates that the material is non-plastic

Station	Offset	Sample Depth From	Sample Depth To	Stratum Depth From	Stratum Depth To	% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC	SHTL Class
Ramp "DC"														
377+00	CL	0.0	1.5	0.0	5.0	Sand, gravel and cinders, dry-loose								Visual (Fill)
		2.5	4.0	0.0	5.0	Sand, gravel and cinders, dry-loose								Visual (Fill)
		5.0	6.5	5.0	7.5	5	7	7	43	38	33	13	17	A-6a (9)(Fill)
		7.5	9.0	7.5	10.0	2	4	7	47	40	29	9	18	A-4a (8)(Fill)
		10.0	11.5	10.0	12.5	12	12	16	36	24	21	5	11	A-4a (5)
						Refusal @ 12.5'				Boring Completed				
380+00	CL	0.0	1.5	0.0	1.5	Topsoil								Visual (Fill)
		2.5	4.0	1.5	5.0	0	6	10	50	34	27	8	18	A-4b (8)
		5.0	6.5	5.0	10.0	1	6	12	34	47	42	21	18	A-7-6(13)
		10.0	11.5	10.0	24.0	19	11	14	33	23	20	4	12	A-4a (4)
		15.0	16.5	10.0	24.0	10	9	16	32	33	24	8	13	A-4a (6)
		20.0	21.5	10.0	24.0	16	11	15	29	29	22	7	12	A-4a (5)
		22.5	24.0	10.0	24.0	22	11	13	29	25	23	8	11	A-4a (4)
		25.0	26.5	24.0	27.5	15	9	14	35	27	20	6	10	A-4a (5)
						Refusal @ 27.5'				Boring Completed				
384+00	CL	0.0	1.5	0.0	2.0	13	11	14	35	27	22	6	18	A-4a (5)(Fill)
		2.5	4.0	2.0	5.0	9	11	14	32	34	25	10	12	A-4a (6)
		5.0	6.5	5.0	10.0	18	24	34	-24-				14	A-3a (0)
		7.5	9.0	5.0	10.0	12	34	24	-30-				7	A-3a (0)
		10.0	11.5	10.0	11.5	12	16	13	41	18	19	3	15	A-4a (5)
						Boring Completed								

SUMMARY OF SOIL TEST DATA

NOTE: NP shown in Liquid Limit and Plasticity Index columns indicates that the material is non-plastic

Station	Offset	Sample Depth From	Sample Depth To	Stratum Depth From	Stratum Depth To	% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC	SHTL Class
Ramp "DE"														
375+00	CL	0.0	1.5	0.0	5.0	Cinders, gravel and sand, loose-dry								Visual (Fill)
		2.5	4.0	0.0	5.0	Cinders, gravel and sand, loose-dry								Visual (Fill)
		5.0	6.5	5.0	7.5	1	8	15	42	34	26	10	16	A-4a (8)
		10.0	11.5	7.5	12.5	4	9	15	37	35	28	11	15	A-6a (8)
		15.0	16.5	12.5	18.0	14	10	14	38	24	20	6	11	A-4a (5)
		16.5	18.0	12.5	18.0	18	9	13	37	23	19	5	13	A-4a (5)
						Boring Completed								
379+00	CL	0.0	1.0	0.0	1.0	Topsoil								Visual (Fill)
		1.0	1.5	1.0	2.5	1	5	10	49	35	28	10	12	A-4a (8)
		2.5	4.0	2.5	5.0	6	7	17	33	37	29	12	14	A-6a (8)
		5.0	6.5	5.0	10.0	6	5	12	43	34	28	10	14	A-4a (8)
		10.0	11.5	10.0	15.0	1	7	23	23	46	31	16	14	A-6b (9)
		15.0	16.0	15.0	20.0	14	8	13	31	34	23	8	12	A-4a (6)
						Boring Completed								
383+00	CL	0.0	1.5	0.0	5.0	Clay, cinders and coal,								Visual (Fill)
		2.5	4.0	0.0	5.0	Clay, cinders and coal,								Visual (Fill)
		5.0	6.5	5.0	7.5	49	20	16	9	6		NP	14	A-1b (0)
		7.5	9.0	7.5	9.0	24	13	35	19	9		NP	18	A-2-4(0)
		9.0	10.0	9.0	10.0	1	2	83	-14-				20	A-3a (0)
						Boring Completed								

SUMMARY OF SOIL TEST DATA

NOTE: NP shown in Liquid Limit and Plasticity Index columns indicates that the material is non-plastic

Station	Offset	Sample Depth From	Sample Depth To	Stratum Depth From	Stratum Depth To	% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC	SHTL Class
Ramp "ME"														
304+95	90'Rt.	0.0	1.5	0.0	2.5	Brown weathered shale and limestone								Visual
		1.5	2.5	0.0	2.5	Brown weathered shale and limestone								Visual
						Refusal @ 2.5'								
309+00	CL	0.0	1.5	0.0	1.5	Topsoil								Visual
		2.5	4.0	1.5	5.0	0	4	11	33	52	46	24	19	A-7-6(15)
		5.0	6.5	5.0	10.0	9	9	13	40	29	31	16	16	A-6b (9)
						Boring Completed								
314+00	CL	0.0	1.5	0.0	1.5	0	4	9	52	35	35	15	18	A-6a (10)
		2.5	4.0	1.5	8.5	13	5	12	32	38	36	20	20	A-6b (11)
		5.0	6.5	1.5	8.5	2	6	11	40	41	36	19	18	A-6b (11)
		8.5	10.0	8.5	10.0	12	10	13	35	30	27	13	12	A-6a (7)
						Boring Completed								
316+75	CL	0.0	1.5	0.0	1.5	Topsoil								Visual
		2.5	4.0	1.5	10.0	3	9	15	38	35	31	16	16	A-6b (10)
		5.0	6.5	1.5	10.0	7	7	12	34	40	34	18	12	A-6b (11)
						Boring Completed								

SUMMARY OF SOIL TEST DATA

NOTE: NP shown in Liquid Limit and Plasticity Index columns indicates that the material is non-plastic

Station	Offset	Sample Depth From	Sample Depth To	Stratum Depth From	Stratum Depth To	% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC	SHTL Class
Ramp "MF"														
338+00	CL	0.0	1.5	0.0	15.0	Rubble, cinders, wood glass, gravel, brick, some clay								Visual (Fill)
		2.5	4.0	0.0	15.0	DO			DO			DO		Visual (Fill)
		5.0	6.5	0.0	15.0	DO			DO			DO		Visual (Fill)
		7.5	9.0	0.0	15.0	DO			DO			DO		Visual (Fill)
		10.0	11.5	0.0	15.0	DO			DO			DO		Visual (Fill)
		12.5	14.0	0.0	15.0	DO			DO			DO		Visual (Fill)
		15.0	16.0	15.0	16.0	9	17	14	36	24	32	8	23	A-4a (5)(Fill)
		16.0	16.5	16.0	17.5	1	5	6	43	45	43	21	33	A-7-6(13)(Fill)
		17.5	19.0	17.5	22.5	0	4	7	48	41	35	15	25	A-6a (9)(Fill)
		20.0	21.5	17.5	22.5	4	5	8	48	35	33	12	25	A-6a (9)(Fill)
		22.5	24.0	22.5	25.0	0	5	8	43	44	40	18	31	A-6b (11)(Fill)
		25.0	26.5	25.0	27.0	14	15	17	21	33	41	19	26	A-7-6(7)
		27.0	28.5	27.0	28.5	13	3	8	44	32	30	10	19	A-4a (8)
						Refusal @ 28.5'				Boring Completed				
341+50	CL	0.0	1.5	0.0	2.0	4	7	16	39	34	26	8	12	A-4a (8)(Fill)
		2.5	4.0	2.0	5.0	1	3	16	36	44	40	18	19	A-6b (11)
		5.0	6.5	5.0	10.0	6	10	11	48	25	29	10	37	A-4a (8)
		10.0	11.5	10.0	15.0	28	9	14	31	18	27	13	12	A-6a (4)
		15.0	16.5	15.0	17.5	7	7	16	36	34	28	12	18	A-6a (8)
		17.5	19.0	17.5	20.0	12	9	18	33	28	22	8	15	A-4a (5)
						Refusal @ 20.0'				Boring Completed				
343+50	CL					(Insufficient sample)								
		0.0	1.5	0.0	2.5	Brown & gray sandy clay & rock frags.								Visual (Fill)
		2.5	4.0	2.5	5.0	1	6	10	51	32	29	9	23	A-4b (8)
		5.0	6.5	5.0	7.5	1	6	15	38	40	37	19	19	A-6b (11)
		7.5	9.0	7.5	10.0	2	12	20	32	34	41	20	17	A-7-6(10)
		10.0	11.5	10.0	15.0	2	9	19	36	34	35	17	18	A-6b (10)
		15.0	16.5	15.0	16.5	2	7	15	44	32	31	15	15	A-6a (10)
		16.5	18.0	16.5	18.0	12	8	16	37	27	23	8	14	A-4a (6)
						Boring Completed								

SUMMARY OF SOIL TEST DATA

NOTE: NP shown in Liquid Limit and Plasticity Index columns indicates that the material is non-plastic

Station	Offset	Sample Depth From	Sample Depth To	Stratum Depth From	Stratum Depth To	% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC	SHTL Class
Duck Creek Road Reloc.														
4+00	CL	0.0	0.5	0.0	0.5	Blacktop								Visual
		2.5	4.0	0.5	5.0	10	9	15	30	36	28	12	23	A-6a (7)(Fill)
		5.0	6.5	5.0	7.5	0	4	18	42	36	32	12	20	A-6a (9)(Fill)
		7.5	9.0	7.5	10.0	28	14	15	19	24	28	12	16	A-6a (2)(Fill)
		10.0	10.5	10.0	12.5	15	11	16	28	30	25	10	17	A-4a (5)
		12.5	14.0	12.5	14.0	26	8	14	29	23	20	6	13	A-4a (3)
						Boring Completed								
8+00	CL	0.0	1.5	0.0	2.0	Brown clay, some cinders, dry-stiff								Visual (Fill)
		2.5	4.0	2.0	10.0	6	3	11	56	24	20	2	16	A-4b (8)
		5.0	6.5	2.0	10.0	0	2	4	55	39	24	7	21	A-4b (8)
		10.0	11.5	10.0	11.5	4	5	13	48	30	21	6	14	A-4a (8)
						Boring Completed								
11+50	CL	0.0	1.5	0.0	2.5	10	12	23	37	18	24	5	23	A-4a (4)(Fill)
		2.5	4.0	2.5	4.0	54	17	14	9	6	21	5	10	A-1-a (0)(Fill)
		5.0	6.5	4.0	11.5	10	41	35	-14-				8	A-1-b (0)
		10.0	11.5	4.0	11.5	12	62	19	-7-				8	A-1-b (0)
						Boring Completed								
13+35	CL	0.0	1.5	0.0	2.5	Brown clay & cinders, moist								Visual (Fill)
		2.5	4.0	2.5	5.0	9	13	16	37	25	24	9	11	A-4a (5)
		5.0	6.5	5.0	10.0	10	12	15	38	25	25	9	12	A-4a (6)
		10.0	11.5	10.0	12.0	9	10	14	40	27	24	16	9	A-4a (6)
		12.5	14.0	12.0	14.5	8	10	14	40	28	25	9	14	A-4a (7)
		15.0	16.5	14.5	17.0	9	11	13	41	26	24	8	20	A-4a (6)
		17.5	19.0	17.0	19.5	11	11	15	36	27	21	6	14	A-4a (6)
		20.0	21.5	19.5	22.0	14	5	7	32	42	29	12	27	A-6a (9)
		22.5	24.0	22.0	28.5	12	11	19	30	28	22	8	12	A-4a (5)
		25.0	26.5	22.0	28.5	11	12	19	31	27	23	9	13	A-4a (5)
		28.5	30.0	28.5	30.0	4	5	10	37	44	31	14	17	A-6a (10)
						Boring Completed								
15+00	CL	0.0	1.5	0.0	2.0	0	3	5	58	34	28	8	11	A-4b (8)(Fill)
		5.0	6.5	2.0	9.0	9	11	17	36	27	22	7	12	A-4a (5)
		10.0	11.5	9.0	11.5	0	1	25	28	46	28	12	30	A-6a (9)
						Boring Completed								
18+00	CL	0.0	1.5	0.0	2.0	12	8	14	34	32	23	7	20	A-4a (6)
		2.5	4.0	2.0	5.0	0	1	2	61	36	29	9	22	A-4b (8)
		5.0	6.5	5.0	12.0	1	5	14	30	50	35	15	21	A-6a (10)
		10.0	11.5	5.0	12.0	2	2	13	38	45	33	13	19	A-6a (9)
		12.5	14.0	12.0	15.0	2	10	31	25	32	31	13	19	A-6a (6)
		15.0	16.0	15.0	16.0	0	0	32	43	25	25	10	18	A-4a (7)
						Boring Completed								

SUMMARY OF SOIL TEST DATA

NOTE: NP shown in Liquid Limit and Plasticity Index columns indicates that the material is non-plastic

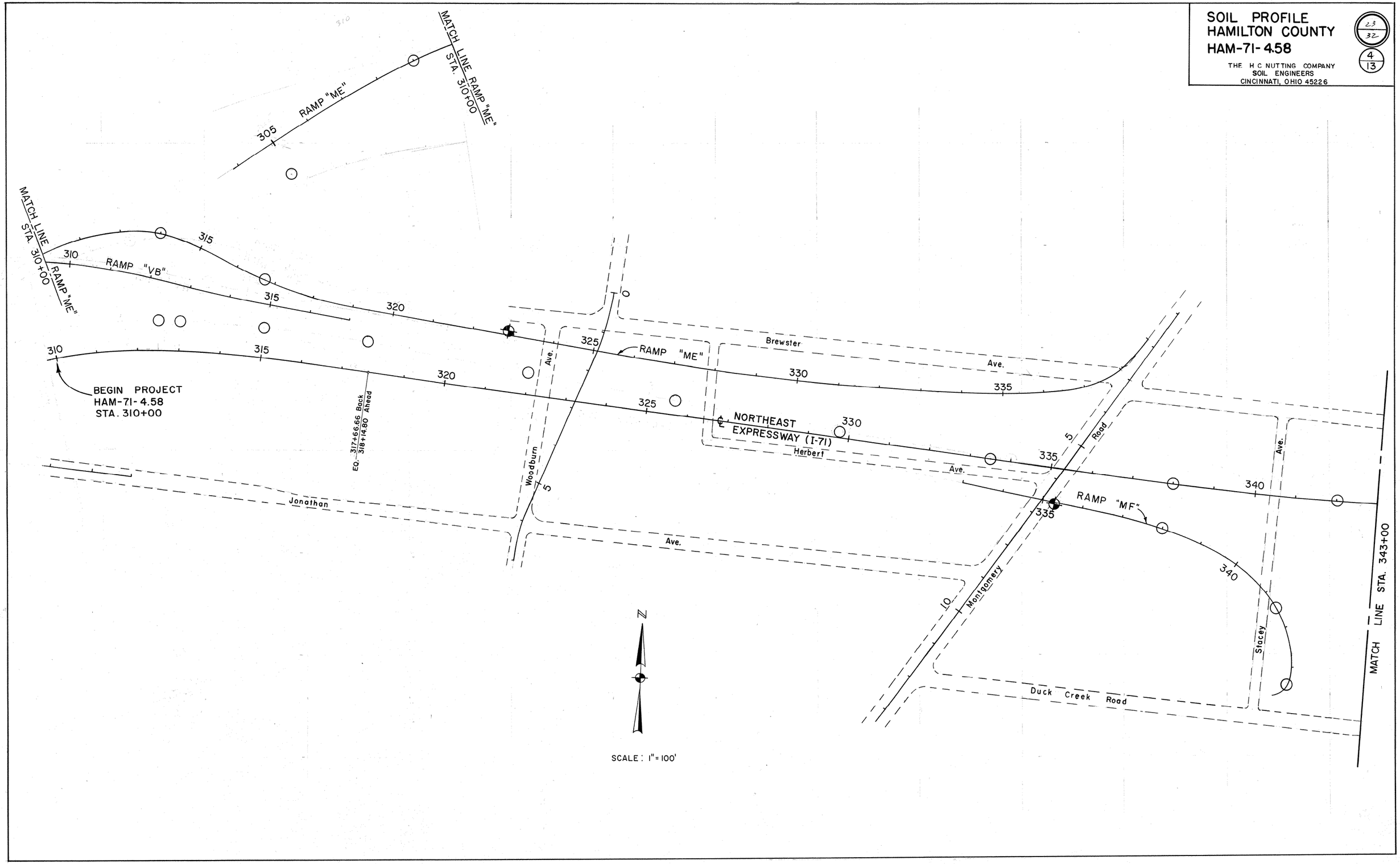
Station	Offset	Sample Depth From	Sample Depth To	Stratum Depth From	Stratum Depth To	% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC	SHTL Class
Dana Observatory Connection														
8+00	CL	0.0	2.5	0.0	2.0	7	7	11	43	32	32	12	12	A-6a(9)(Fill)
		2.5	4.0	2.0	5.0	0	6	12	43	39	30	12	22	A-6a(9)
		5.0	6.5	5.0	7.5	1	4	15	32	48	34	15	20	A-6a(10)
		10.0	11.5	7.5	11.5	9	12	18	34	27	23	6	12	A-4a(5)
						Boring Completed								
15+00	CL	2.5	4.0	0.0	4.5	2	5	11	40	42	28	12	14	A-6a(9)(Fill)
		5.0	6.5	4.5	10.0	16	9	15	34	26	24	8	11	A-4a(5)
						Refusal @ 10'				Boring Completed				
19+00	CL	0.0	0.5	0.0	0.5	Concrete								Visual
		0.5	2.0	0.5	2.0	0	4	2	56	38	33	13	23	A-6a(9)(Fill)
		2.5	4.0	2.0	5.0	0	1	1	53	45	43	20	22	A-7-6(12)
		5.0	6.5	5.0	10.5	1	4	15	44	36	25	8	15	A-4a(8)
		10.5	12.0	10.5	12.0	0	3	13	32	52	38	21	20	A-6b(12)
						Boring Completed								
23+00	CL	0.0	1.5	0.0	2.0	Black clay and brick								Visual (Fill)
		2.5	4.0	2.0	5.0	0	6	17	43	34	24	6	18	A-4a(8)
		5.0	6.5	5.0	9.0	0	2	6	39	53	43	20	24	A-7-6(12)
		7.5	9.0	5.0	9.0	0	2	6	4	51	45	22	24	A-7-6(14)
		9.0	10.5	9.0	10.5	3	8	7	40	42	41	16	18	A-7-6(11)
						Boring Completed								
27+00	CL	0.0	1.5	0.0	2.5	Rubble, some clay, gravels & brick								Visual (Fill)
		2.5	4.0	2.5	4.5	0	3	3	42	52	47	24	24	A-7-6(15)
		4.5	6.0	4.5	7.0	0	2	2	41	55	54	26	28	A-7-6(17)
		7.0	8.5	7.0	9.0	0	2	4	43	51	45	20	20	A-7-6(13)
		9.5	11.0	9.0	14.0	8	4	5	45	38	38	17	13	A-6b(11)
		14.5	16.0	14.0	16.0	0	1	3	42	54	43	19	15	A-7-6(12)
						Refusal @ 16'.				Boring Completed				
31+00	CL	0.0	0.5	0.0	0.5	Clay and gravel,								Visual (Fill)
		0.5	1.5	0.5	1.5	0	2	3	63	32	29	8	13	A-4b(8)
		1.5	3.0	1.5	7.0	0	1	2	57	40	35	13	13	A-6a(9)
		7.0	8.5	7.0	9.5	1	2	8	37	52	53	29	21	A-7-6(18)
		9.5	11.0	9.5	11.0	23	9	11	29	28	31	14	14	A-6a(6)
						Boring Completed								
34+00	CL	0.0	1.5	0.0	2.5	Topsoil								Visual (Fill)
		2.5	4.0	2.5	5.0	0	4	10	52	34	32	11	22	A-6a(8)(Fill)
		5.0	6.5	5.0	11.5	2	6	11	60	21		NP	23	A-4b(8)
		10.0	11.5	5.0	11.5	0	0	23	63	14		NP	23	A-4b(8)
						Boring Completed								
38+00	CL	0.0	0.5	0.0	0.5	Topsoil								Visual
		0.5	1.5	0.5	5.0	0	5	12	27	56	45	22	13	A-7-6(14)
		2.0	3.5	0.5	5.0	0	6	14	28	52	51	26	18	A-7-6(16)
		5.0	7.5	5.0	7.5	14	16	22	28	20	23	8	11	A-4a(3)
		9.0	10.0	7.5	10.0	12	12	17	36	23	22	8	13	A-4a(5)
						Boring Completed								

SOIL PROFILE
HAMILTON COUNTY
HAM-71-4.58

THE H C NUTTING COMPANY
SOIL ENGINEERS
CINCINNATI, OHIO 45226

23/32

4/13

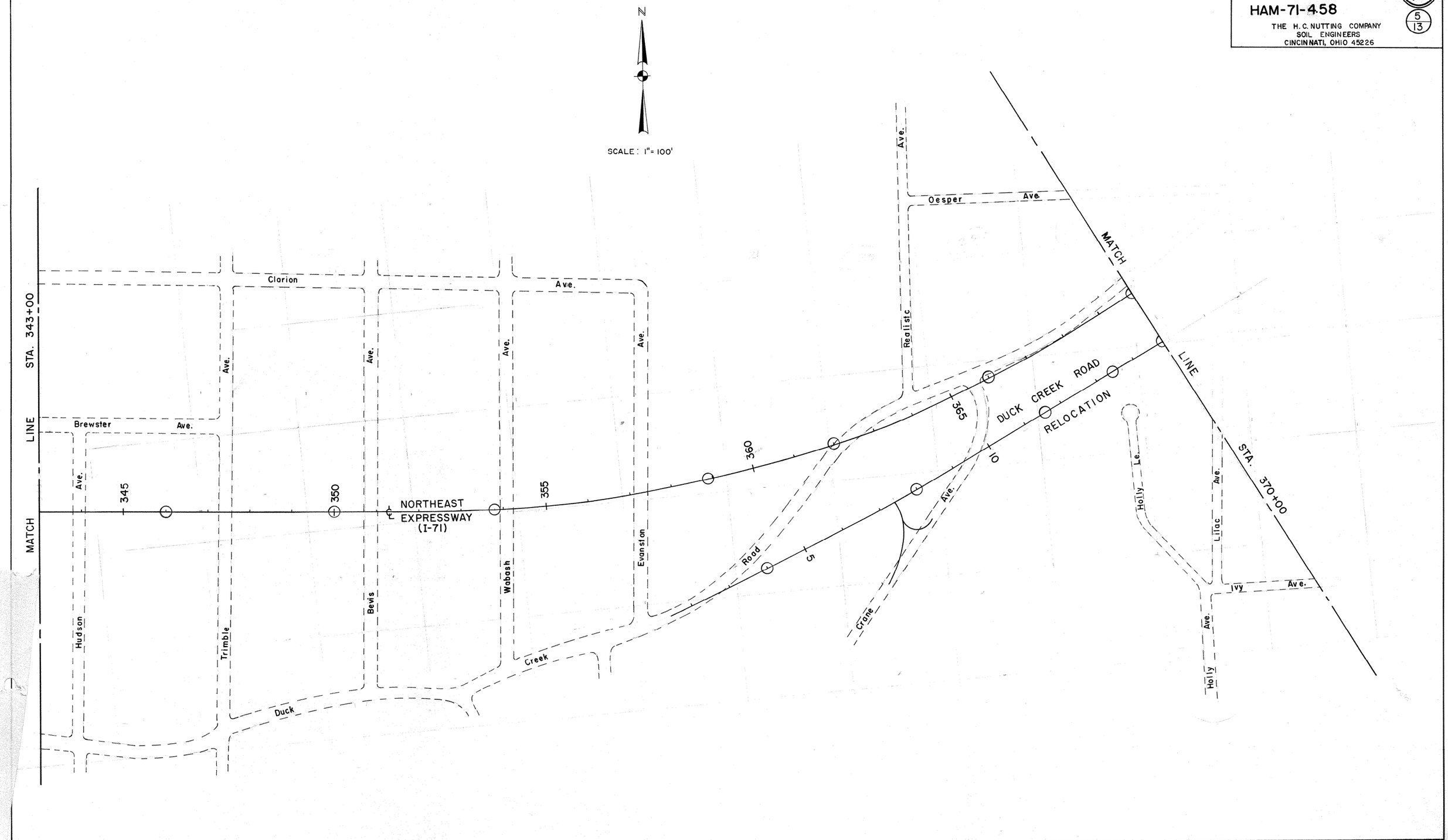


SOIL PROFILE
HAMILTON COUNTY
HAM-71-4.58

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
CINCINNATI, OHIO 45226

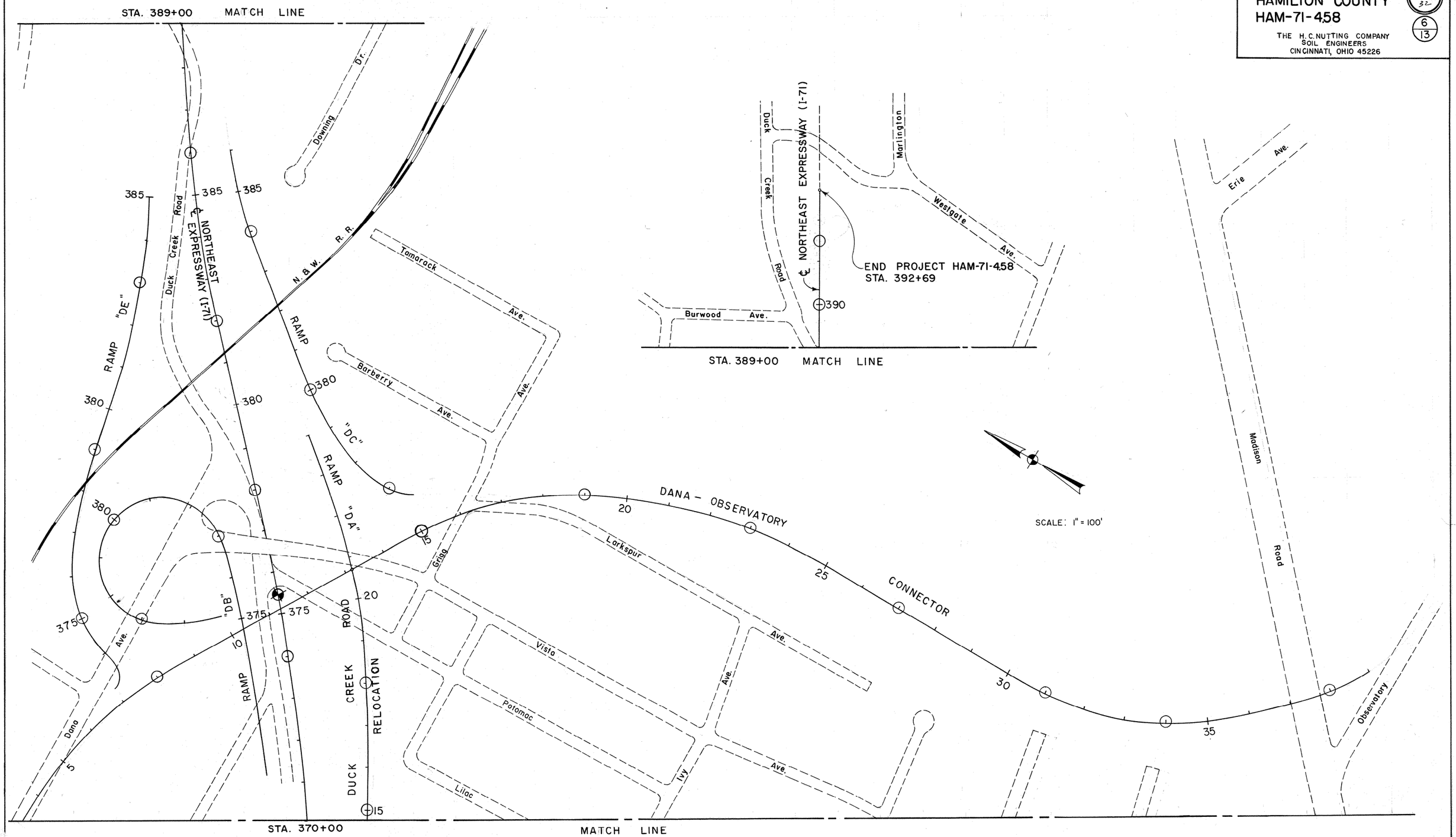
24/32

5/13



SOIL PROFILE
HAMILTON COUNTY
HAM-71-4.58

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
CINCINNATI, OHIO 45226



SOIL PROFILE
HAMILTON COUNTY
HAM-71-4.58

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
CINCINNATI, OHIO 45226

26
32
7
13

Existing Ground Line

Proposed Grade Line

75' Lt.
TS=0.5'
16 18 13 13 11

75 Lt.
Clay & topsoil
20 19 16 12 12

72' Lt.
TS=2.0'
16 12 12 12 16 16

52' Lt.
Woodburn Ave.
16 22 12 13
Refusal

35' Lt.
0.5' Topsoil, bricks & cinders.
Herbert Ave.
18 14 22 17 45 11 10 14 16 18 18 24 20 27
W
Refusal

15' Lt.
17 25 21 27 20 11 11 11 13 16 30 32 24 18
W

℄
0.5' Blacktop & gravel.
Gravel
19 17 12 12 10 10 10 12 13 18 28 19 18 26 22

Montgomery Rd.

℄
18
Clay, brick, some cinders.
23
Cinders & clay.
33
21 27 28 28

Stacey Ave.

℄
10 18 24 14 15 31 16
Refusal

72' Lt.
13 14 15
Refusal

EQUATION
317+66.66 BACK =
318+14.80 AHEAD

PROFILE
NORTHEAST EXPRESSWAY
(I-71)

770 760 750 740 730 720 710 700 690 680 670 660 650 640 630 620 610 600

311 312 313 314 315 316 317 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342

SOIL PROFILE
HAMILTON COUNTY
HAM-71-4.58

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
CINCINNATI, OHIO 45226

27
32
8
13

770
760
750
740
730
720
710
700
690
680
670
660
650
640
630
620

Hudson Ave.
℄
18
16
25
11
15
Refusal
Trimble Ave.
Bevis Ave.
℄
20
26
12
22
12
Refusal
Wabash Ave.
℄
21
17
13
11
W
13
12
Evanston Ave.
℄
19
19
18
12
Duck Creek Road
℄
22
14
18
Crane Ave.
℄
Topsoil, clay & rock fragments.
14
21
11
℄
Clay, gravel, rock & glass.
6
W
18
19

342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373

PROFILE
NORTHEAST EXPRESSWAY
(I-71)

SOIL PROFILE
HAMILTON COUNTY
HAM-71-4.58

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
CINCINNATI, OHIO 45226

28/32
9/13

Proposed
Dana – Observatory Conn.

Existing Vista Ave. Viaduct

Potomac Ave.

℄ TS+2.0'
8
11
16

Clay, blacktop, cinders.
20
29
W
28
18
20

14
17
15
W
26
26
FIS 23

Topsoil, clay & cinders.
W
20
21

Duck Creek Road

16
16
14

14
12
W
24

680 670 660 650 640 630 620 610 600

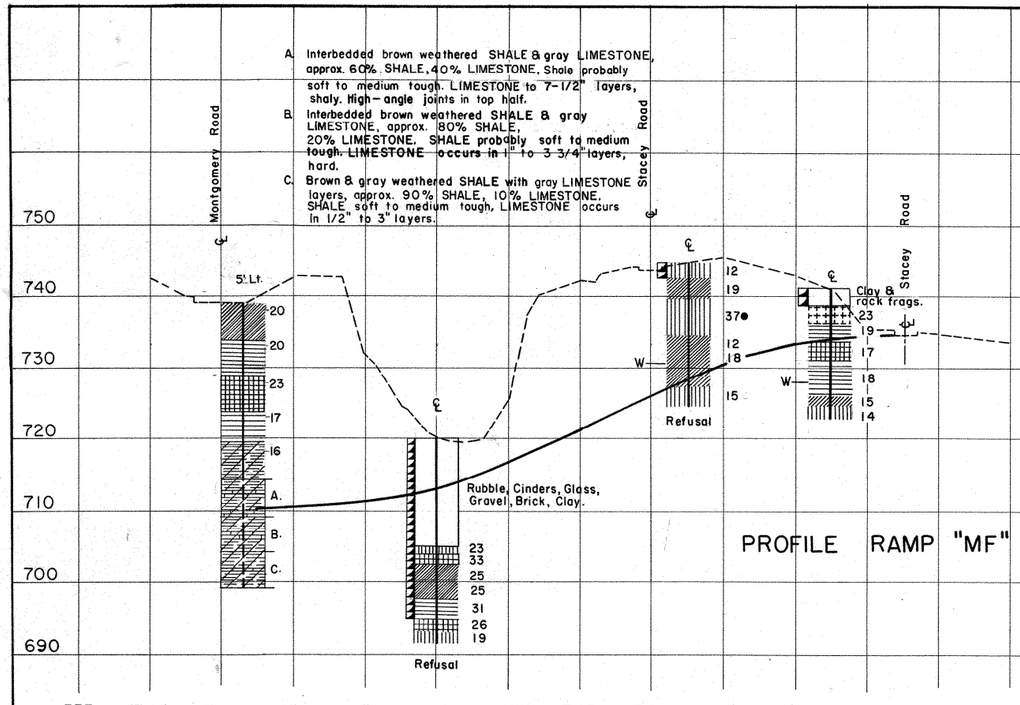
373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393

PROFILE
NORTHEAST EXPRESSWAY
(I-71)

SOIL PROFILE
HAMILTON COUNTY
HAM - 71 - 4.58
THE H.C. NUTTING COMPANY
SOIL ENGINEERS
CINCINNATI, OHIO 45226

29/32
10/13

A. Interbedded brown weathered SHALE & gray LIMESTONE, approx. 60% SHALE, 40% LIMESTONE, Shale probably soft to medium tough. LIMESTONE to 7-1/2" layers, shaly. High-angle joints in top half.
B. Interbedded brown weathered SHALE & gray LIMESTONE, approx. 80% SHALE, 20% LIMESTONE. SHALE probably soft to medium tough. LIMESTONE occurs in 1" to 3 3/4" layers, hard.
C. Brown & gray weathered SHALE with gray LIMESTONE layers, approx. 90% SHALE, 10% LIMESTONE. SHALE soft to medium tough, LIMESTONE occurs in 1/2" to 3" layers.



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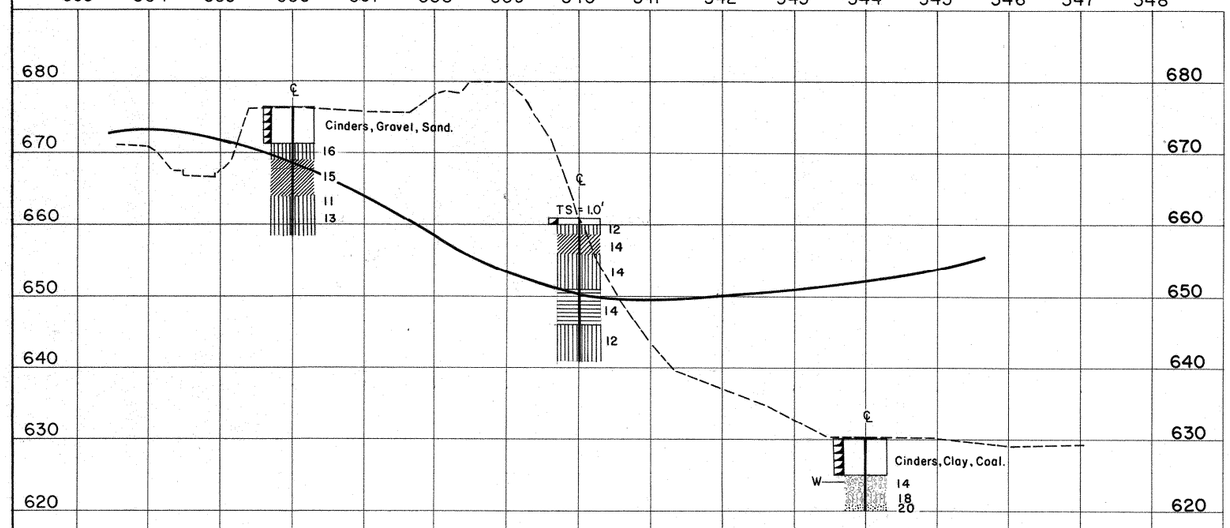

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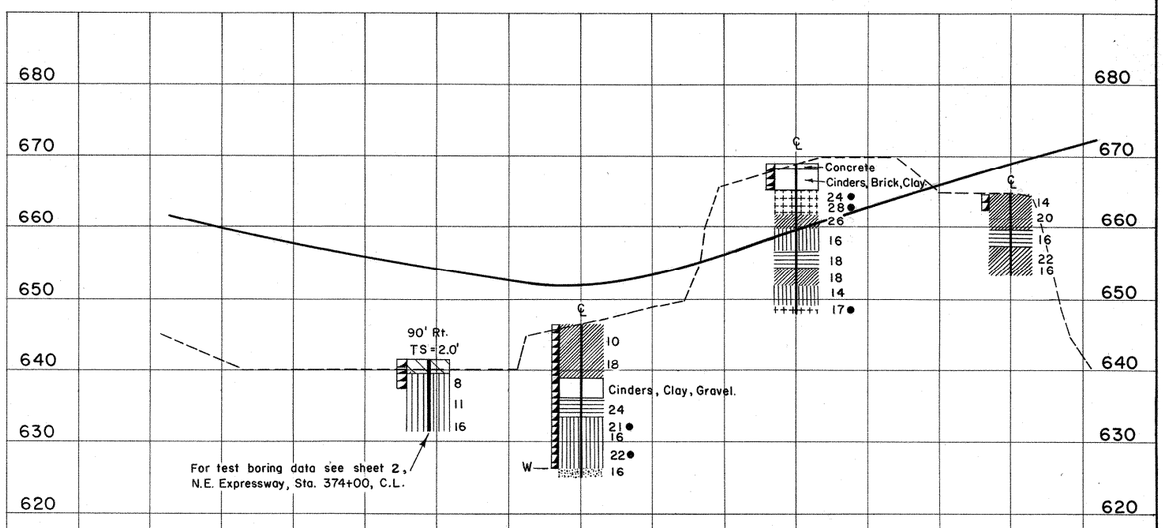
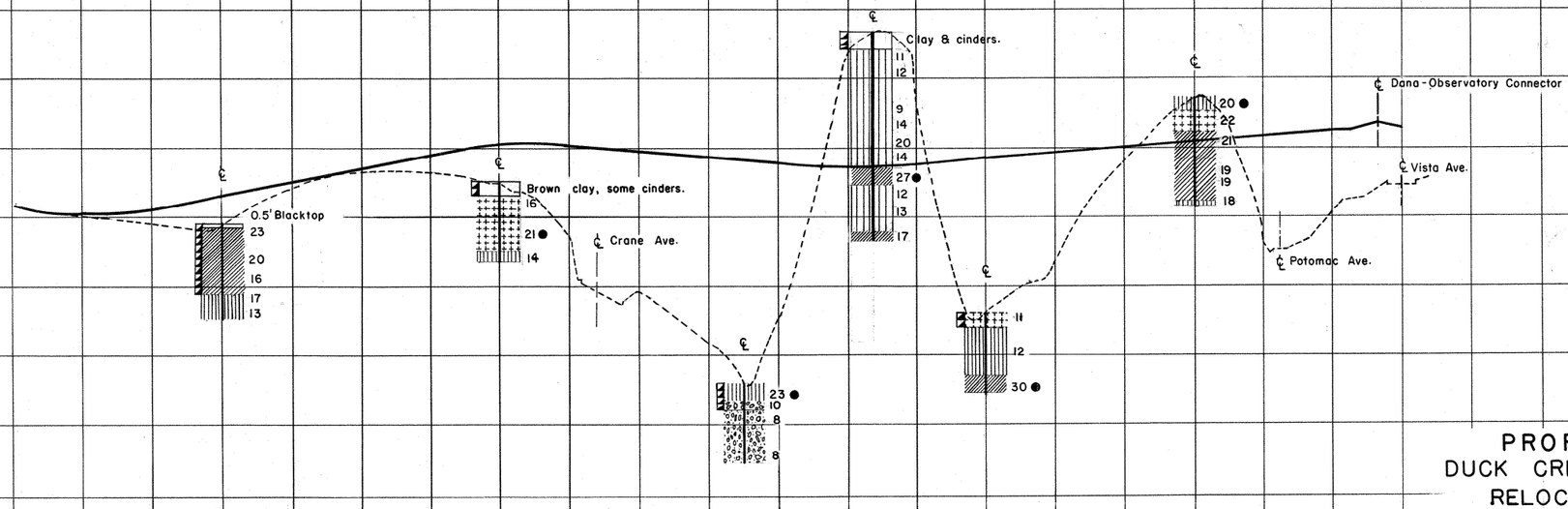


PROFILE RAMP "DB"

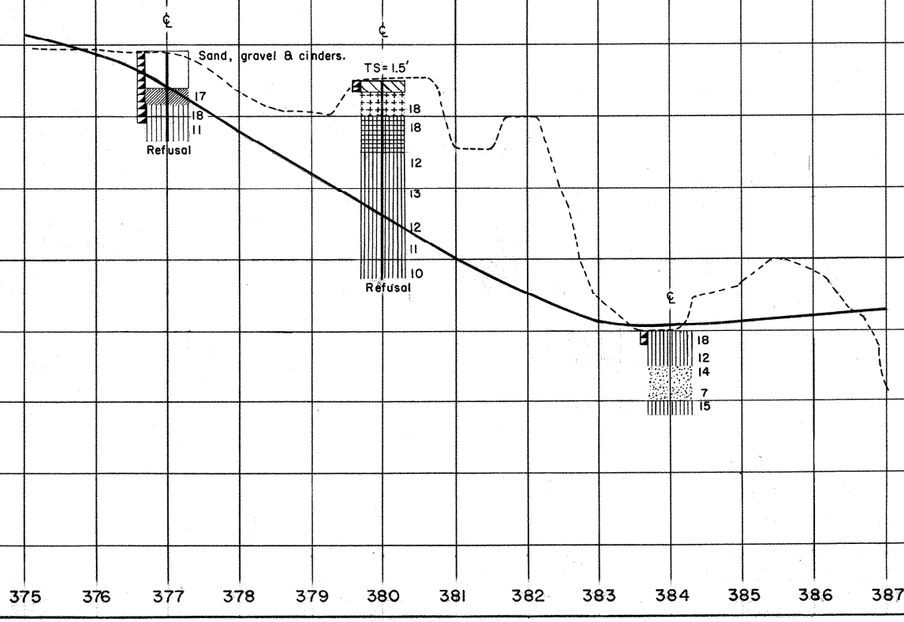
SOIL PROFILE
HAMILTON COUNTY
HAM-71-4.58

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
CINCINNATI, OHIO 45226

30/32
11/13



PROFILE
DUCK CREEK RD.
RELOCATION



PROFILE RAMP "D C"

SOIL PROFILE
HAMILTON COUNTY
HAM-71-4.58

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
CINCINNATI, OHIO 45226

31
32
12
13

740
730
720
710
700
690

302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328

90' Rt.
Refusal

℄
TS=1.5
19
16

Ramp "VB"

℄
18
20
18
12

℄
TS=1.5'
16
12

75' Rt.
TS=2.0'
16
12
12
12
16
16

For test boring data see sheet 2, N.E. Expressway Sta. 317+50, 72' Lt.

8' Lt.
25
22
23
11
14
14
14
12

Woodburn Ave. Bridge

90' Rt.
0.5' Topsoil, bricks & cinders
18
18
14
22
17
45●
11
10
14
16
18
18
W
24●
20
27
Refusal

For test boring data see sheet 2, N.E. Expressway Sta. 325+66, 35' Lt.

740
730
720
710
700
690

328 329 330 331 332 333 334 335 336 337 338 339

115' Rt.
17
25
W
21
27
20
11
11
11
13
16
30●
32
24
18

For test boring data see sheet 2, N.E. Expressway Sta. 329+78, 15' Lt.

160' Rt.
0.5 Blacktop & gravel.
Gravel.
19
17
12
12
10
10
10
12
13
18
28
19●
18
26
22

For test boring data see sheet 2, N.E. Expressway Sta. 333+50, C.L.

PROFILE RAMP "ME"

SOIL PROFILE
HAMILTON COUNTY
HAM-71-4.58

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
CINCINNATI, OHIO 45226

32
32
13
13

PROFILE DANA-OBSERVATORY CONNECTOR

PROFILE DANA-OBSERVATORY CONNECTOR

Concrete
23
22
15
20

14
11
Refusal

℄ Grigg Ave.
℄ Vista Ave.
℄ Ramp DB
℄ Northeast Expressway
℄ Potomac Ave.
℄ Duck Creek Rd.
30' Lt.

12
22
20
12

Clay, Cinders.
20
30
23
F.S. 25
25
18
17
A.

A. Layered brown weathered SHALE & gray LIMESTONE, approx. 70% shale, 30% limestone in recovery. Shale somewhat fossiliferous, calcareous, soft to medium tough. Limestone occurs in 3/4" to 4-3/4" layers, crystalline, fossiliferous, hard. Fracturing exhibited at top of recovery, 14" & 24" from top, and at bottom.

Rubble, Clay, Gravel, Brick.
24
28
20
13
15
Refusal

Clay, Gravel.
13
13
21
14

℄ Madison Road

TS = 0.5'
13
18
11
13

Clay, Brick.
18
24
24
18

TS = 2.5'
W
22
23
23

GENERAL INFORMATION

INTRODUCTION

The project consists of the construction of 1.3 miles of IR 71 and associated intersected roads and ramps, beginning near the junction of West Gale Ave. and Duck Creek Road, between USR 22 - SR 3 and SR 561, in Norwood, extending northeastward, and terminating about 400 feet east of the junction of Duck Creek and Harris Rds.

Maximum proposed cuts and fills are shown in the Project Index, on this sheet.

GEOLOGY OF THE PROJECT

The alignment traverses a portion of the dissected outwash plain over the deeply filled Deep Stage Cincinnati River Valley, where outwash and some interbedded till overlie bedrock, of Ordovician age.

EXPLORATION

Borings were made by means of truck-mounted mechanical soil auger and rotary type drill rig during April, May, and June, 1965. Included in this report are logs of borings made for structure foundation investigations along the project.

INVESTIGATIONAL FINDINGS

Materials occurring immediately below proposed grade consist predominantly of silts (A-4a and A-4b) and silt clays (A-6a and A-6b), with some clays (A-7-6), having medium-high moisture contents and moisture contents in the lower portions of the plastic range.

Frost susceptible silts were encountered within three feet below proposed grade at IR 71 stations 310+20, 317+00, and 355+00.

Random fills, generally comprised of cinders, ashes, and slag with or without soil, were encountered at IR 71 stations 302+40, 307+00, 338+00, and 350+85; Edmondson Ave. station 22+00; and Robertson Ave. station 11+91.

Wet materials were encountered at IR 71 stations 290+00 to 302+40, 310+20, 328+00, and 330+00; Ramp A stations 308+00 and 310+75; Williams Ave. station 11+42; and Ramp C stations 327+00 and 331+00. Organic matter was encountered at IR 71 stations 292+35, 330+00, and 338+00; Ramp A station 310+75; and Ramp D station 328+00.

LEGEND FOR PROJECT AVERAGE RESULTS OF TESTS — 278 SAMPLES TESTED

DESCRIPTION	A.A.S.H.O. CLASS	OHIO CLASS	% AGG.	% SAND	% SAND	% SILT	% CLAY	LIQUID LIMIT	PLASTICITY INDEX	WATER CONTENT	SAMPLES TESTED
Gravel	A-1-a(0)	A-1-a	52	9	10	6	4	NP	NP	17	1
Gravel and or stone fragments with sand	A-1-b(0)	A-1-b	48	25	21	0	7	NP	NP	12	2
Coarse and fine sand	--------	A-3a	11	20	65	14	0	NP	NP	13	7
Gravel with sand and silt	A-2-4(0)	A-2-4	36	22	14	20	7	NP	NP	15	2
Sandy silt	A-4(5)	A-4a	13	7	21	36	23	22	6	14	33
Silt	A-4(8)	A-4b	1	1	11	66	21	26	2	19	62
Silt and clay	A-6(9)	A-6a	3	6	12	40	39	29	13	17	65
Silty clay	A-6(11)	A-6b	5	4	12	29	50	34	10	20	35
Clay	A-7-6(18)	A-7-6	2	3	11	37	47	43	24	22	21
Random fill			VISUAL CLASSIFICATION								
Bouldery zone			VISUAL CLASSIFICATION								
Various other materials			VISUAL CLASSIFICATION								

Sod and/or Topsoil=X'=Approximate depth

Berm material

Auger boring-plan view

Drive sample boring-plan view

Auger boring plotted to vertical scale only

Drive sample boring plotted to vertical scale only

Water content nearly equal to or greater than liquid limit

Indicates a non-plastic material with a high water content

W——— Free water

N/P — Number of blows for "Standard Penetration" test
N=number of blows for first 6 inches
N=number of blows for second 6 inches

NOTE: Figures beside borings indicate water content in percent e.g. 15

SOIL PROFILE

1/34

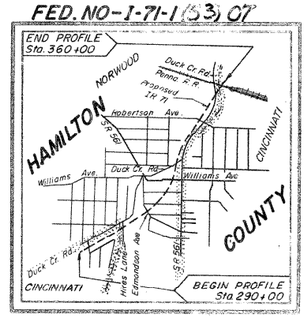
HAMILTON COUNTY
HAM-IR 71-6.14

1/15

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

NOTE: INFORMATION SHOWN BY THIS SUBGRADE PROFILE WAS OBTAINED SOLELY FOR USE IN ESTABLISHING DESIGN CONTROLS FOR THE PROJECT. THE STATE OF OHIO DOES NOT GUARANTEE THE ACCURACY OF THIS DATA AND IT IS NOT TO BE CONSTRUED AS A PART OF THE PLANS GOVERNING CONSTRUCTION OF THE PROJECT.

FED. NO-I-71-1(53) 07



LOCATION MAP

Recon- J. S. M. 3/1/65
Drilling- Auger
B.D.L. 4/21/65 to 4/30/65 and 5/5/65
A.J.P. 6/3/65
Core
C.F.C. 6/8/65 to 6/9/65
Drafting- A.F., R.L.D., R.L.F. 12/14/65

PROJECT INDEX

STATIONS FROM - TO	PLAN VIEW SHEET	PROFILE SHEET	CUT (CU. YDS.)	FILL (CU. YDS.)
Proposed IR 71				
290+00 - 322+00	4	5	250	21,[illegible]
322+00 - 355+00	5	7	[illegible]	[illegible]
Proposed IR 71 (Northbound Lane)				
355+00 - 360	5	8	701	
Relocated Hires Lane				
1+00 - 4+00	4	8	5	1,[illegible]
Edmondson Avenue Interchange Relocated Edmondson Avenue				
0+00 - 28+00	4	9	61	[illegible]
Proposed Ramp A				
302+00 - 312+00	4	9	71	30
Proposed Ramp B				
303+00 - 312+00	4	9	81	17
Williams Avenue Interchange Relocated Williams Avenue				
5+00 - 21+00	4	10	11	17
Proposed Ramp C				
325+00 - 334+00	5	10	51	7
Proposed Ramp D				
320+00 - 330+00	103	10	-	201
Relocated Duck Creek Road				
15+00 - 20+00	7	13	7	61
Proposed Robertson Avenue				
0+00 - 10+00	7	13	7	16

SOIL PROFILE

HAMILTON COUNTY
HAM-IR 71- 6.14

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23. OHIO

2/34 — 2/15

SUMMARY OF SOIL TEST DATA

NOTE: NP shown in Liquid Limit and Plasticity Index columns indicates that the material is non-plastic.
*Denotes sample taken at or near grade.

STATION	OFFSET	DEPTH FROM - TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
Proposed IR 71											
290+75	97'Lt	0.4-6.0	14	5	9	38	34	31	16	13	A-6b
		6.0-10.0	0	0	11	77	12	NP	NP	20	A-4b
		10.0-16.0	0	0	7	80	13	NP	NP	22	A-4b
		16.0-22.0	0	1	9	72	12	NP	NP	20	A-4b
		22.0-25.0	17	7	15	35	26	22	9	12	A-4a
291+00	95'Rt	0.3-7.0	0	3	9	53	35	29	10	10	A-4b
		7.0-13.0	0	3	13	38	46	34	17	16	A-6b
		13.0-17.0	0	2	14	50	25	25	10	22	A-4b
		17.0-26.0	0	0	43	46	11	NP	NP	21	A-4a
		26.0-30.0	0	0	55	34	11	NP	NP	20	A-4a
291+90	75'Rt	0.4-3.0	0	4	10	36	50	44	21	22	A-7-6
		3.0-10.0	7	8	16	34	35	29	14	13	A-6a
		10.0-16.0	14	9	14	33	30	30	15	11	A-6a
		16.0-20.0	0	19	67	8	6	NP	NP	3	A-3a
292+35	15'Lt	0.0-5.0	0	4	16	44	36	28	13	17	A-6a
		5.0-8.0	0	4	15	36	45	35	13	22	A-6b
		8.0-14.0	0	2	12	72	14	NP	NP	18	A-4b
		14.0-19.0	0	1	8	82	14	NP	NP	21	A-4b
		19.0-25.0	0	1	8	77	14	NP	NP	21	A-4b
		25.0-30.0	16	7	16	35	26	23	10	12	A-4a
294+33	90'Lt	0.3-7.0	0	4	29	30	28	26	10	17	A-4a
		7.0-15.0	0	1	24	65	10	NP	NP	21	A-4b
		15.0-23.0	0	1	2	69	28	NP	NP	23	A-4b
		23.0-30.0	0	0	1	72	27	NP	NP	23	A-4b
294+47	95'Rt	0.4-6.0	0	2	7	50	41	34	14	21	A-6a
		6.0-10.0	0	5	14	42	39	33	17	21	A-6b
		10.0-17.0	0	1	5	59	35	28	12	27	A-6a
		17.0-22.0	16	9	12	35	28	25	10	15	A-4a
296+44	90'Lt	0.4-6.0	0	4	15	41	40	31	16	18	A-6b
		6.0-10.0	0	0	9	79	12	NP	NP	22	A-4b
		10.0-15.0	11	2	5	59	23	NP	NP	18	A-4b
		15.0-21.0	0	0	5	82	13	NP	NP	22	A-4b
		21.0-27.0	17	5	11	55	12	21	6	14	A-4b
296+65	75'Rt	0.3-5.0	0	4	4	59	33	31	15	23	A-6a
		5.0-10.0	0	2	10	36	52	44	24	22	A-7-6
		10.0-12.0	18	41	10	20	11	NP	NP	5	A-3a
		12.0-17.0	7	9	12	37	35	30	14	17	A-6a
		17.0-20.0	24	8	13	30	25	23	9	10	A-4a
297+05	37'Lt	0.4-6.0	14	5	22	38	21	NP	NP	14	A-4a
		6.0-10.0	0	1	10	76	13	NP	NP	22	A-4b
		10.0-15.0	0	3	10	60	27	NP	NP	19	A-4b
		15.0-19.0	0	2	5	70	23	NP	NP	19	A-4b
		19.0-24.0	0	1	15	69	15	NP	NP	20	A-4b
		24.0-27.0	20	6	10	42	22	20	6	8	A-4a
298+06	75'Rt	0.5-4.0	12	8	15	35	30	25	9	12	A-4a
		4.0-7.0	15	8	14	34	29	22	7	11	A-4a
		7.0-10.0	21	8	11	34	26	25	12	12	A-6a
		10.0-14.0	6	2	36	43	13	NP	NP	8	A-4a
		14.0-16.0	19	10	23	30	18	21	5	10	A-4a
299+05	80'Lt	0.4-6.0	9	4	14	48	25	22	4	24	A-4a
		6.0-12.0	0	1	32	57	10	NP	NP	19	A-4b
		12.0-18.0	0	0	29	63	8	NP	NP	19	A-4b
		18.0-24.0	0	1	11	73	15	NP	NP	17	A-4b
		24.0-30.0	0	8	16	38	38	22	8	15	A-4a
302+40	65'Rt	0.0-4.0	(24	8	9	34	25	32	14	18)	Visual
		Brown Clayey Silt with Cinders									
		4.0-8.0	0	2	22	64	12	NP	NP	16	A-4b
		8.0-11.0	0	1	14	73	12	NP	NP	23	A-4b
		11.0-18.0	19	7	15	34	25	22	6	8	A-4a
		18.0-25.0	25	6	6	40	23	23	11	11	A-6a
		25.0-30.0	19	7	16	33	25	21	8	10	A-4a
303+10	75'Lt	0.3-4.0	20	10	34	21	15	NP	NP	11	A-4a
		4.0-6.0	62	9	16	9	4	NP	NP	17	A-1-a
		6.0-10.0	5	1	30	53	11	NP	NP	20	A-4b
		10.0-16.0	38	6	14	25	17	18	5	12	A-4a
304+30	75'Rt	0.0-3.0	0	4	14	36	46	42	24	20	A-7-6
		3.0-9.0	0	3	21	46	30	36	18	25	A-6b
		9.0-14.0	0	0	48	40	12	NP	NP	18	A-4a
		14.0-18.0	0	2	4	72	22	NP	NP	17	A-4b
		18.0-23.0	24	0	13	42	21	22	8	10	A-4a
304+75	CL	0.4-5.0	28	7	12	28	25	29	13	15	A-6a
		5.0-8.0	18	4	10	30	38	43	26	26	A-7-6
		8.0-11.0	0	1	20	63	16	NP	NP	19	A-4b
		11.0-17.0	16	6	15	36	27	22	11	13	A-6a
		17.0-23.0	32	6	13	30	19	22	7	11	A-4a
		23.0-28.0	15	8	15	37	25	20	5	13	A-4a
305+50	125'Rt	0.3-7.0	18	11	15	33	23	27	14	13	A-6a
		7.0-14.0	19	6	11	34	30	27	11	12	A-6a
		14.0-19.0	6	5	9	54	26	NP	NP	12	A-4b
		19.0-26.0	0	0	8	77	15	NP	NP	21	A-4b
		26.0-30.0	13	0	15	34	30	22	8	13	A-4a
307+00	15'Lt	0.3-3.0	(51	12	11	16	10	NP	NP	25)	Visual
		Brown Clayey Silt with Cinders									
		3.0-8.0	0	0	20	65	15	NP	NP	17	A-4b
		8.0-14.0	9	8	15	36	32	21	7	12	A-4a
		14.0-20.0	18	7	14	33	28	21	8	13	A-4a
310+20	46'Rt	0.3-5.0	0	2	11	36	51	43	26	20	A-7-6
		5.0-10.0	21	8	9	31	31	30	14	13	A-6a
		10.0-12.0	20	5	12	39	24	21	7	11	A-4a
		12.0-15.0	0	2	34	45	19	NP	NP	14	A-4a
		15.0-20.0	0	1	5	64	30	21	2	17	A-4b
		20.0-25.0	0	1	22	65	12	NP	NP	23	A-4b *
		25.0-28.0	0	0	20	67	13	NP	NP	19	A-4b
		28.0-30.0	0	1	59	28	12	NP	NP	23	A-4a
313+70	20'Rt	0.4-6.0	0	5	19	33	43	43	24	20	A-7-6
		6.0-8.0	5	6	20	33	36	41	26	19	A-7-6
		8.0-12.0	32	12	14	21	21	24	9	9	A-4a
		12.0-18.0	10	7	14	37	32	23	7	11	A-4a
		18.0-25.0	12	8	15	38	27	24	9	10	A-4a *
		25.0-30.0	14	10	13	37	26	23	9	12	A-4a *
316+22	205'Lt	0.4-3.0	0	2	16	54	28	NP	NP	22	A-4b
		3.0-8.0	0	2	15	43	40	34	19	21	A-6b
		8.0-13.0	0	4	12	35	40	32	15	16	A-6a
		13.0-17.0	10	5	17	44	24	22	6	12	A-4a
		17.0-20.0	0	0	29	62	9	NP	NP	18	A-4b
		20.0-25.0	0	0	15	74	11	NP	NP	18	A-4b
		25.0-30.0	0	0	16	71	13	NP	NP	20	A-4b
317+00	CL	0.0-5.0	0	3	12	42	43	36	19	21	A-6b
		5.0-10.0	0	3	15	36	46	41	26	20	A-7-6
		10.0-13.0	8	3	13	31	45	42	24	19	A-7-6
		13.0-16.0	9	7	9	44	31	27	12	10	A-6a
		16.0-23.0	6	6	15	48	25	NP	NP	10	A-4a
		23.0-26.0	1	1	17	69	12	NP	NP	19	A-4b
		26.0-30.0	4	3	6	67	20	NP	NP	16	A-4b *
321+16	5'Lt	0.4-4.0	0	3	15	31	51	42	23	19	A-7-6
		4.0-9.0	11	4	11	33	41	34	18	14	A-6b
		9.0-14.0	11	7	15	36	31	28	13	12	A-6a
		14.0-19.0	7	7	12	37	37	29	13	17	A-6a
		19.0-22.0	0	1	1	76	22	NP	NP	19	A-4b
		22.0-30.0	10	8	14	37	31	25	11	13	A-6a *
323+40	CL	0.4-4.0	20	10	15	28	26	29	12	16	A-6a
		4.0-8.0	11	8	13	31	37	25	11	12	A-6a
		8.0-12.0	17	8	15	40	20	NP	NP	10	A-4a
326+50	CL	0.3-8.0	11	3	10	31	45	45	27	23	A-7-6
		8.0-13.0	5	4	5	47	39	25	11	19	A-6a
		13.0-15.0	31	26	20	15	15	NP	NP	11	A-1-b
328+00	74'Lt	0.0-7.0	11	6	12	41	30	28	11	22	A-6a
		7.0-10.0	14	12	16	30	28	20	9	19	A-4a
		10.0-12.0	4	4	40	34	18	NP	NP	24	A-4a
		12.0-14.0	10	13	19	32	26	20	8	10	A-4a
		14.0-16.0	36	22	14	20	7	NP	NP	15	A-2-4
		16.0-20.0	15	9	20	28	28	22	10	17	A-4a
330+00	CL	0.0-4.0	18	3	15	32	26	23	9	13	A-4a
		4.0-9.0	7	4	39	35	15	NP	NP	24	A-4a
		9.0-12.0	0	2	3	75	20	NP	NP	26	A-4b
		12.0-18.0	0	7	13	30	36	23	10	13	A-4a
334+00	15'Lt	0.3-5.0	0	3	7	51	39	30	10	25	A-4b
		5.0-7.0	45	23	15	10	7	NP	NP	13	A-1-b
		7.0-14.0	5	3	3	44	45	32	13	22	A-6a
		14.0-20.0	13	16	20	30	21	19	5	9	A-4a
338+00	CL	0.0-5.0	(15	3	15	38	29	26	10	--)	Visual
		Cinders, Ashes, and Stone Fragments									
		5.0-9.0	(23	3	12	21	34	27	17	--)	Visual *
		Cinders, Ashes, and Stone Fragments									
		9.0-12.0	7	14	10	40	29	29	13	26	A-6a
		12.0-17.0	0	1	34	50	15	20	3	24	A-4b
		17.0-22.0	0	1	2	43	54	30	19	24	A-6b
340+52	75'Lt	0.3-6.0	0	3	12	54	31	30	15	12	A-6a
		6.0-12.0	6	4	6	61	23	20	3	10	A-4b
		12.0-17.0	11	2	13	44	30	34	17	17	A-6b
		17.0-20.0	0	1	3	52	44	44	22	23	A-7-6
		20.0-25.0	0	0	1	77	22	NP	NP	21	A-4b
		25.0-30.0	11	14	45	21	9	NP	NP	15	A-3a
341+60	CL	0.3-6.0	0	2	5	55	38	41	21	23	A-7-6
		6.0-12.0	0	2	12	52	34	30	13	18	A-6a
		12.0-20.0	0	3	8	54	35	34	16	22	A-6b
		20.0-25.0	14	20	45	15	6	NP	NP	16	A-3a
343+00	75'Lt	0.4-7.0	10	5	10	45	30	34	16	22	A-6b *
		7.0-13.0	0	6	13	43	29	32	13	19	A-6a
		13.0-17.0	(32	21	19	18	10	NP	NP	--)	Visual
		Dark Gray Cinders and Ashes									
		17.0-21.0	(47	21	15	12	5	NP	NP	--)	Visual
		Dark Gray Cinders and Ashes									
		21.0-24.0	(23	10	12	31	24	30	10	--)	Visual
		Brown Clayey Silt with Cinders and Slag									
		24.0-30.0	8	6	14	42	30	31	15	16	A-6a
345+00	75'Lt	0.3-4.0	(25	6	2	40	27	34	17	--)	Visual
		Cinders, Ashes, and Brickbats									
		4.0-12.0	9	7	11	42	31	33	16	19	A-6b
		12.0-15.0	0	3	13	50	34	29	13	19	A-6a
		15.0-20.0	0	2	1	44	53	35	15	24	A-6a
		20.0-25.0	0	2	2	55	41	25	7	14	A-4b
347+35	165'Lt	0.4-4.0	0	3	10	44	43	41	24	22	A-7-6
		4.0-12.0	6	5	16	39	34	33	16	19	A-6b
		12.0-18.0	15	7	16	36	26	26	10	14	A-4a
		18.0-20.0	16	7	17	36	24	22	7	13	A-4a
349+00	CL	0.4-7.0	0	3	3	42	52	40	18	23	A-6b
		7.0-10.0	0	0	6	54	40	27	8	21	A-4b
		10.0-12.0	0	0	2	58	40	27	8	21	A-4b
350+36	170'Lt	0.4-4.0	0	0	0	67	33	27	8	22	A-4b
		4.0-6.0	0	0	0	91	9	NP	NP	22	A-4b
		6.0-12.0	0	0	1	44	55	31	14	19	A-6a
350+85	CL	0.0-8.0	(40	15	23	15	7	NP	NP	--)	Visual *
		Dark Gray Cinders, Ashes, Slag, and Glass									
		8.0-10.0	12	8	12	38	31	37	19	21	A-6b
		10.0-17.0	6	6	12	40	36	NP	NP	18	A-4a
		17.0-24.0	0	1	18	61	20	NP	NP	17	A-4b
		24.0-30.0	7	4	9	49	31	26	11	14	A-6a
352+00	75'Rt	0.0-2.0	(31	18	18	21	12	NP	NP	--)	Visual
		Dark Gray Cinders and Ashes									
		2.0-7.0	3	4	13	42	38	38	22	24	A-6b
		7.0-13.0	0	3	11	54	32	34	20	25	A-6b
		13.0-20.0	0	3	12	58	27	30	13	25	A-6a
352+34	27'Lt	0.4-5.0	0	2	11	45	42	43	20	26	A-7-6 *
		5.0-9.0	0	5	25	38	24	27	11	24	A-6a
		9.0-15.0	10	6	11	38	35	30	12	16	A-6a
		15.0-20.0	0	3	4	41	52	38	19	28	A-6b
		20.0-25.0	3	5	15	44	33	24	8	14	A-4a
354+30	CL	0.4-6.0	0	1	1	35	63	41	20	25	A-7-6 *
		6.0-9.0	0	0	1	52	47	28	7	18	A-4b
		9.0-17.0	0	0	0	35	65	38	18	26	A-6b
		17.0-20.0	11	8	20	31	30	21	7	12	A-4a
356+00	100'Rt	0.3-4.0	8	5	21	38	30	38	21	18	A-6b
		4.0-10.0	15	5	15	30	24	31	16	13	A-6b
		10.0-15.0	11	8	11	32	38	33	14	13	A-6a
Proposed IR 71 (Northbound Lanes)											
357+50	60'Rt	0.4-5.0	0	2	13	50	34	38	19	16	A-6b
		5.0-10.0	15	5	9	37	34	33	17	14	A-6b
		10.0-18.0	15	6	17	33	29	27	14	11	A-6a
		18.0-20.0	13	8	15	38	25	26	10	11	A-4a
		20.0-25.0	10	10	16	40	21	21	6	10	A-4a
		25.0-30.0	16	9	13	37	20	22	7	11	A-4a
359+40	115'Rt	0.4-5.0	5	4	12	38	38	29	13	19	A-6a
		5.0-10.0	0	4	18	35	40	41	21	16	A-7-6
		10.0-15.0	15	7	13	30	35	32	15	13	A-6a
359+70	22'Lt	0.3-5.0	12	9	11	30	40	28	12	13	A-6a *
		5.0-8.0	13	9	17	38	23	21	6	13	A-4a
		8.0-12.0	0	0	0	59	40	28	11	17	A-6a
Edmondson Avenue Interchange — Relocated Edmondson Avenue											
22+00	12'Rt	0.3-3.0	(40	14	13	20	13	NP	NP	--)	Visual *
		Brown Clayey Silt with Cinders and Ashes									
		3.0-8.0	0	4	12	35	49	42	26	21	A-7-6
		8.0-14.0	26	10	16	26	22	24	11	10	A-6a
		14.0-20.0	0	9	19	38	34	23	11	11	A-6a
Ramp A											
306+55	BL	0.3-7.0	35	10	8	31	16	29	8	20	A-4a
		7.0-12.0	18	7	13	37	25	24	8	12	A-4a
		12.0-17.0	9	7	11	44	29	24	9	14	A-4a
		17.0-22.0	16	7	14	36	27	22	6	11	A-4a
308+00	BL	0.3-4.0	0	1	4	61	34	33	13	29	A-6a
		4.0-9.0	16	2	33	37	12	NP	NP	21	A-4a
		9.0-15.0	15	6	15	38	26	20	6	13	A-4a
		15.0-21.0	14	7	9	44	26	21	6	13	A-4a
		21.0-26.0	10	5	17	44	24	20	7	14	A-4a
310+75	3'Rt	0.3-5.0	0	5	25	31	39	31	18	20	A-6b *
		5.0-10.0	0	3	15	35	47	39	21	22	A-6b
		10.0-15.0	18	8	14	29	31	27	13	13	A-6a
		15.0-17.0	22	5	10	36	27	30	16	19	A-6b
		17.0-22.0	0	1	38	44	17	NP	NP	21	A-4a
		22.0-25.0	15	5	14	40	26	20	7	12	A-4a
Ramp B											
308+00	10'Rt	0.3-3.0	0	1	3	56	40	39	15	28	A-6a
		3.0-9.0	0	2	10	33	55	53	33	23	A-7-6
		9.0-15.0	11	7	14	35	33	31	14	15	A-6a
		15.0-18.0	10	2	12	47	29	28	14	16	A-6a
		18.0-24.0	3	7	15	45	24	21	6	12	A-4a *
		24.0-30.0	0	2	11	75	12	NP	NP	16	A-4b
310+00	BL	0.4-6.0	0	4	10	45	41	32	16	16	A-6b
		6.0-12.0	0	2	13	38	47	44	26	19	A-7-6 *
		12.0-18.0	16	9	16	34	25	28	11	12	A-6a *
		18.0-20.0	0	1	62	29	8	NP	NP	15	A-4a
		20.0-25.0	1	1	35	49	14	NP	NP	17	A-4a
		25.0-30.0	0	1	29	57	13	NP	NP	18	A-4b
Williams Avenue Interchange — Relocated Williams Avenue											
11+42	86'Lt	0.4-5.0	0	4	31	41	24	21	5	19	A-4a
		5.0-10.0	21	11	9	36	23	36	19	16	A-6b
		10.0-12.0	4	9	8	56	23	25	8	7	A-4b
		12.0-17.0	0	4	74	12	10	NP	NP	18	A-3a
		17.0-21.0	0	1	4	45	50	32	13	22	A-6a
		21.0-24.0	35	8	12	27	18	24	8	13	A-4a
		24.0-30.0	4	2	9	58	27	22	6	15	A-4b
14+00	CL	0.4-7.0	20	6	12	38	24	30	14	19	A-6a
		7.0-12.0	11	3	17	41	28	31	13	11	A-6a
		12.0-18.0	0	1	6	62	31	28	6	16	A-4b
		18.0-20.0	13	9	14	33	31	25	11	19	A-6a
Ramp C											
327+75	5'Lt	0.0-4.0	0	5	12	34	41	31	12	10	A-6a
		4.0-9.0	13	8	8	38	37	29	12	16	A-6a
		9.0-14.0	7	7	13	35	38	25	11	11	A-6a
		14.0-18.0	4	4	10	43	39	28	11	23	A-6a
		18.0-20.0	26	18	40	10	6	NP	NP	12	A-3a
331+00	BL	0.0-5.0	5	4	13	34	44	31	16	12	A-6b *
		5.0-12.0	0	4	6	30	60	34	16	19	A-6b
		12.0-15.0	0	0	2	80	18	NP	NP	22	A-4b
333+50	BL	0.4-7.0	0	4	16	45	35	30	12	22	A-6a *
		7.0-9.0	10	16	52	13	9	NP	NP	19	A-3a
		9.0-15.0	10	13	18	33	26	21	9	15	A-4a
Ramp D											
322+41	20'Lt	0.0-3.0	0	4	15	38	43	33	16	20	A-6b
		3.0-8.0	15	8	10	33	25	24	8	12	A-4a
		8.0-12.0	16	9	15	38	22	22	7	15	A-4a
		12.0-20.0	0	0	6	62	32	25	7	13	A-4b
323+00	20'Lt	0.3-5.0	0	7	42	33	18	NP	NP	16	A-4a
		5.0-10.0	20	14	22	27	17	19	5	7	A-4a
		10.0-15.0	21	12	11	34	22	22	8	12	A-4a
		15.0-20.0	11	8	16	33	31	28	11	10	A-6a
Relocated Duck Creek Road											
10+20	CL	0.3-5.0	7	10	40	30	13	NP	NP	16	A-4a
		5.0-10.0	22	8	14	35	21	22	7	12	A-4a
		10.0-15.0	0	4	2	46	48	30	11	20	A-6a

SOIL PROFILE

HAMILTON COUNTY

HAM-IR 71-6.14

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

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SUMMARY OF SOIL TEST DATA

NOTE: NP shown in Liquid Limit and Plasticity Index columns indicates that the material is non-plastic.
*Denotes sample taken at or near grade.

DRIVE SAMPLES SOIL TEST DATA

STATION & OFFSET		DEPTH FROM - TO	% ACC.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
					Proposed IR 71						
355+00	80'Rt	5.0-6.0	0	6	18	37	31	30	13	12	A-6a
		7.5-8.5	11	7	19	33	30	29	13	14	A-6a
		10.0-11.0	22	7	15	32	24	26	10	12	A-4a
		12.5-13.5	47	19	8	15	11	22	7	11	A-2-4
		15.0-16.0	19	10	16	34	21	23	8	12	A-4a
		17.5-18.5	Brown Clayey Silt								Visual
		20.0-21.0	12	8	13	38	29	25	8	10	A-4a
		22.5-23.5	19	9	10	39	23	22	8	12	A-4a
		25.0-26.0	15	11	17	33	24	21	7	11	A-4a
		27.5-28.5	23	12	18	31	16	20	6	6	A-4a
		30.0-31.0	17	7	40	27	9	NP	NP	16	A-4a
		32.5-33.5	21	2	16	53	8	NP	NP	19	A-4b
		35.0-36.0	0	0	0	40	60	41	18	26	A-7-6
		37.5-38.5	0	0	0	43	57	34	14	25	A-6a
		40.0-41.0	0	1	0	55	44	30	9	21	A-4b
		42.5-43.5	0	0	0	44	56	37	16	30	A-6b
		45.0-46.0	0	0	0	39	61	37	17	26	A-6b
		47.5-48.5	0	0	4	59	37	25	9	24	A-4b
		50.0-51.0	7	[illegible]	11	42	37	28	12	16	A-6a
					Relocated Hires Lane						
1+95	14'Lt	5.0-6.0	0	14	18	40	28	21	5	15	A-4a
		7.5-8.5	0	3	10	66	21	NP	NP	17	A-4b
		10.0-11.0	0	5	15	60	20	NP	NP	18	A-4b
		15.0-16.0	6	8	17	39	27	23	7	13	A-4a
		17.5-18.5	15	8	14	37	26	22	7	13	A-4a
		20.0-21.0	17	8	13	37	25	21	6	13	A-4a
		22.5-23.5	11	11	19	34	25	22	9	12	A-4a
		25.0-26.0	12	8	15	41	26	20	6	12	A-4a
		30.0-30.7	0	8	55	27	15	NP	NP	16	A-4a
		35.0-35.6	0	2	17	65	16	NP	NP	20	A-4b
		40.0-40.9	25	35	20	10	9	NP	NP	12	A-1-b
		45.0-45.8	10	16	31	32	11	NP	NP	15	A-4a
		50.0-51.0	11	7	14	37	28	21	6	11	A-4a
		55.0-55.8	0	2	9	62	27	22	4	15	A-4b
3+72	123'Lt	5.0-6.0	0	8	16	35	41	27	9	14	A-4a
		7.5-8.5	0	10	14	39	37	26	10	13	A-4a
		10.0-11.0	0	9	15	47	29	22	8	12	A-4a
		12.5-13.5	Gray Sandy Silt								Visual
		15.0-16.0	Gray Sandy Silt								Visual
		17.5-18.5	0	10	19	46	25	21	7	12	A-4a
		20.0-21.0	0	8	15	50	27	20	4	11	A-4b
		22.5-23.5	10	5	17	44	24	20	4	12	A-4a
		25.0-26.0	7	7	16	45	22	19	3	12	A-4a
		30.0-31.0	12	9	15	34	22	22	9	12	A-4a
		35.0-36.0	0	5	75	8	12	NP	NP	18	A-3a
		40.0-40.7	0	1	2	80	17	NP	NP	21	A-4b
		45.0-45.7	0	1	5	71	23	--	--	18	A-4b
		50.0-51.0	0	1	5	65	28	NP	NP	16	A-4b
					Relocated Edmondson Avenue						
13+62	10'Lt	5.0-6.0	0	4	11	44	41	33	13	17	A-6a
		10.0-11.0	16	7	13	39	25	27	11	12	A-6a
		15.0-16.0	11	4	30	38	17	NP	NP	13	A-4a
		17.5-18.5	0	2	91	0	6	NP	NP	16	A-3a
		20.0-21.0	0	1	76	15	8	NP	NP	19	A-3a
		22.5-23.5	0	1	4	60	35	26	6	21	A-4b
		25.0-26.0	0	1	36	49	14	NP	NP	24	A-4a
		27.5-28.5	0	0	47	41	12	NP	NP	22	A-4a
		30.0-31.0	0	1	36	51	12	NP	NP	18	A-4b
		32.5-33.5	0	1	56	34	9	NP	NP	17	A-4a
		35.0-36.0	0	1	34	54	11	NP	NP	20	A-4b
		40.0-41.0	14	7	14	42	23	22	6	13	A-4a
		45.0-46.0	0	4	30	50	16	NP	NP	15	A-4b
15+82	27'Rt	5.0-6.0	0	4	15	45	36	29	9	19	A-4a
		10.0-11.0	0	4	14	40	42	47	28	19	A-7-6
		15.0-16.0	33	7	11	28	21	25	9	13	A-4a
		20.0-21.0	28	9	13	31	19	25	9	12	A-4a
		25.0-26.0	28	7	10	40	15	NP	NP	9	A-4a
		30.0-31.0	0	1	56	35	8	NP	NP	20	A-4a
		32.5-33.5	0	1	43	46	10	NP	NP	18	A-4a
		35.0-36.0	24	4	15	40	17	22	6	15	A-4a
		37.5-38.0	9	2	30	47	12	NP	NP	18	A-4a
		40.0-41.0	17	5	14	44	20	22	6	13	A-4a
		42.5-43.5	47	6	10	24	13	21	5	13	A-4a
		45.0-46.0	0	8	19	47	26	24	7	11	A-4a
		47.5-48.5	0	8	20	44	28	24	9	15	A-4a
		50.0-51.0	19	7	13	41	20	22	6	12	A-4a
		55.0-56.0	0	1	17	68	14	NP	NP	12	A-4b
		60.0-61.0	0	12	77	6	5	NP	NP	19	A-3a
		65.0-65.5	0	17	71	7	5	NP	NP	18	A-3a

STATION & OFFSET		DEPTH FROM - TO	% ACC.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
					Relocated Williams Avenue						
15+49	12'Rt	5.0-6.0	14	6	13	33	34	30	14	12	A-6a
		10.0-11.0	Brown Clayey Sandy Gravel								Visual
		15.0-16.0	21	3	12	32	32	42	19	23	A-7-6
		17.5-18.5	8	4	14	40	34	33	16	19	A-6b
		20.0-21.0	53	6	5	21	15	25	10	9	A-4a
		22.5-23.5	25	8	11	27	29	27	13	15	A-6a
		25.0-26.0	20	10	13	31	26	23	9	12	A-4a
		27.5-28.5	11	6	10	45	28	22	6	13	A-4a
		30.0-31.0	6	4	8	56	26	22	5	17	A-4b
		32.5-33.5	9	3	11	53	24	19	1	16	A-4b
		35.0-36.0	31	8	11	32	18	23	7	12	A-4a
		40.0-41.0	0	1	1	82	16	NP	NP	18	A-4b
		45.0-46.0	0	3	1	81	15	--	--	20	A-4b
		50.0-51.0	24	7	12	33	24	22	8	11	A-4a
		55.0-56.0	14	5	8	47	26	22	5	15	A-4a
		60.0-61.0	0	0	31	57	12	NP	NP	18	A-4b
18+06	51'Lt	15.0-16.0	26	13	20	19	22	23	10	17	A-4a
		20.0-21.0	34	6	11	25	24	26	9	14	A-4a
		30.0-31.0	34	11	17	29	9	NP	NP	18	A-4a
		35.0-36.0	32	11	13	26	18	21	7	6	A-4a
		37.5-38.5	23	12	13	24	28	23	9	13	A-4a
		40.0-41.0	0	3	6	71	20	NP	NP	18	A-4b
		42.5-43.5	39	11	11	26	13	19	2	10	A-4a
		45.0-46.0	15	7	13	41	24	21	7	13	A-4a
		47.5-48.5	17	7	13	40	23	22	7	11	A-4a
		50.0-51.0	19	5	13	40	23	21	5	14	A-4a
		55.0-56.0	11	5	9	49	26	23	7	14	A-4a
		60.0-61.0	7	3	10	61	19	NP	NP	17	A-4b
		65.0-66.0	0	1	1	73	25	NP	NP	18	A-4b
					Proposed Robertson Avenue						
11+01	35'Lt	5.0-6.0	(24	41	17	10	8	NP	NP	36)	
			Random Fill								Visual
		15.0-16.0	(51	17	9	13	10	NP	NP	20)	
			Random Fill								Visual
		20.0-21.0	Brown & Gray Silty Clay, Trace of Organic							23	Visual
		25.0-26.0	26	7	11	31	25	27	9	22	A-4a
		30.0-31.0	0	0	1	56	43	27	8	23	A-4b
		35.0-36.0	0	0	1	47	52	26	8	19	A-4a
		40.0-41.0	0	0	7	63	30	NP	NP	19	A-4b
		45.0-46.0	20	9	5	41	25	24	9	10	A-4a
		50.0-51.0	16	10	18	30	26	23	9	12	A-4a
		55.0-56.0	12	2	16	45	25	19	5	14	A-4a
		60.0-61.0	0	1	9	90	0	NP	NP	23	A-4b
		65.0-66.0	0	1	1	35	63	32	12	20	A-6a
		70.0-71.0	0	0	1	38	61	31	11	25	A-6a
		75.0-76.0	0	0	1	39	60	30	13	30	A-6a
		80.0-81.0	0	1	1	53	45	28	10	23	A-4b
		85.0-86.0	0	1	2	51	46	26	6	19	A-4b
		90.0-91.0	9	2	2	47	40	26	8	23	A-4a
		95.0-95.6	9	10	31	39	11	NP	NP	15	A-4a
14+25	29'Lt	5.0-6.0	Gray Clayey Sandy Gravel					27	11	26	Visual
		10.0-11.0	(22	7	20	21	30	35	22	22)	
			Brown and Gray Gravelly Sandy Clay. - Fill								Visual
		15.0-16.0	(0	1	13	49	37	28	12	25)	
			Brown and Gray Silt and Clay. Slightly Organic.-Fill								Visual
		20.0-21.0	0	3	14	48	35	27	12	18	A-6a
		25.0-26.0	0	33	15	58	24	NP	NP	21	A-4b
		27.5-28.5	0	2	13	43	42	25	9	23	A-4a
		30.0-31.0	12	17	44	21	6	NP	NP	19	A-3a
		32.5-33.5	0	1	4	75	20	NP	NP	22	A-4b
		35.0-36.0	0	0	1	65	34	21	5	23	A-4b
		37.5-38.5	8	14	19	35	24	22	9	12	A-4a
		40.0-41.0	42	11	13	21	13	16	5	9	A-2-4
		45.0-46.0	10	5	11	36	38	26	11	18	A-6a
		50.0-51.0	45	6	16	15	18	22	11	15	A-6a
		55.0-56.0	21	10	15	29	25	22	9	11	A-4a
		60.0-61.0	0	1	2	66	31	24	5	14	A-4b
		65.0-66.0	0	2	14	71	13	NP	NP	30	A-4b
		70.0-71.0	0	1	1	41	57	36	14	22	A-6a

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SOIL PROFILE

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HAMILTON COUNTY
HAM-IR71-6.14

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OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

PROFILE INDEX		CROSS SECTION INDEX	
PROFILES	SHEET	STATIONS	SHEET
Proposed IR 71	6	Proposed IR 71	
Relocated Hires Lane	8	291+00	11
Edmondson Ave. Interchange		292+00	11
Relocated Edmondson Ave.	9	294+50	12
Proposed Ramp A	9	296+50	12
Proposed Ramp B	9	299+00	13
Williams Ave. Interchange			
Relocated Williams Ave.	10		
Proposed Ramp C	10		
Proposed Ramp D	10		
Relocated Duck Creek Rd.	10		

STATION EQUATIONS

Station Equation A: Sta. 301+96.43 - ℄, Proposed IR 71 = Sta. 2+79.74 - ℄, Relocated Hires Lane

Station Equation B: Sta. 310+94.74 - ℄, Proposed IR 71 = Sta. 14+94.74 - ℄, Relocated Edmondson Ave.

Station Equation C: Sta. 321+59.18 - ℄, Proposed IR 71 = Sta. 17+12.74 - ℄, Relocated Williams Ave.

Station Equation D: Sta. 24+09 - ℄, Relocated Edmondson Ave. = Sta. 10+00 - ℄, Relocated Williams Ave.

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SOIL PROFILE

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HAMILTON COUNTY
HAM-IR71-6.14

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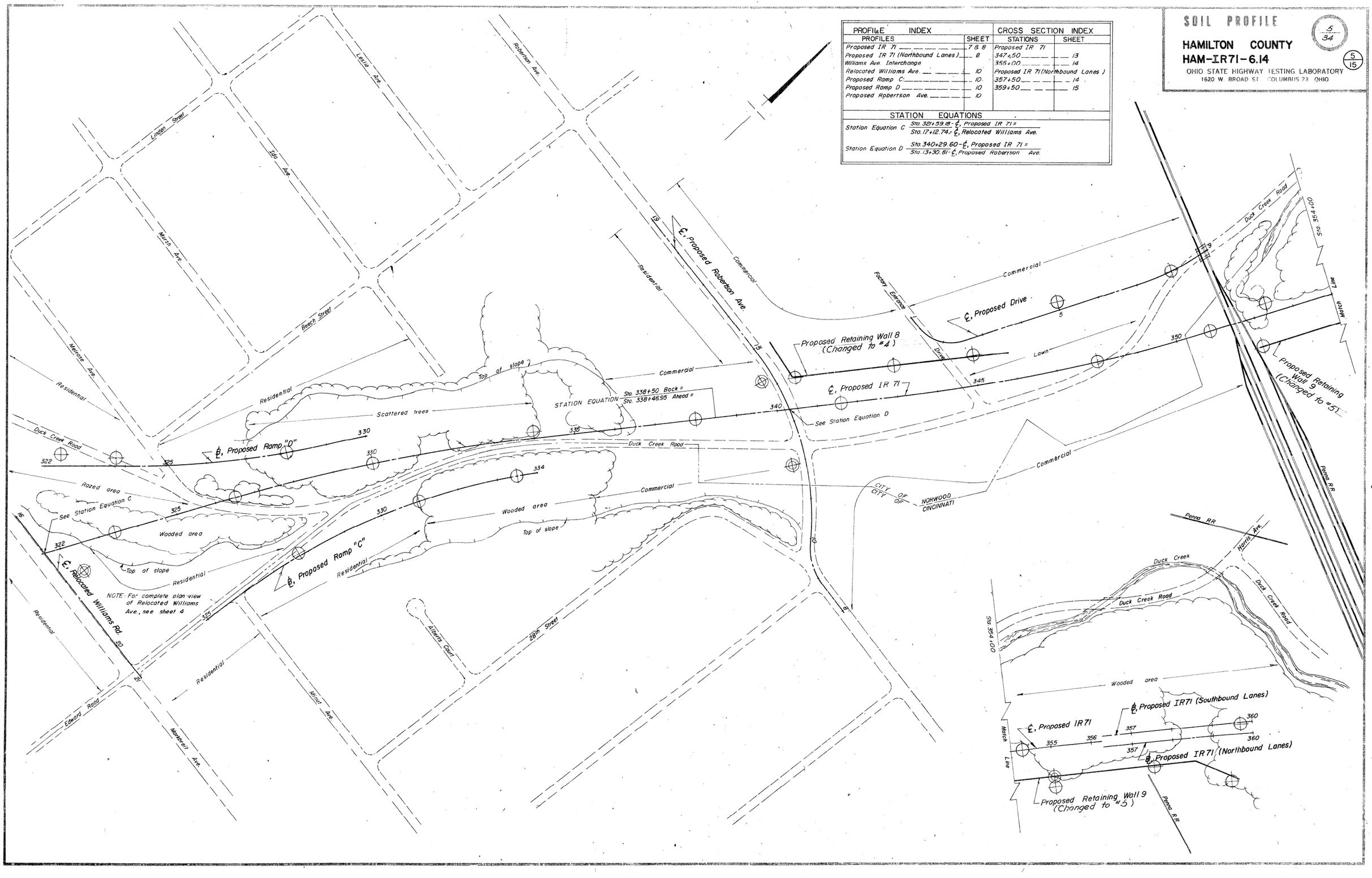
OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

PROFILE INDEX		CROSS SECTION INDEX	
PROFILES	SHEET	STATIONS	SHEET
Proposed IR 71	7 & 8	Proposed IR 71	
Proposed IR 71 (Northbound Lanes)	8	347+50	13
Williams Ave. Interchange		355+00	14
Relocated Williams Ave.	10	Proposed IR 71 (Northbound Lanes)	
Proposed Ramp C	10	357+50	14
Proposed Ramp D	10	359+50	15
Proposed Robertson Ave.	10		

STATION EQUATIONS

Station Equation C — Sta. 321+59.18 - ℄, Proposed IR 71 = Sta. 17+12.74 - ℄, Relocated Williams Ave.

Station Equation D — Sta. 340+29.60 - ℄, Proposed IR 71 = Sta. 13+30.81 - ℄, Proposed Robertson Ave.



SOIL PROFILE

HAMILTON COUNTY

HAM-IR 71 - 6.14

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

660
650
640
630
620
610
600
590
580
570

290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322

97' Lt. Sod & TS=0.4'
Hole squeezed in at elev. 611.6'

95' Rt. Sod & TS=0.3'

15' Lt.
Trace of Organic

90' Lt. Sod & TS=0.3'

90' Lt. Sod & TS=0.4'
Hole caved in at elev. 608.9'

37' Lt. Sod & TS=0.4'
Hole caved in at elev. 611.0'

Proposed grade, Relocated Hires Lane

80' Lt.

Brown clayey silt with cinders

65' Rt.

75' Lt. Sod & TS=0.3'
Refusal (Boulders)

75' Rt.
Hole squeezed in at elev. 601.1'

℄ Sod & TS=0.4'
Hole caved in at elev. 602.0'

15' Lt. Sod & TS=0.3'
Brown clayey silt with cinders.

Proposed Grade, Relocated Edmondson Ave.

(Sta. 15+82, 27' Rt. Relocated Edmondson Ave.)

46' Rt. Sod & TS=0.3'

73' Lt.
*=Refusal

20' Rt. TS=0.4'

205' Lt. Sod & TS=0.4'
Trace of Organic

℄

Proposed Grade, Relocated Williams Ave.

5' Lt. Sod & TS=0.4

SOIL PROFILE

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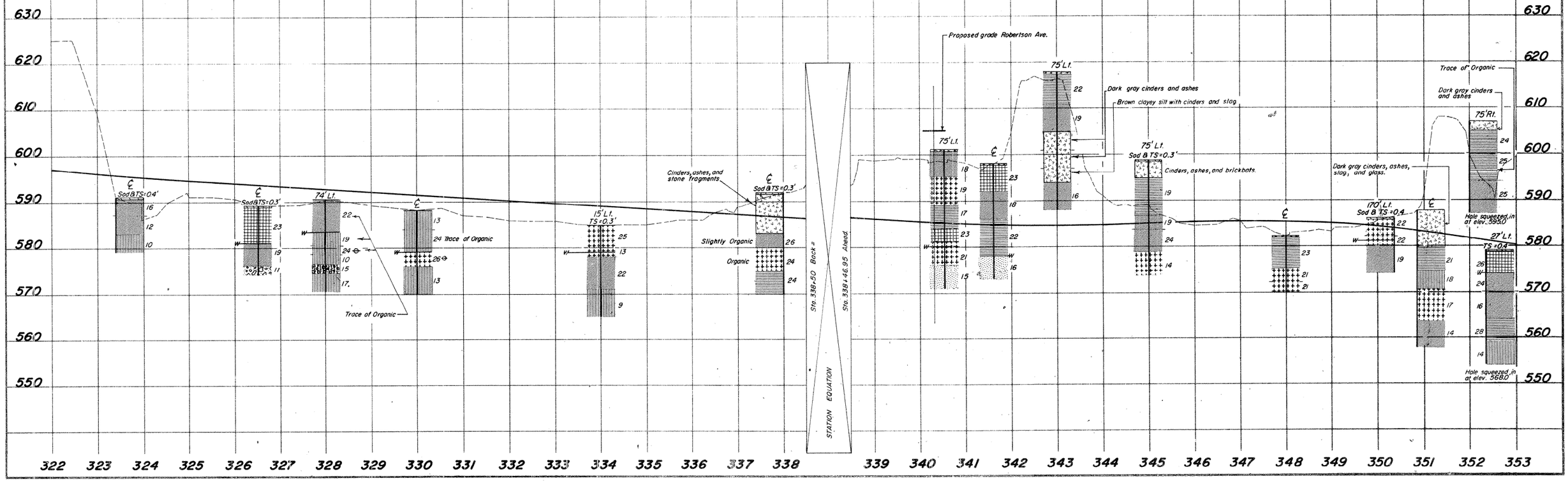
HAMILTON COUNTY

HAM-IR 71-6.14

(7/15)

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23. OHIO



SOIL PROFILE

(8/34)

HAMILTON COUNTY

HAM-IR 71-6.14

(8/15)

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

PROPOSED IR 71 —— PROPOSED IR 71
(Northbound Lanes)

353 354 355 356 357 358 359 360

RELOCATED HIRES LANE

1 2 3 4

SOIL PROFILE

HAMILTON COUNTY

HAM-IR71-6.14

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

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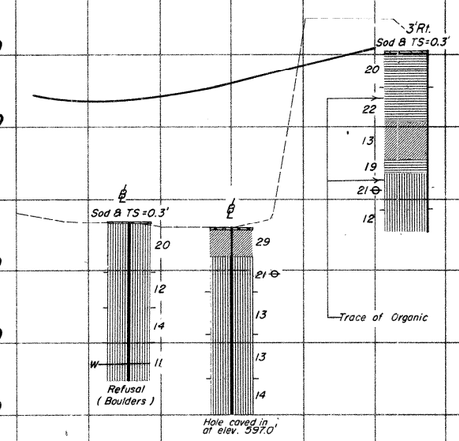
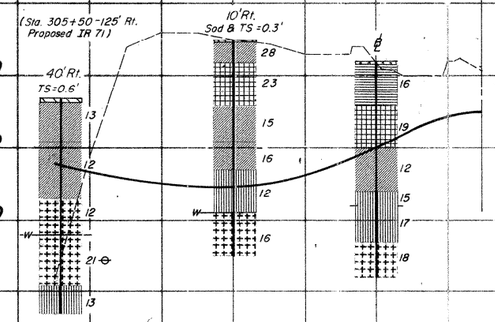
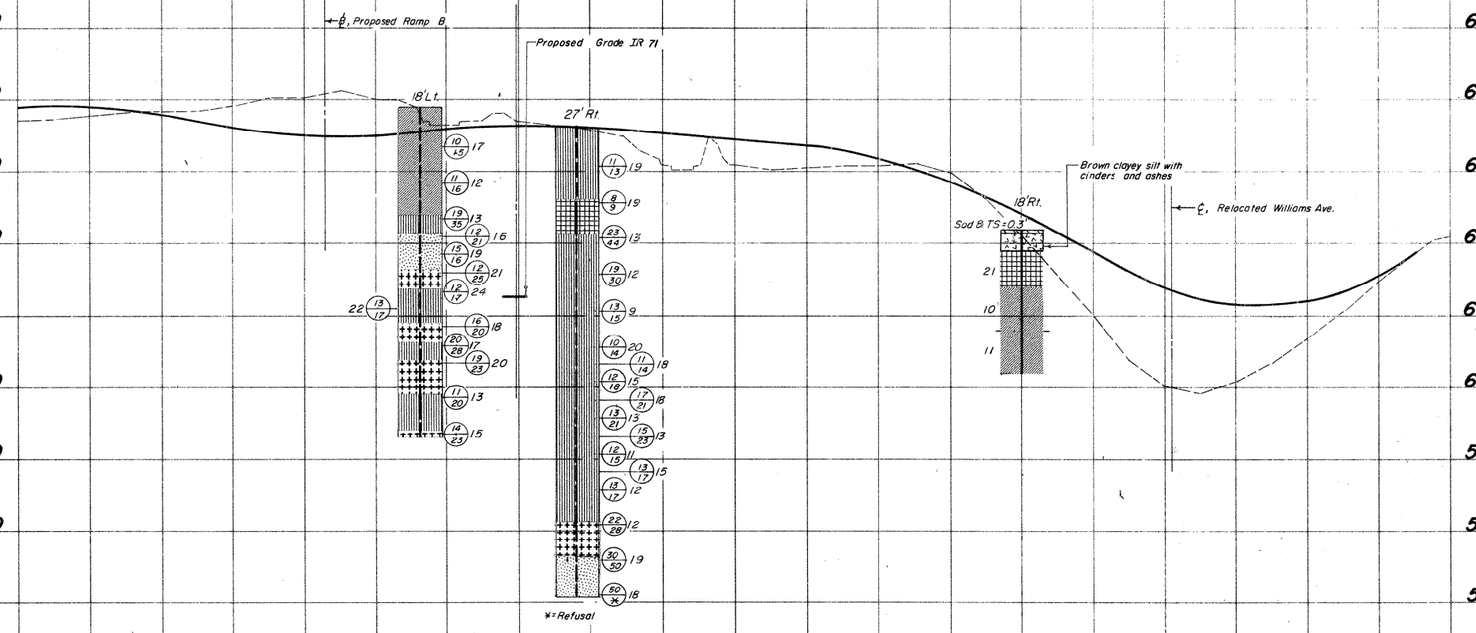


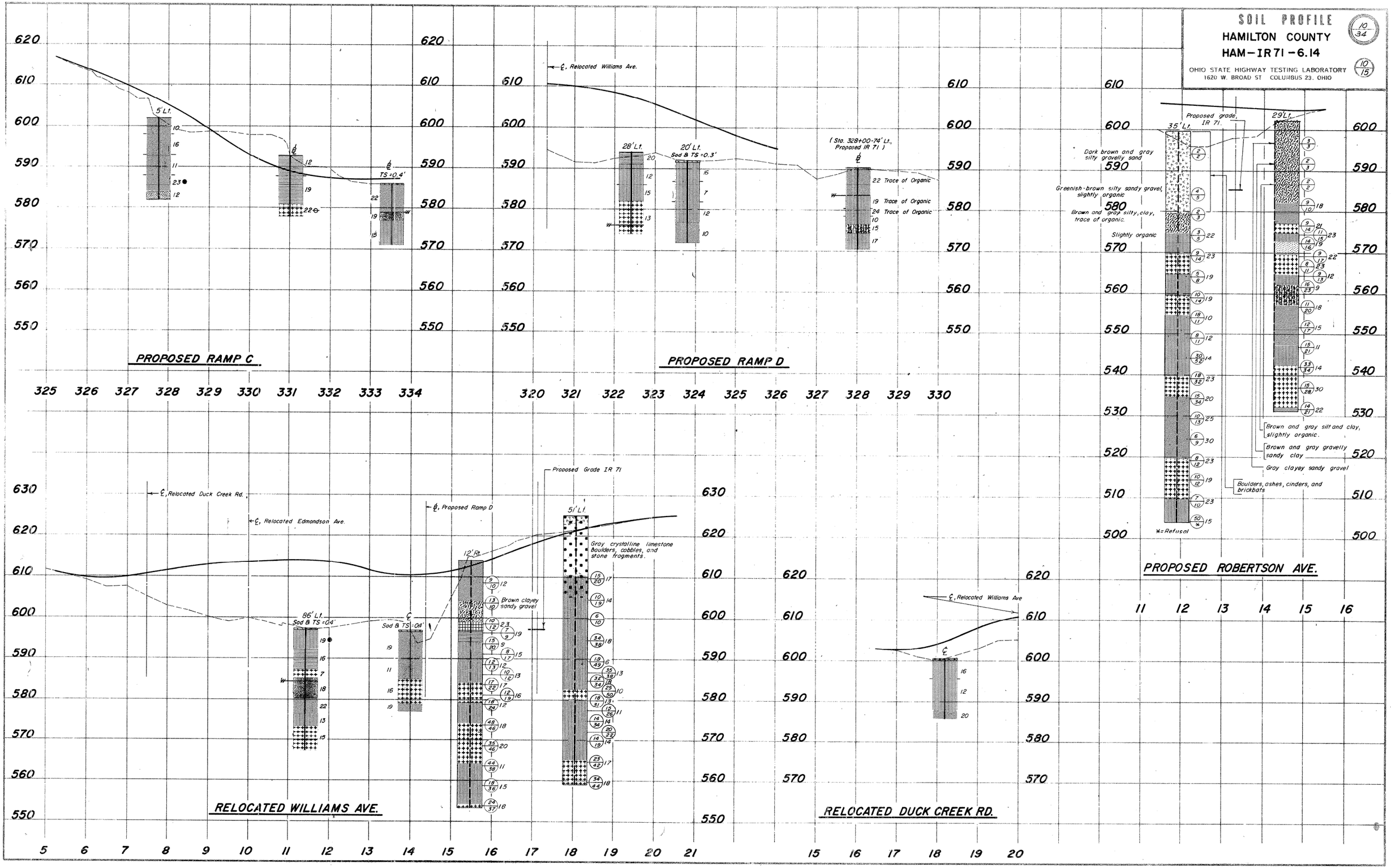
PROPOSED RAMP A



PROPOSED RAMP B



RELOCATED EDMONDSON AVE.


SOIL PROFILE
HAMILTON COUNTY
HAM-IR 71-6.14
OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST COLUMBUS 23, OHIO
10/34
10/15
PROPOSED RAMP C
PROPOSED RAMP D
PROPOSED ROBERTSON AVE.
RELOCATED WILLIAMS AVE.
RELOCATED DUCK CREEK RD.
℄, Relocated Williams Ave.
℄, Relocated Duck Creek Rd.
℄, Relocated Edmondson Ave.
℄, Proposed Ramp D
Proposed Grade IR 71
Proposed grade, IR 71.
5' Lt.
TS = 0.4'
28' Lt.
20' Lt.
Sod & TS = 0.3'
(Sta. 328+00-74' Lt., Proposed IR 71)
22 Trace of Organic
19 Trace of Organic
24 Trace of Organic
35' Lt.
29' Lt.
Dark brown and gray silty gravelly sand
Greenish-brown silty sandy gravel, slightly organic
Brown and gray silty, clay, trace of organic.
Slightly organic
Brown and gray silt and clay, slightly organic.
Brown and gray gravelly sandy clay
Gray clayey sandy gravel
Boulders, ashes, cinders, and brickbats
*=Refusal
86' Lt.
Sod & TS = 0.4'
12' Rt.
Brown clayey sandy gravel
51' Lt.
Gray crystalline limestone boulders, cobbles, and stone fragments.

SOIL PROFILE

HAMILTON COUNTY

HAM – I R 71 – 6.14

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

11/34

11/15

Sta. 292+00

℄ Proposed Retaining Wall 1 (Deleted)

Proposed Retaining Wall 3

(Sta. 292+35)
17
23 Trace of Organic
W
18
21⊖
21⊖
12

(Sta. 291+90)
Sod & TS=0.4'
22
13
11
3

660 650 640 630 620 610 600

160 150 100 50 ℄ 50 100 150 160

Sta. 291+00

Proposed Retaining Wall 3

Building

(Sta. 290+75)
Sod & TS=0.4'
13
20
W
22⊖
20⊖
12

Hole squeezed in at elev. 611.6'

Sod & TS=0.3'
18
16
22
W
21⊖
20⊖

660 650 640 630 620 610 600 590

160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ℄ 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160

SOIL PROFILE

HAMILTON COUNTY

HAM – IR 71 – 6.14

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

12/34

12/15

Sta. 296+50

℄ Proposed Retaining Wall 2 (Deleted)

(Sta. 296+65)
Sod & TS =0.3'
23
22
5
17
10

Building

Proposed Retaining Wall 3

(Sta. 296+44)
Sod & TS =0.4'
18
22 ⊖
18 ⊖
22 ⊖
14
Hole caved in at elev. 608.9'

Building

(Sta. 297+05)
Sod & TS =0.4'
14
W
22 ⊖
19
19
20 ⊖
8
Hole caved in at elev. 611.0'

660 650 640 630 620 610 600 590 580

160 150 100 50 ℄ 50 100 150 160

Sta. 294+50

℄ Proposed Retaining Wall 2 (Deleted)

(Sta. 294+47)
Sod & TS =0.4'
21
21
27 ● Slighty Organic
15
Refusal (Boulders)

Proposed Retaining Wall 3

(Sta. 294+33)
Sod & TS =0.3'
17
W
21 ⊖
23
23

660 650 640 630 620 610 600 590 580

160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ℄ 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160

SOIL PROFILE

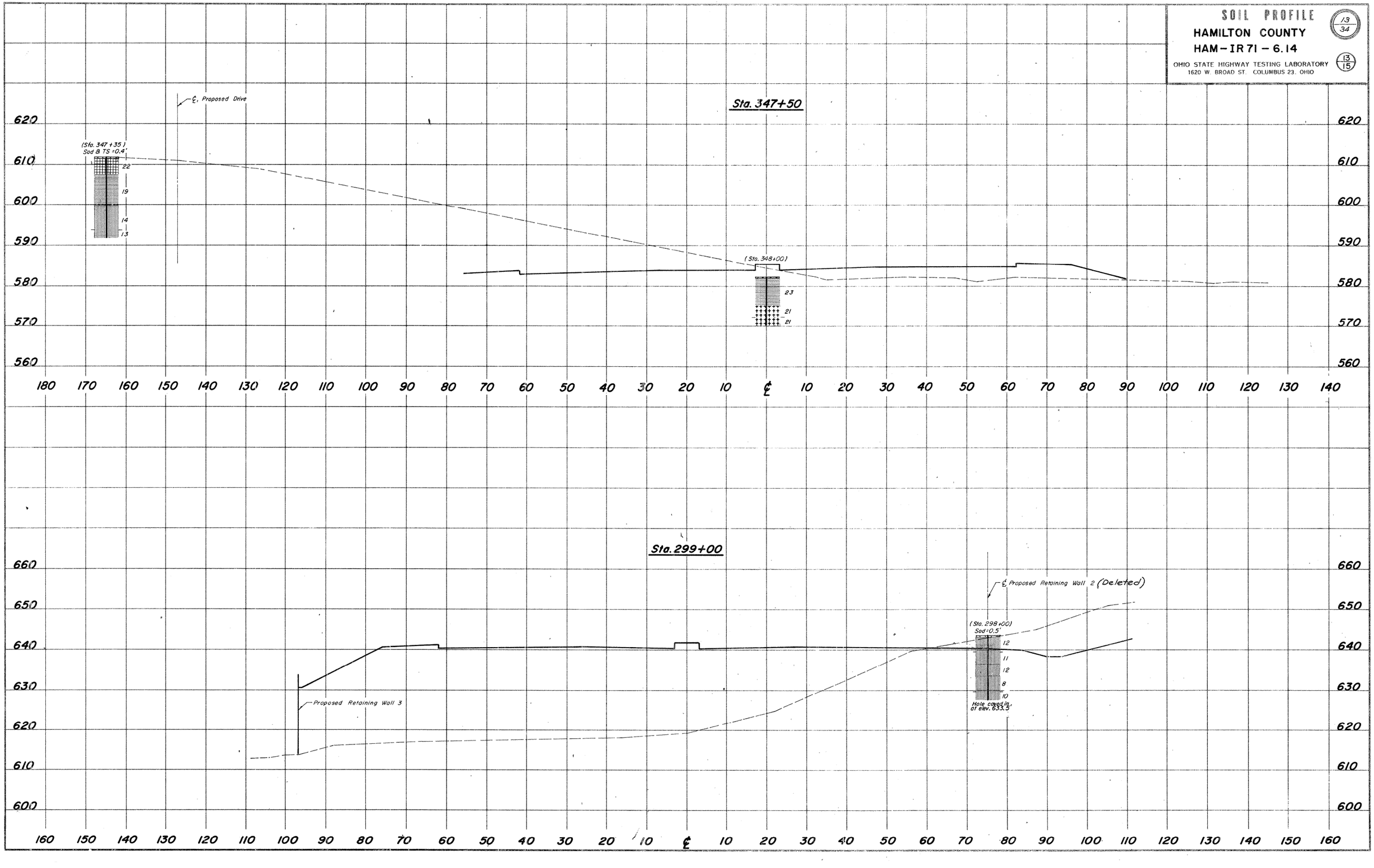
13/34

HAMILTON COUNTY

HAM-IR 71-6.14

13/15

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO



SOIL PROFILE

14/34

HAMILTON COUNTY

HAM – IR 71 – 6.14

14/15

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

PROPOSED I R 71 (Northbound Lanes)

Sta. 357+50

℄ Proposed IR 71 (Southbound Lanes)

℄ Proposed IR 71 (Northbound Lanes)

620 610 600 590 580 570

160 150 100 50 ℄ 50 100 150 160

16
14
11
11
10
11

Sta. 355+00

Building

Sod & TS = 0.3'

12 14 12 11 12 Brown clayey silt 10 12 11 6 16 19 26 25 21 30 26 24 16 Refusal

18 13 13 Refusal (Boulders)

610 600 590 580 570 560 550

160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ℄ 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160

SOIL PROFILE

HAMILTON COUNTY

HAM-IR 71-6.14

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

15/34

15/15

PROPOSED IR 71 (Northbound Lanes)

Sta. 359+50

620
610
600
590
580
570
560

(Sta. 359+40)
TS = 0.4'
19
16
13

℄, Proposed IR 71 (Northbound Lanes)

℄, Proposed IR 71 (Southbound Lanes)

(Sta. 359+70)
Sod & TS = 0.3'
16
13
17

160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ℄ 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160

TE - 118
600 - 11 - 64

MAR 10

HAMILTON COUNTY
HAM-IR 71-6.14

16
34
1
3

GEOLOGY OF THE SITE
The structure site is located on an Illinoian outwash plain, over the buried valley wall of the Deep Stage Cincinnati River. Interbedded outwash and till overlies interbedded shale and limestone bedrock, of Ordovician age.

EXPLORATION
The exploration consisted of three drive sample borings, made between July 30 and August 5, 1965, and seven drive rod penetration tests, made between June 24 and 29, 1965.

INVESTIGATIONAL FINDINGS
The borings encountered unstratified, moist, and medium-dense to extremely dense silts, sands, and occasional gravels, a bouldery interval was encountered in borings B-3 and B-14 at approximately 12-foot depths, elevations 598 and 596 feet. The borings were terminated at 46 to 56-foot depths, elevations 562 to 555 feet, after penetrating in excess of 30 feet of material requiring more than 30 blows per foot in the standard penetration test.

Rod soundings met increasing penetration resistance with increasing depth, and were terminated upon encounter with near-refusal and refusal to penetration at 20 to 28-foot depths, elevations 589 to 582 feet, considered to be in the hard and dense materials revealed by the borings.

No free water was encountered in any of the rod sounding holes.

No test penetrated to bedrock surface.

LEGEND

- Auger Boring Location - Plan View.
- Press and / or Drive Sample and / or Core Boring Location - Plan View.
- Drive Rod Penetration Resistance Sounding Location - Plan View.
- Capped Pile
- Footing
- Footing on Pile
- TR — Top of Rock
- Coal
- Weathered Indurated Clay
- Indurated Clay
- Weathered Shale
- Shale
- Horizontal Bar on Boring Log Indicates the Depth the Sample Was Taken.
- X/Y — Figures Beside the Boring Log in Profile Indicate the Number of Blows for Standard Penetration Test.
  X = Number of Blows for First 6 inches.
  Y = Number of Blows for Second 6 inches.
- Drive Rod Penetration Resistance Sounding Log - Profile
- Casing
- Resistance "R" < 10,000 lbs.
- Resistance "R" > 10,000 lbs.
- Z — Indicates Final Measurement of Penetration, in Inches.
- W — Indicates Free Water Elevation.
- Indicates Static Water Elevation.

SYMBOLS OF ROCK TYPES

- Weathered Sandstone
- Sandstone
- Leached Dolomite

GENERAL INFORMATION

Drive Rod Penetration Sounding Tests

Drive rod penetration resistance tests constitute driving a 1.315-inch diameter steel rod, with a 45° cone point, into the ground, using a 122-pound drop-hammer with a free fall of five feet. At one or two-foot depth intervals, a measurement is taken to determine the amount of penetration achieved in three hammer drops. This reading is converted to an empirical value for capacity "R", in thousands of pounds (which is a measure of both the point resistance and frictional resistance on the rod), by using charts prepared by the Ohio Department of Highways, Bureau of Bridges, on the basis of correlation study of rod penetration with past performance of pile driving. For interpretation, a graph is prepared by plotting the value "R" against the depth at which the reading was taken, and connecting the plotted points. The curve so obtained reflects the density of subsurface materials in a manner that can be readily compared with data from similar tests at other locations on the structure site. From this comparison, the overall uniformity of subsurface condition may be evaluated.

Drive Sample Borings - Drive-Press Sample Borings

Drive sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. sampler, at 2-1/2 and / or 5-foot depth intervals, driven by means of a 140 - pound drop-hammer with a free fall of 30 inches. The number of blows required to drive the sampler 12 inches is considered the standard penetration test.

Drive-press sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. drive sampler, and 3" O.D. thin-wall press sampler. The press sampler is advanced by continuous uniform pressure, applied by the drill rig.

The boring log sheets show a graphic plot of the information obtained, including depth and elevation of the sample, number of blows for the standard penetration tests in two 6-inch increments, depth of press samples, field sample number, sample description - based on laboratory tests and the Casagrande AC classification system - and gradation, plasticity, and moisture content determinations. Results of strength and consolidation testing, if performed, appear on separate enclosures.

At depths where materials are bouldery or gravelly to the extent that the sampler can not be driven, a wash sample is procured for visual classification, in order to determine the general character of the material. These samples are not considered sufficiently representative to warrant laboratory testing.

Particle Size Definitions

Boulders	Cobbles	Gravel	Coarse Sand	Fine Sand	Silt	Clay
8"	3"	2.0mm (No. 10 sieve)	0.42mm (No. 40 sieve)	0.074mm (No. 200 sieve)	0.005mm	

LOG OF BORING

Date Started 8-3-65 — Sampler Type SS — Dia. 1 3/8" — Water Elev. —
Date Completed 8-4-65 — Casing: Length 15' — Dia. 3 1/2"
Boring No. B-3 — Station & Offset 1+95, 14' Lt. (Rear Abutment) — Surface Elev. 610.7'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
610.7	0														
	2														
	4														
605.7	6	20/3			Brownish-Gray Sandy Silt	1	0	14	18	40	28	21	5	15	
603.2	8	9/11			Gray Silt	2	0	3	10	66	21	NP	NP	17	
600.7	10	15/16			Gray Sandy Silt	3	0	5	15	60	20	NP	NP	18	
598.2	12				No Sample Recovered - Boulders (Driller's Description)										
595.7	14														
	16	13/14			Gray Sandy Silt	4	9	8	17	39	27	23	7	13	
593.2	18														
590.7	20	14/14			Gray Gravelly Sandy Silt	5	15	8	14	37	26	22	7	13	
588.2	22	12/11			Gray Gravelly Sandy Silt	6	17	8	13	37	25	21	6	13	
585.7	24	22/18			Gray Sandy Silt	7	11	11	19	34	25	22	9	12	
	26	12/18			Gray Sandy Silt	8	12	6	15	41	26	20	6	12	
	28														
580.7	30														
	32	50* (0.7)			Gray Sandy Silt	9	0	3	55	27	13	NP	NP	16	
575.7	34														
	36	50* (0.6)			Gray Silt	10	0	2	17	65	16	NP	NP	20	
570.7	38														
	40	50* (0.9)			Gray Silty Gravelly Sand	11	26	35	20	10	9	NP	NP	12	
565.7	42														
	44	50* (0.9)			Gray Sandy Silt	12	10	16	31	32	11	NP	NP	15	
560.7	46														
	48	25/25			Gray Sandy Silt	13	14	7	14	37	28	21	6	11	
555.7	50				BOTTOM OF BORING										
554.8	52	50* (0.9)			Gray Silt	14	0	2	9	62	27	22	4	15	
	54														
	56														

*Refusal

LOG OF BORING

Date Started 7-30-65 — Sampler Type SS — Dia. 1 3/8" — Water Elev. —
Date Completed 8-3-65 — Casing: Length 25' — Dia. 3 1/2"
Boring No. B-11 — Station & Offset 3+72, 123' Lt. (Forward Left Wingwall) — Surface Elev. 612.0'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
612.0	0														
	2														
	4														
607.0	6	10/7			Brown Sandy Silt	1	0	8	16	35	41	27	9	14	
604.5	8	9/11			Gray Sandy Silt	2	0	10	14	39	37	26	10	13	
602.0	10	9/13			Gray Sandy Silt	3	0	9	15	47	29	22	8	12	
599.5	12	10/11			Gray Sandy Silt	4	V		I	8	U	A	L	12	
597.0	14	12/17			Gray Sandy Silt	5	V		I	8	U	A	L	11	
594.5	16	16/26			Gray Sandy Silt	6	0	10	19	46	25	21	7	12	
592.0	18	18/19			Gray Sandy Silt	7	0	8	15	50	27	20	4	12	
589.5	20	21/32			Gray Sandy Silt	8	10	5	17	44	24	20	4	12	
587.0	22	15/16			Gray Sandy Silt	9	9	7	16	45	23	19	3	12	
	24														
	26														
582.0	28	18/22			Gray Sandy Silt	10	14	9	15	34	28	23	9	12	
	30														
	32														
577.0	34	23/25			Gray Silty Sand	11	0	5	75	8	12	NP	NP	18	
	36														
	38														
572.0	40	50* (0.7)			Gray Silt	12	0	1	8	80	17	NP	NP	21	
	42														
	44														
567.0	46	50* (0.7)			Gray Silt	13	0	1	5	71	23	-	-	18	
	48				BOTTOM OF BORING										
562.0	50														
561.0		24/25			Gray Silt	14	0	1	5	66	28	NP	NP	16	

*Refusal

NOTE: Information shown by this subsurface investigation was obtained solely for the use in establishing design controls for the project. The State of Ohio does not guarantee the accuracy of this data and it is not to be construed as a part of the plans governing construction of the project.

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR 71-0635
OVER RELOCATED HIRES LANE
SEC. HAM-IR 71-6.14

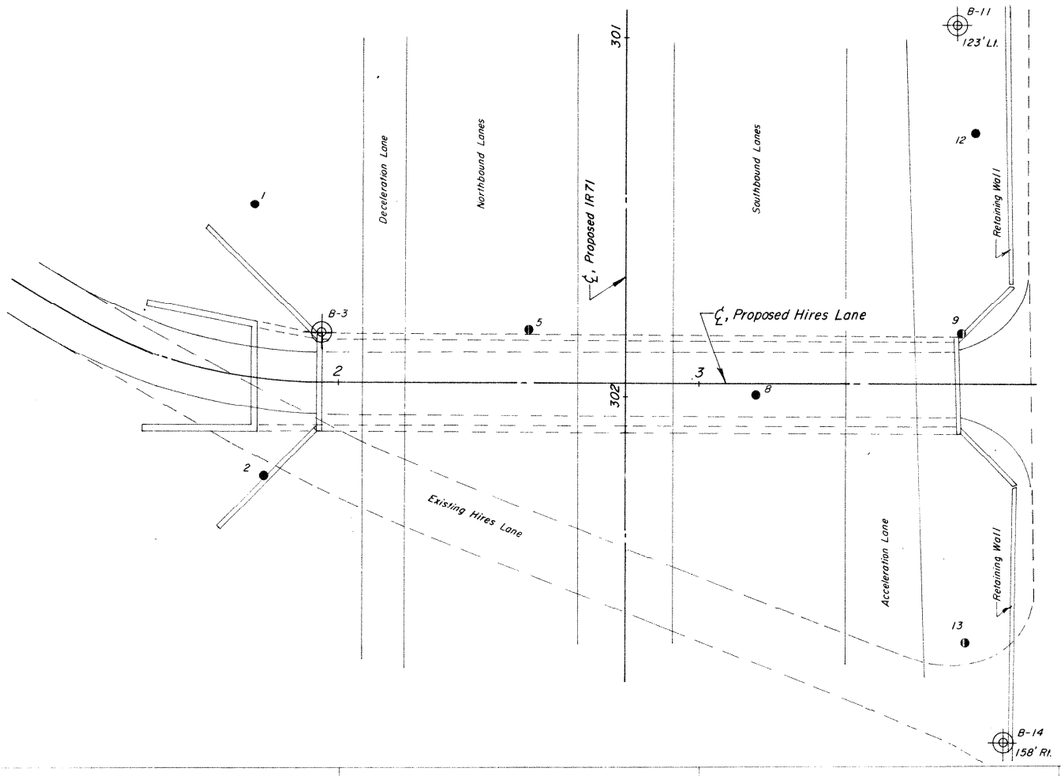
CHECKED BY	REVIEWED BY	DATE
L.N.L.	R.D.R.	9/22/65

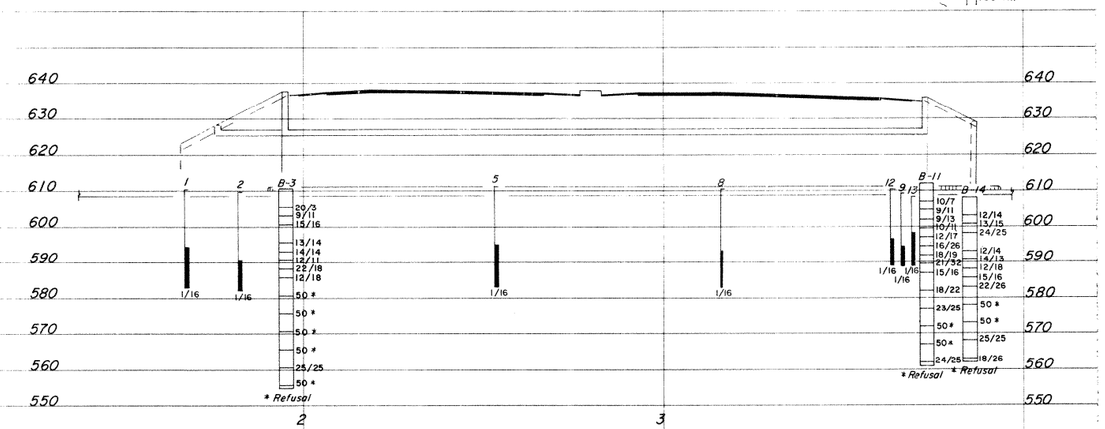
TE - 119
500 - 11 - 64

MAR 10

17/34
2/3

HAM-IR 71-6.14





LOG OF BORING

Date Started 8-5-65 — Sampler Type SS — Dia. 1 3/8" — Water Elev. ____
Date Completed 8-5-65 — Casing: Length 15' — Dia. 3 1/2"
Boring No. B-14 — Station & Offset 3+85, 150' Rt. (Forward Rt. Wingwall) — Surface Elev. 608.2'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics: % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
608.1	0														
	2														
	4														
603.1	6	12/14			Brownish-Gray Sandy Silt	1	13	7	8	51	21	21	3	17	
600.6	8	13/15			Gray Sandy Gravelly Silt	2	22	7	15	35	21	21	5	12	
598.1	10	24/25			Gray Sandy Silt	3	0	11	17	42	30	22	6	10	
595.6	12				No Sample Recovered - Boulders (Driller's Description)										
593.1	14														
	16	12/14			Gray Gravelly Sandy Silt	4	19	8	15	35	23	21	6	12	
590.6	18	14/13			Gray Sandy Silt	5	0	7	18	46	29	22	5	12	
588.1	20	12/18			Gray Gravelly Sandy Silt	6	15	8	12	40	25	23	7	12	
585.6	22	15/16			Gray Sandy Silt	7	12	4	17	41	26	21	5	12	
583.1	24	22/26			Gray Sandy Silt	8	0	3	21	48	28	NP	NP	16	
	26														
	28														
578.1	30														
	32	50* (0.6)			Gray Silty Sand	9	0	53	33	14	-	NP	NP	12	
	34														
573.1	36	50* (0.7)			Gray Silty Sand	10	0	51	22	16	11	NP	NP	10	
	38														
568.1	40														
	42	25/25			Gray Silty Sand	11	0	34	42	13	11	NP	NP	14	
	44				BOTTOM OF BORING										
563.1	46	18/26			Gray Sandy Gravelly Silt	12	28	7	15	27	23	23	8	9	
562.1					*Refusal										

SCALE: 1" = 20'

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR 71-0635
OVER RELOCATED HIRES LANE
SEC. HAM-IR 71-6.14

PLAN AND PROFILE

DRAWN BY	CHECKED BY	REVIEWED BY	DATE
R.L.C.	L.N.L.	R.D.R.	9/22/65

TE-114
1000-1-64

MAR 10 '65

18
34

HAM-IR71-6.14

3
3

Test Location No.	Station & Offset	Surface Elev.	Water Elev.	Piling	Hammer	Formula	Reference	Rod Condition
1	1+67, 48' LT. REAR LEFT WINGWALL	610.4'	DRY					GOOD
2	1+82, 27' RT. REAR RIGHT WINGWALL	609.9'						
5	2+53, 15' LT. REAR	611'	DRY					GOOD
8	3+16, 3' RT. FORWARD	610.5'	DRY					ROD BENT
9	3+73, 14' LT. FORWARD LEFT WINGWALL	609.2'	DRY					GOOD
12	3+77, 70' LT. FORWARD LEFT WINGWALL	610.4'						ROD BENT
13	3+74, 72' RT. FORWARD RT. WINGWALL	608.2'	DRY					GOOD



OHIO STATE HIGHWAY TESTING LABORATORY

1620 WEST BROAD ST. COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION

BRIDGE NO. HAM-IR71-0635

OVER RELOCATED HIRES LANE

SEC. HAM-IR71-6.14

DRIVE ROD PENETRATION RESISTANCE DATA

PLOTTED BY	CHECKED BY	REVIEWED BY	DATE
R.C.	L.N.L.	R.D.R.	9/22/65

TE - 118
600 - 11 - 64

MAR 10 [illegible]

HAMILTON COUNTY
HAM-IR 71- 6.14

19
34
1
4

GEOLOGY OF THE SITE

The structure site is located on an Illinoian outwash plain, over the buried valley wall of the Deep Stage Cincinnati River. Interbedded outwash and till overlies interbedded shale and limestone bedrock, of Ordovician age.

EXPLORATION

The exploration consisted of two drive sample borings and five drive rod penetration tests, made between June 16 and 23, 1965.

INVESTIGATIONAL FINDINGS

The borings encountered unstratified, moist, very stiff to hard clays and silt clays, and medium-dense to very dense silts, sands, and occasional gravels. The borings were terminated at 46 and 66-foot depths, elevations 593 and 571 feet, after penetrating in excess of 20 feet of material requiring more than 30 blows per foot in the standard penetration test.

Rod soundings met increasing penetration resistance with increasing depth, and were terminated upon encounter with near-refusal and refusal to penetration at 11 to 15-foot depths, elevations 628 to 619 feet, considered to be in the hard and dense materials revealed by the borings.

No free water was encountered in any of the rod sounding holes.

No test penetrated to bedrock surface.

LEGEND

- Auger Boring Location - Plan View.
- Press and / or Drive Sample and / or Core Boring Location - Plan View.
- Drive Rod Penetration Resistance Sounding Location - Plan View.
- Capped Pile
- Footing
- Footing on Pile
- TR — Top of Rock
- Horizontal Bar on Boring Log Indicates the Depth the Sample Was Taken.
- X/Y — Figures Beside the Boring Log in Profile Indicate the Number of Blows for Standard Penetration Test.
  X = Number of Blows for First 6 inches.
  Y = Number of Blows for Second 6 inches.
- Drive Rod Penetration Resistance Sounding Log - Profile
- Casing
- Resistance "R" < 10,000 lbs.
- Resistance "R" > 10,000 lbs.
- Z — Indicates Final Measurement of Penetration, in Inches.
- W — Indicates Free Water Elevation.
- Indicates Static Water Elevation.

SYMBOLS OF ROCK TYPES

- Coal
- Weathered Indurated Clay
- Indurated Clay
- Weathered Shale
- Shale
- Weathered Sandstone
- Sandstone
- Leached Dolomite
- Dolomite
- Leached Limestone
- Limestone

GENERAL INFORMATION

Drive Rod Penetration Sounding Tests

Drive rod penetration resistance tests constitute driving a 1.315-inch diameter steel rod, with a 45° cone point, into the ground, using a 122-pound drop-hammer with a free fall of five feet. At one or two-foot depth intervals, a measurement is taken to determine the amount of penetration achieved in three hammer drops. This reading is converted to an empirical value for capacity "R", in thousands of pounds (which is a measure of both the point resistance and frictional resistance on the rod), by using charts prepared by the Ohio Department of Highways, Bureau of Bridges, on the basis of correlation study of rod penetration with past performance of pile driving. For interpretation, a graph is prepared by plotting the value "R" against the depth at which the reading was taken, and connecting the plotted points. The curve so obtained reflects the density of subsurface materials in a manner that can be readily compared with data from similar tests at other locations on the structure site. From this comparison, the overall uniformity of subsurface condition may be evaluated.

Drive Sample Borings - Drive-Press Sample Borings

Drive sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. sampler, at 2-1/2 and / or 5-foot depth intervals, driven by means of a 140 - pound drop-hammer with a free fall of 30 inches. The number of blows required to drive the sampler 12 inches is considered the standard penetration test.

Drive-press sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. drive sampler, and 3" O.D. thin-wall press sampler. The press sampler is advanced by continuous uniform pressure, applied by the drill rig.

The boring log sheets show a graphic plot of the information obtained, including depth and elevation of the sample, number of blows for the standard penetration tests in two 6-inch increments, depth of press samples, field sample number, sample description - based on laboratory tests and the Casagrande AC classification system - and gradation, plasticity, and moisture content determinations. Results of strength and consolidation testing, if performed, appear on separate enclosures.

At depths where materials are bouldery or gravelly to the extent that the sampler can not be driven, a wash sample is procured for visual classification, in order to determine the general character of the material. These samples are not considered sufficiently representative to warrant laboratory testing.

Particle Size Definitions

Boulders	Cobbles	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	8"	3" / 2.0mm	0.42mm		0.074mm	0.005mm
		No. 10 sieve	No. 40 sieve	No. 200 sieve		

NOTE: Information shown by this subsurface investigation was obtained solely for the use in establishing design controls for the project. The State of Ohio does not guarantee the accuracy of this data and it is not to be construed as a part of the plans governing construction of the project.

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR 71-0652
UNDER EDMONDSON AVE.
SEC. HAM-IR 71- 6.14

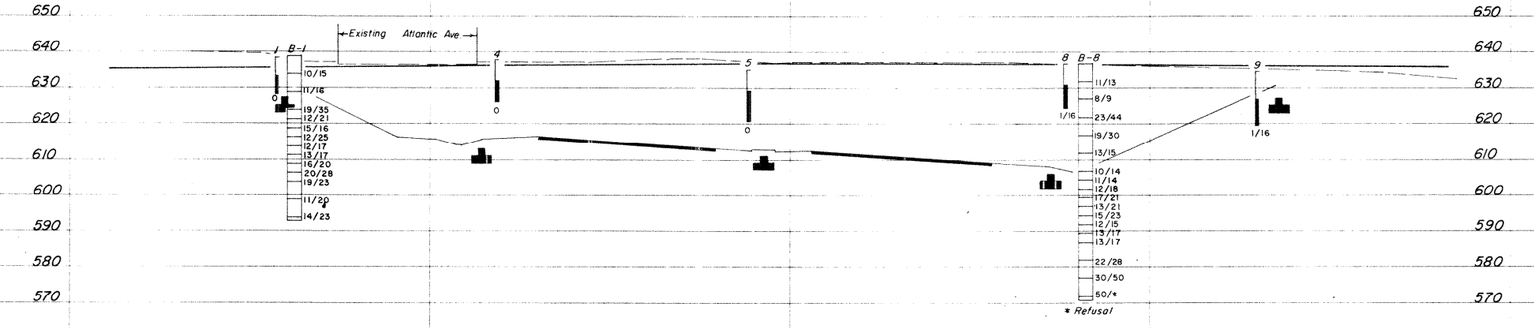
CHECKED BY	REVIEWED BY	DATE
L.N.L.	R.D.R.	8/3/65

TE - 119
500 - 11 - 64

HAM-IR 71-6.14

20/34 (2/4)





SCALE: 1" = 20'

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION

BRIDGE NO. HAM-IR 71-0652
UNDER EDMONDSON AVE

SEC. HAM-IR 71-6.14

PLAN AND PROFILE

DRAWN BY	CHECKED BY	REVIEWED BY	DATE
R.L.F.	L.N.L.	R.D.R.	8/2/65

LOG OF BORING

Date Started 6-17-65 | Sampler Type SS | Dia. 1 3/8" | Water Elev. ———
Date Completed 6-22-65 | Casing: Length NONE | Dia. ———
Boring No. B-1 | Station & Offset 19+62, 18'Lt. (REAR ABUTMENT) | Surface Elev. 638.9'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics: % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
638.9	0														
	2														
	4														
633.9	6	10/15			Brown Silt and Clay	1	0	4	11	44	41	33	13	17	
	8														
628.9	10														
	12	11/16			Brown Gravelly Sandy Clay	2	16	7	13	39	25	27	11	12	
623.9	14														
	16	19/35			Brown Sandy Silt	3	11	4	30	38	17	NP	NP	13	
621.4	18	12/21			Brown Silty Sand	4	0	3	81	8	8	NP	NP	16	
618.9	20	15/16			Brown Silty Sand	5	0	1	76	15	8	NP	NP	19	
616.4	22	12/25			Brown Silt	6	0	1	4	60	35	26	6	21	
613.9	24	12/17			Brown Sandy Silt	7	0	1	36	49	14	NP	NP	24	
611.4	26	13/17			Brown Sandy Silt	8	0	0	47	41	12	NP	NP	22	
608.9	28	16/20			Gray Sandy Silt	9	0	1	36	51	12	NP	NP	18	
606.4	30	20/28			Gray Sandy Silt	10	0	1	56	34	9	NP	NP	17	
603.9	32	19/23			Gray Sandy Silt	11	0	1	34	54	11	NP	NP	20	
	34														
	36														
	38														
598.9	40	11/20			Gray Sandy Silt	12	14	7	14	42	23	22	6	13	
	42														
	44				BOTTOM OF BORING										
593.9															
592.9	46	14/23			Gray Sandy Silt	13	0	4	30	50	16	NP	NP	15	

LOG OF BORING

Date Started 6-22-65 | Sampler Type SS | Dia. 1 3/8" | Water Elev. ———
Date Completed 6-23-65 | Casing: Length 30' | Dia. 3 1/8"
Boring No. B-8 | Station & Offset 17+82.8'Rt. 85'± (FORWARD PIER) | Surface Elev. 636.2'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics: % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
636.2	0														
	2														
	4														
631.2	6	11/13			Brownish-Gray Clayey Silt	1		4	15	45	36	29	9	19	
	8														
626.2	10	8/9			Mottled Brown and Gray Clay	2		4	14	40	42	47	28	19	
	12														
621.2	14														
	16	23/44			Brown Sandy Gravelly Silt	3	33	7	11	28	21	25	9	13	
616.2	18														
	20	19/30			Gray Sandy Gravelly Silt	4	28	9	13	31	19	25	9	12	
611.2	22														
	24	13/25			Gray Sandy Gravelly Silt	5	28	7	10	40	15	NP	NP	9	
606.2	26														
	28														
603.7	30	10/24			Brown Sandy Silt	6		1	56	35	8	NP	NP	20	
	32	11/14			Brownish-Gray Sandy Silt	7		1	43	46	10	NP	NP	18	
601.2	34														
	36	12/18			Gray Sandy Gravelly Silt	8	24	4	15	40	17	22	6	15	
598.7	38	17/21			Gray Sandy Silt	9	9	2	30	47	12	NP	NP	18	
596.2	40														
	42	13/21			Gray Gravelly Sandy Silt	10	17	5	14	44	20	22	6	13	
593.7	44	15/23			Gray Silty Sandy Gravel	11	47	6	10	24	13	21	5	13	
591.2	46	12/15			Gray Sandy Silt	12		8	19	47	26	24	7	11	
588.7	48	13/17			Gray Sandy Silt	13		8	20	44	28	24	9	15	
586.2	50	13/17			Gray Gravelly Sandy Silt	14	19	7	13	41	20	22	6	12	
	52														
	54														
581.2	56	22/28			Gray Silt	15		1	17	68	14	NP	NP	12	
	58														
576.2	60														
	62	30/50			Gray Silty Sand	16		12	77	6	5	NP	NP	19	
	64				BOTTOM OF BORING										
571.2															
570.7	66	50/*			Gray Silty Sand	17		17	71	7	5	NP	NP	18	

*Refusal

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR 71-0652
UNDER EDMONDSON AVE.
SEC. HAM-IR 71-6.14

BORING DATA

TYPED BY	CHECKED BY	REVIEWED BY	DATE
S.A.J.	R.C.	R.D.R.	8/3/65

TE-114
1000-1-64

22/34

4/4

HAM-IR 71-6.14

Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

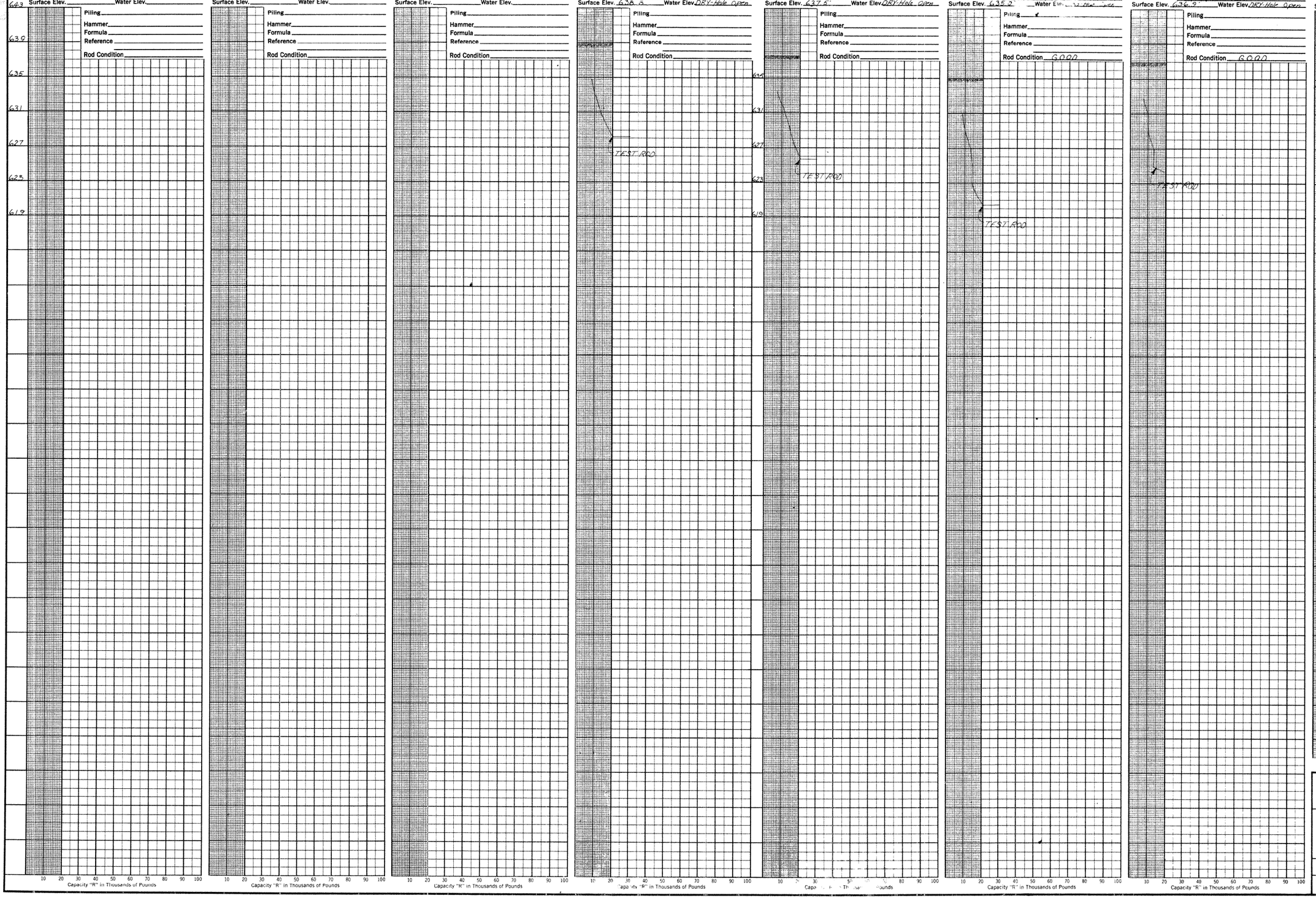
Test Location No. 1
Station & Offset 3+[illegible]7, 30' LT
REAR ABUTMENT
Surface Elev. 638.5 Water Elev. DRY-Hole Open
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

Test Location No. 4
Station & Offset 14+18, 28' RT
REAR PIER
Surface Elev. 637.5 Water Elev. DRY-Hole Open
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

Test Location No. 5
Station & Offset 14+8[illegible] [illegible]
CENT[illegible]
Surface Elev. 635.2 Water Elev. [illegible]
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD

Test Location No. 8
Station & Offset 15+82, 28' RT
FORWARD PIER
Surface Elev. 636.9 Water Elev. DRY-Hole Open
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD

Test Location No. 9
Station & Offset 16+29, 25' LT
FORWARD ABUTMENT
Surface Elev. 634.4 Water Elev. DRY-Hole Open
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD



OHIO STATE HIGHWAY TESTING LABORATORY
1620 WEST BROAD ST. COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR 71-0652
UNDER EDMONDSON AVE.
SEC. HAM-IR 71-6.14

DRIVE ROD PENETRATION RESISTANCE DATA

PLOTTED BY	CHECKED BY	REVIEWED BY	DATE
R.C.	L.N.L.	R.D.R.	8/3/65

TE - 118
600 - 11 - 64

MAR 10 1967

HAMILTON COUNTY
HAM-IR 71-6.14

23
34
4

GEOLOGY OF THE SITE
The structure site is located on an Illinoian outwash plain, over the buried valley wall of the Deep Stage Cincinnati River. Interbedded outwash and till overlies interbedded shale and limestone bedrock, of Ordovician age.

EXPLORATION
The exploration consisted of two drive sample borings and six drive rod penetration tests, made between June 10 and 17, 1965.

INVESTIGATIONAL FINDINGS
The borings encountered unstratified moist, very stiff to hard clays and silt clays and medium dense to very dense silts, sands, and occasional gravels. The borings were terminated at 61 and 66-foot depths, elevations 559 and 553 feet, after penetrating in excess of 30 feet of material requiring more than 30 blows per foot in the standard penetration test. Boring B-8 encountered foundation material comprised of boulders, cobbles, gravels, stone fragments and random fill, at surface to 20-foot depth elevation 605 feet.

Rod soundings met increasing penetration resistance with increasing depth, and were terminated upon encounter with refusal to penetration at 12 to 31-foot depths, elevations 614 to 583 feet, considered to be in the hard and dense materials revealed by the borings.

No free water was encountered in any of the rod sounding holes.

No test penetrated to bedrock surface.

LEGEND

- Auger Boring Location - Plan View.
- Press and / or Drive Sample and / or Core Boring Location - Plan View.
- Drive Rod Penetration Resistance Sounding Location - Plan View.
- Capped Pile
- Footing
- Footing on Pile
- TR — Top of Rock
- Horizontal Bar on Boring Log Indicates the Depth the Sample Was Taken.
- X/Y — Figures Beside the Boring Log in Profile Indicate the Number of Blows for Standard Penetration Test.
  X = Number of Blows for First 6 inches.
  Y = Number of Blows for Second 6 inches.
- Drive Rod Penetration Resistance Sounding Log - Profile
- Casing
- Resistance "R" < 10,000 lbs.
- Resistance "R" > 10,000 lbs.
- Z — Indicates Final Measurement of Penetration, in Inches.
- W — Indicates Free Water Elevation.
- Indicates Static Water Elevation.

SYMBOLS OF ROCK TYPES

- Coal
- Weathered Indurated Clay
- Indurated Clay
- Weathered Shale
- Shale
- Boulders and/or Cobbles
- Weathered Sandstone
- Sandstone
- Leached Dolomite
- Dolomite
- Leached Limestone
- Limestone

GENERAL INFORMATION

Drive Rod Penetration Sounding Tests

Drive rod penetration resistance tests constitute driving a 1.315-inch diameter steel rod, with a 45° cone point, into the ground, using a 122-pound drop-hammer with a free fall of five feet. At one or two-foot depth intervals, a measurement is taken to determine the amount of penetration achieved in three hammer drops. This reading is converted to an empirical value for capacity "R", in thousands of pounds (which is a measure of both the point resistance and frictional resistance on the rod), by using charts prepared by the Ohio Department of Highways, Bureau of Bridges, on the basis of correlation study of rod penetration with past performance of pile driving. For interpretation, a graph is prepared by plotting the value "R" against the depth at which the reading was taken, and connecting the plotted points. The curve so obtained reflects the density of subsurface materials in a manner that can be readily compared with data from similar tests at other locations on the structure site. From this comparison, the overall uniformity of subsurface condition may be evaluated.

Drive Sample Borings - Drive-Press Sample Borings

Drive sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. sampler, at 2-1/2 and / or 5-foot depth intervals, driven by means of a 140 - pound drop-hammer with a free fall of 30 inches. The number of blows required to drive the sampler 12 inches is considered the standard penetration test.

Drive-press sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. drive sampler, and 3" O.D. thin-wall press sampler. The press sampler is advanced by continuous uniform pressure, applied by the drill rig.

The boring log sheets show a graphic plot of the information obtained, including depth and elevation of the sample, number of blows for the standard penetration tests in two 6-inch increments, depth of press samples, field sample number, sample description - based on laboratory tests and the Casagrande AC classification system - and gradation, plasticity, and moisture content determinations. Results of strength and consolidation testing, if performed, appear on separate enclosures.

At depths where materials are bouldery or gravelly to the extent that the sampler can not be driven, a wash sample is procured for visual classification, in order to determine the general character of the material. These samples are not considered sufficiently representative to warrant laboratory testing.

Particle Size Definitions

Boulders	Cobbles	Gravel	Coarse Sand	Fine Sand	Silt	Clay
8"	3"	2.0mm (No. 10 sieve)	0.42mm (No. 40 sieve)	0.074mm (No. 200 sieve)	0.005mm	

NOTE Information shown by this subsurface investigation was obtained solely for the use in establishing design controls for the project. The State of Ohio does not guarantee the accuracy of this data and it is not to be construed as a part of the plans governing construction of the project.

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR 71-0672
UNDER WILLIAMS AVE.
SEC. HAM-IR 71-6.14

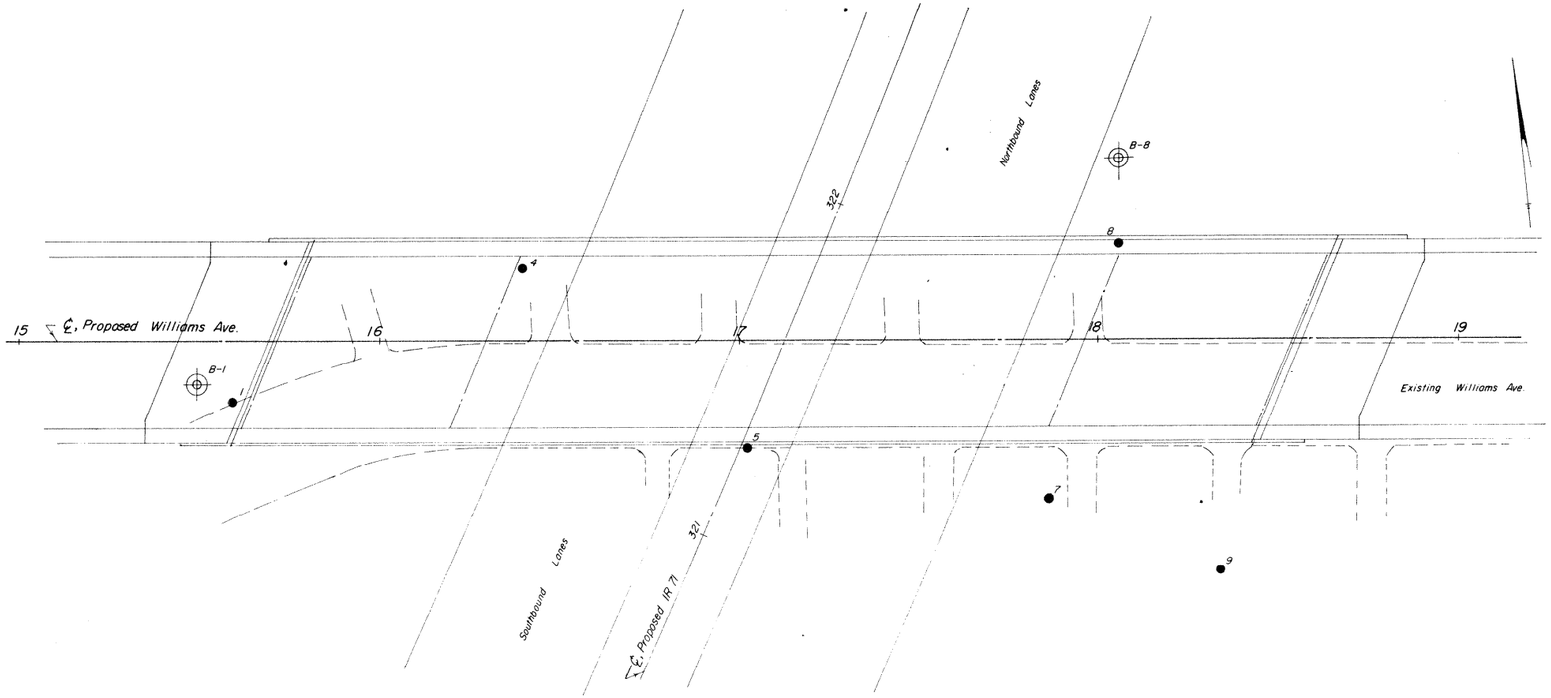
CHECKED BY	REVIEWED BY	DATE
R.H.P.	R.D.R.	7/20/65

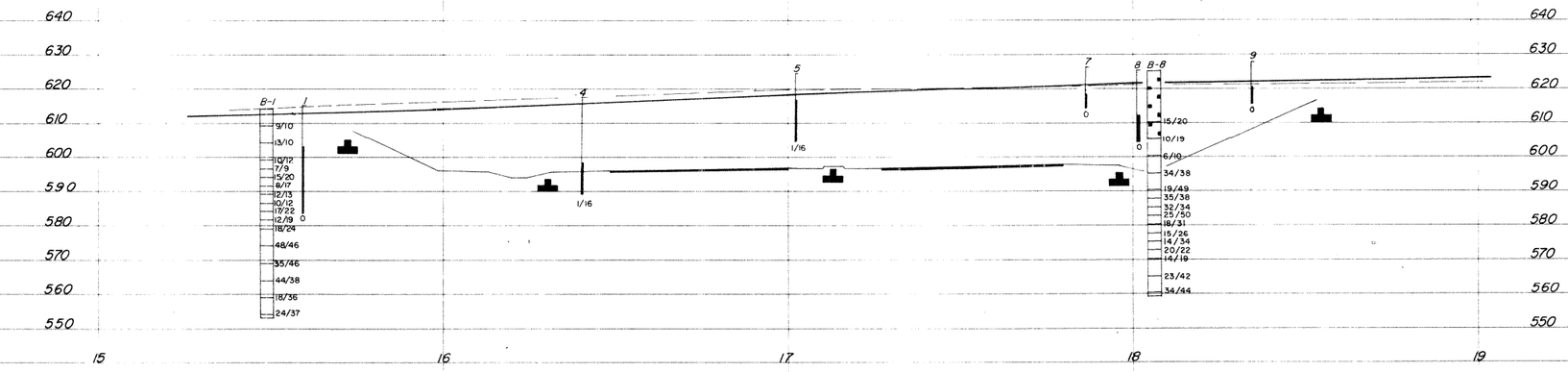
TE - 119
500 - 11 - 64

HAM-IR 71-6.14

24/34

2/4





SCALE: 1" = 20'

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION

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UNDER WILLIAMS AVE.

SEC. HAM-IR 71-6.14

PLAN AND PROFILE

DRAWN BY	CHECKED BY	REVIEWED BY	DATE
R.L.F.	R.H.P.	R.D.R.	7/20/65

TE - 122
600 - 11 - 64

LOG OF BORING

Date Started 6-16-65
Date Completed 6-17-65
Boring No. B-1
Sampler Type SS Dia. 1 3/8"
Casing; Length 40' Dia. 3 1/2"
Station & Offset 15+49.12' Rt (REAR ABUTMENT)
Water Elev. ———
Surface Elev. 614.3'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics: % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
614.3	0														
	2														
	4														
609.3	6	9/10			Brown Sandy Clay	1	14	6	13	33	34	30	14	12	
	8														
604.3	10														
	12	13/10			Brown Clayey Sandy Gravel	2	V	I	S	U	A	L	30	14	24
	14														
599.3	16	10/12			Brown Gravelly Clay	3	21	3	12	32	32	42	19	23	
596.8	18	7/9			Brown Sandy Clay	4	8	4	14	40	34	33	16	19	
594.3	20	15/20			Brown Silty Gravel	5	53	6	5	21	15	25	10	9	
591.8	22	8/17			Brown and Gray Sandy Gravelly Clay	6	25	8	11	27	29	27	13	15	
589.3	24														
	26	12/13			Gray Gravelly Sandy Silt	7	20	10	13	31	26	23	9	12	
586.8	28	10/12			Gray Sandy Silt	8	11	6	10	45	28	22	6	13	
584.3	30														
	32	17/22			Gray Silt	9	6	4	8	56	26	22	5	17	
581.8	34	12/19			Gray Sandy Silt	10	9	3	11	53	24	19	1	16	
579.3	36	18/24			Brown & Gray Sandy Gravelly Silt	11	31	8	11	32	18	23	7	12	
	38														
574.3	40	38/46			Gray Silt	12	0	1	1	82	16	NP	NP	18	
	42														
	44														
569.3	46	35/46			Gray Sandy Silt	13	0	3	1	81	15	-	-	20	
	48														
564.3	50	44/38			Gray Sandy Gravelly Silt	14	24	7	12	33	24	22	8	11	
	52														
	54														
559.3	56	18/36			Gray Gravelly Silt	15	14	5	8	47	26	22	5	15	
	58														
554.3	60				BOTTOM OF BORING										
553.3		38/37			Gray Sandy Silt	16	0	0	31	57	12	NP	NP	18	

LOG OF BORING

Date Started 6-18-65
Date Completed 6-15-65
Boring No. B-8
Sampler Type SS Dia. 1 3/8"
Casing; Length 32' Dia. 3 1/2"
Station & Offset 18+06, 51' Lt (FORWARD PIER)
Water Elev. ———
Surface Elev. 625.2'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics: % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
625.2	0														
623.2	2				Random fill and boulders.										
620.2	4														
	6														
	8														
615.2	10														
	12														
	14														
610.2	16	15/20			Brown Gravelly Sandy Silt	1	26	13	20	19	22	23	10	17	
	18														
605.2	20	10/19			Brown Sandy Gravelly Silt	2	34	6	11	25	24	26	8	14	
	22														
	24														
600.2	26	6/10			No Sample Recovered										
	28														
595.2	30														
	32	34/38			Gray and Brown Silty Sandy Gravel	3	34	11	17	29	9	NP	NP	18	
	34														
590.2	36	19/49			Gray Sandy Gravelly Silt	4	32	11	13	26	18	21	7	6	
587.7	38	35/38			Gray Gravelly Sandy Silt	5	23	12	13	24	28	23	9	13	
585.2	40	32/34			Gray Silt	6	0	3	6	71	20	NP	NP	18	
582.7	42	25/50			Gray Silty Sandy Gravel	7	39	11	11	26	13	19	2	10	
580.2	44	18/31			Gray Gravelly Sandy Silt	8	15	7	13	41	24	21	7	13	
577.7	46	15/26			Gray Gravelly Sandy Silt	9	17	7	13	40	23	22	7	11	
575.2	48	14/34			Gray Sandy Gravelly Silt	10	19	5	13	40	23	21	5	14	
572.7	50	20/22			No Sample Recovered										
570.2	52	14/19			Gray Sandy Silt	11	11	5	9	49	26	23	7	14	
	54														
	56														
565.2	58	23/42			Gray Gravelly Silt	12	7	3	10	61	19	NP	NP	17	
	60														
560.2	62				BOTTOM OF BORING										
559.2	64	34/44			Gray Silt	13	0	1	1	73	25	NP	NP	18	

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR71-0672
UNDER WILLIAMS AVE.
SEC. HAM-IR71-6.14

BORING DATA

TYPED BY	CHECKED BY	REVIEWED BY	DATE
S.A.J.	R.C.	R.D.R.	7/20/65

TE-114
1000-1-64

26
34

4
4

HAM-IR 71-6.14

Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

Test Location No. 1
Station & Offset 15+59, 17' RT
REAR ABUTMENT
Surface Elev. 615.3' Water Elev. DRY-Hole Closed at El. 599.3'
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD

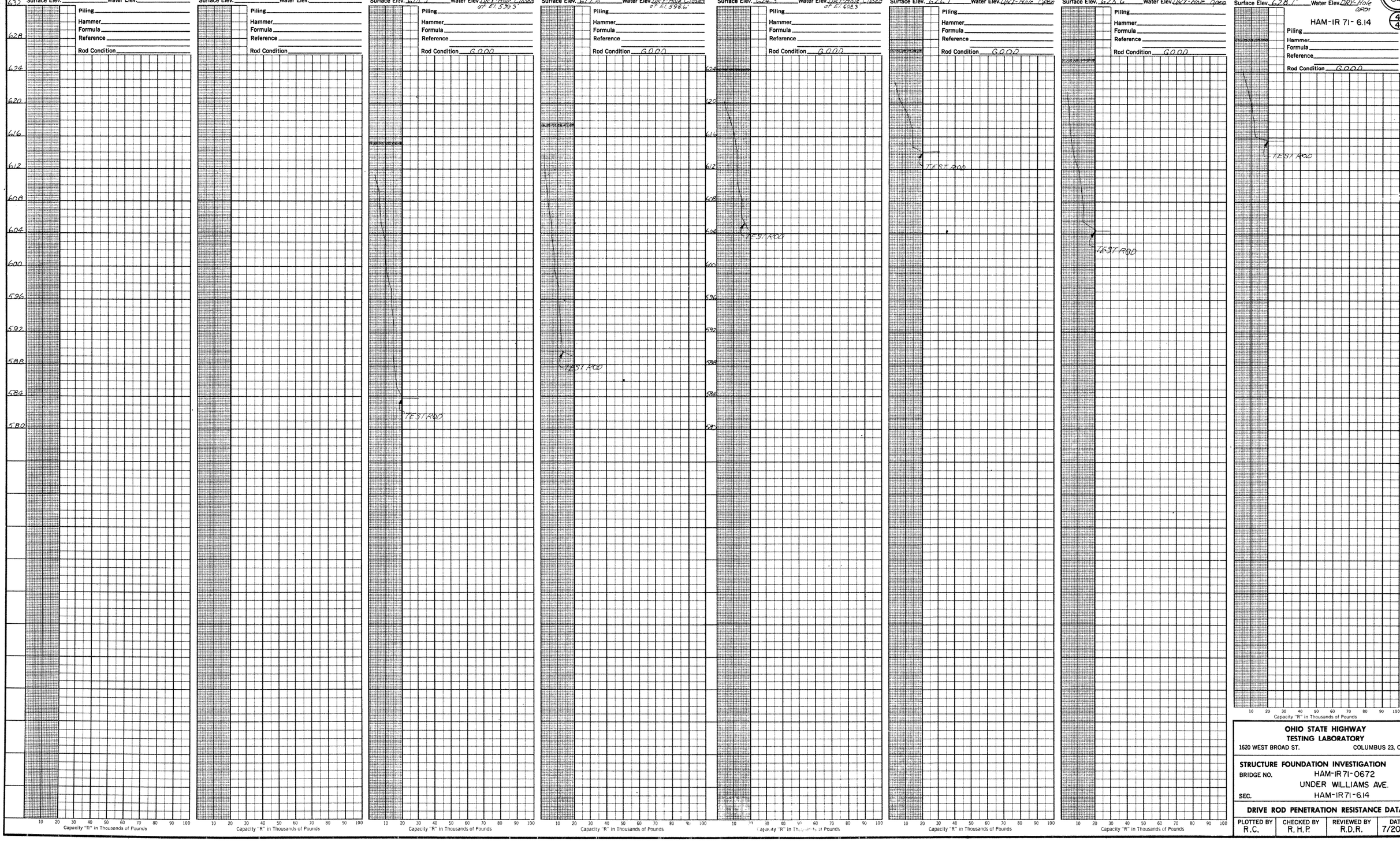
Test Location No. 4
Station & Offset 16+40, 20' LT
REAR PIER
Surface Elev. 617.6' Water Elev. DRY-Hole Closed at El. 598.6'
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD

Test Location No. 5
Station & Offset 17+02, 30' RT
CENTER PIER
Surface Elev. 624.3' Water Elev. DRY-Hole Closed at El. 608.3'
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD

Test Location No. 7
Station & Offset 17+86, 45' RT
FORWARD PIER
Surface Elev. 626.7' Water Elev. DRY-Hole Open
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD

Test Location No. 8
Station & Offset 18+06, 27' LT
FORWARD PIER
Surface Elev. 625.6' Water Elev. DRY-Hole Open
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD

Test Location No. 9
Station & Offset 18+34, 65' RT
FORWARD ABUTMENT
Surface Elev. 628.1' Water Elev. DRY-Hole Open
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD



OHIO STATE HIGHWAY
TESTING LABORATORY
1620 WEST BROAD ST. COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR 71-0672
UNDER WILLIAMS AVE.
SEC. HAM-IR 71-6.14

DRIVE ROD PENETRATION RESISTANCE DATA

PLOTTED BY	CHECKED BY	REVIEWED BY	DATE
R.C.	R.H.P.	R.D.R.	7/20/65

TE - 118
600 - 11 - 64

27
34
1
4

HAMILTON COUNTY
HAM-IR71-6.14

GEOLOGY AND OBSERVATIONS OF THE SITE

The structure site is located on an Illinoian outwash plain, over the buried valley wall of the Deep Stage Cincinnati River. Interbedded outwash and till overlies interbedded shale and limestone bedrock, of Ordovician age. An existing box culvert is located in the immediate area of the rear abutment.

EXPLORATION

The exploration consisted of two drive sample borings and six drive rod penetration tests, made between June 16 and July 1, 1965.

INVESTIGATIONAL FINDINGS

The borings encountered at-surface fill material, comprised of boulders, cinders, ashes, brick bats, and organic soils; below this, unstratified, moist, very stiff to hard clays and silt clays, and medium-dense to very dense silts, sands, and occasional gravels and organic. The borings were terminated at 71 and 96-foot depths, elevations 531 and 504 feet, after penetrating into very dense material.

Rod soundings met increasing penetration resistance with increasing depth, and were terminated upon encounter with near-refusal and refusal to penetration at 28 to 42-foot depths, elevations 577 to 556 feet, considered to be in the dense materials revealed by the borings.

Free water was observed in rod sounding hole number 3 at elevation 587 feet.

No test penetrated to bedrock surface.

LEGEND

- Auger Boring Location - Plan View.
- Press and / or Drive Sample and / or Core Boring Location - Plan View.
- ● Drive Rod Penetration Resistance Sounding Location - Plan View.
- Capped Pile
- Footing
- Footing on Pile
- TR Top of Rock
- Horizontal Bar on Boring Log Indicates the Depth the Sample Was Taken.
- X/Y Figures Beside the Boring Log in Profile Indicate the Number of Blows for Standard Penetration Test.
  X = Number of Blows for First 6 inches.
  Y = Number of Blows for Second 6 inches.
- Drive Rod Penetration Resistance Sounding Log - Profile
- Casing
- Resistance "R" < 10,000 lbs.
- Resistance "R" > 10,000 lbs.
- Z Indicates Final Measurement of Penetration, in Inches.
- W Indicates Free Water Elevation.
- Indicates Static Water Elevation.

SYMBOLS OF ROCK TYPES

- Coal
- Weathered Indurated Clay
- Indurated Clay
- Weathered Shale
- Shale
- Weathered Sandstone
- Sandstone
- Leached Dolomite
- Dolomite
- Leached Limestone
- Limestone

GENERAL INFORMATION

Drive Rod Penetration Sounding Tests

Drive rod penetration resistance tests constitute driving a 1.315-inch diameter steel rod, with a 45° cone point, into the ground, using a 122-pound drop-hammer with a free fall of five feet. At one or two-foot depth intervals, a measurement is taken to determine the amount of penetration achieved in three hammer drops. This reading is converted to an empirical value for capacity "R", in thousands of pounds (which is a measure of both the point resistance and frictional resistance on the rod), by using charts prepared by the Ohio Department of Highways, Bureau of Bridges, on the basis of correlation study of rod penetration with past performance of pile driving. For interpretation, a graph is prepared by plotting the value "R" against the depth at which the reading was taken, and connecting the plotted points. The curve so obtained reflects the density of subsurface materials in a manner that can be readily compared with data from similar tests at other locations on the structure site. From this comparison, the overall uniformity of subsurface condition may be evaluated.

Drive Sample Borings - Drive-Press Sample Borings

Drive sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. sampler, at 2-1/2 and / or 5-foot depth intervals, driven by means of a 140 - pound drop-hammer with a free fall of 30 inches. The number of blows required to drive the sampler 12 inches is considered the standard penetration test.

Drive-press sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. drive sampler, and 3" O.D. thin-wall press sampler. The press sampler is advanced by continuous uniform pressure, applied by the drill rig.

The boring log sheets show a graphic plot of the information obtained, including depth and elevation of the sample, number of blows for the standard penetration tests in two 6-inch increments, depth of press samples, field sample number, sample description - based on laboratory tests and the Casagrande AC classification system - and gradation, plasticity, and moisture content determinations. Results of strength and consolidation testing, if performed, appear on separate enclosures.

At depths where materials are bouldery or gravelly to the extent that the sampler can not be driven, a wash sample is procured for visual classification, in order to determine the general character of the material. These samples are not considered sufficiently representative to warrant laboratory testing.

Particle Size Definitions

Boulders	Cobbles	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	8"	3" / 2.0mm	0.42mm	0.074mm	0.005mm	
		No. 10 sieve	No. 40 sieve	No. 200 sieve		

NOTE: Information shown by this subsurface investigation was obtained solely for the use in establishing design controls for the project. The State of Ohio does not guarantee the accuracy of this data and it is not to be construed as a part of the plans governing construction of the project.

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR71-0708
UNDER ROBERTSON AVENUE
SEC. HAM-IR71-6.14

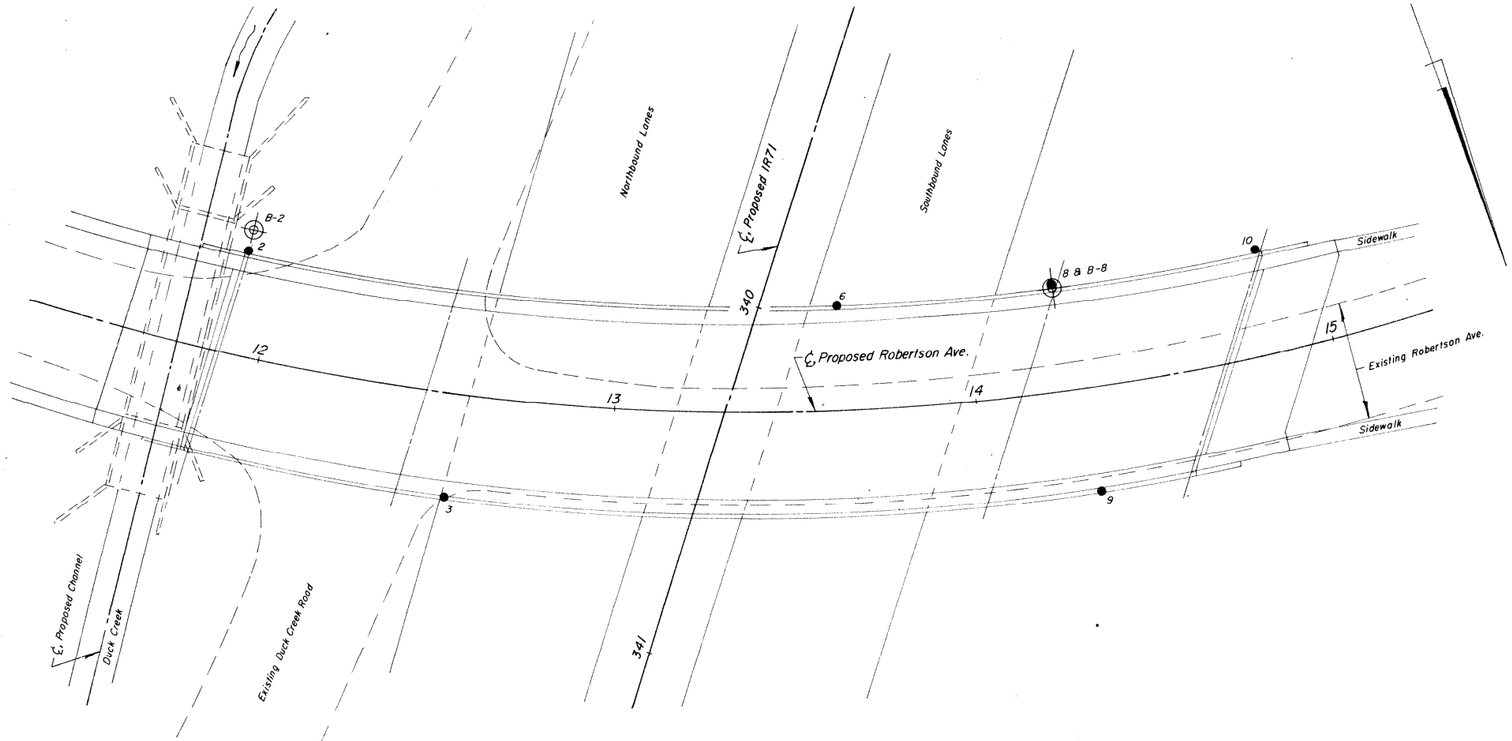
CHECKED BY	REVIEWED BY	DATE
R.H.P.	R.D.R.	8/4/65

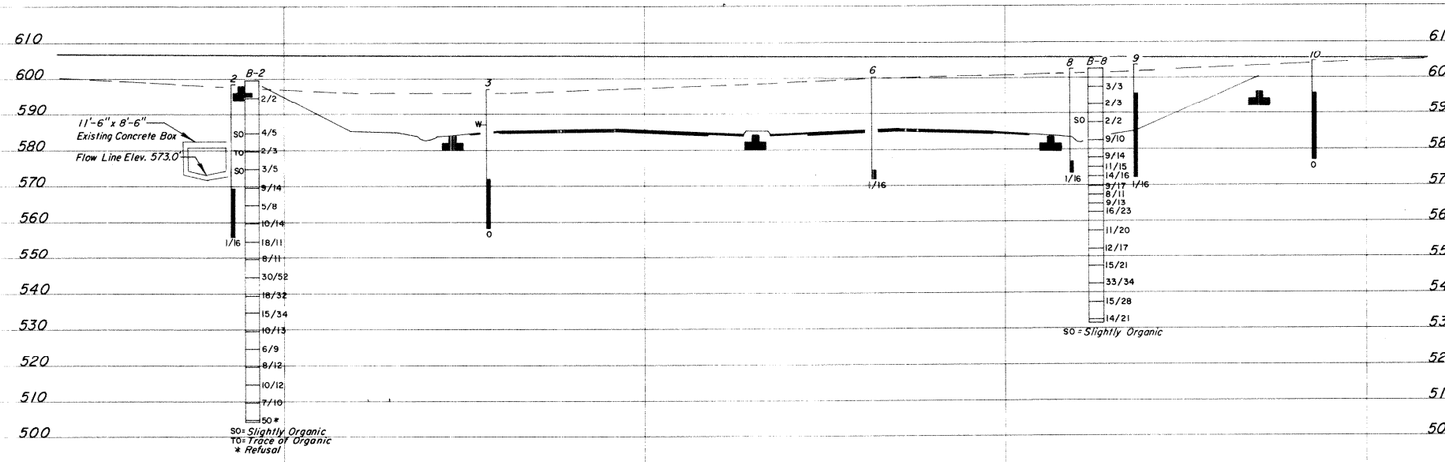
TE - 119
500 - 11 - 64

28
34

HAM-IR71-6.14

2
4





SCALE: 1" = 20'

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR71-0708
UNDER ROBERTSON AVENUE
SEC. HAM-IR71-6.14

PLAN AND PROFILE

DRAWN BY	CHECKED BY	REVIEWED BY	DATE
R.L.C.	R.H.P.	R.D.R.	8/4/65

TE - 122
600 - 11 - 64

LOG OF BORING

Date Started 6-29-65 | Sampler Type SS | Dia. 1 3/8" | Water Elev. —
Date Completed 7-1-65 | Casing: Length 30' | Dia. 3 1/2" | Surface Elev. 599.7
Boring No. B-2 | Station & Offset 11+91,35'Lt (REAR ABUTMENT)

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics: % Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
599.7	0				Fill Materials - Boulders Ashes, Cinders and brick Dusts.										
	2														
594.7	4														
	6	2/2			Dark Brown & Gray Silty Gravelly Sand	1	24	41	17	10	8	NP	NP	36	
589.7	8														
	10														
	12														
584.7	14														
	16	4/5			Greenish-Brown Silty Sandy Gravel, Slightly Organic	2	51	17	6	13	13	NP	NP	20	
	18														
579.7	20														
	22	2/3			Brown & Gray Silty Clay, Trace of Organic	3	V	I	S	U	A	L	PL=	17	23
	24														
574.7	26	3/5			Grayish-Brown Sandy Gravelly Silt, Slightly Organic.	4	26	7	11	31	25	27	9	22	
	28														
569.7	30	9/14			Gray Clayey Silt	5	0	0	1	56	43	27	8	23	
	32														
	34														
564.7	36	5/8			Gray Clayey Silt	6	0	0	1	47	52	26	8	19	
	38														
559.7	40	18/18			Gray Silt	7	0	0	7	63	30	NP	NP	19	
	42														
	44														
554.7	46	18/11			Gray Gravelly Silt	8	20	9	5	41	25	24	9	10	
	48														
549.7	50	8/11			Gray Gravelly Sandy Silt	9	16	10	18	30	26	23	9	12	
	52														
	54	30/52													
544.7	56				Gray Sandy Silt	10	12	2	16	45	25	19	5	14	
	58														
539.7	60	18/32			Gray Silt	11	0	1	9	82	8	NP	NP	23	
	62														
	64														
534.7	66	15/34			Gray Silt & Clay	12	0	1	1	35	63	32	12	20	
	68														
529.7	70	10/13			Gray Silt & Clay	13	0	0	1	38	61	31	11	25	
	72														
	74														
524.7	76	6/9			Gray Silt & Clay	14	0	0	1	39	60	30	13	30	
	78														
519.7	80	8/12			Gray Clayey Silt	15	0	1	1	53	45	28	10	23	
	82														
	84														
514.7	86	10/12			Gray Silt	16	0	1	2	51	46	26	6	19	
	88														
509.7	90	7/10			Gray Clayey Silt	17	9	2	2	47	40	26	9	23	
	92														
	94														
504.7	96	50* (0.6)			Gray Sandy Silt — BOTTOM OF BORING	18	9	10	31	39	11	NP	NP	15	

*Refusal

LOG OF BORING

Date Started 6-24-65 | Sampler Type SS | Dia. 1 3/8" | Water Elev. —
Date Completed 6-29-65 | Casing: Length 45' | Dia. 3 1/2" | Surface Elev. 602.3
Boring No. B-8 | Station & Offset 14+25,29'Lt (FORWARD PIER)

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics: % Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
602.3	0				Fill Materials - Gravel, Silt and Clay.										
	2														
	4														
597.3	6	3/3			Gray Clayey Sandy Gravel	1	VISUAL					27	11	26	
	8														
592.3	10	2/3			Brown & Gray Gravelly Sandy Clay	2	22	7	20	21	30	35	22	22	
	12														
	14														
587.3	16	2/2			Brown & Gray Silt & Clay, Slightly Organic	3	0	1	13	49	37	28	12	25	
	18														
582.3	20	9/10			Brown Silt & Clay	4	0	3	14	48	35	27	12	18	
	22														
	24														
577.3	26	9/14			Brownish-Gray Silt	5	0	33	15	58	24	NP	NP	21	
574.8	28	11/23													
	30	11/15			Brown & Gray Clayey Silt	6	0	2	13	43	42	25	9	23	
572.3	32	14/16			Gray Silty Sand	7	12	17	44	21	6	NP	NP	19	
569.8	34	9/17			Gray Silt	8	0	1	4	75	20	NP	NP	22	
567.3	36	8/11			Gray Silt	9	0	0	1	65	34	21	5	23	
564.8	38	9/13													
562.3	40				Gray Sandy Silt	10	8	14	19	35	24	22	9	12	
	42	16/23			Gray Silty Sandy Gravel	11	42	11	13	21	13	16	5	9	
	44														
557.3	46	11/20			Gray Sandy Clay	12	10	5	11	36	38	26	11	18	
	48														
552.3	50	12/17			Gray Clayey Sandy Gravel	13	45	6	16	15	18	22	11	15	
	52														
	54														
547.3	56	15/21			Gray Gravelly Sandy Silt	14	21	10	15	29	25	22	9	11	
	58														
542.3	60	33/34			Gray Silt	15	0	1	2	66	31	24	5	14	
	62														
	64														
537.3	66	15/28			Gray Silty Clay	16	0	2	14	71	13	NP	NP	30	
	68														
532.3	70	14/21			Gray Silt — BOTTOM OF BORING	17	0	1	1	41	57	36	14	22	
531.3															

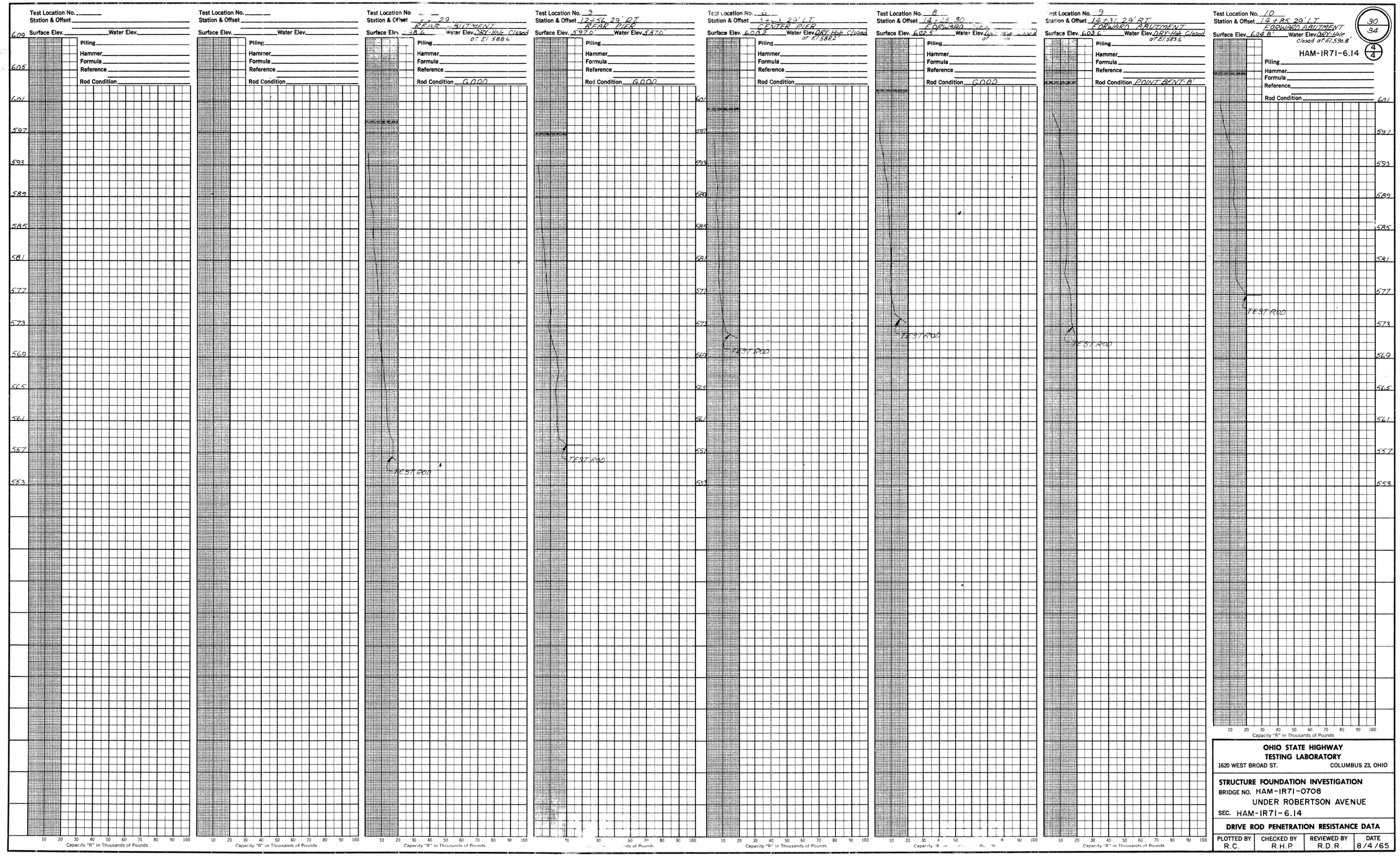
OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR 71-0708
UNDER ROBERTSON AVENUE
SEC. HAM-IR 71-6.14

BORING DATA

TYPED BY	CHECKED BY	REVIEWED BY	DATE
S.A.J.	R.C.	R.D.R.	8/4/65

TE-114
1000-1-64



30
34

HAM-IR71-6.14

4
4

OHIO STATE HIGHWAY TESTING LABORATORY
1620 WEST BROAD ST. COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR71-0708
UNDER ROBERTSON AVENUE
SEC. HAM-IR71-6.14

DRIVE ROD PENETRATION RESISTANCE DATA

PLOTTED BY	CHECKED BY	REVIEWED BY	DATE
R.C.	R.H.P.	R.D.R.	8/4/65

GEOLOGY OF THE SITE
The structure site is located on an Illinoian outwash plain, over the buried valley wall of the deep stage Cincinnati River. Interbedded outwash and till overlies interbedded shale and limestone bedrock, of Ordovician age.

EXPLORATION
The exploration consisted of two drive sample borings made between July 22 and 29, 1965, five drive rod penetration tests, made between June 30 and July 8, 1965.

INVESTIGATIONAL FINDINGS
The borings encountered at surface fill material comprised of gravels, silts and clays containing various amounts of organic material to 11-foot depth, elevation 575 feet in various portions of the structure site, and 36-foot depth, elevation 572 feet in the forward portion, below this, unstratified, moist, very stiff to hard clays and silt clays and medium-dense to very dense gravelly, sandy silt. The borings were terminated at 71-foot depth, elevations 536 to 515 feet, after penetrating in excess of 10 feet of material requiring more than 30 blows per foot in the standard penetration test.

Rod soundings numbers 2, 6, and 9 cased to proposed footing elevations as shown on the site plan, and soundings numbers 4 and 7, met increasing penetration resistance with increasing depth, and were terminated upon encounter with high resistance to penetration at 40 to 61-foot depths, elevations 537 to 533 feet, considered to be in the hard and very dense materials, as revealed by the borings.

Free water was observed in the rod sounding holes between elevations 565 and 563 feet.

No test penetrated to bedrock surface.

LEGEND

- Auger Boring Location - Plan View.
- Press and / or Drive Sample and / or Core Boring Location - Plan View.
- Drive Rod Penetration Resistance Sounding Location - Plan View.
- Capped Pile
- Footing
- Footing on Pile
- TR — Top of Rock
- Horizontal Bar on Boring Log Indicates the Depth the Sample Was Taken.
- X/Y — Figures Beside the Boring Log in Profile Indicate the Number of Blows for Standard Penetration Test.
  X = Number of Blows for First 6 inches.
  Y = Number of Blows for Second 6 inches.
- Drive Rod Penetration Resistance Sounding Log - Profile
- Casing
- Resistance "R" < 10,000 lbs.
- Resistance "R" > 10,000 lbs.
- Z — Indicates Final Measurement of Penetration, in Inches.
- W — Indicates Free Water Elevation.
- Indicates Static Water Elevation.

SYMBOLS OF ROCK TYPES

- Coal
- Weathered Indurated Clay
- Indurated Clay
- Weathered Shale
- Shale
- Weathered Sandstone
- Sandstone
- Leached Dolomite
- Dolomite
- Leached Limestone
- Limestone

GENERAL INFORMATION

Drive Rod Penetration Sounding Tests

Drive rod penetration resistance tests constitute driving a 1.315-inch diameter steel rod, with a 45° cone point, into the ground, using a 122-pound drop-hammer with a free fall of five feet. At one or two-foot depth intervals, a measurement is taken to determine the amount of penetration achieved in three hammer drops. This reading is converted to an empirical value for capacity "R", in thousands of pounds (which is a measure of both the point resistance and frictional resistance on the rod), by using charts prepared by the Ohio Department of Highways, Bureau of Bridges, on the basis of correlation study of rod penetration with past performance of pile driving. For interpretation, a graph is prepared by plotting the value "R" against the depth at which the reading was taken, and connecting the plotted points. The curve so obtained reflects the density of subsurface materials in a manner that can be readily compared with data from similar tests at other locations on the structure site. From this comparison, the overall uniformity of subsurface condition may be evaluated.

Drive Sample Borings - Drive-Press Sample Borings

Drive sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. sampler, at 2-1/2 and / or 5-foot depth intervals, driven by means of a 140 - pound drop-hammer with a free fall of 30 inches. The number of blows required to drive the sampler 12 inches is considered the standard penetration test.

Drive-press sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. drive sampler, and 3" O.D. thin-wall press sampler. The press sampler is advanced by continuous uniform pressure, applied by the drill rig.

The boring log sheets show a graphic plot of the information obtained, including depth and elevation of the sample, number of blows for the standard penetration tests in two 6-inch increments, depth of press samples, field sample number, sample description - based on laboratory tests and the Casagrande AC classification system - and gradation, plasticity, and moisture content determinations. Results of strength and consolidation testing, if performed, appear on separate enclosures.

At depths where materials are bouldery or gravelly to the extent that the sampler can not be driven, a wash sample is procured for visual classification, in order to determine the general character of the material. These samples are not considered sufficiently representative to warrant laboratory testing.

Particle Size Definitions

Boulders	Cobbles	Gravel	Coarse Sand	Fine Sand	Silt	Clay
8"	3"	2.0mm (No. 10 sieve)	0.42mm (No. 40 sieve)	0.074mm (No. 200 sieve)	0.005mm	

NOTE: Information shown by this subsurface investigation was obtained solely for the use in establishing design controls for the project. The State of Ohio does not guarantee the accuracy of this data and it is not to be construed as a part of the plans governing construction of the project.

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR 71-0729
IR 71 UNDER B&O RR.
SEC. HAM-IR 71-6.14

CHECKED BY	REVIEWED BY	DATE
R.H.P.	R. D. R.	9/2/65

LOG OF BORING

Date Started 7-27-65 | Sampler Type SS | Dia. 1 3/8" | Water Elev. ———
Date Completed 7-29-65 | Casing: Length 15.0' | Dia. 3 1/2"
Boring No. B-1 | Station & Offset 587+82, 66' Rt. (Rt. Rear Wingwall) | Surface Elev. 586.0'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
586.0	0														
	2														
	4														
581.0	6	5/7			Fill Material-Brown Clay and Gravel	1	V	I	S	U	A	L	24	18	24	
576.0	10				Greenish-Brown Silt, Trace of Organic	2	0	5	9	65	21	22	3	24	
	12	6/6													
	14														
571.0	16	8/8			Brown Silt	3	0	1	0	83	16	NP	NP	28	
568.5	18	4/5			Gray Silty Clay	4	0	1	0	40	59	37	17	26	
566.0	20	7/8			Gray Sandy Clay	5	0	8	14	39	39	28	13	26	
563.5	22	5/6			Gray Clayey Silt	6	0	4	16	55	25	21	7	16	
561.0	24	15/15			Gray Gravelly Silt	7	31	0	9	46	14	NP	NP	18	
558.5	26	7/12			Gray Clayey Silt	8	0	0	3	52	45	28	9	19	
556.0	28	8/10			Gray Silt and Clay	9	0	3	6	49	42	30	13	16	
	30														
	32														
551.0	34	6/7			Gray Gravelly Sandy Silt	10	16	6	21	28	29	23	10	15	
	36														
546.0	38	6/9			Gray Gravelly Sandy Silt	11	21	5	30	20	24	24	10	13	
	40														
	42														
541.0	44	15/20 *(0.3)			Gray Sandy Gravelly Silt	12	V	I	S	U	A	L	22	8	13	
	46														
536.0	48	12/20			Gray Sandy Gravelly Silt	13	26	6	11	31	24	23	7	12	
	50														
	52														
531.0	54	22/37			Gray Sandy Silt	14	0	2	48	41	9	NP	NP	16	
	56														
526.0	58	9/14			Gray Clayey Silt	15	0	0	2	53	45	28	10	26	
	60														
521.0	62	11/11			Gray Silt	16	0	0	9	76	15	NP	NP	24	
	64														
516.0	66	14/18			Brown Silty Sand	17	0	2	72	19	7	NP	NP	18	
515.0	68				BOTTOM OF BORING										
	70														

Fill Material

*Refusal

LOG OF BORING

Date Started 7-22-65 | Sampler Type SS | Dia. 1 3/8" | Water Elev. ———
Date Completed 7-27-65 | Casing: Length 40' | Dia. 3 1/2"
Boring No. B-10 | Station & Offset 590+24, 120' Lt. (Forward Left Wingwall) | Surface Elev. 607.0'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
607.0	0														
	2														
	4														
602.0	6	6/6			Brownish-Gray Clay	1	0	2	8	52	38	42	22	20	
	8														
597.0	10	1/2			Brown Silt and Clay	2	0	3	11	45	41	33	15	25	
	12														
	14														
592.0	16	2/3			Brownish-Gray Clay	3	0	3	11	48	38	40	23	26	
	18														
587.0	20	2/2			Brownish-Gray Silty Clay	4	0	2	9	51	38	37	17	25	
584.5	22	2/2			Brown and Gray Silty Clay, Trace of Organic	5	0	2	8	54	36	38	18	30	
582.0	24	2/3			Brown and Gray Silty Clay, Trace of Organic	6	0	2	7	54	37	39	19	25	
579.5	26	2/3			Brown and Gray Silt, Trace of Organic	7	0	3	12	46	39	25	6	24	
577.0	28	3/4			Brown and Gray Clay, Trace of Organic	8	0	2	8	44	46	53	30	19	
574.5	30	4/4			Brown and Gray Clay, Trace of Organic	9	0	2	12	39	47	40	21	29	
	32														
572.0	34	6/7			Brownish-Gray Sandy Clay, Organic	10	14	13	28	20	25	32	16	17	
	36														
569.5	38	7/8			Brown Clayey Sand	11	14	24	23	13	26	45	27	16	
567.0	40	6/7			Brown and Gray Silty Clay	12	0	0	1	43	56	38	20	25	
	42														
	44														
562.0	46	9/10			Gray Silt	13	0	0	5	64	31	22	4	22	
	48														
557.0	50	8/11			Gray Silt	14	0	3	15	57	25	19	2	17	
	52														
	54														
552.0	56	9/11			Gray Silt	15	0	3	17	59	21	NP	NP	15	
	58														
547.0	60	9/13			Gray Gravelly Sandy Silt	16	18	8	15	29	30	25	10	14	
	62														
	64														
542.0	66	11/15			Gray Gravelly Sandy Clay	17	20	11	19	24	26	24	11	13	
	68														
537.0	70				BOTTOM OF BORING										
536.0		13/17			Gray Gravelly Sandy Clay	18	22	6	20	26	26	24	11	12	

Fill Material

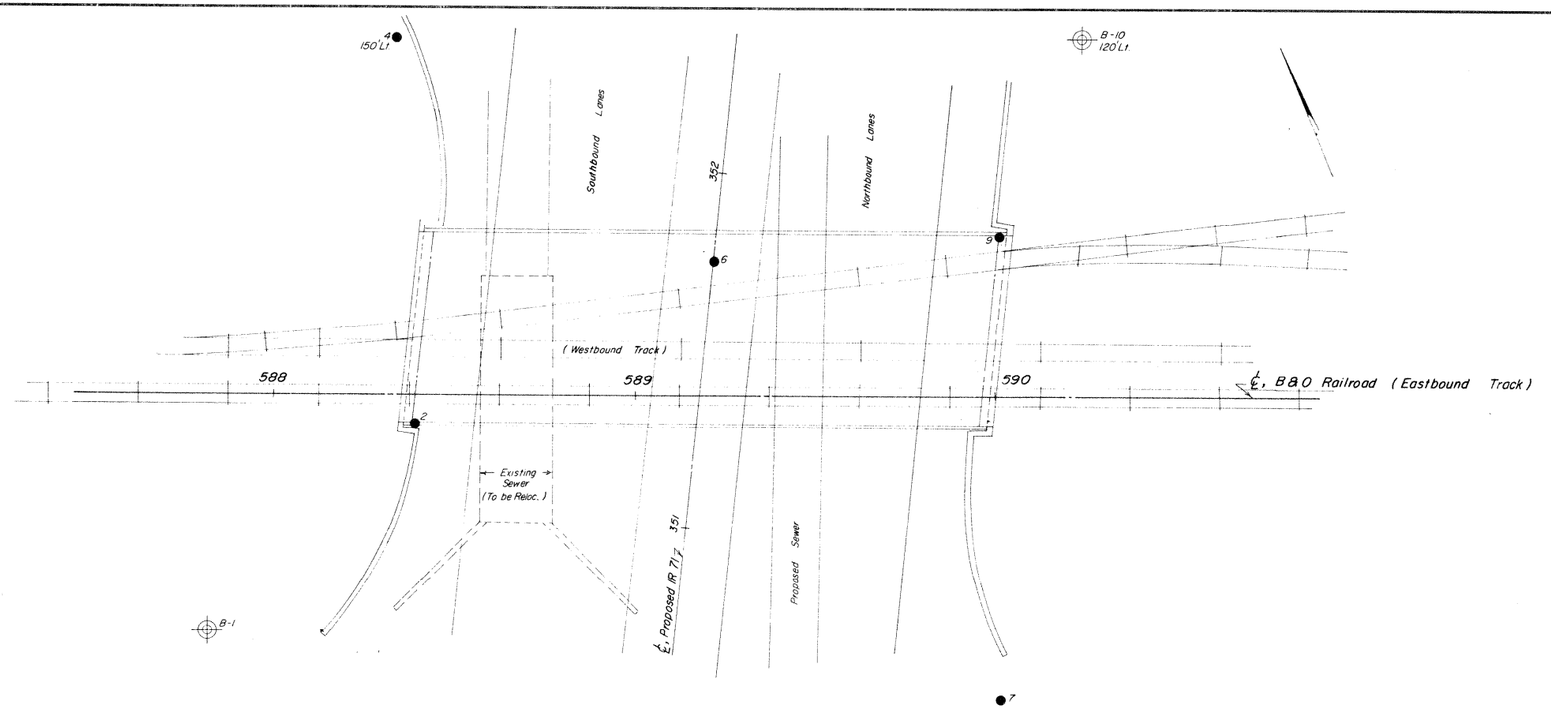
OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

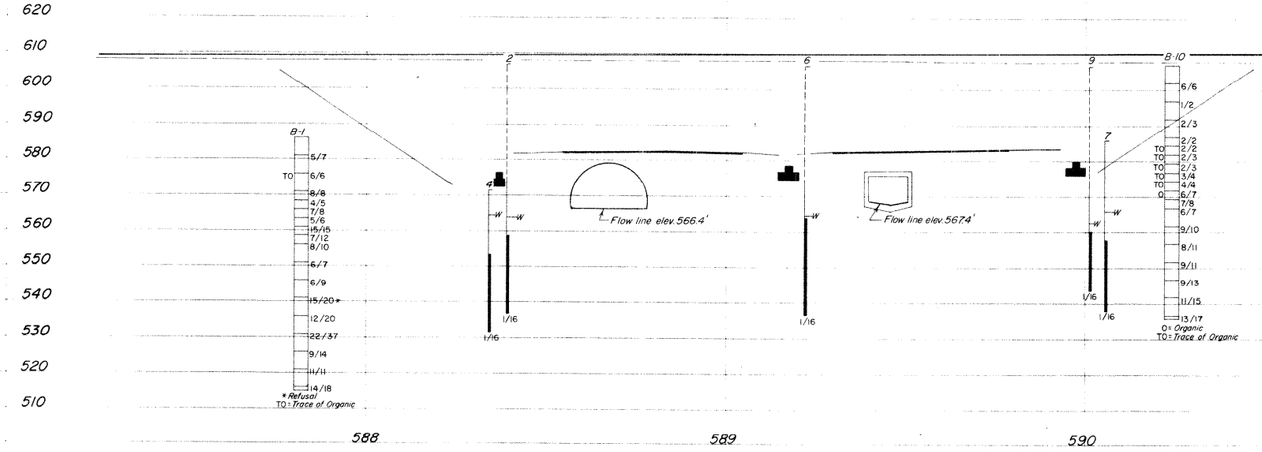
STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR 71-0729
IR 71 UNDER B&O RR
SEC. HAM-IR 71-6.14

BORING DATA

TYPED BY	CHECKED BY	REVIEWED BY	DATE
S.A.J.	R.H.P.	R.D.R.	9/2/65

HAM-IR 71-6.14





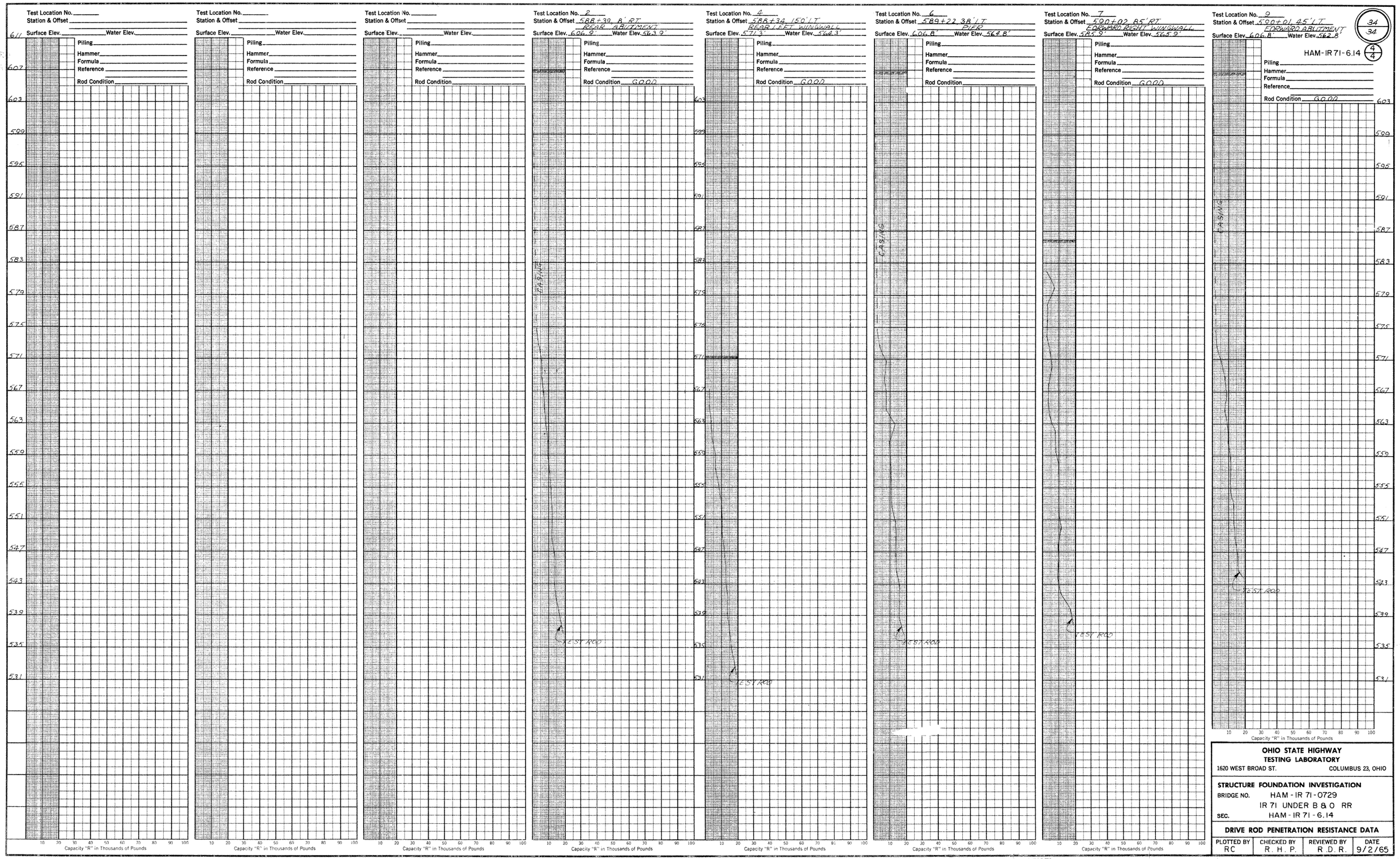
SCALE: 1" = 20'

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR 71-0729
IR 71 UNDER B&O RR
SEC. HAM-IR 71-6.14

PLAN AND PROFILE

DRAWN BY	CHECKED BY	REVIEWED BY	DATE
R.L.F.	R.H.P.	R.D.R.	9/2/65



OHIO STATE HIGHWAY
TESTING LABORATORY
1620 WEST BROAD ST. COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM - IR 71 - 0729
IR 71 UNDER B & O RR
SEC. HAM - IR 71 - 6.14

DRIVE ROD PENETRATION RESISTANCE DATA

PLOTTED BY	CHECKED BY	REVIEWED BY	DATE
RC	R. H. P.	R. D. R.	9/2/65

TE-95
400-1-63

GENERAL INFORMATION

INTRODUCTION

The project consists of the construction of 1.42 miles of IR 71, beginning approximately 400 feet southeast of the Duck Creek Road---Harris Avenue junction, extending northeastward and terminating 0.3 mile east of Kennedy Avenue and approximately 0.4 mile north of Duck Creek Road. For a list of soil profiles included in this report, see the Project Index on this sheet.

For maximum proposed cuts and fill embankments, see the Project Index on this sheet.

GEOLOGY AND OBSERVATIONS OF THE PROJECT

The alignment traverses a portion of the dissected outwash plain, over the deeply filled Deep Stage Cincinnati River Valley, where outwash and some interbedded till overlie bedrock, of Ordovician age.

Sloughing was observed on a hillside in the vicinity of Ramp F stations 4+50 to 11+50, Ramp G stations 7+50 to 10+00, and between Ramp T stations 32+50 and 41+00. A settling basin was observed in the vicinity of Ramp F station 114+00, and an industrial waste area between Highland Ave. Extension stations 26+50 and 31+00.

EXPLORATION

Exploratory borings were made by means of truck-mounted mechanical soil auger and rotary type drill rig, between May 5 and June 10, 1965. Included in this report are logs of borings made for the structure foundation investigations on this project.

INVESTIGATIONAL FINDINGS

Materials encountered were predominantly comprised of silts (A-4a and A-4b) and silt clays (A-6a and A-6b), with some sands (A-3a) and clays (A-7-6), generally having low moisture contents and moisture contents in the lower portions of the plastic range.

Frost susceptible silts were encountered within three feet below proposed grade at IR 71 stations 417+60 and 420+50, Ramp T station 35+85, Ramp E station 18+00, Ramp F stations 7+30 and 8+00, Ridge Ave. station 30+84, Ramp H station 25+00, and Highland Ave. Extension stations 10+50 and 21+90.

Industrial waste materials were encountered at IR 71 (Southbound) station 378+00, Proposed Culvert station 147+67, Norwood Lateral stations 158+18 and 4+44, Ramp T station 30+00, Ramp G station 5+30, Ramp E station 0+63, and between Highland Ave. Extension stations 27+00 and 30+00.

Wet materials were encountered at IR 71 (Northbound) stations 367+00 and 386+00, IR 71 (Southbound) stations 373+17, 376+06, and 402+00, IR 71 stations 417+60 and 420+50, Proposed Culvert station 108+73, Ramp L station 8+00, Ramp T station 37+50, Ramp J station 16+20, Ramp I station 7+25, Ramp E station 7+00, Ramp F stations 2+55, 5+00, 7+30, 8+00, 11+00, 12+50, 13+00, and 13+75, Ramp P stations 4+00 and 7+00, Ramp R station 6+00, and Highland Ave. Extension stations 15+00, 20+60, 21+90, 23+50 and 27+00.

Materials containing organic matter were encountered at IR 71 (Northbound) station 376+50, IR 71 (Southbound) stations 373+17, 375+50, 376+06, 381+00, and 389+30, IR 71 stations 409+80, 416+00, 417+60, 423+50, and 426+50, Proposed Culvert station 142+00, Norwood Lateral stations 158+18 and 4+44, Ramp L station 8+00, Ramp T station 30+00, Ramp J stations 16+20 and 23+20, Ramp E station 7+00, Ramp F stations 2+55, 5+00, 7+30, 8+00, 11+00, 12+50, 13+00 and 13+75, Ramp N station 7+00, Ramp P stations 2+00, 4+00, and 7+00, and Highland Ave. Extension stations 21+30, and 27+50.

LEGEND FOR PROJECT AVERAGE RESULTS OF TESTS -- 531 SAMPLES TESTED

DESCRIPTION	H.R.B. CLASS	OHIO CLASS	% AGG	% C. SAND	% F. SAND	% SILT	% CLAY	LIQUID LIMIT	PLASTICITY INDEX	WATER CONTENT	SAMPLES TESTED
Gravel	A-1-a(0)	A-1-a	54	27	10	--	9 --	NP	NP	8	3
Gravel or stone fragments with sand	A-1-b(0)	A-1-b	38	25	22	--	15 --	18	1	12	9
Fine sand	A-3(0)	A-3	0	21	72	4	3	NP	NP	7	1
Coarse and fine sand	------	A-3a	5	14	60	14	7	NP	NP	12	22
Gravel and/or stone fragments with sand, silt, and clay	A-2-4(0)	A-2-4	34	16	21	19	10	21	4	15	9
Stone fragments with sand, silt, and clay	A-2-6(0)	A-2-6	57	10	12	12	9	32	13	23	1
Sandy silt	A-4(4)	A-4a	17	8	20	35	20	23	7	13	151
Silt	A-4(8)	A-4b	1	1	6	66	26	26	4	20	73
Silt and clay	A-6(8)	A-6a	7	4	11	45	33	30	13	19	149
Silty clay	A-6(11)	A-6b	4	3	9	44	40	37	18	20	66
Elastic clay	A-7-5(20)	A-7-5	0	3	10	50	37	80	37	68	4
Clay	A-7-6(15)	A-7-6	2	2	9	44	43	45	25	22	43
Random fill			VISUAL CLASSIFICATION								
Bouldery zone			VISUAL CLASSIFICATION								
Various other materials			VISUAL CLASSIFICATION								

Sod and/or Topsoil=X'= Approximate depth.

Berm material.

Auger boring-plan view.

Drive sample boring-plan view.

Auger boring plotted to vertical scale only.

Drive sample boring plotted to vertical scale only.

Water content nearly equal to or greater than liquid limit.

Indicates a non-plastic material with a high water content.

Free water.

Number of blows for "Standard Penetration" test.
X=number of blows for first 6 inches.
Y=number of blows for second 6 inches.

NOTE: Figures beside borings indicate water content in percent. e.g. 15

PROJECT INDEX

STATIONS FROM	TO	PLAN VIEW SHEET	PROFILE SHEET	CUT MAX.	FILL EMB. MAX.
Proposed IR 71 (Northbound Lanes)					
360+00	404+00	5&6	8	36'	27'
Proposed IR 71 (Southbound Lanes)					
360+00	386+00	5	9	3'	41'
386+00	405+00	6	10	37'	38'
Proposed IR 71					
405+00	418+00	6	10	37'	12'
418+00	435+00	7	11	26'	17'
Proposed Culvert					
105+00	157+00	5&6	12	48'	--
Proposed Norwood Lateral					
157+00	6+00	5	13	6'	20'
Proposed Ramp L					
6+00	26+00	5	13	38'	34'
Proposed Ramp T					
27+00	50+00	5&6	13	23'	41'
Proposed Ramp J					
8+00	26+00	5	14	26'	12'
Proposed Ramp G					
0+00	10+00	5	14	28'	17'
Proposed Ramp I					
0+00	12+00	5	14	21'	27'
Proposed Ramp E					
1+00	18+00	5	15	25'	20'
Proposed Ramp F					
0+00	17+00	5	15	28'	30'

PROJECT INDEX

STATIONS FROM	TO	PLAN VIEW SHEET	PROFILE SHEET	CUT MAX.	FILL EMB. MAX
Ridge Avenue Interchange Relocated Ridge Avenue					
13+00	32+00	6	16	8'	14'
Proposed Ramp M					
0+00	7+00	6	16	-	20'
Proposed Ramp N					
2+00	13+00	6	16	35'	17'
Proposed Ramp H					
0+00	32+00	5&6	17	3'	46'
Kennedy Avenue Interchange Proposed Kennedy Avenue					
6+00	25+00	6	18	1'	12'
Proposed Ramp P					
0+00	11+00	6	18	-	13'
Proposed Ramp R					
0+00	11+00	6	19	18'	15'
Proposed Highland Avenue Extension					
10+00	50+00	7	19	26'	21'

1-69
540
Red
soil
Purple

SOIL PROFILE

HAMILTON COUNTY

HAM-IR 71-7.45

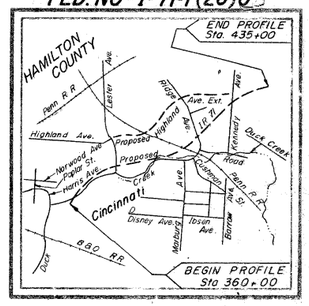
1 / 69

1 / 19

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

NOTE: INFORMATION SHOWN BY THIS SUBGRADE PROFILE WAS OBTAINED SOLELY FOR USE IN ESTABLISHING DESIGN CONTROLS FOR THE PROJECT. THE STATE OF OHIO DOES NOT GUARANTEE THE ACCURACY OF THIS DATA AND IT IS NOT TO BE CONSTRUED AS A PART OF THE PLANS GOVERNING CONSTRUCTION OF THE PROJECT.

FED. NO-I-71-1(20)6



LOCATION MAP

Recon- J.S.M. 3/11/65
Drilling- Auger
B.D.L. 5/5/65 to 5/28/65
A.J.P. 6/1/65 to 6/3/65
Core
C.F.C. 6/3/65 to 6/10/65
Drafting- A.F., R.L.D. 1/18/66

SOIL PROFILE

HAMILTON COUNTY

HAM-IR 71-7.45

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

2/69

2/19

SUMMARY OF SOIL TEST DATA

NOTE: NP shown in Liquid Limit and Plasticity Index columns indicates that the material is non-plastic.
*Denotes sample taken at or near grade.

STATION & OFFSET		DEPTH FROM - TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
Proposed IR 71 (Southbound Lanes)											
361+15	62'Lt	0.3-3.0	0	2	40	41	17	NP	NP	20	A-4a
		3.0-5.0	47	21	24	8	--	NP	NP	13	A-1-b
		5.0-12.0	0	1	2	46	51	34	11	23	A-6a
		12.0-15.0	12	6	21	42	19	26	12	12	A-6a
366+80	BL	0.3-5.0	8	5	14	43	30	30	12	18	A-6a *
		5.0-10.0	15	7	18	39	21	25	11	12	A-6a
370+00	BL	0.4-5.0	0	2	12	63	23	34	11	14	A-6a
		5.0-11.0	6	3	8	59	24	28	15	18	A-6a
		11.0-18.0	19	4	11	47	19	25	9	17	A-4a
		18.0-25.0	15	6	17	35	27	26	13	13	A-6a
372+50	BL	0.4-5.0	1	2	8	77	12	NP	NP	19	A-4b
		5.0-11.0	40	9	15	28	8	NP	NP	9	A-4a
		11.0-17.0	13	8	17	38	24	24	11	14	A-6a
		17.0-20.0	32	8	11	33	16	19	3	9	A-4a
375+50	BL	0.6-4.0	12	8	16	35	29	29	13	16	A-6a
		4.0-8.0	9	5	13	36	37	35	18	16	A-6b
		8.0-12.0	5	4	20	48	23	36	13	25	A-6a
		12.0-17.0	5	6	18	39	32	24	11	17	A-6a
		17.0-22.0	18	9	20	28	25	22	10	11	A-4a
		22.0-26.0	21	6	14	33	26	24	12	13	A-6a
378+00	BL	0.4-5.0	6	3	13	37	41	37	21	18	A-6b
		5.0-7.0	(34	15	9	26	16	30	10	17)	
			Dark-Gray Cinders and Ashes with Brown Clayey Silt								Visual
		7.0-13.0	0	4	13	51	32	31	13	18	A-6a
		13.0-20.0	12	9	18	32	29	27	15	13	A-6a
		20.0-26.0	9	6	21	32	32	25	11	12	A-6a
381+00	25'Rt	0.4-5.0	0	2	13	60	25	33	15	22	A-6a
		5.0-10.0	0	2	11	40	47	43	24	23	A-7-6
		10.0-14.0	0	1	7	47	45	36	19	20	A-6b
		14.0-19.0	16	11	17	36	20	24	10	11	A-4a
		19.0-25.0	0	1	79	17	3	NP	NP	3	A-3a
		25.0-30.0	0	1	88	6	5	NP	NP	3	A-3a
389+30	BL	0.3-4.0	18	5	13	38	26	30	13	19	A-6a
		4.0-10.0	0	2	10	53	35	37	15	28	A-6a
		10.0-15.0	28	7	16	28	21	27	12	11	A-6a
		15.0-17.0	34	13	12	26	15	26	10	9	A-4a
		17.0-21.0	18	7	51	16	8	NP	NP	7	A-3a
		21.0-25.0	51	31	6	7	5	NP	NP	4	A-1-a
394+15	BL	0.0-4.0	0	0	0	42	58	39	17	22	A-6b
		4.0-10.0	0	1	1	44	54	35	14	23	A-6a
		10.0-15.0	26	20	20	12	22	25	10	10	A-2-4
		15.0-19.0	21	10	20	27	22	24	9	11	A-4a
399+30	15'Lt	0.6-6.0	0	3	13	50	34	29	11	20	A-6a
		6.0-11.0	0	2	2	42	54	40	17	24	A-6b
		11.0-13.0	0	0	1	55	44	33	12	23	A-6a *
		13.0-17.5	31	12	18	27	12	NP	NP	10	A-4a *
Proposed IR 71 (Northbound Lanes)											
363+00	BL	0.4-5.0	15	9	30	29	17	23	5	14	A-4a
		5.0-8.0	0	0	1	36	63	39	18	24	A-6b
		8.0-12.0	0	1	1	37	61	35	17	20	A-6b
		12.0-18.0	16	7	16	35	26	26	12	13	A-6a
		18.0-23.0	16	6	16	36	26	25	9	13	A-4a
367+00	BL	0.4-5.0	13	6	16	39	26	24	7	15	A-4a
		5.0-10.0	14	3	4	42	37	32	11	21	A-6a
		10.0-14.5	19	7	12	33	29	25	10	24	A-4a
		14.5-20.0	19	7	17	38	19	27	12	23	A-6a
		20.0-25.0	8	8	7	55	22	22	7	8	A-4b
371+20	BL	0.3-4.0	10	2	2	41	45	42	19	24	A-7-6
		4.0-7.0	0	1	1	39	59	53	27	42	A-7-6
		7.0-10.0	0	0	0	64	36	30	14	18	A-6a
		10.0-15.0	0	4	62	19	15	NP	NP	16	A-3a
376+50	BL	0.4-5.0	12	2	21	47	18	26	8	21	A-4a
		5.0-8.0	0	16	63	9	12	NP	NP	19	A-3a
		8.0-13.0	0	11	25	39	25	22	10	12	A-4a
		13.0-15.0	18	8	26	25	23	23	12	14	A-6a
381+00	50'Lt	0.4-5.0	0	5	8	60	27	27	8	18	A-4b
		5.0-10.0	7	4	20	44	25	25	8	20	A-4a
		10.0-15.0	27	10	19	27	17	21	8	11	A-4a
384+50	BL	0.3-6.0	0	1	33	44	22	20	6	15	A-4a
		6.0-8.0	47	11	17	15	10	18	6	7	A-1-b
		8.0-15.0	21	10	13	34	22	20	6	9	A-4a
386+00	BL	0.4-6.0	0	6	51	28	15	21	5	18	A-4a
		6.0-10.0	25	7	14	34	20	25	9	11	A-4a

STATION & OFFSET		DEPTH FROM - TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
390+40	BL	0.4-6.0	0	1	32	48	19	26	7	17	A-4a
		6.0-8.0	18	28	31	11	12	NP	NP	14	A-3a
		8.0-13.0	12	9	18	41	20	22	8	11	A-4a
		13.0-19.0	4	12	68	11	5	NP	NP	16	A-3a
		19.0-25.0	5	18	62	13	2	NP	NP	13	A-3a
Proposed IR 71											
408+00	CL	0.5-4.0	0	3	9	56	32	27	6	18	A-4b
		4.0-9.5	0	1	3	62	34	34	12	23	A-6a
		9.5-14.5	0	0	0	38	62	46	24	21	A-7-6 *
		14.5-18.0	18	45	30	--	7	--	NP	3	A-1-b
		18.0-20.0	22	30	23	16	9	NP	NP	15	A-1-b
409+80	CL	0.6-4.0	0	5	24	45	26	47	13	37	A-7-5
		4.0-7.0	0	0	1	73	26	NP	NP	20	A-4b
		7.0-10.0	0	2	7	65	26	NP	NP	21	A-4b
412+00	CL	0.0-4.0	0	0	5	62	33	38	11	22	A-6a
		4.0-7.0	57	10	12	12	9	32	13	23	A-2-6
		7.0-12.0	21	10	20	28	21	20	6	9	A-4a
		12.0-16.0	17	9	19	32	23	23	7	13	A-4a
		16.0-21.0	25	9	20	22	24	24	10	9	A-4a
414+00	CL	0.4-5.0	0	16	22	37	25	28	10	19	A-4a
		5.0-7.0	53	10	11	18	8	25	7	17	A-2-4
		7.0-12.0	32	8	15	30	15	22	9	11	A-4a
		12.0-17.0	23	8	16	33	20	23	8	12	A-4a
416+00	CL	0.3-6.0	15	6	21	38	20	41	15	26	A-7-6
		6.0-11.0	0	1	1	61	37	32	13	17	A-6a
417+60	CL	0.4-6.0	0	4	14	47	35	32	14	17	A-6a
		6.0-12.0	21	4	11	41	23	28	13	15	A-6a
		12.0-19.0	0	4	20	54	22	22	5	19	A-4b *
		19.0-21.0	Brown Silty Sand and Gravel							11	Visual
		21.0-28.0	0	3	41	45	11	NP	NP	19	A-4a
420+50	CL	0.5-5.0	3	7	28	38	24	21	5	11	A-4a
		5.0-9.0	0	5	25	26	44	45	27	20	A-7-6
		9.0-14.0	4	17	41	13	25	26	12	15	A-6a
		14.0-18.0	0	1	44	41	14	NP	NP	18	A-4a
		18.0-24.0	0	1	32	50	17	NP	NP	21	A-4b *
		24.0-26.0	0	2	30	56	12	NP	NP	19	A-4b
		26.0-30.0	0	2	40	39	19	NP	NP	19	A-4a
423+50	CL	0.6-4.0	0	3	14	49	34	31	12	17	A-6a
		4.0-6.0	0	3	10	50	37	46	24	21	A-7-6
		6.0-10.0	0	3	13	52	32	32	16	19	A-6b *
		10.0-12.0	0	4	26	48	22	42	21	27	A-7-6
		12.0-17.0	25	22	5	21	27	39	18	20	A-6b
426+50	CL	0.5-2.0	0	3	23	41	33	31	13	26	A-6a
		2.0-7.0	0	3	13	52	32	61	33	39	A-7-6
		7.0-12.0	0	3	13	53	31	42	22	38	A-7-6
		12.0-14.0	39	8	12	23	18	21	6	13	A-4a
429+20	CL	0.5-6.0	0	2	8	53	37	32	11	17	A-6a
		6.0-10.0	0	1	1	57	41	34	13	24	A-6a
431+00	CL	0.6-5.0	0	1	4	56	39	43	24	21	A-7-6 *
		5.0-10.0	0	2	9	38	51	50	31	19	A-7-6 *
		10.0-14.0	0	0	0	64	36	30	12	24	A-6a
Proposed Culvert											
108+73	CL	0.4-4.0	0	3	35	45	17	25	9	25	A-4a
		4.0-10.0	0	0	1	48	51	38	18	24	A-6b *
128+75	CL	0.4-5.0	0	2	21	52	25	31	13	19	A-6a
		5.0-12.0	19	8	19	34	20	22	9	10	A-4a *
		12.0-15.0	27	8	19	28	18	21	8	11	A-4a *
133+32	CL	0.4-5.0	0	1	2	41	56	45	24	24	A-7-6
		5.0-11.0	0	1	1	64	34	34	13	27	A-6a
		11.0-14.0	17	3	11	55	14	20	5	10	A-4b
		14.0-20.0	17	7	19	36	21	25	10	12	A-4a
		20.0-25.0	14	7	22	36	21	22	10	11	A-4a
		25.0-30.0	16	6	18	34	26	24	9	10	A-4a *
142+90	CL	0.4-5.0	0	2	8	58	32	33	16	15	A-6b
		5.0-9.0	43	18	23	9	7	NP	NP	16	A-1-b
		9.0-12.0	20	9	15	36	20	23	7	11	A-4a *
147+67	CL	0.0-7.0	(61	14	8	11	6	NP	NP	7)	
			Gray Sand, Stone Fragments, and Gravel W/Asphalt								Visual
		7.0-9.0	16	9	15	40	20	26	6	17	A-4a
		9.0-15.0	0	4	39	36	21	21	6	15	A-4a
150+67	CL	0.3-7.0	6	2	15	58	19	NP	NP	14	A-4b
		7.0-9.0	26	9	17	28	20	24	9	14	A-4a

STATION & OFFSET		DEPTH FROM - TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
Proposed Norwood Lateral											
158+18	45'Lt	0.4-2.0	(27	5	9	37	22	33	16	--)	
			Brown Silty Clay with Cinders and Stone Fragments								Visual
		2.0-5.0	(25	10	13	27	10	26	4	--)	
			Brown Cinders and Ashes								Visual
		5.0-10.0	0	3	7	58	32	35	15	26	A-6a
		10.0-14.0	14	6	16	37	27	35	20	24	A-6b
		14.0-19.0	14	9	17	39	21	26	11	13	A-6a
		19.0-25.0	13	7	15	42	23	24	9	13	A-4a
4+64	46'Lt	0.4-4.0	(19	8	9	38	26	38	18	--)	
			Dark-Brown Silty Clay W/Sand, Gravel and Cinders								Visual
		4.0-10.0	27	7	8	32	25	35	16	21	A-6b
		10.0-15.0	13	3	7	44	33	43	24	26	A-7-6
		15.0-18.0	13	3	7	44	33	41	24	26	A-7-6
		18.0-24.0	26	4	8	40	22	40	20	23	A-6b
		24.0-30.0	8	8	17	46	21	21	7	11	A-4a
Proposed Ramp L											
8+00	BL	0.4-5.0	15	5	14	33	33	33	16	16	A-6b
		5.0-8.0	0	10	20	41	29	23	9	11	A-4a
		8.0-10.0	19	16	30	22	13	NP	NP	13	A-2-4
		10.0-13.0	21	6	15	39	19	19	5	11	A-4a
		13.0-18.0	28	8	15	36	13	22	8	11	A-4a
		18.0-21.0	0	2	22	33	23	21	4	18	A-4b
		21.0-26.0	0	0	1	46	53	34	17	22	A-6b
		26.0-30.0	0	0	3	67	30	26	9	21	A-4b
10+00	BL	0.4-5.0	0	2	11	45	42	47	24	20	A-7-6
		5.0-10.5	21	8	15	34	22	25	9	10	A-4a
		10.5-15.0	24	8	15	31	22	25	12	13	A-4a
		15.0-20.0	36	6	13	31	14	21	6	12	A-4a *
		20.0-23.0	0	1	5	70	24	NP	NP	21	A-4b
		23.0-28.0	0	1	2	25	72	36	15	27	A-6a
		28.0-30.0	0	0	2	54	44	37	18	21	A-6b
11+00	BL	0.4-3.0	4	3	14	37	42	44	27	22	A-7-6
		3.0-9.0	17	8	17	37	21	24	9	17	A-4a
		9.0-15.0	0	1	3	72	24	25	3	21	A-4b
		15.0-20.0	0	11	21	46	22	49	27	23	A-7-6
		20.0-24.0	0	0	1	39	60	47	28	22	A-7-6
		24.0-30.0	0	0	1	54	45	26	10	20	A-4b
13+00	BL	0.4-4.0	0	3	12	64	21	28	11	22	A-6a
		4.0-9.0	0	1	12	54	33	27	8	19	A-4b
		9.0-14.0	10	6	16	43	25	24	12	12	A-4a
		14.0-20.0	25	7	19	29	20	22	7	10	A-4a
17+50	BL	0.4-5.0	15	12	15	30	28	30	15	19	A-6a
		5.0-11.0	13	10	17	34	26	25	13	13	A-6a
		11.0-15.0	0	1	1	46	52	33	17	21	A-6b
		15.0-20.0	0	2	20	43	35	22	11	13	A-6a
		20.0-25.0	11	7	18	29	35	22	11	10	A-6a
24+35	19'Lt	0.4-6.0	0	1	14	65	20	NP	NP	18	A-4b
		6.0-10.0	0	3	7	47	43	31	13	20	A-6a
		10.0-17.0	20	8	16	33	23	22	8	10	A-4a
		17.0-26.0	0	2	65	25	8	NP	NP	5	A-3a
Proposed Ramp T											
30+00	CL	0.4-5.0	0	9	61	16	14	NP	NP	20	A-3a
		5.0-8.0	8	6	20	33	33	33	9	18	A-4a
		8.0-15.0	18	7	19	27	29	26	12	13	A-6a
33+23	30'Rt	0.4-7.0	0	3	15	48	34	33	13	19	A-6a
		7.0-10.0	0	1	2	44	53	44	21	22	A-7-6
		10.0-15.0	0	0	0	71	29	NP	NP	22	A-4b
34+23	30'Rt	0.4-5.0	0	3	9	33	55	52	29	23	A-7-6
		5.0-10.0	0	3	13	34	50	40	20	18	A-6b
35+85	32'Rt	0.4-5.0	0	3	13	47	37	31	13	15	A-6a
		5.0-11.0	11	6	12	35	36	31	13	14	A-6a
		11.0-16.0	17	9	16	33	25	26	10	11	A-4a
		16.0-22.0	0	0	0	70	30	NP	NP	20	A-4b
		22.0-25.0	0	0	0	91	10	NP	NP	23	A-4b *
		25.0-30.0	0	0	0	44	56	33	13	20	A-6a *
37+50	40'Rt	0.4-5.0	0	5	14	43	38	29	11	19	A-6a
		5.0-10.0	20	9	9	39	23	27	11	9	A-6a
		10.0-14.0	28	9	16	30	20	21	5	9	A-4a
		14.0-19.0	0	0	1	45	54	30	11	27	A-4b
		19.0-25.0	0	0	0	36	64	40	19	21	A-6b *
		25.0-30.0	0	0	0	61	39	27	8	21	A-4b
39+00	40'Rt	0.4-4.5	(15	16	19	27	23	32	13	12)	
			Dark-Brown Silt, Cinders, Asnes, Brickbats, & Slag								Visual
		4.5-9.0	33	4	10	28	25	42	22	15	A-7-6
		9.0-12.0	0	1	5	85	9	NP	NP	23	A-4b
		12.0-17.0	0	0	1	45	54	32	13	27	A-6a *
		17.0-22.0	0	0	0	43	57	41	19	24	A-7-6
		22.0-27.0	0	0	0	64	36	NP	NP	21	A-4b
		27.0-30.0	0	0	0	68	32	NP	NP	22	A-4b

STATION & OFFSET		DEPTH FROM - TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
40+50	40'Rt	0.4-5.0	0	0	3	61	36	42	21	24	A-7-6
		5.0-11.0	0	0	0	49	51	44	31	23	A-7-6
		11.0-15.0	0	0	0	65	35	34	14	25	A-6a
		15.0-21.0	0	0	0	63	37	32	18	24	A-6a
		21.0-23.0	18	6	20	37	19	25	10	11	A-4a
		23.0-25.0	35	27	16	15	7	19	4	10	A-2-4
		25.0-30.0	15	9	21	36	19	24	10	11	A-4a
42+00	32'Rt	0.3-4.0	0	0	9	58	33	40	19	20	A-6b
		4.0-9.0	0	3	24	50	23	28	10	18	A-4b
		9.0-14.0	15	8	20	37	20	22	7	13	A-4a
		14.0-20.0	59	24	10	--	7	--	NP	8	A-1-a
44+00	CL	0.4-4.0	10	16	42	23	9	NP	NP	9	A-3a
		4.0-7.0	31	10	40	12	7	NP	NP	11	A-3a
		7.0-11.0	29	10	22	25	14	20	4	11	A-4a
		11.0-15.0	12	9	18	39	22	21	5	9	A-4a
		15.0-20.0	8	5	17	46	24	24	10	13	A-4a
		20.0-24.0	17	4	23	41	15	18	5	13	A-4a
		24.0-26.0	30	9	23	27	11	20	6	17	A-4a
49+00	CL	0.4-3.0	12	5	13	46	24	28	12	14	A-6a
		3.0-9.0	0	3	46	34	17	NP	NP	18	A-4a
		9.0-15.0	21	4	9	51	15	29	11	20	A-6a
Proposed Ramp J											
12+00	BL	0.4-5.0	21	6	16	40	17	26	11	12	A-6a *
		5.0-10.0	18	9	15	41	17	21	8	11	A-4a
		10.0-13.0	17	9	16	41	17	21	7	12	A-4a
		13.0-15.0	16	26	18	32	8	NP	NP	17	A-4a
15+00	BL	0.4-4.0	0	4	11	49	36	34	13	21	A-6a
		4.0-10.0	12	8	15	24	41	27	12	14	A-6a
		10.0-15.0	20	10	18	35	17	23	10	12	A-4a
		15.0-20.0	18	10	20	36	16	19	5	10	A-4a *
16+20	60'Lt	0.3-5.0	15	8	9	37	31	34	14	32	A-6a
		5.0-10.0	0	1	1	46	52	37	11	22	A-6a
		10.0-15.0	0	1	1	47	51	38	18	25	A-6b
23+20	BL	0.4-4.0	0	0	9	20	36	35	13	14	A-6a
		4.0-9.0	6	2	11	55	26	27	9	23	A-4b
		9.0-15.0	7	5	16	48	24	28	14	16	A-6a
		15.0-20.0	12	11	29	10	38	25	10	14	A-4a
Proposed Ramp I											
4+00	BL	0.4-7.0	0	0	1	53	46	29	11	18	A-6a
		7.0-11.0	0	2	11	49	38	34	13	21	A-6a
		11.0-17.0	0	1	3	45	51	31	13	22	A-6a
		17.0-25.0	9	3	8	42	38	27	11	19	A-6a
7+25	BL	0.4-6.0	0	1	1	76	22	33	18	17	A-6b
		6.0-9.0	0	0	6	17	77	37	21	6	A-4a
		9.0-15.0	0	0	0	54	46	29	10	25	A-4b
		15.0-21.0	0	1	1	50	48	32	16	23	A-6b
		21.0-25.0	0	0	1	3	53	43	30	16	A-6b
12+00	BL	0.3-4.0	21	8	14	39	18	NP	NP	9	A-4a
		4.0-8.0	0	0	1	83	16	NP	NP	23	A-4b
		8.0-14.0	0	0	1	63	36	26	7	19	A-4b
		14.0-20.0	0	0	0	72	28	NP	NP	17	A-4b
Proposed Ramp G											
5+30	BL	0.0-6.0	(64	17	8	8	3	NP	NP	4)	
			Gray Sand, Stone Fragments, W/Cinders & Boulders								Visual
		6.0-10.0	12	10	17	39	16	NP	NP	17	A-4a
7+00	BL	0.4-5.0	0	1	1	67	31	35	14	24	A-6a
		5.0-8.0	0	0	2	67	31	34	13	24	A-6a
		8.0-12.0	0	0	1	41	58	57	17	27	A-6b *
		12.0-16.0	0	0	0	51	49	30	12	25	A-6a *
		16.0-21.0	14	7	27	35	17	17	3	11	A-4a
		21.0-27.0	19	10	18	30	23	21	7	10	A-4a
10+00	BL	0.3-4.0	0	4	11	48	37	40	18	25	A-6b
		4.0-7.0	0	1	2	70	27	24	4	19	A-4b
		7.0-12.0	0	0	1	40	59	39	22	27	A-6b
		12.0-15.0	3	6	15	37	39	28	12	15	A-6a
Proposed Ramp E											
1+48	7'Rt	0.4-4.0	0	10	13	40	37	33	13	18	A-6a
		4.0-6.0	22	5	10	34	29	34	14	20	A-6a
		6.0-11.0	17	9	13	38	23	26	8	12	A-4a
		11.0-16.0	21	8	15	35	21	22	6	8	A-4a
		16.0-21.0	23	13	15	30	19	21	5	11	A-4a
		21.0-25.0	26	20	15	20	19	24	9	13	A-4a
7+00	BL	0.4-4.0	0	4	19	55	22	38	17	31	A-6b
		4.0

SOIL PROFILE

HAMILTON COUNTY

HAM-IR 71- 7.45

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

3/69

3/19

SUMMARY OF SOIL TEST DATA

NOTE: NP shown in Liquid Limit and Plasticity Index columns indicates that the material is non-plastic.
*Denotes sample taken at or near grade.

STATION & OFFSET		DEPTH FROM - TO	% ACC.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
		Proposed Ramp E (Cont'd.)									
9+63	BL	0.4-5.0	(52	8	7	21	12	25	5	--)	
			Dark-Brown Clayey Silt W/Cinders, Ashes, Slag & Brickbats								Visual *
		5.0-10.0	27	9	15	29	20	30	12	15	A-6a *
		10.0-12.0	14	8	11	35	31	37	18	20	A-6b
		12.0-16.0	16	4	7	36	37	38	16	24	A-6b
		16.0-21.0	6	2	5	60	33	32	13	23	A-6a
		21.0-26.5	0	1	1	59	39	32	11	23	A-6a
		26.5-30.0	0	2	4	44	50	34	15	21	A-6a
11+00	BL	0.4-3.0	0	5	32	32	31	33	12	25	A-6a
		3.0-7.0	0	0	1	60	39	NP	NP	18	A-4b
		7.0-11.0	0	1	1	65	33	NP	NP	17	A-4b
		11.0-16.0	0	0	0	59	41	25	12	18	A-6a
		16.0-20.0	0	0	0	47	53	34	15	24	A-6a
12+75	BL	0.4-3.0	8	7	15	45	25	25	8	14	A-4a
		3.0-8.0	7	5	6	59	23	28	11	15	A-6a
		8.0-14.0	21	9	16	34	20	25	10	12	A-4a
		14.0-20.0	17	10	15	40	18	21	7	10	A-4a *
15+00	BL	0.4-5.0	0	3	19	48	30	35	19	17	A-6b
		5.0-11.0	20	8	10	43	19	25	10	10	A-4a
18+00	BL	0.4-6.0	0	3	14	21	62	55	34	20	A-7-6 *
		6.0-10.0	0	1	1	79	19	NP	NP	23	A-4b
		10.0-15.0	0	0	0	69	31	30	10	17	A-4b
		Proposed Ramp F									
2+55	10'Rt	0.4-3.0	8	1	10	42	39	41	23	19	A-7-6
		3.0-8.0	5	6	15	37	37	32	17	13	A-6b *
		8.0-13.0	16	11	13	40	20	23	8	13	A-4a
		13.0-16.0	0	0	0	78	22	25	4	22	A-4b
		16.0-21.0	0	0	0	55	45	29	11	25	A-6a
		21.0-26.0	0	1	1	57	41	31	14	24	A-6a
		26.0-30.0	10	3	8	53	26	29	14	16	A-6a
5+00	BL	0.4-6.0	4	4	14	47	31	33	15	19	A-6a
		6.0-12.0	15	9	16	36	24	25	10	11	A-4a
		12.0-15.0	0	0	2	85	13	NP	NP	23	A-4b
		15.0-20.0	0	0	0	57	43	29	9	25	A-4b
		20.0-25.0	0	0	0	62	38	29	9	26	A-4b
		25.0-30.0	0	0	0	42	58	47	25	31	A-7-6 *
7+30	45'Rt	0.4-5.0	0	4	8	59	29	29	11	17	A-6a
		5.0-12.0	20	7	16	34	23	26	9	12	A-4a
		12.0-18.0	14	6	16	38	26	28	11	13	A-6a
		18.0-21.0	29	7	13	34	17	24	8	9	A-4a
		21.0-28.0	0	1	1	86	12	NP	NP	25	A-4b
		28.0-30.0	0	0	0	90	10	NP	NP	21	A-4b
8+00	BL	0.3-6.0	0	1	8	54	37	40	23	20	A-6b
		6.0-12.0	16	6	13	38	27	35	20	17	A-6b *
		12.0-19.0	0	0	0	81	19	NP	NP	24	A-4b
		19.0-25.0	0	0	0	48	52	35	17	26	A-6b
		25.0-30.0	14	7	17	38	24	23	10	13	A-4a
11+00	BL	0.3-5.0	12	7	12	43	26	28	12	17	A-6a
		5.0-10.0	0	0	0	64	36	27	7	24	A-4b
		10.0-16.0	10	1	1	36	52	38	17	26	A-6a
		16.0-20.0	8	4	9	47	32	24	11	16	A-6a
		20.0-25.0	16	14	20	32	18	19	8	9	A-4a
12+50	60'Lt	0.2-6.0	0	4	13	44	39	31	11	17	A-6a
		6.0-12.0	0	1	13	57	29	30	9	27	A-4b
		12.0-15.0	17	10	28	36	9	18	3	12	A-4a
12+50	20'Rt	0.0-5.0	0	2	4	63	31	92	48	72	A-7-5
		5.0-11.0	8	6	13	33	40	29	14	15	A-6a
		11.0-15.0	9	13	26	25	27	18	4	9	A-4a
13+00	100'Rt	0.0-3.0	0	1	6	52	41	98	44	66	A-7-5
		3.0-9.0	0	1	5	61	33	34	13	26	A-6a
		9.0-15.0	13	5	12	33	37	29	13	27	A-6a
13+75	30'Rt	0.0-3.0	0	2	5	40	53	82	44	95	A-7-5
		3.0-10.0	0	1	0	73	26	NP	NP	23	A-4b
		10.0-15.0	36	11	14	19	20	25	10	14	A-4a
15+00	BL	0.4-6.0	9	4	14	31	51	43	23	18	A-7-6
		6.0-11.0	9	7	13	34	37	29	12	14	A-6a
		11.0-16.0	0	1	2	76	21	NP	NP	23	A-4b
		16.0-20.0	0	0	0	67	33	NP	NP	19	A-4b
16+25	BL	0.4-5.0	0	2	13	35	50	35	14	19	A-6a
		5.0-11.0	0	3	11	35	51	56	36	22	A-7-6
		11.0-15.0	11	6	13	35	35	32	15	14	A-6a *
		Ridge Avenue Interchange Relocated Ridge Avenue									
18+00	35'Rt	0.4-5.0	0	1	7	48	44	38	18	19	A-6b
		5.0-10.0	22	7	13	33	25	29	13	14	A-6a
		10.0-15.0	0	1	0	76	23	NP	NP	13	A-4b

STATION & OFFSET		DEPTH FROM - TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
21+00	CL	0.4-5.0	0	5	53	25	17	NP	NP	10	A-4a
		5.0-9.0	35	9	22	19	15	19	4	11	A-2-4
		9.0-16.0	18	6	15	37	24	24	9	11	A-4a
		16.0-20.0	0	8	77	9	6	NP	NP	6	A-3a
		Proposed Ramp H									
3+00	BL	0.4-6.0	0	4	42	35	19	21	4	14	A-4a
		6.0-11.0	24	6	15	31	24	22	8	11	A-4a
5+50	20'Rt	0.4-7.0	11	8	23	33	25	24	8	11	A-4a
		7.0-13.0	17	6	13	43	21	22	4	10	A-4a
		13.0-18.0	0	1	77	18	4	NP	NP	19	A-3a
8+20	BL	0.4-4.0	0	3	27	48	22	32	11	24	A-6a
		4.0-8.0	10	8	20	36	20	25	10	13	A-4a
		8.0-11.0	14	8	16	43	19	22	7	11	A-4a
10+00	BL	0.3-5.0	0	2	29	46	21	26	8	16	A-4a
		5.0-9.0	18	7	18	37	20	23	7	11	A-4a
		9.0-12.0	21	6	13	41	19	23	7	8	A-4a
		12.0-15.0	0	4	76	11	9	NP	NP	17	A-3a
12+93	BL	0.4-3.0	0	7	63	20	10	NP	NP	12	A-3a
		3.0-5.0	9	39	33	8	11	NP	NP	4	A-3a
		5.0-7.0	15	6	22	33	24	26	10	15	A-4a
		7.0-11.0	17	9	19	38	17	21	7	10	A-4a
18+00	BL	0.4-4.5	6	11	27	34	22	27	9	11	A-4a
		4.5-8.0	58	11	15	11	5	NP	NP	13	A-1-b
		8.0-10.0	30	10	21	21	18	24	9	19	A-4a
		10.0-15.0	18	8	24	29	21	20	6	14	A-4a
20+00	BL	0.6-3.0	0	7	45	31	17	NP	NP	12	A-4a
		3.0-9.0	0	51	36	6	7	NP	NP	8	A-3a
		9.0-12.0	0	9	25	38	28	23	9	12	A-4a
22+00	BL	0.3-5.0	0	6	48	33	13	NP	NP	17	A-4a
		5.0-7.0	53	27	14	--	6	--	NP	NP	A-1-a
		7.0-10.0	39	6	12	30	13	NP	NP	11	A-4a
		10.0-15.0	0	21	72	4	3	NP	NP	7	A-3
25+00	BL	0.4-5.0	0	5	13	52	29	28	9	10	A-4b *
		5.0-10.0	0	4	13	42	41	40	16	14	A-6b
		10.0-13.0	23	8	10	33	26	28	12	19	A-6a
		13.0-17.0	0	1	1	42	56	30	11	13	A-6a
		17.0-20.0	22	8	12	34	24	22	7	16	A-4a
28+00	BL	0.4-5.0	0	1	8	56	35	32	14	16	A-6a *
		5.0-10.0	0	2	6	45	47	41	23	20	A-7-6
		10.0-14.0	0	0	2	67	31	30	11	24	A-6a
		14.0-17.0	0	1	3	68	28	28	6	10	A-4b
		17.0-20.0	0	3	15	45	37	30	13	16	A-6a
31+00	BL	0.4-5.0	10	1	7	54	28	29	11	16	A-6a *
		5.0-7.0	0	2	7	51	40	35	19	19	A-6b
		7.0-11.0	0	3	10	50	37	44	25	21	A-7-6
		11.0-15.0	27	9	11	30	23	26	10	14	A-4a
		Proposed Ramp N									
4+00	BL	0.4-4.0	0	2	17	55	26	25	6	19	A-4b
		4.0-8.0	38	7	18	25	12	26	6	16	A-4a
		8.0-9.0	15	9	28	26	22	22	8	8	A-4a
6+25	BL	0.4-4.0	0	5	7	56	32	30	12	16	A-6a
		4.0-7.0	0	2	15	47	36	31	12	17	A-6a
		7.0-11.0	0	2	27	40	31	29	12	21	A-6a
		11.0-15.0	12	8	18	32	29	26	11	10	A-6a
		Proposed Ramp N									
2+40	BL	0.5-5.0	0	5	14	41	40	33	16	18	A-6b
		5.0-9.0	0	3	15	41	41	39	11	18	A-6a
		9.0-12.0	25	6	9	30	30	33	16	13	A-6b
7+00	BL	0.3-5.0	0	1	6	44	49	38	18	22	A-6b
		5.0-10.0	0	1	1	56	40	47	29	26	A-7-6
		10.0-15.0	0	1	7	68	24	35	14	31	A-6a
9+00	BL	0.4-5.0	0	3	19	51	27	30	12	21	A-6a
		5.0-9.0	0	3	31	38	28	30	15	22	A-6a
		9.0-15.0	12	9	18	39	22	20	7	12	A-4a
13+25	25'Rt	0.5-3.0	10	4	11	42	33	34	15	11	A-6a
		3.0-8.0	0	2	7	48	43	40	20	14	A-6b
		8.0-13.0	27	7	11	36	25	33	15	14	A-6a
		13.0-17.0	0	1	1	36	62	39	16	22	A-6b
		17.0-20.0	0	1	0	65	34	26	6	21	A-4b
		Kennecy Avenue Interchange Proposed Kennedy Avenue									
11+56	16'Lt	0.0-3.0	26	6	8	34	24	35	13	16	A-6a
		3.0-7.0	0	3	11	45	32	37	16	20	A-6b
		7.0-12.0	16	4	15	40	25	31	12	24	A-6a
		12.0-16.0	23	11	16	28	22	29	10	20	A-4a
		16.0-20.0	16	8	16	36	24	27	11	10	A-6a

STATION & OFFSET		DEPTH FROM - TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
		Proposed Ramp P									
2+00	BL	0.4-4.0	0	0	2	68	30	32	10	23	A-4b
		4.0-12.0	26	7	11	39	17	32	13	23	A-6a
		12.0-15.0	17	8	19	33	23	21	8	11	A-4a
4+00	BL	0.4-6.0	0	1	14	52	33	38	18	27	A-6b
		6.0-9.0	0	2	10	61	27	30	12	29	A-6a
		9.0-15.0	13	6	23	37	21	18	6	13	A-4a
		15.0-20.0	13	12	28	29	18	17	11	10	A-6a
7+00	BL	0.4-3.0	0	1	5	68	26	31	11	35	A-6a
		3.0-6.0	0	5	18	57	20	42	13	35	A-7-6
		6.0-12.0	35	14	23	21	7	NP	NP	20	A-2-4
		12.0-17.0	42	10	21	19	8	NP	NP	27	A-2-4
		17.0-20.0	15	5	14	45	21	NP	NP	13	A-4a
		Proposed Ramp R									
1+00	BL	0.3-6.0	0	2	36	42	20	26	12	17	A-6a
		6.0-12.0	0	5	3	47	45	37	19	22	A-6b
		12.0-15.0	43	33	15	--	9	--	NP	NP	10 A-1-b
3+00	BL	0.4-5.0	0	17	28	30	25	34	16	18	A-6b
		5.0-7.0	0	3	17	61	19	23	7	15	A-4b
		7.0-10.0	0	1	2	70	27	NP	NP	18	A-4b
		10.0-15.0	23	8	18	33	18	20	6	12	A-4a
		15.0-20.0	0	11	24	45	20	19	7	11	A-4a
6+00	BL	0.0-4.0	31	8	13	26	22	24	8	11	A-4a
		4.0-8.5	17	9	15	33	26	25	12	11	A-6a
		8.5-15.0	0	0	7	85	8	NP	NP	22	A-4b
8+50	BL	0.3-4.0	28	8	17	26	21	32	14	17	A-6a
		4.0-8.0	0	7	73	15	5	NP	NP	20	A-2a
		8.0-12.0	23	7	18	35	17	19	4	8	A-4a
		Proposed Highland Avenue Extension									
10+50	CL	0.3-3.0	10	5	20	50	15	NP	NP	13	A-4b *
		3.0-10.0	20	15	20	29	16	NP	NP	7	A-4a
11+50	CL	0.4-5.0	0	5	11	53	31	33	16	14	A-6b
		5.0-10.0	5	2	18	52	23	33	16	14	A-6b
		10.0-15.0	7	5	15	54	19	25	5	15	A-4b
		15.0-17.0	15	7	18	48	16	21	4	12	A-4a
		17.0-25.0	14	8	16	47	15	21	5	9	A-4a *
		25.0-30.0	0	1	3	46	50	37	15	21	A-6a
15+00	CL	0.4-6.0	0	2	9	58	31	37	19	18	A-6b
		6.0-12.0	0	1	5	44	50	56	32	21	A-7-6
		12.0-14.0	25	21	22	22	10	19	4	9	A-2-4
		14.0-17.0	0	2	5	48	38	28	7	27	A-4b
		17.0-21.0	13	7	16	44	20	24	9	11	A-4a *
		21.0-25.0	23	8	17	39	13	20	5	10	A-4a
19+00	CL	0.4-6.0	0	2	6	53	39	35	15	17	A-6a
		6.0-13.0	0	3	10	52	35	32	14	16	A-6a
		13.0-19.0	0	1	4	56	39	40	19	19	A-6b
		19.0-24.0	12	5	8	48	27	29	9	13	A-4a *
		24.0-30.0	17	9	16	40	18	22	6	11	A-4a
20+60	CL	0.4-7.0	14	6	10	41	29	33	14	17	A-6a *
		7.0-10.0	7	7	57	23	6	NP	NP	20	A-3a
		10.0-12.0	18	9	17	41	15	24	8	10	A-4a
21+30	CL	0.4-3.0	4	2	17	45	32	33	13	24	A-6a
		3.0-8.0	0	0	0	53	47	30	10	24	A-4b
		8.0-13.0	0	0	0	50	50	35	13	28	A-6a
		13.0-18.0	0	0	1	48	51	38	19	27	A-6b
		18.0-20.0	22	32	26	11	9	NP	NP	16	A-1-b
		20.0-25.0	15	8	17	36	24	25	10	13	A-4a
		25.0-30.0	14	7	18	36	25	25	10	14	A-4a
21+90	CL	0.4-6.0	0	0	1	72	26	NP	NP	26	A-4b *
		6.0-10.0	0	0	0	75	25	NP	NP	26	A-4b
23+50	CL	0.3-6.0	15	2	3	45	35	33	14	24	A-6a
		6.0-10.0	0	3	8	52	37	38	12	20	A-6a
		10.0-14.0	0	5	10	38	47	39	21	22	A-6b
		14.0-17.0	15	7	14	37	27	26	11	14	A-6a *
		17.0-21.0	12	5	8	46	29	26	11	10	A-6a
		21.0-25.0	9	2	13	50	26	22	4	25	A-4b
		25.0-30.0	0	2	5	45	48	32	14	22	A-6a
25+00	200'Lt	0.4-6.0	0	3	14	51	32	36	19	19	A-6b
		6.0-11.0	0	5	13	50	32	42	24	18	A-7-6
		11.0-19.0	14	9	17	39	21	23	7	13	A-4a
		19.0-25.0	0	0	1	1	75	23	NP	23	A-4b
		25.0-30.0	0	0	3	56	41	38	16	21	A-6b
25+00	CL	0.4-6.0	0	2	3	54	41	48	27	27	A-7-6
		6.0-12.0	0	1	5	45	49	45	24	22	A-7-6 *
		12.0-17.0	11	6	9	45	29	26	11	15	A-6a *
		17.0-25.0	0	2	7	57	34	NP	NP	20	A-4b
		25.0-30.0	0	1	5	33	62	38	18	22	A-6b

STATION & OFFSET		DEPTH FROM - TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
27+00	300'Lt	0.4-7.0	0	2	1	63	34	40	15	30	A-6a
		7.0-11.0	0	11	23	44	22	29	11	18	A-6a
		11.0-18.0	0	4	21	58	17	21	2	28	A-4b
		18.0-24.0	0	0	1	69	30	31	9	19	A-4b
		24.0-30.0	0	2	4	61	33	29	9	21	A-4b
29+50	CL	0.4-5.0	(20	14	29	27	12	NP	NP	--)	
			Dark-Gray Silt with Cinders and Ashes								Visual *
		5.0-10.0	0	4	14	51	31	38	19	19	A-6b
		10.0-14.0	0	3	7	67	23	28	5	23	A-4b
		14.0-20.0	11	5	18	41	25	28	10	16	A-4a
31+00	CL	0.4-7.0	0	2	5	64	29	36	12	25	A-6a *
		7.0-14.0	0	5	23	39	33	43	24	16	A-7-6
		14.0-16.0	10	10	18	43	19	23	7	15	A-4a
		16.0-18.0	12	5	15	33	35	35	17	13	A-6b
34+00	CL	0.4-6.0	0	2	10	50	38	44	26	19	A-7-6 *
		6.0-12.0	0	1	2	46	51	43	24	18	A-7-6
37+50	CL	0.4-4.0	0	7	22	33	38	40	22	13	A-6b *
		4.0-10.0	26	9	13	32	20	25	8	15	A-4a
38+00	CL	0.4-5.0	0	5	19	39	37	35	17	17	A-6b *
38+50	CL	0.4-4.0	0	4	18	40	38	40	21	20	A-6b
		4.0-10.0	14	7	18	30	31	26	11	21	A-6a
41+00	CL	0.3-5.0	0	8	33	36	23	19	3	17	A-4a
		5.0-12.0	0	6	21	38	35	33	15	10	A-6a
		12.0-15.0	36	8	14	26	16	22	9	10	A-4a
42+50	CL	0.4-6.0	0	14	43	30	13	19	4	11	A-4a *
		6.0-10.0	0	41	45	9	5	NP	NP	7	A-3a
44+50	CL	0.4-7.0	0	15	20	32	33	36	15	18	A-6a
		7.0-9.0	0	18	66	11	5	NP	NP	6	A-3a
		9.0-12.0	27	10	23	27	13	17	4	10	A-4a
48+90	CL	0.3-6.0	0	1	7	54	38	43	26	22	A-7-6 *
		6.0-10.0	0	2	3	74	21	NP	NP	24	A-4b
		DRIVE SAMPLE SOIL TEST DATA Proposed IR 71 (Southbound Lanes)									
373+17	58'Lt	5.0-6.0	Brown Clayey Sandy Gravel							16	Visual
		10.0-11.0	0	3	40	39	18	21	6	23	A-4a
		12.5-13.5	20	6	10	45	19	21	9	21	A-4a
		15.0-16.0	13	6	12	41	28	23	10	13	A-4a
		17.5-18.5	22	7	16	32	23	22	12	13	A-6a
		20.0-21.0	Gray Sandy Gravel							14	Visual
		22.5-23.5	0	8	32	47	13	NP	NP	14	A-4a
		25.0-26.0	0	5	31	50	14	NP	NP	15	A-4b
		27.5-28.5	24	12	21	34	9	NP	NP	14	A-4a
		30.0-31.0	30	5	10	31	24	23	11	13	A-6a
		35.0-35.8	38	8	11	27	16	18	7	10	A-4a
		40.0-41.0	0	2	4	63	31	24	9	16	A-4b
		45.0-46.0	0	2	69	22	7	NP	NP	22	A-3a
		50.0-51.0	0	0	7	58	35	NP	NP	29	A-4b
		55.0-55.9	21	11	52	8	5	NP	NP	15	A-3a
		60.0-60.7	Brown Silty Sandy Gravel							20	Visual
376+06	10'Rt	5.0-6.0	Brown Silty Sandy Gravel							8	Visual
		7.5-8.5	0	2	11	47	40	33	11	34	A-6a
		10.0-11.0	0	2	22	44	32	32	8	29	A-4a
		12.5-13.5	11	3	18	37	31	32	9	35	A-4a
		15.0-16.0	22	3	11	29	35	25	11	15	A-6a
		17.5-18.5	35	9	16	20	20	22	8	10	A-4a
		20.0-21.0	22	6	17	25	30	24	10	14	A-4a
		22.5-23.5	15	6	19	24	36	24	8	14	A-4a
		25.0-26.0	18	7	17	24	34	23	8	14	A-4a
		30.0-30.5	17	6	6	41	30	23	4	15	A-4a
		35.0-36.0	0	1	5	46	48	28	11	29	A-6a
		40.0-41.0	0	3	74	15	8	NP	NP	11	A-3a
		45.0-45.5	45	10	28	--	17	--	NP	NP	A-1b
		50.0-50.9	11	7	16	34	32	23	10	13	A-4a
		55.0-55.7	34	7	19	19	21	22	7	11	A-4a
		60.0-60.7	17	7	20	28	28	25	11	13	A-6a
		65.0-65.8	11	7	22	35	25	24	9	10	A-4a
		70.0-70.8	15	6	22	31	26	20	5	12	A-4a
402+00	BL	5.0-6.0	0	2	6	58	32	34	20	25	A-6b
		10.0-11.0	0	2	2	45	51	41	21	20	A-7-6
		15.0-16.0	37	5	6	34	18	27	9	25	A-4a
		20.0-21.0	Brown Sand, Gravel, and Stone Fragments						

SOIL PROFILE
HAMILTON COUNTY
HAM-IR 71-7.45

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

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SUMMARY OF SOIL TEST DATA

NOTE: NP shown in Liquid Limit and Plasticity Index columns indicates that the material is non-plastic.
*Denotes sample taken at or near grade.

STATION & OFFSET	DEPTH FROM - TO	% ACC.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
Proposed Ramp L										
22+50 17'Lt	5.0-6.0	24	8	11	38	19	28	5	23	A-4a
	7.5-8.5	0	3	5	50	42	33	11	25	A-6a
	10.0-11.0	0	0	2	48	43	33	13	27	A-6a
	12.5-13.5	12	3	9	45	31	36	17	27	A-6b
	15.0-16.0	0	1	1	55	43	41	21	27	A-6b
	17.5-18.5	0	0	0	43	57	44	22	31	A-7-6
	20.0-21.0	0	0	1	51	48	27	4	22	A-4b
	22.5-23.5	13	6	18	31	32	22	9	15	A-4a
	25.0-26.0	Gray Gravelly Sandy Clay					26	12	13	A-6a
	30.0-31.0	19	9	14	32	26	22	5	11	A-4a
	35.0-36.0	Brown Silty Sand							20	Visual
	40.0-40.8	10	6	66	10	8	NP	NP	17	A-3a
	45.0-45.7	45	11	21	17	6	NP	NP	8	A-1-b
	50.0-50.5	64	20	4	4	8	--	--	2	A-1-a
	55.0-56.0	11	15	27	23	24	18	5	12	A-4a
	60.0-61.0	11	2	4	39	44	30	12	20	A-6a
	65.0-66.0	27	9	9	28	27	26	10	15	A-4a
	70.0-70.5	24	20	14	23	19	21	6	11	A-4a
Proposed Ramp T										
27+35 23'Lt	5.0-6.0	0	2	60	28	10	NP	NP	25	A-4a
	10.0-11.0	Gray Sandy Silt					24	9	14	A-4a
	12.5-13.5	16	8	22	30	24	26	11	15	A-6a
	15.0-16.0	17	5	22	28	28	25	9	12	A-4a
	17.5-18.5	20	8	17	33	22	22	8	13	A-4a
	20.0-20.8	Gray Silty Sandy Gravel							4	Visual
	22.5-23.2	0	2	31	44	23	20	5	19	A-4a
	25.0-26.0	0	1	76	15	8	NP	NP	16	A-3a
	27.5-28.5	0	13	66	14	7	NP	NP	16	A-3a
	30.0-31.0	0	22	49	22	7	NP	NP	13	A-3a
	32.5-33.5	5	38	44	--	13--	NP	NP	14	A-3a
	35.0-35.5	56	14	13	--	12--	NP	NP	6	A-1-a
	40.0-41.0	0	1	1	51	47	32	13	21	A-6a
	45.0-46.0	0	0	11	71	18	NP	NP	21	A-4b
	50.0-51.0	6	4	6	55	29	25	9	14	A-4b
	55.0-56.0	8	12	19	36	25	32	10	27	A-4a
	60.0-61.8	17	2	3	37	41	20	7	10	A-4a
	65.0-66.0	Gray Silty Sandy Gravel							9	Visual
	70.0-70.9	20	6	14	38	22	27	10	14	A-4a
	75.0-75.9	11	34	38	--	17--	NP	NP	14	A-3a

STATION & OFFSET	DEPTH FROM - TO	% ACC.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
Ridge Avenue Interchange Relocated Ridge Avenue										
28+27 27'Lt	5.0-6.0	0	2	10	37	51	51	32	20	A-7-6
	10.0-11.0	21	13	16	23	27	35	15	15	A-6a
	15.0-16.0	25	8	14	30	23	25	12	10	A-6a
	20.0-21.0	21	9	17	32	21	22	7	11	A-4a
	25.0-26.0	0	2	2	41	55	35	15	23	A-6a
	30.0-31.0	17	5	13	38	27	22	7	13	A-4a
	35.0-36.0	0	6	13	59	22	NP	NP	15	A-4b
	37.5-38.5	11	4	17	44	24	19	5	11	A-4a
	40.0-41.0	0	1	2	72	25	20	5	22	A-4b
	42.5-43.5	0	1	1	72	23	NP	NP	22	A-4b
	45.0-46.0	0	1	9	78	12	NP	NP	17	A-4b
	47.5-48.5	0	2	8	70	20	NP	NP	20	A-4b
	50.0-51.0	0	8	23	43	26	NP	NP	21	A-4a
	52.5-53.5	8	1	2	66	23	NP	NP	16	A-4b
	55.0-56.0	8	2	4	47	39	25	12	23	A-6a
	57.5-58.5	16	16	16	40	12	NP	NP	16	A-4a
	60.0-61.0	0	0	36	55	9	NP	NP	20	A-4b
	65.0-65.8	0	1	64	26	9	NP	NP	13	A-3a
	70.0-71.0	21	8	21	26	24	23	10	7	A-4a
	75.0-76.0	Brown Sand and Stone Fragments							5	Visual
	80.0-81.0	Gray Sandy Silty Clay & Gravel					23	11	9	Visual
	85.0-86.0	32	7	18	24	19	22	11	11	A-6a
	90.0-90.6	37	8	11	24	20	22	9	12	A-6a
30+84 36'Rt	5.0-6.0	0	7	8	39	46	38	19	22	A-6b
	10.0-11.0	0	2	8	63	27	NP	NP	25	A-4b
	15.0-16.0	15	6	12	37	30	27	10	26	A-4a
	20.0-21.0	0	1	0	76	23	NP	NP	21	A-4b
	25.0-26.0	0	1	1	72	26	NP	NP	18	A-4b
	30.0-31.0	0	0	0	41	59	36	17	21	A-6b
	35.0-36.0	0	0	1	40	59	32	15	21	A-6a
	40.0-41.0	0	4	0	49	47	25	7	20	A-4a
	42.5-43.5	0	0	0	38	62	39	20	23	A-6b
	45.0-46.0	0	0	0	63	37	23	5	22	A-4b
	47.5-48.5	0	1	0	67	32	NP	NP	15	A-4b
	50.0-51.0	0	1	1	67	31	NP	NP	21	A-4b
	52.5-53.5	16	4	7	45	28	21	4	17	A-4a
	55.0-55.6	0	1	4	62	33	23	8	16	A-4b
	57.5-58.5	13	10	15	41	21	19	8	9	A-4a
	60.0-61.0	17	37	32	--	14--	NP	NP	22	A-1-b
	65.0-66.0	0	10	74	8	8	NP	NP	29	A-3a
	70.0-71.0	16	7	24	35	18	NP	NP	15	A-4a
	75.0-76.0	19	8	22	29	22	22	10	12	A-4a
	80.0-81.0	11	4	13	28	44	36	20	24	A-6b

STATION & OFFSET	DEPTH FROM - TO	% ACC.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
Proposed Ramp H										
2+24 5'Rt	5.0-6.0	33	24	19	15	9	NP	NP	16	A-1-b
	10.0-11.0	41	6	8	34	11	26	10	13	A-4a
	15.0-16.0	14	7	17	35	27	25	9	14	A-4a
	20.0-21.0	62	1	29	4	4	NP	NP	19	A-1-b
	25.0-25.4	0	59	16	13	12	NP	NP	10	A-3a
	30.0-30.5	56	21	7	9	7	NP	NP	6	A-1-b
	35.0-36.0	67	15	6	8	4	NP	NP	10	A-1a
	40.0-41.0	58	16	9	2	15	NP	NP	11	A-1b
6+75 8'Lt	5.0-6.0	24	5	17	29	25	28	11	14	A-6a
	7.5-8.5	37	5	14	25	19	24	9	12	A-4a
	10.0-11.0	Gray Silty Clay and Gravel					24	10	8	Visual
	12.5-13.5	34	4	6	37	19	23	9	11	A-4a
	15.0-16.0	23	5	16	27	29	24	8	13	A-4a
	17.5-18.5	39	5	12	26	18	26	11	10	A-6a
	20.0-21.0	0	11	22	29	38	23	7	8	A-4a
	25.0-26.0	20	5	16	31	28	25	9	13	A-4a
	30.0-31.0	25	4	16	32	23	24	9	14	A-4a
	35.0-36.0	28	6	15	28	23	24	8	13	A-4a
	45.0-45.7	34	11	7	13	25	PL = 15		12	A-2-4
	50.0-51.0	33	7	16	24	20	22	8	13	A-4a
	55.0-56.0	Gray Sandy Gravelly Silt								Visual
	60.0-61.0	53	11	12	13	11	NP	NP	12	A-1-b
17+90 23'Rt	2.5-3.5	Brown Gravelly Sandy Silt							8	Visual
	5.0-6.0	0	9	69	10	12	NP	NP	20	A-3a
	7.5-8.5	Brown Silty Clay					27	11	14	A-6a
	10.0-11.0	0	3	73	15	9	NP	NP	22	A-5a
	15.0-15.7	37	10	18	16	19	22	10	12	A-2-4
	17.5-18.5	15	9	17	29	30	24	10	13	A-4a
	20.0-21.0	0	12	67	10	11	NP	NP	10	A-3a
	25.0-25.8	0	29	59	--	12--	NP	NP	5	A-3a
	30.0-30.5	12	29	57	--	12--	NP	NP	17	A-1b
	40.0-41.0	0	45	46	--	9--	NP	NP	17	A-3
	45.0-46.0	0	30	62	--	8--	NP	NP	18	A-3
19+90 15'Lt	2.5-3.5	17	5	26	31	21	25	7	19	A-4a
	5.0-6.0	0	6	33	37	24	19	3	13	A-4a
	7.5-8.5	15	11	19	29	26	22	6	14	A-4a
	10.0-11.0	36	11	20	19	14	16	1	11	A-2-4
	12.5-13.5	27	8	11	29	25	21	5	25	A-4a
	15.0-16.0	0	5	60	23	12	NP	NP	15	A-3a
	17.5-18.5	0	58	32	4	6	NP	NP	13	A-1b
	20.0-21.0	4	42	40	5	9	NP	NP	17	A-3a
	25.0-26.0	0	44	39	--	17--	NP	NP	14	A-3a
	30.0-30.9	0	39	47	--	14--	NP	NP	17	A-3a
	35.0-36.0	11	43	36	--	10--	NP	NP	15	A-1b
	40.0-41.0	0	47	43	4	6	NP	NP	18	A-3

STATION & OFFSET	DEPTH FROM - TO	% ACC.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
Kennedy Avenue Interchange Proposed Kennedy Avenue										
19+09 40'Lt	5.0-6.0	28	9	11	25	27	30	11	16	A-6a
	10.0-11.0	0	2	1	38	59	37	18	17	A-6b
	15.0-16.0	0	1	0	27	71	41	20	19	A-7-6
	17.5-18.5	0	0	0	30	70	43	22	23	A-7-6
	20.0-21.0	0	1	0	27	72	40	21	22	A-6a
	22.5-23.5	0	0	0	53	47	29	11	25	A-6a
	25.0-26.0	0	0	0	53	47	29	9	17	A-4b
	27.5-28.5	0	0	1	55	44	30	9	22	A-4b
	30.0-31.0	27	25	13	25	10	NP	NP	13	A-2-4
	32.5-33.5	27	11	20	22	20	20	7	14	A-4a
	35.0-36.0	0	71	13	--	16--	NP	NP	13	A-1b
	37.5-38.5	0	68	27	--	5--	NP	NP	19	A-1-b
	40.0-41.0	20	7	14	37	22	21	5	12	A-4a
	45.0-45.8	49	7	10	21	13	20	4	13	A-2-4
	50.0-50.4	Gray Silty Sandy Gravel					22	9	11	Visual
	55.0-55.7	32	3	15	31	19	19	3	10	A-4a
	60.0-60.5	36	19	22	10	13	--	--	7	A-1-b
23+00 22'Rt	5.0-6.0	0	2	45	38	15	NP	NP	19	A-4a
	10.0-11.0	0	2	9	70	19	NP	NP	24	A-4b
	15.0-16.0	0	1	10	80	9	NP	NP	24	A-4b
	20.0-21.0	15	4	10	48	23	NP	NP	23	A-4a
	25.0-26.0	Gray Sandy Silt					NP	NP	21	A-4a
	27.5-28.5	0	11	18	75	6	NP	NP	23	A-4b
	30.0-31.0	25	7	31	32	5	NP	NP	10	A-4a
	32.5-33.5	22	34	18	19	7	NP	NP	10	A-3a
	35.0-35.6	55	8	8	18	13	PL = 15		11	A-2-4
	37.5-38.5	55	8	8	16	13	PL = 15		11	A-2-4
	40.0-41.0	10	5	4	39	42	30	11	15	A-6a
	42.5-43.5	11	9	12	38	30	21	6	10	A-4a
	45.0-46.0	11	10	21	34	24	21	8	14	A-4a
	47.5-48.5	26	6	17	32	17	21	4	11	A-4a
	50.0-51.0	10	20	20	16	21	23	9	12	A-4a
	55.0-56.0	31	24	20	8	17	19	5	12	A-1b
	60.0-60.7	28	4	7	46	15	22	6	8	A-4a
	65.0-65.5	Gray Silty Clay & Stone Fragments					PL =	16	4	Visual
Proposed Highland Avenue Extension										
27+50 CL	5.0-6.0	(24	44	22	6	4	NP	NP	22)	
		Dark-Gray Sand, Gravel, & Cinders (18					2		20)	Visual
	10.0-11.0	Black Organic Sandy Clayey Silt W/Cinders								Visual
	15.0-16.0	(35	19	33	6	7	NP	NP	11)	
		Dark-Gray Cinders W/Slag								Visual
	20.0-21.0	24	7	13	33	23	30	12	22	A-6a
	25.0-25.7	Slag								Visual
	35.0-36.0	11	17	30	24	18	NP	NP	20	A-4a
	40.0-41.0	29	28	23	13	7	NP	NP	11	A-1-b

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SOIL PROFILE

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HAMILTON COUNTY
HAM-IR71-7.45

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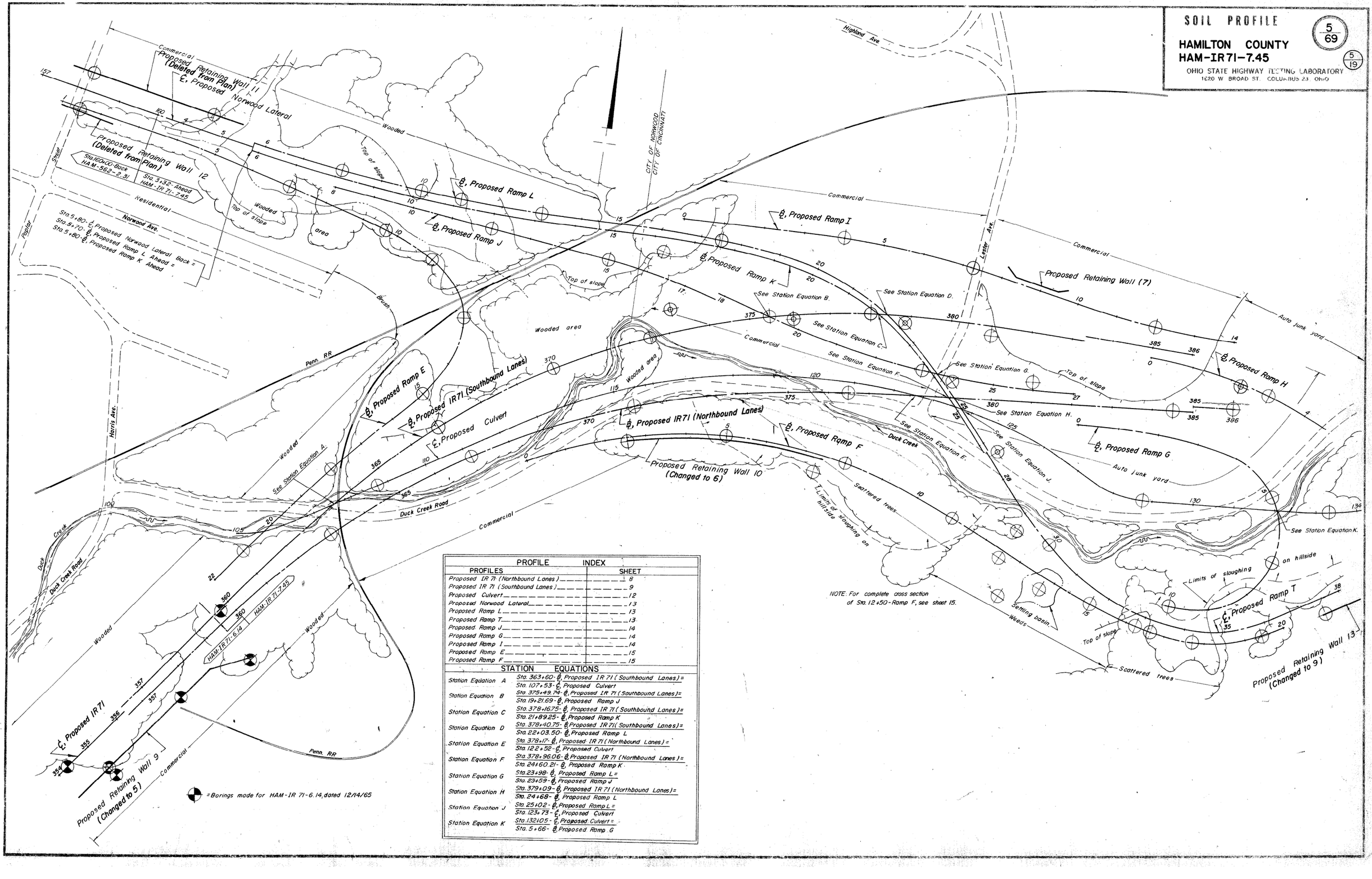
OHIO STATE HIGHWAY TESTING LABORATORY
1620 W BROAD ST. COLUMBUS 23, OHIO



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Proposed Ramp J	14
Proposed Ramp G	14
Proposed Ramp I	14
Proposed Ramp E	15
Proposed Ramp F	15

STATION EQUATIONS

Station Equation A	Sta. 363+60 - ℄ Proposed IR 71 (Southbound Lanes) = Sta. 107+53 - ℄ Proposed Culvert
Station Equation B	Sta. 375+49.74 - ℄ Proposed IR 71 (Southbound Lanes) = Sta. 19+21.69 - ℄ Proposed Ramp J
Station Equation C	Sta. 378+16.75 - ℄ Proposed IR 71 (Southbound Lanes) = Sta. 21+89.25 - ℄ Proposed Ramp K
Station Equation D	Sta. 378+40.75 - ℄ Proposed IR 71 (Southbound Lanes) = Sta. 22+03.50 - ℄ Proposed Ramp L
Station Equation E	Sta. 378+17 - ℄ Proposed IR 71 (Northbound Lanes) = Sta. 122+52 - ℄ Proposed Culvert
Station Equation F	Sta. 378+96.06 - ℄ Proposed IR 71 (Northbound Lanes) = Sta. 24+60.21 - ℄ Proposed Ramp K
Station Equation G	Sta. 23+98 - ℄ Proposed Ramp L = Sta. 23+59 - ℄ Proposed Ramp J
Station Equation H	Sta. 379+09 - ℄ Proposed IR 71 (Northbound Lanes) = Sta. 24+68 - ℄ Proposed Ramp L
Station Equation J	Sta. 25+02 - ℄ Proposed Ramp L = Sta. 123+73 - ℄ Proposed Culvert
Station Equation K	Sta. 132+05 - ℄ Proposed Culvert = Sta. 5+66 - ℄ Proposed Ramp G

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SOIL PROFILE

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HAMILTON COUNTY
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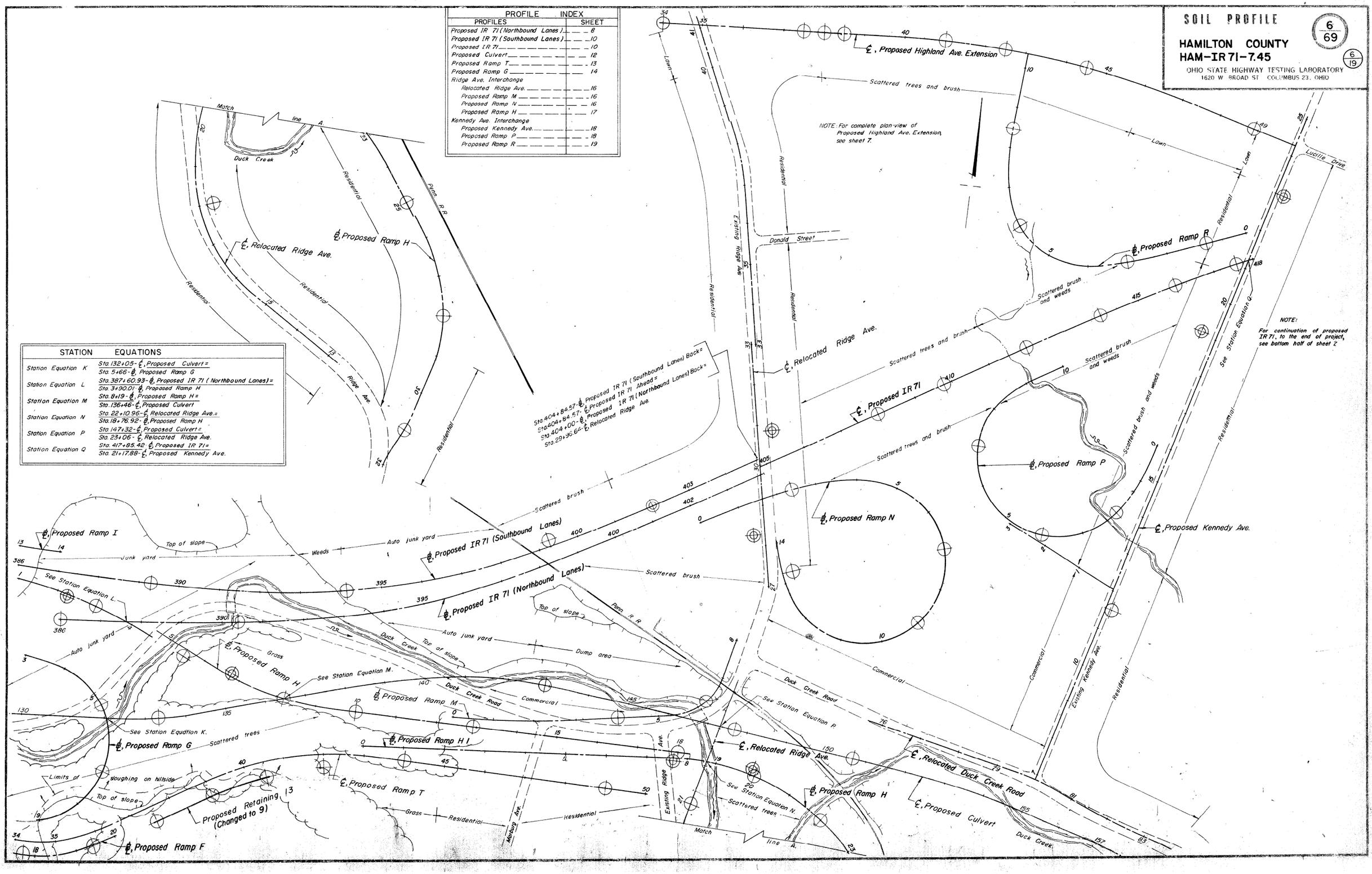
OHIO STATE HIGHWAY TESTING LABORATORY
1620 W BROAD ST COLUMBUS 23, OHIO



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STATION EQUATIONS	
Station Equation K	Sta. 132+05-℄, Proposed Culvert = Sta. 5+66-℄, Proposed Ramp G
Station Equation L	Sta. 387+60.93-℄, Proposed IR 71 (Northbound Lanes) = Sta. 3+90.01-℄, Proposed Ramp H
Station Equation M	Sta. 8+19-℄, Proposed Ramp H = Sta. 136+46-℄, Proposed Culvert
Station Equation N	Sta. 22+10.96-℄, Relocated Ridge Ave. = Sta. 18+76.92-℄, Proposed Ramp H
Station Equation P	Sta. 147+32-℄, Proposed Culvert = Sta. 23+06-℄, Relocated Ridge Ave.
Station Equation Q	Sta. 417+85.42-℄, Proposed IR 71 = Sta. 21+17.88-℄, Proposed Kennedy Ave.

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SOIL PROFILE

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HAMILTON COUNTY
HAM-IR 71-7.45

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OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23 OHIO

Highland Ave.
Lester Ave.
Penn. R.R.
Commercial
Commercial
Penn. R.R.
℄, Proposed Highland Ave. Extension
Scattered trees and brush
Scattered brush
Industrial dump area
Industrial dump area
Lawn
Residential
Residential
Residential
Residential
Ridge Ave.
℄, Relocated Ridge Ave.
Donald Street
10
15
20
25
30
35
38
40
42

NOTE: For complete profile of Highland Ave. Extension, see sheet 19.

NOTE: For continuation of Highland Ave. Extension, see this sheet

NOTE: For complete plan-view of Ridge Ave. Interchange, see sheet 6.

Scattered trees and brush
℄, Proposed Highland Ave. Extension
Lawn
Scattered trees and brush
Lawn
Scattered trees and brush
Scattered weeds and brush
℄, Proposed Ramp R
Scattered trees and brush
Residential
Scattered weeds and brush
Scattered weeds and brush
℄, Proposed Kennedy Ave.
Lawn
Lucille Drive
Residential
Sta. 417+85.42 ℄ Proposed IR 71 =
Sta. 21+17.88 ℄ Proposed Kennedy Ave.
℄, Proposed IR 71
Weeds
Residential
Top of slope
Weeds
38
40
45
50
10
5
0
418
420
425
430
435
25
20
18

NOTE: For complete profile of Highland Ave. Extension, see sheet 19.

NOTE: For complete plan-view of Kennedy Ave. Interchange, see sheet 6

NOTE: For profile of Proposed IR 71 from Sta. 418+00 to Sta. 435+00, see sheet 11.

SOIL PROFILE

HAMILTON COUNTY

HAM—IR 71 - 7.45

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OHIO STATE HIGHWAY TESTING LABORATORY
1620 W BROAD ST COLUMBUS 23, OHIO

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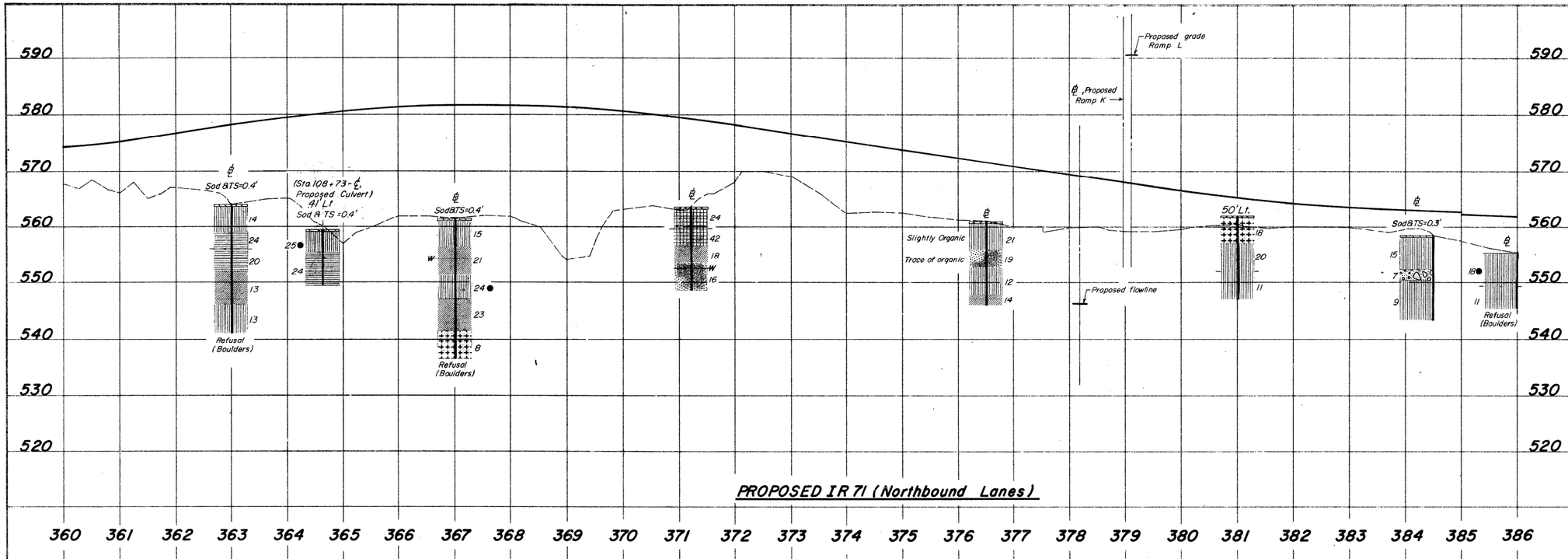

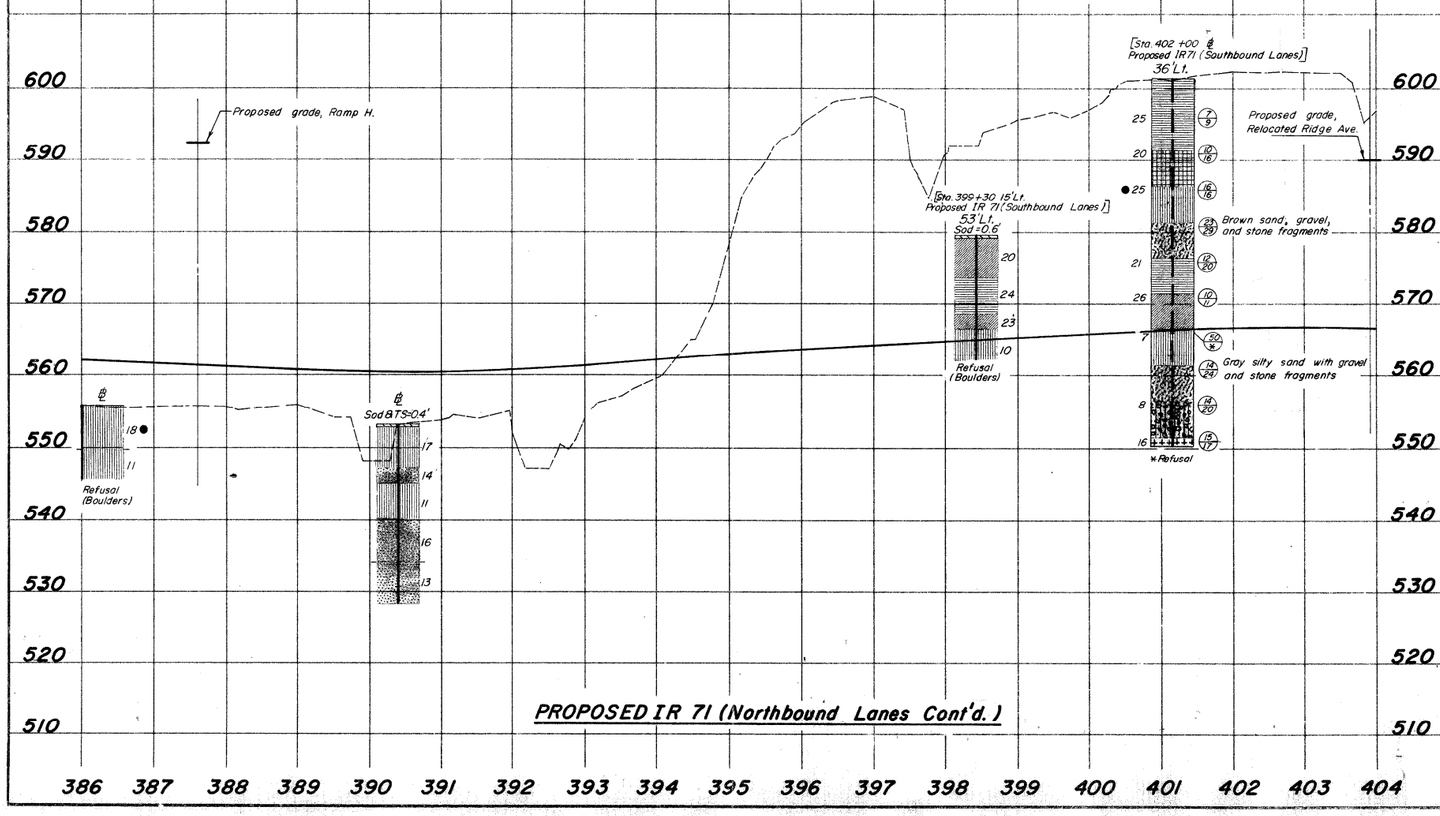

SOIL PROFILE

HAMILTON COUNTY

HAM-IR 71-7.45

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

9/69

9/19

610
600
590
580
570
560
550
540
530
520
510
500
490

62' Lt. Sod & TS=0.3'
W 20 13 23 12

[Sta. 363+00-℄ Proposed IR71 (Northbound Lane)]
53' Rt. Sod & TS=0.3'
14 24 20 13 13
Refusal (Boulders)
Proposed Flowline.

℄ TS=0.3'
18 12

℄ Sod & TS=0.4'
14 W 18 17 13
Hole caved in at elev. 554.0'

℄ Sod & TS=0.4'
19 9 14 9
Refusal (Boulders)

Brown clayey sandy gravel
Gray sandy gravel
Gray silty sandy gravel
*Refusal

58' Lt.
Trace of organic
Organic
Brown silty sandy gravel

Proposed grade, Ramp K
Proposed grade, Ramp L
Proposed grade, Ramp J

℄
16 16 25 17 11 13

10' Rt.
34 29 35 15 10 14 14 15 15 29 11 4 13 11 13 10 12
*Refusal

℄
18
Dark-gray cinders and ashes with brown clayey silt.
18 13 12
Refusal (Boulders)
Slightly organic

25' Rt.
22 Organic 23 20 11 3 3

(Sta. 12+00, ℄ Proposed Ramp 1)
Sod & TS=0.3'
9 23 19 17

PROPOSED IR 71 (Southbound Lanes)

360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386

SOIL PROFILE

HAMILTON COUNTY

HAM-IR71-7.45

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST COLUMBUS 23, OHIO

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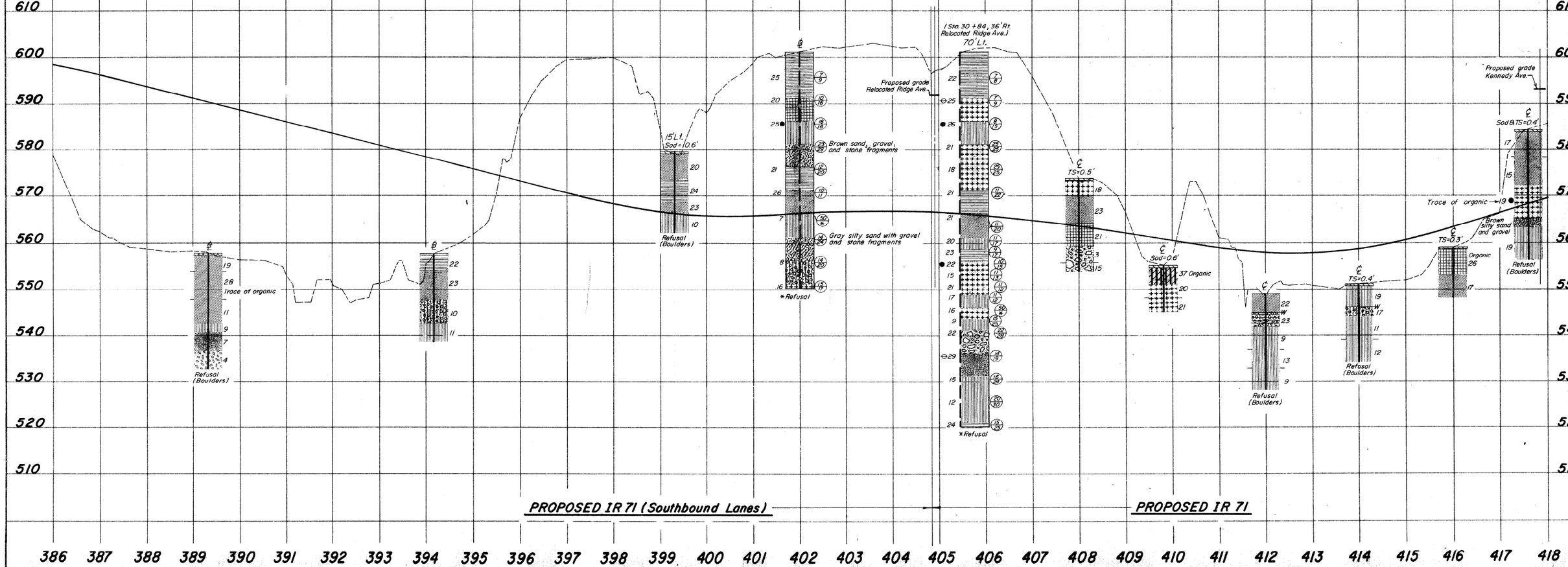
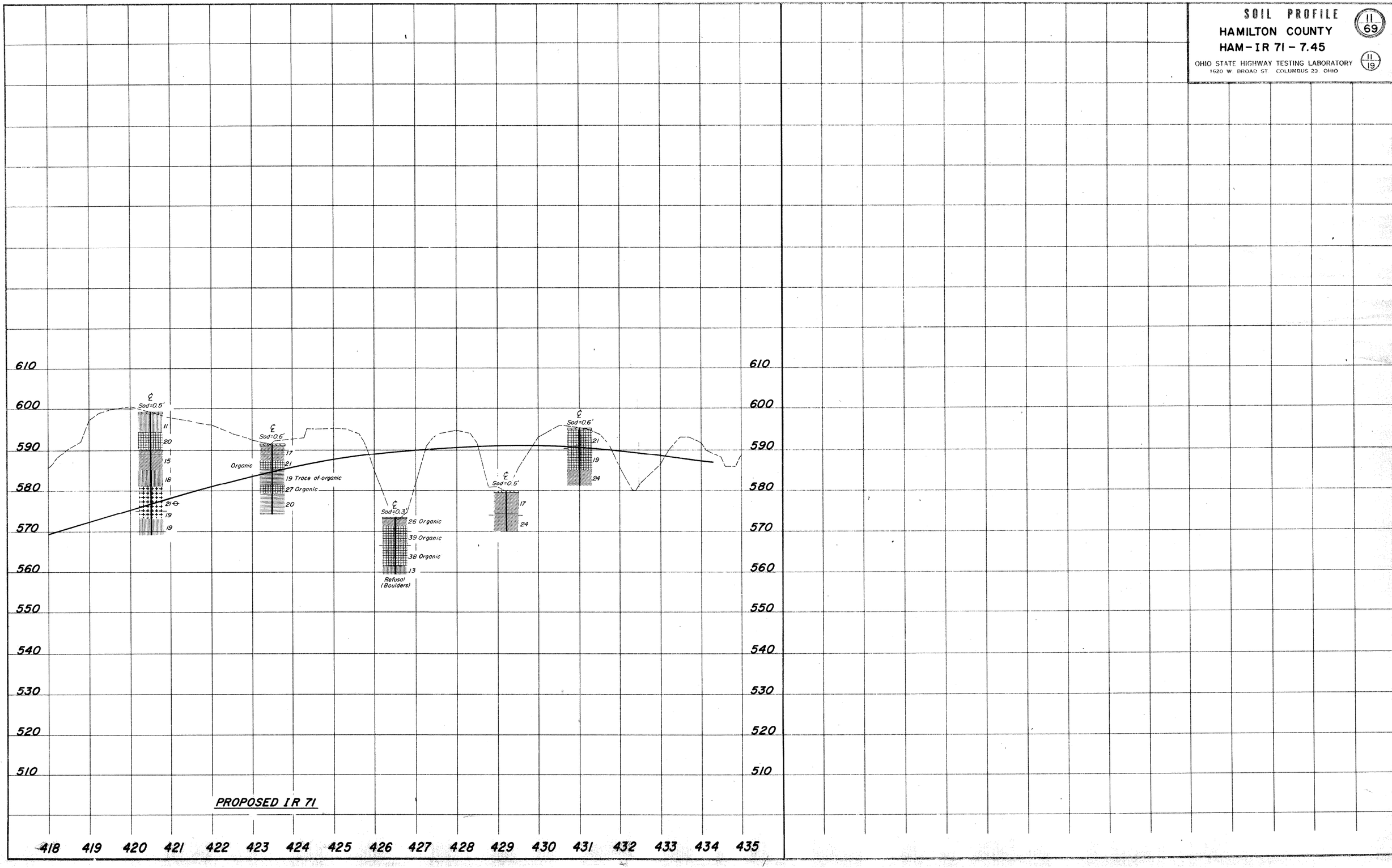
10/19




SOIL PROFILE
HAMILTON COUNTY
HAM-IR 71 - 7.45
OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO
11/69
11/19
610
600
590
580
570
560
550
540
530
520
510
℄ Sod=0.5'
11
20
15
18
21
19
19
℄ Sod=0.6'
17
21
Organic
19 Trace of organic
27 Organic
20
℄ Sod=0.3'
26 Organic
39 Organic
38 Organic
13
Refusal (Boulders)
℄ Sod=0.5'
17
24
℄ Sod=0.6'
21
19
24
PROPOSED IR 71
418
419
420
421
422
423
424
425
426
427
428
429
430
431
432
433
434
435

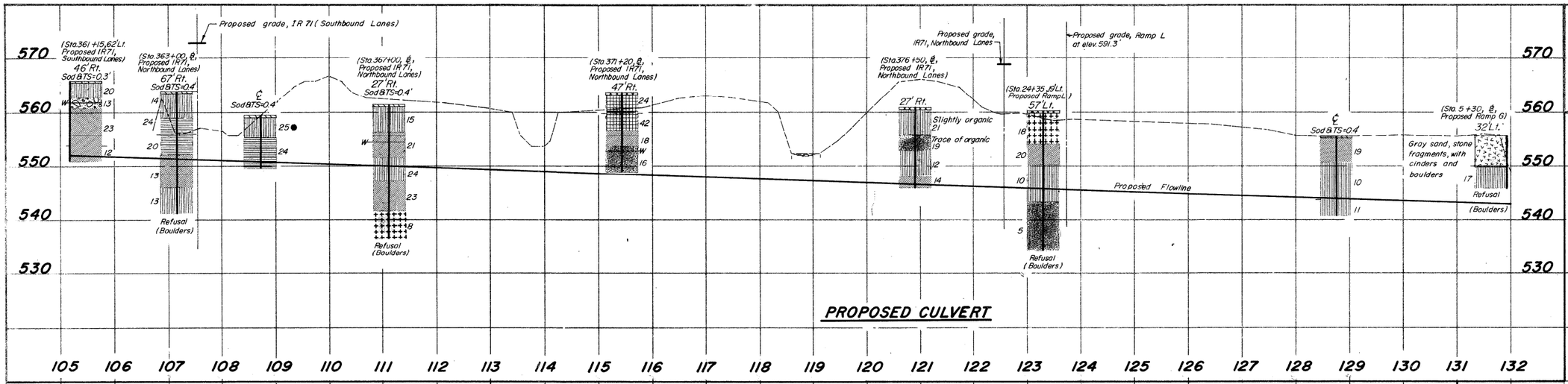
SOIL PROFILE

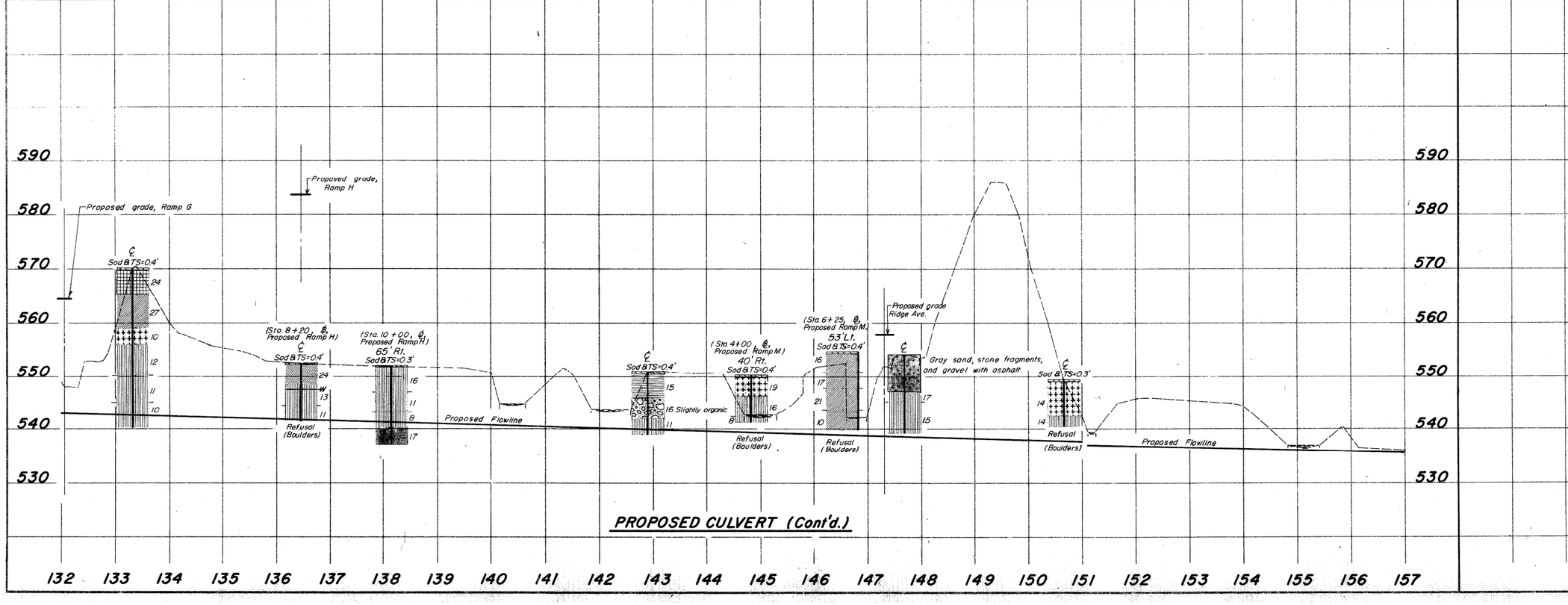
HAMILTON COUNTY
HAM – IR71 – 7.45

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W BROAD ST COLUMBUS 23 OHIO

12/69

12/19





SOIL PROFILE

13/69

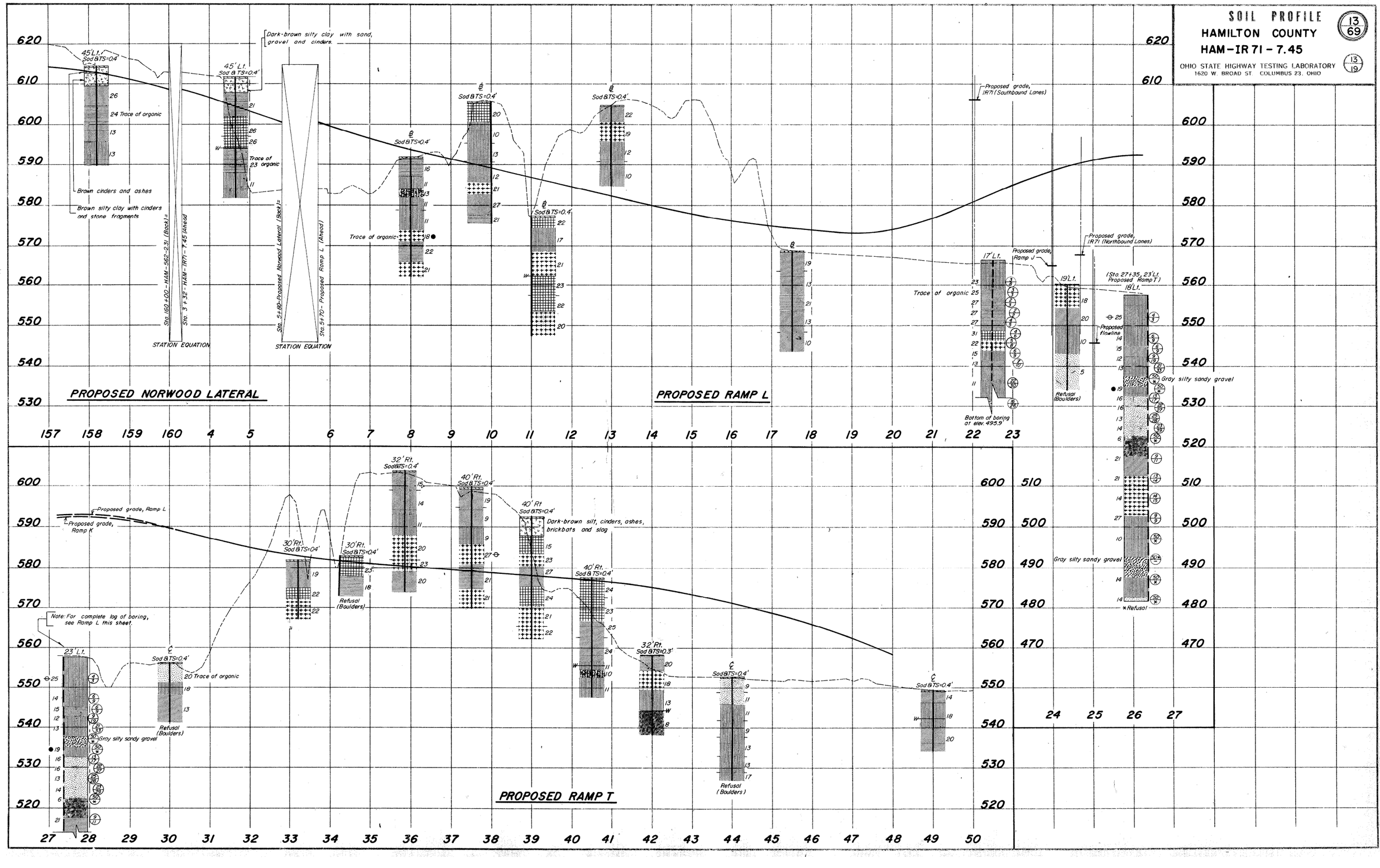
HAMILTON COUNTY

HAM-IR 71 - 7.45

13/19

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

TE-96
7500-8-64



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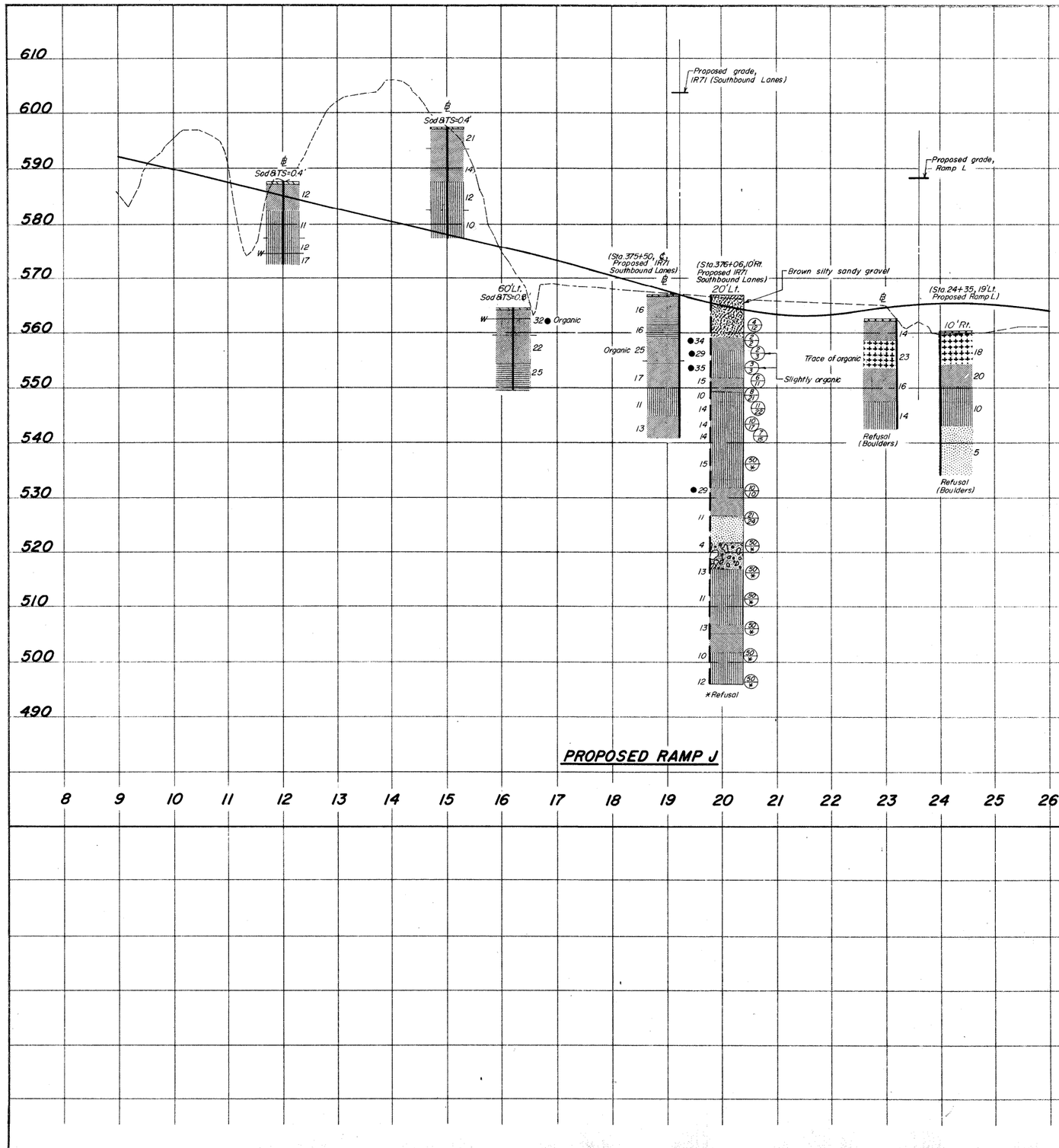
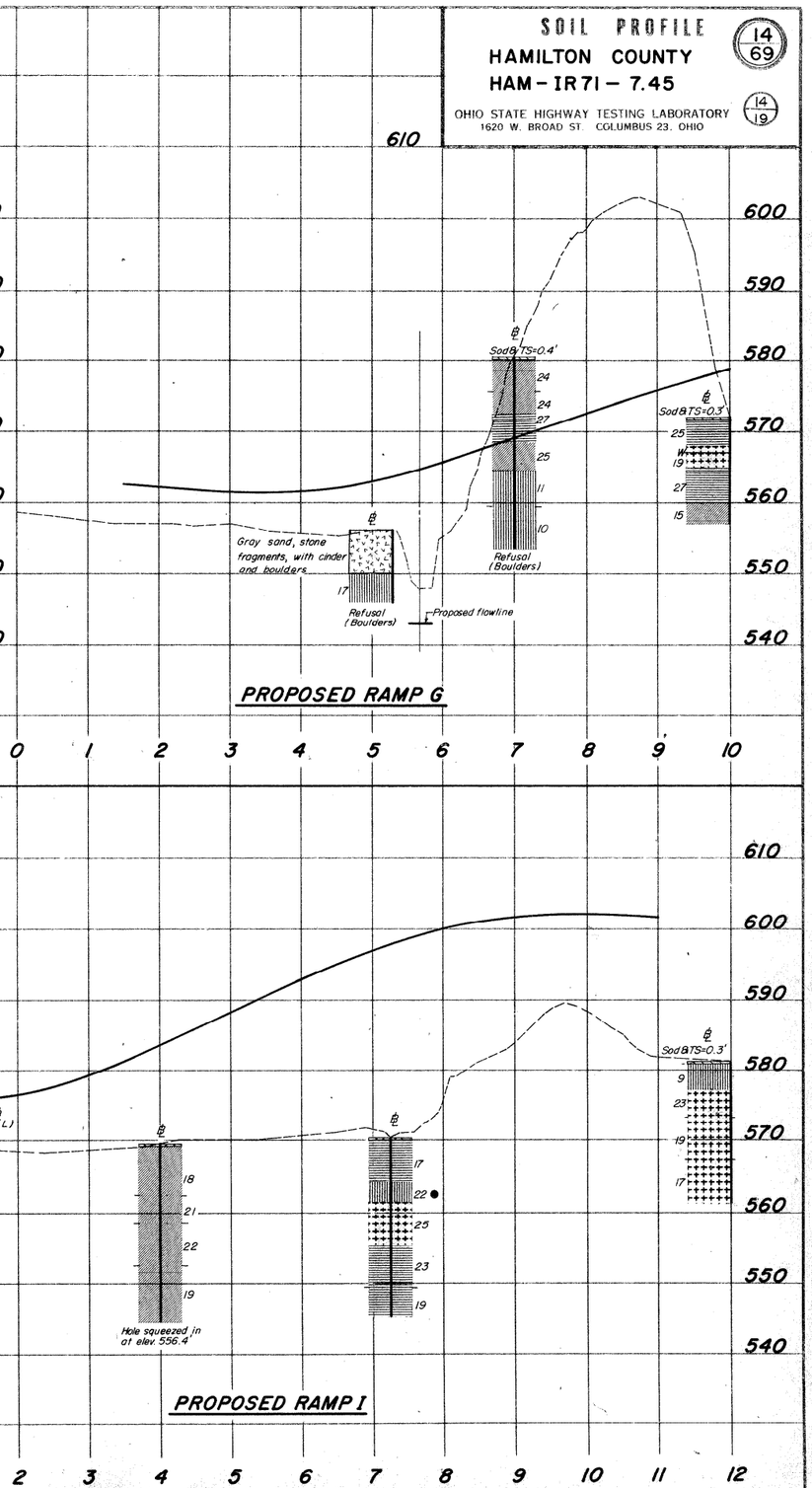
SOIL PROFILE
HAMILTON COUNTY
HAM-IR71-7.45

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

14 / 69

14 / 19





SOIL PROFILE

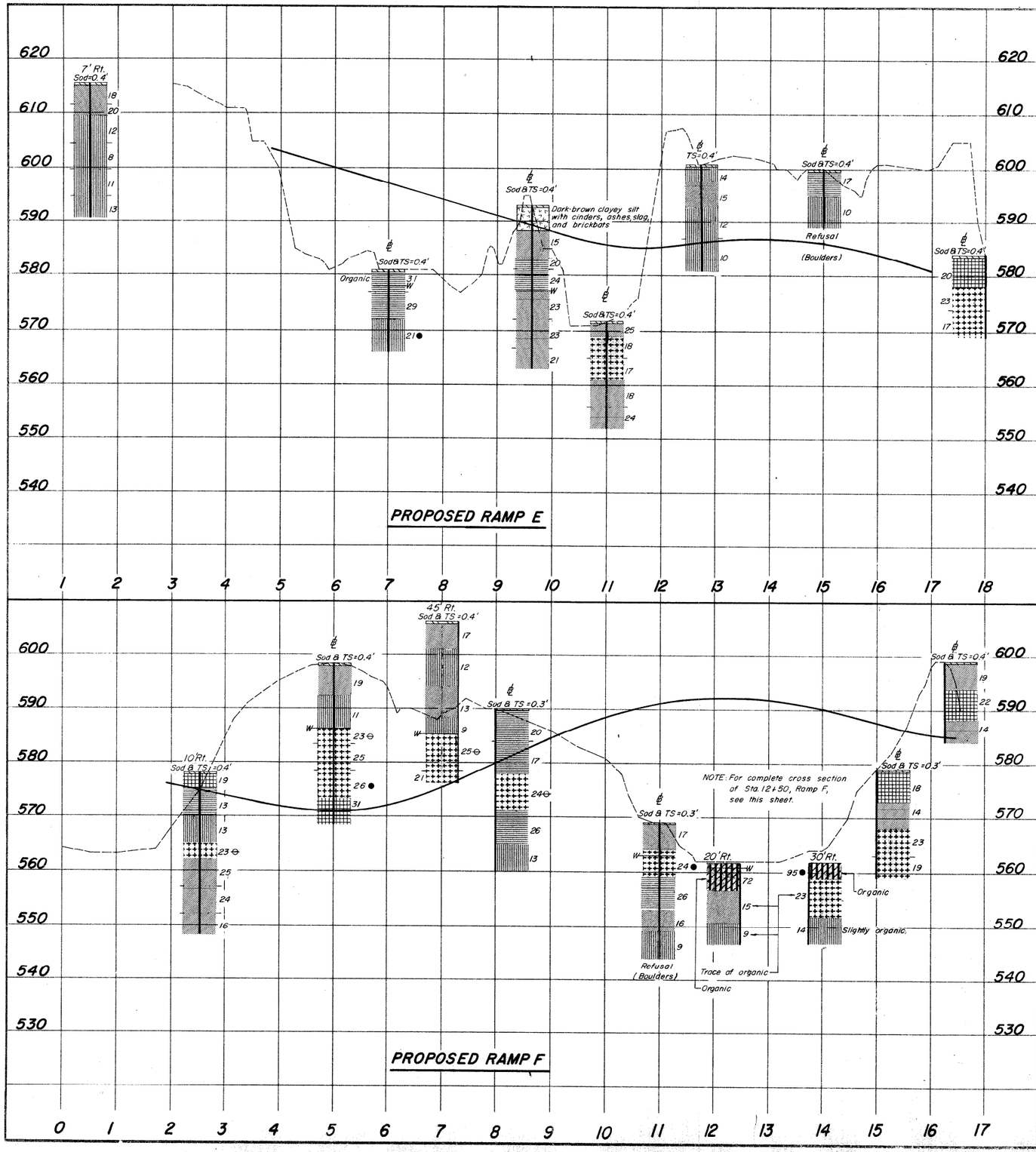
HAMILTON COUNTY

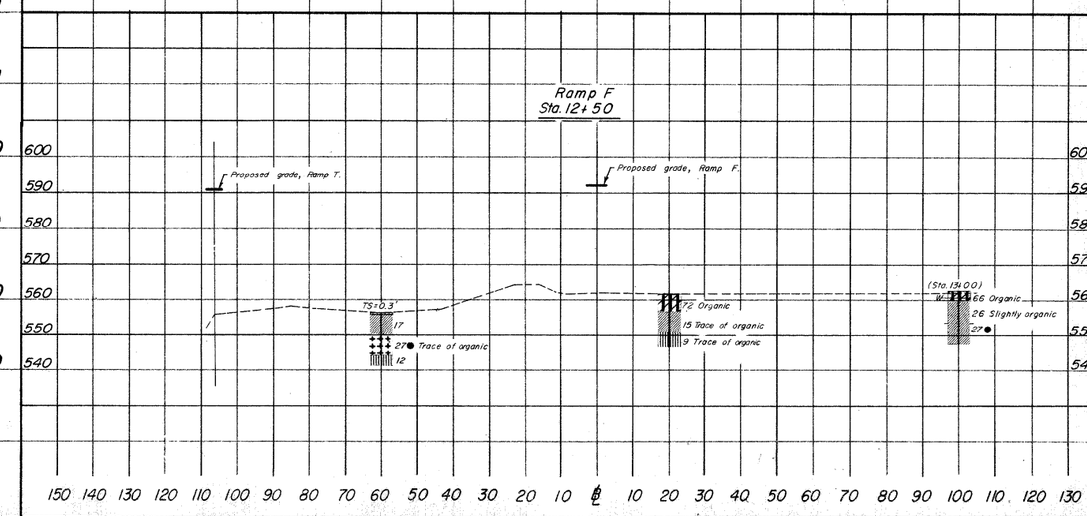
HAM-IR 71-7.45

15/69

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

15/19





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SOIL PROFILE

HAMILTON COUNTY

HAM-IR 71- 7.45

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

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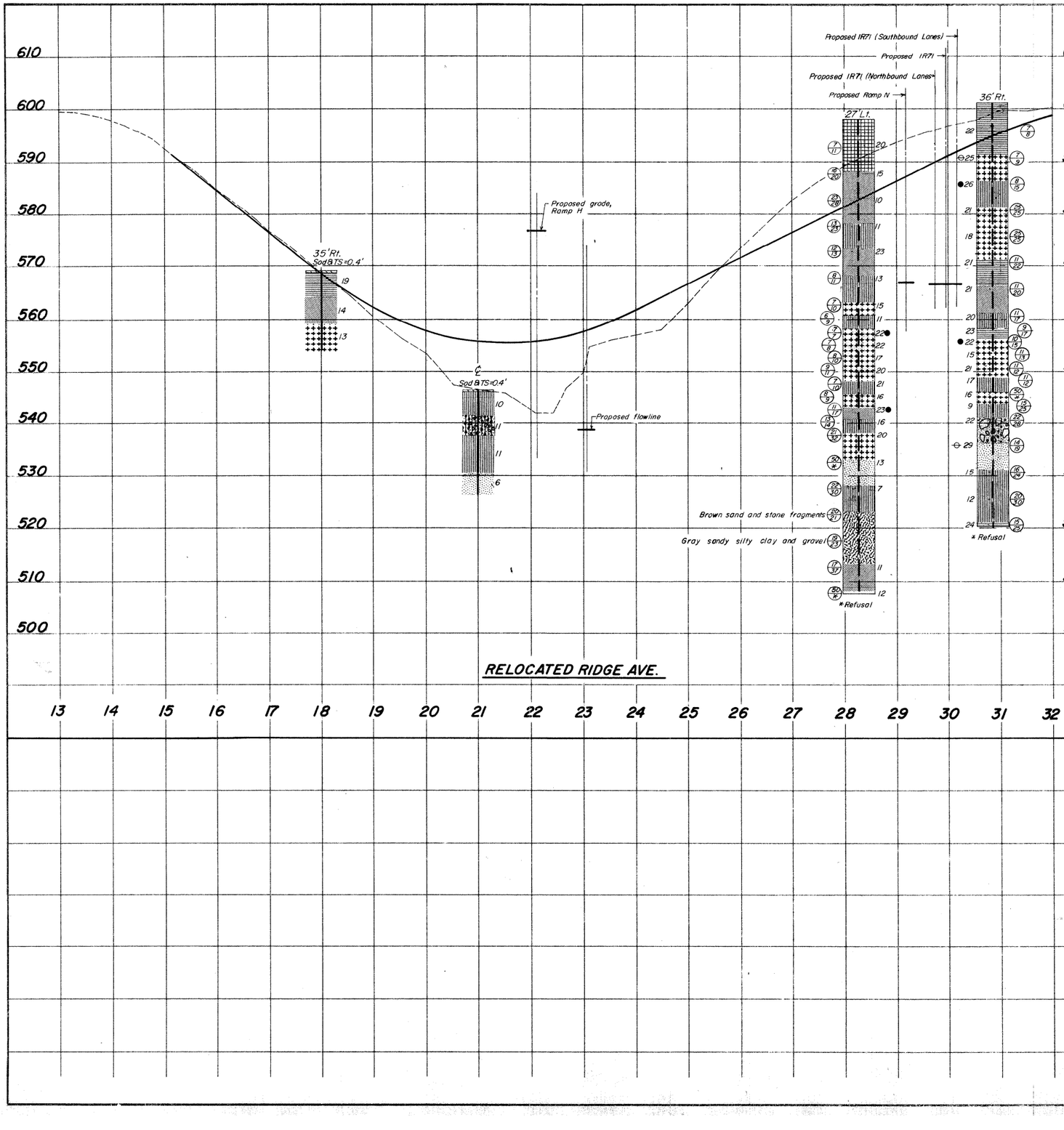

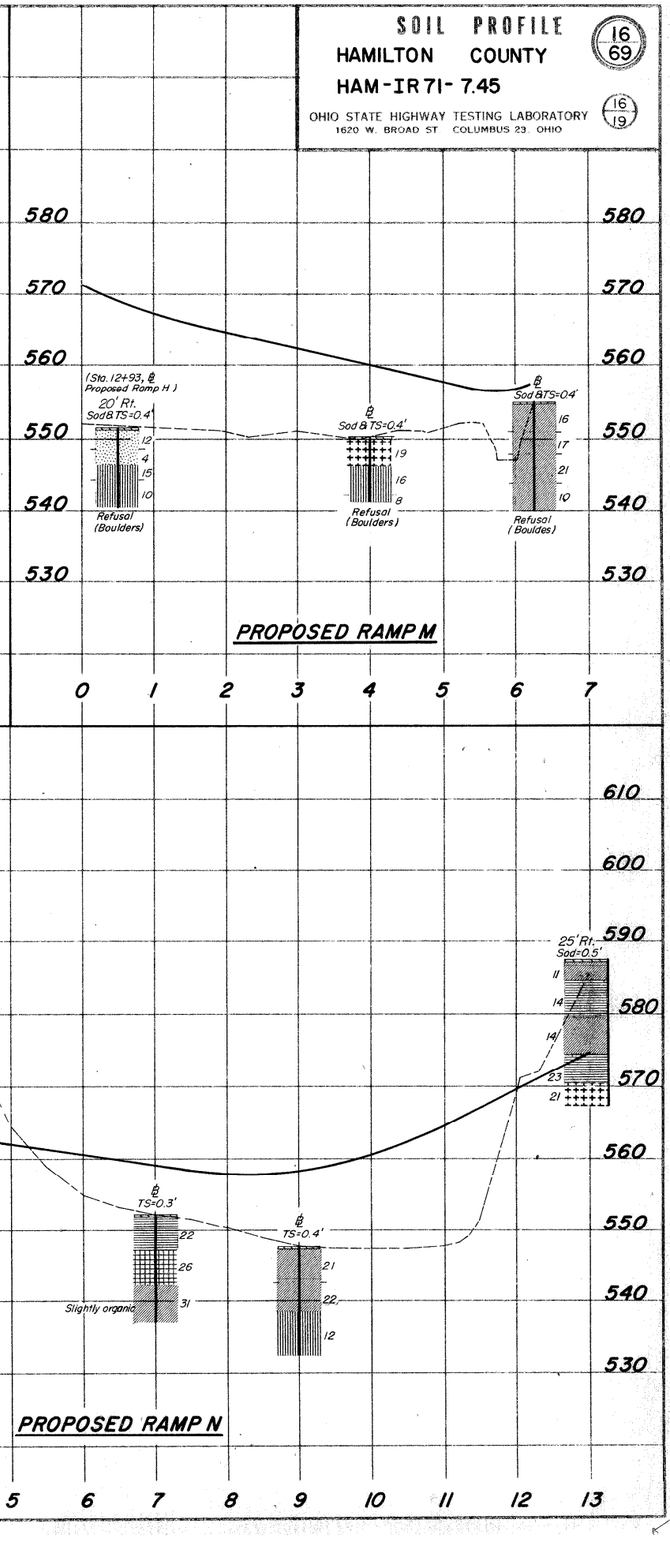

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SOIL PROFILE

17/69

HAMILTON COUNTY

HAM-IR 71-7.45

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

17/19

610
600
590
580
570
560
550
540
530
520
510
500
490

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32

Proposed grade, I R 71 (Northbound Lanes)

5' Rt.

*Refusal

Refusal (Boulders)

20' Rt. Sod & TS=0.4'

Refusal (Boulders)

8' Lt.

Gray silty clay and gravel

Gray sandy gravelly silt

*Refusal

Sod BTS=0.4'

Refusal (Boulders)

Proposed flowline

Sod BTS=0.3'

Sod & TS=0.4'

Refusal (Boulders)

Brown gravelly sandy silt

23' Rt. Sod BTS=0.4'

*Refusal

Proposed grade, Ridge Ave.

15' Lt.

Refusal (Boulders)

*Refusal

Sod & TS=0.3'

Sod BTS=0.4'

Sod BTS=0.4'

Sod BTS=0.4'

PROPOSED RAMP H

SOIL PROFILE

HAMILTON COUNTY
HAM – IR 71 – 7.45

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

18/69
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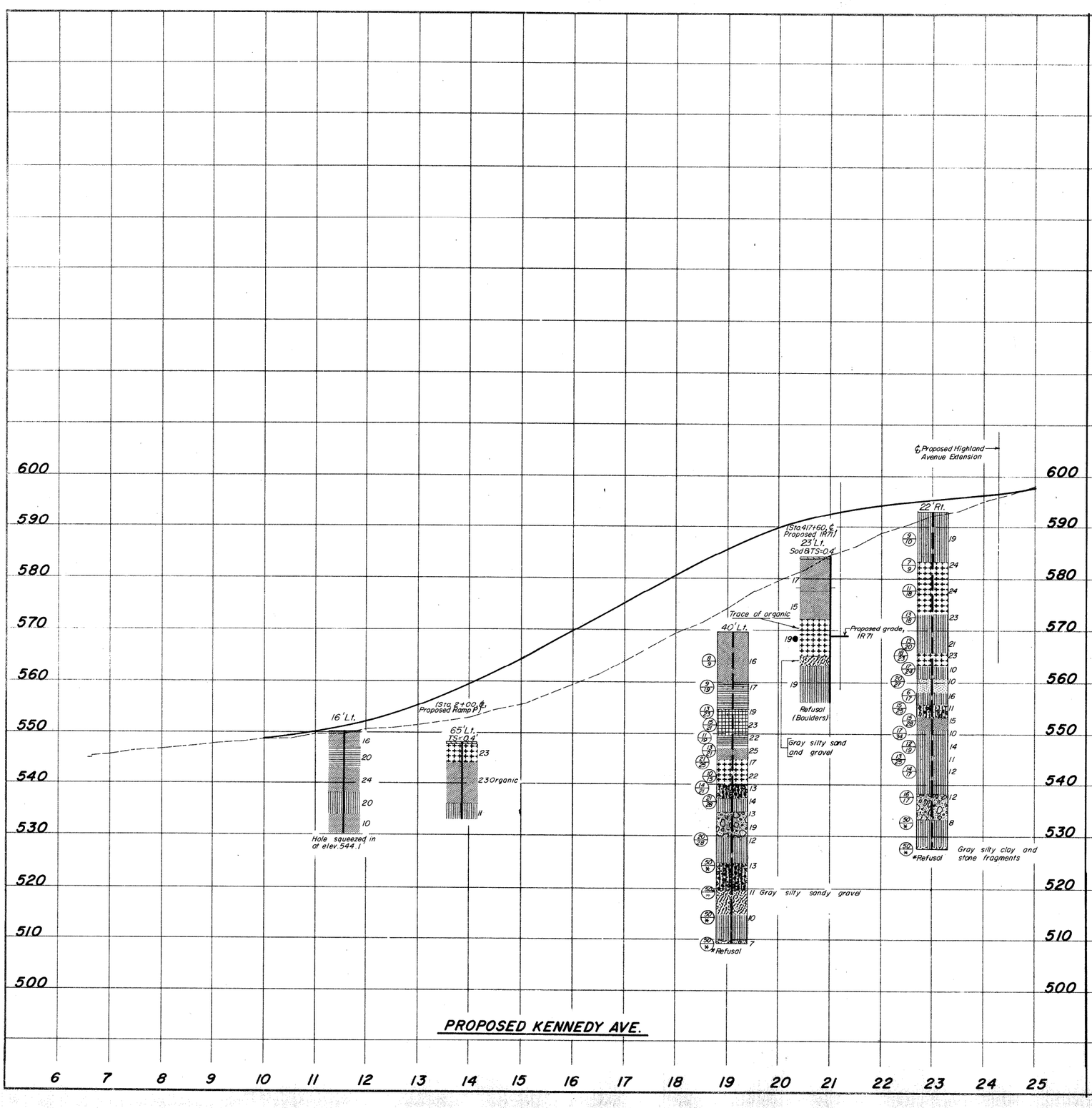
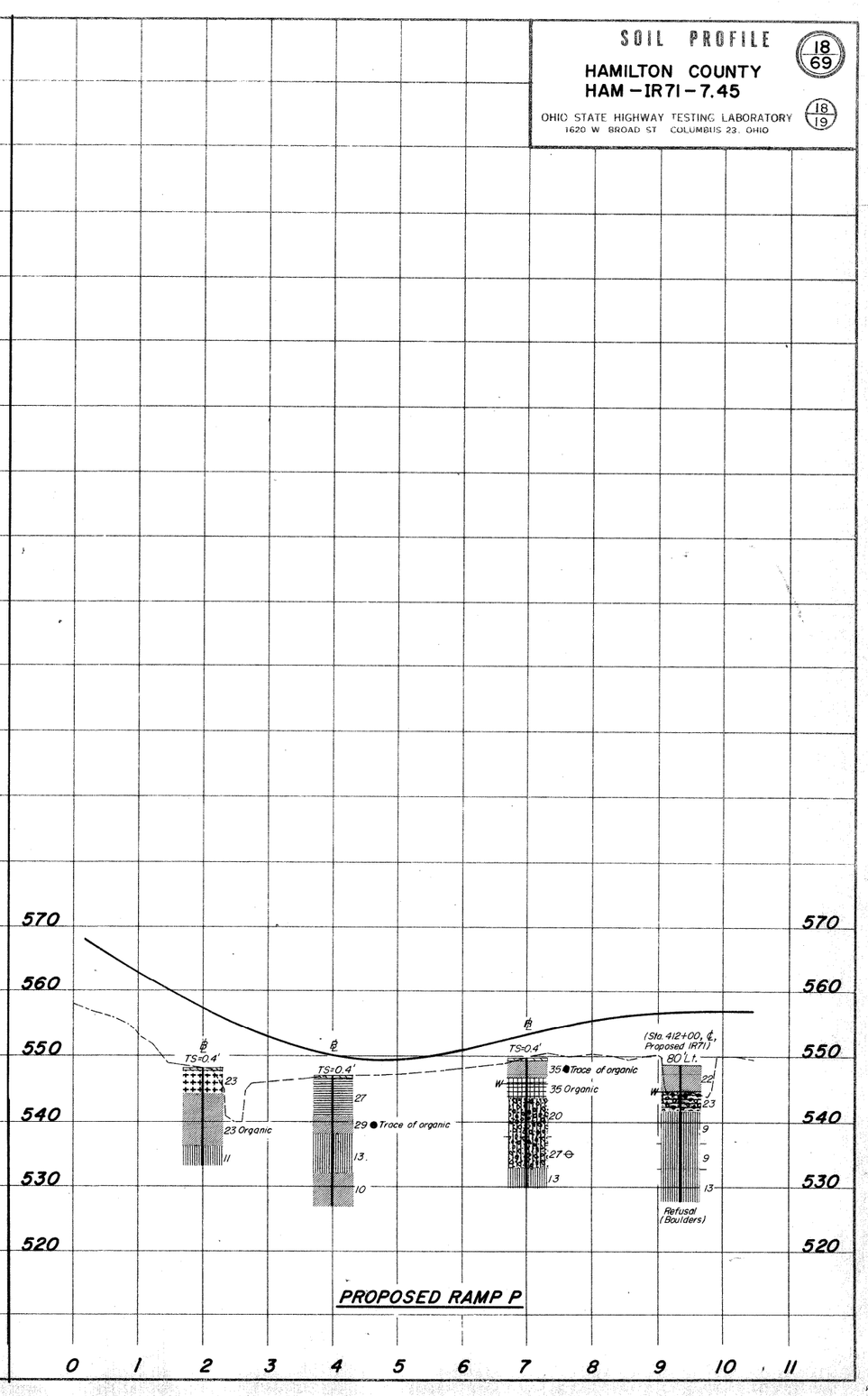




TF 96
2500 R &A

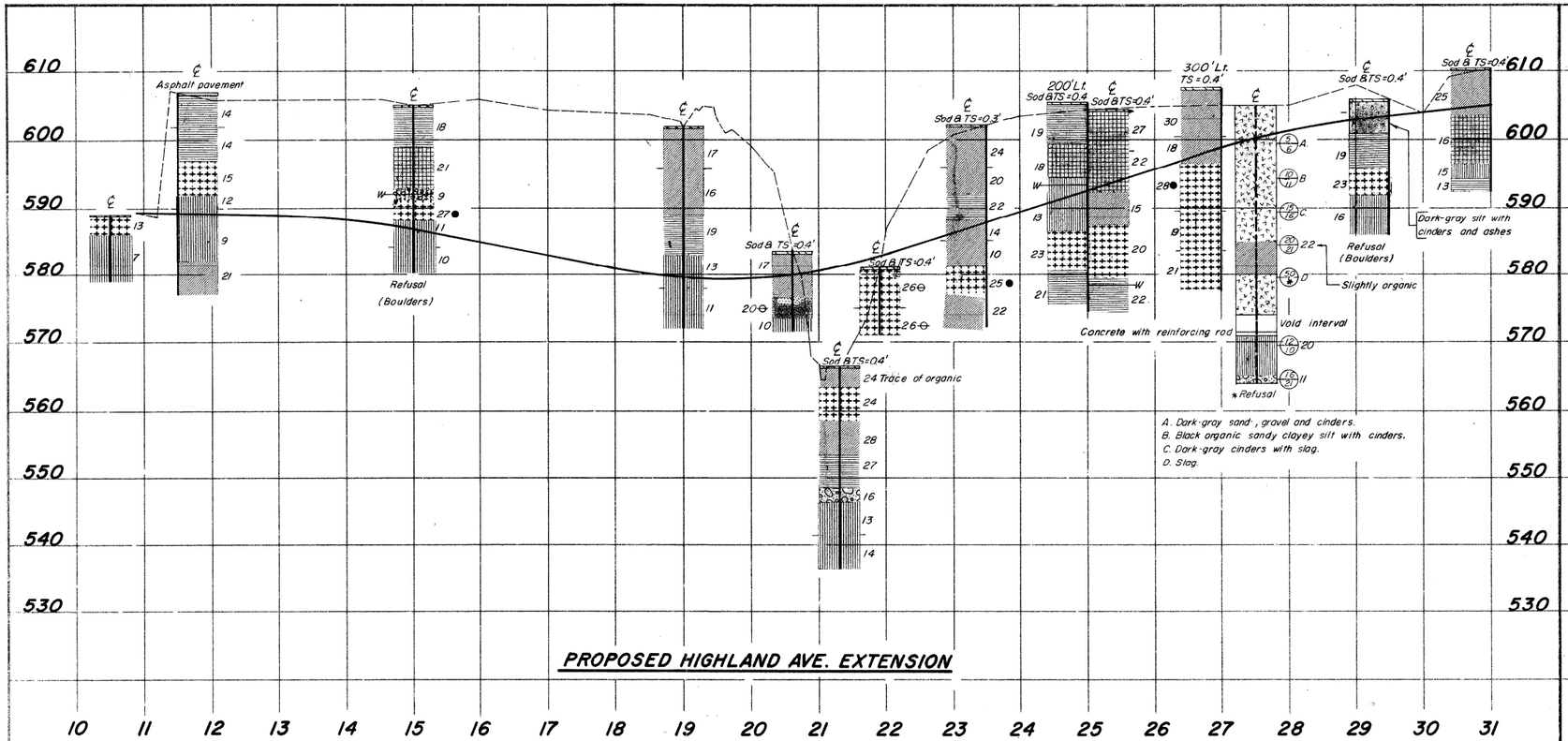
SOIL PROFILE
HAMILTON COUNTY
HAM – IR71 – 7.45

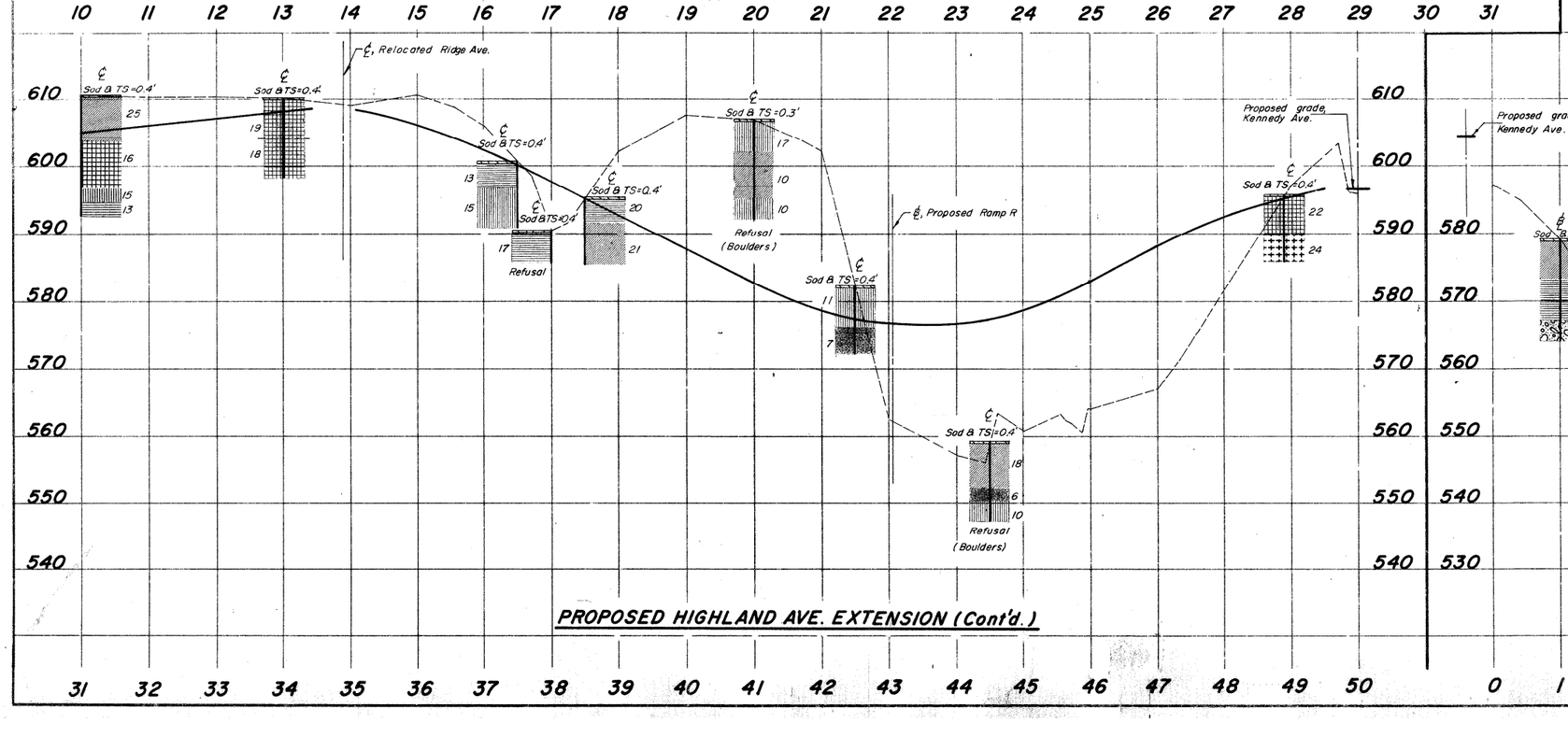
OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

19
69

19
19

MOISTURE - DENSITY SAMPLES				
STATION AND OFFSET		DEPTH	MAX. DRY WT. LBS./CU. FT.	OPTIMUM MOISTURE
Highland Ave. Extension				
23+50	℄	0.4'-6.0'	119.3	12.7 %
		6.0'-12.0'	102.4	20.3 %
		12.0'-17.0'	124.2	11.2 %
		17.0'-21.0'	124.2	11.2%
		21.0'-25.0'	119.3	12.7%
		25.0'-30.0'	112.0	15.8%
25+00	200' Lt.	0.0'-7.0'	1096	16.9%
		7.0'-11.0'	112.0	15.8%
		11.0'-14.0'	117.0	13.5%
		14.0'-21.0'	126.6	10.5%
		21.0'-25.0	112.0	15.8%
		25.0'-30.0	112.0	15.8%
25+00	℄	0.4'-7.0'	102.4	20.3%
		7.0'-11.0'	104.7	19.2%
		11.0'-17.0'	124.2	11.2%
		17.0'-25.0'	126.6	10.5%
27+00	300' Lt.	0.0'-7.0'	104.7	19.2%
		7.0'-11.0'	107.1	18.1%
		11.0'-18.0'	117.0	13.5%
		18.0'-24.0'	114.6	14.6%
		24.0'-30.0'	107.1	18.1%





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HAMILTON COUNTY
HAM-IR 71-7.45

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GEOLOGY OF THE SITE
The structure site is located on an Illinoian outwash plain, over the buried valley wall of the Deep Stage Cincinnati River. Interbedded outwash and till overlies interbedded shale and limestone bedrock, of Ordovician age.

EXPLORATION
The exploration consisted of three drive sample borings and seven drive rod penetration tests, made between June 22 and July 8, 1965.

INVESTIGATIONAL FINDINGS
The borings encountered unstratified, moist, very stiff to hard clays and silt clays, and medium-dense to very dense silts, sands, and occasional gravels. The borings were terminated at 46 to 81-foot depths, elevations 525 to 514 feet, after penetrating in excess of 20 feet of material requiring more than 30 blows per foot in the standard penetration test.

Rod soundings met increasing penetration resistance with increasing depth, and were terminated upon encounter with near-refusal to penetration at 3 to 26-foot depths, elevations 596 to 540 feet, considered to be in the hard and very dense materials, as revealed by the borings.

No free water was encountered in any of the rod sounding holes.

No test penetrated to bedrock surface.

LEGEND

- Auger Boring Location - Plan View.
- Press and / or Drive Sample and / or Core Boring Location - Plan View.
- Drive Rod Penetration Resistance Sounding Location - Plan View.
- Capped Pile
- Footing
- Footing on Pile
- TR — Top of Rock
- Horizontal Bar on Boring Log Indicates the Depth the Sample Was Taken.
- X/Y — Figures Beside the Boring Log in Profile Indicate the Number of Blows for Standard Penetration Test.
  X = Number of Blows for First 6 inches.
  Y = Number of Blows for Second 6 inches.
- Drive Rod Penetration Resistance Sounding Log - Profile
- Casing
- Resistance "R" < 10,000 lbs.
- Resistance "R" > 10,000 lbs.
- Z — Indicates Final Measurement of Penetration, in Inches.
- W — Indicates Free Water Elevation.
- Indicates Static Water Elevation.

SYMBOLS OF ROCK TYPES

- Coal
- Weathered Indurated Clay
- Indurated Clay
- Weathered Shale
- Shale
- Weathered Sandstone
- Sandstone
- Leached Dolomite
- Dolomite
- Leached Limestone
- Limestone

GENERAL INFORMATION

Drive Rod Penetration Sounding Tests

Drive rod penetration resistance tests constitute driving a 1.315-inch diameter steel rod, with a 45° cone point, into the ground, using a 122-pound drop-hammer with a free fall of five feet. At one or two-foot depth intervals, a measurement is taken to determine the amount of penetration achieved in three hammer drops. This reading is converted to an empirical value for capacity "R", in thousands of pounds (which is a measure of both the point resistance and frictional resistance on the rod), by using charts prepared by the Ohio Department of Highways, Bureau of Bridges, on the basis of correlation study of rod penetration with past performance of pile driving. For interpretation, a graph is prepared by plotting the value "R" against the depth at which the reading was taken, and connecting the plotted points. The curve so obtained reflects the density of subsurface materials in a manner that can be readily compared with data from similar tests at other locations on the structure site. From this comparison, the overall uniformity of subsurface condition may be evaluated.

Drive Sample Borings - Drive-Press Sample Borings

Drive sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. sampler, at 2-1/2 and / or 5-foot depth intervals, driven by means of a 140 - pound drop-hammer with a free fall of 30 inches. The number of blows required to drive the sampler 12 inches is considered the standard penetration test.

Drive-press sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. drive sampler, and 3" O.D. thin-wall press sampler. The press sampler is advanced by continuous uniform pressure, applied by the drill rig.

The boring log sheets show a graphic plot of the information obtained, including depth and elevation of the sample, number of blows for the standard penetration tests in two 6-inch increments, depth of press samples, field sample number, sample description - based on laboratory tests and the Casagrande AC classification system - and gradation, plasticity, and moisture content determinations. Results of strength and consolidation testing, if performed, appear on separate enclosures.

At depths where materials are bouldery or gravelly to the extent that the sampler can not be driven, a wash sample is procured for visual classification, in order to determine the general character of the material. These samples are not considered sufficiently representative to warrant laboratory testing.

Particle Size Definitions

Boulders	Cobbles	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	8" / 3"	2.0mm (No. 10 sieve)	0.42mm (No. 40 sieve)	0.074mm (No. 200 sieve)		0.005mm

NOTE: Information shown by this subsurface investigation was obtained solely for the use in establishing design controls for the project. The State of Ohio does not guarantee the accuracy of this data and it is not to be construed as a part of the plans governing construction of the project.

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR 71-0751
UNDER RELOC. PENNA. RR SIDING
SEC. HAM-IR 71-7.45

CHECKED BY	REVIEWED BY	DATE
R.H.P.	R.D.R.	8/12/65

TE - 119
500 - 11 - 64

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HAM-IR 71-7.45

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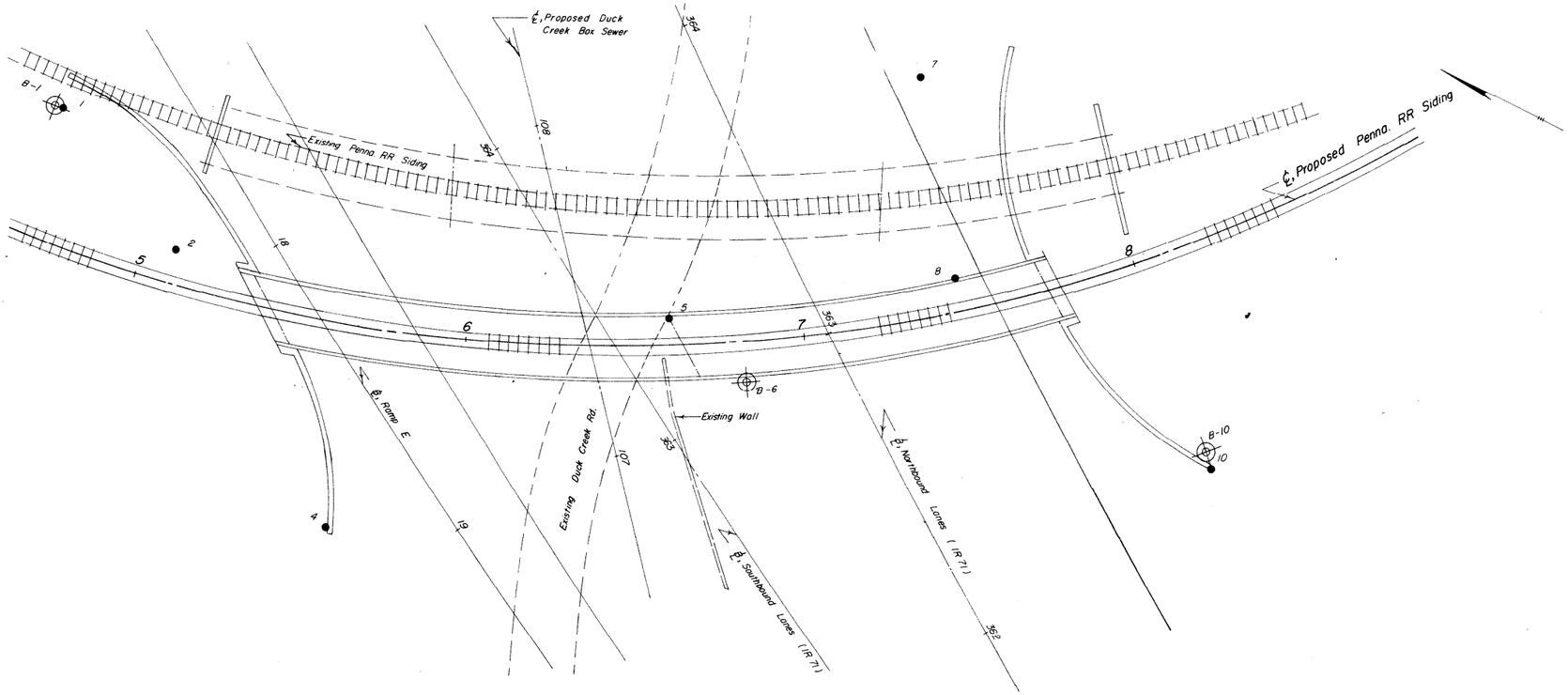

SCALE: 1" = 20'

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR 71-0751
UNDER RELOC. PENNA. RR SIDING
SEC. HAM-IR 71-7.45

PLAN AND PROFILE

DRAWN BY	CHECKED BY	REVIEWED BY	DATE
R.L.F.	R.H.P.	R.D.R.	8/12/65

TE - 122
600 - 11 - 64

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JAN 03 1967

LOG OF BORING

Date Started 7-7-65 | Sampler Type SS | Dia. 1 3/8" | Water Elev. —
Date Completed 7-8-65 | Casing: Length 30" | Dia. 3 1/8"
Boring No. B-1 | Station & Offset 4+60, 38' Lt. (Rear Left Wingwall) | Surface Elev. 605.3

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
605.3	0														
	2														
	4														
600.3	6	11/19			Brown and Gray Sandy Clay	1	0	3	21	32	44	39	22	17	
	8														
595.3	10	17/23			Brown Sandy Gravelly Clay	2	20	7	11	35	27	30	15	11	
	12														
	14														
590.3	16	28/27			Brown Sandy Gravelly Silt	3	36	6	13	26	19	24	8	9	
	18														
585.3	20	50*													
	22	(0.8)			Brown and Gray Gravelly Sandy Silt	4	17	8	15	38	22	20	3	13	
	24														
580.3	26	50*													
	28	(0.9)			Gray Sandy Gravelly Silt	5	29	9	15	28	19	21	5	10	
575.3	30	50*													
	32	(0.7)			Gray Silty Sandy Gravel	6	V	I	S	U	A	L	22	6	9
	34														
570.3	36	12/32			Grayish-Brown Gravelly Silt	7	25	1	7	44	23	25	2	21	
567.8	38	13/21			Gray Clay	8	0	0	0	28	72	44	22	23	
563.3	40	12/23			Gray Silty Clay	9	0	0	0	28	72	37	16	20	
	42														
562.8	44	6/10			Gray Silty Clay	10	0	0	0	44	56	39	18	26	
560.3	46	8/15			Gray Silty Clay	11	0	0	1	45	54	37	17	18	
557.8	48	12/12			Gray Silty Sand	12	13	53	15	10	9			18	
555.3	50	11/16			Gray Silty Sand	13	V	I	S	U	A	L		18	
	52														
552.8	54	6/17			Gray Silt and Clay	14	0	4	10	52	34	27	12	16	
550.3	56	9/18			Gray Clayey Silt	15	0	3	11	50	36	26	10	13	
	58														
545.3	60	11/20			Gray Sandy Silt	16	13	5	16	38	28	25	9	7	
	62														
	64														
540.3	66	14/27			Gray Silty Sandy Gravel	17	V		I	S	U	A	L	10	
	68														
535.3	70	50*													
	72	(0.6)			Gray Gravelly Sandy Silt	18	16	8	14	38	24	21	7	18	
	74														
530.3	76	50*													
	78	(0.7)			Gray Silty Sand	19	0	2	80	11	7	NP	NP	20	
525.3	80	50*(0.7)			*Refusal Gray Silty Sand BOTTOM OF BORING	20	0	7	58	25	10			21	

LOG OF BORING

Date Started 6-30-65 | Sampler Type SS | Dia. 1 3/8" | Water Elev. —
Date Completed 7-1-65 | Casing: Length — | Dia. —
Boring No. B-6 | Station & Offset 6+82, 32' Rt. (PIER) | Surface Elev. 564.6'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
564.6	0														
	2														
	4														
559.6	6	9/11			Brown Clay	1	0	2	2	41	55	42	22	27	
557.1	8	10/9			Brown Silt and Clay	2	0	1	0	50	49	32	15	21	
554.6	10	6/12			Gray Silty Clay	3	0	1	2	40	57	37	19	23	
552.1	12	9/18			Gray Silt and Clay	4	0	2	7	48	43	27	13	16	
549.6	14	12/20			Gray Sandy Silt	5	9	8	15	35	33	21	8	11	
547.1	16	17/27			Gray Silty Sandy Gravel	6	37	12	14	16	21	21	7	14	
544.6	18	14/24			Gray Gravelly Sandy Silt	7	23	12	15	24	26	20	7	14	
542.1	20	14/29			Gray Gravelly Sandy Silt	8	21	9	14	30	26	22	10	14	
539.6	22														
	24	50*													
	26	(0.8')			Gray Sandy Gravelly Silt	9	26	6	14	40	14	22	8	10	
534.6	28	14/29			Gray Gravelly Sandy Silt	10	21	10	14	36	19	NP	NP	10	
	30														
	32														
529.6	34														
	36	14/30			Gray Clayey Silt	11	0	2	2	53	43	26	7	22	
	38														
524.6	40														
	42	50*													
	44	(0.6)			Brown Silty Sandy Gravel	12	43	26	15	-16	-	NP	NP	3	
519.6					BOTTOM OF BORING										
519.2		50*(0.4)			Brown Silty Sand	13	10	18	52	-20	-	NP	NP	9	

*Refusal

LOG OF BORING

Date Started 7-1-65 | Sampler Type SS | Dia. 1 3/8" | Water Elev. —
Date Completed 7-6-65 | Casing: Length — | Dia. —
Boring No. B-10 | Station & Offset 8+02, 68' Rt. (Forward Right Wingwall) | Surface Elev. 574.5

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
574.5	0														
	2														
	4														
574.5	6	8/10			Brown Silt and Clay	1	0	2	17	51	30	33	14	17	
567.0	8	7/8			Brown and Gray Gravelly Sandy Clay	2	V		I	S	U	A	L	34	
564.5	10	5/6			Brown and Gray Clay	3	0	0	1	39	60	46	23	34	
562.0	12	5/5			Gray and Brown Clay	4	0	1	0	33	66	45	22	28	
559.5	14	5/8			Gray Silt and Clay	5	0	0	1	47	52	30	11	23	
557.0	16	7/9			Gray Gravelly Clay	6	22	1	4	36	37	29	12	20	
554.5	18	9/11			Gray Silt and Clay	7	0	3	9	47	41	27	12	20	
552.0	20														
549.5	22	6/12			Gray Gravelly Sandy Silt	8	16	7	15	36	26	22	8	15	
	24	7/11			Gray Sandy Silt	9	12	8	19	30	31	25	10	14	
	26														
544.5	28														
	30	15/28			Gray Silty Gravelly Sand	10	19	42	24	8	7	NP	NP	16	
	32														
539.5	34														
	36	17/28			Gray Gravelly Silt	11	20	1	2	49	28	23	7	12	
	38														
534.5	40														
	42	16/31			Gray Silt and Clay	12	0	7	9	45	39	30	11	28	
	44														
529.5	46	50*													
	48	(0.7)			Brown Silty Sand	13	0	11	73	-16	-	NP	NP	13	
524.5	50														
	52	50*													
	54	(0.6)			Brown Silty Sand	14	0	5	80	-15	-	NP	NP	16	
519.5	56	50*													
	58	(0.6)			Gray Silty Sandy Gravel	15	V		I	S	U	A	L	7	
514.5	60	50*(0.4)			Gray Silty Sandy Gravel BOTTOM OF BORING	16	V	I	S	U	A	L	NP	NP	10

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR 71-0751
UNDER RELOC. PENNA. RR SIDING
SEC. HAM-IR 71-7.45

BORING DATA

TYPED BY	CHECKED BY	REVIEWED BY	DATE
S.A.J.	R.C.	R.D.R.	8/12/65

TE-114
1000-1-64

MICROFILMED
JAN 06 1964

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Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

Test Location No. 1
Station & Offset 4+63, 38' LT
REAR LEFT WINGWALL
Surface Elev. 610.8' Water Elev. DRY-Hole Open
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD

Test Location No. 2
Station & Offset 5+10, 10' LT
REAR ABUTMENT
Surface Elev. 592.8' Water Elev. DRY-Hole Open
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition POINT BENT-8'

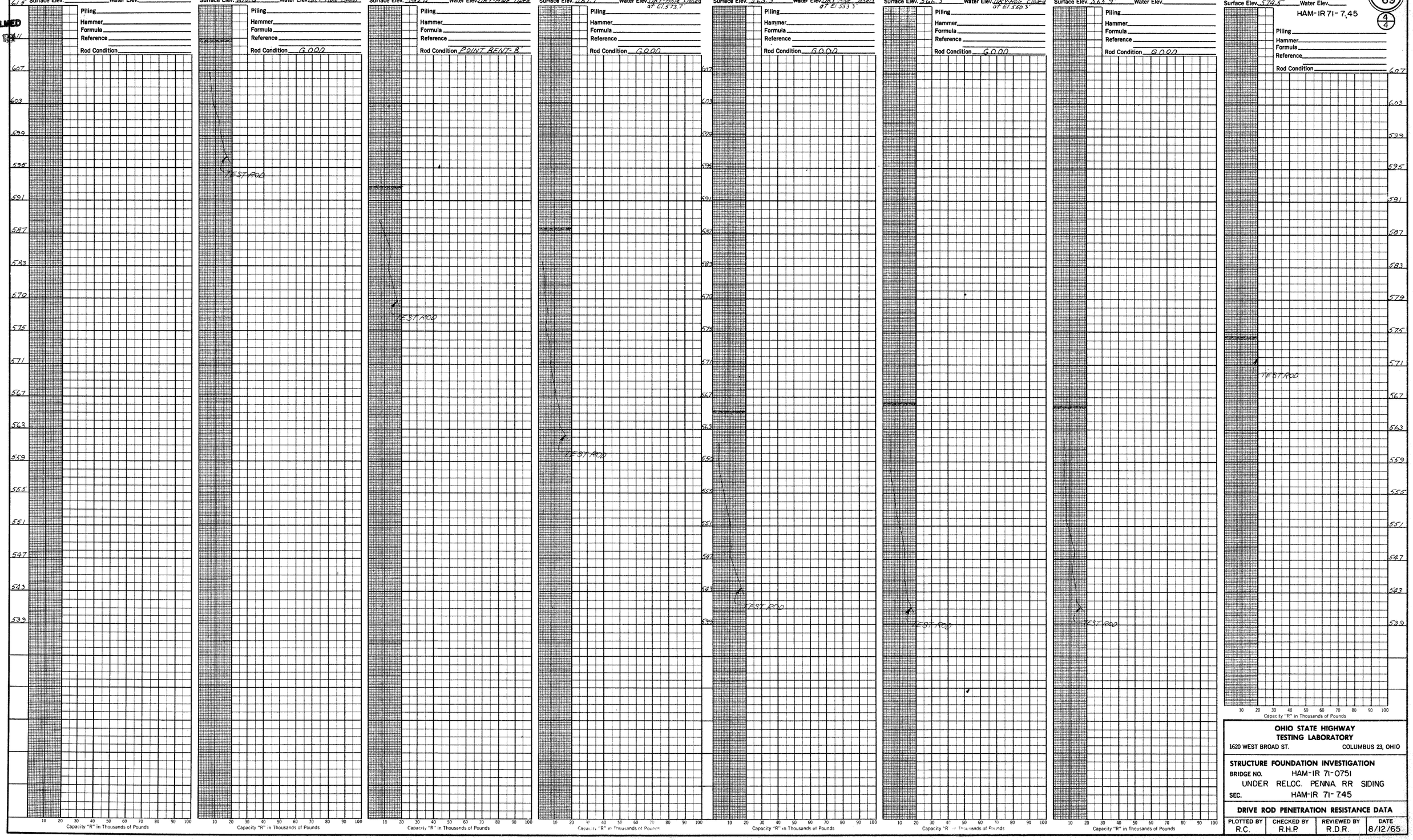
Test Location No. 4
Station & Offset 5+68, 60' RT
REAR RIGHT WINGWALL
Surface Elev. 587.7' Water Elev. DRY-Hole closed at El. 573.7'
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD

Test Location No. 5
Station & Offset 6+60, 8' LT
PIER
Surface Elev. 565.3' Water Elev. DRY-Hole closed at El. 553.3'
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD

Test Location No. 7
Station & Offset 7+50, 70' LT
FORWARD LEFT WINGWALL
Surface Elev. 566.3' Water Elev. DRY-Hole closed at El. 560.3'
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD

Test Location No. 8
Station & Offset 7+47, 10' LT
FORWARD ABUTMENT
Surface Elev. 565.9' Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD

Test Location No. 10
Station & Offset 8+02, 65' RT
FORWARD RIGHT WINGWALL
Surface Elev. 574.5' Water Elev. ____
HAM-IR 71-7.45
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____



OHIO STATE HIGHWAY TESTING LABORATORY
1620 WEST BROAD ST. COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR 71-0751
UNDER RELOC. PENNA. RR SIDING
SEC. HAM-IR 71-7.45

DRIVE ROD PENETRATION RESISTANCE DATA

PLOTTED BY	CHECKED BY	REVIEWED BY	DATE
R.C.	R.H.P.	R.D.R.	8/12/65

TE - 118
600 - 11 - 64

MICROFILMED
JAN 06 1971

HAMILTON COUNTY
HAM-IR71-7.45

GEOLOGY OF THE SITE

The structure site is located on an Illinoian outwash plain, over the buried valley wall of the Deep Stage Cincinnati River adjacent to Duck Creek. Moderately deep interbedded outwash and till overlies interbedded shale and limestone bedrock, of Ordovician age.

EXPLORATION

The exploration consisted of three drive sample borings, made between May 18 and 27, 1965, and six drive rod penetration tests, made between June 1 and 3, 1965.

INVESTIGATIONAL FINDINGS

Borings encountered unstratified intervals of loose to extremely dense gravels, sands, silts, and soft to very stiff clays, containing various amounts of organic material. The borings were terminated at 61 and 71-foot depths, elevations 509 and 496 feet, after penetrating in excess of 30 feet of material requiring in excess of 30 blows per foot in the standard penetration tests.

Rod soundings met gradual increase in penetration resistance with increase in depth and were terminated upon encounter with near-refusal and refusal to penetration at 30 to 38-foot depths, elevations 536 and 533 feet, considered to be in very stiff clay and extremely dense silts, as revealed by the borings.

No free water was observed in any of the rod sounding holes.

LEGEND

- Auger Boring Location - Plan View.
- Press and / or Drive Sample and / or Core Boring Location - Plan View.
- Drive Rod Penetration Resistance Sounding Location - Plan View.
- Capped Pile
- Footing
- Footing on Pile
- TR — Top of Rock
- Horizontal Bar on Boring Log Indicates the Depth the Sample Was Taken.
- X/Y — Figures Beside the Boring Log in Profile Indicate the Number of Blows for Standard Penetration Test.
  X = Number of Blows for First 6 inches.
  Y = Number of Blows for Second 6 inches.
- Drive Rod Penetration Resistance Sounding Log - Profile
- Casing
- Resistance "R" < 10,000 lbs.
- Resistance "R" > 10,000 lbs.
- Z — Indicates Final Measurement of Penetration, in Inches.
- W — Indicates Free Water Elevation.
- Indicates Static Water Elevation.

SYMBOLS OF ROCK TYPES

- Coal
- Weathered Indurated Clay
- Indurated Clay
- Weathered Shale
- Shale
- Weathered Sandstone
- Sandstone
- Leached Dolomite
- Dolomite
- Leached Limestone
- Limestone

GENERAL INFORMATION

Drive Rod Penetration Sounding Tests

Drive rod penetration resistance tests constitute driving a 1.315-inch diameter steel rod, with a 45° cone point, into the ground, using a 122-pound drop-hammer with a free fall of five feet. At one or two-foot depth intervals, a measurement is taken to determine the amount of penetration achieved in three hammer drops. This reading is converted to an empirical value for capacity "R", in thousands of pounds (which is a measure of both the point resistance and frictional resistance on the rod), by using charts prepared by the Ohio Department of Highways, Bureau of Bridges, on the basis of correlation study of rod penetration with past performance of pile driving. For interpretation, a graph is prepared by plotting the value "R" against the depth at which the reading was taken, and connecting the plotted points. The curve so obtained reflects the density of subsurface materials in a manner that can be readily compared with data from similar tests at other locations on the structure site. From this comparison, the overall uniformity of subsurface condition may be evaluated.

Drive Sample Borings - Drive-Press Sample Borings

Drive sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. sampler, at 2-1/2 and / or 5-foot depth intervals, driven by means of a 140 - pound drop-hammer with a free fall of 30 inches. The number of blows required to drive the sampler 12 inches is considered the standard penetration test.

Drive-press sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. drive sampler, and 3" O.D. thin-wall press sampler. The press sampler is advanced by continuous uniform pressure, applied by the drill rig.

The boring log sheets show a graphic plot of the information obtained, including depth and elevation of the sample, number of blows for the standard penetration tests in two 6-inch increments, depth of press samples, field sample number, sample description - based on laboratory tests and the Casagrande AC classification system-and gradation, plasticity, and moisture content determinations. Results of strength and consolidation testing, if performed, appear on separate enclosures.

At depths where materials are bouldery or gravelly to the extent that the sampler can not be driven, a wash sample is procured for visual classification, in order to determine the general character of the material. These samples are not considered sufficiently representative to warrant laboratory testing.

Particle Size Definitions

Boulders	Cobbles	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	8"	3"	2.0mm (No. 10 sieve)	0.42mm (No. 40 sieve)	0.074mm (No. 200 sieve)	0.005mm

NOTE: Information shown by this subsurface investigation was obtained solely for the use in establishing design controls for the project. The State of Ohio does not guarantee the accuracy of this data and it is not to be construed as a part of the plans governing construction of the project.

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR71-0771
IR71 SB OVER RAMPS J, K, & L
SEC. HAM-IR71-7.45

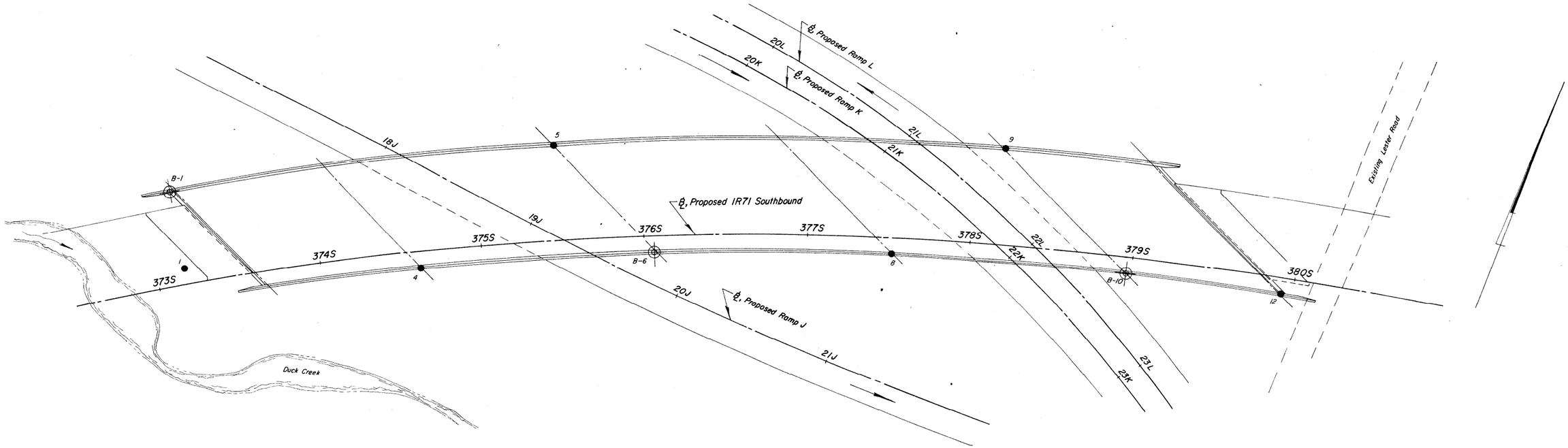
CHECKED BY	REVIEWED BY	DATE
L.N.L.	R.D.R.	6/24/65

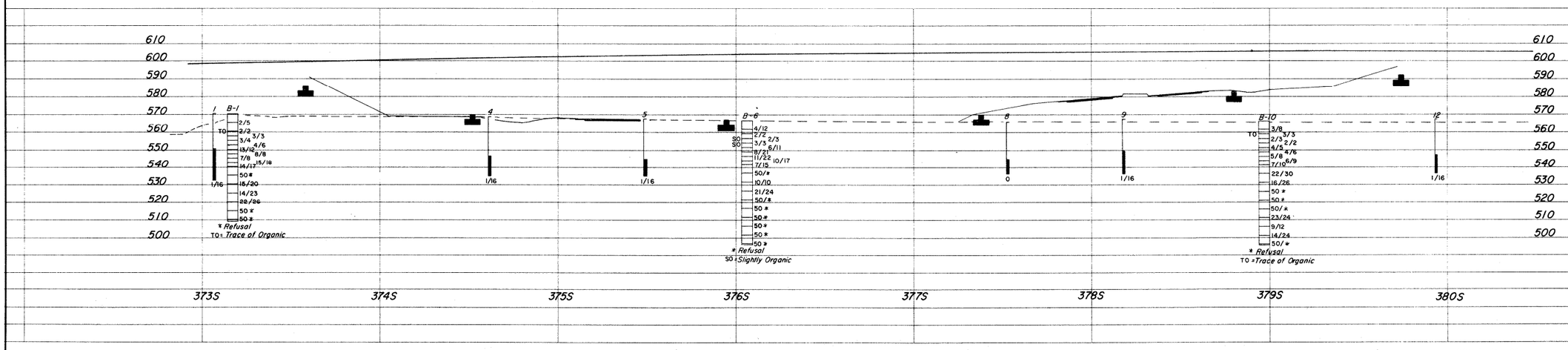
TE - 120
200 - 11 - 64

MICROFILMED
JAN 06 1981

25
69
2
4

HAM-IR71-7.45





SCALE: 1" = 30'

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR71-0771
IR71 SB OVER RAMPS J, K, & L
SEC. HAM-IR71-7.45

PLAN AND PROFILE

DRAWN BY	CHECKED BY	REVIEWED BY	DATE
R.L.C.	L.N.L.	R.D.R.	6/24/65

TE - 122
600 - 11 - 64

MICROFILMED
JAN 06 1971

LOG OF BORING

Date Started 5-18-65 | Sampler Type SS | Dia. 1 3/8" | Water Elev. —
Date Completed 5-19-65 | Casing: Length 35' | Dia. 3 1/2"
Boring No. B-1 | Station & Offset 373+17, 58' Lt (REAR ABUTMENT) | Surface Elev. 570.2'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics: % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
570.2	0														
	2														
	4														
565.2	6	2/5			Brown Clayey Sandy Gravel	1	V	I	S	U	A	L		16	
	8														
560.2	10														
		2/2			Brown Sandy Silt, Trace of Organic	2	0	3	40	39	18	21	6	23	
557.7	12														
		3/3			Brownish-Gray Sandy Gravelly Silt	3	20	6	10	45	19	21	9	21	
555.2	14														
	16	3/4			Gray Sandy Silt	4	13	6	12	41	28	23	10	13	
552.7	18	4/6			Gray Gravelly Sandy Clay	5	22	7	16	32	23	22	12	13	
550.2	20	13/12			Gray Sandy Gravel	6	V	I	S	U	A	L		14	
547.7	22	8/8			Gray Sandy Silt	7	0	8	32	47	13	NP	NP	14	
545.2	24														
	26	7/8			Gray Sandy Silt	8	0	5	31	50	14	NP	NP	15	
542.7	28	15/18			Gray Gravelly Sandy Silt	9	24	12	21	34	9	NP	NP	14	
540.2	30	14/17			Gray Gravelly Clay	10	30	5	10	31	24	23	11	13	
	32														
535.2	34														
	36	50* (0.8')			Gray Sandy Gravelly Silt	11	38	8	11	27	16	18	7	10	
532.2	38														
	40	15/20			Gray Clayey Silt	12	0	2	4	63	31	24	9	16	
	42														
525.2	44														
	46	14/23			Gray Silty Sand	13	0	2	69	22	7	NP	NP	22	
520.2	48														
	50														
	52	22/26			Gray Silt	14	0	0	7	58	35	NP	NP	29	
515.2	54														
	56	50* (0.9')			Gray Silty Gravelly Sand	15	21	14	52	8	5	NP	NP	15	
510.2	58														
509.2	60	50* (0.7')			Brown Silty Sandy Gravel — BOTTOM OF BORING	16	V	I	S	U	A	L		20	

*Refusal

LOG OF BORING

Date Started 5-20-65 | Sampler Type SS | Dia. 1 3/8" | Water Elev. —
Date Completed 5-25-65 | Casing: Length 50' | Dia. 3 1/2"
Boring No. B-6 | Station & Offset 376+06, 10' Rt (2ND PIER) | Surface Elev. 566.8'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics: % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
566.8	0														
	2														
	4														
561.8	6	4/12			Brown Silty Sandy Gravel	1	V	I	S	U	A	L		8	
559.3	8	2/2			Brown and Gray Silt and Clay	2	0	2	11	47	40	33	11	34	
556.8	10	2/3			Grayish-Brown Sandy Silt, Slightly Organic	3	0	2	22	44	32	32	8	29	
554.3	12	3/3			Gray Sandy Silt, Slightly Organic	4	11	3	18	37	31	32	9	35	
551.8	14	6/11			Gray Gravelly Clay	5	22	3	11	29	35	25	11	15	
549.3	16	8/21			Gray Silty Sandy Gravel	6	35	9	16	20	20	22	8	10	
546.8	18	11/22			Gray Gravelly Sandy Silt	7	22	6	17	25	30	24	10	14	
544.3	20	10/17			Gray Gravelly Sandy Silt	8	15	6	19	24	36	24	8	14	
541.8	22														
	24	7/15			Gray Gravelly Sandy Silt	9	18	7	17	24	34	23	8	14	
536.8	26														
	28														
	30	50/*			Gray Gravelly Silt	10	17	6	6	41	30	23	4	15	
531.8	32														
	34														
	36	10/10			Grayish-Brown Silt and Clay	11	0	1	5	46	48	28	11	29	
526.8	38														
	40	21/24			Brown Silty Sand	12	0	3	74	15	8	NP	NP	11	
	42														
521.8	44														
	46	50/*			Brown Silty Sandy Gravel	13	45	10	28	-17-		NP	NP	4	
516.8	48														
	50	50* (0.9')			Gray Sandy Silt	14	11	7	16	34	32	23	10	13	
511.8	52														
	54														
	56	50* (0.7')			Gray Sandy Gravelly Silt	15	34	7	19	19	21	22	7	11	
506.8	58														
	60	50* (0.7')			Gray Gravelly Sandy Clay	16	17	7	20	28	28	25	11	13	
501.8	62														
	64														
	66	50* (0.8')			Gray Sandy Silt	17	11	7	22	35	25	24	9	10	
496.8	68				BOTTOM OF BORING										
496.0	70	50* (0.8')			Gray Gravelly Sandy Silt	18	15	6	22	31	26	29	5	12	

*Refusal

LOG OF BORING

Date Started 5-25-65 | Sampler Type SS | Dia. 1 3/8" | Water Elev. —
Date Completed 5-27-65 | Casing: Length 55' | Dia. 3 1/2"
Boring No. B-10 | Station & Offset 378+97, 10' Rt (FORWARD PIER) | Surface Elev. 566.4'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics: % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
566.4	0														
	2														
	4														
561.4	6	3/8			Brownish-Gray Sandy Gravelly Silt	1	24	8	11	38	19	28	5	23	
558.9	8	3/3			Brownish-Gray Silt and Clay, Trace of Organic	2	0	3	5	50	42	33	11	25	
556.4	10	2/3			Brownish-Gray Silt and Clay	3	0	0	9	48	43	33	13	27	
553.9	12	2/2			Brownish-Gray Gravelly Clay	4	12	3	9	45	31	36	17	27	
551.4	14														
	16	4/5			Brown and Gray Clay	5	0	1	1	55	43	40	21	27	
548.9	18	4/6			Gray Clay	6	0	0	0	43	57	44	22	31	
546.4	20	5/8			Gray Silt	7	0	0	1	51	48	27	4	22	
543.9	22	6/9			Gray Sandy Silt	8	13	6	18	31	32	22	8	15	
541.4	24														
	26	7/10			Gray Gravelly Sandy Clay	9	V	I	S	U	A	L	26	12	13
536.4	28														
	30														
	32	22/30			Gray Gravelly Sandy Silt	10	19	9	14	32	26	22	5	11	
531.4	34														
	36	16/26			Brown Silty Sand	11	V	I	S	U	A	L		20	
526.4	38														
	40	50* (0.8')			Brown Silty Sand	12	10	6	66	20	8	NP	NP	17	
521.4	42														
	44														
	46	50* (0.7')			Brown Silty Sandy Gravel	13	45	11	21	17	6	NP	NP	8	
516.4	48														
	50	50/*			Gray Silty Sandy Gravel	14	64	20	4	4	8	--	---	2	
511.4	52														
	54														
	56	23/24			Brownish-Gray Sandy Silt	15	11	15	27	23	24	18	5	12	
506.4	58														
	60														
	62	9/12			Gray Silt and Clay	16	11	2	4	39	44	30	12	20	
501.4	64														
	66	14/24			Gray Sandy Gravelly Silt	17	27	9	9	28	27	26	10	15	
496.4	68				BOTTOM OF BORING										
495.9	70	50/*			Gray Gravelly Sandy Silt	18	34	20	14	23	19	21	6	11	

*Refusal

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR71-0771
IR71 SB OVER RAMPS J, K, & L
SEC. HAM-IR71-7.45

BORING DATA

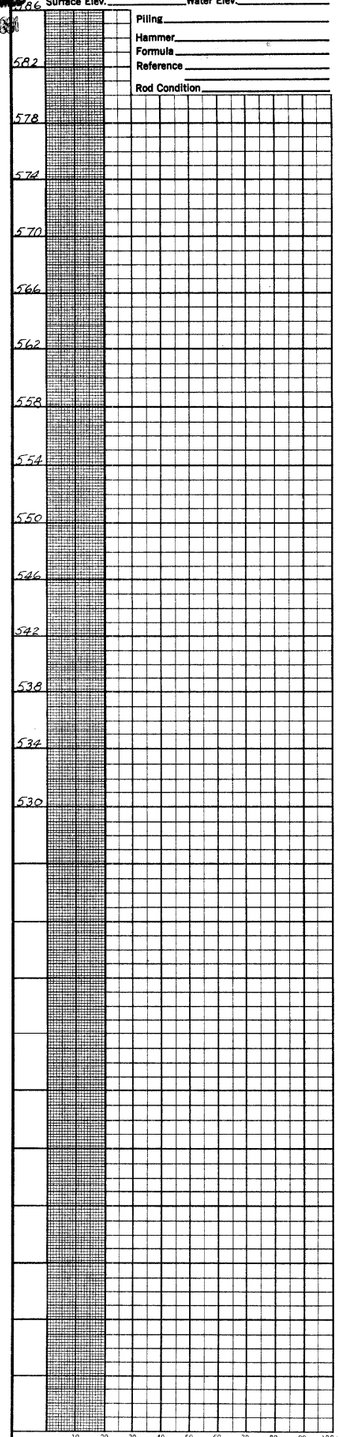
TYPED BY	CHECKED BY	REVIEWED BY	DATE
B. J.R.	R.C.	R.D.R.	6/24/65

TR-114
1000-1-64

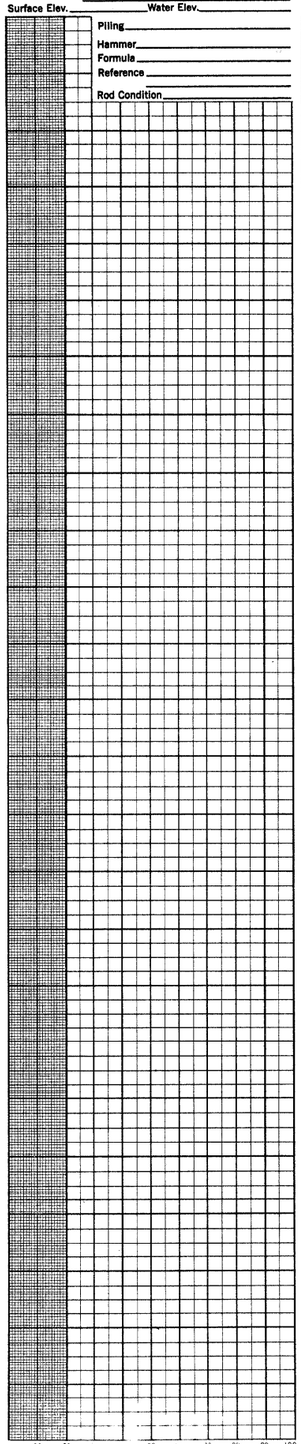
MICROFILMED
JAN 05 1971

HAM-IR71-7.45
4
4

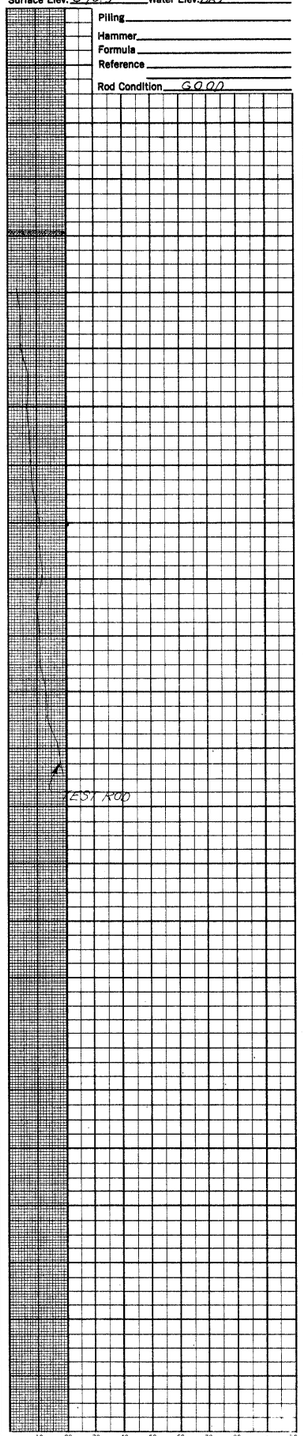
Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____



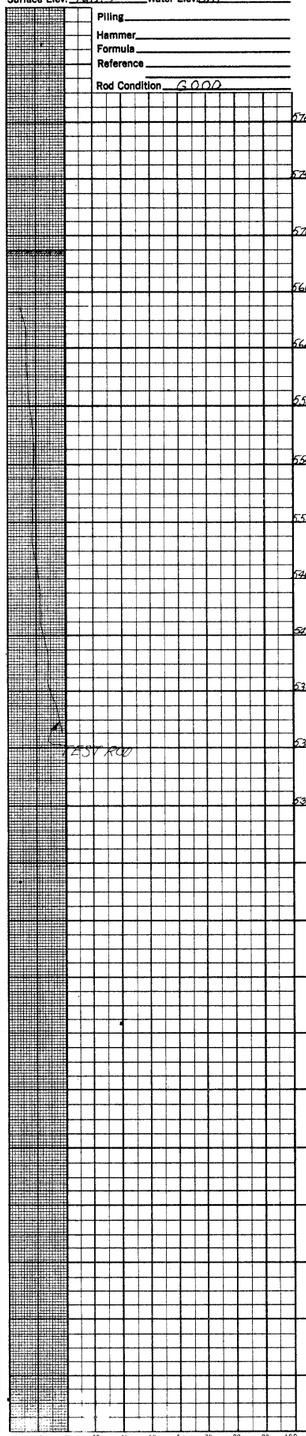
Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____



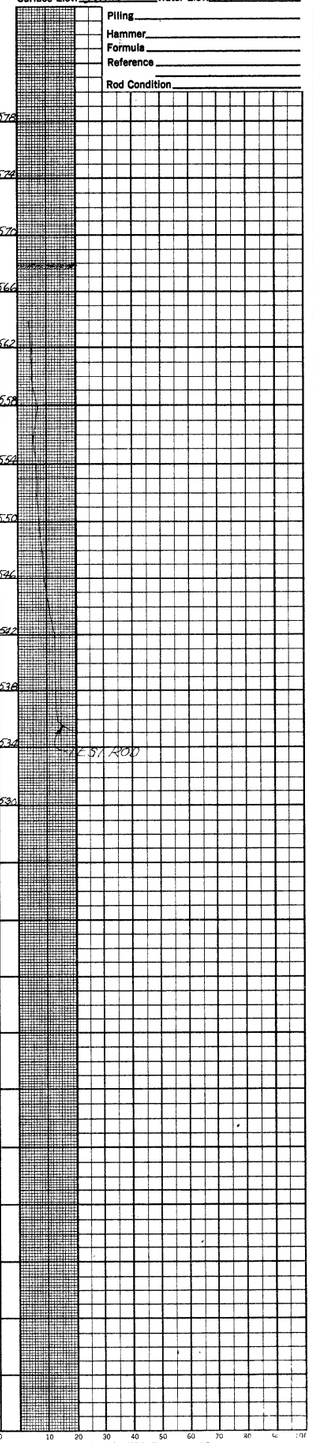
Test Location No. 1
Station & Offset 373+17.10' LT. REAR ABUTMENT
Surface Elev. 570.3 Water Elev. DRY
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD



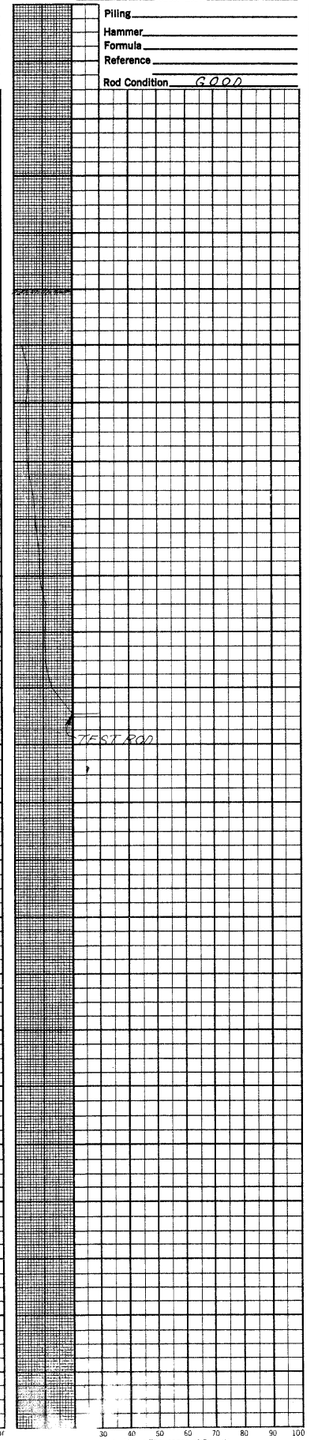
Test Location No. 4
Station & Offset 374+61.10' RT. FIRST PIER
Surface Elev. 568.9 Water Elev. DRY
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD



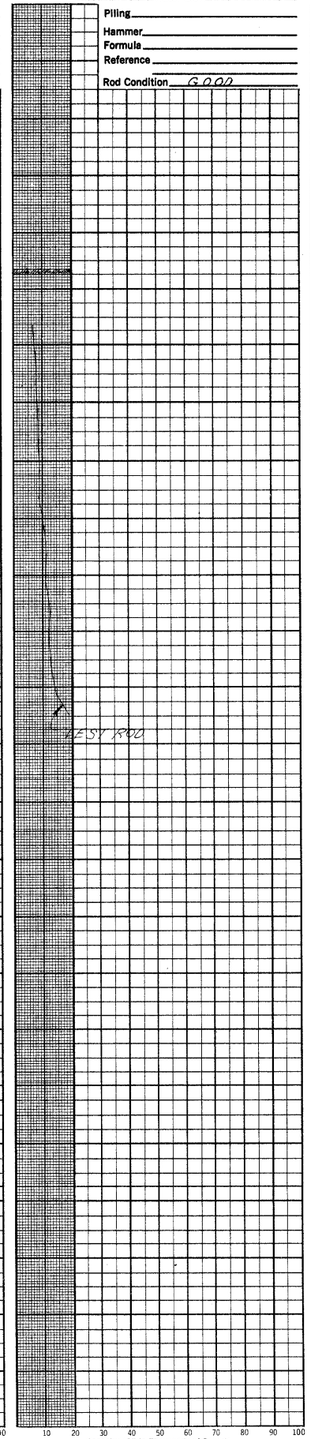
Test Location No. 5
Station & Offset 375+48.58' LT. SECOND PIER
Surface Elev. 567.9 Water Elev. DRY
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____



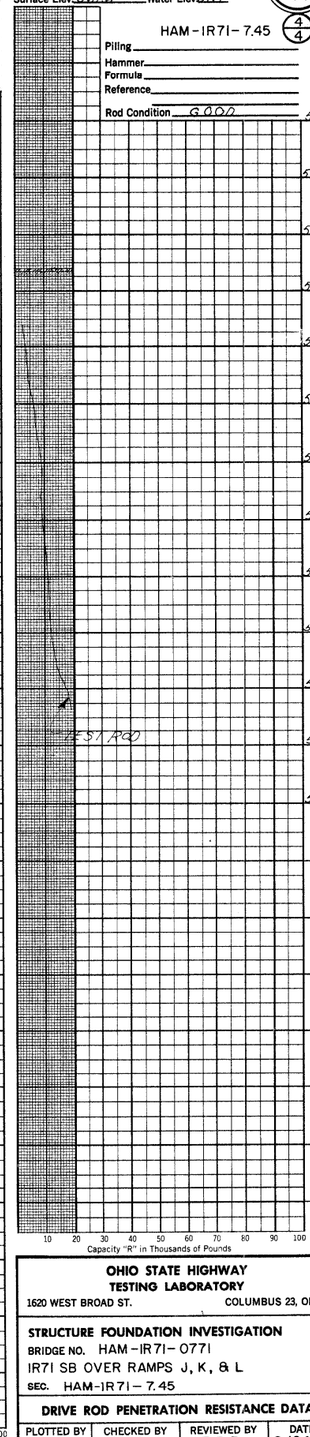
Test Location No. 8
Station & Offset 377+52.10' RT. THIRD PIER
Surface Elev. 566.0 Water Elev. DRY
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD



Test Location No. 9
Station & Offset 378+17.58' LT. FOURTH PIER
Surface Elev. 567.4 Water Elev. DRY
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD



Test Location No. 12
Station & Offset 379+93.10' RT. FORWARD ABUTMENT
Surface Elev. 567.6 Water Elev. DRY
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD



OHIO STATE HIGHWAY
TESTING LABORATORY
1620 WEST BROAD ST. COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR71-0771
IR71 SB OVER RAMPS J, K, & L
SEC. HAM-IR71-7.45

DRIVE ROD PENETRATION RESISTANCE DATA

PLOTTED BY	CHECKED BY	REVIEWED BY	DATE
R.C.	L.N.L.	R.D.R.	6/24/65

TE - 118
600 - 11 - 64

MICROFILMED
JAN 06 1966

HAMILTON COUNTY
HAM-IR71-7.45

GEOLOGY OF THE SITE

The structure site is located on an Illinoian outwash plain, over the buried valley wall of the Deep Stage Cincinnati River adjacent to Duck Creek. Moderately deep interbedded outwash and till overlies interbedded shale and limestone bedrock, of Ordovician age.

EXPLORATION

The exploration consisted of one drive sample boring, made between May 27 and June 2, 1965, and five drive rod penetration tests, made on June 3, 1965. Also included in this report is the log of boring made in conjunction with the IR 71 SB structure over Ramps J, K and L.

INVESTIGATIONAL FINDINGS

Borings encountered unstratified intervals of loose to extremely dense gravels, sands, silts and soft to very stiff clays, containing some amounts of organic material in the rear abutment area. The borings were terminated at 71 and 76-foot depths, elevations 496 and 482 feet, after penetrating in excess of 30 feet of material requiring in excess of 30 blows per foot in the standard penetration tests.

Rod soundings met gradual increase in penetration resistance with increase in depth and were terminated upon encounter with medium-high resistance and refusal to penetration at 17 to 28-foot depths, elevations 542 and 539 feet, considered to be in very stiff clay and extremely dense silts, as revealed by the borings.

No free water was observed in any of the rod sounding holes.

LEGEND

- Auger Boring Location - Plan View.
- Press and / or Drive Sample and / or Core Boring Location - Plan View.
- Drive Rod Penetration Resistance Sounding Location - Plan View.
- Capped Pile
- Footing
- Footing on Pile
- TR — Top of Rock
- Horizontal Bar on Boring Log Indicates the Depth the Sample Was Taken.
- X/Y — Figures Beside the Boring Log in Profile Indicate the Number of Blows for Standard Penetration Test.
  X = Number of Blows for First 6 inches.
  Y = Number of Blows for Second 6 inches.
- Drive Rod Penetration Resistance Sounding Log - Profile
- Casing
- Resistance "R" < 10,000 lbs.
- Resistance "R" > 10,000 lbs.
- Z — Indicates Final Measurement of Penetration, in Inches.
- W — Indicates Free Water Elevation.
- Indicates Static Water Elevation.

SYMBOLS OF ROCK TYPES

- Coal
- Weathered Indurated Clay
- Indurated Clay
- Weathered Shale
- Shale
- Weathered Sandstone
- Sandstone
- Leached Dolomite
- Dolomite
- Leached Limestone
- Limestone

GENERAL INFORMATION

Drive Rod Penetration Sounding Tests

Drive rod penetration resistance tests constitute driving a 1.315-inch diameter steel rod, with a 45° cone point, into the ground, using a 122-pound drop-hammer with a free fall of five feet. At one or two-foot depth intervals, a measurement is taken to determine the amount of penetration achieved in three hammer drops. This reading is converted to an empirical value for capacity "R", in thousands of pounds (which is a measure of both the point resistance and frictional resistance on the rod), by using charts prepared by the Ohio Department of Highways, Bureau of Bridges, on the basis of correlation study of rod penetration with past performance of pile driving. For interpretation, a graph is prepared by plotting the value "R" against the depth at which the reading was taken, and connecting the plotted points. The curve so obtained reflects the density of subsurface materials in a manner that can be readily compared with data from similar tests at other locations on the structure site. From this comparison, the overall uniformity of subsurface condition may be evaluated.

Drive Sample Borings - Drive-Press Sample Borings

Drive sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. sampler, at 2-1/2 and or 5-foot depth intervals, driven by means of a 140 - pound drop-hammer with a free fall of 30 inches. The number of blows required to drive the sampler 12 inches is considered the standard penetration test.

Drive-press sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. drive sampler, and 3" O.D. thin-wall press sampler. The press sampler is advanced by continuous uniform pressure, applied by the drill rig.

The boring log sheets show a graphic plot of the information obtained, including depth and elevation of the sample, number of blows for the standard penetration tests in two 6-inch increments, depth of press samples, field sample number, sample description - based on laboratory tests and the Casagrande AC classification system - and gradation, plasticity, and moisture content determinations. Results of strength and consolidation testing, if performed, appear on separate enclosures.

At depths where materials are bouldery or gravelly to the extent that the sampler can not be driven, a wash sample is procured for visual classification, in order to determine the general character of the material. These samples are not considered sufficiently representative to warrant laboratory testing.

Particle Size Definitions

Boulders	Cobbles	Gravel	Coarse Sand	Fine Sand	Silt	Clay
8"	3"	2.0mm (No. 10 sieve)	0.42mm (No. 40 sieve)	0.074mm (No. 200 sieve)	0.005mm	

NOTE: Information shown by this subsurface investigation was obtained solely for the use in establishing design controls for the project. The State of Ohio does not guarantee the accuracy of this data and it is not to be construed as a part of the plans governing construction of the project.

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR71-0781
IR71 NB & RAMP J UNDER RAMPS K & L
SEC. HAM-IR71-7.45

CHECKED BY	REVIEWED BY	DATE
R.H.P.	R.D.R.	6/24/65

TE - 119
500 - 11 - 64

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JAN 03 1967

29
69
2
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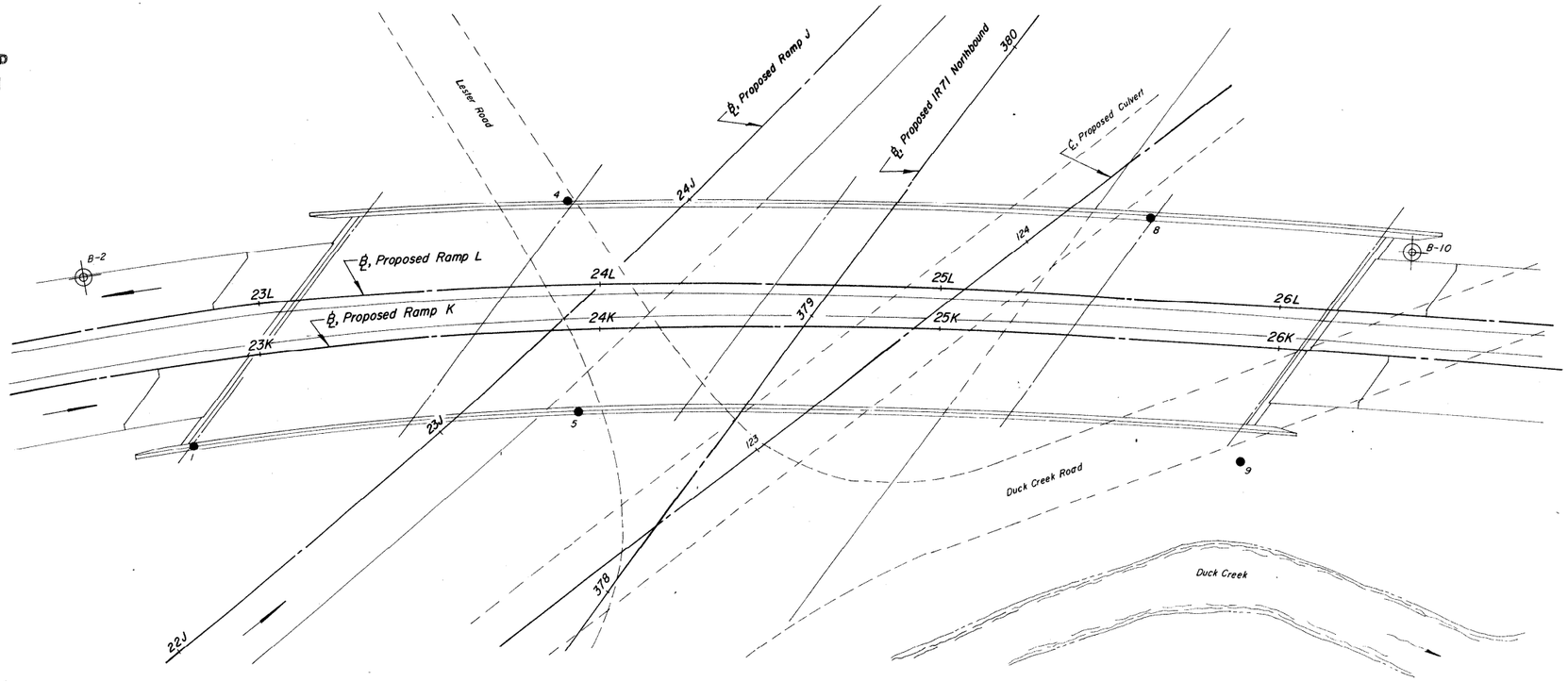
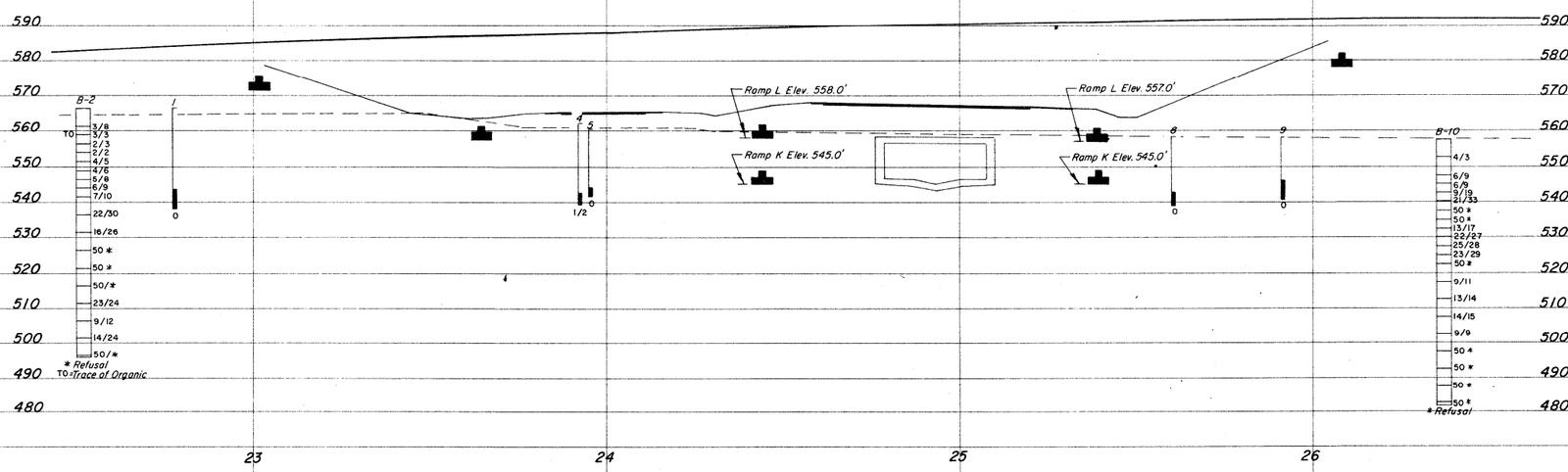
HAM-IR71-7.45





℄ RAMP K

SCALE: 1" = 20'

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR71-0781
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PLAN AND PROFILE

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TE - 122
600 - 11 - 64

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JAN 06 1966

LOG OF BORING

Date Started 5-25-65 | Sampler Type SS | Dia. 1 3/8" | Water Elev. ———
Date Completed 5-27-65 | Casing: Length 55' | Dia. 3 1/2"
Boring No. B-2 | Station & Offset 22+52, 30' Lt (REAR ABUTMENT) | Surface Elev. 566.4'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics: % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
566.4	0														
	2														
	4														
561.4	6	3/8			Brownish-Gray Sandy Gravelly Silt	1	24	8	11	38	19	28	5	23	
558.9	8	3/3			Brownish-Gray Silt and Clay, Trace of Organic	2	0	3	5	50	42	33	11	25	
556.4	10	2/3			Brownish-Gray Silt and Clay	3	0	0	9	48	43	33	13	27	
553.9	12	2/2			Brownish-Gray Gravelly Clay	4	12	3	9	45	31	36	17	27	
551.4	14	4/5			Brown and Gray Clay	5	0	1	1	55	43	40	21	27	
548.9	16	4/6			Gray Clay	6	0	0	0	43	57	44	22	31	
546.4	18	5/8			Gray Silt	7	0	0	1	51	48	27	4	22	
543.9	20	6/9			Gray Sandy Silt	8	13	6	18	31	32	22	8	15	
541.4	22	7/10			Gray Gravelly Sandy Clay	9	V	I	S	U	A	L	26	12	13
	24														
536.4	26	22/30			Gray Gravelly Sandy Silt	10	19	9	14	32	26	22	5	11	
	28														
531.4	30	16/26			Brown Silty Sand	11	V	I	S	U	A	L			20
	32														
526.4	34	50* (0.8')			Brown Silty Sand	12	10	6	66	18	8	NP	NP	17	
	36														
521.4	38	50* (0.7')			Brown Silty Sandy Gravel	13	45	11	21	17	6	NP	NP	8	
	40														
516.4	42	50/*			Gray Silty Sandy Gravel	14	64	20	4	4	8	--	--	2	
	44														
511.4	46	23/24			Brownish-Gray Sandy Silt	15	11	15	27	23	24	18	5	12	
	48														
506.4	50	9/12			Gray Silt and Clay	16	11	2	4	39	44	30	12	20	
	52														
501.4	54	14/24			Gray Sandy Gravelly Silt	17	27	9	9	28	27	26	10	15	
	56														
496.4	58	50/*			Gray Gravelly Sandy Silt	18	36	28	14	23	19	21	6	11	
495.9	60				BOTTOM OF BORING										

*Refusal

LOG OF BORING

Date Started 5-27-65 | Sampler Type SS | Dia. 1 3/8" | Water Elev. ———
Date Completed 6-2-65 | Casing: Length 40' | Dia. 3 1/2"
Boring No. B-10 | Station & Offset 26+37, 31' Lt (FORWARD ABUTMENT) | Surface Elev. 557.6'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics: % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
557.6	0														
	2														
	4														
552.6	6	4/3			Gray and Brown Silty Sand	1	0	2	60	28	10	NP	NP	25	
	8														
547.6'	10	6/9			Gray Gravelly Sandy Silt	2	V	I	S	U	A	L	24	9	14
545.1	12	6/9			Gray Gravelly Sandy Clay	3	16	8	22	30	24	26	11	15	
542.6	14	9/19			Gray Gravelly Sandy Silt	4	17	5	22	28	28	25	9	12	
540.1	16	21/33			Gray Gravelly Sandy Silt	5	20	8	17	33	22	22	8	13	
537.6	18	50* (0.8')			Gray Silty Sandy Gravel	6	V	I	S	U	A	L			4
535.1	20	50* (0.7')			Gray and Brown Sandy Silt	7	0	2	31	44	23	20	5	19	
532.6	22	13/17			Brown Silty Sand	8	0	1	76	15	8	NP	NP	16	
530.1	24	22/27			Brown Silty Sand	9	0	13	66	14	7	NP	NP	16	
527.6	26	25/28			Brown Silty Sand	10	0	22	49	22	7	NP	NP	13	
525.1	28	23/29			Brown Silty Sand	11	5	38	44	-13-		NP	NP	14	
522.6	30	50* (0.9')			Brown Silty Sandy Gravel	12	56	14	18	-12-		NP	NP	6	
	32														
517.6	34	9/11			Gray Silt and Clay	13	0	1	1	51	47	32	13	21	
	36														
512.6	38	13/14			Gray Silt	14	0	0	11	71	18	NP	NP	21	
	40														
507.6	42	14/15			Gray Clayey Silt	15	6	4	6	55	29	25	9	14	
	44														
502.6	46	9/9			Gray Sandy Silt	16	8	12	19	36	25	32	10	27	
	48														
497.6	50	50* (0.8')			Gray Gravelly Silt	17	17	2	3	37	41	20	7	10	
	52														
492.6	54	50* (0.4')			Gray Silty Sandy Gravel	18	V	I	S	U	A	L			9
	56														
487.6	58	50* (0.9')			Gray Gravelly Sandy Silt	19	20	6	14	38	22	27	10	14	
	60														
482.6	62	50* (0.9')			Gray Silty Sand	20	11	34	38	-17-		NP	NP	14	
481.6	63				BOTTOM OF BORING										

*Refusal

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR71-0781
IR71 NB & RAMP J UNDER RAMPS K & L
SEC. HAM-IR71-7.45

BORING DATA

TYPED BY	CHECKED BY	REVIEWED BY	DATE
B.J.R.	R.C.	R.D.R.	6/24/65

TF-114
1000-1-64

MICROFILMED
JAN 06 1969

HAM-IR71-7.45

Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

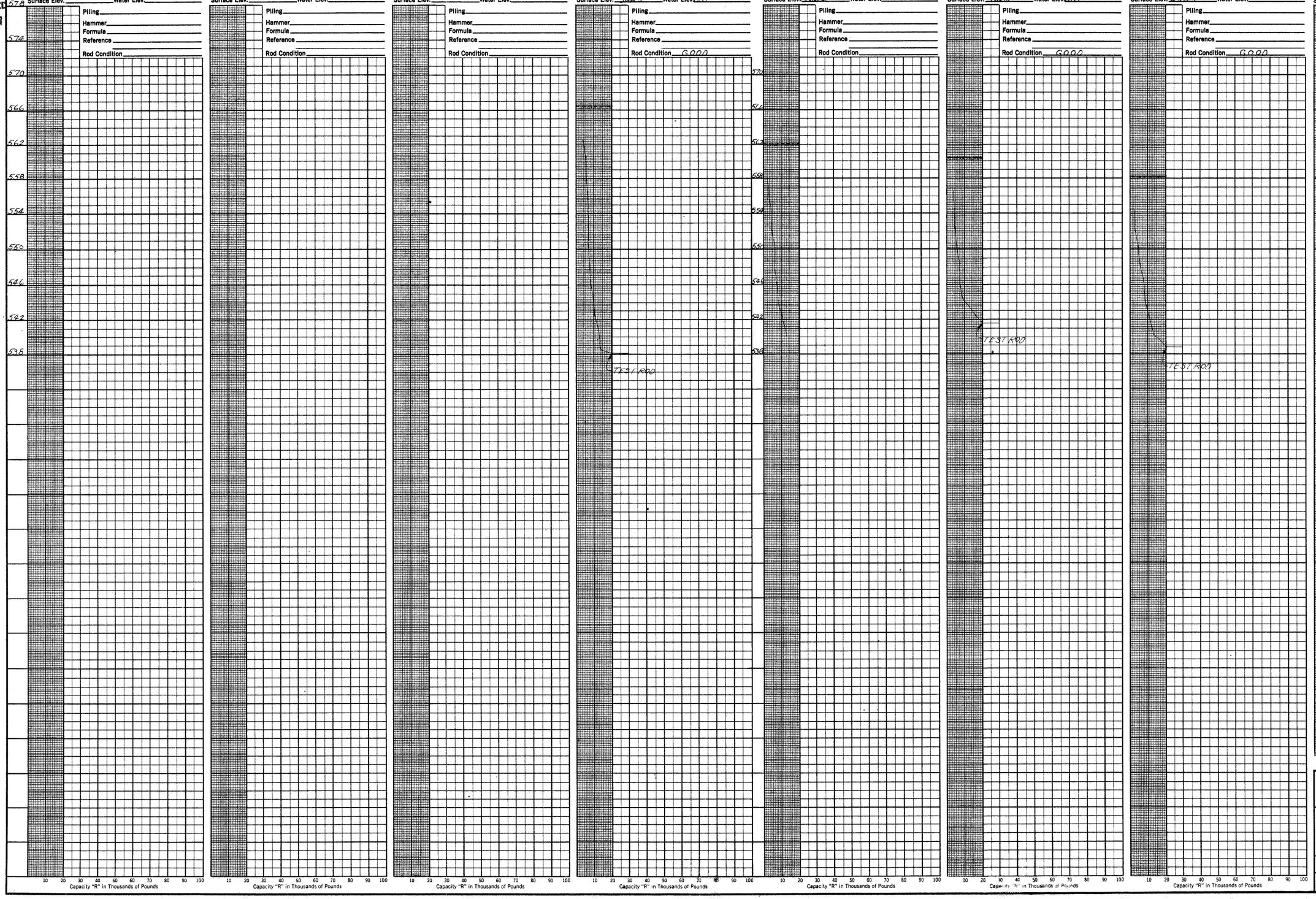
Test Location No. 1
Station & Offset 22+17, 24' RT
REAR ABUTMENT
Surface Elev. 566.5' Water Elev. DRY
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD

Test Location No. 4
Station & Offset 23+91, 38' LT
REAR PIER
Surface Elev. 562.2 Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

Test Location No. 5
Station & Offset 23+93, 24' RT
REAR PIER
Surface Elev. 560.5' Water Elev. DRY
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD

Test Location No. 8
Station & Offset 25+60, 36' LT
FORWARD PIER
Surface Elev. 558.3' Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD

Test Location No. 9
Station & Offset 25+91, 34' RT
FORWARD ABUTMENT
Surface Elev. 558.1' Water Elev. DRY
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD



OHIO STATE HIGHWAY TESTING LABORATORY
1620 WEST BROAD ST. COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR71-0781
IR71 NB & RAMP J UNDER RAMPS K & L
SEC. HAM-IR71-7.45

DRIVE ROD PENETRATION RESISTANCE DATA

PLOTTED BY	CHECKED BY	REVIEWED BY	DATE
R.C.	R.H.P.	R.D.R.	6/24/65

TE - 118
600 - 11 - 64

MICROFILMED
JAN 06 '65

HAMILTON COUNTY
HAM-1R71-7.45

GEOLOGY OF THE SITE

The structure site is located on an Illinoian outwash plain, over the buried valley wall of the Deep Stage Cincinnati River. Interbedded outwash and till overlies interbedded shale and limestone bedrock, of Ordovician age.

EXPLORATION

The exploration consisted of two drive sample borings made between July 29 and August 5, 1965, and six drive rod penetration tests, made between June 22 and 24, 1965.

INVESTIGATIONAL FINDINGS

The borings encountered unstratified, moist, very stiff to hard clays and silt clays, and medium-dense to extremely dense silts, sands, and occasional gravels and boulders. The borings were terminated at 41 and 61-foot depths, elevations 516 and 491 feet, after penetrating in excess of 30 feet of material requiring more than 30 blows per foot in the standard penetration test.

Rod soundings met increasing penetration resistance with increasing depth, and were terminated upon encounter with near-refusal and refusal to penetration at 12 to 24-foot depths, elevations 544 to 519 feet, considered to be in extremely dense materials, revealed by the borings.

No free water was observed in any of the rod sounding holes.

No test penetrated to bedrock surface.

LEGEND

- Auger Boring Location - Plan View.
- Press and / or Drive Sample and / or Core Boring Location - Plan View.
- Drive Rod Penetration Resistance Sounding Location - Plan View.
- Capped Pile
- Footing
- Footing on Pile
- TR — Top of Rock
- Horizontal Bar on Boring Log Indicates the Depth the Sample Was Taken.
- X/Y — Figures Beside the Boring Log in Profile Indicate the Number of Blows for Standard Penetration Test.
  X = Number of Blows for First 6 inches.
  Y = Number of Blows for Second 6 inches.
- Drive Rod Penetration Resistance Sounding Log - Profile
- Casing
- Resistance "R" < 10,000 lbs.
- Resistance "R" > 10,000 lbs.
- Z — Indicates Final Measurement of Penetration, in Inches.
- W — Indicates Free Water Elevation.
- Indicates Static Water Elevation.

SYMBOLS OF ROCK TYPES

- Coal
- Weathered Indurated Clay
- Indurated Clay
- Weathered Shale
- Shale

GENERAL INFORMATION

Drive Rod Penetration Sounding Tests

Drive rod penetration resistance tests constitute driving a 1.315-inch diameter steel rod, with a 45° cone point, into the ground, using a 122-pound drop-hammer with a free fall of five feet. At one or two-foot depth intervals, a measurement is taken to determine the amount of penetration achieved in three hammer drops. This reading is converted to an empirical value for capacity "R", in thousands of pounds (which is a measure of both the point resistance and frictional resistance on the rod), by using charts prepared by the Ohio Department of Highways, Bureau of Bridges, on the basis of correlation study of rod penetration with past performance of pile driving. For interpretation, a graph is prepared by plotting the value "R" against the depth at which the reading was taken, and connecting the plotted points. The curve so obtained reflects the density of subsurface materials in a manner that can be readily compared with data from similar tests at other locations on the structure site. From this comparison, the overall uniformity of subsurface condition may be evaluated.

Drive Sample Borings - Drive-Press Sample Borings

Drive sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. sampler, at 2-1/2 and / or 5-foot depth intervals, driven by means of a 140 - pound drop-hammer with a free fall of 30 inches. The number of blows required to drive the sampler 12 inches is considered the standard penetration test.

Drive-press sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. drive sampler, and 3" O.D. thin-wall press sampler. The press sampler is advanced by continuous uniform pressure, applied by the drill rig.

The boring log sheets show a graphic plot of the information obtained, including depth and elevation of the sample, number of blows for the standard penetration tests in two 6-inch increments, depth of press samples, field sample number, sample description - based on laboratory tests and the Casagrande AC classification system-and gradation, plasticity, and moisture content determinations. Results of strength and consolidation testing, if performed, appear on separate enclosures.

At depths where materials are bouldery or gravelly to the extent that the sampler can not be driven, a wash sample is procured for visual classification, in order to determine the general character of the material. These samples are not considered sufficiently representative to warrant laboratory testing.

Particle Size Definitions

Boulders	Cobbles	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	8"	3"	2.0mm (No. 10 sieve)	0.42mm (No. 40 sieve)	0.074mm (No. 200 sieve)	0.005mm

LOG OF BORING

Date Started 8-3-65 — Sampler Type SS — Dia. 1 3/8" — Water Elev. —
Date Completed 8-5-65 — Casing: Length 35' — Dia. 3 1/2" — Surface Elev. 556.8'
Boring No. B-1 — Station & Offset 2+24, 5' Rt. (Rear Abutment)

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics: % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
556.8	0														
	2														
	4														
551.8	6	2/3			Brown Silty Gravelly Sand	1	33	24	19	15	9	NP	NP	18	
	8														
546.8	10	20/38			Grayish-Brown Gravelly Silt	2	41	6	8	34	11	26	10	13	
	12														
	14														
541.8	16	25/29			Brown Sandy Silt	3	14	7	17	35	27	25	9	14	
	18														
536.8	20	25/39			Brown Sandy Gravel	4	62	1	29	4	4	NP	NP	19	
	22														
	24														
531.8	26	50* (0.4)			Brown Silty Sand	5	0	59	16	13	12	NP	NP	10	
	28														
526.8	30	50/*			Brown Silty Sandy Gravel	6	56	21	7	9	7	NP	NP	6	
	32														
	34														
521.8	36	33/41			Brown and Gray Silty Sandy Gravel	7	67	15	6	8	4	NP	NP	10	
	38														
516.8	40				BOTTOM OF BORING										
515.8		31/36			Brown Silty Sandy Gravel	8	58	16	9	2	15	NP	NP	11	

*Refusal

LOG OF BORING

Date Started 7-29-65 — Sampler Type SS — Dia. 1 3/8" — Water Elev. —
Date Completed 8-3-65 — Casing: Length 20' — Dia. 3 1/2" — Surface Elev. 552.3'
Boring No. B-8 — Station & Offset 6+75, 8' Lt. (Forward Abutment)

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics: % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
552.3	0														
	2														
	4														
547.3	6	9/10			Brownish-Gray Sandy Gravelly Clay	1	24	5	17	29	25	28	11	14	
544.8	8	7/9			Brownish-Gray Sandy Gravelly Silt	2	37	5	14	25	19	24	9	12	
542.3	10	11/23			Gray Silty Clay and Gravel	3	V	I	S	U	A	L	24	10	8
539.8	12	22/28			Gray Gravelly Silt	4	34	4	6	37	19	23	4	11	
537.3	16	12/13			Grayish-Brown Sandy Gravelly Silt	5	23	5	16	27	29	24	8	13	
534.8	18	11/15			Gray Sandy Gravelly Clay	6	39	5	12	26	18	26	11	10	
532.3	20	11/19			Gray Sandy Silt	7	0	11	22	29	38	23	7	8	
	22														
527.3	24														
	26	10/14			Gray Gravelly Sandy Silt	8	20	5	16	31	28	25	9	13	
	28														
522.3	30	16/19			Gray Sandy Gravelly Silt	9	25	4	16	32	23	24	9	14	
	32														
	34														
517.3	36	27/32			Greenish-Gray Sandy Gravelly Silt	10	28	6	15	28	23	24	8	13	
	38														
512.3	40				No Sample Recovered - Boulders (Driller's Description)										
	42														
	44														
507.3	46	50* (0.7)			Gray Clayey Sandy Gravel	11	34	11	17	13	25	PL	=15	12	
	48														
502.3	50	21/27			Gray Sandy Gravelly Silt	12	33	7	16	24	20	22	8	13	
	52														
	54														
497.3	56	30/35			No Sample Recovered - Gray Sandy Gravelly Silt (Driller's Description)										
	58				BOTTOM OF BORING										
492.3	60														
491.3		30/39			Gray Silty Sandy Gravel	13	53	11	12	13	11	NP	NP	10	

*Refusal

NOTE: Information shown by this subsurface investigation was obtained solely for the use in establishing design controls for the project. The State of Ohio does not guarantee the accuracy of this data and it is not to be construed as a part of the plans governing construction of the project.

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-1R71-0798
1R71 NORTHBOUND UNDER RAMP H
SEC. HAM-1R71-7.45

CHECKED BY	REVIEWED BY	DATE
R.H.P.	R.D.R.	9/9/65

TE - 119
500 - 11 - 64

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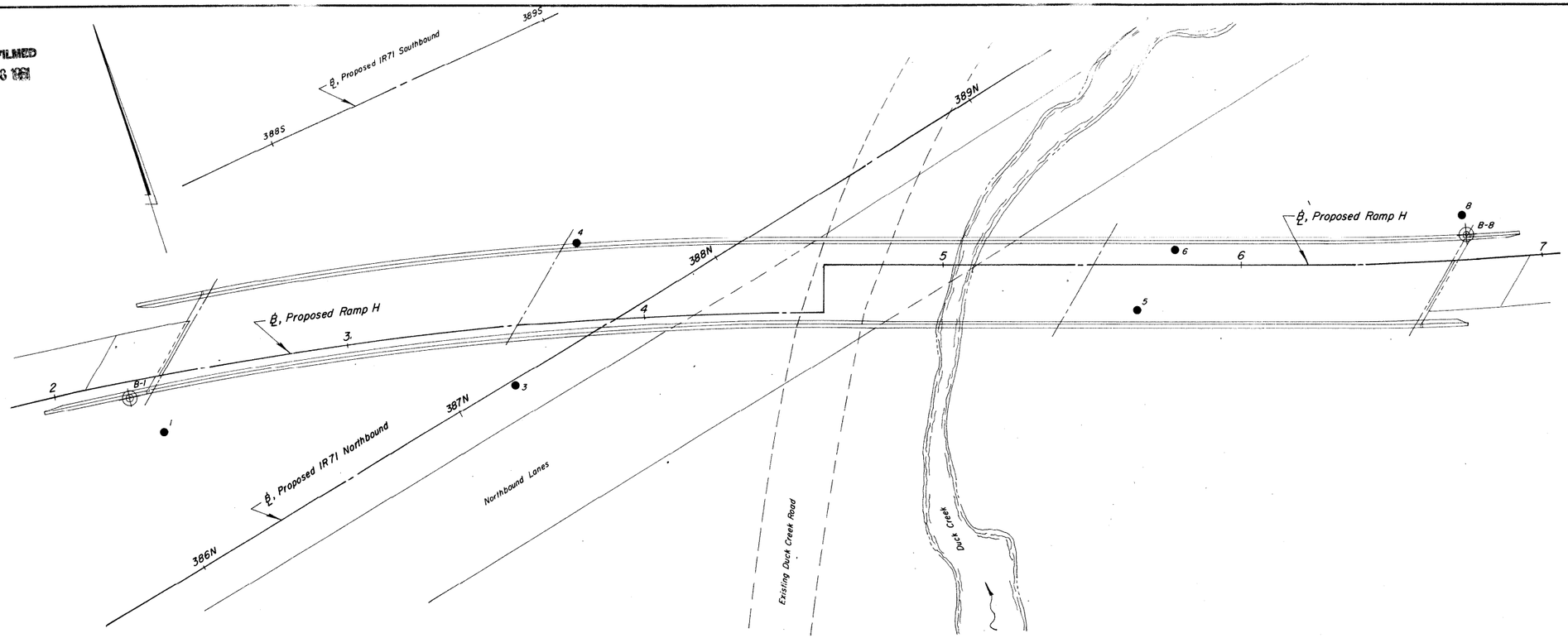
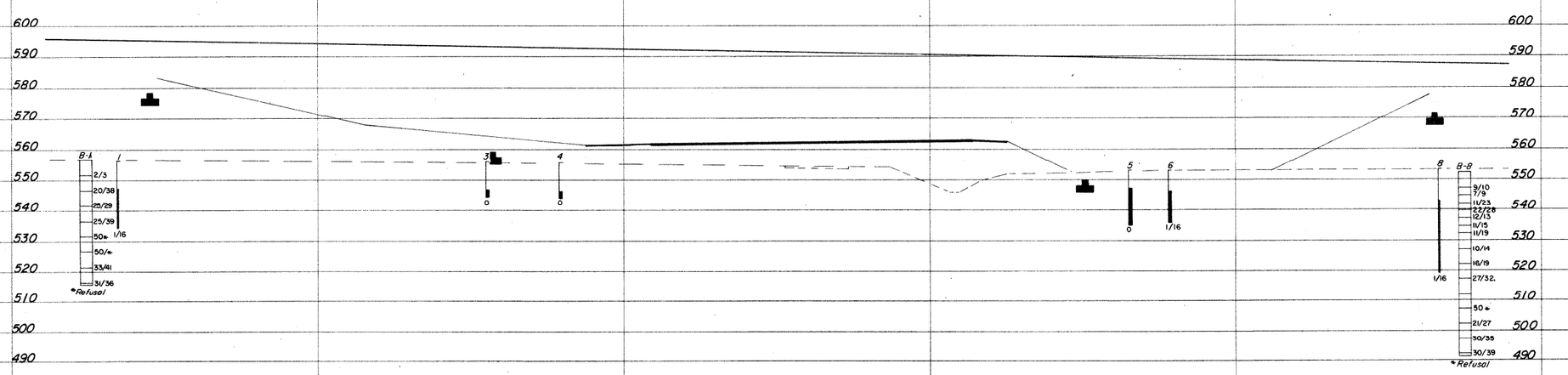
JAN 06 1971

HAM-IR71-7.45





SCALE: 1" = 20'

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR71-0798
IR71 NORTHBOUND UNDER RAMP H
SEC. HAM-IR71-7.45

PLAN AND PROFILE

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R.L.C.	R.H.P.	R.D.R.	9/9/65

TE-114
1020-1-64

MICROFILMED
JAN 06 1966

Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

Test Location No. 1
Station & Offset 2+34 19' RT.
REAR ABUTMENT
Surface Elev. 556.5' Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____
TEST ROD

Test Location No. 3
Station & Offset 3+55 20' RT.
REAR PIER
Surface Elev. 556.0' Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____
TEST ROD

Test Location No. 4
Station & Offset 3+79 26' LT.
REAR PIER
Surface Elev. 555.5' Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ROD BENT
TEST ROD

Test Location No. 5
Station & Offset 5+65 15' RT.
FORWARD PIER
Surface Elev. 553.0' Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____
TEST ROD

Test Location No. 6
Station & Offset 5+78 5' LT.
FORWARD PIER
Surface Elev. 553.0' Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____
TEST ROD

Test Location No. 8
Station & Offset 6+75 15' LT.
FORWARD ABUTMENT
Surface Elev. 553.2' Water Elev. ____
HAM-IR71-7.45
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____
TEST ROD

575 571 567 563 559 555 551 547 543 539 535 531 527 523 519

10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

OHIO STATE HIGHWAY
TESTING LABORATORY
1620 WEST BROAD ST. COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR71-0798
IR71 NORTHBOUND UNDER RAMP H
SEC. HAM-IR71-7.45

DRIVE ROD PENETRATION RESISTANCE DATA

PLOTTED BY	CHECKED BY	REVIEWED BY	DATE
R.C.	R.H.P.	R.D.R.	9/9/65

MICROFILMED
JAN 03 1991

GEOLOGY OF THE SITE
The structure site is located on an Illinoian outwash plain, over the buried valley wall of the Deep Stage Cincinnati River. Interbedded outwash and till overlies interbedded shale and limestone bedrock, of Ordovician age.

EXPLORATION
The exploration consisted of two drive sample borings, made between July 1 and 8, 1965, and five drive rod penetration tests, made on June 23 and 24, 1965.

INVESTIGATIONAL FINDINGS
The borings encountered unstratified, moist, very stiff to hard clays and silt clays, and medium-dense to very dense silts, sands, and occasional gravels. The borings were terminated at 66 and 76-foot depths, elevations 522 and 531 feet, after penetrating in excess of 30 feet of material requiring more than 30 blows per foot in the standard penetration test.

Rod soundings met increasing penetration resistance with increasing depth, and were terminated upon encounter with high resistance to penetration at 10 to 16-foot depths, elevations 522 to 561 feet, considered to be in the hard and dense materials revealed by the borings.

No free water was encountered in any of the rod sounding holes.

No test penetrated to bedrock.

LEGEND

- Auger Boring Location - Plan View.
- Press and / or Drive Sample and / or Core Boring Location - Plan View.
- Drive Rod Penetration Resistance Sounding Location - Plan View.
- Capped Pile
- Footing
- Footing on Pile
- TR — Top of Rock
- Horizontal Bar on Boring Log Indicates the Depth the Sample Was Taken.
- X/Y — Figures Beside the Boring Log in Profile Indicate the Number of Blows for Standard Penetration Test.
  X = Number of Blows for First 6 inches.
  Y = Number of Blows for Second 6 inches.
- Drive Rod Penetration Resistance Sounding Log - Profile
- Casing
- Resistance "R" < 10,000 lbs.
- Resistance "R" > 10,000 lbs.
- Z — Indicates Final Measurement of Penetration, in Inches.
- W — Indicates Free Water Elevation.
- Indicates Static Water Elevation.

SYMBOLS OF ROCK TYPES

- Coal
- Weathered Indurated Clay
- Indurated Clay
- Weathered Shale
- Shale
- Weathered Sandstone
- Sandstone
- Leached Dolomite
- Dolomite
- Leached Limestone
- Limestone

GENERAL INFORMATION

Drive Rod Penetration Sounding Tests

Drive rod penetration resistance tests constitute driving a 1.315-inch diameter steel rod, with a 45° cone point, into the ground, using a 122-pound drop-hammer with a free fall of five feet. At one or two-foot depth intervals, a measurement is taken to determine the amount of penetration achieved in three hammer drops. This reading is converted to an empirical value for capacity "R", in thousands of pounds (which is a measure of both the point resistance and frictional resistance on the rod), by using charts prepared by the Ohio Department of Highways, Bureau of Bridges, on the basis of correlation study of rod penetration with past performance of pile driving. For interpretation, a graph is prepared by plotting the value "R" against the depth at which the reading was taken, and connecting the plotted points. The curve so obtained reflects the density of subsurface materials in a manner that can be readily compared with data from similar tests at other locations on the structure site. From this comparison, the overall uniformity of subsurface condition may be evaluated.

Drive Sample Borings - Drive-Press Sample Borings

Drive sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. sampler, at 2-1/2 and / or 5-foot depth intervals, driven by means of a 140 - pound drop-hammer with a free fall of 30 inches. The number of blows required to drive the sampler 12 inches is considered the standard penetration test.

Drive-press sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. drive sampler, and 3" O.D. thin-wall press sampler. The press sampler is advanced by continuous uniform pressure, applied by the drill rig.

The boring log sheets show a graphic plot of the information obtained, including depth and elevation of the sample, number of blows for the standard penetration tests in two 6-inch increments, depth of press samples, field sample number, sample description - based on laboratory tests and the Casagrande AC classification system-and gradation, plasticity, and moisture content determinations. Results of strength and consolidation testing, it performed, appear on separate enclosures.

At depths where materials are bouldery or gravelly to the extent that the sampler can not be driven, a wash sample is procured for visual classification, in order to determine the general character of the material. These samples are not considered sufficiently representative to warrant laboratory testing.

Particle Size Definitions

Boulders	Cobbles	Gravel	Coarse Sand	Fine Sand	Silt	Clay
8"	3"	2.0mm (No. 10 sieve)	0.42mm (No. 40 sieve)	0.074mm (No. 200 sieve)		0.005mm

NOTE: Information shown by this subsurface investigation was obtained solely for the use in establishing design controls for the project. The State of Ohio does not guarantee the accuracy of this data and it is not to be construed as a part of the plans governing construction of the project.

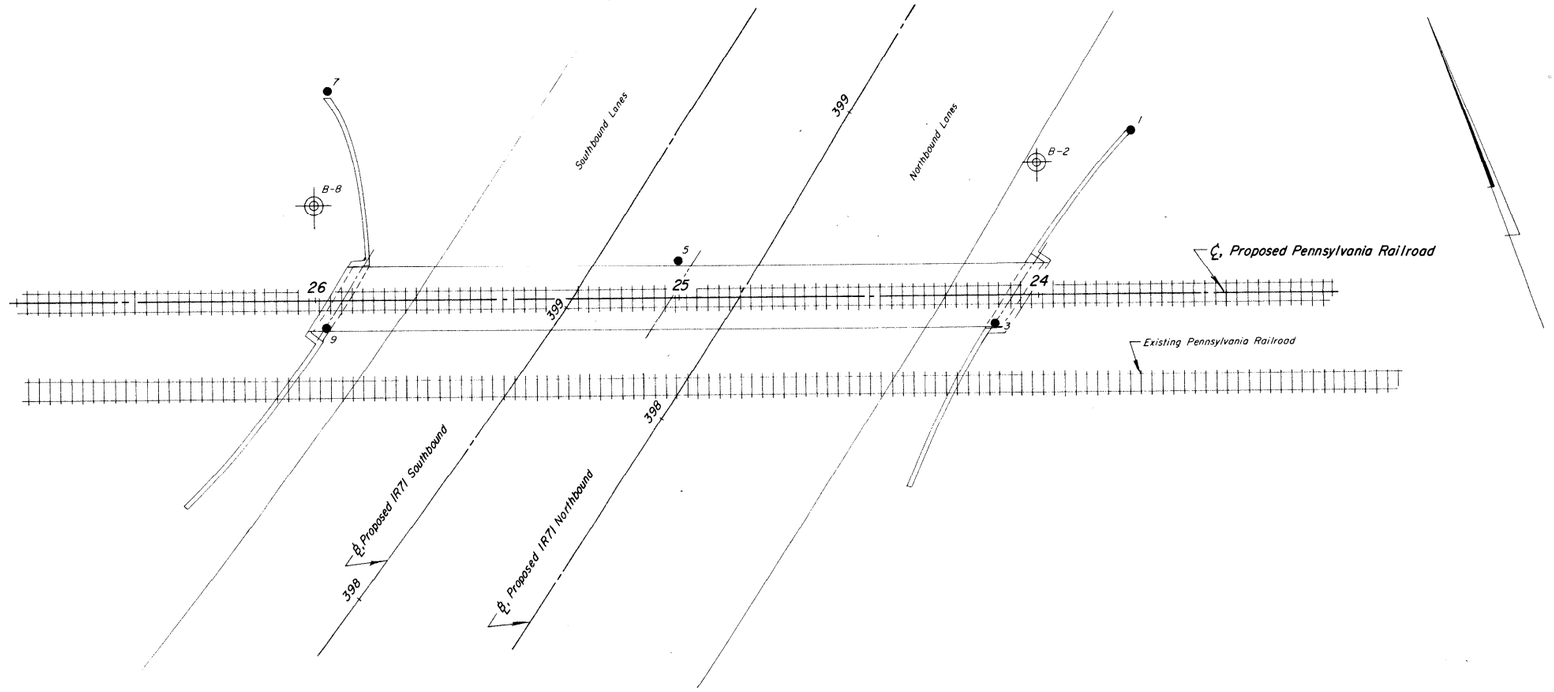
OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR71-0818
UNDER PENNSYLVANIA RAILROAD
SEC. HAM-IR71-7.45

CHECKED BY	REVIEWED BY	DATE
R.H.P.	R.D.R.	8/19/65

MICROFILMED
JAN 03 1967

HAM-IR71-7.45



SCALE: 1" = 20'

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR71-0818
UNDER PENNSYLVANIA RAILROAD
SEC. HAM-IR71-7.45

PLAN AND PROFILE

DRAWN BY	CHECKED BY	REVIEWED BY	DATE
R.L.C.	R.H.P.	R.D.R.	8/19/65

TE - 122
600 - 11 - 64

MICROFILMED
JAN 08 1991

LOG OF BORING

Date Started 7-1-65 Sampler Type SS Dia. 1 3/8"
Date Completed 7-7-65 Casing: Length 65' Dia. 3 1/2"
Boring No. B-2 Station & Offset 24+00, 36' Rt (REAR ABUTMENT)
Water Elev. ———
Surface Elev. 597.8

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics: % Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
597.8	0														
	2														
592.8	4														
	6	6/8			Brown and Gray Silty Clay	1	0	3	9	44	44	33	16	23	
	8														
587.8	10														
	12	11/20			Brown and Gray Sandy Gravelly Silt	2	34	8	9	24	25	29	5	16	
	14														
582.8	16	11/19			Brown Sandy Gravelly Silt	3	23	7	12	32	26	25	9	13	
	18														
577.8	20	13/20			Brown and Gray Sandy Gravelly Silt	4	27	9	14	31	19	20	6	11	
	22														
	24														
572.8	26	9/11			Brown and Gray Clayey Silt	5	0	0	0	59	41	27	7	30	
	28														
567.8	30	8/6			Gray Clayey Silt	6	0	0	0	51	49	27	10	22	
	32														
	34														
562.8	36	14/20			Gray Silty Sandy Gravel	7	36	12	16	25	11	NP	NP	8	
	38														
557.8	40	16/20			No Sample Recovered										
	42														
	44														
552.8	46	11/14			Gray Silty Gravelly Sand	8	39	20	19	14	8	NP	NP	8	
	48														
547.8	50														
	52	13/14			Gray Silty Sandy Gravel	9	43	11	14	23	9	NP	NP	7	
545.3	54	14/14			Gray Gravelly Sandy Silt	10	22	12	15	38	13	NP	NP	13	
542.8	56	17/19			Gray Sandy Gravel	11	70	27	2	-1	-	NP	NP	5	
	58														
537.8	60	16/18			Gray Gravel	12	84	9	3	-4	-	NP	NP	8	
	62														
	64														
532.8	66	19/25			Gray Silty Gravelly Sand	13	33	12	21	22	12	NP	NP	9	
	68														
527.8	70	15/27			Gray Silty Sandy Gravel	14	44	7	17	16	16	NP	NP	11	
	72														
	74														
522.8	76	15/22			Gray Sandy Gravelly Silt BOTTOM OF BORING	15	29	7	10	30	24	23	10	11	

LOG OF BORING

Date Started 7-8-65 Sampler Type SS Dia. 1 3/8"
Date Completed 7-8-65 Casing: Length 45' Dia. 3 1/2"
Boring No. B-6 Station & Offset 26+00, 26' Rt. (Forward Abutment)
Water Elev. ———
Surface Elev. 597.4

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics: % Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
597.4	0														
	2														
592.4	4														
	6	8/9			Brown and Gray Sandy Clay	1	0	5	17	33	45	34	17	17	
	8														
587.4	10														
	12	15/16			Brown Gravelly Clay	2	29	5	6	25	35	33	13	15	
	14														
582.4	16	25/32			Brown Gravelly Sandy Silt	3	19	8	17	32	24	22	8	10	
	18														
577.4	20	47/*			Brown Silty Gravelly Sand	4	39	36	13	6	6	NP	NP	11	
	22														
	24														
572.4	26	16/19			Gray Gravelly Clay	5	29	2	1	23	45	35	11	24	
	28														
567.4	30	6/11			Gray Silty Gravelly Sand	6	26	15	20	22	17	17	4	22	
	32														
	34														
562.4	36	23/35			Gray Silt and Clay	7	0	3	7	39	51	28	12	7	
	38														
557.4	40	24/38			Gray Silty Gravel	8	59	11	3	18	9	18	5	7	
	42														
	44														
552.4	46	37/*			Gray Silty Sandy Gravel	9	66	14	8	6	6	NP	NP	8	
	48														
547.4	50														
	52	20/25			Gray Silty Sandy Gravel	10	V		I	S	U	A	L	5	
	54														
542.4	56	19/16			No Sample Recovered - Gray Sand - (Wash Sample)										
	58														
537.4	60														
	62	32/29			Gray Silty Sandy Gravel	11	V		I	S	U	A	L	8	
	64														
532.4	66				BOTTOM OF BORING										
531.4		32/40			Gray Gravelly Sandy Silt	12	17	15	25	24	19	19	7	8	

*Refusal

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM - IR 71 - 0818
UNDER PENNSYLVANIA RAIL ROAD
SEC. HAM - IR 71 - 7.45

BORING DATA

TYPED BY	CHECKED BY	REVIEWED BY	DATE
S.A.J.	R.C.	R.D.R.	8/19/65

MICROFILMED
JAN 03 1969

38/69

HAM-IR71-7.45 4/4

Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

Test Location No. ____
Station & Offset 23+74.45' RT REAR RIGHT WINGWALL
Surface Elev. 598.1' Water Elev. DRY-Hole Open
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD

Test Location No. 3
Station & Offset 24+12.8' REAR ABUTMENT
Surface Elev. 587.5' Water Elev. DRY-Hole Open
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD

Test Location No. 5
Station & Offset 25+00.10' RT PIER
Surface Elev. 576.0' Water Elev. DRY-Hole Open
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD

Test Location No. 7
Station & Offset 25+97.58' RT FORWARD RIGHT WINGWALL
Surface Elev. 593.2' Water Elev. DRY-Hole Open
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD

Test Location No. 9
Station & Offset 25+98.8' LT FORWARD ABUTMENT
Surface Elev. 593.2' Water Elev. DRY-Hole Open
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD

602 598 594 590 586 582 578 574 570 566 562 558

TEST ROD

10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

OHIO STATE HIGHWAY TESTING LABORATORY
1620 WEST BROAD ST. COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR71-0818
UNDER PENNSYLVANIA RAILROAD
SEC. HAM-IR71-7.45

DRIVE ROD PENETRATION RESISTANCE DATA

PLOTTED BY	CHECKED BY	REVIEWED BY	DATE
R.C.	R.H.P	R.D.R.	8/19/65

TE - 116
600 - 11 - 64

MICROFILMED
JAN 06 1971

GEOLOGY OF THE PROJECT

The structure site is located on the dissected, glaciated Lexington Peneplain, over the buried valley of the pre-glacial Cincinnati River, where interbedded outwash and till, reportedly 250 feet deep, overlie bedrock, of Ordovician age.

EXPLORATION

The exploration consisted of two drive sample borings, made between May 4 and 14, and five drive rod penetration tests, made on May 27 and 28, 1965.

INVESTIGATIONAL FINDINGS

Borings disclosed moist to very moist silts and occasional silt clays with some sand and gravel; medium-dense to dense and very stiff to hard to 55 and 60-foot depths, elevations 546 and 538 feet, and dense to very dense and very hard below this. The borings were terminated at 81 and 91-foot depths, elevations 520 and 508 feet, after penetrating at least 25 feet of materials requiring more than 30 blows per foot in the standard penetration test.

Rod soundings met fairly rapid increase in penetration resistance with increasing depth and were terminated upon encounter with refusal or near-refusal to penetration at 11 to 25-foot depths, elevations 582 to 573 feet. An attempt was made to drive casing to proposed footing elevation at sounding locations numbers 1 and 5, but casing met refusal to penetration at 16 and 20-foot depths, respectively. The soundings are considered to have terminated in the hard and dense materials revealed by the borings.

No free water was observed in the rod sounding holes.

No test penetrated to bedrock.

LEGEND

- Auger Boring Location - Plan View.
- Press and / or Drive Sample and / or Core Boring Location - Plan View.
- Drive Rod Penetration Resistance Sounding Location - Plan View.
- Capped Pile
- Footing
- Footing on Pile
- TR — Top of Rock
- Horizontal Bar on Boring Log Indicates the Depth the Sample Was Taken.
- X/Y — Figures Beside the Boring Log in Profile Indicate the Number of Blows for Standard Penetration Test.
  X = Number of Blows for First 6 inches.
  Y = Number of Blows for Second 6 inches.
- Drive Rod Penetration Resistance Sounding Log - Profile
- Casing
- Resistance "R" < 10,000 lbs.
- Resistance "R" > 10,000 lbs.
- Z — Indicates Final Measurement of Penetration, in Inches.
- W — Indicates Free Water Elevation.
- Indicates Static Water Elevation.

SYMBOLS OF ROCK TYPES

- Coal
- Weathered Indurated Clay
- Indurated Clay
- Weathered Shale
- Shale
- Weathered Sandstone
- Sandstone
- Leached Dolomite
- Dolomite
- Leached Limestone
- Limestone

GENERAL INFORMATION

Drive Rod Penetration Sounding Tests

Drive rod penetration resistance tests constitute driving a 1.315-inch diameter steel rod, with a 45° cone point, into the ground, using a 122-pound drop-hammer with a free fall of five feet. At one or two-foot depth intervals, a measurement is taken to determine the amount of penetration achieved in three hammer drops. This reading is converted to an empirical value for capacity "R", in thousands of pounds (which is a measure of both the point resistance and frictional resistance on the rod), by using charts prepared by the Ohio Department of Highways, Bureau of Bridges, on the basis of correlation study of rod penetration with past performance of pile driving. For interpretation, a graph is prepared by plotting the value "R" against the depth at which the reading was taken, and connecting the plotted points. The curve so obtained reflects the density of subsurface materials in a manner that can be readily compared with data from similar tests at other locations on the structure site. From this comparison, the overall uniformity of subsurface condition may be evaluated.

Drive Sample Borings - Drive-Press Sample Borings

Drive sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. sampler, at 2-1/2 and / or 5-foot depth intervals, driven by means of a 140 - pound drop-hammer with a free fall of 30 inches. The number of blows required to drive the sampler 12 inches is considered the standard penetration test.

Drive-press sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. drive sampler, and 3" O.D. thin-wall press sampler. The press sampler is advanced by continuous uniform pressure, applied by the drill rig.

The boring log sheets show a graphic plot of the information obtained, including depth and elevation of the sample, number of blows for the standard penetration tests in two 6-inch increments, depth of press samples, field sample number, sample description - based on laboratory tests and the Casagrande AC classification system-and gradation, plasticity, and moisture content determinations. Results of strength and consolidation testing, if performed, appear on separate enclosures.

At depths where materials are bouldery or gravelly to the extent that the sampler can not be driven, a wash sample is procured for visual classification, in order to determine the general character of the material. These samples are not considered sufficiently representative to warrant laboratory testing.

Particle Size Definitions

Boulders	Cobbles	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	8" / 3"	2.0mm (No. 10 sieve)	0.42mm (No. 40 sieve)	0.074mm (No. 200 sieve)	0.005mm	

NOTE: Information shown by this subsurface investigation was obtained solely for the use in establishing design controls for the project. The State of Ohio does not guarantee the accuracy of this data and it is not to be construed as a part of the plans governing construction of the project.

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION

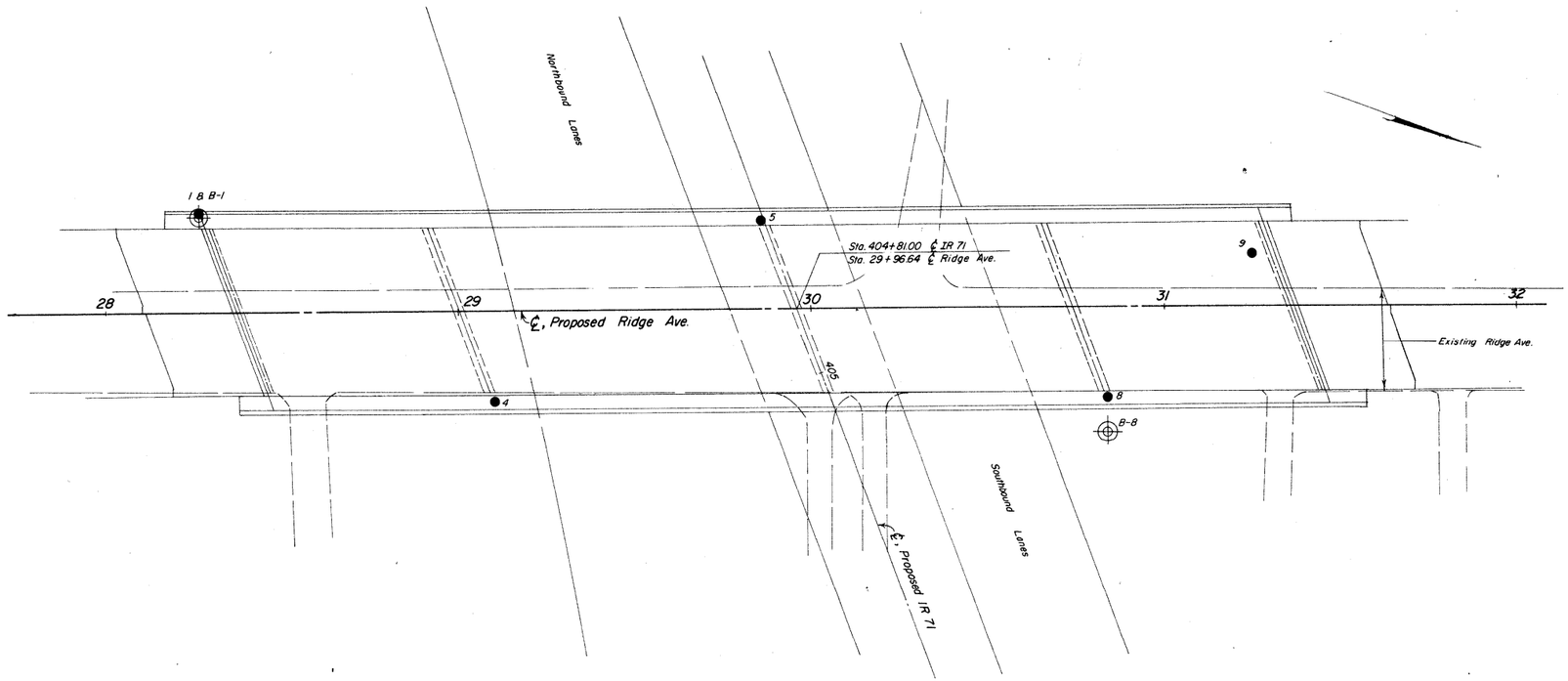
BRIDGE NO. HAM-IR 71-0829
UNDER RIDGE AVENUE
SEC. HAM-IR 71-7.45

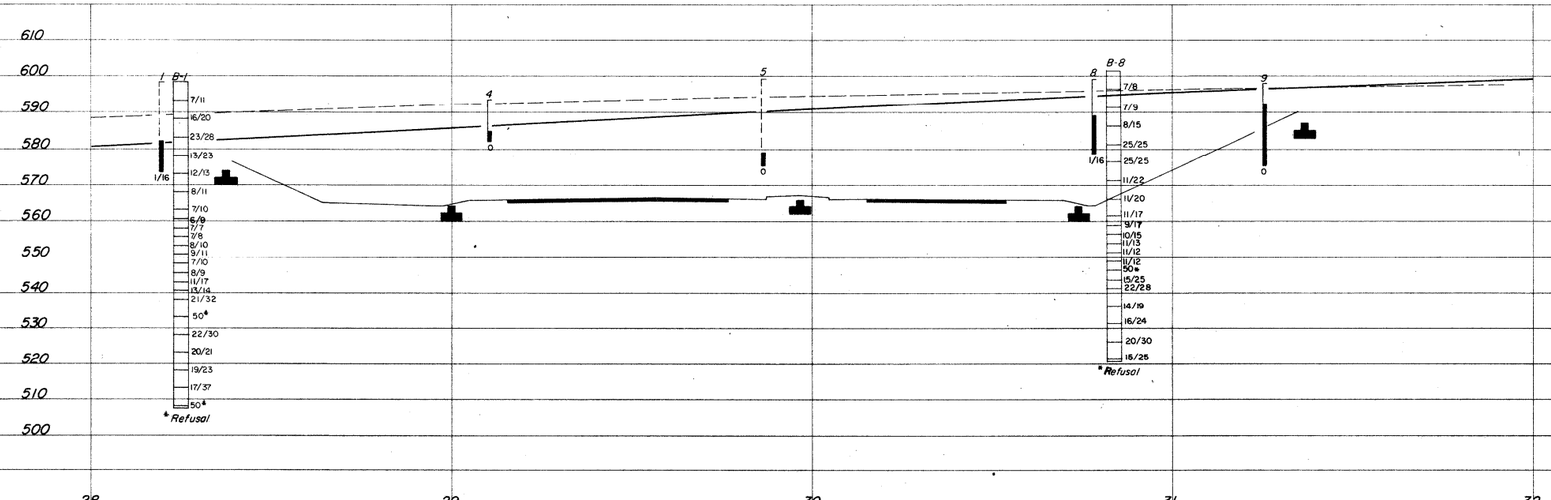
CHECKED BY	REVIEWED BY	DATE
L.N.L.	R.D.R.	6/10/65

TE - 119
500 - 11 - 64

MICROFILMED
JAN 06 1967

HAM-IR 71-7.45





SCALE: 1" = 20'

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION

BRIDGE NO. HAM-IR 71-0829
UNDER RIDGE AVENUE

SEC. HAM-IR 71-7.45

PLAN AND PROFILE

DRAWN BY	CHECKED BY	REVIEWED BY	DATE
R.L.F.	L.N.L.	R.D.R.	6/10/65

TE - 122
600 - 11 - 64

MICROFILMED
JAN 03 1991

LOG OF BORING

Date Started 5-4-65 | Sampler Type SS | Dia. 1 3/8" | Water Elev. —
Date Completed 5-7-65 | Casing: Length 80' | Dia. 3 1/2" | Surface Elev. 598.2'
Boring No. B-1 | Station & Offset 28+27, 27' Lt (REAR ABUTMENT)

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
598.2	0														
	2														
	4														
593.2	6	7/11			Mottled Brown and Gray Clay	1	0	2	10	37	51	51	32	20	
	8														
588.2	10	16/20			Brownish-Gray Gravelly Sandy Clay	2	21	13	16	23	27	35	15	15	
	12														
	14														
583.2	16	23/28			Brownish-Gray Sandy Gravelly Clay	3	25	8	14	30	23	25	12	10	
	18														
578.2	20	13/23			Gray Gravelly Sandy Silt	4	21	9	17	32	21	22	7	11	
	22														
	24														
573.2	26	12/13			Brown and Gray Silt and Clay	5	0	2	2	41	55	35	15	23	
	28														
568.2	30	8/11			Gray Gravelly Sandy Silt	6	17	5	13	38	27	22	7	13	
	32														
	34														
563.2	36	7/10			Gray Silt	7	0	6	13	59	22	NP	NP	15	
560.7	38	6/9			Gray Sandy Silt	8	11	4	17	44	24	19	5	11	
558.2	40	7/7			Gray Silt	9	0	1	2	72	25	20	5	22	
555.7	42	7/8			Gray Silt	10	0	1	4	72	23	NP	NP	22	
553.2	44	8/10			Gray Silt	11	0	1	9	78	12	NP	NP	17	
550.7	46	9/11			Gray Silt	12	0	2	8	70	20	NP	NP	20	
548.2	48	7/10			Gray Sandy Silt	13	0	8	23	43	26	NP	NP	21	
545.7	50	8/9			Gray Silt	14	8	1	2	66	23	NP	NP	16	
543.2	52	11/17			Gray Silt and Clay	15	8	2	4	47	39	25	12	23	
540.7	54	13/14			Gray Gravelly Sandy Silt	16	16	16	16	40	12	NP	NP	16	
538.2	56	21/32			Gray Sandy Silt	17	0	0	36	55	9	NP	NP	20	
	58														
	60														
533.2	62	50* (0.8')			Gray Silty Sand	18	0	1	64	26	9	NP	NP	13	
	64														
528.2	66	22/30			Gray Gravelly Sandy Silt	19	21	8	21	26	24	23	10	7	
	68														
	70														
523.2	72	20/21			Brown Sand and Stone Fragments	20	V	I	S	U	A	L		5	
	74														
518.2	76	19/23			Gray Sandy Silty Clay and Gravel	21	V	I	S	U	A	L	23	11	9
	78														
	80														
513.2	82	17/37			Gray Sandy Gravelly Clay	22	32	7	18	24	19	22	11	11	
	84														
	86														
508.2	88	50*													
507.6	90	(0.6')			Gray Sandy Gravelly Silt BOTTOM OF BORING	23	37	8	11	24	20	22	9	12	

*Refusal

LOG OF BORING

Date Started 5-11-65 | Sampler Type SS | Dia. 1 3/8" | Water Elev. —
Date Completed 5-18-65 | Casing: Length 75' | Dia. 3 1/2" | Surface Elev. 601.3'
Boring No. B-8 | Station & Offset 30+84, 36' Rt (FORWARD PIER)

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
601.3	0														
	2														
	4														
596.3	6	7/8			Mottled Brown and Gray Silty Clay, Trace of Plant Tissue	1	0	7	8	39	46	38	19	22	
	8														
591.3	10	7/9			Mottled Brown and Gray Silt	2	0	2	8	63	27	NP	NP	25	
	12														
	14														
586.3	16	8/15			Brown and Gray Gravelly Sandy Silt	3	15	6	12	37	30	27	10	26	
	18														
581.3	20	25/25			Brown and Gray Silt	4	0	1	0	76	23	NP	NP	21	
	22														
	24														
576.3	26	25/25			Gray Silt	5	0	1	1	72	26	NP	NP	18	
	28														
571.3	30	11/22			Gray Silty Clay	6	0	0	0	41	59	36	17	21	
	32														
	34														
566.3	36	11/20			Gray Silt and Clay	7	0	0	1	40	59	32	15	21	
	38														
561.3	40	11/17			Gray Clayey Silt	8	0	4	0	49	47	25	7	20	
558.8	42	9/17			Gray Silty Clay	9	0	0	0	38	62	39	20	23	
556.3	44	10/15			Gray Silt	10	0	0	0	63	37	23	5	22	
553.8	46	11/13			Gray Silt	11	0	1	0	67	32	NP	NP	15	
551.3	48	11/12			Gray Silt	12	0	1	1	67	31	NP	NP	21	
548.8	50	11/12			Gray Gravelly Silt	13	16	4	7	45	28	21	4	17	
546.3	52	50* (0.6')			Gray Clayey Silt	14	0	1	4	62	33	23	8	16	
543.8	54	15/25			Gray Sandy Silt	15	13	10	15	41	21	19	8	9	
541.3	56	22/28			Gray Silty Gravelly Sand	16	17	37	32	-14-		NP	NP	22	
	58														
	60														
536.3	62	14/19			Gray Silty Sand	17	0	10	74	8	8	NP	NP	29	
	64														
531.3	66	16/24			Gray Gravelly Sandy Silt	18	16	7	24	35	18	NP	NP	15	
	68														
	70														
526.3	72	20/30			Gray Gravelly Sandy Silt	19	19	8	22	29	22	22	10	12	
	74				BOTTOM OF BORING										
521.3	76	15/25			Gray Sandy Clay	20	11	4	13	28	44	36	20	24	
520.3	78														
	80														

*Refusal

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR71-0829
UNDER RIDGE AVENUE
SEC. HAM-IR71-7.45

BORING DATA

TYPED BY	CHECKED BY	REVIEWED BY	DATE
B.J.R.	R.C.	R.D.R.	6/10/65

TE-114
1000-1-64

MICROFILMED
JAN 03 1991

Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

604 600 596 592 588 584 580 576 572

10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

Test Location No. 1
Station & Offset 28+27.28' LT
REAR ABUTMENT
Surface Elev. 598.2' Water Elev. DRY-Hole open
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

CASING
TEST ROD

10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

Test Location No. 4
Station & Offset 29+10.26 RT
REAR PIER
Surface Elev. 593.5' Water Elev. DRY-Hole open
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition POINT BENT-8

596 592 588 584 580 576 572
TEST ROD

10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

Test Location No. 5
Station & Offset 29+86.25' LT
CENTER PIER
Surface Elev. 599.2' Water Elev. DRY-Hole open
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition POINT BENT-8

CASING
TEST ROD

10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

Test Location No. 8
Station & Offset 30+84.26 RT
FORWARD PIER
Surface Elev. 599.1' Water Elev. DRY-Hole open
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD

TEST ROD

10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

Test Location No. 9
Station & Offset 31+25.15' LT
FORWARD ABUTMENT
Surface Elev. 598.0' Water Elev. DRY-Hole open

HAM-IR71-7.45
4/4

Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD

596 592 588 584 580 576 572
TEST ROD

10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

OHIO STATE HIGHWAY
TESTING LABORATORY
1620 WEST BROAD ST. COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR71-0829
UNDER RIDGE AVENUE
SEC. HAM-IR71-7.45

DRIVE ROD PENETRATION RESISTANCE DATA

PLOTTED BY	CHECKED BY	REVIEWED BY	DATE
R.C	L.N.L.	R.D.R.	6/10/65

TE - 118
600 - 11 - 64

MICROFILMED
JAN 03 1967

HAMILTON COUNTY
HAM-IR 71-7.45

43
69
1
4

GEOLOGY OF THE SITE

The structure site is located on an Illinoian outwash plain, over the buried valley wall of the Deep Stage Cincinnati River. Interbedded outwash and till overlies interbedded shale and limestone bedrock, of Ordovician age.

EXPLORATION

The exploration consisted of two drive sample borings, made between April 28 and May 4, and four drive rod penetration tests, made on May 24 and 25, 1965.

INVESTIGATIONAL FINDINGS

The borings encountered moist, very stiff to hard clays and silt clays and medium-to very dense silts, sands, and occasional gravels. The borings were terminated at 61 and 65-foot depths, elevations 528 and 509 feet, after penetrating in excess of 40 feet of material requiring more than 30 blows per foot in the standard penetration test.

Rod soundings met increasing penetration resistance with increasing depth, and were terminated upon encounter with refusal to penetration at 23 to 51-foot depths, elevations 552 to 549 feet, considered to be in the hard and dense materials, as revealed by the borings.

No free water was encountered in any of the rod soundings.

No test penetrated to bedrock surface.

LEGEND

- Auger Boring Location - Plan View.
- Press and / or Drive Sample and / or Core Boring Location - Plan View.
- Drive Rod Penetration Resistance Sounding Location - Plan View.
- Capped Pile
- Footing
- Footing on Pile
- TR — Top of Rock
- Horizontal Bar on Boring Log Indicates the Depth the Sample Was Taken.
- X/Y — Figures Beside the Boring Log in Profile Indicate the Number of Blows for Standard Penetration Test.
  X = Number of Blows for First 6 inches.
  Y = Number of Blows for Second 6 inches.
- Drive Rod Penetration Resistance Sounding Log - Profile
- Casing
- Resistance "R" < 10,000 lbs.
- Resistance "R" > 10,000 lbs.
- Z — Indicates Final Measurement of Penetration, in Inches.
- W — Indicates Free Water Elevation.
- Indicates Static Water Elevation.

SYMBOLS OF ROCK TYPES

- Coal
- Weathered Indurated Clay
- Indurated Clay
- Weathered Shale
- Shale
- Weathered Sandstone
- Sandstone
- Leached Dolomite
- Dolomite
- Leached Limestone
- Limestone

GENERAL INFORMATION

Drive Rod Penetration Sounding Tests

Drive rod penetration resistance tests constitute driving a 1.315-inch diameter steel rod, with a 45° cone point, into the ground, using a 122-pound drop-hammer with a free fall of five feet. At one or two-foot depth intervals, a measurement is taken to determine the amount of penetration achieved in three hammer drops. This reading is converted to an empirical value for capacity "R", in thousands of pounds (which is a measure of both the point resistance and frictional resistance on the rod), by using charts prepared by the Ohio Department of Highways, Bureau of Bridges, on the basis of correlation study of rod penetration with past performance of pile driving. For interpretation, a graph is prepared by plotting the value "R" against the depth at which the reading was taken, and connecting the plotted points. The curve so obtained reflects the density of subsurface materials in a manner that can be readily compared with data from similar tests at other locations on the structure site. From this comparison, the overall uniformity of subsurface condition may be evaluated.

Drive Sample Borings - Drive-Press Sample Borings

Drive sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. sampler, at 2-1/2 and / or 5-foot depth intervals, driven by means of a 140 - pound drop-hammer with a free fall of 30 inches. The number of blows required to drive the sampler 12 inches is considered the standard penetration test.

Drive-press sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. drive sampler, and 3" O.D. thin-wall press sampler. The press sampler is advanced by continuous uniform pressure, applied by the drill rig.

The boring log sheets show a graphic plot of the information obtained, including depth and elevation of the sample, number of blows for the standard penetration tests in two 6-inch increments, depth of press samples, field sample number, sample description - based on laboratory tests and the Casagrande AC classification system-and gradation, plasticity, and moisture content determinations. Results of strength and consolidation testing, if performed, appear on separate enclosures.

At depths where materials are bouldery or gravelly to the extent that the sampler can not be driven, a wash sample is procured for visual classification, in order to determine the general character of the material. These samples are not considered sufficiently representative to warrant laboratory testing.

Particle Size Definitions

Boulders	8"	Cobbles	3"	Gravel	2.0mm	Coarse Sand	0.42mm	Fine Sand	0.074mm	Silt	0.005mm	Clay
					No. 10 sieve		No. 40 sieve		No. 200 sieve			

NOTE: Information shown by this subsurface investigation was obtained solely for the use in establishing design controls for the project. The State of Ohio does not guarantee the accuracy of this data and it is not to be construed as a part of the plans governing construction of the project.

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION

BRIDGE NO. HAM-IR 71-0853
UNDER KENNEDY AVE.
SEC. HAM-IR 71-7.45

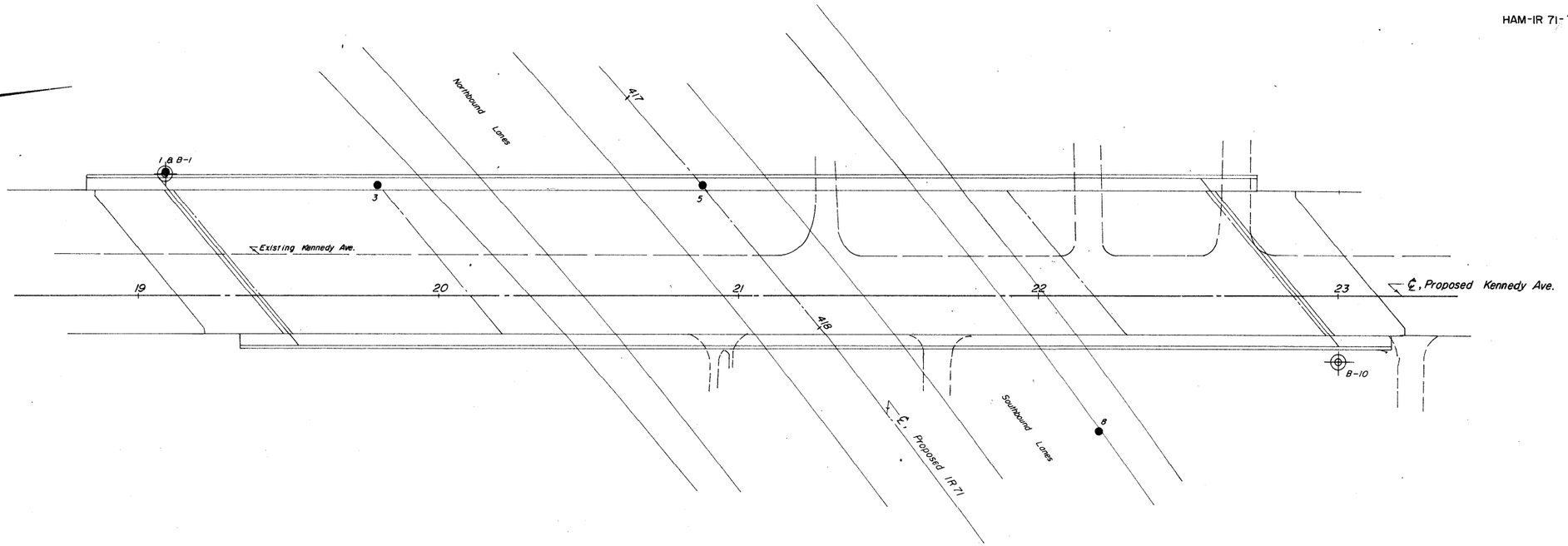
CHECKED BY	REVIEWED BY	DATE
L.N.L.	R.D.R.	6/9/65

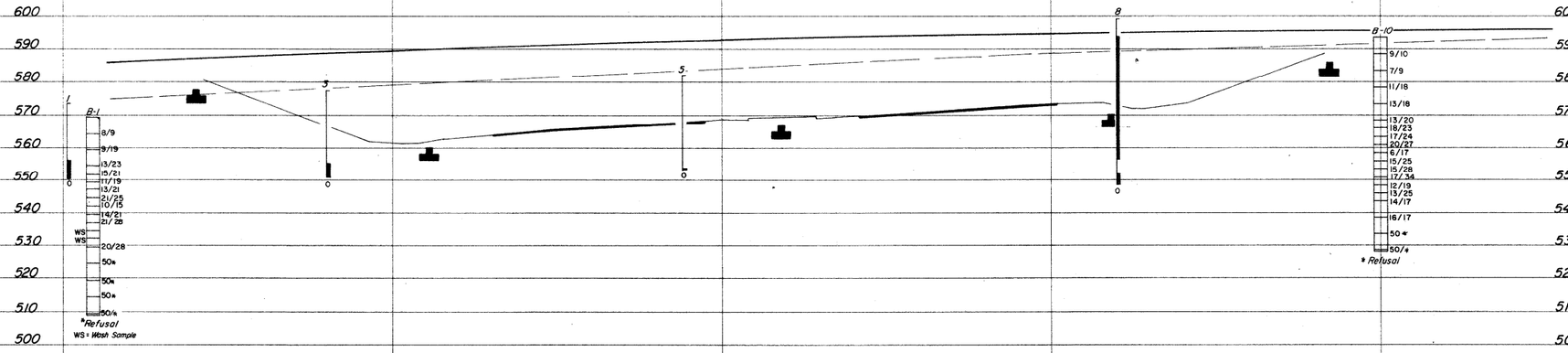
TE - 119
500 - 11 - 64

MICROFILMED
JAN 03 1967

HAM-IR 71- 7.45

44/69 2/4





SCALE: 1" = 20'

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION

BRIDGE NO. HAM-IR 71-0853
UNDER KENNEDY AVE.

SEC. HAM-IR 71- 7.45

PLAN AND PROFILE

DRAWN BY	CHECKED BY	REVIEWED BY	DATE
R.L.F.	L.N.L.	R.D.R.	6/9/65

TE - 122
600 - 11 - 64

MICROFILMED
JAN 06 1971

LOG OF BORING

Date Started 4-28-65 Sampler Type SS Dia. 1 3/8"
Date Completed 4-29-65 Casing: Length 55' Dia. 3 1/2"
Boring No. B-1 Station & Offset 19+09, 40' Lt (REAR ABUTMENT)
Water Elev. ____ Surface Elev. 569.7'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
569.7	0														
	2														
564.7	4	8/9			Brown and Gray Sandy Gravelly Clay	1	28	9	11	25	27	30	11	16	
	6														
	8														
559.7	10	9/19			Gray Silty Clay	2	0	2	1	38	59	37	18	17	
	12														
554.7	14														
	16	13/23			Gray Silty Clay	3	0	1	1	27	71	41	20	19	
552.2	18	15/21			Gray Clay	4	0	0	0	30	70	43	22	23	
549.7	20	11/19			Gray Clay	5	0	1	0	27	72	40	21	22	
547.2	22	13/21			Gray Silt and Clay	6	0	0	0	53	47	29	11	25	
544.7	24	21/25			Gray Clayey Silt	7	0	0	0	53	47	29	9	17	
542.2	26	10/15			Gray Clayey Silt	8	0	0	1	55	44	30	9	22	
539.7	28	14/21			Gray Silty Gravelly Sand	9	27	25	13	25	10	NP	NP	13	
537.2	30	21/28			Gray Gravelly Sandy Silt	10	27	11	20	22	20	20	7	14	
534.7	32				Gray Silty Sand (Wash Sample)	11	0	71	13	-16-		NP	NP	13	
532.2	34				Gray Sand (Wash Sample)	12	0	68	27	-5-		NP	NP	19	
529.7	36														
	38														
	40	28/28			Gray Gravelly Sandy Silt	13	29	7	14	37	22	21	5	12	
	42														
524.7	44	50*													
	46	(0.8')			Gray Silty Sandy Gravel	14	49	7	10	21	13	20	4	13	
	48														
519.7	50	50*													
	52	(0.4')			Gray Silty Sandy Gravel	15	V	I	S	U	A	L	22	9	11
	54														
514.7	56	50*													
	58	(0.7')			Gray Sandy Gravelly Silt	16	32	3	15	31	19	19	3	10	
509.7	60	50*			BOTTOM OF BORING										
509.2		(0.5')			Gray Silty Sandy Gravel	17	36	19	22	16	13	--	--	7	

LOG OF BORING

Date Started 4-30-65 Sampler Type SS Dia. 1 3/8"
Date Completed 5-4-65 Casing: Length 35' Dia. 3 1/2"
Boring No. B-10 Station & Offset 23+00, 22' Rt (FORWARD ABUTMENT)
Water Elev. ____ Surface Elev. 593.3'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
593.3	0														
	2														
588.3	4														
	6	9/10			Brown Sandy Silt	1	0	2	45	38	15	NP	NP	19	
	8														
583.3	10														
	12	7/9			Brown Silt	2	0	2	9	70	19	NP	NP	24	
578.3	14														
	16	11/18			Brown Silt	3	0	1	10	80	9	NP	NP	24	
	18														
573.3	20														
	22	13/18			Grayish-Brown Gravelly Silt	4	15	4	10	48	23	NP	NP	23	
568.3	24														
	26	13/20			Gray Sandy Silt	5	V	I	S	U	A	L	NP	NP	21
565.8	28	18/23			Gray Sandy Silt	6	0	11	18	75	6	NP	NP	23	
563.3	30	17/24			Gray Gravelly Sandy Silt	7	25	7	31	32	5	NP	NP	10	
560.8	32	20/27			Gray Silty Gravelly Sand	8	22	34	18	19	7	NP	NP	10	
558.3	34														
	36	6/17			Gray Sandy Gravelly Silt	9	28	7	13	36	16	20	4	16	
555.8	38	15/25			Gray Silty Sandy Gravel	10	53	8	8	18	13	PL =	15	11	
553.3	40														
	42	15/28			Gray Silt and Clay	11	10	5	4	39	42	30	11	15	
550.8	44	17/34			Gray Sandy Silt	12	11	9	12	38	30	21	6	10	
548.3	46	12/19			Gray Sandy Silt	13	11	10	21	34	24	21	8	14	
545.8	48	13/25			Gray Sandy Gravelly Silt	14	26	8	17	32	17	21	4	11	
543.3	50	14/17			Gray Silty Gravelly Sand	15	19	20	24	16	21	23	9	12	
	52														
	54														
538.3	56	16/17			Gray Silty Gravelly Sand	16	31	24	20	8	17	19	5	12	
	58														
533.3	60	50*													
	62	(0.7')			Gray Gravelly Silt	17	28	4	7	46	15	22	6	8	
	64														
528.3					BOTTOM OF BORING										
527.8	66	50/4			Gray Silty Clay and Stone Fragments	18	V	I	S	U	A	L	PL =	16	4

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM - IR 71-0853
UNDER KENNEDY AVE.
SEC. HAM - IR 71 - 7.45

BORING DATA

TYPED BY	CHECKED BY	REVIEWED BY	DATE
B. J. R.	R.C.	R.D.R.	6/9/65

TE-114
1000-1-64

MICROFILMED
JAN 06 1966

Test Location No. _____
Station & Offset _____
Surface Elev. _____ Water Elev. _____
Piling _____
Hammer _____
Formula _____
Reference _____
Rod Condition _____

Test Location No. _____
Station & Offset _____
Surface Elev. _____ Water Elev. _____
Piling _____
Hammer _____
Formula _____
Reference _____
Rod Condition _____

Test Location No. _____
Station & Offset _____
Surface Elev. _____ Water Elev. _____
Piling _____
Hammer _____
Formula _____
Reference _____
Rod Condition _____

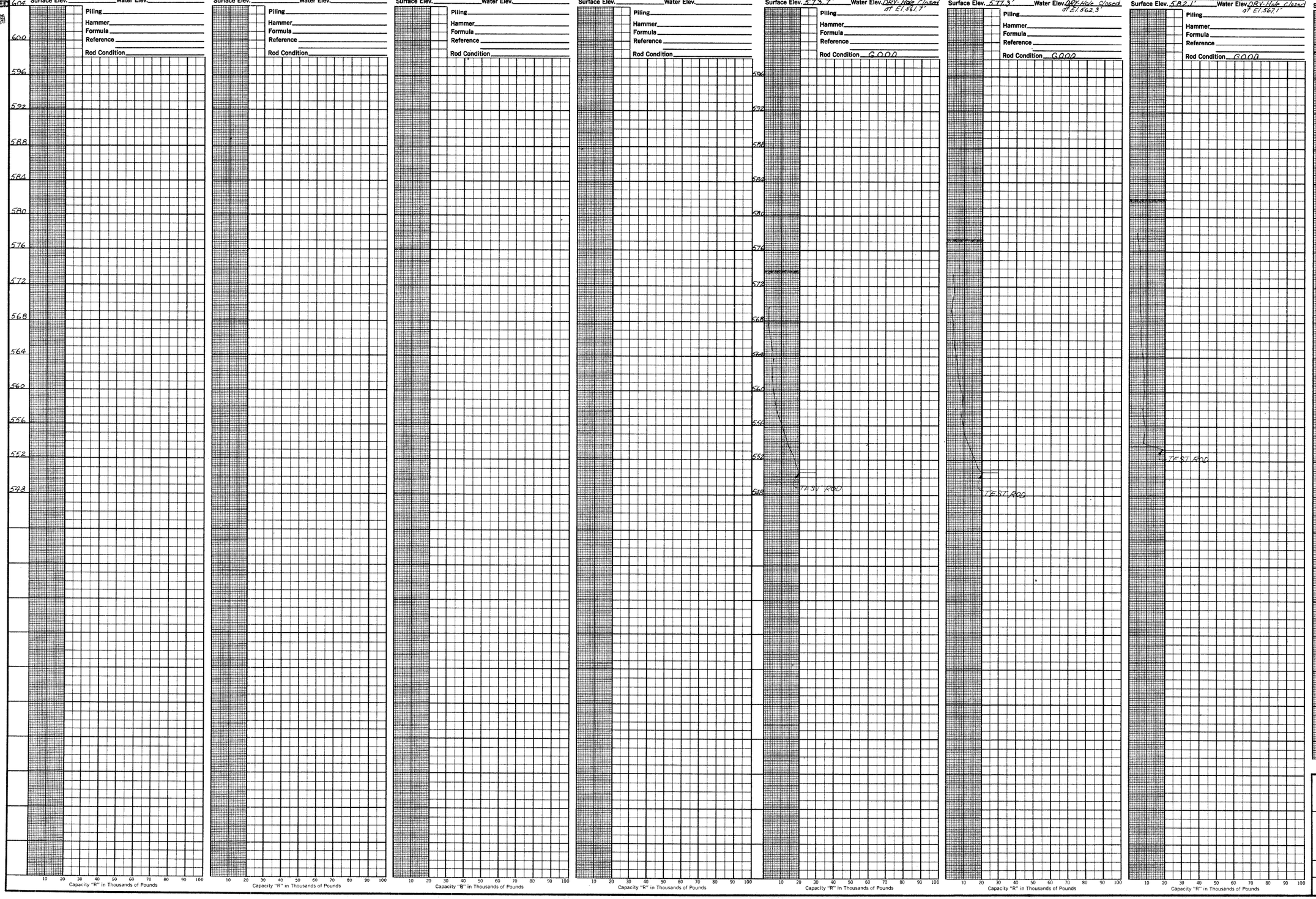
Test Location No. _____
Station & Offset _____
Surface Elev. _____ Water Elev. _____
Piling _____
Hammer _____
Formula _____
Reference _____
Rod Condition _____

Test Location No. 1
Station & Offset 19+09.41' LT
REAR ABUTMENT
Surface Elev. 573.7' Water Elev. DRY-Hole Closed at El 561.7'
Piling _____
Hammer _____
Formula _____
Reference _____
Rod Condition GOOD

Test Location No. 3
Station & Offset 19+80.37' LT
REAR PIER
Surface Elev. 577.3' Water Elev. DRY-Hole Closed at El 562.3'
Piling _____
Hammer _____
Formula _____
Reference _____
Rod Condition GOOD

Test Location No. 5
Station & Offset 20+88.37' LT
CENTER PIER
Surface Elev. 582.1' Water Elev. DRY-Hole Closed at El 567.1'
Piling _____
Hammer _____
Formula _____
Reference _____
Rod Condition GOOD

Test Location No. 8
Station & Offset 22+20.45' RT
FORWARD PIER
Surface Elev. 599.1' Water Elev. DRY-Hole Closed at El 575.1
HAM-IR 71-7.45
Piling _____
Hammer _____
Formula _____
Reference _____
Rod Condition _____



OHIO STATE HIGHWAY
TESTING LABORATORY
1620 WEST BROAD ST. COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR 71-0853
UNDER KENNEDY AVE.
SEC. HAM-IR 71-7.45

DRIVE ROD PENETRATION RESISTANCE DATA

PLOTTED BY	CHECKED BY	REVIEWED BY	DATE
R.C.	L.N.L.	R.D.R.	6/9/65

TE - 118
609 - 11 - 64

MICROFILMED
JAN 06 1971

HAMILTON COUNTY
HAM-IR71-7.45

GEOLOGY OF THE SITE

The structure site is located on an Illinoian outwash plain, over the buried valley wall of the Deep Stage Cincinnati River. Interbedded outwash and till overlies interbedded shale and limestone bedrock, of Ordovician age.

EXPLORATION

The exploration consisted of two drive sample borings and five drive rod penetration tests, made between July 9 and 28, 1965.

INVESTIGATIONAL FINDINGS

The borings encountered unstratified, moist, very stiff to hard clays and silt clays, and medium-dense to very dense silts, sands, and occasional gravels. The borings were terminated at 66 to 81-foot depths, elevations 523 to 508 feet, after penetrating in excess of 20 feet of material requiring more than 30 blows per foot in the standard penetration test.

Rod soundings numbers 2, 6, and 8, cased to proposed footing elevations as shown on the site plan, and soundings numbers 1 and 4, met increasing penetration resistance with increasing depth, and were terminated upon encounter with high resistance to penetration at 40 to 61 foot depths, elevations 562 to 531 feet, considered to be in the hard and very dense materials, as revealed by the borings.

Free water was observed in rod sounding hole number 1 at elevation 565 feet.

No test penetrated to bedrock surface.

LEGEND

- Auger Boring Location - Plan View.
- Press and / or Drive Sample and / or Core Boring Location - Plan View.
- Drive Rod Penetration Resistance Sounding Location - Plan View.
- Capped Pile
- Footing
- Footing on Pile
- TR — Top of Rock
- Horizontal Bar on Boring Log Indicates the Depth the Sample Was Taken.
- X/Y — Figures Beside the Boring Log in Profile Indicate the Number of Blows for Standard Penetration Test.
  X = Number of Blows for First 6 inches.
  Y = Number of Blows for Second 6 inches.
- Drive Rod Penetration Resistance Sounding Log - Profile
- Casing
- Resistance "R" < 10,000 lbs.
- Resistance "R" > 10,000 lbs.
- Z — Indicates Final Measurement of Penetration, in Inches.
- W — Indicates Free Water Elevation.
- Indicates Static Water Elevation.

SYMBOLS OF ROCK TYPES

- Coal
- Weathered Indurated Clay
- Indurated Clay
- Weathered Shale
- Shale
- Weathered Sandstone
- Sandstone
- Leached Dolomite
- Dolomite
- Leached Limestone
- Limestone

GENERAL INFORMATION

Drive Rod Penetration Sounding Tests

Drive rod penetration resistance tests constitute driving a 1.315-inch diameter steel rod, with a 45° cone point, into the ground, using a 122-pound drop-hammer with a free fall of five feet. At one or two-foot depth intervals, a measurement is taken to determine the amount of penetration achieved in three hammer drops. This reading is converted to an empirical value for capacity "R", in thousands of pounds (which is a measure of both the point resistance and frictional resistance on the rod), by using charts prepared by the Ohio Department of Highways, Bureau of Bridges, on the basis of correlation study of rod penetration with past performance of pile driving. For interpretation, a graph is prepared by plotting the value "R" against the depth at which the reading was taken, and connecting the plotted points. The curve so obtained reflects the density of subsurface materials in a manner that can be readily compared with data from similar tests at other locations on the structure site. From this comparison, the overall uniformity of subsurface condition may be evaluated.

Drive Sample Borings - Drive-Press Sample Borings

Drive sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. sampler, at 2-1/2 and / or 5-foot depth intervals, driven by means of a 140 - pound drop-hammer with a free fall of 30 inches. The number of blows required to drive the sampler 12 inches is considered the standard penetration test.

Drive-press sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. drive sampler, and 3" O.D. thin-wall press sampler. The press sampler is advanced by continuous uniform pressure, applied by the drill rig.

The boring log sheets show a graphic plot of the information obtained, including depth and elevation of the sample, number of blows for the standard penetration tests in two 6-inch increments, depth of press samples, field sample number, sample description - based on laboratory tests and the Casagrande AC classification system - and gradation, plasticity, and moisture content determinations. Results of strength and consolidation testing, if performed, appear on separate enclosures.

At depths where materials are bouldery or gravelly to the extent that the sampler can not be driven, a wash sample is procured for visual classification, in order to determine the general character of the material. These samples are not considered sufficiently representative to warrant laboratory testing.

Particle Size Definitions

Boulders	Cobbles	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	8" / 3"	2.0mm (No. 10 sieve)	0.42mm (No. 40 sieve)	0.074mm (No. 200 sieve)		0.005mm

NOTE: Information shown by this subsurface investigation was obtained solely for the use in establishing design controls for the project. The State of Ohio does not guarantee the accuracy of this data and it is not to be construed as a part of the plans governing construction of the project.

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

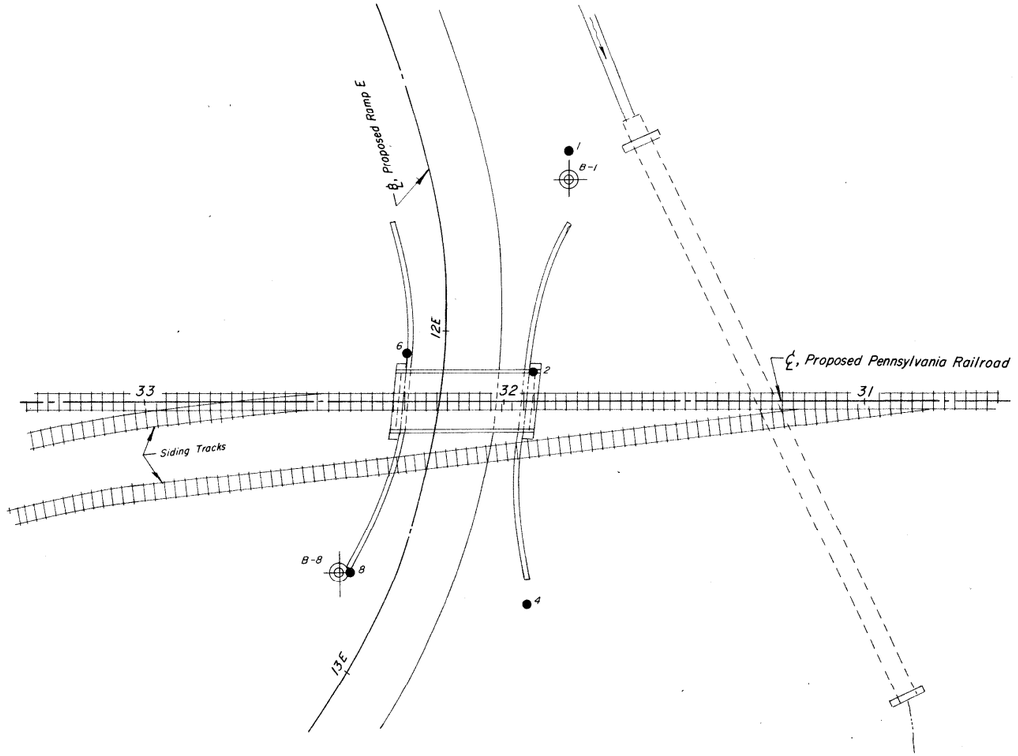
STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR71-
RAMP E UNDER PENNSYLVANIA RAILROAD
SEC. HAM-IR71-7.45

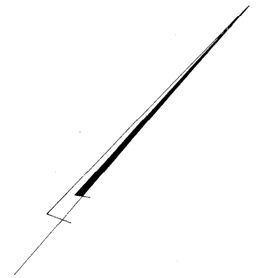
CHECKED BY	REVIEWED BY	DATE
L.N.L.	R.D.R.	8/19/65

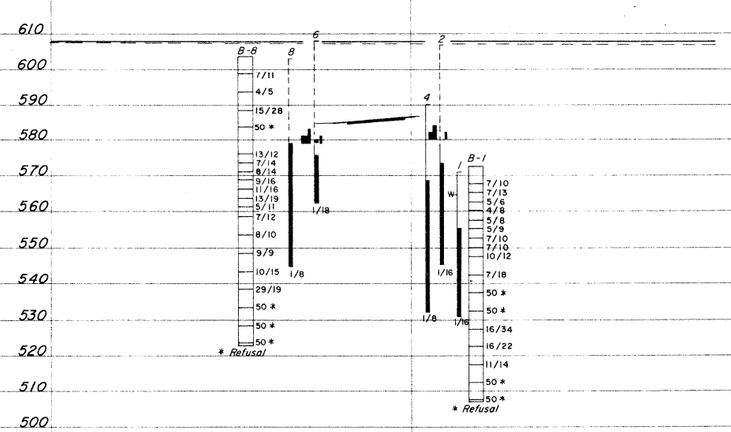
TE 119
500 - 11 - 64

MICROFILMED
JAN 08 1965

HAM-IR71-7.45







SCALE: 1" = 20'

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR71-
RAMP E UNDER PENNSYLVANIA RAILROAD
SEC. HAM-IR71-7.45

PLAN AND PROFILE

DRAWN BY	CHECKED BY	REVIEWED BY	DATE
R.L.C.	L.N.L.	R.D.R.	8/19/65

TE - 122
600/2-11-64

MICROFILMED
JAN 08 1991

LOG OF BORING

Date Started 7-14-65 | Sampler Type SS | Dia 1 3/8" | Water Elev. ———
Date Completed 7-15-65 | Casing: Length ——— | Dia ——— | Surface Elev. 572.7'
Boring No. B-1 | Station & Offset 31+82, 62' Rt. (Rear Right Wingwall)

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics: % Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
572.7	0														
	2														
567.7	4														
	6	7/10			Gray Silt and Clay	1	0	0	1	41	58	33	15	23	
565.2	8	7/13			Brownish-Gray Silt and Clay	2	0	0	0	49	51	33	14	23	
562.7	10														
	12	5/6			Gray Clayey Silt	3	0	0	1	52	47	27	10	23	
560.2	14														
557.7		4/8			Gray Silt and Clay	4	0	1	2	52	45	29	13	18	
	16	5/8			Gray Clayey Silt	5	0	1	5	51	43	25	8	20	
555.2	18	5/9			Gray Gravelly Silt	6	17	5	9	42	27	21	6	12	
552.7	20														
	22	7/10			Gray Gravelly Sandy Silt	7	17	6	12	42	23	22	10	15	
550.2	24	7/10			Gray Sandy Silt	8	7	7	26	46	14	NP	NP	15	
547.7	26	10/12			Gray Sandy Gravelly Silt	9	20	8	11	39	22	19	4	15	
	28														
542.7	30	7/18			Gray Sandy Silt	10	8	10	20	39	23	20	7	19	
	32														
537.7	34														
	36	50* (0.8)			Gray Sandy Silt	11	12	7	16	42	23	22	7	15	
532.7	38														
	40	50* (0.4)			Gray Gravelly Sandy Clay	12	20	12	14	34	20	28	14	8	
	42														
527.7	44														
	46	16/34			Gray Gravelly Sandy Silt	13	21	11	14	42	12	22	9	12	
	48														
522.7	50														
	52	16/22			Gray Sandy Silt	14	0	2	29	45	24	21	8	20	
	54														
517.7	56	11/14			Gray Silt and Clay	15	0	1	1	36	62	35	14	22	
	58														
512.7	60														
	62	50* (0.8)			Gray Silty Sandy Gravel	16	43	30	10	12	5	NP	NP	9	
	64				BOTTOM OF BORING										
507.7	66	50*(0.7)			Gray Silty Gravel	17	V	I	S	U	A	L	14		

*Refusal

LOG OF BORING

Date Started 7-9-65 | Sampler Type SS | Dia 1 3/8" | Water Elev. 579.0'
Date Completed 7-14-65 | Casing: Length 70' | Dia 3 1/2" | Surface Elev. 603.8'
Boring No. B-8 | Station & Offset 32+46, 48' Lt. (Forward Left Wingwall)

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics: % Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
603.8	0														
	2														
	4														
598.8	6	7/11			Mottled Brown and Gray Sandy Clay	1	0	5	18	33	44	31	15	19	
	8														
593.8	10	4/5			Brown Gravelly Sandy Clay	2	16	5	17	30	32	30	14	32	
	12														
588.8	14														
	16	15/28			Brown Clayey Gravel	3	V	I	S	U	A	L	28	13	16
	18														
583.8	20														
	22	50* (0.2)			Brown Gravelly Sandy Clay	4	V	I	S	U	A	L	26	11	11
578.8	24														
	26														
576.3	28	13/12			Gray Silty Gravelly Sand	5	29	15	18	25	13	18	4	9	
573.8	30	7/14			Gray Sandy Gravelly Silt	6	24	7	9	36	24	20	6	15	
571.3	32														
	34	8/14			Gray Gravelly Sandy Silt	7	22	9	15	33	21	20	7	12	
568.8	36	9/16			Gray Gravelly Sandy Silt	8	24	16	17	28	15	18	5	12	
566.3	38	11/16			Gray Silty Clay	9	0	2	0	44	54	33	17	25	
563.8	40														
	42	13/19			Gray Silty Clay	10	0	1	0	35	64	40	19	25	
561.3	44	5/11			Gray Silty Clay	11	0	1	3	43	53	33	17	24	
558.8	46	7/12			Gray Silt and Clay	12	5	3	9	44	39	25	12	19	
	48														
553.8	50														
	52	8/10			Gray Clayey Silt	13	0	1	13	53	33	23	9	18	
	54														
548.8	56	9/9			Gray Silt and Clay	14	0	3	11	49	37	25	12	19	
	58														
543.8	60														
	62	10/15			Gray Silty Sandy Gravel	15	49	8	10	24	9	16	2	12	
	64														
538.8	66	29/19			Gray Sandy Gravel	16	V	I	S	U	A	L	2		
	68														
533.8	70														
	72	50* (0.9)			Gray Gravelly Sandy Silt	17	16	9	14	33	28	23	10	11	
528.8	74														
	76	50* (0.9)			Gray Gravelly Sandy Silt	18	17	7	13	36	27	22	7	12	
	78				BOTTOM OF BORING										
523.8	80														
523.8		50*(0.8)			Grayish-Brown Silty Sand	19	0	1	80	9	10	NP	NP	23	

*Refusal

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR 71-
RAMP E UNDER PENNSYLVANIA RAILROAD
SEC. HAM-IR 71-7.45

BORING DATA

TYPED BY	CHECKED BY	REVIEWED BY	DATE
S.A.J.	R.C.	R.D.R.	8/19/65

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JAN 08 1981

HAM-IR71-7.45

Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

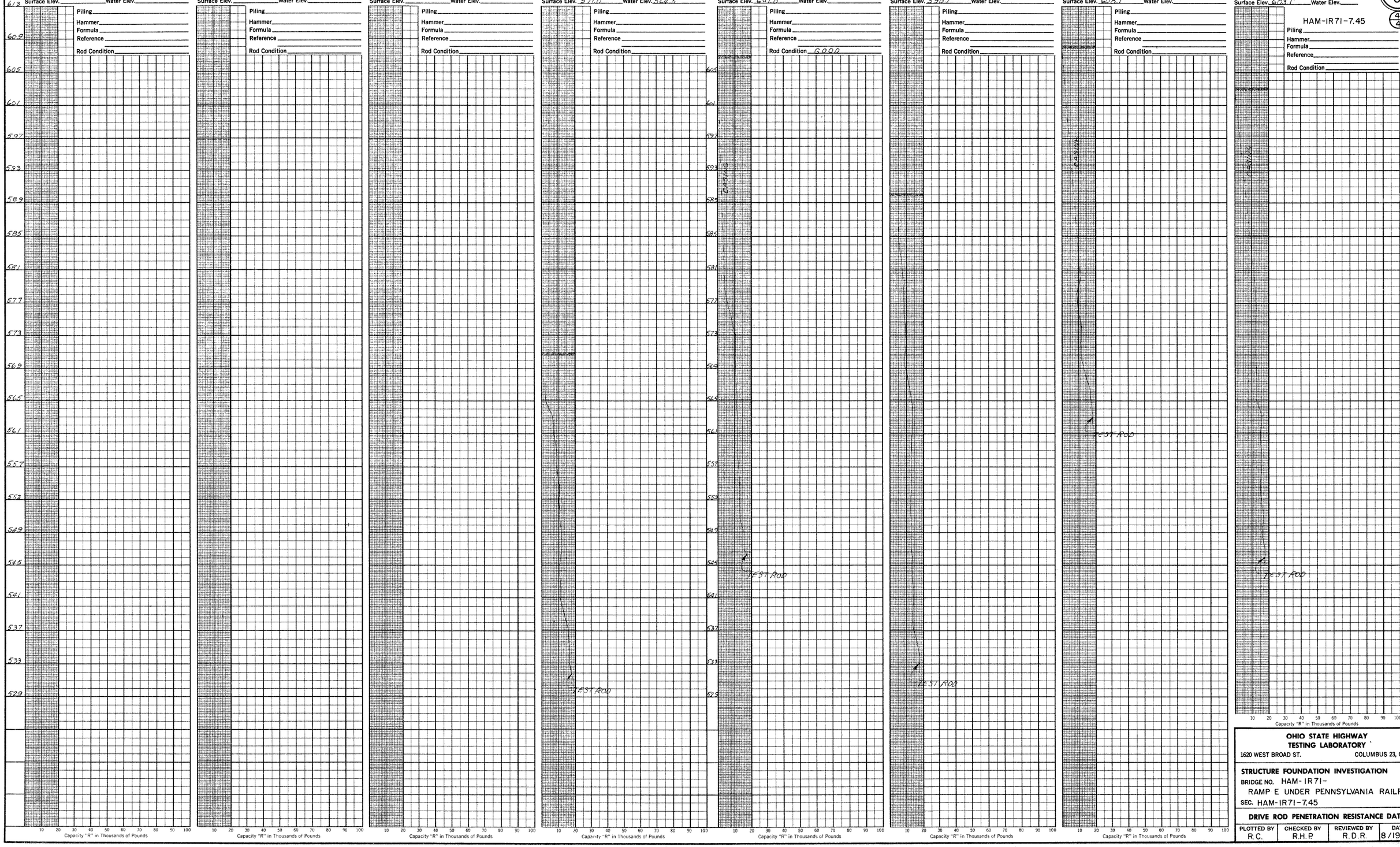
Test Location No. 1
Station & Offset 31+82 70' RT
REAR RIGHT WINGWALL
Surface Elev. 571.0 Water Elev. 564.5'
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

Test Location No. 2
Station & Offset 31+92 8' RT
REAR ABUTMENT
Surface Elev. 697.0 Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD

Test Location No. 4
Station & Offset 31+94 57' LT
REAR LEFT WINGWALL
Surface Elev. 590.1 Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

Test Location No. 6
Station & Offset 32+27 13' RT
FORWARD ABUTMENT
Surface Elev. 608.1 Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

Test Location No. 8
Station & Offset 32+43 48' LT
FORWARD RIGHT WINGWALL
Surface Elev. 603.1 Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____



OHIO STATE HIGHWAY TESTING LABORATORY
1620 WEST BROAD ST. COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR71-
RAMP E UNDER PENNSYLVANIA RAILROAD
SEC. HAM-IR71-7.45

DRIVE ROD PENETRATION RESISTANCE DATA

PLOTTED BY	CHECKED BY	REVIEWED BY	DATE
R.C.	R.H.P.	R.D.R.	8/19/65

TE - 118
600 - 11 - 64

MICROFILMED
JAN 08 1981

51
69
1
5

HAMILTON COUNTY
HAM-IR71-7.45

GEOLOGY OF THE SITE
The structure site is located on an Illinoian outwash plain, over the buried valley wall of the Deep Stage Cincinnati River. Interbedded outwash and till overlies interbedded shale and limestone bedrock, of Ordovician age.

EXPLORATION
The exploration consisted of four drive sample borings and six drive rod penetration tests, made between July 16 and August 3, 1965.

INVESTIGATIONAL FINDINGS
The borings encountered unstratified, moist, very stiff to hard clays and silt clays, and medium-dense to extremely dense silts, sands, and occasional gravels. The borings were terminated at 71 to 86-foot depths, elevations 521 to 498 feet, after penetrating in excess of 15 feet of material requiring more than 30 blows per foot in the standard penetration test.

Rod soundings numbers 4,6,11, and 13, cased to proposed footing elevations as shown on the site plan, and soundings numbers 1 and 9, met increasing penetration resistance with increasing depth, and were terminated upon encounter with high resistance and refusal to penetration at 28 to 74-foot depths, elevations 578 to 526 feet, considered to be in the hard and very dense materials, as revealed by the borings.

No free water was encountered in the rod sounding holes.

No test penetrated to bedrock surface.

LEGEND

- Auger Boring Location - Plan View.
- Press and / or Drive Sample and / or Core Boring Location - Plan View.
- Drive Rod Penetration Resistance Sounding Location - Plan View.
- Capped Pile
- Footing
- Footing on Pile
- TR — Top of Rock
- Horizontal Bar on Boring Log Indicates the Depth the Sample Was Taken.
- X/Y — Figures Beside the Boring Log in Profile Indicate the Number of Blows for Standard Penetration Test.
  X = Number of Blows for First 6 inches.
  Y = Number of Blows for Second 6 inches.
- Drive Rod Penetration Resistance Sounding Log - Profile
- Casing
- Resistance "R" < 10,000 lbs.
- Resistance "R" > 10,000 lbs.
- Z — Indicates Final Measurement of Penetration, in Inches.
- W — Indicates Free Water Elevation.
- Indicates Static Water Elevation.

SYMBOLS OF ROCK TYPES

- Coal
- Weathered Indurated Clay
- Indurated Clay
- Weathered Shale
- Shale
- Weathered Sandstone
- Sandstone
- Leached Dolomite
- Dolomite
- Leached Limestone
- Limestone

GENERAL INFORMATION

Drive Rod Penetration Sounding Tests

Drive rod penetration resistance tests constitute driving a 1.315-inch diameter steel rod, with a 45° cone point, into the ground, using a 122-pound drop-hammer with a free fall of five feet. At one or two-foot depth intervals, a measurement is taken to determine the amount of penetration achieved in three hammer drops. This reading is converted to an empirical value for capacity "R", in thousands of pounds (which is a measure of both the point resistance and frictional resistance on the rod), by using charts prepared by the Ohio Department of Highways, Bureau of Bridges, on the basis of correlation study of rod penetration with past performance of pile driving. For interpretation, a graph is prepared by plotting the value "R" against the depth at which the reading was taken, and connecting the plotted points. The curve so obtained reflects the density of subsurface materials in a manner that can be readily compared with data from similar tests at other locations on the structure site. From this comparison, the overall uniformity of subsurface condition may be evaluated.

Drive Sample Borings - Drive-Press Sample Borings

Drive sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. sampler, at 2-1/2 and / or 5-foot depth intervals, driven by means of a 140 - pound drop-hammer with a free fall of 30 inches. The number of blows required to drive the sampler 12 inches is considered the standard penetration test.

Drive-press sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. drive sampler, and 3" O.D. thin-wall press sampler. The press sampler is advanced by continuous uniform pressure, applied by the drill rig.

The boring log sheets show a graphic plot of the information obtained, including depth and elevation of the sample, number of blows for the standard penetration tests in two 6-inch increments, depth of press samples, field sample number, sample description - based on laboratory tests and the Casagrande AC classification system - and gradation, plasticity, and moisture content determinations. Results of strength and consolidation testing, if performed, appear on separate enclosures.

At depths where materials are bouldery or gravelly to the extent that the sampler can not be driven, a wash sample is procured for visual classification, in order to determine the general character of the material. These samples are not considered sufficiently representative to warrant laboratory testing.

Particle Size Definitions

Boulders	Cobbles	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	8"	3" / 2.0mm (No. 10 sieve)	0.42mm (No. 40 sieve)	0.074mm (No. 200 sieve)	0.005mm	

NOTE: Information shown by this subsurface investigation was obtained solely for the use in establishing design controls for the project. The State of Ohio does not guarantee the accuracy of this data and it is not to be construed as a part of the plans governing construction of the project.

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR71-
RAMPS J,K,I,& L UNDER PENNSYLVANIA RR
SEC. HAM-IR71-7.45

CHECKED BY	REVIEWED BY	DATE
R.H.P.	R.D.R.	9/1/65

TE - 122
600 - 11 - 64

MICROFILMED
JAN 08 1971

LOG OF BORING

Date Started 7-28-65 Sampler Type SS Dia 1 3/8"
Date Completed 7-29-65 Casing: Length 40' Dia 3 1/2"
Boring No. B-1 Station & Offset 25+70, 85' Lt. (Lt. Rear Wingwall)
Water Elev. —
Surface Elev. 568.9'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
568.9	0														
	2														
	4														
563.9	6	6/6			Dark-Brown Sandy Clay, Trace of Organic	1	0	6	18	44	32	38	16	20	
561.4	8	3/5			Brown Gravelly Sandy Silt	2	21	9	14	27	19	25	9	11	
558.9	10	11/10			Brown Silt	3	0	1	1	63	35	26	5	31	
556.4	12	6/5			Gray Clay	4	0	0	0	38	62	52	29	28	
553.9	14	10/11			Gray Silt and Clay	5	0	1	2	64	33	30	13	21	
551.4	16	13/13			Gray Silt and Clay	6	0	1	2	64	33	28	11	21	
548.9	18	10/13			Gray Sandy Silt	7	0	3	24	46	27	20	7	12	
	20														
	22														
543.9	24	8/11			Gray Sandy Silt	8	6	6	18	39	31	24	9	15	
	26														
	28														
538.9	30	8/10			Gray Clayey Silt	9	0	1	6	55	38	25	8	22	
	32														
	34														
533.9	36	11/14			Gray Sandy Silt	10	9	8	17	37	29	23	9	12	
	38														
528.9	40														
	42	20/26			Gray Gravelly Sandy Silt	11	19	7	13	36	25	24	10	14	
	44														
523.9	46	50* (0.4)			Gray Sandy Silt	12	14	11	15	37	23	21	5	9	
	48														
518.9	50	19/22			Gray Clayey Silt	13	0	1	13	46	40	25	9	20	
	52														
	54														
513.9	56	50* (0.7)			Gray Sandy Silt	14	13	5	21	33	28	23	8	11	
	58														
508.9	60	14/17			Gray Sandy Silt	15	7	5	14	63	11	25	9	13	
	62														
	64														
503.9	66	11/24			Gray Silty Gravelly Sand	16	20	12	32	23	13	NP	NP	14	
	68														
498.9	70				BOTTOM OF BORING										
497.9		15/20			Gray Silty Clay with Stone Fragments *Refusal	17	V			S	U	A	L	15	

LOG OF BORING

Date Started 7-21-65 Sampler Type SS Dia 1 3/8"
Date Completed 7-22-65 Casing: Length 25' Dia 3 1/2"
Boring No. B-7 Station & Offset 28+17, 26' Rt. (Rear Pier)
Water Elev. —
Surface Elev. 602.1'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
602.1	0														
	2														
	4														
597.1	6	9/11			Brown Silty Clay	1	0	1	7	45	47	38	20	20	
	8														
592.1	10	11/16			Brown Gravelly Sandy Silt	2	15	5	14	42	24	24	6	15	
	12														
	14														
587.1	16	50* (0.9)			Brown Gravelly Sandy Silt	3	27	9	24	29	11	NP	NP	12	
	18														
582.1	20	14/15			Gray Sandy Gravelly Silt	4	36	7	13	26	18	20	6	7	
	22														
	24														
577.1	26	8/20			Gray Gravelly Sandy Silt	5	21	9	15	34	21	19	4	12	
	28														
572.1	30	10/12			Gray Clayey Silt	6	0	0	0	63	37	29	9	21	
569.6	32	8/11			Gray Silt and Clay	7	0	1	0	47	52	33	13	21	
567.1	34	8/8			Gray Silt and Clay	8	0	0	0	54	46	31	12	23	
564.6	36	10/11			Gray Silty Clay	9	0	0	0	29	71	42	20	26	
562.1	38	6/6			Gray Silt and Clay	10	0	0	0	49	51	32	12	22	
559.6	40	6/8			Gray Silty Clay	11	0	1	0	42	57	37	16	24	
557.1	42	7/8			Gray Silty Clay	12	0	0	0	40	60	36	18	26	
554.6	44	8/8			Gray Silt and Clay	13	0	0	1	49	50	30	15	25	
552.1	46	9/10			Gray Silt and Clay	14	0	4	8	48	40	28	12	16	
	48														
547.1	50	13/13			Gray Clayey Silt	15	0	6	14	43	37	26	10	14	
	52														
542.1	54	10/11			Gray Silt	16	0	0	3	68	29	24	5	19	
	56														
537.1	58	13/20			Gray Sandy Silt	17	12	7	13	41	27	19	5	33	
	60														
532.1	62	16/22			Gray Sandy Silt	18	14	9	14	38	25	22	6	12	
	64														
527.1	66	50* (0.7)			Gray Sandy Silt	19	13	8	16	37	26	27	7	10	
	68														
522.1	70				BOTTOM OF BORING										
521.1		12/22			Gray Sandy Silt	20	0	1	37	36	26	NP	NP	21	

*Refusal

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR 71-
RAMPS J, K, I, & L UNDER PENNSYLVANIA RR
SEC. HAM-IR 71-7.45

BORING DATA

TYPED BY	CHECKED BY	REVIEWED BY	DATE
S.A.J.	R.H.P.	R.D.R.	9/1/65

TE - 122
600 - 11 - 64

MICROFILMED
JAN 06 1971

LOG OF BORING

Date Started 7-23-65 | Sampler Type SS | Dia. 1 3/8" | Water Elev. —
Date Completed 7-28-65 | Casing: Length — | Dia. —
Boring No. B-11 | Station & Offset 29+16, 26' Lt. (Forward Abutment) | Surface Elev. 604.6'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics: % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
604.6	0														
	2														
	4														
599.6	6	8/9			Brown Sandy Silt	1	0	9	24	39	28	26	10	14	
	8														
594.6	10	9/11			Brown Sandy Clay	2	9	12	17	32	30	30	12	23	
	12														
	14														
589.6	16	9/9			Brown Gravelly Clay	3	17	3	9	46	25	30	12	18	
	18														
584.6	20	50/*			Brown Gravelly Sandy Silt	4	19	9	18	31	23	25	9	11	
	22														
	24														
579.6	26	12/17			Gray Sandy Gravelly Silt	5	26	9	17	28	20	21	6	9	
	28														
574.6	30	13/13			Gray Sandy Gravelly Silt	6	32	8	15	27	18	21	8	12	
572.1	32	10/13			Gray Sandy Gravelly Silt	7	V	I	S	U	A	L	24	10	9
569.6	34	9/12			Gray Sandy Gravelly Silt	8	V	I	S	U	A	L	22	8	10
567.1	36	8/9													
564.6	38														
	40	14/15			Gray Gravelly Sandy Silt	9	19	9	14	34	24	21	6	13	
562.1	42	13/12			Gray Clayey Silt	10	V	I	S	U	A	L		14	
559.6	44	8/6			Gray Silty Clay	11	0	0	0	41	59	34	16	27	
557.1	46	9/12			Gray Clay	12	0	0	0	30	70	48	25	29	
554.6	48				Gray Silt and Clay	13	0	0	0	51	49	30	14	22	
	50														
	52														
	54														
549.6	56	9/9			Gray Sandy Silt	14	0	8	18	38	36	22	8	14	
	58														
544.6	60	8/8			Gray Silt and Clay	15	0	0	3	46	51	30	12	24	
	62														
	64														
539.6	66	10/11			Gray Sandy Gravelly Silt	16	34	7	11	25	23	24	7	11	
	68														
534.6	70	12/22			Grey Silty Clay and Gravel	17	V		I	S	U	A	L	8	
	72														
	74														
529.6	76	50/*			Gray Gravelly Sandy Silt	18	23	8	15	31	23	22	7	13	
	78														
524.6	80	50* (0.7)			Gray Silty Sand	19	0	10	70	11	9	NP	NP	17	
	82														
	84				BOTTOM OF BORING										
519.6 518.6		16/30			Gray Silt	20	0	0	1	62	37	25	4	21	

*Refusal

LOG OF BORING

Date Started 7-16-65 | Sampler Type SS | Dia. 1 3/8" | Water Elev. —
Date Completed 7-21-65 | Casing: Length 35' | Dia. 3 1/2"
Boring No. B-13 | Station & Offset 29+98, 50' Rt. (Forward Abutment) | Surface Elev. 601.6'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics: % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
601.6	0														
	2														
	4														
596.6	6	6/11			Brown Sandy Silt	1	14	5	12	46	23	27	6	16	
	8														
591.6	10	10/14			Brown Gravelly Sandy Silt	2	15	6	19	34	26	25	9	13	
	12														
	14														
586.6	16	11/13			Gray and Brown Gravelly Sandy Silt	3	17	9	16	34	24	24	9	11	
	18														
581.6	20	6/9			Brown Silty Sand	4	V		I	S	U	A	L	16	
	22														
	24														
576.6	26	7/9			Gray Sandy Gravelly Silt	5	26	9	15	30	20	20	5	12	
	28														
571.6	30	20/19			Gray Sandy Gravelly Silt	6	35	7	16	27	15	19	3	10	
569.1	32	18/23			Gray Sandy Gravelly Silt	7	V	I	S	U	A	L	21	6	11
566.6	34	13/17			Gray Silty Sandy Gravel	8	V	I	S	U	A	L	22	5	21
564.1	36	14/20			Gray Silt	9	0	1	1	60	38	25	5	14	
561.6	38	14/21			Gray Silt	10	0	1	1	59	39	24	4	11	
559.1	40	16/20			Gray Clayey Silt	11	0	1	1	57	41	29	10	27	
556.6	42	7/9			Gray Silty Clay	12	0	1	0	47	52	35	16	25	
554.1	44	6/7			Gray Clayey Silt	13	0	0	1	53	46	26	10	8	
551.6	46	7/9			Gray Silt and Clay	14	0	6	12	41	41	27	12	20	
	48														
	50														
	52														
546.6	54	9/9			Gray Gravelly Sandy Silt	15	16	7	13	34	30	25	9	14	
	56														
	58														
541.6	60	10/11			Gray Silt	16	0	1	12	62	25	20	4	25	
	62														
	64														
536.6	66	9/13			Gray Sandy Gravelly Silt*	17	27	7	11	44	11	NP	NP	8	
	68														
531.6	70	50* (0.9)			Gray Gravelly Sandy Silt	18	16	8	14	36	26	23	8	8	
	72														
	74														
526.6	76	16/21			Gray Sandy Gravelly Silt	19	29	7	13	26	25	25	10	17	
	78														
521.6	80				BOTTOM OF BORING										
520.6		21/23			Gray Silt	20	0	1	8	65	26	23	3	12	

*Refusal

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR 71-
RAMPS J, K, I, & L UNDER PENNSYLVANIA RR
SEC. HAM-IR 71-7.45

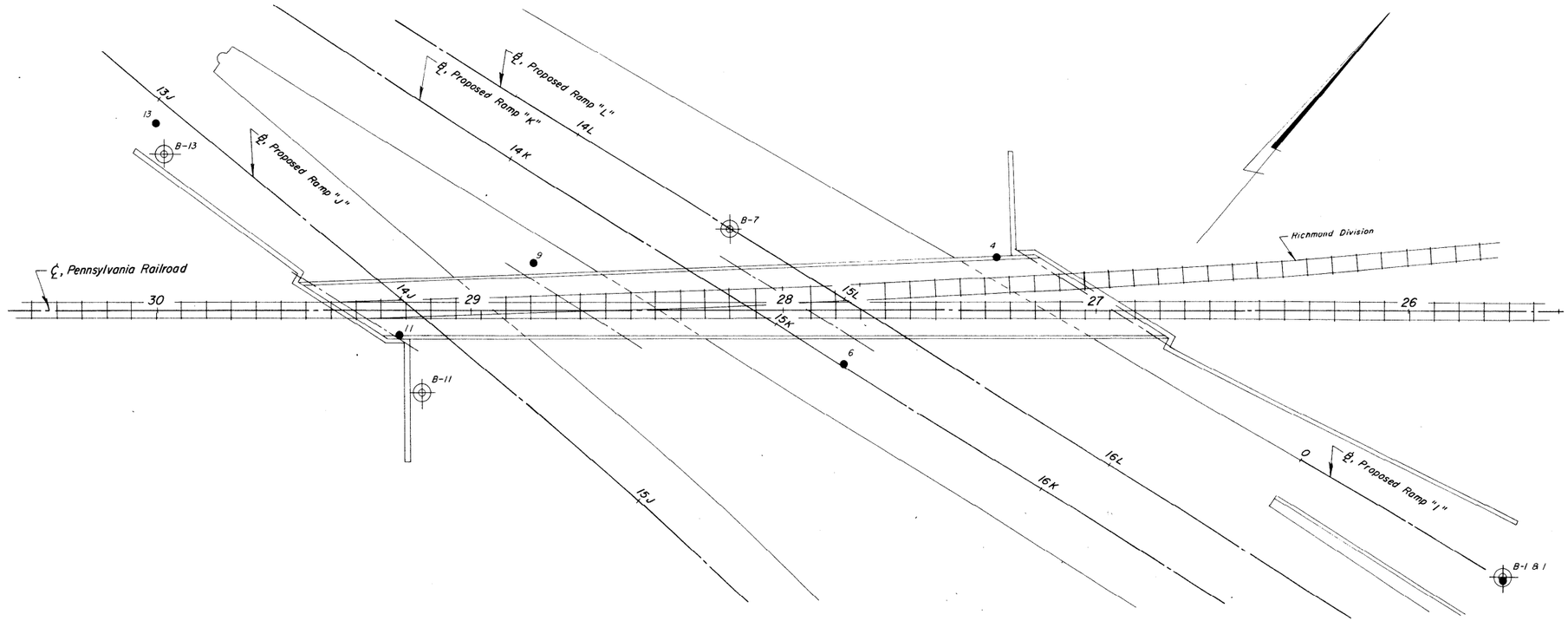
BORING DATA

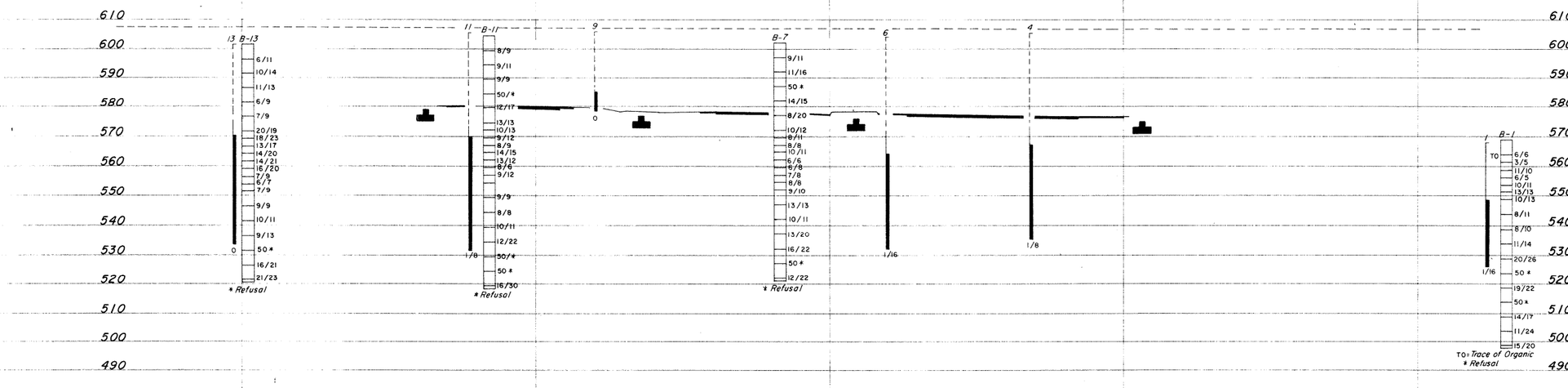
TYPED BY	CHECKED BY	REVIEWED BY	DATE
S.A.J.	R.H.P.	R.D.R.	9/1/65

TC - 119
500 - 11 - 64

MICROFILMED
JAN 06 1967

HAM-IR71-7.45





SCALE: 1" = 20'

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR71-
RAMPS J, K, I, & L UNDER PENNSYLVANIA RR
SEC. HAM-IR71-7.45

PLAN AND PROFILE

DRAWN BY	CHECKED BY	REVIEWED BY	DATE
R.L.C.	R.H.P.	R.D.R.	9/1/65

MICROFILMED
JAN 03 1991

HAM-IR71-7.45

Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

Test Location No. 1
Station & Offset 25+7[illegible] 86' L REAR LEFT RETAINING WALL
Surface Elev. 568.0 Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD

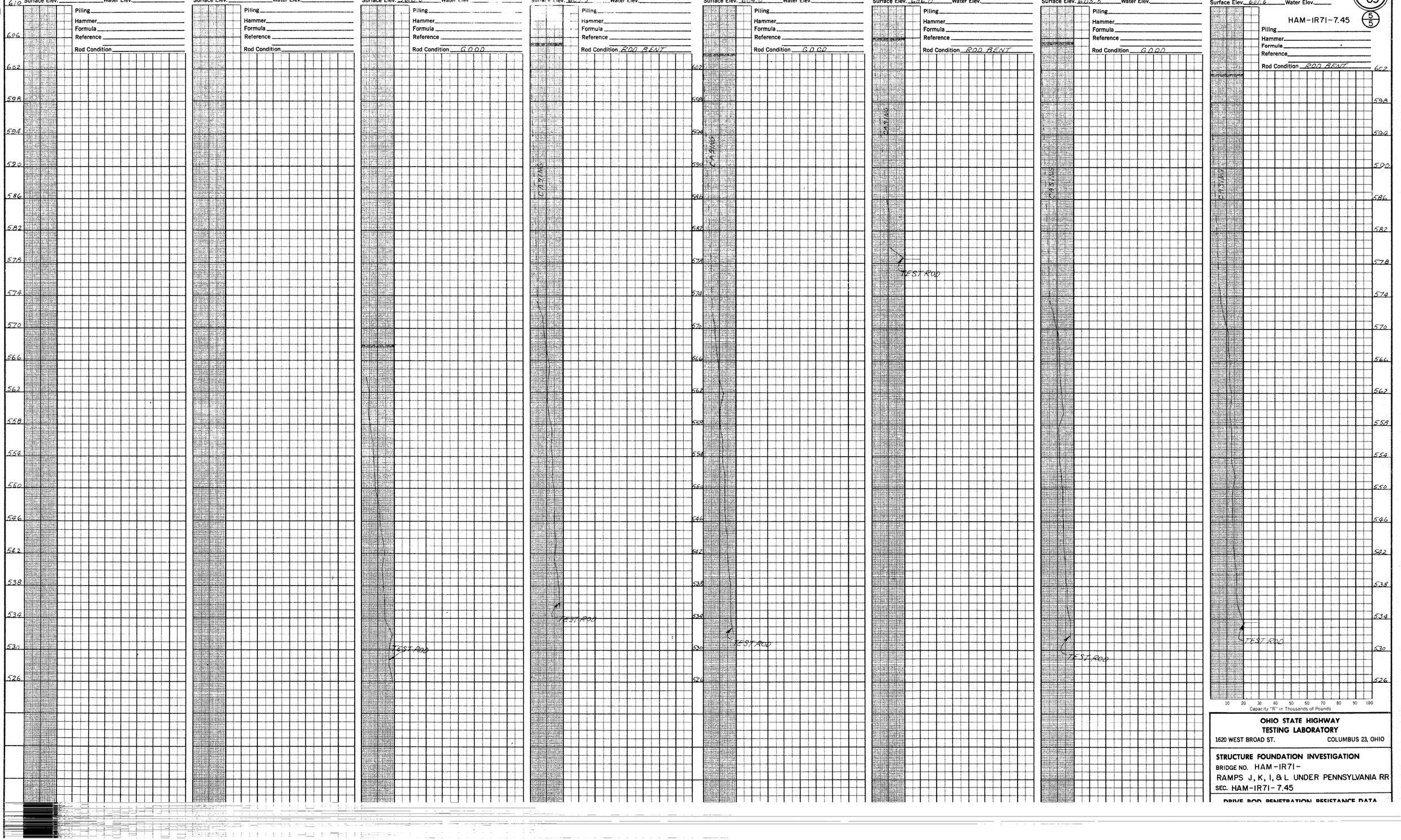
Test Location No. ____
Station & Offset [illegible]+32 7' RT [illegible] ABUTMENT
Surface Elev. 605.3 Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ROD BENT

Test Location No. 6
Station & Offset 27+81 17' LT REAR PIER
Surface Elev. 604.0' Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD

Test Location No. 9
Station & Offset 28+80 15' RT FORWARD PIER
Surface Elev. 606.0' Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ROD BENT

Test Location No. 11
Station & Offset 29+23 8' LT FORWARD ABUTMENT
Surface Elev. 605.5' Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD

Test Location No. 13
Station & Offset 30+00 60' RT FORWARD RT. RET. WALL
Surface Elev. 601.6' Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ROD BENT



OHIO STATE HIGHWAY TESTING LABORATORY
1620 WEST BROAD ST. COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR71-
RAMPS J, K, I, & L UNDER PENNSYLVANIA RR
SEC. HAM-IR71-7.45

DRIVE ROD PENETRATION RESISTANCE DATA

TE - 118
600 - 4 - 66

MICROFILMED
JAN 08 1971

HAMILTON COUNTY
HAM - 71 - 7.45

56
69
1
3

GEOLOGY OF THE SITE
THE STRUCTURE SITE IS LOCATED ON AN ILLINOIAN OUTWASH PLAIN, OVER THE BURIED VALLEY WALL OF THE DEEP STAGE CINCINNATI RIVER. INTERBEDDED OUTWASH AND TILL OVERLIES INTERBEDDED SHALE AND LIMESTONE BEDROCK, OF ORDOVICIAN AGE.

EXPLORATION
THE EXPLORATION CONSISTED OF THREE DRIVE SAMPLE BORINGS, MADE BETWEEN AUGUST 18 AND 25, 1966.

INVESTIGATIONAL FINDINGS
THE BORINGS ENCOUNTERED UNSTRATIFIED, MOIST, VERY STIFF TO HARD CLAYS AND SILT CLAYS, AND MEDIUM-DENSE TO VERY DENSE SILTS, SANDS, GRAVELS, AND OCCASIONAL BOULDERS. THE BORINGS WERE TERMINATED AT 21 TO 51-FOOT DEPTHS, ELEVATIONS 529 TO 507 FEET, AFTER PENETRATING IN EXCESS OF 20 FEET OF MATERIAL REQUIRING MORE THAN 30 BLOWS PER FOOT IN THE STANDARD PENETRATION TEST. BORING B-2 WAS DISCONTINUED AT 21-FOOT DEPTH, ELEVATION 529 FEET DUE TO RAPID RISING OF THE STREAM LEVEL AT THE TIME OF DRILLING.

BEDROCK SURFACE WAS NOT ENCOUNTERED BY THE BORINGS.

LEGEND

- Auger Boring Location - Plan View.
- Press and / or Drive Sample and / or Core Boring Location - Plan View.
- Drive Rod Penetration Resistance Sounding Location - Plan View.
- Capped Pile
- Footing
- Footing on Pile
- TR — Top of Rock
- Horizontal Bar on Boring Log Indicates the Depth the Sample Was Taken.
- X/Y — Figures Beside the Boring Log in Profile Indicate the Number of Blows for Standard Penetration Test.
  X = Number of Blows for First 6 inches.
  Y = Number of Blows for Second 6 inches.
- Drive Rod Penetration Resistance Sounding Log - Profile
- Casing
- Resistance "R" < 10,000 lbs.
- Resistance "R" > 10,000 lbs.
- Z — Indicates Final Measurement of Penetration, in Inches.
- W — Indicates Free Water Elevation.
- Indicates Static Water Elevation.

SYMBOLS OF ROCK TYPES

- Coal
- Weathered Indurated Clay
- Indurated Clay
- Weathered Shale
- Shale
- Boulders
- Weathered Sandstone
- Sandstone
- Leached Dolomite
- Dolomite
- Leached Limestone
- Limestone

GENERAL INFORMATION

Drive Rod Penetration Sounding Tests

Drive rod penetration resistance tests constitute driving a 1.315-inch diameter steel rod, with a 45° cone point, into the ground, using a 122-pound drop-hammer with a free fall of five feet. At one or two-foot depth intervals, a measurement is taken to determine the amount of penetration achieved in three hammer drops. This reading is converted to an empirical value for capacity "R", in thousands of pounds (which is a measure of both the point resistance and frictional resistance on the rod), by using charts prepared by the Ohio Department of Highways, Bureau of Bridges, on the basis of correlation study of rod penetration with past performance of pile driving. For interpretation, a graph is prepared by plotting the value "R" against the depth at which the reading was taken, and connecting the plotted points. The curve so obtained reflects the density of subsurface materials in a manner that can be readily compared with data from similar tests at other locations on the structure site. From this comparison, the overall uniformity of subsurface condition may be evaluated.

Drive Sample Borings - Drive-Press Sample Borings

Drive sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. sampler, at 2-1/2 and / or 5-foot depth intervals, driven by means of a 140 - pound drop-hammer with a free fall of 30 inches. The number of blows required to drive the sampler 12 inches is considered the standard penetration test.

Drive-press sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. drive sampler, and 3" O.D. thin-wall press sampler. The press sampler is advanced by continuous uniform pressure, applied by the drill rig.

The boring log sheets show a graphic plot of the information obtained, including depth and elevation of the sample, number of blows for the standard penetration tests in two 6-inch increments, depth of press samples, field sample number, sample description - based on laboratory tests and the Casagrande AC classification system - and gradation, plasticity, and moisture content determinations. Results of strength and consolidation testing, if performed, appear on separate enclosures.

At depths where materials are bouldery or gravelly to the extent that the sampler can not be driven, a wash sample is procured for visual classification, in order to determine the general character of the material. These samples are not considered sufficiently representative to warrant laboratory testing.

Particle Size Definitions

Boulders	Cobbles	Gravel	Coarse Sand	Fine Sand	Silt	Clay
8"	3"	2.0mm (No. 10 sieve)	0.42mm (No. 40 sieve)	0.074mm (No. 200 sieve)	0.005mm	

NOTE: Information shown by this subsurface investigation was obtained solely for the use in establishing design controls for the project. The State of Ohio does not guarantee the accuracy of this data and it is not to be construed as a part of the plans governing construction of the project.

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM - 71 -
RAMP "G" OVER DUCK CREEK SEWER
SEC. HAM - 71 - 7.45

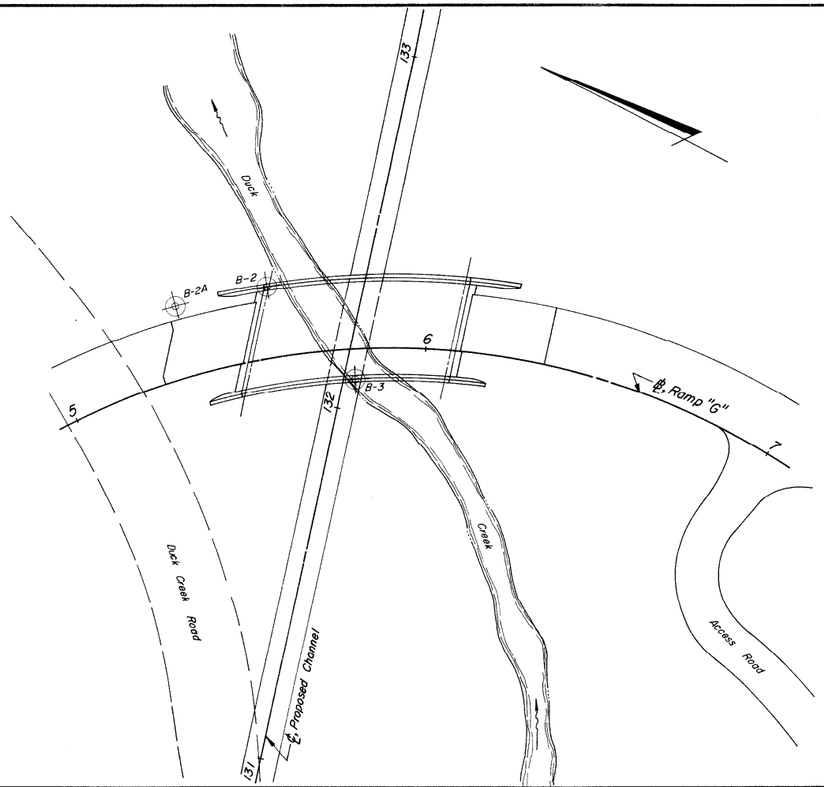
CHECKED BY	REVIEWED BY	DATE
R. H. P.	R. D. R.	9/9/66

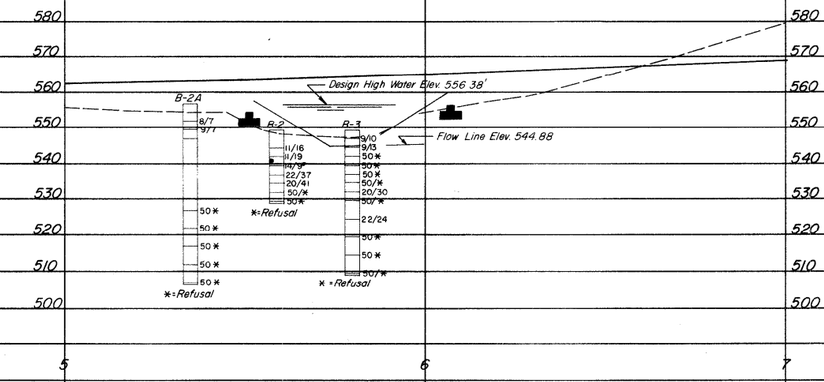
TE - 119
1000 - 4 - 66

MICROFILMED
JAN 06 1967

HAM - 71 - 7.45

57
69
2/3





SCALE: 1" = 20'

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION

BRIDGE NO. HAM - 71 -
RAMP "G" OVER DUCK CREEK SEWER
SEC. HAM - 71 - 7.45

PLAN AND PROFILE

DRAWN BY	CHECKED BY	REVIEWED BY	DATE
R.L.D.	R.H.P.	R.D.R.	9/9/66

TE - 122
600 - 4 - 66

MICROFILMED
JAN 05 1967

58
69
3
3

HAM-71-7.45

LOG OF BORING

Date Started 8-23-66 | Sampler Type SS | Dia. 1 3/8" | Water Elev. 517.9' 8/23/66, 516.9' 8/24/66
Date Completed 8-24-66 | Casing: Length 45' | Dia. 3 1/2"
Boring No. B-2A | Station & Offset 5+35, 20' Lt. (Rear Abutment) | Surface Elev. 556.9'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics: % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
556.9	0														
	2														
	4														
551.9	6	8/7			Brown Silty Sand	1	12	17	45	12	14	NP	NP	17	A-3a
549.4	8	9/7			Brown and Gray Silty Sandy Gravel	2	46	5	12	21	16	PL =	14	14	-
546.9	10														
	12														
	14														
	16														
	18				See log of boring B-2										
	20														
	22														
	24														
	26														
	28														
526.9	30														
	32	50* (0.6)			Brown Silty Gravelly Sand	3	37	30	11	-22-		NP	NP	7	A-1-b
521.9	34														
	36	50* (0.6)			Brown Silty Sandy Gravel	4	56	18	10	-16	-	NP	NP	7	A-1-b
516.9	38														
	40	50* (0.4)			Brown Silty Sandy Gravel	5	47	24	11	-18	-	NP	NP	9	A-1-b
	42														
511.9	44														
	46	50* (0.4)			Brown Silty Sandy Gravel	6	57	19	11	-13	-	NP	NP	5	A-1-a
506.9	48														
506.5	50	50* (0.4)			Brown Silty Gravelly Sand — BOTTOM OF BORING	7	35	29	18	-18	-	NP	NP	11	A-1-b

*Refusal

LOG OF BORING

Date Started 8-18-66 | Sampler Type SS | Dia. 1 3/8" | Water Elev. 555.5'
Date Completed 8-22-66 | Casing: Length 20' | Dia. 3 1/2"
Boring No. B-2 | Station & Offset 5+59, 20' Lt. (Rear Abutment) | Surface Elev. 549.4'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics: % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
549.4	0														
	2														
	4														
544.4	6	11/16			Gray Sandy Gravelly Silt	1	31	10	16	22	21	25	10	7	A-4a
541.9	8	11/19			Gray Clayey Gravel with Boulders	2	V	I	S	U	A	L	PL =	15	9	-
539.4	10	14/9			Brown Silty Gravel	3	69	2	5	14	10	-	-	20	-
536.9	12	22/37			Gray Sandy Gravelly Silt	4	32	9	14	21	24	26	10	11	A-4a
534.4	14	20/41			Gray Gravelly Sandy Silt	5	19	10	16	29	26	25	9	12	A-4a
531.9	16	50/*			Brown Silty Sandy Gravel	6	66	14	8	-12	-	NP	NP	23	A-1-a
529.4	18														
528.7	20	50* (0.7)			Brown Silty Sandy Gravel	7	60	18	9	-13	-	NP	NP	11	A-1-a

*Refusal — BOTTOM OF BORING

LOG OF BORING

Date Started 8-24-66 | Sampler Type SS | Dia. 1 3/8" | Water Elev. ———
Date Completed 8-25-66 | Casing: Length 35' | Dia. 3 1/2"
Boring No. B-3 | Station & Offset 5+80, 8' Rt. (Forward Abutment) | Surface Elev. 549.5'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics: % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
549.5	0														
547.0	2														
	4	9/10			Gray Sandy Gravelly Silt	1	34	8	16	15	27	25	10	13	A-4a
544.5	6	9/13			Gray Gravelly Sandy Silt	2	26	7	20	25	22	22	8	12	A-4a
542.0	8														
539.5	10	50* (0.6)			No Sample Recovered										
	12	50* (0.6)			Brown Sandy Gravelly Silt	3	30	7	11	28	24	23	6	12	A-4a
537.0	14	50* (0.9)			Brown and Gray Sandy Gravelly Silt	4	28	8	19	23	22	19	6	13	A-4a
534.5	16	50/*			Brown Silty Sandy Gravel	5	45	10	21	16	8	-	-	6	-
532.0	18	20/30			Brown Silty Sand	6	6	3	70	9	12	NP	NP	12	A-3a
529.5	20	50/*			Gray Silty Sandy Gravel	7	64	13	7	9	7	23	9	5	A-2-4
	22														
524.5	24														
	26	22/24			Brown Silty Gravelly Sand	8	40	31	9	12	8	-	-	11	-
519.5	28														
	30	50* (0.7)			Brown Silty Sandy Gravel	9	52	20	11	-17	-	NP	NP	5	A-1-b
514.5	32														
	34	50* (0.7)			Gray Silty Sandy Gravel	10	57	19	10	7	7	-	-	9	-
509.5	36				BOTTOM OF BORING										
509.0	38	50/*			Gray Silty Sandy Gravel	11	51	1	19	22	7	-	-	11	-
	40														

*Refusal

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-71-
RAMP "G" OVER DUCK CREEK SEWER
SEC. HAM-71-7.45

BORING DATA

TYPED BY	CHECKED BY	REVIEWED BY	DATE
S. A. J.	R. C.	R. D. R.	9/9/66

TE - 118
600 - 11 - 64

HAMILTON COUNTY
HAM-IR71-7.45

GEOLOGY OF THE SITE
The structure site is located on an Illinoian outwash plain, over the buried valley wall of the Deep Stage Cincinnati River. Interbedded outwash and till overlies interbedded shale and limestone bedrock, of Ordovician age.

EXPLORATION
The exploration consisted of four drive sample borings and five drive rod penetration tests, made between July 13 and 22, 1965.

INVESTIGATIONAL FINDINGS
The borings encountered unstratified, moist, very stiff to hard clays and silts clays, and medium-dense to very dense silts, sands, and occasional gravels. The borings were terminated at 46 and 60-foot depths, elevations 511 and 503 feet, after penetrating in excess of 30 feet of material requiring more than 30 blows per foot in the standard penetration test. Boring B-5 encountered 15 feet of at-surface fill material, comprised of cinders and concrete fragments.

Rod soundings met increasing penetration resistance with increasing depth, and were terminated upon encounter with near-refusal and refusal to penetration at 20 to 75-foot depths, elevations 538 to 481 feet, considered to be in the hard and dense materials, revealed by the borings.

No free water was observed in any of the rod sounding holes.

No test penetrated to bedrock surface.

LEGEND

- Auger Boring Location - Plan View.
- Press and / or Drive Sample and / or Core Boring Location - Plan View.
- Drive Rod Penetration Resistance Sounding Location - Plan View.
- Capped Pile
- Footing
- Footing on Pile
- TR — Top of Rock
- Horizontal Bar on Boring Log Indicates the Depth the Sample Was Taken.
- X/Y — Figures Beside the Boring Log in Profile Indicate the Number of Blows for Standard Penetration Test.
  X = Number of Blows for First 6 inches.
  Y = Number of Blows for Second 6 inches.
- Drive Rod Penetration Resistance Sounding Log - Profile
- Casing
- Resistance "R" < 10,000 lbs.
- Resistance "R" > 10,000 lbs.
- Z — Indicates Final Measurement of Penetration, in Inches.
- W — Indicates Free Water Elevation.
- Indicates Static Water Elevation.

SYMBOLS OF ROCK TYPES

- Coal
- Weathered Indurated Clay
- Indurated Clay
- Weathered Shale
- Shale
- Weathered Sandstone
- Sandstone
- Leached Dolomite
- Dolomite
- Leached Limestone
- Limestone

GENERAL INFORMATION

Drive Rod Penetration Sounding Tests

Drive rod penetration resistance tests constitute driving a 1.315-inch diameter steel rod, with a 45° cone point, into the ground, using a 122-pound drop-hammer with a free fall of five feet. At one or two-foot depth intervals, a measurement is taken to determine the amount of penetration achieved in three hammer drops. This reading is converted to an empirical value for capacity "R", in thousands of pounds (which is a measure of both the point resistance and frictional resistance on the rod), by using charts prepared by the Ohio Department of Highways, Bureau of Bridges, on the basis of correlation study of rod penetration with past performance of pile driving. For interpretation, a graph is prepared by plotting the value "R" against the depth at which the reading was taken, and connecting the plotted points. The curve so obtained reflects the density of subsurface materials in a manner that can be readily compared with data from similar tests at other locations on the structure site. From this comparison, the overall uniformity of subsurface condition may be evaluated.

Drive Sample Borings - Drive-Press Sample Borings

Drive sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. sampler, at 2-1/2 and / or 5-foot depth intervals, driven by means of a 140 - pound drop-hammer with a free fall of 30 inches. The number of blows required to drive the sampler 12 inches is considered the standard penetration test.

Drive-press sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. drive sampler, and 3" O.D. thin-wall press sampler. The press sampler is advanced by continuous uniform pressure, applied by the drill rig.

The boring log sheets show a graphic plot of the information obtained, including depth and elevation of the sample, number of blows for the standard penetration tests in two 6-inch increments, depth of press samples, field sample number, sample description - based on laboratory tests and the Casagrande AC classification system-and gradation, plasticity, and moisture content determinations. Results of strength and consolidation testing, if performed, appear on separate enclosures.

At depths where materials are bouldery or gravelly to the extent that the sampler can not be driven, a wash sample is procured for visual classification, in order to determine the general character of the material. These samples are not considered sufficiently representative to warrant laboratory testing.

Particle Size Definitions

Boulders	Cobbles	Gravel	Coarse Sand	Fine Sand	Silt	Clay
8"	3"	2.0mm (No. 10 sieve)	0.42mm (No. 40 sieve)	0.074mm (No. 200 sieve)	0.005mm	

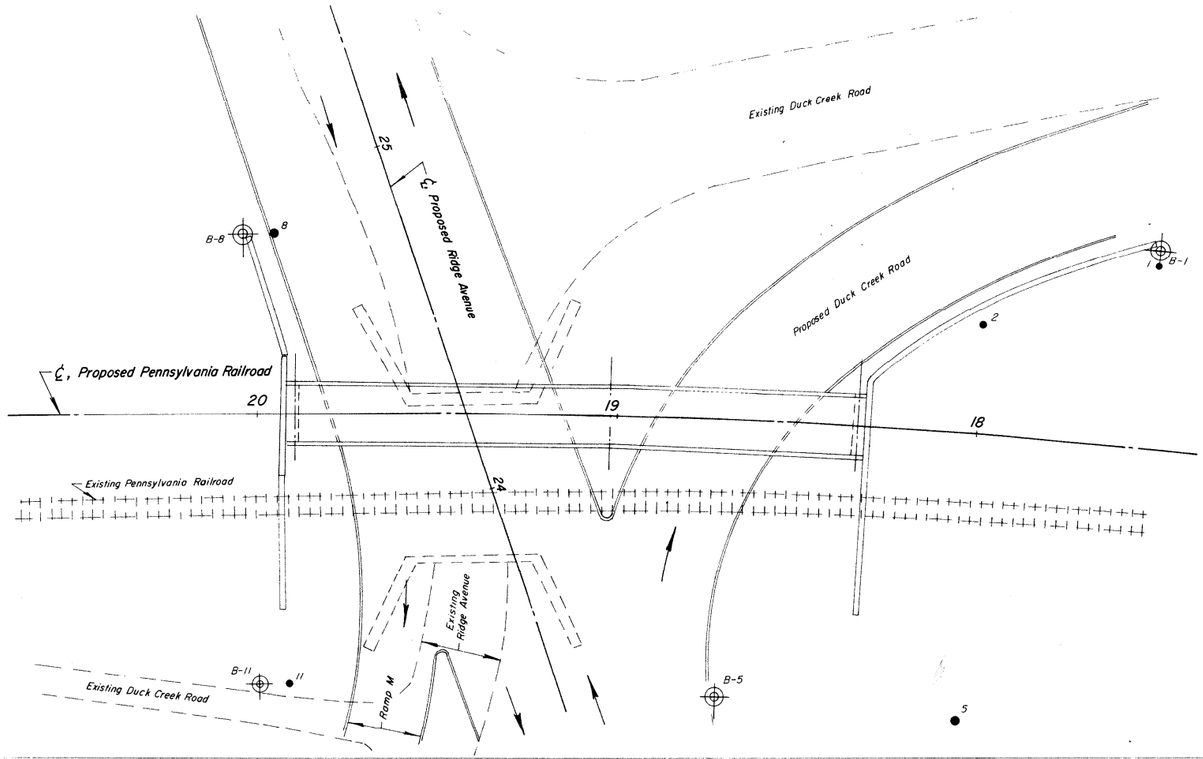
NOTE: Information shown by this subsurface investigation was obtained solely for the use in establishing design controls for the project. The State of Ohio does not guarantee the accuracy of this data and it is not to be construed as a part of the plans governing construction of the project.

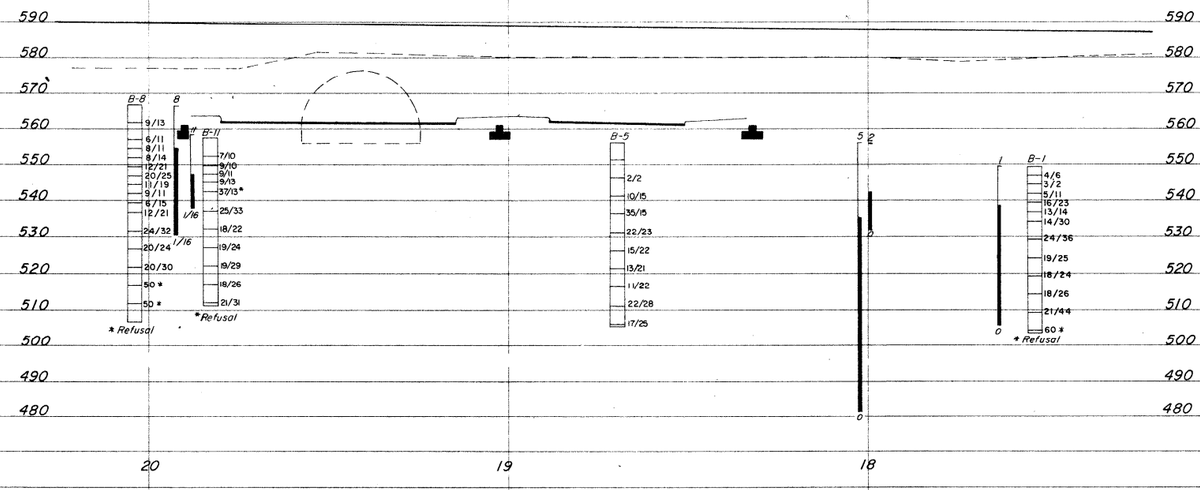
OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR71-
RIDGE AVENUE UNDER PENNSYLVANIA RR
SEC. HAM-IR71-7.45

CHECKED BY	REVIEWED BY	DATE
L.N.L.	R.D.R.	8/25/65

TE - 119
SCD - 11 - 64





SCALE: 1" = 20'

OHIO DEPARTMENT OF HIGHWAYS TESTING LABORATORY 1620 WEST BROAD STREET, COLUMBUS 23, OHIO			
STRUCTURE FOUNDATION INVESTIGATION BRIDGE NO. HAM-IR71- RIDGE AVENUE UNDER PENNSYLVANIA RR SEC. HAM-IR71-7.45			
PLAN AND PROFILE			
DRAWN BY R.L.C.	CHECKED BY L.N.L.	REVIEWED BY R.D.R.	DATE 8/25/65

TE - 122
600 - 11 - 64

HAM-IR 71-7.45

61
69
3
4

LOG OF BORING

Date Started 7-13-65 Sampler Type SS Dia. 1 3/8" Water Elev. —
Date Completed 7-14-65 Casing: Length 29' Dia. 3 1/2"
Boring No. B-1 Station & Offset 17+54, 55' Rt. (Rear Right Wingwall) Surface Elev. 549.2'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
549.2	0														
	2														
546.7															
	4	4/6			Dark-Brown Silt and Clay	1	V	I	S	U	A	L	36	13	11
544.2	6	3/2			Brown Sandy Silt	2	0	2	30	41	27	23	6	19	
541.7	8	5/11			Brown and Gray Sandy Gravelly Silt	3	27	9	15	23	26	26	10	20	
539.2	10														
	12	16/23			Brown Silty Sandy Gravel	4	49	8	11	16	16	23	8	19	
536.7	14	13/14			Gray Sandy Gravelly Silt	5	27	9	10	31	23	20	5	13	
534.2	16	14/30			Brown Silty Sand	6	0	12	69	6	13	NP	NP	12	
	18														
529.2	20	24/36			Brown Silty Sand	7	0	10	76	5	9	NP	NP	14	
	22														
524.2	24														
	26	19/25			Brown Silty Sand	8	0	21	59	10	10	NP	NP	15	
	28														
519.2	30	18/24			Brown Silty Sand	9	0	48	34	9	9	NP	NP	14	
	32														
	34														
514.2	36	18/26			Brown Silty Sand	10	0	44	39	11	6	NP	NP	16	
	38														
509.2	40	50*			Brown Silty Sand	11	0	4	63	24	9	NP	NP	14	
	42														
	44														
504.2	46	50*			Brown Silty Gravelly Sand BOTTOM OF BORING	12	35	33	16	7	9	-	-	9	
503.9		(9.5)													

*Refusal

LOG OF BORING

Date Started 7-21-65 Sampler Type SS Dia. 1 3/8" Water Elev. —
Date Completed 7-22-65 Casing: Length 30' Dia. 3 1/2"
Boring No. B-5 Station & Offset 18+70, 77' Lt. (Left Rear Wingwall) Surface Elev. 556.3'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
556.3	0														
	2														
	4														
551.3	6														
	8														
546.3	10														
	12	2/2			Fill Material - Cinders and Concrete Fragments (Driller's Description)										
541.3	14														
	16	10/15			Brown Sandy Gravelly Clay	1	34	7	13	22	24	29	12	22	
	18														
536.3	20														
	22	35/15			Brownish-Gray Sandy Gravelly Silt	2	22	7	11	28	32	26	8	12	
	24														
531.3	26	22/23			Brown Silty Sand	3	0	51	21	22	6	NP	NP	16	
	28														
526.3	30														
	32	15/22			Brown Silty Sand	4	0	51	38	5	6	NP	NP	6	
	34														
521.3	36	13/21			Brown Silty Sand	5	0	35	49	10	6	NP	NP	17	
	38														
516.3	40	18/22			Brown Silty Sand	6	0	4	80	11	5	NP	NP	19	
	42														
	44														
511.3	46	22/28			Brown Sand	7	0	41	49	-10	-	NP	NP	17	
	48														
506.3	50				BOTTOM OF BORING										
505.3		17/25			Brown Sand	8	0	16	76	4	4	NP	NP	18	

LOG OF BORING

Date Started 7-19-65 Sampler Type SS Dia. 1 3/8" Water Elev. —
Date Completed 7-15-65 Casing: Length 33' Dia. 3 1/2"
Boring No. B-8 Station & Offset 20+08, 50' Rt. (Forward Right Wingwall) Surface Elev. 566.9'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
566.9	0														
	2														
	4														
561.9	6	9/13			Brown and Gray Gravelly Sandy Clay	1	17	7	15	30	31	31	16	18	
	8														
556.9	10														
	12	6/11			Brown Clay	2	0	4	3	33	60	41	23	23	
554.4	14	8/11			Gray Silt and Clay	3	0	6	9	41	44	29	14	16	
551.9	16	8/14			Gray Clayey Silt	4	0	6	13	40	41	23	8	18	
549.4	18	12/21			Gray Sandy Silt	5	0	8	26	35	31	22	9	13	
546.9	20	20/25			Gray Gravelly Sandy Silt	6	20	10	20	28	22	20	6	9	
	22														
544.4	24	11/19			Gray Silty Sandy Gravel	7	V	I	S	U	A	L	25	10	15
541.9	26	9/11			Gray Sandy Silt	8	0	7	19	34	40	22	7	10	
539.4	28	6/15			Gray Sandy Clay	9	7	6	14	37	36	26	13	16	
536.9	30	12/21			Gray Sandy Gravelly Silt	10	29	6	12	32	21	21	6	19	
	32														
531.9	34														
	36	24/32			Brown Silty Sand	11	0	3	67	20	10	NP	NP	5	
	38														
526.9	40	50/4			Brown Sand	12	V	I	S	U	A	L	12		
	42														
	44														
521.9	46	20/30			Brown Silty Sand	13	0	23	63	5	9	NP	NP	17	
	48														
516.9	50														
	52	50* (0.6)			Brown Sand	14	0	41	53	-6	-	NP	NP	18	
511.9	54														
	56	50* (0.6)			No Sample Recovered - Brown Sand (Driller's Description)										
	58														
506.9	60				BOTTOM OF BORING										

*Refusal

LOG OF BORING

Date Started 7-20-65 Sampler Type SS Dia. 1 3/8" Water Elev. —
Date Completed 7-21-65 Casing: Length 30' Dia. 3 1/2"
Boring No. B-11 Station & Offset 20+00, 75' Lt. (Left Forward Wingwall) Surface Elev. 557.4'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
557.4	0														
	2														
	4														
552.4	6	7/10			Dark-Brown Sandy Clay	1	0	6	14	42	38	36	13	13	
549.9	8	9/10			Brown Sandy Clay	2	0	15	28	27	30	32	14	16	
547.4	10	9/11			Brown Sandy Gravelly Silt	3	33	8	13	23	23	27	9	13	
544.9	12	9/13			Brown Gravelly Sandy Clay	4	15	12	14	32	27	26	12	19	
542.4	14														
	16	37/11" (0.2)			Brown Sandy Clay	5	3	15	23	29	30	PL =	17	27	
	18														
537.4	20	25/33			Gray Silty Sandy Gravel	6	55	9	9	17	10	21	4	8	
	22														
	24														
532.4	26	18/22			Grayish-Brown Gravelly Clay	7	31	3	3	30	33	33	14	16	
	28														
527.4	30	19/24			Brown Silty Sand	8	0	54	26	12	8	NP	NP	16	
	32														
	34														
522.4	36	19/29			Brown Silty Sand	9	0	30	52	12	6	NP	NP	18	
	38														
517.4	40	18/26			Brown Silty Sand	10	0	2	80	13	5	NP	NP	18	
	42														
	44				BOTTOM OF BORING										
512.4															
511.4	46	21/31			Brown Sand	11	0	53	39	-8	-	NP	NP	14	

*Refusal

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR 71-
RIDGE AVENUE UNDER PENNSYLVANIA RR
SEC. HAM-IR 71-7.45

BORING DATA

TYPED BY	CHECKED BY	REVIEWED BY	DATE
S.A.J.	R.C.	R.D.R.	8/25/65

TC-114
1000-1-64

62
69

4
4

Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

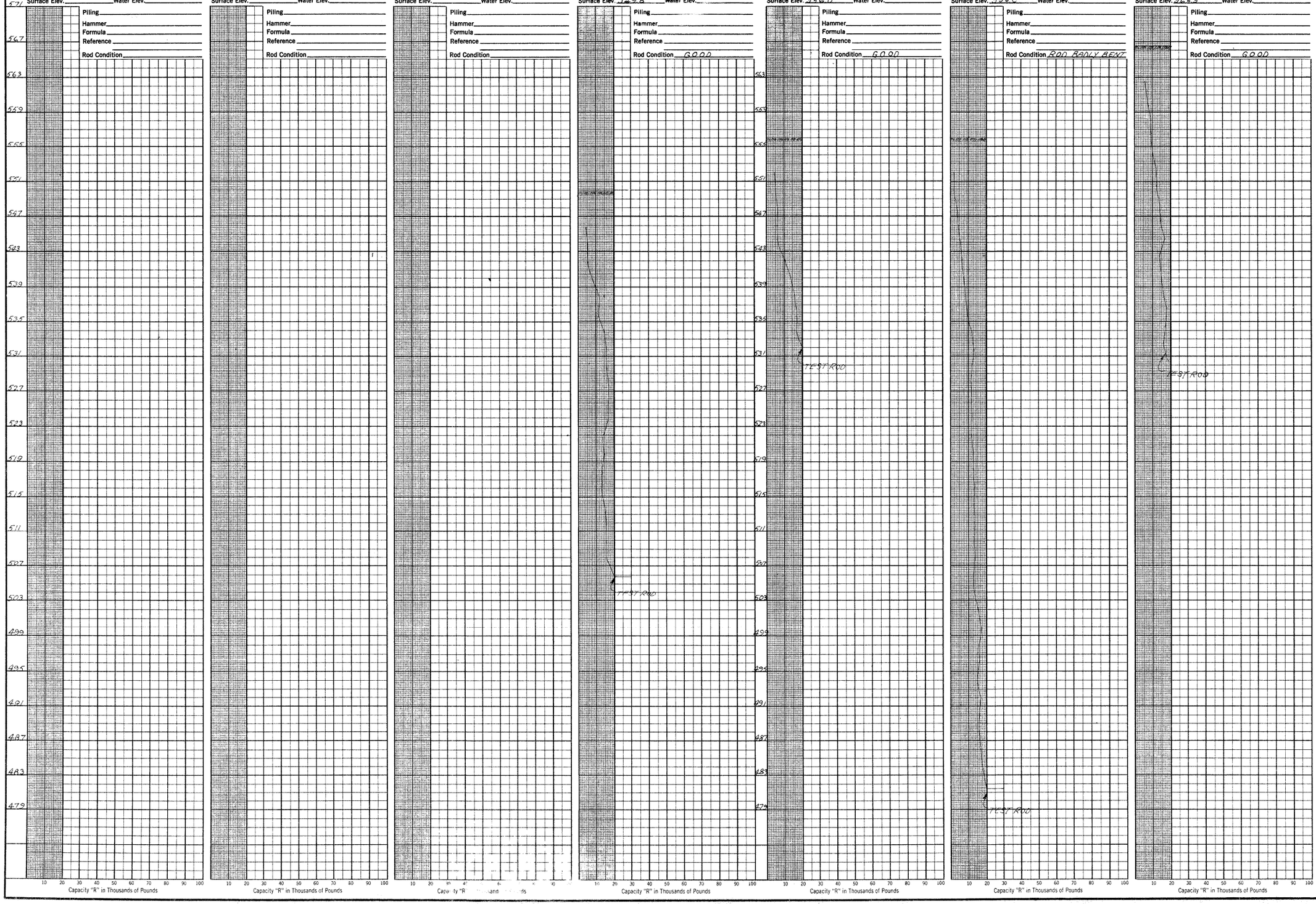
Test Location No. ____
Station & Offset 7+[illegible] 50' RT
RIGHT REAR WINGWALL
Surface Elev. 549.8 Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD

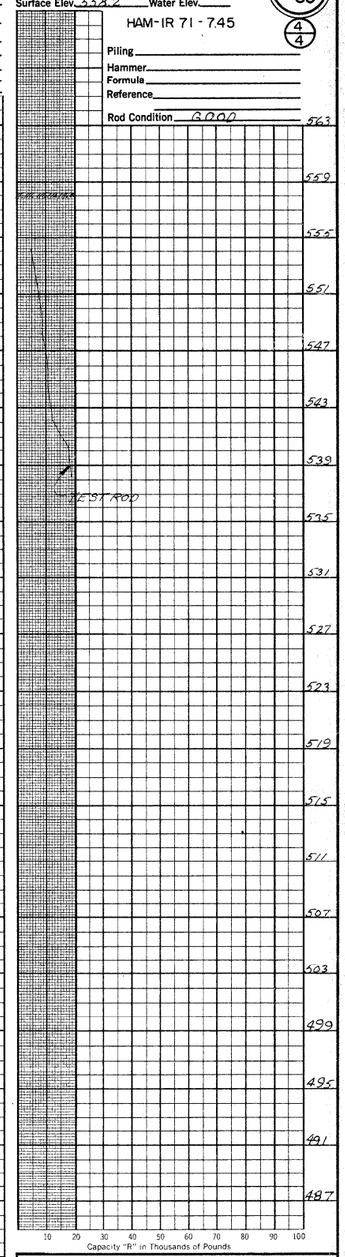
Test Location No. 2
Station & Offset 18+00 30' RT
RIGHT REAR WINGWALL
Surface Elev. 556.0' Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD

Test Location No. 5
Station & Offset 18+00 80' LT
LEFT REAR WINGWALL
Surface Elev. 556.0 Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ROD BADLY BENT

Test Location No. 8
Station & Offset 19+95 50' RT
RIGHT FORWARD WINGWALL
Surface Elev. 566.5' Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD

Test Location No. 11
Station & Offset 19+93 75' LT
LEFT FORWARD WINGWALL
Surface Elev. 558.2' Water Elev. ____
HAM-IR 71-7.45
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition GOOD





OHIO STATE HIGHWAY TESTING LABORATORY
1620 WEST BROAD ST. COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR 71-
RIDGE AVENUE UNDER PENNSYLVANIA RR
SEC. HAM-IR 71-7.45

DRIVE ROD PENETRATION RESISTANCE DATA

PLOTTED BY	CHECKED BY	REVIEWED BY	DATE
R.L.F.	R.H.P.	R.D.R.	8/25/65

TE - 118
600 - 11 - 64

MICROFILMED
JAN 06 1966

HAMILTON COUNTY
HAM-IR71-7.45

GEOLOGY OF THE SITE

The structure site is located on an Illinoian outwash plain, over the buried valley wall of the Deep Stage Cincinnati River. Interbedded outwash and till overlies interbedded shale and limestone bedrock, of Ordovician age.

EXPLORATION

The exploration consisted of two drive sample borings and four drive rod penetration tests, made between July 7 and 15, 1965.

INVESTIGATIONAL FINDINGS

The borings encountered unstratified, moist, very stiff to hard clays and silt clays, and medium-dense to very dense silts, sands, and occasional gravels. The borings were terminated at 41 and 46-foot depths, elevations 506 and 503 feet, after penetrating in excess of 30 feet of material requiring more than 30 blows per foot in the standard penetration test.

Rod soundings met increasing penetration resistance with increasing depth, and were terminated upon encounter with high resistance to penetration at 23 to 35-foot depths, elevations 528 to 511 feet, considered to be in the hard and dense materials revealed by the borings.

No free water was observed in any of the rod sounding holes.

No test penetrated to bedrock.

LEGEND

- Auger Boring Location - Plan View.
- Press and / or Drive Sample and / or Core Boring Location - Plan View.
- Drive Rod Penetration Resistance Sounding Location - Plan View.
- Capped Pile
- Footing
- Footing on Pile
- TR — Top of Rock
- Horizontal Bar on Boring Log Indicates the Depth the Sample Was Taken.
- X/Y — Figures Beside the Boring Log in Profile Indicate the Number of Blows for Standard Penetration Test.
  X = Number of Blows for First 6 inches.
  Y = Number of Blows for Second 6 inches.
- Drive Rod Penetration Resistance Sounding Log - Profile
- Casing
- Resistance "R" < 10,000 lbs.
- Resistance "R" > 10,000 lbs.
- Z — Indicates Final Measurement of Penetration, in Inches.
- W — Indicates Free Water Elevation.
- Indicates Static Water Elevation.

SYMBOLS OF ROCK TYPES

- Coal
- Weathered Indurated Clay
- Indurated Clay
- Weathered Shale
- Shale
- Weathered Sandstone
- Sandstone
- Leached Dolomite
- Dolomite
- Leached Limestone
- Limestone

GENERAL INFORMATION

Drive Rod Penetration Sounding Tests

Drive rod penetration resistance tests constitute driving a 1.315-inch diameter steel rod, with a 45° cone point, into the ground, using a 122-pound drop-hammer with a free fall of five feet. At one or two-foot depth intervals, a measurement is taken to determine the amount of penetration achieved in three hammer drops. This reading is converted to an empirical value for capacity "R", in thousands of pounds (which is a measure of both the point resistance and frictional resistance on the rod), by using charts prepared by the Ohio Department of Highways, Bureau of Bridges, on the basis of correlation study of rod penetration with past performance of pile driving. For interpretation, a graph is prepared by plotting the value "R" against the depth at which the reading was taken, and connecting the plotted points. The curve so obtained reflects the density of subsurface materials in a manner that can be readily compared with data from similar tests at other locations on the structure site. From this comparison, the overall uniformity of subsurface condition may be evaluated.

Drive Sample Borings - Drive-Press Sample Borings

Drive sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. sampler, at 2-1/2 and / or 5-foot depth intervals, driven by means of a 140 - pound drop-hammer with a free fall of 30 inches. The number of blows required to drive the sampler 12 inches is considered the standard penetration test.

Drive-press sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. drive sampler, and 3" O.D. thin-wall press sampler. The press sampler is advanced by continuous uniform pressure, applied by the drill rig.

The boring log sheets show a graphic plot of the information obtained, including depth and elevation of the sample, number of blows for the standard penetration tests in two 6-inch increments, depth of press samples, field sample number, sample description - based on laboratory tests and the Casagrande AC classification system - and gradation, plasticity, and moisture content determinations. Results of strength and consolidation testing, if performed, appear on separate enclosures.

At depths where materials are bouldery or gravelly to the extent that the sampler can not be driven, a wash sample is procured for visual classification, in order to determine the general character of the material. These samples are not considered sufficiently representative to warrant laboratory testing.

Particle Size Definitions

Boulders	Cobbles	Gravel	Coarse Sand	Fine Sand	Silt	Clay
8"	3"	2.0mm (No. 10 sieve)	0.42mm (No. 40 sieve)	0.074mm (No. 200 sieve)	0.005mm	

LOG OF BORING

Date Started 7-14-65 | Sampler Type SS | Dia. 1 3/8" | Water Elev. —
Date Completed 7-15-65 | Casing: Length 35' | Dia. 3 1/2" | Surface Elev. 549.4'
Boring No. B-3 | Station & Offset 17+90, 83' Rt. (Rear Abutment)

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics: % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
549.4	0														
	2														
546.9	4	3/5			Brown Gravelly Sandy Silt	1	V	I	S	U		A	L	8	
544.4	6	3/3			Brown Silty Sand	2	0	9	69	10	12	NP	NP	20	
541.9	8	3/33			Brown Gravelly Sandy Clay	3	V	I	S	U	A	L	27	11	17
539.4	10	3/5			Brown Silty Sand	4	0	3	73	15	9	NP	NP	22	
	12														
534.4	14														
	16	37/20* (0.2)			Gray Silty Sandy Gravel	5	37	10	18	16	19	22	10	12	
531.9	18	20/25			Gray Gravelly Sandy Silt	6	15	9	17	29	30	24	10	13	
529.4	20	24/36			Brown Silty Sand	7	0	12	67	10	11	NP	NP	10	
	22														
524.4	24														
	26	27/26* (0.3)			Brown Silty Sand	8	0	29	59	-12	-	NP	NP	5	
519.4	28														
	30														
	32	27/23* (0.4)			Brown Silty Sand	9	12	39	37	-12	-	NP	NP	17	
514.4	34														
	36	27/26* (0.4)													
	38														
509.4	40	21/23			Brown Sand	10	0	45	46	-9	-	NP	NP	17	
	42														
504.4	44														
503.4	46	21/29			Brown Sand — BOTTOM OF BORING	11	0	30	62	-8	-	NP	NP	18	

*Refusal

LOG OF BORING

Date Started 7-15-65 | Sampler Type SS | Dia. 1 3/8" | Water Elev. —
Date Completed 7-15-65 | Casing: Length 30' | Dia. 3 1/2" | Surface Elev. 546.6'
Boring No. B-4 | Station & Offset 19H+90, 15' Lt. (Rear Abutment)

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics: % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
546.6	0														
	2														
544.1	4	7/6			Dark-Brown and Gray Gravelly Sandy Silt, Trace of Org.	1	17	5	26	31	21	25	7	19	
541.6	6	4/9			Brown Sandy Silt	2	0	6	33	37	24	19	3	13	
539.1	8	3/7			Brown and Gray Gravelly Sandy Silt	3	15	11	19	29	26	22	6	14	
536.6	10	31/30			Brown and Gray Silty Sandy Gravel	4	36	11	20	19	14	16	2	11	
534.1	12														
	14	15/40			Gray Sandy Gravelly Silt	5	27	8	11	29	25	21	5	25	
531.6	16	22/30			Brown Silty Sand	6	0	5	60	23	12	NP	NP	15	
529.1	18	16/17			Brown Sand	7	0	58	32	4	6	NP	NP	13	
526.6	20	18/27			Brown Silty Sand	8	4	42	40	5	9	NP	NP	17	
	22														
521.6	24														
	26	21/29			Brown Silty Sand	9	0	44	39	-17	-	NP	NP	14	
516.6	28														
	30														
	32	28/29* (0.4)			Brown Silty Sand	10	0	39	47	-14	-	NP	NP	17	
511.6	34														
	36	22/28			Brown Sand	11	11	43	36	-10	-	NP	NP	15	
	38														
506.6	40				BOTTOM OF BORING										
505.6		16/20			Brown Sand	12	0	47	43	4	6	NP	NP	18	

*Refusal

NOTE: Information shown by this subsurface investigation was obtained solely for the use in establishing design controls for the project. The State of Ohio does not guarantee the accuracy of this data and it is not to be construed as a part of the plans governing construction of the project.

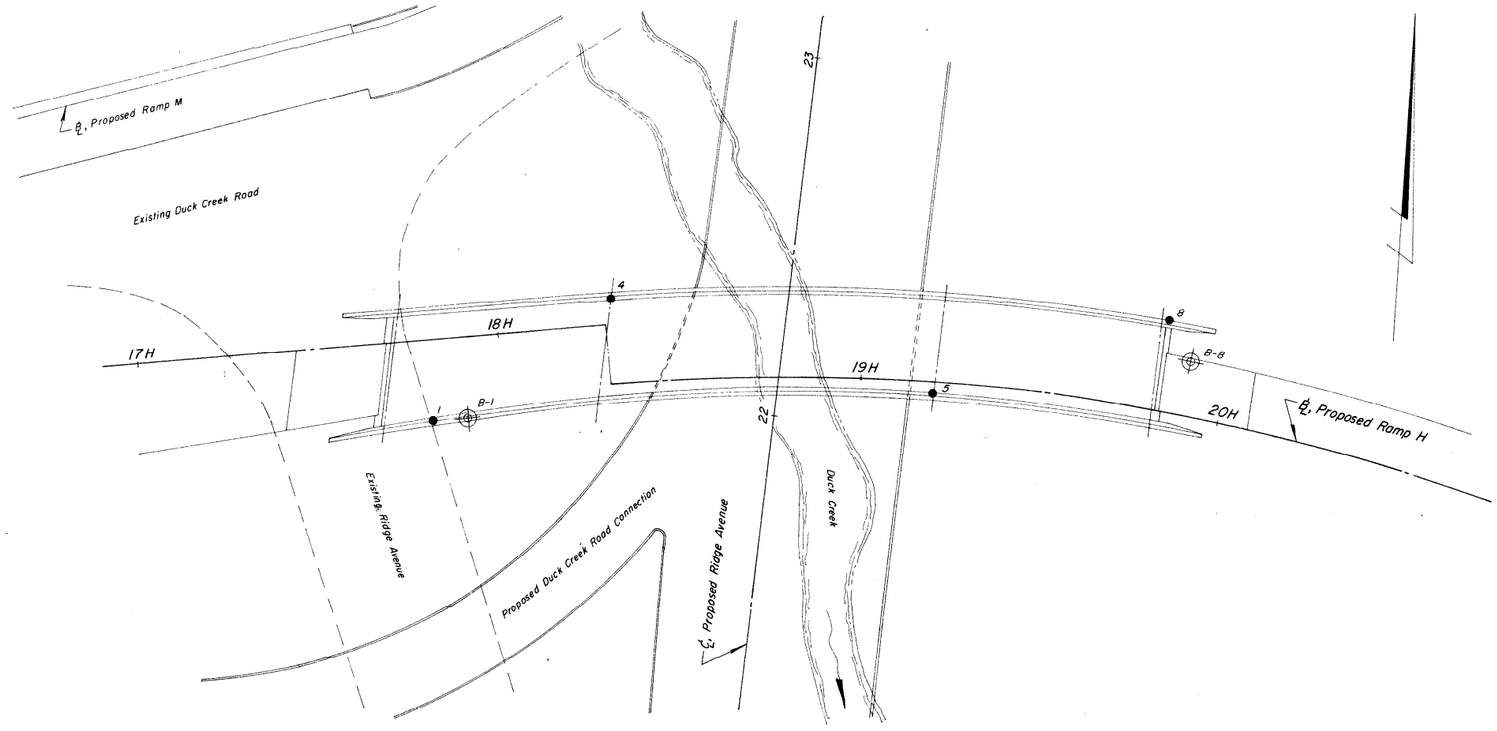
OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

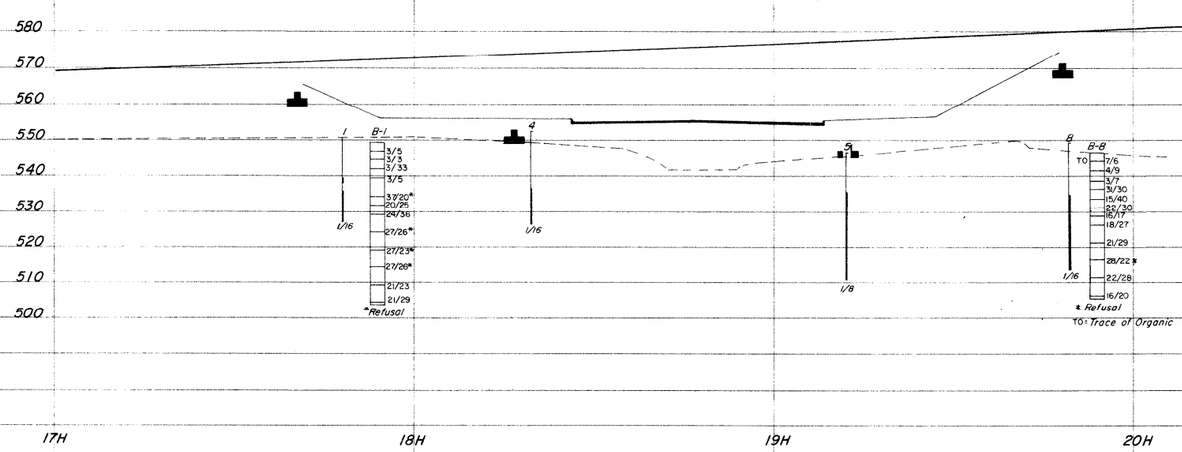
STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR71-
RAMP H OVER RIDGE AVENUE
SEC. HAM-IR71-7.45

CHECKED BY	REVIEWED BY	DATE
R.H.P	R.D.R.	8/19/65

TE - 119
500 - 81 - 64

MICROFILMED
JAN 06 1966





SCALE: 1" = 20'

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR71-
RAMP H OVER RIDGE AVENUE
SEC. HAM-IR71-7.45

PLAN AND PROFILE

DRAWN BY	CHECKED BY	REVIEWED BY	DATE
R.L.C.	R.H.P.	R.D.R.	8/19/65

TX-114
1000-1-64

MICROFILMED
JAN 05 1971

65
69
3
3

Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

Capacity "R" in Thousands of Pounds
10 20 30 40 50 60 70 80 90 100

Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

Capacity "R" in Thousands of Pounds
10 20 30 40 50 60 70 80 90 100

Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

Capacity "R" in Thousands of Pounds
10 20 30 40 50 60 70 80 90 100

Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

Capacity "R" in Thousands of Pounds
10 20 30 40 50 60 70 80 90 100

Test Location No. 1
Station & Offset 17+80, 23' RT
Rear Abutment
Surface Elev. 550.7' Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition Good

554
550
546
542
538
534
530
526 TEST ROD
522
518
514
510
506

Capacity "R" in Thousands of Pounds
10 20 30 40 50 60 70 80 90 100

Test Location No. 4
Station & Offset 18+52, 07' LT
Rear Pier
Surface Elev. 552.6' Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

TEST ROD

Capacity "R" in Thousands of Pounds
10 20 30 40 50 60 70 80 90 100

Test Location No. 5
Station & Offset 19+20, 03' RT
Forward Pier
Surface Elev. 546.8 Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

TEST ROD

Capacity "R" in Thousands of Pounds
10 20 30 40 50 60 70 80 90 100

Test Location No. 8
Station & Offset 19+82, 25' LT
Forward Abutment
Surface Elev. 532.2' Water Elev. ____
HAM-IR71-7.45
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

554
550
546
542
538
534
530
526
522
518
514
510
506
TEST ROD

Capacity "R" in Thousands of Pounds
10 20 30 40 50 60 70 80 90 100

OHIO STATE HIGHWAY TESTING LABORATORY
1620 WEST BROAD ST. COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR 71-
RAMP H OVER RIDGE AVENUE
SEC. HAM-IR 71-7.45

DRIVE ROD PENETRATION RESISTANCE DATA

PLOTTED BY	CHECKED BY	REVIEWED BY	DATE
R.L.F.	R.H.P.	R.D.R.	8/19/65

TF - 118
600 - 11 - 64

66
69
1
4

HAMILTON COUNTY
HAM-IR71-7.45

GEOLOGY OF THE SITE
The structure site is located on an Illinoian outwash plain, over the buried valley wall of the Deep Stage Cincinnati River. Interbedded outwash and till overlies interbedded shale and limestone bedrock, of Ordovician age.

EXPLORATION
The exploration consisted of two drive sample borings and four drive rod penetration tests, made between June 30 and July 8, 1965.

INVESTIGATIONAL FINDINGS
The borings encountered unstratified, moist, very stiff to hard clays and silt clays, and medium-dense to very dense silts, sands, and occasional gravels. The borings were terminated at 56 and 86-foot depths, elevations 518 and 513 feet, after penetrating in excess of 20 feet of material requiring more than 30 blows per foot in the standard penetration test.

Rod soundings met increasing penetration resistance with increasing depth, and were terminated upon encounter with near-refusal and refusal to penetration at 10 to 30-foot depths, elevations 590 to 538 feet, considered to be in the hard and dense materials revealed by the borings. Rod sounding number 8 was not cased to footing elevation as shown on the site plan due to the hard and very dense material.

Free water was observed in rod sounding hole number 1 at elevation 558 feet.

No test penetrated to bedrock surface.

LEGEND

- Auger Boring Location - Plan View.
- Press and / or Drive Sample and / or Core Boring Location - Plan View.
- Drive Rod Penetration Resistance Sounding Location - Plan View.
- Capped Pile
- Footing
- Footing on Pile
- TR — Top of Rock
- Horizontal Bar on Boring Log Indicates the Depth the Sample Was Taken.
- X/Y — Figures Beside the Boring Log in Profile Indicate the Number of Blows for Standard Penetration Test.
  X = Number of Blows for First 6 inches.
  Y = Number of Blows for Second 6 inches.
- Drive Rod Penetration Resistance Sounding Log - Profile
- Casing
- Resistance "R" < 10,000 lbs.
- Resistance "R" > 10,000 lbs.
- Z — Indicates Final Measurement of Penetration, in Inches.
- W—— Indicates Free Water Elevation.
- Indicates Static Water Elevation.

SYMBOLS OF ROCK TYPES

- Coal
- Weathered Indurated Clay
- Indurated Clay
- Weathered Shale
- Shale
- Weathered Sandstone
- Sandstone
- Leached Dolomite
- Dolomite
- Leached Limestone
- Limestone

GENERAL INFORMATION

Drive Rod Penetration Sounding Tests

Drive rod penetration resistance tests constitute driving a 1.315-inch diameter steel rod, with a 45° cone point, into the ground, using a 122-pound drop-hammer with a free fall of five feet. At one or two-foot depth intervals, a measurement is taken to determine the amount of penetration achieved in three hammer drops. This reading is converted to an empirical value for capacity "R", in thousands of pounds (which is a measure of both the point resistance and frictional resistance on the rod), by using charts prepared by the Ohio Department of Highways, Bureau of Bridges, on the basis of correlation study of rod penetration with past performance of pile driving. For interpretation, a graph is prepared by plotting the value "R" against the depth at which the reading was taken, and connecting the plotted points. The curve so obtained reflects the density of subsurface materials in a manner that can be readily compared with data from similar tests at other locations on the structure site. From this comparison, the overall uniformity of subsurface condition may be evaluated.

Drive Sample Borings - Drive-Press Sample Borings

Drive sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. sampler, at 2-1/2 and / or 5-foot depth intervals, driven by means of a 140 - pound drop-hammer with a free fall of 30 inches. The number of blows required to drive the sampler 12 inches is considered the standard penetration test.

Drive-press sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. drive sampler, and 3" O.D. thin-wall press sampler. The press sampler is advanced by continuous uniform pressure, applied by the drill rig.

The boring log sheets show a graphic plot of the information obtained, including depth and elevation of the sample, number of blows for the standard penetration tests in two 6-inch increments, depth of press samples, field sample number, sample description - based on laboratory tests and the Casagrande AC classification system - and gradation, plasticity, and moisture content determinations. Results of strength and consolidation testing, if performed, appear on separate enclosures.

At depths where materials are bouldery or gravelly to the extent that the sampler can not be driven, a wash sample is procured for visual classification, in order to determine the general character of the material. These samples are not considered sufficiently representative to warrant laboratory testing.

Particle Size Definitions

Boulders	Cobbles	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	8" / 3"	2.0mm (No. 10 sieve)	0.42mm (No. 40 sieve)	0.074mm (No. 200 sieve)	0.005mm	

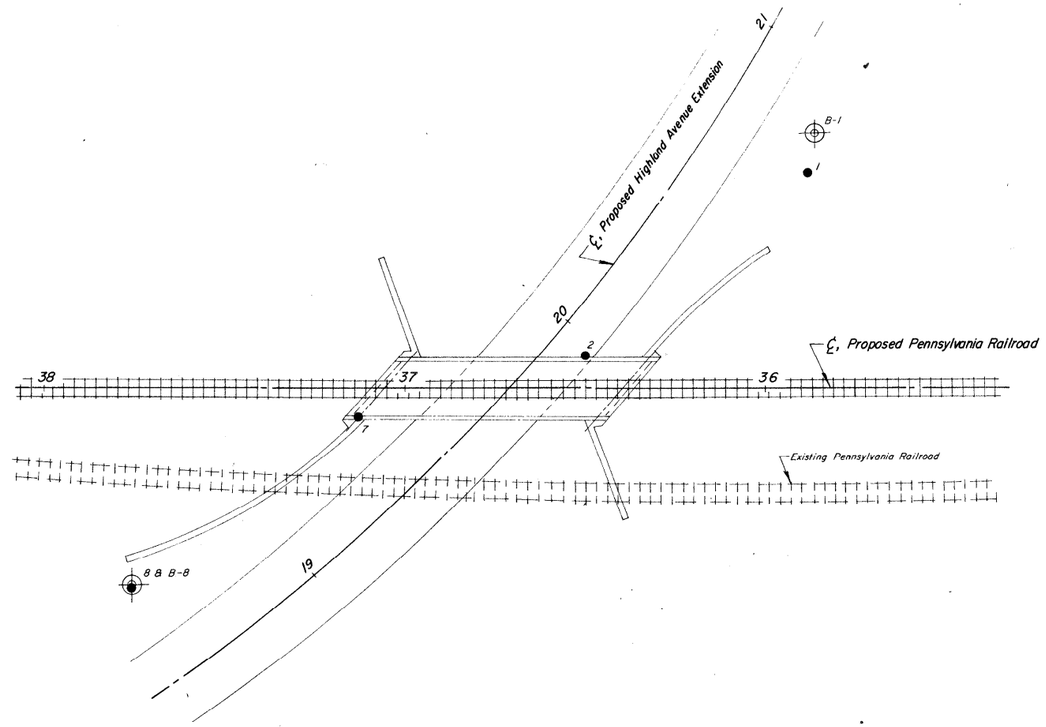
NOTE: Information shown by this subsurface investigation was obtained solely for the use in establishing design controls for the project. The State of Ohio does not guarantee the accuracy of this data and it is not to be construed as a part of the plans governing construction of the project.

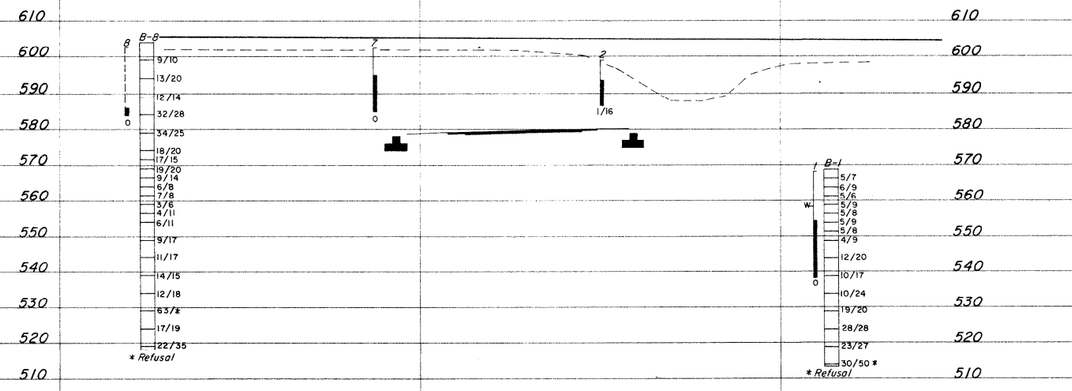
OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR71- HIGHLAND AVENUE
EXTENSION UNDER PENNSYLVANIA RAILROAD
SEC. HAM-IR71-7.45

CHECKED BY	REVIEWED BY	DATE
R.H.P.	R.D.R.	8/12/65

TE - 119
5M - 11 - 64





SCALE: 1" = 20'

OHIO DEPARTMENT OF HIGHWAYS TESTING LABORATORY 1620 WEST BROAD STREET, COLUMBUS 23, OHIO			
STRUCTURE FOUNDATION INVESTIGATION BRIDGE NO. HAM-IR71- HIGHLAND AVENUE EXTENSION UNDER PENNSYLVANIA RAILROAD SEC. HAM-IR71-7.45			
PLAN AND PROFILE			
DRAWN BY	CHECKED BY	REVIEWED BY	DATE
R.L.C.	R.H.P.	R.D.R.	8/12/65

TE - 122
600 - 11 - 64

LOG OF BORING

Date Started 7-2-65 Sampler Type SS Dia. 1 3/8"
Date Completed 7-7-65 Casing: Length 30' Dia. 3 1/2"
Boring No. B-1 Station & Offset 35+86, 71' Rt.(REAR RIGHT WINGWALL) Surface Elev. 568.9'
Water Elev.

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
568.9	0														
566.4	2														
	4	5/7			Brown Clay	1	0	4	15	40	41	47	29	22	
563.9	6	6/9			Grayish-Brown Silty Clay	2	0	0	1	37	62	42	20	24	
561.4	8														
		5/6			Gray Silty Clay	3	0	1	1	32	66	43	18	25	
558.9	10	5/9			Gray Silty Clay	4	0	0	0	36	64	40	17	26	
556.4	12														
	14	5/8			Gray Clayey Silt	5	0	0	0	55	45	27	8	20	
553.9	16	5/9			Gray Clay	6	0	0	0	58	42	26	7	20	
551.4	18														
		5/8			Gray Clayey Silt	7	0	0	0	46	54	30	9	20	
548.9	20														
	22	4/9			Gray Clayey Silt	8	0	0	1	47	52	30	10	25	
543.9	24														
	26	12/20			Gray Gravelly Sandy Silt	9	15	6	12	22	45	26	10	15	
538.9	28														
	30	10/17			Gray Gravelly Sandy Silt	10	20	6	14	32	28	25	10	13	
533.9	32														
	34	10/24			Gray Sandy Gravelly Silt	11	23	5	13	32	27	24	10	12	
528.9	36														
	38	19/20			No Sample Recovered - Gray Gravelly Silt(Driller's Description)										
523.9	40														
	42	28/28			Gray Gravelly Silt	12	20	1	6	46	27	23	8	20	
518.9	44														
	46	23/27			Brown Silty Sand	13	0	13	51	26	10	NP	NP	17	
513.9	48														
513.9	50	50/5"			BOTTOM OF BORING										
513.9	52	(0.1")			Brown Sandy Silt	13	0	7	36	51	6	NP	NP	16	
	54														
	56														

*Refusal

LOG OF BORING

Date Started 6-30-65 Sampler Type SS Dia. 1 3/8"
Date Completed 7-1-65 Casing: Length 35' Dia. 3 1/2"
Boring No. B-8 Station & Offset 37+76, 55' Lt.(Forward Lt. Wingwall) Surface Elev. 604.0'
Water Elev.

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
604.0	0														
	2														
	4														
599.0	6	9/10			Brown Silty Clay	1	V	I	S	U	A L		PL +19	18	
	8														
594.0	10	13/20			Brownish-Gray Silt and Clay	2	0	5	10	43	42	31	12	15	
	12														
	14														
589.0	16	12/14			Brown Silt and Clay	3	0	4	13	45	38	30	14	15	
	18														
584.0	20	32/28			Light-Brown Sandy Gravelly Clay	4	23	6	11	33	27	26	11	15	
	22														
	24														
579.0	26	34/25			Gray Gravelly Sandy Silt	5	V	I	S	U	A	L	20	7	12
	28														
574.0	30	18/20			Brown and Gray Silt	6	0	1	4	83	12	NP	NP	27	
571.5	32	17/15			Gray Silt	7	0	0	0	64	36	26	7	21	
	34														
569.0	36	19/20			Gray Silt	8	0	0	0	66	34	24	6	19	
566.5	38	9/14			Gray Silty Clay	9	0	0	0	40	60	38	16	25	
564.0	40	6/8			Gray Clay	10	0	0	1	39	60	40	22	27	
561.5	42	7/8			Gray Silty Clay	11	0	0	0	49	51	35	17	26	
559.0	44														
	46	3/6			Gray Silty Clay	12	0	0	0	41	59	35	18	23	
556.5	48	4/11			Gray Clayey Silt	13	0	0	1	58	41	25	7	21	
554.0	50	6/11			Gray Silt	14	0	0	0	65	35	23	6	29	
	52														
	54														
549.0	56	9/17			Gray Sandy Silt	15	6	13	23	37	21	NP	NP	11	
	58														
544.0	60	11/17			Gray Silty Sandy Gravel	16	38	15	19	15	13	16	5	9	
	62														
	64														
539.0	66	14/15			Gray Sandy Gravelly Clay	17	34	9	13	25	29	24	11	15	
	68														
534.0	70	12/18			Gray Gravelly Sandy Silt	18	19	6	15	31	29	24	10	14	
	72														
	74														
529.0	76	63/*			Gray Sandy Gravelly Clay	19	31	6	14	25	24	23	11	14	
	78														
524.0	80	17/19			Gray Sandy Gravelly Silt	20	27	6	9	39	19	20	5	15	
	82														
	84				BOTTOM OF BORING										
519.0		22/35			Gray Gravelly Silt *Refusal	21	37	5	5	34	19	23	6	14	
518.0															

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM - IR 71- HIGHLAND AVENUE EXTENSION UNDER PENNSYLVANIA RAILROAD
SEC. HAM - IR 71-7.45

BORING DATA

TYPED BY	CHECKED BY	REVIEWED BY	DATE
S.A.J.	R.C.	R.D.R.	8/12/65

Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

607 603 599 595 591 587 583 579 575 571 567 563 559 555 551 547 543 539 535

10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

Test Location No. 1
Station & Offset 35+88.60'RT
REAR RIGHT WINGWALL
Surface Elev. 568.1' Water Elev. 558.1'
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition POINT BENT-B'

TEST ROD

10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

Test Location No. 2
Station & Offset 36+50 9'RT
REAR ABUTMENT
Surface Elev. 598.9' Water Elev. DRY-Hole Open
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition POINT BENT-B'

TEST ROD

10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

Test Location No. ____
Station & Offset ____
Surface Elev. ____ Water Elev. ____
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition ____

10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

Test Location No. 7
Station & Offset 37+13.8'LT
FORWARD ABUTMENT
Surface Elev. 602.2' Water Elev. DRY-Hole Open
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition POINT BENT-B'

TEST ROD

10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

Test Location No. 8
Station & Offset 37+76
FORWAR
Surface Elev. 602.6'
Piling ____
Hammer ____
Formula ____
Reference ____
Rod Condition

TEST ROD

10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

OHIO STATE HIGHWAY
TESTING LABORATORY
1620 WEST BROAD ST. COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-IR71- HIGHLAND AVENU
EXTENSION UNDER PENNSYLVANIA RAILRO
SEC. HAM-IR71-7.45

DRIVE ROD PENETRATION RESISTANCE DATA

PLOTTED BY	CHECKED BY	REVIEWED BY	DAT
R.C.	R.H.P.	R.D.R.	8/12

Form No. 630—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/17/64 SAMPLER: TYPE Split Spoon & Core barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE None Backfilled

DATE COMPLETED 7/17/64 CASING: LENGTH _____ DIA 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS _____

Water used in drilling from elevation

CLIENT: City of Cincinnati, Ohio

PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0173

BORING No. B-8-1 STATION AND OFFSET 158+68, 60'L. BL SURFACE ELEV. 546.9

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
546.9	0													
544.9	2				Asphaltic concrete and granite block pavement									
	4	1	3-4-4	6"	Brown clay, trace sand with limestone and shale fragments(fill),moist-medium stiff	0	2	3	39	56	43	20	16	A-7-6
541.9		S-1Top			Brown clay,some sand,trace gravel with limestone and shale fragments(fill), moist - stiff	8	13	11	25	43	42	18	18	A-7-6
	6	S-1 Bottom			Brown and gray silty clay,trace sand with limestone and shale fragments(fill) moist - stiff	0	2	2	37	59	40	16	20	A-6b
539.4	8	2	3-3-3	5"	Brown and gray silty clay,trace sand trace gravel(fill),moist-medium stiff	5	4	4	42	45	39	19	24	A-6b
536.9	10	3	2-2-3	12"	Brownish green and gray clay,trace sand, trace gravel (fill), moist - medium stiff	2	1	3	41	53	45	25	27	A-7-6
534.9	12	4	12-8-4	11"	Brick, cinders and organic matter, (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	14	5	4-4-5	10"	Brown and gray clay, trace sand(fill) moist - stiff	0	1	2	27	70	59	36	27	A-7-6
530.9	16	S-2			Brown clay, trace sand (fill), moist-stiff	0	4	2	38	56	46	22	20	A-7-6
529.4	18	6	6-11-18	16"	Brown silt and clay,trace sand, trace gravel with limestone fragments, moist - very stiff	3	3	2	32	60	37	15	20	A-6a
	20	7	9-16-16	15"	Brown clay,trace sand with limestone fragments, moist - hard	Visual classification-No tests performed								A-7-6
	22	8	10-17-23	15"	Brown clay, trace sand with limestone fragments, moist - hard	0	2	1	33	64	45	23	15	A-7-6
524.4														
522.9	24	9	28-90	14"	Brown and gray shale and limestone, moist - hard	Visual classification-No tests performed								
	26	10	NXM	60%	Gray shale,calcareous,slightly tough, broken (¼" to 2" pieces averaging 1½") and gray limestone, crystalline, fossiliferous,jointed and oxide stained midway in the run (¼" to 2"pieces averaging 1½")87% shale, 13% limestone									
	28													
517.9														
	30				Boring completed									
	32													
	34													

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—16-69

THE H. C. NUTTING COMPANY

4130 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/17/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/17/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-8-2 STATION AND OFFSET 159+73, 39' L, BL SURFACE ELEV. 547.7 Bridge No. HAM-71-0157

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
547.7	0				2.1' Blacktop and granite block pavement	Visual classification-No tests performed								
545.6	2													
542.7	4	1	6-3-3	4"	Brown and gray silt and clay, some sand, some gravel (fill), moist - medium stiff	31	13	10	20	26	34	15	27	A-6a
	6	2	2-5-5	5"	Brown and gray clay, little sand, trace gravel (fill), moist - medium stiff	7	9	6	29	49	42	20	27	A-7-6
	8	3	2-5-3	5"	Brown and gray clay, trace sand, trace gravel (fill), moist - medium stiff	4	6	2	34	54	41	18	19	A-7-6
537.7	10	4	4-5	5"	do do	Visual classification-No tests performed								A-7-6
	12	5	3-3-4	13"	Gray silty clay, trace sand, trace gravel with brick fragments and organic matter (fill), moist - medium stiff	2	4	2	51	41	36	16	24	A-6b
532.7	14	6	4-5-6	12"	Gray silty clay, trace sand, little gravel with brick fragments (fill), moist - medium stiff	13	4	2	37	44	40	19	26	A-6b
	16	7	4-16-36	16"	Brown and gray clay, little sand, trace gravel, moist - stiff	5	9	4	34	48	42	18	25	A-7-6
528.7	18	8	27-45-37	13"	Brown clay, trace sand, trace gravel, moist hard	1	5	2	40	52	41	19	18	A-7-6
528.2	20				0.5' Possible limestone layer									
	22	9	42-43-51	8"	Brown and gray clay, trace sand, some gravel with shale and limestone, moist - hard	20	4	0	28	48	44	20	16	A-7-6
525.2														
524.2	24	10A	18-41	9"	Brown and gray silty clay, trace sand, trace gravel with shale and limestone fragments, moist - hard	10	6	4	34	46	40	17	15	A-6b
		10B	65	3"	Gray shale, moist - hard	Visual classification-No tests performed								
522.7	26													
	28	11	NXM	40%	Gray shale, calcareous, moderately tough (½" to 1½" pieces averaging 1") and gray limestone, crystalline, fossiliferous (two pieces 2" and 4") 90% shale, 10% limestone									
517.7	30													
	32				Boring completed									
	34													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/16/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/16/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-8-3 STATION AND OFFSET 160+47, 51' Rt. BL SURFACE ELEV. 549.6 Bridge No. HAM-71-0173

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
549.6	0													
549.1					0.5' Concrete									
	2	1	2-3-3	6"	Brown sand and gravel with cinders, (Fill) moist - medium dense	Visual classification-No tests performed								Fill
546.6		2-A	10	6"	Brown and gray clay, trace sand, little gravel moist - stiff	12	2	1	28	57	44	19	14	A-7-6
	4	2-B	28-30	8"	Brown and gray weathered shale with limestone layers, slightly moist-hard to very hard	Visual classification -No tests performed								
	6	3	17-81	8"	do do	Visual classification-No tests performed								
541.1	8	4	27-90	10"	do do	Visual classification-No tests performed								
	10				Gray shale, calcareous, moderately tough to tough (½" to 3" pieces averaging 1½")									
	12	5	NXM	80%	and gray limestone, crystelline, fossiliferous, jointed (one 4" piece at the top of the run) 93% shale, 7% limestone									
536.1	14													
					Boring completed									
	16													
	18													
	20													
	22													
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 530—16.59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/14/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/15/64 CASING: LENGTH _____ DIA. 3.5" I.D. Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-8-4 STATION AND OFFSET 160+74, 59' L. BL SURFACE ELEV. 547.9 Bridge No. HAM-71-0173

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
547.9	0													
547.5					0.4' Concrete	No tests performed								
4	2	1	2-1-2	7"	Brown silty clay with sand, gravel and cinders (fill), moist - medium stiff	Visual classification-No tests performed								Fill
545.4														
2.1	4	2	4-4-8	7"	Brown silty clay with limestone fragments (fill), moist - medium stiff	Visual classification-No tests performed								Fill
542.9														
2.5	6	3	4-1-1	12"	Cinders, sand, gravel and coal (fill), moist - loose	Visual classification-No tests performed								Fill
540.4	8													
2.5		4	4-5-6	15"	Brown and gray clay, little sand, little gravel (fill), moist - stiff	11	6	6	26	51	43	20	22	A-7-6
537.9	10													
2.5	12	5	3-3-5	7"	Brown silty clay, trace sand, trace gravel (fill), moist - medium stiff	2	2	3	44	49	39	17	20	A-6b
535.4														
2.5	14	6	6-11-13	14"	Brown and gray clay, trace sand, trace gravel, moist - stiff	2	1	1	32	64	46	22	20	A-7-6
533.4														
	16	7	NXM	62%	Brown weathered shale, soft (½" to 3" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed (one 2½ piece at the top of the run) 90% shale, 10% limestone	Visual classification-No tests performed								
531.4														
529.9	18	8	21-38-71		Brown and gray clay, trace sand moist-stiff	0	2	2	36	60	45	21	19	A-7-6
	20	9	NXM	25%	Sample 9 -Brown and gray weathered shale soft (1" to 2" pieces averaging 1½", 100% shale	Visual classification-No tests performed								
	22													
		10	NXM	42%	Sample 10 - Gray shale, calcareous, soft, to moderately tough (1" to 2" pieces, broken) and gray limestone, crystalline,									
	24	11	70		fossiliferous (two pieces 1" and 1½") 90% shale, 10% limestone									
					Sample 11 - Gray shale, moist - hard									
	26	12	NXM	60%	Sample 12 - Gray shale, calcareous, broken, moderately tough (½" to 1½" pieces, averaging 1") and gray limestone, crystalline,									
	28	13	NXM	80%	fossiliferous (two pieces 1½" and 2") 88% shale, 12% limestone									
519.4														
	30				Sample 13 - Gray shale, calcareous, moderately tough to tough (½" to 2" pieces averaging 1½") 100% shale									
	32													
	34				Boring completed									

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Form No. 630—16-59

THE H. C. NUTTING COMPANY

4130 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/16/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 543.3 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/16/64 CASING: LENGTH ____ DIA 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-8-5 STATION AND OFFSET 161+19, 44' Rt., BL SURFACE ELEV. 549.8 Bridge No. HAM-71-0173

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SNTL CLASS
549.8	0													
549.3					Concrete (0.5')									
	2	1	9-13-16		Brown clay, trace sand, little gravel, moist - stiff	14	0	6	34	46	42	21	18	A-7-6
	4	2	5-10-21		Brown clay, trace sand, trace gravel, with shale and limestone fragments, moist - stiff	4	2	1	35	58	46	22	15	A-7-6
543.8	6	3	9-24		Brown and gray clay, trace sand, trace gravel with shale and limestone fragments, moist - very stiff	1	2	2	33	62	43	17	19	A-7-6
542.8		3A	64		Brown and gray shale, moist - hard	Visual classification-No tests performed								
	8				Gray shale, calcareous, moderately tough to tough (¼" to 2" pieces averaging 1") and gray limestone, crystalline, fossiliferous, jointed in the bottom 6" of the run (¼" to 6½" pieces averaging 3") 67% shale, 33% limestone									
	10	4	NXM	77%										
	12	5	NXM	86%	Gray shale, calcareous, moderately tough to tough (¼" to 3" pieces averaging 2") and gray limestone crystalline, fossiliferous (two pieces 2" and 2½") 92% shale, 8% limestone									
	14													
	16	6	NXM	87%										
532.8					Gray shale, calcareous, tough (½" to 2" pieces averaging 1½") 100% shale									
	18													
	20													
	22													
	24													
	26													
	28													
	30													
	32													
	34													

Boring completed

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Form No. 530 -16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/15/64 SAMPLER: TYPE Split Spoon & One Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/16/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-8-6 STATION AND OFFSET 161+72, 54' L. BL SURFACE ELEV. 551.0 Bridge No. HAM-71-0173

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
551.0	0				0.3" Concrete									
548.5	2	1	4-3-3	6"	Brown silty clay with gravel and brick fragments (fill), moist - medium stiff	Visual classification-No tests performed								Fill
546.0	4	2	3-4-4	10"	Brown silty clay, little sand, trace gravel with brick fragments (fill), moist - medium stiff	8	10	9	31	42	40	18	23	A-6b
543.5	6	3	2-2-4	12"	Brown and gray clay, little sand, trace gravel (fill), moist - medium stiff	2	6	6	33	53	44	20	24	A-7-6
542.5	8	4A	3-2	6"	Brown and gray silty clay (fill), moist - medium stiff	Insufficient Samples for Testing - No tests performed								Fill
541.0		4B	4	3"	Gray sandy clay with gravel (fill), very moist - soft									Fill
540.5	10	5A	2	4"	Brown and gray silty clay, trace sand, (fill), moist - medium stiff	0	4	5	35	56	39	16	19	A-6b
538.5	12	5B	4-4	8"	Gray sandy silt, trace gravel (fill), moist - medium stiff	5	22	15	42	16	21	3	13	A-4a
	14	6	2-7-7	11"	Brown and gray clay, trace sand, (probable fill), moist - stiff	0	1	1	32	66	46	20	20	A-7-6
	16	7	3-6-7	14"	Brown clay, trace sand with shale fragments, moist - stiff	0	2	2	31	65	46	23	20	A-7-6
	18	8	5-10-14	13"	Brown and gray clay, trace sand with shale fragments, moist - hard	0	1	1	35	63	44	21	20	A-7-6
531.0	20													
524.5	22	9	60-50	*	Gray shale and limestone, dry - hard	Visual classification-No tests performed								
	24	10	45-47-61	0	do do	Visual classification-No tests performed								
	26	11	41-70	10"	do do	*Poor recovery Visual classification-No tests performed								
	28	12	NXM	58%	Gray shale, calcareous, moderately tough (1½" pieces) and gray limestone, crystalline, fossiliferous (1" - 2½" and 5" pieces) 62% shale, 38% limestone									
519.5	30	13	NXM	78%	Gray shale, calcareous, moderately tough (½" to 2" pieces, averaging 1" and gray limestone, crystalline, fossiliferous, (one 1" piece at the top of the run) 98% shale, 2% limestone									
	32													
	34				Boring completed									

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Form No. 530—16.59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/13/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/14/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-8-7 STATION AND OFFSET 162+39, 53' Rt. BL SURFACE ELEV. 553.2 Bridge No. HAM-71-0173

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
553.2	0				0.2' Blacktop									
550.7	2	1	2-3-5	7"	Brown and gray clay and gravel (fill), moist - loose	60	0	5	14	21	41	19	21	A-2-7
	4	2	4-9-8	9"	Brown and gray clay, trace sand, little gravel with limestone fragments (fill), moist - medium stiff	18	3	3	28	48	47	22	17	A-7-6
	6	3	5-6-11	16"	Brown and gray clay, trace sand, moist - medium stiff	0	3	3	13	81	46	20	21	A-7-6
544.2	8	4	4-125	10"	Brown and gray clay, trace sand, some gravel with limestone fragments, moist - stiff	28	3	3	22	40	43	19	22	A-7-6
543.2	10	5	31-114	16"	Gray shale, dry - hard	Visual classification-No tests performed								
	12	6	NXM	83%	Sample 6-Gray shale with brown weathered zones, top and bottom of run, calcareous, moderately tough (½" to 1½"pieces, averaging 1") 100% shale									
	14	7	NXM	67%	Sample 7 - Gray shale, calcareous, moderately tough with soft seams throughout run (½" to 3" pieces averaging 2") and gray limestone, crystalline, fossilifeross (1" and 3" pieces) 84% shale, 16% limestone									
	16													
	18	8	NXM	80%	Sample 8 - Gray shale calcareous, tough (1" to 2½" pieces averaging 2") and gray limestone, crystalline, fossiliferous(1" and 1½" pieces) 96% shale, 4% limestone									
533.2	20													
	22				Boring completed									
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 530—16-58

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/15/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. NXM WATER ELEV. IMMEDIATE 551.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/15/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-8-8 STATION AND OFFSET 163+06, 40' Rt., BL SURFACE ELEV. 556.0 Bridge No. HAM-71-0173

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL CLASS
556.0	0				Concrete and cinders (fill) (0.5')									
555.5	2	1	9-13-32	16"	Brown and gray clay, little sand, trace gravel with limestone and shale fragments, moist - very stiff	2	7	4	33	54	44	22	23	A-7-6
	4	2	13-12-20	11"	Brown and gray clay, little sand, little gravel with shale and limestone fragments, moist - very stiff	12	5	5	27	51	44	22	16	A-7-6
		S-1		22"	Brown clay, trace sand, moist-very stiff	0	5	1	35	59	46	22	18	A-7-6
	6	3	90	10"	Brown clay, little sand, trace gravel with limestone fragments, moist-stiff	7	11	5	23	54	43	23	20	A-7-6
		4	18	17"	do do	Visual classification-No tests performed								A-7-6
	8	4A	86-80	17"	do do	Visual classification-No tests performed								A-7-6
546.0	10				Brown and gray silty clay, little sand, trace gravel with limestone fragments, moist - very stiff	6	9	7	28	50	39	19	13	A-6b
545.0		5	40-59	17"	Limestone fragments	Visual classification-No tests performed								
544.5	12	5A	46	1"										
	14	6	NXM	68%	Gray shale, calcareous, moderately tough(¼" to 2½" pieces averaging 1½") and gray limestone, crystalline, fossiliferous(two pieces 1" and 2½")									
539.5	16				94% shale, 6% limestone									
	18				Boring completed									
	20													
	22													
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 530-- 16 59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/20/64 SAMPLER: TYPE Split Spoon& Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/20/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-8-9 STATION AND OFFSET 156+75, 8' Rt., Ramp GD, BL SURFACE ELEV. 545.7 Bridge No. HAM-71-0173

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTO CLASS
545.7	0				Brick and limestone									
545.2	2	1	5-6-6	9"	Cinders, clay and sand (fill), very moist - loose	Visual classification-No tests performed								Fill
540.7	4	2	3-2-2	10"	do do	Visual classification-No tests performed								Fill
	6	S-1		18"	Brown and gray silty clay, trace sand, trace gravel (fill), moist-medium stiff	1	3	4	46	46	40	20	24	A-6b
	8	3	5-6-6	17"	Brown and gray silty clay, little sand, trace gravel (fill), moist - medium stiff	2	8	9	45	36	38	16	28	A-6b
536.2	10	4	5-6-6	18"	Brown and gray silt and clay, little sand, trace gravel (fill), moist - medium stiff	5	9	10	44	32	35	14	26	A-6a
533.2	12													
	14	5	5-4-6	17"	Brown and gray silty clay, trace sand, (fill), moist - medium stiff	0	2	2	50	46	37	17	25	A-6b
530.7														
528.7	16	S-2		18"	Brown and gray silt and clay, trace sand (fill), moist - medium stiff	0	3	2	47	48	35	15	25	A-6a
	18	6	3-4-5	11"	Brown and gray clay, trace sand(fill), moist - stiff	0	3	3	37	57	44	22	26	A-7-6
525.7	20	7	4-5-7	17"	Brown and gray clay, trace sand (fill), moist - medium stiff	0	4	3	35	58	45	23	24	A-7-6
524.7		8	27-81	5"	Brown and gray clay, trace sand, moist-stiff	0	4	4	37	55	45	23	25	A-7-6
	22	R-1	NXM	75%	R-1 - Brown weathered shale(no shale recovery) and gray limestone, crystalline, fossiliferous (one 6½" piece) 46% shale, 54% limestone									
		R-2	NXM	40%										
	24	9	6-9-12	18"	R-2 - Brown weathered shale,slightly tough (one 2" piece) and gray limestone, crystalline , fossiliferous,(one 2"piece) 83% shale, 17% limestone									
	26	10	21-55	10"	9 - Brown weathered shale, moist-very stiff									
	28				10- do do									
	30	R-3	NXM	80%	R-3 - Gray and brown shale,calcareous, moderately tough (1" to 3" pieces, averaging 2") and gray limestone,crystalline, fossiliferous,jointed (one 1½"piece midway in the run) 98% shale, 2% limestone									
	32													
	34				Boring completed									

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DATE STARTED 5/21/70 SAMPLER TYPE SS DIA. 2" O.D. WATER ELEVATION

DATE COMPLETED 5/24/70 CASING LENGTH HSA DIA. 3.5" I.D. IMMEDIATE None

BORING NUMBER B-15-3 CORE BARREL TYPE NXM SIZE 2-1/8" O.D. AFTER HRS. Backfilled

STATION & OFFSET 36/51 Ramp 66, 4.0' RIGHT SURFACE ELEVATION 580.7

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Acc	% CS	% FS	% Silt	% Clay	LL	PI	WC
580.7	0											
	2	8-12-14	Brown sandy clay, cobbles (rubble fill), moist - stiff	1		Visual						
	4											
	6	10-21-30	Brown sandy clay, cobbles, (rubble fill), moist - hard	2		Visual						
	8											
		15-17-10	Brown sandy clay, cobbles, (rubble fill), moist - stiff	3		Visual						
	10	90	Brown sandy clay, cobbles, (rubble fill), moist - hard	4		Visual						
568.7	12											
	14	15-13-13	Brown silty clay, brick fragments, cinders, (rubble fill); moist - stiff	5		Visual						
	16	8-9-10	do do do	6		Visual						
	18	7-8-11	do do do	7		Visual						
	20	7-11-5	do do do	8		Visual						
557.7	22	35	Brown sandy clay, cinders, cobbles, (rubble fill), moist - hard	9		Visual						
	24											
	26	12-27-65	do do do	10		Visual						
553.2	28	100	do do do	11		Visual						
	30											
	32	80	Cinders, brick and rock (rubble fill), dry - very dense	12	0	1	4	83	12	N.P.		25
547.7	34											
544.7	36	3-4	Dark brown silt, moist - medium stiff	13	0	1	2	63	34	40	17	28
	38	8										
541.7	40											
	42	11-14-16	Brown and gray silty clay, moist - very stiff	14	3	4	5	38	50	43	21	23
535.7	44											
	46	11-27-34	Brown and gray silty clay, trace limestone fragments (highly weathered shale), moist - hard	15	6	7	3	36	48	46	22	19
531.7	48											
	50		Layered gray shale, soft to medium tough and gray limestone, fossiliferous, approximately 15 to 20% limestone in 1" to 4" layers.									
	52											
528.7	54	76%										

Recovery

BORING COMPLETED

Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/17/64 SAMPLER: TYPE Split Spoon & One Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 537.3 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/18/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0184

BORING No. B-10-2 STATION AND OFFSET 35+03, 19' L. Ramp GG BL SURFACE ELEV. 552.3

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
552.3	0													
	2	1	3-6-10	11"	Brick, cinders and coal(fill), moist - very stiff to medium stiff	Visual classification-No tests performed								Fill
	4	2	4-1-1	5"	do do	Visual classification-No tests performed								Fill
	6	3	3-3-4	3"	do do	Visual classification-No tests performed								Fill
	8	4	5-4-5	6"	do do	Visual classification-No tests performed								Fill
	10	5	3-4-3	13"	do do	Visual classification-No tests performed								Fill
	12													
	14													
537.3	16	6	5-2-2	7"	Brown and dark gray silt, little sand, trace gravel , moist - medium stiff	7	4	7	62	20	27	5	26	A-4b
	18													
532.3	20	7	8-17-13	6"	Brown clay and gravel, trace sand, moist - stiff	39	2	5	19	35	48	26	29	A-7-6
	22													
529.3														
528.8	24	8	NXM	100%	Limestone									
	26	9	8-24-25	12"	Brown clay, trace sand, trace gravel, moist - stiff	9	6	3	37	45	41	19	25	A-7-6
	28													
522.3	30	10	NXM	79%	Gray shale,calcareous,moderately tough to tough, jointed and iron oxide stained at approximately elevation 521 to 520.5 (½ to 3"pieces averaging 1½") and gray limestone, crystalline, fossiliferous, shaly (one 1½" piece in the top 12"of									
	32													
	34													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/17/64 SAMPLER: TYPE Split Spoon 2"O.D.& Core Barrel DIA. NRM WATER ELEV. IMMEDIATE 537.3 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/18/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-10-2 STATION AND OFFSET 35+03, 19' L. Ramp GG BL SURFACE ELEV. 552.3 Bridge No. HAM-71-0184

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
517.3	34				of the run) 97% shale, 3% limestone									
	36				Boring completed									
	38													
	40													
	42													
	44													
	46													
	48													
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 530

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/18/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/19/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow AFTER Backfilled HOURS ____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-10-3 STATION AND OFFSET 36+34, 1.5' Rt. Ramp GG BL SURFACE ELEV. 568.6 Bridge No. HAM-71-0184

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
568.6	0													
568.3		1	20-13-11	13"	0.3' Asphaltic concrete Cinders and gravel (fill), stiff	Visual classification-No tests performed								Fill
566.1	2													
	4	2	5-2-2	9"	Brown silty clay with brick and cinders (fill), soft	Visual classification-No tests performed								Fill
	6	3	3-6-5	9"	Brown silty clay with brick and cinders (fill), medium stiff	Visual classification-No tests performed								Fill
561.1	8	4	4-4-7	12"	Brown clay, trace sand, trace gravel with shale fragments, moist - stiff	2	3	2	40	53	43	21	26	A-7-6
	10	5	3-2-6	18"	Brown clay, trace sand, trace gravel with shale fragments, moist - stiff	6	2	2	35	55	42	21	23	A-7-6
	12	6	5-7-9	16"	Brown clay, trace sand with shale fragments, moist - stiff	0	2	2	39	57	44	20	15	A-7-6
553.6	14													
	16	7	5-12-18	13"	Brown silty clay, trace sand, little gravel with shale fragments, moist - very stiff	19	3	1	39	38	38	17	18	A-6b
551.1	18	8	12-28-32	18"	Brown clay, trace sand with shale fragments, moist - very stiff	0	2	2	41	55	43	21	17	A-7-6
	20													
	22	9	15-21-31	15½"	Brown and gray clay, trace sand with shale fragments, moist - stiff	0	2	2	34	62	42	21	9	A-7-6
544.6	24													
	26				Gray and brown shale, calcareous, moderately tough-weathered in the top 12" of the run (¼" to 2½" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed, (1" to 3" pieces averaging 1½") 90% shale, 10% limestone									
	28	10	NXM	83%										
539.6														
	30				Boring completed									
	32													
	34													

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Form No. 630—16-59

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

Split Spoon & 2"O.D.&

DATE STARTED 8/27/64 SAMPLER: TYPE Com Barrel DIA. HXN WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/27/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-10-4 STATION AND OFFSET 37+17, 10' L, Ramp CC BL SURFACE ELEV. 568.8 Bridge No. HAM-71-0184

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % ABR.	% C.B.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
568.8	0													
566.3	2				Pavement									
564.3	4	S-1		2"	Brown and gray silty clay, trace sand, trace gravel, moist -stiff	8	4	4	35	49	37	16	22	A-6b
561.3	6	1	19-13-17	18"	Brown and gray clay, trace sand, moist - very stiff	0	4	2	35	59	43	21	21	A-7-6
558.8	8	2	19-30-34	18"	Brown and gray silty clay, little sand, trace gravel with limestone fragments, moist - hard	3	7	5	30	55	39	18	20	A-6b
556.8	10	3	23-27-31	6"	Brown weathered shale, moist - hard	Visual classification-No tests performed								
551.8	12	R-1	HXN	57%	Gray shale, calcareous, moderately tough (½" to 2-3/4" pieces averaging 1½") and gray limestone, fossiliferous, iron oxide stained, shaly (one 1" piece in top 18" of the run) 98% shale, 2% limestone									
	14													
	16													
	18				Boring completed									
	20													
	22													
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 53[illegible]-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

*Water used in drilling from elevation 577.8

LOG OF BORING

DATE STARTED 8/28/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE * CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/28/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71.0.93

BORING No. B-10-5 STATION AND OFFSET 38+10, 7' L. Ramp GG BL SURFACE ELEV. 577.8 Bridge No. HAM-71-0184

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
577.8	0													
576.3	2	1	2-5-6	12"	Topsoil and brown silty clay (fill), moist- medium stiff	Visual classification-No tests performed								Fill
	4	2	7-11-11	13"	Brown clay, trace sand with shale fragments, moist - very stiff	0	0	2	34	64	48	21	17	A-7-6
	6	3	8-21-20	7"	Brown clay, trace sand, little gravel with shale fragments, moist-very stiff	15	4	1	30	50	45	20	21	A-7-6
	8	4	11-11-18	15"	Brown clay, trace sand with shale fragments, moist - very stiff	0	2	2	28	68	49	22	22	A-7-6
	10	5	10-12-21	13"	do do	0	0	3	31	66	45	20	20	A-7-6
	12	6	14-18-25	13"	do do	0	1	1	34	64	45	19	18	A-7-6
	14	7	8-10-16	12"	Brown clay, little sand, little gravel with shale fragments, moist-very stiff	10	10	5	28	47	41	16	21	A-7-6
561.0	16	8	70/0.2'	2½"	Gray shale, dry - hard	Visual classification-No tests performed								
560.4	18													
	20	9	NXM	99%	Gray shale, calcareous, moderately tough to tough(½" to 4½" pieces averaging 2½") and gray limestone, crystalline, fossiliferous, jointed (3/4" to 5½" pieces averaging 3") 79% shale, 21% limestone									
555.4	22													
	24				Boring completed									
	26													
	28													
	30													
	32													
	34													

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Form No. 530

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

*Water used in drilling from elevation 587.5

DATE STARTED 8/31/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE * CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/1/64 CASING: LENGTH _____ DIA. None AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0184

BORING No. B-10-6 STATION AND OFFSET 38+79, 2' L. Ramp GG BL SURFACE ELEV. 587.5

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
587.5	0													
	2	1	1-4-6	10"	Topsoil, cinders and brick fragments (fill), dry - stiff	Visual classification-No tests performed								Fill
	4	2	3-7-14	4"	do do	Visual classification-No tests performed								Fill
582.5	6	3	7-10-15	13"	Brown clay, trace sand, moist - very stiff	0	2	3	29	66	52	26	17	A-7-6
	8													
	10	4	11-14-17	12"	do do	Visual classification-No tests performed								A-7-6
	12	5	13-26-30	14"	Brown clay, trace sand, moist - very stiff	0	1	2	37	60	44	20	16	A-7-6
575.0	14	6	20-27-23	15"	Brown silty clay, trace sand, moist - hard	Visual classification-No tests performed								A-6b
	16	7	24-46-57	14"	do do	0	3	2	37	58	40	16	16	A-6b
570.0	18													
	20	8	30-71-50	12"	Brown and gray shale, moist - hard	Visual classification-No tests performed								
	22	9	96	6"	Gray shale, dry - hard	Visual classification-No tests performed								
566.0	24	10	NXM	82%	Sample 10-Gray shale, calcareous, moderately tough, jointed and iron oxide stained midway in the run(1" to 3-3/4" pieces averaging 2½") and gray limestone crystalline, fossiliferous, jointed and iron oxide stained (two pieces 1" and 3") 92% shale,8% limestone									
	26													
	28	11	NXM	90%	Sample 11 - Gray shale, calcareous, moderately tough to tough (½" to 2½" pieces averaging 1½") and gray limestone, crystalline,fossiliferous(1" to 4"pieces averaging 2½") 80% shale, 20% limestone									
	30													
556.0	32	12	NXM	100%										
	34													

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Form No. 530—

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

*Water used in drilling from elevation 587.5

DATE STARTED 8/31/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE * CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/1/64 CASING: LENGTH _____ DIA. None AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-10-6 STATION AND OFFSET 38+79, 2' L. Ramp GG, BL SURFACE ELEV. 587.5 Bridge No. HAM-71-0184

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
					Sample 12 - Gray shale, calcareous, tough, (1" to 3½" pieces averaging 2½") 100% shale									
					Boring completed									

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Form No. 630

THE E. C. NUTTING COMPANY

4130 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/13/64 SAMPLER: TYPE Split Spoon Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT City of Cincinnati, Ohio

DATE COMPLETED 8/14/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT Northeast Expressway HAM-71-0.93

BORING No. B-10-7 STATION AND OFFSET 39+89, 2' Rt. BL Ramp GG SURFACE ELEV. 593.0 Bridge No. HAM-71-0184

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
593.0	0													
590.5	2	1	2-3-4	8"	Brick, cinders and clay (fill), moist-loose	Visual classification-No tests performed								Fill
588.0	4	2	3-3-3	14"	Brown silty clay with brick and cinders (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	6	3	5-5-5	15"	Brown silty clay and cinders(fill), moist - stiff	Visual classification-No tests performed								Fill
	8													
583.0	10	4	2-2-3	15"	Brown silty clay and cinders (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	12	S-1		11"	Brown silty clay with cinders and brick fragments (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	14	5	2-4-5	16"	do do	Visual classification-No tests performed								Fill
578.0	16	6	4-5-7	18"	Brown and gray clay, trace sand, trace gravel with limestone fragments, moist-stiff	3	4	4	31	58	42	25	20	A-7-6
	18													
	20													
	22	7	14-21-36	18"	Brown clay, trace sand, moist - hard	0	1	1	38	60	48	24	16	A-7-6
	24													
568.0	26	8	24-68-76	18"	Brown and gray weathered shale, moist-hard	Visual classification-No tests performed								
	28	9	102	14"	do do	Visual classification-No tests performed								
563.0	30													
	32	10	NXM	55%	Gray shale, clacareous, moderately tough (1½" to 2½" pieces averaging 2") and gray limestone, crystalline, fossiliferous, jointed and iron oxide stained in the bottom half of the run(2½" to 4½" pieces averaging 3") 75% shale, 25% limestone									
	34													

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Form No. 530—16-60

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/13/64 SAMPLER: TYPE Split Spoon Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE None Backfilled CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/14/64 CASING: LENGTH _____ DIA. 3.5"I.D. Hollow Stem Augers AFTER _____ HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-10-7 STATION AND OFFSET 39+89, 2' Rt. BL Ramp GG SURFACE ELEV. 593.0 Bridge No. HAM-71-0184

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
553.0	34 36 38 40	11	NXM	82%	Gray shale, calcareous, tough, (1" to 4" pieces averaging 2½") and gray limestone, crystalline, fossiliferous (two pieces 3½" and 9") 79% shale, 21% limestone									
	42 44 46 48 50 52 54 56 58 60 62 64 66 68				Boring completed									

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Form No. 530—1C

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/27/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/27/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-10-8 STATION AND OFFSET 40+58, 10'Rt., Ramp GG BL SURFACE ELEV. 594.0 Bridge No, HAM-71-0184

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	ENVIL CLASS
594.0	0													
	2	1	3-5-8	5"	Concrete, brick, cinders and clay (fill), moist - medium dense to loose	Visual classification-No tests performed								Fill
	4	2	4-5-6	6"	do do	Visual classification-No tests performed								Fill
	6	3	1-1-1	3"	do do	Visual classification-No tests performed								Fill
	8		3-1-1	0		No recovery								
	10	4	2-1-1	5"	do do	Visual classification-No tests performed								Fill
	12													
	14		2-2-2	0		No recovery								
579.0	16	5	1-2-3	5"	Brick, cinders and gravel (fill), moist - loose	Visual classification-No tests performed								Fill
576.5	18	6	3-4-5	16"	Brown clay, trace sand, moist - medium stiff	0	2	4	27	67	54	30	25	A-7-6
	20	S-1		18"	Brown clay, trace sand, moist - stiff	0	2	1	31	66	46	22	20	A-7-6
	22	7	12-16-27	18"	Brown clay, trace sand with shale fragments, moist - hard	0	2	2	33	63	44	21	17	A-7-6
569.0	24													
	26	8	13-27-43	18"	Brown weathered shale, moist - hard	Visual classification-No tests performed								
	28	9	105	8"	Gray shale, dry - hard	Visual classification-No tests performed								
565.0	30	10	NXM	60%	Gray shale,calcareous,moderately tough with soft seams (½" to 2½" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed and iron oxide stained in the bottom 12"of the run(½" to 3¼"pieces averaging 2") 87% shale, 13% limestone.									
	32													
	34													

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Form No. 630—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/27/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/27/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-10-8 STATION AND OFFSET 40+58, 10' Rt., Ramp GG BL SURFACE ELEV. 594.0 Bridge No. HAM-71-0184

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL. CLASS
	34													
	36	11	NXM	50%	Gray shale, calcareous, moderately tough with soft seams (½" to 2" pieces averaging 1") and gray limestone, crystalline, fossiliferous (1" to 5" pieces averaging 2½") 80% shale, 20% limestone									
555.0	38													
	40													
	42				Boring completed									
	44													
	46													
	48													
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 630—1

THE H. C. NUTTING COMPANY

4160 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

* Water used in drilling from elev.573.4

DATE STARTED 1-5-65 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE * CLIENT: City of Cincinnati,Ohio

DATE COMPLETED 1-5-65 CASING: LENGTH ____ DIA. None AFTER 24 HOURS 561.4 PROJECT: Northeast Expressway HAM-71-0.93 Retaining Wall 16

BORING No. R-16-4 STATION AND OFFSET 155+74,105'Rt.,B.L. SURFACE ELEV. 576.9

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
576.9	0													
576.4		1	4	4"	Brown and gray clay with cinders and gravel,moist, medium stiff	Visual classification-No test performed								Fill
	2	2	16-23	12"	Brown and gray weathered shale with thinly bedded limestone, moist, hard	Visual classification No test performed								
	4	3	35-50	8"	do do	Visual classification No test performed								
571.9														
	6				Gray shale,calcareous,moderately tough with brown weathered zones in the bottom 10" of the run(1" to 5½" pieces averaging 2½")and gray limestone,crystalline,fossiliferous jointed and iron oxide stained in the bottom 10" of the run(1½" to 3" pieces averaging2½")80%shale,20%limestone									
	8	R-1	NXM	70%										
	10													
	12	R-2	NXM	37%	Gray shale,calcareous,moderately tough (½"to 1½"pieces averaging 1") and gray limestone,crystalline,fossiliferous (½" to 1½"pieces averaging 1") 80% shale, 20% limestone.									
	14													
	16	R-3	NXM	80%	Gray shale,calcareous,moderately tough to tough (½"to 3½"pieces averaging 2") and gray limestone, crystalline, fossiliferous (two pieces 1" and 6") 88% shale, 12" limestone									
	18													
557.9														
	20				Boring Completed									
	22													
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 530—10-58

THE R. W. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING *Water used in drilling from elev.580.5

DATE STARTED 1-6-65 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE * CLIENT: City of Cincinnati,Ohio

DATE COMPLETED 1-6-65 CASING: LENGTH ____ DIA. 3.5"I.D. AFTER 24 HOURS 560.5 PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-16-5 STATION AND OFFSET 157+12, 113'Rt., C.L. SURFACE ELEV. 587.0 Retaining Wall 16

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	STATE CLASS.
587.0	0													
	2	1	1-3-2	7"	Topsoil, brick, cinders and gravel, (fill), moist - loose	Visual classification-No tests performed								Fill
	4	2	3-2-2	7"	do do	Visual classification-No tests performed								Fill
	6	3	2-5-2	8"	do do	Visual classification-No tests performed								Fill
	8													
577.5	10	4	3-4-2	7"	do do	Visual classification-No tests performed								Fill
	12	5	10-16-22	15"	Brown and gray clay, trace shale and limestone fragments, trace sand, moist - very stiff	8	2	2	42	46	46	23	20	A-7-6
	14	6	12-17-28	14"	Brown clay, trace shale and limestone fragmentd,trace sand, moist- very stiff	4	6	4	37	49	46	23	22	A-7-6
572.0	16													
	18	7	16-25-30	12"	Brown weathered shale with thinly bedded limestone,moist - very stiff	Visual classification-No tests performed								
		8	35-55	9"	do do	Visual classification-No tests performed								
567.0	20													
	22	R-1	NXM	80%	Gray shale calcareous, moderately tough with brown weathered zones,approx.midway in the run(1½" to 3½" pieces averaging 2") and gray limestone crystalline fossiliferous jointed and iron oxide stained(1" to 2-3/4" pieces averaging 2") 88% shale, 12% limestone									
	24													
	26	R-2	NXM	60%	Gray shale,calcareous,moderately tough with soft seams.(½"to 2½"pieces averaging 2") and gray limestone crystalline fossiliferous jointed and iron oxide stained(1½"to 3"pieces averaging 2") 73% shale, 27% limestone									
	28													
557.0	30													
	32				Boring Completed									
	34													

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/10/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/10/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-31-1 STATION AND OFFSET 182+91.5'L., Ramp RC BL SURFACE ELEV. 622.5 Retaining Wall No. 31

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL CLASS
622.5	0													
	2	1	10-13-16	15"	Clay, brick and cinders(fill), moist - stiff	Visual classification-No tests performed								Fill
620.0	4	2	4-4-5	13"	Sand, gravel, cinders, clay and brick fragments (fill), moist - loose	Visual classification-No tests performed								Fill
617.5	6	3	8-5-6	8"	Sand, gravel and brick (fill), moist - medium dense	Visual classification-No tests performed								Fill
615.0	8	4	4-3-3	7"	Clay, cinders and brick (fill), moist - loose	Visual classification-No tests performed								Fill
612.5	10	5	4-6-8	12"	Weathered shale and cinders (fill), moist - stiff	Visual classification-No tests performed								Fill
610.0	12	6	3-3-3	15"	Cinders, sand and organic matter (fill), moist - loose	Visual classification-No tests performed								Fill
	14	7	1-2-3	13"	do do	Visual classification-No tests performed								Fill
606.0	16	8	2-2-3	16"	Clay and cinders (fill), moist - loose	Visual classification-No tests performed								Fill
	18	9	1-1-3	15"	Cinders and organic matter (fill), moist - loose	Visual classification-No tests performed								Fill
602.5	20	10	2-1-3	16"	do do	Visual classification-No tests performed								Fill
	22	11	1-2-2	13"	Cinders (fill), moist - loose	Visual classification-No tests performed								Fill
	24	12	2-2-2	14"	do do	Visual classification-No tests performed								Fill
597.5	26	13	1-2-2	18"	do do	Visual classification-No tests performed								Fill
	28													
	30													
	32													
	34													

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Form No. 630—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/10/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/10/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-31-1 STATION AND OFFSET 182+91.5' L. Ramp RC BL SURFACE ELEV. 622.5 Retaining Wall No. 31

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
587.5	34													
	36	14	3-5-7	18"	Dark gray silt and clay, trace sand, trace gravel with cinders (fill), moist - medium stiff	5	4	3	47	41	40	15	26	A-6a
	38													
582.5	40													
	42	15	5-9-13	18"	Brown and gray silty clay, trace sand, moist - stiff	0	1	2	46	51	38	16	21	A-6b
	44													
577.5														
	46	16	7-10-15	18"	Brown clay, little sand, little gravel with limestone fragments, moist - stiff	12	6	6	26	50	42	18	25	A-7-6
	48													
572.5	50													
	52	17	8-11-17	15"	Brown silty clay, trace sand, trace gravel with limestone fragments, moist - stiff	4	5	4	18	69	40	17	17	A-6b
568.5	54													
	56	18	9-15-24	18"	Brown and gray weathered shale, moist - hard	Visual classification-No tests performed								
	58													
563.5														
	60				Gray shale, calcareous, tough to moderately tough (½" to 2½" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, 2" to 2-3/4" pieces averaging 2½")									
	62	19	NXM	81%	80% shale, 20% limestone									
558.5	64													
	66				Boring completed									
	68													

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/2/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/3/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER 2 HOURS 605.0 PROJECT: Northeast Expressway RAM-71-0.93 Retaining Wall No. 34

BORING No. R-34-1 STATION AND OFFSET 22+95, 2' L.,NB Reading Rd. BL SURFACE ELEV. 624.0

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
624.0	0													
	2	1	9-11-10	10"	Brown silt and clay, little sand,trace gravel (fill), dry - stiff	9	9	10	42	30	34	12	8	A-6a
	4	2	7-9-9	13"	do do	Visual classification-No tests performed								A-6a
619.0	6	3	7-10-9	9"	Brown clay, trace sand, trace gravel, (fill), moist - stiff	1	5	4	36	54	44	20	17	A-7-6
	8	4	9-11-8	7"	do do	Visual classification-No tests performed								A-7-6
614.0	10					Visual classification-No tests performed								Fill
	12	5	6-7-12	10"	Cinders and brick (fill), moist - medium dense	Visual classification-No tests performed								Fill
	14	6	5-4-3	9"	do do	Visual classification-No tests performed								Fill
609.0	16	7	4-4-5	12"	Gray silty clay (fill), moist- stiff	Visual classification-No tests performed								Fill
606.5	18	8	4-5-3	15"	Cinders and brick (fill), moist - loose	Visual classification-No tests performed								Fill
	20	9	2-3-2	18"	do do	Visual classification-No tests performed								Fill
	22	10	2-1-1	10"	do do	Visual classification-No tests performed								Fill
	24	11	4-2-2	15 "	do do	Visual classification-No tests performed								Fill
596.5	26	12	9-10-12	14"	Gray silt and clay, trace sand, trace gravel with shale fragments moist - stiff	2	5	3	38	52	38	15	16	A-6a
594.0	28	13	11-15-18	11"	Gray clay, trace sand with shale fragments, moist - stiff	0	4	1	30	65	45	19	13	A-7-6
	30	14	8-10-12	12"	Brown and gray clay, little sand,trace gravel with shale fragments, moist - stiff	2	6	6	30	56	46	20	24	A-7-6
	32													
	34													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/2/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/2/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER 2 HOURS 605.0 PROJECT: Northeast Expressway HAM-71-0.93 Retaining Wall No. 34

BORING No. R-34-1 STATION AND OFFSET 22+95, 2'L. NB Reading Road BL SURFACE ELEV. 624.0

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL. CLASS
	34													
	36	15	9-10-11	14"	Brown clay, trace sand, trace gravel with shale fragments, moist-very stiff	1	2	3	35	59	46	19	21	A-7-6
586.5	38													
		16	29-64-100	16"	Gray shale, dry - hard	Visual classification-No tests performed								
583.0	40													
	42				Gray and brown shale, calcareous, moderately tough with soft seams (½" to 3" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed and iron oxide stained (½" to 2½" pieces averagine 1½") 84% shale, 16% limestone									
	44	17	NXM	65%										
578.0	46													
	48				Boring completed									
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 630-[illegible]

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/3/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/3/64 CASING: LENGTH _____ DIA 3.5"I.D.Hollow AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.13

BORING No. R-34-2 STATION AND OFFSET 24+13, 4.5' L. NB Reading Rd.BL SURFACE ELEV. 623.8 Retaining Wall No. 34

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS.
623.8	0													
	2	1	3-4-14	13"	Brown silty clay with gravel (fill), dry	Visual classification-No tests performed								Fill
619.8	4	2	4-7-3	16½"	do do	Visual classification-No tests performed								Fill
	6	3	41-65-36	9"	Cinders and brick fragments (fill), moist	Visual classification-No tests performed								Fill
	8	4	24-31-27	13½"	do do	Visual classification-No tests performed								Fill
	10	5	15-7-9	8½"	do do	Visual classification-No tests performed								Fill
	12	6	2-3-3	0	do do	Visual classification-No tests performed								Fill
608.8	14													
	16	7	12-12-12	11"	Brown and gray silty clay with limestone fragments (fill)	Visual classification-No tests performed								Fill
606.8	18	S-1		24"	Brown silt and clay, some sand, trace gravel with limestone fragments, moist - stiff	3	16	11	33	37	34	12	16	A-6a
604.8	20	8	9-12-13	12"	Brown and gray clay, little sand, trace gravel with limestone fragments, moist-stiff	3	5	5	33	54	42	18	20	A-7-6
	22	9	19-47-XX	17"	Brown clay, trace sand, moist-very stiff	0	4	2	43	51	43	18	14	A-7-6
598.8	24													
	26	R-1	NXM	55%	Brown and gray weathered shale moderately tough 1 3/4" to 3" pieces averaging 2") 100% shale									
	28													
	30				Gray shale with brown weathered zones in the top half of the run, calcareous, moderately tough (½" to 4" pieces averaging 2½") and gray limestone, crystalline,									
	32	R-2	NXM	65%	fossiliferous, jointed (two 1" pieces)									
	34				97% shale, 3% limestone									

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Form No. 530—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/3/64 SAMPLER: TYPE Split Spoon & Com Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/3/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway NAM-71-0.93

BORING No. R-34-2 STATION AND OFFSET 24+13, 4.5' L. NB Reading Rd.BL SURFACE ELEV. 623.8 Retaining Wall No. 34

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
588.8	34													
	36				Boring completed									
	38													
	40													
	42													
	44													
	46													
	48													
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 630

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/10/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 599.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/10/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Retaining Wall No. 35

BORING No. B-35-1 STATION AND OFFSET 184+34, 2' Rt. NB BL SURFACE ELEV. 624.5

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
624.5	0													
		1	7-9-9	6"	Brown silty clay (fill), dry - medium stiff									Fill
622.0	2	2A	3-2		do do									Fill
		2B	1	13"	Cinders and brick fragments (fill), moist - soft									Fill
	4													
	6	3	1-1-1	10"	do do									Fill
	8	4	3-2-1	6"	do do									Fill
	10	5	3-1-1	3"	do do									Fill
	12	6	2-2-2	4"	do do									Fill
	14													
	16	7	2-2-2	9"	do do									Fill
	18	8	3-3-2	13"	do do									Fill
	20	9	3-3-3	11"	do do									Fill
	22	10	2-3-2	11"	do do									Fill
	24	11	2-1-1	13"	do do									Fill
	26	12	2-2-2	16"	do do									Fill
	28	13	3-2-3	16"	do do									Fill
	30													
	32													
	34													

Visual classification-No tests performed

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/10/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 599.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/10/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-35-1 STATION AND OFFSET 184+34.2' Rt.,NB BL SURFACE ELEV. 624.5 Retaining Wall No. 35

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36	14	3-3-2	18"	Cinders and brick fragments (fill), moist - soft	Visual classification-No tests performed								Fill
	38													
	40													
	42	15	6-7-7	14"	do do	Visual classification-No tests performed								Fill
	44													
579.5	46	16	9-12-14	16"	Brown and gray silty clay, trace sand, trace gravel, moist - medium stiff	2	4	4	45	45	39	18	20	A-6b
	48													
574.5	50													
	52	R-1	NXM	98%	2'Brown weathered shale,slightly tough, (2" and 3" pieces averaging 2½") and gray limestone, crystalline,fossiliferous, jointed in the top 6" of the run(½" to 5" pieces averaging 3½") 67%limestone 33% shale									
	54													
569.5	56				3'Gray shale, calcareous,moderately tough (½" to 1½" pieces averaging 1") and gray limestone, crystalline, fossiliferous, (one 1" piece) 98% shale, 2% limestone									
	58													
	60				Boring completed									
	62													
	64													
	66													
	68													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 630

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/9/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 588.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/9/64 CASING: LENGTH _____ DIA. 3.5"I.D.hollow stem augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-35-2 STATION AND OFFSET 185+27.2 Rt., NB BL SURFACE ELEV. 626.0 Retaining Wall No. 35

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
626.0	0													
623.5	2	1	6-6-6	16"	Clay, cinders and brick (fill), moist - stiff	Visual classification-No tests performed								Fill
	4	2	2-2-1	12"	Cinders (fill), moist - loose	Visual classification-No tests performed								Fill
	6	3	1-1-2	15"	do do	Visual classification-No tests performed								Fill
	8		1-2-2	No Recovery										
616.0	10													
	12	4	1-2-2	8"	Cinders and rubble (fill), moist - loose	Visual classification-No tests performed								Fill
	14													
611.0	16	5	1-2-3	8"	Sand, cinders and brick fragments, (fill), moist - loose	Visual classification-No tests performed								Fill
	18	6	2-3-3	11"	do do	Visual classification-No tests performed								Fill
606.0	20													
	22	7	3-4-5	15"	Clay, cinders and brick fragments, (fill), moist - loose	Visual classification-No tests performed								Fill
	24	8	4-5-5	14"	do do	Visual classification-No tests performed								Fill
	26	9	3-3-4	18"	do do	Visual classification-No tests performed								Fill
598.5	28	10	5-7-8	15"	Brown and gray clay, little sand, trace gravel with shale and limestone fragments (fill), moist - medium stiff	6	7	4	31	52	43	21	21	A-7-6
	30	11	6-8-10	16"	Brown and gray clay, trace sand, trace gravel with shale and limestone fragments (fill), moist - medium stiff	6	4	4	30	56	44	18	18	A-7-6
593.0	32				Brown and gray silt and clay, trace									
	34	12	7-11-16	15"	sand (fill), moist - stiff	0	6	3	36	55	38	13	14	A-6a

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/9/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 588.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/9/64 CASING: LENGTH _____ DIA. 3.5"I.D.hollow AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-35-2 STATION AND OFFSET 185+27,2'Rt., NB BL SURFACE ELEV. 626.0 Retaining Wall No. 35

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36	13	4-5-5	18"	Silty clay, cinders, brick and wood fragments (fill), wet - loose	Visual classification-No tests performed								Fill
588.5	38													
		14	7-9-11	17"	Brown and gray clay, trace sand, trace gravel with shale and limestone fragments moist - stiff	2	4	2	34	58	42	16	19	A-7-6
	40													
		8-1		16"	Brown clay, some sand with shale and limestone fragments, moist - stiff	0	12	10	32	46	51	26	20	A-7-6
	42													
		15	5-7-8	18"	Brown and gray clay, little sand, trace gravel with shale and limestone fragments moist - medium stiff	5	6	5	31	53	45	21	23	A-7-6
	44													
	46	16	5-7-9	18"	Brown and gray clay with shale and limestone fragments moist - medium stiff	3	6	3	34	54	43	17	26	A-7-6
	48													
576.0	50													
		17	11-14-22	18"	Brown and gray weathered shale, moist - very stiff	Visual classification-No tests performed								
	52													
	54													
571.0														
	56				Gray shale, calcareous, tough (½" to 4½" pieces averaging 2") and gray limestone, crystalline, fossiliferous (3/4" to 4½" pieces averaging 3") 90% shale, 10% limestone										
		18	NXM	93%										
	58													
566.0	60													
	62				Boring completed									
	64													
	66													
	68													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 630—M-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 2/13/65 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 607.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 2/13/65 CASING: LENGTH ____ DIA. 3.375"I.D.Hollow Stem Augers AFTER 1 HOURS 611.7 Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Retaining Wall No. 35

BORING No. R-35-3 STATION AND OFFSET 185+93, 19'Rt. NB BL SURFACE ELEV. 627.7

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTD. CLASS
627.7	0													
625.2	2	1	4-2-7	15"	Cinders and clay,(fill), moist - medium stiff	Visual classification-No tests performed								Fill
622.7	4	2	6-8-10	14"	Brown and gray silty clay, little sand, (fill), moist - medium stiff	0	4	12	36	48	36	18	20	A-6b
	6	3	3-2-7	12"	Cinders, brick and wood (fill), moist	Visual classification-No tests performed								Fill
	8	4	2-3-4	8"	do do	Visual classification-No tests performed								Fill
	10													
	12	5	10-7-5	10"	do do	Visual classification-No tests performed								Fill
	14	6	6-7-10	8"	do do	Visual classification-No tests performed								Fill
	16	7	7-6-9	11"	do do	Visual classification-No tests performed								Fill
	18													
	20	8	8-12-6	9"	do do	Visual classification-No tests performed								Fill
	22	9	3-7-10	7"	do do	Visual classification-No tests performed								Fill
	24	10	4-5-5	12"	do do	Visual classification-No tests performed								Fill
	26	S-1		18"	do do	Visual classification-No tests performed								Fill
	28	11	11-7-7	13"	do do	Visual classification-No tests performed								Fill
	30													
595.7	32	S-2		18"	do do	Visual classification-No tests performed								Fill
	34	12	9-11-10	18"	Gray silty clay,little sand with rock fragments, trace brick and cinders (fill), moist - stiff	15	9	8	28	40	40	22	26	A-6b

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—1

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 2/13/65 SAMPLER: TYPE Split Spoon& Core Barrel 2"O.D.& DIA. NXM WATER ELEV. IMMEDIATE 607.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 2/13/65 CASING: LENGTH _____ DIA. 3.375"I.D.Hollow Stem Augers AFTER 1 HOURS 611.7 Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-35-3 STATION AND OFFSET 185+93.19'Rt. NB BL SURFACE ELEV. 627.7 Retaining Wall No. 35

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL. CLASS
592.7	34													
590.7	36	S-3		18"	Cinders (fill), moist	Visual classification-No tests performed								Fill
589.2	38	13	10-15-20	12"	Gray silty clay, little gravel, little sand, some brick(fill), moist	12	12	8	28	40	36	17	17	A-6b
587.7	40	14	9-11-8	15"	Gray silt and clay with rock fragments some sand, trace brick(fill), moist-medium stiff	36	13	9	14	28	35	15	21	A-6a
	42	S-4		24"	Brown and greenish brown clay with shale fragments, moist - stiff	1	2	1	1	95	43	19	22	A-7-6
		15	7-7-10	17"	Brown and gray clay, trace sand with shale fragments, moist - medium stiff	2	4	4	27	63	51	28	21	A-7-6
582.7	44													
580.7	46	S-5		24"	Brown clay with shale fragments, moist-stiff	6	0	1	33	60	54	30	24	A-7-6
	48	16	7-8-11	17"	Brown clay with shale fragments, trace sand, moist - medium stiff	0	4	4	38	54	47	24	23	A-7-6
	50													
	52	S-6		18"	Brown clay with shale fragments, moist-stiff	0	1	2	33	64	52	28	27	A-7-6
		17	6-7-10	11"	Brown and gray clay with shale and rock fragments, moist - medium stiff	11	11	7	32	39	41	21	10	A-7-6
573.7	54													
572.7		18	47-78	9"	Gray shale									
	56													
		R-1	NXM	50%	Gray shale, calcareous, moderately tough, (1" to 6" pieces averaging 4") 100% shale									
	58													
567.7	60													
	62				Boring completed									
	64													
	66													
	68													

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Form No. 630—

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 2/12/65 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 600.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 2/12/65 CASING: LENGTH _____ DIA. 3.375"I.D. Hollow Stem Augers AFTER 24 HOURS 600.2 PROJECT: Northeast Expressway HAM-71-0.93 Retaining Wall No. 35

BORING No. R-35-4 STATION AND OFFSET 186+45, 20' L., NB BL SURFACE ELEV. 626.7

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
626.7	0													
	2	1	4-6-9	17"	Cinders, brown clay and brick (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	4	2	7-10-11	18"	do do	Visual classification-No tests performed								Fill
621.7	6	3	7-8-12	10"	Cinders, brick, wood, trace clay (fill) moist	Visual classification-No tests performed								Fill
	8	4	5-9-15	12"	do do	Visual classification-No tests performed								Fill
	10	5	7-3-16	13"	do do	Visual classification-No tests performed								Fill
	12													
	14	6	6-8-10	10"	do do	Visual classification-No tests performed								Fill
	16	7	3-15-11	11"	do do	Visual classification-No tests performed								Fill
	18	8	3-4-3	7"	do do	Visual classification-No tests performed								Fill
	20	9	6-10-5	16"	do do	Visual classification-No tests performed								Fill
	22													
	24	10	3-7-4	14"	do do	Visual classification-No tests performed								Fill
601.7	26													
599.7		S-1		24"	Cinders and silt(fill)	24	14	18	31	13		NP	52	Fill
	28	11	4-6-7	17"	Cinders (fill), wet	Visual classification-No tests performed								Fill
596.7	30													
	32	S-2		24"	Brown silty clay with shale fragments, moist - stiff	0	2	3	35	60	43	19	21	A-7-6
	34	12	10-15-18	9"	Brown and gray clay with shale fragments, moist - medium stiff	1	3	3	30	63	50	26	19	A-7-6

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Form No. 530

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 2/12/65 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 600.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 2/12/65 CASING: LENGTH ____ DIA. 3.375"I.D.Hollow Stem Augers AFTER 24 HOURS 600.2 PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-35-4 STATION AND OFFSET 186+45, 20' L., NB EL SURFACE ELEV. 626.7 Retaining Wall No. 35

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	ENTL. CLASS
591.7	34													
	36	S-3		18"	Gray silty clay with some rock fragments moist - medium stiff	5	6	5	31	53	40	18	22	A-6b
588.2	38	13	30-7-8	18"	Gray and brown silty clay with shale fragments, moist - medium stiff	17	7	14	24	38	36	18	23	A-6b
	40	14	24-38-41	10"	Brown clay with shale fragments, moist-very stiff	1	4	6	8	81	45	23	20	A-7-6
	42	S-4		12"	Brown and gray clay with limestone fragments and shale, moist - stiff	14	3	3	26	54	49	23	23	A-7-6
	44	15	10-27-38	10"	Brown and gray clay with rock fragments moist - stiff	37	9	7	16	31	42	22	26	A-7-6
	46	16	21-37-56	13"	Brown and gray clay with shale fragments, moist - very stiff	0	2	2	37	59	46	24	16	A-7-6
579.2	48													
	50	R-1	NXM	70%	Gray shale, calcareous moderately tough (1" to 6" pieces averaging 4") and gray limestone, crystalline, fossiliferous, jointed (two pieces 1" and 6") 88% shale, 12% limestone									
574.2	52													
	54				Boring completed									
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/8/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 564.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/8/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-11-1 STATION AND OFFSET 28+20, 30' Rt., NB Gilbert Ave. BL SURFACE ELEV. 581.5 Bridge No. HAM-71-0196

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
581.5	0													
581.0		1	2-3-4	14"	Topsoil (0.5'). Brown clayey sand with brick fragments, (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	2													
	4	2	2-2-5	17½"		Visual classification-No tests performed								Fill
576.5														
	6	3	2-3-4	16"	Brown clayey sand with coal fragments (fill), moist - medium stiff	Visual classification-No tests performed								Fill
574.0	8													
		4	2-5-7	16"	Brown silty clay, little sand (fill), moist - medium stiff	0	8	5	42	45	40	18	22	A-6b
571.5	10													
569.5	12	5	4-5-8	18"	Brown and gray clay, trace sand (fill), moist - medium stiff	0	4	4	41	51	48	26	21	A-7-6
	14	S-1		20"	Brown and gray clay, little sand, moist - stiff	0	7	4	30	59	41	19	21	A-7-6
	16	6	17-27-26	18"	Brown clay, trace sand with shale fragments moist - hard	0	0	1	27	72	51	27	18	A-7-6
	18													
		7	15-12-34	18"	Brown clay, trace sand with shale fragments, moist - hard	0	3	5	22	70	44	21	16	A-7-6
561.5	20													
		S-2		17"	Brown and gray clay, little sand, moist - very stiff	0	8	5	41	46	42	18	12	A-7-6
559.0	22													
	24	8	6-10-29	10"	Brown weathered shale, very moist-stiff	Visual classification No tests performed								
556.5														
	26	9	NXM	72%	Gray shale, calcareous, moderately tough to tough (½" to 3" pieces averaging 1½") and gray limestone, crystalline, fossiliferous (two pieces 3" and 2½") 94% shale, 6% limestone									
	28													
551.5	30													
	32				Boring completed									
	34													

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Form No. 530—I

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

Split Spoon and 2"O.D.
DATE STARTED 7/6/64 SAMPLER: TYPE Core Barrel DIA. & NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio
DATE COMPLETED 7/6/64 CASING: LENGTH DIA 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS PROJECT: Northeast Expressway FAM-71-0.93
BORING No. B-11-2 STATION AND OFFSET 29+30, 34' L.N.B.Gilbert B.L. SURFACE ELEV. 600.7 Bridge No. HAM-1-0196

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SNTL CLASS.
600.7	0													
598.2	2	1	14-8-4	6"	Blacktop, sand, gravel and brick (fill), moist - medium dense	Visual classification-No tests performed								Fill
595.7	4	2	2-2-2	14"	Sand, cinders and brick (fill), moist - loose	Visual classification-No tests performed								Fill
593.2	6	3	5-2-2	16"	Sand, clay, concrete and brick (fill), moist - loose	Visual classification-No tests performed								Fill
	8	4	1-2-2	18"	Sand and clay, trace cinders (fill), moist - loose	Visual classification-No tests performed								Fill
	10	5	3-4-6	18"	do do	Visual classification-No tests performed								Fill
685.7	12													
	14													
	16	6	2-4-5	10"	Sand, gravel and brick (fill), moist-loose	Visual classification-No tests performed								Fill
680.7	18													
	20													
678.2	22	7	2-3-3	6"	Brick fragments, (fill), moist - loose	Visual classification-No tests performed								Fill
675.7	24	8	1-2-2	12"	Sand, cinders and clay (fill), moist-loose	Visual classification-No tests performed								Fill
673.2	26	9	1-2-2	18"	Cinders (fill), moist - loose	Visual classification-No tests performed								Fill
	28	10	2-2-4	10"	Sand, gravel and cinders (fill), very moist - loose	Visual classification-No tests performed								Fill
	30													
668.2	32				do do									
	34													

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Form No. 530--16.59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/6/64 SAMPLER: TYPE Split Spoon and Core Barrel DIA. NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/6/64 CASING: LENGTH _____ DIA. 3.5" I.D. Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-11-2 STATION AND OFFSET 29+30, 34'L N.B. Gilbert B.L. SURFACE ELEV. 600.7 Bridge No. HAM-1-0196

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
564.2	36	12	14-36-81	18"	Brown and gray clay, trace sand with shale fragments, moist - hard	0	0	1	23	76	50	26	14	A-7-6
	38				Brown and gray shale, moist - hard									
		13	18-43-100	18"										
	40				Brown and gray shale, soft, weathered, (1" to 3" pieces averaging 2", 100% shale	Visual classification - No tests performed								
	42	14	NXM	72%	Gray shale, calcareous moderately tough, (1½" to 4" pieces averaging 2") and gray limestone, crystalline, fossiliferous (two 1½" pieces at the bottom of the run) 90% shale, 10% limestone									
555.7	44													
	46													
	48													
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 630--1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 25, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/3/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/3/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-11-3 STATION AND OFFSET 29+66, 24'Rt., NB Gilbert BL SURFACE ELEV. 599.4 Bridge No. HAM-1-0196

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% G.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
599.4	0													
	2	1	10-11-11	10"	Concrete blacktop, sand, gravel, clay brick and cinders (fill), moist - medium dense	Visual classification-No tests performed								Fill
594.4	4													
	6	2	2-2-3	16"	Clay and cinders (fill), moist - loose	Visual classification-No tests performed								Fill
591.9	8													
	10	3	2-3-3	13"	Brown clay, little sand, trace gravel, with shale and limestone fragments, (fill), moist - medium stiff	5	11	6	14	64	41	19	18	A-7-6
589.4	12	4	2-2-3	15"	Brown silty clay, trace sand, trace gravel with brick and cinder fragments, (fill), moist - medium stiff	9	6	4	41	40	36	17	21	A-6b
	14													
584.4	16	5	3-3-4	12"	Brown clay, trace sand with shale fragments, moist - stiff	0	1	2	39	58	42	20	18	A-7-6
	18													
	20													
	22	6	5-19-24	17"	Brown and gray clay, little sand, little gravel with shale and limestone fragments, moist - stiff	12	11	3	23	51	45	22	18	A-7-6
576.9	24	7	24-63	12"	Brown and gray shale, moist - hard	Visual classification-No tests performed								
	26	8	28-78	12"	Gray shale, moist - hard	Visual classification-No tests performed								
	28	9	NXM	70%	Gray shale calcareous, tough (¼" to 2½" pieces averaging 1½") and gray limestone crystalline, fossiliferous (one 3"piece in the bottom 12" of the run) 95% shale, 5% limestone									
	30													
	32													
	34													

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/3/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/3/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-11-3 STATION AND OFFSET 29+66,24'Rt.,NB Gilbert BL SURFACE ELEV. 599.4 Bridge No. HAM-1-0196

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
562.4	34 36	10	NXM	75%	Gray shale, calcareous, tough to moderately tough in the bottom half of the run (½" to 3" pieces averaging 1½") and gray limestone, crystalline, fossiliferous (two pieces 1½" and 3" midway and at the bottom of the run) 93% shale, 7% limestone									
	38 40 42 44 46 48 50 52 54 56 58 60 62 64 66				Boring completed									

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Form No. 530—(6-64)

THE E. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/18/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/19/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-11-4 STATION AND OFFSET 30+20, 10' L. NB Gilbert Ave.BL SURFACE ELEV. 602.4 Bridge No. HAM-71-0196

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
602.4	0				0.5' Concrete									
601.9														
599.9	2	1	6-5-5	16"	Brown and gray silt, clay, and sand, trace gravel with shale fragments(fill), moist - stiff	3	25	11	30	31	34	12	14	A-6a
	4	2	7-7-9	18"	Gray silty clay with brick and cinders (fill), moist - stiff	Visual classification-No tests performed								Fill
	6	3	8-9-11	16"	do do	Visual classification-No tests performed								Fill
594.9	8	4	7-6-7	18"	Brown and gray clay, little sand, trace gravel with shale fragments (fill), moist - stiff	7	5	5	33	50	42	19	22	A-7-6
	10													
	12													
	14													
	16	5	11-13-11	11"	Brown clay, trace sand, some gravel with shale fragments (fill), moist - medium stiff	29	5	3	23	40	43	19	17	A-7-6
	18													
	20													
	22	6	6-8-9	9"	Brown clay, trace sand, trace gravel with shale fragments (fill), moist - medium stiff	3	4	4	34	55	44	22	21	A-7-6
	24	7	7-10-10	9"	do do	Visual classification-No tests performed								A-7-6
677.4	26													
674.9		8	29-48-140	13"	Brown and gray weathered shale, dry - hard	Visual classification-No tests performed								
	28				Gray and brown shale, slightly tough(1" to 3" pieces averaging 2")and gray limestone crystalline, fossiliferous, jointed and iron oxide stained(1" and 2"pieces) 83% shale, 17% limestone									
	30	9	NXM	70%										
	32	10	NXM	70%	Gray shale, calcareous, moderately tough with soft seams throughout the fun(¼" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous(one 3" piece in									
	34													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/18/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/19/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING NO. B-11-4 STATION AND OFFSET 30+20, 10' L.NB Gilbert Ave. BL SURFACE ELEV. 602.4 Bridge No. HAM-71-0196

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
564.9	34 36 38	11	NXM	29%	the top 6" of the run)94% shale,6%limestone Gray shale,calcareous,moderately tough (¼" to 1½" pieces averaging 1") and gray limestone, crystalline, fossiliferous (three pieces ¼", ½", and 3½") 91% shale, 9% limestone									
	40 42 44 46 48 50 52 54 56 58 60 62 64 66 68				Boring completed									

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Form No. 630—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/19/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE 598.1 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/19/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-11-5 STATION AND OFFSET 30+96,38'Rt.,NB Gilbert Ave.BL SURFACE ELEV. 605.6 Bridge No. HAM-71-0196

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
605.6	0													
604.6					Concrete (1.0')									
603.1	2	1	3-7	No Recovery	Gravel, loose	Visual classification-No tests performed								Fill
	4	2	2-4-12	12"	Brown and gray silty clay, little sand, little gravel, probable fill, moist - medium stiff	19	11	5	27	38	39	19	22	A-6b
600.6	6	3	5-11-13	16"	Brown clay, little sand, trace gravel with limestone fragments, moist - very stiff	7	7	6	30	50	41	20	14	A-7-6
598.1	8	4	23-36-39	9"	Brown weathered shale, moist - hard	Visual classification-No tests performed								Fill
	10													
	12													
	14													
	16	5	31-34-39	13"	do do	Visual classification-No tests performed								Fill
	18													
	20													
583.6	22													
	24	6	NXM	69%	Gray shale, calcareous, tough to moderately tough (1" to 3½" pieces, averaging 2½") and gray limestone, crystalline, fossiliferous (one 1-3/4" piece at the top of the run) 95% shale, 5% limestone									
	26	7	NXM	66%	Gray shale, calcareous, tough (½" to 2½" pieces averaging 1½") 100% shale									
577.1	28													
	30				Boring completed									
	32													
	34													

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Form No. 530—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/6/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 596.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/6/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-11-6 STATION AND OFFSET 32+23, 42'L., NB Gilbert BL SURFACE ELEV. 611.5 Bridge No. HAM-1-0196

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
611.5	0													
	2	1	15-11-10	12"	Blacktop, clay, concrete, sand, gravel, cinders (fill), moist-medium dense	Visual classification-No tests performed								Fill
609.0	4	2	5-4-3	9"	Brown silty clay, fine gravel (fill) moist - medium stiff	Visual classification-No tests performed								Fill
606.5	6	3	9-5-4✓	9"	Sand, gravel, cinders and rock fragments, (fill), moist - loose	Visual classification-No tests performed								Fill
604.0	8	4	2-2-2	17"	Brown sandy silt, trace gravel with brick and cinders (fill), wet - soft	7	0	32	35	26	22	5	19	A-4a
	10	5	2-1-2✓	18"	Cray and brown sandy silt, trace gravel with brick and cinders (fill), very moist - soft	12	0	21	36	31	27	9	20	A-4a
	12													
	14													
596.5	16	6	4-6-7	16"	Brown and gray clay, trace sand, trace gravel with limestone fragments (probable fill), moist - medium stiff	7	3	3	42	45	42	20	27	A-7-6
	18													
591.5	20	7	8-11-20	16"	Brown silty clay, trace sand, trace gravel with limestone fragments, moist - stiff	10	8	2	34	46	40	18	22	A-6b
	22													
	24													
586.5	26	8	15-31-49	18"	Brown clay, trace sand, moist - very stiff	0	1	1	29	69	44	21	19	A-7-6
585.0	28	9	23-56	12"	Brown and gray shale, moist - hard	Visual classification-No tests performed								
	30	10	21-63	12"	Gray shale, moist - hard	Visual classification-No tests performed								
	32	11	72	6"	do do	Visual classification-No tests performed								
	34													

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Form No. 530—16-58

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/6/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 596.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/6/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-11-6 STATION AND OFFSET 32+23.42'L., NB Gilbert BL SURFACE ELEV. 611.5 Bridge No. HAM-I-0196

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34				Gray shale, calcareous, moderately tough to tough (1" to 3" pieces averaging 1½") and gray limestone crystalline, fossiliferous, jointed (½" to 2" pieces averaging 1") 93% shale, 7% limestone									
	36	12	NXM	63%										
	38													
	40				Gray shale, calcareous, tough (1" to 5" pieces, averaging 3") and gray limestone, crystalline, fossiliferous (two pieces 1½" and 2½") 93% shale, 7% limestone									
	42	13	NXM	88%										
566.5	44													
	46				Boring completed									
	48													
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 530 [illegible]59

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

Split Spoon & 2" O.D.&

DATE STARTED 1/27/65 SAMPLER: TYPE Core Barrel DIA. NXM WATER ELEV. IMMEDIATE 595.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 1/28/65 CASING: LENGTH _____ DIA. 3.375"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-12-6 STATION AND OFFSET 13+52, 35' L. CL, Elsinore Pl. SURFACE ELEV. 607.7 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
607.7	0													
606.7					Asphaltic concrete and cobblestone pavement									
605.2	2	1	12-18-10		Brown silty fine to coarse sand and gravel with brick fragments(fill),moist-medium dense	Visual classification-No tests performed								Fill
	4	2	9-3-5		Brown and gray sandy clay and cinders (fill), moist - loose	Visual classification-No tests performed								Fill
601.7	6	S-1(T)		12"	do do	28	16	21	24	11	36	8	32	A-2-4
		S-1(B)		12"		17	11	14	32	26	45	17	26	A-7-6
	8	3	3-3-4		Brown and gray clay with shale and limestone fragments, moist - stiff do do	4	4	2	38	52	46	23	24	A-7-6
	10					Visual classification-No tests performed								A-7-6
596.7		S-2(T)		12"	do do	18	2	5	39	36	40	19	22	A-6b
	12	S-2(B)		12"		29	6	6	27	32	38	18	20	A-6b
594.2	14	4	7-8-8	15"	Gray silty clay and limestone fragments, moist - very stiff do do	Visual classification-No tests performed								A-6b
	16	S-3		24"	Brown and gray clay with shale and limestone fragments, moist - medium stiff to stiff	Visual classification-No tests performed								A-7-6
	18	5	6-7-7	12"	do do	Visual classification-No tests performed								A-7-6
	20					8	3	3	33	53	46	22	22	A-7-6
		S-4		24"	do do	21	1	2	27	49	49	27	23	A-7-6
	22	6	7-9-12	15"	do do	Visual classification-No tests performed								A-7-6
	24													
	26	S-5		12"	do do	3	2	0	45	50	40	18	13	A-6b
						23	1	2	30	44	40	17	21	A-6b
	28	7	10-12-10	17"	do do	Visual classification-No tests performed								A-7-6
	30													
	32	S-6		18"	do do	Visual classification-No tests performed								A-7-6
		8	11-10-15	14"	do do	Visual classification-No tests performed								A-7-6
	34													

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Form No. 530—15

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 1/27/65 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 595.7 Backfilled CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 1/28/65 CASING: LENGTH _____ DIA. 3.375"I.D.Hollow Stem Augers WATER _____ HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0203

BORING No. B-12-6 STATION AND OFFSET 13+52, 35' L, CL, Elsinore Pl. SURFACE ELEV. 607.2

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTD. CLASS
	34													
	36													
	38	9	8-10-13	10"	Brown and gray clay with shale and limestone fragments, moist - medium stiff to stiff	Visual classification-No tests performed								A-7-6
	40													
	42	S-7		12"	do do	13	3	3	35	46	42	21	20	A-7-6
						3	2	3	40	52	43	23	22	A-7-6
	44	10	12-15-17	17"	do do	Visual classification-No tests performed								A-7-6
	46	S-8		18"	do do	11	5	5	35	44	41	20	18	A-7-6
	48	11	7-9-12	10"	do do	Visual classification-No tests performed								A-7-6
	50													
	52	S-9		12"	do do	Visual classification-No tests performed								A-7-6
554.2	54	12	12-10-14	12"	do do	Visual classification-No tests performed								A-7-6
					Brown and gray clay with shale and limestone fragments, trace of organic matter, moist - stiff	27	3	2	31	37	44	22	20	A-7-6
	56	S-10		18"		18	1	1	32	48	45	22	19	A-7-6
						8	1	1	39	51	44	22	20	A-7-6
	58	13	11-15-21	10"	do do	Visual classification-No tests performed								A-7-6
547.7	60													
	62	S-11		12"	Brown and gray sandy clay with limestone Fragments, moist - very stiff	No classification tests performed							19	A-7-6
	64	14	17-29-58	12"	do do	Visual classification-No tests performed								A-7-6
542.7	66													
	68	R-1	NXM	80%										

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Form No. 550—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 1/27/65 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 595.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 1/28/65 CASING: LENGTH _____ DIA. 3.375"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-12-6 STATION AND OFFSET 13+52, 35'L. CL Elsinore Pl. SURFACE ELEV. 607.7 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % ABR.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
	68				Gray and brown shale calcareous moderately tough (weathered in the top 18" of the run)(¼ to 2" pieces averaging 1½") and gray limestone, crystalline, fossiliferous (1" and 1½" pieces) 93% shale, 7% limestone									
537.7	70													
	72													
	74													
	76				Boring completed									
	78													
	80													
	82													
	84													
	86													
	88													
	90													
	92													
	94													
	96													
	98													
	100													
	102													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—16M

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 1/25/65 SAMPLER: TYPE Split Spoon & Core Barrel DIA. NXM WATER ELEV. IMMEDIATE 596.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 1/26/65 CASING: LENGTH ____ DIA 3.375"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-12-7 STATION AND OFFSET 13+38, 45' Rt., CL, Elsinore Pl. SURFACE ELEV. 607.6 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
607.6	0													
	2	1	4-7-9	10"	Cinders with brick fragments and clay (fill), moist - medium dense	Visual classification-No tests performed								Fill
	4	2	3-5-12	11"	do do	Visual classification-No tests performed								Fill
601.1	6	S-1		18"	do do	Visual classification-No tests performed								Fill
	8	3	7-3-6	12"	Brown and gray clay, trace cinders (fill) moist - medium stiff	No classification tests performed							23	Fill
599.1					do do	Visual classification-No tests performed								Fill
	10	4	3-4-4	10"	Cinders with wood fragments (fill), moist - medium stiff	Visual classification-No tests performed								Fill
596.1	12	S-2		18"	do do	Visual classification-No tests performed								Fill
	14	5	4-4-4	10"	Brown and gray clay with shale fragments and cinders (fill), moist to very moist - medium stiff	Visual classification-No tests performed								Fill
	16	6	3-4-5	11"	do do	Visual classification-No tests performed								Fill
		S-3		24"	do do	Visual classification-No tests performed								Fill
	18	7	3-5-7	16"	do do	Visual classification-No tests performed								Fill
	20	8	4-7-8	17"	do do	Visual classification-No tests performed								Fill
585.6	22	S-4		24"	do do	Visual classification-No tests performed								Fill
	24	9	5-7-10	18"	Brown and gray clay with shale fragments, trace cinders (fill), wet - soft	Visual classification-No tests performed								Fill
582.6		10	4-5-6	12"	do do	Visual classification-No tests performed								Fill
581.1	26	11	19-27-28	10"	Cinders with limestone fragments and clay (fill), wet - very dense	Visual classification-No tests performed								Fill
	28	12	19-27-23	17"	Brown and gray clay with shale and limestone fragments and organic matter, (fill), moist - medium stiff	Visual classification-No tests performed								A-7-6
577.6	30													
	32	S-5		18"	Brown and gray clay with shale and limestone fragments, wet -medium stiff to stiff	26	3	2	27	42	40	18	20	A-6b
						25	6	4	26	39	43	21	19	A-7-6
	34	13	7-10-11	17"	do do	Visual classification-No tests performed								A-7-6

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 1/25/65 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 596.6 Backfilled CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 1/26/65 CASING: LENGTH _____ DIA. 3.375"I.D.Hollow Stem Augers AFTER _____ HOURS _____ PROJECT: Northeast Expressway HAM-71-0,93 Bridge No. HAM-71-0203

BORING No. B-12-7 STATION AND OFFSET 13+48, 45' Rt.,CL, Elsinore Pl. SURFACE ELEV. 607.6

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36	S-6		18"	Brown and gray clay with shale and limestone fragments, moist - stiff	Visual classification-No tests performed								A-7-6
	38	14	9-11-12	16"	do do	Visual classification-No tests performed								A-7-6
	40													
	42	S-7		18"	do do	Visual classification-No tests performed								A-7-6
	44	15	10-15-19	12"	do do	Visual classification-No tests performed								A-7-6
	46	S-8		12"	do do	Visual classification-No tests performed								A-7-6
	48	16	12-15-21	16"	do do	Visual classification-No tests performed								A-7-6
	50													
	52	S-9		18"	do do	Visual classification-No tests performed								A-7-6
	54	17	10-11-17	17"	do do	Visual classification-No tests performed								A-7-6
552.6														
	56	S-10		18"	Brown and gray clay, trace organic matter moist - stiff	No classification tests performed						20		A-7-6
550.6														
	58	18	11-12-18	17"	Brown and gray clay, trace organic matter very moist - medium stiff	Visual classification-no tests performed								A-7-6
	60													
		S-11		12"	do do	Visual classification-No tests performed								A-7-6
	62	19	20-21	10"	do do	Visual classification-No tests performed								A-7-6
		20	10	6"	do do	Visual classification-No tests performed								A-7-6
543.6	64													
542.6		21	49-93	5"	Brown and gray clay with limestone fragments, moist - stiff	Visual classification-No tests performed								A-7-6
	66													
	68	R-1	NXM	80%										

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Form No. 530—16-5

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 1/25/65 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 596.6 Backfilled CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 1/26/65 CASING: LENGTH _____ DIA. 3.375"I.D.Hollow Stem Augers AFTER _____ HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-12-7 STATION AND OFFSET 13+38, 45' Rt., CL, Elsinore Pl. SURFACE ELEV. 607.6 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
537.6	68 70	R-1	NXM	80%	Gray shale calcareous, moderately tough (½" to 4" pieces averaging 2½") and gray limestone cyrstalline, fossiliferous (two pieces 2" and 2½") 92% shale, 8% limestone									
	72 74 76 78 80 82 84 86 88 90 92 94 96 98 100 102													

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Form No. 530—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

* Water used in drilling from elev.624.0

DATE STARTED 1-8-65 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE * CLIENT: City of Cincinnati,Ohio

DATE COMPLETED 1-8-65 CASING: LENGTH None DIA. None AFTER 24 HOURS 608.0 PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-47-2 STATION AND OFFSET 22+90.5,11'L. SE.Van Meter St.BL SURFACE ELEV. 633.0' Retaining Wall 47

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
633.0	0													
632.5		1	3	5"	0.5' topsoil(fill),motar - soft	No test performed								Fill
	2	2	3-5	6"	Brown clay,little gravel, trace sand, (fill) moist - medium stiff	13	4	4	33	46	47	24	22	A-7-6
630.0														
	4	S-1		14"	Brown and gray clay,trace limestone(fill) trace sand, moist - stiff	4	2	3	33	58	48	25	20	A-7-6
	6	3	4-5-6	16"	do do	3	4	5	40	48	43	21	21	A-7-6
	8													
		4	5-7-6	15"	Brown and gray clay,little limestone fragments,trace sand, moist - stiff	18	5	4	31	42	42	21	13	A-7-6
	10													
	12	5	5-6-8	18"	Brown and gray clay,trace limestone fragments,trace sand, moist - stiff	8	3	3	37	49	42	20	22	A-7-6
	14	6	3-6-7	12"	do do	4	4	3	36	53	50	28	19	A-7-6
	16	7	12-16-38	8"	Brown and gray clay,trace limestone fragments,trace sand, moist- very stiff	4	1	2	37	56	46	23	24	A-7-6
	18	8	30-58	8"	do do	7	2	2	30	59	52	28	17	A-7-6
613.0	20													
	22	R-1	NXM	25%	Gray shale, calcareous, slightly tough (½"to 1½"pieces averaging 1") 100% shale									
	24													
	26	R-2	NXM	50%	Gray shale,calcareous, slightly to moderately tough(½"to 2"pieces averaging 1") and gray limestone crystalline fossiliferous jointed at the top and bottom of the run(½"to 4"pieces averaging 2") 85% shale, 15% limestone									
	28													
603.0	30													
	32				Boring Completed									
	34													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/8/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE 586.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/8/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0207

BORING No. B-13-1 STATION AND OFFSET 199+00, 4'Rt.Relocated Penn.RR SURFACE ELEV. 611.0

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL CLASS
611.0	0													
	2	1	10-11-13	10"	Brown sandy clay with gravel and cinders (fill), moist - stiff	Visual classification-No tests performed								Fill
	4	2	10-8-6	7"	do do	Visual classification-No tests performed								Fill
606.0	6	3	5-4-4	9"	Cinders, gravel, brick, sand and clay (fill), moist - loose	Visual classification-No tests performed								Fill
	8	4	2-3-4	16"	do do	Visual classification-No tests performed								Fill
	10	5	2-2-3	18"	do do	Visual classification-No tests performed								Fill
	12													
	14													
	16	6	2-2-3	18"	do do	Visual classification-No tests performed								Fill
	18													
	20													
	22	7	2-2-4	11"	do do	Visual classification-No tests performed								Fill
	24													
586.0	26	8	2-2-3	10"	Brown and gray silty clay, little sand little gravel with cinders (fill), very moist - soft	16	8	9	30	37	36	16	24	A-6b
583.0	28													
	30	9	3-4-7	17"	Brown and gray clay, trace sand with shale fragments (fill), moist - medium stiff	0	4	4	42	50	43	19	26	A-7-6
	32	10	4-6-8	16"	Brown and gray clay, trace sand with shale fragments (fill), moist - medium stiff	0	4	3	39	54	42	18	23	A-7-6
	34	11	3-5-7	17"	Brown and gray clay, trace sand, little gravel with shale fragments (fill) moist - medium stiff	13	4	2	37	54	42	20	22	A-7-6

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/8/64 SAMPLER: TYPE Split Spoon & CoreBarrel DIA. 2" O.D. & NXM WATER ELEV. IMMEDIATE 586.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/8/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-13-1 STATION AND OFFSET 199+00, 4' Rt. Relocated Penn.RR SURFACE ELEV. 611.0 Bridge No. HAM-71-0207

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36	12	3-5-8	11"	Brown and gray clay, trace sand with shale fragments (fill), moist - medium stiff	0	4	2	38	56	41	18	21	A-7-6
	38	13	3-3-4	17"	Brown and gray clay, trace sand, trace gravel with shale fragments and cinders, (fill), wet - soft	2	4	3	35	56	45	21	25	A-7-6
571.0	40													
12		14	5-7-8	17"	Brown and gray silty clay, some sand, trace of gravel with wood and cinders (fill), moist - medium stiff	5	13	11	31	40	38	17	13	A-6b
568.5	42													
	44	15	4-7-9	13"	Brown and gray clay, little sand, trace gravel, with shale and limestone fragments, moist - medium stiff	1	10	8	31	50	44	21	24	A-7-6
566.0														
	46	16	6-7-13	15"	Brown and gray silty clay, trace sand, little gravel with shale and limestone fragments (fill), moist - medium stiff	14	5	3	32	46	39	17	17	A-6b
	48													
		16A	5-7-12			No sample recovered								
561.0	50													
	52	17	5-6-9	11"	Brown and gray clay, trace sand with shale and limestone fragments, moist - medium stiff	0	2	2	44	52	48	26	26	A-7-6
	54													
	56	18	8-11-13	18"	Brown clay, trace sand, trace gravel with limestone fragments, moist -stiff	2	4	4	32	58	43	23	17	A-7-6
	58													
	60													
	62	19	14-18-21	18"	Brown and gray clay, trace sand, trace gravel with limestone fragments, moist stiff	2	6	3	27	62	50	27	24	A-7-6
	64													
546.0														
545.0	66	20	32-93	12"	Gray shale, moist - hard	Visual description-No tests performed								Fill
	68													

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Form No. 530—16.59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/8/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 586.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/8/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-13-1 STATION AND OFFSET 199+00, 4' Rt. Relocated Penn.RR SURFACE ELEV. 611.0 Bridge No. HAM-71-0207

ELEV.	DEPTH	SAMPLE No.	STD PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
540.0	68–70	21	NXM	67%	Gray shale, calcareous, soft to moderately tough (½" to 3" pieces, averaging 1½") and gray limestone, crystalline, fossiliferous(½" -1" and 3" pieces) 91% shale, 9% limestone									
	72–102				Boring completed									

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Form No. 530--16.59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/23/63 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/24/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-13-2 STATION AND OFFSET 200+55,8'L.CL,Relocated Penn.RR Tracks SURFACE ELEV. 614.2 Bridge No. 71-0207

ELEV.	DEPTH	SAMPLE No.	STD. PEN (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
614.2	0													
	2	1	8-4-5	13"	Cinders, brick and wood (fill), moist-loose to very loose	Visual classification-No tests performed								Fill
	4	2	2-3-2	15"	do do	Visual classification-No tests performed								Fill
	6	3	1-1-1	10"	do do	Visual classification-No tests performed								Fill
	8	4	1-1-1	12"	do do	Visual classification-No tests performed								Fill
	10													
	12	5	4-2-2	14"	do do	Visual classification-No tests performed								Fill
	14													
599.2														
	16	6	1-1-2	18"	Brown clayey fine sand with cinders (fill), moist - very loose	Visual classification-No tests performed								Fill
	18													
594.2	20													
	22	7	2-2-3	7"	Cinders and clayey fine sand (fill), moist - loose	Visual classification-No tests performed								Fill
	24	8	2-2-3	8"	do do	Visual classification-No tests performed								Fill
589.2														
	26	9	2-3-3	6"	Brown and gray silty clay with cinders, (fill), moist - stiff	Visual classification-No tests performed								Fill
	28	10	4-7-8	8"	do do	Visual classification-No tests performed								Fill
	30	11	2-10-7	13"	do do	Visual classification-No tests performed								Fill
	32													
	34	12	2-5-6	10"	do do	Visual classification-No tests performed								Fill

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/23/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/24/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-13-2 STATION AND OFFSET 200+55, 8'L., CL, Relocated Penn.RR Tracks SURFACE ELEV. 614.2 Bridge No. HAM-71-0207

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
579.2	34													
	36	13	4-8-12	8"	Brick and brown and gray silty clay (fill), moist - medium dense	Visual classification-No tests performed								Fill
576.7	38	14	4-12-14	8"	Brown and gray silt and clay, trace sand, trace gravel with shale fragments, (probable fill), moist - stiff	7	4	4	42	43	36	14	16	A-6a
	40													
	42	15	4-12-15	14"	Brown and gray silt and clay, trace sand little gravel with shale fragments, (probable fill), moist - medium stiff	14	5	4	35	42	37	15	16	A-6a
	44	16	5-5-8	18"	Brown silt and clay, trace sand, moist - medium stiff	0	1	1	67	31	35	13	23	A-6a
	46	17	4-6-9	16"	Brown and gray silt and clay, trace sand, moist - medium stiff	0	2	2	62	34	34	15	22	A-6a
	48													
564.2	50													
	52	18	5-8-13	17"	Brown and gray silty clay, trace sand, trace gravel with limestone fragments, moist - stiff	3	2	1	39	55	39	19	20	A-6b
	54													
559.2	56	19	15-17-21	18"	Brown and gray clay, trace sand, little gravel with limestone fragments, moist-very stiff	18	3	3	31	45	44	23	21	A-7-6
	58													
	60													
	62	20	6-13-31	17"	Brown and gray clay, trace sand, trace gravel with limestone fragments, moist-hard	7	4	2	35	52	46	22	16	A-7-6
550.7	64													
	66	21	NXM	51%	Gray shale, calcareous, moderately tough (½" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous, jointed midway in the run (1" to 2½" pieces averaging 1½") 87% shale 13% limestone									
	68													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/23/64 SAMPLER: TYPE Split Spoon 2"O.D. & Core Barrel DIA. NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/24/64 CASING: LENGTH _____ DIA. 3.5"I.D. Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-13-2 STATION AND OFFSET 200+55, 8'L., CL Relocated Penn. RR Tracks SURFACE ELEV. 614.2 Bridge No. HAM-71-0207

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
545.7	68													
	70				Boring completed									
	72													
	74													
	76													
	78													
	80													
	82													
	84													
	86													
	88													
	90													
	92													
	94													
	96													
	98													
	100													
	102													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 630—16-69

THE E. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

Split Spoon & 2"O.D.&

DATE STARTED 8/31/64 SAMPLER: TYPE Core Barrel DIA. NXM WATER ELEV. IMMEDIATE 592.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/31/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-13-3 STATION AND OFFSET 201+79, 17'Rt.Relocated Penn.* SURFACE ELEV. 620.1 Bridge No. HAM-71-0207

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
620.1	0				WRR Tracks CL									
	2	1	1-1-3	14"	Cinders, sand, clay and gravel (fill), moist - loose	Visual classification-No tests performed								Fill
	4	2	5-4-5	17"	do do	Visual classification-No tests performed								Fill
	6	3	4-5-5	16"	Brown silty clay with sand, gravel, cinders and brick (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	8	4	4-4-3	16"	do do	Visual classification-No tests performed								Fill
	10													
	12	S-1		19"	do do	Visual classification-No tests performed								Fill
	14	5	2-2-2	17"	Cinders, brick and sand (fill), moist - loose	Visual classification-No tests performed								Fill
605.1														
	16	6	4-4-5	14"	Brown and gray silt and clay, little sand, little gravel with limestone fragments (fill), moist - medium stiff	16	10	5	30	39	36	14	14	A-6a
	18													
	20													
	22	7	3-4-5	15"	Brown and gray silt and clay, little sand, little gravel with limestone fragments (fill), moist - stiff	19	9	5	31	36	35	14	18	A-6a
	24													
	26	S-2		10"	Gray silt and clay, trace sand, trace gravel, moist - stiff	7	5	3	40	45	37	15	17	A-6a
593.1														
	28	8	3-4-5	18"	Brown and gray clay, trace sand, trace gravel with cinders (fill), moist - medium stiff	1	2	3	41	53	42	19	33	A-7-6
	30													
	32	9	5-7-11	16"	Brown clay, trace sand, trace gravel with limestone fragments, moist-stiff	9	3	2	39	47	41	21	20	A-7-6
	34	10	5-7-9	17"	Brown clay, trace sand, little gravel with limestone fragments, moist-medium stiff	10	6	3	33	48	41	21	21	A-7-6

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/31/64 SAMPLER: TYPE Split Spoon & Cone Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 592.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/31/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT Northeast Expressway HAM-71-0.93

BORING No. B-13-3 STATION AND OFFSET 201+79, 17'Rt.Relocated Penn * SURFACE ELEV. 620.1 Bridge No, HAM-71-0207

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	*RR Tracks CL DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTC CLASS
	34													
	36		5-5-6	0	Brown clay, trace sand, little gravel with limestone fragments, moist - medium stiff									
582.1	38	S-3		12"		Visual classification-No tests performed								A-7-6
581.1					Brown silty clay, little sand, little gravel with limestone fragments, - moist - stiff	10	10	5	27	48	40	21	18	A-6b
	40	11	7-9-14	14"										
578.1	42				Brown clay, trace sand, trace gravel with limestone fragments, moist - stiff	2	6	3	27	62	45	23	19	A-7-6
	44	12	7-11-14	17"										
	46	13	9-11-13	15"	Brown clay, little sand, trace gravel with limestone fragments, moist - stiff	6	6	4	27	57	43	20	21	A-7-6
	48													
	50													
	52	14	9-12-16	18"	Brown and gray clay, trace sand with limestone fragments, moist - very stiff	0	5	3	30	62	46	22	20	A-7-6
566.1	54													
565.1		15	43-78	14"	Gray shale, moist - hard	Visual classification - No tests performed								
	56				Gray shale, calcareous, moderately tough (1" to 6½" pieces averaging 3") 100% shale									
	58	16	NXM	35%										
560.1	60													
	62				Boring completed									
	64													
	66													
	68													

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Form No 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

REVISED
9/2/64-vb

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/9/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 583.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/11/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-12-1 STATION AND OFFSET 13+52, 40' L., Elsinore Pl. CL SURFACE ELEV. 608.0 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTD. CLASS.
608.0	0													
605.5	2	1	7-9-9	14"	Cinders (fill), moist - medium stiff	Visual classification-No tests performed								Fill
603.5	4	2	3-4-6	17"	Brown silty clay with cinders and brick (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	6	3	2-5-11	3"	Brown and gray silty clay with shale fragments(fill), very stiff	Visual classification-No tests performed								Fill
598.0	8 10	4	2-2-1	16"	Brown and gray silty clay with shale fragments (fill), soft	Visual classification-No tests performed								Fill
	12	5	2-3-4	17½"	Brown and gray sandy silt, trace gravel with shale fragments (fill), moist - medium stiff	10	18	17	27	28	26	10	20	A-4a
593.0	14													
	16	6	2-5-12	18"	Gray clay, trace sand with shale fragments (fill), moist - very stiff	0	4	3	35	58	47	23	23	A-7-6
588.0	18 20													
586.0	22	S-1		18"	Brown and gray silt and clay, trace sand, trace gravel with shale fragments (fill), moist - medium stiff	4	4	2	44	46	37	15	17	A-6a
	24	7	11-14-17	16"	Brown and gray silty clay, little sand, trace gravel with shale fragments(fill), moist - medium stiff	1	8	5	29	57	40	18	26	A-6b
583.0	26	8	11-12-14	11"	Brown and gray clay, little sand, trace gravel, moist - very stiff	10	9	4	31	46	43	21	22	A-7-6
580.5	28	9	5-9-11	6"	Brown and gray silty clay, little sand, with shale fragments (fill), moist - medium stiff	0	8	4	39	49	40	20	22	A-6b
578.0	30	S-2			Dark brown sandy silt, trace gravel, with shale fragments(fill)moist-medium stiff	10	18	20	29	23	31	10	30	A-4a
[illegible]	32	10	4-6-3	13"	Brown and gray clay, trace sand with shale fragments (fill), moist - medium stiff	0	4	3	35	58	44	24	21	A-7-6
	34													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

REVISED
9/2/64-vb

LOG OF BORING

DATE STARTED 7/9/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA 2"O.D.& NXM WATER ELEV. IMMEDIATE 583.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/9/64 CASING: LENGTH _____ DIA 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-12-1 STATION AND OFFSET 13+52, 40' L., Elsinore Pl. CL SURFACE ELEV. 608.0 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36	11	6-9-11	16"	Brown and gray clay, little sand, trace gravel with shale fragments (fill), moist - very stiff	2	8	4	29	57	41	21	20	A-7-6
	38	12	9-9-13	18"	Brown and gray clay, little sand with shale fragments(fill), moist - medium stiff	0	8	3	33	56	41	21	22	A-7-6
568.0	40													
	42	13	11-16-21	18"	Dark brown silty clay, trace sand,little gravel with limestone fragments(fill), moist - medium stiff	19	4	5	38	34	39	19	18	A-6b
	44	14	11-11-19	17"	Brown silty clay, trace sand with limestone fragments (fill), moist - medium stiff	0	4	2	42	52	40	19	17	A-6b
563.0	46	15	13-11-16	12"	Brown clay, little sand, trace gravel, with limestone fragments (fill), moist-medium stiff	4	7	4	36	49	41	19	21	A-7-6
	48													
	50													
	52	16	24-64-25	16"	Brown clay, trace sand with limestone fragments, moist - medium stiff	0	4	3	41	52	42	23	25	A-7-6
	54													
	56	17	21-42-32	18"	Brown and gray clay, trace sand, trace gravel with limestone fragments (fill), moist - medium stiff	2	2	2	35	59	44	23	24	A-7-6
	58													
548.0	60													
		18	15-21-62	18"	Brown silty clay, little sand,little gravel with limestone fragments(probable fill), moist - medium stiff	14	12	7	33	34	39	20	21	A-6b
546.0	62													
	64	19	NXM	12%	Brown and gray weathered shale, soft(no shale recovery) and gray limestone, crystalline, fossiliferous, jointed, (½" to 2½" pieces, averaging 2")88% shale, 12% limestone									
	66													
	68	20	19-29-31		Brown and gray weathered shale, moist - very stiff									

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Form No. 530—16 59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/9/64 SAMPLER: TYPE Splt Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 583.0 Backfilled CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/11/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS _____ PROJECT: Northeast Expressway HAM -71-0.93

BORING No. B-12-1 STATION AND OFFSET 13+52, 40'L. Elsinore Pl., CL SURFACE ELEV. 608.0 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	68				Gray shale, calcareous, moderately tough, (1" to 2" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, (3/4" and 2" pieces) 94% shale, 6% limestone									
	70													
	72	21	NXM	32%										
53+.5	74													
	76				Boring completed									
	78													
	80													
	82													
	84													
	86													
	88													
	90													
	92													
	94													
	96													
	98													
	100													
	102													

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Form No. 630—16-69

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

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9/2/64-vb

LOG OF BORING

DATE STARTED 7/9/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE 583.9 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/9/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-12-2 STATION AND OFFSET 13+71, 43' Rt., Elsinore Pl. SURFACE ELEV. 608.9 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTG. CLASS.
608.9	0				0.3' Concrete	No tests performed								
606.4	2	1	4-4-5	8"	Cinders, clay, gravel (fill), moist - loose	Visual classification-No tests performed								Fill
603.9	4	2	1-1-2	18"	Brown and gray silty clay with organic matter (fill), moist - soft	Visual classification-No tests performed								Fill
	6	3	1-1-2	15"	Clay and cinders (fill), very moist - loose	Visual classification-No tests performed								Fill
	8	4	1-2-2	16"	do do	Visual classification-No tests performed								Fill
	10	5	1-1-2	18"	do do	Visual classification-No tests performed								Fill
	12													
593.9	14													
	16	6	2-3-3	17"	Gray and brown silty clay, little sand, with brick, cinders and organic matter (fill), moist - medium stiff	0	10	7	65	18	36	16	23	A-6b
588.9	18													
	20													
	22	7	3-5-7	13"	Brown clay, trace sand with shale fragments (fill), moist - medium stiff	0	4	4	40	52	42	21	20	A-7-6
583.9	24													
	26	8	4-4-5	16"	Gray silt, clay and sand, trace gravel with brick and cinders (fill), moist - medium stiff	4	19	20	31	26	28	11	14	A-6a
581.4	28	9	5-6-9	12"	Gray and brown silty clay, little sand, little gravel with shale and limestone fragments (fill), moist - medium stiff	20	7	4	31	38	38	19	20	A-6b
578.9	30	10	5-6-9	13"	Gray and brown clay, little sand, trace gravel, with shale fragments (fill), moist - stiff	1	8	3	33	55	44	23	21	A-7-6
	32													
	34	11	6-7-8	10"	Brown and gray clay, trace sand with shale and limestone fragments (fill), moist - stiff	0	5	4	37	54	41	20	20	A-7-6

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Form No. 530—10-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

REVISED
9/2/64-vb

LOG OF BORING

DATE STARTED 7/9/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 583.9 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/9/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS _____ Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-12-2 STATION AND OFFSET 13+71, 43' Rt., Elsinore Pl. SURFACE ELEV. 608.9 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL CLASS
	34													
	36	12	5-6-8	17"	Gray and brown clay, trace sand with shale and limestone fragments (fill), moist - stiff	0	4	4	39	53	42	20	16	A-7-6
571.4	38													
	40	13	8-9-11	10"	Gray and brown silty clay, trace sand with shale fragments (fill), moist - stiff	0	3	1	44	52	39	19	16	A-6b
	42	14	6-7-9	13"	Gray silty clay, little sand with shale fragments (fill), moist - stiff	0	8	5	37	50	37	16	18	A-6b
	44	15	9-11-15	17"	Brown and gray silty clay, trace sand with shale fragments (fill), moist - stiff	0	4	6	38	52	39	17	17	A-6b
563.9	46	16	7-9-11	15"	Brown and gray clay, little sand, trace gravel with shale and limestone fragments, moist - stiff	5	6	6	32	51	44	22	19	A-7-6
	48													
	50	17	6-8-13	16"	Brown and gray clay, trace sand with shale and limestone fragments, moist - stiff	0	6	4	37	53	43	21	23	A-7-6
	52	18	10-12-15	18"	Brown and gray clay, trace sand with shale and limestone fragments, moist - stiff	0	0	6	36	58	42	20	20	A-7-6
	54													
	56	19	9-11-16	15"	Brown and gray clay, little sand, little gravel with limestone fragments, moist-stiff	17	10	6	23	44	47	26	22	A-7-6
	58													
548.9	60													
		20	21-34	12"	Gray shale, moist - hard	Visual classification-No tests performed								
	62													
	64	21	NXM	70%	Gray and brown shale, calcareous, soft to moderately tough(two pieces 2" and 3") and gray limestone, crystalline, fossiliferous, jointed(2" and 2½" pieces) 67% shale, 33% limestone									
542.9	66													
	68													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

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9/2/64-vb

LOG OF BORING

DATE STARTED 7/9/64 SAMPLER: TYPE Split Spoon & 2"O.D. & Core Barrel DIA. NXM WATER ELEV. IMMEDIATE 583.9 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/9/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-12-2 STATION AND OFFSET 13+71, 42' Rt., Elsinore Pl. SURFACE ELEV. 608.9 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	*Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL CLASS
					Gray shale, calcareous, moderately tough to tough (¼" to 2" pieces, averaging 1½") and gray limestone, shaly, fossiliferous (1½" to 2½" pieces averaging 1½"), 85% shale, 15%limestone									
					Boring completed at 542.9'									

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/10/64 SAMPLER: TYPE Split Spoon and Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 577.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/10/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM 71-0203

BORING No. B-12-3 STATION AND OFFSET 14+72, 42'Rt.,Elsinore Pl. CL SURFACE ELEV. 612.6

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
612.6	0													
612.3					0.3' Concrete	No tests performed								
610.1	2	1	2-2-1	10"	Clay, sand, gravel and cinders (fill) moist - loose	Visual classification-No tests performed								Fill
607.6	4	2	2-2-3	15"	Gray silty clay with fine gravel and cinders (fill), moist - medium stiff	Visual classification-No tests performed								Fill
605.1	6	3	1-1-2	17"	Cinders and clay (fill), moist - loose	Visual classification-No tests performed								Fill
602.6	8, 10	4	2-3-4	18"	Brown and gray silty clay with cinders and shale fragments(fill),moist-medium stiff	Visual classification-No tests performed								Fill
597.6	12, 14	5	3-4-5	18"	Brown and gray clay, some sand,trace gravel with cinders and shale fragments, (fill), moist - medium stiff	1	16	5	30	48	43	23	23	A-7-6
592.6	16, 18, 20	6	4-5-5	13"	Brown and gray silty clay,little sand, trace gravel with weathered shale fragments, (fill), moist - medium stiff	1	5	10	36	48	37	18	23	A-6b
587.6	22, 24	7	4-5-6	16"	Brown and gray clay, trace sand,trace gravel with weathered shale fragments, (fill), moist to very moist - medium stiff	3	2	1	51	43	41	20	25	A-7-6
582.6	26, 28, 30	8	3-5-8	15"	Gray silty clay, trace sand, trace gravel with weathered shale fragments, (fill), moist - stiff	1	3	3	39	54	36	16	16	A-6b
580.1	32	9	19-20-17	17"	Brown and gray clay, trace sand, some gravel with weathered shale and limestone fragments(fill)moist - stiff	34	1	1	25	39	43	21	18	A-7-6
	34	10	7-11-12	17"	Gray silty clay, trace sand, trace gravel with shale and limestone fragments(fill),moist-stiff	1,10	6	3	37	44	36	16	14	A-6b

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

18

Form No. 530—10-53

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/10/64 SAMPLED: TYPE Split Spoon and Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE 577.6 Backfilled CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/10/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-12-3 STATION AND OFFSET 14+72, 42' Rt., Elsinore Pl.CL SURFACE ELEV. 612.6 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
575..	36	11	12-18-23	9"	Gray silty clay with shale and limeston fragments (fill)moist - stiff	Insufficient sample for testing					37	17	20	A-6b
	38	12	6-7-8	15"	Brown and gray clay, trace sand,trace gravel (fill), moist - stiff	1	0	1	30	68	52	28	27	A-7-6
572.6	40													
	42	13	12-13-15	18"	Dark brown elastic clay, trace sand, moist - stiff	0	1	1	45	53	60	24	33	A-7-5
570.1	44	14	7-12-15	18"	Brown clay, trace sand, moist - stiff	0	0	1	31	68	59	33	25	A-7-6
	46	15	7-11-16	17"	do do	0	1	1	29	69	59	35	23	A-7-6
	48	16	9-11-14	17"	Brown clay, trace sand, trace gravel with limestone fragments, moist - stiff	10	3	2	28	57	51	28	23	A-7-6
	50													
561.1	52	17	9-12-17	18"	Brown clay, trace sand with limestone fragments, moist - stiff	0	4	2	34	60	52	30	21	A-7-6
	54													
	56	18	14-38	12"	Brown and gray weathered shale, moist - hard									
	58	19	NXM	52%	Gray shale, calcareous, moderately tough, (¼" to 2"pieces averaging 1½") and gray limestone, crystalline, fossiliferous, (¼" to 3" pieces, averaging 1½") 83% shale, 17% limestone									
	60													
551.6	62				Boring completed									
	64													
	66													
	68													

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/11/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/11/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. 8-12-4 STATION AND OFFSET 15+61, 44' L., CL, Elsinore Pl. SURFACE ELEV. 616.8 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
616.8	0													
	2	1	3-4-4	14"	Concrete, sand, gravel and clay(fill), moist - loose	Visual classification-No tests performed								
614.3	4	2	4-5-7	16"	Brown silt and clay,little sand,trace gravel,(fill), moist - medium stiff	8	8	10	34	40	35	15	18	A-6a
609.8	6													
	8	3	6-9-14	16"	Brown silty clay,little sand,little gravel with cinders and limestone fragments (fill),moist - stiff	14	6	5	34	41	39	19	18	A-6b
	10													
	12	S-1		13"	Brown silty clay,some sand,trace gravel with cinders and limestone fragments, (fill) - moist - stiff	2	16	8	39	35	39	17	*	A-6b
	14	4	8-11-15	10"	Brown silty clay, trace sand, trace gravel (fill), moist- stiff	9	4	3	39	45	39	19	14	A-6b
	16	5	7-8-10	18"	Brown silty clay, trace sand, some gravel with limestone fragments (fill), moist - stiff	20	4	3	31	42	40	20	18	A-6b
	18													
	20													
594.8	22													
	24	6	6-8-11	16"	Gray clay, trace sand,little gravel with limestone fragments (fill),moist-stiff	18	2	3	32	45	41	21	18	A-7-6
	26													
	28	7	6-9-13	17"	Brown and gray clay, trace sand,little gravel with limestone fragments (fill) moist -stiff	16	4	2	37	41	44	24	22	A-7-6
586.8	30													
	32	8	5-8-12	18"	Brown and gray silty clay, trace sand, trace gravel with limestone fragments (fill), moist - stiff	6	4	2	43	45	40	20	19	A-6b
583.8	34													

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20-

Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/11/64 SAMPLER: TYP Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None Backfilled CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/11/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-12-4 STATION AND OFFSET 15+61, 44' L., CL, Elsinore Place SURFACE ELEV. 616.8 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34	S-2		19"	Brown and gray clay, little sand with shale fragments (fill), moist - stiff	0	7	5	37	51	42	19	22	A-7-6
	36	9	9-12-15	18"	Brown and gray clay, trace sand, little gravel with shale fragments (fill), moist - stiff	19	2	1	32	46	46	24	21	A-7-6
	38	10	7-11-14	18"	Brown and gray clay, trace sand, little gravel with shale fragments (fill), moist - stiff	13	2	4	36	45	41	19	14	A-7-6
576.8	40													
		S-3			Brown and gray silty clay, little sand, trace gravel with shale fragments (fill), moist- stiff	4	6	4	37	49	39	17	20	A-6b
	42	11	9-16-20	15"	Brown and gray silty clay, trace sand with shale fragments (fill), moist-stiff	0	2	3	41	54	39	19	18	A-6b
571.8	44													
	46	12	18-50	12"	Brown and gray shale, moist - hard	Visual classification-No tests performed								
	48	13	82-100	12"	Gray shale, dry - hard									
567.3	50													
	52	14	NXM	60%	Gray shale, calcareous, moderately tough to tough (½" to 3" pieces averaging 1½") 100% shale									
562.3	54													
	56				Boring completed									
	58													
	60													
	62													
	64													
	66													
	68													

*Insufficient sample

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Form No. 530--16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/25/64 SAMPLER: TYPE Split Spoon & CoreBarrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 601.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/25/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-12-5 STATION AND OFFSET 15+56, 48' Rt. Elsinore Pl.CL SURFACE ELEV. 616.2 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTC CLASS
616.2	0													
615.8					6" Concrete									
613.7	2	1	11-6-6	11"	Clay, cinders and gravel (fill), moist-medium dense	Visual classification-No tests performed								Fill
611.2	4	2	7-8-8	13"	Brick, clay, cinders and gravel (fill), moist - medium dense	Visual classification-No tests performed								Fill
608.7	6	3	2-3-3	13"	Brown clay, trace sand with shale fragments(probable fill),moist-medium stiff	0	2	3	33	62	47	23	22	A-7-6
	8	4	3-4-5	14"	Brown and gray silty clay,trace sand, little gravel with shale and limestone fragments(probable fill),moist-medium stiff	11	5	4	30	50	40	18	20	A-6b
	10	5	2-3-3	16"	Brown and gray silty clay, trace sand, trace gravel with shale and limestone fragments (probable fill), moist - medium stiff	1	5	4	37	53	39	17	23	A-6b
601.2	12													
	14													
	16	6	4-7-5	10"	Brown and gray clay, little sand,little gravel with shale and limestone fragments, (probable fill), moist - medium stiff	11	9	4	30	46	41	19	23	A-7-6
	18													
	20													
	22	7	5-6-5	15"	Brown and gray clay, trace sand, little gravel with shale and limestone fragments, moist - stiff	15	5	2	28	50	44	22	24	A-7-6
	24													
	26	8	7-8-9	17"	Brown and gray clay, trace sand, trace gravel with shale and limestone fragments, moist - stiff	1	4	4	30	61	48	25	19	A-7-6
	28													
587.2														
585.7	30	S-1		16"	Brown silty clay, little sand, moist - stiff	0	6	5	42	47	40	18	18	A-6b
	32	9	14-18-27	18"	Brown weathered shale, moist - hard	Visual classification-No tests performed								
	34	10	22-38-53	18"	do do	Visual classification-No tests performed								

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Form No. 530—15-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/25/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 601.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/25/64 CASING: LENGTH _____ DIA. 2.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-12-5 STATION AND OFFSET 15+56, 48' Rt. Elainore Pl, CL SURFACE ELEV. 616.2 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36	11	24-60	12"	Brown and gray weathered shale, moist - hard	Visual classification-No tests performed								
	38	12	32-58	12"	Gray shale, moist - hard	Visual classification-No tests performed								
576.2	40													
	42	13	NXM	60%	Gray shale, clacareous, moderately tough (1" to 6" pieces averaging 3") and gray limestone, crystalline, fossiliferous, jointed (1" to 3" pieces averaging 1½") 90% shale, 10% limestone									
	44													
	46	14	NXM	98%	Gray shale, calcareous, tough(1"to 6½" pieces averaging 4") and gray limestone, crystalline, fossiliferous (three pieces 3/4" - 1" and 2") 94% shale, 6% limestone									
	48													
566.2	50													
	52				Boring completed									
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 530—16-59

THE E. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/26/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 583.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/26/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-26-1 STATION AND OFFSET 13+43, 45'Rt.Elsinore Pl. CL SURFACE ELEV. 607.6 Retaining Wall No. 26

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
607.6	0				0.3' Concrete									
607.3		1	4-5-5	16"	Clay and cinders (fill),moist - loose	Visual classification-No tests performed								Fill
605.1	2													
	4	2	2-1-1	11"	Cinders (fill), moist - very loose	Visual classification-No tests performed								Fill
602.6	6	3	1-1-1	18"	Cinders and clay(fill), moist - very loose	Visual classification-No tests performed								Fill
	8	4	1-1-1	18"	do do	Visual classification-No tests performed								Fill
	10	5	1-1-1	18"	do do	Visual classification-No tests performed								Fill
	12													
	14													
592.6	16	6	3-3-3	14"	Brown and gray silt and clay, some sand, trace gravel with cinders and shale fragments (fill), moist - medium stiff	5	10	14	31	40	34	14	22	A-6a
	18													
587.6	20													
	22	7	2-3-3	18"	Brown and dark gray silty clay, some sand, trace gravel with cinders (fill), moist - medium stiff	5	10	14	31	40	36	16	28	A-6b
585.6	24	S-1		18"	Brown and gray clay, trace sand, little gravel with shale and limestone fragments, moist - medium stiff	11	4	4	32	49	41	17	27	A-7-6
	26	8	2-3-4	3"	Brown and gray clay, trace sand, trace gravel with shale and limestone fragments, moist - stiff	1	3	2	30	64	48	24	26	A-7-6
	28		5-8-12	0										
	30				Brown and gray clay, trace sand, trace gravel with shale and limestone fragments, moist - stiff	2	4	5	37	52	41	28	19	A-7-6
	32	9	8-11-15	17"	Brown and gray clay,little sand,little gravel with shale and limestone fragments, moist - stiff	16	10	7	31	36	41	19	16	A-7-6
	34	S-2		23"										

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/26/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 583.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/26/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-26-1 STATION AND OFFSET 13+43, 45' Rt.Elsinore Pl. CL SURFACE ELEV. 607.6 Retaining Wall No. 26

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
573.6	34													
570.6	36	10	7-8-10	15"	Brown and gray silty clay, little sand, little gravel with shale and limestone fragments, moist - stiff	15	8	4	31	42	38	16	17	A-6b
566.6	38 40	11	6-8-11	15"	Brown and gray clay, trace sand, trace gravel with shale and limestone fragments, moist - stiff	2	5	4	38	51	41	20	15	A-7-6
562.6	42 44	12	11-12-14	13"	Gray silt and clay, trace sand, trace gravel with shale fragments, moist - stiff	4	3	2	41	50	35	15	14	A-6a
	46	S-3		19"	Brown and gray clay, trace sand, trace gravel, moist - stiff	2	3	6	35	54	45	23	21	A-7-6
	48 50	13	7-11-14	18"	Brown clay, little sand, trace gravel with limestone fragments, moist - stiff	2	5	5	34	54	43	21	22	A-7-6
	52 54	14	6-9-11	17"	Brown clay, trace sand, trace gravel with shale fragments, moist - stiff	1	3	3	43	50	44	22	17	A-7-6
550.6	56	S-4			Brown and gray silty clay, moist - stiff	0	4	3	36	57	50	28	22	A-7-6
547.6	58 60	15	5-14-11	17"	Brown and gray silty clay, trace sand with organic matter, moist - medium stiff	0	2	2	48	48	39	19	22	A-6b
	62 64	16	6-7-8	17"	Brown and gray clay, little sand, little gravel with limestone fragments, very moist - medium stiff	14	6	5	26	49	41	20	24	A-7-6
542.6	66 68	17	58-93	15"	Gray shale, moist - hard	Visual classification-No tests performed								

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/26/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 583.6

DATE COMPLETED 8/26/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled

CLIENT: City of Cincinnati, Ohio

PROJECT: Northeast Expressway HAM-71-0.93 Retaining Wall No. 26

BORING No. R-26-1 STATION AND OFFSET 13+43, 45' Rt. Elsinore Pl. CL SURFACE ELEV. 607.6

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SNTL CLASS
536.6	68–70	18	NXM	75%	Gray shale,calcareous,moderately tough to tough(¼" to 3" pieces averaging 1½") and gray limestone, crystalline, fossiliferous,jointed(1" and 1-3/4" pieces) 90% shale, 10% limestone									
	72–102				Boring completed									

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Form No. 640—3649

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/26/64 SAMPLER: TYPE Split Spoon & Coebarrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/27/64 CASING: LENGTH _____ DIA 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-1 STATION AND OFFSET 186+51, 31' Rt., NB BL SURFACE ELEV. 627.2 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
627.2	0													
	2	1	7-9-5	13"	Brown silt, clay and sand, trace gravel with cinders (fill), moist - very stiff	6	13	27	28	26	29	13	12	A-6a
	4	2	4-2-3	8"	Brown silty clay and cinders (fill), moist - stiff	Visual classification-No tests performed								A-6a
	6	3	3-5-7	14"	do do	Visual classification-No tests performed								A-6a
	8	4	7-8-5	12"	Brown and gray silt and clay, some sand, little gravel with cinders (fill), moist - medium stiff	12	16	9	32	31	31	11	24	A-6a
617.2	10													
	12	5	2-2-2	15"	Cinders, brick and wood fragments (fill) moist - medium dense	Visual classification-No tests performed								Fill
	14	6	2-1-3	13"	do do	Visual classification-No tests performed								Fill
	16	7	1-2-4	7"	do do	Visual classification-No tests performed								Fill
	18	8	2-2-2	5"	do do	Visual classification-No tests performed								Fill
	20	9	1-1-1	10"	do do	Visual classification-No tests performed								Fill
	22	10	1-2-3	13"	do do	Visual classification-No tests performed								Fill
602.2	24													
	26	11	2-3-2	15"	Brown and gray silty clay and cinders (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	28	12	1-4-6	13"	do do	Visual classification-No tests performed								Fill
	30	13	10-11-5	13"	do do	Visual classification-No tests performed								Fill
594.7	32													
	34	14	3-5-7	15"	Gray silty clay, trace sand, trace shale and limestone fragments (fill), moist - medium stiff	7	6	3	34	50	39	18	22	A-6b

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/26/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/27/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-1 STATION AND OFFSET 186+51, 31' Rt., NB BL SURFACE ELEV. 627.2 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS.
592.2	34													
	36	15	7-8-14	11"	Gray clay, trace sand with shale and limestone fragments (fill), moist - medium stiff	0	1	2	37	60	42	20	17	A-7-6
	38	16	8-8-10	17"	Brown and gray clay, trace sand, trace shale and limestone fragments (fill), moist - medium dense	2	5	4	38	51	43	22	22	A-7-6
	40	17	5-7-9	6"	Brown clay, trace sand with shale and limestone fragments (fill), moist - medium stiff	0	3	5	35	57	46	22	25	A-7-6
	42													
	44													
	46	18	7-8-7	15"	Brown and gray clay, trace sand, trace shale and limestone fragments (fill), moist - medium stiff	7	3	4	33	53	48	25	24	A-7-6
	48													
577.2	50													
	52	19	6-7-10	18"	Brown and gray silty clay, little sand, trace shale and limestone fragments (probable fill), moist - medium stiff	2	8	4	38	48	39	17	28	A-6b
574.2	54													
	56	20	72-97	12"	Gray shale, moist - very stiff									
569.2	58													
	60	R-1	NXM	100%	Gray shale, calcareous, moderately tough to tough with soft seams in the top 24" of the run (½" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous, shaly, jointed(two pieces ½"and 2½") 95% shale, 5% limestone									
564.2	62													
	64				Boring completed									
	66													
	68													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 590—15-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/23/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/26/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER 5 HOURS 601.6 PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-2 STATION AND OFFSET 187+18, 23' L. NB BL SURFACE ELEV. 628.0 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL CLASS.
628.0	0				11.5" Concrete									
627.5	2	1	5-6-7	17"	Cinders, brick and wood fragments(fill), moist - very dense	Visual classification-No tests performed								Fill
	4	2	6-8-6	18"	do do	Visual classification-No tests performed								Fill
	6	3	6-7-6	15"	do do	Visual classification-No tests performed								Fill
	8	4	8-13-23	12"	do do	Visual classification-No tests performed								Fill
	10	5	2-3-3	15"	do do	Visual classification-No tests performed								Fill
	12													
	14	6	1-2-2	15"	do do	Visual classification-No tests performed								Fill
	16	7	1-2-3	15"	do do	Visual classification-No tests performed								Fill
	18	8	1-3-5	12"	do do	Visual classification-No tests performed								Fill
	20	9	2-3-4	16"	do do	Visual classification-No tests performed								Fill
	22	10	3-4-4	14"	do do	Visual classification-No tests performed								Fill
603.0	24.5													
	26	11	4-5-7	17"	Gray silt and clay, little sand, trace gravel (fill), moist - medium stiff	8	8	5	42	37	35	15	21	A-6a
600.5	28	S-1		13"	Brown and gray clay, little sand, trace gravel (fill), moist - medium stiff	2	6	4	36	52	43	21	23	A-7-6
	30	12	7-18-14	16"	Brown and gray clay, trace sand(fill), moist - medium stiff	0	2	4	37	57	42	20	25	A-7-6
	32													
	34	13	7-10-14	10"	Brown and gray clay, trace sand(fill), moist - medium stiff	0	2	6	34	58	45	20	18	A-7-6

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Form No. 530—14-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/23/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. EXT WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/26/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER 5 HOURS 601.6 PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-2 STATION AND OFFSET 187+18, 23' L. NB BL SURFACE ELEV. 628.0 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SNTL CLASS
	34													
592.5	36	14	- 7 -	6"	Dark brown and gray clay, trace sand (fill), moist -medium stiff	0	2	2	44	52	46	20	26	A-7-6
		15	8-11	11"	Brown and gray clay, trace sand, moist-stiff	0	1	2	37	60	48	25	24	A-7-6
	38													
		S-2		12"	Brown and gray clay, trace sand, moist stiff	0	2	2	33	63	52	28	24	A-7-6
	40	16	8-7-10	15"	Brown and gray clay, trace sand, moist-stiff	0	1	3	21	75	55	30	24	A-7-6
	42													
	44	17	41-10-16	12"	Brown and gray clay and gravel, little sand with limestone fragments, moist - very stiff	38	6	4	19	33	42	20	22	A-7-6
583.0														
93	46	18	65-81	4"	Brown and gray weathered shale, moist-very stiff				•					
	48													
579.0														
	50				Gray shale, calcareous, moderately tough to tough (½" to 4" pieces averaging 2½") and gray limestone, crystalline, fossiliferous, shaly (two pieces ½" and 1" in the top 12" of the run) 97% shale 3% limestone									
	52	R-1	NXM	90%										
574.0	54													
	56				Boring completed									
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 25, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/22/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 584.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/23/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-3 STATION AND OFFSET 187+74, 64'Rt., NB BL SURFACE ELEV. 630.2 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% G.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL CLASS
630.2	0													
629.7		1	- 4 -		Topsoil	Visual classification-No tests performed								Fill
	2	2	10-14	10"	Brown silty clay with cinders and brick fragments (fill), moist - stiff									
	4	3	10-12-13	8"	do do	Visual classification-No tests performed								Fill
	6	4	10-6-10	14"	do do	Visual classification-No tests performed								Fill
622.7	8													
	10	5	6-6-5	17"	Cinders, brick and wood fragments(fill), moist - medium dense	Visual classification-No tests performed								Fill
	12	6	11-11-12	10"	do do	Visual classification-No tests performed								Fill
	14	7	10-11-17	16"	do do	Visual classification-No tests performed								Fill
	16	8	5-3-7	8"	do do	Visual classification-No tests performed								Fill
	18	9	3-4-5	10"	do do	Visual classification-No tests performed								Fill
	20	10	3-3-3	3"	do do	Visual classification-No tests performed								Fill
	22	11	7-3-2	8"	do do	Visual classification-No tests performed								Fill
	24	12	4-2-4	3"	do do	Visual classification-No tests performed								Fill
603.2	26	13	7-8-8	8"	Gray silt and clay, some sand, little shale and limestone fragments (fill), moist - medium stiff	13	12	11	28	36	35	15	23	A-6a
600.2	28	14	7-8-10	13"	Brown and gray clay, trace sand with shale and limestone fragments (fill), moist - medium stiff	5	2	3	40	50	42	20	21	A-7-6
	30	15	4-7-9	15"	Brown and gray clay, little sand with shale and limestone fragments (fill), moist - stiff	0	6	5	33	56	45	23	21	A-7-6
	32													
	34													

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/22/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 584.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/23/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0,93

BORING No. B-19-3 STATION AND OFFSET 187+74, 64' Rt., NB BL SURFACE ELEV. 630.2 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SNTL CLASS
	34													
	36	16	6-7-8	17"	Brown clay, trace sand with shale and limestone fragments (fill), moist - stiff	0	2	4	38	56	46	25	24	A-7-6
	38	17	8-7-8	8"	Brown clay, trace sand, trace shale and limestone fragments (fill), moist - stiff	3	3	4	35	55	46	24	18	A-7-6
	40	18	7-8-14	18"	Brown and gray clay, little sand with shale and limestone fragments (fill), moist - medium stiff	0	7	5	39	49	41	19	21	A-7-6
	42	19	6-8-11	18"	Brown and gray clay, little sand, trace shale and limestone fragments (fill), moist - medium stiff	6	7	3	33	51	42	20	24	A-7-6
584.7	44	~~20~~ 6		6"	Brown and gray clay, trace sand trace shale and limestone fragments(fill),	4	4	3	36	53	44	22	23	A-7-6
	46	21	8-10	12"	moist - medium stiff	0	3	4	31	62	47	23	24	A-7-6
	48				Brown clay, trace sand, moist - stiff									
580.2	50													
	52	22	35-95	11"	Brown and gray shale, moist - hard									
576.2	54													
	56	R-1	NXM	60%	Gray shale, calcareous, moderately tough (¼" to 5" pieces averaging 2") 100% shale									
571.2	58													
	60				Boring completed									
	62													
	64													
	66													
	68													

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Form No. [illegible]

THE H. C. NUTTING COMPANY

[illegible]

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/29/64 SAMPLER: TYPE Split Spoon & Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 605.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/29/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway NAM-71-0.93 Bridge No. 71-0224

BORING No. B-19-4 STATION AND OFFSET 188+41, 17' Rt. SB BL SURFACE ELEV. 630.2

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.L.	W.C.	SOIL CLASS.
630.2	0													
627.7	2	1	10-7-6	13"	Blacktop, gravel, clay and cinders, (fill), moist - stiff	Visual classification-No tests performed								Fill
625.2	4	2	2-3-4	8"	Clay, gravel, cinders and brick (fill), moist - loose	Visual classification-No tests performed								Fill
	6	3	1-2-3	18"	Clay and cinders (fill), moist - loose	Visual classification-No tests performed								Fill
	8													
620.2	10													
	12	4	2-3-5	8"	Cinders (fill), moist - loose	Visual classification-No tests performed								Fill
	14													
	16	5	2-2-2	17"	do do	Visual classification-No tests performed								Fill
	18													
	20													
	22	6	2-2-4	18"	do do	Visual classification-No tests performed								Fill
	24													
605.2	26	7	1-3-4	17"	Cinders and clay (fill), wet - loose	Visual classification-No tests performed								Fill
602.7	28													
600.2	30	8	4-6-8	16"	Brown and gray silty clay, little sand, with limestone fragments (fill), moist - stiff	0	9	4	33	54	38	17	20	A-6b
	32	S-1 9	4-5-7	9" 16"	Brown clay, trace sand, little gravel, limestone fragments (fill), moist-stiff Brown clay, trace sand with limestone fragments, (fill) moist-medium stiff	14 0	2 2	3 3	27 43	54 52	54 50	32 28	21 24	A-7-6 A-7-6
	34	10	4-5-6	17"	do do	0	4	4	34	58	48	27	24	A-7-6

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS DESIRED [illegible]

Form No. 530—4-64

THE H. C. NUTTING COMPANY

4130 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/29/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 605.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/29/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-4 STATION AND OFFSET 188+41, 17' Rt., NB BL SURFACE ELEV. 630.2 Bridge No. 71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL. CLASS
	34													
	36	S-2		11"	Brown clay, little sand, trace gravel with limestone fragments (fill), moist - stiff	3	9	7	31	50	45	23	21	A-7-6
	38	11	3-5-7	17"	Brown clay, trace sand with limestone fragments (fill), moist - stiff	0	1	2	29	68	55	32	24	A-7-6
	40													
	42													
	44		5-8-9	0		No sample recovered								
	46	S-3		16"		0	1	2	41	56	43	22	23	A-7-6
	48	12	7-5-6	5"	Clay and limestone fragments (fill)	Visual classification-No tests performed								A-7-6
	50	13	18-36-62	18"	Gray clay, trace sand, moist - very stiff	0	0	1	36	63	42	19	12	A-7-6
	52													
576.2	54													
	56	14	NXM	42%	Gray shale, calcareous, moderately tough (1/4" to 2" pieces averaging 1") and gray limestone, crystalline, fossiliferous (one 2" piece at the bottom of the run) 97% shale, 3% limestone									
571.2	58													
	60				Boring completed									
	62													
	64													
	66													
	68													

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91

Form No. 630—16-59

THE R. C. NUTTING COMPANY

4130 AIRPORT ROAD
CINCINNATI 26, OHIO

REVISED
10/14/64-vb

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/26/64 SAMPLER: TYPE Split Spoon & CoreBarrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 605.9 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/26/64 CASING: LENGTH _____ DIA 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-5 STATION AND OFFSET 189+00, 80'Rt., NB BL SURFACE ELEV. 630.9 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % GRAV.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
630.9	0													
	2	1	14-10-6	16"	Cinders, clay and gravel (fill), moist - medium dense	Visual classification-No tests performed								Fill
628.4	4	2	4-5-7	14"	Brown and gray clay, little sand, some gravel with brick fragments (fill), moist - medium stiff	30	7	4	25	34	53	33	25	A-7-6
625.9	6	3	2-2-4	17"	Brown and gray sandy silt, little gravel with cinders (fill), moist - medium stiff	11	8	22	36	23	25	9	17	A-4a
620.9	8													
	10													
	12	4	2-2-4	6"	Cinders, gravel, wood and clay (fill), moist - loose	Visual classification-No tests performed								Fill
	14													
615.9	16	5	2-4-6	7"	Brown and gray silty clay and gravel, trace sand with limestone fragments, (fill), moist - medium stiff	43	4	3	19	31	40	18	17	A-6b
	18													
	20													
	22	6	2-3-3	7"	Brown and gray silty clay, little sand, some gravel with limestone fragments, (fill), very moist - soft	20	6	6	16	52	40	20	28	A-6b
605.9	24													
	26	7	1-1-1	13"	Cinders (fill), wet - very loose	Visual classification-No tests performed								Fill
603.4	28													
	30	8	5-6-8	17"	Brown and gray clay, trace sand, trace gravel, moist - stiff	2	1	2	36	59	46	24	20	A-7-6
		8-2		12"	Brown clay, trace sand, moist - stiff	0	1	3	36	60	49	27	22	A-7-6
	32	9	7-7-8	16"	Brown clay, trace sand, trace gravel, with limestone fragments, moist-stiff	2	2	3	35	58	50	28	22	A-7-6
	34													

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Form No. 630—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

REVISED
10/14/64-vb

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/26/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 605.9 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/26/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-5 STATION AND OFFSET 189+00, 80' Rt., NB BL SURFACE ELEV. 630.9 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
	34													
	36	10	3-5-6	13"	Brown clay,trace sand, little gravel, with limestone fragments, moist - stiff	15	5	3	29	48	48	27	22	A-7-6
592.9	38													
1.5		S-2		16"	Brown silty clay, trace sand with									
590.9	40				limestone fragments, moist - stiff	0	1	3	49	47	35	16	21	A-6b
2		11	5-8-13	18"	Brown clay, trace sand, trace gravel,									
	42				with limestone fragments, moist-stiff	2	1	3	31	63	57	34	22	A-7-6
	44	12	8-11-14	15"	do do	27	5	5	21	42	49	25	21	A-7-6
585.9														
5	46	13	17-28-39	18"	Gray shale, moist - hard	Visual classification-No tests performed								
	48													
580.9	50													
	52	14	NXM	41%	Gray shale,calcareous,moderately tough broken (½" to 2" pieces averaging 1") and gray limestone, crystalline, fossiliferous, jointed (two pieces 1" and 3½") 92% shale, 8% limestone									
	54													
575.9														
	56													
	58				Boring completed									
	60													
	62													
	64													
	66													
	68													

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/1/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 606.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/2/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-6 STATION AND OFFSET 189+64,20'Rt. NB BL SURFACE ELEV. 631.2 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
631.2	0													
628.7	2	1	11-10-8	10"	Sand, gravel and coal (fill), moist - medium dense	Visual classification-No tests performed								Fill
	4	2	4-4-5	18"	Clay, sand, cinders and gravel (fill), moist - loose to medium dense	Visual classification-No tests performed								Fill
	6	3	4-5-5	17"	Clay, sand, cinders and gravel (fill), moist - loose to medium dense	Visual classification-No tests performed								Fill
	8													
	10													
	12	4	4-5-9	18"	Clay, sand, cinders and gravel (fill), moist - loose to medium dense	Visual classification-No tests performed								Fill
	14													
	16	5	4-4-4	18"	Clay, sand, cinders and gravel (fill), moist - loose to medium dense	Visual classification-No tests performed								Fill
	18													
611.2	20													
608.7	22	6	4-4-3	17"	Gray silty clay with sand layers (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	24	7	3-3-4	17"	Gray silty clay with cinders and sand, (fill), moist - medium stiff	Visual classification-No tests performed								Fill
606.2	26	8	4-5-7	7"	Brick, clay, and cinders (fill), wet - medium dense	Visual classification-No tests performed								Fill
603.7	28	9	8-11-13	16"	Brown and gray clay, trace sand with shale fragments (fill), moist - stiff	0	3	7	30	65	46	24	20	A-7-6
	30	10	5-8-12	17"	Brown and gray clay, trace sand with shale fragments (fill), moist-stiff	0	4	4	36	56	49	25	22	A-7-6
	32													
	34	S-1		20"	Brown and gray clay, little sand, trace gravel with shale fragments (fill), moist - stiff	5	5	6	48	36	49	27	16	A-7-6

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

19

Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/1/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. NXM WATER ELEV. IMMEDIATE 606.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/2/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-6 STATION AND OFFSET 189+64, 20' Rt. NB BL SURFACE ELEV. 631.2 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36	11	10-12-15	18"	Brown and gray clay, little sand, trace gravel with shale fragments (fill), moist - stiff	5	5	6	48	36	49	27	16	A-7-6
593.7	38													
		12	5-8-12	13"	Brown and gray silty clay, little sand with organic matter, (fill), moist - medium stiff	0	6	6	43	45	36	19	29	A-6b
	40													
		13	5-9-12	9"	Brown and dark gray silty clay, sand and gravel with limestone fragments, (fill), moist - medium stiff	45	30	9	6	10	37	17	28	A-6b
	42													
	44													
586.2														
	46	14	14-24	8"	Brown and gray clay, trace sand with limestone fragments, moist - very stiff	0	7	0	*	*	46	21	19	A-7-6
583.7	48													
		15	35-68	12"	Gray shale, moist - hard	Visual classification-No tests performed								
581.7	50													
		16	NXM	75%	Gray shale, calcareous, tough (1" to3½" pieces averaging 2½") and gray limestone, crystalline, fossiliferous (two pieces 3/4" and 1-3/4" midway in the run) 96% shale, 4% limestone									
	52													
	54													
576.7														
	56				Boring completed	*Insufficient sample for testing								
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 530—15-59

REVISED:
12/10/64-vb

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/1/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 601.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/1/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-7 STATION AND OFFSET 190+88, NB BL 17' Rt. SURFACE ELEV. 631.6 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
631.6	0													
	2	1	5-6-8	16"	Sand, gravel and clay (fill), moist - medium dense	Visual classification-No tests performed								Fill
629.1	4	2	5-4-5	17"	Clay, silt, sand and gravel (fill), moist - medium stiff	Visual classification-No tests performed								Fill
626.6	6	3	3-2-1	16"	Clay, gravel and cinders (fill), moist - loose	Visual classification-No tests performed								Fill
	8													
621.6	10													
	12	4	1-1-1	15"	Organic matter and cinders (fill), moist - very loose	Visual classification-No tests performed								Fill
	14													
616.6	16	5	1-1-1	16"	Cinders, clay and rock fragments, (fill), very moist - loose	Visual classification-No tests performed								Fill
	18	6	2-2-2	17"	do do	Visual classification-No tests performed								Fill
	20													
609.6	22													
	24	7	5-6-6	16"	Gray silty clay with cinders and brick fragments,(fill), moist-medium stiff	Visual classification-No tests performed								Fill
606.6	26	S-1		15"	Gray silt and clay, little sand, some gravel with rock and brick fragments, (fill), moist - stiff	24	6	8	31	31	36	15	16	A-6a
604.6	28	8	4-5-6	15"	do do	Visual classification-No tests performed								Fill
601.6	30													
	32	9	2-2-6	7"	Cinders and brick fragments (fill), wet - loose	Visual classification-No tests performed								Fill
599.1	34	10	4-6-8	14"	Brick fragments(fill),wet-medium dense	Visual classification-No tests performed								Fill

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

REVISED:
12/10/64-vb

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/1/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 601.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/1/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-7 STATION AND OFFSET 190+88, NB BL 17' Rt. SURFACE ELEV. 631.6 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
596.6	36	11	4-7-10	13"	Brown and gray clay, little sand, little gravel with limestone fragments, (probable fill), moist - stiff	14	11	5	30	40	41	21	19	A-7-6
	38													
	40													
	42	12	10-17-34	17"	Brown and gray clay, trace sand (fill), moist - very stiff	0	2	1	38	59	46	22	16	A-7-6
586.6	44													
	46				Gray shale, calcareous, moderately tough (1" to 2" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, (½" to 5" pieces averaging 2½") 80%shale 20% limestone									
	48	R-1	NXM	50%										
581.6	50													
	52				Boring completed									
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 530--66-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/26/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 610.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/26/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-8 STATION AND OFFSET 192+11, 38' Rt., NB BL SURFACE ELEV. 632.0 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTD CLASS
632.0	0													
630.5	2	1	16-9-6	12"	Gravel and cinders (fill), medium stiff to stiff	Visual classification-No tests performed								Fill
	4	2	7-7-6	9"	Brown and gray silty clay with cinders and brick fragments (fill), moist - medium stiff	Visual classification-No tests performed								Fill
627.0	6	3	6-6-4	9"	Brown sandy silt, little gravel with limestone fragments (fill), moist - medium stiff	10	13	29	38	10		NP	12	A-4a
625.0	8	S-1		3"	do do	No tests performed-Insufficient sample							14	A-4a
623.0	10	4	8-9-9	13"	Brown and gray silt and clay, some sand, little gravel with brick and limestone fragments (fill), moist - medium stiff	14	10	12	32	32	33	13	19	A-6a
620.5	12	5	5-7-8	16"	Brown and gray silty clay, little sand, little gravel with limestone fragments, moist - medium stiff	10	7	5	32	46	38	16	18	A-6b
	14	6	9-13-11	13"	Brown and gray silty clay, little sand, trace gravel with limestone fragments (fill), moist - medium stiff	2	6	6	36	50	39	17	15	A-6b
	16	S-2		17"	Brown and gray silty clay, little sand, little gravel with limestone fragments, (fill), moist-medium stiff	13	8	4	36	39	37	17	14	A-6b
611.5	18	7	20-19-11	16"	Brown and gray silty clay, trace sand moist - stiff	0	2	4	38	56	38	17	14	A-6b
	20	8	13-16-19	16"	Brown and gray silt and clay, trace sand, trace gravel (fill), moist -stiff	5	4	3	36	52	38	15	16	A-6a
607.0	22	9	11-14-14	16"	Brown and gray silty clay, little sand, trace gravel (fill), moist - stiff	2	8	5	37	48	38	17	17	A-6b
	24	S-3		20"		12	6	4	36	42	38	16	11	A-6b
602.0	26	10	20-22-19	16"	Gray shale, moist									
	28													
	30													
	32													
	34													

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Form No. 530—14-58

THE H. C. NUTTING COMPANY

4130 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/26/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 610.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/29/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-S STATION AND OFFSET 192+11, 38' Rt., NB BL SURFACE ELEV. 632.0 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL. CLASS.
597.0	34	R-1	NXM	100%	Gray shale, slightly tough, broken(¼" to 2" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, (one 1½"piece at the top of the run) 95% shale, 5% limestone									
	38	R-2	NXM	66%										
590.0	40				Gray shale,slightly tough with brown weathered zones in the top half of the run(½" to 3" pieces averaging 2") and gray limestone, crystalline,fossiliferous, jointed, (1" to 3-3/4"pieces averaging 3") 86% shale, 14% limestone									
	42													
	44													
	46				Boring completed									
	48													
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/22/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/23/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-9 STATION AND OFFSET 193+12, 9' Rt., NB BL SURFACE ELEV. 633.3 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
633.3	0													
632.8		1	9-3-3	7"	0.5' Blacktop									
	2				Brown silty clay with limestone fragments, (fill), moist - soft to very stiff	Visual classification-No tests performed Fill								
	4	S-1		20"	do do	No tests performed - Shelby tube lost								
628.8														
	6	2	7-9-9	13"	Brown silty clay, some sand, little gravel with limestone fragments (fill), moist - stiff	13	13	8	36	30	34	17	10	A-6b
625.8	8													
		3	6-27-13	13"	Brown silt and clay, little sand, little gravel with limestone fragments (fill), moist - very stiff	10	11	6	36	37	36	14	13	A-6a
	10													
		4	16-9-9	9"	Brown silt and clay, some sand, little gravel with limestone fragments (fill), moist - stiff	15	18	9	28	30	33	12	14	A-6a
	12													
619.3	14	5	20-19-11	5"	Brown silt and clay, some sand, little gravel with limestone fragments (fill), moist - stiff	13	12	10	23	42	36	15	10	A-6a
	16	6	9-11-11	11"	Brown silty clay, some sand (fill), moist - stiff	0	14	6	36	44	36	16	16	A-6b
	18	7	11-11-12	11"	Brown and gray silty clay, trace sand, (fill), moist - stiff	0	5	3	36	56	40	16	14	A-6b
613.3	20													
		8	15-17-19	9"	Gray silt and clay, little sand (fill), moist- stiff	0	4	6	35	55	38	15	14	A-6a
611.3	22													
		9	19-23-26	15"	Brown silt and clay, trace sand, moist- stiff	0	2	4	42	52	35	14	17	A-6a
	24													
608.3														
	26	10	16-19-21	16"	Brown clay, little sand, moist -stiff	0	6	8	41	45	44	23	21	A-7-6
	28													
603.3	30													
		11	13-13-11	11"	Brown silty clay, some sand, trace gravel with limestone fragments, moist- very stiff	9	11	11	24	45	39	21	10	A-6b
	32													
	34													

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Form No. 530—16-69

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/22/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None Backfilled CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/23/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-9 STATION AND OFFSET 193+12, 9' Rt. NB BL SURFACE ELEV. 633.3 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
598.3	34													
	36	12	17-19-16	7"	Gray shale, moist - very stiff									
595.3	38													
	40	R-1	NXM	88%	Gray shale, calcareous, tough (¼" to 2" pieces averaging 1") and gray limestone, crystalline, fossiliferous(½" to 3½" pieces averaging 2") 84% shale,16% limestone									
590.3	42													
	44				Boring completed									
	46													
	48													
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 630—15-59

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/7/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/7/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-10 STATION AND OFFSET 193+14, 61' Rt. NB BL SURFACE ELEV. 637.3 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
637.3	0				1.0' Concrete									
636.3	2	1	4-7-7	12"	Brown silty clay with cinders and gravel (fill), moist - stiff	Visual classification-No tests performed								Fill
	4	2	6-5-4	15"	do do	Visual classification-No tests performed								Fill
	6	3	7-9-11	9"	do do	Visual classification-No tests performed								Fill
629.8	8	4	7-7-7	11"	Brown silty clay, little sand, some gravel with limestone fragments(fill), moist - stiff	25	9	7	27	32	36	16	20	A-6b
627.3	10	S-1		2"	Brown silt and clay, little sand, trace metal, moist - stiff	5	10	8	40	37	35	15	17	A-6a
625.3	12	5	7-9-11	10"	Brown silty clay, trace sand, some gravel (fill), moist - stiff	33	4	5	25	33	40	18	16	A-6b
	14													
621.3	16	6	11-9-10	11"	Brown and gray silty clay, little sand, little gravel with limestone fragments, (fill), moist - stiff	17	7	3	31	42	38	17	13	A-6b
	18	7	8-10-12	10"	Brown and gray clay, little sand, little gravel with limestone fragments (fill), moist - stiff	17	6	6	30	41	41	19	16	A-7-6
618.8	20	8	6-22-9	12"	Brown and gray silty clay, little sand with limestone fragments(fill), moist-stiff	0	7	7	37	49	40	18	14	A-6b
	22	9	7-9-10	11"	Brown and gray silty clay, trace sand with limestone fragments (fill), moist-stiff	0	1	2	43	54	40	18	12	A-6b
613.8	24	10	9-11-12	14"	Brown and gray clay, trace sand, some gravel with limestone fragments (fill), moist - stiff	20	2	2	27	49	45	21	15	A-7-6
	26	11	11-10-9	10"	Brown and gray clay, trace sand, trace gravel with limestone fragments(fill), moist - stiff	3	3	2	36	56	44	20	18	A-7-6
	28	12	7-9-10	12"	Gray clay, trace sand with limestone fragments (fill), moist - stiff	0	4	2	38	56	41	18	18	A-7-6
607.3	30	13	11-12-10	14"	Dark brown clay, trace sand, trace gravel with organic matter, moist -stiff	5	2	4	46	43	42	16	24	A-7-6
604.8	32				Brown plastic clay, little sand, little									
	34	14	10-11-9	15"	gravel, moist - medium stiff	16	11	7	21	45	50	17	24	A-7-6

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/7/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/7/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-10 STATION AND OFFSET 193+14, 61' Rt. NB BL SURFACE ELEV. 637.3 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL CLASS
602.3	34													
601.3	36	S-2		1"	Gray clay, moist - stiff	Insufficient sample								
	38	R-1	NXM	43%	Brown and gray weathered shale (1" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous, jointed (1" to 3" pieces averaging 2") 77%shale, 23% limestone									
	40													
	42				Gray shale,calcareous,moderately tough in top 6" to tough(1" to 6" pieces averaging 4") and gray limestone, fossiliferous, shaly (one 1" piece in the bottom 3" of the run (98% shale, 2% limestone)									
	44													
591.3	46	R-2	NXM	100%										
	48				Boring completed									
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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82

Form No. 530—14-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/13/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/13/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-11 STATION AND OFFSET 194+47, 3' L., NB BL SURFACE ELEV. 637.5 Bridge No. HAM-71-0024

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
637.5	0													
637.0					0.5' Concrete									
635.0	2	1	4-5-9	10"	Cinders (fill), wet - loose	Visual classification-No tests performed								Fill
632.5	4	2	2-4-6	15"	Brown and gray silt and clay, little sand, little gravel (fill), very moist-soft	14	8	9	38	31	36	14	32	A-6a
630.0	6	3	6-9-5	17"	Brown and gray silty clay, little sand, little gravel (fill), moist - medium stiff	15	6	5	36	38	37	16	20	A-6b
627.5	8	4	7-8-5	12"	Brown and gray silt and clay, little sand, some gravel with topsoil (fill), wet - soft	30	10	8	26	26	36	15	30	A-6a
626.5	10	S-1(T)		24"	do do	Visual classification-No tests performed								A-6a
625.5	12	S-1(B)			Brown clay, trace sand, little shale and limestone fragments, moist-very stiff	15	3	2	34	46	42	20	22	A-7-6
623.5	14	5	19-38-48	9"	Brown silty clay, little sand, little shale and limestone fragments, moist - very stiff	11	4	6	35	44	40	18	16	A-6b
	16				Brown and gray weathered shale, slightly tough (1" to 4" pieces averaging 2") and gray limestone, crystalline, fossiliferous, iron oxide stained (1" to 6" pieces averaging 4") 80% shale, 20% limestone									
	18	R-1	NXM	68%										
	20				Gray shale, calcareous, moderately tough to tough (1" to 5" pieces averaging 3") and gray limestone, crystalline, fossiliferous, jointed and oxide stained, (one 6½" piece in the bottom 2' of the run) 89% shale, 11% limestone									
	22													
613.5	24	R-2	NXM	93%										
	26				Boring completed									
	28													
	30													
	32													
	34													

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Form No. 630—10-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/8/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/8/64 CASING: LENGTH DIA. 3.5"I.D.Hollow Stem Augers AFTER HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-12 STATION AND OFFSET 194+39, 59' Rt., NB SL SURFACE ELEV. 637.3 Bridge No. HAM-71-0184

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
637.3	0				0.2' Asphaltic Concrete 0.3' Red Brick									
635.3	2				1.5' Concrete									
	4	1	8-5-7	9"	Brown and gray silty clay, some sand, little gravel (fill), wet - soft	18	17	7	28	30	36	16	28	A-6b
632.3	6	2	9-11-15	12"	Brown silt and clay, little sand, trace gravel (fill), moist - medium stiff	6	10	5	44	35	35	14	24	A-6a
629.8	8	3	12-9-11	8"	Brown clay, little sand, trace gravel, (fill), moist - medium stiff	7	10	7	32	44	42	22	25	A-7-6
627.3	10													
	12	4	7-9-15	12"	Brown and gray silty clay, some sand, some gravel (fill), very moist - soft	21	12	8	29	30	35	16	24	A-6b
624.8	14	5	8-9-11	14"	Brown clay, trace sand (fill), moist - stiff	0	4	3	34	59	53	29	26	A-7-6
620.8	16	S-1		18"	Brown clay, little sand, some fill, with limestone fragments (fill), moist-stiff	26	7	4	21	42	45	23	20	A-7-6
	18	6	11-15-19	16"	Brown clay, trace sand, trace limestone fragments, moist - very stiff	1	2	3	39	55	46	23	17	A-7-6
	20	7	15-18-21	12"	Brown and gray clay, little sand, trace limestone fragments, moist - very stiff	2	6	4	35	53	47	24	18	A-7-6
	22													
	24	8	23-56-61	11"	Brown clay, trace sand with limestone fragments, moist - very stiff	0	1	2	45	52	43	19	18	A-7-6
612.3	26	R-1	NXM	20%	Gray and brown shale, slightly tough, (1" and 2" pieces) and gray limestone, crystalline, fossiliferous, jointed and iron oxide stained (two pieces ½" and 4") 92% shale, 8% limestone									
	28													
	30													
	32	R-2	NXM	60%	Gray shale, calcareous, slightly to moderately tough with thin brown weathered zones throughout the run 100% shale									
	34													

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Form No. 630—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/13/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/13/64 CASING: LENGTH ____ DIA 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-13 STATION AND OFFSET 195+69, 39' Rt., NB BL SURFACE ELEV. 648.5 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTO CLASS
648.5	0													
648.0					0.5' Concrete									
646.0	2	1	4-9-5	14"	Gray silty clay and cinders (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	4	2	3-5-7	12"	Brown and gray silt and clay, trace sand, trace gravel (fill), moist - medium stiff	9	5	4	40	42	37	15	15	A-6a
	6	3	3-4-4	13"	Brown and gray silt and clay, trace sand, little gravel (fill), moist - medium stiff	10	4	2	45	39	35	13	18	A-6a
641.0	8	4	5-6-8	14"	Brown and gray silty clay and gravel, little sand (fill), moist - medium stiff	37	8	6	21	28	39	17	18	A-6b
638.5	10	5	7-9-15	12"	Brown and gray silty clay, little sand, some shale and limestone fragments, moist - stiff	20	5	5	32	38	40	18	18	A-6b
636.0	12													
635.0		6	68-93	5"	Gray shale, moist - hard									
	14													
	16				Gray shale, calcareous, moderately tough with brown weathered zones in the top half of the run (1" to 4½" pieces averaging 3") and gray limestone, crystalline, fossiliferous, iron oxide stained (three pieces 1" - 4" and 6½" at the top of the run) 81% shale, 19% limestone									
	18	R-1	NXM	53%										
	20													
	22	R-2	NXM	73%	Gray shale, calcareous, moderately tough with brown weathered zones throughout the run (1" to 2½" pieces averaging 2") and gray limestone, crystalline, fossiliferous, jointed in the top 12" (1½" to 4½" pieces averaging 3") 70% shale, 30% limestone									
625.0	24													
	26				Boring completed									
	28													
	30													
	32													
	34													

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Form No. 536—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/24/64 SAMPLER: TYPE Split Spoon& CoreBarrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/24/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-14 STATION AND OFFSET 196+98, 23' Rt., NB SL SURFACE ELEV. 653.7 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
653.7	0													
653.2	2	1	6-4-5	10"	Cinders and gravel(fill)moist-medium stiff Brown and gray weathered shale with limestone fragments, moist - very stiff	Visual classification-No tests performed								Fill
	4	2	20-16-31	9"	do do									
648.7	6	3	30-36-47	14"	Gray shale, moist - hard									
646.7	8	R-1	NXM	100%	Gray shale,calcareous, moderately tough with a 3" brown weathered zone at the bottom of the run (1" to 4½" pieces averaging 3") 100% shale									
	10													
	12	R-2	NXM	88%	Gray shale, calcareous,moderately tough, (½" to 2½" pieces averaging 2") and gray limestone, crystalline,fossiliferous, jointed and iron oxide stained (1" to 5" pieces averaging 3")80% shale,20% limestone									
	14													
638.7	16				Boring completed									
	18													
	20													
	22													
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 630—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/24/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/25/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-15 STATION AND OFFSET 197+02, 80' Rt., NB BL SURFACE ELEV. 653.2 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTO CLASS
653.2	0	1	3	5"	0.5' Asphaltic concrete									
652.7		1A	2-4	5"	Brown silty clay with trace cinders, topsoil and rock fragments (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	2													
	4	2	10-10-4	17"	do do	Visual classification-No tests performed								Fill
648.2														
	6	3	9-11-7	4"	Brown silty clay with rock fragments, (probable fill) moist - stiff									
645.7	8													
		4	13-16-20	12"	Brown silty clay and limestone fragments, trace sand, moist - stiff	52	5	4	16	23	38	16	14	A-6b
643.2	10													
		5	19-42-46	9"	Brown and gray silt, clay and limestone fragments, trace sand, moist - hard	50	6	3	16	25	35	15	14	A-6a
641.2	12													
	14				Gray shale, calcareous, moderately tough with brown weathered zones in the top half of the run (1" to 2½" pieces averaging 2") and gray limestone, crystalline, fossiliferous, jointed at the bottom of the run (1" to 4½" pieces averaging 2½") 82% shale, 18% limestone									
	16	R-1	NXM	71%										
	18													
	20	R-2	NXM	50%	Gray shale, calcareous, slightly tough with brown weathered zones throughout the run (½" to 2" pieces averaging 1") and gray limestone, crystalline, fossiliferous, jointed (1" to 3" pieces averaging 2")									
631.2	22				70% shale, 30% limestone									
	24													
	26				Boring completed									
	28													
	30													
	32													
	34													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/13/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/13/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS ____ Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0224

BORING No. B-19-16 STATION AND OFFSET 198+26, 42' Rt., NB BL SURFACE ELEV. 660.3

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
660.3	0				0.5' Concrete									
659.8	2	1	5-6-7	12"	Gray clay, trace sand, little shale fragments (fill), moist - stiff	18	3	2	29	48	45	21	21	A-7-6
657.3	4	2	9-25-31	15"	Brown and gray silty clay, little sand some limestone fragments moist-hard	31	5	5	25	34	40	17	15	A-6b
655.3														
654.3	6	3	12-70	9"	Gray shale and limestone fragments, dry - hard									
	8	R-1	NXM	52%	Gray shale, calcareous, moderately tough with brown weathered zones in the bottom 12" of the run (½" to 2½" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed (½" to 4" pieces averaging 2") 90% shale, 10% limestone									
	10													
	12													
	14	R-2	NXM	87%	Gray shale, calcareous, moderately tough to tough with a 6" brown weathered zone at the top of the run (1" to 4½" averaging 3") and gray limestone, crystalline, fossiliferous, jointed (1" to 2½" pieces averaging 1½") 90% shale, 10% limestone									
644.3	16				Boring completed									
	18													
	20													
	22													
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 630—16-59

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/11/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None Backfilled CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/11/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS ____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-17-8 STATION AND OFFSET 195+40, 14' L. SB BL SURFACE ELEV. 648.4 Bridge No. HAM-71-0226

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	AASHTO CLASS
648.4	0													
647.9		1	3	16"	Cinders (FILL), SHFF	Visual classification-No tests performed								Fill
	2	1A	4-4	16"	Brown and gray clay, trace sand, moist-stiff	Visual classification-No tests performed								A-7-6
643.4	4	2	9-8-11	9"	do do	0	2	4	40	54	43	17	19	A-7-6
7.5	6	3	16-21-26	16"	Gray shale, moist - very stiff	Visual classification-No tests performed								
640.4	8													
	10	R-1	NXM	72%	Gray shale with brown weathered zones throughout the run, calcareous, moderately tough (1" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous, shaly in the top 2/3 of the run (1" to 3" pieces averaging 1½") 78% shale, 22% limestone									
635.4	12													
	14													
	16													
	18													
	20													
	22													
	24													
	26													
	28													
	30													
	32													
	34				Boring completed									

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Form No. 510 — THE A. D. LITTLE COMPANY — Cincinnati 26, O.

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

Split Spoon & 2"O.D. &

DATE STARTED 6/23/64 SAMPLER: TYPE Core Barr DIA. NXM WATER ELEV IMMEDIATE 604.3 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/30/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-26-2 STATION AND OFFSET 189+64, 28' Rt., RB 61. SURFACE ELEV. 629.8 Bridge No. HAM-71-0228

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTD CLASS
629.8	0													
	2	1	14-8-5	10"	Cinders, clay, gravel and brick (fill), moist - medium dense	Visual classification-No tests performed								Fill
627.3														
	4	2	3-4-5	18"	Sand, gravel and clay (fill), moist - loose	Visual classification-No tests performed								Fill
624.8	6	3	2-2-3	10"	Clay, cinders, sand and gravel (fill), moist - loose	Visual classification-No tests performed								Fill
	8													
	10													
	12	4	2-4-3	17"	do do	Visual classification -No tests performed								Fill
	14													
	16		2-2-2	0		No sample recovered								
612.3														
	18	5	2-2-3	7"	Cinders, sand and wood (fill), moist - loose	Visual classification-No tests performed								Fill
609.8	20													
	22	6	1-1-2	18"	Cinders, organic matter and sand (fill), moist - very loose	Visual classification-No tests performed								Fill
	24													
604.8														
	26	7	4-6-9	18"	Brown and gray clay, trace sand, trace gravel with limestone fragments (fill) moist - stiff	10	4	2	29	55	41	19	24	A-7-6
	28													
		S-1		15"	Brown and gray clay, trace sand, trace gravel with limestone fragments (fill) moist - stiff	1	6	3	38	52	44	21	24	A-7-6
	30													
		8	7-10-14	14"	Brown and gray clay, trace sand with shale and limestone fragments (fill), moist - stiff	0	2	0	60	38	42	20	18	A-7-6
	32													
		9	4-5-7	16"	Brown and gray clay, trace sand with shale and limestone fragments (fill), moist - stiff	0	2	4	32	62	46	23	22	A-7-6
	34													

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Form No 530-16

THE R. G. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

Split Spoon & 2"O.D.

DATE STARTED 6/30/64 SAMPLER: TYPE Core Barrel DIA. NXM WATER ELEV. IMMEDIATE 604.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/30/64 CASING: LENGTH _____ DIA 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-16-2 STATION AND OFFSET 189+64, 28'Rt., RB BL SURFACE ELEV. 629.8 Bridge No. HAM-71-0228

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36	10	8-5-4	13"	Brown and gray clay, little sand, trace gravel with limestone fragments (probable fill), moist - medium stiff	10	8	7	29	46	52	30	28	A-7-6
	38	11	4-5-8	12"	Brown and gray clay, some sand, trace gravel with limestone fragments, (probable fill), moist - medium stiff	7	13	10	25	45	52	30	36	A-7-6
	40													
587.3	42	12	11-22-34	16"	Brown clay, little sand, trace gravel, moist - very stiff	1	8	3	34	54	42	20	18	A-7-6
	44	13	22-42	12"	Gray shale, moist - hard	Visual classification-No tests performed								
584.3	46	14	78	6"	do do	Visual classification-No tests performed								
	48	15	NXM	75%	Gray shale, calcareous, tough with moderately tough layers in the bottom 12" of the run (1/4" to 4" pieces averaging 1-1/2") 100% shale									
579.3	50													
	52				Boring completed									
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/24/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 601.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/24/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-16-4 STATION AND OFFSET 191+92, 1' Rt. Ramp RB BL SURFACE ELEV. 631.0 Bridge No. HAM-71-0228

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
631.0	0													
	2	1	5-7-7	15"	Brown silty clay, sand, gravel and cinders(fill), moist - medium stiff	Visual classification-No tests performed								Fill
628.5														
	4	2	3-3-3	15"	Cinders, sand, gravel and clay, moist - loose	Visual classification-No tests performed								Fill
	6	3	2-3-3	14"	do do	Visual classification-No tests performed								Fill
623.5														
	8	4	5-4-3	17"	Brick, clay and cinders (fill), moist - loose									
621.0	10													
	12	5	5-6-4	11"	Cinders with brick fragments(fill), moist - medium dense	Visual classification-No tests performed								Fill
	14	6	9-9-8	15"	do do	Visual classification-No tests performed								Fill
616.0														
	16	7	5-3-4	17"	Cinders and clay (fill), moist - loose and medium stiff	Visual classification-No tests performed								Fill
613.5	18													
		8	2-1-1	17"	Cinders (fill), very moist - loose	Visual classification-No tests performed								Fill
611.0	20													
		9	4-3-3	13"	Brick and cinders (fill)moist-loose	Visual classification-No tests performed								Fill
608.5	22													
	24	10	4-8-6	11"	Brick, cinders and clay (fill), moist-medium dense	Visual classification-No tests performed								Fill
	26	11	7-8-5	11"	do do	Visual classification-No tests performed								Fill
603.5	28													
		12	3-3-4	17"	Brown sandy clay with fine gravel,brick and cinders (fill), moist - soft	Visual classification-No tests performed								Fill
601.0	30													
		13	2-2-3	17"	Cinders, gravel and clay(fill) moist-soft	Visual classification-No tests performed								Fill
598.5	32				Brown and gray silty clay,little sand, little gravel with shale and brick									
	34	14	3-4-6	11"	fragments(fill), moist - medium stiff	10	10	8	32	40	37	16	20	A-6b

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Form No. 536—16 5P

THE E. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/12/64 SAMPLER: TYPE Split Spoon Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/12/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0271

BORING No. B-20-1 STATION AND OFFSET 0+26, 14' L. McGregor BL SURFACE ELEV. 765.7

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL CLASS
765.7	0													
	2	1	10-9-10	17"	Brown and gray clay and gravel, trace sand with limestone fragments (fill), moist - stiff	41	5	3	24	27	42	22	16	A-7-6
	4	2	4-5-6	15"	do do	Visual classification-No tests performed								A-7-6
760.2	6	3	5-5-6	14"	Brown and gray silty clay, little sand little gravel with limestone fragments (fill), moist - stiff	16	7	5	36	36	40	20	20	A-6b
	8	4	4-5-7	15"	do do	Visual classification-No tests performed								A-6b
	10	5	13-10-10	7"	Brown and gray silty clay, little sand, some gravel with limestone fragments (fill), moist - stiff	21	6	5	36	32	40	20	19	A-6b
	12													
	14													
750.7	16	6	4-5-6	17"	Brown and gray clay, little sand, some gravel with limestone fragments (fill), moist - stiff	20	6	5	31	38	42	22	23	A-7-6
748.7	18	S-1			Brown silt and clay, some sand with limestone fragments (fill), moist - very stiff	0	14	7	30	49	30	11	10	A-6a
746.7	20	7	8-5-8	16"	Brown and gray silty clay, little sand some gravel with limestone fragments, (fill), very moist - medium stiff	22	5	5	32	36	40	20	28	A-6b
	22													
	24	8	5-7-9	11"	Brown and gray silty clay, little sand some gravel with limestone fragments, (fill), moist - medium stiff	34	5	5	26	30	38	18	20	A-6b
740.7	26	9	13-12-12	7"	Brown and gray silty clay, trace sand, trace gravel with limestone fragments, (fill), moist - medium stiff	3	3	2	42	50	48	26	20	A-7-6
	28	10	13-65-44	15"	Brown and gray clay, trace sand, some gravel with limestone fragments, moist - very stiff	32	6	2	24	36	52	29	18	A-7-6
735.7	30													
	32	11	28-24-41	14"	do do	32	2	2	33	31	37	17	14	A-6b
733.7	34	12	105	6"	Brown and gray clay, trace sand, trace gravel with limestone fragments, moist - very stiff	4	3	2	31	60	49	25	16	A-7-6

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Form No. 500—76 5

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/12/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV IMMEDIATE None CLIENT City of Cincinnati, Ohio

DATE COMPLETED 8/12/64 CASING LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT Northeast Expressway HAM-71-0.93

BORING No. B-20-1 STATION AND OFFSET 0+26, 14' L. McGregor BL SURFACE ELEV. 765.7 Bridge No. HAM-71-0271

ELEV.	DEPTH	SAMPLE No	STD. PEN (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
730.7	34													
	36	13	141-65-54	18"	Brown and gray weathered shale, moist - hard									
	38													
725.7	40													
	42	14	NXM	89%	Gray shale, calcareous, moderately tough to tough with a 4" fossiliferous zone at approximately elevation 724 (1" to 3" pieces averaging 2") and gray limestone crystalline, fossiliferous (1" to 3½" pieces averaging 2") 70% shale, 30% limestone									
	44													
720.7	46													
	48				Boring completed									
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 630—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/7/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. x NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/7/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-20-2 STATION AND OFFSET 0+53, 8' Rt., McGregor St., BL SURFACE ELEV. 766.2 Bridge No. HAM-71-0271

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
~~766.2~~	0				~~Asphaltic concrete~~									
~~765.2~~		1	9-12-12	16"	Brown and gray silty clay with rock fragments (fill), moist - very stiff	22	0	2	35	41	35	16	16	A-6b
	2													
	4	2	3-8-9	15"	do do	Visual classification-No tests performed								A-6b
	6	3	4-6-6	15"	Brown and gray silty clay, little sand, trace gravel with limestone fragments, (fill), moist - very stiff	2	11	4	41	42	38	18	17	A-6b
	8													
756.2	10	4	4-7-6	8"	do do	Visual classification-No tests performed								A-6b
		5	3-6-4	12"	Brown silt and clay, little sand, little gravel with limestone fragments (fill), moist - stiff	12	10	5	38	35	30	11	16	A-6a
	12													
	14													
751.2														
	16	6	3-4-6	13"	Brown silty clay, trace sand, trace gravel with limestone fragments (fill), moist - stiff	4	4	4	43	45	40	19	18	A-6b
	18													
	20													
	22	7	2-3-7	15"	Brown silty clay, little sand, trace gravel with limestone fragments, (probable fill), moist - medium stiff	1	8	5	42	44	40	19	26	A-6b
	24													
741.2														
	26	8	6-5-5	17"	Brown and gray sandy silt, little sand, some gravel with limestone fragments, (probable fill), moist - medium stiff	25	9	6	29	31	30	10	18	A-4a
	28													
736.2	30													
		9	5-6-9	17"	Brown and gray silty clay, trace sand, trace gravel with limestone fragments, (probable fill), moist - medium stiff	1	2	2	43	52	38	18	21	A-6b
	32													
	34													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/7/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/7/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-20-2 STATION AND OFFSET 0+53,8'Rt.,McGregor St. BL SURFACE ELEV. 766.2 Bridge No. HAM-71-0271

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
731.2	34													
	36	10	25-34-17	18"	Brown and gray clay, trace sand, some gravel with limestone fragments, moist-very stiff	37	6	2	26	29	41	20	15	A-7-6
728.7	38	11	24-22-35	16"	Brown and gray silty clay, trace sand, trace gravel with limestone fragments, moist - hard	4	4	2	45	45	38	18	16	A-6b
726.2	40													
	42	12	11-72-67	17"	Brown and gray weathered shale, moist-hard	Visual classification-No tests performed								
	44	13	20-60-71	14"	do do	Visual classification-No tests performed								
718.2	46	14	20-61-72	18"	do do	Visual classification-No tests performed								
	48				Brown and gray weathered shale,slightly tough (1½" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous, shaly(one 2½" piece) 69% shale, 31% limestone									
	50	15	NXM	87%										
	52				Gray shale, calcareous,moderately tough, (1" to 2½" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, (3/4" to 3½" pieces averaging 2") 50% shale, 50% limestone									
	54													
	56	16	NXM	78%										
709.2					Gray shale, calcareous,moderately tough with soft seams throughout run (½" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous (½" to 7" pieces averaging 3") 68%shale, 32% limestone									
	58													
	60													
	62													
	64				Boring completed									
	66													
	68													

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Form No. 930--1m-65

THE E. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/6/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 744.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/7/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-20-3 STATION AND OFFSET 1+29, 13'L. McGregor BL SURFACE ELEV. 766.2 Bridge No. HAM-71-0271

ELEV.	DEPTH	SAMPLE No	STD. PEN. (N)	% REC	DESCRIPTION	Physical Characteristics % AGG.	% C.S	% F.S	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
766.2	0													
765.2					1' Blacktop and brick									
763.7	2	1	2-7-10	3"	Brown silty clay with shale and limestone fragments (fill), moist - stiff	Visual classification-No tests performed								Fill
	4	2	7-8-13	4"	Brown and gray silty clay, little sand, little gravel with shale and limestone fragments (fill), moist - medium stiff	19	7	5	33	36	35	17	18	A-6b
	6	3	3-5-7	14"	Brown and gray silty clay, little sand, little gravel with shale and limestone fragments (fill), moist - stiff	10	9	4	36	41	35	16	22	A-6b
758.7	8	4	7-8-9	13"	Brown and gray silt and clay, little sand, little gravel with shale and limestone fragments(fill), moist-stiff	18	9	4	37	32	31	13	17	A-6a
756.2	10													
	12	5	7-8-9	8"	Brown sandy silt, some gravel with shale and limestone fragments (fill), moist - stiff	34	10	7	24	25	28	10	6	A-4a
	14													
751.2														
	16	6	17-16-6	10"	Brown silt, clay and gravel, little sand with shale and limestone fragments (fill), moist - stiff	49	6	4	20	21	33	13	18	A-6a
	18													
746.2	20													
	22	7	8-9-11	12"	Brown and gray clay, trace sand, little gravel with shale and limestone fragments (fill), moist - stiff	13	3	3	37	44	43	23	24	A-7-6
	24													
	26	8	3-3-5	13"	Brown and gray clay, trace sand with shale and limestone fragments (fill), moist - stiff	0	2	2	48	48	42	22	26	A-7-6
	28													
736.2	30													
	32	9	3-5-11	14"	Brown silty clay, little sand, some gravel with shale and limestone fragments (fill), moist - stiff	21	6	5	34	34	39	19	20	A-6b
	34													

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Form No 530- 1- 54

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/6/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 744.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/7/64 CASING: LENGTH ____ DIA 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-20-3 STATION AND OFFSET 1+29, 13' L.McGregor Bl. SURFACE ELEV. 766.2 Bridge No. HAM-71-0271

ELEV.	DEPTH	SAMPLE No.	STD. PEN (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C	SHTL CLASS
	34													
	36	10	12-18-29	9"	Brown and gray silty clay, little sand, little gravel with shale and limestone fragments (fill), moist - stiff	12	10	4	37	37	32	18	10	A-6b
	38	11	16-18-24	16"	Brown and gray silty clay, little sand, little gravel with shale and limestone fragments (fill), moist - stiff	15	8	4	36	37	36	16	16	A-6b
726.2	40													
	42	12	20-20-27	15"	Brown clay, trace sand, trace gravel with shale and limestone fragments, (fill), moist - stiff	1	4	2	38	55	44	22	21	A-7-6
723.7														
	44	13	24-67-73	13"	Brown and gray weathered shale, moist-soft	Visual classification-No tests performed								
720.2	46													
3	48	14	NXM	32%	Brown and gray weathered shale(no shale recovered)and gray limestone,crystalline, fossiliferous,jointed midway in the run (1" to 4½" pieces averaging 3") 62%shale, 28% limestone									
	50													
	52				Brown and gray weathered shale,slightly tough(½" to 2½" pieces averaging 2")									
	54	15	NXM	62%	and gray limestone, crystalline, fossiliferous - shaly in the top 12" and the bottom 4" (½" to 4" pieces averaging 3") 62% shale, 38% limestone									
710.2	56													
	58				Boring completed									
	60													
	62													
	64													
	66													
	68													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

*Water used in drilling from elevation 747.8

DATE STARTED 9/2/64 SAMPLER: TYPE ____ DIA. ____ WATER ELEV. IMMEDIATE ____ CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/3/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS ____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-20-4 STATION AND OFFSET 2+32, 9' L. McGregor Ave. BL SURFACE ELEV. 747.8 Bridge No. HAM-71-0271

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.L.	W.C.	SOIL CLASS
747.8	0													
745.3	2	1	1-3-6	12"	Topsoil and cinders (fill), dry - stiff	Visual classification-No tests performed								Fill
	4	2	9-20-23	8"	Brown and gray silty clay,little sand, some gravel with rock fragments(fill), moist-stiff	30	7	3	25	35	37	18	16	A-6b
	6	3	6-18-13	10"	Brown and gray silty clay,little sand, some gravel with rock fragments(fill), moist - stiff	27	8	5	26	34	37	18	16	A-6b
	8	4	4-6-7	13"	Brown and gray silty clay,little sand, little gravel with shale fragments (fill), moist - medium stiff	14	7	4	31	44	36	18	20	A-6b
737.8	10													
	12	5	3-6-10	9"	Brown and gray silt and clay,little sand, some gravel with organic matter and rock fragments(fill),moist-medium stiff	30	10	8	22	30	32	14	19	A-6a
732.8	14	S-1	Pushed	0		No sample recovered								
	16	6	4-5-7	14"	Brown and gray clay,trace sand,little gravel with organic matter and rock fragments(fill), very moist-medium stiff	10	5	3	35	47	42	22	24	A-7-6
730.3	18	7	3-4-4	13"	Brown and gray silty clay, trace sand, trace gravel with topsoil(fill), very moist - medium stiff	4	5	4	39	48	40	19	23	A-6b
727.8	20													
	22	8	3-3-4	7"	Brown and gray silt and clay,little sand,trace gravel with topsoil (fill), very moist - medium stiff	6	11	6	40	37	33	14	17	A-6a
725.3	24	9	2-3-4	0		No sample recovered								
722.8	26	10	1-1-1	10"	Gray clay, trace sand with organic matter (fill), very moist - soft	0	2	2	38	58	43	22	36	A-7-6
720.3	28	11	1-2-1	7"	Gray silty clay, trace sand with organic matter (fill), wet - soft	0	0	2	48	50	37	17	38	A-6b
717.8	30	12	3-4-5	12"	Brown and gray silt and clay,trace sand with organic matter(fill),moist-medium stiff	0	1	1	54	44	35	13	22	A-6b
715.3	32	13	4-5-7	10"	Brown clay, trace sand (fill), very moist - medium stiff	0	2	2	37	59	42	30	30	A-7-6
	34													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

*Water used in drilling from elevation 747.8

DATE STARTED 9/2/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE * CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/3/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-20-4 STATION AND OFFSET 2+32, 9' L. McGregor Ave. BL SURFACE ELEV. 747.8 Bridge No. HAM-71-0271

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
712.8	34													
	36	14	4-5-6	8"	Brown and gray silty clay, little sand, little gravel with topsoil (fill), moist - medium stiff	10	9	5	37	39	36	17	23	A-6b
	38													
707.8	40													
		15	4-5-6	16"	Brown and gray silty clay, trace sand with organic matter (fill), moist - medium stiff	0	4	4	52	40	35	15	24	A-6a
	42													
	44													
	46	16	6-13-29	4"	do do	No tests performed-Insufficient sample								A-6a
	48													
697.8	50													
		17	10-18-40	10"	Brown and gray silty clay, trace sand, moist - very stiff	0	0	1	48	51	40	19	21	A-6b
	52													
694.8														
	54				Gray shale, calcareous, moderately tough, (½" to 3" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, shaly in the bottom 18" of the run(1" to 3" pieces averaging 2") 55% shale, 45% limestone									
	56	18	NXM	80%										
689.8	58													
	60				Boring completed									
	62													
	64													
	66													
	68													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

LOG OF BORING

DATE STARTED 8-12-65 SAMPLER: TYPE Split Split DIA. 2"O.D. WATER ELEVATION

DATE COMPLETED 8-13-65 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 15'

BORING NUMBER B-21-1 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER HRS. Backfilled

STATION & OFFSET 224+54, 73'Lt. SURFACE ELEVATION 825.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
825.0	0											
		5-9-9	Dark brown clayey silt, (fill) slightly moist - medium stiff	1	5	5	11	51	28	33	11	13
823.0	2											
	4											
	6	6-6-22	Brown and gray silty clay with limestone fragments, (fill) moist - stiff	2	23	6	3	30	38	36	18	15
	8											
815.0	10											
	12	10-4-5	Brown and gray silty clay and limestone fragments, (fill) very moist - medium stiff	3	48	12	5	16	19	34	18	27
812.0												
810.0	14	3-3-3	Brown fat clay with limestone fragments, (fill) moist - medium stiff	4	20	3	3	25	49	62	38	28
	16	53-100	Limestone fragments and clay	5	Visual							
808.5												
	18											
	20	23-26-32	Brown weathered shale	6	Visual							
803.0	22											
801.0	24	100	Brown weathered shale with limestone layers	7	Visual							
	26	47%	Interbedded light brown shale and gray limestone(approx. 80% shale and 20% limestone);shale 1/4 to 4"pieces, remolded in part, soft, weathered, limestone thin bedded, 3/4 to 1-1/4"beds, fine-grained, hard									
797.5												
	28		Interbedded gray shale and gray limestone(approx. 55% shale & 45% limestone);shale broken to fragmented, fossiliferous, medium tough, limestone thin bedded, 1/2 to 4"beds averaging 1-1/2", fine-grained, fossiliferous									
795.1	30											
794.0		85%	Gray shale, 3"+ pieces, trace broken, calcareous, medium tough									
793.5	32		Gray limestone, thin bedded, (one 6"bed), fossiliferous, weathered, w/high angle joint, surfaces weathered									
791.8			Gray shale, 1 to 2"pieces, little broken, medium tough with 2-1" limestone beds near top.									
	34		Gray limestone, thin bedded, 2 to 8"beds, averaging 4", fossiliferous, impure, hard.									
		91%										
788.5	36											
	38		Interbedded gray shale and gray limestone(approx. 75% shale & 25% limestone), shale 1 to 3" pieces, some broken, medium tough, limestone thin bedded, 1 to 3"beds averaging 2", fossiliferous, hard									
786.0												
	40		Gray limestone thin bedded, 2 to 7"beds, averaging 4", fossiliferous, impure, hard.									
783.5		88%										
783.0	42		Gray calcareous shale, 2 & 4"pieces, hard.									
		% Recovery	Boring Completed									
	44											

LOG OF BORING

DATE STARTED 7-27-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION

DATE COMPLETED 7-28-65 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 20' & 34'

BORING NUMBER B-21-2 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER 24 HRS. 7.2'

STATION & OFFSET 225+33. Centerline SURFACE ELEVATION 824.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	L.L.	PI	WC
824.0	0											
	2	7-7-7	Brown clayey silt with limestone fragments. (fill) moist - stiff	1	20	10	8	40	22	31	10	26
	4											
819.0												
	6	6-7-7	Mottled brown and gray clayey silt with limestone fragments, (fill) moist - stiff	2	4	2	4	36	54	41	21	25
	8											
	10											
	12	5-4-5	Mottled brown and gray clayey silt with limestone fragments, (fill) moist - stiff	3	7	5	3	35	50	42	22	20
	14											
	16	4-5-6	Brown and gray silty clay with limestone fragments, (fill) moist - stiff	4	11	4	5	36	44	38	20	21
	18											
	20											
	22	13-6-6	Brown silty clay with limestone fragments, (fill) very moist - medium stiff	5	4	5	5	37	49	41	22	27
	24											
	26	3-4-6	Brown and gray lean clay, trace brick, (fill) moist - medium stiff	6	3	3	3	36	55	50	28	26
	28											
794.0	30											
	32	3-3-4	Dark brown silty clay, trace organics, moist - medium stiff	7	3	1	3	57	36	42	16	37
790.0	34											
	36	100%	Interbedded brown and gray shale and limestone (approx. 55% shale and 45% limestone), shale, mostly broken to crushed, soft, weathered, limestone thin bedded, 1/2 to 3-1/2"beds averaging 1-1/4", fine-grained, impure, fossiliferous, hard									
787.0	38	80%	Interbedded gray shale and limestone (approx. 75% shale and 25% limestone), shale, 1/4 to 3-1/2" pieces averaging 1-1/4", trace broken pieces, tough, with evidence of shrinkage cracks after drying; limestone, thin bedded, 1/2 to 4-1/2"beds averaging 2", fine-grained, impure, hard, fossiliferous									
	40	98%										
	42											
780.5	44	% Recovery	Boring Completed									

LOG OF BORING

DATE STARTED 8-16-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION

DATE COMPLETED 8-17-65 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 14.5

BORING NUMBER B-22-1 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER _____ HRS. Backfilled

STATION & OFFSET 226+10, T.C. 7.5'Lt. of Centerline SURFACE ELEVATION 826.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
826.0	0											
	2	3-6-8	Brown clayey silt, (fill) moist - stiff	1	1	1	3	65	30	33	15	16
	4											
	6	8-7-5	Brown clayey silt, trace cinders, (fill) dry - medium stiff	2	19	7	8	40	26	34	16	12
	8											
816.0	10											
	12	12-35-39	Concrete, cinders and clay, (fill) wet - soft	3		Visual						
	14											
	16	3-4-4	Concrete, cinders and clay, (fill) wet - soft	4		Visual						
	18											
806.0	20											
	22	2-3-3	Brown and gray lean clay, wet - soft	5	5	6	11	38	40	36	20	29
	24											
	26	2-3-5	Brown and gray lean clay, wet - soft	6	4	6	10	42	38	38	22	30
798.0	28	6-8-4	Brown and gray lean clay, moist - stiff	7	4	3	4	35	54	48	29	24
795.0	30	14-17-35	Brown and gray weathered shale	8		Visual						
~~794.8~~	32		~~Gray limestone fine grained, thin-bedded, fossiliferous, hard, weathered~~ Light brown shale, 2 to 7"pieces, averaging 6", with shrinkage cracks after drying, soft, weathered									
793.5												
792.0	34	96%	Gray limestone, thin bedded, 1-1/2 to 3-1/2"pieces, averaging 2", fine-grained, fossiliferous, impure, weathered, brittle to hard									
	36		Interbedded gray shale and limestone (approx. 75% shale and 25% limestone), shale 1 to 2" pieces, trace broken to fragmented, medium tough; limestone thin bedded, 1/2 to 4"beds, averaging 1-1/2", fine-grained, fossiliferous, hard									
788.2	38											
787.6			Gray limestone, thin bedded one-1"& one 6"bed, fine grained, hard									
787.0		100%	Gray shale, 1/2 to 2-1/2"pieces avg. 1", highly fossiliferous, hard, w/1-1/2"bed of gray limestone near*									
786.2	40		Gray limestone, thin-bedded, 1 to 4"beds avg. 3", fine-grained, fossiliferous, hard, w/high angle /joint									
785.0			Gray shale, 3/4 to 3"pieces, averaging 1-1/2", fossiliferous, hard.									
	42	% Recovery	Boring Completed									
												/*bottom

LOG OF BORING

DATE STARTED 8-18-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 8-19-65 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None
BORING NUMBER B-22-2 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER 24 HRS. 12'

STATION & OFFSET 226+63.5 TC, 7.0'Lt. SURFACE ELEVATION 820.3

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
820.3	0											
819.3		3-5	Topsoil, (fill)	1A	Visual							
	2	5	Brown lean clay, (fill) moist - stiff	1B	Visual							
		8-12-13	Brown lean clay, (fill) moist - stiff	2	1	4	5	42	48	44	25	12
	4											
815.3												
	6	8-10-10	Cinders and clay, (fill) moist - stiff									
813.3				3	Visual							
	8											
	10											
809.3		10-16	Mottled brown fat clay, moist- stiff	4A	0	0	2	36	62	55	32	24
	12	23	Brown and gray silty clay and limestone, moist -very stiff	4B	Visual							
	14											
	16	16-18-55	Brown and gray silty clay and limestone, moist - very stiff	5	43	15	6	16	20	32	15	15
802.3	18											
	20		Interbedded gray shale and gray limestone (approx. 50% shale and 50% limestone); shale 1/2 to 2" pieces, some broken, medium tough; limestone thinbedded, 1/2 to 3" beds averaging 1-1/2", fine-grained, fossiliferous, impure, hard									
		71%										
	22											
797.3												
	24	% Recovery	Boring Completed									
	26											
	23											

LOG OF BORING

DATE STARTED 8-16-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION

DATE COMPLETED 8-16-65 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None

BORING NUMBER B-22-4 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER HRS. Backfilled

STATION & OFFSET 223+67, TC. 8'Lt. of Centerline SURFACE ELEVATION 830.0

Ellev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	L.L.	PI	WC
830.0	0											
829.5		10	Brown lean clay, (fill) moist - stiff	1	0	2	1	61	36	34	18	12
	2	13-17	Brown lean clay, slightly moist - very stiff	2	0	1	3	55	41	40	22	15
825.5	4											
	6	15-19-24	Brown lean clay with limestone fragments, moist - hard	3	21	9	5	38	27	40	22	14
821.0	8											
	10		Brown and gray limestone, thin bedded, 1/2 to 3"beds, averaging 1", highly fossiliferous(fossil									
		92%	hash), fossils poorly cemented, frequently separated by films of shale, porous, mostly brittle,									
817.5	12		weathered, with evidence of high angle joint at 819, with evidence of thin seams of									
		45%	weathered brown shale									
	14		Interbedded gray shale and gray limestone (approx. 65% shale and 35% limestone); shale mostly									
			broken, highly fossiliferous, soft to medium tough, weathered, with evidence of shrinkage cracks									
813.8	16	95%	on drying; limestone thin bedded, 1 to 3"beds, averaging 1-3/4", fossiliferous, impure, hard									
	18		Gray calcareous shale, 1 to 7"pieces, averaging 4", trace broken near top and middle, tough,									
			with 1/2 to 2"beds of fine-grained gray limestone at 812.5, 811 & 808.									
	20											
		98%										
807.5	22											
			Interbedded gray shale and gray limestone(approx. 75% shale & 25% limestone); shale 1/2 to 3"									
	24		pieces averaging 1", trace broken pieces, highly fossiliferous, medium tough, limestone thin-									
804.5			bedded, 1/2 to 3-1/2"beds, averaging 2", fine-grained, fossiliferous, impure, hard									
	26		Interbedded gray limestone and gray shale(approx. 70% limestone & 30% shale), limestone thin bedded									
		98%	1/2 to 3"beds, averaging 2-1/2", fine-grained, sparingly calcareous, hard, with high angle joint in bottom									
802.5	28		piece, joints surface strained slightly with iron oxide.									
		% Recover										
	30		Boring Completed									
	32											

LOG OF BORING

DATE STARTED 7-22-65 SAMPLER: TYPE Split Spoon DIA. 2"O. D. WATER ELEVATION

DATE COMPLETED 7-23-65 CASING: LENGTH HSA DIA. 3.5"I. D. IMMEDIATE None

BORING NUMBER B-23-1 CORE BARREL: TYPE NXM SIZE 2-1/8"I. D. AFTER 24 HRS. 3.5

STATION & OFFSET 231+01, 128.5'Lt. SURFACE ELEVATION 828.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	L L	P I	W C
828.0	0											
827.5			Concrete		Visual							
	2	26-22-33	Brown silty clay with limestone fragments, dry - ahrd	1	46	6	4	20	24	35	16	8
	4											
823.0												
822.0	6	39-52	Brown and gray weathered shale	2	Visual							
	8	75%	Interbedded brown shale and gray and brown limestone(approx. 60% shale and 40% limestone), shale crushed, soft, weathered; limestone thin bedded, 1 2"to 4"beds, averaging 1-1 2"fine-grained, impure, hard, fossiliferous, weathered									
819.0												
	10		Interbedded gray and grown shale and limestone, badly broken to crushed, weathered									
816.0	12	60%										
	14		Interbedded gray shale and limestone(approx. 85% shale & 15% limestone), shale 1 4"to 2-1 2" pieces & broken pieces, medium tough;limestone thin bedded, 1 to 3"beds, some broken pieces, fine-grained, impure, fossiliferous, hard									
	16											
811.0		96%										
810.5	18		Interbedded gray snale and limestone badly broken to pulverized									
	20		Interbedded gray limestone and snale approx.(85% limestone & 15% shale);limestone thin bedded, 1/2"to 4", averaging 1-1/2", fine-grained, impure hard, fossiliferous, shale broken, medium tough									
807.8												
	22	95%	Interbedded gray shale and limestone (approx. 75% shale & 25% limestone);shale badly broken to fragmented, medium tough;limestone thin bedded, 1 to 2-1 2"beds, averaging 1-1 2";trace broken pieces, impure, hard, fossiliferous									
805.5												
	24	% Recovery	Boring Completed									
	26											
	28											

LOG OF BORING

DATE STARTED 7-21-65 SAMPLER: TYPE Split Spoon DIIA. 2"O.D. WATER ELEVATION

DATE COMPLETED 7-22-65 CASING: LENGTH HSA DIIA. 3.5"I.D. IMMEDIATE None

BORING NUMBER B-23-3 CORE BARREL: TYPE NXM SIIZE 2-1/8"I.D. AFTER 24 HRS. 2.7'

STATION & OFFSET 230+83.5, 16.0'Lt. SURFACE ELEVATION 824.8

Elev.	Depth	Std. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	L.L.	P.I.	W.C.
824.8	0		Concrete sidewalk									
824.3												
822.8	2	19-22-29	Brown sandy clay and broken limestone, dry- hard	1	49	22	15	10	4		NP	8
	4	64-23-16	Brown and gray clay and limestone, moist - very stiff	2	41	8	7	18	26	43	21	24
	6		Brown and gray clay and limestone, moist - hard									
817.8	8	18-21-30		3	55	9	5	11	20	34	16	17
		31-75	Gray shale	4			Visual					
814.8	10											
	12	87%	Interbedded gray shale and limestone (approx. 55% shale and 45% limestone); shale badly broken, fossiliferous, soft to medium tough, weathered, trace of iron oxide, limestone thin bedded, 1" to 4" beds averaging 1-1/2" fine-grained, impure, fossiliferous, hard, weathered									
	14											
	16	67%										
	18											
	20											
802.8	22											
	24	78%	Gray shale, 1"to 3-1/2"pieces, little broken, tough, with 2-2-1/2"+ limestone beds in top foot.									
798.8	26											
	28	88%	Interbedded gray shale and limestone, (approx. 75% shale and 25% limestone); shale 1"to 2" pieces, tough, very fossiliferous, limestone thin bedded, 1/2"to 2"beds, fine-grained, impure, hard, fossiliferous									
795.3	30		Gray shale, 1"to 4"pieces, averaging 2", tough, sparcely fossiliferous, with 3-1/2"to 1-1/2" limestone beds in top foot									
	32	93%										
791.8	34		Interbedded gray limestone and shale (approx. 70% limestone and 30% shale); limestone thin bedded, 1/2"to 4"beds, averaging 2", fine-grained, impure, hard, fossiliferous, shale 1/2"to 1" pieces, tough, very fossiliferous									
	36											
787.8												
786.8	38		Gray shale, 1-1/2"to 2-1/2"pieces, tough									
	40	105%	Interbedded gray limestone and shale (approx. 65% limestone and 35% shale); limestone thin bedded, 1/2"to 4"beds averaging 1-1/2", fine-grained, impure, hard, fossiliferous, shale 1-2"to 3-1/2"pieces averaging 2", tough, fossiliferous with evidence of shrinkage cracks after drying									
	42											
780.8	44	100%	Boring Completed									
		Recovery										

LOG OF BORING

DATE STARTED 7-28-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELIEVATION

DATE COMPLETED 7-28-65 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None

BORING NUMBER B-23-5 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER HRS. Backfilled

STATION & OFFSET 231+53, 195'Rt. SURFACE ELEVATION 821.9

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
821.9	0											
821.4			Concrete sidewalk									
820.9		5	Clay and cinders, (fill) moist - stiff	1	Visual							
	2	3-4	Brown lean clay with limestone fragments, (probable fill), moist - stiff	2	24	5	8	27	36	43	28	25
	4											
816.9												
	6	10-15-15	Mottled brown sandy lean clay, moist - very stiff	3	3	6	15	43	33	26	9	17
	8											
811.9	10											
		4-6-9	Mottled brown and gray clayey silt, moist - medium stiff	4	0	1	2	57	40	35	11	25
	12											
	14											
806.9												
	16	6-7-10	Mottled brown fat clay, moist - stiff	5	0	0	2	32	66	61	40	26
	18											
		5-16-16	Mottled brown fat clay, moist - stiff	6	1	1	5	31	62	52	26	25
801.9	20											
800.9												
	22		Interbedded brown & gray shale & limestone(approx. 75% shale & 25% limestone);shale, 1/4 to 2-1/2" broken pieces & fragments to crushed & remolded, soft to medium tough, weathered;limestone thin bedded, broken 1-1/2 to 2"beds, fine-grained, weathered.									
798.9												
	24	98%	Gray & brown interbedded shale & limestone(approx. 55% shale & 45% limestone);shale 1/4 to 2-1/2" pieces, some broken medium tough, very fossiliferous, weathered;limestone, thin bedded, 1" to 1-1/2"beds, fine-grained, impure, fossiliferous, hard, weathered									
796.7												
	26		Interbedded gray shale & limestone(approx.65% shale & 35% limestone);shale 1/2 to 2-1/2" pieces, some broken, medium tough, weathered, with evidence of soft gray shale or clay at bottom;lime-stone thin-bedded, 1 to 2"beds, fine-grained, impure, fossiliferous, hard, weathered.									
794.4												
	28											
	30	90%	Interbedded gray shale & limestone(approx. 60% shale & 40% limestone); shale 1/4 to 2-1/2" pieces averaging 1", medium tough, fossiliferous in middle one-third, limestone thin bedded, 1/2 to 2-1/2"beds averaging 1-1/2", fine-grained, impure, fossiliferous, hard									
790.9												
	32	% Recovery	Boring Completed									

LOG OF BORING

DATE STARTED 8-4-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION

DATE COMPLETED 8-4-65 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None

BORING NUMBER B-24-2 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER HRS. Backfilled

STATION & OFFSET 237+52, on Centerline SURFACE ELEVATION 808.6

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	L.L.	PI	WC
808.6	0											
807.6			Concrete, gravel and cinders									
806.1	2	2-1-1	Gray clay, (fill) moist - medium stiff	1	Visual - Insufficient sample							
	4	1-2-5	Gray clayey sand with limestone fragments, (fill) wet - soft	2	41	11	2	16	30	37	18	26
803.6												
	6	1-3-11	Brown and gray silty clay with limestone fragments, (fill) wet - soft	3	30	6	2	25	37	40	22	32
800.6	8	1	Brown and gray silty clay with limestone fragments, (fill) wet - soft	4	Visual							
		3-5	Brown and gray silty clay, moist - medium stiff	5	1	3	7	42	47	36	18	28
	10											
		4-6-7	Brown and gray silty clay with limestone fragments, moist - medium stiff	6	34	13	6	15	32	43	23	26
	12											
		3-3-4	Brown and gray silty clay with limestone fragments, moist - medium stiff	7	Visual							
794.1	14											
	16	3-5-7	Mottled brown silty clay, moist - stiff	8	0	1	17	40	42	31	15	20
	18											
		3-5-8	Mottled brown silty clay, moist - stiff	9	Visual							
788.6	20											
		15-39	Brown sandy lean clay with limestone fragments	10	29	17	7	19	28	36	19	18
	22											
	24											
783.6												
782.6	26		Gray shale, 1, 4 to 4" pieces averaging 1-1, 4", soft weathered.									
		93%										
	28		Gray limestone, thin bedded, 1-2 to 3-1, 2"beds, averaging 2", fine-grained, impure, fossiliferous, hard, with heavy irregular thin seams of gray shale.									
779.6												
778.4	30											
777.8			Gray shale 1 4 to 3"pieces averaging 1", calcareous, tough, with 1"beds of fine-grained, hard, gray limestone near middle.									
776.3	32											
775.8												
775.1			Gray limestone, thin bedded, 2 & 5"beds, fine-grained, impure, fossiliferous, h...									
774.5	34	53%										
773.6												
	36	Rec.	Gray shale, 1, 2 to 5-1, 2"pieces averaging 2", calcareous, tough.									
	38		Gray limestone, thin-bedded (one 5"bed), fine-grained, impure, fossiliferous, hard									
	40		Gray shale, 2-1, 2 to 5"pieces, tough, very fossiliferous.									
			Gray limestone, thin bedded, 2 to 3"beds, fine-grained, impure, hard, fossiliferous, with many seams of hard fossiliferous gray shale.									
			Interbedded gray shale and gray limestone (approx. 50% shale and 50% limestone); shale 1 to 1-1/2" pieces, hard, limestone thin bedded, 2 to 2-1, 2"beds, fine-grained, impure, hard.									

Boring Completed

LOG OF BORING

DATE STARTED 8-5-65 SAMPLER: TYPE Split Spoon DIA. 2"O. D. WATER ELEVATION

DATE COMPLETED 8-5-65 CASING: LENGTH DIA. IMMEDIATE None

BORING NUMBER B-24-4 CORE BARREL: TYPE NXM SIZE 2-1 8"I. D. AFTER HRS Backfilled

STATION & OFFSET 237+95, 142' Rt. of Centerline SURFACE ELEVATION 802.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	L.L.	PI	W.C.
802.0	0											
801.0		3-3	Topsoil	1	Visual							
	2	6	Brown clay, (fill) moist - stiff	2	Visual - Insufficient sample							
	4											
	6	7-7-10	Mottled brown lean clay, (fill) moist - stiff	3	1	3	5	36	55	45	27	23
	8											
	10	3-2-5	Brown lean clay, (fill) moist - medium stiff									
	12			4	4	4	12	42	38	36	20	16
787.5	14											
	16	1-1-1	Gray lean clay, trace organic, wet - very soft	5	0	1	2	48	49	36	18	36
	18	1-1/2-1/2	Gray lean clay, wet - very soft	6	0	1	5	51	43	31	15	31
	20											
780.0	22	1-2-4		7		No Recovery						
778.5		2-5	Brown and gray sandy lean clay, moist - medium stiff	8	8	9	17	36	30	26	14	21
	24	8	Mottled brown and gray lean clay, moist - stiff	9	0	2	9	34	55	47	30	21
	26	3-6-7	Mottled brown and gray silty clay, moist - stiff	10	0	0	13	35	52	44	25	25
	28											
		7-11-12	Brown and gray clayey silt, moist - stiff	11	4	4	3	53	36	38	13	22
772.0	30											
	32	25%	Gray and brown limestone, thin bedded, 1 to 2-1/2"beds, fine-grained, hard, fossiliferous, weathered, with evidence of soft gray shale									
769.0		62%										
	34		Interbedded gray shale and gray limestone (approx. 60% shale and 40% limestone); shale 1/4 to 2-1/2"pieces averaging 1", trace fragmented to broken pieces, medium hard; limestone thin bedded, 2-1/2" to 5"beds averaging 3-1/2", fine-grained, impure, hard, fossiliferous									
	36	91%										
764.0	38											
762.0	40	100%	Gray shale, 1/4" to 2-1/2" pieces averaging 1", slightly calcareous, hard; with 6"bed of fine-grained, hard gray limestone at bottom.									
	42	% Recovery	Boring Completed									

LOG OF BORING

Date Started 8-3-65 Sampler: Type Split Spoon Dia. 2"O.D. Water Elevation
Date Completed 8-3-65 Casing: Length HSA Dia. 4"O.D. Immediate None
Boring Number B-25-1 Core Barrel: Type NXM Size 2-1/8"I.D. After ____ Hrs. Backfilled
Station & Offset 249+58.5, 146.5'Lt. Surface Elevation 796.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
796.0	0											
795.5			Concrete, gravel and cinders									
793.5	2	17-42-38	Brown and gray clay and limestone fragments, dry - hard	1	50	5	3	15	27	36	18	9
	4	34-61-97	Brown and gray weathered shale,	2	Visual							
791.0		100		3								
	6	54%	Gray limestone, thin-bedded, 1 to 3"beds averaging 1-1/2", trace broken pieces, fine-grained, weathered, hard, with evidence of soft gray shale on bedding planes.									
	8											
786.0	10	50%										
	12	83%	Gray shale, 1 to 3"pieces averaging 1-1/2", calcareous, tough, with evidence of shrinkage cracks after drying.									
782.7	14		Interbedded gray shale and gray limestone(approx. 60% shale & 40% limestone);shale 1 to 2"pieces trace broken pieces, brittle to medium tough, highly fossiliferous; limestone thin bedded, 2"+beds, fine-grained, hard, fossiliferous									
780.2	16	88%	Interbedded gray shale & gray limestone(approx. 50% shale & 50% limestone);shale 3"pieces, very tough, calcareous; limestone 1 to 3"beds averaging 2", fine-grained, impure, hard									
779.0	18	% Recovery	Boring Completed									
	20											

LOG OF BORING

DATE STARTED 7-27-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION

DATE COMPLETED 7-28-65 CASING: LENGTH HSA DIA. 3.375"I.D. IMMEDIATE None

BORING NUMBER B-25-2 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER 1/2 HRS. Backfilled

STATION & OFFSET 249+21.5, 95'Lt. SURFACE ELEVATION 796.1

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	L.L.	P.I.	W.C.
796.1	0											
~~795.6~~		2	Concrete									
~~795.1~~			Concrete and cinders, (fill)	1	Visual							
	2	10-15	Brown silty clay with limestone fragments, moist - very stiff	2	25	17	6	19	33	44	23	24
	4											
	6	15-17-39	Brown silty clay with limestone fragments, moist - very stiff	3	34	4	2	22	38	32	16	28
787.6	8											
785.6	10	~~100~~	Gray shale, medium tough	4	Visual							
	12	100%	Gray shale, 1/2 to 5"pieces, averaging 2", medium tough, sparcely fossiliferous									
783.1	14		Interbedded gray shale & limestone (approx. 75% shale & 25% limestone); shale 1/2 to 4"pieces averaging 2", medium tough, very fossiliferous; limestone, thin bedded, 1/2 to 3"beds, averaging 1-1/2", bedding planes irregularly undulating, fine-grained, impure, fossiliferous, hard									
780.1	16											
	18	100%	Interbedded gray shale and limestone (approx. 90% shale & 10% limestone); shale, 1 to 7"pieces averaging 4", tough, sparcely fossiliferous; limestone, thin bedded, 1 to 4"beds averaging 2-1.2", fine grained, impure, fossiliferous, hard									
776.6	20											
775.1			Gray limestone, thin bedded 1/4 to 4"beds averaging 1-1/2", beds separated by shale partings, fine grained, impure, fossiliferous, hard									
	22	90%	Interbedded gray limestone & shale (approx. 85% limestone & 15% shale); limestone thin bedded, 2-1/2 to 4"beds, fine-grained, impure, fossiliferous, hard; shale 1/4 to 3/4"pieces, tough, sparcely fossiliferous									
773.1	24		Gray shale, 1 to 5"pieces averaging 2", tough, with two 1"beds of hard gray limestone near bottom									
771.2												
~~770.6~~	26		Gray limestone, thin bedded 2 & 5-1/2"beds, fine-grained, impure, fossiliferous, hard									
~~770.1~~			~~Gray shale, 1-2"pieces, some broken, medium tough~~									
	28	100%	Interbedded gray limestone & shale (approx. 55% limestone & 45% shale); limestone, thin bedded, 1 to 4"beds averaging 2-1/2", fine-grained, impure, fossiliferous, hard, with high angle joint at bottom joint surfaces coated w/iron oxide; shale 1/2 to 2"pieces averaging 1", fossiliferous, tough									
767.6	30		Interbedded gray shale and limestone (approx. 75% shale and 25% limestone); shale 1/4 to 5"pieces averaging 1-1/2"trace broken pieces, tough, sparcely fossiliferous; limestone thin bedded, 1 to 2-1/2"beds, fine-grained, impure, fossiliferous, hard									
	32											
768.3												
762.7	34	100%	Gray limestone, thin bedded (one 7" bed), fine-grained, impure, fossiliferous, hard									
	36		Interbedded gray shale and limestone (approx. 60% shale and 40% limestone); shale 1/4"to 4" pieces averaging 2" trace broken pieces tough, sparcely, fossiliferous, limestone thin bedded, 1/4" to 4"beds averaging 1-1/2", fine-grained, impure, fossiliferous, hard									
759.1		100%										
	38	% Recovery	Boring Completed									
	40											

LOG OF BORING

DATE STARTED 7-29-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 7-30-65 CASING: LENGTH _____ DIA. _____ IMMEDIATE None
BORING NUMBER B-25-4 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER 1/2 HRS. Backfilled

STATION & OFFSET 249+62, 84'Rt. SURFACE ELEVATION 789.4

Elew.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
789.4	0											
788.9			Concrete	Visual								
	2	7-10-8	Brown silty clay, trace brick, (fill) moist - stiff	1	11	3	4	43	39	34	16	14
	4											
783.9	6	6	Cinders, (fill)	2	Visual							
		12-18	Brown lean clay, moist - very stiff	3	3	2	1	7	87	36	17	14
	8											
780.4		59-98	Brown and gray silty clay with limestone fragments,	4	11	2	7	29	51	44	25	28
	10		Interbedded brown and gray shale and limestone(approx. 90% shale and 10%limestone), shale broken, soft, weathered, limestone thin bedded, 1 to 3"beds, fossiliferous, impure, hard, weathered									
777.4	12	65%										
			Gray limestone, thin bedded, 1 to 5"beds averaging 2", fine-grained, fossiliferous, impure, weathered, with evidence of soft brown shale									
774.9	14											
773.4	16		Gray and brown shale, 1 to 4"pieces averaging 2", medium tough, weathered, with 3-1"+beds of hard fine-grained limestone									
772.7		100%	Gray limestone, thin bedded, 1/2 to 2-1/2"beds averaging 2", fine-grained, fossiliferous, impure,									
771.7	18		Gray and brown shale, 2 to 4"pieces, medium tough, weathered. /weathered, hard									
			Gray and brown limestone, thin bedded, 1-1/2"-3-1/2"beds, trace broken pieces, fossiliferous, impure, weathered, hard, with evidence of brown and gray shale									
	20											
767.4	22	85%										
			Interbedded gray limestone and shale(approx. 65% limestone & 35% shale);limestone thin bedded, 1 to 4"beds, fossiliferous, impure;shale 1/2"to 6"pieces averaging 2", tough, with high angle joint at 761, joint surfaces weathered									
	24											
	26	80%										
	28											
	30											
		100%										
	32											
756.4												
	34	% Recovery	Boring Completed									
	36											
	38											
	40											

LOG OF BORING

DATE STARTED 8-22-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION

DATE COMPLETED 8-22-65 CASING: LENGTH DIA. IMMEDIATE None

BORING NUMBER R-1-1 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER 1 HRS. 10'

STATION & OFFSET 212+09.5, 75.5'Lt. SURFACE ELEVATION 776.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	L.L	PI	WC
776.0	0											
	2	7-15-18	Brown and gray clayey silt with limestone fragments, moist - dry stiff	1	16	6	5	38	35	33	14	12
	4											
771.0	6	10-12-17	Brown silty clay with limestone fragments, moist - stiff	2	23	7	5	26	39	25	6	14
	8											
	10											
	12	9-10-11	Brown silty clay with limestone fragments, moist - stiff	3	30	10	6	30	24	34	15	12
	14											
	16	7-9-10	Brown silty clay with limestone fragments, moist - stiff	4	15	11	7	31	36	36	19	19
	18											
756.0	20											
755.0		37-80	Gray and brown weathered shale	5	Visual							
	22		Interbedded brown and gray shale and limestone (approx. 75% shale and 25% limestone); shale broken, fossiliferous, weathered, soft; limestone thin bedded, 1/2 to 5" averaging 2",									
	24	56%	fossiliferous, weathered, hard									
750.0	26											
748.7			Gray shale, 1 to 4"pieces and broken pieces, calcareous, medium tough									
	28		Interbedded brown and gray limestone and shale(approx. 85% limestone & 15% shale); limestone thin bedded, 1/2 to 3"beds, avg. 1-1/4", fine-grained, fossiliferous, hard, weathered, shale 1 to 3"									
746.9		96%	pieces, avg. 2", fossiliferous, weathered w/evidence of shrinkage cracks after drying, med. tough									
746.0	30		Gray shale, 3, 4 to 3"pieces, avg. 1-1/2", trace broken, fossiliferous, weathered, medium tough									
745.0			Gray and brown limestone, thin bedded, 1 to 3"avg. 1-1/2" fine-grained, weathered, hard with									
	32	% Recovery	Boring Completed									/evidence of gray shale

LOG OF BORING

DATE STARTED 8-5-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 8-6-65 CASING: LENGTH ____ DIA. ____ IMMEDIATE ____
BORING NUMBER R-1-2 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER 1 HRS. 4'
STATION & OFFSET 214+84, 75'Lt. SURFACE ELEVATION 786.3

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
786.3	0											
784.8	2	12-15-22	Cinders and gravel, (fill)	1	Visual							
	4											
	6	7-9-12	Brown and gray silty clay, (fill) moist - stiff	2	8	6	4	38	44	37	19	15
	8											
	10	4-5-5	Brown silty clay, (fill) moist - stiff	3	4	6	4	37	49	38	19	18
	12											
	14											
771.3												
770.3	16	12-14	Brown and gray lean clay with limestone fragments, moist - very stiff	4	14	6	3	42	35	34	16	16
	18											
766.1	20	92%	Interbedded gray shale and gray limestone(approx. 75% shale and 25% limestone); shale 1/4 to 4" pieces, averaging 2", trace broken pieces, medium tough, weathered, with some evidence of shrinkage cracks after drying; limestone thin bedded, 1/4 to 3.5"beds averaging 2", fine-grained, impure, fossiliferous, hard, weathered.									
765.3	22											
762.8	24	92%	Gray limestone, thin bedded, 2" and 8" beds, fine-grained, impure, fossiliferous, hard, weathered.									
760.3	26		Interbedded gray shale and gray limestone (approx. 65% shale and 35% limestone); shale 1/2 to 2"pieces, averaging 1", trace broken pieces, tough, weathered, some bedding planes oxidized and discolored with iron oxide particularly at shale-limestone contacts; limestone thin bedded, 1 to 3"beds averaging 1-1/2"fine-grained, impure, fossiliferous, hard, weathered.									
758.8	28											
757.3		93%										
755.8	30		Interbedded gray limestone and gray shale (approx. 60% limestone and 40% shale); limestone-thin bedded 1/4 to 3-1/2"beds averaging 1-1/2"fine grained, trace of seams of shale, fossiliferous, hard, few bedding planes oxidized and discolored with iron oxide; shale 1/4" to 2" pieces, mostly broken to fragmented, tough, weathered.									
	32	100%										
752.3	34	Recovery										
	36		Interbedded gray shale and gray limestone(approx. 80% shale & 20% limestone);shale 1/2 to 5-1/2" pieces averaging 2", tough, fossiliferous, limestone thin bedded, 1/4 to 1"beds, fine-grained, trace of thin seams of shale, fossiliferous, hard.									
	38											
	40		Gray limestone, thin bedded,2 to 5"beds averaging 3", fine-grained, fossiliferous, with trace of thin seams and one 3/4" shale parting, hard.									
	42		Gray shale, 2 to 5"pieces averaging 2-1/2"calcareous, very tough, with 2"highly fossiliferous zone at top and at 756, with 3"bed of fine-grained, hard gray limestone near middle.									
			Interbedded gray shale and gray limestone(approx. 55% shale and 45% limestone);shale 1/4 to 3" pieces averaging 1-1/2", calcareous, very tough, sparcely fossiliferous;limestone thin bedded, 1/4 to4"beds averaging 1-1/2", fossiliferous, trace of thin seams of hard gray shale, hard.									
			Boring Completed									

LOG OF BORING

DATE STARTED 7-20-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION

DATE COMPLETED 7-20-65 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None

BORING NUMBER R-1-3 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D? AFTER 8 Days. Caved at 11.7. dry

STATION & OFFSET 220+31.5, 74'Lt. SURFACE ELEVATION 802.3

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	L.L.	PI	W C
802.3	0											
800.8	2	7-4-6	Blacktop, cinders and shale, (fill)	1		Visual						
	4	5-4-6	Brown and gray silty clay with weathered shale and broken limestone, (fill) moist - stiff	2	15	7	6	38	34	38	18	16
	6	4-5-6	Brown and gray silty clay with weathered shale and broken limestone, (fill) moist - stiff	3	21	4	3	33	39	37	18	17
	8											
	10											
	12	6-5-4		4		Insufficient sample						
	14	12-22-9	Brown and gray silty clay with weathered shale and broken limestone, (fill) moist - stiff	5	26	6	2	30	36	37	18	11
787.3	16	6-5-4	Brown and gray silty clay, (fill) moist - stiff	6	2	4	2	41	51	38	18	18
	18	15-8-5	Brown and gray silty clay and broken limestone, (fill) moist - medium stiff	7	24	5	2	33	36	35	15	30
782.3	20	4-8	Gray silty clay, trace of organic matter, moist-med.stiff	8	2	5	5	41	47	40	20	26
781.3		15		9	24	8	4	33	31	34	17	14
779.8	22		Gray and brown silty clay with broken limestone, moist - very stiff									
	24	5-8-8	Gray and brown weathered shale	10		Visual						
777.3	26		Interbedded gray shale and limestone (approx. 50% shale and 50% limestone); shale 1/4 to 2" pieces averaging 1-1/4", medium tough to tough, with 1"+bryozoan layer at 968; limestone thin bedded, 1/2"to 7"beds, averaging 2", fine-grained, impure, fossiliferous, hard									
	28	80%										
	30											
	32											
	34	93%										
767.3	36	% Recovery	Boring Completed									

LOG OF BORING

DATE STARTED 8-3-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 8-3-65 CASING: LENGTH DIA. IMMEDIATE None
BORING NUMBER R-1-4 CORE BARREL: TYPE NXM SIZE 2-1 8"I.D. AFTER 1 HRS. 19'
STATION & OFFSET 222+07, 68'Lt. SURFACE ELEVATION 811.6

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
811.6	0											
810.1	2	19-10-8	Clay, brick and gravel, (fill)	1	Visual							
	4											
	6	5-7-8	Brown and gray silty clay with stone fragments, (fill) moist - stiff	2	18	8	5	27	42	39	20	20
801.6	8											
	10											
	12	9-10-12	Brown and gray silty clay and broken rock, (fill) moist - stiff	3	57	5	1	15	22	31	14	14
	14											
	16	24-14-26	Brown and gray silty clay and broken rock, (fill) moist - stiff	4	44	10	3	19	24	31	15	12
	18											
	20											
	22	12-9-13	Brown and gray silty clay and broken rock, (fill) moist - stiff	5	52	8	4	15	21	34	17	13
786.6	24											
	26	12-18-14	Brown and gray sandy clay with limestone fragments, moist - stiff	6	18	10	5	29	38	38	20	23
781.6	28											
781.1	30	80	Gray highly weathered shale	7	Visual							
780.6	32		Gray and brown limestone, thin bedded, 3"- beds, fine-grained, weathered.									
779.1												
778.3	34	95%	Gray and brown shale, 2-4"pieces, weathered, medium tough, with evidence of shrinkage cracks after drying.									
776.9												
776.1	36		Gray limestone, thin bedded, 1 to 3"beds averaging 2", fine-grained, weathered, hard with 2"layer of soft gray shale near middle.									
	38											
	40	95%	Gray shale, 1/2 to 3"pieces averaging 1-1/2", medium tough.									
771.1	42	%Recovery	Interbedded gray limestone and gray shale (approx. 65% limestone and 35% shale); limestone thin bedded 1/2"to 4" averaging 1", fossiliferous, fine-grained, hard; shale 1/4 to 1/4"pieces, irregularly bedded, medium tough.									
			Interbedded gray shale and gray limestone, (approx. 75% shale and 25% limestone), shale 3/4 to 2-1/2"pieces averaging 1-1/2", badly broken at top, sparingly fossiliferous, medium tough; limestone thin bedded, 1-1/2 to 3", fine-grained, impure, hard.									

Boring Completed

LOG OF BORING

DATE STARTED 7-26-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION

DATE COMPLETED 7-27-65 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 16.5'

BORING NUMBER R-4-1 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER 24 HRS. 9.7'

STATION & OFFSET 226+46, 73'Lt. SURFACE ELEVATION 830.8

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% AGG.	% CS	% FS	% Silt	% Cloy	L.L.	P.I.	W.C.
830.8	0											
	2	21-35-46	Brick, gravel and sand, (fill)	1	Visual							
825.8	4											
	6	5-6-6	Gray and brown silty clay with shale fragments, (fill) moist - stiff	2	5	4	2	39	50	26	8	21
820.8	8											
	10	4-6-5	Gray silty clay with limestone fragments, (fill) moist - stiff	3	25	5	4	31	35	34	16	17
815.8	12											
	14											
813.8	16	7-20-15	Brown fat clay with limestone fragments, moist - stiff	4	22	3	5	24	46	63	39	39
	18	60-21-30	Brown weathered shale and limestone	5	Visual							
810.8	20											
	22	68%	Interbedded brown and gray shale and limestone(approx. 75% shale & 25% limestone);shale broken to crushed, soft, weathered;limestone thin bedded 1/2"to 3-1/2"beds averaging 1-1/4", medium hard, weathered									
	24											
804.8	26											
	28	93%	Gray shale, 1/2"to 3-1/2"pieces averaging 1-1/4", trace broken pieces, medium tough, weathered trace of iron oxide on some surfaces, w/a 1"bed of fine-grained gray limestone near top of [illegible] bed									
802.8			Interbedded gray shale & limestone(approx. 65% shale & 35% limestone); shale 1/2"to 2" pieces, medium tough, very fossiliferous, limestone thin bedded, 1 to 3"beds avg.1-1/2", fine grained, impure, hard fossiliferous.									
800.8	30											
	32	83%	Interbedded gray shale and limestone(approx. 80% shale and 20% limestone);shale, 1/2"to 2-1/2" pieces, some broken to crushed, rarely fossiliferous, medium tough;limestone thin bedded, 1/2 to 2-1/2"beds averaging 1", fine-grained, impure, hard, fossiliferous									
796.8	34											
	36	92%	Interbedded gray limestone and shale(approx. 60% limestone & 40% shale); limestone thin bedded 1/2 to 3"beds averaging 1-1/2", fine-grained, impure, hard, fossiliferous;shale 1/2"to 2-1/2" pieces, trace of broken pieces, tough, very fossiliferous									
794.4	38											
	40	90%	Interbedded gray shale and limestone(approx. 75% shale & 25% limestone), shale, 1/2"to 4"pieces averaging 3-1/2"tough;limestone, thin bedded, 1-1/2"to 4"beds, averaging 2-1/2", fine grained, impure, hard, fossiliferous									
789.4	42											
	44	92%	Interbedded gray limestone and shale (approx. 60% limestone and 40% shale), limestone thin bedded, 1/2 to 3-1/2"beds, averaging 1-1/4", fine-grained, impure, hard fossiliferous, shale, 1/8-2"pieces, averaging 1", tough									
786.3	46	% Recovery	Boring Completed									

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO HAM.-71-2.41
McGregor Ave. to Lincoln Ave.
SEC

BORING DATA

		REVIEWED BY	DATE
		CRL	65

LOG OF BORING

DATE STARTED 7-23-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 7-27-65 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None
BORING NUMBER R-5-1 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER 24 HRS. 18.2

STATION & OFFSET 228+91, 90'Rt. SURFACE ELEVATION 831.9

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
831.9	0											
830.9		4-6	Topsoil	1	Visual							
	2	6	Brown silty clay, moist - very stiff	2	8	5	6	45	36	36	16	11
	4											
826.9	6	50-60	Brown clayey silt, moist - hard	3	0	5	13	51	31	24	7	9
	8											
821.9	10											
	12	8-10-12	Mottled brown and gray fat clay, moist- very stiff	4	0	0	2	38	60	52	31	20
	14	11-17-20	Mottled brown and gray fat clay, moist - very stiff	5	0	0	1	25	74	65	40	24
816.9	16	12-12-13	Mottled brown and gray silty clay, moist - very stiff	6	0	0	4	30	66	50	26	33
813.9	18		Interbedded brown and gray shale and limestone (approx. 65% shale & 35% limestone); shale badly broken to crushed, soft, weathered; limestone thin-bedded, 1 to 1-1/2"beds, fine grained, medium hard, fossiliferous, weathered.									
811.4	20											
	22	72%	Interbedded gray shale and limestone(approx. 60% shale & 40% limestone; shale badly broken to crushed, medium tough; limestone thin bedded, 1/2"to 4"beds averaging 1-1/2", trace of broken pieces, fine-grained, hard, fossiliferous									
	24											
805.7	26	88%	Gray shale, 1-4"pieces averaging 2", tough									
802.7	28											
	30	88%	Interbedded gray shale and limestone(approx. 50% shale & 50% limestone), shale streaks to 2-1/2"pieces, trace of broken pieces, tough, very fossiliferous, limestone thin bedded, 1-2"beds fine-grained, impure, hard, fossiliferous									
799.4	32		Gray shale, 1-1/2" to 2" pieces, tough, sparcely fossiliferous, w/3-1"- beds of hard gray limestone in upper third									
	34											
795.7	36	97%										
794.1	38		Interbedded gray limestone and shale(approx. 85% limestone and 15% shale), limestone thin bedded, 1-2"beds, fine-grained, impure, hard, fossiliferous; shale, streaks to 1" pieces, tough, very									
	40	100%	Interbedded gray snale and limestone(approx. 60% shale & 40% limestone); /fossiliferous shale 1/2"to 3"pieces averaging 2", tough; limestone thin bedded, 1/2"to 5"beds averaging 2", fine-grained, impure, hard, fossiliferous									
789.9	42											
	44		Gray limestone, thin bedded, 1-1 4"to 4"beds averaging 2", fine-grained impure, hard, fossiliferous, with irregular snale lenses to 1" thick.									
787.4	46	100%	Interbedded gray shale and limestone(approx. 65% shale and 35% limestone); shale, 1 2"to 3" pieces averaging 1-1 4" tough, fossiliferous limestone, thin bedded, 1 4 to 6" beds averaging 2", fine-grained, impure, hard, fossiliferous									
	48											
782.9	50	100% Recovery	Boring Completed									

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SEC

BORING DATA

		REVIEWED BY	DATE
		C.R.L.	65

LOG OF BORING

DATE STARTED 8-6-65 SAMPLER: TYPE Split Spoon DIA. 2"O. D. WATER ELEVATION
DATE COMPLETED 8-7-65 CASING: LENGTH n.a. DIA. 3.5"I. D. IMMEDIATE None
BORING NUMBER R-7-2 CORE BARREL: TYPE NXM SIZE 2-1. 8"I. D. AFTER HRS. Backfilled
STATION & OFFSET 235+26, 106'Lt. SURFACE ELEVATION 813.8

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	W C
813.8	0											
812.8			Concrete, gravel and cinders									
811.3	2	2-2-2	Clay and cinders, (fill) wet - soft	1	Visual							
	4											
	6	2-2-5	Brown and gray silty clay, trace cinders, (fill) moist - medium stiff	2	8	5	12	42	33	35	16	28
804.8	8											
	10		Mottled brown and gray fat clay, moist - stiff									
	12	6-5-11		3	4	2	12	28	54	52	38	25
800.3	14											
	16	3-3-5	Mottled brown lean clay, moist - medium stiff	4	0	2	21	38	38	31	17	22
	18	3-6-8	Mottled brown lean clay, moist - medium stiff	5	0	0	21	45	30	25	14	20
793.8	20											
	22	4-5-7	Mottled brown clayey silt, moist - medium stiff	6	0	0	36	36	28	20	8	16
791.3	24	4-4-6	Mottled brown and gray lean clay, moist - medium stiff	7	0	0	27	31	42	31	19	20
	26	5-6-8	Mottled brown and gray lean clay, moist -medium stiff	8	0	0	16	34	50	36	22	21
786.8	28	31-63	Gray shale, medium tough	9	Visual							
783.8	30											
783.4			Gray limestone, thin bedded, 1/2" & 4-1/2"beds, fine grained, impure, hard, fossiliferous.									
781.8	32		Gray shale, 1 2 to 3"pieces, averaging 1" medium tough, weathered with shrinkage cracks after drying.									
780.5	34	85%										
779.3			Gray limestone, thin bedded (one 2-1/2"bed), fine-grained, impure, hard fossiliferous.									
777.3	36											
	38	100%	Gray shale 2-1/2-3"pieces, weathered, medium tough, with shrinkage cracks after drying.									
773.8	40		Gray limestone, thin bedded (one 5"bed), fine-grained, impure, hard.									
		%Recovery										
	42		Gray shale, 1/2 to 3"pieces, averaging 1", medium tough, trace of shrinkage cracks after drying, with evidence of soft gray shale.									
			Gray limestone, thin bedded, 1/2-6"beds averaging 3", fine-grained, impure, hard, fossiliferous with thin seams of tough gray shale.									
			Interbedded gray shale and gray limestone(approx. 65% shale & 35% limestone); shale 1/4 to 4" pieces averaging 1-1/2", medium tough, with some evidence of shrinkage cracks after drying, limestone thin bedded, 1 to 4"beds averaging 2", fine-grained, impure, hard.									
			Boring Completed									

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BORING DATA

		REVIEWED BY	DATE
		CRL	'65

LOG OF BORING

DATE STARTED 8-2-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION

DATE COMPLETED 8-2-65 CASING: LENGTH DIA. IMMEDIATE None

BORING NUMBER B-8-1 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER 1 HRS. 5'

STATION & OFFSET 232+49, 74'Lt. SURFACE ELEVATION 817.5

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	L.L.	P.I.	W.C.
817.5	0											
817.0			Concrete									
	2	7-9-10	Brown and gray silty clay, moist - stiff	Visual 1	6	4	2	40	48	40	20	
813.0	4											
	6	37-71	Brown and gray silty clay with limestone fragments, moist - hard	2	17	6	3	29	45	36	15	
808.5	8											
	10		Interbedded gray limestone and gray and brown shale(approx. 80% limestone & 20% shale); limestone thin and irregularly bedded, 1/2"to 3"beds, fine-grained, medium hard, weathered; shale mostly streaks to 1/2"beds, fossiliferous, soft to medium tough									
	12											
	14	92%										
803.0												
	16		Interbedded gray limestone and gray shale(approx. 75% limestone and 25% shale);limestone thin and irregularly bedded. 1 2 to 4"beds, fossiliferousm fine-grained, hard shale mostly streaks, fossiliferous, tough									
800.5	18	100%	Interbedded gray shale and gray limestone(approx. 60% shale & 40% limestone)shale 1 to 2" pieces, some broken pieces, medium tough limestone thin bedded. 1 to 4"beds avg. 1-1/2", fossiliferous, fine-grained, impure									
798.5	20		Gray shale 2 to 8" pieces and fragmented, tough									
	22	86%										
795.0												
	24		Interbedded gray shale and gray limestone (approx. 60% shale and 40% limestone):shale 1to 3 pieces, very fossiliferous, tough; limestone thin bedded, 1/2"to 2"beds, averaging 1-1/2", fine grained fossiliferous, impure, hard									
792.0	26	100%	Gray shale, 1/2 to 8"pieces averaging 3", tough to very tough									
789.0	28											
	30	100%	Interbedded gray limestone and gray shale(approx. 60% limestone & 40% shale), limestone thin bedded, 1/2"to 4"beds averaging 2-1/2", fine-grained, fossiliferous, impure, very tough, shale 1. 2"to 2-1/2"pieces averaging 1", very fossiliferous, impure, very tough									
786.0	32		Gray shale, 2-1/4"to 7"pieces averaging 4", tough									
784.5			~~Interbedded gray limestone and gray shale(approx. 75% limestone & 25% shale), limestone thin bedded, 2 to 4"beds averaging 2-1/2"fine-grained, fossiliferous, hard, shale 1/2-3"pieces, tough~~									
783.5	34											
782.4		100%	Gray shale, 1 to 5"pieces, avg. 3", tough, with trace of shrinkage cracks after drying									
	36		Gray limestone, thin bedded, 2 to 3" beds, fine-grained, fossiliferous, with streaks of gray shale									
780.5	38		% Recovery Boring Completed									
	40											

LOG OF BORING

DATE STARTED 8-4-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION

DATE COMPLETED 8-4-65 CASING: LENGTH DIA. IMMEDIATE None

BORING NUMBER B-8-4 CORE BARREL: TYPE NXM SIZE 2-1.8"I.D. AFTER 1 HRS. 4'

STATION & OFFSET 237+27, 76'Lt. SURFACE ELEVATION 812.0'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	L.L.	PI	W.C.
812.0	0											
	2	5-9-15	Brown sandy silt clay with limestone fragments. (fill) moist - stiff	1	11	18	11	30	30	38	20	11
	4											
807.0												
	6	6-7-9	Brown clayey silt, (fill) moist - stiff	2	0	4	10	44	42	35	17	20
	8											
802.0	10											
801.0		10-12	Brown fat clay, moist - stiff	3	0	3	4	20	73	62	38	19
	12	12	Brown and gray lean clay with limestone fragments, moist - stiff	4	21	8	5	22	44	47	28	27
	14											
797.0												
	16	37-43-20	Brown and gray silty clay, weathered shale and limestone fragments. moist - hard	5	60	12	4	10	14	30	15	15
	18											
792.0	20											
791.0		47-83	Brown and gray weathered shale	6		Visual						
	22		Light brown shale, mostly remolded, soft									
789.0		53%										
	24		Interbedded gray shale & gray limestone (approx. 65% shale & 35% limestone); shale 1"+ beds, fossiliferous, medium tough; limestone 1/2"to 3-1/2" averaging 1-1/2", fine-grained, hard									
	26											
785.0		75%										
	28	% Recovery	Boring Completed									
	30											

LOG OF BORING

DATE STARTED 8-3-65 SAMPLER: TYPEd Split Spoon DIA. 2"O. D. WATER ELEVATION

DATE COMPLETED 8-3-65 CASING: LENGTH DIA. IMMEDIATE None

BORING NUMBER R-8-5 CORE BARREL: TYPE NXM SIZE 2-1/8"I. D. AFTER 1 HRS. 6'

STATION & OFFSET 239+86, 79'Lt. SURFACE ELEVATION 808.6

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	L.L.	PI	W.C.
808.6	0											
808.1			Concrete									
	2	5-5-7	Brown lean clay, trace cinders, (fill) moist - stiff	1	9	4	7	37	43	41	22	22
803.6	4											
	6	6-6-7	Brown silty clay, moist - stiff	2	2	4	10	38	46	37	18	23
798.6	8											
	10	9-9-11	Brown and gray fat clay, moist - stiff	3	0	1	7	49	43	56	40	20
793.6	12											
	14											
791.6	16	15-65	Brown and gray lean clay with limestone fragments, moist - very stiff	4	38	4	6	18	34	44	25	12
790.6	18		Gray shale, 1"+ pieces, trace fragmented to broken, weathered, soft to medium tough									
	20	99%	Gray shale, 1/2"to 7"pieces, averaging 2-1/2", medium tough to tough, with 3"bed of fine-grained gray limestone at 789.									
787.7												
786.4	22		Gray limestone, thin bedded, 1 to 3", averaging 2", fossiliferous, impure, hard									
785.7			Gray shale, 1 to 4"pieces averaging 2", highly fossiliferous, tough									
785.0	24		Gray limestone, thin bedded, 1/2to 3"beds avg.1-1/2", fine-grained, hard, some beds separated by*									
783.4		95%	Interbedded gray shale and gray limestone(approx. 65% shale & 35% limestone); shale 1 to 3"pieces avg. 1-1/2", sparingly fossiliferous w. evidence of shrinkage cracks after drying, med. tough;**									
	26		Gray shale, 1/4 to 2-1/2"pieces, averaging 1" trace of remolded and broken pieces at bottom, with evidence of shrinkage cracks after drying, medium tough.									
781.4	28		Gray shale, 1/4 to 3-1/2"pieces averaging 2", highly fossiliferous, tough.									
779.4												
778.0	30	100%	Interbedded gray limestone & gray shale(approx. 75% limestone & 25% shale) limestone thin bedded 2 to 4"beds, averaging 3" fossiliferous, impure, hard;shale 1 to 2"beds, tough									
776.6	32		Gray shale, 1-1/2"to 3-1/2"pieces, averaging 2-1/4", sparingly fossiliferous, tough									
776.1			Gray limestone, thin bedded (2-3"beds), fine-grained, hard									
775.0	34	80%	Gray shale, 1-1/2"to 2-3/4"pieces, hard									
774.5			Gray limestone, thin bedded, 3"+beds, fine to med. grained, hard, w/evidence of shale on some									
772.6	36		Gray limestone, thin bedded 1 to 3"beds averaging 2", medium grained, impure, hard, with evidence of shale on bedding planes /bedding planes									
	38	% Recovery	Boring Completed									

*tough gray shale partings to 12"+ th.

**limestone thin bedded, 3"-, fine-grained hard

LOG OF BORING

DATE STARTED 7-29-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION

DATE COMPLETED 7-29-65 CASING: LENGTH HSA DIA. 3.375"I.D. IMMEDIATE None

BORING NUMBER B-10-2 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER 1/2 HRS. Backfilled

STATION & OFFSET 243+23, 80'Rt. SURFACE ELEVATION 805.8

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	L.L.	PI	W c
805.8	0		Concrete									
804.8	1	4	Cinders, (fill)	1	Visual							
	2	15-15	Brown silty clay with limestone fragments, moist - hard	2	8	5	2	35	50	38	18	16
	4											
800.8	6	65-95	Brown silty clay and limestone fragments, moist - hard	3	57	13	5	11	14	28	12	10
798.8	8		Interbedded brown and gray limestone and shale (approx. 70% limestone and 30% shale); limestone thin and irregularly bedded, streaks to 4"beds averaging 1", fossiliferous, impure medium hard, weathered, shale irregularly bedded in streaks to 3"pieces, mostly soft, fossiliferous									
	10	90%										
	12											
	14	90%										
789.8	16											
788.8			Gray shale, broken to crushed, soft									
	18		Gray shale, 1/2"to 6" pieces averaging 3", calcareous, tough									
	20	90%										
784.3	22											
	24		Interbedded gray shale and limestone (approx. 50% shale and 50% limestone), shale 1/2"to 1-1/2" pieces very fossiliferous, tough, limestone thin bedded, 1/2 to 2-1/2"beds, impure, fossiliferous, hard									
	26	100%										
777.8	28		Interbedded gray shale and limestone (approx. 60% shale & 40% limestone); shale 1"+pieces, irregularly bedded, fossiliferous, tough; limestone irregularly thin bedded, 1"+beds, impure, fossiliferous, tough									
776.3	30	100%										
	32		Interbedded gray shale and limestone (approx. 55% shale & 45% limestone); shale, streaks to 6"pieces, averaging 1-1/2", calcareous, very tough; limestone thin bedded 1/4"to 6"beds, averaging 3", fine-grained, fossiliferous, hard									
	34	100%										
	36											
767.8	38	58%										
	40		% Recovery Boring Completed									

LOG OF BORING

DATE STARTED 8-17-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION

DATE COMPLETED 8-17-65 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None

BORING NUMBER R-10-1 CORE BARREL: TYPE NXM SIZE 2-1 8"I.D. AFTER _____ HRS. Backfilled

STATION & OFFSET 241+58 - 89'Rt. SURFACE ELEVATION 809.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	L.L.	PI	W.C.
809.0	0											
807.0	2	6-11-14	Brown silty clay, trace brick and cinders, (fill) dry - stiff	1	15	11	12	28	34	37	18	12
	4	10-11-14	Brown clayey silt, moist - stiff	2	0	3	8	57	32	26	8	1[illegible]
	6	16-21-31	Brown clayey silt, moist - very stiff	3	3	6	12	42	37	26	10	14
	8											
799.0	10											
	12	16-23-36	Brown and gray fat clay, moist - hard	4	1	3	11	30	55	51	31	1[illegible]
	14											
794.0												
	16	16-19-32	Brown and gray weathered shale	5	Visual							
791.0	18											
	20		Gray shale, 2 to 4"pieces, averaging 2-1/2", medium tough, with 1"bed of limestone at 789, weathered									
788.0												
787.0	22	100%	Gray limestone, thin bedded, 1-1/2 to 4"beds averaging 3", impure, highly fossiliferous									
786.0			Gray shale, 1 to 2-1/2"pieces, highly fossiliferous, hard									
	24	% Recovery	Boring Completed									
	26											

LOG OF BORING

DATE STARTED 8-5-65 | SAMPLER: TYPE Split Spoon | DIA. 2"O.D. | WATER ELEVATION

DATE COMPLETED 8-5-65 | CASING: LENGTH | DIA. | IMMEDIATE None

BORING NUMBER R-14-1 | CORE BARREL: TYPE NXM | SIZE 2-1/8"I.D. | AFTER 1 HRS. 3'

STATION & OFFSET 227+75.5 TH. 10'Lt. | SURFACE ELEVATION 812.9

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
812.9	0			Visual								
812.4			Blacktop									
	2	3-4-4	Mottled brown and gray fat clay, (probable fill) moist - stiff	1	0	2	3	23	72	73	51	21
	4											
	6	4-5-5	Mottled brown and gray fat clay, (probable fill) moist - stiff	2	0	1	5	26	68	60	36	30
805.4	8											
		80	Gray weathered shale and limestone	3	Visual							
802.4	10	90	Gray weathered shale and limestone	4	Visual							
	12		Gray limestone, thin bedded, 1-3-1/2"beds. averaging 2", trace of broken at top, impure, with many irregular thin seams of gray shale, fine-grained, fossiliferous hard.									
798.9	14	78%										
			Interbedded gray shale and gray limestone (approx. 65% shale & 35% limestone) shale, 1/2 to 1" and broken pieces, tough, limestone thin bedded, 1 to 4"beds averaging 2", trace broken pieces,									
796.9	16		fossiliferous, hard.									
	18	95%	Gray shale, 1 to 6"pieces averaging 2-1/2", calcareous, tough, fossiliferous at bottom.									
793.4												
793.2	20		Gray limestone, thin bedded (one 2-1/2"bed) fine-grained, hard, impure.									
792.4												
	22	% Recovery	Gray shale, 1/4 to 2-1/2"pieces averaging 2-1/2", calcareous, tough, very fossiliferous.									

Boring Completed

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
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STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-71-2.41
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SEC.

BORING DATA

REVIEWED BY CRL | DATE /65

LOG OF BORING

DATE STARTED 8-17-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 8-17-65 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None
BORING NUMBER R-P-1 CORE BARREL: TYPE SIZE AFTER HRS. Backfilled

STATION & OFFSET 245+61, 187'Lt. Centerline SURFACE ELEVATION 809.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
809.0	0		Blacktop									
808.5		6-8-15	Mottled brown silty clay, moist - stiff	1	0	6	15	43	36	25	10	18
	2											
	4											
	6	11-13-13	Mottled brown silty clay, moist - stiff	2	0	2	14	49	35	25	10	18
	8											
800.0	10											
	12	8-9-17	Brown and gray silty clay, moist - very stiff	3	2	3	6	33	56	48	26	25
795.5	14											
793.5	16	135	Gray shale and limestone	4	Visual							
			Boring Completed									
	18											
	20											
	22											
	24											
	26											
	28											
	30											
	32											

THE H. C. NUTTING COMPANY
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. HAM-71-2.41
McGregor Ave. to Lincoln Ave.
SEC

BORING DATA

		REVIEWED BY	DATE
		C.R.L.	'65.

LOG OF BORING

Date Started 8-2-65 | Sampler Type SS | Dia. 1 3/8" | Water Elev. ____

Date Completed 8-4-65 | Casing: Length 15' | Dia. 2 1/2" | Surface Elev. 610.7'

Boring No. B-3 | Station & Offset 1409, 14' Lt. (Rear Abutment)

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics: % Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
610.7	0														
	2														
	4														
605.7															
	8	20/3			Brownish-Gray Sandy Silt	1	0	14	18	40	28	21	5	15	
603.2	8														
		9/11			Gray Silt	2	0	3	10	66	21	NP	NP	17	
600.7	10														
		15/16			Gray Sandy Silt	3	0	5	15	60	20	NP	NP	18	
598.2	12				No Sample Recovered - Boulders (Driller's Description)										
	14														
595.7															
	16	13/12			Gray Sandy Silt	4	9	8	17	39	27	23	7	13	
593.2	18														
		14/12			Gray Gravelly Sandy Silt	5	15	8	14	37	26	22	7	13	
590.7	20														
		12/11			Gray Gravelly Sandy Silt	6	17	8	13	37	25	21	6	13	
588.2	22														
	24	22/18			Gray Sandy Silt	7	11	11	19	34	25	22	9	12	
585.7															
	26	12/18			Gray Sandy Silt	8	12	6	15	41	26	20	6	12	
	28														
580.7	30														
	32	50* (0.7)			Gray Sandy Silt	9	0	3	55	27	15	NP	NP	16	
	34														
575.7															
	36	50* (0.6)			Gray Silt	10	0	2	17	65	16	NP	NP	20	
	38														
570.7	40														
	42	50* (0.9)			Gray Silty Gravelly Sand	11	26	35	24	10	5	NP	NP	12	
	44														
565.7															
	46	50* (0.9)			Gray Sandy Silt	12	10	16	31	32	11	NP	NP	15	
	48														
560.7	50														
	52	25/25			Gray Sandy Silt	13	14	7	14	37	28	21	6	11	
	54				BOTTOM OF BORING										
552.1	58	50* (1.9)			Gray Silt	14	0	2	9	62	27	22	4	15	

*Refusal

LOG OF BORING

Date Started 7-30-64 Sampler Type SS Dia. 1 3/8" Water Elev. _____

Date Completed 8-3-64 Casing: Length 25' Dia. 3 1/2"

Boring No. B-11 Station & Offset 3+72, 123' Lt. (Forward Left Wingwall) Surface Elev. 612.0'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
612.0	0														
	2														
	4														
607.0	6	10/7			Brown Sandy Silt	1	0	8	16	35	41	27	9	14	
604.5	8														
602.0	10	9/11			Gray Sandy Silt	2	0	10	14	39	37	26	10	13	
	12	9/13			Gray Sandy Silt	3	0	9	15	47	29	22	8	12	
599.5	14	10/11			Gray Sandy Silt	4	V		I	S	U	A	L	12	
597.0	16	12/17			Gray Sandy Silt	5	V		I	S	U	A	L	11	
594.5	18														
	20	16/20			Gray Sandy Silt	6	0	10	19	46	25	21	7	12	
592.0	22	18/19			Gray Sandy Silt	7	0	8	15	50	27	20	4	12	
589.5	24	21/3[illegible]			Gray Sandy Silt	8	10	5	17	44	24	20	4	12	
587.0	26	15/16			Gray Sandy Silt	9	9	7	16	45	23	19	3	12	
	28														
582.0	30	18/22			Gray Sandy Silt	10	14	9	15	34	28	23	9	12	
	32														
	34														
577.0	36	23/25			Gray Silty Sand	11	0	5	75	8	12	NP	NP	18	
	38														
572.0	40														
	42	50* (0.7)			Gray Silt	12	0	1	3	80	17	NP	NP	21	
	44														
567.0	46	50* (0.7)			Gray Silt	13	0	1	5	71	23	-	-	18	
	48														
562.0	50				BOTTOM OF BORING										
561.0		24/24			Gray Silt	14	0	1	5	66	28	NP	NP	16	

*Refusal

LOG OF BORING

Date Started 8-2-64 | Sampler Type SS | Dia. 1 3/8" | Water Elev. ____

Date Completed 8-4-64 | Casing: Length 15' | Dia. 3 1/2"

Boring No. B-14 | Station & Offset 3+89, 158' Rt. (Forward Rt. Wingwall) | Surface Elev. 608.1'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics: % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
608.1	0														
	2														
	4														
603.1	6	12/1			Brownish-Gray Sandy Silt	1	13	7	8	51	21	21	3	17	
600.6	8	13/1			Gray Sandy Gravelly Silt	2	22	7	15	35	21	21	5	12	
598.1	10	24/2			Gray Sandy Silt	3	0	11	17	42	30	22	6	10	
595.6	12				No Sample Recovered - Boulders (Driller's Description)										
593.1	14														
	16	12/1			Gray Gravelly Sandy Silt	4	19	8	15	35	23	21	6	12	
590.6	18	14/1			Gray Sandy Silt	5	0	7	18	46	29	22	5	12	
588.1	20														
	22	12/1			Gray Gravelly Sandy Silt	6	15	8	12	40	25	23	7	12	
585.6	24	15/1			Gray Sandy Silt	7	12	4	17	41	26	21	5	12	
583.1	26	22/2			Gray Sandy Silt	8	0	3	21	48	28	NP	NP	16	
	28														
578.1	30														
	32	50* (0.6)			Gray Silty Sand	9	0	53	33	-14	-	NP	NP	12	
	34														
573.1	36	50* (0.7)			Gray Silty Sand	10	0	51	22	16	11	NP	NP	10	
	38														
568.1	40														
	42	37/3			Gray Silty Sand	11	0	34	43	13	11	NP	NP	14	
	44														
563.1	46	18/2			Gray Sandy Gravelly Silt	12	28	7	15	27	23	23	8	9	

BOTTOM OF BORING

*Refusal

OHIO DEPARTMENT OF HIGHWAYS

HAM-71-0652

LOG OF BORING

Date Started 6-17-65 | Sampler Type SS | Dia. 1 3/8" | Water Elev. ———

Date Completed 6-22-65 | Casing: Length NONE | Dia. ———

Boring No. B-1 | Station & Offset 13+62, 18'LT. (REAR ABUTMENT) | Surface Elev. 638.9'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics % Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
638.9	0														
	2														
	4														
633.9	6	10/15			Brown Silt and Clay	1	0	4	11	44	41	33	13	17	
	8														
628.9	10														
	12	11/16			Brown Gravelly Sandy Clay	2	16	7	13	39	25	27	11	12	
	14														
623.9	16	19/35			Brown Sandy Silt	3	11	4	30	38	17	NP	NP	13	
621.4	18	12/21			Brown Silty Sand	4	0	3	81	8	8	NP	NP	16	
618.9	20	15/16			Brown Silty Sand	5	0	1	76	15	8	NP	NP	19	
616.4	22														
	24	12/25			Brown Silt	6	0	1	4	60	35	26	6	21	
613.9	26	12/17			Brown Sandy Silt	7	0	1	36	49	14	NP	NP	24	
611.4	28	13/17			Brown Sandy Silt	8	0	0	47	41	12	NP	NP	22	
608.9	30	16/20			Gray Sandy Silt	9	0	1	36	51	12	NP	NP	18	
606.4	32														
	34	20/28			Gray Sandy Silt	10	0	1	56	34	9	NP	NP	17	
603.9	36	19/23			Gray Sandy Silt	11	0	1	34	54	11	NP	NP	20	
	38														
598.9	40														
	42	11/20			Gray Sandy Silt	12	13	7	13	43	23	22	8	13	
	B-1														
	44														
593.9					BOTTOM OF BORING										
592.9	46	14/23			Gray Sandy Silt	13	0	4	30	50	16	NP	NP	15	

HAM-01-0452

LOG OF BORING

Date Started 6-22-65 | Sampler Type SS | Dia. 1 3/8" | Water Elev. ____

Date Completed 6-23-65 | Casing: Length 30' | Dia. 3 1/2"

Boring No. B-9-X | Station & Offset 15+82.27' RT. (FORWARD PIER) | Surface Elev. 636.2'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics % Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTG Class.
636.2	0														
	2														
	4														
631.2	6	11/13			Brownish-Gray Clayey Silt	1		4	15	45	36	39	9	19	
	8														
626.2	10	8/9			Mottled Brown and Gray Clay	2		4	14	40	42	47	28	19	
	12														
621.2	14														
	16	23/44			Brown Sandy Gravelly Silt	3	33	7	11	28	21	25	9	13	
	18														
616.2	20	19/30			Gray Sandy Gravelly Silt	4	28	9	13	31	19	25	9	12	
	22														
611.2	24														
	26	13/15			Gray Sandy Gravelly Silt	5	28	7	10	40	15	NP	NP	9	
	28														
606.2	30	10/14			Brown Sandy Silt	6		1	56	35	8	NP	NP	20	
603.7	32	11/14			Brownish-Gray Sandy Silt	7		1	43	46	10	NP	NP	18	
601.2	34	12/18			Gray Sandy Gravelly Silt	8	24	4	15	40	17	22	6	15	
598.7	36	17/21			Gray Sandy Silt	9	9	3	39	47	12	NP	NP	18	
596.2	38	13/21			Gray Gravelly Sandy Silt	10	37	5	15	43	20	28	6	13	
593.7	40	B-9													
	42	15/23			Gray Silty Sandy Gravel	11	47	6	10	24	13	21	5	13	
591.2	44	12/15			Gray Sandy Silt	12		8	19	47	26	24	7	11	
588.7	46	13/17			Gray Sandy Silt	13		8	20	44	28	24	9	15	
586.2	48	13/17			Gray Gravelly Sandy Silt	14	19	7	13	41	20	22	6	12	
	50														
	52														
581.2	54														
	56	22/28			Gray Silt	15		1	17	68	14	NP	NP	12	
	58														
576.2	60														
	62	30/50			Gray Silty Sand	16		12	77	6	5	NP	NP	19	
	64														
571.2	64	50/4			Gray Silty Sand	17		17	73	7	3	NP	NP	18	

BOTTOM OF BORING

Refusal

HAM-[illegible]

LOG OF BORING

Date Started 6-16-65 | Sampler Type SS | Dia. 1 3/8" | Water Elev. _____

Date Completed 6-17-65 | Casing Length 40' | Dia. 3 1/2"

Boring No. B-1 | Station & Offset 15+49.12' Rt (REAR ABUTMENT) | Surface Elev. 614.3

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.O.	SHTD Class.
614.3	0														
	2														
	4														
609.3	6	9/10			Brown Sandy Clay	1	14	6	13	31	34	30	14	12	
	8														
604.3	10	13/10			Brown Clayey Sandy Gravel	2	V	1	9	U	[illegible]	30	14	24	
	12														
	14														
599.3	16	10/12			Brown Gravelly Clay	3	21	3	12	32	32	42	19	23	
596.8	18	7/9			Brown Sandy Clay	4	8	4	14	40	34	33	10	19	
594.3	20	15/20			Brown Silty Gravel	5	53	6	5	21	15	25	10	9	
591.8	22	8/17			Brown and Gray Sandy Gravelly Clay	6	25	8	11	27	29	27	13	15	
	24														
589.3	26	12/13			Gray Gravelly Sandy Silt	7	20	10	13	31	26	23	9	12	
586.8	28	10/12			Gray Sandy Silt	8	11	6	10	45	28	22	6	13	
584.3	30	17/22			Gray Silt	9	6	4	8	56	26	22	5	17	
581.8	32	12/19			Gray Sandy Silt	10	9	3	11	53	24	19	1	16	
	34														
579.3	36	18/24			Brown & Gray Sandy Gravelly Silt	11	31	8	11	32	18	23	7	12	
	38														
574.3	40	48/46			Gray Silt	12	0	1	1	82	16	NP	NP	18	
	42	B-1													
	44														
569.3	46	35/46			Gray Sandy Silt	13	0	3	1	81	15	*	*	20	
	48														
56[illegible]	50	14/38			Gray Sandy Gravelly Silt	14	24	7	12	33	24	22	8	11	
	52														
	54														
559.3	56	18/36			Gray Gravelly Silt	15	14	5	8	47	26	22	5	15	
	58				BOTTOM OF BORING										
55[illegible]	60	2[illegible]/37			Gray Sandy Silt	16	0	0	31	57	12	NP	NP	18	
55[illegible]															

LOG OF BORING

Date Started 6-29-65 | Sampler Type SS | Dia. 1 3/8" | Water Elev.
Date Completed 7-1-65 | Casing: Length 30' | Dia. 3 1/2"
Boring No. B-2 | Station & Offset 11+91, 35' Lt (REAR ABUTMENT) | Surface Elev. 599.7

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics: % Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTD Class.
599.7	0				Fill: Materials - Boulders, Ashes, Cinders and brick-bats.										
	2														
	4														
594.7	6	2/2			Dark Brown & Gray Silty Gravelly Sand	1	24	41	17	10	8	NP	NP	36	
	8														
589.7	10														
	12														
	14														
584.7	16	4/5			Greenish-Brown Silty Sandy Gravel, Slightly Organic	2	51	17	6	13	13	NP	NP	20	
	18														
579.7	20	2/3			Brown & Gray Silty Clay, Trace of Organic	3	V	I	S	U	A	L		PL= 17	23
	22														
	24														
574.7	26	3/5			Grayish-Brown Sandy Gravelly Silt, Slightly Organic.	4	26	7	11	31	25	27	9	22	
	28														
569.7	30	9/14			Gray Clayey Silt	5	0	0	1	56	43	27	8	23	
	32														
	34														
564.7	36	5/8			Gray Clayey Silt	6	0	0	1	47	52	26	8	19	
	38														
559.7	40	10/14			Gray Silt	7	0	0	1	63	36	NP	NP	19	
	42	G-3													
	44														
554.7	46	18/11			Gray Gravelly Silt	8	20	9	5	41	25	24	9	10	
	48														
549.7	50	8/11			Gray Gravelly Sandy Silt	9	16	10	18	30	26	23	9	12	
	52														
	54														
544.7	56	30/52			Gray Sandy Silt	10	12	2	16	45	25	19	5	14	
	58														
539.7	60	18/32			Gray Silt	11	0	1	9	82	8	NP	NP	23	
	62														
	64														
534.7	66	15/34			Gray Silt & Clay	12	0	1	1	35	63	32	12	20	
	68														
529.7	70	10/13			Gray Silt & Clay	13	0	0	1	38	61	31	11	25	
	72														
	74														
524.7	76	6/9			Gray Silt & Clay	14	0	0	1	39	60	30	13	30	
	78														
519.7	80	8/12			Gray Clayey Silt	15	0	1	1	53	45	28	10	23	
	82														
	84														
514.7	86	10/12			Gray Silt	16	0	1	1	31	66	26	9	19	
	88	B-2													
509.7	90	7/10			Gray Clayey Silt	17	9	2	2	47	40	26	9	23	
	92														
	94				BOTTOM OF BORING										
504.7	96	50* (0.6')			Gray Sandy Silt	18	9	10	31	39	11	NP	NP	15	

*Refusal

HAM-71-0228

LOG OF BORING

Date Started 6-24-65 | Sampler Type SS | Dia. 1 3/8" | Water Elev. ____

Date Completed 6-29-65 | Casing: Length 43' | Dia. 3 1/2"

Boring No. B-8 | Station & Offset 14+25, 29' Lt. (FORWARD PIER) | Surface Elev. 602.3

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTD Class.
					Physical Characteristics										
602.3	0				Fill Materials - Gravel, Silt and Clay.										
	2														
	4														
597.3	6	3/3			Gray Clayey Sandy Gravel	1	VISUAL					27	11	26	
	8														
592.3	10	2/3			Brown & Gray Gravelly Sandy Clay	2	22	7	20	21	30	35	22	22	
	12														
	14														
587.3	16	2/2			Brown & Gray Silt & Clay, Slightly Organic	3	0	1	13	49	37	28	12	25	
	18														
582.3	20	9/10			Brown Silt & Clay	4	0	3	14	48	35	27	12	18	
	22														
	24														
577.3	26	9/14			Brownish-Gray Silt	5	0	33	15	58	24	NP	NP	21	
574.8	28	11/15			Brown & Gray Clayey Silt	6	0	2	13	43	42	25	9	23	
572.3	30	14/16			Gray Silty Sand	7	12	17	44	21	6	NP	NP	19	
569.8	32	9/11			Gray Silt	8	0	1	4	75	20	NP	NP	22	
567.3	34	8/11			Gray Silt	9	0	0	1	65	34	21	5	23	
564.8	36	9/13			Gray Sandy Silt	10	8	14	19	39	24	22	9	12	
562.3	38	16/23			Gray Silty Sandy Gravel	11	42	11	13	21	13	16	5	9	
	40	6/7													
	42														
	44														
557.3	46	11/20			Gray Sandy Clay	12	10	5	11	36	38	26	11	18	
	48														
552.3	50	12/17			Gray Clayey Sandy Gravel	13	45	6	16	15	18	22	11	15	
	52														
	54														
547.3	56	15/21			Gray Gravelly Sandy Silt	14	21	10	15	29	25	22	9	11	
	58														
542.3	60	33/34			Gray Silt	15	0	1	2	66	31	24	5	14	
	62														
	64														
537.3	66	15/28			Gray Silty Clay	16	0	2	14	71	13	NP	NP	30	
	68														
532.3	70	15/21			Gray Silt BOTTOM OF BORING	17	0	1	1	43	57	36	14	22	

LOG OF BORING

Date Started 2-27-69 | Sampler Type SS | Dia. 1 1/8" | Water Elev. ____

Date Completed 2-29-69 | Casing: Length 14.0 | Dia. 1 1/2"

Boring No. B-1 | Station & Offset 587+82, 66' Rt. (Rt. Rear Wingwall) | Surface Elev. 584.0

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
584.0	0														
	2														
	4														
581.0	6	5/7			Fill Material-Brown Clay and Gravel	1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	24	18	24	
	8														
576.0	10	6/6			Greenish-Brown Silty Trace of Organic	2	0	5	9	65	21	22	3	24	
	12														
	14														
571.0	16	8/8			Brown Silt	3	0	1	0	83	16	NP	NP	28	
568.5	18	4/5			Gray Silty Clay	4	0	1	0	40	59	37	17	26	
566.0	20	7/8			Gray Sandy Clay	5	0	8	13	39	39	28	13	26	
563.5	22	3/6			Gray Clayey Silt	6	0	4	16	55	25	21	7	16	
561.0	24	13/13			Gray Gravelly Silt	7	31	0	9	46	14	NP	NP	18	
558.5	26	7/12			Gray Clayey Silt	8	0	0	3	52	45	28	9	19	
556.0	28	8/10			Gray Silt and Clay	9	0	3	6	49	42	30	13	16	
	30														
	32														
	34														
551.0	36	6/7			Gray Gravelly Sandy Silt	10	16	6	21	28	29	23	10	15	
	38														
546.0	40	6/9			Gray Gravelly Sandy Silt	11	21	5	30	20	24	24	16	13	
	42														
	44														
541.0	46	13/20 (0.3)			Gray Sandy Gravelly Silt	12	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	22	8	13	
	48														
536.0	50	13/20			Gray Sandy Gravelly Silt	13	28	6	11	31	24	23	7	12	
	52														
	54														
531.0	56	22/37			Gray Sandy Silt	14	0	2	48	41	9	NP	NP	16	
	58														
526.0	60	9/14			Gray Clayey Silt	15	0	0	2	53	45	28	10	26	
	62														
	64														
521.0	66	11/11			Gray Silt	16	0	0	9	70	15	NP	NP	24	
	68														
					BOTTOM OF BORING										
516.0	70														
519.0		14/18			Brown Silty Sand	17	0	2	72	19	7	NP	NP	18	

*Refusal

LOG OF BORING

Date Started 7-22-64 Sampler Type SS Dia. 1 3/8" Water Elev. ____
Date Completed 7-27-64 Casing Length 40" Dia. 1 1/2"
Boring No. E-10 Station & Offset 590+24, 120' Lt. (Forward Left Wingwall) Surface Elev. 607.0

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
607.0	0														
	2														
	4														
602.0	6	6/6			Brownish-Gray clay	1	0	2	8	52	38	42	22	20	
	8														
597.0	10	1/2			Brown Silt and clay	2	0	3	11	45	41	33	15	25	
	12														
	14														
592.0	16	2/3			Brownish-Gray clay	3	0	3	11	48	38	40	23	26	
	18														
587.0	20	2/2			Brownish-Gray Silty clay	4	0	2	9	51	38	37	17	25	
584.5	22	2/2			Brown and Gray Silty clay, Trace of Organic	5	0	2	8	54	36	38	18	30	
582.0	24	2/3			Brown and Gray Silty clay, Trace of Organic	6	0	2	7	54	37	39	19	25	
579.5	26	2/3			Brown and Gray Silt, Trace of Organic	7	0	3	12	46	39	25	6	24	
577.0	28	3/4			Brown and Gray clay, Trace of Organic	8	0	2	8	44	46	53	30	19	
574.5	30	1/4			Brown and Gray clay, Trace of Organic	9	0	2	12	39	47	40	21	29	
572.0	32	6/7			Brownish-Gray Sandy clay, Organic	10	14	13	28	20	25	32	16	17	
569.5	34	7/8			Brown clayey Sand	11	14	24	23	13	26	45	27	16	
567.0	36	6/7			Brown and Gray Silty clay	12	0	0	1	43	56	38	20	25	
	38														
	40														
	42														
	44														
562.0	46	9/10			Gray Silt	13	0	0	5	64	31	22	4	22	
	48														
557.0	50	8/11			Gray Silt	14	0	3	15	57	25	19	2	17	
	52														
	54														
552.0	56	9/11			Gray Silt	15	0	3	17	59	21	NP	NP	15	
	58														
547.0	60	9/13			Gray Gravelly Sandy Silt	16	18	8	15	29	30	25	10	14	
	62														
	64														
542.0	66	11/15			Gray Gravelly Sandy clay	17	20	11	19	24	26	24	11	13	
	68														
537.0	70				BOTTOM OF BORING										
536.0		13/17			Gray Gravelly Sandy clay	18	22	6	20	26	26	24	11	12	

Fill Material

LOG OF BORING

Date Started 7-7-64 | Sampler Type SS | Dia. 1 3/8" | Water Elev. ———
Date Completed 7-8-64 | Casing: Length 30' | Dia. 3 1/2"
Boring No. B-1 | Station & Offset 4+60, 38' Lt. (Rear Left Wingwall) | Surface Elev. 605.3

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
605.3	0														
	2														
	4														
600.3	6	11/19			Brown and Gray Sandy Clay	1	0	3	21	32	44	39	22	17	
	8														
595.3	10	17/23			Brown Sandy Gravelly Clay	2	20	7	11	35	27	30	15	11	
	12														
	14														
590.3	16	20/27			Brown Sandy Gravelly Silt	3	36	6	13	26	19	24	8	9	
	18														
585.3	20														
	22	50* (0.8)			Brown and Gray Gravelly Sandy Silt	4	17	8	15	38	22	20	3	13	
	24														
580.3	26	50*													
	28	(0.9)			Gray Sandy Gravelly Silt	5	29	9	15	28	19	21	5	10	
575.3	30														
	32	50* (0.7)			Gray Silty Sandy Gravel	6	V	I	S	U	A	L	22	6	9
	34														
570.3	36	12/32			Grayish-Brown Gravelly Silt	7	25	1	7	44	23	25	2	21	
567.8	38	13/21			Gray Clay	8	0	0	0	28	72	44	22	23	
565.3	40														
	42	12/23			Gray Silty Clay	9	0	0	3	28	72	37	16	20	
562.8	44	6/10			Gray Silty Clay	10	0	0	0	44	56	39	18	26	
560.3	46	8/15			Gray Silty Clay	11	0	0	1	45	54	37	17	18	
557.8	48	12/12			Gray Silty Sand	12	13	53	15	10	9			18	
555.3	50	11/16			Gray Silty Sand	13	V	I	S		U	A	L	18	
	52														
552.8	54	6/17			Gray Silt and Clay	14	0	4	10	52	34	27	12	16	
550.3	56	9/18			Gray Clayey Silt	15	0	3	11	50	36	26	10	13	
	58														
545.3	60	11/20			Gray Sandy Silt	16	13	5	16	38	28	25	9	7	
	62														
	64														
540.3	66	14/27			Gray Silty Sandy Gravel	17	V		I	S	U	A	L	10	
	68														
535.3	70														
	72	50* (0.6)			Gray Gravelly Sandy Silt	18	16	8	14	38	24	21	7	18	
	74														
530.3	76	50*													
	78	(0.7)			Gray Silty Sand	19	0	2	80	11	7	NP	NP	20	
	78														
525.3	80	50*(0.7)			*Refusal Gray Silty Sand BOTTOM OF BORING	20	0	7	58	25	10			21	

LOG OF BORING

Date Started 6-30-65
Date Completed 7-2-65
Boring No. B-6
Sampler Type SS Dia. 1 1/8"
Casing: Length ____ Dia. ____
Station & Offset 6+82, 12' RT. (PIER)
Water Elev. ____
Surface Elev. 564.6'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics % Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
564.6	0														
	2														
	4														
558.6	6	9/11			Brown Clay	1	0	2	2	41	55	42	22	27	
557.1	8	10/9			Brown Silt and Clay	2	8	1	8	50	43	32	15	21	
552.6	10	6/12			Gray Silty Clay	3	0	1	2	40	57	37	19	23	
552.1	12	9/13			Gray Silt and Clay	4	0	2	7	48	43	27	13	16	
548.6	16	12/20			Gray Sandy Silt	5	9	8	15	35	33	21	8	11	
547.1	18	17/27			Gray Silty Sandy Gravel	6	37	12	14	16	21	21	7	14	
544.6	20	14/24			Gray Gravelly Sandy Silt	7	23	12	15	24	26	20	7	14	
543.1	24	14/29			Gray Gravelly Sandy Silt	8	21	9	14	30	26	22	10	14	
539.6	26	50# f (0.8)	r		Gray Sandy Gravelly Silt	9	26	6	14	40	14	22	8	10	
534.6	30	14/29			Gray Gravelly Sandy Silt	10	21	10	14	36	19	NP	NP	10	
529.6	36	14/30			Gray Clayey Silt	11	0	2	2	53	43	26	7	22	
524.6	40	50# (0.9)			Brown Silty Sandy Gravel	12	43	26	15	16	*	NP	NP	3	
519.6	44				BOTTOM OF BORING										
519.2	46	50# (0.4)			Brown Silty Sand	13	10	18	58	20	*	NP	NP	9	

*Refusal

LOG OF BORING

Date Started 7-2-69 | Sampler Type SS | Dia. 1 3/8" | Water Elev. ____

Date Completed 7-6-69 | Casing: Length ____ | Dia. ____

Boring No. B-10 | Station & Offset 84+02, 60' Rt. (Forward Right Wingwall) | Surface Elev. 574.5

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics % Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
574.5	0														
	2														
	4														
574.5	6	8/10			Brown Silt and Clay	1	0	2	17	51	30	33	14	17	
567.0	8	7/8			Brown and Gray Gravelly Sandy Clay	2	V			S	U	A	L	34	
564.5	10	5/6			Brown and Gray Clay	3	0	0	1	39	60	46	23	34	
562.0	12	5/5			Gray and Brown Clay	4	0	1	0	33	66	55	22	28	
559.5	14	5/8			Gray Silt and Clay	5	0	0	1	47	52	30	11	23	
557.0	16	7/9			Gray Gravelly Clay	6	22	1	4	36	37	29	12	20	
554.5	18	9/11			Gray Silt and Clay	7	0	3	9	47	41	27	12	20	
552.0	20	6/12			Gray Gravelly Sandy Silt	8	16	7	15	36	26	22	8	15	
549.5	22	7/11			Gray Sandy Silt	9	12	8	19	30	31	25	10	14	
	24														
544.5	26	15/23			Gray Silty Gravelly Sand	10	19	42	24	8	7	NP	NP	16	
	28														
539.5	30	17/28			Gray Gravelly Silt	11	20	1	2	49	28	23	7	12	
	32														
534.5	34	16/31			Gray Silt and Clay	12	0	7	3	43	39	30	13	28	
	36														
	38														
	40														
	42														
	44	B-10													
529.5	46	50# (0.7)			Brown Silty Sand	13	0	11	73	-16	-	NP	NP	13	
	48														
524.5	50	50# (0.6)			Brown Silty Sand	14	0	5	80	-15	-	NP	NP	16	
	52														
	54														
519.5	56	50# (0.6)			Gray Silty Sandy Gravel	15	V			S	U	A	L	7	
	58														
514.5	60	50# (0.6)			Gray Silty Sandy Gravel BOTTOM OF BORING	16	V			S	U	A	L	10	

LOG OF BORING

Date Started 5-18-65 Sampler Type SS Dia: 1 3/8"
Date Completed 5-19-65 Casing: Length 35' Dia. 3 1/2"
Boring No. B-1 Station & Offset 373+17, 58' Lt (REAR ABUTMENT)

Water Elev. ____
Surface Elev. 570.2'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
570.2	0														
	2														
	4														
565.2	6	2/3			Brown Clayey Sandy Gravel	1	V	I	S	U	A	L		16	
	8														
560.2	10	2/2			Brown Sandy Silt, Trace of Organic	2	0	3	40	39	18	21	6	23	
557.7	12	3/3			Brownish-Gray Sandy Gravelly Silt	3	20	6	10	45	19	21	9	21	
555.2	14	3/4			Gray Sandy Silt	4	13	6	12	41	28	23	10	13	
552.7	16	4/6			Gray Gravelly Sandy Clay	5	22	7	16	32	23	22	12	13	
550.2	18	13/12			Gray Sandy Gravel	6	V	I	S	U	A	L		14	
547.7	20	8/8			Gray Sandy Silt	7	0	8	32	47	13	NP	NP	14	
545.2	22	7/8			Gray Sandy Silt	8	0	5	31	50	14	NP	NP	15	
542.7	24	15/18			Gray Gravelly Sandy Silt	9	24	12	21	34	9	NP	NP	14	
540.2	26	14/17			Gray Gravelly Clay	10	30	5	10	31	24	23	11	13	
	28														
	30														
535.2	32	50* (0.8')			Gray Sandy Gravelly Silt	11	38	8	11	27	16	18	7	10	
	34														
530.2	36	15/20			Gray Clayey Silt	12	0	2	4	63	31	24	9	16	
	38														
525.2	40	14/23			Gray Silty Sand	13	0	2	69	22	7	NP	NP	22	
	42														
520.2	44	22/26			Gray Silt	14	0	0	7	58	35	NP	NP	29	
	46														
515.2	48	50* (0.9')			Gray Silty Gravelly Sand	15	21	14	52	8	5	NP	NP	15	
	50														
510.2	52	50* (0.7')			Brown Silty Sandy Gravel	16	V	I	S	U	A	L		20	
509.2	54				BOTTOM OF BORING										
	56														
	58														
	60														

*Refusal

LOG OF BORING

Date Started 5-20-65 | Sampler Type SS | Dia. 1 3/8" | Water Elev. —

Date Completed 5-25-65 | Casing: Length 50' | Dia. 3 1/2"

Boring No. B-6 | Station & Offset 376+06, 10' Rt (2ND PIER) | Surface Elev. 566.8'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
566.8	0														
	2														
	4														
561.8	6	4/12			Brown Silty Sandy Gravel	1	V	I	S	U	A	L		8	
559.3	8	2/2			Brown and Gray Silt and Clay	2	0	2	11	47	40	33	11	34	
556.8	10	2/3			Grayish-Brown Sandy Silt, Slightly Organic	3	0	2	22	44	32	32	8	29	
554.3	12	3/3			Gray Sandy Silt, Slightly Organic	4	11	3	18	37	31	32	9	35	
551.8	14	6/11			Gray Gravelly Clay	5	22	3	11	29	35	25	11	15	
549.3	16	8/21			Gray Silty Sandy Gravel	6	35	9	16	20	20	22	8	10	
546.8	18	11/22			Gray Gravelly Sandy Silt	7	22	6	17	25	30	24	10	14	
544.3	20	10/17			Gray Gravelly Sandy Silt	8	15	6	19	24	36	24	8	14	
541.8	22	7/15			Gray Gravelly Sandy Silt	9	18	7	17	24	34	23	8	14	
	24														
	26														
	28														
536.8	30	50/*			Gray Gravelly Silt	10	17	6	6	41	30	23	4	15	
	32														
	34														
531.8	36	10/10			Grayish-Brown Silt and Clay	11	0	1	5	46	48	28	11	29	
	38														
526.8	40														
		21/24			Brown Silty Sand	12	0	3	74	15	8	NP	NP	11	
	42														
	44														
521.8	46	50/*			Brown Silty Sandy Gravel	13	45	10	28		-17-		NP	NP	4
	48														
516.8	50	50* (0.9')			Gray Sandy Silt	14	11	7	16	34	32	23	10	13	
	52														
	54														
511.8	56	50* (0.7')			Gray Sandy Gravelly Silt	15	34	7	19	19	21	22	7	11	
	58														
506.8	60	50* (0.7')			Gray Gravelly Sandy Clay	16	17	7	20	28	28	25	11	13	
	62														
	64														
501.8	66	50* (0.8')			Gray Sandy Silt	17	11	7	22	35	25	24	9	10	
	68														
496.8					BOTTOM OF BORING										
496.0	70	50* (0.8')			Gray Gravelly Sandy Silt	18	15	6	22	31	26	20	5	12	

*Refusal

DATE STARTED 5/20/70 SAMPLER:TYPE SS DIA. 2.0'' I.D. WATER ELEVATION
DATE COMPLETED 5/21/70 CASING:LENGTH HSA DIA. 3.5'' I.D. IMMEDIATE 542.0 (18.0)
BORING NUMBER D-11-5 CORE BARREL:TYPE NXM SIZE 2-1/8'' I.D. AFTER 24 HRS. 541.0 (20.0)

STATION & OFFSET 36x55 Ramp BF, 3.0' Right SURFACE ELEVATION 561.0

Elev.	Depth	Stn.Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
561.0	0											
	2	4-5-6	Cinders, brick fragments, cobbles with clay (rubble FILL), moist stiff	1		Visual						
	4											
556.0	6	5-6-7	Brown and gray silty clay with gravel and rock fragments, (FILL), moist - stiff	2	13	10	5	37	35	37	16	17
	8											
552.0		5-7-8	do do do	3	14	11	5	39	32	35	15	18
	10											
	12	10-24-25	Cinders, brick fragments, cobbles, wood, with some clay (rubble FILL), moist - dense	4		Visual						
	14	6-7-6	Cinders, brick fragments, cobbles and some clay, (rubble FILL), moist - medium dense	5		Visual						
	16	4-3-3	Cinders, brick fragments, cobbles, wood with some clay (rubble FILL), moist - loose	6		Visual						
	18											
	20	2-2-4	do do do	7		Visual						
	22	2-2-4	do do do	8		Visual						
	24	2-2-2	Cinders, brick fragments, cobbles and wood with some clay (rubble FILL), moist - very loose	9		Visual						
536.0												
534.5	26	3-4-7	Gray silty clay with shale fragments (FILL), moist - stiff	10	0	6	4	38	52	43	20	22
532.5	28	2-4-7	Brown and gray silty clay, trace brick fragments, (FILL), moist - stiff	11	0	5	3	38	53	45	20	23
	30	5-6-7	Brown and gray silty CLAY, moist - stiff	12	0	3	2	44	51	42	20	20
	32											
	34											
	36	5-6-8	do do do	13	1	9	4	39	47	44	20	23
522.0	38											
	40	4-10-12	Brown silty CLAY moist - very stiff	14	17	6	3	30	44	48	24	19
	42											
	44											
	46	6-10-12	do do do	15	1	1	4	37	57	45	25	21
	48											
512.0												
510.5	50	30-30-75	Gray SHALE	16		Visual						
	52		Gray shale, medium tough to tough, and gray limestone, fossiliferous, approximately 10 to 15% limestone in 2'' to 4'' layers.									
	54											
505.5	56	77%										

Recovery BORING COMPLETED

DATE STARTED 5/22/70 SAMPLER: TYPE SS DIA. 2" O.D. WATER ELEVATION

DATE COMPLETED 5/22/70 CASING: LENGTH HSA DIA. 3.5" I.D. IMMEDIATE None

BORING NUMBER B-11-6 CORE BARREL: TYPE NXM SIZE 2-1/8" I.D. AFTER HRS. Backfilled

STATION & OFFSET 37+23 Ramp CF, 20.0' Left SURFACE ELEVATION 563.0'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg	% GS	% FS	% Silt	% Clay	LL	PI	WC
563.0	0											
	2	8-5-5	Brown and gray sandy silty clay with rock and some brick fragments (FILL), moist - stiff	1	7	22	11	34	28	41	19	20
	4											
	6	3-4-5	Brown and gray sandy silty clay with shale and rock fragments, (FILL), moist - stiff	2	22	12	7	30	29	35	14	17
	8											
	10											
	12	4-8-12	Brown and gray sandy, silty clay with shale and rock fragments (FILL), , moist - very stiff	3	8	24	7	28	33	40	21	19
550.5												
	14	8-9-11	Brown lean clay with rock fragments, (FILL), moist - stiff	4	27	8	5	24	36	44	24	19
548.0												
	16	7-15-8	Cinders, wood and clay (rubble FILL), , moist medium dense	5		Visual						
	18	8-9-11	do do do	6		Visual						
543.0	20											
	22	2-2-2	Cinders (FILL), moist - very loose	7		Visual						
	24	2-2-2	do do do	8		Visual						
	26	2-2-2	do do do	9		Visual						
535.5	28											
		2-2-2	Cinders, clay layers (FILL), moist - loose	10		Visual						
533.0	30											
		4-5-7	Brown and gray silty CLAY moist - stiff	11	0	4	3	38	55	45	24	23
	32											
	34											
	36	9-8-8	do do do	12	5	7	5	38	45	44	21	24
525.5	38											
		7-12-18	Brown and gray silty CLAY with some fossils, moist - very stiff	13	4	10	4	37	45	43	22	20
523.0	40											
521.8		12-17-30	Brown sandy silty clay with limestone fragments, moist - hard	14	6	19	15	36	24	32	13	15
	42											
	44		Layered gray shale, soft, weathered in top 0.5' of recovery and gray limestone, limestone, fossiliferous. Approximately 15 to 20% limestone in 1/2" to 4-1/2" layers									
516.8	46	53% Recovery	BORING COMPLETED									

DATE COMPLETED 5/19/70 SAMPLER:TYPE SS DIA. 2'' O.D. WATER ELEVATION

DATE COMPLETED 5/19/70 CASING:LENGTH HSA DIA. 3.5'' I.D. IMMEDIATE 529.1 (25.0)

BORING NUMBER B-11-7 CORE BARREL:TYPE NXM SIZE 2-1/8'' I.D. AFTER 72 HRS. 526.1 (27.0)

STATION & OFFSET 37+91, Ramp GF 6' Right SURFACE ELEVATION 553.1

Elev.	Depth	Stn. Pen (N)	Description	Sa. No.	Physical Characteristics							
					% Agg	% CS	% FS	% Silt	% Clay	LL	PI	WC
553.1	0											
	2	3-3-4	Brown sandy silty clay with some cinders, gravel, brick (Fill), moist - stiff	1	18	20	11	25	25	45	19	19
548.1	4											
	6	9-9-8	Cinders, brick, concrete, some clay, (rubble FILL), moist - medium dense	2		Visual						
	8											
	10	2-1-2	Cinders, brick, concrete, some clay, (rubble FILL), moist - very loose	3		Visual						
	12	4-1-3	do do do	4		Visual						
	14	1-1-1	do do do	5		Visual						
	16	1-7-4	Cinders, brick, concrete, some clay, (rubble FILL), moist - medium dense	6		Visual						
	18	2-2-4	Cinders, brick, concrete, some clay, (rubble FILL), moist - loose	7		Visual						
	20											
	22	2-1-2	do do do	8		Visual						
	24	3-5-4	do do do	9		Visual						
	26	2-2-3	do do do	10		Visual						
	28											
523.1	30	2-2-3	do do do	11		Visual						
	32	3-5-7	Brown and gray lean clay, moist - stiff	12	0	3	1	36	60	46	26	25
519.1	34											
	36		Layered brown and gray shale, soft to medium tough and gray limestone, fossiliferous, Approximately 10 to 15% limestone in 2'' and 6'' layers (only two layers).									
514.1	38	66%										
	40	Recovery	BORING COMPLETED									

DATE STARTED 5/22/70 SAMPLER: TYPE SS DIA. 2'' O.D. WATER ELEVATION

DATE COMPLETED 5/22/70 CASING: LENGTH HSA DIA. 3.5'' I.D. IMMEDIATE None

BORING NUMBER B-11-8 CORE BARREL: TYPE NXM SIZE 2-1/8'' I.D. AFTER HRS. Backfilled

STATION & OFFSET 39/01 Ramp GF, 4.0' Right SURFACE ELEVATION 55' 8''

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg	% CS	% FS	% Silt	% Clay	LL	PI	WC
551.8	0											
550.8		9-10	Brown sand and gravel (FILL), dry - medium dense	1		Visual						
	2	11	Brown lean CLAY (FILL), moist - stiff	2	10	13	3	34	40	45	25	13
546.8	4											
	6	8-7-5	Cinders, brick and gravel (rubble FILL), moist - medium dense	3		Visual						
	8	5-6-5	do do do	4		Visual						
	10											
	12	4-4-4	Cinders, brick and gravel (rubble FILL), moist - loose	5		Visual						
	14	3-4-4	do do do	6		Visual						
536.8												
	16	3-4-3	Brown silty sand (FILL), moist - loose	7	2	8	39	42	9		N.P.	17
	18	3-4-4	do do do	8	3	7	39	38	12		N.P.	20
531.8	20											
	22	3-4-6	Brown silty clay, (FILL), moist - stiff	9	1	5	4	45	45	38	17	23
529.3												
	24	6-10-7	Clay, cinders, brick and rock fragments, (rubble FILL), moist - medium dense	10			Visual					
	26	15-8-10	do do do	11			Visual					
	28	75	Clay, cinders, brick and rock fragments, (rubble FILL), moist - very dense	12			Visual					
521.8	30											
	32	3-4-7	Brown and gray clayey SILT moist - medium stiff	13	0	1	2	72	25	26	6	23
517.3	34											
	36	10-20-61	Brown and gray silty clay (highly weathered shale), with limestone fragments, moist-hard	14	10	8	6	32	44	43	20	20
515.3												
	38		Layered gray shale, soft to medium tough, and gray limestone, fossiliferous, approximately 20 to 25% limestone in 1'' to 5'' layers.									
	40											
510.3	42	52% Recovery										

BORING COMPLETED

Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/25/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/28/64 CASING: LENGTH _____ DIA 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-16-2 STATION AND OFFSET 153+02, 96'Rt. BL SURFACE ELEV. 597.6 Retaining Wall No. 16

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
597.6	0				0.3' Concrete									
597.3														
595.1	2	1	12-3-7	11"	Cinders (fill), medium stiff	Visual classification-No tests performed								Fill
593.6	4	2	12-13-12	16"	Brown clay, trace sand with brick fragments (fill), moist - medium stiff	0	4	5	35	56	45	23	25	A-7-6
	6	S-1		24"	Brown and gray clay, trace sand, trace gravel, moist - stiff	1	3	4	31	61	52	30	20	A-7-6
	8	3	3-9-18	18"	Brown and gray clay, trace sand, moist-medium stiff	0	2	2	28	68	54	30	23	A-7-6
587.6	10	4	13-12-16	18"	Brown and gray clay, trace sand, moist-stiff	0	2	2	36	60	45	24	18	A-7-6
	12	5	9-13-7	16"	Brown and gray weathered shale, moist-very stiff to hard	Visual classification-No tests performed								
	14	6	15-25-38	14½"	do	do					Visual classification-No tests performed			
	16	7	18-34-46	18"	do	do					Visual classification-No tests performed			
	18	8	23-39-43	18"	do	do					Visual classification-No tests performed			
	20	9	23-74-86	18"	do	do					Visual classification-No tests performed			
	22	10	31-62-71	16"	do	do					Visual classification-No tests performed			
	24													
571.1	26	11	62-71	9"	do	do					Visual classification-No tests performed			
	28	12	NXM	83%	Sample 12-Gray and brown shale calcareous, slightly to moderately tough (¼" to 2" pieces averaging 1¼") and gray limestone, fossiliferous, jointed and iron oxide stained (1" to 3½" pieces averaging 2") 80% shale, 20% limestone									
	30													
	32	13	NXM	88%										
	34													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/25/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/28/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-16-2 STATION AND OFFSET 153+02, 96' Rt. BL SURFACE ELEV. 597.6 Retaining Wall No. 16

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34				Sample 13 - Gray shale, calcareous, moderately tough (¼" to 2" pieces averaging 1") and gray limestone, crystalline, fossiliferous, shaly(two 2½" pieces at bottom of the run) 88% shale, 12% limestone									
	36	14	NXM	50%										
	36													
	40	15	NXM	89%	Sample 14 - Gray shale,calcareous, moderately tough, jointed (½" to 2"pieces averaging 1") and gray limestone,crystalline, fossiliferous,jointed and iron oxide stained(two 2½" pieces) 86% shale, 14% limestone									
	42													
	42	16	NXM	50%										
553.6	44													
	46				Sample 15 - Gray shale,calcareous,moderately tough to tough (½" to 3" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed (3/4" to 3" pieces averaging 1½") 88% shale, 12% limestone									
	48													
	50				Sample 16 - Gray shale, calcareous,tough (½" to 2½" pieces averaging 1½") 100% shale									
	52													
	54				Boring completed									
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 539—16-59

THE E. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

REVISED
10/14/64-vb

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/29/64 SAMPLER: TYPE Split Spoon& Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/30/64 CASING: LENGTH DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-16-3 STATION AND OFFSET 154+54, 100' Rt. BL SURFACE ELEV. 586.4 Retaining Wall No. 16

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
586.4	0													
583.9	2	1	9-19-11	14"	Cinders and limestone(fill),dry-stiff	Visual classification-No tests performed								Fill
	4	2	6-8-9	16"	Brown clay, little sand,trace gravel, moist - stiff	2	5	5	28	60	48	26	18	A-7-6
	6	S-1		22"	do do	4	8	4	34	50	48	24	16	A-7-6
	8	3	13-18-21	16"	Brown clay, trace sand, moist - stiff	0	2	3	26	69	48	23	18	A-7-6
574.4	10	4	11-19-36	18"	Brown clay, trace sand, moist - very stiff	0	0	3	35	62	45	21	16	A-7-6
571.4	12	5	23-28-39	18"	Brown silty clay, trace sand,trace gravel, moist - stiff	2	4	2	39	53	39	17	18	A-6b
	14													
	16	6	NXM	91%	Sample 6 - Gray shale,calcareous, moderately tough with brown weathered zones throughout the run (½" to 2" pieces averaging 1") and gray limestone, crystalline,fossiliferous, jointed and iron oxide stained(1" to 2" pieces averaging 1½") 59% shale, 41% limestone									
	18	7	NXM	25%										
	20													
	22	8	NXM	91%	Sample 7 - Gray shale,calcareous, moderately tough with brown weathered zones throughout the run(½" to 1"pieces averaging 1") 100% shale									
	24	9	NXM	53%	Samples 8 & 9 - Gray shale,calcareous, moderately tough, jointed in the bottom half of the run (½" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous and iron oxide stained(1" to 3" pieces averaging 2½") 88%shale, 12% limestone									
	26													
	28	10	NXM	73%	Sample 10 - Gray shale,calcareous, moderately tough with brown weathered zones throughout the run(½" to 2" pieces averaging 1") and gray limestone, crystalline,fossiliferous,jointed(½"to 3"pieces 3½"pieces averaging 2")73% shale 27% limestone									
556.4	30													
	32													
	34				Boring completed									

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Form No. [illegible]

THE K. C. NUTTING COMPANY

[illegible] AIRPORT ROAD
CINCINNATI 26, OHIO

REVISED
10/12/64-vb

TESTING ENGINEERS AND SOILS CONSULTANTS

*Water used in drilling from surface - elevation 605.3.

LOG OF BORING

DATE STARTED 8/18/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE * CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/20/64 CASING: LENGTH DIA. 3.5"I.D. Hollow Stem Augers AFTER HOURS Backfilled PROJECT: Northeast Expressway

BORING No. R-21-1 STATION AND OFFSET 166+86, 16.5' Rt., Ramp GD BL SURFACE ELEV. 605.3 HAM-71-0.93 Retaining Wall No. 21

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N) **	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	UNIT. CLASS.
605.3	0													
603.3	2	1	12-11-12	14"	Cinders, topsoil and brick (fill), moist - stiff	Visual classification-No tests performed								Fill
2	4	2	12-80	8"	Brown clay, trace sand, trace gravel with shale and limestone fragments, moist - very stiff	2	5	4	29	60	43	20	20	A-7-6
600.3														
3 598.8	6	3	26-60	7"	Brown weathered shale, moist - hard	Visual classification-No tests performed								
1.5	8	4	NXM	60%	Brown and gray weathered shale, slightly tough, jointed(¼"to 1½" pieces averaging 1")(trace of limestone)									
	10, 12, 14	5	NXM	17%	Brown and gray weathered shale, slightly tough to soft(½" to 1½" pieces averaging 1")trace of limestone(one 3/4"piece jointed) 99% shale, 1% limestone									
	16, 18	6	NXM	31%	Brown and gray weathered shale, slightly tough(½" and 1"pieces and gray limestone crystalline, fossiliferous(1" and 2½" pieces) 92% shale, 8% limestone									
	20, 22, 24	7	NXM	80%	Gray shale, calcareous, moderately tough (1" to 4" pieces averaging 2") and gray limestone, crystalline, fossiliferous, jointed and iron oxide stained (three pieces 1" and 1½") 95% shale, 5% limestone									
	26, 28	8	NXM	54%	Gray shale, calcareous, moderately tough (½" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous, jointed(three pieces ½" to 1") 95% shale, 5% limestone									
576.3														
22.5	30, 32, 34				Boring completed **70 lb. hammer weight 30 inch fall									

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

*Water used in drilling from elevation 609.7

LOG OF BORING

DATE STARTED 8/30/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE * AFTER Backfilled HOURS CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/30/64 CASING: LENGTH DIA. 3.5"I.D.Hollow Stem Augers PROJECT: Northeast Expressway HAM-71-0.93 Retaining Wall No. 21

BORING No. R-21-2 STATION AND OFFSET 168+21, 19.5' Rt., Ramp GD BL SURFACE ELEV. 609.7

ELEV.	DEPTH	SAMPLE No.	STD. PEN. ** (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
609.7	0													
608.2	2	1	5-6-8	14"	Gray silty clay with topsoil and cinders (fill), moist	Visual classification-No tests performed								Fill
607.2	4	2	12-14-38	16"	Brown clay, trace sand, trace gravel with shale and limestone fragments, moist - stiff	1	6	3	31	59	46	20	18	A-7-6
	6	3	10-18-45	12"	do do .	Visual classification-No tests performed								A-7-6
	8	4	18-32-60	15"	Brown and gray clay, trace sand with shale and limestone fragments, moist - very stiff	0	2	4	32	62	44	17	18	A-7-6
600.2	10	5	60	3"	Brown silty clay, little sand, little gravel with shale and limestone fragments, moist - very stiff	13	9	6	16	56	40	16	19	A-6b
598.7	12	6	NXM	53%	Sample 6 - Gray shale, calcareous, moderately tough (½" to 2" pieces averaging 1") and gray limestone, crystalline, fossiliferous (one 1½"piece in the bottom 4" of the run) 97% shale, 3% limestone									
	14													
	16	7	NXM	63%	Sample 7 - Gray shale, calcareous, moderately tough (1" to 5" pieces averaging 2½") and gray limestone, crystalline, fossiliferous, jointed and iron oxide stained (three pieces ½" - 1" and 1½" in the bottom 8" of the run 95% shale,									
	18													
	20	8	NXM	51%	5% limestone									
	22				Sample 8 - Gray shale with brown weathered zones in the top half of the run, calcareous, moderately tough to tough (1" to 6" pieces averaging 3") and gray limestone, crystalline, fossiliferous									
	24													
	26	9	NXM	75%	(1½" to 2½" pieces averaging 2")									
	28				84% shale, 16% limestone									
					Sample 9 - Gray shale, calcareous, tough to moderately tough (½" to 3" pieces averaging 2") 100% shale									
	30													
	32	10	NXM	60%	Sample 10-Gray shale, calcareous moderately tough to tough, jointed in the top and bottom 6" of the run(½" to 3" pieces averaging 2") 100% shale									
576.2	34				Boring completed									

**70 lb. Hammer Weight
30 inch fall

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Form No. 530—5-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

*Water used in drilling from elevation 596.5

DATE STARTED 8/27/64 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEV. IMMEDIATE * CLIENT City of Cincinnati, Ohio

DATE COMPLETED 8/28/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow AFTER _____ HOURS Backfilled PROJECT Northeast Expressway HAM-71-0.93

BORING No. R-21-3 STATION AND OFFSET 168+91, 13' Rt. Ramp GD BL SURFACE ELEV. 596.5 Retaining Wall No. 21

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
596.5	0													
	2	1	4-7-8	9"	Brown weathered shale with limestone fragments, dry - hard	Visual classification-No tests performed								
	4	2	25-50	10"	Brown and gray shale with limestone fragments, moist - hard	Visual classification-No tests performed								
590.0	6	3	20-50	10"	do do	Visual classification-No tests performed								
	8	4	NXM	83%	Sample 4-Brown and gray weathered shale slightly tough(¼" to 1½" pieces averaging 1")and gray limestone,crystalline, fossiliferous(two pieces ½" and 2")39% shale, 41% limestone									
	10	5	NXM	90%	Sample 5-Gray shale,calcareous,moderately tough to tough (1" to 5½" pieces averaging 3") 100% shale									
	12													
	14	6	NXM	89%	Sample 6-Gray shale,calcareous,tough to moderately tough,weathered in bottom 12" of the run(1" to 5½"pieces averaging 3") and gray limestone, crystalline, fossiliferous,jointed and iron oxide stained (½" to 1½" averaging 1")86% shale, 14% limestone									
	16													
	18	7	NXM	91%										
576.0	20	8	NXM	100%	Sample 7-Gray shale,calcareous,moderately tough with soft seams(½" to 4½" pieces averaging 2") 100% shale									
	22				Sample 8-Gray shale,calcareous,tough (½" to 3" pieces averaging 2") and gray limestone, crystalline,fossiliferous (one 2½" piece at the bottom of the run) 94% shale, 6% limestone									
	24													
	26				Boring completed									
	28													
	30													
	32													
	34													

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Form No. 530- 16.59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/13/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/13/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No R-21-4 STATION AND OFFSET 170+23, 18' Rt., BL Ramp GD SURFACE ELEV. 594.3 Retaining Wall No. 21

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
594.3	0													
593.8		1	4	5"	Cinders (fill), moist - loose	Visual classification-No tests performed								Fill
	2	2	5-8	12"	Brown and gray weathered shale, moist - hard	Visual classification-No tests performed								
	4	3	16-31-58	18"	Brown and gray weathered shale, moist-hard	Visual classification-No tests performed								
589.3														
	6	4	23-74	15"	Gray shale, moist - hard	Visual classification-No tests performed								
	8	5	41-130	18"	Gray shale, moist - hard	Visual classification-No tests performed								
584.3	10													
	12	6	NXM	80%	Gray shale, calcareous, jointed in top 6" of the run, tough (½" to 2½" pieces, averaging 2") and gray limestone, shaly, fossiliferous, (two 1½" pieces) 94% shale, 6% limestone									
	14													
	16	7	NXM	61%	Gray shale, calcareous, moderately tough to tough (1" to 3"pieces averaging 2") and gray limestone, fossiliferous (one 3/4" piece)98% shale, 2% limestone									
576.3	18													
	20													
	22				Boring completed									
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/2/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 595.4 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/3/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-23-1 STATION AND OFFSET 177+02, 70' Rt., NB BL SURFACE ELEV. 620.4 Retaining Wall No. 23

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
620.4	0				0.3' Concrete									
620.1														
617.9	2	1	5-4-4	10"	Brown silty clay with cinders(fill), moist - medium stiff	Visual classification-No tests performed								Fill
	4	2	5-5-5	11"	Clay, sand, gravel, brick and cinders (fill), moist - loose	Visual classification-No tests performed								Fill
	6	3	2-2-4	12"	do do	Visual classification-No tests performed								Fill
	8	4	2-1-3	12"	do do	Visual classification-No tests performed								Fill
	10	5	2-2-3	11"	do do	Visual classification-No tests performed								Fill
	12													
	14													
	16	6	2-3-2	13"	do do	Visual classification-No tests performed								Fill
	18													
	20													
	22	7	2-3-4	17"	do do	Visual classification-No tests performed								Fill
	24													
	26		1-1-2	0										
592.9														
	28	8	2-3-5	10"	Brown and gray clay, little sand, trace gravel with limestone fragments(fill), moist - medium stiff	4	5	5	37	49	41	16	22	A-7-6
	30	S-1		20"	Brown clay, trace sand, trace gravel with limestone fragments, moist - stiff	9	5	4	32	50	42	18	22	A-7-6
588.4	32	9	5-5-6	10"	Brown and gray silt and clay, trace sand, moist - medium stiff	0	0	1	55	44	32	12	23	A-6a
	34													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/2/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 595.4 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/3/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-23-1 STATION AND OFFSET 177+02, 70' Rt., NB BL SURFACE ELEV. 620.4 Retaining Wall No. 23

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
585.4	34													
	36	10	5-7-9	17"	Brown and gray clay, trace sand, moist stiff	0	0	2	48	50	44	22	22	A-7-6
	38	11	5-9-14	18"	Brown clay, little sand, trace gravel with limestone fragments, moist-stiff	9	8	4	28	51	41	19	19	A-7-6
580.4	40													
		12	17-10-15	10"	Brown silty clay, trace sand, trace gravel with limestone fragments, moist - stiff	2	4	4	38	52	40	17	19	A-6b
577.9	42													
		13	7-11-16	15"	Brown silt and clay, little sand, trace gravel with limestone fragments, moist-stiff	6	7	4	42	41	34	12	18	A-6a
575.4	44													
	46	14	8-12-18	18"	Brown clay, little sand, little gravel with limestone fragments, moist-stiff	13	10	5	29	43	41	16	17	A-7-6
572.9	48													
		15	7-10-17	18"	Brown silt and clay, little sand with limestone fragments, moist - stiff	0	7	4	37	52	37	14	20	A-6a
570.4	50													
	52	16	12-16-28	18"	Brown and gray weathered shale, moist - hard	Visual classification-No tests performed								
	54													
565.4														
	56	17	NXM	43%	Gray shale, calcareous, moderately tough (½" to 2" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed (½" to 2" pieces averaging 1") 95% shale, 5% limestone									
	58													
560.4	60													
	62				Boring completed									
	64													
	66													
	68													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/1/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/1/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-14-6 STATION AND OFFSET 180+10, 70'Rt. NB BL SURFACE ELEV. 623.5 Bridge No. HAM-71-0209

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
623.5	0													
	2	1	5-7-8	10"	Cinders, sand, gravel and brick fragments (fill), moist - medium dense	Visual classification-No tests performed								Fill
	4	2	6-8-9	11"	do do	Visual classification-No tests performed								Fill
	6													
616.0	8		No Penetration											
		3	5-6-7	13"	Gray weathered shale and brick fragments (fill), moist - medium dense	Visual classification-No tests performed								Fill
613.5	10													
	12	4	5-7-6	8"	Clay, cinders and brick fragments, (fill), moist - medium dense	Visual classification-No tests performed								Fill
	14													
	16	5	5-5-6	16"	do do	Visual classification-No tests performed								Fill
	18													
603.5	20													
	22	6	8-4-3	14"	Cinders, brick, clay, sand and gravel, (fill), moist - loose	Visual classification-No tests performed								Fill
	24													
	26	7	6-4-3	12"	do do	Visual classification-No tests performed								Fill
	28	8	4-3-4	15"	do do	Visual classification-No tests performed								Fill
593.5	30													
	32	9	4-4-5	12"	Brown and gray clay, trace sand, trace trace gravel with shale and limestone fragments (fill), moist - stiff	1	3	3	45	48	46	20	21	A-7-6
590.5	34	S-1		19"	Brown and gray silt and clay, little sand, trace gravel with shale and limestone fragments (fill), moist - stiff	1	7	4	36	52	37	15	19	A-6a

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/1/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/1/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-14-6 STATION AND OFFSET 180+10, 70' Rt, NB BL SURFACE ELEV. 623.5 Bridge No. HAM-71-0209

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36	10	7-11-15	16"	Brown and gray silt and clay, little sand, trace gravel with shale fragments, (fill), moist - stiff	1	8	5	36	50	37	14	14	A-6a
	38	11	5-7-9	16"	Gray silt and clay, little sand, some gravel with shale and limestone fragments, (fill), moist - medium stiff	25	8	3	33	31	33	13	19	A-6a
583.5	40													
		12	4-6-8	15"	Brown and gray silty clay, trace sand with shale and limestone fragments, (fill), moist - stiff	0	5	4	41	50	39	15	21	A-6b
580.5	42													
	44	S-2		20"	Gray clay, trace sand with limestone fragments (fill), moist - stiff	0	1	1	40	58	44	18	30	A-7-6
	46	13	5-6-7	18"	Brown and gray clay, trace sand with limestone fragments (fill), moist - stiff	0	0	2	37	61	47	22	26	A-7-6
	48	14	9-11-15	18"	Brown clay, trace sand, moist - stiff	0	2	2	33	63	48	20	18	A-7-6
	50	15	12-16-21	18"	Brown clay, trace sand, moist - hard	0	2	1	35	62	48	21	18	A-7-6
	52													
	54													
568.5														
567.5	56	16	34-68	15"	Gray shale, dry - hard	Visual classification-No tests performed								
	58				Gray shale, moderately tough to tough (½" to 4½" pieces averaging 3") and gray limestone, crystalline, fossiliferous, shaly (two pieces 1" and 2") 95%shale 5% limestone									
		17	NXM	83%										
562.5	60													
	62				Boring completed									
	64													
	66													
	68													

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Form No. 530—16 59

THE H. C. NUTTING COMPANY

[illegible] AIRPORT ROAD
[illegible]

TESTING ENGINEERS AND [illegible]

LOG OF BORING

DATE STARTED [illegible] SAMPLING [illegible] DIA. [illegible] WATER [illegible] [illegible] City of Cincinnati, Ohio

DATE COMPLETED 8/[illegible]/64 CASING LENGTH [illegible] DIA. [illegible] HOURS [illegible] PROJECT Northeast Expressway
Stem Augers
SAM 71-0.93

BORING No. B-[illegible] STATION AND OFFSET [illegible] SURFACE ELEV. 620.0 Retaining Wall No. 25

ELEV.	DEPTH	SAMPLE No	STD. PEN (N)	% REC	DESCRIPTION	Physical Characteristics: % AGG	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHT. CL.
620.0	0													
	2	1	5-6-8	12"	Clay, sand, cinders and brick(fill), moist - medium dense to loose	Visual classification-No tests performed								Fill
	4	2	7-6-5	6"	do do	Visual classification-No tests performed								Fill
	6	3	2-5-4	10"	do do	Visual classification-No tests performed								Fill
	8	4	2-3-3	11"	do do	Visual classification-No tests performed								Fill
	10	5	3-6-5	11"	do do	Visual classification-No tests performed								Fill
	12													
	14	6	2-5-8	13"	do do	Visual classification-No tests performed								Fill
	16	7	2-5-3	16"	do do	Visual classification-No tests performed								Fill
	18	8	3-4-3	18"	do do	Visual classification-No tests performed								Fill
600.0	20	9	2-5-2	16"	Cinders and [illegible] (fill), moist - loose	Visual classification-No tests performed								Fill
	22													
	24	10	[illegible]	16"	do do	Visual classification-No tests performed								Fill
	26	11	3-3-4	9"	do do	Visual classification-No tests performed								Fill
592.5	28	12	3-6-7	18"	Brown and gray silt and clay little sand, trace gravel with shale fragments(fill), moist - medium stiff	9	7	5	36	43	35	14	24	A-6a
	30	13	5-7-8	15"	Brown and gray silt and clay little sand, trace gravel with shale and limestone fragments (fill), moist - medium stiff	1	13	5	37	45	35	14	22	A-6a
	32				Brown and gray silt and clay little sand [illegible] with shale and limestone [illegible] moist - medium stiff	20	9	[illegible]	28	38	36	14	20	A-6a
	34		[illegible]	[illegible]										

[illegible] PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, [illegible] REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL.

Form No. 530 16 90

THE H. C. NUTTING COMPANY

TESTING ENGINEERS AND [illegible]

LOG OF BORING

DATE STARTED 6/22/90 DRILLER [illegible] DIA. BXN WATER ON BOTTOM OF [illegible] CITY OF Cincinnati, Ohio

DATE COMPLETED 6/27/90 CASING: LENGTH ____ DIA 3.5"I.D.Hollow Stem Augers WATER AFTER ____ HOURS ____ Northeast Expressway (AM-71-0.9)

BORING No. R-25-1 STATION AND OFFSET 181+55, 71'Rt., NB BL SURFACE ELEV. 620.0 Retaining Wall No. 25

ELEV.	DEPTH	SAMPLE No	STD. PEN (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
	32													
	36	15	7-9-10	18"	Brown and gray silt and clay, little sand, trace gravel with shale and limestone fragments (fill), moist - stiff	2	10	6	29	53	37	15	16	A-6a
	38													
	40													
	42	16	7-9-10	18"	Brown and gray silt and clay, little sand, trace gravel with shale and limestone fragments (fill), moist-stiff	6	9	5	38	42	37	15	20	A-6a
	44													
575.0	46	17	5-8-9	15"	Gray sandy silt and gravel with limestone fragments (till), wet - medium stiff	38	14	5	21	22	28	10	14	A-4a
	48													
570.0	50													
	52	18	4-5-8	12"	Silty clay, concrete and brick fragments (fill), wet - medium dense	Visual classification-No tests performed Fill								
	54													
565.0		19	78	"	Gray [illegible] hard	Visual classification-No tests performed								
564.5	56				[illegible] weak, silty clays to moderately tough (1" to 12" pieces) [illegible] and gray limestone fragments [illegible] fragments (rubble pieces 3", 2" and 5") 89% shale, 11% limestone										
	58	20	"	"										
560.5	60													
	62													
	64													
	66													

Boring complete

...TO A WRITTEN REQUEST FOR SUBMITTAL OF REPORTS, THE PUBLIC AND OURSELVES. ALL REPORTS ARE SUBMITTED AN THE ...INTELLECTUAL PROPERTY OF CLIENTS AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS ... OR THE REPORTING USE RESULTS IN WHOLE OR PERIODS USE WITHOUT APPROVAL ...

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Form No. 530—16-59

REVISED
10/14/64-vb

THE R. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/6/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/6/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-41-1 STATION AND OFFSET 205+80, 74' L. SB BL SURFACE ELEV. 732.3 Retaining Wall No. 41

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % GRAV.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
732.3	0				Blacktop									
732.0	2	1	16-17-9	16"	Ashpaltic concrete, sand and gravel, (fill), moist - medium dense	Visual classification-No tests performed								Fill
729.8	4	2	7-7-9	18"	Brown silt and clay, little sand, some gravel with limestone fragments, moist - stiff	20	10	5	35	30	32	13	16	A-6a
727.3	6	3	5-5-4	10"	Brown sandy silt, trace gravel with limestone fragments, moist - stiff	8	4	5	45	38	29	10	16	A-4a
724.8	8	4	4-5-7	11"	Brown silt and clay with sand, gravel and limestone fragments, moist - stiff	Visual classification-No tests performed								A-6a
	10													
	12	5	3-4-9	15"	Brown silt and clay, little sand, little gravel with limestone fragments, moist - stiff	12	12	7	35	34	35	15	24	A-6a
	14													
717.3	16	6	11-27-61	18"	Brown weathered shale with limestone fragments, moist to dry - very stiff to hard	Visual classification-No tests performed								
	18													
	20													
	22	7	45-75	10"	do do	Visual classification-No tests performed								
	24													
708.3	26	8	NXM	49%	Brown and gray shale, calcareous, slightly tough, jointed (weathered in the top 12") (¼" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous (1" to 2" pieces averaging 1½") 83% shale, 17% limestone									
	28													
	30	9	NXM	67%	Gray shale with brown weathered zones throughout, calcareous, moderately tough (¼" to 3" pieces averaging 2") and gray limestone, crystalline fossiliferous (1" and 4½" pieces) 82% shale, 18% limestone									
	32													
	34				Boring completed									

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/5/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/5/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-41-2 STATION AND OFFSET 207+65, 76' L. SB BL SURFACE ELEV. 747.2 Retaining Wall No. 41

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
747.2	0													
746.5		1	3	6"	Topsoil (0.5')	Visual classification-No tests performed								
744.7	2	2	7-9	12"	Brown clay, little sand, little gravel, with limestone fragments (fill), dry-hard	14	7	3	34	42	42	22	12	A-7-6
742.2	4	3	7-16-11	15"	Brown silt and clay, little sand, little gravel with limestone fragments (probable fill), moist - very stiff	12	9	5	41	33	34	14	14	A-4a
	6	4	5-5-7	18"	Brown silty clay, little sand, trace gravel with limestone fragments (probable fill) moist - very stiff	2	11	6	39	42	38	17	14	A-6b
	8	5	7-9-12	12"	do do	Visual classification-No tests performed								A-6b
	10													
	12	6	7-8-11	12"	Brown silty clay, little sand, little gravel with limestone fragments (probable fill), moist - very stiff	12	11	3	36	38	39	19	15	A-6b
	14													
	16	7	7-8-12	12"	Brown silty clay, little sand, trace gravel with limestone fragments (probable fill), moist - very stiff	1	8	5	41	45	38	18	16	A-6b
	18													
	20													
	22	8	5-7-11	11"	Brown silty clay, little sand, trace gravel with limestone fragments (probable fill), moist - stiff	2	6	6	44	42	37	17	18	A-6b
	24													
722.2														
	26	9	7-5-6	18"	Brown and gray clay, little sand, little gravel with limestone fragments (probable fill), moist - medium stiff	20	5	5	31	39	44	23	28	A-7-6
	28													
	30													
	32	10	9-14-19	18"	Brown clay, trace sand, trace gravel with limestone fragments, moist - very stiff	4	2	2	35	57	48	26	20	A-7-6
	34													

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—16 59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/5/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER-ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/5/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway NAM-71-0.93

BORING No. R-41-2 STATION AND OFFSET 207+65, 76' L. SB BL. SURFACE ELEV. 747.2 Retaining Wall No. 40

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
711.7	36													
		11	32-16-48	17"	Brown and gray weathered shale, moist-hard	Visual classification-No tests performed								
709.2	38													
	40				Brown and gray weathered shale, moderately tough with soft seams throughout the run (1" to 6" pieces averaging 3") and gray limestone, crystalline, fossiliferous, jointed in the bottom 18" of the run(1" to 7½" pieces averaging 3") 78% shale, 22% limestone									
	42	12	NXM	95%										
	44													
		13	NXM	63%	Gray and brown shale,calcareous, moderately tough with soft seams in the top half of the run (1" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous (1" to 4" pieces averaging 3") 83% shale,17% limestone									
	46													
699.2	48													
	50				Boring completed									
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 630—16-62

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

REVISED
10/14/64-vb

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/3/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/4/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-41-3 STATION AND OFFSET 209+12, 75' L. SB BL SURFACE ELEV. 758.5 Retaining Wall No. 41

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % ABS.	% C.B.	% F.A.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
758.5	0													
	2	1	6-11-12	10"	Brown and gray silty clay with rock fragments and wood (fill), moist - very stiff	Visual classification-No tests performed								Fill
756.0	4	2	6-9-9	11"	Brown and gray silty clay,trace sand, trace gravel with shale and limestone fragments(probable fill),moist - very stiff	6	5	4	37	48	38	18	11	A-6b
	6													
	8	3	7-6-4	8"	do do	Visual classification-No tests performed								A-6b
751.0														
	10	4	7-12-14	11"	Brown and gray silt and clay, trace sand, trace gravel with shale and limestone fragments(probable fill), moist - very stiff	1	3	4	48	44	36	14	8	A-6a
748.5	12	5	7-12-14	16"	Brown silty clay, trace sand,little gravel with shale and limestone fragments, (probable fill), moist - very stiff	10	4	4	40	42	36	17	15	A-6b
	14													
743.5	16	6	4-7-20	17"	Brown and gray clay,little sand,little gravel with shale and limestone fragments, (probable fill), moist - very stiff	12	7	5	32	44	42	20	16	A-7-6
	18													
738.5	20													
	22	7	4-4-7	15"	Brown silt and clay, trace sand,some gravel with shale and limestone fragments, (probable fill), moist - very stiff	29	5	4	33	29	33	15	14	A-6a
	24													
733.5	26	8	4-5-7	18"	Brown silty clay, trace sand,trace gravel with shale and limestone fragments(probable fill), moist - stiff	8	4	4	40	44	39	19	21	A-6b
731.0	28													
	30	9	5-7-8	12"	Brown and gray silt and clay,little sand, trace gravel(probable fill), moist - very stiff	3	12	6	40	39	35	15	16	A-6a
	32	10	4-10-6	16"	Brown and gray silt and clay,little sand, with shale and limestone fragments, (probable fill), moist - very stiff	0	8	6	43	43	35	15	16	A-6a
	34	11	5-7-9	8"	Brown silt and clay, trace sand,trace gravel with shale and limestone fragments (probable fill), moist - very stiff	9	0	1	46	44	36	15	20	A-6a

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/3/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/4/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93 Retaining Wall No. 41

BORING No. R-41-3 STATION AND OFFSET 209+12, 75' L. SB BL SURFACE ELEV. 758.5

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36	12	5-8-8	18"	Brown silt and clay, trace sand, trace gravel with shale and limestone fragments, (probable fill), moist - very stiff	Visual classification-No tests performed								A-6a
721.0	38													
10	40	13	8-10-16	14"	Brown silty clay, little sand, little gravel with shale and limestone fragments, (probable fill), moist - stiff	14	10	5	36	35	37	17	14	A-6b
	42	14	7-10-14	11"	Brown and gray silty clay, little sand, trace gravel with topsoil and limestone fragments (probable fill), moist-stiff	2	6	4	42	46	40	18	16	A-6b
716.0														
5	44	15	5-14-22	17"	Brown clay, trace sand, trace gravel, moist - very stiff	1	4	3	34	58	46	25	17	A-7-6
	46	16	14-28-60	14"	Brown clay, trace sand, trace gravel, moist - hard	6	2	2	38	52	42	22	15	A-7-6
711.0	48													
5		17	10-40-30	16"	Brown weathered shale with limestone, moist - hard	Visual classification-No tests performed								
	50													
	52	18	27-30-55	16"	Brown and gray shale, moist - hard	Visual classification-No tests performed								
703.5	54													
7.5		19	NXM	88%	Gray shale, calcareous, moderately tough (1" to 4" pieces averaging 2") and gray limestone, crystalline, fossiliferous, jointed (one 1" piece in the bottom 6" of the run, 96% shale, 4% limestone									
	56													
	58	20	NXM	97%	Gray shale, calcareous, tough(½" to 3½" pieces averaging 1½")and gray limestone, crystalline, fossiliferous(1½" to 4" pieces averaging 3") 53% shale, 47% limestone									
	60													
	62	21	NXM	85%	Gray shale, calcareous, tough(1" to 3" pieces averaging 2½") and gray limestone crystalline, fossiliferous(1½" to 4" pieces averaging 3") 68% shale, 32% limestone									
694.5	64													
9	66				Boring completed									
	68													

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Form No. 830 [illegible]69

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/13/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE 730.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/14/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-41-4 STATION AND OFFSET 210+29.74'L, SB BL SURFACE ELEV. 755.0 Retaining Wall No. 41

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS.
755.0	0													
	2	1	4-5-4	16"	Brown and gray silty clay, little sand, little gravel (fill), moist-medium stiff	11	7	5	37	40	39	19	18	A-6b
	4	2	3-4-5	18"	do do	Visual classification-No test performed								A-6b
	6	3	3-6-9	11"	Brown and gray silty clay, trace sand some gravel (fill), moist - medium stiff	22	4	2	37	35	36	18	18	A-6b
	8													
	10	4	7-7-11	13"	do do	Visual classification-No tests performed								A-6b
	12	5	6-9-13	13"	Brown and gray silty clay and gravel, trace sand with limestone fragments, (fill), moist - stiff	40	2	2	30	26	37	17	14	A-6b
	14													
	16	6	7-6-8	18"	Brown and gray silty clay and gravel, trace sand with limestone fragments, (fill), moist - stiff	44	4	4	25	23	36	16	16	A-6b
	18													
735.0	20													
	22	7	10-10-24	18"	Brown and gray silt and clay, trace sand, trace gravel with limestone fragments (fill), moist - very stiff	7	5	2	52	34	33	13	11	A-6a
	24													
730.0														
	26	8	23-26-29	13"	Brown silty clay with brick fragments, (fill), moist - very stiff	Visual classification-No tests performed								Fill
	28													
725.0	30													
	32	9	6-10-12	16"	Gray clay, trace sand with organic matter (fill), moist, medium stiff	0	1	1	57	41	43	19	24	A-7-6
	34	10	6-9-11	0		No sample recovered								

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19

Form No. 530—15.59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/13/64 SAMPLER: TYPE Split Spoon & CoreBarrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 730.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/14/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS ____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-41-4 STATION AND OFFSET 210+29,74'L. SB BL SURFACE ELEV. 755.0 Retaining Wall No. 41

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
719.0	36	S-1(Top)			Brown and gray clay, trace sand (fill), moist - medium stiff	0	3	2	49	46	46	19	24	A-7-6
		S-2(Bottom)			Brown clay,little sand, moist - stiff	0	4	6	40	50	52	30	22	A-7-6
	38	11	9-11-13	18"	Brown and gray clay, trace sand, moist stiff	0	2	2	38	58	54	31	26	A-7-6
	40													
	42	12	53-17-21	18"	Brown and gray clay, trace sand, trace gravel, very moist - medium stiff	5	4	1	37	53	51	29	33	A-7-6
	44	13	19-26-31	16"	Brown clay, trace sand, moist - stiff	0	1	2	40	57	57	34	26	A-7-6
710.0														
	46	14	NXM	61%	Gray and brown shale, calcareous, moderately tough, jointed in the bottom 6" of the run (1" to 2½" pieces averaging 1½") and gray limestone, crystalline, fossiliferous (½ to 6" pieces averaging 3½") 67% shale, 33% limestone									
	48													
	50													
	52	15	NXM	75%	Gray shale, calcareous,tough with fossiliferous zones in the bottom 18" of the run(1" to 3½" pieces averaging 2") and gray limestone, crystalline, fossiliferous (1½" to 3½" pieces averaging 2½") 80% shale, 20% limestone									
	54													
700.0														
	56				Boring completed									
	58													
	60													
	62													
	64													
	66													
	68													

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62

Form No. 630—[illegible]59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 25, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

Split Spoon 2"O.D.

DATE STARTED 8/10/64 SAMPLER: TYPE Core Barrel DIA. NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/12/64 CASING: LENGTH [illegible] DIA 3.5"I.D.Hollow Stem Augers AFTER [illegible] HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-41-5 STATION AND OFFSET 212+77, 75' L. SB BL SURFACE ELEV. 772.0 Retaining Wall No. 41

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS.
772.0	0													
	2	1	6-12-20	14"	Brown and gray silty clay with brick fragments and cinders (fill), moist - stiff	Visual classification-No tests performed								Fill
769.5	4	2	12-9-11	16"	Brown and gray silty clay, trace sand some gravel with shale fragments (fill), moist - stiff	22	3	2	38	35	39	17	16	A-6b
	6	3	9-9-9	16"	Brown and gray silty clay, trace sand, trace gravel with shale fragments (fill), moist - very stiff	4	4	4	41	47	39	19	15	A-6b
	8													
	10	4	9-13-11	18"	do do	Visual classification-No tests performed								A-6b
	12	5	9-33-20	9"	Brown silty clay and gravel, trace sand with limestone fragments (fill), moist-hard	54	5	3	21	17	36	16	20	A-6b
	14													
	16	6	5-6-10	13"	Brown and gray silty clay, trace sand, trace gravel with shale fragments, (fill), moist - stiff	9	4	5	42	40	38	17	22	A-6b
	18													
752.0	20													
	22	7	88-30-42	14"	Brown and gray silty clay, trace sand, trace gravel with limestone fragments, moist - hard	4	1	2	50	43	37	16	14	A-6b
	24													
747.0														
745.0	26	8	150-110-100	11"	Brown weathered shale and limestone, moist - hard	Visual classification-No tests performed								
	28													
	30	9	NXM	50%	Sample 9 - Brown and gray weathered shale, slightly tough (1" to 3" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed in the top 6" of the run (1" to 4" pieces averaging 2½") 72% shale, 28% limestone									
	32													
	34	10	NXM	50%										

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/10/64 SAMPLER: TYPE Split Spoon Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/12/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-41-5 STATION AND OFFSET 212+77, 75' L, SB BL SURFACE ELEV. 772.0 Retaining Wall No. 41

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36													
	38	11	NXM	91%	Sample 10 - Brown and gray weathered shale, slightly tough (one 1½" piece) and gray limestone, crystalline, fossiliferous, jointed and iron oxide stained (1" to 3" pieces averaging 2") 53% shale, 47% limestone									
732.0	40													
13.	42				Sample 11 - Gray and brown shale, calcareous, moderately tough (1" to 4" pieces averaging 2½") and gray limestone, crystalline, fossiliferous (1" to 4½" pieces averaging 3") 56% shale, 44% limestone									
	44													
	46													
	48													
	50				Boring completed									
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

64

LOG OF BORING

Date Started 7-14-65 Sampler Type SS Dia. 1 3/8" Water Elev. ____

Date Completed 7-15-65 Casing: Length ____ Dia. ____

Boring No. B-1 Station & Offset 31+82, 62' Rt. (Rear Right Wingwall) Surface Elev. 572.7'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
572.7	0														
	2														
	4														
567.7	6	7/10			Gray Silt and Clay	1	0	0	1	41	58	33	15	23	
565.2	8	7/13			Brownish-Gray Silt and Clay	2	0	0	0	49	51	33	14	23	
562.7	10	5/6			Gray Clayey Silt	3	0	0	1	52	47	27	10	23	
560.2	12	4/8			Gray Silt and Clay	4	0	1	2	52	45	29	13	18	
557.7	14	5/8			Gray Clayey Silt	5	0	1	5	51	43	25	8	20	
555.2	16	5/9			Gray Gravelly Silt	6	17	5	9	42	27	21	6	12	
552.7	18	7/10			Gray Gravelly Sandy Silt	7	17	6	12	42	23	22	10	15	
550.2	20	7/10			Gray Sandy Silt	8	7	7	26	46	14	NP	NP	15	
547.7	22	10/12			Gray Sandy Gravelly Silt	9	20	8	11	39	22	19	4	15	
	24														
	26														
542.7	28	7/18			Gray Sandy Silt	10	8	10	20	39	23	20	7	19	
	30														
	32														
537.7	34	50* (0.8)			Gray Sandy Silt	11	12	7	16	42	23	22	7	15	
	36														
	38														
532.7	40	50* (0.4)			Gray Gravelly Sandy Clay	12	20	12	14	34	20	28	14	8	
	42														
	44														
527.7	46	16/34			Gray Gravelly Sandy Silt	13	21	11	14	42	12	22	9	12	
	48														
522.7	50	16/22			Gray Sandy Silt	14	0	2	29	45	24	21	8	20	
	52														
	54														
517.7	56	11/14			Gray Silt and Clay	15	0	1	1	36	62	35	14	22	
	58														
512.7	60	50* (0.8)			Gray Silty Sandy Gravel	16	43	30	10	12	5	NP	NP	9	
	62														
	64				BOTTOM OF BORING										
507.7 506.7	66	50*(0.7)			Gray Silty Gravel	17	V	I			U	A	L	14	

*Refusal

LOG OF BORING

Date Started 7-9-65 | Sampler Type SS | Dia. 1 3/8" | Water Elev. 579.0'

Date Completed 7-14-65 | Casing: Length 70' | Dia. 3 1/2"

Boring No. B-8 | Station & Offset 32+46, 48' Lt. (Forward Left Wingwall) | Surface Elev. 603.8'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
603.8	0														
	2														
	4														
598.8	6	7/11			Mottled Brown and Gray Sandy Clay	1	0	5	18	33	44	31	15	19	
	8														
593.8	10	4/5			Brown Gravelly Sandy Clay	2	16	5	17	30	32	30	14	32	
	12														
	14														
588.8	16	15/28			Brown Clayey Gravel	3	V	I	S	U	A	L	28	13	16
	18														
583.8	20														
	22	50* (0.2)			Brown Gravelly Sandy Clay	4	V	I	S	U	A	L	26	11	11
	24														
578.8	26														
576.3	28	13/12			Gray Silty Gravelly Sand	5	29	15	18	25	13	18	4	9	
573.8	30	7/14			Gray Sandy Gravelly Silt	6	24	7	9	36	24	20	6	15	
	32														
571.3	34	8/14			Gray Gravelly Sandy Silt	7	22	9	15	33	21	20	7	12	
568.8	36	9/16			Gray Gravelly Sandy Silt	8	24	16	17	28	15	18	5	12	
566.3	38	11/16			Gray Silty Clay	9	0	2	0	44	54	33	17	25	
563.8	40														
	42	13/19			Gray Silty Clay	10	0	1	0	35	64	40	19	25	
561.3	44	5/11			Gray Silty Clay	11	0	1	3	43	53	33	17	24	
558.8	46	7/12			Gray Silt and Clay	12	5	3	9	44	39	25	12	19	
	48														
553.8	50														
	52	8/10			Gray Clayey Silt	13	0	1	13	53	33	23	9	18	
	54														
548.8	56	9/9			Gray Silt and Clay	14	0	3	11	49	37	25	12	19	
	58														
543.8	60														
	62	10/15			Gray Silty Sandy Gravel	15	49	8	10	24	9	16	2	12	
	64														
538.8	66	29/19			Gray Sandy Gravel	16	V	I		S	U	A	L	2	
	68														
533.8	70														
	72	50* (0.9)			Gray Gravelly Sandy Silt	17	16	9	14	33	28	23	10	11	
	74														
528.8	76														
	78	50* (0.9)			Gray Gravelly Sandy Silt	18	17	7	13	36	27	22	7	12	
					BOTTOM OF BORING										
523.8	80														
523.0		50*(0.8)			Grayish-Brown Silty Sand	19	0	1	80	9	10	NP	NP	23	

*Refusal

HBM 21-JRL

LOG OF BORING

Date Started 7-21-65 | Sampler Type SS | Dia. 1 3/8" | Water Elev. _____

Date Completed 7-22-65 | Casing: Length 25' | Dia. 3 1/2"

Boring No. B-7 | Station & Offset 28+17, 26' Rt. (Rear Pier) | Surface Elev. 602.1'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
602.1	0														
	2														
	4														
597.1	6	9/11			Brown Silty Clay	1	0	1	7	45	47	38	20	20	
	8														
592.1	10	11/16			Brown Gravelly Sandy Silt	2	15	5	14	42	24	24	6	15	
	12														
	14														
587.1	16	50* (0.9)			Brown Gravelly Sandy Silt	3	27	9	24	29	11	NP	NP	12	
	18														
582.1	20	14/15			Gray Sandy Gravelly Silt	4	36	7	13	26	18	20	6	7	
	22														
	24														
577.1	26	8/20			Gray Gravelly Sandy Silt	5	21	9	15	34	21	19	4	12	
	28														
572.1	30	10/12			Gray Clayey Silt	6	0	0	0	63	37	29	9	21	
569.6	32	8/11			Gray Silt and Clay	7	0	1	0	47	52	33	13	21	
567.1	34	8/8			Gray Silt and Clay	8	0	0	0	54	46	31	12	23	
564.6	36	10/11			Gray Silty Clay	9	0	0	0	29	71	42	20	26	
562.1	38	6/6			Gray Silt and Clay	10	0	0	0	49	51	32	12	22	
559.6	40	6/8			Gray Silty Clay	11	0	1	0	42	57	37	16	24	
557.1	42	7/8			Gray Silty Clay	12	0	0	0	40	60	36	18	26	
554.6	44	8/8			Gray Silt and Clay	13	0	0	1	49	50	30	15	25	
552.1	46	9/10			Gray Silt and Clay	14	0	4	8	48	40	28	12	16	
	48														
	50														
547.1	52	13/13			Gray Clayey Silt	15	0	6	14	43	37	26	10	14	
	54														
	56														
542.1	58	10/11			Gray Silt	16	0	0	3	68	29	24	5	19	
	60														
	62														
537.1	64	13/20			Gray Sandy Silt	17	12	7	13	41	27	19	5	33	
	66														
	68														
532.1	70	16/22			Gray Sandy Silt	18	14	9	14	38	25	22	6	12	
	72														
	74														
527.1	76	50* (0.7)			Gray Sandy Silt	19	13	8	16	37	26	27	7	10	
	78														
522.1	80	12/22			Gray Sandy Silt	20	0	1	37	36	26	NP	NP	21	
521.1					BOTTOM OF BORING										

*Refusal

LOG OF BORING

Date Started 7-23-64 | Sampler Type SS | Dia. 1 3/8" | Water Elev. ____
Date Completed 7-28-64 | Casing: Length ____ | Dia. ____
Boring No. B-11 | Station & Offset 29+16, 26' Lt. (Forward Abutment) | Surface Elev. 604.6'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics: % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
604.6	0														
	2														
	4														
599.6	6	8/9			Brown Sandy Silt	1	0	9	24	39	28	26	10	14	
	8														
594.6	10														
	12	9/11			Brown Sandy Clay	2	9	12	17	32	30	30	12	23	
	14														
589.6	16	9/9			Brown Gravelly Clay	3	17	3	9	46	25	30	12	18	
	18														
584.6	20														
	22	50/*			Brown Gravelly Sandy Silt	4	19	9	18	31	23	25	9	11	
	24														
579.6	26	12/17			Gray Sandy Gravelly Silt	5	26	9	17	28	20	21	6	9	
	28														
574.6	30														
	32	13/13			Gray Sandy Gravelly Silt	6	32	8	15	27	18	21	8	12	
572.1	34	10/13			Gray Sandy Gravelly Silt	7	V	I	S	U	A	L	24	10	9
569.6	36	9/12			Gray Sandy Gravelly Silt	8	V	I	S	U	A	L	22	8	10
567.1	38	8/9													
564.6	40														
	42	14/15 B-4			Gray Gravelly Sandy Silt	9	19	9	14	34	24	21	6	13	
562.1	44	13/12			Gray Clayey Silt	10	V	I	S	U	A	L		14	
559.6	46	8/8			Gray Silty Clay	11	0	0	0	41	59	34	16	27	
557.1	48	9/12			Gray Clay	12	0	0	0	30	70	48	25	29	
554.6	50				Gray Silt and Clay	13	0	0	0	51	49	30	14	22	
	52														
	54														
549.6	56	9/9			Gray Sandy Silt	14	0	8	18	38	36	22	8	14	
	58														
544.6	60														
	62	8/8			Gray Silt and Clay	15	0	0	3	46	51	30	12	24	
	64														
539.6	66	10/11			Gray Sandy Gravelly Silt	16	34	7	11	25	23	24	7	11	
	68														
534.6	70														
	72	12/22			Gray Silty Clay and Gravel	17	V		I	S	U	A	L	8	
	74														
529.6	76	50/*			Gray Gravelly Sandy Silt	18	23	8	15	31	23	22	7	13	
	78														
524.6	80														
	82	50* (0.7)			Gray Silty Sand	19	0	10	70	11	9	NP	NP	17	
	84				BOTTOM OF BORING										
519.6															
518.6		16/30			Gray Silt	20	0	0	1	62	37	25	4	21	

*Refusal

LOG OF BORING

Date Started 7-16-64 | Sampler Type SS | Dia. 1 3/8" | Water Elev. ____

Date Completed 7-21-65 | Casing: Length 35' | Dia. 3 1/2"

Boring No. B-13 | Station & Offset 29+98, 50' Rt. (Forward Abutment) | Surface Elev. 601.6'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
601.6	0														
	2														
	4														
596.6	6	6/11			Brown Sandy Silt	1	14	5	12	46	23	27	6	16	
	8														
591.6	10														
	12	10/14			Brown Gravelly Sandy Silt	2	15	6	19	34	26	25	9	13	
	14														
586.6	16	11/13			Gray and Brown Gravelly Sandy Silt	3	17	9	16	34	24	24	9	11	
	18														
581.6	20														
	22	6/9			Brown Silty Sand	4	V		I	S	U	A	L	16	
	24														
576.6	26	7/9			Gray Sandy Gravelly Silt	5	26	9	15	30	20	20	5	12	
	28														
571.6	30														
	32	20/19			Gray Sandy Gravelly Silt	6	35	7	16	27	15	19	3	10	
569.1	34	18/23			Gray Sandy Gravelly Silt	7	V	I	S	U	A	L	21	6	11
566.6	36	13/17			Gray Silty Sandy Gravel	8	V	I	S	U	A	L	22	5	21
564.1	38	14/20			Gray Silt	9	0	1	1	60	38	25	5	14	
561.6	40														
	42	14/21			Gray Silt	10	0	1	1	59	39	24	4	11	
559.1		B-12													
	44	16/20			Gray Clayey Silt	11	0	1	1	57	41	29	10	27	
556.6	46	7/9			Gray Silty Clay	12	0	1	0	47	52	35	16	25	
554.1	48	6/7			Gray Clayey Silt	13	0	0	1	53	46	26	10	8	
551.6	50														
	52	7/9			Gray Silt and Clay	14	0	6	12	41	41	27	12	20	
	54														
546.6	56	9/9			Gray Gravelly Sandy Silt	15	16	7	13	34	30	25	9	14	
	58														
541.6	60														
	62	10/11			Gray Silt	16	0	1	12	62	25	20	4	25	
	64														
536.6	66	9/13			Gray Sandy Gravelly Silt	17	27	7	11	44	11	NP	NP	8	
	68														
531.6	70														
	72	50* (0.9)			Gray Gravelly Sandy Silt	18	16	8	14	36	26	23	8	8	
	74														
526.6	76	16/21			Gray Sandy Gravelly Silt	19	29	7	13	26	25	25	10	17	
	78														
521.6	80				BOTTOM OF BORING										
520.6		21/23			Gray Silt	20	0	1	8	65	26	23	3	12	

*Refusal

HAM.471-0.30

4/5

DATE STARTED 6-18-70 SAMPLER:TYPE SS DIA. 2'' O.D. WATER ELEVATION
DATE COMPLETED 6/18/70 CASING:LENGTH HSA DIA.3.25'' I.D. IMMEDIATE None
BORING NUMBER P-8-1 CORE BARREL:TYPE NXM SIZE AFTER HRS Backfilled
STATION & OFFSET 41/14 Ramp GG 5.0' Right SURFACE ELEVATION 591.0

Elev.	Depth	Sta.Pen. (N)	Description	Sa. No.	Physical Characteristics % Gas	% CG	% SG	% Silt	% Clay	LL	PI	WC
591.0	0											
588.5	2	4-5-7	Brown silty clay (fill), moist stiff	1	11	10	8	31	42	43	23	15
586.0	4	6-5-4	Brown clayey gravelly sand (fill), moist - loose	2	27	19	14	20	20	32	14	17
	6	9-4-3	Gray and brown sandy silty clay (fill), moist - medium stiff	3	13	21	12	26	28	34	16	18
	8											
581.0	10	[illegible]	Gray and brown sandy silty clay (fill), moist - stiff	4	9	15	7	29	41	40	21	17
578.5	12	4-6-17	Brown and gray sandy silty clay. (fill), moist - medium stiff	5	16	14	7	23	35	41	21	21
576.0	14	5-[illegible]	Dark brown clayey gravelly sand with cinders and brick fragments (fill), moist - very dense	6	25	24	12	16	21	34	14	17
[illegible]	16	[illegible]-20-11	Brick fragments [illegible]	7		Visual						
	18											
571.0	20	6-11-14	Brown and gray sandy silty clay with brick fragments (fill), moist - stiff	8	13	21	12	17	37	42	21	23
568.5	22	5-5-16	Brown and gray sandy silty clay with shale fragments (fill), moist - very stiff	9	9	14	6	30	41	44	24	22
566.0	24	5-7-11	Cinders brick fragments some clay (fill), moist - medium dense	10		Visual						
	26	[illegible]-9-17	Brown and gray silty clay, highly weathered shale, moist - hard	11	7	7	4	46	36	37	17	18
	28											
561.0	30											
560.0	32	55-95	Gray shale	12		Visual						
555.5	34	69%	Interbedded gray shale and gray limestone. Approx. 35% shale, 15% limestone. Shale silty calcareous, occasional trace fossiliferous, medium tough to tough. Trace to some probable soft. Limestone occurs well in 1'' to 2'' layers. Is crystalline, trace shaley, fossiliferous, occasionally jointed, hard.									
554.0	36	25%	Gray shale with gray limestone. Approx. 15% shale and 25% limestone. (Entire recovery limestone) Assume shale silty calcareous, soft to medium tough. Limestone occurs as 4-1/2'' layers, is crystalline, fossiliferous, hard, (Recovery poor).									
	38	Rec.	BORING COMPLETED									

REVISED 10/15/70
12/15/70

THE H.C. NUTTING CO.
SOIL ENGINEERS
AIRPORT ROAD CINCINNATI, OHIO 45226

STRUCTURE FOUNDATION INVESTIGATION
RETAINING WALL NO. 8
SEC. HAM.-471-0.30 (BORING P-8-1)

BORING DATA

		REVISED BY	DATE
		[illegible]	10/5/70

DATE STARTED 6/16/70 SAMPLER: TYPE SS DIA. 2" O.D. WATER ELEVATION
DATE COMPLETED 6/17/70 CASING: LENGTH HSA DIA. 3.5" I.D. IMMEDIATE None
BORING NUMBER B-10-1 CORE BARREL: TYPE NXW SIZE AFTER HRS, Backfilled
STATION & OFFSET 43+11 Ramp GG 27.5' Left SURFACE ELEVATION 585.0

Elev.	Depth	Sta. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
585.0	0											
	2	3-5-5	Dark brown sandy lean clay, some cinders (fill), moist loose	1	18	24	10	22	25	37	19	18
580.0	4											
	6	4-5-6	Brown lean clay, moist - stiff	2	3	3	0	32	59	60	23	23
	8											
	10											
	12	7-9-13	Brown lean clay, moist - very stiff	3	0	2	3	39	56	45	25	20
	14	26-18-12	do do do	4	17	8	3	30	42	44	24	19
	16	12-11-23	Brown lean clay, moist - hard	5	2	5	3	38	54	45	25	20
567.5	18											
565.5	20	13-33-40	Brown and gray lean clay, highly weathered shale, moist - hard	6	6	4	2	39	49	44	25	17
562.5	22	50%	Gray shale (trace to some brown) with gray limestone layers. Approx. 75% shale, 25% limestone. Shale, silty, calcareous, probable soft to medium tough. Limestone occurs in 1½ to 3" layers, is crystalline, trace shaly, fossiliferous, hard.									
560.5	24	50%	Gray shale, silty, crystalline, often fossiliferous, soft to medium tough, trace / tough.									
	26	Recovery	BORING COMPLETED									

DATE STARTED 8/13/70 SAMPLER: TYPE SS DIA. 2" O.D. WATER ELEVATION

DATE COMPLETED 8/13/70 CASING: LENGTH HSA DIA. 3.5" I.D. IMMEDIATE None

BORING NUMBER R-10-2 CORE BARREL: TYPE NXM SIZE AFTER 24 HRS. 573.5 (9.5')

STATION & OFFSET 44+57 Ramp GG 11.0' Left SURFACE ELEVATION 583.0

Elev.	Depth	Sta. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
583.0	0											
580.5	2	17-10-15	Clay, rock and brick fragments, some cinders (fill), moist - medium dense	1		Visual						
578.0	4	9-12-18	Dark brown silty clay, trace cinders and rock fragments (fill), moist - very stiff	2	23	8	4	27	38	47	25	23
	6	7-5-9	Brown lean clay, trace limestone fragments, moist - stiff	3	1	5	5	37	52	47	26	22
	8											
573.0	10											
570.5	12	10-12-11	Brown silty clay, highly weathered shale, moist - very stiff	4	2	4	4	40	50	47	25	16
	14	23-43-93	Brown and gray weathered shale with limestone layers, very hard	5	Visual							
566.0	16	125	do do do	6	Visual							
	18		Interbedded gray shale and gray limestone. Approximately 85% shale and 15% limestone. Shale, silty, calcareous, sometimes fossiliferous, occasionally jointed, tough. Limestone occurs primarily within top third of core, in ½" to 4" layers. Is crystalline, fossiliferous, sometimes jointed with occasional iron-oxide staining, hard.									
	20											
561.0	22	80% Recovery										

BORING COMPLETED

THE H. C. NUTTING COMPANY
TESTING ENGINEERS AND SOIL CONSULTANTS • SINCE 1921
4120 AIRPORT ROAD • CINCINNATI, OHIO 45226 • TEL. 513-321-5816

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TEST BORING REPORT

CLIENT City of Cincinnati, Ohio ORDER No. 97.710

PROJECT Pedestrian Bridge over Dana Avenue HOLE No. 4

LOCATION Station 11+22, Centerline

DRILLER B.R. Ball DRILL No. 28 DATE STARTED 1-13-73

ELEVATION REFERENCE City of Cincinnati, Ohio DATE COMPLETED 1-13-73

CASING: DIAMETER 3.5"I.D. Hollow Stem Augers HAMMER WT. ____ FALL ____

SAMPLER: DIAMETER & TYPE 2"O.D. Split Spoon HAMMER WT. 140# FALL 30"

DEPTH TO WATER: IMMEDIATE 28.0' UPON COMPLETION 23.0'

DEPTH TO WATER ____ DAYS AFTER COMPLETION Backfilled-Upon Completion WATER USED IN DRILLING No

ELEVATION	DEPTH		DESCRIPTION OF MATERIALS	SAMPLE No.	SAMPLE DEPTH	TYPE OF SAMPLE	BLOWS PER 6" ON SAMPLER or % Core Rec.	Recovery
694.3'	0'							
		1.0'	Topsoil and brown and gray silty clay, wet - medium stiff	1	0-1	SS	5-2	8"
693.3	1.0'							
		4.0'	Brown and gray silty clay, moist - soft to medium stiff	2	1-1.5	SS	2	6"
689.3	5.0'			3	5-6.5	SS	6-9-10	12"
		5.0'	Brown and gray silty clay with concretions, moist - very stiff	4	7.5-9	SS	7-8-9	18"
684.3	10.0'			5	10-11.5	SS	9-11-13	18"
		2.5'	Mottled brown and gray sandy silty clay with some fine gravel, moist - very stiff					
681.8	12.5'			6	12.5-14	SS	10-12-14	18"
		2.5'	Brown and gray sandy silty clay with some fine gravel, moist - very stiff					
679.3	15.0'			7	15-16.5	SS	9-13-18	18"

REMARKS:

Samples recovered from this test boring are available for inspection, which is strongly recommended. The company assumes no responsibility for interpretations made by others of load bearing, stability, excavating or other physical characteristics of materials penetrated in the boring.

Respectfully submitted,
THE H. C. NUTTING CO.
By M.F. Nethero

Form 504A—10-58

PROJECT Pedestrian Bridge over Dana Avenue HOLE No. 4

ELEVATION	DEPTH	DESCRIPTION OF MATERIALS	SAMPLE No.	SAMPLE DEPTH	TYPE OF SAMPLE	BLOWS PER 6" ON SAMPLER or % Core Rec.	Rec.
679.3'	15.0'						
		5.0' Gray and brown sandy silty clay with some fine gravel, moist - hard to very stiff	8	17.5-19	SS	8-10-9	18"
674.3	20.0'		9	20-20.5	SS	6	6"
		15.0' Gray sandy silty clay with some fine gravel, moist - stiff to very stiff	10	20.5-21.5	SS	7-8	12"
			11	25-26.5	SS	5-6-7	18"
			12	30-31.5	SS	6-7-10	18"
659.3	35.0'		13	35-36.5	SS	9-27-34	18"
		5.0' Gray silty fine to coarse sand, gravel and rock fragments, wet - very dense					
654.3	40.0'		14	40-41.5	SS	10-13-11	18"
		10.0' Gray sandy silty clay with some gravel, moist - very stiff to hard	15	45-46.5	SS	8-11-17	18"
			16	48.5-50	SS	9-12-15	18"
644.3	50.0'						
		BORING COMPLETED					
		REMARKS: Gas pocket at 35.0' blew out water from augers to a depth of 43.0', was still flowing when hole was backfilled.					

THE H. C. NUTTING COMPANY
TESTING ENGINEERS AND SOIL CONSULTANTS • SINCE 1921
4120 AIRPORT ROAD • CINCINNATI, OHIO 45226 • TEL. 513-321-5816

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TEST BORING REPORT

CLIENT City of Cincinnati, Ohio ORDER No. 97.710

PROJECT Pedestrian Bridge over Dana Avenue HOLE No. 5

LOCATION Station 11+88.5, Centerline

DRILLER B.R. Ball DRILL No. 28 DATE STARTED 1-14-73

ELEVATION REFERENCE City of Cincinnati, Ohio DATE COMPLETED 1-14-73
CASING: DIAMETER 2.25"I.D. Hollow Stem Augers HAMMER WT. ____ FALL ____
SAMPLER: DIAMETER & TYPE 2"O.D. Split Spoon HAMMER WT. 140# FALL 30"
DEPTH TO WATER: IMMEDIATE 28.5' UPON COMPLETION 20.0'
DEPTH TO WATER ____ DAYS AFTER COMPLETION Backfilled-Upon Completion WATER USED IN DRILLING No

ELEVATION	DEPTH	DESCRIPTION OF MATERIALS	SAMPLE No.	SAMPLE DEPTH	TYPE OF SAMPLE	BLOWS PER 6" ON SAMPLER or % Core Rec.	Recovery
692.6'	0'						
		1.0' Dark brown topsoil, (frozen) wet	1	0-1	SS	4-2	10"
691.6	1.0'						
		1.5' Brown and gray silty clay, moist - soft to medium stiff	2	1-1.5	SS	2	6"
690.1	2.5'						
		5.0' Brown and gray silty clay, moist - very stiff	3	2.5-4	SS	5-7-9	18"
			4	5-6.5	SS	7-9-10	18"
685.1	7.5'						
		2.5' Brown and gray silty clay with concretions, moist -very stiff	5	7.5-9	SS	8-9-12	18"
682.6	10.0'						
		2.5' Gray and brown sandy silty clay, with some fine to coarse gravel and rock fragments, moist - hard	6	10-10.5	SS	No 13-5 Penetration	6"
680.1	12.5'						
			7	12.5-14	SS	16-19-23	18"

REMARKS:

Samples recovered from this test boring are available for inspection, which is strongly recommended. The company assumes no responsibility for interpretations made by others of load bearing, stability, excavating or other physical characteristics of materials penetrated in the boring.

Respectfully submitted,
THE H. C. NUTTING CO.
By M. F. Nutting

Form 504A—10-58

PROJECT Pedestrian Bridge over Dana Avenue HOLE No. 5

ELEVATION	DEPTH	DESCRIPTION OF MATERIALS	SAMPLE No.	SAMPLE DEPTH	TYPE OF SAMPLE	BLOWS PER 6" ON SAMPLER or % Core Rec.	Rec.
680.1'	12.5'						
		7.5' Brown and gray sandy silty clay with some gravel, moist - hard	8	15-16.5	SS	14-17-19	18"
			9	17.5-19	SS	13-16-22	18"
672.6	20.0'		10	20-21.5	SS	10-9-8	4"
		15.0' Gray sandy silty clay with some gravel and rock fragments, moist - very stiff to stiff	11	25-26.5	SS	7-8-9	18"
			12	30-31.5	SS	5-6-7	18"
657.6	35.0'		13	35-36.5	SS	9-16-18	14"
		5.0' Gray silty fine to coarse sand, gravel and rock fragments, wet - dense					
652.6	40.0'		14	40-41.5	SS	8-11-13	18"
		10.0' Gray sandy silty clay with some fine gravel, moist-very stiff	15	45-46.5	SS	10-13-16	18"
			16	48.5-50	SS	9-11-14	18"
642.6	50.0'						
		BORING COMPLETED					
		REMARKS: Gas pocket at 35.0' blew out water to top of augers; was still flowing when hole was backfilled.					

State of Ohio
Department of Highways
Testing Laboratory

LOG OF BORING

Date Started 12-5-63 Sampler Type S.S Dia. 1 3/8" Water Elev. _____
Date Completed 12-12-63 Casing Length 40.0 Dia. 3 1/2"

Project Identification: Hamilton
HAM-71-0.93
Retaining Wall

Boring No. B-1 Station & Offset _____ Surface Elev. 629.9

Elev.	Depth	Std. Pen. (N)	Description	Field No.	Lab. Nos. So.	Physical Characteristics % Agg.	% C.S	% F.S	% Silt	% Clay	L.L.	Pl.	W.C.	SHTL Class
629.8	0													
627.3	2	4/5												
	4													
624.8	6	7/7												
622.3	8	9/8	Fill Material-Cinders, Ashes, Brick Bats, Stone Fragments with Brown Clayey Silt			V	I	S	U	A	L			
619.	10	4/4												
617.3	12	4/4												
614.8	14	6/4												
612.3	16	4/5												
609.8	18	8/8												
	20													
	22													
	24													
604.8	26	17/10												
602.3	28	4/3												
599.8	30	8/10	Gray Sandy Clay and Stone Fragments	11	41151	41	9	6	16	28	41	19	20	A-?-6
597.3	32	6/9	Brown Sandy Clay with some Stone Fragments	12	41152	25	9	14	24	28	47	24	34	A-7-6
594.8	34	7/10	Gray Clay	13	41153	0	3	3	33	61	51	25	22	A-?-6
	36													

Particle Sizes: Agg. = >2.00mm, Coarse Sand = 2.00 - 0.42mm, Fine Sand = 0.42 - 0.074mm, Silt = 0.074 - 0.005mm, Clay = < 0.005mm

SHEET 2 of 6 sheets

Boring No. B-1 Station & Offset _____ Surface Elev. 629.8 Project: HAM-71-0.93

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Field No.	Lab. Nos. So.	Physical Characteristics % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	$MTL Class
592.3	38	5/8			Gray Clay	14	41154	9	3	2	34	52	55	30	32	A-7-6
589.8	40	7/12			Brownish Gray Gravelly Clay	15	41155	20	9	6	21	44	51	28	27	A-7-6
587.3	42	13/14			Brown and Gray Clay with some Stone Fragments	16	41156	28	2	1	32	37	46	22	18	A-7-6
584.8	44	6/8			Greenish Grey Clay with some Stone Fragments	17	41157	32	2	1	26	39	44	21	24	A-7-6
582.3	46	8/12			Greenish Gray Clay and Stone Fragments	18	41158	48	3	1	15	33	PL=22		25	
579.8	48	11/12			Brown Sandy Clay with some Stone Fragments	19	41159	29	13	5	19	34	51	28	14	A-7-6
577.3	50															
	52		2.4	0.1	Top of Rock											
	54				Shale, gray, soft to firm, calcareous, moderately fissile, in beds 0.5' to 1.0' thick, and separated by soft clay seams, with limestone interbeds (bluish gray, hard, dense, 0.3' thick, comprising 10% of the interval) Core loss 53%.											
	56															
	58		1.1	3.9												
569.8	60															
	62				Bottom of Boring											
	64															
	66															
	68															
	70															
	72															
	74															
	76															
	78															
	80															

SHEET 3 of 9 sheets

State of Ohio
Department of Highways
Testing Laboratory

LOG OF BORING

Date Started 12/12/63 Sampler: Type S.S Dia 1 3/8" Water Elev. _____
Date Completed 12/19/63 Casing: Length 40.0 Dia 3 1/2"

Project Identification: Hamilton
HAM-71-0.93
Retaining Wall

Boring No. B-2 Station & Offset _____ Surface Elev. 630.7

Elev.	Depth	Std. Pen. (N)	Description	Field No.	Lab. Nos. So.	Physical Characteristics % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	Pl.	W.C.	SHTL Class
630.7	0													
	2													
628.2	4	6/7												
625.7	6	4/6												
	8													
620.7	10	4/4	Fill Material-Cinders, Ashes, Brick Bats, Stone Fragments with little Gray Silty Clay			V	I	S	U	A	L			
	12													
	14													
615.7	16	5/5												
613.2	18	3/3												
610.7	20	3/4												
	22													
608.2	24	9/11												
605.7	26	12/17												
603.2	28	8/11	Brown Clay	9	41632	0	1	2	42	55	47	22	23	
600.7	30	9/11	Brown Clay	10	41633	0	2	2	39	57	53	28	23	
	32													
598.2	34	3/5	Brown Clay	11	41634	0	4	4	39	53	44	21	34	
595.7	36	5/6	Brown Clay	12	41635	0	2	2	44	52	53	28	28	

Depth in Feet

Particle Sizes Agg = >2.00mm, Coarse Sand = 2.00 - 0.42mm, Fine Sand = 0.42 - 0.074mm, Silt = 0.074 - 0.005mm, Clay = < 0.005mm

Boring No. B-2 Station & Offset _____ Surface Elev. 630.7 Project: HAM-71-0.93

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Field No.	Lab. Nos. So.	Physical Characteristics % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.L.	W.C.	$HTL Class
	38															
590.7	40	11/14			Mottled Brown and Gray Silt and Clay	13	41636	0	1	3	50	46	36	14	24	
	42															
588.7	44	50/			Brownish Gray Clay	14	41637	0	0	1	40	59	50	24	22	
585.4	46	50*			Brown Clay	15	41638	0	1	1	47	51	46	21	16	
	48				Top of Rock Clay shale, gray, extremely weathered											
	50		1.1	1.4												
	52				Clay shale, gray, soft to firm, calcareous, subfissile to fissile, in beds 0.6' thick, and separated by soft clay seams, with few limestone interbeds (0.3' thick, comprising 5% of the interval) and few fossils.												
	54		2.9	2.1	Core loss 47%.											
575.7	56				Bottom of Boring											
	58				* 0.3' penetration											
	60															
	62															
	64															
	66															
	68															
	70															
	72															
	74															
	76															
	78															
	80															

SHEET 5 of 9 sheets

State of Ohio
Department of Highways
Testing Laboratory

LOG OF BORING

Date Started 1/7/64
Date Completed 1/8/64
Sampler Type S.S. Dia. 1 3/8"
Casing Length 30.0' Dia. 3 1/2"
Water Elev. ———

Project Identification Hamilton
HAM-71-6.93
Retaining Wall

Boring No. B-3 Station & Offset ———
Surface Elev. 631.7

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Field No.	Lab. Nos. So	Physical Characteristics % Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	Pl.	W.C.	SHTL. Class
631.7	0															
	2															
629.2		4/5														
	4															
626.7	6	5/5			Fill Material-Brownish Gray Silty Clay			V	I	S	U	A	L			
624.2	8	6/6			with Cinders, Brick Bats and Stone Fragments											
621.7	10															
	12	6/5														
619.2																
	14	4/4														
	16															
614.2	18	8/8			Brownish Gray Clay with some Stone Fragments	6	42244	28	6	2	22	42	43	18	11	A-7-6
611.7	20	4/9			Brown and Gray Clay with some Stone Fragments	7	42245	26	7	1	29	37	42	21	14	A-7-6
	22															
	24															
606.7	26	11/14			Gray Clay with little Stone Fragments	8	42246	15	3	4	33	45	39	15	15	A-6a
604.2	28	6/10			Brown and Gray Clayey Sand with some Stone Fragments	9	42247	27	29	5	12	27	39	19	18	A-6b
601.7	30	15/16			Gray Clay with some Stone Fragments	10	42248	25	2	2	24	47	48	24	12	A-7-6
599.2	32	15/21			Gray Clay with some Stone Fragments	11	42249	36	5	3	17	39	46	22	14	A-7-6
596.7	34				Top of Rock											
	36															

Particle Sizes: Agg= >2.00mm, Coarse Sand=2.00-0.42mm, Fine Sand=0.42-0.074mm, Silt=0.074-0.005mm, Clay= <0.005mm

SHEET 2 OF 2 SHEETS

Boring No. B-3 Station & Offset _____ Surface Elev 631.7 Project: HAM-71-0.93

Elev	Depth	Rec ft	Loss ft	Description
	38	2.4	2.6	Limestone, grey, fossiliferous, coarsely-crystalline, in beds 0.1' to 0.4' thick, hard. Core loss 4%.
	40			
	42			Clay, mottled grecnish-gray to gray, calcareous, with few fossils. Core loss 95%.
	44	0.5	4.5	
	46			Limestone, grey, fossiliferous, coarsely-crystalline, in beds 0.5' to 0.2" thick, hard, jointed in part, with calcareous clay seams. Core loss 13%.
	48	2.9	2.1	Shale, gray, argillaceous, slightly calcareous, fissile, firm, crumbly in part. Core loss 96%.
581.7	50			
	52			Bottom of Boring
	54			
	56			
	58			
	60			
	62			
	64			
	66			
	68			
	70			
	72			
	74			
	76			
	78			
	80			

Form FE-2b

State of Ohio
Department of Highways
Testing Laboratory

LOG OF BORING

Date Started 1/21/64 Sampler Type S.S. Dia. 1 3/8" Water Elev. _____
Date Completed 1/22/64 Casing Length 15.0 Dia. 3 1/2"

Project Identification: Hamilton
HAM-71-0.93
Retaining Wall

Boring No. B-4 Station & Offset _____ Surface Elev. 632.0

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Field No.	Lab. Nos.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class
632.0	0															
629.5	2															
	4	11/10														
627.0	6	6/9			Fill Material - Brick Bats, Cinders with Brown Clayey Silt			V	I	S	U	A	L			
	8															
622.0	10															
	12	5/6														
619.5	14	6/6														
617.0	16	7/9			Brown and Gray Clay with Some Stone Fragments	5	42812	26	3	2	27	32	35	12	19	A-6-a
614.5	18	8/10			Brown and Gray Silt and Clay	6	42813	0	2	2	46	50	34	13	15	A-6-a
612.0	20	6/8			Brownish Gray Clay with little Stone Fragments	7	42814	18	5	5	23	49	38	16	24	A-6-b
609.5	22	6/6			Brownish Gray Clay and Stone Fragments	8	42815	40	5	5	20	30	41	19	18	A-7-6
607.0	24	10/12			Gray Clay with little Stone Fragments	9	42816	16	2	1	30	51	48	25	20	A-7-6
604.5	26	8/8			Brown and Gray Clay	10	42817	0	2	2	33	63	45	21	18	A-7-6
602.0	28	6/9 *			Brown and Gray Clay and Stone Fragments	11	42818	48	3	3	21	25	49	22	33	A-7-6
599.5	30	17/21			Brown Clay	12	42819	0	1	1	35	63	53	28	20	A-7-6
597.0	32	50*			Brown Clay	13	42820	0	1	1	41	57	45	20	21	A-7-6
596.2	34															
	36															

Particle Sizes: Agg= >2.00mm, Coarse Sand=2.00-0.42mm, Fine Sand=0.42-0.074mm, Silt=0.074-0.005mm, Clay= <0.005mm

* 0.3 penetration

Top of Rock

Boring No. B-4 Station & Offset _____ Surface Elev. 632.0 Project: HAM-71-0.93

Elev	Depth	Rec ft	Loss ft	Description
594.5	38	2.5	1.5	Shale, brown, argillaceous, with clay seams, calcareous with few thin limestone beds, medium-firm, fissile, weathered. Core loss 28%
	40			
	42	3.0	2.0	Shale, gray argillaceous, calcareous, fossiliferous, with clay seams, fissile, firm to medium-firm with few limestone interbeds (gray, hard, fossiliferous, max 0.3' thick, comprising 8% of the interval). Core loss 40%.
592.0	44			
	46			Bottom of Boring
	48			
	50			
	52			
	54			
	56			
	58			
	60			
	62			
	64			
	66			
	68			
	70			
	72			
	74			
	76			
	78			
	80			

Form FE-2h

State of Ohio
Department of Highways
Testing Laboratory

LOG OF BORING

Date Started 9-25-68 Sampler: Type SS Dia. 1 3/8" Water Elev. _____
Date Completed 9-26-68 Casing: Length _____ Dia. _____

Project Identification: HAMILTON
HAM-71-(1,)(2.51)
Landslide Investigation

Boring No. 1 Station & Offset 12+75, 55'Lt. Surface Elev. 580.2'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Field No.	Lab Nos. Sa	Physical Characteristics: % Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class
580.2	0															
	2															
	4															
575.2																
573.7	6	15/31			Brown Silty Clay	1	78788	14	5	4	29	48	42	17	19	A-7-6
	8				↳ TOP OF ROCK											
	10		1.5	2.0	Claystone, light-brown, hard, dense 2" to 3" layers of crystalline limestone											
	12				interbedded with yellow, calcareous clay shale, weathered at top of unit.											
566.2	14		3.4	1.1	Core loss 48%											
	16															
	18		4.0	1.0	Shale, gray, calcareous, silty, hard, interbedded with clay shale seams,											
	20				5" limestone seams at elevations 564.7' and 558.2'. Core loss 13%											
	22															
	24		4.6	0.4												
555.2																
	26				↳ BOTTOM OF BORING											
	28															
	30															
	32															
	34															
	36															

SHEET of sheets

Particle Sizes Agg: >2.00mm, Coarse Sand = 2.00 - 0.42mm, Fine Sand = 0.42-0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

State of Ohio
Department of Highways
Testing Laboratory

LOG OF BORING

Date Started 10-1-68 Sampler: Type SS Dia. 1 3/8" Water Elev. ———
Date Completed 10-1-68 Casing: Length 10.0' Dia. 3 1/2"

Project Identification: HAMILTON
HAM - 71 - (1.56) (2.51)
Landslide Investigation

Boring No. 2 Station & Offset 12+75, BL. Surface Elev. 599.8'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Field No.	Lab. Nos. Sa	Physical Characteristics % Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class
599.8	0															
	2															
597.3		2/3			Brown Sandy Silt with Little Cinders and Stone Fragments	1	79142	16	15	11	26	32	-	-	25	Visual
594.8	4															
	6	2/3			Brown Cinders, Sand and Silt	2	79143	27	17	28	13	15	NP	NP	21	A-2-4
592.3	8	4/5			Gray Silty Clay with Little Stone Fragments	3	79144	12	4	3	38	43	41	15	24	A-7-6
589.8	10															
	12	4/9			Gray Silty Clay with Little Stone Fragments	4	79145	-	-	-	-	-	-	-	18	M.O.*
587.3	14	3/5			Gray Silty Clay with Little Stone Fragments	5	79146						40	15	26	Visual
584.8	16	4/5			Brown Silty Clay with Little Shale Fragments	6	79147	11	1	2	37	49	44	20	27	A-7-6
582.3	18	7/7			Brown Silty Clay with Little Shale Fragments	7	79148	18	1	2	31	48	45	22	26	A-7-6
579.8	20	4/8			Brownish-Gray Silty Clay	8	79149	0	2	3	28	67	48	24	24	A-7-6
	22															
	24															
573.8	26				▽ TOP OF ROCK											
	28		4.2	0.8	Shale, gray, medium-firm with gray hard dense limestone interbeds comprising 20% of the interval, badly broken and jointed. Core Loss 16%.											
569.8	30															
	32				*Moisture only ∟ BOTTOM OF BORING											
	34															
	36															

Particle Sizes. Agg: >2.00mm, Coarse Sand = 2.00 - 0.42mm, Fine Sand = 0.42-0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

State of Ohio
Department of Highways
Testing Laboratory

(3/5)

LOG OF BORING

Date Started 10-1-68 Sampler: Type SS Dia 1 3/8" Water Elev ———
Date Completed 10-2-68 Casing: Length 10.0' Dia. 3 1/2"

Project Identification: HAMILTON
HAM - 71 - (1.56) (2.51)
Landslide Investigation

Boring No. 3 Station & Offset 12+75, 41' Rt. Surface Elev. 602.5'

Elev	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Field No.	Lab. Nos. Sa	Physical Characteristics % Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class
602.5	0															
	2															
600.0		4/5			Brown Silty Clay	1	79138	0	3	3	32	62	41	14	25	A-7-6
	4															
597.0	6	6*			Brown Silty Clay with Little Shale Fragments	2	79139	11	3	4	34	48	39	16	21	A-6b
					← TOP OF WEATHERED ROCK											
	8															
592.5	10		0.8	1.0												
		30* (0.6')			Brown Weathered Shale	3	79140	0	2	3	54	4	38	14	15	Visual
590.0	12		0.3	2.2												
		20* (0.2')			Brown Weathered Shale	4	79141	-	-	-	-	-	45	19	17	Visual
587.5	14		1.1	1.2	← TOP OF ROCK											
	16															
	18		5.0	0.0	Shale, gray, medium-firm, with gray hard dense limestone interbeds comprising 20% of the interval, badly broken and jointed. No Core Loss.											
582.5	20															
	22				*Refusal											
					← BOTTOM OF BORING											
	24															
	26															
	28															
	30															
	32															
	34															
	36															

SHEET of sheets

Particle Sizes Agg: >2.00mm, Coarse Sand = 2.00 - 0.42mm, Fine Sand = 0.42–0.074 mm, Silt = 0.074 – 0.005 mm, Clay = <0.005 mm

State of Ohio
Department of Highways
Testing Laboratory

LOG OF BORING

Date Started 9-27-68 Sampler: Type SS Dia. 1 3/8" Water Elev. _____
Date Completed 9-30-68 Casing: Length _____ Dia. _____

Project Identification: HAMILTON
HAM - 71 - (1.56) (2.51)
Landslide Investigation

Boring No. 5 Station & Offset 13+50, BL. Surface Elev. 600.0'

Elev.	Depth	Std Pen (N)	Rec. ft.	Loss ft.	Description	Field No.	Lab Nos. Sa	Physical Characteristics % Agg	% C.S	% F.S	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class
600.0	0															
	2															
597.5																
	4	12/3			Brownish-Gray Stone Fragments with Silty Clay	1	78790	50	8	4	14	24	35	13	19	A-6a
596.0		2/2			Gray Silt and Clay with Some Stone Fragments	2	78791	27	6	4	26	37	35	13	25	A-6a
595.0	6	1/2			Gray Silty Clay with Some Stone Fragments	3	78792	30	3	2	32	33	40	16	30	A-6b
594.0		4/4			Gray Silty Clay with Some Stone Fragments	4	78793	23	6	2	32	37	42	17	40	A-7-6
	8															
590.0	10															
	12	2/6			Brown Silty Clay with Little Stone Fragments	5	78794	17	2	2	26	53	44	18	24	A-7-6
587.5																
	14	2/5			Brown Clay	6	78795	0	1	2	29	68	43	18	24	A-7-6
585.0																
	16	3/8			Brown Stone Fragments with Silt and Clay	7	78796	40	3	3	19	35	47	20	19	A-7-6
582.5																
	18	8/15			Brown Silty Clay with Little Stone Fragments	8	78797	15	1	1	34	49	48	21	19	A-7-6
580.0	20															
		10/22			Brown Silty Clay, Trace of Stone Fragments	9	78798	7	2	3	29	59	46	19	15	A-7-6
	22															
	24															
575.0																
	26	30*			Gray Silt and Clay with Some Gravel	10	78799	25	2	1	30	42	36	14	15	A-6a
		(0.3')			↳ TOP OF ROCK											
	28		4.1	0.6												
	30				Shale, gray, medium-firm with gray hard dense limestone interbeds comprising 20% of the interval. Badly broken and jointed.											
	32		4.4	0.6	Core Loss 12%.											
	34															
565.0																
	36				*Refusal ↳ BOTTOM OF BORING											

SHEET of sheets

Particle Sizes Agg: >2.00mm, Coarse Sand = 2.00 - 0.42mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

State of Ohio
Department of Highways
Testing Laboratory

LOG OF BORING

Date Started 9-26-68 Sampler: Type SS Dia. 1 3/8" Water Elev. ———
Date Completed 9-26-68 Casing: Length ——— Dia. ———

Project Identification: HAMILTON
HAM-71-(1.[illegible])(2.51)
Landslide Investigation

Boring No. 4 Station & Offset 13+50, 55'Lt. Surface Elev. 580.7'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Field No.	Lab. Nos. Sa	Physical Characteristics: % Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class
580.7	0															
	2															
	4															
575.7	6	6/10			Brown Silty Clay with some Gravel	1	78787	24	7	4	19	46	41	17	24	A-7-6
573.5	8				℄ TOP OF ROCK											
	10		1.8	1.0	Claystone, light-brown, silty, calcareous, moist, weathered at top, interbedded with 5" of hard, crystalline limestone layers.											
	12															
566.7	14		4.5	0.5	Core loss 13%											
	16															
	18		5.0	0.0	Shale, light-gray, calcareous, silty clayey in part; with several 3" to 4" crystalline, hard, limestone beds.											
	20															
	22				Core loss 4%											
	24		5.0	0.0												
555.7	26				↑ BOTTOM OF BORING											
	28															
	30															
	32															
	34															
	36															

SHEET of sheets

Particle Sizes. Agg: >2.00mm, Coarse Sand = 2.00 - 0.42mm, Fine Sand = 0.42–0.074 mm, Silt = 0.074 – 0.005 mm, Clay =<0.005 mm

LOG OF BORING Order No. 99.990, 9-24-68 JH

DATE STARTED 6-5-68 SAMPLER: TYPE SPLIT SPOON DIA. 2"O.D. WATER ELEVATION

DATE COMPLETED 6-5-68 CASING: LENGTH _____ DIA. _____ IMMEDIATE NONE

BORING NUMBER R-5-1 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER BACKFILLED HRS. _____

STATION & OFFSET 302+48, 106' RIGHT, NORTHEAST EXWY. HAM 71-3.61 SURFACE ELEVATION 727.4'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	L.L	PI	W.C
727.4	0											
726.4			BLACKTOP AND GRAVEL	VISUAL								
	2	16-54-59	BROWN HIGHLY WEATHERED SHALE WITH LIMESTONE FRAGMENTS, SLIGHTLY MOIST - HARD	1	24	3	6	33	34	35	16	15
	4											
722.4												
	6	34-74	BROWN HIGHLY WEATHERED SHALE, SLIGHTLY MOIST - HARD	2	0	2	8	46	44	34	15	13
	8											
	10											
	12	46-55	DO DO DO	3	0	5	4	46	45	36	16	13
714.9												
	14	100%	INTERBEDDED LIGHT BROWN WEATHERED SHALE AND LIGHT GRAY LIMESTONE, APPROX. 60% SHALE, 40% LIMESTONE. SHALE CALCAREOUS, NON-FOSSILIFEROUS, SOME PROBABLE SOFT TO MEDIUM TOUGH. DISTRIBUTED IN 1-1/4" TO 5" LAYERS, IS CRYSTALLINE, FOSSILIFEROUS, HARD; MOST LAYERS EXHIBIT HIGH-ANGLE JOINTING WITH IRON-OXIDE STAINING.									
711.4	16											
	18	100%	INTERBEDDED LIGHT BROWN AND LIGHT GRAY WEATHERED SHALE AND LIGHT GRAY LIMESTONE, APPROX. 65% SHALE, 35% LIMESTONE. SHALE CALCAREOUS, NON-FOSSILIFEROUS TO FOSSILIFEROUS, MEDIUM TOUGH TO TOUGH. LIMESTONE OCCURS ESSENTIALLY WELL DISTRIBUTED, OCCASIONALLY CLOSELY-PACKED, IN 1/2" TO 6" LAYERS, IS CRYSTALLINE AND SHALY, TRACE FINE-GRAINED, FOSSILIFEROUS, HARD; HIGH-ANGLE JOINTING WITH IRON-OXIDE STAINING DISPLAYED AT APPROX. 17.5', 17.9', 18.8', 21.4', 26.4' & 29.4'.									
	20											
	22											
	24	90%										
	26											
	28	100%										
697.4	30											
	32	90%	LIGHT GRAY SHALE, CALCAREOUS, NON-FOSSILIFEROUS TO FOSSILIFEROUS, TOUGH TO HARD, THIN (3/4") LIGHT GRAY LIMESTONE LAYER, CRYSTALLINE AND SHALY, FOSSILIFEROUS, HARD, JOINTED, OCCURS AT BOTTOM OF RECOVERY.									
	34											
692.4												
	36	% RECOVERY	BORING COMPLETED									

733.5	10			
	12	44%		INTERBEDDED LIGHT BROWN WEATHERED SHALE AND LIGHT GRAY LIMESTONE, APPROX. 75% SHALE, 25% LIMESTONE. SHALE CALCAREOUS, NON-FOSSILIFEROUS, PROBABLE SOFT TO MEDIUM TOUGH. LIMESTONE OCCURS WELL DISTRIBUTED IN 1/2" TO 4-1/2" LAYERS, IS CRYSTALLINE, FOSSILIFEROUS, HARD; HIGH-ANGLE JOINTING WITH IRON-OXIDE STAINING EXHIBITED NEAR TOP AND CENTER OF RECOVERY FROM 10' TO 12.5', APPROX. AT 15', AND NEAR TOP AND CENTER OF RECOVERY FROM 17.5' TO 22'.
	14	70%		
	16			
	18			
	20	66%		
	22			
719.5	24	100%		INTERBEDDED LIGHT GRAY SHALE AND LIGHT GRAY LIMESTONE, APPROX. 75% SHALE, 25% LIMESTONE. SHALE CALCAREOUS, NON-FOSSILIFEROUS TO TRACE FOSSILIFEROUS, MEDIUM TOUGH TO TOUGH. LIMESTONE OCCURS WELL DISTRIBUTED IN 1/2" TO 2" LAYERS, IS CRYSTALLINE, FOSSILIFEROUS, HARD; HIGH-ANGLE JOINT WITH IRON-OXIDE ~~STAINING DISPLAYED AT APPROX. 27'~~.
	26			
716.0	28			
	30	78%		INTERBEDDED LIGHT BROWN AND LIGHT GRAY WEATHERED SHALE AND LIGHT GRAY LIMESTONE, APPROX. 75% SHALE, 25% LIMESTONE. SHALE CALCAREOUS, NON-FOSSILIFEROUS TO TRACE FOSSILIFEROUS, PROBABLE SOFT TO MEDIUM TOUGH. LIMESTONE OCCURS WELL DISTRIBUTED IN 1/2" TO 4-1/2" LAYERS, IS CRYSTALLINE, SOME SHALY, TRACE FINE-GRAINED, FOSSILIFEROUS, HARD; HIGH-ANGLE JOINTING WITH IRON-OXIDE STAINING EXHIBITED 1.3' FROM TOP AND AT BOTTOM OF RECOVERY FROM 27.5' TO 32.5'; AND NEAR CENTER OF RECOVERY FROM 32.5' TO 37.5'.
	32			
	34	50%		
706.0	36			
	38			
	40	45%		INTERBEDDED LIGHT BROWN AND LIGHT GRAY WEATHERED SHALE AND LIGHT GRAY LIMESTONE, APPROX. 55% SHALE, 45% LIMESTONE (ENTIRE RECOVERY ESSENTIALLY LIMESTONE), SHALE ASSUMED CALCAREOUS, NON-FOSSILIFEROUS, SOFT TO MEDIUM TOUGH. LIMESTONE OCCURS IN 3/4" TO 2-3/4" LAYERS, IS CRYSTALLINE AND FINE-GRAINED, FOSSILIFEROUS, HARD; MOST LAYERS DISPLAY HIGH-ANGLE JOINTING WITH IRON-OXIDE STAINING.
701.0	42			
	44	35%		INTERBEDDED LIGHT GRAY (TRACE LIGHT BROWN) SHALE AND LIGHT GRAY LIMESTONE, APPROX. 85% SHALE, 15% LIMESTONE. SHALE CALCAREOUS, TRACE FOSSILIFEROUS, POSSIBLE SOFT TO MEDIUM TOUGH. LIMESTONE OCCURS IN 2-1/4" LAYERS, IS CRYSTALLINE, TRACE SHALY, FOSSILIFEROUS, HARD; HIGH-ANGLE JOINT WITH IRON-OXIDE STAINING INDICATED AT TOP OF RECOVERY.
687.0	46			
	48	% RECOVERY		BORING COMPLETED
	50			

LOG OF BORING

Order No. 99.900, 9-24-68 JH.

DATE STARTED 6-3-68 SAMPLER: TYPE SPLIT SPOON DIA. 2"O.D. WATER ELEVATION

DATE COMPLETED 6-4-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE NONE

BORING NUMBER R-5-3 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER BACKFILLED HRS.

STATION & OFFSET 300+06, 95'RIGHT, NORTHEAST EXWY, HWM 71-3.61 SURFACE ELEVATION 743.5'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
743.5	0											
742.5		2-4	BROWN GRAVELLY, CLAYEY SILTY SAND, TRACE CINDERS, (FILL) VERY MOIST - MEDIUM STIFF	1	25	16	13	25	21	26	7	63
	2		BROWN GRAVELLY, SANDY SILTY CLAY, MOIST - MEDIUM STIFF	2	21	8	12	18	41	34	14	18
	4	8-11-19	DO DO DO	3	VISUAL							
738.5												
	6	38-80	BROWN HIGHLY WEATHERED SHALE, MOIST - VERY STIFF	4	0	6	7	42	45	36	16	18
	8											
		55-70	DO DO DO	5	VISUAL							

LOG OF BORING Order No. 99.990 9-23-68 JH

DATE STARTED 3-8-68 SAMPLER: TYPE SPLIT SPOON DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 3-8-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE NONE
BORING NUMBER R-7-2 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER BACKFILLED UPON HRS. COMPLETION

STATION & OFFSET 24+71 VICTORY PARKWAY, 74'LEFT, NORTHEAST EXWY. HWM 71-3.61 SURFACE ELEVATION 652.0'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
652.0	0											
	2	4-6-7	BROWN SANDY SILTY CLAY WITH CINDERS AND BROKEN ROCK, (FILL) MOIST - STIFF	1	8	6	14	32	40	30	14	16
	4	4-6-11	DO DO DO	2	VISUAL							
647.0	6	6-9-13	BROWN GRAVELLY SILTY CLAY, MOIST - STIFF	3	17	5	9	27	42	36	19	24
644.5	8	10-15-22	BROWN SILTY CLAY WITH LIMESTONE FRAGMENTS, MOIST - HARD	4	33	5	11	24	27	32	17	13
643.0	10	18-29	BROWN CLAYEY SILTY SAND WITH LIMESTONE FRAGMENTS, MOIST-HARD	5	17	16	25	23	19	19	7	5
642.0	12	37-40-45	BROWN AND GRAY SANDY, CLAYEY SILT WITH LIMESTONE FRAGMENTS, MOIST - HARD	6	15	8	18	33	26	22	7	9
639.5	14	11-13-18	BROWN GRAVELLY SILTY CLAY, MOIST - VERY STIFF	7	26	5	7	24	38	33	16	18
637.0	16	13	BLUISH GRAY SILTY CLAY, MOIST - VERY STIFF	8	8	3	3	34	52	34	14	17
		16-15	DO DO DO	9	VISUAL							
634.5	18											
	20	23-31-46	BROWN HIGHLY WEATHERED SHALE, MOIST - VERY STIFF	10	2	2	2	34	60	40	18	17
632.0	22	18-23-29	GRAY SHALE	11	VISUAL							
	24	53-90	DO DO	12	VISUAL							
627.0	26	50%	LAYERED GRAY SHALE, MEDIUM TOUGH									
624.0	28	75%										
	30		LAYERED GRAY SHALE, CALCAREOUS, TOUGH AND GRAY FOSSILIFEROUS LIMESTONE, JOINTED, APPROX. 25 TO 30% LIMESTONE IN 3/4" TO 5" PIECES.									
620.0	32	100%										
	34		LAYERED GRAY SHALE, CALCAREOUS, TOUGH									
617.0		100%										
	36	% RECOVERY	BORING COMPLETED									
	38											

LOG OF BORING Order No. 99.990, 9-25-68 JH

DATE STARTED 7-2-68 SAMPLER: TYPE SPLIT SPOON DIA. 2"O.D. WATER ELEVATION

DATE COMPLETED 7-9-68 CASING: LENGTH NONE DIA. IMMEDIATE UNABLE TO DETERMINE

BORING NUMBER R-11-2 CORE BARREL: TYPE NWM SIZE 2-1/8"O.D. AFTER BACKFILLED HRS.

STATION & OFFSET 296+81, RAMP "VB", 42' RIGHT, NORTHEAST EXWY, HWM 71-3.61 SURFACE ELEVATION 674.3'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
674.3	0											
	2	7-60	DARK BROWN SANDY SILTY CLAY, MOIST - STIFF	1	2	6	16	40	36	46	21	18
	4											
669.3												
	6	8-11-11	BROWN AND GRAY HIGHLY WEATHERED SHALE, MOIST - VERY STIFF	2	3	1	2	40	54	43	21	18
	8											
664.3	10											
663.3		60-120	GRAY AND BROWN SHALE	3	VISUAL							
	12		INTERBEDDED LIGHT BROWN (TRACE LIGHT GRAY) WEATHERED SHALE AND LIGHT GRAY LIMESTONE, APPROX. 80% SHALE, 20% LIMESTONE. SHALE CALCAREOUS, NON-FOSSILIFEROUS TO FOSSILIFEROUS, MEDIUM TOUGH, TRACE HARD. LIMESTONE OCCURS IN 1" TO 3" LAYERS, IS CRYSTALLINE, TRACE FINE-GRAINED, FOSSILIFEROUS, HARD; HIGH-ANGLE JOINTING WITH IRON-OXIDE STAINING EXHIBITED NEAR CENTER AND AT BOTTOM OF RECOVERY.									
	14	50%										
	16											
657.3												
	18		INTERBEDDED LIGHT GRAY SHALE AND LIGHT GRAY LIMESTONE, APPROX. 85% SHALE, 15% LIMESTONE. SHALE CALCAREOUS, NON-FOSSILIFEROUS TO FOSSILIFEROUS, TOUGH TO HARD; TRACE LIGHT BROWN DISPLAYED AT APPROX. 23', READY-PARTING ALONG BEDDING PLANES EXHIBITED LAST 1.3' OF RECOVERY. LIMESTONE OCCURS WELL DISTRIBUTED IN 3/4" TO 2-7/8" LAYERS, IS CRYSTALLINE AND FINE-GRAINED, FOSSILIFEROUS, HARD; SOME LAYERS EXHIBIT HIGH-ANGLE JOINTING WITH IRON-OXIDE STAINING.									
	20	85%										
	22											
	24	75%										
	26											
	28	95%										
	30											
643.3												
	32	% RECOVERY	BORING COMPLETED									
	34											

LOG OF BORING ORDER No. 99,990 9-23-68 JH

DATE STARTED 7-31-68 SAMPLER: TYPE SPLIT SPOON DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 7-31-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE NONE
BORING NUMBER B-41-2 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 1 HRS. 10 (710.5)

STATION & OFFSET 310+09 RAMP ME, 19'RT. NORTHEAST EXWY. HAM 71-3.61 SURFACE ELEVATION 720.5'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
720.5	0											
	2	6-4-7	BROWN SILTY CLAY, MOIST - VERY STIFF	1	0	2	8	45	45	36	18	17
715.5	4											
	6	8-9-10	BROWN SANDY SILTY CLAY, MOIST - VERY STIFF	2	12	7	13	36	32	31	16	12
	8											
	10											
	12	11-10-12	DO DO	3	13	8	13	38	28	29	13	13
	14											
705.5												
	16	7-15-20	BROWN AND GRAY GRAVELLY, SILTY CLAY, MOIST - VERY STIFF	4	19	6	11	30	34	29	14	14
	18											
700.5	20											
	22	9-10-10	GRAY SANDY CLAYEY SILT, MOIST - STIFF	5	14	10	16	34	26	21	6	12
	24	8-9-11	DO DO	6	11	9	15	39	26	22	8	11
695.5	26	45-71	GRAY AND BROWN WEATHERED SHALE, MOIST - VERY STIFF	7	0	2	1	37	60	45	20	14
	28											
	30											
	32											

	24		
694.5	26		
	28	15%	LAYERED LIGHT BROWN (TRACE LIGHT GRAY) WEATHERED SHALE AND LIGHT GRAY LIMESTONE, APPROX. 90% SHALE, 10% LIMESTONE. SHALE CALCAREOUS, NON-FOSSILIFEROUS, PROBABLE SOFT TO MEDIUM TOUGH. LIMESTONE OCCURS IN 7/8" TO 2-3/4" LAYERS, IS FINE-GRAINED, NON-FOSSILIFEROUS TO TRACE FOSSILIFEROUS, HARD; HIGH-ANGLE JOINTING WITH IRON-OXIDE STAINING EXHIBITED IN MOST LAYERS.
	30		
	32		
	34	17%	
684.5	36		
	38	% RECOVERY	BORING COMPLETED
	40		

LOG OF BORING

ORDER No. 99,990, 9-24-68 JH

DATE STARTED 7-12-68 SAMPLER: TYPE SPLIT SPOON DIA. 2"O.D. WATER ELEVATION

DATE COMPLETED 7-12-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE NONE

BORING NUMBER B-31-3 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 1 HRS. 6' (641.6)

STATION & OFFSET 296+42, 81'LEFT NORTHEAST EXWY, HAM 71-3.61 SURFACE ELEVATION 647.6'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
647.6	0											
	2	4-4-5	BROWN SILTY CLAY, MOIST - MEDIUM STIFF	1	2	5	7	52	34	43	17	13
	4											
642.6												
	6	12-14-12	BROWN AND GRAY GRAVELLY, SILTY CLAY, MOIST - VERY STIFF	2	16	5	10	28	41	39	19	12
	8											
637.6	10											
	12	16-17-18	BROWN AND GRAY SILTY, SANDY GRAVEL WITH LIMESTONE FRAGMENTS, MOIST - MEDIUM STIFF	3	38	14	13	13	22	38	18	22
633.6	14											
	16	38-63	GRAY SHALE	4	VISUAL							
	18											
	20											
	22											
	24											
	26											
	28											
	30											
	32											

	14		
631.6	16		
	18	36%	INTERBEDDED LIGHT GRAY SHALE AND LIGHT GRAY LIMESTONE, APPROX. 85% SHALE, 15% LIMESTONE. SHALE CALCAREOUS, FOSSILIFEROUS, PROBABLE MEDIUM TOUGH TO TOUGH. LIMESTONE OCCURS IN 1" TO 2" LAYERS, IS CRYSTALLINE, FOSSILIFEROUS, HARD; ALL LAYERS INDICATE HIGH-ANGLE JOINTING.
	20		
626.6	22	% RECOVERY	BORING COMPLETED
	24		
	26		

LOG OF BORING

ORDER No. 99.990 JH 10-22-68

DATE STARTED 6-24-68 SAMPLER: TYPE SPLIT SPOON DIA. 2"O.D. WATER ELEVATION

DATE COMPLETED 6-26-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE UNABLE TO DETERMINE

BORING NUMBER B-32-2 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER _____ HRS. _____

STATION & OFFSET 293+77, RAMP VA, 21'LEFT, NORTHEAST EXWY. HAM 71-3.61 SURFACE ELEVATION 680.2'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
680.2	0											
	2	3-4-6	DARK BROWN SANDY SILTY CLAY.(FILL) MOIST - STIFF	1	0	5	15	44	36	37	13	19
	4											
675.2	6	4-4-5	BROWN SANDY SILTY CLAY, MOIST - MEDIUM STIFF	2	13	9	12	32	34	32	14	17
	8											
	10											
	12	8-8-12	DO DO	3	13	13	13	32	29	28	12	17
	14											
	16	8-10-8	DO DO	4	9	12	12	38	29	27	11	16
662.7	18											
	20	10-8-11	GRAY SANDY CLAYEY SILT, MOIST - MEDIUM STIFF	5	8	8	12	48	24	22	7	13
660.2	22	6-6-7	BROWN AND GRAY CLAYEY GRAVEL, MOIST - MEDIUM DENSE	6	41	7	10	25	17	24	9	17
657.7	24	8-7-7	BROWN AND GRAY GRAVELLY, SANDY SILTY CLAY, MOIST - MEDIUM STIFF	7	20	10	13	36	21	23	8	16
655.2	26	6-6-6	GRAY SANDY SILTY CLAY, MOIST - MEDIUM STIFF	8	17	9	13	37	24	23	9	13
	28	8-6-6	DO DO	9	VISUAL							
650.2	30											
	32	8-8-7	GRAY GRAVELLY SANDY SILTY CLAY, MOIST - MEDIUM STIFF	20	VISUAL							

	32												
	34												
	36	5-5-10	DO	DO	DO	11	27	10	12	30	21	23	9	12
	38												
640.2	40												
	42	4-6-10	GRAY SANDY CLAYEY SILT, MOIST - STIFF			12	18	9	16	36	21	20	7	13
	44												
635.2														
	46	8-4-9	GRAY SANDY SILTY CLAY, MOIST - MEDIUM STIFF			13	18	11	14	36	21	24	10	16
	48												
630.2	50												
	52	8-8-9	GRAY SANDY CLAYEY GRAVEL, MOIST - MEDIUM STIFF			14	40	11	10	22	17	22	8	15
	54												
625.2														
	56	9-11-15	GRAY SILTY CLAY, MOIST - MEDIUM STIFF			15	0	4	5	42	49	36	18	20
	58												
	60												
		10-11-12	DO	DO		16	No RECOVERY							
	62												
	64												
	66	10-9-16	DO	DO		17	0	3	3	58	36	30	12	27
	68												
	70												

	70													
	72	10-15-20	GRAY SILTY CLAY, MOIST - STIFF	18	0	2	3	23	72	38	19	23
	74													
	76	11-12-17	DO DO	19	12	7	8	34	39	28	12	21
	78													
600.2	80													
	82	20-50-75	GRAY SHALE AND LIMESTONE	20	No Recovery							
	84													
	86													
	88													
	90													

LOG OF BORING ORDER No. 99,990 JH 10-22-68

[redacted] ED 6-28-68 SAMPLER: TYPE SPLIT SPOON DIA. 2"O.D. WATER ELEVATION

DATE COMPLETED 6-28-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 25' (626.3')

BORING NUMBER B-42-1 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 1 HRS. 12' (639.3')

STATION & OFFSET 292+71, NORTHEAST EXWY, 9.3' RIGHT, NORTHEAST EXWY, HAM 71-3.61 SURFACE ELEVATION 651.3'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
651.3	0											
	2	7-4-5	DARK BROWN SANDY SILTY CLAY, (FILL) MOIST - STIFF	1	3	8	17	50	22	50	30	13
	4	4-5-5	DO DO DO	2	VISUAL							
646.3	6	3-3-4	BROWN SILTY CLAY, (FILL) MOIST - VERY STIFF	3	8	7	12	35	38	36	20	19
643.8	8	8-8-11	BROWN AND GRAY SANDY SILTY CLAY, WITH GRAVEL, MOIST -STIFF	4	19	8	14	35	24	24	10	14
	10	7-9-10	BROWN AND GRAY SANDY SILTY CLAY WITH GRAVEL, MOIST - MEDIUM STIFF	5	12	10	16	36	26	24	11	14
638.8	12	4-5-6	GRAY SANDY SILTY CLAY, VERY MOIST - MEDIUM STIFF	6	9	11	14	41	25	21	9	14
636.3	14	3-5-4	GRAY SILTY CLAY, VERY MOIST - SOFT	7	14	9	8	32	37	28	14	22
	16	2-3-3	DO DO	8	VISUAL							
	18	2-3-4	DO DO	9	0	0	2	27	71	44	25	31
	20	2-2-2	DARK GRAY CLAY, WITH SILT LENSES, VERY MOIST - SOFT	10	0	2	4	45	49	32	16	30
626.3	22	1-2-4	DARK GRAY SILTY CLAY, VERY MOIST - SOFT	11	0	2	14	53	31	29	12	27
	24											
	26											
621.3	28											
	30											
	32											

616.3	32 34 36 38	6-9-9	GRAY CLAYEY GRAVEL WITH SAND SEAMS, WET - MEDIUM DENSE	12	54	13	9	9	15	28	14	17
611.3	40 42 44	3-6-7	GRAY SILTY CLAY, MOIST - SOFT	13	0	2	5	44	49	36	17	29
	46 48	4-6-8	GRAY SILTY CLAY, VERY MOIST - SOFT	14	0	0	2	39	59	37	19	35
601.3	50 52 54 56 58 60	5-7-9	GRAY AND BLUISH GRAY SILTY CLAY, VERY MOIST - SOFT	15	6	4	6	35	49	33	16	34

	54 56 58	60%	LIGHT GRAY SHALE WITH LIGHT GRAY LIMESTONE, APPROX. 90% SHALE, 10% LIMESTONE. SHALE CALCAREOUS, NON-FOSSILIFEROUS, TOUGH TO HARD. LIMESTONE OCCURS WITHIN TOP-HALF OF RECOVERY IN 1/2" TO 2-1/4" LAYERS, IS CRYSTALLINE, FOSSILIFEROUS, HARD: ALL LAYERS EXHIBIT JOINTING.
593.3			
	60 62 64 66	% RECOVERY	BORING COMPLETED

LOG OF BORING Order No. 99,990 JH 10-22-68

DATE STARTED 4-26-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION

DATE COMPLETED 4-26-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None

BORING NUMBER B-29-5 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER Backfilled Upon HRS. Completion

STATION & OFFSET 12+96, 27' Left, Blair Avenue, Northeast Exwy, HAM 71-3.61 SURFACE ELEVATION 690.8'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
690.8	0											
	2	10-13-15	BROWN CLAYEY, SILTY GRAVEL, TRACE CINDERS AND SMALL BRICK FRAGMENTS, (FILL) MOIST - VERY STIFF	1	35	9	8	22	26	35	17	19
	4											
685.8	6	5-7-9	BROWN SILTY CLAY, MOIST - STIFF	2	0	2	2	40	56	36	18	20
	8											
		10-12-15	DO DO	3	Visual							
	10											
	12	5-7-10	BROWN SILTY CLAY, MOIST - VERY STIFF	4	4	4	8	38	46	32	17	15
	14	8-12-15	DO DO	5	Visual							
	16	8-12-14	BROWN SILTY CLAY, MOIST - STIFF	6	1	2	4	47	46	30	14	18
	18											
		8-10-11	BROWN SILTY CLAY, MOIST - MEDIUM STIFF	7	0	0	1	34	65	42	23	24
670.8	20											
	22	10-40-100	GRAY AND BROWN CLAY, MOIST - MEDIUM STIFF	8	0	0	4	17	79	36	14	28
	24											
	26											
	28											
	30											
	32											

	20		
	22		
668.3			
	24		LIGHT BROWN WEATHERED SHALE WITH LIGHT GRAY LIMESTONE, APPROX. 90% SHALE, 10% LIMESTONE (ENTIRE RECOVERY LIMESTONE). SHALE ASSUMED CALCAREOUS, NON-FOSSILIFEROUS, PROBABLE SOFT TO MEDIUM TOUGH.
	26	10%	LIMESTONE OCCURS IN 1/2" TO 2-3/4" LAYERS, IS CRYSTALLINE, FOSSILIFEROUS, HARD; HIGH-ANGLE JOINTING INDICATED.
663.3	28		
	30		LIGHT BROWN (TRACE LIGHT GRAY) WEATHERED SHALE WITH LIGHT GRAY LIMESTONE, APPROX. 80% SHALE, 20% LIMESTONE. SHALE CALCAREOUS, NON-FOSSILIFEROUS, SOFT TO MEDIUM TOUGH, TRACE TOUGH. LIMESTONE
	32	40%	OCCURS PRIMARILY WITHIN TOP 10" OF RUN IN 1/2" TO 9-1/4" LAYERS, IS CRYSTALLINE, FOSSILIFEROUS, HARD.
658.3			
	34	% RECOVERY	BORING COMPLETED
	36		
	38		
	40		

LOG OF BORING

ORDER No. 99.990 JH 11-21-68

DATE STARTED 6-4-68 SAMPLER: TYPE SPLIT SPOON DIA. 2"O.D. WATER ELEVATION

DATE COMPLETED 6-4-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE NONE

BORING NUMBER R-5-2 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER BACKFILLED HRS.

STATION & OFFSET 304+32, NORTHEAST EXWY. 99'RIGHT. HAM 71-3.61 SURFACE ELEVATION 736.7'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
736.7	0											
735.7			BLACKTOP AND GRAVEL	1	VISUAL							
	2	21-24-57	BROWN AND GRAY WEATHERED SHALE AND LIMESTONE FRAGMENTS, DRY - HARD	2	VISUAL							
		60										
	4		DO DO DO									
	6	54-85	DO DO DO	3	VISUAL							
	8											
	10	125	DO DO DO	4	VISUAL							
	12											
	14											
	16											
	18											
	20											
	22											
	24											
	26											
	28											
	30											
	32											

723.2	12 14		
718.2	16 18	87%	INTERBEDDED LIGHT BROWN WEATHERED SHALE AND LIGHT GRAY LIMESTONE, APPROX.75% SHALE, 25% LIMESTONE. SHALE CALCAREOUS, NON-FOSSILIFEROUS, TOUGH, TRACE MEDIUM TOUGH. LIMESTONE OCCURS WELL DISTRIBUTED IN 1" TO 5½" LAYERS, IS CRYSTALLINE, FOSSILIFEROUS, HARD; HIGH-ANGLE JOINTING EXHIBITED AT CENTER AND BOTTOM OF RECOVERY.
716.7	20	100%	INTERBEDDED LIGHT GRAY LIMESTONE AND LIGHT GRAY SHALE (TRACE LIGHT BROWN),APPROX.50% LIMESTONE, 45% SHALE, LIMESTONE OCCURS IN 1½" TO 4½" LAYERS, IS SHALY AND FINE-GRAINED, FOSSILIFEROUS, HARD. SHALE CALCAREOUS, NON-FOSSILIFEROUS, MEDIUM TOUGH TO TOUGH.
711.7	22 24 26	70%	INTERBEDDED LIGHT BROWN (TRACE LIGHT GRAY) WEATHERED SHALE AND GRAY LIMESTONE, APPROX.85% SHALE, 15% LIMESTONE. SHALE CALCAREOUS, NON-FOSSILIFEROUS TO FOSSILIFEROUS, MEDIUM TOUGH TO TOUGH. LIMESTONE OCCURS WELL DISTRIBUTED IN 1" TO 3"LAYERS, IS CRYSTALLINE AND SHALY, FOSSILIFEROUS, HARD.
706.7	28 30	93%	LIGHT GRAY SHALE (SOME LIGHT BROWN) WITH LIGHT GRAY LIMESTONE, APPROX.90% SHALE, 10% LIMESTONE. SHALE CALCAREOUS, NON-FOSSILIFEROUS TO FOSSILIFEROUS, MEDIUM TOUGH TO TOUGH. LIMESTONE OCCURS IN 1" TO 2-3/4"LAYERS, IS CRYSTALLINE AND SHALY, FOSSILIFEROUS, HARD.
701.7	32 34	100%	INTERBEDDED LIGHT BROWN AND LIGHT GRAY WEATHERED SHALE AND LIGHT GRAY LIMESTONE, APPROX.55% SHALE, 45% LIMESTONE. SHALE CALCAREOUSL, FOSSILIFEROUS, MEDIUM TOUGH TO TOUGH. LIMESTONE OCCURS CLOSELY-PACKED PRIMARILY IN TOP-HALF OF RECOVERY IN 1-3/4" TO 11"LAYERS, IS SHALY, SOME CRYSTALLINE, FOSSILIFEROUS, HARD.
696.7	36 38 40	93%	INTERBEDDED LIGHT GRAY (TRACE LIGHT BROWN) SHALE AND LIGHT GRAY LIMESTONE, APPROX.70% SHALE, 30% LIMESTONE. SHALE CALCAREOUS, NON-FOSSILIFEROUS TO FOSSILIFEROUS,MEDIUM TOUGH TO TOUGH, LIMESTONE OCCURS CLOSELY-PACKED PRIMARILY IN CENTER PORTION OF RECOVERY IN 1" TO 2½"LAYERS, IS CRYSTALLINE, TRACE SHALY, FOSSILIFEROUS, HARD;ALL LAYERS DISPLAY HIGH-ANGLE JOINTING WITH IRON-OXIDE STAINING.
693.7	42 44	83%	LIGHT GRAY SHALE, CALCAREOUS, NON-FOSSILIFEROUS TO TRACE FOSSILIFEROUS, TOUGH (TRACE PROBABLE SOFT NEAR CENTER). THIN (1") LIGHT GRAY LIMESTONE LAYER,CRYSTALLINE, FOSSILIFEROUS, HARD, JOINTED,OCCURS.
	46 48 50 52 54	% RECOVERY	BORING COMPLETED

LOG OF BORING

ORDER No. 99,990 JH 11-21-68

DATE STARTED 5-3-68 SAMPLER: TYPE SPLIT SPOON DIA. 2"O.D. WATER ELEVATION

DATE COMPLETED 5-15-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE NONE

BORING NUMBER R-13-1 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER BACKFILLED UPON HRS. COMPLETION

STATION & OFFSET 20+87, VICTORY PARKWAY, 25'LEFT, NORTHEAST EXWY.IIAM 71-3.61 SURFACE ELEVATION 694.0'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	L L	PI	W C
694.0	0											
		2-2-3	DARK BROWN AND BROWN SANDY, SILTY CLAY, (FILL) MOIST - MEDIUM STIFF	1	3	5	15	41	36	36	15	22
691.5	2											
	4	3-4-5	BROWN SILTY CLAY, (FILL) MOIST - MEDIUM STIFF	2	8	5	13	32	42	50	28	24
689.0												
	6	3-3-5	BROWN GRAVELLY, SANDY, SILTY CLAY, VERY MOIST - SOFT	3	18	10	15	33	24	27	11	18
	8	4-4-6	BROWN GRAVELLY, SANDY, SILTY CLAY, MOIST - MEDIUM STIFF	4	16	10	14	36	24	27	11	14
	10											
	12	3-4-5	DO DO DO	5	24	10	16	30	20	25	10	15
	14	4-8-10	BROWN GRAVELLY, SANDY SILTY CLAY, MOIST - STIFF	6	24	10	14	30	22	25	10	13
	16	8-6-10	DO DO	7	25	9	14	29	23	26	10	13
676.5	18											
		8-5-6	GRAY GRAVELLY SANDY SILTY CLAY, MOIST - MEDIUM STIFF	8	15	10	15	34	25	23	8	14
	20											
	22	5-6-8	GRAY GRAVELLY, SANDY SILTY CLAY, VERY MOIST - MEDIUM STIFF	9	20	14	14	31	21	34	19	14
	24	14-6-9	DO DO DO	10	28	7	10	35	20	25	9	13
	26	6-8-8	DO DO DO	11	24	16	10	30	20	24	8	14
	28											
		6-7-8	DO DO DO	12	VISUAL							
664.0	30											
		3-4-5	GRAY SANDY SILTY CLAY, VERY MOIST - MEDIUM STIFF	13	1	9	14	42	34	25	9	15
	32											

	32															
	34															
659.0	36	5-6-8	GRAY GRAVELLY SANDY SILTY CLAY, VERY MOIST - MEDIUM STIFF			14	19	8	15	37	21	21	8	13
	38													
	40													
	42	8-10-15	DO	DO	DO	15	14	9	13	40	24	22	8	15
	44													
	46	8-6-8	DO	DO	DO	16	VISUAL							
	48													
644.0	50													
	52	10-45-35	GRAY GRAVELLY SANDY, CLAYEY SILT, VERY MOIST - MEDIUM STIFF			17	22	12	13	34	19	22	7	12
	54													
	56	10-25-30	DO	DO	DO	18	VISUAL - NO RECOVERY							
	58													
	60													
	62	7-8-16	DO	DO	DO	19	VISUAL - NO RECOVERY							
	64													
629.0	66	10-10-15	GRAY SANDY CLAY, MOIST - MEDIUM STIFF			20	VISUAL - NO RECOVERY							
	68													
	70													

	72	10-15-20	DO	DO	21	VISUAL - NO RECOVERY
	74					
	76	6-6-10	DO	DO	22	VISUAL - NO RECOVERY
	78					
	80					
	82	11-11-16	DO	DO	23	VISUAL - NO RECOVERY
	84					
609.0						
	86	25-100	GRAY SHALE, MOIST - HARD		24	VISUAL - NO RECOVERY
	88					
	90					
	92					

88

90

92

94

96

98

100

604.0

599.0

50%

% RECOVERY

INTERBEDDED LIGHT GRAY SHALE AND LIGHT GRAY LIMESTONE, APPROX. 85% SHALE, 15% LIMESTONE. SHALE CALCAREOUS, NON-FOSSILIFEROUS TO FOSSILIFEROUS, MEDIUM TOUGH TO TOUGH. LIMESTONE OCCURS IN 2" AND 7-1/4" LAYERS, IS CRYSTALLINE AND SHALY, FOSSILIFEROUS, HARD.

BORING COMPLETED

LOG OF BORING

ORDER No. 99,990 JH 11-21-68

DATE STARTED 8-14-68 SAMPLER: TYPE SPLIT SPOON DIA. 2"O.D. WATER ELEVATION

DATE COMPLETED 8-14-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE NONE

BORING NUMBER R-7-1 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 1 DAY 6'(736.0')

STATION & OFFSET 343+58, NORTHEAST EXWY. 128'RIGHT, HAM 71-3.61 SURFACE ELEVATION 742.0'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	L.L.	P.I.	W.C.
742.0	0											
741.5			CONCRETE AND CINDERS	VISUAL								
	2	7-5-6	BROWN SILTY CLAY, MOIST - STIFF	1	0	2	6	55	37	40	21	23
	4	5-6-7	DO DO	2	VISUAL							
737.0												
	6	6-6-8	BROWN SANDY, SILTY CLAY, MOIST - STIFF	3	0	7	13	36	44	40	20	20
	8											
732.0	10											
		3-4-5	BROWN SILTY CLAY, MOIST - STIFF	4	0	4	15	29	52	48	27	20
	12											
	14	4-5-6	DO DO	5	0	3	9	36	52	40	22	21
727.0												
	16	5-6-6	BROWN SANDY SILTY CLAY, MOIST - STIFF	6	0	6	14	37	43	36	18	19
724.5	18											
		5-6-8	BROWN SILTY CLAY, MOIST - VERY STIFF	7	0	0	2	42	56	40	18	22
722.0	20											
		45-81	BROWN SILTY CLAY WITH BROKEN LIMESTONE FRAGMENTS, MOIST - HARD	8	11	2	3	36	48	40	18	13
	22											
	24											
	26											
	28											
	30											
	32											

	20		
721.0			
	22		INTERBEDDED LIGHT BROWN WEATHERED SHALE AND LIGHT GRAY LIMESTONE, APPROX. 85% SHALE, 15% LIMESTONE. SHALE CALCAREOUS, TRACE FOSSILIFEROUS, PROBABLE SOFT TO MEDIUM TOUGH. LIMESTONE OCCURS IN 3/4" TO 5-1/2" LAYERS, IS CRYSTALLINE, FOSSILIFEROUS, HARD.
	24	40%	
716.0	26		
	28	% RECOVERY	BORING COMPLETED
	30		
	32		

LOG OF BORING

ORDER No. 99.990 JH 10-2-68

DATE STARTED 7-10-68 SAMPLER: TYPE SPLIT SPOON DIA. 2"O.D. WATER ELEVATION

DATE COMPLETED 7-12-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE UNABLE TO DETERMINE

BORING NUMBER R-11-3 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER ____ HRS. ____

STATION & OFFSET 298+83, RAMP "VB", 42'Rt. NORTHEAST EXWY. HAM 71-3.61' SURFACE ELEVATION 711.8

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
711.8	0											
710.3	2	5-7-8	BROWN SANDY, SILTY CLAY, (TOPSOIL) DRY - VERY STIFF	1	0	7	19	37	37	35	17	12
	4	7-8-8	BROWN GRAVELLY, SANDY SILTY CLAY, MOIST - VERY STIFF	2	22	7	15	30	26	24	10	12
706.3	6											
	8	8-12-14	BROWN SANDY, CLAYEY GRAVEL, MOIST - MEDIUM DENSE	3	36	8	10	25	21	25	8	14
701.8	10											
	12	8-17-14	BROWN GRAVELLY, SILTY CLAY, MOIST - VERY STIFF	4	29	6	8	27	30	32	17	11
	14											
	16											
	18											
	20											
	22											
	24											
	26											
	28											
	30											
	32											

	10 12 14		
696.8	16	65%	INTERBEDDED LIGHT BROWN WEATHERED SHALE AND LIGHT GRAY LIMESTONE, APPROX. 85% SHALE 15% LIMESTONE. SHALE CALCAREOUS, NON-FOSSILIFEROUS TO TRACE FOSSILIFEROUS, SOFT TO MEDIUM TOUGH. LIMESTONE OCCURS IN 1" TO 4" LAYERS, IS CRYSTALLINE, TRACE FINE-GRAINED, FOSSILIFEROUS, HARD; HIGH-ANGLE JOINTING WITH SOME IRON-OXIDE STAINING EXHIBITED IN MOST LAYERS.
	18	35%	
	20		
	22	13%	
	24		
	26	36%	
	28		
681.8	30	22%	
	32	95%	INTERBEDDED LIGHT GRAY LIMESTONE AND LIGHT BROWN (TRACE GRAY) WEATHERED SHALE, APPROX. 50% LIMESTONE, 50% SHALE. LIMESTONE OCCURS ESSENTIALLY CLOSELY-PACKED IN 1" TO 7" LAYERS, IS CRYSTALLINE AND SHALY, FOSSILIFEROUS, HARD; HIGH-ANGLE JOINT DISPLAYED AT APPROX. 31'. SHALE CALCAREOUS, TRACE FOSSILIFEROUS TO FOSSILIFEROUS, MEDIUM TOUGH, SOME TOUGH, TRACE SOFT.
	34		
	36		
674.8		74%	
	38	100%	INTERBEDDED LIGHT BROWN AND LIGHT GRAY WEATHERED SHALE AND LIGHT GRAY LIMESTONE, APPROX. 60% SHALE, 40% LIMESTONE. SHALE CALCAREOUS, TRACE FOSSILIFEROUS TO FOSSILIFEROUS, ESSENTIALLY MEDIUM TOUGH. LIMESTONE OCCURS CLOSELY-PACKED IN 1" TO 3" LAYERS, IS CRYSTALLINE, SOME SHALY, FOSSILIFEROUS, HARD; HIGH-ANGLE JOINT WITH IRON-OXIDE STAINING EXHIBITED NEAR CENTER OF RECOVERY FROM 38.5' TO 42'.
	40		
669.8	42	70%	
	44		INTERBEDDED LIGHT GRAY SHALE (SOME BROWN) AND LIGHT GRAY LIMESTONE, APPROX. 85% SHALE, 15% LIMESTONE. SHALE CALCAREOUS, NON-FOSSILIFEROUS TO FOSSILIFEROUS, TOUGH (SOME PROBABLE SOFT TO MEDIUM TOUGH). LIMESTONE OCCURS WITHIN LAST 1½' OF RECOVERY IN 1" TO 2½" LAYERS, IS CRYSTALLINE, FOSSILIFEROUS, HARD; SOME HIGH-ANGLE JOINTING WITH IRON-OXIDE STAINING DISPLAYED.
	46	64%	
664.8			
	48	67%	LIGHT GRAY SHALE, CALCAREOUS, NON-FOSSILIFEROUS, TOUGH (SOME PROBABLE SOFT TO MEDIUM TOUGH).
	50		

660.3	52		
	54	20%	INTERBEDDED LIGHT GRAY (AND BROWN) SHALE AND GRAY LIMESTONE, APPROX. 80% SHALE, 20% LIMESTONE (ENTIRE RECOVERY ESSENTIALLY LIMESTONE). SHALE ASSUMED CALCAREOUS, NON-FOSSILIFEROUS TO TRACE FOSSILIFEROUS, PROBABLE SOFT TO MEDIUM TOUGH. LIMESTONE OCCURS IN 1" TO 4" LAYERS, IS SHALY AND CRYSTALLINE, FOSSILIFEROUS, HARD.
655.3	56		
	58	82%	LIGHT GRAY SHALE, CALCAREOUS, NON-FOSSILIFEROUS TO FOSSILIFEROUS, TOUGH, SOME PROBABLE MEDIUM TOUGH
650.3	60		
	62	94%	INTERBEDDED LIGHT GRAY SHALE AND LIGHT GRAY LIMESTONE, APPROX. 70% SHALE, 30% LIMESTONE. SHALE CALCAREOUS, TRACE FOSSILIFEROUS TO FOSSILIFEROUS, TOUGH. LIMESTONE OCCURS CLOSELY-PACKED NEAR CENTER OF RECOVERY IN 1-3/4" TO 3-1/2" LAYERS, IS CRYSTALLINE, SOME SHALY, FOSSILIFEROUS, HARD.
646.8	64		
	66	% RECOVERY	BORING COMPLETED
	68		
	70		
	72		

LOG OF BORING ORDER No. 99.990 JH 10-1-68

DATE STARTED 8-13-68 SAMPLER: TYPE SPLIT SPOON DIA. 2"O.D. WATER ELEVATION

DATE COMPLETED 8-13-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE NONE

BORING NUMBER R-7-2 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 1 HRS. 5' (739.3')

STATION & OFFSET 342+71, 128'RIGHT, NORTHEAST EXWY. HAM 71-3.61 SURFACE ELEVATION 744.3'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
744.3	0											
	2	5-7-8	BROWN SILTY CLAY, MOIST - MEDIUM STIFF	1	0	5	5	57	33	30	11	22
	4											
739.3												
	6	10-15-19	BROWN SANDY, SILTY CLAY, MOIST - VERY STIFF	2	0	10	10	43	37	34	17	16
736.8	8											
		9-14-17	BROWN SILTY CLAY, MOIST - VERY STIFF	3	4	8	10	40	38	35	17	16
734.3	10											
	12	15-12-20	BROWN AND GRAY SANDY, LEAN CLAY WITH BROKEN STONE FRAGMENTS MOIST - VERY STIFF	4	11	11	14	36	28	30	15	14
	14	16-18-21	DO DO DO	5	27	10	13	29	21	26	12	12
729.3												
	16	19-21-32	BROWN AND GRAY SILTY CLAY, MOIST - STIFF	6	0	4	7	47	42	37	20	20
726.8	18											
		12-11-14	BROWN AND GRAY SANDY, SILTY CLAY, MOIST - STIFF	7	10	8	13	41	28	26	12	12
724.3	20											
	22	12-13-15	BROWN FAT CLAY WITH BROKEN STONE FRAGMENTS, MOIST - VERY STIFF	8	12	3	5	29	51	52	30	20
721.8												
	24	13-16-31	BROWN SANDY LEAN CLAY, WITH BROKEN STONE FRAGMENTS, MOIST - VERY STIFF	9	14	14	8	30	34	36	19	13
719.3												
	26	18-29-56	BROWN LEAN CLAY WITH BROKEN STONE FRATMENTS, MOIST - VERY STIFF	10	11	5	7	35	42	37	20	16
716.8	28											
		27-53-68	BROWN SILTY CLAY, MOIST - VERY STIFF	11	0	1	2	36	61	44	22	14
	30											
	32											

714.3	28 30		
709.3	32 34	20%	INTERBEDDED LIGHT BROWN WEATHERED SHALE AND LIGHT GRAY LIMESTONE, APPROX. 80% SHALE, 20% LIMESTONE (ENTIRE RECOVERY ESSENTIALLY LIMESTONE). SHALE ASSUMED CALCAREOUS, NON-FOSSILIFEROUS TO TRACE FOSSILIFEROUS, PROBABLE SOFT TO MEDIUM TOUGH, LIMESTONE OCCURS IN 1" TO 2½" LAYERS, IS CRYSTALLINE, FOSSILIFEROUS, HARD: HIGH-ANGLE JOINTING WITH IRON-OXIDE STAINING EXHIBITED IN MOST LAYERS.
	36 38 40	% RECOVERY	BORING COMPLETED

LOG OF BORING

ORDER No. 99.990 JH 10-2-68

DATE STARTED 7-9-68 SAMPLER: TYPE SPLIT SPOON DIA. 2"O.D. WATER ELEVATION

DATE COMPLETED 7-9-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 14.5' (633.5)

BORING NUMBER B-31-2 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 1 HRS. 6' (642.0)

STATION & OFFSET 295+14, 77' LEFT, NORTHEAST EXWY. HAM 71-3.61 SURFACE ELEVATION 648.0'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
648.0	0											
	2	15-18-12	BROWN SILTY CLAY, BRICK, (FILL) MOIST - MEDIUM STIFF	1	INSUFFICIENT SAMPLE							
	4											
	6	3-2-3	DO DO	2	11	6	5	46	32	30	15	19
	8											
638.0	10											
	12	4-3-5	BROWN CLAYEY, SANDY GRAVEL, (FILL) MOIST - LOOSE	3	30	8	13	24	25	30	16	15
	14											
633.5												
	16	3-3-4	GRAY SILTY CLAY, MOIST - MEDIUM STIFF	4	0	2	8	60	30	29	12	26
	18											
	20											
	22	3-2-2	DO DO	5	0	2	6	55	37	31	11	28
	24											
	26	2-2-3	DO DO	6	0	0	2	42	56	38	18	29
	28											
	30											
	32	3-4-5	DO DO	7	2	0	2	43	53	37	15	26

613.0	32 34 36 38 40	27-75	GRAY SHALE, DRY - HARD	8	0	2	2	38	58	43	21	13

	34		
612.0	36		
	38	44%	LIGHT GRAY SHALE, CALCAREOUS, NON-FOSSILIFEROUS TO FOSSILIFEROUS, MEDIUM TOUGH, SOME TOUGH; SOME PROBABLE SOFT INDICATED AT TOP OF RECOVERY; SOME TILTING OF BEDDING PLANES AND REMOLD CONDITION EXHIBITED, AND SLICKENSIDES DISPLAYED, APPROX. 6" FROM TOP OF RECOVERY; MOVEMENT INDICATED 1½"
	40		LIGHT GRAY LIMESTONE LAYER, CRYSTALLINE, FOSSILIFEROUS HARD, OCCURS 3½" FROM BOTTOM OF RECOVERY.
607.0			
	42	% RECOVERY	BORING COMPLETED
	44		
	46		
	48		
	50		

LOG OF BORING

ORDER No. 99.990 JH 10-2-68

DATE STARTED 7-9-68 SAMPLER: TYPE SPLIT SPOON DIA. 2"O.D. WATER ELEVATION

DATE COMPLETED 7-9-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 15' (633.4')

BORING NUMBER B-31-1 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 3 HRS. 16' (632.4)

STATION & OFFSET 293+95, 75'LEFT, NORTHEAST EXWY. HAM 71-3.61 SURFACE ELEVATION 648.4'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
648.4	0											
	2	27-10-12	BROWN SILTY SAND AND GRAVEL, (FILL) MOIST - STIFF	1	INSUFFICIENT SAMPLE							
	4											
	6	4-6-6	DO DO DO	2	26	6	20	28	20	29	12	15
	8											
638.4	10											
	12	5-6-8	BROWN SANDY SILTY CLAY, (FILL) MOIST - STIFF	3	15	9	16	37	23	23	8	13
	14											
633.4												
	16	4-4-5	GRAY SANDY, SILTY CLAY, MOIST - MEDIUM STIFF	4	14	7	14	38	27	23	8	15
	18											
	20											
	22	2-3-4	DO DO	5	0	7	13	37	43	28	12	12
	24											
623.4												
	26	3-2-3	GRAY SILTY CLAY, MOIST - MEDIUM STIFF	6	0	0	2	54	44	36	16	26
	28											
	30											
	32	2-2-3	DO DO	7	0	5	13	53	29	28	8	26

	32													
	34													
613.4	36	3-2-4	GRAY CLAYEY SILT, MOIST - MEDIUM STIFF	8	0	0	3	71	26	26	5	28		
	38													
608.4	40													
	42	7-8-10	GRAY SILTY CLAY, MOIST - MEDIUM STIFF	9	0	3	10	44	43	32	14	25		
	44													
	46	8-8-9	DO DO	10	0	6	9	39	46	32	15	16		
	48													
598.4	50													
	52	9-12-11	GRAY CLAYEY GRAVEL, MOIST - MEDIUM DENSE	11	47	9	7	19	18	32	14	22		
	54													
593.4	56	53	GRAY SILTY CLAY, MOIST - STIFF	12	0	2	3	45	50	35	13	30		
	58													
	60													

	54		
592.9	56		LIGHT GRAY SHALE, CALCAREOUS, NON-FOSSILIFEROUS TO TRACE FOSSILIFEROUS, ESSENTIALLY TOUGH, TRACE POSSIBLE SOFT INDICATED AT TOP OF RECOVERY. 2" LIGHT GRAY LIMESTONE LAYER, CRYSTALLINE,
	58	53%	FOSSILIFEROUS, HARD, JOINTED, OCCURS APPROX. 10" FROM BOTTOM OF RECOVERY.
587.9	60		
	62	% RECOVERY	BORING COMPLETED
	64		
	66		
	68		
	70		

LOG OF BORING

ORDER No. 99.990, 9-27-68 JH

STARTED 7-16-68 SAMPLER: TYPE SPLIT SPOON DIA. 2"O.D. WATER ELEVATION

DATE COMPLETED 7-16-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE NONE

BORING NUMBER B-42-2 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 1 HRS. 12' (644.7')

STATION & OFFSET 295+20, 98'Rt., NORTHEAST EXWY., HAM 71-3.61 SURFACE ELEVATION 656.7'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
656.7	0											
	2	2-4-7	BROWN SANDY SILTY CLAY, MOIST - STIFF	1	11	7	13	32	37	37	20	22
	4											
651.7												
	6	5-6-7	BROWN SANDY, CLAYEY SILT, MOIST - STIFF	2	0	10	18	48	24	23	6	16
	8											
646.7	10											
	12	6-7-8	BROWN GRAVELLY, SILTY CLAY, MOIST - STIFF	3	28	7	12	33	20	25	8	16
	14											
641.7												
	16	5-6-6	GRAY GRAVELLY, SILTY CLAY, MOIST - STIFF	4	37	5	7	27	24	29	13	18
	18											
636.7	20											
	22	4-7-8	GRAY SILTY CLAY, MOIST - STIFF	5	0	2	6	52	40	36	18	20
	24											
631.7												
	26	4-5-7	GRAY GRAVELLY SANDY SILTY CLAY, MOIST - STIFF.	6	18	12	9	29	32	36	18	24
	28											
626.7	30											
	32	12-27-43	GRAY SHALE	7	VISUAL							

	30		
624.7	32		
	34	16%	LIGHT BROWN AND LIGHT GRAY WEATHERED SHALE AND LIGHT GRAY LIMESTONE, APPROX. 85% SHALE, 15% LIMESTONE. (RECOVERY PRIMARILY LIMESTONE). SHALE ASSUMED CALCAREOUS, PROBABLE SOFT TO MEDIUM TOUGH. LIMESTONE OCCURS IN 1-1/2" TO 3" LAYERS, IS CRYSTALLINE, SOME SHALY, FOSSILIFEROUS, HARD.
	36		
619.7	38	% RECOVERY	BORING COMPLETED
	40		

LOG OF BORING

ORDER No. 99.990, 9-25-68 JH

DATE STARTED 7-30-68 SAMPLER: TYPE SPLIT SPOON DIA. 2"O.D. WATER ELEVATION

DATE COMPLETED 7-30-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 20' (702.4')

BORING NUMBER B-41-4 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 1 HRS. 23' (699.4)

STATION & OFFSET 311+65, RAMP ME, 14"Rt. NORTHEAST EXWY. HAM 71-3.61 SURFACE ELEVATION 722.4

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
722.4	0											
	2	5-5-6	BROWN AND GRAY SILTY CLAY, MOIST - MEDIUM STIFF	1	0	1	2	57	40	37	18	28
717.4	4											
	6	6-7-7	BROWN SILTY CLAY, MOIST - STIFF	2	0	4	6	35	55	50	30	27
	8											
		5-6-7	DO DO	3	0	2	7	27	64	60	34	25
712.4	10											
	12	9-10-15	BROWN GRAVELLY SILTY CLAY, MOIST - VERY STIFF	4	15	8	13	36	28	28	11	12
709.9												
	14	11-12-17	BROWN AND GRAY SANDY SILTY CLAY, MOIST - VERY STIFF	5	9	12	14	37	28	29	12	12
707.9												
	16	16-18-27	BROWN GRAVELLY SILTY CLAY, MOIST - VERY STIFF	6	27	7	11	34	21	27	10	24
704.9	18											
		15-19-21	BROWN AND GRAY SANDY SILTY CLAY, MOIST - VERY STIFF	7	8	9	14	41	28	26	9	14
702.4	20											
	22	6-10-16	BROWN AND GRAY GRAVELLY, SILTY CLAY, MOIST - STIFF	8	20	6	9	36	29	28	11	16
699.9												
	24	9-11-18	BROWN AND GRAY SANDY SILTY CLAY, MOIST - STIFF	9	5	8	14	42	31	24	9	16
	26	10-16-21	BROWN AND GRAY SANDY SILTY CLAY, MOIST - VERY STIFF	10	9	11	15	35	30	27	10	11
	28											
692.4	30											
	32	6-10-14	GRAY SANDY CLAYEY SILT, MOIST - MEDIUM STIFF	11	8	8	13	46	25	22	7	16

	32												
	34												
687.4													
	36	8-9-11	GRAY GRAVELLY, SANDY SILTY CLAY, MOIST - MEDIUM STIFF	12	19	9	14	38	20	22	8	12
	38												
	40												
	42	7-8-11	DO DO DO	13	14	9	12	36	29	25	10	17
	44												
677.4													
	46	6-10-12	GRAY SILTY SAND WITH CLAY SEAMS, WET - MEDIUM DENSE	14	2	8	54	18	18		NP	20
	48												
672.4	50												
	52	5-7-9	GRAY SILTY SAND, WET - MEDIUM DENSE	15	0	7	63	16	14		NP	24
	54												
667.4													
	56	8-12-10	GRAY SILTY CLAY, MOIST - STIFF	16	0	0	1	27	72	39	18	18
	58												
662.4	60												
	62	16-29-40	GRAY AND BROWN SILTY CLAY, MOIST- VERY STIFF	17	13	1	1	33	52	40	18	18
	64												
657.4													
	66	38-60	GRAY SHALE	18	VISUAL							
	68												
	70												

	64		
656.4	66		
	68	30%	LIGHT GRAY SHALE, CALCAREOUS, NON-FOSSILIFEROUS TO FOSSILIFEROUS, TOUGH TO HARD; SOME SOFT INDICATED TOP 2" OF RECOVERY.
	70		
651.4	72	% RECOVERY	BORING COMPLETED
	74		
	76		

LOG OF BORING Order No. 99,990 9-20-68 JH

DATE STARTED 3-18-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 3-18-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None
BORING NUMBER RA-1 CORE BARREL: TYPE SIZE AFTER 1 HRS. None

STATION & OFFSET 7+27 Whittier, 26'Right Northeast Exwy. HAM 71-3.61 SURFACE ELEVATION 764.0'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	L.L.	P.I	W.C
764.0	0		CONCRETE									
763.5												
761.5	2	4-7-6	CINDERS, (FILL) MOIST - MEDIUM DENSE	1	Visual							
	4	5-4-5	BROWN SILTY CLAY WITH BROKEN STONE FRAGMENTS, (FILL) MOIST - STIFF	2	2	4	14	33	47	39	20	24
	6	4-7-6	DO DO DO	3	8	7	11	31	43	36	18	19
	8											
		8-10-9	BROWN SILTY CLAY WITH BROKEN STONE FRAGMENTS AND TRACE OF BRICK, (FILL) MOIST - STIFF	4	Visual							
754.0	10											
	12	10-11-13	BROWN SILTY CLAY, MOIST - STIFF	5	0	1	3	35	61	43	23	25
	14	10-12-16	DO DO	6	Visual							
	16	9-10-11	BROWN SILTY CLAY, MOIST - VERY STIFF	7	0	1	3	33	63	41	22	23
	18											
		8-9-10	DO DO	8	Visual							
	20											
	22	7-10-13	BROWN SILTY CLAY, MOIST - STIFF	9	0	0	4	35	61	43	25	24
	24											
739.0												
	26	8-12-18	BROWN SANDY SILTY CLAY, MOIST - VERY STIFF	10	0	7	14	25	54	44	24	26
	28											
734.0	30	85	REFUSAL									
			BORING COMPLETED									
	32											

LOG OF BORING Order No. 99.990 9-23-68 JH

DATE STARTED 3-18-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 3-18-68 CASING: LENGTH HSA DIA. 2.25"I.D. IMMEDIATE None
BORING NUMBER R-A-2 CORE BARREL: TYPE SIZE AFTER Backfilled Upon HRS Completion

STATION & OFFSET 6+36 Whittier St., 22.5'Right Northeast Exwy, HAM 71-3.61 SURFACE ELEVATION 768.0'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
768.0	0											
767.5			CONCRETE, ASHES, CINDERS & GRAVEL (FILL) MOIST - LOOSE	1	VISUAL							
	2	2-6-8	BROWN SANDY SILTY CLAY, MOIST - VERY STIFF	2	9	11	16	33	31	23	9	12
	4	6-13-15	DO DO	3	VISUAL							
763.0												
	6	4-12-13	BROWN GRAVELLY, SANDY LEAN CLAY, MOIST - VERY STIFF	4	23	9	14	30	24	25	11	12
	8	6-16-26	DO DO DO	5	VISUAL							
758.0	10											
	12	AUGER	LIMESTONE FRAGMENTS	6	VISUAL							
755.5												
	14	10-15-16	BROWN HIGHLY WEATHERED SHALE WITH LIMESTONE FRAGMENTS, MOIST - VERY STIFF	7	20	3	5	37	35	35	16	16
753.0												
	16	10-12	BROWN SILTY CLAY WITH LIMESTONE FRAGMENTS, MOIST - MEDIUM	8	20	3	10	14	53	58	23	46
		35	DO DO DO /STIFF	9	INSUFFICIENT SAMPLE							
750.5	18											
749.5		40-27	BROWN WEATHERED SHALE	10	VISUAL							
	20		BORING COMPLETED									
	22											
	24											
	26											
	28											
	30											
	32											

LOG OF BORING

ORDER No. 99.990 9-23-68 JH

DATE STARTED 7-31-68 SAMPLER: TYPE SPLIT SPOON DIA. 2"O.D. WATER ELEVATION

DATE COMPLETED 7-31-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 35' (680.8')

BORING NUMBER B-41-3 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 1 HRS. 13' (702.8)

STATION & OFFSET 310+74, RAMP ME, 2' RIGHT, NORTHEAST EXWY. HAM 71-3.61 SURFACE ELEVATION 715.8'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
715.8'	0											
	2	5-7-8	BROWN SILTY CLAY, MOIST - STIFF	1	4	5	9	45	37	36	16	16
	4											
	6	6-9-12	BROWN SILTY CLAY, MOIST - MEDIUM STIFF	2	0	0	10	56	34	29	10	20
	8											
	10											
	12	10-9-15	BROWN SILTY CLAY, MOIST - STIFF	3	5	4	10	39	42	34	16	17
	14	8-10-18	BROWN SILTY CLAY, MOIST - VERY STIFF	4	0	5	9	52	34	29	10	17
	16	9-10-10	BROWN SILTY CLAY, MOIST - STIFF	5	19	7	10	31	33	28	10	13
698.3	18											
	20	6-10-16	BROWN SANDY, SILTY CLAY, MOIST - STIFF	6	10	10	13	36	31	30	13	11
695.8	22	9-10-12	GRAY SANDY, SILTY CLAY, MOIST - STIFF	7	13	11	15	33	28	22	8	12
693.3	24	8-11-13	GRAY SILTY CLAY, MOIST - STIFF	8	10	7	12	37	34	24	10	14
690.8	26	4-5-7	GRAY GRAVELLY, SANDY CLAYEY SILT, MOIST - MEDIUM STIFF	9	15	9	15	36	25	20	6	14
688.3	28	4-5-6	DO DO DO	10	19	9	14	34	24	22	8	15
685.8	30	6-7-7	GRAY SANDY SILTY CLAY, MOIST - MEDIUM STIFF	11	14	8	13	37	28	22	8	15
	32											

680.8	34 36 38	19-18-25	BROWN SILTY CLAY WITH BROKEN STONE FRAGMENTS, MOIST - STIFF	12	23	6	4	31	36	28	9	19
675.8	40 42 44 46 48 50	35-36	BROWN HIGHLY WEATHERED SHALE WITH LIMESTONE FRAGMENTS, MOIST - VERY STIFF	13	58	9	5	13	15	30	12	15

	38 40		
674.8	42		
	44	30%	INTERBEDDED LIGHT BROWN WEATHERED SHALE AND LIGHT GRAY LIMESTONE, APPROX. 75% SHALE, 25% LIMESTONE. SHALE CALCAREOUS, NON-FOSSILIFEROUS, SOFT TO POSSIBLE MEDIUM TOUGH. LIMESTONE OCCURS IN 3/4" TO 3-3/4" LAYERS, IS CRYSTALLINE, SOME SHALY, FOSSILIFEROUS, HARD; MOST LAYERS EXHIBIT HIGH-ANGLE JOINTING WITH SOME IRON-OXIDE STAINING. (RECOVERY ESSENTIALLY LIMESTONE)
669.8	46		
	48	% RECOVERY	BORING COMPLETED
	50		

LOG OF BORING

ORDER No. 99.990, 11-6-68 JH

DATE STARTED 8-12-68 SAMPLER: TYPE SPLIT SPOON DIA. 2"O.D. WATER ELEVATION

DATE COMPLETED 8-12-68 CASING: LENGTH HSA DIA. 3.25"I.D. IMMEDIATE NONE

BORING NUMBER R-12-1 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER BACKFILLED UPON HRS. COMPLETION

STATION & OFFSET 13+30, DUCK CREEK ROAD, 62'RIGHT, NORTHEAST EXWY. HAM 71-3.61 SURFACE ELEVATION 693.6'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
693.6	0	2	DARK BROWN SILTY CLAY, (FILL) MOIST - MEDIUM STIFF	1	5	11	8	47	29	34	11	24
693.1	2	2-2	BROWN SILTY CLAY, MOIST - MEDIUM STIFF	2	0	8	11	38	43	36	18	22
688.6	4	4-6-8	DO DO DO	3	VISUAL							
	6	3-3-5	BROWN SANDY CLAY, MOIST - STIFF	4	0	4	16	37	43	37	20	25
	8	4-6-7	DO DO	5	VISUAL							
	10											
	12	10-11-11	DO DO	6	5	8	13	47	27	25	9	14
678.6	14	5-9-10	BROWN SANDY CLAY, MOIST - VERY STIFF	7	14	9	13	36	28	27	12	14
676.1	16	6-7-8	BROWN CLAYEY SAND, MOIST - VERY STIFF	8	7	7	64	5	17	30	13	16
	18	5-7-10	GRAY AND BROWN SANDY CLAY WITH LIMESTONE FRAGMENTS, MOIST - VERY STIFF	9	15	10	15	31	29	24	9	15
671.1	20 22	13-15-11	DO DO DO	10	47	7	11	19	16	22	8	10
668.6	24	8-9-12	GRAY SILTY CLAY, MOIST - VERY STIFF	11	0	4	7	46	43	28	13	14
	26	8-12-15	GRAY SANDY CLAY, MOIST - VERY STIFF	12	12	7	16	35	30	24	11	12
663.6	28 30	10-14-16	DO DO	13	12	8	15	32	33	26	12	12
	32	6-9-10	GRAY GRAVELLY, SANDY CLAY, MOIST - STIFF	14	19	7	14	31	29	27	14	14

	32											
	34											
	36	5-7-9	GRAY GRAVELLY SANDY CLAY, MOIST - MEDIUM STIFF	15	15	11	14	34	26	24	12	12
	38											
653.6	40											
	42	7-11-25	GRAY SANDY CLAY WITH GRAVEL AND SAND LAYERS, MOIST - VERY STIFF	16	26	15	19	25	15	17	6	10
	44											
648.6												
	46	8-10-12	GRAY GRAVELLY, SANDY CLAY, MOIST - STIFF	17	18	9	17	32	24	22	8	12
	48											
643.6	50											
642.6		6-9	GREENISH GRAY SILTY CLAY, MOIST - MEDIUM STIFF	18	8	5	7	39	41	31	16	21
	52	7	GRAY SILTY CLAY AND BOULDERS, MOIST - HARD	19	VISUAL							
	54											
	56	115-22-35	DO DO	20	17	5	6	24	48	42	22	24
	58											
	60											
	62											
	64											

	56		
636.1	58		
	60	38%	INTERBEDDED LIGHT BROWN WEATHERED SHALE AND LIGHT GRAY LIMESTONE, APPROX. 85% SHALE, 15% LIMESTONE. SHALE CALCAREOUS, TRACE FOSSILIFEROUS, SOFT TO MEDIUM TOUGH. LIMESTONE OCCURS IN 3/4" TO 2-1/2" LAYERS, IS CRYSTALLINE, FOSSILIFEROUS, HARD; LAYER AT BOTTOM OF RECOVERY EXHIBITS HIGH-ANGLE JOINT WITH IRON-OXIDE STAINING.
	62		
631.1			
	64	% RECOVERY	BORING COMPLETED
	66		
	68		
	70		

LOG OF BORING ORDER No. 99.990, 11-6-68 JH

DATE STARTED 10-1-68 SAMPLER: TYPE SPLIT SPOON DIA. 2"O.D. WATER ELEVATION

DATE COMPLETED 10-4-68 CASING: LENGTH HSA DIA. 2.25"I.D. IMMEDIATE NONE

BORING NUMBER B-41-1 CORE BARREL: TYPE NX SIZE 2-1/8"O.D. AFTER BACKFILLED UPON HRS. COMPLETION

STATION & OFFSET 308+98, RAMP ME, 5'LEFT, NORTHEAST EXWY., HAM 71-3.61 SURFACE ELEVATION 710.1'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
710.1	0											
	2	4-8-13	BROWN CLAYEY SILT, MOIST - STIFF	1	6	4	7	51	32	28	7	14
707.6												
706.1	4	8-10-14	BROWN SILTY CLAY, MOIST - STIFF	2	0	3	9	39	49	44	22	17
	6	20-30-45	BROWN CLAYEY GRAVEL, MOIST - STIFF	3	45	11	8	20	16	29	15	12
	8											
701.1		45-40-40	DO DO	4	VISUAL							
	10											
	12	20-15-40	BROWN GRAVELLY, SILTY CLAY, MOIST - VERY STIFF	5	19	3	4	30	44	42	20	8
	14	40-45-50	DO DO	6	VISUAL							
695.1												
	16	45-55-140	GRAY GRAVELLY, SILTY CLAY, MOIST - VERY STIFF	7	32	5	2	32	29	33	13	14
692.6	18											
		75-100-150	GRAY SHALE	8	VISUAL							
	20											
		150	DO	9	VISUAL							
	22											
	24											
	26											
	28											
	30											
	32											

689.6

20

22

24

684.6

26

28

30

30%

% RECOVERY

LAYERED GRAY SHALE AND LIMESTONE

BORING COMPLETED

LOG OF BORING

ORDER No. 99.990 JH 10-22-68

DATE STARTED 8-1-68 SAMPLER: TYPE SPLIT SPOON DIA. 2"O.D. WATER ELEVATION

DATE COMPLETED 8-1-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 34' (677.4)

BORING NUMBER R-3-1 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 1 HRS. 25'(686.4')

STATION & OFFSET 319+01 RAMP ME, 6' LEFT, NORTHEAST EXWY, HAM 71-4.58 SURFACE ELEVATION 711.4'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
711.4	0											
	2	7-9-12	BROWN SANDY SILTY CLAY WITH LIMESTONE FRAGMENTS. (FILL) MOIST - STIFF	1	17	10	16	30	27	28	14	13
706.4	4											
	6	2-3-3	BROWN SILTY CLAY, MOIST - MEDIUM STIFF	2	0	3	5	58	34	31	12	21
701.4	8											
	10	7-8-9	BROWN SANDY SILTY CLAY, MOIST - STIFF	3	13	10	17	32	28	29	15	14
	12	8-8-10	DO DO	4	12	11	18	32	27	26	13	13
696.4	14											
693.9	16	7-10-11	BROWN CLAYEY GRAVEL, MOIST - STIFF	5	43	7	9	22	19	26	12	13
	18	6-8-12	BROWN GRAVELLY SANDY SILTY CLAY, MOIST - STIFF	6	33	9	12	25	21	25	10	12
691.4	20											
	22	9-12-18	BROWN SANDY SILTY CLAY WITH LIMESTONE FRAGMENTS, MOIST - STIFF	7	18	10	16	30	26	25	11	14
688.9	24	12-13-19	BROWN GRAVELLY, SANDY SILTY CLAY, MOIST - STIFF	8	27	8	13	29	23	27	12	14
	26	7-12-18	DO DO	9	21	8	15	31	25	26	12	14
684.4	28											
	30	9-11-15	BROWN SILTY CLAY, MOIST - STIFF	10	10	7	12	33	38	34	18	19
	32	12-17-25	DO DO	11	17	4	6	51	22	28	11	19
	34											
	36	3-5-9	DO DO	12	13	7	10	41	29	30	14	19
	38											
671.4	40											
	42	4-9-11	BROWN SILTY SAND, MOIST - MEDIUM DENSE	13	2	4	55	27	12		NP	22
666.4	44											
	46	3-5-7	GRAY SILTY CLAY, MOIST - STIFF	14	6	6	10	32	46	37	21	15
	48											
	50											
	52	6-14-20	DO DO	15	3	3	2	29	63	50	28	22
	54											
656.4	56											
	58	43%	INTERBEDDED LIGHT BROWN AND LIGHT GRAY WEATHERED SHALE AND LIGHT GRAY LIMESTONE, APPROX. 85% SHALE, 15% LIMESTONE. SHALE CALCAREOUS, TRACE FOSSILIFEROUS TO FOSSILIFEROUS, MEDIUM TOUGH TO TOUGH. LIMESTONE OCCURS IN 1-1/4" TO 4-1/4" LAYERS, IS CRYSTALLINE, FOSSILIFEROUS, HARD; HIGH-ANGLE JOINT WITH TRACE IRON-OXIDE STAINING EXHIBITED NEAR TOP OF RECOVERY.									
651.4	60											
	62	% RECOVERY	BORING COMPLETED									

LOG OF BORING Order No. 99.990 JH 11-21-68

DATE STARTED 8-6-68 SAMPLER: TYPE SPLIT SPOON DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 8-6-68 CASING. LENGTH HSA DIA. 3.25"I.D. IMMEDIATE 25' (686.7')
BORING NUMBER R-3-2 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER BACKFILLED UPON HRS. COMPLETION
STATION & OFFSET 319+92, RAMP ME, 14' LEFT, NORTHEAST EXWY, HAM 71-4.58 SURFACE ELEVATION 711.7'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
711.7	0											
710.7		3-5	TOPSOIL AND CLAY. (FILL)	1	VISUAL							
	2	6	BROWN GRAVELLY, CLAYEY SAND, MOIST - STIFF	2	25	11	16	27	21	24	11	11
	4											
706.7												
	6	8-11-14	GRAY GRAVELLY SANDY, SILTY CLAY, MOIST - STIFF	3	22	10	15	30	23	22	10	11
	8											
	10											
	12	8-9-13	DO DO	4	30	8	13	29	20	23	11	12
	14	7-11-14	DO DO	5	26	9	15	28	22	22	9	12
696.7												
	16	11-14-16	GRAY SANDY SILTY CLAY, MOIST - STIFF	6	12	11	16	37	24	21	9	97
694.2	18											
		8-9-9		7	INSUFFICIENT SAMPLE							
	20											
	22	8-9-10	GRAY SILTY CLAY WITH LIMESTONE FRAGMENTS, MOIST - STIFF	8	10	2	5	41	42	51	31	27
	24	9-11-15	DO DO DO	9	16	5	5	37	37	37	23	18
686.7												
	26	30-17-18	BROWN AND GRAY SILTY CLAY AND LIMESTONE FRAGMENTS, MOIST - STIFF	10	34	4	4	28	30	37	20	19
	28											
		13-14-16	DO DO DO	11	12	5	5	39	39	34	17	22
	30											
	32	23-41-47	DO DO DO	12	15	3	5	40	37	35	19	18
	34	71-53	BROWN AND GRAY SILTY CLAY AND LIMESTONE FRAGMENTS, MOIST - VERY STIFF	13	38	4	5	25	28	36	21	18
676.7												
	36	33-57-69	BROWN AND GRAY SILTY CLAY, MOIST - VERY STIFF	14	0	3	1	48	48	36	15	17
	38											
	40											
	42	40-46-65	DO DO	15	0	0	2	42	56	46	22	19
	44											
666.7												
	46	65-85	BROWN SHALE	16	VISUAL							
	48											
661.7	50											
	52	30%	LAYERED BROWN AND GRAY WEATHERED SHALE AND LIMESTONE LAYERS, APPROX. 5% LIMESTONE IN 1/2" TO 3" LAYERS.									
	54											
656.7												
	56	% RECOVERY	BORING COMPLETED									
	58											

LOG OF BORING

ORDER No. 99.990 JH 10-22-68

DATE STARTED 8-5-68 SAMPLER: TYPE SPLIT SPOON DIA. 2"O.D. WATER ELEVATION

DATE COMPLETED 8-5-68 CASING: LENGTH HSA DIA. 3.25"I.D. IMMEDIATE 43.5' (674.4')

BORING NUMBER R-3-3 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER BACKFILLED UPON HRS. COMPLETION

STATION & OFFSET 320+98 RAMP ME, 8' LEFT NORTHEAST EXWY, HAM 71-4.58 SURFACE ELEVATION 717.9'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
717.9	0											
716.9			BLOCK, CONCRETE AND GRAVEL.									
	2	6-8-11	BROWN AND GRAY GRAVELLY SANDY SILTY CLAY, MOIST- STIFF	1	22	9	15	31	23	25	9	18
712.9	4											
	6	11-13-16	BROWN AND GRAY SANDY SILTY CLAY, MOIST - STIFF	2	14	12	15	30	29	25	10	12
707.9	8											
	10											
	12	7-8-9	BROWN AND GRAY SANDY CLAYEY SILT, MOIST - STIFF	3	16	10	16	36	22	22	8	11
702.9	14											
	16	9-16-18	GRAY GRAVELLY, SANDY CLAYEY SILT, MOIST - STIFF	4	22	10	15	35	18	20	6	14
	18											
697.9	20											
695.9	22	10-13-17	BROWN AND GRAY SANDY SILTY CLAY, MOIST - STIFF	5	14	9	14	30	33	33	15	18
	24	13-15-15	BROWN AND GRAY GRAVELLY SILTY CLAY WITH LIMESTONE FRAGMENTS MOIST - VERY STIFF	6	21	8	10	39	22	34	15	16
692.9	26	23-51-30	BROWN AND GRAY CLAYEY GRAVEL WITH LIMESTONE FRAGMENTS, MOIST - VERY STIFF	7	55	5	4	13	23	45	26	26
690.4	28											
	30	30-31-39	BROWN AND GRAY FAT CLAY WITH LIMESTONE FRAGMENTS, MOIST - VERY STIFF	8	15	9	3	18	55	70	42	26
	32	76	DO DO DO	9	VISUAL							
685.4	34	23-85	BROWN AND GRAY CLAYEY GRAVEL WITH LIMESTONE FRAGMENTS, MOIST - VERY STIFF	10	42	5	3	16	34	54	32	13
682.9	36	8-11-13	BROWN AND GRAY SILTY CLAY, MOIST - VERY STIFF	11	1	3	4	46	46	37	17	15
680.9	38	45-81	BROWN AND GRAY WEATHERED SHALE WITH LIMESTONE LAYERS, MOIST - STIFF	12	16	1	2	34	47	42	20	17
	40	43-77	DO DO DO	13	0	0	1	36	63	48	24	15
	42											
	44											
	46	120	DO DO DO	14	0	0	2	48	50	39	19	20
	48											
667.9	50											
	52		LIGHT BROWN AND GRAY WEATHERED SHALE WITH LIGHT GRAY LIMESTONE, APPROX. 95% SHALE, 5% LIMESTONE. SHALE CALCAREOUS, TRACE FOSSILIFEROUS, SOFT TO MEDIUM TOUGH. LIMESTONE OCCURS IN 1/2" TO 1-1/2"									
	54	27%	LAYERS, IS CRYSTALLINE, FOSSILIFEROUS, HARD.									
662.9												
	56	% RECOVERY	BORING COMPLETED									
	58											

LOG OF BORING

ORDER No. 99.990, 9-25-68 JH

DATE STARTED 8-9-68 SAMPLER: TYPE SPLIT SPOON DIA. 2"O.D. WATER ELEVATION

DATE COMPLETED 8-9-68 CASING: LENGTH HSA DIA. 3.375"I.D. IMMEDIATE 32.5' (686.7')

BORING NUMBER R-3-4 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER BACKFILLED UPON HRS. COMPLETION

STATION & OFFSET 322+85, RAMP ME, 8'LEFT, NORTHEAST EXWY, HAM 71-4.58 SURFACE ELEVATION 719.2'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
719.2	0											
718.2		2-3	DARK BROWN AND GRAY GRAVELLY, SILTY CLAY, (FILL) MOIST-MEDIUM	1	20	8	10	37	25	34	13	25
716.7	2	5	BROWN SANDY LEAN CLAY, MOIST - STIFF /STIFF	2	4	9	12	35	40	41	23	22
	4	8-6-6	BROWN AND GRAY LEAN CLAY, MOIST - VERY STIFF	3	SAMPLE DESTROYED							
	6	5-5-5	DO DO	4	0	4	14	35	47	43	24	23
	8											
709.2	10											
	12	7-11-15	BROWN AND GRAY GRAVELLY, SANDY SILTY CLAY, MOIST - VERY STIFF	5	21	11	16	30	22	24	10	11
704.2	14											
	16	9-7-9	GRAY AND BROWN GRAVELLY, SANDY SILTY CLAY WITH ROCK FRAGMENTS, MOIST - STIFF	6	33	8	13	27	19	24	9	14
	18											
699.2	20											
	22	5-6-8	GRAY SANDY, SILTY CLAY, MOIST - MEDIUM STIFF	7	11	8	12	39	30	24	8	14
	24											
	26	6-8-9	DO DO	8	13	10	16	35	26	21	7	14
	28											
		7-8-10	DO DO	9	12	11	16	37	24	22	8	12
689.2	30											
	32	4-6-8	GRAY GRAVELLY, SANDY, CLAYEY SILT, MOIST - MEDIUM STIFF	10	17	9	16	35	23	20	6	13
686.7												
685.2	34	5-6-8	GRAY AND GREENISH GRAY GRAVELLY, SILTY CLAY, MOIST - MEDIUM STIFF	11	27	6	8	33	26	28	11	20
	36	6-10-12	BROWN AND GRAY LEAN CLAY, MOIST - STIFF	12	13	5	8	39	35	32	16	18
682.2	38											
		8-11-13	BROWN AND GRAY GRAVELLY LEAN CLAY, MOIST - STIFF	13	15	7	10	31	37	36	19	18
679.2	40											
		7-10-11	BROWN AND GRAY LEAN CLAY, MOIST- STIFF	14	7	4	7	41	41	32	17	17
676.7	42											
	44	8-10-12	BROWN SILTY CLAY, MOIST - STIFF	15	12	3	5	44	36	30	13	16
674.2												
	46	4-5-6	BROWN AND GRAY CLAY, (VARVED) MOIST - STIFF	16	0	0	1	9	90	58	30	34
671.7	48											
670.2		3-4-4	GRAY SILTY CLAY, VERY MOIST - SOFT	17	0	0	0	71	29	27	9	30
	50											
	52	11-13-23	BLUISH GRAY SILTY CLAY, MOIST - VERY STIFF	18	0	2	0	39	59	40	20	15
	54											
664.2												
662.7	56	18-35-51	GREENISH GRAY HIGHLY WEATHERED SHALE, MOIST - HARD	19	0	0	0	37	63	45	22	16
	58	85%	INTERBEDDED LIGHT BROWN WEATHERED SHALE AND LIGHT GRAY LIMESTONE, APPROX. 85% SHALE, 15% LIMESTONE. SHALE CALCAREOUS, NON-FOSSILIFEROUS TO FOSSILIFEROUS, ESSENTIALLY MEDIUM TOUGH (TRACE POSSIBLE SOFT). LIMESTONE OCCURS PRIMARILY WITHIN TOP 2-FT. OF RECOVERY IN 1" TO 4" LAYERS, IS CRYSTALLINE, TRACE SHALY, FOSSILIFEROUS, HARD.										
	60											
657.7	62	% RECOVERY	BORING COMPLETED									
	64											

LOG OF BORING Order No. 99.990 JH 10-22-68

DATE STARTED 8-2-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 8-2-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 20' (699.9')
BORING NUMBER R-3-5 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 1 HRS. 23' (696.9')

STATION & OFFSET 323+89, Ramp ME, 10' Left, Northeast Exwy. HAM 71-4.58 SURFACE ELEVATION 719.9'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
719.9	0											
718.4	2	4-3-2	Cinders, (FILL)	1	Visual							
	4											
	6	8-10-10	Brown sandy silty clay, moist - stiff	2	4	7	15	39	35	33	16	21
	8											
709.9	10											
	12	9-15-22	Brown gravelly sandy clay, moist - stiff	3	34	9	13	27	17	23	9	11
	14											
704.9												
	16	8-12-15	Gray sandy silty clay, moist - stiff	4	8	11	16	40	25	23	9	11
	18											
699.9	20											
	22	7-14-16	Brown sandy gravel, moist - dense	5	70	18	7	-5-				9
	24											
	26	6-8-10	do do	6	70	15	7	-8-				7
	28											
		3-4-7	do do	7	66	16	8	-10-				8
689.9	30											
687.9	32	4-6-6	Brown silty sandy gravel, moist - dense	8	46	34	7	-13-				14
	34	3-2-3	Gray silty clay, moist - medium stiff	9	0	2	1	65	32	32	11	33
684.9												
	36	2-2-3	Gray sandy silty clay, moist - medium stiff	10	11	11	16	40	22	25	8	21
682.4	38											
		2-3-5	Gray silty clay, moist - medium stiff	11	7	3	4	54	32	38	18	26
679.9	40											
	42	2-2-4	Gray gravelly silty clay, moist - medium stiff	12	26	4	8	39	23	37	19	26
677.4												
	44	3-4-5	Gray silty clay, moist - medium stiff	13	0	1	5	59	35	40	18	26
	46	6-7-8	do do	14	0	1	7	57	35	36	17	25
	48											
669.9	50											
	52	4-5-5	Gray gravelly silty clay, moist - stiff	15	23	5	10	31	31	31	14	17
	54											
664.9												
	56	7-9-10	Gray and brown silty clay with broken stone fragments, moist - stiff	16	13	5	8	41	33	29	15	16
	58											
	60											
	62	10-15-18	do do do	17	3	1	1	31	64	44	23	17
	64											
	66	14-20-40	do do do	18	7	2	2	35	54	41	23	18
	68											
	70											
649.4		60	do do do	19	Insufficient sample							
	72		Interbedded light gray shale and light gray limestone, approx. 80% shale, 20% limestone. Shale calcareous, non-fossiliferous, probable soft to medium tough, trace tough. Limestone occurs in 1" to 4-3/4" layers, is crystalline, fossiliferous, hard.									
	74	34%										
644.4	76											
	78	% Recovery	Boring Completed									

LOG OF BORING

ORDER No. 99,990 JH 10-22-68

DATE STARTED 9-9-68 SAMPLER: TYPE SPLIT SPOON DIA. 2"O.D. WATER ELEVATION

DATE COMPLETED 9-11-68 CASING: LENGTH HSA DIA. 2.25"I.D. IMMEDIATE NONE

BORING NUMBER R-5-1 CORE BARREL: TYPE SIZE AFTER BACKFILLED UPON HRS. COMPLETION

STATION & OFFSET 5+16 DUCK CREEK ROAD, 31' RIGHT, NORTHEAST EXWY. HAM 71-4.58 SURFACE ELEVATION 683.2'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
683.2	0											
	2	3-3-4	BROWN SANDY SILTY CLAY WITH LIMESTONE FRAGMENTS, (FILL) MOIST - MEDIUM STIFF	1	18	8	13	35	26	36	18	16
	4		BROWN SANDY SILTY CLAY WITH LIMESTONE FRAGMENTS, (FILL) MOIST - VERY STIFF	1A	17	8	14	36	25	27	13	11
678.2	6	3-13-13	BROWN SANDY SILTY CLAY, MOIST - STIFF	2	10	8	15	36	31	26	12	13
	8											
673.2	10	6-11-19	BROWN AND GRAY GRAVELLY SANDY, SILTY CLAY, MOIST - STIFF	3	33	6	13	26	22	25	12	11
	12											
668.2	14											
	16	6-7-10	GRAY SANDY SILTY CLAY, MOIST - MEDIUM STIFF	4	17	10	19	32	22	22	10	13
	18	7-8-9	DO DO	5	15	10	19	33	23	22	10	12
	20											
	22	7-8-11	DO DO	6	12	10	18	36	24	23	11	13
	24	15-20-25	DO DO	7	19	8	15	34	24	25	12	13
	26	50	DO DO	8	NO RECOVERY							
655.7	28											
654.2		12-18-30	GRAY SANDY CLAYEY GRAVEL, MOIST - VERY DENSE	9	44	9	13	21	13	21	9	10
	30											
		25-25-30	BROWN GRAVELLY SILTY SAND, MOIST - VERY DENSE	10	21	8	40	21	10		NP	15
651.2	32											
	34	25-30-45	BROWN SILTY SANDY GRAVEL, MOIST - VERY DENSE	11	50	18	16	-16-				5
	36	34-35-35	DO DO	12	44	22	17	-17-				5
	38											
643.2	40											
	42	15-25-30	BROWN SILTY SAND, MOIST - DENSE	13	6	15	58	-21-				6
638.2	44											
	46	16-20-25	BROWN SILTY GRAVELLY SAND, MOIST - DENSE	14	38	13	36	-13-				5
	48											
	50											
630.7	52	15-20-30	DO DO	15	26	13	35	18	8		NP	9
	54		BORING COMPLETED									
	56											

LOG OF BORING

Order No. 99.990, 9-27-68 JH

DATE STARTED 8-15-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 8-15-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 50' (633.0)
BORING NUMBER R-5-2 CORE BARREL: TYPE SIZE AFTER 24 HRS. Caved @ 48'; Dry

STATION & OFFSET 7+02 Duck Creek 32' Right, Northeast Expy. Ham 71-4.58 SURFACE ELEVATION 683.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
683.0'	0											
680.5	2	4-7-9	Brown sandy clayey GRAVEL, moist - stiff	1	36	6	13	23	22	27	11	14
	4	5-6-8	Brown gravelly, sandy silty CLAY, moist - stiff	2	Visual							
	6	9-10-12	do do	3	25	7	14	30	24	24	10	15
	8	8-11-13	do do	4	Visual							
673.0	10											
670.5	12	10-15-20	Brown gravelly sandy clayey SILT, moist - Stiff	5	16	11	19	32	22	21	7	10
668.0	14	17-18-25	Brown gravelly, silty SAND, moist - very stiff	6	30	14	23	24	9	17	3	11
665.5	16	10-18-21	ROCK FRAGMENTS	7	Visual							
	18	9-16-19	Brown gravelly sandy silty CLAY, moist - stiff	8	36	6	11	26	21	26	11	13
	20	16-19-25	Brown gravelly sandy silty CLAY, moist - very stiff	9	31	6	13	27	23	24	10	12
	22	11-15-20	do do do	10	Visual							
	24	12-17-20	do do do	11	17	8	15	33	27	25	13	13
	26	10-18-35	do do do	12	Visual							
	28	17-21-33	do do do	13	22	11	17	29	21	27	14	12
650.5	30											
648.0	32	10-15-19	Brown silty SAND, moist - dense	14	9	17	45	19	10		NP	6
	34	12-17-16	Brown sandy SILT with fine sand layers, moist - dense	15	0	2	32	52	14	20	4	21
	36											
643.0	38											
	40	13-16-19	Brown fine SAND, moist - dense	16	0	9	80		-11-			4
638.0	42											
	44	11-17-20	Brown silty SAND, moist - dense	17	11	27	50		-12-			5
633.0	46											
	48	15-18-23	Brown fine to coarse SAND, moist - dense	18	0	26	66		-8-			19
	50											
626.5	52	8-15-25	do do	19	1	54	40		-5-			23
	54		Boring Completed									
	56											
	58											
	60											

LOG OF BORING Order No. 99,990, 11-6-68 JH

DATE STARTED 8-12-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 8-12-68 CASING: LENGTH HSA DIA. 3.25"I.D. IMMEDIATE None
BORING NUMBER R-6-1 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER Backfilled Upon HRS. Completion

STATION & OFFSET 13+38, Duck Creek Road, 62' Right, Northeast Exwy. HAM 71-4.58 SURFACE ELEVATION 693.6'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
693.6	0	2	Dark brown silty clay (FILL) moist - medium stiff	1	5	11	8	47	29	34	11	24
691.1	2	2-2	Brown silty CLAY, moist - medium stiff	2	0	8	11	38	43	36	18	22
688.6	4	4-6-8	DO DO DO	3	Visual							
	6	3-3-5	Brown sandy CLAY, moist - stiff	4	0	4	16	37	43	37	20	25
	8	4-6-7	DO DO	5	Visual							
	10											
	12	10-11-11	DO DO	6	5	8	13	47	27	25	9	14
678.6	14	5-9-10	Brown sandy CLAY, moist - very stiff	7	14	9	13	36	28	27	12	14
676.1	16	6-7-8	Brown clayey SAND, moist - very stiff	8	7	7	64	5	17	30	13	16
	18	5-7-10	Gray and brown sandy CLAY with limestone fragments, moist - very stiff	9	15	10	15	31	29	24	9	15
	20											
	22	13-15-11	DO DO DO	10	47	7	11	19	16	22	8	10
671.1	24	8-9-12	Gray silty CLAY, moist - very stiff	11	0	4	7	46	43	28	13	14
668.6	26	8-12-15	Gray sandy CLAY, moist - very stiff	12	12	7	16	35	30	24	11	12
	28	10-14-16	DO DO	13	12	8	15	32	33	26	12	12
663.6	30											
	32	6-9-10	Gray gravelly, sandy CLAY, moist - stiff	14	19	7	14	31	29	27	14	14
	34											
	36	5-7-9	Gray gravelly sandy CLAY, moist - medium stiff	15	15	11	14	34	26	24	12	12
	38											
653.6	40											
	42	7-11-25	Gray sandy CLAY with gravel and sand layers, moist - very stiff	16	26	15	19	25	15	17	6	10
	44											
648.6	46	8-10-12	Gray gravelly, sandy CLAY, moist - stiff	17	18	9	17	32	24	22	8	12
	48											
643.6	50											
642.6		6-9	Greenish gray silty CLAY, moist - medium stiff	18	8	5	7	39	41	31	16	21
	52		Gray silty CLAY and boulders, moist - hard	19	Visual							
	54											
	56	115-22-35	DO DO	20	17	5	6	24	48	42	22	24
636.1	58											
	60	38%	Interbedded light brown weathered SHALE and light gray LIMESTONE, approx. 85% SHALE, 15% LIMESTONE. Shale calcareous, trace fossiliferous, soft to medium tough. Limestone occurs in 3/4" to 2-1/2" layers, is crystalline, fossiliferous, hard; layer at bottom of recovery exhibits high-angle joint with iron-oxide staining.									
	62											
631.1												
	64	% Recovery	Boring Completed									
	66											

LOG OF BORING Order No. 99.990. 9-27-68 JH

DATE STARTED 5-20-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 5-20-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 15' (713.6')
BORING NUMBER B-34-3 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 2 HRS. 14' (714.6')
STATION & OFFSET 322+98, C.L., Northeast Expy. HAM 71-4,58 SURFACE ELEVATION 728.6'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
728.6	0											
723.6	2 4	10-9-11	Brown silty clay, trace brick fragments and glass.(FILL) moist - stiff	1	9	4	7	48	32	58	39	18
718.6	6 8 10	9-9-10	Light brown silty clay, moist - medium stiff	2	12	7	11	37	33	36	17	23
708.6	12 14 16 18 20	10-11-10	Light brown gravelly, sandy, silty clay, moist - medium stiff	3	18	12	16	30	24	24	9	13
		9-10-11	DO DO DO	4	19	12	17	30	22	23	10	14
703.6	22 24	41-27-19	Gray gravelly, sandy clay, moist - stiff	5	16	14	16	32	22	*		12
698.6	26 28 30	9-12-15	Gray clayey silt, moist - stiff	6	7	7	2	60	24	22	7	12
693.6	32 34	5-7-12	Gray gravelly, sandy, silty clay, moist - medium stiff	7	16	9	16	33	26	24	9	13
691.1	36 38	6-6-8	Gray silty clay with organics, very moist - medium stiff	8	0	0	1	71	28	32	11	31
	40	3-4-5	Greenish gray silty clay,trace of organics, very moist - medium dense	9	0	4	1	55	40	35	14	26
	42	4-5-6	DO DO DO	10	0	3	4	51	42	45	22	33
683.6	44	6-7-6	DO DO DO	11	0	2	4	49	45	43	21	27
	46	90	Gray and brown highly weathered shale, moist - very stiff	12	Visual							
678.6	48 50	17-32-60	DO DO DO	13	0	2	5	43	50	36	16	19
677.6		32-57	Brown and gray highly weathered shale, moist - hard	14	0	1	0	33	66	48	23	15
667.6	52 54 56	60%	Light brown and light gray weathered shale with light gray limestone layers, approx. 90% shale, 10% limestone. Shale calcareous, non-fossiliferous to trace fossiliferous, medium tough, some probable soft; high-angle joint exhibited top 1' of recovery. Limestone occurs primarily near center of section in 1" to 5½" layers, is crystalline, some fine-grained, fossiliferous, hard.									
	58 60	68%										
	62 64	% Recovery	Boring Completed									

Foundation Boring Sheet No. FB-9.

LOG OF BORING

ORDER No. 99.990, 9-24-68 JH

DATE STARTED 5-28-68 SAMPLER: TYPE SPLIT SPOON DIA. 2"O.D. WATER ELEVATION

DATE COMPLETED 5-28-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 9.5', (714.7')

BORING NUMBER B-34-4 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER BACKFILLED HRS.

STATION & OFFSET 323+73.5 97'Lt. NORTHEAST EXWY. HAM 71-4.58 SURFACE ELEVATION 724.2'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
724.2	0											
	2	2-4-6	BROWN SILTY CLAY, (FILL) MOIST - MEDIUM STIFF	1	5	9	9	45	32	36	17	30
	4	6-7-8	DO DO	2	VISUAL							
717.7	6	4-5-7	BROWN SILTY CLAY, TRACE WOOD, (FILL) MOIST - MEDIUM STIFF	3	3	4	9	38	46	46	26	25
	8	6-6-8	BROWN SILTY CLAY, MOIST - MEDIUM STIFF	4	0	5	13	51	31	30	11	27
714.2	10											
	12	13-16-20	BROWN GRAVELLY, SANDY SILTY CLAY, MOIST - STIFF	5	27	8	12	30	23	28	13	12
709.2	14											
	16	19-13-18	BROWN SANDY SILTY CLAY, MOIST - MEDIUM STIFF	6	5	14	20	35	26	25	11	13
704.2	18 20											
	22	15-13-14	GRAY AND BROWN GRAVELLY SILTY CLAY WITH SAND SEAMS, VERY MOIST - MEDIUM STIFF	7	17	11	14	35	23	24	10	18
699.2	24											
	26	7-10-15	GRAY GRAVELLY, CLAYEY SILT WITH SAND SEAMS, MOIST - MEDIUM STIFF	8	24	10	14	32	20	21	7	12
694.2	28 30											
	32	19-10-6	GRAY CLAYEY SANDY GRAVEL WITH ROCK FRAGMENTS, WET - MEDIUM DENSE	9	51	13	7	18	11	23	8	21
689.2	34											
	36	11-12-14	GREENISH GRAY SILTY CLAY, MOIST - MEDIUM STIFF	10	0	4	13	41	42	42	23	24
684.2	38 40											
	42	10-14-16	GREENISH GRAY SILTY CLAY WITH LIMESTONE FRAGMENTS, MOIST - STIFF	11	32	8	9	24	27	32	15	18
	44	15-16-18	DO DO DO	12	23	8	9	28	32	34	17	16
679.2	46	24-140	BROWN SILTY CLAY WITH LIMESTONE FRAGMENTS, MOIST - STIFF	13	14	7	8	33	38	43	23	23
676.7	48											
	50	9-11-12	BROWN AND GRAY SILTY CLAY, (VARVED) MOIST - STIFF	14	0	0	1	15	84	52	26	40
	52	10-13-14	BROWN AND GRAY FAT CLAY, (VARVED) MOIST - VERY STIFF	15	0	0	0	7	93	66	36	36
671.7	54	31-60	BROWN AND GRAY SHALE	16	VISUAL							
	56	48-68	DO DO	17	VISUAL							
	58	90	DO DO	18	VISUAL							
664.2	60		INTERBEDDED LIGHT BROWN (TRACE LIGHT GRAY) WEATHERED SHALE AND LIGHT GRAY LIMESTONE, APPROX. 65% SHALE, 35% LIMESTONE. SHALE CALCAREOUS, NON-FOSSILIFEROUS, MEDIUM TOUGH. LIMESTONE OCCURS PRIMARILY IN BOTTOM-HALF OF SECTION IN 3/4" TO 4" LAYERS. IS CRYSTALLINE, FOSSILIFEROUS, HARD.									
661.7	62	100%										
	64		LIGHT GRAY SHALE, CALCAREOUS, NON-FOSSILIFEROUS TO FOSSILIFEROUS, TOUGH TO HARD. THIN (1/2") LIGHT GRAY LIMESTONE LAYER, CRYSTALLINE, FOSSILIFEROUS, HARD, OCCURS AT APPROX. 64'.									
659.2	66	% RECOVERY	BORING COMPLETED									
	68											

LOG OF BORING Order No. 99.990, 9-27-68 JH

DATE STARTED 5-29-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 5-29-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 25.0' (697.7')
BORING NUMBER B-34-5 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER Backfilled HRS.
STATION & OFFSET 323+45, 159' Left, Northeast Expy. BAM 71-4.58 SURFACE ELEVATION 722.7'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
722.7	0											
720.2	2	2-4-4	Brown silty clay, (FILL) moist - medium stiff	1	3	8	10	42	37	36	21	20
	4	4-6-7	Brown and gray lean CLAY, moist - medium stiff	2	9	5	13	33	40	41	26	22
	6	3-4-6	DO DO	3	2	8	10	42	38	34	19	23
	8	6-7-8	DO DO	4	Visual							
712.7	10											
	12	11-16-17	Brown and gray gravelly, sandy silty CLAY, moist - stiff	5	31	10	15	24	20	23	10	12
	14											
	16	18-21-23	DO DO DO	6	27	10	15	28	20	18	6	12
	18											
702.7	20	14-17-18	DO DO DO	7	28	12	16	31	13	22	9	13
700.2	22	8-11-13	Gray gravelly, sandy silty CLAY, moist - stiff	8	16	8	14	35	27	24	10	15
697.7	24	10-11-13	Greenish gray gravelly fat CLAY, moist - stiff	9	22	2	4	21	51	59	40	32
695.7	26	11-13-16	Greenish gray sandy silty CLAY, moist - stiff	10	10	10	13	38	29	26	12	28
	28	9-11-14	Gray silty CLAY, moist - stiff	11	12	7	10	35	36	22	10	12
692.7	30											
690.2	32	11-12-14	Gray gravelly sandy clayey SILT, moist - medium stiff	12	22	12	16	30	20	14	2	16
687.7	34	9-11-18	Gray silty SAND, very moist - medium dense	13	10	22	33	22	13	16	4	15
685.2	36	6-6-7	Greenish blue and gray gravelly, silty CLAY, very moist - soft	14	16	8	6	46	24	31	11	28
682.7	38	5-7-9	Greenish blue and gray silty CLAY, trace organics, very moist - medium stiff	15	0	1	3	56	40	36	15	28
	40											
	42	8-16-18	Bluish gray gravelly silty CLAY, moist - stiff	16	35	5	6	23	31	37	21	19
677.7	44											
	46	11-13-16	Bluish-greenish gray sandy, silty CLAY with limestone fragments, moist - stiff	17	19	8	12	28	33	29	14	17
673.7	48											
	50	13-17-18	Greenish-gray silty CLAY, moist - stiff	18	10	9	7	32	42	38	20	17
	52											
	54											
	56	14-15-17	DO DO	19	Sample Destroyed							
	58											
	60											
	62	15-24-18	DO DO	20	0	1	1	32	66	48	27	20
657.7	64											
	66	23-31-40	Bluish gray silty CLAY, moist - stiff	21	0	2	2	34	62	40	18	21
	68											
652.7	70											
650.2	72	90%	Light brown and gray weathered SHALE, calcareous, non-fossiliferous to fossiliferous, medium tough to some possible tough. Two limestone layers (½" & 1½"), crystalline, fossiliferous, hard; occur at center of section and 8" from top of section, respectively.									
647.7	74		Interbedded light gray LIMESTONE and light gray shale, approx. 60% limestone, 40% shale. Limestone occurs closely packed in 3/4" to 4" layers, is crystalline and shaly, fossiliferous, hard; High-angle jointing exhibited at bottom of section. Shale calcareous, non-fossiliferous, tough (some probable soft), with ready-parting along bedding planes indicated.									
	76											
	78	% Recovery	Boring Completed									
	80											

LOG OF BORING Order No. 99.990, 9-27-68 JH

DATE STARTED 5-22-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 5-22-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None
BORING NUMBER B-35-1 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 1 HRS. 15' (729.0')

STATION & OFFSET 334+07, 153'Rt. Northeast Expy. HAM 71-4.58 SURFACE ELEVATION 744.0'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
744.0	0											
742.0	2	3-3-5	DARK BROWN SILTY CLAY, (FILL) MOIST - MEDIUM STIFF	1	0	5	4	60	31	34	8	22
	4											
	6	5-5-8	BROWN SANDY SILTY CLAY WITH LIMESTONE FRAGMENTS, MOIST- STIFF	2*	VISUAL					42	23	24
	8											
	10											
	12	6-12-18	BROWN SANDY SILTY CLAY WITH LIMESTONE FRAGMENTS, MOIST - VERY STIFF	3	3	14	16	34	33	32	16	12
729.0	14											
	16	5-8-33	GRAY GRAVELLY SANDY SILTY CLAY WITH BROKEN STONE FRAGMENTS, MOIST - VERY STIFF	4*	VISUAL							10
	18	7-11-15	DO DO DO	5	38	7	12	27	16	21	8	10
	20											
721.5	22	8-14-17	DO DO DO	6	31	12	13	24	20	21	7	10
	24	3-4-3	DARK GRAY LEAN CLAY WITH ORGANICS, VERY MOIST - SOFT	7	0	1	2	59	38	32	18	30
719.0	26	3-4-3	DARK GRAY CLAYEY SILT WITH ORGANICS, VERY MOIST - SOFT	8	0	1	0	69	30	34	6	34
716.5	28	3-5-7	GREENISH GRAY SANDY, SILTY CLAY, MOIST - MEDIUM STIFF	9	0	14	10	20	56	40	21	25
714.0	30	3-5-8	GREENISH GRAY LEAN CLAY, MOIST - MEDIUM STIFF	10	2	4	2	42	50	42	25	24
711.5	32	7-13-17	GREENISH BROWN AND GRAY SILTY CLAY WITH BROKEN STONE FRAGMENTS, MOIST - STIFF	11	18	5	3	40	34	35	17	18
709.0	34	6-12-18	GREENISH BROWN AND GRAY HIGHLY WEATHERED SHALE, MOIST - VERY STIFF	12	4	6	2	35	53	44	23	17
	36											
	38											
704.0	40											
703.5		70	BROWN WEATHERED SHALE AND LIMESTONE FRAGMENTS	13	INSUFFICIENT SAMPLES							
	42	53%	INTERBEDDED LIGHT BROWN WEATHERED SHALE AND LIGHT GRAY LIMESTONE, APPROX. 75% SHALE, 25% LIMESTONE. SHALE CALCAREOUS, NON-FOSSILIFEROUS TO FOSSILIFEROUS, POSSIBLE SOFT TO MEDIUM TOUGH. LIMESTONE OCCURS IN 3/4" TO 7" LAYERS, IS CRYSTALLINE AND FINE-GRAINED, TRACE SHALY, FOSSILIFEROUS, HARD: HIGH-ANGLE JOINT WITH IRON-OXIDE STAINING EXHIBITED AT TOP OF RECOVERY.									
698.5	44											
	46											
	48	% Recovery	BORING COMPLETED									
	50		* SAMPLE DESTROYED									

LOG OF BORING Order No. 99.990, 9-24-68 JH

DATE STARTED 5-21-68 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 5-21-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None
BORING NUMBER B-35-2 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 2' HRS. 24.5' (714.7')

STATION & OFFSET 335+19, 90' Right, Northeast Exwy. HAM 71-4.58 SURFACE ELEVATION 739.2'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
~~739.2~~	0											
	2	3-3-4	Brown silty CLAY, moist - medium stiff	1	0	2	4	58	36	36	15	20
734.2	4											
	6	6-8-9	Brown sandy, silty CLAY, moist - very stiff	2	4	6	15	29	46	40	20	20
729.2	8											
	10											
	12	6-18-29	Light brown and gray silty CLAY, moist - hard	3	9	7	4	31	49	46	22	23
724.2	14											
	16	9-12-10	Brown silty CLAY with limestone fragments, moist - hard	4	49	5	3	19	24	38	19	17
	18											
719.2	20											
	22	31-20-38	Brown highly weathered SHALE, moist - hard	5	7	2	1	40	50	40	16	16
	24											
714.2												
	26	45%	Interbedded light brown weathered SHALE and light gray limestone, approx. 60% shale, 40% limestone. Shale calcareous, fossiliferous, probable soft to medium tough. Limestone occurs in 3/4" to 7-1/2" layers, is crystalline, fine-grained and shaly, fossiliferous, hard; high-angle jointing with iron-oxide staining occurs within top half of recovery.									
	28											
709.2	30											
	32	30%	Interbedded light brown weathered SHALE and light gray limestone, approx. 80% shale, 20% limestone. Shale calcareous, fossiliferous, probable soft to medium tough. Limestone occurs in 1" to 3-3/4" layers, is crystalline, fossiliferous, hard.									
	34											
704.2												
	36	10%	Light brown and light gray weathered SHALE with light gray limestone layers, approx. 90% shale, 10% limestone (entire recovery essentially limestone). Shale assumed calcareous, fossiliferous, soft to medium tough. Limestone occurs in 1/2" to 3" layers, is crystalline, fossiliferous, hard.									
	38											
699.2	40											
	42	% Recovery	Boring Completed									

LOG OF BORING

ORDER No. 99,990, 9-24-68 JH

DATE STARTED 5-21-68 SAMPLER: TYPE SPLIT SPOON DIA. 2"O.D. WATER ELEVATION

DATE COMPLETED 5-21-68 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE NONE

BORING NUMBER B-35-3 CORE BARREL: TYPE NXM SIZE 2-1/8"O.D. AFTER 1' HRS. 17' (720')

STATION & OFFSET STATION 334+91, 7'RIGHT, NORTHEAST EXWY, HAM 71-4.58 SURFACE ELEVATION 737.0'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
737.0	0		~~CONCRETE AND GRAVEL (FILL)~~	VISUAL								
~~736.5~~	2	8-9-11	DARK BROWN SILTY CLAY, MOIST - STIFF	1	0	5	12	29	54	51	28	20
732.0	4											
	6	10-15-18	BROWN GRAVELLY, SANDY CLAYEY SILT, MOIST - VERY STIFF	2	22	12	18	30	18	22	8	12
727.0	8											
	10											
	12	8-14-10	BROWN GRAVELLY, SILTY CLAY, MOIST - VERY STIFF	3	27	5	8	28	32	35	19	21
722.0	14											
	16	14-17-21	BROWN SILTY CLAY, MOIST - VERY STIFF	4	2	5	6	32	55	44	24	12
	18											
717.0	20											
	22	18-20-24	BROWN HIGHLY WEATHERED SHALE, MOIST - HARD	5	7	1	2	44	46	38	18	14
	24											
712.0												
	26	40%	INTERBEDDED LIGHT BROWN WEATHERED SHALE AND LIGHT GRAY LIMESTONE, APPROX. 80% SHALE, 20% LIMESTONE, SHALE CALCAREOUS, NON-FOSSILIFEROUS TO FOSSILIFEROUS, PROBABLE SOFT TO POSSIBLE TOUGH. LIMESTONE OCCURS IN 1/2" TO 2-7/8" LAYERS, IS CRYSTALLINE AND FINE-GRAINED, FOSSILIFEROUS, HARD; HIGH-ANGLE JOINTING WITH IRON-OXIDE STAINING EXHIBITED IN MOST LAYERS.									
	28											
	30											
705.0	32	21%										
	34	80%	INTERBEDDED LIGHT BROWN AND LIGHT GRAY WEATHERED SHALE AND LIGHT GRAY LIMESTONE, APPROX. 85% SHALE, 15% LIMESTONE SHALE CALCAREOUS, TRACE FOSSILIFEROUS TO FOSSILIFEROUS, MEDIUM TOUGH TO TOUGH. LIMESTONE OCCURS WELL DISTRIBUTED IN 1" TO 4" LAYERS, IS CRYSTALLINE AND FINE-GRAINED, TRACE SHALY, FOSSILIFEROUS, HARD.									
	36											
700.0	38	% RECOVERY	BORING COMPLETED									
	40											

LOG OF BORING

DATE STARTED 12-30-65 SAMPLER: TYPE Split Spoon DIA. 2"O. D. WATER ELEVATION
DATE COMPLETED 1-3-66 CASING: LENGTH HSA DIA. 3.5"I. D. IMMEDIATE None
BORING NUMBER B-36-3 CORE BARREL: TYPE NXM SIZE 2-1/8"I. D. AFTER _____ HRS. Backfilled

STATION & OFFSET 347+21, 7' Left SURFACE ELEVATION 727.6

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
727.6	0											
727.1			Concrete Walk									
	2	3-4-7	Brown and gray sandy lean clay, moist - stiff	1	Visual 3	5	16	24	52	39	21	20
	4											
	6	9-11-15	Brown and gray sandy lean clay, moist - very stiff	2	5	6	19	22	48	37	22	17
	8											
717.6	10											
716.6		45	Brown silty clay, moist - very stiff	3	Visual							
	12		Interbedded brown weathered shale and gray limestone, approx. 50% shale, 50% limestone in recovery. Shale calcareous, fossiliferous, possible soft to tough. Limestone occurs in 3/4" to 5-1/2" layers, fossiliferous, crystalline to impure-crystalline, hard. Fracturing, displaying solution activities, exhibited and indicated throughout most of section.									
	14	72%										
	16											
	18											
	20	10%										
	22	78%										
	24											
	26	58%										
700.1	28											
		% Recovery	Boring Completed									

LOG OF BORING

HAM-71-4.58

DATE STARTED 1-14-66 SAMPLER: TYPE Split Spoon DIA. 2"O. D. WATER ELEVATION
DATE COMPLETED 1-14-66 CASING: LENGTH HSA DIA. 3.5"I. D. IMMEDIATE 700.0' (25)
BORING NUMBER B-36-5 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER HRS. Backfilled

STATION & OFFSET 347+17, 136' Right SURFACE ELEVATION 725.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
725.0	0											
724.5			Concrete Walk									
724.0		2	Brick and cinders, (fill)	1	Visual							
	2	4-8	Brown silty clay with rock fragments, moist - stiff	2	30	7	8	25	30	33	16	16
	4											
720.0												
	6	5-11-17	Brown and gray gravelly, sandy, silty clay, moist - very stiff	3	17	8	12	30	33	32	16	14
717.2	8	75	do do do	4	21	8	12	32	27	28	12	13
	10		Brown sandy clay and limestone boulders, moist - hard									
	12											
712.2												
	14	14-16-20	Brown gravelly sandy clay, moist - very stiff	5	17	15	19	24	25	26	11	12
710.0												
	16	10-14-17	Gray and brown sandy, silty clay, moist - very stiff	6	11	11	16	38	24	26	11	12
707.5	18											
		7-8-10	Gray sandy, clayey silt, moist - stiff	7	10	11	16	37	26	23	7	14
705.0	20											
		7-9-12	Gray sandy, clayey silt, trace wood, moist - stiff	8	15	10	16	37	22	21	7	12
	22											
	24	6-6-9	do do do	9	12	8	13	36	31	25	10	19
700.0												
699.0	26	5-14	Gray gravelly, silty sand, wet - medium dense	10	25	26	31	-18-				14
		16	Gray gravelly, silty clay, moist - stiff	11	18	6	12	35	29	24	10	12
	28											
		7-10-13	Gray silty clay, moist - stiff	12	7	6	10	37	40	34	19	15
695.0	30											
	32	7-10-15	Gray lean clay, moist - stiff	13	12	3	6	29	50	44	27	17
	34											
	36	12-13-15	Gray gravelly, sandy lean clay, moist - stiff	14	16	8	16	29	31	28	14	20
	38											
685.0	40											
		10-11-11	Gray silty clay, trace organics, moist - stiff	15	1	1	2	46	50	27	10	25
	42											
681.4												
	44		Gray-brown silty clay with fine rock fragments and fossils, moist - stiff to hard, with 4"									
680.0		100%	limestone floater at top of section and 3-3/4" floater at bottom; 2-1/2" section of limestone									
	46	16-17-33	occurs at center of run in oblique position.									
	48		Gray silty clay with limestone fragments,	16	22	5	3	30	40	39	21	23
676.5												
	50		Interbedded weathered shale and gray limestone. Recovery poor; essentially limestone, occuring									
		48%	in 3/8" to 4" layers, crystalline, fossiliferous, hard, exhibiting fracture at bottom of recovery.									
674.0	52		Shale calcareous, possible soft to medium tough.									
		94%	Brown weathered shale, grading into gray shale at approx. 52.5' with 5" layer gray limestone									
670.5	54		at top of section, and 7-1/2" layer at bottom. Shale calcareous, medium tough to tough and									
	56		exhibits somewhat ready-parting along bedding planes. Limestone crystalline. fossiliferous, hard.									
	58	% Recovery	Boring Completed									

LOG OF BORING

DATE STARTED 12-29-65 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 12-29-65 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE None
BORING NUMBER B-36-2 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER _____ HRS. Backfilled

STATION & OFFSET 347+72, 90' Left SURFACE ELEVATION 732.0'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
732.0	0											
731.0		2-2	Rubble (fill)	1	Visual							
	2	4	Brown silty clay, moist - medium stiff	2	0	2	2	56	40	38	19	24
727.0	4											
	6	10-11-11	Brown lean clay, moist - very stiff	3	4	3	9	34	50	45	25	20
	8											
722.0	10											
	12	12-15-22	Brown **lean clay** and highly weathered shale, with 1/4" to 1" limestone layers, moist - hard	4	8	3	4	33	52	50	28	20
	14											
717.0												
	16	5-3-14	Brown weathered shale with 1/2" to 1" limestone layers, moist - medium stiff to hard	5	Visual							
	18											
713.0												
	20		Interbedded brown weathered shale and gray limestone, approx. 60% shale, 30% limestone. Shale calcareous, possible soft to tough. Limestone occurs in 3/4" to 4" layers, crystalline, fossiliferous, hard. Fracturing exhibited throughout most of recovery.									
	22	40%										
708.0	24											
	26		Interbedded gray and brown weathered shale and gray limestone, approx. 75% shale, 25% limestone. Shale somewhat fossiliferous calcareous, possible soft to tough. Limestone occurs in 1/2" to 1-1/2" layers, fine-grained to crystalline, fossiliferous, hard. Fracturing with iron-oxide staining exhibited approx. 1'-1-1/2' from top of recovery. Broken condition and fracturing observed last 9" of recovery.								
		63%										
703.5	28											
	30		Interbedded gray shale, some brown and gray limestone, approx. 60% shale, 40% limestone. Shale trace fossiliferous to fossiliferous, slightly calcareous to calcareous, medium tough to tough. Limestone occurs in 1/2"to 5-1/2"layers, shaly-crystalline, crystalline and fine-grained fossiliferous, hard. Fracture with iron-oxide staining exhibited at approx. 32.0'.								
		96%										
699.5	32											
	34	% Recovery	Boring Completed									

LOG OF BORING

DATE STARTED 2-3-66 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 2-3-66 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 708.0 (18')
BORING NUMBER B-36-4 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER ____ HRS. Backfilled

STATION & OFFSET 347+57, 66' Right SURFACE ELEVATION 726.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
726.0	0											
725.5			Concrete Walk									
	2	3-4-4	Cinders and clay, (fill)	1	Visual							
	4	3-3-4	do do	2	Visual							
721.0												
	6	3-5-3	Brown clayey sand and gravel, trace cinders, (fill) moist - medium stiff	3	48	7	8	15	22	33	16	19
	8											
716.0	10											
	12	4-9-12	Brown sandy silty clay, moist - stiff	4	13	9	12	28	38	31	15	17
	14											
711.0												
	16	9-18-25	Brown and gray clayey silt with rock fragments, moist - dense	5	13	5	11	46	25	23	6	13
	18											
706.0	20											
	22	5-5-6	Gray gravelly, sandy clayey silt, trace wood, moist - stiff	6	19	10	17	33	21	20	6	14
703.5												
	24	5-4-6	Gray sandy, silty clay, trace organic, moist - stiff	7	13	7	12	41	27	26	8	18
701.0												
	26	4-6-7	Gray lean clay, moist - stiff	8	6	5	9	40	40	33	18	18
698.5	28											
		9-8-13	Gray sandy, silty clay, moist - stiff	9	14	11	15	32	28	21	8	13
696.0	30											
	32	9-11-25	Gray and brown silty clay, moist - very stiff	10	5	4	3	34	54	43	23	21
693.5												
	34	9-14-17	Brown and gray clay and highly weathered shale, moist- very stiff	11	1	3	2	39	55	40	19	19
691.0												
689.5	36	12-20-50	Brown weathered shale	12		Visual						
	38	20%	Brown weathered shale and gray limestone; very poor recovery- approx. 50% shale, 50% limestone in recovery. Shale calcareous, soft to medium tough. Limestone occurs possibly in layers of 3/4" to 3", impure-crystalline, fossiliferous, hard; limestone exhibits fracture and iron-oxide staining.									
	40											
684.5												
683.5	42	27-100	Brown and gray shale									
	44	70%	Interbedded gray shale and limestone, approx. 70% shale, 30% limestone. Shale somewhat fossiliferous, calcareous, medium tough to hard. Two-inch brown shale layer at approx. 43.8'. Limestone occurs in 1" to 7" layers, fine-grained to crystalline, fossiliferous, hard. Fractures with iron-oxide stains occur at approx. 44.5' and 46.5'.									
	46											
678.5	48	% Recovery										
	50		Boring Completed									

LOG OF BORING

HAMILTON COUNTY
HAM-71-4.58

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DATE STARTED 1-10-66 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 1-11-66 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 641.2 (28)
BORING NUMBER B-38-5 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER HRS. Backfilled

STATION & OFFSET 375+69, 139' Right SURFACE ELEVATION 669.2

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
669.2	0											
668.7		2	Topsoil	1	Visual							
	2	2-3	Brown sandy, silty clay, (fill) moist - medium stiff	2	4	6	16	31	43	40	22	24
666.7	4	7-9-9	Brown sandy lean clay, moist - stiff	3	2	4	16	31	47	49	30	26
664.2	6	6-7-10	Brown sandy, silty clay, moist - stiff	4	8	9	15	41	27	26	10	14
	8											
659.2	10											
	12	4-5-7	Brown sandy clay with limestone fragments, moist - medium stiff	5	24	9	18	28	21	24	11	11
654.2	14											
	16	6-9-12	Gray gravelly, sandy, silty clay, moist - stiff	6	18	8	15	31	28	26	12	13
	18											
	20											
	22	6-10-12	do do do	7	19	9	14	32	26	24	10	11
	24											
644.2	26	15-17-17	Brown clayey gravel and cobbles, moist - hard	8	63	4	3	18	12	28	11	15
	28											
639.2	30											
	32	7-12-13	Brown silty sand and gravel and cobbles, moist - medium dense	9	50	14	14	15	7	20	4	10
	34											
634.2	36	11-17-19	Brown silty sand, moist - dense	10	1	4	78	-17-				5
	38											
629.2	40											
	42	11-13-19	Brown fine sand, moist - dense	11	0	5	84	-11-				11
624.2	44											
	46	6-9-13	Brown silty sand, moist - medium dense	12	0	2	86	-12-				24
	48											
619.2	50											
	52	7-13-19	Gray silty sand, moist - medium dense	13	0	0	57	-43-				18
	54											
614.2	56	9-13-17	Gray gravelly, silty clay, moist - stiff	14	30	6	8	32	24	27	10	26
	58											
609.2	60											
	62	20-35-46	Brown and gray weathered shale	15		Visual						
	64											
	66	35-45-43	do do	16		Visual						
	68											
599.2	70											
598.2		55-100	Gray weathered shale	17		Visual						
	72		Layered gray and brown shale and gray limestone, approx. 75% shale, 25% limestone in recovery. Shale trace fossiliferous, calcareous, possible soft to tough. Limestone occurs in 7/8" to 1-1/2"layers, crystalline, fossiliferous, hard. Limestone layers display fracturing.									
	74	32%										
593.2	76											
	78	% Recovery	Boring Completed									

Foundation Boring Sheet No. FB-14.

LOG OF BORING

DATE STARTED 1-7-66 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 1-7-66 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 623.2' (15')
BORING NUMBER B-38-3 CORE BARREL: TYPE NXM SIZE 2-1/8"I.D. AFTER 48 HRS. 627.2 (11')

STATION & OFFSET 375+38 4'R SURFACE ELEVATION 638.2

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
638.2	0											
636.7	2	2-2-3	Clay and cinders, (fill)	1	Visual							
	4	6-6-5	Brown silty clay, rock fragments and cinders, (fill) moist - medium stiff	2	12	5	8	45	30	29	10	20
633.2	6	3-3-4	Brown silty clay, (fill) very moist - soft	3	1	4	6	49	40	33	14	30
	8											
628.2	10											
	12	3-3-8	Mottled brown silty clay, moist - medium stiff	4	8	4	12	30	46	53	34	23
	14											
623.2	16	6-6-9	Brown fine sand, wet - medium dense	5	0	7	87	-6-				25
	18											
618.2	20											
	22	7-13-17	Brown silty sand, wet- dense	6	0	0	88	-12-				25
	24											
613.2	26	7-13-16	Gray sandy silt, moist - dense	7	0	0	24	69	7		NP	18
	28											
608.2	30											
607.2		5-6	Gray clayey silt, moist - stiff	8	6	4	6	48	36	24	8	17
	32	10	Brown weathered shale	9	Visual							
	34											
	36											
601.7		20-45-75	do do	10	Visual							
	38		Layered brown weathered shale and gray limestone, approx. 70% shale, 30% limestone in recovery. Shale somewhat fossiliferous, calcareous, soft to medium tough. Limestone occurs in 3/4" to 4-3/4" layers, crystalline, fossiliferous, hard. Fracturing exhibited at top of recovery, 14" and 24" from top, and at bottom.									
	40	58%										
596.7	42											
	44	% Reocvery	Boring Completed									

LOG OF BORING

DATE STARTED 2-21-66 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 2-22-66 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 655' (24')
BORING NUMBER B-39-1 CORE BARREL: TYPE SIZE AFTER HRS. Backfilled

STATION & OFFSET 377+58 DE, 10' Left of Centerline SURFACE ELEVATION 679.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
679.0	0											
	2	4-2-2	Coal and cinders, (fill)	1	Visual							
674.0	4											
	6	ST	Brown gravelly, silty clay, moist - medium stiff	S1	15	7	8	39	31	36	17	25
	8	3-3-4	do do do	2	17	7	11	33	32	32	16	18
669.0	10											
667.0	12	ST	Brown sandy, silty clay, moist - medium stiff	S2	7	6	14	44	29	29	13	20
	14	2-3-3	Brown silty clay, moist - medium stiff	3	0	2	5	62	31	31	10	26
664.0												
	16	ST	Brown sandy lean clay, moist - stiff	S3	7	9	14	32	38	35	18	20
662.0	18	8-10-12	Brown sandy silt, moist - stiff	4	6	3	12	34	45		NP	21
659.0	20											
657.0	22	ST	Brown silty clay, moist - stiff	S4	7	4	12	32	45	44	25	22
	24	3-3-3	Brown clayey sand, very moist - soft	5	5	11	45	14	25	29	14	25
654.0												
	26	9-8-9	Brown silty sand, wet - medium dense	6	4	11	45	30	10		NP	20
	28											
649.0	30											
647.0	32	ST	Gray silty clay, moist - stiff	S5	14	4	9	31	42	31	15	16
	34	9-12-12	Gray gravelly silty clay, moist - medium stiff	7	18	6	11	30	35	29	13	17
644.0												
	36	5-7-10	Gray silty clay, very moist - medium stiff	8	13	6	13	32	36	28	12	18
641.5	38											
		5	Gray sandy, silty clay, moist - medium stiff	9	13	7	13	34	33	28	12	16
		23-40	Gray sandy, silty clay, moist - hard	10	12	7	15	41	25	23	8	11
639.0	40											
	42	19-21-22	Gray clayey silt, moist - hard	11	14	3	12	52	19	21	3	14
636.5												
	44	16-21-25	Brown gravelly, sandy silt, moist - dense	12	17	8	15	46	14	21	3	15
634.0												
	46	17-18-20	Brown fine to medium sand, moist - dense	13	9	55	27	-9-				4
631.5	48											
		14-16-16	Brown fine to coarse sand, moist - dense	14	17	48	24	-11-				9
629.0	50											
	52	10-14-16	Brown fine to medium sand, wet - dense	15	1	29	60	-10-				18
	54											
624.0												
	56	12-15-16	Brown fine to coarse sand, wet - dense	16	26	38	27	-9-				15
	58											
619.0	60											
	62	12-20-20	Brown silty sand, wet - dense	17	11	51	24	-14-				14
	64											
614.0												
	66	17-15-16	Brown gravelly sand, wet - dense	18	20	38	38	-4-				12
	68											
609.0	70											
607.5	72	15-19-21	Brown fine to medium sand, wet - dense	19	1	72	19	-8-				15
			Boring Completed									

LOG OF BORING

DATE STARTED 1-26-66 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 1-27-66 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 624.0' (50')
BORING NUMBER B-39-2 CORE BARREL: TYPE SIZE AFTER HRS. Backfilled

STATION & OFFSET 378+52, D.E., 36' Right of Centerline SURFACE ELEVATION 674.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
674.0	0											
	2	2-3-3	Cinders, (fill)	1	Visual							
670.5	4	3-3		2	Visual							
669.0		3	Brown sandy lean clay, (probable fill) moist - medium stiff	3	2	5	18	40	35	32	16	18
667.0	6	ST	Brown and gray silty clay, (probable fill) moist - stiff	S1	4	5	9	47	35	34	14	18
664.0	8 10	5-7-11	Brown gravelly, sandy lean clay, (probable fill) moist - medium stiff	4	17	7	14	32	30	32	17	13
662.0	12	ST	Mottled brown and gray gravelly, sandy lean clay, (probable fill) moist - stiff	S2	24	5	17	23	31	37	20	25
659.0	14	6-7-7	Brown sandy lean clay, (probable fill) moist - stiff	5	6	3	21	39	31	33	17	18
657.0	16	ST	Mottled brown and gray lean clay, (probable fill) moist - stiff	S3	7	5	11	38	39	34	16	16
656.0	18	5-9	Brown gravelly silty clay, (probable fill) moist - stiff	6	18	5	10	28	39	45	27	12
654.0	20	9	Brown and gray silty clay, moist - stiff	7	0	1	4	62	33	31	9	20
	22	ST	Brown and gray sandy silty clay, moist - very stiff	S4	4	8	19	40	29	25	9	16
649.0	24	7-12-15	Brown and gray sandy silty clay, moist - stiff	8	1	9	22	36	32	23	8	15
646.5	26 28	7-8-9	Brown and gray sandy lean clay, moist - stiff	9	5	5	24	31	35	32	17	20
644.0	30	8-12-17	Brown and gray gravelly, sandy, silty clay, moist - very stiff	10	23	12	17	26	22	24	10	12
642.0	32	ST	Brown and gray gravelly, silty clay, moist - very stiff	S5	19	5	11	30	35	32	15	13
639.0	34	1-2-2	Brown silt, wet - loose	11	2	1	6	74	17		NP	30
	36	4-4-4	Brown silty sand, moist - loose	12	5	65	18	-12-				10
634.0	38 40	2-2-4	do do	13	12	57	15	-16-				12
	42	ST	Brown fine to coarse sand, moist - medium dense	S6	Visual							
629.0	44	8-10-12	do do do	14	19	52	20	-9-				5
624.0	46 48 50	9-14-18	Brown fine to medium sand, moist - dense	15	9	54	30	-7-				12
	52	ST	Brown gravelly sand, wet - dense	S7	Visual							
	54	13-21-25	do do	16	23	38	29	-10-				12
614.0	56 58 60	14-16-17	do do	17	34	38	17	-11-				11
609.0	62 64	15-19-25	Brown fine to medium sand, wet - dense	18	8	37	46	-9-				17
604.0	66 68 70	8-15-18	Gray sandy silt with sand seams, moist - dense	19	0	1	31	57	11		NP	16
599.0	72 74	14-18-23	Gray silt, wet - dense	20	0	0	4	68	28	21	2	20
597.5	76	11-16-22	Gray silty sand, wet - dense	21	1	4	60	29	6		NP	19
	78 80		Boring Completed									

LOG OF BORING

HAMILTON COUNTY
HAM-71-4.58

DATE STARTED 1-13-66 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 1-13-66 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 625.0' (6')
BORING NUMBER B-40-2 CORE BARREL: TYPE SIZE AFTER HRS. Backfilled
STATION & OFFSET 380+71.5, 54' Left SURFACE ELEVATION 631.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
631.0	0											
630.0	2	2-2	Coal, cinders and clay, (fill) moist - soft	1	Visual							
		3	Brown silty clay, trace cinders, (fill) very moist - soft	2	2	4	8	54	32	27	8	26
626.0	4											
	6	1-1-1	Gray silty, clayey sand, (fill) wet - very loose	3	12	11	34	21	22	20	6	24
621.0	8											
	10											
	12	2-2-2	Gray and brown silty gravel, (fill) wet - soft	4	53	5	7	23	12	21	7	23
616.0	14											
	16	3-5-9	Brown and gray silty sand, wet - medium dense	5	1	11	76	-12-		—		24
611.0	18											
	20											
	22	9-11-11	Gray silty sand, wet - medium dense	6	0	1	70	-29-		—		22
606.0	24											
	26	7-9-10	Gray sandy silt, wet - medium dense	7	0	1	36	53	10		NP	20
601.0	28											
	30											
	32	7-8-11	Gray silt, wet - medium dense	8	2	1	17	66	14		NP	23
596.0	34											
	36	8-12-15	Gray silt, moist - medium stiff	9	0	0	14	54	32	19	3	22
591.0	38											
	40											
	42	6-8-10	Gray sandy silt, moist - medium stiff	10	0	0	27	54	19		NP	21
586.0	44											
	46	6-8-12	Gray silt, moist - medium dense	11	2	1	11	74	12		NP	20
581.0	48											
	50											
	52	5-7-9	Gray clayey silt, moist - medium dense	12	4	1	2	57	36	24	4	24
576.0	54											
	56	6-9-12	Gray lean clay, moist - stiff	13	6	3	5	34	52	35	18	21
571.0	58											
	60											
	62	7-11-12	Gray silt, very moist - medium dense	14	0	0	0	73	27	24	2	23
	64											
	66	6-9-12	Gray silt, moist - medium dense	15	2	2	3	63	30	23	2	24
	68											
	70											
559.5	72	4-6-9	Gray silt, very moist - medium dense	16	0	0	4	76	20		NP	26
			Boring Completed									
	74											

LOG OF BORING

DATE STARTED 1-26-66 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 2-3-66 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 610' (65')
BORING NUMBER B-40-4 CORE BARREL: TYPE SIZE AFTER HRS. Backfilled

STATION & OFFSET 381+57, 80' Right SURFACE ELEVATION 675.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
675.0	0											
	2	4-1-1	Cinders, gravel and coal, (fill) very moist - soft	1	Visual							
	4	1-1-2	do do do	2	Visual							
	6	1-1-1	do do do	3	Visual							
	8	1-1-1	do do do	4	Visual							
665.0	10											
	12	2-3-4	Brown gravelly, lean clay, (fill) very moist - soft	5	21	6	8	33	32	37	20	22
662.5												
	14	3-3-4	Brown sandy, silty clay, (fill) very moist - soft	6	2	6	9	42	41	34	16	23
660.0												
	16	2-2-3	Brown sandy lean clay, (fill) very moist - soft	7	6	6	9	42	37	38	20	26
	18											
	20	3-3-4	do do do	8	Visual							
655.0												
	22	2-3-3	Brown gravelly, sandy lean clay, (fill) wet- soft	9	19	12	11	31	27	32	15	27
	24											
650.0												
	26	2-2-3	Brown silty clay, (fill) wet - soft	10	7	7	12	40	34	39	21	26
646.5	28											
	30	76	Clay and wood, (fill) wet - soft	11	Visual							
	32	3-3-4	do do	12	Visual							
642.5												
640.0	34	3-3-4	Gray and brown sandy lean clay, moist - medium stiff	13	1	5	16	36	42	48	29	25
	36	4-5-7	Gray and brown sandy, silty clay, wet - soft	14	8	7	14	38	33	28	12	25
637.5	38											
	40	6-7-7	Brown and gray sandy silty clay, wet - soft	15	5	5	15	38	37	40	21	23
635.0												
	42	7-7-7	Brown clayey sand, moist - medium dense	16	14	38	21	5	22	40	22	16
632.5												
	44	5-4-3	Brown silty sand, moist - loose	17	5	25	48	3	19		NP	17
	46	5-6-6	Brown silty sand, moist - medium dense	18	3	31	46	5	15		NP	16
627.5	48											
	50	6-7-6	Brown gravelly, silty sand, moist - moist - medium dense	19	27	31	27	5	10		NP	16
625.0												
	52	5-6-6	Brown clayey sand, wet - medium dense	20	7	33	37	5	18	25	9	22
622.5												
	54	14-13-13	Brown silty sand, moist - medium dense	21	5	13	61	-21-				12
	56	30-26-30	Brown silty sand, moist - very dense	22	1	18	63	-18-				14
	58											
	60											
	62	17-20-27	Brown silty sand, moist - dense	23	3	25	58	-14-				14
	64											
610.0												
	66	16-19-28	Gray silty sand, wet - dense	24	1	10	71	-18-				18
	68											
605.0	70											
	72	14-16-19	Gray sandy silt, wet - dense	25	0	0	45	47	8		NP	20
	74											
	76	15-16-19	do do	26	0	1	44	45	10		NP	17
	78											
595.0	80											
	82	16-16-18	Gray silty clay, moist - stiff	27	0	0	3	41	56	27	10	28
	84											
590.0												
588.5	86	16-17-19	Gray clayey silt, moist - stiff	28	0	0	0	65	35	24	4	21
	88		Boring Completed									
	90											

LOG OF BORING

DATE STARTED 1-25-66 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 1-25-66 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 627' (50')
BORING NUMBER B-40-5 CORE BARREL: TYPE SIZE AFTER HRS. Backfilled
STATION & OFFSET 382+18, 147' Right SURFACE ELEVATION 677.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
677.0	0											
676.5		5	Topsoil	1	Visual							
	2	2-2	Brown silty clay, moist - medium stiff	2	10	7	10	40	33	36	18	21
	4											
672.0												
	6	5-7-11	Brown and gray gravelly, lean clay, moist - stiff	3	15	4	15	31	35	38	20	21
	8											
667.0	10											
		14-17-25	Brown and gray gravelly, sandy lean clay, moist -very stiff	4	19	10	15	28	28	29	14	11
	12											
	14											
	16	12-16-22	do do do	5	34	6	12	26	22	25	11	11
	18											
657.0	20											
		7-11-15	Brown clayey silt, moist - stiff	6	10	5	11	52	22	22	5	14
	22											
	24											
652.0												
	26	7-13-14	Brown silt, moist - medium dense	7	8	5	12	58	17		NP	15
	28											
	30											
646.0		3-7	Brown silt, wet - medium dense	8	6	1	8	72	13		NP	29
	32	10	Brown fine to coarse sand and gravel, moist - medium dense	9	49	19	23	-9-				7
644.5												
	34	6-8-10	Brown fine to medium sand, moist - medium dense	10	2	16	73	-9-				5
	36	5-8-11	do do do	11	1	24	65	-10-				5
639.5												
	38	6-8-11	Brown silty sand, moist - medium dense	12	3	34	50	-13-				4
637.0	40											
		5-10-13	Brown fine to medium sand, moist - medium dense	13	4	54	31	-11-				5
	42											
634.5												
		6-10-13	Brown silty sand, moist - medium dense	14	2	40	45	-13-				5
	44											
	46	8-13-15	do do do	15	1	33	54	-12-				5
	48	8-9-12	do do do	16	0	7	79	-14-				12
627.0	50											
		7-9-16	Brown fine to medium sand, wet - medium dense	17	1	27	64	-8-				22
624.5	52											
		10-15-19	Brown silty sand, wet - dense	18	3	17	64	-16-				16
	54											
	56	8-18-20	do do	19	0	15	69	-16-				17
	58											
617.0	60											
616.0		15-22	Brown fine to medium sand, wet - dense	20	0	17	73	-10-				19
	62	36	Gray silty sand, wet - very dense	21	0	7	69	-24-				19
	64											
612.0												
	66	8-16-19	Gray sandy silt, wet - dense	22	0	0	29	63	8		NP	22
	68											
	70											
	72	14-24-25	do do	23	0	0	38	52	10		NP	19
	74											
	76	10-16-23	do do	24	1	0	32	57	10		NP	22
	78											
	80											
		11-15-17	do do	25	2	1	21	67	9		NP	19
	82											
	84											
592.0												
590.5	86	11-14-18	Gray clayey silt, wet - dense	26	1	1	2	63	33	22	4	21
	88		Boring Completed									

LOG OF BORING

DATE STARTED 1-24-66 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEVATION
DATE COMPLETED 1-24-66 CASING: LENGTH HSA DIA. 3.5"I.D. IMMEDIATE 628' (50')
BORING NUMBER B-40-6 CORE BARREL: TYPE None SIZE AFTER HRS. Backfilled

STATION & OFFSET 382+23, 192.5' Right SURFACE ELEVATION 678.0'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
678.0	0											
677.0		1-1	Cinders, (fill) moist - very loose	1	Visual							
	2	1	Brown gravelly, sandy, silty clay, very moist - soft	2	17	8	14	35	26	26	11	20
	4											
673.0												
	6	6-8-11	Brown and gray lean clay, moist - stiff	3	0	1	12	48	39	35	18	19
	8											
668.0	10											
	12	8-12-17	Brown sandy lean clay, moist - stiff	4	14	8	14	32	32	28	13	15
	14											
663.0												
	16	10-17-18	Brown gravelly, clayey silt, moist - very stiff	5	25	6	12	38	19	22	5	14
660.5												
	18	8-9-9	Brown clayey silt, moist - very stiff	6	11	6	11	50	22	22	5	22
	20											
	22	6-9-8	do do do	7	10	4	14	52	20	21	4	17
655.5												
	24	4-4-5	Brown fine to medium sand, moist - loose	8	2	50	40	-8-				10
	26	10-12-15	Brown fine to medium sand, moist - medium dense	9	8	62	22	-8-				5
650.5												
	28	18-18-25	Brown silty sand, moist - dense	10	15	33	38	-14-				6
648.0	30											
647.0		7-11	Brown sandy silt, wet - medium dense	11	4	1	26	60	9		NP	25
	32	14	Brown fine to medium sand, moist - medium dense	12	3	39	46	-12-				6
	34	6-10-11	do do do	13	4	66	21	-9-				5
	36	7-8-10	do do do	14	7	53	29	-11-				6
	35											
	40	7-8-10	do do do	15	3	51	39	-7-				6
	42	6-8-10	do do do	16	4	61	24	-11-				5
	44											
633.0												
	46	10-11-12	Brown fine to coarse sand, moist - medium dense	17	15	29	45	-11-				5
	48											
628.0	50											
	52	6-8-12	Brown silty sand, wet - medium dense	18	1	32	54	-13-				22
	54											
623.0												
	56	6-12-19	Brown fine to medium sand, wet - dense	19	0	14	76	-10-				21
	58											
618.0	60											
	62	12-21-35	Gray silty sand, wet - very dense	20	0	11	68	-21-				18
	64											
613.0												
	66	9-13-20	Gray sandy silt, wet - very dense	21	0	0	30	63	7		NP	20
	68											
608.0	70											
	72	10-22-26	Gray silty sand, wet - dense	22	0	0	53	41	6		NP	19
	74											
603.0												
	76	10-14-21	Gray silt, wet - dense	23	0	0	17	65	18		NP	22
	78											
598.0	30											
	82	25-19-25	Gray gravelly silt, moist - dense	24	20	3	8	46	23	20	3	20
	84											
593.0												
591.5	86	12-16-20	Gray clayey silt, moist - stiff	25	9	6	15	42	28	22	7	15
	88		Boring Completed									

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OCT 20 1982

LOG OF BORING

DATE STARTED 1-14-66 SAMPLER: TYPE Split Spoon DIA. 2"O. D. WATER ELEVATION

DATE COMPLETED 1-14-66 CASING: LENGTH HSA DIA. 3.5"I. D. IMMEDIATE 617.4', (7.5')

BORING NUMBER B-43-1 CORE BARREL: TYPE SIZE AFTER HRS. Backfilled

STATION & OFFSET 388+90, 26'Right SURFACE ELEVATION 624.9

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
624.9	0											
	2	3-5-5	Clay and cinders, (fill) moist - medium stiff	1	Visual							
	4											
619.9												
	6	7-9-13	Brown sandy gravel, moist - medium dense	2	64	12	12	-12-				7
617.4	8											
		5-6-6	Gray sandy silt, wet - medium dense	3	0	0	28	66	6		NP	25
614.9	10											
	12	5-7-12	Gray silty sand, wet - medium dense	4	0	0	66	30	4		NP	22
612.4												
	14	6-7-13	Gray sandy silt, wet - medium dense	5	0	0	30	64	6		NP	20
	16	10-17-19	Gray sandy silt, wet - dense	6	0	0	37	55	8		NP	23
	18											
	20											
	22	10-9-12	Gray sandy silt, wet - medium dense	7	0	0	20	71	9		NP	22
	24											
	26	12-13-15	do do do	8	0	2	22	68	8		NP	20
	28											
	30											
594.9												
593.4	32	6-10-14	Gray silt, wet - medium dense	9	0	0	4	85	11		NP	25
			Boring Completed									

LOG OF BORING

DATE STARTED 1-12-66 SAMPLER: TYPE Split Spoon DIA. 2"O. D. WATER ELEVATION
DATE COMPLETED 1-14-66 CASING: LENGTH HSA DIA. 3.5"I. D. IMMEDIATE 616.3 (7')
BORING NUMBER B-43.2 CORE BARREL: TYPE NXM SIZE 2-1/8"I. D. AFTER ____ HRS. Backfilled

STATION & OFFSET 389+37, 10.5' Right SURFACE ELEVATION 623.3

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
623.3	0											
	2	2-2-3	Topsoil and brown clay, (fill) moist - medium stiff	1	Visual							
620.8												
	4	4-4-5	Brown sandy, silty clay, moist - medium stiff	2	0	0	38	40	22	25	9	20
618.3												
	6	12-25-22	Gravel and sandstone boulders, (fill)	3	Visual							
615.8	8											
		5-7-8	Gray sandy silt, wet - medium dense	4	0	0	19	71	10		NP	24
	10											
	12	5-7-8	do do	5	0	0	34	58	8		NP	22
		5-7-7	do do	6	0	0	22	70	8		NP	23
608.3	14											
605.8	16	4-6-9	Gray silty sand, wet - medium dense	7	0	0	69	-31-				30
	18	7-17-19	Gray sandy silt, wet - dense	8	0	0	20	66	14		NP	23
603.3	20											
	22	13-15-15	Gray silt, wet - dense	9	4	1	15	67	13		NP	21
	24	8-10-20	Gray silt, moist - dense	10	2	1	11	76	10		NP	22
	26	8-11-16	Gray silt, wet - medium dense	11	1	0	5	81	13		NP	20
	28											
	30											
	32	8-11-12	do do	12	0	0	17	73	10		NP	24
	34											
588.3												
	36	7-8-12	Gray silt with clay seams, wet - medium dense	13	5	2	1	63	29	21	1	25
	38											
583.3	40											
	42	7-12-14	Gray silty clay, moist - stiff	14	10	7	10	44	29	24	9	15
578.3	44											
	46	7-10-15	Gray sandy, silty clay, moist - stiff	15	10	8	15	41	26	22	7	13
	48											
573.3	50											
	52	5-7-10	Gray silt, moist - stiff	16	4	2	10	55	29	20	3	18
	54											
568.3												
	56	4-6-7	Gray clayey silt, moist - medium stiff	17	2	2	6	52	38	24	6	23
	58											
563.3	60											
	62	5-5-7	Gray silt, moist - medium dense	18	0	0	2	79	19	22	1	24
	64											
558.3												
	66	4-4-6	Gray silty clay, very moist - medium stiff	19	0	0	1	54	45	27	7	27
	68											
553.3	70											
	72	4-8-10	Gray silt, very moist - medium dense	20	0	0	4	69	27	23	2	28
	74											
548.3												
	76	14-18-24	Gray clayey silt with gravel and rock fragments, moist - very stiff	21	40	9	6	29	16	23	5	12
	78											
543.3	80											
	82	35-58-130	Brown weathered shale	22	Visual							
	84											
538.3												
	86	23%	Entire recovery essentially limestone, possible 1" to 4" layers, fractured and broken throughout, exhibiting iron-oxide staining. Limestone crystalline, fossiliferous, hard. Very poor recovery.									
	88											
533.3	90											
		% Recovery	Boring Completed									

LOG OF BORING

1-11-68 VM

DATE STARTED 12-1-67 SAMPLER: TYPE S.S. DIA. 2" O.D. WATER ELEVATION

DATE COMPLETED 12-2-67 CASING: LENGTH HSA DIA. 2.25" I.D. IMMEDIATE 647.3 (28')

BORING NUMBER R-1-1 CORE BARREL: TYPE SIZE AFTER BACKFILLED HRS.

STATION & OFFSET 374+11 DE, 9' Lt., N. E. Expy. I-71-1 (33) HWM 71-4.58 E. OF SURFACE ELEVATION 675.3

VICTORY PKWY. TO BLUEWOOD. PROJ. No. 0534

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
675.3	0											
673.3	2	2-2-10	BROWN CLAY AND TOPSOIL (FILL), MOIST-MEDIUM STIFF	1	VISUAL							
	4	6-8-16	BROWN SILTY CLAY, DRY-VERY STIFF	2	0	2	9	56	33	36	16	12
670.3	6	8-11-14	BROWN SANDY, SILTY CLAY, MOIST - VERY STIFF	3	2	8	14	34	42	30	12	12
	8											
	10	10-13-18	DO DO DO	4	2	11	15	38	34	39	18	18
	12	7-8-11	BROWN SANDY, SILTY CLAY, MOIST - STIFF	5	5	5	18	35	37	40	20	16
662.8	14	12-17-24	BROWN SANDY, CLAYEY SILT, DRY - VERY STIFF	6	9	10	20	39	22	23	7	7
660.3	16	12-15-17	BROWN SANDY, SILTY CLAY, MOIST - VERY STIFF	7	12	12	16	35	25	24	8	12
657.8	18	10-17-20	BROWN AND GRAY SANDY CLAYEY SILT, MOIST - VERY STIFF	8	10	10	16	38	26	24	7	14
655.3	20	6-7-8	GRAY GRAVELLY SANDY CLAYEY SILT, MOIST - STIFF	9	22	10	13	35	20	20	6	12
	22	5-6-7	DO DO DO	10	16	11	15	36	22	21	7	12
650.3	24	6-7-7	GRAY SANDY, CLAYEY SILT, MOIST - STIFF	11	14	9	15	38	24	20	6	14
647.8	26	10-13-18	GRAY GRAVELLY SANDY SILTY CLAY, MOIST - VERY STIFF	12	15	10	14	35	26	23	8	14
	28	13-13-16	DO DO DO	13	20	10	15	29	26	25	8	14
	30											
	32											
640.3	34											
	36	13-16-18	GRAY SANDY, SILTY CLAY, MOIST - VERY STIFF	14	10	8	15	34	33	25	10	14
	38											
	40											
	42	11-14-17	DO DO DO	15	10	10	13	33	34	25	10	14
	44											
	46	15-16-20	DO DO DO	16	10	12	15	31	32	24	9	12
	48											
625.3	50											
	52	12-16-24	GRAY CLAYEY SILT, MOIST - STIFF	17	6	6	10	46	32	22	6	14
	54											
620.3	56											
	58	15-18-21	BROWN AND GRAY CLAYEY GRAVEL WITH SAND SEAMS	18	35	11	11	29	14	21	5	13
	60											
613.8	62	11-16-17	DO DO DO	19	VISUAL							
	64		BORING COMPLETED									
	66											
	68											
	70											

LOG OF BORING

1-11-68 VM

DATE STARTED 12-4-67 SAMPLER: TYPE S.S. DIA. 2" O.D. WATER ELEVATION
DATE COMPLETED 12-5-67 CASING: LENGTH 15A DIA. 3.5" I.D. IMMEDIATE 676.3 (1')
BORING NUMBER R-1-2 CORE BARREL: TYPE SIZE AFTER BACKFILLED HRS.

STATION & OFFSET 374+90 LE. 9' Lt., N. E. Expy, I-71-1 (33) HWM 71-4.58 E. OF Victory Pkwy. TO Bushwood, Proj. No. 0534 SURFACE ELEVATION 677.3

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
677.3	0											
676.3		29-61/7	BASE MATERIAL (PARKING LOT)	1	VISUAL							
	2		BROWN AND GRAY SILTY CLAY, VERY MOIST - MEDIUM STIFF	2	4	9	10	48	29	27	9	22
672.3	4											
	6	8-11-14	BROWN SANDY SILTY CLAY, MOIST - STIFF	3	3	7	13	33	44	42	21	26
667.3	8											
	10											
664.8	12	2-3-3	BROWN GRAVELLY, SILTY CLAY, MOIST - MEDIUM STIFF	4	19	10	14	26	31	34	16	28
	14	3-4-5	BROWN SANDY FAT CLAY, MOIST - MEDIUM STIFF	5	3	14	24	17	42	52	30	28
662.3	16											
659.8		12-18-23	BROWN CLAYEY SAND AND GRAVEL, MOIST - DENSE	6	28	14	18	24	16	22	6	16
	18											
657.3	20	6-6-7	GRAY SANDY SILT, MOIST - STIFF	7	12	12	15	38	23	18	4	13
	22	4-4-7	GRAY SANDY CLAYEY SILT, MOIST - STIFF	8	13	12	15	37	23	20	6	13
654.8												
	24	3-4-5	GRAY GRAVELLY SANDY CLAYEY SILT, MOIST - STIFF	9	16	11	14	37	22	20	5	13
652.3	26											
		3-4-8	GRAY SANDY, CLAYEY SILT, MOIST - STIFF	10	11	11	15	37	26	21	6	15
	28											
		3-5-4	DO DO DO	11	VISUAL							
	30											
	32	5-9-15	DO DO DO	12	9	11	22	32	26	21	7	13
644.8												
	34	9-12-18	GRAY SANDY, SILTY CLAY, MOIST - VERY STIFF	13	8	8	16	40	28	24	8	14
	36											
639.8	38											
		9-17-18	GRAY GRAVELLY SANDY SILTY CLAY, MOIST - VERY STIFF	14	20	9	13	33	25	24	10	12
	40											
634.8	42											
	44	12-14-17	GRAY GRAVELLY SANDY CLAYEY SILT MOIST - VERY STIFF	15	22	9	15	36	18	22	7	12
	46											
	48											
		11-14-18	DO DO DO	16	10	12	16	34	22	21	7	12
	50											
	52											
	54	13-18-22	DO DO DO	17	10	10	16	37	21	19	5	11
	56											
	58											
		17-19-23	DO DO DO	18	22	10	15	35	18	19	6	10
	60											
	62											
614.3		21-18-21	DO DO DO	19	13	12	15	35	23	19	5	12
	64		BORING COMPLETED									
	66											
	68											
	70											

LOG OF BORING

1-11-68 VT

DATE STARTED 12-5-67 SAMPLER: TYPE S.S. DIA. 2" O.D. WATER ELEVATION
DATE COMPLETED 12-6-67 CASING: LENGTH 58 DIA. 3.5" I.D. IMMEDIATE FIRST SEAM @ 658.0 (18')
BORING NUMBER R-1-3 CORE BARREL: TYPE SIZE AFTER BACKFILLED HRS. SECOND SEAM @ 621.0 (55')

STATION & OFFSET 575+98 NE, 9' Lt., N.E. Expy, I-71-1 (53) HAM 71-4.58 E. OF Victory Pkwy. TO Burwood, Proj. No. 0534 SURFACE ELEVATION 676.0'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
676.0	0		CONCRETE SLAB									
675.5	2	5-5-5	BROWN SILTY CLAY, MOIST - STIFF	1	VISUAL							
	4	6-7-9	DO DO DO	2	VISUAL 0	2	7	43	48	65	38	28
671.0	6											
		2-5-7	BROWN GRAVELLY, SANDY, SILTY CLAY, MOIST - STIFF	3	23	11	14	28	24	30	12	15
	8											
	10											
	12	18-24-10	BROWN GRAVELLY, SANDY, SILTY CLAY, MOIST - VERY STIFF	4	36	10	12	26	16	25	9	14
	14											
661.0												
	16	15-18-31	BROWN & GRAY GRAVELLY, SANDY, CLAYEY SILT, MOIST - VERY STIFF	5	19	11	14	41	15	20	5	10
658.0	18											
656.0	20	10-16-16	GRAY CLAYEY SAND & GRAVEL, VERY MOIST - DENSE	6	28	10	12	31	19	20	6	14
	22	4-14-16	GRAY SILTY CLAY (VARVED) MOIST - STIFF	7	1	2	2	53	62	36	14	25
653.5	24	7-9-10	GRAY CLAYEY SAND & GRAVEL, VERY MOIST - DENSE	8	27	12	14	31	16	19	5	14
651.0	26	8-7-11	GRAY SANDY, CLAYEY SILT, VERY MOIST - STIFF	9	11	12	15	40	22	20	6	13
648.5	28	5-5-6	GRAY SANDY [illegible] STIFF	10	22	7	15	34	28	20	6	15
646.0	30	4-5-5	GRAY SANDY, CLAYEY SILT, MOIST - STIFF	11	11	13	16	37	23	20	6	12
643.5	32											
	34	9-14-17	GRAY GRAVELLY, SILTY CLAY, MOIST - VERY STIFF	12	18	8	11	31	32	24	9	15
641.0	36	12-16-19	GRAY SILTY CLAY, MOIST - VERY STIFF	13	6	8	11	36	39	25	11	14
638.5	38											
	40	16-20-23	GRAY GRAVELLY, SANDY, SILTY CLAY, MOIST - VERY STIFF	14	17	9	13	34	27	21	8	10
	42	14-18-20	DO DO DO	15	16	8	13	33	30	23	9	12
	44											
631.0												
	46	11-16-17	GRAY, CLAYEY SILT, MOIST - VERY STIFF	16	11	6	12	50	21	19	4	13
	48											
626.0	50											
	52	13-14-19	GRAY SANDY, CLAYEY SILT, MOIST - VERY STIFF	17	8	9	13	48	22	20	4	14
	54											
621.0												
	56	18-22-23	BROWN SILTY SAND, WET - DENSE	18	7	49	30	-14-				18
	58											
	60											
	62											
613.5		16-19-20	DO DO DO	19	8	39	25	-28-				14
	64		BORING COMPLETED									
	66											
	68											
	70											

THE H. C. NUTTING COMPANY

LOG OF BORING

1/12/68/ps

DATE STARTED 12/2/67 SAMPLER: TYPE SS DIA. 2" OD WATER ELEVATION

DATE COMPLETED 12/3/67 CASING: LENGTH 18A DIA. 3.5" ID IMMEDIATE 623.7 (50')

BORING NUMBER R-1-4 CORE BARREL: TYPE SIZE AFTER BACKFILLED HRS.

STATION & OFFSET 376 + 60 DE, 9' LEFT SURFACE ELEVATION 673.7'

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
673.7	0											
672.7			CONCRETE									
672.2	2	5	BROWN CLAY, SOME CINDERS (FILL) MOIST = MEDIUM STIFF	1	VISUAL							
		3-4	BROWN SILTY CLAY, VERY MOIST - SOFT	2	0	5	5	58	34	32	12	27
	4											
668.7												
	8	4-5-7	BROWN SILTY CLAY, MOIST - STIFF	3	4	5	14	35	42	35	17	29
	8											
663.7	10											
	12	9-11-16	BROWN SANDY, CLAYEY SILT, MOIST - STIFF	4	12	11	17	37	23	22	7	13
	14											
657.7	16	14-17	BROWN SANDY, CLAYEY SILT, MOIST - VERY STIFF	5	11	13	16	36	24	21	6	13
		15	GRAY GRAVELLY, SANDY SILT, MOIST - VERY STIFF	6	25	13	13	32	17	20	5	12
	18											
653.7	20											
	22	6-7-9	GRAY GRAVELLY, SANDY, CLAYEY SILT, MOIST - STIFF	7	16	10	14	36	24	22	8	13
	24	6-7-7	DO DO DO	8	19	9	13	35	24	21	6	14
648.7												
	26	6-6-7	GRAY SANDY, CLAYEY SILT, MOIST - STIFF	9	7	11	16	40	26	21	6	13
646.2	28											
	30	5-6-6	GRAY SILTY CLAY, MOIST - VERY STIFF	10	VISUAL							
	32	9-19-23	DO DO DO	11	6	8	10	41	35	25	8	18
641.2												
	34	18-21-26	GRAY SANDY, SILTY CLAY, MOIST - VERY STIFF	12	8	6	14	38	34	24	8	17
638.7												
	36	11-16-18	GRAY GRAVELLY, SANDY, SILTY CLAY, MOIST - VERY STIFF	13	17	8	12	34	29	24	10	16
636.2	38											
		10-14-16	GRAY, SANDY, SILTY CLAY, MOIST - VERY STIFF	14	5	9	12	37	37	26	10	16
633.7	40											
	42	14-17-18	GRAY CLAYEY SILT, MOIST - VERY STIFF	15	14	7	12	45	22	20	4	13
	44											
628.7												
	46	11-16-20	GRAY GRAVELLY, SANDY SILT, MOIST - VERY STIFF	16	21	5	10	46	18	20	4	14
	48											
623.7	50											
	52	13-18-23	BROWN FINE TO MEDIUM SAND, WET - DENSE	17	1	28	63	-8-				20
	54											
	56	14-17-20	DO DO DO	18	2	34	56	-8-				20
	58											
613.7	60											
612.2		19-31-29	BROWN SILTY SAND, WET - VERY DENSE	10	5	38	45	-12-				16
	62		BORING COMPLETED									
	64											
	66											
	68											
	70											

LOG OF BORING

2/8/68/PS

DATE STARTED 12/8/67 SAMPLER: TYPE S.S. DIA. 2" O.D. WATER ELEVATION

DATE COMPLETED 12/9/67 CASING: LENGTH HSA DIA. 2.25" I.D. IMMEDIATE 645.5' (20')

BORING NUMBER B-8-1 CORE BARREL: TYPE SIZE AFTER BACKFILLED HRS.

STATION & OFFSET 8+78 DUCK CREEK RD. 34' RIGHT SURFACE ELEVATION 665.5

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
665.5	0											
665.0			CONCRETE		VISUAL							
	2	5-6-7	BROWN SANDY, CLAYEY SILT, MOIST - VERY STIFF	1	12	12	20	36	20	22	7	12
660.5	4											
	6	11-18-23	GRAY SANDY SILT, MOIST - VERY STIFF	2	12	10	24	41	13	17	3	12
658.0	8											
655.5	10	14-16-19	GRAY SANDY SILT WITH GRAVEL AND LIMESTONE FRAGMENTS, MOIST - VERY STIFF	3	34	6	13	31	16	21	7	18
	12	12-18-18	GRAY SANDY, SILTY CLAY, MOIST - VERY STIFF	4	14	10	16	36	24	22	10	11
650.5	14	16-20-23	DO DO DO	5	VISUAL							
	16	9-8-9	BROWN FINE TO MEDIUM SAND, MOIST - MEDIUM DENSE	6	11	31	50	-8				22
648.0	18											
	20	8-8-12	BROWN SILTY SAND AND GRAVEL, MOIST - MEDIUM DENSE	7	33	43	8	-16				8
643.0	22	8-9-10	BROWN SILTY SAND AND GRAVEL, WET - MEDIUM DENSE	8	39	35	10	-16				15
640.5	24	7-9-9	BROWN SILTY CLAY, MOIST - VERY STIFF	9	1	2	15	40	42	30	13	23
	26	9-11-13	BROWN FINE TO MEDIUM SAND, MOIST - MEDIUM DENSE	10	3	78	9	-10				9
	28											
	30											
	32	15-16-19	BROWN FINE TO MEDIUM SAND, MOIST - DENSE	11	7	64	24	-5				18
630.5	34											
	36	14-18-22	BROWN SILTY SAND, MOIST - DENSE	12	4	37	44	-15				15
625.5	40											
	42	8-9-9	GRAY SILT, WET - MEDIUM DENSE	13	0	0	5	80	15		NP	22
	44											
	46	9-8-11	DO DO DO	14	0	0	7	73	20		NP	21
615.5	48											
	50											
	52	11-14-13	GRAY SILTY SAND, WET - DENSE	15	0	0	78	-22				23
610.5	54											
	56	9-16-17	GRAY FINE SAND, WET - DENSE	16	0	0	99	-1				24
605.5	58											
	60											
	62	14-18-19	GRAY SILT, WET - DENSE	17	0	0	12	76	12		NP	24
600.5	64											
	66	13-17-19	GRAY CLAYEY SILT, MOIST - STIFF	18	0	0	1	67	32	25	5	23
595.5	68											
	70											
	72	15-18-20	GRAY SILTY CLAY, MOIST - VERY STIFF	19	0	0	2	44	54	28	8	19
590.5	74											
	76	14-16-19	GRAY CLAYEY SILT, MOIST - STIFF	20	0	0	1	63	36	26	7	20
	78											
	80											
584.0	82	13-15-18	DO DO DO	21	1	1	1	61	36	24	5	20
	84		BORING COMPLETED									

LOG OF BORING

2/8/68/PS

DATE STARTED 12/10/67 SAMPLER: TYPE S.S. DIA. 2" O.D. WATER ELEVATION

DATE COMPLETED 12/12/67 CASING: LENGTH HSA DIA. 2.25" I.D. IMMEDIATE 676.5 (40')

BORING NUMBER R-10-1 CORE BARREL: TYPE SIZE AFTER BACKFILLED HRS.

STATION & OFFSET 4+32 CLAYLAND 13' LEFT SURFACE ELEVATION 686.5

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
686.5	0											
	2	2-3-4	BROWN SILTY CLAY, TRACE CINDERS, (FILL), MOIST - MEDIUM STIFF	1	2	7	11	41	39	36	16	27
681.5	4											
	6	4-3-3	BROWN SILTY CLAY, (FILL), MOIST - MEDIUM STIFF	2	2	3	5	56	34	32	12	26
	8	3-5-6	DO DO DO	3	VISUAL							
676.5	10											
674.0	12	14-19-22	BROWN AND GRAY SILTY CLAY, MOIST - HARD	4	13	8	10	31	38	33	14	9
	14	13-15-17	GRAY AND BROWN SANDY, SILTY CLAY, MOIST - VERY STIFF	5	14	7	17	34	28	23	8	12
	16	12-16-18	DO DO DO	6	VISUAL							
669.0	18											
666.5	20	12-18-17	GRAY SANDY, SILTY CLAY, MOIST - STIFF	7	9	10	17	34	30	23	8	12
	22	13-15-17	GRAY SILTY CLAY, MOIST - STIFF	8	9	7	11	35	38	26	10	15
	24	12-16-21	DO DO	9	VISUAL							
661.5	26											
	28	12-15-18	GRAY GRAVELLY SANDY, CLAYEY SILT, MOIST - STIFF	10	18	11	15	34	22	20	6	10
	30											
	32	13-14-19	DO DO DO	11	16	10	24	22	28	21	7	12
	34											
	36	12-15-17	DO DO DO	12	16	10	16	34	24	20	6	12
	38											
646.5	40											
645.0	42	13-16-19	GRAY SILTY SAND, WET - DENSE	13	1	1	50	41	7		NP	19
	44		BORING COMPLETED									
	46											
	48											
	50											

LOG OF BORING 2-8-68 PS

DATE STARTED 12-1-67 SAMPLER: TYPE S.S. DIA. 2"O.D. WATER ELEVATION

DATE COMPLETED 12-1-67 CASING: LENGTH NSA DIA. 3.5"I.D. IMMEDIATE NONE

BORING NUMBER R-10-2 CORE BARREL: TYPE NXM SIZE 2-1/8" I.D. AFTER BACKFILLED HRS.

STATION & OFFSET 2+26 CLAYLAND 19'LEFT SURFACE ELEVATION 687.1

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics							
					% Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
687.1	0											
686.1		5-7	TOPSOIL, ASH AND CINDERS, (FILL) MOIST - STIFF	1	VISUAL							
	2	16	BROWN SANDY SILTY CLAY WITH SMALL FLOATERS AND LAYERS OF LIMESTONE, MOIST - STIFF	2	27	9	13	23	28	27	12	12
682.1	4											
	6	28-39-61	BROWN HIGHLY WEATHERED SHALE, MOIST - HARD	3	14	4	2	39	41	36	14	18
678.6	8											
677.1	10	66%	LAYERED BROWN WEATHERED SHALE, MEDIUM TOUGH AND GRAY FOSSILIFEROUS LIMESTONE, JOINTED, APPROX. 25 TO 30% LIMESTONE IN 1" AND 2" PIECES									
	12											
	14	50%	LAYERED GRAY AND BROWN SHALE, MEDIUM TOUGH AND GRAY FOSSILIFEROUS LIMESTONE, JOINTED, APPROX. 15 TO 20% LIMESTONE IN 1/2" TO 2" PIECES.									
672.1	16	%RECOVERY	BORING COMPLETED									
	18											
	20											
	—											
	—											
	—											

LOG OF BORING Order No. 99,990 6-28-68 JH

DATE STARTED 2-24-68 SAMPLER: TYPE SPLIT SPOON DIA. 2"OD WATER ELEVATION
DATE COMPLETED 2-25-68 CASING: LENGTH HSA DIA. 3.5"ID IMMEDIATE 612.0 (10')
BORING NUMBER B-11-1 CORE BARREL: TYPE SIZE AFTER BACKFILLED HRS.

STATION & OFFSET 382+07, 133' LEFT SURFACE ELEVATION 622.0

Elev.	Depth	Stn. Pen. (N)	Description	Sa. No.	Physical Characteristics: % Agg.	% CS	% FS	% Silt	% Clay	LL	PI	WC
622.0	0											
619.5	2	6-4-3	BROWN SANDY CLAY, CONCRETE AND ROCK, (FILL) MOIST - MEDIUM STIFF	1	VISUAL							
617.0	4	3-4-5	BROWN CLAYEY, SILTY SAND, (FILL) MOIST - MEDIUM STIFF	2	8	13	30	32	17	22	6	21
616.0	6	6-8	BLACK CLAY, MUD AND CINDERS, (FILL) MOIST - DENSE	3	VISUAL							
		8	BROWN SANDY GRAVEL, MOIST - MEDIUM DENSE TO LOOSE	4	VISUAL							
612.0	10	2-4-8	DO DO DO	5	52	22	19	~7~				11
609.5	12	13-17-20	GRAY SILT, MOIST - DENSE	6	0	1	9	76	14		NP	18
607.0	14	15-16-17	GRAY SANDY SILT, MOIST - DENSE	7	0	2	20	66	12		NP	20
604.5	16	11-15-18	GRAY SILT, WET - DENSE	8	1	1	9	80	9		NP	21
	18	15-17-20	GRAY SANDY SILT, MOIST - DENSE	9	0	1	24	65	10		NP	22
	20	11-13-15	GRAY SANDY SILT, WET - MEDIUM DENSE	10	0	0	14	79	7		NP	24
	22	10-14-17	GRAY SANDY SILT, WET - DENSE	11	0	1	15	74	10		NP	21
	24	11-13-15	GRAY SANDY SILT, WET - MEDIUM DENSE	12	0	1	33	56	10		NP	21
	26											
	28											
592.0	30											
	32	14-19-23	GRAY SILT, MOIST - DENSE	13	2	3	4	69	22	21	2	20
			DO DO	14	VISUAL							
	34											
	36	15-19-21	GRAY SILT, WET - DENSE	15	1	1	2	74	22	21	3	22
	38											
582.0	40											
	42	13-17-23	GRAY SANDY, SILTY CLAY, MOIST - VERY STIFF	16	11	9	17	38	25	21	9	13
	44											
	46	12-16-19	GRAY SANDY, SILTY CLAY, MOIST - VERY STIFF	17	6	11	19	38	26	20	8	12
	48											
572.0	50											
	52	22-31-46	GRAY SILT, MOIST - VERY DENSE	18	3	1	6	70	20		NP	23
	54											
	56	28-40-58	DO DO	19	0	0	3	85	12		NP	22
	58											
562.0	60											
560.5	62	16-23-30	GRAY CLAYEY SILT, MOIST - VERY STIFF	20	1	0	2	72	25	25	5	20
			BORING COMPLETED									
	64											
	66											
	68											
	70											

State of Ohio
Department of Highways
Testing Laboratory

LOG OF BORING

Date Started 11-3-70 Sampler Type Truck Auger Water Elev. Immediate ____
Date Completed 11-3-70 After ____ Hours ____

Project Identification: HAMILTON
HAM-7,1-7.45
Subsurface Investigation

Boring No. 1 Station & Offset 160+57, 10'Lt. Surface Elev. 606.8'

Elev.	Depth	Description	Field No.	Lab. Nos. So.	Physical Characteristics % Agg.	% C.S.	% F.S.	% Silt	% Clay	LL	PI	W.C.	SHTL Class.
606.8	0												
	2	BROWNISH-GRAY SANDY SILT AND CLAY	1	21815	13	7	14	36	30	30	14	17	A-6a
602.8	4												
	6	GRAY SANDY SILT AND CLAY	2	21816	12	8	8	43	29	34	14	23	A-6a
597.8	8												
	10												
	12	GRAY SILTY CLAY, ORGANIC	3	21817	10	9	12	37	32	48	22	46	A-7-6
592.8	14	(CHEMICAL PLANT WASTE)											
	16	GRAY SANDY CLAYEY SILT, ORGANIC	4	21818	8	9	11	48	24	53	18	48	A-7-5
587.8	18	(CHEMICAL PLANT WASTE)											
	20												
	22	BROWN SILTY CLAY	5	21819	0	1	6	32	61	--	--	--	121 VISUA
582.8	24	(CHEMICAL PLANT WASTE)											
	26												
	28	GRAY GRAVELLY SANDY SILT AND CLAY	6	21820	14	27	15	35	29	25	12	10	A-6a
576.8	30												
	32	BOTTOM OF BORING											
	34												
	36												

Particle Sizes: Agg.= >2.00mm , Coarse Sand = 2.00 - 0.42mm , Fine Sand=0.42 - 0.074 mm , Silt = 0.074 - 0.005mm, Clay = < 0.005 mm

Form TE-139

State of Ohio
Department of Highways
Testing Laboratory

LOG OF BORING

Date Started 11-3-70 Sampler Type Truck Auger Water Elev. Immediate ____
Date Completed 11-3-70 After ____ Hours ____

Project Identification: HAMILTON
HAM-71-7.45
Subsurface Investigation

Boring No. 2 Station & Offset 161+34, 11' Lt. Surface Elev. 603.9'

Elev.	Depth	Description	Field No.	Lab. Nos. So.	Physical Characteristics % Agg.	% C.S.	% F.S.	% Silt	% Clay	LL.	P.I.	W.C.	SHTL Class.
603.9	0												
	2	BROWNISH-GRAY CINDERS AND BRICKBATS	7	21821	53	9	11	15	12	NP	NP	14	A-2-4
599.9	4	(FILL MATERIAL)											
	6	BROWN SANDY SILT AND CLAY WITH BRICKBATS AND CONCRETE FRAGMENTS	8	21822	20	11	12	30	27	33	15	15	A-6a
594.9	8	(FILL MATERIAL)											
	10	GRAY SANDY SILTY CLAY	9	21823	10	8	13	36	32	37	18	28	A-6b
591.9	12												
	14	BOTTOM OF BORING											
	16	(Refusal)											
	18												
	20												
	22												
	24												
	26												
	28												
	30												
	32												
	34												
	36												

Particle Sizes: Agg.= > 2.00mm , Coarse Sand = 2.00 - 0.42mm , Fine Sand=0.42 - 0.074mm , Silt = 0.074 - 0.005mm, Clay = < 0.005 mm

Form TE-139

State of Ohio
Department of Highways
Testing Laboratory

LOG OF BORING

Date Started 11-3-70 Sampler Type Truck Auger Water Elev. Immediate 594.6'
Date Completed 11-3-70 After ___ Hours ___

Project Identification: HAMILTON
HAM-71-7.45
Subsurface Investigation

Boring No. 3 Station & Offset 162+25, 10' Lt. Surface Elev. 597.6'

Elev.	Depth	Description	Field No.	Lab. Nos. So.	Physical Characteristics % Agg.	% C.S.	% F.S.	% Silt	% Clay	LL	P.I.	W.C.	SHTL Class.
597.6	0												
	2												
	4	BROWNISH-GRAY SANDY SILTY CLAY	10	21824	7	8	11	35	39	36	18	26	A-6b
	6												
590.6'	8	(FILL MATERIAL)											
	10												
	12	BROWN SANDY SILT AND CLAY	11	21825	5	5	10	41	39	40	23	22	A-6b
583.6	14	(FILL MATERIAL)											
581.6	16	BROWNISH-GRAY SAND, SILT AND CLAY	12	21826	6	9	21	32	32	31	15	26	A-6a
	18												
	20	BOTTOM OF BORING											
	22	Refusal											
	24	Hole squeezed in at elev. 590.6'											
	26												
	28												
	30												
	32												
	34												
	36												

Particle Sizes: Agg. = > 2.00mm , Coarse Sand = 2.00 - 0.42mm , Fine Sand = 0.42 - 0.074mm , Silt = 0.074 - 0.005mm, Clay = < 0.005 mm

Form TE-139

State of Ohio
Department of Transportation
Division of Highways
Testing Laboratory

2/13

LOG OF BORING

HOLLOW STEM

Date Started 3-5-74 Sampler Type AUGER Dia. Water Elev.
Date Completed 3-6-74 Casing Length Dia. Seepage Elev. 590.1'

Project Identification HAMILTON
HAM-471-0.30
SLOPE INDICATOR

Boring No. 1 Station & Offset 46+50 - 70' LT, BL RAMP GG Surface Elev. 603.1'

Elev.	Depth	Std. Pen.	Rec.	Loss	Description	No.	Nos. Sc.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	Class
603.1					2.6' CASING ABOVE SURFACE ELEV											
602.5	2	70 (0.6)			BROWNISH-GRAY SILT AND CLAY WITH GRAVEL	1	74837	19	7	8	33	33	35	15	16	A-6a
599.6	4				BROKEN LIMESTONE FRAGMENTS			V	I	S	U	A	L			
598.1	6	5/6/5			GRAY SANDY SILTY CLAY WITH GRAVEL	2	74838	25	10	8	26	31	35	16	14	A-6b
596.6		p.s.			GRAY SILT AND CLAY	3A	74959	0	1	2	40	57	33	14	20	A-6a
595.1	8	5/7/35			BROWNISH-GRAY SILTY CLAY	4	74840	0	1	2	45	52	43	18	20	A-7-6
593.1	10	5/10/14			BRWONISH-GRAY SILTY CLAY	5	74841	0	3	5	35	57	43	22	19	A-7-6
591.6	12	12/6/12			BROWN SILTY CLAY	6	74842	0	5	6	32	57	44	22	18	A-7-6
590.1	14	6/13/15			BROWN SILTY CLAY	7	74843	11	2	2	31	54	45	24	19	A-7-6
588.1	16	8/10/18			BROWN SILTY CLAY	8	74844	0	3	4	31	62	44	23	17	A-7-6
585.6	18	9/16/16			BROWNISH-GRAY SILTY CLAY	9	74845	0	1	2	39	58	43	21	17	A-7-6
583.1	20	10/14/19			BROWN SILTY CLAY	10	74846	0	0	2	38	60	48	22	19	A-7-6
580.6	22	15/22/35			BROWN SILTY CLAY TOP OF ROCK	11	74847	0	1	1	41	57	45	20	16	A-7-6
	24	15/50			BROWN WEATHERED SHALE	12	74848	0	1	2	41	56	45	20	16	VISUAL
578.1	26	16/50 (0.3)			BROWN WEATHERED CLAY SHALE	13	74849	0	2	3	42	53	43	19	12	VISUAL
575.1	28				CLAY SHALE, GRAY WITH SCATTERED THIN LIMESTONE BEDS (DRILLERS DESCRIPTION)											
	30		4.5	0.5	CLAY SHALE, GRAY, SOFT, CALCAREOUS WITH FOUR THIN LIMESTONE STRINGERS (FROM 1 IN. TO 3 INCHES THICK) - 16 PERCENT LIMESTONE 84% PERCENT SHALE. CORE LOSS 10%											
570.1	32															
	34															
	36				BOTTOM OF BORING											

Particle Sizes Agg.=>2.00mm, Coarse Sand=2.00-0.42mm, Fine Sand=0.42-0.074 mm, Silt=0.074-0.005 mm, Clay=<0.005 mm

Form TE-151

Form No. 530—16-58

THE H. C. NUTTING COMPANY

4126 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/27/64 SAMPLER: TYPE Split Spoon & Cofe Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 524.3 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/27/64 CASING: LENGTH _____ DIA 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-7-1 STATION AND OFFSET 150+86.191'L. BL SURFACE ELEV. 541.8 Bridge No. HAM-71-0157

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SNTL CLASS
541.8	0				0.5'Concrete									
541.3														
	2	1	3-2-2	8"	Brown and gray silty clay and cinders (fill), moist - loose	Visual classification-No tests performed								Fill
539.3														
	4	2	3-3-3	12"	Brown and gray silty clay with rock fragments(fill), moist - medium stiff	Visual classification-No tests performed								Fill
536.8														
	6	3	2-2-3	15"	Brown and gray silty clay with organic matter and cinders (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	8				do do									
		4	3-4-5	16"		Visual classification-No tests performed								Fill
531.8	10													
		5	5-4-6	8"	Brown and gray silty clay with brick, (fill), moist - stiff	Visual classification-No tests performed								Fill
	12													
	14													
526.8														
	16	6	6-12-40	9"	Brick and limestone fragments with clay (fill), moist - very dense	Visual classification-No tests performed								Fill
	18	7	95	5"	do do	Visual classification-No tests performed								Fill
521.8	20													
		8	8-12-5	10"	Brick and concrete with clay (fill), wet - medium dense	Visual classification-No tests performed								Fill
519.3	22													
	24	9	2-2-3	11"	Gray silty clay with brick and organic matter (fill), wet - soft	Visual classification-No tests performed								Fill
516.8														
	26	10	9-12-9	10"	Brick and concrete with brown and gray weathered shale, wet - stiff	Visual classification-No tests performed								Fill
514.8														
	28	11	NXM	73%	Gray shale, calcareous, moderately tough to tough (1" to 2" pieces averaging 1½") and gray limestone, crystalline, fossiliferous (1½" to 5½" pieces, averaging 4") 77% shale, 23% limestone									
	30													
	32													
	34													

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/27/64 SAMPLER: TYPE Split Spoon & Core Barel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 524.3 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/27/64 CASING: LENGTH _____ DIA 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-7-1 STATION AND OFFSET 150+86,191' L. BL SURFACE ELEV. 541.8 Bridge No. HAM-71-0157

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
504.8	34 36	12	NXM	72%	Gray shale, calcareous, tough(1/2" to 3" pieces averaging 2") and gray limestone, crystalline,fossiliferous, (1/2"to 4"pieces averaging 2") 87% shale, 13% limestone									
	38 40 42 44 46 48				Boring completed									

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Form No. 530—15

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/22/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/23/64 CASING: LENGTH ____ DIA 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS ____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-7-2 STATION AND OFFSET 150+75, 124'L. BL SURFACE ELEV. 542.0 Bridge No. HAM-71-0157

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
542.0	0													
541.6					Concrete (0.4')									
	2	1	2-9-4	3"	Brown and gray silty clay with gravel and cinders (fill), moist - soft	Visual classification-No tests performed								Fill
539.5														
	4	2	4-9-9	14"	Brown and gray clay, trace sand, trace gravel with shale and limestone fragments, moist - stiff	8	6	3	33	50	43	19	25	A-7-6
	6	3	8-16-25	13"	Brown and gray clay, trace sand, trace gravel with limestone fragments, moist - very stiff	1	2	2	38	57	42	18	13	A-7-6
534.5	8													
		4	19-75	8"	Brown and gray silty clay, trace sand, little gravel with limestone fragments, moist - very stiff	11	5	4	34	46	40	16	16	A-6b
532.0	10													
	12	5	16-41-77	14"	Brown and gray silt and clay, little sand, trace gravel with limestone fragments, moist - very stiff	3	9	4	32	52	39	15	14	A-6a
	14	6	76-45-70	17"	Brown and gray silt and clay, trace sand, trace gravel with limestone fragments, moist - hard	7	3	2	36	52	38	14	12	A-6a
527.0	16	7	23-65-80	16"	Brown and gray weathered shale, hard	Visual classification-No tests performed								
	18	8	51-70	9"	do do	Visual classification-No tests performed								
522.0	20													
	22	9	NXM	67%	Gray and brown shale, calcareous, moderately tough (1" to 4½" pieces averaging 2") and gray limestone, crystalline, fossiliferous (two pieces ½" and 4½") 92% shale, 8% limestone									
	24													
	26				Gray shale, calcareous, moderately tough with brown and gray weathered zones in the bottom half of the run (1" to 2½" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed in the bottom 6" of the run (1" to 4½" pieces averaging 3") 79% shale, 21% limestone									
	28	10	NXM	71%										
512.0	30													
	32				Boring completed									
	34													

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Form No. 53[illegible]5-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/9/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/9/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER 24 HOURS 514.2 PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-7-3 STATION AND OFFSET 22' S. of S. Curb E. Court Street 78' W. of W. Curb Gilbert Avenue SURFACE ELEV. 537.2 Bridge No. HAM-71-0157

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
537.2	0													
	2	1	18-17-25	10"	Cinders and brick(fill), moist - dense	Visual classification-No tests performed								Fill
	4	2	17-21-7	9"	do do	Visual classification-No tests performed								Fill
	6	3	18-9-12	10"	do do	Visual classification-No tests performed								Fill
	8	4	10-11-9	16"	do do	Visual classification-No tests performed								Fill
	10	5	6-7-12	15"	do do	Visual classification-No tests performed								Fill
525.2	12													
	14	6	9-8-10	18"	Brown silty clay with gravel and brick fragments (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	16	7	6-7-10	10"	do do	Visual classification-No tests performed								Fill
	18	8	10-14-7	9"	do do	Visual classification-No tests performed								Fill
517.2	20													
	22	9	5-6-9	10"	Dark gray silty clay with brick fragments (fill), moist - stiff	Visual classification-No tests performed								Fill
	24	10	3-4-7	8"	do do	Visual classification-No tests performed								Fill
512.2														
	26	11	4-9-15	14"	Brown and gray clay, trace sand, moist - stiff	0	4	3	38	55	43	18	20	A-7-6
	28	12	15-15-20	17"	Brown and gray clay, trace sand with shale fragments, moist - very stiff	0	1	1	37	61	44	18	16	A-7-6
507.2	30													
	32	13	17-19-27	17"	Brown and gray weathered shale, moist - very stiff to hard	Visual classification-No tests performed								
	34	14	100	2"	do do	Visual classification-No tests performed								

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/9/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/9/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER 24 HOURS 514.2 PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0157

BORING No. B-7-3 STATION AND OFFSET 22' S. of S. Curb E. Court Street 78' W. of W. Curb Gilbert Avenue SURFACE ELEV. 537.2

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
503.2	34													
	36	15	NXM	60%	Brown and gray weathered shale, moderately tough with soft seams (½" to 3½" pieces averaging 2") and gray limestone, crystalline, fossiliferous (three pieces 1" - 1½" and 2") 92% shale, 8% limestone									
498.2	38													
	40				Boring completed									
	42													
	44													
	46													
	48													
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 630—16.58

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/31/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/31/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollo Stem Augers AFTER Backfilled HOURS ____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-15-2 STATION AND OFFSET 151+38, 39' L., BL SURFACE ELEV. 560.0 Retaining Wall No. 15

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
560.0	0													
559.0					Asphaltic concrete									
	2	1	9-8-8	18"	Brown and gray clay, trace sand, trace gravel, moist - very stiff	1	1	2	33	63	45	23	21	A-7-6
	4	2	7-9-10	6"	do do	Visual description-No tests performed								A-7-6
	6	3	6-6-11	16"	Brown and gray clay, trace sand, trace gravel with shale fragments, moist - very stiff	1	4	2	37	56	42	20	20	A-7-6
	8													
551.0		4	16-13-19	18"	Brown clay, trace sand with shale fragments, moist - very stiff	0	3	1	30	66	47	23	21	A-7-6
	10													
	12	5	NXM	43%	Brown and gray weathered shale, slightly tough (½" to 2" pieces averaging 1½") and gray limestone, crystalline, fossiliferous (½" & 1" pieces broken) 95% shale, 5% limestone									
	14													
	16	6	NXM	75%	Brown and gray weathered shale, slightly tough (½" to 2" pieces, averaging 1½") and gray limestone, crystalline, fossiliferous, jointed (1" to 3" pieces averaging 2") 77% shale, 23% limestone									
	18													
541.0														
	20				Boring completed									
	22													
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 630—15

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

Split Spoon & 2"O.D.& Water used in drilling from elevation 598.4

DATE STARTED 7/20/64 SAMPLER: TYPE Core Barrel DIA. NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/22/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-16-1 STATION AND OFFSET 151+68, 122' Rt. BL SURFACE ELEV. 598.4 Retaining Wall No. 16

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% G.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
598.4	0				0.4' Concrete									
598.0	2	1	2-2-3	12"	Brown and gray clay, little sand, trace gravel, moist - stiff	6	8	4	26	56	49	26	23	A-7-6
	4	2	6-9-14	18"	do do	Visual classification-No tests performed								A-7-6
	6	3	6-10-60	16"	Brown and gray clay, trace sand, trace gravel with limestone fragments, moist-very stiff	1	2	2	31	64	45	22	18	A-7-6
590.9	8	4	17-17-34	17"	Brown and gray weathered shale, hard	Visual classification-No tests performed								
	10													
	12	5	22-45-75	17"	do do	Visual classification-No tests performed								
	14	6	17-51-68	17"	do do	Visual classification-No tests performed								
	16	7	28-70	13"	do do	Visual classification-No tests performed								
	18	8	33-74	12"	do do	Visual classification-No tests performed								
	20	9	37-90	13"	do do	Visual classification-No tests performed								
	22	10	41-87	12"	do do	Visual classification-No tests performed								
573.4	24													
	26	11	NXM	54%	Gray and brown shale, calcareous, slightly tough (weathered in the top 2' of the run) (¼" to 3" pieces, averaging 1") and gray limestone, crystalline, fossiliferous, (one 1½" pieces midway in the run)									
	28													
	30													
	32	12	NXM	73%	Gray shale, calcareous, moderately tough to tough (¼" to 2½" pieces, averaging 1½") and gray limestone, crystalline, fossiliferous, jointed midway in the run (1" to 4½" pieces averaging 2½") 80% shale, 20% limestone									
	34													

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

Water used in drilling from elevation 598.4

DATE STARTED 7/20/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/22/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-16-1 STATION AND OFFSET 151+68,122'Rt.,BL SURFACE ELEV. 598.4 Retaining Wall No. 16

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36				Gray shale, calcareous, tough, jointed in top 18" (1" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous, jointed and iron oxide stained (one 3" piece) 95% shale, 5% limestone									
	38	13	NXM	82%										
	40													
	42				Gray shale, calcareous, tough (1" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous, jointed (1" to 3" pieces averaging 2½") 83% shale, 17% limestone									
	44	14	NXM	88%										
551.9	46	15	NXM	83%	Gray shale, calcareous, tough (1" to 2½" pieces, averaging 1½") and gray limestone, crystalline, fossiliferous, jointed (two pieces 1½" and 2½") 78% shale, 22% limestone									
	48													
					Boring completed									

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16

Form No. 630—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/17/64 SAMPLER: TYPE Split Spoon & Core barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE None Backfilled

DATE COMPLETED 7/17/64 CASING: LENGTH _____ DIA 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS _____

Water used in drilling from elevation

CLIENT: City of Cincinnati, Ohio

PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0173

BORING No. B-8-1 STATION AND OFFSET 158+68, 60'L. BL SURFACE ELEV. 546.9

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
546.9	0													
544.9	2				Asphaltic concrete and granite block pavement									
	4	1	3-4-4	6"	Brown clay, trace sand with limestone and shale fragments(fill),moist-medium stiff	0	2	3	39	56	43	20	16	A-7-6
541.9		S-1Top			Brown clay,some sand,trace gravel with limestone and shale fragments(fill), moist - stiff	8	13	11	25	43	42	18	18	A-7-6
	6	S-1 Bottom			Brown and gray silty clay,trace sand with limestone and shale fragments(fill) moist - stiff	0	2	2	37	59	40	16	20	A-6b
539.4	8	2	3-3-3	5"	Brown and gray silty clay,trace sand trace gravel(fill),moist-medium stiff	5	4	4	42	45	39	19	24	A-6b
536.9	10	3	2-2-3	12"	Brownish green and gray clay,trace sand, trace gravel (fill), moist - medium stiff	2	1	3	41	53	45	25	27	A-7-6
534.9	12	4	12-8-4	11"	Brick, cinders and organic matter, (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	14	5	4-4-5	10"	Brown and gray clay, trace sand(fill) moist - stiff	0	1	2	27	70	59	36	27	A-7-6
530.9	16	S-2			Brown clay, trace sand (fill), moist-stiff	0	4	2	38	56	46	22	20	A-7-6
529.4	18	6	6-11-18	16"	Brown silt and clay,trace sand, trace gravel with limestone fragments, moist - very stiff	3	3	2	32	60	37	15	20	A-6a
	20	7	9-16-16	15"	Brown clay,trace sand with limestone fragments, moist - hard	Visual classification-No tests performed								A-7-6
	22	8	10-17-23	15"	Brown clay, trace sand with limestone fragments, moist - hard	0	2	1	33	64	45	23	15	A-7-6
524.4														
522.9	24	9	28-90	14"	Brown and gray shale and limestone, moist - hard	Visual classification-No tests performed								
	26	10	NXM	60%	Gray shale,calcareous,slightly tough, broken (¼" to 2" pieces averaging 1½") and gray limestone, crystalline, fossiliferous,jointed and oxide stained midway in the run (¼" to 2"pieces averaging 1½")87% shale, 13% limestone									
	28													
517.9														
	30				Boring completed									
	32													
	34													

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Form No. 530—16-69

THE H. C. NUTTING COMPANY

4130 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/17/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/17/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-8-2 STATION AND OFFSET 159+73, 39' L, BL SURFACE ELEV. 547.7 Bridge No. HAM-71-0157

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
547.7	0				2.1' Blacktop and granite block pavement	Visual classification-No tests performed								
545.6	2													
542.7	4	1	6-3-3	4"	Brown and gray silt and clay, some sand, some gravel (fill), moist - medium stiff	31	13	10	20	26	34	15	27	A-6a
	6	2	2-5-5	5"	Brown and gray clay, little sand, trace gravel (fill), moist - medium stiff	7	9	6	29	49	42	20	27	A-7-6
	8	3	2-5-3	5"	Brown and gray clay, trace sand, trace gravel (fill), moist - medium stiff	4	6	2	34	54	41	18	19	A-7-6
537.7	10	4	4-5	5"	do do	Visual classification-No tests performed								A-7-6
	12	5	3-3-4	13"	Gray silty clay, trace sand, trace gravel with brick fragments and organic matter (fill), moist - medium stiff	2	4	2	51	41	36	16	24	A-6b
532.7	14	6	4-5-6	12"	Gray silty clay, trace sand, little gravel with brick fragments (fill), moist - medium stiff	13	4	2	37	44	40	19	26	A-6b
	16	7	4-16-36	16"	Brown and gray clay, little sand, trace gravel, moist - stiff	5	9	4	34	48	42	18	25	A-7-6
528.7	18	8	27-45-37	13"	Brown clay, trace sand, trace gravel, moist hard	1	5	2	40	52	41	19	18	A-7-6
528.2	20				0.5' Possible limestone layer									
	22	9	42-43-51	8"	Brown and gray clay, trace sand, some gravel with shale and limestone, moist - hard	20	4	0	28	48	44	20	16	A-7-6
525.2														
524.2	24	10A	18-41	9"	Brown and gray silty clay, trace sand, trace gravel with shale and limestone fragments, moist - hard	10	6	4	34	46	40	17	15	A-6b
		10B	65	3"	Gray shale, moist - hard	Visual classification-No tests performed								
522.7	26													
	28	11	NXM	40%	Gray shale, calcareous, moderately tough (½" to 1½" pieces averaging 1") and gray limestone, crystalline, fossiliferous (two pieces 2" and 4") 90% shale, 10% limestone									
517.7	30													
	32				Boring completed									
	34													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/16/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/16/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-8-3 STATION AND OFFSET 160+47, 51' Rt. BL SURFACE ELEV. 549.6 Bridge No. HAM-71-0173

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
549.6	0													
549.1					0.5' Concrete									
	2	1	2-3-3	6"	Brown sand and gravel with cinders, (Fill) moist - medium dense	Visual classification-No tests performed								Fill
546.6		2-A	10	6"	Brown and gray clay, trace sand, little gravel moist - stiff	12	2	1	28	57	44	19	14	A-7-6
	4	2-B	28-30	8"	Brown and gray weathered shale with limestone layers, slightly moist-hard to very hard	Visual classification -No tests performed								
	6	3	17-81	8"	do do	Visual classification-No tests performed								
541.1	8	4	27-90	10"	do do	Visual classification-No tests performed								
	10				Gray shale, calcareous, moderately tough to tough (½" to 3" pieces averaging 1½")									
	12	5	NXM	80%	and gray limestone, crystelline, fossiliferous, jointed (one 4" piece at the top of the run) 93% shale, 7% limestone									
536.1	14													
					Boring completed									
	16													
	18													
	20													
	22													
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 530—16.59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/14/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/15/64 CASING: LENGTH _____ DIA. 3.5" I.D. Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-8-4 STATION AND OFFSET 160+74, 59' L. BL SURFACE ELEV. 547.9 Bridge No. HAM-71-0173

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
547.9	0													
547.5					0.4' Concrete	No tests performed								
4	2	1	2-1-2	7"	Brown silty clay with sand, gravel and cinders (fill), moist - medium stiff	Visual classification-No tests performed								Fill
545.4														
2.1	4	2	4-4-8	7"	Brown silty clay with limestone fragments (fill), moist - medium stiff	Visual classification-No tests performed								Fill
542.9														
2.5	6	3	4-1-1	12"	Cinders, sand, gravel and coal (fill), moist - loose	Visual classification-No tests performed								Fill
540.4	8													
2.5		4	4-5-6	15"	Brown and gray clay, little sand, little gravel (fill), moist - stiff	11	6	6	26	51	43	20	22	A-7-6
537.9	10													
2.5	12	5	3-3-5	7"	Brown silty clay, trace sand, trace gravel (fill), moist - medium stiff	2	2	3	44	49	39	17	20	A-6b
535.4														
2.5	14	6	6-11-13	14"	Brown and gray clay, trace sand, trace gravel, moist - stiff	2	1	1	32	64	46	22	20	A-7-6
533.4														
	16	7	NXM	62%	Brown weathered shale, soft (½" to 3" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed (one 2½ piece at the top of the run) 90% shale, 10% limestone	Visual classification-No tests performed								
531.4														
529.9	18	8	21-38-71		Brown and gray clay, trace sand moist-stiff	0	2	2	36	60	45	21	19	A-7-6
	20	9	NXM	25%	Sample 9 -Brown and gray weathered shale soft (1" to 2" pieces averaging 1½", 100% shale	Visual classification-No tests performed								
	22													
		10	NXM	42%	Sample 10 - Gray shale, calcareous, soft, to moderately tough (1" to 2" pieces, broken) and gray limestone, crystalline,									
	24	11	70		fossiliferous (two pieces 1" and 1½") 90% shale, 10% limestone									
					Sample 11 - Gray shale, moist - hard									
	26	12	NXM	60%	Sample 12 - Gray shale, calcareous, broken, moderately tough (½" to 1½" pieces, averaging 1") and gray limestone, crystalline,									
	28	13	NXM	80%	fossiliferous (two pieces 1½" and 2") 88% shale, 12% limestone									
519.4														
	30				Sample 13 - Gray shale, calcareous, moderately tough to tough (½" to 2" pieces averaging 1½") 100% shale									
	32													
	34				Boring completed									

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Form No. 630—16-59

THE H. C. NUTTING COMPANY

4130 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/16/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 543.3 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/16/64 CASING: LENGTH ____ DIA 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-8-5 STATION AND OFFSET 161+19, 44' Rt., BL SURFACE ELEV. 549.8 Bridge No. HAM-71-0173

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SNTL CLASS
549.8	0													
549.3					Concrete (0.5')									
	2	1	9-13-16		Brown clay, trace sand, little gravel, moist - stiff	14	0	6	34	46	42	21	18	A-7-6
	4	2	5-10-21		Brown clay, trace sand, trace gravel, with shale and limestone fragments, moist - stiff	4	2	1	35	58	46	22	15	A-7-6
543.8	6	3	9-24		Brown and gray clay, trace sand, trace gravel with shale and limestone fragments, moist - very stiff	1	2	2	33	62	43	17	19	A-7-6
542.8		3A	64		Brown and gray shale, moist - hard	Visual classification-No tests performed								
	8				Gray shale, calcareous, moderately tough to tough (¼" to 2" pieces averaging 1") and gray limestone, crystalline, fossiliferous, jointed in the bottom 6" of the run (¼" to 6½" pieces averaging 3") 67% shale, 33% limestone									
	10	4	NXM	77%										
	12	5	NXM	86%	Gray shale, calcareous, moderately tough to tough (¼" to 3" pieces averaging 2") and gray limestone crystalline, fossiliferous (two pieces 2" and 2½") 92% shale, 8% limestone									
	14													
	16	6	NXM	87%										
532.8					Gray shale, calcareous, tough (½" to 2" pieces averaging 1½") 100% shale									
	18													
	20													
	22													
	24													
	26													
	28													
	30													
	32													
	34													

Boring completed

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Form No. 530 -16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/15/64 SAMPLER: TYPE Split Spoon & One Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/16/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-8-6 STATION AND OFFSET 161+72, 54' L. BL SURFACE ELEV. 551.0 Bridge No. HAM-71-0173

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
551.0	0				0.3" Concrete									
548.5	2	1	4-3-3	6"	Brown silty clay with gravel and brick fragments (fill), moist - medium stiff	Visual classification-No tests performed								Fill
546.0	4	2	3-4-4	10"	Brown silty clay, little sand, trace gravel with brick fragments (fill), moist - medium stiff	8	10	9	31	42	40	18	23	A-6b
543.5	6	3	2-2-4	12"	Brown and gray clay, little sand, trace gravel (fill), moist - medium stiff	2	6	6	33	53	44	20	24	A-7-6
542.5	8	4A	3-2	6"	Brown and gray silty clay (fill), moist - medium stiff	Insufficient Samples for Testing - No tests performed								Fill
541.0		4B	4	3"	Gray sandy clay with gravel (fill), very moist - soft									Fill
540.5	10	5A	2	4"	Brown and gray silty clay, trace sand, (fill), moist - medium stiff	0	4	5	35	56	39	16	19	A-6b
538.5	12	5B	4-4	8"	Gray sandy silt, trace gravel (fill), moist - medium stiff	5	22	15	42	16	21	3	13	A-4a
	14	6	2-7-7	11"	Brown and gray clay, trace sand, (probable fill), moist - stiff	0	1	1	32	66	46	20	20	A-7-6
	16	7	3-6-7	14"	Brown clay, trace sand with shale fragments, moist - stiff	0	2	2	31	65	46	23	20	A-7-6
	18	8	5-10-14	13"	Brown and gray clay, trace sand with shale fragments, moist - hard	0	1	1	35	63	44	21	20	A-7-6
531.0	20													
524.5	22	9	60-50	*	Gray shale and limestone, dry - hard	Visual classification-No tests performed								
	24	10	45-47-61	0	do do	Visual classification-No tests performed								
	26	11	41-70	10"	do do	*Poor recovery Visual classification-No tests performed								
	28	12	NXM	58%	Gray shale, calcareous, moderately tough (1½" pieces) and gray limestone, crystalline, fossiliferous (1" - 2½" and 5" pieces) 62% shale, 38% limestone									
519.5	30	13	NXM	78%	Gray shale, calcareous, moderately tough (½" to 2" pieces, averaging 1" and gray limestone, crystalline, fossiliferous, (one 1" piece at the top of the run) 98% shale, 2% limestone									
	32													
	34				Boring completed									

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Form No. 530—16.59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/13/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/14/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-8-7 STATION AND OFFSET 162+39, 53' Rt. BL SURFACE ELEV. 553.2 Bridge No. HAM-71-0173

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
553.2	0				0.2' Blacktop									
550.7	2	1	2-3-5	7"	Brown and gray clay and gravel (fill), moist - loose	60	0	5	14	21	41	19	21	A-2-7
	4	2	4-9-8	9"	Brown and gray clay, trace sand, little gravel with limestone fragments (fill), moist - medium stiff	18	3	3	28	48	47	22	17	A-7-6
	6	3	5-6-11	16"	Brown and gray clay, trace sand, moist - medium stiff	0	3	3	13	81	46	20	21	A-7-6
544.2	8	4	4-125	10"	Brown and gray clay, trace sand, some gravel with limestone fragments, moist - stiff	28	3	3	22	40	43	19	22	A-7-6
543.2	10	5	31-114	16"	Gray shale, dry - hard	Visual classification-No tests performed								
	12	6	NXM	83%	Sample 6-Gray shale with brown weathered zones, top and bottom of run, calcareous, moderately tough (½" to 1½"pieces, averaging 1") 100% shale									
	14	7	NXM	67%	Sample 7 - Gray shale, calcareous, moderately tough with soft seams throughout run (½" to 3" pieces averaging 2") and gray limestone, crystalline, fossilifeross (1" and 3" pieces) 84% shale, 16% limestone									
	16													
	18	8	NXM	80%	Sample 8 - Gray shale calcareous, tough (1" to 2½" pieces averaging 2") and gray limestone, crystalline, fossiliferous(1" and 1½" pieces) 96% shale, 4% limestone									
533.2	20													
	22				Boring completed									
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 530—16-58

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/15/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. NXM WATER ELEV. IMMEDIATE 551.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/15/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-8-8 STATION AND OFFSET 163+06, 40' Rt., BL SURFACE ELEV. 556.0 Bridge No. HAM-71-0173

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL CLASS
556.0	0				Concrete and cinders (fill) (0.5')									
555.5	2	1	9-13-32	16"	Brown and gray clay, little sand, trace gravel with limestone and shale fragments, moist - very stiff	2	7	4	33	54	44	22	23	A-7-6
	4	2	13-12-20	11"	Brown and gray clay, little sand, little gravel with shale and limestone fragments, moist - very stiff	12	5	5	27	51	44	22	16	A-7-6
		S-1		22"	Brown clay, trace sand, moist-very stiff	0	5	1	35	59	46	22	18	A-7-6
	6	3	90	10"	Brown clay, little sand, trace gravel with limestone fragments, moist-stiff	7	11	5	23	54	43	23	20	A-7-6
		4	18	17"	do do	Visual classification-No tests performed								A-7-6
	8	4A	86-80	17"	do do	Visual classification-No tests performed								A-7-6
546.0	10				Brown and gray silty clay, little sand, trace gravel with limestone fragments, moist - very stiff	6	9	7	28	50	39	19	13	A-6b
545.0		5	40-59	17"	Limestone fragments	Visual classification-No tests performed								
544.5	12	5A	46	1"										
	14	6	NXM	68%	Gray shale, calcareous, moderately tough(¼" to 2½" pieces averaging 1½") and gray limestone, crystalline, fossiliferous(two pieces 1" and 2½")									
539.5	16				94% shale, 6% limestone									
	18				Boring completed									
	20													
	22													
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 530-- 16 59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/20/64 SAMPLER: TYPE Split Spoon& Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/20/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-8-9 STATION AND OFFSET 156+75, 8' Rt., Ramp GD, BL SURFACE ELEV. 545.7 Bridge No. HAM-71-0173

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTO CLASS
545.7	0				Brick and limestone									
545.2	2	1	5-6-6	9"	Cinders, clay and sand (fill), very moist - loose	Visual classification-No tests performed								Fill
540.7	4	2	3-2-2	10"	do do	Visual classification-No tests performed								Fill
	6	S-1		18"	Brown and gray silty clay, trace sand, trace gravel (fill), moist-medium stiff	1	3	4	46	46	40	20	24	A-6b
	8	3	5-6-6	17"	Brown and gray silty clay, little sand, trace gravel (fill), moist - medium stiff	2	8	9	45	36	38	16	28	A-6b
536.2	10	4	5-6-6	18"	Brown and gray silt and clay, little sand, trace gravel (fill), moist - medium stiff	5	9	10	44	32	35	14	26	A-6a
533.2	12													
	14	5	5-4-6	17"	Brown and gray silty clay, trace sand, (fill), moist - medium stiff	0	2	2	50	46	37	17	25	A-6b
530.7														
528.7	16	S-2		18"	Brown and gray silt and clay, trace sand (fill), moist - medium stiff	0	3	2	47	48	35	15	25	A-6a
	18	6	3-4-5	11"	Brown and gray clay, trace sand(fill), moist - stiff	0	3	3	37	57	44	22	26	A-7-6
525.7	20	7	4-5-7	17"	Brown and gray clay, trace sand (fill), moist - medium stiff	0	4	3	35	58	45	23	24	A-7-6
524.7		8	27-81	5"	Brown and gray clay, trace sand, moist-stiff	0	4	4	37	55	45	23	25	A-7-6
	22	R-1	NXM	75%	R-1 - Brown weathered shale(no shale recovery) and gray limestone, crystalline, fossiliferous (one 6½" piece) 46% shale, 54% limestone									
		R-2	NXM	40%										
	24	9	6-9-12	18"	R-2 - Brown weathered shale,slightly tough (one 2" piece) and gray limestone, crystalline , fossiliferous,(one 2"piece) 83% shale, 17% limestone									
	26	10	21-55	10"	9 - Brown weathered shale, moist-very stiff									
	28				10- do do									
	30	R-3	NXM	80%	R-3 - Gray and brown shale,calcareous, moderately tough (1" to 3" pieces, averaging 2") and gray limestone,crystalline, fossiliferous,jointed (one 1½"piece midway in the run) 98% shale, 2% limestone									
	32													
	34				Boring completed									

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Form No. 830—16-59

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 11/10/64 SAMPLER: TYPE Split Spoon& Core Barrel DIA. 2"O.D & NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 11/10/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled-Street HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-15-5 STATION AND OFFSET 154+60, 100' L. BL SURFACE ELEV. 543.7 Retaining Wall No. 15

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
543.7	0													
542.7					1.0' Asphaltic concrete									
541.7	2	1	13-5-6	9"	Cinders, sand and gravel (fill), moist-medium dense	Visual classification-No tests performed								Fill
538.7	4	2	3-3-3	7"	Gray clay, some sand, some gravel, (fill), wet - soft	22	14	10	25	29	56	36	26	A-7-6
536.7	6	3	8-6-13	9"	Brown and gray clay, trace sand, trace gravel, moist - very stiff	5	3	3	38	51	46	22	18	A-7-6
	8	S-1		0										
532.2	10	4	79	5"	Brown silty clay, little sand, trace gravel, moist - very stiff	3	9	6	34	48	40	18	19	A-6b
	12	5	22-35-60	16"	Brown and gray weathered shale, moist-very stiff									
527.7	14	6	22-28-79	17"	do do									
	16													
	18				Gray and brown shale, calcareous, moderately tough, jointed and weathered in the top 12" of the run(1" to 4½"pieces averaging 3") and gray limestone,crystalline, fossiliferous, jointed(two pieces ½" and 1½") 97% shale, 3% limestone									
	20	R-1	NXM	78%										
	22				Gray shale, calcareous,moderately tough to tough (1" to 4" pieces averaging 2") and gray limestone, crystalline, fossiliferous (½" to 5" pieces averaging 2") 83% shale, 17% limestone									
	24	R-2	NXM	93%										
517.7	26													
	28				Boring completed									
	30													
	32													
	34													

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—16-63

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 11/11/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 11/11/64 CASING: LENGTH _____ DIA. 3.5"I.D. AFTER _____ HOURS Backfilled-Street PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-15-6 STATION AND OFFSET 156+32, 102.5'L. CL SURFACE ELEV. 545.5 Retaining Wall No. 15

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
545.5	0													
544.5	2	1	60	6"	Blacktop and brick	Visual classification-No tests performed								
542.5	4	2	65-32-8	7"	Wood and concrete Crushed limestone and sand fill	Visual classification-No tests performed								
	6	S-1		9"	Gray and brown clay, trace of sand and gravel, very moist - soft	5	6	4	31	54	44	21	34	A-7-6
	8	3	1-2-3	8"	do do	2	6	4	36	52	43	19	28	A-7-6
534.5	10	S-2		20"	Brown clay, trace sand, little gravel, moist - medium stiff	13	5	3	31	48	45	22	26	A-7-6
	12	4	2-2-4	15"	Dark gray and brown silt, trace of sand, very moist - soft	0	0	3	71	26	34	9	28	A-4b
532.0	14	5	2	4"	Brown and gray silty clay, trace of sand, very moist - medium stiff	0	0	2	61	37	35	16	27	A-6b
531.5		6	6-13	8"	Brown and gray clay, trace of sand, moist - stiff	0	0	2	34	64	50	26	22	A-7-6
529.5	16													
	18	7	12-17-23	17"	Brown and gray weathered shale, moist-very stiff to hard									
524.5	20	8	30-40-47	17"	do do									
	22													
	24	R-1	NXM	63%	Gray shale, calcareous, moderately tough with brown weathered zones throughout the run (1" to 5" pieces averaging 3") and gray limestone, crystalline, fossiliferous, mointed and iron oxide stained (one 4" piece at the top of the run) 93% shale, 7% limestone									
	26													
	28	R-2	NXM	80%	Gray shale, calcareous, tough (1" to 5" pieces averaging 4") and gray limestone, jointed and iron oxide stained (1½" to 5"pieces averaging 3") 84% shale, 16% limestone									
514.5	30													
	32													
	34				Boring completed									

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530 – 1[illegible]

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/4/64 SAMPLER: TYPE Split Spoon & CoreBarrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 537.4 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/4/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER 2 hr.s HOURS 540.9 PROJECT: ~~Northeast Expressway~~ ~~HAM-71-0.93~~ Bridge No. HAM-71-0184

BORING No. B-10-1 STATION AND OFFSET 34+40, 8' L. Ramp GG SURFACE ELEV. 551.9

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
551.9	0													
	2	1	7-4-3	10"	Cinders and brick(fill),moist-loose	Visual classification-No tests performed								Fill
	4	2	2-2-2	12"	do do do	Visual classification-No tests performed								Fill
	6	3	3-2-1	18"	do do do	Visual classification-No tests performed								Fill
	8	4	1-2-1	16"	do do do	Visual classification-No tests performed								Fill
	10	5	5-6-6	12"	do do do	Visual classification-No tests performed								Fill
539.4	12	6	1-2-4	8"	Cinders and coal (fill), wet - soft	Visual classification-No tests performed								Fill
	14	7	3-2-2	10"	do do do	Visual classification-No tests performed								Fill
	16	8	4-4-5	9"	do do do	Visual classification-No tests performed								Fill
	18	9	6-3-5	12"	do do do	Visual classification-No tests performed								Fill
	20	10	4-4-5	11"	do do do	Visual classification-No tests performed								Fill
526.9	22	11	7-19-27	13"	Brown and gray silt and clay, trace sand, moist - stiff	0	4	4	53	39	35	15	18	A-6a
524.4	24	12	NXM	85%	Brown and gray weathered shale,slightly tough(1" to 4"pieces averaging 2½") and gray limestone, crystalline, fossiliferous, (1½" to 8½" pieces averaging 4") 60% shale, 40% limestone									
519.4	26													
	28													
	30													
	32													
	34				Boring completed									

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL.

Form No. 530—16

THE E. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

Page 1 of 2

LOG OF BORING

DATE STARTED 8/17/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 537.3 ~~CLIENT: City of Cincinnati, Ohio~~

DATE COMPLETED 8/18/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: ~~Northeast Expressway~~ ~~HAM-71-0.93~~ HAM 471-0.93

BORING No. B-10-2 STATION AND OFFSET 35+03, 19' L. Ramp GG BL SURFACE ELEV. 552.3 Bridge No. HAM-71-0184

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
552.3	0													
	2	1	3-6-10	11"	Brick, cinders and coal(fill), moist - very stiff to medium stiff	Visual classification-No tests performed								Fill
	4	2	4-1-1	5"	do do	Visual classification-No tests performed								Fill
	6	3	3-3-4	3"	do do	Visual classification-No tests performed								Fill
	8	4	5-4-5	6"	do do	Visual classification-No tests performed								Fill
	10	5	3-4-3	13"	do do	Visual classification-No tests performed								Fill
	12													
	14													
537.3	16	6	5-2-2	7"	Brown and dark gray silt, little sand, trace gravel moist - medium stiff	7	4	7	62	20	27	5	26	A-4b
	18													
532.3	20	7	8-17-13	6"	Brown clay and gravel, trace sand, moist - stiff	39	2	5	19	35	48	26	29	A-7-6
	22													
529.3 ~~528.8~~	24	8	NXM	100%	~~Limestone~~									
	26	9	8-24-25	12"	Brown clay, trace sand, trace gravel, moist - stiff	9	6	3	37	45	41	19	25	A-7-6
	28													
522.3	30	10	NXM	79%	Gray shale, calcareous, moderately tough to tough, jointed and iron oxide stained at approximately elevation 521 to 520.5 (½ to 3" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, shaly (one 1½" piece in the top 12" of									
	32													
	34													

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Form No. 530—16-5*

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/17/64 SAMPLER: TYPE Split Spoon 2"O.D.& Core Barrel DIA. NXM WATER ELEV. IMMEDIATE 537.3 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/18/64 CASING: LENGTH _____ DIA. 3.5"I.D Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-10-2 STATION AND OFFSET 35+03, 19' Lt. Ramp GG BL SURFACE ELEV. 552.3 Bridge No. HAM-71-0184

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
517.3	34				of the run) 97% shale, 3% limestone									
	36				Boring completed									
	38													
	40													
	42													
	44													
	46													
	48													
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 530

THE B. C.-NUTTING COMPA.

4120 AIRPORT ROAD
CINCINNATI 25, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/18/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: [redacted]

DATE COMPLETED 8/19/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow AFTER Backfilled HOURS _____ PROJECT: [redacted] HAM-71-0.30

BORING No. B-10-3 STATION AND OFFSET 36+34, 1.5' Rt. Ramp GG BL SURFACE ELEV. 568.6 Bridge No. HAM-71-0184

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
568.6	0													
568.3		1	20-13-11	13"	0.3' Asphaltic concrete Cinders and gravel (fill), stiff	Visual classification-No tests performed								Fill
566.1	2													
	4	2	5-2-2	9"	Brown silty clay with brick and cinders (fill), soft	Visual classification-No tests performed								Fill
	6	3	3-6-5	9"	Brown silty clay with brick and cinders (fill), medium stiff	Visual classification-No tests performed								Fill
561.1	8	4	4-4-7	12"	Brown clay, trace sand, trace gravel with shale fragments, moist - stiff	2	3	2	40	53	43	21	26	A-7-6
	10	5	3-2-6	18"	Brown clay, trace sand, trace gravel with shale fragments, moist - stiff	6	2	2	35	55	42	21	23	A-7-6
	12	6	5-7-9	16"	Brown clay, trace sand with shale fragments, moist - stiff	0	2	2	39	57	44	20	15	A-7-6
553.6	14													
	16	7	5-12-18	13"	Brown silty clay, trace sand, little gravel with shale fragments, moist - very stiff	19	3	1	39	38	38	17	18	A-6b
551.1	18	8	12-28-32	18"	Brown clay, trace sand with shale fragments, moist - very stiff	0	2	2	41	55	43	21	17	A-7-6
	20	9	15-21-31	15½"	Brown and gray clay, trace sand with shale fragments, moist - stiff	0	2	2	34	62	42	21	9	A-7-6
544.6	22													
	24				Gray and brown shale, calcareous, moderately tough-weathered in the top 12" of the run (¼" to 2½" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed, (1" to 3" pieces averaging 1½") 90% shale, 10% limestone									
	26	10	NXM	83%										
539.6	28													
	30				Boring completed									
	32													
	34													

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Form No. 530—16-69

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

Split Spoon & 2"O.D.&

DATE STARTED 8/27/64 SAMPLER: TYPE Core Barrel DIA. NXM WATER ELEV. IMMEDIATE None CLIENT: ~~City of Cincinnati, Ohio~~

DATE COMPLETED 8/27/64 CASING: LENGTH _____ DIA 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: ~~Northeast Expressway~~ ~~HAM-71-0.95~~ HAM-471-0.95

BORING No. B-10-4 STATION AND OFFSET 37+17, 10' L. Ramp GG BL SURFACE ELEV. 568.8 Bridge No. HAM-71-0184

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
568.8	0													
566.3	2				Pavement									
564.3	4	S-1		2"	Brown and gray silty clay, trace sand, trace gravel, moist -stiff	8	4	4	35	49	37	16	22	A-6b
561.3	6	1	19-13-17	18"	Brown and gray clay, trace sand, moist - very stiff	0	4	2	35	59	43	21	21	A-7-6
558.8	8	2	19-30-34	18"	Brown and gray silty clay, little sand, trace gravel with limestone fragments, moist - hard	3	7	5	30	55	39	18	20	A-6b
556.8	10	3	23-27-31	6"	Brown weathered shale, moist - hard	Visual classification-No tests performed								
551.8	12	R-1	NXM	57%	Gray shale, calcareous, moderately tough (½" to 2-3/4" pieces averaging 1½") and gray limestone, fossiliferous, iron oxide stained, shaly (one 1" piece in top 18" of the run) 98% shale, 2% limestone									
	14													
	16													
	18				Boring completed									
	20													
	22													
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 837 1-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

*Water used in drilling from elevation 577.8

LOG OF BORING

DATE STARTED 8/28/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE * CLIENT: City of Cleveland, Ohio

DATE COMPLETED 8/28/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.99 HAM-871-35

BORING No. B-10-5 STATION AND OFFSET 38+10, 7' L. Ramp GG BL SURFACE ELEV. 577.8 Bridge No. HAM-71-0184

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
577.8	0													
576.3		1	2-5-6	12"	Topsoil and brown silty clay (fill), moist- medium stiff	Visual classification-No tests performed								Fill
	2													
	4	2	7-11-11	13"	Brown clay, trace sand with shale fragments, moist - very stiff	0	0	2	34	64	48	21	17	A-7-6
	6	3	8-21-20	7"	Brown clay, trace sand, little gravel with shale fragments, moist-very stiff	15	4	1	30	50	45	20	21	A-7-6
	8	4	11-11-18	15"	Brown clay, trace sand with shale fragments, moist - very stiff	0	2	2	28	68	49	22	22	A-7-6
	10	5	10-12-21	13"	do do	0	0	3	31	66	45	20	20	A-7-6
	12	6	14-18-25	13"	do do	0	1	1	34	64	45	19	18	A-7-6
	14													
	16	7	8-10-16	12"	Brown clay, little sand, little gravel with shale fragments, moist-very stiff	10	10	5	28	47	41	16	21	A-7-6
561.0		8	70/0.2'	2½"	Gray shale, dry - hard	Visual classification-No tests performed								
560.4	18													
	20	9	NXM	99%	Gray shale, calcareous, moderately tough to tough(½" to 4½" pieces averaging 2½") and gray limestone, crystallina, fossiliferous, jointed (3/4" to 5½" pieces averaging 3") 79% shale, 21% limestone									
555.4	22													
	24				Boring completed									
	26													
	28													
	30													
	32													
	34													

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Form No. 530—

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

*Water used in drilling from elevation 587.5

DATE STARTED 8/31/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE * ~~AFT~~ City of Cincinnati, Ohio

DATE COMPLETED 9/1/64 CASING: LENGTH _____ DIA. None AFTER Backfilled HOURS _____ PROJECT: ~~Northeast Expressway HAM-71-0.95~~ HAM-471-0.50 Bridge No. HAM-71-0184

BORING No. B-10-6 STATION AND OFFSET 38+79, 2' L. Ramp GG BL SURFACE ELEV. 587.5

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHT. CLASS
587.5	0													
	2	1	1-4-6	10"	Topsoil, cinders and brick fragments (fill), dry - stiff	Visual classification-No tests performed								Fill
	4	2	3-7-14	4"	do do	Visual classification-No tests performed								Fill
582.5	6	3	7-10-15	13"	Brown clay, trace sand, moist - very stiff	0	2	3	29	66	52	26	17	A-7-6
	8													
	10	4	11-14-17	12"	do do	Visual classification-No tests performed								A-7-6
575.0	12	5	13-26-30	14"	Brown clay, trace sand, moist - very stiff	0	1	2	37	60	44	20	16	A-7-6
	14	6	20-27-23	15"	Brown silty clay, trace sand, moist - hard	Visual classification-No tests performed								A-6b
	16	7	24-46-57	14"	do do	0	3	2	37	58	40	16	16	A-6b
570.0	18													
	20	8	30-71-50	12"	Brown and gray shale, moist - hard	Visual classification-No tests performed								
	22	9	96	6"	Gray shale, dry - hard	Visual classification-No tests performed								
566.0	24	10	NXM	82%	Sample 10-Gray shale, calcareous, moderately tough, jointed and iron oxide stained midway in the run(1" to 3-3/4" pieces averaging 2½") and gray limestone crystalline, fossiliferous, jointed and iron oxide stained (two pieces 1" and 3") 92% shale,8% limestone									
	26													
	28	11	NXM	90%										
	30													
556.0	32	12	NXM	100%	Sample 11 - Gray shale, calcareous, moderately tough to tough (½" to 2½" pieces averaging 1½") and gray limestone, crystalline,fossiliferous(1" to 4"pieces averaging 2½") 80% shale, 20% limestone									
	34													

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Form No. 530—7

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/31/64 SAMPLER TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE Water used in drilling from elevation 587.5 CLIENT City of Cincinnati, Ohio

DATE COMPLETED 9/1/64 CASING: LENGTH ____ DIA. None AFTER Backfilled HOURS ____ PROJECT Northeast Expressway HAM-71-0.93

BORING No. B-10-6 STATION AND OFFSET 38+79, 2' L. Ramp GG, BL SURFACE ELEV. 587.5 Bridge No. HAM-71-0184

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTE CLASS
					Sample 12 - Gray shale, calcareous, tough, (1" to 3½" pieces averaging 2½") 100% shale									
					Boring completed									

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Form No. 530

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/13/64 SAMPLER: TYPE Split Spoon Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT ~~City of Cincinnati, Ohio~~

DATE COMPLETED 8/14/64 CASING: LENGTH _____ DIA 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT ~~Northeast Expressway~~ ~~HAM-71-0.03~~ HAM-071-0.30

BORING No. B-10-7 STATION AND OFFSET 39+89, 2' Rt. BL Ramp GG SURFACE ELEV. 593.0 Bridge No. HAM-71-0184

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
593.0	0													
590.5	2	1	2-3-4	8"	Brick, cinders and clay (fill), moist-loose	Visual classification-No tests performed								Fill
588.0	4	2	3-3-3	14"	Brown silty clay with brick and cinders (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	6	3	5-5-5	15"	Brown silty clay and cinders(fill), moist - stiff	Visual classification-No tests performed								Fill
583.0	8	4	2-2-3	15"	Brown silty clay and cinders (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	10	S-1		11"	Brown silty clay with cinders and brick fragments (fill), moist - medium stiff	Visual classification-No tests performed								Fill
578.0	12	5	2-4-5	16"	do do	Visual classification-No tests performed								Fill
	14													
	16	6	4-5-7	18"	Brown and gray clay, trace sand, trace gravel with limestone fragments, moist-stiff	3	4	4	31	58	42	25	20	A-7-6
	18													
	20													
568.0	22	7	14-21-36	18"	Brown clay, trace sand, moist - hard	0	1	1	38	60	48	24	16	A-7-6
	24													
	26	8	24-68-76	18"	Brown and gray weathered shale, moist-hard	Visual classification-No tests performed								
563.0	28	9	102	14"	do do	Visual classification-No tests performed								
	30													
	32	10	NXM	55%	Gray shale, clacareous, moderately tough (1½" to 2½" pieces averaging 2") and gray limestone, crystalline, fossiliferous, jointed and iron oxide stained in the bottom half of the run(2½" to 4½" pieces averaging 3") 75% shale, 25% limestone									
	34													

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Form No. 530—15 [illegible]

THE H. C. NUTTING COMPANY

8120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/13/64 SAMPLER: TYPE Split Spoon 2"O.D. & Core Barrel NXM WATER ELEV. IMMEDIATE None CLIENT City of Cincinnati, Ohio

DATE COMPLETED 8/14/64 CASING: LENGTH Backfilled DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS ____ PROJECT Northeast Expressway HAM-71-0.93

BORING No. B-10-7 STATION AND OFFSET 39+89, 2' Rt. BL Ramp GG SURFACE ELEV. 593.0 Bridge No. HAM-71-0184

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL CLASS
	34													
	36													
	38	11	NXM	82%	Gray shale, calcareous, tough, (1" to 4" pieces averaging 2½") and gray limestone, crystalline, fossiliferous (two pieces 3½" and 9") 79% shale, 21% limestone									
553.0	40													
	42				Boring completed									
	44													
	46													
	48													
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—1F

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/27/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/27/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway ~~HAM-71-0.93~~ HAM-471-0.50

BORING No. B-10-8 STATION AND OFFSET 40+58, 10'Rt., Ramp GG BL SURFACE ELEV. 594.0 Bridge No. HAM-71-0184

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
594.0	0													
		1	3-5-8	5"	Concrete, brick, cinders and clay (fill), moist - medium dense to loose	Visual classification-No tests performed								Fill
	2													
	4	2	4-5-6	6"	do do	Visual classification-No tests performed								Fill
	6	3	1-1-1	3"	do do	Visual classification-No tests performed								Fill
	8		3-1-1	0		No recovery								
	10	4	2-1-1	5"	do do	Visual classification-No tests performed								Fill
	12													
	14		2-2-2	0		No recovery								
579.0														
	16	5	1-2-3	5"	Brick, cinders and gravel (fill), moist - loose	Visual classification-No tests performed								Fill
576.5	18													
		6	3-4-5	16"	Brown clay, trace sand, moist - medium stiff	0	2	4	27	67	54	30	25	A-7-6
	20													
		S-1		18"	Brown clay, trace sand, moist - stiff	0	2	1	31	66	46	22	20	A-7-6
	22													
		7	12-16-27	18"	Brown clay, trace sand with shale fragments, moist - hard	0	2	2	33	63	44	21	17	A-7-6
	24													
569.0														
	26	8	13-27-43	18"	Brown weathered shale, moist - hard	Visual classification-No tests performed								
	28	9	105	8"	Gray shale, dry - hard	Visual classification-No tests performed								
565.0														
	30	10	NXM	60%	Gray shale, calcareous, moderately tough with soft seams (½" to 2½" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed and iron oxide stained in the bottom 12" of the run (½" to 3½" pieces averaging 2") 87% shale, 13% limestone									
	32													
	34													

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Form No. 530—16-5

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/27/64 SAMPLER: Split Spoon & Core Barrel DIA. NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/27/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-10-8 STATION AND OFFSET 40+58, 10' Rt., Ramp GG BL SURFACE ELEV. 594.0 Bridge No. HAM-71-0184

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36	11	NXM	50%	Gray shale, calcareous, moderately tough with soft seams (½" to 2" pieces averaging 1") and gray limestone, crystalline, fossiliferous (1" to 5" pieces averaging 2½") 80% shale, 20% limestone									
555.0	38													
	40													
	42				Boring completed									
	44													
	46													
	48													
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

X

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Form No. 630- 9

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/3/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 537.2 ~~CLIENT: City of Cincinnati, Ohio~~

DATE COMPLETED 9/3/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS _____ Backfilled PROJECT: ~~Northeast Expressway~~ HAM-471-0 ~~HAM-71-0~~ BRIDGE NO. HAM-71-0184 ~~Roadway Work No. 18~~

BORING No. R-18-2 STATION AND OFFSET 34+16 76Rt ~~10+49, 12'Rt. Prop. Tail Track CL~~ SURFACE ELEV. 552.2

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
552.2	0													
	2	1	9-15-10	9"	Cinders and brick fragments (fill), moist - medium dense to loose	Visual classification-No tests performed								Fill
	4	2	7-9-6	12"	do do	Visual classification-No tests performed								Fill
	6	3	2-2-2	14"	do do	Visual classification-No tests performed								Fill
	8	4	2-1-3	15"	do do	Visual classification-No tests performed								Fill
	10	5	1-2-1	17"	do do	Visual classification-No tests performed								Fill
	12	6	2-1-1	16"	do do	Visual classification-No tests performed								Fill
	14	7	1-1-1	15"	do do	Visual classification-No tests performed								Fill
	16	8	2-2-1	14"	do do	Visual classification-No tests performed								Fill
532.2	20	9	1-2-3	13"	Cinders and coal (fill), moist-loose	Visual classification-No tests performed								Fill
	22	10	2-3-2	16"	do do	Visual classification-No tests performed								Fill
	24	11	3-3-4	17"	do do	Visual classification-No tests performed								Fill
	26	12	2-3-3	15"	do do	Visual classification-No tests performed								Fill
522.2	30	13	9-18-20	14"	Brown and gray clay, little sand, little gravel with rock fragments moist-medium stiff	17	9	6	24	44	49	24	33	A-7-6
	32	14	20-19-29	10"	do do	Visual classification-No tests performed								A-7-6
	34													

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Form No. 530—1/

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/3/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 537.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/3/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-18-2 STATION AND OFFSET 10+49, 12' Rt., Prop.Tail Track CL SURFACE ELEV. 552.2 Retaining Wall No. 18

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
517.2														
	36	15	19-21-26	9"	Brown and gray clay, trace sand, trace gravel with shale and limestone fragments, moist - stiff	7	2	2	30	59	47	20	24	A-7-6
	38	16	15-18-21	7"	do do	Visual classification-No tests performed								A-7-6
512.2	40													
510.2	42	17	17-22-47	12"	Brown and gray silt and clay, little sand, with shale and limestone fragments, very moist - medium stiff	0	7	3	34	56	39	15	24	A-6a
	44				Gray shale, calcareous, moderately tough to tough, broken(¼" to 2" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed (1" to 4" pieces averaging 3") 80% shale, 20% limestone									
	46	18	NXM	47%										
505.2														
	48				Boring completed									
	50													

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Form No. 530—1-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/15/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 541.5 CLIENT ~~City of Cincinnati, Ohio~~

DATE COMPLETED 9/16/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: ~~Northeast Expressway~~ HAM-71-0.93 HAM-471-0.3 ~~Brighton Tie~~ HAM-71-0.00

BORING No. R-18-3 STATION AND OFFSET 34+32 105 LT 12+30, 13' Rt. Prop. Pavt. Tree SURFACE ELEV. 554.0

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTD CLASS
554.0	0													
	2	1	9-13-7	18"	Cinders and limestone (fill), dry - medium dense	Visual classification-No tests performed								Fill
549.0	4	2	9-9-11	17"	do do	Visual classification-No tests performed								Fill
546.5	6	3	6-6-6	14"	Cinders and sand(fill), moist - medium dense	Visual classification-No tests performed								Fill
	8				Brown silty clay with brick fragments,									
544.0	10	4	2-2-3	11"	(fill), moist - medium stiff	Visual classification-No tests performed								Fill
	12	5	1-1-1	13"	Gray silty clay with coal fragments (fill), moist - very soft	Visual classification-No tests performed								Fill
541.5	14	6	2-1-2	16"	Gray sand with brick fragments (fill), wet - very loose	Visual classification-No tests performed								Fill
	16	7	1-1-1	0"										
	18	8	1-1-1	0"										
534.0	20													
533.5		9	200	6"	~~Wood~~	Visual classification-No tests performed								Fill
	22													
	24	10	7-7-9	11"	Dark brown silty clay (fill), moist - stiff	Visual classification-No tests performed								Fill
529.0	26	11	9-9-9	13"	Brown and gray clay, trace sand, trace gravel, moist - stiff	6	2	2	35	55	41	17	24	A-7-6
	28													
	30													
	32	12	9-11-14	16"	do do	0	2	3	35	60	43	17	24	A-7-6
	34													

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Form No. 530—16-58

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/15/64 SAMPLER: TYPE Split Spoon & CoreBarrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 541.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/16/64 CASING: LENGTH ____ DIA. 5"I.D.Hollow Stem Augers AFTER backfilled HOURS ____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-18-3 STATION AND OFFSET 12+30, 13' Rt., Prop. Tail Track CL SURFACE ELEV. 554.0 Retaining Wall No. 18

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTG. CLASS
	34													
519.0														
	36	13	32-36-59	16"	Gray shale, moist - hard	Visual classification-No tests performed								
	38													
	40													
	42	14	NXM	72%	Gray shale, moist - hard *									
511.0														
	44				Boring completed									
	46				*Vandals destroyed core samples in the field. Description based on driller's examination only. (Notified Mr. Warnke of Hazelet & Erdal by telephone of this condition.)									
	48													
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 530—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/11/64 SAMPLER: TYPE Split Spoon Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE 494.6 & 479.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/12/64 CASING: LENGTH _____ DIA. 3.5" I.D. Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT Northeast Expressway HAM-71-0.93

BORING No. B-6-1 STATION AND OFFSET 139+68, 59' L. NB BL SURFACE ELEV. 519.6 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
519.6	0													
	2	1	5-5-6	18"	Blacktop, gravel and cinders (fill), moist - medium dense	Visual classification-No tests performed								Fill
517.1	4	2	2-2-1	10"	Cinders and brick (fill), moist - loose	Visual classification-No tests performed								Fill
514.6	6	3	2-3-3	9"	Clayey brown fine sand with brick (fill) moist - loose	Visual classification-No tests performed								Fill
512.1	8													
	10	4	1-1-1	15"	Clay, sand, gravel, cinders and brick fragments (fill), moist - loose to very loose	Visual classification-No tests performed								Fill
	12	5	3-3-3	6"	do do	Visual classification-No tests performed								Fill
504.6	14	6	1-2-1	8"	do do	Visual classification-No tests performed								Fill
	16	7	1-1-2	14"	Clayey brown fine sand (fill), very moist - loose	Visual classification-No tests performed								Fill
500.1	18													
	20	8	3-2-2	4"	Clay, sand, gravel, cinders and brick (fill), very moist - loose	Visual classification-No tests performed								Fill
	22													
	24	9	1-1-1	16"	do do	Visual classification-No tests performed								Fill
	26	10	1-1-½	10"	do do	Visual classification-No tests performed								Fill
492.1	28	11	2-2-2	17"	Clay, sand, gravel, cinders and brick, wet - loose	Visual classification-No tests performed								Fill
	30													
	32	12	2-2-3	15"	do do	Visual classification-No tests performed								Fill
	34													

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THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/11/64 SAMPLER: TYPE Split Spoon Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 494.6 & 479.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/12/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-1 STATION AND OFFSET 139+68, 59' L. NB BL SURFACE ELEV. 519.6 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
484.6	34													
	36	13	2-3-4	16"	Gray sandy silt, trace gravel wet - loose	10	6	36	34	14	18	1	2	A-4a
479.6	38 40													
	42	14	2-4-9	15"	Brown silty sand, some gravel with brick wet - medium dense	31	18	29	16	6		NP	19	A-2-4
474.6	44													
	46	15	3-5-9	14"	Gray silt and clay, some sand, moist-stiff	0	2	22	43	33	30	14	20	A-6a
471.6	48													
470.6		S-1(T)			Gray clayey sand and gravel moist - medium stiff	50	8	11	10	21	38	18	31	A-2-6
469.6	50	S-1(B)		21"	Gray clay, trace sand, moist - stiff	0	0	1	32	67	41	17	25	A-7-6
	53	16	4-7-11	17"	Gray silty clay, trace sand, moist - medium stiff	0	0	1	29	70	38	16	24	A-6b
	54													
464.6														
	56	17	5-9-11	17"	Gray silt and clay, moist - medium stiff	0	0	0	46	54	33	11	24	A-6a
	58													
	60													
	62	18	5-9-12	17"	Gray silt and clay, trace sand with sand layers, moist - medium stiff	0	0	1	47	52	31	11	23	A-6a
	64													
	66	19	4-6-11	15"	Gray silt and clay with sand layers, moist - medium stiff	0	0	0	39	61	34	14	28	A-6a
	68													

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Form No. 530—16-**

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/11/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 494.6 & 479.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/12/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-1 STATION AND OFFSET 139+68, 59' L. NB BL SURFACE ELEV. 519.6 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	68													
449.6	70													
	72	20	8-9-12	15"	Gray fine sand, wet - medium dense	0	1	91	- 8	-		NP	23	A-3
446.6														
	74	21	12-18-11	17"	Gray silt and clay, some sand with limestone fragments and sand layers, wet - soft	0	12	20	11	57	32	14	38	A-6a
	76													
441.6	78				Gray coarse and fine sand, little clay,									
440.6		S-2(T)			little silt, moist - medium stiff	0	2	65	16	17		NP	29	A-3a
439.6	80	S-2(B)		21"	Gray clay, trace sand, varved, moist-stiff	0	1	2	27	70	41	18	30	A-7-6
		22	4-5-6	11"	Gray silt and clay, trace sand with sand layers, moist - medium stiff	0	0	4	22	74	36	15	29	A-6a
	82													
	84													
	86	23	4-6-8	17"	Gray silt and clay, trace sand with sand layers, moist - medium stiff	0	0	4	32	64	34	13	31	A-6a
	88													
	90													
	92	24	4-7-8	17"	Gray silt and clay, some sand with sand layers, moist - medium stiff	0	0	22	19	59	30	13	42	A-6a
	94													
	96	25	6-11-13	16"	Gray silt and clay, some sand with sand layers, wet - soft	0	0	30	18	52	27	11	33	A-6a
	98													
419.6	100													
		26	11-12-16	17"	Gray sandy silt with clay layers, wet-soft	0	0	57	17	26	18	4	27	A-4a
	102													

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Form No. 530—16-

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/11/64 SAMPLER: TYPE Split Spoon Cont. Barrel DIA. -- NXM WATER ELEV. IMMEDIATE 494.6 & 479.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/12/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-1 STATION AND OFFSET 139+68, 59' L. NB BL SURFACE ELEV. 519.6 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	102													
414.6	104													
	106	27	6-9-15	18"	Gray coarse and fine sand, little clay, little silt with clay layers, wet - medium dense	5	5	62	12	16		NP	27	A-3a
409.6	108													
	110													
	112	28	8-10-31	17"	Gray sandy silt, little gravel with clay layers and limestone fragments, wet - soft	18	10	36	14	22	22	6	29	A-4a
404.6	114													
	116	29	27-33-58	15"	Brown and gray sandy gravel, little silt with limestone fragments, moist - very dense	56	20	12	-	12 -		NP	5	A-1-a
400.6	118													
	120				Gray shale calcareous (no shale recovery) and gray limestone, crystalline, fossiliferous, jointed (1" to 3" pieces averaging 2"), 78% shale, 22% limestone									
	122	20	NXM	22%										
395.6	124													
	126													
	128				Boring completed									
	130													
	132													
	134													
	136													

X

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REFERENCE OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—1

THE E. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/23/64 SAMPLER: TYPE Split Spoon and Core Barrel 2"O.D.& DIA. NXM WATER ELEV. IMMEDIATE 478.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/24/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-3 STATION AND OFFSET 138+81, 118' Rt., NB BL SURFACE ELEV. 513.7 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
513.7	0				0.3' Concrete									
	2	1	3-4-5	15"	Clay and cinders (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	4	2	3-4-4	17"	do do	Visual classification-No tests performed								Fill
508.7	6	3	2-2-3	17"	Clay, cinders, brick and gravel (fill), moist - loose	Visual classification-No tests performed								Fill
	8	4	2-2-2	18"	do do	Visual classification-No tests performed								Fill
	10	5	1-1-2	9"	do do	Visual classification-No tests performed								Fill
	12	6	1-2-2	8"	do do	Visual classification-No tests performed								Fill
498.7	14													
	16	7	1-3-3	16"	Gray sandy clay with cinders and brick (fill), moist - soft	Visual classification-No tests performed								Fill
	18													
493.7	20													
	22	8	5-12-10	17"	Gray sandy clay with fine gravel, limestone and brick fragments (fill), moist - very stiff	Visual classification-No tests performed								Fill
	24													
488.7	26	9	2-2-2	10"	Gray silty clay with fine gravel and brick fragments (fill) very moist - soft	Visual classification-No tests performed								Fill
	28													
	30	10	1-1-3	14"	do do	Visual classification-No tests performed								Fill
	32													
	34													

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Form No. 536—1C

THE R. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/23/64 SAMPLER: TYPE Split Spoon and Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 478.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/24/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-3 STATION AND OFFSET 138+81, 118'Rt., NB BL SURFACE ELEV. 513.7 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
478.7	34													
	36	11	1-3-3	15"	Clay, brick and cinders (fill), wet - soft	Visual classification-No tests performed								Fill
	38													
473.7	40													
	42	12	3-3-4	15"	Gray clay, some sand, some gravel, moist - medium stiff	24	15	15	18	28	46	18	29	A-7-6
	44													
	46	13	6-9-14	17"	Brown clay, trace sand, varved, moist - stiff	0	1	0	31	68	44	22	28	A-7-6
	48													
463.7	50													
	52	14	3-6-9	18"	Gray silty clay, trace sand with silt lenses, moist - medium stiff	0	1	0	37	62	38	16	30	A-6b
	54													
458.7	56	15	4-6-8	17"	Gray silt and clay, trace sand with sand lenses, moist - stiff	0	1	2	64	33	32	11	24	A-6a
	58													
453.7	60													
	62	16	3-4-4	15"	Gray sandy silt with sand layers, wet - soft	0	13	28	21	38	27	9	33	A-4a
	64													
448.7	66	17	4-5-7	17"	Gray silt and clay, some sand, with sand layers, wet - soft	0	1	20	23	56	33	15	34	A-6a
	68													

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Form No. 520—61

THE H. G. NUTTING COMPANY

6120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/23/64 SAMPLER: Split Spoon and 2"O.D.& Core Barrel DIA. NXM WATER ELEV. IMMEDIATE 478.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/24/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0135

BORING No. B-6-3 STATION AND OFFSET 138+81, 118' Rt.,NB BL SURFACE ELEV. 513.7

ELEV.	DEPTH	SAMPLE No.	STD. PEN (N)	% REC.	DESCRIPTION	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	68													
	70													
	72	18	4-5-6	18"	Gray silt, clay and sand with sand layers, very moist - medium stiff	0	1	39	18	42	25	11	29	A-6a
438.7	74													
	76	19	5-7-12	18"	Gray clay, trace sand with sand layers, very moist - medium stiff	0	0	4	23	73	42	20	39	A-7-6
	78													
433.7	80													
	82	20	4-8-10	15"	Gray silt and clay, little sand with sand layers, very moist - medium stiff	0	0	14	32	54	32	13	24	A-6a
	84													
	86	21	5-7-11	15"	Gray silt and clay, some sand with sand layers, very moist - medium stiff	0	2	26	22	50	27	12	30	A-6a
	88													
423.7	90													
	92	22	7-11-12	16"	Gray sandy silt with sand layers, very moist - medium stiff	0	4	41	13	42	23	9	28	A-4a
	94													
[illegible]	96	23	6-9-11	16"	Gray silt, clay and sand with sand layers, very moist - soft	0	10	27	18	45	29	13	24	A-6a
	98													
[illegible]	100													
	102	24	7-14-18	14"	Brown and gray coarse and fine sand, little clay, little silt, little gravel, with silty clay layers and limestone layers, wet-dense	15	19	41	11	14		NP	15	A-3a

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/23/64 SAMPLER: TYPE Split Spoon and 2"O.D.& 3.5"I.D.Hollow Stem Augers DIA. NXM WATER ELEV. IMMEDIATE 478.7 OWNER: City of Cincinnati, Ohio

DATE COMPLETED 6/24/64 CASING: LENGTH _____ DIA. _____ AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-3 STATION AND OFFSET 138+81, 118' Rt., NB BL SURFACE ELEV. 513.7 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	102													
	104													
408.7														
	106	25	18-27-46	17"	Gray sandy gravel, little silt with limestone fragments, moist - very dense	65	14	10	- 11	-		NP	6	A-1-a
	108													
403.7	110													
402.2		26	26-48-82	17"	Gray gravelly sand, trace clay, little silt, moist - very dense	51	16	15	13	5		NP	4	A-1-b
	112				Gray and brown shale (no shale recovery) and gray limestone, crystalline, fossiliferous, jointed (1" to 3" pieces, averaging 1½") 74% shale, 26% limestone									
	114	27	NXM	43%										
	116													
396.7														
	118				Boring completed									
	120													
	122													
	124													
	126													
	128													
	130													
	132													
	134													
	136													

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Form No. 530—I

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/12/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 476.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/13/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-6 STATION AND OFFSET 140+88, 1'Rt. NB BL SURFACE ELEV. 516.2 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
516.2	0													
513.7	2	1	10-12-11	10"	Blacktop, gravel, cinders and brick, (fill), moist - medium dense	Visual classification-No tests performed								Fill
	4	2	4-3-3	8"	Cinders, gravel and brick (fill), moist - loose	Visual classification-No tests performed								Fill
	6	3	3-1-2	7"	do do	Visual classification-No tests performed								Fill
	8	4	2-1-2	8"	do do	Visual classification-No tests performed								Fill
	10													
503.7	12	5	3-2-3	10"	do do	Visual classification-No tests performed								Fill
	14	6	2-3-2	8"	Clay, gravel, cinders and brick (fill), moist - loose	Visual classification-No tests performed								Fill
	16	7	1-2-1	8"	do do	Visual classification-No tests performed								Fill
	18	8	1-1-1	8"	do do	Visual classification-No tests performed								Fill
496.2	20													
	22	9	1-1-0	15"	Cinders, clay, sand, gravel and brick, (fill), wet - very loose	Visual classification-No tests performed								Fill
	24	10	1-0-1	17"	do do	Visual classification-No tests performed								Fill
	26	11	1-1-0	15"	do do	Visual classification-No tests performed								Fill
	28	12	1-1-1	16"	do do	Visual classification-No tests performed								Fill
	30	13	1-2-2	16"	do do	Visual classification-No tests performed								Fill
	32													
	34													

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Form No. 530—1f

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/12/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. NXM WATER ELEV. IMMEDIATE 476.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED: 6/13/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Auger AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-6 STATION AND OFFSET 140+88, 1' Rt, NB BL SURFACE ELEV. 516.2 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C	SNTL CLASS
481.2	34													
	36	14	2-3-3	17"	Brown silty clay with brick and cinders (fill), very moist - soft	Visual classification-No tests performed								Fill
	38													
	40													
	42	15	1-3-3	6"	do do	Visual classification-No tests performed								Fill
	44													
471.2	46	16	19-26-15	21"	Gray sandy gravel, trace silt, wet - dense	60	22	10	- 8 -				12	A-1-a
468.7	48													
	50	17	5-7-13	10"	Brown gravelly sand, trace silt, wet - medium dense	43	41	9	- 7 -				12	A-1-a
466.2	52	18	3-4-6	5"	Dark gray silt and clay, some sand, trace gravel, moist - medium stiff	2	15	17	35	31	34	11	28	A-6a
	54													
461.2	56	19	3-5-7	12"	Gray sandy silt with fine sand layers, wet - soft	0	5	31	20	44	27	10	32	A-4a
	58													
456.2	60	20	4-6-7	17"	Gray silt and clay, some sand with fine sand layers, wet - soft	0	2	20	32	46	29	12	27	A-6a
	62													
	64													
451.2	66	21	4-5-6	15"	Gray silty clay, trace sand, trace gravel, varved, very moist-medium stiff	1	1	1	26	71	40	17	34	A-6b
	68													

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Form No. 530—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/12/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 476.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/13/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-6 STATION AND OFFSET 140+88, 1' Rt., NB BL SURFACE ELEV. 516.2 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	68													
446.2	70													
	72	22	4-6-6	16"	Gray silt and clay, varved, very moist - medium stiff	0	0	0	32	68	36	14	30	A-6a
441.2	74													
	76	23	3-3-5	18"	Gray clay, trace gravel with sand lenses, varved, very moist - medium stiff	2	0	0	26	72	42	20	28	A-7-6
	78													
	80													
	82	24	4-6-7	17"	Gray clay, trace sand with sand lenses, varved, very moist - medium stiff	0	1	0	22	77	46	22	32	A-7-6
	84													
	86	25	3-5-8	17"	Gray clay, trace sand with sand layers, very moist - soft	0	1	2	39	58	43	20	32	A-7-6
	88													
426.2	90													
	92	26	9-14-16	10"	Gray coarse and fine sand, little silt, trace gravel, wet - dense	1	18	64	- 17 -				19	A-3a
	94													
421.2	96	27	9-14-16	14"	Gray silty clay, trace sand with sand lenses, very moist - medium stiff	0	0	1	29	70	40	17	34	A-6b
	98													
416.2	100													
	102	28	15-21-28	17"	Brown sandy silt, little gravel with silty clay layers and limestone fragments, wet - dense	18	22	24	7	29	23	9	26	A-4a

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Form No. 530—4

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/12/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 476.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/13/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-6 STATION AND OFFSET 140+88, 1' Rt., NE Bl SURFACE ELEV. 516.2 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	102													
	104													
411.2														
	106	29	7-10-15	16"	Gray silt and clay, trace sand, some gravel with sand and gravel layers and limestone fragments, moist - medium stiff	26	5	5	49	15	34	14	33	A-6a
	108													
406.2	110													
404.7		30	34-43-47	16"	Gray gravelly sand, little silt with limestone fragments, moist - very dense	47	18	15	- 20 -				6	A-1-b
	112													
	114													
401.2														
400.2	116	31	- 108 -	5"	Broken limestone fragments	Visual classification- No tests performed								
	118				Gray shale, calcareous (no shale recovery) and gray limestone, crystalline fossiliferous (1"to 3½"pieces averaging 2") 65% shale, 35% limestone									
		32	NXM	35%										
	120													
395.2														
	122				Boring completed									
	124													
	126													
	128													
	130													
	132													
	134													
	136													

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Form No. 670

THE H. C. NUTTING COMPANY

4130 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

Split Spoon & 2"O.D.

DATE STARTED 6/4/64 SAMPLER: TYPE Core Barrel DIA. NXM WATER ELEV. IMMEDIATE 456.3 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/5/64 CASING: LENGTH ____ DIA. 3.5"I.D. Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-8 STATION AND OFFSET 141+17, 72' Rt., NB BL SURFACE ELEV. 517.3 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% G.	% F.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
517.3	0													
516.8					0.5" Concrete									
	2	1	4-6-3	14"	Cinders and sand (fill), moist - loose	Visual classification-No tests performed								Fill
514.8	4	2	3-3-2	7"	Cinders, sand and clay (fill), moist - loose	Visual classification-No tests performed								Fill
512.3	6	3	1-1-1	16"	Cinders (fill), moist - very loose	Visual classification-No tests performed								Fill
	8	4	1-1-1	15"	do do	Visual classification-No tests performed								Fill
	10	5	1-1-1	17"	do do	Visual classification-No tests performed								Fill
	12	6	1-1-1	16"	do do	Visual classification-No tests performed								Fill
	14	7	1-1-1	17"	do do	Visual classification-No tests performed								Fill
	16	8	1-1-1	17"	do do	Visual classification-No tests performed								Fill
497.3	18	9	1-1-1	18"	Cinders with clay (fill), moist - very loose	Visual classification-No tests performed								Fill
	20	10	1-1-2	17"	do do	Visual classification-No tests performed								Fill
492.3	22	11	1-1-2	17"	Gray silt and clay and sand, some gravel with cinders (fill), wet-soft	22	23	19	22	14	26	11	21	A-6a
489.8	24	12	1-2-2	18"	Gray sandy silt, some gravel with cinders (fill), wet - soft	21	22	20	23	14	26	10	20	A-4a
	26	13	1-2-3	18"	Gray sandy silt, some gravel with cinders (fill), wet - soft	21	19	14	30	16	28	10	32	A-4a
	28													
	30													
	32													
	34													

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Form No. 530

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/4/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. NXM WATER ELEV. IMMEDIATE 456.3 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/5/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-8 STATION AND OFFSET 141+17, 72' Rt., NB BL SURFACE ELEV. 517.3 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS.
	34													
	36	14	2-2-3	18"	Brown and gray sandy silt, little gravel with cinders (fill), moist - medium stiff	17	20	23	28	12		NP	24	A-4a
	38													
477.3	40													
	42	15	6-8-10	15"	Brown clay, trace sand, varved, moist-stiff	0	0	1	27	72	45	23	27	A-7-6
	44													
	46	16	4-6-9	17"	Brown and gray clay, moist - stiff	0	0	0	27	73	46	25	30	A-7-6
	48													
467.3	50													
	52	17	3-3-4	18"	Gray silty clay with fine sand lenses, wet - soft	0	0	0	35	64	39	19	38	A-6b
	54													
462.3														
	56	18	2-2-3	18"	Gray clay with fine sand lenses, very moist - soft	0	0	0	26	74	43	23	32	A-7-6
	58													
	60													
457.3														
456.3		19	2-3	12"	Gray silty clay, trace sand with fine sand lenses, very moist - medium stiff	0	0	3	79	18	40	20	30	A-6b
	62	20	18	5"	Gray fine sand, wet - dense	3	3	85	9				32	A-3
	64													
452.3														
	66	21	15-17-10	16"	Gray gravelly sand, little silt, wet - medium dense	18	35	33	14				12	A-1-b
	68													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/4/64 SAMPLER: TYPE Split Spoon& Core Barrel DIA. 2"O.D. NXM WATER ELEV. IMMEDIATE 456.3 Backfilled CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/5/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-8 STATION AND OFFSET 141+17,72'Rt., NB BL SURFACE ELEV. 517.3 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	68													
447.3	70													
		22	4-6-8	17"	Gray silty sand with clay seams, wet - medium dense	0	20	47	9	24	19	7	19	A-2-4
	72													
442.3	74													
	76	23	4-5-6	17"	Gray coarse and fine sand, little clay, trace silt with clay seams, wet - medium dense	0	8	72	8	12		NP	24	A-3a
	78													
437.3	80													
		24	3-4-4	18"	Gray clay, trace sand, with fine sand seams, very moist - medium stiff	0	1	2	27	70	44	24	29	A-7-6
	82													
432.3	84													
	86	25	3-4-5	18"	Gray silty clay, trace sand with fine sand seams, moist - medium stiff	0	0	2	36	62	39	18	25	A-6b
	88													
427.3	90													
		26	4-4-5	18"	Gray clay, trace sand with fine sand seams, very moist - medium stiff	0	2	2	20	76	47	26	34	A-7-6
	92													
	94													
422.3	96	27	8-15-17	17"	Brown fine sand, wet - dense	0	32	60	- 8	-			20	A-3
	98													
417.3	100													
		28	11-18-24	16"	Brown coarse and fine sand, little silt, trace gravel with clay seams, wet - dense	4	27	56	- 13	-			18	A-3a
	102													

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Form No. 530

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

Split Spoon& 2"O.D.&

DATE STARTED 6/4/64 SAMPLER: TYPE Core Barrel DIA. NXM WATER ELEV. IMMEDIATE 456.3 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/5/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0135

BORING No. B-6-8 STATION AND OFFSET 141+17, 72' Rt., NB BL SURFACE ELEV. 517.3

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	102													
	104													
412.3														
	106	29	13-18-26	17"	Brown fine sand with clay seams, wet - dense	2	4	88	- 6 -				18	A-3
	108													
407.3	110													
405.8	112	30	24-39-61	16"	Gray sandy gravel, trace silt with limestone fragments, moist - very dense	55	16	15	- 14 -				6	A-1-a
	114				Brown and gray shale (no shale recovered) and gray limestone, crystalline, fossiliferous, jointed and broken (1" to 2½" pieces, averaging 1½") 74% shale, 26% limestone									
		31	NXM	26%										
400.3	116													
	118													
	120				Boring completed									
	124													
	126													
	128													
	130													
	132													
	134													
	136													
	138													

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Form No. 620—16-**

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

Split Spoon and Core 2"O.D and LOG OF BORING

DATE STARTED 5/25/64 SAMPLER: TYPE Barrel DIA. NXM WATER ELEV. IMMEDIATE 503.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/26/64 CASING: LENGTH ____ DIA 3.375"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-13 STATION AND OFFSET 142+48, 81' Rt., NB BL SURFACE ELEV. 518.7 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
518.7	0				8" Concrete									
516.2	2	1	4-7-3	15"	Clay, cinders, sand and gravel (fill), moist - loose	Visual classification-No tests performed								Fill
	4	2	1-1-2	7"	Gray sandy clay, cinders and brick (fill), moist - very loose	Visual classification-No tests performed								Fill
	6	3	1-1-1	9"	do do	Visual classification-No tests performed								Fill
511.2	8	4	1-1-1	14"	Gray silty clay with cinders (fill), moist - soft	Visual classification-No tests performed								Fill
	10	5	1-1-2	15"	do do	Visual classification-No tests performed								Fill
506.2	12	6	2-2-3	9"	Gray and brown silty clay, some sand with brick fragments,(fill)wet-soft	0	18	8	37	37	33	17	22	A-6b
503.7	14	7	2-3-4	16"	Brown and gray clay, little sand very moist - medium stiff	0	10	5	35	50	42	22	28	A-7-6
	16	8	2-3-4	17"	Brown and grav clay, little sand,trace of gravel, very moist - medium stiff	4	12	4	30	50	43	24	28	A-7-6
	18	9	1-2-3	13"	Brown and gray clay, some sand, some gravel very moist - soft	20	17	9	34	20	47	33	18	A-7-6
496.2	20	10	1-1-2	15"	Brown and gray silt and clay,little sand very moist - soft	0	10	4	52	34	30	15	22	A-6a
	22	11	2-2-2	18"	Brown and gray silt and clay, trace sand, some topsoil , very moist-soft	0	0	1	33	66	31	12	28	A-6a
491.2	24	12	5-6-7	17"	Brown and gray clay, trace of sand, moist - stiff	0	0	1	33	66	47	25	28	A-7-6
	26	13	5-6-8	18"	Brown and gray clay, trace of sand, moist - stiff	0	2	2	20	76	51	27	24	A-7-6
	28													
	30													
	32													
	34													

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Form No. 530—1(

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

Split Spoon and Core 2"O.D. and

LOG OF BORING

DATE STARTED 5/25/64 SAMPLER: TYPE Barrel DIA. NXM WATER ELEV. IMMEDIATE 503.7 Backfilled CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/26/64 CASING: LENGTH _____ DIA. 3.375"I.D.Hollow Stem Augers WATER _____ HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-13 STATION AND OFFSET 142+48, 81' Rt., NB BL SURFACE ELEV. 518.7 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36	14	5-6-7	18"	Brown and gray clay, trace sand, moist - stiff	0	1	0	33	66	47	25	30	A-7-6
	38													
	40													
	42	15	2-3-3	18"	Gray clay, trace of sand with brown silt and sand lenses, moist - medium stiff	0	0	1	29	70	42	18	34	A-7-6
	44													
	46	16	2-3-4	18"	Gray clay with fine sand lenses, moist - medium stiff	0	0	0	31	69	42	21	30	A-7-6
	48													
468.7	50													
	52	17	2-2-3	18"	Gray silty clay with fine sand lenses, moist - medium stiff	0	0	0	27	73	40	20	29	A-6b
	54													
463.7														
	56	18	2-3-4	18"	Gray clay with fine sand lenses, moist- medium stiff	0	0	0	28	72	42	21	32	A-7-6
	58													
	60													
	62	19	3-4-4	17"	Gray clay with fine sand lenses, moist- medium stiff	0	0	0	27	73	41	21	29	A-7-6
	64													
453.7														
	66	20	2-3-4	18"	Gray silty clay with fine sand lenses, moist - medium stiff	0	0	0	28	72	40	19	34	A-6b
	68													

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 5/25/64 SAMPLER: TYPE Split Spoon and Core Barrel DIA. 2"O.D. and NXM WATER ELEV. IMMEDIATE 503.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/26/64 CASING: LENGTH _____ DIA. 3.375"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-13 STATION AND OFFSET 142448, 81' Rt., NB BL SURFACE ELEV. 518.7 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	68													
448.7	70													
	72	21	3-4-5	17½"	Gray silt and clay with fine sand lenses, moist - medium stiff	0	0	0	36	64	35	11	30	A-6a
	74													
443.7														
	76	22	2-3-4	18"	Gray clay with fine sand lenses, moist-medium stiff	0	0	0	23	77	42	21	34	A-7-6
	78													
	80													
	82	23	2-2-3	18"	Gray clay with fine sand lenses, moist-medium stiff	0	0	0	19	81	44	18	33	A-7-6
	84													
	86	24	2-3-5	18"	Gray clay with fine sand lenses, moist-medium stiff	0	0	0	24	76	45	24	31	A-7-6
	88													
	90													
	92	25	3-3-4	18"	Gray clay with fine sand lenses, moist-medium stiff	0	0	0	20	80	44	19	32	A-7-6
	94													
423.7														
	96	26	3-4-4	18"	Gray silt and clay with fine sand lenses, very moist - soft	0	0	0	46	54	32	12	30	A-6a
	98													
419.2														
	100	27	20-40-66	16"	Gray sandy gravel little silt with limestone and shale fragments;wet-dense	65	17	7	- 11 -				12	A-1-a
417.7														
	102													

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 25, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

Split Spoon 2"O.D. and Core and

LOG OF BORING

DATE STARTED 5/25/64 SAMPLER: TYPE Barrel DIA. NXM WATER ELEV. IMMEDIATE 503.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/26/64 CASING: LENGTH _____ DIA. 3.375"I.D.Hollow Stem Augers WATER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-13 STATION AND OFFSET 142+48, 81' Rt., NB BL SURFACE ELEV. 518.7 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL CLASS
412.7	102 104 106	28	NXM	40%	Gray and brown weathered shale-soft (one 2" pieces recovered) and gray limestone, crystalline, fossiliferous with vertical and high angle joints (½" to3½" pieces averaging 1½") 62% shale,38% limestone									
	108 110 112 114 116 118 120 122 124 126 128 130 132 134 136				Boring completed									

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Form No. 530—16-.

THE H. C. NUTTING COMPAN

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 5/8/64 SAMPLER: TYPE Split Spoon DIA. 2" O.D. WATER ELEV. IMMEDIATE 496.9 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/11/64 CASING: LENGTH ____ DIA. 3.375"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-16 STATION AND OFFSET 143+33, 72' Rt., NB BL SURFACE ELEV. ____ Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
519.4	0				0.2' Concrete	No tests performed								
516.9	2	1	1-2-3	15"	Brown sandy clay and cinders(fill), moist - loose	Visual classification-No tests performed								Fill
516.9	4	2	1-1-1	11"	Cinders (fill), moist - very loose	Visual classification-No tests performed								Fill
514.4	6	3	2-2-4	15"	Cinders, clay and brick (fill),moist-loose	Visual classification-No tests performed								Fill
511.9	8	4	2-3-4	12"	Brown and gray silty clay and weathered shale (fill), moist - medium stiff	Visual classification-No tests performed								Fill
509.4	10	5	4-3-3	14"	Brown and gray clay, trace sand with weathered shale (fill), moist - medium stiff	0	4	2	40	54	43	25	22	A-7-6
506.9	12	6	1-1-2	12"	Gray sandy silt, little gravel with organic matter very moist - soft	14	7	11	47	21	25	7	24	A-4a
504.4	14	7	4-2-2	13"	Brown and gray silt and clay, trace sand, trace organic matter and weathered shale , very moist - soft	0	1	5	62	32	28	12	25	A-6a
501.9	16	8	3-4-4	11"	Brown and gray clay, trace of sand with weathered shale moist - stiff	0	2	1	39	58	45	25	22	A-7-6
	18	9	3-4-6	15"	Brown and gray clay, trace of sand with weathered shale ,moist-stiff	0	8	2	32	58	46	27	25	A-7-6
496.9	20	10	1	5"	Gray gravelly sand,trace silt,wet-very loose	39	38	12	14	- 11	-		15	A-1-b
494.4	22	11	2-3	12"	Brown and gray silty clay, some sand, moist - stiff	0	8	20	37	35	35	18	24	A-6b
	24	12	3-3-5	17"	Brown and gray clay, little sand,little gravel, very moist - medium stiff	13	6	11	22	48	42	24	28	A-7-6
491.9	26	13	6-7-10	16"	Brown and gray silty clay, trace of sand varved with fine sand lenses, moist - stiff	0	1	1	45	53	36	16	24	A-6b
	28	14	5-6-8	17"	Brown and gray silty clay, trace of sand varved with fine sand lenses,moist-stiff	0	1	0	39	60	38	17	27	A-6b
486.9	30	15	5-7-7	18"	Brown and gray clay,trace of sand,varved with fine sand lenses,moist-stiff	0	0	1	28	71	42	16	30	A-7-6
	32													
	34													

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Form No. 530—16-r

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 5/8/64 SAMPLER: TYPE Split Spoon DIA. 2"O.D., WATER ELEV. IMMEDIATE 496.9 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/11/64 CASING: LENGTH _____ DIA. 3.375"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-16 STATION AND OFFSET 143+33, 72' Rt. NB BL SURFACE ELEV. 519.4 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
484.4	36	16	3-3-4	17"	Gray silty clay, varved with fine sand lenses, moist - medium stiff	0	0	0	39	61	40	22	32	A-6b
	38													
	40													
	42	17	2-3-3	18"	Gray silty clay, varved with fine sand lenses, very moist - medium stiff	0	0	0	29	71	40	20	33	A-6b
	44													
474.4	46	18	6-9-10	17"	Gray silt and clay, trace sand, varved with, fine sand lenses, moist - stiff	0	0	2	38	60	38	14	25	A-6a
	48													
	50													
	52	19	2-3-5	17"	Gray silt and clay, trace of sand, varved with silt seams, moist - medium stiff	0	0	1	52	47	35	13	37	A-6a
	54													
464.4	56	20	3-3-4	18"	Gray clay, varved with fine sand lenses, moist - medium stiff	0	0	0	28	72	41	21	33	A-7-6
	58													
459.4	60													
	62	21	4-5-6	18"	Gray silty clay, trace of sand, varved with fine sand lenses, moist - medium stiff	0	0	1	29	70	40	20	33	A-6b
	64													
454.4	66	22	4-4-4	18"	Gray clay, varved with fine sand lenses, moist - medium stiff	0	0	0	23	77	43	22	29	A-7-6
	68													

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

Split Spoon
LOG OF BORING

DATE STARTED 5/8/64 SAMPLER: TYPE Spoon DIA. 2"O.D. WATER ELEV. IMMEDIATE 496.9 Backfilled CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/11/64 CASING: LENGTH _____ DIA. 3.375"I.D.Hollow Stem Augers HAMMER _____ HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-16 STATION AND OFFSET 143+33, 72' Rt., NB BL SURFACE ELEV. 519.4 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	68													
449.4	70													
		23	28-32-39	16"	Gray sandy silt, some gravel with limestone fragments, moist - stiff	24	23	16	20	17	22	8	11	A-4a
446.9	72													
	74				Boring completed									
	76													
	78													
	80													
	82													
	84													
	86													
	88													
	90													

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Form No. 630—14

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/9/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE 477.1 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/9/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER 24 HOURS 478.6 PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-1-1 STATION AND OFFSET 262.5'S.of S.Curb E.Third St. 21.5' W. of W. Curb Broadway SURFACE ELEV. 494.6 Bridge No. HAM-71-0093 N

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
494.6	0													
	2	1	9-21-10	8"	Brown sandy clay with brick and rock fragments (fill), moist - stiff	Visual classification-No tests performed								Fill
492.1	4	2	7-12-8	7"	Brown and gray sandy silt, little clay, little gravel moist-medium dense	17	19	18	33	13		NP	16	A-4a
	6	3	3-5-15	10"	Brown sandy silt and gravel, trace clay, moist - medium stiff	42	12	8	29	9	24	4	14	A-4a
	8	4	3-2-2	14"	Dark brown sandy silt, little clay, trace gravel very moist - soft	8	10	17	46	19	25	6	20	A-4a
	10	5	2-3-3	7"	Brown sandy silt, some clay, trace gravel, very moist- soft	10	11	14	45	20	26	8	27	A-4a
482.1	12													
	14	6	4-5-7	11"	Brown silty clay, trace sand, moist - medium stiff	0	0	2	53	45	40	17	24	A-6b
	16	7	6-8-10	14"	do do	0	0	1	53	46	40	16	23	A-6b
477.1	18	8	4-3-4	18"	Brown silt, little sand, very moist - medium stiff	0	0	12	55	33	31	10	23	A-4b
	20	9	5-4-4	17"	do do	0	0	8	59	33	31	10	26	A-4b
	22	10	3-3-3	17"	do do	0	0	15	54	31	29	9	24	A-4b
	24	11	3-4-3	17"	Brown silt, little sand with sand with sand layers, very moist - soft	0	0	10	59	31	31	9	26	A-4b
	26	12	2-2-3	18"	Brown silt, some sand with sand layers, very moist - medium stiff	0	0	20	52	28	28	7	28	A-4b
	28	13	4-3-2	17"	do do	0	0	15	59	26	28	7	29	A-4b
	30	14	2-1-1	18"	Brown silt with sand layers, very moist - soft	Visual classification-No tests performed								A-4b
	32													
	34													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/9/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 477.1 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/9/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER 24 HOURS 478.6 PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-1-1 STATION AND OFFSET 262.5'S.of S.Curb E.Third St. 21.5'W.of W. Curb Broadway SURFACE ELEV. 494.6 Bridge No. HAM-71-0093 N

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36	15	1-1-3	18"	Gray silt, some sand with sand layers, wet - soft	0	0	22	52	26	26	5	28	A-4b
	38	16	2-2-2	16"	do do	Visual classification-No tests performed								A-4b
	40	17	2-3-3	18"	do do	0	0	26	51	23	25	4	28	A-4b
	42													
449.6	44													
	46	18	9-10-15	18"	Brown and gray gravelly sand, little silt wet - medium dense	25	37	25	- 13 -				8	A-1-b
	48													
444.6	50													
	52	19	6-8-9	10"	Gray sandy silt, trace gravel with sand layers, very moist - medium stiff	3	3	31	37	26	24	8	18	A-4a
	54													
439.6	56													
	58	20	1-18-17	17"	Gray silty sand, some gravel with sand layers, wet - dense	26	6	40	17	11		NP	21	A-2-4
434.6	60													
	62	21	9-12-12	14"	Gray sandy gravel, little silt, wet - medium dense	67	13	10	- 10 -				8	A-1-a
430.6	64													
	66	22	NXM	88%	Gray shale, calcareous, tough (1" to 4½" pieces averaging 2½") and gray limestone, crystalline, fossiliferous(one 4½" piece) 92% shale, 8% limestone									
	68													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/9/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 477.1 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/9/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER 24 HOURS 478.6 PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-1-1 STATION AND OFFSET 262.5'S.of S.Curb E. Third St. 21.5'W.of W. Curb Broadway SURFACE ELEV. 494.6 Bridge No. HAM-71-0093 N

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
425.6	68													
	70				Boring completed									
	72													
	74													
	76													
	78													
	80													
	82													
	84													
	86													
	88													
	90													
	92													
	94													
	96													
	98													
	100													
	102													

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Form No. 830—16-60

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/14/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 475.1 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/14/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-1-2 STATION AND OFFSET 230'S.of S. Curb Third St. 68' E. of E. Curb Broadway SURFACE ELEV. 495.1 Bridge No. HAM-71-0093 N

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
495.1	0													
	2	1	7-15-20	10"	Brown sandy clay with brick fragments, (fill), moist - stiff	Visual classification-No tests performed								Fill
	4	2	10-11-31	9"	Concrete, cinders and brick fragments, (fill), moist - dense	Visual classification-No tests performed								Fill
	6	3	5-4-3	13"	do do	Visual classification-No tests performed								Fill
	8	4	7-2-4	12"	Brown sandy clay with brick fragments, (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	10	5	6-5-10	14"	do do	Visual classification-No tests performed								Fill
482.6	12													
	14	6	4-6-6	16"	Dark brown silt and clay, some sand, trace gravel, moist - medium stiff	9	7	13	37	34	36	14	19	A-6a
	16	S-1		24"	Dark brown silt and clay, some sand, trace gravel, moist - medium stiff	2	15	19	33	31	31	13	18	A-6a
478.1	18	7	3-5-6	17"	Brown fine and coarse sand, some clay, trace silt, little gravel, wet - soft	19	25	26	8	22		NP	20	A-3a
475.1	20	8	4-4-5	17"	Brown and gray gravelly sandy silt, wet - loose	38	21	1	32	8		NP	18	A-4a
472.6	22	9	9-12-11	10"	Brown and gray gravelly sand, trace clay, little silt, wet - medium dense	46	24	10	16	4		NP	16	A-1-b
470.1	24	10	10-12-12	9"	Brown and gray sandy silt, little gravel, wet - medium dense	16	43	3	35	3		NP	23	A-4a
467.6	26	11	5-6-7	12"	Brown gravelly sand, trace silt, very moist - medium dense	33	46	3	4	14	48	27	19	A-1-b
465.1	28	12	3-2-4	16"	Brown coarse sand, little clay, trace silt, trace gravel, wet - loose	6	62	9	6	17	45	25	19	A-2-7
462.6	30	13	3-5-5	17"	Gray silt, trace sand, very moist - medium stiff	0	0	6	56	38	30	9	27	A-4b
	32													
	34													

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Form No. 530—1659

THE H. C. NUTTING COMPANY

4130 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/14/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 475.1 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/14/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway NAM-71-0.93

BORING No. B-1-2 STATION AND OFFSET 230'S.of S. Curb Third St. 88' E. of E. Curb Broadway SURFACE ELEV. 495.1 Bridge No. NAM-71-0093 N

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
459.1	36	S-2(Top)			Gray silt, little sand, very moist - medium stiff	0	3	9	51	37	23	5	19	A-4b
		S-2(Bottom)		24"	Gray silt and clay, little sand with sand layers, moist-medium stiff	0	4	7	44	45	30	12	20	A-6a
	38	14	7-7-5	18"	Gray silt and clay, little sand with sand layers, moist - medium stiff	0	4	6	48	42	31	11	21	A-6a
	40													
		15	6-6-7	18"	Gray silt and clay, little sand, moist-stiff	0	2	8	48	42	29	11	20	A-6a
	42													
	44													
450.1														
	46	16	5-8-8	17"	Gray sandy silt, moist - stiff	0	5	33	40	22		NP	17	A-4a
	48													
	50													
	52	17	9-11-12	18"	Brown and gray sandy silt, moist - stiff	0	0	28	43	29	26	9	16	A-4a
	54													
440.1														
	56	18	7-8-9	18"	Gray fine and coarse sand, little clay, little silt, trace gravel with sand layers, wet - medium dense	8	18	47	17	10		NP	23	A-3a
	58													
435.1	60													
		19	12-15-20	11"	Gray gravel, trace clay, trace silt, little sand, wet - dense	75	10	5	7	5		NP	15	A-1-a
	62													
431.1	64													
	66	R-1	NXM	80%	Gray shale, calcareous, tough (1" to 4" pieces averaging 2½") and gray limestone, crystalline, fossiliferous, jointed midway in the run (2" to 7" pieces averaging 4"), 75% shale, 25% limestone									
	68													

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Form No. 530—1M

THE H. C. NUTTING COMPANY

4130 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/14/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 475.1 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/14/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway NHS-71-0.93

BORING No. B-1-2 STATION AND OFFSET 230'S.of S. Curb Third St. 88' E. of E. Curb Broadway SURFACE ELEV. 495.1 Bridge No. HAM-71-0093 N

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% G.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL CLASS
426.1	68													
	70													
	72				Boring completed									
	74													
	76													
	78													
	80													
	82													
	84													
	86													
	88													
	90													
	92													
	94													
	96													
	98													
	100													
	102													

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Form No. 530—10-58

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/16/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NTM WATER ELEV. IMMEDIATE 485.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/16/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0093 S

BORING No. B-2-1 STATION AND OFFSET 133'S.of S. Curb of E.Third St. 98' W.of W. Curb of Broadway SURFACE ELEV. 525.6

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
525.6	0													
523.1	2	1	7-8-10	6"	Brown fine to coarse gravel (fill), moist - dense	Visual classification-No tests performed								
520.6	4	2	9-11-21	9"	Brown clayey sand and gravel (fill), moist - dense	40	17	9	15	19	32	14	8	A-2-6
518.1	6	3	7-5-7	11"	Brown silt and clay, some sand, little gravel with cinders, brick and wood fragments, (fill), moist - medium stiff	14	13	8	22	43	36	14	20	A-6a
	8	4	8-10-34	9"	Brown and gray silty clay with cinders, brick and wood fragments, (fill), moist - stiff	Visual classification-No tests performed Fill								
	10	5	9-11-29	10"	do do	Visual classification-No tests performed Fill								
	12	6	7-18-29	9"	do do	Visual classification-No tests performed Fill								
	14	7	8-9-12	12"	do do	Visual classification-No tests performed Fill								
	16	8	10-12-9	11"	do do	Visual classification-No tests performed Fill								
	18	9	7-6-6	12"	do do	Visual classification-No tests performed Fill								
	20	10	7-9-9	10"	do do	Visual classification-No tests performed Fill								
	22	11	27-29-43	12"	do do	Visual classification-No tests performed Fill								
	24	12	19-15-31	11"	do do	Visual classification-No tests performed Fill								
	26	13	12-18-17	9"	do do	Visual classification-No tests performed Fill								
	28	14	9-12-8	16"	do do	Visual classification-No tests performed Fill								
	30													
	32													
	34													

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Form No. 530

THE H. C. NUTTING COMPANY

4150 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/16/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 485.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/16/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway NHM-71-0.93

BORING No. B-2-1 STATION AND OFFSET 133'S.of S. Curb of E.Third St. 98' W. of W. Curb of Broadway SURFACE ELEV. 525.6 Bridge No. HAM-71-0093 S

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
	34													
488.6	36	15	7-9-11	17"	do do	Visual classification-No tests performed								Fill
	38	16	10-7-7	14"	Brown fine and coarse sand, trace silt, trace gravel, moist - medium dense	1	55	37	- 7 -				6	A-1-b
	40													
	42	17	7-8-9	16"	Brown fine and coarse sand, little silt little gravel, moist - medium dense	13	53	23	- 11 -				6	A-1-b
	44													
	46	18	7-9-10	17"	Brown coarse sand, little silt, little gravel, moist - medium dense	10	66	13	- 11 -				8	A-1-b
	48													
	50													
	52	19	13-10-9	16"	Brown gravelly sand, little silt, moist - medium dense	48	20	15	- 17 -				7	A-1-b
	54													
	56	20	8-10-11	17"	Brown sandy gravel, little silt, wet - medium dense	60	18	7	- 15 -				12	A-1-a
	58													
	60													
464.6	62	21	8-9	10"	Brown gravelly sand, trace silt, wet - medium dense	36	53	7	- 4 -				13	A-1-b
		22	11	6"	Brown silt, trace sand, trace gravel, moist - medium stiff	1	4	3	50	42		NP	25	A-4b
	64													
460.6	66	23	4-4-6	17"	Gray silt, little sand, moist - medium stiff	0	2	10	48	40	25	9	21	A-4a
	68													

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Form No. 530—15-62

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

Split Spoon & 2"O.D.C

DATE STARTED 9/16/64 SAMPLER: TYPE Core Barrel DIA. NXM WATER ELEV. IMMEDIATE 485.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/16/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-2-1 STATION AND OFFSET 133'S.of S. Curb of E. Third St., 98'W.of W. Curb of Broadway SURFACE ELEV. 525.6 Bridge No. HAM-71-0093 S

ELEV.	DEPTH	SAMPLE No.	STD. PEN (ft)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
	68													
455.6	70													
		24	10-12-14	18"	Brown and gray silt and clay, little sand, moist - stiff	0	2	16	42	40	28	11	18	A-6a
	72													
	74													
450.6														
	76	25	6-9-10	15"	Brown and gray silt, little sand, moist - stiff	0	4	15	46	35	26	8	18	A-4a
	78													
	80													
		26	10-11-12	14"	Brown and gray sandy silt, very moist - medium stiff	0	2	38	33	27		NP	15	A-4a
	82													
	84													
	86													
		27	9-8-11	17"	Brown and gray sandy silt, moist - medium stiff	0	2	35	35	28		NP	16	A-4a
	88													
435.6	90													
		28	33-27-23	12"	Limestone fragments and silty clay, wet	58	15	11	- 16	-			7	A-1-b
	92													
	94													
430.6														
	96				Gray shale, calcareous, tough(4" to 3" pieces averaging 2") and gray limestone crystalline, fossiliferous, jointed (one 1' piece in the bottom 2' of the run)									
	98	R-1	NXM	85%										
425.6	100													
					Boring completed									
	102													

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Form No. 530

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/10/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 487.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/10/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-2-2 STATION AND OFFSET 84'S.of S. Curb, E. Third St, 20' W. of W. Curb Broadway SURFACE ELEV. 504.5 Bridge No. HAM-71-0093 S

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
504.5	0													
	2	1	15-23-10	9"	Brick, cinders and gravel (fill), dry-dense	Visual classification-No tests performed								Fill
	4	2	21-10-11	10"	do do	Visual classification-No tests performed								Fill
	6	3	7-21-15	8"	do do	Visual classification-No tests performed								Fill
	8	4	8-14-8	11"	do do	Visual classification-No tests performed								Fill
494.5	10													
	12	5	10-17-9	8"	Brown silt, little sand, trace gravel, moist - medium stiff	7	5	9	71	8		NP	22	A-4b
492.0	14	6	3-4-4	10"	Brown fine sand, little silt, moist - loose	0	0	88	- 12 -			NP	6	A-3a
	16	7	4-5-5	18"	Brown fine sand, little silt, moist - loose	0	2	80	- 18 -			NP	10	A-3a
487.0	18	8	7-12-14	12"	Brown gravelly sand, trace silt, moist-medium dense	29	47	6	- 8 -			NP	4	A-1-b
484.5	20	9	9-12-18	13"	Brown sandy gravel, little silt, moist-medium dense	56	24	6	- 14 -			NP	5	A-1-a
482.0	22	10	8-15-17	10"	Brown gravelly sand, little silt, moist-medium dense	Visual classification-No tests performed								A-1-b
	24	11	12-10-11	11"	do do	44	38	6	- 12 -			NP	4	A-1-b
477.0	26													
	28	12	10-9-8	9"	Brown sandy gravel, trace silt, moist - medium dense	Visual classification-No tests performed								A-1-a
	30	13	7-8-9	10"	do do	51	33	8	- 8 -			NP	5	A-1-a
471.0	32													
	34	14	6-7-7	10"	Brown sandy gravel, little silt, wet - medium dense	Visual classification-No tests performed								A-1-b

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL.

Form No. 530—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/10/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 487.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/10/64 CASING: LENGTH _____ DIA 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0,93

BORING No. B-2-2 STATION AND OFFSET 84' S. of S. Curb, E. Third St. 20' W. of W. Curb Broadway SURFACE ELEV. 504.5 Bridge No. HAM-71-0093 S

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36	15	7-9-11	16"	Brown sandy gravel, little silt,wet - medium dense	28	48	14	- 10	-		NP	12	A-1-b
	38	16	7-8-10	10"	Brown gravelly sand, trace silt, wet - medium dense	27	42	22	- 9	-		NP	12	A-1-b
464.5	40													
	42	17	6-7-8	16"	Gray silt, trace sand with organic matter, moist - medium stiff	0	0	4	53	43	34	14	19	A-4b
461.5														
	44	S-1		24"	Gray sandy silt, moist - stiff	0	2	11	47	40	27	10	18	A-4a
	46	18	7-8-10	17"	Gray sandy silt, moist - medium stiff	0	2	8	52	38	26	10	18	A-4a
	48													
454.5	50													
	52	19	9-10-12	18"	Gray silt and clay, little sand, moist-stiff	0	3	7	48	42	31	13	18	A-6a
	54													
	56	S-2		24"	Brown and gray silt and clay, some sand, moist - stiff	0	4	17	44	35	29	12	17	A-6a
	58	20	10-15-18	17"	Brown and gray silt and clay, some sand, moist - stiff	0	1	22	42	35	28	11	16	A-6a
	60													
	62	21	9-14-18	16"	Brown and gray silt and clay, some sand, moist - stiff	0	2	20	43	35	28	11	17	A-6a
	64													
439.5	66	22	7-9-10	17"	Brown and gray sandy silt,moist - stiff	0	1	40	34	25	22	6	16	A-4a
	68													

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Form No. 530—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/10/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 487.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/10/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-2-2 STATION AND OFFSET 84'S.of S. Curb, E. Third St. 20' W. of W. Curb,Broadway SURFACE ELEV. 504.5 Bridge No. HAM-71-0093 S

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL. CLASS
	68													
	70													
	72	23	7-7-9	17"	Brown and gray sandy silt, trace gravel, moist - stiff	1	2	32	38	27	24	8	16	A-4a
	74													
429.5														
428.5	76	24	23-75	6"	Gray shale, moist - hard	Visual classification-No tests performed								
	78				Gray shale, calcareous, moderately tough to tough (½" to 5" pieces averaging 2½") and gray limestone, fossiliferous (one ½" piece approximately midway in the run) 99% shale, 1% limestone									
	80	25	NXM	68%										
423.5														
	82													
	84				Boring completed									
	86													
	88													
	90													
	92													
	94													
	96													
	98													
	100													
	102													

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Form No. [illegible]

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/8/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 475.4 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/9/64 CASING: LENGTH DIA. 3.5"I.D.Hollow Stem Augers AFTER 24 HOURS 481.7 PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-2-3 STATION AND OFFSET 135'S.of N. Curb E.Third St. 77'E. of E. Curb Broadway SURFACE ELEV. 504.4 Bridge No. HAM-71-0093 S

Elev.	Depth	Sample No.	Std. Pen. (N)	% Rec.	Description	% Abs.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	Soil Class
504.4	0													
	2	1	7-12-15	8"	Cinders and brick fragments, (fill), dry - dense	Visual classification-No tests performed								Fill
	4	2	10-12-8	10"	do do	Visual classification-No tests performed								Fill
496.9	6	3	5-5-8	16"	do do	Visual classification-No tests performed								Fill
494.4	8	4	7-12-11	15"	Brown sandy silt, little gravel wet - stiff	18	4	13	48	17	25	4	13	A-4a
491.9	10	5	5-40-27	14"	Brown gravelly sand, trace clay, little silt with brick fragments, moist - very dense	46	22	10	15	7	22	3	14	A-1-b
489.4	12	6	7-9-8	10"	Brown fine sand, some silt, trace gravel, moist - medium dense	4	5	69	- 22	-		NP	7	A-3a
	14	7	10-12-15	11"	Brown gravelly sand, little silt, moist - medium dense	48	27	9	- 16	-		NP	7	A-1-b
	16	8	3-5-12	17"	Brown gravelly sand, little silt, moist - medium dense	49	34	3	- 14	-		NP	9	A-1-b
481.9	18	9	4-5-8	18"	Brown gravelly sand, little silt, very moist - medium dense	66	14	3	- 17	-		NP	10	A-1-b
479.4	20	10	10-21-19	18"	Brown sandy gravel, little silt, moist - dense	56	25	7	- 12	-		NP	6	A-1-a
476.9	22	11	14-17-12	17"	Brown gravelly sand, little silt, moist - dense	40	40	10	- 10	-		NP	6	A-1-b
474.4	24	12	9-15-10	18"	Brown sandy gravel, trace silt, moist - medium dense	53	28	10	- 9	-		NP	4	A-1-a
471.9	26	13	7-9-9	17"	Brown fine sand, wet - medium dense	3	36	55	- 6	-		NP	21	A-3
	28	14	3-5-7	17"	Gray silt, trace sand with sand layers, moist - medium stiff	0	1	7	54	38	30	10	24	A-4b

[illegible]

Form No. 530-[illegible]

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/8/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 475.4 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/9/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER 24 HOURS 481.7 PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-2-3 STATION AND OFFSET 135'S.of N. Curb E. Third St. 22' E.of E. Curb Broadway SURFACE ELEV. 504.4 Bridge No. HAM-71-0093 S

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL. CLASS
	34													
466.9	36	15	4-5-6	17"	Gray silt, little sand with sand layers, moist - medium stiff	0	0	11	54	35	30	10	24	A-4b
	38	16	3-6-6	18"	Gray sandy silt with sand layers, moist- medium stiff	Visual classification-No tests performed								A-4a
	40													
461.9	42	17	4-4-5	16"	do do	0	1	8	58	33	29	9	25	A-4a
	44	18	6-7-8	18"	Brown and gray silt and clay, little sand, moist - stiff	0	2	8	51	39	30	13	19	A-6a
	46	19	7-6-7	17"	Gray silt and clay, trace sand, moist - stiff	0	4	4	51	41	31	13	19	A-6a
	48													
	50													
	52	20	9-10-13	15"	Brown and gray silt and clay, trace sand, moist - stiff	0	2	7	55	36	30	11	17	A-6a
	54													
449.4	56	21	9-9-12	18"	Gray sandy silt, moist - stiff	0	1	12	49	38	24	6	19	A-4a
	58													
	60													
	62	22	9-12-14	18"	Brown and gray sandy silt, moist - stiff	0	2	37	34	27	24	9	15	A-4a
	64													
	66	23	7-9-12	18"	Brown and gray sandy silt with sand layers, moist - stiff	0	2	35	36	27	25	9	16	A-4a
	68													

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Form No. 530-[illegible]

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/8/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 475.4 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/9/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER 24 HOURS 481.7 PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-2-3 STATION AND OFFSET 135'S.of N. Curb E. Third St. 22' E. of E. Curb Broadway SURFACE ELEV. 504.4 - Bridge No. HAM-71-0093 S

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	68													
434.4	70													
	72	24	9-11-13	17"	Gray fine sand, little caly, little silt with sand layers, very moist - medium dense	0	2	66	19	13		NP	18	A-3a
	74													
	76	25	10-15-16	17"	Gray coarse and fine sand, little clay, little silt, little gravel with sand layers, very moist - dense	13	15	38	19	15		NP	20	A-3a
426.9														
426.4	78	26	100	4"	Brown and gray weathered shale, moist - hard	Visual classification-No tests performed								
	80													
		27	NXM	100%	Gray shale, calcareous, tough (½" to 3½" pieces averaging 2") 100% shale									
421.4	82													
	84				Boring completed									
	86													
	88													
	90													
	92													
	94													
	96													
	98													
	100													
	102													

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Form No. 630—16-59

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/11/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 481.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/12/64 CASING: LENGTH ____ DIA 3.5"I.D.Hollow Stem Augers AFTER 24 HOURS 484.5 PROJECT: Northeast Expressway BAM-71-0.93

BORING No. B-2-4 STATION AND OFFSET 28'S of S.Curb of Third St. 86'E of E. Curb of Broadway SURFACE ELEV. 513.5 Bridge No. BAM-71-0093 .8

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SLT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
513.5	0													
	2	1	12-10-17	10"	Brown fine to coarse sand and gravel (fill), dry - dense	Visual classification-No tests performed								Fill
511.0	4	2	17-28-10	9"	Brick, cinders and wood fragments(fill), moist - medium dense	Visual classification-No tests performed								Fill
	6	3	19-20-25	11"	do do	Visual classification-No tests performed								Fill
	8	4	9-12-10	9"	do do	Visual classification-No tests performed								Fill
	10													
	12	5	3-4-5	12"	do do	Visual classification-No tests performed								Fill
	14	6	3-4-6	14"	do do	Visual classification-No tests performed								Fill
498.3	16	7	6-4-5	15"	Brown gravelly sand, trace silt, moist-loose	4	54	34	- 8	-			5	A-1-b
	18	8	9-15-18	14"	Brown gravelly sand, little silt, moist - dense	48	15	19	- 18	-			5	A-1-b
493.5	20	9	5-7-10	11"	Brown silty sand, trace gravel with silt layers, moist - medium dense	8	37	24	- 31	-			10	A-2-4
491.0	22	10	7-9-9	13"	Brown gravelly sand, some silt, moist-medium dense	67	5	6	15	7		NP	7	A-1-b
488.5	24	11	8-9-11	10"	Brown sandy gravel, little silt, moist-medium dense	66	14	5	11	4		NP	9	A-1-a
	26	12	9-11-13	13"	do do	Visual classification-No tests performed								A-1-a
	28													
	30	13	10-12-12	10"	Brown sandy gravel, little silt, moist-medium dense	64	16	6	12	2		NP	7	A-1-a
481.0	32	14	4-3-4	13"	Gray sandy silt with sand layers, very moist - medium stiff	0	1	28	47	24	21	2	23	A-4a
	34													

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Form No. 530-1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/11/64 SAMPLER: TYPE Split Spoon& Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 481.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/12/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER 24 HOURS 484.5 PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-2-4 STATION AND OFFSET 28'S.of S. Curb of Third St. 86' E. of E. Curb of Broadway SURFACE ELEV. 513.5 Bridge No. HAM-71-0093 S

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36	15	5-6-4	17"	Gray sandy silt with sand layers, very moist - medium stiff	0	0	19	47	34	27	8	25	A-4a
	38													
473.5	40													
	42	16	4-3-5	18"	Gray silt, trace sand, wet - soft	0	0	6	59	35	30	9	22	A-4b
	44													
	46	17	3-4-4	17"	Gray silt, some sand, wet - soft	0	0	22	52	26	24	5	22	A-4b
	48													
	50	18	6-7-9	18"	Gray silt, trace sand, moist - medium stiff	0	2	6	54	38	28	12	16	A-4b
	52													
	54													
458.5	56	19	7-9-11	18"	Brown and gray silt and clay, trace sand, moist - stiff	0	1	5	55	39	31	13	18	A-6a
	58													
	60	20	5-6-9	18"	Brown and gray silt and clay, trace sand, moist - stiff	0	0	8	53	39	20	12	18	A-6a
	62													
	64													
	66	21	6-8-10	18"	Brown and gray silt and clay, some sand, moist - medium stiff	0	1	24	30	45	27	11	20	A-6a
	68													

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Form No. 530—10/63

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/11/64 SAMPLER: TYPE Split Spoon& Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 481.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/12/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER 24 HOURS 484.5 PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-2-4 STATION AND OFFSET 28' S. of S. Curb of Third St. 86' E. of E. Curb of Broadway SURFACE ELEV. 513.5 Bridge No. HAM-71-0093 S

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	68													
443.5	70													
	72	22	9-12-20	18"	Brown and gray sandy silt with sand layers, moist - stiff	0	0	23	43	34	26	9	16	A-4a
	74													
438.5	76	23	9-12-13	18"	Brown silt and clay, some sand with sand layers, moist - stiff	0	2	20	42	36	30	12	18	A-6a
	78													
433.5	80													
	82	24	9-11-12	18"	Brown and gray sandy silt with sand layers, very moist - medium stiff	0	2	39	36	23		NP	14	A-4a
	84													
	86	25	7-8-10	18"	Brown and gray sandy silt with sand layers, moist - stiff	0	2	24	45	29	25	7	16	A-4a
	88													
423.5	90													
	92	26	17-29-38	10"	Gray gravelly sand, wet - very dense	Visual classification-No tests performed								A-1-b
	94													
418.5	96	27	NXM	86%	Gray shale, calcareous, tough(¼" to 4" pieces averaging 2") and gray limestone, crystalline, fossiliferous(two pieces ½" and 1½" approximately midway in the run) 97% shale, 3% limestone									
413.5	98													
	100													
	102				Boring Completed									

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Form No. 520[illegible]

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/2/64 SAMPLER: TYPE Split Spoon & Com Barrel DIA. 2"O.D.& NEM WATER ELEV. IMMEDIATE 490.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/3/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-3-1 STATION AND OFFSET 124+02, 59' L. NB BL SURFACE ELEV. 532.5 Bridge No. HAM-71-0093 E

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL CLASS
532.5	0													
532.0					0.5' Blacktop and gravel									
	2	1	7-12-8	16"	Brown sandy clay (fill), moist - medium stiff	Visual classification-No tests performed								Fill
530.0	4	2	6-7-3	17"	Brown fine gravel (fill), moist-medium dense	Visual classification-No tests performed								Fill
527.5	6	3	3-4-8	16"	Brown silty clay and gravel, some sand, (fill), moist - medium stiff	43	16	5	14	22	38	19	14	A-6b
525.0	8	4	7-27-43	6"	Gray shale and rock fragments(fill), moist - stiff	Visual classification-No tests performed								Fill
522.5	10	5	7-12-15	12"	Gray silt and clay, trace sand with gravel and shale fragments (fill), moist - medium stiff	0	6	2	40	52	36	15	13	A-6a
520.0	12	6	7-15-34	11"	Brown and gray silty clay with cinders and brick fragments (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	14	7	6-8-10	7"	do do	Visual classification-No tests performed								Fill
515.0	16	8	5-4-9	12"	Brown and gray sandy silt with cinders and brick fragments (fill), moist - medium stiff	0	2	19	46	33		NP	20	A-4a
	18	9	7-8-10	15"	do do	0	1	27	42	30	25	9	21	A-4a
510.0	20	10	9-6-5	10"	Brown sand, gravel and cinders (fill), moist - medium dense	Visual classification-No tests performed								Fill
507.5	22	11	17-34-21	18"	Brown gravelly sand with clay and rock fragments, moist - dense	Visual classification-No tests performed								A-1-b
505.0	24	12	5-7-8	10"	Brown gravelly sand, little silt, moist - medium dense	45	37	5	- 13 -				4	A-1-b
502.5	26	13	6-7-8	12"	Brown sandy gravel, little silt, moist - medium dense	53	28	7	- 12 -				3	A-1-a
500.0	28	14	5-6-6	12"	Brown gravelly sand, trace silt, moist - medium dense	8	77	10	- 5 -				18	A-1-b
	30													
	32													
	34													

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/2/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE 490.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/3/64 CASING: LENGTH ____ DIA. 8.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-3-1 STATION AND OFFSET 124+02, 59' L. NB BL SURFACE ELEV. 532.5 Bridge No. HAM-71-0093 E

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36	15	3-7-9	17"	Brown gravelly sand, little silt, moist - dense	33	36	14	- 17	-			11	A-1-b
495.0	38	16	4-5-7	18"	Brown and gray sandy silt, some clay, little gravel with sand layers, moist-medium stiff	12	9	25	30	24	25	9	19	A-4a
492.5	40	17	7-6-9	18"	Brown silt and clay, some sand, trace gravel with sand layers, moist - medium stiff	2	1	30	33	34	28	12	23	A-6a
	42	18	3-5-6	18"	Gray silt and clay, some sand with sand layers, moist - medium stiff	0	1	20	40	39	30	12	24	A-6a
487.5	44													
	46	19	4-5-5	18"	Gray sandy silt with sand layers, moist - medium stiff	0	1	23	42	34	26	10	27	A-4a
	48	20	5-5-6	17"	Brown and gray sandy silt with sand layers, moist - medium stiff	0	2	50	20	28		NP	26	A-4a
	50													
	52	21	4-5-5	18"	Gray sandy silt with sand layers, moist - medium stiff	0	1	49	24	26		NP	26	A-4a
	54													
477.5	56	22	6-6-7	18"	Gray silt and clay, some sand with sand layers, moist - medium stiff	0	1	19	19	61	33	15	28	A-6a
	58													
472.5	60													
	62	23	4-6-7	18"	Gray sandy silt with sand layers, moist medium stiff	0	0	28	43	29	24	7	23	A-4a
	64													
	66	24	3-4-5	18"	Gray sandy silt with sand layers, moist-medium stiff	0	1	25	48	26		NP	25	A-4a
	68													

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Form No. 530—

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/2/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 490.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/3/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-3-1 STATION AND OFFSET 124+02, 59' L. NB BL SURFACE ELEV. 532.5 Bridge No. HAM-71-0093 E

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL CLASS
	68													
	70													
	72	25	4-4-4	17"	Gray sandy silt with sand layers, moist - medium stiff	0	1	22	43	34	27	10	28	A-4a
457.5	74													
	76	26	3-5-7	17"	Gray silt and clay with sand layers, moist - medium stiff	0	1	8	46	45	35	13	33	A-6a
	78													
	80													
	82	27	4-5-6	18"	Gray silt and clay with sand layers, moist - medium stiff	0	0	4	50	46	36	14	28	A-6a
	84													
	86	28	6-8-9	18"	Gray silt and clay with sand layers, moist - stiff	0	2	16	46	36	31	13	18	A-6a
	88													
442.5	90													
	92	29	7-8-9	18"	Gray sandy silt with sand layers, moist - stiff	0	2	19	44	35	27	10	18	A-4a
	94													
	96	30	5-6-7	18"	Brown and gray sandy silt, trace gravel with sand layers, moist - stiff	1	10	27	44	18	25	6	23	A-4a
	98													
	100													
	102	31	6-8-8	18"	Gray sandy silt, trace gravel with sand layers, moist- stiff	3	3	19	50	25	27	8	18	A-4a

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Form No. 530—

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/2/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 490.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/3/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-3-1 STATION AND OFFSET 124+02, 59' L. NB BL SURFACE ELEV. 532.5 Bridge No. HAM-71-0093E

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	102													
	104													
	106	32	7-8-9	18"	Gray sandy silt with sand layers, moist - stiff	0	1	29	49	21		NP	22	A-4a
	108													
	110													
	112	33	6-9-9	18"	Gray sandy silt, trace gravel with sand layers, moist - stiff	3	1	33	45	18		NP	20	A-4a
	114													
417.5														
417.0	116	34	90	4"	Gray shale, moist - hard	Visual classification-No tests performed								
	118	R-1	NXM	80%	Gray shale, calcareous, tough (½" to 2½" pieces averaging 1½") and gray limestone, crystalline, fossiliferous (three 1" pieces) 95% shale, 5% limestone									
412.0	120													
	122													
	124				Boring completed									
	126													
	128													
	130													
	132													
	134													
	136													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 630

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/24/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 500.3 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/26/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0093 E

BORING No. B-3-2 STATION AND OFFSET 124+20, 4' L. NB BL SURFACE ELEV. 534.3

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS.
534.3	0													
533.5					0.8' Concrete									
	2	1	9-11-8	8"	Brown silty gravel, little clay, some sand with brick fragments(fill), moist - stiff	39	23	12	18	10	20	5	10	A-2-4
	4	2	7-12-10	10"	do do	Visual classification-No tests performed								A-2-4
	6	3	13-10-8	14"	do do	48	18	8	12	14	25	10	9	A-2-4
526.8	8	4	9-7-10	9"	Brown clayey gravel, some sand with brick fragments (fill), moist - stiff	46	18	6	14	16	29	13	12	A-2-6
	10	5	10-18-32	7"	Brown clayey gravel, some sand with brick fragments (fill), moist -stiff	56	12	6	12	14	26	11	8	A-2-6
521.8	12													
	14	6	10-9-12	6"	Gray silty clay, trace sand, with brick fragments, moist - stiff	Visual classification-No tests performed								A-6b
	16	7	5-6-10	12"	do do	0	4	3	41	52	37	17	13	A-6b
516.8	18													
		8	11-15-8	14"	Brown silty clay, brick and shale (fill), moist - stiff	Visual classification-No tests performed								Fill
	20													
	22	9	6-7-15	15"	do do	Visual classification-No tests performed								Fill
	24	10	9-27-43	12"	do do	Visual classification-No tests performed								Fill
	26	11	8-10-9	14"	do do	Visual classification-No tests performed								Fill
	28	12	7-12-15	12"	do do	Visual classification-No tests performed								Fill
	30													
	32	13	9-11-6	6"	do do	Visual classification-No tests performed								Fill
501.8														
	34	14	10-9-7	5"	Brown gravelly sand,little silt,wet-medium dense	Visual classification-No tests performed								A-1-b

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/24/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 500.3 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/26/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-3-2 STATION AND OFFSET 124+20, 4' L, NB BL SURFACE ELEV. 534.3 Bridge No. HAM-71-0093 E

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
499.3	34													
	36	15	4-3-10	6"	Brown gravelly sand, little silt, wet - medium dense	50	24	5	- 21 -			NP	16	A-1-b
496.8	38	16	5-6-7	17"	Brown and gray silt and clay, little sand, with sand lenses, moist-medium stiff	0	0	20	45	35	29	11	22	A-6a
494.3	40													
	42	17	4-6-7	18"	Brown sandy silt with sand lenses, moist - stiff	0	1	30	37	32	26	8	20	A-4a
	44	18	4-4-5	18"	Brown and gray sandy silt with sand layers, moist - medium stiff	0	1	29	28	42	26	10	25	A-4a
	46	19	5-5-5	18"	Gray sandy silt with sand layers, moist - medium stiff	0	1	37	32	30	22	7	26	A-4a
	48	20	3-4-5	17"	Gray sandy silt with sand layers, very moist - medium stiff	0	1	35	31	33	23	7	29	A-4a
	50	21	4-6-7	17"	Gray sandy silt with sand layers, wet - medium stiff	0	1	63	18	18		NP	25	A-4a
481.8	52	22	5-7-8	17"	Gray silt and clay, little sand with sand layers, moist - stiff	0	7	9	19	65	37	15	21	A-6a
	54	23	6-8-10	18"	Gray silt and clay, little sand with sand layers, moist - medium stiff	0	4	10	26	60	36	15	21	A-6a
476.8	56	24	6-6-6	18"	Gray sandy silt with sand layers, moist - medium stiff	0	0	38	35	27	28	8	29	A-4a
474.3	58	25	5-5-6	18"	Gray silt and clay, trace sand with sand layers, moist - medium stiff	0	0	6	60	34	31	11	28	A-6a
469.3	60													
	62													
	64													
	66	26	6-6-10	18"	Gray sandy silt with sand layers, moist - medium stiff	0	0	20	45	35	26	9	24	A-4a
	68													

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Form No. 580—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/24/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 500.3 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/26/64 CASING: LENGTH _____ DIA. 8.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-3-2 STATION AND OFFSET 124+20, 4' L. NB BL SURFACE ELEV. 534.3 Bridge No. HAM-71-0093 E

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	68													
	70													
		27	7-8-9	18"	Gray sandy silt with sand layers, moist - medium stiff	0	2	43	31	24		NP	25	A-4a
	72													
	74													
459.3														
	76	28	5-5-6	18"	Gray silt and clay, trace sand with sand layers, moist - medium stiff	0	0	3	45	52	36	14	30	A-6a
	78													
	80													
		29	6-5-6	18"	do do	0	0	6	51	43	32	11	26	A-6a
	82													
	84													
	86	30	6-8-11	18"	do do	0	0	5	49	46	30	12	19	A-6a
	88													
	90													
		31	7-10-12	18"	Gray silt and clay, trace sand with sand layers, moist - stiff	0	2	4	51	43	29	12	18	A-6a
	92													
	94													
	96	32	8-10-10	18"	Gray silt and clay, little sand, with sand layers, moist - stiff	0	1	15	47	37	27	11	18	A-6a
	98													
	100													
	102	33	9-11-13	18"	do do	0	4	10	48	38	29	11	17	A-6a

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Form No. 530—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/24/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 500.3 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/26/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0093 E

BORING No. B-3-2 STATION AND OFFSET 124+20, 4' L. NB BL SURFACE ELEV. 534.3

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	102													
	104													
429.3														
	106	34	10-12-15	18"	Bluish gray sandy silt with sand layers moist - stiff	0	2	24	49	25		NP	20	A-4a
	108													
	110													
	112	35	11-11-13	17"	do do	0	1	39	40	20		NP	18	A-4a
	114													
418.8	116													
	118	R-1	NXM	85%	Gray shale, calcareous, tough (1/2" to 2-3/4" pieces averaging 1-1/2") 100% shale									
413.8	120													
	122													
	124				Boring completed									
	126													
	128													
	130													
	132													
	134													
	136													

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Form No. 530-[illegible]

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/4/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 501.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/5/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-3-3 STATION AND OFFSET 126+21, 73.5' Rt. NB BL SURFACE ELEV. 529.2 Bridge No. HAM-71-0093 E

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
529.2	0													
528.7					0.5' Blacktop									
	2	1	7-12-10	10"	Brown and gray silty clay and broken stone fragments (fill), moist - stiff	Visual classification-No tests performed								Fill
526.2														
	4	2	6-7-9	10"	Brown and gray silty clay, some sand, little gravel with rock fragments moist - stiff	15	13	10	32	30	32	16	15	A-6b
524.2	6	3	6-7-7	11"	Brown and gray sandy silt, some gravel, with rock fragments moist -stiff	27	18	13	26	16	24	8	13	A-4a
	8	4	7-9-10	17"	do do	Visual classification-No tests performed								A-4a
	10	5	6-9-11	16"	Brown sandy silt, little gravel with rock fragments moist - medium stiff	10	8	14	24	44		NP	15	A-4a
516.7	12													
	14	6	5-5-6	17"	Brown silty sand, some gravel, moist - medium stiff	28	19	19	19	15	26	10	16	A-2-4
514.2	16	7	3-4-7	11"	Brown clayey gravel, some sand, moist - medium stiff	48	20	6	12	14	40	20	16	A-2-6
511.7	18	8	10-11-11	9"	Brown gravelly sand, some silt, moist - medium dense	60	13	5	- 22 -			NP	7	A-1-b
	20	9	11-9-7	7"	Brown gravelly sand, little silt, moist - medium dense	64	13	4	- 19 -			NP	6	A-1-b
	22													
	24	10	7-6-8	10"	do do	34	36	17	- 13 -			NP	6	A-1-b
	26	11	5-6-7	11"	do do	37	40	9	- 14 -			NP	5	A-1-b
	28	12	3-5-5	10"	Brown gravelly sand, little silt, trace gravel, wet - loose	8	16	59	- 17 -			NP	25	A-1-b
499.2	30													
	32	13	4-5-6	11"	Brown coarse and fine sand, trace clay, some silt, trace gravel, wet-loose	4	7	57	27	5		NP	26	A-3a
496.7	34	14	6-8-7	17"	Brown and gray clay, little sand, trace gravel with sand layers, moist - stiff	4	1	9	22	64	44	21	28	A-7-6

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Form No. 530—1[illegible]

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/4/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 501.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/5/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-3-3 STATION AND OFFSET 126+21,73.5'Rt. NB BL SURFACE ELEV. 592.2 Bridge No. HAM-71-0093 E

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
494.2	34													
492.2	36	S-1		24"	Brown and gray silt,little sand with sand lenses, varved, moist-medium stiff	0	0	14	53	33	28	10	28	A-4b
	38	15	4-4-7	17"	Brown and gray sandy silt with sand layers, moist - medium stiff	0	1	36	37	26		NP	25	A-4a
	40	16	5-4-5	18"	Brown and gray sandy silt with sand layers, wet - soft	0	1	36	38	25		NP	26	A-4a
	42													
	44	17	4-4-5	17"	do do	0	1	31	41	27	25	8	27	A-4a
484.2														
482.2	46	S-2		24"	Gray silt and clay with sand lenses,some sand, varved, moist - stiff	0	2	20	22	56	31	13	26	A-6a
	48	18	4-5-5	17"	Brown and gray sandy silt with sand layers, very moist - medium stiff	0	1	35	32	32	26	10	28	A-4a
	50													
	52	19	5-7-7	18"	Gray sandy silt with sand layers, wet - soft	0	2	45	28	25	20	6	29	A-4a
	54													
	56	S-3		12"	Gray sandy silt, trace gravel with sand layers, very moist - soft	2	4	39	23	32	24	9	25	A-4a
	58	20	4-3-6	17"	Gray sandy silt with sand and clay layers, wet - soft	0	2	60	21	17		NP	26	A-4a
	60													
	62	21	5-4-5	16"	Gray sandy silt with sand layers, very moist - soft	0	1	35	36	28	24	8	27	A-4a
	64													
	66	S-4		24"	Gray sandy silt with sand layers,varved, moist - medium stiff	0	1	49	31	19	21	2	29	A-4a
	68													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS. AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REFERENCE OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/4/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 501.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/6/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-3-3 STATION AND OFFSET 126+21, 73.5' Rt. NB BL SURFACE ELEV. 592.2 Bridge No. HAM-71-0093 E

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	68	22	4-7-8	12"	Gray sandy silt with sand layers, moist - medium stiff	0	1	41	39	19		NP	27	A-4a
459.2	70													
	72	23	4-4-7	10"	Gray coarse and fine sand, trace clay, little silt, wet - loose	0	2	80	11	7		NP	29	A-3a
454.2	74													
452.2	76	S-5		24"	Gray silt, little sand, moist - stiff	0	1	11	52	36	25	8	18	A-4b
	78	24	5-6-7	18"	Gray silt and clay, little sand, moist-medium stiff	0	1	13	47	39	29	13	18	A-6a
	80													
	82	25	6-6-7	18"	Gray silt and clay, little sand, moist - stiff	0	2	14	46	38	28	12	17	A-6a
	84													
	86	S-6		24"	Gray silt and clay, little sand, moist-stiff	0	1	11	47	41	32	15	20	A-6a
	88	26	7-8-11	18"	Gray silt and clay, trace sand, moist-stiff	0	1	7	49	43	31	13	20	A-6a
439.2	90													
	92	27	7-9-10	17"	Gray silty clay, trace sand, moist-stiff	0	1	8	48	43	34	16	20	A-6b
	94													
434.2	96	S-7		24"	Brown and gray silt and clay, little sand, moist - stiff	0	1	10	52	37	34	15	19	A-6a
	98	28	7-8-9	18"	Brown and gray silt and clay, little sand, moist - stiff	0	1	12	50	37	34	14	20	A-6a
	100													
	102	29	6-9-11	18"	do do	0	1	13	50	36	33	13	19	A-6a

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Form No. 530—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/4/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 501.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/5/64 CASING: LENGTH _____ DIA. 2.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-3-3 STATION AND OFFSET 126+21, 73.5' Rt. NB BL SURFACE ELEV. 592.2 Bridge No. HAM-71-0093 E

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	102													
	104													
424.2														
	106	S-8		24"	Gray sandy silt, some gravel, moist-medium stiff	24	7	27	27	15	22	3	22	A-4a
	108	30	7-9-10	17"	Brown and gray sandy silt, moist -stiff	0	2	46	33	19		NP	19	A-4a
	110													
		31	6-8-10	16"	Brown and gray sandy silt with sand layers, moist - stiff	0	3	40	35	22	22	5	19	A-4a
	112													
	114													
414.2														
	116	32	47-38-49	16"	Brown gravelly sand, trace clay, little silt, wet - very dense	49	20	15	10	6		NP	12	A-1-b
	118													
409.2	120													
	122	R-1	NXM	80%	Gray shale, calcareous, moderately tough to tough (1/2" to 2-3/4" pieces averaging 2") and gray limestone, crystalline, fossiliferous, shaly (1" to 6" pieces averaging 3") 70% shale, 30% limestone									
	124													
404.2														
	126													
	128				Boring completed									
	130													
	132													
	134													
	136													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 630 [illegible] 59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/21/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 490.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/23/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-3-4 STATION AND OFFSET 125+17, 61' Rt., NB BL SURFACE ELEV. 533.5 Bridge No. HAM-71-0093 E

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
533.5	0													
532.7					0.8' Concrete	Visual classification-No tests performed								Fill
	2	1	7-15-37	8"	Brown and gray sandy clay with gravel, concrete and brick fragments (fill), moist - stiff	Visual classification-No tests performed								Fill
	4	2	10-19-12	9"	do do	Visual classification-No tests performed								Fill
	6	3	8-10-11	11"	do do	Visual classification-No tests performed								Fill
	8	4	9-11-15	10"	do do	Visual classification-No tests performed								Fill
	10													
	12	5	8-21-12	12"	do do	Visual classification-No tests performed								Fill
	14	6	15-17-23	12"	do do	Visual classification-No tests performed								Fill
518.5	16	7	9-11-11	14"	Brown and gray silt and clay, some sand some gravel with brick and concrete fragments (fill), moist - medium stiff	21	10	10	32	27	29	11	12	A-6a
	18	8	7-10-15	10"	Brown silt and clay, little sand with brick and concrete fragments (fill), moist - stiff	0	4	12	36	48	31	13	12	A-6a
	20	9	7-12-37	6"	do do	Visual classification-No tests performed								A-6a
	22													
	24	10	5-8-15	9"	do do	22	6	8	34	30	31	13	20	A-6a
508.5	26	11	9-10-11	10"	Brown sandy silt and gravel with brick concrete and rock fragments(fill), moist - medium stiff	50	6	5	23	16	28	9	22	A-4a
506.0	28	12	8-10-12	9"	Brown silty sand, some gravel with brick and concrete fragments(fill), moist - medium dense	34	15	32	- 19	-		NP	7	A-2-4
503.5	30													
	32	13	10-15-19	13"	Brown sandy silt, some gravel, moist - dense	34	13	13	- 40	-		NP	5	A-4a
501.0														
	34	14	8-10-12	12"	Brown clay, little sand with sand layers moist - medium stiff	0	1	14	25	60	42	20	30	A-7-6

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/21/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 490.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/23/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-3-4 STATION AND OFFSET 125+17, 61' Rt., NB BL SURFACE ELEV. 533.5 Bridge No. HAM-71-0093 E

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL. CLASS
498.5	34													
	36	15	7-9-10	15"	Brown silty clay, little sand with sand layers, moist - medium stiff	0	0	11	27	62	40	17	34	A-6b
496.0	38													
		16	3-7-8	18"	Brown and gray silt and clay, little sand, little gravel with sand layers, moist - medium stiff	12	6	10	29	43	35	14	29	A-6a
493.5	40													
	42	17	4-5-9	17"	Brown sandy silt with sand layers, moist - medium stiff	0	2	32	39	27	25	8	25	A-4a
491.0														
	44	18	3-4-5	17"	Brown and gray silt and clay, some sand, little gravel with sand layers, very moist - medium stiff	11	5	16	26	42	32	12	23	A-6a
488.5														
	46	19	3-4-4	18"	Brown and gray silty clay, little sand with sand layers, very moist - medium stiff	0	1	15	26	58	36	16	27	A-6b
486.0	48													
		20	3-3-4	18"	Brown and gray sandy silt, trace gravel with sand layers, wet - soft	1,5	3	36	26	30		NP	25	A-4a
	50													
		21	2-4-5	18"	Gray sandy silt with sand layers, wet - soft	0	1	39	32	28		NP	31	A-4a
	52													
	54	22	4-6-8	17"	do do	Visual classification-No tests performed								A-4a
	56	23	6-6-8	17"	Gray sandy silt with sand layers, very moist - medium stiff	0	1	33	23	43	25	9	22	A-4a
	58													
473.5	60													
		24	4-6-7	16"	Gray silt and clay, little sand with sand layers, very moist - medium stiff	0	0	15	43	42	30	11	25	A-6a
	62													
	64													
468.5														
	66	25	4-6-11	18"	Gray sandy silt with sand layers, very moist - medium stiff	0	1	29	42	28		NP	26	A-4a
	68													

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Form No. 530

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/21/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 490.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/23/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-3-4 STATION AND OFFSET 125+17, 61' Rt. NB BL SURFACE ELEV. 533.3 Bridge No. HAM-71-0093 E

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL CLASS
	68													
463.5	70													
	72	26	5-6-8	17"	Gray silt and sand with sand layers, very moist - medium stiff	0	2	35	50	13		NP	25	A-4b
	74													
	76	27	4-4-5	18"	Gray silt, little sand with sand layers, very moist - medium stiff	0	1	13	56	30		NP	25	A-4b
	78													
453.5	80													
	82	28	6-6-6	18"	Gray silt and clay, little sand with sand layers, moist - medium stiff	0	1	10	47	42	29	12	21	A-6a
	84													
	86	29	6-7-8	18"	Gray silt and clay, little sand with sand layers, moist - medium stiff	0	1	9	48	42	31	13	20	A-6a
	88													
443.5	90													
	92	30	7-10-15	18"	Gray silt, little sand with sand layers, moist - medium stiff	0	1	13	51	35	27	10	19	A-4b
	94													
438.5														
	96	31	12-15-18	15"	Brown and gray silt and clay, little sand, trace gravel with sand layers, moist - medium stiff	4	2	14	47	33	27	11	17	A-6a
	98													
433.5	100													
	102	32	11-14-7	18"	Brown and gray silt, little sand with sand layers, moist - medium stiff	0	1	15	54	30	24	7	18	A-4b

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Form No. 530—15-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/21/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 490.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/23/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-3-4 STATION AND OFFSET 125+17, 61' Rt., NB BL SURFACE ELEV. 533.5 Bridge No. HAM-71-0093 E

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	102													
	104													
	106	33	7-9-12	18"	Brown silt, little sand, moist - medium stiff	0	1	17	54	28		NP	20	A-4b
	108													
423.5	110													
	112	34	6-9-13	18"	Brown and gray sandy silt, moist - medium stiff	0	0	34	42	24		NP	19	A-4a
	114													
	116	35	9-12-15	18"	Brown and gray sandy silt with sand layers, moist - medium stiff	0	0	38	49	13		NP	22	A-4a
	118													
413.5	120	36	100	0	Gray shale, calcareous, moderately tough to tough (¼ to 2½" pieces averaging 1½") and gray limestone, crystalline, fossiliferous (two 1" pieces in the bottom 6" of the run) 97% shale, 3% limestone									
	122													
	124													
408.0	126													
	128				Boring completed									
	130													
	132													
	134													
	136													

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Form No. 630-[illegible]59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/30/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 489.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/1/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No B-3-5 STATION AND OFFSET 122+46, 84.5' L. NB BL SURFACE ELEV. 531.7 Bridge No. HAM-71-0093 K

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
531.7	0				0.8' Concrete									
530.9	2	1	12-8-6	10"	Brown silt and clay with brick, wood and shale fragments (fill), moist-stiff	Visual classification-No tests performed								A-6a
	4	2	8-9-11	12"	Brown and gray silt, clay and gravel, little sand with brick, wood and shale fragments (fill), moist - stiff	43	9	8	22	18	31	13	16	A-6a
	6	3	7-9-15	12"	Brown and gray silt and clay, some sand, some gravel with brick, wood and shale fragments (fill), dry - stiff	22	22	10	26	20	28	11	9	A-6a
	8	4	9-11-8	16"	do do	Visual classification-No tests performed								A-6a
521.7	10													
	12	5	27-10-12	17"	Brown and gray sandy silt, some gravel with brick, wood and shale fragments, (fill), moist - stiff	26	11	12	30	21	27	10	13	A-4a
	14	6	15-9-9	16"	do do	Visual classification-No tests performed								A-4a
	16	7	7-8-7	18"	Brown sandy silt, some gravel with brick, wood and shale fragments (fill), moist - medium stiff	28	12	13	34	13		NP	15	A-4a
514.2	18	8	6-8-10	16"	Brown silt, little sand with brick, wood and shale fragments (fill), moist - medium stiff	0	2	16	58	24	28	8	18	A-4a
511.7	20	9	7-12-18	9"	Brown and gray clay with sand, brick, wood and shale fragments, (fill), moist - stiff	Visual classification-No tests performed								Fill
508.7	22	10	7-10-12	11"	Brown gravelly sand, little silt, moist - medium dense	61	17	4	13	5		NP	6	A-1-b
506.7	24	11	7-12-15	12"	Brown sandy gravel, little silt, moist - medium dense	62	21	5	- 12	-		NP	4	A-1-a
504.2	26	12	8-7-7	18"	Brown silt, little sand with sand layers, very moist - medium stiff	0	0	18	50	32	27	8	31	A-4b
501.7	28	13	6-5-6	18"	Brown silt and clay, trace sand with sand layers, moist - medium stiff	0	0	6	40	54	36	15	28	A-6a
499.2	30	14	9-11-12	10"	Brown gravelly sand, little silt, wet-dense	19	47	23	- 11	-		NP	7	A-1-b
	32													
	34													

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Form No. 530—

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/30/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 489.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/1/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-3-5 STATION AND OFFSET 122+46, 84.5' L. NE BL SURFACE ELEV. 531.7 Bridge No. HAM-71-0093 E

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL. CLASS
	34													
	36	15	10-12-18	16"	Brown gravelly sand, little silt, moist - dense	8	63	19	- 10	-		NP	4	A-1-b
494.2														
	38	16	16-12-14	15"	Brown and gray sandy silt with clay layers, moist - medium dense	0	43	13	26	18		NP	23	A-4a
491.7	40													
	42	17	15-25-16	14"	Brown and gray silty sand and gravel, little clay, little silt with clay layers, moist - dense	50	11	11	17	11		NP	22	A-2-4
489.2														
	44	18	5-6-6	18"	Brown and gray sandy silt with sand layers, very moist - medium stiff	0	2	33	33	32	25	9	26	A-4a
	46	19	7-6-7	18"	Gray sandy silt, trace gravel with sand layers, moist - medium stiff	2	1	22	45	30		NP	27	A-4a
	48													
	50													
	52	20	5-6-6	16"	Gray sandy silt with sand layers, wet - soft	0	2	31	41	26	23	7	27	A-4a
	54													
	56	21	6-6-8	18"	Gray sandy silt with sand layers, wet - soft	0	1	51	29	19		NP	24	A-4a
	58													
	60													
	62	22	6-5-7	18"	Gray sandy silt with sand layers, wet- soft	0	2	27	41	30	24	7	26	A-4a
	64													
466.7														
	66	23	4-5-6	18"	Gray silt, little sand with sand layers, very moist - medium stiff	0	1	17	51	31		NP	24	A-4b
	68													

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Form No. 530—15-58

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/30/64 SAMPLER: TYP Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 489.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/1/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS ____ Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-3-5 STATION AND OFFSET 122+46, 84.5' L. NB BL SURFACE ELEV. 531.7 Bridge No. HAM-71-0093 E

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL. CLASS
	68													
461.7	70													
		24	5-5-5	18"	Gray sandy silt with sand layers, very moist - soft	0	1	27	47	25		NP	21	A-4a
	72													
	74													
456.7														
	76	25	5-6-8	16"	Gray silt and clay, moist - medium stiff	0	1	6	54	39	27	11	20	A-6a
	78													
	80													
		26	6-6-7	18"	Gray silt and clay, trace sand, moist - medium stiff	0	1	3	50	46	33	15	21	A-6a
	82													
	84													
	86	27	5-6-7	15"	Gray silt and clay, little sand, moist- medium stiff	0	5	9	49	37	30	13	19	A-6a
	88													
441.7	90													
		28	8-12-15	18"	Brown and gray sandy silt, moist - stiff	0	2	24	41	33	26	10	18	A-6a
	92													
	94													
436.7														
	96	29	9-11-14	18"	Brown and gray silt and clay, little sand, moist - stiff	0	2	14	46	38	31	13	18	A-6a
	98													
431.7	100													
		30	5-6-7	18"	Brown and gray sandy silt with sand and gravel layers, very moist - medium stiff	0	3	38	37	22		NP	16	A-4a
	102													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/30/64 SAMPLER: TYPE Split Spoon & Com Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 489.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/1/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-3-5 STATION AND OFFSET 122+46, 84.5' L. NB BL SURFACE ELEV. 531.7 Bridge No. HAM-71-0093 E

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	102													
	104													
	106	31	6-7-7	18"	Brown and gray sandy silt with sand layers, very moist - medium stiff	0	3	37	38	22	20	5	18	A-4a
	108													
421.7	110													
	112	R-1	NXM	85%	Gray shale, calcareous, moderately tough to tough (½" to 2½" pieces averaging 1½") 100% shale									
	114													
416.7														
	116				Boring completed									
	118													
	120													
	122													
	124													
	126													
	128													
	130													
	132													
	134													
	136													

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Form No. 530—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/11/64 SAMPLER: TYPE Split Spoon DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE 494.6 & 479.6 Backfilled CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/12/64 CASING: LENGTH _____ DIA. 3.5" I.D. Hollow Stem Augers AFTER _____ HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-1 STATION AND OFFSET 139+68, 59' L. NB BL SURFACE ELEV. 519.6 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
519.6	0													
	2	1	5-5-6	18"	Blacktop, gravel and cinders (fill), moist - medium dense	Visual classification-No tests performed								Fill
517.1														
	4	2	2-2-1	10"	Cinders and brick (fill), moist - loose	Visual classification-No tests performed								Fill
514.6														
	6	3	2-3-3	9"	Clayey brown fine sand with brick (fill) moist - loose	Visual classification-No tests performed								Fill
512.1	8													
		4	1-1-1	15"	Clay, sand, gravel, cinders and brick fragments (fill), moist - loose to very loose	Visual classification-No tests performed								Fill
	10													
	12	5	3-3-3	6"	do do	Visual classification-No tests performed								Fill
	14	6	1-2-1	8"	do do	Visual classification-No tests performed								Fill
504.6														
	16	7	1-1-2	14"	Clayey brown fine sand (fill), very moist - loose	Visual classification-No tests performed								Fill
	18													
500.1	20	8	3-2-2	4"	Clay, sand, gravel, cinders and brick (fill), very moist - loose	Visual classification-No tests performed								Fill
	22													
	24	9	1-1-1	16"	do do	Visual classification-No tests performed								Fill
	26	10	1-1-½	10"	do do	Visual classification-No tests performed								Fill
492.1														
	28	11	2-2-2	17"	Clay, sand, gravel, cinders and brick, wet - loose	Visual classification-No tests performed								Fill
	30	12	2-2-3	15"	do do	Visual classification-No tests performed								Fill
	32													
	34													

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Form No. 530—16-63

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/11/64 SAMPLER: TYPE Split Spoon 2"O.D.& Core Barrel DIA. NXM WATER ELEV. IMMEDIATE 494.6 & 479.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/12/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-1 STATION AND OFFSET 139+68, 59' L. NB BL SURFACE ELEV. 519.6 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL. CLASS
484.6	34													
	36	13	2-3-4	16"	Gray sandy silt, trace gravel wet - loose	10	6	36	34	14	18	1	2	A-4a
479.6	38 40													
	42	14	2-4-9	15"	Brown silty sand, some gravel with brick wet - medium dense	31	18	29	16	6		NP	19	A-2-4
474.6	44													
	46	15	3-5-9	14"	Gray silt and clay, some sand, moist- stiff	0	2	22	43	33	30	14	20	A-6a
471.6	48													
470.6		S-1(T)			Gray clayey sand and gravel moist - medium stiff	50	8	11	10	21	38	18	31	A-2-6
469.6	50	S-1(B)		21"	Gray clay, trace sand, moist - stiff	0	0	1	32	67	41	17	25	A-7-6
	53	16	4-7-11	17"	Gray silty clay, trace sand, moist - medium stiff	0	0	1	29	70	38	16	24	A-6b
464.6	54													
	56	17	5-9-11	17"	Gray silt and clay, moist - medium stiff	0	0	0	46	54	33	11	24	A-6a
	58 60													
	62	18	5-9-12	17"	Gray silt and clay, trace sand with sand layers, moist - medium stiff	0	0	1	47	52	31	11	23	A-6a
	64													
	66	19	4-6-11	15"	Gray silt and clay with sand layers, moist - medium stiff	0	0	0	39	61	34	14	28	A-6a
	68													

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Form No. 530—16-

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/11/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 494.6 & 479.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/12/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-1 STATION AND OFFSET 139+68, 59' L. NB BL SURFACE ELEV. 519.6 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SNTL CLASS
	68													
449.6	70													
	72	20	8-9-12	15"	Gray fine sand, wet - medium dense	0	1	91	- 8	-		NP	23	A-3
446.6														
	74	21	12-18-11	17"	Gray silt and clay, some sand with limestone fragments and sand layers, wet - soft	0	12	20	11	57	32	14	38	A-6a
	76													
441.6	78													
440.6		S-2(T)			Gray coarse and fine sand, little clay, little silt, moist - medium stiff	0	2	65	16	17		NP	29	A-3a
439.6	80	S-2(B)		21"	Gray clay, trace sand, varved, moist-stiff	0	1	2	27	70	41	18	30	A-7-6
		22	4-5-6	11"	Gray silt and clay, trace sand with sand layers, moist - medium stiff	0	0	4	22	74	36	15	29	A-6a
	82													
	84													
	86	23	4-6-8	17"	Gray silt and clay, trace sand with sand layers, moist - medium stiff	0	0	4	32	64	34	13	31	A-6a
	88													
	90													
	92	24	4-7-8	17"	Gray silt and clay, some sand with sand layers, moist - medium stiff	0	0	22	19	59	30	13	42	A-6a
	94													
	96	25	6-11-13	16"	Gray silt and clay, some sand with sand layers, wet - soft	0	0	30	18	52	27	11	33	A-6a
	98													
419.6	100													
	102	26	11-12-16	17"	Gray sandy silt with clay layers, wet-soft	0	0	57	17	26	18	4	27	A-4a

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/11/64 SAMPLER: TYPE Split Spoon Cont. Barrel DIA. NXM WATER ELEV. IMMEDIATE 494.6 & 479.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/12/64 CASING: LENGTH _____ DIA. 3.5" I.D. Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-1 STATION AND OFFSET 139+68, 59' L. NB BL SURFACE ELEV. 519.6 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
414.6	102 104													
409.6	106 108 110	27	6-9-15	18"	Gray coarse and fine sand, little clay, little silt with clay layers, wet - medium dense	5	5	62	12	16		NP	27	A-3a
404.6	112 114	28	8-10-31	17"	Gray sandy silt, little gravel with clay layers and limestone fragments, wet - soft	18	10	36	14	22	22	6	29	A-4a
400.6	116 118	29	27-33-58	15"	Brown and gray sandy gravel, little silt with limestone fragments, moist - very dense	56	20	12	- 12 -			NP	5	A-1-a
395.6	120 122 124	20	NXM	22%	Gray shale calcareous (no shale recovery) and gray limestone, crystalline, fossiliferous, jointed (1" to 3" pieces averaging 2"), 78% shale, 22% limestone									
	126 128 130 132 134 136				Boring completed									

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Form No. 530

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/13/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2" O.D.& NXM WATER ELEV. IMMEDIATE 496.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/14/64 CASING: LENGTH _____ DIA. 3.5" I.D. Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0135

BORING No. B-6-2 STATION AND OFFSET 139+50, 5' L. NB BL SURFACE ELEV. 524.0

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
524.0	0													
	2	1	12-13-15	15"	Brick, cinders, concrete (fill), moist-dense to very dense	Visual classification-No tests performed Fill								
	4													
	6	2	14-28	10"	do do	Visual classification-No tests performed Fill								
	8	3	27-42	8"	do do	Visual classification-No tests performed Fill								
514.0	10													
511.5	12	4	8-6-4	14"	Clay with brick and cinder fragments (fill), moist - medium stiff	Visual classification-No tests performed Fill								
	14	5	2-3-2	15"	Clay, cinders, gravel, trace of brick, (fill), moist - medium stiff to soft	Visual classification-No tests performed Fill								
	16	6	1-2-1	16"	do do	Visual classification-No tests performed Fill								
	18	7	1-2-2	17"	do do	Visual classification-No tests performed Fill								
	20	8	1-2-3	10"	do do	Visual classification-No tests performed Fill								
	22	9	2-3-3	18"	do do	Visual classification-No tests performed Fill								
	24	10	3-3-4	10"	do do	Visual classification-No tests performed Fill								
496.5	26													
494.0	28	11	1-1-1	7"	Gray fine to coarse sand with fine gravel (fill), wet - very loose	Visual classification-No tests performed Fill								
	30	12	1-0-1	10"	Sand, gravel, silt, clay with trace of cinders (fill), wet - very loose	Visual classification-No tests performed Fill								
	32													
	34													

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Form No. 530—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/13/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE 496.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/14/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-2 STATION AND OFFSET 139+50, 5'L. NB BL SURFACE ELEV. 524.0 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
489.0	34													
	36	13	2-3-3	17"	Clay with brick and wood fragments, (fill), wet - soft	Visual classification-No tests performed								Fill
484.0	38 40													
	42	14	2-2-3	18"	Clay, brick, gravel and cinders (fill), wet - soft	Visual classification-No tests performed								Fill
479.0	44													
	46 48 50	15	4-8-8	18"	Sand and gravel with brick fragments, (fill), wet - medium dense	Visual classification-No tests performed								Fill
	52 54	16	5-8-9	15"	do do	Visual classification-No tests performed								Fill
469.0	56 58 60	16	5-6-8	17"	Gray silt, trace sand, moist - medium stiff	0	1	1	61	37	27	6	24	A-4b
	62 64	18	6-8-10	18"	Gray silt, trace sand, moist - medium stiff	0	1	4	65	30	25	5	22	A-4b
459.0	66 68	19	3-5-7	18"	Gray clay, trace sand, very moist -soft	0	0	1	20	79	43	21	28	A-7-6

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Form No. 530—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/13/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE 496.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/14/64 CASING: LENGTH ___ ___ DIA. 3.5"I.D.Hollow AFTER Backfilled HOURS ___ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-2 STATION AND OFFSET 139+50, 5' L., NB BL SURFACE ELEV. 524.0 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	68													
454.0	70													
		20	4-6-12	16"	Brown and gray fine sand, wet - medium dense	0	3	91	- 6	-			26	A-3
	72													
	74													
449.0														
	76	21	10-11-1[illegible]	17"	Brown sandy silt with silty clay layers, wet - medium dense	0	2	60	14	24		NP	32	A-4a
	78													
	80													
	82	22	11-13-16	14"	do do	0	3	46	14	37	20	7	26	A-4a
	84													
	86	23	5-9-11	15"	Brown sandy silt with fine sand layers, wet - medium stiff	0	0	41	20	39	22	8	25	A-4a
	88													
434.0	90													
	92	24	4-7-9	16"	Gray silt and clay, little sand with fine sand layers, wet - medium stiff	0	0	14	40	46	35	14	28	A-6a
	94													
429.0														
	96	25	11-10-15	17"	Brown sandy silt with fine sand layers, wet - soft	0	0	37	16	47	24	9	32	A-4a
	98													
424.0	100													
	102	26	10-11-14	13"	Gray silt and clay, some sand with fine sand layers, wet - soft	0	0	30	16	54	28	12	29	A-6a

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Form No. 530—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/13/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 496.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/14/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-2 STATION AND OFFSET 139+50, 5' L., NB BL SURFACE ELEV. 524.0 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	102													
	104													
	106	27	9-11-15	17"	Gray silt and clay, little sand with fine sand layers, moist - medium stiff	0	0	15	23	62	30	11	26	A-6a
	108													
	110													
	112	28	10-17-25	15"	Gray silt and clay, some sand with fine sand layers, moist - medium stiff	0	3	30	19	48	27	12	30	A-6a
	114													
409.0	116	29	18-25-54	15"	Brown sandy gravel, little silt with limestone fragments, wet - very dense	53	21	14	- 12	-			8	A-1-a
	118													
	120	30	125	5"	Brown sandy gravel with silt and limestone fragments, wet - very dense	Visual classification-No tests performed								A-1-a
	122													
	124													
399.0	126	31	132	6"	Brown gravelly sand, little silt with limestone fragments, wet - very dense	54	16	14	- 16	-			6	A-1-b
	128													
394.0	130	32	93-174	11"	Brown and gray gravelly sand, little silt, trace clay, moist - very dense	40	24	14	14	8		NP	6	A-1-b
	132				Gray shale,calcareous moderately tough with soft seams through-out run (1"to 2½" pieces averaging 1½") and gray limestone,crystalline,fossiliferous, jointed in the top 6"(1"to 2½"pieces averaging 1½")85%shale,15% limestone									
	134	33	NXM	57%										
389.0														
	136				Boring completed									

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Form No. 630

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/23/64 SAMPLER: TYPE Split Spoon and Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 478.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/24/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-3 STATION AND OFFSET 138+81, 118' Rt., NB BL SURFACE ELEV. 513.7 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % ARG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
513.7	0				0.3' Concrete									
	2	1	3-4-5	15"	Clay and cinders (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	4	2	3-4-4	17"	do do	Visual classification-No tests performed								Fill
508.7	6	3	2-2-3	17"	Clay, cinders, brick and gravel (fill), moist - loose	Visual classification-No tests performed								Fill
	8	4	2-2-2	18"	do do	Visual classification-No tests performed								Fill
	10	5	1-1-2	9"	do do	Visual classification-No tests performed								Fill
	12	6	1-2-2	8"	do do	Visual classification-No tests performed								Fill
498.7	14	7	1-3-3	16"	Gray sandy clay with cinders and brick (fill), moist - soft	Visual classification-No tests performed								Fill
	16													
	18													
493.7	20	8	5-12-10	17"	Gray sandy clay with fine gravel, limestone and brick fragments (fill), moist - very stiff	Visual classification-No tests performed								Fill
	22													
	24													
488.7	26	9	2-2-2	10"	Gray silty clay with fine gravel and brick fragments (fill), very moist - soft	Visual classification-No tests performed								Fill
	28													
	30	10	1-1-3	14"	do do	Visual classification-No tests performed								Fill
	32													
	34													

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/23/64 SAMPLER: TYPE Split Spoon and Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 478.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/24/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-3 STATION AND OFFSET 138+81, 118'Rt.,NB BL SURFACE ELEV. 513.7 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
478.7	34													
	36	11	1-3-3	15"	Clay, brick and cinders (fill), wet - soft	Visual classification-No tests performed								Fill
	38													
473.7	40													
	42	12	3-3-4	15"	Gray clay, some sand, some gravel, moist - medium stiff	24	15	15	18	28	46	18	29	A-7-6
	44													
	46	13	6-9-14	17"	Brown clay, trace sand, varved, moist - stiff	0	1	0	31	68	44	22	28	A-7-6
	48													
463.7	50													
	52	14	3-6-9	18"	Gray silty clay, trace sand with silt lenses, moist - medium stiff	0	1	0	37	62	38	16	30	A-6b
	54													
458.7	56	15	4-6-8	17"	Gray silt and clay, trace sand with sand lenses, moist - stiff	0	1	2	64	33	32	11	24	A-6a
	58													
453.7	60													
	62	16	3-4-4	15"	Gray sandy silt with sand layers, wet - soft	0	13	28	21	38	27	9	33	A-4a
	64													
448.7	66	17	4-5-7	17"	Gray silt and clay, some sand, with sand layers, wet - soft	0	1	20	23	56	33	15	34	A-6a
	68													

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Form No. 530—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 25, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/23/64 SAMPLER: TYPE Split Spoon and Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 478.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/24/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-3 STATION AND OFFSET 138+81, 118' Rt., NB BL SURFACE ELEV. 513.7 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	68													
	70													
	72	18	4-5-6	18"	Gray silt, clay and sand with sand layers, very moist - medium stiff	0	1	39	18	42	25	11	29	A-6a
	74													
438.7														
	76	19	5-7-12	18"	Gray clay, trace sand with sand layers, very moist - medium stiff	0	0	4	23	73	42	20	39	A-7-6
	78													
433.7	80													
	82	20	4-8-10	15"	Gray silt and clay, little sand with sand layers, very moist - medium stiff	0	0	14	32	54	32	13	24	A-6a
	84													
	86	21	5-7-11	15"	Gray silt and clay, some sand with sand layers, very moist - medium stiff	0	2	26	22	50	27	12	30	A-6a
	88													
423.7	90													
	92	22	7-11-12	16"	Gray sandy silt with sand layers, very moist - medium stiff	0	4	41	13	42	23	9	28	A-4a
	94													
418.7														
	96	23	6-9-11	16"	Gray silt, clay and sand with sand layers, very moist - soft	0	10	27	18	45	29	13	24	A-6a
	98													
413.7	100													
	102	24	7-14-18	14"	Brown and gray coarse and fine sand, little clay, little silt, little gravel with silty clay layers and limestone layers, wet-dense	15	19	41	11	14		NP	15	A-3a

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Form No. 530—15-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/23/64 SAMPLER: TYPE Split Spoon and Com. Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 478.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/24/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-3 STATION AND OFFSET 138+81, 118' Rt., NB BL SURFACE ELEV. 513.7 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL CLASS
	102													
	104													
408.7														
	106	25	18-27-46	17"	Gray sandy gravel, little silt with limestone fragments, moist - very dense	65	14	10	- 11	-		NP	6	A-1-a
	108													
403.7	110													
402.2		26	26-48-82	17"	Gray gravelly sand, trace clay, little silt, moist - very dense	51	16	15	13	5		NP	4	A-1-b
	112				Gray and brown shale (no shale recovery) and gray limestone, crystalline, fossiliferous, jointed (1" to 3" pieces, averaging 1½") 74% shale, 26% limestone									
	114	27	NXM	43%										
	116													
396.7														
	118													
	120				Boring completed									
	122													
	124													
	126													
	128													
	130													
	132													
	134													
	136													

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Form No. 530

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 5/26/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 492.8 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/27/64 CASING: LENGTH _____ DIA. 3.375"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-4 STATION AND OFFSET 140+22, 74' Rt., NB BL SURFACE ELEV. 515.3 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
515.3	0				0.3' Concrete	No tests performed								
514.8	2	1	4-6-10	9"	Cinders, sand and gravel (fill), moist-dense	Visual classification-No tests performed								Fill
512.8	4	2	5-4-2	15"	Cinders and clay (fill), moist - loose	Visual classification-No tests performed								Fill
510.3	6	3	5-3-2	14"	Clay, brick and cinders (fill), moist - loose	Visual classification-No tests performed								Fill
	8	4	1-1-1	17"	Clay, brick and cinders (fill), moist-very loose	Visual classification-No tests performed								Fill
	10	5	1-2-1	12"	do do	Visual classification-No tests performed								Fill
	12	6	2-1-2	8"	do do	Visual classification-No tests performed								Fill
	14	7	2-2-2	11"	do do	Visual classification-No tests performed								Fill
	16	8	1-1-3	14"	do do	Visual classification-No tests performed								Fill
	18	9	1-1-2	7"	do do	Visual classification-No tests performed								Fill
	20	10	1-½-½	5"	Clay, brick and coal (fill), wet - very loose	Visual classification-No tests performed								Fill
492.8	22	11	1-1-1	17"	Brown sandy clay with cinders (fill), wet - soft	Visual classification-No tests performed								Fill
490.3	24	12	1-1-2	18"	do do	Visual classification-No tests performed								Fill
	26													
	28													
	30													
	32													
	34													

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Form No. 530—16-60

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 5/26/64 SAMPLER: TYPE Split Spoon & Core DIA. 2"O.D. and NXM WATER ELEV. IMMEDIATE 492.8 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/27/64 CASING: LENGTH ____ DIA. 3.375"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-4 STATION AND OFFSET 140+22, 74' Rt., NB BL SURFACE ELEV. 515.3 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36	13	1-2-3	18"	Brown sandy clay with cinders, (fill),	Visual classification-no tests performed								Fill
	38													
475.3	40													
	42	14	2-2-3	17"	Brown fine to coarse sand and gravel with clay and cinders (fill), wet-loose	Visual classification-No tests performed								Fill
	44													
470.3														
	46	15	2-3-5	16"	Gray silt and clay, trace sand, little gravel, some organic matter (probable fill), very moist - soft	16	4	3	53	19	36	12	40	A-6a
	48													
465.3	50													
	52	16	2-3-4	17"	Gray silty clay, trace sand, varved, very moist - medium stiff	0	0	2	37	61	36	18	31	A-6b
	54													
460.3														
	56	17	3-7-4	18"	Gray silt and clay, some sand with sand seams, very moist - medium stiff	0	4	20	26	50	31	15	26	A-6a
	58													
455.3	60													
	62	18	12-18-24	16"	Gray and brown gravelly sand, little silt, wet - dense	51	12	20	- 17	-			10	A-1-b
	64													
449.8		19	7	5"	Gray and brown gravelly sand with silt, wet - medium dense	Visual Classification-No tests performed								
	66	20	3-4	12"	Gray silty clay, trace sand, moist-medium stiff	0	0	2	32	66	38	18	24	A-6b
	68													

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Form No. 530—16-58

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

Split Spoon and Core 2"O.D. and 3.375"I.D.Hollow Stem Augers

LOG OF BORING

DATE STARTED 5/26/64 SAMPLER: TYPE Barrel DIA. NXM WATER ELEV. IMMEDIATE 492.8 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/27/64 CASING: LENGTH ____ DIA. ____ AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-4 STATION AND OFFSET 140+22', 74' Rt., NB BL SURFACE ELEV. 515.3 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTD. CLASS
	68													
445.3	70													
	72	21	5-6-7	16"	Brown coarse and fine sand, little silt, trace gravel with clay seams, wet - medium dense	6	12	68	-	14 -			15	A-3a
	74													
440.3	76	22	7-9-11	17"	Brown and gray fine sand, with clay seams, wet - medium dense	1	9	83	-	7 -			20	A-3
	78													
435.3	80													
	82	23	11-13-18	16"	Brown and gray coarse and fine sand, little clay, trace silt with clay seams, wet - dense	0	12	63	10	15		NP	22	A-3a
	84													
	86	24	13-17-21	16"	Brown and gray coarse and fine sand, trace clay, trace silt, trace gravel, with clay seams, wet - dense	6	14	67	6	7		NP	14	A-3a
	88													
	90													
	92	25	12-16-20	15"	Brown and gray coarse and fine sand, little silt, trace of gravel with clay seams, wet - dense	3	13	73	- 11	-			18	A-3a
	94													
	96	26	13-18-23	17"	Brown and gray coarse and fine sand, trace clay, little silt with clay seams, wet - very dense	0	2	76	13	9		NP	23	A-3a
	98													
415.3	100													
	102	27	13-14-15	16"	Brown and gray fine sand with clay seams, wet - medium dense	0	11	80	-	9 -			22	A-3

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Form No. 530—1M

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 5/26/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE 492.8 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/27/64 CASING: LENGTH ____ DIA. 3.375"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-4 STATION AND OFFSET 140+22, 74' Rt., NB BL SURFACE ELEV. 515.3 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	102													
410.3	104													
	106	28	15-19-13	14"	Brown and gray gravelly sand, little silt, trace clay, moist - dense	40	24	15	13	8		NP	7	A-1-b
	108													
	110													
403.8		29	40-38-60	16"	Brown and gray gravelly sand, little silt, trace clay, moist - very dense	49	20	10	12	9	20	6	6	A-1-b
	112				Gray shale, calcareous, moderately tough, (one 1½" piece recovered) and gray limestone, crystalline, fossiliferous, jointed and broken midway in the run (½" to 3½" pieces averaging 2") 60% shale, 40% limestone									
	114													
		30	NXM	45%										
398.8	116													
	118				Boring completed									
	120													
	122													
	124													
	126													
	128													
	130													
	132													
	134													
	136													

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Form No. 630

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

Split Spoon& 2" O.D.

DATE STARTED 5/28/64 SAMPLER: TYPE Core Barre DIA. NXM WATER ELEV. IMMEDIATE 492.8 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/29/64 CASING: LENGTH ____ DIA. 3.375"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-5 STATION AND OFFSET 140+83, 51' L, NB BL SURFACE ELEV. 517.8 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS.
517.8	0													
512.3	2	1	24-10-15	12"	Blacktop, cinders and fine to coarse sand and gravel (fill), dry - medium dense	Visual classification-No tests performed								Fill
512.8	4	2	2-3-4	8"	Brown fine to coarse sand and cinders, (fill), moist - loose	Visual classification-No tests performed								Fill
510.3	6	3	2-1-3	13"	Brown sandy clay with fine gravel and cinders (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	8													
	10	4	2-1-3	12"	Clay, brick and cinders, (fill), moist - loose	Visual classification-No tests performed								Fill
505.3	12	5	2-2-2	9"	do do	Visual classification-No tests performed								Fill
	14	6	2-1-1	15"	Brown sandy silt, some gravel (fill), moist - medium stiff	27	2	10	48	13	24	7	18	A-4a
	16	7	2-2-3	16"	Brown sandy silt, some gravel (fill), very moist - medium stiff	17	23	12	31	17	25	9	20	A-4a
500.3	18	8	1-1-2	17"	Gray silt and clay, some sand, trace of gravel, trace coal (fill), very moist - medium stiff	6	22	13	35	24	31	13	23	A-6a
	20	9	1-2-2	17"	Gray silt and clay, some sand, little gravel (fill), very moist - medium stiff	14	23	13	27	23	32	14	32	A-6a
495.3	22	10	1-1-2	18"	Gray and brown sandy silt, trace coal (fill), moist - medium stiff	0	26	30	32	12		NP	27	A-4a
	24	11	1-1-1	17"	Gray and brown sandy silt (fill), moist - medium stiff	0	21	32	33	14		NP	22	A-4a
	26				Gray and brown sandy silt with cinders									
	28	12	1-1-2	7"	(fill), moist - medium stiff	Visual classification-No tests performed								Fill
487.8	30													
	32	13	4-3-2	7"	Gray silt and clay, some sand, little gravel with cinders (fill), moist - medium stiff	16	14	9	33	28	34	15	28	A-6a
	34													

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Form No. 530—1[illegible]

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 5/28/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. NXM WATER ELEV. IMMEDIATE 492.8 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/29/64 CASING: LENGTH _____ DIA. 3.375"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-5 STATION AND OFFSET 140+83, 51' L. NB BL SURFACE ELEV. 517.8 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
482.8	34													
	36	14	1-1-1	18"	Brown sandy silt, little gravel moist - medium stiff	12	23	25	28	12		NP	24	A-4a
477.8	38													
	40	15	3-5-7	14"	Gray clay, trace sand, moist - stiff	0	2	2	34	62	47	29	26	A-7-6
472.8	42													
	44	16	3-5-8	16"	Gray silty clay, trace sand, moist - stiff	0	1	6	51	42	37	17	24	A-6b
467.8	46													
	48	17	4-7-11	16"	Brownish gray gravelly sand, trace silt, wet - medium dense	22	41	27	- 10	-			12	A-1-b
462.8	50													
	52	18	7-9-11	17"	Brown fine sand with clay seams, wet - medium dense	2	44	50	- 4	-			22	A-3
457.8	54													
	56	19	7-10-11	16½"	Brown fine and coarse sand, little clay, little silt, trace gravel with clay seams, wet - medium dense	2	16	54	14	14		NP	22	A-3a
452.8	58													
	60	20	3-4-6	18"	Gray silty clay, little sand, with fine sand seams, very moist - soft	0	6	8	25	61	36	16	29	A-6b
	62													
	64													
	66													
	68													

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Form No. 530—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 5/28/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. NXM WATER ELEV. IMMEDIATE 492.8 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/29/64 CASING: LENGTH _____ DIA. 3.375"I.D. Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-5 STATION AND OFFSET 140+83, 51' L. NB BL SURFACE ELEV. 517.8 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	68													
447.8	70													
	72	21	4-4-5	17"	Gray silt and clay, some sand, trace gravel with fine sand seams, very moist - soft	8	9	20	29	34	28	12	31	A-6a
442.8	74													
	76	22	3-4-5	16"	Gray silty clay, little sand, with fine sand seams, very moist - soft	0	3	9	30	58	34	16	33	A-6b
	78													
437.8	80													
	82	23	3-3-4	18"	Gray clay, trace sand with fine sand seams, very moist - soft	0	2	6	24	68	41	21	24	A-7-6
	84													
432.8														
	86	24	4-5-5	18"	Gray silt and clay, little sand, trace gravel, with fine sand seams, very moist - soft	5	3	10	30	52	32	12	33	A-6a
	88													
427.8	90													
	92	25	3-4-6	18"	Gray silty clay, trace sand, with fine sand seams, very moist - soft	0	0	8	26	66	37	18	30	A-6b
	94													
	96	26	4-5-6	18"	Gray silty clay, trace sand with fine sand seams, moist - medium stiff	0	2	7	25	66	38	18	29	A-6b
	98													
	100													
	102	27	3-4-4	18"	Gray silty clay with fine sand seams, moist - medium stiff	0	0	0	54	46	37	18	26	A-6b

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 5/28/64 SAMPLER: TYPE Split Spoon and Core Barrel DIA. 2"O.D. NXM WATER ELEV. IMMEDIATE 492.8 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/29/64 CASING: LENGTH _____ DIA. 3.375"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-5 STATION AND OFFSET 140+83, 51' L. NB BL SURFACE ELEV. 517.8 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	102													
	104													
	106	28	4-4-5	18"	Gray silty clay, trace sand, with fine sand seams, moist - medium stiff	0	0	2	38	60	38	18	26	A-7-6
	108													
407.8	110													
	112	29	25-42-67	12"	Gray gravelly sand, little silt with limestone fragments, wet - very dense	57	14	13	-	16 -			7	A-1-b
	114													
402.8	116	30	25-42-67	7"	Gray sandy gravel, little silt with limestone fragments, wet - very dense	56	16	13	-	15 -			8	A-1-a
	118													
	120													
397.8	122	31	NXM	50%	Gray shale calcareous, moderately tough, broken (½ to 1" pieces) and gray limestone crystalline, fossiliferous, jointed, (½ to 3" pieces, averaging 1½") 60% shale, 40% limestone									
	124													
392.8	126													
	128				Boring completed									
	130													
	132													
	134													
	136													

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Form No. 520

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/12/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 476.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/13/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-6 STATION AND OFFSET 140+88, 1'Rt. NB BL SURFACE ELEV. 516.2 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
516.2	0													
	2	1	10-12-11	10"	Blacktop, gravel, cinders and brick, (fill), moist - medium dense	Visual classification-No tests performed								Fill
513.7	4	2	4-3-3	8"	Cinders, gravel and brick (fill), moist - loose	Visual classification-No tests performed								Fill
	6	3	1-1-2	7"	do do	Visual classification-No tests performed								Fill
	8	4	2-1-2	8"	do do	Visual classification-No tests performed								Fill
	10	5	3-2-3	10"	do do	Visual classification-No tests performed								Fill
503.7	12	6	2-3-2	8"	Clay, gravel, cinders and brick (fill), moist - loose	Visual classification-No tests performed								Fill
	14	7	1-2-1	8"	do do	Visual classification-No tests performed								Fill
	16	8	1-1-1	8"	do do	Visual classification-No tests performed								Fill
496.2	18	9	1-1-0	15"	Cinders, clay, sand, gravel and brick, (fill), wet - very loose	Visual classification-No tests performed								Fill
	20	10	1-0-1	17"	do do	Visual classification-No tests performed								Fill
	22	11	1-1-0	15"	do do	Visual classification-No tests performed								Fill
	24	12	1-1-1	16"	do do	Visual classification-No tests performed								Fill
	26	13	1-2-2	16"	do do	Visual classification-No tests performed								Fill
	28													
	30													
	32													
	34													

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Form No. 530—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/12/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. NXM WATER ELEV. IMMEDIATE 476.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/13/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Auger AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-6 STATION AND OFFSET 140+88, 1' Rt, NB BL SURFACE ELEV. 516.2 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL. CLASS
481.2	34													
	36	14	2-3-3	17"	Brown silty clay with brick and cinders (fill), very moist - soft	Visual classification-No tests performed								Fill
	38													
	40													
	42	15	1-3-3	6"	do do	Visual classification-No tests performed								Fill
	44													
471.2	46	16	19-26-15	21"	Gray sandy gravel, trace silt, wet - dense	60	22	10	- 8	-			12	A-1-a
468.7	48													
	50	17	5-7-13	10"	Brown gravelly sand, trace silt, wet - medium dense	43	41	9	- 7	-			12	A-1-a
466.2	52	18	3-4-6	5"	Dark gray silt and clay, some sand, trace gravel, moist - medium stiff	2	15	17	35	31	34	11	28	A-6a
	54													
461.2	56	19	3-5-7	12"	Gray sandy silt with fine sand layers, wet - soft	0	5	31	20	44	27	10	32	A-4a
	58													
456.2	60													
	62	20	4-6-7	17"	Gray silt and clay, some sand with fine sand layers, wet - soft	0	2	20	32	46	29	12	27	A-6a
	64													
451.2	66	21	4-5-6	15"	Gray silty clay, trace sand, trace gravel, varved, very moist-medium stiff	1	1	1	26	71	40	17	34	A-6b
	68													

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Form No. 530—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/12/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 476.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/13/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0135

BORING No. B-6-6 STATION AND OFFSET 140+88, 1' Rt., NB BL SURFACE ELEV. 516.2

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	68													
446.2	70													
	72	22	4-6-6	16"	Gray silt and clay, varved, very moist - medium stiff	0	0	0	32	68	36	14	30	A-6a
	74													
441.2														
	76	23	3-3-5	18"	Gray clay, trace gravel with sand lenses, varved, very moist - medium stiff	2	0	0	26	72	42	20	28	A-7-6
	78													
	80													
	82	24	4-6-7	17"	Gray clay, trace sand with sand lenses, varved, very moist - medium stiff	0	1	0	22	77	46	22	32	A-7-6
	84													
	86	25	3-5-8	17"	Gray clay, trace sand with sand layers, very moist - soft	0	1	2	39	58	43	20	32	A-7-6
	88													
426.2	90													
	92	26	9-14-16	10"	Gray coarse and fine sand, little silt, trace gravel, wet - dense	1	18	64	- 17	-			19	A-3a
	94													
421.2														
	96	27	9-14-16	14"	Gray silty clay, trace sand with sand lenses, very moist - medium stiff	0	0	1	29	70	40	17	34	A-6b
	98													
416.2	100													
	102	28	15-21-28	17"	Brown sandy silt, little gravel with silty clay layers and limestone fragments, wet - dense	18	22	24	7	29	23	9	26	A-4a

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Form No. 530—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/12/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 476.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/13/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-6 STATION AND OFFSET 140+88, 1' Rt., NB BL SURFACE ELEV. 516.2 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	102													
	104													
411.2														
	106	29	7-10-15	16"	Gray silt and clay, trace sand, some gravel with sand and gravel layers and limestone fragments, moist - medium stiff	26	5	5	49	15	34	14	33	A-6a
	108													
406.2	110													
404.7		30	34-43-47	16"	Gray gravelly sand, little silt with limestone fragments, moist - very dense	47	18	15	- 20 -				6	A-1-b
	112													
	114													
401.2														
400.2	116	31	- 108 -	5"	Broken limestone fragments	Visual classification- No tests performed								
	118				Gray shale, calcareous (no shale recovery) and gray limestone, crystalline fossiliferous (1" to 3½" pieces averaging 2") 65% shale, 35% limestone									
		32	NXM	35%										
	120													
395.2														
	122													
	124				Boring completed									
	126													
	128													
	130													
	132													
	134													
	136													

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Form No. 530

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/4/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. NXM WATER ELEV. IMMEDIATE 456.3 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/5/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-8 STATION AND OFFSET 141+17, 72' Rt., NB BL SURFACE ELEV. 517.3 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
517.3	0				0.3' Concrete									
516.8	2	1	4-6-3	14"	Cinders and sand (fill), moist -loose	Visual classification-No tests performed								Fill
514.8	4	2	3-3-2	7"	Cinders, sand and clay (fill), moist - loose	Visual classification-No tests performed								Fill
512.3	6	3	1-1-1	16"	Cinders (fill), moist - very loose	Visual classification-No tests performed								Fill
	8	4	1-1-1	15"	do do	Visual classification-No tests performed								Fill
	10	5	1-1-1	17"	do do	Visual classification-No tests performed								Fill
	12	6	1-1-1	16"	do do	Visual classification-No tests performed								Fill
	14	7	1-1-1	17"	do do	Visual classification-No tests performed								Fill
	16	8	1-1-1	17"	do do	Visual classification-No tests performed								Fill
	18	9	1-1-1	18"	Cinders with clay (fill), moist - very loose	Visual classification-No tests performed								Fill
497.3	20	10	1-1-2	17"	do do	Visual classification-No tests performed								Fill
	22	11	1-1-2	17"	Gray silt and clay and sand, some gravel with cinders (fill), wet-soft	22	23	19	22	14	26	11	21	A-6a
492.3	24	12	1-2-2	18"	Gray sandy silt, some gravel with cinders (fill), wet - soft	21	22	20	23	14	26	10	20	A-4a
489.8	26	13	1-2-3	18"	Gray sandy silt, some gravel with cinders (fill), wet - soft	21	19	14	30	16	28	10	32	A-4a
	28													
	30													
	32													
	34													

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Form No. 530

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/4/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. NXM WATER ELEV. IMMEDIATE 456.3 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/5/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-8 STATION AND OFFSET 141+17, 72' Rt., NB BL SURFACE ELEV. 517.3 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS.
	34													
	36	14	2-2-3	18"	Brown and gray sandy silt, little gravel with cinders (fill), moist - medium stiff	17	20	23	28	12		NP	24	A-4a
	38													
477.3	40													
	42	15	6-8-10	15"	Brown clay, trace sand, varved, moist-stiff	0	0	1	27	72	45	23	27	A-7-6
	44													
	46	16	4-6-9	17"	Brown and gray clay, moist - stiff	0	0	0	27	73	46	25	30	A-7-6
	48													
467.3	50													
	52	17	3-3-4	18"	Gray silty clay with fine sand lenses, wet - soft	0	0	0	35	64	39	19	38	A-6b
	54													
462.3														
	56	18	2-2-3	18"	Gray clay with fine sand lenses, very moist - soft	0	0	0	26	74	43	23	32	A-7-6
	58													
457.3	60													
456.3		19	2-3	12"	Gray silty clay, trace sand with fine sand lenses, very moist - medium stiff	0	0	3	79	18	40	20	30	A-6b
	62	20	18	5"	Gray fine sand, wet - dense	3	3	85	- 9 -				32	A-3
	64													
452.3														
	66	21	15-17-10	16"	Gray gravelly sand, little silt, wet - medium dense	18	35	33	- 14 -				12	A-1-b
	68													

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Form No. 530

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/4/64 SAMPLER: TYPE Split Spoon& Core Barrel DIA. 2"O.D. NXM WATER ELEV. IMMEDIATE 456.3 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/5/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-8 STATION AND OFFSET 141+17,72'Rt., NB BL SURFACE ELEV. 517.3 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	68													
447.3	70													
		22	4-6-8	17"	Gray silty sand with clay seams, wet - medium dense	0	20	47	9	24	19	7	19	A-2-4
	72													
	74													
442.3														
	76	23	4-5-6	17"	Gray coarse and fine sand, little clay, trace silt with clay seams, wet - medium dense	0	8	72	8	12		NP	24	A-3a
	78													
437.3	80													
		24	3-4-4	18"	Gray clay, trace sand, with fine sand seams, very moist - medium stiff	0	1	2	27	70	44	24	29	A-7-6
	82													
	84													
432.3														
	86	25	3-4-5	18"	Gray silty clay, trace sand with fine sand seams, moist - medium stiff	0	0	2	36	62	39	18	25	A-6b
	88													
427.3	90													
		26	4-4-5	18"	Gray clay, trace sand with fine sand seams, very moist - medium stiff	0	2	2	20	76	47	26	34	A-7-6
	92													
	94													
422.3														
	96	27	8-15-17	17"	Brown fine sand, wet - dense	0	32	60	- 8	-			20	A-3
	98													
417.3	100													
		28	11-18-24	16"	Brown coarse and fine sand, little silt, trace gravel with clay seams, wet - dense	4	27	56	- 13	-			18	A-3a
	102													

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Form No. 530—

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

Split Spoon& 2"O.D.&

DATE STARTED 6/4/64 SAMPLER: TYPE Core Barrel DIA. NXM WATER ELEV. IMMEDIATE 456.3 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/5/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway

Stem Augers HAM-71-0.93

BORING No. B-6-8 STATION AND OFFSET 141+17, 72' Rt., NB BL SURFACE ELEV. 517.3 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	102													
	104													
412.3														
	106	29	13-18-26	17"	Brown fine sand with clay seams, wet - dense	2	4	88	- 6 -				18	A-3
	108													
407.3	110													
405.8	112	30	24-39-61	16"	Gray sandy gravel, trace silt with limestone fragments, moist - very dense	55	16	15	- 14 -				6	A-1-a
	114				Brown and gray shale (no shale recovered) and gray limestone, crystalline, fossiliferous, jointed and broken (1" to 2½" pieces, averaging 1½") 74% shale, 26% limestone									
		31	NXM	26%										
400.3	116													
	118													
	120				Boring completed									
	124													
	126													
	128													
	130													
	132													
	134													
	136													
	138													

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Form No. 530—15-59

THE H. C. NUTTING COMPANY

4130 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/5/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2" O.D. NXM WATER ELEV. IMMEDIATE 487.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/6/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-9 STATION AND OFFSET 141+71, 22'Rt., NB BL SURFACE ELEV. 517.7 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
517.7	0				0.5' Concrete									
517.2	2	1	6-5-3	7"	Brick, clay and cinders (fill), moist-loose to very loose	Visual classification-No tests performed								Fill
	4	2	2-2-2	12"	do do	Visual classification-No tests performed								Fill
	6	3	1-1-1	16"	do do	Visual classification-No tests performed								Fill
	8	4	4-3-2	6"	do do	Visual classification-No tests performed								Fill
	10	5	2-2-2	14"	do do	Visual classification-No tests performed								Fill
	12													
	14	6	1-2-2	16"	do do	Visual classification-No tests performed								Fill
502.7	16	7	3-2-3	17"	Gray sandy clay with gravel (fill), moist - medium stiff	Visual classification-No tests performed								Fill
500.2	18	8	2-2-2	12"	Gray silty clay with brick and cinders (fill), moist - medium stiff	Visual classification-No tests performed								Fill
497.7	20	9	2-3-4	14"	Gray silty clay (fill), moist - medium stiff	Visual classification-No tests performed								Fill
495.2	22	10	2-2-4	14"	Gray silty clay with brick and cinders (fill), moist - medium stiff	Visual classification-No tests performed								Fill
492.7	24	11	2-2-3	16"	Gray clay, little sand with brick fragments and cinders (fill), moist - medium stiff	0	8	6	33	53	44	28	22	A-7-6
490.2	26	12	2-3-4	17"	Brown and gray silty clay, little sand, (fill), moist - medium stiff	0	4	6	47	43	36	21	25	A-6b
	28	13	2-3-5	9"	Gray silty clay, trace gravel, little sand, with wood and brick fragments, (fill), moist - medium stiff	8	12	5	33	42	37	21	26	A-6b
	30													
	32													
	34													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/5/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. NXM WATER ELEV. IMMEDIATE 487.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/6/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-9 STATION AND OFFSET 141+71, 22' Rt., NB BL SURFACE ELEV. 517.7 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
482.7	34													
	36	14	3-4-5	16"	Brown and gray silty clay, trace sand, with fine sand layers moist - medium stiff	0	6	3	41	50	39	21	22	A-6b
	38													
477.7	40													
	42	15	5-6-7	17"	Brown and gray clay, trace sand, moist-stiff	0	4	5	25	66	44	25	27	A-7-6
	44													
	46	16	4-5-7	18"	Gray clay, trace sand, moist - stiff	0	1	7	48	44	43	23	28	A-7-6
	48													
467.7	50													
	52	17	3-4-4	18"	Brown and gray silty clay, trace sand, varved, moist - medium stiff	0	1	1	32	66	40	20	29	A-6b
	54													
462.7														
	56	18	2-2-3	17"	Gray clay, trace sand, varved, with fine sand lenses, very moist - medium stiff	0	0	1	26	73	43	22	34	A-7-6
	58													
457.7	60													
	62	19	2-3-4	18"	Gray silty clay, trace sand with fine sand lenses, very moist - medium stiff	0	0	1	33	66	39	19	30	A-6b
	64													
452.7														
	66	20	9-10-10	16"	Brown silty sand, with clay seams, wet medium dense	0	34	38	10	18	19	7	15	A-2-4
	68													

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Form No. 530

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/5/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2" O.D. NXM WATER ELEV. IMMEDIATE 487.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/6/65 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Auger's AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-9 STATION AND OFFSET 141+71, 22' Rt., NB BL SURFACE ELEV. 517.7 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL. CLASS
	68													
	70													
	72	21	5-6-7	17"	Brown silty sand, with clay seams, wet - medium dense	0	33	39	8	20	18	7	17	A-2-4
	74													
442.7														
	76	22	3-3-4	18"	Gray clay, with fine sand lenses, moist - medium stiff	0	0	0	25	75	45	24	36	A-7-6
	78													
	80													
	82	23	3-4-4	18"	do do	0	0	0	18	82	51	30	34	A-7-6
	84													
432.7														
	86	24	3-4-5	18"	Gray silty clay, with fine sand lenses, very moist - soft	0	0	0	23	77	39	19	34	A-6b
	88													
427.7	90													
	92	25	3-4-5	12"	Gray clay, trace sand with fine sand lenses, very moist - medium stiff	0	0	1	23	76	47	25	32	A-7-6
	94													
421.7	96	26	5-5	6"	Gray clay, trace sand with fine sand lenses, wet - soft	0	0	2	24	74	46	25	36	A-7-6
		27	17	17"	Brown coarse and fine sand, trace silt, little clay, little gravel, with clay seams, wet - dense	14	17	47	9	13	NP	NP	20	A-3a
	98													
417.7	100													
	102	28	12-17-23	16"	Brown sandy silt, with clay seams, wet - dense	0	2	59	8	31	20	9	22	A-4a

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Form No. 530

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

Split Spoon & 2" O.D.

DATE STARTED 6/5/64 SAMPLER: TYP Core Barrel DIA. NXM WATER ELEV. IMMEDIATE 487.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/6/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-9 STATION AND OFFSET 141+71, 22' Rt., NB BL SURFACE ELEV. 517.7 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	102													
	104													
412.7														
	106	29	44-16-17	17"	Brown clayey sand, some gravel with limestone fragments and clay seams, wet - dense	21	31	14	9	25	26	11	25	A-2-6
	108													
407.7	110													
406.2		30	21-44-91	14"	Brown and gray coarse and fine sand, trace silt, some gravel with limestone fragments, moist - very dense	22	25	39	- 14	-			12	A-3a
	112													
	114	31	NXM	42%	Gray and brown shale (no shale recovered) and gray limestone, crystalline, fossiliferous, jointed and broken (½"to 4½" pieces, averaging 2") 58% shale, 42% limestone									
401.2	116													
	118				Boring completed									
	120													
	122													
	124													
	126													
	128													
	130													
	132													
	134													
	136													

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Form No. 630—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

Split Spoon and Core 2"O.D. and

LOG OF BORING

DATE STARTED 5/11/64 SAMPLER: TYPE Barrel DIA. NXM WATER ELEV. IMMEDIATE 457.9 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/12/64 CASING: LENGTH _____ DIA. 3.375"I.D. Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-12 STATION AND OFFSET 142+24, 7.0' L. NB SL SURFACE ELEV. 517.9 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % ABR.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
517.9	0				Concrete	No tests performed								
515.4	2	1	5-6-11	16"	Cinders, brick and clay (fill) moist-medium dense	Visual classification-No tests performed								Fill
	4	2	2-1-2	13"	Clay with cinders (fill) moist - very loose	Visual classification-No tests performed								Fill
	6	3	1-1-1	9"	do do	Visual classification-No tests performed								Fill
	8	4	1-2-1	10"	do do	Visual classification-No tests performed								Fill
	10	5	4-1-1	10"	do do	Visual classification-No tests performed								Fill
	12													
502.9	14	6	1-1-2	12"	do do	Visual classification-No tests performed								Fill
	16	7	3-3-2	15"	Gray silty clay with gravel, sand and brick, moist - loose	Visual classification-No tests performed								Fill
500.4	18													
		8	3-6-9	16"	Gray and brown silt and clay, little sand, trace gravel, moist-stiff	4	6	13	41	36	30	14	20	A-6a
497.9	20													
	22	9	4-5-8	14"	Gray and brown silty clay, trace sand, trace of gravel moist - stiff	1	3	3	37	54	40	20	20	A-6b
	24	10	3-6-9	16"	Gray and brown silty clay, trace sand, little gravel moist - stiff	16	4	6	35	39	35	17	19	A-6b
492.9														
	26	11	9-6-6	10"	Gray and brown silt and clay, little sand, little gravel moist -stiff	14	6	6	40	34	29	14	16	A-6a
490.4														
489.9	28	12	3	4"	Brown and gray silt, trace sand, very moist - soft	0	1	4	67	28	26	8	27	A-4b
		13	2-3	8"	Brown and gray silt and clay, trade sand, very moist - soft	0	1	4	63	32	29	13	26	A-6a
487.9	30													
		14	2-3-5	11"	Brown and gray silty clay, trace sand, moist - medium stiff	0	3	7	44	46	35	19	29	A-6b
	32													
		15	4-4-6	9"	Brown and gray silty clay, trace sand, moist - medium stiff	0	0	2	60	38	34	17	21	A-6b
	34													

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Form No. 830

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

Split Spoon and Core 2"O.D. and

LOG OF BORING

DATE STARTED 5/11/64 SAMPLER: TYPE Barrel DIA. NXM WATER ELEV. IMMEDIATE 457.9 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/12/64 CASING: LENGTH _____ DIA. 3.375"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT Northeast Expressway HAM-71-0.93

BORING No. B-6-12 STATION AND OFFSET 142+24, 7.0' L. NB BL SURFACE ELEV. 517.9 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	
	34													
	36	16	4-5-7	12"	Brown and gray silty clay, trace sand, trace gravel, (fill)moist - meidum stiff	2	2	3	48	45	35	20	20	A-6b
	38	17	5-7-11	14"	Brown and gray silty clay, trace sand, little gravel (fill) moist-medium stiff	11	2	2	52	33	32	16	22	A-6b
477.9	40													
	42	18	5-2-4	9"	Brown silt, trace sand, wet - loose	0	0	3	84	13		NP	28	A-4b
472.9	44													
	46	19	6-10-14	12"	Brown clay, trace sand, moist - stiff	0	2	1	31	66	48	26	24	A-7-6
	48													
	50													
	52	20	7-7-8	12"	Gray clay, varved, moist - medium stiff	0	0	0	28	72	42	22	30	A-7-6
	54													
462.9														
	56	21	2-3-5	14"	Gray silty clay, varved, moist - medium stiff	0	0	0	33	67	37	17	30	A-6b
	58													
	60													
	62	22	2-3-4	17"	Gray silty clay, trace sand, wet -soft	0	1	7	19	73	40	22	34	A-6b
	64													
452.9														
	66	23	4-4-5	18"	Gray clay, varved, trace sand, trace organic matter, very moist - medium stiff (varved)	0	0	2	24	74	42	22	36	A-7-6
	68													

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Form No. 530—46-59

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

Split Spoon and Core 2"O.D. and

LOG OF BORING

DATE STARTED 5/11/64 SAMPLER: TYPE Barrel DIA. NXM WATER ELEV. IMMEDIATE 457.9 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/12/64 CASING: LENGTH ____ DIA. 3.375"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-12 STATION AND OFFSET 142+24, 7.0' L. NB BL. SURFACE ELEV. 517.9 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
	68													
	70													
	72	24	3-4-5	16"	Gray clay, varved, moist - medium stiff	0	0	0	30	70	42	18	30	A-7-6
	74													
	76	25	4-5-6	17"	Gray clay, varved, moist - medium stiff	0	0	0	23	77	47	27	35	A-7-6
	78													
	80													
	82	26	3-4-6	18"	Gray clay varved, trace sand, very moist medium stiff	0	0	1	28	71	46	26	30	A-7-6
	84													
	86	27	5-4-5	18"	Gray clay, varved, trace sand, very moist - medium stiff	0	0	1	21	78	43	23	32	A-7-6
	88													
427.9	90													
	92	28	3-4-5	18"	Gray silty clay, varved, trace sand, very moist - medium stiff	0	1	0	31	68	38	18	30	A-6b
	94													
422.9	96	29	3-4-5	16"	Brown fine sand, wet - loose	0	3	97	- 0	-	-	-	22	A-3
	98													
417.9	100													
	102	30	4-6-8	18"	Gray silty clay, trace sand trace gravel with limestone fragments and weathered shale, very moist - medium stiff	3	0	2	26	69	38	20	31	A-6b

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Form No. 530

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

Split Spoon and Core 2"O.D. and

LOG OF BORING

DATE STARTED 5/11/64 SAMPLER: TYPE Barrel DIA. NXM WATER ELEV. IMMEDIATE 457.9 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/12/64 CASING: LENGTH _____ DIA. 3.375"I.D.Hollo METER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-12 STATION AND OFFSET 142+24, 7.0'L. NB EL SURFACE ELEV. 517.9 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	102													
	104													
	106				Gray crystalline, fossiliferous limestone (¼" to 2½" pieces averaging 1½") with evidence of gray soft shale between bedding planes, 40% limestone, 60% shale (shale percentage assumed)									
	108	31	NXM	40"										
407.9	110													
	112				Boring completed									
	114													
	116													
	118													
	120													
	122													
	124													
	126													
	128													
	130													
	132													
	134													
	136													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS,

Form No. 530—16.50

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

Split Spoon and Core 2"O.D. and

LOG OF BORING

DATE STARTED 5/25/64 SAMPLER: TYPE Barrel DIA. NXM WATER ELEV. IMMEDIATE 503.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/26/64 CASING: LENGTH _____ DIA. 3.375"I.D. Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0135

BORING No. B-6-13 STATION AND OFFSET 142+48, 81' Rt., NB BL SURFACE ELEV. 518.7

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	ENTL. CLASS.
518.7	0				0.5' Concrete									
516.2	2	1	4-7-3	15"	Clay, cinders, sand and gravel (fill), moist - loose	Visual classification-No tests performed								Fill
	4	2	1-1-2	7"	Gray sandy clay, cinders and brick (fill), moist - very loose	Visual classification-No tests performed								Fill
	6	3	1-1-1	9"	do do	Visual classification-No tests performed								Fill
511.2	8	4	1-1-1	14"	Gray silty clay with cinders (fill), moist - soft	Visual classification-No tests performed								Fill
	10	5	1-1-2	15"	do do	Visual classification-No tests performed								Fill
506.2	12	6	2-2-3	9"	Gray and brown silty clay, some sand with brick fragments, (fill) wet-soft	0	18	8	37	37	33	17	22	A-6b
503.7	14	7	2-3-4	16"	Brown and gray clay, little sand very moist - medium stiff	0	10	5	35	50	42	22	28	A-7-6
	16	8	2-3-4	17"	Brown and gray clay, little sand, trace of gravel, very moist - medium stiff	4	12	4	30	50	43	24	28	A-7-6
	18	9	1-2-3	13"	Brown and gray clay, some sand, some gravel very moist - soft	20	17	9	34	20	47	33	18	A-7-6
496.2	20	10	1-1-2	15"	Brown and gray silt and clay, little sand very moist - soft	0	10	4	52	34	30	15	22	A-6a
	22	11	2-2-2	18"	Brown and gray silt and clay, trace sand, some topsoil, very moist-soft	0	0	1	33	66	31	12	28	A-6a
491.2	24	12	5-6-7	17"	Brown and gray clay, trace of sand, moist - stiff	0	0	1	33	66	47	25	28	A-7-6
	26	13	5-6-8	18"	Brown and gray clay, trace of sand, moist - stiff	0	2	2	20	76	51	27	24	A-7-6
	28													
	30													
	32													
	34													

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Form No. 530—1

THE H. C. NUTTING COMPANY

4130 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

Split Spoon and Core 2" O.D. and

LOG OF BORING

DATE STARTED 5/25/64 SAMPLER: TYPE Barrel DIA. NXM WATER ELEV. IMMEDIATE 503.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/26/64 CASING: LENGTH _____ DIA. 3.375"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-13 STATION AND OFFSET 142+48, 81' Rt., NB BL SURFACE ELEV. 518.7 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
	34													
	36	14	5-6-7	18"	Brown and gray clay, trace sand, moist - stiff	0	1	0	33	66	47	25	30	A-7-6
	38													
	40													
	42	15	2-3-3	18"	Gray clay, trace of sand with brown silt and sand lenses, moist - medium stiff	0	0	1	29	70	42	18	34	A-7-6
	44													
	46	16	2-3-4	18"	Gray clay with fine sand lenses, moist - medium stiff	0	0	0	31	69	42	21	30	A-7-6
	48													
468.7	50													
	52	17	2-2-3	18"	Gray silty clay with fine sand lenses, moist - medium stiff	0	0	0	27	73	40	20	29	A-6b
	54													
463.7														
	56	18	2-3-4	18"	Gray clay with fine sand lenses, moist-medium stiff	0	0	0	28	72	42	21	32	A-7-6
	58													
	60													
	62	19	3-4-4	17"	Gray clay with fine sand lenses, moist-medium stiff	0	0	0	27	73	41	21	29	A-7-6
	64													
453.7														
	66	20	2-3-4	18"	Gray silty clay with fine sand lenses, moist - medium stiff	0	0	0	28	72	40	19	34	A-6b
	68													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—16

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 5/25/64 SAMPLER: TYPE Split Spoon and Core Barrel DIA. 2"O.D. and NXM WATER ELEV. IMMEDIATE 503.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/26/64 CASING: LENGTH _____ DIA. 3.375"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-13 STATION AND OFFSET 142+48, 81' Rt., NB BL SURFACE ELEV. 518.7 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS.
	68													
448.7	70													
	72	21	3-4-5	17½"	Gray silt and clay with fine sand lenses, moist - medium stiff	0	0	0	36	64	35	11	30	A-6a
	74													
443.7	76	22	2-3-4	18"	Gray clay with fine sand lenses, moist-medium stiff	0	0	0	23	77	42	21	34	A-7-6
	78													
	80													
	82	23	2-2-3	18"	Gray clay with fine sand lenses, moist-medium stiff	0	0	0	19	81	44	18	33	A-7-6
	84													
	86	24	2-3-5	18"	Gray clay with fine sand lenses, moist-medium stiff	0	0	0	24	76	45	24	31	A-7-6
	88													
	90													
	92	25	3-3-4	18"	Gray clay with fine sand lenses, moist-medium stiff	0	0	0	20	80	44	19	32	A-7-6
	94													
423.7	96	26	3-4-4	18"	Gray silt and clay with fine sand lenses, very moist - soft	0	0	0	46	54	32	12	30	A-6a
	98													
419.2	100	27	20-40-66	16"	Gray sandy gravel little silt with limestone and shale fragments; wet-dense	65	17	7	- 11	-			12	A-1-a
417.7	102													

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

Split Spoon and Core 2"O.D. and

LOG OF BORING

DATE STARTED 5/25/64 SAMPLER: TYPE Barrel DIA. NXM WATER ELEV. IMMEDIATE 503.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/26/64 CASING: LENGTH _____ DIA. 3.375"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-13 STATION AND OFFSET 142+48, 81' Rt., NB BL SURFACE ELEV. 516.7 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGR.	% C.G.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
412.7	102 104 106	28	NXM	40%	Gray and brown weathered shale-soft (one 2" pieces recovered) and gray limestone, crystalline, fossiliferous with vertical and high angle joints (¼" to 3½" pieces averaging 1½") 62% shale, 38% limestone.									
	108 110 112 114 116 118 120 122 124 126 128 130 132 134 136				Boring completed									

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Form No. 696—16

THE H. C. NUTTING COMPANY

4130 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/1/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. NXM WATER ELEV. IMMEDIATE 483.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/2/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-14 STATION AND OFFSET 142+62, 22' Rt. NB BL SURFACE ELEV. 518.5 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.L.	W.C.	SOIL CLASS
518.5	0				0.5' Concrete									
518.0	2	1	4-3-2	12"	Brown sand and gravel with brick fragments (fill), moist - loose	Visual classification-No tests performed								Fill
516.0	4	2	1-1-1	16"	Brown sandy clay with cinders (fill), moist - soft	Visual classification-No tests performed								Fill
	6	3	1-1-1	17"	do do	Visual classification-No tests performed								Fill
	8	4	1-1-1	17"	do do	Visual classification-No tests performed								Fill
	10	5	1-1-2	16½"	do do	Visual classification-No tests performed								Fill
506.0	12	6	2-3-4	18"	Gray clay, trace sand with shale and limestone fragments, , moist - medium stiff	0	6	5	31	58	46	26	24	A-7-6
	14	7	2-3-4	17"	Gray clay, trace sand with shale and limestone fragments , moist - stiff	0	2	2	37	59	44	23	28	A-7-6
501.0	16	8	4-4-6	12"	Brown and gray silty clay, some sand with shale and limestone fragments, , moist - stiff	0	16	10	36	38	26	19	24	A-6b
498.5	18	9	6-6-7	15"	Brown and gray clay, some sand, trace gravel with shale and limestone fragments, moist - stiff	6	16	6	27	45	41	23	19	A-7-6
496.0	20	10	3-3-4	16"	Brown and gray silty clay, trace sand with shale and limestone fragments, , moist - medium stiff	0	4	3	51	42	35	17	23	A-6b
493.5	22	11	2-2-2	14"	Brown silt, trace sand with topsoil, wet - soft	0	0	4	73	23	26	7	27	A-4b
491.0	24	12	2-4-3	15"	Brown silt and clay, trace sand with topsoil wet - soft	0	2	3	62	33	30	13	27	A-6a
488.5	26	13	1-2-2	13"	Brown and gray silty clay, trace sand with silt seams moist - medium stiff	0	2	4	45	49	38	20	22	A-6b
	28													
	30													
	32													
	34													

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Form No. 530—64-5

THE H. C. NUTTING COMPANY

4130 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/1/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. NXM WATER ELEV. IMMEDIATE 483.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/2/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-14 STATION AND OFFSET 142+62, 72' Rt., NB BL SURFACE ELEV. 518.5 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36	14	2-2-3	16"	Brown and gray silty clay, little sand, with fine sand seams, moist - medium stiff	0	3	10	32	55	40	21	28	A-6b
	38													
478.5	40													
	42	15	3-4-4	17"	Brown and gray clay, trace sand, varved, moist - medium stiff	0	0	1	25	74	49	25	35	A-7-6
	44													
	46	16	2-2-3	18"	Gray clay, trace sand, varved, moist - medium stiff	0	0	1	5	94	46	25	39	A-7-6
	48													
468.5	50													
	52	17	2-3-3	18"	Gray silty clay, trace sand, varved, with fine sand lenses, very moist - medium stiff	0	0	1	31	68	39	19	32	A-6b
	54													
	56	18	3-3-3	18"	Gray silty clay, trace sand, varved, with fine sand lenses, moist - medium stiff	0	0	1	33	66	38	18	30	A-6b
	58													
458.5	60													
	62	19	2-3-4	18"	Gray clay, trace sand, varved, with fine sand lenses, moist - medium stiff	0	0	1	24	75	42	20	28	A-7-6
	64													
	66	20	2-3-4	18"	Gray clay with fine sand lenses, varved, moist - medium stiff	0	0	0	21	79	46	23	31	A-7-6
	68													

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Form No. 530—46-57

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/1/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. NXM WATER ELEV. IMMEDIATE 483.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/2/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-14 STATION AND OFFSET 142+ 62, 22' Rt. NB BL SURFACE ELEV. 518.5 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	68													
448.5	70													
	72	21	2-3-4	18"	Gray silty clay with fine sand lenses, varved, moist - medium stiff	0	0	0	35	65	39	18	30	A-6b
443.5	74													
	76	22	3-4-5	17½"	Gray clay, with fine sand lenses, varved, moist - medium stiff	0	0	0	20	80	52	29	30	A-7-6
	78													
	80													
	82	23	3-4-5	18"	Gray clay with fine sand lenses, varved, moist - medium stiff	0	0	0	20	80	46	22	31	A-7-6
	84													
	86	24	3-3-5	18"	do do	0	0	0	21	79	45	22	32	A-7-6
	88													
428.5	90													
	929	25	2-4-6	18"	Gray silty clay, with sand lenses, varved, moist - medium stiff	0	0	0	26	74	40	18	35	A-6b
	94													
423.5	96													
	98	26	8-8-9	6"	Gray gravelly sand, little silt, wet - medium dense	13	57	15	- 15	-			10	A-1-b
418.5	100													
417.0	102	27	18-54-42	15"	Gray gravelly sand, little silt, little clay with limestone fragments, moist-very dense	47	23	10	10	10	20	5	10	A-1-b

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Form No. 530—46-5

THE H. C. NUTTING COMPANY

4130 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

Split Spoon & 2"O.D.

DATE STARTED 6/1/64 SAMPLER: TYPE Core Barrel DIA. NXM WATER ELEV. IMMEDIATE 483.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/2/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-14 STATION AND OFFSET 142+ 62, 22' Rt., NB BL SURFACE ELEV. 518.5 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
	102													
	104													
	106	28	NXM	40%	Brown and gray weathered shale, soft (one 3½" piece recovered) and gray limestone, crystalline, fossiliferous jointed and broken in the top 12" of the run (1" to 2"pieces, averaging 1½") 65% shale, 35% limestone									
411.0	108													
	110				Boring completed									
	112													
	114													
	116													
	118													
	120													
	122													
	124													
	126													
	128													
	130													
	132													
	134													
	136													

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Form No. 630—15

THE H. C. NUTTING COMPANY

4130 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 5/8/64 SAMPLER: TYPE Split Spoon DIA. 2" O.D. WATER ELEV. IMMEDIATE 496.9 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/11/64 CASING: LENGTH ____ DIA 3.375"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-16 STATION AND OFFSET 143+33, 72' Rt., NB BL SURFACE ELEV. ____ Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % ANG.	% G.R.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
519.5	0				0.5' Concrete	No tests performed								
518.9		1	1-2-3	15"	Brown sandy clay and cinders(fill), moist - loose	Visual classification-No tests performed								Fill
516.9	2													
	4	2	1-1-1	11"	Cinders (fill), moist - very loose	Visual classification-No tests performed								Fill
514.4														
	6	3	2-2-4	15"	Cinders, clay and brick (fill),moist-loose	Visual classification-No tests performed								Fill
511.9	8													
		4	2-3-4	12"	Brown and gray silty clay and weathered shale (fill), moist - medium stiff	Visual classification-No tests performed								Fill
509.4	10													
		5	4-3-3	14"	Brown and gray clay, trace sand with weathered shale (fill), moist - medium stiff	0	4	2	40	54	43	25	22	A-7-6
506.9	12													
	14	6	1-1-2	12"	Gray sandy silt, little gravel with organic matter . . . . very moist - soft	14	7	11	47	21	25	7	24	A-4a
504.4														
	16	7	4-2-2	13"	Brown and gray silt and clay, trace sand, trace organic matter and weathered shale . . . . very moist - soft	0	1	5	62	32	28	12	25	A-6a
501.9														
	18	8	3-4-4	11"	Brown and gray clay, trace of sand with weathered shale . . . . . moist - stiff	0	2	1	39	58	45	25	22	A-7-6
	20	9	3-4-6	15"	Brown and gray clay, trace of sand with weathered shale . . . . . ,moist-stiff	0	8	2	32	58	46	27	25	A-7-6
496.9	22													
496.4		10	1	5"	Gray gravelly sand,little silt,very loose	39	38	12	14	- 11	-		15	A-1-b
	24	11	2-3	12"	Brown and gray silty clay, some sand, moist - stiff	0	8	20	37	35	35	18	24	A-6b
494.4														
	26	12	3-3-5	17"	Brown and gray clay, little sand,little gravel, very moist - medium stiff	13	6	11	22	48	42	24	28	A-7-6
491.9														
	28	13	6-7-10	16"	Brown and gray silty clay, trace of sand varved with fine sand lenses, moist - stiff	0	1	1	45	53	36	16	24	A-6b
	30	14	5-6-8	17"	Brown and gray silty clay, trace of sand varved with fine sand lenses,moist-stiff	0	1	0	39	60	38	17	27	A-6b
486.9	32													
	34	15	5-7-7	18"	Brown and gray clay,trace of sand,varved with fine sand lenses,moist-stiff	0	0	1	28	71	42	16	30	A-7-6

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 5/8/64 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEV. IMMEDIATE 496.9 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/11/64 CASING: LENGTH _____ DIA. 3.375"I.D.Holloe Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-16 STATION AND OFFSET 143+33, 72' Rt. NB BL SURFACE ELEV. 519.4 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (ft)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
484.4	34													
	36	16	3-3-4	17"	Gray silty clay, varved with fine sand lenses, moist - medium stiff	0	0	0	39	61	40	22	32	A-6b
	38													
	40													
	42	17	2-3-3	18"	Gray silty clay, varved with fine sand lenses, very moist - medium stiff	0	0	0	29	71	40	20	33	A-6b
	44													
474.4														
	46	18	6-9-10	17"	Gray silt and clay, trace sand, varved with fine sand lenses, moist - stiff	0	0	2	38	60	38	14	25	A-6a
	48													
	50													
	52	19	2-3-5	17"	Gray silt and clay, trace of sand, varved with silt seams, moist - medium stiff	0	0	1	52	47	35	13	37	A-6a
	54													
464.4														
	56	20	3-3-4	18"	Gray clay, varved with fine sand lenses, moist - medium stiff	0	0	0	28	72	41	21	33	A-7-6
	58													
459.4	60													
	62	21	4-5-6	18"	Gray silty clay, trace of sand, varved with fine sand lenses, moist - medium stiff	0	0	1	29	70	40	20	33	A-6b
	64													
454.4														
	66	22	4-4-4	18"	Gray clay, varved with fine sand lenses, moist - medium stiff	0	0	0	23	77	43	22	29	A-7-6
	68													

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Form No. 630—16

THE H. C. NUTTING COMPANY

4130 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

Split LOG OF BORING

DATE STARTED 5/8/64 SAMPLER: TYPE Spoon DIA. 2"O.D. WATER ELEV. IMMEDIATE 496.9 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/11/64 CASING: LENGTH _____ DIA. 3.375"I.D.Hollow Stem Augers WATER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-16 STATION AND OFFSET 143+33, 72' Rt., NB RL SURFACE ELEV. 519.4 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SNTL CLASS
	68													
449.4	70													
	72	23	28-32-39	16"	Gray sandy silt, some gravel with limestone fragments, moist - stiff	24	23	16	20	17	22	8	11	A-4a
446.9	74				Boring completed									
	76													
	78													
	80													
	82													
	84													
	86													
	88													
	90													

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Form No. 630

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

Split Spoon and Core 2"O.D. and Steel Augers

DATE STARTED 5/12/64 SAMPLER: TYPE Barrel DIA. NXM WATER ELEV. IMMEDIATE 505.3 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/13/64 CASING: LENGTH ____ DIA. 3.375"I.D.Hollow AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway

BORING No. B-6-17 STATION AND OFFSET 143+93, 14' L, NB BL SURFACE ELEV. 520.3

HAM-71-0.93
Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % ANG.	% G.G.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
520.3	0													
		1	23-15-10	15"	Cinders and brick (fill), moist - medium dense	Visual classification-No tests performed								Fill
517.8	2													
	4	2	2-1-1	11"	Brown clay and sand (fill), moist - very loose	Visual classification-No tests performed								Fill
	6	3	1-1-1	7"	do do	Visual classification-No tests performed								Fill
512.8	8													
		4	1-1-1	14"	Brown sandy clay with fine gravel, (fill), moist - soft	Visual classification-No tests performed								Fill
510.3	10													
		5	1-1-2	12"	Gray sandy clay with cinders and coal, (fill), wet - soft	Visual classification-No tests performed								Fill
	12													
	14	6	1-2-2	13"	do do	Visual classification-No tests performed								Fill
505.3														
	16	7	1-1-2	15"	Gray sandy clay with cinders and organic matter (fill), wet - soft	Visual classification-No tests performed								Fill
502.8	18													
		8	2-2-2	16"	Gray and brown silty clay, little sand, trace gravel, trace organic matter moist - medium stiff	1	2	10	51	36	30	16	26	A-6b
	20													
	22	9	2-2-3	17"	Brown and gray silty clay, little sand, trace gravel, moist - medium stiff	8	4	9	45	34	32	17	20	A-6b
497.8														
	24	10	2-2-3	16"	Brown and gray silt and clay, some sand, moist - medium stiff	0	7	16	47	30	28	13	21	A-6a
495.3														
	26	11	2-2-4	16"	Brown silty clay, little sand, moist - medium stiff	0	3	12	48	37	33	17	26	A-6b
	28													
		12	3-4-5	17"	Gray and brown silty clay, little sand, moist - medium stiff	0	2	11	50	37	35	17	25	A-6b
490.3	30													
	32	13	3-5-6	18"	Brown and gray silt and clay, little sand, moist - medium stiff	0	1	10	55	34	29	14	22	A-6a
	34													

AS A GENERAL INTERPRETATION OF CLIENT'S NEEDS AND CONDITIONS, ALL REPORTS AND RECOMMENDATIONS ARE CONFIDENTIAL PROPERTY OF CLIENTS AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS OR EXTRACTS FROM OR REGARDING OUR REPORTS OR ANALYSES, INCLUDING THE COMPANY NAME, IS RESERVED PENDING OUR WRITTEN APPROVAL.

Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

Split Spoon and Core 2"O.D. and

LOG OF BORING

DATE STARTED 5/12/64 SAMPLER: TYPE Barrel DIA. NXM WATER ELEV. IMMEDIATE 505.3 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/13/64 CASING: LENGTH _____ DIA. 3.375"I.D.Hollo AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-17 STATION AND OFFSET 143+93, 14'L., NB BL SURFACE ELEV. 520.3 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
	34													
	36	14	4-8-10	17"	Brown and gray silt and clay, some sand, little gravel with limestone fragments, moist - stiff	15	8	13	26	38	31	15	26	A-6a
	38													
480.3	40													
	42	15	3-4-5	18"	Gray clay, trace of sand, varved with fine sand lenses, very moist - soft	0	0	1	26	73	42	22	32	A-7-6
	44													
475.3														
	46	16	3-3-4	18"	Gray silty clay, little sand, varved with fine sand lenses, very moist - medium stiff	0	2	10	34	54	37	17	34	A-6b
	48													
	50	17	5-7-9	17"	Gray silty clay, varved, moist - stiff	0	0	0	34	66	38	16	26	A-6b
	52													
	54													
465.3														
	56	18	3-4-8	17"	Gray clay, varved with silt seams, very moist - soft	0	0	0	30	70	43	23	34	A-7-6
	58													
460.3	60													
	62	19	3-4-5	18"	Gray silty clay, trace of sand, varved with fine sand lenses, very moist - medium stiff	0	0	1	65	34	40	19	31	A-6b
	64													
455.3														
454.3	66	20	3-4	12"	Gray clay, trace sand, varved with fine sand lenses, very moist-medium stiff	0	0	2	28	70	41	21	36	A-7-6
		21	4-3	6"	Gray silt and clay, some sand, some gravel, with broken limestone, moist-stiff	27	19	11	16	27	28	12	18	A-6a

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—16-61

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

Split Spoon and Core 2"O.D. and

LOG OF BORING

DATE STARTED 5/12/64 SAMPLER: TYPE Barrel DIA. NXM WATER ELEV. IMMEDIATE 505.3 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/13/64 CASING: LENGTH _____ DIA 3.375"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0135

BORING No. B-6-17 STATION AND OFFSET 143+93, 14' L., NB BL SURFACE ELEV. 520.3

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
	68													
450.3	70													
	72	22	9-9-12	17"	Gray silty clay, trace sand, moist - very stiff	0	3	2	39	56	39	19	22	A-6b
	74													
445.3					Gray weathered shale moist-hard	Visual classification-No tests performed								
	76	23	79	6"	Gray shale calcareous, moderately tough (1/2 to 3" pieces, averaging 1½") with gray crystalline, fossilliferous limestone, one 4" piece at the bottom of the run,									
	78													
439.8	80	24	NXM	58%	93% shale and 7% limestone									
	82													
	84				Boring completed									
	86													
	88													
	90													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 630—10

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

Split Spoon & Core 2"O.D. and

LOG OF BORING

DATE STARTED 5/13/64 SAMPLER: TYPE Barrel DIA. NXM WATER ELEV. IMMEDIATE 470.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/14/64 CASING: LENGTH ____ DIA. 3.375"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.4 Bridge No. HAM-71-0135

BORING No. B-6-18 STATION AND OFFSET 144+65, 54' Rt., BL SURFACE ELEV. 520.0

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
520.0	0													
	2	1	2-2-4	15"	Cinders, gravel and sand (fill), moist - loose	Visual classification - No tests performed								Fill
517.5	4	2	5-4-2	7"	Brown sandy clay and brick (fill), moist - loose	Visual classification - No tests performed								Fill
515.0	6	3	1-2-2	12"	Brown sandy clay and cinders (fill), moist - loose to very loose	Visual classification - No tests performed								Fill
	8	4	2-1-2	10"	do do	Visual classification - No tests performed								Fill
510.0	10	5	2-2-3	16"	Gray and brown silt and clay, trace of sand, little gravel moist - medium stiff	12	4	5	42	37	33	15	26	A-6a
507.5	12	6	2-4-4	16"	Gray and brown silty clay, little sand, little gravel , moist - medium stiff	20	8	9	27	36	34	18	17	A-6b
505.0	14	7	3-5-4	17"	Gray and brown silt and clay and gravel, little sand, , moist - medium stiff	40	6	10	21	23	29	14	18	A-6a
502.5	16	8	4-6-10	17"	Brown and gray clay, varved, trace of sand, trace of gravel, moist - stiff	3	2	1	22	72	44	22	28	A-7-6
	18	9	4-7-10	17"	Brown clay, varved, moist - stiff	0	0	0	26	74	45	22	26	A-7-6
497.5	20	10	4-6-7	17"	Gray and brown silty clay, varved, trace of sand, moist - stiff	0	0	2	43	55	36	17	26	A-6b
	22	11	4-4-5	17"	Gray silty clay, varved, little sand, moist - medium stiff	0	14	2	28	56	40	20	29	A-6b
492.5	24	12	3-4-5	18"	Gray clay, varved, trace of sand, moist - medium stiff	0	0	1	25	74	46	25	28	A-7-6
	26	13	3-3-4	18"	Gray clay, varved, moist - medium stiff	0	0	0	23	77	44	24	33	A-7-6
	28													
	30													
	32													
	34													

IT'S MUTUAL PROTECTION TO CLIENT, THE PUBLIC, AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS OR EXTRACTS FROM OR REGARDING OUR REPORTS OR DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

Form No. 530—16-5

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

Split Spoon 2"O.D. and Core and

LOG OF BORING

DATE STARTED 5/13/64 SAMPLER: TYPE Barrel DIA. NXM WATER ELEV. IMMEDIATE 470.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/14/64 CASING: LENGTH _____ DIA. 3.375"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.92 Bridge No. HAM-71-0135

BORING No. B-6-18 STATION AND OFFSET 144+65, 54' Rt., BL SURFACE ELEV. 520.0

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
	34													
485.0	36	14	3-4-5	18"	Gray silty clay, varved, moist - stiff	0	0	0	30	70	40	21	24	A-6b
	38													
480.0	40													
	42	15	3-4-5	18"	Gray sandy silt, varved, moist - medium stiff	0	0	2	43	55	26	8	27	A-4a
	44													
475.0	46	16	4-7-9	18"	Gray silty clay, varved, trace of sand, moist - stiff	0	0	1	25	74	40	19	24	A-6b
	48													
470.0	50													
468.0	52	17	11-15-19	15"	Gray clayey sand and gravel, moist-dense	47	10	9	15	19	27	13	20	A-2-6
	54	18	33-23-22	16"	Gray silty clay, trace of sand, some gravel, moist - very stiff	22	3	4	23	48	36	18	18	A-6b
465.0	56	19	20-22-24	18"	Gray clay, trace of sand, trace gravel with limestone fragments, moist - hard	2	2	1	24	61	41	21	15	A-7-6
	58													
	60				Gray weathered shale and broken limestone, moist - hard	Visual classification-No tests performed								A-7-6
459.0	62	20	37-121	10"										
	64	21	NXM	85%	Gray shale, calcareous, jointed in the bottom 2-ft.of the run, tough to moderately tough (¼" to 3½" pieces, averaging 2") with weathered zones approximately midway and at the bottom of the run									
454.0	66													
	68				Boring completed									

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 630—15

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

Split Spoon and Core 2"O.D. and

LOG OF BORING

DATE STARTED 5/14/64 SAMPLER: TYPE Barrel DIA. NXM WATER ELEV. IMMEDIATE 509.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/16/64 CASING: LENGTH _____ DIA 3.375"I.D.Hollow 8tam Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-19 STATION AND OFFSET 145+10, 32'L. NB BL SURFACE ELEV. 521.5 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
521.5	0													
	2	1	5-4-1	14"	Cinders, clay, sand and gravel(fill), moist - loose	Visual classification-No tests performed								Fill
	4	2	3-3-5	15"	do do	Visual classification-No tests performed								Fill
516.5	6	3	3-4-5	15"	Clay, brick, cinders and sand,(fill), moist - loose	Visual classification-No tests performed								Fill
	8	4	2-2-3	17"	do do	Visual classification-No tests performed								Fill
511.5	10													
	12	5	1-1-1	16"	Clay and wood (fill), wet - very loose	Visual classification-No tests performed								Fill
509.0	14	6	1-1-1	14"	Gray sandy clay with brick and organic matter, (fill), wet - soft	Visual classification-No tests performed								Fill
	16	7	1-1-8	12"	do do	Visual classification-No tests performed								Fill
504.0	18													
501.5	20	8	5-6-7	18"	Brown and gray clay, trace sand, trace gravel, moist - stiff	1	4	1	28	66	45	23	25	A-7-6
	22	9	4-6-8	18"	Brown and gray silty clay, trace sand, moist - stiff	0	5	2	38	55	37	17	23	A-6b
	24	10	4-6-8	17"	Brown and gray silty clay, trace sand, moist - stiff	0	4	2	41	53	37	18	29	A-6b
496.5	26	11	4-6-7	17"	Brown and gray silt and clay, trace sand, moist - stiff	0	4	4	42	50	35	14	21	A-6a
494.0	28	12	4-6-9	17"	Brown and gray clay, trace sand, trace gravel, moist - stiff	2	2	2	42	52	63	43	25	A-7-6
491.5	30													
	32	13	3-3-3	18"	Gray silty clay, trace sand with fine sand lenses, very moist - medium stiff	0	2	4	36	58	38	16	27	A-6b
	34													

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL.

Form No. 530—1650

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

Split Spoon and Core 2"O.D. and

LOG OF BORING

DATE STARTED 5/14/64 SAMPLER: TYPE Barrel DIA. NXM WATER ELEV. IMMEDIATE 509.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/16/64 CASING: LENGTH ____ DIA. 3.375"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-19 STATION AND OFFSET 145+10, 32' L. NB BL SURFACE ELEV. 521.5 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
	34													
486.5														
	36	14	3-3-5	14"	Gray clay with fine sand lenses, moist-medium stiff	0	0	0	18	82	46	24	32	A-7-6
483.5	38													
		15	12-19-28	12"	Gray sandy silt, some gravel with broken limestone and shale fragments,moist-hard	29	19	8	22	22	27	10	14	A-4a
481.5	40													
		16	22-23-48	15"	Gray silt and clay,little sand,trace gravel with limestone and weathered shale fragments,moist - hard	2	10	5	31	52	36	15	18	A-6a
	42													
	44													
476.5														
	46				Gray and brown shale, calcareous, jointed and broken,moderately tough(1/2" to 4" pieces,averaging 2") with weathered zones throughout run and one 1/2"gray fine grained fossiliferous limestone layer at elevation 475.5									
		17	NXM	73%										
	48													
471.5	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68				Boring completed									

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS AND DRAWINGS ARE THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 630—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

Split Spoon and Core 2"O.D. and

LOG OF BORING

DATE STARTED 5/14/64 SAMPLER: TYPE Barrel DIA. NXM WATER ELEV. IMMEDIATE 497.8 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/15/64 CASING: LENGTH DIA 3.375"I.D.Hollow Stem Augers AFTER HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-20 STATION AND OFFSET 146+02, 29' L., NB BL SURFACE ELEV. 522.8 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
522.8	0													
520.3	2	1	3-10-5	15"	Brown fine to coarse sand and gravel with brick fragments (fill), moist - medium dense	Visual classification-No tests performed								Fill
517.8	4	2	3-3-2	12"	Gray and brown silty clay, some sand, little gravel, (fill), moist - medium stiff	18	11	11	24	36	33	17	20	A-6b
515.3	6	3	2-3-2	15"	Gray and brown silty clay with sand and gravel (fill), moist-medium stiff	Visual classification-No tests performed								Fill
512.8	8	4	2-3-3	16"	Gray and brown silty clay, trace sand, trace gravel, moist-medium stiff	2	5	5	44	44	36	16	24	A-6b
510.3	10	5	6-10-14	18"	Brown and gray clay, trace sand, moist-very stiff	0	4	3	35	58	43	19	22	A-7-6
507.8	12	6	9-7-9	16"	Brown and gray silty clay, little sand, trace gravel with limestone fragments, moist - very stiff	4	11	6	29	50	36	16	16	A-6b
505.3	14	7	8-11-13	17"	Brown and gray silt and clay, little sand, little gravel with limestone fragments, moist - hard	15	8	5	34	38	37	15	20	A-6a
	16	8	21-11-14	18"	Gray and brown silty clay, trace sand, trace gravel with limestone fragments, moist - hard	3	5	4	33	55	37	17	18	A-6b
	18	9	7-8-13	15½"	Gray and brown silty clay, little sand, little gravel with limestone fragments, moist - hard	11	9	4	32	44	33	16	18	A-6b
	20	10	5-11-18	16"	Gray silty clay, trace sand, trace gravel with limestone fragments, moist-hard	2	5	2	35	56	39	19	20	A-6b
	22	11	39-46-63	17"	Gray silty clay, little sand, little gravel, with limestone fragments, moist-hard	15	9	4	37	35	33	16	16	A-6b
496.3	24													
	26													
	28													
	30	12	NXM	90%	Gray shale calcareous, tough, (½" to 3" pieces averaging 1½") and gray limestone crystalline, fossiliferous, jointed									
	32													
	34													

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL.

Form No. 530—1

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

Split Spoon and Core 2"O.D. and

LOG OF BORING

DATE STARTED 5/14/64 SAMPLER: TYPE Barrel DIA. NXM WATER ELEV. IMMEDIATE 497.8 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/15/64 CASING: LENGTH ____ DIA. 3.375"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-20 STATION AND OFFSET 146+02, 29' L. NB BL SURFACE ELEV. 522.8 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
	34				Gray shale calcareous, tough (¼" to 3" pieces averaging 1")and gray limestone crystalline, fossiliferous, jointed(¼" to 2"pieces,averaging 1½")90% shale,									
486.3	36	13	NXM	65%	10% limestone									
	38													
	40				Boring completed									
	42													
	44													
	46													
	48													
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

"AS A SPECIAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS AND DRAWINGS AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

Split Spoon and Core 2"O.D. and

LOG OF BORING

DATE STARTED 5/18/64 SAMPLER: TYPE Barrel DIA. NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/18/64 CASING: LENGTH ____ DIA. 3.375"I.D.,Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-21 STATION AND OFFSET 145+69, 49' Rt., NB BL SURFACE ELEV. 526.7 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
526.7	0													
524.2	2	1	2-2-3	9"	Cinders and clay (fill), moist-loose	Visual classification-No tests performed								Fill
521.7	4	2	2-2-2	13"	Brown silt, trace sand, trace gravel, moist - medium stiff	8	0	5	67	20	27	7	24	A-4b
	6	3	2-4-6	17"	Brown clay, trace sand, moist-very stiff	0	3	1	34	62	45	24	20	A-7-6
517.7	8	4	5-17-10	17½"	Brown and gray clay, trace sand, moist-very stiff	0	2	2	24	72	45	23	26	A-7-6
515.7	10	S-1			Brown and gray silty clay, trace sand, trace gravel, moist - stiff	6	2	2	34	56	39	20	22	A-6b
	12	5	7-6-5	12"	Brown and gray silt and clay, some sand, little gravel with limestone, moist-medium stiff	16	18	15	23	28	31	14	16	A-6a
	14	6	12-15-24	11"	Brown silt and clay, little sand, some gravel with limestone fragments, moist-very stiff	35	12	5	21	27	32	15	18	A-6a
	16	7	13-22-13	16"	Brown and gray silt and clay, little sand, little gravel with limestone fragments, moist - hard	12	12	7	30	39	33	15	17	A-6a
509.2	18	8	8-11-13	17"	Brown and gray silty clay, little sand, with limestone fragments, moist - hard	0	12	6	38	44	40	20	16	A-6b
	20	9	8-9-10	17½"	Brown and gray silty clay, little sand, trace gravel with limestone fragments, moist - hard	10	10	4	30	46	35	17	18	A-6b
	24	10	10-10-12	18"	Gray and brown silty clay, little sand, moist - hard	0	8	4	34	54	39	21	18	A-6b
	26	11	8-9-13	17"	Gray and brown silty clay, trace sand, with limestone fragments, moist -hard	0	5	3	32	60	38	20	19	A-6b
	28	12	7-14-19	10"	Gray and brown silty clay, little sand, little gravel with limestone fragments, moist - hard	16	8	3	27	46	37	19	18	A-6b
496.7	30													
495.7		13	7-8	12"	Gray and brown clay, little sand with limestone fragments, moist-hard	0	12	4	37	57	41	21	19	A-7-6
493.2	32	14	13	6"	Gray silty clay, little sand, moist - hard	0	12	3	35	50	37	18	15	A-6b
	34				Gray weathered shale, moist - hard	Visual classification-No tests performed								

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

Split Spoon and Core 2"O.D and

LOG OF BORING

DATE STARTED 5/18/64 SAMPLER: TYPE Barrel DIA. NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/18/64 CASING: LENGTH _____ DIA. 3.375"I.D. Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0135

BORING No. B-6-21 STATION AND OFFSET 145+69, 49' Rt., NB BL SURFACE ELEV. 526.7

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
	34													
	36	15	NXM	57%	Gray shale calcareous, medium tough (2" to 3"pieces averaging 1½") and gray limestone, crystalline, fossiliferous, (one ½"piece in the top 6" of the run) 99% shale, 1% limestone									
487.7	38													
	40				Boring completed									
	42													
	44													
	46													
	48													
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 830

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

Split Spoon and Core 2" O.D. and

LOG OF BORING

DATE STARTED 5/18/64 SAMPLER: TYPE Barrel DIA. NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/18/64 CASING: LENGTH ____ DIA. 3.375" I.D. Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-22 STATION AND OFFSET 146+80, 38' L. NB BL SURFACE ELEV. 521.5 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
521.5	0													
520.5		1	2-5	10"	Brown sandy clay with gravel(fill), moist - medium stiff	Visual classification-No tests performed								
	2	2	15	6"	Gray and brown clay, trace of sand, moist - hard	0	0	1	39	55	58	38	14	A-7-6
519.0		3	69	5"	Gray weathered shale, moist - hard	Visual classification-No tests performed								
518.0	4				Gray shale calcareous, medium tough to tough (½" to 3½" pieces averaging 2") and gray limestone crystalline, fossiliferous, (two pieces 3" and 5") 77% shale, 23%									
	6													
	8	4	NXM	72%	limestone									
	10				Gray shale calcareous, tough with soft shale layers between elevation 518.5 to 515.5(½" to 2" pieces averaging 1½") and gray limestone crystalline, fossiliferous,									
	12	5	NXM	73%	jointed in the bottom 4" of the run (1" to 2-3/4" pieces averaging 2")									
508.0	14				83% shale, 17% limestone									
	16				Boring completed									
	18													
	20													
	22													
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 630—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

Split Spoon and Core 2"O.D. and NXM

LOG OF BORING

DATE STARTED 5/19/64 SAMPLER: TYPE Barrel DIA. NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/19/64 CASING: LENGTH _____ DIA. 3.375"I.D. AFTER _____ HOURS _____ PROJECT: Northeast Expressway

Hollow Stem Augers Backfilled HAM-71-0.93

BORING No. B-6-24 STATION AND OFFSET 148+14, 66' L., NB BL SURFACE ELEV. 544.7 Bridge No. 71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
544.7	0													
	2	1	4-6-7	9"	Brick, concrete, limestone and sand, (fill), moist - medium dense	Visual classification-No tests performed								Fill
	4	2	4-6-6	11"	do do	Visual classification-No tests performed								Fill
539.7	6	3	6-7-8	16"	Brown and gray clay, trace sand, with limestone fragments, moist - very stiff	0	6	4	33	57	41	22	18	A-7-6
537.2	8	4	5-7-15	17"	Brown and gray clay with sand and limestone fragments, moist-very stiff	Visual classification-No tests performed								
534.7	10													
533.2	12	5	6-11-15	17½"	Brown and gray clay, trace sand, with limestone fragments, moist - hard	0	4	2	34	60	44	24	18	A-7-6
	14	6	NXM	57%	Brown weathered shale(¼"to 2" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed (one 3½" piece) 92% shale,8% limestone									
	16													
	18	7	NXM	83%	Brown and gray shale, moderately tough with weathered zones throughout run (¼" to 4" pieces averaging 2") and gray limestone crystalline, fossiliferous, jointed (½" and 3" pieces) 90% shale, 10% limestone									
	20													
	22	8	NXM	89%	Gray and brown shale, calcareous, moderately tough to tough with weathered zones throughout run (1" to 4" pieces, averaging 2½"), 100% shale									
521.5	24													
	26				Boring completed									
	28													
	30													
	32													
	34													

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Form No. 630—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

Split Spoon and Core 2"O.D. and

LOG OF BORING

DATE STARTED 5/20/64 SAMPLER: TYPE Barrel DIA. NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/20/64 CASING: LENGTH ____ DIA. 3.375" I.D. Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING NO. B-6-25 STATION AND OFFSET 148+18, 48' Rt., NB BL SURFACE ELEV. 548.0 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% ARG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
548.0	0				0.5' Concrete									
547.5														
546.0	2	1	2-2-2	15"	Brown and gray sandy clay with gravel (fill), moist - medium stiff	Visual classification - No tests performed								
544.5		2	11-22-28	18"	Gray and brown silty clay, little sand, moist - hard	0	8	3	43	46	38	20	10	A-6b
543.0	4				Brown and gray weathered shale, dry-hard	Visual classification-No tests performed								
	6				Sample 3 - Gray shale, calcareous, tough to moderately tough (½" to 3" pieces averaging 1½") and gray limestone-crystalline, fossiliferous (1½" to 7½" pieces averaging 2") 80% shale, 20% limestone									
	8	3	NXM	78%										
	10													
	12				Sample 4 - Gray shale-calcareous, tough (1" to 4" pieces, averaging 2") and gray limestone-crystalline, fossiliferous, jointed (one 2" piece at top of run) 97% shale, 3% limestone									
	14	4	NXM	82%										
	16				Sample 5 - Gray shale-calcareous, tough with soft seams (½" to 2½" pieces, averaging 1½") and gray limestone crystalline, fossiliferous (1" to 4½" pieces, averaging 2½") 78% shale, 22% limestone									
	18	5	NXM	48%										
	20	6	NXM	35%	Sample 6 - Gray shale calcareous, tough jointed at bottom (½" to 4", averaging 2") 100% shale									
	22	7	NXM	83%										
	24				Sample 7 - Gray shale, calcareous, tough to moderately tough, broken and jointed in bottom half (½" to 4½" averaging 1½") and gray limestone-crystalline, fossiliferous jointed (two pieces 1½" and 2") 94% shale, 6% limestone									
	26													
520.0	28	8	NXM	45%	Sample 8 - Gray shale, calcareous, tough (½" to 3½" pieces averaging 2") and gray limestone, fine grained, jointed (one 2" piece at top of run) 94% shale, 6% limestone									
	30													
	32				Boring completed									
	34													

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Form No. 630

THE H. C. NUTTING COMPANY

4130 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 5/22/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 543.3 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/22/64 CASING: LENGTH ____ DIA. 3.375"I.D. Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING NO. B-6-26 STATION AND OFFSET 149+19, 33' L., BL SURFACE ELEV. 558.3 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SNYL CLASS
558.3	0													
555.8	2	1	6-6-7	10"	Brick, cinders and clay (fill), dry - medium dense	Visual classification-No tests performed								Fill
	4	2	1-1-1	12"	Brown and gray sandy clay with cinders and brick (fill), moist - soft	Visual classification-No tests performed								Fill
	6	3	1-1-3	14"	do do	Visual classification-No tests performed								Fill
550.3	8	4	1	5"	do do	Visual classification-No tests performed								Fill
548.3	10	5	9-13	11"	Brown and gray silty clay, trace sand, moist - hard	0	6	3	35	56	40	22	21	A-6b
	12	6	11-18-23	18"	Brown and gray clay, trace sand with shale and limestone fragments - hard	0	5	2	37	56	42	22	16	A-7-6
543.3	14													
540.4	16	7	26-27-49	16"	Gray and brown silty clay, trace sand with shale and limestone fragments, moist - hard	0	8	2	40	50	35	16	18	A-6b
	18													
	20				Sample 8 - Gray shale calcareous, moderately tough, borken in the bottom 4" of the run (½" to 4"pieces averaging 1½") and gray limestone crystalline, fossiliferous (1½" and 5½" pieces) 81% shale, 19% limestone									
	22	8	NXM	72%										
	24	9	NXM	86%	Sample 9 - Gray shale, calcareous, moderately tough with soft weathered seams throughout run (½" to 1½" pieces averaging 1") and gray limestone, crystalline, fossiliferous, broken and jointed in the top 6" of the run (½" to 4½" pieces averaging 2") 70% shale, 30% limestone									
	26	10	NXM	89%										
	28													
528.8		11	NXM	67%										
	30													
	32													
	34													

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Form No. 530

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 5/22/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 543.3 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/22/64 CASING: LENGTH _____ DIA 3.375"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No B-6-26 STATION AND OFFSET 149+19, 33' L., BL SURFACE ELEV. 558.3 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
					Sample 10 - Gray and brown shale calcareous, moderately tough to tough with weathered zones in the top half of the run (½" to 2"pieces averaging 1") and gray limestone crystalline, fossiliferous, jointed (½" to 2"pieces averaging 1½") 75% shale, 25% limestone									
					Sample 11 - Gray shale calcareous, tough (½" to 1½" pieces averaging 1") and gray limestone crystalline, fossiliferous, jointed (½" to 3½" averaging 1½") 78% shale, 22% limestone									
					Boring completed									

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Form No. 530—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

Split Spoon and Core 2"O.D. and

LOG OF BORING

DATE STARTED 5/21/64 SAMPLER: TYPE Barrel DIA. NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 5/21/64 CASING: LENGTH ____ DIA. 3.375"I.D. Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0135

BORING No. B-6-27 STATION AND OFFSET 149+23.30'Rt., NB BL SURFACE ELEV. 560.8

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
560.8	0													
558.3	2	1	1-1-3	14"	Brown and gray silty clay with cinders (fill), moist - medium stiff	Visual classification-No tests performed								
555.8	4	2	7-7-7	17"	Brown silty clay, little sand with limestone fragments, moist - stiff	0	10	4	38	48	40	21	17	A-6b
	6	3	13-16-19	18"	Brown and gray clay, trace sand with limestone fragments, moist - hard	0	6	2	32	60	44	24	16	A-7-6
	8	4	10-15-22	18"	do do	Visual classification-No tests performed								A-7-6
550.3	10	5	64	6"	Gray and brown clay, trace of sand with limestone fragments, moist - hard	0	2	1	35	62	47	26	11	A-7-6
	12	6	NXM	77%	Sample 6 - Gray shale calcareous, tough to moderately tough (1" to 4½" pieces averaging 2½") and gray limestone, crystalline, fossiliferous (1" to 3½" pieces, averaging 2") 85% shale, 15% limestone									
	14													
	16	7	NXM	79%	Sample 7 -Gray shale calcareous, tough, (1" to 6" pieces, averaging 2½") and gray limestone, crystalline, fossiliferous (one 2" piece) 95% shale, 5% limestone									
	18													
	20	8	NXM	81%	Sample 8 -Gray shale calcareous, moderately tough (¼" to 2" pieces, averaging 1") and gray limestone crystalline, fossiliferous (two pieces 2" and 3½") 80% shale, 20% limestone									
	22													
	24	9	NXM	92%	Sample 9-Gray limestone crystalline, fossiliferous (two pieces 2½" and 3")									
	26				Gray shale calcareous, tough to moderately tough(½" to 3" pieces averaging 2") weathered zone at elevation 538)									
	28	10	NXM	79%										
531.5					Sample 10-Gray shale calcareous, tough with weathered zones between limestone layers(½"to 2"pieces averaging 1½") and gray limestone crystalline, fossiliferous (½" to 2½" pieces, averaging 1½") 85% shale, 15% limestone									
	30													
	32													
	34				Boring completed									

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Form No. 530—16

THE H. C. NUTTING COMPANY

4130 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/3/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 554.3 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/3/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS ____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-28 STATION AND OFFSET 149+96, 44' Rt. BL SURFACE ELEV. 564.3 Bridge No. HAM-71-0135

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
564.3	0													
563.5		1	3	5"	0.3' Concrete	Visual classification-No tests performed								
561.8	2	2	8-11	10"	Brown clay, trace sand, moist-very stiff	0	2	1	40	57	41	20	20	A-7-6
559.3	4	3	12-22-28	17"	Brown weathered shale with limestone fragments, moist - hard	Visual classification-No tests performed								
	6	4	13-18-25	18"	Brown and gray weathered shale, moist-hard	Visual classification-No tests performed								
	8													
		5	64-38	9"	do do	Visual classification-No tests performed								
554.3	10													
	12	6	NXM	52%	Sample 6 - Gray shale with brown weathered zones top and bottom of run calcareous, moderately tough to soft (1" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous, (1" to 3" pieces averaging 2") 75% shale, 25% limestone									
	14													
	16	7	NXM	54%	Sample 7 - Gray shale, calcareous, moderately tough(½" to 2" pieces, averaging 1") 100% shale									
	18													
	20	8	NXM	65%	Sample 8 - Gray shale, calcareous, moderately tough to tough (½" to 3" pieces averaging 2") and gray limestone crystalline, fossiliferous, jointed, (½" to 2" pieces averaging 1") 92% shale, 8% limestone									
	22													
	24													
539.3														
	26				Boring completed									
	28													
	30													
	32													
	34													

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Form No. 630—1

THE H. C. NUTTING COMPANY

4130 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/27/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 524.3 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/27/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-7-1 STATION AND OFFSET 150+86.191'L. BL SURFACE ELEV. 541.8 Bridge No. HAM-71-0157

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
541.8	0				0.5'Concrete									
539.3	2	1	3-2-2	8"	Brown and gray silty clay and cinders (fill), moist - loose	Visual classification-No tests performed								Fill
536.8	4	2	3-3-3	12"	Brown and gray silty clay with rock fragments(fill), moist - medium stiff	Visual classification-No tests performed								Fill
	6	3	2-2-3	15"	Brown and gray silty clay with organic matter and cinders (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	8	4	3-4-5	16"	do do	Visual classification-No tests performed								Fill
531.8	10													
	12	5	5-4-6	8"	Brown and gray silty clay with brick, (fill), moist - stiff	Visual classification-No tests performed								Fill
	14													
526.8	16	6	6-12-40	9"	Brick and limestone fragments with clay (fill), moist - very dense	Visual classification-No tests performed								Fill
	18	7	95	5"	do do	Visual classification-No tests performed								Fill
521.8	20													
	22	8	8-12-5	10"	Brick and concrete with clay (fill), wet - medium dense	Visual classification-No tests performed								Fill
519.3	24	9	2-2-3	11"	Gray silty clay with brick and organic matter (fill), wet - soft	Visual classification-No tests performed								Fill
516.8	26	10	9-12-9	10"	Brick and concrete with brown and gray weathered shale, wet - stiff (fill)	Visual classification-No tests performed								Fill
514.8	28	11	NXM	73%	Gray shale, calcareous,moderately tough to tough (1" to 2" pieces averaging 1½") and gray limestone, crystalline, fossiliferous (1½" to 5½" pieces, averaging 4") 77% shale, 23%limestone									
	30													
	32													
	34													

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Form No. 530—15

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/27/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 524.3 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/27/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-7-1 STATION AND OFFSET 150+86,191' L. BL. SURFACE ELEV. 541.8 Bridge No. HAM-71-0157

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
504.8	34 36	12	NXM	72%	Gray shale, calcareous, tough(1/2" to 3" pieces averaging 2") and gray limestone, crystalline,fossiliferous, (1/2"to 4"pieces averaging 2") 87% shale, 13% limestone									
	38 40 42 44 46 48				Boring completed									

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 630—1

THE H. C. NUTTING COMPANY

4130 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/22/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None Backfilled CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/23/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS ____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-7-2 STATION AND OFFSET 150+75, 124'L, BL SURFACE ELEV. 542.0 Bridge No. HAM-71-0157

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS.
542.0	0				Concrete (0.4')									
541.6					Brown and gray silty clay with gravel and cinders (fill), moist - soft	Visual classification-No tests performed								Fill
539.5	2	1	2-9-4	3"										
	4	2	4-9-9	14"	Brown and gray clay, trace sand, trace gravel with shale and limestone fragments, moist - stiff	8	6	3	33	50	43	19	25	A-7-6
	6	3	8-16-25	13"	Brown and gray clay, trace sand, trace gravel with limestone fragments, moist - very stiff	1	2	2	38	57	42	18	13	A-7-6
534.5	8	4	19-75	8"	Brown and gray silty clay, trace sand, little gravel with limestone fragments moist - very stiff	11	5	4	34	46	40	16	16	A-6b
532.0	10													
	12	5	16-41-77	14"	Brown and gray silt and clay, little sand, trace gravel with limestone fragments, moist - very stiff	3	9	4	32	52	39	15	14	A-6a
	14	6	76-45-70	17"	Brown and gray silt and clay, trace sand, trace gravel with limestone fragments, moist - hard	7	3	2	36	52	38	14	12	A-6a
527.0	16	7	23-65-80	16"	Brown and gray weathered shale, hard	Visual classification-No tests performed								
	18	8	51-70	9"	do do	Visual classification-No tests performed								
522.0	20													
	22	9	NXM	67%	Gray and brown shale, calcareous, moderately tough (1" to 4½" pieces averaging 2") and gray limestone, crystalline, fossiliferous (two pieces ½" and 4½") 92% shale, 8% limestone									
	24													
	26	10	NXM	71%	Gray shale, calcareous, moderately tough with brown and gray weathered zones in the bottom half of the run (1" to 2½" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed in the bottom 6" of the run (1" to 4½" pieces averaging 3") 79% shale, 21% limestone									
	28													
512.0	30													
	32				Boring completed									
	34													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. B[illegible]16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/9/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/9/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER 24 HOURS 514.2 PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-7-3 STATION AND OFFSET 22' S. of S. Curb E. Court Street 78' W. of W. Curb Gilbert Avenue SURFACE ELEV. 537.2 Bridge No. HAM-71-0157

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTC CLASS
537.2	0													
	2	1	18-17-25	10"	Cinders and brick(fill), moist - dense	Visual classification-No tests performed								Fill
	4	2	17-21-7	9"	do do	Visual classification-No tests performed								Fill
	6	3	18-9-12	10"	do do	Visual classification-No tests performed								Fill
	8	4	10-11-9	16"	do do	Visual classification-No tests performed								Fill
	10													
525.2	12	5	6-7-12	15"	do do	Visual classification-No tests performed								Fill
	14	6	9-8-10	18"	Brown silty clay with gravel and brick fragments (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	16	7	6-7-10	10"	do do	Visual classification-No tests performed								Fill
	18	8	10-14-7	9"	do do	Visual classification-No tests performed								Fill
517.2	20													
	22	9	5-6-9	10"	Dark gray silty clay with brick fragments (fill), moist - stiff	Visual classification-No tests performed								Fill
	24	10	3-4-7	8"	do do	Visual classification-No tests performed								Fill
512.2	26	11	4-9-15	14"	Brown and gray clay, trace sand, moist - stiff	0	4	3	38	55	43	18	20	A-7-6
	28	12	15-15-20	17"	Brown and gray clay, trace sand with shale fragments, moist - very stiff	0	1	1	37	61	44	18	16	A-7-6
507.2	30													
	32	13	17-19-27	17"	Brown and gray weathered shale, moist - very stiff to hard	Visual classification-No tests performed								
	34	14	100	2"	do do	Visual classification-No tests performed								

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/9/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/9/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER 24 HOURS 514.2 PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0157

BORING No. B-7-3 STATION AND OFFSET 22' S. of S. Curb E. Court Street 78' W. of W. Curb Gilbert Avenue SURFACE ELEV. 537.2

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
503.2	34													
	36	15	NXM	60%	Brown and gray weathered shale, moderately tough with soft seams (¼" to 3½" pieces averaging 2") and gray limestone, crystalline, fossiliferous (three pieces 1" - 1½" and 2") 92% shale, 8% limestone									
	38													
498.2	40				Boring completed									
	42													
	44													
	46													
	48													
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 630—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/17/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE Water used in drilling from elevation None

DATE COMPLETED 7/17/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS _____ Backfilled

CLIENT: City of Cincinnati, Ohio

PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0173

BORING No. B-8-1 STATION AND OFFSET 158+68, 60'L. BL SURFACE ELEV. 546.9

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
546.9	0													
544.9	2				Asphaltic concrete and granite block pavement									
	4	1	3-4-4	6"	Brown clay, trace sand with limestone and shale fragments(fill),moist-medium stiff	0	2	3	39	56	43	20	16	A-7-6
541.9		S-1Top			Brown clay, some sand, trace gravel with limestone and shale fragments(fill), moist - stiff	8	13	11	25	43	42	18	18	A-7-6
	6	S-1 Bottom			Brown and gray silty clay, trace sand with limestone and shale fragments(fill) moist - stiff	0	2	2	37	59	40	16	20	A-6b
539.4		2	3-3-3	5"	Brown and gray silty clay, trace sand, trace gravel(fill),moist-medium stiff	5	4	4	42	45	39	19	24	A-6b
	8	3	2-2-3	12"	Brownish green and gray clay,trace sand, trace gravel (fill), moist - medium stiff	2	1	3	41	53	45	25	27	A-7-6
536.9	10													
534.9		4	12-8-4	11"	Brick, cinders and organic matter, (fill), moist - medium stiff	Visual classification-No tests performed Fill								
	12	5	4-4-5	10"	Brown and gray clay, trace sand moist - stiff	0	1	2	27	70	59	36	27	A-7-6
	14	S-2			Brown clay, trace sand moist-stiff	0	4	2	38	56	46	22	20	A-7-6
530.9	16													
529.4		6	6-11-18	16"	Brown silt and clay,trace sand, trace gravel with limestone fragments, moist - very stiff	3	3	2	32	60	37	15	20	A-6a
	18	7	9-16-16	15"	Brown clay,trace sand with limestone fragments, moist - hard	Visual classification-No tests performed A-7-6								
	20													
		8	10-17-23	15"	Brown clay, trace sand with limestone fragments, moist - hard	0	2	1	33	64	45	23	15	A-7-6
524.4	22													
522.9		9	28-90	14"	Brown and gray shale and limestone, moist - hard	Visual classification-No tests performed								
	24													
	26	10	NXM	60%	Gray shale,calcareous,slightly tough, broken (½" to 2" pieces averaging 1½") and gray limestone, crystalline, fossiliferous,jointed and oxide stained midway in the run (½" to 2"pieces averaging 1½")87% shale, 13% limestone									
	28													
517.9														
	30				Boring completed									
	32													
	34													

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Form No. 530—16-59

REVISED-vb
12/28/64

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/17/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/17/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-8-2 STATION AND OFFSET 159+73, 39' L. BL SURFACE ELEV. 547.7 Bridge No. HAM-71-0123

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% G.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
547.7	0				2.1' Blacktop and granite block pavement	Visual classification-No tests performed								
545.6	2													
	4	1	6-3-3	4"	Brown and gray silt and clay, some sand, some gravel (fill), moist - medium stiff	31	13	10	20	26	34	15	27	A-6a
542.7	6	2	2-5-5	5"	Brown and gray clay, little sand, trace gravel (fill), moist - medium stiff	7	9	6	29	49	42	20	27	A-7-6
	8	3	2-5-3	5"	Brown and gray clay, trace sand, trace gravel (fill), moist - medium stiff	4	6	2	34	54	41	18	19	A-7-6
537.7	10	4	4-5	5"	do do	Visual classification-No tests performed								A-7-6
	12	5	3-3-4	13"	Gray silty clay, trace sand, trace gravel with brick fragments and organic matter (fill), moist - medium stiff	2	4	2	51	41	36	16	24	A-6b
532.7	14	6	4-5-6	12"	Gray silty clay, trace sand, little gravel with brick fragments (fill), moist - medium stiff	13	4	2	37	44	40	19	26	A-6b
	16	7	4-16-36	16"	Brown and gray clay, little sand, trace gravel, moist - stiff	5	9	4	34	48	42	18	25	A-7-6
528.7	18	8	27-45-37	13"	Brown clay, trace sand, trace gravel, moist hard	1	5	2	40	52	41	19	18	A-7-6
528.2	20				0.5' Possible limestone layer									
	22	9	42-43-51	8"	Brown and gray clay, trace sand, some gravel with shale and limestone, moist - hard	20	4	0	28	48	44	20	16	A-7-6
525.2					Brown and gray silty clay, trace sand,									
524.2	24	10A	18-41	9"	trace gravel with shale and limestone	10	6	4	34	46	40	17	15	A-6b
		~~10B~~	65	3"	fragments, moist - hard	Visual classification-No tests performed								
522.7	26				Gray shale, moist - hard									
	28	11	NXM	40%	Gray shale, calcareous, moderately tough (¼" to 1½" pieces averaging 1") and gray limestone, crystalline, fossiliferous (two pieces 2" and 4") 90% shale, 10% limestone									
517.7	30													
	32				Boring completed									
	34													

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Form No. 530—10

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/16/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/16/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-8-3 STATION AND OFFSET 160+47, 51' Rt. BL SURFACE ELEV. 549.6 Bridge No. HAM-71-0173

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
549.6	0													
549.1					0.5' Concrete									
	2	1	2-3-3	6"	Brown sand and gravel with cinders, (fill), moist - medium dense	Visual classification-No tests performed								Fill
546.6		2-A	10	6"	Brown and gray clay, trace sand, little gravel, moist - stiff	12	2	1	28	57	44	19	14	A-7-6
	4	2-B	28-30	8"	Brown and gray weathered shale with limestone layers, slightly moist-hard to very hard	Visual classification -No tests performed								
	6	3	17-81	8"	do do	Visual classification-No tests performed								
541.1	8	4	27-90	10"	do do	Visual classification-No tests performed								
	10				Gray shale, calcareous, moderately tough to tough (½" to 3" pieces averaging 1½")									
	12	5	NXM	80%	and gray limestone, crystalline, fossiliferous, jointed (one 4" piece									
536.1					at the top of the run) 93% shale, 7% limestone									
	14													
					Boring completed									
	16													
	18													
	20													
	22													
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/14/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/15/64 CASING: LENGTH _____ DIA. 3.5" I.D. Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-8-4 STATION AND OFFSET 160+74, 59' L. BL SURFACE ELEV. 547.9 Bridge No. HAM-71-0173

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
547.9	0													
547.5					0.4' Concrete	No tests performed								
	2	1	2-1-2	7"	Brown silty clay with sand, gravel and cinders (fill), moist - medium stiff	Visual classification-No tests performed								Fill
545.4														
	4	2	4-4-8	7"	Brown silty clay with limestone fragments (fill), moist - medium stiff	Visual classification-No tests performed								Fill
542.9														
	6	3	4-1-1	12"	Cinders, sand, gravel and coal (fill), moist - loose	Visual classification-No tests performed								Fill
540.4	8													
		4	4-5-6	15"	Brown and gray clay, little sand, little gravel moist - stiff	11	6	6	26	51	43	20	22	A-7-6
537.9	10													
	12	5	3-3-5	7"	Brown silty clay, trace sand, trace gravel moist - medium stiff	2	2	3	44	49	39	17	20	A-6b
535.4														
	14	6	6-11-13	14"	Brown and gray clay, trace sand, trace gravel, moist - stiff	2	1	1	32	64	46	22	20	A-7-6
533.4														
	16	7	NXM	62%	Brown weathered shale, soft(½"to 3"pieces averaging 1½") and gray limestone crystalline, fossiliferous, jointed(one 2½" piece at the top of the run)90% shale, 10% limestone	Visual classification-No tests performed								
531.4														
529.9	18	8	21-38-71		Brown and gray clay, trace sand, moist-stiff	0	2	2	36	60	45	21	19	A-7-6
	20	9	NXM	25%	Sample 9 -Brown and gray weathered shale, soft (1" to 2" pieces averaging 1½", 100% shale	Visual classification-No tests performed								
	22				Sample 10 - Gray shale, calcareous, soft, to moderately tough (1" to 2" pieces,									
		10	NXM	42%	broken) and gray limestone, crystalline,									
	24	11	70		fossiliferous(two pieces 1" and 1½") 90% shale, 10% limestone									
					Sample 11 - Gray shale, moist - hard									
	26	12	NXM	60%	Sample 12 - Gray shale, calcareous, broken, moderately tough (½" to 1½" pieces, averaging 1") and gray limestone, crystalline,									
	28	13	NXM	80%	fossiliferous (two pieces 1½" and 2") 88% shale, 12% limestone									
519.4														
	30				Sample 13 - Gray shale, calcareous, moderately tough to tough (½" to 2"pieces averaging 1½") 100% shale									
	32													
	34				Boring completed									

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Form No. 630—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/16/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 543.3 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/16/64 CASING: LENGTH _____ DIA 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-8-5 STATION AND OFFSET 161+19, 44' Rt., BL SURFACE ELEV. 549.8 Bridge No. HAM-71-0823

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
549.8	0				Concrete (0.2')									
549.3														
	2	1	9-13-16		Brown clay, trace sand, little gravel, moist - stiff	14	0	6	34	46	42	21	18	A-7-6
	4	2	5-10-21		Brown clay, trace sand, trace gravel, with shale and limestone fragments, moist - stiff	4	2	1	35	58	46	22	15	A-7-6
543.8	6	3	9-24		Brown and gray clay, trace sand, trace gravel with shale and limestone fragments, moist - very stiff	1	2	2	33	62	43	17	19	A-7-6
542.8		3A	64		Brown and gray shale, moist - hard	Visual classification-No tests performed								
	8				Gray shale, calcareous, moderately tough to tough (¼" to 2" pieces averaging 1") and gray limestone, crystalline, fossiliferous, jointed in the bottom 6" of the run (¼" to 6" pieces averaging 3") 67% shale, 33% limestone									
	10	4	NXM	77%										
	12	5	NXM	86%	Gray shale, calcareous, moderately tough to tough (¼" to 3" pieces averaging 2") and gray limestone crystalline, fossiliferous (two pieces 2" and 2½") 92% shale, 8% limestone									
	14													
532.8	16	6	NXM	87%	Gray shale, calcareous, tough (¼" to 2" pieces averaging 1½") 100% shale									
	18													
	20				Boring completed									
	22													
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 630

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/15/64 SAMPLER: TYPE Split Spoon & OneBarrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/16/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-8-6 STATION AND OFFSET 161+72, 54' L. BL SURFACE ELEV. 551.0 Bridge No. HAM-71-0173

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	ENTL. CLASS
551.0	0				0.4" Concrete									
548.5	2	1	4-3-3	6"	Brown silty clay with gravel and brick fragments (fill), moist - medium stiff	Visual classification-No tests performed								Fill
546.0	4	2	3-4-4	10"	Brown silty clay, little sand, trace gravel with brick fragments (fill), moist - medium stiff	8	10	9	31	42	40	18	23	A-6b
543.5	6	3	2-2-4	12"	Brown and gray clay, little sand, trace gravel (fill), moist - medium stiff	2	6	6	33	53	44	20	24	A-7-6
542.5	8	4A	3-2	6"	Brown and gray silty clay (fill), moist - medium stiff	Insufficient Samples for Testing - No tests performed								Fill
541.0		4B	4	3"	Gray sandy clay with gravel (fill), very moist - soft									Fill
540.5	10	5A	2	4"	Brown and gray silty clay, trace sand, moist - medium stiff	0	4	5	35	56	39	16	19	A-6b
538.5	12	5B	4-4	8"	Gray sandy silt, trace gravel moist - medium stiff	5	22	15	42	16	21	3	13	A-4a
	14	6	2-7-7	11"	Brown and gray clay, trace sand, (probable fill), moist - stiff	0	1	1	32	66	46	20	20	A-7-6
	16	7	3-6-7	14"	Brown clay, trace sand with shale fragments, moist - stiff	0	2	2	31	65	46	23	20	A-7-6
	18	8	5-10-14	13"	Brown and gray clay, trace sand with shale fragments, moist - hard	0	1	1	35	63	44	21	20	A-7-6
531.0	20													
		9	60-50	*	Gray shale and limestone, dry - hard	Visual classification-No tests performed								
	22	10	45-47-61	0	do do	Visual classification-No tests performed								
	24					*Poor recovery								
	26	11	41-70	10"	do do	Visual classification-No tests performed								
524.5														
	28	12	NXM	58%	Gray shale, calcareous, moderately tough (1½" pieces) and gray limestone, crystalline, fossiliferous (1" - 2½" and 5" pieces) 62% shale, 38% limestone									
	30	13	NXM	78%	Gray shale, calcareous, moderately tough (¼" to 2" pieces, averaging 1" and gray limestone, crystalline, fossiliferous, (one 1" piece at the top of the run) 98% shale, 2% limestone									
519.5	32				Boring completed									
	34													

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/13/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/14/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-8-7 STATION AND OFFSET 162+39, 53' Rt. BL SURFACE ELEV. 553.2 Bridge No. HAM-71-0173

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
553.2	0				0.2' Blacktop									
550.7	2	1	2-3-5	7"	Brown and gray clay and gravel (fill), moist - loose	60	0	5	14	21	41	19	21	A-2-7
	4	2	4-9-8	9"	Brown and gray clay, trace sand, little gravel with limestone fragments moist - medium stiff	18	3	3	28	48	47	22	17	A-7-6
	6	3	5-6-11	16"	Brown and gray clay, trace sand, moist - medium stiff	0	3	3	13	81	46	20	21	A-7-6
544.2	8	4	4-125	10"	Brown and gray clay, trace sand, some gravel with limestone fragments, moist - stiff	28	7	3	22	40	43	19	22	A-7-6
543.2	10	5	31-114	16"	Gray shale, dry - hard	Visual classification-No tests performed								
	12	6	NXM	83%	Sample 6-Gray shale with brown weathered zones, top and bottom of run, calcareous, moderately tough (½" to 1½"pieces, averaging 1") 100% shale									
	14	7	NXM	67%	Sample 7 - Gray shale, calcareous, moderately tough with soft seams throughout run (½" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous (1" and 3" pieces) 84% shale, 16% limestone									
	16													
	18	8	NXM	80%	Sample 8 - Gray shale calcareous, tough (1" to 2½" pieces averaging 2") and gray limestone, crystalline, fossiliferous(1" and 1½" pieces) 96% shale, 4% limestone									
533.2	20													
	22				Boring completed									
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 530—16-

THE H. C. NUTTING COMPANY

4130 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/15/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. NXM WATER ELEV. IMMEDIATE 551.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/15/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-8-8 STATION AND OFFSET 163+06, 40' Rt., BL SURFACE ELEV. 556.0 Bridge No. HAM-71-0173

± ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
556.0	0				Concrete and cinders (fill) (0.5')									
555.5	2	1	9-13-32	16"	Brown and gray clay, little sand, trace gravel with limestone and shale fragments, moist - very stiff	2	7	4	33	54	44	22	23	A-7-6
	4	2	13-12-20	11"	Brown and gray clay, little sand, little gravel with shale and limestone fragments, moist - very stiff	12	5	5	27	51	44	22	16	A-7-6
	6	S-1	90	22"	Brown clay, trace sand, moist-very stiff	0	5	1	35	59	46	22	18	A-7-6
		3		10"	Brown clay, little sand, trace gravel with limestone fragments, moist-stiff	7	11	5	23	54	43	23	20	A-7-6
		4	18	17"	do do	Visual classification-No tests performed								A-7-6
	8	4A	86-80	17"	do do	Visual classification-No tests performed								A-7-6
546.0	10				Brown and gray silty clay, little sand, trace gravel with limestone fragments, moist - very stiff	6	9	7	28	50	39	19	13	A-6b
545.0		5	40-59	17"	Limestone fragments	Visual classification-No tests performed								
544.5	12	5A	46	1"										
	14	6	NXM	68%	Gray shale, calcareous, moderately tough(½" to 2½" pieces averaging 1½") and gray limestone, crystalline, fossiliferous(two pieces 1" and 2½") 94% shale, 6% limestone									
539.5	16				Boring completed									
	18													
	20													
	22													
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 630—1

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/20/64 SAMPLER: TYPE Split Spoon& Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/20/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-8-9 STATION AND OFFSET 156+75, 8' Rt., Ramp GD, BL SURFACE ELEV. 545.7 Bridge No. HAM-71-0173

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
545.7	0				Brick and limestone									
543.2	2	1	5-6-6	9"	Cinders, clay and sand (fill), very moist - loose	Visual classification-No tests performed								Fill
540.7	4	2	3-2-2	10"	do do	Visual classification-No tests performed								Fill
	6	S-1		18"	Brown and gray silty clay, trace sand, trace gravel moist-medium stiff	1	3	4	46	46	40	20	24	A-6b
536.2	8	3	5-6-6	17"	Brown and gray silty clay, little sand, trace gravel , moist - medium stiff	2	8	9	45	36	38	16	28	A-6b
	10	4	5-6-6	18"	Brown and gray silt and clay, little sand, trace gravel , moist - medium stiff	5	9	10	44	32	35	14	26	A-6a
533.2	12	5	5-4-6	17"	Brown and gray silty clay, trace sand, moist - medium stiff	0	2	2	50	46	37	17	25	A-6b
530.7	14													
	16	S-2		18"	Brown and gray silt and clay, trace sand moist - medium stiff	0	3	2	47	48	35	15	25	A-6a
528.7	18	6	3-4-5	11"	Brown and gray clay, trace sand moist - stiff	0	3	3	37	57	44	22	26	A-7-6
		7	4-5-7	17"	Brown and gray clay, trace sand moist - medium stiff	0	4	3	35	58	45	23	24	A-7-6
525.7	20	8	27-81	5"	Brown and gray clay, trace sand, moist-stiff	0	4	4	37	55	45	23	25	A-7-6
524.7	22	R-1	NXM	75%	R-1 - Brown weathered shale(no shale recovery) and gray limestone, crystalline, fossiliferous (one 6½" piece) 46% shale, 54% limestone									
		R-2	NXM	40%										
	24	9	6-9-12	18"	R-2 - Brown weathered shale,slightly tough (one 2" piece) and gray limestone, crystalline , fossiliferous,(one 2"piece) 83% shale, 17% limestone									
	26	10	21-55	10"	9 - Brown weathered shale, moist-very stiff									
	28				10- do do									
	30	R-3	NXM	80%	R-3 - Gray and brown shale,calcareous, moderately tough (1" to 3" pieces, averaging 2") and gray limestone,crystalline, fossiliferous,jointed (one 1½"piece midway in the run) 98% shale, 2% limestone									
	32													
	34				Boring completed									

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Form No. 530—15-60

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/4/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 537.4 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/4/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER 2 hr.s HOURS 540.9 PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-10-1 STATION AND OFFSET 34+40, 8' L. Ramp GG SURFACE ELEV. 551.9 Bridge No. HAM-71-0184

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
551.9	0													
	2	1	7-4-3	10"	Cinders and brick(fill),moist-loose	Visual classification-No tests performed								Fill
	4	2	2-2-2	12"	do do do	Visual classification-No tests performed								Fill
	6	3	3-2-1	18"	do do do	Visual classification-No tests performed								Fill
	8	4	1-2-1	16"	do do do	Visual classification-No tests performed								Fill
	10	5	5-6-6	12"	do do do	Visual classification-No tests performed								Fill
539.4	12	6	1-2-4	8"	Cinders and coal (fill), wet - soft	Visual classification-No tests performed								Fill
	14	7	3-2-2	10"	do do do	Visual classification-No tests performed								Fill
	16	8	4-4-5	9"	do do do	Visual classification-No tests performed								Fill
	18	9	6-3-5	12"	do do do	Visual classification-No tests performed								Fill
	20	10	4-4-5	11"	do do do	Visual classification-No tests performed								Fill
526.9	22	11	7-19-27	13"	Brown and gray silt and clay, trace sand, moist - stiff	0	4	4	53	39	35	15	18	A-6a
524.4	24	12	NXM	85%	Brown and gray weathered shale,slightly tough(1" to 4"pieces averaging 2½") and gray limestone, crystalline, fossiliferous, (1½" to 8½" pieces averaging 4") 60% shale, 40% limestone									
519.4	26				Boring completed									
	28													
	30													
	32													
	34													

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/17/64 SAMPLER: TYPE Split Spoon & One Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 537.3 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/18/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0184

BORING No. B-10-2 STATION AND OFFSET 35+03, 19' L. Ramp GG BL SURFACE ELEV. 552.3

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
552.3	0													
	2	1	3-6-10	11"	Brick, cinders and coal(fill), moist - very stiff to medium stiff	Visual classification-No tests performed								Fill
	4	2	4-1-1	5"	do do	Visual classification-No tests performed								Fill
	6	3	3-3-4	3"	do do	Visual classification-No tests performed								Fill
	8	4	5-4-5	6"	do do	Visual classification-No tests performed								Fill
	10	5	3-4-3	13"	do do	Visual classification-No tests performed								Fill
	12													
	14													
537.3	16	6	5-2-2	7"	Brown and dark gray silt, little sand, trace gravel , moist - medium stiff	7	4	7	62	20	27	5	26	A-4b
	18													
532.3	20	7	8-17-13	6"	Brown clay and gravel, trace sand, moist - stiff	39	2	5	19	35	48	26	29	A-7-6
	22													
529.3														
528.8	24	8	NXM	100%	Limestone									
	26	9	8-24-25	12"	Brown clay, trace sand, trace gravel, moist - stiff	9	6	3	37	45	41	19	25	A-7-6
	28													
522.3	30	10	NXM	79%	Gray shale,calcareous,moderately tough to tough, jointed and iron oxide stained at approximately elevation 521 to 520.5 (½ to 3"pieces averaging 1½") and gray limestone, crystalline, fossiliferous, shaly (one 1½" piece in the top 12"of									
	32													
	34													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/17/64 SAMPLER: TYPE Split Spoon 2"O.D.& Core Barrel DIA. NRM WATER ELEV. IMMEDIATE 537.3 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/18/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-10-2 STATION AND OFFSET 35+03, 19' L. Ramp GG BL SURFACE ELEV. 552.3 Bridge No. HAM-71-0184

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
517.3	34				of the run) 97% shale, 3% limestone									
	36				Boring completed									
	38													
	40													
	42													
	44													
	46													
	48													
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 530

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/18/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/19/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow AFTER Backfilled HOURS ____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-10-3 STATION AND OFFSET 36+34, 1.5' Rt. Ramp GG BL SURFACE ELEV. 568.6 Bridge No. HAM-71-0184

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
568.6	0													
568.3		1	20-13-11	13"	0.3' Asphaltic concrete Cinders and gravel (fill), stiff	Visual classification-No tests performed								Fill
566.1	2													
	4	2	5-2-2	9"	Brown silty clay with brick and cinders (fill), soft	Visual classification-No tests performed								Fill
	6	3	3-6-5	9"	Brown silty clay with brick and cinders (fill), medium stiff	Visual classification-No tests performed								Fill
561.1	8	4	4-4-7	12"	Brown clay, trace sand, trace gravel with shale fragments, moist - stiff	2	3	2	40	53	43	21	26	A-7-6
	10	5	3-2-6	18"	Brown clay, trace sand, trace gravel with shale fragments, moist - stiff	6	2	2	35	55	42	21	23	A-7-6
	12	6	5-7-9	16"	Brown clay, trace sand with shale fragments, moist - stiff	0	2	2	39	57	44	20	15	A-7-6
553.6	14													
	16	7	5-12-18	13"	Brown silty clay, trace sand, little gravel with shale fragments, moist - very stiff	19	3	1	39	38	38	17	18	A-6b
551.1	18	8	12-28-32	18"	Brown clay, trace sand with shale fragments, moist - very stiff	0	2	2	41	55	43	21	17	A-7-6
	20													
	22	9	15-21-31	15½"	Brown and gray clay, trace sand with shale fragments, moist - stiff	0	2	2	34	62	42	21	9	A-7-6
544.6	24													
	26				Gray and brown shale, calcareous, moderately tough-weathered in the top 12" of the run (¼" to 2½" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed, (1" to 3" pieces averaging 1½") 90% shale, 10% limestone									
	28	10	NXM	83%										
539.6														
	30				Boring completed									
	32													
	34													

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Form No. 630—16-59

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

Split Spoon & 2"O.D.&

DATE STARTED 8/27/64 SAMPLER: TYPE Com Barrel DIA. HXN WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/27/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-10-4 STATION AND OFFSET 37+17, 10' L, Ramp CC BL SURFACE ELEV. 568.8 Bridge No. HAM-71-0184

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % ABR.	% C.B.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
568.8	0													
566.3	2				Pavement									
564.3	4	S-1		2"	Brown and gray silty clay, trace sand, trace gravel, moist -stiff	8	4	4	35	49	37	16	22	A-6b
561.3	6	1	19-13-17	18"	Brown and gray clay, trace sand, moist - very stiff	0	4	2	35	59	43	21	21	A-7-6
558.8	8	2	19-30-34	18"	Brown and gray silty clay, little sand, trace gravel with limestone fragments, moist - hard	3	7	5	30	55	39	18	20	A-6b
556.8	10	3	23-27-31	6"	Brown weathered shale, moist - hard	Visual classification-No tests performed								
551.8	12	R-1	HXN	57%	Gray shale, calcareous, moderately tough (½" to 2-3/4" pieces averaging 1½") and gray limestone, fossiliferous, iron oxide stained, shaly (one 1" piece in top 18" of the run) 98% shale, 2% limestone									
	14													
	16													
	18				Boring completed									
	20													
	22													
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 53[illegible]-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

*Water used in drilling from elevation 577.8

LOG OF BORING

DATE STARTED 8/28/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE * CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/28/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71.0.93

BORING No. B-10-5 STATION AND OFFSET 38+10, 7' L. Ramp GG BL SURFACE ELEV. 577.8 Bridge No. HAM-71-0184

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
577.8	0													
576.3	2	1	2-5-6	12"	Topsoil and brown silty clay (fill), moist- medium stiff	Visual classification-No tests performed								Fill
	4	2	7-11-11	13"	Brown clay, trace sand with shale fragments, moist - very stiff	0	0	2	34	64	48	21	17	A-7-6
	6	3	8-21-20	7"	Brown clay, trace sand, little gravel with shale fragments, moist-very stiff	15	4	1	30	50	45	20	21	A-7-6
	8	4	11-11-18	15"	Brown clay, trace sand with shale fragments, moist - very stiff	0	2	2	28	68	49	22	22	A-7-6
	10	5	10-12-21	13"	do do	0	0	3	31	66	45	20	20	A-7-6
	12	6	14-18-25	13"	do do	0	1	1	34	64	45	19	18	A-7-6
	14	7	8-10-16	12"	Brown clay, little sand, little gravel with shale fragments, moist-very stiff	10	10	5	28	47	41	16	21	A-7-6
561.0	16	8	70/0.2'	2½"	Gray shale, dry - hard	Visual classification-No tests performed								
560.4	18													
	20	9	NXM	99%	Gray shale, calcareous, moderately tough to tough(½" to 4½" pieces averaging 2½") and gray limestone, crystalline, fossiliferous, jointed (3/4" to 5½" pieces averaging 3") 79% shale, 21% limestone									
555.4	22													
	24				Boring completed									
	26													
	28													
	30													
	32													
	34													

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Form No. 530

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

*Water used in drilling from elevation 587.5

DATE STARTED 8/31/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE * CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/1/64 CASING: LENGTH _____ DIA. None AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0184

BORING No. B-10-6 STATION AND OFFSET 38+79, 2' L. Ramp GG BL SURFACE ELEV. 587.5

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
587.5	0													
	2	1	1-4-6	10"	Topsoil, cinders and brick fragments (fill), dry - stiff	Visual classification-No tests performed								Fill
	4	2	3-7-14	4"	do do	Visual classification-No tests performed								Fill
582.5	6	3	7-10-15	13"	Brown clay, trace sand, moist - very stiff	0	2	3	29	66	52	26	17	A-7-6
	8													
	10	4	11-14-17	12"	do do	Visual classification-No tests performed								A-7-6
	12	5	13-26-30	14"	Brown clay, trace sand, moist - very stiff	0	1	2	37	60	44	20	16	A-7-6
575.0	14	6	20-27-23	15"	Brown silty clay, trace sand, moist - hard	Visual classification-No tests performed								A-6b
	16	7	24-46-57	14"	do do	0	3	2	37	58	40	16	16	A-6b
570.0	18													
	20	8	30-71-50	12"	Brown and gray shale, moist - hard	Visual classification-No tests performed								
	22	9	96	6"	Gray shale, dry - hard	Visual classification-No tests performed								
566.0	24	10	NXM	82%	Sample 10-Gray shale, calcareous, moderately tough, jointed and iron oxide stained midway in the run(1" to 3-3/4" pieces averaging 2½") and gray limestone crystalline, fossiliferous, jointed and iron oxide stained (two pieces 1" and 3") 92% shale,8% limestone									
	26													
	28	11	NXM	90%	Sample 11 - Gray shale, calcareous, moderately tough to tough (½" to 2½" pieces averaging 1½") and gray limestone, crystalline,fossiliferous(1" to 4"pieces averaging 2½") 80% shale, 20% limestone									
	30													
556.0	32	12	NXM	100%										
	34													

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Form No. 530—

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

*Water used in drilling from elevation 587.5

DATE STARTED 8/31/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE * CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/1/64 CASING: LENGTH _____ DIA. None AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-10-6 STATION AND OFFSET 38+79, 2' L. Ramp GG, BL SURFACE ELEV. 587.5 Bridge No. HAM-71-0184

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
					Sample 12 - Gray shale, calcareous, tough, (1" to 3½" pieces averaging 2½") 100% shale									
					Boring completed									

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Form No. 630

THE E. C. NUTTING COMPANY

4130 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/13/64 SAMPLER: TYPE Split Spoon Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT City of Cincinnati, Ohio

DATE COMPLETED 8/14/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT Northeast Expressway HAM-71-0.93

BORING No. B-10-7 STATION AND OFFSET 39+89, 2' Rt. BL Ramp GG SURFACE ELEV. 593.0 Bridge No. HAM-71-0184

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
593.0	0													
590.5	2	1	2-3-4	8"	Brick, cinders and clay (fill), moist-loose	Visual classification-No tests performed								Fill
588.0	4	2	3-3-3	14"	Brown silty clay with brick and cinders (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	6	3	5-5-5	15"	Brown silty clay and cinders(fill), moist - stiff	Visual classification-No tests performed								Fill
	8													
583.0	10	4	2-2-3	15"	Brown silty clay and cinders (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	12	S-1		11"	Brown silty clay with cinders and brick fragments (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	14	5	2-4-5	16"	do do	Visual classification-No tests performed								Fill
578.0	16	6	4-5-7	18"	Brown and gray clay, trace sand, trace gravel with limestone fragments, moist-stiff	3	4	4	31	58	42	25	20	A-7-6
	18													
	20													
	22	7	14-21-36	18"	Brown clay, trace sand, moist - hard	0	1	1	38	60	48	24	16	A-7-6
	24													
568.0	26	8	24-68-76	18"	Brown and gray weathered shale, moist-hard	Visual classification-No tests performed								
	28	9	102	14"	do do	Visual classification-No tests performed								
563.0	30													
	32	10	NXM	55%	Gray shale, clacareous, moderately tough (1½" to 2½" pieces averaging 2") and gray limestone, crystalline, fossiliferous, jointed and iron oxide stained in the bottom half of the run(2½" to 4½" pieces averaging 3") 75% shale, 25% limestone									
	34													

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Form No. 530—16-60

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/13/64 SAMPLER: TYPE Split Spoon Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE None Backfilled CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/14/64 CASING: LENGTH _____ DIA. 3.5"I.D. Hollow Stem Augers AFTER _____ HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-10-7 STATION AND OFFSET 39+89, 2' Rt. BL Ramp GG SURFACE ELEV. 593.0 Bridge No. HAM-71-0184

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
553.0	34 36 38 40	11	NXM	82%	Gray shale, calcareous, tough, (1" to 4" pieces averaging 2½") and gray limestone, crystalline, fossiliferous (two pieces 3½" and 9") 79% shale, 21% limestone									
	42 44 46 48 50 52 54 56 58 60 62 64 66 68				Boring completed									

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Form No. 530—1C

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/27/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/27/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-10-8 STATION AND OFFSET 40+58, 10'Rt., Ramp GG BL SURFACE ELEV. 594.0 Bridge No, HAM-71-0184

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	ENVIL CLASS
594.0	0													
	2	1	3-5-8	5"	Concrete, brick, cinders and clay (fill), moist - medium dense to loose	Visual classification-No tests performed								Fill
	4	2	4-5-6	6"	do do	Visual classification-No tests performed								Fill
	6	3	1-1-1	3"	do do	Visual classification-No tests performed								Fill
	8		3-1-1	0		No recovery								
	10	4	2-1-1	5"	do do	Visual classification-No tests performed								Fill
	12													
	14		2-2-2	0		No recovery								
579.0	16	5	1-2-3	5"	Brick, cinders and gravel (fill), moist - loose	Visual classification-No tests performed								Fill
576.5	18	6	3-4-5	16"	Brown clay, trace sand, moist - medium stiff	0	2	4	27	67	54	30	25	A-7-6
	20	S-1		18"	Brown clay, trace sand, moist - stiff	0	2	1	31	66	46	22	20	A-7-6
	22	7	12-16-27	18"	Brown clay, trace sand with shale fragments, moist - hard	0	2	2	33	63	44	21	17	A-7-6
569.0	24													
	26	8	13-27-43	18"	Brown weathered shale, moist - hard	Visual classification-No tests performed								
	28	9	105	8"	Gray shale, dry - hard	Visual classification-No tests performed								
565.0	30	10	NXM	60%	Gray shale,calcareous,moderately tough with soft seams (½" to 2½" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed and iron oxide stained in the bottom 12"of the run(½" to 3¼"pieces averaging 2") 87% shale, 13% limestone.									
	32													
	34													

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Form No. 630—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/27/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/27/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-10-8 STATION AND OFFSET 40+58, 10' Rt., Ramp GG BL SURFACE ELEV. 594.0 Bridge No. HAM-71-0184

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL. CLASS
	34													
	36	11	NXM	50%	Gray shale, calcareous, moderately tough with soft seams (½" to 2" pieces averaging 1") and gray limestone, crystalline, fossiliferous (1" to 5" pieces averaging 2½") 80% shale, 20% limestone									
555.0	38													
	40													
	42				Boring completed									
	44													
	46													
	48													
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 830-[illegible]59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/19/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/19/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-3-1 STATION AND OFFSET 137+92, 156'L. NB BL SURFACE ELEV. 538.7 Retaining Wall No. 3

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % Agg.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
538.7	0													
	2	1	4-9-10	10"	Brown sandy gravel, trace silt, moist - medium dense	70	21	4	- 5	-		NP	3	A-1-a
	4	2	14-22-22	14"	do do	Visual classification-No tests performed								A-1-a
	6	3	10-12-14	16"	do do	66	22	5	- 7	-		NP	3	A-1-a
531.2	8				Brown coarse and fine sand, some silt, trace gravel, moist - medium dense									
	10	4	5-6-5	12"		9	6	63	- 22	-		NP	10	A-3a
	12	5	5-5-5	10"	Brown coarse and fine sand, some silt, moist - loose	0	2	75	- 23	-		NP	10	A-3a
526.2	14	6	9-7-10	9"	Brown silty sand, some gravel with silt layers, moist - medium dense	30	14	22	29	5		NP	18	A-2-4
523.7	16	7	12-15-17	15"	Brown sandy gravel, little silt, moist- dense	56	18	16	- 10	-		NP	4	A-1-a
521.2	18	8	19-17-15	15"	Brown gravelly sand, little silt, moist- dense	31	33	25	- 11	-		NP	4	A-1-b
	20	9	10-12-13	11"	Brown gravelly sand, trace silt, moist - medium dense	37	29	25	- 9	-		NP	3	A-1-b
	22	10	12-14-15	12"	Brown gravelly sand, little silt, moist- medium dense	45	25	20	- 10	-		NP	5	A-1-b
	24	11	7-7-8	13"	Brown gravelly sand, trace silt, moist- medium dense	4	58	33	- 5	-		NP	5	A-1-b
	26													
510.2	28	12	10-11-12	14"	Brown coarse and fine sand, little silt, trace gravel, moist - medium stiff	6	32	46	- 16	-		NP	5	A-3a
508.7	30				Boring completed									
	32													
	34													

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Form No. 531

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

SUMMARY OF TEST DATA FOR SOILS

BORING No. R-3-1 STATION & OFFSET 137+92, 156' L. NB BL SURFACE ELEV. 538.7

CLIENT: City of Cincinnati, Ohio
PROJECT: HAM-71-0.93
HAM-71-0.93
Retaining Wall No. 3

SAMPLE No.	SAMPLE DEPTH	STRATUM DEPTH	HRB CLASS	SHTL CLASS	GROUP INDEX	Physical Characteristics								OTHER TESTS
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	
1	0-1.5	0-7.5	A-1-a	A-1-a	0	70	21	4	- 5	-		NP	3	
2	2.5-4	0-7.5	A-1-a	A-1-a	Visual	No tests performed - Not necessary								
3	5-6.5	0-7.5	A-1-a	A-1-a	0	66	22	5	- 7	-		NP	3	
4	7.5-9	7.5-12.5		A-3a	0	9	6	63	- 22	-		NP	10	
5	10-11.5	7.5-12.5		A-3a	0	0	2	75	- 23	-		NP	10	
6	12.5-14	12.5-15	A-2-4	A-2-4	0	30	14	22	29	5		NP	18	
7	15-16.5	15-17.5	A-1-a	A-1-a	0	56	18	16	- 10	-		NP	4	
8	17.5-19	17.5-28.5	A-1-b	A-1-b	0	31	33	25	- 11	-		NP	4	
9	20-21.5	17.5-28.5	A-1-b	A-1-b	0	37	29	25	- 9	-		NP	3	
10	22.5-24	17.5-28.5	A-1-b	A-1-b	0	45	25	20	- 10	-		NP	5	
11	25-26.5	17.5-28.5	A-1-b	A-1-b	0	4	58	33	- 5	-		NP	5	
12	28.5-30	28.5-30		A-3a	0	6	32	46	- 16	-		NP	5	

Form No. 630—10-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/15/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 499.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/16/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-6-1 STATION AND OFFSET 125+15, 54' L. SB BL SURFACE ELEV. 527.5 Retaining Wall No. 6

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
527.5	0													
	2	1	7-12-6	10"	Sand, gravel and brick fragments(fill), moist - dense	Visual classification-No tests performed								Fill
525.0	4	2	8-10-11	12"	Brown gravelly sand, little silt, moist - medium dense	46	17	25	- 12	-		NP	6	A-1-b
522.5	6	3	10-11-11	9"	Brown sandy gravel, trace silt, moist - medium dense	74	14	3	- 9	-		NP	4	A-1-a
	8													
	10	4	8-10-11	13"	do do	Visual classification-No tests performed								A-1-a
	12	5	9-10-12	14"	Brown sandy gravel, trace silt, moist- medium dense	67	20	4	- 9	-		NP	4	A-1-a
515.0	14	6	9-11-11	13"	Brown gravelly sand, trace silt, moist- medium dense	30	59	6	- 5	-		NP	4	A-1-b
	16	7	8-10-11	12"	Brown gravelly sand, little silt,moist- medium dense	16	60	14	- 10	-		NP	4	A-1-b
	18													
	20	8	9-10-10	12"	Brown gravelly sand,trace silt,moist - medium dense	34	50	8	- 8	-		NP	4	A-1-b
	22	9	12-16-15	11"	Brown gravelly sand, trace silt,moist- dense	36	52	6	- 6	-		NP	4	A-1-b
	24	10	10-11-13	11"	Brown gravelly sand, trace silt,moist - medium dense	37	49	8	- 6	-		NP	4	A-1-b
502.5	26	11	20-26-25	12"	Brown sandy gravel, trace silt, moist- very dense	51	36	7	- 6	-		NP	4	A-1-a
500.0	28	12	10-9-12	14"	Brown gravelly sand, trace silt, wet - medium dense	48	37	7	- 8	-		NP	6	A-1-b
497.5	30	13	6-7-7	17"	Brown and gray silt and clay, trace sand, trace gravel with sand layers, (varved) moist - medium stiff	3	2	0	41	54	35	13	28	A-6a
495.0	32	14	5-6-7	18"	Brown and gray silt, some sand with sand layers, wet - soft	0	0	21	69	10		NP	24	A-4b
	34													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/15/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 499.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED _____ CASING: LENGTH _____ DIA. _____ AFTER _____ HOURS _____ PROJECT Northeast Expressway HAM-71-0.93

BORING No. R-6-1 STATION AND OFFSET 125+15, 54' L. SB BL SURFACE ELEV. 527.5 Retaining Wall No. 6

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
492.5	34													
490.5	36	S-1		24"	Brown sandy silt with sand layers, moist - medium stiff	0	0	47	49	4		NP	22	A-4a
	38	15	10-15-16	15"	Gray silt and clay, trace sand with sand layers, moist - medium stiff	0	0	2	41	57	31	11	26	A-6a
487.5	40													
		16	7-7-8	17"	Gray silt, trace sand with sand layers, very moist - soft	0	0	1	73	26		NP	28	A-4b
	42													
	44													
481.5	46	S-2(Top)		12"	Dark gray silt, trace sand with sand lenses(varved), moist - medium stiff	0	1	3	84	12		NP	26	A-4b
480.5		S-2(Bottom)		12"	Gray sandy silt with sand lenses, moist-medium stiff	0	0	34	37	29	23	8	17	A-4a
	48	17	8-9-11	18"	Brown and gray silt and clay, some sand with sand layers, moist - medium stiff	Visual classification-No tests performed								A-6a
	50													
		18	6-8-9	17"	do do	0	0	22	26	52	33	13	25	A-6a
	52													
	54													
	56													
470.5		S-3		24"	Gray silt and clay, little sand with sand layers (varved), moist - stiff	0	1	11	56	32	28	12	17	A-6a
	58	19	7-6-8	16"	Gray sandy silt with sand layers, very moist- soft	0	0	28	41	31	24	8	26	A-4a
	60													
	62	20	7-7-8	18"	Gray sandy silt with sand layers, very moist - soft	0	0	23	47	30	26	9	28	A-4a
	64													
462.5														
	66	S-4		24"	Gray silty clay, little sand with sand layers, moist - stiff	0	1	9	57	33	29	9	28	A-4b
460.5														
	68													

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/15/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.,& NXM WATER ELEV. IMMEDIATE 499.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/16/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-6-1 STATION AND OFFSET 125+15, 54' L, SB BL SURFACE ELEV. 527.5 Retaining Wall No. 6

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SNTL CLASS
	68	21	7-8-10	17"	Gray sandy silt, moist - medium stiff	0	0	12	49	39	27	10	19	A-4a
457.5	70													
	72	22	7-10-11	17"	Gray silt and clay, little sand, moist - stiff	0	2	13	49	36	28	11	19	A-6a
	74													
	76	S-5		24"	Gray silt and clay, little sand, moist- medium stiff	0	3	12	48	37	28	11	20	A-6a
	78	23	9-10-14	17"	do do	Visual classification-No tests performed								A-6a
447.5	80													
	82	24	8-10-12	18"	Gray silt, little sand, moist - stiff	0	1	14	50	35	27	10	20	A-4b
	84													
442.5														
	86	S-6		24"	Gray silt and clay, trace sand, moist - stiff	0	1	7	48	44	32	15	21	A-6a
	88	25	9-11-11	18"	do do	Visual classification-No tests performed								A-6a
	90													
	92	26	10-11-12	17"	Gray silt and clay, little sand, moist - stiff	0	1	10	46	43	32	15	20	A-6a
	94													
432.5														
	96	S-7		24"	Gray sandy silt, moist - stiff	0	0	31	44	25	23	6	18	A-4a
430.5	98	27	5-7-6	15"	Brown and gray silt, some sand, moist - stiff	0	0	20	51	29	26	8	20	A-4b
	100													
	102	28	7-7-6	18"	Brown and gray silt, little sand, moist stiff	0	0	19	53	28	25	7	20	A-4b

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Form No. 330—46

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/15/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 499.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/16/64 CASING: LENGTH ____ DIA. 2.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-6-1 STATION AND OFFSET 125+15, 54' L. SB BL SURFACE ELEV. 527.5 Retaining Wall No. 6

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL CLASS
	102													
	104													
	106	S-8		24"	Gray sandy silt, some sand with sand layers, moist -stiff	0	1	34	54	11	25	7	24	A-4b
	108	29	10-15-15	18"	Brown and gray silt, trace sand, moist - stiff	0	1	7	56	36	29	10	19	A-4b
	110													
	112	30	9-11-17	18"	Brown and gray silt, some sand, moist - stiff	0	1	20	52	27		NP	21	A-4b
	114													
	116	S-9		18"	Gray silt, trace sand with sand layers, (varved), moist - stiff	0	1	8	53	38	27	9	25	A-4b
410.5	118	31	37-54-40	12"	Brown and gray sandy gravel, trace clay, trace silt, wet - very dense	62	17	9	8	4		NP	14	A-1-a
	120													
	122	32	29-39-64	10"	Brown and gray sandy gravel, trace clay, trace silt, wet - very dense	57	21	10	8	4		NP	11	A-1-a
	124													
402.5	126				Gray shale, calcareous, tough (1" to 4½" pieces averaging 1½") and gray limestone, crystalline, fossiliferous (1" to 6½" pieces averaging 3½") 50% shale, 50% limestone									
	128													
397.5	130													
	132				Boring completed									
	134													
	136													

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Form No. 530 - 11-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/19/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/19/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Retaining Wall No. 9

BORING No. R-9-1 STATION AND OFFSET 125+40, 134'L. SB. BL. SURFACE ELEV. 534.7

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
534.7	0				0.5' Concrete									
534.2	2	1	2-3-3	10"	Brown silty clay with brick and cinders (fill), moist - medium stiff	Visual classification-No tests performed								Fill
532.2	4	2	4-5-5	14"	Brown sandy silt, some gravel with brick and cinders (fill) very moist - medium stiff	20	11	23	30	16	25	8	23	A-4a
	6	3	4-6-6	13"	do do	20	14	19	31	16	25	7	24	A-4a
527.2	8	4	7-9-11	11"	Brown sandy gravel, little silt, moist-medium dense	61	15	9	- 15 -			NP	7	A-1-a
	10	5	10-11-12	15"	do do	66	18	5	- 11 -			NP	6	A-1-a
	12													
	14	6	9-12-12	13"	do do	63	20	5	- 12 -			NP	5	A-1-a
519.7	16	7	7-7-9	10"	Brown gravelly sand, little silt, moist-medium dense	9	67	11	- 13 -			NP	5	A-1-b
	18	8	8-7-10	11"	do do	23	56	10	- 11 -			NP	5	A-1-b
	20	9	8-9-9	12"	do do	19	37	31	- 13 -			NP	6	A-1-b
	22													
	24	10	8-10-11	10"	Brown gravelly sand, trace silt, moist - medium dense	39	42	10	- 9 -			NP	5	A-1-b
508.2	26	11	9-9-11	11"	Brown gravelly sand, little silt, moist-medium dense	11	34	22	- 13 -			NP	5	A-1-b
	28				Boring completed									
	30													
	32													
	34													

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Form No. 530—16-60

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/17/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 500.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/18/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Retaining Wall No. 11

BORING No. R-11-1 STATION AND OFFSET 137+47, 88' L. NB BL SURFACE ELEV. 534.6

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
534.6	0													
534.0					0.6' Pavement									
	2	1	5-4-3	15"	Clay, gravel, cinders and brick (fill), moist - loose	Visual classification-No tests performed Fill								
532.1	4	2	2-2-1	17"	Brown and gray silty clay with cinders and brick fragments (fill), moist - soft and loose	Visual classification-No tests performed Fill								
529.6	6	3	1-1-2	18"	Brown and gray silt, little sand with cinders (fill), very moist - soft	0	2	16	56	26	25	7	23	A-4b
527.1	8	4	2-3-4	5"	Brown sandy gravel, trace silt, moist-loose	66	13	13	- 8	-		NP	6	A-1-a
524.6	10	5	4-6-8	16"	Brown gravelly sand, trace silt, moist-medium dense	19	48	27	- 6	-		NP	4	A-1-b
	12	6	4-6-7	16"	Brown gravelly sand, trace silt, moist-medium dense	25	40	26	- 9	-		NP	6	A-1-b
	14	7	5-6-9	14"	Brown gravelly sand, trace silt, moist-medium dense	16	52	23	- 9	-		NP	5	A-1-b
	16	8	7-9-11	18"	do do	30	53	12	- 5	-		NP	4	A-1-b
514.6	18	9	10-13-16	18"	Brown sandy gravel, little silt, moist-medium dense	50	28	11	- 11	-		NP	5	A-1-a
512.1	20	10	8-9-10	17"	Brown gravelly sand, trace silt, moist-medium dense	18	59	16	- 7	-		NP	5	A-1-b
509.6	22	11	7-10-11	18"	Brown fine sand, moist - medium dense	6	31	55	- 8	-		NP	6	A-3
	24	12	7-10-11	16"	do do	0	5	85	- 10	-		NP	9	A-3
504.6	26	13	6-8-10	18"	Brown sandy silt with silt layers, very moist - medium dense	0	2	57	37	4		NP	18	A-4a
	28	14	6-6-6	17"	do do	0	0	46	49	5		NP	24	A-4a
	30													
	32													
	34													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/17/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 500.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/18/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Retaining Wall No. 11

BORING No. R-11-1 STATION AND OFFSET 137+47, 88' L. NB BL SURFACE ELEV. 534.6

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
499.6	34													
	36	15	4-5-7	18"	Brown silt, trace sand, wet - medium dense	0	0	6	90	4		NP	20	A-4b
494.6	38 40													
	42	16	5-8-10	17"	Gray silt and clay, trace sand with silt layers, moist - stiff	0	0	3	51	46	31	11	22	A-6a
489.6	44													
	46	17	5-7-9	18"	Gray silt, trace sand with silt and sand layers, moist - stiff	0	0	9	50	41	23	6	23	A-4b
	48 50													
	52	18	4-5-8	18"	Gray silt, trace sand with silt layers, moist - stiff	0	4	2	41	53	30	9	24	A-4b
	54													
	56	19	4-5-7	18"	Gray silt, trace sand with silt layers, moist - medium stiff	0	0	2	50	48	29	7	24	A-4b
	58													
474.6	60													
	62	20	3-5-8	17"	Gray silt and clay with silt layers, moist - medium stiff	0	0	0	35	65	37	15	24	A-6a
471.6	64													
	66	21	5-7-11	18"	Brown and gray clay, trace sand, moist - stiff	0	1	5	28	66	42	20	20	A-7-6
	68													

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Form No. 530—16-58

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS.

LOG OF BORING

DATE STARTED 8/17/64 SAMPLER: TYPE Split Spoon & CoreBarrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE 500.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/18/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-11-1 STATION AND OFFSET 137+47, 88' L. NB BL SURFACE ELEV. 534.6 Retaining Wall No. 11

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	68													
	70													
		22	7-9-12	18"	Brown and gray clay, trace sand, moist - stiff	0	4	0	16	80	49	24	32	A-7-6
	72													
	74													
459.6														
	76	23	5-6-9	16"	Brown and gray fine sand, wet - medium dense	0	0	94	- 6	-		NP	27	A-3
	78													
454.6	80													
		24	6-8-11	16"	Brown and gray fine sand, little clay, some silt with silty clay layers, wet - medium dense	0	1	65	20	14		NP	22	A-3a
	82													
	84													
449.6														
	86	25	6-7-10	17"	Brown and gray sandy silt with silty clay layers, very moist - medium dense	0	0	55	24	21		NP	27	A-4a
	88													
	90													
		26	7-8-10	17"	Gray sandy silt with fine sand layers, moist - medium stiff	0	1	24	40	35	24	7	22	A-4a
	92													
	94													
	96	27	9-10-11	15"	Gray sandy silt with fine sand layers, moist - medium stiff	0	0	26	44	30	22	5	24	A-4a
	98													
	100													
		28	8-9-10	18"	do do	0	0	24	37	39	24	8	26	A-4a
	102													

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Form No. 530—16-58

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/17/64 SAMPLER: TYPE Split Spoon& Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 500.6 Backfilled CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/18/64 CASING: LENGTH _____ DIA 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-11-1 STATION AND OFFSET 137+47, 88' L. NB BL SURFACE ELEV. 534.6 Retaining Wall No. 11

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	102													
	104													
	106	29	7-11-12	17"	Gray sandy silt with fine sand layers, moist - medium stiff	0	1	37	33	29	21	5	21	A-4a
	108													
	110													
	112	30	7-8-13	17"	Gray sandy silt with sand layers, moist-stiff	0	1	34	35	30	20	5	22	A-4a
	114													
	116	31	9-11-15	18"	do do	0	2	36	35	27	23	7	22	A-4a
	118													
414.6	120													
		32	10-11-13	17"	Gray silt, little sand with sand layers, moist - stiff	0	1	14	50	35	28	9	20	A-4b
	122													
	124													
409.6														
	126	33	32-46	11"	Brown and gray sandy gravel, little silt, with limestone fragments	53	17	18	- 12	-			6	A-1-a
	128													
404.6	130													
		34	65-134	12"	Brown gravelly sand, little clay, trace silt with limestone fragments, moist - very dense	55	19	10	3	13		NP	8	A-1-b
	132													
	134													
	136	35	71-153	12"	Gray gravelly sand, little clay, little silt with limestone fragments, moist-stiff	42	24	12	12	10	18	2	6	A-1-b

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/17/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 500.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/18/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Retaining Wall No. 11

BORING No. R-11-1 STATION AND OFFSET 137+47, 88'L. NB BL SURFACE ELEV. 534.6

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	136													
396.6	138													
	140	36	NXM	92%	Gray shale, calcareous, tough (1/2" to 3" pieces averaging 1½") and gray limestone, crystalline, fossiliferous (two pieces 1/4" and 3/4") 98% shale, 2% limestone									
391.6	142													
	144				Boring completed									
	146													
	148													
	150													
	152													
	154													
	156													
	158													
	160													
	162													
	164													
	166													
	168													
	170													

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Form No. 530-69

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 11/7/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 490.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 11/8/64 CASING: LENGTH _____ DIA 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-12-1 STATION AND OFFSET 136+89, 55' L. SB BL SURFACE ELEV. 525.5 Retaining Wall No. 12

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% G.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
525.5	0													
523.0	2	1	4-5-7	9"	Blacktop, sand, gravel and concrete (fill), moist - medium dense	Visual classification-No tests performed								Fill
	4	2	4-3-3	16"	Brown sandy clay with gravel, cinders and brick fragments (fill), moist-stiff	Visual classification-No tests performed								Fill
518.0	6	3	3-5-7	17"	do do	Visual classification-No tests performed								Fill
	8	4	2-2-4	18"	Brown and gray sandy silt, little gravel with cinders and brick fragments(fill), moist - soft	11	11	25	35	18	24	6	19	A-4a
	10	5	2-2-5	17"	Brown sandy silt,little gravel with cinders and brick fragments(fill), very moist - soft	11	17	25	30	17	26	8	23	A-4a
	12	6	1-3-4	17"	do do	15	14	22	31	18	27	10	18	A-4a
	14	7	3-2-2	18"	Brown sandy silt,little gravel with cinders and brick fragments(fill), moist - medium stiff	16	18	24	27	15	26	9	19	A-4a
	16	8	1-2-3	17"	Gray sandy silt, some gravel with cinders and brick fragments (fill), very moist - soft	23	11	22	29	15	25	7	21	A-4a
	18	9	1-2-3	18"	do do	27	14	19	27	13	24	6	20	A-4a
	20	10	2-3-2	18"	do do	17	17	30	21	15	24	5	21	A-4a
	22	11	1-3-5	17"	do do	22	12	18	32	16	26	8	21	A-4a
	24	12	3-4-3	17"	do do	Visual classification-No tests performed								A-4a
495.0	26	13	2-3-5	17"	Gray silt and clay, some sand,little gravel with cinders and brick fragments, (fill), very moist - soft	16	15	16	34	19	28	11	20	A-6a
	28													
	30													
	32													
	34													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 11/7/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 490.5' CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 11/8/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Retaining Wall No. 12

BORING No. R-12-1 STATION AND OFFSET 136+89.55'L. SB BL SURFACE ELEV. 525.5

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
490.5	34													
	36	14	6-8-12	10"	Brown sandy silt, trace gravel, wet - medium dense	7	4	45	- 44	-		NP	10	A-4a
488.0	38													
		15	8-10-11	15"	Brown gravelly sand, trace silt, wet - medium dense	45	33	17	- 5	-		NP	12	A-1-b
485.5	40													
	42	16	5-7-9	14"	Brown sandy gravel, trace silt, wet - medium dense	62	28	7	- 3	-		NP	11	A-1-a
480.5	44													
	46	17	5-6-7	12"	Brown gravelly sand, trace silt, wet - medium dense	45	29	18	- 8	-		NP	14	A-1-b
	48													
		18	5-7-9	14"	Brown gravelly sand, little silt, wet - medium dense	61	14	8	- 17	-		NP	20	A-1-b
475.5	50													
		19	6-8-10	13"	Brown sandy gravel, trace silt, wet - medium dense	60	20	12	- 8	-		NP	9	A-1-a
	52													
	54													
					Brown sandy gravel, trace silt, wet -									
469.5	56	20	12-17	11"	medium dense	52	28	12	- 8	-		NP	9	A-1-a
		21	9	2"	Gray silt and clay, trace sand with silt lenses, moist - stiff	Visual classification-No tests performed								A-6a
	58													
	60	S-1		24"	do do	0	0	6	35	59	34	13	24	A-6a
		22	5-7-8	16"	Gray silt and clay, little sand, trace gravel with silt and sand lenses, moist - medium stiff	2	3	8	37	50	31	13	25	A-6a
	62													
	64													
460.5														
	66	23	5-6-8	17"	Gray sandy silt, trace gravel with sand layers, moist - medium stiff	3	3	12	48	34	28	10	26	A-4a
	68													

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Form No. 530—

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 11/7/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 490.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 11/8/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-12-1 STATION AND OFFSET 136+89, 55' L. SB BL SURFACE ELEV. 525.5 Retaining Wall No. 12

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTC. CLASS
	68													
455.5	70													
	72	24	5-7-12	17"	Brown and gray silt and clay, trace sand with silt lenses (varved) moist - medium stiff	0	0	1	44	55	36	13	25	A-6a
	74													
450.5														
	76	25	12-15-21	15"	Gray fine sand, little silt, trace gravel, wet - dense	1	1	88	- 10 -			NP	23	A-3
	78													
445.5	80													
		26	5-6-8	17"	Gray silt and clay, trace sand with silt and sand lenses, (varved),moist - medium stiff	0	0	6	38	56	35	14	27	A-6a
	82													
442.5														
	84				Gray sandy silt with sand layers,									
440.5		S-2		24"	moist - stiff	0	0	24	42	34	28	10	26	A-4a
	86	27	6-7-9	16"	Gray silty clay, trace sand with silt and sand layers (varved), very moist - medium stiff	0	0	5	36	59	37	17	28	A-6b
	88													
	90													
		28	5-9-11	17"	Brown and gray silty clay, trace sand with silt and sand layers(varved), very moist - soft	0	0	2	22	76	40	17	36	A-6b
	92													
	94													
	96	29	6-7-9	17"	Brown and gray silt and clay, trace sand with silt and sand layers (varved), very moist - soft	0	0	6	29	65	37	17	27	A-6b
	98													
425.5	100													
		30	5-9-11	17"	Brown and gray silt and clay,little sand with silt and sand layers,varved,very moist - soft	0	0	10	50	40	32	12	30	A-6a

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Form No. 530

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 11/7/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 490.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 11/8/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-12-1 STATION AND OFFSET 136+89, 55' L. SB BL SURFACE ELEV. 525.5 Retaining Wall No. 12

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	102													
	104													
420.5	106	31	6-7-10	15"	Gray fine sand, wet - medium dense	0	15	78	- 7 -			NP	24	A-3
	108													
415.5	110													
	112	32	10-14-22	16"	Gray fine and coarse sand, little silt with clay seams, wet - dense	0	10	75	- 15 -			NP	23	A-3a
	114													
	116	33	31-43-56	16"	Gray fine and coarse sand, some silt, some gravel with limestone fragments, wet - very dense	29	14	37	- 20 -			NP	9	A-3a
	118													
405.5	120													
	122	34	54-70-81	15"	Brown and gray sandy gravel, little silt with rock fragments, wet -very dense	58	16	12	- 14 -			NP	7	A-1-a
402.5	124													
	126	R-1	NXM	38%	Gray and brown shale(no shale recovery) and gray limestone, crystalline, fossiliferous, jointed(1" to 3½" pieces averaging 2") 62% shale, 38% limestone									
397.5	128													
	130				Boring completed									
	132													
	134													
	136													

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Form No. 630

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/19/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 496.1 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/21/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-13-1 STATION AND OFFSET 136+34, 67' Rt., WB BL SURFACE ELEV. 529.1 Retaining Wall No. 13

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.L.	W.C.	SOIL CLASS
529.1	0													
	2	1	9-5-3	7"	Brick and cinders(fill), moist-loose to medium dense	Visual classification-No tests performed								Fill
	4	2	8-7-6	10"	do do	Visual classification-No tests performed								Fill
524.1	6	3	7-2-1	3"	Brick (fill), moist - very loose	Visual classification-No tests performed								Fill
521.6	8	4	3-3-4	18"	Brown clayey sand and gravel with cinders (fill), moist - loose	Visual classification-No tests performed								Fill
	10	5	2-2-5	17"	do do	Visual classification-No tests performed								Fill
	12													
	14													
	16	6	4-2-4	18"	do do	Visual classification-No tests performed								Fill
	18	7	7-6-4	8"	do do	Visual classification-No tests performed								Fill
509.1	20													
	22	8	2-2-1	18"	Brown silt, little sand, trace gravel, wet - soft	2	2	12	61	23	24	4	25	A-4b
506.1	24	S-1		23"	Brown sandy silt, trace gravel, moist-medium stiff	0	0	30	48	22	26	8	16	A-4a
504.1	26	9	3-7-9	15"	Brown silty clay, little sand,trace gravel, very moist - medium stiff	1	2	17	57	23	27	18	21	A-6b
501.6	28	10	4-7-7	7"	Brown sandy gravel, little silt,moist-medium dense	66	17	5	- 12	-		NP	5	A-1-a
500.1	30	11	4-7-8	15"	Brown gravelly sand, little silt, moist - medium dense	48	16	26	- 10	-		NP	4	A-1-b
496.6	32													
	34	12	3-4-6	16"	Brown sandy gravel, trace silt, wet - medium dense	Visual classification-No tests performed								A-1-a

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS

Form No. 539—4

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 25, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/19/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. NXM WATER ELEV. IMMEDIATE 496.1 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/21/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-13-1 STATION AND OFFSET 136+34, 67'Rt., WB BL SURFACE ELEV. 529.1 Retaining Wall No. 13

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
	34													
	36	13	7-8-9	10"	Brown sandy gravel, trace silt, wet - medium dense	62	29	5	- 4			NP	10	A-1-a
489.1	38													
	40													
	42	14	1-1-1	18"	Brown gravelly sand, little silt, wet- very loose	26	48	16	- 10	-		NP	15	A-1-b
484.1	44													
	46	15	2-3-5	17"	Brown and gray silt and clay, trace sand, trace gravel with sand layers, moist - medium stiff	1	1	8	43	47	32	15	24	A-6a
	48													
479.1	50				Brown silty clay, little sand with									
478.1		S-2(Top)		11"	silt layers, moist - very stiff	0	1	9	32	58	40	17	22	A-6b
477.1	52	S-2(Bottom)		11"	Gray silty clay, varved, moist - stiff	0	0	0	35	65	40	18	24	A-6b
		16	6-8-10	18"	Gray clay with silt layers, varved, moist - medium stiff	0	0	0	23	77	41	17	29	A-7-6
	54													
	56	17	3-4-7	18"	Gray clay, trace sand with silt layers, varved, very moist - medium stiff	0	0	1	18	81	43	18	38	A-7-6
	58													
469.1	60													
		18	3-4-7	17"	Gray silt and clay with silt seams, varved, very moist - medium stiff	0	0	0	26	74	35	11	30	A-6a
	62													
	64													
464.1														
	66	8-3		24"	Gray clay with silt layers,varved, moist - stiff	0	0	0	24	76	48	23	29	A-7-6
	68	19	4-5-13	18"	do do	Visual classification-No tests performed A-7-6								

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Form No. 530—

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/19/64 SAMPLER: TYPE Split Spoon & Core Barrel 2"O.D.& NIM WATER ELEV. IMMEDIATE 496.1 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/21/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-13-1 STATION AND OFFSET 136+34, 67' Rt., WB BL SURFACE ELEV. 529.1 Retaining Wall No. 13

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
	68													
459.1	70													
	72	20	4-7-10	18"	Gray sandy silt with clay layers, wet - soft	0	1	25	21	53	27	10	35	A-4a
454.1	74													
	76	21	14-15-19	16"	Gray fine sand with clay layers, wet - dense	0	4	89	- 7	-		NP	20	A-3
	78													
449.1	80													
	82	22	6-7-9	18"	Gray silt, little sand with sand layers varved, moist - medium stiff	0	0	12	55	33	26	6	27	A-4b
	84													
444.1	86	23	6-7-13	15"	Gray sandy silt with sand layers, varved moist - medium stiff	0	1	24	45	30	23	5	25	A-4a
	88													
	90													
	92	24	5-7-9	18"	Gray sandy silt, trace gravel with sand layers, moist - medium stiff	2	1	18	45	34	27	9	24	A-4a
	94													
	96	25	5-8-9	14"	Gray sandy silt with sand layers, varved moist - medium stiff	0	1	13	41	45	26	7	25	A-4a
	98													
429.1	100													
	102	26	4-7-8	10"	Gray coarse and fine sand, little clay, little silt, trace gravel, moist - medium dense	2	4	64	16	14		NP	18	A-3a

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Form No. 530—1

THE H. C. NUTTING COMPANY

4130 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/19/64 SAMPLER: TYPE Split Spoon & Core Barrel 2"O.D. NXM WATER ELEV. IMMEDIATE 496.1 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/21/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-13-1 STATION AND OFFSET 136+34, 67' Rt., WB BL SURFACE ELEV. 529.1 Retaining Wall No. 13

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	102													
	104													
424.1														
422.6	106	S-4		14"	Gray silt, little sand with sand layers, moist - stiff	0	7	5	64	24	27	7	22	A-4b
	108	27	8-9-10	15"	Gray coarse and fine sand, little clay, little silt with clay seams, moist - medium dense	0	2	66	19	13		NP	19	A-3a
419.1	110													
	112	28	8-9-13	16"	Gray silt, trace sand, trace gravel with sand layers, moist - stiff	2	1	4	67	26	19	3	20	A-4b
	114													
	116	29	11-15-23	18"	Gray silt, little sand with sand layers, varved, moist - medium stiff	0	1	12	56	31	27	7	25	A-4b
	118													
409.1	120													
		30	13-91	11"	Gray silty sand, some gravel with clay layers, moist - stiff	35	11	21	20	13	19	4	20	A-2-4
	122													
	124													
404.1														
	126	31	36-60	10"	Gray gravelly sand, trace clay, little silt with clay layers, moist - stiff	46	13	20	13	8		NP	11	A-1-b
	128													
399.6														
399.1	130	32	108	51	Gray shale, moist - hard	Visual classification-No tests performed								
	132				Gray shale, calcareous, moderately tough (½" to 2" pieces averaging 1") and gray limestone, crystalline, fossiliferous, (three 3/4" to 1/2" pieces at the bottom of the run) 97% shale, 3% limestone									
		33	NXM	45%										
	134													
394.1														
	136				Boring completed									

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Form No. 510

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

REVISED
10/14/64-vb

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/2/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/3/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-15-1 STATION AND OFFSET 149+96, 50' L. BL SURFACE ELEV. 563.5 Retaining Wall No. 15

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % ARG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
563.5	0													
	2	1	4-5-3	12"	Brick, clay and cinders (fill), moist-loose	Visual classification-No tests performed								Fill
	4	2	1-2-3	10"	do do	Visual classification-No tests performed								Fill
558.5	6	3	3-3-4	17"	Brown and gray silty clay with cinders, (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	8													
553.5	10													
	12	4	3-5-6	17"	Brown and gray clay, trace sand with cinders (fill), moist - medium stiff	0	5	4	29	62	45	23	17	A-7-6
550.8	14	5	31-17-20	16"	Brown and gray clay with limestone fragments, moist - stiff	Visual classification-No tests performed								A-7-6
	16	6	20-24-34	16½"	Brown and gray clay, trace sand with limestone fragments, moist - hard	0	1	0	37	62	43	22	14	A-7-6
	18													
543.5	20													
542.5		7	19-63	11"	Brown and gray shale, moist - hard									
	22	8	NXM	56%	Sample 8 - Gray and brown, calcareous, soft shale(1½" and 4" pieces) and gray limestone, crystalline, fossiliferous, jointed (1" to 2½" pieces averaging 2") 75% shale, 25% limestone									
	24	9	NXM	64%										
	26	10	NXM	92%	Sample 9 - Gray shale, calcareous, moderately tough (½" to 1½" pieces averaging 1" and gray limestone, crystalline, fossiliferous (1½" to 6" pieces, averaging 3") 67% shale, 33% limestone									
	28													
	30	11	NXM	63%										
531.7	32				Boring completed									
	34													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

REVISED
10/14/64-vb

LOG OF BORING

DATE STARTED 6/2/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/3/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-15-1 STATION AND OFFSET 149+96, 50' L. BL SURFACE ELEV. 563.5 Retaining Wall No. 15

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL CLASS
					Sample 10 - Gray shale, calcareous, moderately tough (1/4" to 2" pieces, averaging 1") and gray limestone, crystalline, fossiliferous, jointed (one 1½" piece at the top of the run) 96% shale, 4% limestone									
					Sample 11 - Gray shale, calcareous, moderately tough with a brown weathered zone in the bottom 6" of the run (1/4" to 2" pieces averaging 1") and gray limestone, crystalline, fossiliferous, (1½" to 3½" pieces, averaging 2") 80% shale, 20% limestone									
					Boring completed									

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Form No. 630

THE H. C. NUTTING COMPANY

4130 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/31/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/31/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-15-2 STATION AND OFFSET 151+38, 39' L., BL SURFACE ELEV. 560.0 Retaining Wall No. 15

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
560.0	0													
559.0					Asphaltic concrete									
	2	1	9-8-8	18"	Brown and gray clay, trace sand, trace gravel, moist - very stiff	1	1	2	33	63	45	23	21	A-7-6
	4	2	7-9-10	6"	do do	Visual description-No tests performed								A-7-6
	6	3	6-6-11	16"	Brown and gray clay, trace sand, trace gravel with shale fragments, moist - very stiff	1	4	2	37	56	42	20	20	A-7-6
	8													
551.0		4	16-13-19	18"	Brown clay, trace sand with shale fragments, moist - very stiff	0	3	1	30	66	47	23	21	A-7-6
	10													
	12	5	NXM	43%	Brown and gray weathered shale, slightly tough (½" to 2" pieces averaging 1½") and gray limestone, crystalline, fossiliferous (½" & 1" pieces broken) 95% shale, 5% limestone									
	14													
	16	6	NXM	75%	Brown and gray weathered shale, slightly tough (½" to 2" pieces, averaging 1½") and gray limestone, crystalline, fossiliferous, jointed (1" to 3" pieces averaging 2") 77% shale, 23% limestone									
	18													
541.0														
	20				Boring completed									
	22													
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 630

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/3/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/3/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-15-3 STATION AND OFFSET 152+20, 53' L. BL SURFACE ELEV. 552.7 Retaining Wall No. 15

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
552.7	0													
551.7		1	2	12"	Concrete and cinders(fill), dry - soft	Visual classification-No tests performed								Fill
	2	1A	5-8		Brown clay, little sand, trace gravel with shale fragments, moist - stiff	4	6	5	29	56	45	22	23	A-7-6
	4	2	6-12-12	11"	Brown clay, trace sand, trace gravel with shale fragments, moist-very stiff	2	6	3	35	54	42	20	18	A-7-6
	6	3	12-13-16	14"	Brown and gray clay, trace sand, trace gravel with shale fragments, moist - very stiff	2	4	3	33	58	44	22	20	A-7-6
545.7	8													
	10	4	NXM	19%	Brown weathered shale(no shale recovered) and gray limestone, crystalline, fossiliferous, jointed and oxide stained, (1" to 3" pieces, averaging 2") 81% shale, 19% limestone									
	12	5	61-65-70	13"	Brown and gray weathered shale, moist-very stiff									
	14													
	16	6	NXM	67%	Gray shale, calcareous, broken, soft to moderately tough (¼" to 2" pieces, averaging 1") and gray limestone, crystalline, fossiliferous, jointed, (1" and 1½" pieces) 95% shale, 5% limestone									
535.2	18													
					Boring completed									
	20													
	22													
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 530—

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

Split Spoon & 2"O.D.& Water used in drilling

from elevation 598.4

DATE STARTED 7/20/64 SAMPLER: TYPE Core Barrel DIA. NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/22/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-16-1 STATION AND OFFSET 151+68, 122' Rt. BL SURFACE ELEV. 598.4 Retaining Wall No. 16

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
598.4	0				0.4' Concrete									
598.0		1	2-2-3	12"	Brown and gray clay, little sand, trace gravel, moist - stiff	6	8	4	26	56	49	26	23	A-7-6
	2													
	4	2	6-9-14	18"	do do	Visual classification-No tests performed								A-7-6
	6	3	6-10-60	16"	Brown and gray clay, trace sand, trace gravel with limestone fragments, moist-very stiff	1	2	2	31	64	45	22	18	A-7-6
590.9	8													
		4	17-17-34	17"	Brown and gray weathered shale, hard	Visual classification-No tests performed								
	10													
		5	22-45-75	17"	do do	Visual classification-No tests performed								
	12													
	14	6	17-51-68	17"	do do	Visual classification-No tests performed								
	16	7	28-70	13"	do do	Visual classification-No tests performed								
	18	8	33-74	12"	do do	Visual classification-No tests performed								
	20													
		9	37-90	13"	do do	Visual classification-No tests performed								
	22													
		10	41-87	12"	do do	Visual classification-No tests performed								
	24													
573.4														
	26	11	NXM	54%	Gray and brown shale, calcareous, slightly tough (weathered in the top 2' of the run) (¼" to 3" pieces, averaging 1") and gray limestone, crystalline, fossiliferous, (one 1½" pieces midway in the run)									
	28													
	30													
	32	12	NXM	73%	Gray shale, calcareous, moderately tough to tough (¼" to 2½" pieces, averaging 1½") and gray limestone, crystalline, fossiliferous, jointed midway in the run (1" to 4½" pieces averaging 2½") 80% shale, 20% limestone									
	34													

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Form No. 530—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

Water used in drilling from elevation 598.4

DATE STARTED 7/20/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/22/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway NAM-71-0.93 Retaining Wall No. 16

BORING No. R-16-1 STATION AND OFFSET 151+68,122'Rt.,BL SURFACE ELEV. 598.4

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL. CLASS
	34													
	36				Gray shale, calcareous, tough, jointed in top 18" (1" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous, jointed and iron oxide stained (one 3" piece) 95% shale, 5% limestone									
	38	13	NXM	82%										
	40													
	42				Gray shale, calcareous, tough (1"to3"pieces averaging 2") and gray limestone, crystalline, fossiliferous, jointed (1"to 3" pieces averaging 2½") 83% shale, 17% limestone									
	44	14	NXM	88%										
	46				Gray shale, calcareous, tough (1" to 2½" pieces, averaging 1½") and gray limestone, crystalline, fossiliferous, jointed (two pieces 1½" and 2½") 78% shale, 22% limestone									
551.9		15	NXM	83%										
	48				Boring completed									

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Form No. 630—10-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

Split Spoon & 2"O.D.

DATE STARTED 7/25/64 SAMPLER: TYPE Core Barrel DIA. NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/28/64 CASING: LENGTH _____ DIA 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAN-71-0.93

BORING No. B-16-2 STATION AND OFFSET 153+02, 96'Rt. BL SURFACE ELEV. 597.6 Retaining Wall No. 16

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
597.6	0				0.3' Concrete									
597.3														
595.1	2	1	12-3-7	11"	Cinders (fill), medium stiff	Visual classification-No tests performed								Fill
593.6	4	2	12-13-12	16"	Brown clay, trace sand with brick fragments (fill), moist - medium stiff	0	4	5	35	56	45	23	25	A-7-6
	6	S-1		24"	Brown and gray clay, trace sand, trace gravel, moist - stiff	1	3	4	31	61	52	30	20	A-7-6
	8	3	3-9-18	18"	Brown and gray clay, trace sand, moist-medium stiff	0	2	2	28	68	54	30	23	A-7-6
587.6	10	4	13-12-16	18"	Brown and gray clay, trace sand, moist-stiff	0	2	2	36	60	45	24	18	A-7-6
	12	5	9-13-7	16"	Brown and gray weathered shale, moist-very stiff to hard	Visual classification-No tests performed								
	14	6	15-25-38	14½"	do do	Visual classification-No tests performed								
	16	7	18-34-46	18"	do do	Visual classification-No tests performed								
	18	8	23-39-43	18"	do do	Visual classification-No tests performed								
	20	9	23-74-86	18"	do do	Visual classification-No tests performed								
	22	10	31-62-71	16"	do do	Visual classification-No tests performed								
	24	11	62-71	9"	do do	Visual classification-No tests performed								
571.1	26													
	28	12	NXM	83%	Sample 12-Gray and brown shale calcareous, slightly to moderately tough (¼" to 2" pieces averaging 1½") and gray limestone, fossiliferous, jointed and iron oxide stained (1" to 3½" pieces averaging 2") 80% shale, 20% limestone									
	30													
	32	13	NXM	88%										
	34													

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Form No. 530—15-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/25/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/28/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-16-2 STATION AND OFFSET 153+02, 96' Rt. BL SURFACE ELEV. 597.6 Retaining Wall No. 16

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL. CLASS
	34				Sample 13 - Gray shale, calcareous, moderately tough (¼" to 2" pieces averaging 1") and gray limestone, crystalline, fossiliferous, shaly(two 2½" pieces at bottom of the run) 88% shale, 12% limestone									
	36	14	NXM	50%										
	38													
	40	15	NXM	89%	Sample 14 - Gray shale,calcareous, moderately tough, jointed (¼" to 2"pieces averaging 1") and gray limestone,crystalline, fossiliferous,jointed and iron oxide stained(two 2½" pieces) 86% shale, 14% limestone									
	42													
553.6	44	16	NXM	50%										
	46				Sample 15 - Gray shale,calcareous,moderately tough to tough (½" to 3" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed (3/4" to 3" pieces averaging 1½") 88% shale, 12% limestone									
	48													
	50													
	52				Sample 16 - Gray shale, calcareous,tough (½" to 2½" pieces averaging 1½") 100% shale									
	54													
	56				Boring completed									
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 830—1549

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

REVISED
10/14/64-vb

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/29/64 SAMPLER: TYPE Split Spoon& Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/30/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-16-3 STATION AND OFFSET 154+54, 100' Rt. BL SURFACE ELEV. 586.4 Retaining Wall No. 16

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
586.4	0													
		1	9-19-11	14"	Cinders and limestone(fill),dry-stiff	Visual classification-No tests performed								Fill
583.9	2													
	4	2	6-8-9	16"	Brown clay, little sand,trace gravel, moist - stiff	2	5	5	28	60	48	26	18	A-7-6
	6	S-1		22"	do do	4	8	4	34	50	48	24	16	A-7-6
	8	3	13-18-21	16"	Brown clay, trace sand, moist - stiff	0	2	3	26	69	48	23	18	A-7-6
	10	4	11-19-36	18"	Brown clay, trace sand, moist - very stiff	0	0	3	35	62	45	21	16	A-7-6
574.4	12	5	23-28-39	18"	Brown silty clay, trace sand,trace gravel, moist - stiff	2	4	2	39	53	39	17	18	A-6b
571.4	14													
	16	6	NXM	91%	Sample 6 - Gray shale,calcareous, moderately tough with brown weathered zones throughout the run (½" to 2" pieces averaging 1") and gray limestone, crystalline,fossiliferous, jointed and iron oxide stained(1" to 2" pieces averaging 1½") 59% shale, 41% limestone									
	18	7	NXM	25%										
	20													
	22	8	NXM	91%	Sample 7 - Gray shale,calcareous, moderately tough with brown weathered zones throughout the run(½" to 1"pieces averaging 1") 100% shale									
	24	9	NXM	53%	Samples 8 & 9 - Gray shale,calcareous, moderately tough, jointed in the bottom half of the run (½" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous and iron oxide stained(1" to 3" pieces averaging 2½") 88%shale, 12% limestone									
	26													
	28	10	NXM	73%	Sample 10 - Gray shale,calcareous, moderately tough with brown weathered zones throughout the run(½" to 2"pieces averaging 1") and gray limestone, crystalline,fossiliferous,jointed(½"to 3"pieces 3½"pieces averaging 2")73% shale 27% limestone									
556.4	30													
	32				Boring completed									
	34													

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Form No. 630—1

THE H. C. NUTTING COMPANY

4160 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

* Water used in drilling from elev.573.4

DATE STARTED 1-5-65 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE * CLIENT: City of Cincinnati,Ohio

DATE COMPLETED 1-5-65 CASING: LENGTH ____ DIA. None AFTER 24 HOURS 561.4 PROJECT: Northeast Expressway HAM-71-0.93 Retaining Wall 16

BORING No. R-16-4 STATION AND OFFSET 155+74,105'Rt.,B.L. SURFACE ELEV. 576.9

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
576.9	0													
576.4		1	4	4"	Brown and gray clay with cinders and gravel,moist, medium stiff	Visual classification-No test performed								Fill
	2	2	16-23	12"	Brown and gray weathered shale with thinly bedded limestone, moist, hard	Visual classification No test performed								
	4	3	35-50	8"	do do	Visual classification No test performed								
571.9														
	6				Gray shale,calcareous,moderately tough with brown weathered zones in the bottom 10" of the run(1" to 5½" pieces averaging 2½")and gray limestone,crystalline,fossiliferous jointed and iron oxide stained in the bottom 10" of the run(1½" to 3" pieces averaging2½")80%shale,20%limestone									
	8	R-1	NXM	70%										
	10													
	12	R-2	NXM	37%	Gray shale,calcareous,moderately tough (½"to 1½"pieces averaging 1") and gray limestone,crystalline,fossiliferous (½" to 1½"pieces averaging 1") 80% shale, 20% limestone.									
	14													
	16	R-3	NXM	80%	Gray shale,calcareous,moderately tough to tough (½"to 3½"pieces averaging 2") and gray limestone, crystalline, fossiliferous (two pieces 1" and 6") 88% shale, 12" limestone									
	18													
557.9														
	20				Boring Completed									
	22													
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 530—10-58

THE R. W. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING *Water used in drilling from elev.580.5

DATE STARTED 1-6-65 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE * CLIENT: City of Cincinnati,Ohio

DATE COMPLETED 1-6-65 CASING: LENGTH ____ DIA. 3.5"I.D. AFTER 24 HOURS 560.5 PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-16-5 STATION AND OFFSET 157+12, 113'Rt., C.L. SURFACE ELEV. 587.0 Retaining Wall 16

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	STATE CLASS.
587.0	0													
	2	1	1-3-2	7"	Topsoil, brick, cinders and gravel, (fill), moist - loose	Visual classification-No tests performed								Fill
	4	2	3-2-2	7"	do do	Visual classification-No tests performed								Fill
	6	3	2-5-2	8"	do do	Visual classification-No tests performed								Fill
	8													
577.5	10	4	3-4-2	7"	do do	Visual classification-No tests performed								Fill
	12	5	10-16-22	15"	Brown and gray clay, trace shale and limestone fragments, trace sand, moist - very stiff	8	2	2	42	46	46	23	20	A-7-6
	14	6	12-17-28	14"	Brown clay, trace shale and limestone fragmentd,trace sand, moist- very stiff	4	6	4	37	49	46	23	22	A-7-6
572.0	16	7	16-25-30	12"	Brown weathered shale with thinly bedded limestone,moist - very stiff	Visual classification-No tests performed								
	18	8	35-55	9"	do do	Visual classification-No tests performed								
567.0	20													
	22	R-1	NXM	80%	Gray shale calcareous, moderately tough with brown weathered zones,approx.midway in the run(1½" to 3½" pieces averaging 2") and gray limestone crystalline fossiliferous jointed and iron oxide stained(1" to 2-3/4" pieces averaging 2") 88% shale, 12% limestone									
	24													
	26	R-2	NXM	60%	Gray shale,calcareous,moderately tough with soft seams.(½"to 2½"pieces averaging 2") and gray limestone crystalline fossiliferous jointed and iron oxide stained(1½"to 3"pieces averaging 2") 73% shale, 27% limestone									
	28													
557.0	30													
	32				Boring Completed									
	34													

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530-[illegible]

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/8/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2" O.D.& NXM WATER ELEV. IMMEDIATE 527.3 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/8/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-18-1 STATION AND OFFSET 9+44, 12' Rt., Prop.Tail Track CL SURFACE ELEV. 552.3 Retaining Wall No. 18

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
552.3	0													
	2	1	3-5-5	8"	Cinders (fill), moist - loose	Visual classification-No tests performed								Fill
	4	2	7-4-3	11"	do do	Visual classification-No tests performed								Fill
	6	3	2-1-1	9"	do do	Visual classification-No tests performed								Fill
	8	4	1-1-2	10"	do do	Visual classification-No tests performed								Fill
	10	5	2-1-2	11"	do do	Visual classification-No tests performed								Fill
	12	6	1-1-2	12"	do do	Visual classification-No tests performed								Fill
537.3	14	7	2-2-3	13"	Cinders and organic matter(fill), very moist to wet - loose	Visual classification-No tests performed								Fill
	16	8	1-2-2	17"	do do	Visual classification-No tests performed								Fill
	18	9	3-4-3	12"	do do	Visual classification-No tests performed								Fill
	20	10	2-3-3	12"	do do	Visual classification-No tests performed								Fill
	22	11	1-4-2	18"	do do	Visual classification-No tests performed								Fill
	24	12	1-2-3	13"	do do	Visual classification-No tests performed								Fill
	26													
	28													
	30													
	32													
	34													

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL.

Form No. 530—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/8/64 SAMPLER: TYPE Split Spoon& Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 527.3 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/8/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Retaining Wall No. 18

BORING No. R-18-1 STATION AND OFFSET 9+44, 12' Rt., Prop. Tail Track CL SURFACE ELEV. 552.3

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL. CLASS
	34													
	36	13	4-3-4	12"	Cinders and organic matter (fill), very moist to wet - loose	Visual classification-No tests performed								Fill
	38													
512.3	40													
	42	14	4-7-10	18"	Brown and gray silty clay, trace sand, moist - medium stiff	0	0	2	36	62	40	18	25	A-6b
509.3														
	44	S-1		22"	Gray silt and clay, trace sand, moist - stiff	0	1	3	48	48	33	12	21	A-6a
507.3	46	15	7-11-16	18"	Brown and gray silt, trace sand, trace gravel with silt layers and limestone fragments, moist - medium stiff	6	3	1	50	40	30	10	20	A-4b
	48													
502.8														
502.3	50	16	96	7"	Gray shale, moist - hard	Visual classification-No tests performed								
	52				Gray shale, calcareous, moderately tough, fossiliferous in the bottom 12" of the run (½" to 2½" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed (1" to 2½" pieces averaging 1½") 86% shale, 14% limestone									
	54	R-1	NXM	75%										
497.3														
	56				Boring completed									
	58													
	60													
	62													
	64													
	66													
	68													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 630

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/3/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 537.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/3/64 CASING: LENGTH ____ DIA 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS ____ Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-18-2 STATION AND OFFSET 10+49,12'Rt.Prop.Tail Track CL SURFACE ELEV. 552.2 Retaining Wall No. 18

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
552.2	0													
	2	1	9-15-10	9"	Cinders and brick fragments (fill), moist - medium dense to loose	Visual classification-No tests performed								Fill
	4	2	7-9-6	12"	do do	Visual classification-No tests performed								Fill
	6	3	2-2-2	14"	do do	Visual classification-No tests performed								Fill
	8	4	2-1-3	15"	do do	Visual classification-No tests performed								Fill
	10	5	1-2-1	17"	do do	Visual classification-No tests performed								Fill
	12	6	2-1-1	16"	do do	Visual classification-No tests performed								Fill
	14	7	1-1-1	15"	do do	Visual classification-No tests performed								Fill
	16	8	2-2-1	14"	do do	Visual classification-No tests performed								Fill
	18	9	1-2-3	13"	do do	Visual classification-No tests performed								Fill
532.2	20				Cinders and coal (fill), moist-loose									
	22	10	2-3-2	16"	do do	Visual classification-No tests performed								Fill
	24	11	3-3-4	17"	do do	Visual classification-No tests performed								Fill
	26	12	2-3-3	15"	do do	Visual classification-No tests performed								Fill
	28	13	9-18-20	14"	Brown and gray clay,little sand,little gravel with rock fragments moist-medium stiff	17	9	6	24	44	49	24	33	A-7-6
522.2	30	14	20-19-29	10"	do do	Visual classification-No tests performed								A-7-6
	32													
	34													

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Form No. 500—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/3/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 537.2 - CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/3/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway NAM-71-0.93

BORING No. B-18-2 STATION AND OFFSET 10+49, 12' Rt., Prop.Tail Track CL. SURFACE ELEV. 552.2 Retaining Wall No. 18

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SNTL. CLASS
517.2	34													
	36	15	19-21-26	9"	Brown and gray clay, trace sand, trace gravel with shale and limestone fragments, moist - stiff	7	2	2	30	59	47	20	24	A-7-6
	38	16	15-18-21	7"	do do	Visual classification-No tests performed								A-7-6
512.2	40													
510.2	42	17	17-22-47	12"	Brown and gray silt and clay, little sand with shale and limestone fragments, very moist - medium stiff	0	7	3	34	56	39	15	24	A-6a
	44				Gray shale, calcareous, moderately tough to tough, broken(¼" to 2" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed (1" to 4" pieces averaging 3") 80% shale, 20% limestone									
	46	18	NXM	47%										
505.2														
	48													
	50													

Boring completed

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Form No. 530—14-59

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/15/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 541.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/16/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-18-3 STATION AND OFFSET 12+30, 13' Rt., Prop. Tail Track CL SURFACE ELEV. 554.0 Retaining Wall No. 18

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
544.0	0													
	2	1	9-13-7	18"	Cinders and limestone (fill), dry - medium dense	Visual classification-No tests performed								Fill
549.0	4	2	9-9-11	17"	do do	Visual classification-No tests performed								Fill
546.5	6	3	6-6-6	14"	Cinders and sand(fill), moist - medium dense	Visual classification-No tests performed								Fill
	8				Brown silty clay with brick fragments,									
544.0	10	4	2-2-3	11"	(fill), moist - medium stiff	Visual classification-No tests performed								Fill
	12	5	1-1-1	13"	Gray silty clay with coal fragments (fill), moist - very soft	Visual classification-No tests performed								Fill
541.5	14	6	2-1-2	16"	Gray sand with brick fragments (FILL), wet - very loose	Visual classification-No tests performed								Fill
	16	7	1-1-1	0"										
	18	8	1-1-1	0"										
534.0	20													
533.5		9	200	6"	Wood	Visual classification-No tests performed								Fill
	22													
	24	10	7-7-9	11"	Dark brown silty clay (fill), moist - stiff	Visual classification-No tests performed								Fill
529.0														
	26	11	9-9-9	13"	Brown and gray clay, trace sand, trace gravel, moist - stiff	6	2	2	35	55	41	17	24	A-7-6
	28													
	30													
	32	12	9-11-14	16"	do do	0	2	3	35	60	43	17	24	A-7-6
	34													

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Form No. 530—15-58

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/15/64 SAMPLER: TYPE Split Spoon & CoreBarrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 541.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/16/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-18-3 STATION AND OFFSET 12+30, 13' Rt., Stem Augers Prop.Tail Track CL SURFACE ELEV. 554.0 Retaining Wall No. 18

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
519.0	34													
	36	13	32-36-59	16"	Gray shale, moist - hard	Visual classification-No tests performed								
	38													
	40													
	42	14	NXM	72%	Gray shale, moist - hard *									
511.0														
	44				Boring completed									
	46													
	48				*Vandals destroyed core samples in the field. Description based on driller's examination only. (Notified Mr. Warnke of Hazelet & Erdal by telephone of this condition.)									
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 630—15.59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

*Water used in drilling from elevation 574.8

DATE STARTED 9/8/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE * CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/10/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Retaining Wall No. 18

BORING No. R-18-4 STATION AND OFFSET 12+86,13' L. Prop.Tail Track CL SURFACE ELEV. 574.8

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
574.8	0													
	2	1	1-1-1	8"	Cinders and topsoil (fill), dry - soft	Visual classification-No tests performed								Fill
569.8	4	2	9-14-11	11"	Topsoil, cinders and brick (fill),dry-stiff	Visual classification-No tests performed								Fill
	6	3	7-11-9	10"	Brown clay, little sand,trace gravel with topsoil and brick fragments(fill), moist - stiff	5	5	10	39	41	42	21	16	A-7-6
	8				do do									
564.8	10	4	6-7-11	12"		Visual classification-No tests performed								A-7-6
562.3	12	5	1-2-2	8"	Brown and gray silty clay, little sand, trace gravel with topsoil and brick fragments,(fill),moist-medium stiff	8	4	10	40	38	37	17	27	A-6b
	14	6	3-4-6	12"	Brown and gray silty clay with topsoil, sand and brick fragments(fill),moist-medium stiff	Visual classification-No tests performed								Fill
558.8	16													
556.3	18	7	3-3-7	6"	Brick, gravel, wood fragments, and brown silty clay(fill), very moist-stiff	Visual classification-No tests performed								Fill
	20	8	4-6-3	12"	Brown silty clay and topsoil with brick and rock fragments (fill), moist - stiff	Visual classification-No tests performed								Fill
	22	9	5-7-4	8"	do do	Visual classification-No tests performed								Fill
	24	10	6-6-3	7"	do do	Visual classification-No tests performed								Fill
	26	11	2-3-3	11"	do do	Visual classification-No tests performed								Fill
	28													
	30	12	5-6-4	0										
	32	13	6-4-5	12"	do do	Visual classification-No tests performed								Fill
541.3	34													

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Form No. 530—16-58

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

*Water used in drilling from elevation 574.8

DATE STARTED 9/8/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. NXM WATER ELEV. IMMEDIATE * CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/10/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-18-4 STATION AND OFFSET 12+86, 13' L. Prop. Tail Track CL SURFACE ELEV. 574.8 Retaining Wall No. 18

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34	14	3-4-4	8"	Brown clayey sand with brick, rock and wood fragments (fill), very moist - medium stiff	Visual classification-No tests performed								Fill
	36													
536.3	38	15	4-5-3	10"	do do	Visual classification-No tests performed								Fill
	40	16	3-5-4	9"	Topsoil, cinders, wood and brick fragments (fill), very moist - medium stiff	Visual classification-No tests performed								Fill
	42	17	6-4-3	10"	do do	Visual classification-No tests performed								Fill
531.3	44													
	46	18	3-5-4	8"	Brown and gray silty clay with sand and and cinders (fill), very moist - stiff	Visual classification-No tests performed								Fill
526.3	48													
	50	19	18-20-26	4"	Brown and gray clay with sand, moist - stiff	No tests performed-Insufficient sample								A-7-6
	52													
521.3	54													
	56	20	11-18-23	9"	Brown and gray clay, trace sand with limestone fragments, moist - very stiff	0	3	3	33	61	42	17	22	A-7-6
516.3	58													
	60	21	18-30-36	10"	Gray shale, moist - hard	Visual classification-No tests performed								
512.3	62													
	64	22	NXM	70%	Gray shale,calcareous,moderately tough (½"to 2½" pieces averaging 1½") and gray limestone, crystalline, fossiliferous (1½" to 4½" pieces averaging 2½")									
	66				87% shale, 13% limestone									
507.3	68				Boring completed									

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Form No. 630-[illegible]

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

*Water used in drilling from elevation 564.7

DATE STARTED 9/14/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE * CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/14/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-18-5 STATION AND OFFSET 13+22, 12' Rt., Prep.Tail Track CL SURFACE ELEV. 564.7 Retaining Wall No. 18

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SLT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
564.7	0													
	2	1	5-7-11	8"	Topsoil, cinders and clay (fill), dry to moist - stiff to medium stiff	Visual classification-No tests performed								Fill
	4	2	5-8-10	13"	do do	Visual classification-No tests performed								Fill
	6	3	32-6-11	9"	do do	Visual classification-No tests performed								Fill
	8	4	3-2-5	12"	do do	Visual classification-No tests performed								Fill
554.7	10													
	12	5	2-3-4	8"	Topsoil, sand, ashes and brick fragments (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	14	6	1-3-3	6"	do do	Visual classification-No tests performed								Fill
549.7	16	7	2-3-2	12"	Brown sandy silt, some gravel with ashes and brick fragments (fill), moist - medium stiff	21	7	18	32	22	27	9	24	A-4a
	18	8	2-3-3	6"	Brown sandy silt, little gravel with ashes and brick fragments(fill),moist-medium stiff	11	9	27	27	26	26	9	25	A-4a
544.7	20	9	3-4-6	6"	Brown gravelly sand,little clay,little silt, with ashes and brick fragments, (fill), moist - medium stiff	37	22	19	12	10		NP	19	A-1-b
542.2	22	10	2-4-3	0										
539.7	24	11	2-3-2	5"	Brown silty sand, little clay,some gravel with ashes and brick fragments, (fill), moist - medium stiff	26	21	25	16	12		NP	18	A-2-4
537.2	26	12	4-4-7	12"	Topsoil, sand, ashes and brick fragments(fill), moist - medium stiff	Visual classification-No tests performed								Fill
	28	13	2-3-1	6"	do do	Visual classification-No tests performed								Fill
532.2	30	14	1-1-3	10"	Brown silt,little sand,little gravel with ashes and brick fragments(fill), moist - medium stiff	10	8	8	50	24		NP	22	A-4b
	32													
	34													

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Form No. 530—1[illegible]

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

*Water used in drilling from elevation 564.7

DATE STARTED 9/14/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE * CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/14/64 CASING: LENGTH ____ DIA 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS ____ Backfilled PROJECT Northeast Expressway HAM-71-0.93

BORING No. R-18-5 STATION AND OFFSET 13+22, 12'Rt.,Prop.Tail Track CL SURFACE ELEV. 564.7 Retaining Wall No. 18

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL CLASS
529.7	34													
	36	15	6-7-7	13"	Brown and gray silt, trace sand, moist-medium stiff (possible fill)	0	1	5	79	15		NP	22	A-4b
	38													
524.7	40													
		16	7-9-50	7"	Brown and gray silty clay, trace sand, moist - stiff	0	2	0	34	64	40	18	14	A-6b
	42													
	44													
519.7														
	46	17	12-15-53	4"	Brown weathered shale, moist-very stiff Visual classification-No tests performed									
	48													
515.7														
	50	R-1	NXM	60%	Gray shale, calcareous, moderately tough (½" to 1½" pieces averaging 1") 100% shale									
	52													
		R-2	NXM	90%	Gray shale, calcareous, moderately tough (½" to 1½" pieces averaging 1") 100% shale									
510.7	54													
	56				Boring completed									

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Form No. 610—1M

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

REVISED
10/12/64-vb

TESTING ENGINEERS AND SOILS CONSULTANTS

*Water used in drilling from surface - elevation 605.3.

LOG OF BORING

DATE STARTED 8/18/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE * CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/20/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-21-1 STATION AND OFFSET 166+86, 16.5' Rt., Ramp CD BL SURFACE ELEV. 605.3 Retaining Wall No. 21

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N) **	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
605.3	0													
603.3	2	1	12-11-12	14"	Cinders, topsoil and brick (fill), moist - stiff	Visual classification-No tests performed								Fill
600.3	4	2	12-80	8"	Brown clay, trace sand, trace gravel with shale and limestone fragments, moist - very stiff	2	5	4	29	60	43	20	20	A-7-6
598.8	6	3	26-60	7"	Brown weathered shale, moist - hard	Visual classification-No tests performed								
	8	4	NXM	60%	Brown and gray weathered shale, slightly tough, jointed(¼"to 1½" pieces averaging 1")(trace of limestone)									
	10													
	12	5	NXM	17%	Brown and gray weathered shale, slightly tough to soft(¼" to 1½" pieces averaging 1")trace of limestone(one 3/4"piece jointed) 99% shale, 1% limestone									
	14													
	16	6	NXM	31%	Brown and gray weathered shale, slightly tough(¼" and 1"pieces and gray limestone crystalline, fossiliferous(1" and 2½" pieces) 92% shale, 8% limestone									
	18													
	20				Gray shale, calcareous, moderately tough (1" to 4" pieces averaging 2") and gray limestone, crystalline, fossiliferous,									
	22	7	NXM	80%	jointed and iron oxide stained (three pieces 1" and 1½") 95% shale, 5% limestone									
	24				Gray shale, calcareous, moderately tough (¼" to 3" pieces averaging 2") and gray									
	26	8	NXM	54%	limestone, crystalline, fossiliferous, jointed(three pieces ¼" to 1") 95% shale,									
	28				5% limestone									
576.3														
	30				Boring completed									
	32													
	34				**70 lb. hammer weight 30 inch fall									

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Form No. 530—

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

*Water used in drilling from elevation 609.7

DATE STARTED 8/30/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE * CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/30/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93 Retaining Wall No. 21

BORING No. R-21-2 STATION AND OFFSET 168+21, 19.5' Rt., Ramp GD BL SURFACE ELEV. 609.7

ELEV.	DEPTH	SAMPLE No.	STD. PEN. ** (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL. CLASS
609.7	0													
608.2	2	1	5-6-8	14"	Gray silty clay with topsoil and cinders (Fill), moist	Visual classification-No tests performed								Fill
607.2	4	2	12-14-38	16"	Brown clay, trace sand, trace gravel with shale and limestone fragments, moist - stiff	1	6	3	31	59	46	20	18	A-7-6
	6	3	10-18-45	12"	do do	Visual classification-No tests performed								A-7-6
	8	4	18-32-60	15"	Brown and gray clay, trace sand with shale and limestone fragments, moist - very stiff	0	2	4	32	62	44	17	18	A-7-6
600.2	10	5	60	3"	Brown silty clay, little sand, little gravel with shale and limestone fragments, moist - very stiff	13	9	6	16	56	40	16	19	A-6b
598.7	12	6	NXM	53%	Sample 6 - Gray shale, calcareous, moderately tough (½" to 2" pieces averaging 1") and gray limestone, crystalline, fossiliferous (one 1½"piece in the bottom 4" of the run) 97% shale, 3% limestone									
	14													
	16	7	NXM	63%	Sample 7 - Gray shale, calcareous, moderately tough (1" to 5" pieces averaging 2½") and gray limestone, crystalline, fossiliferous, jointed and iron oxide stained (three pieces ½" - 1" and 1½" in the bottom 8" of the run 95% shale,									
	18													
	20	8	NXM	51%	5% limestone									
	22				Sample 8 - Gray shale with brown weathered zones in the top half of the run, calcareous, moderately tough to tough (1" to 6" pieces averaging 3") and gray limestone, crystalline, fossiliferous (1½" to 2½" pieces averaging 2")									
	24													
	26	9	NXM	75%	84% shale, 16% limestone									
	28													
	30				Sample 9 - Gray shale, calcareous, tough to moderately tough (½" to 3" pieces averaging 2") 100% shale									
	32	10	NXM	60%	Sample 10-Gray shale, calcareous, moderately tough to tough, jointed in the top and bottom 6" of the run(½" to 3" pieces averaging 2") 100% shale									
576.2	34				Boring completed									

**70 lb. Hammer Weight
30 inch fall

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Form No. 530—16

REVISED jh
12-21-64

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

*Water used in drilling from elevation 596.5

DATE STARTED 8/27/64 SAMPLER: TYPE Split Spoon Core Barrel DIA. 2"O.D. NXM WATER ELEV. IMMEDIATE * CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/28/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0,93

BORING No. R-21-3 STATION AND OFFSET 168+91, 13' Rt. Ramp GD BL SURFACE ELEV. 596.5 Retaining Wall No. 21

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
596.5	0													
	2	1	4-7-8	9"	Brown weathered shale with limestone fragments, dry - hard	Visual classification-No tests performed								
	4	2	25-50	10"	Brown and gray shale with limestone fragments, moist - hard	Visual classification-No tests performed								
590.0	6	3	20-50	10"	do do	Visual classification-No tests performed								
	8	4	NXM	83%	Sample 4-Brown and gray weathered shale slightly tough(¼" to 1½" pieces averaging 1")and gray limestone,crystalline,									
	10	5	NXM	90%	fossiliferous(two pieces ½" and 2")63% shale, 38% limestone									
	12				Sample 5-Gray shale,calcareous,moderately tough to tough (1" to 5½" pieces averaging 3") 100% shale									
	14	6	NXM	89%	Sample 6-Gray shale,calcareous,tough to moderately tough,weathered in bottom 12" of the run(1" to 5½"pieces averaging 3") and gray limestone, crystalline,									
	16				fossiliferous,jointed and iron oxide									
	18	7	NXM	91%	stained (½" to 1½" averaging 1")86% shale, 14% limestone									
576.0	20	8	NXM	100%	Sample 7-Gray shale,calcareous,moderately tough with soft seams(½" to 4½" pieces averaging 2") 100% shale									
	22				Sample 8-Gray shale,calcareous,tough (½" to 3" pieces averaging 2") and gray limestone, crystalline,fossiliferous (one 2½" piece at the bottom of the run) 94% shale, 6% limestone									
	24													
	26				Boring completed									
	28													
	30													
	32													
	34													

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Form No. 530—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/13/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/13/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-21-4 STATION AND OFFSET 170+23, 18' Rt., BL Ramp GD SURFACE ELEV. 594.3 Retaining Wall No. 21

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	UNIF. CLASS.
594.3	0													
591.8		1	4	5"	Cinders (fill), moist - loose	Visual classification-No tests performed								Fill
	2	2	5-8	12"	Brown and gray weathered shale, moist - hard	Visual classification-No tests performed								
	4	3	16-31-58	18"	Brown and gray weathered shale, moist-hard	Visual classification-No tests performed								
589.3														
	6	4	23-74	15"	Gray shale, moist - hard	Visual classification-No tests performed								
	8	5	41-130	18"	Gray shale, moist - hard	Visual classification-No tests performed								
584.3	10													
	12	6	NXM	80%	Gray shale, calcareous, jointed in top 6" of the run, tough (½" to 2½" pieces, averaging 2") and gray limestone, shaly, fossiliferous, (two 1½" pieces) 94% shale, 6% limestone									
	14													
	16	7	NXM	61%	Gray shale, calcareous, moderately tough to tough (1" to 3"pieces averaging 2") and gray limestone, fossiliferous (one 3/4" piece)98% shale, 2% limestone									
576.3	18													
	20				Boring completed									
	22													
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 530—10

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/2/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 595.4 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/3/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-23-1 STATION AND OFFSET 177+02, 70' Rt., NB BL SURFACE ELEV. 620.4 Retaining Wall No. 23

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
620.4	0				0.3' Concrete									
620.1		1	5-4-4	10"	Brown silty clay with cinders(fill), moist - medium stiff	Visual classification-No tests performed								Fill
617.9	2													
	4	2	5-5-5	11"	Clay, sand, gravel, brick and cinders (fill), moist - loose	Visual classification-No tests performed								Fill
	6	3	2-2-4	12"	do do	Visual classification-No tests performed								Fill
	8	4	2-1-3	12"	do do	Visual classification-No tests performed								Fill
	10	5	2-2-3	11"	do do	Visual classification-No tests performed								Fill
	12													
	14													
	16	6	2-3-2	13"	do do	Visual classification-No tests performed								Fill
	18													
	20	7	2-3-4	17"	do do	Visual classification-No tests performed								Fill
	22													
	24													
	26		1-1-2	0										
592.9														
	28	8	2-3-5	10"	Brown and gray clay, little sand, trace gravel with limestone fragments moist - medium stiff	4	5	5	37	49	41	16	22	A-7-6
	30	S-1		20"	Brown clay, trace sand, trace gravel with limestone fragments, moist - stiff	9	5	4	32	50	42	18	22	A-7-6
588.4	32	9	5-5-6	10"	Brown and gray silt and clay, trace sand, moist - medium stiff	0	0	1	55	44	32	12	23	A-6a
	34													

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Form No. 530—16-64

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/2/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 595.4 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/3/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway NAM-71-0.93

BORING No. R-23-1 STATION AND OFFSET 177+02, 70' Rt., NB BL SURFACE ELEV. 620.4 Retaining Wall No. 23

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
585.4	34													
	36	10	5-7-9	17"	Brown and gray clay, trace sand, moist stiff	0	0	2	48	50	44	22	22	A-7-6
	38	11	5-9-14	18"	Brown clay, little sand, trace gravel with limestone fragments, moist-stiff	9	8	4	28	51	41	19	19	A-7-6
580.4	40	12	17-10-15	10"	Brown silty clay, trace sand, trace gravel with limestone fragments, moist - stiff	2	4	4	38	52	40	17	19	A-6b
577.9	42	13	7-11-16	15"	Brown silt and clay, little sand, trace gravel with limestone fragments, moist-stiff	6	7	4	42	41	34	12	18	A-6a
575.4	44	14	8-12-18	18"	Brown clay, little sand, little gravel with limestone fragments, moist-stiff	13	10	5	29	43	41	16	17	A-7-6
572.9	48	15	7-10-17	18"	Brown silt and clay, little sand with limestone fragments, moist - stiff	0	7	4	37	52	37	14	20	A-6a
570.4	50	16	12-16-28	18"	Brown and gray weathered shale, moist - hard	Visual classification-No tests performed								
	52													
	54													
565.4	56	17	NXM	43%	Gray shale, calcareous, moderately tough (½" to 2" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed (¼" to 2" pieces averaging 1") 95% shale, 5% limestone									
	58													
560.4	60													
	62				Boring completed									
	64													
	66													
	68													

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/27/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 590.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/27/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-25-1 STATION AND OFFSET 181+05, 71' Rt., NB RL SURFACE ELEV. 620.0 Retaining Wall No. 25

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
620.0	0													
	2	1	5-6-8	12"	Clay, sand, cinders and brick(fill), moist - medium dense to loose	Visual classification-No tests performed								Fill
	4	2	7-6-5	6"	do do	Visual classification-No tests performed								Fill
	6	3	2-5-4	10"	do do	Visual classification-No tests performed								Fill
	8	4	2-3-3	11"	do do	Visual classification-No tests performed								Fill
	10	5	3-6-5	11"	do do	Visual classification-No tests performed								Fill
	12	6	2-5-8	13"	do do	Visual classification-No tests performed								Fill
	14	7	2-5-3	16"	do do	Visual classification-No tests performed								Fill
	16	8	3-4-3	18"	do do	Visual classification-No tests performed								Fill
600.0	18	9	2-3-2	16"	Cinders and clay (fill), moist - loose	Visual classification-No tests performed								Fill
	20	10	2-3-4	16"	do do	Visual classification-No tests performed								Fill
	22	11	3-3-4	9"	do do	Visual classification-No tests performed								Fill
592.5	24	12	3-6-7	18"	Brown and gray silt and clay,little sand, trace gravel with shale fragments(fill), moist - medium stiff	9	7	5	36	43	35	14	24	A-6a
	26	13	5-7-8	18"	Brown and gray silt and clay,little sand, trace gravel with shale and limestone fragments (fill), moist - medium stiff	1	12	5	37	45	35	14	22	A-6a
	28	14	7-8-10	17"	Brown and gray silt and clay,little sand, some gravel with shale and limestone fragments(fill), moist - medium stiff	20	9	5	28	38	36	14	20	A-6a
	30													
	32													
	34													

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/27/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 590.0 Backfilled CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/27/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-25-1 STATION AND OFFSET 181+05, 71'Rt., NB BL SURFACE ELEV. 620.0 Retaining Wall No. 25

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL. CLASS
	34													
	36	15	7-9-10	18"	Brown and gray silt and clay, little sand, trace gravel with shale and limestone fragments (fill), moist - stiff	2	10	6	29	53	37	15	16	A-6a
	38													
	40													
	42	16	7-9-10	18"	Brown and gray silt and clay, little sand, trace gravel with shale and limestone fragments (fill), moist-stiff	6	9	5	38	42	37	15	20	A-6a
	44													
575.0														
	46	17	5-8-9	15"	Gray sandy silt and gravel with limestone fragments (fill), wet - medium stiff	38	14	5	21	22	28	10	14	A-4a
	48													
570.0	50													
	52	18	4-5-8	12"	Silty clay, concrete and brick fragments (fill), wet - medium dense	Visual classification-No tests performed Fill								
	54													
565.0														
564.5	56	19	78	7"	Gray shale, moist - hard	Visual classification-No tests performed								
	58	20	NXM	63%	Gray shale, calcareous, slightly tough to moderately tough (½" to 3½" pieces averaging 2") and gray limestone, crystalline, fossiliferous (three pieces ½", 1" and 5") 89% shale, 11% limestone									
559.5	60													
	62				Boring completed									
	64													
	66													
	68													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/26/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 583.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/26/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS ____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-26-1 STATION AND OFFSET 13+43, 45'Rt.Elsinore Pl. CL SURFACE ELEV. 607.6 Retaining Wall No. 26

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
607.6	0				0.3' concrete									
607.3														
	2	1	4-5-5	16"	Clay and cinders (fill),moist - loose	Visual classification-No tests performed								Fill
605.1														
	4	2	2-1-1	11"	Cinders (fill), moist - very loose	Visual classification-No tests performed								Fill
602.6														
	6	3	1-1-1	18"	Cinders and clay(fill), moist - very loose	Visual classification-No tests performed								Fill
	8													
		4	1-1-1	18"	do do	Visual classification-No tests performed								Fill
	10													
		5	1-1-1	18"	do do	Visual classification-No tests performed								Fill
	12													
	14													
592.6														
	16	6	3-3-3	14"	Brown and gray silt and clay, some sand, trace gravel with cinders and shale fragments (fill), moist - medium stiff	5	10	14	31	40	34	14	22	A-6a
	18													
587.6	20													
		7	2-3-3	18"	Brown and dark gray silty clay, some sand, trace gravel with cinders (fill), moist - medium stiff	5	10	14	31	40	36	16	28	A-6b
585.6	22													
		S-1		18"	Brown and gray clay, trace sand, little gravel with shale and limestone fragments, moist - medium stiff	11	4	4	32	49	41	17	27	A-7-6
	24													
		8	2-3-4	3"	Brown and gray clay, trace sand, trace gravel with shale and limestone fragments, moist - stiff	1	3	2	30	64	48	24	26	A-7-6
	26													
	28		5-8-12	0										
	30													
		9	8-11-15	17"	Brown and gray clay, trace sand, trace gravel with shale and limestone fragments, moist - stiff	2	4	5	37	52	41	28	19	A-7-6
	32													
		S-2		23"	Brown and gray clay,little sand,little gravel with shale and limestone fragments, moist - stiff	16	10	7	31	36	41	19	16	A-7-6
	34													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/26/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 583.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/26/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-26-1 STATION AND OFFSET 13+43, 45' Rt.Elsinore Pl. CL SURFACE ELEV. 607.6 Retaining Wall No. 26

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
573.6	34													
	36	10	7-8-10	15"	Brown and gray silty clay, little sand, little gravel with shale and limestone fragments, moist - stiff	15	8	4	31	42	38	16	17	A-6b
570.6	38	11	6-8-11	15"	Brown and gray clay, trace sand, trace gravel with shale and limestone fragments, moist - stiff	2	5	4	38	51	41	20	15	A-7-6
566.6	40													
	42	12	11-12-14	13"	Gray silt and clay, trace sand, trace gravel with shale fragments, moist - stiff	4	3	2	41	50	35	15	14	A-6a
562.6	44													
	46	S-3		19"	Brown and gray clay, trace sand, trace gravel, moist - stiff	2	3	6	35	54	45	23	21	A-7-6
	48	13	7-11-14	18"	Brown clay, little sand, trace gravel with limestone fragments, moist - stiff	2	5	5	34	54	43	21	22	A-7-6
	50													
	52	14	6-9-11	17"	Brown clay, trace sand, trace gravel with shale fragments, moist - stiff	1	3	3	43	50	44	22	17	A-7-6
	54													
	56	S-4			Brown and gray silty clay, moist - stiff	0	4	3	36	57	50	28	22	A-7-6
550.6	58	15	5-14-11	17"	Brown and gray silty clay, trace sand with organic matter, moist - medium stiff	0	2	2	48	48	39	19	22	A-6b
547.6	60													
	62	16	5-7-8	17"	Brown and gray clay, little sand, little gravel with limestone fragments, very moist - medium stiff	14	6	5	26	49	41	20	24	A-7-6
	64													
542.6	66	17	58-93	15"	Gray shale, moist - hard	Visual classification-No tests performed								
	68													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/26/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 583.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/26/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-26-1 STATION AND OFFSET 13+43, 45' Rt. Elsinore Pl. CL SURFACE ELEV. 607.6 Retaining Wall No. 26

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SNTL CLASS
536.6	68–70	18	NXM	75%	Gray shale,calcareous,moderately tough to tough(¼" to 3 " pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed(1" and 1-3/4" pieces) 90% shale, 10% limestone									
	72–102				Boring completed									

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/10/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/10/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-31-1 STATION AND OFFSET 182+91.5'L., Ramp RC BL SURFACE ELEV. 622.5 Retaining Wall No. 31

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL CLASS
622.5	0													
	2	1	10-13-16	15"	Clay, brick and cinders(fill), moist - stiff	Visual classification-No tests performed								Fill
620.0	4	2	4-4-5	13"	Sand, gravel, cinders, clay and brick fragments (fill), moist - loose	Visual classification-No tests performed								Fill
617.5	6	3	8-5-6	8"	Sand, gravel and brick (fill), moist - medium dense	Visual classification-No tests performed								Fill
615.0	8	4	4-3-3	7"	Clay, cinders and brick (fill), moist - loose	Visual classification-No tests performed								Fill
612.5	10	5	4-6-8	12"	Weathered shale and cinders (fill), moist - stiff	Visual classification-No tests performed								Fill
610.0	12	6	3-3-3	15"	Cinders, sand and organic matter (fill), moist - loose	Visual classification-No tests performed								Fill
	14	7	1-2-3	13"	do do	Visual classification-No tests performed								Fill
606.0	16	8	2-2-3	16"	Clay and cinders (fill), moist - loose	Visual classification-No tests performed								Fill
	18	9	1-1-3	15"	Cinders and organic matter (fill), moist - loose	Visual classification-No tests performed								Fill
602.5	20	10	2-1-3	16"	do do	Visual classification-No tests performed								Fill
	22	11	1-2-2	13"	Cinders (fill), moist - loose	Visual classification-No tests performed								Fill
	24	12	2-2-2	14"	do do	Visual classification-No tests performed								Fill
597.5	26	13	1-2-2	18"	do do	Visual classification-No tests performed								Fill
	28													
	30													
	32													
	34													

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Form No. 630—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/10/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/10/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-31-1 STATION AND OFFSET 182+91.5' L. Ramp RC BL SURFACE ELEV. 622.5 Retaining Wall No. 31

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
587.5	34													
	36	14	3-5-7	18"	Dark gray silt and clay, trace sand, trace gravel with cinders (fill), moist - medium stiff	5	4	3	47	41	40	15	26	A-6a
	38													
582.5	40													
	42	15	5-9-13	18"	Brown and gray silty clay, trace sand, moist - stiff	0	1	2	46	51	38	16	21	A-6b
	44													
577.5														
	46	16	7-10-15	18"	Brown clay, little sand, little gravel with limestone fragments, moist - stiff	12	6	6	26	50	42	18	25	A-7-6
	48													
572.5	50													
	52	17	8-11-17	15"	Brown silty clay, trace sand, trace gravel with limestone fragments, moist - stiff	4	5	4	18	69	40	17	17	A-6b
568.5	54													
	56	18	9-15-24	18"	Brown and gray weathered shale, moist - hard	Visual classification-No tests performed								
	58													
563.5														
	60				Gray shale, calcareous, tough to moderately tough (½" to 2½" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, 2" to 2-3/4" pieces averaging 2½")									
	62	19	NXM	81%	80% shale, 20% limestone									
558.5	64													
	66				Boring completed									
	68													

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Form No. 530

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/19/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/20/64 CASING: LENGTH ____ DIA. None AFTER 24 HOURS 629.4 PROJECT: Northeast Expressway HAM-71-0,93 Retaining Wall No. 32

BORING No. R-32-1 STATION AND OFFSET 185+04, 28' L., Ramp GA BL SURFACE ELEV. 643.4

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N) *	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
643.4	0													
	2	1	14-21-33	14"	Brown weathered shale, moist-very stiff	Visual classification-No tests performed								
	4	2	65-110-145	15"	do do	Visual classification -No tests performed								
638.4	6				Gray and brown shale, slightly tough (1" to 2½" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed and iron oxide stained (¼" to 3½" pieces averaging 1½") 83% shale, 17% limestone									
	8	R-1	NXM	48%										
	10				Gray and brown shale, slightly tough (½" to 2" pieces averaging 1") and gray limestone, crystalline, fossiliferous, jointed and iron oxide stained (1" to 3" pieces averaging 2") 90% shale, 10% limestone									
	12	R-2	NXM	32%										
	14				Gray shale, calcareous, moderately tough with 6" brown weathered zone in the top 6" of the run (1" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous and iron oxide stained (¼" to 1½" pieces in the top 4" of the run) 90% shale, 10% limestone									
	16	R-3	NXM	94%										
626.4	18													
	20													
	22													
	24													
	26													
	28													
	30													
	32													
	34													

Boring completed

*Hammer Weight - 35 lbs.
Fall - 30 inches

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/4/64 SAMPLER: TYPE Split Spoon& Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None Backfilled CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/4/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93 Retaining Wall No. 33

BORING No. R-33-1 STATION AND OFFSET 186+05, 5' L, SB BL SURFACE ELEV. 620.3

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
620.3	0													
619.3					1' Pavement									
617.8	2	1	5-7-7	8"	Sand, gravel and concrete (fill), moist - medium dense	Visual classification-No tests performed								Fill
615.3	4	2	4-9-6	6"	Gray silt and clay, some sand, trace gravel with limestone fragments, wet - soft	11	12	9	28	40	34	13	22	A-6a
	6	3	15-21-38	18"	Gray shale, moist - hard	Visual classification-No tests performed								
	8	4	100	9"	do do	Visual classification-No tests performed								
610.3	10													
	12	5	NXM	76%	Gray shale, calcareous, tough (1" to 4-3/4"pieces averaging 3") 100% shale									
	14													
	16	6	NXM	95%	Gray shale, calcareous,tough to moderately tough (1" to 3½"pieces averaging 2") and gray limestone, crystalline,fossiliferous, jointed and iron oxide stained (⅛" to 3" pieces averaging 2") 86% shale, 14% limestone									
	18													
600.3	20													
	22				Boring completed									
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/2/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/3/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER 2 HOURS 605.0 PROJECT: Northeast Expressway RAM-71-0.93 Retaining Wall No. 34

BORING No. R-34-1 STATION AND OFFSET 22+95, 2' L.,NB Reading Rd. BL SURFACE ELEV. 624.0

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
624.0	0													
	2	1	9-11-10	10"	Brown silt and clay, little sand,trace gravel (fill), dry - stiff	9	9	10	42	30	34	12	8	A-6a
	4	2	7-9-9	13"	do do	Visual classification-No tests performed								A-6a
619.0	6	3	7-10-9	9"	Brown clay, trace sand, trace gravel, (fill), moist - stiff	1	5	4	36	54	44	20	17	A-7-6
	8	4	9-11-8	7"	do do	Visual classification-No tests performed								A-7-6
614.0	10					Visual classification-No tests performed								Fill
	12	5	6-7-12	10"	Cinders and brick (fill), moist - medium dense	Visual classification-No tests performed								Fill
	14	6	5-4-3	9"	do do	Visual classification-No tests performed								Fill
609.0	16	7	4-4-5	12"	Gray silty clay (fill), moist- stiff	Visual classification-No tests performed								Fill
606.5	18	8	4-5-3	15"	Cinders and brick (fill), moist - loose	Visual classification-No tests performed								Fill
	20	9	2-3-2	18"	do do	Visual classification-No tests performed								Fill
	22	10	2-1-1	10"	do do	Visual classification-No tests performed								Fill
	24	11	4-2-2	15 "	do do	Visual classification-No tests performed								Fill
596.5	26	12	9-10-12	14"	Gray silt and clay, trace sand, trace gravel with shale fragments moist - stiff	2	5	3	38	52	38	15	16	A-6a
594.0	28	13	11-15-18	11"	Gray clay, trace sand with shale fragments, moist - stiff	0	4	1	30	65	45	19	13	A-7-6
	30	14	8-10-12	12"	Brown and gray clay, little sand,trace gravel with shale fragments, moist - stiff	2	6	6	30	56	46	20	24	A-7-6
	32													
	34													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/2/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/2/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER 2 HOURS 605.0 PROJECT: Northeast Expressway HAM-71-0.93 Retaining Wall No. 34

BORING No. R-34-1 STATION AND OFFSET 22+95, 2'L. NB Reading Road BL SURFACE ELEV. 624.0

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL. CLASS
	34													
	36	15	9-10-11	14"	Brown clay, trace sand, trace gravel with shale fragments, moist-very stiff	1	2	3	35	59	46	19	21	A-7-6
586.5	38													
		16	29-64-100	16"	Gray shale, dry - hard	Visual classification-No tests performed								
583.0	40													
	42				Gray and brown shale, calcareous, moderately tough with soft seams (½" to 3" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed and iron oxide stained (½" to 2½" pieces averagine 1½") 84% shale, 16% limestone									
	44	17	NXM	65%										
578.0	46													
	48				Boring completed									
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 630-[illegible]

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/3/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/3/64 CASING: LENGTH _____ DIA 3.5"I.D.Hollow AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.13

BORING No. R-34-2 STATION AND OFFSET 24+13, 4.5' L. NB Reading Rd.BL SURFACE ELEV. 623.8 Retaining Wall No. 34

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS.
623.8	0													
	2	1	3-4-14	13"	Brown silty clay with gravel (fill), dry	Visual classification-No tests performed								Fill
619.8	4	2	4-7-3	16½"	do do	Visual classification-No tests performed								Fill
	6	3	41-65-36	9"	Cinders and brick fragments (fill), moist	Visual classification-No tests performed								Fill
	8	4	24-31-27	13½"	do do	Visual classification-No tests performed								Fill
	10	5	15-7-9	8½"	do do	Visual classification-No tests performed								Fill
	12	6	2-3-3	0	do do	Visual classification-No tests performed								Fill
608.8	14													
	16	7	12-12-12	11"	Brown and gray silty clay with limestone fragments (fill)	Visual classification-No tests performed								Fill
606.8	18	S-1		24"	Brown silt and clay, some sand, trace gravel with limestone fragments, moist - stiff	3	16	11	33	37	34	12	16	A-6a
604.8	20	8	9-12-13	12"	Brown and gray clay, little sand, trace gravel with limestone fragments, moist-stiff	3	5	5	33	54	42	18	20	A-7-6
	22	9	19-47-XX	17"	Brown clay, trace sand, moist-very stiff	0	4	2	43	51	43	18	14	A-7-6
598.8	24													
	26	R-1	NXM	55%	Brown and gray weathered shale moderately tough 1 3/4" to 3" pieces averaging 2") 100% shale									
	28													
	30				Gray shale with brown weathered zones in the top half of the run, calcareous, moderately tough (½" to 4" pieces averaging 2½") and gray limestone, crystalline,									
	32	R-2	NXM	65%	fossiliferous, jointed (two 1" pieces)									
	34				97% shale, 3% limestone									

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Form No. 530—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/3/64 SAMPLER: TYPE Split Spoon & Com Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/3/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway NAM-71-0.93

BORING No. R-34-2 STATION AND OFFSET 24+13, 4.5' L. NB Reading Rd.BL SURFACE ELEV. 623.8 Retaining Wall No. 34

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
588.8	34													
	36				Boring completed									
	38													
	40													
	42													
	44													
	46													
	48													
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 530-[illegible]59

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/4/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/4/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers WATER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-34-3 STATION AND OFFSET 25+10,4.5'L. NB Reading Rd. BL SURFACE ELEV. 621.4 Retaining Wall No. 34

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL CLASS
621.4	0													
	2													
	4	1	2-2-5	16"	Cinders (fill), moist - soft	Visual classification-No tests performed								Fill
614.9	6	2	1-2-4	13½"	do do	Visual classification-No tests performed								Fill
	8				Brown sandy silt, trace gravel, moist-stiff	6	16	20	34	24	24	7	16	A-4a
	10	S-1			Brown and gray sandy silt, trace gravel, very moist - soft	8	20	19	29	24	22	6	17	A-4a
610.9		3	3-3	16"	Gray silt and clay, some sand, trace gravel, very moist-medium stiff	4	13	13	36	34	31	11	23	A-6a
	12													
	14	4	2-3-3	12"	do do	Visual classification-No tests performed								Fill
606.4														
	16	5	5-8-14	18"	Brown clay, trace sand, moist - stiff	0	4	3	35	58	46	20	21	A-7-6
603.9	18	S-2			Brown silt and clay, little sand, moist - very stiff	0	11	8	41	40	37	14	16	A-6a
602.9														
601.4	20	6	48-56-63	18"	Brown weathered shale, moist - very stiff									
	22	R-1	NXM	72%	Brown weathered shale, slightly tough (1" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous, jointed (two 2" pieces in the top 6" of the run) 93% shale, 7% limestone									
	24													
	26													
	28	R-2	NXM	89%	Brown weathered shale, slightly tough (½" to 5½" pieces, averaging 3") 100% shale									
591.4	30													
	32				Boring completed									
	34													

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Form No. 630

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/10/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 599.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/10/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Retaining Wall No. 35

BORING No. B-35-1 STATION AND OFFSET 184+34, 2' Rt. NB BL SURFACE ELEV. 624.5

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
624.5	0													
		1	7-9-9	6"	Brown silty clay (fill), dry - medium stiff									Fill
622.0	2	2A	3-2		do do									Fill
		2B	1	13"	Cinders and brick fragments (fill), moist - soft									Fill
	4													
	6	3	1-1-1	10"	do do									Fill
	8	4	3-2-1	6"	do do									Fill
	10	5	3-1-1	3"	do do									Fill
	12	6	2-2-2	4"	do do									Fill
	14													
	16	7	2-2-2	9"	do do									Fill
	18	8	3-3-2	13"	do do									Fill
	20	9	3-3-3	11"	do do									Fill
	22	10	2-3-2	11"	do do									Fill
	24	11	2-1-1	13"	do do									Fill
	26	12	2-2-2	16"	do do									Fill
	28	13	3-2-3	16"	do do									Fill
	30													
	32													
	34													

Visual classification-No tests performed

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/10/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 599.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/10/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-35-1 STATION AND OFFSET 184+34.2' Rt.,NB BL SURFACE ELEV. 624.5 Retaining Wall No. 35

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36	14	3-3-2	18"	Cinders and brick fragments (fill), moist - soft	Visual classification-No tests performed								Fill
	38													
	40													
	42	15	6-7-7	14"	do do	Visual classification-No tests performed								Fill
	44													
579.5	46	16	9-12-14	16"	Brown and gray silty clay, trace sand, trace gravel, moist - medium stiff	2	4	4	45	45	39	18	20	A-6b
	48													
574.5	50													
	52	R-1	NXM	98%	2'Brown weathered shale,slightly tough, (2" and 3" pieces averaging 2½") and gray limestone, crystalline,fossiliferous, jointed in the top 6" of the run(½" to 5" pieces averaging 3½") 67%limestone 33% shale									
	54													
569.5	56				3'Gray shale, calcareous,moderately tough (½" to 1½" pieces averaging 1") and gray limestone, crystalline, fossiliferous, (one 1" piece) 98% shale, 2% limestone									
	58													
	60				Boring completed									
	62													
	64													
	66													
	68													

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Form No. 630

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/9/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 588.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/9/64 CASING: LENGTH _____ DIA. 3.5"I.D.hollow stem augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-35-2 STATION AND OFFSET 185+27.2 Rt., NB BL SURFACE ELEV. 626.0 Retaining Wall No. 35

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
626.0	0													
623.5	2	1	6-6-6	16"	Clay, cinders and brick (fill), moist - stiff	Visual classification-No tests performed								Fill
	4	2	2-2-1	12"	Cinders (fill), moist - loose	Visual classification-No tests performed								Fill
	6	3	1-1-2	15"	do do	Visual classification-No tests performed								Fill
	8		1-2-2	No Recovery										
616.0	10													
	12	4	1-2-2	8"	Cinders and rubble (fill), moist - loose	Visual classification-No tests performed								Fill
	14													
611.0	16	5	1-2-3	8"	Sand, cinders and brick fragments, (fill), moist - loose	Visual classification-No tests performed								Fill
	18	6	2-3-3	11"	do do	Visual classification-No tests performed								Fill
606.0	20													
	22	7	3-4-5	15"	Clay, cinders and brick fragments, (fill), moist - loose	Visual classification-No tests performed								Fill
	24	8	4-5-5	14"	do do	Visual classification-No tests performed								Fill
	26	9	3-3-4	18"	do do	Visual classification-No tests performed								Fill
598.5	28	10	5-7-8	15"	Brown and gray clay, little sand, trace gravel with shale and limestone fragments (fill), moist - medium stiff	6	7	4	31	52	43	21	21	A-7-6
	30	11	6-8-10	16"	Brown and gray clay, trace sand, trace gravel with shale and limestone fragments (fill), moist - medium stiff	6	4	4	30	56	44	18	18	A-7-6
593.0	32				Brown and gray silt and clay, trace									
	34	12	7-11-16	15"	sand (fill), moist - stiff	0	6	3	36	55	38	13	14	A-6a

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/9/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 588.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/9/64 CASING: LENGTH _____ DIA. 3.5"I.D.hollow AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-35-2 STATION AND OFFSET 185+27,2'Rt., NB BL SURFACE ELEV. 626.0 Retaining Wall No. 35

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36	13	4-5-5	18"	Silty clay, cinders, brick and wood fragments (fill), wet - loose	Visual classification-No tests performed								Fill
588.5	38													
		14	7-9-11	17"	Brown and gray clay, trace sand, trace gravel with shale and limestone fragments moist - stiff	2	4	2	34	58	42	16	19	A-7-6
	40													
		8-1		16"	Brown clay, some sand with shale and limestone fragments, moist - stiff	0	12	10	32	46	51	26	20	A-7-6
	42													
		15	5-7-8	18"	Brown and gray clay, little sand, trace gravel with shale and limestone fragments moist - medium stiff	5	6	5	31	53	45	21	23	A-7-6
	44													
	46	16	5-7-9	18"	Brown and gray clay with shale and limestone fragments moist - medium stiff	3	6	3	34	54	43	17	26	A-7-6
	48													
576.0	50													
		17	11-14-22	18"	Brown and gray weathered shale, moist - very stiff	Visual classification-No tests performed								
	52													
	54													
571.0														
	56				Gray shale, calcareous, tough (½" to 4½" pieces averaging 2") and gray limestone, crystalline, fossiliferous (3/4" to 4½" pieces averaging 3") 90% shale, 10% limestone										
		18	NXM	93%										
	58													
566.0	60													
	62				Boring completed									
	64													
	66													
	68													

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Form No. 630—M-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 2/13/65 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 607.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 2/13/65 CASING: LENGTH ____ DIA. 3.375"I.D.Hollow Stem Augers AFTER 1 HOURS 611.7 Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Retaining Wall No. 35

BORING No. R-35-3 STATION AND OFFSET 185+93, 19'Rt. NB BL SURFACE ELEV. 627.7

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTD. CLASS
627.7	0													
625.2	2	1	4-2-7	15"	Cinders and clay,(fill), moist - medium stiff	Visual classification-No tests performed								Fill
622.7	4	2	6-8-10	14"	Brown and gray silty clay, little sand, (fill), moist - medium stiff	0	4	12	36	48	36	18	20	A-6b
	6	3	3-2-7	12"	Cinders, brick and wood (fill), moist	Visual classification-No tests performed								Fill
	8	4	2-3-4	8"	do do	Visual classification-No tests performed								Fill
	10													
	12	5	10-7-5	10"	do do	Visual classification-No tests performed								Fill
	14	6	6-7-10	8"	do do	Visual classification-No tests performed								Fill
	16	7	7-6-9	11"	do do	Visual classification-No tests performed								Fill
	18													
	20	8	8-12-6	9"	do do	Visual classification-No tests performed								Fill
	22	9	3-7-10	7"	do do	Visual classification-No tests performed								Fill
	24	10	4-5-5	12"	do do	Visual classification-No tests performed								Fill
	26	S-1		18"	do do	Visual classification-No tests performed								Fill
	28	11	11-7-7	13"	do do	Visual classification-No tests performed								Fill
	30													
595.7	32	S-2		18"	do do	Visual classification-No tests performed								Fill
	34	12	9-11-10	18"	Gray silty clay,little sand with rock fragments, trace brick and cinders (fill), moist - stiff	15	9	8	28	40	40	22	26	A-6b

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Form No. 530—1

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 2/13/65 SAMPLER: TYPE Split Spoon& Core Barrel 2"O.D.& DIA. NXM WATER ELEV. IMMEDIATE 607.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 2/13/65 CASING: LENGTH _____ DIA. 3.375"I.D.Hollow Stem Augers AFTER 1 HOURS 611.7 Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-35-3 STATION AND OFFSET 185+93.19'Rt. NB BL SURFACE ELEV. 627.7 Retaining Wall No. 35

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL. CLASS
592.7	34													
590.7	36	S-3		18"	Cinders (fill), moist	Visual classification-No tests performed								Fill
589.2	38	13	10-15-20	12"	Gray silty clay, little gravel, little sand, some brick(fill), moist	12	12	8	28	40	36	17	17	A-6b
587.7	40	14	9-11-8	15"	Gray silt and clay with rock fragments some sand, trace brick(fill), moist-medium stiff	36	13	9	14	28	35	15	21	A-6a
	42	S-4		24"	Brown and greenish brown clay with shale fragments, moist - stiff	1	2	1	1	95	43	19	22	A-7-6
		15	7-7-10	17"	Brown and gray clay, trace sand with shale fragments, moist - medium stiff	2	4	4	27	63	51	28	21	A-7-6
582.7	44													
580.7	46	S-5		24"	Brown clay with shale fragments, moist-stiff	6	0	1	33	60	54	30	24	A-7-6
	48	16	7-8-11	17"	Brown clay with shale fragments, trace sand, moist - medium stiff	0	4	4	38	54	47	24	23	A-7-6
	50													
	52	S-6		18"	Brown clay with shale fragments, moist-stiff	0	1	2	33	64	52	28	27	A-7-6
		17	6-7-10	11"	Brown and gray clay with shale and rock fragments, moist - medium stiff	11	11	7	32	39	41	21	10	A-7-6
573.7	54													
572.7		18	47-78	9"	Gray shale									
	56													
		R-1	NXM	50%	Gray shale, calcareous, moderately tough, (1" to 6" pieces averaging 4") 100% shale									
	58													
567.7	60													
	62				Boring completed									
	64													
	66													
	68													

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Form No. 630—

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 2/12/65 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 600.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 2/12/65 CASING: LENGTH _____ DIA. 3.375"I.D. Hollow Stem Augers AFTER 24 HOURS 600.2 PROJECT: Northeast Expressway HAM-71-0.93 Retaining Wall No. 35

BORING No. R-35-4 STATION AND OFFSET 186+45, 20' L., NB BL SURFACE ELEV. 626.7

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
626.7	0													
	2	1	4-6-9	17"	Cinders, brown clay and brick (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	4	2	7-10-11	18"	do do	Visual classification-No tests performed								Fill
621.7	6	3	7-8-12	10"	Cinders, brick, wood, trace clay (fill) moist	Visual classification-No tests performed								Fill
	8	4	5-9-15	12"	do do	Visual classification-No tests performed								Fill
	10	5	7-3-16	13"	do do	Visual classification-No tests performed								Fill
	12													
	14	6	6-8-10	10"	do do	Visual classification-No tests performed								Fill
	16	7	3-15-11	11"	do do	Visual classification-No tests performed								Fill
	18	8	3-4-3	7"	do do	Visual classification-No tests performed								Fill
	20	9	6-10-5	16"	do do	Visual classification-No tests performed								Fill
	22													
	24	10	3-7-4	14"	do do	Visual classification-No tests performed								Fill
601.7	26													
599.7		S-1		24"	Cinders and silt(fill)	24	14	18	31	13		NP	52	Fill
	28	11	4-6-7	17"	Cinders (fill), wet	Visual classification-No tests performed								Fill
596.7	30													
	32	S-2		24"	Brown silty clay with shale fragments, moist - stiff	0	2	3	35	60	43	19	21	A-7-6
	34	12	10-15-18	9"	Brown and gray clay with shale fragments, moist - medium stiff	1	3	3	30	63	50	26	19	A-7-6

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Form No. 530

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 2/12/65 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 600.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 2/12/65 CASING: LENGTH ____ DIA. 3.375"I.D.Hollow Stem Augers AFTER 24 HOURS 600.2 PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-35-4 STATION AND OFFSET 186+45, 20' L., NB EL SURFACE ELEV. 626.7 Retaining Wall No. 35

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	ENTL. CLASS
591.7	34													
	36	S-3		18"	Gray silty clay with some rock fragments moist - medium stiff	5	6	5	31	53	40	18	22	A-6b
588.2	38	13	30-7-8	18"	Gray and brown silty clay with shale fragments, moist - medium stiff	17	7	14	24	38	36	18	23	A-6b
	40	14	24-38-41	10"	Brown clay with shale fragments, moist-very stiff	1	4	6	8	81	45	23	20	A-7-6
	42	S-4		12"	Brown and gray clay with limestone fragments and shale, moist - stiff	14	3	3	26	54	49	23	23	A-7-6
	44	15	10-27-38	10"	Brown and gray clay with rock fragments moist - stiff	37	9	7	16	31	42	22	26	A-7-6
	46	16	21-37-56	13"	Brown and gray clay with shale fragments, moist - very stiff	0	2	2	37	59	46	24	16	A-7-6
579.2	48													
	50	R-1	NXM	70%	Gray shale, calcareous moderately tough (1" to 6" pieces averaging 4") and gray limestone, crystalline, fossiliferous, jointed (two pieces 1" and 6") 88% shale, 12% limestone									
574.2	52													
	54				Boring completed									
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 630—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/21/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/21/64 CASING: LENGTH ____ DIA. None AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-36-1 STATION AND OFFSET 188+20, 1' L. Ramp RA BL SURFACE ELEV. 644.6 Retaining Wall No. 36

ELEV.	DEPTH	SAMPLE No.	STD. PEN. * (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
644.6	0													
642.6	2	1	21-41-68	14"	Brown and gray shale, moist - hard	Visual classification-No tests performed								
	4	R-1	NXM	30%	Brown and gray weathered shale, slightly tough (a trace recovered) and gray limestone, crystalline, fossiliferous, jointed and iron oxide stained (1" and 7" pieces) 79% shale, 21% limestone									
	6													
	8	R-2	NXM	70%	Gray and brown shale, calcareous, moderately tough (½" to 3-3/4" pieces averaging 2") and gray limestone, crystalline, fossiliferous, jointed and iron oxide stained (1" and 2½" pieces) 90% shale, 10% limestone									
	10													
632.6	12													
	14				Boring completed									
	16													
	18				*Hammer Weight - 35 pounds Fall - 30 Inches									
	20													
	22													
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 630—1

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/13/64 SAMPLER: TYPE Split Spoon & Com Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/13/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS ____ Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-36-2 STATION AND OFFSET 189+35, 5' L. Ramp RA BL SURFACE ELEV. 629.5 Retaining Wall No. 36

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
629.5	0													
629.0		1A			0.5" Concrete									
628.0	2	1B	20-3-2	12"	Cinders (fill), soft	Visual classification-No tests performed								Fill
625.0	4	2	26-34-38	16"	Gray shale, moist - hard	Visual classification-No tests performed								
	6	R-1	NXM	88%	Gray shale, calcareous, moderately tough to tough (¼" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous (three pieces 1½" - 8" and 7" at the top of the run) 63% shale, 27% limestone									
620.0	8													
	10													
	12				Boring completed									
	14													
	16													
	18													
	20													
	22													
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 530—M-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/18/64 SAMPLER: TYPE Split Spoon & Ore Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 627.1 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/18/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-37-1 STATION AND OFFSET 187+84, 4' Rt., Ramp GA BL SURFACE ELEV. 627.1 Retaining Wall No. 37

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
627.1	0				0.5' Concrete									
626.5														
625.6		1	8-10	10"	Gray clay, trace sand, trace gravel, (fill), moist - stiff	2	3	2	35	58	44	22	28	A-7-6
624.1	2	2	20	5"	Brown weathered shale, moist - hard									
	4				Gray shale, calcareous, moderately tough to tough (1" to 5½" pieces averaging 3") and gray limestone, crystalline, fossiliferous, jointed and iron oxide stained in the top 18" of the run (1" to 5½" pieces averaging 4") 75% shale, 25% limestone									
	6													
		R-1	NXM	85%										
	8													
	10				Gray shale, calcareous, tough (1" to 7½" pieces averaging 4") and gray limestone, crystalline, fossiliferous (1" to 4"pieces averaging 2") 90% shale, 10% limestone									
	12	R-2	NXM	100%										
614.1														
	14				Boring completed									
	16													
	18													
	20													
	22													
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 630

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/13/64 SAMPLER: TYPE Split Spoon& Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/13/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS ____ PROJECT: Northeast Expressway RAM-71-0.93

BORING No. R-37-2 STATION AND OFFSET 189+09, 4' Rt., Ramp GA CL SURFACE ELEV. 626.6 Retaining Wall No. 37

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
626.6	0													
625.6		1	3-6		Sand and gravel(fill),dry - soft to medium stiff	Visual classification-No tests performed								Fill
		1A	9		Brown silt and clay, some sand, trace gravel, moist - stiff	8	12	8	27	45	35	15	13	A-6a
624.1	2													
	4	2	26-30-34	16"	Gray shale, moist - very stiff	Visual classification-No tests performed								
621.6														
	6	R-1	NXM	98%	Gray shale, calcareous,tough with brown weathered zones in the top 12" of the run (1" to 4" pieces averaging 2") and gray limestone, crystalline,fossiliferous, jointed (¼" to 4" pieces averaging 1½")									
	8													
616.6	10				86% shale, 14% limestone									
	12				Boring completed									
	14													
	16													
	18													
	20													
	22													
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 830-[illegible]

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/17/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/17/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-38-1 STATION AND OFFSET 188+99, 23' Rt., Ramp RF BL SURFACE ELEV. 623.1 Retaining Wall No. 38

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
623.1	0													
621.1	2				Asphaltic concrete and Portland cement concrete pavement									
619.1	4	S-1		17"	Brown and gray silty clay, little sand, trace gravel, moist-soft	1	10	9	34	46	40	17	20	A-6b
	6	1	4-2-2	16"	Brown and gray silt and clay, little sand, trace gravel, very moist - medium stiff	2	10	8	45	35	37	13	18	A-6a
615.6	8													
613.1	10	2	14+38-14	11"	Brown and gray clay, little sand, little gravel with limestone fragments, moist - very stiff	16	9	6	23	46	46	23	18	A-7-6
	12				Brown weathered shale, slightly tough (¼" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous, two pieces 1" and 3½" at the top of the run) 92% shale, 8% limestone									
	14	R-1	NXM	50%										
	16				Brown weathered shale, slightly tough, jointed in the bottom half of the run (¼" to 2" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, (one 1½" piece midway in the run) 97% shale, 3% limestone									
	18	R-2	NXM	55%										
	20				Gray shale with thin brown weathered zones throughout the run, calcareous, moderately tough (½" to 1½" pieces averaging 1") and gray limestone, crystalline, fossiliferous (two 2" pieces) 92% shale, 8% limestone									
	22													
599.1	24	R-3	NXM	72%										
	26				Boring completed									
	28													
	30													
	32													
	34													

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Form No. 830-[illegible]

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/17/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/17/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-38-1 STATION AND OFFSET 188+99, 23' Rt., Ramp RF BL SURFACE ELEV. 623.1 Retaining Wall No. 38

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
623.1	0													
621.1	2				Asphaltic concrete and Portland cement concrete pavement									
619.1	4	S-1		17"	Brown and gray silty clay, little sand, trace gravel, moist-soft	1	10	9	34	46	40	17	20	A-6b
	6	1	4-2-2	16"	Brown and gray silt and clay, little sand, trace gravel, very moist - medium stiff	2	10	8	45	35	37	13	18	A-6a
615.6	8													
613.1	10	2	14+38-14	11"	Brown and gray clay, little sand, little gravel with limestone fragments, moist - very stiff	16	9	6	23	46	46	23	18	A-7-6
	12				Brown weathered shale, slightly tough (¼" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous, two pieces 1" and 3½" at the top of the run) 92% shale, 8% limestone									
	14	R-1	NXM	50%										
	16				Brown weathered shale, slightly tough, jointed in the bottom half of the run (¼" to 2" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, (one 1½" piece midway in the run) 97% shale, 3% limestone									
	18	R-2	NXM	55%										
	20				Gray shale with thin brown weathered zones throughout the run, calcareous, moderately tough (½" to 1½" pieces averaging 1") and gray limestone, crystalline, fossiliferous (two 2" pieces) 92% shale, 8% limestone									
	22													
599.1	24	R-3	NXM	72%										
	26				Boring completed									
	28													
	30													
	32													
	34													

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THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/14/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/14/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-38-2 STATION AND OFFSET 192+97, 4' Rt. Ramp RF BL SURFACE ELEV. 626.8 Retaining Wall No. 38

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
626.8	0													
624.8	2				0.5' blacktop, 0.5'concrete, 0.5' wood cross-tie and 0.5' concrete									
622.3	4	1	4-7-3	10"	Gray silty clay, little sand, some rock fragments (fill), moist-medium stiff	29	7	8	27	29	37	17	23	A-6b
619.3	6	2	5-10-8	12"	Brown and gray clay, trace sand, little rock fragments (fill), moist - medium stiff	13	4	4	35	44	41	19	23	A-7-6
616.8	8	3	5-9-9	13"	Brown and gray silty clay, little sand, little rock fragments (fill), moist - medium stiff	11	10	6	34	39	40	19	18	A-6b
614.3	10	4	7-10-15	9"	Brown and gray clay, trace sand,little gravel fragments (fill), moist - medium stiff	15	5	3	33	44	42	23	27	A-7-6
611.8	12	5	8-10-13	10"	Brown clay and wood fragments, moist - medium stiff	Visual classification-No tests performed Fill								
609.3	14	6	10-12-11	10"	Brown and gray silty clay and rock fragments, trace sand moist - medium stiff	47	5	4	22	22	36	16	14	A-6b
606.8	16	7	9-11-13	8"	Brown clayey gravel, little sand with rock fragments moist - medium stiff	53	8	6	15	18	30	12	11	A-2-6
604.3	18	8	7-19-6	11"	Brown and gray clay, trace sand,little rock fragments ,,moist-medium stiff	19	3	4	29	45	47	23	18	A-7-6
601.8	20	9	14-8-9	12"	Brown elastic clay, trace sand, moist-stiff	0	2	3	43	52	54	19	22	A-7-5
599.3	22	10	6-8-12	14"	Brown clay, trace sand, moist - stiff	0	2	3	41	54	45	21	22	A-7-6
596.8	24	11	7-10-11	12"	Brown and gray silty clay, little sand some gravel, moist - stiff	29	9	7	28	27	38	17	22	A-6b
597.8	26	12	27-38-73	10"	Gray shale, moist - very stiff									
	28													
	30													
	32													
	34													

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Form No. 530—1M58

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/14/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/14/64 CASING: LENGTH _____ DIA 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-38-2 STATION AND OFFSET 192+97, 4' Rt. Ramp RF BL SURFACE ELEV. 626.8 Retaining Wall No. 38

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36													
588.8	38	R-1	NXM	72%	Gray shale, calcareous, moderately tough, (½" to 4" pieces averaging 2") 100%shale									
	40				Boring completed									
	42													
	44													
	46													
	48													
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/8/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 564.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/8/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-11-1 STATION AND OFFSET 28+20, 30' Rt., NB Gilbert Ave. BL SURFACE ELEV. 581.5 Bridge No. HAM-71-0196

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
581.5	0													
581.0		1	2-3-4	14"	Topsoil (0.5'). Brown clayey sand with brick fragments, (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	2													
	4	2	2-2-5	17½"		Visual classification-No tests performed								Fill
576.5														
	6	3	2-3-4	16"	Brown clayey sand with coal fragments (fill), moist - medium stiff	Visual classification-No tests performed								Fill
574.0	8													
		4	2-5-7	16"	Brown silty clay, little sand (fill), moist - medium stiff	0	8	5	42	45	40	18	22	A-6b
571.5	10													
569.5	12	5	4-5-8	18"	Brown and gray clay, trace sand (fill), moist - medium stiff	0	4	4	41	51	48	26	21	A-7-6
	14	S-1		20"	Brown and gray clay, little sand, moist - stiff	0	7	4	30	59	41	19	21	A-7-6
	16	6	17-27-26	18"	Brown clay, trace sand with shale fragments moist - hard	0	0	1	27	72	51	27	18	A-7-6
	18													
		7	15-12-34	18"	Brown clay, trace sand with shale fragments, moist - hard	0	3	5	22	70	44	21	16	A-7-6
561.5	20													
		S-2		17"	Brown and gray clay, little sand, moist - very stiff	0	8	5	41	46	42	18	12	A-7-6
559.0	22													
	24	8	6-10-29	10"	Brown weathered shale, very moist-stiff	Visual classification No tests performed								
556.5														
	26	9	NXM	72%	Gray shale, calcareous, moderately tough to tough (½" to 3" pieces averaging 1½") and gray limestone, crystalline, fossiliferous (two pieces 3" and 2½") 94% shale, 6% limestone									
	28													
551.5	30													
	32				Boring completed									
	34													

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Form No. 530—I

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

Split Spoon and 2"O.D.
DATE STARTED 7/6/64 SAMPLER: TYPE Core Barrel DIA. & NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio
DATE COMPLETED 7/6/64 CASING: LENGTH DIA 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS PROJECT: Northeast Expressway FAM-71-0.93
BORING No. B-11-2 STATION AND OFFSET 29+30, 34' L.N.B.Gilbert B.L. SURFACE ELEV. 600.7 Bridge No. HAM-1-0196

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SNTL CLASS.
600.7	0													
598.2	2	1	14-8-4	6"	Blacktop, sand, gravel and brick (fill), moist - medium dense	Visual classification-No tests performed								Fill
595.7	4	2	2-2-2	14"	Sand, cinders and brick (fill), moist - loose	Visual classification-No tests performed								Fill
593.2	6	3	5-2-2	16"	Sand, clay, concrete and brick (fill), moist - loose	Visual classification-No tests performed								Fill
	8	4	1-2-2	18"	Sand and clay, trace cinders (fill), moist - loose	Visual classification-No tests performed								Fill
	10	5	3-4-6	18"	do do	Visual classification-No tests performed								Fill
685.7	12													
	14													
	16	6	2-4-5	10"	Sand, gravel and brick (fill), moist-loose	Visual classification-No tests performed								Fill
680.7	18													
	20													
678.2	22	7	2-3-3	6"	Brick fragments, (fill), moist - loose	Visual classification-No tests performed								Fill
675.7	24	8	1-2-2	12"	Sand, cinders and clay (fill), moist-loose	Visual classification-No tests performed								Fill
673.2	26	9	1-2-2	18"	Cinders (fill), moist - loose	Visual classification-No tests performed								Fill
	28	10	2-2-4	10"	Sand, gravel and cinders (fill), very moist - loose	Visual classification-No tests performed								Fill
	30													
668.2	32				do do									
	34													

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Form No. 530--16.59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/6/64 SAMPLER: TYPE Split Spoon and Core Barrel DIA. NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/6/64 CASING: LENGTH _____ DIA. 3.5" I.D. Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-11-2 STATION AND OFFSET 29+30, 34'L N.B. Gilbert B.L. SURFACE ELEV. 600.7 Bridge No. HAM-1-0196

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
564.2	36	12	14-36-81	18"	Brown and gray clay, trace sand with shale fragments, moist - hard	0	0	1	23	76	50	26	14	A-7-6
	38				Brown and gray shale, moist - hard									
		13	18-43-100	18"										
	40				Brown and gray shale, soft, weathered, (1" to 3" pieces averaging 2", 100% shale	Visual classification - No tests performed								
	42	14	NXM	72%	Gray shale, calcareous moderately tough, (1½" to 4" pieces averaging 2") and gray limestone, crystalline, fossiliferous (two 1½" pieces at the bottom of the run) 90% shale, 10% limestone									
555.7	44													
	46													
	48													
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 630--1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 25, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/3/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/3/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-11-3 STATION AND OFFSET 29+66, 24'Rt., NB Gilbert BL SURFACE ELEV. 599.4 Bridge No. HAM-1-0196

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% G.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
599.4	0													
	2	1	10-11-11	10"	Concrete blacktop, sand, gravel, clay brick and cinders (fill), moist - medium dense	Visual classification-No tests performed								Fill
594.4	4													
	6	2	2-2-3	16"	Clay and cinders (fill), moist - loose	Visual classification-No tests performed								Fill
591.9	8													
	10	3	2-3-3	13"	Brown clay, little sand, trace gravel, with shale and limestone fragments, (fill), moist - medium stiff	5	11	6	14	64	41	19	18	A-7-6
589.4	12	4	2-2-3	15"	Brown silty clay, trace sand, trace gravel with brick and cinder fragments, (fill), moist - medium stiff	9	6	4	41	40	36	17	21	A-6b
	14													
584.4	16	5	3-3-4	12"	Brown clay, trace sand with shale fragments, moist - stiff	0	1	2	39	58	42	20	18	A-7-6
	18													
	20													
	22	6	5-19-24	17"	Brown and gray clay, little sand, little gravel with shale and limestone fragments, moist - stiff	12	11	3	23	51	45	22	18	A-7-6
576.9	24	7	24-63	12"	Brown and gray shale, moist - hard	Visual classification-No tests performed								
	26	8	28-78	12"	Gray shale, moist - hard	Visual classification-No tests performed								
	28	9	NXM	70%	Gray shale calcareous, tough (¼" to 2½" pieces averaging 1½") and gray limestone crystalline, fossiliferous (one 3"piece in the bottom 12" of the run) 95% shale, 5% limestone									
	30													
	32													
	34													

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL.

Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/3/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/3/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-11-3 STATION AND OFFSET 29+66,24'Rt.,NB Gilbert BL SURFACE ELEV. 599.4 Bridge No. HAM-1-0196

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
562.4	34 36	10	NXM	75%	Gray shale, calcareous, tough to moderately tough in the bottom half of the run (½" to 3" pieces averaging 1½") and gray limestone, crystalline, fossiliferous (two pieces 1½" and 3" midway and at the bottom of the run) 93% shale, 7% limestone									
	38 40 42 44 46 48 50 52 54 56 58 60 62 64 66				Boring completed									

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Form No. 530—(6-64)

THE E. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/18/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/19/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-11-4 STATION AND OFFSET 30+20, 10' L. NB Gilbert Ave.BL SURFACE ELEV. 602.4 Bridge No. HAM-71-0196

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
602.4	0				0.5' Concrete									
601.9														
599.9	2	1	6-5-5	16"	Brown and gray silt, clay, and sand, trace gravel with shale fragments(fill), moist - stiff	3	25	11	30	31	34	12	14	A-6a
	4	2	7-7-9	18"	Gray silty clay with brick and cinders (fill), moist - stiff	Visual classification-No tests performed								Fill
	6	3	8-9-11	16"	do do	Visual classification-No tests performed								Fill
594.9	8	4	7-6-7	18"	Brown and gray clay, little sand, trace gravel with shale fragments (fill), moist - stiff	7	5	5	33	50	42	19	22	A-7-6
	10													
	12													
	14													
	16	5	11-13-11	11"	Brown clay, trace sand, some gravel with shale fragments (fill), moist - medium stiff	29	5	3	23	40	43	19	17	A-7-6
	18													
	20													
	22	6	6-8-9	9"	Brown clay, trace sand, trace gravel with shale fragments (fill), moist - medium stiff	3	4	4	34	55	44	22	21	A-7-6
	24	7	7-10-10	9"	do do	Visual classification-No tests performed								A-7-6
677.4	26													
674.9		8	29-48-140	13"	Brown and gray weathered shale, dry - hard	Visual classification-No tests performed								
	28				Gray and brown shale, slightly tough(1" to 3" pieces averaging 2")and gray limestone crystalline, fossiliferous, jointed and iron oxide stained(1" and 2"pieces) 83% shale, 17% limestone									
	30	9	NXM	70%										
	32	10	NXM	70%	Gray shale, calcareous, moderately tough with soft seams throughout the fun(¼" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous(one 3" piece in									
	34													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/18/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/19/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING NO. B-11-4 STATION AND OFFSET 30+20, 10' L.NB Gilbert Ave. BL SURFACE ELEV. 602.4 Bridge No. HAM-71-0196

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
564.9	34 36 38	11	NXM	29%	the top 6" of the run)94% shale,6%limestone Gray shale,calcareous,moderately tough (¼" to 1½" pieces averaging 1") and gray limestone, crystalline, fossiliferous (three pieces ¼", ½", and 3½") 91% shale, 9% limestone									
	40 42 44 46 48 50 52 54 56 58 60 62 64 66 68				Boring completed									

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Form No. 630—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/19/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE 598.1 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/19/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-11-5 STATION AND OFFSET 30+96,38'Rt.,NB Gilbert Ave.BL SURFACE ELEV. 605.6 Bridge No. HAM-71-0196

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
605.6	0													
604.6					Concrete (1.0')									
603.1	2	1	3-7	No Recovery	Gravel, loose	Visual classification-No tests performed								Fill
	4	2	2-4-12	12"	Brown and gray silty clay, little sand, little gravel, probable fill, moist - medium stiff	19	11	5	27	38	39	19	22	A-6b
600.6	6	3	5-11-13	16"	Brown clay, little sand, trace gravel with limestone fragments, moist - very stiff	7	7	6	30	50	41	20	14	A-7-6
598.1	8	4	23-36-39	9"	Brown weathered shale, moist - hard	Visual classification-No tests performed								Fill
	10													
	12													
	14													
	16	5	31-34-39	13"	do do	Visual classification-No tests performed								Fill
	18													
	20													
583.6	22													
	24	6	NXM	69%	Gray shale, calcareous, tough to moderately tough (1" to 3½" pieces, averaging 2½") and gray limestone, crystalline, fossiliferous (one 1-3/4" piece at the top of the run) 95% shale, 5% limestone									
	26	7	NXM	66%	Gray shale, calcareous, tough (½" to 2½" pieces averaging 1½") 100% shale									
577.1	28													
	30				Boring completed									
	32													
	34													

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Form No. 530—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/6/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 596.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/6/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-11-6 STATION AND OFFSET 32+23, 42'L., NB Gilbert BL SURFACE ELEV. 611.5 Bridge No. HAM-1-0196

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
611.5	0													
	2	1	15-11-10	12"	Blacktop, clay, concrete, sand, gravel, cinders (fill), moist-medium dense	Visual classification-No tests performed								Fill
609.0	4	2	5-4-3	9"	Brown silty clay, fine gravel (fill) moist - medium stiff	Visual classification-No tests performed								Fill
606.5	6	3	9-5-4✓	9"	Sand, gravel, cinders and rock fragments, (fill), moist - loose	Visual classification-No tests performed								Fill
604.0	8	4	2-2-2	17"	Brown sandy silt, trace gravel with brick and cinders (fill), wet - soft	7	0	32	35	26	22	5	19	A-4a
	10	5	2-1-2✓	18"	Cray and brown sandy silt, trace gravel with brick and cinders (fill), very moist - soft	12	0	21	36	31	27	9	20	A-4a
	12													
	14													
596.5	16	6	4-6-7	16"	Brown and gray clay, trace sand, trace gravel with limestone fragments (probable fill), moist - medium stiff	7	3	3	42	45	42	20	27	A-7-6
	18													
591.5	20	7	8-11-20	16"	Brown silty clay, trace sand, trace gravel with limestone fragments, moist - stiff	10	8	2	34	46	40	18	22	A-6b
	22													
	24													
586.5	26	8	15-31-49	18"	Brown clay, trace sand, moist - very stiff	0	1	1	29	69	44	21	19	A-7-6
585.0	28	9	23-56	12"	Brown and gray shale, moist - hard	Visual classification-No tests performed								
	30	10	21-63	12"	Gray shale, moist - hard	Visual classification-No tests performed								
	32	11	72	6"	do do	Visual classification-No tests performed								
	34													

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Form No. 530—16-58

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/6/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 596.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/6/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-11-6 STATION AND OFFSET 32+23.42'L., NB Gilbert BL SURFACE ELEV. 611.5 Bridge No. HAM-I-0196

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34				Gray shale, calcareous, moderately tough to tough (1" to 3" pieces averaging 1½") and gray limestone crystalline, fossiliferous, jointed (½" to 2" pieces averaging 1") 93% shale, 7% limestone									
	36	12	NXM	63%										
	38													
	40				Gray shale, calcareous, tough (1" to 5" pieces, averaging 3") and gray limestone, crystalline, fossiliferous (two pieces 1½" and 2½") 93% shale, 7% limestone									
	42	13	NXM	88%										
566.5	44													
	46				Boring completed									
	48													
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 630—1650

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/8/64 SAMPLER: TYPE Split Spoon & Cam Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 564.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/8/64 CASING: LENGTH ____ DIA 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS ____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-11-1 STATION AND OFFSET 28+20, 30' Rt., NB Gilbert Ave. BL SURFACE ELEV. 581.5 Bridge No. HAM-71-0196

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
581.5	0				Topsoil (0.5')									
	2	1	2-3-4	14"	Brown clayey sand with brick fragments, (fill), moist - medium stiff	Visual classification-No tests performed								Fill
576.5	4	2	2-2-5	17½"		Visual classification-No tests performed								Fill
574.0	6	3	2-3-4	16"	Brown clayey sand with coal fragments (fill), moist - medium stiff	Visual classification-No tests performed								Fill
571.5	8	4	2-5-7	16"	Brown silty clay, little sand moist - medium stiff	0	8	5	42	45	40	18	22	A-6b
569.5	10													
	12	5	4-5-8	18"	Brown and gray clay, trace sand moist - medium stiff	0	4	4	41	51	48	26	21	A-7-6
	14	S-1		20"	Brown and gray clay, little sand, moist - stiff	0	7	4	30	59	41	19	21	A-7-6
	16	6	12-21-26	18"	Brown clay, trace sand with shale fragments, moist - hard	0	0	1	27	72	51	27	18	A-7-6
	18													
561.5	20	7	15-12-34	18"	Brown clay, trace sand with shale fragments, moist - hard	0	3	5	22	70	44	21	16	A-7-6
	22	8-2		17"	Brown and gray clay, little sand, moist - very stiff	0	8	5	41	46	42	18	12	A-7-6
559.0														
556.5	24	8	16-19-29	10"	Brown weathered shale, very moist-stiff	Visual classification-No tests performed								
	26	9	NXM	72%	Gray shale, calcareous, moderately tough to tough (¼"to 3" pieces, averaging 1½") and gray limestone, crystalline, fossiliferous (two pieces 1" and 2½") 94% shale, 6% limestone									
551.5	28													
	30													
	32				Boring completed									
	34													

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Form No. 630

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/6/64 SAMPLER: TYPE Split Spoon and Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE None CLIENT City of Cincinnati, Ohio

DATE COMPLETED 7/6/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT Northeast Expressway FAM-71-0.93

BORING No. B-11-2 STATION AND OFFSET 29+30, 34' L.N.B.Gilbert B.L. SURFACE ELEV. 600.7 Bridge No. HAM-1-0196

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
600.7	0													
598.2	2	1	14-8-4	6"	Blacktop, sand, gravel and brick (fill), moist - medium dense	Visual classification-No tests performed								Fill
595.7	4	2	2-2-2	14"	Sand, cinders and brick (fill), moist - loose	Visual classification-No tests performed								Fill
593.2	6	3	5-2-2	16"	Sand, clay, concrete and brick (fill), moist - loose	Visual classification-No tests performed								Fill
	8													
	10	4	1-2-2	18"	Sand and clay, trace cinders (fill), moist - loose	Visual classification-No tests performed								Fill
	12	5	3-4-6	18"	do do	Visual classification-No tests performed								Fill
685.7	14													
	16	6	2-4-5	10"	Sand, gravel and brick (fill), moist-loose	Visual classification-No tests performed								Fill
	18													
680.7	20													
678.2	22	7	2-3-3	6"	Brick fragments, (fill), moist - loose	Visual classification-No tests performed								Fill
675.7	24	8	1-2-2	12"	Sand, cinders and clay (fill), moist-loose	Visual classification-No tests performed								Fill
673.2	26	9	1-2-2	18"	Cinders (fill), moist - loose	Visual classification-No tests performed								Fill
	28	10	2-2-4	10"	Sand, gravel and cinders (fill), very moist - loose	Visual classification-No tests performed								Fill
	30				do do									
	32													
568.2	34	11	5-9-13	17"	Brown clay, trace sand, moist - very stiff	0	1	1	31	67	48	24	18	A-7-6

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Form No. 530—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/6/64 SAMPLER: TYPE Split Spoon and Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/6/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-11-2 STATION AND OFFSET 29+30, 34'L N.B. Gilbert B.L. SURFACE ELEV. 600.7 Bridge No. HAM-1-0196

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTE CLASS
	34													
564.2	36	12	14-36-81	18"	Brown and gray clay, trace sand with shale fragments, moist - hard	0	0	1	23	76	50	26	14	A-7-6
	38	13	18-43-100	18"	Brown and gray shale, moist - hard	Visual classification -No tests performed								
	40				Brown and gray shale, soft, weathered, (1" to 3" pieces averaging 2",100%shale									
	42	14	NXM	72%	Gray shale,calcareous moderately tough, (1½" to 4" pieces averaging 2") and gray limestone, crystalline, fossiliferous (two 1½" pieces at the bottom of the run) 90% shale, 10% limestone									
555.7	44													
	46													
	48													
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 630

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/3/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/3/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-11-3 STATION AND OFFSET 29+66, 24'Rt., NB Gilbert BL SURFACE ELEV. 599.4 Bridge No. HAM-1-0196

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
599.4	0													
	2	1	10-11-11	10"	Concrete blacktop, sand, gravel, clay brick and cinders (fill), moist - medium dense	Visual classification-No tests performed								Fill
594.4	4													
	6	2	2-2-3	16"	Clay and cinders (fill), moist - loose	Visual classification-No tests performed								Fill
591.9	8													
		3	2-3-3	13"	Brown clay, little sand, trace gravel, with shale and limestone fragments, (fill), moist - medium stiff	5	11	6	14	64	41	19	18	A-7-6
589.4	10													
	12	4	2-2-3	15"	Brown silty clay, trace sand, trace gravel with brick and cinder fragments, (fill), moist - medium stiff	9	6	4	41	40	36	17	21	A-6b
584.4	14													
	16	5	3-3-4	12"	Brown clay, trace sand with shale fragments, moist - stiff	0	1	2	39	58	42	20	18	A-7-6
	18													
	20													
		6	5-19-24	17"	Brown and gray clay, little sand, little gravel with shale and limestone fragments, moist - stiff	12	11	3	23	51	45	22	18	A-7-6
576.9	22													
	24	7	24-63	12"	Brown and gray shale, moist - hard	Visual classification-No tests performed								
	26	8	28-78	12"	Gray shale, moist - hard	Visual classification-No tests performed								
	28	9	NXM	70%	Gray shale calcareous, tough (¼" to 2½" pieces averaging 1½") and gray limestone, crystalline, fossiliferous (one 3"piece in the bottom 12" of the run) 95% shale, 5% limestone									
	30													
	32													
	34													

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Form No. 530—16-58

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/3/64 SAMPLER: TYPE Split Spoon& Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/3/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-11-3 STATION AND OFFSET 29466,24'Rt.,NB Gilbert BL SURFACE ELEV. 599.4 Bridge No. HAM-1-0196

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
562.4	34 36	10	NXM	75%	Gray shale, calcareous, tough to moderately tough in the bottom half of the run (¼" to 3" pieces averaging 1½") and gray limestone, crystalline, fossiliferous (two pieces 1½" and 3" midway and at the bottom of the run) 93% shale, 7% limestone									
	38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68				Boring completed									

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/18/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/19/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-11-4 STATION AND OFFSET 30+20, 10' L. NB Gilbert Ave.BL SURFACE ELEV. 602.4 Bridge No. HAM-71-0196

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
602.4	0				0.5' Concrete									
599.9	2	1	6-5-5	16"	Brown and gray silt, clay, and sand, trace gravel with shale fragments(fill), moist - stiff	3	25	11	30	31	34	12	14	A-6a
	4	2	7-7-9	18"	Gray silty clay with brick and cinders (fill), moist - stiff	Visual classification-No tests performed								Fill
594.9	6	3	8-9-11	16"	do do	Visual classification-No tests performed								Fill
	8	4	7-6-7	18"	Brown and gray clay, little sand, trace gravel with shale fragments moist - stiff	7	5	5	33	50	42	19	22	A-7-6
	10													
	12													
	14													
	16	5	11-13-11	11"	Brown clay, trace sand, some gravel with shale fragments moist - medium stiff	29	5	3	23	40	43	19	17	A-7-6
	18													
	20													
	22	6	6-8-9	9"	Brown clay, trace sand, trace gravel with shale fragments moist - medium stiff	3	4	4	34	55	44	22	21	A-7-6
	24	7	7-10-10	9"	do do	Visual classification-No tests performed								A-7-6
677.4	26	8	29-48-140	13"	Brown and gray weathered shale, dry - hard	Visual classification-No tests performed								
674.9	28													
	30	9	NXM	70%	Gray and brown shale,slightly tough(1" to 3"pieces averaging 2") and gray limestone crystalline,fossiliferous,jointed and iron oxide stained(1" and 2"pieces) 83% shale, 17% limestone									
	32	10	NXM	70%	Gray shale,calcareous,moderately tough with soft seams throughout the run(¼" to 3" pieces averaging 2") and gray limestone, crystalline,fossiliferous(one 3" piece in									
	34													

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Form No. 530—16-5

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/18/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/19/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-11-4 STATION AND OFFSET 30+20, 10' L.NB Gilbert Ave. BL SURFACE ELEV. 602.4 Bridge No. HAM-71-0196

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34				the top 6" of the run)94% shale,6%limestone									
		11	NXM	29%	Gray shale,calcareous,moderately tough (½" to 1½" pieces averaging 1") and gray limestone, crystalline, fossiliferous (three pieces ¼", ½", and 3½") 91% shale, 9% limestone									
	36													
564.9	38													
					Boring completed									
	40													
	42													
	44													
	46													
	48													
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 630—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/19/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE 598.1 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/19/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0196

BORING No. B-11-5 STATION AND OFFSET 30+96,38'Rt.,NB Gilbert Ave.BL SURFACE ELEV. 605.6

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
605.6	0													
604.6					Concrete (1.0')									
603.1	2	1	3-7 No Recovery		Gravel, loose (fill)	Visual classification-No tests performed								Fill
	4	2	2-4-12	12"	Brown and gray silty clay,little sand, little gravel, probable fill, moist - medium stiff	19	11	5	27	38	39	19	22	A-6b
600.6	6	3	5-11-13	16"	Brown clay,little sand,trace gravel with limestone fragments, moist - very stiff	7	7	6	30	50	41	20	14	A-7-6
598.1	8	4	23-36-39	9"	Brown weathered shale, moist - hard	Visual classification-No tests performed								
	10													
	12													
	14													
	16	5	31-34-39	13"	do do	Visual classification-No tests performed								
	18													
	20													
583.6	22													
	24	6	NXM	69%	Gray shale, calcareous,tough to moderately tough (1" to 3½" pieces, averaging 2½") and gray limestone, crystalline, fossiliferous (one 1-3/4" piece at the top of the run) 95% shale, 5% limestone									
	26	7	NXM	66%	Gray shale, calcareous, tough (½" to 2½" pieces averaging 1½") 100% shale									
577.1	28													
	30				Boring completed									
	32													
	34													

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Form No. 630-[illegible]

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/6/64 SAMPLER: TYPE Split Spoon & CoreBarrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 596.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/6/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-11-6 STATION AND OFFSET 32+23, 42'L., NB Gilbert BL SURFACE ELEV. 611.5 Bridge No. HAM-1-0196

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
611.5	0													
609.0	2	1	15-11-10	12"	Blacktop, clay, concrete, sand, gravel, cinders (fill), moist-medium dense	Visual classification-No tests performed								Fill
606.5	4	2	5-4-3	9"	Brown silty clay, fine gravel (fill) moist - medium stiff	Visual classification-No tests performed								Fill
604.0	6	3	9-5-4	9"	Sand, gravel, cinders and rock fragments, (fill), moist - loose	Visual classification-No tests performed								Fill
	8													
	10	4	2-2-2	17"	Brown sandy silt, trace gravel with brick and cinders (fill), wet - soft	7	0	32	35	26	22	5	19	A-4a
	12	5	2-1-2	18"	Gray and brown sandy silt, trace gravel with brick and cinders (fill), very moist - soft	12	0	21	36	31	27	9	20	A-4a
596.5	14													
	16	6	4-6-7	16"	Brown and gray clay, trace sand, trace gravel with limestone fragments moist - medium stiff	7	3	3	42	45	42	20	27	A-7-6
	18													
591.5	20													
	22	7	8-11-20	16"	Brown silty clay, trace sand, trace gravel with limestone fragments, moist - stiff	10	8	2	34	46	40	18	22	A-6b
	24													
586.5														
585.0	26	8	15-31-49	18"	Brown clay, trace sand, moist - very stiff	0	1	1	29	69	44	21	19	A-7-6
	28	9	23-56	12"	Brown and gray shale, moist - hard	Visual classification-No tests performed								
	30													
	32	10	21-63	12"	Gray shale, moist - hard	Visual classification-No tests performed								
		11	72	6"	do do	Visual classification-No tests performed								
	34													

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Form No. 530—

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/6/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 596.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/6/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-11-6 STATION AND OFFSET 32+23.42'L., NB Gilbert RL SURFACE ELEV. 611.5 Bridge No. HAM-I-0196

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL CLASS
	34				Gray shale, calcareous, moderately tough to tough (1" to 3" pieces averaging 1½") and gray limestone crystalline, fossiliferous, jointed (½" to 2" pieces averaging 1") 93% shale, 7% limestone									
	36	12	NXM	63%										
	38													
	40				Gray shale, calcareous, tough (1" to 5" pieces, averaging 3") and gray limestone, crystalline, fossiliferous (two pieces 1½" and 2½") 93% shale, 7% limestone									
	42	13	NXM	88%										
566.5	44													
	46													
	48				Boring completed									
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 630—

THE H. C. NUTTING COMPANY

4130 AIRPORT ROAD
CINCINNATI 26, OHIO

REVISED
9/2/64-vb

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/9/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 583.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/11/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-12-1 STATION AND OFFSET 13+52, 40' L., Elsinore Pl. CL SURFACE ELEV. 608.0 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
608.0	0													
	2	1	7-9-9	14"	Cinders (fill), moist - medium stiff	Visual classification-No tests performed								Fill
605.5														
603.5	4	2	3-4-6	17"	Brown silty clay with cinders and brick, (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	6	3	2-5-11	3"	Brown and gray silty clay with shale fragments(fill), very stiff	Visual classification-No tests performed								Fill
	8	4	2-2-1	16"	Brown and gray silty clay with shale fragments (fill), soft	Visual classification-No tests performed								Fill
598.0	10													
	12	5	2-3-4	17½"	Brown and gray sandy silt, trace gravel with shale fragments moist - medium stiff	10	18	17	27	28	26	10	20	A-4a
593.0	14													
	16	6	2-5-12	18"	Gray clay, trace sand with shale fragments moist - very stiff	0	4	3	35	58	47	23	23	A-7-6
	18													
588.0	20													
586.0	22	S-1		18"	Brown and gray silt and clay, trace sand, trace gravel with shale fragments moist - medium stiff	4	4	2	44	46	37	15	17	A-6a
	24	7	11-14-17	16"	Brown and gray silty clay, little sand, trace gravel with shale fragments moist - medium stiff	1	8	5	29	57	40	18	26	A-6b
583.0														
	26	8	11-12-14	11"	Brown and gray clay, little sand, trace gravel, moist - very stiff	10	9	4	31	46	43	21	22	A-7-6
580.5	28													
578.0	30	9	5-9-11	6"	Brown and gray silty clay, little sand, with shale fragments moist - medium stiff	0	8	4	39	49	40	20	22	A-6b
	32	S-2			Dark brown sandy silt, trace gravel, with shale fragments moist-medium stiff	10	18	20	29	23	31	10	30	A-4a
576.0		10	4-6-3	13"	Brown and gray clay, trace sand with shale fragments moist - medium stiff	0	4	3	35	58	44	24	21	A-7-6
	34													

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Form No. 530—16.59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

REVISED
9/2/64-vb

LOG OF BORING

DATE STARTED 7/9/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 583.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/9/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-12-1 STATION AND OFFSET 13+52, 40' L., Elsinore Pl. CL SURFACE ELEV. 608.0 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36	11	6-9-11	16"	Brown and gray clay, little sand, trace gravel with shale fragments moist - very stiff	2	8	4	29	57	41	21	20	A-7-6
	38	12	9-9-13	18"	Brown and gray clay, little sand with shale fragments , , moist - medium stiff	0	8	3	33	56	41	21	22	A-7-6
568.0	40													
	42	13	11-16-21	18"	Dark brown silty clay, trace sand, little gravel with limestone fragments moist - medium stiff	19	4	5	38	34	39	19	18	A-6b
	44	14	11-11-19	17"	Brown silty clay, trace sand with limestone fragments moist - medium stiff	0	4	2	42	52	40	19	17	A-6b
563.0	46	15	13-11-16	12"	Brown clay, little sand, trace gravel, with limestone fragments moist-	4	7	4	36	49	41	19	21	A-7-6
	48				medium stiff									
	50													
	52	16	24-64-25	16"	Brown clay, trace sand with limestone fragments, moist - medium stiff	0	4	3	41	52	42	23	25	A-7-6
	54													
	56	17	21-42-32	18"	Brown and gray clay, trace sand, trace gravel with limestone fragments moist - medium stiff	2	2	2	35	59	44	23	24	A-7-6
	58													
548.0	60													
	62	18	15-21-62	18"	Brown silty clay, little sand, little gravel with limestone fragments moist - medium stiff	14	12	7	33	34	39	20	21	A-6b
546.0														
	64	19	NXM	12%	Brown and gray weathered shale, soft(no shale recovery) and gray limestone, crystalline, fossiliferous, jointed, (¼" to 2½" pieces, averaging 2") 88% shale, 12% limestone									
	66													
	68	20	19-29-31		Brown and gray weathered shale, moist - very stiff									

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

REVISED
9/2/64-vb

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/9/64 SAMPLER: TYPE Splti Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 583.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/11/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM -71-0.93

BORING No. B-12-1 STATION AND OFFSET 13+52, 40'L. Elainore Pl., CL SURFACE ELEV. 608.0 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL CLASS
	68				Gray shale, calcareous, moderately tough, (1" to 2" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, (3/4" and 2" pieces) 94% shale, 6% limestone									
	70													
	72	21	NXM	32%										
534.5	74													
	76				Boring completed									
	78													
	80													
	82													
	84													
	86													
	88													
	90													
	92													
	94													
	96													
	98													
	100													
	102													

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Form No. 630—15-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

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9/2/64-vb

LOG OF BORING

DATE STARTED 7/9/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE 583.9 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/9/64 CASING: LENGTH _____ DIA. 3.5"I.D. Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0203

BORING No. B-12-2 STATION AND OFFSET 13+71, 43' Rt., Elsinore Pl. SURFACE ELEV. 608.9

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
608.9	0				0.3' Concrete	No tests performed								
608.6		1	4-4-5	8"	Cinders, clay, gravel (fill), moist - loose	Visual classification-No tests performed								Fill
606.4	2													
603.9	4	2	1-1-2	18"	Brown and gray silty clay with organic matter (fill), moist - soft	Visual classification-No tests performed								Fill
	6	3	1-1-2	15"	Clay and cinders (fill), very moist - loose	Visual classification-No tests performed								Fill
	8	4	1-2-2	16"	do do	Visual classification-No tests performed								Fill
	10	5	1-1-2	18"	do do	Visual classification-No tests performed								Fill
	12													
	14													
593.9	16	6	2-3-3	17"	Gray and brown silty clay, little sand, with brick, cinders and organic matter (fill), moist - medium stiff	0	10	7	65	18	36	16	23	A-6b
	18													
588.9	20	7	3-5-7	13"	Brown clay, trace sand with shale fragments (fill), moist - medium stiff	0	4	4	40	52	42	21	20	A-7-6
	22													
	24													
583.9	26	8	4-4-5	16"	Gray silt, clay and sand, trace gravel with brick and cinders (fill), moist - medium stiff	4	19	20	31	26	28	11	14	A-6a
581.4	28	9	5-6-9	12"	Gray and brown silty clay, little sand, little gravel with shale and limestone fragments moist - medium stiff	20	7	4	31	38	38	19	20	A-6b
578.9	30	10	5-6-9	13"	Gray and brown clay little sand, trace gravel, with shale fragments moist - stiff	1	8	3	33	55	44	23	21	A-7-6
	32	11	6-7-8	10"	Brown and gray clay, trace sand with shale and limestone fragments moist - stiff	0	5	4	37	54	41	20	20	A-7-6
	34													

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Form No. 530—16.58

THE H. C. NUTTING COMPANY

4130 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

REVISED
9/2/64-vb

LOG OF BORING

DATE STARTED 7/9/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 583.9 Backfilled CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/9/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-12-2 STATION AND OFFSET 13+71, 42' Rt., Elsinore Pl. SURFACE ELEV. 608.9 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36	12	5-6-8	17"	Gray and brown clay, trace sand with shale and limestone fragments moist - stiff	0	4	4	39	53	42	20	16	A-7-6
571.4	38													
	40	13	8-9-11	10"	Gray and brown silty clay, trace sand with shale fragments moist - stiff	0	3	1	44	52	39	19	16	A-6b
	42	14	6-7-9	13"	Gray silty clay, little sand with shale fragments moist - stiff	0	8	5	37	50	37	16	18	A-6b
	44	15	9-11-15	17"	Brown and gray silty clay, trace sand with shale fragments , moist - stiff	0	4	6	38	52	39	17	17	A-6b
536.9	46	16	7-9-11	15"	Brown and gray clay, little sand, trace gravel with shale and limestone fragments, moist - stiff	5	6	6	32	51	44	22	19	A-7-6
	48													
	50	17	6-8-13	16"	Brown and gray clay, trace sand with shale and limestone fragments, moist - stiff	0	6	4	37	53	43	21	23	A-7-6
	52	18	10-12-15	18"	Brown and gray clay, trace sand with shale and limestone fragments, moist - stiff	0	0	6	36	58	42	20	20	A-7-6
	54													
	56	19	9-11-16	15"	Brown and gray clay, little sand, little gravel with limestone fragments, moist-stiff	17	10	6	23	44	47	26	22	A-7-6
	58													
548.9	60													
	62	20	21-34	12"	Gray shale, moist - hard	Visual classification-No tests performed								
	64	21	NXM	70%	Gray and brown shale, calcareous, soft to moderately tough(two pieces 2" and 3") and gray limestone, crystalline, fossiliferous, jointed(2" and 2½" pieces) 67% shale, 33% limestone									
542.9	66													
	68													

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Form No. 530—1[illegible]

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

REVISED
9/2/64-vb

LOG OF BORING

DATE STARTED 7/9/64 SAMPLER: TYPE Split Spoon & 2"O.D. & Core Barrel DIA. NXM WATER ELEV. IMMEDIATE 583.9 Backfilled CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/9/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-12-2 STATION AND OFFSET 13+71, 42' Rt.,Elsinore Pl. SURFACE ELEV. 608.9 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS.
					Gray shale, calcareous, moderately tough to tough (¼" to 2" pieces, averaging 1½") and gray limestone, shaly, fossiliferous (1½" to 2½" pieces averaging 1½"), 85% shale, 15%limestone									
					Boring completed at 542.9'									

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Form No. 530

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/10/64 SAMPLER: TYPE Split Spoon and Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 577.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/10/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-12-3 STATION AND OFFSET 14+72, 42'Rt.,Elsinore Pl. CL SURFACE ELEV. 612.6 Bridge No. HAM 71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	M.C.	SOIL CLASS
612.6	0				0.3' Concrete	No tests performed								
612.3														
610.1	2	1	2-2-1	10"	Clay, sand, gravel and cinders (fill) moist - loose	Visual classification-No tests performed								Fill
607.6	4	2	2-2-3	15"	Gray silty clay with fine gravel and cinders (fill), moist - medium stiff	Visual classification-No tests performed								Fill
605.1	6	3	1-1-2	17"	Cinders and clay (fill), moist - loose	Visual classification-No tests performed								Fill
602.6	8	4	2-3-4	18"	Brown and gray silty clay with cinders and shale fragments(fill),moist-medium stiff	Visual classification-No tests performed								Fill
	10													
	12	5	3-4-5	18"	Brown and gray clay, some sand,trace gravel with cinders and shale fragments, (fill), moist - medium stiff	1	16	5	30	48	43	23	23	A-7-6
597.6	14													
	16	6	4-5-5	13"	Brown and gray silty clay,little sand, trace gravel with weathered shale fragments, moist - medium stiff	1	5	10	36	48	37	18	23	A-6b
592.6	18													
	20	7	4-5-6	16"	Brown and gray clay, trace sand,trace gravel with weathered shale fragments, moist to very moist - medium stiff	3	2	1	51	43	41	20	25	A-7-6
587.6	22													
	24	8	3-5-8	15"	Gray silty clay, trace sand, trace gravel with weathered shale fragments, moist - stiff	1	3	3	39	54	36	16	16	A-6b
582.6	26													
	28	9	19-20-17	17"	Brown and gray clay, trace sand, some gravel with weathered shale and limestone fragments, moist - stiff	34	1	1	25	39	43	21	18	A-7-6
580.1	30													
	32	10	7-11-12	17"	Gray silty clay, trace sand, trace gravel with shale and limestone fragments, moist-stiff	10	6	3	37	44	36	16	14	A-6b
	34													

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/10/64 SAMPLER: TYPE Split Spoon and Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE 577.6 Backfilled CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/10/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-12-3 STATION AND OFFSET 14+72, 42' Rt., Elsinore Pl.CL SURFACE ELEV. 612.6 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
	34													
	36	11	12-18-23	9"	Gray silty clay with shale and limestone fragments moist - stiff	Insufficient sample for testing					37	17	20	A-6b
575.1	38													
		12	6-7-8	15"	Brown and gray clay, trace sand, trace gravel moist - stiff	1	0	1	30	68	52	28	27	A-7-6
572.6	40													
	42	13	12-13-15	18"	Dark brown elastic clay, trace sand, moist - stiff	0	1	1	45	53	60	24	33	A-7-5
580.1														
	44	14	7-12-15	18"	Brown clay, trace sand, moist - stiff	0	0	1	31	68	59	33	25	A-7-6
	46													
		15	7-11-16	17"	do do	0	1	1	29	69	59	35	23	A-7-6
	48	16	9-11-14	17"	Brown clay, trace sand, trace gravel with limestone fragments, moist - stiff	10	3	2	28	57	51	28	23	A-7-6
	50													
561.1	52	17	9-12-17	18"	Brown clay, trace sand with limestone fragments, moist - stiff	0	4	2	34	60	52	30	21	A-7-6
	54	18	14-38	12"	Brown and gray weathered shale, moist - hard									
	56													
	58	19	NXM	52%	Gray shale, calcareous, moderately tough, (½" to 2"pieces averaging 1½") and gray limestone, crystalline, fossiliferous, (½" to 3" pieces, averaging 1½") 83% shale, 17% limestone									
	60													
551.6														
	62				Boring completed									
	64													
	66													
	68													

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Form No. 530—1

THE H. C. NUTTING COMPANY

4130 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/11/64 SAMPLER: TYPE Split Spoon & Cone Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/11/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0203

BORING No. B-12-4 STATION AND OFFSET 15+61, 44' L., CL. Elsinore Pl. SURFACE ELEV. 616.8

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
616.8	0													
	2	1	3-4-4	14"	Concrete, sand, gravel and clay(fill), moist - loose	Visual classification-No tests performed								Fill
614.3	4	2	4-5-7	16"	Brown silt and clay,little sand,trace gravel,(fill), moist - medium stiff	8	8	10	34	40	35	15	18	A-6a
609.8	6													
	8	3	6-9-14	16"	Brown silty clay,little sand,little gravel with cinders and limestone fragments (fill),moist - stiff	14	6	5	34	41	39	19	18	A-6b
	10													
604.8	12	S-1		13"	Brown silty clay,some sand,trace gravel with cinders and limestone fragments, (fill), moist-stiff	2	16	8	39	35	39	17	*	A-6b
	14	4	8-11-15	10"	Brown silty clay, trace sand, trace gravel moist- stiff	9	4	3	39	45	39	19	14	A-6b
	16	5	7-8-10	18"	Brown silty clay, trace sand, some gravel with limestone fragments moist - stiff	20	4	3	31	42	40	20	18	A-6b
	18													
	20													
594.8	22													
	24	6	6-8-11	16"	Gray clay, trace sand,little gravel with limestone fragments moist-stiff	18	2	3	32	45	41	21	18	A-7-6
	26													
	28	7	6-9-13	17"	Brown and gray clay, trace sand,little gravel with limestone fragments moist -stiff	16	4	2	37	41	44	24	22	A-7-6
586.8	30													
	32	8	5-8-12	18"	Brown and gray silty clay, trace sand, trace gravel with limestone fragments moist - stiff	6	4	2	43	45	40	20	19	A-6b
583.8	34													

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/11/64 SAMPLER: TYP Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/11/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-12-4 STATION AND OFFSET 15+61, 44' L., CL, Elsinore Place SURFACE ELEV. 616.8 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34	S-2		19"	Brown and gray clay, little sand with shale fragments moist - stiff	0	7	5	37	51	42	19	22	A-7-6
	36	9	9-12-15	18"	Brown and gray clay, trace sand.little gravel with shale fragments moist - stiff	19	2	1	32	46	46	24	21	A-7-6
	38	10	7-11-14	18"	Brown and gray clay, trace sand.little gravel with shale fragments moist - stiff	13	2	4	36	45	41	19	14	A-7-6
576.8	40													
		S-3			Brown and gray silty clay,little sand, trace gravel with shale fragments moist- stiff	4	6	4	37	49	39	17	20	A-6b
	42													
		11	9-16-20	15"	Brown and gray silty clay,trace sand with shale fragments moist-stiff	0	2	3	41	54	39	19	18	A-6b
	44													
571.8														
	46	12	18-50	12"	Brown and gray shale, moist - hard	Visual classification-No tests performed								
	48	13	82-100	12"	Gray shale, dry - hard	Visual classification-No tests performed								
567.3	50													
	52	14	NXM	60%	Gray shale, calcareous, moderately tough to tough (½" to 3" pieces averaging 1½") 100% shale									
562.3	54													
	56				Boring completed	*Insufficient sample								
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/25/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 601.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/25/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS _____ Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-12-5 STATION AND OFFSET 15+56, 48' Rt. Elsinore Pl.CL SURFACE ELEV. 616.2 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
616.2	0													
615.8					0.4' Concrete									
613.7	2	1	11-6-6	11"	Clay, cinders and gravel (fill), moist-medium dense	Visual classification-No tests performed								Fill
611.2	4	2	7-8-8	13"	Brick, clay, cinders and gravel (fill), moist - medium dense	Visual classification-No tests performed								Fill
608.7	6	3	2-3-3	13"	Brown clay, trace sand with shale fragments, moist-medium stiff	0	2	3	33	62	47	23	22	A-7-6
	8	4	3-4-5	14"	Brown and gray silty clay, trace sand, little gravel with shale and limestone fragments, moist-medium stiff	11	5	4	30	50	40	18	20	A-6b
	10													
	12	5	2-3-3	16"	Brown and gray silty clay, trace sand, trace gravel with shale and limestone fragments, moist - medium stiff	1	5	4	37	53	39	17	23	A-6b
601.2	14													
	16	6	4-7-5	10"	Brown and gray clay, little sand, little gravel with shale and limestone fragments, moist - medium stiff	11	9	4	30	46	41	19	23	A-7-6
	18													
	20	7	5-6-5	15"	Brown and gray clay, trace sand, little gravel with shale and limestone fragments, moist - stiff	15	5	2	28	50	44	22	24	A-7-6
	22													
	24													
	26	8	7-8-9	17"	Brown and gray clay, trace sand, trace gravel with shale and limestone fragments, moist - stiff	1	4	4	30	61	48	25	19	A-7-6
	28													
587.2														
585.7	30	S-1		16"	Brown silty clay, little sand, moist - stiff	0	6	5	42	47	40	18	18	A-6b
	32	9	14-18-27	18"	Brown weathered shale, moist - hard	Visual classification-No tests performed								
	34	10	22-38-53	18"	do do	Visual classification-No tests performed								

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/25/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 601.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/25/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-12-5 STATION AND OFFSET 15+56, 48' Rt, Elsinore Pl, CL SURFACE ELEV. 616.2 Bridge No, HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36	11	24-60	12"	Brown and gray weathered shale, moist - hard	Visual classification-No tests performed								
	38	12	32-58	12"	Gray shale, moist - hard	Visual classification-No tests performed								
576.2	40													
	42	13	NXM	60%	Gray shale, clacareous, moderately tough (1" to 6" pieces averaging 3") and gray limestone, crystalline, fossiliferous, jointed (1" to 3" pieces averaging 1½") 90% shale, 10% limestone									
	44													
	46	14	NXM	98%	Gray shale, calcareous, tough (1" to 6½" pieces averaging 4") and gray limestone, crystalline, fossiliferous (three pieces 3/4" - 1" and 2") 94% shale, 6% limestone									
	48													
566.2	50													
	52				Boring completed									
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 530 [illegible]59

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

Split Spoon & 2" O.D.&

DATE STARTED 1/27/65 SAMPLER: TYPE Core Barrel DIA. NXM WATER ELEV. IMMEDIATE 595.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 1/28/65 CASING: LENGTH _____ DIA. 3.375"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-12-6 STATION AND OFFSET 13+52, 35' L. CL, Elsinore Pl. SURFACE ELEV. 607.7 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
607.7	0													
606.7					Asphaltic concrete and cobblestone pavement									
605.2	2	1	12-18-10		Brown silty fine to coarse sand and gravel with brick fragments(fill),moist-medium dense	Visual classification-No tests performed								Fill
	4	2	9-3-5		Brown and gray sandy clay and cinders (fill), moist - loose	Visual classification-No tests performed								Fill
601.7	6	S-1(T)		12"	do do	28	16	21	24	11	36	8	32	A-2-4
		S-1(B)		12"		17	11	14	32	26	45	17	26	A-7-6
	8	3	3-3-4		Brown and gray clay with shale and limestone fragments, moist - stiff do do	4	4	2	38	52	46	23	24	A-7-6
	10					Visual classification-No tests performed								A-7-6
596.7		S-2(T)		12"	do do	18	2	5	39	36	40	19	22	A-6b
	12	S-2(B)		12"		29	6	6	27	32	38	18	20	A-6b
594.2	14	4	7-8-8	15"	Gray silty clay and limestone fragments, moist - very stiff do do	Visual classification-No tests performed								A-6b
	16	S-3		24"	Brown and gray clay with shale and limestone fragments, moist - medium stiff to stiff	Visual classification-No tests performed								A-7-6
	18	5	6-7-7	12"	do do	Visual classification-No tests performed								A-7-6
	20					8	3	3	33	53	46	22	22	A-7-6
		S-4		24"	do do	21	1	2	27	49	49	27	23	A-7-6
	22	6	7-9-12	15"	do do	Visual classification-No tests performed								A-7-6
	24													
	26	S-5		12"	do do	3	2	0	45	50	40	18	13	A-6b
						23	1	2	30	44	40	17	21	A-6b
	28	7	10-12-10	17"	do do	Visual classification-No tests performed								A-7-6
	30													
	32	S-6		18"	do do	Visual classification-No tests performed								A-7-6
		8	11-10-15	14"	do do	Visual classification-No tests performed								A-7-6
	34													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—15

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 1/27/65 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 595.7 Backfilled CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 1/28/65 CASING: LENGTH _____ DIA. 3.375"I.D.Hollow Stem Augers WATER _____ HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0203

BORING No. B-12-6 STATION AND OFFSET 13+52, 35' L, CL, Elsinore Pl. SURFACE ELEV. 607.2

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTD. CLASS
	34													
	36													
	38	9	8-10-13	10"	Brown and gray clay with shale and limestone fragments, moist - medium stiff to stiff	Visual classification-No tests performed								A-7-6
	40													
	42	S-7		12"	do do	13	3	3	35	46	42	21	20	A-7-6
						3	2	3	40	52	43	23	22	A-7-6
	44	10	12-15-17	17"	do do	Visual classification-No tests performed								A-7-6
	46	S-8		18"	do do	11	5	5	35	44	41	20	18	A-7-6
	48	11	7-9-12	10"	do do	Visual classification-No tests performed								A-7-6
	50													
	52	S-9		12"	do do	Visual classification-No tests performed								A-7-6
554.2	54	12	12-10-14	12"	do do	Visual classification-No tests performed								A-7-6
					Brown and gray clay with shale and limestone fragments, trace of organic matter, moist - stiff	27	3	2	31	37	44	22	20	A-7-6
	56	S-10		18"		18	1	1	32	48	45	22	19	A-7-6
						8	1	1	39	51	44	22	20	A-7-6
	58	13	11-15-21	10"	do do	Visual classification-No tests performed								A-7-6
547.7	60													
	62	S-11		12"	Brown and gray sandy clay with limestone Fragments, moist - very stiff	No classification tests performed							19	A-7-6
	64	14	17-29-58	12"	do do	Visual classification-No tests performed								A-7-6
542.7	66													
	68	R-1	NXM	80%										

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Form No. 550—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 1/27/65 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 595.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 1/28/65 CASING: LENGTH _____ DIA. 3.375"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-12-6 STATION AND OFFSET 13+52, 35'L. CL Elsinore Pl. SURFACE ELEV. 607.7 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % ABR.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
	68				Gray and brown shale calcareous moderately tough (weathered in the top 18" of the run)(¼ to 2" pieces averaging 1½") and gray limestone, crystalline, fossiliferous (1" and 1½" pieces) 93% shale, 7% limestone									
537.7	70													
	72													
	74													
	76				Boring completed									
	78													
	80													
	82													
	84													
	86													
	88													
	90													
	92													
	94													
	96													
	98													
	100													
	102													

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Form No. 530—16M

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 1/25/65 SAMPLER: TYPE Split Spoon & Core Barrel DIA. NXM WATER ELEV. IMMEDIATE 596.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 1/26/65 CASING: LENGTH ____ DIA 3.375"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-12-7 STATION AND OFFSET 13+38, 45' Rt., CL, Elsinore Pl. SURFACE ELEV. 607.6 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
607.6	0													
	2	1	4-7-9	10"	Cinders with brick fragments and clay (fill), moist - medium dense	Visual classification-No tests performed								Fill
	4	2	3-5-12	11"	do do	Visual classification-No tests performed								Fill
601.1	6	S-1		18"	do do	Visual classification-No tests performed								Fill
	8	3	7-3-6	12"	Brown and gray clay, trace cinders (fill) moist - medium stiff	No classification tests performed							23	Fill
599.1					do do	Visual classification-No tests performed								Fill
	10	4	3-4-4	10"	Cinders with wood fragments (fill), moist - medium stiff	Visual classification-No tests performed								Fill
596.1	12	S-2		18"	do do	Visual classification-No tests performed								Fill
	14	5	4-4-4	10"	Brown and gray clay with shale fragments and cinders (fill), moist to very moist - medium stiff	Visual classification-No tests performed								Fill
	16	6	3-4-5	11"	do do	Visual classification-No tests performed								Fill
		S-3		24"	do do	Visual classification-No tests performed								Fill
	18	7	3-5-7	16"	do do	Visual classification-No tests performed								Fill
	20	8	4-7-8	17"	do do	Visual classification-No tests performed								Fill
585.6	22	S-4		24"	do do	Visual classification-No tests performed								Fill
	24	9	5-7-10	18"	Brown and gray clay with shale fragments, trace cinders (fill), wet - soft	Visual classification-No tests performed								Fill
582.6		10	4-5-6	12"	do do	Visual classification-No tests performed								Fill
581.1	26	11	19-27-28	10"	Cinders with limestone fragments and clay (fill), wet - very dense	Visual classification-No tests performed								Fill
	28	12	19-27-23	17"	Brown and gray clay with shale and limestone fragments and organic matter, (fill), moist - medium stiff	Visual classification-No tests performed								A-7-6
577.6	30													
	32	S-5		18"	Brown and gray clay with shale and limestone fragments, wet -medium stiff to stiff	26	3	2	27	42	40	18	20	A-6b
						25	6	4	26	39	43	21	19	A-7-6
	34	13	7-10-11	17"	do do	Visual classification-No tests performed								A-7-6

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 1/25/65 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 596.6 Backfilled CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 1/26/65 CASING: LENGTH _____ DIA. 3.375"I.D.Hollow Stem Augers AFTER _____ HOURS _____ PROJECT: Northeast Expressway HAM-71-0,93 Bridge No. HAM-71-0203

BORING No. B-12-7 STATION AND OFFSET 13+48, 45' Rt.,CL, Elsinore Pl. SURFACE ELEV. 607.6

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36	S-6		18"	Brown and gray clay with shale and limestone fragments, moist - stiff	Visual classification-No tests performed								A-7-6
	38	14	9-11-12	16"	do do	Visual classification-No tests performed								A-7-6
	40													
	42	S-7		18"	do do	Visual classification-No tests performed								A-7-6
	44	15	10-15-19	12"	do do	Visual classification-No tests performed								A-7-6
	46	S-8		12"	do do	Visual classification-No tests performed								A-7-6
	48	16	12-15-21	16"	do do	Visual classification-No tests performed								A-7-6
	50													
	52	S-9		18"	do do	Visual classification-No tests performed								A-7-6
	54	17	10-11-17	17"	do do	Visual classification-No tests performed								A-7-6
552.6														
	56	S-10		18"	Brown and gray clay, trace organic matter moist - stiff	No classification tests performed						20		A-7-6
550.6														
	58	18	11-12-18	17"	Brown and gray clay, trace organic matter very moist - medium stiff	Visual classification-no tests performed								A-7-6
	60													
		S-11		12"	do do	Visual classification-No tests performed								A-7-6
	62	19	20-21	10"	do do	Visual classification-No tests performed								A-7-6
		20	10	6"	do do	Visual classification-No tests performed								A-7-6
543.6	64													
542.6		21	49-93	5"	Brown and gray clay with limestone fragments, moist - stiff	Visual classification-No tests performed								A-7-6
	66													
	68	R-1	NXM	80%										

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Form No. 530—16-5

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 1/25/65 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 596.6 Backfilled CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 1/26/65 CASING: LENGTH _____ DIA. 3.375"I.D.Hollow Stem Augers AFTER _____ HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-12-7 STATION AND OFFSET 13+38, 45' Rt., CL, Elsinore Pl. SURFACE ELEV. 607.6 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
537.6	68 70	R-1	NXM	80%	Gray shale calcareous, moderately tough (½" to 4" pieces averaging 2½") and gray limestone cyrstalline, fossiliferous (two pieces 2" and 2½") 92% shale, 8% limestone									
	72 74 76 78 80 82 84 86 88 90 92 94 96 98 100 102													

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/8/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE 586.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/8/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-13-1 STATION AND OFFSET 199+00, 4'Rt.Relocated Penn.RR SURFACE ELEV. 611.0 Bridge No. HAM-71-0207

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
611.0	0													
	2	1	10-11-13	10"	Brown sandy clay with gravel and cinders (fill), moist - stiff	Visual classification-No tests performed								Fill
	4	2	10-8-6	7"	do do	Visual classification-No tests performed								Fill
606.0	6	3	5-4-4	9"	Cinders, gravel, brick, sand and clay (fill), moist - loose	Visual classification-No tests performed								Fill
	8	4	2-3-4	16"	do do	Visual classification-No tests performed								Fill
	10	5	2-2-3	18"	do do	Visual classification-No tests performed								Fill
	12													
	14													
	16	6	2-2-3	18"	do do	Visual classification-No tests performed								Fill
	18													
	20													
	22	7	2-2-4	11"	do do	Visual classification-No tests performed								Fill
	24													
586.0	26	8	2-2-3	10"	Brown and gray silty clay, little sand little gravel with cinders (fill), very moist - soft	16	8	9	30	37	36	16	24	A-6b
583.0	28													
	30	9	3-4-7	17"	Brown and gray clay, trace sand with shale fragments, moist - medium stiff	0	4	4	42	50	43	19	26	A-7-6
	32	10	4-6-8	16"	Brown and gray clay, trace sand with shale fragments moist - medium stiff	0	4	3	39	54	42	18	23	A-7-6
	34	11	3-5-7	17"	Brown and gray clay, trace sand, little gravel with shale fragments, moist-medium stiff	13	4	2	37	54	42	20	22	A-7-6

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/8/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2" O.D. & NXM WATER ELEV. IMMEDIATE 586.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/8/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-13-1 STATION AND OFFSET 199+00, 4' Rt. Relocated Penn.RR SURFACE ELEV. 611.0 Bridge No. HAM-71-0207

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36	12	3-5-8	11"	Brown and gray clay, trace sand with shale fragments moist - medium stiff	0	4	2	38	56	41	18	21	A-7-6
	38	13	3-3-4	17"	Brown and gray clay, trace sand, trace gravel with shale fragments and cinders, wet - soft	2	4	3	35	56	45	21	25	A-7-6
571.0	40													
	42	14	5-7-8	17"	Brown and gray silty clay, some sand, trace of gravel with wood and cinders moist - medium stiff	5	13	11	31	40	38	17	13	A-6b
568.5														
566.0	44	15	4-7-9	13"	Brown and gray clay, little sand, trace gravel, with shale and limestone fragments, moist - medium stiff	1	10	8	31	50	44	21	24	A-7-6
	46	16	6-7-13	15"	Brown and gray silty clay, trace sand, little gravel with shale and limestone fragments moist - medium stiff	14	5	3	32	46	39	17	17	A-6b
	48	16A	5-7-12			No sample recovered								
561.0	50													
	52	17	5-6-9	11"	Brown and gray clay, trace sand with shale and limestone fragments, moist - medium stiff	0	2	2	44	52	48	26	26	A-7-6
	54													
	56	18	8-11-13	18"	Brown clay, trace sand, trace gravel with limestone fragments, moist -stiff	2	4	4	32	58	43	23	17	A-7-6
	58													
	60													
	62	19	14-18-21	18"	Brown and gray clay, trace sand, trace gravel with limestone fragments, moist - stiff	2	6	3	27	62	50	27	24	A-7-6
	64													
546.0														
545.0	66	20	32-93	12"	Gray shale, moist - hard	Visual description-No tests performed								Fill
	68													

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Form No. 530—1648

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/8/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 586.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/8/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS ____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-13-1 STATION AND OFFSET 199+00, 4' Rt. Relocated Penn.RR SURFACE ELEV. 611.0 Bridge No. HAM-71-0207

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	UNIFIED CLASS
540.0	68 70	21	NXM	67%	Gray shale, calcareous, soft to moderately tough (¼" to 3" pieces, averaging 1½") and gray limestone, crystalline, fossiliferous (¼" -1" and 3" pieces) 91% shale, 9% limestone									
	72 74 76 78 80 82 84 86 88 90 92 94 96 98 100 102				Boring completed									

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Form No. 530

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/23/63 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/24/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway NHM-71-0.93

BORING No. B-13-2 STATION AND OFFSET 200+55,8'L.CL,Relocated Penn.RR Tracks SURFACE ELEV. 614.2 Bridge No. 71-0207

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
614.2	0													
	2	1	8-4-5	13"	Cinders, brick and wood (fill),moist-loose to very loose	Visual classification-No tests performed								Fill
	4	2	2-3-2	15"	do do	Visual classification-No tests performed								Fill
	6	3	1-1-1	10"	do do	Visual classification-No tests performed								Fill
	8	4	1-1-1	12"	do do	Visual classification-No tests performed								Fill
	10	5	4-2-2	14"	do do	Visual classification-No tests performed								Fill
	12													
	14													
599.2	16	6	1-1-2	18"	Brown clayey fine sand with cinders (fill), moist - very loose	Visual classification-No tests performed								Fill
	18													
594.2	20	7	2-2-3	7"	Cinders and clayey fine sand (fill), moist - loose	Visual classification-No tests performed								Fill
	22													
	24	8	2-2-3	8"	do do	Visual classification-No tests performed								Fill
589.2	26	9	2-3-3	6"	Brown and gray silty clay with cinders, (fill), moist - stiff	Visual classification-No tests performed								Fill
	28	10	4-7-8	8"	do do	Visual classification-No tests performed								Fill
	30	11	2-10-7	13"	do do	Visual classification-No tests performed								Fill
	32													
	34	12	2-5-6	10"	do do	Visual classification-No tests performed								Fill

"AS A BEFITTING PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—10

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/23/64 SAMPLER: TYPE Split Spoon & 2"O.D. & Core Barrel DIA. NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/24/64 CASING: LENGTH _____ DIA 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-13-2 STATION AND OFFSET 200+55,8'L.,CL, Relocated Penn.RR Tracks SURFACE ELEV. 614.2 Bridge No. HAM-71-0207

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
579.2	34													
	36	13	4-8-12	8"	Brick and brown and gray silty clay (fill), moist - medium dense	Visual classification-No tests performed								Fill
576.7	38	14	4-12-14	8"	Brown and gray silt and clay,trace sand, trace gravel with shale fragments, moist - stiff	7	4	4	42	43	36	14	16	A-6a
	40													
	42	15	4-12-15	14"	Brown and gray silt and clay,trace sand little gravel with shale fragments, moist - medium stiff	14	5	4	35	42	37	15	16	A-6a
	44	16	5-5-8	18"	Brown silt and clay, trace sand, moist - medium stiff	0	1	1	67	31	35	13	23	A-6a
	46	17	4-6-9	16"	Brown and gray silt and clay, trace sand, moist - medium stiff	0	2	2	62	34	34	15	22	A-6a
	48													
564.2	50													
	52	18	5-8-13	17"	Brown and gray silty clay, trace sand, trace gravel with limestone fragments, moist - stiff	3	2	1	39	55	39	19	20	A-6a
	54													
559.2	56	19	15-17-21	18"	Brown and gray clay, trace sand,little gravel with limestone fragments, moist-very stiff	18	3	3	31	45	44	23	21	A-7-6
	58													
	60													
	62	20	6-13-31	17"	Brown and grey clay, trace sand, trace gravel with limestone fragments, moist-hard	7	4	2	35	52	46	22	16	A-7-6
550.7	64													
	66	21	NXM	51%	Gray shale, calcareous,moderately tough (¼" to 3" pieces averaging 2") and gray limestone, crystalline,fossiliferous, jointed midway in the run (1" to 21" pieces averaging 1½") 87%shale 13% limestone									
	68													

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Form No. 530—1648

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/23/64 SAMPLER: TYPE Split Spoon 2"O.D. & Core Barrel DIA. NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/24/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT Northeast Expressway HAM-71-0.93

BORING No. B-13-2 STATION AND OFFSET 200+55, 8'L., CL, Relocated Penn RR Tracks SURFACE ELEV. 614.2 Bridge No. HAM-71-0207

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
545.7	68													
	70				Boring completed									
	72													
	74													
	76													
	78													
	80													
	82													
	84													
	86													
	88													
	90													
	92													
	94													
	96													
	98													
	100													
	102													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530-[illegible]9

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/31/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 592.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/31/64 CASING: LENGTH _____ DIA 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-13-3 STATION AND OFFSET 201+79, 17'Rt.Relocated Penn.* SURFACE ELEV. 620.1 Bridge No. HAM-71-0207

*RR Tracks CL

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
620.1	0													
	2	1	1-1-3	14"	Cinders, sand, clay and gravel (fill), moist - loose	Visual classification-No tests performed								Fill
	4	2	5-4-5	17"	do do	Visual classification-No tests performed								Fill
	6	3	4-5-5	16"	Brown silty clay with sand, gravel, cinders and brick (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	8	4	4-4-3	16"	do do	Visual classification-No tests performed								Fill
	10													
	12	S-1		19"	do do	Visual classification-No tests performed								Fill
	14	5	2-2-2	17"	Cinders, brick and sand (fill), moist - loose	Visual classification-No tests performed								Fill
605.1	16	6	4-4-5	14"	Brown and gray silt and clay, little sand, little gravel with limestone fragments (fill), moist - medium stiff	16	10	5	30	39	36	14	14	A-6a
	18													
	20													
	22	7	3-4-5	15"	Brown and gray silt and clay, little sand, little gravel with limestone fragments (fill), moist - stiff	19	9	5	31	36	35	14	18	A-6a
	24													
593.1	26	S-2		10"	Gray silt and clay, trace sand, trace gravel, moist - stiff	7	5	3	40	45	37	15	17	A-6a
	28	8	3-4-5	18"	Brown and gray clay, trace sand, trace gravel with cinders (fill), moist - medium stiff	1	2	3	41	53	42	19	33	A-7-6
590.1	30													
	32	9	5-7-11	16"	Brown clay, trace sand, trace gravel with limestone fragments, moist-stiff	9	3	2	39	47	41	21	20	A-7-6
	34	10	5-7-9	17"	Brown clay, trace sand, little gravel with limestone fragments, moist-medium stiff	10	6	3	33	48	41	21	21	A-7-6

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/31/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 592.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/31/64 CASING: LENGTH _____ DIA 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT Northeast Expressway HAM-71-0.93

BORING No. B-13-3 STATION AND OFFSET 201+79, 17'Rt.Relocated Penn * SURFACE ELEV. 620.1 Bridge No. HAM-71-0207

*RR Tracks CL

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36		5-5-6	0	Brown clay, trace sand, little gravel with limestone fragments, moist -									
582.1	38	S-3		12"	medium stiff	Visual classification-No tests performed								A-7-6
581.1														
	40	11	7-9-14	14"	Brown silty clay, little sand, little gravel with limestone fragments, - moist - stiff	10	10	5	27	48	40	21	18	A-6b
578.1	42													
	44	12	7-11-14	17"	Brown clay, trace sand, trace gravel with limestone fragments, moist - stiff	2	6	3	27	62	45	23	19	A-7-6
	46	13	9-11-13	15"	Brown clay, little sand, trace gravel with limestone fragments, moist - stiff	6	6	4	27	57	43	20	21	A-7-6
	48													
	50													
	52	14	9-12-16	18"	Brown and gray clay, trace sand with limestone fragments, moist - very stiff	0	5	3	30	62	46	22	20	A-7-6
566.1	54													
565.1		15	43-78	14"	Gray shale, moist - hard	Visual classification - No tests performed								
	56				Gray shale, calcareous, moderately									
		16	NXM	35%	tough (1" to 6½" pieces averaging 3") 100% shale									
	58													
560.1	60													
	62				Boring completed									
	64													
	66													
	68													

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Form No. 530—14.59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

Split Spoon & 2"O.D. LOG OF BORING

DATE STARTED 7/30/64 SAMPLER: TYPE Core Barrel DIA. NXM WATER ELEV. IMMEDIATE 575.1 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/30/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ Backfilled HOURS ____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-14-1 STATION AND OFFSET 175+95, 2' Rt. Ramp R.D. BL SURFACE ELEV. 611.6 Bridge No. HAM-71-0209

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
611.6	0													
609.1	2	1	9-6-8	15"	Brown sandy clay with fine gravel, (fill), moist - hard	Visual classification-No tests performed								Fill
606.6	4	2	3-2-2	14"	Cinders and brick (fill), moist-loose	Visual classification-No tests performed								Fill
	6	3	3-3-7	17"	Cinders, brick and clay (fill), moist - medium dense to loose	Visual classification-No tests performed								Fill
	8	4	2-3-3	14"	do do	Visual classification-No tests performed								Fill
601.6	10													
599.1	12	5	4-6-8	9"	Cinders with rock fragments (fill) moist - medium dense	Visual classification-No tests performed								Fill
	14	6	6-11-9	11"	Brown fine sand with rock fragments (fill), moist - medium dense	Visual classification-No tests performed								Fill
596.6	16	7	3-3-3	16"	Cinders, brick, wood, lime, clay and organic matter (fill), moist - medium dense to loose	Visual classification-No tests performed								Fill
	18													
	20	8	2-2-3	12"	do do	Visual classification-No tests performed								Fill
	22	9	5-4-5	9"	do do	Visual classification-No tests performed								Fill
	24	10	2-6-7	12"	do do	Visual classification-No tests performed								Fill
586.6	26	11	1-1-2	18"	Cinders and clay (fill), moist - very loose	Visual classification-No tests performed								Fill
	28													
	30													
	32	12	2-2-2	13"	do do	Visual classification-No tests performed								Fill
	34													

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Form No. 530—16-58

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/30/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2" O.D.& NXM WATER ELEV. IMMEDIATE 575.1 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/30/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-14-1 STATION AND OFFSET 175+95, 2' Rt., Ramp R.D. BL SURFACE ELEV. 611.6 Bridge No. HAM-71-0209

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL. CLASS
	34													
576.6														
	36	13	1-1-1	11"	Cinders and rock fragments (fill), wet - very loose	Visual classification-No tests performed								Fill
	38													
571.6	40													
	42	14	2-2-5	8"	Cinders and clay (fill), moist - medium dense to loose	Visual classification-No tests performed								Fill
	44													
	46	15	3-6-9	18"	do do	Visual classification-No tests performed								Fill
	48													
561.6	50													
	52	16	5-8-11	10"	Gray silty clay with rock fragments, (fill), moist - stiff	Visual classification-No tests performed								Fill
	54													
	56	17	3-5-9	5"	do do	Visual classification-No tests performed								Fill
	58													
551.6	60													
	62	18	6-7-105	15"	Gray silty clay with rock fragments, brick and cinders (fill), wet -medium stiff	Visual classification-No tests performed								Fill
548.6														
	64	19	NXM	38%	Gray shale, calcareous, moderately tough (½" to 3" pieces, averaging 2") and gray limestone, crystalline, fossiliferous, (1" to 2½" pieces averaging 2") 90% shale, 10% limestone									
	66													
	68													

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Form No. 630—15.58

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/30/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 575.1 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/30/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-14-1 STATION AND OFFSET 175+95, 2' Rt. Ramp R.D. BL SURFACE ELEV. 611.6 Bridge No. HAM-71-0209

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL. CLASS
	68													
538.6	70 72	20	NXM	90%	Gray shale, calcareous, moderately tough (½" to 3" pieces averaging 1½") and gray limestone, crystalline, fossiliferous (½" to 2" pieces averaging 1") 87% shale, 13% limestone									
	74 76 78 80 82 84 86 88 90 92 94 96 98 100 102				Boring completed									

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Form No. 630

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/29/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE 572.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/29/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0209

BORING No. B-14-2 STATION AND OFFSET 176+70, 1' Rt., BL, Ramp R.D. SURFACE ELEV. 612.2

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
612.2	0													
	2	1	14-17-14	9"	Brown sandy clay with fine gravel, (fill), dry - hard	Visual classification-No tests performed								Fill
609.7	4	2	1-2-3	14"	Cinders and clay (fill), moist - loose to very loose	Visual classification-No tests performed								Fill
	6	3	3-4-6	6"	do do	Visual classification-No tests performed								Fill
	8	4	6-5-5	3"	do do	Visual classification-No tests performed								Fill
	10	5	3-4-5	9"	do do	Visual classification-No tests performed								Fill
	12													
	14													
	16	6	2-3-4	7"	do do	Visual classification-No tests performed								Fill
	18													
	20													
	22	7	2-3-3	6"	do do	Visual classification-No tests performed								Fill
	24	8	3-2-3	10"	do do	Visual classification-No tests performed								Fill
	26	9	1-2-3	12"	do do	Visual classification-No tests performed								Fill
	28	10	1-1-1	8"	do do	Visual classification-No tests performed								Fill
582.2	30													
	32	11	2-2-2	15"	Cinders, clay, organic matter, with glass (fill), moist - loose	Visual classification-No tests performed								Fill
	34	12	2-3-3	11"	do do	Visual classification-No tests performed								Fill

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Form No. 530—

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/29/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 572.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/29/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-14-2 STATION AND OFFSET 176+70, 1' Rt. BL Ramp RD SURFACE ELEV. 612.2 Bridge No. HAM-71-0209

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS.
	34													
	36	13	1-2-2	18"	do do	Visual classification-No tests performed								Fill
	38	14	2-2-2	4"	do do	Visual classification-No tests performed								Fill
582.2	40													
	42	15	19-14-9	11"	Gray silty clay with organic matter, wood, sand and gravel (fill), wet - soft	Visual classification-No tests performed								Fill
	44													
	46	16	2-2-4	17"	do do	Visual classification-No tests performed								Fill
	48													
	50													
	52	17	4-5-10	7"	do do	Visual classification-No tests performed								A-6b
	54													
557.2														
	56	18	7-12-19	4"	Brown and gray clay with limestone fragments wet - soft	Insufficient Sample-No tests performed								A-6b
	58													
	60													
	62	19	7-11-4	10"	Brown and gray silty clay, some sand, some gravel with limestone fragments, very moist-medium stiff	32	12	8	25	23	34	16	26	A-6b
549.2														
	64				Gray shale, calcareous, moderately tough (½" and 3" pieces) and gray limestone, crystalline, fossiliferous (1" to 3-3/4" pieces averaging 2-1/2") 75% shale, 25% limestone									
	66	20	NXM	33%										
544.2	68				Boring completed									

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Form No. 530—16

THE E. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/1/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/1/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-14-6 STATION AND OFFSET 180+10, 70'Rt, NB BL SURFACE ELEV. 623.5 Bridge No. HAM-71-0209

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
623.5	0													
	2	1	5-7-8	10"	Cinders, sand, gravel and brick fragments (fill), moist - medium dense	Visual classification-No tests performed								Fill
	4	2	6-8-9	11"	do do	Visual classification-No tests performed								Fill
	6		No Penetration											
616.0	8													
		3	5-6-7	13"	Gray weathered shale and brick fragments, (fill), moist - medium dense	Visual classification-No tests performed								Fill
613.5	10													
	12	4	5-7-6	8"	Clay, cinders and brick fragments, (fill), moist - medium dense	Visual classification-No tests performed								Fill
	14													
	16	5	5-5-6	16"	do do	Visual classification-No tests performed								Fill
	18													
603.5	20													
		6	8-4-3	14"	Cinders, brick, clay, sand and gravel, (fill), moist - loose	Visual classification-No tests performed								Fill
	22													
	24													
	26	7	6-4-3	12"	do do	Visual classification-No tests performed								Fill
	28	8	4-3-4	15"	do do	Visual classification-No tests performed								Fill
593.5	30													
		9	4-4-5	12"	Brown and gray clay, trace sand, trace trace gravel with shale and limestone fragments, moist - stiff	1	3	3	45	48	46	20	21	A-7-6
590.5	32													
	34	S-1		19"	Brown and gray silt and clay, little sand, trace gravel with shale and limestone fragments, moist - stiff	1	7	4	36	52	37	15	19	A-6a

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/1/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/1/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-14-6 STATION AND OFFSET 180+10, 70' Rt. NB BL SURFACE ELEV. 623.5 Bridge No. HAM-71-0209

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36	10	7-11-15	16"	Brown and gray silt and clay,little sand, trace gravel with shale fragments, moist - stiff	1	8	5	36	50	37	14	14	A-6a
	38													
583.5	40	11	5-7-9	16"	Gray silt and clay, little sand,some gravel with shale and limestone fragments, moist - medium stiff	25	8	3	33	31	33	13	19	A-6a
		12	4-6-8	15"	Brown and gray silty clay,trace sand with shale and limestone fragments, moist - stiff	0	5	4	41	50	39	15	21	A-6b
580.5	42													
	44	S-2		20"	Gray clay, trace sand with limestone fragments moist - stiff	0	1	1	40	58	44	18	30	A-7-6
	46	13	5-6-7	18"	Brown and gray clay, trace sand with limestone fragments , moist - stiff	0	0	2	37	61	47	22	26	A-7-6
	48													
	50	14	9-11-15	18"	Brown clay,trace sand, moist - stiff	0	2	2	33	63	48	20	18	A-7-6
		15	12-16-21	18"	Brown clay, trace sand, moist - hard	0	2	1	35	62	48	21	18	A-7-6
	52													
	54													
569.5														
567.5	56	16	34-68	15"	Gray shale, dry - hard	Visual classification-No tests performed								
	58				Gray shale,moderately tough to tough ($\frac{1}{2}$" to 4$\frac{1}{2}$" pieces averaging 3") and gray limestone, crystalline, fossiliferous, shaly (two pieces 1" and 2") 95%shale 5% limestone									
		17	NXM	83%										
	60													
562.5														
	62				Boring completed									
	64													
	66													
	68													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—15

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/10/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 602.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/10/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-15-1 STATION AND OFFSET 16+17, 3' L, NB Reading Rd, BL SURFACE ELEV. 612.0 Bridge No. HAM-71-0211

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
612.0	0													
609.5	2	1	8-10-7	15"	Brown sandy clay with cinders and bricks (fill), moist - hard	Visual classification-No tests performed								Fill
607.0	4	2	2-2-3	9"	Cinders (fill), moist - loose	Visual classification-No tests performed								Fill
604.5	6 8	3	3-3-3	15"	Brown and gray silty clay with cinders (fill), moist - soft	Visual classification-No tests performed								Fill
602.0	10	4	3-2-2	11"	Cinders (fill), moist - loose	Visual classification-No tests performed								Fill
599.5	12	5	1-1-4	16"	Gray silty clay with cinders (fill), wet - soft	Visual classification-No tests performed								Fill
597.0	14	6	4-5-12	18"	Brown silty clay with cinders (fill), moist - stiff	Visual classification-No tests performed								Fill
594.5	16 18	7	10-12-9	11"	Wood, brick and cinders (fill), moist-medium dense	Visual classification-No tests performed								Fill
592.0	20	8	4-5-8	7"	Brick and clay (fill), moist - medium dense	Visual classification-No tests performed								Fill
	22	9	3-5-5	18"	Gray silty clay with cinders and brick, (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	24	10	5-6-4	10"	do do	Visual classification-No tests performed								Fill
	26 28	11	2-2-4	18"	do do	Visual classification-No tests performed								Fill
582.0	30													
	32	12	2-4-6	14"	Brown clay, little sand (fill), moist-stiff	0	6	4	32	58	48	25	22	A-7-6
	34													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/10/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 602.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/10/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0211

BORING No. R.-15-1 STATION AND OFFSET 16+17, 3' L. NB Reading Rd. BL SURFACE ELEV. 612.0

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
577.0	36	13	3-3-3	11"	Brown and gray sandy silt with metal fragments (fill), moist - medium stiff	0	13	14	48	25	35	10	25	A-4a
	38													
572.0	40													
	42	14	6-7-7	3"	Gray silty clay (fill), wet - soft	Visual classification-No tests performed								Fill
	44													
567.0	46	15	7-8-9	6"	Brown and gray clay, little sand, little gravel wet - soft	15	6	4	27	48	46	23	34	A-7-6
	48													
	50													
	52	16	4-6-7	18"	Brown and gray clay, trace sand, moist-medium stiff	0	5	3	40	52	47	26	23	A-7-6
	54													
557.0	56	17	26-65	12"	Brown and gray weathered shale, moist-very stiff	Visual classification-No tests performed								
554.0	58													
	60	18	NXM	82%	Gray shale, calcareous, moderately tough, (½" to 2½" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, (1½" to 3-3/4" pieces averaging 3") 80% shale, 20% limestone									
	62													
549.0														
	64				Boring completed									
	66													
	68													

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

REVISED

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

10/14/64-vb

DATE STARTED 7/31/64 SAMPLER: TYPE Split Spoon& Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 576.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/31/64 CASING: LENGTH DIA. 3.5"I.D.Hollow Stem Augers AFTER HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-15-3 STATION AND OFFSET 18+36, 7' Rt., NB Reading Rd. BL SURFACE ELEV. 616.5 Bridge No. HAM-71-0211

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % ABD.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHR. CLASS
616.5	0													
614.0	2	1	7-6-6	16"	Brown sandy clay with fine gravel and cinders (fill), moist - stiff	Visual classification-No tests performed								Fill
	4	2	2-1-2	14"	Cinders with clay and rock fragments (fill), moist - very loose to loose	Visual classification-No tests performed								Fill
	6	3	1-1-1	6"	do do	Visual classification-No tests performed								Fill
	8	4	1-2-3	18"	do do	Visual classification-No tests performed								Fill
606.5	10													
	12	5	2-3-4	10"	Cinders with clay and organic matter (fill), moist - loose to very loose	Visual classification-No tests performed								Fill
	14													
	16	6	1-1-2	15"	do do	Visual classification-No tests performed								Fill
599.0	18	7	2-2-6	6"	Cinders and wood (fill), moist - loose	Visual classification-No tests performed								Fill
596.5	20													
	22	8	2-3-3	5"	Cinders, clay and organic matter (fill), moist - loose	Visual classification-No tests performed								Fill
	24	9	4-3-2	10"	do do	Visual classification-No tests performed								Fill
	26	10	5-4-4	13"	do do	Visual classification-No tests performed								Fill
589.0	28	11	2-2-2	17"	Cinders with brick and organic matter, (fill), moist - loose	Visual classification-No tests performed								Fill
586.5	30													
	32	12	2-2-4	14"	Cinders, clay and organic matter, (fill), moist - loose	Visual classification-No tests performed								Fill
	34	13	2-2-2	15"	do do	Visual classification-No tests performed								Fill

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

REVISED
10/14/64-vb

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/31/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 576.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/31/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-15-3 STATION AND OFFSET 18+36, 7' Rt., NB Reading Rd.BL SURFACE ELEV. 616.5 Bridge No. HAM-71-0211

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL. CLASS
	34													
	36	14	2-3-3	18"	Cinders, clay and organic matter (fill), moist - loose	Visual classification-No tests performed								Fill
	38													
576.5	40													
	42	15	1-1-1	18"	Cinders with clay and rock fragments, (fill), wet - very loose	Visual classification-No tests performed								Fill
	44													
	46	16	2-2-2	18"	do do	Visual classification-No tests performed								Fill
	48													
566.5	50													
	52	17	3-7-16	12"	Brown and gray elastic silt and clay, some sand, some gravel with limestone fragments and fine sand layers, moist - medium stiff	36	16	12	20	16	28	11	19	A-5
	54													
561.5														
	56	18	9-17-20	10"	Brown and gray clayey sand and gravel with limestone fragments and fine sand layers, moist - stiff	46	11	8	16	19	35	16	26	A-2-6
	58													
557.5														
	60				Refusal at 59'									
	62				Boring completed									
	64													
	66													
	68													

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Form No. 630—1[illegible]

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/11/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE 589.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/11/64 CASING: LENGTH _____ DIA. 3.5"I.D. Hollow AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-15-5 STATION AND OFFSET 20+31, 12' Rt., NB Reading Rd.BL SURFACE ELEV. 621.1 Bridge No. HAM-71-0211

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
621.1	0													
	2	1	7-9-10	15"	Brown sandy clay with cinders (fill), moist - medium stiff to very stiff	Visual classification-No tests performed Fill								
	4	2	3-2-3	6"	do do	Visual classification-No tests performed Fill								
616.1	6	3	4-3-3	16"	Brown and gray clay, trace sand, trace gravel with limestone fragments (fill), moist - stiff	2	2	2	35	59	49	25	18	A-7-6
	8	4	3-4-5	17"	do do	Visual classification-No tests performed A-7-6								
	10	5	2-3-3	12"	do do	4	3	3	31	59	44	20	21	A-7-6
608.6	12													
	14	6	2-3-4	10"	Cinders (fill), moist - loose	Visual classification-No tests performed Fill								
	16	7	1-1-3	12"	do do	Visual classification-No tests performed Fill								
	18	8	2-2-2	17"	do do	Visual classification-No tests performed Fill								
	20	9	2-3-4	14"	do do	Visual classification-No tests performed Fill								
	22	10	2-4-5	12"	do do	Visual classification-No tests performed Fill								
596.1	24													
	26	11	2-3-3	15"	Brick (fill), moist - loose	Visual classification-No tests performed Fill								
	28	12	2-2-3	15"	do do	Visual classification-No tests performed Fill								
	30	13	4-1-1	15"	do do	Visual classification-No tests performed Fill								
	32													
	34													

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Form No. 530—16.59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/11/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 589.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/11/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-15-S STATION AND OFFSET 20+31, 12' Rt. NB Reading Rd.BL SURFACE ELEV. 621.1 Bridge No. HAM-71-0211

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SNTL CLASS
586.1	34													
	36	14	4-7-7	18"	Brown and gray silty clay, trace sand, with limestone fragments moist - stiff	0	2	2	47	49	39	19	23	A-6b
581.1	38 40													
	42	15	2-5-6	18"	Brown and gray silt and clay, little sand with limestone fragments very moist - medium stiff	0	5	5	46	44	34	15	24	A-6a
576.1	44													
	46	16	5-7-16	18"	Brown clay, trace sand, trace gravel, with limestone fragments, moist - very stiff	2	4	5	33	56	48	26	17	A-7-6
	48 50													
	52	17	8-12-37	17"	Brown and gray clay, little sand, trace gravel with limestone fragments, moist - very stiff	7	7	7	27	52	43	22	16	A-7-6
566.1	54													
	56	18	29-34-54	18"	Brown and gray weathered shale, moist - stiff	Visual classification-No tests performed								
561.1	58 60													
	62	19	NXM	83%	Gray shale, calcareous, moderately tough to tough (1" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous, jointed in the top 6" of the run (1" to 4" pieces averaging 2") 79% shale, 21% limestone									
556.1	64													
	66				Boring completed									
	68													

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Form No. 830—15.59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/26/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/27/64 CASING: LENGTH _____ DIA 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-1 STATION AND OFFSET 186+51, 31' Rt., NB BL SURFACE ELEV. 627.2 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
627.2	0													
	2	1	7-9-5	13"	Brown silt, clay and sand, trace gravel with cinders (fill), moist - very stiff	6	13	27	28	26	29	13	12	A-6a
	4	2	4-2-3	8"	Brown silty clay and cinders (fill), moist - stiff	Visual classification-No tests performed								A-6a
	6	3	3-5-7	14"	do do	Visual classification-No tests performed								A-6a
	8	4	7-8-5	12"	Brown and gray silt and clay, some sand, little gravel with cinders (fill), moist - medium stiff	12	16	9	32	31	31	11	24	A-6a
617.2	10													
	12	5	2-2-2	15"	Cinders, brick and wood fragments (fill) moist - medium dense	Visual classification-No tests performed								Fill
	14	6	2-1-3	13"	do do	Visual classification-No tests performed								Fill
	16	7	1-2-4	7"	do do	Visual classification-No tests performed								Fill
	18	8	2-2-2	5"	do do	Visual classification-No tests performed								Fill
	20	9	1-1-1	10"	do do	Visual classification-No tests performed								Fill
	22	10	1-2-3	13"	do do	Visual classification-No tests performed								Fill
602.2	24													
	26	11	2-3-2	15"	Brown and gray silty clay and cinders (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	28	12	1-4-6	13"	do do	Visual classification-No tests performed								Fill
	30	13	10-11-5	13"	do do	Visual classification-No tests performed								Fill
594.7	32													
	34	14	3-5-7	15"	Gray silty clay, trace sand, trace shale and limestone fragments moist - medium stiff	7	6	3	34	50	39	18	22	A-6b

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/26/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/27/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-1 STATION AND OFFSET 186+51, 31' Rt., NB EL SURFACE ELEV. 627.2 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
592.2	34													
	36	15	7-8-14	11"	Gray clay, trace sand with shale and limestone fragments moist - medium stiff	0	1	2	37	60	42	20	17	A-7-6
	38	16	8-8-10	17"	Brown and gray clay, trace sand, trace shale and limestone fragments moist - medium dense	2	5	4	38	51	43	22	22	A-7-6
	40	17	5-7-9	6"	Brown clay, trace sand with shale and limestone fragments moist - medium stiff	0	3	5	35	57	46	22	25	A-7-6
	42													
	44													
	46	18	7-8-7	15"	Brown and gray clay, trace sand, trace shale and limestone fragments moist - medium stiff	7	3	4	33	53	48	25	24	A-7-6
	48													
577.2	50													
	52	19	6-7-10	18"	Brown and gray silty clay, little sand, trace shale and limestone fragments moist - medium stiff	2	8	4	38	48	39	17	28	A-6b
574.2	54													
	56	20	72-97	12"	Gray shale, moist - very stiff									
569.2	58													
	60	R-1	NXM	100%	Gray shale, calcareous, moderately tough to tough with soft seams in the top 24" of the run (½" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous, shaly, jointed(two pieces ½"and 2½") 95% shale, 5% limestone									
564.2	62													
	64				Boring completed									
	66													
	68													

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Form No. 630-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/23/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/26/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER 5 HOURS 601.6 PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-2 STATION AND OFFSET 187+18, 23' L. NB BL SURFACE ELEV. 628.0 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS.
628.0	0				0.5' Concrete									
627.5	2	1	5-6-7	17"	Cinders, brick and wood fragments(fill), moist - very dense	Visual classification-No tests performed Fill								
	4	2	6-8-6	18"	do do	Visual classification-No tests performed Fill								
	6	3	6-7-6	15"	do do	Visual classification-No tests performed Fill								
	8	4	8-13-23	12"	do do	Visual classification-No tests performed Fill								
	10	5	2-3-3	15"	do do	Visual classification-No tests performed Fill								
	12	6	1-2-2	15"	do do	Visual classification-No tests performed Fill								
	14	7	1-2-3	15"	do do	Visual classification-No tests performed Fill								
	16	8	1-3-5	12"	do do	Visual classification-No tests performed Fill								
	18	9	2-3-4	16"	do do	Visual classification-No tests performed Fill								
	20	10	3-4-4	14"	do do	Visual classification-No tests performed Fill								
603.0	22	11	4-5-7	17"	Gray silt and clay, little sand, trace gravel moist - medium stiff	8	8	5	42	37	35	15	21	A-6a
600.5	24	S-1		13"	Brown and gray clay, little sand, trace gravel moist - medium stiff	2	6	4	36	52	43	21	23	A-7-6
	26	12	7-18-14	16"	Brown and gray clay, trace sand moist - medium stiff	0	2	4	37	57	42	20	25	A-7-6
	28	13	7-10-14	10"	Brown and gray clay, trace sand moist - medium stiff	0	2	6	34	58	45	20	18	A-7-6
	30													
	32													
	34													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—15M

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/23/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/26/64 CASING: LENGTH _____ DIA. 3.5"I.D. Hollow Stem Augers AFTER 5 HOURS 601.6 PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-2 STATION AND OFFSET 187+18, 23' L. NB BL SURFACE ELEV. 628.0 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
592.5		14	- 7 -	6"	Dark brown and gray clay, trace sand moist -medium stiff	0	2	2	44	52	46	20	26	A-7-6
	36	15	8-11	11"	Brown and gray clay, trace sand, moist-stiff	0	1	2	37	60	48	25	24	A-7-6
	38	S-2		12"	Brown and gray clay, trace sand, moist stiff	0	2	2	33	63	52	28	24	A-7-6
	40	16	8-7-10	15"	Brown and gray clay, trace sand,moist-stiff	0	1	3	21	75	55	30	24	A-7-6
	42													
	44	17	41-10-16	12"	Brown and gray clay and gravel,little sand with limestone fragments, moist - very stiff	38	6	4	19	33	42	20	22	A-7-6
583.0														
	46	18	65-81	4"	Brown and gray weathered shale, moist-very stiff									
	48													
579.0														
	50	R-1	NXM	90%	Gray shale, calcareous,moderately tough to tough (¼" to 4" pieces averaging 2¼") and gray limestone, crystalline, fossiliferous, shaly (two pieces ½" and 1" in the top 12" of the run) 97% shale, 3% limestone									
	52													
574.0	54													
	56				Boring completed									
	58													
	60													
	62													
	64													
	66													
	68													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—10-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/22/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 584.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/23/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS ____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-3 STATION AND OFFSET 187+74, 64'Rt., NB BL SURFACE ELEV. 630.2 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.L.	W.C.	SOIL CLASS
630.2	0													
629.7		1	- 4 -		Topsoil	Visual classification-No tests performed								Fill
	2	2	10-14	10"	Brown silty clay with cinders and brick fragments (fill), moist - stiff									
	4	3	10-12-13	8"	do di	Visual classification-No tests performed								Fill
	6	4	10-6-10	14"	do do	Visual classification-No tests performed								Fill
622.7	8													
	10	5	6-6-5	17"	Cinders, brick and wood fragments(fill), moist - medium dense	Visual classification-No tests performed								Fill
	12	6	11-11-12	10"	do do	Visual classification-No tests performed								Fill
	14	7	10-11-17	16"	do do	Visual classification-No tests performed								Fill
	16	8	5-3-7	8"	do do	Visual classification-No tests performed								Fill
	18	9	3-4-5	10"	do do	Visual classification-No tests performed								Fill
	20	10	3-3-3	3"	do do	Visual classification-No tests performed								Fill
	22	11	7-3-2	8"	do do	Visual classification-No tests performed								Fill
	24	12	4-2-4	3"	do do	Visual classification-No tests performed								Fill
603.2	26													
	28	13	7-8-8	8"	Gray silt and clay, some sand, little shale and limestone fragments moist - medium stiff	13	12	11	28	36	35	15	23	A-6a
600.2	30													
	32	14	7-8-10	13"	Brown and gray clay, trace sand with shale and limestone fragments moist - medium stiff	5	2	3	40	50	42	20	21	A-7-6
	34	15	4-7-9	15"	Brown and gray clay, little sand with shale and limestone fragments moist - stiff	0	6	5	33	56	45	23	21	A-7-6

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/22/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 584.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/23/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-3 STATION AND OFFSET 187+74, 64' Rt., NB BL SURFACE ELEV. 630.2 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
	34													
	36	16	6-7-8	17"	Brown clay, trace sand with shale and limestone fragments moist - stiff	0	2	4	38	56	46	25	24	A-7-6
	38													
	40	17	8-7-8	8"	Brown clay, trace sand, trace shale and limestone fragments moist - stiff	3	3	4	35	55	46	24	18	A-7-6
	42	18	7-8-14	18"	Brown and gray clay, little sand with shale and limestone fragments moist - medium stiff	0	7	5	39	49	41	19	21	A-7-6
	44	19	6-8-11	18"	Brown and gray clay, little sand, trace shale and limestone fragments moist - medium stiff	6	7	3	33	51	42	20	24	A-7-6
584.7	46	20	6	6"	Brown and gray clay, trace sand, trace shale and limestone fragments	4	4	3	36	53	44	22	23	A-7-6
		21	8-10	12"	moist - medium stiff	0	3	4	31	62	47	23	24	A-7-6
	48				Brown clay, trace sand, moist - stiff									
580.2	50													
		22	35-95	11"	Brown and gray shale, moist - hard									
	52													
576.2	54													
	56	R-1	NXM	60%	Gray shale, calcareous, moderately tough (¼" to 5" pieces averaging 2") 100% shale									
571.2	58													
	60				Boring completed									
	62													
	64													
	66													
	68													

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Form No. 630

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/29/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 605.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/29/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. 71-0224

BORING No. B-19-4 STATION AND OFFSET 188+41, 17' Rt. NB BL SURFACE ELEV. 630.2

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL CLASS
630.2	0													
	2	1	10-7-6	13"	Blacktop, gravel, clay and cinders, (fill), moist - stiff	Visual classification-No tests performed								Fill
627.7														
625.2	4	2	2-3-4	8"	Clay, gravel, cinders and brick (fill), moist - loose	Visual classification-No tests performed								Fill
	6	3	1-2-3	18"	Clay and cinders (fill), moist - loose	Visual classification-No tests performed								Fill
	8													
620.2	10													
	12	4	2-3-5	8"	Cinders (fill), moist - loose	Visual classification-No tests performed								Fill
	14													
	16	5	2-2-2	17"	do do	Visual classification-No tests performed								Fill
	18													
	20													
	22	6	2-2-4	18"	do do	Visual classification-No tests performed								Fill
	24													
605.2	26	7	1-3-4	17"	Cinders and clay (fill) wet - loose	Visual classification-No tests performed								Fill
602.7	28	8	4-6-8	16"	Brown and gray silty clay.little sand, with limestone fragments moist - stiff	0	9	4	33	54	38	17	20	A-6b
600.2	30	S-1		9"	Brown clay, trace sand little gravel, limestone fragments moist-stiff	14	2	3	27	54	54	32	21	A-7-6
	32	9	4-5-7	16"	Brown clay,trace sand with limestone fragments, moist-medium stiff	0	2	3	43	52	50	28	24	A-7-6
	34	10	4-5-6	17"	do do	0	4	4	34	58	48	27	24	A-7-6

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Form No. 530—4

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/29/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 605.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/29/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-4 STATION AND OFFSET 188+41, 17' Rt., NB BL SURFACE ELEV. 630.2 Bridge No. 71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36	S-2		11"	Brown clay, little sand, trace gravel with limestone fragments moist - stiff	3	9	7	31	50	45	23	21	A-7-6
	38	11	3-5-7	17"	Brown clay, trace sand with limestone fragments moist - stiff	0	1	2	29	68	55	32	24	A-7-6
	40													
	42													
	44		5-8-9	0		No sample recovered								
	46	S-3		16"		0	1	2	41	56	43	22	23	A-7-6
	48	12	7-5-6	5"	Clay and limestone fragments	Visual classification-No tests performed								A-7-6
	50	13	18-36-62	18"	Gray clay, trace sand, moist - very stiff	0	0	1	36	63	42	19	12	A-7-6
	52													
576.2	54													
	56	14	NXM	42%	Gray shale, calcareous, moderately tough (1/4" to 2" pieces averaging 1") and gray limestone, crystalline, fossiliferous (one 2" piece at the bottom of the run) 97% shale, 3% limestone									
571.2	58													
	60				Boring completed									
	62													
	64													
	66													
	68													

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

REVISED
10/14/64-vb

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/26/64 SAMPLER: TYPE Split Spoon & CoreBarrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 605.9 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/26/64 CASING: LENGTH DIA 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-5 STATION AND OFFSET 189+00, 80'Rt., NB BL SURFACE ELEV. 630.9 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % GRAV.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
630.9	0													
	2	1	14-10-6	16"	Cinders, clay and gravel (fill), moist - medium dense	Visual classification-No tests performed								Fill
628.4	4	2	4-5-7	14"	Brown and gray clay, little sand, some gravel with brick fragments (fill), moist - medium stiff	30	7	4	25	34	53	33	25	A-7-6
625.9	6	3	2-2-4	17"	Brown and gray sandy silt, little gravel with cinders (fill), moist - medium stiff	11	8	22	36	23	25	9	17	A-4a
620.9	10	4	2-2-4	6"	Cinders, gravel, wood and clay (fill), moist - loose	Visual classification-No tests performed								Fill
615.9	16	5	2-4-6	7"	Brown and gray silty clay and gravel, trace sand with limestone fragments, (fill), moist - medium stiff	43	4	3	19	31	40	18	17	A-6b
	22	6	2-3-3	7"	Brown and gray silty clay, little sand, some gravel with limestone fragments, (fill), very moist - soft	20	6	6	16	52	40	20	28	A-6b
605.9	26	7	1-1-1	13"	Cinders (fill), wet - very loose	Visual classification-No tests performed								Fill
603.4	28	8	5-6-8	17"	Brown and gray clay, trace sand, trace gravel, moist - stiff	2	1	2	36	59	46	24	20	A-7-6
	30	S-1		12"	Brown clay, trace sand, moist - stiff	0	1	3	36	60	49	27	22	A-7-6
	32	9	7-7-8	16"	Brown clay, trace sand, trace gravel, with limestone fragments, moist-stiff	2	2	3	35	58	50	28	22	A-7-6
	34													

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Form No. 530—16-5

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

REVISED
10/14/64-vb

LOG OF BORING

DATE STARTED 6/26/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 605.9 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/26/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-5 STATION AND OFFSET 189+00, 80' Rt., NB BL SURFACE ELEV. 630.9 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTD CLASS
	34													
	36	10	3-5-6	13"	Brown clay,trace sand, little gravel, with limestone fragments, moist - stiff	15	5	3	29	48	48	27	22	A-7-6
592.9	38													
590.9	40	S-2		16"	Brown silty clay, trace sand with limestone fragments, moist - stiff	0	1	3	49	47	35	16	21	A-6b
	42	11	5-8-13	18"	Brown clay, trace sand, trace gravel, with limestone fragments, moist-stiff	2	1	3	31	63	57	34	22	A-7-6
585.9	44	12	8-11-14	15"	do do	27	5	5	21	42	49	25	21	A-7-6
	46	13	17-28-39	18"	Gray shale, moist - hard	Visual classification-No tests performed								
	48													
580.9	50													
	52	14	NXM	41%	Gray shale,calcareous,moderately tough broken (½" to 2" pieces dveraging 1") and gray limestone, crystalline, fossiliferous, jointed (two pieces 1" and 3½") 92% shale, 8% limestone									
575.9	54													
	56				Boring completed									
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 530—I

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/1/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 606.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/2/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-6 STATION AND OFFSET 189+64.20'Rt. NB BL SURFACE ELEV. 631.2 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SNTL CLASS
631.2	0													
628.7	2	1	11-10-8	10"	Sand, gravel and coal (fill), moist - medium dense	Visual classification-No tests performed								Fill
	4	2	4-4-5	18"	Clay, sand, cinders and gravel (fill), moist - loose to medium dense	Visual classification-No tests performed								Fill
	6	3	4-5-5	17"	Clay, sand, cinders and gravel (fill), moist - loose to medium dense	Visual classification-No tests performed								Fill
	8													
	10	4	4-5-9	18"	Clay, sand, cinders and gravel (fill), moist - loose to medium dense	Visual classification-No tests performed								Fill
	12													
	14													
	16	5	4-4-4	18"	Clay, sand, cinders and gravel (fill), moist - loose to medium dense	Visual classification-No tests performed								Fill
	18													
611.2	20													
608.7	22	6	4-4-3	17"	Gray silty clay with sand layers (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	24	7	3-3-4	17"	Gray silty clay with cinders and sand, (fill), moist - medium stiff	Visual classification-No tests performed								Fill
606.2	26	8	4-5-7	7"	Brick, clay, and cinders (fill), wet - medium dense	Visual classification-No tests performed								Fill
603.7	28	9	8-11-13	16"	Brown and gray clay, trace sand with shale fragments moist - stiff	0	3	2	30	65	46	24	20	A-7-6
	30	10	5-8-12	17"	Brown and gray clay,trace sand with shale fragments , moist-stiff	0	4	4	36	56	49	25	22	A-7-6
	32				Brown and gray clay,little sand,trace gravel with shale fragments									
	34	S-1		20"	moist - stiff	5	5	6	48	36	49	27	16	A-7-6

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Form No. 530—10-58

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/1/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. NXM WATER ELEV. IMMEDIATE 606.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/2/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-6 STATION AND OFFSET 189+64, 20' Rt. NB BL SURFACE ELEV. 631.2 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTD. CLASS
	34													
	36	11	10-12-15	18"	Brown and gray clay, little sand, trace gravel with shale fragments moist - stiff	5	5	6	48	36	49	27	16	A-7-6
593.7	38													
		12	5-8-12	13"	Brown and gray silty clay, little sand with organic matter, moist - medium stiff	0	6	6	43	45	36	19	29	A-6b
	40													
	42	13	5-9-12	9"	Brown and dark gray silty clay, sand and gravel with limestone fragments, moist - medium stiff	45	30	9	6	10	37	17	28	A-6b
	44													
586.2														
	46	14	14-24	8"	Brown and gray clay, trace sand with limestone fragments, moist - very stiff	0	7	0	*	*	46	21	19	A-7-6
583.7	48													
		15	35-68	12"	Gray shale, moist - hard	Visual classification-No tests performed								
581.7	50													
	52	16	NXM	75%	Gray shale, calcareous, tough (1" to3½" pieces averaging 2½") and gray limestone, crystalline, fossiliferous (two pieces 3/4" and 1-3/4" midway in the run) 96% shale; 4% limestone									
	54													
576.7														
	56				Boring completed	*Insufficient sample for testing								
	58													
	60													
	62													
	64													
	66													
	68													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530-[illegible]9

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

REVISED:
12/10/64-vb

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/1/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 601.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/1/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-7 STATION AND OFFSET 190+88, NB BL 17' Rt. SURFACE ELEV. 631.6 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
631.6	0													
629.1	2	1	5-6-8	16"	Sand, gravel and clay (fill), moist - medium dense	Visual classification-No tests performed								Fill
626.6	4	2	5-4-5	17"	Clay, silt, sand and gravel (fill), moist - medium stiff	Visual classification-No tests performed								Fill
621.6	6 8 10	3	3-2-1	16"	Clay, gravel and cinders (fill), moist - loose	Visual classification-No tests performed								Fill
616.6	12 14	4	1-1-1	15"	Organic matter and cinders (fill), moist - very loose	Visual classification-No tests performed								Fill
	16	5	1-1-1	16"	Cinders, clay and rock fragments, (fill), very moist - loose	Visual classification-No tests performed								Fill
	18	6	2-2-2	17"	do do	Visual classification-No tests performed								Fill
609.6	20 22													
606.6	24	7	5-6-6	16"	Gray silty clay with cinders and brick fragments,(fill), moist-medium stiff	Visual classification-No tests performed								Fill
604.6	26	S-1		15"	Gray silt and clay, little sand, some gravel with rock and brick fragments, (fill), moist - stiff	24	6	8	31	31	36	15	16	A-6a
601.6	28 30	8	4-5-6	15"	do do	Visual classification-No tests performed								Fill
599.1	32	9	2-2-6	7"	Cinders and brick fragments (fill), wet - loose	Visual classification-No tests performed								Fill
	34	10	4-6-8	14"	Brick fragments(fill),wet-medium dense	Visual classification-No tests performed								Fill

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Form No. 530—1068

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

REVISED:
12/10/64-vb

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/1/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 601.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/1/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-7 STATION AND OFFSET 190+88, NB BL 17' Rt. SURFACE ELEV. 631.6 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
596.6	34													
	36	11	4-7-10	13"	Brown and gray clay, little sand, little gravel with limestone fragments, moist - stiff	14	11	5	30	40	41	21	19	A-7-6
	38													
	40													
	42													
	44	12	10-17-34	17"	Brown and gray clay, trace sand moist - very stiff	0	2	1	38	59	46	22	16	A-7-6
586.6														
	46				Gray shale, calcareous, moderately tough (1" to 2" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, (½" to 5" pieces averaging 2½") 80% shale 20% limestone									
	48	R-1	NXM	50%										
581.6	50													
	52				Boring completed									
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 530-[illegible]59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/26/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 610.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/26/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-8 STATION AND OFFSET 192+11, 38' Rt., NB BL SURFACE ELEV. 632.0 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
632.0	0													
630.5	2	1	16-9-6	12"	Gravel and cinders (fill), medium stiff to stiff	Visual classification-No tests performed								Fill
	4	2	7-7-6	9"	Brown and gray silty clay with cinders and brick fragments (fill), moist - medium stiff	Visual classification-No tests performed								Fill
627.0	6	3	6-6-4	9"	Brown sandy silt, little gravel with limestone fragments (fill), moist - medium stiff	10	13	29	38	10		NP	12	A-4a
625.0	8	S-1		3"	do do	No tests performed-Insufficient sample							14	A-4a
623.0	10	4	8-9-9	13"	Brown and gray silt and clay, some sand, little gravel with brick and limestone fragments (fill), moist - medium stiff	14	10	12	32	32	33	13	19	A-6a
620.5	12	5	5-7-8	16"	Brown and gray silty clay, little sand, little gravel with limestone fragments, moist - medium stiff	10	7	5	32	46	38	16	18	A-6b
	14	6	9-13-11	13"	Brown and gray silty clay, little sand, trace gravel with limestone fragments moist - medium stiff	2	6	6	36	50	39	17	15	A-6b
	16	S-2		17"	Brown and gray silty clay, little sand, little gravel with limestone fragments, moist-medium stiff	13	8	4	36	39	37	17	14	A-6b
611.5	18	7	20-19-11	16"	Brown and gray silty clay, trace sand moist - stiff	0	2	4	38	56	38	17	14	A-6b
	20	8	13-16-19	16"	Brown and gray silt and clay, trace sand, trace gravel moist -stiff	5	4	3	36	52	38	15	16	A-6a
607.0	22	9	11-14-14	16"	Brown and gray silty clay, little sand, trace gravel moist - stiff	2	8	5	37	48	38	17	17	A-6b
	24	S-3		20"	Brown and gray silty clay with shale fragments, moist - stiff	12	6	4	36	42	38	16	11	A-6b
602.0	26	10	20-22-19	16"	Gray shale, moist									
	28													
	30													
	32													
	34													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—1/58

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/26/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA 2"O.D.& NXM WATER ELEV. IMMEDIATE 610.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/29/64 CASING: LENGTH _____ DIA 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-8 STATION AND OFFSET 192+11, 38' Rt., NE BL SURFACE ELEV. 632.0 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SNTL CLASS
597.0	34													
	36	R-1	NXM	100%	Gray shale, slightly tough, broken(¼" to 2" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, (one 1½"piece at the top of the run) 95% shale, 5% limestone									
	38	R-2	NXM	66%										
	40				Gray shale,slightly tough with brown weathered zones in the top half of the run(¼" to 3" pieces averaging 2") and gray limestone, crystalline,fossiliferous, jointed, (1" to 3-3/4"pieces averaging 3") 86% shale, 14% limestone									
590.0	42													
	44													
	46				Boring completed									
	48													
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/22/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/23/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-9 STATION AND OFFSET 193+12, 9' Rt., NB BL SURFACE ELEV. 633.3 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
633.3	0													
632.8		1	9-3-3	7"	0.5' Blacktop	Visual classification-no tests performed Fill								
	2				Brown silty clay with limestone fragments, moist - soft to very stiff									
	4	S-1		20"	do do	No tests performed - Shelby tube lost								
628.8	6	2	7-9-9	13"	Brown silty clay, some sand, little gravel with limestone fragments moist - stiff	13	13	8	36	30	34	17	10	A-6b
625.8	8	3	6-27-13	13"	Brown silt and clay, little sand, little gravel with limestone fragments moist - very stiff	10	11	6	36	37	36	14	13	A-6a
	10													
	12	4	16-9-9	9"	Brown silt and clay, some sand, little gravel with limestone fragments moist - stiff	15	18	9	28	30	33	12	14	A-6a
619.3	14	5	20-19-11	5"	Brown silt and clay, some sand, little gravel with limestone fragments, moist - stiff	13	12	10	23	42	36	15	10	A-6a
	16	6	9-11-11	11"	Brown silty clay, some sand moist - stiff	0	14	6	36	44	36	16	16	A-6b
	18	7	11-11-12	11"	Brown and gray silty clay, trace sand, moist - stiff	0	5	3	36	56	40	16	14	A-6b
613.3	20													
611.3	22	8	15-17-19	9"	Gray silt and clay, little sand moist- stiff	0	4	6	35	55	38	15	14	A-6a
	24	9	19-23-26	15"	Brown silt and clay, trace sand, moist- stiff	0	2	4	42	52	35	14	17	A-6a
608.3	26	10	16-19-21	16"	Brown clay, little sand, moist -stiff	0	6	8	41	45	44	23	21	A-7-6
	28													
603.3	30													
	32	11	13-13-11	11"	Brown silty clay, some sand, trace gravel with limestone fragments, moist- very stiff	9	11	11	24	45	39	21	10	A-6b
	34													

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Form No. 530—1648

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/22/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None Backfilled CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/23/64 CASING: LENGTH _____ DIA. 3.5"I.D.Holbow Stem Augers AFTER _____ HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-9 STATION AND OFFSET 193+12, 9' Rt. NB BL SURFACE ELEV. 633.3 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
598.3	34													
	36	12	17-19-16	7"	Gray shale, moist - very stiff									
595.3	38													
	40	R-1	NXM	88%	Gray shale, calcareous, tough (¼" to 2" pieces averaging 1") and gray limestone, crystalline, fossiliferous(½" to 3½" pieces averaging 2") 84% shale,16% limestone									
590.3	42													
	44				Boring completed									
	46													
	48													
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 530-[illegible]-69

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

REVISED jh
12-22-64

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/7/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/7/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-10 STATION AND OFFSET 193+14, 61' Rt. NB BL SURFACE ELEV. 637.3 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% G.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
637.3	0													
636.3					1.0' Concrete									
	2	1	4-7-7	12"	Brown silty clay with cinders and gravel (fill), moist - stiff	Visual classification-No tests performed								Fill
	4	2	6-5-4	15"	do do	Visual classification-No tests performed								Fill
	6	3	7-9-11	9"	do do	Visual classification-No tests performed								Fill
629.8	8													
		4	7-7-7	11"	Brown silty clay, little sand, some gravel with limestone fragments moist - stiff	25	9	7	27	32	36	16	20	A-6b
627.3	10													
	12	S-1		2"	Brown silt and clay, little sand, trace gravel, moist - stiff	5	10	8	40	37	35	15	17	A-6a
625.3		5	7-9-11	10"	Brown silty clay, trace sand, some gravel , moist - stiff	33	4	5	25	33	40	18	16	A-6b
	14													
621.3	16	6	11-9-10	11"	Brown and gray silty clay, little sand, little gravel with limestone fragments, , moist - stiff	17	7	3	31	42	38	17	13	A-6b
	18	7	8-10-12	10"	Brown and gray clay, little sand, little gravel with limestone fragments moist - stiff	17	6	6	30	41	41	19	16	A-7-6
618.8														
	20	8	6-22-9	12"	Brown and gray silty clay, little sand with limestone fragments , moist- stiff	0	7	7	37	49	40	18	14	A-6b
	22	9	7-9-10	11"	Brown and gray silty clay, trace sand with limestone fragments , moist- stiff	0	1	2	43	54	40	18	12	A-6b
613.8	24													
		10	9-11-12	14"	Brown and gray clay, trace sand, some gravel with limestone fragments moist - stiff	20	2	2	27	49	45	21	15	A-7-6
	26	11	11-10-9	10"	Brown and gray clay, trace sand, trace gravel with limestone fragments moist - stiff	3	3	2	36	56	44	20	18	A-7-6
	28	12	7-9-10	12"	Gray clay, trace sand with limestone fragments moist - stiff	0	4	2	38	56	41	18	18	A-7-6
607.3	30													
		13	11-12-10	14"	Dark brown clay, trace sand, trace gravel with organic matter, moist -stiff	5	2	4	46	43	42	16	24	A-7-6
604.8	32													
	34	14	10-11-9	15"	Brown elastic clay, little sand, little gravel, moist - medium stiff	16	11	7	21	45	50	17	24	A-7-6

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

REVISED jh
12-22-64

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/7/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/7/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-10 STATION AND OFFSET 193+14, 61' Rt. NB BL SURFACE ELEV. 637.3 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
602.3	34													
601.3	36	S-2		1"	Gray clay, moist - stiff	Insufficient sample					34	16	17	
	38	R-1	NXM	43%	Brown and gray weathered shale (1" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous, jointed (1" to 3" pieces averaging 2") 77%shale, 23% limestone									
	40													
	42				Gray shale, calcareous, moderately tough in top 6" to tough(1" to 6" pieces averaging 4") and gray limestone, fossiliferous, shaly (one 1" piece in the bottom 3" of the run (98% shale, 2% limestone)									
	44													
591.3	46	R-2	NXM	100%										
	48				Boring completed									
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 830—1-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

REVISED jh
12-23-64

LOG OF BORING

DATE STARTED 10/13/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/13/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-11 STATION AND OFFSET 194+47, 3' L., NB BL SURFACE ELEV. 637.5 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
637.5	0													
637.0					0.5' Concrete									
635.0	2	1	4-5-9	10"	Cinders (fill), wet - loose	Visual classification-No tests performed								Fill
632.5	4	2	2-4-6	15"	Brown and gray silt and clay, little sand, little gravel very moist-soft	14	8	9	38	31	36	14	32	A-6a
630.0	6	3	6-9-5	17"	Brown and gray silty clay, little sand, little gravel moist - medium stiff	15	6	5	36	38	37	16	20	A-6b
627.5	8	4	7-8-5	12"	Brown and gray silt and clay, little sand, some gravel with topsoil wet - soft	30	10	8	26	26	36	15	30	A-6a
626.5	10	8-1(T)		24"	do do	Visual classification-No tests performed								A-6a
625.5	12	8-1(B)			Brown clay, trace sand, little shale and limestone fragments, moist-very stiff	15	3	2	34	46	42	20	22	A-7-6
623.5	14	5	19-38-48	9"	Brown silty clay, little sand, little shale and limestone fragments, moist - very stiff	11	4	6	35	44	40	18	16	A-6b
	16	R-1	NXM	68%	Brown and gray weathered shale, slightly tough (1" to 4" pieces averaging 2") and gray limestone, crystalline, fossiliferous, iron oxide stained (1" to 6" pieces averaging 4") 80% shale, 20% limestone									
	18													
	20				Gray shale, calcareous, moderately tough to tough (1" to 5" pieces averaging 3") and gray limestone, crystalline, fossiliferous, jointed and oxide stained, (one 6½" piece in the bottom 2' of the run) 89% shale, 11% limestone									
	22													
613.5	24	R-2	NXM	93%										
	26				Boring completed									
	28													
	30													
	32													
	34													

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Form No. 630—1459

THE H. C. NUTTING COMPANY

4130 AIRPORT ROAD
CINCINNATI 26, OHIO

REVISED jh
12-23-64

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/8/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/8/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-12 STATION AND OFFSET 194+39, 59' Rt., NB BL SURFACE ELEV. 637.3 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % Agg.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
637.3	0				0.3' Asphaltic Concrete									
635.3	2				0.5' Red Brick 1.5' Concrete									
632.3	4	1	8-5-7	9"	Brown and gray silty clay, some sand, little gravel wet - soft	18	17	7	28	30	36	16	28	A-6b
629.8	6	2	9-11-15	12"	Brown silt and clay, little sand, trace gravel moist - medium stiff	6	10	5	44	35	35	14	24	A-6a
627.3	8	3	12-9-11	8"	Brown clay, little sand, trace gravel, moist - medium stiff	7	10	7	32	44	42	22	25	A-7-6
624.8	10	4	7-9-15	12"	Brown and gray silty clay, some sand, some gravel very moist - soft	21	12	8	29	30	35	16	24	A-6b
	12													
	14	5	8-9-11	14"	Brown clay, trace sand moist - stiff	0	4	3	34	59	53	29	26	A-7-6
620.8	16	S-1		18"	Brown clay, little sand, some fill, with limestone fragments moist-stiff	26	7	4	21	42	45	23	20	A-7-6
	18	6	11-15-19	16"	Brown clay, trace sand, trace limestone fragments, moist - very stiff	1	2	3	39	55	46	23	17	A-7-6
	20	7	15-18-21	12"	Brown and gray clay, little sand, trace limestone fragments, moist - very stiff	2	6	4	35	53	47	24	18	A-7-6
	22													
	24	8	23-56-61	11"	Brown clay, trace sand with limestone fragments, moist - very stiff	0	1	2	45	52	43	19	18	A-7-6
612.3														
	26	R-1	NXM	20%	Gray and brown shale, slightly tough, (1" and 2" pieces) and gray limestone, crystalline, fossiliferous, jointed and iron oxide stained (two pieces 4" and 4") 92% shale, 8% limestone									
	28													
	30													
	32	R-2	NXM	60%	Gray shale, calcareous, slightly to moderately tough with thin brown weathered zones throughout the run 100% shale									
	34													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

REVISED jh
12-23-64

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/8/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/8/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-12 STATION AND OFFSET 194+39, 59' Rt., NB BL SURFACE ELEV. 637.3 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SNTL CLASS
602.3	34													
	36				Boring completed									
	38													
	40													
	42													
	44													
	46													
	48													
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 530—15-58

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/13/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2" O.D. & NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/13/64 CASING: LENGTH ____ DIA. 3.5" I.D. Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-13 STATION AND OFFSET 195+69, 39' Rt., NB BL SURFACE ELEV. 648.5 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
648.5	0				0.5' Concrete									
648.0	2	1	4-9-5	14"	Gray silty clay and cinders (fill), moist - medium stiff	Visual classification-No tests performed								Fill
646.0	4	2	3-5-7	12"	Brown and gray silt and clay, trace sand, trace gravel moist - medium stiff	9	5	4	40	42	37	15	15	A-6a
	6	3	3-4-4	13"	Brown and gray silt and clay, trace sand, little gravel moist - medium stiff	10	4	2	45	39	35	13	18	A-6a
641.0	8	4	5-6-8	14"	Brown and gray silty clay and gravel, little sand moist - medium stiff	37	8	6	21	28	39	17	18	A-6b
638.5	10	5	7-9-15	12"	Brown and gray silty clay, little sand, some shale and limestone fragments, moist - stiff	20	5	5	32	38	40	18	18	A-6b
636.0	12	6	68-93	5"	Gray shale, moist - hard									
635.0	14				Gray shale, calcareous, moderately tough with brown weathered zones in the top half of the run (1" to 4½" pieces averaging 3") and gray limestone,									
	16													
	18	R-1	NXM	53%	crystalline, fossiliferous, iron oxide stained (three pieces 1" - 4" and 6½" at the top of the run) 81% shale, 19% limestone									
	20													
	22	R-2	NXM	73%	Gray shale, calcareous, moderately tough with brown weathered zones throughout the run (1" to 2½" pieces averaging 2") and gray limestone, crystalline, fossiliferous, jointed in the top 12" (1½" to 4½" pieces									
625.0	24				averaging 3") 70% shale, 30% limestone									
	26													
	28				Boring completed									
	30													
	32													
	34													

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Form No. 530—

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/24/64 SAMPLER: TYPE Split Spoon& Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/24/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-14 STATION AND OFFSET 196+98, 23' Rt., NB BL SURFACE ELEV. 653.7 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
653.7	0													
653.2	2	1	6-4-5	10"	Cinders and gravel(fill)moist-medium stiff	Visual classification-No tests performed								Fill
	4	2	20-16-31	9"	Brown and gray weathered shale with limestone fragments, moist - very stiff do do									
648.7	6	3	30-36-47	14"	Gray shale, moist - hard									
646.7	8													
	10	R-1	NXM	100%	Gray shale,calcareous, moderately tough with a 3" brown weathered zone at the bottom of the run (1" to 4½" pieces averaging 3") 100% shale									
	12	R-2	NXM	88%	Gray shale, calcareous,moderately tough, (½" to 2½" pieces averaging 2") and gray limestone, crystalline,fossiliferous, jointed and iron oxide stained (1" to 5" pieces averaging 3")80% shale,20% limestone									
638.7	14				Boring completed									
	16													
	18													
	20													
	22													
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 890—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/24/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/25/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0224

BORING No. B-19-15 STATION AND OFFSET 197+02, 80' Rt., NB BL SURFACE ELEV. 653.2

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS.
653.2	0	1	3	5"	0.5' Asphaltic concrete									
652.7		1A	2-4	5"	Brown silty clay with trace cinders, topsoil and rock fragments (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	2													
	4	2	10-10-4	17"	do do	Visual classification-No tests performed								Fill
648.2														
	6	3	9-11-7	4"	Brown silty clay with rock fragments, , moist - stiff									
645.7	8													
		4	13-16-20	12"	Brown silty clay and limestone fragments, trace sand, moist - stiff	52	5	4	16	23	38	16	14	A-6b
643.2	10													
		5	19-42-46	9"	Brown and gray silt, clay and limestone fragments, trace sand, moist - hard	50	6	3	16	25	35	15	14	A-6a
641.2	12													
	14				Gray shale, calcareous, moderately tough with brown weathered zones in the top									
	16	R-1	NXM	71%	half of the run (1" to 2½" pieces averaging 2") and gray limestone, crystalline, fossiliferous, jointed at the bottom of the run (1" to 4½" pieces averaging 2½") 82% shale, 18% limestone									
	18													
	20	R-2	NXM	50%	Gray shale, calcareous, slightly tough with brown weathered zones throughout the run (½" to 2" pieces averaging 1") and gray limestone, crystalline, fossiliferous, jointed (1" to 3" pieces averaging 2") 70% shale, 30% limestone									
631.2	22													
	24													
	26				Boring completed									
	28													
	30													
	32													
	34													

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Form No. 530—10-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/13/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/13/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0224

BORING NO B-19-16 STATION AND OFFSET 198+26, 42' Rt., NB BL SURFACE ELEV. 660.3

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.A.	% F.A.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
660.3	0				0.3' Concrete									
659.8	2	1	5-6-7	12"	Gray clay, trace sand, little shale fragments moist - stiff	18	3	2	29	48	45	21	21	A-7-6
657.3	4	2	9-25-31	15"	Brown and gray silty clay, little sand some limestone fragments moist-hard	31	5	5	25	34	40	17	15	A-6b
655.3	6	3	12-70	9"	Gray shale and limestone fragments, dry - hard									
	8	R-1	NXM	52%	Gray shale, calcareous, moderately tough with brown weathered zones in the bottom 12" of the run (½" to 2½" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed (½" to 4" pieces averaging 2") 90% shale, 10% limestone									
	10													
	12													
	14	R-2	NXM	87%	Gray shale, calcareous, moderately tough to tough with a 6" brown weathered zone at the top of the run (1" to 4½" averaging 3") and gray limestone, crystalline, fossiliferous, jointed (1" to 2½" pieces averaging 1½") 90% shale, 10% limestone									
644.3	16													
	18				Boring completed									
	20													
	22													
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 630—12-59

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/13/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None Recorded CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/13/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-17-1 STATION AND OFFSET 187+93, 3' L. SR BL SURFACE ELEV. 622.3 Bridge No. HAM-71-0316

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % GRAV.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
622.3	0													
620.3	2	1	1-2-3	10"	Brown and gray silt and clay, some sand, trace gravel with cinders (fill), wet-soft	6	10	10	32	42	34	13	29	A-6b
	4	S-1		18"	Brown and gray silty clay, little sand, trace gravel, moist - stiff	29	7	6	26	32	39	17	22	A-6b
616.3	6	2	4-10-12	11"	Brown and gray silty clay, little sand, little gravel, moist-stiff	13	5	6	37	39	40	16	24	A-6b
	8	3	10-14-20	10"	Brown and gray weathered shale, moist - very stiff	Visual classification-No tests performed								
	10	4	18-71	10"	do do	Visual classification-No tests performed								
	12	5	29-54	9"	Gray shale, dry - hard	Visual classification-No tests performed								
609.8	14	R-1	NXM	100%	Gray shale, calcareous, tough (1" to 7" pieces averaging 4") and gray limestone, crystalline, jointed and iron oxide stained (one 4" piece at the top of the run) 93% shale, 7% limestone									
	16													
	18													
	20	R-2	NXM	88%	Gray shale, calcareous, tough (½" to 4½" pieces averaging 2") and gray limestone, crystalline, fossiliferous (two pieces 3/4" and 1-1/2") 96% shale, 4% limestone									
599.5	22													
	24				Boring completed									
	26													
	28													
	30													
	32													
	34													

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/1/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/1/64 CASING: LENGTH ____ DIA 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING NO. B-17-2 STATION AND OFFSET 189+02, 23' L. SB BL SURFACE ELEV. 623.2 Bridge No. HAM-71-0226

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SAT.	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
623.2	0													
622.7		1	2		Cinders and gravel(fill) moist-soft	Visual classification-No tests performed								Fill
	2	1A	4-6	17½"	Brown and gray silt and clay,little sand, trace gravel with limestone fragments, moist-medium stiff	8	9	6	37	40	37	13	22	A-6a
618.2	4	2	4-6-6	13"	Brown silt and clay,little sand, trace gravel with limestone fragments moist -medium stiff	4	12	7	33	44	39	15	17	A-6a
615.7	6	3	2-2-7	18"	Gray clay, trace sand, trace gravel with shale fragments very moist-medium stiff	1	3	2	37	57	43	19	27	A-7-6
613.2	8 10	4	20-31-36	18"	Gray clay, little sand, trace gravel with shale fragments moist - medium stiff	2	11	4	38	45	38	14	21	A-7-6
611.2	12	5	30-36-100	11"	Brown and gray weathered shale, moist - hard	Visual classification-No tests performed								
	14	6	NXM	80%	Gray shale,calcareous,moderately tough to tough(1" to 4½" pieces averaging 3") and gray limestone, crystalline, fossiliferous (3/4" to 3"pieces averaging 2"in the top 12" of the run) 87% shale, 13% limestone									
	16 18													
601.2	20 22	7	NXM	60%	Gray shale, calcareous,moderately tough to tough (1" to 4½" pieces averaging 3") and gray limestone, crystalline, fossiliferous, shaly, jointed (two pieces 3/4" and 1") 97% shale, 3% limestone									
	24													
	26				Boring completed									
	28													
	30													
	32													
	34													

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Form No. 630-9

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/2/64 SAMPLER: TYPE Split Spoon & CoreBarrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 598.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/2/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER 3 HOURS 614.2 PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-17-3 STATION AND OFFSET 190+50, 10' Rt., SB BL SURFACE ELEV. 624.2 Bridge No. HAM-71-0226

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
624.2	0				0.3' Concrete									
623.7														
621.7	2	1	7-8-12	10"	Cinders and brick (fill), dry - dense	Visual classification-No tests performed								Fill
619.2	4	2	27-10-15	8"	Brown silty clay with limestone and shale fragments moist - stiff	Insufficient sample-No tests performed								A-6b
	6	3	20-17-18	5"	Brown and gray silt and clay, little sand, trace gravel with shale and limestone fragments moist -stiff	4	8	7	33	48	36	14	14	A-6a
	8	4	19-9-9	10"	do do	Visual classification-No tests performed								A-6a
	10													
	12	5	10-12-11	14"	Brown and gray clay, trace sand with shale and limestone fragments moist - stiff	0	3	4	37	56	42	18	15	A-7-6
	14	6	9-11-15	9"	do do	Visual classification-No tests performed								A-7-6
609.2	16	S-1		1"	Brown silt and clay, little sand, some gravel with shale and limestone fragments , moist - stiff	31	12	6	21	30	35	12	17	A-6a
	18	7	10-7-7	13"	Brown and gray silt and clay, little sand, trace gravel with shale and limestone fragments moist - stiff	5	13	6	32	44	37	14	20	A-6a
604.7	20	8	9-11-9	12"	Brown and gray clay, little sand, trace gravel with shale and limestone fragments, moist - medium stiff	2	5	6	33	54	42	18	25	A-7-6
	22													
	24	9	9-10-10	14"	Brown and gray clay, little sand, trace gravel with shale and limestone fragments, moist - medium stiff	4	8	4	34	50	42	17	26	A-7-6
598.2	26	S-2		10"	Brown and gray clay, trace sand, moist- medium stiff	0	0	2	41	57	44	18	14	A-7-6
595.7	28	10	39-80	9"	Brown and gray weathered shale, moist - hard	Visual classification-No tests performed								
	30				2.0' Brown and gray weathered shale, slightly tough, jointed(¼" to 2½" pieces averaging 1½") 100% shale									
	32	11	NXM	82%	3.0'Gray shale, calcareous, moderately tough (¼"to 3"pieces averaging 1½")and gray limestone, crystalline, fossiliferous, jointed and iron oxide stained(1 to 4"pieces averaging 2½") 78% shale, 22% limestone									
590.7	34				Boring completed									

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Form No. [illegible]

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/24/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 599.1 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/25/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0226

BORING No. B-17-4 STATION AND OFFSET 191+93, 1' L, SB BL SURFACE ELEV. 630.1

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
630.1	0													
	2	1	4-3-5	18"	Cinders, sand and brick fragments, (fill), moist - loose to very dense	Visual classification-No tests performed								Fill
	4	2	7-9-11	16"	do do	Visual classification-No tests performed								Fill
	6	3	4-4-6	6"	do do	Visual classification-No tests performed								Fill
622.6	8	4	2-2-2	18"	Gray silty clay (fill), moist-soft	Visual classification-No tests performed								Fill
620.1	10	5	2-5-7	16"	Cinders and brick fragments (fill), loose to medium dense	Visual classification-No tests performed								Fill
	12													
	14													
	16	6	3-6-3	1"	do do	Visual classification-No tests performed								Fill
612.6	18	7	9-15-20	13½"	Brown silty clay with cinders(fill), moist - stiff	Visual classification-No tests performed								Fill
	20	8	9-15-6	11"	do do	Visual classification-No tests performed								Fill
608.1	22													
606.1	24	9	6-9-9	10"	Wood fragments (fill)	Visual classification-No tests performed								Fill
	26	10	2-5-3	0										
	28	11	9-16-20	16"	Brown and gray silty clay with wood fragments(fill), moist - hard	Visual classification-No tests performed								Fill
600.1	30													
599.1		12	9-9	16"	Brown and gray silty clay, moist - medium stiff	Visual classification-No tests performed								Fill
	32	12A	11		Brown and gray clayey gravel, some sand with limestone fragments, moist-stiff	Visual classification-No tests performed								A-2-7
597.6	34	13	20-16-9	16"	do do	47	15	6	8	24	42	20	26	A-2-7

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/24/64 SAMPLER: TYPE Split Spoon & DIA. 2"O.D.& WATER ELEV. IMMEDIATE 599.1 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/25/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway RAM-71-0.93

BORING No. B-17-4 STATION AND OFFSET 191+93, 1' L. SB BL SURFACE ELEV. 630.1 Bridge No. RAM-71-0226

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTD. CLASS
	34													
595.1	36	14	23-19-21	10"	Brown silty clay and gravel,little sand with limestone fragments,moist-stiff	43	13	6	15	23	37	16	20	A-6b
	38													
590.1	40													
	42	15	51-49-63	13"	Gray shale, moist - hard	Visual classification-No tests performed								
586.1	44													
	46													
	48	16	XXX	50%	*Interbedded gray shale and fossiliferous limestone									
581.1	50													
	52				Boring completed									
	54													
	56				*Vandals destroyed core samples in the field. Descriptions based on driller's examination only. (Notified Mr. Warnke of Hazelet & Erdal by telephone of this condition)									
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 630—16-5

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 25, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/2/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/2/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-17-5 STATION AND OFFSET 191+94, 40' L. SB BL SURFACE ELEV. 625.8 Bridge No. HAM-71-0226

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
625.8	0													
624.3	2	1	6-5-14	18"	Cinders, brick and sand (fill), dry - medium stiff to stiff	Visual classification-No tests performed								Fill
	4	2	4-4-4	16"	do do	Visual classification-No tests performed								Fill
620.8	6	3	4-5-6	10"	Brown and gray silty clay, trace sand trace gravel with brick fragments(fill), dry - stiff	9	3	2	32	54	40	18	12	A-6b
618.3	8	4	7-7-14	9"	Brown and gray silt and clay,little sand, trace gravel (fill), moist - stiff	1	5	6	42	46	36	14	12	A-6a
	10													
	12	S-1		24"	Brown silt and clay, trace sand(fill), moist - very stiff	0	3	6	42	49	37	15	14	A-6a
	14	5	9-9-13	9"	do do	Insufficient sample-No tests performed								A-6a
	16	6	9-7-7	6"	Brown silt and clay, trace sand with brick fragments (fill), moist - stiff	Insufficient sample-No tests performed								A-6a
608.3	18													
	20	7	6-8-8	7"	Brown silt and clay, trace sand with limestone fragments moist - very stiff	Insufficient sample-No tests performed								A-6a
	22	S-2		24"	Brown silt and clay, some sand, trace gravel with limestone fragments moist - stiff	4	18	6	33	39	35	13	16	A-6a
	24	8	13-9-16	11"	Brown and gray silt and clay, some sand, some gravel with limestone fragments moist - stiff	22	16	7	26	29	32	11	16	A-6a
600.8	26													
	28	9	NXM	84%	Brown and gray weathered shale,moderately tough (½" to 2½" pieces averaging 1½")and gray limestone, crystalline,fossiliferous, jointed at approximately elevation 599, (½" to 4" pieces averaging 3") 78% shale, 23% limestone									
595.8	30													
	32				Boring completed									
	34													

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Form No. 630—

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/8/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/8/64 CASING: LENGTH _____ DIA. 3.5"I.D.hollow stem augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-17-7 STATION AND OFFSET 194+72, 24' L, SB BL SURFACE ELEV. 631.7 Bridge No. HAM-71-0226

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL CLASS
631.7	0													
630.2	2	1	15-3-2	16"	Blacktop, sand and gravel(fill), very stiff to soft	Visual classification-No tests performed Fill								
627.2	4	S-1			Brown silt and clay, little sand, moist - very stiff	0	4	9	39	48	39	13	17	A-6a
623.7	6 8	2	36-42-47	16"	Brown weathered shale, moist - very stiff	Visual classification-No tests performed								
	10 12	3	NXM	55%	Gray shale, calcareous, moderately tough (½" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous (1" to 7½" pieces averaging 4") 78% shale, 22% limestone									
	14 16	4	NXM	98%	Gray shale, calcareous, moderately tough (½" to 3½" pieces averaging 2") 100% shale									
613.7	18													
	20 22 24 26 28 30 32 34				Boring completed									

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Form No. 530—16-60

THE E. C. NUTTING COMPANY

4130 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/31/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/31/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-16-1 STATION AND OFFSET 188+75, 6' Rt. Ramp RB BL SURFACE ELEV. 622.7 Bridge No. HAM-71-0228

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
622.7	0													
	2	1	6-6-7	16"	Brown and gray silty clay with cinders, brick and wood fragments (fill), moist-medium stiff	Visual classification-No tests performed								Fill
620.2	4	2	1-1-1	12"	Cinders and wood (fill), moist - soft	Visual classification-No tests performed								Fill
617.7	6	3	7-5-5	16"	Gray silty clay, little sand, little gravel with limestone fragments (fill), moist - medium stiff	14	8	6	31	41	38	17	18	A-6b
	8				do do									
612.7	10	4	19-12-7	6"		Visual classification-No tests performed								A-6b
	12	5	2-3-3	16"	Brown and gray silt and clay, some sand, trace gravel with limestone fragments, (fill), moist - medium stiff	2	12	11	36	39	33	13	27	A-6a
610.2	14	6	7-9-4	9"	Brown and gray silty clay, little sand, some gravel with brick fragments,(fill), moist - medium stiff	24	5	5	30	36	39	18	25	A-6b
607.7	16	7	7-7-9	14"	Brown and gray silty clay, some sand, trace gravel with limestone fragments, moist - medium stiff	1	11	9	33	46	40	19	18	A-6b
605.2	18	8	6-8-8	16"	Brown and gray clay, trace sand with limestone fragments moist - medium stiff	0	2	2	33	63	50	26	26	A-7-6
	20													
	22	S-1			Brown clay, little sand, trace gravel, moist - stiff	9	6	6	27	52	45	21	16	A-7-6
	24	9	28-24-48	18"	Brown clay, little sand with limestone fragments, moist - very stiff	0	5	5	36	54	46	21	17	A-7-6
597.7	26	10	40-60-70	18"	Brown weathered shale, moist - hard	Visual classification-No tests performed								
594.7	28				3.0' Brown and gray weathered shale, moderately tough(1/2" to 4" pieces averaging 1-1/2") 100% shale									
	30	11	NXM	75%										
	32													
	34													

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Form No. 530—16-5

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/31/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/31/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT Northeast Expressway HAM-71-0.93

BORING No. B-16-1 STATION AND OFFSET 188+75, 6' Rt. Ramp RB BL SURFACE ELEV. 622.7 Bridge No. HAM-71-0228

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL. CLASS
584.7	34 36 38	12	NXM	95%	2.0' Gray shale, calcareous, moderately tough (1/2" to 2" pieces averaging 1-1/2") and gray limestone, crystalline, fossiliferous (two 1/2" pieces at the bottom of the run) 96% shale, 4% limestone									
	40 42 44 46 48 50 52 54 56 58 60 62 64 66 68				5.0' Gray shale, calcareous, moderately tough to tough (1/2" to 2-3/4" pieces averaging 1-1/2") and gray limestone, crystalline, fossiliferous, (1" to 2-1/2" pieces, averaging 2") 90% shale, 10% limestone Boring completed									

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Form No. 530

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/30/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE 604.8 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/30/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-16-2 STATION AND OFFSET 189+64, 28' Rt., RB BL SURFACE ELEV. 629.8 Bridge No. HAM-71-0228

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
629.8	0													
627.3	2	1	14-8-5	10"	Cinders, clay, gravel and brick (fill), moist - medium dense	Visual classification-No tests performed								Fill
624.8	4	2	3-4-5	18"	Sand, gravel and clay (fill), moist - loose	Visual classification-No tests performed								Fill
	6	3	2-2-3	10"	Clay, cinders, sand and gravel (fill), moist - loose	Visual classification-No tests performed								Fill
	8													
	10													
	12	4	2-4-3	17"	do do	Visual classification -No tests performed								Fill
	14													
	16		2-2-2	0		No sample recovered								
612.3	18	5	2-2-3	7"	Cinders, sand and wood (fill), moist - loose	Visual classification-No tests performed								Fill
609.8	20	6	1-1-2	18"	Cinders, organic matter and sand (fill), moist - very loose	Visual classification-No tests performed								Fill
	22													
	24													
604.8	26	7	4-6-9	18"	Brown and gray clay, trace sand, trace gravel with limestone fragments moist - stiff	10	4	2	29	55	41	19	24	A-7-6
	28													
	30	S-1		15"	Brown and gray clay, trace sand, trace gravel with limestone fragments moist - stiff	1	6	3	38	52	44	21	24	A-7-6
	32	8	7-10-14	14"	Brown and gray clay, trace sand with shale and limestone fragments moist - stiff	0	2	0	60	38	42	20	18	A-7-6
	34	9	4-5-7	16"	Brown and gray clay, trace sand with shale and limestone fragments moist - stiff	0	2	4	32	62	46	23	22	A-7-6

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Form No. 530—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/30/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 604.8 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/30/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-16-2 STATION AND OFFSET 189+64, 28'Rt., RB BL SURFACE ELEV. 629.8 Bridge No. HAM-71-0228

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36	10	8-5-4	13"	Brown and gray clay, little sand, trace gravel with limestone fragments moist - medium stiff	10	8	7	29	46	52	30	28	A-7-6
	38	11	4-5-8	12"	Brown and gray clay, some sand, trace gravel with limestone fragments, moist - medium stiff	7	13	10	25	45	5 2	30	36	A-7-6
	40													
587.3	42	12	11-22-34	16"	Brown clay, little sand, trace gravel, moist - very stiff	1	8	3	34	54	42	20	18	A-7-6
	44	13	22-42	12"	Gray shale, moist - hard	Visual classification-No tests performed								
584.3	46	14	78	6"	do do	Visual classification-No tests performed								
	48	15	NXM	75%	Gray shale, calcareous, tough with moderately tough layers in the bottom 12" of the run (1/4" to 4" pieces averaging 1-1/2") 100% shale									
579.3	50													
	52				Boring completed									
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 630—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/20/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE 600.4 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/21/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-16-3 STATION AND OFFSET 190+93, 28' L. Ramp RB BL SURFACE ELEV. 630.4 Bridge No. HAM-71-0228

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
630.4	0													
627.9	2	1	16-2-4	9"	Blacktop, sand and gravel, medium stiff	Visual classification-No tests performed								Fill
	4	2	3-6-8	13"	Brown silty clay with cinders and brick fragments, very stiff	Visual classification-No tests performed								Fill
622.9	6	3	16-9-9	13"	do do	Visual classification-No tests performed								Fill
	8	4	8-10-12	16"	Cinders and brick fragments (fill), medium dense	Visual classification-No tests performed								Fill
	10	5	2-3-3	15"	do do	Visual classification-No tests performed								Fill
	12													
	14													
	16	6	6-6-8	15"	do do	Visual classification-No tests performed								Fill
	18													
	20													
	22	7	2-4-9	13½"	do do	Visual classification-No tests performed								Fill
	24	8	7-12-8	16"	do do	Visual classification-No tests performed								Fill
	26	9	8-11-11	16"	do do	Visual classification-No tests performed								Fill
	28	10	5-5-5	9"	do do	Visual classification-No tests performed								Fill
	30	11	2-3-16	18"	do do	Visual classification-No tests performed								Fill
	32	12	8-7-13	18"	do do	Visual classification-No tests performed								Fill
	34													

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Form No. 630—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/20/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 600.4 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/21/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-16-3 STATION AND OFFSET 190+93, 28'L. Ramp RB BL SURFACE ELEV. 630.4 Bridge No. HAM-71-0228

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL Class
	34													
595.4	36	13	8-12-19	18"	Brown and gray silty clay little sand little gravel moist - medium stiff	16	8	5	33	38	40	17	22	A-6b
	38	14	6-5-8	18"	Brown and gray silty clay, trace sand, trace gravel, moist - medium stiff	1	6	3	48	42	38	18	22	A-6b
590.4	40													
587.9	42	15	27-37-56	18"	Brown and gray clay, trace sand, moist- very stiff	0	4	3	35	58	48	24	16	A-7-6
586.4	44	16	97-113-147	18"	Gray shale, dry - hard	Visual classification-No tests performed								
	46	17	NXM	100%	Interbedded gray hard shale and fossiliferous limestone *									
	48													
581.4	50				Boring completed									
	52													
	54				*Vandals destroyed core samples in the field - descriptions based on driller's examination only. (Notified Mr. Warnke of Hazelet and Erdal by telephone of this condition.									
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 880—1648

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/24/64 SAMPLER: TYPE Split Spoon & ComBarrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 601.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/24/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-16-4 STATION AND OFFSET 191+92, 1' Rt. Ramp RB BL SURFACE ELEV. 631.0 Bridge No. HAM-71-0228

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
631.0	0													
	2	1	5-7-7	15"	Brown silty clay, sand, gravel and cinders (fill), moist - medium stiff	Visual classification-No tests performed								Fill
628.5														
	4	2	3-3-3	15"	Cinders, sand, gravel and clay, moist - loose	Visual classification-No tests performed								Fill
	6	3	2-3-3	14"	do do	Visual classification-No tests performed								Fill
623.5														
	8	4	5-4-3	17"	Brick, clay and cinders (fill), moist - loose									
621.0	10													
	12	5	5-6-4	11"	Cinders with brick fragments (fill), moist - medium dense	Visual classification-No tests performed								Fill
	14	6	9-9-8	15"	do do	Visual classification-No tests performed								Fill
616.0														
	16	7	5-3-4	17"	Cinders and clay (fill), moist - loose and medium stiff	Visual classification-No tests performed								Fill
613.5														
	18	8	2-1-1	17"	Cinders (fill), very moist - loose	Visual classification-No tests performed								Fill
611.0	20													
	22	9	4-3-3	13"	Brick and cinders (fill) moist-loose	Visual classification-No tests performed								Fill
608.5														
	24	10	4-8-6	11"	Brick, cinders and clay (fill), moist-medium dense	Visual classification-No tests performed								Fill
	26	11	7-8-5	11"	do do	Visual classification-No tests performed								Fill
603.5														
	28	12	3-3-3	17"	Brown sandy clay with fine gravel, brick and cinders (fill), moist - soft	Visual classification-No tests performed								Fill
601.0	30													
	32	13	2-2-3	17"	Cinders, gravel and clay (fill) moist-soft	Visual classification-No tests performed								Fill
598.5					Brown and gray silty clay, little sand, little gravel with shale and brick									
	34	14	3-4-6	11"	fragments (fill), moist - medium stiff	10	10	8	32	40	37	16	20	A-6b

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/24/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 601.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/24/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT Northeast Expressway HAM-71-0.93

BORING No. B-16-4 STATION AND OFFSET 191+92, 1' Rt. Ramp RB BL SURFACE ELEV. 631.0 Bridge No. HAM-71-0228

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
596.0	34													
	36	15	4-7-9	14"	Brown and gray clay, little sand, some gravel with limestone fragments very moist - medium stiff	30	11	5	23	31	41	21	29	A-7-6
591.0	38													
	40													
	42	16	22-37-58	18"	Gray shale, moist - hard	Visual classification-No tests performed								
586.0	44													
	46													
	48	17	NXM	63%	Gray shale, clacareous, moderately tough with soft seams (1" to 3" pieces averaging 1½") and gray limestone, crystalline, fossiliferous(1½" and 3" pieces averaging 2") 87% shale, 13% limestone									
581.0	50													
	52				Boring completed									
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 610—15-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/28/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. NXM WATER ELEV. IMMEDIATE 601.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/28/64 CASING: LENGTH ____ DIA: 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-16-5 STATION AND OFFSET 189+67, 29' L. Ramp RB BL SURFACE ELEV. 623.5 Bridge No. HAM-71-0228

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% GRD.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
623.5	0													
621.0	2	1	9-13-15	7"	Brown and gray silty clay with gravel, moist - stiff	Visual classification-No tests performed								Fill
	4	2	2-2-2	2"	Cinders, soft	Visual classification-No tests performed								Fill
616.0	6	3	1-2-4	3"	do do	Visual classification-No tests performed								Fill
613.5	8	4	5-6-5	13½"	Gray clay, little sand, trace gravel with limestone fragments moist-medium stiff	8	11	7	29	45	41	18	19	A-7-6
611.0	12	5	8-9-9	16"	Gray sandy silt, trace gravel with limestone fragments moist - medium stiff	4	22	19	31	24	21	6	12	A-4a
	14	6	8-5-9	16"	Gray silty clay, some sand, trace gravel with limestone fragments moist - stiff	3	10	12	31	44	35	16	24	A-6b
606.0	16 18	7	3-7-8	18"	Brown silty clay, little sand, trace gravel moist - medium stiff	4	8	8	31	49	40	20	19	A-6b
	20	8	6-7-7	17"	Brown clay, trace sand, moist - stiff	0	2	4	31	63	48	23	25	A-7-6
601.0	22	9	6-8-4	18"	Brown and gray clay, trace sand, little gravel, moist - very stiff	19	1	2	25	53	51	25	19	A-7-6
	24	10	28-34-42	18"	Brown weathered shale, moist - hard	Visual classification-No tests performed								
595.5	26 28	11	32-49-53	18"	do do	Visual classification-No tests performed								
	30	12	NXM	51%	Brown weathered shale, slightly tough to soft (1" to 3" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed (two 1½" pieces) 95% shale, 5% limestone									
	32													
	34													

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Form No. 530—16-5

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/28/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 601.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/28/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-16-5 STATION AND OFFSET 189+67, 29' L. Ramp RB BL SURFACE ELEV. 623.5 Bridge No. HAM-71-0228

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL. CLASS
585.5	34 36 38	13	NXM	64%	Gray shale, calcareous, moderately tough to tough (1/2" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous, jointed and iron oxide stained (2" to 3-1/2"pieces averaging 3") 80% shale, 20% limestone									
	40 42 44 46 48 50 52 54 56 58 60 62 64 66 68				Boring completed									

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Form No. 530 [illegible]

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/11/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/11/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Auger AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-18-1 STATION AND OFFSET 190+13, 50' Rt., Ramp RA BL SURFACE ELEV. 625.7 Bridge No. HAM-71-0231

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% G.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
625.7	0													
~~625.4~~		1	3	9"	0.5' Topsoil	Visual classification-No tests performed								
	2	1A	4-4	9"	Brown silty clay, little sand, little gravel with shale and limestone fragments, moist - very stiff	Visual classification-No tests performed								A-6b
	4	2	7-5-6	11"	do do	11	8	8	28	45	39	17	15	A-6b
620.7	6	3	7-6-6	13"	Brown clay, trace sand with shale and limestone fragments, moist - stiff	0	1	2	31	66	52	25	26	A-7-6
618.2	8	4	33-37-41	12"	Gray shale, moist- hard	Visual classification-No tests performed								
615.7	10													
	12	R-1	NXM	82%	Gray shale, calcareous, tough with brown weathered zones throughout run (¼" to 3" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, (two pieces 1½" and 3½") 93% shale 7% limestone									
610.7	14													
	16				Boring completed									
	18													
	20													
	22													
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 630-[illegible]

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/9/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/9/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-18-2 STATION AND OFFSET 190+98, 30'Rt., Ramp RA BL SURFACE ELEV. 625.2 Bridge No. HAM-71-0231

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
623.2	0				0.3' Concrete									
622.9		1	8-10-12	13"	Brown and gray clay with cinders and shale fragments (fill), moist - medium stiff	Visual classification-No tests performed								Fill
622.7	2													
	4	2	4-6-8	17"	Brown and gray clay, trace sand, trace gravel with shale and limestone fragments (fill), moist - stiff	5	4	5	34	52	41	15	19	A-7-6
	6	S-1			Brown and gray clay, trace sand with shale and limestone fragments, moist - medium stiff	0	4	2	32	62	51	26	27	A-7-6
	8	3	3-3-4	18"	Brown and gray clay, trace sand, trace gravel with shale fragments (fill), moist - medium stiff	1	4	2	32	61	46	20	25	A-7-6
615.2	10													
		4	8-4-5	14"	Brown and gray silty clay with brick fragments (fill), moist - medium stiff	Visual classification-No tests performed								Fill
612.7	12													
	14	5	11-18-35	18"	Brown and gray weathered shale, moist - very stiff to hard	Visual classification-No tests performed								
	16	6	28-54-93	18"	Gray shale, calcareous, moderately tough (1/2" to 3-3/4" pieces averaging 2") and gray limestone, crystalline, fossiliferous (one 3½" piece in the bottom 8" of the run) 94% shale, 6% limestone	Visual classification-No tests performed								
	18	7	NXM	73%										
606.2	20													
	22				Boring completed									
601.2	24													
	26													
	28													
	30													
	32													
	34													

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THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/21/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 611.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/21/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-18-3 STATION AND OFFSET 191+86, 1' L. Ramp RA BL SURFACE ELEV. 626.0 Bridge No. HAM-71-0231

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
626.0	0	[illegible]	30		0.5' Concrete Pavement									
[illegible]		[illegible]	2	3"	Cinders and brick fragments(fill) moist-soft									
[illegible]		16	3		Brown and gray silty clay with shale fragments,(fill), moist - soft	Visual classification-No tests performed								Fill
623.5	2													
621.5	4	S-1		19"	Brown and gray silty clay, little sand, little gravel with shale fragments, moist - medium stiff	10	9	5	33	43	38	16	24	A-6b
	6	2	4-3-4	8"	Brown and gray silt and clay, trace sand, some gravel with shale fragments, moist - stiff	31	3	2	26	38	39	15	18	A-6a
618.5	8	3	3-4-4	13"	Brown clay, little sand with shale fragments, moist - stiff	0	8	6	37	49	44	19	24	A-7-6
	10	S-2		23"	Brown clay, trace sand with shale fragments, moist - stiff	0	2	3	50	45	49	23	25	A-7-6
	12													
	14	4	4-5-7	18"	Brown and gray clay, trace sand, trace gravel with shale fragments, moist - medium stiff	3	2	3	34	58	45	21	26	A-7-6
611.0														
	16	5	3-2-2	11"	Gray silt and clay, some sand, moist - medium stiff	0	12	11	31	46	34	14	22	A-6a
	18	6	4-3-3	13"	Gray silt and clay, some sand, trace gravel, moist - medium stiff	8	11	12	29	40	35	15	25	A-6a
	20													
	22	7	4-4-4	6"	Gray silt and clay, some sand, trace gravel, moist - medium stiff	1	11	12	24	52	35	15	23	A-6a
602.0	24													
	26	R-1	NXM	82%	Gray shale, calcareous, moderately tough with soft seams, broken (¼" to 3" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, (three pieces, ½", 1" and 3½") 92%shale 8% limestone									
597.0	28													
	30				Boring completed									
	32													
	34													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/3/64 SAMPLER: TYPE Split Spoon & ComBarrel DIA 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/3/64 CASING: LENGTH _____ DIA 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-18-4 STATION AND OFFSET 192+98, 10'Rt., Ramp GA BL SURFACE ELEV. 626.9 Bridge No. HAM-71-0231

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
626.9	0				0.5" Concrete									
624.4	2	1	7-8-5	12"	Sand, gravel and cinders (fill), moist-medium dense	Visual classification-No tests performed								Fill
	4	2	10-8-9	12"	Brown silt, clay and gravel, trace sand with shale and limestone fragments, (fill), moist - medium stiff	47	5	4	21	23	34	15	13	A-6a
	6	3	7-9 -11	16"	Brown and gray silt and clay, little sand, little gravel with shale and limestone fragments (fill), moist-stiff	17	7	4	32	40	35	14	15	A-6a
	8	4	6-7-8	15"	Brown and gray silt and clay, trace sand, some gravel with shale and limestone fragments, (fill), moist-stiff	22	8	4	29	37	35	13	14	A-6a
	10	5	7-9-10	16"	Brown and gray silt and clay, trace sand, little gravel with shale and limestone fragments (fill) moist-stiff	16	3	4	35	42	38	14	9	A-6a
	12	6	8-8-9	17"	Brown and gray silt and clay, trace sand with shale fragments (fill), moist - very stiff	0	2	2	40	56	38	14	11	A-6a
	14	7	7-9-10	18"	Gray silt and clay, trace sand, trace gravel with brick fragments (fill), moist - very stiff	8	3	1	43	45	35	14	14	A-6a
609.4	16	8	5-6-6	15"	Brown and gray silty clay, trace sand, trace gravel with shale fragments moist - very stiff	1	1	3	39	56	39	17	14	A-6b
	18	9	4-5-6	17"	Brown and gray silt and clay, trace sand with shale fragments moist - stiff	0	2	2	39	57	40	16	19	A-6b
604.4	20	10	3-4-5	18"	Brown clay, little sand, trace gravel with shale fragments moist-stiff	2	6	6	34	52	42	17	24	A-7-6
601.9	22	11	3-3-5	12"	Brown and gray silty clay, little sand, trace gravel with shale and limestone fragments moist - stiff	5	5	6	37	47	40	16	20	A-6b
	24													
	26													
	28													
596.9	30	12	3-5-10	16"	Brown silt, clay and gravel, little sand with limestone fragments, moist-medium stiff	36	12	6	23	23	33	12	23	A-6a
	32													
593.4	34													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/3/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/3/64 CASING: LENGTH _____ DIA 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-18-4 STATION AND OFFSET 192+98, 10'Rt., Ramp GA BL SURFACE ELEV. 626.9 Bridge No. HAM-71-0231

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL. CLASS
591.9	34	13	27-48	13"	Gray shale, dry - hard	Visual classification-No tests performed								
	36	14	NXM	93%	Gray shale, calcareous, tough to moderately tough (1" to 7½" pieces averaging 3") and gray limestone, crystalline, fossiliferous (1½" and 2½" pieces) 90% shale, 10% limestone									
	38													
586.9	40													
	42				Boring completed									
	44													
	46													
	48													
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 530 — 4-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/14/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/14/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-18-5 STATION AND OFFSET 193+77, 25' Rt., Ramp GA BL SURFACE ELEV. 627.8 Bridge No. HAM-71-0231

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
627.8	0				Asphaltic concrete									
626.8					Portland cement concrete									
625.3	2				Sand and gravel (fill), dry - soft to medium stiff									
	4	1	4-5-7	3"	Brown clay with limestone fragments, moist - soft	Visual classification-No tests performed								A-1-a
	6	2	14-19-23	11"	Rock fragments, some brown sand, trace silt moist - medium stiff	65	10	11	8	6		NP	16	A-1-a
	8	3	17-23-25	9"	do do	68	10	8	8	6		NP	10	A-1-a
	10													
		4	19-25-31	0										
	12													
614.3		5	23-57-100	7½"	do do	Visual classification-No tests performed								A-1-a
	14													
	16				Brown clay and weathered shale(no recovery) and gray limestone, crystalline,									
	18	R-1	NXM	10%	fossiliferous, (one 6" piece) 90% shale and clay, 10% limestone									
	20													
	22													
	24				Brown and gray shale, soft to moderately tough (¼" to 2"pieces averaging 1") and									
	26	R-2	NXM	76%	gray limestone, crystalline, fossiliferous, jointed and broken throughout the run,									
599.8	28				iron oxide stained (1" to 3" pieces averaging 2") 65% limestone, 35% shale									
	30				Boring completed									
	32													
	34													

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Form No. 830-[illegible]9

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/9/64 SAMPLER: TYPE Split Spoon & ConBarrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/9/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-18-6 STATION AND OFFSET 194+75, 22' Rt., Ramp RA BL SURFACE ELEV. 631.8 Bridge No. HAM-71-0231

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	HWY. CLASS.
631.8	0				Asphaltic concrete pavement									
631.3		1	19-4-7	13½"	Cinders, moist - medium stiff (fill)	Visual classification-No tests performed								Fil
629.3	2													
627.3	4	S-1			Brown clay, trace sand, moist - stiff	0	4	4	33	59	50	25	24	A-7-6
	6	2	14-19-23	16"	Brown clay, trace sand, moist - very stiff	0	4	3	39	54	45	22	20	A-7-6
624.3	8													
	10	R-1	NXM	55%	Brown and gray weathered shale, slightly tough to moderately tough (½" to 3" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed in the top half of the run (1" to 6½" pieces averaging 3") 73% shale, 27% limestone									
	12													
	14				Gray shale, calcareous, moderately tough to tough, broken in the bottom 12" of the run (½" to 2-3/4" pieces averaging 1½") and gray limestone, crystalline, fossiliferous (1½" and 3" pieces) 90% shale, 10% limestone									
	16	R-2	NXM	80%										
614.3	18													
	20				Boring completed									
	22													
	24													
	26													
	28													
	30													
	32													
	34													

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 630—10-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/12/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.6 NXH WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/12/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-18-7 STATION AND OFFSET 195+43, 10' L., Ramp GA BL SURFACE ELEV. 641.6 Bridge No. HAM-71-0231

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	M.C.	SOIL CLASS.
641.6	0													
	2	1	4-7-7		Brown sandy silt, trace gravel, dry - stiff	4	11	9	28	48		NP	12	A-4a
638.6	4				3.0' Brown weathered shale, slightly tough (¼" to 2" pieces averaging 1½") and gray limestone, crystalline, fossiliferous (two pieces 2" and 3½" at the top of the run) 85% shale, 15%limestone									
	6	R-1	NXH	78%										
633.6	8				2.0' Gray shale, calcareous, moderately tough to tough (¼" to 1½" averaging 1") and gray limestone, crystalline, fossiliferous, (two 2" pieces at the top of the run) 83% shale, 17% limestone									
	10													
	12													
	14													
	16													
	18													
	20													
	22													
	24													
	26													
	28													
	30													
	32													
	34				Boring completed at 633.6'									

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—1

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/12/64 SAMPLER: TYPE Split Spoon 2"O.D. & Core Barrel DIA. NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/12/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-20-1 STATION AND OFFSET 0+26, 14' L. McGregor BL SURFACE ELEV. 765.7 Bridge No. HAM-71-0271

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTO CLASS
765.7	0													
	2	1	10-9-10	17"	Brown and gray clay and gravel, trace sand with limestone fragments moist - stiff	41	5	3	24	27	42	22	16	A-7-6
	4	2	4-5-6	15"	do do	Visual classification-No tests performed								A-7-6
760.2	6	3	5-5-6	14"	Brown and gray silty clay, little sand, little gravel with limestone fragments moist - stiff	16	7	5	36	36	40	20	20	A-6b
	8	4	4-5-7	15"	do do	Visual classification-No tests performed								A-6b
	10	5	13-10-10	7"	Brown and gray silty clay, little sand, some gravel with limestone fragments moist - stiff	21	6	5	36	32	40	20	19	A-6b
	12													
	14													
750.7	16	6	4-5-6	17"	Brown and gray clay, little sand, some gravel with limestone fragments moist - stiff	20	6	5	31	38	42	22	23	A-7-6
748.7	18	8-1			Brown silt and clay, some sand with limestone fragments moist - very stiff	0	14	7	30	49	30	11	10	A-6a
746.7	20	7	8-5-8	16"	Brown and gray silty clay, little sand some gravel with limestone fragments, very moist - medium stiff	22	5	5	32	36	40	20	28	A-6b
	22													
	24	8	5-7-9	11"	Brown and gray silty clay, little sand some gravel with limestone fragments, moist - medium stiff	34	5	5	26	30	38	18	20	A-6b
740.7	26	9	13-12-12	7"	Brown and gray silty clay, trace sand, trace gravel with limestone fragments, moist - medium stiff	3	3	2	42	50	48	26	20	A-7-6
	28	10	13-65-44	15"	Brown and gray clay, trace sand, some gravel with limestone fragments, moist - very stiff	32	6	2	24	36	52	29	18	A-7-6
735.7	30													
	32	11	28-24-41	14"	do do	32	2	2	33	31	37	17	14	A-6b
733.2	34	12	105	6"	Brown and gray clay, trace sand, trace gravel with limestone fragments, moist - hard stiff	4	3	2	31	60	49	25	16	A-7-6

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/12/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/12/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-20-1 STATION AND OFFSET 0+26, 14' L. McGregor BL SURFACE ELEV. 765.7 Bridge No. HAM-71-0271

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
730.7	34													
	36	13	141-65-54	18"	Brown and gray weathered shale, moist - hard									
	38													
725.7	40													
	42	14	NXM	89%	Gray shale, calcareous, moderately tough to tough with a 4" fossiliferous zone at approximately elevation 724(1" to 3" pieces averaging 2") and gray limestone crystalline, fossiliferous (1" to 3½" pieces averaging 2")70% shale,30% limestone									
720.7	44													
	46													
	48				Boring completed									
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 530—1[illegible]

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

REVISED
10/5/64-vb

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/7/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None Backfilled CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/7/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-20-2 STATION AND OFFSET 0+53, 8' Rt., McGregor St., BL SURFACE ELEV. 766.2 Bridge No. HAM-71-0271

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
766.2	0				Asphaltic concrete									
765.9		1	9-12-12	16"	Brown and gray silty clay with rock fragments moist - very stiff	22	0	2	35	41	35	16	16	A-6b
	2													
	4	2	3-8-9	15"	do do	Visual classification-No tests performed								A-6b
	6	3	4-6-6	15"	Brown and gray silty clay, little sand trace gravel with limestone fragments, moist - very stiff	2	11	4	41	42	38	18	17	A-6b
	8													
		4	4-7-6	8"	do do	Visual classification-No tests performed								A-6b
756.2	10													
		5	3-6-4	12"	Brown silt and clay, little sand little gravel with limestone fragments moist - stiff	12	10	5	38	35	30	11	16	A-6a
	12													
	14													
751.2														
	16	6	3-4-6	13"	Brown silty clay, trace sand, trace gravel with limestone fragments moist - stiff	4	4	4	43	45	40	19	18	A-6b
	18													
	20													
	22	7	2-3-7	15"	Brown silty clay, little sand, trace gravel with limestone fragments, moist - medium stiff	1	8	5	42	44	40	19	26	A-6b
	24													
741.2														
	26	8	6-5-5	17"	Brown and gray sandy silt, little sand, some gravel with limestone fragments, moist - medium stiff	25	9	6	29	31	30	10	18	A-4a
	28													
736.2	30													
		9	5-6-9	17"	Brown and gray silty clay, trace sand, trace gravel with limestone fragments, moist - medium stiff	1	2	2	43	52	38	18	21	A-6b
	32													
	34													

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS

Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

REVISED
10/5/64-vb

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/7/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/7/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-20-2 STATION AND OFFSET 0+53, 8' Rt., McGregor St. BL SURFACE ELEV. 766.2 Bridge No. HAM-71-0271

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
731.2	36	10	25-34-17	18"	Brown and gray clay, trace sand, some gravel with limestone fragments, moist- very stiff	37	6	2	26	29	41	20	15	A-7-6
728.7	38	11	24-22-35	16"	Brown and gray silty clay, trace sand, trace gravel with limestone fragments, moist - hard	4	4	2	45	45	38	18	16	A-6b
726.2	40	12	11-72-67	17"	Brown and gray weathered shale, moist- hard	Visual classification-No tests performed								
	42													
	44	13	20-60-71	14"	do do	Visual classification-No tests performed								
	46	14	20-61-72	18"	do do	Visual classification-No tests performed								
718.2	48				0.8' Brown and gray weathered shale, slightly tough (1½" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous, shaly (one 2½" piece) 69% shale, 31% limestone									
	50	15	NXM	87%										
	52													
	54				4.2' Gray shale, calcareous, moderately tough, (1" to 2½" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, (3/4" to 3-1/4" pieces averaging 2") 50% shale, 50% limestone									
	56	16	NXM	78%										
709.2	58				5.0' Gray shale, calcareous, moderately tough with soft seams throughout run (½" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous, (½" to 7" pieces averaging 3") 68% shale, 32% limestone									
	60													
	62													
	64													
	66													
	68				Boring completed									

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Form No. 530—16

THE E. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/6/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 744.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/7/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-20-3 STATION AND OFFSET 1+29, 13'L. McGregor St SURFACE ELEV. 766.2 Bridge No. HAM-71-0271

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTE CLASS
766.2	0													
765.2					1' Blacktop and brick									
763.7	2	1	2-7-10	3"	Brown silty clay with shale and limestone fragments (fill), moist - stiff	Visual classification-No tests performed								Fill
	4	2	7-8-13	4"	Brown and gray silty clay, little sand, little gravel with shale and limestone fragments , moist - medium stiff	19	7	5	33	36	35	17	18	A-6b
	6	3	3-5-7	14"	Brown and gray silty clay, little sand, little gravel with shale and limestone fragments moist - stiff	10	9	4	36	41	35	16	22	A-6b
758.7	8													
		4	7-8-9	13"	Brown and gray silt and clay, little sand, little gravel with shale and limestone fragments , moist-stiff	18	9	4	37	32	31	13	17	A-6a
756.2	10													
	12	5	7-8-9	8"	Brown sandy silt, some gravel with shale and limestone fragments moist - stiff	34	10	7	24	25	28	10	6	A-4a
	14													
751.2														
	16	6	17-16-6	10"	Brown silt, clay and gravel, little sand, with shale and limestone fragments moist - stiff	49	6	4	20	21	33	13	18	A-6a
	18													
746.2	20													
	22	7	8-9-11	12"	Brown and gray clay, trace sand, little gravel with shale and limestone fragments moist - stiff	13	3	3	37	44	43	23	24	A-7-6
	24													
	26	8	3-3-5	13"	Brown and gray clay, trace sand with shale and limestone fragments moist - stiff	0	2	2	48	48	42	22	26	A-7-6
	28													
736.2	30													
	32	9	3-5-11	14"	Brown silty clay, little sand, some gravel with shale and limestone fragments, moist - stiff	21	6	5	34	34	39	19	20	A-6b
	34													

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Form No. 530—16-5

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/6/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 744.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/7/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-20-3 STATION AND OFFSET 1+29, 13' L.McGregor BL SURFACE ELEV. 766.2 Bridge No. HAM-71-0271

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36	10	12-18-29	9"	Brown and gray silty clay,little sand, little gravel with shale and limestone fragments moist - stiff	12	10	4	37	37	32	18	10	A-6b
	38	11	16-18-24	16"	Brown and gray silty clay, little sand, little gravel with shale and limestone fragments moist - stiff	15	8	4	36	37	36	16	16	A-6b
726.2	40													
		12	20-20-27	15"	Brown clay, trace sand, trace gravel with shale and limestone fragments, moist - stiff	1	4	2	38	55	44	22	21	A-7-6
723.7	42													
	44	13	24-67-73	13"	Brown and gray weathered shale, moist-soft	Visual classification-No tests performed								
720.2	46													
	48	14	NXM	32%	Brown and gray weathered shale(no shale recovered)and gray limestone,crystalline, fossiliferous,jointed midway in the run (1" to 4½" pieces averaging 3") 62%shale, 28% limestone									
	50													
	52				Brown and gray weathered shale,slightly tough(½" to 2½" pieces averaging 2")									
	54	15	NXM	62%	and gray limestone, crystalline, fossiliferous - shaly in the top 12" and the bottom 4" (½" to 4" pieces averaging 3") 62% shale, 38% limestone									
710.2	56													
	58				Boring completed									
	60													
	62													
	64													
	66													
	68													

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Form No. 530—10-59

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

*Water used in drilling from elevation 747.8

DATE STARTED 9/2/64 SAMPLER: TYPE _____ DIA. _____ WATER ELEV. IMMEDIATE _____ CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/3/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-20-4 STATION AND OFFSET 2+32, 9' L. McGregor Ave. BL SURFACE ELEV. 747.8 Bridge No. HAM-71-0271

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTO CLASS
747.8	0													
745.3	2	1	1-3-6	12"	Topsoil and cinders (fill), dry - stiff	Visual classification-No tests performed								Fill
	4	2	9-20-23	8"	Brown and gray silty clay,little sand, some gravel with rock fragments moist-stiff	30	7	3	25	35	37	18	16	A-6b
	6	3	6-18-13	10"	Brown and gray silty clay,little sand, some gravel with rock fragments moist - stiff	27	8	5	26	34	37	18	16	A-6b
	8	4	4-6-7	13"	Brown and gray silty clay,little sand, little gravel with shale fragments , moist - medium stiff	14	7	4	31	44	36	18	20	A-6b
737.8	10													
	12	5	3-6-10	9"	Brown and gray silt and clay,little sand, some gravel with organic matter and rock fragments moist-medium stiff	30	10	8	22	30	32	14	19	A-6a
732.8	14	S-1	Pushed	0		No sample recovered								
730.3	16	6	4-5-7	14"	Brown and gray clay,trace sand,little gravel with organic matter and rock fragments very moist-medium stiff	10	5	3	35	47	42	22	24	A-7-6
727.8	18	7	3-4-4	13"	Brown and gray silty clay, trace sand, trace gravel with topsoil very moist - medium stiff	4	5	4	39	48	40	19	23	A-6b
725.3	20	8	3-3-4	7"	Brown and gray silt and clay,little sand,trace gravel with topsoil very moist - medium stiff	6	11	6	40	37	33	14	17	A-6a
722.8	22	9	2-3-4	0		No sample recovered								
720.3	24	10	1-1-1	10"	Gray clay, trace sand with organic matter very moist - soft	0	2	2	38	58	43	22	36	A-7-6
717.8	26	11	1-2-1	7"	Gray silty clay, trace sand with organic matter wet - soft	0	0	2	48	50	37	17	38	A-6b
715.3	28	12	3-4-5	12"	Brown and gray silt and clay,trace sand with organic matter moist-medium stiff	0	1	1	54	44	35	13	22	A-6b
	30	13	4-5-7	10"	Brown clay, trace sand very moist - medium stiff	0	2	2	37	59	42	30	30	A-7-6
	32													
	34													

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

*Water used in drilling from elevation 747.8

DATE STARTED 9/2/64 SAMPLER: TYP Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE * CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/3/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-20-4 STATION AND OFFSET 2+32, 9' L. McGregor Ave. BL SURFACE ELEV. 747.8 Bridge No. HAM-71-0271

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
712.8														
	36	14	4-5-6	8"	Brown and gray silty clay, little sand, little gravel with topsoil moist - medium stiff	10	9	5	37	39	36	17	23	A-6b
	38													
707.8	40													
		15	4-5-6	16"	Brown and gray silty clay, trace sand with organic matter moist - medium stiff	0	4	4	52	40	35	15	24	A-6a
	42													
	44													
	46	16	6-13-29	4"	do do	No tests performed-Insufficient sample								A-6a
	48													
697.8	50													
		17	10-18-40	10"	Brown and gray silty clay, trace sand, moist - very stiff	0	0	1	48	51	40	19	21	A-6b
	52													
694.8														
	54				Gray shale, calcareous, moderately tough, (¼" to 3" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, shaly in the bottom 18" of the run(1" to 3" pieces averaging 2") 55% shale, 45% limestone									
	56	18	NXM	80%										
689.8	58													
	60				Boring completed									
	62													
	64													
	66													
	68													

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Form No. 630—16-59

THE E. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

REVISED
10/8/64-vb

LOG OF BORING

*Could not be determined

DATE STARTED 8/21/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE * CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/27/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS ____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-20-6 STATION AND OFFSET 3+40, 6'Rt.McGregor Ave. CL SURFACE ELEV. 773.2 Bridge No. HAM-71-0271

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.L.	W.C.	SOIL CLASS.
773.2	0													
	2	1	1-1-1		Cinders, topsoil, clay, brick and concrete (fill), moist - loose	Visual classification-No tests performed								Fill
	4	2	3-4-4		do do	Visual classification-No tests performed								Fill
	6	3	1-2-1		do do	Visual classification-No tests performed								Fill
	8	4	1-4-3		do do	Visual classification-No tests performed								Fill
	10	5	1-1-3		do do	Visual classification-No tests performed								Fill
760.7	12	6	3-4-5		Brown and gray silty clay,little sand, some gravel with cinders, topsoil, brick and concrete (fill), very moist-medium stiff	22	9	5	27	37	36	16	26	A-6b
	14													
	16		No Recovery											
756.2					Brown and gray silt and clay,little sand, little gravel with cinders,topsoil,brick and concrete (fill),moist-medium stiff	11	6	4	40	39	33	13	19	A-6a
755.2	18	7A/B	5-4 24											
753.7					Brown and gray shale and clay(fill), moist - stiff	Visual classification-No tests performed								Fill
	20	8	6-6-5		Brown and gray silt and clay,some sand, little gravel with shale fragments, (fill), moist - stiff	13	18	9	20	40	34	14	18	A-6a
	22													
		9	4-5-6	5"	Brown and gray silt, clay and gravel little sand with weathered shale (fill), very moist - medium stiff	43	14	3	17	23	32	14	25	A-6a
748.7	24													
	26	10	3-8-4	8"	Cinders (fill), wet - loose	Visual classification-No tests performed								Fill
	28	11	2-3-3	6"	do do	Visual classification-No tests performed								Fill
743.7														
	30	12	3-4-9	5"	Brown and gray silt, clay and gravel, little sand with shale and limestone fragments wet - soft	41	10	6	19	24	35	13	23	A-6a
	32													
		13	6-8-9	8"	Brown and gray silt and clay, little sand, trace gravel with shale and limestone fragments moist-stiff	8	5	6	40	41	34	14	14	A-6a
	34													

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Form No. 530—16-59a

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

REVISED
10/8/64-vb

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

*Could not be determined

DATE STARTED 8/21/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE * CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/27/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-20-6 STATION AND OFFSET 3+40, 6' Rt., McGregor Ave. CL SURFACE ELEV. 773.2 Bridge No. HAM-71-0271

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36													
		14	7-20-20	8"	Brown and gray silt and clay, little sand, trace gravel with shale and limestone fragments moist-stiff	6	12	5	41	36	32	13	22	A-6a
	38													
	40													
732.2														
	42	15	8-8-11	9"	Brown and gray silty clay, trace sand, some gravel with limestone and shale fragments moist - medium stiff	27	5	4	29	35	35	16	15	A-6b
	44													
	46													
		16	5-6-7	5"	Brown and gray silty clay with shale and limestone fragments wet -soft	Visual classification-No tests performed								A-6b
	48													
	50													
	52	17	9-32-30	3"	do do	Visual classification-No tests performed								A-6b
	54													
	56													
717.2														
		18	8-4-8	12½"	Brown and gray clay, trace sand, moist-stiff	0	4	4	32	60	49	25	23	A-7-6
714.8	58													
		19	NXM	62%	Brown weathered shale,slightly tough(a trace recovered) and gray limestone, crystalline, fossiliferous, jointed in the top 6" of the run(1" to 4½" pieces averaging 3") 55% shale, 45% limestone									
	60													
	62	20	NXM	63%	Gray shale,calcareous,moderately tough with soft seams (¼" to 1½" pieces averaging 1") and gray limestone, crystalline, fossiliferous(1" to 4"pieces averaging 3") 66% shale, 34% limestone									
709.8														
	64													
	66													
	68				Boring completed									

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Form No. 530-[illegible]59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

REVISED
10/9/64-vb
REVISED
10/14/64-vb

REVISED
10/19/64-vb

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

*Water used in drilling from elevation 623.8

DATE STARTED 7/1/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None * CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/1/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER 48 HOURS 622.0 PROJECT: Northeast Expressway HAM-71-0.93

BORING No R-40-1 STATION AND OFFSET 12+61, 39' Rt., E. 6th St. BL SURFACE ELEV. 628.3 Retaining Wall No. 40

ELEV.	DEPTH	SAMPLE No.	STD. PEN. ** (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTC CLASS
628.3	0													
	2	1	6-7-14	3"	Black silty clay, cinders and rock, (fill), moist - hard	Visual classification-No tests performed								Fill
	4	2	19-19-21	4"	do do	Visual classification-No tests performed								Fill
	6	3	26-27-32	10"	do do	Visual classification-No tests performed								Fill
622.3														
	8	4	45-75	8"	Brown clay, trace sand, moist - hard	0	2	2	32	64	48	24	18	A-7-6
619.3	10													
	12	5	NXM	38%	Brown weathered shale with clay seams, soft (¼" to 2" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed (two 1½" pieces) 95% shale, 5% limestone									
	14													
	16	6	NXM	33%	Brown and gray weathered shale with clay seams, soft (1" to 3½" pieces averaging 2") and gray limestone, crystalline, fossiliferous, jointed (one 3/4" piece) 99% shale, 1% limestone									
	18													
609.3														
	20				Boring completed									
	22													
	24													
	26				** 35 lb. hammer weight 30 inch fall									
	28													
	30													
	32													
	34													

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Form No. 630—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

REVISED 8/26/64-vb
REVISED 10/12/64-vb

TESTING ENGINEERS AND SOILS CONSULTANTS

*Water used in drilling from elevation 647.7.

LOG OF BORING

DATE STARTED 7/2/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None * CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/3/64 CASING: LENGTH ____ DIA. None AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-40-2 STATION AND OFFSET 13+07, 104' Rt., E. 6th St. BL SURFACE ELEV. 652.2 Retaining Wall No. 40

ELEV.	DEPTH	SAMPLE No.	STD. PEN. ** (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
652.2	0													
651.2		1	4-6	10"	Black silty clay(fill)moist-medium stiff Visual classification-no tests performed FILL									
	2	2	7	3"	Brown silty clay, little sand, trace gravel, moist - medium stiff	3	12	7	32	46	39	17	22	A-6b
	4	3	16-18-23	12"	Brown silty clay, little sand, trace gravel, moist - stiff	9	10	7	33	41	39	19	20	A-6b
647.2	6	4	70	5"	Brown clay, little sand, with limestone fragments, moist - hard	0	5	8	26	61	46	24	18	A-7-6
645.2	8				Sample 5-Brown weathered shale, soft, (a trace recovered) and gray limestone, crystalline, fossiliferous(1½" to 2½" pieces averaging 2") 80% shale,20% limestone									
	10	5	NXM	32%										
	12	6	NXM	48%	Sample 6 - Brown weathered shale, soft, (a trace recovered) and gray limestone, crystalline, fossiliferous, jointed, (½" to 1½" pieces averaging 1") 60%shale, 40% limestone									
638.5	14	7	NXM	20%										
	16				Sample 7 - Brown weathered shale, soft, (a trace recovered) and gray limestone, crystalline, fossiliferous, jointed, (two 1" pieces) 90% shale, 10% limestone									
	18													
	20				Boring completed									
	22													
	24				**35 lbs. - Hammer Weight 30" Fall									
	26													
	28													
	30													
	32													
	34													

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Form No. 530—16-58

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/25/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/26/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-40-3 STATION AND OFFSET 14+12, 97' Rt., Prop.E. 6th St. SURFACE ELEV. 660.0 Retaining Wall No. 40

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
660.0	0													
	2	1	1-1-1	6"	Cinders (fill), moist - loose	Visual classification-No tests performed								Fill
	4	2	2-2-2		do do	Visual classification-No tests performed								Fill
655.0	6	S-1		16"	Brown clay, trace sand, trace gravel, (fill), moist - medium stiff	1	1	4	40	54	50	28	22	A-7-6
	8	3	3-5-7	12"	Limestone fragments with clay, dry - hard	Visual classification-No tests performed								Fill
650.0	10													
	12	4	7-12-20	16"	Brown silty clay, trace sand, little gravel with limestone fragments, moist - hard	11	6	4	33	46	39	17	16	A-6b
647.5	14	5	12-19-21	17"	Brown clay, trace sand, trace gravel with limestone fragments, moist - hard	3	3	3	36	55	44	22	15	A-7-6
	16	6	- 16 -	6"	Brown clay, trace sand with limestone fragments, moist - hard	0	0	2	40	58	42	21	16	A-7-6
	18	7	- 22 -	6"	Brown and gray clay, trace sand, trace gravel with limestone fragments, moist - hard	2	3	2	34	59	44	21	14	A-7-6
640.0	20													
638.0	22	8	24-60	12"	Brown and gray shale, moist - hard	Visual classification-No tests performed								A-7-6
	24	9	NXM	71%	Gray shale with brown weathered zones throughout run, calcareous, moderately tough (1" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous, (½" to 3" pieces averaging 2") 83% shale, 17% limestone									
633.0	26													
	28				Boring completed									
	30													
	32													
	34													

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Form No. 530—16-

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/2/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/2/64 CASING: LENGTH _____ DIA. 3.5"I.D. Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-40-4 STATION AND OFFSET 10+91, 31'Rt.E.6th St. CL SURFACE ELEV. 604.3 Retaining Wall No. 40

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL CLASS
604.3	0													
	2	1	12-11-11	13"	Concrete, sandstone, clay, brick and cinders (fill) moist - medium dense	Visual classification-no tests performed								Fill
	4	2	13-16	9"	do do	Visual classification-no tests performed								Fill
599.3	6	3	6-8-9	17"	Brown and gray clay, trace sand, moist - very stiff	0	2	2	27	69	50	26	16	A-7-6
	8	4	16-23-34	17"	Brown and gray clay, trace sand, trace gravel with limestone fragments, moist - hard	7	0	4	35	54	46	22	18	A-7-6
594.3	10													
	12	5	15-38	12"	Brown and gray shale, moist - hard	Visual classification-No tests performed								
591.8		6	50	6"	Gray shale, dry - hard	Visual classification-No tests performed								
589.3	14													
	16	7	NXM	70%	Gray shale, calcareous, moderately tough to tough (¼" to 3" pieces, averaging 1½") and gray limestone, crystalline, fossiliferous (two pieces 1" and 2") 95% shale, 5% limestone									
	18													
584.3	20													
	22				Boring completed									
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 530

THE H. C. NUTTING COMPANY

4130 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/22/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/22/64 CASING: LENGTH DIA 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS PROJECT: Northeast Expressway HAM-71-0.93

BORING NO. B-40-5 STATION AND OFFSET 11+75, 250'Rt.Proposed E.6th St. SURFACE ELEV. 679.8 Retaining Wall No. 40

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
679.8	0													
	2	1	3-4-6	8"	Topsoil, clay and limestone fragments (fill), moist - medium stiff	Visual classification-No tests performed								Fill
677.3	4	2	3-3-4	12"	Brown clay, trace sand, trace gravel with limestone fragments moist - medium stiff	2	2	2	44	50	43	22	21	A-7-6
	6	S-1		21"	Brown clay, trace sand with limestone fragments moist - medium stiff	0	4	4	42	50	42	20	22	A-7-6
	8	3	2-2-4	14"	Brown clay, trace sand, little gravel with limestone fragments moist - medium stiff	15	4	3	31	47	41	19	24	A-7-6
669.8	10													
	12	4	3-4-4	16"	Brown silty clay and gravel, trace sand with shale and limestone fragments, moist - medium stiff	38	4	3	23	32	39	18	18	A-6b
667.3	14	5	3-3-4	9"	Brown and gray clay and gravel, trace sand with shale and limestone fragments, moist - medium stiff	36	4	2	26	32	43	21	20	A-7-6
664.8	16	S-2		10"	Brown silty clay, little sand, trace gravel with shale and limestone fragments, moist - medium stiff	10	11	7	33	39	40	18	20	A-6b
662.8	18	6	3-3-10	9"	Brown silty clay and gravel, trace sand with shale and limestone fragments, moist - medium stiff	36	2	2	26	34	40	19	19	A-6b
659.8	20													
658.8		7	21-65	12"	Brown clay, trace sand	0	1	0	39	60	41	19	14	A-7-6
	22													
654.8	24													
	26	8	24-73	12"	Gray shale, moist - hard	Visual classification - No tests performed								
650.8	28													
	30													
	32	9	NXM	70%	Gray shale calcareous, moderately tough with brown weathered zones in the top 6" and midway in the run (1" to 2" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, (1" to 4" pieces, averaging 3") 60" shale, 30% limestone									
645.8	34													

Boring completed

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Form No. 630—

THE H. C. NUTTING COMPANY

6180 AIRPORT ROAD
CINCINNATI 24, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/25/64 SAMPLER: TYPE Split Spoon & CoreBarrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/25/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS ____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-40-6 STATION AND OFFSET 12+75, 182'Rt.Proposed East 6th St BL SURFACE ELEV. 678.1 Retaining Wall No. 40

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	ENVIL. CLASS
678.1	0													
675.6	2	1	6-7-9	12"	Concrete, clay, cinders and limestone fragments (fill),moist - medium dense	Visual classification-No tests performed								Fill
	4	2	4-4-5	11"	Brown clay and gravel, trace sand with limestone fragments, moist - stiff	50	2	2	24	22	44	23	23	A-7-6
	6	S-1		15"	Brown clay, trace sand with limestone fragments, stiff	0	3	4	47	46	41	19	16	A-7-6
670.1	8	3	12-21-34	12"	Limestone fragments, some clay	Visual classification-No tests performed								A-7-6
668.1	10	4	12-20	10"	Brown silt and clay,little sand, trace gravel with limestone fragments,very stiff	6	7	4	42	41	36	15	14	A-6a
	12	5	8-17-28	17"	Brown silty clay, trace sand, trace gravel, moist - very hard	2	1	3	41	53	40	19	14	A-6b
664.6	14	6	17-38	12"	Brown and gray silty clay, trace sand, moist - hard	0	2	2	39	57	40	20	12	A-6b
	16	7	19-44	12"	Brown and gray weathered shale, moist - hard									
660.1	18													
655.1	20	8	NXM	97%	Gray shale,calcareous, moderately tough with a brown weathered zone between elevation 659 and 658 (1" to 6" pieces averaging 4") and gray limestone, crystalline, fossiliferous(1" to 4"pieces averaging 1½") 90% shale,10% limestone									
	22													
	24				Boring completed									
	26													
	28													
	30													
	32													
	34													

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Form No. 530

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

REVISED
10/14/64-vb

LOG OF BORING

*Water used in drilling from elevation 634.6

DATE STARTED 7/2/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None * CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/2/64 CASING: LENGTH ____ DIA. ____ AFTER 24 HOURS 631.9 PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-40-7 STATION AND OFFSET 14+05, 39' Rt. E. 6th St. CL SURFACE ELEV. 634.6 Retaining Wall No. 40

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N) **	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
634.6	0				0.2' Topsoil	No tests performed								
630.6	2	1	2-12-17	15"	Brown clay, little sand, moist - stiff	0	10	5	32	53	42	18	19	A-7-6
	4	2	15-32-31	12"	Brown clay, trace sand with limestone fragments, moist - very stiff	0	6	4	34	56	44	20	12	A-7-6
	6	3	32-80	6"	Brown clay, little sand, trace gravel with limestone fragments, moist - hard	2	11	4	30	53	44	21	17	A-7-6
	8	4	82-120	6"	Brown clay, trace sand with limestone fragments, moist - hard	0	1	1	37	61	43	20	8	A-7-6
624.6	10				Brown weathered shale,soft(¼"and 1"pieces) and gray limestone, crystalline, fossiliferous(1½" to 3½"pieces averaging 3") 78% shale, 22% limestone									
	12	5	NXM	38%										
	14				Brown weathered shale,soft one 1½" piece recovered) and gray limestone,crystalline, fossiliferous (two pieces 3/4" and 1½") 91% shale, 9% limestone									
619.6	16	6	NXM	20%										
	18													
	20													
	22													
	24													
	26													
	28													
	30													
	32													
	34													

Boring completed

** 35 lb. - Hammer Weight
30 Inch- Fall

"AS A CRITICAL EVALUATION TO CLIENTS, BOTH PRESENT AND POTENTIAL, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 630—16M

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

REVISED
10/14/64-vb

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/6/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/6/64 CASING: LENGTH DIA 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-41-1 STATION AND OFFSET 205+80, 74' L. SB BL SURFACE ELEV. 732.3 Retaining Wall No. 41

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % ABR.	% C.B.	% F.S.	% SILT	% CLAY	L.L.	P.I.	M.C.	SOIL CLASS.
732.3	0													
732.0					Blacktop									
	2	1	16-17-9	16"	Ashpaltic concrete, sand and gravel, (fill), moist - medium dense	Visual classification-No tests performed								Fill
729.8					Brown silt and clay,little sand, some gravel with limestone fragments, moist - stiff	20	10	5	35	30	32	13	16	A-6a
	4	2	7-7-9	18"										
727.3					Brown sandy silt, trace gravel with limestone fragments, moist - stiff	8	4	5	45	38	29	10	16	A-4a
	6	3	5-5-4	10"										
724.8					Brown silt and clay with sand, gravel and limestone fragments, moist - stiff	Visual classification-No tests performed								A-6a
	8	4	4-5-7	11"										
	10				Brown silt and clay, little sand, little gravel with limestone fragments, moist - stiff	12	12	7	35	34	35	15	24	A-6a
	12	5	3-4-9	15"										
	14													
717.3					Brown weathered shale with limestone fragments, moist to dry - very stiff to hard	Visual classification-No tests performed								
	16	6	11-27-61	18"										
	18													
	20													
	22	7	45-75	10"	do do	Visual classification-No tests performed								
	24													
708.3					Brown and gray shale,calcareous,slightly tough,jointed(weathered in the top 12") (¼" to 3" pieces averaging 2") and gray limestone,crystalline,fossiliferous(1" to 2"pieces averaging 1½") 83%shale, 17% limestone									
	26	8	NXM	49%										
	28													
	30				Gray shale with brown weathered zones throughout,calcareous,moderately tough (¼" to 3" pieces averaging 2") and gray limestone,crystalline,fossiliferous(1" and 4½" pieces) 82% shale, 18% limestone									
700.3	32	9	NXM	67%										
	34				Boring completed									

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC AND OURSELVES, ALL REPORTS AND BORINGS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 650—L

THE R. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/5/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/5/64 CASING: LENGTH ____ DIA 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS ____ PROJECT Northeast Expressway HAM-71-0.93

BORING No. R-41-2 STATION AND OFFSET 207+65, 76' L. SB BL SURFACE ELEV. 747.2 Retaining Wall No. 41

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
747.2	0													
746.5		1	3	6"	Topsoil (0.5')	Visual classification-No tests performed								
744.7	2	2	7-9	12"	Brown clay, little sand, little gravel, with limestone fragments, dry-hard	14	7	3	34	42	42	22	12	A-7-6
742.2	4	3	7-16-11	15"	Brown silt and clay, little sand, little gravel with limestone fragments, moist - very stiff	12	9	5	41	33	34	14	14	A-6a
	6	4	5-5-7	18"	Brown silty clay, little sand, trace gravel with limestone fragments, moist - very stiff	2	11	6	39	42	38	17	14	A-6b
	8	5	7-9-12	12"	do do	Visual classification-No tests performed								A-6b
	10	6	7-8-11	12"	Brown silty clay, little sand, little gravel with limestone fragments, moist - very stiff	12	11	3	36	38	39	19	15	A-6b
	12													
	14													
	16	7	7-8-12	12"	Brown silty clay, little sand, trace gravel with limestone fragments, moist - very stiff	1	8	5	41	45	38	18	16	A-6b
	18													
	20													
	22	8	5-7-11	11"	Brown silty clay, little sand, trace gravel with limestone fragments, moist - stiff	2	6	6	44	42	37	17	18	A-6b
	24													
722.2														
	26	9	7-5-6	18"	Brown and gray clay, little sand, little gravel with limestone fragments, moist - medium stiff	20	5	5	31	39	44	23	28	A-7-6
	28													
	30													
	32	10	9-14-19	18"	Brown clay, trace sand, trace gravel with limestone fragments, moist - very stiff	4	2	2	35	57	48	26	20	A-7-6
	34													

AS A GENERAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—1

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/5/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/5/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-41-2 STATION AND OFFSET 207+65, 76' L. SR RL SURFACE ELEV. 747.2 Retaining Wall No. 40

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL CLASS
	34													
711.7	36													
		11	32-16-48	17"	Brown and gray weathered shale, moist-hard	Visual classification-No tests performed								
709.2	38													
	40				Brown and gray weathered shale, moderately tough with soft seams throughout the run (1" to 6" pieces averaging 3") and gray limestone, crystalline, fossiliferous, jointed in the bottom 18" of the run(1" to 7½" pieces averaging 3") 78% shale, 22% limestone									
	42	12	NXM	95%										
	44													
		13	NXM	63%	Gray and brown shale,calcareous, moderately tough with soft seams in the top half of the run (1" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous (1" to 4" pieces averaging 3") 83% shale,17% limestone									
	46													
699.2	48													
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

Boring completed

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. C38—15-59

THE E. C. NUTTING COMPANY

4130 AIRPORT ROAD
CINCINNATI 26, OHIO

REVISED
10/14/64-vb

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/3/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXW WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/4/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway NAM-71-0.93

BORING No. R-41-3 STATION AND OFFSET 209+12, 75' L, SB BL SURFACE ELEV. 758.5 Retaining Wall No. 41

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
758.5	0													
	2	1	6-11-12	10"	Brown and gray silty clay with rock fragments and wood (fill), moist - very stiff	Visual classification-No tests performed								Fill
756.0	4	2	6-9-9	11"	Brown and gray silty clay,trace sand, trace gravel with shale and limestone fragments moist - very stiff	6	5	4	37	48	38	18	11	A-6b
	6	3	7-6-4	8"	do do	Visual classification-No tests performed								A-6b
751.0	8	4	7-12-14	11"	Brown and gray silt and clay, trace sand, trace gravel with shale and limestone fragments moist - very stiff	1	3	4	48	44	36	14	8	A-6a
748.5	10													
	12	5	7-12-14	16"	Brown silty clay, trace sand,little gravel with shale and limestone fragments, moist - very stiff	10	4	4	40	42	36	17	15	A-6b
743.5	14													
	16	6	4-7-20	17"	Brown and gray clay,little sand,little gravel with shale and limestone fragments, moist - very stiff	12	7	5	32	44	42	20	16	A-7-6
738.5	18													
	20													
	22	7	4-4-7	15"	Brown silt and clay, trace sand,some gravel with shale and limestone fragments, moist - very stiff	29	5	4	33	29	33	15	14	A-6a
733.5	24													
	26	8	4-5-7	18"	Brown silty clay, trace sand,trace gravel with shale and limestone fragments moist - stiff	8	4	4	40	44	39	19	21	A-6b
731.0	28													
	30	9	5-7-8	12"	Brown and gray silt and clay,little sand, trace gravel moist - very stiff	3	12	6	40	39	35	15	16	A-6a
	32	10	4-10-6	16"	Brown and gray silt and clay,little sand with shale and limestone fragments moist - very stiff	0	8	6	43	43	35	15	16	A-6a
	34	11	5-7-9	8"	Brown silt and clay, trace sand,trace gravel with shale and limestone fragments moist - very stiff	9	0	1	46	44	36	15	20	A-6a

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

REVISED
10/14/63-vb

LOG OF BORING

DATE STARTED 8/3/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/4/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway NHM-71-0.93

BORING No. R-41-3 STATION AND OFFSET 209+12, 75' L. SB BL SURFACE ELEV. 758.5 Retaining Wall No. 41

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36	12	5-8-8	18"	Brown silt and clay trace sand, trace gravel with shale and limestone fragments,	Visual classification-No tests performed								A-6a
721.0	38				moist - very stiff									
		13	8-10-16	14"	Brown silty clay, little sand, little gravel with shale and limestone fragments,	14	10	5	36	35	37	17	14	A-6b
	40				moist - stiff									
	42	14	7-10-14	11"	Brown and gray silty clay, little sand, trace gravel with topsoil and limestone fragments, moist-stiff	2	6	4	42	46	40	18	16	A-6b
716.0														
	44	15	5-14-22	17"	Brown clay, trace sand, trace gravel, moist - very stiff	1	4	3	34	58	46	25	17	A-7-6
	46	16	14-28-60	14"	Brown clay, trace sand, trace gravel, moist - hard	6	2	2	38	52	42	22	15	A-7-6
711.0	48													
		17	10-40-30	16"	Brown weathered shale with limestone, moist - hard	Visual classification-No tests performed								
	50													
		18	27-30-55	18"	Brown and gray shale, moist - hard	Visual classification-No tests performed								
	52													
703.5	54													
		19	NXM	88%	Gray shale, calcareous, moderately tough (1" to 4" pieces averaging 2") and gray limestone, crystalline, fossiliferous, jointed (one 1" piece in the bottom 6" of the run, 96% shale, 4% limestone									
	56													
	58													
		20	NXM	97%	Gray shale, calcareous, tough (½" to 3½" pieces averaging 1½") and gray limestone, crystalline, fossiliferous (1½" to 4" pieces averaging 3") 53% shale, 47% limestone									
	60													
	62	21	NXM	85%	Gray shale, calcareous, tough (1" to 3" pieces averaging 2½") and gray limestone crystalline, fossiliferous (1½" to 4" pieces averaging 3") 68% shale, 32% limestone									
694.5	64													
	66				Boring completed									
	68													

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Form No. 530—

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/13/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE 730.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/14/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. A-41-4 STATION AND OFFSET 210+29.74'L, SB BL SURFACE ELEV. 755.9 Retaining Wall No. 41

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
755.0	0													
	2	1	4-5-4	16"	Brown and gray silty clay, little sand, little gravel (fill), moist-medium stiff	11	7	5	37	40	39	19	18	A-6b
	4	2	3-4-5	18"	do do	Visual classification-No test performed								A-6b
	6	3	3-6-9	11"	Brown and gray silty clay, trace sand some gravel (fill), moist - medium stiff	22	4	2	37	35	36	18	18	A-6b
	8													
	10	4	7-7-11	13"	do do	Visual classification-No tests performed								A-6b
	12	5	6-9-13	13"	Brown and gray silty clay and gravel, trace sand with limestone fragments, (fill), moist - stiff	40	2	2	30	26	37	17	14	A-6b
	14													
	16	6	7-6-8	18"	Brown and gray silty clay and gravel, trace sand with limestone fragments, (fill), moist - stiff	44	4	4	25	23	36	16	16	A-6b
	18													
735.0	20													
	22	7	10-10-24	18"	Brown and gray silt and clay, trace sand, trace gravel with limestone fragments (fill), moist - very stiff	7	5	2	52	34	33	13	11	A-6a
	24													
730.0	26	8	23-26-29	13"	Brown silty clay with brick fragments, (fill), moist - very stiff	Visual classification-No tests performed								Fill
	28													
725.0	30													
	32	9	6-10-12	16"	Gray clay, trace sand with organic matter (fill), moist, medium stiff	0	1	1	57	41	43	19	24	A-7-6
	34	10	6-9-11	0		No sample recovered								

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Form No. 530—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/13/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 730.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/14/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-41-4 STATION AND OFFSET 210+29,74 'L, SB BL SURFACE ELEV. 755.0 Retaining Wall No. 41

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SWTL CLASS
721.0	34													
719.0	36	S-1(Top)			Brown and gray clay, trace sand (fill), moist - medium stiff	0	3	2	49	46	46	19	24	A-7-6
		S-2(Bottom)			Brown clay, little sand, moist - stiff	0	4	6	40	50	52	30	22	A-7-6
	38	11	9-11-13	18"	Brown and gray clay, trace sand, moist - stiff	0	2	2	38	58	54	31	26	A-7-6
	40													
	42	12	53-17-21	18"	Brown and gray clay, trace sand, trace gravel, very moist - medium stiff	5	4	1	37	53	51	29	33	A-7-6
	44	13	19-26-31	16"	Brown clay, trace sand, moist - stiff	0	1	2	40	57	57	34	26	A-7-6
710.0	46				Gray and brown shale, calcareous, moderately tough, jointed in the bottom 6" of the run (1" to 2½" pieces averaging 1½") and gray limestone, crystalline, fossiliferous (½ to 6" pieces averaging 3½") 67% shale, 33% limestone									
	48	14	NXM	61%										
	50													
	52				Gray shale, calcareous, tough with fossiliferous zones in the bottom 18" of the run(1" to 3½" pieces averaging 2") and gray limestone, crystalline, fossiliferous (1½" to 3½" pieces averaging 2½") 80% shale, 20% limestone									
	54	15	NXM	75%										
700.0	56				Boring completed									
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 530

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/10/64 SAMPLER: TYPE Split Spoon 2"O.D. Core Barrel DIA. NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/12/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-41-5 STATION AND OFFSET 212+77, 75' L. SB BL SURFACE ELEV. 772.0 Retaining Wall No. 41

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
772.0	0													
769.5	2	1	6-12-20	14"	Brown and gray silty clay with brick fragments and cinders (fill), moist - stiff	Visual classification-No tests performed								Fill
	4	2	12-9-11	16"	Brown and gray silty clay, trace sand some gravel with shale fragments moist - stiff	22	3	2	38	35	39	17	16	A-6b
	6	3	9-9-9	16"	Brown and gray silty clay, trace sand, trace gravel with shale fragments moist - very stiff	4	4	4	41	47	39	19	15	A-6b
	8	4	9-13-11	18"	do do	Visual classification-No tests performed								A-6b
	10													
	12	5	9-33-20	9"	Brown silty clay and gravel, trace sand with limestone fragments moist-hard	54	5	3	21	17	36	16	20	A-6b
	14													
	16	6	5-6-10	13"	Brown and gray silty clay, trace sand, trace gravel with shale fragments, (moist - stiff	9	4	5	42	40	38	17	22	A-6b
	18													
752.0	20													
	22	7	88-30-42	14"	Brown and gray silty clay, trace sand, trace gravel with limestone fragments, moist - hard	4	1	2	50	43	37	16	14	A-6b
	24													
747.0														
745.0	26	8	150-110-100	11"	Brown weathered shale and limestone, moist - hard	Visual classification-No tests performed								
	28													
	30	9	NXM	50%	Sample 9 - Brown and gray weathered shale, slightly tough (1" to 3" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed in the top 6" of the run (1" to 4" pieces averaging 2½") 72% shale, 28% limestone									
	32													
	34	10	NXM	50%										

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS,

Form No. 580—16-58

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/10/64 SAMPLER: TYPE Split Spoon Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/12/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway NAH-71-8.93

BORING No. R-41-5 STATION AND OFFSET 212+17, 75' L, 88 BL SURFACE ELEV. 772.0 Retaining Wall No. 41

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SNTL CLASS
	34													
	36													
	38													
732.0	40	11	NXM	91%	Sample 10 - Brown and gray weathered shale, slightly tough (one 1½" piece) and gray limestone, crystalline, fossiliferous, jointed and iron oxide stained (1" to 3" pieces averaging 2") 53% shale, 47% limestone									
	42				Sample 11 - Gray and brown shale, calcareous, moderately tough (1" to 4" pieces averaging 2½") and gray limestone, crystalline, fossiliferous (1" to 4½" pieces averaging 3") 56% shale, 44% limestone									
	44													
	46													
	48													
	50				Boring completed									
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 830

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/14/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/14/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Retaining Wall No. 42

BORING No. R-42-1 STATION AND OFFSET 199+22, 72' Rt., NB BL SURFACE ELEV. 672.5

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
672.5	0													
670.5	2	1	6-7-7	16"	Cinders, (fill), dry - medium dense	Visual classification-No tests performed Fill								
	4	2	12-15-15	12"	Brown clay, trace sand with limestone fragments, moist - very stiff	0	4	2	39	55	45	21	16	A-7-6
667.5	6	3	21-37-64	15"	Brown weathered shale, moist - very stiff									
665.5	8				Brown weathered shale, slightly tough (1" to 4½" pieces averaging 2") and gray limestone, crystalline, fossilifferous (1½" to 3½" pieces averaging 2½") 80% shale, 20% limestone									
	10	R-1	NXM	87%										
	12				Gray shale, calcareous, tough with brown weathered zones in the top 16" and bottom 4" of the run (1" to 11" pieces averaging 6") and gray limestone, crystalline, fossiliferous, jointed (two 1" pieces) 97% shale, 3% limestone									
	14													
	16	R-2	NXM	100%										
655.5	18				Boring completed									
	20													
	22													
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 530—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

* Water used in drilling from elev.643.9

DATE STARTED 1-7-65 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE * CLIENT: City of Cincinnati,Ohio

DATE COMPLETED 1-7-65 CASING: LENGTH ____ DIA. None AFTER 24 HOURS 627.4 PROJECT: Northeast Expressway HAM-71-0.93 Retaining Wall 47

BORING No. R-47-1 STATION AND OFFSET 21+15,7'L. S.E.,Van Meter St.B.L. SURFACE ELEV. 649.4

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
649.4	0													
648.9		1	2	4"	0.3Topsoil and gravel(fill)moist- soft	No test performed - Insufficient Sample								Fill
	2	2	3-3	12"	Brown clay, trace sand,moist - medium stiff	0	0	2	45	53	50	26	24	A-7-6
645.9	4	S-1		12"	do do	0	1	2	40	57	52	28	21	A-7-6
	6	3	6-12-23	12"	Brown and gray clay,trace limestone fragments,trace sand, moist - very stiff	8	4	2	31	55	50	26	14	A-7-6
	8	4	28-50	10"	Brown and gray clay and limestone fragments,trace sand, moist - very stiff	38	6	2	20	34	46	24	18	A-7-6
640.4	10	5	40-55	8"	Brown weathered shale and thinly bedded limestone, moist - hard	Visual classification-No tests performed								
637.4	12													
	14	R-1	NXM	70%	Gray shale,calcareous, moderately tough with brown weathered zones throughout the run(½"to 3" pieces averaging 2½")and gray limestone crystalline fossiliferous, jointed and iron oxide strained(1"to 3½" pieces averaging 2")80% shale,20% limestone									
	16													
	18													
	20	R-2	NXM	75%	Gray shale,calcareous, moderately tough with brown weathered zones throughout the run (½"to 3" pieces averaging 2") and gray limestone crystalline fossiliferous, jointed and iron oxide stained (½"to4"pieces averaging 2") 80%shale, 20% limestone									
627.4	22													
	24				Boring Completed									
	26													
	28													
	30													
	32													
	34													

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Form No. 530—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

* Water used in drilling from elev.624.0

DATE STARTED 1-8-65 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE * CLIENT: City of Cincinnati,Ohio

DATE COMPLETED 1-8-65 CASING: LENGTH None DIA. None AFTER 24 HOURS 608.0 PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-47-2 STATION AND OFFSET 22+90.5,11'L. SE.Van Meter St.BL SURFACE ELEV. 633.0' Retaining Wall 47

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
633.0	0													
632.5		1	3	5"	0.5' topsoil(fill),motar - soft	No test performed								Fill
	2	2	3-5	6"	Brown clay,little gravel, trace sand, (fill) moist - medium stiff	13	4	4	33	46	47	24	22	A-7-6
630.0														
	4	S-1		14"	Brown and gray clay,trace limestone(fill) trace sand, moist - stiff	4	2	3	33	58	48	25	20	A-7-6
	6	3	4-5-6	16"	do do	3	4	5	40	48	43	21	21	A-7-6
	8													
		4	5-7-6	15"	Brown and gray clay,little limestone fragments,trace sand, moist - stiff	18	5	4	31	42	42	21	13	A-7-6
	10													
	12	5	5-6-8	18"	Brown and gray clay,trace limestone fragments,trace sand, moist - stiff	8	3	3	37	49	42	20	22	A-7-6
	14	6	3-6-7	12"	do do	4	4	3	36	53	50	28	19	A-7-6
	16	7	12-16-38	8"	Brown and gray clay,trace limestone fragments,trace sand, moist- very stiff	4	1	2	37	56	46	23	24	A-7-6
	18	8	30-58	8"	do do	7	2	2	30	59	52	28	17	A-7-6
613.0	20													
	22	R-1	NXM	25%	Gray shale, calcareous, slightly tough (½"to 1½"pieces averaging 1") 100% shale									
	24													
	26	R-2	NXM	50%	Gray shale,calcareous, slightly to moderately tough(½"to 2"pieces averaging 1") and gray limestone crystalline fossiliferous jointed at the top and bottom of the run(½"to 4"pieces averaging 2") 85% shale, 15% limestone									
	28													
603.0	30													
	32				Boring Completed									
	34													

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Form No. 530—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

* Water used in drilling from elev.661.4

LOG OF BORING

DATE STARTED 1-12-65 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE * CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 1-12-65 CASING: LENGTH ____ DIA. None AFTER 24 HOURS 655.9 PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-48-1 STATION AND OFFSET 21+33,60'R. SE,Van Meter St. BL. SURFACE ELEV. 665.4 Retaining Wall 48

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
665.4	0													
663.4	2	1	4-3-5	10"	Topsoil and bfown clay with limestone fragments,(fill) moist - soft	Visual classification-No tests performed								Fill
660.4	4	2	10-12-16	14"	Brown clay, trace sand, moist - very stiff	0	2	2	38	58	46	23	14	A-7-6
	6	3	35-58	12"	Brown and gray weathered shale with thinly bedded limestone, moist - hard	Visual classification-No tests performed								Fill
	8	4	-100-	4"	do do	Visual classification-No tests performed								Fill
655.4	10													
	12				Gray shale, calcareous, moderately tough to tough(1½" to 6" pieces averaging 4½") 100% shale									
	14	R-1	NXM	95%										
	16				Gray shale, calcareous, moderately tough to tough (1"to 3"pieces averaging 2½") and gray limestone crystalline fossiliferous jointed and iron oxide stained in the top 8" of the run (1-3/4" to 4½"pieces averaging 3") 78% shale, 22% limestone									
	18													
645.6	20	R-2	NXM	93%										
	22				Boring Completed									
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 630—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

* Water used in drilling from elev.642.7

LOG OF BORING

DATE STARTED 1-11-65 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE * CLIENT: City of Cincinnati,Ohio

DATE COMPLETED 1-11-65 CASING: LENGTH ____ DIA. None AFTER 24 HOURS 634.2 PROJECT: Northeast Expressway HAM-71-0.93 Retaining Wall 48

BORING No. R-48-2 STATION AND OFFSET 22+46,45'Rt.,SE.Van Meter St.B.L. SURFACE ELEV. 649.2

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
649.2	0													
647.2	2	1	4-6-6	12"	Brown clay,little limestone fragments, trace sand,with topsoil,(fill) moist - medium stiff	18	6	4	35	37	45	22	24	A-7-6
644.2	4	2	7-10-13	15"	Brown and gray clay,some limestone fragments,trace sand, moist - stiff	24	3	3	30	40	46	22	18	A-7-6
641.2	6	3	16-38-50	13"	Gray and brown weathered shale and thinly bedded limestone, moist - hard									
	8													
	10	R-1	NXM	89%	Gray and brown shale,calcareous moderately tough to soft,weathered in the bottom half of the run(¼"to 2½"pieces averaging 1")and gray limestone,crystalline fossiliferous,jointed and iron oxide stained (2½"to 3½"pieces averaging 3")77% shale 23% limestone.									
	12													
	14	R-2	NXM	83%	Gray shale,calcareous,moderately tough with brown weathered zones throughout the run (¼"to 3"pieces averaging 2")and gray limestone crystalline,fossiliferous jointed and iron oxide stained(¼"to 4" pieces averaging 2") 80% shale, 20% limestone.									
	16													
	18	R-3	NXM	80%	Gray shale calcareous,moderately tough to tough with brown weathered zones in the bottom 12"of the run (¼"to 3-3/4" pieces averaging 1½")and gray limestone crystalline,fossilfferous jointed and iron oxide stained in the bottom 12"of the run(1"to 9"pieces averaging3")63% shale, 37% limestone									
	20													
627.2	22													
	24													
	26													
	28													
	30													
	32													
	34													

Boring Completed

Remark: Lost water @ 633.2

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Form No. 630—1

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

*Water used in drilling from 769.9

DATE STARTED 9/17/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE * CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/21/64 CASING: LENGTH ____ DIA. 3.5"I.D. AFTER 41 days dry @ 14' PROJECT: Northeast Expressway HAM-71-0.93

BORING No. WERC-A STATION AND OFFSET 22+80, 148'L. SB Reading Ka. BL SURFACE ELEV. 769.9 Proposed Cellular Retaining Wal

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % ABD.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
769.9	0													
	2	1	1-2-3	7"	Brown silty clay with topsoil and limestone and brick fragments (fill), dry to moist - medium stiff to stiff	Visual classification-No tests performed								Fill
		2	4-9-8	6"	do do	Visual classification-No tests performed								Fill
	4	3	9-11-15	7"	do do	Visual classification-No tests performed								Fill
764.4	6	3-1		4"	Brown silt and clay, little sand, little gravel with topsoil and shale and rock fragments (fill), moist - stiff	Visual classification-No tests performed								A-6a
		4	6-7-11	10"	do do	10	6	6	39	39	37	15	13	A-6a
761.2	8	4-2		2"	do do	Visual classification-No tests performed								A-6a
	10	5	12-12-10	7"	Brown clay, trace sand, some gravel with rock fragments (probable fill), moist-very stiff	31	4	3	29	33	41	18	3	A-7-6
758.2	12	6	7-9-11	8"	Brown clay, trace sand, some gravel with rock fragments (probable fill), moist-stiff	24	2	3	33	38	43	18	16	A-7-6
757.4					Interbedded clay and limestone layers									
	14	7	27-33-47	8"	Brown clayey limestone fragments, little sand, moist-stiff	52	10	4	16	18	35	20	7	A-2-6
755.4		8	26-50	5"	do do	53	9	4	18	16	34	16	12	A-2-6
753.4	16				Interbedded clay and limestone layers									
752.9		9	36-50	4"	Brown clayey limestone fragments, some sand, moist-stiff	56	19	4	10	11	27	11	14	A-2-6
750.9	18				Interbedded clay and limestone layers									
749.9	20	10	43-37	5"	Brown clay, trace sand, some shale and limestone fragments, moist-stiff	25	3	3	27	42	41	19	14	A-7-6
	22				Interbedded clay and limestone layers									
	24													
	26													
741.9	28													
740.9		11	63-92-50	10"	Brown weathered shale, moist - hard									
739.9	30				Interbedded shale and limestone layers									
739.4		12	69-50	4"	Brown weathered shale, moist - hard									
	32													
		13	5-50	1"	Interbedded shale and limestone layers									
	34													

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Form No. 530—

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

*Water used in drilling from elevation 769.9

DATE STARTED 9/17/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE * CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/21/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER 41 days dry @14' PROJECT: Northeast Expressway HAM-71-0.93

BORING No. WKRC-A STATION AND OFFSET 22+80.148'L. SB Reading Rd. BL SURFACE ELEV. 769.9 Proposed Cellular Retaining Wall

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
734.9	36	R-1	NXM	75%	Brown weathered shale, slightly tough(½" to 3½"pieces averaging 2") and gray limestone, crystalline, fossiliferous, jointed midway in the run(1" to 2½"pieces averaging 2") 69% shale, 31% limestone									
	38													
	40				Brown weathered shale, slightly tough(1" to 2½" pieces averaging 2") and gray limestone, crystalline, fossiliferous(1½" to 3½" pieces averaging 2") 64% shale, 36% limestone									
	42	R-2	NXM	75%										
	44				Brown weathered shale, slightly tough, (1" to 3½" pieces averaging 2") and gray limestone, crystalline, fossiliferous 73% shale, 27% limestone									
	46	R-3	NXM	92%										
	48													
721.4	50				Boring completed									
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 630—1

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

*Water used in drilling from elevation 755.3

DATE STARTED 9/23/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE * CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/24/64 CASING: LENGTH 5.0' DIA. 3.5"I.D. AFTER ____ HOURS ____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. WKRC-B STATION AND OFFSET 22+80, 126.5' L. SB Reading Rd. SURFACE ELEV. 755.3 Proposed Cellular Retaining Wall

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
755.3	0													
753.8	2	1	5-6-11	6"	Brown clay, little sand, some gravel with rock and brick fragments(fill), moist, stiff	21	7	6	33	33	45	19	12	A-7-6
752.3	4	2	6-9-10	10"	Brown silt and clay, some sand with topsoil and limestone fragments(fill), moist - stiff	0	18	8	37	37	34	14	7	A-6a
750.8	6	3	7-11-19	7"	Brown clay and limestone fragments, trace sand with topsoil (fill), moist very stiff	50	4	3	19	24	42	19	12	A-7-6
748.8	8	4	27-50	2"	Interbedded clay and limestone layers Brown weathered shale and limestone fragments, moist - very stiff to hard									
746.8	10	5	21-37-50	8"	Interbedded brown shale and limestone layers Brown weathered shale, moist -very stiff									
744.8	12	6	41-50	3"	Interbedded brown shale and limestone layers Brown weathered shale,moist-very stiff to hard									
742.3	14	7	47-50	5"	Interbedded brown shale and limestone layers Brown weathered shale,moist-very stiff to hard									
739.3	16				Interbedded brown shale and limestone layers									
	18	R-1	NXM	50%	Brown highly weathered shale, soft(¼"to 2"pieces averaging 1") and gray limestone, crystalline,fossiliferous,jointed(½"to 3"pieces averaging 2")73% shale,27%limestone									
	20	R-2	NXM	64%	Brown highly weathered shale,soft(1"to 3" pieces averaging 2") and gray limestone, crystalline,fossiliferous,jointed and iron oxide stained (1½"to 3½"pieces averaging 2") 82% shale, 18% limestone									
	22													
	24	R-3	NXM	40%	Brown weathered shale,slightly tough(1½" to 3"pieces averaging 2")and gray limestone, crystalline,fossiliferous,jointed at the bottom of the run (1½"to 4"pieces averaging 2½") 82% shale, 18% limestone									
	26													
	28	R-4	NXM	80%	Brown weathered shale, slightly tough (1" to 5" pieces averaging 3") and gray limestone, crystalline,fossiliferous(1½" to 6" pieces averaging 4")50% shale, 50% limestone									
724.3	30													
	32				Boring completed									
	34													

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Form No. 630—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/6/64 SAMPLER: TYPE Split Spoon & Barrel DIA. 2"O.D.& N.X.M. WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/6/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway NAM-71-0.93

BORING No. WERC-C STATION AND OFFSET 23+20, 171' L, SB Reading Rd. SURFACE ELEV. 775.8 Proposed Cellular Retaining Wall

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI	W.C.	SOIL CLASS.
775.6	0				0.5'Blacktop									
775.3	2	1	10-12-10	6"	Brown silt and clay, little sand, some gravel (fill), dry - hard	29	8	4	30	29	35	15	9	A-6a
772.3	4	2A 2B	7-7-10	8"	do do Brown silt and clay, little sand, some gravel, dry - very stiff	Visual classification-No tests performed								A-6a
	6	S-1	-	12"	Brown silt, clay and limestone fragments	25	8	6	36	25	32	12	9	A-6a
	8	3	7-9-14		Brown silt and clay, trace sand, little limestone fragments, dry - hard	Visual classification-No tests performed								A-6a
	10	S-2		12"	Brown silt, clay and limestone fragments	13	5	4	41	37	36	15	14	A-6a
	12	4	10-15-47	12"	Brown silt and clay, trace sand, limestone fragments, dry - hard	Visual classification-No tests performed								A-6a
762.8						3	0	5	51	41	36	15	12	A-6a
761.8	14	5	120	4"	Shale and limestone fragments, moist-hard									
	16	R-1	NXM	87%	Brown weathered shale, slightly tough (1" to 4½" pieces averaging 2") and gray limestone, crystalline, fossiliferous, jointed midway in the run (1" to 7½" pieces averaging 3½") 60% shale, 40% limestone									
	18													
	20	R-2	NXM	48%	Brown weathered shale, slightly tough (½" to 3½" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed (1" to 4½" pieces averaging 3") 63% shale, 37% limestone									
	22													
	24													
	26	R-3	NXM	83%	Brown weathered shale, slightly tough (1" to 4½" pieces averaging 3") and gray limestone, crystalline, fossiliferous, shaly (1½" to 4½" pieces averaging 3") 70% shale, 30% limestone									
	28													
746.8	30				Boring Completed									
	32													
	34													

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Form No. 530—L

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

* Water used in drilling from 768.8'

DATE STARTED 9-25-64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE * CLIENT: City of Cincinnati,Ohio

DATE COMPLETED 9-29-64 CASING: LENGTH ____ DIA. 3.5"I.D. AFTER 41 days Dry @ 22' PROJECT: Northeast Expressway HAM-71-0.93

BORING No WRRC-D STATION AND OFFSET 23+20,146'L. SB Reading Rd. SURFACE ELEV. 768.8 Proposed Cellular Retaining Wall

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
768.8	0													
	2	1	4-9-13	4"	Brown silty clay,toposil and brick fragments,(fill), dry - stiff	Visual classification-No tests performed								Fill
	4	2	11-8-16	8"	Brown silty clay and topsoil with rock and brick fragments (fill),moist -stiff to very stiff	Visual classification-No tests performed								Fill
763.8	6	3	9-16-13	5"	do do Brown clay and limestone fragments,trace sand with brick (fill),moist-stiff	Visual classification-No tests performed								Fill
762.3		4	18-13-16	10"		46	2	1	21	30	54	30	21	A-7-6
761.8	8	5	29-50	5"	Brown weathered shale,moist - very stiff									
760.3		6	33-50	6"	Interbedded shale and limestone layers Brown weathered shale, moist - hard									
759.8	10				Interbedded shale and limestone layers									
757.3	12													
	14	7	27-36-59	11"	Brown weathered shale, moist - hard									
754.8					Interbedded shale and limestone layers									
753.8					Brown weathered shale, moist - hard									
751.3	16	8	43-50	5"	Interbedded shale and limestone layers									
750.8	18	9	62-50	6"	Brown weathered shale, moist - hard									
	20													
	22	10	50	1"	Interbedded shale and limestone layers									
746.8														
	24	R-1	NXM	84%	Brown highly weathered shale,slightly tough(¼" and 1" pieces) and gray limestone, crystalline, fossiliferous(1"to 2½" pieces averaging 2")50% shale,50%limestone									
	26	R-2	NXM	50%	Brown highly weathered shale,slightly tough (¼"and 1½"pieces) and gray limestone, crystalline,fossiliferous, broken(½"to 2" pieces averaging 1")85% shale,15%limestone									
	28	R-3	NXM	83%	Brown weathered shale,moderately tough (1"to4"pieces averaging 2") and gray limestone, crystalline, fossiliferous, jointed at the bottom of the run(1"to 4½" pieces averaging 3") 65% shale, 35% limestone.									
	30													
736.8	32													
	34				Boring Completed									

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Form No. 530-[illegible]59

THE H. C. NUTTING COMPANY

4130 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

*Water used in drilling from elevation 756.3

LOG OF BORING

DATE STARTED 10/1/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE * CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/1/64 CASING: LENGTH _____ DIA. 3.5"I.D. AFTER 41 days Dry @27' PROJECT: Northeast Expressway HAM-71-0.93

BORING No. WKRC-E STATION AND OFFSET 23+20, 126'L. SB Reading Rd. SURFACE ELEV. 756.3 Proposed Cellular Retaining Wall

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
756.3	0													
754.8		1	2-3-3	5"	Dark brown topsoil and brick fragments, (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	2	2	8-5-5	2"	Brown clay and topsoil with limestone fragments (fill), moist - stiff	Visual classification-No tests performed								Fill
751.8	4	3	6-13-17	4"	do do	Visual classification-No tests performed								Fill
749.8	6				Interbedded clay and limestone layers									
	8	4	39-23-31	13"	Brown weathered shale, moist-very stiff									
747.3		5	36-51	10"	do do									
746.3	10				Interbedded shale and limestone layers									
745.3		6	41-65	6"	Brown weathered shale, moist - hard									
744.6					Interbedded shale and limestone layers									
744.3	12	7	46-50	5"	Brown weathered shale, moist - hard									
	14				Interbedded shale and limestone layers									
		8	50	2"										
740.3	16				Brown weathered shale, moist - hard									
739.8		9	73											
738.3	18				Interbedded shale and limestone layers									
	20	R-1	NXM	66%	Brown weathered shale, slightly tough (1" to 3" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed (1" to 3½" pieces averaging 2½") 46% shale, 54% limestone									
	22	R-2	NXM	83%	Brown weathered shale, moderately tough (1" to 4½" pieces averaging 3") and gray limestone, crystalline, fossiliferous, jointed at the top and bottom of the run (1" to 2½" pieces averaging 2") 67% shale, 33% limestone									
	24													
	26													
728.3	28	R-3	NXM	75%	Brown weathered shale, moderately tough (1" to 4½" pieces averaging 2") and gray limestone, crystalline, fossiliferous, jointed, (1" to 3" pieces averaging 2") 65% shale, 35% limestone									
	30													
	32				Boring completed									
	34													

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Form No. 530—1959

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 3/20/65 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE 503.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 3/21/65 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Auger AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. LP-1 STATION AND OFFSET 127+12,39.5'Rt. NB BL Tunnel bet. 3rd and 5th Sts. South Portal SURFACE ELEV. 526.7 Lytle Park Tunnel

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
526.7	0													
525.2	2	1	1-2-2		Topsoil, clay and grass (fill), wet - soft	Visual classification-No tests performed								
521.7	4	2	6-11-8		Brick (fill)	Visual classification-No tests performed								
	6	3	2-2-3		Brown sandy silt, little gravel, very moist - soft	17	9	18	46	10		NP	24	A-4a
516.7	8	4	1-1-1		Brown sandy silt and gravel, wet -soft	40	13	9	31	7	24	4	18	A-4a
	10	5	2-7-8		Brown sandy gravel, trace of silt, moist - medium dense	74	12	4	- 10 -				6	A-1-a
514.2	12													
	14	6	10-12-15		Brown gravelly sand, little silt, moist - medium dense	52	24	8	- 16 -				6	A-1-b
510.7	16	7	21-15		do do	21	54	10	- 15 -				5	A-1-b
509.2	18	8	12		Brown silt, some sand, moist - medium dense	0	3	26	57	14		NP	22	A-4b
	20	9	13-13-13		Brown gravelly sand, little silt, moist - medium dense	21	39	25	- 15 -				6	A-1-b
	22	10	7-11-8		Brown gravelly sand, trace silt, wet - medium dense	32	54	7	- 7 -				12	A-1-b
501.7	24													
500.2	26	11	7-8-9		Brown silt and clay, trace sand(varved) moist - stiff	0	1	0	43	56	37	15	25	A-6a
	28	S-1			Gray silt, trace sand (varved), moist- medium stiff	0	1	1	56	42	28	8	14	A-4b
	30	12	5-7-7		Gray silt, trace sand, very moist- medium stiff	0	0	2	66	32	29	7	26	A-4b
	32	13	5-6-7		Gray silt with sand seams, moist - medium stiff	0	1	2	58	39	28	7	19	A-4b
	34													

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Form No. 530—16

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

Split Spoon & 2"O.D.S
Core Barrel

DATE STARTED 3/20/65 SAMPLER: TYPE Core Barrel DIA. HXM WATER ELEV. IMMEDIATE 503.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 3/21/65 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT Northeast Expressway HAM-71-0.93

BORING No. LP-1 STATION AND OFFSET 127+12,39.5'Rt. NB BL Tunnel bet 3rd and 5th Sts. South Portal SURFACE ELEV. 526.7 Lytle Park Tunnel

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
	34													
	36	S-2			Brown silt with fine sand lenses, moist - loose	0	0	14	66	20	23	4	26	A-4b
	38	14	3-4-5		Gray silt, little sand, wet - loose	0	0	12	81	7		NP	29	A-4b
	40													
	42	15	3-5-5		do do	0	0	17	60	23	19	2	25	A-4b
	44													
479.7	46	S-3			Gray silt with clay lenses, trace of sand, wet - loose	0	1	2	77	20		NP	32	A-4b
	48	16	3-3-4		Gray sandy silt, wet - loose	0	2	60	20	18		NP	24	A-4a
	50													
	52	17	3-4-5		do do	0	2	48	26	24	20	5	24	A-4a
	54													
471.7														
469.7	56	S-4			Gray silt and clay with organics, moist - medium stiff	0	1	7	52	40	32	12	28	A-6a
	58	18	3-4-5		Gray sandy silt, very moist - medium medium stiff	0	1	36	35	28	24	7	27	A-4a
466.7	60													
	62	19	5-6-8		Gray coarse and fine sand, little silt, trace gravel with thin clay lenses, wet - medium dense	1	5	80	-14	-			2	A-3a
	64													
461.7														
	66	S-5			Gray sandy silt with fine sand lenses, with trace of organics, moist - medium stiff	0	1	21	49	29	31	6	22	A-4a
	68													

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Form No. 530—16.5

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 3/20/65 SAMPLER: TYP Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 503.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 3/21/65 CASING: LENGTH _____ DIA. 8.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Lytle Park Tunnel

BORING No. LP-1 STATION AND OFFSET 127+12, 39.5'Rt. NB BL Tunnel be SURFACE ELEV. 526.7

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	3rd and 5th Sts., South Portal DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	ENTL. CLASS
	68	20	3-5-8		Gray sandy silt, moist - medium stiff	0	1	16	48	35	22	6	17	A-4a
456.7	70													
	62	21	4-6-8		Gray silt and clay, little sand, moist - stiff	0	0	15	48	37	27	11	17	A-6a
	74													
449.7	76	S-6			Greenish gray silt and clay, little sand, trace gravel, moist - medium stiff	1	2	16	44	37	27	11	20	A-6a
	78	22	5-6-9		Gray sandy silt, trace gravel, moist-stiff	1	2	16	48	33	26	9	18	A-4a
	80													
	82	23	5-6-8		Gray sandy silt, moist - stiff	0	2	21	43	34	26	10	18	A-4a
	84													
	86	S-7	(Top)		Greenish gray sandy silt,moist-stiff	0	1	16	48	35	26	10	19	A-4a
			(Bottom)		Greenish gray sandy silt,moist-medium stiff	0	1	30	40	29	21	6	18	A-4a
	88	27	7-7-7		Gray sandy silt, moist - stiff	0	2	33	47	18	22	16	17	A-4a
436.7	90													
	92	25	7-7-9		Gray silt, little sand, moist - medium stiff	0	1	15	53	31	27	10	20	A-4b
	94													
431.7														
	96	S-8			Greenish gray sandy silt,moist - stiff	0	1	34	37	28	23	8	16	A-4a
429.7														
	98	26	8-9-12		Gray coarse and fine sand, some silt, moist - medium dense	0	33	32	11	24	21	5	18	A-3a
426.7	100													
	102	27	8-8-10		Gray sandy silt, moist - stiff	0	2	50	30	18	21	4	19	A-4a

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Form No. 530—16

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 3/20/65 SAMPLER: TYPE Split Spoon & Core Barrel DIA. NXM WATER ELEV. IMMEDIATE 503.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 3/21/65 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway NAM-71-0.93

BORING No. LP-1 STATION AND OFFSET 127+12,39.5'Rt. NB BL Tunnel SURFACE ELEV. 526.7 Lytle Park Tunnel

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
	102				bet. 3rd and 5th Sts.,South Portal									
	104													
421.7														
	106	28	15-18-24		Brownish gray gravelly sand, trace of silt, wet - dense	23	33	36	- 8 -				13	A-1-b
	108													
416.7	110													
	112	29	21-27-39		Grayish brown silt, gravel and rock fragments, moist - very dense	52	0	2	30	16	22	5	9	A-4a
	114													
411.7														
	116	30	25-31-40		Brown gravelly sand and rock fragments, trace of silt, moist - very dense	20	60	15	- 5 -				13	A-1-b
	118													
	120													
	122	31	30-52-41		Brown gravelly sand and rock fragments, trace silt, wet - very dense	19	54	17	- 10 -				11	A-1-b
402.7	124													
	126	R-1	NXM	75%	Gray shale, calcareous, moderately tough to tough (¼" to 3" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed and broken in the top 12" (1" to 6" pieces averaging 3") 60% shale, 40% limestone									
	128													
397.7														
	130				Boring completed									
	132													
	134													
	136													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 3/18/65 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 499.3 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 3/19/65 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. LP-2 STATION AND OFFSET 125+44,11.5'Rt. SB BL Tunnel SURFACE ELEV. 529.3 Lytle Park Tunnel

bet. 3rd and 5th Sts. South Portal

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
529.3	0				Blacktop and concrete									
528.6														
527.6	2	1	8-6		Brown sandy gravel, little silt, moist - medium dense (fill)	47	24	13	- 16	-			5	A-1-a
		2	4		Brown silt, little sand, moist - medium stiff	0	0	11	69	20	26	5	22	A-4b
524.3	4													
	6	3	6-7-8		Brown gravelly sand, some silt, moist - medium dense	57	13	7	- 23	-			7	A-1-b
521.8	8													
		4	7-7-8		Brown sandy gravel, little silt, moist - medium dense	Visual classification-No tests performed								A-1-a
	10													
		5	9-9-9		do do	65	18	5	- 12	-			5	A-1-a
	12													
	14	6	8-9-10		do do	Visual classification-No tests performed								A-1-a
	16	7	9-10-8		Brown sandy gravel, trace silt, moist - medium dense	59	29	5	- 7	-			4	A-1-a
511.8	18													
		8	10-10-11		Brown gravelly sand, trace silt, moist - medium dense	48	38	7	- 7	-			4	A-1-b
509.3	20													
		9	2-3-3		Brown gravelly sand, trace gravel, moist - loose	49	40	6	- 5	-			5	A-1-b
	22													
	24													
	26	10	1-2-3		do do	36	40	13	- 11	-			8	A-1-b
	28													
499.3	30													
497.8		11	6-9-9		Gray silty clay (varved), moist - medium stiff	0	0	0	37	63	37	16	22	A-6b
	32													
		S-1			Gray silt and clay with silt lenses, (varved) moist - stiff	0	0	2	33	65	34	15	25	A-6a
	34													

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Form No. 530—1658

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 3/18/65 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 499.3 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 3/19/65 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. LP-2 STATION AND OFFSET 125+44, 11.5'Rt., SB BL Tunnel SURFACE ELEV. 529.3 Lytle Park Tunnel

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL. CLASS
	34				between 3rd and 5th Sts., South Portal									
496.3		12	4-6-9		Gray silt and clay, trace sand, trace gravel(varved), moist - medium stiff	1	2	2	36	59	33	13	26	A-6a
	36	13	4-6-8		Gray sandy silt (varved), moist -stiff	0	2	51	37	10	25	6	20	A-4a
	38													
489.3	40													
		S-2			Gray with brown silt and clay with silt lenses, moist - medium stiff	0	0	7	43	50	34	13	23	A-6a
487.3	42													
		14	4-6-12		Gray silt, some sand, wet - medium stiff	0	1	20	61	18		NP	27	A-4b
	44													
	46	15	3-7-12		Gray silt, little sand, with clay seams, wet - medium stiff	0	0	14	61	25	20	2	26	A-4b
	48													
	50													
		S-3			Gray silt, trace of sand, moist - medium stiff	0	2	2	69	27	34	7	28	A-4b
477.3	52													
		16	4-6-8		Gray sandy silt, trace of gravel, some organic, moist - medium stiff	6	9	22	30	33	27	8	27	A-4a
	54													
	56	17	4-6-8		do do	3	9	19	37	32	27	7	27	A-4a
	58													
	60													
		S-4			Gray sandy silt, moist - medium stiff	0	0	26	40	34	24	7	25	A-4a
467.3	62													
		18	3-4-5		Gray silt and clay, little sand, moist- medium stiff	0	2	10	52	36	31	11	25	A-6a
	64													
	66	19	3-3-5		do do	0	0	15	46	39	31	11	26	A-6a
	68													

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 3/18/65 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 499.3 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 3/19/65 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. LP-2 STATION AND OFFSET 125+44, 11.5'Rt.,SB BL Tunnel SURFACE ELEV. 529.3 Lytle Park Tunnel

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL. CLASS.
	68				bet. 3rd and 5th Sts. South Portal									
459.3	70													
457.3	72	S-5			Gray sandy silt with fine sand seams, moist - medium stiff	0	1	19	47	33	28	9	28	A-4a
	74	20	3-4-5		Gray silt, little sand, moist - medium stiff	0	1	13	50	36	27	10	22	A-4b
454.3	76	21	3-5-7		Gray sandy silt, moist - medium stiff	0	1	14	49	36	24	9	16	A-4a
	78													
	80													
	82	S-6			Greenish gray sandy silt, moist - medium stiff	0	2	18	44	36	26	10	19	A-4a
	84	22	3-5-7		Gray sandy silt, trace gravel, moist - medium stiff	1	0	27	44	28	22	7	17	A-4a
	86	23	3-4-6		do do	1	1	23	46	29	23	7	18	A-4a
	88													
439.3	90													
437.3	92	S-7			Greenish gray silt, trace sand, trace gravel, moist - stiff	1	0	5	66	28	24	8	16	A-4b
	94	24	5-8-11		Brown silt and clay, little sand, trace gravel, moist - stiff	5	2	12	42	39	31	15	19	A-6a
434.3	96	25	5-9-12		Gray silty clay, little sand, trace gravel, moist - stiff	1	1	11	44	43	32	16	19	A-6b
	98													
429.3	100													
	102	S-8			Greenish gray sandy silt, some gravel, moist - stiff	0	1	30	43	26	27	9	19	A-4a

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Form No. 530—16.59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 3/18/65 SAMPLER: TYPE Split Spoon& Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 499.3 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 3/19/65 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway RAM-71-0.93

BORING No. LP-2 STATION AND OFFSET 125+44, 11.5'Rt., SB BL Tunnel SURFACE ELEV. 529.3 Lytle Park Tunnel

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
					bet. 3rd and 5th Sts., South Portal	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	102													
		26	6-8-11		Gray sandy silt, moist - stiff	0	6	26	46	22	28	9	20	A-4a
	104													
	106	27	5-9-13		do do	0	1	31	44	24	27	9	19	A-4a
	108													
419.3	110													
		28	14-28-24		Grayish brown gravelly sand and rock fragments, trace of silt and organics, wet - dense	7	56	29	- 8 -				32	A-1-b
	112													
	114													
	116	29	8-16-20		Grayish brown gravelly sand and rock fragments, trace of silt and organics, wet - medium dense	28	21	42	- 9 -				22	A-1-b
	118													
	120													
		30	81-102		Grayish brown sand, gravel and rock fragments, little silt, moist - very dense	50	19	19	- 12 -				7	A-1-b
	122													
	124													
404.3														
	126				Gray shale, calcareous, moderately									
		R-1	NXM	73%	tough to tough (½" to 3" pieces averaging 2") and gray limestone, crystalline,									
	128				fossiliferous(½" to 6" pieces averaging									
399.3	130				3") 70% shale, 30% limestone									
	132				Boring completed									
	134													
	136													

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THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 3/15/65 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 510.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 3/18/65 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. LP-3 STATION AND OFFSET 135+58, 9' L. NB BL Tunnel bet. SURFACE ELEV. 535.7 Lytle Park Tunnel

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
535.7	0				3rd and 5th Sts., North Portal									
	2	1	8-9-6		Brick, wood and cinders, rubble fill	Visual classification-No tests performed								Fill
	4													
	6	2	2-3-3		do do	Visual classification-No tests performed								Fill
	8													
525.7	10													
	12	3	8-10-12		Brown sandy gravel, little silt, moist - medium dense	50	22	17	- 11 -				4	A-1-a
523.2														
	14	4	10-15-25		Brown gravelly sand, trace of silt, moist - dense	44	37	14	- 5 -				2	A-1-b
	16	5	10-20-26		do do	49	28	18	- 5 -				3	A-1-b
	18	6	13-16-21		do do	Visual classification-No tests performed								A-1-b
	20													
	22	7	11-14-18		do do	22	51	20	- 7 -				3	A-1-b
	24													
510.7														
	26	8	6-8-8		Brown silt, trace of sand, wet -medium dense	0	0	9	72	19		NP	27	A-4b
	28	S-1			Brown silt, trace sand, varved, moist	0	1	7	71	21	29	6	28	A-4b
507.2														
	30	9	4-7-12		Brown and gray clay, trace sand, moist-stiff	0	0	2	24	74	54	32	26	A-7-6
	32	10	3-5-7		Grayish brown clay, trace sand, trace gravel, moist - stiff	1	1	4	26	68	50	30	26	A-7-6
	34													

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 3/15/65 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 510.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 3/18/65 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. LP-3 STATION AND OFFSET 135+58, 9' L. NB BL Tunnel bet. SURFACE ELEV. 535.7 Lytle Park Tunnel

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SNTL CLASS
500.7	34				3rd and 5th Sts., North Portal									
498.7	36	S-2			Brown and gray silt and clay with silt lenses, trace sand, trace gravel, moist - stiff	4	2	0	23	71	38	14	34	A-6a
495.7	38	11	3-4-5		Brown and gray clay, trace sand(varved), moist - stiff	0	1	0	24	75	49	28	35	A-7-6
	40													
	42	12	3-4-4		Brownish gray silty clay, little sand, (varved), moist - medium stiff	0	2	16	39	43	33	16	29	A-6b
490.7	44													
488.7	46	S-3			Gray silt and clay with silt lenses, moist - medium stiff	0	0	0	31	69	37	15	31	A-6a
	48	13	3-3-4		Gray silty clay, trace sand (varved), wet - soft	0	0	1	26	73	38	17	32	A-6b
485.7	50													
	52	14	3-4-5		Gray clay with silt lenses (varved), very moist - soft	0	0	0	61	39	47	24	33	A-7-6
	54													
	56	S-4			Gray clay with silt lenses, moist - medium stiff	0	0	0	21	79	47	23	24	A-7-6
	58	15	2-3-5		Gray clay, some silt, very moist - medium stiff	0	0	0	25	75	42	20	31	A-7-6
	60													
	62	16	2-3-5		Gray clay, little silt (varved), moist - medium stiff	0	0	1	19	80	45	21	32	A-7-6
	64													
470.7	66	S-5			Gray silty clay with fine sand and clay seams	0	0	8	35	57	34	16	31	A-6b
468.7	68													

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Form No. 530—16-

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 3/15/65 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 510.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 3/18/65 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. LP-3 STATION AND OFFSET 135+58,9' L. NB BL Tunnel bet. 3rd and 5th Sts., North Portal SURFACE ELEV. 535.7 Lytle Park Tunnel

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	68	17	3-4-5		Gray silt and clay, little sand, (Varved), very moist - soft	0	0	11	56	33	30	11	26	A-6a
	70													
		18	6-6-7		Gray silt and clay, little sand, moist- medium stiff	0	1	17	33	49	31	13	30	A-6a
	72													
	74													
460.7														
	76	S-6			Brown and gray coarse and fine sand, little silt, wet	0	0	85	- 15 -				18	A-3a
457.7	78													
		19	5-7-8		Gray silt, little sand, very moist - medium stiff	0	0	15	54	31	27	9	23	A-4b
455.7	80													
		20	4-5-6		Gray sandy silt, wet - soft	0	1	36	39	24	21	5	20	A-4a
	82													
	84													
450.7														
	86	S-7			Greenish gray silt and clay with fine sand lenses, moist - medium stiff	0	1	9	60	30	31	12	25	A-6a
	88	21	4-5-6		Gray silt and clay with sand seams, wet - soft	0	0	16	48	36	30	13	27	A-6a
445.7	90													
		22	3-4-5		Gray silt, little sand, moist - medium stiff	0	0	15	53	32	28	10	24	A-4b
	92													
	94													
	96	S-8			Greenish gray silt with fine sand lenses, moist - medium stiff	0	1	18	51	30	28	10	24	A-4b
	98	23	4-5-5		Gray silt, trace of sand, moist - medium stiff	0	0	10	56	34	28	9	21	A-4b
	100													
		24	4-5-6		Gray silt, little sand, moist - medium stiff	0	1	13	52	34	29	10	23	A-4b
	102													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4130 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

Split Spoon & 2"O.D.&
DATE STARTED 3/15/65 SAMPLER: TYPE Core Barrel DIA. NXM WATER ELEV. IMMEDIATE 510.7 CLIENT: City of Cincinnati, Ohio
DATE COMPLETED 3/18/65 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway
BORING No. LP-3 STATION AND OFFSET 135+58, 9' L. NB RL Tunnel bet. 3rd and 5th Sts. North Portal SURFACE ELEV. 535.7 HAM-71-0.93 Lytle Park Tunnel

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
	102													
	104													
430.7														
	106	S-9			Greenish gray sandy silt, trace of gravel, moist - soft	1	2	34	37	26	23	7	22	A-4a
428.7														
	108	25	5-6-6		Gray silt, little sand, moist - medium stiff	0	0	14	59	27	25	6	22	A-4b
425.7	110													
		26	3-5-8		Gray sandy silt, trace of gravel and rock fragments, moist - medium stiff	4	2	22	43	29	25	8	22	A-4a
	112													
	114													
	116	27	4-8-15		Gray sandy silt, some sand, little gravel and rock fragments, moist - stiff	16	4	28	30	22	25	9	21	A-4a
	118													
	120													
		S-10			Gray sandy silt, some sand, some gravel and rock fragments, moist - medium stiff	25	14	21	24	16	26	8	16	A-4a
	122													
		28	6-6-7		do do	19	4	29	26	22	25	8	20	A-4a
	124													
410.7														
	126	29	80-72		Gray gravelly sand and rock fragments, little silt, moist - very dense	55	18	15	- 12 -				10	A-1-b
	128													
405.7	130													
	132	R-1	NXM	18%	Gray shale, calcareous(no recovery) and gray limestone, crystalline, fossiliferous, jointed and broken (¼" to 3" pieces averaging 1½") only limestone recovered- total 0.85'									
	134													
400.7														
	136				Boring completed									

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Form No. 630—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

REVISED
9/2/64-vb

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/9/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 583.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/11/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-12-1 STATION AND OFFSET 13+52, 40' L., Elsinore Pl. CL SURFACE ELEV. 608.0 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTD. CLASS
608.0	0													
605.5	2	1	7-9-9	14"	Cinders (fill), moist - medium stiff	Visual classification-No tests performed								Fill
603.5	4	2	3-4-6	17"	Brown silty clay with cinders and brick (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	6	3	2-5-11	3"	Brown and gray silty clay with shale fragments(fill), very stiff	Visual classification-No tests performed								Fill
	8	4	2-2-1	16"	Brown and gray silty clay with shale fragments (fill), soft	Visual classification-No tests performed								Fill
598.0	10													
	12	5	2-3-4	17½"	Brown and gray sandy silt, trace gravel with shale fragments (fill), moist - medium stiff	10	18	17	27	28	26	10	20	A-4a
593.0	14													
	16	6	2-5-12	18"	Gray clay, trace sand with shale fragments (fill), moist - very stiff	0	4	3	35	58	47	23	23	A-7-6
	18													
588.0	20													
586.0	22	S-1		18"	Brown and gray silt and clay, trace sand, trace gravel with shale fragments (fill), moist - medium stiff	4	4	2	44	46	37	15	17	A-6a
	24	7	11-14-17	16"	Brown and gray silty clay, little sand, trace gravel with shale fragments(fill), moist - medium stiff	1	8	5	29	57	40	18	26	A-6b
583.0	26	8	11-12-14	11"	Brown and gray clay, little sand, trace gravel, moist - very stiff	10	9	4	31	46	43	21	22	A-7-6
580.5	28	9	5-9-11	6"	Brown and gray silty clay, little sand, with shale fragments (fill), moist - medium stiff	0	8	4	39	49	40	20	22	A-6b
578.0	30	S-2			Dark brown sandy silt, trace gravel, with shale fragments(fill)moist-medium stiff	10	18	20	29	23	31	10	30	A-4a
576.0	32	10	4-6-3	13"	Brown and gray clay, trace sand with shale fragments (fill), moist - medium stiff	0	4	3	35	58	44	24	21	A-7-6
	34													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

REVISED
9/2/64-vb

LOG OF BORING

DATE STARTED 7/9/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 583.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/9/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-12-1 STATION AND OFFSET 13+52, 40' L., Elsinore Pl. CL SURFACE ELEV. 608.0 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36	11	6-9-11	16"	Brown and gray clay, little sand, trace gravel with shale fragments (fill), moist - very stiff	2	8	4	29	57	41	21	20	A-7-6
	38	12	9-9-13	18"	Brown and gray clay, little sand with shale fragments(fill), moist - medium stiff	0	8	3	33	56	41	21	22	A-7-6
568.0	40													
	42	13	11-16-21	18"	Dark brown silty clay, trace sand,little gravel with limestone fragments(fill), moist - medium stiff	19	4	5	38	34	39	19	18	A-6b
	44	14	11-11-19	17"	Brown silty clay, trace sand with limestone fragments (fill), moist - medium stiff	0	4	2	42	52	40	19	17	A-6b
563.0	46	15	13-11-16	12"	Brown clay, little sand, trace gravel, with limestone fragments (fill), moist-medium stiff	4	7	4	36	49	41	19	21	A-7-6
	48													
	50													
	52	16	24-64-25	16"	Brown clay, trace sand with limestone fragments, moist - medium stiff	0	4	3	41	52	42	23	25	A-7-6
	54													
	56	17	21-42-32	18"	Brown and gray clay, trace sand, trace gravel with limestone fragments (fill), moist - medium stiff	2	2	2	35	59	44	23	24	A-7-6
	58													
548.0	60													
		18	15-21-62	18"	Brown silty clay, little sand,little gravel with limestone fragments(probable fill), moist - medium stiff	14	12	7	33	34	39	20	21	A-6b
546.0	62													
		19	NXM	12%	Brown and gray weathered shale, soft(no shale recovery) and gray limestone, crystalline, fossiliferous, jointed, (½" to 2½" pieces, averaging 2")88% shale, 12% limestone									
	64													
	66													
	68	20	19-29-31		Brown and gray weathered shale, moist - very stiff									

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/9/64 SAMPLER: TYPE Splt Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 583.0 Backfilled CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/11/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS _____ PROJECT: Northeast Expressway HAM -71-0.93

BORING No. B-12-1 STATION AND OFFSET 13+52, 40'L. Elsinore Pl., CL SURFACE ELEV. 608.0 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	68				Gray shale, calcareous, moderately tough (1" to 2" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, (3/4" and 2" pieces) 94% shale, 6% limestone									
	70													
	72	21	NXM	32%										
536.5	74													
	76				Boring completed									
	78													
	80													
	82													
	84													
	86													
	88													
	90													
	92													
	94													
	96													
	98													
	100													
	102													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/8/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE 586.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/8/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0207

BORING No. B-13-1 STATION AND OFFSET 199+00, 4'Rt.Relocated Penn.RR SURFACE ELEV. 611.0

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL CLASS
611.0	0													
	2	1	10-11-13	10"	Brown sandy clay with gravel and cinders (fill), moist - stiff	Visual classification-No tests performed								Fill
	4	2	10-8-6	7"	do do	Visual classification-No tests performed								Fill
606.0	6	3	5-4-4	9"	Cinders, gravel, brick, sand and clay (fill), moist - loose	Visual classification-No tests performed								Fill
	8	4	2-3-4	16"	do do	Visual classification-No tests performed								Fill
	10	5	2-2-3	18"	do do	Visual classification-No tests performed								Fill
	12													
	14													
	16	6	2-2-3	18"	do do	Visual classification-No tests performed								Fill
	18													
	20													
	22	7	2-2-4	11"	do do	Visual classification-No tests performed								Fill
	24													
586.0	26	8	2-2-3	10"	Brown and gray silty clay, little sand little gravel with cinders (fill), very moist - soft	16	8	9	30	37	36	16	24	A-6b
583.0	28													
	30	9	3-4-7	17"	Brown and gray clay, trace sand with shale fragments (fill), moist - medium stiff	0	4	4	42	50	43	19	26	A-7-6
	32	10	4-6-8	16"	Brown and gray clay, trace sand with shale fragments (fill), moist - medium stiff	0	4	3	39	54	42	18	23	A-7-6
	34	11	3-5-7	17"	Brown and gray clay, trace sand, little gravel with shale fragments (fill) moist - medium stiff	13	4	2	37	54	42	20	22	A-7-6

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/8/64 SAMPLER: TYPE Split Spoon & CoreBarrel DIA. 2" O.D. & NXM WATER ELEV. IMMEDIATE 586.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/8/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-13-1 STATION AND OFFSET 199+00, 4' Rt. Relocated Penn.RR SURFACE ELEV. 611.0 Bridge No. HAM-71-0207

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36	12	3-5-8	11"	Brown and gray clay, trace sand with shale fragments (fill), moist - medium stiff	0	4	2	38	56	41	18	21	A-7-6
	38	13	3-3-4	17"	Brown and gray clay, trace sand, trace gravel with shale fragments and cinders, (fill), wet - soft	2	4	3	35	56	45	21	25	A-7-6
571.0	40													
12		14	5-7-8	17"	Brown and gray silty clay, some sand, trace of gravel with wood and cinders (fill), moist - medium stiff	5	13	11	31	40	38	17	13	A-6b
568.5	42													
	44	15	4-7-9	13"	Brown and gray clay, little sand, trace gravel, with shale and limestone fragments, moist - medium stiff	1	10	8	31	50	44	21	24	A-7-6
566.0														
	46	16	6-7-13	15"	Brown and gray silty clay, trace sand, little gravel with shale and limestone fragments (fill), moist - medium stiff	14	5	3	32	46	39	17	17	A-6b
	48													
		16A	5-7-12			No sample recovered								
561.0	50													
	52	17	5-6-9	11"	Brown and gray clay, trace sand with shale and limestone fragments, moist - medium stiff	0	2	2	44	52	48	26	26	A-7-6
	54													
	56	18	8-11-13	18"	Brown clay, trace sand, trace gravel with limestone fragments, moist -stiff	2	4	4	32	58	43	23	17	A-7-6
	58													
	60													
	62	19	14-18-21	18"	Brown and gray clay, trace sand, trace gravel with limestone fragments, moist stiff	2	6	3	27	62	50	27	24	A-7-6
	64													
546.0														
545.0	66	20	32-93	12"	Gray shale, moist - hard	Visual description-No tests performed								Fill
	68													

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Form No. 530—16.59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/8/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 586.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/8/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-13-1 STATION AND OFFSET 199+00, 4' Rt. Relocated Penn.RR SURFACE ELEV. 611.0 Bridge No. HAM-71-0207

ELEV.	DEPTH	SAMPLE No.	STD PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
540.0	68–70	21	NXM	67%	Gray shale, calcareous, soft to moderately tough (½" to 3" pieces, averaging 1½") and gray limestone, crystalline, fossiliferous(½" -1" and 3" pieces) 91% shale, 9% limestone									
	72–102				Boring completed									

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Form No. 530--16.59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/23/63 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/24/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-13-2 STATION AND OFFSET 200+55,8'L.CL,Relocated Penn.RR Tracks SURFACE ELEV. 614.2 Bridge No. 71-0207

ELEV.	DEPTH	SAMPLE No.	STD. PEN (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
614.2	0													
	2	1	8-4-5	13"	Cinders, brick and wood (fill), moist-loose to very loose	Visual classification-No tests performed								Fill
	4	2	2-3-2	15"	do do	Visual classification-No tests performed								Fill
	6	3	1-1-1	10"	do do	Visual classification-No tests performed								Fill
	8	4	1-1-1	12"	do do	Visual classification-No tests performed								Fill
	10													
	12	5	4-2-2	14"	do do	Visual classification-No tests performed								Fill
	14													
599.2														
	16	6	1-1-2	18"	Brown clayey fine sand with cinders (fill), moist - very loose	Visual classification-No tests performed								Fill
	18													
594.2	20													
	22	7	2-2-3	7"	Cinders and clayey fine sand (fill), moist - loose	Visual classification-No tests performed								Fill
	24	8	2-2-3	8"	do do	Visual classification-No tests performed								Fill
589.2														
	26	9	2-3-3	6"	Brown and gray silty clay with cinders, (fill), moist - stiff	Visual classification-No tests performed								Fill
	28	10	4-7-8	8"	do do	Visual classification-No tests performed								Fill
	30	11	2-10-7	13"	do do	Visual classification-No tests performed								Fill
	32													
	34	12	2-5-6	10"	do do	Visual classification-No tests performed								Fill

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/23/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/24/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-13-2 STATION AND OFFSET 200+55, 8'L., CL, Relocated Penn.RR Tracks SURFACE ELEV. 614.2 Bridge No. HAM-71-0207

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
579.2	34													
	36	13	4-8-12	8"	Brick and brown and gray silty clay (fill), moist - medium dense	Visual classification-No tests performed								Fill
576.7	38	14	4-12-14	8"	Brown and gray silt and clay, trace sand, trace gravel with shale fragments, (probable fill), moist - stiff	7	4	4	42	43	36	14	16	A-6a
	40													
	42	15	4-12-15	14"	Brown and gray silt and clay, trace sand little gravel with shale fragments, (probable fill), moist - medium stiff	14	5	4	35	42	37	15	16	A-6a
	44	16	5-5-8	18"	Brown silt and clay, trace sand, moist - medium stiff	0	1	1	67	31	35	13	23	A-6a
	46	17	4-6-9	16"	Brown and gray silt and clay, trace sand, moist - medium stiff	0	2	2	62	34	34	15	22	A-6a
	48													
564.2	50													
	52	18	5-8-13	17"	Brown and gray silty clay, trace sand, trace gravel with limestone fragments, moist - stiff	3	2	1	39	55	39	19	20	A-6b
	54													
559.2	56	19	15-17-21	18"	Brown and gray clay, trace sand, little gravel with limestone fragments, moist-very stiff	18	3	3	31	45	44	23	21	A-7-6
	58													
	60													
	62	20	6-13-31	17"	Brown and gray clay, trace sand, trace gravel with limestone fragments, moist-hard	7	4	2	35	52	46	22	16	A-7-6
550.7	64													
	66	21	NXM	51%	Gray shale, calcareous, moderately tough (½" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous, jointed midway in the run (1" to 2½" pieces averaging 1½") 87% shale 13% limestone									
	68													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/23/64 SAMPLER: TYPE Split Spoon 2"O.D. & Core Barrel DIA. NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/24/64 CASING: LENGTH _____ DIA. 3.5"I.D. Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-13-2 STATION AND OFFSET 200+55, 8'L., CL Relocated Penn. RR Tracks SURFACE ELEV. 614.2 Bridge No. HAM-71-0207

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
545.7	68													
	70				Boring completed									
	72													
	74													
	76													
	78													
	80													
	82													
	84													
	86													
	88													
	90													
	92													
	94													
	96													
	98													
	100													
	102													

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Form No. 630—16-69

THE E. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

Split Spoon & 2"O.D.&

DATE STARTED 8/31/64 SAMPLER: TYPE Core Barrel DIA. NXM WATER ELEV. IMMEDIATE 592.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/31/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-13-3 STATION AND OFFSET 201+79, 17'Rt.Relocated Penn.* SURFACE ELEV. 620.1 Bridge No. HAM-71-0207

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
620.1	0				WRR Tracks CL									
	2	1	1-1-3	14"	Cinders, sand, clay and gravel (fill), moist - loose	Visual classification-No tests performed								Fill
	4	2	5-4-5	17"	do do	Visual classification-No tests performed								Fill
	6	3	4-5-5	16"	Brown silty clay with sand, gravel, cinders and brick (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	8	4	4-4-3	16"	do do	Visual classification-No tests performed								Fill
	10													
	12	S-1		19"	do do	Visual classification-No tests performed								Fill
	14	5	2-2-2	17"	Cinders, brick and sand (fill), moist - loose	Visual classification-No tests performed								Fill
605.1														
	16	6	4-4-5	14"	Brown and gray silt and clay, little sand, little gravel with limestone fragments (fill), moist - medium stiff	16	10	5	30	39	36	14	14	A-6a
	18													
	20													
	22	7	3-4-5	15"	Brown and gray silt and clay, little sand, little gravel with limestone fragments (fill), moist - stiff	19	9	5	31	36	35	14	18	A-6a
	24													
	26	S-2		10"	Gray silt and clay, trace sand, trace gravel, moist - stiff	7	5	3	40	45	37	15	17	A-6a
593.1														
	28	8	3-4-5	18"	Brown and gray clay, trace sand, trace gravel with cinders (fill), moist - medium stiff	1	2	3	41	53	42	19	33	A-7-6
	30													
	32	9	5-7-11	16"	Brown clay, trace sand, trace gravel with limestone fragments, moist-stiff	9	3	2	39	47	41	21	20	A-7-6
	34	10	5-7-9	17"	Brown clay, trace sand, little gravel with limestone fragments, moist-medium stiff	10	6	3	33	48	41	21	21	A-7-6

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/31/64 SAMPLER: TYPE Split Spoon & Cone Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 592.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/31/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT Northeast Expressway HAM-71-0.93

BORING No. B-13-3 STATION AND OFFSET 201+79, 17'Rt.Relocated Penn * SURFACE ELEV. 620.1 Bridge No, HAM-71-0207

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	*RR Tracks CL DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTC CLASS
	34													
	36		5-5-6	0	Brown clay, trace sand, little gravel with limestone fragments, moist - medium stiff									
582.1	38	S-3		12"		Visual classification-No tests performed								A-7-6
581.1					Brown silty clay, little sand, little gravel with limestone fragments, - moist - stiff	10	10	5	27	48	40	21	18	A-6b
	40	11	7-9-14	14"										
578.1	42				Brown clay, trace sand, trace gravel with limestone fragments, moist - stiff	2	6	3	27	62	45	23	19	A-7-6
	44	12	7-11-14	17"										
	46	13	9-11-13	15"	Brown clay, little sand, trace gravel with limestone fragments, moist - stiff	6	6	4	27	57	43	20	21	A-7-6
	48													
	50													
	52	14	9-12-16	18"	Brown and gray clay, trace sand with limestone fragments, moist - very stiff	0	5	3	30	62	46	22	20	A-7-6
566.1	54													
565.1		15	43-78	14"	Gray shale, moist - hard	Visual classification - No tests performed								
	56				Gray shale, calcareous, moderately tough (1" to 6½" pieces averaging 3") 100% shale									
	58	16	NXM	35%										
560.1	60													
	62				Boring completed									
	64													
	66													
	68													

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Form No 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

REVISED
9/2/64-vb

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/9/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 583.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/11/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-12-1 STATION AND OFFSET 13+52, 40' L., Elsinore Pl. CL SURFACE ELEV. 608.0 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTD. CLASS.
608.0	0													
605.5	2	1	7-9-9	14"	Cinders (fill), moist - medium stiff	Visual classification-No tests performed								Fill
603.5	4	2	3-4-6	17"	Brown silty clay with cinders and brick (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	6	3	2-5-11	3"	Brown and gray silty clay with shale fragments(fill), very stiff	Visual classification-No tests performed								Fill
598.0	8 10	4	2-2-1	16"	Brown and gray silty clay with shale fragments (fill), soft	Visual classification-No tests performed								Fill
	12	5	2-3-4	17½"	Brown and gray sandy silt, trace gravel with shale fragments (fill), moist - medium stiff	10	18	17	27	28	26	10	20	A-4a
593.0	14													
	16	6	2-5-12	18"	Gray clay, trace sand with shale fragments (fill), moist - very stiff	0	4	3	35	58	47	23	23	A-7-6
588.0	18 20													
586.0	22	S-1		18"	Brown and gray silt and clay, trace sand, trace gravel with shale fragments (fill), moist - medium stiff	4	4	2	44	46	37	15	17	A-6a
	24	7	11-14-17	16"	Brown and gray silty clay, little sand, trace gravel with shale fragments(fill), moist - medium stiff	1	8	5	29	57	40	18	26	A-6b
583.0	26	8	11-12-14	11"	Brown and gray clay, little sand, trace gravel, moist - very stiff	10	9	4	31	46	43	21	22	A-7-6
580.5	28	9	5-9-11	6"	Brown and gray silty clay, little sand, with shale fragments (fill), moist - medium stiff	0	8	4	39	49	40	20	22	A-6b
578.0	30	S-2			Dark brown sandy silt, trace gravel, with shale fragments(fill)moist-medium stiff	10	18	20	29	23	31	10	30	A-4a
[illegible]	32	10	4-6-3	13"	Brown and gray clay, trace sand with shale fragments (fill), moist - medium stiff	0	4	3	35	58	44	24	21	A-7-6
	34													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

REVISED
9/2/64-vb

LOG OF BORING

DATE STARTED 7/9/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA 2"O.D.& NXM WATER ELEV. IMMEDIATE 583.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/9/64 CASING: LENGTH _____ DIA 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-12-1 STATION AND OFFSET 13+52, 40' L., Elsinore Pl. CL SURFACE ELEV. 608.0 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36	11	6-9-11	16"	Brown and gray clay, little sand, trace gravel with shale fragments (fill), moist - very stiff	2	8	4	29	57	41	21	20	A-7-6
	38	12	9-9-13	18"	Brown and gray clay, little sand with shale fragments(fill), moist - medium stiff	0	8	3	33	56	41	21	22	A-7-6
568.0	40													
	42	13	11-16-21	18"	Dark brown silty clay, trace sand,little gravel with limestone fragments(fill), moist - medium stiff	19	4	5	38	34	39	19	18	A-6b
	44	14	11-11-19	17"	Brown silty clay, trace sand with limestone fragments (fill), moist - medium stiff	0	4	2	42	52	40	19	17	A-6b
563.0	46	15	13-11-16	12"	Brown clay, little sand, trace gravel, with limestone fragments (fill), moist-medium stiff	4	7	4	36	49	41	19	21	A-7-6
	48													
	50													
	52	16	24-64-25	16"	Brown clay, trace sand with limestone fragments, moist - medium stiff	0	4	3	41	52	42	23	25	A-7-6
	54													
	56	17	21-42-32	18"	Brown and gray clay, trace sand, trace gravel with limestone fragments (fill), moist - medium stiff	2	2	2	35	59	44	23	24	A-7-6
	58													
548.0	60													
		18	15-21-62	18"	Brown silty clay, little sand,little gravel with limestone fragments(probable fill), moist - medium stiff	14	12	7	33	34	39	20	21	A-6b
546.0	62													
	64	19	NXM	12%	Brown and gray weathered shale, soft(no shale recovery) and gray limestone, crystalline, fossiliferous, jointed, (½" to 2½" pieces, averaging 2")88% shale, 12% limestone									
	66													
	68	20	19-29-31		Brown and gray weathered shale, moist - very stiff									

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—16 59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/9/64 SAMPLER: TYPE Splt Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 583.0 Backfilled CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/11/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS _____ PROJECT: Northeast Expressway HAM -71-0.93

BORING No. B-12-1 STATION AND OFFSET 13+52, 40'L. Elsinore Pl., CL SURFACE ELEV. 608.0 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	68				Gray shale, calcareous, moderately tough, (1" to 2" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, (3/4" and 2" pieces) 94% shale, 6% limestone									
	70													
	72	21	NXM	32%										
53+.5	74													
	76				Boring completed									
	78													
	80													
	82													
	84													
	86													
	88													
	90													
	92													
	94													
	96													
	98													
	100													
	102													

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Form No. 630—16-69

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

REVISED
9/2/64-vb

LOG OF BORING

DATE STARTED 7/9/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE 583.9 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/9/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-12-2 STATION AND OFFSET 13+71, 43' Rt., Elsinore Pl. SURFACE ELEV. 608.9 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTG. CLASS.
608.9	0				0.3' Concrete	No tests performed								
606.4	2	1	4-4-5	8"	Cinders, clay, gravel (fill), moist - loose	Visual classification-No tests performed								Fill
603.9	4	2	1-1-2	18"	Brown and gray silty clay with organic matter (fill), moist - soft	Visual classification-No tests performed								Fill
	6	3	1-1-2	15"	Clay and cinders (fill), very moist - loose	Visual classification-No tests performed								Fill
	8	4	1-2-2	16"	do do	Visual classification-No tests performed								Fill
	10	5	1-1-2	18"	do do	Visual classification-No tests performed								Fill
	12													
593.9	14													
	16	6	2-3-3	17"	Gray and brown silty clay, little sand, with brick, cinders and organic matter (fill), moist - medium stiff	0	10	7	65	18	36	16	23	A-6b
588.9	18													
	20													
	22	7	3-5-7	13"	Brown clay, trace sand with shale fragments (fill), moist - medium stiff	0	4	4	40	52	42	21	20	A-7-6
583.9	24													
	26	8	4-4-5	16"	Gray silt, clay and sand, trace gravel with brick and cinders (fill), moist - medium stiff	4	19	20	31	26	28	11	14	A-6a
581.4	28	9	5-6-9	12"	Gray and brown silty clay, little sand, little gravel with shale and limestone fragments (fill), moist - medium stiff	20	7	4	31	38	38	19	20	A-6b
578.9	30	10	5-6-9	13"	Gray and brown clay, little sand, trace gravel, with shale fragments (fill), moist - stiff	1	8	3	33	55	44	23	21	A-7-6
	32													
	34	11	6-7-8	10"	Brown and gray clay, trace sand with shale and limestone fragments (fill), moist - stiff	0	5	4	37	54	41	20	20	A-7-6

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Form No. 530—10-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

REVISED
9/2/64-vb

LOG OF BORING

DATE STARTED 7/9/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 583.9 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/9/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS _____ Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-12-2 STATION AND OFFSET 13+71, 43' Rt., Elsinore Pl. SURFACE ELEV. 608.9 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL CLASS
	34													
	36	12	5-6-8	17"	Gray and brown clay, trace sand with shale and limestone fragments (fill), moist - stiff	0	4	4	39	53	42	20	16	A-7-6
571.4	38													
	40	13	8-9-11	10"	Gray and brown silty clay, trace sand with shale fragments (fill), moist - stiff	0	3	1	44	52	39	19	16	A-6b
	42	14	6-7-9	13"	Gray silty clay, little sand with shale fragments (fill), moist - stiff	0	8	5	37	50	37	16	18	A-6b
	44	15	9-11-15	17"	Brown and gray silty clay, trace sand with shale fragments (fill), moist - stiff	0	4	6	38	52	39	17	17	A-6b
563.9	46	16	7-9-11	15"	Brown and gray clay, little sand, trace gravel with shale and limestone fragments, moist - stiff	5	6	6	32	51	44	22	19	A-7-6
	48													
	50	17	6-8-13	16"	Brown and gray clay, trace sand with shale and limestone fragments, moist - stiff	0	6	4	37	53	43	21	23	A-7-6
	52	18	10-12-15	18"	Brown and gray clay, trace sand with shale and limestone fragments, moist - stiff	0	0	6	36	58	42	20	20	A-7-6
	54													
	56	19	9-11-16	15"	Brown and gray clay, little sand, little gravel with limestone fragments, moist-stiff	17	10	6	23	44	47	26	22	A-7-6
	58													
548.9	60													
		20	21-34	12"	Gray shale, moist - hard	Visual classification-No tests performed								
	62													
	64	21	NXM	70%	Gray and brown shale, calcareous, soft to moderately tough(two pieces 2" and 3") and gray limestone, crystalline, fossiliferous, jointed(2" and 2½" pieces) 67% shale, 33% limestone									
542.9	66													
	68													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

REVISED
9/2/64-vb

LOG OF BORING

DATE STARTED 7/9/64 SAMPLER: TYPE Split Spoon & 2"O.D. & Core Barrel DIA. NXM WATER ELEV. IMMEDIATE 583.9 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/9/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-12-2 STATION AND OFFSET 13+71, 42' Rt., Elsinore Pl. SURFACE ELEV. 608.9 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	*Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL CLASS
					Gray shale, calcareous, moderately tough to tough (¼" to 2" pieces, averaging 1½") and gray limestone, shaly, fossiliferous (1½" to 2½" pieces averaging 1½"), 85% shale, 15%limestone									
					Boring completed at 542.9'									

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/10/64 SAMPLER: TYPE Split Spoon and Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 577.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/10/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM 71-0203

BORING No. B-12-3 STATION AND OFFSET 14+72, 42'Rt.,Elsinore Pl. CL SURFACE ELEV. 612.6

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
612.6	0													
612.3					0.3' Concrete	No tests performed								
610.1	2	1	2-2-1	10"	Clay, sand, gravel and cinders (fill) moist - loose	Visual classification-No tests performed								Fill
607.6	4	2	2-2-3	15"	Gray silty clay with fine gravel and cinders (fill), moist - medium stiff	Visual classification-No tests performed								Fill
605.1	6	3	1-1-2	17"	Cinders and clay (fill), moist - loose	Visual classification-No tests performed								Fill
602.6	8, 10	4	2-3-4	18"	Brown and gray silty clay with cinders and shale fragments(fill),moist-medium stiff	Visual classification-No tests performed								Fill
597.6	12, 14	5	3-4-5	18"	Brown and gray clay, some sand,trace gravel with cinders and shale fragments, (fill), moist - medium stiff	1	16	5	30	48	43	23	23	A-7-6
592.6	16, 18, 20	6	4-5-5	13"	Brown and gray silty clay,little sand, trace gravel with weathered shale fragments, (fill), moist - medium stiff	1	5	10	36	48	37	18	23	A-6b
587.6	22, 24	7	4-5-6	16"	Brown and gray clay, trace sand,trace gravel with weathered shale fragments, (fill), moist to very moist - medium stiff	3	2	1	51	43	41	20	25	A-7-6
582.6	26, 28, 30	8	3-5-8	15"	Gray silty clay, trace sand, trace gravel with weathered shale fragments, (fill), moist - stiff	1	3	3	39	54	36	16	16	A-6b
580.1	32	9	19-20-17	17"	Brown and gray clay, trace sand, some gravel with weathered shale and limestone fragments(fill)moist - stiff	34	1	1	25	39	43	21	18	A-7-6
	34	10	7-11-12	17"	Gray silty clay, trace sand, trace gravel with shale and limestone fragments(fill),moist-stiff	1,10	6	3	37	44	36	16	14	A-6b

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Form No. 530—10-53

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/10/64 SAMPLED: TYPE Split Spoon and Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE 577.6 Backfilled CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/10/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-12-3 STATION AND OFFSET 14+72, 42' Rt., Elsinore Pl.CL SURFACE ELEV. 612.6 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
575..	36	11	12-18-23	9"	Gray silty clay with shale and limeston fragments (fill)moist - stiff	Insufficient sample for testing					37	17	20	A-6b
	38	12	6-7-8	15"	Brown and gray clay, trace sand,trace gravel (fill), moist - stiff	1	0	1	30	68	52	28	27	A-7-6
572.6	40													
	42	13	12-13-15	18"	Dark brown elastic clay, trace sand, moist - stiff	0	1	1	45	53	60	24	33	A-7-5
570.1	44	14	7-12-15	18"	Brown clay, trace sand, moist - stiff	0	0	1	31	68	59	33	25	A-7-6
	46	15	7-11-16	17"	do do	0	1	1	29	69	59	35	23	A-7-6
	48	16	9-11-14	17"	Brown clay, trace sand, trace gravel with limestone fragments, moist - stiff	10	3	2	28	57	51	28	23	A-7-6
	50													
561.1	52	17	9-12-17	18"	Brown clay, trace sand with limestone fragments, moist - stiff	0	4	2	34	60	52	30	21	A-7-6
	54													
	56	18	14-38	12"	Brown and gray weathered shale, moist - hard									
	58	19	NXM	52%	Gray shale, calcareous, moderately tough, (¼" to 2"pieces averaging 1½") and gray limestone, crystalline, fossiliferous, (¼" to 3" pieces, averaging 1½") 83% shale, 17% limestone									
	60													
551.6	62				Boring completed									
	64													
	66													
	68													

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/11/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/11/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. 8-12-4 STATION AND OFFSET 15+61, 44' L., CL, Elsinore Pl. SURFACE ELEV. 616.8 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
616.8	0													
	2	1	3-4-4	14"	Concrete, sand, gravel and clay(fill), moist - loose	Visual classification-No tests performed								
614.3	4	2	4-5-7	16"	Brown silt and clay,little sand,trace gravel,(fill), moist - medium stiff	8	8	10	34	40	35	15	18	A-6a
609.8	6													
	8	3	6-9-14	16"	Brown silty clay,little sand,little gravel with cinders and limestone fragments (fill),moist - stiff	14	6	5	34	41	39	19	18	A-6b
	10													
	12	S-1		13"	Brown silty clay,some sand,trace gravel with cinders and limestone fragments, (fill) - moist - stiff	2	16	8	39	35	39	17	*	A-6b
	14	4	8-11-15	10"	Brown silty clay, trace sand, trace gravel (fill), moist- stiff	9	4	3	39	45	39	19	14	A-6b
	16	5	7-8-10	18"	Brown silty clay, trace sand, some gravel with limestone fragments (fill), moist - stiff	20	4	3	31	42	40	20	18	A-6b
	18													
	20													
594.8	22													
	24	6	6-8-11	16"	Gray clay, trace sand,little gravel with limestone fragments (fill),moist-stiff	18	2	3	32	45	41	21	18	A-7-6
	26													
	28	7	6-9-13	17"	Brown and gray clay, trace sand,little gravel with limestone fragments (fill) moist -stiff	16	4	2	37	41	44	24	22	A-7-6
586.8	30													
	32	8	5-8-12	18"	Brown and gray silty clay, trace sand, trace gravel with limestone fragments (fill), moist - stiff	6	4	2	43	45	40	20	19	A-6b
583.8	34													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/11/64 SAMPLER: TYP Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None Backfilled CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/11/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-12-4 STATION AND OFFSET 15+61, 44' L., CL, Elsinore Place SURFACE ELEV. 616.8 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34	S-2		19"	Brown and gray clay, little sand with shale fragments (fill), moist - stiff	0	7	5	37	51	42	19	22	A-7-6
	36	9	9-12-15	18"	Brown and gray clay, trace sand, little gravel with shale fragments (fill), moist - stiff	19	2	1	32	46	46	24	21	A-7-6
	38	10	7-11-14	18"	Brown and gray clay, trace sand, little gravel with shale fragments (fill), moist - stiff	13	2	4	36	45	41	19	14	A-7-6
576.8	40													
		S-3			Brown and gray silty clay, little sand, trace gravel with shale fragments (fill), moist- stiff	4	6	4	37	49	39	17	20	A-6b
	42	11	9-16-20	15"	Brown and gray silty clay, trace sand with shale fragments (fill), moist-stiff	0	2	3	41	54	39	19	18	A-6b
571.8	44													
	46	12	18-50	12"	Brown and gray shale, moist - hard	Visual classification-No tests performed								
	48	13	82-100	12"	Gray shale, dry - hard									
567.3	50													
	52	14	NXM	60%	Gray shale, calcareous, moderately tough to tough (½" to 3" pieces averaging 1½") 100% shale									
562.3	54													
	56				Boring completed									
	58													
	60													
	62													
	64													
	66													
	68													

*Insufficient sample

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Form No. 530--16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/25/64 SAMPLER: TYPE Split Spoon & CoreBarrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 601.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/25/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-12-5 STATION AND OFFSET 15+56, 48' Rt. Elsinore Pl.CL SURFACE ELEV. 616.2 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTC CLASS
616.2	0													
615.8					6" Concrete									
613.7	2	1	11-6-6	11"	Clay, cinders and gravel (fill), moist-medium dense	Visual classification-No tests performed								Fill
611.2	4	2	7-8-8	13"	Brick, clay, cinders and gravel (fill), moist - medium dense	Visual classification-No tests performed								Fill
608.7	6	3	2-3-3	13"	Brown clay, trace sand with shale fragments(probable fill),moist-medium stiff	0	2	3	33	62	47	23	22	A-7-6
	8	4	3-4-5	14"	Brown and gray silty clay,trace sand, little gravel with shale and limestone fragments(probable fill),moist-medium stiff	11	5	4	30	50	40	18	20	A-6b
	10	5	2-3-3	16"	Brown and gray silty clay, trace sand, trace gravel with shale and limestone fragments (probable fill), moist - medium stiff	1	5	4	37	53	39	17	23	A-6b
601.2	12													
	14													
	16	6	4-7-5	10"	Brown and gray clay, little sand,little gravel with shale and limestone fragments, (probable fill), moist - medium stiff	11	9	4	30	46	41	19	23	A-7-6
	18													
	20													
	22	7	5-6-5	15"	Brown and gray clay, trace sand, little gravel with shale and limestone fragments, moist - stiff	15	5	2	28	50	44	22	24	A-7-6
	24													
	26	8	7-8-9	17"	Brown and gray clay, trace sand, trace gravel with shale and limestone fragments, moist - stiff	1	4	4	30	61	48	25	19	A-7-6
	28													
587.2														
585.7	30	S-1		16"	Brown silty clay, little sand, moist - stiff	0	6	5	42	47	40	18	18	A-6b
	32	9	14-18-27	18"	Brown weathered shale, moist - hard	Visual classification-No tests performed								
	34	10	22-38-53	18"	do do	Visual classification-No tests performed								

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL.

Form No. 530—15-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/25/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 601.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/25/64 CASING: LENGTH _____ DIA. 2.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-12-5 STATION AND OFFSET 15+56, 48' Rt. Elainore Pl, CL SURFACE ELEV. 616.2 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36	11	24-60	12"	Brown and gray weathered shale, moist - hard	Visual classification-No tests performed								
	38	12	32-58	12"	Gray shale, moist - hard	Visual classification-No tests performed								
576.2	40													
	42	13	NXM	60%	Gray shale, clacareous, moderately tough (1" to 6" pieces averaging 3") and gray limestone, crystalline, fossiliferous, jointed (1" to 3" pieces averaging 1½") 90% shale, 10% limestone									
	44													
	46	14	NXM	98%	Gray shale, calcareous, tough(1"to 6½" pieces averaging 4") and gray limestone, crystalline, fossiliferous (three pieces 3/4" - 1" and 2") 94% shale, 6% limestone									
	48													
566.2	50													
	52				Boring completed									
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—16-59

THE E. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/26/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 583.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/26/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-26-1 STATION AND OFFSET 13+43, 45'Rt.Elsinore Pl. CL SURFACE ELEV. 607.6 Retaining Wall No. 26

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
607.6	0				0.3' Concrete									
607.3		1	4-5-5	16"	Clay and cinders (fill),moist - loose	Visual classification-No tests performed								Fill
605.1	2													
	4	2	2-1-1	11"	Cinders (fill), moist - very loose	Visual classification-No tests performed								Fill
602.6	6	3	1-1-1	18"	Cinders and clay(fill), moist - very loose	Visual classification-No tests performed								Fill
	8	4	1-1-1	18"	do do	Visual classification-No tests performed								Fill
	10	5	1-1-1	18"	do do	Visual classification-No tests performed								Fill
	12													
	14													
592.6	16	6	3-3-3	14"	Brown and gray silt and clay, some sand, trace gravel with cinders and shale fragments (fill), moist - medium stiff	5	10	14	31	40	34	14	22	A-6a
	18													
587.6	20													
	22	7	2-3-3	18"	Brown and dark gray silty clay, some sand, trace gravel with cinders (fill), moist - medium stiff	5	10	14	31	40	36	16	28	A-6b
585.6	24	S-1		18"	Brown and gray clay, trace sand, little gravel with shale and limestone fragments, moist - medium stiff	11	4	4	32	49	41	17	27	A-7-6
	26	8	2-3-4	3"	Brown and gray clay, trace sand, trace gravel with shale and limestone fragments, moist - stiff	1	3	2	30	64	48	24	26	A-7-6
	28		5-8-12	0										
	30				Brown and gray clay, trace sand, trace gravel with shale and limestone fragments, moist - stiff	2	4	5	37	52	41	28	19	A-7-6
	32	9	8-11-15	17"	Brown and gray clay,little sand,little gravel with shale and limestone fragments, moist - stiff	16	10	7	31	36	41	19	16	A-7-6
	34	S-2		23"										

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/26/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 583.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/26/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-26-1 STATION AND OFFSET 13+43, 45' Rt.Elsinore Pl. CL SURFACE ELEV. 607.6 Retaining Wall No. 26

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
573.6	34													
570.6	36	10	7-8-10	15"	Brown and gray silty clay, little sand, little gravel with shale and limestone fragments, moist - stiff	15	8	4	31	42	38	16	17	A-6b
566.6	38 40	11	6-8-11	15"	Brown and gray clay, trace sand, trace gravel with shale and limestone fragments, moist - stiff	2	5	4	38	51	41	20	15	A-7-6
562.6	42 44	12	11-12-14	13"	Gray silt and clay, trace sand, trace gravel with shale fragments, moist - stiff	4	3	2	41	50	35	15	14	A-6a
	46	S-3		19"	Brown and gray clay, trace sand, trace gravel, moist - stiff	2	3	6	35	54	45	23	21	A-7-6
	48 50	13	7-11-14	18"	Brown clay, little sand, trace gravel with limestone fragments, moist - stiff	2	5	5	34	54	43	21	22	A-7-6
	52 54	14	6-9-11	17"	Brown clay, trace sand, trace gravel with shale fragments, moist - stiff	1	3	3	43	50	44	22	17	A-7-6
550.6	56	S-4			Brown and gray silty clay, moist - stiff	0	4	3	36	57	50	28	22	A-7-6
547.6	58 60	15	5-14-11	17"	Brown and gray silty clay, trace sand with organic matter, moist - medium stiff	0	2	2	48	48	39	19	22	A-6b
	62 64	16	6-7-8	17"	Brown and gray clay, little sand, little gravel with limestone fragments, very moist - medium stiff	14	6	5	26	49	41	20	24	A-7-6
542.6	66 68	17	58-93	15"	Gray shale, moist - hard	Visual classification-No tests performed								

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/26/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 583.6

DATE COMPLETED 8/26/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled

CLIENT: City of Cincinnati, Ohio

PROJECT: Northeast Expressway HAM-71-0.93 Retaining Wall No. 26

BORING No. R-26-1 STATION AND OFFSET 13+43, 45' Rt. Elsinore Pl. CL SURFACE ELEV. 607.6

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SNTL CLASS
536.6	68–70	18	NXM	75%	Gray shale,calcareous,moderately tough to tough(¼" to 3" pieces averaging 1½") and gray limestone, crystalline, fossiliferous,jointed(1" and 1-3/4" pieces) 90% shale, 10% limestone									
	72–102				Boring completed									

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Form No. 640—3649

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/26/64 SAMPLER: TYPE Split Spoon & Coebarrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/27/64 CASING: LENGTH _____ DIA 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-1 STATION AND OFFSET 186+51, 31' Rt., NB BL SURFACE ELEV. 627.2 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
627.2	0													
	2	1	7-9-5	13"	Brown silt, clay and sand, trace gravel with cinders (fill), moist - very stiff	6	13	27	28	26	29	13	12	A-6a
	4	2	4-2-3	8"	Brown silty clay and cinders (fill), moist - stiff	Visual classification-No tests performed								A-6a
	6	3	3-5-7	14"	do do	Visual classification-No tests performed								A-6a
	8	4	7-8-5	12"	Brown and gray silt and clay, some sand, little gravel with cinders (fill), moist - medium stiff	12	16	9	32	31	31	11	24	A-6a
617.2	10													
	12	5	2-2-2	15"	Cinders, brick and wood fragments (fill) moist - medium dense	Visual classification-No tests performed								Fill
	14	6	2-1-3	13"	do do	Visual classification-No tests performed								Fill
	16	7	1-2-4	7"	do do	Visual classification-No tests performed								Fill
	18	8	2-2-2	5"	do do	Visual classification-No tests performed								Fill
	20	9	1-1-1	10"	do do	Visual classification-No tests performed								Fill
	22	10	1-2-3	13"	do do	Visual classification-No tests performed								Fill
602.2	24													
	26	11	2-3-2	15"	Brown and gray silty clay and cinders (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	28	12	1-4-6	13"	do do	Visual classification-No tests performed								Fill
	30	13	10-11-5	13"	do do	Visual classification-No tests performed								Fill
594.7	32													
	34	14	3-5-7	15"	Gray silty clay, trace sand, trace shale and limestone fragments (fill), moist - medium stiff	7	6	3	34	50	39	18	22	A-6b

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/26/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/27/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-1 STATION AND OFFSET 186+51, 31' Rt., NB BL SURFACE ELEV. 627.2 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS.
592.2	34													
	36	15	7-8-14	11"	Gray clay, trace sand with shale and limestone fragments (fill), moist - medium stiff	0	1	2	37	60	42	20	17	A-7-6
	38	16	8-8-10	17"	Brown and gray clay, trace sand, trace shale and limestone fragments (fill), moist - medium dense	2	5	4	38	51	43	22	22	A-7-6
	40	17	5-7-9	6"	Brown clay, trace sand with shale and limestone fragments (fill), moist - medium stiff	0	3	5	35	57	46	22	25	A-7-6
	42													
	44													
	46	18	7-8-7	15"	Brown and gray clay, trace sand, trace shale and limestone fragments (fill), moist - medium stiff	7	3	4	33	53	48	25	24	A-7-6
	48													
577.2	50													
	52	19	6-7-10	18"	Brown and gray silty clay, little sand, trace shale and limestone fragments (probable fill), moist - medium stiff	2	8	4	38	48	39	17	28	A-6b
574.2	54													
	56	20	72-97	12"	Gray shale, moist - very stiff									
569.2	58													
	60	R-1	NXM	100%	Gray shale, calcareous, moderately tough to tough with soft seams in the top 24" of the run (½" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous, shaly, jointed(two pieces ½"and 2½") 95% shale, 5% limestone									
564.2	62													
	64				Boring completed									
	66													
	68													

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Form No. 590—15-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/23/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/26/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER 5 HOURS 601.6 PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-2 STATION AND OFFSET 187+18, 23' L. NB BL SURFACE ELEV. 628.0 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL CLASS.
628.0	0				11.5" Concrete									
627.5	2	1	5-6-7	17"	Cinders, brick and wood fragments(fill), moist - very dense	Visual classification-No tests performed								Fill
	4	2	6-8-6	18"	do do	Visual classification-No tests performed								Fill
	6	3	6-7-6	15"	do do	Visual classification-No tests performed								Fill
	8	4	8-13-23	12"	do do	Visual classification-No tests performed								Fill
	10	5	2-3-3	15"	do do	Visual classification-No tests performed								Fill
	12													
	14	6	1-2-2	15"	do do	Visual classification-No tests performed								Fill
	16	7	1-2-3	15"	do do	Visual classification-No tests performed								Fill
	18	8	1-3-5	12"	do do	Visual classification-No tests performed								Fill
	20	9	2-3-4	16"	do do	Visual classification-No tests performed								Fill
	22	10	3-4-4	14"	do do	Visual classification-No tests performed								Fill
603.0	24.5													
	26	11	4-5-7	17"	Gray silt and clay, little sand, trace gravel (fill), moist - medium stiff	8	8	5	42	37	35	15	21	A-6a
600.5	28	S-1		13"	Brown and gray clay, little sand, trace gravel (fill), moist - medium stiff	2	6	4	36	52	43	21	23	A-7-6
	30	12	7-18-14	16"	Brown and gray clay, trace sand(fill), moist - medium stiff	0	2	4	37	57	42	20	25	A-7-6
	32													
	34	13	7-10-14	10"	Brown and gray clay, trace sand(fill), moist - medium stiff	0	2	6	34	58	45	20	18	A-7-6

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Form No. 530—14-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/23/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. EXT WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/26/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER 5 HOURS 601.6 PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-2 STATION AND OFFSET 187+18, 23' L. NB BL SURFACE ELEV. 628.0 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SNTL CLASS
	34													
592.5	36	14	- 7 -	6"	Dark brown and gray clay, trace sand (fill), moist -medium stiff	0	2	2	44	52	46	20	26	A-7-6
		15	8-11	11"	Brown and gray clay, trace sand, moist-stiff	0	1	2	37	60	48	25	24	A-7-6
	38													
		S-2		12"	Brown and gray clay, trace sand, moist stiff	0	2	2	33	63	52	28	24	A-7-6
	40	16	8-7-10	15"	Brown and gray clay, trace sand, moist-stiff	0	1	3	21	75	55	30	24	A-7-6
	42													
	44	17	41-10-16	12"	Brown and gray clay and gravel, little sand with limestone fragments, moist - very stiff	38	6	4	19	33	42	20	22	A-7-6
583.0														
93	46	18	65-81	4"	Brown and gray weathered shale, moist-very stiff				•					
	48													
579.0														
	50				Gray shale, calcareous, moderately tough to tough (½" to 4" pieces averaging 2½") and gray limestone, crystalline, fossiliferous, shaly (two pieces ½" and 1" in the top 12" of the run) 97% shale 3% limestone									
	52	R-1	NXM	90%										
574.0	54													
	56				Boring completed									
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 25, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/22/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 584.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/23/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-3 STATION AND OFFSET 187+74, 64'Rt., NB BL SURFACE ELEV. 630.2 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% G.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL CLASS
630.2	0													
629.7		1	- 4 -		Topsoil	Visual classification-No tests performed								Fill
	2	2	10-14	10"	Brown silty clay with cinders and brick fragments (fill), moist - stiff									
	4	3	10-12-13	8"	do do	Visual classification-No tests performed								Fill
	6	4	10-6-10	14"	do do	Visual classification-No tests performed								Fill
622.7	8													
	10	5	6-6-5	17"	Cinders, brick and wood fragments(fill), moist - medium dense	Visual classification-No tests performed								Fill
	12	6	11-11-12	10"	do do	Visual classification-No tests performed								Fill
	14	7	10-11-17	16"	do do	Visual classification-No tests performed								Fill
	16	8	5-3-7	8"	do do	Visual classification-No tests performed								Fill
	18	9	3-4-5	10"	do do	Visual classification-No tests performed								Fill
	20	10	3-3-3	3"	do do	Visual classification-No tests performed								Fill
	22	11	7-3-2	8"	do do	Visual classification-No tests performed								Fill
	24	12	4-2-4	3"	do do	Visual classification-No tests performed								Fill
603.2	26	13	7-8-8	8"	Gray silt and clay, some sand, little shale and limestone fragments (fill), moist - medium stiff	13	12	11	28	36	35	15	23	A-6a
600.2	28	14	7-8-10	13"	Brown and gray clay, trace sand with shale and limestone fragments (fill), moist - medium stiff	5	2	3	40	50	42	20	21	A-7-6
	30	15	4-7-9	15"	Brown and gray clay, little sand with shale and limestone fragments (fill), moist - stiff	0	6	5	33	56	45	23	21	A-7-6
	32													
	34													

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/22/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 584.7 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/23/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0,93

BORING No. B-19-3 STATION AND OFFSET 187+74, 64' Rt., NB BL SURFACE ELEV. 630.2 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SNTL CLASS
	34													
	36	16	6-7-8	17"	Brown clay, trace sand with shale and limestone fragments (fill), moist - stiff	0	2	4	38	56	46	25	24	A-7-6
	38	17	8-7-8	8"	Brown clay, trace sand, trace shale and limestone fragments (fill), moist - stiff	3	3	4	35	55	46	24	18	A-7-6
	40	18	7-8-14	18"	Brown and gray clay, little sand with shale and limestone fragments (fill), moist - medium stiff	0	7	5	39	49	41	19	21	A-7-6
	42	19	6-8-11	18"	Brown and gray clay, little sand, trace shale and limestone fragments (fill), moist - medium stiff	6	7	3	33	51	42	20	24	A-7-6
584.7	44	~~20~~ 6		6"	Brown and gray clay, trace sand trace shale and limestone fragments(fill),	4	4	3	36	53	44	22	23	A-7-6
	46	21	8-10	12"	moist - medium stiff	0	3	4	31	62	47	23	24	A-7-6
	48				Brown clay, trace sand, moist - stiff									
580.2	50													
	52	22	35-95	11"	Brown and gray shale, moist - hard									
576.2	54													
	56	R-1	NXM	60%	Gray shale, calcareous, moderately tough (¼" to 5" pieces averaging 2") 100% shale									
571.2	58													
	60				Boring completed									
	62													
	64													
	66													
	68													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. [illegible]

THE H. C. NUTTING COMPANY

[illegible]

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/29/64 SAMPLER: TYPE Split Spoon & Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 605.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/29/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway NAM-71-0.93 Bridge No. 71-0224

BORING No. B-19-4 STATION AND OFFSET 188+41, 17' Rt. SB BL SURFACE ELEV. 630.2

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.L.	W.C.	SOIL CLASS.
630.2	0													
627.7	2	1	10-7-6	13"	Blacktop, gravel, clay and cinders, (fill), moist - stiff	Visual classification-No tests performed								Fill
625.2	4	2	2-3-4	8"	Clay, gravel, cinders and brick (fill), moist - loose	Visual classification-No tests performed								Fill
	6	3	1-2-3	18"	Clay and cinders (fill), moist - loose	Visual classification-No tests performed								Fill
	8													
620.2	10													
	12	4	2-3-5	8"	Cinders (fill), moist - loose	Visual classification-No tests performed								Fill
	14													
	16	5	2-2-2	17"	do do	Visual classification-No tests performed								Fill
	18													
	20													
	22	6	2-2-4	18"	do do	Visual classification-No tests performed								Fill
	24													
605.2	26	7	1-3-4	17"	Cinders and clay (fill), wet - loose	Visual classification-No tests performed								Fill
602.7	28													
600.2	30	8	4-6-8	16"	Brown and gray silty clay, little sand, with limestone fragments (fill), moist - stiff	0	9	4	33	54	38	17	20	A-6b
	32	S-1 9	4-5-7	9" 16"	Brown clay, trace sand, little gravel, limestone fragments (fill), moist-stiff Brown clay, trace sand with limestone fragments, (fill) moist-medium stiff	14 0	2 2	3 3	27 43	54 52	54 50	32 28	21 24	A-7-6 A-7-6
	34	10	4-5-6	17"	do do	0	4	4	34	58	48	27	24	A-7-6

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Form No. 530—4-64

THE H. C. NUTTING COMPANY

4130 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/29/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 605.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/29/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-4 STATION AND OFFSET 188+41, 17' Rt., NB BL SURFACE ELEV. 630.2 Bridge No. 71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL. CLASS
	34													
	36	S-2		11"	Brown clay, little sand, trace gravel with limestone fragments (fill), moist - stiff	3	9	7	31	50	45	23	21	A-7-6
	38	11	3-5-7	17"	Brown clay, trace sand with limestone fragments (fill), moist - stiff	0	1	2	29	68	55	32	24	A-7-6
	40													
	42													
	44		5-8-9	0		No sample recovered								
	46	S-3		16"		0	1	2	41	56	43	22	23	A-7-6
	48	12	7-5-6	5"	Clay and limestone fragments (fill)	Visual classification-No tests performed								A-7-6
	50	13	18-36-62	18"	Gray clay, trace sand, moist - very stiff	0	0	1	36	63	42	19	12	A-7-6
	52													
576.2	54													
	56	14	NXM	42%	Gray shale, calcareous, moderately tough (1/4" to 2" pieces averaging 1") and gray limestone, crystalline, fossiliferous (one 2" piece at the bottom of the run) 97% shale, 3% limestone									
571.2	58													
	60				Boring completed									
	62													
	64													
	66													
	68													

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Form No. 630—16-59

THE R. C. NUTTING COMPANY

4130 AIRPORT ROAD
CINCINNATI 26, OHIO

REVISED
10/14/64-vb

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/26/64 SAMPLER: TYPE Split Spoon & CoreBarrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 605.9 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/26/64 CASING: LENGTH _____ DIA 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-5 STATION AND OFFSET 189+00, 80'Rt., NB BL SURFACE ELEV. 630.9 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % GRAV.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
630.9	0													
	2	1	14-10-6	16"	Cinders, clay and gravel (fill), moist - medium dense	Visual classification-No tests performed								Fill
628.4	4	2	4-5-7	14"	Brown and gray clay, little sand, some gravel with brick fragments (fill), moist - medium stiff	30	7	4	25	34	53	33	25	A-7-6
625.9	6	3	2-2-4	17"	Brown and gray sandy silt, little gravel with cinders (fill), moist - medium stiff	11	8	22	36	23	25	9	17	A-4a
620.9	8													
	10													
	12	4	2-2-4	6"	Cinders, gravel, wood and clay (fill), moist - loose	Visual classification-No tests performed								Fill
	14													
615.9	16	5	2-4-6	7"	Brown and gray silty clay and gravel, trace sand with limestone fragments, (fill), moist - medium stiff	43	4	3	19	31	40	18	17	A-6b
	18													
	20													
	22	6	2-3-3	7"	Brown and gray silty clay, little sand, some gravel with limestone fragments, (fill), very moist - soft	20	6	6	16	52	40	20	28	A-6b
605.9	24													
	26	7	1-1-1	13"	Cinders (fill), wet - very loose	Visual classification-No tests performed								Fill
603.4	28													
	30	8	5-6-8	17"	Brown and gray clay, trace sand, trace gravel, moist - stiff	2	1	2	36	59	46	24	20	A-7-6
		8-2		12"	Brown clay, trace sand, moist - stiff	0	1	3	36	60	49	27	22	A-7-6
	32	9	7-7-8	16"	Brown clay, trace sand, trace gravel, with limestone fragments, moist-stiff	2	2	3	35	58	50	28	22	A-7-6
	34													

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Form No. 630—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

REVISED
10/14/64-vb

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/26/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 605.9 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/26/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-5 STATION AND OFFSET 189+00, 80' Rt., NB BL SURFACE ELEV. 630.9 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
	34													
	36	10	3-5-6	13"	Brown clay,trace sand, little gravel, with limestone fragments, moist - stiff	15	5	3	29	48	48	27	22	A-7-6
592.9	38													
1.5		S-2		16"	Brown silty clay, trace sand with									
590.9	40				limestone fragments, moist - stiff	0	1	3	49	47	35	16	21	A-6b
2		11	5-8-13	18"	Brown clay, trace sand, trace gravel,									
	42				with limestone fragments, moist-stiff	2	1	3	31	63	57	34	22	A-7-6
	44	12	8-11-14	15"	do do	27	5	5	21	42	49	25	21	A-7-6
585.9														
5	46	13	17-28-39	18"	Gray shale, moist - hard	Visual classification-No tests performed								
	48													
580.9	50													
	52	14	NXM	41%	Gray shale,calcareous,moderately tough broken (½" to 2" pieces averaging 1") and gray limestone, crystalline, fossiliferous, jointed (two pieces 1" and 3½") 92% shale, 8% limestone									
	54													
575.9														
	56													
	58				Boring completed									
	60													
	62													
	64													
	66													
	68													

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/1/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 606.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/2/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-6 STATION AND OFFSET 189+64,20'Rt. NB BL SURFACE ELEV. 631.2 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
631.2	0													
628.7	2	1	11-10-8	10"	Sand, gravel and coal (fill), moist - medium dense	Visual classification-No tests performed								Fill
	4	2	4-4-5	18"	Clay, sand, cinders and gravel (fill), moist - loose to medium dense	Visual classification-No tests performed								Fill
	6	3	4-5-5	17"	Clay, sand, cinders and gravel (fill), moist - loose to medium dense	Visual classification-No tests performed								Fill
	8													
	10													
	12	4	4-5-9	18"	Clay, sand, cinders and gravel (fill), moist - loose to medium dense	Visual classification-No tests performed								Fill
	14													
	16	5	4-4-4	18"	Clay, sand, cinders and gravel (fill), moist - loose to medium dense	Visual classification-No tests performed								Fill
	18													
611.2	20													
608.7	22	6	4-4-3	17"	Gray silty clay with sand layers (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	24	7	3-3-4	17"	Gray silty clay with cinders and sand, (fill), moist - medium stiff	Visual classification-No tests performed								Fill
606.2	26	8	4-5-7	7"	Brick, clay, and cinders (fill), wet - medium dense	Visual classification-No tests performed								Fill
603.7	28	9	8-11-13	16"	Brown and gray clay, trace sand with shale fragments (fill), moist - stiff	0	3	7	30	65	46	24	20	A-7-6
	30	10	5-8-12	17"	Brown and gray clay, trace sand with shale fragments (fill), moist-stiff	0	4	4	36	56	49	25	22	A-7-6
	32													
	34	S-1		20"	Brown and gray clay, little sand, trace gravel with shale fragments (fill), moist - stiff	5	5	6	48	36	49	27	16	A-7-6

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/1/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. NXM WATER ELEV. IMMEDIATE 606.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/2/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-6 STATION AND OFFSET 189+64, 20' Rt. NB BL SURFACE ELEV. 631.2 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36	11	10-12-15	18"	Brown and gray clay, little sand, trace gravel with shale fragments (fill), moist - stiff	5	5	6	48	36	49	27	16	A-7-6
593.7	38													
		12	5-8-12	13"	Brown and gray silty clay, little sand with organic matter, (fill), moist - medium stiff	0	6	6	43	45	36	19	29	A-6b
	40													
		13	5-9-12	9"	Brown and dark gray silty clay, sand and gravel with limestone fragments, (fill), moist - medium stiff	45	30	9	6	10	37	17	28	A-6b
	42													
	44													
586.2														
	46	14	14-24	8"	Brown and gray clay, trace sand with limestone fragments, moist - very stiff	0	7	0	*	*	46	21	19	A-7-6
583.7	48													
		15	35-68	12"	Gray shale, moist - hard	Visual classification-No tests performed								
581.7	50													
		16	NXM	75%	Gray shale, calcareous, tough (1" to3½" pieces averaging 2½") and gray limestone, crystalline, fossiliferous (two pieces 3/4" and 1-3/4" midway in the run) 96% shale; 4% limestone									
	52													
	54													
576.7														
	56				Boring completed	*Insufficient sample for testing								
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 530—15-59

REVISED:
12/10/64-vb

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/1/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 601.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/1/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-7 STATION AND OFFSET 190+88, NB BL 17' Rt. SURFACE ELEV. 631.6 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
631.6	0													
	2	1	5-6-8	16"	Sand, gravel and clay (fill), moist - medium dense	Visual classification-No tests performed								Fill
629.1	4	2	5-4-5	17"	Clay, silt, sand and gravel (fill), moist - medium stiff	Visual classification-No tests performed								Fill
626.6	6	3	3-2-1	16"	Clay, gravel and cinders (fill), moist - loose	Visual classification-No tests performed								Fill
	8													
621.6	10													
	12	4	1-1-1	15"	Organic matter and cinders (fill), moist - very loose	Visual classification-No tests performed								Fill
	14													
616.6	16	5	1-1-1	16"	Cinders, clay and rock fragments, (fill), very moist - loose	Visual classification-No tests performed								Fill
	18	6	2-2-2	17"	do do	Visual classification-No tests performed								Fill
	20													
609.6	22													
	24	7	5-6-6	16"	Gray silty clay with cinders and brick fragments,(fill), moist-medium stiff	Visual classification-No tests performed								Fill
606.6	26	S-1		15"	Gray silt and clay, little sand, some gravel with rock and brick fragments, (fill), moist - stiff	24	6	8	31	31	36	15	16	A-6a
604.6	28	8	4-5-6	15"	do do	Visual classification-No tests performed								Fill
601.6	30													
	32	9	2-2-6	7"	Cinders and brick fragments (fill), wet - loose	Visual classification-No tests performed								Fill
599.1	34	10	4-6-8	14"	Brick fragments(fill),wet-medium dense	Visual classification-No tests performed								Fill

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

REVISED:
12/10/64-vb

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/1/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 601.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/1/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-7 STATION AND OFFSET 190+88, NB BL 17' Rt. SURFACE ELEV. 631.6 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
596.6	36	11	4-7-10	13"	Brown and gray clay, little sand, little gravel with limestone fragments, (probable fill), moist - stiff	14	11	5	30	40	41	21	19	A-7-6
	38													
	40													
	42	12	10-17-34	17"	Brown and gray clay, trace sand (fill), moist - very stiff	0	2	1	38	59	46	22	16	A-7-6
586.6	44													
	46				Gray shale, calcareous, moderately tough (1" to 2" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, (½" to 5" pieces averaging 2½") 80%shale 20% limestone									
	48	R-1	NXM	50%										
581.6	50													
	52				Boring completed									
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 530--66-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/26/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 610.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/26/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-8 STATION AND OFFSET 192+11, 38' Rt., NB BL SURFACE ELEV. 632.0 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTD CLASS
632.0	0													
630.5	2	1	16-9-6	12"	Gravel and cinders (fill), medium stiff to stiff	Visual classification-No tests performed								Fill
	4	2	7-7-6	9"	Brown and gray silty clay with cinders and brick fragments (fill), moist - medium stiff	Visual classification-No tests performed								Fill
627.0	6	3	6-6-4	9"	Brown sandy silt, little gravel with limestone fragments (fill), moist - medium stiff	10	13	29	38	10		NP	12	A-4a
625.0	8	S-1		3"	do do	No tests performed-Insufficient sample							14	A-4a
623.0	10	4	8-9-9	13"	Brown and gray silt and clay, some sand, little gravel with brick and limestone fragments (fill), moist - medium stiff	14	10	12	32	32	33	13	19	A-6a
620.5	12	5	5-7-8	16"	Brown and gray silty clay, little sand, little gravel with limestone fragments, moist - medium stiff	10	7	5	32	46	38	16	18	A-6b
	14	6	9-13-11	13"	Brown and gray silty clay, little sand, trace gravel with limestone fragments (fill), moist - medium stiff	2	6	6	36	50	39	17	15	A-6b
	16	S-2		17"	Brown and gray silty clay, little sand, little gravel with limestone fragments, (fill), moist-medium stiff	13	8	4	36	39	37	17	14	A-6b
611.5	18	7	20-19-11	16"	Brown and gray silty clay, trace sand moist - stiff	0	2	4	38	56	38	17	14	A-6b
	20	8	13-16-19	16"	Brown and gray silt and clay, trace sand, trace gravel (fill), moist -stiff	5	4	3	36	52	38	15	16	A-6a
607.0	22	9	11-14-14	16"	Brown and gray silty clay, little sand, trace gravel (fill), moist - stiff	2	8	5	37	48	38	17	17	A-6b
	24	S-3		20"		12	6	4	36	42	38	16	11	A-6b
602.0	26	10	20-22-19	16"	Gray shale, moist									
	28													
	30													
	32													
	34													

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—14-58

THE H. C. NUTTING COMPANY

4130 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/26/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 610.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/29/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-S STATION AND OFFSET 192+11, 38' Rt., NB BL SURFACE ELEV. 632.0 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL. CLASS.
597.0	34	R-1	NXM	100%	Gray shale, slightly tough, broken(¼" to 2" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, (one 1½"piece at the top of the run) 95% shale, 5% limestone									
	38	R-2	NXM	66%										
590.0	40				Gray shale,slightly tough with brown weathered zones in the top half of the run(½" to 3" pieces averaging 2") and gray limestone, crystalline,fossiliferous, jointed, (1" to 3-3/4"pieces averaging 3") 86% shale, 14% limestone									
	42													
	44													
	46				Boring completed									
	48													
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/22/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/23/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-9 STATION AND OFFSET 193+12, 9' Rt., NB BL SURFACE ELEV. 633.3 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
633.3	0													
632.8		1	9-3-3	7"	0.5' Blacktop									
	2				Brown silty clay with limestone fragments, (fill), moist - soft to very stiff	Visual classification-No tests performed Fill								
	4	S-1		20"	do do	No tests performed - Shelby tube lost								
628.8														
	6	2	7-9-9	13"	Brown silty clay, some sand, little gravel with limestone fragments (fill), moist - stiff	13	13	8	36	30	34	17	10	A-6b
625.8	8													
		3	6-27-13	13"	Brown silt and clay, little sand, little gravel with limestone fragments (fill), moist - very stiff	10	11	6	36	37	36	14	13	A-6a
	10													
		4	16-9-9	9"	Brown silt and clay, some sand, little gravel with limestone fragments (fill), moist - stiff	15	18	9	28	30	33	12	14	A-6a
	12													
619.3	14	5	20-19-11	5"	Brown silt and clay, some sand, little gravel with limestone fragments (fill), moist - stiff	13	12	10	23	42	36	15	10	A-6a
	16	6	9-11-11	11"	Brown silty clay, some sand (fill), moist - stiff	0	14	6	36	44	36	16	16	A-6b
	18	7	11-11-12	11"	Brown and gray silty clay, trace sand, (fill), moist - stiff	0	5	3	36	56	40	16	14	A-6b
613.3	20													
		8	15-17-19	9"	Gray silt and clay, little sand (fill), moist- stiff	0	4	6	35	55	38	15	14	A-6a
611.3	22													
		9	19-23-26	15"	Brown silt and clay, trace sand, moist- stiff	0	2	4	42	52	35	14	17	A-6a
	24													
608.3														
	26	10	16-19-21	16"	Brown clay, little sand, moist -stiff	0	6	8	41	45	44	23	21	A-7-6
	28													
603.3	30													
		11	13-13-11	11"	Brown silty clay, some sand, trace gravel with limestone fragments, moist- very stiff	9	11	11	24	45	39	21	10	A-6b
	32													
	34													

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Form No. 530—16-69

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/22/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None Backfilled CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/23/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-9 STATION AND OFFSET 193+12, 9' Rt. NB BL SURFACE ELEV. 633.3 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
598.3	34													
	36	12	17-19-16	7"	Gray shale, moist - very stiff									
595.3	38													
	40	R-1	NXM	88%	Gray shale, calcareous, tough (¼" to 2" pieces averaging 1") and gray limestone, crystalline, fossiliferous(½" to 3½" pieces averaging 2") 84% shale,16% limestone									
590.3	42													
	44				Boring completed									
	46													
	48													
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 630—15-59

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/7/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/7/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-10 STATION AND OFFSET 193+14, 61' Rt. NB BL SURFACE ELEV. 637.3 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
637.3	0				1.0' Concrete									
636.3	2	1	4-7-7	12"	Brown silty clay with cinders and gravel (fill), moist - stiff	Visual classification-No tests performed								Fill
	4	2	6-5-4	15"	do do	Visual classification-No tests performed								Fill
	6	3	7-9-11	9"	do do	Visual classification-No tests performed								Fill
629.8	8	4	7-7-7	11"	Brown silty clay, little sand, some gravel with limestone fragments(fill), moist - stiff	25	9	7	27	32	36	16	20	A-6b
627.3	10	S-1		2"	Brown silt and clay, little sand, trace metal, moist - stiff	5	10	8	40	37	35	15	17	A-6a
625.3	12	5	7-9-11	10"	Brown silty clay, trace sand, some gravel (fill), moist - stiff	33	4	5	25	33	40	18	16	A-6b
	14													
621.3	16	6	11-9-10	11"	Brown and gray silty clay, little sand, little gravel with limestone fragments, (fill), moist - stiff	17	7	3	31	42	38	17	13	A-6b
	18	7	8-10-12	10"	Brown and gray clay, little sand, little gravel with limestone fragments (fill), moist - stiff	17	6	6	30	41	41	19	16	A-7-6
618.8	20	8	6-22-9	12"	Brown and gray silty clay, little sand with limestone fragments(fill), moist-stiff	0	7	7	37	49	40	18	14	A-6b
	22	9	7-9-10	11"	Brown and gray silty clay, trace sand with limestone fragments (fill), moist-stiff	0	1	2	43	54	40	18	12	A-6b
613.8	24	10	9-11-12	14"	Brown and gray clay, trace sand, some gravel with limestone fragments (fill), moist - stiff	20	2	2	27	49	45	21	15	A-7-6
	26	11	11-10-9	10"	Brown and gray clay, trace sand, trace gravel with limestone fragments(fill), moist - stiff	3	3	2	36	56	44	20	18	A-7-6
	28	12	7-9-10	12"	Gray clay, trace sand with limestone fragments (fill), moist - stiff	0	4	2	38	56	41	18	18	A-7-6
607.3	30	13	11-12-10	14"	Dark brown clay, trace sand, trace gravel with organic matter, moist -stiff	5	2	4	46	43	42	16	24	A-7-6
604.8	32				Brown plastic clay, little sand, little									
	34	14	10-11-9	15"	gravel, moist - medium stiff	16	11	7	21	45	50	17	24	A-7-6

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/7/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/7/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-10 STATION AND OFFSET 193+14, 61' Rt. NB BL SURFACE ELEV. 637.3 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL CLASS
602.3	34													
601.3	36	S-2		1"	Gray clay, moist - stiff	Insufficient sample								
	38	R-1	NXM	43%	Brown and gray weathered shale (1" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous, jointed (1" to 3" pieces averaging 2") 77%shale, 23% limestone									
	40													
	42				Gray shale,calcareous,moderately tough in top 6" to tough(1" to 6" pieces averaging 4") and gray limestone, fossiliferous, shaly (one 1" piece in the bottom 3" of the run (98% shale, 2% limestone)									
	44													
591.3	46	R-2	NXM	100%										
	48				Boring completed									
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 530—14-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/13/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/13/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-11 STATION AND OFFSET 194+47, 3' L., NB BL SURFACE ELEV. 637.5 Bridge No. HAM-71-0024

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
637.5	0													
637.0					0.5' Concrete									
635.0	2	1	4-5-9	10"	Cinders (fill), wet - loose	Visual classification-No tests performed								Fill
632.5	4	2	2-4-6	15"	Brown and gray silt and clay, little sand, little gravel (fill), very moist-soft	14	8	9	38	31	36	14	32	A-6a
630.0	6	3	6-9-5	17"	Brown and gray silty clay, little sand, little gravel (fill), moist - medium stiff	15	6	5	36	38	37	16	20	A-6b
627.5	8	4	7-8-5	12"	Brown and gray silt and clay, little sand, some gravel with topsoil (fill), wet - soft	30	10	8	26	26	36	15	30	A-6a
626.5	10	S-1(T)		24"	do do	Visual classification-No tests performed								A-6a
625.5	12	S-1(B)			Brown clay, trace sand, little shale and limestone fragments, moist-very stiff	15	3	2	34	46	42	20	22	A-7-6
623.5	14	5	19-38-48	9"	Brown silty clay, little sand, little shale and limestone fragments, moist - very stiff	11	4	6	35	44	40	18	16	A-6b
	16				Brown and gray weathered shale, slightly tough (1" to 4" pieces averaging 2") and gray limestone, crystalline, fossiliferous, iron oxide stained (1" to 6" pieces averaging 4") 80% shale, 20% limestone									
	18	R-1	NXM	68%										
	20				Gray shale, calcareous, moderately tough to tough (1" to 5" pieces averaging 3") and gray limestone, crystalline, fossiliferous, jointed and oxide stained, (one 6½" piece in the bottom 2' of the run) 89% shale, 11% limestone									
	22													
613.5	24	R-2	NXM	93%										
	26				Boring completed									
	28													
	30													
	32													
	34													

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Form No. 630—10-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/8/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/8/64 CASING: LENGTH DIA. 3.5"I.D.Hollow Stem Augers AFTER HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-12 STATION AND OFFSET 194+39, 59' Rt., NB SL SURFACE ELEV. 637.3 Bridge No. HAM-71-0184

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
637.3	0				0.2' Asphaltic Concrete 0.3' Red Brick									
635.3	2				1.5' Concrete									
	4	1	8-5-7	9"	Brown and gray silty clay, some sand, little gravel (fill), wet - soft	18	17	7	28	30	36	16	28	A-6b
632.3	6	2	9-11-15	12"	Brown silt and clay, little sand, trace gravel (fill), moist - medium stiff	6	10	5	44	35	35	14	24	A-6a
629.8	8	3	12-9-11	8"	Brown clay, little sand, trace gravel, (fill), moist - medium stiff	7	10	7	32	44	42	22	25	A-7-6
627.3	10													
	12	4	7-9-15	12"	Brown and gray silty clay, some sand, some gravel (fill), very moist - soft	21	12	8	29	30	35	16	24	A-6b
624.8	14	5	8-9-11	14"	Brown clay, trace sand (fill), moist - stiff	0	4	3	34	59	53	29	26	A-7-6
620.8	16	S-1		18"	Brown clay, little sand, some fill, with limestone fragments (fill), moist-stiff	26	7	4	21	42	45	23	20	A-7-6
	18	6	11-15-19	16"	Brown clay, trace sand, trace limestone fragments, moist - very stiff	1	2	3	39	55	46	23	17	A-7-6
	20	7	15-18-21	12"	Brown and gray clay, little sand, trace limestone fragments, moist - very stiff	2	6	4	35	53	47	24	18	A-7-6
	22													
	24	8	23-56-61	11"	Brown clay, trace sand with limestone fragments, moist - very stiff	0	1	2	45	52	43	19	18	A-7-6
612.3	26	R-1	NXM	20%	Gray and brown shale, slightly tough, (1" and 2" pieces) and gray limestone, crystalline, fossiliferous, jointed and iron oxide stained (two pieces ½" and 4") 92% shale, 8% limestone									
	28													
	30													
	32	R-2	NXM	60%	Gray shale, calcareous, slightly to moderately tough with thin brown weathered zones throughout the run 100% shale									
	34													

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Form No. 630—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/13/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/13/64 CASING: LENGTH _____ DIA 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-13 STATION AND OFFSET 195+69, 39' Rt., NB BL SURFACE ELEV. 648.5 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
648.5	0													
648.0					0.5' Concrete									
	2	1	4-9-5	14"	Gray silty clay and cinders (fill), moist - medium stiff	Visual classification-No tests performed								Fill
646.0	4	2	3-5-7	12"	Brown and gray silt and clay, trace sand, trace gravel (fill), moist - medium stiff	9	5	4	40	42	37	15	15	A-6a
	6	3	3-4-4	13"	Brown and gray silt and clay, trace sand, little gravel (fill), moist - medium stiff	10	4	2	45	39	35	13	18	A-6a
641.0	8	4	5-6-8	14"	Brown and gray silty clay and gravel, little sand (fill), moist - medium stiff	37	8	6	21	28	39	17	18	A-6b
638.5	10	5	7-9-15	12"	Brown and gray silty clay, little sand, some shale and limestone fragments, moist - stiff	20	5	5	32	38	40	18	18	A-6b
636.0	12													
635.0	14	6	68-93	5"	Gray shale, moist - hard									
	16				Gray shale, calcareous, moderately tough with brown weathered zones in the top half of the run (1" to 4½" pieces averaging 3") and gray limestone, crystalline, fossiliferous, iron oxide stained (three pieces 1" - 4" and 6½" at the top of the run) 81% shale, 19% limestone									
	18	R-1	NXM	53%										
	20				Gray shale, calcareous, moderately tough with brown weathered zones throughout the run (1" to 2½" pieces averaging 2") and gray limestone, crystalline, fossiliferous, jointed in the top 12" (1½" to 4½" pieces averaging 3") 70% shale, 30% limestone									
	22	R-2	NXM	73%										
625.0	24													
	26				Boring completed									
	28													
	30													
	32													
	34													

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 536—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/24/64 SAMPLER: TYPE Split Spoon& CoreBarrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/24/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-14 STATION AND OFFSET 196+98, 23' Rt., NB SL SURFACE ELEV. 653.7 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
653.7	0													
653.2	2	1	6-4-5	10"	Cinders and gravel(fill)moist-medium stiff Brown and gray weathered shale with limestone fragments, moist - very stiff	Visual classification-No tests performed								Fill
	4	2	20-16-31	9"	do do									
648.7	6	3	30-36-47	14"	Gray shale, moist - hard									
646.7	8	R-1	NXM	100%	Gray shale,calcareous, moderately tough with a 3" brown weathered zone at the bottom of the run (1" to 4½" pieces averaging 3") 100% shale									
	10													
	12	R-2	NXM	88%	Gray shale, calcareous,moderately tough, (½" to 2½" pieces averaging 2") and gray limestone, crystalline,fossiliferous, jointed and iron oxide stained (1" to 5" pieces averaging 3")80% shale,20% limestone									
	14													
638.7	16				Boring completed									
	18													
	20													
	22													
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 630—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/24/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/25/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-19-15 STATION AND OFFSET 197+02, 80' Rt., NB BL SURFACE ELEV. 653.2 Bridge No. HAM-71-0224

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTO CLASS
653.2	0	1	3	5"	0.5' Asphaltic concrete									
652.7		1A	2-4	5"	Brown silty clay with trace cinders, topsoil and rock fragments (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	2													
	4	2	10-10-4	17"	do do	Visual classification-No tests performed								Fill
648.2														
	6	3	9-11-7	4"	Brown silty clay with rock fragments, (probable fill) moist - stiff									
645.7	8													
		4	13-16-20	12"	Brown silty clay and limestone fragments, trace sand, moist - stiff	52	5	4	16	23	38	16	14	A-6b
643.2	10													
		5	19-42-46	9"	Brown and gray silt, clay and limestone fragments, trace sand, moist - hard	50	6	3	16	25	35	15	14	A-6a
641.2	12													
	14				Gray shale, calcareous, moderately tough with brown weathered zones in the top half of the run (1" to 2½" pieces averaging 2") and gray limestone, crystalline, fossiliferous, jointed at the bottom of the run (1" to 4½" pieces averaging 2½") 82% shale, 18% limestone									
	16	R-1	NXM	71%										
	18													
	20	R-2	NXM	50%	Gray shale, calcareous, slightly tough with brown weathered zones throughout the run (½" to 2" pieces averaging 1") and gray limestone, crystalline, fossiliferous, jointed (1" to 3" pieces averaging 2")									
631.2	22				70% shale, 30% limestone									
	24													
	26				Boring completed									
	28													
	30													
	32													
	34													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/13/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/13/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS ____ Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0224

BORING No. B-19-16 STATION AND OFFSET 198+26, 42' Rt., NB BL SURFACE ELEV. 660.3

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
660.3	0				0.5' Concrete									
659.8	2	1	5-6-7	12"	Gray clay, trace sand, little shale fragments (fill), moist - stiff	18	3	2	29	48	45	21	21	A-7-6
657.3	4	2	9-25-31	15"	Brown and gray silty clay, little sand some limestone fragments moist-hard	31	5	5	25	34	40	17	15	A-6b
655.3														
654.3	6	3	12-70	9"	Gray shale and limestone fragments, dry - hard									
	8	R-1	NXM	52%	Gray shale, calcareous, moderately tough with brown weathered zones in the bottom 12" of the run (½" to 2½" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed (½" to 4" pieces averaging 2") 90% shale, 10% limestone									
	10													
	12													
	14	R-2	NXM	87%	Gray shale, calcareous, moderately tough to tough with a 6" brown weathered zone at the top of the run (1" to 4½" averaging 3") and gray limestone, crystalline, fossiliferous, jointed (1" to 2½" pieces averaging 1½") 90% shale, 10% limestone									
644.3	16				Boring completed									
	18													
	20													
	22													
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/13/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/13/64 CASING: LENGTH _____ DIA. 3.5"I.D,Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-17-1 STATION AND OFFSET 187+93, 3' L. SB RL SURFACE ELEV. 622.3 Bridge No. HAM-71-0226

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
622.3	0													
620.3	2	1	1-2-3	10"	Brown and gray silt and clay, some sand, trace gravel with cinders (fill), wet-soft	6	10	10	32	42	34	13	29	A-6b
	4	S-1		18"	Brown and gray silty clay, little sand, trace gravel, moist - stiff	29	7	6	26	32	39	17	22	A-6b
616.3	6	2	4-10-12	11"	Brown and gray silty clay, little sand, little gravel(probable fill),moist-stiff	13	5	6	37	39	40	16	24	A-6b
	8	3	10-14-20	10"	Brown and gray weathered shale, moist - very stiff	Visual classification-No tests performed								
	10	4	18-71	10"	do do	Visual classification-No tests performed								
	12	5	29-54	9"	Gray shale, dry - hard	Visual classification-No tests performed								
609.8	14	R-1	NXM	100%	Gray shale, calcareous,tough (1" to 7" pieces averaging 4") and gray limestone, crystalline, jointed and iron oxide stained (one 4" piece at the top of the run) 93% shale, 7% limestone									
	16													
	18													
	20	R-2	NXM	88%	Gray shale, calcareous,tough(½" to 4½" pieces averaging 2") and gray limestone, crystalline, fossiliferous (two pieces 3/4" and 1-1/2") 96% shale, 4% limestone									
599.5	22													
	24				Boring completed									
	26													
	28													
	30													
	32													
	34													

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Form No. 830—16-59

THE E. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/1/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/1/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-17-2 STATION AND OFFSET 189+02, 23' L. SB BL SURFACE ELEV. 623.2 Bridge No. HAM-71-0226

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
623.2	0													
622.7		1	2		Cinders and gravel(fill),moist-soft	Visual classification-No tests performed								Fill
	2	1A	4-6	17½"	Brown and gray silt and clay,little sand, trace gravel with limestone fragments, (fill),moist-medium stiff	8	9	6	37	40	37	13	22	A-6a
618.2	4	2	4-6-6	13"	Brown silt and clay,little sand, trace gravel with limestone fragments (fill), moist -medium stiff	4	12	7	33	44	39	15	17	A-6a
615.7	6	3	2-2-7	18"	Gray clay, trace sand, trace gravel with shale fragments (fill),very moist-medium stiff	1	3	2	37	57	43	19	27	A-7-6
613.2	8 10	4	20-31-36	18"	Gray clay, little sand, trace gravel with shale fragments (probable fill), moist - medium stiff	2	11	4	38	45	38	14	21	A-7-6
611.2	12	5	30-36-100	11"	Brown and gray weathered shale, moist - hard	Visual classification-No tests performed								
2	14 16	6	NXM	80%	Gray shale,calcareous,moderately tough to tough(1" to 4½" pieces averaging 3") and gray limestone, crystalline, fossiliferous (3/4" to 3" pieces averaging 2"in the top 12" of the run) 87% shale, 13% limestone									
601.2	18 20 22	7	NXM	60%	Gray shale, calcareous,moderately tough to tough (1" to 4½" pieces averaging 3") and gray limestone, crystalline, fossiliferous, shaly, jointed (two pieces 3/4" and 1") 97% shale, 3% limestone									
	24 26 28 30 32 34				Boring completed									

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Form No. 530--16.59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 25, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/2/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 598.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/2/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER 3 HOURS 614.2 PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-17-3 STATION AND OFFSET 190+50, 10' Rt., SB BL SURFACE ELEV. 624.2 Bridge No. HAM-71-0226

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
624.2	0				0.5' Concrete									
623.7														
621.7	2	1	7-8-12	10"	Cinders and brick (fill), dry - dense	Visual classification-No tests performed								Fill
619.2	4	2	27-10-15	8"	Brown silty clay with limestone and shale fragments (fill), moist - stiff	Insufficient sample-No tests performed								A-6b
	6	3	20-17-18	5"	Brown and gray silt and clay, little sand, trace gravel with shale and limestone fragments (fill), moist -stiff	4	8	7	33	48	36	14	14	A-6a
	8	4	19-9-9	10"	do do	Visual classification-No tests performed								A-6a
	10													
	12	5	10-12-11	14"	Brown and gray clay, trace sand with shale and limestone fragments (fill), moist - stiff	0	3	4	37	56	42	18	15	A-7-6
	14	6	9-11-15	9"	do do	Visual classification-No tests performed								A-7-6
609.2														
	16	S-1		1"	Brown silt and clay, little sand, some gravel with shale and limestone fragments (fill), moist - stiff	31	12	6	21	30	35	12	17	A-6a
	18	7	10-7-7	13"	Brown and gray silt and clay, little sand, trace gravel with shale and limestone fragments (fill) moist - stiff	5	13	6	32	44	37	14	20	A-6a
604.7	20	8	9-11-9	12"	Brown and gray clay, little sand, trace gravel with shale and limestone fragments, (fill), moist - medium stiff	2	5	6	33	54	42	18	25	A-7-6
	22													
	24	9	9-10-10	14"	Brown and gray clay, little sand, trace gravel with shale and limestone fragments, (fill), moist - medium stiff	4	8	4	34	50	42	17	26	A-7-6
598.2	26	S-2		10"	Brown and gray clay, trace sand, moist - medium stiff	0	0	2	41	57	44	18	14	A-7-6
		10	39-80	9"	Brown and gray weathered shale, moist - hard	Visual classification-No tests performed								
595.7	28													
	30				2.0' Brown and gray weathered shale, slightly tough, jointed (¼" to 2½" pieces averaging 1½") 100% shale									
	32	11	NXM	82%	3.0' Gray shale, calcareous, moderately tough (¼" to 3" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed and iron oxide stained (¼" to 4" pieces averaging 2½") 78% shale, 22% limestone									
590.7	34				Boring completed									

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Form No. 626—10-58

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/24/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 599.1 Backfilled CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/25/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0226

BORING No. B-17-4 STATION AND OFFSET 191+93, 1' L. 6B RL SURFACE ELEV. 630.1

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
630.1	0													
	2	1	4-3-5	18"	Cinders, sand and brick fragments, (fill), moist - loose to very dense	Visual classification-No tests performed								Fill
	4	2	7-9-11	16"	do do	Visual classification-No tests performed								Fill
	6	3	4-4-6	6"	do do	Visual classification-No tests performed								Fill
622.6	8	4	2-2-2	18"	Gray silty clay (fill), moist-soft	Visual classification-No tests performed								Fill
620.1	10													
	12	5	2-5-7	16"	Cinders and brick fragments (fill), loose to medium dense	Visual classification-No tests performed								Fill
	14													
	16	6	3-6-3	1"	do do	Visual classification-No tests performed								Fill
612.6	18													
	20	7	9-15-20	13½"	Brown silty clay with cinders(fill), moist - stiff	Visual classification-No tests performed								Fill
608.1	22	8	9-15-6	11"	do do	Visual classification-No tests performed								Fill
606.1	24	9	6-9-9	10"	Wood fragments (fill)	Visual classification-No tests performed								Fill
	26	10	2-5-3	0										
	28	11	9-16-20	16"	Brown and gray silty clay with wood fragments(fill), moist - hard	Visual classification-No tests performed								Fill
	30													
599.1		12	9-9	16"	Brown and gray silty clay(probable fill), moist - medium stiff	Visual classification-No tests performed								Fill
597.6	32	12A	11		Brown and gray clayey gravel, some sand with limestone fragments,moist-stiff	Visual classification-No tests performed								A-2-7
	34	13	20-16-9	16"	do do	47	15	6	8	24	42	20	26	A-2-7

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Form No. 530—10-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/24/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 599.1 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/25/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0226

BORING No. B-17-4 STATION AND OFFSET 191+93, 1' L. SB BL SURFACE ELEV. 620.1

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C	SHTI CLASS
595.1	34													
	36	14	23-19-21	10"	Brown silty clay and gravel, little sand with limestone fragments, moist-stiff	43	13	6	15	23	37	16	20	A-6b
	38													
590.1	40													
	42	15	51-49-63	13"	Gray shale, moist - hard	Visual classification-No tests performed								
586.1	44													
	46	16	NXM	50%	*Interbedded gray shale and fossiliferous limestone									
	48													
581.1	50													
	52				Boring completed									
	54													
	56				*Vandals destroyed core samples in the field. Descriptions based on driller's examination only. (Notified Mr. Warnke of Hazelet & Erdal by telephone of this condition)									
	58													
	60													
	62													
	64													
	66													
	68													

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15

Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/2/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/2/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT Northeast Expressway HAM-71-0.93

BORING No. B-17-5 STATION AND OFFSET 191+94, 40' L. SB BL SURFACE ELEV. 625.8 Bridge No. HAM-71-0226

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL CLASS
625.8	0													
624.3		1	6-5-14	18"	Cinders, brick and sand (fill), dry - medium stiff to stiff	Visual classification-No tests performed								Fill
	2													
		2	4-4-4	16"	do do	Visual classification-No tests performed								Fill
	4													
620.8														
	6	3	4-5-6	10"	Brown and gray silty clay, trace sand, trace gravel with brick fragments(fill), dry - stiff	9	3	2	32	54	40	18	12	A-6b
618.3														
	8	4	7-7-14	9"	Brown and gray silt and clay, little sand, trace gravel (fill), moist - stiff	1	5	6	42	46	36	14	12	A-6a
	10													
		S-1		24"	Brown silt and clay, trace sand(fill), moist - very stiff	0	3	6	42	49	37	15	14	A-6a
	12													
		5	9-9-13	9"	do do	Insufficient sample-No tests performed								A-6a
	14													
	16	6	9-7-7	6"	Brown silt and clay, trace sand with brick fragments (fill), moist - stiff	Insufficient sample-No tests performed								A-6a
	18													
		7	6-8-8	7"	Brown silt and clay, trace sand with limestone fragments (probable fill), moist - very stiff	Insufficient sample-No tests performed								A-6a
	20													
	22	S-2		24"	Brown silt and clay, some sand, trace gravel with limestone fragments(probable fill), moist - stiff	4	18	6	33	39	35	13	16	A-6a
		8	13-9-16	11"	Brown and gray silt and clay, some sand, some gravel with limestone fragments (probable fill), moist - stiff	22	16	7	26	29	32	11	16	A-6a
600.8	24													
	26													
		9	NXM	84%	Brown and gray weathered shale, moderately tough (½" to 2½" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed at approximately elevation 599, (½" to 4" pieces averaging 3") 78% shale, 23% limestone									
	28													
595.8	30													
	32				Boring completed									
	34													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/25/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 610.4 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/26/64 CASING: LENGTH ____ DIA 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-17-6 STATION AND OFFSET 192+88,11'L. SB BL SURFACE ELEV. 630.4 Bridge No. HAM-71-0226

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
630.4	0													
	2	1	9-6-6	13½"	Brown silty clay with cinders, gravel and brick fragments (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	4	2	4-7-8	9"	do do	Visual classification-No tests performed								Fill
	6	3	6-9-8	7"	do do	Visual classification-No tests performed								Fill
622.9	8	4	7-15-15	12"	Brown and gray silty clay, trace sand, little gravel with limestone fragments (fill), very moist - medium stiff	17	4	4	30	45	38	16	26	A-6b
620.0	10													
	12	5	10-8-20	18"	Brown and gray silt and clay, trace sand, some gravel with limestone fragments (fill), moist - stiff	28	3	3	25	41	38	15	17	A-6a
	14	6	19-18-24	16"	Brown and gray silt and clay, little sand, little gravel with limestone fragments (fill), moist - very stiff	15	6	6	30	43	37	15	11	A-6a
	16	7	20-30-27	16"	Brown and gray silt and clay, trace sand, little gravel with limestone fragments (fill), moist - very stiff	12	4	4	32	48	36	15	11	A-6a
	18	8	12-12-17	6"	do do	Visual classification-No tests performed								A-6a
	20	9	12-18-20	6"	Brown and gray silt and clay, little sand, trace gravel with limestone fragments (fill), moist - very stiff	1	6	6	47	40	31	11	13	A-6a
	22	10	12-12-19	3"	do do	Visual classification-No tests performed								A-6a
	24	11	13-12-17	13"	Brown and gray silt and clay, little sand, little gravel with limestone fragments and cinders (fill), moist - stiff	14	9	7	32	38	36	15	18	A-6a
	26	12	12-16-31	16"	Brown and gray silt and clay (fill), moist - stiff	Visual classification-No tests performed								A-6a
	28	13	19-27-40	16"	Dark gray silt and clay, some sand, some gravel with limestone fragments, (fill). moist - medium stiff	30	14	12	24	20	34	12	18	A-6a
	30													
	32													
	34													

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL.

Form No. 520—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/25/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA 2"O.D.& NXM WATER ELEV. IMMEDIATE 610.4 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/26/64 CASING: LENGTH _____ DIA 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0226

BORING No. B-17-6 STATION AND OFFSET 192+88, 11' L. SB BL SURFACE ELEV. 630.4

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36	14	12-23-19	12½"	Brown and gray silt and clay, little sand, some gravel with limestone fragments (fill), very moist - medium stiff	26	11	6	32	25	35	15	26	A-6a
	38													
590.4	40													
	42	15	8-8-19	6"	Brown and gray silty clay and gravel, little sand, wet - soft	42	5	5	25	23	36	17	29	A-6b
586.4	44													
	46													
	48	16	NXM	72%	*Interbedded gray shale and fossiliferous limestone									
581.4	50													
	52				Boring completed									
	54													
	56				*Vandals destroyed core samples in the field. Descriptions based on driller's examination only. (Notified Mr. Warnke of Hazelet & Erdal by telephone of this condition.									
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/8/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/8/64 CASING: LENGTH ____ DIA. 3.5"I.D.hollow stem augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0226

BORING No. B-17-7 STATION AND OFFSET 194+72, 24' L, SB BL SURFACE ELEV. 631.7

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTO CLASS
631.7	0													
630.2	2	1	15-3-2	16"	Blacktop, sand and gravel(fill), very stiff to soft	Visual classification-No tests performed								Fill
627.2	4	S-1			Brown silt and clay, little sand, moist - very stiff	0	4	9	39	48	39	13	17	A-6a
	6	2	36-42-47	16"	Brown weathered shale, moist - very stiff	Visual classification-No tests performed								
623.7	8													
	10	3	NXM	55%	Gray shale, calcareous, moderately tough (½" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous (1" to 7½" pieces averaging 4") 78% shale, 22% limestone									
	12													
	14				Gray shale, calcareous, moderately tough (½" to 3½" pieces averaging 2")									
	16	4	NXM	98%	100% shale									
613.7	18													
	20				Boring completed									
	22													
	24													
	26													
	28													
	30													
	32													
	34													

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 630—16-59

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/11/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None Backfilled CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/11/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS ____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-17-8 STATION AND OFFSET 195+40, 14' L. SB BL SURFACE ELEV. 648.4 Bridge No. HAM-71-0226

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	AASHTO CLASS
648.4	0													
647.9		1	3	16"	Cinders (FILL), SHFF	Visual classification-No tests performed								Fill
	2	1A	4-4	16"	Brown and gray clay, trace sand, moist-stiff	Visual classification-No tests performed								A-7-6
643.4	4	2	9-8-11	9"	do do	0	2	4	40	54	43	17	19	A-7-6
7.5	6	3	16-21-26	16"	Gray shale, moist - very stiff	Visual classification-No tests performed								
640.4	8													
	10	R-1	NXM	72%	Gray shale with brown weathered zones throughout the run, calcareous, moderately tough (1" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous, shaly in the top 2/3 of the run (1" to 3" pieces averaging 1½") 78% shale, 22% limestone									
635.4	12													
	14													
	16													
	18													
	20													
	22													
	24													
	26													
	28													
	30													
	32													
	34				Boring completed									

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/11/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/11/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Auger AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-18-1 STATION AND OFFSET 190+13, 50' Rt., Ramp RA BL SURFACE ELEV. 625.7 Bridge No. HAM-71-0231

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
625.7	0													
625.2		1	3	9"	0.5' Topsoil	Visual classification-No tests performed								
	2	1A	4-4	9"	Brown silty clay, little sand, little gravel with shale and limestone fragments, moist - very stiff	Visual classification-No tests performed								A-6b
	4	2	7-5-6	11"	do do	11	8	8	28	45	39	17	15	A-6b
620.7														
	6	3	7-6-6	13"	Brown clay, trace sand with shale and limestone fragments, moist - stiff	0	1	2	31	66	52	25	26	A-7-6
618.2	8													
		4	33-37-41	12"	Gray shale, moist- hard	Visual classification-No tests performed								
615.7	10													
	12	R-1	NXM	82%	Gray shale, calcareous, tough with brown weathered zones throughout fun (¼" to 3" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, (two pieces 1½" and 3¼") 93% shale 7% limestone									
610.7	14													
	16				Boring completed									
	18													
	20													
	22													
	24													
	26													
	28													
	30													
	32													
	34													

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—16-69

THE E. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/3/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/3/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS ____ Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-18-4 STATION AND OFFSET 192+98, 49'Rt., Ramp RA BL SURFACE ELEV. 626.9 Bridge No. HAM-71-0231

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
626.9	0				0.3' Concrete									
626.6														
	2	1	7-8-5	12"	Sand, gravel and cinders (fill), moist-medium dense	Visual classification-No tests performed								Fill
624.4	4	2	10-8-9	12"	Brown silt, clay and gravel, trace sand with shale and limestone fragments, (fill), moist - medium stiff	47	5	4	21	23	34	15	13	A-6a
	6	3	7-9 -11	16"	Brown and gray silt and clay, little sand, little gravel with shale and limestone fragments (fill), moist-stiff	17	7	4	32	40	35	14	15	A-6a
	8	4	6-7-8	15"	Brown and gray silt and clay, trace sand, some gravel with shale and limestone fragments, (fill), moist-stiff	22	8	4	29	37	35	13	14	A-6a
	10	5	7-9-10	16"	Brown and gray silt and clay, trace sand, little gravel with shale and limestone fragments (fill) moist-stiff	16	3	4	35	42	38	14	9	A-6a
	12	6	8-8-9	17"	Brown and gray silt and clay, trace sand with shale fragments (fill), moist - very stiff	0	2	2	40	56	38	14	11	A-6a
	14	7	7-9-10	18"	Gray silt and clay, trace sand, trace gravel with brick fragments (fill), moist - very stiff	8	3	1	43	45	35	14	14	A-6a
609.4	16	8	5-6-6	15"	Brown and gray silty clay, trace sand, trace gravel with shale fragments (fill), moist - very stiff	1	1	3	39	56	39	17	14	A-6b
	18	9	4-5-6	17"	Brown and gray silt and clay, trace sand with shale fragments (fill), moist - stiff	0	2	2	39	57	40	16	19	A-6b
604.4	20	10	3-4-5	18"	Brown clay, little sand, trace gravel with shale fragments (fill), moist-stiff	2	6	6	34	52	42	17	24	A-7-6
601.9	22	11	3-3-5	12"	Brown and gray silty clay, little sand, trace gravel with shale and limestone fragments (probable fill), moist - stiff	5	5	6	37	47	40	16	20	A-6b
	24													
596.9	26	12	3-5-10	16"	Brown silt, clay and gravel, little sand with limestone fragments, moist-medium stiff	36	12	6	23	23	33	12	23	A-6a
593.4	28													
	30													
	32													
	34													

AS A MATTER OF PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL.

Form No. 530—10-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/3/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/3/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-18-4 STATION AND OFFSET 192+98, 49'Rt., Ramp RA-BL SURFACE ELEV. 626.9 Bridge No. HAM-71-0231

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL. CLASS
591.9	34	13	27-48	13"	Gray shale, dry - hard	Visual classification-No tests performed								
	36	14	NXM	93%	Gray shale, calcareous, tough to moderately tough (1" to 7½" pieces averaging 3") and gray limestone, crystalline, fossiliferous (1½" and 2½" pieces) 90% shale, 10% limestone									
	38													
586.9	40													
	42				Boring completed									
	44													
	46													
	48													
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 680—16-58

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/31/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. NXM WATER ELEV. IMMEDIATE None Backfilled CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/31/64 CASING: LENGTH _____ DIA 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-16-1 STATION AND OFFSET 188+75, 6' Rt. Ramp RB BL SURFACE ELEV. 622.7 Bridge No. HAM-71-0228

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
622.7	0													
620.2	2	1	6-6-7	16"	Brown and gray silty clay with cinders, brick and wood fragments (fill), moist-medium stiff	Visual classification-No tests performed								Fill
617.7	4	2	1-1-1	12"	Cinders and wood (fill), moist - soft	Visual classification-No tests performed								Fill
	6	3	7-5-5	16"	Gray silty clay, little sand, little gravel with limestone fragments (fill), moist - medium stiff	14	8	6	31	41	38	17	18	A-6b
612.7	8	4	19-12-7	6"	do do	Visual classification-No tests performed								A-6b
610.2	10	5	2-3-3	16"	Brown and gray silt and clay, some sand, trace gravel with limestone fragments, (fill), moist - medium stiff	2	12	11	36	39	33	13	27	A-6a
	12	6	7-9-4	9"	Brown and gray silty clay, little sand, some gravel with brick fragments, (fill), moist - medium stiff	24	5	5	30	36	39	18	25	A-6b
	14	7	7-7-9	14"	Brown and gray silty clay, some sand, trace gravel with limestone fragments, (probable fill), moist - medium stiff	1	11	9	33	46	40	19	18	A-6b
605.2	16	8	6-8-8	16"	Brown and gray clay, trace sand with limestone fragments (probable fill), moist - medium stiff	0	2	2	33	63	50	26	26	A-7-6
	18													
	20	S-1			Brown clay, little sand, trace gravel, moist - stiff	9	6	6	27	52	45	21	16	A-7-6
	22	9	28-24-48	18"	Brown clay, little sand with limestone fragments, moist - very stiff	0	5	5	36	54	46	21	17	A-7-6
597.7	24													
	26	10	40-60-72	18"	Brown weathered shale, moist - hard	Visual classification-No tests performed								
594.7	28													
	30	11	NXM	75%	3.0' Brown and gray weathered shale, moderately tough (1/2" to 4" pieces averaging 1-1/2") 100% shale									
	32													
	34													

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9

Form No. 530—16-5

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/31/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/31/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT Northeast Expressway HAM-71-0.93

BORING No. B-16-1 STATION AND OFFSET 188+75, 6' Rt. Ramp RB BL SURFACE ELEV. 622.7 Bridge No. HAM-71-0228

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34				2.0' Gray shale, calcareous, moderately tough (1/2" to 2" pieces averaging 1-1/2") and gray limestone, crystalline, fossiliferous (two 1/2" pieces at the bottom of the run) 96% shale, 4% limestone									
	36													
584.7	38	12	NXM	95%										
	40				5.0' Gray shale, calcareous, moderately tough to tough (1/2" to 2-3/4" pieces averaging 1-1/2") and gray limestone, crystalline, fossiliferous, (1" to 2-1/2" pieces, averaging 2") 90% shale, 10% limestone									
	42													
	44													
	46													
	48				Boring completed									
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 510 — THE A. D. LITTLE COMPANY — Cincinnati 26, O.

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

Split Spoon & 2"O.D. &

DATE STARTED 6/23/64 SAMPLER: TYPE Core Barr DIA. NXM WATER ELEV IMMEDIATE 604.3 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/30/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-26-2 STATION AND OFFSET 189+64, 28' Rt., RB 61. SURFACE ELEV. 629.8 Bridge No. HAM-71-0228

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTD CLASS
629.8	0													
	2	1	14-8-5	10"	Cinders, clay, gravel and brick (fill), moist - medium dense	Visual classification-No tests performed								Fill
627.3														
	4	2	3-4-5	18"	Sand, gravel and clay (fill), moist - loose	Visual classification-No tests performed								Fill
624.8	6	3	2-2-3	10"	Clay, cinders, sand and gravel (fill), moist - loose	Visual classification-No tests performed								Fill
	8													
	10													
	12	4	2-4-3	17"	do do	Visual classification -No tests performed								Fill
	14													
	16		2-2-2	0		No sample recovered								
612.3														
	18	5	2-2-3	7"	Cinders, sand and wood (fill), moist - loose	Visual classification-No tests performed								Fill
609.8	20													
	22	6	1-1-2	18"	Cinders, organic matter and sand (fill), moist - very loose	Visual classification-No tests performed								Fill
	24													
604.8														
	26	7	4-6-9	18"	Brown and gray clay, trace sand, trace gravel with limestone fragments (fill) moist - stiff	10	4	2	29	55	41	19	24	A-7-6
	28													
		S-1		15"	Brown and gray clay, trace sand, trace gravel with limestone fragments (fill) moist - stiff	1	6	3	38	52	44	21	24	A-7-6
	30													
		8	7-10-14	14"	Brown and gray clay, trace sand with shale and limestone fragments (fill), moist - stiff	0	2	0	60	38	42	20	18	A-7-6
	32													
		9	4-5-7	16"	Brown and gray clay, trace sand with shale and limestone fragments (fill), moist - stiff	0	2	4	32	62	46	23	22	A-7-6
	34													

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Form No 530-16

THE R. G. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

Split Spoon & 2"O.D.

DATE STARTED 6/30/64 SAMPLER: TYPE Core Barrel DIA. NXM WATER ELEV. IMMEDIATE 604.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/30/64 CASING: LENGTH _____ DIA 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-16-2 STATION AND OFFSET 189+64, 28'Rt., RB BL SURFACE ELEV. 629.8 Bridge No. HAM-71-0228

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36	10	8-5-4	13"	Brown and gray clay, little sand, trace gravel with limestone fragments (probable fill), moist - medium stiff	10	8	7	29	46	52	30	28	A-7-6
	38	11	4-5-8	12"	Brown and gray clay, some sand, trace gravel with limestone fragments, (probable fill), moist - medium stiff	7	13	10	25	45	52	30	36	A-7-6
	40													
587.3	42	12	11-22-34	16"	Brown clay, little sand, trace gravel, moist - very stiff	1	8	3	34	54	42	20	18	A-7-6
	44	13	22-42	12"	Gray shale, moist - hard	Visual classification-No tests performed								
584.3	46	14	78	6"	do do	Visual classification-No tests performed								
	48	15	NXM	75%	Gray shale, calcareous, tough with moderately tough layers in the bottom 12" of the run (1/4" to 4" pieces averaging 1-1/2") 100% shale									
579.3	50													
	52				Boring completed									
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/20/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE 630.4 CLIENT. City of Cincinnati, Ohio

DATE COMPLETED 8/21/64 CASING: LENGTH _____ DIA. 3.5"I.D. Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-16-3 STATION AND OFFSET 190+93, 28' L. Ramp RB BL SURFACE ELEV. 630.4 Bridge No. HAM-71-0228

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL. CLASS.
630.4	0													
627.9	2	1	16-2-4	9"	Blacktop, sand and gravel, medium stiff	Visual classification-No tests performed								Fill
	4	2	3-6-8	13"	Brown silty clay with cinders and brick fragments, very stiff	Visual classification-No tests performed								Fill
622.9	6	3	16-9-9	13"	do	Visual classification-No tests performed								Fill
	8	4	8-10-12	16"	Cinders and brick fragments (fill), medium dense	Visual classification-No tests performed								Fill
	10	5	2-3-3	15"	do do	Visual classification-No tests performed								Fill
	12													
	14													
	16	6	6-6-8	15"	do do	Visual classification-No tests performed								Fill
	18													
	20													
	22	7	2-4-9	13½"	do do	Visual classification-No tests performed								Fill
	24	8	7-12-8	16"	do do	Visual classification-No tests performed								Fill
	26	9	8-11-11	16"	do do	Visual classification-No tests performed								Fill
	28	10	5-5-5	9"	do do	Visual classification-No tests performed								Fill
	30	11	2-3-16	18"	do do	Visual classification-No tests performed								Fill
	32													
	34	12	8-7-13	18"	do do	Visual classification-No tests performed								Fill

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/20/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 600.4 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/21/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-16-3 STATION AND OFFSET 190+93, 28'L. Ramp RB BL SURFACE ELEV. 630.4 Bridge No. HAM-71-0228

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTD Class
595.4	34													
	36	13	8-12-19	18"	Brown and gray silty clay, little sand little gravel (probable fill), moist - medium stiff	16	8	5	33	38	40	17	22	A-6b
	38	14	6-5-8	18"	Brown and gray silty clay, trace sand, trace gravel, moist - medium stiff	1	6	3	48	42	38	18	22	A-6b
590.4	40													
587.9	42	15	27-37-56	18"	Brown and gray clay, trace sand, moist-very stiff	0	4	3	35	58	48	24	16	A-7-6
586.4	44	16	97-113-147	18"	Gray shale, dry - hard	Visual classification-No tests performed								
	46	17	NXM	100%	Interbedded gray hard shale and fossiliferous limestone *									
	48													
581.4	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

Boring completed

*Vandals destroyed core samples in the field - descriptions based on driller's examination only. (Notified Mr. Warnke of Hazelet and Erdal by telephone of this condition.

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Form No. 530—16

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/24/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 601.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/24/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-16-4 STATION AND OFFSET 191+92, 1' Rt. Ramp RB BL SURFACE ELEV. 631.0 Bridge No. HAM-71-0228

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
631.0	0													
	2	1	5-7-7	15"	Brown silty clay, sand, gravel and cinders(fill), moist - medium stiff	Visual classification-No tests performed								Fill
628.5														
	4	2	3-3-3	15"	Cinders, sand, gravel and clay, moist - loose	Visual classification-No tests performed								Fill
	6	3	2-3-3	14"	do do	Visual classification-No tests performed								Fill
623.5														
	8	4	5-4-3	17"	Brick, clay and cinders (fill), moist - loose									
621.0	10													
	12	5	5-6-4	11"	Cinders with brick fragments(fill), moist - medium dense	Visual classification-No tests performed								Fill
	14	6	9-9-8	15"	do do	Visual classification-No tests performed								Fill
616.0														
	16	7	5-3-4	17"	Cinders and clay (fill), moist - loose and medium stiff	Visual classification-No tests performed								Fill
613.5	18													
		8	2-1-1	17"	Cinders (fill), very moist - loose	Visual classification-No tests performed								Fill
611.0	20													
		9	4-3-3	13"	Brick and cinders (fill)moist-loose	Visual classification-No tests performed								Fill
608.5	22													
	24	10	4-8-6	11"	Brick, cinders and clay (fill), moist-medium dense	Visual classification-No tests performed								Fill
	26	11	7-8-5	11"	do do	Visual classification-No tests performed								Fill
603.5	28													
		12	3-3-4	17"	Brown sandy clay with fine gravel,brick and cinders (fill), moist - soft	Visual classification-No tests performed								Fill
601.0	30													
		13	2-2-3	17"	Cinders, gravel and clay(fill) moist-soft	Visual classification-No tests performed								Fill
598.5	32				Brown and gray silty clay,little sand, little gravel with shale and brick									
	34	14	3-4-6	11"	fragments(fill), moist - medium stiff	10	10	8	32	40	37	16	20	A-6b

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Form No. 530—10-59

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/28/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. NXM WATER ELEV. IMMEDIATE 601.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/28/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-16-5 STATION AND OFFSET 189+67, 29' L. Ramp RB BL SURFACE ELEV. 623.5 Bridge No. HAM-71-0228

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
623.5	0													
621.0	2	1	9-13-15	7"	Brown and gray silty clay with gravel, moist - stiff	Visual classification-No tests performed								Fill
	4	2	2-2-2	2"	Cinders, soft	Visual classification-No tests performed								Fill
616.0	6	3	1-2-4	3"	do do	Visual classification-No tests performed								Fill
613.5	8 10	4	5-6-5	13½"	Gray clay, little sand, trace gravel with limestone fragments (fill), moist - medium stiff	8	11	7	29	45	41	18	19	A-7-6
611.0	12	5	8-9-9	16"	Gray sandy silt, trace gravel with limestone fragments (fill), moist - medium stiff	4	22	19	31	24	21	6	12	A-4a
	14	6	8-5-9	16"	Gray silty clay, some sand, trace gravel with limestone fragments (fill), moist - stiff	3	10	12	31	44	35	16	24	A-6b
606.0	16 18	7	3-7-8	18"	Brown silty clay, little sand, trace gravel (fill), moist - medium stiff	4	8	8	31	49	40	20	19	A-6b
	20	8	6-7-7	17"	Brown clay, trace sand, moist - stiff	0	2	4	31	63	48	23	25	A-7-6
601.0	22	9	6-8-4	18"	Brown and gray clay, trace sand, little gravel, moist - very stiff	19	1	2	25	53	51	25	19	A-7-6
	24	10	28-34-42	18"	Brown weathered shale, moist - hard	Visual classification-No tests performed								
595.5	26 28	11	32-49-53	18"	do do	Visual classification-No tests performed								
	30	12	NXM	51%	Brown weathered shale, slightly tough to soft (1" to 3" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed (two 1½" pieces)									
	32				95% shale, 5% limestone									
	34													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 25, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/28/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 601.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/28/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-16-5 STATION AND OFFSET 189+67, 29' L. Ramp RB BL SURFACE ELEV. 623.5 Bridge No. HAM-71-0228

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
585.5	34 36 38	13	NXM	64%	Gray shale, calcareous, moderately tough to tough (1/2" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous, jointed and iron oxide stained (2" to 3-1/2"pieces averaging 3") 80% shale, 20% limestone									
	40 42 44 46 48 50 52 54 56 58 60 62 64 66 68				Boring completed									

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Form No. 530—16-69

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/11/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/11/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Auger AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-18-1 STATION AND OFFSET 190+13, 50' Rt., Ramp RA BL SURFACE ELEV. 625.7 Bridge No. HAM-71-0231

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
625.7	0													
~~625.2~~		1	3	9"	0.5' Topsoil	Visual classification-No tests performed								
	2	1A	4-4	9"	Brown silty clay, little sand, little gravel with shale and limestone fragments, moist - very stiff	Visual classification-No tests performed								A-6b
	4	2	7-5-6	11"	do do	11	8	8	28	45	39	17	15	A-6b
620.7														
	6	3	7-6-6	13"	Brown clay, trace sand with shale and limestone fragments, moist - stiff	0	1	2	31	66	52	25	26	A-7-6
618.2	8													
		4	33-37-41	12"	Gray shale, moist- hard	Visual classification-No tests performed								
615.7	10													
	12				Gray shale, calcareous, tough with brown weathered zones throughout run (½" to 3" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, (two pieces 1½" and 3½") 93% shale 7% limestone									
	14	R-1	NXM	82%										
610.7														
	16				Boring completed									
	18													
	20													
	22													
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 536—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/9/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/9/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-18-2 STATION AND OFFSET 190+98, 30'Rt., Ramp RA BL SURFACE ELEV. 625.2 Bridge No. HAM-71-0231

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
625.2	0													
624.9					0.3' Concrete									
		1	8-10-12	13"	Brown and gray clay with cinders and shale fragments (fill), moist - medium stiff	Visual classification-No tests performed								Fill
622.7	2													
	4	2	4-6-8	17"	Brown and gray clay, trace sand, trace gravel with shale and limestone fragments (fill), moist - stiff	5	4	5	34	52	41	15	19	A-7-6
	6	S-1			Brown and gray clay, trace sand with shale and limestone fragments, moist - medium stiff	0	4	2	32	62	51	26	27	A-7-6
	8	3	3-3-4	18"	Brown and gray clay, trace sand, trace gravel with shale fragments (fill), moist - medium stiff	1	4	2	32	61	46	20	25	A-7-6
615.2	10													
		4	8-4-5	14"	Brown and gray silty clay with brick fragments (fill), moist - medium stiff	Visual classification-No tests performed								Fill
612.7	12													
	14	5	11-18-35	18"	Brown and gray weathered shale, moist - very stiff to hard	Visual classification-No tests performed								Fill
	16	6	28-54-93	18"	Gray shale, calcareous, moderately tough (1/2" to 3-3/4" pieces averaging 2") and gray limestone, crystalline, fossiliferous (one 3½" piece in the bottom 8" of the run) 94% shale, 6% limestone	Visual classification-No tests performed								Fill
	18	7	NXM	73%										
606.2	20													
	22													
601.2	24				Boring completed									
	26													
	28													
	30													
	32													
	34													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/21/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 611.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/21/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-18-3 STATION AND OFFSET 191+86, 1' L. Ramp RA BL SURFACE ELEV. 626.0 Bridge No. HAM-71-0231

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
626.0	0				0.5' Concrete Pavement									
625.5		1a	30		Cinders and brick fragments(fill),moist-soft									
625.0		1b	2	3"	Visual classification-No tests performed									Fill
624.5	2	1c	3		Brown and gray silty clay with shale fragments,(fill), moist - soft									
623.5	4	S-1		19"	Brown and gray silty clay,little sand, little gravel with shale fragments, moist - medium stiff	10	9	5	33	43	38	16	24	A-6b
621.5	6	2	4-3-4	8"	Brown and gray silt and clay, trace sand, some gravel with shale fragments, moist - stiff	31	3	2	26	38	39	15	18	A-6a
618.5	8	3	3-4-4	13"	Brown clay, little sand with shale fragments, moist - stiff	0	8	6	37	49	44	19	24	A-7-6
	10	S-2		23"	Brown clay, trace sand with shale fragments, moist - stiff	0	2	3	50	45	49	23	25	A-7-6
	12	4	4-5-7	18"	Brown and gray clay, trace sand,trace gravel with shale fragments, moist - medium stiff	3	2	3	34	58	45	21	26	A-7-6
611.0	14													
	16	5	3-2-2	11"	Gray silt and clay, some sand, moist - medium stiff	0	12	11	31	46	34	14	22	A-6a
	18	6	4-3-3	13"	Gray silt and clay, some sand, trace gravel, moist - medium stiff	8	11	12	29	40	35	15	25	A-6a
	20	7	4-4-4	6"	Gray silt and clay, some sand, trace gravel, moist - medium stiff	1	11	12	24	52	35	15	23	A-6a
	22													
602.0	24													
	26	R-1	NXM	82%	Gray shale, calcareous, moderately tough with soft seams, broken (¼" to 3" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, (three pieces, ½", 1" and 3½") 92%shale 8% limestone									
597.0	28													
	30				Boring completed									
	32													
	34													

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Form No. 530—16-59

THE E. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/3/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/3/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-18-4 STATION AND OFFSET 192+98, 49'Rt., Ramp RA BL SURFACE ELEV. 626.9 Bridge No. HAM-71-0231

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
626.9	0				0.3' Concrete									
626.6														
	2	1	7-8-5	12"	Sand, gravel and cinders (fill), moist-medium dense	Visual classification-No tests performed								Fill
624.4														
	4	2	10-8-9	12"	Brown silt, clay and gravel, trace sand with shale and limestone fragments, (fill), moist - medium stiff	47	5	4	21	23	34	15	13	A-6a
	6	3	7-9-11	16"	Brown and gray silt and clay, little sand, little gravel with shale and limestone fragments (fill), moist-stiff	17	7	4	32	40	35	14	15	A-6a
	8	4	6-7-8	15"	Brown and gray silt and clay, trace sand, some gravel with shale and limestone fragments, (fill), moist-stiff	22	8	4	29	37	35	13	14	A-6a
	10													
	12	5	7-9-10	16"	Brown and gray silt and clay, trace sand, little gravel with shale and limestone fragments (fill) moist-stiff	16	3	4	35	42	38	14	9	A-6a
	14	6	8-8-9	17"	Brown and gray silt and clay, trace sand with shale fragments (fill), moist - very stiff	0	2	2	40	56	38	14	11	A-6a
	16	7	7-9-10	18"	Gray silt and clay, trace sand, trace gravel with brick fragments (fill), moist - very stiff	8	3	1	43	45	35	14	14	A-6a
609.4	18													
	20	8	5-6-6	15"	Brown and gray silty clay, trace sand, trace gravel with shale fragments (fill), moist - very stiff	1	1	3	39	56	39	17	14	A-6b
	22	9	4-5-6	17"	Brown and gray silt and clay, trace sand with shale fragments (fill), moist - stiff	0	2	2	39	57	40	16	19	A-6b
604.4	24	10	3-4-5	18"	Brown clay, little sand, trace gravel with shale fragments (fill), moist-stiff	2	6	6	34	52	42	17	24	A-7-6
601.9	26	11	3-3-5	12"	Brown and gray silty clay, little sand, trace gravel with shale and limestone fragments (probable fill), moist - stiff	5	5	6	37	47	40	16	20	A-6b
	28													
596.9	30													
	32	12	3-5-10	16"	Brown silt, clay and gravel, little sand with limestone fragments, moist-medium stiff	36	12	6	23	23	33	12	23	A-6a
593.4	34													

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Form No. 530—16 59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/3/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/3/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-18-4 STATION AND OFFSET 192+98, 49'Rt., Ramp RA BL SURFACE ELEV. 626.9 Bridge No. HAM-71-0231

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
591.9	34	13	27-48	13"	Gray shale, dry - hard	Visual classification-No tests performed								
	36	14	NXM	93%	Gray shale, calcareous, tough to moderately tough (1" to 7½" pieces averaging 3") and gray limestone, crystalline, fossiliferous (1½" and 2½" pieces) 90% shale, 10% limestone									
586.9	38													
	40													
	42				Boring completed									
	44													
	46													
	48													
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/14/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/14/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-18-5 STATION AND OFFSET 193+77, 25' Rt., Ramp GA BL SURFACE ELEV. 627.8 Bridge No. HAM-71-0231

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
627.8	0				Asphaltic concrete									
627.4					Portland cement concrete									
626.8					Sand and gravel (fill), dry - soft to medium stiff									
625.3	2													
	4	1	4-5-7	3"	Brown clay with limestone fragments, (fill), moist - soft	Visual classification-No tests performed								A-1-a
	6	2	14-19-23	11"	Rock fragments, some brown sand, trace silt (fill), moist - medium stiff	65	10	11	8	6		NP	16	A-1-a
	8	3	17-23-25	9"	do do	68	10	8	8	6		NP	10	A-1-a
	10													
	12	4	19-25-31	0										
614.3		5	23-57-100	7½"	do do	Visual classification-No tests performed								A-1-a
	14													
	16				Brown clay and weathered shale(no recovery) and gray limestone, crystalline,									
	18	R-1	NXM	10%	fossiliferous, (one 6" piece) 90% shale and clay, 10% limestone									
	20													
	22													
	24				Brown and gray shale, soft to moderately tough (½" to 2"pieces averaging 1") and									
	26	R-2	NXM	76%	gray limestone, crystalline, fossiliferous, jointed and broken throughout the run,									
599.8	28				iron oxide stained (1" to 3" pieces averaging 2") 65% limestone, 35% shale									
	30				Boring completed									
	32													
	34													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/9/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/9/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-18-6 STATION AND OFFSET 194+75, 22' Rt., Ramp RA BL SURFACE ELEV. 631.8 Bridge No. HAM-71-0231

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTD CLASS
631.8	0				Asphaltic concrete pavement									
631.3		1	19-4-7	13½"	Cinders, moist - medium stiff	Visual classification-No tests performed								Fil
629.3	2													
627.3	4	S-1			Brown clay, trace sand, moist - stiff	0	4	4	33	59	50	25	24	A-7-6
	6	2	14-19-23	16"	Brown clay, trace sand, moist - very stiff	0	4	3	39	54	45	22	20	A-7-6
624.3	8													
	10	R-1	NXM	55%	Brown and gray weathered shale, slightly tough to moderately tough (½" to 3" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed in the top half of the run (1" to 6½" pieces averaging 3") 73% shale, 27% limestone									
	12													
	14													
	16	R-2	NXM	80%	Gray shale, calcareous, moderately tough to tough, broken in the bottom 12" of the run (½" to 2-3/4" pieces averaging 1½") and gray limestone, crystalline, fossiliferous (1½" and 3" pieces) 90% shale, 10% limestone									
614.3	18													
	20				Boring completed									
	22													
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/12/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/12/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-18-7 STATION AND OFFSET 195+43, 10' L., Ramp RA BL SURFACE ELEV. 641.6 Bridge No. HAM-71-0231

ELEV.	DEPTH	SAMPLE No.	STD PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
641.6	0													
	2	1	4-7-7		Brown sandy silt, trace gravel, dry - stiff	4	11	9	28	48		NP	12	A-4a
638.6														
	4				3.0' Brown weathered shale, slightly tough (½" to 2" pieces averaging 1½") and gray limestone, crystalline, fossiliferous (two pieces 2" and 3½" at the top of the run) 85% shale, 15%limestone									
	6	R-1	NXM	78%										
633.6	8													
	10				2.0' Gray shale, calcareous, moderately tough to tough (½" to 1½" averaging 1") and gray limestone, crystalline, fossiliferous, (two 2" pieces at the top of the run) 83% shale, 17% limestone									
	12													
	14													
	16				Boring completed at 633.6'									
	18													
	20													
	22													
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 830—15-59

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/14/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None AFTER Backfilled HOURS CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/14/64 CASING: LENGTH DIA 3.5"I.D.Hollow Stem Augers PROJECT: Northeast Expressway HAM-71-0.93 Retaining Wall No. 38

BORING No. R-38-2 STATION AND OFFSET 192+97, 4' Rt. Hamp RP BL SURFACE ELEV. 626.8

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTO CLASS
626.8	0													
624.8	2				0.5' blacktop, 0.5'concrete, 0.5' wood cross-tie and 0.5' concrete									
622.3	4	1	4-7-3	10"	Gray silty clay, little sand, some rock fragments (fill), moist-medium stiff	29	7	8	27	29	37	17	23	A-6b
619.3	6	2	5-10-8	12"	Brown and gray clay, trace sand, little rock fragments (fill), moist - medium stiff	13	4	4	35	44	41	19	23	A-7-6
616.8	8	3	5-9-9	13"	Brown and gray silty clay, little sand, little rock fragments (fill), moist - medium stiff	11	10	6	34	39	40	19	18	A-6b
614.3	10	4	7-10-15	9"	Brown and gray clay, trace sand,little gravel fragments (fill), moist - medium stiff	15	5	3	33	44	42	23	27	A-7-6
611.8	12	5	8-10-13	10"	Brown clay and wood fragments, moist - medium stiff	Visual classification-No tests performed*								Fill
609.3	16	6	10-12-11	10"	Brown and gray silty clay and rock fragments, trace sand (fill), moist - medium stiff	47	5	4	22	22	36	16	14	A-6b
606.8	18	7	9-11-13	8"	Brown clayey gravel, little sand with rock fragments (fill), moist - medium stiff	53	8	6	15	18	30	12	11	A-2-6
604.3	20	8	7-19-6	11"	Brown and gray clay, trace sand,little rock fragments (fill),moist-medium stiff	19	3	4	29	45	47	23	18	A-7-6
601.8	22	9	14-8-9	12"	Brown elastic clay, trace sand, moist-stiff	0	2	3	43	52	54	19	22	A-7-5
599.3	24	10	6-8-12	14"	Brown clay, trace sand, moist - stiff	0	2	3	41	54	45	21	22	A-7-6
596.8	28	11	7-10-11	12"	Brown and gray silty clay, little sand some gravel, moist - stiff	29	9	7	28	27	38	17	22	A-6b
597.8	30	12	27-38-73	10"	Gray shale, moist - very stiff									
	32													
	34													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 10/14/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 10/14/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-38-2 STATION AND OFFSET 192+97, 4' Rt. Ramp RF BL SURFACE ELEV. 626.8 Retaining Wall No. 38

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36													
588.8	38	R-1	NXM	72%	Gray shale, calcareous, moderately tough, (½" to 4" pieces averaging 2") 100%shale									
	40				Boring completed									
	42													
	44													
	46													
	48													
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 536—16 5P

THE E. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/12/64 SAMPLER: TYPE Split Spoon Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/12/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0271

BORING No. B-20-1 STATION AND OFFSET 0+26, 14' L. McGregor BL SURFACE ELEV. 765.7

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL CLASS
765.7	0													
	2	1	10-9-10	17"	Brown and gray clay and gravel, trace sand with limestone fragments (fill), moist - stiff	41	5	3	24	27	42	22	16	A-7-6
	4	2	4-5-6	15"	do do	Visual classification-No tests performed								A-7-6
760.2	6	3	5-5-6	14"	Brown and gray silty clay, little sand little gravel with limestone fragments (fill), moist - stiff	16	7	5	36	36	40	20	20	A-6b
	8	4	4-5-7	15"	do do	Visual classification-No tests performed								A-6b
	10	5	13-10-10	7"	Brown and gray silty clay, little sand, some gravel with limestone fragments (fill), moist - stiff	21	6	5	36	32	40	20	19	A-6b
	12													
	14													
750.7	16	6	4-5-6	17"	Brown and gray clay, little sand, some gravel with limestone fragments (fill), moist - stiff	20	6	5	31	38	42	22	23	A-7-6
748.7	18	S-1			Brown silt and clay, some sand with limestone fragments (fill), moist - very stiff	0	14	7	30	49	30	11	10	A-6a
746.7	20	7	8-5-8	16"	Brown and gray silty clay, little sand some gravel with limestone fragments, (fill), very moist - medium stiff	22	5	5	32	36	40	20	28	A-6b
	22													
	24	8	5-7-9	11"	Brown and gray silty clay, little sand some gravel with limestone fragments, (fill), moist - medium stiff	34	5	5	26	30	38	18	20	A-6b
740.7	26	9	13-12-12	7"	Brown and gray silty clay, trace sand, trace gravel with limestone fragments, (fill), moist - medium stiff	3	3	2	42	50	48	26	20	A-7-6
	28	10	13-65-44	15"	Brown and gray clay, trace sand, some gravel with limestone fragments, moist - very stiff	32	6	2	24	36	52	29	18	A-7-6
735.7	30													
	32	11	28-24-41	14"	do do	32	2	2	33	31	37	17	14	A-6b
733.7	34	12	105	6"	Brown and gray clay, trace sand, trace gravel with limestone fragments, moist - very stiff	4	3	2	31	60	49	25	16	A-7-6

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Form No. 500—76 5

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/12/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV IMMEDIATE None CLIENT City of Cincinnati, Ohio

DATE COMPLETED 8/12/64 CASING LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT Northeast Expressway HAM-71-0.93

BORING No. B-20-1 STATION AND OFFSET 0+26, 14' L. McGregor BL SURFACE ELEV. 765.7 Bridge No. HAM-71-0271

ELEV.	DEPTH	SAMPLE No	STD. PEN (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
730.7	34													
	36	13	141-65-54	18"	Brown and gray weathered shale, moist - hard									
	38													
725.7	40													
	42	14	NXM	89%	Gray shale, calcareous, moderately tough to tough with a 4" fossiliferous zone at approximately elevation 724 (1" to 3" pieces averaging 2") and gray limestone crystalline, fossiliferous (1" to 3½" pieces averaging 2") 70% shale, 30% limestone									
	44													
720.7	46													
	48				Boring completed									
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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9

Form No. 630—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/7/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. x NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/7/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-20-2 STATION AND OFFSET 0+53, 8' Rt., McGregor St., BL SURFACE ELEV. 766.2 Bridge No. HAM-71-0271

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
~~766.2~~	0				~~Asphaltic concrete~~									
~~765.2~~		1	9-12-12	16"	Brown and gray silty clay with rock fragments (fill), moist - very stiff	22	0	2	35	41	35	16	16	A-6b
	2													
	4	2	3-8-9	15"	do do	Visual classification-No tests performed								A-6b
	6	3	4-6-6	15"	Brown and gray silty clay, little sand, trace gravel with limestone fragments, (fill), moist - very stiff	2	11	4	41	42	38	18	17	A-6b
	8													
756.2	10	4	4-7-6	8"	do do	Visual classification-No tests performed								A-6b
		5	3-6-4	12"	Brown silt and clay, little sand, little gravel with limestone fragments (fill), moist - stiff	12	10	5	38	35	30	11	16	A-6a
	12													
	14													
751.2														
	16	6	3-4-6	13"	Brown silty clay, trace sand, trace gravel with limestone fragments (fill), moist - stiff	4	4	4	43	45	40	19	18	A-6b
	18													
	20													
	22	7	2-3-7	15"	Brown silty clay, little sand, trace gravel with limestone fragments, (probable fill), moist - medium stiff	1	8	5	42	44	40	19	26	A-6b
	24													
741.2														
	26	8	6-5-5	17"	Brown and gray sandy silt, little sand, some gravel with limestone fragments, (probable fill), moist - medium stiff	25	9	6	29	31	30	10	18	A-4a
	28													
736.2	30													
		9	5-6-9	17"	Brown and gray silty clay, trace sand, trace gravel with limestone fragments, (probable fill), moist - medium stiff	1	2	2	43	52	38	18	21	A-6b
	32													
	34													

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/7/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/7/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-20-2 STATION AND OFFSET 0+53,8'Rt.,McGregor St. BL SURFACE ELEV. 766.2 Bridge No. HAM-71-0271

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
731.2	34													
	36	10	25-34-17	18"	Brown and gray clay, trace sand, some gravel with limestone fragments, moist-very stiff	37	6	2	26	29	41	20	15	A-7-6
728.7	38	11	24-22-35	16"	Brown and gray silty clay, trace sand, trace gravel with limestone fragments, moist - hard	4	4	2	45	45	38	18	16	A-6b
726.2	40													
	42	12	11-72-67	17"	Brown and gray weathered shale, moist-hard	Visual classification-No tests performed								
	44	13	20-60-71	14"	do do	Visual classification-No tests performed								
718.2	46	14	20-61-72	18"	do do	Visual classification-No tests performed								
	48				Brown and gray weathered shale,slightly tough (1½" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous, shaly(one 2½" piece) 69% shale, 31% limestone									
	50	15	NXM	87%										
	52				Gray shale, calcareous,moderately tough, (1" to 2½" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, (3/4" to 3½" pieces averaging 2") 50% shale, 50% limestone									
	54													
	56	16	NXM	78%										
709.2					Gray shale, calcareous,moderately tough with soft seams throughout run (½" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous (½" to 7" pieces averaging 3") 68%shale, 32% limestone									
	58													
	60													
	62													
	64				Boring completed									
	66													
	68													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 930--1m-65

THE E. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/6/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 744.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/7/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-20-3 STATION AND OFFSET 1+29, 13'L. McGregor BL SURFACE ELEV. 766.2 Bridge No. HAM-71-0271

ELEV.	DEPTH	SAMPLE No	STD. PEN. (N)	% REC	DESCRIPTION	Physical Characteristics % AGG.	% C.S	% F.S	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
766.2	0													
765.2					1' Blacktop and brick									
763.7	2	1	2-7-10	3"	Brown silty clay with shale and limestone fragments (fill), moist - stiff	Visual classification-No tests performed								Fill
	4	2	7-8-13	4"	Brown and gray silty clay, little sand, little gravel with shale and limestone fragments (fill), moist - medium stiff	19	7	5	33	36	35	17	18	A-6b
	6	3	3-5-7	14"	Brown and gray silty clay, little sand, little gravel with shale and limestone fragments (fill), moist - stiff	10	9	4	36	41	35	16	22	A-6b
758.7	8	4	7-8-9	13"	Brown and gray silt and clay, little sand, little gravel with shale and limestone fragments(fill), moist-stiff	18	9	4	37	32	31	13	17	A-6a
756.2	10													
	12	5	7-8-9	8"	Brown sandy silt, some gravel with shale and limestone fragments (fill), moist - stiff	34	10	7	24	25	28	10	6	A-4a
	14													
751.2														
	16	6	17-16-6	10"	Brown silt, clay and gravel, little sand with shale and limestone fragments (fill), moist - stiff	49	6	4	20	21	33	13	18	A-6a
	18													
746.2	20													
	22	7	8-9-11	12"	Brown and gray clay, trace sand, little gravel with shale and limestone fragments (fill), moist - stiff	13	3	3	37	44	43	23	24	A-7-6
	24													
	26	8	3-3-5	13"	Brown and gray clay, trace sand with shale and limestone fragments (fill), moist - stiff	0	2	2	48	48	42	22	26	A-7-6
	28													
736.2	30													
	32	9	3-5-11	14"	Brown silty clay, little sand, some gravel with shale and limestone fragments (fill), moist - stiff	21	6	5	34	34	39	19	20	A-6b
	34													

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Form No 530- 1- 54

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/6/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 744.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/7/64 CASING: LENGTH ____ DIA 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-20-3 STATION AND OFFSET 1+29, 13' L.McGregor Bl. SURFACE ELEV. 766.2 Bridge No. HAM-71-0271

ELEV.	DEPTH	SAMPLE No.	STD. PEN (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C	SHTL CLASS
	34													
	36	10	12-18-29	9"	Brown and gray silty clay, little sand, little gravel with shale and limestone fragments (fill), moist - stiff	12	10	4	37	37	32	18	10	A-6b
	38	11	16-18-24	16"	Brown and gray silty clay, little sand, little gravel with shale and limestone fragments (fill), moist - stiff	15	8	4	36	37	36	16	16	A-6b
726.2	40													
	42	12	20-20-27	15"	Brown clay, trace sand, trace gravel with shale and limestone fragments, (fill), moist - stiff	1	4	2	38	55	44	22	21	A-7-6
723.7														
	44	13	24-67-73	13"	Brown and gray weathered shale, moist-soft	Visual classification-No tests performed								
720.2	46													
3	48	14	NXM	32%	Brown and gray weathered shale(no shale recovered)and gray limestone,crystalline, fossiliferous,jointed midway in the run (1" to 4½" pieces averaging 3") 62%shale, 28% limestone									
	50													
	52				Brown and gray weathered shale,slightly tough(½" to 2½" pieces averaging 2")									
	54	15	NXM	62%	and gray limestone, crystalline, fossiliferous - shaly in the top 12" and the bottom 4" (½" to 4" pieces averaging 3") 62% shale, 38% limestone									
710.2	56													
	58				Boring completed									
	60													
	62													
	64													
	66													
	68													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4180 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

*Water used in drilling from elevation 747.8

DATE STARTED 9/2/64 SAMPLER: TYPE ____ DIA. ____ WATER ELEV. IMMEDIATE ____ CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/3/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS ____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-20-4 STATION AND OFFSET 2+32, 9' L. McGregor Ave. BL SURFACE ELEV. 747.8 Bridge No. HAM-71-0271

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.L.	W.C.	SOIL CLASS
747.8	0													
745.3	2	1	1-3-6	12"	Topsoil and cinders (fill), dry - stiff	Visual classification-No tests performed								Fill
	4	2	9-20-23	8"	Brown and gray silty clay,little sand, some gravel with rock fragments(fill), moist-stiff	30	7	3	25	35	37	18	16	A-6b
	6	3	6-18-13	10"	Brown and gray silty clay,little sand, some gravel with rock fragments(fill), moist - stiff	27	8	5	26	34	37	18	16	A-6b
	8	4	4-6-7	13"	Brown and gray silty clay,little sand, little gravel with shale fragments (fill), moist - medium stiff	14	7	4	31	44	36	18	20	A-6b
737.8	10													
	12	5	3-6-10	9"	Brown and gray silt and clay,little sand, some gravel with organic matter and rock fragments(fill),moist-medium stiff	30	10	8	22	30	32	14	19	A-6a
732.8	14	S-1	Pushed	0		No sample recovered								
	16	6	4-5-7	14"	Brown and gray clay,trace sand,little gravel with organic matter and rock fragments(fill), very moist-medium stiff	10	5	3	35	47	42	22	24	A-7-6
730.3	18	7	3-4-4	13"	Brown and gray silty clay, trace sand, trace gravel with topsoil(fill), very moist - medium stiff	4	5	4	39	48	40	19	23	A-6b
727.8	20													
	22	8	3-3-4	7"	Brown and gray silt and clay,little sand,trace gravel with topsoil (fill), very moist - medium stiff	6	11	6	40	37	33	14	17	A-6a
725.3	24	9	2-3-4	0		No sample recovered								
722.8	26	10	1-1-1	10"	Gray clay, trace sand with organic matter (fill), very moist - soft	0	2	2	38	58	43	22	36	A-7-6
720.3	28	11	1-2-1	7"	Gray silty clay, trace sand with organic matter (fill), wet - soft	0	0	2	48	50	37	17	38	A-6b
717.8	30	12	3-4-5	12"	Brown and gray silt and clay,trace sand with organic matter(fill),moist-medium stiff	0	1	1	54	44	35	13	22	A-6b
715.3	32	13	4-5-7	10"	Brown clay, trace sand (fill), very moist - medium stiff	0	2	2	37	59	42	30	30	A-7-6
	34													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

*Water used in drilling from elevation 747.8

DATE STARTED 9/2/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE * CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/3/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-20-4 STATION AND OFFSET 2+32, 9' L. McGregor Ave. BL SURFACE ELEV. 747.8 Bridge No. HAM-71-0271

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
712.8	34													
	36	14	4-5-6	8"	Brown and gray silty clay, little sand, little gravel with topsoil (fill), moist - medium stiff	10	9	5	37	39	36	17	23	A-6b
	38													
707.8	40													
		15	4-5-6	16"	Brown and gray silty clay, trace sand with organic matter (fill), moist - medium stiff	0	4	4	52	40	35	15	24	A-6a
	42													
	44													
	46	16	6-13-29	4"	do do	No tests performed-Insufficient sample								A-6a
	48													
697.8	50													
		17	10-18-40	10"	Brown and gray silty clay, trace sand, moist - very stiff	0	0	1	48	51	40	19	21	A-6b
	52													
694.8														
	54				Gray shale, calcareous, moderately tough, (½" to 3" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, shaly in the bottom 18" of the run(1" to 3" pieces averaging 2") 55% shale, 45% limestone									
	56	18	NXM	80%										
689.8	58													
	60				Boring completed									
	62													
	64													
	66													
	68													

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Form No. 530—16 59

THE E. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/21/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE *Could not be determined CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/27/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-20-6 STATION AND OFFSET 3+40, 6' Rt. McGregor Ave. BL SURFACE ELEV. 773.2 Bridge No. HAM-71-0271

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
773.2	0													
	2	1	1-1-1		Cinders, topsoil, clay, brick and concrete (fill), moist - loose	Visual classification-No tests performed								Fill
	4	2	3-4-4		do do	Visual classification-No tests performed								Fill
	6	3	1-2-1		do do	Visual classification-No tests performed								Fill
	8													
	10	4	1-4-3		do do	Visual classification-No tests performed								Fill
760.7	12	5	1-1-3		do do	Visual classification-No tests performed								Fill
	14	6	3-4-5		Brown and gray silty clay, little sand, some gravel with cinders, topsoil, brick and concrete (fill), very moist-medium stiff	22	9	5	27	37	36	16	26	A-6b
	16													
756.2					Brown and gray silt and clay, little sand, little gravel with cinders, topsoil, brick and concrete (fill), moist-medium stiff	11	6	4	40	39	33	13	19	A-6a
755.2	18	7	5-4		Brown and gray shale and clay, (fill), moist - stiff	Visual classification-No tests performed								Fill
753.7	20	8A	24		Brown and gray silt and clay, some sand, little gravel with shale fragments (fill), moist - stiff	13	18	9	20	40	34	14	18	A-6a
	22	8B	6-6-5											
	24	9	4-5-6	5"	Brown and gray silt, clay and gravel, little sand with weathered shale (fill), very moist - medium stiff	43	14	3	17	23	32	14	25	A-6a
748.7	26	10	3-8-4	8"	Cinders (fill), wet - loose	Visual classification-No tests performed								Fill
	28	11	2-3-3	6"	do do	Visual classification-No tests performed								Fill
743.7	30													
	32	12	3-4-9	5"	Brown and gray silt, clay and gravel, little sand with shale and limestone fragments (fill), wet - soft	41	10	6	19	24	35	13	23	A-6a
	34	13	6-8-9	8"	Brown and gray silt and clay, little sand, trace gravel with shale and limestone fragments (fill), moist - stiff	8	5	6	40	41	34	14	14	A-6a

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/21/64 SAMPLER: TYP Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE * CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/27/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-20-6 STATION AND OFFSET 3+40, 6' Rt. McGregor Ave. ℄ SURFACE ELEV. 773.2 Bridge No. HAM-71-0271

* Could not be determined

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36													
	38	14	7-20-20	8"	Brown and gray silt and clay, little sand, trace gravel with shale and limestone fragments (fill), moist - stiff	6	12	5	41	36	32	13	22	A-6a
732.2	40													
	42	15	8-8-11	9"	Brown and gray silty clay, trace sand, some gravel with limestone and shale fragments (fill), moist - medium stiff	27	5	4	29	35	35	16	15	A-6b
	44													
	46													
	48	16	5-6-7	5"	Brown and gray silty clay with shale and limestone fragments (fill), wet - soft	Visual classification-No tests performed								A-6b
	50													
	52	17	9-32-30	3"	do do	Visual classification-No tests performed								A-6b
	54													
717.2	56													
	58	18	8-4-8	12½"	Brown and gray clay, trace sand, moist - stiff	0	4	4	32	60	49	25	23	A-7-6
714.8														
	60	19	NXM	62%	Brown weathered shale, slightly tough, (a trace recovered) and gray limestone, crystalline, fossiliferous, jointed in the top 6" of the run (1" to 4½" pieces, averaging 3") 55% shale, 45% limestone									
	62	20	NXM	63%	Gray shale, calcareous, moderately tough with soft seams (½" to 1½" pieces averaging 1") and gray limestone, crystalline, fossiliferous (1" to 4" pieces averaging 3") 66% shale, 34% limestone									
709.8	64													
	66				Boring completed									
	68													

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Form No. 530—16-59

REVISED
10/14/64-vb

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/2/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/3/64 CASING: LENGTH DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-15-1 STATION AND OFFSET 149+96, 50' L. BL SURFACE ELEV. 563.5 Retaining Wall No. 15

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % MOIS.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
563.5	0													
	2	1	4-5-3	12"	Brick, clay and cinders (fill), moist-loose	Visual classification-No tests performed								Fill
558.5	4	2	1-2-3	10"	do do	Visual classification-No tests performed								Fill
	6	3	3-3-4	17"	Brown and gray silty clay with cinders (fill), moist - medium stiff	Visual classification-No tests performed								Fill
553.5	10													
	12	4	3-5-6	17"	Brown and gray clay, trace sand with cinders (fill), moist - medium stiff	0	5	4	29	62	45	23	17	A-7-6
	14	5	31-17-20	16"	Brown and gray clay with limestone fragments, moist - stiff	Visual classification-No tests performed								A-7-6
	16	6	20-24-34	16½"	Brown and gray clay, trace sand with limestone fragments, moist - hard	0	1	0	37	62	43	22	14	A-7-6
	18													
543.5	20													
542.5		7	19-63	11"	Brown and gray shale, moist - hard									
	22	8	NXM	56%	Sample 8 - Gray and brown, calcareous, soft shale(1½" and 4" pieces) and gray limestone, crystalline, fossiliferous, jointed (1" to 2½" pieces averaging 2") 75% shale, 25% limestone									
	24	9	NXM	64%										
	26													
	28	10	NXM	92%	Sample 9 - Gray shale, calcareous, moderately tough (½" to 1½" pieces averaging 1" and gray limestone, crystalline, fossiliferous (1½" to 6" pieces, averaging 3") 67% shale, 33% limestone									
	30													
531.7	32	11	NXM	63%										
	34				Boring completed									

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Form No. 530—16-99

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

REVISED
10/14/64-vb

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 6/2/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 6/3/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-15-1 STATION AND OFFSET 149+96, 50' L. BL SURFACE ELEV. 563.5 Retaining Wall No. 15

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SNTL CLASS
					Sample 10 - Gray shale, calcareous, moderately tough (1/4" to 2" pieces, averaging 1") and gray limestone, crystalline, fossiliferous, jointed (one 1½" piece at the top of the run) 96% shale, 4% limestone									
					Sample 11 - Gray shale, calcareous, moderately tough with a brown weathered zone in the bottom 6" of the run (1/4" to 2" pieces averaging 1") and gray limestone, crystalline, fossiliferous, (1½" to 3½" pieces, averaging 2") 80% shale, 20% limestone									
					Boring completed									

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 630—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/31/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/31/64 CASING: LENGTH _____ DIA. 3.5"I.D. Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-15-2 STATION AND OFFSET 151+38, 39' L., BL SURFACE ELEV. 560.0 Retaining Wall No. 15

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
560.0	0													
559.0					Asphaltic concrete									
	2	1	9-8-8	18"	Brown and gray clay, trace sand, trace gravel, moist - very stiff	1	1	2	33	63	45	23	21	A-7-6
	4	2	7-9-10	6"	do do	Visual description-No tests performed								A-7-6
	6	3	6-6-11	16"	Brown and gray clay, trace sand, trace gravel with shale fragments, moist - very stiff	1	4	2	37	56	42	20	20	A-7-6
551.0	8	4	16-13-19	18"	Brown clay, trace sand with shale fragments, moist - very stiff	0	3	1	30	66	47	23	21	A-7-6
	10, 12, 14	5	NXM	43%	Brown and gray weathered shale, slightly tough (½" to 2" pieces averaging 1½") and gray limestone, crystalline, fossiliferous (½" & 1" pieces broken) 95% shale, 5% limestone									
541.0	16, 18	6	NXM	75%	Brown and gray weathered shale, slightly tough (½" to 2" pieces, averaging 1½") and gray limestone, crystalline, fossiliferous, jointed (1" to 3" pieces averaging 2") 77% shale, 23% limestone									
	20, 22, 24, 26, 28, 30, 32, 34				Boring completed									

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Form No. 630—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/3/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/3/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-15-3 STATION AND OFFSET 152+20, 53' L. BL SURFACE ELEV. 552.7 Retaining Wall No. 15

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
552.7	0													
551.7		1	2	12"	Concrete and cinders(fill), dry - soft	Visual classification-No tests performed								Fill
1	2	1A	5-8		Brown clay, little sand, trace gravel with shale fragments, moist - stiff	4	6	5	29	56	45	22	23	A-7-6
	4	2	6-12-12	11"	Brown clay, trace sand, trace gravel with shale fragments, moist-very stiff	2	6	3	35	54	42	20	18	A-7-6
	6	3	12-13-16	14"	Brown and gray clay, trace sand, trace gravel with shale fragments, moist - very stiff	2	4	3	33	58	44	22	20	A-7-6
545.7														
6	8				Brown weathered shale(no shale recovered) and gray limestone, crystalline, fossiliferous, jointed and oxide stained (1" to 3" pieces, averaging 2") 81% shale, 19% limestone									
	10	4	NXM	19%										
	12	5	61-65-70	13"	Brown and gray weathered shale, moist-very stiff									
	14				Gray shale, calcareous, broken, soft to moderately tough (¼" to 2" pieces, averaging 1") and gray limestone, crystalline, fossiliferous, jointed, (1" and 1½" pieces) 95% shale, 5% limestone									
	16	6	NXM	67%										
535.2	18													
16.5'	20				Boring completed									
	22													
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/4/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/5/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS ____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-15-4 STATION AND OFFSET 153+31, 55' L. BL SURFACE ELEV. 549.5 Retaining Wall No. 15

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
549.5	0				Concrete									
548.2					Brown clay,cinders and gravel (fill), moist - loose	No tests performed-Insufficient sample								Fill
548.0	2	1	2-2-8	9"										
	4	2	12-12-16	18"	Brown weathered shale, moist - stiff	Visual classification-No tests performed								
543.0	6	3	11-38	13"	Brown and gray weathered shale, moist-very stiff	Visual classification-No tests performed								
	8				Gray shale,calcareous,moderately tough to tough (½" to 3" pieces averaging 2") and gray limestone, fossiliferous									
	10	4	NXM	75%	(one ½"piece at top of the run)99%shale 1% limestone									
	12				Gray shale,calcareous,tough(1" to 6" pieces averaging 3" and gray limestone, Crystalline, fossiliferous,jointed(1" to 2½" pieces averaging 1½") 83% shale 17% limestone									
	14	5	NXM	74%										
533.0	16													
	18				Boring completed									
	20													
	22													
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 630—16.59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

Water used in drilling from elevation 598.4

DATE STARTED 7/20/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/22/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-16-1 STATION AND OFFSET 151+68, 122' Rt., BL SURFACE ELEV. 598.4 Retaining Wall No. 16

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGR.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
598.4	0				0.4' Concrete									
598.0														
	2	1	2-2-3	12"	Brown and gray clay, little sand, trace gravel, moist - stiff	6	8	4	26	56	49	26	23	A-7-6
	4	2	6-9-14	18"	do do	Visual classification-No tests performed								A-7-6
	6	3	6-10-60	16"	Brown and gray clay, trace sand, trace gravel with limestone fragments, moist-very stiff	1	2	2	31	64	45	22	18	A-7-6
590.9	8													
7		4	17-17-34	17"	Brown and gray weathered shale, hard	Visual classification-No tests performed								
	10													
		5	22-45-75	17"	do do	Visual classification-No tests performed								
	12													
	14	6	17-51-68	17"	do do	Visual classification-No tests performed								
	16	7	28-70	13"	do do	Visual classification-No tests performed								
	18	8	33-74	12"	do do	Visual classification-No tests performed								
	20													
		9	37-90	13"	do do	Visual classification-No tests performed								
	22													
		10	41-87	12"	do do	Visual classification-No tests performed								
	24													
573.4														
	26	11	NXM	54%	Gray and brown shale, calcareous, slightly tough (weathered in the top 2' of the run) (¾" to 3" pieces, averaging 1") and gray limestone, crystalline, fossiliferous, (one 1½" pieces midway in the run)									
	28													
	30													
	32	12	NXM	73%	Gray shale, calcareous, moderately tough to tough (½" to 2½" pieces, averaging 1½") and gray limestone, crystalline, fossiliferous, jointed midway in the run (1" to 4½" pieces averaging 2½") 80% shale, 20% limestone									
	34													

AS A MEMBER ORGANIZATION TO SERVE THE PUBLIC AND CONSULTANTS, ALL REPORTS ARE CONSIDERED AS THE CONFIDENTIAL PROPERTY OF CLIENTS. AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—15-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

Water used in drilling from elevation 598.4

DATE STARTED 7/20/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/22/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-16-1 STATION AND OFFSET 151+68,122'Rt.,BL SURFACE ELEV. 598.4 Retaining Wall No. 16

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36				Gray shale, calcareous, tough, jointed in top 18" (1" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous, jointed and iron oxide stained (one 3" piece) 95% shale, 5% limestone									
	38	13	NXM	82%										
	40													
	42				Gray shale, calcareous, tough (1"to3"pieces averaging 2") and gray limestone, crystalline, fossiliferous, jointed (1"to 3" pieces averaging 2½") 83% shale, 17% limestone									
	44	14	NXM	88%										
	46				Gray shale, calcareous, tough (1" to 2½" pieces, averaging 1½") and gray limestone, crystalline, fossiliferous, jointed (two pieces 1½" and 2½") 78% shale, 22% limestone									
551.9		15	NXM	83%										
	48				Boring completed									

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/25/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/28/64 CASING: LENGTH _____ DIA 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-16-2 STATION AND OFFSET 153+02, 96'Rt. BL SURFACE ELEV. 597.6 Retaining Wall No. 16

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
597.6	0				0.3' Concrete									
597.3														
595.1	2	1	12-3-7	11"	Cinders (fill), medium stiff	Visual classification-No tests performed								Fill
593.6	4	2	12-13-12	16"	Brown clay, trace sand with brick fragments (fill), moist - medium stiff	0	4	5	35	56	45	23	25	A-7-6
	6	S-1		24"	Brown and gray clay, trace sand, trace gravel, moist - stiff	1	3	4	31	61	52	30	20	A-7-6
	8	3	3-9-18	18"	Brown and gray clay, trace sand, moist-medium stiff	0	2	2	28	68	54	30	23	A-7-6
587.6	10	4	13-12-16	18"	Brown and gray clay, trace sand, moist-stiff	0	2	2	36	60	45	24	18	A-7-6
	12	5	9-13-7	16"	Brown and gray weathered shale, moist-very stiff to hard	Visual classification-No tests performed								
	14	6	15-25-38	14½"	do	do					Visual classification-No tests performed			
	16	7	18-34-46	18"	do	do					Visual classification-No tests performed			
	18	8	23-39-43	18"	do	do					Visual classification-No tests performed			
	20	9	23-74-86	18"	do	do					Visual classification-No tests performed			
	22	10	31-62-71	16"	do	do					Visual classification-No tests performed			
	24													
571.1	26	11	62-71	9"	do	do					Visual classification-No tests performed			
	28	12	NXM	83%	Sample 12-Gray and brown shale calcareous, slightly to moderately tough (¼" to 2" pieces averaging 1¼") and gray limestone, fossiliferous, jointed and iron oxide stained (1" to 3½" pieces averaging 2") 80% shale, 20% limestone									
	30													
	32	13	NXM	88%										
	34													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/25/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/28/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-16-2 STATION AND OFFSET 153+02, 96' Rt. BL SURFACE ELEV. 597.6 Retaining Wall No. 16

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34				Sample 13 - Gray shale, calcareous, moderately tough (¼" to 2" pieces averaging 1") and gray limestone, crystalline, fossiliferous, shaly(two 2½" pieces at bottom of the run) 88% shale, 12% limestone									
	36	14	NXM	50%										
	36													
	40	15	NXM	89%	Sample 14 - Gray shale,calcareous, moderately tough, jointed (½" to 2"pieces averaging 1") and gray limestone,crystalline, fossiliferous,jointed and iron oxide stained(two 2½" pieces) 86% shale, 14% limestone									
	42													
	42	16	NXM	50%										
553.6	44													
	46				Sample 15 - Gray shale,calcareous,moderately tough to tough (½" to 3" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed (3/4" to 3" pieces averaging 1½") 88% shale, 12% limestone									
	48													
	50				Sample 16 - Gray shale, calcareous,tough (½" to 2½" pieces averaging 1½") 100% shale									
	52													
	54				Boring completed									
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 539—16-59

THE E. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

REVISED
10/14/64-vb

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/29/64 SAMPLER: TYPE Split Spoon& Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/30/64 CASING: LENGTH DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-16-3 STATION AND OFFSET 154+54, 100' Rt. BL SURFACE ELEV. 586.4 Retaining Wall No. 16

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
586.4	0													
583.9	2	1	9-19-11	14"	Cinders and limestone(fill),dry-stiff	Visual classification-No tests performed								Fill
	4	2	6-8-9	16"	Brown clay, little sand,trace gravel, moist - stiff	2	5	5	28	60	48	26	18	A-7-6
	6	S-1		22"	do do	4	8	4	34	50	48	24	16	A-7-6
	8	3	13-18-21	16"	Brown clay, trace sand, moist - stiff	0	2	3	26	69	48	23	18	A-7-6
574.4	10	4	11-19-36	18"	Brown clay, trace sand, moist - very stiff	0	0	3	35	62	45	21	16	A-7-6
571.4	12	5	23-28-39	18"	Brown silty clay, trace sand,trace gravel, moist - stiff	2	4	2	39	53	39	17	18	A-6b
	14													
	16	6	NXM	91%	Sample 6 - Gray shale,calcareous, moderately tough with brown weathered zones throughout the run (½" to 2" pieces averaging 1") and gray limestone, crystalline,fossiliferous, jointed and iron oxide stained(1" to 2" pieces averaging 1½") 59% shale, 41% limestone									
	18	7	NXM	25%										
	20													
	22	8	NXM	91%	Sample 7 - Gray shale,calcareous, moderately tough with brown weathered zones throughout the run(½" to 1"pieces averaging 1") 100% shale									
	24	9	NXM	53%	Samples 8 & 9 - Gray shale,calcareous, moderately tough, jointed in the bottom half of the run (½" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous and iron oxide stained(1" to 3" pieces averaging 2½") 88%shale, 12% limestone									
	26													
	28	10	NXM	73%	Sample 10 - Gray shale,calcareous, moderately tough with brown weathered zones throughout the run(½" to 2" pieces averaging 1") and gray limestone, crystalline,fossiliferous,jointed(½"to 3"pieces 3½"pieces averaging 2")73% shale 27% limestone									
556.4	30													
	32													
	34				Boring completed									

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Form No. 630—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/8/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2" O.D.& NXM WATER ELEV. IMMEDIATE 527.3 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/8/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS ____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-18-1 STATION AND OFFSET 9+44, 12' Rt., Prop.Tail Track CL SURFACE ELEV. 552.3 Retaining Wall No. 18

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
552.3	0													
	2	1	3-5-5	8"	Cinders (fill), moist - loose	Visual classification-No tests performed								Fill
	4	2	7-4-3	11"	do do	Visual classification-No tests performed								Fill
	6	3	2-1-1	9"	do do	Visual classification-No tests performed								Fill
	8	4	1-1-2	10"	do do	Visual classification-No tests performed								Fill
	10													
	12	5	2-1-2	11"	do do	Visual classification-No tests performed								Fill
	14	6	1-1-2	12"	do do	Visual classification-No tests performed								Fill
537.3	16	7	2-2-3	13"	Cinders and organic matter(fill), very moist to wet - loose	Visual classification-No tests performed								Fill
	18	8	1-2-2	17"	do do	Visual classification-No tests performed								Fill
	20													
	22	9	3-4-3	12"	do do	Visual classification-No tests performed								Fill
	24	10	2-3-3	12"	do do	Visual classification-No tests performed								Fill
	26	11	1-4-2	18"	do do	Visual classification-No tests performed								Fill
	28													
	30													
	32	12	1-2-3	13"	do do	Visual classification-No tests performed								Fill
	34													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/8/64 SAMPLER: TYPE Split Spoon& Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 527.3 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/8/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-18-1 STATION AND OFFSET 9+44, 12' Rt., Prop.Tail Track CL SURFACE ELEV. 552.3 Retaining Wall No. 18

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36	13	4-3-4	12"	Cinders and organic matter (fill), very moist to wet - loose	Visual classification-No tests performed								Fill
	38													
512.3	40													
	42	14	4-7-10	18"	Brown and gray silty clay, trace sand, moist - medium stiff	0	0	2	36	62	40	18	25	A-6b
509.3														
	44	S-1		22"	Gray silt and clay, trace sand, moist - stiff	0	1	3	48	48	33	12	21	A- 6a
507.3														
	46	15	7-11-16	18"	Brown and gray silt, trace sand, trace gravel with silt layers and limestone fragments, moist - medium stiff	6	3	1	50	40	30	10	20	A-4b
	48													
502.8														
502.3	50	16	96	7"	Gray shale, moist - hard	Visual classification-No tests performed								
	52				Gray shale, calcareous, moderately tough, fossiliferous in the bottom 12" of the run (½" to 2½" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed (1" to 2½" pieces averaging 1½") 86% shale, 14% limestone									
	54	R-1	NXM	75%										
497.3														
	56													
	58				Boring completed									
	60													
	62													
	64													
	66													
	68													

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Form No. 630—10-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/3/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 537.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/3/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-18-2 STATION AND OFFSET 10+49,12'Rt.Prop.Tail Track CL SURFACE ELEV. 552.2 Retaining Wall No. 18

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
552.2	0													
	2	1	9-15-10	9"	Cinders and brick fragments (fill), moist - medium dense to loose	Visual classification-No tests performed								Fill
	4	2	7-9-6	12"	do do	Visual classification-No tests performed								Fill
	6	3	2-2-2	14"	do do	Visual classification-No tests performed								Fill
	8	4	2-1-3	15"	do do	Visual classification-No tests performed								Fill
	10													
	12	5	1-2-1	17"	do do	Visual classification-No tests performed								Fill
	14	6	2-1-1	16"	do do	Visual classification-No tests performed								Fill
	16	7	1-1-1	15"	do do	Visual classification-No tests performed								Fill
	18	8	2-2-1	14"	do do	Visual classification-No tests performed								Fill
532.2	20													
	22	9	1-2-3	13"	Cinders and coal (fill), moist-loose	Visual classification-No tests performed								Fill
	24	10	2-3-2	16"	do do	Visual classification-No tests performed								Fill
	26	11	3-3-4	17"	do do	Visual classification-No tests performed								Fill
	28	12	2-3-3	15"	do do	Visual classification-No tests performed								Fill
522.2	30													
	32	13	9-18-20	14"	Brown and gray clay,little sand,little gravel with rock fragments(fill),moist-medium stiff	17	9	6	24	44	49	24	33	A-7-6
	34	14	20-19-29	10"	do do	Visual classification-No tests performed								A-7-6

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/3/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 537.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/3/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-18-2 STATION AND OFFSET 10+49, 12' Rt., Prop.Tail Track CL SURFACE ELEV. 552.2 Retaining Wall No. 18

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
517.2	34													
	36	15	19-21-26	9"	Brown and gray clay, trace sand, trace gravel with shale and limestone fragments, moist - stiff	7	2	2	30	59	47	20	24	A-7-6
	38	16	15-18-21	7"	do do	Visual classification-No tests performed								A-7-6
512.2	40													
510.2	42	17	17-22-47	12"	Brown and gray silt and clay, little sand with shale and limestone fragments, very moist - medium stiff	0	7	3	34	56	39	15	24	A-6a
	44				Gray shale, calcareous, moderately tough to tough, broken(¼" to 2" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed (1" to 4" pieces averaging 3") 80% shale, 20% limestone									
505.2	46	18	NXM	47%										
	48													
	50				Boring completed									

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Form No. 530—26-00

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/15/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 541.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/16/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Retaining Wall No. 18

BORING No. R-18-3 STATION AND OFFSET 12+30, 13' Rt., Prop. Tail Track CL SURFACE ELEV. 554.0

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL CLASS
544.0	0													
	2	1	9-13-7	18"	Cinders and limestone (fill), dry - medium dense	Visual classification-No tests performed Fill								
549.0	4	2	9-9-11	17"	do do	Visual classification-No tests performed Fill								
546.5	6	3	6-6-6	14"	Cinders and sand(fill), moist - medium dense	Visual classification-No tests performed Fill								
544.0	8	4	2-2-3	11"	Brown silty clay with brick fragments, (fill), moist - medium stiff	Visual classification-No tests performed Fill								
541.5	10	5	1-1-1	13"	Gray silty clay with coal fragments (fill), moist - very soft	Visual classification-No tests performed Fill								
	12	6	2-1-2	16"	Gray sand with brick fragments (fill), wet - very loose	Visual classification-No tests performed Fill								
	14	7	1-1-1	0"										
	16	8	1-1-1	0"										
534.0	20	9	200	6"	Wood	Visual classification-No tests performed Fill								
533.5	22	10	7-7-9	11"	Dark brown silty clay (fill), moist - stiff	Visual classification-No tests performed Fill								
529.0	24	11	9-9-9	13"	Brown and gray clay, trace sand, trace gravel, moist - stiff	6	2	2	35	55	41	17	24	A-7-6
	26													
	28													
	30	12	9-11-14	16"	do do	0	2	3	35	60	43	17	24	A-7-6
	32													
	34													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/15/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 541.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/16/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-18-3 STATION AND OFFSET 12+30, 13' Rt.,Prop.Tail Track CL SURFACE ELEV. 554.0 Retaining Wall No. 18

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
519.0	34													
	36	13	32-36-59	16"	Gray shale, moist - hard	Visual classification-No tests performed								
	38													
	40													
	42	14	NXM	72%	Gray shale, moist - hard *									
511.0	44													
	46				Boring completed									
	48				*Vandals destroyed core samples in the field. Description based on driller's examination only. (Notified Mr. Warnke of Hazelet & Erdal by telephone of this condition.)									
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 530—14 M

THE R. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

*Water used in drilling from elevation 574.8

DATE STARTED 9/8/64 SAMPLER: TYPE Split Spoon - Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE * CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/10/64 CASING: LENGTH DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS PROJECT: Northeast Expressway HAM-71-0.93 Retaining Wall No. 18

BORING No. R-18-4 STATION AND OFFSET 12+86.13' L. Prop.Tail Track CL SURFACE ELEV. 574.8

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % ASH	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
574.8	0													
	2	1	1-1-1	8"	Cinders and topsoil (fill), dry - soft	Visual classification-No tests performed								Fill
	4	2	9-14-11	11"	Topsoil, cinders and brick (fill),dry-stiff	Visual classification-No tests performed								Fill
569.8	6	3	7-11-9	10"	Brown clay, little sand,trace gravel with topsoil and brick fragments(fill), moist - stiff	5	5	10	39	41	42	21	16	A-7-6
	8	4	6-7-11	12"	do do	Visual classification-No tests performed								A-7-6
564.8	10													
	12	5	1-2-2	8"	Brown and gray silty clay, little sand, trace gravel with topsoil and brick fragments,(fill),moist-medium stiff	8	4	10	40	38	37	17	27	A-6b
562.3	14	6	3-4-6	12"	Brown and gray silty clay with topsoil, sand and brick fragments(fill),moist-medium stiff	Visual classification-No tests performed								Fill
558.8	16													
	18	7	3-3-7	6"	Brick, gravel, wood fragments, and brown silty clay(fill), very moist-stiff	Visual classification-No tests performed								Fill
556.3	20	8	4-6-3	12"	Brown silty clay and topsoil with brick and rock fragments (fill), moist - stiff	Visual classification-No tests performed								Fill
	22	9	5-7-4	8"	do do	Visual classification-No tests performed								Fill
	24	10	6-6-3	7"	do do	Visual classification-No tests performed								Fill
	26	11	2-3-3	11"	do do	Visual classification-No tests performed								Fill
	28	12	5-6-4	0										
	30													
	32	13	6-4-5	12"	do do	Visual classification-No tests performed								Fill
541.3	34													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

*Water used in drilling from elevation 574.8

DATE STARTED 9/8/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. NXM WATER ELEV. IMMEDIATE * CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/10/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-18-4 STATION AND OFFSET 12+86, 13' L. Prop. Tail Track CL SURFACE ELEV. 574.8 Retaining Wall No. 18

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34	14	3-4-4	8"	Brown clayey sand with brick, rock and wood fragments (fill), very moist - medium stiff	Visual classification-No tests performed								Fill
	36													
		15	4-5-3	10"	do do	Visual classification-No tests performed								Fill
536.3	38													
	40	16	3-5-4	9"	Topsoil, cinders, wood and brick fragments (fill), very moist - medium stiff	Visual classification-No tests performed								Fill
	42	17	6-4-3	10"	do do	Visual classification-No tests performed								Fill
531.3	44													
		18	3-5-4	8"	Brown and gray silty clay with sand and and cinders (fill), very moist - stiff	Visual classification-No tests performed								Fill
	46													
526.3	48													
	50	19	18-20-26	4"	Brown and gray clay with sand, moist - stiff	No tests performed-Insufficient sample								A-7-6
	52													
521.3	54													
		20	11-18-23	9"	Brown and gray clay, trace sand with limestone fragments, moist - very stiff	0	3	3	33	61	42	17	22	A-7-6
	56													
516.3	58													
	60	21	18-30-36	10"	Gray shale, moist - hard	Visual classification-No tests performed								
	62													
512.3														
	64	22	NXM	70%	Gray shale, calcareous, moderately tough (¼"to 2½" pieces averaging 1½") and gray limestone, crystalline, fossiliferous (1½" to 4½" pieces averaging 2½")									
	66				87% shale, 13% limestone									
507.3	68				Boring completed									

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Form No. 830—1

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

*Water used in drilling from elevation 564.7

DATE STARTED 9/14/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXH WATER ELEV. IMMEDIATE * CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/14/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS ____ Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-18-5 STATION AND OFFSET 13+22, 12' Rt., Prop.Tail Track CL SURFACE ELEV. 564.7 Retaining Wall No. 18

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS.
564.7	0													
	2	1	5-7-11	8"	Topsoil, cinders and clay (fill), dry to moist - stiff to medium stiff	Visual classification-No tests performed								Fill
	4	2	5-8-10	13"	do do	Visual classification-No tests performed								Fill
	6	3	32-6-11	9"	do do	Visual classification-No tests performed								Fill
	8	4	3-2-5	12"	do do	Visual classification-No tests performed								Fill
554.7	10													
	12	5	2-3-4	8"	Topsoil, sand, ashes and brick fragments (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	14	6	1-3-3	6"	do do	Visual classification-No tests performed								Fill
549.7														
	16	7	2-3-2	12"	Brown sandy silt, some gravel with ashes and brick fragments (fill), moist - medium stiff	21	7	18	32	22	27	9	24	A-4a
	18	8	2-3-3	6"	Brown sandy silt, little gravel with ashes and brick fragments(fill),moist-medium stiff	11	9	27	27	26	26	9	25	A-4a
544.7	20													
	22	9	3-4-6	6"	Brown gravelly sand,little clay,little silt, with ashes and brick fragments, (fill), moist - medium stiff	37	22	19	12	10		NP	19	A-1-b
542.2		10	2-4-3	0										
539.7	24													
	26	11	2-3-2	5"	Brown silty sand, little clay,some gravel with ashes and brick fragments, (fill), moist - medium stiff	26	21	25	16	12		NP	18	A-2-4
537.2														
	28	12	4-4-7	12"	Topsoil, sand, ashes and brick fragments(fill), moist - medium stiff	Visual classification-No tests performed								Fill
	30	13	2-3-1	6"	do do	Visual classification-No tests performed								Fill
532.2	32													
	34	14	1-1-3	10"	Brown silt,little sand,little gravel with ashes and brick fragments(fill), moist - medium stiff	10	8	8	50	24		NP	22	A-4b

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

*Water used in drilling from eelvation 564.7

DATE STARTED 9/14/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE * CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/14/64 CASING: LENGTH ____ DIA 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT Northeast Expressway HAM-71-0.93

BORING No. R-18-5 STATION AND OFFSET 13+22, 12'Rt.,Prop.Tail Track CL SURFACE ELEV. 564.7 Retaining Wall No. 18

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
529.7	34													
	36	15	6-7-7	13"	Brown and gray silt, trace sand, moist-medium stiff (possible fill)	0	1	5	79	15		NP	22	A-4b
	38													
524.7	40													
	42	16	7-9-50	7"	Brown and gray silty clay, trace sand, moist - stiff	0	2	0	34	64	40	18	14	A-6b
519.7	44													
	46	17	12-15-53	4"	Brown weathered shale, moist-very stiff Visual classification-No tests performed									
	48													
515.7	50	R-1	NXM	60%	Gray shale, calcareous, moderately tough (¼" to 1½" pieces averaging 1") 100% shale									
	52													
	54	R-2	NXM	90%	Gray shale, calcareous, moderately tough (¼" to 1½" pieces averaging 1") 100% shale									
510.7	56				Boring completed									

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Form No. [illegible]

THE K. C. NUTTING COMPANY

[illegible] AIRPORT ROAD
CINCINNATI 26, OHIO

REVISED
10/12/64-vb

TESTING ENGINEERS AND SOILS CONSULTANTS

*Water used in drilling from surface - elevation 605.3.

LOG OF BORING

DATE STARTED 8/18/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE * CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/20/64 CASING: LENGTH DIA. 3.5"I.D. Hollow Stem Augers AFTER HOURS Backfilled PROJECT: Northeast Expressway

BORING No. R-21-1 STATION AND OFFSET 166+86, 16.5' Rt., Ramp GD BL SURFACE ELEV. 605.3 HAM-71-0.93 Retaining Wall No. 21

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N) **	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	UNIT. CLASS.
605.3	0													
603.3	2	1	12-11-12	14"	Cinders, topsoil and brick (fill), moist - stiff	Visual classification-No tests performed								Fill
2	4	2	12-80	8"	Brown clay, trace sand, trace gravel with shale and limestone fragments, moist - very stiff	2	5	4	29	60	43	20	20	A-7-6
600.3														
3 598.8	6	3	26-60	7"	Brown weathered shale, moist - hard	Visual classification-No tests performed								
1.5	8	4	NXM	60%	Brown and gray weathered shale, slightly tough, jointed(¼"to 1½" pieces averaging 1")(trace of limestone)									
	10, 12, 14	5	NXM	17%	Brown and gray weathered shale, slightly tough to soft(½" to 1½" pieces averaging 1")trace of limestone(one 3/4"piece jointed) 99% shale, 1% limestone									
	16, 18	6	NXM	31%	Brown and gray weathered shale, slightly tough(½" and 1"pieces and gray limestone crystalline, fossiliferous(1" and 2½" pieces) 92% shale, 8% limestone									
	20, 22, 24	7	NXM	80%	Gray shale, calcareous, moderately tough (1" to 4" pieces averaging 2") and gray limestone, crystalline, fossiliferous, jointed and iron oxide stained (three pieces 1" and 1½") 95% shale, 5% limestone									
	26, 28	8	NXM	54%	Gray shale, calcareous, moderately tough (½" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous, jointed(three pieces ½" to 1") 95% shale, 5% limestone									
576.3														
22.5	30, 32, 34				Boring completed **70 lb. hammer weight 30 inch fall									

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

*Water used in drilling from elevation 609.7

LOG OF BORING

DATE STARTED 8/30/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE * AFTER Backfilled HOURS CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/30/64 CASING: LENGTH DIA. 3.5"I.D.Hollow Stem Augers PROJECT: Northeast Expressway HAM-71-0.93 Retaining Wall No. 21

BORING No. R-21-2 STATION AND OFFSET 168+21, 19.5' Rt., Ramp GD BL SURFACE ELEV. 609.7

ELEV.	DEPTH	SAMPLE No.	STD. PEN. ** (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
609.7	0													
608.2	2	1	5-6-8	14"	Gray silty clay with topsoil and cinders (fill), moist	Visual classification-No tests performed								Fill
607.2	4	2	12-14-38	16"	Brown clay, trace sand, trace gravel with shale and limestone fragments, moist - stiff	1	6	3	31	59	46	20	18	A-7-6
	6	3	10-18-45	12"	do do .	Visual classification-No tests performed								A-7-6
	8	4	18-32-60	15"	Brown and gray clay, trace sand with shale and limestone fragments, moist - very stiff	0	2	4	32	62	44	17	18	A-7-6
600.2	10	5	60	3"	Brown silty clay, little sand, little gravel with shale and limestone fragments, moist - very stiff	13	9	6	16	56	40	16	19	A-6b
598.7	12	6	NXM	53%	Sample 6 - Gray shale, calcareous, moderately tough (½" to 2" pieces averaging 1") and gray limestone, crystalline, fossiliferous (one 1½"piece in the bottom 4" of the run) 97% shale, 3% limestone									
	14													
	16	7	NXM	63%	Sample 7 - Gray shale, calcareous, moderately tough (1" to 5" pieces averaging 2½") and gray limestone, crystalline, fossiliferous, jointed and iron oxide stained (three pieces ½" - 1" and 1½" in the bottom 8" of the run 95% shale,									
	18													
	20	8	NXM	51%	5% limestone									
	22				Sample 8 - Gray shale with brown weathered zones in the top half of the run, calcareous, moderately tough to tough (1" to 6" pieces averaging 3") and gray limestone, crystalline, fossiliferous									
	24													
	26	9	NXM	75%	(1½" to 2½" pieces averaging 2")									
	28				84% shale, 16% limestone									
					Sample 9 - Gray shale, calcareous, tough to moderately tough (½" to 3" pieces averaging 2") 100% shale									
	30													
	32	10	NXM	60%	Sample 10-Gray shale, calcareous moderately tough to tough, jointed in the top and bottom 6" of the run(½" to 3" pieces averaging 2") 100% shale									
576.2	34				Boring completed									

**70 lb. Hammer Weight
30 inch fall

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Form No. 530—5-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

*Water used in drilling from elevation 596.5

DATE STARTED 8/27/64 SAMPLER: TYPE Split Spoon DIA. 2"O.D. WATER ELEV. IMMEDIATE * CLIENT City of Cincinnati, Ohio

DATE COMPLETED 8/28/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow AFTER _____ HOURS Backfilled PROJECT Northeast Expressway HAM-71-0.93

BORING No. R-21-3 STATION AND OFFSET 168+91, 13' Rt. Ramp GD BL SURFACE ELEV. 596.5 Retaining Wall No. 21

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
596.5	0													
	2	1	4-7-8	9"	Brown weathered shale with limestone fragments, dry - hard	Visual classification-No tests performed								
	4	2	25-50	10"	Brown and gray shale with limestone fragments, moist - hard	Visual classification-No tests performed								
590.0	6	3	20-50	10"	do do	Visual classification-No tests performed								
	8	4	NXM	83%	Sample 4-Brown and gray weathered shale slightly tough(¼" to 1½" pieces averaging 1")and gray limestone,crystalline, fossiliferous(two pieces ½" and 2")39% shale, 41% limestone									
	10	5	NXM	90%	Sample 5-Gray shale,calcareous,moderately tough to tough (1" to 5½" pieces averaging 3") 100% shale									
	12													
	14	6	NXM	89%	Sample 6-Gray shale,calcareous,tough to moderately tough,weathered in bottom 12" of the run(1" to 5½"pieces averaging 3") and gray limestone, crystalline, fossiliferous,jointed and iron oxide stained (½" to 1½" averaging 1")86% shale, 14% limestone									
	16													
	18	7	NXM	91%										
576.0	20	8	NXM	100%	Sample 7-Gray shale,calcareous,moderately tough with soft seams(½" to 4½" pieces averaging 2") 100% shale									
	22				Sample 8-Gray shale,calcareous,tough (½" to 3" pieces averaging 2") and gray limestone, crystalline,fossiliferous (one 2½" piece at the bottom of the run) 94% shale, 6% limestone									
	24													
	26				Boring completed									
	28													
	30													
	32													
	34													

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Form No. 530- 16.59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/13/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/13/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No R-21-4 STATION AND OFFSET 170+23, 18' Rt., BL Ramp GD SURFACE ELEV. 594.3 Retaining Wall No. 21

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
594.3	0													
593.8		1	4	5"	Cinders (fill), moist - loose	Visual classification-No tests performed								Fill
	2	2	5-8	12"	Brown and gray weathered shale, moist - hard	Visual classification-No tests performed								
	4	3	16-31-58	18"	Brown and gray weathered shale, moist-hard	Visual classification-No tests performed								
589.3														
	6	4	23-74	15"	Gray shale, moist - hard	Visual classification-No tests performed								
	8	5	41-130	18"	Gray shale, moist - hard	Visual classification-No tests performed								
584.3	10													
	12	6	NXM	80%	Gray shale, calcareous, jointed in top 6" of the run, tough (½" to 2½" pieces, averaging 2") and gray limestone, shaly, fossiliferous, (two 1½" pieces) 94% shale, 6% limestone									
	14													
	16	7	NXM	61%	Gray shale, calcareous, moderately tough to tough (1" to 3"pieces averaging 2") and gray limestone, fossiliferous (one 3/4" piece)98% shale, 2% limestone									
576.3	18													
	20													
	22				Boring completed									
	24													
	26													
	28													
	30													
	32													
	34													

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/6/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 596.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/6/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-11-S STATION AND OFFSET 32+23, 42'L., NB Gilbert EL SURFACE ELEV. 611.5 Bridge No. HAM-1-0196

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
611.5	0													
609.0	2	1	15-11-10	12"	Blacktop, clay, concrete, sand, gravel, cinders (fill), moist-medium dense	Visual classification-No tests performed								Fill
605.5	4	2	5-4-3	9"	Brown silty clay, fine gravel (fill) moist - medium stiff	Visual classification-No tests performed								Fill
604.0	6	3	9-5-4✓	9"	Sand, gravel, cinders and rock fragments, (fill), moist - loose	Visual classification-No tests performed								Fill
	8													
	10	4	2-2-2	17"	Brown sandy silt, trace gravel with brick and cinders (fill), wet - soft	7	0	32	35	26	22	5	19	A-4a
	12	5	2-1-2✓	18"	Gray and brown sandy silt, trace gravel with brick and cinders (fill), very moist - soft	12	0	21	36	31	27	9	20	A-4a
596.5	14													
	16	6	4-6-7	16"	Brown and gray clay, trace sand, trace gravel with limestone fragments (probable fill), moist - medium stiff	7	3	3	42	45	42	20	27	A-7-6
591.5	18													
	20	7	8-11-20	16"	Brown silty clay, trace sand, trace gravel with limestone fragments, moist - stiff	10	8	2	34	46	40	18	22	A-6b
586.5	22													
585.0	24	8	15-31-49	18"	Brown clay, trace sand, moist - very stiff	0	1	1	29	69	44	21	19	A-7-6
	26													
	28	9	23-56	12"	Brown and gray shale, moist - hard	Visual classification-No tests performed								
	30													
	32	10	21-63	12"	Gray shale, moist - hard	Visual classification-No tests performed								
	34	11	72	6"	do do	Visual classification-No tests performed								

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/6/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 596.5 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/6/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-11-6 STATION AND OFFSET 32+23.42'L., NB Gilbert BL SURFACE ELEV. 611.5 Bridge No. HAM-1-0196

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL. CLASS
	34				Gray shale, calcareous, moderately tough to tough (1" to 3" pieces averaging 1½") and gray limestone crystalline, fossiliferous, jointed (½" to 2" pieces averaging 1") 93% shale, 7% limestone									
	36	12	NXM	63%										
	38													
	40													
	42				Gray shale, calcareous, tough (1" to 5" pieces, averaging 3") and gray limestone crystalline, fossiliferous (two pieces 1½" and 2½") 93% shale, 7% limestone									
566.5	44	13	NXM	88%										
	46													
	48				Boring completed									
	50													
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/25/64 SAMPLER: TYPE Split Spoon & CoreBarrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 601.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/25/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS _____ BackFilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-12-5 STATION AND OFFSET 15+56, 48' Rt. Elsinore Pl.CL SURFACE ELEV. 616.2 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
616.2	0													
615.8					0.4' Concrete									
613.7	2	1	11-6-6	11"	Clay, cinders and gravel (fill), moist-medium dense	Visual classification-No tests performed								Fill
611.2	4	2	7-8-8	13"	Brick, clay, cinders and gravel (fill), moist - medium dense	Visual classification-No tests performed								Fill
608.7	6	3	2-3-3	13"	Brown clay, trace sand with shale fragments(probable fill),moist-medium stiff	0	2	3	33	62	47	23	22	A-7-6
	8	4	3-4-5	14"	Brown and gray silty clay,trace sand, little gravel with shale and limestone fragments(probable fill),moist-medium stiff	11	5	4	30	50	40	18	20	A-6b
	10	5	2-3-3	16"	Brown and gray silty clay, trace sand, trace gravel with shale and limestone fragments (probable fill), moist - medium stiff	1	5	4	37	53	39	17	23	A-6b
	12													
	14													
601.2	16	6	4-7-5	10"	Brown and gray clay, little sand,little gravel with shale and limestone fragments, (probable fill), moist - medium stiff	11	9	4	30	46	41	19	23	A-7-6
	18													
	20	7	5-6-5	15"	Brown and gray clay, trace sand, little gravel with shale and limestone fragments, moist - stiff	15	5	2	28	50	44	22	24	A-7-6
	22													
	24													
	26	8	7-8-9	17"	Brown and gray clay, trace sand, trace gravel with shale and limestone fragments, moist - stiff	1	4	4	30	61	48	25	19	A-7-6
	28													
587.2														
585.7	30	S-1		16"	Brown silty clay, little sand, moist - stiff	0	6	5	42	47	40	18	18	A-6b
	32	9	14-18-27	18"	Brown weathered shale, moist - hard	Visual classification-No tests performed								
	34	10	22-38-53	18"	do do	Visual classification-No tests performed								

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Form No. 530--16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/25/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 601.2 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/25/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-12-5 STATION AND OFFSET 15+56, 48' Rt. Elsinore Pl. CL SURFACE ELEV. 616.2 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD PEN (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36	11	24-60	12"	Brown and gray weathered shale, moist - hard	Visual classification-No tests performed								
	38	12	32-58	12"	Gray shale, moist - hard	Visual classification-No tests performed								
576.2	40													
	42	13	NXM	60%	Gray shale, clacareous, moderately tough (1" to 6" pieces averaging 3") and gray limestone, crystalline, fossiliferous, jointed (1" to 3" pieces averaging 1½") 90% shale, 10% limestone									
	44													
	46	14	NXM	98%	Gray shale, calcareous, tough(1"to 6½" pieces averaging 4") and gray limestone, crystalline, fossiliferous (three pieces 3/4" - 1" and 2"). 94% shale, 6% limestone									
	48													
566.2	50													
	52				Boring completed									
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 830—16.59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/11/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/11/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0203

BORING No. B-12-4 STATION AND OFFSET 15+61, 44' L., CL, Elsinore Pl. SURFACE ELEV. 616.8

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
616.8	0													
614.3	2	1	3-4-4	14"	Concrete, sand, gravel and clay(fill), moist - loose	Visual classification-No tests performed								
609.8	4 6	2	4-5-7	16"	Brown silt and clay,little sand,trace gravel,(fill), moist - medium stiff	8	8	10	34	40	35	15	18	A-6a
	8 10	3	6-9-14	16"	Brown silty clay,little sand,little gravel with cinders and limestone fragments (fill),moist - stiff	14	6	5	34	41	39	19	18	A-6b
	12	S-1		13"	Brown silty clay,some sand,trace gravel with cinders and limestone fragments, (fill), moist - stiff	2	16	8	39	35	39	17	*	A-6b
	14	4	8-11-15	10"	Brown silty clay, trace sand, trace gravel (fill), moist- stiff	9	4	3	39	45	39	19	14	A-6b
594.8	16 18 20 22	5	7-8-10	18"	Brown silty clay, trace sand, some gravel with limestone fragments (fill), moist - stiff	20	4	3	31	42	40	20	18	A-6b
	24 26	6	6-8-11	16"	Gray clay, trace sand,little gravel with limestone fragments (fill),moist-stiff	18	2	3	32	45	41	21	18	A-7-6
586.8	28 30	7	6-9-13	17"	Brown and gray clay, trace sand,little gravel with limestone fragments (fill) moist -stiff	16	4	2	37	41	44	24	22	A-7-6
583.8	32 34	8	5-8-12	18"	Brown and gray silty clay, trace sand, trace gravel with limestone fragments (fill), moist - stiff	6	4	2	43	45	40	20	19	A-6b

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/11/64 SAMPLER: TYP Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 7/11/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-12-4 STATION AND OFFSET 15+61, 44' L., CL, Elsinore Place SURFACE ELEV. 616.8 Bridge No. HAM-71-0203

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34	S-2		19"	Brown and gray clay, little sand with shale fragments (fill), moist - stiff	0	7	5	37	51	42	19	22	A-7-6
	36	9	9-12-15	18"	Brown and gray clay, trace sand, little gravel with shale fragments (fill), moist - stiff	19	2	1	32	46	46	24	21	A-7-6
	38	10	7-11-14	18"	Brown and gray clay, trace sand, little gravel with shale fragments (fill), moist - stiff	13	2	4	36	45	41	19	14	A-7-6
576.8	40	S-3			Brown and gray silty clay, little sand, trace gravel with shale fragments (fill), moist- stiff	4	6	4	37	49	39	17	20	A-6b
	42	11	9-16-20	15"	Brown and gray silty clay, trace sand with shale fragments (fill), moist-stiff	0	2	3	41	54	39	19	18	A-6b
571.8	46	12	18-50	12"	Brown and gray shale, moist - hard	Visual classification-No tests performed								
	48	13	82-100	12"	Gray shale, dry - hard	Visual classification-No tests performed								
567.3	50													
	52	14	NXM	60%	Gray shale, calcareous, moderately tough to tough (¼" to 3" pieces averaging 1½") 100% shale									
562.3	54													
	56				Boring completed			*Insufficient sample						
	58													
	60													
	62													
	64													
	66													
	68													

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THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/2/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 595.4 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/3/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-23-1 STATION AND OFFSET 177+02, 70' Rt., NB BL SURFACE ELEV. 620.4 Retaining Wall No. 23

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
620.4	0				0.3' Concrete									
620.1														
617.9	2	1	5-4-4	10"	Brown silty clay with cinders(fill), moist - medium stiff	Visual classification-No tests performed								Fill
	4	2	5-5-5	11"	Clay, sand, gravel, brick and cinders (fill), moist - loose	Visual classification-No tests performed								Fill
	6	3	2-2-4	12"	do do	Visual classification-No tests performed								Fill
	8	4	2-1-3	12"	do do	Visual classification-No tests performed								Fill
	10	5	2-2-3	11"	do do	Visual classification-No tests performed								Fill
	12													
	14													
	16	6	2-3-2	13"	do do	Visual classification-No tests performed								Fill
	18													
	20													
	22	7	2-3-4	17"	do do	Visual classification-No tests performed								Fill
	24													
	26		1-1-2	0										
592.9														
	28	8	2-3-5	10"	Brown and gray clay, little sand, trace gravel with limestone fragments(fill), moist - medium stiff	4	5	5	37	49	41	16	22	A-7-6
	30	S-1		20"	Brown clay, trace sand, trace gravel with limestone fragments, moist - stiff	9	5	4	32	50	42	18	22	A-7-6
588.4	32	9	5-5-6	10"	Brown and gray silt and clay, trace sand, moist - medium stiff	0	0	1	55	44	32	12	23	A-6a
	34													

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/2/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 595.4 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/3/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-23-1 STATION AND OFFSET 177+02, 70' Rt., NB BL SURFACE ELEV. 620.4 Retaining Wall No. 23

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
585.4	34													
	36	10	5-7-9	17"	Brown and gray clay, trace sand, moist stiff	0	0	2	48	50	44	22	22	A-7-6
	38	11	5-9-14	18"	Brown clay, little sand, trace gravel with limestone fragments, moist-stiff	9	8	4	28	51	41	19	19	A-7-6
580.4	40													
		12	17-10-15	10"	Brown silty clay, trace sand, trace gravel with limestone fragments, moist - stiff	2	4	4	38	52	40	17	19	A-6b
577.9	42													
		13	7-11-16	15"	Brown silt and clay, little sand, trace gravel with limestone fragments, moist-stiff	6	7	4	42	41	34	12	18	A-6a
575.4	44													
	46	14	8-12-18	18"	Brown clay, little sand, little gravel with limestone fragments, moist-stiff	13	10	5	29	43	41	16	17	A-7-6
572.9	48													
		15	7-10-17	18"	Brown silt and clay, little sand with limestone fragments, moist - stiff	0	7	4	37	52	37	14	20	A-6a
570.4	50													
	52	16	12-16-28	18"	Brown and gray weathered shale, moist - hard	Visual classification-No tests performed								
	54													
565.4														
	56	17	NXM	43%	Gray shale, calcareous, moderately tough (½" to 2" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed (½" to 2" pieces averaging 1") 95% shale, 5% limestone									
	58													
560.4	60													
	62				Boring completed									
	64													
	66													
	68													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/31/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 592.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/31/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-13-3 STATION AND OFFSET 201+79, 17'Rt.Relocated Penn.* SURFACE ELEV. 620.1 Bridge No. HAM-71-0207

*RR Tracks CL

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
620.1	0													
	2	1	1-1-3	14"	Cinders, sand, clay and gravel (fill), moist - loose	Visual classification-No tests performed								Fill
	4	2	5-4-5	17"	do do	Visual classification-No tests performed								Fill
	6	3	4-5-5	16"	Brown silty clay with sand, gravel, cinders and brick (fill), moist - medium stiff	Visual classification-No tests performed								Fill
	8	4	4-4-3	16"	do do	Visual classification-No tests performed								Fill
	10													
	12	S-1		19"	do do	Visual classification-No tests performed								Fill
	14	5	2-2-2	17"	Cinders, brick and sand (fill), moist - loose	Visual classification-No tests performed								Fill
605.1	16	6	4-4-5	14"	Brown and gray silt and clay, little sand, little gravel with limestone fragments (fill), moist - medium stiff	16	10	5	30	39	36	14	14	A-6a
	18													
	20													
	22	7	3-4-5	15"	Brown and gray silt and clay, little sand, little gravel with limestone fragments (fill), moist - stiff	19	9	5	31	36	35	14	18	A-6a
	24													
593.1	26	S-2		10"	Gray silt and clay, trace sand, trace gravel, moist - stiff	7	5	3	40	45	37	15	17	A-6a
	28	8	3-4-5	18"	Brown and gray clay, trace sand, trace gravel with cinders (fill), moist - medium stiff	1	2	3	41	53	42	19	33	A-7-6
	30													
	32	9	5-7-11	16"	Brown clay, trace sand, trace gravel with limestone fragments, moist-stiff	9	3	2	39	47	41	21	20	A-7-6
	34	10	5-7-9	17"	Brown clay, trace sand, little gravel with limestone fragments, moist-medium stiff	10	6	3	33	48	41	21	21	A-7-6

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/31/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 592.6 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/31/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT Northeast Expressway HAM-71-0.93

BORING No. B-13-3 STATION AND OFFSET 201+79, 17'Rt.Relocated Penn * SURFACE ELEV. 620.1 Bridge No. HAM-71-0207

*RR Tracks CL

ELEV	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTC CLASS
	34													
	36		5-5-6	0	Brown clay, trace sand, little gravel with limestone fragments, moist -									
582.1	38	S-3		12"	medium stiff	Visual classification-No tests performed								A-7-6
581.1														
	40	11	7-9-14	14"	Brown silty clay, little sand, little gravel with limestone fragments, moist - stiff	10	10	5	27	48	40	21	18	A-6b
578.1	42													
	44	12	7-11-14	17"	Brown clay, trace sand, trace gravel with limestone fragments, moist - stiff	2	6	3	27	62	45	23	19	A-7-6
	46	13	9-11-13	15"	Brown clay, little sand, trace gravel with limestone fragments, moist - stiff	6	6	4	27	57	43	20	21	A-7-6
	48													
	50													
	52	14	9-12-16	18"	Brown and gray clay, trace sand with limestone fragments, moist - very stiff	0	5	3	30	62	46	22	20	A-7-6
566.1	54													
565.1		15	43-78	14"	Gray shale, moist - hard	Visual classification - No tests performed								
	56				Gray shale, calcareous, moderately									
		16	NXM	35%	tough (1" to 6½" pieces averaging 3") 100% shale									
	58													
560.1	60													
	62				Boring completed									
	64													
	66													
	68													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/1/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/1/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-14-6 STATION AND OFFSET 180+10, 70'Rt. NB BL SURFACE ELEV. 623.5 Bridge No. HAM-71-0209

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
623.5	0													
	2	1	5-7-8	10"	Cinders, sand, gravel and brick fragments (fill), moist - medium dense	Visual classification-No tests performed								Fill
	4	2	6-8-9	11"	do do	Visual classification-No tests performed								Fill
	6													
616.0	8		No Penetration											
		3	5-6-7	13"	Gray weathered shale and brick fragments (fill), moist - medium dense	Visual classification-No tests performed								Fill
613.5	10													
	12	4	5-7-6	8"	Clay, cinders and brick fragments, (fill), moist - medium dense	Visual classification-No tests performed								Fill
	14													
	16	5	5-5-6	16"	do do	Visual classification-No tests performed								Fill
	18													
603.5	20													
	22	6	8-4-3	14"	Cinders, brick, clay, sand and gravel, (fill), moist - loose	Visual classification-No tests performed								Fill
	24													
	26	7	6-4-3	12"	do do	Visual classification-No tests performed								Fill
	28	8	4-3-4	15"	do do	Visual classification-No tests performed								Fill
593.5	30													
	32	9	4-4-5	12"	Brown and gray clay, trace sand, trace trace gravel with shale and limestone fragments (fill), moist - stiff	1	3	3	45	48	46	20	21	A-7-6
590.5	34	S-1		19"	Brown and gray silt and clay, little sand, trace gravel with shale and limestone fragments (fill), moist - stiff	1	7	4	36	52	37	15	19	A-6a

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 9/1/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 9/1/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-14-6 STATION AND OFFSET 180+10, 70' Rt, NB BL SURFACE ELEV. 623.5 Bridge No. HAM-71-0209

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36	10	7-11-15	16"	Brown and gray silt and clay, little sand, trace gravel with shale fragments, (fill), moist - stiff	1	8	5	36	50	37	14	14	A-6a
	38	11	5-7-9	16"	Gray silt and clay, little sand, some gravel with shale and limestone fragments, (fill), moist - medium stiff	25	8	3	33	31	33	13	19	A-6a
583.5	40													
		12	4-6-8	15"	Brown and gray silty clay, trace sand with shale and limestone fragments, (fill), moist - stiff	0	5	4	41	50	39	15	21	A-6b
580.5	42													
	44	S-2		20"	Gray clay, trace sand with limestone fragments (fill), moist - stiff	0	1	1	40	58	44	18	30	A-7-6
	46	13	5-6-7	18"	Brown and gray clay, trace sand with limestone fragments (fill), moist - stiff	0	0	2	37	61	47	22	26	A-7-6
	48	14	9-11-15	18"	Brown clay, trace sand, moist - stiff	0	2	2	33	63	48	20	18	A-7-6
	50	15	12-16-21	18"	Brown clay, trace sand, moist - hard	0	2	1	35	62	48	21	18	A-7-6
	52													
	54													
568.5														
567.5	56	16	34-68	15"	Gray shale, dry - hard	Visual classification-No tests performed								
	58				Gray shale, moderately tough to tough (½" to 4½" pieces averaging 3") and gray limestone, crystalline, fossiliferous, shaly (two pieces 1" and 2") 95%shale 5% limestone									
		17	NXM	83%										
562.5	60													
	62				Boring completed									
	64													
	66													
	68													

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—16.59

THE H. C. NUTTING COMPANY

[illegible] AIRPORT ROAD
[illegible]

TESTING ENGINEERS AND [illegible]

LOG OF BORING

DATE STARTED [illegible] SAMPLER [illegible] DIA. [illegible] WATER [illegible] [illegible] City of Cincinnati, Ohio

DATE COMPLETED 8/[illegible]/64 CASING LENGTH [illegible] DIA. [illegible] HOURS [illegible] PROJECT Northeast Expressway
Stem Augers
SAM 71-0.93

BORING No. B-[illegible] STATION AND OFFSET [illegible] SURFACE ELEV. 620.0 Retaining Wall No. 25

ELEV.	DEPTH	SAMPLE No	STD. PEN (N)	% REC	DESCRIPTION	Physical Characteristics % AGG	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHT. CL.
620.0	0													
	2	1	5-6-8	12"	Clay, sand, cinders and brick(fill), moist - medium dense to loose	Visual classification-No tests performed								Fill
	4	2	7-6-5	6"	do do	Visual classification-No tests performed								Fill
	6	3	2-5-4	10"	do do	Visual classification-No tests performed								Fill
	8	4	2-3-3	11"	do do	Visual classification-No tests performed								Fill
	10	5	3-6-5	11"	do do	Visual classification-No tests performed								Fill
	12													
	14	6	2-5-8	13"	do do	Visual classification-No tests performed								Fill
	16	7	2-5-3	16"	do do	Visual classification-No tests performed								Fill
	18	8	3-4-3	18"	do do	Visual classification-No tests performed								Fill
600.0	20	9	2-5-2	16"	Cinders and [illegible] (fill), moist - loose	Visual classification-No tests performed								Fill
	22													
	24	10	[illegible]	16"	do do	Visual classification-No tests performed								Fill
	26	11	3-3-4	9"	do do	Visual classification-No tests performed								Fill
592.5	28	12	3-6-7	18"	Brown and gray silt and clay little sand, trace gravel with shale fragments(fill), moist - medium stiff	9	7	5	36	43	35	14	24	A-6a
	30	13	[illegible]	15"	Brown and gray silt and clay little sand, trace gravel with shale and limestone fragments (fill), moist - medium stiff	[illegible]	13	5	37	45	35	14	22	A-6a
	32		[illegible]	[illegible]	Brown and gray silt and clay little sand [illegible] with shale and limestone [illegible] moist - medium stiff	20	9	[illegible]	28	38	36	14	20	A-6a

[illegible] PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, [illegible] REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL.

Form No. 530 16 90

THE H. C. NUTTING COMPANY

TESTING ENGINEERS AND [illegible]

LOG OF BORING

DATE STARTED 6/22/90 DRILLER [illegible] DIA. BXN WATER ON BOTTOM OF [illegible] CITY OF Cincinnati, Ohio

DATE COMPLETED 6/27/90 CASING: LENGTH ____ DIA 3.5"I.D.Hollow Stem Augers WATER AFTER ____ HOURS ____ Northeast Expressway (AM-71-0.9)

BORING No. R-25-1 STATION AND OFFSET 181+55, 71'Rt., NB BL SURFACE ELEV. 620.0 Retaining Wall No. 25

ELEV.	DEPTH	SAMPLE No	STD. PEN (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
	32													
	36	15	7-9-10	18"	Brown and gray silt and clay, little sand, trace gravel with shale and limestone fragments (fill), moist - stiff	2	10	6	29	53	37	15	16	A-6a
	38													
	40													
	42	16	7-9-10	18"	Brown and gray silt and clay, little sand, trace gravel with shale and limestone fragments (fill), moist-stiff	6	9	5	38	42	37	15	20	A-6a
	44													
575.0	46	17	5-8-9	15"	Gray sandy silt and gravel with limestone fragments (till), wet - medium stiff	38	14	5	21	22	28	10	14	A-4a
	48													
570.0	50													
	52	18	4-5-8	12"	Silty clay, concrete and brick fragments (fill), wet - medium dense	Visual classification-No tests performed Fill								
	54													
565.0		19	78	"	Gray [illegible] hard	Visual classification-No tests performed								
564.5	56				[illegible] weak, silty clays to moderately tough (1" to 12" pieces) [illegible] and gray limestone fragments [illegible] fragments (rubble pieces 3", 2" and 5") 89% shale, 11% limestone										
	58	20	"	"										
560.5	60													
	62													
	64													
	66													

Boring complete

...TO A WRITTEN REQUEST FOR SUBMITTAL OF REPORTS, THE PUBLIC AND OURSELVES. ALL REPORTS ARE SUBMITTED AN THE ...INTELLECTUAL PROPERTY OF CLIENTS AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS ... OR THE REPORTING USE RESULTS IN WHOLE OR PERIODS USE WITHOUT APPROVAL ...

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Form No. 530—16-59

REVISED
10/14/64-vb

THE R. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/6/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/6/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-41-1 STATION AND OFFSET 205+80, 74' L. SB BL SURFACE ELEV. 732.3 Retaining Wall No. 41

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % GRAV.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS.
732.3	0				Blacktop									
732.0	2	1	16-17-9	16"	Ashpaltic concrete, sand and gravel, (fill), moist - medium dense	Visual classification-No tests performed								Fill
729.8	4	2	7-7-9	18"	Brown silt and clay, little sand, some gravel with limestone fragments, moist - stiff	20	10	5	35	30	32	13	16	A-6a
727.3	6	3	5-5-4	10"	Brown sandy silt, trace gravel with limestone fragments, moist - stiff	8	4	5	45	38	29	10	16	A-4a
724.8	8	4	4-5-7	11"	Brown silt and clay with sand, gravel and limestone fragments, moist - stiff	Visual classification-No tests performed								A-6a
	10													
	12	5	3-4-9	15"	Brown silt and clay, little sand, little gravel with limestone fragments, moist - stiff	12	12	7	35	34	35	15	24	A-6a
	14													
717.3	16	6	11-27-61	18"	Brown weathered shale with limestone fragments, moist to dry - very stiff to hard	Visual classification-No tests performed								
	18													
	20													
	22	7	45-75	10"	do do	Visual classification-No tests performed								
	24													
708.3	26	8	NXM	49%	Brown and gray shale, calcareous, slightly tough, jointed (weathered in the top 12") (¼" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous (1" to 2" pieces averaging 1½") 83% shale, 17% limestone									
	28													
	30	9	NXM	67%	Gray shale with brown weathered zones throughout, calcareous, moderately tough (¼" to 3" pieces averaging 2") and gray limestone, crystalline fossiliferous (1" and 4½" pieces) 82% shale, 18% limestone									
	32													
	34				Boring completed									

"AS A NATURAL PRECAUTION TO CLIENTS, THE PUBLIC AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/5/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/5/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-41-2 STATION AND OFFSET 207+65, 76' L. SB BL SURFACE ELEV. 747.2 Retaining Wall No. 41

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
747.2	0													
746.5		1	3	6"	Topsoil (0.5')	Visual classification-No tests performed								
744.7	2	2	7-9	12"	Brown clay, little sand, little gravel, with limestone fragments (fill), dry-hard	14	7	3	34	42	42	22	12	A-7-6
742.2	4	3	7-16-11	15"	Brown silt and clay, little sand, little gravel with limestone fragments (probable fill), moist - very stiff	12	9	5	41	33	34	14	14	A-4a
	6	4	5-5-7	18"	Brown silty clay, little sand, trace gravel with limestone fragments (probable fill) moist - very stiff	2	11	6	39	42	38	17	14	A-6b
	8	5	7-9-12	12"	do do	Visual classification-No tests performed								A-6b
	10													
	12	6	7-8-11	12"	Brown silty clay, little sand, little gravel with limestone fragments (probable fill), moist - very stiff	12	11	3	36	38	39	19	15	A-6b
	14													
	16	7	7-8-12	12"	Brown silty clay, little sand, trace gravel with limestone fragments (probable fill), moist - very stiff	1	8	5	41	45	38	18	16	A-6b
	18													
	20													
	22	8	5-7-11	11"	Brown silty clay, little sand, trace gravel with limestone fragments (probable fill), moist - stiff	2	6	6	44	42	37	17	18	A-6b
	24													
722.2														
	26	9	7-5-6	18"	Brown and gray clay, little sand, little gravel with limestone fragments (probable fill), moist - medium stiff	20	5	5	31	39	44	23	28	A-7-6
	28													
	30													
	32	10	9-14-19	18"	Brown clay, trace sand, trace gravel with limestone fragments, moist - very stiff	4	2	2	35	57	48	26	20	A-7-6
	34													

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Form No. 530—16 59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/5/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER-ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/5/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway NAM-71-0.93

BORING No. R-41-2 STATION AND OFFSET 207+65, 76' L. SB BL. SURFACE ELEV. 747.2 Retaining Wall No. 40

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
711.7	36													
		11	32-16-48	17"	Brown and gray weathered shale, moist-hard	Visual classification-No tests performed								
709.2	38													
	40				Brown and gray weathered shale, moderately tough with soft seams throughout the run (1" to 6" pieces averaging 3") and gray limestone, crystalline, fossiliferous, jointed in the bottom 18" of the run(1" to 7½" pieces averaging 3") 78% shale, 22% limestone									
	42	12	NXM	95%										
	44													
		13	NXM	63%	Gray and brown shale,calcareous, moderately tough with soft seams in the top half of the run (1" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous (1" to 4" pieces averaging 3") 83% shale,17% limestone									
	46													
699.2	48													
	50				Boring completed									
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 630—16-62

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

REVISED
10/14/64-vb

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/3/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/4/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER ____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-41-3 STATION AND OFFSET 209+12, 75' L. SB BL SURFACE ELEV. 758.5 Retaining Wall No. 41

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % ABS.	% C.B.	% F.A.	% SILT	% CLAY	L.L.	P.I.	W.C.	SOIL CLASS
758.5	0													
	2	1	6-11-12	10"	Brown and gray silty clay with rock fragments and wood (fill), moist - very stiff	Visual classification-No tests performed								Fill
756.0	4	2	6-9-9	11"	Brown and gray silty clay,trace sand, trace gravel with shale and limestone fragments(probable fill),moist - very stiff	6	5	4	37	48	38	18	11	A-6b
	6													
	8	3	7-6-4	8"	do do	Visual classification-No tests performed								A-6b
751.0														
	10	4	7-12-14	11"	Brown and gray silt and clay, trace sand, trace gravel with shale and limestone fragments(probable fill), moist - very stiff	1	3	4	48	44	36	14	8	A-6a
748.5	12	5	7-12-14	16"	Brown silty clay, trace sand,little gravel with shale and limestone fragments, (probable fill), moist - very stiff	10	4	4	40	42	36	17	15	A-6b
	14													
743.5	16	6	4-7-20	17"	Brown and gray clay,little sand,little gravel with shale and limestone fragments, (probable fill), moist - very stiff	12	7	5	32	44	42	20	16	A-7-6
	18													
738.5	20													
	22	7	4-4-7	15"	Brown silt and clay, trace sand,some gravel with shale and limestone fragments, (probable fill), moist - very stiff	29	5	4	33	29	33	15	14	A-6a
	24													
733.5	26	8	4-5-7	18"	Brown silty clay, trace sand,trace gravel with shale and limestone fragments(probable fill), moist - stiff	8	4	4	40	44	39	19	21	A-6b
731.0	28													
	30	9	5-7-8	12"	Brown and gray silt and clay,little sand, trace gravel(probable fill), moist - very stiff	3	12	6	40	39	35	15	16	A-6a
	32	10	4-10-6	16"	Brown and gray silt and clay,little sand, with shale and limestone fragments, (probable fill), moist - very stiff	0	8	6	43	43	35	15	16	A-6a
	34	11	5-7-9	8"	Brown silt and clay, trace sand,trace gravel with shale and limestone fragments (probable fill), moist - very stiff	9	0	1	46	44	36	15	20	A-6a

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/3/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/4/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93 Retaining Wall No. 41

BORING No. R-41-3 STATION AND OFFSET 209+12, 75' L. SB BL SURFACE ELEV. 758.5

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36	12	5-8-8	18"	Brown silt and clay, trace sand, trace gravel with shale and limestone fragments, (probable fill), moist - very stiff	Visual classification-No tests performed								A-6a
721.0	38													
10	40	13	8-10-16	14"	Brown silty clay, little sand, little gravel with shale and limestone fragments, (probable fill), moist - stiff	14	10	5	36	35	37	17	14	A-6b
	42	14	7-10-14	11"	Brown and gray silty clay, little sand, trace gravel with topsoil and limestone fragments (probable fill), moist-stiff	2	6	4	42	46	40	18	16	A-6b
716.0														
5	44	15	5-14-22	17"	Brown clay, trace sand, trace gravel, moist - very stiff	1	4	3	34	58	46	25	17	A-7-6
	46	16	14-28-60	14"	Brown clay, trace sand, trace gravel, moist - hard	6	2	2	38	52	42	22	15	A-7-6
711.0	48													
5		17	10-40-30	16"	Brown weathered shale with limestone, moist - hard	Visual classification-No tests performed								
	50													
	52	18	27-30-55	16"	Brown and gray shale, moist - hard	Visual classification-No tests performed								
703.5	54													
7.5		19	NXM	88%	Gray shale, calcareous, moderately tough (1" to 4" pieces averaging 2") and gray limestone, crystalline, fossiliferous, jointed (one 1" piece in the bottom 6" of the run, 96% shale, 4% limestone									
	56													
	58	20	NXM	97%	Gray shale, calcareous, tough(½" to 3½" pieces averaging 1½")and gray limestone, crystalline, fossiliferous(1½" to 4" pieces averaging 3") 53% shale, 47% limestone									
	60													
	62	21	NXM	85%	Gray shale, calcareous, tough(1" to 3" pieces averaging 2½") and gray limestone crystalline, fossiliferous(1½" to 4" pieces averaging 3") 68% shale, 32% limestone									
694.5	64													
9	66				Boring completed									
	68													

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Form No. 830 [illegible]69

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/13/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE 730.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/14/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-41-4 STATION AND OFFSET 210+29.74'L, SB BL SURFACE ELEV. 755.0 Retaining Wall No. 41

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS.
755.0	0													
	2	1	4-5-4	16"	Brown and gray silty clay, little sand, little gravel (fill), moist-medium stiff	11	7	5	37	40	39	19	18	A-6b
	4	2	3-4-5	18"	do do	Visual classification-No test performed								A-6b
	6	3	3-6-9	11"	Brown and gray silty clay, trace sand some gravel (fill), moist - medium stiff	22	4	2	37	35	36	18	18	A-6b
	8													
	10	4	7-7-11	13"	do do	Visual classification-No tests performed								A-6b
	12	5	6-9-13	13"	Brown and gray silty clay and gravel, trace sand with limestone fragments, (fill), moist - stiff	40	2	2	30	26	37	17	14	A-6b
	14													
	16	6	7-6-8	18"	Brown and gray silty clay and gravel, trace sand with limestone fragments, (fill), moist - stiff	44	4	4	25	23	36	16	16	A-6b
	18													
735.0	20													
	22	7	10-10-24	18"	Brown and gray silt and clay, trace sand, trace gravel with limestone fragments (fill), moist - very stiff	7	5	2	52	34	33	13	11	A-6a
	24													
730.0														
	26	8	23-26-29	13"	Brown silty clay with brick fragments, (fill), moist - very stiff	Visual classification-No tests performed								Fill
	28													
725.0	30													
	32	9	6-10-12	16"	Gray clay, trace sand with organic matter (fill), moist, medium stiff	0	1	1	57	41	43	19	24	A-7-6
	34	10	6-9-11	0		No sample recovered								

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Form No. 530—15.59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/13/64 SAMPLER: TYPE Split Spoon & CoreBarrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE 730.0 CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/14/64 CASING: LENGTH ____ DIA. 3.5"I.D.Hollow Stem Augers AFTER Backfilled HOURS ____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-41-4 STATION AND OFFSET 210+29,74'L. SB BL SURFACE ELEV. 755.0 Retaining Wall No. 41

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
719.0	36	S-1(Top)			Brown and gray clay, trace sand (fill), moist - medium stiff	0	3	2	49	46	46	19	24	A-7-6
		S-2(Bottom)			Brown clay,little sand, moist - stiff	0	4	6	40	50	52	30	22	A-7-6
	38	11	9-11-13	18"	Brown and gray clay, trace sand, moist stiff	0	2	2	38	58	54	31	26	A-7-6
	40													
	42	12	53-17-21	18"	Brown and gray clay, trace sand, trace gravel, very moist - medium stiff	5	4	1	37	53	51	29	33	A-7-6
	44	13	19-26-31	16"	Brown clay, trace sand, moist - stiff	0	1	2	40	57	57	34	26	A-7-6
710.0														
	46	14	NXM	61%	Gray and brown shale, calcareous, moderately tough, jointed in the bottom 6" of the run (1" to 2½" pieces averaging 1½") and gray limestone, crystalline, fossiliferous (½ to 6" pieces averaging 3½") 67% shale, 33% limestone									
	48													
	50													
	52	15	NXM	75%	Gray shale, calcareous,tough with fossiliferous zones in the bottom 18" of the run(1" to 3½" pieces averaging 2") and gray limestone, crystalline, fossiliferous (1½" to 3½" pieces averaging 2½") 80% shale, 20% limestone									
	54													
700.0														
	56				Boring completed									
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 630—[illegible]59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 25, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

Split Spoon 2"O.D.

DATE STARTED 8/10/64 SAMPLER: TYPE Core Barrel DIA. NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/12/64 CASING: LENGTH [illegible] DIA 3.5"I.D.Hollow Stem Augers AFTER [illegible] HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-41-5 STATION AND OFFSET 212+77, 75' L. SB BL SURFACE ELEV. 772.0 Retaining Wall No. 41

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS.
772.0	0													
	2	1	6-12-20	14"	Brown and gray silty clay with brick fragments and cinders (fill), moist - stiff	Visual classification-No tests performed								Fill
769.5	4	2	12-9-11	16"	Brown and gray silty clay, trace sand some gravel with shale fragments (fill), moist - stiff	22	3	2	38	35	39	17	16	A-6b
	6	3	9-9-9	16"	Brown and gray silty clay, trace sand, trace gravel with shale fragments (fill), moist - very stiff	4	4	4	41	47	39	19	15	A-6b
	8													
	10	4	9-13-11	18"	do do	Visual classification-No tests performed								A-6b
	12	5	9-33-20	9"	Brown silty clay and gravel, trace sand with limestone fragments (fill), moist-hard	54	5	3	21	17	36	16	20	A-6b
	14													
	16	6	5-6-10	13"	Brown and gray silty clay, trace sand, trace gravel with shale fragments, (fill), moist - stiff	9	4	5	42	40	38	17	22	A-6b
	18													
752.0	20													
	22	7	88-30-42	14"	Brown and gray silty clay, trace sand, trace gravel with limestone fragments, moist - hard	4	1	2	50	43	37	16	14	A-6b
	24													
747.0														
745.0	26	8	150-110-100	11"	Brown weathered shale and limestone, moist - hard	Visual classification-No tests performed								
	28													
	30	9	NXM	50%	Sample 9 - Brown and gray weathered shale, slightly tough (1" to 3" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, jointed in the top 6" of the run (1" to 4" pieces averaging 2½") 72% shale, 28% limestone									
	32													
	34	10	NXM	50%										

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Form No. 530—16-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/10/64 SAMPLER: TYPE Split Spoon Core Barrel DIA. 2"O.D. & NXM WATER ELEV. IMMEDIATE None CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/12/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS Backfilled PROJECT: Northeast Expressway HAM-71-0.93

BORING No. R-41-5 STATION AND OFFSET 212+77, 75' L, SB BL SURFACE ELEV. 772.0 Retaining Wall No. 41

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics								
						% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
	34													
	36													
	38	11	NXM	91%	Sample 10 - Brown and gray weathered shale, slightly tough (one 1½" piece) and gray limestone, crystalline, fossiliferous, jointed and iron oxide stained (1" to 3" pieces averaging 2") 53% shale, 47% limestone									
732.0	40													
13.	42				Sample 11 - Gray and brown shale, calcareous, moderately tough (1" to 4" pieces averaging 2½") and gray limestone, crystalline, fossiliferous (1" to 4½" pieces averaging 3") 56% shale, 44% limestone									
	44													
	46													
	48													
	50				Boring completed									
	52													
	54													
	56													
	58													
	60													
	62													
	64													
	66													
	68													

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Form No. 530

REVISED
10/5/64-VB

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/7/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None Backfilled CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/7/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93 Bridge No. HAM-71-0271

BORING No. B-20-2 STATION AND OFFSET 0+53, 8' Rt., McGregor St., BL SURFACE ELEV. 766.2

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SHTL CLASS
766.2	0				Asphaltic concrete									
764.9	2	1	9-12-12	16"	Brown and gray silty clay with rock fragments (fill), moist - very stiff	22	0	2	35	41	35	16	16	A-6b
	4	2	3-8-9	15"	do do	Visual classification-No tests performed								A-6b
	6	3	4-6-6	15"	Brown and gray silty clay,little sand trace gravel with limestone fragments, (fill), moist - very stiff	2	11	4	41	42	38	18	17	A-6o
	8	4	4-7-6	8"	do do	Visual classification-No tests performed								A-6b
756.2	10	5	3-6-4	12"	Brown silt and clay, little sand little gravel with limestone fragments(fill), moist - stiff	12	10	5	38	35	30	11	16	A-6a
	12													
	14													
751.2	16	6	3-4-6	13"	Brown silty clay, trace sand, trace gravel with limestone fragments(fill), moist - stiff	4	4	4	43	45	40	19	18	A-6b
	18													
	20													
	22	7	2-3-7	15"	Brown silty clay, little sand, trace gravel with limestone fragments, (probable fill), moist - medium stiff	1	8	5	42	44	40	19	26	A-6b
741.2	24													
	26	8	6-5-5	17"	Brown and gray sandy silt,little sand, some gravel with limestone fragments, (probable fill), moist - medium stiff	25	9	6	29	31	30	10	18	A-4a
	28													
736.2	30													
	32	9	5-6-9	17"	Brown and gray silty clay, trace sand, trace gravel with limestone fragments, (probable fill), moist - medium stiff	1	2	2	43	52	38	18	21	A-6b
	34													

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Form No. 530—14-59

THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD
CINCINNATI 26, OHIO

TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 8/7/64 SAMPLER: TYPE Split Spoon & Core Barrel DIA. 2"O.D.& NXM WATER ELEV. IMMEDIATE None Backfilled CLIENT: City of Cincinnati, Ohio

DATE COMPLETED 8/7/64 CASING: LENGTH _____ DIA. 3.5"I.D.Hollow Stem Augers AFTER _____ HOURS _____ PROJECT: Northeast Expressway HAM-71-0.93

BORING No. B-20-2 STATION AND OFFSET 0+53, 8' Rt., McGregor St. BL SURFACE ELEV. 766.2 Bridge No. HAM-71-0271

ELEV.	DEPTH	SAMPLE No.	STD. PEN. (N)	% REC.	DESCRIPTION	Physical Characteristics: % AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	W.C.	SMTL CLASS
	34													
731.2	36	10	25-34-17	18"	Brown and gray clay, trace sand, some gravel with limestone fragments, moist-very stiff	37	6	2	26	29	41	20	15	A-7-6
728.7	38													
		11	24-22-35	16"	Brown and gray silty clay, trace sand, trace gravel with limestone fragments, moist - hard	4	4	2	45	45	38	18	16	A-6b
726.2	40													
		12	11-72-67	17"	Brown and gray weathered shale, moist-hard	Visual classification-No tests performed								
	42													
	44	13	20-60-71	14"	do do	Visual classification-No tests performed								
	46	14	20-61-72	18"	do do	Visual classification-No tests performed								
718.2	48													
		15	NXM	87%	0.8' Brown and gray weathered shale, slightly tough (1½" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous, shaly (one 2½" piece) 69% shale, 31% limestone									
	50													
	52													
	54				4.2' Gray shale, calcareous, moderately tough, (1" to 2½" pieces averaging 1½") and gray limestone, crystalline, fossiliferous, (3/4" to 3-1/4" pieces averaging 2") 50% shale, 50% limestone									
		16	NXM	78%										
	56													
709.2	58				5.0' Gray shale, calcareous, moderately tough with soft seams throughout run (½" to 3" pieces averaging 2") and gray limestone, crystalline, fossiliferous, (½" to 7" pieces averaging 3") 68% shale, 32% limestone									
	60													
	62													
	64													
	66													
	68				Boring completed									

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

SPECIAL PROVISIONS

ULTRASONIC IMPACT TREATMENT

CO-RT-SEC: HAM-71-1.97

PID: 82975

DATE: 6-22-04

OHIO DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
ULTRASONIC IMPACT TREATMENT

June 22, 2004

I. DESCRIPTION

This work shall consist of applying ultrasonic impact treatment (UIT) to fatigue prone welded details as indicated in the plans.

II. UIT CONTRACTOR QUALIFICATIONS

The contractor shall engage a firm competent and proficient in the use of ultrasonic impact treatment. The UIT firm shall have had experience with similar types of work on treatment of bridge details in previous projects. The list of projects, their locations, key personnel directly involved in performance and supervision of the work and the names of a current contact person for each of the projects shall be submitted for approval by the Engineer.

III. EQUIPMENT REQUIREMENTS

The UIT firm shall furnish complete UIT tooling requirements, including, but not limited to 1 electronic control units with power source, 1 UIT tools, all required tool tip sets; additional treatment pins, as required; closed circuit cooling system; complete set of extension cables and cooling hoses; all necessary adjustment and maintenance tools for the UIT system; and all equipment consumables required during the application of UIT. The UIT shall be performed using equipment with a frequency of either 27 kHz or 36 kHz, using a power output rating of at minimum 800 Watts.

The Contractor shall furnish all necessary safety equipment, including, but not limited to, safety harnesses, vests, glasses, earplugs, etc. The Contractor shall furnish all necessary permits, means of access, traffic control, and 110 V, 60 Hz, 3 HW AC with a minimum of three outlets power supply.

IV. TRAINING

If the Contractor's personnel are not trained operators previously certified by the UIT firm, then the UIT firm shall provide training for the Contractor's personnel. The training includes the setup of all necessary equipment, and the establishment of quality control procedures. Specifically, the UIT firm shall provide:

1. A technical procedure manual defining the treatment methodology and parameters for the successful operation of the tool to achieve the desired results.
2. A technical procedure inspection guide covering the details of the quality assurance program to be conducted to ensure that the treatment methodology has been applied in accordance with the instructions given in the technical procedure manual.
3. UIT treatment training of Contractor personnel. A minimum of two individuals shall be trained on-site with a comprehensive training program on the general operation of the tool and the guidelines for the technical treatment application for this project.
4. Quality inspection training of Contractor personnel. A minimum of two individuals, other than those applying the treatment, shall be trained to carry out complete and thorough inspections of the treatment being undertaken.

The Contractor shall furnish adequate personnel assigned to the UIT work.

V. PROCEDURES

Prior to the application of UIT the welds must be inspected. Any cracks not identified in the plans shall be brought to the attention of the engineer prior to UIT treatment. Any weld defects or cracks at or near the weld must be repaired prior to treatment.

Unless otherwise recommended by the manufacturer, the following shall apply in the application of UIT:

The axis of the UIT impacting pins during application should be held perpendicular to the direction of travel. The tool must be continuously adjusted to ensure the perpendicular orientation to the direction of travel is maintained. All pin tips should make contact with the weld toe simultaneously. During treatment, the tool shall not remain stationary for an extended period of time. The application of UIT shall include treatment of an additional area of ½" around the entire defect. On stitch welded areas, each defect shall be considered a separate defect. Rate of travel of the tool is approximately 2 feet per minute for full effect.

IV. METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Ultrasonic Impact Treatment will not be measured separately but will be paid for at a lump sum price for each structure location. This price will be full compensation for all labor, tools, equipment, materials, mobilization, training, and incidentals necessary to perform the work.

Payment will be made under:

Pay Item		Pay Unit
Structural Steel Misc.:	2" stress relief hole retrofit	EACH