LOCATION MAP

LATITUDE: 39° 09' 03" LONGITUDE: -84° 32' 24"

SCALE IN MILES

0 1 2 3 4

N

PORTION TO BE IMPROVED

INTERSTATE HIGHWAY

FEDERAL ROUTES

STATE ROUTES

COUNTY & TOWNSHIP ROADS

OTHER ROADS

STATE OF OHIO

DEPARTMENT OF TRANSPORTATION

HAM-75-3.84
CSO 21 & ACCESS DR
(BU-13)

HAMILTON COUNTY
CITY OF CINCINNATI

INDEX OF SHEETS:

DESIGN DESIGNATION

	IR 75 SOUTH OF MITCHELL	IR 75 SOUTH OF IR 74	IR 74 WEST OF BEEKMAN	IR 74 EAST OF BEEKMAN	DIRECTIONAL ROADWAY IR 75 NB TO IR 74 WB	DIRECTIONAL ROADWAY IR 74 EB TO IR 75 SB
CURRENT ADT (2010)	149,400	152,100	75,000	88,300	25,300	25,300
DESIGN YEAR ADT (2030)	174,300	179,200	89,300	102,000	29,800	29,800
DESIGN HOURLY VOLUME (2030)	14,640	15,050	8,040	9,180	4,100	4,380
DIRECTIONAL DISTRIBUTION	0.54	0.70	0.72	0.73	1.00	1.00
TRUCKS (24 HOUR B&C)	0.16	0.13	0.15	0.13	0.03	0.08
DESIGN SPEED	60 MPH	60 MPH	60 MPH	60 MPH	50 MPH	50 MPH
LEGAL SPEED	55 MPH	55 MPH	55 MPH	55 MPH	50 MPH	50 MPH
DESIGN FUNCTIONAL CLASSIFICATION:	03 URBAN INTERSTATE	03 URBAN INTERSTATE	03 URBAN INTERSTATE	03 URBAN INTERSTATE	03 URBAN INTERSTATE	03 URBAN INTERSTATE
NHS PROJECT	YES					

DESIGN EXCEPTIONS

DESIGN FEATURE	APPROVAL DATES	SHEET NUMBERS
STOP. SIGHT DIST. - SB IR 75 (CURVE 6)	4/6/18	SEE BU-14
SHOULDER WIDTH - IR 74-1892R BRIDGE	4/10/18	SEE BU-14
SHOULDER WIDTH - RAMP P 1908S BRIDGE	12/12/18	SEE BU-14
CURVE RADIUS - RAMP P 1908S BRIDGE	12/12/18	SEE BU-14
STOP. SIGHT DIST. - RAMP P 1908S BRIDGE	12/12/18	SEE BU-14
S.E. RATE - IR 74 EB CURVE 13, 1908R BRIDGE	4/26/18	SEE BU-14

PROJECT DESCRIPTION

THIS IS PHASE 5A OF THE HAMILTON 75 CORRIDOR PROJECTS (MCE). THE PROJECT ADDS A LANE TO IR 75 SB, PROVIDES 4-LANE CONTINUITY NB, AND RECONFIGURES IR 74 EB RAMPS TO IR 75. THE PROJECT ALSO INCLUDES SURFACE COURSE AND ADDITIONAL PAVEMENT WORK TO THE SOUTH AND IMPROVEMENTS TO RAMP A AT THE HOPPLE ST INTERCHANGE.

BU-13 WORK DESCRIPTION

BU-13 PROVIDES FOR THE INSTALLATION OF MSD COMBINED SEWER SEPARATION AND OVERFLOWS, AS WELL AS THE CONSTRUCTION OF ACCESS DRIVE. MSD PID 11143260 SS# 6339

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 SUPPLEMENTAL SPECIFICATIONS LISTED IN THE PLANS AND 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 AND THAT PROVISIONS FOR THE MAINTENANCE AND SAFETY OF TRAFFIC WILL BE AS SET FORTH ON THE PLANS AND ESTIMATES.

ENGINEERS SEAL:

STATE OF OHIO BRUCE FRASER E-59019 REGISTERED PROFESSIONAL ENGINEER

SIGNED: Bruce Fraser

DATE: 05/17/2019

PLAN PREPARED BY:

AMERICAN STRUCTUREPOINT INC.

2550 CORPORATE EXCHANGE DR. STE 300
COLUMBUS, OH 43231
TEL 614.901.2235 FAX 614.901.2236
www.structurepoint.com

SUPPLEMENTAL SPECIFICATIONS

800-2016	1/19/18	814	7/15/16	866	4/21/17	914	7/15/16
804	1/15/16	821	4/20/12	867	4/15/16	921	4/20/12
806	3/2/15	832	1/17/14	902	12/31/12	939	7/17/15
808	10/16/15	839	7/17/15	904	7/15/16		
809	1/19/18	840	4/15/16	908	10/20/17		

STANDARD CONSTRUCTION DRAWINGS

BP-1.1	7/28/00	MH-1.1	1/15/16	RM-1.1	1/19/18	HL-10.11	1/19/18	MT-95.30	7/21/17	TC-7.65	1/15/16	ITS-10.10	7/17/15
BP-2.1	7/17/15	MH-1.2	1/15/16	RM-4.1	7/21/17	HL-10.12	1/20/17	MT-95.31	7/21/17	TC-9.10	1/19/18	ITS-10.11	1/19/18
BP-2.2	7/18/08			RM-4.3	7/18/14	HL-10.13	1/20/17	MT-95.32	7/21/17	TC-9.30	1/19/18	ITS-13.10	7/17/15
BP-2.3	7/18/14	DM-1.1	7/21/17	RM-4.4	7/21/17	HL-10.15	7/17/15	MT-95.40	1/20/17	TC-12.30	1/19/18	ITS-14.10	7/17/15
BP-2.4	7/19/13	DM-1.2	1/18/13	RM-4.5	7/21/17	HL-10.31	1/19/18	MT-95.45	7/21/17	TC-15.115	10/18/13	ITS-14.11	7/17/15
BP-3.1	7/18/14	DM-1.3	7/18/14	RM-4.6	7/19/13	HL-20.11	4/21/17	MT-95.50	7/21/17	TC-16.21	1/19/18	ITS-15.10	7/17/15
BP-6.1	7/19/13	DM-2.1	1/18/13			HL-20.13	1/19/18	MT-95.73	1/19/18	TC-21.10	7/21/17	ITS-15.11	7/17/15
BP-8.1	7/18/08	DM-4.1	1/15/16	A-1-69	7/19/02	HL-20.21	1/19/18	MT-98.10	1/20/17	TC-21.20	1/19/18	ITS-50.10	1/19/18
		DM-4.2	7/20/12	AS-1-15	7/17/15	HL-20.24	1/19/18	MT-98.11	1/20/17	TC-21.50	7/15/16	ITS-50.11	1/15/16
CB-1.1	1/15/16	DM-4.3	1/15/16	AS-2-15	1/19/18	HL-30.11	1/19/18	MT-98.20	7/18/14	TC-22.10	10/18/13	ITS-50.12	1/19/18
CB-1.2	1/15/16	DM-4.4	1/15/16	EXJ-4-87	1/19/18	HL-30.21	1/17/14	MT-98.21	7/18/14	TC-22.20	1/17/14	ITS-60.10	7/15/16
CB-1.3	1/15/16			GSD-1-96	7/19/02	HL-30.22	1/17/14	MT-98.29	1/20/17	TC-41.30	10/18/13		
CB-2.1	1/15/16	MGS-1.1	1/19/18	PCB-91	1/18/13	HL-30.31	1/17/14	MT-98.30	7/21/17	TC-42.10	10/18/13		
CB-2.2	1/15/16	MGS-2.1	1/19/18	PSID-1-13	7/15/16	HL-30.32	1/17/14	MT-99.30	1/19/18	TC-42.20	10/18/13		
CB-2.3	1/15/16	MGS-3.1	1/19/18	RB-1-55	7/19/13	HL-30.33	1/17/14	MT-99.60	7/15/16	TC-52.10	10/18/13		
CB-3.1	1/15/16	MGS-3.2	1/18/13	SBR-1-13	1/14/14	HL-30.41	1/19/18	MT-101.70	1/17/14	TC-52.20	1/19/18		
CB-3.3	1/15/16	MGS-4.2	7/19/13	SBR-2-13	1/14/14	HL-40.10	1/20/17	MT-101.75	7/15/16	TC-61.30	1/20/17		
		MGS-4.3	1/18/13	SICD-1-96	7/18/14	HL-40.20	1/20/17	MT-101.80	1/16/18	TC-65.10	1/17/14		
I-2.1	1/15/16	MGS-5.2	7/15/16	SICD-2-14	7/18/14	HL-50.11	1/16/15	MT-101.90	7/21/17	TC-65.11	7/21/17		
I-2.2	1/15/16	MGS-5.3	7/15/16	VPF-1-90	1/19/18	HL-50.21	1/19/18	MT-102.10	1/20/17	TC-71.10	1/19/18		
I-2.3	1/15/16	MGS-6.1	1/19/18			HL-60.12	7/15/16	MT-102.20	7/18/14	TC-72.20	7/15/16		
I-2.4	1/15/16					HL-60.21	1/16/15	MT-103.10	1/19/18	TC-73.20	7/21/17		
						HL-60.31	7/21/17	MT-104.10	10/16/15				
								MT-105.10	7/19/13				

SPECIAL PROVISIONS

The DBT confirms that the record drawings have been updated to incorporate all red-lined changes and have been approved by the appropriate parties. These updated drawings represent the final and accurate record of the buildable unit's design and construction.

STATE OF OHIO BRUIN RAMSDELL E-71332 REGISTERED PROFESSIONAL ENGINEER

Bruin Ramsdell 2023.10.16 15:34:57-04'00'

The following sheets have been updated: 9, 9A, 9B, 10, 13, 16, 22.

UNDERGROUND UTILITIES

Contact Two Working Days Before You Dig

OHIO811.org Before You Dig

OHIO811, 8-1-1, or 1-800-362-2764
(Non-members must be called directly)

FEDERAL PROJECT NO. E170 (713)

PID NO. 104667

CONSTRUCTION PROJECT NO. 183000

CSXT (CSX OP # OH1179) INVOLVEMENT NORFOLK SOUTHERN

HAM-75-3.84

LStutler
11/16/2019 12:05:59 AM
O:\2017\01113\C Design\104667_HAM-75-3.84\Design Roadway\Sheets\BU-13_CSO 21 & Access Dr\104667_GT001.dgn

A ℄ RAMP O STA 235+72.96, ℄ = ℄ IR 74 WB STA 1036+11.21, 32.5' LT

B ℄ RAMP E STA 221+95.34, ℄ = ℄ IR 75 STA 220+53.64, 256.6' RT

C ℄ RAMP E STA 238+15.40, ℄ = ℄ IR 75 STA 238+15.40, 84.9' RT

D ℄ IR 74 WB STA 1055+57.83, ℄ = ℄ IR 75 STA 220+86.92, 188.4' RT

NOTE: PROJECT CONTROL AND REFERENCE POINT INFORMATION TO BE INCLUDED IN BU-14 SUBMITTAL

BEGIN WORK STA 2128+06

WESTERN HILLS VIADUCT

SPRING GROVE AVE

COOK ST

COLERAIN AVE

MARSHALL AVE

CENTRAL PKWY

MATCH LINE A-A IR 75 STA 176+00

℄ CONST IR 75

℄ IR 74 EB STA 1020+70.00, ℄ = ℄ IR 74 STA 1020+70.00, 20.0' RT

℄ IR 74 STA 1022+55.29, ℄ = ℄ IR 74 WB STA 1022+55.92, 20.0' RT

BEGIN PROJECT STA 991+30

E170 (713)

MATCH LINE C-C IR 74 STA 990+00

BEEKMAN ST

STRUCTURE NO HAM-74-1840

STRUCTURE NO HAM-74-1852

℄ CONST IR 74

MATCH LINE B-B IR 75 STA 285+00

STRUCTURE NO HAM-74-1875

STRUCTURE NO HAM-74-1892

END PROJECT STA 294+73.46

℄ IR 74 WB STA 987+94.06, ℄ = ℄ IR 74 987+94.06, 20.0' LT

℄ IR 74 EB STA 987+94.06, ℄ = ℄ IR 74 987+94.06, 20.0' RT

BEGIN WORK STA 980+90

℄ CONST IR 74

MATCH LINE C-C IR 74 STA 990+00

℄ CONST IR 74 WB

℄ CONST IR 74 EB

STRUCTURE NO HAM-74-1908R

BEGIN IR 74 DIRECTIONAL ROADWAY

℄ IR 74 WB STA. 1036+32.96, 0.00 RT= RAILROAD

CSX RAILROAD

NS RAILROAD

STRUCTURE NO HAM-74-1908L

STRUCTURE NO HAM-74-1931L&R

℄ CONST RAMP O

LOCATION OF PROPOSED WORK

STRUCTURE NO HAM-127-0514

℄ RAMP O STA 248+63.90, ℄ = ℄ IR 75 STA 248+73.90, 71.5' LT

MILL CREEK

EX. DUKE ENERGY TRANSMISSION LINE

STRUCTURE NO HAM-75-0605

END WORK STA 324+34

CLIFTON AVE

℄ IR 74 EB STA 1049+73.79, ℄ = ℄ IR 75 STA 226+33.67, 70.2' LT

LOCATION OF PROPOSED WATER MAIN WORK

STRUCTURE NO HAM-75-0383

SASSAFRAS ST

COMFORT ST

MONMOUTH AVE

CENTRAL PARKWAY

℄ RAMP A STA 199+29.60, ℄ = ℄ IR 75 STA 199+29.61, 85.5' LT

℄ CONST RAMP A

MAPLE ST

MATCH LINE A-A IR 75 STA 176+00

STRUCTURE NO HAM-52-2044

E170 (713)

BEGIN PROJECT STA 203+90.00

STRUCTURE NO HAM-75-0440

STRUCTURE NO HAM-74-1908S

℄ CONST RAMP E

℄ CONST RAMP P

℄ RAMP P STA 248+31.22, ℄ = ℄ IR 75 STA 248+31.17, 68.6' RT

EX. GAS LINE 12" STEEL PIPE INTERMEDIATE PRESSURE 35PSI INSTALLED 1959

LUDLOW AVE

EX. DUKE ENERGY TRANSMISSION LINE

℄ CONST IR 75

CANAL RIDGE ROAD LANDFILL

MITCHELL AVE

S__ = STREAM NUMBER, REFER TO ENVIRONMENTAL COMMITMENTS

HORIZONTAL SCALE IN FEET

0 200 400 800

CALCULATED BER

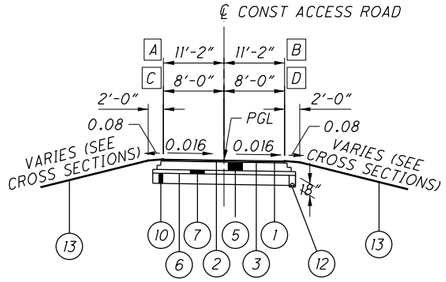
CHECKED JS

SCHEMATIC PLAN

HAM-75-3.84

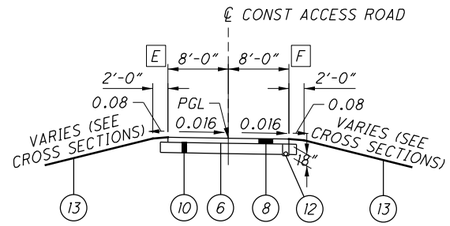
2 / 22

Istutler
10/13/2023 11:54:32 AM
D:\2017\01113\C Design\104667_HAM-75-3.84\Design\Roadway\Sheets\BU-13_CSO 21 & Access Dr\104667_GB001.dgn



ACCESS ROAD ASPHALT SECTION

STA 10+06.00 TO STA 10+66.77
STA 14+66.77 TO STA 15+17.34



ACCESS ROAD GRAVEL SECTION

STA 10+66.77 TO STA 14+66.67

A STA 10+06.00 TO STA 10+66.77

B STA 10+06.00 TO STA 10+66.77

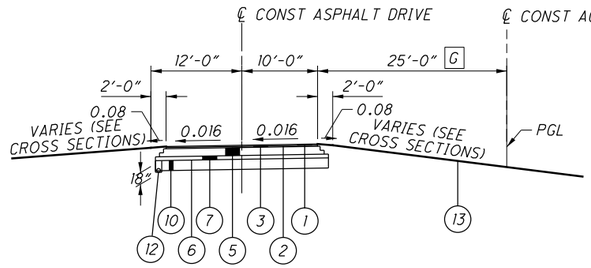
C VARIES 8'-0" TO 43'-0", STA 14+66.67 TO STA 15+02.42
60'-0", STA 15+02.42 TO STA 15+17.34

D VARIES 8'-0" TO 0'-0", STA 14+94.00 TO STA 15+17.34

E VARIES 11'-2" TO 8'-0", STA 10+67.02 TO STA 11+40.48

F VARIES 11'-2" TO 8'-0", STA 10+67.02 TO STA 11+40.48

G VARIES 0'-0" TO 25'-0", STA 15+17.34 TO STA 15+57.42



ACCESS ROAD ASPHALT SECTION

STA 15+17.34 TO STA 16+07.89

LEGEND

(1) ITEM 442 - 1½" ASPHALT CONCRETE SURFACE COURSE, 12.5 MM, TYPE A (446)
(2) ITEM 407 - TACK COAT
(3) ITEM 442 - 1¾" ASPHALT CONCRETE INTERMEDIATE COURSE, 19 MM, TYPE A (446)
(4) ITEM 254 - VARIABLE DEPTH PAVEMENT PLANING, ASPHALT CONCRETE
(5) ITEM 302 - 13" ASPHALT CONCRETE BASE, PG64-22
(6) ITEM 204 - PROOF ROLLING
(7) ITEM 304 - 6" AGGREGATE BASE
(8) ITEM 304 - 8" AGGREGATE BASE
(9) NOT USED
(10) ITEM 206 - CEMENT STABILIZED SUBGRADE, 16" DEEP
(11) ITEM 605 - 6" SHALLOW PIPE UNDERDRAINS WITH GEOTEXTILE FABRIC
(12) ITEM 605 - 6" BASE PIPE UNDERDRAINS WITH GEOTEXTILE FABRIC
(13) ITEM 659 - SEEDING AND MULCHING
(14) ITEM 622 - CONCRETE BARRIER, SINGLE SLOPE, TYPE B1 (WITH 2 RACEWAYS @ 4" DIA.)
(15) ITEM 622 - CONCRETE BARRIER, SINGLE SLOPE, TYPE C (WITH 2 RACEWAYS @ 4" DIA.)
(16) ITEM 622 - CONCRETE BARRIER, SINGLE SLOPE, TYPE C1 (WITH 2 RACEWAYS @ 4" DIA.)
(17) ITEM 622 - CONCRETE BARRIER, SINGLE SLOPE, TYPE D
(18) ITEM 254 - 3¼" PAVEMENT PLANING, ASPHALT CONCRETE
(19) ITEM 254 - 1½" PAVEMENT PLANING, ASPHALT CONCRETE
(20) ITEM 302 - ASPHALT CONCRETE BASE, PG64-22 (DEPTH VARIES, 4" MIN- 9.6" MAX)
(21) BRIDGE PARAPET
(22) CAST-IN-PLACE CONCRETE BARRIER WITH MOMENT SLAB
(23) ITEM 526 - REINFORCED CONCRETE APPROACH SLABS (T=17")
(24) ITEM 609 - CURB, TYPE 4-C
(25) ITEM 606 - GUARDRAIL, TYPE MGS
(26) ITEM 452 - 15" NON-REINFORCED CONCRETE PAVEMENT
(27) ITEM 601 - PAVED GUTTER, TYPE 1-2, AS PER PLAN
(28) ITEM 622 - CONCRETE BARRIER, SINGLE SLOPE, TYPE B1
(29) ITEM 601 - PAVED GUTTER, TYPE 3, AS PER PLAN
(30) ITEM 606 - GUARDRAIL, TYPE MGS WITH LONG POSTS
(31) ITEM 606 - CONCRETE BARRIER, SINGLE SLOPE, TYPE C1, AS PER PLAN
(32) ITEM 446 - 2" ASPHALT CONCRETE SURFACE COURSE, PG64-20
(33) ITEM 302 - 10" ASPHALT CONCRETE BASE, PG64-22

TYPICAL SECTIONS - ACCESS ROAD

HAM-75-3.84

UTILITIES

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

WATER, STORM, & SEWER
METROPOLITAN SEWER DISTRICT OF GREATER CINCINNATI
ATTN: ROB FRANKLIN
1600 GEST STREET
CINCINNATI, OH 45204
513-557-7188
ROB.FRANKLIN@CINCINNATI-OH.GOV

ATTN: ANDY BACHMAN
1600 GEST STREET
CINCINNATI, OH 45204
513-244-3904
ANDY.BACHMAN@CINCINNATI-OH.GOV

CINCINNATI STORMWATER MANAGEMENT UTILITY
ATTN: ROB GOODPASTER
4747 SPRING GROVE AVE
CINCINNATI, OH 45232
513-591-7746
ROBERT.GOODPASTER@CINCINNATI-OH.GOV

GREATER CINCINNATI WATER WORKS
ATTN: JON HUNSEDER
4747 SPRING GROVE AVE
CINCINNATI, OH 45232
513-591-5056
JON.HUNSEDER@GCWW.CINCINNATI-OH.GOV

ELECTRIC
DUKE ENERGY - ELECTRIC
ATTN: AARON WRIGHT
139 EAST 4TH STREET, ROOM 467A
CINCINNATI, OH 45202
513-287-3674
AARON.WRIGHT@DUKE-ENERGY.COM

GAS
DUKE ENERGY - GAS
ATTN: BRAD SEITER
139 EAST 4TH ST., ROOM 460A
CINCINNATI, OH 45202
513-287-4415
BRALEY.SEITER@DUKE-ENERGY.COM

TELEPHONE & CABLE
CINCINNATI BELL - UNDERGROUND
ATTN: MARK CONNER
221 E 4TH ST, BLDG 121-900
CINCINNATI, OH 45201
513-565-7043
MARK.CONNER@CINBELL.COM

CINCINNATI BELL - AERIAL
ATTN: DORIAN JOHNSON
221 E 4TH ST, BLDG 121-900
CINCINNATI, OH 45201
513-566-5120
DORIAN.JOHNSON@CINBELL.COM

CHARTER (FKA TIME WARNER CABLE)
ATTN: KENT RIEGER
11252 CORNELL PARK DR
CINCINNATI, OH 45242
513-386-5499
KENT.RIEGER@TWCABLE.COM

TELEPHONE & CABLE - CONTINUED
MCI/VERIZON
ATTN: ALLAN GUEST
120 RAVINE ST
AKRON, OH
330-253-8267
ALLAN.GUEST@VERIZONBUSINESS.COM

QUEST/CENTURYLINK
ATTN: CHRIS STRAYER
441 W. BROAD ST
PATASKALA, OH 43062
330-886-1299
CHRISTOPHER.STRAYER@CENTURYLINK.COM

CITY OF CINCINNATI TELECOM
ATTN: EDDIE SELLON
1106 BATES AVENUE
CINCINNATI, OH 45225
513-352-2391
EDDIE.SELLON@CINCINNATI-OH.GOV

ITS (FORMERLY ARTIMIS)
ODOT CENTRAL OFFICE OF TRAFFIC OPERATIONS
1606 WEST BROAD STREET
COLUMBUS, OH 43223

ODOT ITS IS A NON-OUPS MEMBER
FOR LOCATES CONTACT:
ODOT CENTRAL OFFICE OF TRAFFIC OPERATIONS
1606 WEST BROAD STREET
COLUMBUS, OH 43223
614-387-4113
CEN.ITS.LAB@DOT.OHIO.GOV

LOCAL MUNICIPALITIES
CITY OF CINCINNATI ENGINEERING
ATTN: CITY ENGINEER
CHRIS KELLY
801 PLUM ST, ROOM 450
CITY HALL
CINCINNATI, OH 45202
513-352-3721
CHRIS.KELLY@CINCINNATI-OH.GOV

CITY OF CINCINNATI TRAFFIC
ATTN: LINDA KISER
801 PLUM ST, ROOM 320
CINCINNATI, OH 45202
513-352-3730
LINDA.KISER@CINCINNATI-OH.GOV

CITY OF CINCINNATI LIGHTING
ATTN: CURTIS HINES
801 PLUM ST, ROOM 320
CINCINNATI, OH 45202
513-532-3462
CURTIS.HINE@CINCINNATI-OH.GOV

CITY OF CINCINNATI SIGNALS
ATTN: ANDY CARTER
801 PLUM ST, ROOM 320
CINCINNATI, OH 45202
513-352-5272
ANDY.CARTER@CINCINNATI-OH.GOV

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.

SURVEYING PARAMETERS

PRIMARY PROJECT CONTROL MONUMENTS GOVERN ALL POSITIONING ON ODOT PROJECTS. SEE SHEETS 4-5 OF THE BU-14 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: GNSS
MONUMENT TYPE: B

VERTICAL POSITIONING

ORTHOMETRIC HEIGHT DATUM: NAVD 1988
GEOID: GEOID 03

HORIZONTAL POSITIONING

REFERENCE FRAME: NAD 1983 (1995)
ELLIPSOID: GRS80
MAP PROJECTION: LAMBERT CONFORMAL CONIC
COORDINATE SYSTEM: OHIO SOUTH (3402)
COMBINED SCALE FACTOR: 0.999916592897
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.

CALCULATED LZS
CHECKED JS

GENERAL NOTES

HAM-75-3.84

PLANS REFERENCE THE CURRENT VERSIONS OF MSD AND THE CITY OF CINCINNATI STANDARD CONSTRUCTION DRAWING AND SUPPLEMENTAL SPECIFICATIONS. SEE THE FOLLOWING WEBSITES TO OBTAIN COPIES OF THE CURRENT STANDARD DOCUMENTS:

HTTP://WWW.MSDGC.ORG/ABOUT_MSD/LEGAL_AND_ORGANIZATIONAL_DOCUMENTS/INDEX.HTML

METROPOLITAN SEWER DISTRICT (MSD) OF GREATER CINCINNATI STANDARD CONSTRUCTION DRAWINGS

SANITARY SEWER NOTES

ALL SANITARY SEWERS SHALL BE PVC, SDR 35, ASTM D-3034 IN ACCORDANCE WITH MSDGC RULES AND REGULATIONS, OR DUCTILE IRON CLASS 56 IN ACCORDANCE WITH ODOT ITEM 611, EXCEPT WHERE NOTED.

MANHOLES ON SANITARY AND COMBINED SEWERS: ALL PROPOSED MANHOLES AND DROP MANHOLES SHALL BE TYPE T ON SEWERS 48-INCH OR LARGER AND TYPE S ON SEWERS 42-INCH AND SMALLER. THE MODIFIED TYPE S MANHOLE SHALL BE USED ON SEWERS 24-INCH TO 42-INCH WHEN NOT LOCATED IN PAVED AREAS. THE STANDARD PRECAST MANHOLE BASE WITH FLEXIBLE MANHOLE JOINTS SHALL BE USED WITH P.V.C. PIPE. IF THE CONTRACTOR PROVIDES PRECAST MANHOLES, THE CONTRACTOR SHALL ASSUME ANY RISK OF MAKING FIELD MODIFICATIONS DUE TO FIELD CONDITIONS.

ALL FENCING AND GUARDRAIL DAMAGES BY SEWER CONSTRUCTION SHALL BE REPLACED IN KIND BY THE CONTRACTOR AND ALL ASSOCIATED COSTS SHOULD BE INCLUDED WITH ITEM 611.

ROOF DRAINS, FOUNDATION DRAINS, AND OTHER CLEAN WATER CONNECTIONS TO THE SANITARY SEWER ARE PROHIBITED.

ALL MANHOLES ON PUBLIC SANITARY SEWERS SHALL HAVE STANDARD LIDS AND FRAMES IN ACCORDANCE WITH ACC. NO. 49005, EXCEPT WHERE NOTED. THE FRAME SHALL BE SECURELY FASTENED TO THE TOP MANHOLE SECTION BY FOUR 3/4-INCH STAINLESS STEEL CINCH ANCHORS.

FOR SANITARY SEWER MANHOLES CONSTRUCTED IN GRASS AREAS, THE RIM ELEVATION SHALL BE 3" HIGH SUCH THAT THE SURROUNDING GRADE AND THE PAVEMENT SHALL BE FEATURED AWAY FROM THE MANHOLE RIM AT A GRADUAL SLOPE.

THE CONTRACTOR SHALL TEST ALL MANHOLE LEAKAGE BY MEANS OF VACUUM TESTING. THE VACUUM TESTING CANNOT BE DONE UNTIL AFTER THE MANHOLES ARE SET TO FINAL GRADE AND THE MANHOLE CASTINGS ARE BOLTED DOWN. ALL LIFT HOLES SHALL BE PLUGGED. ANY OTHER OPENINGS, SUCH AS PRESSURE RELIEF VALVES, SHALL BE TEMPORARILY PLUGGED TO ALLOW THE VACUUM TEST. ALL PIPES ENTERING THE MANHOLE SHALL BE PLUGGED AND CARE SHALL BE TAKEN TO SECURELY BRACE THE PLUGS FROM BEING DRAWN INTO THE MANHOLE. THE VACUUM EQUIPMENT TEST HEAD SHALL BE PLACED IN THE OPENING OF THE TOP SLAB OR CONE SECTION AND THE SEAL INFLATED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. VACUUM TESTING SHALL BE IN ACCORDANCE WITH ASTM C1244. A VACUUM OF 10 INCHES MERCURY (10" HG) SHALL BE DRAWN AND THE VACUUM PUMP SHUT OFF. WITH THE VALVES CLOSED, THE TIME SHALL BE MEASURE FOR THE VACUUM TO DROP TO NINE INCHES MERCURY (9" HG). THE MANHOLE SHALL PASS IF THE TIME MEETS OR EXCEEDS THE ALLOWABLE TIME AS CALCULATED BY ASTM C1244, OR AS APPROVED BY THE ENGINEER. ALL MANHOLE REPAIR AND RETESTING REQUIRED BECAUSE OF FAILURE TO MEET THE TESTING REQUIREMENTS SHALL BE BORNE BY THE CONTRACTOR AT HIS COST. THE COST OF THE LEAKAGE TEST SHALL BE INCLUDED IN THE PRICE BID FOR THE VARIOUS ITEM 611 ITEMS.

SANITARY SEWER NOTES (CONTINUED)

A DEFLECTION TEST WILL BE REQUIRED ON ALL MAINLINE PVC SEWERS AS SPECIFIED IN THE LATEST EDITION OF THE CITY OF CINCINNATI SUPPLEMENT TO THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, CONSTRUCTION AND MATERIAL SPECIFICATIONS. MAXIMUM LIMIT FOR VERTICAL DEFLECTION SHALL BE 5% OF THE PIPE INSIDE DIAMETER. DEFLECTION TEST SHALL BE CONDUCTED 30 DAYS AFTER PLACING BACKFILL. CONTRACTOR SHALL REPAIR OR REPLACE SEWERS FAILING THE DEFLECTION TESTS AT NO COST TO ODOT.

ALL MAINLINE CONDUITS 36-INCHES AND SMALLER SHALL BE SUBJECTED TO AN AIR TEST. THIS TEST SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST ASTM OR UNI-BELL PVC PIPE ASSOCIATION REQUIREMENTS FOR EACH UNIQUE PIPE MATERIAL IN EFFECT AT THE TIME THAT BIDS ARE SUBMITTED. THE CONTRACTOR SHALL PERFORM THE LEAKAGE TEST AT NO ADDITIONAL COST TO ODOT, INCLUDING FURNISHING ALL LABOR, MATERIALS, AND APPURTENANCES NECESSARY FOR PERFORMANCE OF THE LEAKAGE TEST. THE COST OF THE LEAKAGE TEST SHALL BE INCLUDED IN THE BID PRICE FOR THE APPROPRIATE 611 ITEMS.

FLOW WILL BE PERMITTED THROUGH THE NEWLY CONSTRUCTED SEWER, PRIOR TO TESTING REQUIREMENTS BEING MET, ON AN AS NEEDED BASIS, AS DIRECTED BY THE ENGINEER.

MAINTAINING FLOW

EXISTING 78-INCH SEWER AT PROPOSED CSO STRUCTURE:

THE EXISTING 78-INCH SEWER IN THE VICINITY OF I-75 CONVEYS COMBINED SEWAGE FLOW FROM MH 29614042 TO THE WEST, TO MH 29614043. THE 78-INCH SEWER TRANSITIONS TO A 144-INCH (W) X 93-INCH (H) SEWER BETWEEN MH 29614043 AND CSO 21 (STRUCTURE 29614053). THE 16-INCH SANITARY SEWER UNDERFLOW PIPE CSO 21 CONVEYS DRY WEATHER FLOW AND SOME ADDITIONAL WET WEATHER FLOW FROM THE 144-INCH (W) X 93-INCH (H) COMBINED SEWER TO THE DOWNSTREAM SANITARY SEWER SYSTEM. THE OUTFALL FROM CSO 21 FUNCTIONS AS A SEWER OVERFLOW DISCHARGE BY DISCHARGING THE COMBINED SEWAGE FLOW IN EXCESS OF THE 16-INCH SANITARY SEWER CAPACITY TO MILL CREEK.

THE CONTRACTOR SHALL MAINTAIN SEWAGE FLOW WITHIN THE EXISTING SYSTEM AT ALL TIMES DURING CONSTRUCTION BY BY-PASS PUMPING OR DIVERTING SEWAGE FLOW INTO TEMPORARILY INSTALLED CONDUIT.

DRY WEATHER FLOW SHALL BE MAINTAINED IN THE EXISTING 78-INCH DIAMETER COMBINED SEWER AND CONVEYED TO THE EXISTING 16-INCH DIAMETER SANITARY SEWER AT ALL TIMES UNTIL THE DRY WEATHER FLOW IS DIVERTED FROM THE EXISTING 78-INCH DIAMETER COMBINED SEWER INTO THE PROPOSED 24-INCH DIAMETER FROM THE RELOCATED CSO 21 STRUCTURE. A MINIMUM OF 175 GALLONS PER MINUTE (0.39 CUBIC FEET PER SECOND) PEAK DRY WEATHER FLOW AND A MAXIMUM OF 2,900 GALLONS PER MINUTE (6.44 CUBIC FEET PER SECOND) WET WEATHER FLOW SHALL BE MAINTAINED TO THE EXISTING OUTFALL PIPE LOCATED ADJACENT TO THE MILL CREEK AS WELL AS THE EXISTING 16-INCH DIAMETER PIPE.

PUMPS, CONDUIT OR OTHER METHODS USED TO MAINTAIN WET WEATHER FLOW MUST BE OF ADEQUATE SIZE TO HANDLE A MINIMUM OF 269,300 GALLONS PER MINUTE (600 CUBIC FEET PER SECOND) WET WEATHER FLOW BASED ON A 10-YEAR, 24-HOUR SCS TYPE II STORM.

MAINTAINING FLOW (CONTINUED)

EXISTING 16-INCH SEWER AT EXISTING MANHOLE 29614028, IR-75 STA. 241+25.85, 608.02' LT:

THE CONTRACTOR SHALL MAINTAIN SEWAGE FLOW WITHIN THE EXISTING SEWER AT ALL TIMES DURING CONSTRUCTION BY BY-PASS PUMPING OF DIVERTING SEWAGE FLOW INTO TEMPORARILY INSTALLED CONDUIT. THE EXISTING 16-INCH DIAMETER SEWER AT EXISTING MANHOLE 296134028 IS SANITARY (UNDERFLOW, COMBINED) AND CONVEYS DRY WEATHER FLOW AND WET WEATHER FLOWS DURING RAIN EVENTS.

DRY WEATHER FLOW SHALL BE MAINTAINED FROM THE EXISTING 16-INCH DIAMETER SEWER AT ALL TIMES UNTIL THE DRY WEATHER FLOW IS DIVERTED FROM THE EXISTING 16-INCH DIAMETER SANITARY SEWER INTO THE PROPOSED 24-INCH DIAMETER SANITARY SEWER. A MINIMUM OF 175 GALLONS PER MINUTE (0.39 CUBIC FEET PER SECOND) PEAK DRY WEATHER FLOW SHALL BE MAINTAINED.

PUMPS, CONDUIT, OR OTHER METHODS USED TO MAINTAIN WET WEATHER FLOW MUST BE OF ADEQUATE SIZE TO HANDLE A MINIMUM OF 2,891 GALLONS PER MINUTE (6.44 CUBIC FEET PER SECOND) WET WEATHER FLOW BASED ON A 10-YEAR, 24-HOUR SCS TYPE II STORM.

THE DESCRIPTION, DESIGN, CALCULATIONS, EQUIPMENT LIST AND EQUIPMENT LAYOUT, STANDARD OPERATING PROCEDURES AND EQUIPMENT MAINTENANCE PLANS, EMERGENCY OPERATING PROCEDURES, NOTIFICATION AND RESPONSE IN THE EVENT OF UNFORESEEN BY-PASSING DISCHARGES INTO ADJACENT AREAS, AND RECORD-KEEPING METHODS FOR THE MANAGEMENT OF MAINTAINING FLOWS AND BY-PASSING IS TO BE DEFINED IN A CONTRACTOR'S TEMPORARY BYPASS PLAN (CTBP) AND SUBMITTED TO MSD, FOR REVIEW BY MSD ENGINEERING PER THE SUBMITTAL REQUIREMENTS OF SPEC SECTION 01 33 00, FOR APPROVAL PRIOR TO EXCAVATION. ALLOW 30 DAYS FOR REVIEW OF THE SUBMISSION. THIS PLAN SHALL LIST THE CONTRACTOR'S SINGLE POINT OF CONTACT, WITH PHONE NUMBERS DURING THE WORKDAY AND THE OFF-HOURS, WHO IS RESPONSIBLE FOR THE MAINTENANCE OF FLOW. ALTERNATE CONTACT AND PHONE NUMBERS ARE ALSO REQUIRED.

THE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE VARIOUS CONTRACT ITEMS.

IT SHALL BE NOTED AND PLANNED THAT THE MILL CREEK SURFACE WATER ELEVATION AT THE PROJECT LOCATION IS VARIABLE AND IS DEPENDENT ON RAINFALL EVENTS THAT OCCUR WITHIN THE MILL CREEK DRAINAGE BASIN THAT IS LOCATED IN CENTRAL HAMILTON COUNTY AND SOUTHERN PORTIONS OF BUTLER COUNTY. FEMA DATA SHOWS THE 100 YEAR FLOOD ELEVATION AT 485.4 FEET NEAR THE PROJECT.

THERE ARE MANY SOURCES AND PREDICTIVE AND FORECASTING INFORMATION FOR BOTH LOCAL WEATHER AND OHIO RIVER SURFACE WATER ELEVATIONS. LOCAL WEATHER WEBSITES INCLUDING TELEVISION, RADIO, OR PUBLIC AGENCY-BASED, SUCH AS HTTP://WWW.WKRC.COM/WEATHER/DOPPLER/DOPPLER12.ASPX OR HTTP://WWW.NWS.NOAA.GOV/CGI-BIN/AHPS.CGI?ILN&MLGO1&HYDROGRAPH OR HTTP://WWW.RIVERWATCH.NOAA.GOV/FORECASTS/ILNRVDILN.SHTML FOR THE OHIO RIVER AT CINCINNATI, OHIO. MSD IS NOT RESPONSIBLE FOR THE ACCURACY OF THESE OR OTHER SOURCES OF PREDICTIVE AND FORECASTING INFORMATION, BUT ARE LISTED AS A MEANS TO ILLUSTRATE THE AVAILABILITY OF INFORMATION RESOURCES.

DUKE ENERGY FACILITIES

WORK UNDER AND ADJACENT TO ENERGIZED DUKE ENERGY FACILITIES MUST BE PERFORMED PER OSHA REQUIREMENTS AND ALL OTHER APPLICABLE HEALTH AND SAFETY STANDARDS. AN OUTAGE HAS NOT BEEN APPROVED OR GUARANTEED FOR CONSTRUCTION OF THE PROPOSED SEWER IMPROVEMENTS.

MSD REQUIREMENTS

ALL PROPOSED COMBINED SEWER AND SANITARY PIPING AND RELATED APPURTENANCES WORK TO BE PROVIDED TO THE METROPOLITAN SEWER DISTRICT MUST BE INSTALLED AND TESTED IN ACCORDANCE WITH MSD RULES AND REGULATIONS, POLICIES, AND STANDARD DRAWINGS. ALL MATERIALS MUST CONFORM TO MSD RULES AND REGULATIONS, POLICIES AND STANDARD DRAWINGS. SEPARATE SANITARY PLANS MUST BE SUBMITTED AND APPROVED BY MSD. MSD MUST BE CONTACTED FOR INSPECTION 48 HOURS PRIOR TO THE BEGINNING OF ANY MSD WORK. THE PERMIT TO INSTALL FOR THE SANITARY AND COMBINED SEWER WORK MUST BE OBTAINED FROM OEPA PRIOR TO THE START OF ANY WORK AND IT MUST BE PROCESSED THROUGH MSD'S DEVELOPMENT SERVICES OFFICE. ALL STORMWATER CONNECTIONS TO THE COMBINED SEWER REQUIRE A STORMWATER CONNECTION PERMIT FROM MSD'S DEVELOPMENT SERVICES OFFICE.

ALL EXISTING SEWERS TO REMAIN IN SERVICE MUST BE DIGITALLY VIDEOTAPED PRE- AND POST-CONSTRUCTION AND A COPY PROVIDED TO THE MSD INSPECTOR. ANY DAMAGE CAUSED TO THE SEWERS DURING CONSTRUCTION MUST BE REPAIRED TO THE SATISFACTION OF MSD. ACCESS TO SEWERS MUST BE MAINTAINED AT ALL TIMES.

ALL SEWER WORK MUST BE VERIFIED AND LOCATED WITH AS-BUILTS PERFORMED BY A SURVEYOR TO INCLUDE RIM ELEVATIONS, INVERT ELEVATIONS OF ALL CONNECTIONS AT STRUCTURES (ALONG WITH THE DIRECTION OF CONNECTION AND DESIGNATION AS "FLOW IN" OR "FLOW OUT" OF THE STRUCTURE), PIPE MATERIALS AND DIMENSIONS, STRUCTURE TYPES WITH HORIZONTAL COORDINATE LOCATION, GRATE AND LID SIZES, AND NOTE PERTINENT CHANGES TO THE PLANS. DATUM FOR THE SURVEY SHOULD BE NOTED AND SHOULD BE PER MSD STANDARDS OR THE ORIGINAL PLANS. THE AS-BUILT SHOULD BE SIGNED, SEALED, AND DATED BY A LICENSED SURVEYOR.

CALCULATED LZS
CHECKED JS

GENERAL NOTES

HAM-75-3.84

TRENCHING AND BACKFILLING

PART 1 GENERAL

SCOPE
THIS SECTION COVERS PREPARATION OF THE SITE; REMOVAL AND DISPOSAL OF ALL DEBRIS; EXCAVATION AND TRENCHING; THE HANDLING, STORAGE, TRANSPORTATION, AND DISPOSAL OF ALL EXCAVATED MATERIAL; ALL NECESSARY SHEETING, SHORING, AND PROTECTION OF WORK; PREPARATION OF SUBGRADES; PUMPING AND DEWATERING AS NECESSARY; PROTECTION OF ADJACENT PROPERTY; BACKFILLING; PIPE EMBEDMENT; SURFACING AND GRADING; AND OTHER APPURTENANT WORK.

GENERAL
COSTS FOR TRENCHING AND BACKFILLING AS SPECIFIED HEREIN SHALL BE INCLUDED IN THE PRICE BID FOR ALL TYPES OF CONDUIT SPECIFIED ON THE CONTRACT PLANS.

WITH REFERENCE TO THE TERMS AND CONDITIONS OF THE CONSTRUCTION STANDARDS FOR EXCAVATIONS SET FORTH IN OSHA "SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION", CHAPTER XVII OF TITLE 29, CFR, PART 1926, CONTRACTOR SHALL EMPLOY A COMPETENT PERSON AND, WHEN NECESSARY BASED ON THE REGULATIONS, A REGISTERED PROFESSIONAL ENGINEER, TO ACT UPON ALL PERTINENT MATTERS OF THE WORK OF THIS SECTION.

ALL BACKFILL OPERATIONS SHALL BE IN ACCORDANCE WITH THE CITY OF CINCINNATI SUPPLEMENT TO THE STATE OF OHIO (ODOT) CONSTRUCTION AND MATERIAL SPECIFICATIONS (CMS), AS SHOWN ON MSD STANDARD DRAWING ACC. NO. 49032, EXCEPT AS OTHERWISE NOTED HEREIN. ALL REQUIREMENTS OF THESE ITEMS SHALL BE STRICTLY ADHERED TO BY THE CONTRACTOR AND ENFORCED BY THE ENGINEER.

SUBMITTALS
SUBMIT SHEETING AND SHORING DESIGN PLANS, SIGNED AND SEALED BY PROFESSIONAL ENGINEER LICENSED OR REGISTERED IN THE STATE OF OHIO.

PART 2 - PRODUCTS

MATERIALS
CLASS A CLSM. THE INITIAL TRIAL MIXTURE FOR CLASS A CLSM SHALL CONSIST OF THE FOLLOWING MINIMUM PROPORTIONS PER CUBIC YARD:
FLY ASH: 250 LB [113 KG]
SAND (SSD): 2860 LB [1297 KG]
WATER: 370 LB [168 KG]
AIR ENTRAINING AGENT: 6 PERCENT
MINIMUM COMPRESSIVE STRENGTH AT 56 DAYS: 129 PSI [889 KPA]

CONTROLLED LOW STRENGTH MATERIAL (CLSM) AS SPECIFIED HEREIN ABOVE THE "INITIAL BACKFILL" SHALL BE REQUIRED WHERE THE TRENCH IS LOCATED ANYWHERE IN THE RIGHT OF WAY OR ANY PART OF THE TRENCH IS WITHIN TWO FEET OF THE OUTSIDE EDGE A RIGHT-OF-WAY, CLSM SHALL BE USED AND SHALL EXTEND TO THE PAVEMENT SUBGRADE OR TO THE TOPSOIL FOR THE ENTIRE WIDTH OF THE TRENCH.

COMPACTED BANK RUN GRAVEL BACKFILL, MEETING THE REQUIREMENTS OF SECTION 703.20 OF THE CITY SUPPLEMENT AND MSD STANDARD DRAWING 49032, ABOVE THE "INITIAL BACKFILL" SHALL BE REQUIRED FOR ALL CONDUITS AND TRENCHES UNDER SIDEWALKS, DRIVEWAY AND PARKING LOT PAVEMENTS, WHEN CLSM IS NOT REQUIRED AS SPECIFIED ABOVE.

TRENCHING AND BACKFILLING (CONTINUED)

BEDDING AND INITIAL BACKFILL FOR PLASTIC PIPES SHALL BE CLASS I OR CLASS II AS DEFINED BELOW AND APPLIED AS PER MSD STANDARD DRAWING ACCESSION NUMBER 49032 REQUIREMENTS.

CLASS I - ANGULAR 1/4 INCH TO 1 INCH GRADED STONE, INCLUDING A NUMBER OF FILL MATERIALS SUCH AS CORAL, SLAG, CINDERS, CRUSHED STONE, CRUSHED SHELLS, AND SHELLS. WHERE ANY UNGRADED (ONE SIZE AGGREGATED) CRUSHED STONE, CORAL OR SLAG IS USED, LIMIT SIZE TO 1 INCH MAXIMUM. USE THIS MATERIAL WHERE THE DEPTH OF COVER OF THE CONDUIT IS BETWEEN FOURTEEN (14) FEET AND THIRTY-FIVE (35) FEET.

CLASS II - COARSE SANDS AND GRAVELS WITH MAXIMUM PARTICLE SIZE OF 1 INCH, INCLUDING VARIOUS GRADED SANDS AND GRAVELS CONTAINING SMALL PERCENTAGES OF FINES, GENERALLY BEING GRANULAR AND NON-COHESIVE, EITHER WET OR DRY. SOIL TYPES GW, GP, SW, AND SP ARE INCLUDED IN THIS CLASS AS FURTHER DEFINED IN ASTM-D-2487. USE OF THIS MATERIAL IS APPLICABLE TO CONDUITS WHEN THE DEPTH OF COVER IS FOURTEEN (14) FEET OR LESS.

MATERIALS TESTING
PRELIMINARY REVIEW OF MATERIALS
AS REQUIRED BY ENGINEER, ALL TESTS FOR PRELIMINARY REVIEW OF MATERIALS SHALL BE MADE BY AN ACCEPTABLE INDEPENDENT TESTING LABORATORY AT THE EXPENSE OF CONTRACTOR. TWO INITIAL GRADATION TESTS SHALL BE MADE FOR EACH TYPE OF EMBEDMENT, FILL, BACKFILL, OR OTHER MATERIAL, AND ONE ADDITIONAL GRADATION TEST SHALL BE MADE FOR EACH ADDITIONAL FIVE-HUNDRED (500) TONS OF EACH MATERIAL DELIVERED TO THE SITE. IN ADDITION, ONE SET OF INITIAL ATTERBERG LIMITS TEST SHALL BE MADE FOR EACH FILL MATERIALS CONTAINING MORE THAN TWENTY (20) PERCENT BY WEIGHT PASSING THE NO. 200 SIEVE. ONE ADDITIONAL ATTERBERG LIMITS TEST SHALL BE MADE ON EACH ADDITIONAL FIVE-HUNDRED (500) TONS OF EACH MATERIAL DELIVERED TO THE SITE.

ALL MATERIAL TESTING ON CLSM SHALL BE MADE BY AN INDEPENDENT TESTING LABORATORY AT THE EXPENSE OF CONTRACTOR.

FIELD TESTING EXPENSE. ALL MOISTURE DENSITY (PROCTOR) TESTS AND RELATIVE DENSITY TESTS ON THE MATERIALS, AND ALL IN PLACE FIELD DENSITY TESTS, SHALL BE MADE BY AN INDEPENDENT TESTING LABORATORY AT THE EXPENSE OF OWNER. CONTRACTOR SHALL PROVIDE ACCESS TO THE MATERIALS AND WORK AREA AND SHALL ASSIST THE LABORATORY AS NEEDED IN OBTAINING REPRESENTATIVE SAMPLES.

REQUIRED TESTS. FOR PLANNING PURPOSES, THE FOLLOWING GUIDELINES SHALL BE USED FOR FREQUENCY OF FIELD TESTS. ADDITIONAL TESTS SHALL BE PERFORMED AS NECESSARY FOR JOB CONDITIONS AND NUMBER OF FAILED TESTS. TEST RESULTS SHALL BE SUBMITTED IN ACCORDANCE WITH ITEM 106 OF THE ODOT CMS AND THE CITY OF CINCINNATI SUPPLEMENT THERETO.

TRENCHING AND BACKFILLING (CONTINUED)

TWO MOISTURE DENSITY (PROCTOR) TESTS IN ACCORDANCE WITH ASTM D698 (OR, WHEN REQUIRED, ASTM D1557), OR TWO RELATIVE DENSITY TESTS IN ACCORDANCE WITH ASTM D4253 AND D4254 FOR EACH TYPE OF GENERAL FILL, DESIGNATED FILL, BACKFILL, OR OTHER MATERIAL PROPOSED. IN-PLACE FIELD DENSITY AND MOISTURE TESTS AT INTERVALS OF 1000 FEET MAXIMUM ALONG THE TRENCH. ONE IN-PLACE FIELD DENSITY AND MOISTURE TEST FOR EVERY 200 CUBIC YARDS OF BACKFILL. ONE IN-PLACE DENSITY AND MOISTURE TEST WHENEVER THERE IS A SUSPICION OF A CHANGE IN THE QUALITY OF MOISTURE CONTROL OR EFFECTIVENESS OF COMPACTION. AT LEAST ONE TEST FOR EVERY FULL SHIFT OF COMPACTION OPERATIONS ON MASS EARTHWORK. ADDITIONAL GRADATION, PROCTOR, AND RELATIVE DENSITY TESTS WHENEVER THE SOURCE OR QUALITY OF MATERIAL CHANGES.

TESTING OF CLSM SHALL BE AS FOLLOWS:
COMPRESSIVE STRENGTH. FOR EVERY 200 CUBIC YARDS OF CLSM PLACED, FILL FOUR 6 BY 12 INCH PLASTIC CYLINDER MOLDS TO OVERFLOWING AND THEN TAP SIDES LIGHTLY. CURE CYLINDERS IN THE MOLDS COVERED UNTIL TIME OF TESTING, AT LEAST 14 DAYS. STRIP THE CYLINDERS CAREFULLY USING A KNIFE TO CUT AWAY THE PLASTIC MOLD. CAP THE CYLINDERS WITH HIGH STRENGTH GYPSUM PLASTER OR OTHER CAPPING PROCESS THAT WILL NOT BREAK THESE LOW STRENGTH MATERIALS. TEST CYLINDERS IN ACCORDANCE WITH ASTM C39. TWO CYLINDERS SHALL BE TESTED AT 7 DAYS AND THE OTHER TWO CYLINDERS SHALL BE TESTED AT 56 DAYS.

FLOW OF FILL. ONCE EACH DAY THAT CLSM IS PLACED, TEST THE FILL MATERIAL IN ACCORDANCE WITH ASTM C939 FOR THE EFFLUX TIME. WET SCREENING MAY BE REQUIRED TO REMOVE COARSE PARTICLES.

UNIT WEIGHT AND YIELD. ONCE EACH DAY THAT CLSM IS PLACED, DETERMINE UNIT WEIGHT AND YIELD IN ACCORDANCE WITH ASTM C138.

AIR CONTENT. ONCE EACH DAY THAT CLSM IS PLACED, DETERMINE AIR CONTENT IN ACCORDANCE WITH ASTM C231.
PENETRATION RESISTANCE. ONCE EACH DAY THAT CLSM IS PLACED, DETERMINE EARLY BEARING STRENGTH IN ACCORDANCE WITH ASTM C403 PENETRATION PROCEDURE.

PART 3 - EXECUTION

CLEARING AND GRUBBING
CLEARING AND GRUBBING SHALL BE PERFORMED ITEM 201 OF THE ODOT CMS AND THE CITY OF CINCINNATI SUPPLEMENT THERETO.

EXCAVATION
EXCAVATIONS SHALL PROVIDE ADEQUATE WORKING SPACE AND CLEARANCES FOR THE WORK TO BE PERFORMED THEREIN AND FOR INSTALLATION AND REMOVAL OF CONCRETE FORMS. IN NO CASE SHALL EXCAVATION FACES BE UNDERCUT FOR EXTENDED FOOTINGS.

SUBGRADE SURFACES SHALL BE CLEAN AND FREE OF LOOSE MATERIAL OF ANY KIND WHEN CONCRETE IS PLACED THEREON.

EXCEPT WHERE EXTERIOR SURFACES ARE SPECIFIED TO BE DAMP-PROOFED, MONOLITHIC CONCRETE MANHOLES AND OTHER CONCRETE STRUCTURES OR PARTS THEREOF, WHICH DO NOT HAVE FOOTINGS THAT EXTEND BEYOND THE OUTSIDE FACE OF EXTERIOR WALLS, MAY BE PLACED DIRECTLY AGAINST EXCAVATION FACES WITHOUT THE USE OF OUTER FORMS, PROVIDED THAT SUCH FACES ARE STABLE.

TRENCHING AND BACKFILLING (CONTINUED)

NO CLASSIFICATION OF EXCAVATED MATERIALS WILL BE MADE FOR PAYMENT PURPOSES. EXCAVATION AND TRENCHING WORK SHALL INCLUDE THE REMOVAL AND SUBSEQUENT HANDLING OF ALL MATERIALS EXCAVATED OR OTHERWISE REMOVED IN PERFORMANCE OF THE WORK, REGARDLESS OF THE TYPE, CHARACTER, COMPOSITION, OR CONDITION THEREOF.

BLASTING OR OTHER USE OF EXPLOSIVES FOR EXCAVATION WILL NOT BE PERMITTED.

DEWATERING

DEWATERING EQUIPMENT SHALL BE PROVIDED TO REMOVE AND DISPOSE OF ALL SURFACE WATER AND GROUNDWATER ENTERING EXCAVATIONS, TRENCHES, OR OTHER PARTS OF THE WORK. EACH EXCAVATION SHALL BE KEPT DRY DURING SUBGRADE PREPARATION AND CONTINUALLY THEREAFTER UNTIL THE STRUCTURE TO BE BUILT, OR THE PIPE TO BE INSTALLED THEREIN, IS COMPLETED TO THE EXTENT THAT NO DAMAGE FROM HYDROSTATIC PRESSURE, FLOTATION, OR OTHER CAUSE WILL RESULT.

ALL EXCAVATIONS FOR CONCRETE STRUCTURES OR TRENCHES WHICH EXTEND DOWN TO OR BELOW GROUNDWATER SHALL BE DEWATERED BY LOWERING AND KEEPING THE GROUNDWATER BENEATH SUCH EXCAVATIONS.

SURFACE WATER SHALL BE DIVERTED OR OTHERWISE PREVENTED FROM ENTERING EXCAVATIONS OR TRENCHES TO THE GREATEST EXTENT POSSIBLE WITHOUT CAUSING DAMAGE TO ADJACENT PROPERTY.

CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONDITION OF ANY PIPE OR CONDUIT WHICH HE MAY USE FOR DRAINAGE PURPOSES, AND ALL SUCH PIPE OR CONDUIT SHALL BE LEFT CLEAN AND FREE OF SEDIMENT.

CONTRACTOR SHALL OBTAIN FROM THE APPROPRIATE AGENCIES AND AUTHORITIES, THE DEWATERING AND STORMWATER DISCHARGE PERMITS REQUIRED TO REMOVE AND DISPOSE OF GROUNDWATER, SURFACE WATER, AND ANY OTHER WATER USED IN CONTRACTOR'S OPERATIONS. THE PERMITS SHALL BE OBTAINED PRIOR TO START OF CONSTRUCTION.

CALCULATED LZS
CHECKED JS

GENERAL NOTES

HAM-75-3.84

TRENCHING AND BACKFILLING (CONTINUED)

SHEETING AND SHORING

EXCEPT WHERE BANKS ARE CUT BACK ON A STABLE SLOPE OR OTHER EFFECTIVE TRENCH SUPPORT IS PROVIDED, EXCAVATIONS FOR STRUCTURES AND TRENCHES SHALL BE SUPPORTED WITH SHORING AS NECESSARY TO PREVENT CAVING OR SLIDING. SHEET PILING OR OTHER EXCAVATION SUPPORT SYSTEMS SHALL BE INSTALLED AS NECESSARY TO LIMIT THE EXTENT OF EXCAVATIONS FOR DEEPER STRUCTURES AND TO PROTECT ADJACENT STRUCTURES AND FACILITIES FROM DAMAGE DUE TO EXCAVATION AND SUBSEQUENT CONSTRUCTION. CONTRACTOR SHALL ASSUME COMPLETE RESPONSIBILITY FOR, AND SHALL INSTALL ADEQUATE PROTECTION SYSTEMS FOR PREVENTION OF DAMAGE TO EXISTING FACILITIES. SHEETING, SHORING AND EXCAVATION SUPPORT SYSTEMS SHALL MET ALL APPLICABLE OSHA (OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION) REQUIREMENTS. TRENCH SHEETING MAY BE REMOVED IF THE PIPE STRENGTH IS SUFFICIENT TO CARRY TRENCH LOADS BASED ON TRENCH WIDTH TO THE BACK OF SHEETING. TRENCH SHEETING SHALL NOT BE PULLED AFTER BACKFILLING. WHERE TRENCH SHEETING IS LEFT IN PLACE, IT SHALL NOT BE BRACED AGAINST THE PIPE, BUT SHALL BE SUPPORTED IN A MANNER WHICH WILL PRECLUDE CONCENTRATED LOADS OR HORIZONTAL THRUSTS ON THE PIPE. CROSS BRACES INSTALLED ABOVE THE PIPE TO SUPPORT SHEETING MAY BE REMOVED AFTER PIPE EMBEDMENT HAS BEEN COMPLETED. TRENCH SHEETING SHALL BE REMOVED UNLESS OTHERWISE PERMITTED BY ENGINEER. TRENCH SHEETING WILL NOT BE REMOVED, IF IN THE OPINION OF ENGINEER, REMOVAL OF THE SHEETING WILL CAUSE DAMAGE TO THE FACILITY IT IS PROTECTING. IF LEFT IN PLACE, THE SHEETING SHALL BE CUT OFF 3 FEET BELOW FINISHED GRADE. THE DESIGN OF THE SUPPORT SYSTEM SHALL BE SUCH AS TO PERMIT COMPLETE REMOVAL WHILE MAINTAINING SAFETY AND STABILITY AT ALL TIMES.

STABILIZATION

SUB-GRADES FOR CONCRETE STRUCTURES AND TRENCH BOTTOMS SHALL BE FIRM, DENSE, AND THOROUGHLY COMPACTED AND CONSOLIDATED; SHALL BE FREE FROM MUD AND MUCK; AND SHALL BE SUFFICIENTLY STABLE TO REMAIN FIRM AND INTACT UNDER THE FEET OF THE WORKERS. SUB-GRADES FOR CONCRETE STRUCTURES OR TRENCH BOTTOMS WHICH ARE OTHERWISE SOLID, BUT WHICH BECOME MUCKY ON TOP DUE TO CONSTRUCTION OPERATIONS, SHALL BE REINFORCED WITH CRUSHED ROCK OR GRAVEL AS SPECIFIED FOR GRANULAR FILLS. THE STABILIZING MATERIAL SHALL BE PLACED IN A MANNER THAT NO VOIDS REMAIN IN THE GRANULAR FILL. ALL EXCESS GRANULAR FILL WITH UNFILLED VOID SPACE SHALL BE REMOVED. THE FINISHED ELEVATION OF STABILIZED SUB-GRADES SHALL ALLOW FOR INSTALLATION OF PIPES, MANHOLES, ETC. TO THE ELEVATIONS INDICATED ON THE DRAWINGS.

TRENCH EXCAVATION

NO MORE TRENCH SHALL BE OPENED IN ADVANCE OF PIPE LAYING THAN IS NECESSARY TO EXPEDITE THE WORK. ONE(1) BLOCK OR FOUR-HUNDRED (400) FEET, WHICHEVER IS THE SHORTER, SHALL BE THE MAXIMUM LENGTH OF OPEN TRENCH ON ANY LINE UNDER CONSTRUCTION. EXCEPT WHERE NO DIG METHODS ARE INDICATED ON THE DRAWINGS, IS SPECIFIED, OR IS PERMITTED BY ENGINEER, ALL TRENCH EXCAVATION SHALL BE OPEN CUT FROM THE SURFACE AND CONFORM TO MSD STANDARD DRAWING 49032.

TRENCHING AND BACKFILLING (CONTINUED)

ALIGNMENT, GRADE, AND MINIMUM COVER

THE ALIGNMENT AND GRADE OR ELEVATION OF EACH PIPELINE SHALL BE FIXED AND DETERMINED FROM OFFSET STAKES. VERTICAL AND HORIZONTAL ALIGNMENT OF PIPES, AND THE MAXIMUM JOINT DEFLECTION USED IN CONNECTION THEREWITH, SHALL BE IN CONFORMITY WITH REQUIREMENTS OF THE SECTION COVERING INSTALLATION OF PIPE. WHERE PIPE GRADES OR ELEVATIONS ARE NOT DEFINITELY FIXED BY THE CONTRACT DRAWINGS, TRENCHES SHALL BE EXCAVATED TO A DEPTH SUFFICIENT TO PROVIDE A MINIMUM DEPTH OF BACKFILL COVER OVER THE TOP OF THE PIPE OF 36 INCHES OVER PIPES BELOW PAVED AND GRADED STREETS AND, OF 36 INCHES OVER PIPES IN OTHER LOCATIONS. GREATER PIPE COVER DEPTHS MAY BE NECESSARY ON VERTICAL CURVES OR TO PROVIDE ADEQUATE CLEARANCE BENEATH EXISTING PIPES, CONDUITS, DRAINS, DRAINAGE STRUCTURES, OR OTHER OBSTRUCTIONS ENCOUNTERED AT NORMAL PIPE GRADES. MEASUREMENT OF PIPE COVER DEPTH SHALL BE MADE VERTICALLY FROM THE OUTSIDE TOP OF PIPE TO FINISHED GROUND OR PAVEMENT SURFACE ELEVATION, EXCEPT WHERE FUTURE SURFACE ELEVATIONS ARE INDICATED ON THE DRAWINGS.

WHERE THE SEWER TRENCH IS IN A FILL SECTION AND THE TOP OF THE PIPE EXTENDS ABOVE THE VERTICAL LIMITS OF WHERE THE FILL BEGINS (PORTIONS OF THE TRENCH BACKFILL ARE IN THE CONSTRUCTED EMBANKMENT) THE CONTRACTOR SHALL REFER TO SECTION 603 REQUIREMENTS IN THE CITY OF CINCINNATI SUPPLEMENT TO THE ODOT CMS, FOR PLACEMENT OF THE EMBANKMENT FILL PRIOR TO BEGINNING THE TRENCH EXCAVATION.

MECHANICAL EXCAVATION

THE USE OF MECHANICAL EQUIPMENT WILL NOT BE PERMITTED IN LOCATIONS WHERE ITS OPERATION WOULD CAUSE DAMAGE TO TREES, BUILDINGS, CULVERTS, OR OTHER EXISTING PROPERTY, UTILITIES, OR STRUCTURES ABOVE OR BELOW GROUND. IN ALL SUCH LOCATIONS, HAND EXCAVATING METHODS SHALL BE USED. MECHANICAL EQUIPMENT USED FOR TRENCH EXCAVATION SHALL BE OF A TYPE, DESIGN, AND CONSTRUCTION, AND SHALL BE SO OPERATED, THAT THE ROUGH TRENCH EXCAVATION BOTTOM ELEVATION CAN BE CONTROLLED, AND THAT TRENCH ALIGNMENT IS SUCH THAT PIPE, WHEN ACCURATELY LAID TO SPECIFIED ALIGNMENT, WILL BE CENTERED IN THE TRENCH WITH ADEQUATE SIDEWALL CLEARANCE. UNDERCUTTING THE TRENCH SIDEWALL TO OBTAIN SIDEWALL CLEARANCE WILL NOT BE PERMITTED. IN LOCATIONS WHERE MAXIMUM TRENCH WIDTHS ARE REQUIRED FOR DESIGNATED RIGID CONDUITS, MECHANICAL EQUIPMENT SHALL BE OPERATED SO THAT UNIFORM TRENCH WIDTHS AND VERTICAL SIDEWALLS ARE OBTAINED AT LEAST FROM AN ELEVATION TWELVE (12) INCHES ABOVE THE TOP OF THE INSTALLED PIPE TO THE BOTTOM OF THE TRENCH.

CUTTING CONCRETE SURFACE CONSTRUCTION CUTS IN CONCRETE PAVEMENT AND CONCRETE BASE PAVEMENT SHALL BE NO LARGER THAN NECESSARY TO PROVIDE ADEQUATE WORKING SPACE FOR PROPER INSTALLATION OF PIPE AND APPURTENANCES. CUTTING SHALL BE STARTED WITH A CONCRETE SAW IN A MANNER WHICH WILL PROVIDE A CLEAN GROOVE AT LEAST ONE AND ONE-HALF (1 1/2) INCHES DEEP ALONG EACH SIDE OF THE TRENCH AND ALONG THE PERIMETER OF CUTS FOR STRUCTURES.

TRENCHING AND BACKFILLING (CONTINUED)

CONCRETE PAVEMENT AND CONCRETE BASE PAVEMENT OVER TRENCHES EXCAVATED FOR PIPELINES SHALL BE REMOVED SO THAT A SHOULDER NOT LESS THAN 6 INCHES IN WIDTH AT ANY POINT IS LEFT BETWEEN THE CUT EDGE OF THE PAVEMENT AND THE TOP EDGE OF THE TRENCH. TRENCH WIDTH AT THE BOTTOM SHALL NOT BE GREATER THAN AT THE TOP AND NO UNDERCUTTING WILL BE PERMITTED. PAVEMENT CUTS SHALL BE MADE TO AND BETWEEN STRAIGHT OR ACCURATELY MARKED CURVED LINES WHICH, UNLESS OTHERWISE REQUIRED, SHALL BE PARALLEL TO THE CENTER LINE OF THE TRENCH. PAVEMENT REMOVAL FOR CONNECTIONS TO EXISTING LINES OR STRUCTURES SHALL NOT EXCEED THE EXTENT NECESSARY FOR THE INSTALLATION.

WHERE THE TRENCH PARALLELS THE LENGTH OF CONCRETE WALKS, AND THE TRENCH LOCATION IS ALL OR PARTIALLY UNDER THE WALK, THE ENTIRE WALK SHALL BE REMOVED AND REPLACED. WHERE THE TRENCH CROSSES DRIVES, WALKS, CURBS, OR OTHER SURFACE CONSTRUCTION, THE SURFACE CONSTRUCTION SHALL BE REMOVED AND SUBSEQUENTLY REPLACED BETWEEN EXISTING JOINTS OR BETWEEN SAW CUTS AS SPECIFIED FOR PAVEMENT.

EXCAVATION BELOW PIPE SUB-GRADE

EXCEPT WHERE OTHERWISE REQUIRED, PIPE TRENCHES SHALL BE EXCAVATED BELOW THE UNDERSIDE OF THE PIPE AS SHOWN ON MSD STANDARD DRAWING ACC. NO. 49032 TO PROVIDE FOR THE INSTALLATION OF GRANULAR EMBEDMENT.

BELL HOLES SHALL PROVIDE ADEQUATE CLEARANCE FOR TOOLS AND METHODS USED FOR INSTALLING PIPE. NO PART OF ANY BELL OR COUPLING SHALL BE IN CONTACT WITH THE TRENCH BOTTOM, TRENCH WALLS, OR GRANULAR EMBEDMENT WHEN THE PIPE IS JOINTED.

ARTIFICIAL FOUNDATIONS IN TRENCHES. WHENEVER UNSUITABLE OR UNSTABLE SOIL CONDITIONS ARE ENCOUNTERED, TRENCHES SHALL BE EXCAVATED BELOW GRADE AND THE TRENCH BOTTOM SHALL BE BROUGHT TO GRADE WITH SUITABLE MATERIAL. IN SUCH CASES, PAYMENT WILL BE MADE FOR CHANGES OR ADDITIONS TO THE WORK IN ACCORDANCE WITH ODOT SECTION 109 AND THE CITY OF CINCINNATI SUPPLEMENT THERETO.

BACKFILL INSTALLATION REQUIREMENTS

COMPACTED BACKFILL
WHERE CLSM IS NOT REQUIRED, COMPACTED GRANULAR BACKFILL FOR THE FULL DEPTH OF SEWER TRENCH SHALL CONFORM TO REQUIREMENTS OF MSD STANDARD DRAWING ACCESSION NUMBER 49032, IN THE LOCATIONS INDICATED BELOW. WHERE BENEATH PAVEMENTS, SURFACINGS, DRIVEWAYS, CURBS, GUTTERS, WALKS, OR OTHER SURFACE CONSTRUCTION OR STRUCTURES.

WHERE IN STREET, ROAD, OR HIGHWAY SHOULDERS.
BACKFILLING IN OTHER AREAS THAN INDICATED ABOVE CAN CONSIST OF LOCAL SITE MATERIAL WITH THE FOLLOWING QUALIFICATIONS:
NO ROCKS, FROZEN LUMPS, OR FOREIGN MATER AND PARTICAL IN EXCESS OF THREE (3) INCHES SHALL BE INCLUDED. MATERIAL DOES NOT CONSIST OF HIGHLY PLASTIC SILTS, CLAYS, ORGANIC SILTS OR PEAT. NO RUBBISH, MUCK OR UNSUITABLE MATERIALS ARE INCLUDED, AND ANY STONES OR SHALE OF UP TO ONE-HALF CUBIC (0.5) FOOT IN VOLUME IN THE BACKFILL ARE SEPARATED FOR EACH OTHER AND THE PIPE BY AT LEAST SIX (6) INCHES OF EARTH OR APPROVED SITE OR SELECT BACKFILL.

TRENCHING AND BACKFILLING (CONTINUED)

JETTED BACKFILL

IN LIEU OF COMPACTING THE BANK RUN GRAVEL BACKFILL IN FOUR (4) INCH LIFTS, THE BANK RUN GRAVEL BACKFILL MAY BE COMPACTED BY THOROUGHLY JETTING WITH WATER, IN AREAS OUTSIDE OF THE RIGHT OF WAY, PROVIDED SATISFACTORY DRAINAGE AND REMOVAL OF THE FREE WATER IS PROVIDED. THE BANK RUN GRAVEL BACKFILL SHALL BE CONSOLIDATED BY THOROUGHLY JETTING WITH WATER. FOR JETTING, A HOSE NOT SMALLER THAN ONE AND ONE-HALF (1-1/2) INCH DIAMETER AND A NOZZLE NOT SMALLER THAN ONE (1) INCH DIAMETER AND NOT SHORTER THAN TWO-THIRDS (2/3) THE DEPTH OF THE TRENCH CARRYING A WATER PRESSURE OF FORTY (40) POUNDS PER SQUARE INCH (PSI) SHALL BE INSERTED IN A UNIFORM PATTERN, AT FIVE FEET MAXIMUM SPACING, TO OBTAIN MAXIMUM CONSOLIDATION. AFTER THE FINAL JETTING OF THE TRENCH, THE BACKFILL SHALL BE LEFT TO SETTLE AND TO PERMIT DRAINAGE OF IMPOUNDED WATER. TYPICAL JETTING PROCEDURES SHALL INCLUDE A WATER REMOVAL SYSTEM AT INTERVALS NOT TO EXCEED FIVE HUINDRED (500) LINEAL FEET OF TRENCH. WATER REMOVAL SHALL NOT BEGIN UNTIL THE WATER SURFACES ABOVE THE BACKFILL. AFTER JETTING IS COMPLETE, THE AREA AROUND THE JETTING HOLE SHALL BE FILLED AND COMPACTED BY THE USE OF THE BUCKET ON THE EQUIPMENT USED FOR EXCAVATING. SETTLED TRENCH SURFACES SHALL THEN BE BROUGHT TO GRADE BY FILLING WITH BANK RUN GRAVEL BACKFILL AND COMPACTED TO A DENSITY EQUAL TO THAT OF THE ADJACENT GROUND. WATER SHALL BE REMOVED BY INSTALLING AN OPENING IN THE MANHOLE OR INSTALLING A VERTICAL EIGHT-INCH PERFORATED PIPE WITH FILTER PAPER ADJACENT TO THE MANHOLE. IF THE VERTICAL PIPE METHOD IS USED, THE VERTICAL PIPE SHALL BE FILLED WITH AASHTO #57 STONE AFTER ALL WATER IS REMOVED BY PUMPING. ALL MANHOLE OPENINGS SHALL BE PLUGGED AND SEALED AFTER JETTING AND WATER REMOVAL OPERATIONS ARE COMPLETED.

SPECIAL BACKFILL REQUIREMENTS

BACKFILL MATERIAL FOR TYPE "C" CONDUIT SHALL CONFORM TO BACKFILL INSTALLATION REQUIREMENTS BELOW.

THE BACKFILL FOR TYPE "C" CONDUIT SHALL BE FINALLY CONSOLIDATED BY MECHANICAL COMPACTION OR BY THOROUGHLY JETTING WITH WATER AS SPECIFIED ABOVE. IF THE BACKFILL IS FINALLY CONSOLIDATED BY JETTING, THE CONTRACTOR SHALL ASSUME ALL RESPONSIBILITY AND ASSOCIATED COSTS FOR ANY GROUND OR HILLSIDE MOVEMENT AND/OR INSTABILITY RELATED TO THE JETTING COMPACTION PROCEDURES.

THE CONTRACTOR SHALL INCLUDE THE COST FOR THE NECESSARY BACKFILL AND COMPACTION WITH THE VARIOUS CONDUIT ITEMS IN UNIT PRICES FOR VARIOUS CONDUIT CLASS ITEMS. NO ADDITIONAL PAYMENT SHALL BE MADE FOR THE USE OF CONTROLLED LOW STRENGTH MATERIAL (CLSM) DENSITY BACKFILL WHEN REQUIRED BY THE JURISDICTIONAL AGENCY OR DUE TO UNSUPPORTED TRENCHES, OVER EXCAVATING, OR THE INABILITY TO PROPERLY COMPACT THE BACKFILL IN THE EXCAVATED TRENCH. STRUCTURE BACKFILL. BACKFILL AROUND MANHOLES AND SMALL CONCRETE VAULTS SHALL MEET THE REQUIREMENTS SPECIFIED FOR COMPACTED TRENCH BACKFILL.

CONTROLLED LOW STRENGTH MATERIAL (CLSM). CLSM SHALL NOT BE PLACED ON FROZEN GROUND. BATCHING, MIXING, AND PLACING OF CLSM MAY BE STARTED WHEN WEATHER CONDITIONS ARE FAVORABLE AND WHEN THE TEMPERATURE IS AT LEAST 34°F AND RISING. AT TIME OF PLACEMENT, CLSM SHALL HAVE A TEMPERATURE OF AT LEAST 40°F. MIXING AND PLACING SHALL STOP WHEN THE TEMPERATURE IS 38°F AND FALLING. EACH FILLING STAGE SHALL BE AS CONTINUOUS AN OPERATION AS IS PRACTICABLE.

CALCULATED LZS
CHECKED JS

GENERAL NOTES

HAM-75-3.84

TRENCHING AND BACKFILLING (CONTINUED)

CLSM SHALL BE DISCHARGED FROM THE MIXER BY AN ACCEPTABLE PROCEDURE INTO THE AREA TO BE FILLED. CLSM SHALL BE PLACED TO LIMITS INDICATED ON THE DRAWINGS. MIXING CLSM WITH IN-SITU SOIL SHALL BE AVOIDED.

WHEN CLSM IS PLACED AS BACKFILL AGAINST STRUCTURES, THE FILL SHALL BE PLACED IN LIFTS OF 2 TO 3 FEET AND THE NEXT LIFT SHALL NOT BE PLACED UNTIL THE PREVIOUS LIFT HAS TAKEN INITIAL SET AND AT LEAST 16 HOURS HAVE ELAPSED FROM THE END OF PLACEMENT. LIFT THICKNESS SHALL BE REDUCED AS NECESSARY TO PREVENT FLOATATION OF THE STRUCTURE.

WHEN CLSM IS PLACED OVER CULVERTS OR PIPELINES, THEY SHALL BE ANCHORED TO PREVENT FLOTATION DURING THE PLACEMENT OF CLSM. UNLESS OTHERWISE REQUIRED, CLSM SHALL BE PLACED TO ONE FOOT BELOW SUBGRADE ELEVATION IF THE SUBGRADE ELEVATION IS NOT MORE THAN 5 FEET OVER THE TOP OF THE CULVERT OR PIPE. IF THE SUBGRADE IS MORE THAN 5 FEET OVER THE TOP OF THE CULVERT OR PIPE FILL, CLSM SHALL BE PLACED TO AN ELEVATION 2 FEET OVER THE TOP OF THE CULVERT OR PIPE, AND THE REMAINDER SHALL BE BACKFILLED WITH SOIL DESIGNATED BY ENGINEER.

DRAINAGE MAINTENANCE

TRENCHES ACROSS ROADWAYS, DRIVEWAYS, WALKS, OR OTHER TRAFFICWAYS ADJACENT TO DRAINAGE DITCHES OR WATERCOURSES SHALL NOT BE BACKFILLED PRIOR TO COMPLETION OF BACKFILLING THE TRENCH ON THE UPSTREAM SIDE OF THE TRAFFICWAY, TO PREVENT IMPOUNDING WATER AFTER THE PIPE HAS BEEN LAID. BRIDGES AND OTHER TEMPORARY STRUCTURES REQUIRED TO MAINTAIN TRAFFIC ACROSS SUCH UNFILLED TRENCHES SHALL BE CONSTRUCTED AND MAINTAINED BY CONTRACTOR. BACKFILLING SHALL BE DONE SO THAT WATER WILL NOT ACCUMULATE IN UNFILLED OR PARTIALLY FILLED TRENCHES. ALL MATERIAL DEPOSITED IN ROADWAY DITCHES OR OTHER WATERCOURSES CROSSED BY THE LINE OF TRENCH SHALL BE REMOVED IMMEDIATELY AFTER BACKFILLING IS COMPLETED, AND THE ORIGINAL SECTION, GRADES, AND CONTOURS OF DITCHES OR WATERCOURSES SHALL BE RESTORED. SURFACE DRAINAGE SHALL NOT BE OBSTRUCTED LONGER THAN NECESSARY.

FINAL GRADING

AFTER OTHER OUTSIDE WORK HAS BEEN FINISHED, AND BACKFILLING AND EMBANKMENTS COMPLETED AND SETTLED, ALL AREAS WHICH ARE TO BE GRADED SHALL BE BROUGHT TO EXISTING GRADE AND SLOPE.

USE OF GRADERS OR OTHER POWER EQUIPMENT WILL BE PERMITTED FOR FINAL GRADING AND DRESSING OF SLOPES, PROVIDED THE RESULT IS UNIFORM AND EQUIVALENT TO MANUAL METHODS. ALL SURFACES SHALL BE GRADED TO SECURE EFFECTIVE DRAINAGE.

FINAL GRADES AND SURFACES SHALL BE SMOOTH, EVEN, AND FREE FROM CLODS AND STONES, WEEDS, BRUSH, AND OTHER DEBRIS.

DISPOSAL OF EXCESS EXCAVATED MATERIALS

DISPOSAL OF EXCESS MATERIAL FROM OTHER TRENCH EXCAVATION SITES SHALL BE AS FOLLOWS. EXCEPT AS OTHERWISE PERMITTED, ALL EXCESS EXCAVATED MATERIALS SHALL BE DISPOSED OF AWAY FROM THE SITE.

TRENCHING AND BACKFILLING (CONTINUED)

BROKEN CONCRETE AND OTHER DEBRIS RESULTING FROM PAVEMENT OR SIDEWALK REMOVAL, EXCAVATED ROCK IN EXCESS OF THE AMOUNT PERMITTED TO BE INSTALLED IN TRENCH BACKFILL, DEBRIS ENCOUNTERED IN EXCAVATION WORK, AND OTHER SIMILAR WASTE MATERIALS SHALL BE DISPOSED OF AWAY FROM THE SITE.

SETTLEMENT

CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SETTLEMENT OF TRENCH BACKFILL WHICH MAY OCCUR WITHIN THE CORRECTION PERIOD STIPULATED IN THE GENERAL CONDITIONS.

CONTRACTOR SHALL MAKE, OR CAUSE TO BE MADE, ALL REPAIRS OR REPLACEMENTS MADE NECESSARY BY SETTLEMENT WITHIN THIRTY (30) DAYS AFTER NOTICE FROM ENGINEER.

RESTORATION OF IMPROVEMENTS

ALL SURFACE RESTORATION SHALL BE COMPLETED IN STRICT ACCORDANCE WITH THE APPROPRIATE ITEMS OF THE CITY SUPPLEMENT TO ODOT CMS, AS DIRECTED BY THE ENGINEER. ALL DISTURBED AREAS SHALL BE RESTORED AS NEARLY AS PRACTICAL TO THE CONDITION THEY WERE PRIOR TO CONSTRUCTION WITHIN THIRTY (30) DAYS OF PIPE INSTALLATION, AT THE DIRECTION OF THE ENGINEER.

ROADS, STREETS, AND OTHER PAVED SURFACES

UNLESS OTHERWISE SPECIFIED, ROADS AND STREETS IN WHICH THE SURFACE IS REMOVED, BROKEN, OR DAMAGED DURING THE WORK, SHALL BE RESURFACED AND BROUGHT TO THE ORIGINAL GRADE AND SECTION. ROADWAYS USED BY THE CONTRACTOR SHALL BE CLEANED AND REPAIRED. BEFORE RESURFACING MATERIAL IS PLACED, EDGES OF PAVEMENTS SHALL BE TRIMMED BACK FAR ENOUGH TO PROVIDE CLEAN, SOLID, VERTICAL FACES, AND SHALL BE FREE OF LOOSE MATERIAL. ALL PAVED SURFACES SHALL BE CUT WITH A PAVEMENT SAW. ROUGH CUTS ARE NOT ALLOWED.

PAVEMENT RESTORATION SHALL BE IN ACCORDANCE WITH THE "TYPICAL RESTORATION SECTION" ON THE DRAWINGS AND PROVISIONS OF CDOTE, AS DIRECTED BY THE CITY.

ALL DRIVEWAYS SHALL BE CONSTRUCTED IN KIND IN ACCORDANCE WITH ITEM 627 OF THE CITY SUPPLEMENT TO ODOT CMS.

CONCRETE WALKS SHALL BE RESTORED WITH A FIVE (5) INCH THICK PLAIN PORTLAND CEMENT CONCRETE WALK (ITEM 608).

CULTIVATED AREAS AND OTHER SURFACE IMPROVEMENTS

CULTIVATED OR PLANTED AREAS AND OTHER SURFACE IMPROVEMENTS WHICH ARE DAMAGED BY ACTIONS OF THE CONTRACTOR SHALL BE RESTORED AS NEARLY AS POSSIBLE TO THEIR ORIGINAL CONDITION. THE CONTRACTOR SHALL RESTORE UNPAVED AREAS BY SEEDING AND MULCHING IN ACCORDANCE WITH ITEM 659 OF THE ODOT CMS UNLESS OTHERWISE NOTED HEREIN.
ALL DRAINAGE DITCHES DISTURBED BY THE CONTRACTOR'S WORK SHALL BE RESTORED, RESHAPED, AND GRADED TO DRAIN PROPERLY. SOD, EROSION CONTROL MATS, OR OTHER METHODS SHALL BE USED BY THE CONTRACTOR TO ENSURE THAT DRAINAGE DITCHES ARE RESTORED TO THE PRE-CONSTRUCTION CONDITION AS MUCH AS PRACTICAL.

ITEM 201 - CLEARING AND GRUBBING

PROVIDE CLEARING AND GRUBBING AS NEEDED PER CMS 201.

COFFERDAMS AND EXCAVATION BRACING NOTES

SHEETING AND SHORING SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE DETAILED DESIGN PLANS OF ALL METHODS OF INSTALLATION AND MAINTAINING DURING THE ENTIRE DURATION OF PROJECT. THE CONTRACTOR'S PLANS AND DETAILS SHALL BE APPROVED AND STAMPED BY A LICENSED ENGINEER FROM THE STATE OF OHIO. PLANS AND DETAILS MUST BE SUBMITTED TO THE ENGINEER 30 BUSINESS DAYS PRIOR TO ANY WORK STARTED.

USED MATERIAL SHALL BE IN GOOD CONDITION, NOT DAMAGED OR EXCESSIVELY PITTED. ALL STEEL OR WOOD SHEETING DESIGNATED TO REMAIN IN PLACE SHALL BE NEW. NEW OR USED SHEETING MAY BE USED FOR TEMPORARY WORK.

TIMBER USED FOR BREAST BOARDS (LAGGING): NEW OR USED, MEETING THE REQUIREMENTS FOR DOUGLAS FIR DENSE NO. 1 OR SOUTHERN PINE NO. 1 DENSE SR.

DESIGN ALL STEEL WORK FOR SHEETING, SHORING, BRACING, COFFERDAMS, ETC. IN ACCORDANCE WITH THE PROVISIONS OF THE AISC MANUAL OF STEEL CONSTRUCTION. FIELD WELDING WILL BE PERMITTED. STEEL SHEET PILING SHALL BE MANUFACTURED FROM STEEL CONFORMING TO ASTM A328/A328M - 07. STEEL FOR SOLDIER PILES, WALES, AND BRACES SHALL BE NEW OR USED AND MAY CONFORM TO ASTM A36/A36M-05. MAINTAIN SHORING AND BRACING IN EXCAVATIONS REGARDLESS OF THE DURATION EXCAVATIONS WILL BE OPEN. CARRY DOWN SHORING AND BRACING AS EXCAVATION PROGRESSES. UNLESS OTHERWISE
SHOWN, SPECIFIED, OR REQUIRED, REMOVE ALL MATERIALS USED FOR TEMPORARY CONSTRUCTION WHEN WORK IS COMPLETED. MAKE THIS REMOVAL IN A MANNER NOT INJURIOUS TO THE STRUCTURE OR ITS APPEARANCE OR TO ADJACENT WORK.

ITEM 503 - COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN A

PROVIDE COFFERDAMS AND EXCAVATION BRACING FOR THE LAUNCHING PIT PER CMS 503.

ITEM 503 - COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN B

PROVIDE COFFERDAMS AND EXCAVATION BRACING FOR THE RECEIVING PIT PER CMS 503.

ITEM 503 - COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN C

PROVIDE COFFERDAMS AND EXCAVATION BRACING FOR THE PROPOSED CSO STRUCTURE PER CMS 503 AND THE NOTES ON THIS SHEET.

ITEM 503 - COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN D

PROVIDE COFFERDAMS AND EXCAVATION BRACING FOR THE PROPOSED MH S230 PER CMS 503 AND THE NOTES ON THIS SHEET.

ITEM 530 SPECIAL - STRUCTURE, MISC.: CSO STRUCTURE & APPURTENANCES

THIS ITEM SHALL INCLUDE ALL WORK REQUIRED TO INSTALL THE CSO STRUCTURE AND APPURTENANCES AS DETAILED IN THESE PLANS. THE PRICE BID FOR THIS ITEM SHALL BE COMPLETE AND INCLUDE ALL NECESSARY SITE PREPARATION, EXCAVATION, EMBANKMENT, MAINTENANCE OF EXISTING FLOW, REINFORCING STEEL, CONCRETE FOR STRUCTURES, ACCESSORIES, SEEDING AND MULCHING.

ITEM 611 - 42" CONDUIT, BORED OR JACKED, AS PER PLAN, BELOW CSX RAILROAD

THIS ITEM INCLUDES ALL WORK REQUIRED TO COMPLETE THE PIPE SEWERS IN ACCORDANCE WITH TRENCHLESS PIPE INSTALLATION AND THE APPLICABLE SECTIONS OF THE CITY OF CINCINNATI SUPPLEMENT TO ODOT CMS, AND ACCORDING TO NOTES AND DETAILS SHOWN ON THE DRAWINGS. CARRIER PIPE SHALL BE 24" DUCTILE IRON PIPE, THICKNESS CLASS 56, PUSH-ON JOINTS AND FITTINGS, IN ACCORDANCE WITH ODOT ITEM 611 OF THE SPECIFICATIONS.

THE PRICE BID FOR THIS ITEM SHALL BE COMPLETE AND INCLUDE ALL NECESSARY SITE PREPARATION, EXCAVATION, EMBANKMENT, DEWATERING, MAINTENANCE OF EXISTING SANITARY FLOW, TEMPORARY SHORING, PREPARATION OF TRENCH BOTTOM, CASING PIPE, JOINT MATERIAL, BACKFILL, TESTING, DISPOSAL OF WASTE MATERIAL, DUST CONTROL, LIGHTS, ODOR CONTROL, SIGNS AND BARRICADES, NOISE CONTROL, CLEANING UP, SAW CUTTING, TRAFFIC CONTROL, AND RESTORATION.

SURFACE DISRUPTION

UNLESS OTHERWISE NOTED IN THE CONTRACT DOCUMENTS, SETTLEMENT OR HEAVE AT THE GROUND SURFACE DURING AND AFTER CONSTRUCTION SHALL NOT EXCEED ONE-HALF (1/2) INCH UNLESS OTHERWISE SPECIFIED AS MEASURED ALONG THE CENTERLINE OF THE CONDUIT BEING INSTALLED.

EXISTING UTILITIES

EXISTING UTILITIES ARE TO BE LOCATED IN THE FIELD PRIOR TO CONSTRUCTION, AND SHALL BE PROTECTED AND/OR RELOCATED IN ACCORDANCE WITH THE REQUIREMENTS OF THE UTILITY. BEFORE ANY EXCAVATION IS PERFORMED, THE CONTRACTOR SHALL CALL OHIO UTILITY PROTECTION SERVICE (OUPS) TO HAVE UNDERGROUND UTILITIES LOCATED AND MARKED. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY UTILITY LOCATIONS AND ALLOW FOR THEIR LOCATIONS. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE DONE TO UTILITIES SHALL BE IMMEDIATELY AND COMPLETELY REPAIRED AT THE CONTRACTOR'S EXPENSE.

ALL UTILITIES CROSSED BY TRENCHLESS PIPE INSTALLATION SHALL BE POTHOLED OR THE CONTRACTOR SHALL PROVIDE A LETTER FROM THE UTILITY STATING THE DEPTH OF THEIR UTILITY. COSTS FOR THIS WORK SHALL BE INCLUDED WITH THE APPLICABLE JACK & BORE PIPE INSTALLATION BID ITEM.

JACK AND BORE - BELOW CSX RAILROAD

THIS ITEM SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE APPLICABLE SECTIONS OF THE CITY OF CINCINNATI SUPPLEMENT TO THE ODOT CMS AND ACCORDING TO THE NOTES AND DETAILS SHOWN ON THE DRAWINGS.

PROVIDE A 42" STEEL CASING PIPE CONFORMING TO 748.06 WITH 0.625" WALL THICKNESS AND HAVING JOINTS WITH A CIRCUMFERENCIAL FULLY PENETRATING BU4B WELD THAT IS PERFORMED BY AN ODOT APPROVED FIELD WELDER.

CALCULATED LZS
CHECKED JS

GENERAL NOTES

HAM-75-3.84

ITEM 611 - 42" CONDUIT, BORED OR JACKED, AS PER PLAN, BELOW CSX RAILROAD (CONTINUED)

THE BORE SHALL BE REASONABLY CLOSE TO THE PROPOSED GRADE (NO POCKETS OR BELLIES WILL BE PERMITTED) AND LARGE ENOUGH TO ACCOMMODATE NOT ONLY THE PIPE, BUT ALSO SOME MEANS OF INTRODUCING THE LOW-STRENGTH MORTAR FILL INTO THE ANNULAR SPACE BETWEEN THE CARRIER PIPE AND CASING PIPE. ALL ASSOCIATED COSTS FOR FILLING THE ANNULAR SPACE SHALL BE INCLUDED IN THE BID PRICE FOR THIS ITEM.

THE LENGTH OF CONDUIT TO BE PAID SHALL BE THE ACTUAL NUMBER OF LINEAR FEET MEASURED FROM ONE END OF THE BORED CASING TO THE OTHER END OF THE BORED CASING. THE MAXIMUM FOOTAGE THAT WILL BE PAID UNDER THIS ITEM WILL BE THAT SHOWN ON THE PLANS, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

DUCTILE IRON PIPE (DIP) CARRIER PIPE, AS SHOWN ON THE DRAWINGS AND IN ACCORDANCE WITH ITEM 611, SHALL BE INSTALLED INSIDE THE STEEL CASING PIPE WITHIN THE LIMITS OF THE JACK AND BORE.

SAFETY

PERFORM ALL WORK IN ACCORDANCE WITH THE CURRENT APPLICABLE REGULATIONS OF THE FEDERAL, STATE, AND LOCAL AGENCIES, INCLUDING, BUT NOT LIMITED TO, CFR 29 PART 1926, SUBPART S, UNDERGROUND CONSTRUCTION.

AS-BUILT PLANS

SUBMIT A COMPLETE SET OF AS-BUILT-PLANS SHOWING ALL JACK & BORE INSTALLATIONS WITHIN THIRTY (30) CALENDAR DAYS OF COMPLETION OF THE WORK. PLANS MUST BE DIMENSIONALLY CORRECT COPIES OF THE CONTRACT PLANS. INCLUDE NOTES ON THE PLANS STATING THE FINAL PIPE PATH DIAMETER, CASING DIAMETER (IF APPLICABLE), DRILLING FLUID COMPOSITION, COMPOSITION OF ANY OTHER MATERIALS USED TO FILL THE ANNULAR VOID BETWEEN THE BORE PATH AND THE CASING. NOTE THE SIZE AND TYPE OF CARRIER PIPES TO BE PLACED WITHIN THE CASING AS PART OF THE WORK.

WHEN A PROJECT IS WITHIN THE CITY OF CINCINNATI LIMITS, ALL UTILITIES CROSSED BY TRENCHLESS PIPE INSTALLATION SHALL BE POTHOLED OR THE CONTRACTOR SHALL PROVIDE A LETTER FROM THE UTILITY STATING THE DEPTH OF THEIR UTILITY. COSTS FOR THIS WORK SHALL BE INCLUDED WITH THE APPLICABLE JACK & BORE PIPE INSTALLATION BID ITEM.

ITEM 611 - CONDUIT, MISC.: VIDEO TAPING OF INSTALLED SEWERS

CONTRACTOR TO FURNISH VIDEOTAPING OF INSTALLED SEWERS MEETING THE REQUIREMENTS OF THE CITY OF CINCINNATI SUPPLEMENT TO THE STATE OF OHIO (ODOT) CONSTRUCTION AND MATERIAL SPECIFICATIONS AND ACCORDING TO THE FOLLOWING CURRENT REQUIREMENTS:

CURRENT PACP CERTIFICATION OF ALL CCTV OPERATORS WILL BE REQUIRED FOR ALL CCTV WORK.

DATABASE SHALL BE UNMODIFIED NASSCO-PACP CERTIFIED ACCESS DATABASE.

CCTV SOFTWARE SHALL BE NASSCO-PACP CERTIFIED.

INITIAL SURVEY TELEVISION INSPECTION

THE CONTRACTOR SHALL TELEVISE THE SEWER AND SHALL INSPECT THE UPSTREAM AND DOWNSTREAM MANHOLES OF EACH SEWER SEGMENT TELEVISED AND DOCUMENT ALL OBSERVATIONS.

SEWER SECTIONS AND MANHOLES SHALL BE INSPECTED BY MEANS OF REMOTE CCTV. IF A BLOCKAGE CANNOT BE REMOVED AND HAMPERS THE VIDEOTAPING OF THE SEWER IN ONE DIRECTION, THEN THE CONTRACTOR SHALL ATTEMPT TO COMPLETE THE SECTION BY TELEVISING FROM THE OTHER MANHOLE TO COMPLETE THE SECTION. THIS REVERSAL MUST IMMEDIATELY FOLLOW THE INITIAL DIRECTION ON THE SAME SURVEY AND REPORT. THE CONTRACTOR MUST IMMEDIATELY REPORT THE OBSTRUCTION TO THE ENGINEER.

THE RECORDED VIDEO MUST SHOW THE ENTIRE CIRCUMFERENCE OF THE SEWER. ANY FLOW CONTROL TO REMOVE STANDING WATER AND DEBRIS SHALL BE INCIDENTAL TO THIS ITEM. THE CONTRACTOR MUST ALSO CONSIDER WEATHER CONDITIONS TO OBTAIN THE BEST VIDEO IMAGE OF THE SEWER. THIS MAY REQUIRE THE CONTRACTOR TO DELAY ANY VIDEO WORK UNTIL AFTER MAJOR RAIN EVENTS TO ALLOW THE SYSTEM TO RETURN TO LOWER DRY WEATHER FLOW.

PERFORM ALL CCTV INSPECTIONS IN ACCORDANCE WITH NASSCO'S PIPELINE ASSESSMENT CERTIFICATION PROGRAM (PACP). CCTV INSPECTIONS WILL BE CONDUCTED ENTIRELY IN DIGITAL FORMAT. THE ENTIRE INSPECTION SURVEY SHALL BE RECORDED IN MPEG-1 FORMAT WRITTEN TO DVD AND SUBMITTED WITH DIGITAL LINKS TO THE SURVEY. ALL CLEANING AND TELEVISION INSPECTION REPORTS SHALL BE WITH-IN +/- 2 (TWO) FEET OF THE MEASURED LINEAR FOOTAGE BETWEEN MANHOLES ALONG THE EXISTING SEWER CENTERLINE FROM THE CENTER OF THE MANHOLE. THE DOCUMENTATION OF THE WORK SHALL CONSIST OF PACP CCTV REPORTS, UNMODIFIED PACP DATABASE, LOGS, ELECTRONIC REPORTS, ETC. NOTING IMPORTANT FEATURES ENCOUNTERED DURING THE INSPECTION. THE SPEED OF TRAVEL SHALL BE SLOW ENOUGH TO INSPECT EACH PIPE JOINT, TEE CONNECTION, STRUCTURAL DETERIORATION, INFILTRATION AND INFLOW SOURCES, AND DEPOSITS, BUT SHOULD NOT, AT ANY TIME, BE FASTER THAN 30 FEET PER MINUTE. THE CAMERA MUST BE CENTERED IN THE PIPE TO PROVIDE ACCURATE DISTANCE MEASUREMENTS TO PROVIDE EXACT LOCATIONS OF IMPORTANT FEATURES IN THE SEWER AND THESE FOOTAGE MEASUREMENTS SHALL BE DISPLAYED AND DOCUMENTED ON THE VIDEO. THE COMPLETED DVD WILL BECOME THE PROPERTY OF THE MSD.

ITEM 611 - CONDUIT, MISC.: VIDEO TAPING OF INSTALLED SEWERS

EVERY SECTION OF SEWER (MANHOLE TO MANHOLE) SHALL BE IDENTIFIED BY AUDIO AND ALPHANUMERIC ON THE VIDEO DISPLAY AND SHALL INCLUDE: PROJECT NAME, MUNICIPALITY, STREET NAME, CAGIS MANHOLE NUMBERS (CONTRACTOR SHALL REQUEST THE EIGHT DIGIT MANHOLE NUMBERS ASSIGNED BY MSD FOR ALL PROPOSED AND EXISTING MANHOLES INCLUDED IN VIDEO), INSPECTOR'S NAME, SEWER DIAMETER AND LENGTH, AND DATE OF INSPECTION. IMPORTANT FEATURES SHALL BE IDENTIFIED BY AUDIO AND ON PACP LOG TO INCLUDE ALL MANHOLES, ACTIVE AND INACTIVE SERVICE CONNECTIONS, STRUCTURAL DEFECTS, MAINTENANCE PROBLEMS, GREASE, ROOTS, INFILTRATION, OBVIOUS INFLOW SOURCES, ETC. ALL VIDEO MUST BE CONTINUOUSLY METERED FROM MANHOLE TO MANHOLE. IN ADDITION TO TELEVISING THE SEWER, ALL MANHOLES SHALL BE PANNED WITH THE VIDEO CAMERA AND VISUALLY INSPECTED. IF THE CONTRACTOR DOES NOT SUBMIT THE SPECIFIED INFORMATION, OR IF IT IS NOT IN THE REQUIRED FORMAT, OR IF CAGIS MANHOLE NUMBERS ARE NOT INCLUDED, PAYMENT FOR VIDEOTAPING OF FINAL SEWERS AND FOR SEWER PIPE INSTALLED WILL NOT BE MADE UNTIL THE VIDEO INFORMATION IS CORRECTED.

ITEM 690 SPECIAL - BOLLARD

THIS ITEM SHALL INCLUDE THE CONSTRUCTION OF REMOVABLE STEEL BOLLARDS, TIMBERFORM REMOVABLE BOLLARDS WITH HASP/HOLE COVER, 2190-RH PRE-FINISHED CHROME YELLOW COLOR, FROM COLUMBIA CASCADE COMPANY, OR APPROVED EQUAL AS APPROVED BY THE ENGINEER. FURNISH EACH BOLLARD WITH AT LEAST ONE PADLOCK AND KEY. PADLOCKS FURNISHED SHALL BE EITHER BRASS OR BRONZE, EQUAL TO MASTER NO. 4BKA OR WILSON BOHANNAN 660A. OBTAIN THE APPROPRIATE MASTER KEY NUMBER FROM THE MAINTAINING AGENCY.

ITEM 611 - MANHOLE, MISC.: MANHOLE REHABILITATION

PART I. GENERAL

DESCRIPTION
THIS WORK SHALL CONSIST OF EXISTING SANITARY SEWER MANHOLE REHABILITATION USING STANDARD CEMENTITIOUS RELINER. THE WORK WILL INCLUDE ELIMINATING INFILTRATION, REPAIRING/REBUILDING CHIMNEYS, RESETTING, CASTINGS, RE-GROUTING INLET PIPES, AND REHABILITATION OF PORTION THE MANHOLE AS FURTHER DESCRIBED HEREIN.

THE CONTRACTOR SHALL FURNISH ALL LABOR, COMPONENTS, MATERIALS, TOOLS, AND APPURTENANCES NECESSARY FOR THE PERFORMANCE AND COMPLETION OF THE WORK.

COMPLIANCE AND ACCEPTANCE

COMPLIANCE WITH THIS CONTRACT SHALL BE COMPLETE WHEN ALL CONDITIONS SET FORTH IN THESE SPECIFICATIONS HAVE BEEN MET, INCLUDING THE FOLLOWING: THE MANHOLES SHALL EXHIBIT A SMOOTH, EVEN FINISH WITH UNIFORM BONDING TO THE ORIGINAL SUBSTRATE. THE FINISHED PRODUCT SHALL CONFORM TO THE WALLS OF THE ORIGINAL SUBSTRATE. THE CONTRACTOR SHALL FIELD VERIFY MANHOLE DEPTHS AND VARIOUS OTHER DIMENSIONS INCLUDING THE MANHOLE DIAMETER. NO LONGITUDINAL OR CIRCUMFERENTIAL SHRINKAGE, GAP OR ANNULAR SPACE BETWEEN THE FINISHED PRODUCT AND EXISTING SUBSTRATE SHALL BE ALLOWED. THERE SHALL BE NO VISIBLE INFILTRATION THROUGHOUT THE REHABILITATED PORTION OF THE MANHOLE INCLUDING THE REHABILITATION PRODUCT'S TERMINATIONS. THE FINISHED LINER SHALL BE HOMOGENEOUS THROUGHOUT AND FREE OF ANY HOLES, VISIBLE CRACKS, FOREIGN MATERIAL, BLISTERS, OR OTHER DELETERIOUS FAULTS OR ANY OTHER DEFECTS, WHICH IN THE OPINION OF THE ENGINEER, WILL AFFECT THE STRUCTURAL INTEGRITY, STRENGTH, WATER TIGHTNESS, FUTURE MAINTENANCE ACCESS, AND OVERALL PERFORMANCE OF THE FINISHED PRODUCT.

DEFECTS, IN THE OPINION OF THE ENGINEER, THAT WILL NOT MEET THIS SPECIFICATION, THAT WILL AFFECT THE STRUCTURAL INTEGRITY, STRENGTH, WATER TIGHTNESS, FUTURE MAINTENANCE ACCESS, AND OVERALL PERFORMANCE OF THE FINISHED PRODUCT SHALL BE REPAIRED OR THE MANHOLE REPLACED AT THE CONTRACTOR'S EXPENSE. ALL MATERIALS AND PROCEDURES SHOULD BE IN ACCORDANCE WITH COATING/LINING MANUFACTURER'S SPECIFICATIONS OR AS FURTHER INDICATED IN THIS SPECIFICATION. ANY MANHOLES EXHIBITING THESE DEFECTS WILL BE REJECTED FOR PAYMENT UNTIL SUCH TIME REPAIRS HAVE BEEN MADE TO THE SATISFACTION OF THE ENGINEER. THE FOLLOWING METHODS OF REPAIR SHALL BE IMPLEMENTED BY THE CONTRACTOR TO RESOLVE COMMON DEFECTS UNLESS OTHERWISE APPROVED BY THE ENGINEER:

REHABILITATION METHOD/DEFECT		REPAIR METHOD
STANDARD CEMENTITIOUS RELINER	INFILTRATION	STOP LEAKS AND PATCH AREA ACCORDING TO MANUFACTURER'S SPECIFICATIONS. RE-PREP AND RE-COAT ENTIRE MANHOLE IF LEAKS REOCCUR
	DAMAGED INCOMING PIPE TERMINATIONS	REPAIR WITH STRUCTURAL GROUT OR POINT REPAIR
STANDARD CEMENTITIOUS RELINER	CRACKS, VOIDS, OR HOLIDAY SPOTS	RE-COAT AREA TO 125% OF PROPER THICKNESS.
	FINAL THICKNESS LESS THAN REQUIRED	RE-COAT TO 125% OF PROPER THICKNESS.

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GENERAL NOTES

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ITEM 611 - MANHOLE, MISC.: MANHOLE REHABILITATION (CONTINUED)

THE FINAL PRODUCT THICKNESS SHALL NOT BE LESS THAN THE REQUIRED THICKNESS SPECIFIED. AT ITS DISCRETION, THE ENGINEER WILL MEASURE FINAL PRODUCT THICKNESS UTILIZING NON-DESTRUCTIVE ULTRASONIC THICKNESS TESTING EQUIPMENT.

REFERENCED DOCUMENTS:

ALL WORK MUST ALSO CONFORM TO THE LATEST EDITION OF THE FOLLOWING SPECIFICATIONS:

MSD RULES AND REGULATIONS
CITY OF CINCINNATI SUPPLEMENT (CITY SUPPLEMENT) TO THE STATE OF OHIO DEPARTMENT OF TRANSPORTATION, CONSTRUCTION AND MATERIALS SPECIFICATION STATE OF OHIO DEPARTMENT OF TRANSPORTATION, CONSTRUCTION AND MATERIALS SPECIFICATION INTERNATIONAL CONCRETE REPAIR INSTITUTE (ICRI) AMERICAN SOCIETY OF CIVIL ENGINEER PRACTICE NO. 92 MANHOLE INSPECTION AND REHABILITATION AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM). THESE SHALL PERTAIN TO PRODUCT MATERIAL, INSTALLATION, TESTING, FINAL ACCEPTANCE, ETC. AS APPLICABLE AND AS REFERENCED IN THE PRODUCT MANUFACTURER'S LITERATURE. IF THERE IS A DIFFERENCE IN THESE SPECIFICATIONS, THE MSD RULES AND REGULATIONS SHALL GOVERN, THENCE THE CITY SUPPLEMENT, AND ODOT SPECIFICATION RESPECTIVELY.

QUALIFICATION OF CONTRACTOR

THE CONTRACTOR SHALL BE FULLY TRAINED AND QUALIFIED TO INSTALL AN APPROVED LINING PRODUCT FOR THE REHABILITATION OF SANITARY AND COMBINED SEWER MANHOLES AS DETERMINED AND RECOMMENDED BY THE PRODUCT MANUFACTURER.

THE CONTRACTOR SHALL HAVE AT LEAST ONE (1) YEAR EXPERIENCE IN THE REHABILITATION OF SANITARY AND COMBINED SEWER MANHOLES.

THE CONTRACTOR MUST HAVE AT LEAST ONE (1) YEAR EXPERIENCE WITH THE INSTALLATION OF AN APPROVED LINING METHOD AS LISTED IN PART III. THE CONTRACTOR MUST PROVIDE DOCUMENTATION THAT WITHIN THE LAST TWO (2) YEARS, THE CONTRACTOR'S COMPANY AND CONTRACTOR'S FIELD SUPERINTENDENT HAVE SUCCESSFULLY INSTALLED AN APPROVED LINING PRODUCT IN AT LEAST 100 MANHOLES. THE TOTAL VERTICAL FOOTAGE FOR THESE 100 MANHOLES MUST BE AT LEAST 300 FEET.

THE CONTRACTOR MUST PROVIDE A LIST OF AT LEAST TWO (2) MUNICIPALITIES OR GOVERNMENT AGENCIES THAT HAVE CONTRACTED THEIR SERVICES FOR THE REHABILITATION OF SANITARY AND COMBINED SEWER MANHOLES USING AT LEAST ONE OF THE APPROVED LINING PRODUCT SPECIFIED BELOW. THESE SERVICES MUST HAVE BEEN PROVIDED IN THE LAST TWO (2) YEARS. ADDITIONALLY, THE CONTRACTOR WILL SUPPLY A CONTACT NAME AND PHONE NUMBER FOR EACH MUNICIPALITY OR GOVERNMENT AGENCY REFERENCED. CONTRACTORS WHO DO NOT MEET THESE EXPERIENCE REQUIREMENTS WILL NOT BE CONSIDERED FOR AWARD OF THE WORK. ALL REFERENCES SHALL PERTAIN TO ACTUAL WORK PERFORMED BY THE CONTRACTOR.

ITEM 611 - MANHOLE, MISC.: MANHOLE REHABILITATION (CONTINUED)

PRODUCT LIST

THIS SECTION CONTAINS ALL WORK NECESSARY TO REHABILITATE SEWER MANHOLES. THE ENGINEER WILL CONSIDER THE FOLLOWING PRODUCTS OR APPROVED EQUALS:

RELINER MSP GEOPOLYMER MORTAR

STANDARD CEMENT MATERIALS

ONLY INSTALLERS CERTIFIED BY THE MANUFACTURER WILL BE PERMITTED TO INSTALL THE ABOVE-MENTIONED PRODUCTS. A REPRESENTATIVE OF THE PRODUCT MANUFACTURER MUST ATTEND THE LINING SYSTEM INSTALLATION.

QUALITY ASSURANCE: PERSONNEL DIRECTLY INVOLVED WITH INSTALLING THE MANHOLE REHABILITATION PRODUCT SHALL RECEIVE TRAINING IN THE HANDLING, STORAGE, USE, AND APPLICATION OF THE PRODUCTS. A REPRESENTATIVE OF THE PRODUCT MANUFACTURER SHALL PERFORM THE TRAINING.

THE CONTRACTOR SHALL PROTECT, STORE, AND HANDLE THE MATERIALS DURING TRANSPORTATION, WHILE ON-SITE AND DURING INSTALLATION IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS TO ENSURE THAT THEY ARE NOT DAMAGED.

IF ANY MATERIALS BECOME DAMAGED BEFORE OR DURING INSTALLATION, THEY SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE BEFORE PROCEEDING FURTHER.

SUBMITTALS

NAME OF THE COMPETENT PERSON(S) AND RESUME AS DEFINED IN ITEM 107.07 OF THE CITY SUPPLEMENT.

PRODUCT DATA (INCLUDING MATERIAL SAFETY DATA SHEETS (MSDS)) COVERING ALL THE MATERIALS OF CONSTRUCTION TO INCLUDE PLUGGING MATERIAL, PATCHING MATERIAL AND EPOXY COATINGS, LINER MATERIALS, ETC.

MATERIALS CERTIFICATION: JOINT CERTIFICATION OF MATERIALS FROM THE MANUFACTURER AND CONTRACTOR SHALL STATE THAT THE FINAL PRODUCTS WILL MEET OR EXCEED REQUIREMENTS OF THIS SPECIFICATION ONCE INSTALLED UNDER FIELD CONDITIONS.

STATEMENT OF WARRANTY - AN UNCONDITIONAL, NON-PRORATED WARRANTY COVERING ALL LABOR AND MATERIALS, TO STOP INFILTRATION, MATERIAL FAILURES, DETERIORATION, DEFECTS, ETC. WILL BE REQUIRED BY THE INSTALLER AND THE MANUFACTURER FOR THE TIME PERIOD SPECIFIED BELOW:
STANDARD CEMENTITIOUS RELINER SYSTEMS - 5 YEAR UNCONDITIONAL WARRANTY.

ALL OTHER ADDITIONAL WARRANTIES AS PROVIDED BY THE MANUFACTURERS WILL BE APPLICABLE. THE CONTRACTOR MAY SUPPLY A 5-YEAR MAINTENANCE BOND IN LIEU OF A STATEMENT OF WARRANTY.

INSTALLER CERTIFICATION - APPLICATORS MUST BE FACTORY TRAINED AND PROVIDE CERTIFICATION FROM THE MANUFACTURER THAT THE INSTALLER IS AN APPROVED PRODUCT APPLICATOR.

CORRECTIONS TO PUNCH LIST ITEMS AS REQUIRED BY THE ENGINEER TO FULFILL THE REQUIREMENTS OF THIS SPECIFICATION.

ITEM 611 - MANHOLE, MISC.: MANHOLE REHABILITATION (CONTINUED)

PART II. GENERAL PROVISIONS

EXISTING UTILITIES

THE CONTRACTOR MUST TAKE THE NECESSARY PRECAUTIONS FOR THE PROTECTION OF ANY UTILITY ENCOUNTERED ON THE PROJECT OR THE RESTORATION OF ANY UTILITY DAMAGED DURING THE WORK.

SUPPORTING AND PROTECTING EXISTING WATER LINES, GAS MAINS, TELEPHONE CONDUIT, ETC., SHALL BE INCLUDED IN PAYMENT FOR THE VARIOUS ITEMS OF WORK.

ALL WORK REQUIRED FOR THE MAINTENANCE OF SERVICE OF EXISTING UTILITIES SHALL BE DONE BY, AND AT THE EXPENSE OF THE CONTRACTOR.

ALL MAINTENANCE, REPAIR, AND REPLACEMENT OF EXISTING UTILITIES SHALL BE IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE VARIOUS UTILITY COMPANIES HAVING JURISDICTION.

ALL EXISTING STORM SEWERS, DRIVEWAY DRAINS, AND OTHER SURFACE DRAIN PIPES, REMOVED OR DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED AND RECONNECTED BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER AT THE EXPENSE OF THE CONTRACTOR.

ALL DISTURBED AREAS SHALL BE RESTORED AS NEARLY AS POSSIBLE TO THEIR PRE-CONSTRUCTION CONDITION.

THE COST OF ALL RESTORATION OF STREETS, DRIVES, WALKS, SOD, ETC., SHALL BE INCIDENTAL TO THE WORK AND NOT MEASURED FOR PAYMENT.

PART III. MATERIALS AND EXECUTION

GENERAL

MATERIAL AND EQUIPMENT ACCEPTANCE. ALL MATERIALS SHALL BE DELIVERED TO THE JOB SITE IN ORIGINAL UNOPENED PACKAGE AND CLEARLY LABELED WITH THE MANUFACTURER'S IDENTIFICATION AND PRINTED INSTRUCTIONS. ALL MATERIAL SHALL BE STORED AND HANDLED IN ACCORDANCE WITH RECOMMENDATIONS OF THE MANUFACTURER. THE CONTRACTOR SHALL FURNISH AND MAINTAIN, IN GOOD CONDITION, ALL EQUIPMENT NECESSARY FOR PROPER EXECUTION AND INSPECTION OF THE WORK.

NO CHANGES TO THE CHEMICAL COMPOSITION, PROCESS, OR INSTALLATION OF THE PRODUCT SHALL BE ALLOWED.

PRIOR TO ENTERING MANHOLES, THE CONTRACTOR SHALL CONDUCT AN EVALUATION OF THE ATMOSPHERE TO DETERMINE THE PRESENCE OF TOXIC, FLAMMABLE VAPORS, OR POSSIBLE LACK OF OXYGEN. THIS EVALUATION SHALL BE IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.

NO EXTRANEOUS MATERIAL SHALL BE ALLOWED TO DIRECTLY OR INDIRECTLY DISCHARGE TO THE SANITARY SEWER SYSTEM AS A RESULT OF THE CONTRACTOR'S OPERATIONS. ALL DEBRIS RESULTING FROM SURFACE PREPARATION, CLEANING, AND COATING APPLICATION SHALL BE PREVENTED FROM ENTERING THE SEWER'S FLOW. ALL DEBRIS AND EXCESS MATERIALS MUST BE ENTIRELY REMOVED FROM THE MANHOLE AND DISPOSED OF IN A FASHION APPROVED BY THE ENGINEER. THE CONTRACTOR SHALL BE HELD SOLELY RESPONSIBLE FOR THE COST OF ANY CLEANING OR ADDITIONAL MAINTENANCE TO THE SEWER SYSTEM PERFORMED BY THE ENGINEER, OR BY MSD OR ITS AGENT IN RESPONSE TO THE CONTRACTOR'S FAILURE TO MEET THESE REQUIREMENTS.

ITEM 611 - MANHOLE, MISC.: MANHOLE REHABILITATION (CONTINUED)

CLEANING AND SURFACE PREPARATION

PRE-INSPECTION: PRIOR TO BEGINNING WORK, THE MANHOLE SHALL BE VISUALLY INSPECTED AND AREAS OF STRUCTURAL DAMAGE AND INFILTRATION SHALL BE REPORTED TO THE ENGINEER IN WRITING.

CLEANING AND SURFACE PREPARATION

FOR ALL LINING REHABILITATION SYSTEMS, CONCRETE SURFACES SHALL BE PREPARED IN ACCORDANCE WITH THE INTERNATIONAL CONCRETE REPAIR INSTITUTE (ICRI) GUIDELINE NO. 03732 TO PROVIDE A SURFACE PROFILE OF CSP 3 OR HIGHER. BRICK AND OTHER MASONRY SURFACES SHALL BE PREPARED WITH THE SAME LEVEL OF CLEANING EFFORT AS STATED FOR CONCRETE SURFACES.

THE CONTRACTOR SHALL REMOVE ALL EXISTING MANHOLE STEPS WITHIN THE SURFACE AREA TO BE REHABILITATED UNLESS OTHERWISE APPROVED BY THE ENGINEER. THE METAL PORTION OF ALL STEPS SHALL BE REMOVED FLUSH WITH THE MANHOLE WALL SURFACE AND SPOT PRIMED/PATCHED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS PRIOR TO APPLYING THE REHABILITATION SYSTEM. THE FINAL COATED SURFACE SHALL HAVE A SMOOTH UNIFORM APPEARANCE WITH NO DISCOLORATION, AND WITH NO INDICATION OF THE STEPS' PREVIOUS LOCATION IN THE REHABILITATED WALL.

PRIOR TO PATCHING, ALL LOOSE AND DETERIORATED MATERIAL SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR.

MANHOLE WALL REPAIR SHALL INCLUDE THE PLUGGING AND/OR PATCHING OF ALL VISIBLE LEAKS, CRACKS, HOLES, VOIDS, AND DETERIORATED SURFACES IN THE MANHOLES. CONCRETE SURFACE DEFECTS, SUCH AS DETERIORATED CONCRETE OR MASONRY, HOLLOW AREAS, BUGHOLES, HONEYCOMBS, CRACKS AND VOIDS SHALL BE FILLED FLUSH AND TRUE WITH SPECIFIED GROUTING, PLUGGING OR PATCHING COMPOUND IN ACCORDANCE WITH ICRI TECHNICAL GUIDELINE NO. 03730 "GUIDE FOR SELECTING APPLICATION METHODS FOR THE REPAIR OF CONCRETE SURFACES".

FOR STANDARD CEMENTITIOUS RELINER SYSTEMS, THE MANHOLE SURFACES SHALL BE FREE OF LEAKS, AS VERIFIED BY THE ENGINEER'S REPRESENTATIVE, FOR A MINIMUM OF 12 HOURS PRIOR TO PROCEEDING WITH THE APPLICATION OF THE MANHOLE REHABILITATION PRODUCT(S). THE CONTRACTOR SHALL STOP ALL LEAKS WITH PATCHING MATERIALS OR INFILTRATION CONTROL MATERIALS THAT ARE COMPATIBLE WITH THE MANHOLE REHABILITATION PRODUCT(S) IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. INSTALL WEEP HOLES AS REQUIRED TO LOCALIZE INFILTRATION DURING APPLICATION OF THE PATCHING MATERIAL OR INFILTRATION CONTROL MATERIAL. IMMEDIATELY UPON THE ENGINEER'S CONFIRMATION THAT ALL ACTIVE INFILTRATION HAS BEEN HALTED, A 12 HOUR OBSERVATION PERIOD WILL BEGIN. IF THE ENGINEER DETERMINES THAT NO INFILTRATION HAS RECURRED IN THE MANHOLE STRUCTURE AT THE END OF THE 12-HOUR PERIOD, THEN THE CONTRACTOR WILL BE AUTHORIZED TO BEGIN THE APPLICATION OF THE REHABILITATION PRODUCT(S). IF THE ENGINEER DETERMINES THAT INFILTRATION HAS RECURRED DURING THE 12-HOUR OBSERVATION PERIOD, THEN A NEW 12-HOUR OBSERVATION PERIOD WILL BEGIN AT SUCH TIME AS THE CONTRACTOR STOPS THE ACTIVE INFILTRATION. THIS CYCLE WILL CONTINUE UNTIL THE ENGINEER AUTHORIZES THE APPLICATION OF THE REHABILITATION PRODUCT(S).

CALCULATED LZS CHECKED JS

GENERAL NOTES

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ITEM 611 - MANHOLE, MISC.: MANHOLE REHABILITATION (CONTINUED)

THE MITIGATION OF SEVERE INFILTRATION MAY REQUIRE THE INJECTION OF CHEMICAL GROUT UNDER PRESSURE. IF THE CONTRACTOR CHOOSES TO MITIGATE ALL ACTIVE INFILTRATION BY INJECTING AN APPROVED CHEMICAL GROUT UNDER THE SUPERVISION OF THE ENGINEER, THE 12-HOUR WAITING PERIOD TO BEGIN THE APPLICATION OF THE REHABILITATION PRODUCT(S) MAY BE WAIVED AT THE FINAL DISCRETION OF THE ENGINEER.

PATCHING OF MANHOLE WALLS SHALL BE REQUIRED TO REPAIR VOIDS, BROKEN OR MISSING BRICK, ETC. IN ORDER TO PROVIDE A SMOOTH AND STRUCTURALLY SOUND SUBSTRATE FOR THE MANHOLE REHABILITATION PRODUCT(S). ALL CRACKED OR DISINTEGRATED MATERIAL SHALL BE REMOVED FROM THE AREA TO BE PATCHED EXPOSING A SOUND SUBSTRATE. PATCHES SHALL BE ALLOWED TO FULLY CURE ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS BEFORE CONTINUING WITH THE MANHOLE REHABILITATION.

THE INSIDE PORTION OF THE MANHOLE CASTING (NEW OR EXISTING) SHALL BE PREPPED TO THE SATISFACTION OF THE ENGINEER AND AT A MINIMUM BE FREE OF SCALE OR FLAKING RUST FROM THE CASTING BOTTOM TO THE CASTING LIP PRIOR TO THE INSTALLATION OF THE REHABILITATION PRODUCT(S).

AFTER CONCRETE AND MASONRY SURFACES HAVE BEEN RENDERED FREE OF LEAKS, AND ALL SURFACE PREPARATION AND REPAIRS HAVE BEEN COMPLETED, ALL SURFACES TO RECEIVE THE REHABILITATION PRODUCT(S) SHALL BE CLEANED IN ACCORDANCE WITH ASTM D 4258 "PRACTICE FOR SURFACE CLEANING CONCRETE FOR COATING" AND ASTM D 4261 "PRACTICE FOR SURFACE CLEANING UNIT MASONRY FOR COATING". IF NOT MORE THAN TWO DAYS PASS BETWEEN THE TIME OF PREPPING AND THE APPLICATION OF THE LINING, THE MANHOLE WILL NOT HAVE TO BE RE-CLEANED EXCEPT AT THE DISCRETION OF THE ENGINEER.

ITEM 611 - MANHOLE, MISC.: MANHOLE REHABILITATION (CONTINUED)

PRODUCT APPLICATION

THE CONTRACTOR SHALL INSTALL THE STANDARD CEMENTITIOUS RELINER SYSTEM DESCRIBED BELOW.

THE CONTRACTOR MAY PROCEED WITH THE APPLICATION OF THE REHABILITATION PRODUCT(S) ONLY UPON THE AUTHORIZATION OF THE ENGINEER. IF RECOMMENDED BY THE MANUFACTURER, FIRST APPLY A BONDING PRIMER TO THE ENTIRE SURFACE. AFTER COMPLETING THE PRIMER, HAND TROWEL THE FIRST EPOXY COAT AND ENSURE THAT MATERIAL IS PUSHED INTO ANY REMAINING CREVASSES OR IMPERFECTIONS OF THE FINAL PREPPED SURFACE. A FIBERGLASS FABRIC SHALL THEN BE INCORPORATED INTO THE SYSTEM FOR REINFORCEMENT. THE REINFORCING FABRIC SHALL BE, AS A MINIMUM, 18 OZ. FIBERGLASS BONDED FABRIC OF TYPE E GLASS HAVING A TENSILE STRENGTH OF 10,000 TO 12,000 PSI, A MODULUS OF ELASTICITY OF 500,000 TO 750,000 PSI AND A MAXIMUM ELONGATION OF 4.8%. THE FABRIC SHALL BE A STITCH-BONDED CONSTRUCTION WITH A CHEMICAL BINDER TO ENHANCE WET OUT, HANDLING AND ADHESION. THE FIBERGLASS FABRIC SHALL BE CUT TO THE REQUIRED DIMENSIONS AND PRESSED INTO THE EPOXY TO ACHIEVE FULL WETTING OF THE FABRIC. WITH SUBSEQUENT APPLICATIONS OF THE FABRIC, THE EDGES SHALL BE EITHER OVERLAPPED OR BUTT-JOINED, AT THE DISCRETION OF THE APPLICATOR. EPOXY SHALL BE APPLIED BETWEEN THE OVERLAPPED EDGES TO ASSURE A MONOLITHIC CONSTRUCTION. BUTTED JOINTS SHALL BE COATED WITH EPOXY AND COVERED WITH A 4-INCH WIDE FIBERGLASS SEAMING-STRIP (CAP-STRIP) TO ASSURE THE MONOLITHIC CONSTRUCTION. THE FABRIC SHALL BE TOP COATED BY TROWELING ON THE APPROPRIATE EPOXY TOPCOAT DESIGNED TO HOLD THE FIBERGLASS FABRIC AND AS RECOMMENDED BY THE MANUFACTURER. THE EPOXY TOPCOAT MUST BE COMPATIBLE WITH THE FIBERGLASS FABRIC AND WORK WELL IN THE ANTICIPATED TEMPERATURES AND OTHER SPECIFIC CONDITIONS OF THE APPLICATION. THIS FINAL COATING SHALL BE APPLIED IN SUCH A MANNER AS TO COMPLETELY SATURATE AND ENCAPSULATE THE FIBERGLASS FABRIC. TOTAL FINISHED LINING THICKNESS MUST EQUAL OR EXCEED 125 MILS (1/8 INCH).

EXTENT OF REHABILITATION

THE INSTALLATION SHALL FORM A STRUCTURALLY ENHANCED MONOLITHIC LINER FROM IMMEDIATELY ABOVE THE TYPICAL FLOW LINE (WATER LINE) OF THE CHANNEL TO THE LIP OF THE CASTING.

THE PRODUCT MUST BE INSTALLED WHEN THE TEMPERATURE INSIDE THE MANHOLE IS 40 DEGREES F OR HIGHER

ALL CEMENTITIOUS RELINER COATINGS SHALL ADHERE TO MOIST SURFACES AND CURE EVEN WHEN SUBMERGED IN WATER. ADHESION OF THE COATINGS SHALL EXCEED THE TENSILE STRENGTH OF THE CONCRETE, OR BRICK SUBSTRATE.

ITEM 611 - MANHOLE, MISC.: MANHOLE REHABILITATION (CONTINUED)

CONSTRUCTION REQUIREMENTS

BYPASSING SEWAGE FLOW: THE CONTRACTOR SHALL BYPASS SEWAGE FLOW AROUND (OR THROUGH) THE MANHOLE TO BE REHABILITATED IN A MANNER THAT IS APPROPRIATE TO THE REHABILITATION METHOD. THE CONTRACTOR SHALL INSURE THAT FLOW-THROUGH PLUGS, PUMPS, AND BYPASS LINES ARE OF ADEQUATE CAPACITY AND SIZE TO MAINTAIN FLOW THROUGHOUT THE REHABILITATION PROCESS WITHOUT SEWER BACKUP. HOSES AND FITTINGS SHALL BE IN GOOD CONDITION, WITHOUT HOLES, SO AS NOT TO CAUSE SEWAGE SPILLS. IF SEWAGE BACKUP OCCURS AND ENTERS BUILDINGS, OR DISCHARGES TO THE WATERS OF THE STATE, THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ANY CLEANUP, REPAIR, PROPERTY DAMAGE COSTS AND CLAIMS, OR RESULTANT REGULATORY AGENCY FINES. A COPY OF A WRITTEN RELEASE SHALL BE FURNISHED TO THE ENGINEER. THE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE VARIOUS WORK ITEMS.

MAINTAINING FLOW: IT WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR, THROUGHOUT THE TENURE OF THIS WORK, TO PROVIDE AND MAINTAIN SUFFICIENT FLOW AT ALL TIMES TO PASS ANY FLASH OF STORM FLOW OF DRAINAGE DITCHES AND PREVENT ANY BACKWATER FLOODING DUE TO OBSTRUCTION CAUSED BY CONSTRUCTION EQUIPMENT OR MATERIALS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROHIBITING STORM OR SUBSURFACE WATER FROM ENTERING THE SANITARY SEWER DURING REHABILITATION WORK AS MAY BE CAUSED BY FLASH FLOODS, HIGH CREEK WATERS, HEAVY RAINS, ETC.

RETRIEVAL OF MATERIALS AND EQUIPMENT: IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REMOVE MATERIALS AND EQUIPMENT THAT HAVE BEEN LODGED IN A SEWER DIRECTLY OR INDIRECTLY RESULTING FROM CLEANING OR REHABILITATION OPERATIONS. IF EXCAVATION IS REQUIRED, THE CONTRACTOR IS RESPONSIBLE FOR EXCAVATION AND SUBSEQUENT REPAIR. POINT REPAIRS WILL NOT BE MEASURED FOR PAYMENT AND ARE CONSIDERED INCIDENTAL TO THE WORK.

QUALITY ASSURANCE AND TESTING

SPARK TEST FOR REINFORCED EPOXY SYSTEMS

ADHESION TEST FOR REINFORCED EPOXY PERFORMED BY THE ENGINEER.

THE ENGINEER RESERVES THE RIGHT TO PERFORM ADHESION TESTING USING ITS OWN WORKFORCE OR A QUALIFIED TESTING COMPANY. ALL ADHESION TESTING SHALL BE IN ACCORDANCE WITH ASTM D 4541-95 - STANDARD TEST METHOD FOR PULL-OFF STRENGTH OF COATINGS USING PORTABLE ADHESION TESTERS, AND THE FOLLOWING REQUIREMENTS. THE PURPOSE OF THE TEST IS TO ENSURE THAT ALL AREAS OF THE REHABILITATED MANHOLE ARE ADEQUATELY BONDED AND THAT THE MODE OF FAILURE WILL BE THE TENSILE STRENGTH OF THE EXISTING CONCRETE OR BRICK STRUCTURE AND NOT THE ADHESION OF THE INDIVIDUAL COATINGS. THE MAXIMUM ADHESION TEST LOAD WILL NOT EXCEED 200 PSI FOR PRECAST MANHOLES. THE CONTRACTOR SHALL MAKE ALL REPAIRS TO AREAS OF THE MANHOLE THAT ARE NOT ADEQUATELY BONDED. ALL COSTS FOR ANY REPAIRS DUE TO ADHESION TEST FAILURES SHALL BE AT THE CONTRACTOR'S EXPENSE.

DYE TESTING AND VISUAL INSPECTION PERFORMED BY THE ENGINEER.

ITEM 611 - MANHOLE, MISC.: MANHOLE REHABILITATION (CONTINUED)

THE DISTRICT RESERVES THE RIGHT TO PERFORM DYE TESTING AS NEEDED AND INTRODUCE WATER AROUND THE OUTSIDE OF THE MANHOLE TO ENSURE THAT THE MANHOLE REHABILITATION PRODUCTS ARE PROPERLY BONDED AND PROVIDING A SEAL AT ALL PRODUCT TERMINATIONS.

IN ADDITION, THE DISTRICT WILL HAVE AN INSPECTOR ENTER THE MANHOLE TO ENSURE THAT THE REHABILITATION PRODUCTS MEET THE FINAL ACCEPTANCE CRITERIA OUTLINED IN OTHER SECTIONS OF THIS SPECIFICATION. THE INSPECTOR WILL ALSO IMPACT THE COATING AREAS WITH A HAMMER AND POSSIBLY PERFORM DESTRUCTIVE AND NONDESTRUCTIVE TESTING IN ORDER TO ENSURE ADEQUATE BONDING AND THICKNESS OF THE COATING (OR LINING). THESE PHYSICAL INSPECTIONS WILL BE SUPPLEMENTED WITH TAKING DIGITAL IMAGES OF THE MANHOLE SURFACES USING A HIGH-RESOLUTION REMOTE CAMERA. THE CONTRACTOR SHALL MAKE ALL REPAIRS TO AREAS OF THE MANHOLE THAT ARE FOUND TO BE DEFECTIVE. ALL COSTS FOR ANY REPAIRS SHALL BE AT THE CONTRACTOR'S EXPENSE.

MEASUREMENT AND PAYMENT

THE FOLLOWING ITEMS OF WORK WILL NOT BE MEASURED FOR PAYMENT BUT THE COST THEREOF WILL BE CONSIDERED AS INCIDENTAL TO THE WORK:

RECORDS, LOGS, PHOTOS, ETC.
INSPECTION
REMOVAL AND DISPOSAL OF DEBRIS.
TRAFFIC CONTROL AS NEEDED.
BYPASS PUMPING AND FLOW CONTROL AS REQUIRED.
PROVIDING TEMPORARY AND FINAL RESTORATION OF GRASS AREAS.
EMERGENCY AFTER HOUR'S RESPONSE CAUSED BY THE REHABILITATION WORK.
DEMOBILIZATION AND MOBILIZATION BECAUSE OF SUSPENSION OF WORK.
GAINING OFF ROAD ACCESS INCLUDING THE CONSTRUCTION OF TEMPORARY ACCESS ROADS AND ITS SUBSEQUENT REMOVAL.

ITEM 611 - CATCH BASIN, MISC.: REMODEL BOTTOM OF EXISTING CATCH BASIN

THIS ITEM SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARD DRAWING ACC. NO. 49004 AND AS DIRECTED BY THE ENGINEER.

CALCULATED LZS
CHECKED JS

GENERAL NOTES

HAM-75-3.84

9B
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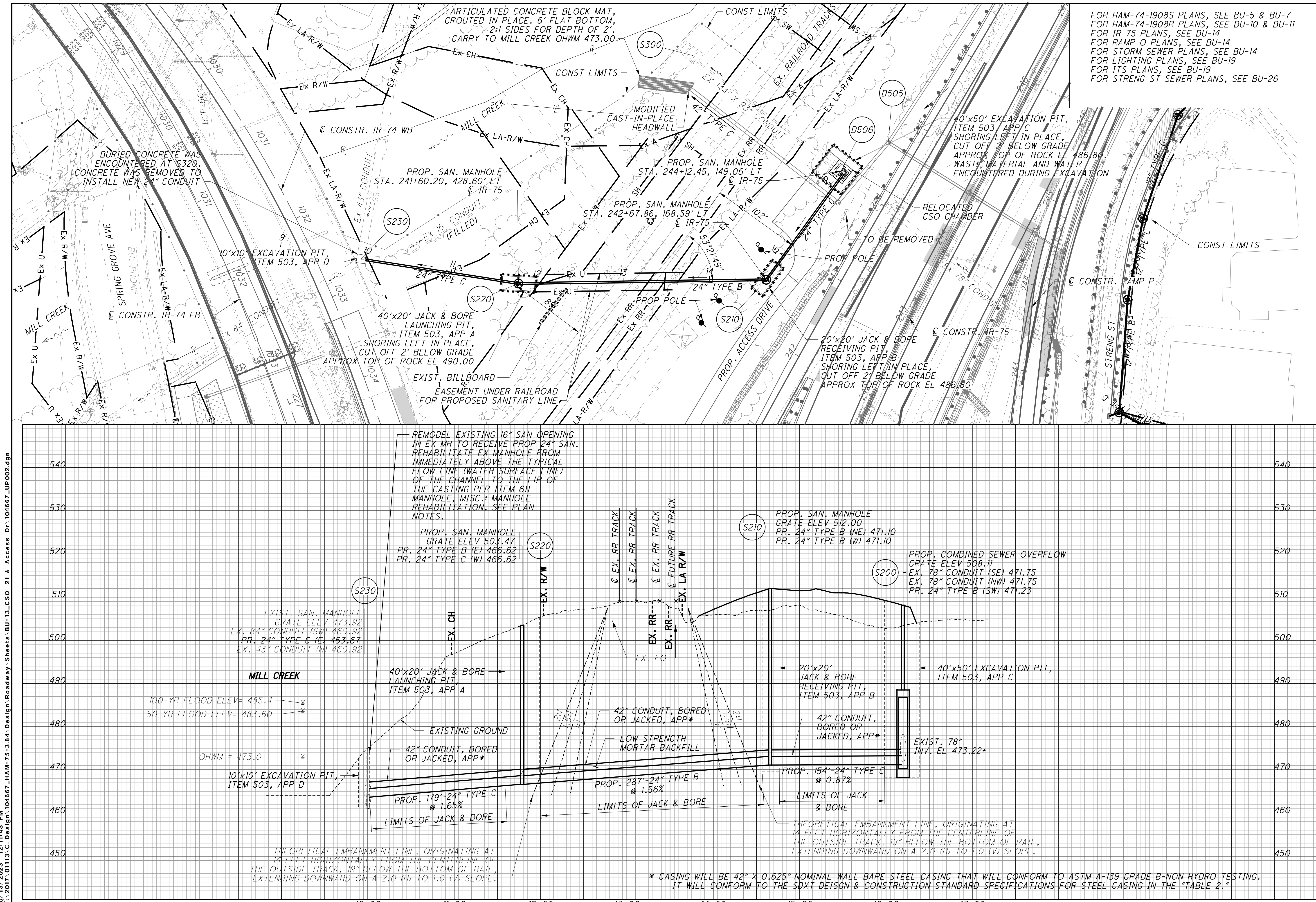

FOR HAM-74-1908S PLANS, SEE BU-5 & BU-7
FOR HAM-74-1908R PLANS, SEE BU-10 & BU-11
FOR IR 75 PLANS, SEE BU-14
FOR RAMP O PLANS, SEE BU-14
FOR STORM SEWER PLANS, SEE BU-14
FOR LIGHTING PLANS, SEE BU-19
FOR ITS PLANS, SEE BU-19
FOR STRENG ST SEWER PLANS, SEE BU-26

* CASING WILL BE 42" X 0.625" NOMINAL WALL BARE STEEL CASING THAT WILL CONFORM TO ASTM A-139 GRADE B-NON HYDRO TESTING. IT WILL CONFORM TO THE SDXT DEISGN & CONSTRUCTION STANDARD SPECIFICATIONS FOR STEEL CASING IN THE "TABLE 2."

CALCULATED LZS
CHECKED JS

CSO 21 IR-75 RECONSTRCUTION AND ANALYSIS
SEWER PLAN & PROFILE

HAM-75-3.84

10 / 22

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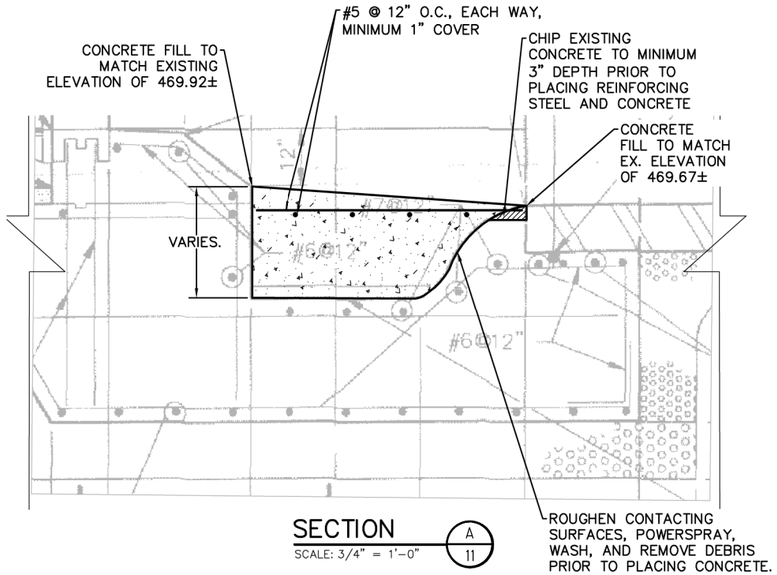
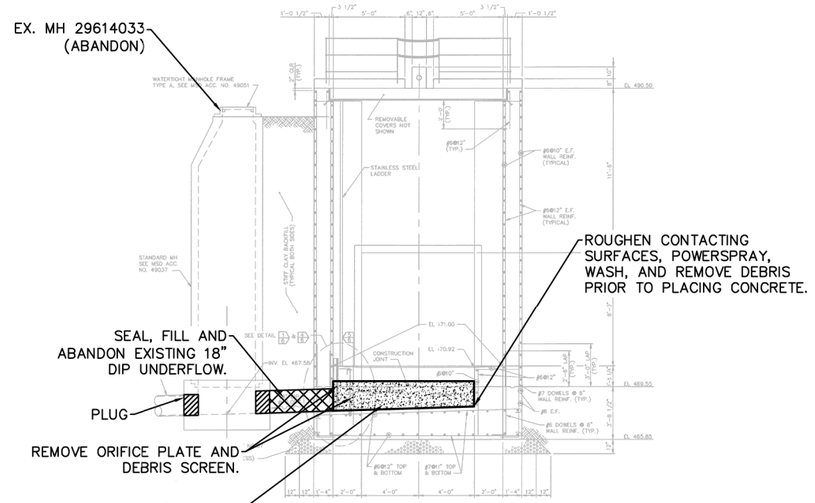


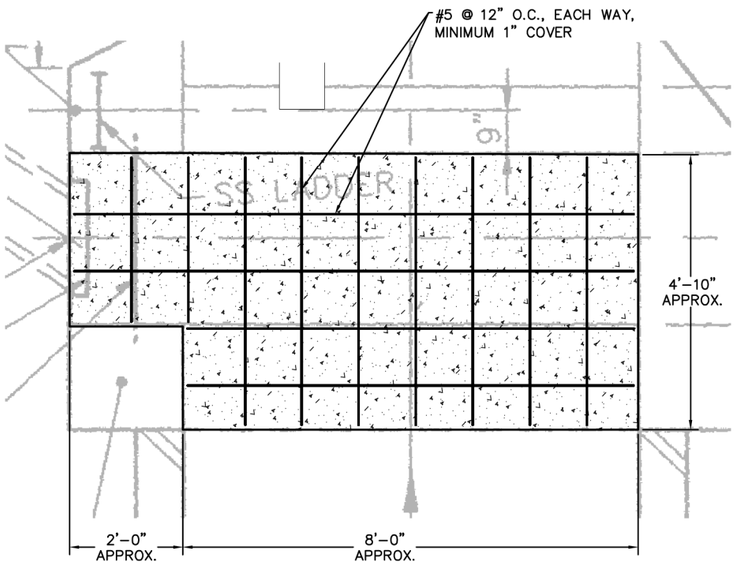
SECTION A/11
SCALE: 3/4" = 1'-0"

NOTES:

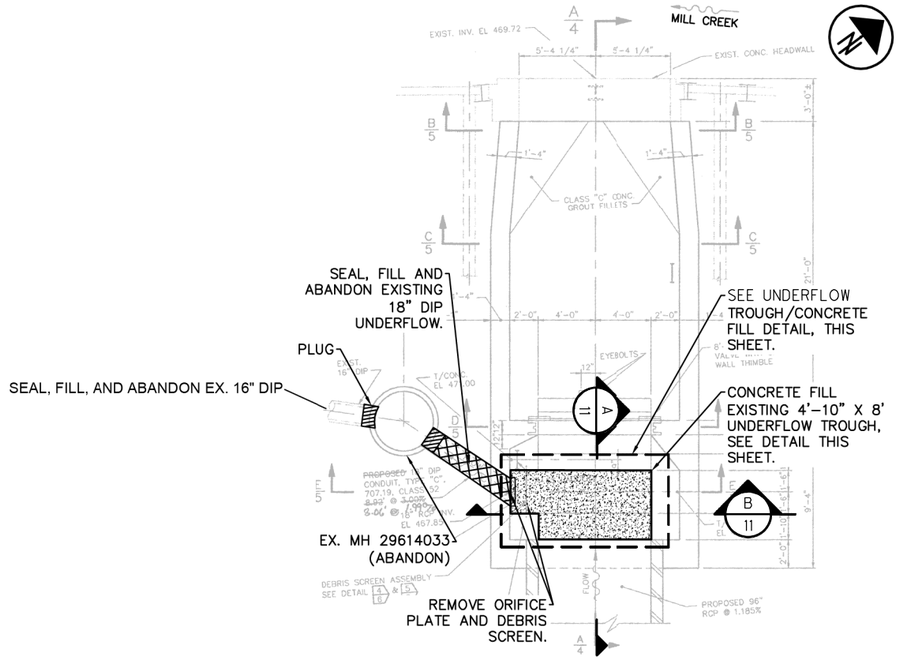
1. BACKGROUND IMAGES TAKEN FROM AS-BUILT DRAWINGS "CSO NO. 21 STRENG STREET SEWER REHABILITATION" FOR MSDGC CAPITAL IMPROVEMENT PROJECT 52-58-06-02, MILL CREEK C.S.O IMPROVEMENT, CONTRACT 'B'. CONTRACTOR SHALL FIELD VERIFY ACTUAL DIMENSIONS AND LOCATIONS.



SECTION B/11
SCALE: 3/16" = 1'-0"



UNDERFLOW TROUGH/CONCRETE FILL DETAIL
SCALE: 3/4" = 1'-0"



PLAN @ EL 475.00
SCALE: 3/16" = 1'-0"

CALCULATED CML
CHECKED JS

DETAILS

HAM-75-3.84

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MSDGC ACC. NO.: 75283
FOR EASEMENT DRAWING, SEE ACC. NO.: N/A

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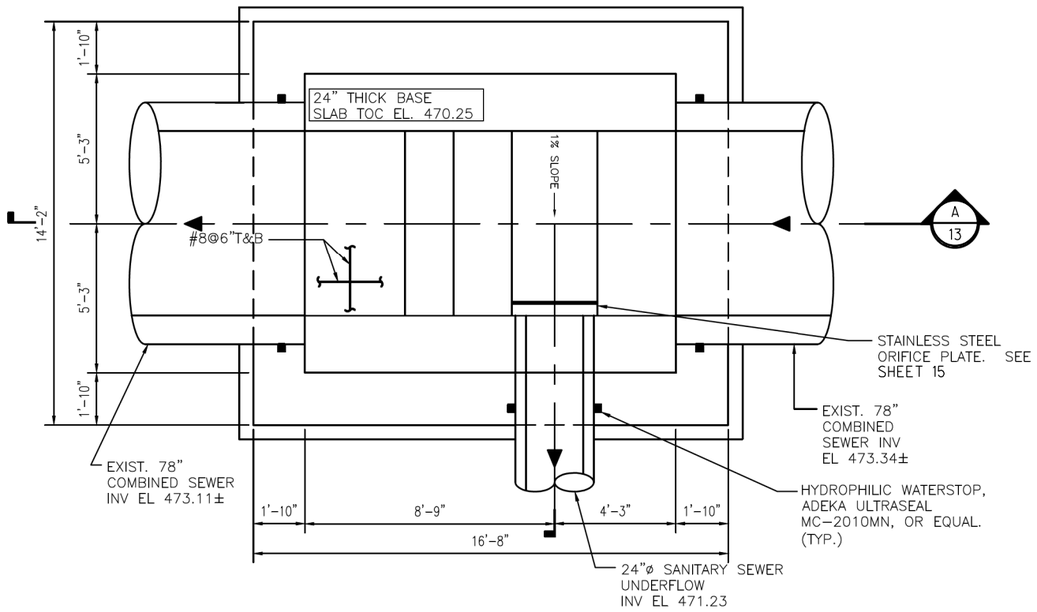
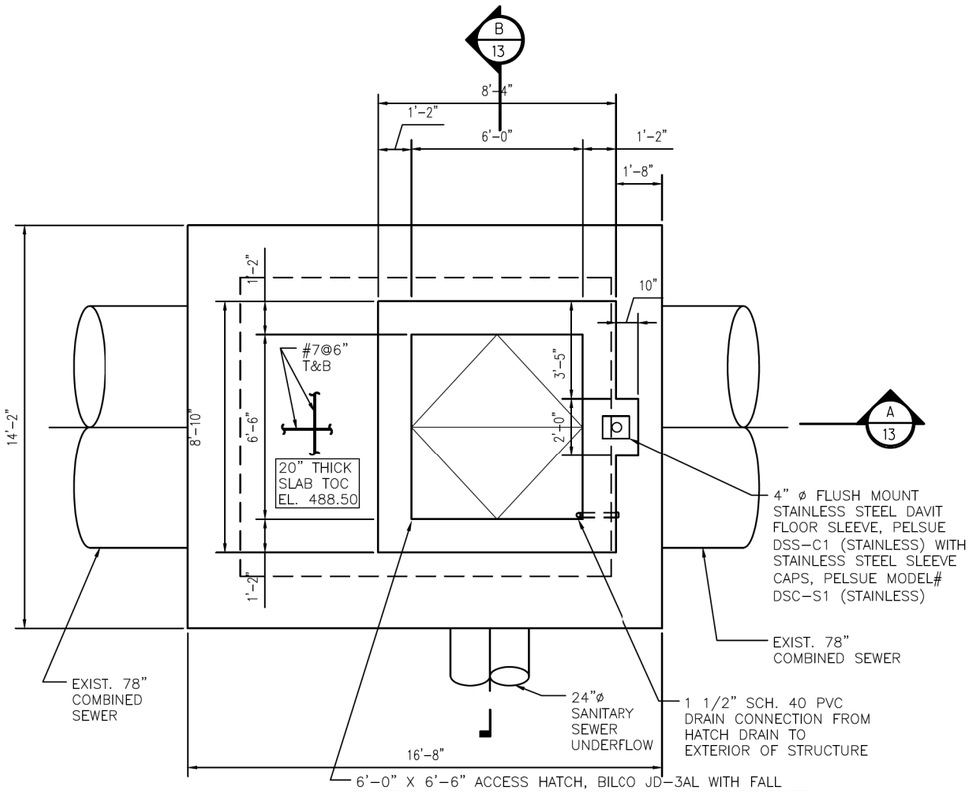


BOTTOM PLAN

SCALE 3/8"=1'-0"



TOP PLAN

SCALE 3/8"=1'-0"

NOTES:

1. CONCRETE TO HAVE A 28 DAY COMPRESSIVE STRENGTH OF 4,000 PSI.
2. REINFORCING BARS SHALL CONFORM TO ASTM A 615, GRADE 60.
3. SEE SHEET 14 FOR FOUNDATION PREPARATION DETAILS.
4. ITEM 530 SPECIAL-STRUCTURE, MISC.:CSO STRUCTURE AND APPURTENANCES, AS PER PLAN.
5. HATCH IS NOT RATED FOR VEHICULAR TRAFFIC. SEE CIVIL DRAWINGS FOR BOLLARD LOCATIONS.

MSDGC ACC. NO.: 75284
FOR EASEMENT DRAWING SEE MSDGC ACC. NO.: N/A

CALCULATED CML
CHECKED JS

DETAILS

HAM-75-3.84

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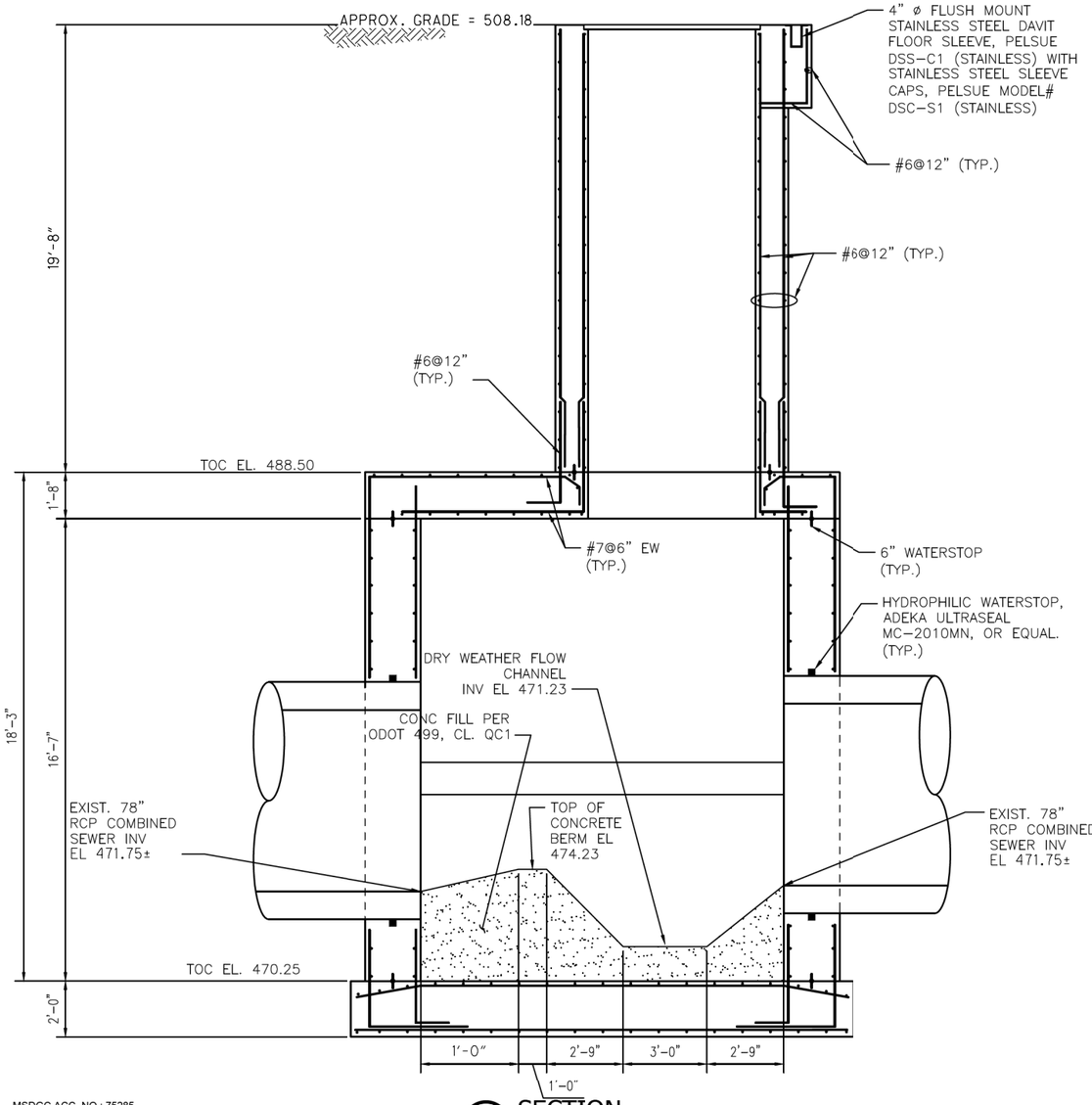
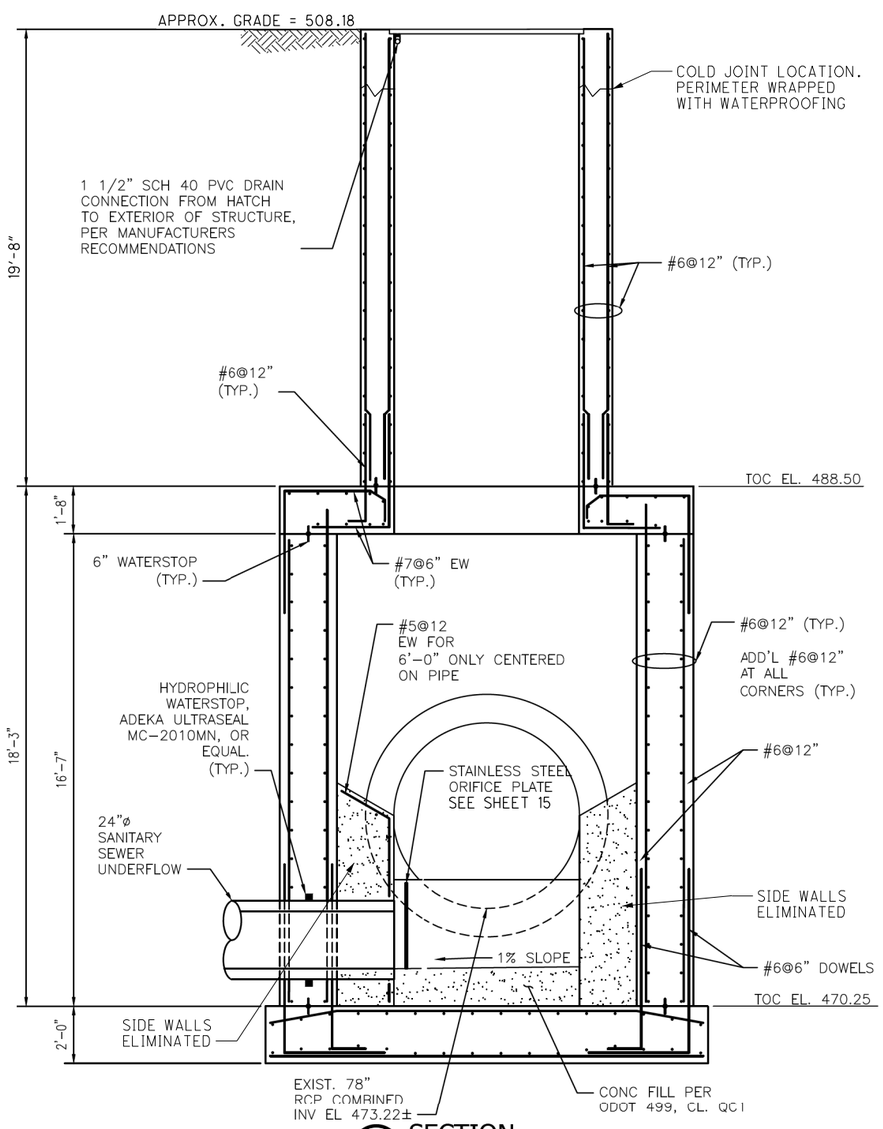


A/12 SECTION
SCALE 3/8"=1'-0"



B/12 SECTION
SCALE 3/8"=1'-0"

MSDGC ACC. NO.: 75285
FOR EASEMENT DRAWING, SEE MSDGC ACC. NO.: N/A

CALCULATED CML
CHECKED JS

DETAILS

HAM-75-3.84

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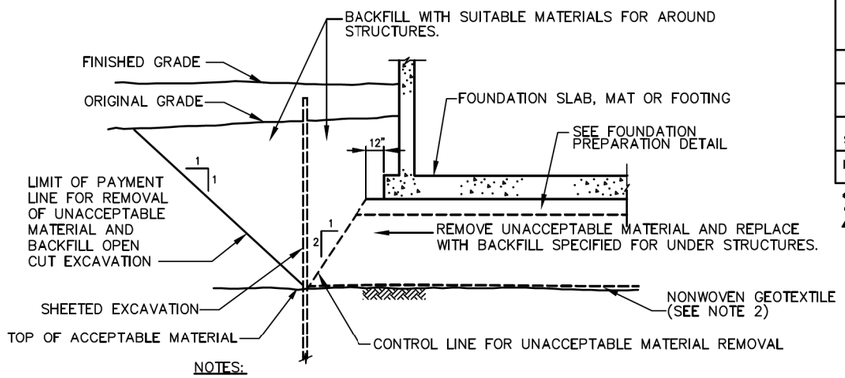
22



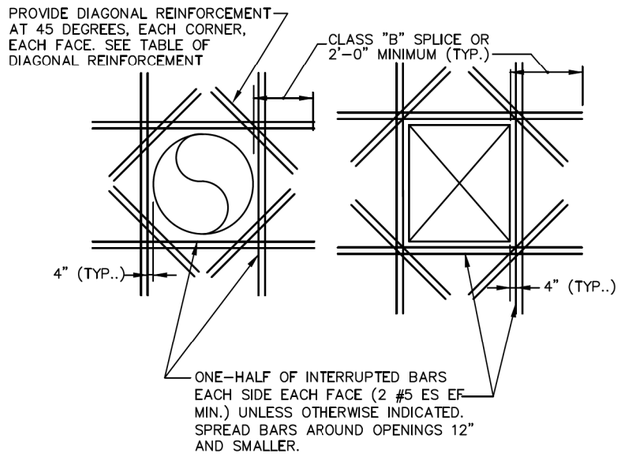
NOTES:

1. PERCENT COMPACTION IS THE RATIO OF FIELD DRY DENSITY DETERMINED BY ASTM D-1556 TO MAXIMUM DRY DENSITY DETERMINED BY ASTM D-1557 MULTIPLIED BY 100.
2. NONWOVEN ODOT TYPE D GEOTEXTILE SHALL BE PLACED AT UNDISTURBED SUBGRADE WHEN SCREENED GRAVEL OR CRUSHED STONE IS USED AS BACKFILL BENEATH STRUCTURES.

REMOVAL OF UNACCEPTABLE MATERIAL FROM BENEATH STRUCTURES

NOT TO SCALE
2-9.3.2 (REV. 7-18-06)

TABLE OF DIAGONAL REINFORCEMENT					
MEMBER THICKNESS IN INCHES / OPENING SIZE	LARGEST OPENING DIMENSION IN INCHES				
	LESS THAN 24	24 TO 36	36" TO 48	48" TO 60	60" AND LARGER
LESS THAN 16	NONE	NONE	NONE	NONE	NONE
16 TO 32	NONE	2-#6 X 4'-0"	2-#6 X 4'-0"	2-#7 X 4'-6"	2-#7 X 4'-6"
32" TO 48	NONE	2-#6 X 4'-0"	2-#7 X 4'-6"	2-#7 X 4'-6"	2-#8 X 5'-0"
48" TO 60	NONE	2-#7 X 4'-6"	2-#7 X 4'-6"	2-#8 X 5'-0"	2-#8 X 5'-0"
60 AND LARGER	NONE	2-#7 X 4'-6"	2-#8 X 5'-0"	2-#8 X 5'-0"	2-#9 X 6'-0"

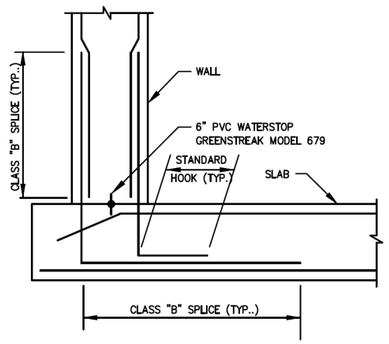


ADDITIONAL REINFORCEMENT FOR ROUND AND RECTANGULAR OPENINGS

NTS

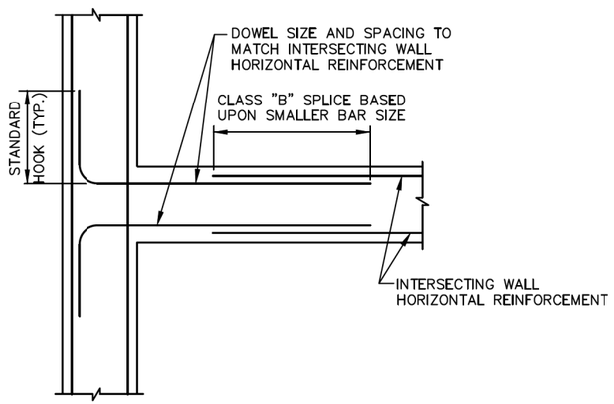
CLEAR CONCRETE COVER FOR CAST-IN-PLACE CONCRETE OVER REINFORCEMENT (INCHES)			
MEMBER	EXPOSURE CONDITIONS		
	AIR	WEATHER	EARTH OR STONE
FOOTINGS AND FOUNDATION MATS	2"♦	2"♦	2" ♦ 3" ●
WALLS	2"	2"	2"
JOISTS, BEAM STIRRUPS AND COLUMN TIES	1 1/2"	2"	2" ♦ 3" ●
FRAMED SLABS-EACH FACE	1"	2"	2"▲

♦ TOP FACE AND SIDES
● BOTTOM FACE
▲ WHEN PLACED ON SAND-GRAVEL, WELL DRAINED COMPACTED FILL



INTERSECTION OF SLAB AND WALL

NTS



INTERSECTION OF TWO WALLS WITHOUT CONSTRUCTION JOINT

NTS

REINFORCING BAR SPLICES PER ACI 318			
f'c = 4,000 psi			fy = 60,000 psi
BAR SIZE	CLASS "B" SPLICE		COMPRESSION SPLICE
	TOP BARS	OTHER BARS	
# 3 (10)	2'-0"	1'-6"	1'-0"
# 4 (13)	2'-8"	2'-1"	1'-3"
# 5 (16)	3'-4"	2'-7"	1'-7"
# 6 (19)	4'-0"	3'-1"	1'-11"
# 7 (22)	5'-10"	4'-6"	2'-2"
# 8 (25)	6'-8"	5'-2"	2'-6"
# 9 (29)	7'-6"	5'-10"	2'-10"
# 10 (32)	8'-6"	6'-6"	3'-2"
# 11 (36)	9'-5"	7'-3"	3'-6"

TABULATED VALUES ARE FOR UNCOATED BARS AND NORMAL WEIGHT CONCRETE.

TOP BARS ARE HORIZONTAL REINFORCEMENT PLACED SUCH THAT MORE THAN 12" OF CONCRETE IS PLACED BELOW THE BAR.

TABULATED VALUES ARE FOR BARS WHICH HAVE AT LEAST ONE BAR DIAMETER OF CLEAR CONCRETE COVER AND ARE SPACED AT LEAST TWO BAR DIAMETERS; OR HAVE AT LEAST ONE BAR DIAMETER OF CLEAR CONCRETE COVER, ARE SPACED AT LEAST ONE ONE BAR DIAMETER AND ARE ENCLOSED BY STIRRUPS OR TIES. SPLICE LENGTHS FOR BARS NOT CONFORMING TO EITHER OF THESE CONDITIONS SHALL BE INCREASED 50%.

REINFORCING BAR SPLICES

(f'c = 4,000 psi & fy = 60,000 psi)
NTS

REINFORCING BAR DEVELOPMENT PER ACI 318				
f'c = 4,000 psi				fy = 60,000 psi
BAR SIZE	BASIC TENSION DEVELOPMENT	TOP BAR DEVELOPMENT	COMPRESSION DEVELOPMENT	STANDARD HOOK DEVELOPMENT
# 3 (10)	1'-2"	1'-6"	8"	7"
# 4 (13)	1'-7"	2'-1"	9"	9"
# 5 (16)	2'-0"	2'-7"	1'-0"	1'-0"
# 6 (19)	2'-4"	3'-1"	1'-2"	1'-2"
# 7 (22)	3'-6"	4'-6"	1'-5"	1'-5"
# 8 (25)	3'-11"	5'-2"	1'-7"	1'-7"
# 9 (29)	4'-6"	5'-10"	1'-9"	1'-9"
# 10 (32)	5'-0"	6'-6"	2'-0"	2'-0"
# 11 (36)	5'-7"	7'-3"	2'-3"	2'-3"

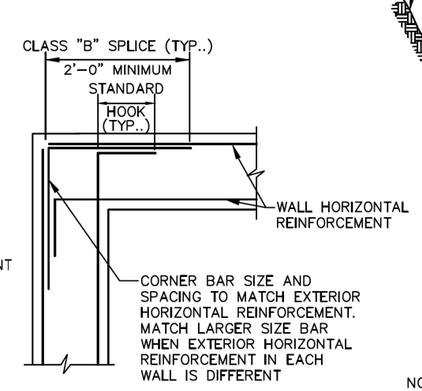
TABULATED VALUES ARE FOR UNCOATED BARS AND NORMAL WEIGHT CONCRETE.

TOP BARS ARE HORIZONTA_ REINFORCEMENT PLACED SUCH THAT MORE THAN 12" OF CONCRETE IS PLACED BELOW THE BAR.

TABULATED VALUES ARE FOR BARS WHICH HAVE AT LEAST ONE BAR DIAMETER OF CLEAR CONCRETE COVER AND ARE SPACED AT LEAST TWO BAR DIAMETERS; OR HAVE AT LEAST ONE BAR DIAMETER OF CLEAR CONCRETE COVER, ARE SPACED AT LEAST ONE ONE BAR DIAMETER AND ARE ENCLOSED BY STIRRUPS OR TIES. SPLICE LENGTHS FOR BARS NOT CONFORMING TO EITHER OF THESE CONDITIONS SHALL BE INCREASED 50%.

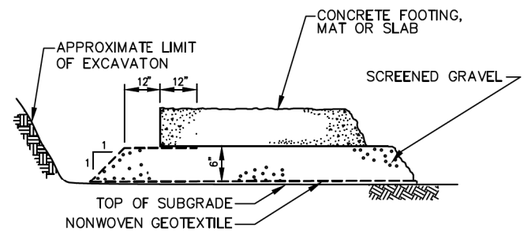
REINFORCING BAR DEVELOPMENT

(f'c = 4,000 psi & fy = 60,000 psi)
NTS



WALL CORNER REINFORCEMENT

NTS



GRADATION REQUIREMENTS

SIEVE SIZE	PERCENTAGE BY WEIGHT PASSING
	SCREENED GRAVEL
1 1/2"	100
1"	95 – 100
1/2"	25 – 60
#4	0 – 10
#8	0 – 5

NOTE: CONFORM TO ODOT TYPE D GEOTEXTILE FABRIC

FOUNDATION PREPARATION WITH GEOTEXTILE

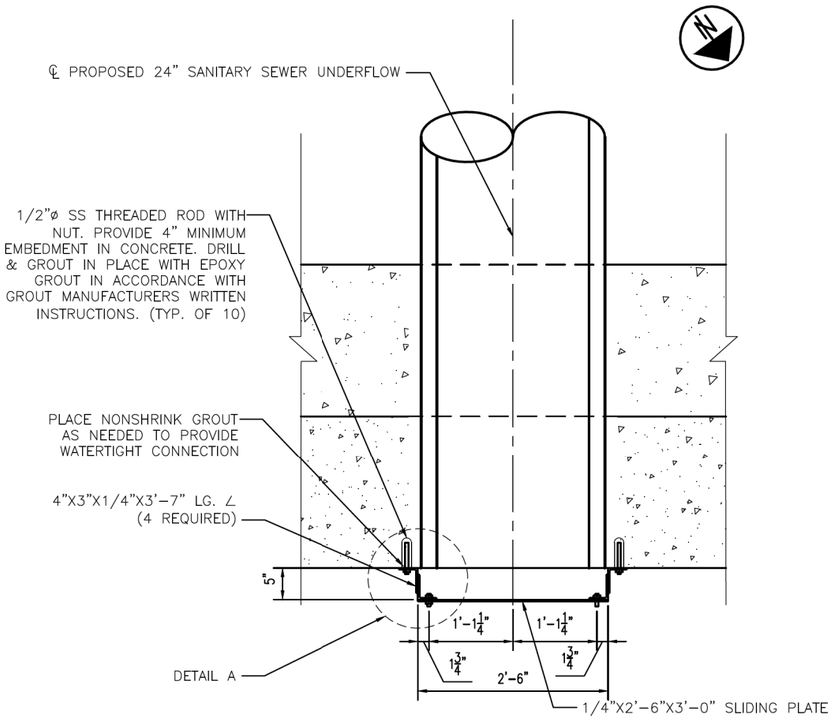
NOT TO SCALE

MSDGC ACC. NO.: 75286
FOR EASEMENT DRAWING, SEE MSDGC ACC. NO.: N/A

CALCULATED CML CHECKED JS

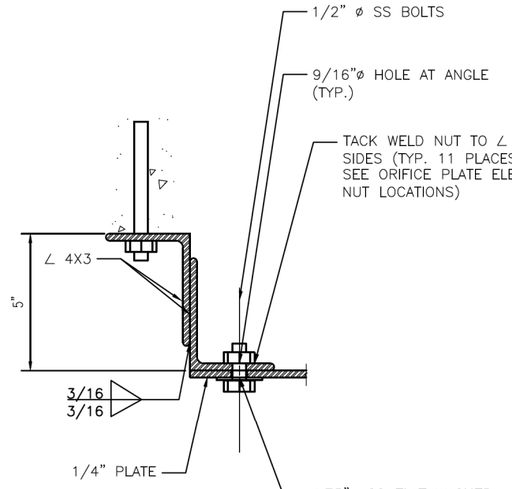
DETAILS

HAM-75-3.84



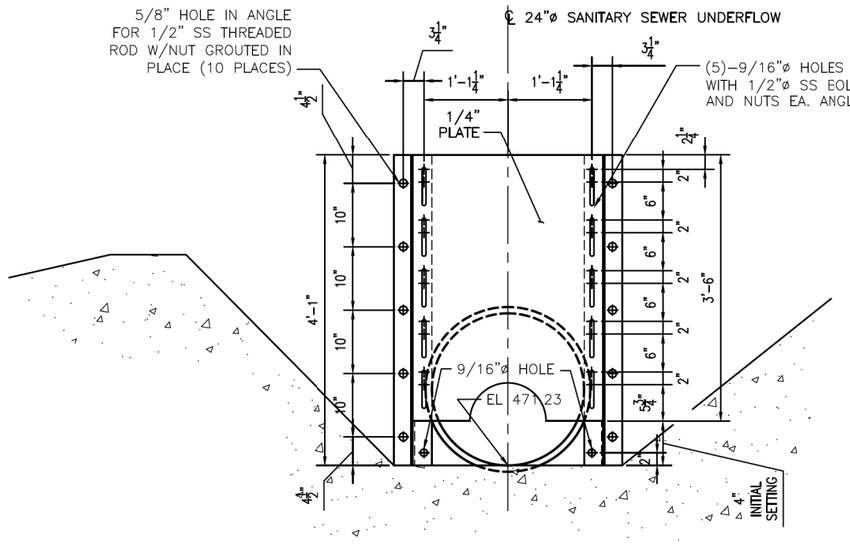
ORIFICE PLATE PLAN

SCALE: 1" = 1'-0"



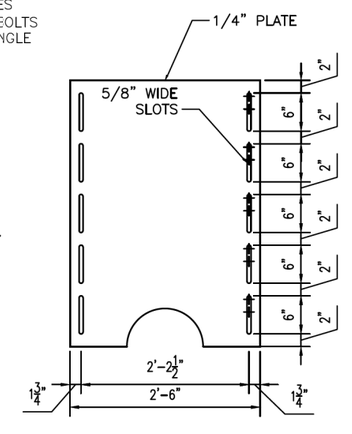
DETAIL A
ORIFICE PLATE
ANGLE CONNECTION

SCALE: 1" = 1'-0"



ORIFICE PLATE ELEVATION

SCALE: 1" = 1'-0"



ORIFICE PLATE DETAIL

SCALE: 1" = 1'-0"

NOTE: ALL NUTS, BOLTS, RODS, PLATES AND ANGLES SHALL BE ASTM A276 TYPE 316 STAINLESS STEEL

MSDGC ACC. NO.: 75287

FOR EASEMENT DRAWING, SEE MSDGC ACC. NO.: N/A

CALCULATED CML
CHECKED JS

DETAILS

HAM-75-3.84

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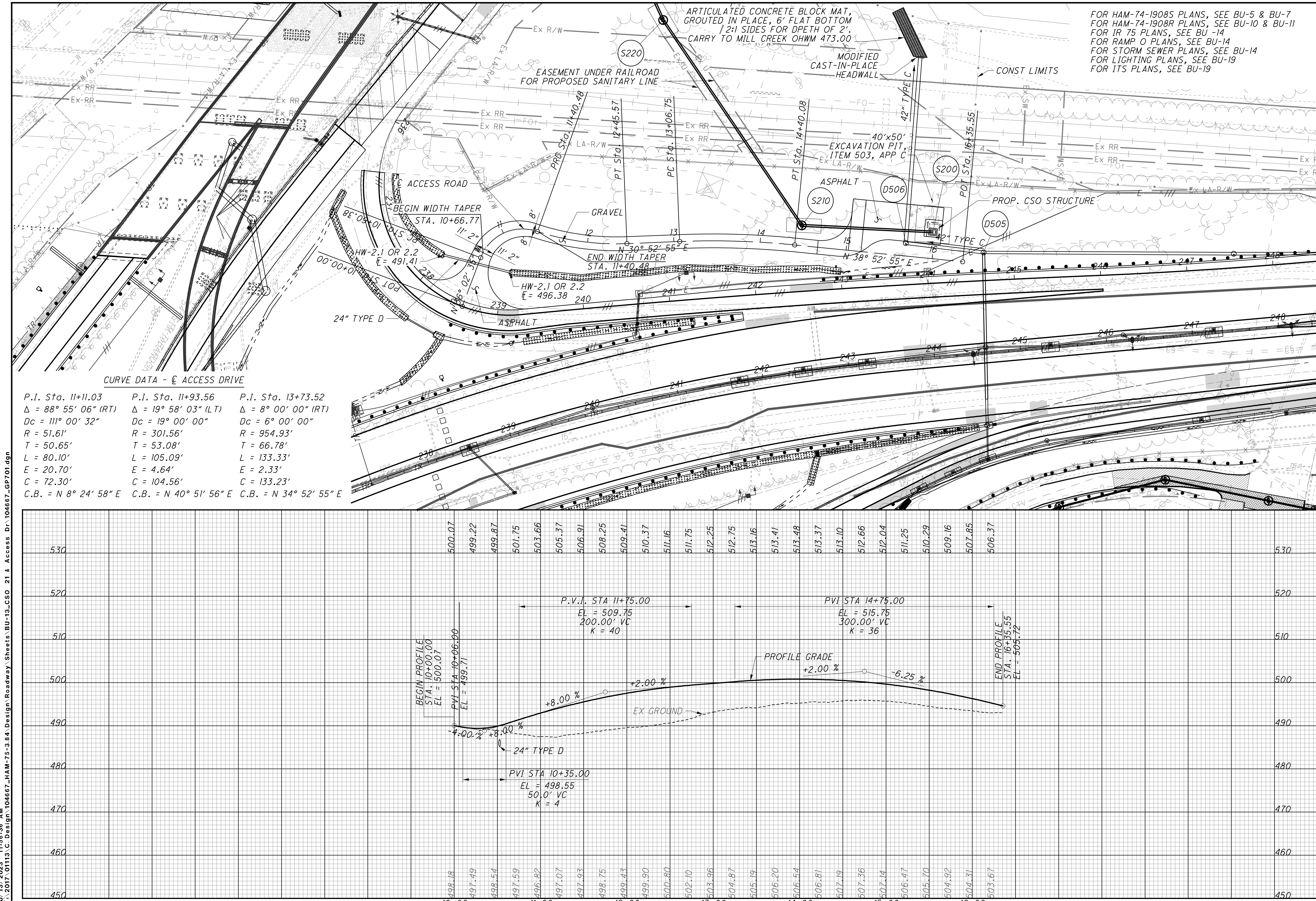
FOR HAM-74-1908S PLANS, SEE BU-5 & BU-7
FOR HAM-74-1908R PLANS, SEE BU-10 & BU-11
FOR IR 75 PLANS, SEE BU -14
FOR RAMP O PLANS, SEE BU-14
FOR STORM SEWER PLANS, SEE BU-14
FOR LIGHTING PLANS, SEE BU-19
FOR ITS PLANS, SEE BU-19



CURVE DATA - ℄ ACCESS DRIVE

P.I. Sta. 11+11.03	P.I. Sta. 11+93.56	P.I. Sta. 13+73.52
Δ = 88° 55' 06" (RT)	Δ = 19° 58' 03" (LT)	Δ = 8° 00' 00" (RT)
Dc = 111° 00' 32"	Dc = 19° 00' 00"	Dc = 6° 00' 00"
R = 51.61'	R = 301.56'	R = 954.93'
T = 50.65'	T = 53.08'	T = 66.78'
L = 80.10'	L = 105.09'	L = 133.33'
E = 20.70'	E = 4.64'	E = 2.33'
C = 72.30'	C = 104.56'	C = 133.23'
C.B. = N 8° 24' 58" E	C.B. = N 40° 51' 56" E	C.B. = N 34° 52' 55" E

HORIZONTAL SCALE IN FEET 0 25 50 100

CALCULATED LZS CHECKED JS

PLAN AND PROFILE ACCESS ROAD

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SEEDING	
END WIDTH	SQ. YDS.

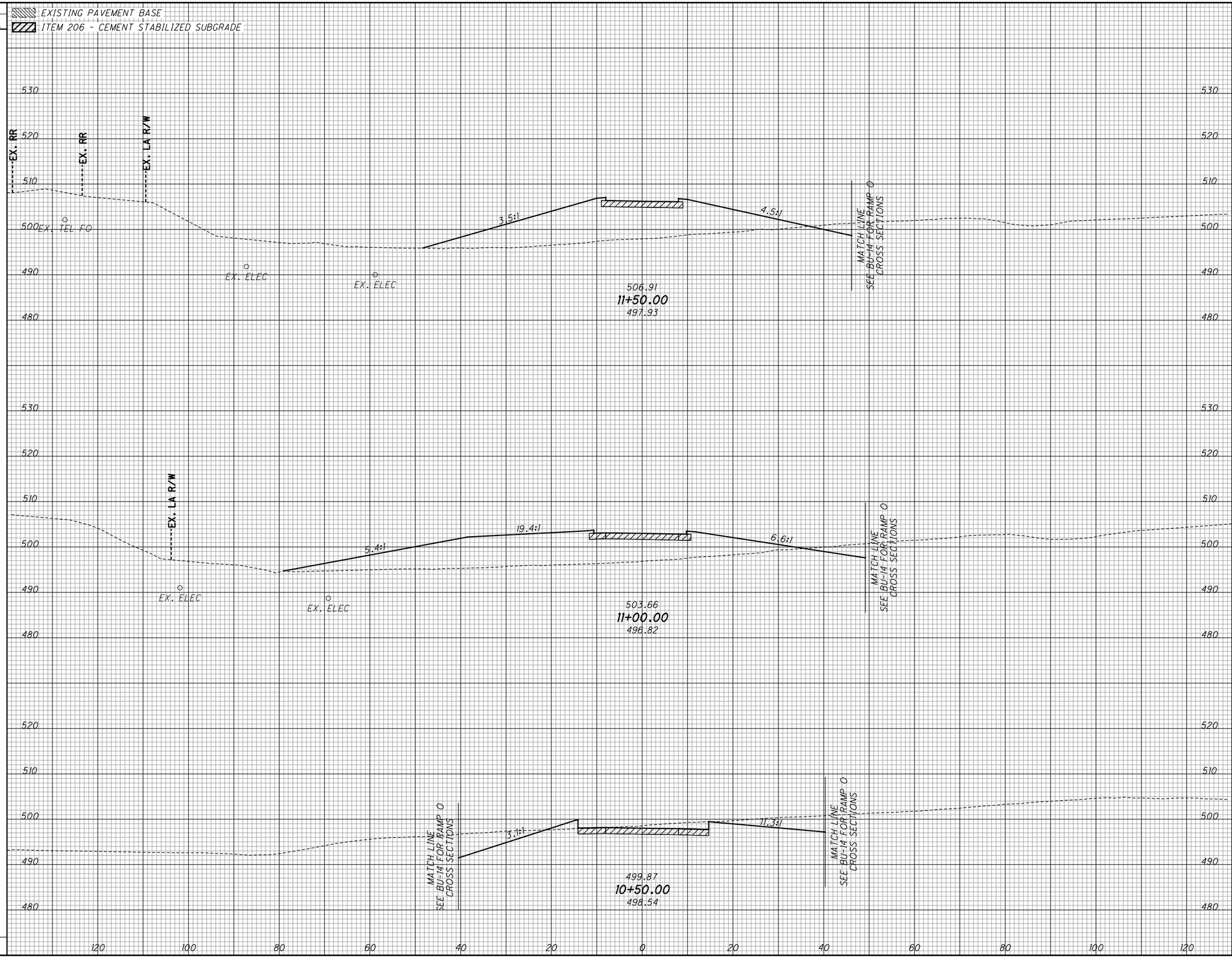
EXISTING PAVEMENT BASE

ITEM 206 - CEMENT STABILIZED SUBGRADE

END AREA		VOLUME	
CUT	FILL	CUT	FILL

CALCULATED LZS

CHECKED JS



CROSS SECTIONS - ACCESS ROAD
STA. 10+50 TO STA. 11+50

HAM-75-3.84

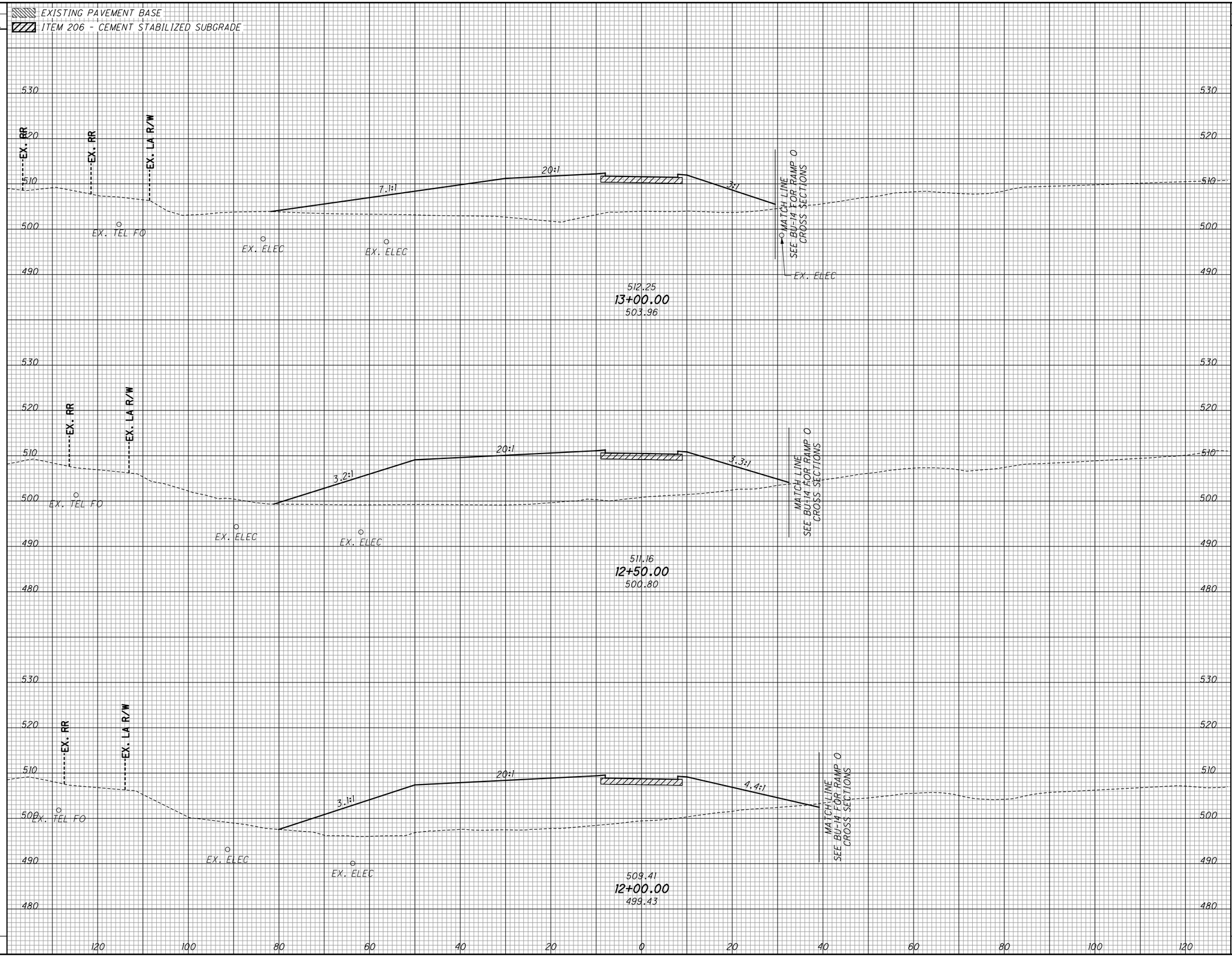
SEEDING	
END WIDTH	SQ. YDS.

EXISTING PAVEMENT BASE
ITEM 206 - CEMENT STABILIZED SUBGRADE

END AREA	
CUT	FILL

VOLUME	
CUT	FILL

CALCULATED LZS
CHECKED JS



CROSS SECTIONS - ACCESS ROAD
STA. 12+00 TO STA. 13+00

HAM-75-3.84

SEEDING	
END WIDTH	SQ. YDS.

EXISTING PAVEMENT BASE

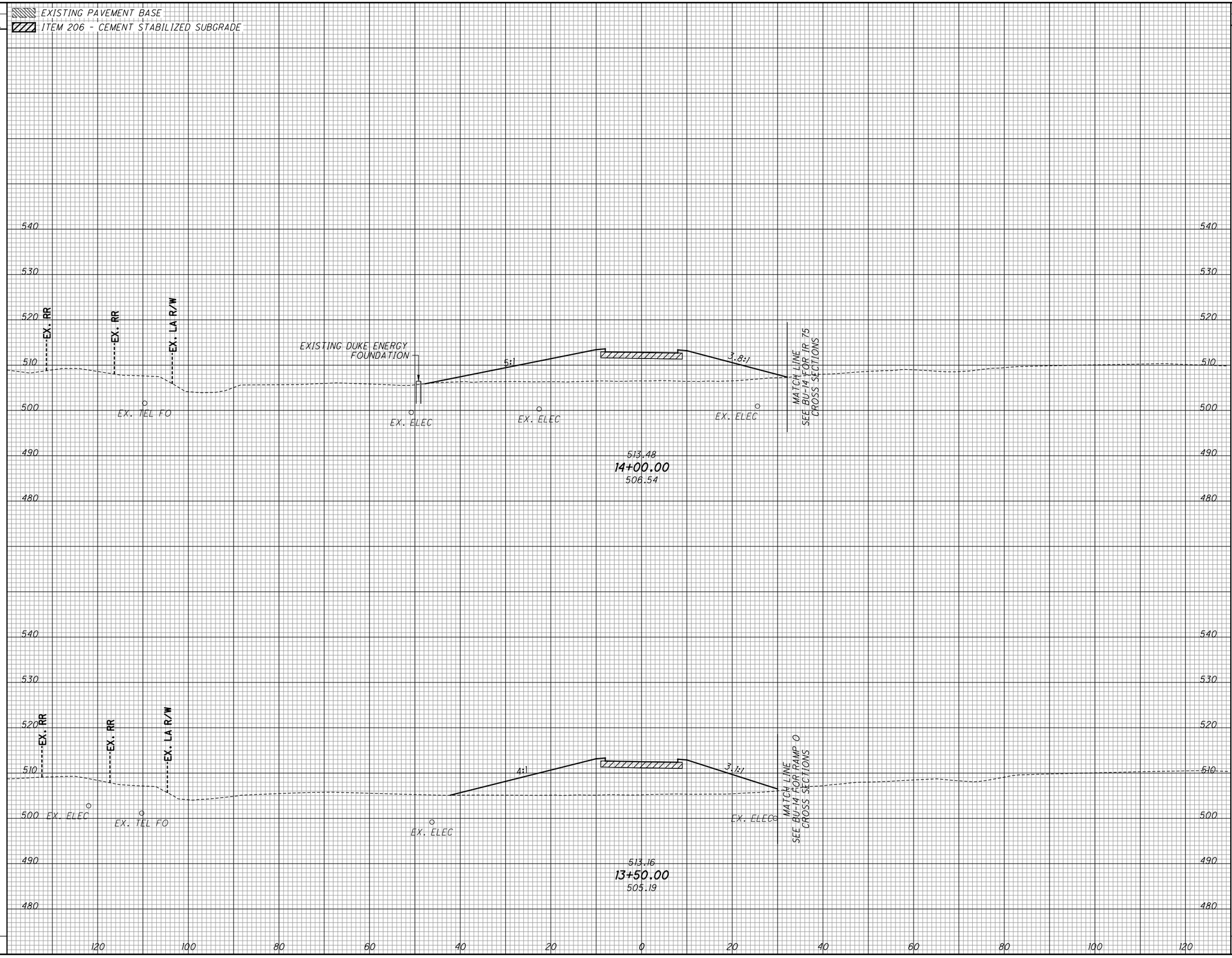
ITEM 206 - CEMENT STABILIZED SUBGRADE

END AREA	
CUT	FILL

VOLUME	
CUT	FILL

CALCULATED LZS

CHECKED JS



CROSS SECTIONS - ACCESS ROAD
STA. 13+50 TO STA. 14+00

HAM-75-3.84

SEEDING	
END WIDTH	SQ. YDS.

EXISTING PAVEMENT BASE

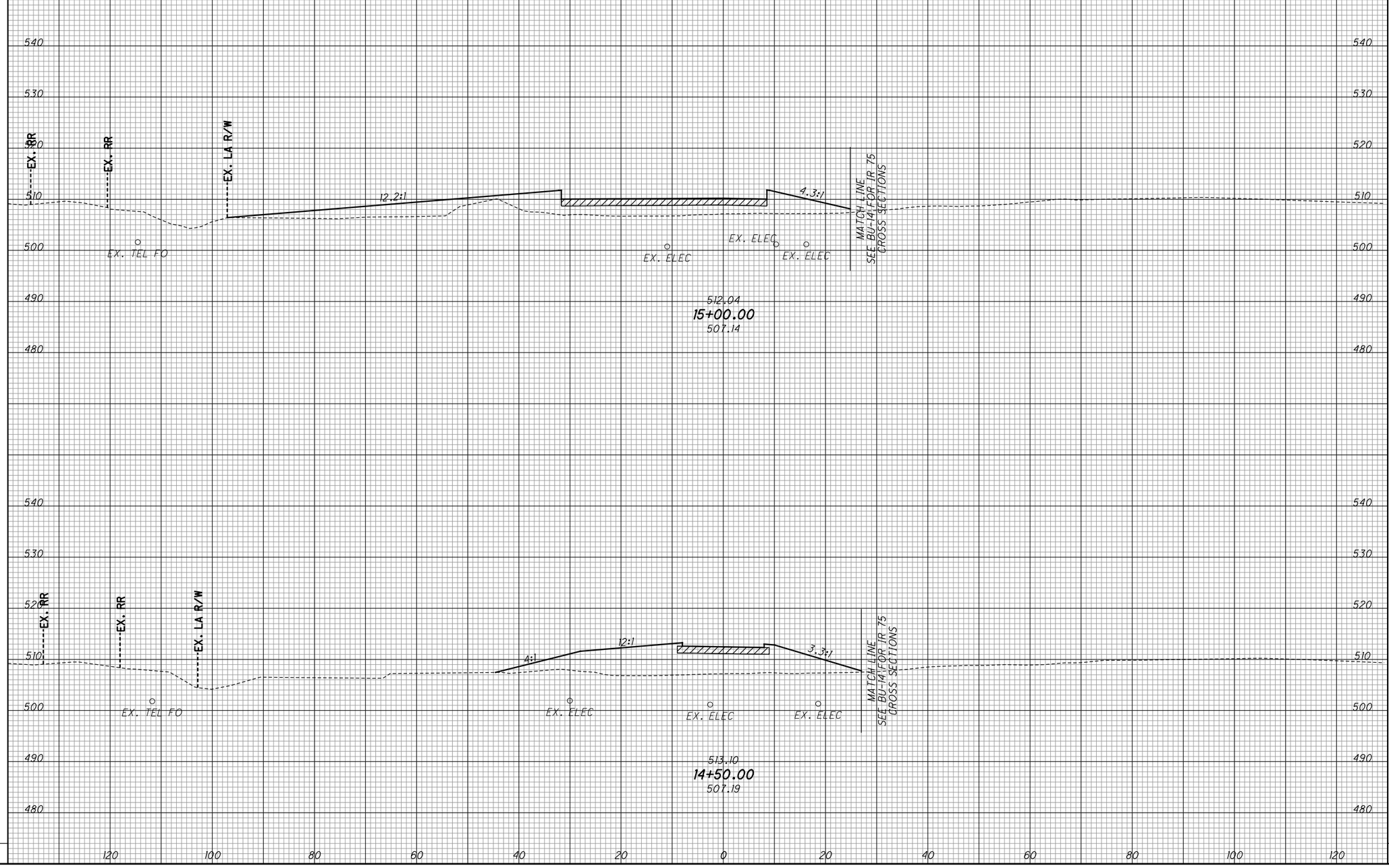
ITEM 206 - CEMENT STABILIZED SUBGRADE

END AREA	
CUT	FILL

VOLUME	
CUT	FILL

CALCULATED LZS

CHECKED JS



CROSS SECTIONS - ACCESS ROAD
STA. 14+50 TO STA. 15+00

HAM-75-3.84

SEEDING	
END WIDTH	SQ. YDS.

EXISTING PAVEMENT BASE

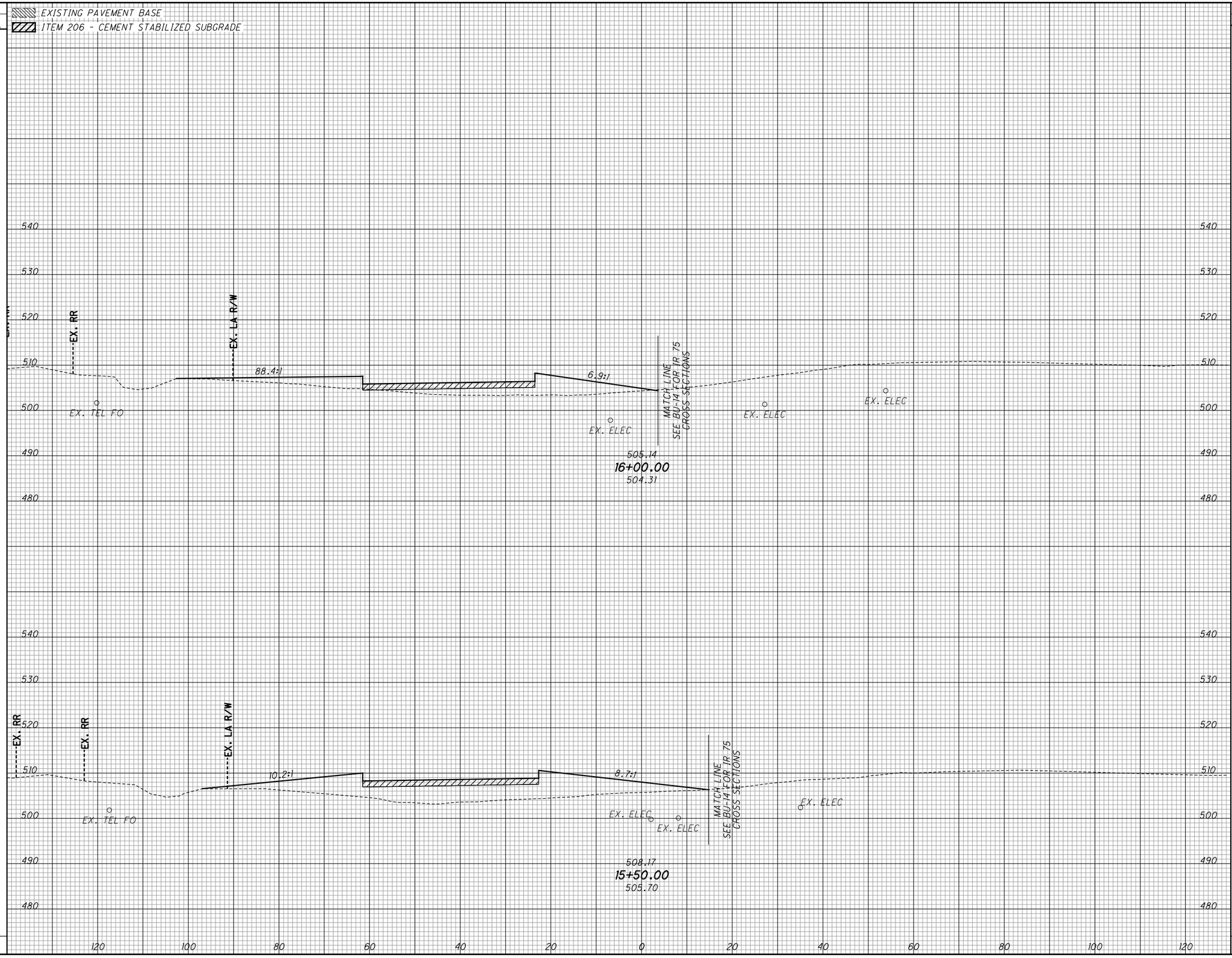
ITEM 206 - CEMENT STABILIZED SUBGRADE

END AREA	
CUT	FILL

VOLUME	
CUT	FILL

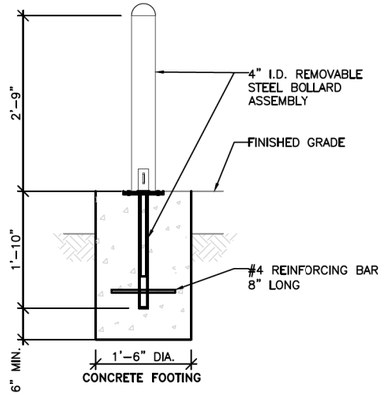
CALCULATED LZS

CHECKED JS



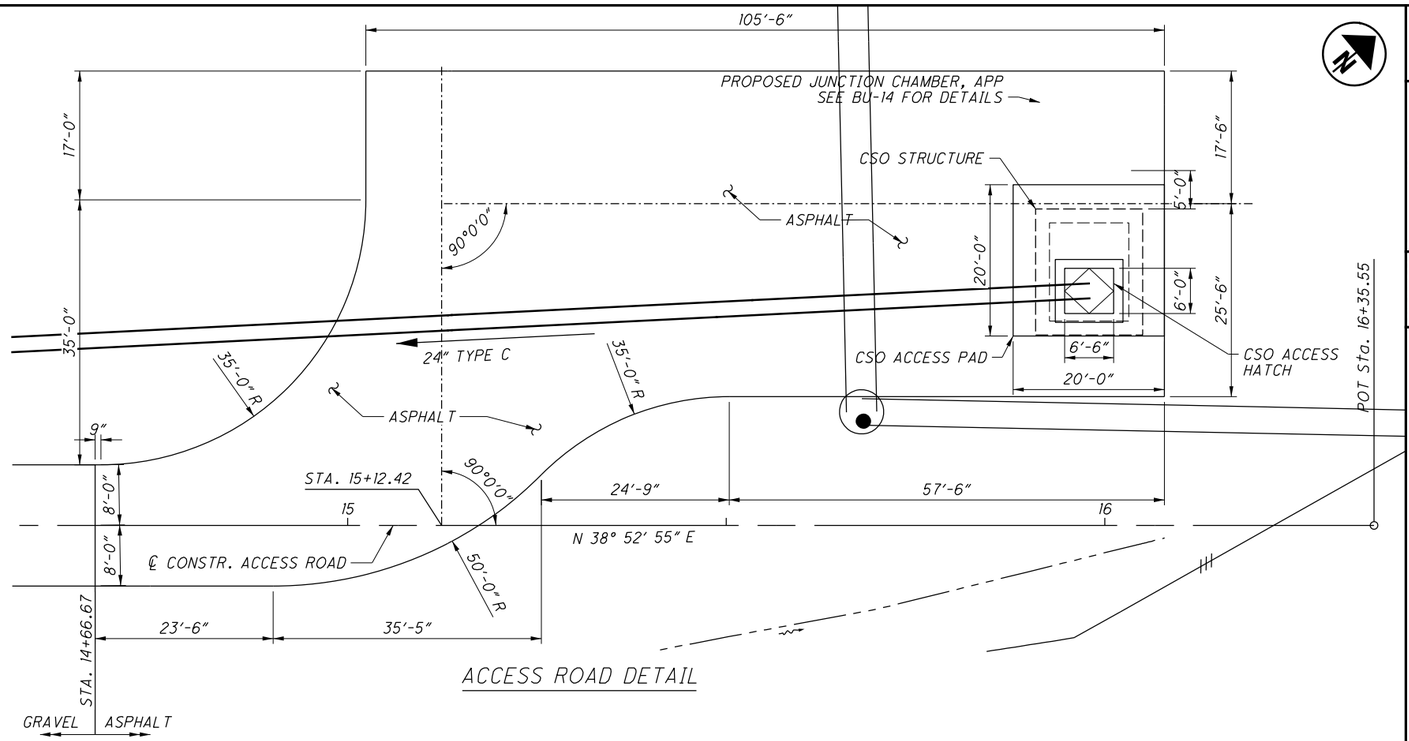
CROSS SECTIONS - ACCESS ROAD STA. 15+50 TO STA. 16+00

HAM-75-3.84

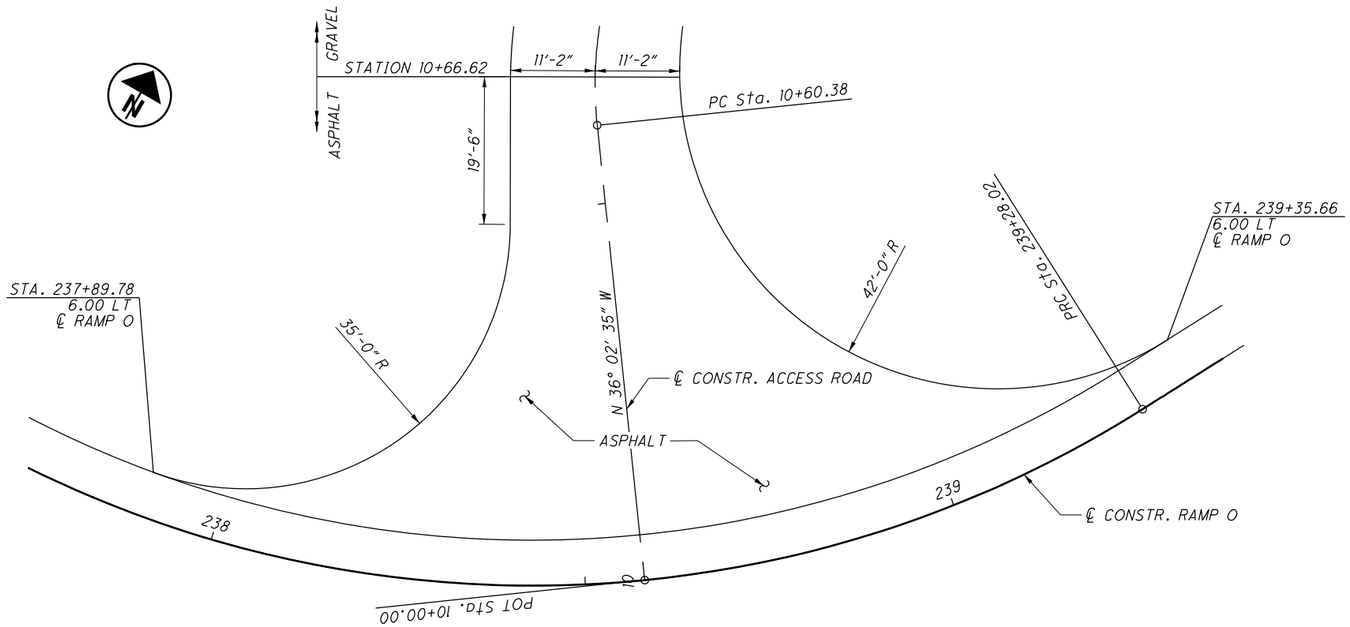


ITEM 690 SPECIAL BOLLARD, AS PER PLAN,
BASIS OF DESIGN:
POST GUARD
MODEL NO. RMB436Y EMB4X12
REMOVABLE STEEL BOLLARD

REMOVABLE BOLLARD DETAIL
NO SCALE

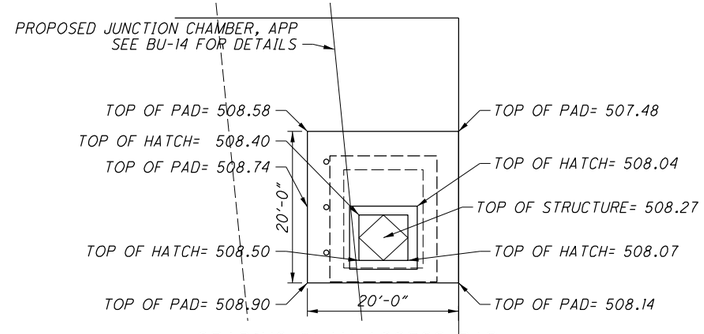


ACCESS ROAD DETAIL



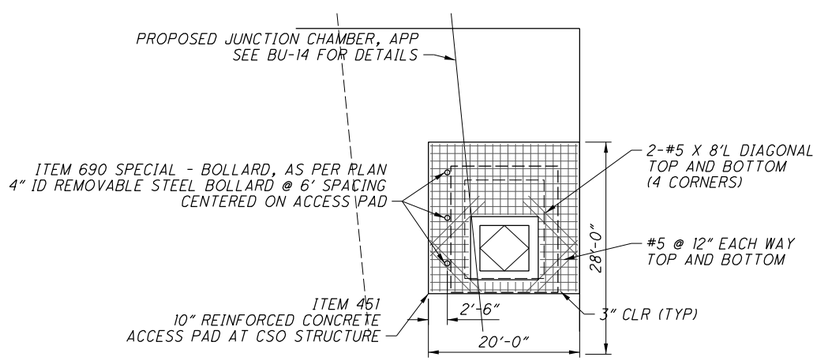
ACCESS ROAD DETAIL

DRIVE APRON



GRADING PLAN ACCESS PAD

CSO STRUCTURE ACCESS



LAYOUT PLAN ACCESS PAD

CSO STRUCTURE ACCESS

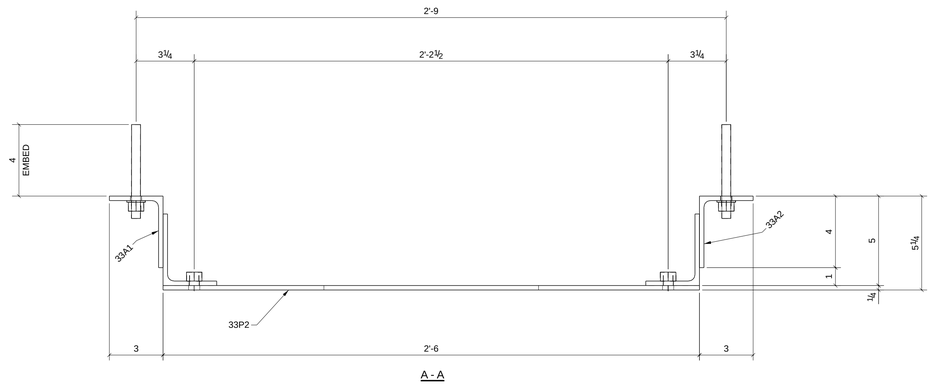
HORIZONTAL SCALE IN FEET
0 5 10 20

CALCULATED CML
CHECKED JS

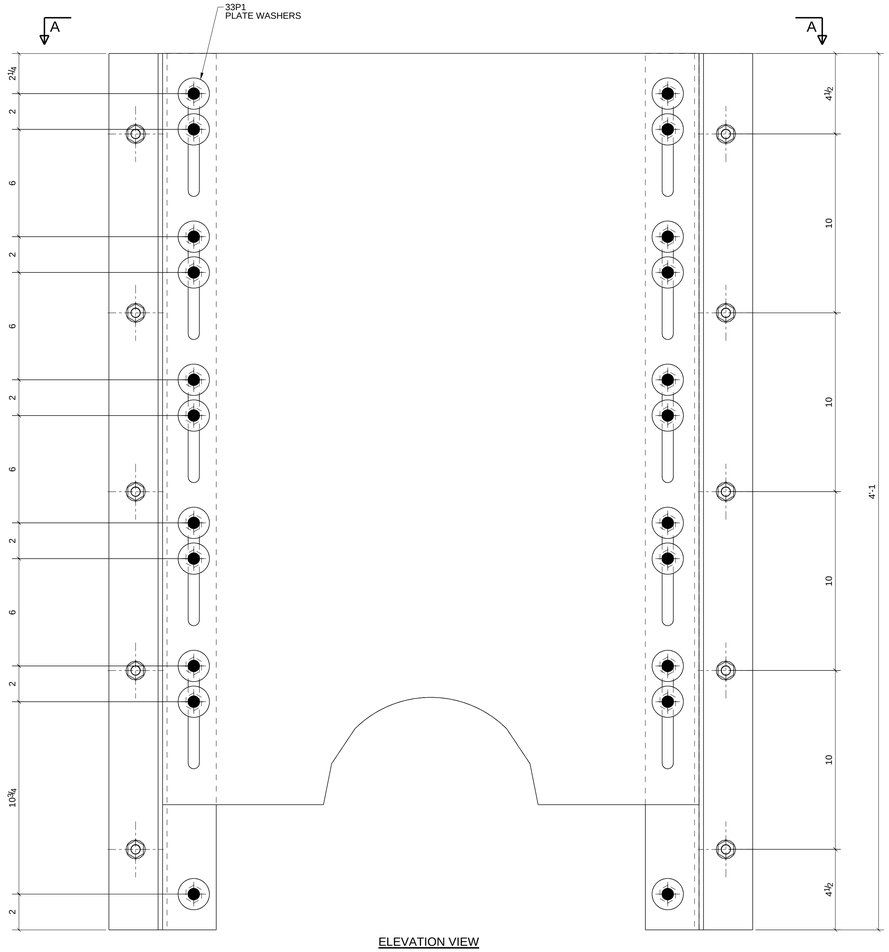
DETAILS
ACCESS ROAD

HAM-75-3.84

22
22



A - A



ELEVATION VIEW

WALSH
1260 E Summit St.
Crown Point, IN 46307
(219) 661-2450

By: JDH Date: 28-Apr-20

Walsh Construction Company II, LLC certifies that we have reviewed this submittal, verified field conditions, and found it in compliance with the Contract Documents

REV	DESCRIPTION	DATE

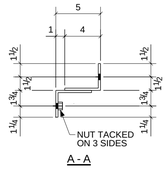
J. R. HOE AND SONS

101 IRONWOOD ROAD
MIDDLESBORO, KY

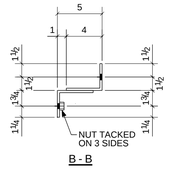
DESCRIPTION	ELEVATION VIEW				
PROJECT NAME	MILL CREEK				
DRAWN BY	JKB	CHECKED BY		JOB No.	DRG No.
DATE DRAWN	02/28/2020			N/A	E1

BILL OF MATERIAL

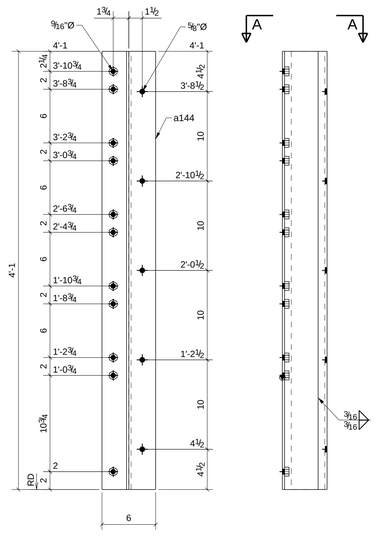
MARK	QTY	DESCRIPTION	LENGTH	WEIGHT	REMARKS
33A1	1	ANGLE			
33A1	1	L4X3X1/4	4'-1"	23	316 S.S.
a144	1	L4X3X1/4	4'-1"	23	316 S.S.
	11	1/2_HEAVY_HEX_NUT		1	
33A2	1	ANGLE			
33A2	1	L4X3X1/4	4'-1"	23	316 S.S.
a144	1	L4X3X1/4	4'-1"	23	316 S.S.
	11	1/2_HEAVY_HEX_NUT		1	
33P1	22	PLATE WASHERS			
33P1	22	FL1/8"X1 3/4"	0'-1 3/4"	2	316 S.S.
33P2	1	PLATE			
33P2	1	PL1/4"X30"	3'-6"	83	316 S.S.
		TOTAL WEIGHT THIS DRAWING		179	



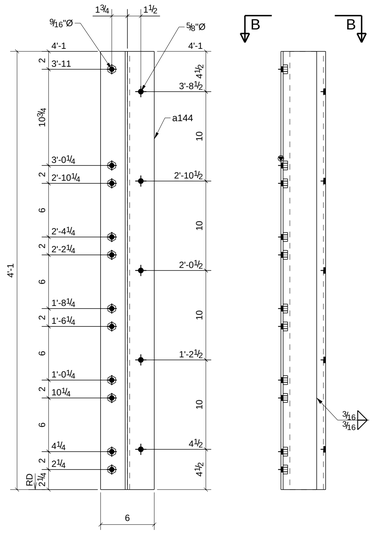
A - A



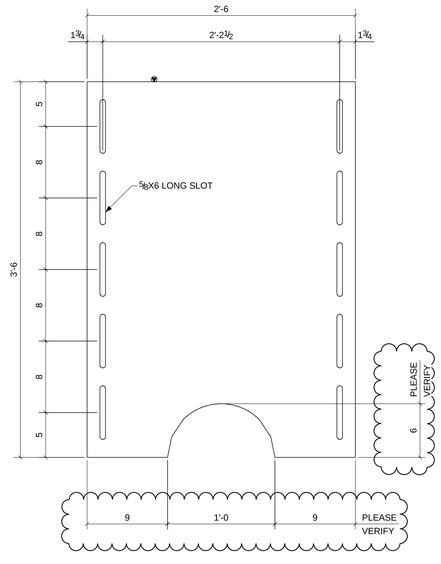
B - B



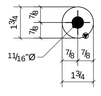
1 ~ ANGLE ~ 33A1



1 ~ ANGLE ~ 33A2



1 ~ PLATE ~ 33P2



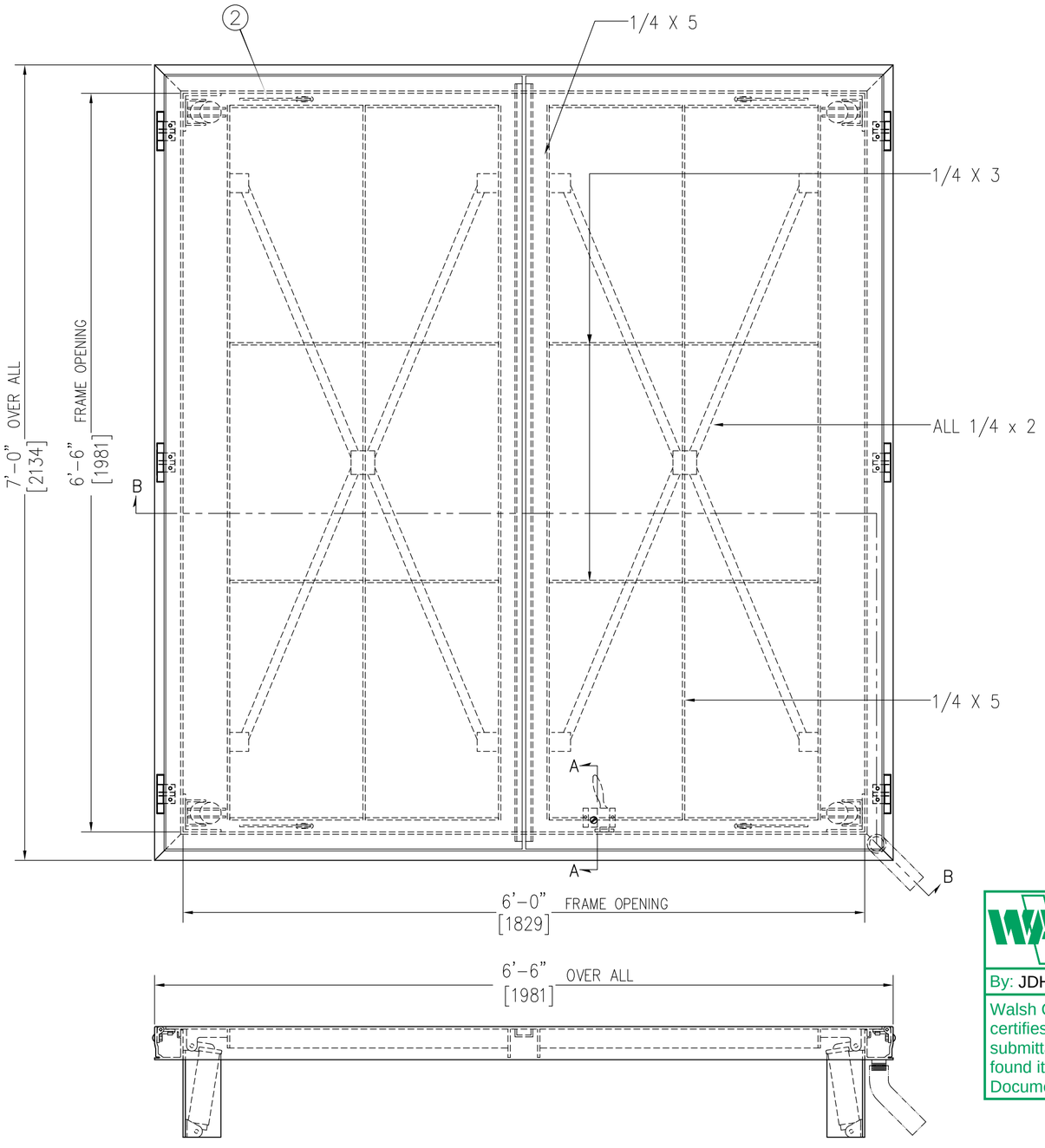
22 ~ PLATE WASHER ~ 33P1

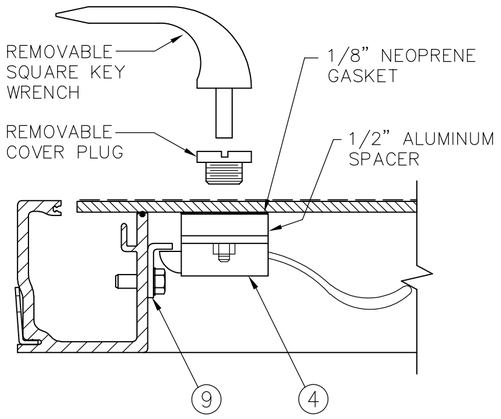
REV	DESCRIPTION	DATE

J. R. HOE AND SONS

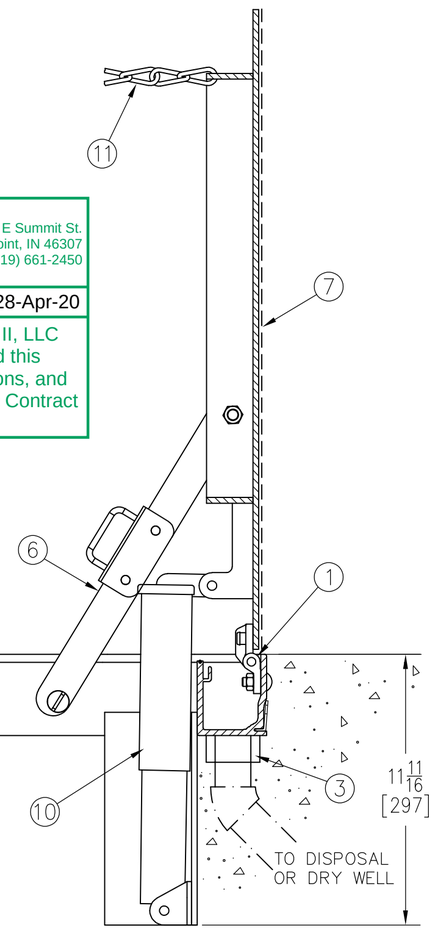
101 IRONWOOD ROAD
MIDDLESBORO, KY

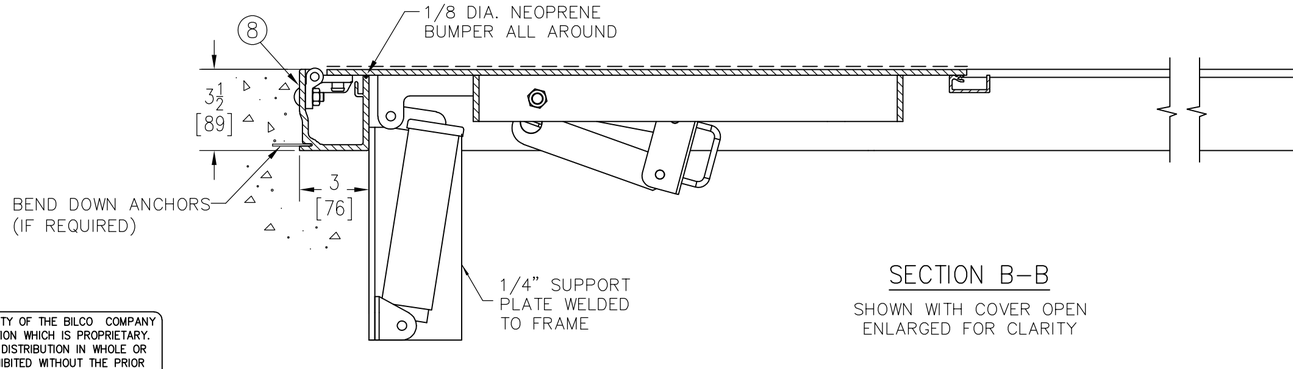
DESCRIPTION	316 SS ORIFICE PLATE W/ ANGLES				
PROJECT NAME	MILL CREEK				
DRAWN BY	JKB	CHECKED BY		JOB No.	DRG No.
DATE DRAWN	02/28/2020			N/A	33





SECTION A–A
STANDARD SLAM LOCK





SECTION B–B
SHOWN WITH COVER OPEN
ENLARGED FOR CLARITY

SPRINGS 1 @ 300 & 1 @ 400

Sym.	Revision	Date	By
A	New Release		

SPECIFICATIONS:

1. Bilco heavy duty forged stainless steel hinges with stainless steel pins
2. Guide Arm
3. 1–1/2" drain coupling
4. Standard slam lock
5.
6. Bilco automatic lock open arm
7. 1/4" aluminum diamond pattern plate cover
8. Bilco 1/4" aluminum channel frame with recessed anchors
9. Stainless steel lock strike
10. Stainless steel spring lifting mechanism
11. Heavy duty check chain

INSTALLER NOTES:

A. Use caution. Cover is spring loaded. Do not remove safety shipping bolt until unit is to be installed and in normal horizontal operating position.
B. Be sure unit is set on slight pitch toward drain corner.
C. Before anchoring in place open and close door. Check to see that the door in the closed position rests on the frame all around. If not, shim under the frame at the proper corner.
D. Do not reduce 1 1/2" drain pipe to dry well or disposal system.
E. Bend down anchors if required

(1) UNIT(S) REQUIRED AS SHOWN (Aluminum Weldment)
COVER REINF. FOR 300 Lbs. PER Sq. Ft.

SHOP FINISH:
COVER: MILL FINISH
FRAME: MILL FINISH
HARDWARE: STAINLESS STEEL TYPE 316 (UNLESS OTHERWISE SPECIFIED)

WALSH
1260 E Summit St.
Crown Point, IN 46307
(219) 661-2450

By: JDH Date: 28-Apr-20

Walsh Construction Company II, LLC certifies that we have reviewed this submittal, verified field conditions, and found it in compliance with the Contract Documents

Customer: WALSH CONSTRUCTION CO OF ILL
1260 E SUMMIT ST
CROWN POINT IN 46307

P.O. N° 218093

Job:

Builder:

Architect:

Engineer:

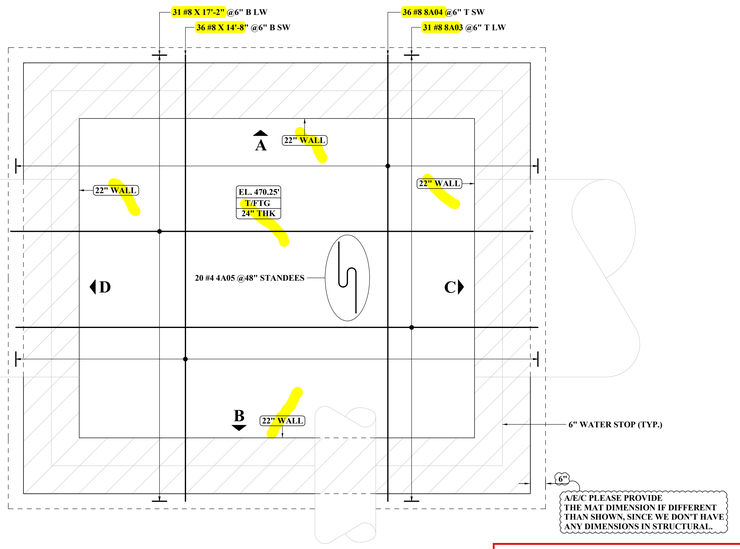
Sales Rep: SPOHN ASSOCIATES INC.
3935 NORTH MERIDIAN STREET
INDIANAPOLIS IN 46208

Manufacturers of Doors for Special Services
Bilco® THE BILCO COMPANY
New Haven, Connecticut 06505

TYPE "JD" ALUMINUM DOUBLE LEAF ACCESS DOOR – SIZE 6'–0" x 6'–6" [1829mm x 1981mm]

Drawn By	Date	Drawing No.	Rev.
JLD	3–4–20	JD–18729	A
757021	Scale DO NOT SCALE		

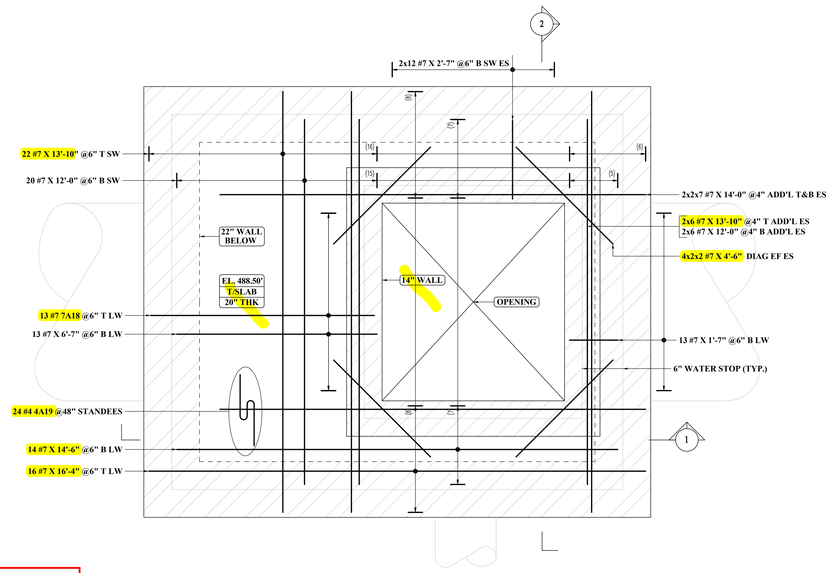
JD–N_SS 11–01–14 PLOT2



A/E/C PLEASE PROVIDE
THE MAT DIMENSION IF DIFFERENT
THAN SHOWN, SINCE WE DON'T HAVE
ANY DIMENSIONS IN STRUCTURAL.

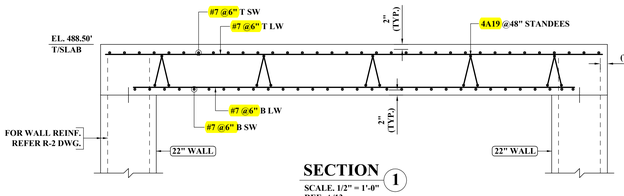
BOTTOM MAT REINFORCEMENT DETAILS

SCALE. 1/2" = 1'-0"
REF:S0.1 & S5.1



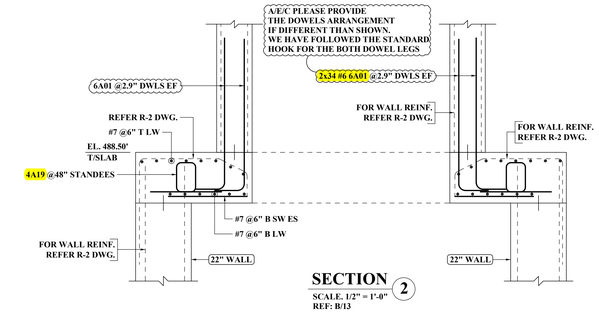
TOP SLAB REINFORCEMENT DETAILS

SCALE. 1/2" = 1'-0"
REF:S0.1 & S5.1



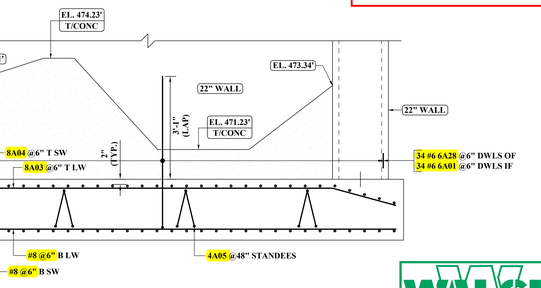
SECTION 1

SCALE. 1/2" = 1'-0"
REF: A/13



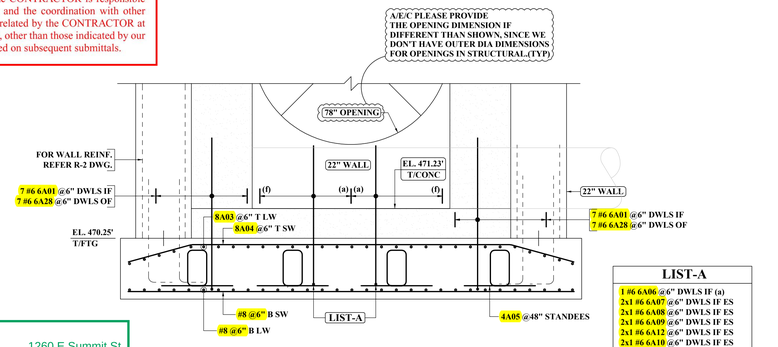
SECTION 2

SCALE. 1/2" = 1'-0"
REF: B/13



ELEVATION A

REF:A&B/12
SCALE. 1/2" = 1'-0"



ELEVATION C

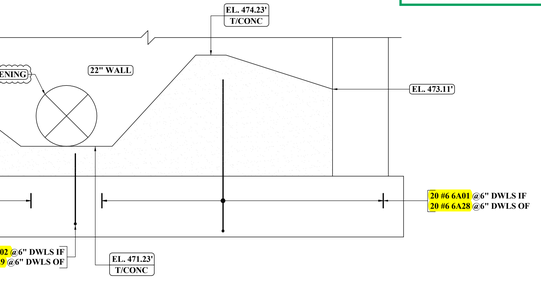
REF:A&B/12
SCALE. 1/2" = 1'-0"

LIST-A

1 #6 6A06 @6" DWLS IF (a)
2x1 #6 6A31 @6" DWLS OF ES
2x1 #6 6A06 @6" DWLS IF ES
2x1 #6 6A09 @6" DWLS IF ES
2x1 #6 6A12 @6" DWLS IF ES
2x1 #6 6A18 @6" DWLS IF ES
2x1 #6 6A11 @6" DWLS IF ES (g)

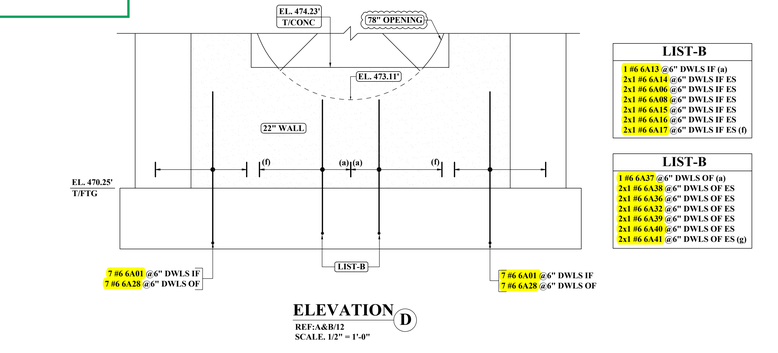
LIST-A

1 #6 6A36 @6" DWLS OF (a)
2x1 #6 6A31 @6" DWLS OF ES
2x1 #6 6A06 @6" DWLS IF ES
2x1 #6 6A32 @6" DWLS OF ES
2x1 #6 6A33 @6" DWLS OF ES
2x1 #6 6A34 @6" DWLS OF ES
2x1 #6 6A35 @6" DWLS OF ES
2x1 #6 6A30 @6" DWLS OF ES (g)



ELEVATION B

REF:A&B/12
SCALE. 1/3" = 1'-0"



ELEVATION D

REF:A&B/12
SCALE. 1/2" = 1'-0"

LIST-B

1 #6 6A13 @6" DWLS IF (a)
2x1 #6 6A14 @6" DWLS IF ES
2x1 #6 6A06 @6" DWLS IF ES
2x1 #6 6A08 @6" DWLS IF ES
2x1 #6 6A15 @6" DWLS IF ES
2x1 #6 6A16 @6" DWLS IF ES
2x1 #6 6A17 @6" DWLS IF ES (f)

LIST-B

1 #6 6A37 @6" DWLS OF (a)
2x1 #6 6A38 @6" DWLS OF ES
2x1 #6 6A36 @6" DWLS OF ES
2x1 #6 6A32 @6" DWLS OF ES
2x1 #6 6A39 @6" DWLS OF ES
2x1 #6 6A40 @6" DWLS OF ES
2x1 #6 6A41 @6" DWLS OF ES (g)

AMERICAN STRUCTUREPOINT INC.
2550 Corporate Exchange Drive, Suite 300
Columbus, Ohio 43231
TEL 614.901.2235
FAX 614.901.2236

(✓) Reviewed
( ) Reviewed as Noted
( ) Not Accepted
( ) Revise and Resubmit

By: SJF Date: 04/28/20

Project No.: 2017.01113

This submittal has been reviewed for conformance with the design concept and for compliance with the contract documents only. The notes made do not relieve the CONTRACTOR from compliance with the contract documents. Design and certification of manufactured items that are not specifically designed and detailed in the contract documents are the responsibility of the registered professional engineer working for the CONTRACTOR. The CONTRACTOR is responsible for all dimensions, quantities, fabrication, fit, and the coordination with other trades. Dimensions shall be confirmed and correlated by the CONTRACTOR at the job site. Any changes made to the submittal, other than those indicated by our review, shall be clouded or otherwise highlighted on subsequent submittals.

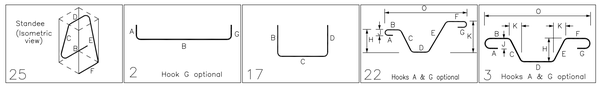
WALSH
1260 E Summit St.
Crown Point, IN 46307
(219) 661-2450

By: JDH Date: 28-Apr-20

Walsh Construction Company II, LLC certifies that we have reviewed this submittal, verified field conditions, and found it in compliance with the Contract Documents

Drawing Sheet : R-1					BENDING DETAILS													
Bar Mark	Qty	Size	Total Length	Type	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'J'	'K'	'O'	'R'
4A05	20	#4	6'-1 K"	25		1'-6"	1'-2 K"	0'-8"	1'-2 K"	1'-6"		1'-2 K"		0'-7 K"		
4A19	24	#4	5'-8 K"	25		1'-6"	1'-0 K"	0'-8"	1'-0 K"	1'-6"		1'-0"		0'-6"		
6A01	161	#6	6'-0"	2	1'-0"	5'-0"										
6A02	4	#6	5'-4"	2	1'-0"	7'-4"										
6A06	3	#6	5'-5"	2	1'-0"	4'-5"										
6A07	2	#6	5'-6"	2	1'-0"	4'-6"										
6A08	4	#6	5'-7"	2	1'-0"	4'-7"										
6A09	2	#6	5'-9"	2	1'-0"	4'-9"										
6A10	2	#6	6'-6"	2	1'-0"	5'-6"										
6A11	2	#6	7'-3"	2	1'-0"	6'-3"										
6A12	2	#6	6'-1"	2	1'-0"	5'-1"										
6A13	1	#6	5'-3"	2	1'-0"	4'-3"										
6A14	2	#6	5'-4"	2	1'-0"	4'-4"										
6A15	2	#6	5'-11"	2	1'-0"	4'-11"										
6A16	2	#6	6'-4"	2	1'-0"	5'-4"										
6A17	2	#6	7'-1"	2	1'-0"	6'-1"										
6A28	93	#6	6'-1"	17		5'-1"	5'-0"									
6A29	4	#6	5'-5"	17		7'-4"	5'-1"									
6A30	2	#6	9'-4"	17		5'-1"	6'-3"									
6A31	2	#6	7'-7"	17		5'-1"	4'-6"									
6A32	4	#6	7'-8"	17		5'-1"	4'-7"									
6A33	2	#6	7'-10"	17		5'-1"	4'-9"									
6A34	2	#6	8'-2"	17		5'-1"	5'-1"									
6A35	2	#6	8'-7"	17		5'-1"	5'-6"									
6A36	3	#6	7'-6"	17		5'-1"	4'-5"									
6A37	1	#6	7'-4"	17		5'-1"	4'-3"									
6A38	2	#6	7'-5"	17		5'-1"	4'-4"									
6A39	2	#6	8'-0"	17		5'-1"	4'-11"									
6A40	2	#6	8'-5"	17		5'-1"	5'-4"									
6A41	2	#6	9'-2"	17		5'-1"	6'-1"									
7A18	13	#7	8'-3 K"	27		0'-8 K"	1'-1"	6'-6"				0'-8 K"		2'-7 K"	7'-2 K"	
8A03	31	#8	17'-3 K"	3		2'-1 K"	13'-0"	2'-1 K"				0'-7 K"		2'-0 K"	17'-1 K"	
8A04	36	#8	14'-9 K"	3		2'-1 K"	10'-6"	2'-1 K"				0'-7 K"		2'-0 K"	14'-7 K"	

Bar list produced by RebarCAD 2018



ALL BARS IN THIS DRAWING
ASTM A615 GRADE 60
BLACK UNCOATED

LAP SCHEDULE

SIZE	4000 PSI	
	TOP	OTHERS
#3	24"	18"
#4	32"	25"
#5	40"	31"
#6	48"	37"
#7	70"	54"
#8	80"	62"
#9	90"	70"
#10	102"	78"

THIS DRAWING TO BE USED FOR REBAR PLACEMENT ONLY

FOR WALL REINF. SEE DWG NO. R-2

COVER DETAILS

MAT TOP	2"
MAT SIDES	2"
MAT BOTTOM	3"
SLAB TOP	2"
SLAB SIDES	2"
SLAB BOTTOM	2"

ABBREVIATIONS

REFERENCE	REF
BOTTOM	B , BOT
TOP	T
SHORT WAY	SW
LONG WAY	LW
EXISTING	EXT
TYPICAL	TYP
EACH SIDE	ES
REINFORCEMENT	REINF
DRAWING	DWG
TOP OF FOOTING	T/FTG
TOP OF CONCRETE	T/CONC
TOP OF SLAB	T/SLAB
THICKNESS	THK.

1. REINFORCING STEEL PLACING PLAN & DETAILS ONLY.
2. THIS DRAWING IS TO BE USED IN CONJUNCTION WITH THE CONTRACT DOCUMENTS.
3. ANY ELEVATIONS OR DIMENSIONS SHOWN ON THIS DRAWING ARE FOR DETAILING PURPOSES.
4. ELEVATIONS OR DIMENSIONS SHOWN ON THIS DRAWING SHALL NOT BE USED FOR CONSTRUCTION.
5. DIMENSIONS NOT SHOWN ON THE CONTRACT DOCUMENTS HAVE BEEN SCALED.

THIS DRAWING TO BE USED FOR REBAR PLACEMENT ONLY.

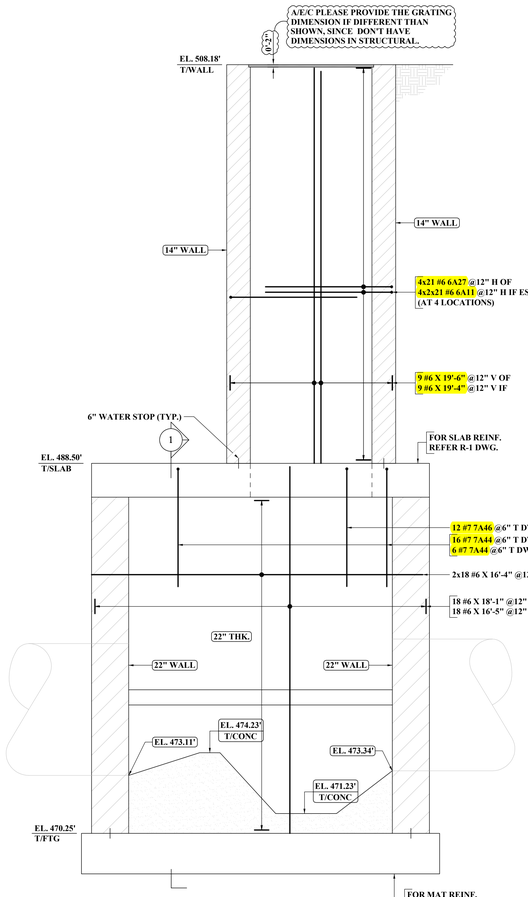
REINFORCING STEEL IS UNCOATED ASTM A615 GRADE 60 UNLESS NOTED OTHERWISE.

Circle City Rebar LLC
"Reinforcing The Future"
4002 Industrial Blvd.
Indianapolis, IN 46254
Phone 317-917-8566
Fax 317-917-8129

TITLE	BOTTOM MAT & TOP MAT REINFORCEMENT DETAILS
ARCHITECT/ ENGINEER	AMERICAN STRUCTURE POINT INC.
PROJECT	BU-13
LOCATION	HAMILTON COUNTY CITY OF CINCINNATI
CUSTOMER	WALSH CONSTRUCTION COMPANY
DRAWN BY PRO	CHECKED BY PRO
DATE	04/13/2020
JOB #	CCR4991
DWG #	R-1

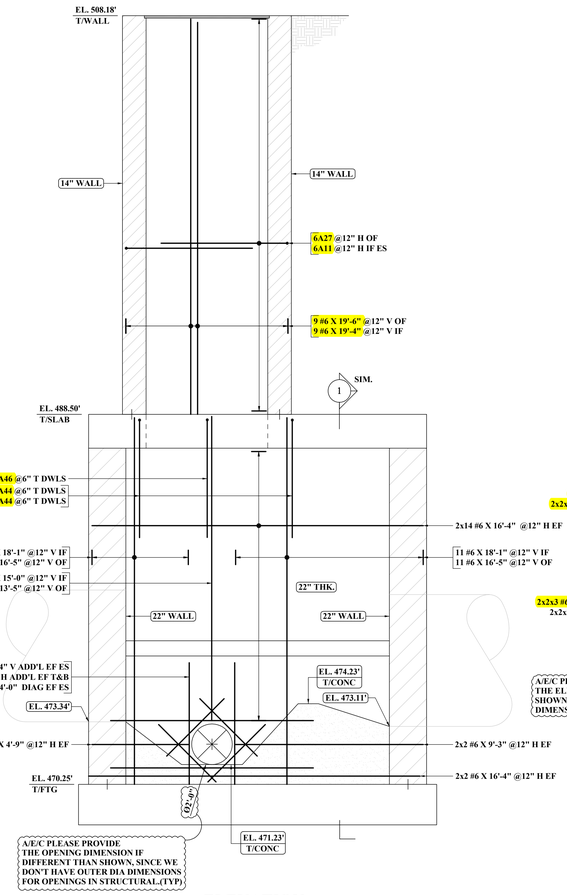
FOR APPROVAL

REV	REVISION DESCRIPTION	DATE
0	APPROVAL	04/13/2020



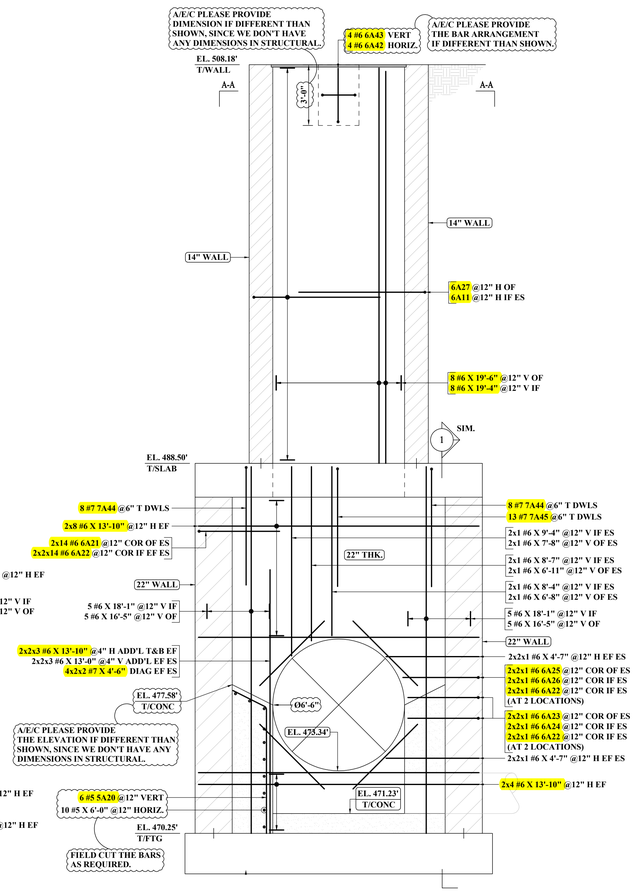
ELEVATION A

REF:A&B/12
SCALE. 1/3" = 1'-0"



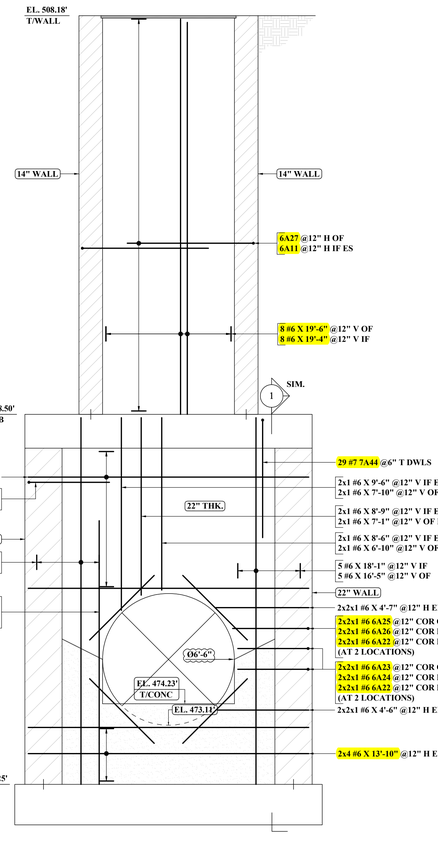
ELEVATION B

REF:A&B/12
SCALE. 1/3" = 1'-0"



ELEVATION C

REF:A&B/12
SCALE. 1/3" = 1'-0"

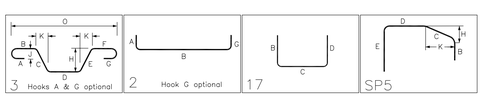


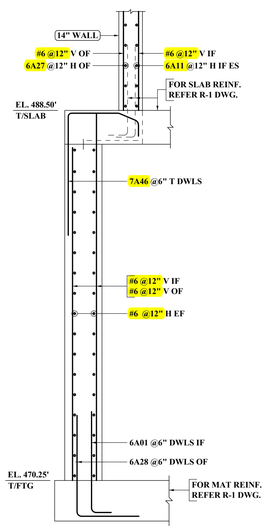
ELEVATION D

REF:A&B/12
SCALE. 1/3" = 1'-0"

Drawing Sheet : R-2					BENDING DETAILS												
Bar Mark	Qty	Size	Total Length	Type	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'J'	'K'	'X'	'O'	'R'
5A20	61	#5	8'-1"	3		6'-2 X"	1'-10 X"						1'-8 X"		0'-9 X"	7'-0"	
6A11	160	#6	7'-3"	2	1'-0"	6'-3"											
6A21	56	#6	5'-0"	17		4'-0"	4'-0"										
6A22	128	#6	5'-0"	2	1'-0"	4'-0"											
6A23	8	#6	7'-6"	17		5'-6"	4'-0"										
6A24	8	#6	4'-6"	2	1'-0"	3'-6"											
6A25	8	#6	7'-9"	17		5'-9"	4'-0"										
6A26	8	#6	4'-9"	2	1'-0"	3'-9"											
6A27	84	#6	12'-4"	17		6'-3"	6'-3"										
6A42	4	#6	4'-8"	17		1'-6"	1'-8"	1'-6"									
6A43	4	#6	4'-2"	17		1'-6"	2'-8"										
7A44	69	#7	12'-0"	17		5'-10"	6'-2"										
7A45	13	#7	6'-8"	SP5		(0'-9")	1'-1"	1'-8"	6"-2"				0'-5 X"		1'-0"		
7A46	24	#7	10'-6"	SP5		(0'-9")	1'-1"	2'-6"	6"-2"				0'-5 X"		1'-0"		

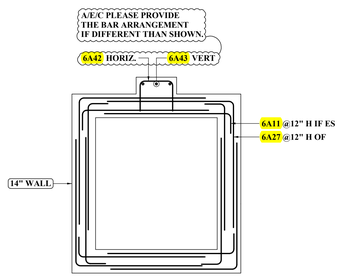
Bar list produced by RebarCAD 2018





SECTION 1

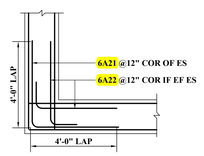
SCALE. 1/3" = 1'-0"
REF: B/13



(HORIZONTAL BAR ARRANGEMENT)

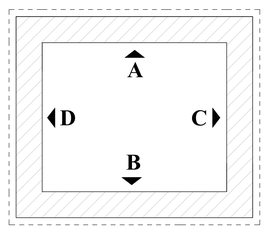
PLAN VIEW OF A-A

SCALE. 1/3" = 1'-0"



TYPICAL ADD'L CORNER DETAILS

SCALE. 1/2" = 1'-0"
REF : 14



KEYPLAN

NTS

COVER DETAILS

MAT TOP	2"
MAT SIDES	2"
MAT BOTTOM	3"
SLAB TOP	2"
SLAB SIDES	2"
SLAB BOTTOM	2"

ABBREVIATIONS

REFERENCE	REF
BOTTOM	B , BOT
TOP	T
VERTICAL	V, VERT
HORIZONTAL	H, HORIZ
INNER FACE	IF
OUTER FACE	OF
EACH FACE	EF
EACH SIDE	ES
DRAWING	DWG
TOP OF FOOTING	T/FTG
TOP OF CONCRETE	T/CONC
TOP OF SLAB	T/SLAB
THICKNESS	THK.
TYPICAL	TYP
SIMILAR	SIM
DOWELS	DWLS
ADDITIONAL	ADD'L
DIAGONAL	DIAG
CORNER	COR

ALL BARS IN THIS DRAWING
ASTM A615 GRADE 60
BLACK UNCOATED

LAP SCHEDULE

SIZE	4000 PSI	
	TOP	OTHERS
#3	24"	18"
#4	32"	25"
#5	40"	31"
#6	48"	37"
#7	70"	54"
#8	80"	62"
#9	90"	70"
#10	102"	78"

THIS DRAWING TO BE USED
FOR REBAR PLACEMENT ONLY

FOR OTHER REINF.
SEE DWG NO. R-1

1. REINFORCING STEEL PLACING PLAN & DETAILS ONLY.
2. THIS DRAWING IS TO BE USED IN CONJUNCTION WITH THE CONTRACT DOCUMENTS.
3. ANY ELEVATIONS OR DIMENSIONS SHOWN ON THIS DRAWING ARE FOR DETAILING PURPOSES.
4. ELEVATIONS OR DIMENSIONS SHOWN ON THIS DRAWING SHALL NOT BE USED FOR CONSTRUCTION.
5. DIMENSIONS NOT SHOWN ON THE CONTRACT DOCUMENTS HAVE BEEN SCALED.

THIS DRAWING TO BE USED FOR REBAR PLACEMENT ONLY.
REINFORCING STEEL IS UNCOATED ASTM A615 GRADE 60 UNLESS NOTED OTHERWISE

Circle City Rebar LLC
"Reinforcing The Future"
4092 Industrial Blvd.
Indianapolis, IN 46254
Phone 317-707-8566
Fax 317-707-8729

FOR APPROVAL

REV	REVISION DESCRIPTION	DATE
0	APPROVAL	04/13/2020

TITLE	WALL A TO D REINFORCEMENT DETAILS
ARCHITECT/ ENGINEER	AMERICAN STRUCTURE POINT INC.
PROJECT	BU-13
LOCATION	HAMILTON COUNTY CITY OF CINCINNATI
CUSTOMER	WALSH CONSTRUCTION COMPANY
DRAWN BY	PRD
CHECKED BY	PRD
DATE	04/13/2020
JOB #	CCR4991
DWG #	R-2

Circle City Rebar, LLC
4002 Industrial Blvd
Indianapolis, IN 46254
Phone: (317)917-8566 Fax: (317)917-8729

JOB NUMBER	RELEASE NUMBER	REQ. DELIVERY DATE	PAGE
CCR4991	1		1 of 3

JOB NAME	CC
CSO21 & ACCESS DRIVE	LTZ

CUSTOMER	BY
Walsh Construction	PRO

MATERIAL TYPE	REFERENCE	DRAWING ID	DESCRIPTION
Rebar, Grade 60, Black	PRO	R-1&R-2	R1&2 BOT MAT & TOP MAT & WALLS

Itm	Qty	Size	Length	Mark	Shape	Lbs	A	B	C	D	E	F/R	G	H	J	K	O	BC
1	31	8	17-04	8A03	3	1434			2-013	13-00	2-013			0-073		2-003	17-011	H
2	36	8	14-10	8A04	3	1425			2-013	10-06	2-013			0-073		2-003	14-071	H
3	31	8	17-02			1421												0
4	36	8	14-08			1410												0
	134.					5690.												
5	89	7	12-00	7A44	17	2183		5-10	6-02									H04
6	13	7	8-04	7A18	22	221			0-083	1-01	6-06			0-082		2-072	7-021	H03
7	16	7	16-04			534												0
8	14	7	14-06			415												0
9	28	7	14-00			801												0
10	34	7	13-10			961												0
11	32	7	12-00			785												0
12	24	7	10-06	7A46	SP5	515		0-09	1-01	2-06	6-02			0-051		1-00		L
13	13	7	9-06	7A45	SP5	252		0-09	1-01	1-06	6-02			0-051		1-00		L
14	13	7	6-07			175												0
15	48	7	4-06			442												0
16	24	7	2-07			127												0
17	13	7	1-07			42												0
	361.					7453.												
18	84	6	12-06	6A27	17	1577		6-03	6-03									H04
19	2	6	9-04	6A30	17	28		3-01	6-03									H04
20	2	6	9-02	6A41	17	28		3-01	6-01									H04
21	2	6	8-07	6A35	17	26		3-01	5-06									H04
22	2	6	8-05	6A40	17	25		3-01	5-04									H04
23	2	6	8-02	6A34	17	25		3-01	5-01									H04
24	93	6	8-01	6A28	17	1129		3-01	5-00									H04
25	2	6	8-00	6A39	17	24		3-01	4-11									H04
26	56	6	8-00	6A21	17	673		4-00	4-00									H04
27	2	6	7-10	6A33	17	24		3-01	4-09									H04
28	8	6	7-09	6A25	17	93		3-09	4-00									H04
29	4	6	7-08	6A32	17	46		3-01	4-07									H04
30	2	6	7-07	6A31	17	23		3-01	4-06									H04
31	3	6	7-06	6A36	17	34		3-01	4-05									H04
32	8	6	7-06	6A23	17	90		3-06	4-00									H04
33	2	6	7-05	6A38	17	22		3-01	4-04									H04
34	1	6	7-04	6A37	17	11		3-01	4-03									H04
35	170	6	7-03	6A11	2	1851	1-00	6-03										H04
36	2	6	7-01	6A17	2	21	1-00	6-01										H04
37	2	6	6-06	6A10	2	20	1-00	5-06										H04
38	2	6	6-04	6A16	2	19	1-00	5-04										H04
39	2	6	6-01	6A12	2	18	1-00	5-01										H04
40	161	6	6-00	6A01	2	1451	1-00	5-00										H04
41	2	6	5-11	6A15	2	18	1-00	4-11										H04
42	2	6	5-09	6A09	2	17	1-00	4-09										H04
43	4	6	5-07	6A08	2	34	1-00	4-07										H04
44	2	6	5-06	6A07	2	17	1-00	4-06										H04
45	4	6	5-05	6A29	17	33		2-04	3-01									H04

Circle City Rebar, LLC
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JOB NUMBER	RELEASE NUMBER	REQ. DELIVERY DATE	PAGE
CCR4991	1		2 of 3

JOB NAME	CC
CSO21 & ACCESS DRIVE	LTZ

CUSTOMER	BY
Walsh Construction	PRO

MATERIAL TYPE	REFERENCE	DRAWING ID	DESCRIPTION
Rebar, Grade 60, Black	PRO	R-1&R-2	R1&2 BOT MAT & TOP MAT & WALLS

Itm	Qty	Size	Length	Mark	Shape	Lbs	A	B	C	D	E	F/R	G	H	J	K	O	BC
1	3	6	5-05	6A06	2	24	1-00	4-05										H04
2	2	6	5-04	6A14	2	16	1-00	4-04										H04
3	1	6	5-03	6A13	2	8	1-00	4-03										H04
4	128	6	5-00	6A22	2	961	1-00	4-00										H04
5	8	6	4-09	6A26	2	57	1-00	3-09										H04
6	4	6	4-08	6A42	17	28		1-06	1-08	1-06								H07
7	8	6	4-06	6A24	2	54	1-00	3-06										H04
8	4	6	4-02	6A43	17	25		1-06	2-08									H04
9	4	6	3-04	6A02	2	20	1-00	2-04										H04
10	34	6	19-06			996												0
11	34	6	19-04			987												0
12	55	6	18-01			1494												0
13	55	6	16-05			1356												0
14	68	6	16-04			1668												0
15	2	6	15-00			45												0
16	72	6	13-10			1496												0
17	2	6	13-05			40												0
18	24	6	13-00			469												0
19	8	6	10-00			120												0
20	2	6	9-06			29												0
21	2	6	9-04			28												0
22	4	6	9-03			56												0
23	2	6	8-09			26												0
24	2	6	8-07			26												0
25	2	6	8-06			26												0
26	2	6	8-04			25												0
27	2	6	7-10			24												0
28	2	6	7-08			23												0
29	2	6	7-01			21												0
30	2	6	6-11			21												0
31	2	6	6-10			21												0
32	2	6	6-08			20												0
33	8	6	6-00			72												0
34	4	6	4-09			29												0
35	12	6	4-07			83												0
36	4	6	4-06			27												0
37	16	6	4-00			96												0
	1216.					17894.												
38	6	5	8-01	5A20	3	51		6-023	1-101					1-081		0-091	7-00	H01
39	10	5	6-00			63												0
	16.					114.												
40	20	4	6-01	4A05	25	81		1-06	1-023	0-08	1-023	1-06		1-022		0-071		L09
41	24	4	5-08	4A19	25	91		1-06	1-001	0-08	1-001	1-06		1-00		0-06		L09
	44.					172.												

Total Weight: 31,323 Lbs

Longest Length: 19-06

Circle City Rebar, LLC
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JOB NUMBER	RELEASE NUMBER	REQ. DELIVERY DATE	PAGE
CCR4991	1		3 of 3

JOB NAME	CC
CSO21 & ACCESS DRIVE	LTZ

CUSTOMER	BY
Walsh Construction	PRO

MATERIAL TYPE	REFERENCE	DRAWING ID	DESCRIPTION
Rebar, Grade 60, Black	PRO	R-1&R-2	R1&2 BOT MAT & TOP MAT & WALLS

Itm	Qty	Size	Length	Mark	Shape	Lbs	A	B	C	D	E	F/R	G	H	J	K	O	BC

WEIGHT SUMMARY

Rebar, Grade 60, Black

SIZE	TOTAL ITEMS	TOTAL PIECES	TOTAL LBS	STRAIGHT ITEMS	STRAIGHT PIECES	STRAIGHT LBS	LIGHT BENDING ITEMS	LIGHT BENDING PIECES	LIGHT BENDING LBS	HEAVY BENDING ITEMS	HEAVY BENDING PIECES	HEAVY BENDING LBS
4	2	44	172	0	0	0	2	44	172	0	0	0
5	2	16	114	1	10	63	0	0	0	1	6	51
6	65	1216	17,894	28	426	9,324	0	0	0	37	790	8,570
7	13	361	7,453	11	259	5,049	0	0	0	2	102	2,404
8	4	134	5,690	2	67	2,831	0	0	0	2	67	2,859
	86	1771	31,323	42	762	17,267	2	44	172	42	965	13,884

Total Weight: 31,323 Lbs

Longest Length: 19-06

A. GENERAL
1. VERIFY THE CONFIGURATION AND ELEVATION OF ALL EXISTING AND ADJACENT STRUCTURAL ELEMENTS. REPORT SAME PRIOR TO START OF EXCAVATION SUPPORT CONSTRUCTION TO SJL ENGINEERS.
2. LOCATE AND IDENTIFY ALL EXISTING UNDERGROUND AND/OR OVERHEAD SERVICES AND STRUCTURES NEAR THE EXCAVATION SUPPORT SYSTEM, PROTECT AND RELOCATE AS NECESSARY. DO NOT INSTALL SOLDIER BEAMS BEFORE ALL SERVICES AND STRUCTURES HAVE BEEN LOCATED.
3. PERFORM EXCAVATION SUPPORT CONSTRUCTION IN ACCORDANCE WITH THE CONTRACT REQUIREMENTS AND CONFIRM TO ALL APPLICABLE SAFETY REGULATIONS INCLUDING THE PROVISIONS OF FEDERAL OSHA.
4. PROVIDE PROTECTIVE BARRIER AROUND EXCAVATION THAT CONFORMS TO ALL APPLICABLE SAFETY REGULATIONS. WALSH CONSTRUCTION CO., INC. (WCC) TO PROVIDE.
5. CARE SHALL BE TAKEN DURING THE INSTALLATION OF THE EXCAVATION SUPPORT SYSTEM TO AVOID DAMAGE AND/OR UNINTENDED CONSEQUENCES WHILE WORKING ADJACENT TO EXISTING ELEMENTS. IF GROUND CONDITIONS FOR EMBEDMENT ARE DISTURBED, SJL ENGINEERS SHALL BE NOTIFIED SO A DETERMINATION CAN BE MADE IF ADDITIONAL SUPPORT IS REQUIRED.
6. LOCATION OF ALL PITS TO BE DETERMINED BY WCC.

B. DESIGN ASSUMPTIONS
1. THE CURRENT DESIGN SCHEME ILLUSTRATES A TEMPORARY SUPPORT SYSTEM CAPABLE OF SUPPORTING RETAINED HEIGHTS SHOWN HEREIN WITH MAXIMUM EARTH PRESSURES REPRESENTED BY AN APPARENT LOADING DIAGRAM OF 0.3*120PCF*HEIGHT.
2. THE CURRENT DESIGN IS BASED UPON THE GROUND CONDITIONS AS IDENTIFIED IN THE CONTRACT DOCUMENTS AND THE SEQUENCE OF WORK AS INDICATED ON THE SHOP DRAWINGS. SHOULD ANY OR ALL OF THIS CHANGE, REDESIGN OF THE EXCAVATION SUPPORT SYSTEM MAY BE REQUIRED.
3. SUPPORT SYSTEM DESIGNED FOR A CONSTRUCTION SURCHARGE OF 400 PSF; THE CONTRACTOR SHALL NOT EXCEED THIS SURCHARGE WITHOUT NOTIFYING SJL ENGINEERS TO CONFIRM IF ACCEPTABLE.
4. A MINIMUM SETBACK DISTANCE OF 10 FT FROM EXCAVATION FOR CONSTRUCTION SURCHARGES IS REQUIRED.
5. DESIGN ASSUMES A DEWATERED CONDITION.
6. JACKING FRAME TO BE IN INTIMATE CONTACT WITH SOLDIER BEAMS AND LAGGING AND/OR GROUND WHERE APPLICABLE.
7. ALL EXCAVATION SUPPORT SYSTEMS ARE OUTSIDE THE LIMITS OF THE THEORETICAL EMBANKMENT RAILROAD LIVE LOAD.

C. DESIGN PARAMETERS
1. LOADS APPLIED TO THE EXCAVATION SUPPORT SYSTEM, OTHER THAN THAT INDICATED ON THESE DRAWINGS, ARE SUBJECT TO REVIEW BY SJL ENGINEERS.
2. THE SIZE AND DEPTH OF THE EXCAVATION SUPPORT SYSTEM ON THE DRAWINGS ARE BASED ON INFORMATION, AS PROVIDED AT THIS TIME. FIELD VERIFICATION IS TO BE PERFORMED PRIOR TO LAYOUT AND CONSTRUCTION OF THE PROPOSED EXCAVATION SUPPORT SYSTEM. IF CHANGES TO THE EXCAVATION SUPPORT SYSTEM ARE REQUIRED IN ORDER TO ACCOMMODATE THE PROPOSED STRUCTURES AND CONNECTIONS, SJL ENGINEERS SHALL BE NOTIFIED IN A TIMELY MANNER.
3. WCC SHALL VERIFY ALL CLEARANCES FOR CONSTRUCTION OF THE EXCAVATION SUPPORT SYSTEM AND PURPOSED STRUCTURE AND CONNECTIONS.

D. PROTECTION BY CONTRACTOR
1. PROTECT ALL EXCAVATIONS FROM THE ACTIONS OF WEATHER.

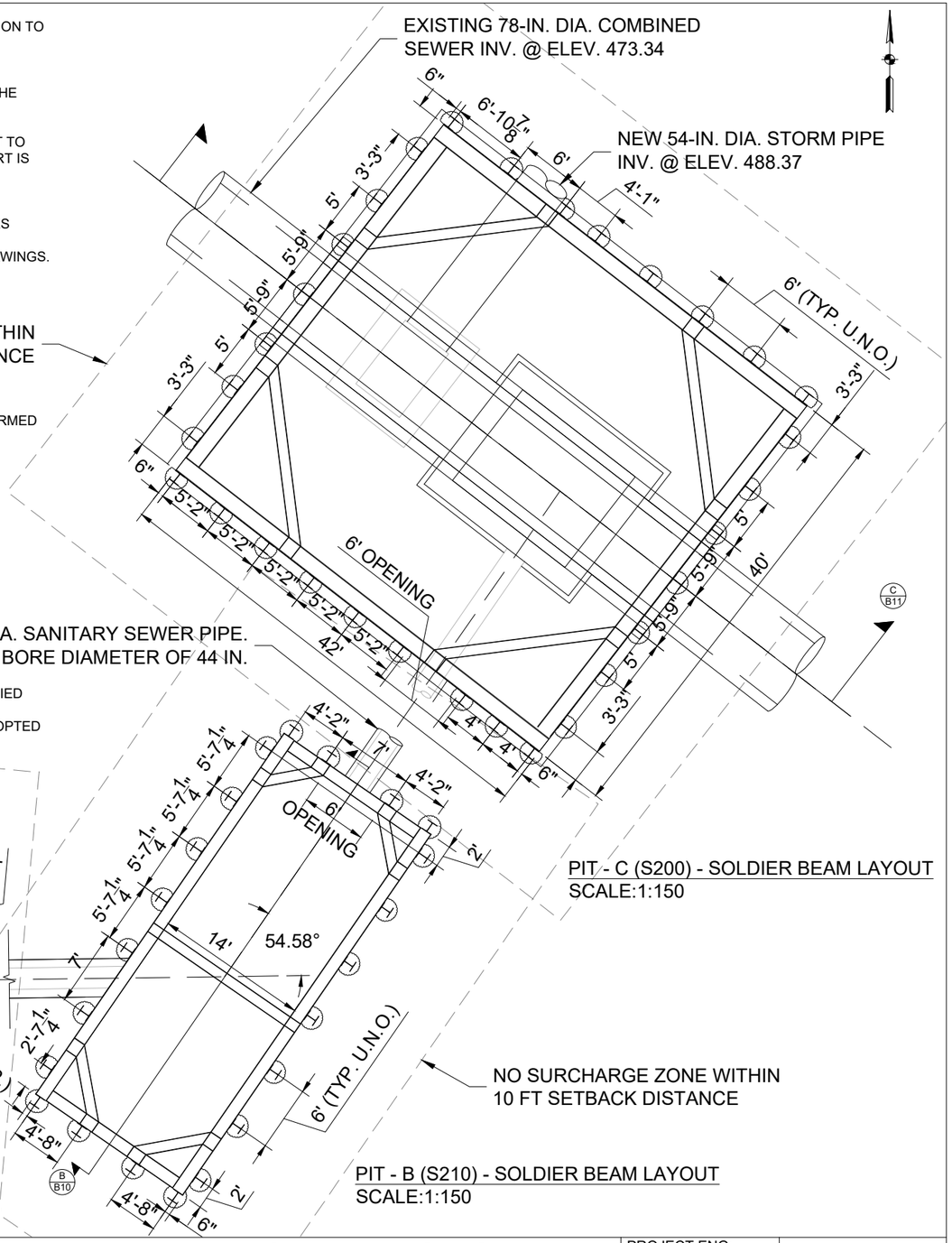
E. HEALTH AND SAFETY
1. ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH THE OCCUPATIONAL HEALTH AND SAFETY ACT LATEST REVISION, AND SITE SPECIFIC SAFETY PLANS.

F. SOLDIER BEAM AND WALE CONNECTION NOTES
1. MATERIALS:
   a. STRUCTURAL SHAPES.....ASTM A572 OR ASTM A992, 50 KSI MIN. YIELD STRESS.
   b. PLATE STEEL FOR TIMBER LAGGING.....ASTM A36, 36 KSI MIN. YIELD STRESS.
   c. THREADED RODS FOR LAGGING..... ASTM A36, 36 KSI MIN. YIELD STRESS.
   d. NUTS FOR THREADED RODS..... ASTM A563, GRADE A.
   e. WELD ELECTRODES.....AWS E70XX LOW HYDROGEN
   f. BASE DESIGN BENDING STRESS FOR MIXED HARDWOODS.....1,200 PSI.
   g. CLSM COMPRESSIVE STRENGTH PER ODOT CMS 613.....100 PSI.
2. WELDS AND WELDING PERSONNEL CERTIFICATIONS SHALL MEET THE REQUIREMENTS OF AWS D1.1, "STRUCTRUAL WELDING CODE." WELDING PERSONNEL SHALL BE AWS CERTIFIED FOR WELDS MADE.
3. FABRICATION AND INSTALLATION OF STRUCTURAL STEEL SHALL MEET THE REQUIREMENTS OF THE "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES," AS ADOPTED BY AISC.
4. INSTALL STRUCTURAL STEEL STRAIGHT, LEVEL AND PLUMB AS APPLICABLE.
5. PROVIDE STEEL SHIM PACKS WITH MATCHING PLATE DIMENSIONS AS REQUIRED FOR WALE INSTALLATION.

REVISION DATES:

1 - REVISION No. 1 PER REVIEW COMMENTS DATED 11-13-19. SHOP DRAWINGS DATED 11-15-19.

2 - REVISION No. 2 PER REVIEW COMMENTS RECEIVED 11-26-19. SHOP DRAWINGS DATED 11-27-19.



PIT - C (S200) - SOLDIER BEAM LAYOUT
SCALE:1:150

PIT - A (S220) - SOLDIER BEAM LAYOUT
SCALE:1:150

PIT - B (S210) - SOLDIER BEAM LAYOUT
SCALE:1:150

STATE OF OHIO
SCOTT J. LUDLOW
E59231
REGISTERED PROFESSIONAL ENGINEER

11/15/19
DATE

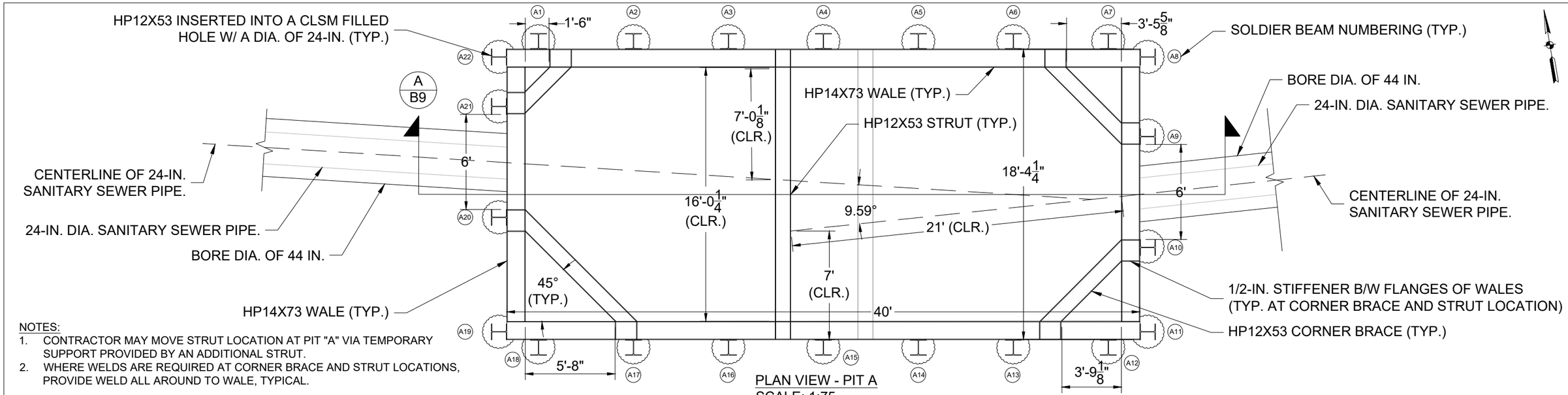
NOTES

1. Observe via visual inspection daily for movement of soldier beams/bracing to determine if additional support is necessary.
2. Support system designed for a construction surcharge of 400 psf with a setback distance of 10 ft.
3. Refer to respective pit locations for lookout plates and stability brackets.
4. Lag as necessary with angle iron in corners of excavation support system.
5. Contractor may move strut location at Pit "A" via temporary support provided by an additional strut.

PLAN VIEW AND GENERAL NOTES

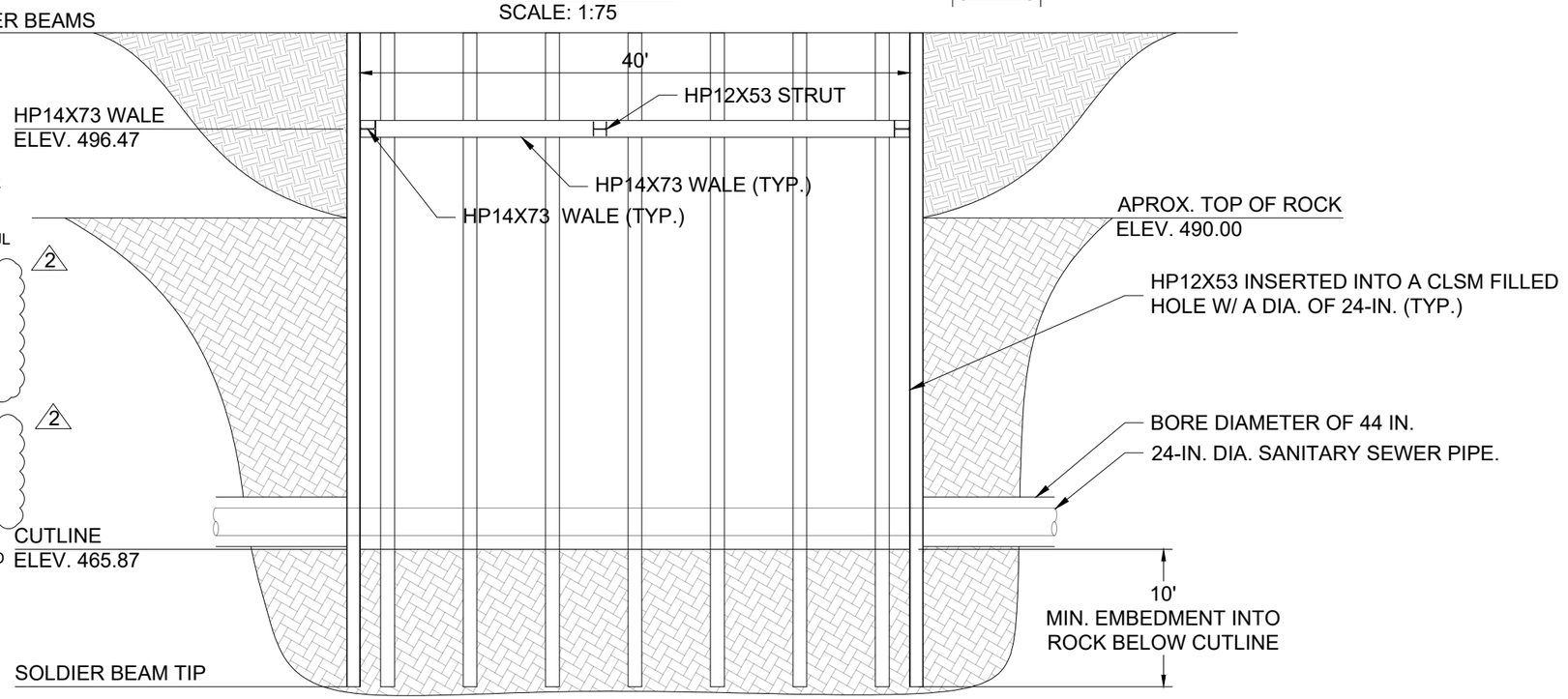
PROJECT: EXCAVATION SUPPORT STYSTEM FOR CSO 21 (BU-13)
LOCATION: HAMILTON CO., OH
CLIENT: WALSH CONSTRUCTION CO., INC.
SJL PROJ. NO.:1-19-029
SCALE: AS SHOWN

PROJECT ENG: SJL	S.J. Ludlow Consulting Engineers, Inc.
APPROVED BY: SJL	450 E. 96th St. Suite 500 Indianapolis, IN 46240 317-371-5539
DRAWN BY: KAL	
DATE AND TIME: 11/15/19	
DRAWING NO.: 1-19-029.B8	



PLAN VIEW - PIT A
SCALE: 1:75

NOTES:
1. CONTRACTOR MAY MOVE STRUT LOCATION AT PIT "A" VIA TEMPORARY SUPPORT PROVIDED BY AN ADDITIONAL STRUT.
2. WHERE WELDS ARE REQUIRED AT CORNER BRACE AND STRUT LOCATIONS, PROVIDE WELD ALL AROUND TO WALE, TYPICAL.



SECTION A-A (PIT A)
SCALE: 1'-0" = 3/32"

SEQUENCE OF WORK
1. LAYOUT ALL SOLDIER BEAMS FOR EXCAVATION SUPPORT SYSTEM AND FIELD VERIFY THE LOCATIONS OF ALL SOLDIER PILES RELATIVE TO OTHER PLANNED AND EXISTING ELEMENTS.
2. INSTALL SOLDIER BEAMS TO DEPTH SHOWN ON THESE DRAWINGS. IF PENETRATION DEPTH OF THE SOLDIER BEAM IS NOT OBTAINED, NOTIFY SJL ENGINEERS OF THE RESULTS. FIELD VERIFY TIP ELEVATIONS.
3. EXCAVATE AND INSTALL LAGGING AS NECESSARY TO NO DEEPER THAN 2 FT BELOW ELEVATION OF FIRST WALE. INSTALL TIMBER LAGGING TO LENGTH AS REQUIRED. PLACE LAGGING ON FRONT FLANGE OF SOLDIER BEAM. TO REDUCE SOIL SLOUGHING/LOSS, EXPOSED SOIL FACE HEIGHT SHALL BE LIMITED TO ONE OR TWO LAGGING BOARDS. FILL ANY VOID SPACE BETWEEN LAGGING AND RETAINED SOIL WITH FLOWABLE FILL OR EXCAVATED SOIL.
4. INSTALL FIRST LEVEL OF BRACING AT ELEVATION SHOWN.
5. CONTINUE TO EXCAVATE AND INSTALL LAGGING AS NECESSARY. TO REDUCE SOIL SLOUGHING/LOSS, EXPOSED SOIL FACE HEIGHT SHALL BE LIMITED TO ONE OR TWO LAGGING BOARDS. FILL ANY VOID SPACE BETWEEN LAGGING AND RETAINED SOIL WITH FLOWABLE FILL OR EXCAVATED SOIL. (SEE DETAILS AND NOTES ON SHEET B13 FOR REQUIREMENTS IN ROCK)
6. PERFORM CONSTRUCTION ACTIVITIES.
7. BACKFILL EXCAVATION AND REMOVE BRACING AFTER BACKFILL IS PLACED WITHIN 2 FT OF BRACING LEVEL.
8. REMOVE/CUT SOLDIER BEAMS, WHERE REQUIRED.

2 - REVISION No. 2 PER REVIEW COMMENTS RECEIVED 11-26-19.

STATE OF OHIO
SCOTT J. LUDLOW
E59231
REGISTERED PROFESSIONAL ENGINEER

11/27/19
DATE

NOTES

1. Observe via visual inspection daily for movement of soldier beams/bracing to determine if additional support is necessary.
2. Support system designed for a construction surcharge of 400 psf with a setback distance of 10 ft.
3. Lookout plates and stability brackets to be provided at every other soldier beam location.
4. Lagging not shown for clarity. See Sheet B13 for details.
5. Lag as necessary with angle iron in corners of excavation support system.
6. Elevation for wale is shown at the center of the section.
7. Weld all wale to wale and wale to corner braces/strut w/ 5/16 - in. fillet weld.

PLAN VIEW AND SECTION @ PIT A

PROJECT: EXCAVATION SUPPORT STYSTEM FOR CSO 21 (BU-13)
LOCATION: HAMILTON CO., OH
CLIENT: WALSH CONSTRUCTION CO., INC.
SJL PROJ. NO.:1-19-029
SCALE: AS SHOWN

PROJECT ENG: SJL	
APPROVED BY: SJL	
DRAWN BY: KAL	
DATE AND TIME: 11/27/19	

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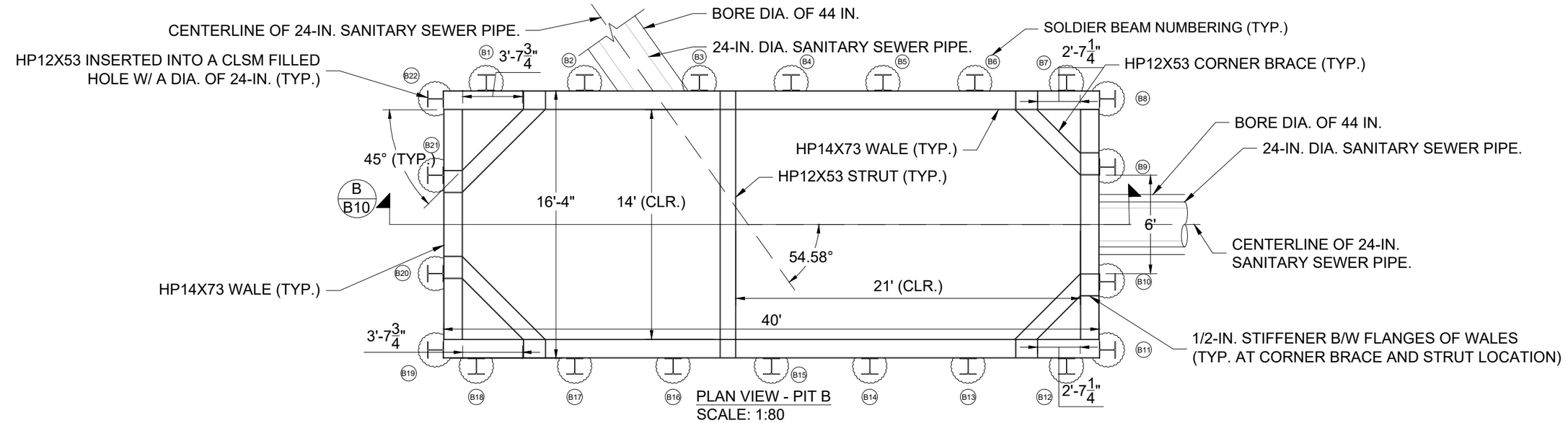
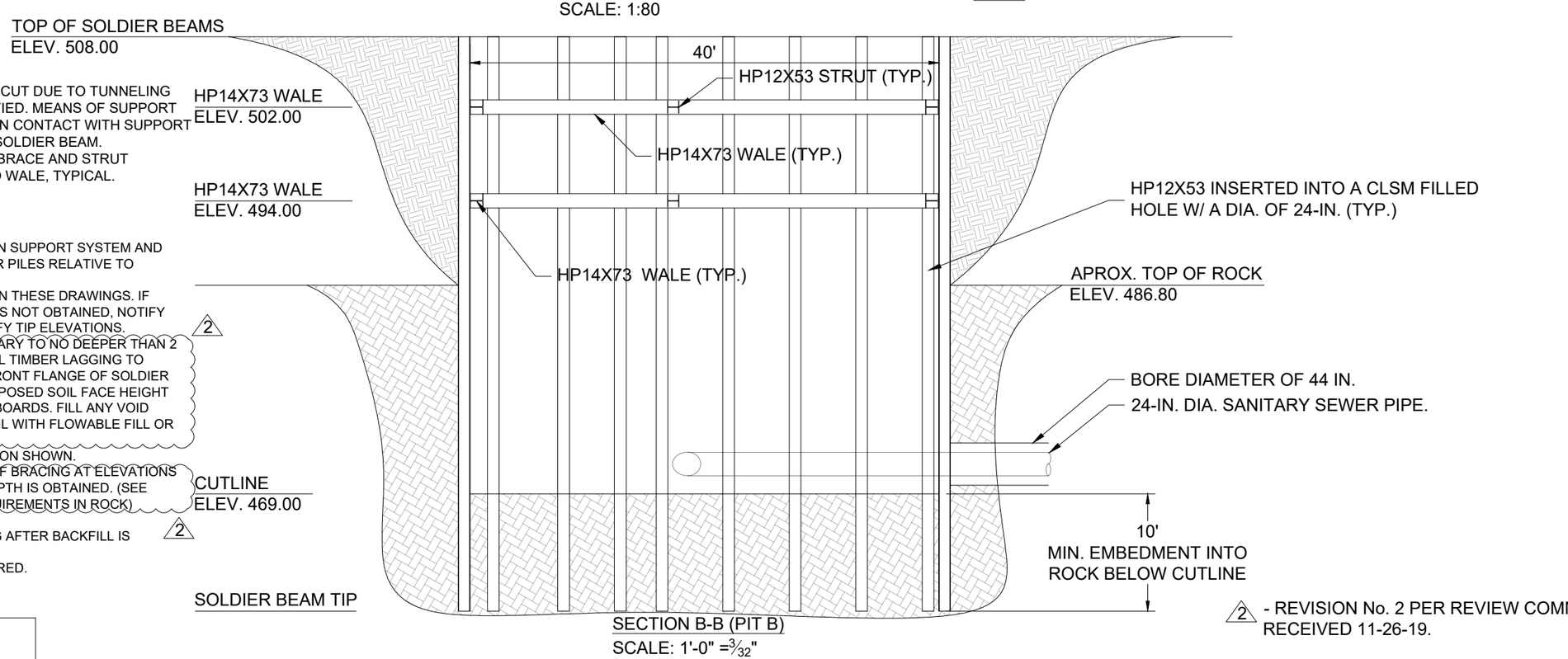
317-371-5539

DRAWING NO.:
1-19-029.B9



PLAN VIEW - PIT B
SCALE: 1:80



SECTION B-B (PIT B)
SCALE: 1'-0" = 3/32"

NOTES:
1. IN THE CASE A SOLDIER BEAM NEEDS TO BE CUT DUE TO TUNNELING ACTIVITIES, SJL ENGINEERS SHALL BE NOTIFIED. MEANS OF SUPPORT SHALL BE PROVIDED VIA ADDITIONAL WALE IN CONTACT WITH SUPPORT SYSTEM AND SPAN OVER CUT PORTION OF SOLDIER BEAM.
2. WHERE WELDS ARE REQUIRED AT CORNER BRACE AND STRUT LOCATIONS, PROVIDE WELD ALL AROUND TO WALE, TYPICAL.

SEQUENCE OF WORK
1. LAYOUT ALL SOLDIER BEAMS FOR EXCAVATION SUPPORT SYSTEM AND FIELD VERIFY THE LOCATIONS OF ALL SOLDIER PILES RELATIVE TO OTHER PLANNED AND EXISTING ELEMENTS.
2. INSTALL SOLDIER BEAMS TO DEPTH SHOWN ON THESE DRAWINGS. IF PENETRATION DEPTH OF THE SOLDIER BEAM IS NOT OBTAINED, NOTIFY SJL ENGINEERS OF THE RESULTS. FIELD VERIFY TIP ELEVATIONS.
3. EXCAVATE AND INSTALL LAGGING AS NECESSARY TO NO DEEPER THAN 2 FT BELOW ELEVATION OF FIRST WALE. INSTALL TIMBER LAGGING TO LENGTH AS REQUIRED. PLACE LAGGING ON FRONT FLANGE OF SOLDIER BEAM. TO REDUCE SOIL SLOUGHING/LOSS, EXPOSED SOIL FACE HEIGHT SHALL BE LIMITED TO ONE OR TWO LAGGING BOARDS. FILL ANY VOID SPACE BETWEEN LAGGING AND RETAINED SOIL WITH FLOWABLE FILL OR EXCAVATED SOIL.
4. INSTALL FIRST LEVEL OF BRACING AT ELEVATION SHOWN.
5. REPEAT STEPS 3-4 FOR ADDITIONAL LEVELS OF BRACING AT ELEVATIONS SHOWN HEREIN UNTIL REQUIRED CUTLINE DEPTH IS OBTAINED. (SEE DETAILS AND NOTES ON SHEET B13 FOR REQUIREMENTS IN ROCK)
6. PERFORM CONSTRUCTION ACTIVITIES.
7. BACKFILL EXCAVATION AND REMOVE BRACING AFTER BACKFILL IS PLACED WITHIN 2 FT OF BRACING LEVEL.
8. REMOVE/CUT SOLDIER BEAMS, WHERE REQUIRED.

2 - REVISION No. 2 PER REVIEW COMMENTS RECEIVED 11-26-19.

STATE OF OHIO
SCOTT J. LUDLOW
E59231
REGISTERED PROFESSIONAL ENGINEER
11/27/19
DATE

NOTES
1. Observe via visual inspection daily for movement of soldier beams/bracing to determine if additional support is necessary.
2. Support system designed for a construction surcharge of 400 psf with a setback distance of 10 ft.
3. Lookout plates and stability brackets to be provided at every other soldier beam location.
4. Lagging not shown for clarity. See Sheet B13 for details.
5. Lag as necessary with angle iron in corners of excavation support system.
6. Elevations for wales are shown at the center of the section.
7. Weld all wale to wale and wale to corner braces/struts w/ 5/16 - in. fillet weld.

PLAN VIEW AND SECTION @ PIT B

PROJECT: EXCAVATION SUPPORT STYSTEM FOR CSO 21 (BU-13)
LOCATION: HAMILTON CO., OH
CLIENT: WALSH CONSTRUCTION CO., INC.
SJL PROJ. NO.:1-19-029
SCALE: AS SHOWN

PROJECT ENG: SJL	
APPROVED BY: SJL	
DRAWN BY: KAL	
DATE AND TIME: 11/27/19	
DRAWING NO.:	1-19-029.B10

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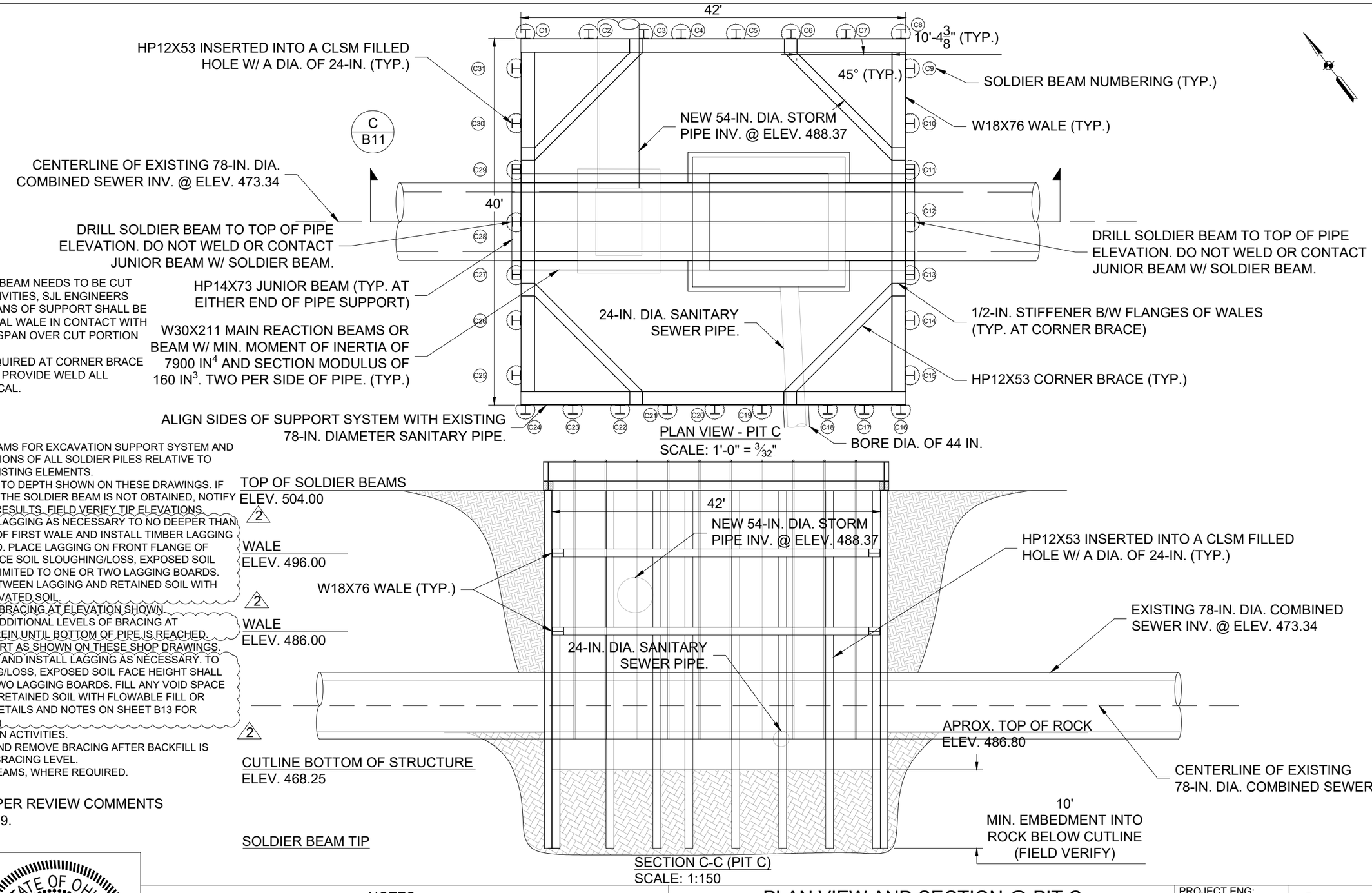

NOTES:

1. IN THE CASE A SOLDIER BEAM NEEDS TO BE CUT DUE TO TUNNELING ACTIVITIES, SJL ENGINEERS SHALL BE NOTIFIED. MEANS OF SUPPORT SHALL BE PROVIDED VIA ADDITIONAL WALE IN CONTACT WITH SUPPORT SYSTEM AND SPAN OVER CUT PORTION OF SOLDIER BEAM.
2. WHERE WELDS ARE REQUIRED AT CORNER BRACE AND STRUT LOCATIONS, PROVIDE WELD ALL AROUND TO WALE, TYPICAL.

SEQUENCE OF WORK

1. LAYOUT ALL SOLDIER BEAMS FOR EXCAVATION SUPPORT SYSTEM AND FIELD VERIFY THE LOCATIONS OF ALL SOLDIER PILES RELATIVE TO OTHER PLANNED AND EXISTING ELEMENTS.
2. INSTALL SOLDIER BEAMS TO DEPTH SHOWN ON THESE DRAWINGS. IF PENETRATION DEPTH OF THE SOLDIER BEAM IS NOT OBTAINED, NOTIFY SJL ENGINEERS OF THE RESULTS. FIELD VERIFY TIP ELEVATIONS.
3. EXCAVATE AND INSTALL LAGGING AS NECESSARY TO NO DEEPER THAN 2 FT BELOW ELEVATION OF FIRST WALE AND INSTALL TIMBER LAGGING TO LENGTH AS REQUIRED. PLACE LAGGING ON FRONT FLANGE OF SOLDIER BEAM. TO REDUCE SOIL SLOUGHING/LOSS, EXPOSED SOIL FACE HEIGHT SHALL BE LIMITED TO ONE OR TWO LAGGING BOARDS. FILL ANY VOID SPACE BETWEEN LAGGING AND RETAINED SOIL WITH FLOWABLE FILL OR EXCAVATED SOIL.
4. INSTALL FIRST LEVEL OF BRACING AT ELEVATION SHOWN.
5. REPEAT STEPS 3-4 FOR ADDITIONAL LEVELS OF BRACING AT ELEVATIONS SHOWN HEREIN UNTIL BOTTOM OF PIPE IS REACHED.
6. CONSTRUCT PIPE SUPPORT AS SHOWN ON THESE SHOP DRAWINGS.
7. CONTINUE TO EXCAVATE AND INSTALL LAGGING AS NECESSARY. TO REDUCE SOIL SLOUGHING/LOSS, EXPOSED SOIL FACE HEIGHT SHALL BE LIMITED TO ONE OR TWO LAGGING BOARDS. FILL ANY VOID SPACE BETWEEN LAGGING AND RETAINED SOIL WITH FLOWABLE FILL OR EXCAVATED SOIL. (SEE DETAILS AND NOTES ON SHEET B13 FOR REQUIREMENTS IN ROCK)
8. PERFORM CONSTRUCTION ACTIVITIES.
9. BACKFILL EXCAVATION AND REMOVE BRACING AFTER BACKFILL IS PLACED WITHIN 2 FT OF BRACING LEVEL.
10. REMOVE/CUT SOLDIER BEAMS, WHERE REQUIRED.

2 - REVISION No. 2 PER REVIEW COMMENTS RECEIVED 11-26-19.

STATE OF OHIO
SCOTT J. LUDLOW
E59231
REGISTERED PROFESSIONAL ENGINEER

11/27/19
DATE

NOTES

1. Observe via visual inspection daily for movement of soldier beams/bracing to determine if additional support is necessary.
2. Support system designed for a construction surcharge of 400 psf with a setback distance of 10 ft.
3. Lookout plates and stability brackets to be provided at soldier beam locations between corner braces and at all corner soldier beam locations.
4. Lagging not shown for clarity. See Sheet B13 for details.
5. Elevations for wales are shown at the center of the section.
6. Lag as necessary with angle iron in corners of excavation support system.
7. Weld all wale to wale and wale to corner braces/strut w/ 5/16 - in. fillet weld.

PLAN VIEW AND SECTION @ PIT C

PROJECT: EXCAVATION SUPPORT STYSTEM FOR CSO 21 (BU-13)
LOCATION: HAMILTON CO., OH
CLIENT: WALSH CONSTRUCTION CO., INC.
SJL PROJ. NO.:1-19-029
SCALE: AS SHOWN

PROJECT ENG: SJL	
APPROVED BY: SJL	
DRAWN BY: KAL	
DATE AND TIME: 11/27/19	
DRAWING NO.:	1-19-029.B11

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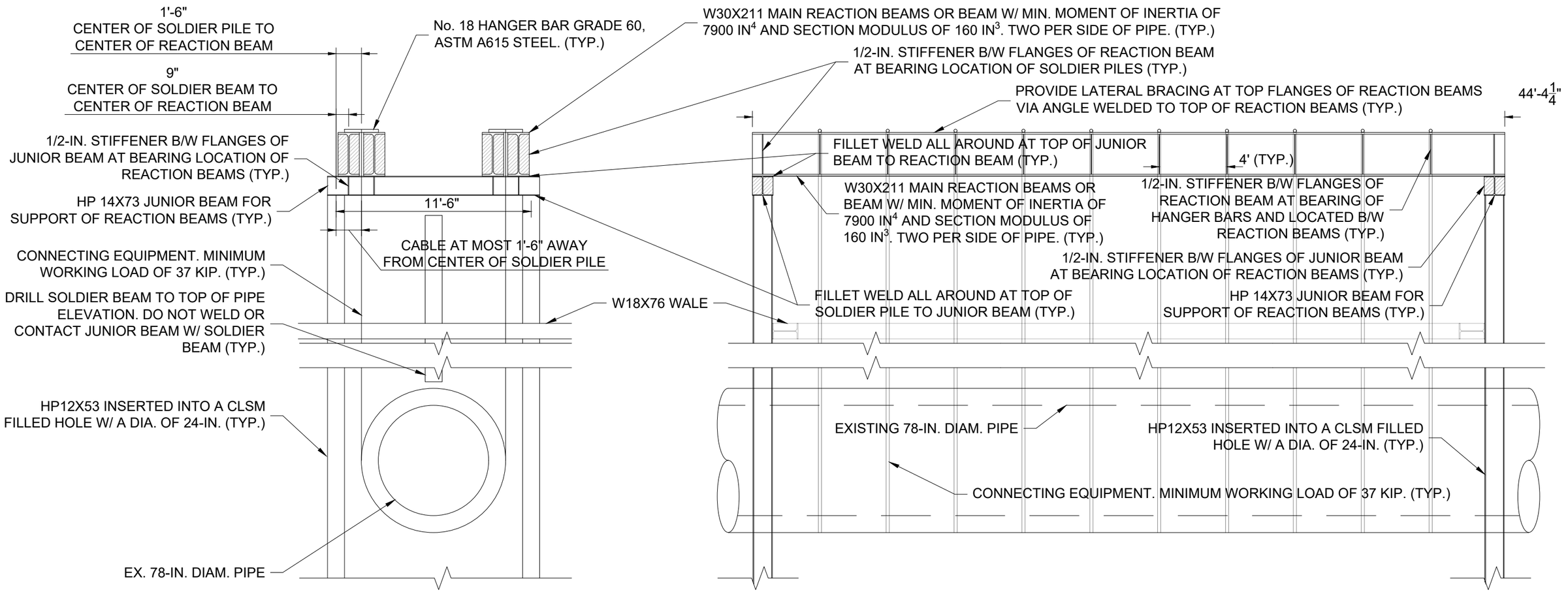
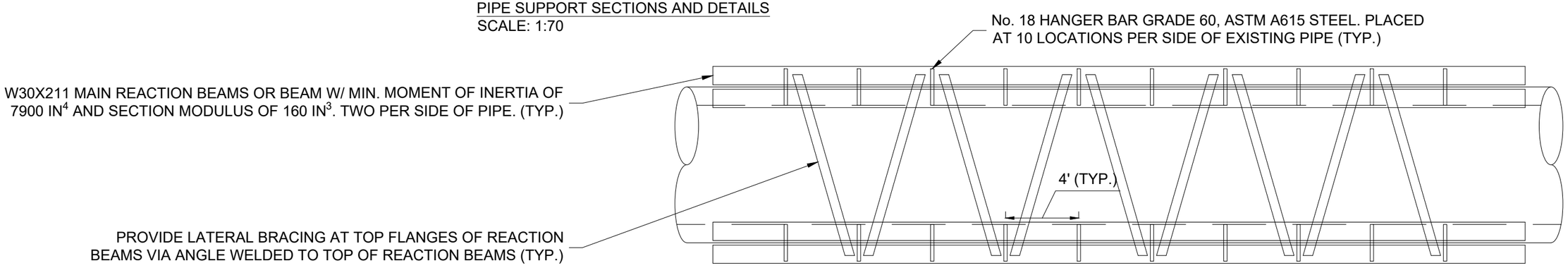


PIPE SUPPORT SECTIONS AND DETAILS
SCALE: 1:70



PLAN VIEW PIPE SUPPORT
SCALE: 1:70

STATE OF OHIO
SCOTT
J.
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REGISTERED
PROFESSIONAL ENGINEER

11/15/19
DATE

NOTES

1. Observe via visual inspection daily for movement of soldier beams/bracing to determine if additional support is necessary.
2. Support system designed for a construction surcharge of 400 psf with a setback distance of 10 ft.
3. Lookout plate to be provided at all soldier beam locations.
4. Use a 5/16-in. size fillet weld unless noted otherwise.
5. Pipe support and connecting equipment shall be a minimum of two per pipe section with a maximum spacing of no greater than 4 ft.

PIPE SUPPORT - SECTION AND DETAILS

PROJECT: EXCAVATION SUPPORT STYSTEM FOR CSO 21 (BU-13)
LOCATION: HAMILTON CO., OH
CLIENT: WALSH CONSTRUCTION CO., INC.
SJL PROJ. NO.:1-19-029
SCALE: AS SHOWN

PROJECT ENG: SJL	
APPROVED BY: SJL	
DRAWN BY: KAL	
DATE AND TIME: 11/15/19	

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DRAWING NO.:
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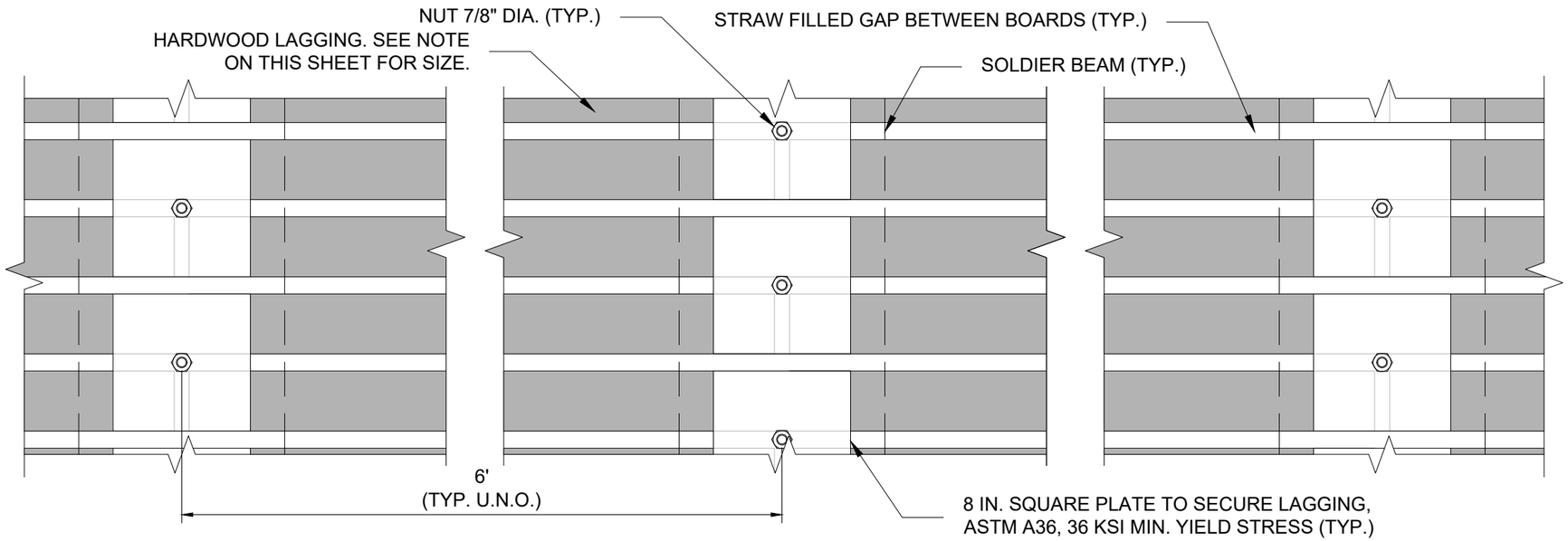
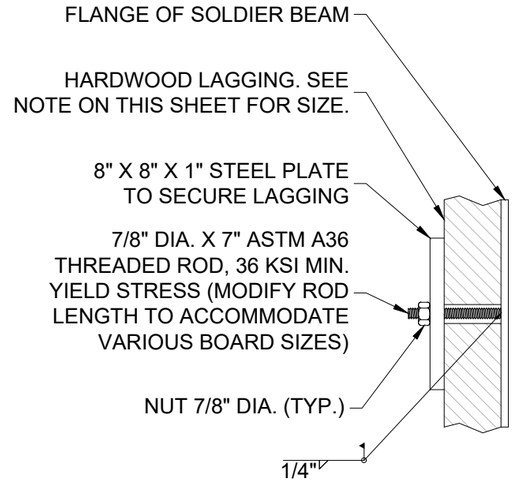
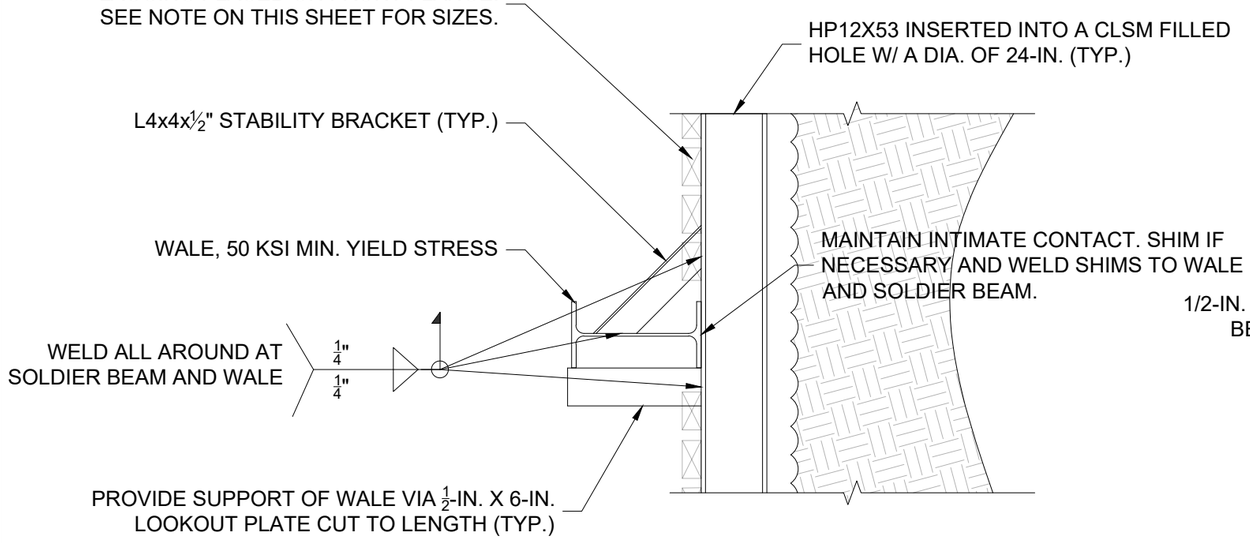


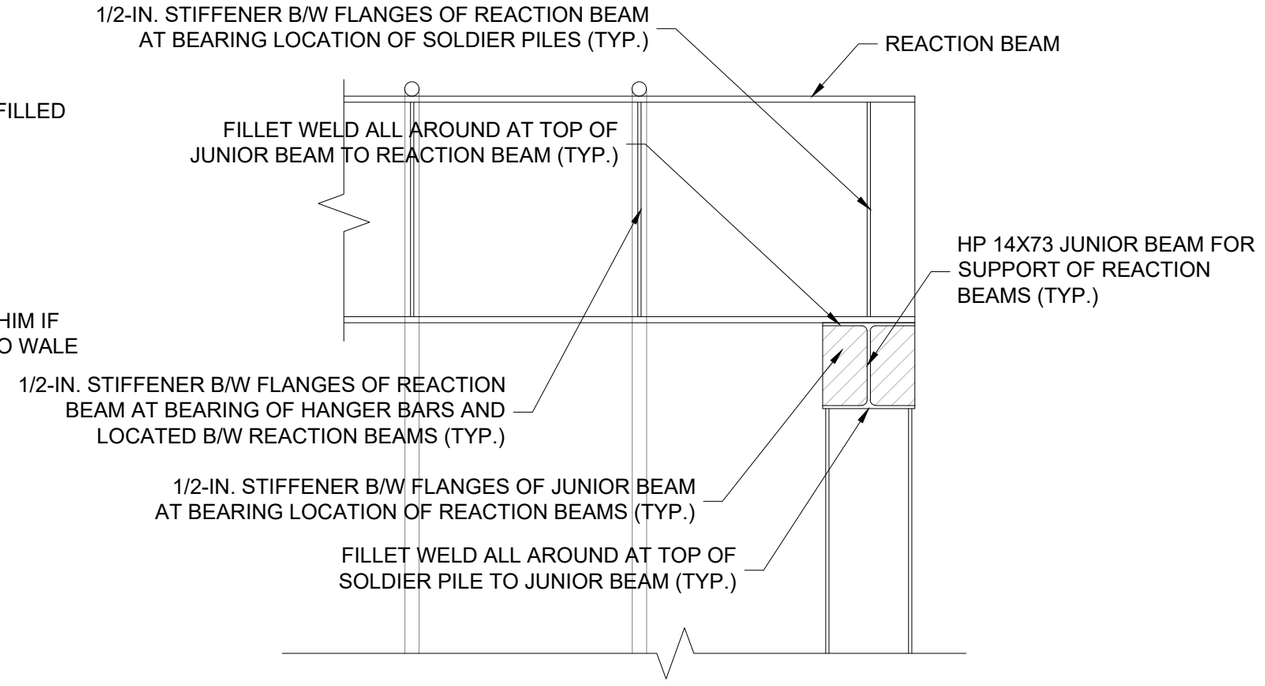
PARTIAL VIEW OF LAGGING FACE
SCALE: NTS



LAGGING STUD DETAIL
AT SOLDIER BEAM
SCALE: NTS



DETAIL
SCALE ⅜" = 1'-0"



END VIEW - PIPE SUPPORT SECTION
SCALE: NTS

STATE OF OHIO
SCOTT J. LUDLOW
E59231
REGISTERED PROFESSIONAL ENGINEER

11/15/19
DATE

NOTES

1. Observe via visual inspection daily for movement of soldier beams/bracing to determine if additional support is necessary.
2. Support system designed for a construction surcharge of 400 psf with a setback distance of 10 ft.
3. Refer to respective pit locations for lookout plates and stability brackets.
4. Use 3x8-in. nominal hardwood lagging to a depth up to 25 ft, thereafter use 4x8-in. nominal hardwood lagging. Extend lagging face as shown herein 3 ft below top of top of sound rock.
5. Provide support via lagging in sound rock. Spacing of lagging boards based on field observations by WCC personnel. If necessary, provide additional lagging where conditions indicate instability of face.

SECTION AND DETAILS

PROJECT: EXCAVATION SUPPORT STYSTEM FOR CSO 21 (BU-13)
LOCATION: HAMILTON CO., OH
CLIENT: WALSH CONSTRUCTION CO., INC.
SJL PROJ. NO.:1-19-029
SCALE: AS SHOWN

PROJECT ENG:	SJL
APPROVED BY:	SJL
DRAWN BY:	KAL
DATE AND TIME:	11/15/19

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