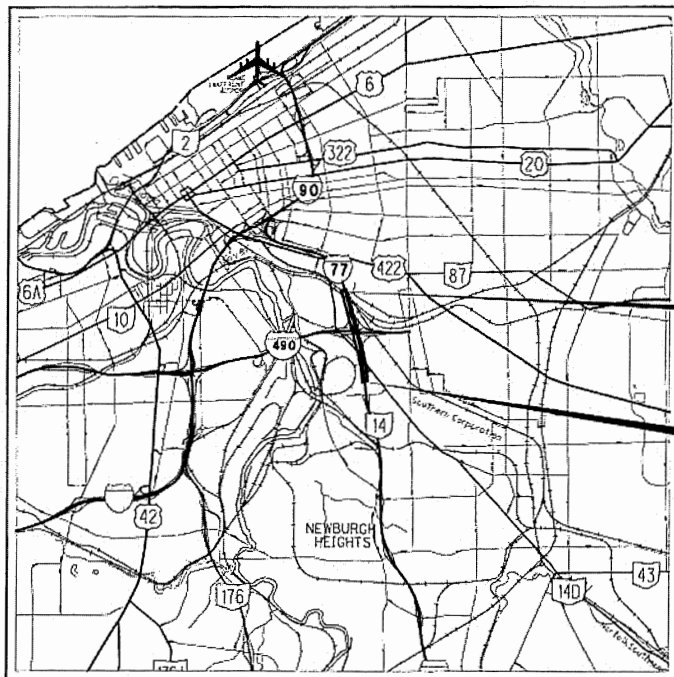


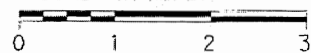
STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
CUY-77-14.35 (CCG6A)
CITY OF CLEVELAND
CUYAHOGA COUNTY



LOCATION MAP

LATITUDE: 41° 28' 50" N LONGITUDE: 81° 39' 45" W

SCALE IN MILES



- PORTION TO BE IMPROVED.....
- INTERSTATE & DIVIDED HIGHWAY.....
- UNDIVIDED STATE & FEDERAL ROUTES.....
- COUNTY HIGHWAYS.....
- OTHER ROADS.....

DESIGN DESIGNATION

CURRENT ADT (2018)	74100
DESIGN YEAR ADT (2038)	84210
DESIGN HOURLY VOLUME (2038)	7830
DIRECTIONAL DISTRIBUTION	70%
TRUCKS (24 HOUR B&C)	7.5%
DESIGN SPEED	60 MPH
LEGAL SPEED	55 MPH

DESIGN FUNCTIONAL CLASSIFICATION -
URBAN INTERSTATE - INTERSTATE ROUTE 77

DESIGN EXCEPTIONS

DESIGN FEATURES	APPROVAL DATE	SHEET NO.
SHOULDER WIDTH	10-11-2016	10-15
SUPERELEVATION RATE	10-11-2016	9
STOPPING SIGHT DISTANCE	10-11-2016	124-125

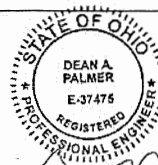
UNDERGROUND UTILITIES

TWO WORKING DAYS
BEFORE YOU DIG
CALL 1-800-362-2764 (TOLL FREE)
OHIO UTILITIES PROTECTION SERVICE
NON-MEMBERS
MUST BE CALLED DIRECTLY
PLAN PREPARED BY:

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD OHIO 44902
PHONE: (419) 524-0074 FAX: (419) 524-1812

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

ENGINEERS SEAL:



SIGNED: *Dean A. Palmer*
DATE: 12/21/2016

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STANDARD CONSTRUCTION DRAWINGS

STANDARD CONSTRUCTION DRAWINGS										SUPPLEMENTAL SPECIFICATIONS	
BP-1.1	7-28-00	HW-2.1	1-15-16	TC-7.65	1-15-16	HL-10.11	7-15-16	MT-98.11	7-18-14	800	1-20-17
BP-2.5	7-19-13	HW-2.2	1-15-16	TC-15.115	10-18-13	HL-10.12	1-15-16	MT-98.20	7-18-14	813	10-21-16
BP-2.6	7-15-16			TC-21.10	7-15-16	HL-10.13	7-15-16	MT-98.21	7-18-14	821	4-20-12
BP-3.1	7-18-14	I-2.2	1-15-16	TC-21.20	7-15-16	HL-10.31	7-17-15	MT-98.29	7-19-13	832	1-17-14
BP-5.1	7-19-13			TC-21.50	7-15-16	HL-20.11	1-16-15	MT-99.20	7-19-13	845	1-19-07
BP-6.1	7-19-13	MH-1.1	1-15-16	TC-22.10	10-18-13	HL-20.14	1-16-15	MT-99.30	1-16-15	875	1-17-14
BP-9.1	7-19-13	MH-1.2	1-15-16	TC-22.20	1-17-14	HL-20.21	7-15-16	MT-99.50	7-19-13	902	12-31-12
				TC-41.10	7-19-13	HL-30.11	7-15-16	MT-99.60	7-15-16	913	10-16-15
MGS-1.1	7-19-13	DM-1.1	1-15-16	TC-41.15	10-18-13	HL-30.21	1-17-14	MT-101.60	7-19-13	921	4-20-12
MGS-2.1	7-19-13	DM-1.2	1-18-13	TC-41.20	10-18-13	HL-30.22	1-17-14	MT-101.70	1-17-14		
MGS-3.1	7-18-14	DM-1.3	7-18-14	TC-41.30	10-18-13	HL-30.32	1-17-14	MT-101.75	7-15-16		
MGS-3.2	1-18-13	DM-4.1	1-15-16	TC-42.10	10-18-13	HL-40.10	1-17-14	MT-101.80	1-16-15		
MGS-4.2	7-19-13	DM-4.2	7-20-12	TC-42.20	10-18-13	HL-40.20	7-15-16	MT-101.90	7-17-15		
MGS-4.3	1-18-13	DM-4.3	1-15-16	TC-51.11	1-15-16	HL-50.21	7-15-16	MT-102.10	7-18-14		
MGS-5.3	7-15-16	DM-4.4	1-15-16	TC-51.12	1-15-16	HL-60.11	1-15-16	MT-102.30	10-16-15		
MGS-6.1	7-19-13			TC-52.10	10-18-13	HL-60.21	1-16-15	MT-103.10	1-16-15		
		CB-1.1	1-15-16	TC-52.20	7-15-16	HL-60.31	7-17-15	MT-105.10	7-19-13		
RM-1.1	7-18-14	CB-1.2	1-15-16	TC-61.10	1-17-14						
RM-4.1	7-19-13	CB-2.2	1-15-16	TC-61.30	7-18-14	MT-95.30	7-15-16	AS-1-15	7-17-15		
RM-4.2	4-18-14	CB-3.2	1-15-16	TC-64.10	1-17-15	MT-95.31	7-18-14	AS-2-15	7-17-15		
RM-4.3	7-18-14	CB-3.4	1-15-16	TC-65.10	1-17-14	MT-95.32	7-18-14	GSD-1-96	7-19-02		
RM-4.4	7-18-14			TC-65.11	7-15-16	MT-95.40	7-18-14	PCB-91	1-18-13		
RM-4.5	7-18-14			TC-71.10	7-15-16	MT-95.45	7-15-16	SBR-1-13	1-17-14		
RM-4.6	7-19-13			TC-72.20	7-15-16	MT-95.50	10-16-15	SBR-2-13	1-17-14		
						MT-97.10	7-18-14	SICD-1-96	7-18-14		
						MT-97.12	7-18-14	SICD-2-14	7-18-14		

SPECIAL PROVISIONS

PROJECT DESCRIPTION

THE PROJECT CONSISTS OF REPLACEMENT OF BRIDGE CUY-77-1433 L & R ON I.R. 77 OVER THE I.R. 490 INTERCHANGE. THE PROPOSED WORK INCLUDES THE REALIGNMENT OF RAMPS S-W, AND S-E AND THE CONSTRUCTION OF ALL RELATED DRAINAGE, ROADWAY WORK, TRAFFIC CONTROL, AND MAINTENANCE OF TRAFFIC. THE PROJECT LENGTH ON I.R. 77 IS APPROXIMATELY 0.39 MILES.

PROJECT EARTH DISTURBED AREA	= 16.74 Ac.
ESTIMATED CONTRACTOR EARTH DISTURBED AREA	= 3.00 Ac.
NOTICE OF INTENT EARTH DISTURBED AREA	= 19.74 Ac.

LIMITED ACCESS

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

2016 SPECIFICATIONS

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

I HEREBY APPROVE THESE PLANS AND DECLARE THAT THE MAKING OF THIS IMPROVEMENT WILL NOT REQUIRE THE CLOSING TO TRAFFIC OF THE HIGHWAY EXCEPT AS NOTED ON SHEETS 34-36, AND THAT PROVISIONS FOR THE MAINTENANCE AND SAFETY OF THE TRAFFIC WILL BE AS SET FORTH ON THE PLANS AND ESTIMATES.

APPROVED
DATE 02-14-17 *Megan S. De* DISTRICT DEPUTY DIRECTOR

APPROVED
DATE _____ DIRECTOR, DEPARTMENT OF TRANSPORTATION

FEDERAL PROJECT NO.
E140(305)

PID NO.
13567

CONSTRUCTION PROJECT NO.

RAILROAD INVOLVEMENT
NONE

CUY-77-14.35

1
365

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Sheets\Roadway\Sheets\13567gb-1.dgn 12/14/2016 11:01:23 AM DonHelman



**Ⓔ CONSTRUCTION I.R. 77
CURVE DATA**

P.I. Sta = 63+98.55
Δ = 9° 36' 26" (LT)
Dc = 1° 00' 00"
R = 5,729.57'
T = 481.49'
L = 960.72'
E = 20.20'
eMAX.: *0.027 NDC

*SB MEDIAN LANE = 0.006±
WITHIN LIMITS OF WEARING
COURSE REMOVED AND RESURFACING

**Ⓑ CONSTRUCTION RAMP S-W
SPIRAL DATA**

P.I. STA. 269+42.04
Ls = 450.00'
fs = 9° 00' 00"
LT = 300.39'
ST = 150.35'
x = 448.89'
y = 23.52'
k = 224.82'
p = 5.89'

**Ⓑ CONSTRUCTION RAMP S-W
CURVE DATA**

P.I. Sta. 272+33.72
Δ = 11° 19' 43" (LT)
Dc = 4° 00' 00"
R = 1,432.39'
T = 142.07'
L = 283.21'
E = 7.03'
C = 282.75'
C.B. = N 18° 40' 25" W
eMAX. = 0.046
DESIGN SPEED = 45 MPH

**Ⓑ CONSTRUCTION RAMP S-W
CURVE DATA**

P.I. Sta. 278+53.91
Δ = 60° 40' 43" (LT)
Dc = 7° 00' 00"
R = 818.51'
T = 479.05'
L = 866.84'
E = 129.88'
C = 826.89'
C.B. = N 54° 40' 38" W
eMAX. = 0.058
DESIGN SPEED = 45 MPH

NOTE:
SEE SHEET NO. 4 FOR S.B.
& N.B. Ⓔ OF CONST. DETAILS

BEGIN WORK
STA. 165+34.00

BEGIN PROJECT
STA. 66+75
E140 (305)

END PROJECT
STA. 87+48.84
E140 (305)

**Ⓔ CONSTRUCTION I.R. 77
CURVE DATA**

P.I. Sta. 192+19.42
Δ = 15° 50' 18" (RT)
Dc = 2° 00' 00"
R = 2,864.79'
T = 398.50'
L = 791.92'
E = 27.58'
C = 789.40'
C.B. = N 13° 27' 57" W

**Ⓑ CONSTRUCTION RAMP S-E
CURVE DATA**

P.I. Sta. 163+82.31
Δ = 3° 32' 35" (RT)
Dc = 0° 30' 00"
R = 11,459.16'
T = 354.42'
L = 708.62'
E = 5.48'
C = 708.51'
C.B. = N 4° 53' 00" W
eMAX. = NC

**Ⓑ CONSTRUCTION RAMP S-E
SPIRAL DATA**

P.I. STA. 168+66.73
Ls = 200.00'
fs = 10° 00' 00"
LT = 130.22'
ST = 70.20'
x = 199.36'
y = 12.19'
k = 99.90'
p = 2.62'

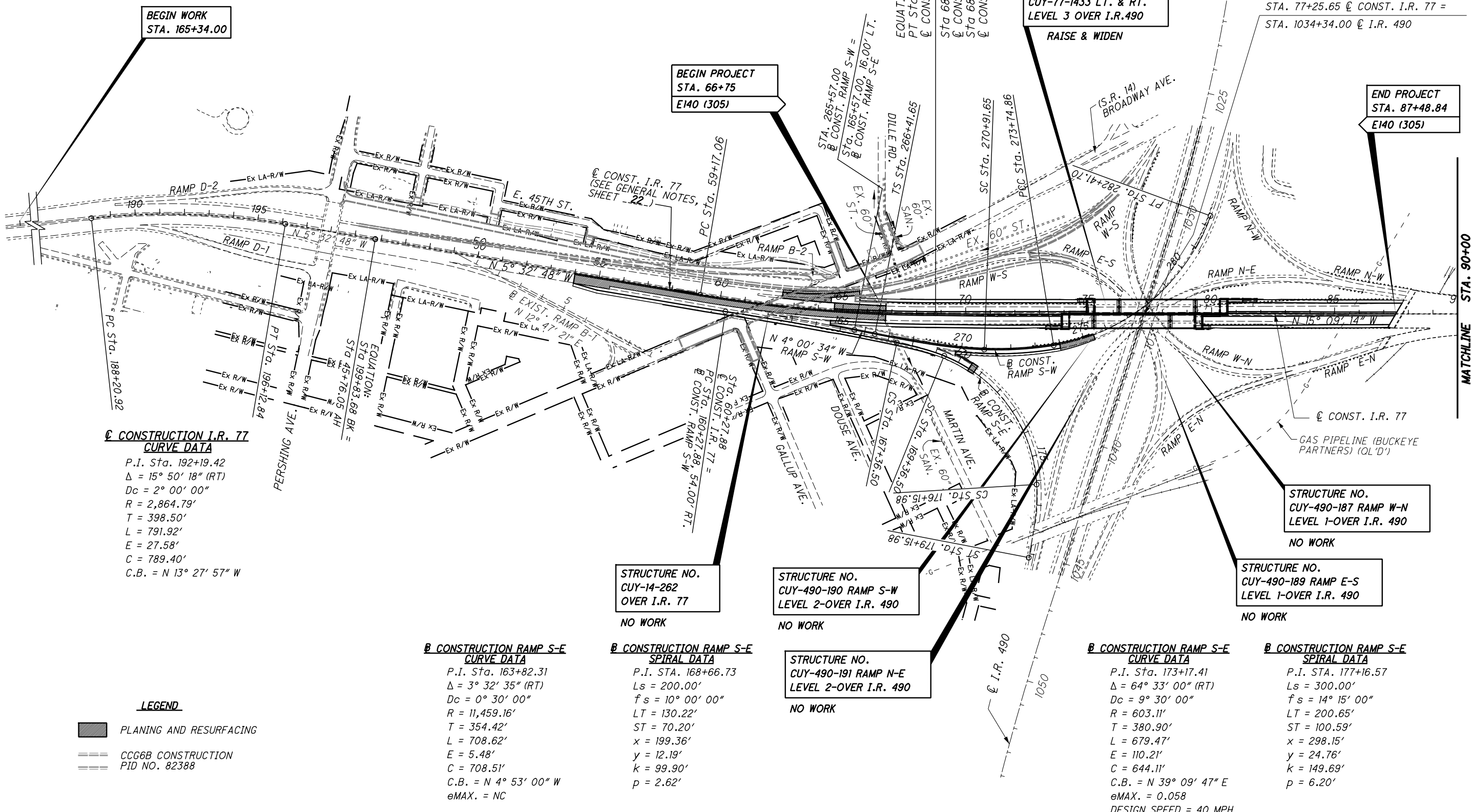
**Ⓑ CONSTRUCTION RAMP S-E
CURVE DATA**

P.I. Sta. 173+17.41
Δ = 64° 33' 00" (RT)
Dc = 9° 30' 00"
R = 603.11'
T = 380.90'
L = 679.47'
E = 110.21'
C = 644.11'
C.B. = N 39° 09' 47" E
eMAX. = 0.058
DESIGN SPEED = 40 MPH

**Ⓑ CONSTRUCTION RAMP S-E
SPIRAL DATA**

P.I. STA. 177+16.57
Ls = 300.00'
fs = 14° 15' 00"
LT = 200.65'
ST = 100.59'
x = 298.15'
y = 24.76'
k = 149.69'
p = 6.20'

- LEGEND**
- PLANING AND RESURFACING
 - CCG6B CONSTRUCTION
PID NO. 82388



STRUCTURE NO.
CUY-77-1433 LT. & RT.
LEVEL 3 OVER I.R.490
RAISE & WIDEN

STRUCTURE NO.
CUY-14-262
OVER I.R. 77
NO WORK

STRUCTURE NO.
CUY-490-190 RAMP S-W
LEVEL 2-OVER I.R. 490
NO WORK

STRUCTURE NO.
CUY-490-191 RAMP N-E
LEVEL 2-OVER I.R. 490
NO WORK

STRUCTURE NO.
CUY-490-187 RAMP W-N
LEVEL 1-OVER I.R. 490
NO WORK

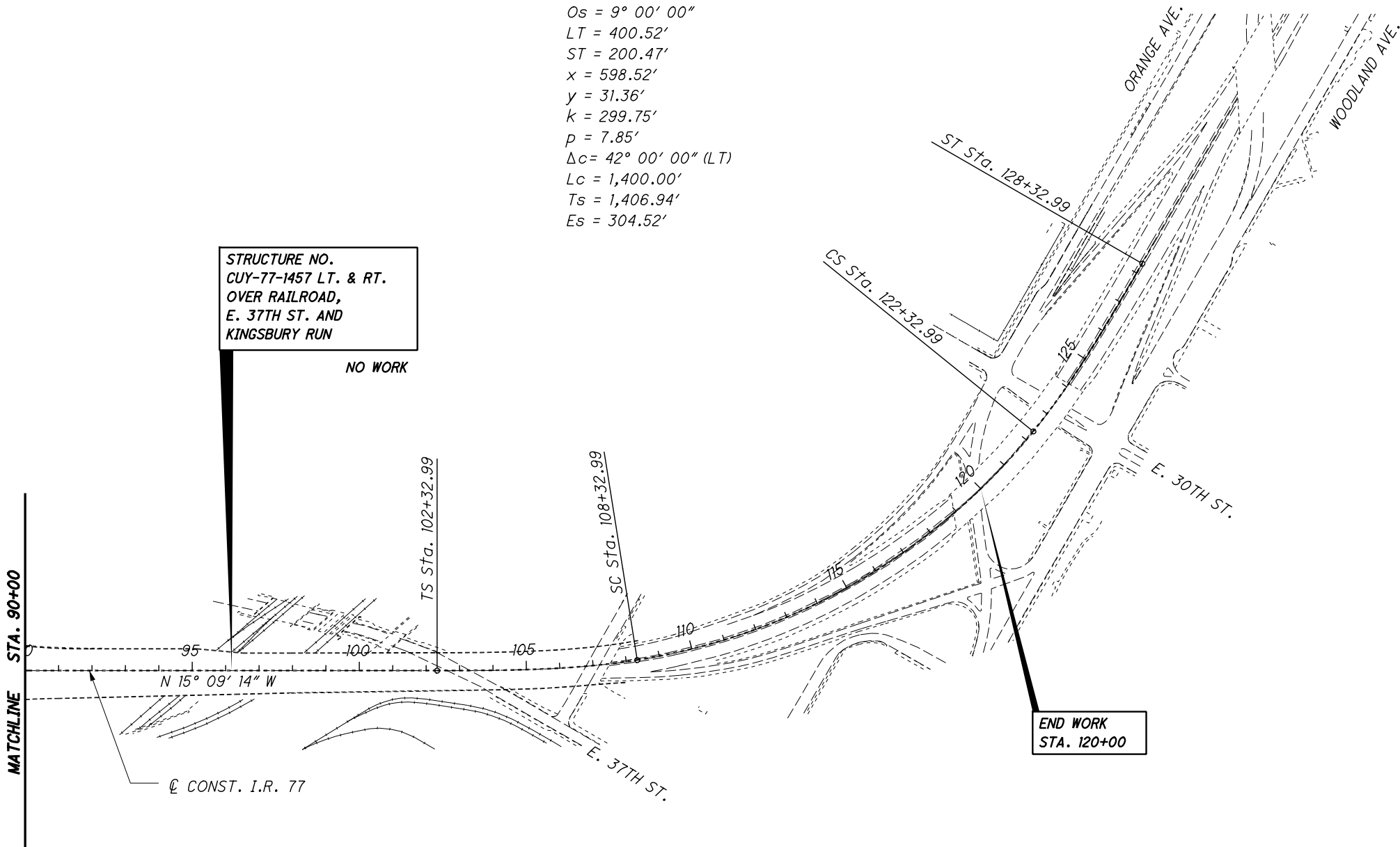
STRUCTURE NO.
CUY-490-189 RAMP E-S
LEVEL 1-OVER I.R. 490
NO WORK

℄ CONSTRUCTION I.R. 77
S.C.S DATA

P.I. Sta = 116+39.93
 $\Delta = 60^\circ 00' 00''$ (LT)
 $Dc = 3^\circ 00' 00''$
 $R = 1,909.86'$
 $Ls = 600.00'$
 $Os = 9^\circ 00' 00''$
 $LT = 400.52'$
 $ST = 200.47'$
 $x = 598.52'$
 $y = 31.36'$
 $k = 299.75'$
 $p = 7.85'$
 $\Delta c = 42^\circ 00' 00''$ (LT)
 $Lc = 1,400.00'$
 $Ts = 1,406.94'$
 $Es = 304.52'$

STRUCTURE NO.
 CUY-77-1457 LT. & RT.
 OVER RAILROAD,
 E. 37TH ST. AND
 KINGSBURY RUN

NO WORK



NOTE:
 SEE SHEET NO. 4 FOR S.B.
 & N.B. ℄ OF CONST. DETAILS

END WORK
 STA. 120+00

CALCULATED
 DAW
 CHECKED
 JDL

0 200 400
 HORIZONTAL
 SCALE IN FEET

SCHEMATIC PLAN - 2

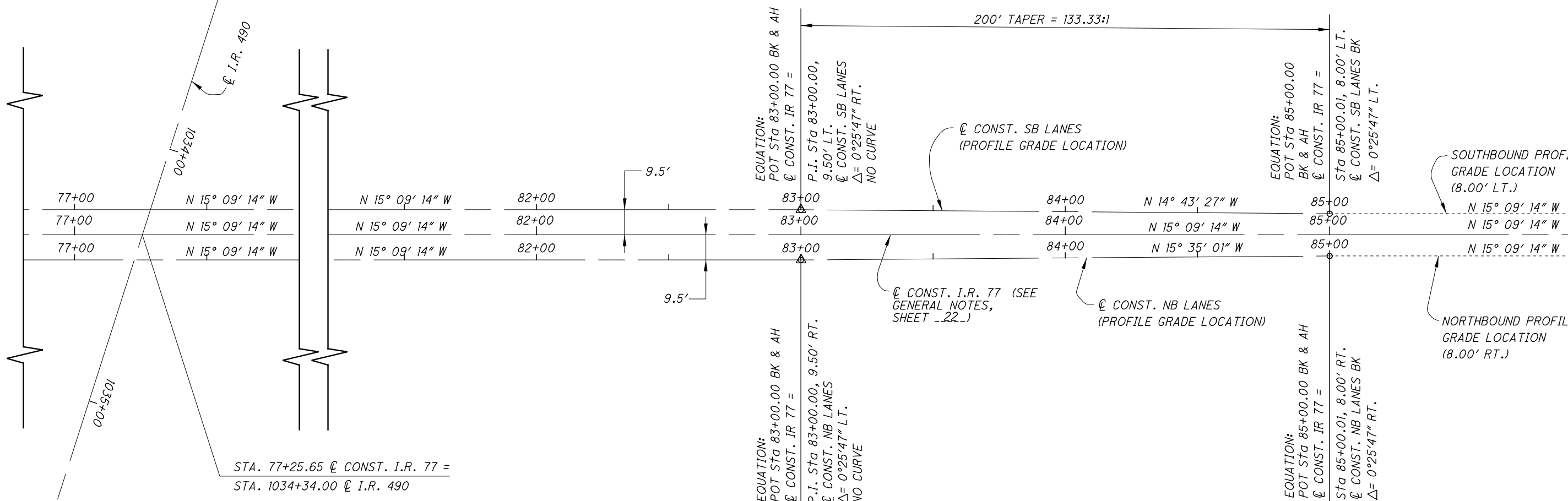
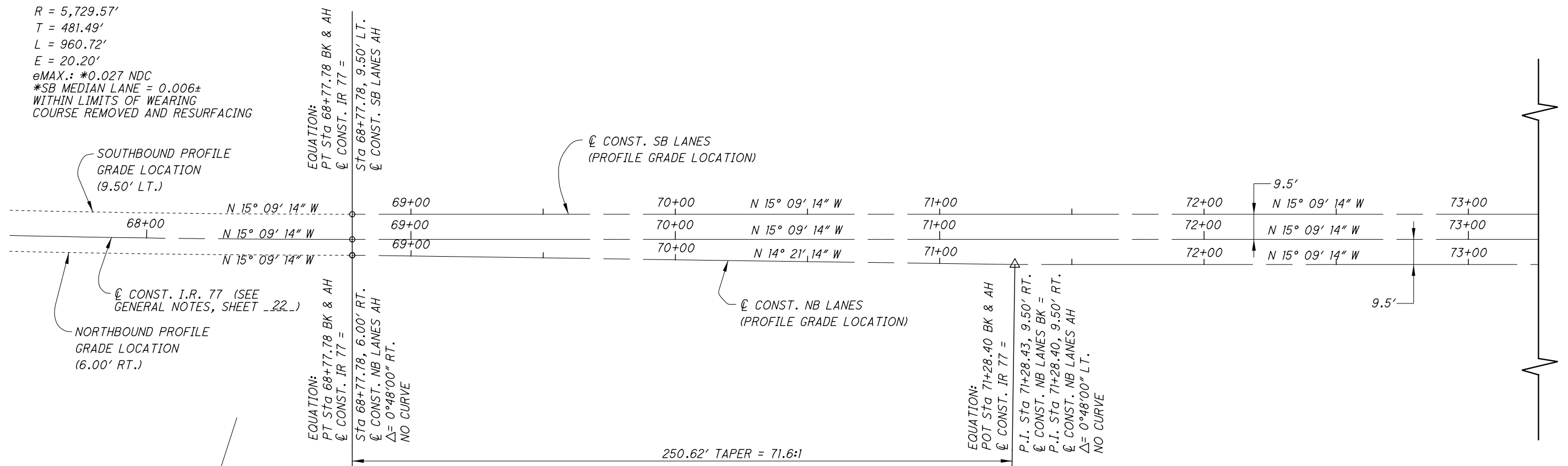
\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\13567gb-2.dgn 12/14/2016 11:02:08 AM DonHelman

**CONST. I.R. 77
CURVE DATA**

P.I. Sta = 63+98.55
 $\Delta = 9^\circ 36' 26''$ (LT)
 $Dc = 1^\circ 00' 00''$
 $R = 5,729.57'$
 $T = 481.49'$
 $L = 960.72'$
 $E = 20.20'$
 eMAX.: *0.027 NDC
 *SB MEDIAN LANE = 0.006±
 WITHIN LIMITS OF WEARING
 COURSE REMOVED AND RESURFACING

CALCULATED
 DAW
 CHECKED
 JDL

0 10 20 40
 HORIZONTAL
 SCALE IN FEET

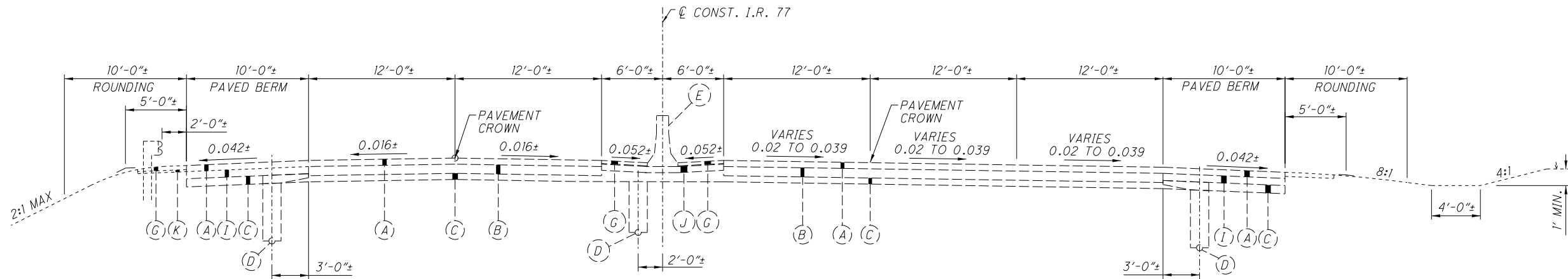


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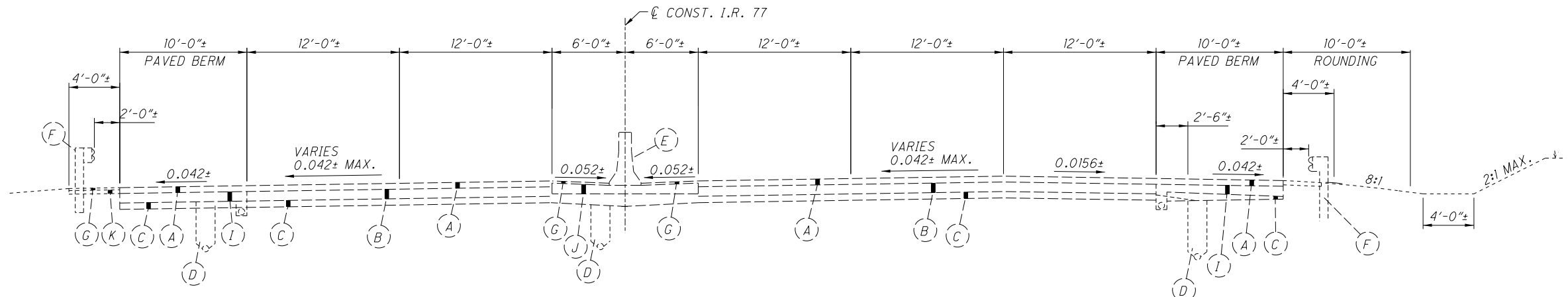
CENTERLINE SCHEMATIC LAYOUT

CUY-77-14.35

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Roadway\Sheets\13567gy001.dgn 12/14/2016 11:03:33 AM DonHeiman



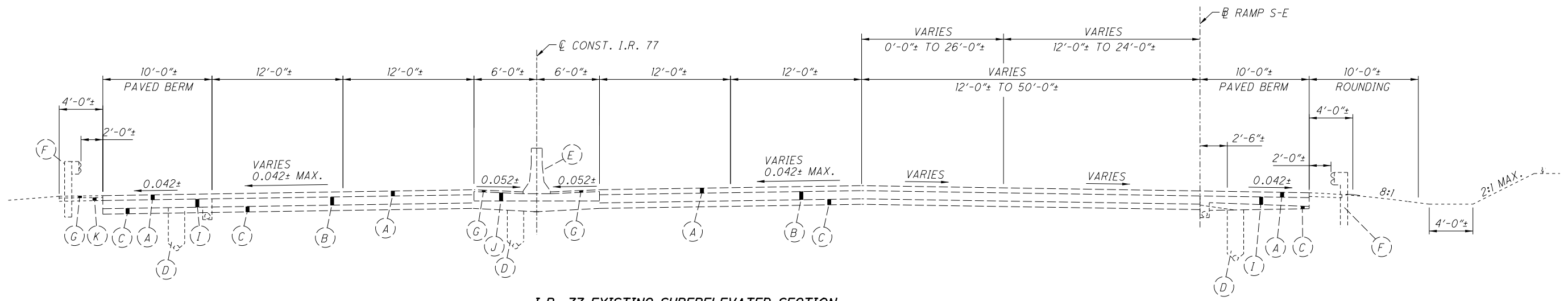
I.R. 77 EXISTING NORMAL SECTION
STA. 54+00± TO STA. 58+60±



I.R. 77 EXISTING SUPERELEVATED SECTION
STA. 58+60± TO STA. 59+17.06±

EXISTING ITEM LEGEND

- (A) 6"± ASPHALT CONCRETE
- (B) 9"± REINFORCED CONCRETE PAVEMENT
- (C) 6"± AGGREGATE BASE
- (D) 6"± UNDERDRAIN
- (E) 50"± CONCRETE BARRIER
- (F) GUARDRAIL, TYPE 5
- (G) 3"± ASPHALT CONCRETE
- (H) 11"± BITUMINOUS AGGREGATE BASE
- (I) CONCRETE BASE OR AGGREGATE BASE
- (J) CONCRETE BASE
- (K) COMPACTED AGGREGATE
- (L) 9"± CONCRETE PAVEMENT

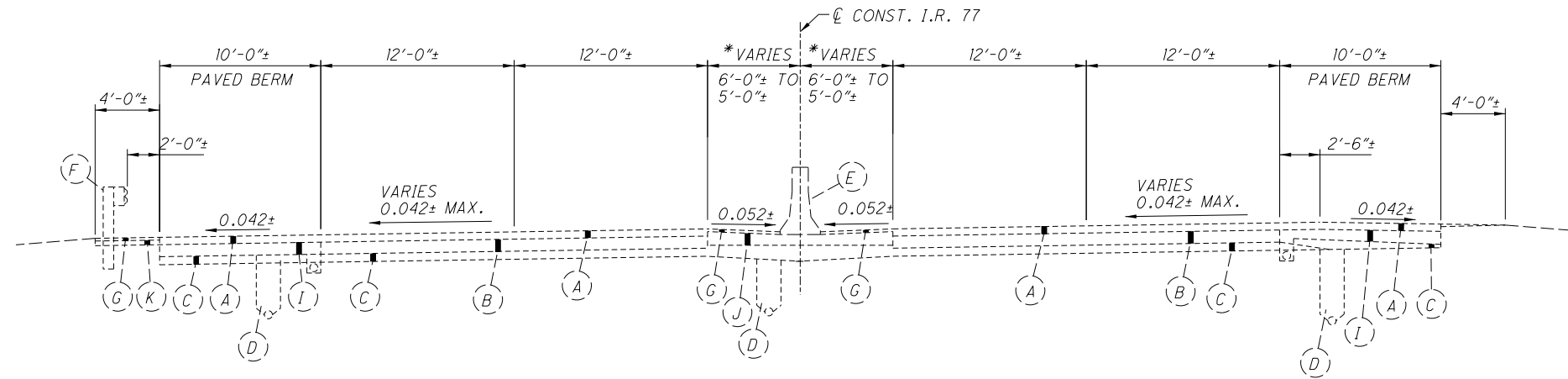


I.R. 77 EXISTING SUPERELEVATED SECTION
STA. 59+17.06± TO STA. 65+45±

EXISTING TYPICAL SECTIONS

CUY-77-14.35

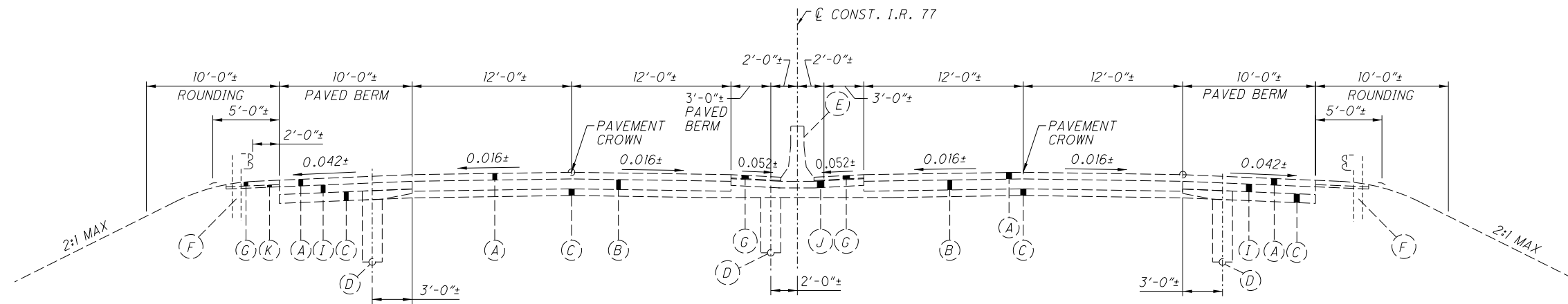
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I.R. 77 EXISTING SUPERELEVATED SECTION

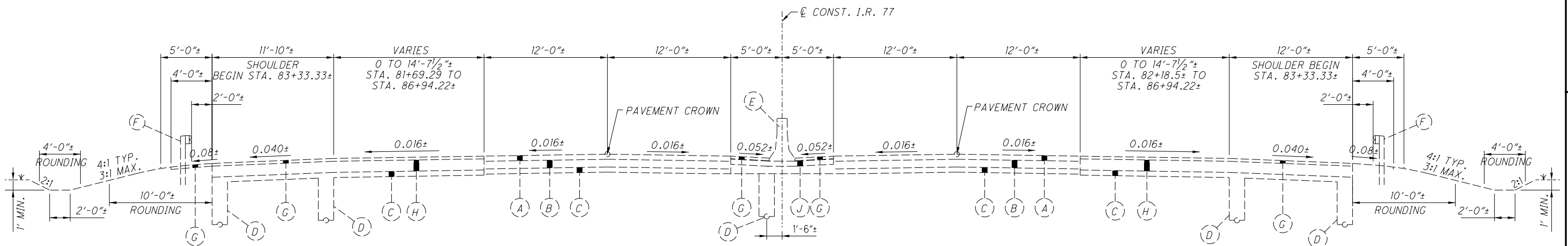
STA. 65+45± TO STA. 70+50±

* STA. 57+00 TO STA. 66+75 - 6'-0"
STA. 66+75 TO STA. 68+75 - VARIES 6'-0" TO 5'-0"
STA. 68+75 TO STA. 70+50 - 5'-0"



I.R. 77 EXISTING NORMAL SECTION

STA. 70+50± TO STA. 74+88.27± (SKEW)
STA. 79+64.20± (SKEW) TO STA. 81+69.29± (LT) STA. 82+18.50± (RT)

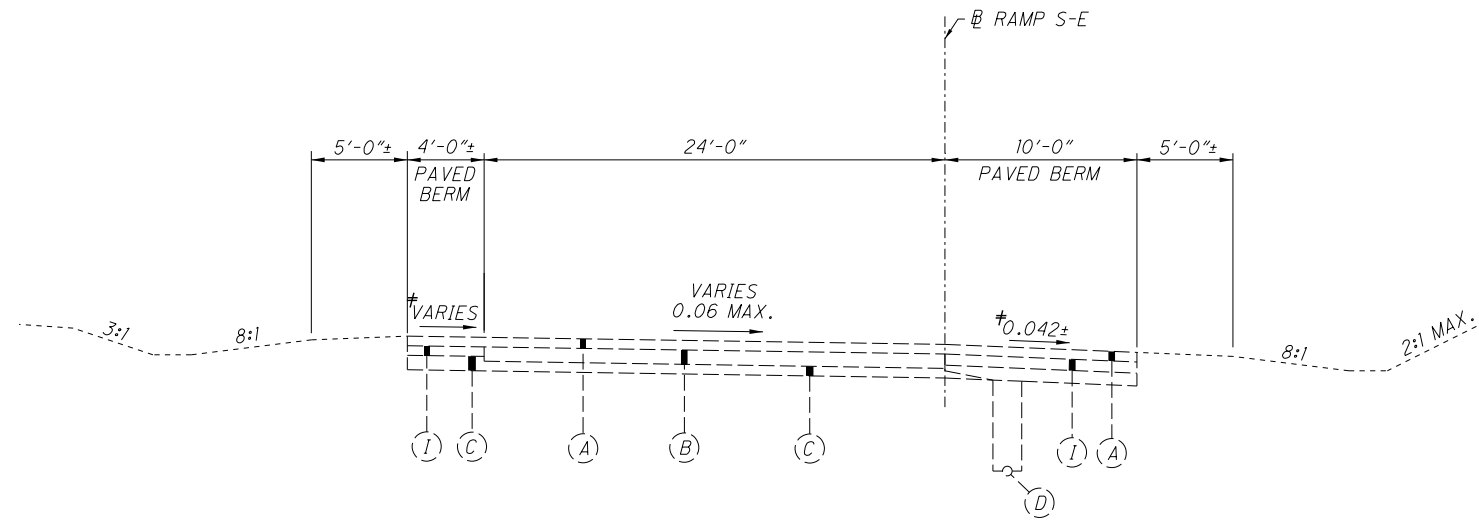


I.R. 77 EXISTING NORMAL SECTION

STA. 81+69.29± TO STA. 87+48.84± (LT.)
STA. 82+18.50± TO STA. 87+48.84± (RT.)

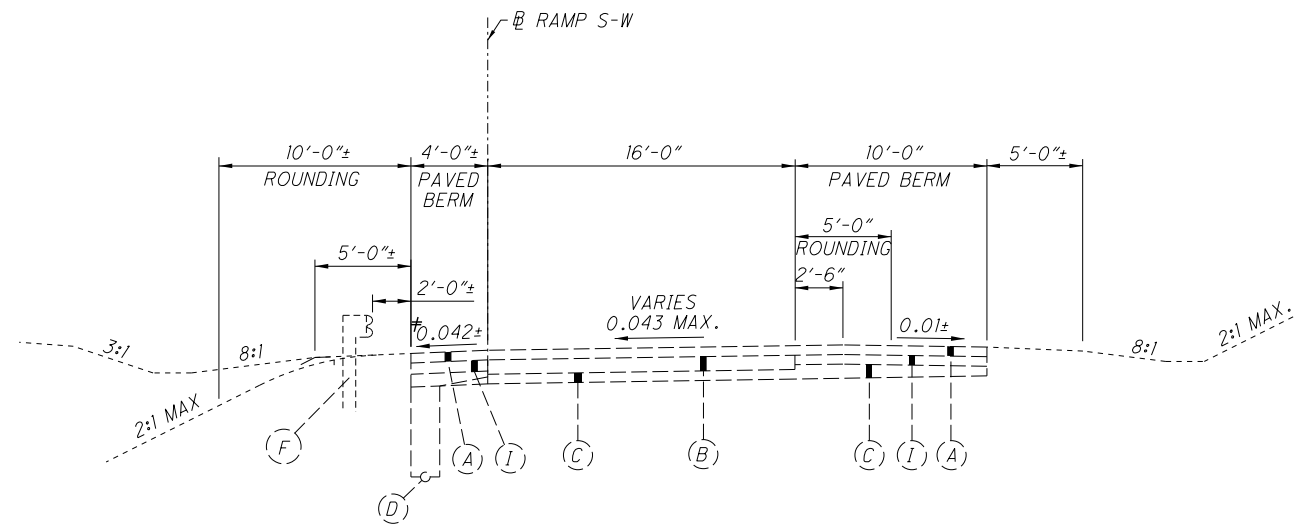
SEE SHEET NO. 5 FOR EXISTING PAVEMENT ITEM LEGEND

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RAMP S-E EXISTING SUPERELEVATED SECTION

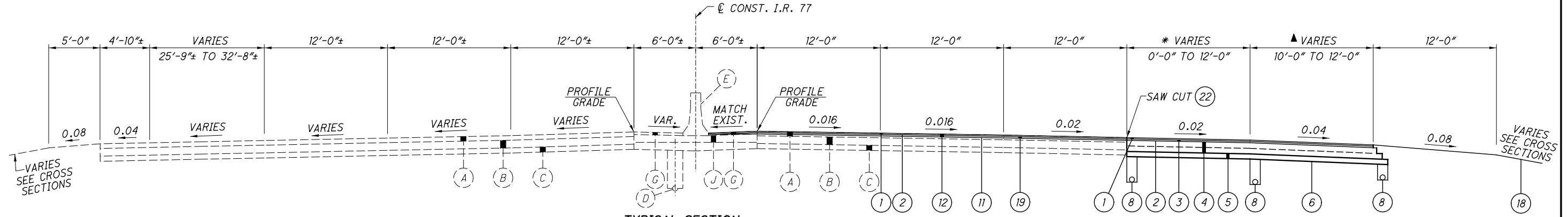
± 0.042 NORMAL OR MATCH SUPERELEVATION SLOPE IF GREATER



RAMP S-W EXISTING SUPERELEVATED SECTION

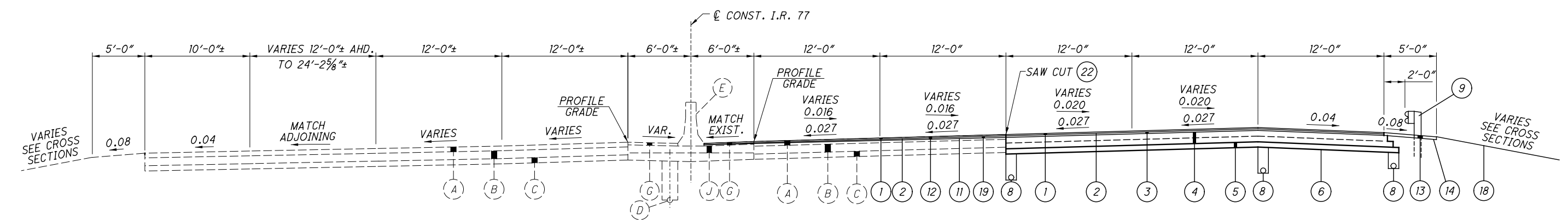
SEE SHEET NO. 5 FOR EXISTING PAVEMENT ITEM LEGEND

F:\2005\105040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\13567CYD.dgn 12/15/2016 8:21:57 AM DonHelman



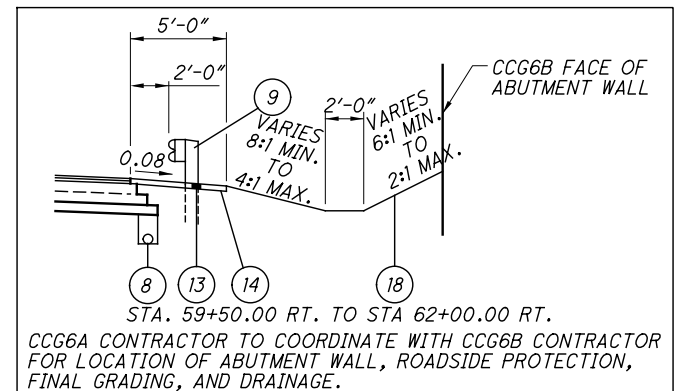
TYPICAL SECTION
 STA. 54+00.00 TO STA. 55+48.36 = 148.36 FT.

* STA. 54+00.00 TO STA. 55+00.00 = 0' - 12'
 STA. 55+00.00 TO STA. 55+48.36 = 12'
 ▲ STA. 54+00.00 TO STA. 55+00.00 = 10' - 12'
 STA. 55+00.00 TO STA. 55+48.36 = 12'



**** SUPERELEVATION SECTION**
 STA. 55+48.36 RT. TO STA. 60+27.88 RT. = 479.52 FT.
 STA. 55+48.36 LT. TO STA. 62+50.00 LT. = 701.64 FT.

**SEE SUPERELEVATION TABLE SHEETS 170-175 FOR SLOPE



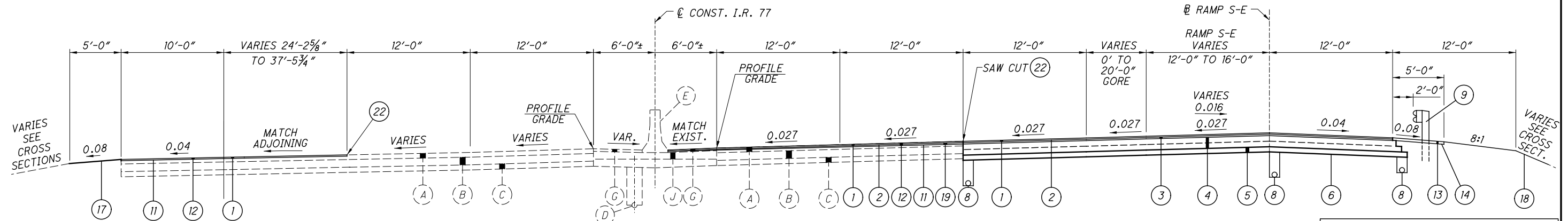
STA. 59+50.00 RT. TO STA 62+00.00 RT.
 CCG6A CONTRACTOR TO COORDINATE WITH CCG6B CONTRACTOR FOR LOCATION OF ABUTMENT WALL, ROADSIDE PROTECTION, FINAL GRADING, AND DRAINAGE.

SEE SHEET NO. 5 FOR EXISTING PAVEMENT ITEM LEGEND
 SEE SHEET NO. 9 FOR PROPOSED ITEM LEGEND
 SEE SHEET NO. 11 FOR EDGE COURSE DESIGN DETAIL

TYPICAL SECTIONS

CUY-77-14.35

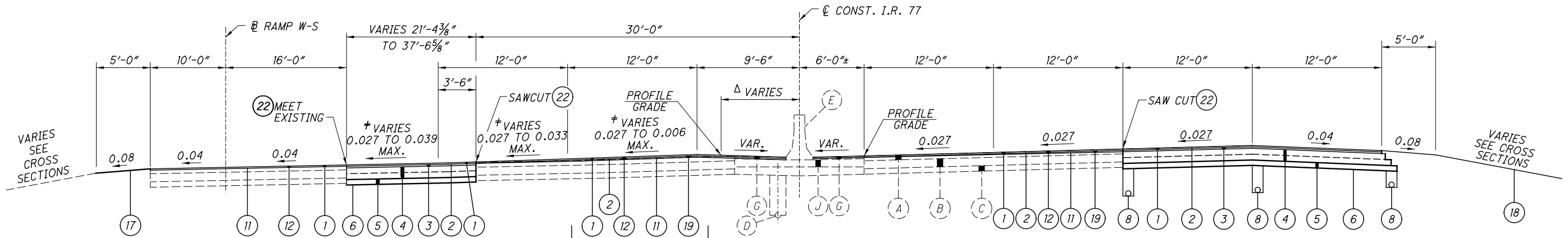
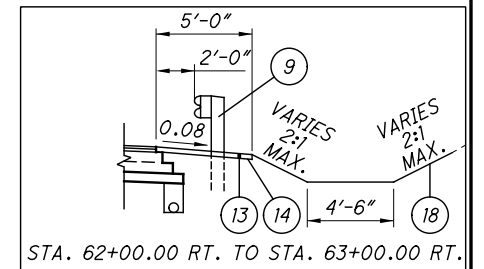
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**** SUPERELEVATION SECTION**

STA. 60+27.88 RT. TO STA. 64+53.28 RT. = 425.40 FT.
 STA. 62+50.00 LT. TO STA. 64+50.00 LT. = 200.00 FT.

**SEE SUPERELEVATION TABLE SHEETS 170-175 FOR SLOPE



**** SUPERELEVATION SECTION**

STA. 64+50.00 LT. TO STA. 65+66.59 LT. = 116.59 FT.
 STA. 64+53.28 RT. TO STA. 65+66.59 RT. = 113.31 FT.

* STA. 64+65.00 LT. TO STA. 66+75.00 LT.

Δ SEE PAVEMENT TRANSITION DETAIL SHEETS 178

† NORMAL DESIGN CRITERIA = 0.027

ITEM LEGEND

- | | | |
|--|---|---|
| <ul style="list-style-type: none"> ① 442 - 1/2" ASPHALT CONCRETE SURFACE COURSE, 12.5MM, TYPE A (446), PG 76-22M, AS PER PLAN ② 407 - NON-TRACKING TACK COAT (FOR INTERMEDIATE COURSE) (APPLICATION RATE 0.055 GAL./S.Y.) ③ 442 - 3/4" ASPHALT CONCRETE INTERMEDIATE COURSE, 19MM, TYPE A (446) ④ 302 - 13" ASPHALT CONCRETE BASE, PG64-22 (TWO LIFTS) ⑤ 304 - 6" AGGREGATE BASE ⑥ 204 - SUBGRADE COMPACTION ⑦ 622 - CONCRETE BARRIER, SINGLE SLOPE, TYPE C1 ⑧ 605 - 6" □ BY TYPE PIPE UNDERDRAIN WITH GEOTEXTILE FABRIC, 707.31 OR 707.41 ⑨ 606 - GUARDRAIL, TYPE MGS ⑩ 511 - CLASS QC1 CONCRETE WITH QC/QA, AS PER PLAN, RETAINING WALL AND FOOTING ⑪ 407 - NON-TRACKING TACK COAT (APPLICATION RATE 0.085 GAL./S.Y.) | <ul style="list-style-type: none"> ⑫ 254 - PAVEMENT PLANING, ASPHALT CONCRETE (THICKNESS = 1/2" AVG.) ⑬ 441 - 3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1 (448), (UNDER GUARDRAIL), AS PER PLAN ⑭ 209 - LINEAR GRADING, AS PER PLAN ⑮ 526 - REINFORCED CONCRETE APPROACH SLABS (T=17"), AS PER PLAN (SEE STRUCTURE PLANS) ⑯ 511 - CLASS QC1 CONCRETE WITH QC/QA, ABUTMENT NOT INCLUDING FOOTING ⑰ 209 - LINEAR GRADING ⑱ 659 - SEEDING AND MULCHING ⑲ 442 - ASPHALT CONCRETE INTERMEDIATE COURSE, 9.5MM, TYPE A (448) (VARIABLE THICKNESS) (SEE PRELEVELING TABLES ON SHEETS 113-114) ⑳ 609 - CURB, TYPE 4-C ㉑ 622 - CONCRETE BARRIER, SINGLE SLOPE, TYPE D, AS PER PLAN | <ul style="list-style-type: none"> ㉒ 875 - LONGITUDINAL JOINT ADHESIVE (SEE NOTE ON SHEET 20) |
|--|---|---|

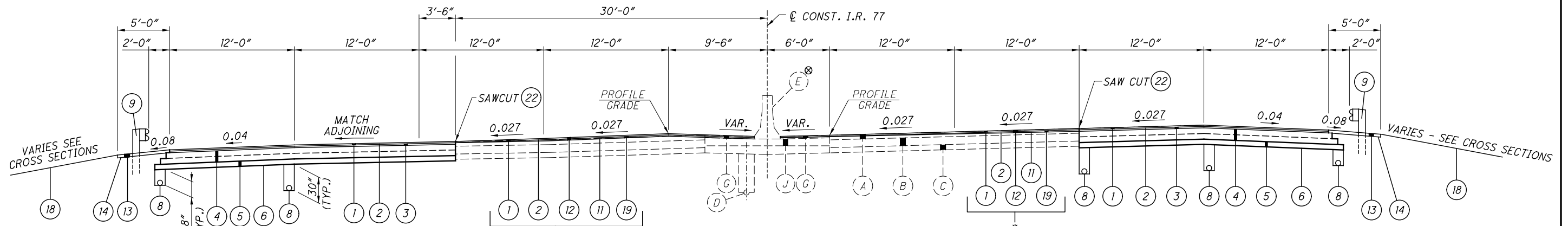
□ UNDERDRAIN TYPES INCLUDE:
 BASE PIPE (18" DEPTH),
 SHALLOW PIPE (30" DEPTH), AND
 UNCLASSIFIED PIPE (VARIABLE DEPTH).
 SEE PLAN SHEETS FOR LOCATIONS.

SEE SHEET NO. 5 FOR EXISTING PAVEMENT ITEM LEGEND

TYPICAL SECTIONS

CUY-77-14.35

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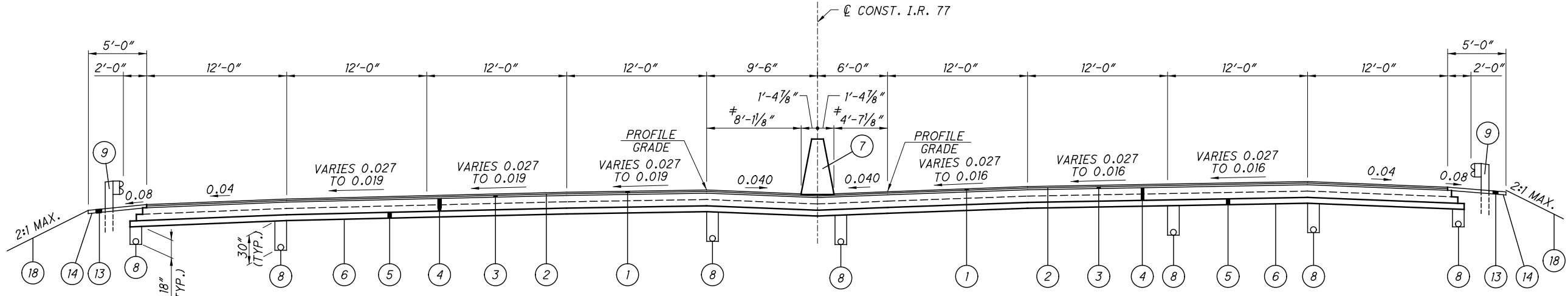


⊗ SEE SHEETS 182-183 FOR BARRIER TRANSITION STA. 66+61.24 TO STA. 66+81.24

**** SUPERELEVATION SECTION**
STA. 65+66.59 TO STA. 66+75.00 = 108.41 FT.

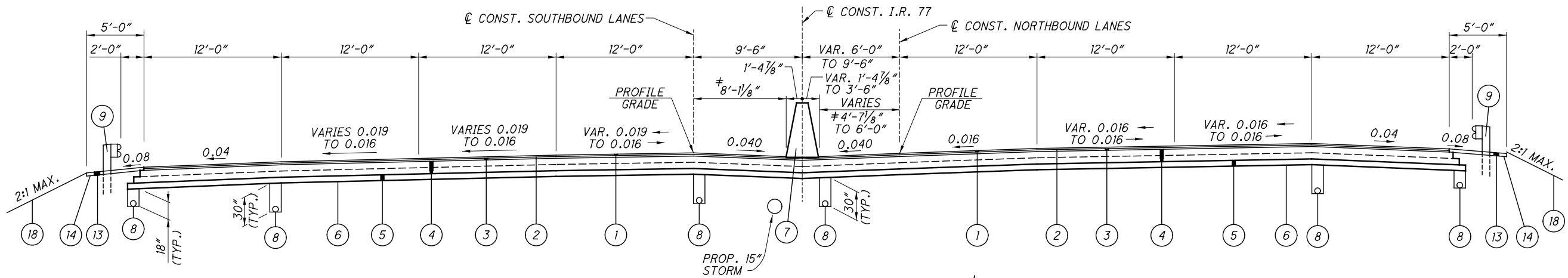
* STA. 64+38.85 RT. TO STA. 66+75.00 RT.
STA. 64+65.00 LT. TO STA. 66+75.00 LT.

** SEE SUPERELEVATION TABLE DETAIL SHEETS 170-175



SUPERELEVATION SECTION
STA. 66+75.00 TO STA. 68+77.78 = 202.78 FT.

‡ NORMAL DESIGN CRITERIA 12'-0"



SUPERELEVATION SECTION
STA. 68+77.78 TO STA. 71+28.40 = 250.62 FT.

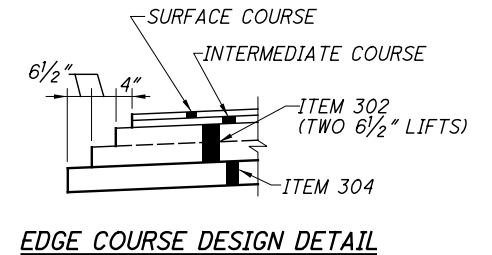
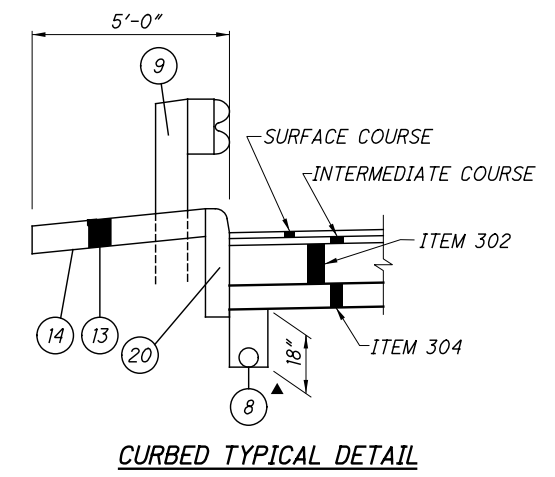
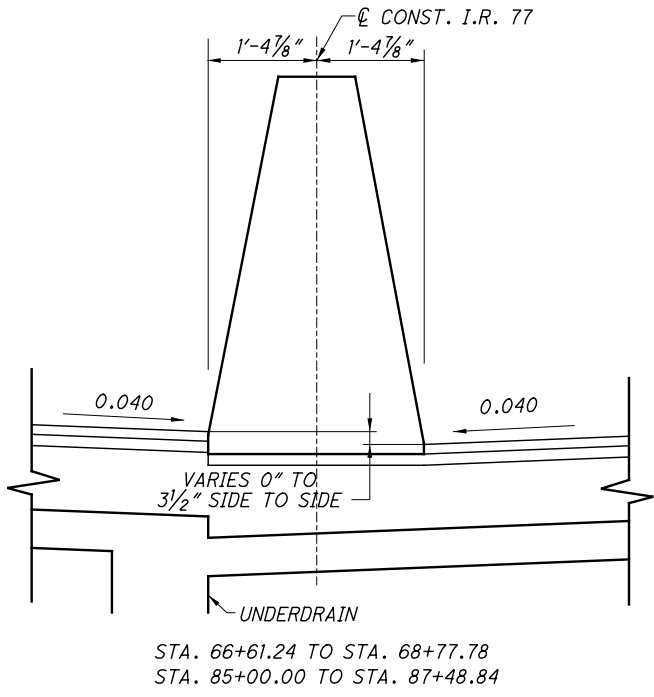
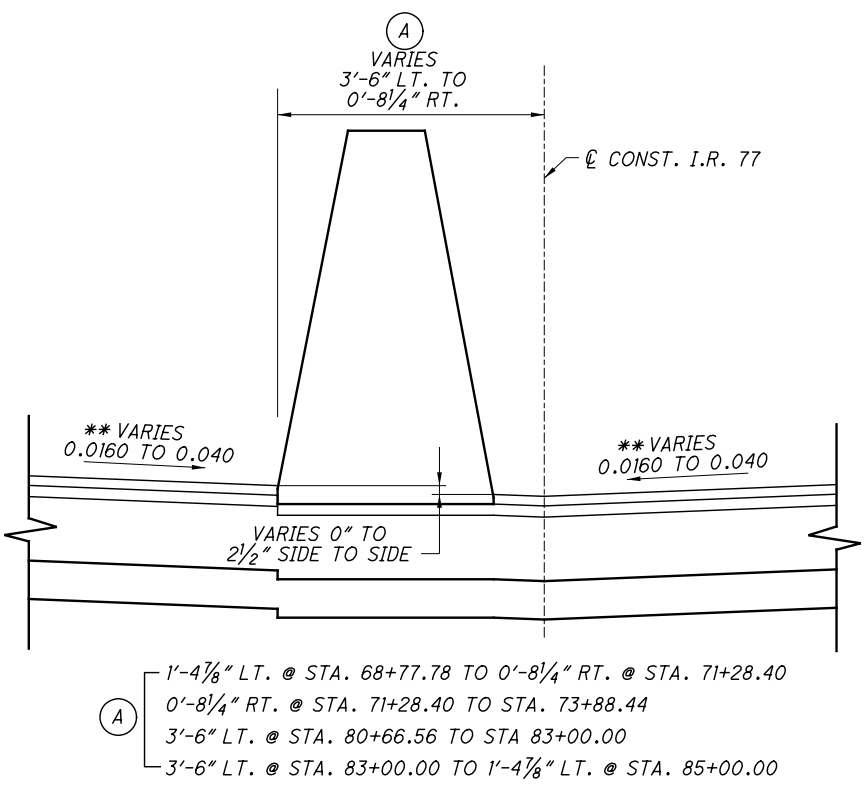
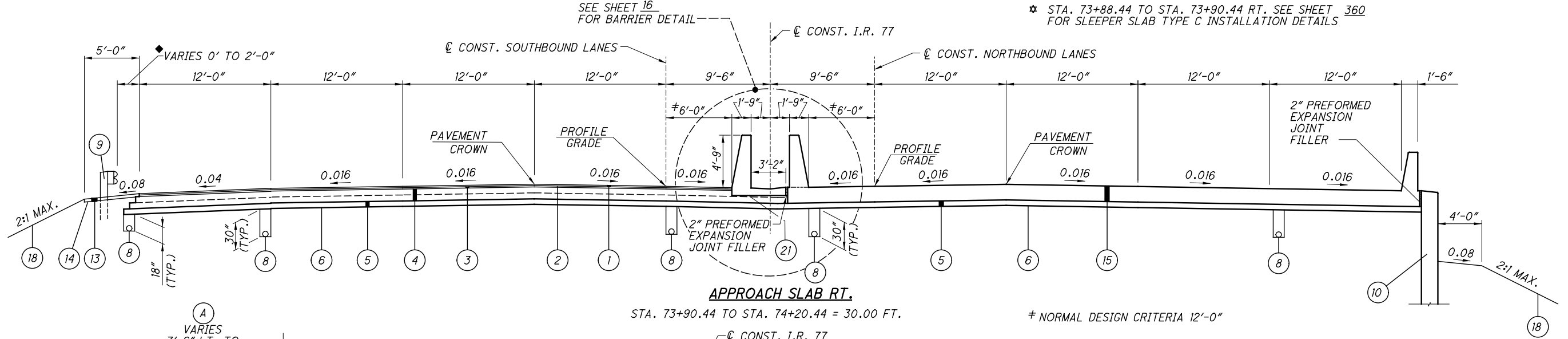
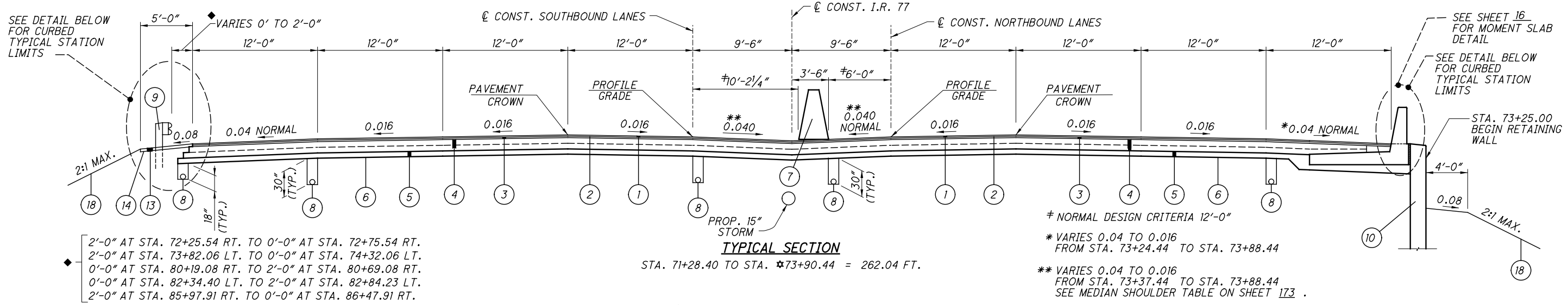
‡ NORMAL DESIGN CRITERIA 12'-0"

SEE SHEET NO. 5 FOR EXISTING PAVEMENT ITEM LEGEND
SEE SHEET NO. 9 FOR PROPOSED ITEM LEGEND
SEE SHEET NO. 11 FOR EDGE COURSE DESIGN DETAIL

TYPICAL SECTIONS

CUY-77-14.35

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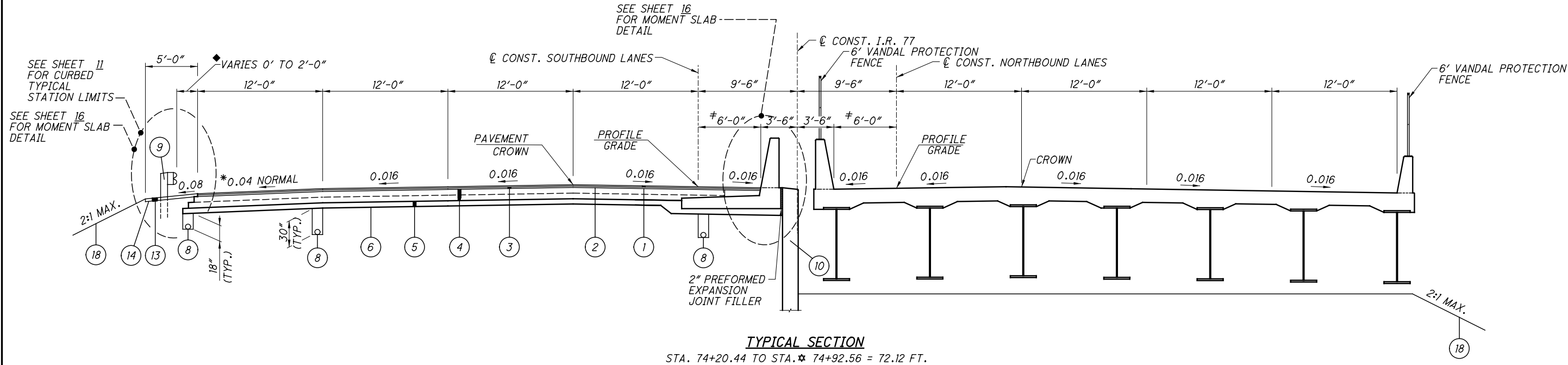


SEE SHEET NO. 9 FOR PROPOSED ITEM LEGEND

TYPICAL SECTIONS

CUY-77-14.35

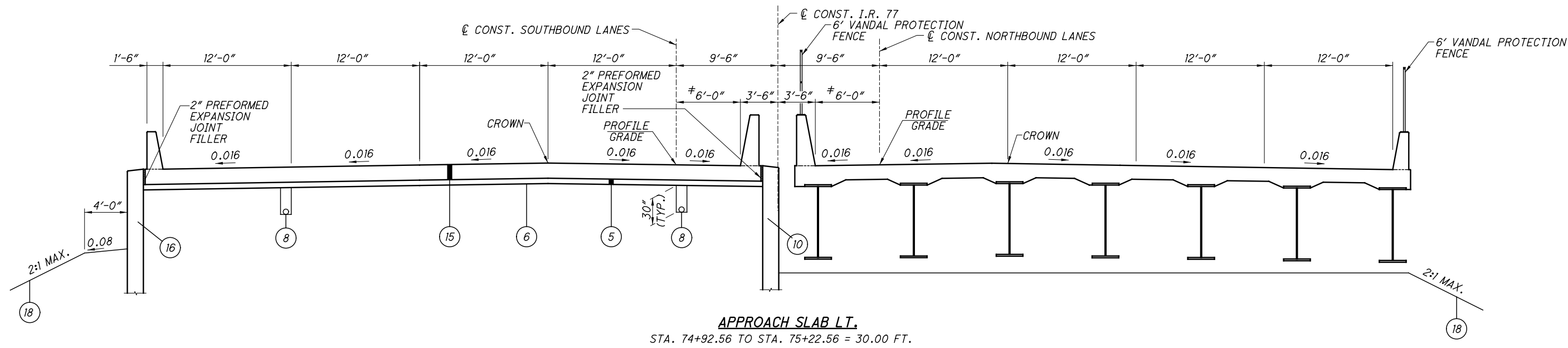
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TYPICAL SECTION

STA. 74+20.44 TO STA. 74+92.56 = 72.12 FT.

- ‡ NORMAL DESIGN CRITERIA 12'-0"
- * VARIES 0.04 TO 0.016 FROM STA. 74+26.56 TO STA. 74+90.56
- ◆ SEE TABLE ON SHEET 11
- ☆ STA. 74+90.56 TO STA. 74+92.56 LT. SEE SHEET 360 FOR SLEEPER SLAB TYPE C INSTALLATION DETAILS



APPROACH SLAB LT.

STA. 74+92.56 TO STA. 75+22.56 = 30.00 FT.

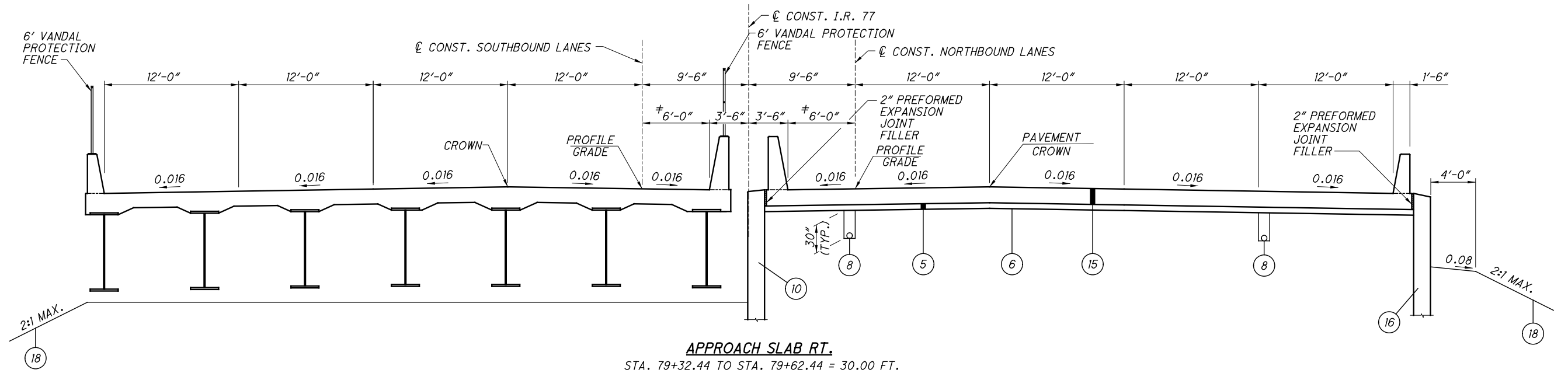
‡ NORMAL DESIGN CRITERIA 12'-0"

SEE SHEET NO. 9 FOR PROPOSED ITEM LEGEND
SEE SHEET NO. 11 FOR EDGE COURSE DESIGN DETAIL

TYPICAL SECTIONS

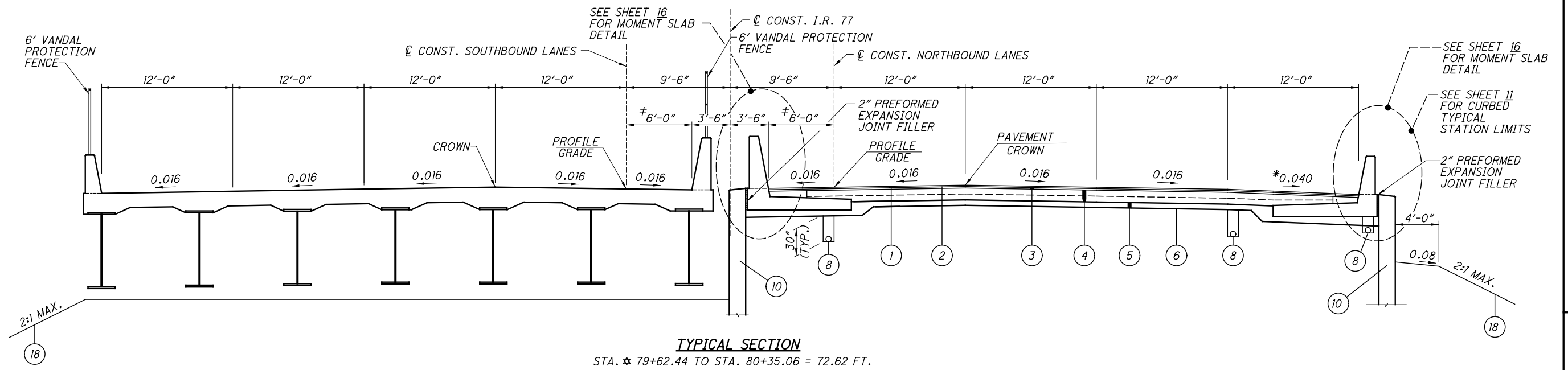
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APPROACH SLAB RT.
STA. 79+32.44 TO STA. 79+62.44 = 30.00 FT.

‡ NORMAL DESIGN CRITERIA 12'-0"



TYPICAL SECTION
STA. * 79+62.44 TO STA. 80+35.06 = 72.62 FT.

‡ NORMAL DESIGN CRITERIA 12'-0"

* VARIES 0.016 TO 0.04
FROM STA. 79+64.44 TO STA. 80+28.44

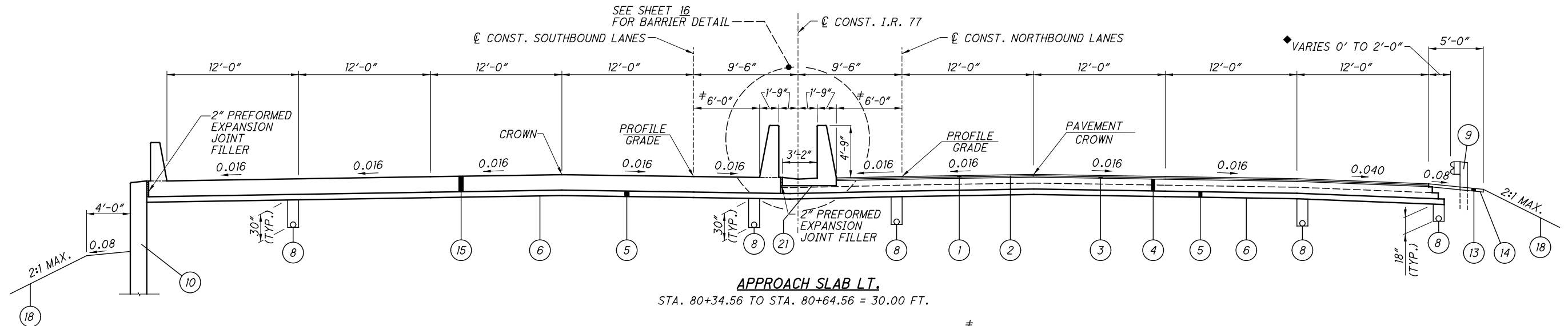
* STA. 79+62.44 TO STA. 79+64.44 RT. SEE SHEET 360
FOR SLEEPER SLAB TYPE C INSTALLATION DETAILS

SEE SHEET NO. 9 FOR PROPOSED ITEM LEGEND
SEE SHEET NO. 11 FOR EDGE COURSE DESIGN DETAIL

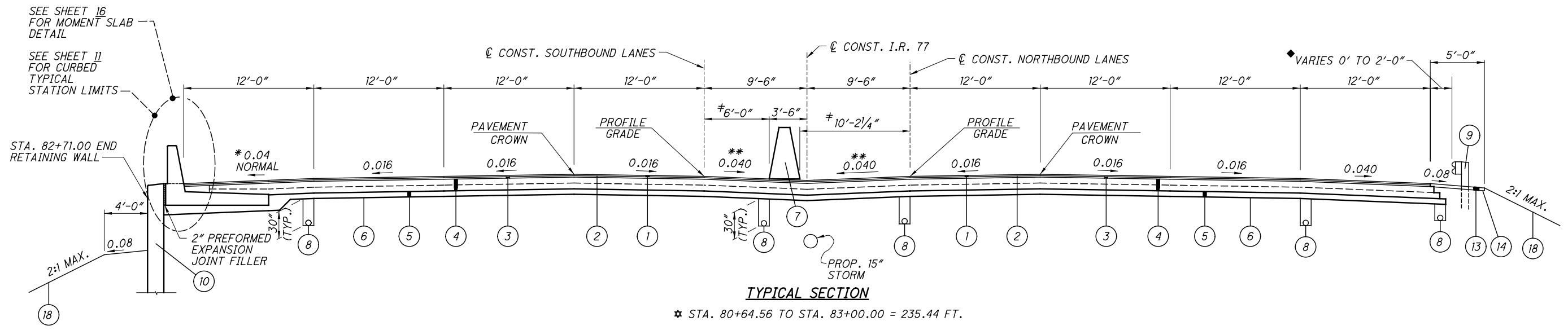
TYPICAL SECTIONS

CUY-77-14.35

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‡ NORMAL DESIGN CRITERIA 12'-0"
 ◆ SEE TABLE ON SHEET 11

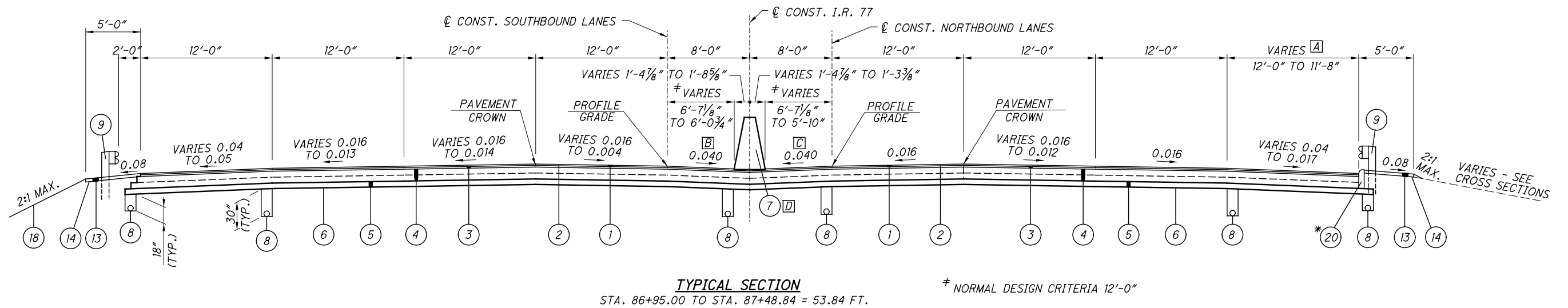
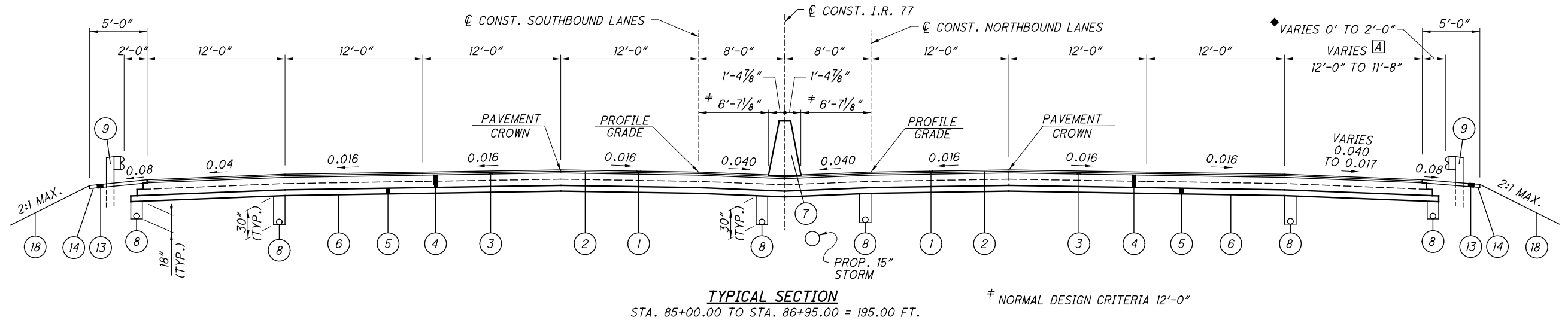
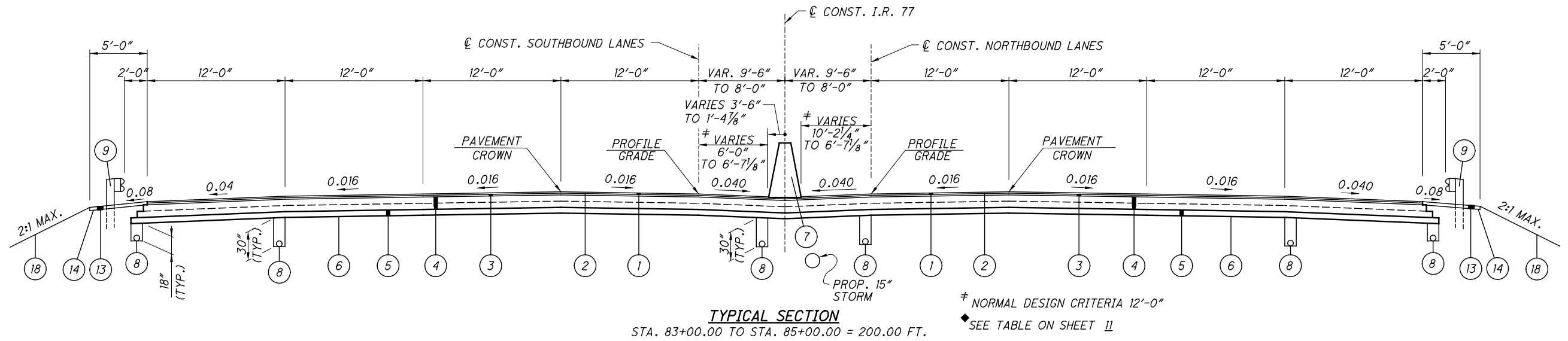


‡ NORMAL DESIGN CRITERIA 12'-0"
 * VARIES 0.016 TO 0.040 FROM STA. 80+66.56 TO STA. 81+30.44
 ** VARIES 0.016 TO 0.040 FROM STA. 80+66.56 TO STA. 81+17.56 SEE MEDIAN SHOULDER TRANSITION TABLE ON SHEET 173 .
 ◆ SEE TABLE ON SHEET 11
 ★ STA. 80+64.56 TO STA. 80+66.56 LT. SEE SHEET 360 FOR SLEEPER SLAB TYPE C INSTALLATION DETAILS

SEE SHEET NO. 9 FOR PROPOSED ITEM LEGEND
 SEE SHEET NO. 11 FOR EDGE COURSE DESIGN DETAIL

TYPICAL SECTIONS

CUY-77-14.35



ⓑ CROSS SLOPE VARIES 0.04 TO 0.005

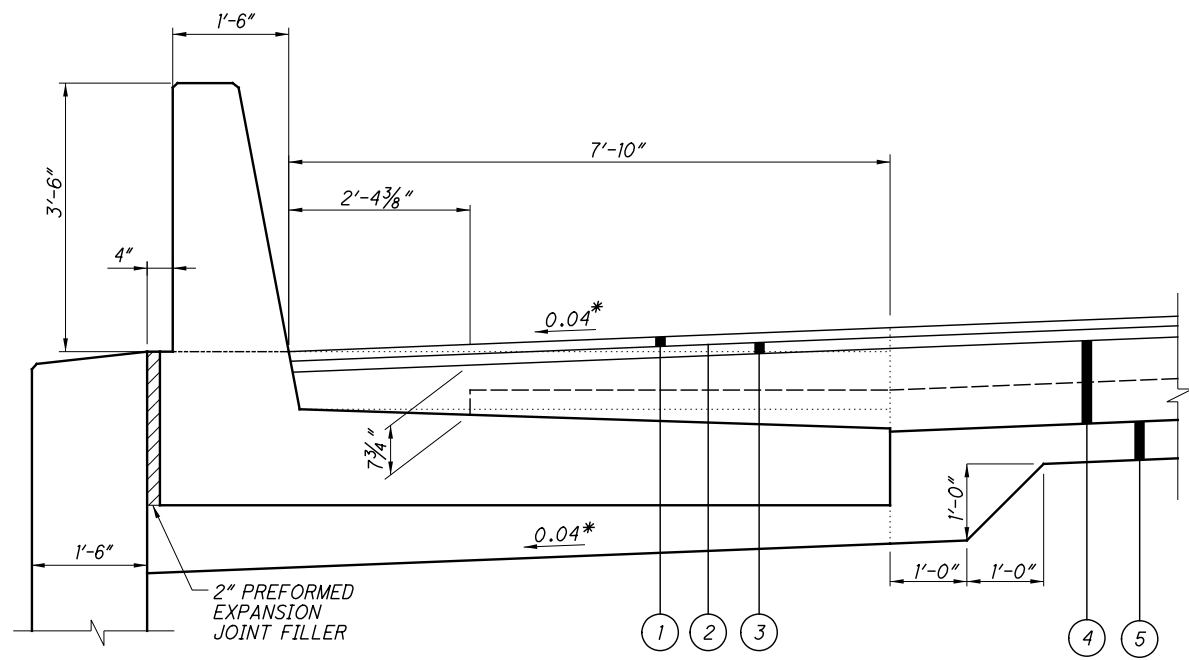
ⓒ CROSS SLOPE VARIES 0.04 TO 0.003

ⓓ BARRIER TRANSITION FROM SINGLE SLOPE TO 3' WIDE NEW JERSEY SHAPE BARRIER FROM 87+25.09 TO 87+45.09 SEE SHEETS 182- 183 FOR MORE INFORMATION

* CURB TYPE 4C STA. 86+47.91 TO STA. 87+22.91 RT. = 75.00'

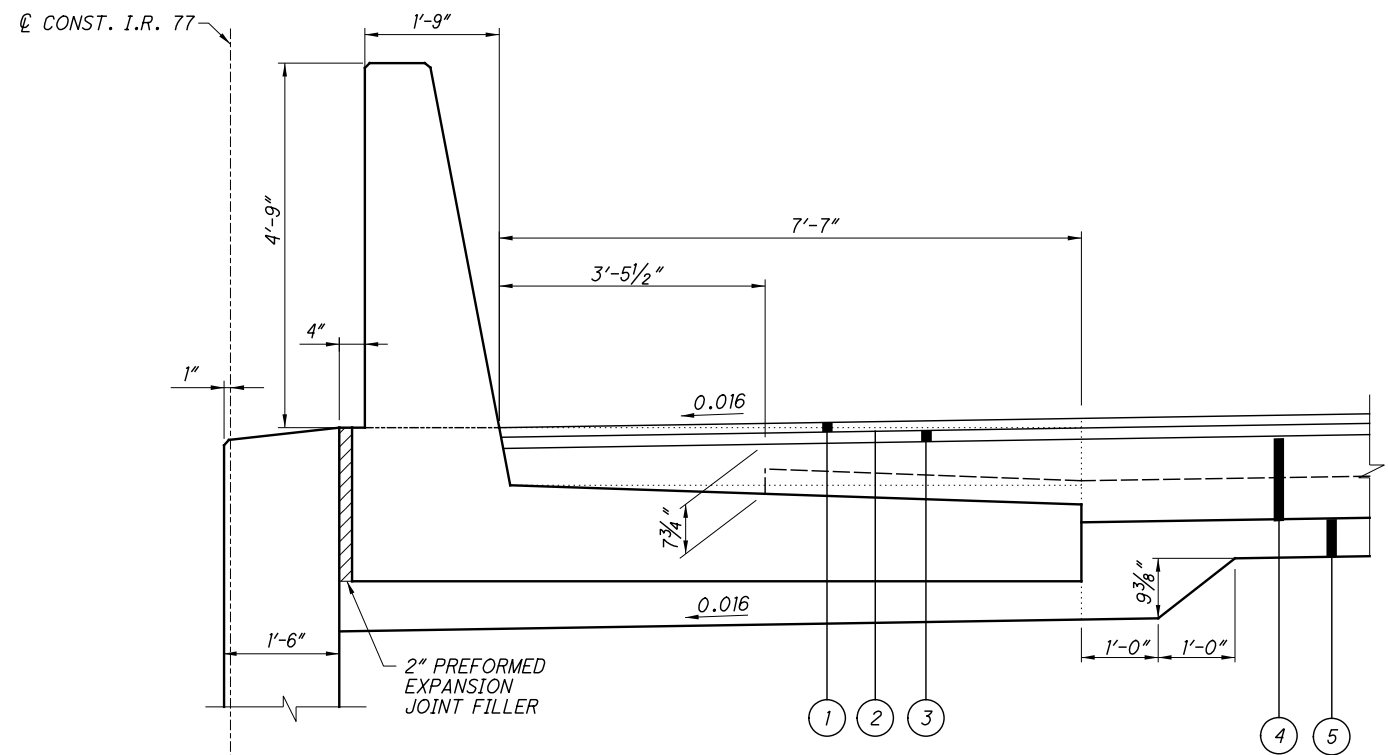
SEE SHEET NO. 9 FOR PROPOSED ITEM LEGEND

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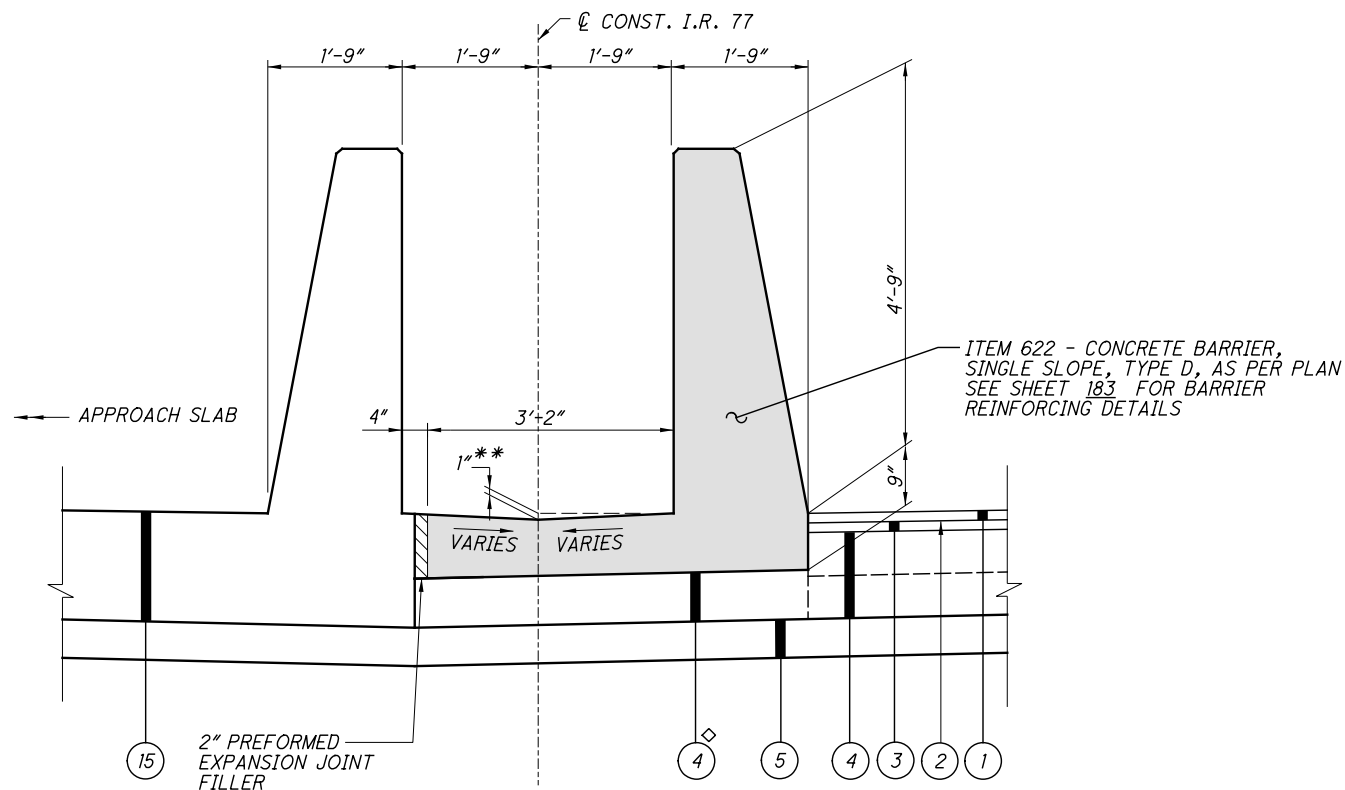
OUTSIDE MOMENT SLAB

NB STA. 73+25.00 TO STA. 73+88.44 RT. = 63.44 FT.
 SB STA. 74+55.06 TO STA. 74+90.56 LT. = 35.50 FT.
 NB STA. 79+64.44 TO STA. 79+96.08 RT. = 31.64 FT.
 SB STA. 80+66.56 TO STA. 81+85.00 LT. = 118.44 FT.



MEDIAN MOMENT SLAB

SB STA. 74+19.94 TO STA. 74+90.56 LT. = 70.62 FT.
 NB STA. 79+64.44 TO STA. 80+35.06 RT. = 70.62 FT.



**ITEM 622 - CONCRETE BARRIER, SINGLE SLOPE
 TYPE D, AS PER PLAN**

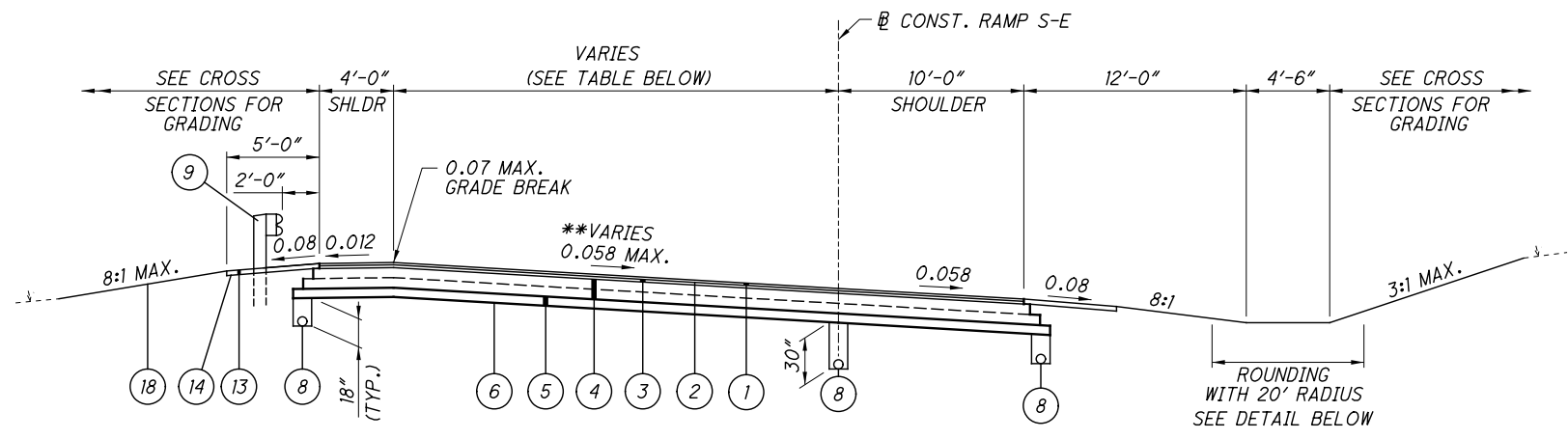
STA. 73+88.44 RT. TO STA. 74+19.94 RT. = 31.50 FT.
 STA. 80+35.06 LT. TO STA. 80+66.56 LT. = 31.50 FT.

* SHOULDER VARIES 0.04 TO 0.016
 FROM NB STA. 73+24.44 TO STA. 73+88.44 RT. = 64.00 FT.
 FROM SB STA. 74+26.56 TO STA. 74+90.56 LT. = 64.00 FT.
 FROM NB STA. 79+64.44 TO STA. 80+28.44 RT. = 64.00 FT.
 FROM SB STA. 80+66.56 TO STA. 81+30.56 LT. = 64.00 FT.

** VARIES 1" DROP TO 0.016 TO MATCH PAVEMENT CROSS SLOPE

◇ 7.25" OF ITEM 302 UNDER ITEM 622 - CONCRETE BARRIER,
 SINGLE SLOPE, TYPE D, AS PER PLAN

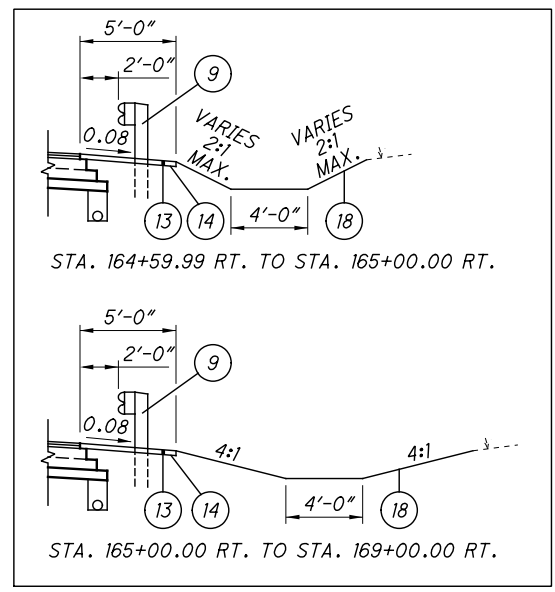
SEE SHEET NO. 9 FOR PROPOSED ITEM LEGEND.
 SEE SHEET NO. 276 FOR MOMENT SLAB DETAILS.



SUPERELEVATED TYPICAL SECTION
 I.R. 77 TO I.R. 490 RAMP S-E
 STA. 169+00.00 TO STA. 170+50.00 = 150.00 FT.

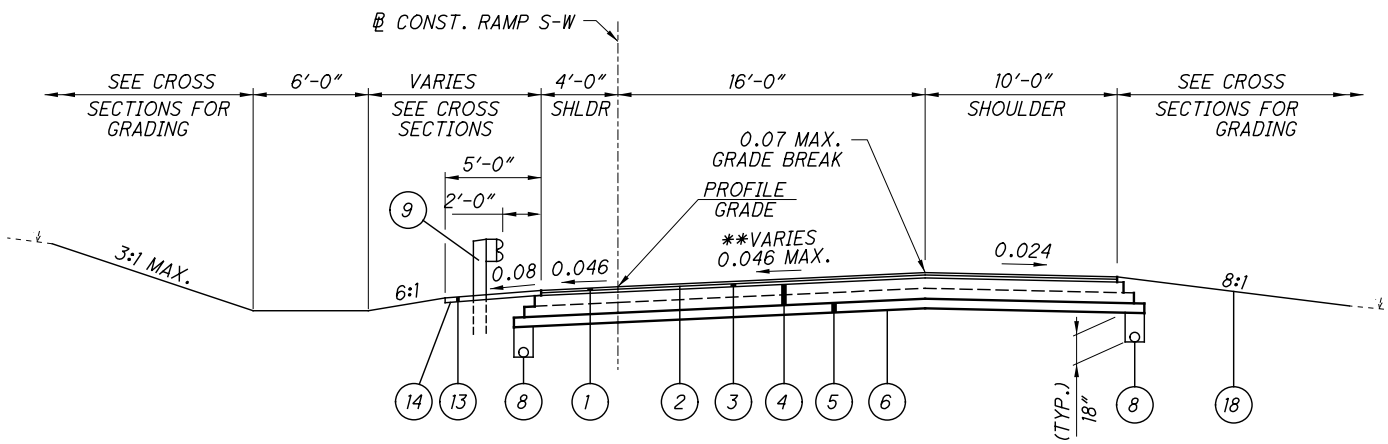
RAMP S-E LANE TABLE

STA. 164+56.99 TO STA. 165+57.00; 16'-0" WIDE
 STA. 165+57.00 TO STA. 169+74.07; 16'-0" WIDE TO 52'-0" WIDE
 STA. 169+74.07 TO STA. 170+50.00; 24'-0" WIDE

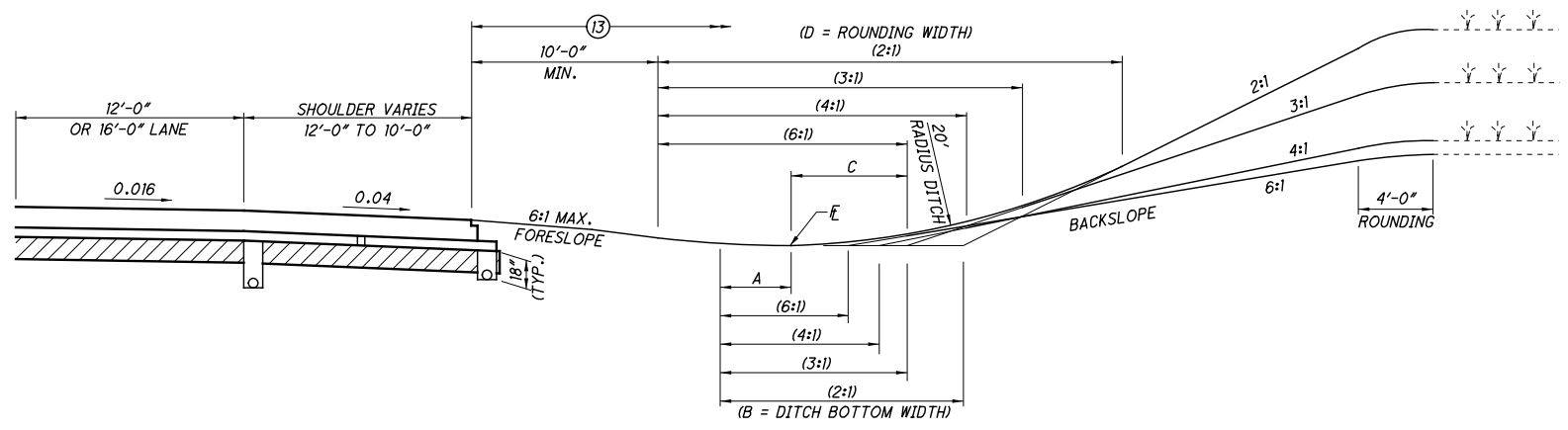


STA. 164+59.99 RT. TO STA. 165+00.00 RT.

STA. 165+00.00 RT. TO STA. 169+00.00 RT.



SUPERELEVATED TYPICAL SECTION
 I.R. 77 TO I.R. 490 RAMP S-W
 STA. 269+76.23 TO STA. 274+00.00 = 423.77 FT.



DITCH TYPICAL SECTION WITHOUT GUARDRAIL
 (WHERE ADDITIONAL GRADING IS REQUIRED - SEE CROSS SECTIONS)

FORE-SLOPE	BACKSLOPE									
	A	C	6:1		4:1		3:1		2:1	
	B	D	B	D	B	D	B	D	B	D
20' RADIUS - RAMPS AND ADJACENT MAINLINE AS MARKED										
8:1	1'-3"	2'-6"	2'-11"	5'-9"	3'-8"	7'-4"	4'-6"	8'-10"		
6:1	1'-8"	3'-3"	3'-4"	6'-7"	4'-1"	8'-2"	4'-11"	9'-7"		
4:1	2'-6"	4'-10"	4'-1"	8'-2"	4'-11"	9'-8"				

** SEE SUPERELEVATION TABLE SHEETS 170-175 FOR SLOPE

SEE SHEET NO. 9 FOR PROPOSED ITEM LEGEND

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UTILITIES

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

TRANSPORTATION

GREATER CLEVELAND REGIONAL TRANSIT AUTHORITY (GCRTA)
1240 WEST 6TH STREET
CLEVELAND, OHIO 44115
ATTN: MIKE SHIPPER
PHONE: (216) 566-5084
FAX: (216) 431-6209

WATER

CITY OF CLEVELAND
DIVISION OF WATER
1201 LAKESIDE AVENUE, 2nd FLOOR
CLEVELAND, OHIO 44114
ATTN: FRED ROBERTS
PHONE: (216) 664-2444, EXT. 5520
FAX: (216) 664-2838

CITY OF CLEVELAND
DIVISION OF WATER
POLLUTION CONTROL
12302 KIRBY ROAD
CLEVELAND, OHIO 44108
ATTN: RACHID ZOGHAIB
PHONE: (216) 664-3785

SEWER

NORTHEAST OHIO REGIONAL SEWER DISTRICT (NEORS)
3900 EUCLID AVENUE
CLEVELAND, OHIO 44115
ATTN: MARY MACIEJOWSKI
PHONE: (216) 881-6600, EXT. 6466

GAS

DOMINION EAST OHIO GAS COMPANY
320 SPRINGSIDE DR.
AKRON, OHIO 44333
ATTN: BRYAN DAYTON
PHONE: (330) 664-2409

CABLE

TIME WARNER CABLE
7 SEVERANCE CIRCLE
CLEVELAND HEIGHTS, OHIO 44118
ATTN: PAT SANTOEMMO
PHONE: (216) 575-8016
EXT. 1216554202
FAX: (216) 581-3262

TIME WARNER CABLE
8179 DOW CIRCLE
STRONGSVILLE, OHIO 44136
SUPERVISOR: GARY NAUMANN
PHONE: (216) 575-8016, EXT. 5033
FIELD ENGINEER: PAUL SILVESTRO
PHONE: (216) 575-8016
EXT. 1216555034
FAX: (440) 826-2940

ELECTRIC

CEI, FIRST ENERGY
6896 MILLER RD. #101
BRECKSVILLE, OHIO 44141
ATTN: TED RADER
PHONE: (404) 717-6845

DIVISION OF CLEVELAND PUBLIC POWER (CPP)
CLEVELAND PUBLIC POWER CIRCUITS:
STREET LIGHTING
1300 LAKESIDE AVENUE
CLEVELAND, OHIO 44114
ATTN: JAMES FERGUSON,
CHIEF, BUREAU OF STREET LIGHTING
PHONE: (216) 420-7704, EXT. 183

COMMUNICATIONS

AT & T OHIO
13630 LORAIN AVENUE 2ND FLOOR
CLEVELAND, OHIO 44111
ATTN: JAMES JANIS
PHONE: (216) 476-6142
FAX: (216) 476-6013

WINDSTREAM
560 TERNES AVENUE
ELYRIA, OHIO 44035
ATTN: GEOFFREY HAMM
PHONE: (440) 329-4245

LIGHTING

ODOT DISTRICT 12
5500 TRANSPORTATION BLVD.
GARFIELD HEIGHTS, OHIO 44125
ROADWAY SERVICES LIGHTING
ATTN: ANTHONY TOTH
PHONE: (216) 584-2221

SIGNALS

CITY OF CLEVELAND, DIVISION OF TRAFFIC ENGINEERING
601 LAKESIDE ROAD, RM 518
CLEVELAND, OHIO 44114
ATTN: ROB MAVEC
PHONE: (216) 644-3194

PETROLEUM

BUCKEYE PARTNERS, L.P.
(BUCKEYE OIL PIPELINE COMPANY)
FIVE TEK PARK
9999 HAMILTON BOULEVARD
BREINIGSVILLE, PA 18031
ATTN: TRENT MOODY
PHONE: (610) 904-4145

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.

WORK LIMITS

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

CLEARING AND GRUBBING

ALTHOUGH THERE ARE NO TREES OR STUMPS SPECIFICALLY MARKED FOR REMOVAL WITHIN THE LIMITS OF THE PROJECT, A LUMP SUM QUANTITY IS INCLUDED IN THE GENERAL SUMMARY FOR ITEM 201 - CLEARING AND GRUBBING. ALL PROVISIONS AS SET FORTH IN THE SPECIFICATIONS UNDER THIS ITEM ARE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 201 - CLEARING AND GRUBBING.

ROUNDING

THE ROUNDING AT SLOPE BREAKPOINTS SHOWN ON THE TYPICAL SECTIONS APPLIES TO ALL CROSS-SECTIONS EVEN THOUGH OTHERWISE SHOWN.

PROTECTION OF RIGHT-OF-WAY LANDSCAPING

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

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

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

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

ITEM 619 - FIELD OFFICE, TYPE C, AS PER PLAN

A TYPE C FIELD OFFICE IS REQUIRED FOR THIS PROJECT. THE FOLLOWING REVISIONS TO EQUIPMENT SUPPLIED WITH TYPE C FIELD OFFICE, AS SPECIFIED IN TABLE 619.02-1, FIELD OFFICE, SHALL APPLY:

THE COPIER SUPPLIED MUST MEET THE REQUIREMENTS OF THE COPIER SUPPLIED WITH THE TYPE C FIELD OFFICE.

THE BROAD BAND INTERNET CONNECTION MUST MEET A MINIMUM DOWNLOAD SPEED OF 10MB PER SECOND AND A MINIMUM UPLOAD SPEED OF 5MB PER SECOND.

CONTRACTOR SHALL FURNISH, SET UP, AND MAINTAIN A WI-FI ROUTER MEETING THE REQUIREMENTS OF IEEE802.11AC FOR THE EXCLUSIVE USE OF THE DEPARTMENT.

ALL OTHER FIELD OFFICE ITEMS SUPPLIED SHALL MEET THE RERQUIREMENTS OF A TYPE C FIELD OFFICE.

ITEM 619 - FIELD OFFICE, TYPE C, AS PER PLAN 36 MNTH

PAVING UNDER GUARDRAIL

THIS OPERATION SHALL INCLUDE PREPARATION OF THE GRADED SHOULDER USING ITEM 209 - RESHAPING UNDER GUARDRAIL, AS PER PLAN AND PAVING UNDER THE GUARDRAIL USING ITEM 441 - ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, (448), (UNDER GUARDRAIL), AS PER PLAN

ITEM 209 - RESHAPING UNDER GUARDRAIL, AS PER PLAN SHALL CONSIST OF EXCAVATING TOPSOIL OR OLD ASPHALT CONCRETE COMPACTION AND APPLYING HERBICIDE AS SPECIFIED IN THE PLANS AND IN ACCORDANCE WITH THE FOLLOWING:

ALL COLLECTED DEBRIS AND TOPSOIL, INCLUDING RHIZOMES, ROOTS, AND OTHER VEGETATIVE PLANT MATERIAL SHALL BE REMOVED AND DISPOSED OF AS SPECIFIED IN 105.17.

THE REMOVED MATERIAL SHALL BE REPLACED WITH MATERIAL AS DETAILED ON THE TYPICAL SECTIONS OR AS APPROVED BY THE ENGINEER.

HERBICIDE SHALL BE EPA APPROVED FOR PAVING UNDER GUARDRAIL. IT SHALL BE APPLIED TO THE PREPARED AREA AFTER FINAL LEVELING AND GRADING HAS BEEN COMPLETED. THE APPLICATION SHALL BE JUST PRIOR TO PAVING AND SHALL STRICTLY ADHERE TO THE MANUFACTURER'S INSTRUCTIONS. DO NOT SPRAY WITHIN 1000 FT. OF A STATE SCENIC RIVER.

EACH SUCCESSFUL BIDDER MUST BE LICENSED BY THE OHIO DEPARTMENT OF AGRICULTURE AS A COMMERCIAL APPLICATOR AND ALL PERSONS INVOLVED IN THE ACTUAL SPRAYING SHALL BE LICENSED AS COMMERCIAL OPERATORS IN THE APPROPRIATE SPRAY CATEGORY.

HERBICIDE LABEL, MATERIAL SAFETY DATA SHEET AND COPY OF APPLICATORS LICENSES SHALL BE SUBMITTED TO THE ENGINEER FOR VERIFICATION PRIOR TO COMMENCING WORK.

ALL LABOR, EQUIPMENT AND MATERIALS REQUIRED TO PERFORM THE WORK OUTLINED ABOVE SHALL BE INCLUDED FOR PAYMENT UNDER ITEM 209 - RESHAPING UNDER GUARDRAIL, AS PER PLAN.

PAVING UNDER GUARDRAIL SHALL CONSIST OF PLACING ITEM 441 ASPHALT CONCRETE TO A DEPTH OF 3" AND A MAXIMUM WIDTH OF 4" USING ONE OF THE FOLLOWING METHODS:

METHOD A:

- 1. SET GUARDRAIL POSTS
- 2. PLACE ITEM 441

METHOD B:

- 1. PLACE ITEM 441
- 2. BORE ASPHALT AT POST LOCATIONS (MAY BE OMITTED IF STEEL POSTS ARE USED).
- 3. SET GUARDRAIL POSTS
- 4. PATCH AROUND POSTS. THE MATERIALS USED FOR PATCHING SHALL BE AN ASPHALT CONCRETE APPROVED BY THE ENGINEER. PATCHED AREAS SHALL BE COMPACTED USING EITHER HAND OR MECHANICAL METHODS. FINISHED SURFACES SHALL BE SMOOTH AND SLOPED TO DRAIN AWAY FROM THE POSTS.

ALL LABOR, EQUIPMENT, AND MATERIALS REQUIRED TO PERFORM THE WORK OUTLINED ABOVE, WITH THE EXCEPTION OF SETTING GUARDRAIL POSTS, SHALL BE INCLUDED FOR PAYMENT UNDER ITEM 441 - ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, (448), (UNDER GUARDRAIL), AS PER PLAN.

ITEM 606 - ANCHOR ASSEMBLY, MGS TYPE E

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

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

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

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

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

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CONNECTION BETWEEN EXISTING AND PROPOSED GUARDRAIL

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

ITEM 622 - CONCRETE BARRIER, SINGLE SLOPE, TYPE C1

IN ADDITION TO THE SPECIFICATIONS UNDER CMS 622, THIS ITEM OF WORK SHALL CONSIST OF CONSTRUCTING THE SINGLE SLOPE BARRIER ON TOP OF THE 442 INTERMEDIATE ASPHALT COURSE AT A VARYING DISTANCE FROM THE CENTERLINE OF I.R. 77. AS SHOWN ON THE DETAILS ON SHEET 11, THE LOW SIDE OF THE BARRIER WILL BE A MAXIMUM OF 3 1/2 INCHES (0.17 FEET) LOWER THAN THE HIGH SIDE OF THE BARRIER. THE LOW SIDE OF THE BARRIER WILL BE ON THE LEFT SIDE OF THE BARRIER SOUTH OF THE BRIDGE AND ON THE RIGHT SIDE OF THE BARRIER NORTH OF THE BRIDGE.

THE METHOD OF MEASUREMENT AND BASIS OF PAYMENT FOR THIS ITEM OF WORK SHALL BE AS DEFINED IN ITEM 622 OF THE CMS AND SHALL INCLUDE ALL MATERIALS, LABOR, EQUIPMENT AND INCIDENTALS NECESSARY TO CONSTRUCT THE BARRIER ACCORDING TO PLAN DETAILS.

ITEM 209 - LINEAR GRADING

WHEN THE ABOVE ITEM IS CALLED FOR ON THE PLANS OR IN THE PROPOSAL, ALL APPLICABLE PROVISIONS OF ITEM 209, AS SET FORTH IN THE CONSTRUCTION AND MATERIAL SPECIFICATIONS, SHALL APPLY EXCEPT AS MODIFIED HEREIN.

THIS WORK SHALL CONSIST OF THE COMPLETE GRADING AND PREPARATION OF AREAS UPON WHICH TOPSOIL AND SEED ARE TO BE PLACED; ALL IN ACCORDANCE WITH THESE SPECIFICATIONS AND IN REASONABLY CLOSE CONFORMITY WITH THE LINES, GRADES, DEPTHS AND LIMITS SHOWN ON THE PLANS OR OTHERWISE DIRECTED BY THE ENGINEER. SEE THE TYPICAL SECTIONS SHOWN ON SHEETS 9-17.

THIS WORK SHALL INCLUDE ALL LABOR AND EQUIPMENT NECESSARY TO PRODUCE THE TYPICAL SECTIONS AND GRADED SHOULDER. THIS SHALL INCLUDE EXCAVATION TO THE REQUIRED LIMITS AND DEPTH, DISPOSAL OF UNUSED MATERIAL AND EMBANKMENT CONSTRUCTION.

THE QUANTITY WILL BE MEASURED AND PAID FOR AT THE CONTRACT UNIT PRICE BID PER STATION FOR: ITEM 209 - LINEAR GRADING

BENCHING OF FOUNDATION SLOPES

ALTHOUGH CROSS-SECTIONS INDICATE SPECIFIC DIMENSIONS FOR PROPOSED BENCHING OF THE EMBANKMENT FOUNDATIONS IN CERTAIN AREAS, NO WAIVER OF THE SPECIFICATIONS IS INTENDED. BENCH ALL OTHER SLOPED EMBANKMENT AREAS AS SET FORTH IN 203.05. NO ADDITIONAL PAYMENT WILL BE MADE FOR BENCHING REQUIRED UNDER THE PROVISIONS OF 203.05.

ITEM 204 - PROOF ROLLING

A QUANTITY HAS BEEN ESTIMATED IN THE PAVEMENT CALCULATIONS AND CARRIED TO THE GENERAL SUMMARY TO ADDRESS LOCATIONS REQUIRING PROOF ROLLING.

ITEM 204 - SUBGRADE COMPACTION AND PROOF ROLLING

THE SOIL PROFILES SHOW AREAS WHERE UNSTABLE MATERIALS MAY BE ENCOUNTERED. SOILS CLASSIFIED AS UNSTABLE HAVE BEEN IDENTIFIED AND SHOWN IN THE TABLE BELOW ALONG WITH ASSOCIATED QUANTITIES OF EXCAVATION TO REMOVE THE MATERIAL AND EMBANKMENT TO REPLACE THE MATERIAL. APPROXIMATE UNDERCUT DEPTHS HAVE BEEN SHOWN. EARTHWORK QUANTITIES CALCULATED BELOW HAVE BEEN BASED ON THESE DEPTHS AND THE LATERAL LIMITS AS DEFINED IN 204.03.

CONSTRUCT THE SUBGRADE AS FOLLOWS AND IN THE FOLLOWING SEQUENCE:

1. APPROXIMATE LIMITS FOR EXCAVATION OF UNSTABLE SUBGRADE ARE SHOWN AND LABELED ON THE CROSS SECTIONS AS UNSTABLE SUBGRADE. THE ENGINEER WILL IDENTIFY THE ACTUAL LIMITS OF EXCAVATION FOR UNSTABLE SUBGRADE BASED ON THE PROOF ROLLING RESULTS AND VISUAL OBSERVATIONS.

PROOF ROLL THE COMPACTED SUBGRADE ACCORDING TO 204.06.
2. EXCAVATE UNSTABLE SUBGRADE AS DIRECTED BY THE ENGINEER AND STABILIZE BY REPLACING WITH THE SPECIFIED MATERIALS ACCORDING TO 204.07. EXCAVATIONS WILL EXTEND 18 INCHES BEYOND THE EDGE OF THE SURFACE OF THE PAVEMENT, PAVED SHOULDERS, OR PAVED MEDIANS.
3. PROOF ROLL THE STABILIZED AREAS ACCORDING TO 204.06 TO VERIFY STABILITY.
4. FINE GRADE THE SUBGRADE TO THE SPECIFIED GRADE.

THE QUANTITIES FOR EXCAVATING THE UNSTABLE SUBGRADE ARE PAID UNDER ITEM 204 - EXCAVATION OF SUBGRADE.

UNSTABLE MATERIAL EARTHWORK - ITEM 204									
UNSTABLE MATERIAL - UNDERCUT 1-0'	STATION	LOCATION	END AREA		VOLUME		EXCAVATION OF SUBGRADE	GRANULAR MATERIAL, TYPE B	GEOTEXTILE FABRIC
			CUT	FILL	EXC.	EMB.			
			SQ.FT.	SQ.FT.	CU.YD.	CU.YD.			
BEGIN UNSTABLE EARTHWORK	82+75	N.B. & S.B.							
END UNSTABLE EARTHWORK	85+00	N.B. & S.B.	118	118	983.33	983.33	983.33	983.33	2950
TOTAL UNSTABLE MATERIAL EARTHWORK							983.33	983.33	2950
USE							984	984	2950
TOTAL CARRIED TO GENERAL SUMMARY							984	984	2950

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ASPHALT CONCRETE SURFACE COURSE SEALING REQUIREMENTS:

IN ADDITION TO THE GUTTER SEALING REQUIREMENTS SPECIFIED IN SCD BP-3.1 AND C&MS 401.15, THE CONTRACTOR SHALL SEAL THE FOLLOWING LOCATIONS:

- ALL CASTINGS INCLUDING BUT NOT LIMITED TO MONUMENTS, MANHOLES, WATER VALVES, CATCH BASINS, CURB INLETS.
- BUTT JOINTS AND FEATHER JOINTS INCLUDING BRIDGE APPROACHES.
- BUTT JOINT BETWEEN PAVED SHOULDER AND DRIVEWAY ASPHALT AND THE TAPERED EDGE WHEN FEATHERING TO AN EXISTING ASPHALT DRIVEWAY.
- PERIMETER OF ALL PAVEMENT REPAIRS OR OTHER ASPHALT INLAYS WHEN THE REPAIR/INLAY IS NOT OVERLAID WITH AN ASPHALT CONCRETE SURFACE COURSE.
- ALL COLD LONGITUDINAL JOINTS BETWEEN PAVED SHOULDERS AND GUARDRAIL ASPHALT.

THE MATERIAL USED SHALL BE A CERTIFIED 702.01 PG BINDER. THE WIDTH OF THE SEALER SHALL BE 2-3 INCHES. ANY ADDITIONAL COSTS ASSOCIATED WITH THE WORK IDENTIFIED IN THIS NOTE SHALL BE INCLUDED IN THE APPROPRIATE ASPHALT CONCRETE SURFACE COURSE ITEM OF WORK.

PART-WIDTH CONSTRUCTION

BECAUSE OF THE NECESSITY TO BUILD THIS PROJECT UNDER TRAFFIC AND TO CONSTRUCT THE FULL PAVEMENT WIDTH IN STAGES, EXERCISE CARE TO PREVENT THE CONSTRUCTION OF A BUTT JOINT IN THE BASE COURSES. LAP LONGITUDINAL JOINTS AS SHOWN ON STANDARD CONSTRUCTION DRAWING BP-3.1.

ITEM 253 - PAVEMENT REPAIR

WITHIN THE LIMITS OF THE RESURFACING FOR I.R. 77, PROVIDE THE FOLLOWING QUANTITY OF ITEM 253 - PAVEMENT REPAIR FOR REPAIR OF UNSOUND EXISTING ASPHALT. THIS ITEM SHALL CONFORM TO ALL REQUIREMENTS OF CMS ITEM 253 - PAVEMENT REPAIR. DEPTH OF THE REPAIR SHALL BE TO THE TOP OF THE EXISTING CONCRETE PAVEMENT.

THE ESTIMATED QUANTITY OF ITEM 253 - PAVEMENT REPAIR FOR THE PLAN RESURFACING AREAS = 80 CU. YD.

THE ESTIMATED QUANTITY OF ITEM 253 - PAVEMENT REPAIR FOR THE MOT RESURFACING AREAS = 450 CU. YD.

TOTAL ITEM 253 - PAVEMENT REPAIR CARRIED TO THE GENERAL SUMMARY = 530 CU. YD.

ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO PERFORM THE WORK OUTLINED ABOVE SHALL BE INCLUDED FOR PAYMENT UNDER ITEM 253 - PAVEMENT REPAIR.

ITEM 441 - ASPHALT CONCRETE SURFACE COURSE, TYPE 1 (448), PG70-22M, AS PER PLAN

THE COARSE VIRGIN AGGREGATE FOR THIS ITEM SHALL BE A BLEND OF 60% MIN. AIR COOLED BLAST FURNACE SLAG (ACBFS) OR TRAP ROCK FROM ONTARIO WITH LIMESTONE COMPRISING THE REMAINING PERCENTAGE.

USE A PG70-22M BINDER FOR THIS ITEM.

ITEM 442 - ASPHALT CONCRETE SURFACE COURSE, 12.5mm, TYPE A (446), PG76-22M, AS PER PLAN

THE COARSE VIRGIN AGGREGATE AND AT LEAST 50% OF THE FINE VIRGIN AGGREGATE FOR THIS ITEM SHALL BE LIMITED TO AIR COOLED BLAST FURNACE SLAG (ACBFS) OR TRAP ROCK FROM ONTARIO.

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

USE A PG76-22M BINDER FOR THIS ITEM.

USE SS 875.02 FOR LONGITUDINAL COLD JOINTS

ITEM 875 - LONGITUDINAL JOINT ADHESIVE AT PAVEMENT WIDENING

THIS ITEM SHALL CONFORM TO SUPPLEMENTAL SPECIFICATION 875 AND HAS BEEN PROVIDED TO REINFORCE THE LONGITUDINAL JOINT BETWEEN THE EXISTING PAVEMENT TO REMAIN AND THE INTERMEDIATE COURSE OF THE PROPOSED PAVEMENT. THE FOLLOWING QUANTITY CALCULATED BELOW HAS BEEN CARRIED TO THE GENERAL SUMMARY.

	FROM	TO		LENGTH		RATE		TOTAL
STA	54+00.00	STA 55+48.36	NB IR 77	=	148.36 FT	x	1 LB PER 3 FT	= 49.45 LBS.
STA	55+48.36	STA 66+75.00	NB IR 77	=	1126.64 FT	x	1 LB PER 3 FT	= 375.55 LBS.
STA	64+65.00	STA 66+75.00	SB IR 77	=	210.00 FT	x	1 LB PER 3 FT	= 70.00 LBS.
STA	64+50.00	STA 65+67.00	RAMP WS	=	117.00 FT	x	1 LB PER 3 FT	= 39.00 LBS.
SUBTOTAL								= 534.00 LBS.
TOTAL CARRIED TO GENERAL SUMMARY								= 534 LBS.

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**ITEM 611 - CONDUIT, MISC.: 16" CONDUIT, TYPE F, AS PER PLAN AND
ITEM 611 - CONDUIT, MISC.: 18" CONDUIT, TYPE F, AS PER PLAN**

THE OUTLET PIPE SHALL BE DUCTILE IRON PIPE CONFORMING TO ANSI A 21.51, CLASS 53. DUCTILE IRON SHALL BE ASTM A 536 GRADE 60-42-10. CONNECTIONS SHALL BE FLANGED JOINTS WITH RUBBER SEALING GASKETS SEE DETAIL, SHEET 195. JOINTS SHALL CONFORM WITH ANSI A 21.10. POLYETHYLENE ENCASEMENT SHALL BE INCLUDED WITH THIS ITEM. POLYETHYLENE ENCASEMENT SHALL BE AS PER ODOT SPECIFICATION 638.12. FLANGED JOINTS, BOLTS, PIPE, FITTINGS AND POLYETHYLENE ENCASEMENT TO BE INCLUDED FOR PAYMENT WITH ITEM 611 - CONDUIT, MISC.: 16" CONDUIT, TYPE F, AS PER PLAN AND ITEM 611 - CONDUIT, MISC.: 18" CONDUIT, TYPE F, AS PER PLAN.

ITEM 611 - MANHOLE RECONSTRUCTED TO GRADE, AS PER PLAN

THIS ITEM SHALL BE AS PER CMS 611 WITH THE EXCEPTION THAT THE EXISTING CATCH BASIN FRAME AND GRATE SHALL BE DISPOSED OF AND REPLACED WITH NEW SECTION AND MANHOLE NO. 3 FRAME AND GRATE.

EXISTING UNDERDRAINS

PROVIDE UNOBSTRUCTED OUTLETS FOR ALL EXISTING UNDERDRAINS ENCOUNTERED DURING CONSTRUCTION.

PROVIDE AN OUTLET PER STANDARD CONSTRUCTION DRAWING DM-1.1 FOR ALL UNDERDRAINS THAT OUTLET TO A SLOPE.

UNDERDRAINS THAT CAN BE CONNECTED TO THE NEW OR EXISTING UNDERDRAINS AT THE END OF THE PROJECT LIMITS AS WELL AS ALL NECESSARY BENDS OR BRANCHES REQUIRED FOR CONNECTION ARE INCLUDED IN THE BASIS OF PAYMENT FOR UNCLASSIFIED PIPE UNDERDRAINS.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR THE WORK NOTED ABOVE:

ITEM 601 - TIED CONCRETE BLOCK MAT, TYPE 1	4	SQ. YD.
ITEM 611 - 6" CONDUIT, TYPE F	50	FT.
ITEM 611 - PRECAST REINFORCED CONCRETE OUTLET	2	EACH
ITEM 605 - 6" UNCLASSIFIED PIPE UNDERDRAINS WITH GEOTEXTILE FABRIC, 707.31 OR 707.41	50	FT.

ITEM SPECIAL - PIPE CLEANOUT

THIS WORK SHALL CONSIST OF REMOVING SEDIMENT AND DEBRIS FROM THE EXISTING DRAINAGE CONDUITS SPECIFIED IN THE PLANS. ALL MATERIAL REMOVED SHALL BE DISPOSED OF AS PER 105.16 AND 105.17. ALL SEWERS SHALL BE CLEANED OUT TO THE SATISFACTION OF THE ENGINEER.

CLEANOUT OF THE PIPE SHALL BE PAID FOR AT THE UNIT PRICE BID FOR ITEM SPECIAL - PIPE CLEANOUT. THIS PRICE SHALL INCLUDE THE COST FOR MATERIAL, EQUIPMENT, LABOR, AND ALL INCIDENTALS REQUIRED TO COMPLETE THE CLEANOUT.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR THE ABOVE NOTED WORK:

ITEM SPECIAL - PIPE CLEANOUT, 24" AND UNDER	400	FT.
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CROSSINGS AND CONNECTIONS TO EXISTING PIPES AND UTILITIES

WHERE PLANS PROVIDE FOR A PROPOSED CONDUIT TO BE CONNECTED TO, OR CROSS OVER OR UNDER AN EXISTING SEWER OR UNDERGROUND UTILITY, THE CONTRACTOR SHALL LOCATE THE EXISTING PIPES OR UTILITIES BOTH AS TO LINE AND GRADE BEFORE STARTING TO LAY THE PROPOSED CONDUIT.

IF IT IS DETERMINED THAT THE ELEVATION OF THE EXISTING CONDUIT, OR EXISTING APPURTENANCE TO BE CONNECTED, DIFFERS FROM THE PLAN ELEVATION OR RESULTS IN A CHANGE IN THE PLAN CONDUIT SLOPE, THE ENGINEER SHALL BE NOTIFIED BEFORE STARTING CONSTRUCTION OF ANY PORTION OF THE PROPOSED CONDUIT WHICH WILL BE AFFECTED BY THE VARIANCE IN THE EXISTING ELEVATIONS.

IF IT IS DETERMINED THAT THE PROPOSED CONDUIT WILL INTERSECT AN EXISTING SEWER OR UNDERGROUND UTILITY IF CONSTRUCTED AS SHOWN ON THE PLAN, THE ENGINEER SHALL BE NOTIFIED BEFORE STARTING CONSTRUCTION OF ANY PORTION OF THE PROPOSED CONDUIT WHICH WOULD BE AFFECTED BY THE INTERFERENCE WITH AN EXISTING FACILITY.

PAYMENT FOR ALL THE OPERATIONS DESCRIBED ABOVE SHALL BE INCLUDED IN THE CONTRACT PRICE FOR THE PERTINENT 611 CONDUIT ITEM.

EXISTING / PROPOSED PIPE CONNECTIONS

THE CONTRACTOR SHALL HAVE THE OPTION OF USING A COUPLING BAND TO JOIN EXISTING CORRUGATED METAL PIPE WITH A PROPOSED SECTION OF CORRUGATED METAL PIPE OR PLACING A CONCRETE COLLAR AS PER STANDARD CONSTRUCTION DRAWING DM-1.1. ALL OTHER PIPE CONNECTIONS SHALL HAVE A CONCRETE COLLAR AS PER STANDARD CONSTRUCTION DRAWING DM-1.1 PLACED AT THE JOINING OF EXISTING AND PROPOSED SECTIONS OF PIPE.

ANY EXPOSED METAL FROM THE PIPE CONNECTIONS OF A CORRUGATED METAL PIPE SHALL BE GALVANIZED COATED AS PER CMS SPECIFICATION 711.02 AND INCLUDED IN THE COST OF ITEM 611.

TEMPORARY DRAINAGE ITEMS

TEMPORARY DRAINAGE ITEMS LABELED ON THE MAINTENANCE OF TRAFFIC PLAN ARE ITEMIZED ON THE MOT PLANS. PAYMENT FOR THE TEMPORARY DRAINAGE ITEMS ARE ITEMIZED AND CARRIED TO THE GENERAL SUMMARY.

REVIEW OF DRAINAGE FACILITIES

BEFORE ANY WORK IS STARTED ON THE PROJECT AND AGAIN BEFORE FINAL ACCEPTANCE BY THE STATE, REPRESENTATIVES OF THE STATE AND THE CONTRACTOR, ALONG WITH LOCAL REPRESENTATIVES, SHALL MAKE AN INSPECTION OF ALL EXISTING SEWERS WHICH ARE TO REMAIN IN SERVICE AND WHICH MAY BE AFFECTED BY THE WORK. THE CONDITION OF THE EXISTING CONDUITS AND THEIR APPURTENANCES SHALL BE DETERMINED FROM FIELD OBSERVATIONS. RECORDS OF THE INSPECTION SHALL BE KEPT IN WRITING BY THE STATE. ALL NEW CONDUITS, INLETS, CATCH BASINS, AND MANHOLES CONSTRUCTED AS A PART OF THE PROJECT SHALL BE FREE OF ALL FOREIGN MATTER AND IN A CLEAN CONDITION BEFORE THE PROJECT WILL BE ACCEPTED BY THE STATE.

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

PAYMENT FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE INCLUDED IN THE CONTRACT PRICE FOR THE PERTINENT 611 CONDUIT ITEMS.

EXISTING AND PROPOSED DRAINAGE FOR CONSTRUCTION PHASES

DRAINAGE ITEMS MAY EXTEND THROUGH MULTIPLE CONSTRUCTION PHASES. ALL EXISTING AND PROPOSED DRAINAGE ITEMS SHALL BE PROVIDED WITH A POSITIVE OUTLET AT ALL TIMES AS APPROVED BY THE ENGINEER. ALL MATERIALS, LABOR AND INCIDENTALS NECESSARY TO PROVIDE THESE TEMPORARY OUTLETS UNTIL THE PLAN DELINEATED OUTLET CAN BE CONSTRUCTED SHALL BE INCLUDED WITH ITEM 615 - ROADS FOR MAINTAINING TRAFFIC, AND NO ADDITIONAL PAYMENTS SHALL BE MADE.

ITEM 601 - SLOPE PROTECTION, MISC.: GROUT FILLED FABRIC MATS

EMBANKMENT SLOPE PROTECTION EXTENDING FROM THE FACE OF THE ABUTMENT DOWN TO THE TOE OF SLOPE PROTECTION SHALL BE AS SPECIFIED IN ITEM 601.05 OF THE CONSTRUCTION AND MATERIAL SPECIFICATION EXCEPT AS MODIFIED HEREIN. THE FOLLOWING SHALL BE CONSIDERED AS SUPPLEMENTAL TO THE PROVISIONS SET FOR THEREIN.

LEVEL SECTIONS SHALL BE PROVIDED ON THE SURFACE OF GROUT FILLED FABRIC MATS FOR LEVEL PADS FOR LADDER ACCESS TO THE GIRDERS AND PIERS PER BRIDGE PLAN DETAILS. THE CONCRETE PADS SHALL BE 6" THICK PER ITEM 601.07.

MATERIAL:

THE MATERIAL USED FOR EMBANKMENT SLOPE PROTECTION SHALL CONSIST OF SPECIALLY-WOVEN MULTIPLE PANELS OF DOUBLE LAYER, OPEN SELVAGE NYLON FABRIC, JOINED IN A MAT CONFIGURATION WITH 8" FILTER POINT SPACING, SIMILAR TO "FABRIFORM 8" OR APPROVED ALTERNATE. THIS MAT SHALL BE FILLED WITH A GROUT CONSISTING OF A MIXTURE OF PORTLAND CEMENT, FINE AGGREGATE AND WATER SO PROPORTIONED AND MIXED AS TO PROVIDE A PUMPABLE SLURRY. POZZOLAN AND GROUT FLUIDIFIER MAY BE USED AT THE OPTION OF THE CONTRACTOR. THE MIX SHALL EXHIBIT A COMPRESSIVE STRENGTH OF 2000 P.S.I. AT TWENTY-EIGHT (28) DAYS WHEN MADE AND TESTED IN ACCORDANCE WITH ASTM C-31 AND C-39.

INSTALLATION:

THE GROUT FILLED FABRIC MATS SHALL BE INSTALLED ON THE PREPARED SLOPE IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. THE SIDES AND BOTTOM OF THE GROUT FILLED FABRIC MATS SHALL TERMINATE IN ANCHOR TRENCHES. THE TOP OF THE GROUT FILLED FABRIC MATS SHALL TERMINATE AT THE ABUTMENTS AGAINST 2" PREFORMED EXPANSION JOINT FILLER. (SEE DETAIL ON SHEET 195). LEVEL PADS AT PIERS 1L AND 2R SHALL BE PROVIDED ON THE SURFACE OF THE GROUT FILLED MATS AS DETAILED ON SHEET .

MEASUREMENT FOR PAYMENT:

GROUT FILLED FABRIC MATS WILL BE MEASURED BY THE SQUARE YARD OF FINISHED SURFACE COMPLETE IN PLACE.

BASIS OF PAYMENT:

PAYMENT FOR THE ACCEPTED QUANTITIES, COMPLETE IN PLACE WILL BE MADE AT THE CONTRACT UNIT PRICE BID FOR:

ITEM	UNIT	DESCRIPTION
601	SQ. YD.	SLOPE PROTECTION, MISC.: GROUT FILLED FABRIC MATS

THIS PRICE SHALL BE FULL COMPENSATION FOR ALL MATERIALS, LABOR, EQUIPMENT AND INCIDENTALS NECESSARY, INCLUDING CONCRETE LEVEL PADS, TO COMPLETE THIS ITEM AS SPECIFIED.

POST CONSTRUCTION STORM WATER TREATMENT

THIS PLAN UTILIZES STRUCTURAL BEST MANAGEMENT PRACTICES (BMP'S) FOR POST CONSTRUCTION STORM WATER TREATMENT. SEE PROJECT SITE PLANS ON SHEETS 115-117 FOR PROPOSED BMP LOCATIONS.

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SEEDING AND MULCHING

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

- ITEM 659 - SOIL ANALYSIS TEST 2 EACH
- ITEM 659 - TOPSOIL 3633 CU. YD.
- ITEM 659 - SEEDING AND MULCHING 28023 SQ. YD.
- ITEM 659 - REPAIR SEEDING AND MULCHING 1637 SQ. YD.
- ITEM 659 - INTER-SEEDING 1637 SQ. YD.
- ITEM 659 - COMMERCIAL FERTILIZER 5 TON
- ITEM 659 - LIME 7 ACRES
- ITEM 659 - WATER 182 M. GAL.
- ITEM 659 - MOWING 74 M. SQ. FT.

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

DATUM PARAMETERS

PRIMARY PROJECT CONTROL MONUMENTS GOVERN ALL POSITIONING ON ODOT PROJECTS.

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

PROJECT CONTROL ESTABLISHED BY ODOT D-12

POSITIONING METHOD: BY ODOT D-12
 MONUMENT TYPE: 5/8" REBAR BY ODOT-D12
 5/8" REBAR WITH TRAVERSE CAP BY
 RICHLAND ENGINEERING LIMITED

VERTICAL POSITIONING

ORTHOMETRIC HEIGHT DATUM: NAVD 88
 GEOID: GEOID12A

HORIZONTAL POSITIONING

REFERENCE FRAME: NAD83(95)
 ELLIPSOID: GRS 80
 MAP PROJECTION: LAMBERT CONIC CONFORMAL
 COORDINATE SYSTEM: OHIO STATE PLANE NORTH ZONE
 COMBINED SCALE FACTOR: 1.0000
 ORIGIN OF COORDINATE SYSTEM: X=0,Y=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.

ELEVATION DATUM

ALL ELEVATIONS ARE BASED ON U.S.G.S. DATUM - N.A.V.D. 88

PROJECT BEARINGS

BEARINGS WERE PROVIDED BY THE OHIO DEPARTMENT OF TRANSPORTATION DISTRICT 12 AND ARE BASED ON THE OHIO STATE PLANE COORDINATE SYSTEM, NAD83(95), NORTH ZONE.

HORIZONTAL DATUM

PROJECT CONTROL WAS PROVIDED BY THE OHIO DEPARTMENT OF TRANSPORTATION DISTRICT 12 IN 2007, NAD83(95) BASED ON THE OHIO STATE PLANE COORDINATE SYSTEM, NORTH ZONE.

VERTICAL DATUM

PROJECT ELEVATIONS WERE PROVIDED BY THE OHIO DEPARTMENT OF TRANSPORTATION DISTRICT 12 IN 2007, BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988.

PROJECT CONTROL						
C OF CONSTRUCTION I.R. 77		STATE PLANE GRID COORDINATES NAD83(95)				
STATION	OFFSET	NORTH (Y)	EAST (X)	ORTHO. HT.	DESCRIPTION	
PROJECT CONTROL						
65+79.72	46.48' RT.	660598.7985	2198545.2869	660.21	5/8" REBAR SET WITH PLASTIC CAP STAMPED "RICHLAND ENG. TRAVERSE PT" SV2005	
66+38.46	55.47' LT.	660634.1008	2198433.0774	658.72	SURVEY MARKER FOUND WITH 2" ALUMINUM CAP STAMPED "BARR & PREVOST" BM 1 (SV2004)	
73+83.05	272.30' LT.	661295.1028	2198034.5340	650.49	5/8" REBAR FOUND - SET BY ODOT DISTRICT 12 AND PROVIDED FOR CONTROL IN 2005 7	
74+61.16	38.92' RT.	661451.8567	2198314.5170	685.34	5/8" REBAR SET WITH PLASTIC CAP STAMPED "RICHLAND ENG. TRAVERSE PT" SV2006	
74+62.90	281.76' LT.	661369.6973	2198004.5312	648.40	SURVEY MARKER FOUND WITH 2" ALUMINUM CAP STAMPED "BARR & PREVOST" BM 2 (SV2003)	
76+44.40	152.64' LT.	661578.6457	2198081.7157	645.51	5/8" REBAR SET WITH PLASTIC CAP STAMPED "RICHLAND ENG. TRAVERSE PT" SV2001	
78+96.96	205.16' RT.	661915.9563	2198361.0483	646.72	5/8" REBAR SET WITH PLASTIC CAP STAMPED "RICHLAND ENG. TRAVERSE PT" SV2002	
79+51.45	151.16' LT.	661875.4011	2198002.8774	668.73	5/8" REBAR SET WITH PLASTIC CAP STAMPED "RICHLAND ENG. TRAVERSE PT" BM 3 (I32)	
82+88.39	56.45' LT.	662225.3882	2198006.2090	687.04	5/8" REBAR SET WITH PLASTIC CAP STAMPED "RICHLAND ENG. TRAVERSE PT" BM 5 (SV2000)	
EXISTING CENTERLINE OF RIGHT OF WAY IR 77						
192+19.42	CL	657834.1375	2198805.8439	P.I. CURVE		
199+83.68 (BK)= 45+76.05 (AHD)	CL	658599.8743	2198731.4810	EQUATION STATION		
50+00.00	CL	659021.8392	2198690.5028	P.O.T.		
59+17.06	CL	659934.6052	2198601.8615	P.C.		
63+98.55	CL	660413.8384	2198555.3218	P.I.		
68+77.78	20.20' RT.	660878.5833	2198429.4544	P.T.		
90+22.30	CL	662948.5348	2197868.8468	P.O.T.		
100+00.00	CL	663892.2371	2197613.2627	P.O.T.		
RECORDED AND MONUMENTED CENTERLINE FOR EX. RIGHT OF WAY I.R. 77 (CUY-77-13.80 - BAKER)						
50+00.00	0.25' RT.	CENTERLINE OF CONSTRUCTION CUY-77-14.35 = P.O.T. CUY-77-13.80				
981+22.57		659021.8643	2198690.7610	P.O.T.		
63+96.55	P.O.C. 20.38' RT.	CENTERLINE OF CONSTRUCTION CUY-77-14.35 = P.I. CUY-77-13.80				
995+20.27		660413.0165	2198555.6622	P.I. CURVE		

CENTERLINE CONSTRUCTION I.R. 77 (CUY-77-14.35, PID No. 13567)

THE CENTERLINE OF CONSTRUCTION SHOWN IN THE CUY-77-14.35 CONSTRUCTION PLANS AND REFERENCED ON THE PROJECT CONTROL CHART, ON THIS SHEET, HAS BEEN ESTABLISHED FOR THIS PROJECT ONLY BASED ON THE OHIO STATE PLANE COORDINATE SYSTEM, NAD83(95), NORTH ZONE). THE ADJACENT PROJECT, CUY-77-13.80, PID No. 82388, HAS AN INDEPENDENT CENTERLINE SHOWN BASED UPON A DIFFERENT DATUM ADJUSTMENT, OHIO STATE PLANE COORDINATE SYSTEM, NAD83(2011), NORTH ZONE WITH A PAF OF 1.0000597995. THE CUY-77-13.80 PROJECT CENTERLINE IS THE RECORDED AND MONUMENTED CENTERLINE FOR THE EXISTING RIGHT OF WAY OF I.R. 77. REFERENCE BETWEEN THE TWO CENTERLINES ALONG THE COMMON TANGENT SECTION (BETWEEN PERSHING AVENUE AND I.R. 490) IS SHOWN IN THE PROJECT CONTROL TABLE.

ITEM 623 - CONSTRUCTION LAYOUT STAKES AND SURVEYING, AS PER PLAN

AN OHIO PROFESSIONAL SURVEYOR SHALL DETERMINE THE MINIMUM VERTICAL CLEARANCES OF ALL EXISTING AND NEW BRIDGES WITHIN THE PROJECT LIMITS AFTER COMPLETION OF ALL THE WORK, BUT PRIOR TO FINAL ACCEPTANCE OF THE PROJECT. AT A MINIMUM, MEASUREMENTS SHALL BE TAKEN ALONG THE CENTERLINE OF EACH FASCIA BEAM AT THE EDGE OF SHOULDERS, EDGE LINES, LANE LINES, AND CROWN OF THE ROADWAY BELOW. THE MEASUREMENTS SHALL BE DOCUMENTED ON THE ODOT VERTICAL CLEARANCE SURVEY FORM. THE FORM SHALL BEAR THE STAMP OR SEAL OF THE OHIO PROFESSIONAL SURVEYOR WHO HAS TAKEN THE MEASUREMENTS. THE OHIO PROFESSIONAL SURVEYOR SHALL SUBMIT THE COMPLETED FORM TO THE PROJECT ENGINEER AND THE DISTRICT BRIDGE MAINTENANCE ENGINEER PRIOR TO FINAL ACCEPTANCE OF THE PROJECT.

ITEM 630 - SIGN SUPPORT ASSEMBLY, BARRIER MOUNTED, AS PER PLAN

THIS ITEM SHALL CONFORM TO CMS 630 AND SHALL INCLUDE ALL ATTACHMENTS REQUIRED AND SHOWN IN PLAN INSERT SHEET ON SHEET 222.

ENDANGERED BAT HABITAT REMOVAL

THIS PROJECT IS LOCATED WITHIN THE KNOWN HABITAT RANGES OF THE FEDERALLY LISTED AND PROTECTED INDIANA BAT AND NORTHERN LONG-EARED BAT. NO TREES SHALL BE REMOVED UNDER THIS PROJECT FROM APRIL 1 THROUGH SEPTEMBER 30. ALL NECESSARY TREE REMOVAL SHALL OCCUR OCTOBER 1 THROUGH MARCH 31. THIS REQUIREMENT IS NECESSARY TO AVOID AND MINIMIZE IMPACTS TO THESE SPECIES AS REQUIRED BY THE ENDANGERED SPECIES ACT. FOR THE PURPOSES OF THIS NOTE, A TREE IS DEFINED AS: A LIVE, DYING, OR DEAD WOODY PLANT, WITH A TRUNK THREE INCHES OR GREATER IN DIAMETER AT A HEIGHT OF 4.5 FEET ABOVE THE GROUND SURFACE, AND WITH A MINIMUM HEIGHT OF 13 FEET.

ENDANGERED SPECIES HABITAT KIRTLAND WARBLER

THIS PROJECT IS WITHIN THE KNOWN RANGE OF THE FEDERALLY ENDANGERED KIRTLAND WARBLER (SETOPHAGA KIRTLANDII). ANY UNAVOIDABLE CUTTING OF TREES WITH SUITABLE ROOSTING AND BROOD REARING HABITAT FOR THE KIRTLAND WARBLER (LIVING OR STANDING DEAD TREES OR SNAGS WITH EXFOLIATING, PEELING OR LOOSE BARK, SPLIT TRUNKS AND/OR BRANCHES, OR CAVITIES) WILL BE PERFORMED BEFORE APRIL 22 AND AFTER JUNE 1 OR BEFORE AUGUST 15 AND AFTER OCTOBER 15, WHEN THE SPECIES WOULD NOT BE USING SUCH HABITAT.

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GENERAL NOTES

CUY-77-14.35

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SHEET NO.	REF. NO.	STATION		SIDE	WIDTH	254		407		442		611		614															
		FROM	TO			SY	GAL	CY	FT	FT	FT	EACH	EACH	CY	EACH	EACH	EACH	EACH	EACH	FT	MILE	W	Y	FT	FT				
PRE-PHASE 1																													
EXISTING MEDIAN BARRIER																													
49 - 51		58+50.00	96+00.00	NB/SB																									
51		83+57.50	84+47.50	NB																									
49 - 51		66+45.00	87+48.00	NB/SB																									
TEMPORARY DRAINAGE																													
50		69+49.00	70+35.00	NB/SB								76	40																
50		70+35.00	72+05.00	NB/SB								160	40																
50		72+05.00	73+75.00	NB/SB								160	40																
50		80+20.00	81+40.00	NB/SB								110	40																
50 - 51		81+40.00	82+60.00	NB/SB								110	40																
51		82+60.00	83+80.00	NB/SB								110	40																
51		83+80.00	85+00.00	NB/SB								110	40																
51		85+00.00	85+48.00	NB/SB								38	40																
PHASE 1																													
RESURFACING TO REVERSE EXISTING PAVEMENT CROSS SLOPE																													
49 - 50		68+50.00	74+41.32	NB			504	80																					
50		74+41.32	75+01.32	NB			73	8																					
50		79+30.63	79+90.63	NB			73	8																					
50 - 51		79+90.63	86+77.40	NB			585	92																					
51		86+77.40	87+37.40	NB			73	8																					
49 - 50		68+50.00	74+61.89	SB			521	82																					
50		74+61.89	75+21.89	SB			73	8																					
50		79+51.03	80+11.03	SB			73	8																					
50 - 51		80+11.03	87+00.40	SB			587	93																					
51		87+00.40	87+60.40	SB			73	8																					
TEMPORARY SHEET PILING FOR PHASED CONSTRUCTION																													
50		70+50.00	74+00.00	NB																									
50		74+40.00	74+90.00	NB																									
50 - 51		79+50.00	83+50.00	NB																									
50		70+50.00	75+00.00	SB																									
50		79+65.00	80+15.00	SB																									
50 - 51		80+50.00	83+50.00	SB																									
49		58+50.00	61+50.00	NB																									
49		61+50.00	64+20.00	NB																									
49		64+20.00	66+00.00	NB																									
49		66+00.00	66+90.00	NB																									
49 - 50		66+90.00	72+15.00	NB																									
50		72+15.00	75+00.00	NB																									
50		75+00.00	79+30.00	NB																									
50 - 51		79+30.00	85+00.00	NB																									
51		85+00.00	87+50.00	NB																									
51		87+50.00	93+65.00	NB																									
PHASE 1 SUBTOTAL							2635	395		874	320	520	1	281	266		189	49	76	4	1600	1810	3245	3515	2275				

CALCULATED	MAF	CHECKED	MES
MAINTENANCE OF TRAFFIC SUBSUMMARY			
CUY - 77 - 14.35			
			23
			365

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SHEET NO.	REF. NO.	STATION		SIDE	WIDTH	615		622																				
		FROM	TO			PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A	ROADS FOR MAINTAINING TRAFFIC	PORTABLE BARRIER, 32"	PORTABLE BARRIER, 32", BRIDGE MOUNTED	PORTABLE BARRIER, 32", BRIDGE MOUNTED, AS PER PLAN	PORTABLE BARRIER, 50"	PORTABLE BARRIER, 4" CONNECTOR																
		SY	LS			FT	FT	FT	FT	FT	EACH																	
		PRE-PHASE 1																										
		EXISTING MEDIAN BARRIER																										
49 - 51		58+50.00	96+00.00	NB/SB																								
51		83+57.50	84+47.50	NB																								
49 - 51		66+45.00	87+48.00	NB/SB																								
		TEMPORARY DRAINAGE																										
50		69+49.00	70+35.00	NB/SB																								
50		70+35.00	72+05.00	NB/SB																								
50		72+05.00	73+75.00	NB/SB																								
50		80+20.00	81+40.00	NB/SB																								
50 - 51		81+40.00	82+60.00	NB/SB																								
51		82+60.00	83+80.00	NB/SB																								
51		83+80.00	85+00.00	NB/SB																								
51		85+00.00	85+48.00	NB/SB																								
		PHASE 1																										
		RESURFACING TO REVERSE EXISTING PAVEMENT CROSS SLOPE																										
49 - 50		68+50.00	74+41.32	NB																								
50		74+41.32	75+01.32	NB																								
50		79+30.63	79+90.63	NB																								
50 - 51		79+90.63	86+77.40	NB																								
51		86+77.40	87+37.40	NB																								
49 - 50		68+50.00	74+61.89	SB																								
50		74+61.89	75+21.89	SB																								
50		79+51.03	80+11.03	SB																								
50 - 51		80+11.03	87+00.40	SB																								
51		87+00.40	87+60.40	SB																								
		TEMPORAY SHEET PILING FOR PHASED CONSTRUCTION																										
50		70+50.00	74+00.00	NB																								
50		74+40.00	74+90.00	NB																								
50 - 51		79+50.00	83+50.00	NB																								
50		70+50.00	75+00.00	SB																								
50		79+65.00	80+15.00	SB																								
50 - 51		80+50.00	83+50.00	SB																								
49		58+50.00	61+50.00	NB																								
49		61+50.00	64+20.00	NB																								
49		64+20.00	66+00.00	NB																								
49		66+00.00	66+90.00	NB																								
49 - 50		66+90.00	72+15.00	NB	20																							
50		72+15.00	75+00.00	NB	116.67																							
50		75+00.00	79+30.00	NB																								
50 - 51		79+30.00	85+00.00	NB																								
51		85+00.00	87+50.00	NB																								
51		87+50.00	93+65.00	NB																								
PHASE 1 SUBTOTAL					136.67	LS	1900		430	160																		

CALCULATED	MAF
	CHECKED
MES	
MAINTENANCE OF TRAFFIC SUBSUMMARY	
CUY - 77 - 14.35	
24	
365	

SHEET NO.	REF. NO.	STATION		SIDE	WIDTH	254		407		442		611		614													
		FROM	TO			SY	GAL	CY	FT	FT	FT	EACH	EACH	CY	EACH	EACH	EACH	EACH	EACH	EACH	FT	MILE	MILE	FT	FT		
						PAVEMENT PLANING, ASPHALT CONCRETE	NON-TRACKING TACK COAT	ASPHALT CONCRETE SURFACE COURSE, 12.5MM, TYPE A (446), PG 76-22M, AS PER PLAN	12" CONDUIT, TYPE A, 707.01, AS PER PLAN	12" SLOTTED DRAIN, TYPE 2, AS PER PLAN	INCREASED BARRIER DELINEATION	WORK ZONE IMPACT ATTENUATOR (UNIDIRECTIONAL)	WORK ZONE RAISED PAVEMENT MARKER, AS PER PLAN	ASPHALT CONCRETE FOR MAINTAINING TRAFFIC	BARRIER REFLECTOR, TYPE A	BARRIER REFLECTOR, TYPE B	OBJECT MARKER, ONE WAY	OBJECT MARKER, TWO WAY	MAINTAINING TRAFFIC, MISC.: BARRIER MEDIAN INLET RECONSTRUCTED TO GRADE	MAINTAINING TRAFFIC, MISC.: TEMPORARY SHEET PILING FOR PHASE CONSTRUCTION	WORK ZONE LANE LINE, CLASS 1	WORK ZONE EDGE LINE, CLASS 1	WORK ZONE CHANNELIZING LINE, CLASS 1	WORK ZONE DOTTED LINE, CLASS 1			
		RAMP S-E																									
49		61+02.00	65+25.00	NB								10										423.00	423.00				
49		65+25.00	67+30.00	NB						190.00	1	6				5						205.00	205.00				
		RAMP E-S																									
50		74+63.60	76+27.47	SB						200						5											
		I.R. 77																									
49		59+00.00	64+40.00	SB								84										540.00	1080.00				
49		64+40.00	67+40.00	SB						300.00		45				7						300.00	300.00				
49		67+40.00	68+00.00	SB						60		1				1					60.00	60.00	60.00				
49		68+00.00	68+80.00	SB							1	1									80.00	80.00	80.00				
49 - 50		68+80.00	69+80.00	SB								1				3	3				100.00	100.00	100.00				
50		69+80.00	69+95.00	SB																	15.00	15.00	15.00				
50		69+95.00	75+25.00	SB								4				12	12				530.00	530.00	530.00				
50		75+25.00	79+55.00	SB								4				9	9				430.00	430.00	430.00				
50 - 51		79+55.00	87+00.00	SB								6				15	15				745.00	745.00	745.00				
51		87+00.00	88+00.00	SB						100		15									100.00	100.00	100.00				
51		88+00.00	89+40.00	SB						140		21									140.00	280.00	280.00				
51		89+40.00	95+90.00	SB							1	99										650.00	1300.00				
51 - 52		95+90.00	115+40.15	SB																	1952.00						
		RAMP W-S																									
49		61+48.77	64+40.00	SB																	291.23	291.23					
49		64+40.00	68+00.00	SB						360	1					8					360.00	360.00					
49 - 50		68+00.00	70+66.00	SB																	280.00	280.00					
		RAMP N-W																									
51		86+00.00	88+50.00	SB						250	1					6											
51		90+62.00	92+90.00	SB																	228.00	228.00					
51		92+90.00	95+90.00	SB																	300.00						
		ORANGE AVE. ENT. RAMP																									
52		115+40.15	119+81.48	SB																	420.00	420.00	420.00				
49 - 52		REFRESH PHASE 1 MOT MARKINGS ONE TIME																			3770.00	10064.23	8265	6482.23	420		
49 - 52		WINTER MARKING BETWEEN PHASE 1 AND PHASE 2A																				3732.52	8900.23	8576.71	9037.78	420.00	
SUBTOTAL										1600	5	297			39	76				9462.52	25783.69	21591.71	19727.24	1260			
SUBTOTAL FROM SHEET 23						2635	395		874	320	520	1	281	266		189	49	76	4	1600	1810	3245	3515	2275			
PHASE 1 TOTAL						2635	395		874	320	2120	6	578	266		228	125	76	4	1600	11272.52	29028.69	25106.71	22002.24	1260		

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SHEET NO.	REF. NO.	STATION		SIDE	WIDTH	254	407	442	611		614																		
		PAVEMENT PLANING, ASPHALT CONCRETE	NON-TRACKING TACK COAT			ASPHALT CONCRETE SURFACE COURSE, 12.5MM, TYPE A (446), PG 76-22M, AS PER PLAN	12" CONDUIT, TYPE A, 707.01, AS PER PLAN	12" SLOTTED DRAIN, TYPE 2, AS PER PLAN	INCREASED BARRIER DELINEATION	WORK ZONE IMPACT ATTENUATOR (UNIDIRECTIONAL)	WORK ZONE RAISED PAVEMENT MARKER, AS PER PLAN	ASPHALT CONCRETE FOR MAINTAINING TRAFFIC	BARRIER REFLECTOR, TYPE A	BARRIER REFLECTOR, TYPE B	OBJECT MARKER, ONE WAY	OBJECT MARKER, TWO WAY	MAINTAINING TRAFFIC, MISC.: BARRIER MEDIAN INLET RECONSTRUCTED TO GRADE	MAINTAINING TRAFFIC, MISC.: TEMPORARY SHEET PILING FOR PHASE CONSTRUCTION	WORK ZONE LANE LINE, CLASS 1	WORK ZONE EDGE LINE, CLASS 1	WORK ZONE CHANNELIZING LINE, CLASS 1	WORK ZONE DOTTED LINE, CLASS 1							
FROM	TO	SY	GAL	CY	FT	FT	FT	FT	EACH	EACH	CY	EACH	EACH	EACH	EACH	FT	MILE	MILE	FT	FT									
																	W	Y											
PHASE 2A																													
53		56+17.06	64+30.00	NB								1	126											812.94	1625.88				
53		64+30.00	66+00.00	NB					170				27										170.00	340.00					
53		66+00.00	69+20.00	NB									48										320.00	320.00					
53 - 54		69+20.00	73+50.00	NB									4										430.00	430.00					
54		73+50.00	74+20.00	NB									1										70.00	70.00					
54		74+20.00	79+30.00	NB									4										510.00	510.00					
54 - 55		79+30.00	84+75.00	NB									5										545.00	545.00					
55		84+75.00	87+75.00	NB					300				6										300.00	300.00					
55		87+75.00	88+85.64	NB									18										110.64	110.64					
55		88+85.64	92+23.71	NB									51										338.07	676.14					
55		92+23.71	94+23.71	NB									30										200.00	400.00					
RAMP S-E																													
53		63+45.11	68+50.50	NB																				521.00					
RAMP S-W																													
54		5+35.11	7+74.81	NB	6'																		239.70						
54		7+74.81	9+42.72	NB	6' TO 4'																		167.91						
I.R. 77																													
53		58+06.30	65+66.59	SB									195										760.29	760.29					
53		65+66.59	66+65.04	SB									15											98.45					
53 - 54		66+65.04	69+64.23	SB					300				45										300.00	300.00					
54		69+64.23	75+24.00	SB									10										559.77	559.77					
54		75+24.00	80+34.00	SB									4		11								510.00	510.00					
54 - 55		80+34.00	83+00.00	SB									2		5								266.00	266.00					
55		83+00.00	85+58.75	SB									2		5								258.75	258.75					
55		85+58.75	87+70.00	SB					211.25				33		5								211.25	211.25					
55		87+70.00	90+10.00	SB					240				36		4								240.00	480.00					
55 - 56		90+10.00	96+47.55	SB								1	96		5									637.55					
56		96+47.55	115+40.15	SB																			1868.52						
RAMP W-S																													
53		65+66.59	66+91.60	SB									4										125.00	125.00					
53 - 54		66+91.60	70+65.00	SB									15										383.00	383.00					
RAMP N-W																													
55 - 56		91+03.15	96+47.55	SB									27											544.40					
ORANGE AVE ENT. RAMP																													
52		115+40.15	119+81.48	SB																				420.00					
NEW GUARDRAIL DELINEATION																													
53 - 56														98	98														
53 - 56		PARTIAL REFRESH OF PHASE 2A MARKING FOR PHASE 2B																		2919.52	7642.23	6335.77	6751.90	420.00					
53 - 56		PARTIAL REFRESH OF PHASE 2A MARKING FOR PHASE 2C																		2919.52	7642.23	6335.77	6751.90	420.00					
PHASE 2A TOTAL											1221.25	2.00	804.00		98.00	68.00	192.00		9571.56	24184.69	21248.25	22541.58	1260.00						

CALCULATED
 MAF
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 MES
MAINTENANCE OF TRAFFIC SUBSUMMARY
CUY-77-14.35
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SHEET NO.	REF. NO.	STATION		SIDE	WIDTH	254					407					442					611					614										CALCULATED	
		FROM	TO			PAVEMENT PLANING, ASPHALT CONCRETE	NON-TRACKING TACK COAT	ASPHALT CONCRETE SURFACE COURSE, 12.5MM, TYPE A (446), PG 76-22M, AS PER PLAN	12" CONDUIT, TYPE A, 707.01, AS PER PLAN	12" SLOTTED DRAIN, TYPE 2, AS PER PLAN	INCREASED BARRIER DELINEATION	WORK ZONE IMPACT ATTENUATOR (UNIDIRECTIONAL)	WORK ZONE RAISED PAVEMENT MARKER, AS PER PLAN	ASPHALT CONCRETE FOR MAINTAINING TRAFFIC	BARRIER REFLECTOR, TYPE A	BARRIER REFLECTOR, TYPE B	OBJECT MARKER, ONE WAY	OBJECT MARKER, TWO WAY	MAINTAINING TRAFFIC, MISC.: BARRIER MEDIAN INLET RECONSTRUCTED TO GRADE	MAINTAINING TRAFFIC, MISC.: TEMPORARY SHEET PILING FOR PHASE CONSTRUCTION	WORK ZONE LANE LINE, CLASS 1	WORK ZONE EDGE LINE, CLASS 1	WORK ZONE CHANNELIZING LINE, CLASS 1	WORK ZONE DOTTED LINE, CLASS 1	W	Y	MAF										
						SY	GAL	CY	FT	FT	FT	EACH	EACH	CY	EACH	EACH	EACH	EACH	EACH	FT	MILE	MILE	FT	FT			CHECKED	MES									
PHASE 2B																																					
59		165+33.31	186+73.31	NB														2140.00	2140.00	2140.00		1140.00															
59		186+73.31	190+19.60	NB														346.29	346.29	692.58																	
59		190+19.60	196+70.00	NB														650.40	650.40	650.40																	
59 - 60		196+70.00	199+83.68	NB														313.68	313.68	313.68		313.68															
60		45+76.05	47+47.57	NB														171.52	171.52	171.52		171.52															
60		47+47.57	51+60.00	NB								1						412.43	412.43	412.43																	
60		51+60.00	55+00.00	NB					340									340.00	340.00	340.00																	
60 - 61		55+00.00	58+00.00	NB														300.00	300.00	300.00																	
61		58+00.00	62+19.19	NB														419.19	419.19	419.19		419.19															
61		62+19.19	62+83.90	NB														64.71		64.71		64.71															
61		62+83.90	64+71.50	NB								1								187.60		375.20															
61		64+71.50	66+61.29	NB						189.79										189.79		379.58															
61 - 62		66+61.29	70+50.00	NB						777.42										388.71		388.71															
62		70+50.00	73+50.00	NB																300.00		300.00															
RAMP B-1																																					
60		47+47.57	52+25.78	NB																																	
RAMP S-E																																					
61		162+19.50	164+82.15	NB																262.65		262.65															
61		164+82.15	165+81.24	NB					100.00											99.09		99.09															
61		165+81.24	168+50.00	NB																268.76		268.76															
61		168+50.00	168+85.33	NB																35.33		35.33															
61 - 62		168+85.33	169+28.80	NB								1								43.47		43.47															
62		169+28.80	170+50.00	NB					121.20											121.20		121.20															
62		170+50.00	171+79.87	NB																129.87		129.87															
62		171+79.87	173+45.00	NB																165.13																	
RAMP S-W																																					
61 - 62		268+87.50	269+42.09	NB																																	
62		269+42.09	274+09.00	NB					466.91																												
62		274+09.00	275+25.00	NB																116.00		116.00															
62		275+25.00	276+02.50	NB																																	
PHASE 2B TOTAL																																					
												1995.32	3.00	238.00											5158.22	7490.63	8362.45	1924.53	2044.39								

MAINTENANCE OF TRAFFIC SUBSUMMARY

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SHEET NO.	REF. NO.	STATION		SIDE	WIDTH	254		407		442		611		614												
		FROM	TO			SY	GAL	CY	FT	FT	FT	EACH	EACH	CY	EACH	EACH	EACH	EACH	EACH	EACH	FT	MILE	MILE	FT	FT	
PARTIAL REFRESH OF PHASE 2B MARKING FOR PHASE 2C																										
65 - 66		165+33.31	51+00.00	NB																						
67 - 68		66+61.29	73+50.00	NB																						
PHASE 2C																										
66		51+00.00	54+00.00	NB																						
66		54+00.00	56+70.50	NB																						
66 - 67		56+70.50	58+00.00	NB																						
66 - 67		58+00.00	62+83.90	NB																						
66 - 67		62+83.90	66+61.29	NB																						
RAMP S-E																										
66		54+00.00	56+70.50	NB																						
66 - 67		56+70.50	58+00.00	NB																						
67		58+00.00	61+00.00	NB																						
67		161+00.00	168+88.18	NB																						
67 - 68		168+88.18	170+50.00	NB																						
68		170+50.00	172+60.00	NB																						
RAMP S-W																										
67 - 68		268+87.25	269+76.22	NB																						
68		269+76.22	274+00.00	NB																						
68		274+00.00	276+15.00	NB																						
68		276+15.00	277+75.00	NB																						
PHASE 2C TOTAL																										
FOR ADDITIONAL MOT MARKING PRIOR TO FINAL MARKING SEE MOT NOTES																										
RESURFACING AT BEGIN / END																										
65		165+33.31	186+73.31	NB	48	11413.33	970.13	475.56																		
65		186+73.31	190+19.60	NB	36	1385.16	117.74	57.72																		
65		190+19.60	196+70.00	NB	48	3468.8	294.85	144.53																		
65 - 66		196+70.00	199+83.68	NB	36	1254.72	106.65	52.28																		
66		45+76.05	51+00.00	NB	36	2095.8	178.14	87.33																		
66		51+00.00	54+00.00	NB	48	1600	136	66.67																		
67		58+00.00	62+50.00	SB	36	1800	153	75																		
67		62+50.00	64+65.00	SB	24	573.33	48.73	23.89																		
PERSHING AVE EXIT RAMP																										
65		186+73.31	190+19.60	NB	26	1000.39	85.03	41.68																		
BROADWAY AVE EXIT RAMP																										
66		45+76.05	51+00.00	NB	26	1513.63	128.66	63.07																		
ORANGE AVE ENT. RAMP																										
52		107+52.82	111+14.33	SB	24	964.03	81.94	40.17																		
52		111+14.33	115+42.00	SB	26.5	1259.25	107.04	52.47																		
52		115+42.00	119+85.00	SB	27.75	1365.92	116.1	56.91																		
TOTALS PHASE 1 (FROM SHEET 25)						2635.00	395.00		874.00	320.00	2120.00	6.00	578.00	266.00												
TOTALS PHASE 2A (FROM SHEET 27)											1221.25	2.00	804.00		98.00	68.00	192.00									
TOTALS PHASE 2B (FROM SHEET 29)											1995.32	3.00	238.00			36.00	79.00									
TOTALS PHASE 2C (FROM TOP THIS SHEET)											636.39	1.00	64.00			42.00	58.00									
TOTALS ADDITIONAL (FROM BOTTOM THIS SHEET)						29694.36	2524.01	1237.28																		
CONVERT TO MILES																										
TOTALS CARRIED TO GENERAL SUMMARY						32330	2920	1238	874	320	5973	12	1684	266	98	374	454	76	4	1600	5.92	25.11	48963	6490		

MAINTENANCE OF TRAFFIC SUBSUMMARY

CUY-77-14.35

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SHEET NO.	INTER-SECTION	STATION		CENTERLINE REFERENCE	LENGTH FT	WITDH AVE FT	251	253	254	255	407			441		644																				
		FROM	TO				PARTIAL DEPTH PAVEMENT REPAIR (441)	PAVEMENT REPAIR	PAVEMENT PLANING, ASPHALT CONCRETE	FULL DEPTH PAVEMENT REMOVAL AND RIGID REPLACEMENT, CLASS OC FS	FULL DEPTH PAVEMENT REMOVAL AND RIGID REPLACEMENT, CLASS OC MS	FULL DEPTH PAVEMENT SAWING	TACK COAT, 702.13	NON-TRACKING TACK COAT (FOR INTERMEDIATE COURSE)	NON-TRACKING TACK COAT	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), PG70-22M, AS PER PLAN	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, (448)	EDGE LINE, 4"	LANE LINE, 4"	CENTER LINE	CHANNELIZING LINE, 8"	STOP LINE	CROSSWALK LINE	TRANSVERSE/DIAGONAL LINE	LANE ARROW	DOTTED LINE, 4"										
							SY	SY	SY	SY	SY	FT	GAL	GAL	GAL	CY	CY	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	W	Y				
BROADWAY																																				
85		127+00.00	128+24.42	BROADWAY	124.42	45			622.76						52.93	25.95																				
85		128+24.42	131+57.00	ON SKEW BROADWAY	320.58	46			1655.72						140.74	68.99																				
86		135+22.00	137+77.60	ON SKEW BROADWAY	255.60	47			1340.00						113.90	55.83																				
86		137+77.60	138+08.00	BROADWAY	30.40	46			155.90						13.25	6.50																				
86		138+08.00	138+51.51	BROADWAY	43.51	44			214.83						18.26	8.95																				
86		138+51.51	143+30.00	BROADWAY	478.49	43			2297.60						195.30	95.73																				
86		143+30.00	145+50.00	BROADWAY	220.00	49			1197.47						101.79	49.89																				
86		145+50.00	147+53.00	BROADWAY	203.00	60			1348.75						114.64	56.20																				
86		147+53.00	148+80.00	BROADWAY	127.00	66			931.78						79.20	38.82																				
86		148+80.00	149+55.00	ON SKEW BROADWAY	75.00	66			550.00						46.75	22.92																				
86	ROCKEFELLER	154+35.00	156+00.00	ON SKEW BROADWAY	165.00				1475.56							61.48																				
86-87		156+00.00	163+30.00	BROADWAY	730.00	39			3163.33						268.88	131.81																				
87		163+30.00	164+69.00	ON SKEW BROADWAY	139.00	48			741.33						63.01	30.89																				
87		166+92.00	174+00.00	ON SKEW BROADWAY	708.00	42			3304.00						280.84	137.67																				
87		174+00.00	176+40.00	ON SKEW BROADWAY	240.00	44			1173.33						99.73	48.89																				
87	E 34TH ST.	179+35.00	180+70.00	ON SKEW BROADWAY	135.00				869.44							36.23																				
87		180+70.00	181+64.61	BROADWAY	94.61	42			446.66						37.97	18.61																				
87		181+64.61	183+03.65	BROADWAY	139.04	41			627.15						53.31	26.13																				
87-88		183+03.65	184+96.34	BROADWAY	192.69	39			825.57						70.17	34.40																				
88		184+96.34	185+40.53	BROADWAY	44.19	40			197.29						16.77	8.22																				
88		185+40.53	186+35.09	BROADWAY	94.56	44			459.69						39.07	19.15																				
88		186+35.09	186+80.86	BROADWAY	45.77	50			255.05						21.68	10.63																				
88		186+80.86	187+55.00	BROADWAY	74.14	50			413.15						35.12	17.21																				
88	E 30TH ST.	187+55.00	189+00.00	BROADWAY	145.00				716.67						60.92	29.86																				
E 30TH ST.																																				
89	BROADWAY	33+01.60	33+55.00	E 30TH ST.	53.40									43.78	28.33																					
89-90		33+55.00	40+17.60	E 30TH ST.	662.60	44								275.35	178.17																					
PAVEMENT REPAIR QUANTITIES																																				
88		33+01.60	40+17.60	E 30TH ST.			430	320		90	450	1854																								
SUBTOTAL							430	320	24983.03	90	450	1854	319.13	206.50	1924.23	1197.39	182.51	660	9761.64	4583.18	218.28	360.62	629.31	51	12	771.04	115.00									
CONVERT TO MILES																		0.13	1.85	0.87																
TOTALS CARRIED TO GENERAL SUMMARY							430	320	24984	90	450	1854	320	207	1925	1198	183	0.13	1.85	0.87	219	361	630	51	12			887								

MAINTENANCE OF TRAFFIC RESURFACING SUBSUMMARY

CUY-77-14.35

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ITEM 614, MAINTAINING TRAFFIC

A. GENERAL

THE CONTRACTOR SHALL CONDUCT HIS OPERATIONS AS TO MAKE THE PROPOSED CONSTRUCTION WITH A MINIMUM OF HAZARD, DELAY AND INCONVENIENCE TO THE MOTORISTS USING THE HIGHWAY. FURTHERMORE, IN ADDITION TO THE CONSTRUCTION AND MATERIAL SPECIFICATIONS, THE FOLLOWING SPECIFIC PROVISIONS ARE MANDATORY.

B. NOTIFICATION

FUNCTIONAL TRAFFIC CONTROL IS A MAJOR CONCERN ON THIS PROJECT, IT IS ESSENTIAL THAT THE MOTORING PUBLIC BE ADEQUATELY FOREWARNED OF FUTURE LANE CLOSURES AND TRAFFIC RESTRICTIONS. THEREFORE THE CONTRACTOR SHALL SUBMIT A SCHEDULE TO THE OHIO DEPARTMENT OF TRANSPORTATION INFORMATION OFFICER INDICATING THE LOCATIONS AND DATES OF THE LANE CLOSURES AT LEAST SEVEN (7) DAYS PRIOR TO THE IMPLEMENTATION OF ANY CLOSURES. THE CONTRACTOR SHALL ALSO NOTIFY THE LOCAL LAW ENFORCEMENT AGENCIES OF LANE CLOSURES AT LEAST THREE (3) DAYS PRIOR TO IMPLEMENTATION.

DISTRICT 12 PUBLIC INFORMATION OFFICER
5500 TRANSPORTATION BLVD.
GARFIELD HEIGHTS, OHIO 44125-5396
PHONE: (216) 581-2100 EXT. 244

C. CONSTRUCTION SEQUENCE

I.R. 77 RECONSTRUCTION WILL BE BY THREE (3) SEPARATE PHASES. THE SEQUENCE OF CONSTRUCTION SHALL PROCEED FROM PRE-PHASE 1 TO PHASE 1 TO PHASE 2 TO PHASE 3. PRE-PHASE 1 INCLUDES PREPARATORY WORK ALONG THE I.R. 77 MEDIAN BARRIER WALL TO PREPARE FOR TRAFFIC SHIFTS IN PHASE 1 AND WORK ALONG BROADWAY AVENUE.

THE CONTRACTOR SHALL PROVIDE LIGHTING FOR I.R. 77 THROUGH EXISTING AND PROPOSED TOWER AND CONVENTIONAL LIGHTING AT ALL TIMES. THE CONTRACTOR SHALL PROVIDE RAMP UNDERPASS LIGHTING AT ALL TIMES THROUGH THE EXISTING LUMINAIRES AND PROPOSED LUMINAIRES. LIGHTING SEQUENCE OF CONSTRUCTION ACTIVITIES HAVE BEEN DESCRIBED IN LIGHTING GENERAL NOTES, SHEET 224-226.

PRE-PHASE 1

THE ALTERNATE ROUTES FOR I.R. 77 SHALL BE ESTABLISHED PRIOR TO ANY LANE SHIFTS OR RESTRICTIONS ON I.R. 77.

BROADWAY AVENUE LOCAL ALTERNATE ROUTE:

IN PREPARATION OF BROADWAY AVENUE BEING SIGNED AS THE LOCAL ALTERNATE I.R. 77 ROUTE PORTIONS OF BROADWAY AVENUE SHALL BE REPAIRED/RESURFACED, HAVE NEW PAVEMENT MARKINGS APPLIED, AND HAVE REVISED LANE USE SIGNS INSTALLED. SEE RESURFACING PLANS FOR BROADWAY AVENUE WORK ITEMS. PREPARATION SHALL BE MADE FOR TRAFFIC SIGNAL MODIFICATIONS ALONG THE BROADWAY AVENUE ALTERNATE ROUTE. SEE ALTERNATE ROUTE SIGNING - NB AND SB I.R. 77. AT THE COMPLETION OF ALL PREPARATORY WORK ON BROADWAY AVENUE THE LOCAL ALTERNATE I.R. 77 ROUTE SIGNING SHALL BE INSTALLED AND WORK INVOLVING LANE SHIFTS AND RESTRICTIONS CAN BEGIN ON I.R. 77. THE LOCAL ALTERNATE ROUTE SIGNING ON BROADWAY AVENUE SHALL REMAIN IN PLACE UNTIL ALL 3 PHASES OF CONSTRUCTION ARE COMPLETE ON I.R. 77.

I.R. 77 NORTHBOUND/SOUTHBOUND ALTERNATE ROUTE:

THE ALTERNATE ROUTES INCLUDED IN THE PLANS FOR I.R. 77 SHALL BE ESTABLISHED. OVERHEAD SIGN WORK ALONG THE ALTERNATE ROUTES SHALL BE INSTALLED ALONG THE DIVIDED HIGHWAY ROUTES. ASSOCIATED LANE CLOSURES TO IMPLEMENT THE ALTERNATE ROUTES WILL BE IN ACCORDANCE WITH THE DISTRICT 12 PERMITTED LANE CLOSURE TIMES. THE ALTERNATE ROUTE SIGNING SHALL REMAIN IN PLACE UNTIL SUBSTANTIAL COMPLETION OF THE PROJECT WHEN ALL LANES ON I.R. 77 ARE OPEN AND NO ADDITIONAL CLOSURES OR RESTRICTIONS ARE ANTICIPATED.

REMOVE THE EXISTING SIGN TRUSS AT STATION 84+02.50. PROVIDE TEMPORARY SIGNING FOR THE "WOODLAND AVE." "E 30TH ST." "1/2 MILE" "EXIT 162A" SIGNING. TEMPORARY SIGNING TO BE MAINTAINED UNTIL PERMANENT SIGNING CAN BE ERECTED. REMOVE THE EXISTING MEDIAN BARRIER AND BARRIER TRANSITIONS (90') AND REPLACE WITH 50" PORTABLE BARRIER, AS PER PLAN. WORK IN THE MEDIAN IN PRE PHASE 1 TO BE ACCOMPLISHED USING ODOT STANDARD CONSTRUCTION DRAWING MT-95.40 WITH LANE CLOSURES IN ACCORDANCE WITH DISTRICT 12 PERMITTED LANE CLOSURE TIMES.

TEMPORARY DRAINAGE AND EXISTING DRAINAGE MODIFICATIONS ALONG THE EXISTING MEDIAN BARRIER ARE REQUIRED IN PRE PHASE 1 PRIOR TO SHIFTING TRAFFIC IN PHASE 1.

EXISTING DRAINAGE MODIFICATIONS INCLUDE THE RECONSTRUCTION OF THE BARRIER MEDIAN INLETS TO GRADE, INCLUDING THE REPLACEMENT OF THE GRATE AND FRAME WITH A COVER SUITABLE TO WITHSTAND HS-20 TRAFFIC LOADING DURING CONSTRUCTION OF PHASE 1, THE RESURFACING OF THE EXISTING MEDIAN SHOULDER TO A CROSS SLOPE OF 1.6% WITHIN THE LIMITS OF THE MEDIAN BARRIER SLOT, WITHOUT REDUCING THE INLET OPENING SLOT TO LESS THAN 4". ALL WORK INDICATED AND INCIDENTAL TO EXISTING DRAINAGE MODIFICATIONS SHALL BE PAID FOR PER ITEM 614 - MAINTAINING TRAFFIC, MISC.: BARRIER MEDIAN INLET RECONSTRUCTED TO GRADE.

12" SLOTTED DRAIN, TYPE 2 WILL BE REQUIRED ALONG THE TOE OF THE EXISTING MEDIAN BARRIER WALL AS SHOWN ON THE PHASE 1 MAINTENANCE OF TRAFFIC PLANS, SHEETS 46, 49 - 51 . THE 12" SLOTTED DRAIN WILL OUTLET INTO THE EXISTING BARRIER MEDIAN INLETS.

THE EXISTING DRAINAGE MODIFICATIONS AND THE 12" SLOTTED DRAIN WORK IN THE MEDIAN IN PRE PHASE 1 TO BE ACCOMPLISHED USING ODOT STANDARD CONSTRUCTION DRAWING MT-95.40 WITH LANE CLOSURES IN ACCORDANCE WITH DISTRICT 12 PERMITTED LANE CLOSURE TIMES.

PHASE 1

CONSTRUCT THE OUTSIDE PAVEMENT LANES AND PAVED SHOULDERS THROUGH THE INTERMEDIATE ASPHALT COURSE AND THE OUTSIDE PORTIONS OF BOTH BRIDGES. TWO (2) LANES OF TRAFFIC SHALL BE MAINTAINED IN EACH DIRECTION ON I.R. 77 AT ALL TIMES WITH THE EXCEPTION OF THOSE TIMES NOTED UNDER THE CLOSURE AND RESTRICTIONS SECTION OF THIS NOTE.

AT THE COMPLETION OF PHASE 1 CONSTRUCTION THE CONTRACTOR SHALL SHIFT TRAFFIC INTO THE PHASE 2A MOT LANES FOR OVER WINTER.

PHASE 2

CONSTRUCT THE REMAINING PAVEMENTS AND INSIDE SHOULDERS THROUGH THE INTERMEDIATE ASPHALT COURSE AND THE MEDIAN BARRIER. THE INSIDE PORTION OF BOTH BRIDGES SHALL BE CONSTRUCTED. TWO (2) LANES OF TRAFFIC SHALL BE MAINTAINED IN EACH DIRECTION ON THE OUTSIDE PORTION OF THE NEW PAVEMENT AND BRIDGES CONSTRUCTED IN PHASE 1 WITH THE EXCEPTION OF THOSE TIMES NOTED UNDER THE CLOSURE AND RESTRICTIONS SECTION OF THIS NOTE. EXIT RAMP TO BROADWAY AND IR 490 WILL BE MAINTAINED AT ALL TIMES EXCEPT AS NOTED BELOW.

IR 77 NORTHBOUND WILL BE CONSTRUCTED IN THREE SUB PHASES DURING THE PHASE 2 CONSTRUCTION SHOWN AS PHASE 2A, 2B AND 2C. PHASE 2A WILL CONSTRUCT IR 77 NORTHBOUND FROM STATION 66+75 TO STA. 70+50. AT THE COMPLETION OF PHASE 2A REMOVE OVERHEAD SIGNS AND SIGN TRUSSES AT STATION 58+20, 65+00 AND PROVIDE AND ERECT MAINTENANCE OF TRAFFIC EXIT SIGNING PER MT-98.21. CONSTRUCT NEW MEDIAN BARRIER SIGN SUPPORTS AT STATION 58+55. REMOVE OVERHEAD SIGNS AND SIGN TRUSS AT STATION 168+85 ON RAMP S-E AND PROVIDE AND ERECT MAINTENANCE OF TRAFFIC EXIT SIGNING. RECONSTRUCT THE INSIDE SHOULDER ON RAMP S-W FROM STATION 271+35 TO STATION 275+43 AS SHOWN IN THE PHASE 2B PLANS WITH PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A.

AT THE COMPLETION OF PHASE 2A THE NORTHBOUND TRAFFIC WILL BE SHIFTED ON IR 77 NORTHBOUND APPROACHING THE WORK TO THE INSIDE SHOULDER AS SHOWN IN PHASE 2B. THIS PHASE ALLOWS FOR NORTHBOUND IR 77, RAMPS SE AND SW, OUTSIDE PAVEMENT TO BE CONSTRUCTED.

PHASE 2C SHIFTS THE EXIT RAMP TRAFFIC AT IR 490 ONTO THE NEW PAVEMENT CONSTRUCTED IN PHASE 2B AND CONSTRUCTS THE REMAINING PAVEMENT IN THE RAMP GORES ALONG WITH THE INSIDE PAVEMENT OF RAMP S-W. AT THE INITIATION OF PHASE 2C RAMP S-W WILL BE CLOSED A WEEKEND, 10:00 PM FRIDAY TO 6:00 AM MONDAY FOR THE CONSTRUCTION OF THE NEW RAMP PAVEMENT FROM STATION 167+36 TO STATION 170+50.

AT THE COMPLETION OF PHASE 2C CONSTRUCTION THE CONTRACTOR SHALL SHIFT TRAFFIC INTO THE PROPOSED LANE ALIGNMENTS FOR OVER WINTER.

PHASE 3

CONSTRUCT THE FINAL ASPHALT SURFACE COURSE ON THE PAVEMENT CONSTRUCTED IN PHASE 1 AND 2. CONSTRUCT THE FINAL PAVEMENT MARKINGS. TWO (2) LANES OF TRAFFIC SHALL BE MAINTAINED IN EACH DIRECTION ON THE PAVEMENT AND BRIDGE CONSTRUCTED IN PHASE 1 AND PHASE 2.

D. TWO LANE TRAFFIC WIDTH REQUIREMENTS

DURING CONSTRUCTION ON I.R. 77 THE TWO (2) TRAFFIC LANES SHALL BE A MINIMUM WIDTH OF 11'-0" PLUS A 1'-0" MINIMUM BUFFER ON EACH SIDE TO GUARDRAIL, PARAPETS, BARRIERS OR PAVEMENT EDGES FOR A TOTAL CLEAR WIDTH OF 24'-0" MINIMUM.

NOTE CONTINUED ON NEXT SHEET

CALCULATED
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MAINTENANCE OF TRAFFIC GENERAL NOTES

CUY - 77 - 14.35

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ITEM 614. MAINTAINING TRAFFIC CONTINUED

E. CLOSURES AND RESTRICTIONS

1. INTERSTATE ROUTE 77:

TWO (2) LANES OF TRAFFIC IN EACH DIRECTION SHALL BE MAINTAINED ON I.R. 77 AT ALL TIMES EXCEPT DURING THE PERMITTED CLOSURES/RESTRICTIONS AS NOTED BELOW:

CLOSURES

- a. DURING PHASE 1 CONSTRUCTION FOR THE BRIDGE DEMOLITION AND THE NEW BRIDGE ERECTION WORK I.R. 77 MAY BE CLOSED OVERNIGHT FOR 10 NIGHTS. THE CLOSURE MAY BE IN PLACE FOR BOTH DIRECTIONS OF I.R. 77 TRAFFIC.
- b. DURING PHASE 1 REMOVAL OF THE EXISTING OVERHEAD SIGN SUPPORTS WHEN COMPLETE STOPPAGE OF I.R. 77 DIRECTIONAL TRAFFIC WILL BE REQUIRED.
- c. DURING PHASE 2 CONSTRUCTION BRIDGE DEMOLITION/BEAM REMOVAL AND BRIDGE BEAM ERECTION I.R. 77 SOUTHBOUND MAY BE CLOSED FOR TWO (2) WEEKENDS. THESE WEEKEND CLOSURES SHALL COINCIDE WITH TWO OF THE WEEKEND CLOSURES ON I.R. 490 AND THE I.R. 77/I.R. 490 RAMPS.
- d. DURING PHASE 2 CONSTRUCTION FOR THE BRIDGE DEMOLITION AND THE NEW BRIDGE ERECTION WORK I.R. 77 MAY BE CLOSED OVERNIGHT FOR 10 NIGHTS. THE CLOSURE MAY BE IN PLACE FOR BOTH DIRECTIONS OF I.R. 77 TRAFFIC.
- e. DURING PHASE 2 REMOVAL AND ERECTION OF THE NEW OVERHEAD SIGN SUPPORTS WHEN COMPLETE STOPPAGE OF I.R. 77 DIRECTIONAL TRAFFIC WILL BE REQUIRED.

WEEKEND CLOSURES OF I.R. 77 SHALL BEGIN IN ACCORDANCE WITH THE 2 LANE TO 1 LANE TIME CONSTRAINT IN THE DISTRICT 12, PERMITTED LANE CLOSURE TIMES FOR A WEEKEND FRIDAY EVENING AND THE CLOSURE SHALL BE REMOVED IN ACCORDANCE WITH THE TIME CONSTRAINT IN THE DISTRICT 12, PERMITTED LANE CLOSURE TIMES FOR A WEEKEND MONDAY MORNING.

OVERNIGHT CLOSURES OF I.R. 77 SHALL BEGIN IN ACCORDANCE WITH THE 2 LANE TO 1 LANE TIME CONSTRAINT IN THE DISTRICT 12, PERMITTED LANE CLOSURE TIMES FOR A WEEKDAY EVENING AND THE CLOSURE SHALL BE REMOVED IN ACCORDANCE WITH THE TIME CONSTRAINT IN THE DISTRICT 12, PERMITTED LANE CLOSURE TIMES FOR A WEEKDAY MORNING.

LANE CLOSURE TIMES SHALL BE ADJUSTED FOR SPECIAL EVENTS THAT HAVE A SEATING CAPACITY OF 10,000 IN THE DOWNTOWN CLEVELAND AREA. THE CONTRACTOR SHALL NOT CLOSE A LANE(S) IN THE INBOUND DIRECTION 2 HOURS BEFORE AN EVENT AND IN THE OUTBOUND DIRECTION 2 HOURS AFTER AN EVENT ENDS.

STOPPAGE OF TRAFFIC ON I.R. 77 SHALL BE WITHIN THE TIME RESTRAINTS GIVEN IN THE DISTRICT 12, PERMITTED LANE CLOSURE TIMES FOR THE LANE REDUCTION OF 2 LANES TO 1 LANE OF TRAFFIC. LENGTH OF STOPPAGE SHALL BE PER THE SHORT-DURATION CLOSURE OF MULTI-LANE DIVIDED HIGHWAY, SCD MT - 99.60.

DURING THE DEMOLITION OF THE EXISTING AND THE CONSTRUCTION OF THE NEW STRUCTURE, A SAFETY NET OR PLATFORM SHALL BE REQUIRED TO PROTECT THE RAMPS AND I.R. 490. THE CONTRACTOR SHALL PROVIDE A SAFETY NET OR PLATFORM OF SUITABLE STRENGTH ON THE UNDERSIDE OF THE DECK. THE DESIGN OF THE DECK OR PLATFORM SHALL CONFORM WITH OSHA REQUIREMENTS AND THE APPROVAL OF THE ENGINEER AND SHALL REMAIN IN PLACE UNTIL THE WORK HAS BEEN COMPLETED AND ACCEPTED OR AS DIRECTED BY THE ENGINEER. THE DEMOLITION AND TRAFFIC PROTECTION PLAN SUBMISSION WILL BE IN ACCORDANCE WITH CMS 501.05.

COORDINATION WITH CUY-77-13.80, PID 82388, CCG6B, DESIGN BUILD PROJECT.

NO CUY-77-14.35, CCG6A, WORK WILL BE DONE IN PHASE 1 THAT DIRECTLY IMPACTS THE EXISTING PAVEMENT SOUTH OF THE PROPOSED CCG6A RETAINING WALL LIMITS (STATION 73+25) FROM THE BEGINNING OF THE 2018 CONSTRUCTION SEASON UNTIL SEPTEMBER 1, 2018. THE CCG6B CONTRACTOR WILL HAVE CONTROL OF THE WORK ZONE ON IR 77 SOUTH OF STATION 73+25 DURING THIS TIME PERIOD. THE CCG6B CONTRACT DOCUMENTS INDICATE A SPECIFIC CONSTRUCTION SCHEDULE AND THIS AREA ON IR 77 IS NEEDED BY THE CCG6B CONTRACTOR TO PERFORM THE CONSTRUCTION ITEMS INDICATED IN THE CCG6B CONTRACT DOCUMENTS. IF THE CCG6B CONTRACTOR ALTERS THE CONTRACT DOCUMENT CONSTRUCTION SCHEDULE IT WILL BE THE RESPONSIBILITY OF THE CCG6B CONTRACTOR TO COORDINATE AND ENSURE THAT THE CCG6A CONTRACTOR HAS THE TIME AND THE ACCESS TO COMPLETE THE CCG6A, PHASE 1, WORK SHOWN IN THE CUY-77-14.35 PLANS PRIOR TO THE END OF THE 2018 CONSTRUCTION SEASON.

COORDINATION WITH CUY-490/10-2.09/19.28, PID 96833, OC SECTION 3, DESIGN BUILD PROJECT.

THE OC SECTION 3 PROJECT WILL BE UNDER CONSTRUCTION FROM THE 2017 CONSTRUCTION SEASON THROUGH THE 2020 CONSTRUCTION SEASON. THROUGHOUT THE OC SECTION 3 PROJECT VARIOUS ROAD CLOSURES AND RESTRICTIONS ARE ALLOWED WHICH IMPACT DETOURS INCLUDED IN CUY-77-14.35.

THE CONTRACTOR SHALL COORDINATE WITH THE OC SECTION 3 CONTRACTOR TO ENSURE THAT DETOUR ROUTES ARE OPEN AND ACCESSIBLE WHEN REQUIRED OR MODIFIED TO PROVIDE DETOURS ACCEPTABLE TO ODOT PROJECT ENGINEER.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR ANY MODIFICATIONS TO THE DETOURS SHOWN IN THE PLANS.

ITEM 614 - MAINTAINING TRAFFIC, MISC.: COVERING SIGNS	2000 SF
ITEM 614 - MAINTAINING TRAFFIC, MISC.: DETOUR SIGNS	2000 SF

PAYMENT FOR ADDITIONAL DETOUR SIGNS SHALL INCLUDE SIGNS, POSTS, MOUNTING HARDWARE, INSTALLATION AND REMOVAL

F. PERMITTED LANE CLOSURE LIMITATIONS

IF LANE CLOSURES ARE IN PLACE OUTSIDE THE SPECIFIED TIMES, LIQUIDATED DAMAGES IN THE AMOUNT OF \$75.00 PER MINUTE FOR THE FIRST 30 MINUTES, THEN \$100.00 PER MINUTE THEREAFTER, SHALL BE ASSESSED THE CONTRACTOR FOR EACH MINUTE THE LANE REMAINS CLOSED.

G. WINTER TIME LIMITATIONS

ALL EXISTING LANES SHALL BE OPEN TO TRAFFIC BETWEEN OCTOBER 16 AND MARCH 31. OCTOBER 16 SHALL BE CONSIDERED TO CONSTITUTE AN INTERIM COMPLETION DATE AND LIQUIDATED DAMAGES SHALL BE ASSESSED IN THE AMOUNT OF \$ 1,400 FOR EACH CALENDAR DAY THAT ALL LANES ARE NOT OPEN AND AVAILABLE TO TRAFFIC.

H. LANES OPEN DURING HOLIDAYS OR SPECIAL EVENTS

NO SET-UP OR TAKE DOWN OF MAINTENANCE OF TRAFFIC ITEMS SUCH AS PAVEMENT MARKINGS, DRUMS, PB'S ETC., SHALL BE DONE AND ALL EXISTING LANES SHALL BE OPEN TO TRAFFIC DURING THE FOLLOWING DESIGNATED HOLIDAYS OR EVENTS:

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

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

DAY OF THE WEEK	TIME ALL LANES MUST BE OPEN TO TRAFFIC
SUNDAY	12:00N FRIDAY THROUGH 6:00 AM MONDAY
MONDAY	12:00N FRIDAY THROUGH 6:00 AM TUESDAY
TUESDAY	12:00N MONDAY THROUGH 6:00 AM WEDNESDAY
WEDNESDAY	12:00N TUESDAY THROUGH 6:00 AM THURSDAY
THURSDAY	12:00N WEDNESDAY THROUGH 6:00 AM MONDAY
FRIDAY	12:00N THURSDAY THROUGH 6:00 AM MONDAY
SATURDAY	12:00N FRIDAY THROUGH 6:00 AM MONDAY

SHOULD THE CONTRACTOR FAIL TO MEET ANY OF THESE REQUIREMENTS, THE CONTRACTOR SHALL BE ASSESSED LIQUIDATED DAMAGES IN ACCORDANCE WITH THE PERMITTED LANE CLOSURE LIMITATIONS.

I. CONTRACTORS EQUIPMENT - OPERATION AND STORAGE

NO EQUIPMENT HAVING A GROSS WEIGHT IN EXCESS OF 60,000 POUNDS SHALL BE PERMITTED ON ANY I.R. 77 OR RAMP BRIDGE STRUCTURE IN ACCORDANCE WITH 501.05.B.6. A STRUCTURAL ANALYSIS SHALL BE PERFORMED, SIGNED, SEALED, AND DATED BY AN OHIO REGISTERED PROFESSIONAL ENGINEER TO PROVE PROPOSED EQUIPMENT HAVING A GROSS WEIGHT IN EXCESS OF 60,000 POUNDS WILL NOT EXCEED UNIT STRESSES IN ACCORDANCE WITH 501.05.B.6.b. A SECOND, DIFFERENT OHIO REGISTERED PROFESSIONAL ENGINEER SHALL CHECK, SIGN, SEAL, AND DATE THE STRUCTURAL ANALYSIS. THE CONTRACTOR SHALL SUBMIT COPIES OF THE CALCULATIONS TO THE ENGINEER, AT LEAST FIFTEEN (15) DAYS PRIOR TO BEGINNING WORK, AND RECEIVE APPROVAL BEFORE STARTING.

THE CONTRACTOR'S EQUIPMENT SHALL BE EQUIPPED WITH AT LEAST ONE AMBER FLASHING LIGHT. EQUIPMENT MAY BE PARKED IN AREAS ALONG THE HIGHWAY WHEN WORK OPERATIONS ARE SCHEDULED TO CONTINUE WITHIN THE NEXT WORKDAY. OTHERWISE THE EQUIPMENT THAT IS NOT PROTECTED BY CONCRETE BARRIERS SHALL BE STORED AT A STORAGE AREA OUTSIDE THE R/W, THE LOCATION OF WHICH SHALL HAVE PRIOR APPROVAL OF THE ENGINEER. WHEN PARKING ALONG THE HIGHWAY THE EQUIPMENT SHALL BE PLACED AND DELINEATED AS PER 614.03. NO EQUIPMENT SHALL BE PARKED IN THE MEDIAN OF THE HIGHWAY. ADEQUATE BARRICADES AND LIGHTS SHALL BE PLACED ON THE PAVEMENT SIDE OF THE EQUIPMENT, TO IDENTIFY THE LIMITS OF THE EQUIPMENT. ALL OTHER EQUIPMENT, INCLUDING PRIVATE VEHICLES, SHALL BE STORED AT THE APPROVED CONTRACTOR'S STORAGE AREA. NO EQUIPMENT SHALL BE PARKED ON PRIVATE PROPERTY UNLESS PRIOR APPROVAL OF THE OWNER AND THE PROJECT ENGINEER/SUPERVISOR HAS BEEN GRANTED.

J. ESTIMATED QUANTITIES

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY TO REPAIR AND ADJUST THE EXISTING ASPHALT SURFACES USED DURING THE MAINTENANCE OF TRAFFIC AS DETERMINED BY THE ENGINEER.

ITEM 614 - ASPHALT CONCRETE FOR MAINTAINING TRAFFIC 100 CU. YD.

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

NOTE CONTINUED ON NEXT SHEET

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MAINTENANCE OF TRAFFIC GENERAL NOTES

CUY-77-14.35

ITEM 614. MAINTAINING TRAFFIC CONTINUED

RESTRICTIONS

A ONE LANE RESTRICTION ON I.R. 77 IN ACCORDANCE WITH THE DISTRICT 12, PERMITTED LANE CLOSURE TIMES SHALL BE PROVIDED FOR THE FOLLOWING WORK ACTIVITIES:

- a. DURING PHASE 1 FOR THE CONSTRUCTION OF THE TEMPORARY DRAINAGE CONNECTIONS IN AN ACTIVE MAINTENANCE OF TRAFFIC LANE.
- b. DURING PHASE 1 AND PHASE 2 WHEN MATERIAL DELIVERY AND OFF LOADING OF MATERIAL WILL NEED TO BE ACCOMPLISHED FROM AN ACTIVE I.R. 77 MAINTENANCE OF TRAFFIC LANE.
- c. DURING PHASE 2 FOR THE REMOVAL OF THE MEDIAN SIGN TRUSS AND THE CONSTRUCTION OF THE NEW MEDIAN BARRIER SIGN SUPPORTS.

LANE CLOSURE TIMES SHALL BE ADJUSTED FOR SPECIAL EVENTS THAT HAVE A SEATING CAPACITY OF 10,000 IN THE DOWNTOWN CLEVELAND AREA. THE CONTRACTOR SHALL NOT CLOSE A LANE(S) IN THE INBOUND DIRECTION 2 HOURS BEFORE AN EVENT AND IN THE OUTBOUND DIRECTION 2 HOURS AFTER AN EVENT ENDS.

- 2. INTERSTATE ROUTE 490:
TWO (2) LANES OF TRAFFIC IN EACH DIRECTION SHALL BE MAINTAINED ON I.R. 490 AT ALL TIMES EXCEPT DURING THE PERMITTED CLOSURES AS NOTED BELOW:

CLOSURES

- a. DURING PHASE 1 CONSTRUCTION BRIDGE DEMOLITION/BEAM REMOVAL AND BRIDGE BEAM ERECTION I.R. 490 MAY BE CLOSED FOR THREE (3) WEEKENDS.
- b. DURING PHASE 1 CONSTRUCTION FOR THE BRIDGE DEMOLITION AND THE NEW BRIDGE ERECTION WORK ON I.R. 77, I.R. 490 MAY BE CLOSED OVERNIGHT FOR 10 NIGHTS. THE CLOSURE MAY BE IN PLACE FOR BOTH DIRECTIONS OF I.R. 490 TRAFFIC.
- c. DURING PHASE 2 CONSTRUCTION BRIDGE DEMOLITION/BEAM REMOVAL AND BRIDGE BEAM ERECTION I.R. 490 MAY BE CLOSED FOR THREE (3) WEEKENDS. TWO OF THE WEEKEND CLOSURES SHALL COINCIDE WITH THE TWO WEEKEND CLOSURES ON I.R. 77 SOUTHBOUND.
- d. DURING PHASE 2 CONSTRUCTION FOR THE BRIDGE DEMOLITION AND THE NEW BRIDGE ERECTION WORK ON I.R. 77, I.R. 490 MAY BE CLOSED OVERNIGHT FOR 10 NIGHTS. THE CLOSURE MAY BE IN PLACE FOR BOTH DIRECTIONS OF I.R. 490 TRAFFIC.

WEEKEND CLOSURES OF I.R. 490 SHALL BEGIN IN ACCORDANCE WITH THE 2 LANE TO 1 LANE TIME CONSTRAINT IN THE DISTRICT 12, PERMITTED LANE CLOSURE TIMES FOR A WEEKEND FRIDAY EVENING AND THE CLOSURE SHALL BE REMOVED IN ACCORDANCE WITH THE TIME CONSTRAINT IN THE DISTRICT 12, PERMITTED LANE CLOSURE TIMES FOR A WEEKEND MONDAY MORNING.

OVERNIGHT CLOSURES OF I.R. 490 SHALL BEGIN IN ACCORDANCE WITH THE 2 LANE TO 1 LANE TIME CONSTRAINT IN THE DISTRICT 12, PERMITTED LANE CLOSURE TIMES FOR A WEEKDAY EVENING AND THE CLOSURE SHALL BE REMOVED IN ACCORDANCE WITH THE TIME CONSTRAINT IN THE DISTRICT 12, PERMITTED LANE CLOSURE TIMES FOR A WEEKDAY MORNING.

THE INTENT IS TO CLOSE I.R. 490 ONLY WHEN WORK IS BEING DONE TO THE I.R. 77 BRIDGE DIRECTLY OVERHEAD. THE DURATION OF THE CLOSURE SHALL BE LIMITED TO THOSE TIMES WHEN THE OVERHEAD WORK IS SCHEDULED.

LANE CLOSURE TIMES SHALL BE ADJUSTED FOR SPECIAL EVENTS THAT HAVE A SEATING CAPACITY OF 10,000 IN THE DOWNTOWN CLEVELAND AREA. THE CONTRACTOR SHALL NOT CLOSE A LANE(S) IN THE INBOUND DIRECTION 2 HOURS BEFORE AN EVENT AND IN THE OUTBOUND DIRECTION 2 HOURS AFTER AN EVENT ENDS.

- 3. INTERSTATE ROUTE 77 AND 490 RAMPS UNDER I.R.77:
ALL RAMP LANES SHALL BE MAINTAINED ON I.R. 77 AND I.R. 490 AT ALL TIMES EXCEPT DURING THE PERMITTED CLOSURES AS NOTED BELOW:

CLOSURES

- a. DURING PHASE 1 CONSTRUCTION BRIDGE DEMOLITION/BEAM REMOVAL AND BRIDGE BEAM ERECTION THE I.R. 77 AND I.R. 490 RAMPS MAY BE CLOSED FOR THREE (3) WEEKENDS. THE THREE (3) WEEKENDS SHALL COINCIDE WITH THE I.R. 490 MAINLINE CLOSURES.
- b. DURING PHASE 1 CONSTRUCTION FOR THE BRIDGE DEMOLITION AND THE NEW BRIDGE ERECTION WORK ON I.R. 77, THE I.R. 77 AND I.R. 490 RAMPS MAY BE CLOSED OVERNIGHT FOR 10 NIGHTS. THE OVERNIGHT CLOSURE SHALL COINCIDE WITH THE OVERNIGHT CLOSURES OF I.R. 490 TRAFFIC.
- c. DURING PHASE 2 CONSTRUCTION BRIDGE DEMOLITION/BEAM REMOVAL AND BRIDGE BEAM ERECTION THE I.R. 77 AND I.R. 490 RAMPS MAY BE CLOSED FOR THREE (3) WEEKENDS. THE THREE (3) WEEKENDS SHALL COINCIDE WITH THE I.R. 490 MAINLINE CLOSURES. TWO OF WEEKEND CLOSURES SHALL COINCIDE WITH THE TWO WEEKEND CLOSURES ON I.R. 77 SOUTHBOUND.
- d. DURING PHASE 2 CONSTRUCTION FOR THE BRIDGE DEMOLITION AND THE NEW BRIDGE ERECTION WORK ON I.R. 77, THE I.R. 77 AND I.R. 490 RAMPS MAY BE CLOSED OVERNIGHT FOR 10 NIGHTS. THE OVERNIGHT CLOSURE SHALL COINCIDE WITH THE OVERNIGHT CLOSURES OF I.R. 490 TRAFFIC.
- e. DURING PHASE 2C CONSTRUCTION FOR THE PROPOSED PAVEMENT TIE-IN BETWEEN RAMP S-E AND S-W, RAMP S-W MAY BE CLOSED FOR ONE (1) WEEKEND.

WEEKEND CLOSURES OF THE I.R. 77 AND I.R. 490 RAMPS SHALL BEGIN IN ACCORDANCE WITH THE 2 LANE TO 1 LANE TIME CONSTRAINT IN THE DISTRICT 12, PERMITTED LANE CLOSURE TIMES FOR A WEEKEND FRIDAY EVENING AND THE CLOSURE SHALL BE REMOVED IN ACCORDANCE WITH THE TIME CONSTRAINT IN THE DISTRICT 12, PERMITTED LANE CLOSURE TIMES FOR A WEEKEND MONDAY MORNING.

OVERNIGHT CLOSURES OF THE I.R. 77 AND I.R. 490 RAMPS SHALL BEGIN IN ACCORDANCE WITH THE 2 LANE TO 1 LANE TIME CONSTRAINT IN THE DISTRICT 12, PERMITTED LANE CLOSURE TIMES FOR A WEEKDAY EVENING AND THE CLOSURE SHALL BE REMOVED IN ACCORDANCE WITH THE TIME CONSTRAINT IN THE DISTRICT 12, PERMITTED LANE CLOSURE TIMES FOR A WEEKDAY MORNING.

THE INTENT IS TO CLOSE THE I.R. 77 AND I.R. 490 RAMPS ONLY WHEN WORK IS BEING DONE TO THE I.R. 77 BRIDGE DIRECTLY OVERHEAD. THE DURATION OF THE CLOSURE FOR THE RAMPS SHALL BE LIMITED TO THOSE TIMES WHEN THE OVERHEAD WORK IS SCHEDULED AND I.R. 490 IS CLOSED.

- 4. BROADWAY AVENUE:
TWO (2) LANES OF TRAFFIC IN EACH DIRECTION SHALL BE MAINTAINED ON BROADWAY AVENUE ALL TIMES EXCEPT DURING THE PERMITTED LANE RESTRICTIONS AS NOTED BELOW:
 - a. DURING PRE-PHASE 1 PLANING AND RESURFACING OF BROADWAY AVENUE ONE LANE OF TRAFFIC IN EACH DIRECTION SHALL BE MAINTAINED AT ALL TIMES. MAINTAIN TRAFFIC IN ACCORDANCE WITH MT-95.31 AND MT-95.32.
- 5. EAST 30TH STREET:
TWO (2) LANES OF TRAFFIC IN EACH DIRECTION SHALL BE MAINTAINED ON EAST 30TH STREET AT ALL TIMES EXCEPT DURING THE PERMITTED LANE RESTRICTIONS AS NOTED BELOW:
 - a. DURING PRE-PHASE 1 JOINT REPAIR WITH FULL DEPTH PAVEMENT REMOVAL AND RIGID REPLACEMENT ONE LANE OF TRAFFIC IN EACH DIRECTION SHALL BE MAINTAINED AT ALL TIMES. MAINTAIN TRAFFIC IN ACCORDANCE WITH MT-95.31 AND MT-95.32.

E. PERMITTED LANE CLOSURE INFORMATION

LANE CLOSURES ON THIS PROJECT MAY ONLY BE IMPLEMENTED AT THE TIMES PERMITTED BY THE "DISTRICT 12 PERMITTED LANE CLOSURE TIMES" (P.L.C.T.) LIST, WHICH IS LOCATED ON THE ODOT WEB SITE:
www.dot.state.oh.us/dist12/workzone/laneclo.htm
THE LATEST REVISION, AT 14 DAYS PRIOR TO THE BID DATE, SHALL BE IN EFFECT FOR THE PROJECT.

NO TEMPORARY CLOSURES SHALL BE IN PLACE WHEN NO WORK IS BEING PERFORMED.

CALCULATED
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MAINTENANCE OF TRAFFIC GENERAL NOTES

CUY-77-14.35

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PHASE CONSTRUCTION SEQUENCE - SUPPLEMENTAL LANE RESTRICTION/ CLOSURE CHART

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PHASE	DIRECTION	CONSTRUCTION ACTIVITY	TEMPORARY TRAFFIC CONTROL	COMPLETE CLOSURE SEE NOTE 2			EXISTING NO. OF LANES	RESTRICTIONS SEE NOTE 1		
				NUMBER OF OCCURANCES				NUMBER OF LANES CLOSED		
				WEEKEND	WEEKDAY OVERNIGHT	SHORT DURATION		WEEKEND	WEEKDAY	WEEKDAY OVERNIGHT
BROADWAY AVE.										
(PRE) 1	NB. & SB.	RESURFACING	STD. CONST. DWG. MT-95.31 AND MT-95.32 - SEE NOTE 3	NONE	NONE	NONE	2	1	1	1
(PRE) 1	NB. & SB.	MARKING	STD. CONST. DWG. MT-99-20 - SEE NOTE 4	NONE	NONE	NONE	2			1
(PRE) 1	NB. & SB.	EXISTING TRAFFIC SIGNAL MODIFICATIONS	MAINTAIN EXISTING SIGNALS FLASH MODE - SEE NOTE 3	NONE	NONE	NONE	2		0	
EAST 30TH ST.										
(PRE) 1	NB. & SB.	JOINT REPAIR	STD. CONST. DWG. MT-95.31 AND MT-95.32 - SEE NOTE 3	NONE	NONE	NONE	2	1	1	1
(PRE) 1	NB. & SB.	MARKING MODIFICATIONS	SEE NOTE 4	NONE	NONE	NONE	2	1		1
ORANGE AVE										
(PRE) 1	EB.	MARKING AND SIGNING MODIFICATIONS	SEE NOTE 4	NONE	NONE	NONE	4	2		2
I.R. 77										
(PRE) 1	NB. & SB.	TEMPORARY LIGHTING	DETAILED IN LIGHTING GENERAL NOTES SHEET 224-226	NONE	NONE	NONE	2	1		1
(PRE) 1	NB. & SB.	OVERHEAD SIGN SUPPORT REMOVAL	STD. CONST. DWG. MT-99.60	NONE	NONE	AS NEEDED	2			
(PRE) 1	NB. & SB.	MEDIAN BARRIER MODIFICATIONS AND DELINEATION		NONE	NONE	NONE	2	1		1
(PRE) 1	NB. & SB.	MEDIAN INLET MODIFICATIONS		NONE	NONE	NONE	2	1		1
(PRE) 1	NB. & SB.	TEMPORARY DRAINAGE/SLOTTED DRAIN INSTALLATION		NONE	NONE	NONE	2	1		1
I.R. 77										
1	NB. & SB.	LANE CLOSED REVERSE EXISTING PAVEMENT CROSS-SLOPES WITH RESURFACING		NONE	NONE	NONE	2	1		1
1	NB. & SB.	BRIDGE AND PAVEMENT CONSTRUCTION OUTSIDE PORTION	DETAILED IN M.O.T. PLANS SHT. 49-52	NONE	10	NONE	2	1		1
1	NB. & SB.	MATERIAL DELIVERY - OFF LOADING	STD. CONST. DWG. MT-95.30	NONE	NONE	NONE	2			1
1	NB. & SB.	TEMPORARY DRAINAGE CONNECTIONS	STD. CONST. DWG. MT-95.30	NONE	NONE	NONE	2			1
I.R. 490										
1	EB. & WB.	OVERHEAD I.R. 77 BRIDGE WORK	DETOUR SEE SHT. 74-75	3	10	NONE	2			
I.R. 490 & 77 RAMPS										
1	ALL	OVERHEAD I.R. 77 BRIDGE WORK	DETOUR SEE SHT. 75-78	3	10	NONE	1			

- NOTE 1 LANE RESTRICTIONS ON I.R. 77 AND I.R. 490 ARE TO BE IN ACCORDANCE WITH DISTRICT 12, PERMITTED LANE CLOSURE TIMES.
 NOTE 2 COMPLETE CLOSURE TIMES DEFINED IN THE MAINTENANCE OF TRAFFIC NOTES FOR THE APPLICABLE ROUTE.
 NOTE 3 WORK TO BE ACCOMPLISHED DURING NON-PEAK HOURS (PEAK HOURS ARE DEFINED AS: 6:00 AM TO 9:00 AM AND 3:00 PM TO 6:00 PM, WEEKDAYS)
 NOTE 4 MARKING AT INTERSECTIONS MAY REQUIRE LANE CLOSURES PER MT-95.31 AND OR MT-95.32.
 NOTE 5 WEEKEND CLOSURE OF I.R. 77 SOUTHBOUND SHALL COINCIDE WITH 2 OF THE 3 WEEKEND CLOSURES ON I.R. 490.

MAINTENANCE OF TRAFFIC GENERAL NOTES

CUY-77-14.35

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PHASE CONSTRUCTION SEQUENCE - SUPPLEMENTAL LANE RESTRICTION/CLOSURE CHART

PHASE	DIRECTION	CONSTRUCTION ACTIVITY	TEMPORARY TRAFFIC CONTROL	COMPLETE CLOSURE SEE NOTE 2			EXISTING NO. OF LANES	RESTRICTIONS SEE NOTE 1		
				NUMBER OF OCCURANCES				NUMBER OF LANES CLOSED		
				WEEKEND	WEEKDAY OVERNIGHT	SHORT DURATION		WEEKEND	WEEKDAY	WEEKDAY OVERNIGHT
I.R. 77										
2	NB. & SB.	BRIDGE AND PAVEMENT CONSTRUCTION INSIDE PORTION	DETAIL IN M.O.T. PLAN SHT. <u>53-56</u>	NONE	10	NONE	2	1		1
2	SB.	BEAM REMOVAL/BEAM ERECTION	DETOUR SEE SHT. <u>79</u> . SEE NOTE 5	2	NONE	NONE	2			
2	NB. & SB.	OVERHEAD SIGN SUPPORT REMOVAL AND ERECTION	STD. CONST. DWG. MT-99.60	NONE	NONE	AS NEEDED	2			
2B	NB.	MEDIAN BARRIER SIGN SUPPORTS	STD. CONST. DWG. MT-95.30	NONE	NONE	NONE	3	1		1
2	NB. & SB.	MATERIAL DELIVERY - OFF LOADING	STD. CONST. DWG. MT-95.30	NONE	NONE	NONE	2			1
I.R. 490										
2	EB. & WB.	OVERHEAD I.R. 77 BRIDGE WORK	DETOUR SEE SHT. <u>74-75</u>	3	10	NONE	2			
I.R. 490 & 77 RAMPS										
2	ALL	OVERHEAD I.R. 77 BRIDGE WORK	DETOUR SEE SHT. <u>75-78</u>	3	10	NONE	1			
I.R. 77 NB - RAMP S-W (TO I.R. 490 WEST)										
2C-1	NB. TO WB.	PAVEMENT TIE-IN	DETAILED IN M.O.T. PLAN SHT. <u>67-68</u> W/RAMP DETOUR SEE SHT. <u>76</u>	1	NONE	NONE	1			

- NOTE 1 LANE RESTRICTIONS ON I.R. 77 AND I.R. 490 ARE TO BE IN ACCORDANCE WITH DISTRICT 12, PERMITTED LANE CLOSURE TIMES.
- NOTE 2 COMPLETE CLOSURE TIMES DEFINED IN THE MAINTENANCE OF TRAFFIC NOTES FOR THE APPLICABLE ROUTE.
- NOTE 3 WORK TO BE ACCOMPLISHED DURING NON-PEAK HOURS (PEAK HOURS ARE DEFINED AS: 6:00 AM TO 9:00 AM AND 3:00 PM TO 6:00 PM, WEEKDAYS)
- NOTE 4 MARKING AT INTERSECTIONS MAY REQUIRE LANE CLOSURES PER MT-95.31 AND OR MT-95.32.
- NOTE 5 WEEKEND CLOSURE OF I.R. 77 SOUTHBOUND SHALL COINCIDE WITH 2 OF THE 3 WEEKEND CLOSURES ON I.R. 490.

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MAINTENANCE OF TRAFFIC GENERAL NOTES

CUY-77-14.35

STOPPAGE OF MAINLINE TRAFFIC (OVERHEAD SIGN WORK)

STOPPAGE TIMES SHALL BE SCHEDULED FOR OFF-PEAK TRAFFIC TIMES AND COINCIDE WITH THE ODOT DISTRICT 12, PERMITTED LANE CLOSURE TIMES. NO COMPLETE STOPPAGE WILL BE SCHEDULED DURING THOSE TIMES WHICH ARE UNACCEPTABLE FOR A LANE REDUCTION.

THE CONTRACTOR SHALL NOTIFY THE ENGINEER/PERMIT OFFICE AND THE ODOT PUBLIC INFORMATION OFFICE, SEVEN (7) DAYS PRIOR TO ANY MAINLINE TRAFFIC STOPPAGE.

PAYMENT FOR THE STOPPAGE OF TRAFFIC SHALL BE INCLUDED IN THE LUMP SUM BID FOR ITEM 614 - MAINTAINING TRAFFIC EXCEPT FOR THE COST OF LAW ENFORCEMENT OFFICER WITH PATROL CAR WHICH WILL BE PAID SEPARATELY.

SEE SCD MT - 99.60 FOR ADDITIONAL INFORMATION.

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

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

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

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

DURING A TRAFFIC SIGNAL INSTALLATION WHEN IMPACTING THE NORMAL FUNCTION OF THE SIGNAL OR THE FLOW OF TRAFFIC OR WHEN TRAFFIC NEEDS TO BE DIRECTED THROUGH AN ENERGIZED TRAFFIC SIGNAL CONTRARY TO THE SIGNAL DISPLAY (E.G., DIRECTING MOTORISTS THROUGH A RED LIGHT).

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

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

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

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

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

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

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

ITEM 614 - LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE 336 HOURS

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

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

ITEM 614 - LAW ENFORCEMENT OFFICER (WITH PATROL CAR) FOR ENFORCEMENT IN WORK ZONES

WHEN LAW ENFORCEMENT OFFICERS (LEOS) ARE USED AS A SPEED CONTROL MEASURE IN STATIONARY WORK ZONES, THEY SHALL BE USED AS SHOWN IN THESE PLANS. LEOS CAN BE USED IN THE FORM OF: STATIONARY PATROL CAR, CIRCULATING PATROL CAR, AND/OR AIR ENFORCEMENT IN COMBINATION WITH GROUND PATROL CAR.

THE LEO WORKS AT THE DIRECTION OF THE CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE FOR ARRANGING THE SERVICES OF THE LEO WITH AN OFFICIAL PATROL CAR (CAR WITH TOPMOUNTED EMERGENCY FLASHING LIGHTS AND COMPLETE MARKINGS OF THE APPROPRIATE LAW ENFORCEMENT AGENCY). THE CONTRACTOR SHOULD SCHEDULE THE LEO A MINIMUM OF ONE WEEK IN ADVANCE AND SHALL INCLUDE ANY MINIMUM SHOW-UP TIME REQUIRED BY THE LAW ENFORCEMENT AGENCY INVOLVED. THE ENGINEER SHALL RESOLVE ANY ISSUES THAT MAY ARISE BETWEEN THE TWO PARTIES.

THE LEO SHALL REPORT TO THE CONTRACTOR PRIOR TO THE START OF THE SHIFT, IN ORDER TO RECEIVE INSTRUCTIONS REGARDING SPECIFIC WORK ASSIGNMENTS AS SHOWN IN THE PLANS. THE LEO IS EXPECTED TO STAY AT THE PROJECT SITE FOR THE ENTIRE DURATION OF HIS/HER SHIFT. THE LEO SHALL REPORT TO THE CONTRACTOR AT THE END IF HIS/HER SHIFT. SHOULD IT BE NECESSARY TO LEAVE THE PROJECT SITE, THE LEO SHALL NOTIFY THE ENGINEER. THE CONTRACTOR SHALL PROVIDE THE LEO WITH A TWO-WAY COMMUNICATIONS DEVICE WHICH SHALL BE RETURNED TO THE CONTRACTOR AT THE END OF HIS/HER SHIFT.

A MEETING WITH DISTRICT PERSONNEL, CENTRAL OFFICE PERSONNEL, WORKZONE TRAFFIC SUPERVISOR (IF APPLICABLE) AND APPROPRIATE LAW ENFORCEMENT AGENCIES SHALL TAKE PLACE PRIOR TO THE BEGINNING OF THE PROJECT. WORK ZONE SAFETY AND MOBILITY TRAINING SPECIFIC TO THE PROJECT WILL TAKE PLACE AT THIS TIME ALONG WITH DISTRIBUTION OF PRE-WORK ZONE CRASH ANALYSES. DURING THIS MEETING, DUTIES AND RESPONSIBILITIES OF THE LEO WILL BE DISCUSSED.

LEOS (WITH PATROL CARS) REQUIRED BY THESE PLANS SHALL BE PAID FOR ON A UNIT PRICE (HOURLY) BASIS UNDER ITEM 614 - LAW ENFORCEMENT OFFICER (WITH PATROL CAR) FOR ENFORCEMENT. THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY.

ITEM 614 - LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ENFORCEMENT 384 HRS

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

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

ITEM 614 - WORK ZONE IMPACT ATTENUATOR FOR 24" WIDE HAZARDS (UNIDIRECTIONAL OR BIDIRECTIONAL)

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

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

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

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

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

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

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

PORTABLE CONCRETE BARRIER TO PERMANET BARRIER TRANSITION

AT LOCATIONS WHERE EXISTING 50" MEDIAN BARRIER IS INDICATED TO BE REMOVED AND REPLACED WITH 50" PORTABLE BARRIER TRANSITIONS SHALL BE PROVIDED AS PER MT-101.80 ALL COST ASSOCIATED WITH MAKING THE TRANSITION AS DETAILED IN THE STANDARD CONSTRUCTION DRAWING SHALL BE INCLUDED IN THE UNIT COST FOR THE 50" PORTABLE BARRIER.

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ITEM 614 - WORK ZONE INCREASED PENALTIES SIGN (R11-H5A)

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

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

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

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

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

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

ITEM 614 - WORK ZONE INCREASED PENALTIES SIGN 16 EACH

ITEM 614 - PORTABLE CHANGEABLE MESSAGE SIGN, CLASS 1, AS PER PLAN

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

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

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

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

(THE CONTRACTOR SHALL IMPLEMENT A SYSTEM WHEREBY CHANGEABLE MESSAGES WILL BE IMPLEMENTED WITHIN 1 HOURS FOLLOWING TELEPHONE NOTIFICATION FROM THE PROJECT ENGINEER TO A DESIGNATED PHONE.)

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

(THE PCMS SHALL CONTAIN A CELLULAR TELEPHONE DATA LINK WHICH WILL (IN ACTIVE CELLULAR PHONE AREAS) ALLOW REMOTE SIGN ACTIVATION, MESSAGE CHANGES, MESSAGE ADDITIONS AND REVISIONS TO TIME OF DAY PROGRAMS. THE SYSTEM SHALL ALSO PERMIT VERIFICATION OF CURRENT AND PROGRAMMED MESSAGES. ONE REMOTE DATA INPUT DEVICE (LAPTOP COMPUTER PLUS MODEM OR EQUIVALENT) SHALL BE FURNISHED FOR USE BY THE DISTRICT TRAFFIC ENGINEER, OR EQUIVALENT, AND SHALL BE INSURED AGAINST THEFT.)

THE PCMS UNIT SHALL BE MAINTAINED IN GOOD WORKING ORDER BY THE CONTRACTOR IN ACCORDANCE WITH THE PROVISIONS OF C&MS 614.07. THE CONTRACTOR SHALL, PRIOR TO ACTIVATING THE UNIT, MAKE ARRANGEMENTS, WITH AN AUTHORIZED SERVICE AGENT FOR THE PCMS, TO ASSURE PROMPT SERVICE IN THE EVENT OF FAILURE. ANY FAILURE SHALL NOT RESULT IN THE SIGN BEING OUT OF SERVICE FOR MORE THAN 12 HOURS, INCLUDING WEEKENDS. FAILURE TO COMPLY MAY RESULT IN AN ORDER TO STOP WORK AND OPEN ALL TRAFFIC LANES AND/OR IN THE DEPARTMENT TAKING APPROPRIATE ACTION TO SAFELY CONTROL TRAFFIC. THE ENTIRE COST TO CONTROL TRAFFIC, ACCRUED BY THE DEPARTMENT DUE TO THE CONTRACTOR'S NONCOMPLIANCE, WILL BE DEDUCTED FROM MONEYS DUE, OR TO BECOME DUE THE CONTRACTOR ON HIS CONTRACT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR 24-HOUR-PER-DAY OPERATION AND MAINTENANCE OF THESE SIGNS ON THE PROJECT FOR THE DURATION OF THE PHASES WHEN THE PLAN REQUIRES THEIR USE.

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

ITEM 614 - PORTABLE CHANGEABLE MESSAGE SIGN, AS PER PLAN 360 SIGN MONTH ASSUMING 15 PCMS SIGN(S) FOR 24 MONTH(S)

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MAINTENANCE OF TRAFFIC GENERAL NOTES

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ITEM 614 - WORKSITE TRAFFIC SUPERVISOR

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

1. AMERICAN TRAFFIC SAFETY SERVICE ASSOCIATION (ATSSA), PHONE NUMBER 1-800-272-8772, CERTIFIED TRAFFIC CONTROL SUPERVISOR (TCS).
2. NATIONAL HIGHWAY INSTITUTE, DESIGN AND OPERATION OF WORK ZONE TRAFFIC CONTROL, PHONE NUMBER 1-703-235-0500.
3. THE OHIO CONTRACTORS ASSOCIATION, TRAFFIC CONTROL SUPERVISOR (OCA/TCS) WORK ZONE CLASS, ONLY IF TAKEN AFTER MAY 5, 2004, PHONE NUMBER 1-800-229-1388.
4. OHIO LABORERS TRAINING, TRAFFIC CONTROL SUPERVISORS CLASS, PHONE NUMBER 1-740-599-7915.

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

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

1. BE AVAILABLE ON A 24-HOUR PER DAY BASIS, AND BE ABLE TO BE ON SITE FOR ALL EMERGENCY TRAFFIC CONTROL NEEDS WITHIN ONE HOUR OF NOTIFICATION BY POLICE OR PROJECT STAFF AND BE PREPARED TO EFFECT CORRECTIVE MEASURES IMMEDIATELY ON EXISTING WORK ZONE TRAFFIC CONTROL DEVICES.
2. ATTEND PRECONSTRUCTION MEETING AND ALL PROJECT MEETINGS WHERE TRAFFIC CONTROL MANAGEMENT IS DISCUSSED.
3. BE AVAILABLE FOR MEETINGS OR DISCUSSIONS WITH THE ENGINEER UPON REQUEST OR WITHIN 36 HOURS.
4. COORDINATE A TRAFFIC INCIDENT MANAGEMENT MEETING EACH YEAR BEFORE CONSTRUCTION WORK BEGINS WITH ODOT AND THE SAFETY FORCES THAT WILL RESPOND TO INCIDENTS ON THE PROJECT. ITEMS TO BE DISCUSSED WILL BE THE:
 - A. TRAFFIC INCIDENT MANAGEMENT PLAN (TIMP);
 - B. EMERGENCY RESPONSE AND NOTIFICATION;
 - C. PROJECT WORK/PHASING CONCERNS (E.G., RAMP CLOSURES); AND
 - D. RESPONDERS CONCERNS.
5. BE AWARE OF, AND COORDINATE IF NECESSARY, ALL TRAFFIC CONTROL OPERATIONS, INCLUDING THOSE OF SUBCONTRACTORS AND SUPPLIERS.
6. COORDINATE PROJECT ACTIVITIES WITH ALL LAW ENFORCEMENT OFFICERS (LEOS). A WTS SHALL ALSO BE THE MAIN CONTACT PERSON WITH THE LEOS WHILE THEY ARE ON THE PROJECT.
7. COORDINATE MEETINGS WITH ODOT PERSONNEL, LEOS AND OTHER APPLICABLE ENTITIES BEFORE EACH PLAN PHASE SWITCH TO DISCUSS WORK ZONE TRAFFIC CONTROL.
8. ENSURE COMPLIANCE WITH THE CONTRACT DOCUMENTS FOR SIGNS, BARRICADES, TEMPORARY CONCRETE BARRIER, PAVEMENT MARKINGS, PORTABLE MESSAGE SIGNS, AND OTHER TRAFFIC CONTROL DEVICES ON A DAILY BASIS; AND FACILITATE ANY CORRECTIVE ACTION NECESSARY.

9. NOTIFY THE CONTRACTOR OF THE NEED FOR CLEANING AND MAINTENANCE OF ALL TRAFFIC CONTROL DEVICES, INCLUDING THE COVERING AND REMOVAL OF INAPPLICABLE SIGNS.
10. INSPECT, EVALUATE, PROPOSE NECESSARY MODIFICATIONS TO, AND DOCUMENT THE EFFECTIVENESS OF, THE TRAFFIC CONTROL DEVICES AND/OR TRAFFIC OPERATIONS ON A DAILY BASIS (7 DAYS A WEEK). IN ADDITION, A WEEKLY NIGHT INSPECTION OF THE WORK ZONE SETUP FOR DAYTIME WORK OPERATIONS; AND ONE DAYTIME INSPECTION PER WEEK FOR NIGHTTIME PROJECTS. THIS SHALL INCLUDE (BUT NOT BE LIMITED TO) DOCUMENTATION ON THE FOLLOWING PROJECT EVENTS:
 - A. INITIAL TRAFFIC CONTROL SETUP (DAY AND NIGHT REVIEW).
 - B. DAILY TRAFFIC CONTROL SETUP AND REMOVAL.
 - C. WHEN CONSTRUCTION STAGING CAUSES A CHANGE IN THE TRAFFIC CONTROL SETUP.
 - D. CRASH OCCURRENCES WITHIN THE CONSTRUCTION AREA.
 - E. REMOVAL OF TRAFFIC CONTROL DEVICES AT THE END OF A PHASE OR PROJECT.
 - F. ALL OTHER EMERGENCY TRAFFIC CONTROL NEEDS.
11. COMPLETE THE DEPARTMENT APPROVED LONG TERM INSPECTION FORM (CA-D-8) AFTER EACH INSPECTION AS REQUIRED IN # 10 AND SUBMIT IT TO THE ENGINEER THE FOLLOWING WORK DAY. THESE REPORTS SHALL INCLUDE A CHECKLIST OF ALL TRAFFIC CONTROL MAINTENANCE ITEMS TO BE REVIEWED. A COPY OF THE FORM WILL BE PROVIDED AT THE PRE-CONSTRUCTION MEETING. ANY DEFICIENCIES OBSERVED SHALL BE NOTED, ALONG WITH RECOMMENDED CORRECTIVE ACTIONS AND THE DATES BY WHICH SUCH CORRECTIONS WERE, OR WILL BE, COMPLETED. A COPY OF THIS DOCUMENT CAN BE FOUND IN THE CURRENT REVISION OF THE DEPARTMENT OF TRANSPORTATION CONSTRUCTION INSPECTION FORMS MANUAL.
12. VERIFY THAT ALL FLAGGING OPERATIONS ARE BEING CONDUCTED PER THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
13. HAVE COPIES OF THE ODOT TEMPORARY TRAFFIC CONTROL MANUAL AND APPLICABLE STANDARDS AND SPECIFICATIONS INCLUDED IN THE CONTRACT DOCUMENTS AVAILABLE AT ALL TIMES ON THE PROJECT.
14. IDENTIFY AND CONTACT ALL POSSIBLE RESPONSE PERSONNEL; PREPLAN AND KEEP AN UPDATED ROSTER WITH PHONE NUMBERS:
 - A. FEDERAL, STATE, AND LOCAL TRANSPORTATION AGENCIES (TRAFFIC MANAGEMENT CENTER);
 - B. REGIONAL, COUNTY OR LOCAL 911 DISPATCH; AND
 - C. TOWING AND RECOVERY PROVIDERS.
15. COMPLY WITH THE PROVISIONS OF ODOT CHAPTER 61, CONTROL OF TRAFFIC THROUGH TRAFFIC INCIDENT MANAGEMENT AREAS.
16. PROPOSE A RESPONSE/ACTION PLAN TO:
 - A. ESTABLISH ALTERNATE ROUTE PLANS PER THE PROVIDED ODOT PLAYBOOK;
 - B. REMOVE TRAFFIC DEMAND FROM IMPACTED ROADWAY(S);
 - C. DIVERT TRAFFIC TO ROUTES THAT CAN ACCOMMODATE DEMANDS;
 - D. DETOUR TRAFFIC AWAY FROM SENSITIVE AREAS (SUCH AS SCHOOLS, HOSPITALS, ETC.);
 - E. DISCUSS METHODS OF DETERMINING A STAGING AREA FOR RESPONDERS WITHIN OR NEAR THE CONSTRUCTION ZONE; AND
 - F. DISCUSS METHODS OF DEVELOPING INGRESS AND EGRESS SITES WITHIN THE CONSTRUCTION ZONE.

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

17. PERFORM, AT A MINIMUM, THE FOLLOWING FUNCTIONS IN INCIDENT DETECTION AND VERIFICATION:
 - A. CALL 911/ NOTIFY TRAFFIC MANAGEMENT CENTER AND PROVIDE THE FOLLOWING:
 - I. LOCATION - INCLUDING MILEPOST NUMBER AND DIRECTION OF TRAVEL.
 - II. NUMBER AND TYPE OF VEHICLES INVOLVED.
 - III. ESTIMATED EXTENT OF DAMAGE OR INJURY.
 - IV. ESTIMATED NUMBER OF PATIENTS INVOLVED.
 - V. ANY POTENTIAL HAZARDOUS CONDITIONS.
 - VI. THE PLACARD NUMBER ON ANY HAZARDOUS MATERIALS PLACARD FROM A SAFE DISTANCE.
 - B. INITIATE TRAFFIC MANAGEMENT / PROVIDE TRAFFIC CONTROL.
 - C. ASSIST MOTORIST WITH DISABLED VEHICLES.
 - D. RECOMMEND ROADWAY REPAIR NEEDS.
 - E. PROVIDE REPAIR RESOURCES.
18. ATTEND POST-INCIDENT DEBRIEFINGS IF REQUIRED.

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

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

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

ITEM 614 - WORKSITE TRAFFIC SUPERVISOR 28 MONTHS

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ITEM 614 - WORK ZONE MARKINGS

ESTIMATED QUANTITIES OF WORK ZONE PAVEMENT MARKINGS HAVE BEEN CALCULATED AND INCLUDED IN THE MAINTENANCE OF TRAFFIC SUBSUMMARY FOR USE AS IDENTIFIED IN THE MAINTENANCE OF TRAFFIC PLANS. THESE QUANTITIES INCLUDE THE NECESSARY MARKING FOR PHASE 1 AND PHASE 2.

AT THE COMPLETION OF PHASE 2 WORK ZONE MARKING WILL BE ESTABLISHED ON THE INTERMEDIATE COURSE PAVEMENT AT THE LOCATION OF THE FINAL PAVEMENT MARKING PRIOR TO THE APPLICATION OF THE FINAL SURFACE COURSE.

AFTER THE PLACEMENT OF THE FINAL SURFACE COURSE IN PHASE 3 AND PRIOR TO THE APPLICATION OF THE FINAL PAVEMENT MARKINGS, WORK ZONE MARKINGS WILL BE PLACED AT THE LOCATION OF THE FINAL PAVEMENT MARKINGS.

THE FOLLOWING QUANTITIES ARE INCLUDED TO BE PLACED ON THE INTERMEDIATE COURSE AT THE COMPLETION OF PHASE 2 AND ON THE SURFACE COURSE AT THE COMPLETION OF PHASE 3.

AFTER COMPLETION OF PHASE 2 (OVER WINTER)	
ITEM 614 - WORK ZONE LANE LINE, CLASS I	5.35 MILE
ITEM 614 - WORK ZONE EDGE LINE, CLASS I	6.56 MILE
ITEM 614 - WORK ZONE GORE MARKING, CLASS II	6780 FT.

AFTER COMPLETION OF PHASE 3	
ITEM 614 - WORK ZONE LANE LINE, CLASS II, 642 PAINT	5.35 MILE
ITEM 614 - WORK ZONE EDGE LINE, CLASS III, 642 PAINT	6.56 MILE
ITEM 614 - WORK ZONE GORE MARKING, CLASS II, 642 PAINT	6780 FT.

COVERING OF SIGNS

WHERE THE PLANS CALL FOR A PERMANENT SIGN TO BE COVERED, THE CONTRACTOR SHALL DO SO IN A MANNER AS TO AVOID DAMAGING THE PERMANENT SIGN WHEN THE COVER IS REMOVED. THE COVER SHALL BE TOTALLY OPAQUE. THE USE OF ADHESIVE TAPE APPLIED DIRECTLY TO A SIGN FACE IS STRICTLY PROHIBITED. PAYMENT FOR COVERING SIGNS IS CONSIDERED INCIDENTAL TO ITEM 614 - MAINTAINING TRAFFIC, LUMP SUM UNLESS SEPARATELY ITEMIZED IN THE PLANS.

FLOODLIGHTING

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

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

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

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

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

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

THE WINTER SNOW-PLOWING SEASON FOR THIS PROJECT SHALL RUN FROM NOVEMBER 15 THROUGH MARCH 31.

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

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

RESURFACING OF THE TRANSITION AREAS SHALL BE PERFORMED AT THE TIME THAT THE SURFACE COURSE IS BEING APPLIED TO THE ENTIRE PROJECT. PRIOR TO APPLICATION OF THE SURFACE COURSE ON THE PROJECT, THE SURFACE COURSE OF THE EXISTING PAVEMENT WITHIN THE TRANSITION AREA SHALL BE REMOVED TO A DEPTH EQUIVALENT TO THE DEPTH OF THE PROPOSED SURFACE COURSE, AS DETERMINED BY THE ENGINEER.

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

ITEM 614 - WORK ZONE RAISED PAVEMENT MARKERS ON CONCRETE SURFACES

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

THE WINTER SNOW-PLOWING SEASON FOR THIS PROJECT SHALL RUN FROM NOVEMBER 15 THROUGH MARCH 31.

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

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

AN ESTIMATED QUANTITY OF ITEM 614 - WORK ZONE RAISED PAVEMENT MARKER, AS PER PLAN HAS BEEN PROVIDED IN THE MOT SUBSUMMARY AND CARRIED TO THE GENERAL SUMMARY.

ITEM 614 - DELINEATION OF PORTABLE AND PERMANENT BARRIER

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

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

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

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

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

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

THE ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE MOT SUBSUMMARY AND CARRIED TO THE GENERAL SUMMARY.

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

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

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TEMPORARY DRAINAGE
ITEM 611 - 12" SLOTTED DRAIN, TYPE 2, AS PER PLAN
ITEM 611 - 12" CONDUIT, TYPE A, 707.01, AS PER PLAN

SHEET PILING WILL BE PLACED TO SUPPORT THE NEW ROADWAY EMBANKMENT DURING PHASE 1 CONSTRUCTION. IN ORDER TO REMOVE SURFACE WATER FROM THE EXISTING PAVEMENT DURING PHASE 1, 12" SLOTTED DRAIN, TYPE 2, AS PER PLAN SHALL BE CONSTRUCTED ALONG THE CONCRETE MEDIAN BARRIER AND CMP OUTLET PIPES PLACED ALONG THE CONCRETE MEDIAN BARRIER OUT LETTING INTO THE EXISTING MEDIAN BARRIER INLETS. THIS ITEM SHALL CONSIST OF 12 INCH DIAMETER SLOTTED DRAIN ALUMINUM COATED STEEL CONDUIT 707.01 WITH 6 INCH TRAPEZOIDAL GALVANIZED SOLID BAR GRATE AS APPROVED BY THE ENGINEER. ALL COSTS FOR LABOR AND MATERIALS, INCLUDING TYPE 2 BEDDING, AND BACKFILLING AS DETAILED ON STANDARD CONSTRUCTION DRAWING DM-1.3 AND THE SUBSEQUENT REMOVAL AT THE END OF THE PHASED CONSTRUCTION SHALL BE INCLUDED IN THE PRICE BID PER FOOT FOR ITEM 611 - 12" SLOTTED DRAIN, TYPE 2, AS PER PLAN.

OUTLET PIPES SHALL BE PAID FOR AS ITEM 611 - 12" CONDUIT, TYPE A, 707.01, AS PER PLAN AND BE CONSTRUCTED IN THE LOCATION SHOWN ON THE PHASE 1 MOT TYPICAL SECTION, WITH BEDDING AND BACKFILL AS SHOWN ON THE SLOTTED DRAINS STANDARD CONSTRUCTION DRAWING DM-1.3 AND THE SUBSEQUENT REMOVAL AT THE END OF THE PHASED CONSTRUCTION. SEE MOT TYPICAL SECTION, SHEET 46 FOR TYPICAL TEMPORARY DRAINAGE DETAILS.

PROPOSED LOCATIONS FOR TEMPORARY SLOTTED DRAINS AND OUTLET PIPES ARE SHOWN ON THE PHASE 1 MOT PLAN, SHEETS 49-52.

TEMPORARY DRAINAGE ITEMS LABELED ON THE MAINTENANCE OF TRAFFIC PLAN ARE ITEMIZED ON THE MOT SUBSUMMARY. PAYMENT FOR THE TEMPORARY DRAINAGE ITEMS ARE ITEMIZED AND CARRIED TO THE GENERAL SUMMARY.

DUST CONTROL

THE CONTRACTOR SHALL FURNISH AND APPLY WATER FOR DUST CONTROL AS DIRECTED BY THE ENGINEER. THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED FOR DUST CONTROL PURPOSES:

ITEM 616 - WATER 196 M. GAL

ITEM 614 - MAINTAINING TRAFFIC, MISC.: BARRIER MEDIAN INLET RECONSTRUCTED TO GRADE

EXISTING DRAINAGE MODIFICATIONS INCLUDE THE RECONSTRUCTION OF THE BARRIER MEDIAN INLETS TO GRADE, INCLUDING THE REPLACEMENT OF THE GRATE AND FRAME WITH A COVER SUITABLE TO WITHSTAND HS-20 TRAFFIC LOADING DURING CONSTRUCTION OF PHASE 1, THE RESURFACING OF THE EXISTING MEDIAN SHOULDER TO A CROSS SLOPE OF 1.6% WITHIN THE LIMITS OF THE MEDIAN BARRIER SLOT, WITHOUT REDUCING THE INLET OPENING SLOT TO LESS THAN 4". ALL WORK INDICATED AND INCIDENTAL TO EXISTING DRAINAGE MODIFICATIONS SHALL BE PAID FOR PER ITEM 614 - MAINTAINING TRAFFIC, MISC.: BARRIER MEDIAN INLET RECONSTRUCTED TO GRADE.

ITEM 614 - MAINTAINING TRAFFIC, MISC.: TEMPORARY SHEET PILING FOR PHASE CONSTRUCTION

TEMPORARY SHEETING WILL BE DRIVEN TO SUPPORT THE NEW ROADWAY EMBANKMENT CONSTRUCTED IN PHASE 1 AND TO SUPPORT THE EXISTING ROADWAY EMBANKMENT ADJACENT TO THE PROPOSED FORE SLOPE BENCHES BELOW THE NEW BRIDGE END SPANS EXCAVATED IN PHASE 1.

THE LONGITUDINAL LIMITS OF THE SHEET PILING ARE AS SHOWN ON THE PHASE 1 MOT PLAN, SHEETS 49-52. ADDITIONAL TEMPORARY SHORING IS REQUIRED AT THE EXISTING AND PROPOSED BRIDGE ABUTMENTS. THE DETAILS AND REQUIREMENTS FOR THIS TEMPORARY SHORING ARE DETAILED IN THE STRUCTURE PLANS.

REFERRING TO THE LIMITS SHOWN ON THE PHASE 1 MOT PLAN SHEETS, "SECTION A" SHALL HAVE A MINIMUM SECTION MODULUS OF 15.0 IN³/FOOT OF WALL, HAVE A MINIMUM MOMENT OF INERTIA OF 82 IN⁴/FOOT, AND SHALL BE DRIVEN TO A MINIMUM DEPTH OF 11.25 FEET BELOW THE TOP SURFACE OF THE EXISTING PAVEMENT. THE HEIGHT OF THE CANTILEVERED WALL FROM THE DREDGE LINE TO THE TOP OF THE PROPOSED PAVEMENT SHALL NOT EXCEED 8.0 FEET.

"SECTION B" SHALL HAVE A MINIMUM SECTION MODULUS OF 33.0 IN³/FOOT OF WALL, HAVE A MINIMUM MOMENT OF INERTIA OF 250 IN⁴/FOOT, AND SHALL BE DRIVEN TO A MINIMUM DEPTH OF 24.5 FEET BELOW THE TOP SURFACE OF THE EXISTING PAVEMENT. THE HEIGHT OF THE CANTILEVERED WALL FROM THE PROPOSED EMBANKMENT BENCH TO THE TOP OF THE EXISTING ADJACENT PAVEMENT SHALL NOT EXCEED 9.5 FEET.

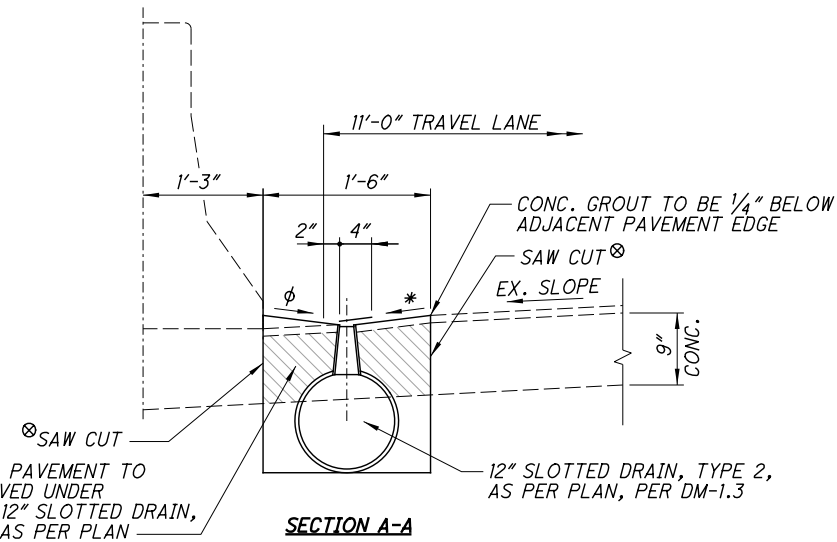
"SECTION C" SHALL HAVE A MINIMUM SECTION MODULUS OF 22.0 IN³/FOOT OF WALL, HAVE A MINIMUM MOMENT OF INERTIA OF 130 IN⁴/FOOT, AND SHALL BE DRIVEN TO A MINIMUM DEPTH OF 21 FEET BELOW THE TOP SURFACE OF THE EXISTING PAVEMENT. THE HEIGHT OF THE CANTILEVERED WALL FROM THE PROPOSED EMBANKMENT BENCH TO THE TOP OF THE EXISTING ADJACENT PAVEMENT SHALL NOT EXCEED 9.0 FEET.

THE TEMPORARY SHEETING SHALL BE CONSTRUCTED IN CONFORMANCE WITH 504, EXCEPT THAT THE SHEET PILE MAY ALSO BE MANUFACTURED OF A STEEL GRADE WITH A YIELD STRESS, F_y, OF 50,000 PSI.

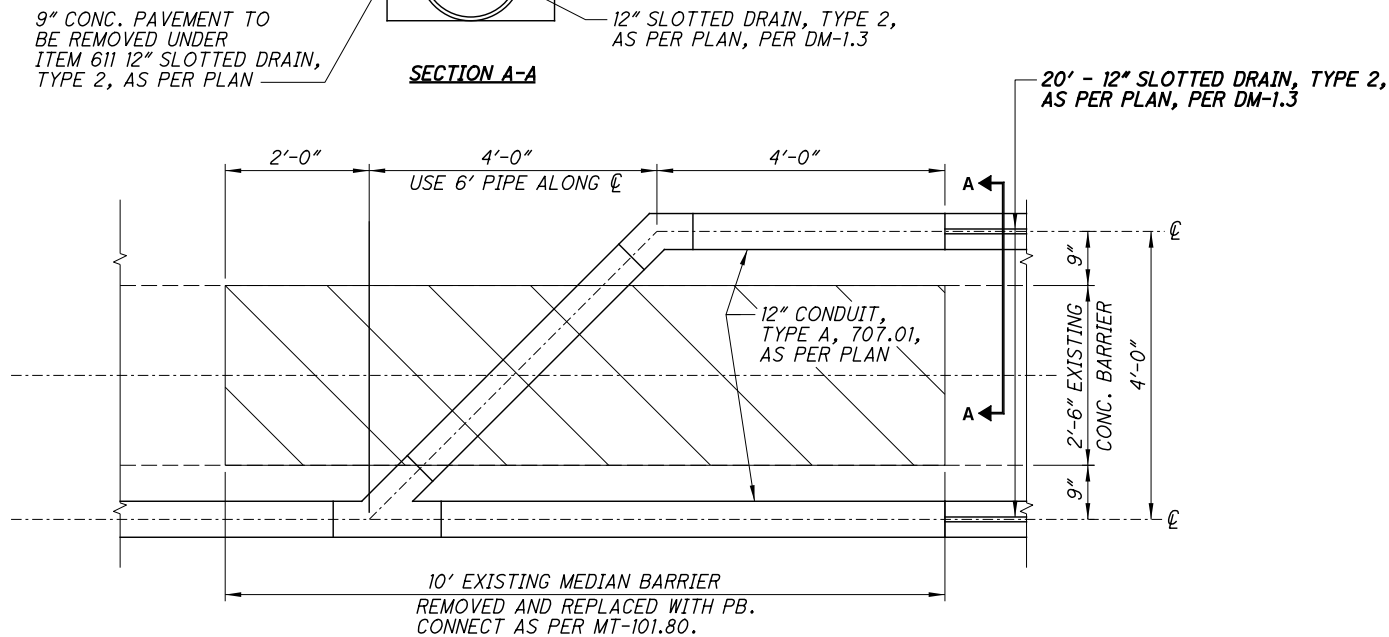
ALL SHEET PILING SHALL BE PARTIALLY REMOVED DURING THE PHASE 2 EMBANKMENT CONSTRUCTION AS THE PROPOSED EMBANKMENT ELEVATION MEETS THE PHASE 1 EMBANKMENT ELEVATION. SEE MOT TYPICAL SECTION, SHEET 46.

THE CONTRACTOR MAY CONSIDER AN ALTERNATIVE DESIGN FOR TEMPORARY SHEET PILING FOR PHASED CONSTRUCTION. THE DESIGN SHALL INCLUDE A HIGHWAY DESIGN LOADING EQUAL TO TWO FEET OF EQUIVALENT SOIL HEIGHT AS A SURCHARGE. THE TEMPORARY SHORING MUST BE DESIGNED BY A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF OHIO. THE ALTERNATE METHOD SHALL BE SUBMITTED FOR REVIEW AND APPROVAL PER CMS 501.05.

ALL WORK ASSOCIATED WITH PLACEMENT AND PARTIAL REMOVAL OF THE SHEET PILING SHALL BE INCLUDED FOR PAYMENT PER FOOT FOR ITEM 614 - MAINTAINING TRAFFIC, MISC.: TEMPORARY SHEET PILING FOR PHASE CONSTRUCTION. THE QUANTITIES ARE CARRIED WITH THE MOT QUANTITIES, SHEET 23-32.



- *MATCH EXISTING CROSS SLOPE
- φ SLOPE TOWARD SLOTTED DRAIN @ 1/2"/FT.
- ⊗ SAW CUT FOR PAVEMENT REMOVAL INCLUDED IN UNIT COST BID FOR ITEM 611, 12" SLOTTED DRAIN, TYPE 2, AS PER PLAN



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ALTERNATE DETOUR ROUTE

ALTERNATE DETOUR ROUTE SIGNING AND PAVEMENT MARKINGS

ADJUST SIGNING AND MARKING AS SHOWN ON THE ALTERNATE DETOUR ROUTE SIGNING AND MARKING PLAN ON SHEET 89-90. AT THE END OF THE PROJECT RESTORE ALL MODIFIED SIGNING AND PAVEMENT MARKING TO PRE-CONSTRUCTION SIGNING AND PAVEMENT MARKING.

ITEM 614 - MAINTAINING TRAFFIC. MISC.: MAINTENANCE OF TRAFFIC SIGNAL SYSTEM COORDINATION

A. GENERAL DESCRIPTION

THE PURPOSE OF THIS ITEM OF WORK IS TO FURNISH ALL MATERIALS, LABOR, TOOLS AND EQUIPMENT NECESSARY TO PERFORM TIMING AND OPERATIONAL ANALYSIS (AS DESCRIBED IN THIS NOTE) ON EITHER AN ISOLATED SIGNALIZED INTERSECTION OR A TRAFFIC RESPONSIVE, CLOSED LOOP COORDINATED TRAFFIC SIGNAL SYSTEM(S), AND IMPLEMENT THE REQUIRED CHANGES TO THE SIGNAL OPERATION IN ORDER TO OPTIMIZE TRAFFIC FLOW ALONG THE ALTERNATE DETOUR ROUTE. THIS WORK SHALL BE PERFORMED AS DIRECTED BY THE ENGINEER FOR THE ENTIRE DURATION OF THE PROJECT.

THE FOLLOWING SIGNALIZED INTERSECTIONS ARE INCLUDED IN THIS ITEM OF WORK AND ARE IDENTIFIED AS EITHER PART OF A SIGNAL SYSTEM OR AS AN ISOLATED INTERSECTION:

SYSTEM 1:

- BROADWAY & ROCKEFELLER/ E. 37TH STREET
- BROADWAY & I.R. 490 EASTBOUND EXIT RAMP
- BROADWAY & DILLE STREET
- BROADWAY & I.R. 77 NORTHBOUND EXIT RAMP
- BROADWAY & FINN AVENUE

SYSTEM 2:

- E. 30TH STREET & BROADWAY AVENUE
- E. 30TH STREET & ORANGE AVENUE
- E. 30TH STREET & WOODLAND AVE.

ISOLATED INTERSECTIONS

- BROADWAY & E. 34TH STREET

THIS WORK SHALL CONSIST OF PREPARING SIGNAL TIMING AND TRAFFIC PROGRESSION PROGRAMS, LOADING THE PROGRAMS INTO THE LOCAL SIGNAL CONTROLLER OR SIGNAL SYSTEMS (UPLOAD AND DOWNLOAD FROM A MASTER CONTROLLER OR CENTRAL OFFICE MONITOR), EVALUATING THE PERFORMANCE OF THE SYSTEM AND REFINING THE PROGRAMS AS NECESSARY TO OPTIMIZE TRAFFIC FLOW AND OPERATION DURING ALL PHASES OF CONSTRUCTION. THE WORK SHALL INCLUDE TRAFFIC DATA COLLECTION AND EVALUATION, TRAFFIC SIGNAL PROGRESSION AND TIMING ANALYSES, DEVELOPMENT OF TRAFFIC ADJUSTED PATTERN SELECTION PARAMETERS, PERFORMING THE SYSTEM EVALUATION AND REFINEMENT OF THE SYSTEM OPERATION.

IF REQUIRED, SIGNAL "SYSTEMS" SHALL BE ANALYZED TOGETHER AND TRAFFIC PROGRESSION PROGRAMS SHALL BE COORDINATED TO OPTIMIZE THE OVERALL TRAFFIC FLOW BETWEEN THE TWO (2) SYSTEMS.

IT IS THE INTENT OF THIS ITEM OF WORK TO OPTIMIZE ONLY CYCLE LENGTHS, PHASE SPLITS, PERMISSIVES AND OFFSETS AND NOT TO CHANGE THE EXISTING PHASING OTHER THAN WHAT IS PROPOSED IN THE PLANS.

AS PART OF THIS ITEM OF WORK, TRAFFIC COUNTS AND TURNING MOVEMENT COUNTS SHALL BE REQUIRED AT EACH INTERSECTION (NOTED ABOVE) FOR THE FOUR (4) TIME PERIODS AND THREE (3) FIELD CONDITIONS LISTED UNDER PART D - "SYSTEM TRAVEL STUDIES".

TIMING CHANGES MAY ONLY BE PERFORMED BY CITY OF CLEVELAND PERSONAL AND MUST BE APPROVED BY ANDY CROSS; DIVISION OF TRAFFIC, PRIOR TO IMPLEMENTATION.

B. SYSTEMS ENGINEER OR TECHNICIAN:

THE WORK SHALL BE PERFORMED BY A PERSON EXPERIENCED IN TRAFFIC ENGINEERING OR TRAFFIC ENGINEERING TECHNOLOGY. THE SYSTEMS ENGINEER OR TECHNICIAN SHALL HAVE A MINIMUM OF FIVE (5) YEARS EXPERIENCE IN TRAFFIC ENGINEERING OR TRAFFIC ENGINEERING TECHNOLOGY AND SHALL BE KNOWLEDGEABLE WITH THE DESIGN AND OPERATION OF CLOSED LOOP TRAFFIC CONTROL AND SURVEILLANCE SYSTEMS. THE SYSTEMS ENGINEER OR TECHNICIAN SHALL BE FAMILIAR WITH THE EXISTING "CLOSED LOOP" AND SHALL HAVE PREVIOUSLY SET-UP AND FINE-TUNED A SYSTEM OF THIS TYPE.

THREE (3) COPIES OF A RESUME DOCUMENTING THE FOLLOWING SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL:

THE SYSTEM ENGINEER OR TECHNICIAN'S EDUCATION INCLUDING TRAINING IN TRAFFIC ENGINEERING TECHNOLOGY AND SIGNAL SYSTEM DESIGN.

THE SYSTEM ENGINEER OR TECHNICIAN'S FAMILIARITY WITH THE EXISTING "CLOSED LOOP" TYPE SYSTEM ON THIS PROJECT AND EXPERIENCE IN SETTING UP AND FINE TUNING A SYSTEM OF THIS TYPE. A LISTING OF OTHER CLOSED LOOP SYSTEMS THAT THE SYSTEM ENGINEER OR TECHNICIAN HAS PROGRAMMED INTO THE TRAFFIC RESPONSIVE MODE SHALL BE PROVIDED TO THE ENGINEER FOR DOCUMENTATION PURPOSES.

A BRIEF DESCRIPTION OF PROPOSED METHODOLOGY OF DATA COLLECTION AND ANALYSIS, OF SYSTEM PARAMETER USAGE IN SYSTEM EVALUATION, OF FREQUENCY AND MEASUREMENT OF TRAVEL TIME AND DELAY, AND COMPARING ACTUAL VERSUS SYSTEM MEASUREMENTS OF DELAYS (LEVEL OF SERVICE).

THE SYSTEMS ENGINEER OR TECHNICIAN UNDER AUTHORITY OF THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE OPERATION OF THE TWO SIGNAL SYSTEMS AND ISOLATED SIGNALIZED INTERSECTIONS (AS NOTED IN PART A), FROM THE START OF THE TEN (10) DAY PERFORMANCE TEST UNTIL COMPLETION AND ACCEPTANCE OF THIS PROJECT. THE SYSTEMS ENGINEER OR TECHNICIAN SHALL PROVIDE A TWENTY FOUR (24) HOUR EMERGENCY PHONE NUMBER AND SHALL RESPOND TO SYSTEM OR SIGNAL OPERATION RELATED PROBLEMS AS DEEMED NECESSARY BY THE ENGINEER TWENTY FOUR (24) HOURS A DAY, SEVEN DAYS A WEEK. THE ENGINEER RESERVES THE RIGHT TO REQUEST A SIGNAL OR SYSTEMS ANALYSIS AT ANY TIME THROUGHOUT THE ENTIRE DURATION OF THE PROJECT, SHOULD NEW OR CONTINUING PROBLEMS OCCUR WITH THE OPERATION OF THE TRAFFIC SIGNAL SYSTEM(S).

THE ENGINEER RESERVES THE RIGHT TO REQUEST THAT THE CONTRACTOR PROVIDE A NEW SYSTEMS ENGINEER OR TECHNICIAN SHOULD THE CURRENT SYSTEMS ENGINEER OR TECHNICIAN FAIL TO PERFORM THE REQUIRED DUTIES IN A TIMELY AND PROFESSIONAL MANNER OR FAIL TO HAVE A FIRM UNDERSTANDING OF THE OPERATION AND PROGRAMMING OF THE EXISTING CLOSED LOOP SYSTEM.

THE SYSTEMS ENGINEER OR TECHNICIAN MAY DELEGATE NON-TECHNICAL TASKS (I.E. TRAVEL TIME RUNS, INTERSECTION TRAFFIC COUNTS, ETC....) TO PERSONNEL UNDER HIS/ HER DIRECT SUPERVISION, PROVIDED THAT APPROVAL IS RECEIVED BY THE ENGINEER PRIOR TO COMMENCING THIS WORK. THE SYSTEMS ENGINEER OR TECHNICIAN SHALL SUBMIT TO THE ENGINEER IN WRITING A LIST OF THOSE TASKS WHICH ARE TO BE PERFORMED BY OTHER PERSONNEL. THE ENGINEER RESERVES THE RIGHT TO DENY PART OR ALL OF THE REQUEST FOR WORK TO BE PERFORMED BY PERSONNEL OTHER THAN THE SYSTEMS ENGINEER OR TECHNICIAN.

C. TRAFFIC PROGRAMS:

SIGNAL PROGRESSION AND TIMING PROGRAMS SHALL BE DEVELOPED BY THE SYSTEMS ENGINEER OR TECHNICIAN FROM COUNT AND OCCUPANCY DATA OBTAINED FROM THE LOCAL INTERSECTION AND SYSTEM LOOP DETECTORS, SUPPLEMENTED BY FIELD COUNTS AND MEASUREMENTS AS REQUIRED OR AS DIRECTED BY THE ENGINEER. THE SIGNAL PROGRESSION PROGRAMS TO BE DEVELOPED SHALL BE AS FOLLOWS:

THREE (3) INBOUND PREFERENTIAL (A.M. PEAK)

THREE (3) OUTBOUND PREFERENTIAL (P.M. PEAK)

THREE (3) AVERAGE (OFF PEAK)

NOTE: THE THREE AVERAGE PROGRAMS SHOULD UTILIZE VARYING CYCLE LENGTHS BASED ON TRAFFIC VOLUME, DENSITY AND OCCUPANCY TO MINIMIZE OVERALL INTERSECTION APPROACH DELAY TIME.

TWO (2) SPECIAL PROGRAMS FOR EITHER HIGH CONGESTION OR QUEUE BACKUP.

TWO (2) SPECIAL "INCIDENT MANAGEMENT" TYPE PROGRAMS TO ADDRESS ADDITIONAL TRAFFIC DEMANDS PLACED ON THE TWO SYSTEMS IN THE EVENT OF AN ACCIDENT OR LANE BLOCKAGE ON I.R. 77 WITHIN THE CONSTRUCTION ZONE LOCATED ON THIS PROJECT. ONE PROGRAM SHALL BE DEVELOPED FOR INBOUND (A.M.) PEAK TRAFFIC FLOW, THE OTHER PROGRAM SHALL BE DEVELOPED FOR OUTBOUND (P.M.) PEAK TRAFFIC FLOW. IT IS IMPORTANT TO NOTE THAT THESE PROGRAMS SHOULD BE DESIGNED TO OPTIMIZE TRAFFIC FLOWS OFF OF THE I.R. 77 N.B./BROADWAY RAMP AND OR I.R. 77 S.B./ E. 30TH STREET RAMPS, THROUGH THE TWO (2) SYSTEMS AND ALONG THE ALTERNATE DETOUR ROUTE. THE ENGINEER SHALL BE ABLE TO CONTACT THE SYSTEMS ENGINEER OR TECHNICIAN ON SHORT NOTICE AND REQUEST THAT ONE OF THESE PROGRAMS BE IMMEDIATELY IMPLEMENTED IN COORDINATION WITH THE CITY OF CLEVELAND IN THE EVENT OF AN "INCIDENT" WITHIN THE CONSTRUCTION ZONE ON I.R. 77. RESPONSE TIME TO IMPLEMENT THE PROGRAM SHALL NOT EXCEED FIFTEEN (15) MINUTES FROM THE TIME THE CALL IS PLACED BY THE ENGINEER.

A MINIMUM OF THREE TIMING PLANS FOR A BACK UP TIME BASE COORDINATED SYSTEM SHALL BE DEVELOPED AND PROGRAMMED INTO THE SYSTEM.

DEFINE SYSTEM PARAMETERS WHICH WILL ENABLE THE SYSTEM TO AUTOMATICALLY TRANSFER INTO A "FREE OPERATION" MODE DURING LIGHT TRAFFIC VOLUME PERIODS AND TO AUTOMATICALLY TRANSFER TO A COMPUTER SELECTED COORDINATED MODE DURING HEAVY TRAFFIC VOLUME PERIODS.

THE FOLLOWING SYSTEM PARAMETERS SHALL BE ESTABLISHED:
VOLUME, OCCUPANCY AND DIRECTIONAL THRESHOLDS
TRANSITION SMOOTHING FACTORS
SYSTEM DETECTOR ASSIGNMENT
SYSTEM DETECTOR WEIGHING

THE SYSTEMS ENGINEER OR TECHNICIAN MAY USE COMPUTER SOFTWARE TO HELP ASSIST IN HIS/ HER ANALYSIS OF THE OPERATION OF THE CLOSED LOOP SYSTEM. THIS SOFTWARE, LAP TOP COMPUTER, ETC., SHALL BE PROVIDED BY THE CONTRACTOR AT HIS OWN EXPENSE. THE CITY OF CLEVELAND USES SYNCHRO SOFTWARE FOR THEIR SIGNAL TIMING AND COORDINATION DEVELOPMENT. THE CONTRACTOR SHALL PROVIDE DIGITAL COPIES OF THE SYNCHRO FILES USED TO DEVELOP THE PROPOSED MOT TIMING PLAN TO THE CITY OF CLEVELAND FOR REVIEW AND APPROVAL.

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**ITEM 614 - MAINTAINING TRAFFIC, MISC.: MAINTENANCE OF TRAFFIC SIGNAL SYSTEM
COORDINATION CONTINUED**

D. SYSTEM TRAVEL TIME STUDIES:

THE SYSTEMS ENGINEER OR TECHNICIAN SHALL CONDUCT A SERIES OF TRAVEL TIME STUDIES FOR EACH SYSTEM, TO MEASURE THE TIME IT TAKES TO TRAVEL FROM THE BEGINNING OF EACH SYSTEM TO THE END OF THAT SYSTEM, IN EACH DIRECTION, THE TRAVEL TIME STUDY PARAMETERS SHOULD BE BASED ON THE POSTED SPEED LIMIT; HOWEVER, DURING PEAK PERIODS IT MAY NOT BE POSSIBLE TO OBTAIN THE POSTED SPEED DUE TO LARGER TRAFFIC VOLUMES.

EACH SET OF TRAVEL TIME STUDIES SHALL INCLUDE A MINIMUM OF THREE (3) RUNS THROUGH THE SYSTEM PER DIRECTION. TRAVEL TIME STUDIES SHALL BE CONDUCTED DURING "IDEAL" WEATHER CONDITIONS (I.E. NO SNOW, RAIN OR FOG, ETC.).

TRAVEL TIME STUDIES SHALL BE CONDUCTED FOR THE FOLLOWING FOUR (4) TIME PERIODS:

- 1) THE FIRST SET OF TRAVEL TIME STUDIES SHALL BE CONDUCTED BETWEEN THE HOURS OF 7:00 A.M. AND 9:00 A.M. ON WEEKDAYS.
- 2) THE SECOND SET OF TRAVEL TIME STUDIES SHALL BE CONDUCTED BETWEEN THE HOURS OF 11:00 A.M. AND 1:00 P.M. WEEKDAYS.
- 3) THE THIRD SET OF TRAVEL TIME STUDIES SHALL BE CONDUCTED BETWEEN THE HOURS OF 4:00 P.M. AND 6:00 P.M. WEEKDAYS.
- 4) THE FOURTH SET OF TRAVEL TIME STUDIES SHALL BE CONDUCTED DURING ANY OF THE FOLLOWING NON-PEAK HOUR PERIODS:
 - A. 9:00 A.M. TO 11:00 A.M. MONDAY THROUGH SATURDAY
 - B. 7:00 P.M. TO 10:00 P.M. MONDAY THROUGH SATURDAY
 - C. 7:00 A.M. TO 10:00 P.M. SUNDAY

A WRITTEN REPORT SHALL BE PROVIDED TO THE ENGINEER DOCUMENTING, AT A MINIMUM: THE NAME OF THE PERSON PERFORMING THE STUDY, THE DATE OF THE TRAVEL TIME STUDY, DAY OF WEEK, TIME OF DAY, TOTAL TIME OF TRAVEL AND TOTAL TIME THE VEHICLE WAS STOPPED FOR EACH TRIP.

IN ADDITION, THE SYSTEMS ENGINEER OR TECHNICIAN SHALL CONDUCT THESE THREE (3) SEPARATE SETS OF TRAVEL TIME STUDIES FOR EACH OF THE FOLLOWING FIELD CONDITIONS:

- 1) PRIOR TO THE BEGINNING OF CONSTRUCTION, WITH THE EXISTING SIGNAL SYSTEM IN OPERATION (NO LANE CLOSURES ON BROADWAY OR I.R. 77 SHALL BE IN EFFECT DURING THIS ANALYSIS).
- 2) AFTER ANY SUBSTANTIAL CHANGE IN MAINTENANCE OF TRAFFIC PATTERN IS INITIATED AS PART OF THIS PROJECT, INCLUDING LONG TERM INDIVIDUAL RAMP CLOSURES AND SUBSEQUENT OPENINGS ON I.R. 77.
- 3) AFTER THE PROJECT IS COMPLETE WHEN ALL NORMAL LANES OF TRAFFIC AND ALL RAMP ARE REOPENED ON I.R. 77. THIS STUDY WILL VERIFY THAT THE SIGNAL SYSTEM IS OPERATING IN ITS ORIGINAL CONDITION.

THE REPORTS PROVIDED FROM EACH OF THE THREE FIELD CONDITIONS FOR WHICH SYSTEM TRAVEL TIME STUDIES ARE PREPARED SHALL BE USED AS ONE MEANS OF MEASURING THE EFFICIENCY OF THE SYSTEMS. THESE REPORTS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL AND DOCUMENTATION.

THE COST OF PERFORMING THIS ITEM OF WORK, INCLUDING ALL LABOR, MATERIALS, EQUIPMENT, TOOLS AND OTHER INCIDENTALS NECESSARY TO PERFORM THE WORK AS OUTLINED ABOVE SHALL BE INCLUDED IN THE LUMP SUM BID PRICE FOR ITEM 614 - MAINTAINING TRAFFIC, MISC.: MAINTENANCE OF TRAFFIC SIGNAL SYSTEM COORDINATION.

ITEM 614. DETOUR SIGNING

DETOUR SIGNING AND ALTERNATE ROUTE SIGNING FOR THE PROJECT AS SHOWN ON SHEETS ~~69-89~~ SHALL BE PAID FOR AS ITEM 614, DETOUR SIGNING, LUMP SUM, UNLESS OTHERWISE INDICATED.

CASTINGS ADJUSTED TO GRADE, AS PER PLAN

THE FOLLOWING ITEMS HAVE BEEN INCLUDED IN THE MOT GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER TO ADJUST ANY CASTINGS TO GRADE IN CONJUNCTION WITH THE RESURFACING OF BROADWAY AVENUE. THE TIME BETWEEN ADJUSTING THE CASTINGS AND RESURFACING SHALL BE KEPT TO AN ABSOLUTE MINIMUM. ADJUSTING RINGS SHALL NOT BE USED. THE CONTRACTOR SHALL NOTIFY PRIVATE COMPANIES ONE WEEK IN ADVANCE OF BEGINNING WORK THAT WOULD AFFECT ANY OF THEIR CASTINGS SO THAT THEY MAY PROVIDE INSPECTION PRIOR TO RESURFACING OPERATIONS. PAYMENT SHALL BE MADE AT THE UNIT CONTRACT BID PRICE PER EACH FOR THE FOLLOWING AS PER PLAN ITEMS AND QUANTITIES:

- ITEM 638 - VALVE BOX ADJUSTED TO GRADE, AS PER PLAN 8 EACH
ITEM 611 - MANHOLE ADJUSTED TO GRADE, AS PER PLAN 21 EACH
ITEM 611 - CATCH BASIN ADJUSTED TO GRADE, AS PER PLAN 16 EACH
ITEM 623 - MONUMENT BOX ADJUSTED TO GRADE, AS PER PLAN 1 EACH

ITEM 611 - CATCH BASINS RECONSTRUCTED TO GRADE

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN INCLUDED IN THE MOT GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER TO RECONSTRUCT DELAPIDATED CATCH BASINS IN CONJUNCTION WITH THE RESURFACING OF BROADWAY AVENUE. THE TIME BETWEEN RECONSTRUCTION OF THE CATCH BASINS AND RESURFACING SHALL BE KEPT TO AN ABSOLUTE MINIMUM.

- ITEM 611 - CATCH BASIN RECONSTRUCTED TO GRADE 5 EACH

ITEM SPECIAL - MISCELLANEOUS METAL

EXISTING CASTINGS MAY PROVE TO BE UNSUITABLE FOR REUSE, AS DETERMINED BY THE ENGINEER. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE THE CASTINGS OF THE REQUIRED TYPE, SIZE AND STRENGTH (HEAVY OR LIGHT DUTY) FOR THE PARTICULAR STRUCTURE IN QUESTION. ALL MATERIAL SHALL MEET ITEM 611 OF THE SPECIFICATIONS AND SHALL HAVE THE PRIOR APPROVAL OF THE ENGINEER.

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER.

- ITEM SPECIAL - MISCELLANEOUS METAL 3000 POUNDS

THE CONTRACTOR IS CAUTIONED TO USE EXTREME CARE IN THE REMOVAL, STORAGE AND REPLACEMENT OF ALL EXISTING CASTINGS. CASTINGS DAMAGED BY THE NEGLIGENCE OF THE CONTRACTOR, AS DETERMINED BY THE ENGINEER, SHALL BE REPLACED WITH THE PROPER NEW CASTINGS AT THE EXPENSE OF THE CONTRACTOR.

ITEM 614 - DELINEATION OF TEMPORARY AND PERMANENT GUARDRAIL

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

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

THE ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE MOT SUBSUMMARY AND CARRIED TO THE GENERAL SUMMARY.

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

ITEM 614 - REPLACEMENT SIGN

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

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

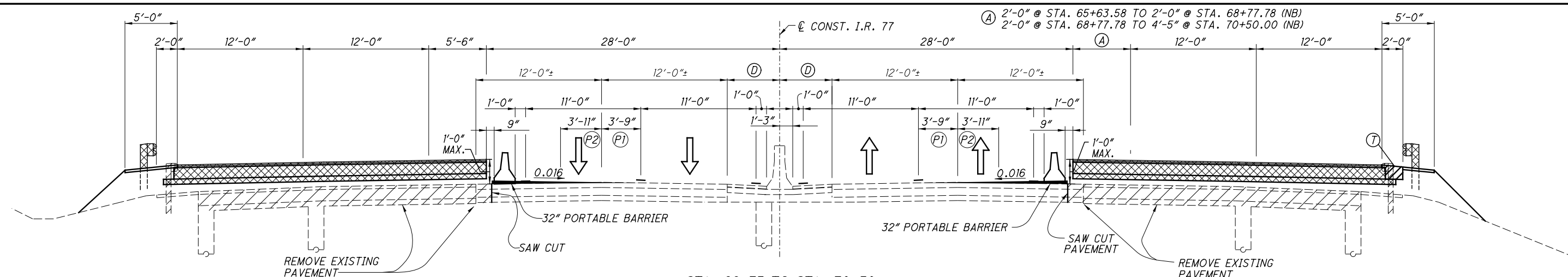
AN ESTIMATED QUANTITY OF 40 EACH HAS BEEN PROVIDED IN THE GENERAL SUMMARY.

DRUM REQUIREMENTS

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

PAYMENT FOR DRUMS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 614 -MAINTAINING TRAFFIC UNLESS SEPARATELY ITEMIZED.

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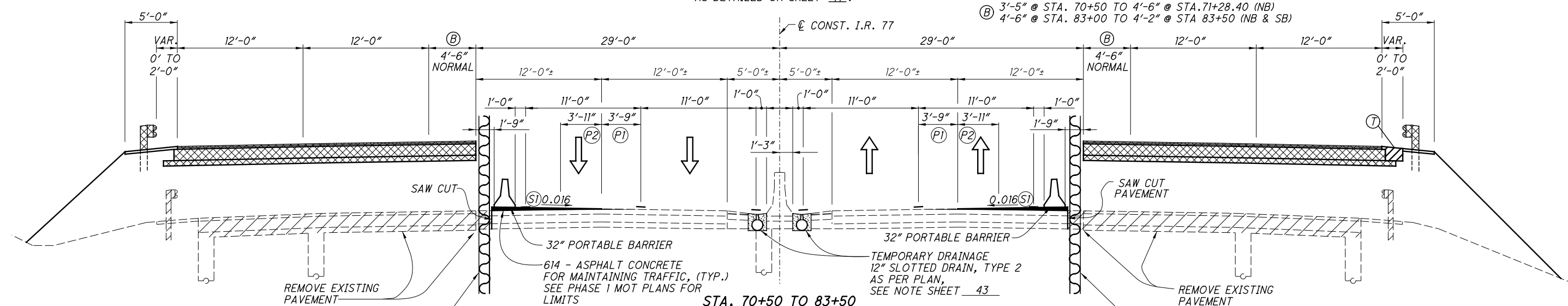
STA. 66+75 TO STA. 70+50
MAINTENANCE OF TRAFFIC TYPICAL SECTION
PART-WIDTH CONSTRUCTION - PHASE 1

ⓓ 6' FROM STA. 64+50 TO STA. 66+75
 VARIES 6' TO 5' STA. 66+75 TO STA. 68+75
 5' FROM STA. 68+75 TO STA. 70+50

NOTE: I.R. 77 TRAFFIC SHALL BE SHIFTED TO PHASE 2 OVER THE WINTER SEASON AS DETAILED ON SHEET 47.

NOTE: SEE PHASE 1 MOT PLAN FOR LOCATIONS OF TEMPORARY DRAINAGE OUTLETS. (UNDER NB AND SB LANES)

Ⓣ ITEM 615 - PAVEMENT FOR MAINTAINING TRAFFIC CLASS A (2'-0" WIDE) CONSTRUCTED IN PHASE 1 STA. 66+00.00 TO STA. 72+15.00 RT. = 615.00'



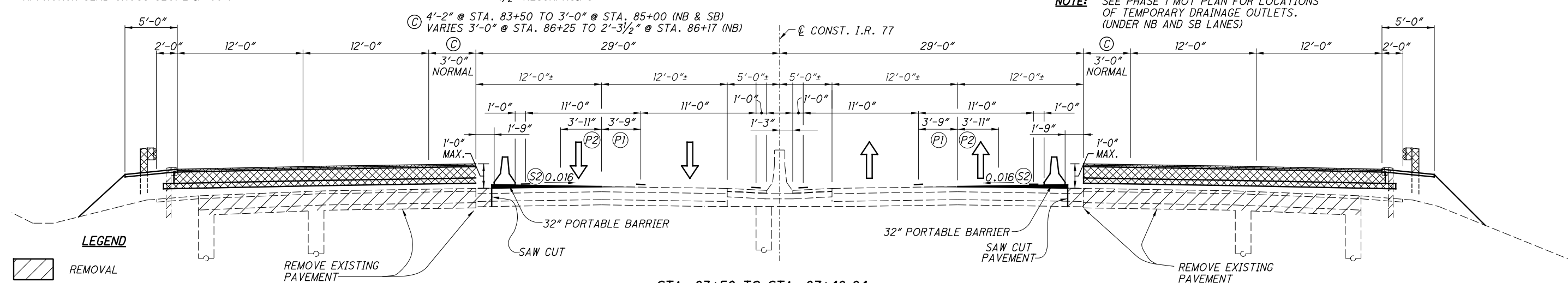
STA. 70+50 TO STA. 83+50
MAINTENANCE OF TRAFFIC TYPICAL SECTION
PART-WIDTH CONSTRUCTION - PHASE 1

Ⓢ1 TRANSITION CROSS SLOPE TO MATCH EXISTING BRIDGE DECK CROSS SLOPE IN 60'.
 Ⓢ2 TRANSITION CROSS SLOPE TO MATCH EXISTING APPROACH SLAB CROSS SLOPE IN 60'.

SHEET PILE SEE MOT GENERAL NOTE

Ⓟ1 1/2" PLANING AND RESURFACING
 Ⓟ2 1/2" TO 0" PLANING WITH 1/2" RESURFACING

NOTE: SEE PHASE 1 MOT PLAN FOR LOCATIONS OF TEMPORARY DRAINAGE OUTLETS. (UNDER NB AND SB LANES)



STA. 83+50 TO STA. 87+48.84
MAINTENANCE OF TRAFFIC TYPICAL SECTION
PART-WIDTH CONSTRUCTION - PHASE 1

NOTE: SEE PHASE 1 MOT PLAN FOR LOCATIONS OF TEMPORARY DRAINAGE OUTLETS. (UNDER NB AND SB LANES)

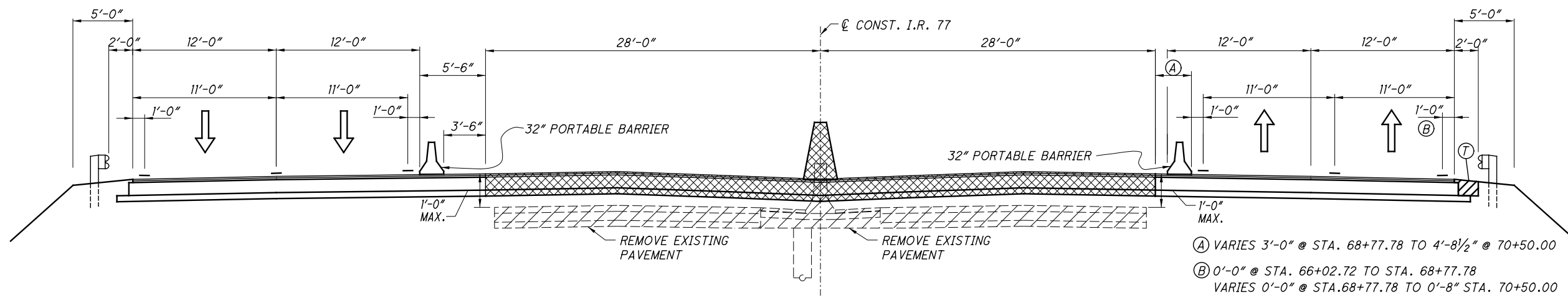
LEGEND

- REMOVAL
- PHASE CONSTRUCTION
- TRAFFIC DIRECTION

MAINTENANCE OF TRAFFIC TYPICAL SECTIONS
ROADWAY PART-WIDTH CONSTRUCTION - PHASE 1

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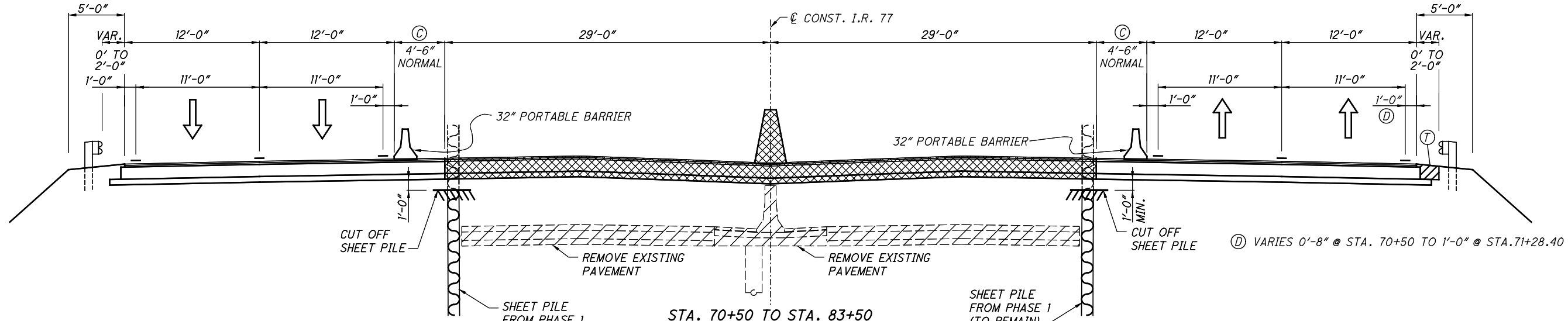
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STA. 66+75 TO STA. 70+50
MAINTENANCE OF TRAFFIC TYPICAL SECTION
PART-WIDTH CONSTRUCTION - PHASE 2

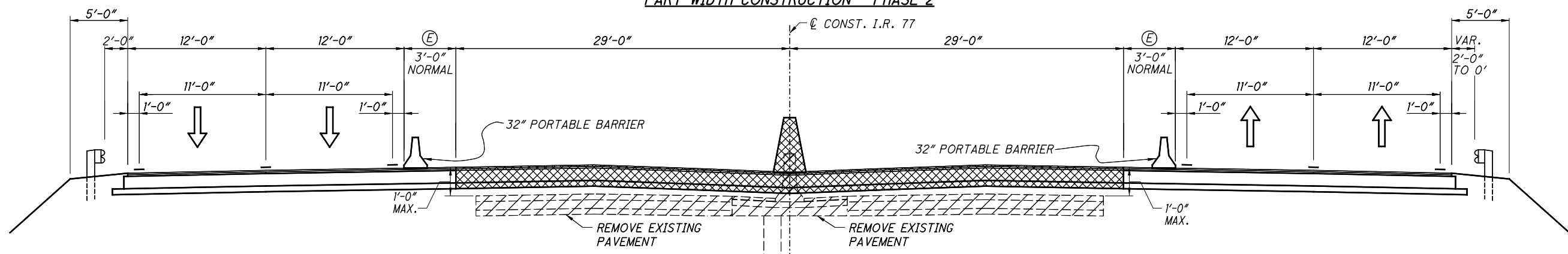
NOTE: I.R. 77 TRAFFIC SHALL BE SHIFTED TO PHASE 2 OVER THE WINTER SEASON AS DETAILED ON THIS SHEET.

- (A) VARIES 3'-0" @ STA. 68+77.78 TO 4'-8 1/2" @ 70+50.00
- (B) 0'-0" @ STA. 66+02.72 TO STA. 68+77.78
VARIES 0'-0" @ STA. 68+77.78 TO 0'-8" STA. 70+50.00
- (T) ITEM 615 - PAVEMENT FOR MAINTAINING TRAFFIC CLASS A (2'-0" WIDE) CONSTRUCTED IN PHASE 1
STA. 66+00.00 TO STA. 72+15.00 RT. = 615.00'



STA. 70+50 TO STA. 83+50
MAINTENANCE OF TRAFFIC TYPICAL SECTION
PART-WIDTH CONSTRUCTION - PHASE 2

- (C) VARIES 3'-8 1/2" @ STA. 70+50 TO 4'-6" @ STA. 71+28.40 (NB)
VARIES 4'-6" @ STA. 83+00 TO 3'-3" @ STA. 83+50 (NB & SB)
- (D) VARIES 0'-8" @ STA. 70+50 TO 1'-0" @ STA. 71+28.40



STA. 83+50 TO STA. 87+48.84
MAINTENANCE OF TRAFFIC TYPICAL SECTION
PART-WIDTH CONSTRUCTION - PHASE 2

- (E) 3'-3" @ STA. 83+50 TO 3'-0" @ STA. 85+00 (NB & SB)
VARIES 3'-0" @ STA. 86+25 TO 2'-3 1/2" @ STA. 86+17 (NB)

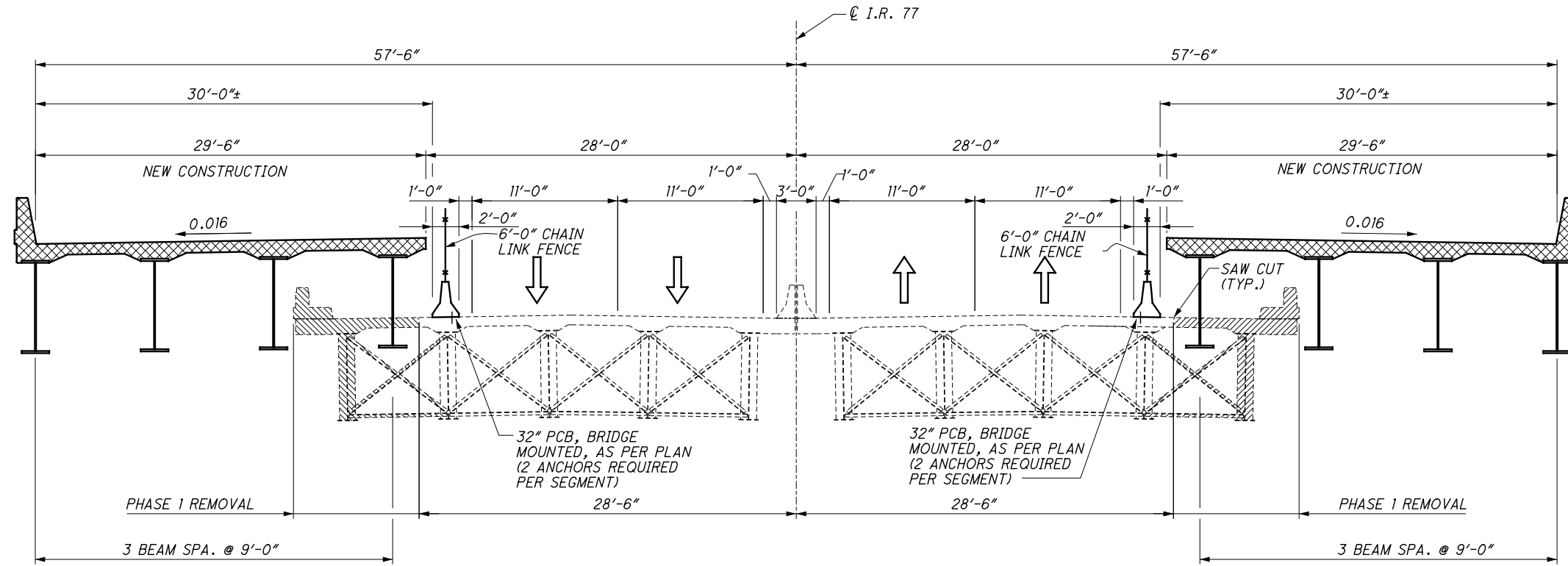
LEGEND

- REMOVAL
- PHASE CONSTRUCTION
- TRAFFIC DIRECTION

MAINTENANCE OF TRAFFIC TYPICAL SECTIONS
ROADWAY PART-WIDTH CONSTRUCTION - PHASE 2

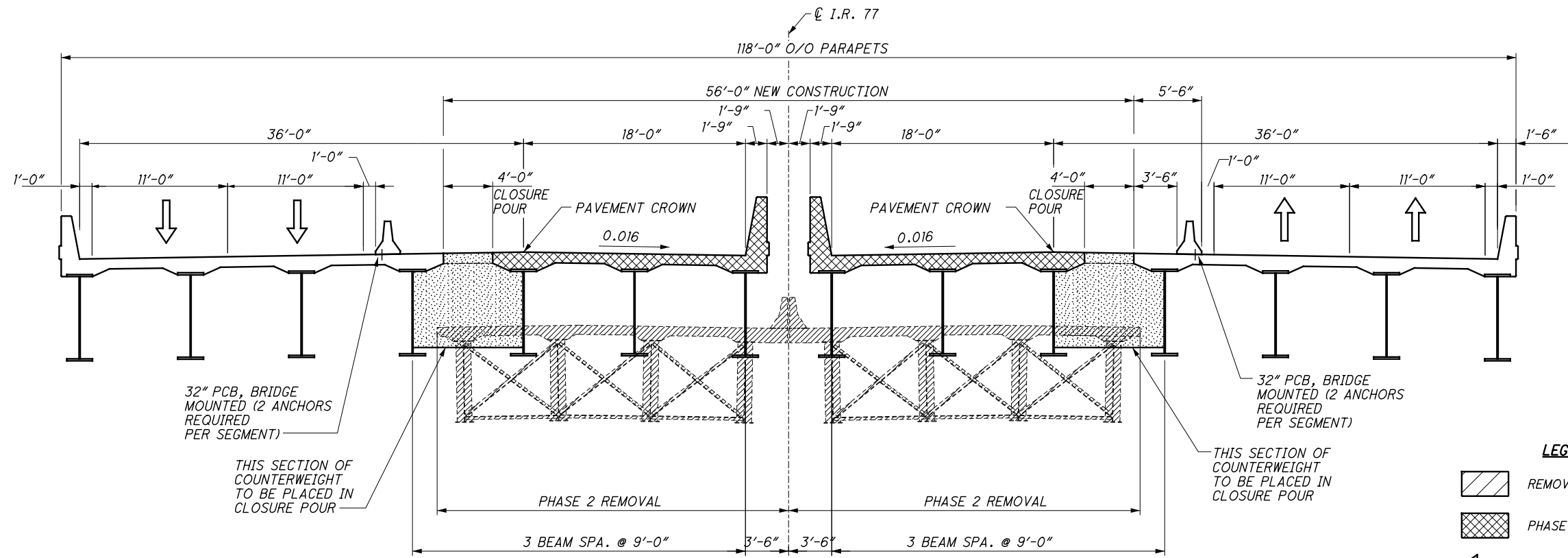
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PHASE 1 CONSTRUCTION

NOTE: 1) SEE SHEET 93 FOR BRIDGE MOUNTED BARRIER WITH 6'-0" CHAIN LINK FENCE DETAILS



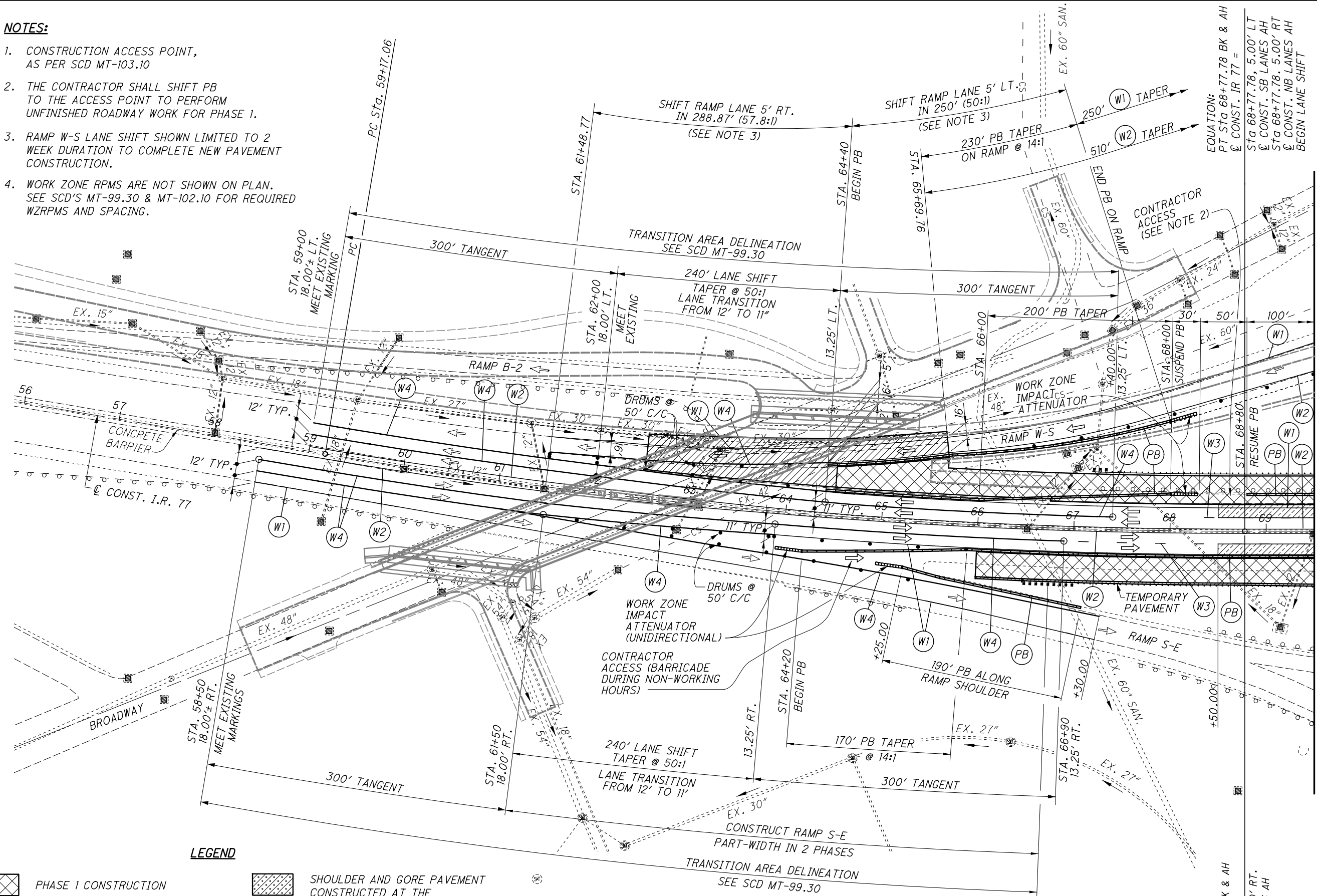
PHASE 2 CONSTRUCTION

LEGEND

-  REMOVAL
-  PHASE CONSTRUCTION
-  TRAFFIC DIRECTION

NOTES:

1. CONSTRUCTION ACCESS POINT, AS PER SCD MT-103.10
2. THE CONTRACTOR SHALL SHIFT PB TO THE ACCESS POINT TO PERFORM UNFINISHED ROADWAY WORK FOR PHASE 1.
3. RAMP W-S LANE SHIFT SHOWN LIMITED TO 2 WEEK DURATION TO COMPLETE NEW PAVEMENT CONSTRUCTION.
4. WORK ZONE RPMS ARE NOT SHOWN ON PLAN. SEE SCD'S MT-99.30 & MT-102.10 FOR REQUIRED WZRPMS AND SPACING.



LEGEND

- PHASE 1 CONSTRUCTION
- PLANING AND RESURFACING
- 614 - ASPHALT CONCRETE FOR MAINTAINING TRAFFIC
- 615 - PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A

- SHOULDER AND GORE PAVEMENT CONSTRUCTED AT THE COMPLETION OF OUTSIDE NEW PAVEMENT
- TRAFFIC DIRECTION
- CCG6B CONSTRUCTION PID NO. 82388

WORK ZONE MARKING LEGEND

- W1 WORK ZONE EDGE LINE (WHITE) CLASS I
- W2 WORK ZONE EDGE LINE (YELLOW) CLASS I
- W3 WORK ZONE LANE LINE, CLASS I
- W4 WORK ZONE CHANNELIZING LINE, CLASS I
- W5 WORK ZONE DOTTED LINE, CLASS I
- PB PORTABLE BARRIER

EQUATION:
PT STA 68+77.78 BK & AH
CONST. IR 77 =

Sta 68+77.78, 5.00' LT
CONST. SB LANES AH
Sta 68+77.78, 5.00' RT
CONST. NB LANES AH
BEGIN LANE SHIFT

EQUATION:
PT STA 68+77.78 BK & AH
CONST. IR 77 =

Sta 68+77.78, 6.00' RT.
CONST. NB LANES AH
Δ = 0°48'00" RT.
NO CURVE

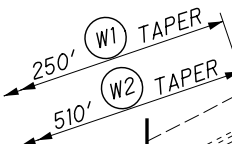


**MAINTENANCE OF TRAFFIC PLAN
PART-WIDTH CONSTRUCTION - PHASE 1**

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WORK ZONE MARKING LEGEND

- (W1) WORK ZONE EDGE LINE (WHITE) CLASS I
- (W2) WORK ZONE EDGE LINE (YELLOW) CLASS I
- (W3) WORK ZONE LANE LINE, CLASS I
- (W4) WORK ZONE CHANNELIZING LINE, CLASS I
- (W5) WORK ZONE DOTTED LINE, CLASS I
- (PB) PORTABLE BARRIER



MEET EXISTING MARKINGS

MATCHLINE STA. 69+50

MATCHLINE STA. 82+00

TEMPORARY PAVEMENT

LEGEND

- PHASE I CONSTRUCTION
- 614 - ASPHALT CONCRETE FOR MAINTAINING TRAFFIC
- 615 - PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A
- CCG6B CONSTRUCTION PID NO. 82388

▲▲ TYPICAL TEMPORARY DRAINAGE 12" SLOTTED DRAIN SEE MOT NOTES AND MOT TYPICALS

⇄ TRAFFIC DIRECTION

* SHEET PILING REQUIRED AT EXISTING AND PROPOSED BRIDGE ABUTMENTS. SEE BRIDGE PLANS FOR NOTES AND DETAILS OF THESE AREAS. SHEETS 298 & 299

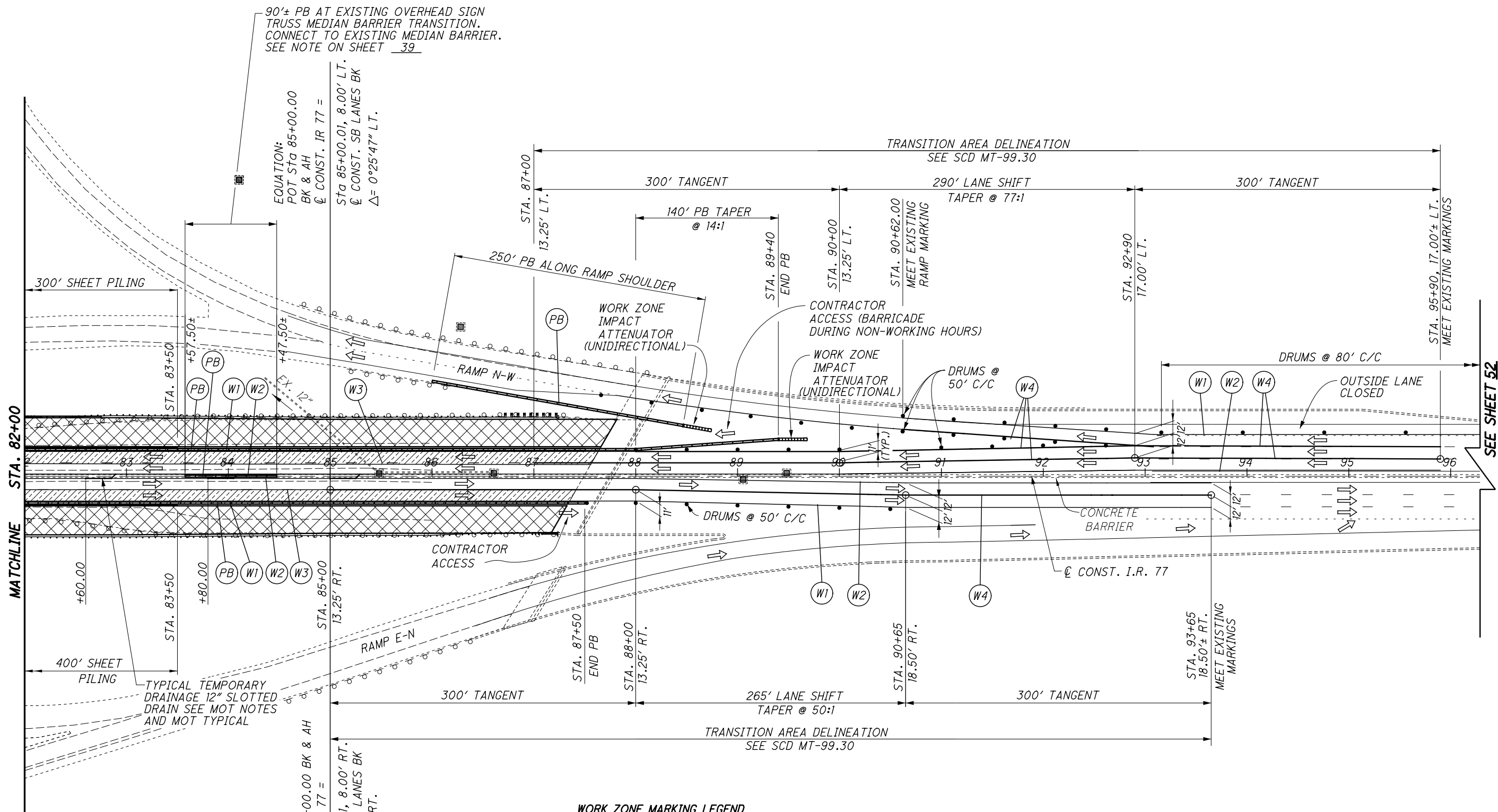


**MAINTENANCE OF TRAFFIC PLAN
PART - WIDTH CONSTRUCTION - PHASE 1**

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90'± PB AT EXISTING OVERHEAD SIGN TRUSS MEDIAN BARRIER TRANSITION. CONNECT TO EXISTING MEDIAN BARRIER. SEE NOTE ON SHEET 39.

EQUATION:
POT Sta 85+00.00 BK & AH
∅ CONST. IR 77 =
Sta 85+00.01, 8.00' LT.
∅ CONST. SB LANES BK
∆ = 0°25'47" LT.

EQUATION:
POT Sta 85+00.00 BK & AH
∅ CONST. IR 77 =
Sta 85+00.01, 8.00' RT.
∅ CONST. NB LANES BK
∆ = 0°25'47" RT.

TYPICAL TEMPORARY DRAINAGE 12" SLOTTED DRAIN SEE MOT NOTES AND MOT TYPICAL

WORK ZONE MARKING LEGEND

- (W1) WORK ZONE EDGE LINE (WHITE) CLASS I
- (W2) WORK ZONE EDGE LINE (YELLOW) CLASS I
- (W3) WORK ZONE LANE LINE, CLASS I
- (W4) WORK ZONE CHANNELIZING LINE, CLASS I
- (W5) WORK ZONE DOTTED LINE, CLASS I
- (PB) PORTABLE BARRIER

LEGEND

- PHASE I CONSTRUCTION
- 614 - ASPHALT CONCRETE FOR MAINTAINING TRAFFIC
- TRAFFIC DIRECTION



**MAINTENANCE OF TRAFFIC PLAN
PART-WIDTH CONSTRUCTION - PHASE 1**

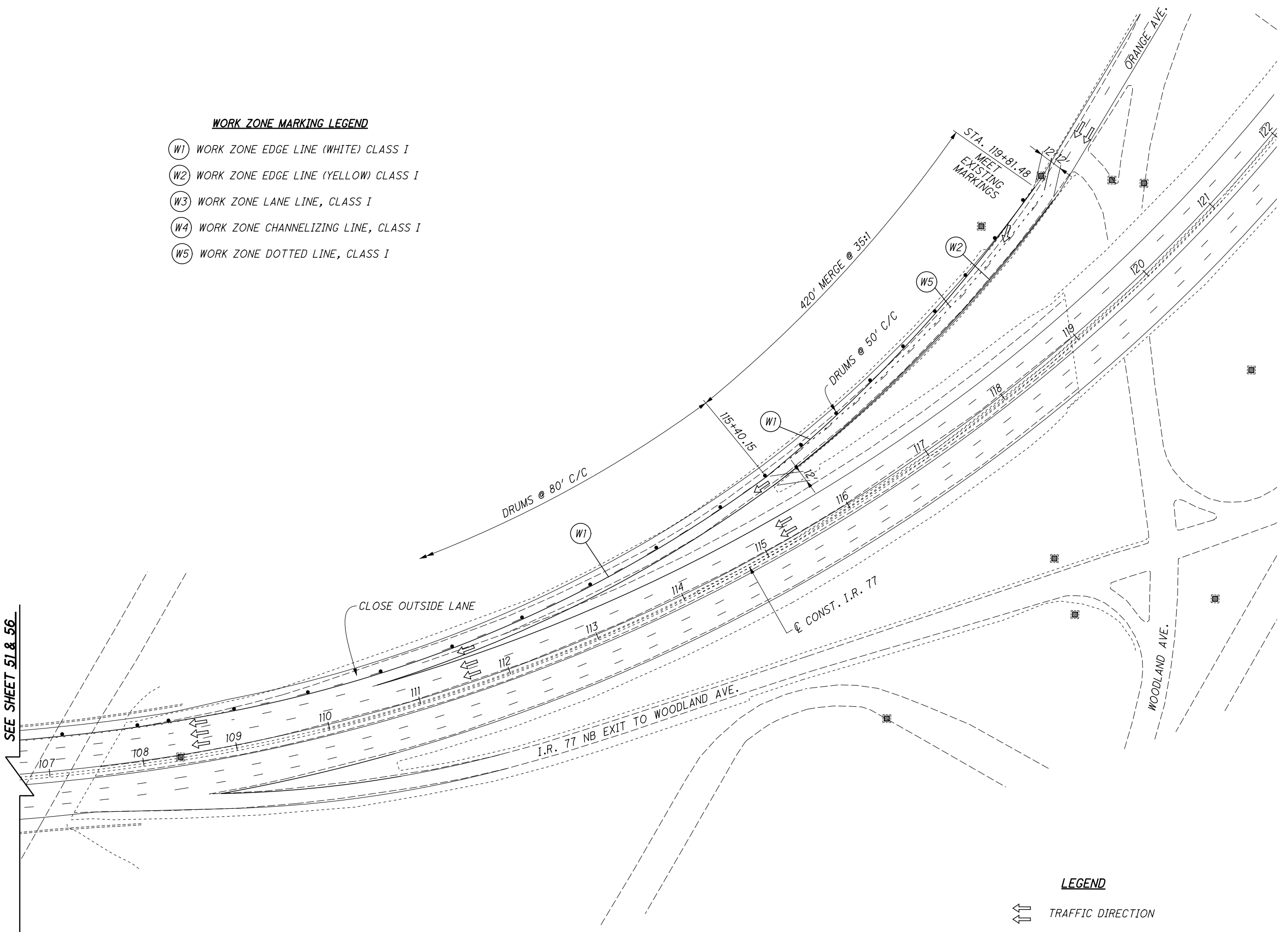
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SEE SHEET 51 & 56

WORK ZONE MARKING LEGEND

- (W1) WORK ZONE EDGE LINE (WHITE) CLASS I
- (W2) WORK ZONE EDGE LINE (YELLOW) CLASS I
- (W3) WORK ZONE LANE LINE, CLASS I
- (W4) WORK ZONE CHANNELIZING LINE, CLASS I
- (W5) WORK ZONE DOTTED LINE, CLASS I



LEGEND
 ↑↑ TRAFFIC DIRECTION

CALCULATED MAF CHECKED TJF

0 50 100
 25
 HORIZONTAL SCALE IN FEET

**MAINTENANCE OF TRAFFIC PLAN
 PART-WIDTH CONSTRUCTION - PHASE 1**

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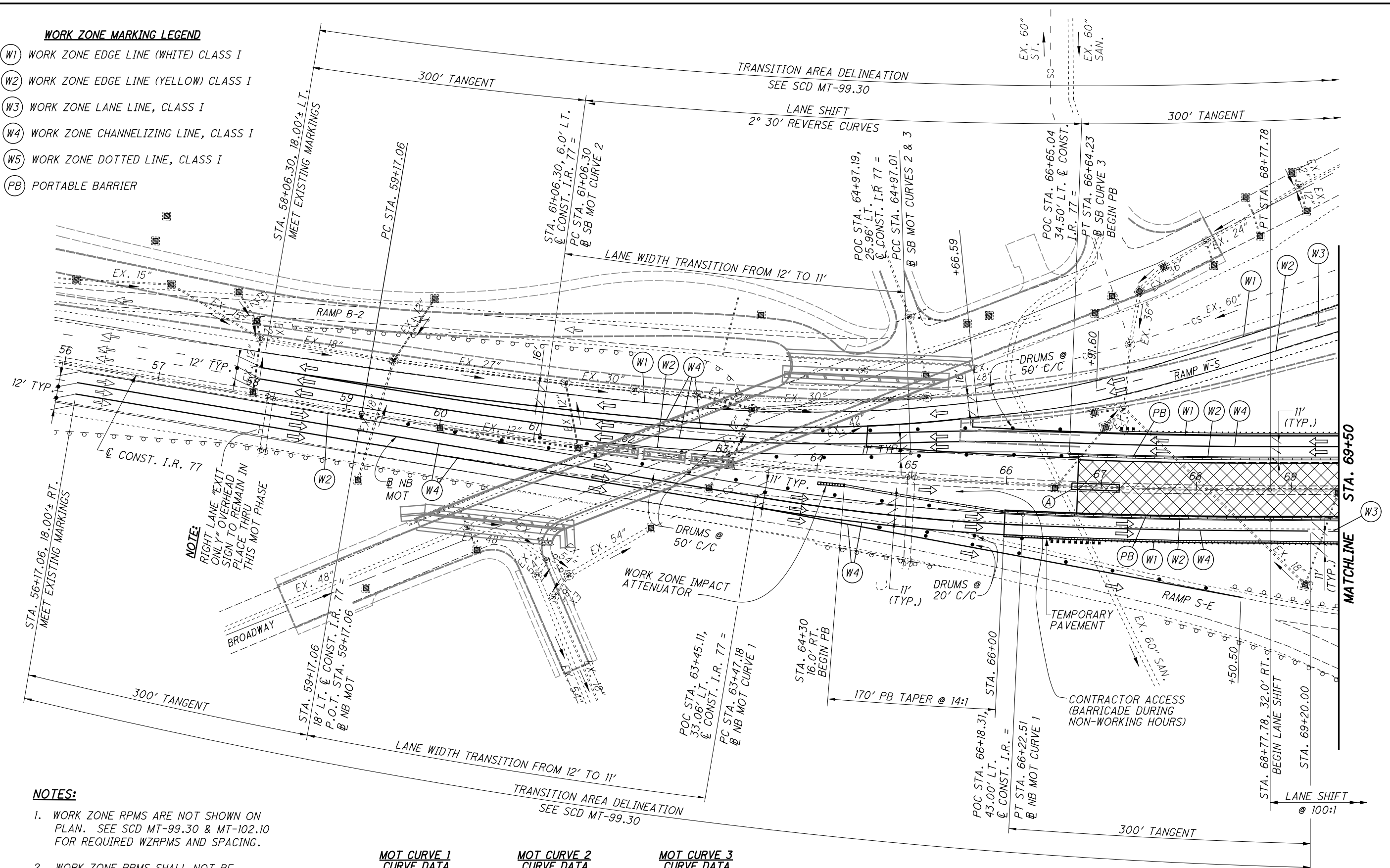
WORK ZONE MARKING LEGEND

- (W1) WORK ZONE EDGE LINE (WHITE) CLASS I
- (W2) WORK ZONE EDGE LINE (YELLOW) CLASS I
- (W3) WORK ZONE LANE LINE, CLASS I
- (W4) WORK ZONE CHANNELIZING LINE, CLASS I
- (W5) WORK ZONE DOTTED LINE, CLASS I
- (PB) PORTABLE BARRIER

CALCULATED MAF CHECKED TJF

**MAINTENANCE OF TRAFFIC PLAN
PART-WIDTH CONSTRUCTION - PHASE 2A**

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- NOTES:**
1. WORK ZONE RPMS ARE NOT SHOWN ON PLAN. SEE SCD MT-99.30 & MT-102.10 FOR REQUIRED WZRPMS AND SPACING.
 2. WORK ZONE RPMS SHALL NOT BE USED OVER WINTER. SEE NOTES ON SHEET 42.

(A) LEAVE 50' GAP IN NEW BARRIER FOR PLACEMENT OF PORTABLE BARRIER IN PHASES 2B AND 2C. BARRIER CONSTRUCTION TO BE COMPLETED AFTER PHASE 2C.

**MOT CURVE 1
CURVE DATA**

P.I. Sta. 64+85.01
 $\Delta = 6^\circ 53' 00''$ (LT)
 $D_c = 2^\circ 30' 00''$
 $R = 2,291.83'$
 $T = 137.83'$
 $L = 275.34'$
 $E = 4.14'$
 $C = 275.17'$
 C.B. = N $9^\circ 07' 25''$ W

**MOT CURVE 2
CURVE DATA**

P.I. Sta. 63+02.13
 $\Delta = 9^\circ 46' 04''$ (LT)
 $D_c = 2^\circ 30' 00''$
 $R = 2,291.83'$
 $T = 195.83'$
 $L = 390.71'$
 $E = 8.35'$
 $C = 390.24'$
 C.B. = N $12^\circ 19' 23''$ W

**MOT CURVE 3
CURVE DATA**

P.I. Sta. 65+80.66
 $\Delta = 4^\circ 10' 49''$ (RT)
 $D_c = 2^\circ 30' 00''$
 $R = 2,291.83'$
 $T = 83.64'$
 $L = 167.21'$
 $E = 1.53'$
 $C = 167.18'$
 C.B. = N $15^\circ 07' 00''$ W

LEGEND





- PHASE 2A CONSTRUCTION
- 615 - PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A
- TRAFFIC DIRECTION
- CCG6B CONSTRUCTION PID NO. 82388

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WORK ZONE MARKING LEGEND

- (W1) WORK ZONE EDGE LINE (WHITE) CLASS I
- (W2) WORK ZONE EDGE LINE (YELLOW) CLASS I
- (W3) WORK ZONE LANE LINE, CLASS I
- (W4) WORK ZONE CHANNELIZING LINE, CLASS I
- (W5) WORK ZONE DOTTED LINE, CLASS I
- (PB) PORTABLE BARRIER

LEGEND

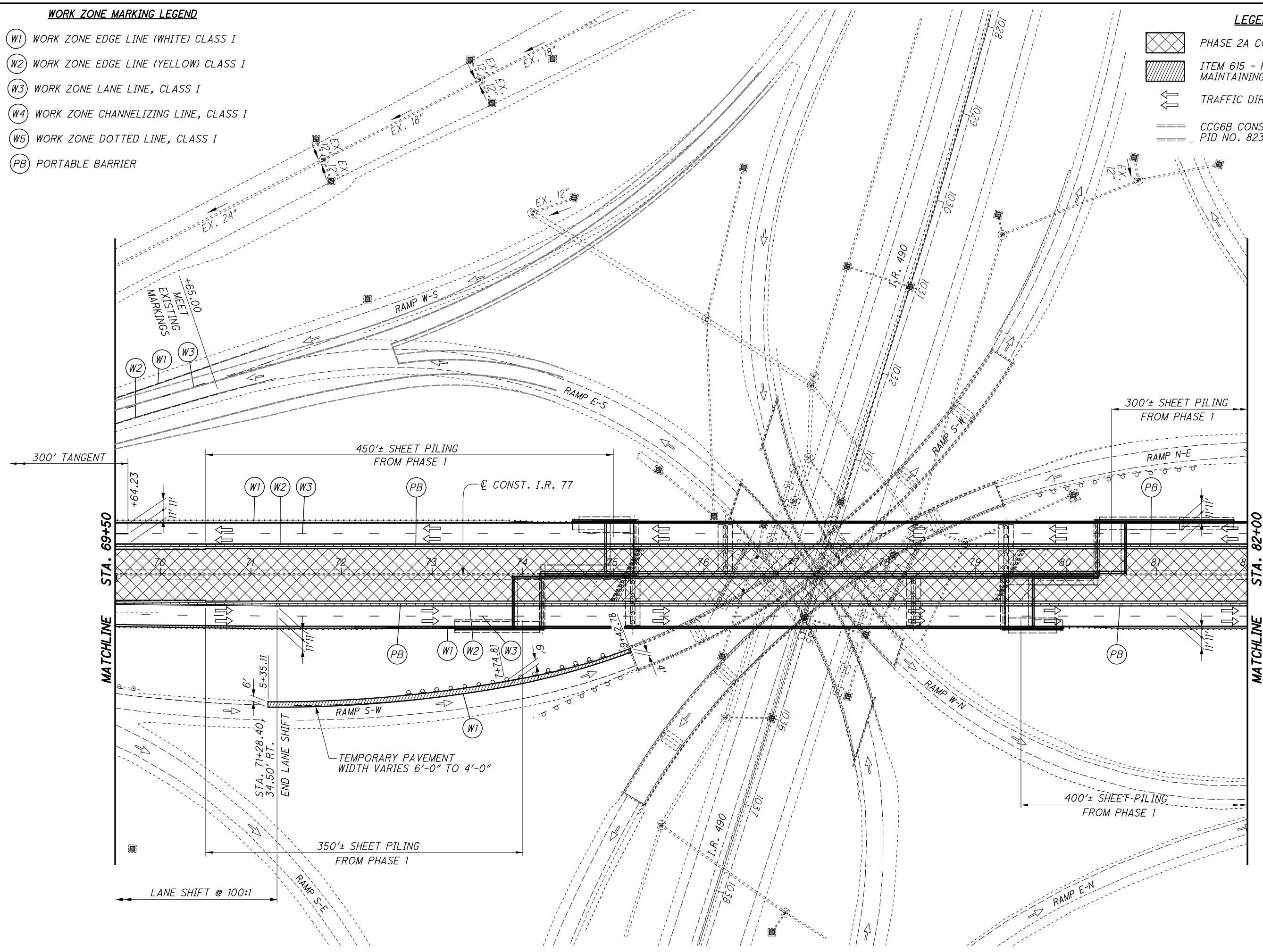
-  PHASE 2A CONSTRUCTION
-  ITEM 615 - PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A
-  TRAFFIC DIRECTION
-  CCG6B CONSTRUCTION PID NO. 82388

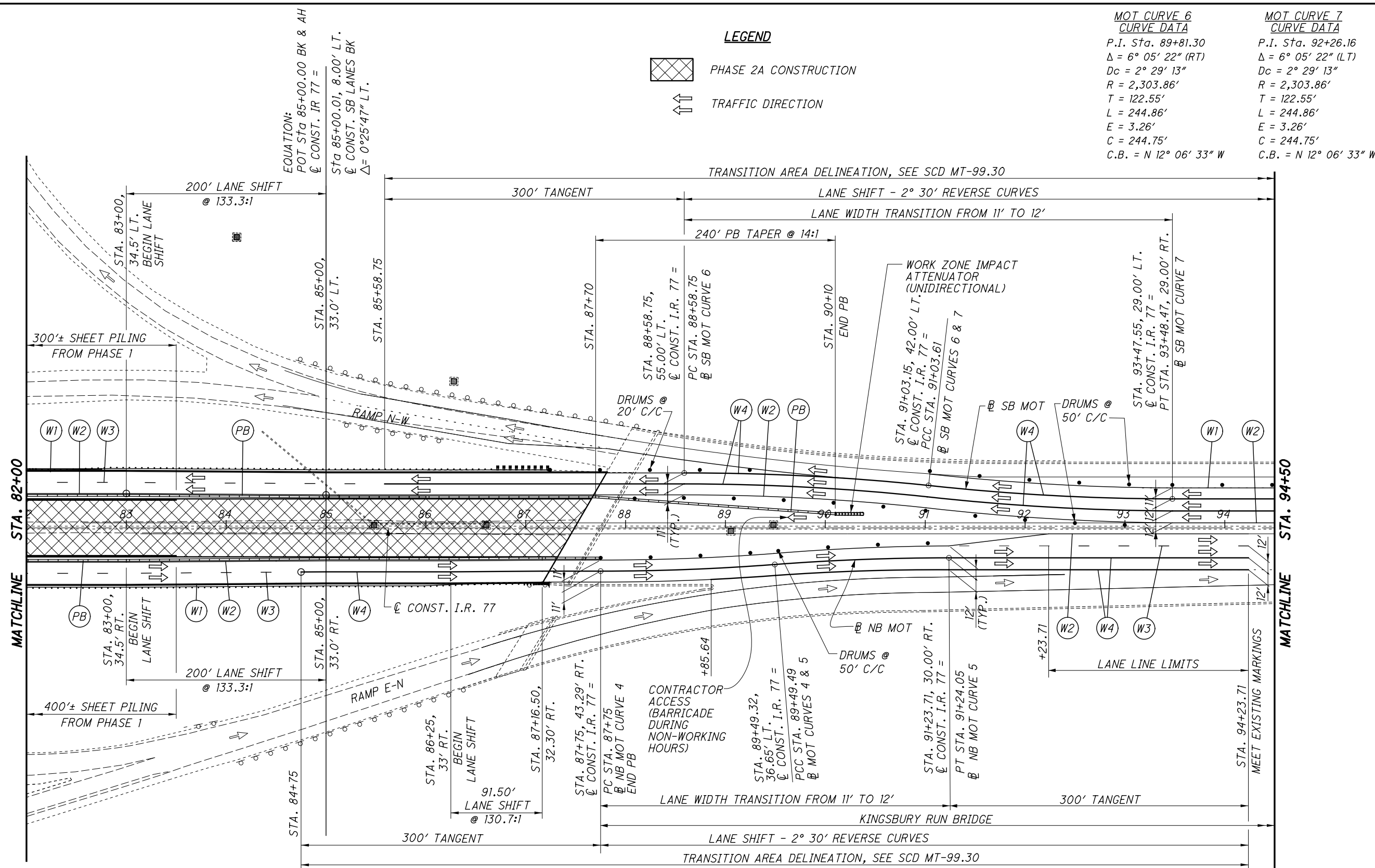


MAINTENANCE OF TRAFFIC PLAN - PHASE 2A
PART - WIDTH CONSTRUCTION - PHASE 2A

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365

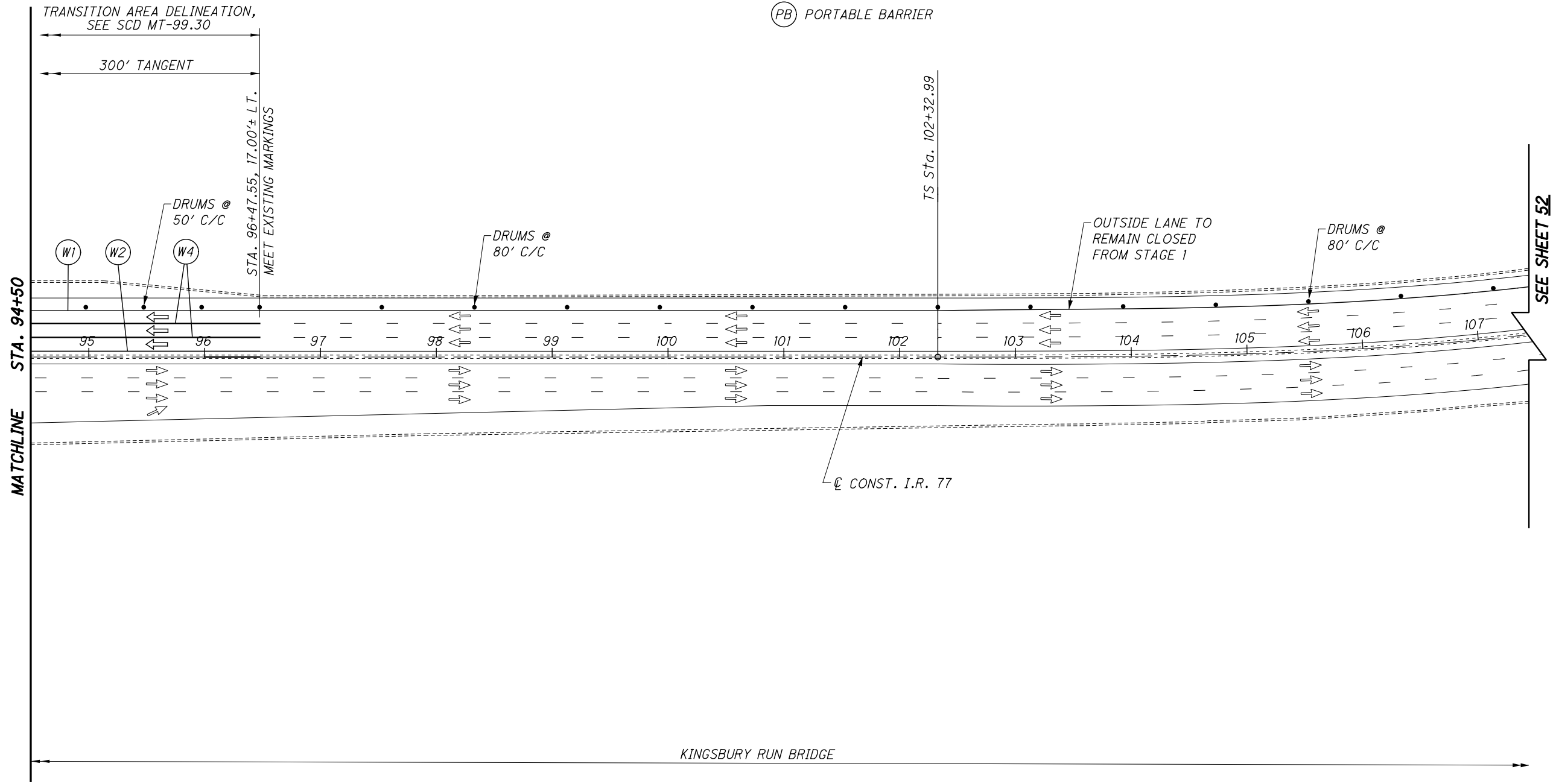
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

**MAINTENANCE OF TRAFFIC PLAN
PART-WIDTH CONSTRUCTION - PHASE 2A**

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WORK ZONE MARKING LEGEND

- (W1) WORK ZONE EDGE LINE (WHITE) CLASS I
- (W2) WORK ZONE EDGE LINE (YELLOW) CLASS I
- (W3) WORK ZONE LANE LINE, CLASS I
- (W4) WORK ZONE CHANNELIZING LINE, CLASS I
- (W5) WORK ZONE DOTTED LINE, CLASS I
- (PB) PORTABLE BARRIER

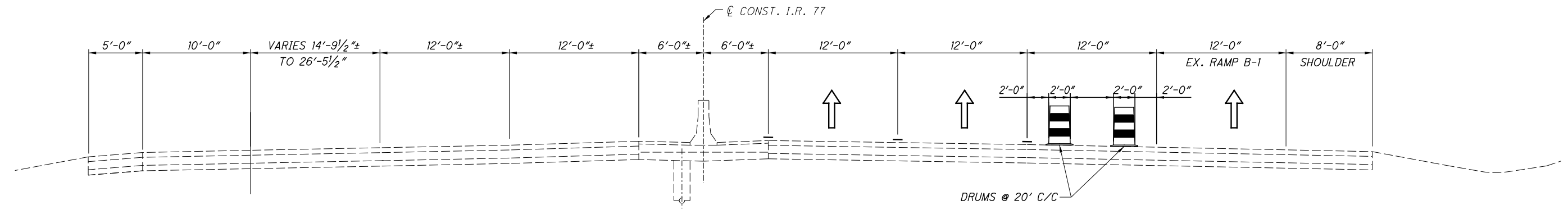
- LEGEND**
-  PHASE 2A CONSTRUCTION
 -  TRAFFIC DIRECTION

CALCULATED MAF CHECKED TJF

0 50 100
25
HORIZONTAL SCALE IN FEET

**MAINTENANCE OF TRAFFIC PLAN
PART-WIDTH CONSTRUCTION - PHASE 2A**

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\13567myc.dgn 12/14/2016 11:33:05 AM DonHelman

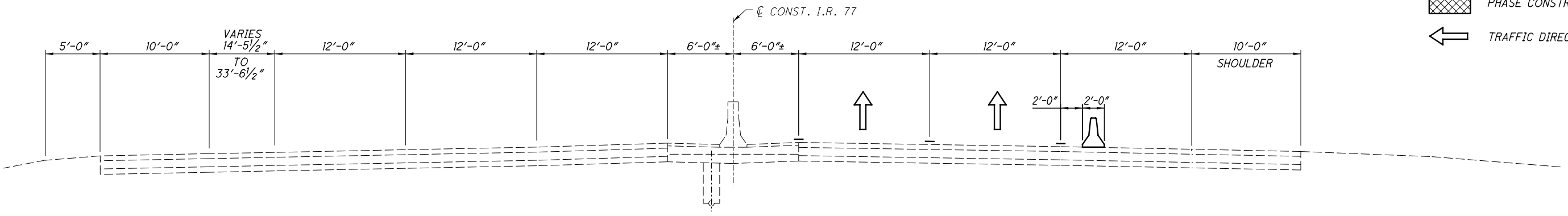


MOT TYPICAL SECTION A-A

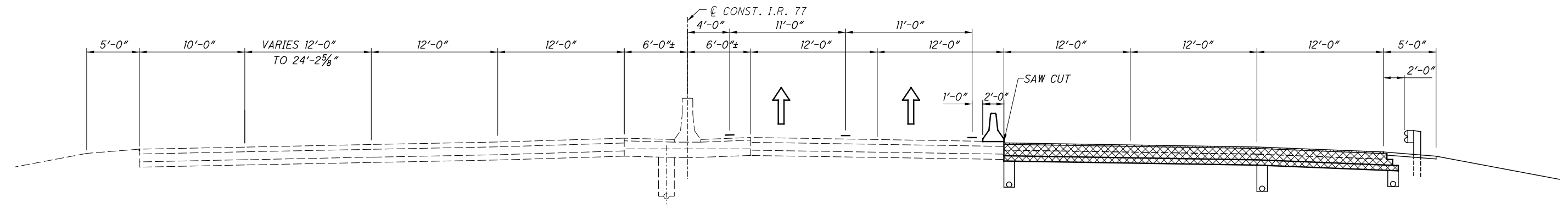
NOTES:
1. VARIES THROUGH EXIT RAMP LIMITS

LEGEND

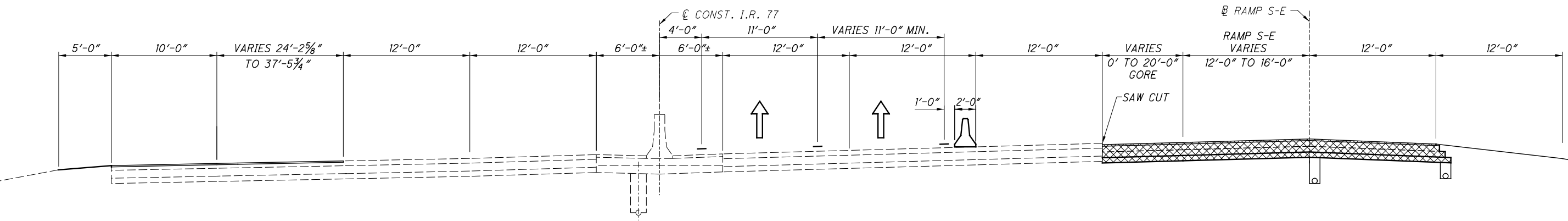
- PHASE CONSTRUCTION
- TRAFFIC DIRECTION



MOT TYPICAL SECTION B-B



MOT TYPICAL SECTION C-C

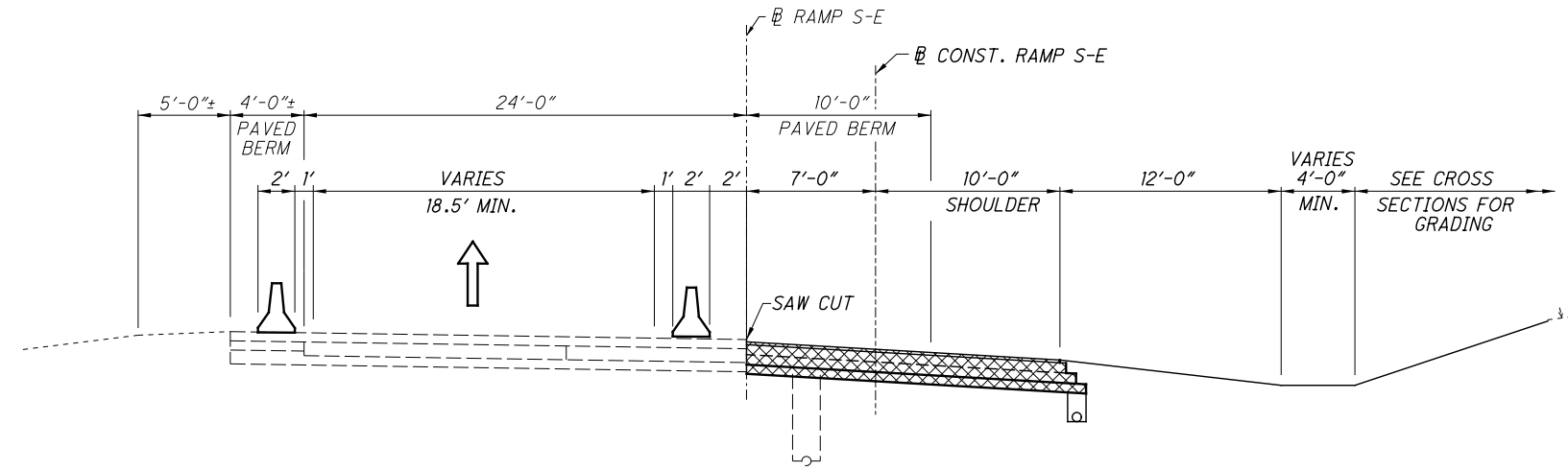


MOT TYPICAL SECTION D-D

MAINTENANCE OF TRAFFIC - TYPICAL SECTIONS
PART-WIDTH CONSTRUCTION - PHASE 2B

CUY-77-14.35

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


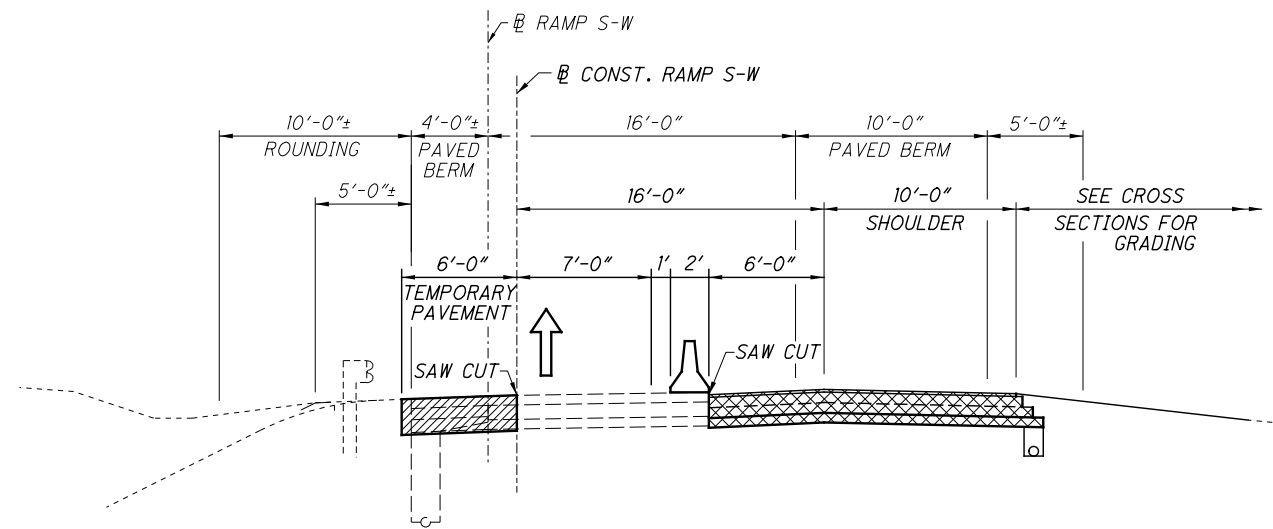
MOT TYPICAL SECTION X-X
 I.R. 77 TO I.R. 490 RAMP S-E
 STA. 164+56.99 TO STA. 170+50.00 = 593.01 FT.

RAMP S-E LANE TABLE

STA. 164+56.99 TO STA. 165+57.00; 16'-0" WIDE
 STA. 165+57.00 TO STA. 169+74.07; 16'-0" WIDE TO 52'-0" WIDE
 STA. 169+74.07 TO STA. 170+50.00; 24'-0" WIDE

LEGEND

-  PHASE CONSTRUCTION
-  ITEM 615 - PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A*
-  TRAFFIC DIRECTION



MOT TYPICAL SECTION Y-Y
 I.R. 77 TO I.R. 490 RAMP S-W
 STA. 269+76.23 TO STA. 274+00.00 = 423.77 FT.

*** ITEM 615 - TEMPORARY PAVEMENT EARTHWORK**

EARTHWORK REQUIRED FOR THE CONSTRUCTION OF 615 PAVEMENT FOR MAINTAINING TRAFFIC ALONG RAMP S-W HAS BEEN SHOWN AND ESTIMATED FOR INFORMATIONAL PURPOSES ONLY.

THIS PAVEMENT WILL BE REMOVED WHEN NO LONGER NEEDED FOR M.O.T. OPERATIONS. THE AFFECTED AREAS SHALL BE RETURNED TO ORIGINAL CONDITIONS.

ALL M.O.T. PAVEMENT EXCAVATION SHALL BE CONSTRUCTED IN ACCORDANCE WITH ITEM 615.03 OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS UNLESS OTHERWISE NOTED.

EARTHWORK FOR MAINTAINING TRAFFIC




THE FOLLOWING QUANTITIES HAVE BEEN INCLUDED IN THE PLAN FOR INFORMATION ONLY;







EXCAVATION FOR MAINTAINING TRAFFIC 102 CU. YD.

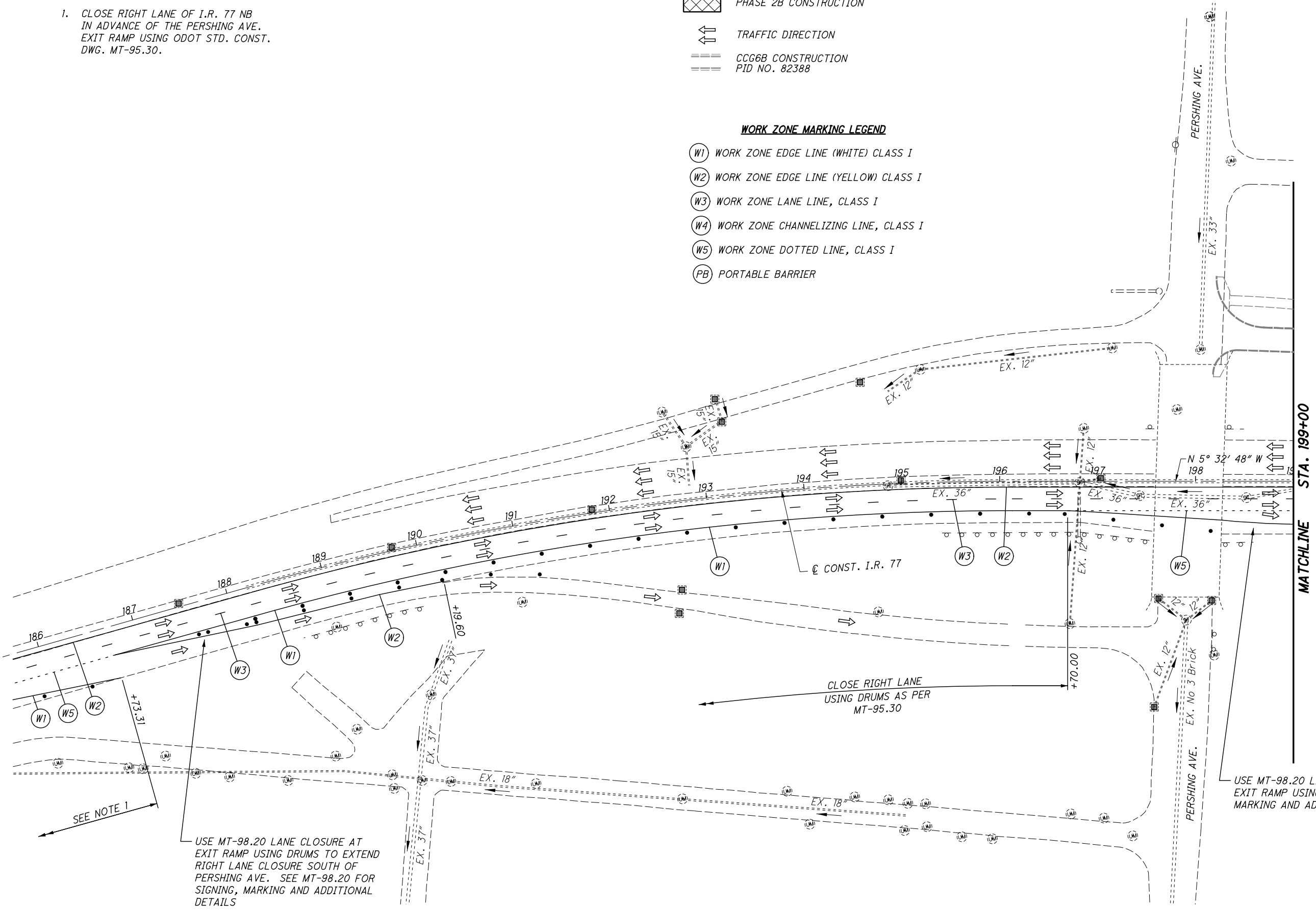
EMBANKMENT FOR MAINTAINING TRAFFIC 102 CU. YD.

NOTES:

1. CLOSE RIGHT LANE OF I.R. 77 NB IN ADVANCE OF THE PERSHING AVE. EXIT RAMP USING ODOT STD. CONST. DWG. MT-95.30.

- LEGEND**
-  PHASE 2B CONSTRUCTION
 -  TRAFFIC DIRECTION
 -  CCG6B CONSTRUCTION
PID NO. 82388

- WORK ZONE MARKING LEGEND**
-  W1 WORK ZONE EDGE LINE (WHITE) CLASS I
 -  W2 WORK ZONE EDGE LINE (YELLOW) CLASS I
 -  W3 WORK ZONE LANE LINE, CLASS I
 -  W4 WORK ZONE CHANNELIZING LINE, CLASS I
 -  W5 WORK ZONE DOTTED LINE, CLASS I
 -  PB PORTABLE BARRIER







 CALCULATED MAF TJF

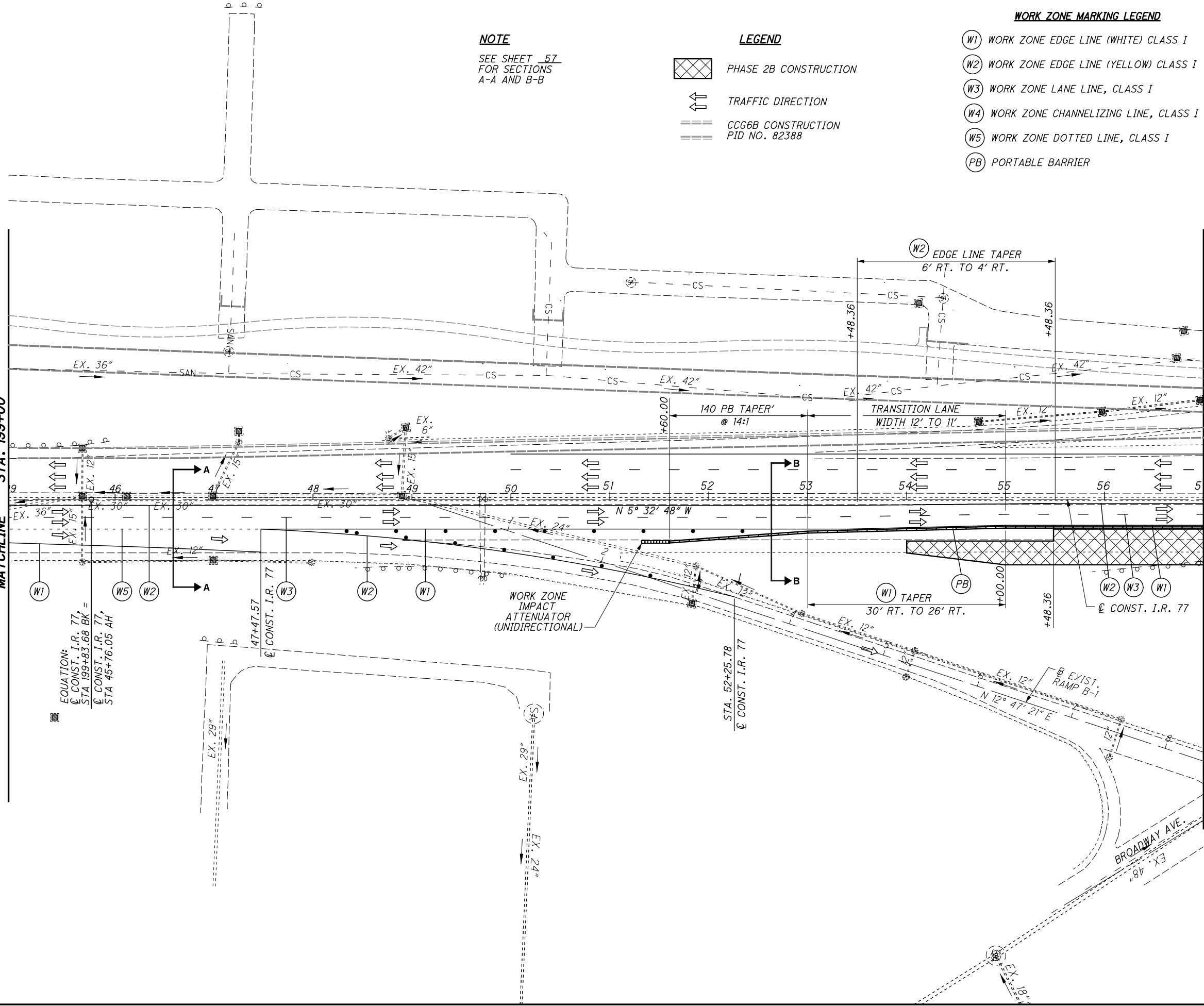
MAINTENANCE OF TRAFFIC PLAN
PART-WIDTH CONSTRUCTION - PHASE 2B

CUY-77-14.35

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\13567mph_phase2B.dgn 12/14/2016 11:34:24 AM DonHelman

MATCHLINE STA. 199+00

MATCHLINE STA. 57+00



NOTE

SEE SHEET 57 FOR SECTIONS A-A AND B-B

LEGEND

- PHASE 2B CONSTRUCTION
- TRAFFIC DIRECTION
- CCG6B CONSTRUCTION
- PID NO. 82388

WORK ZONE MARKING LEGEND

- (W1) WORK ZONE EDGE LINE (WHITE) CLASS I
- (W2) WORK ZONE EDGE LINE (YELLOW) CLASS I
- (W3) WORK ZONE LANE LINE, CLASS I
- (W4) WORK ZONE CHANNELIZING LINE, CLASS I
- (W5) WORK ZONE DOTTED LINE, CLASS I
- (PB) PORTABLE BARRIER

EQUATION:
 C CONST. I.R. 77,
 STA 199+83.68 BK =
 C CONST. I.R. 77,
 STA 45+76.05 AH

147+47.57
 C CONST. I.R. 77

STA. 52+25.78
 C CONST. I.R. 77

WORK ZONE
 IMPACT
 ATTENUATOR
 (UNIDIRECTIONAL)

(W1) TAPER
 30' RT. TO 26' RT.

140 PB TAPER'
 @ 14:1

TRANSITION LANE
 WIDTH 12' TO 11'

(W2) EDGE LINE TAPER
 6' RT. TO 4' RT.

B EXIST.
 RAMP B-1
 N 12° 47' 21" E

BROADWAY AVE.
 EX. 48"



**MAINTENANCE OF TRAFFIC PLAN
 PART-WIDTH CONSTRUCTION - PHASE 2B**

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**MAINTENANCE OF TRAFFIC PLAN
PART-WIDTH CONSTRUCTION - PHASE 2B**

CUY-77-14.35
61
365

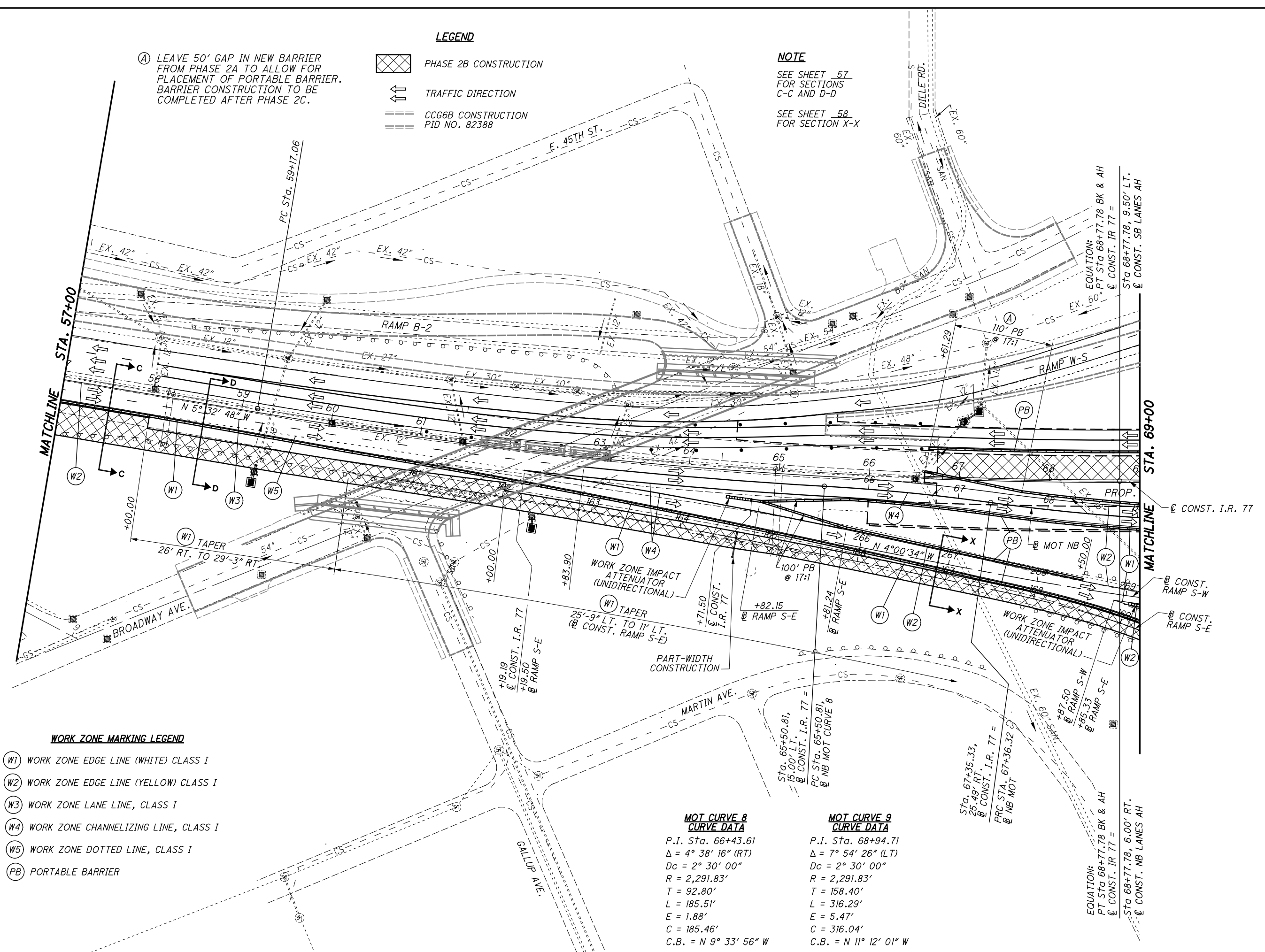
LEGEND

- PHASE 2B CONSTRUCTION
- TRAFFIC DIRECTION
- CCG6B CONSTRUCTION
- PID NO. 82388

(A) LEAVE 50' GAP IN NEW BARRIER FROM PHASE 2A TO ALLOW FOR PLACEMENT OF PORTABLE BARRIER. BARRIER CONSTRUCTION TO BE COMPLETED AFTER PHASE 2C.

NOTE

SEE SHEET 57 FOR SECTIONS C-C AND D-D
SEE SHEET 58 FOR SECTION X-X



WORK ZONE MARKING LEGEND

- (W1) WORK ZONE EDGE LINE (WHITE) CLASS I
- (W2) WORK ZONE EDGE LINE (YELLOW) CLASS I
- (W3) WORK ZONE LANE LINE, CLASS I
- (W4) WORK ZONE CHANNELIZING LINE, CLASS I
- (W5) WORK ZONE DOTTED LINE, CLASS I
- (PB) PORTABLE BARRIER

**MOT CURVE 8
CURVE DATA**

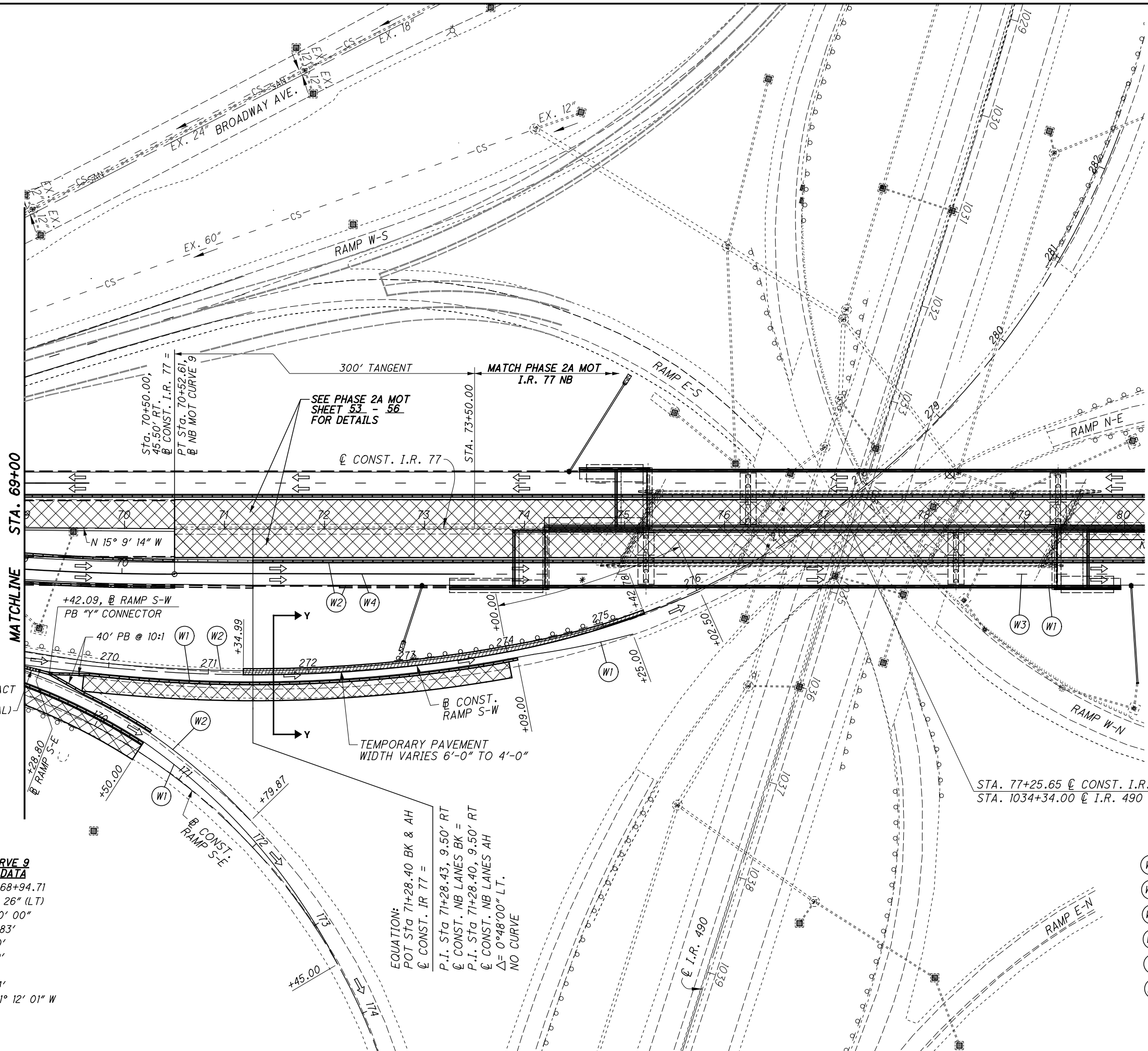
P.I. Sta. 66+43.61
 $\Delta = 4^\circ 38' 16''$ (RT)
 $Dc = 2^\circ 30' 00''$
 $R = 2,291.83'$
 $T = 92.80'$
 $L = 185.51'$
 $E = 1.88'$
 $C = 185.46'$
 $C.B. = N 9^\circ 33' 56'' W$

**MOT CURVE 9
CURVE DATA**





P.I. Sta. 68+94.71
 $\Delta = 7^\circ 54' 26''$ (LT)
 $Dc = 2^\circ 30' 00''$
 $R = 2,291.83'$
 $T = 158.40'$
 $L = 316.29'$
 $E = 5.47'$
 $C = 316.04'$
 $C.B. = N 11^\circ 12' 01'' W$

EQUATION:
 PT Sta 68+77.78 BK & AH
 $\text{CONST. IR } 77 =$
 Sta 68+77.78, 6.00' RT.
 $\text{CONST. NB LANES AH}$

EQUATION:
 PT Sta 68+77.78 BK & AH
 $\text{CONST. IR } 77 =$
 Sta 68+77.78, 9.50' LT.
 $\text{CONST. SB LANES AH}$









LEGEND

-  PHASE 2 CONSTRUCTION
-  ITEM 615 - PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A
-  TRAFFIC DIRECTION
-  CCG6B CONSTRUCTION PID NO. 82388

NOTE

SEE SHEET 58 FOR SECTION Y-Y

WORK ZONE MARKING LEGEND

-  W1 WORK ZONE EDGE LINE (WHITE) CLASS I
-  W2 WORK ZONE EDGE LINE (YELLOW) CLASS I
-  W3 WORK ZONE LANE LINE, CLASS I
-  W4 WORK ZONE CHANNELIZING LINE, CLASS I
-  W5 WORK ZONE DOTTED LINE, CLASS I
-  PB PORTABLE BARRIER

**MOT CURVE 9
CURVE DATA**

P.I. Sta. 68+94.71
 $\Delta = 7^\circ 54' 26''$ (LT)
 $D_c = 2^\circ 30' 00''$
 $R = 2,291.83'$
 $T = 158.40'$
 $L = 316.29'$
 $E = 5.47'$
 $C = 316.04'$
 C.B. = $N 11^\circ 12' 01'' W$

EQUATION:
 POT Sta 71+28.40 BK & AH
 @ CONST. I.R. 77 =
 P.I. Sta 71+28.43, 9.50' RT
 @ CONST. NB LANES BK =
 P.I. Sta 71+28.40, 9.50' RT
 @ CONST. NB LANES AH
 $\Delta = 0^\circ 48' 00''$ LT.
 NO CURVE

STA. 77+25.65 @ CONST. I.R. 77 =
 STA. 1034+34.00 @ I.R. 490

300' TANGENT
 MATCH PHASE 2A MOT
 I.R. 77 NB

SEE PHASE 2A MOT
 SHEET 53 - 56
 FOR DETAILS

MATCHLINE STA. 69+00

WORK ZONE IMPACT
 ATTENUATOR
 (UNIDIRECTIONAL)

+42.09, @ RAMP S-W
 PB "Y" CONNECTOR

40' PB @ 10:1

TEMPORARY PAVEMENT
 WIDTH VARIES 6'-0" TO 4'-0"

@ CONST.
 RAMP S-W

RAMP E-N

RAMP W-N

@ I.R. 490

RAMP W-S

RAMP E-S

RAMP N-E

EX. 60"

EX. 12"

EX. 24"

Sta. 70+50.00,
 45.50' RT.
 @ CONST. I.R. 77 =
 PT Sta. 70+52.61,
 @ NB MOT CURVE 9

$N 15^\circ 9' 14'' W$

+34.99

+50.00

+79.87

+45.00

+00.00

+09.00

+25.00

+02.50

EX. 12"

EX. 12"

EX. 12"

EX. 12"

EX. 12"

EX. 12"

EX. 12"

EX. 12"

EX. 12"

EX. 12"

EX. 12"

EX. 12"

EX. 12"

EX. 12"

EX. 12"

EX. 12"

EX. 12"

EX. 12"

EX. 12"

EX. 12"

EX. 12"

EX. 12"

EX. 12"

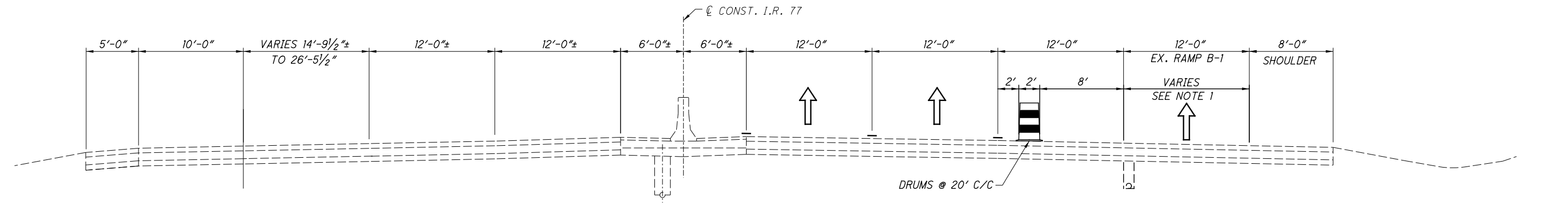
EX. 12"

EX. 12"

EX. 12"

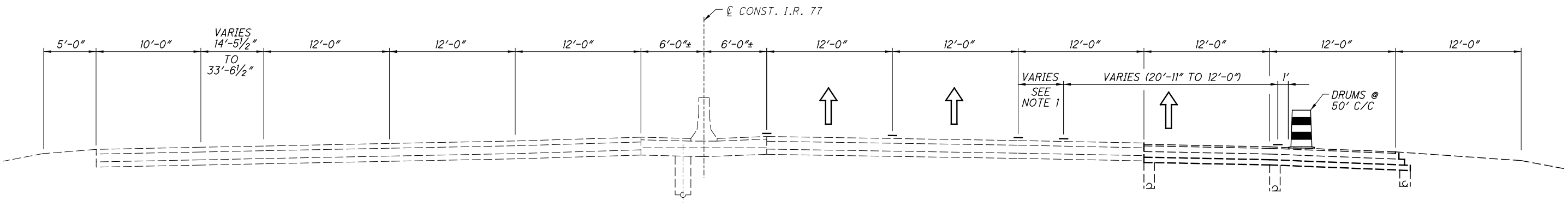
EX. 12"

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\13567.mye.dgn 12/14/2016 11:37:28 AM DonHelman

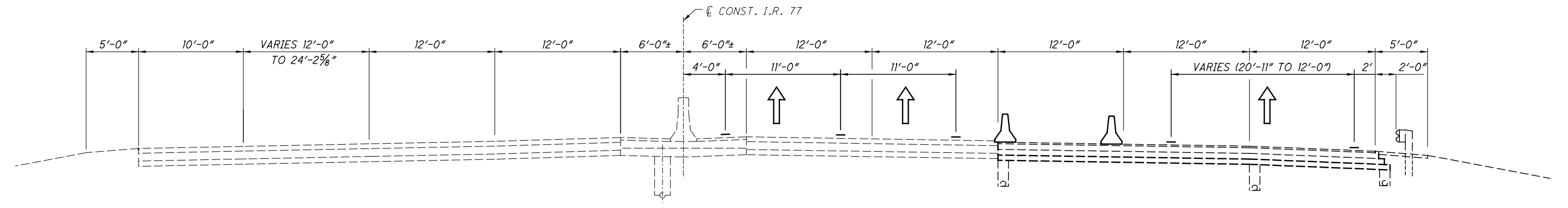


MOT TYPICAL SECTION A-A

NOTES:
1. VARIES THROUGH EXIT RAMP LIMITS





MOT TYPICAL SECTION B-B

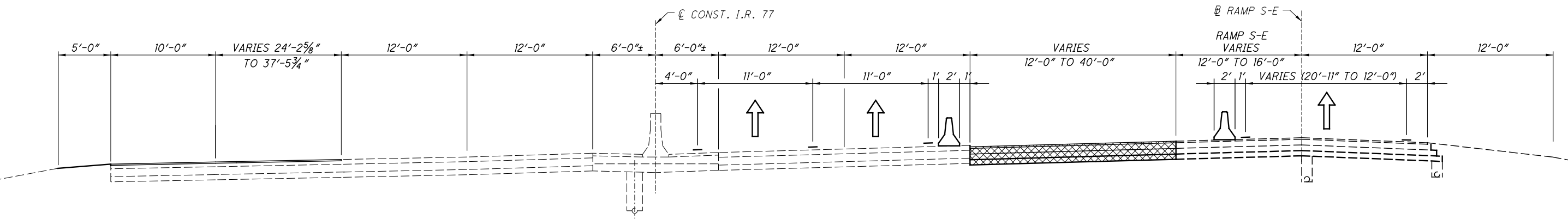


MOT TYPICAL SECTION C-C

LEGEND

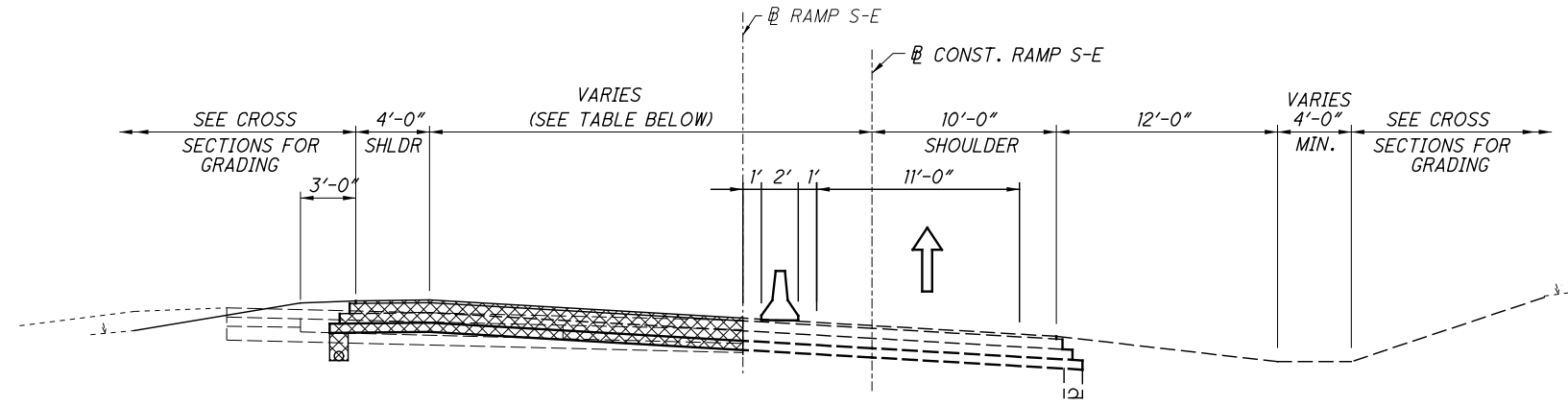
 PHASE CONSTRUCTION

 TRAFFIC DIRECTION



MOT TYPICAL SECTION D-D

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\13567myf.dgn 12/14/2016 11:38:04 AM DonHelman





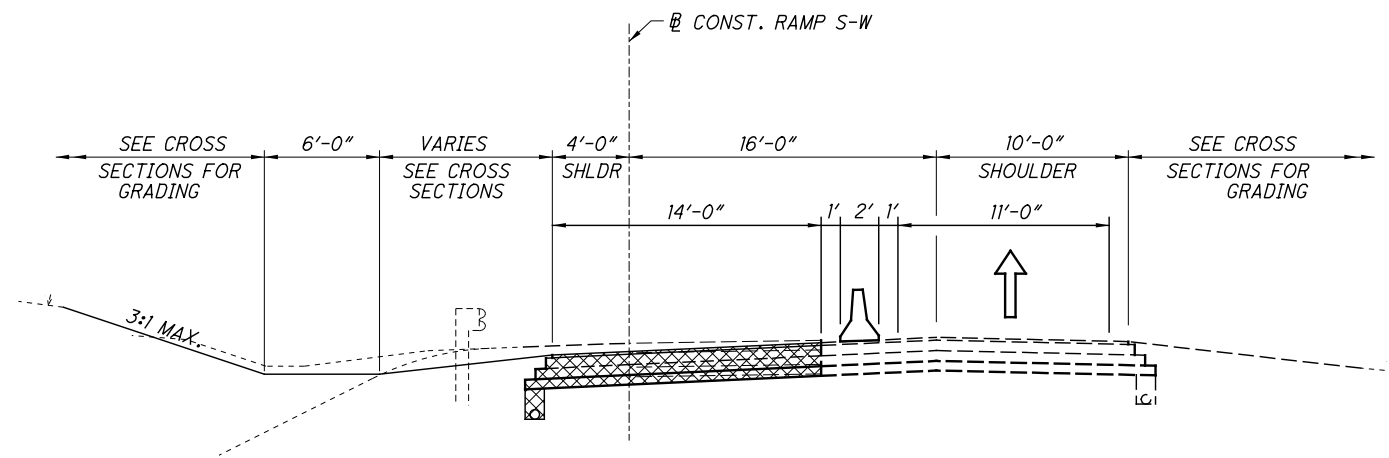
MOT TYPICAL SECTION X-X
I.R. 77 TO I.R. 490 RAMP S-E
STA. 164+56.99 TO STA. 170+50.00 = 593.01 FT.

RAMP S-E LANE TABLE

STA. 164+56.99 TO STA. 165+57.00; 16'-0" WIDE
STA. 165+57.00 TO STA. 169+74.07; 16'-0" WIDE TO 52'-0" WIDE
STA. 169+74.07 TO STA. 170+50.00; 24'-0" WIDE

LEGEND

-  PHASE CONSTRUCTION
-  TRAFFIC DIRECTION






MOT TYPICAL SECTION Y-Y
I.R. 77 TO I.R. 490 RAMP S-W
STA. 269+76.23 TO STA. 274+00.00 = 423.77 FT.







NOTES:

1. CLOSE RIGHT LANE OF I.R. 77 NB IN ADVANCE OF THE PERSHING AVE. EXIT RAMP USING ODOT STD. CONST. DWG. MT-95.30.

LEGEND

-  PHASE 2C CONSTRUCTION
-  TRAFFIC DIRECTION
-  CCG6B CONSTRUCTION
PID NO. 82388

WORK ZONE MARKING LEGEND

-  W1 WORK ZONE EDGE LINE (WHITE) CLASS I
-  W2 WORK ZONE EDGE LINE (YELLOW) CLASS I
-  W3 WORK ZONE LANE LINE, CLASS I
-  W4 WORK ZONE CHANNELIZING LINE, CLASS I
-  W5 WORK ZONE DOTTED LINE, CLASS I
-  PB PORTABLE BARRIER

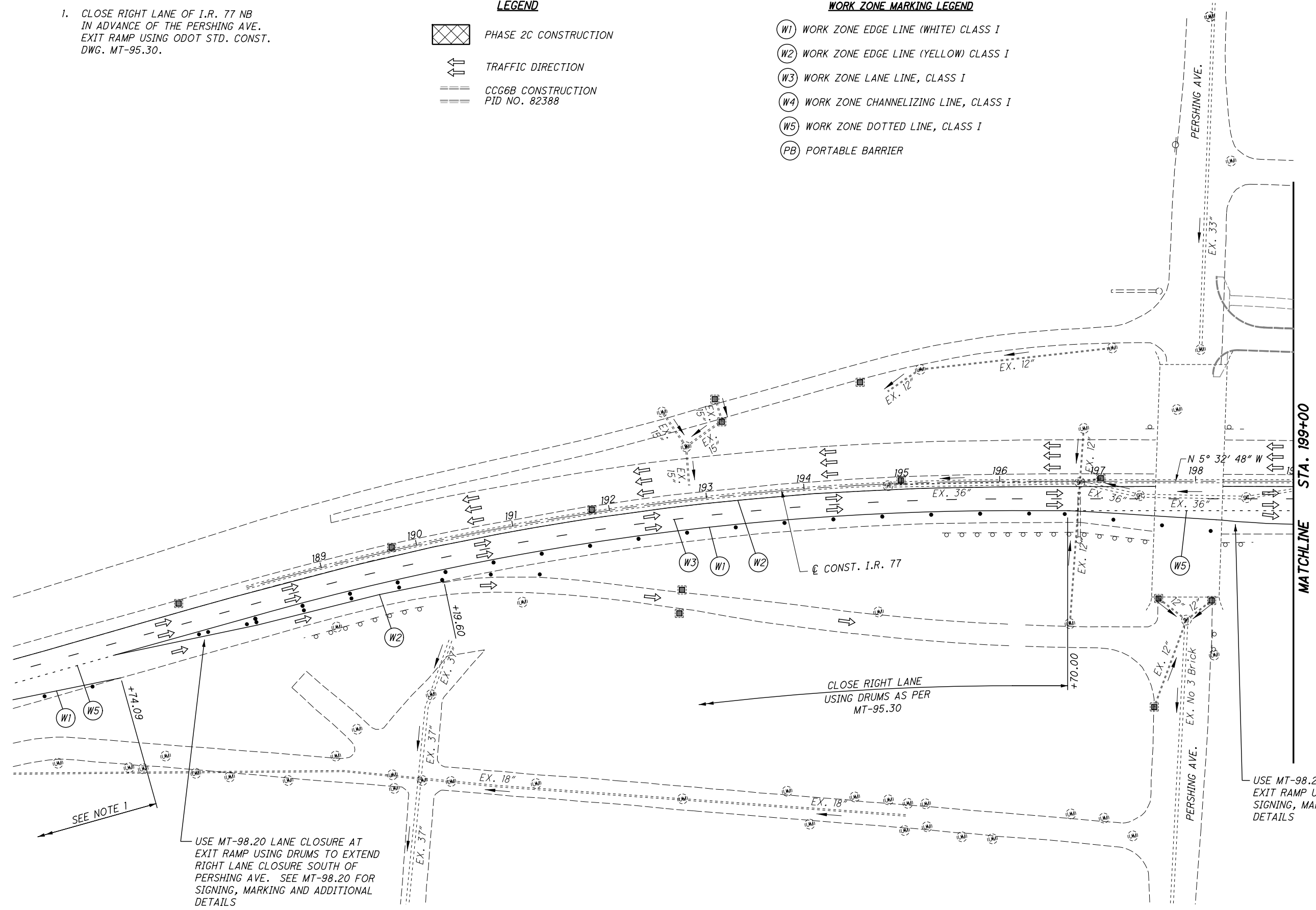


CALCULATED	MAF
CHECKED	TJF

**MAINTENANCE OF TRAFFIC PLAN
PART-WIDTH CONSTRUCTION - PHASE 2C**

CUY-77-14.35

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SEE NOTE 1

USE MT-98.20 LANE CLOSURE AT EXIT RAMP USING DRUMS TO EXTEND RIGHT LANE CLOSURE SOUTH OF PERSHING AVE. SEE MT-98.20 FOR SIGNING, MARKING AND ADDITIONAL DETAILS

CLOSE RIGHT LANE USING DRUMS AS PER MT-95.30

USE MT-98.20 LANE CLOSURE AT EXIT RAMP USING DRUMS FOR SIGNING, MARKING AND ADDITIONAL DETAILS

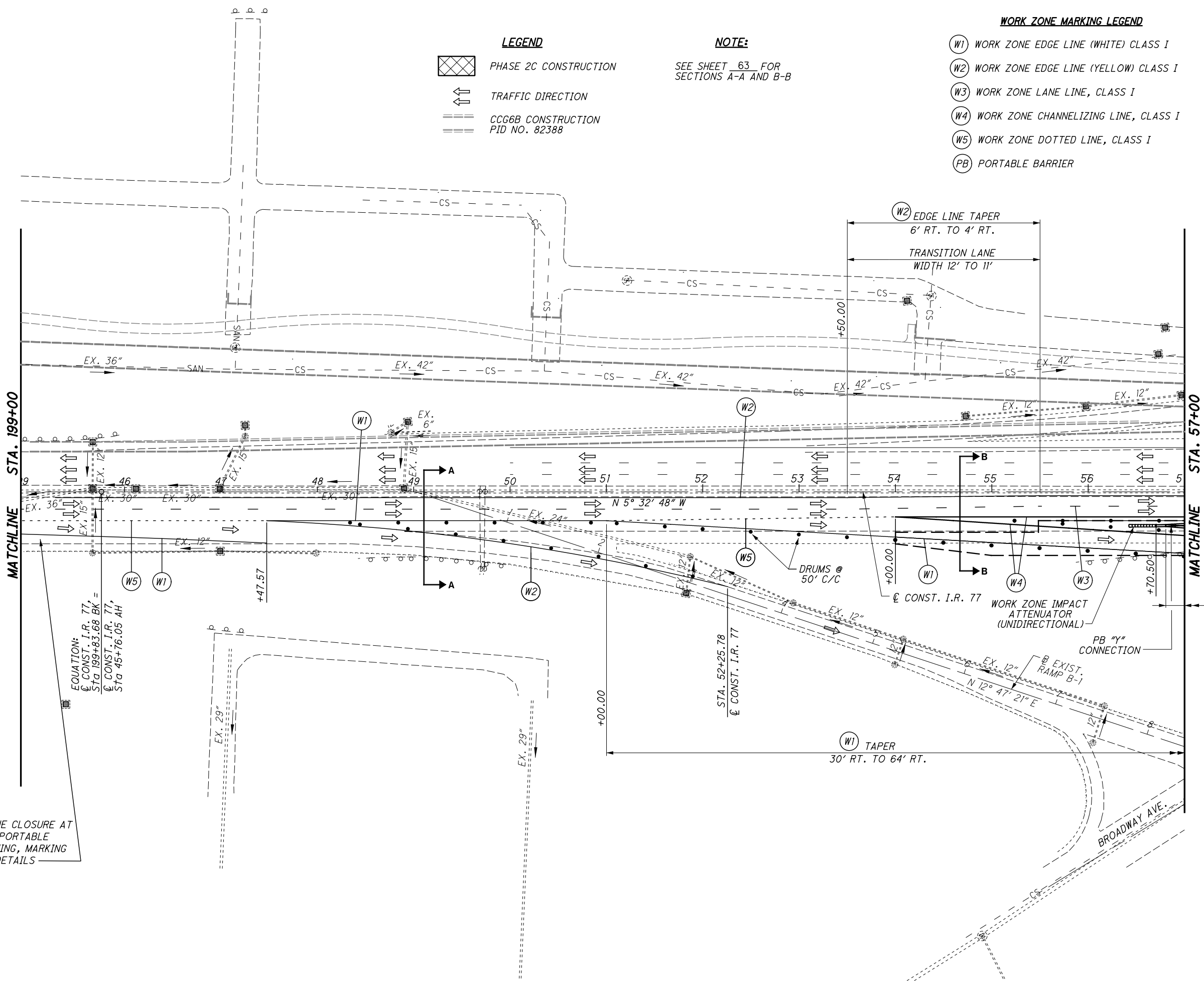
MATCHLINE STA. 199+00

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Roadway\Sheets\13567\mmpm_phase2C.dgn 12/14/2016 11:39:32 AM DonHelman

CALCULATED MAF CHECKED TJF

0 50 100
25
HORIZONTAL SCALE IN FEET

**MAINTENANCE OF TRAFFIC PLAN
PART-WIDTH CONSTRUCTION - PHASE 2C**



LEGEND

- PHASE 2C CONSTRUCTION
- TRAFFIC DIRECTION
- CCG6B CONSTRUCTION
- PID NO. 82388

NOTE:

SEE SHEET 63 FOR SECTIONS A-A AND B-B

WORK ZONE MARKING LEGEND

- (W1) WORK ZONE EDGE LINE (WHITE) CLASS I
- (W2) WORK ZONE EDGE LINE (YELLOW) CLASS I
- (W3) WORK ZONE LANE LINE, CLASS I
- (W4) WORK ZONE CHANNELIZING LINE, CLASS I
- (W5) WORK ZONE DOTTED LINE, CLASS I
- (PB) PORTABLE BARRIER

EQUATION:
 C CONST. I.R. 77,
 Sta 199+83.68 BK =
 C CONST. I.R. 77,
 Sta 45+76.05 AH

USE MT-98.20 LANE CLOSURE AT EXIT RAMP USING PORTABLE BARRIER FOR SIGNING, MARKING AND ADDITIONAL DETAILS

119 PB' TAPER @ 17:1

(W1) TAPER
30' RT. TO 64' RT.

(W2) EDGE LINE TAPER
6' RT. TO 4' RT.
TRANSITION LANE
WIDTH 12' TO 11'

WORK ZONE IMPACT ATTENUATOR (UNIDIRECTIONAL)

PB "Y" CONNECTION

B EXIST. RAMP B-1

BROADWAY AVE.

STA. 52+25.78
C CONST. I.R. 77

DRUMS @ 50' C/C

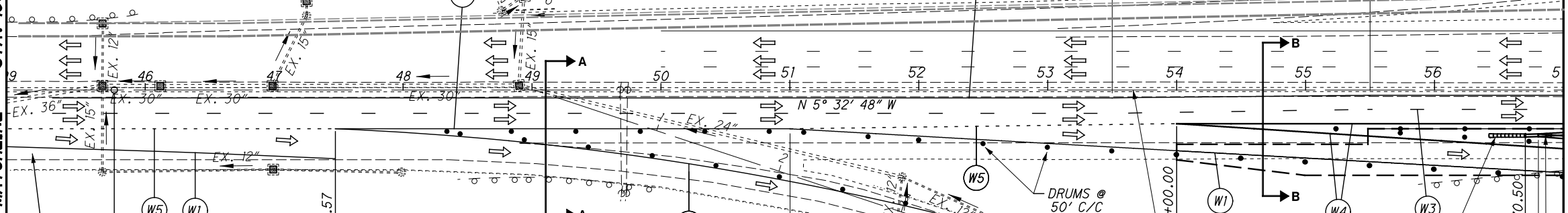
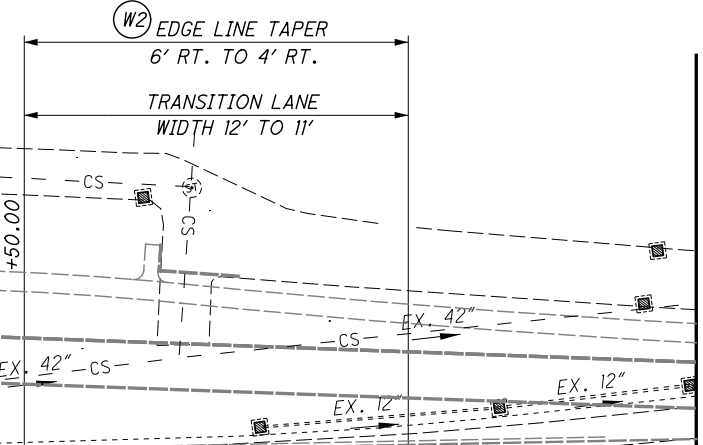
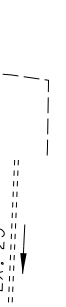
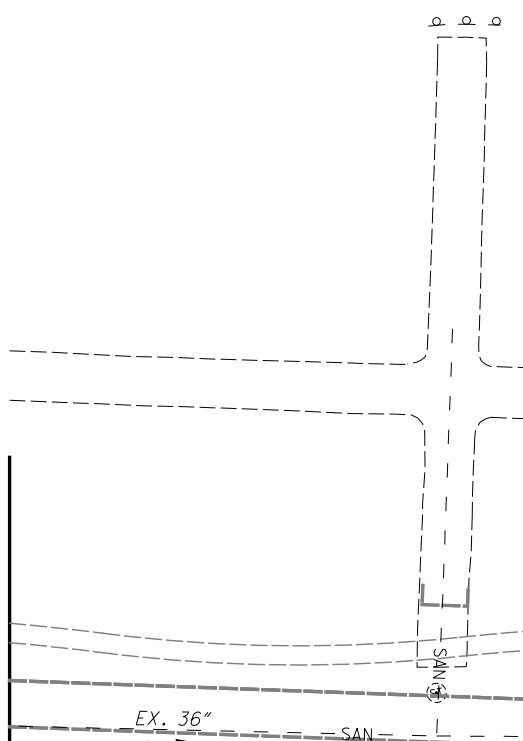
C CONST. I.R. 77

N 5° 32' 48" W

N 12° 47' 21" E


MATCHLINE STA. 199+00


MATCHLINE STA. 57+00



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LEGEND

 PHASE 2C-1 CONSTRUCTION
 AT THE BEGINNING OF PHASE 2C CONSTRUCTION,
 RAMP S-W FROM STATION 267+36.50 TO
 STATION 269+76.50 SHALL BE CLOSED OVER A
 LONG WEEKEND TO COMPLETE PROPOSED WORK.

 PHASE 2C CONSTRUCTION

 TRAFFIC DIRECTION

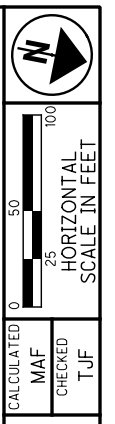
 CCG6B CONSTRUCTION
 PID NO. 82388

NOTE:

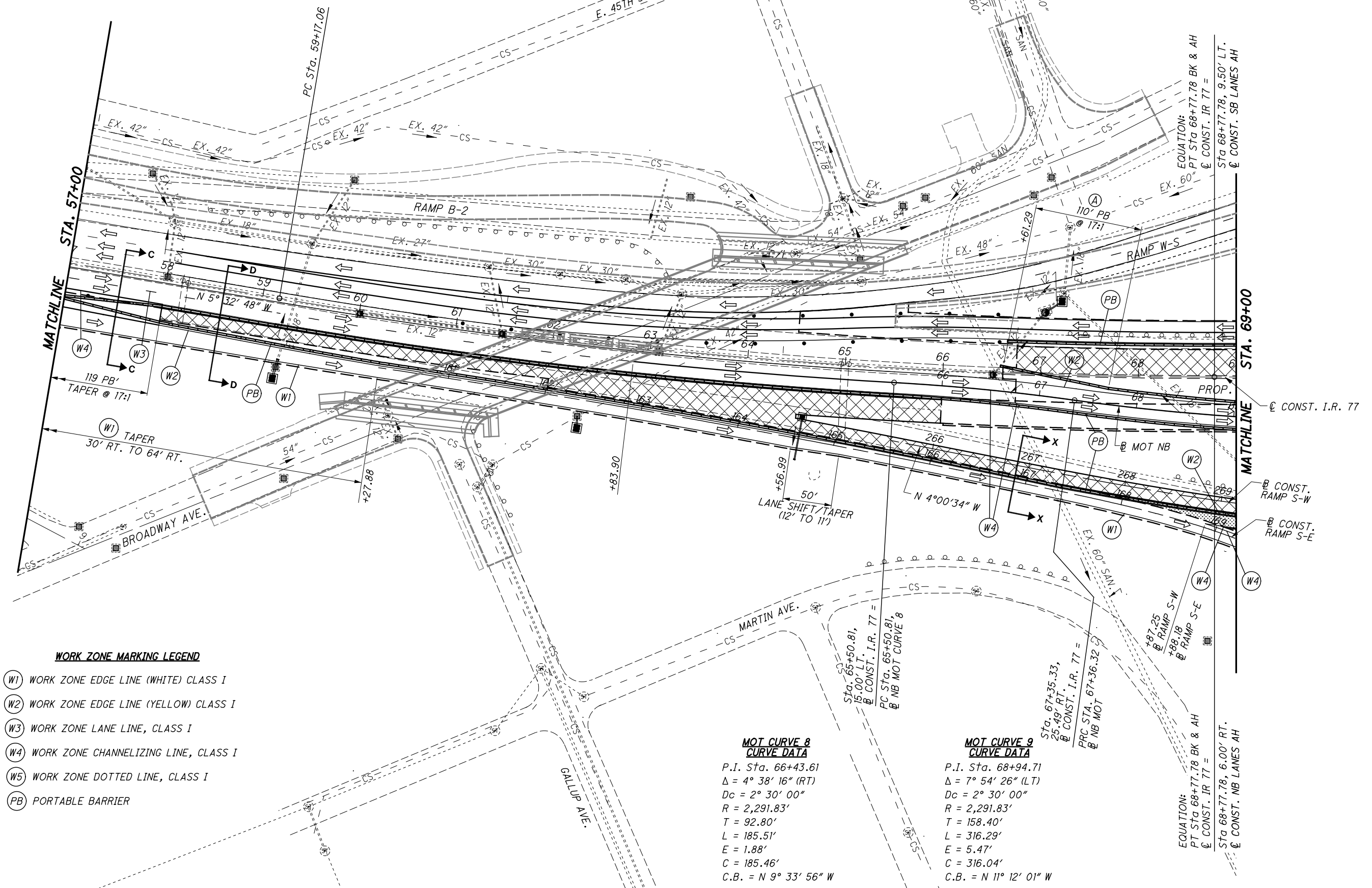
SEE SHEET 63 FOR
 SECTION C-C AND D-D

SEE SHEET 64 FOR
 SECTION X-X

(A) LEAVE 50' GAP IN NEW BARRIER
 FROM PHASE 2A TO ALLOW FOR
 PLACEMENT OF PORTABLE BARRIER.
 BARRIER CONSTRUCTION TO BE
 COMPLETED AFTER PHASE 2C.



**MAINTENANCE OF TRAFFIC PLAN
 PART-WIDTH CONSTRUCTION - PHASE 2C**



WORK ZONE MARKING LEGEND

(W1) WORK ZONE EDGE LINE (WHITE) CLASS I

(W2) WORK ZONE EDGE LINE (YELLOW) CLASS I

(W3) WORK ZONE LANE LINE, CLASS I

(W4) WORK ZONE CHANNELIZING LINE, CLASS I

(W5) WORK ZONE DOTTED LINE, CLASS I

(PB) PORTABLE BARRIER

**MOT CURVE 8
 CURVE DATA**

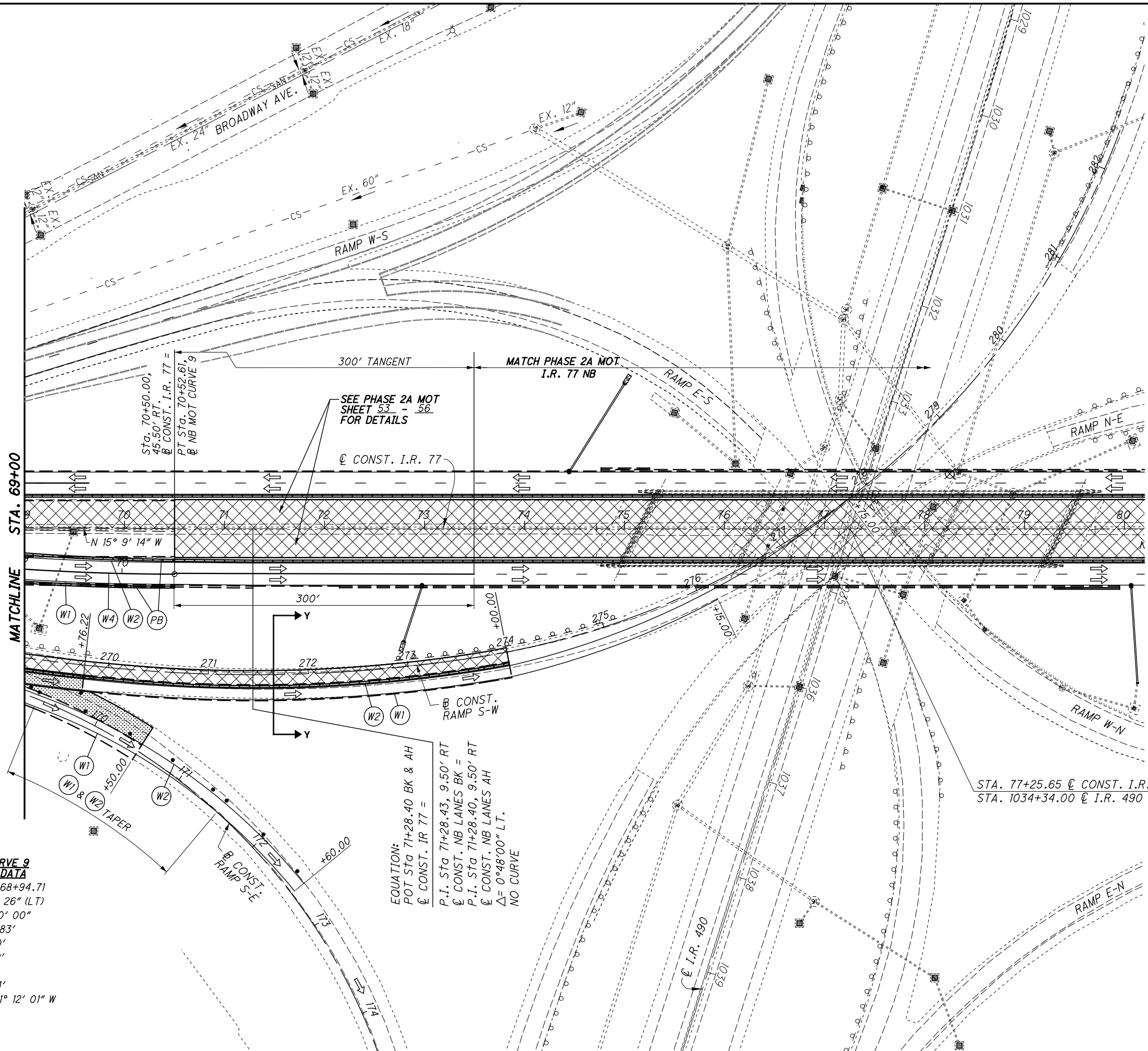
P.I. Sta. 66+43.61
 $\Delta = 4^\circ 38' 16''$ (RT)
 $Dc = 2^\circ 30' 00''$
 $R = 2,291.83'$
 $T = 92.80'$
 $L = 185.51'$
 $E = 1.88'$
 $C = 185.46'$
 $C.B. = N 9^\circ 33' 56'' W$

**MOT CURVE 9
 CURVE DATA**





P.I. Sta. 68+94.71
 $\Delta = 7^\circ 54' 26''$ (LT)
 $Dc = 2^\circ 30' 00''$
 $R = 2,291.83'$
 $T = 158.40'$
 $L = 316.29'$
 $E = 5.47'$
 $C = 316.04'$
 $C.B. = N 11^\circ 12' 01'' W$

EQUATION:
 PT Sta 68+77.78 BK & AH
 Q CONST. I.R. 77 =
 Sta 68+77.78, 6.00' RT.
 Q CONST. NB LANES AH

EQUATION:
 PT Sta 68+77.78 BK & AH
 Q CONST. I.R. 77 =
 Sta 68+77.78, 9.50' LT.
 Q CONST. SB LANES AH









LEGEND

-  PHASE 2C-1 CONSTRUCTION AT THE BEGINNING OF PHASE 2C CONSTRUCTION, RAMP S-W FROM STATION 267+36.50 TO STATION 269+76.50 SHALL BE CLOSED OVER A LONG WEEKEND TO COMPLETE PROPOSED WORK.
-  PHASE 2C CONSTRUCTION
-  TRAFFIC DIRECTION
-  CCG6B CONSTRUCTION PID NO. 82388

NOTE

SEE SHEET 64 FOR SECTION Y-Y

WORK ZONE MARKING LEGEND

-  WORK ZONE EDGE LINE (WHITE) CLASS I
-  WORK ZONE EDGE LINE (YELLOW) CLASS I
-  WORK ZONE LANE LINE, CLASS I
-  WORK ZONE CHANNELIZING LINE, CLASS I
-  WORK ZONE DOTTED LINE, CLASS I
-  PORTABLE BARRIER

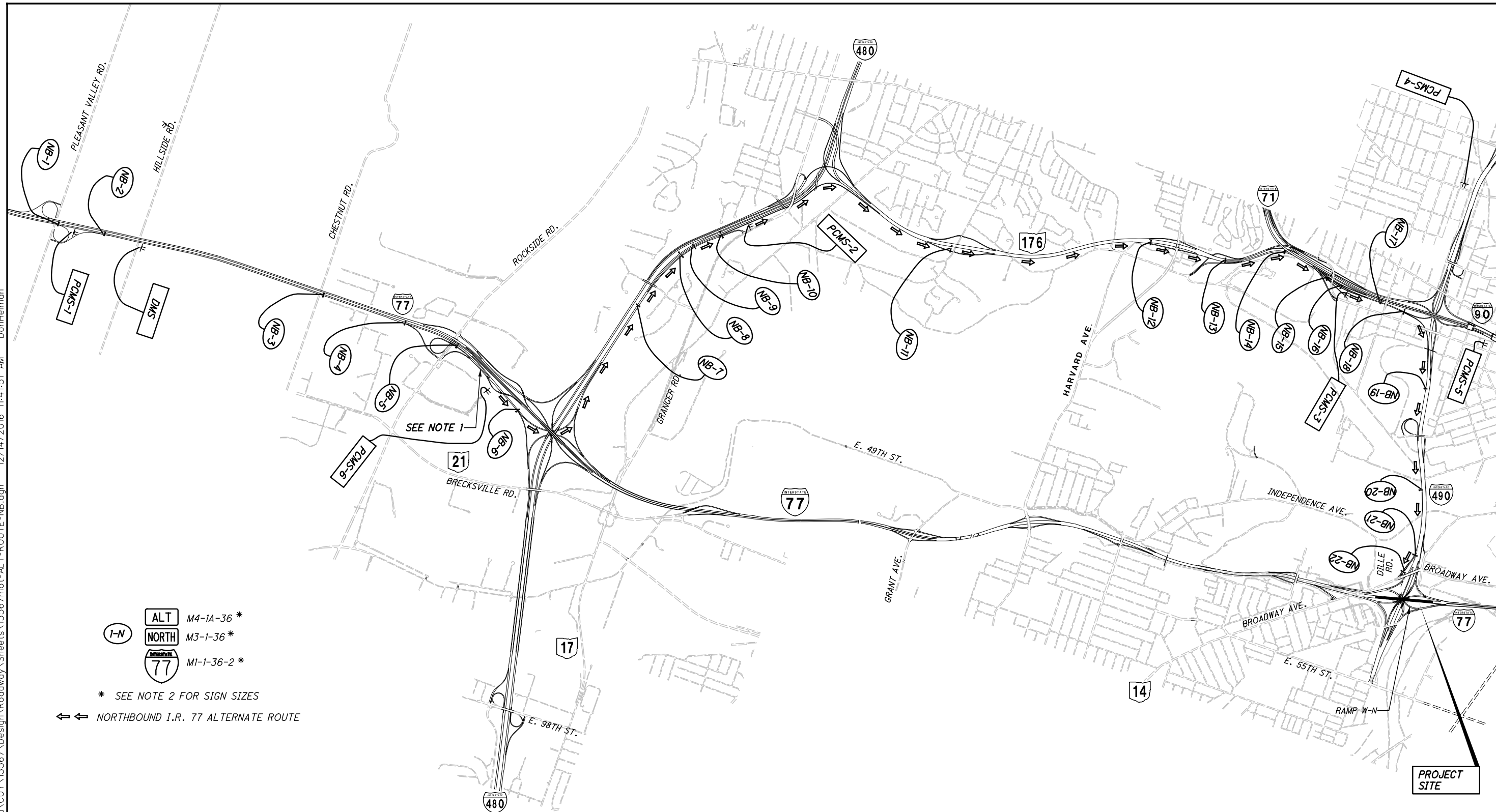
**MOT CURVE 9
 CURVE DATA**

P.I. Sta. 68+94.71
 $\Delta = 7^\circ 54' 26''$ (LT)
 $D_c = 2^\circ 30' 00''$
 $R = 2,291.83'$
 $T = 158.40'$
 $L = 316.29'$
 $E = 5.47'$
 $C = 316.04'$
 $C.B. = N 11^\circ 12' 01'' W$

EQUATION:
 POT Sta 71+28.40 BK & AH
 @ CONST. I.R. 77 =
 P.I. Sta 71+28.43, 9.50' RT
 @ CONST. NB LANES BK =
 P.I. Sta 71+28.40, 9.50' RT
 @ CONST. NB LANES AH
 $\Delta = 0^\circ 48' 00''$ LT.
 NO CURVE

STA. 77+25.65 @ CONST. I.R. 77 =
 STA. 1034+34.00 @ I.R. 490

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\mot-ALT-ROUTE-NB.dgn 12/14/2016 11:41:51 AM DonHelman



* SEE NOTE 2 FOR SIGN SIZES

← ← NORTHBOUND I.R. 77 ALTERNATE ROUTE

NOTES:

1. DURING OVERNIGHT AND WEEKEND CLOSURES ON I.R. 77 NB CLOSE I.R. 77 NB AT I.R. 480 PER SCD MT-99.50 AND CLOSE THE ENTRANCE RAMP FROM ROCKSIDE RD. TO I.R. 77 NB PER SCD MT-98.29.

2. ALTERNATE ROUTE SIGNS ON INTERSTATES SHALL BE 36" MINIMUM WITH APPROPRIATELY SIZED AUXILIARY SIGNS.

614 DETOUR SIGNING

ALL ALTERNATE ROUTE SIGNS SHOWN SHALL BE INCLUDED FOR PAYMENT IN LUMP SUM PRICE BID FOR ITEM 614 DETOUR SIGNING. ALL PERMITTED DETOUR CLOSURES SHALL BE INCLUDED IN THIS LUMP SUM ITEM AND NOT PAID FOR PER EACH CLOSURE PERIOD.

PORTABLE CHANGEABLE MESSAGE SIGNS RECOMMENDED MESSAGES WHEN RAMP W-N IS CLOSED

	77 NB ALTERNATE ROUTE		77 NB CLOSURE
	FLASH 1	FLASH 2	FLASH 1
PCMS-1	I-77 NB ROAD WORK	USE I-480 WEST	I-77 NB CLOSED
PCMS-2	I-77 NB	USE 176 NORTH	N/A
PCMS-3	I-490 CLOSED TO 77 NB	USE 90 EAST	N/A
PCMS-4	I-490 CLOSED TO 77 NB	USE 90 EAST	N/A
PCMS-5	ALT 77 TRAFFIC	USE EXIT 171	N/A
PCMS-6	I-77 NB ROAD WORK	USE I-480 WEST	N/A
DMS	ROAD WORK N I-77 AT I-490 USE ALT - I-480 WB		I-77 NB CLOSED AT I-490 USE ALT - I-480 WB

PORTABLE CHANGEABLE MESSAGE SIGNS RECOMMENDED MESSAGES WHEN RAMP W-N IS OPEN

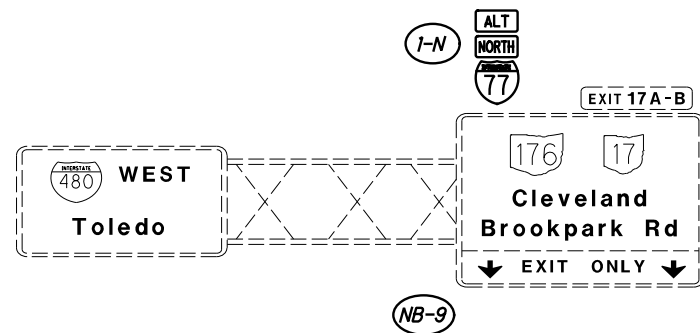
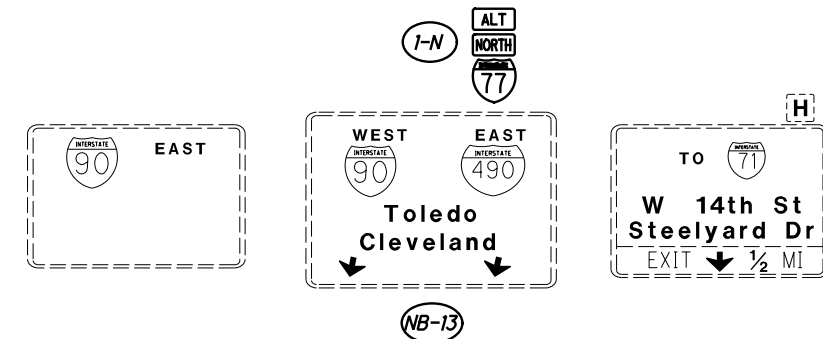
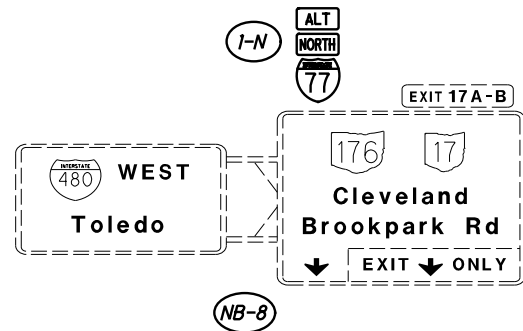
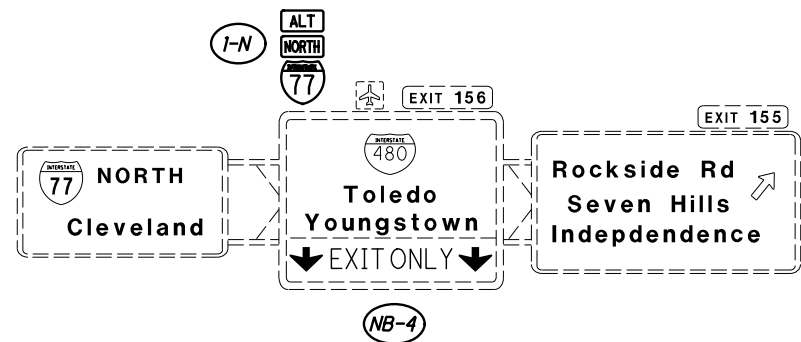
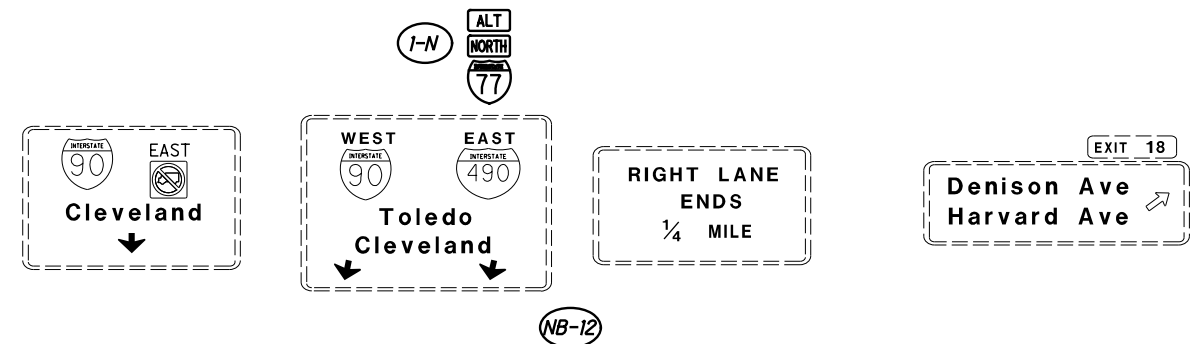
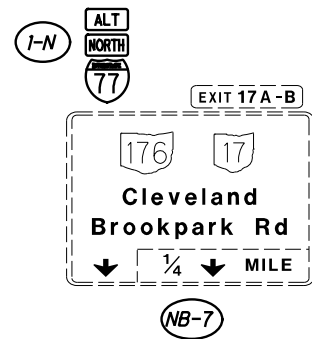
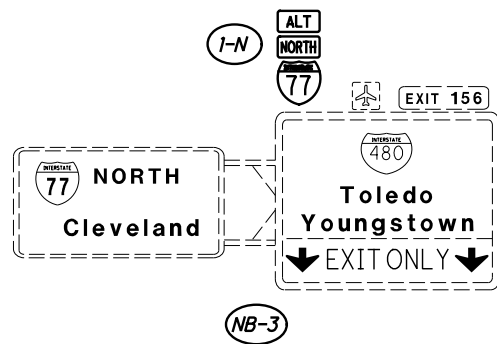
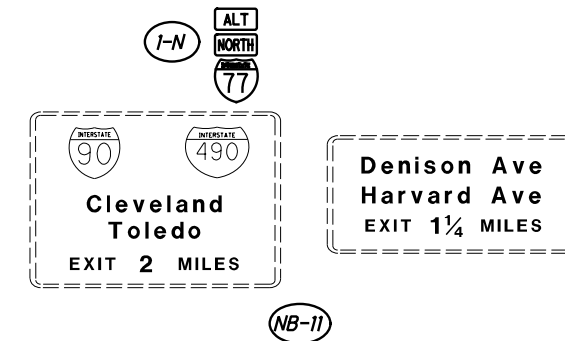
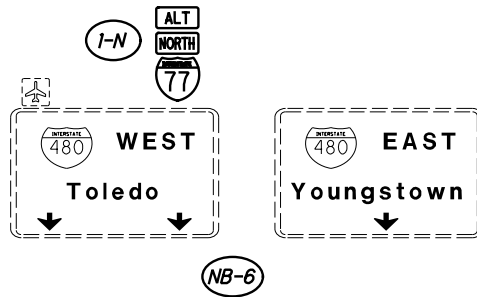
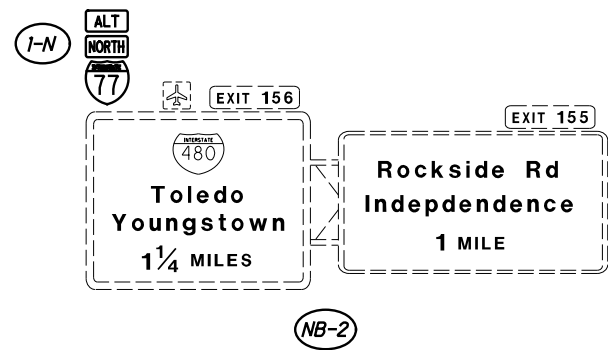
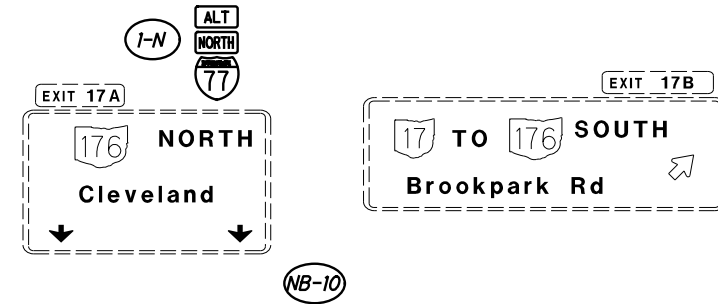
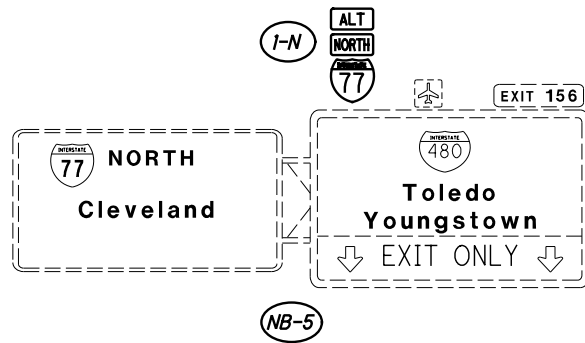
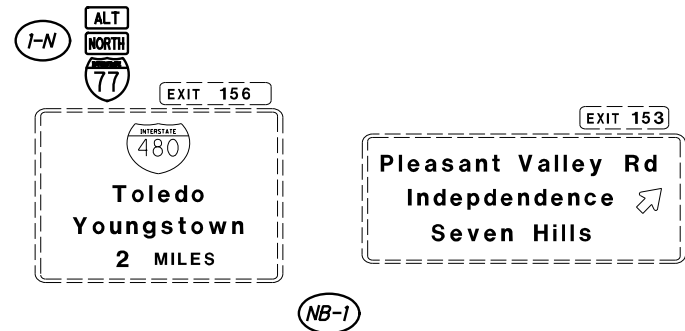
	77 NB ALTERNATE ROUTE		77 NB CLOSURE
	FLASH 1	FLASH 2	FLASH 1
PCMS-1	I-77 NB ROAD WORK	USE I-480 WEST	I-77 NB CLOSED
PCMS-2	I-77 NB	USE 176 NORTH	N/A
PCMS-3	I-77 NB	USE 490 EAST	N/A
PCMS-4	NOT USED	NOT USED	N/A
PCMS-5	NOT USED	NOT USED	N/A
PCMS-6	I-77 NB ROAD WORK	USE I-480 WEST	N/A
DMS	ROAD WORK N I-77 AT I-490 USE ALT - I-480 WB		I-77 NB CLOSED AT I-490 USE ALT - I-480 WB



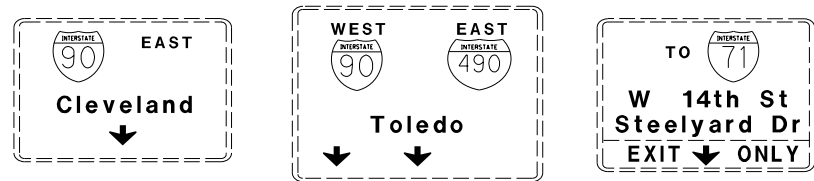
CALCULATED MAF CHECKED TJF
MAINTENANCE OF TRAFFIC
ALTERNATE ROUTE PLAN - NORTHBOUND I.R. 77

CUY-77-14.35
 69
 365

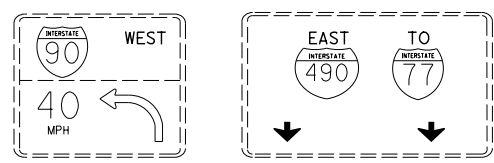
\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\13567MOT-ALT-ROUTE-NB-SIGNS.dgn 12/14/2016 11:42:55 AM DonHelman



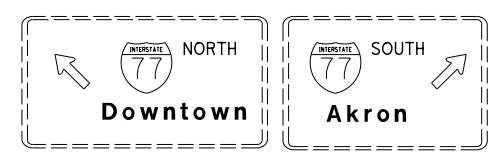
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SR-176 NB (ON STRUCTURE DIRECTLY UNDER BRIDGE)
NO WORK
NB-14



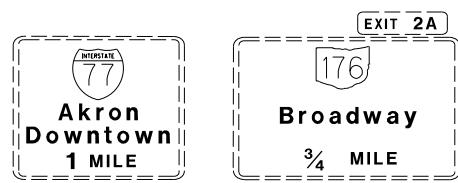
NO WORK
NB-18



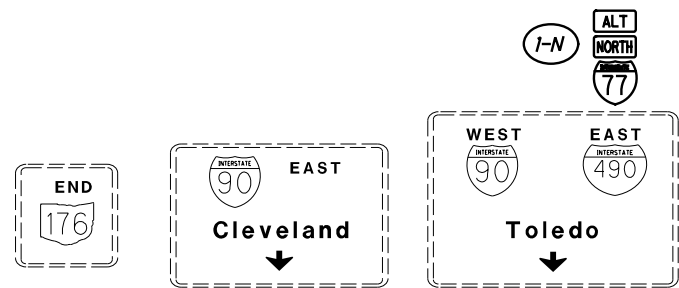
NO WORK
NB-22



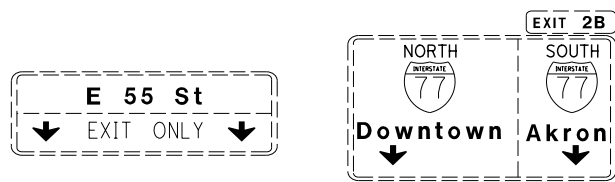
SR-176 NB (MTD. UNDER BRIDGE)
NO WORK
NB-15



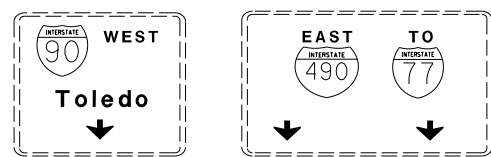
IR-490 EB
NO WORK
NB-19



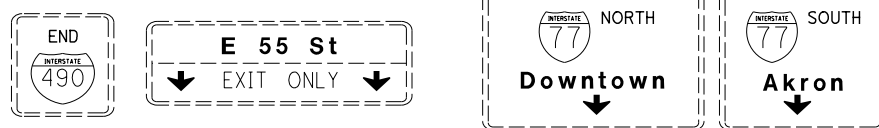
NB-16



IR-490 EB
NO WORK
NB-20



NO WORK
NB-17



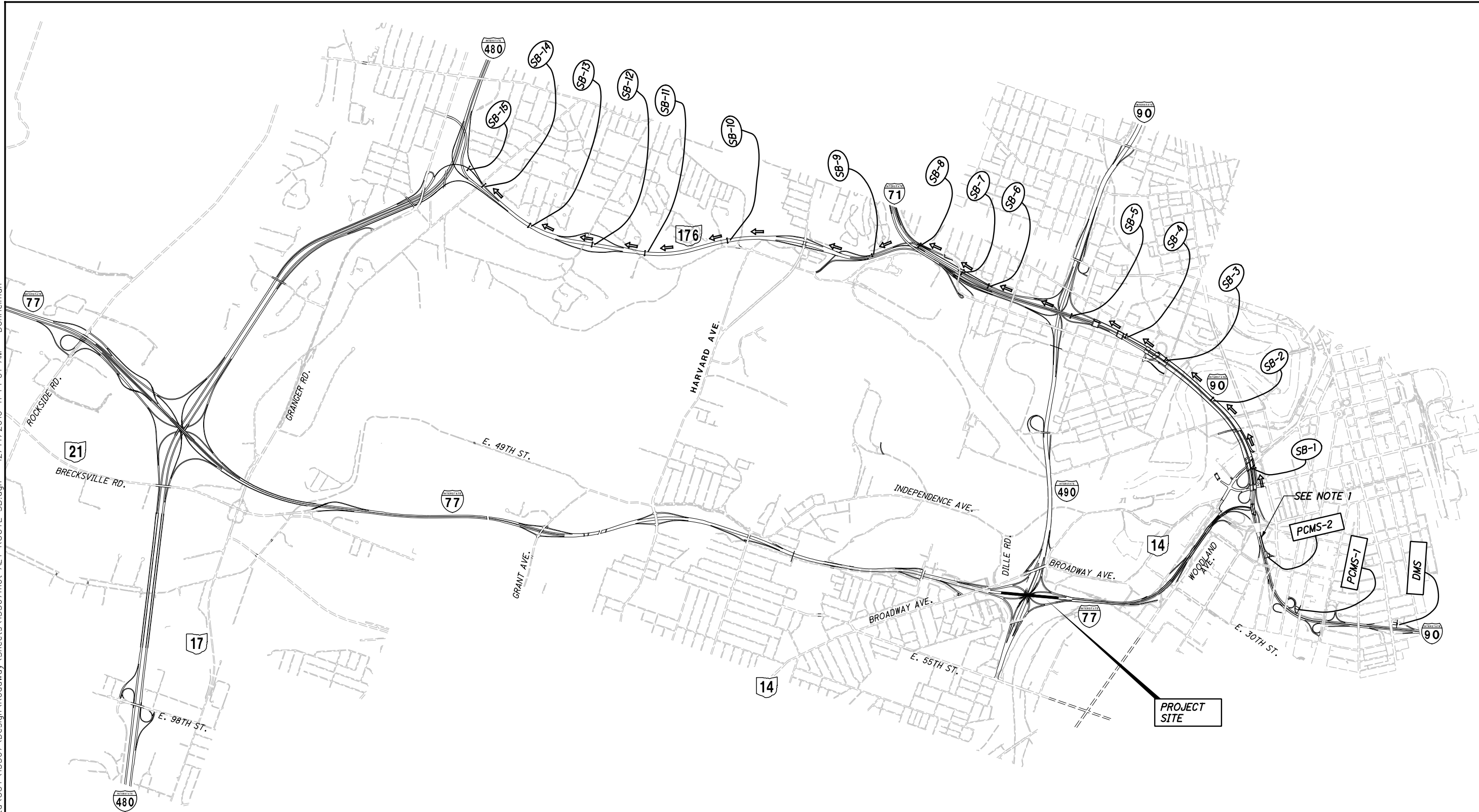
IR-490 EB
NO WORK
NB-21

CALCULATED
MAF
CHECKED
TJF

MAINTENANCE OF TRAFFIC
ALTERNATE ROUTE OVERHEAD SIGNS - NORTHBOUND I.R. 77

CUY-77-14.35

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\mot-ALT-ROUTE-SB.dgn 12/14/2016 11:44:01 AM DonHeiman

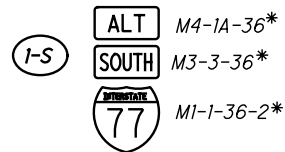


NOTES:

1. DURING OVERNIGHT AND WEEKEND CLOSURES ON I.R. 77 SB CLOSE THE EXIT RAMP FROM I.R. 90 WB TO I.R. 77 SB PER SCD MT-98.29.
2. ALTERNATE ROUTE SIGNS ON INTERSTATES SHALL BE 36" MINIMUM WITH APPROPRIATELY SIZED AUXILIARY SIGNS.

614 DETOUR SIGNING

ALL ALTERNATE ROUTE SIGNS SHOWN SHALL BE INCLUDED FOR PAYMENT IN LUMP SUM PRICE BID FOR ITEM 614 DETOUR SIGNING. ALL PERMITTED DETOUR CLOSURES SHALL BE INCLUDED IN THIS LUMP SUM ITEM AND NOT PAID FOR PER EACH CLOSURE PERIOD.



* SEE NOTE 2 FOR SIGN SIZES
 ← ← SOUTHBOUND I.R. 77 ALTERNATE ROUTE

PORTABLE CHANGEABLE MESSAGE SIGNS RECOMMENDED MESSAGES			
	ALTERNATE ROUTE		DETOUR MESSAGE
	FLASH 1	FLASH 2	FLASH 1
PCMS-1	I-77 SB ROAD WORK	USE I-90 WEST	I-77 SB CLOSED
PCMS-2	I-77 SB ROAD WORK	USE I-90 WEST	I-77 SB CLOSED
DMS	ROAD WORK S I-77 AT I-490 USE ALT - I-90 WB		I-77 SB CLOSED AT I-490 USE ALT - I-90 WB



MAINTENANCE OF TRAFFIC
ALTERNATE ROUTE PLAN - SOUTHBOUND I.R. 77

CUY-77-14.35
 72
 365

ALT SOUTH 77 I-S

LEFT EXIT 170B

SOUTH
Columbus
1 MILE

WEST
Toledo
KEEP RIGHT

SB-1

ALT SOUTH 77 I-S

LEFT EXIT 170B

SOUTH
Columbus
1/2 MILE

WEST
Toledo

EXIT ONLY

SB-2

ALT SOUTH 77 I-S

LEFT EXIT 170B

SOUTH
Columbus

WEST
Toledo
40 MPH

EXIT 171
W 14th St
Abbey Ave

SB-3

ALT SOUTH 77 I-S

LEFT EXIT 170B

SOUTH
Columbus

WEST
Toledo
40 MPH

SB-4

ALT SOUTH 77 I-S

EXIT 246

176 SOUTH
Parma
LEFT 1 MILE

71 SOUTH
Columbus

SB-5

ALT SOUTH 77 I-S

LEFT EXIT 246

176 SOUTH
Parma
LEFT 1/2 MILE

EXIT 245
42 Pearl Rd
W 25th St
Fulton Rd
3/4 MILE

SB-6

ALT SOUTH 77 I-S

LEFT EXIT 246

176 SOUTH
Parma
LEFT 1/4 MILE

SB-7

ALT SOUTH 77 I-S

LEFT EXIT 246

176 SOUTH
Parma

71 SOUTH
Columbus

SB-8

ALT SOUTH 77 I-S

176 SOUTH
Parma

EXIT 18A
Harvard Ave
Denison Ave
EXIT 1/4 MILE

Jennings Rd
Steelyard Dr
EXIT ONLY

SB-9

ALT SOUTH 77 I-S

EXIT 16A-B

480 INTERSTATE
Youngstown
Toledo
EXIT 2 MILES

EXIT 16C
Hinckley Pkwy
Spring Rd
EXIT 3/4 MILE

SB-10

ALT SOUTH 77 I-S

EXIT 16A-B

480 INTERSTATE
Youngstown
Toledo
EXIT 1 1/2 MILES

EXIT 16C
Hinckley Pkwy
Spring Rd
EXIT 1/4 MILE

SB-11

ALT SOUTH 77 I-S

176 SOUTH
Parma

EXIT 16A
480 INTERSTATE
Youngstown
EAST
EXIT ONLY

EXIT 16B
480 INTERSTATE
Toledo
WEST
EXIT ONLY

SB-12

ALT SOUTH 77 I-S

176 SOUTH
Parma

EXIT 16A
480 INTERSTATE
Youngstown
EAST
EXIT ONLY

EXIT 16B
480 INTERSTATE
Toledo
WEST
EXIT ONLY

SB-13

ALT SOUTH 77 I-S

176 SOUTH
Parma

EXIT 16A
480 INTERSTATE
Youngstown
EAST
EXIT ONLY

EXIT 16B
480 INTERSTATE
Toledo
WEST
EXIT ONLY

SB-14

ALT SOUTH 77 I-S

EXIT 16A
480 INTERSTATE
Youngstown
EAST
EXIT ONLY

EXIT 16B
480 INTERSTATE
Toledo
WEST
EXIT ONLY

SB-15

CALCULATED
MAF
CHECKED
TJF

MAINTENANCE OF TRAFFIC
ALTERNATE ROUTE OVERHEAD SIGNS - SOUTHBOUND I.R. 77

CUY-77-14.35

614 DETOUR SIGNING

ALL DETOUR SIGNS SHOWN SHALL BE INCLUDED FOR PAYMENT IN LUMP SUM PRICE BID FOR ITEM 614 DETOUR SIGNING

NOTES: ALL DETOUR SIGNS FOR E. 55TH ST. SHALL BE COVERED OR REMOVED WHEN EB I.R. 490 IS OPEN TO TRAFFIC. OTHER DETOUR SIGNS MAY REMAIN IN PLACE DURING THE CONSTRUCTION SEASON.

E 55TH ST EXIT

DETOUR ROUTE

1. USE I.R. 77 SB.
2. EXIT AT FLEET AVE.
3. FLEET AVE. TO I.R. 77 NB RAMP.
4. I.R. 77 NB TO E. 55TH ST.

LEGEND

→ E. 55TH ST
DETOUR ROUTE

X X RAMP CLOSED

E 55TH ST
EXIT
CLOSED

FOLLOW
IR 77
SOUTH

MESSAGE 1

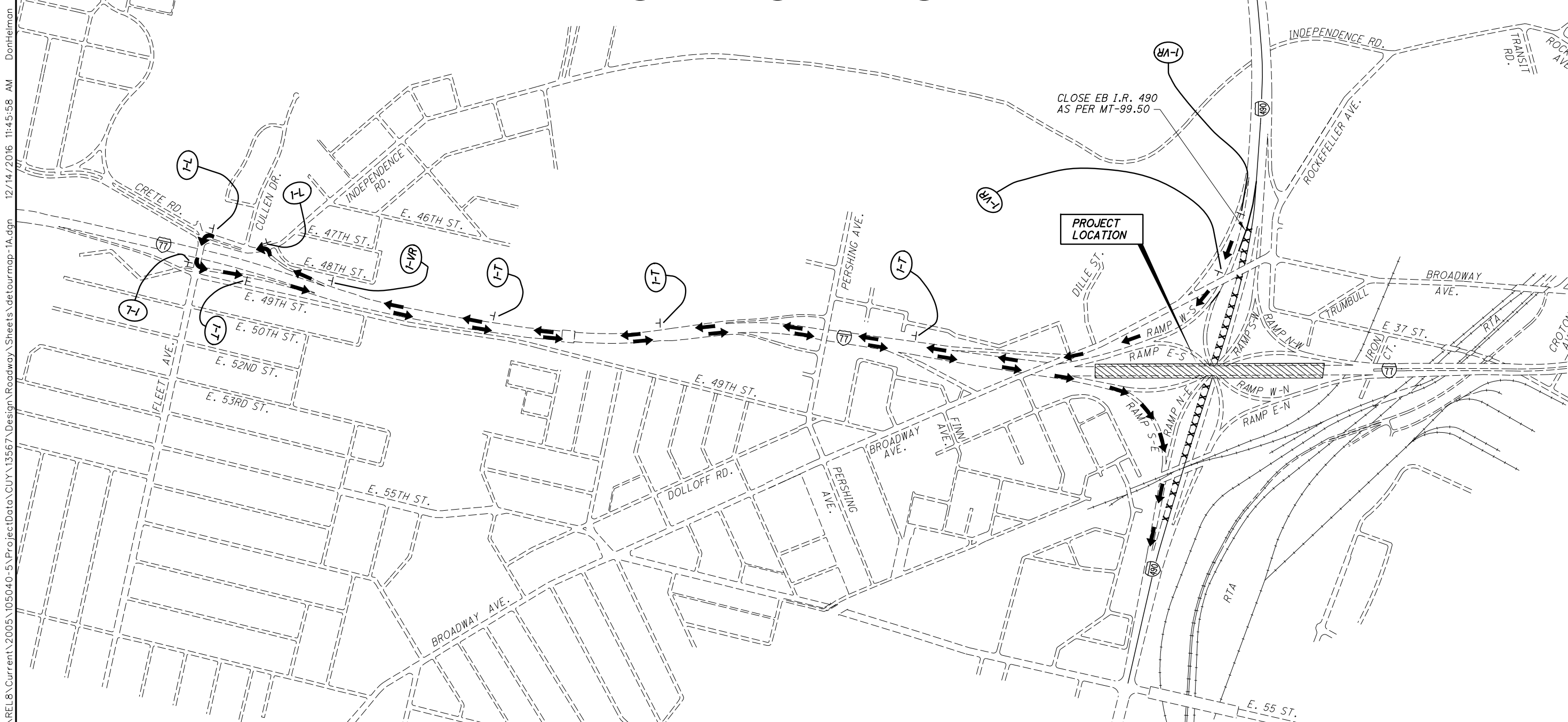
MESSAGE 2

PCMS 1

E. 55TH ST D3-1-30
DETOUR M4-9SPEC-30
I-VR

E. 55TH ST D3-1-30
DETOUR M4-9-30
I-T

E. 55TH ST D3-1-30
DETOUR M4-9L-30
I-L



CALCULATED	JDL
CHECKED	TJF

MAINTENANCE OF TRAFFIC DETOUR MAP FOR E. 55TH ST.

CUY-77-14.35

74
365

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\detourmap-1A.dgn 12/14/2016 11:45:58 AM DonHeiman

614 DETOUR SIGNING

ALL DETOUR SIGNS SHOWN SHALL BE INCLUDED FOR PAYMENT IN LUMP SUM PRICE BID FOR ITEM 614 DETOUR SIGNING.

NOTE: DETOUR ROUTE SIGNS ON INTERSTATES SHALL BE 36" MINIMUM WITH APPROPRIATE SIZED AUXILIARY SIGNS.

DETOUR ROUTE SIGNS ON OTHER ROUTES MAY BE 24" MINIMUM WITH APPROPRIATELY SIZED AUXILIARY SIGNS.

ALL DETOUR SIGNS ON WB I.R. 490 AND RAMP SHALL BE COVERED OR REMOVED WHEN WB I.R. 490 AND RAMP E-S ARE OPEN TO TRAFFIC. OTHER DETOUR SIGNS MAY REMAIN IN PLACE DURING THE CONSTRUCTION SEASON.

RAMP E-S (WB I.R. 490 TO SB I.R. 77) CLOSED

DETOUR ROUTE

1. TAKE RAMP E-N TO NB I.R. 77 AND EXIT TO WOODLAND AVE.
2. WOODLAND WEST TO ORANGE AVE.
3. WB ORANGE AVE. TO TURNAROUND ON ORANGE AVE.
4. EB ORANGE AVE. TO RAMP
5. RAMP TO SB I.R. 77.

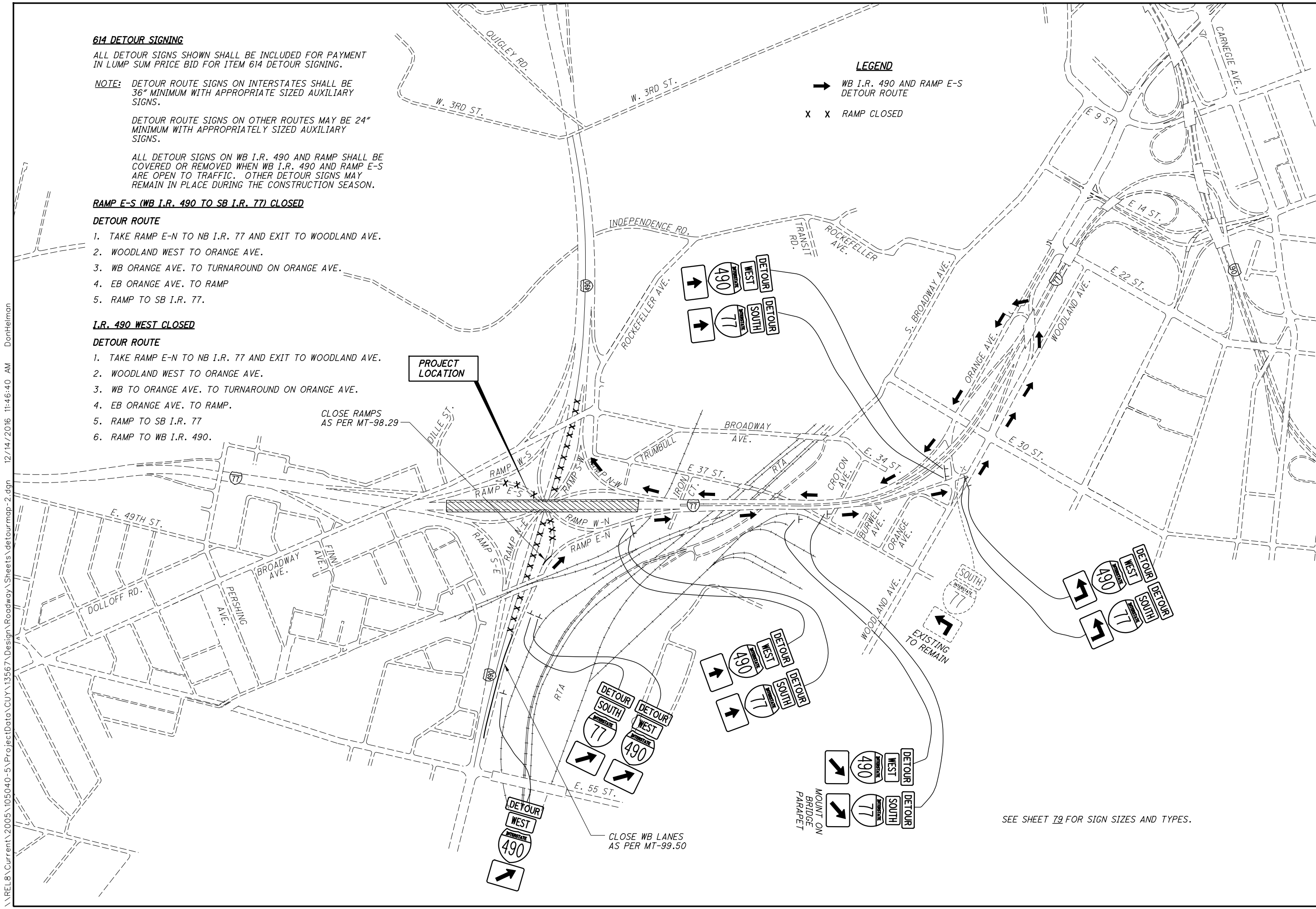
I.R. 490 WEST CLOSED

DETOUR ROUTE

1. TAKE RAMP E-N TO NB I.R. 77 AND EXIT TO WOODLAND AVE.
2. WOODLAND WEST TO ORANGE AVE.
3. WB TO ORANGE AVE. TO TURNAROUND ON ORANGE AVE.
4. EB ORANGE AVE. TO RAMP.
5. RAMP TO SB I.R. 77
6. RAMP TO WB I.R. 490.

LEGEND

- ➔ WB I.R. 490 AND RAMP E-S DETOUR ROUTE
- X X RAMP CLOSED



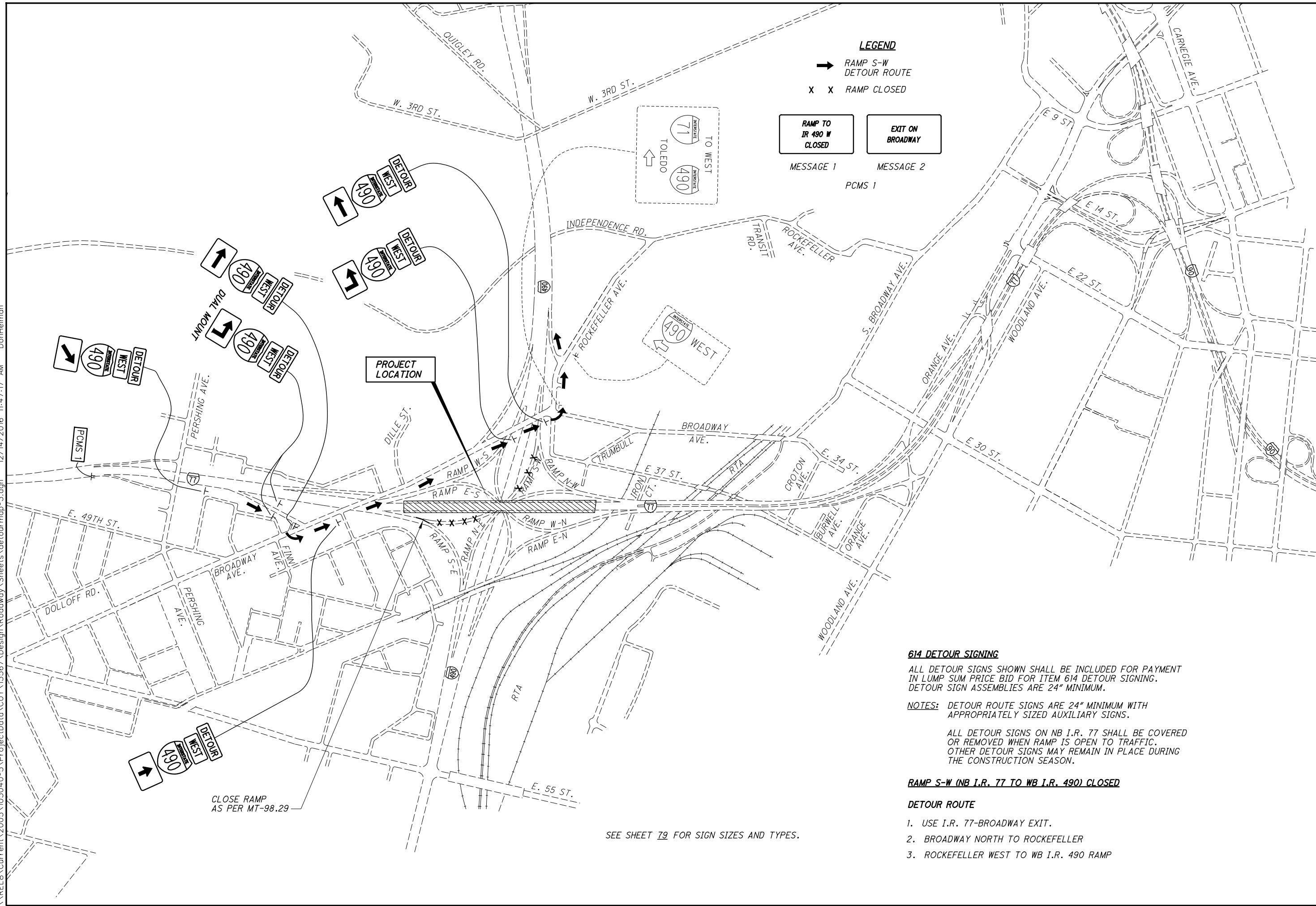
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CALCULATED	JDL
CHECKED	TJF

MAINTENANCE OF TRAFFIC DETOUR MAP FOR RAMP E-S (WB I.R. 490 TO SB I.R. 77) AND WB I.R. 490

SEE SHEET 79 FOR SIGN SIZES AND TYPES.

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\detourmap-3.dgn 12/14/2016 11:47:17 AM DonHelman



CALCULATED	JDL
CHECKED	TJF

**MAINTENANCE OF TRAFFIC DETOUR MAP
FOR RAMP S-W (NB I.R. 77 TO WB I.R. 490)**

CUY-77-14.35

LEGEND

- ➔ RAMP S-W
DETOUR ROUTE
- X X RAMP CLOSED

RAMP TO
IR 490 W
CLOSED

EXIT ON
BROADWAY

MESSAGE 1

MESSAGE 2

PCMS 1

614 DETOUR SIGNING

ALL DETOUR SIGNS SHOWN SHALL BE INCLUDED FOR PAYMENT IN LUMP SUM PRICE BID FOR ITEM 614 DETOUR SIGNING. DETOUR SIGN ASSEMBLIES ARE 24" MINIMUM.

NOTES: DETOUR ROUTE SIGNS ARE 24" MINIMUM WITH APPROPRIATELY SIZED AUXILIARY SIGNS.

ALL DETOUR SIGNS ON NB I.R. 77 SHALL BE COVERED OR REMOVED WHEN RAMP IS OPEN TO TRAFFIC. OTHER DETOUR SIGNS MAY REMAIN IN PLACE DURING THE CONSTRUCTION SEASON.

RAMP S-W (NB I.R. 77 TO WB I.R. 490) CLOSED

DETOUR ROUTE

1. USE I.R. 77-BROADWAY EXIT.
2. BROADWAY NORTH TO ROCKEFELLER
3. ROCKEFELLER WEST TO WB I.R. 490 RAMP

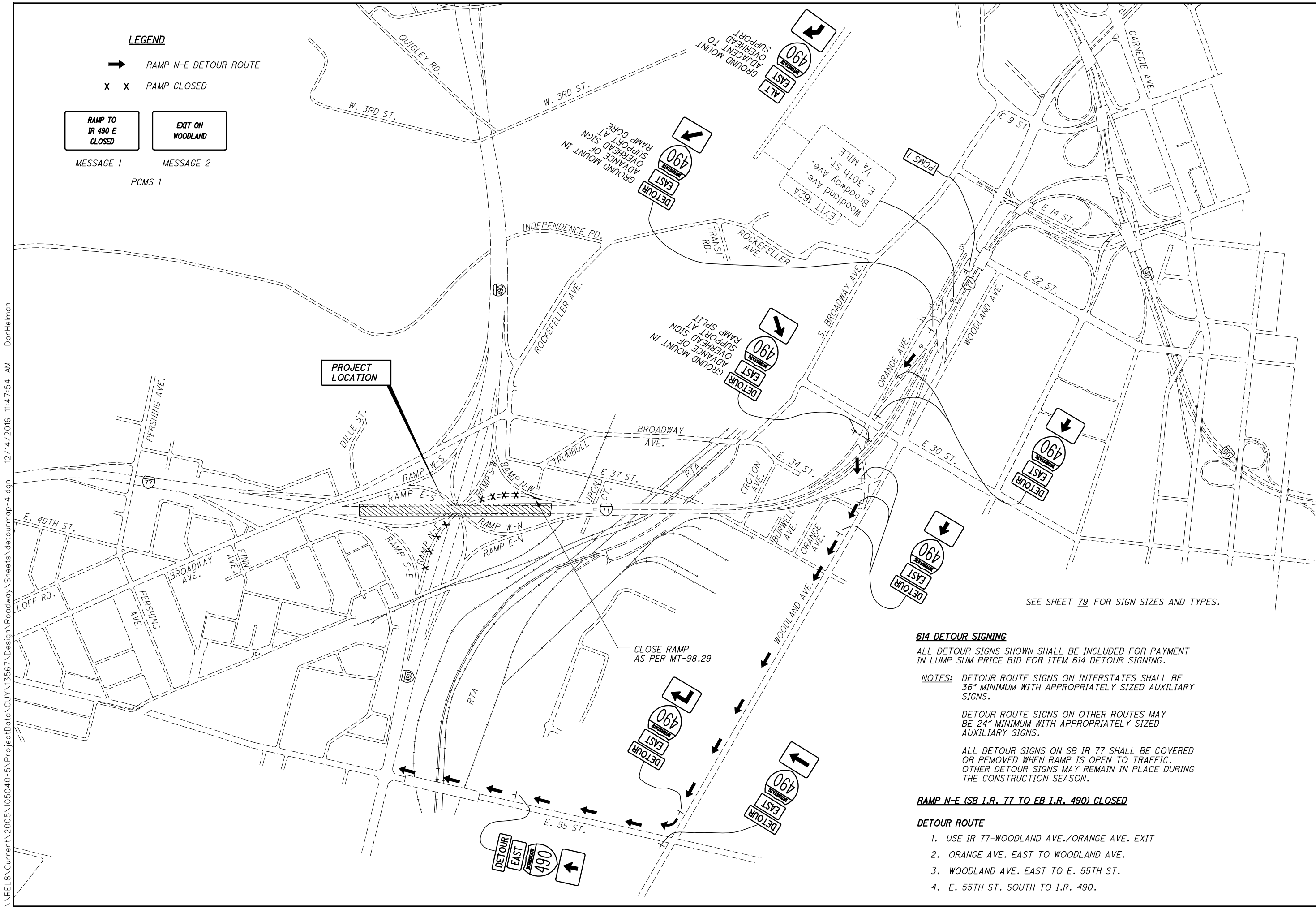
SEE SHEET 79 FOR SIGN SIZES AND TYPES.

CLOSE RAMP
AS PER MT-98.29

LEGEND

→ RAMP N-E DETOUR ROUTE
 X X RAMP CLOSED

RAMP TO IR 490 E CLOSED	EXIT ON WOODLAND
MESSAGE 1	MESSAGE 2
PCMS 1	



SEE SHEET 79 FOR SIGN SIZES AND TYPES.

614 DETOUR SIGNING

ALL DETOUR SIGNS SHOWN SHALL BE INCLUDED FOR PAYMENT IN LUMP SUM PRICE BID FOR ITEM 614 DETOUR SIGNING.

NOTES: DETOUR ROUTE SIGNS ON INTERSTATES SHALL BE 36" MINIMUM WITH APPROPRIATELY SIZED AUXILIARY SIGNS.

DETOUR ROUTE SIGNS ON OTHER ROUTES MAY BE 24" MINIMUM WITH APPROPRIATELY SIZED AUXILIARY SIGNS.

ALL DETOUR SIGNS ON SB IR 77 SHALL BE COVERED OR REMOVED WHEN RAMP IS OPEN TO TRAFFIC. OTHER DETOUR SIGNS MAY REMAIN IN PLACE DURING THE CONSTRUCTION SEASON.

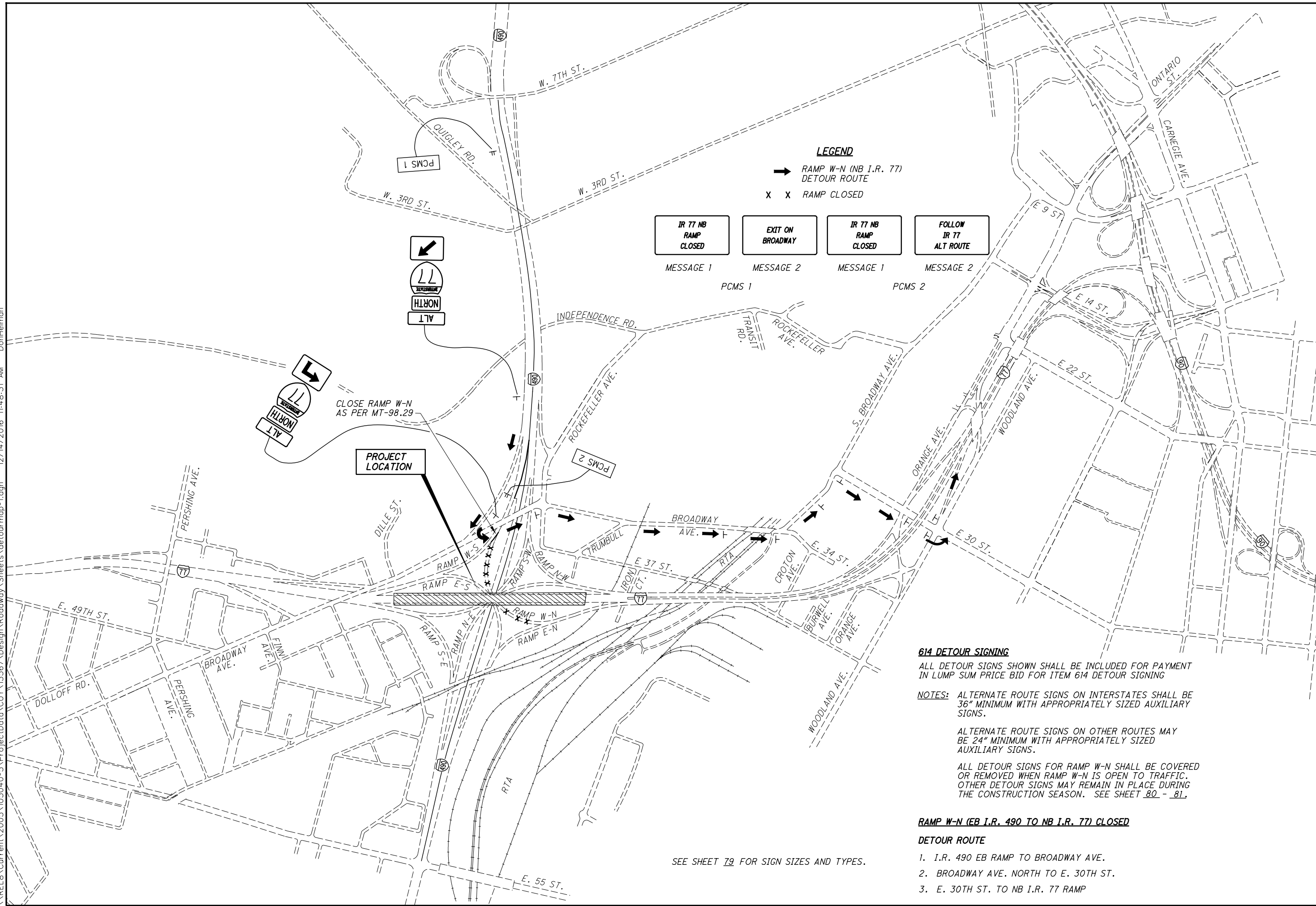
RAMP N-E (SB I.R. 77 TO EB I.R. 490) CLOSED

DETOUR ROUTE

1. USE IR 77-WOODLAND AVE./ORANGE AVE. EXIT
2. ORANGE AVE. EAST TO WOODLAND AVE.
3. WOODLAND AVE. EAST TO E. 55TH ST.
4. E. 55TH ST. SOUTH TO I.R. 490.

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\detourmap-4.dgn 12/14/2016 11:47:54 AM DonHeiman

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\detourmap-1.dgn 12/14/2016 11:48:31 AM DonHelman



CALCULATED
JDL
CHECKED
TJF

**MAINTENANCE OF TRAFFIC DETOUR MAP
FOR RAMP W-N (EB I.R. 490 TO NB I.R. 77)**

CUY-77-14.35

LEGEND

- ➔ RAMP W-N (NB I.R. 77)
DETOUR ROUTE
- X X RAMP CLOSED

IR 77 NB RAMP CLOSED	EXIT ON BROADWAY	IR 77 NB RAMP CLOSED	FOLLOW IR 77 ALT ROUTE
MESSAGE 1	MESSAGE 2	MESSAGE 1	MESSAGE 2
PCMS 1		PCMS 2	

CLOSE RAMP W-N
AS PER MT-98.29

PROJECT LOCATION

614 DETOUR SIGNING

ALL DETOUR SIGNS SHOWN SHALL BE INCLUDED FOR PAYMENT IN LUMP SUM PRICE BID FOR ITEM 614 DETOUR SIGNING

NOTES: ALTERNATE ROUTE SIGNS ON INTERSTATES SHALL BE 36" MINIMUM WITH APPROPRIATELY SIZED AUXILIARY SIGNS.

ALTERNATE ROUTE SIGNS ON OTHER ROUTES MAY BE 24" MINIMUM WITH APPROPRIATELY SIZED AUXILIARY SIGNS.

ALL DETOUR SIGNS FOR RAMP W-N SHALL BE COVERED OR REMOVED WHEN RAMP W-N IS OPEN TO TRAFFIC. OTHER DETOUR SIGNS MAY REMAIN IN PLACE DURING THE CONSTRUCTION SEASON. SEE SHEET 80 - 81.

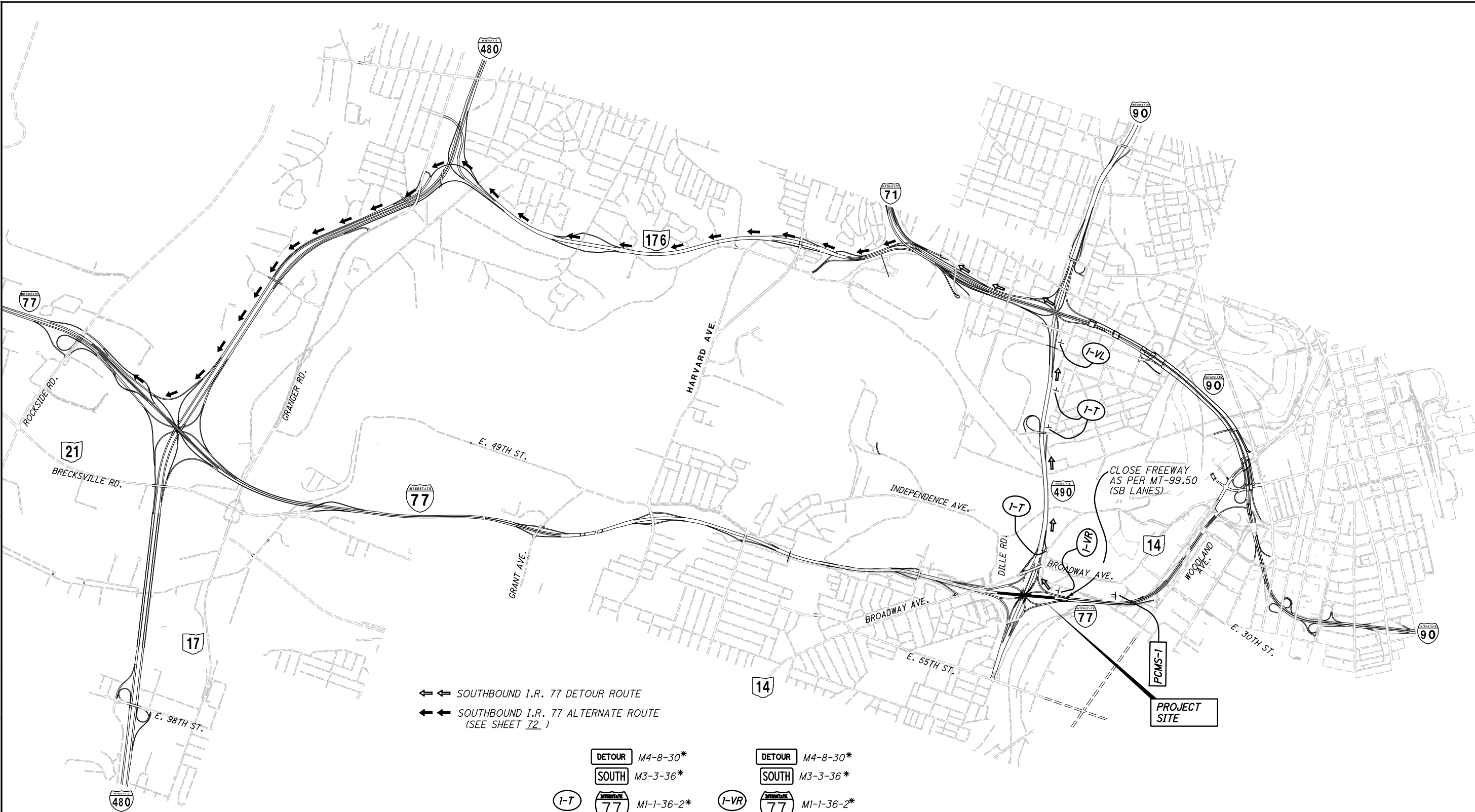
RAMP W-N (EB I.R. 490 TO NB I.R. 77) CLOSED

DETOUR ROUTE

1. I.R. 490 EB RAMP TO BROADWAY AVE.
2. BROADWAY AVE. NORTH TO E. 30TH ST.
3. E. 30TH ST. TO NB I.R. 77 RAMP

SEE SHEET 79 FOR SIGN SIZES AND TYPES.

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Roadway\Sheets\13567\mot-detour77.dgn 12/14/2016 11:49:07 AM DonHeiman



← ← SOUTHBOUND I.R. 77 DETOUR ROUTE
 ← ← SOUTHBOUND I.R. 77 ALTERNATE ROUTE (SEE SHEET 72)

NOTES: DETOUR ROUTE SIGNS ON INTERSTATE SHALL BE 36" MINIMUM WITH THE APPROPRIATELY SIZED AUXILIARY SIGNS.

SIGNS ON INTERSTATE ROUTES SHALL BE COVERED OR REMOVED WHEN DETOUR IS NOT IN EFFECT.

614 DETOUR SIGNING

ALL DETOUR SIGNS SHOWN SHALL BE INCLUDED FOR PAYMENT IN LUMP SUM PRICE BID FOR ITEM 614 DETOUR SIGNING. ALL PERMITTED DETOUR CLOSURES SHALL BE INCLUDED IN THIS LUMP SUM ITEM AND NOT PAID FOR PER EACH CLOSURE PERIOD.

- | | | | |
|--|-----------------|--|-----------------|
| | DETOUR M4-8-30* | | DETOUR M4-8-30* |
| | SOUTH M3-3-36* | | SOUTH M3-3-36* |
| | M1-1-36-2* | | M1-1-36-2* |
| | M6-3-30* | | M6-2-30* |
| | DETOUR M4-8-30* | | DETOUR M4-8-30* |
| | SOUTH M3-3-36* | | SOUTH M3-3-36* |
| | M1-1-36-2* | | M1-1-36-2* |
| | M6-2-30* | | M6-1-30* |

*SEE NOTES FOR SIGN SIZES

PORTABLE CHANGEABLE MESSAGE SIGNS RECOMMENDED MESSAGES		
	FLASH 1	FLASH 2
PCMS-1	I-77 SB CLOSED	USE I-490 WEST

CALCULATED JDL CHECKED TJF

HORIZONTAL SCALE IN FEET

**MAINTENANCE OF TRAFFIC
 DETOUR PLAN - SOUTHBOUND I.R. 77**



LEGEND

- NORTHBOUND ALTERNATE ROUTE
- SOUTHBOUND ALTERNATE ROUTE
- TRAFFIC SIGNAL TIMING CHANGES ONLY
- INTERSECTION SIGNING CHANGES
- SIGNAL COORDINATION

614 DETOUR SIGNING

ALL ALTERNATE ROUTE SIGNS SHALL BE INCLUDED FOR PAYMENT IN LUMP SUM PRICE BID FOR ITEM 614 DETOUR SIGNING.

RAMP TO
IR 490 W
CLOSED

EXIT ON
BROADWAY

MESSAGE 1

MESSAGE 2

PCMS 1

DURING OVERNIGHT AND WEEKEND CLOSURES ON I.R. 77 NB, CLOSE I.R. 77 NB AT THE BROADWAY AVE. EXIT PER SCD MT-99.50. COORDINATE WITH CCG6B FOR ALTERNATE ROUTE SIGNING.

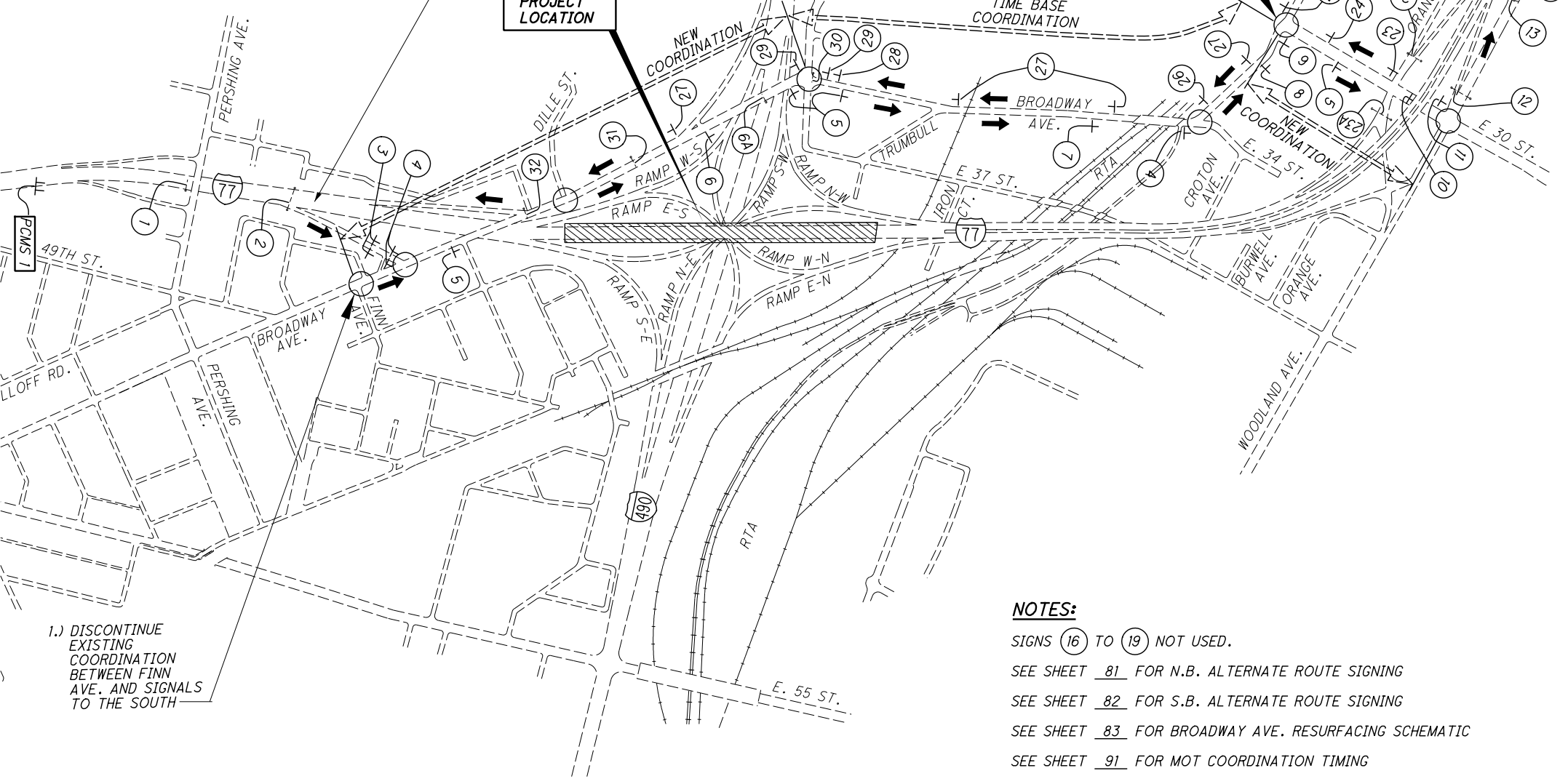
PROJECT LOCATION

- 1.) REDESIGNATE W.B. LANES
- 2.) MARKING REVISIONS SEE SHEET 89

TIME BASE COORDINATION

NEW COORDINATION

NEW COORDINATION



N.B. I.R. 77

LOCAL ALTERNATE ROUTE

1. USE BROADWAY EXIT
2. BROADWAY NORTHWEST TO E. 30TH ST.
3. E. 30TH ST. NORTH TO WOODLAND AVE.
4. TAKE N.B. I.R. 77 RAMP @ E. 30TH ST. AND WOODLAND AVE. INTERSECTION

NOTES:

- SIGNS (16) TO (19) NOT USED.
- SEE SHEET 81 FOR N.B. ALTERNATE ROUTE SIGNING
- SEE SHEET 82 FOR S.B. ALTERNATE ROUTE SIGNING
- SEE SHEET 83 FOR BROADWAY AVE. RESURFACING SCHEMATIC
- SEE SHEET 91 FOR MOT COORDINATION TIMING

- 1.) DISCONTINUE EXISTING COORDINATION BETWEEN FINN AVE. AND SIGNALS TO THE SOUTH

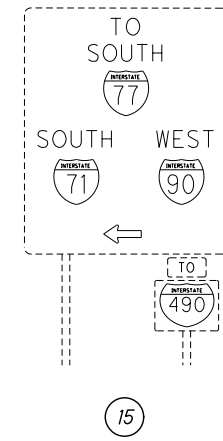
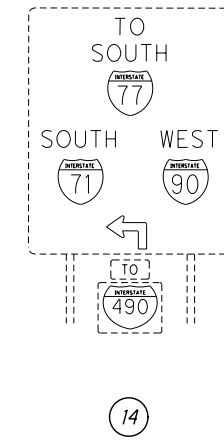
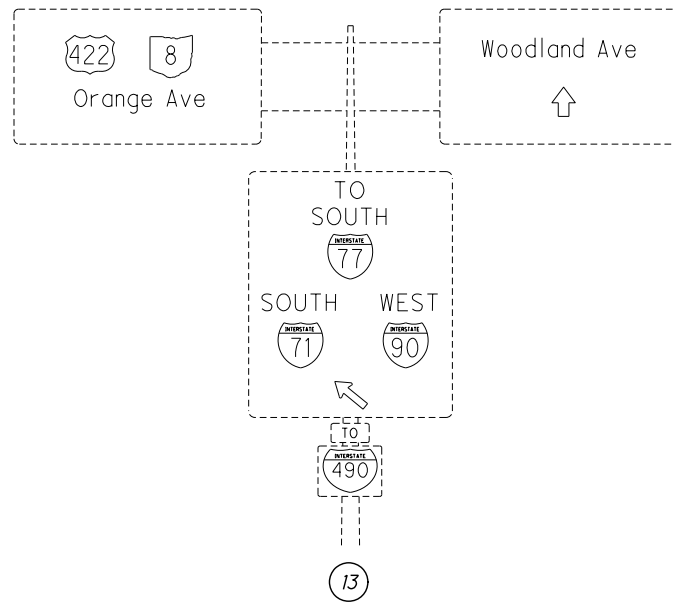
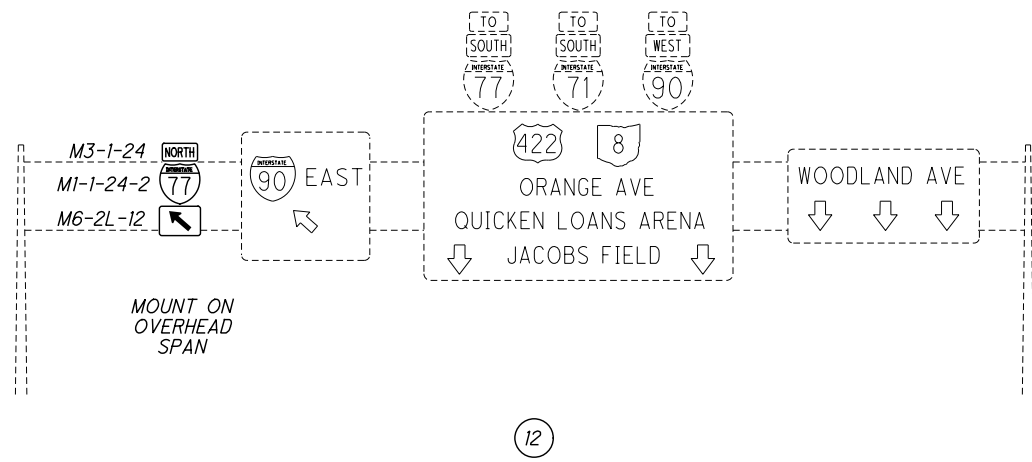
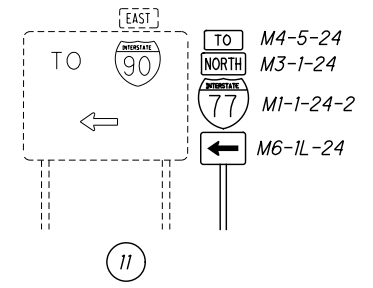
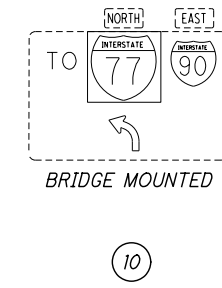
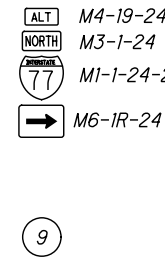
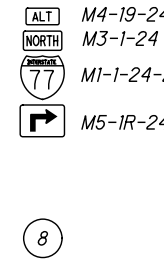
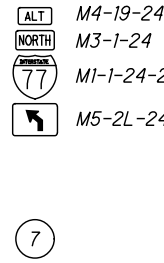
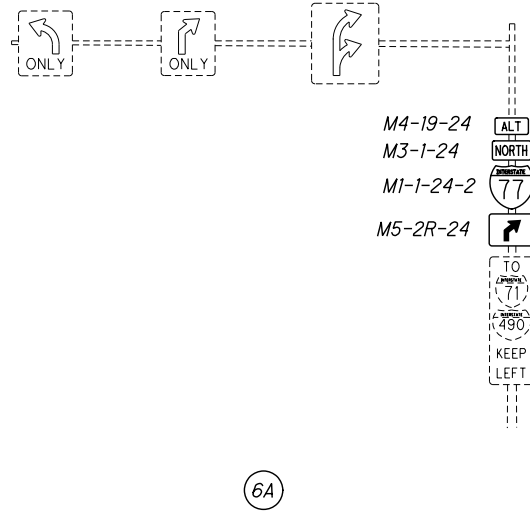
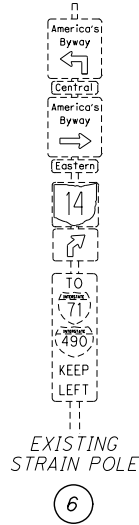
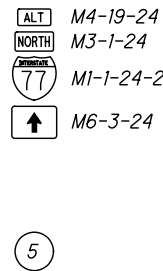
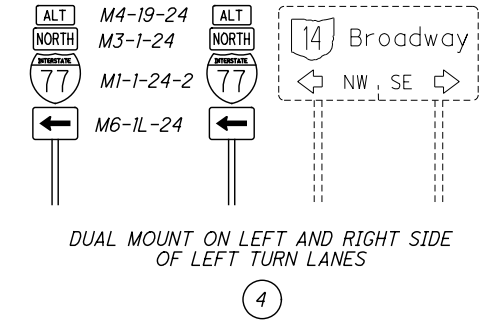
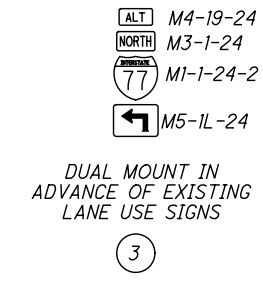
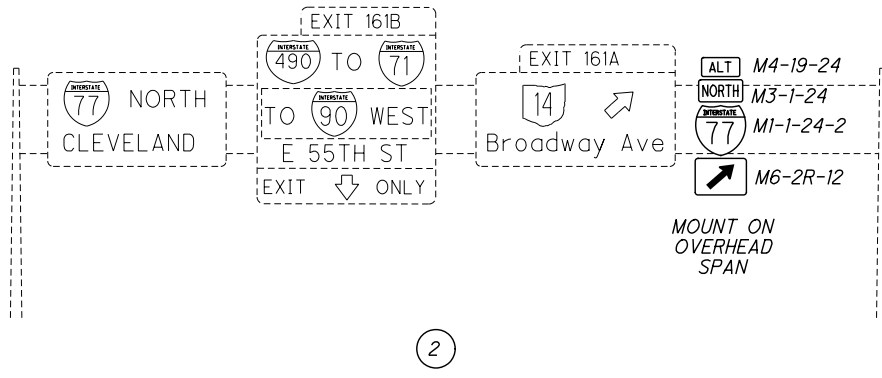
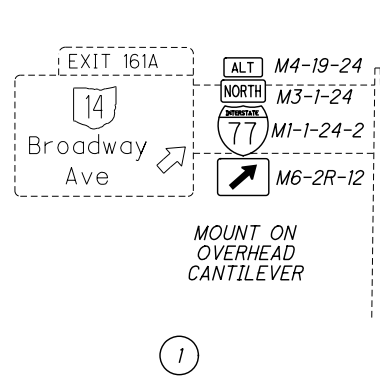
\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\detourmap-5.dgn 12/14/2016 11:51:54 AM DonHelman

EXPECT DELAYS AHEAD
MESSAGE 1
ALTERNATE ROUTE

ALT-RTE EXIT TO BROADWAY
MESSAGE 2

I-77 NB CLOSED
MESSAGE 1
CLOSURE PCMS

USE BROADWAY ALT
MESSAGE 2



NOTES:

SIGNS 16 TO 19 NOT USED.

SEE SHEET 80 FOR SIGNING LOCATIONS

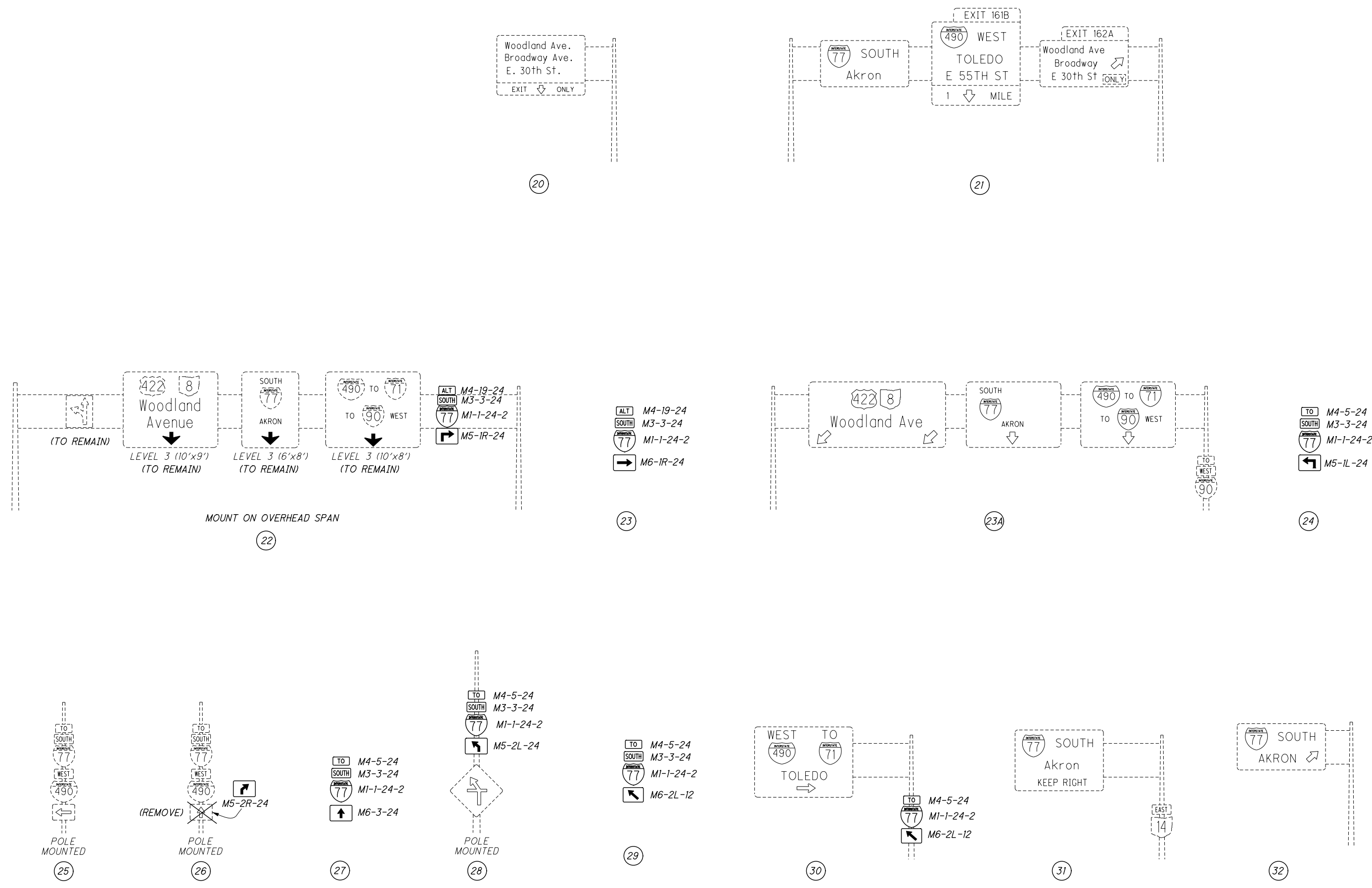
CALCULATED
JDL
CHECKED
TJF

MAINTENANCE OF TRAFFIC LOCAL DETOUR ALTERNATE ROUTE SIGNING - NB I.R. 77

CUY-77-14.35

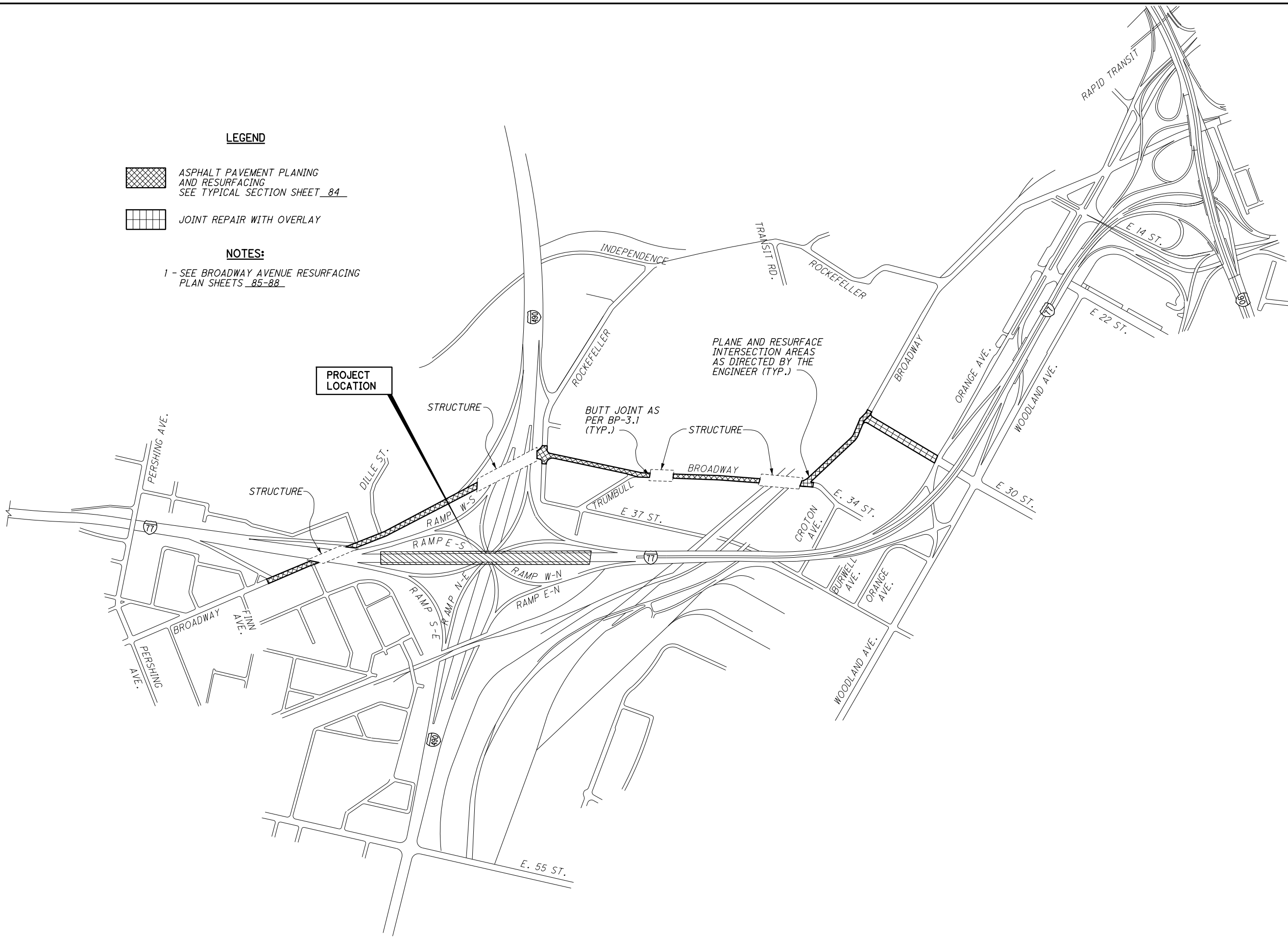
**MAINTENANCE OF TRAFFIC
LOCAL ALTERNATE ROUTE SIGNING TO SB I.R. 77**

CUY-77-14.35



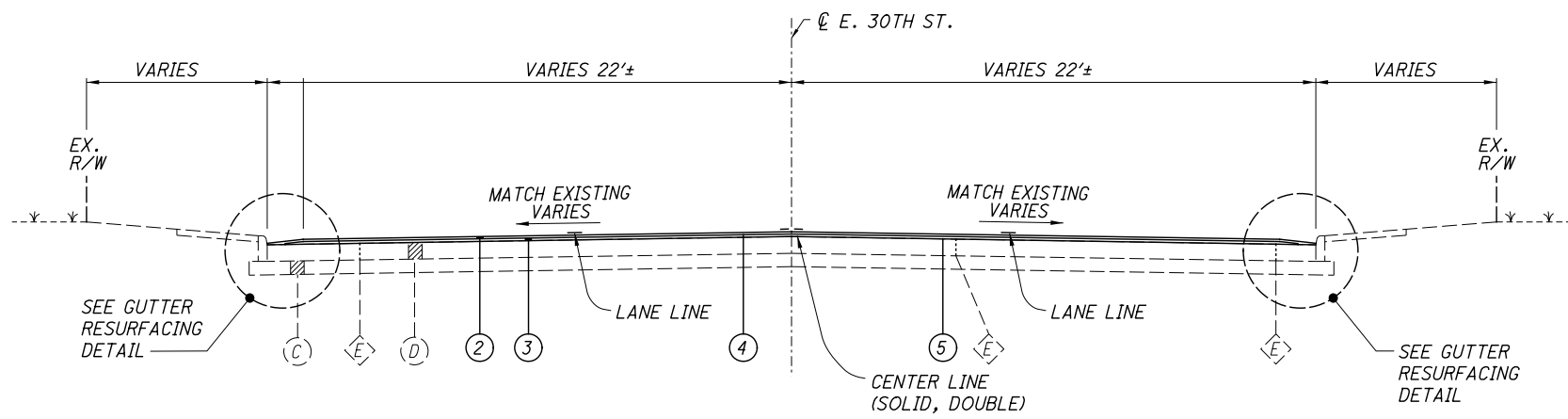
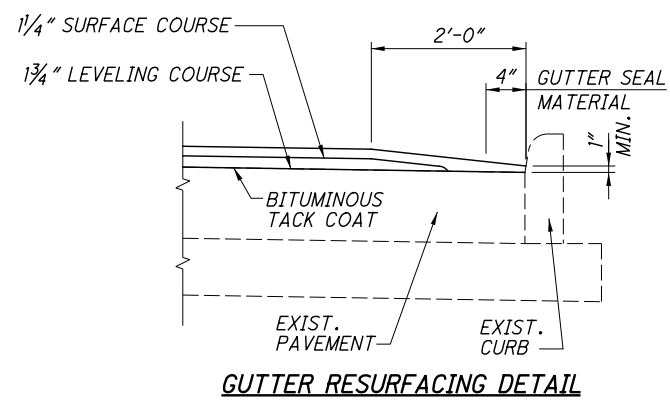
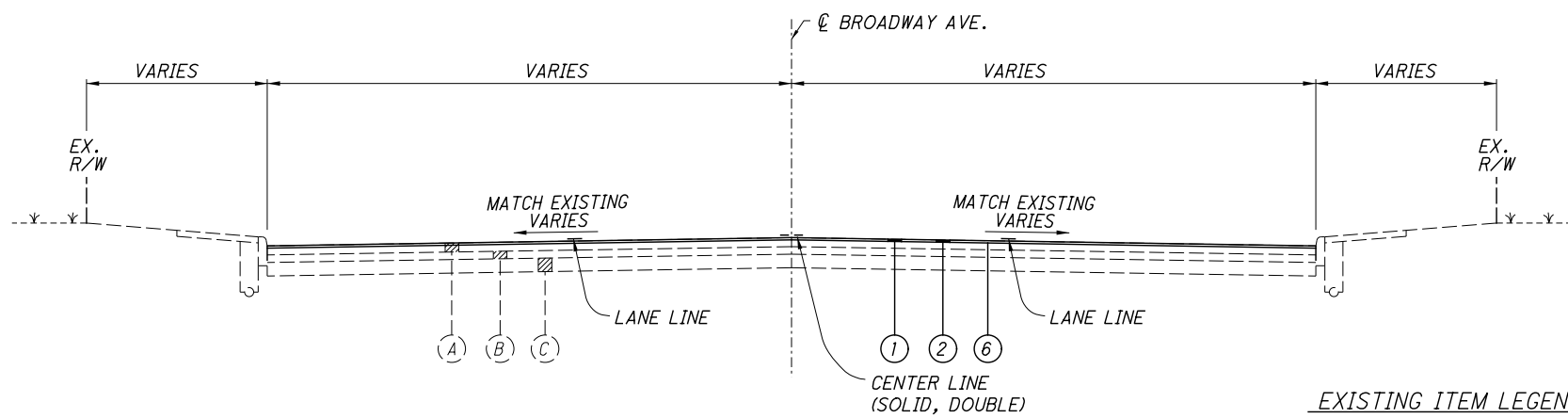
NOTES:
SIGNS 16 TO 19 NOT USED.
SEE SHEET 80 FOR SIGNING LOCATIONS

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\13567mot-resurf.dgn 12/14/2016 1:10:08 PM DonHelman



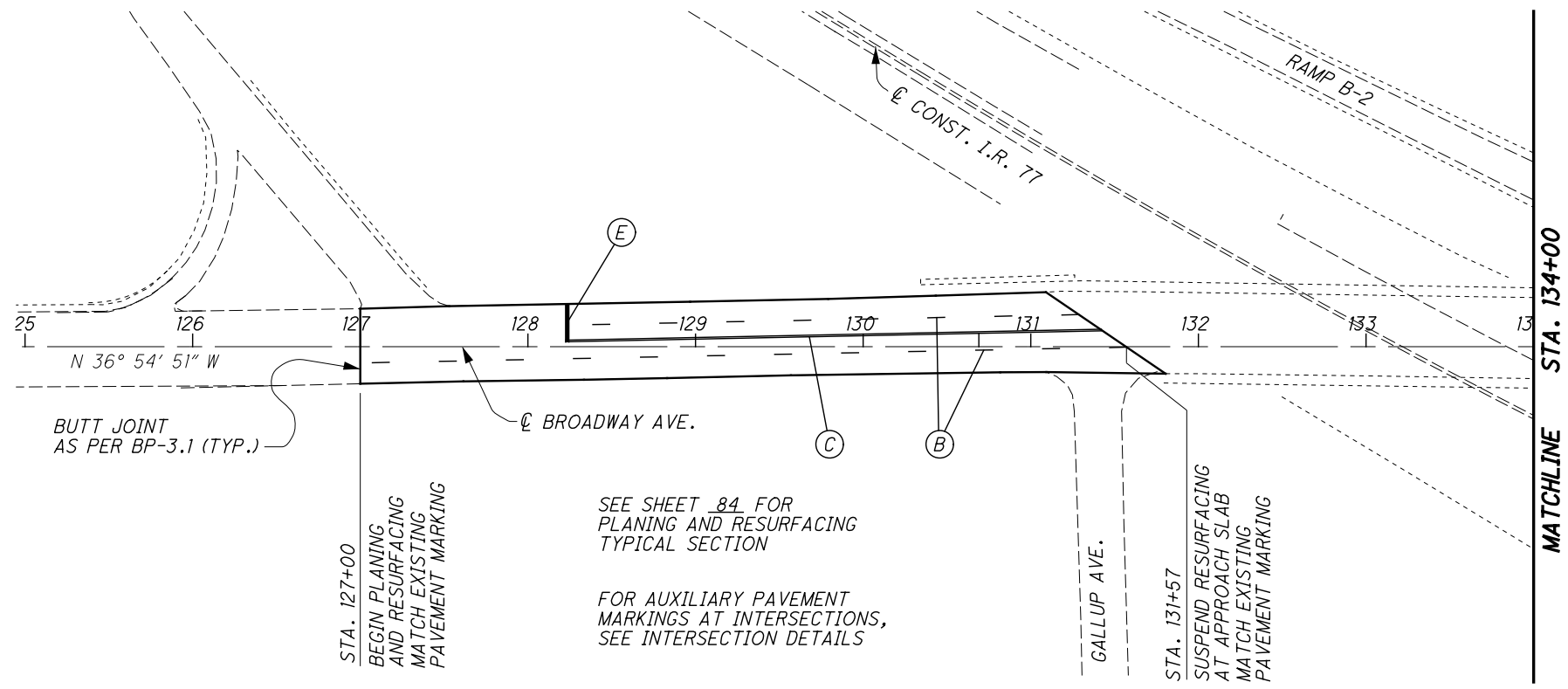
Maintenance of Traffic Resurfacing Schematic for Alternate Route

CUY-77-14.35



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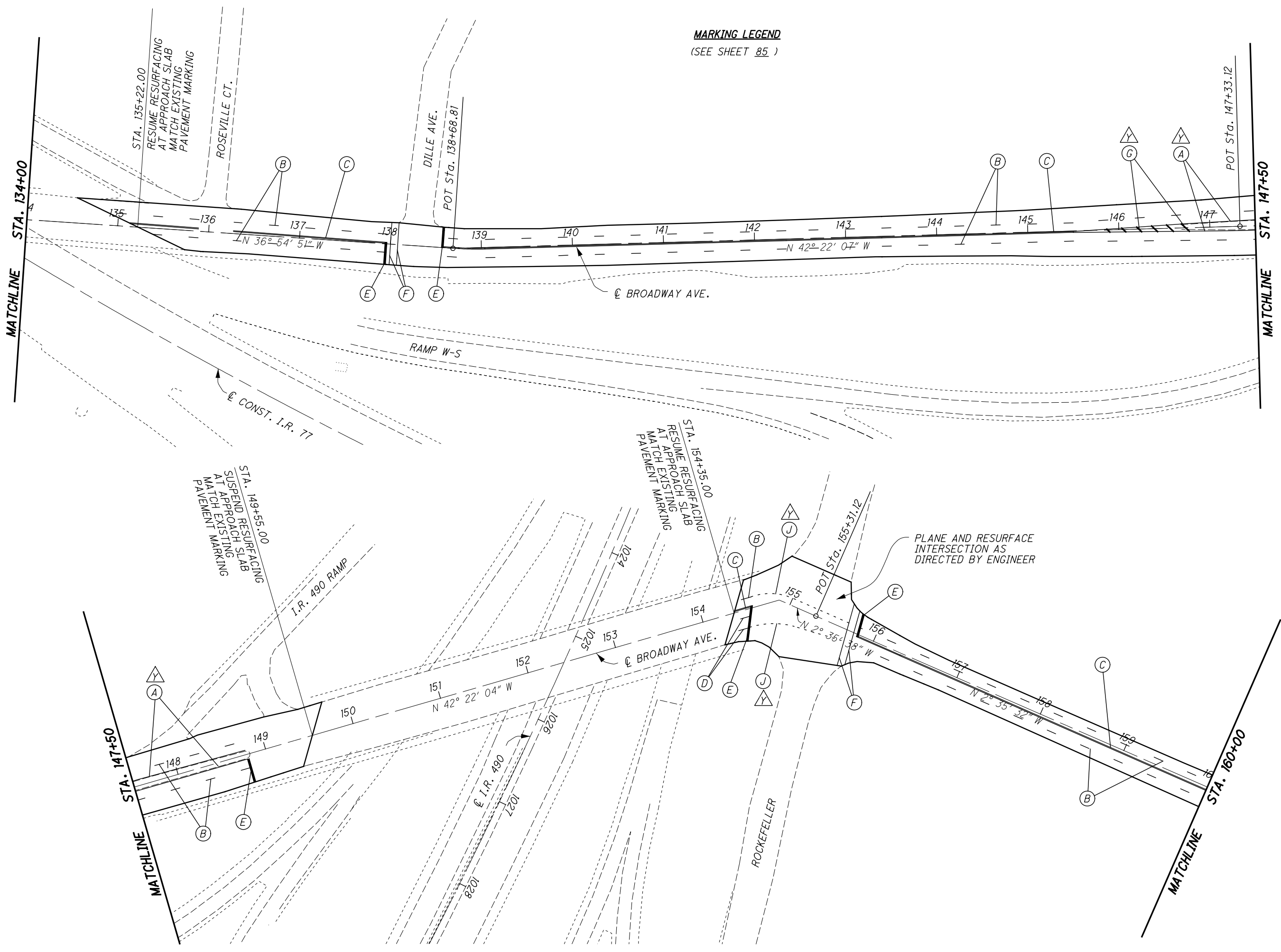
- MARKING LEGEND**
- ① WORK ZONE STOP LINE, CLASS 1, 740.06, TYPE 1
 - ② WORK ZONE LANE ARROW, CLASS 1, 740.06, TYPE 1
 - ▲ WHITE MARKING
 - ▲ YELLOW MARKING
 - Ⓐ 644 - EDGE LINE, TYPE 1, 4"
 - Ⓑ 644 - LANE LINE, 4"
 - Ⓒ 644 - CENTER LINE
 - Ⓓ 644 - CHANNELIZING LINE, 8"
 - Ⓔ 644 - STOP LINE
 - Ⓕ 644 - CROSSWALK LINE
 - Ⓖ 644 - TRANSVERSE / DIAGONAL LINE
 - Ⓗ 644 - LANE ARROW
 - Ⓘ 644 - WORD ON PAVEMENT, 48"
 - Ⓙ 644 - DOTTED LINE, 4"



CALCULATED _____
 MAF _____
 CHECKED TJF
MAINTENANCE OF TRAFFIC - RESURFACING PLAN
BROADWAY AVE. - STA. 125+00 TO STA. 134+00

CUY-77-14.35

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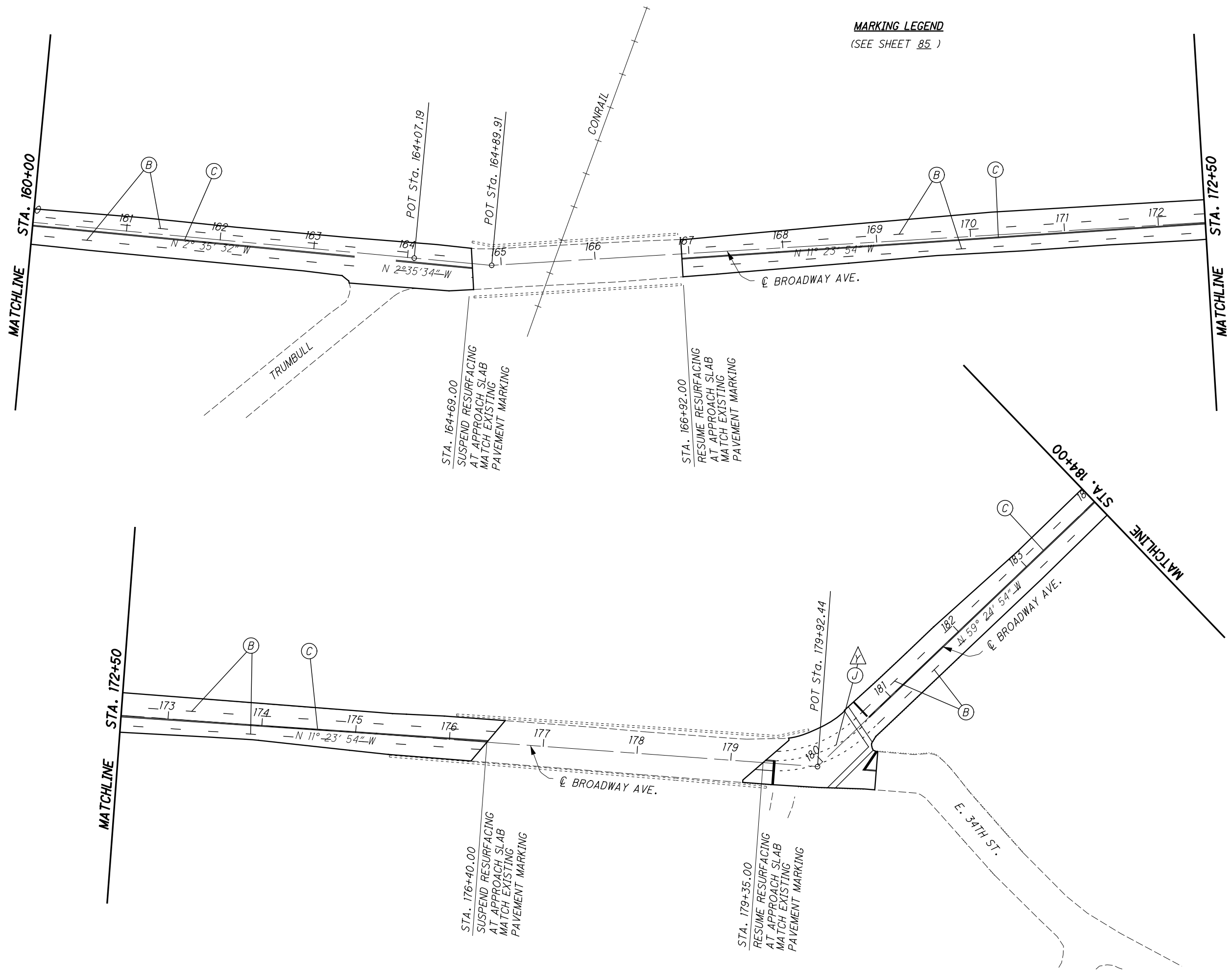


MARKING LEGEND
(SEE SHEET 85)



CALCULATED	MAF
CHECKED	TJF

MAINTENANCE OF TRAFFIC - RESURFACING PLAN
BROADWAY AVE. - STA. 134+00 TO STA. 160+00



MARKING LEGEND
(SEE SHEET 85.)

CALCULATED	MAF
CHECKED	TJF

0 50 100
HORIZONTAL SCALE IN FEET

MAINTENANCE OF TRAFFIC - RESURFACING PLAN
BROADWAY AVE. - STA. 160+00 TO STA. 184+00



CALCULATED MAF CHECKED TJF

MAINTENANCE OF TRAFFIC - RESURFACING PLAN
BROADWAY AVE. - STA. 184+00 TO STA. 191+00

CUY-77-14.35
88
365

FULL DEPTH JOINT REPAIR

A QUANTITY OF FULL DEPTH PAVEMENT REPLACEMENT HAS BEEN ESTIMATED FOR THE LIMITS SHOWN BELOW TO BE USED AS DIRECTED BY THE ENGINEER FOR CONCRETE JOINT REPAIR. RIGID PAVEMENT REMOVAL AND REPLACEMENT SHALL BE PER CMS 255 AS DETAILED IN STANDARD CONSTRUCTION DRAWING BP-2.5 FOR TRANSVERSE JOINTS.

ESTIMATION OF EXISTING TRANSVERSE JOINTS - REPAIR PER 255

STA. 33+01.6 TO STA. 40+17.6 = 716 FT. W/ JOINTS @ 15 FT. SPACING
716 FT. / 15 FT. = 48 TRANSVERSE JOINTS.
USE 50 JOINTS W/ 30% IN NEED OF REPAIR = 15 JOINTS.
ROAD WIDTH = 45 FT.
REPLACEMENT LENGTH = 6 FT.

ESTIMATION OF EXISTING LONGITUDINAL JOINT - REPAIR PER 251

STA. 33+01.60 TO STA. 40+17.60 = 716 FT.
3 LONGITUDINAL JOINTS x 716 FT. = 2148 FT.
USE 2150 x 30% IN NEED OF REPAIR = 645 FT.

ITEM 255 - FULL DEPTH PAVEMENT REMOVAL AND RIGID REPLACEMENT, CLASS QC MS

15 TRANSVERSE JOINTS @ 45 FT. x 6 FT. / 9 = 450 SQ. YD.
TOTAL CARRIED TO MAINTENANCE OF TRAFFIC SUBSUMMARY = 450 SQ.YDS.

ITEM 255 - FULL DEPTH PAVEMENT SAWING

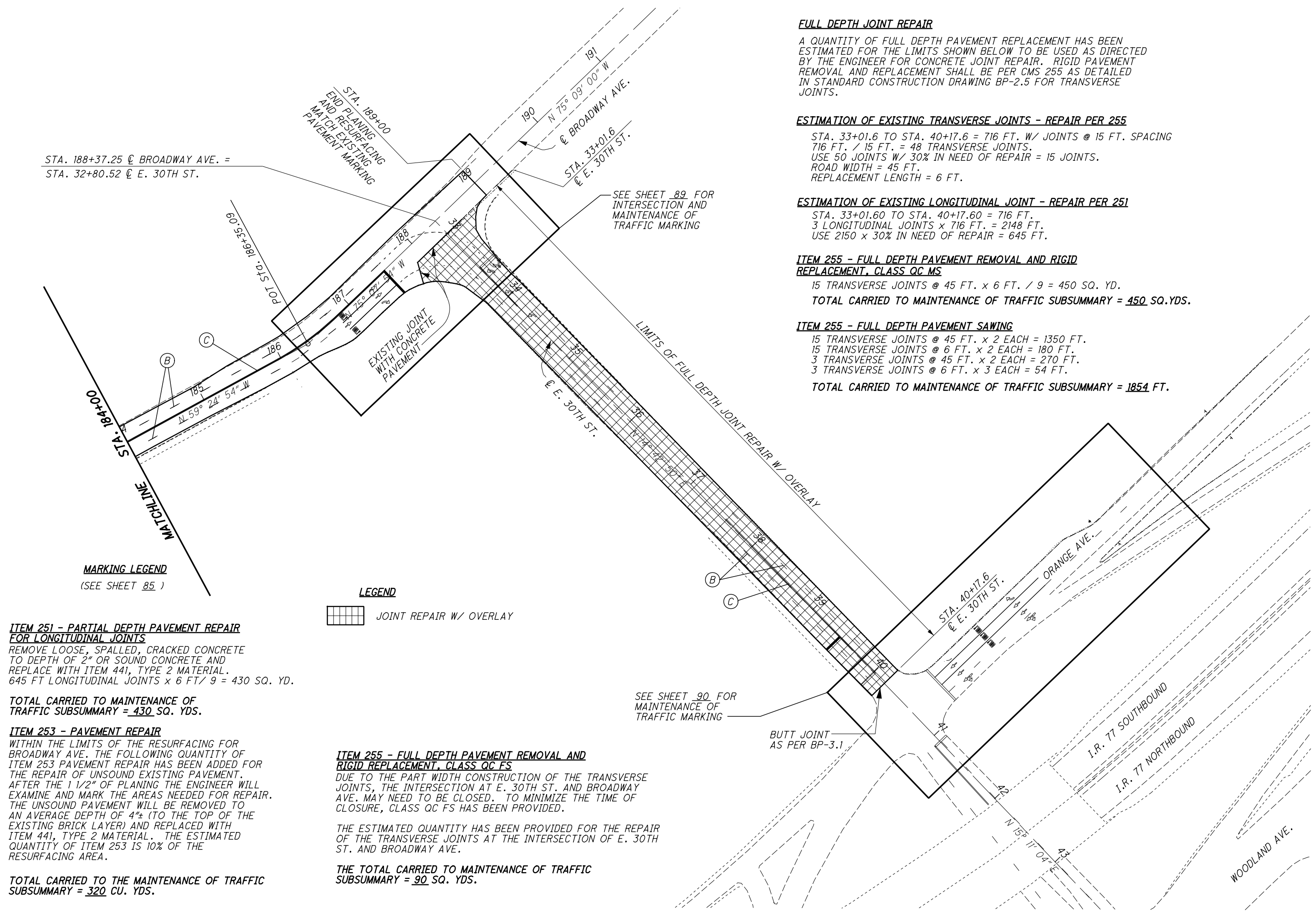
15 TRANSVERSE JOINTS @ 45 FT. x 2 EACH = 1350 FT.
15 TRANSVERSE JOINTS @ 6 FT. x 2 EACH = 180 FT.
3 TRANSVERSE JOINTS @ 45 FT. x 2 EACH = 270 FT.
3 TRANSVERSE JOINTS @ 6 FT. x 3 EACH = 54 FT.
TOTAL CARRIED TO MAINTENANCE OF TRAFFIC SUBSUMMARY = 1854 FT.

ITEM 255 - FULL DEPTH PAVEMENT REMOVAL AND RIGID REPLACEMENT, CLASS QC FS

DUE TO THE PART WIDTH CONSTRUCTION OF THE TRANSVERSE JOINTS, THE INTERSECTION AT E. 30TH ST. AND BROADWAY AVE. MAY NEED TO BE CLOSED. TO MINIMIZE THE TIME OF CLOSURE, CLASS QC FS HAS BEEN PROVIDED.

THE ESTIMATED QUANTITY HAS BEEN PROVIDED FOR THE REPAIR OF THE TRANSVERSE JOINTS AT THE INTERSECTION OF E. 30TH ST. AND BROADWAY AVE.

THE TOTAL CARRIED TO MAINTENANCE OF TRAFFIC SUBSUMMARY = 90 SQ. YDS.



STA. 188+37.25 @ BROADWAY AVE. =
STA. 32+80.52 @ E. 30TH ST.

STA. 189+00
END PLANING
AND RESURFACING
MATCH EXISTING
PAVEMENT MARKING

190 N 75° 09' 00" W
@ BROADWAY AVE.
STA. 33+01.6
@ E. 30TH ST.

SEE SHEET 89 FOR
INTERSECTION AND
MAINTENANCE OF
TRAFFIC MARKING

LIMITS OF FULL DEPTH JOINT REPAIR W/ OVERLAY

SEE SHEET 90 FOR
MAINTENANCE OF
TRAFFIC MARKING

BUTT JOINT
AS PER BP-3.1

MARKING LEGEND
(SEE SHEET 85)

LEGEND
[Grid Pattern] JOINT REPAIR W/ OVERLAY

ITEM 251 - PARTIAL DEPTH PAVEMENT REPAIR FOR LONGITUDINAL JOINTS

REMOVE LOOSE, SPALLED, CRACKED CONCRETE TO DEPTH OF 2" OR SOUND CONCRETE AND REPLACE WITH ITEM 441, TYPE 2 MATERIAL.
645 FT LONGITUDINAL JOINTS x 6 FT / 9 = 430 SQ. YD.

TOTAL CARRIED TO MAINTENANCE OF TRAFFIC SUBSUMMARY = 430 SQ. YDS.

ITEM 253 - PAVEMENT REPAIR

WITHIN THE LIMITS OF THE RESURFACING FOR BROADWAY AVE. THE FOLLOWING QUANTITY OF ITEM 253 PAVEMENT REPAIR HAS BEEN ADDED FOR THE REPAIR OF UNSOUND EXISTING PAVEMENT. AFTER THE 1 1/2" OF PLANING THE ENGINEER WILL EXAMINE AND MARK THE AREAS NEEDED FOR REPAIR. THE UNSOUND PAVEMENT WILL BE REMOVED TO AN AVERAGE DEPTH OF 4"± (TO THE TOP OF THE EXISTING BRICK LAYER) AND REPLACED WITH ITEM 441, TYPE 2 MATERIAL. THE ESTIMATED QUANTITY OF ITEM 253 IS 10% OF THE RESURFACING AREA.

TOTAL CARRIED TO THE MAINTENANCE OF TRAFFIC SUBSUMMARY = 320 CU. YDS.

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CALCULATED	JDL	CHECKED	TJF
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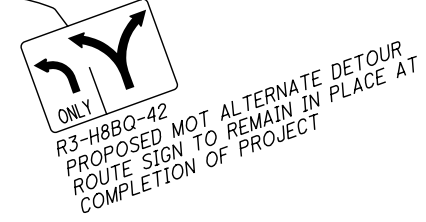
**MAINTENANCE OF TRAFFIC MARKING & SIGNING
PLAN - BROADWAY AVE. AND E. 30TH STREET**

NOTES:

- FOR MARKING LEGEND SEE SHEET 85 .
- EXISTING PAVEMENT MARKINGS HAVE BEEN REPLACED THROUGH RESURFACING LIMITS. SEE SHEET 88 FOR RESURFACING PLAN.

LEGEND

■ JOINT REPAIR W/ OVERLAY

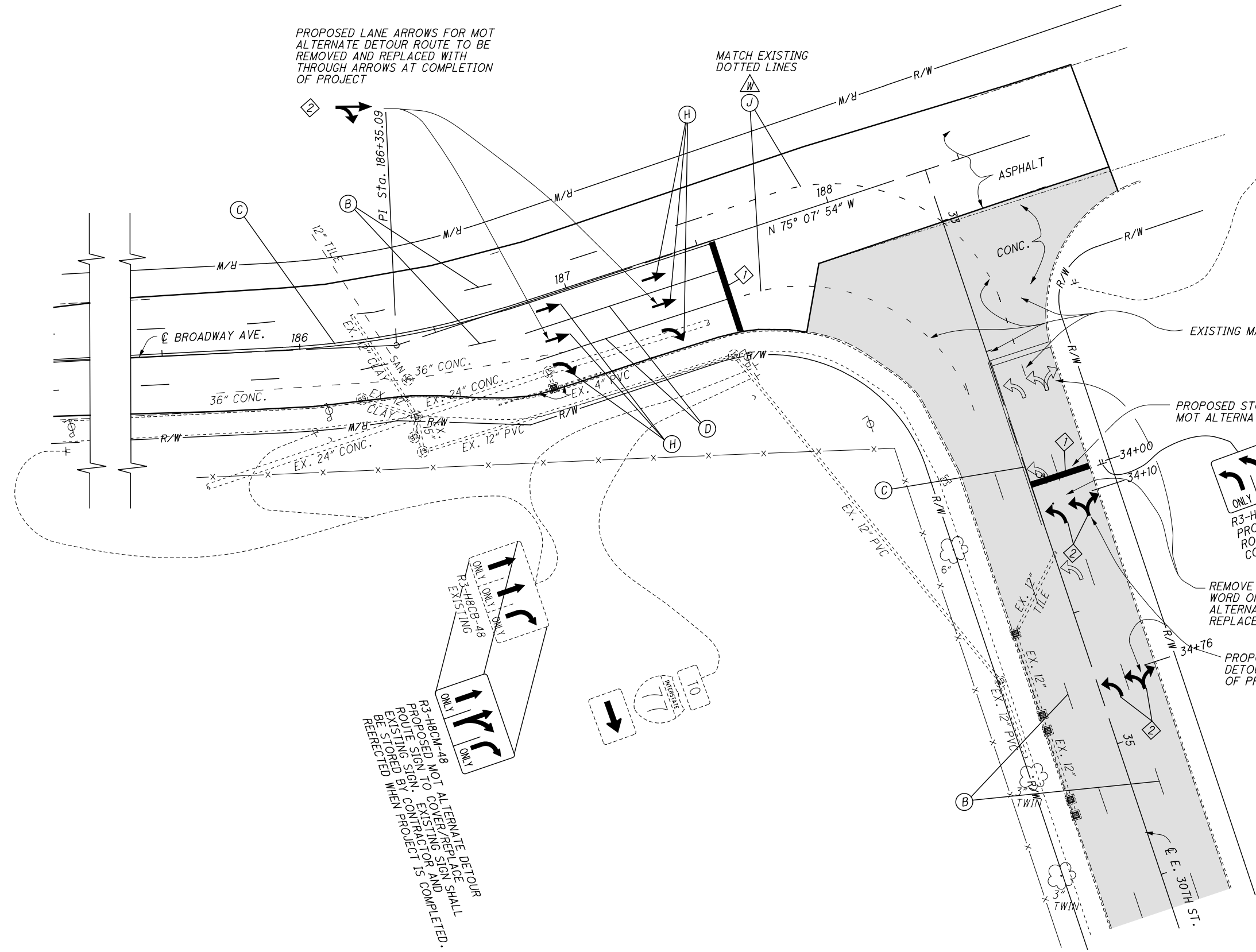


REMOVE EXISTING LANE ARROWS WORD ON PAVEMENT FOR MOT ALTERNATE DETOUR ROUTE. REPLACE WHEN PROJECT IS COMPLETED

PROPOSED LANE ARROWS FOR MOT ALTERNATE DETOUR ROUTE TO REMAIN AT COMPLETION OF PROJECT.

PROPOSED LANE ARROWS FOR MOT ALTERNATE DETOUR ROUTE TO BE REMOVED AND REPLACED WITH THROUGH ARROWS AT COMPLETION OF PROJECT

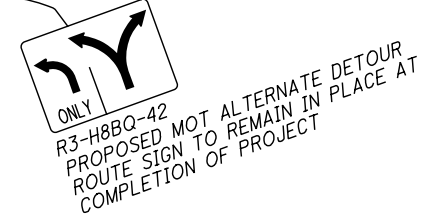
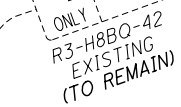
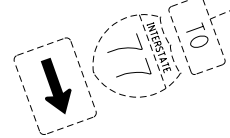
MATCH EXISTING DOTTED LINES



ONLY R3-H8CB-48 EXISTING

ONLY R3-H8CM-48

ONLY R3-H8CM-48 ALTERNATE DETOUR ROUTE SIGN TO COVER/REPLACE SIGN AND ROUTE SIGN. EXISTING SIGN BY CONTRACTOR IS COMPLETED. BE STORED WHEN PROJECT IS COMPLETED. BE REJECTED

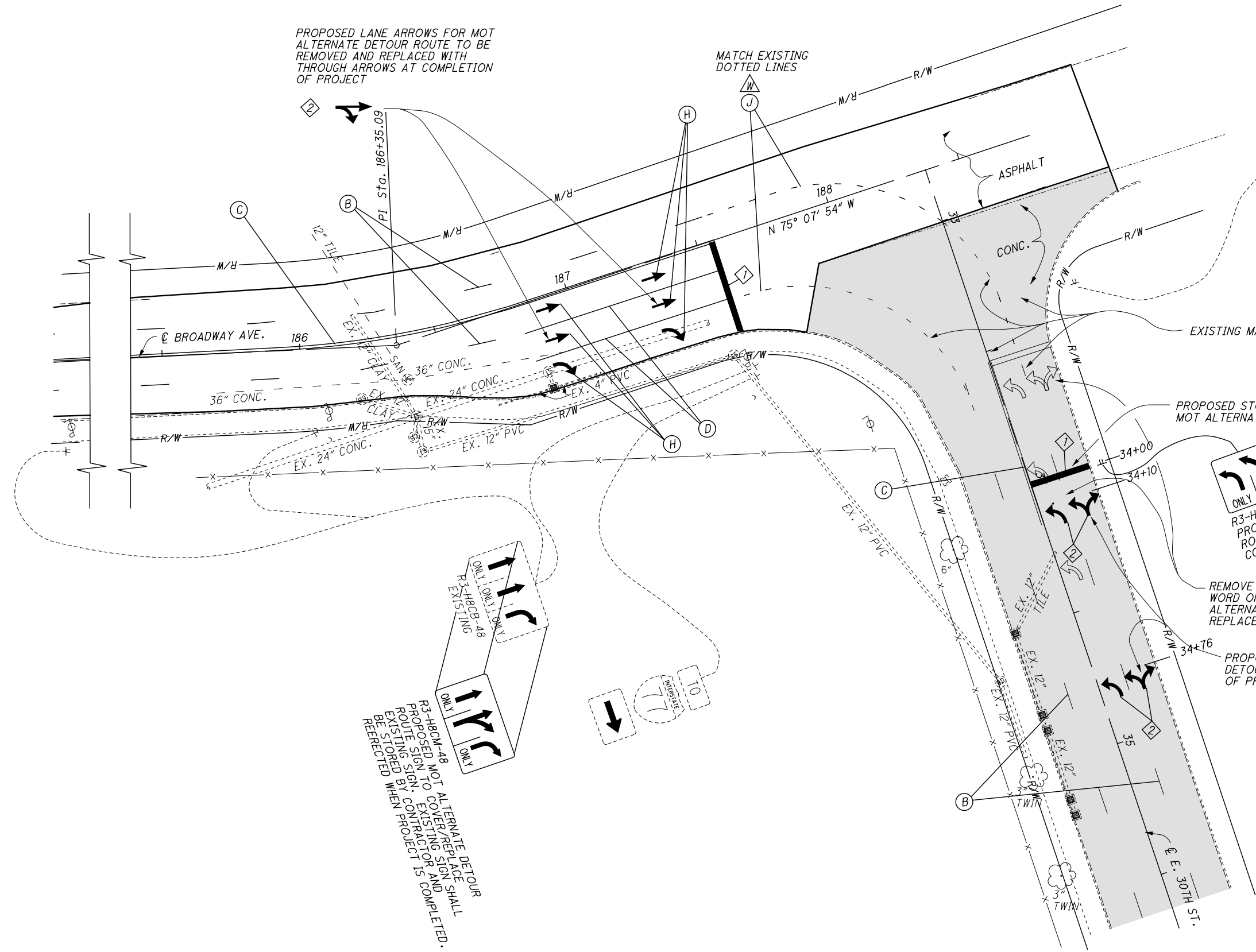


REMOVE EXISTING LANE ARROWS WORD ON PAVEMENT FOR MOT ALTERNATE DETOUR ROUTE. REPLACE WHEN PROJECT IS COMPLETED

PROPOSED LANE ARROWS FOR MOT ALTERNATE DETOUR ROUTE TO REMAIN AT COMPLETION OF PROJECT.

PROPOSED LANE ARROWS FOR MOT ALTERNATE DETOUR ROUTE TO BE REMOVED AND REPLACED WITH THROUGH ARROWS AT COMPLETION OF PROJECT

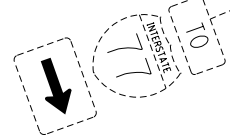
MATCH EXISTING DOTTED LINES

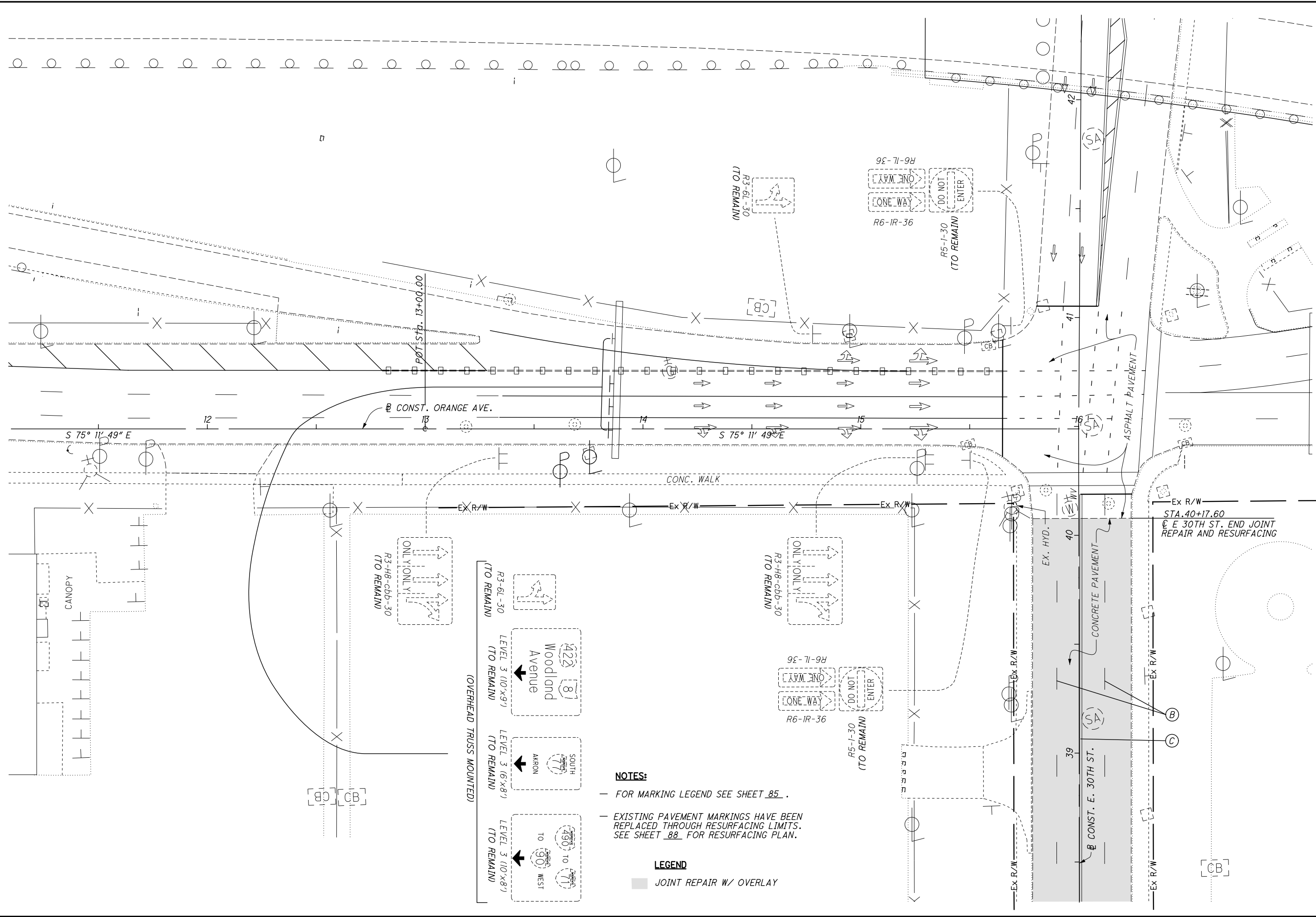


ONLY R3-H8CB-48 EXISTING

ONLY R3-H8CM-48

ONLY R3-H8CM-48 ALTERNATE DETOUR ROUTE SIGN TO COVER/REPLACE SIGN AND ROUTE SIGN. EXISTING SIGN BY CONTRACTOR IS COMPLETED. BE STORED WHEN PROJECT IS COMPLETED. BE REJECTED





NOTES:

- FOR MARKING LEGEND SEE SHEET 85.
- EXISTING PAVEMENT MARKINGS HAVE BEEN REPLACED THROUGH RESURFACING LIMITS. SEE SHEET 88 FOR RESURFACING PLAN.

LEGEND

■ JOINT REPAIR W/ OVERLAY

CALCULATED JDL
 CHECKED TJF

**MAINTENANCE OF TRAFFIC MARKING & SIGNING PLAN
 E. 30TH STREET AND ORANGE AVE. WIDENING**

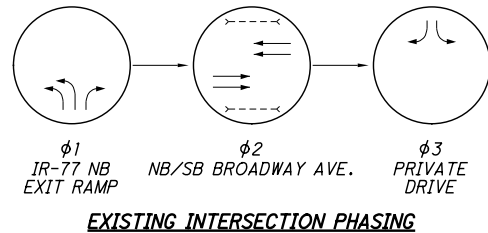
CUY-77-14.35

90
365

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1

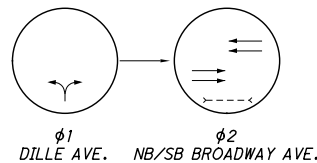
INTERSECTION:	BROADWAY AVENUE @ IR-77 NB EXIT RAMP			
CYCLE LENGTH:	___ SEC			
OFFSET PHASE(S)	OFFSET TIME (SEC)			
PHASE (φ)	1	2	3	4
EXISTING SPLIT				
MOT SPLIT				



EXISTING INTERSECTION PHASING

2

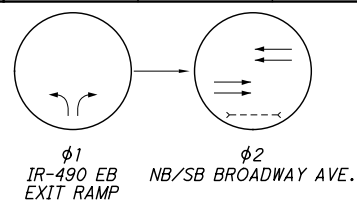
INTERSECTION:	BROADWAY AVENUE @ DILLE AVENUE			
CYCLE LENGTH:	___ SEC			
OFFSET PHASE(S)	OFFSET TIME (SEC)			
PHASE (φ)	1	2	3	4
EXISTING SPLIT				
MOT SPLIT				



EXISTING INTERSECTION PHASING

3

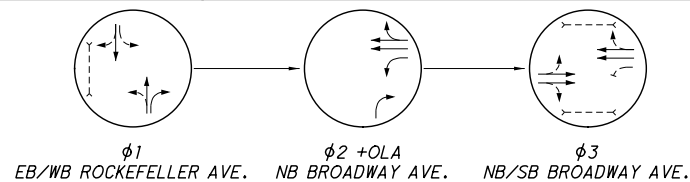
INTERSECTION:	BROADWAY AVENUE @ IR-490 EB EXIT RAMP			
CYCLE LENGTH:	___ SEC			
OFFSET PHASE(S)	OFFSET TIME (SEC)			
PHASE (φ)	1	2	3	4
EXISTING SPLIT				
MOT SPLIT				



EXISTING INTERSECTION PHASING

4

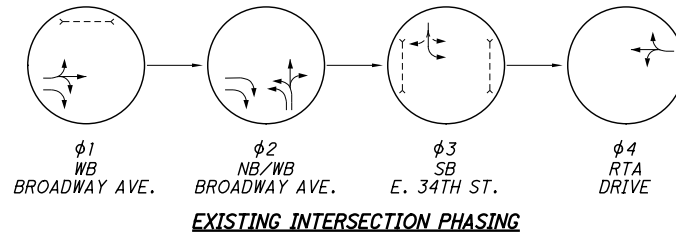
INTERSECTION:	BROADWAY AVENUE @ ROCKEFELLER AVENUE			
CYCLE LENGTH:	___ SEC			
OFFSET PHASE(S)	OFFSET TIME (SEC)			
PHASE (φ)	1	2	3	4
EXISTING SPLIT				
MOT SPLIT				



EXISTING INTERSECTION PHASING

5

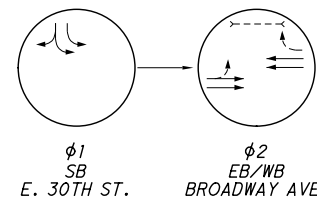
INTERSECTION:	BROADWAY AVENUE @ EAST 34TH STREET / RTA			
CYCLE LENGTH:	___ SEC			
OFFSET PHASE(S)	OFFSET TIME (SEC)			
PHASE (φ)	1	2	3	4
EXISTING SPLIT				
MOT SPLIT				



EXISTING INTERSECTION PHASING

6

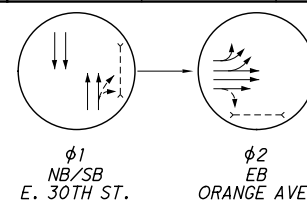
INTERSECTION:	BROADWAY AVENUE @ EAST 30TH STREET			
CYCLE LENGTH:	___ SEC			
OFFSET PHASE(S)	OFFSET TIME (SEC)			
PHASE (φ)	1	2	3	4
EXISTING SPLIT				
MOT SPLIT				



EXISTING INTERSECTION PHASING

7

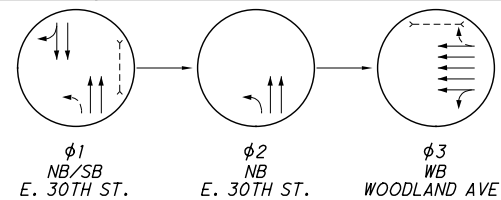
INTERSECTION:	EAST 30TH STREET @ ORANGE AVENUE			
CYCLE LENGTH:	___ SEC			
OFFSET PHASE(S)	OFFSET TIME (SEC)			
PHASE (φ)	1	2	3	4
EXISTING SPLIT				
MOT SPLIT				



EXISTING INTERSECTION PHASING

8

INTERSECTION:	EAST 30TH STREET @ WOODLAND AVENUE			
CYCLE LENGTH:	___ SEC			
OFFSET PHASE(S)	OFFSET TIME (SEC)			
PHASE (φ)	1	2	3	4
EXISTING SPLIT				
MOT SPLIT				

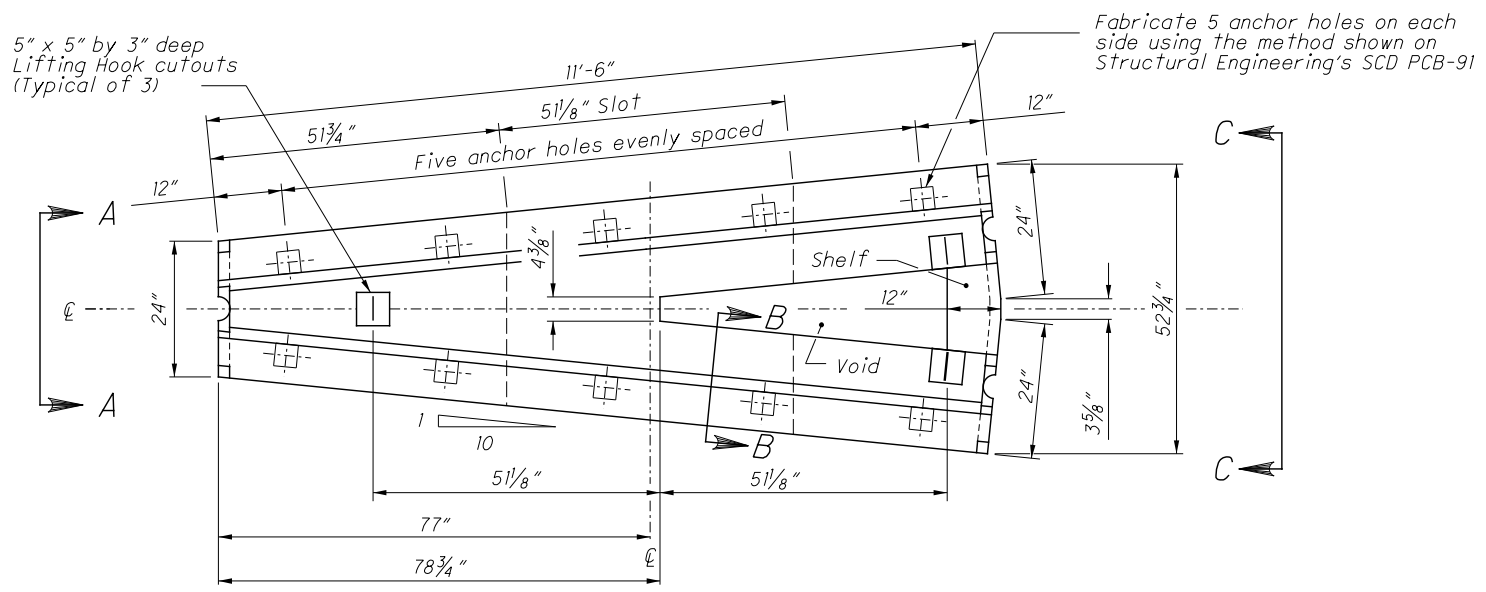


EXISTING INTERSECTION PHASING

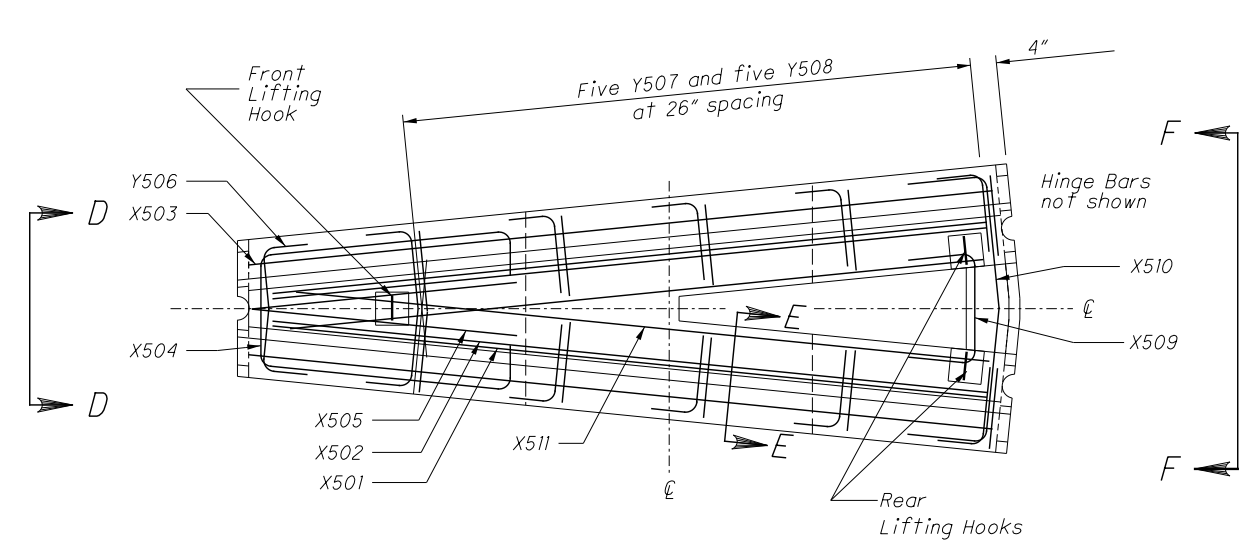
NOTES

- ① SEE SHEET 80 FOR SIGNAL LOCATIONS ON LOCAL DETOUR ALTERNATE ROUTE.
- ② SEE THE MOT SIGNAL SYSTEM COORDINATION NOTE ON SHEET 44.
- ③ THE CONTRACTOR SHALL RECORD THE EXISTING SIGNAL TIMINGS, PHASING, COORDINATION, AND TRAFFIC VOLUME PATTERNS PRIOR TO THE BEGINNING OF ANY WORK ON I.R. 77.
- ④ THE CONTRACTOR SHALL DEVELOP PROPOSED MOT TIMING AND COORDINATION UTILIZING THE EXISTING SIGNAL PHASING. ALL TIMING ADJUSTMENTS SHALL BE APPROVED AND MADE BY THE CITY OF CLEVELAND PERSONNEL.
- ⑤ THE CONTRACTOR SHALL MONITOR TRAFFIC PATTERNS ALONG THE LOCAL ALTERNATE ROUTE THROUGHOUT THE DURATION OF THE PROJECT AND DEVELOP TIMING AND COORDINATION ADJUSTMENTS AT THE REQUEST OF THE ENGINEER. TO BE IMPLEMENTED BY THE CITY OF CLEVELAND PERSONNEL.

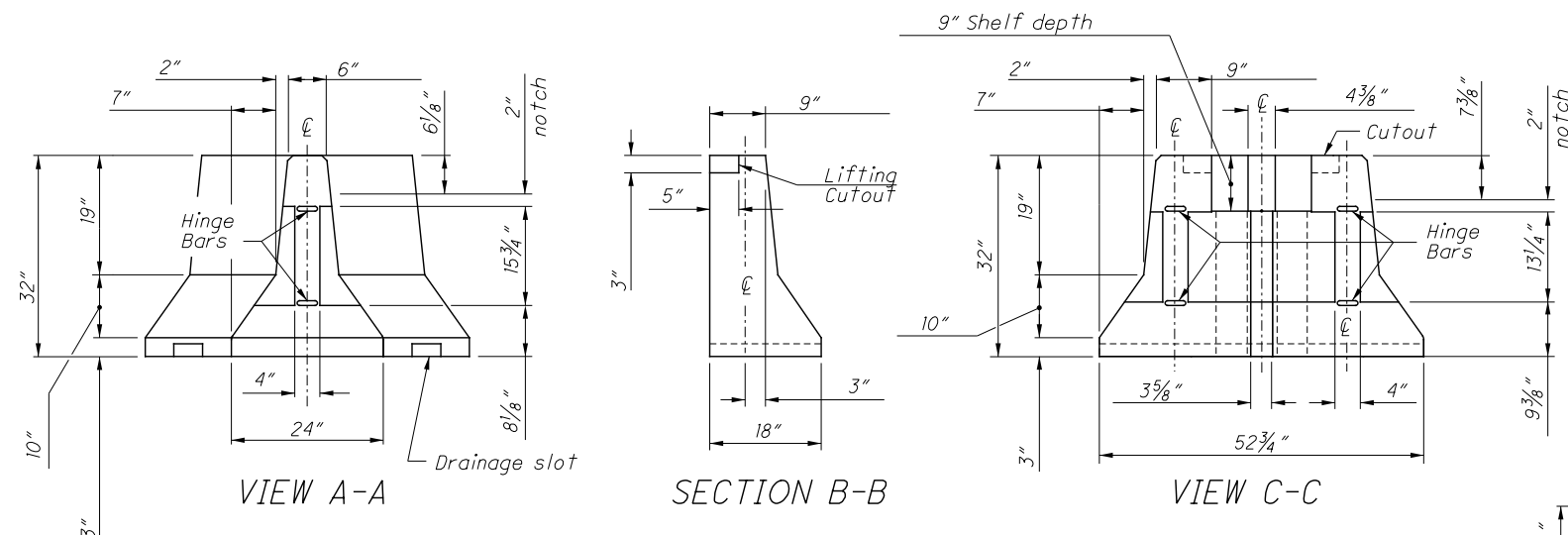
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PLAN



REINFORCING PLAN VIEW



NOTES

GENERAL: This barrier segment is used to split one run of portable concrete barrier into dual runs. Attach directly to ODOT's 32" PCB; however, other approved barrier shapes may be connected to this segment by the use of an appropriate transition unit. Attach at least one standard PCB segment in between this "Y" and an Impact Attenuator. Its field application is shown in MOT plans and on MT standard drawings. Do not use this barrier in an unanchored configuration next to bridge deck edges or similar dropoffs, anchor according to method shown on PCBDD or other approved method.

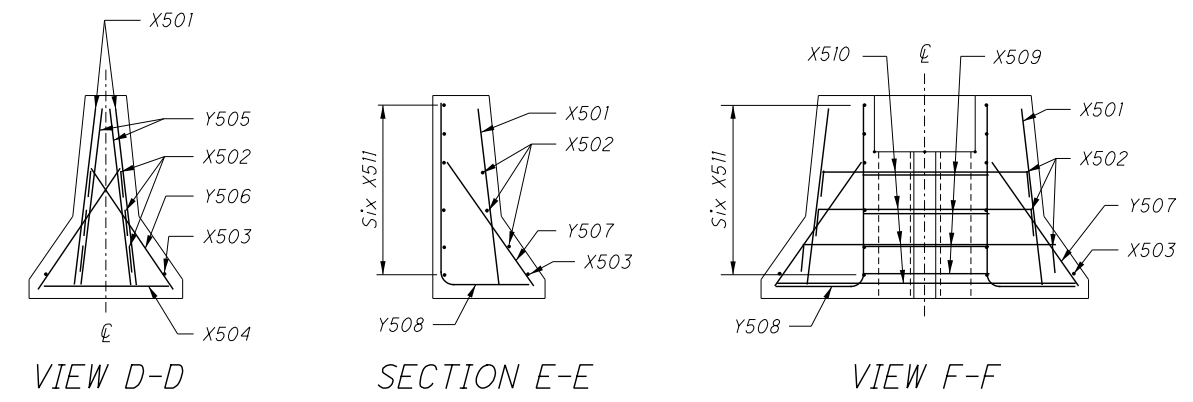
BARRIER DETAILS: Use SCD RM-4.2 for details not shown here, including the geometry of this pin and loop segment matches in every way the design of the end connections shown on the HINGED CONNECTION and JOINT CONNECTION Details (the alternate J-J Hooks connection design is permitted). Additionally, barrier edges may be radiused or chamfered as per the LEGEND Note, barrier is to be permanently marked as mentioned in the MARKINGS Note, and delineate as per the REFLECTORIZATION Note.

MATERIAL SPECIFICATIONS: The minimum design strength of the concrete is 4,000 psi and meets the requirements of CMS 499. For reinforcing steel, use ASTM A615 Grade 60 black steel and provide 2" min. rebar cover. Material specifications for the Hinge and Reinforcing Bars, as well as the Connecting Hardware may be found on SCD RM-4.2. For additional material specifications not shown here, see SCD RM-4.2 and CMS 622.

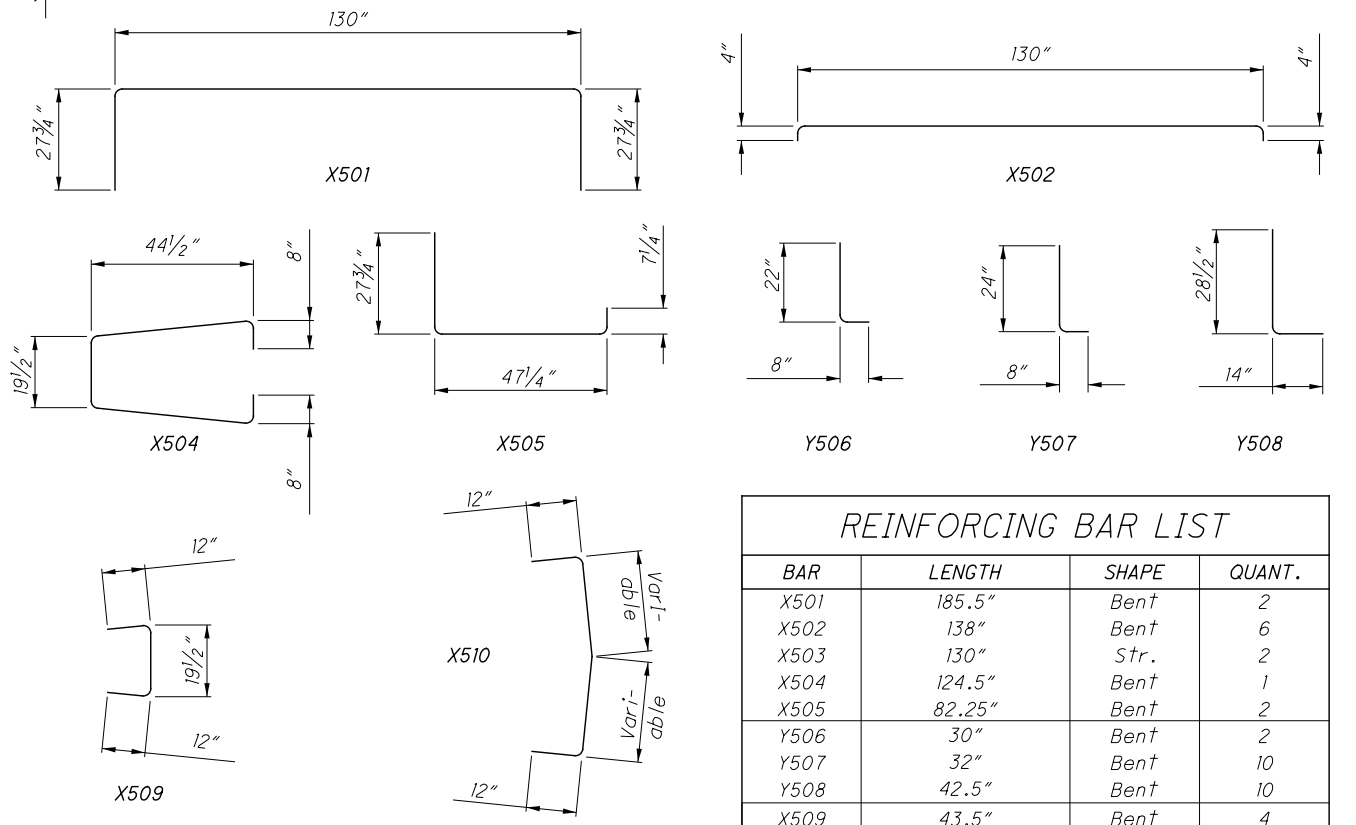
HANDLING: The fabricator is responsible for the design of a lifting system for handling segments. As a minimum, use three lifting points at the locations suggested in the Plan views, and design with a lifting factor of safety of 4. Any protrusions from the lifting hook design is not to affect the crash worthiness of the barrier. The calculations shall be signed, sealed and dated by a Registered Engineer and include these calculations with the Manufacturing Drawings required by Supplement 1073.12. Refer to Part 5 of the PCI Handbook. Approximate segment weight is 8,500 lbs [3850 kg].

PAYMENT: Payment will be made under Item 622 - Portable Barrier, "Y" Connector, Each, and will include all forms, materials and labor to cast this segment.

ALTERNATE METHOD: Contractors may choose to use a wide Impact Attenuator in lieu of the concrete "Y" alternate. The chosen unit will be a Type 2 or 3 Impact Attenuator matching the product previously called for on the project plans at the expected installation location.



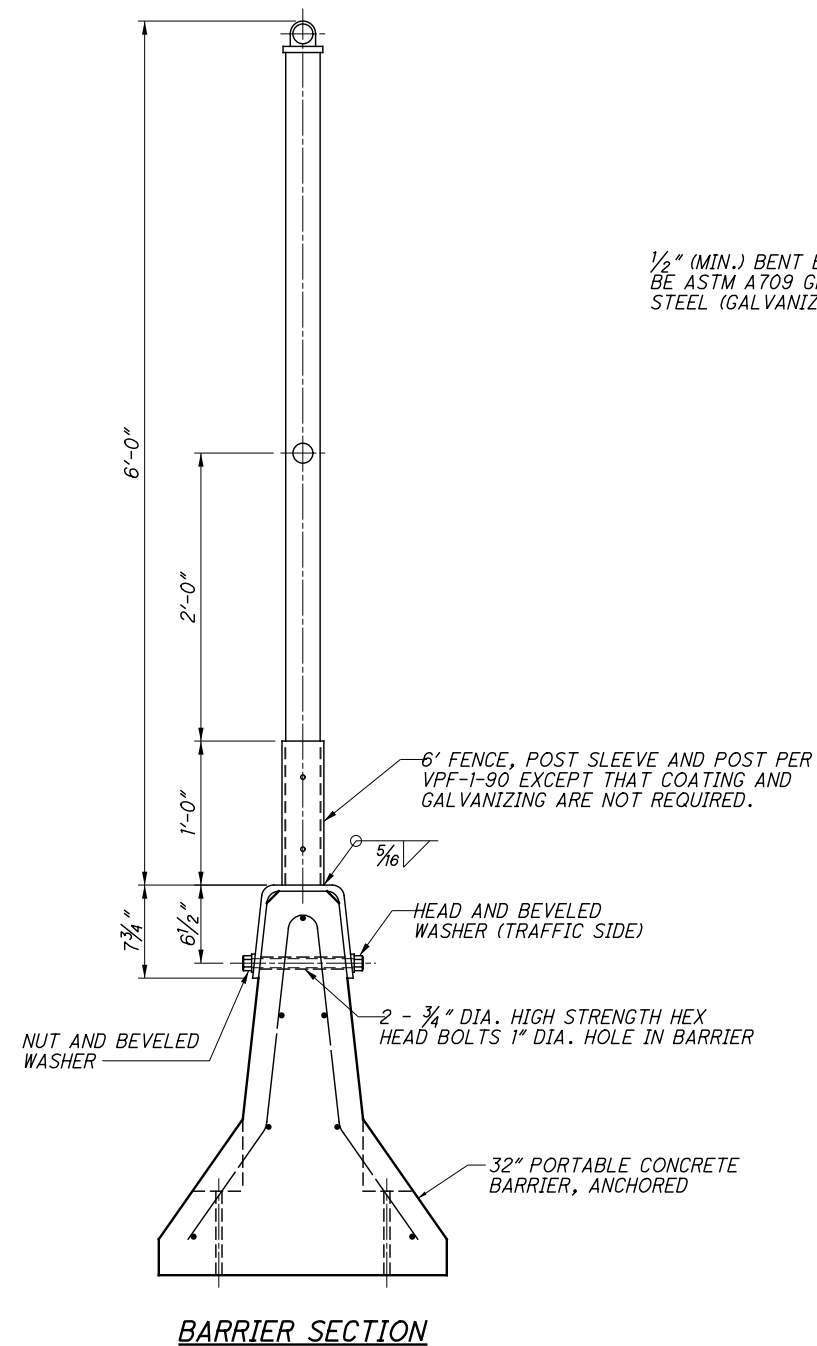
REINFORCING DETAILS



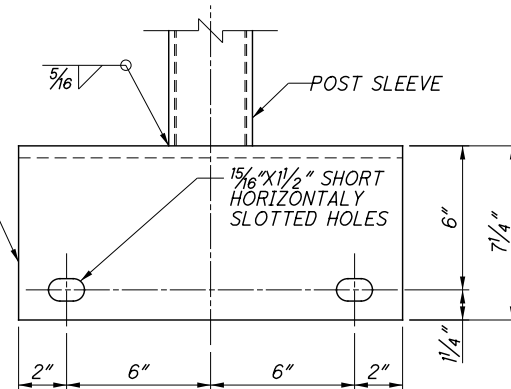
BENDING DIAGRAMS

REINFORCING BAR LIST			
BAR	LENGTH	SHAPE	QUANT.
X501	185.5"	Bent	2
X502	138"	Bent	6
X503	130"	Str.	2
X504	124.5"	Bent	1
X505	82.25"	Bent	2
Y506	30"	Bent	2
Y507	32"	Bent	10
Y508	42.5"	Bent	10
X509	43.5"	Bent	4
X510	Varies	Bent	4
X511	124"	Str.	12

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1/2" (MIN.) BENT BASE PLATES SHALL BE ASTM A709 GRADE 36 OR 50 STEEL (GALVANIZING NOT REQUIRED)



SIDE VIEW

ITEM 622 - PORTABLE BARRIER, 32", BRIDGE MOUNTED, AS PER PLAN

THIS ITEM SHALL BE AS PER CMS 622.04 AND THE STANDARD CONSTRUCTION DRAWINGS WITH THE EXCEPTION THAT IT SHALL INCLUDE THE COST TO FURNISH, INSTALL, AND MAINTAIN THE BARRIER MOUNTED VANDAL PROTECTION FENCE AS DETAILED ON THIS SHEET. PAYMENT FOR ITEM 622 - PORTABLE BARRIER, 32", BRIDGE MOUNTED, AS PER PLAN SHALL INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, AND INCIDENTALS TO CONSTRUCT, MAINTAIN, AND REMOVE THIS ITEM AT THE LOCATIONS INDICATED IN THE PLANS.

NOTES

FENCE LINE POSTS AND END POSTS SHALL BE 2.880" OUTSIDE DIA. GRADE 2 PIPE, 710.03 (TYPE 1), FY = 50,000 PSI, 4.64 LB/FT. THE PROTECTIVE COATING SHALL BE ACCORDING TO AASHTO M181 FOR GRADE 2 POSTS.

BASE PLATES SHALL BE ASTM A709 GRADE 36 OR 50 STEEL GALVANIZED ACCORDING TO 711.02.

POST SLEEVES SHALL BE 3.5" OUTSIDE DIA. PIPE, ASTM A53, 25,000 PSI MIN. YIELD STRENGTH, 7.58 LB/FT, GALVANIZED ACCORDING TO 711.02. HEXAGON SOCKET SET SCREWS SHALL BE SAE 4140 ALLOY STEEL, HEAT TREATED, WITH FLAT OR OVAL POINTS.

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SHEET NUMBER											ITEM	ITEM EXT.	FUNDING PARTICIPATION		GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
18-22	23-33	34-45	99	100	101-103	104-111	113-114	155, 164, 169	205	206-209			01/IMS/BR					
ROADWAY																		
LS											201	11000	LS		LS		CLEARING AND GRUBBING	
						15465					202	23000	15465		15465	SY	PAVEMENT REMOVED	
						3089					202	23010	3089		3089	SY	PAVEMENT REMOVED, ASPHALT	
			1698								202	30700	1698		1698	FT	CONCRETE BARRIER REMOVED	
						84					202	32000	84		84	FT	CURB REMOVED	
				287							202	35100	287		287	FT	PIPE REMOVED, 24" AND UNDER	
			3829								202	38000	3829		3829	FT	GUARDRAIL REMOVED	
				3							202	58100	3		3	EACH	CATCH BASIN REMOVED	
				3							202	58200	3		3	EACH	INLET REMOVED	
400											SPECIAL	20270110	400		400	FT	PIPE CLEANOUT, 24" AND UNDER	21
								22872			203	10000	22872		22872	CY	EXCAVATION	
								23866			203	20000	23866		23866	CY	EMBANKMENT	
984						30315					204	10000	30315		30315	SY	SUBGRADE COMPACTION	
984											204	13000	984		984	CY	EXCAVATION OF SUBGRADE	
											204	30010	984		984	CY	GRANULAR MATERIAL, TYPE B	
2950						12					204	45000	12		12	hour	PROOF ROLLING	
				20							204	50000	2950		2950	SY	GEOTEXTILE FABRIC	
			48								209	10000	20		20	FT	DITCH CLEANOUT	
											209	15001	48		48	STA	RESHAPING UNDER GUARDRAIL, AS PER PLAN	18
							4				209	60200	4		4	STA	LINEAR GRADING	
			4392								606	15050	4392		4392	FT	GUARDRAIL, TYPE MGS	
			4								606	26150	4		4	EACH	ANCHOR ASSEMBLY, MGS TYPE E	
			2								606	26550	2		2	EACH	ANCHOR ASSEMBLY, MGS TYPE T	
			4								606	35002	4		4	EACH	MGS BRIDGE TERMINAL ASSEMBLY, TYPE 1	
			2								606	35102	2		2	EACH	MGS BRIDGE TERMINAL ASSEMBLY, TYPE 2	
			1010								622	10140	1010		1010	FT	CONCRETE BARRIER, SINGLE SLOPE, TYPE C1	
			63								622	10161	63		63	FT	CONCRETE BARRIER, SINGLE SLOPE, TYPE D, AS PER PLAN	16
			2								622	10201	2		2	EACH	BARRIER TRANSITION, AS PER PLAN NO. 1	182
			2								622	10201	2		2	EACH	BARRIER TRANSITION, AS PER PLAN NO. 2	186
			18								622	25014	18		18	EACH	CONCRETE BARRIER, END ANCHORAGE, REINFORCED, TYPE C1	
			1								623	39501	1		1	EACH	MONUMENT BOX ADJUSTED TO GRADE, AS PER PLAN	45
			8								638	10801	8		8	EACH	VALVE BOX ADJUSTED TO GRADE, AS PER PLAN	45
EROSION CONTROL																		
				29							601	10001	29		29	SY	RIPRAP, AS PER PLAN	194
4					10						601	21050	14		14	SY	TIED CONCRETE BLOCK MAT, TYPE 1	
				5287							601	21100	5287		5287	SY	SLOPE PROTECTION, MISC.: GROUT FILLED FABRIC MATS	21
				8							601	32204	8		8	CY	ROCK CHANNEL PROTECTION, TYPE C WITH GEOTEXTILE FABRIC	
2											659	00100	2		2	EACH	SOIL ANALYSIS TEST	
3633											659	00300	3633		3633	CY	TOPSOIL	
28023											659	10000	28023		28023	SY	SEEDING AND MULCHING	
1637											659	14000	1637		1637	SY	REPAIR SEEDING AND MULCHING	
1637											659	15000	1637		1637	SY	INTER-SEEDING	
5											659	20000	5		5	TON	COMMERCIAL FERTILIZER	
7											659	31000	7		7	ACRE	LIME	
182											659	35000	182		182	MGAL	WATER	
74											659	40000	74		74	MSF	MOWING	
				1038							670	00500	1038		1038	SY	SLOPE EROSION PROTECTION	
				3662							670	00700	3662		3662	SY	DITCH EROSION PROTECTION	
											832	15000	LS		LS		STORM WATER POLLUTION PREVENTION PLAN	
											832	30000	150000		150000	EACH	EROSION CONTROL	

GENERAL SUMMARY

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SHEET NUMBER											ITEM	ITEM EXT.	FUNDING PARTICIPATION		GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
18-22	23-33	34-45	99	100	101-103	104-111	113-114	155, 164, 169	205	206-209			01/IMS/BR					
				1.3							602	20000	1.30	1.30	CY	CONCRETE MASONRY		
					8537						605	11110	8537	8537	FT	6" SHALLOW PIPE UNDERDRAINS WITH GEOTEXTILE FABRIC, 707.31 OR 707.41		
50					835						605	13410	885	885	FT	6" UNCLASSIFIED PIPE UNDERDRAINS WITH GEOTEXTILE FABRIC, 707.31 OR 707.41		
					5764						605	14020	5764	5764	FT	6" BASE PIPE UNDERDRAINS WITH GEOTEXTILE FABRIC, 707.31 OR 707.41		
					140						611	00510	140	140	FT	6" CONDUIT, TYPE F FOR UNDERDRAIN OUTLETS, 707.33 OR 707.41		
					449						611	00900	449	449	FT	6" CONDUIT, TYPE B		
50											611	01500	50	50	FT	6" CONDUIT, TYPE F		
	874										611	04201	874	874	FT	12" CONDUIT, TYPE A, 707.01, AS PER PLAN	43	
				17							611	04400	17	17	FT	12" CONDUIT, TYPE B, 706.02		
				21							611	04600	21	21	FT	12" CONDUIT, TYPE C		
				1152							611	05900	1152	1152	FT	15" CONDUIT, TYPE B		
				18							611	06100	18	18	FT	15" CONDUIT, TYPE C		
				332							611	06700	332	332	FT	15" CONDUIT, TYPE F, 707.05 TYPE C OR 707.21		
				18							611	07400	18	18	FT	18" CONDUIT, TYPE B, 706.02		
				5							611	07600	5	5	FT	18" CONDUIT, TYPE C		
				6							611	09100	6	6	FT	21" CONDUIT, TYPE C		
	320										611	97011	320	320	FT	12" SLOTTED DRAIN, TYPE 2, AS PER PLAN	43	
				36							611	97400	36	36	FT	CONDUIT, MISC.: 16" CONDUIT, TYPE F, AS PER PLAN	21	
				115							611	97400	115	115	FT	CONDUIT, MISC.: 18" CONDUIT, TYPE F, AS PER PLAN	21	
				5							611	98180	5	5	EACH	CATCH BASIN, NO. 3A		
				4							611	98300	4	4	EACH	CATCH BASIN, NO. 5		
				1							611	98341	1	1	EACH	CATCH BASIN, NO. 5A		
				1							611	98470	1	1	EACH	CATCH BASIN, NO. 2-2B		
				2							611	98541	2	2	EACH	CATCH BASIN, NO. 2-4, AS PER PLAN	194	
											611	98631	16	16	EACH	CATCH BASIN ADJUSTED TO GRADE, AS PER PLAN	45	
		16									611	98634	5	5	EACH	CATCH BASIN RECONSTRUCTED TO GRADE		
		5									611	99110	7	7	EACH	INLET, NO. 3 FOR SINGLE SLOPE BARRIER, TYPE C1		
				7							611	99150	4	4	EACH	INLET ADJUSTED TO GRADE		
				4							611	99574	1	1	EACH	MANHOLE, NO. 3		
				1														
				21							611	99655	21	21	EACH	MANHOLE ADJUSTED TO GRADE, AS PER PLAN	45	
				1							611	99660	1	1	EACH	MANHOLE RECONSTRUCTED TO GRADE		
				2							611	99661	2	2	EACH	MANHOLE RECONSTRUCTED TO GRADE, AS PER PLAN	21	
2					5						611	99710	7	7	EACH	PRECAST REINFORCED CONCRETE OUTLET		
		3000									SPECIAL	61199820	3000	3000	LB	MISCELLANEOUS METAL	45	

GENERAL SUMMARY

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SHEET NUMBER											ITEM	ITEM EXT.	FUNDING PARTICIPATION		GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
18-22	23-33	34-45	99	100	101-103	104-111	113-114	155, 164, 169	205	206-209			01 / IMS / BR					
PAVEMENT																		
	430										251	01000	430	430	SY	PARTIAL DEPTH PAVEMENT REPAIR (441)		
530	320										253	02000	850	850	CY	PAVEMENT REPAIR		
	57314					6694					254	01000	64008	64008	SY	PAVEMENT PLANING, ASPHALT CONCRETE		
	90										255	10110	90	90	SY	FULL DEPTH PAVEMENT REMOVAL AND RIGID REPLACEMENT, CLASS QC FS		
	450										255	10160	450	450	SY	FULL DEPTH PAVEMENT REMOVAL AND RIGID REPLACEMENT, CLASS QC MS		
	1854										255	20000	1854	1854	FT	FULL DEPTH PAVEMENT SAWING		
						10371					302	46000	10371	10371	CY	ASPHALT CONCRETE BASE, PG64-22		
						5071					304	20000	5071	5071	CY	AGGREGATE BASE		
	320										407	13900	320	320	GAL	TACK COAT, 702.13		
	5052					2110	48				407	20000	7210	7210	GAL	NON-TRACKING TACK COAT		
	1198										441	50101	1198	1198	CY	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), PG70-22M, AS PER PLAN	20	
	183										441	50300	183	183	CY	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, (448)		
			221								441	50701	221	221	CY	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, (448), (UNDER GUARDRAIL), AS PER PLAN	18	
	1238					1446					442	10001	2684	2684	CY	ASPHALT CONCRETE SURFACE COURSE, 12.5 MM, TYPE A (446), PG76-22M, AS PER PLAN	20	
						1382					442	10100	1382	1382	CY	ASPHALT CONCRETE INTERMEDIATE COURSE, 19 MM, TYPE A (446)		
							10				442	20150	10	10	CY	ASPHALT CONCRETE INTERMEDIATE COURSE, 9.5 MM, TYPE B (448)		
						194					609	24510	194	194	FT	CURB, TYPE 4-C		
						11389					618	40100	11389	11389	FT	RUMBLE STRIPS, (ASPHALT CONCRETE)		
						534					875	10000	534	534	LB	LONGITUDINAL JOINT ADHESIVE		
LIGHTING																		
SEE LIGHTING GENERAL SUMMARY SHEET 227																		
TRAFFIC CONTROL																		
									43		620	00500	43	43	EACH	DELINEATOR, POST GROUND MOUNTED		
									4		620	11000	4	4	EACH	DELINEATOR, BRACKET MOUNTED		
									6		620	31200	6	6	EACH	REMOVAL OF DELINEATOR		
									298		621	00100	298	298	EACH	RPM		
									50		621	00300	50	50	EACH	RPM REFLECTOR		
									230		621	54000	230	230	EACH	RAISED PAVEMENT MARKER REMOVED		
									8		625	32000	8	8	EACH	GROUND ROD		
			106								626	00100	106	106	EACH	BARRIER REFLECTOR		
											84.0	630	02100	84.0	FT	GROUND MOUNTED SUPPORT, NO. 2 POST		
											62.5	630	03100	62.5	FT	GROUND MOUNTED SUPPORT, NO. 3 POST		
											69.6	630	04100	69.6	FT	GROUND MOUNTED SUPPORT, NO. 4 POST		
											126.5	630	07600	126.5	FT	GROUND MOUNTED STRUCTURAL BEAM SUPPORT, W10X12		
											161.9	630	08000	161.9	FT	GROUND MOUNTED STRUCTURAL BEAM SUPPORT, W12X30		
											57.7	630	08210	57.7	FT	GROUND MOUNTED SUPPORT, PIPE		
											5.0	630	08600	5.0	EACH	SIGN POST REFLECTOR		
											14	630	09000	14	EACH	BREAKAWAY STRUCTURAL BEAM CONNECTION		
											3	630	09050	3	EACH	TRIANGULAR SLIP BASE CONNECTION		
											1	630	35500	1	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-7.65, DESIGN 6		
											2	630	45500	2	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-7.65, DESIGN 8		
											1	630	55000	1	EACH	CONCRETE BARRIER MEDIAN OVERHEAD SIGN SUPPORT FOUNDATION, TC-7.65		

GENERAL SUMMARY

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SHEET NUMBER											ITEM	ITEM EXT.	FUNDING PARTICIPATION		GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
18-22	23-33	34-45	99	100	101-103	104-111	113-114	155, 164, 169	205	206-209			01/IMS/BR					
TRAFFIC CONTROL (CONT'D.)																		
										1	630	55001	1	1	EACH	CONCRETE BARRIER MEDIAN OVERHEAD SIGN SUPPORT FOUNDATION, TC-7.65, AS PER PLAN	184	
										1	630	66500	1	1	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-15.115		
										4	630	79600	4	4	EACH	SIGN SUPPORT ASSEMBLY, BRIDGE MOUNTED, TYPE 1		
										2	630	79611	2	2	EACH	SIGN SUPPORT ASSEMBLY, BARRIER MOUNTED, AS PER PLAN	222	
										231.8	630	80100	231.8	231.8	SF	SIGN, FLAT SHEET		
										178.0	630	80200	178.0	178.0	SF	SIGN, GROUND MOUNTED EXTRUSHEET		
										1113.0	630	80224	1113.0	1113.0	SF	SIGN, OVERHEAD EXTRUSHEET		
										45.0	630	80400	45.0	45.0	SF	SIGN, PERMANENT OVERLAY		
										3.0	630	82000	3.0	3.0	EACH	SIGN BACKING ASSEMBLY		
										12	630	84500	12	12	EACH	GROUND MOUNTED STRUCTURAL BEAM SUPPORT FOUNDATION		
										6	630	84510	6	6	EACH	RIGID OVERHEAD SIGN SUPPORT FOUNDATION		
										3	630	84600	3	3	EACH	GROUND MOUNTED PIPE SUPPORT FOUNDATION		
										14	630	84900	14	14	EACH	REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL		
										3	630	85100	3	3	EACH	REMOVAL OF GROUND MOUNTED SIGN AND REERECTION		
										1	630	85400	1	1	EACH	REMOVAL OF GROUND MOUNTED MAJOR SIGN AND DISPOSAL		
										5	630	85600	5	5	EACH	REMOVAL OF GROUND MOUNTED MAJOR SIGN AND REERECTION		
										15	630	86002	15	15	EACH	REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL		
										7	630	86102	7	7	EACH	REMOVAL OF GROUND MOUNTED STRUCTURAL BEAM SUPPORT AND DISPOSAL		
										4	630	87100	4	4	EACH	REMOVAL OF OVERHEAD MOUNTED SIGN AND REERECTION		
										12	630	87400	12	12	EACH	REMOVAL OF OVERHEAD MOUNTED SIGN AND DISPOSAL		
										1	630	89706	1	1	EACH	REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-12.30		
										4	630	89802	4	4	EACH	REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-7.65		
										0.13	644	00100	0.13	0.13	MILE	EDGE LINE, 4"		
										1.85	644	00200	1.85	1.85	MILE	LANE LINE, 4"		
										0.87	644	00300	0.87	0.87	MILE	CENTER LINE		
										219	644	00400	219	219	FT	CHANNELIZING LINE, 8"		
										361	644	00500	361	361	FT	STOP LINE		
										630	644	00600	630	630	FT	CROSSWALK LINE		
										51	644	00700	51	51	FT	TRANSVERSE/DIAGONAL LINE		
										12	644	01300	12	12	EACH	LANE ARROW		
										887	644	01500	887	887	FT	DOTTED LINE, 4"		
										6.56	646	10010	6.56	6.56	MILE	EDGE LINE, 6"		
										5.35	646	10110	5.35	5.35	MILE	LANE LINE, 6"		
										6780	646	10310	6780	6780	FT	CHANNELIZING LINE, 12"		
										145	646	10600	145	145	FT	TRANSVERSE/DIAGONAL LINE		
										475	646	10620	475	475	FT	CHEVRON MARKING		
										4524	646	20504	4524	4524	FT	DOTTED LINE, 6"		

GENERAL SUMMARY

CUY-77-14.35

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SHEET NUMBER											ITEM	ITEM EXT.	FUNDING PARTICIPATION		GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
18-22	23-33	34-45	99	100	101-103	104-111	113-114	155, 164, 169	205	206-209			01/IMS/BR					
MAINTENANCE OF TRAFFIC																		
		336									614	1110	336		336	HOUR	LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE	
		384									614	11120	384		384	HOUR	LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ENFORCEMENT	
		28									614	11500	28		28	MNTH	WORKSITE TRAFFIC SUPERVISOR	
	5973										614	11630	5973		5973	FT	INCREASED BARRIER DELINEATION	
	12										614	12336	12		12	EACH	WORK ZONE IMPACT ATTENUATOR (UNIDIRECTIONAL)	
		LS									614	12420	LS		LS		DETOUR SIGNING	
		16									614	12470	16		16	EACH	WORK ZONE SPEED LIMIT SIGN	
		16									614	12484	16		16	EACH	WORK ZONE INCREASED PENALTIES SIGN	
		40									614	12500	40		40	EACH	REPLACEMENT SIGN	
	1684										614	12801	1684		1684	EACH	WORK ZONE RAISED PAVEMENT MARKER, AS PER PLAN	42
	266	100									614	13000	366		366	CY	ASPHALT CONCRETE FOR MAINTAINING TRAFFIC	
	98										614	13200	98		98	EACH	BARRIER REFLECTOR, TYPE A	
	374										614	13300	374		374	EACH	BARRIER REFLECTOR, TYPE B	
	454										614	13350	454		454	EACH	OBJECT MARKER, ONE WAY	
	76										614	13360	76		76	EACH	OBJECT MARKER, TWO WAY	
	4										614	18000	4		4	EACH	MAINTAINING TRAFFIC, MISC.: BARRIER MEDIAN INLET RECONSTRUCTED TO GRADE	43
		LS									614	18002	LS		LS		MAINTAINING TRAFFIC, MISC.: MAINTENANCE OF TRAFFIC SIGNAL SYSTEM COORDINATION	44
		2000									614	18010	2000		2000	SF	MAINTAINING TRAFFIC, MISC.: COVERING SIGNS	35
		2000									614	18010	2000		2000	SF	MAINTAINING TRAFFIC, MISC.: DETOUR SIGNS	35
	1600										614	18030	1600		1600	FT	MAINTAINING TRAFFIC, MISC.: TEMPORARY SHEET PILING FOR PHASE CONSTRUCTION	43
		360									614	18601	360		360	SNMT	PORTABLE CHANGEABLE MESSAGE SIGN, AS PER PLAN	40
	5.92	5.35									614	20000	11.27		11.27	MILE	WORK ZONE LANE LINE, CLASS I	
		5.35									614	20500	5.35		5.35	MILE	WORK ZONE LANE LINE, CLASS II, 642 PAINT	
	25.11	6.56									614	22000	31.67		31.67	MILE	WORK ZONE EDGE LINE, CLASS I	
		6.56									614	22350	6.56		6.56	MILE	WORK ZONE EDGE LINE, CLASS III, 642 PAINT	
	48963										614	23000	48963		48963	FT	WORK ZONE CHANNELIZING LINE, CLASS I	
	6490	6780									614	28000	13270		13270	FT	WORK ZONE GORE MARKING, CLASS II	
		6780									614	28200	6780		6780	FT	WORK ZONE GORE MARKING, CLASS II, 642 PAINT	
		LS									615	10000	LS		LS		ROADS FOR MAINTAINING TRAFFIC	
	390										615	20000	390		390	SY	PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A	
		195									616	10000	195		195	MGAL	WATER	
	15082										622	41000	15082		15082	FT	PORTABLE BARRIER, 32"	
	160										622	41010	160		160	FT	PORTABLE BARRIER, 50"	
	1020										622	41020	1020		1020	FT	PORTABLE BARRIER, 32", BRIDGE MOUNTED	
	860										622	41021	860		860	FT	PORTABLE BARRIER, 32", BRIDGE MOUNTED, AS PER PLAN	93
	3										622	41050	3		3	EACH	PORTABLE BARRIER, "Y" CONNECTOR	
RETAINING WALLS																		
SEE RETAINING WALL SUMMARY, SHEET 262																		
STRUCTURES (OVER 20') CUY-77-1435 L & R																		
CUY-77-14.35 L & R ESTIMATED QUANTITIES, SEE SHEET 293																		
MISCELLANEOUS																		
											100	50200	LS		LS		DEPARTMENT'S SHARE OF THE DISPUTE RESOLUTION ADVISOR	
											108	10000	LS		LS		CPM PROGRESS SCHEDULE	
											614	11000	LS		LS		MAINTAINING TRAFFIC	
36											619	16021	36		36	MNTH	FIELD OFFICE, TYPE C, AS PER PLAN	18
											623	10001	LS		LS		CONSTRUCTION LAYOUT STAKES AND SURVEYING, AS PER PLAN	22
											624	10000	LS		LS		MOBILIZATION	

GENERAL SUMMARY

CUY-77-14.35

SHEET NO.	REF. NO.	STATION		SIDE	202		209	441	606				622				626			FOR INFORMATIONAL PURPOSES ONLY							
					CONCRETE BARRIER REMOVED	GUARDRAIL REMOVED	RESHAPING UNDER GUARDRAIL, AS PER PLAN	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, (448), (UNDER GUARDRAIL) A.P.P.	GUARDRAIL, TYPE MGS	ANCHOR ASSEMBLY, MGS TYPE E	ANCHOR ASSEMBLY, MGS TYPE T	MGS BRIDGE TERMINAL ASSEMBLY, TYPE 1	MGS BRIDGE TERMINAL ASSEMBLY, TYPE 2	CONCRETE BARRIER, SINGLE SLOPE, TYPE C1	CONCRETE BARRIER, SINGLE SLOPE, TYPE D, AS PER PLAN	BARRIER TRANSITION, AS PER PLAN NO. 1	BARRIER TRANSITION, AS PER PLAN NO. 2	CONCRETE BARRIER, END ANCHORAGE, REINFORCED, TYPE C1	BARRIER REFLECTOR, TYPE A	BARRIER REFLECTOR, TYPE B		20'-0" DEDUCT FOR MEDIAN BARRIER INLET I-2.2	10'-0" DEDUCT FOR MEDIAN BARRIER OVERHEAD SIGN SUPPORT	15'-0" DEDUCT FOR CONCRETE BARRIER, END ANCHORAGE	20'-0" DEDUCT FOR BARRIER TRANSITION, AS PER PLAN	TOTAL BARRIER DEDUCT	
		FT	FT		STA	CY	FT	EACH	EACH	EACH	EACH	FT	FT	EACH	EACH	EACH	EACH	WHITE	WHITE	YELLOW							
FROM	TO																										
121 - 123	1-GR	67+22.22	75+15.48	LT		793																					
123	2-GR	71+81.27	74+77.84	RT		297																					
123 - 126	3-GR	79+35.97	87+23.81	RT		788																					
123 - 126	4-GR	79+75.51	87+44.60	LT		769																					
119 - 121	10-GR	55+87.21	60+59.27	RT		472																					
121	11-GR	164+10.24	165+37.05	RT		127																					
121	12-GR	167+79.06	169+84.35	RT		205																					
121	13-GR	268+47.81	269+87.45	LT		140																					
123	14-GR	272+86.70	275+25.13	LT		238																					
121 - 123	5-GR	67+19.56	74+57.06	LT			7.38	35	725.00		1		1														
121 - 123	6-GR	66+50.60	73+27.50	RT			6.77	32	600.00	1		1															
123 - 126	7-GR	79+94.08	87+25.41	RT			7.32	34	704.43			1	1														
123 - 126	8-GR	81+82.50	87+21.90	LT			5.40	25	462.50	1		1															
119 - 121	16-GR	57+22.50	168+97.50	RT			11.75	55	1112.50	1	1																
121 - 123	17-GR	266+62.63	275+25.13	LT			8.63	40	787.50	1		1															
121 - 123	1-R	66+61.24	74+85.27	CL	824.0									557.20	31.50	1		7			14	3		6	1	170	
123 - 126	2-R	79+65.34	87+48.84	CL	783.5									452.28	31.50	1		11			14	4	1	8	1	230	
123	4-BR	73+25.00	79+96.08	RT																	8						
123	5-BR	74+55.06	81+85.00	LT																	8						
121	7-BR	58+10.00	59+00.00	CL	90.0																		1			10	
SUBTOTAL					1697.50	3829	47.25	221	4391.93	4	2	4	2	1009.48	63	2	2	18	50	16	40						
TOTALS CARRIED TO GENERAL SUMMARY					1698	3829	48	221	4392	4	2	4	2	1010	63	2	2	18	106								

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SHEET NO.	REF. NO.	STATION						601	611				605				BENDS & BRANCHES (FOR INFORMATION ONLY)						
		FROM	☉	ELEV	TO	☉	ELEV	TIED CONCRETE BLOCK MAT, TYPE 1	6" CONDUIT, TYPE B	6" CONDUIT, TYPE F FOR UNDERDRAIN OUTLETS, 707.33 OR 707.41	PRECAST REINFORCED CONCRETE OUTLET	6" SHALLOW PIPE UNDERDRAINS WITH GEOTEXTILE FABRIC, 707.31 OR 707.41	6" UNCLASSIFIED PIPE UNDERDRAINS WITH GEOTEXTILE FABRIC, 707.31 OR 707.41	6" BASE PIPE UNDERDRAINS WITH GEOTEXTILE FABRIC, 707.31 OR 707.41	OUTLET DETAILS	6" CROSS	6" TEE	6" WYE	6" X 22.5° BEND	6" X 45° BEND	6" X 90° BEND	6" PLUG	
								SY	FT	FT	EACH	FT	FT	FT	EA	EA	EA	EA	EA	EA	EA		
189	1 - SO	65+41.22	IR 77	EX. EL.	65+72.37	IR 77		41						A			2		2				
189	2 - SO	65+55.51	IR 77	EX. EL.	65+86.94	IR 77							32										
189	3 - SO	65+86.94	IR 77		67+00.94	IR 77						114									1		
189	4 - SO	67+02.47	IR 77					12		5				C		1				2			
189 - 190	5 - SO	67+02.47	IR 77		70+96.00	IR 77						394									1		
190	6 - SO	71+00.00	IR 77				1.8	12		15	1			G		1				2			
190	7 - SO	71+00.00	IR 77		75+17.56	IR 77						418									1		
190	8 - SO	80+39.56	IR 77		82+12.58	IR 77						173									1		
190	9 - SO	82+12.58	IR 77					9						I							1		
190 - 191	10 - SO	82+17.58	IR 77		86+00.00	IR 77						382		H	1						1		
191	11 - SO	86+00.00	IR 77				1.8	12		17	1			H	2		1						
191	12 - SO	86+00.00	IR 77		87+72.18	IR 77						172									1		
SO TOTALS =							4	86	37	2	1653	32	0	0	3	0	5	0	2	5	5		
189	1 - SS	65+41.92	IR 77	EX. EL.	65+75.00	IR 77							34	A									
189	2 - SS	65+75.00	IR 77		67+00.71	IR 77															1		
189 - 190	3 - SS	67+02.59	IR 77		70+96.00	IR 77								C							1		
190	4 - SS	71+00.00	IR 77		74+39.56	IR 77										1					1		
190 - 191	5 - SS	82+17.58	IR 77		86+00.00	IR 77								H	1						1		
191	6 - SS	86+00.00	IR 77		87+77.66	IR 77																	
SS TOTALS =							0	0	0	0	0	34	1419	0	1	1	0	0	0	0	0	4	
189	1 - NO	66+52.85	IR 77		69+00.00	IR 77						247									1		
189	2 - NO	69+00.00	IR 77				1.8	12		29	1			G		1				2			
189 - 190	3 - NO	69+00.00	IR 77		72+92.48	IR 77						393									1		
190	4 - NO	72+97.48	IR 77					11						I							1		
190	5 - NO	72+97.48	IR 77		74+15.44	IR 77						118		G					1		1		
190 - 191	6 - NO	79+37.44	IR 77		83+50.00	IR 77						413		G							1		
191	7 - NO	83+50.00	IR 77				1.8	12		15	1			G		1				2			
191	8 - NO	83+52.00	IR 77		86+53.41	IR 77						302		J					1		1		
191	9 - NO	86+60.00	IR 77		87+19.71	IR 77						60		J					1		1		
10-NO TO 51-NO NOT USED																							
188 - 189	52 - NO	55+00.00	IR 77		59+01.20	IR 77						401							1	1	1		
189	53 - NO	59+01.20	IR 77		61+50.00	IR 77						249									1		
189	54 - NO	61+50.00	IR 77	648.02	62+25.00	IR 77																	
189	55 - NO	62+25.00	IR 77		64+50.00	IR 77						215											
189	56 - NO	64+60.00	IR 77		66+49.00	IR 77						189		B						1	1		
189	57 - NO	64+60.00	IR 77		66+49.00	IR 77			12							1							
NO TOTALS =							4	69	44	2	2586	85	0	0	0	1	3	0	4	6	9		

TOTALS CARRIED TO UNDERDRAIN SUBSUMMARY SHEET NO. 103

CALCULATED	MAF	CHECKED	TJF		
UNDERDRAIN SUBSUMMARY					
CUY - 77 - 14.35					
<table border="1" style="margin: auto; border-collapse: collapse;"> <tr> <td style="padding: 2px;">101</td> </tr> <tr> <td style="padding: 2px;">365</td> </tr> </table>				101	365
101					
365					

SHEET NO.	REF. NO.	STATION					601			611				605				BENDS & BRANCHES (FOR INFORMATION ONLY)									
							TIED CONCRETE BLOCK MAT, TYPE 1	6" CONDUIT, TYPE B	6" CONDUIT, TYPE F FOR UNDERDRAIN OUTLETS, 707.33 OR 707.41	PRECAST REINFORCED CONCRETE OUTLET	6" SHALLOW PIPE UNDERDRAINS WITH GEOTEXTILE FABRIC, 707.31 OR 707.41	6" UNCLASSIFIED PIPE UNDERDRAINS WITH GEOTEXTILE FABRIC, 707.31 OR 707.41	6" BASE PIPE UNDERDRAINS WITH GEOTEXTILE FABRIC, 707.31 OR 707.41	OUTLET DETAILS													
															SY	FT	FT	EACH	FT	FT	EA	EA	EA	EA	EA	EA	EA
FROM	└	ELEV	TO	└	ELEV																						
189	1 - NS	66+53.31	IR 77			IR 77				24									B	1	1						1
189	2 - NS	66+52.85	IR 77		68+96.00	IR 77											243										1
189 - 190	3 - NS	69+00.00	IR 77		72+92.48	IR 77										393			G							1	
190 - 191	4 - NS	80+11.58	IR 77		83+50.00	IR 77										339			E							1	
191	5 - NS	83+52.00	IR 77		86+53.58	IR 77										302										1	
191	6 - NS	86+53.58	IR 77		87+14.22	IR 77										61			E								
7-NS TO 50-NS NOT USED																											
188 - 189	51 - NS	54+00.00	IR 77		59+13.20	IR 77											500		C		1			1		1	
189	52 - NS	59+23.00	IR 77		61+50.00	IR 77										227										1	
189	53 - NS	61+50.00	IR 77	648.54	62+25.00	IR 77	648.54									75											
189	54 - NS	62+25.00	IR 77		64+52.00	IR 77										10			J							1	
189	55 - NS	64+61.00	IR 77		66+50.00	IR 77										189			D							1	
NS TOTALS =							0	24	31	0	0	85	2470	0	1	1	1	0	1	1	1	8					
189	1 - M	66+76.50	IR 77		69+45.00	IR 77				6						269					1				1	1	
189	2 - M	69+53.26	IR 77	667.59	69+75.00	IR 77	668.59									22			E							1	
189 - 190	3 - M	69+75.00	IR 77		71+40.65	IR 77										166			E							1	
190	4 - M	71+53.26	IR 77		73+58.44	IR 77										205			E							1	
190	4A - M	73+63.44	IR 77		74+15.44	IR 77										52			E							1	
190	5A - M	80+39.00	IR 77		80+83.30	IR 77										44			E							1	
190 - 191	5 M	80+96.00	IR 77		83+46.74	IR 77										251			E							1	
191	6 - M	83+55.00	IR 77		85+46.74	IR 77										192			K			1				1	
191	7 - M	85+55.00	IR 77		86+56.74	IR 77										102			E							1	
191	8 M	86+63.26	IR 77		87+50.31	IR 77										87			E					2			
M TOTALS =							0	6	0	0	1179	22	189	0	0	1	0	1	2	1	9						
189	1 - SI	66+76.50	IR 77		69+45.00	IR 77				7						269			A			1				1	
189	2 - SI	69+53.26	IR 77	667.59	69+75.00	IR 77	667.59									22			D							1	
189 - 190	3 - SI	69+75.00	IR 77		71+45.00	IR 77										170			D				1			1	
190	4 - SI	71+50.00	IR 77		73+57.71	IR 77										208			D					1		1	
190	5 - SI	73+63.44	IR 77		75+17.56	IR 77										154			D					1		1	
SI TOTALS =							0	35	0	0	800	22	0	0	1	2	3	1	5								
190	1 - NI	79+37.44	IR 77		80+88.30	IR 77				7						151			D					1		1	
190 - 191	2 - NI	81+00.00	IR 77		83+46.73	IR 77										247			D							1	
191	3 - NI	83+55.00	IR 77		85+46.74	IR 77										192			D							1	
191	4 - NI	85+55.00	IR 77		86+56.74	IR 77										102			K							1	
191	5 - NI	86+63.26	IR 77		87+41.58	IR 77										79			K					1			
6-NI TO 51-NI NOT USED																											
188	52 - NI	54+00.00	IR 77		55+48.36	IR 77										148			B							1	
188	53 - NI	55+48.36	IR 77		55+48.36	IR 77					12								B							1	
188 - 190	54 - NI	55+48.36	IR 77		58+77.20	IR 77										329					1					1	
189	55 - NI	58+77.20	IR 77		59+11.76	IR 77					50								A			2		2			
189	56 - NI	58+81.20	IR 77		61+50.00	IR 77										269										1	
189	57 - NI	61+50.00	IR 77	647.88	62+25.00	IR 77	647.88									75			C								
189	58 - NI	62+25.00	IR 77		62+25.00	IR 77					41		16						H			2	2		1		
189	59 - NI	62+25.00	IR 77		66+48.00	IR 77										413											
NI TOTALS =							0	138	16	0	1748	85	181	0	0	3	4	0	8	1	7						

TOTALS CARRIED TO UNDERDRAIN SUBSUMMARY SHEET NO. 103

CALCULATED MAF CHECKED TJF
UNDERDRAIN SUBSUMMARY
 CUY-77-14.35
 102
 365

SHEET NO.	REF. NO.	STATION						601	611				605			BENDS & BRANCHES (FOR INFORMATION ONLY)														
		FROM	☐	ELEV	TO	☐	ELEV	TIED CONCRETE BLOCK MAT, TYPE 1 SY	6" CONDUIT, TYPE B FT	6" CONDUIT, TYPE F FOR UNDERDRAIN OUTLETS, 707.33 OR 707.41 FT	PRECAST REINFORCED CONCRETE OUTLET EACH	6" SHALLOW PIPE UNDERDRAINS WITH GEOTEXTILE FABRIC, 707.31 OR 707.41 FT	6" UNCLASSIFIED PIPE UNDERDRAINS WITH GEOTEXTILE FABRIC, 707.31 OR 707.41 FT	6" BASE PIPE UNDERDRAINS WITH GEOTEXTILE FABRIC, 707.31 OR 707.41 FT	OUTLET DETAILS	6" CROSS EA	6" TEE EA	6" WYE EA	6" X 22.5°BEND EA	6" X 45°BEND EA	6" X 90°BEND EA	6" PLUG EA								
		189	1 -SES	164+68.00	RAMP SE		167+50.00	RAMP SE									282										1			
189	2 -SES	167+52.00	RAMP SE		170+50.00	RAMP SE	EX								298	B									1					
189	3 -SES	170+50.00	RAMP SE	EX	170+50.00	RAMP SE	EX		9																2					
SES TOTALS =							0	9	0	0	0	0	580	0	0	0	0	0	0	2	2									
189	1 -SEO	164+68.00	RAMP SE		164+68.00	RAMP SE		1.8	12	12	1					C	1				1	1								
189	2 -SEO	164+68.00	RAMP SE		167+50.00	RAMP SE						282				A					1				1					
189	3 -SEO	167+52.00	RAMP SE		170+50.00	RAMP SE	EX					288	10			A					1									
SEO TOTALS =							1.8	12	12	1	570	0	10	0	0	0	1	0	3	1	1									
189	1 -SEI	169+96.81	RAMP SE		170+50.00	RAMP SE									54															
189	2 -SEI	170+50.00	RAMP SE		170+50.00	RAMP SE			33							B	2	1			1	2								
SEI TOTALS =							0	33	0	0	0	0	54	0	0	2	1	0	1	2	0									
189	1 -SWI	264+65.00	RAMP SW		267+48.00	RAMP SW									283	J									1					
189	2 -SWI	267+52.00	RAMP SW		270+00.00	RAMP SW	657.51						10		238										1					
189	3 -SWI	270+00.00	RAMP SW	657.51	270+00.00	RAMP SW	657.51	37								B	1	1			1	1								
189 - 190	4 -SWI	270+00.00	RAMP SW	657.51	274+00.00	RAMP SW	EX						400												1					
SWI TOTALS =							0	37	0	0	0	410	521	0	0	1	1	0	1	1	3									
189 - 190	1 -SWS	270+00.00	RAMP SW		274+00.00	RAMP SW							50		350										1					
SWS TOTALS =							0	0	0	0	0	50	350	0	0	0	0	0	0	0	0	1								
UNDERDRAIN TOTALS																														
LEFT SIDE (SOUTHBOUND)																														
SO TOTALS =							4	86	37	2	1653		32	0	0	3	0	5	0	2	5	6								
SS TOTALS =							0	0	0	0	0		34	1419	0	1	1	0	0	0	0	4								
SI TOTALS =							0	35	0	0	800		22	0	0	0	1	2	3	1	5									
RIGHT SIDE (NORTHBOUND)																														
NO TOTALS =							4	69	44	2	2586		85	0	0	1	3	0	4	6	9									
NS TOTALS =							0	24	31	0	0		85	2470	0	1	1	1	0	1	1	8								
NI TOTALS =							0	138	16	0	1748		85	181	0	0	3	4	0	8	1	7								
MEDIAN																														
M TOTALS =							0	6	0	0	1179		22	189	0	0	1	0	1	2	1	9								
RAMP SE																														
SES TOTALS =							0	9	0	0	0		0	580	0	0	0	0	0	0	2	2								
RAMP SE																														
SEO TOTALS =							2	12	12	1	570		10	0	0	1	0	0	3	1	1									
RAMP SE																														
SEI TOTALS =							0	33	0	0	0		0	54	0	0	2	1	0	1	2	0								
RAMP SW																														
SWI TOTALS =							0	37	0	0	0		410	521	0	0	1	1	0	1	1	3								
RAMP SW																														
SWS TOTALS =							0	0	0	0	0		50	350	0	0	0	0	0	0	0	1								
SUBTOTAL =							10	449	140	5	8537		835	5764	0	5	11	16	3	25	21	55								
TOTALS CARRIED TO GENERAL SUMMARY							10	449	140	5	8537		835	5764	BENDS AND BRANCHES TOTALS (FOR INFORMATION ONLY)															

CALCULATED	MAF	CHECKED	TJF
UNDERDRAIN SUBSUMMARY			
CUY-77-14.35			
103 365			

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LINE	DESCRIPTION		CALCULATION						QUANTITY
PLANING AND RESURFACING									
	LOCATION	FROM STATION	TO STATION	LENGTH		WIDTH			
					FROM	TO			
1	NB	54+00.00	55+48.36 =	148.36 FT	40.71	40.71	=	6039.74 SF	
2	NB	55+48.36	66+61.26 =	1112.90 FT	28.70	28.70	=	31940.23 SF	
3	NB	66+61.24	66+75.00 =	13.76 FT	24.00	24.00	=	330.24 SF	
4	SB	62+50.00	64+50.00 =	200.00 FT	34.51	47.54	=	8205.00 SF	
5	SB	64+50.00	65+66.59 =	116.59 FT	26.18	25.52	=	3013.85 SF	
6	SB	64+65.00	66+61.24 =	196.24 FT	28.30	28.30	=	5553.59 SF	
7	SB	66+61.24	66+75.00 =	13.76 FT	24.00	24.00	=	330.24 SF	
8							TOTAL AREA =	55412.89 SF	
FULL PAVEMENT (WIDTH GOES TO THE MIDDLE OF MEDIAN BARRIER TYPE C1)									
	LOCATION	FROM STATION	TO STATION	LENGTH		WIDTH			
					FROM	TO			
9	NB	54+00.00	55+00.00 =	100.00 FT	12.00	24.00	=	1800.00 SF	
10	NB	55+00.00	55+48.36 =	48.36 FT	24.00	24.00	=	1160.64 SF	
11	NB	55+48.36	60+27.88 =	479.52 FT	36.00	36.00	=	17262.72 SF	
12	NB	60+27.88	64+53.28 =	425.40 FT	12.00	12.00	=	5104.80 SF	
13	NB	64+53.28	66+75.00 =	221.72 FT	24.00	24.00	=	5321.28 SF	
14	NB	66+75.00	68+77.78 =	202.78 FT	54.00	54.00	=	10950.12 SF	
15	NB	68+77.78	73+25.00 =	447.22 FT	54.00	55.41	=	24465.17 SF	
16	NB	73+25.00	73+90.44 =	65.44 FT	47.58	47.58	=	3113.64 SF	
17	NB	79+62.44	79+96.08 =	33.64 FT	38.58	38.58	=	1297.83 SF	
18	NB	79+96.08	80+35.06 =	38.98 FT	46.41	46.41	=	1809.06 SF	
19	NB	80+35.06	80+66.56 =	31.50 FT	54.00	54.00	=	1701.00 SF	
20	NB	80+66.56	83+00.00 =	233.44 FT	59.59	59.59	=	13910.69 SF	
21	NB	83+00.00	85+00.00 =	200.00 FT	59.59	56.00	=	11559.00 SF	
22	NB	85+00.00	87+16.65 =	216.65 FT	56.00	55.29	=	12055.49 SF	
23	NB	87+16.65	87+48.84 =	32.19 FT	55.29	0.00	=	889.89 SF	
24	RAMP S-E GORE	62+01.89	64+53.28 =	251.39 FT	0.00	20.00	=	2513.90 SF	
25	SB	64+50.00	65+66.59 =	116.59 FT	21.36	38.50	=	3489.54 SF	
26	SB	65+66.59	66+75.00 =	108.41 FT	27.50	27.50	=	2981.28 SF	
27	SB	66+75.00	68+77.78 =	202.78 FT	57.50	57.50	=	11659.85 SF	
28	SB	68+77.78	71+28.40 =	250.62 FT	57.50	59.59	=	14672.55 SF	
29	SB	71+28.40	73+88.44 =	260.04 FT	59.25	59.25	=	15407.37 SF	
30	SB	73+88.44	74+19.94 =	31.50 FT	54.00	54.00	=	1701.00 SF	
31	SB	74+19.94	74+55.06 =	35.12 FT	46.42	46.42	=	1630.27 SF	
32	SB	74+55.06	74+92.56 =	37.50 FT	38.59	38.59	=	1447.13 SF	
33	SB	80+64.56	81+85.00 =	120.44 FT	47.58	47.58	=	5730.54 SF	
34	SB	81+85.00	83+00.00 =	115.00 FT	55.41	55.41	=	6372.15 SF	
35	SB	83+00.00	85+00.00 =	200.00 FT	47.58	56.00	=	10358.00 SF	
36	SB	85+00.00	86+95.00 =	195.00 FT	56.00	56.00	=	10920.00 SF	
37	SB	86+95.00	87+48.84 =	53.84 FT	56.00	56.00	=	3015.04 SF	
38	SB	87+48.84	87+80.96 =	32.12 FT	56.00	0.00	=	899.36 SF	
39							TOTAL AREA =	205199.31 SF	
APPROACH SLABS (USED TO CALCULATE THE PAVEMENT QUANTITIES ONLY)									
	LOCATION	FROM STATION	TO STATION	LENGTH		WIDTH			
					FROM	TO			
40	NB	73+90.44	74+20.44 =	30.00 FT	57.58	57.58	=	1727.50 SF	
41	SB	74+92.56	75+22.56 =	30.00 FT	57.58	57.58	=	1727.50 SF	
42	NB	79+32.44	79+62.44 =	30.00 FT	57.58	57.58	=	1727.50 SF	
43	SB	80+34.56	80+64.56 =	30.00 FT	57.58	57.58	=	1727.50 SF	
44							TOTAL AREA =	6910.00 SF	
MEDIAN MOMENT SLAB (USED TO CALCULATE THE PAVEMENT QUANTITIES ONLY)									
	LOCATION	FROM STATION	TO STATION	LENGTH		WIDTH			
		X SLOPE			FROM				
45	SB	M 0.016	74+19.94	74+90.56 =	70.62 FT	7.583 FT	=	535.51 SF	
46	NB	M 0.016	79+64.44	80+35.06 =	70.62 FT	7.583 FT	=	535.51 SF	
47				141.24 FT			TOTAL =	1071.02 SF	

CALCULATED
MES
CHECKED
TJF

CALCULATIONS - MAINLINE

CUY - 77 - 14.35

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LINE	DESCRIPTION	CALCULATION						QUANTITY	
OUTSIDE MOMENT SLAB (USED TO CALCULATE THE PAVEMENT QUANTITIES ONLY)									
	LOCATION	FROM STATION	TO STATION	LENGTH	WIDTH				
	X SLOPE VARIES 0.04 - 0.016								
48	NB RT	0.04 73+25.00	73+88.44 =	63.44 FT	X 7.833 FT	=	496.93 SF		
49	SB LT	0.04 74+55.06	74+90.56 =	35.50 FT	X 7.833 FT	=	278.07 SF		
50	NB RT	0.04 79+64.44	79+96.08 =	31.64 FT	X 7.833 FT	=	247.84 SF		
51	SB LT	0.04 80+66.56	81+85.00 =	118.44 FT	X 7.833 FT	=	927.74 SF		
52				249.02 FT		TOTAL =	1950.58 SF		
CONCRETE BARRIER, TYPE D AS PER PLAN (USED TO CALCULATE THE PAVEMENT QUANTITIES ONLY)									
	LOCATION	FROM STATION	TO STATION						
53	NB RT	73+88.44	74+19.94 =			=	31.50 FT		
54	SB LT	80+35.06	80+66.56 =			=	31.50 FT		
55						TOTAL LENGTH =	63.00 FT		
ITEM 254 - PAVEMENT PLANING, ASPHALT CONCRETE (THICKNESS = 1 1/2")									
56	FROM LINE	8	=	55412.89 SF	/ 9	=	6156.99 SY		
57						TOTAL ITEM 254 =	6156.99 SY		
						MAINLINE SUBTOTAL CARRIED TO GENERAL SUMMARY =	6157 SY		
ITEM 407 - NON-TRACKING TACK COAT (FOR PLANING AND RESURFACING) (APPLICATION RATE 0.085 GAL./S.Y.)									
58	FROM LINE	8	=	55412.89 SF	/ 9 X 0.085 GAL/SQ YD	=	523.34 GAL		
59						TOTAL ITEM 407 =	523.34 GAL		
						MAINLINE SUBTOTAL CARRIED TO GENERAL SUMMARY =	524 GAL		
ITEM 442 - 1 1/2" ASPHALT CONCRETE SURFACE COURSE, 12.5MM, TYPE A (446), PG 76-22M, AS PER PLAN									
60	FROM LINE	8				=	55412.89 SF		
61	FROM LINE	39				=	205199.31 SF		
62	ADDITION FOR PAVEMENT OVER MOMENT SLABS							=	3021.60 SF
63	SUBTRACT AREA UNDER CONCRETE BARRIER: FROM ROADWAY SUBSUMMARY							=	-3962.10 SF
64	SUM OF LINES	60	TO	63 =	259671.70 SF	X (1 1/2" / 12)	/ 27	=	
65						TOTAL ITEM 442 =	1202.18 CY		
						MAINLINE SUBTOTAL CARRIED TO GENERAL SUMMARY =	1203 CY		
ITEM 407 - NON-TRACKING TACK COAT (FOR INTERMEDIATE COURSE) (APPLICATION RATE 0.055 GAL./S.Y.)									
66	FROM LINE	39				=	205199.31 SF		
67	ADDITION FOR PAVEMENT OVER MOMENT SLABS							=	3021.60 SF
68	SUBTRACT AREA UNDER CONCRETE BARRIER: FROM ROADWAY SUBSUMMARY							=	-3962.10 SF
69	SUM OF LINES	66	TO	68 =	204258.81 SF	/ 9 X 0.055 GAL/SQ YD	=	1248.25 GAL	
70						TOTAL ITEM 407 =	1248.25 GAL		
						MAINLINE SUBTOTAL CARRIED TO GENERAL SUMMARY =	1249 GAL		
ITEM 442 - 1 3/4" ASPHALT CONCRETE INTERMEDIATE COURSE, 19MM, TYPE A (446)									
71	FROM LINE	39				=	205199.31 SF		
72	ADDITION FOR PAVEMENT OVER MOMENT SLABS							=	3021.60 SF
73	FROM LINE	71 AND	72	=	208220.91 SF	X (1 3/4" / 12)	/ 27	=	
74						TOTAL ITEM 442 =	1124.65 CY		
						MAINLINE SUBTOTAL CARRIED TO GENERAL SUMMARY =	1125 CY		

NOTE: TOTALS CARRIED TO THE GENERAL SUMMARY ARE THE SUM OF THE MAINLINE, RAMP S-E AND RAMP S-W SUBTOTALS.

CALCULATED	MES	CHECKED	TJF
CALCULATIONS - MAINLINE			
CUY - 77 - 14.35			
105 365			

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LINE	DESCRIPTION	CALCULATION										QUANTITY
ITEM 302 - 13" ASPHALT CONCRETE BASE, PG64-22												
75	FROM LINE 39											= 205199.31 SF
EDGE COURSE STEP (1ST LIFT)												
76	FROM STATION 54+00.00	NB	TO STATION 60+27.88	NB	=	627.88	FT	X	(4"/12)	FT	= 209.29 SF	
77	FROM STATION 64+53.28	NB	TO STATION 72+93.00	NB	=	839.72	FT	X	(4"/12)	FT	= 279.91 SF	
78	FROM STATION 80+11.08	NB	TO STATION 86+47.91	NB	=	636.83	FT	X	(4"/12)	FT	= 212.28 SF	
79	FROM STATION 65+66.59	SB	TO STATION 74+40.06	SB	=	873.47	FT	X	(4"/12)	FT	= 291.16 SF	
80	FROM STATION 82+17.00	SB	TO STATION 87+48.84	SB	=	531.84	FT	X	(4"/12)	FT	= 177.28 SF	
81	SUM OF LINES 75 TO	80										= 206369.23 SF
82	FROM LINE 81	=	206369.23	SF	X	(13" / 12)	/	27			= 8280.25 CY	
EDGE COURSE STEP (2ND LIFT)												
83	FROM STATION 54+00.00	NB	TO STATION 60+27.88	NB	=	627.88	FT	X	(6 1/2"/12)	FT	= 340.10 SF	
84	FROM STATION 64+53.28	NB	TO STATION 72+93.00	NB	=	839.72	FT	X	(6 1/2"/12)	FT	= 454.85 SF	
85	FROM STATION 80+11.08	NB	TO STATION 86+47.91	NB	=	636.83	FT	X	(6 1/2"/12)	FT	= 344.95 SF	
86	FROM STATION 65+66.59	SB	TO STATION 74+40.06	SB	=	873.47	FT	X	(6 1/2"/12)	FT	= 473.13 SF	
87	FROM STATION 82+17.00	SB	TO STATION 87+48.84	SB	=	531.84	FT	X	(6 1/2"/12)	FT	= 288.08 SF	
88	SUM OF LINES 83 TO	87										= 1901.11 SF
89	FROM LINE 88	=	1901.11	SF	X	(6 1/2" / 12)	/	27			= 38.14 CY	
90	ADDITION FOR OUTSIDE MOMENT SLAB	=	1950.58	SF	X	1.04	FT + 5.75	IN /	2 /	27	= 54.95 CY	
91	ADDITION FOR MEDIAN MOMENT SLAB	=	1071.02	SF	X	0.85	FT + 5.75	IN /	2 /	27	= 26.36 CY	
92	ADDITION FOR CONCRETE BARRIER, TYPE D AS PER PLAN						63.00	FT X 5.08	FT X	7.25	IN / 27	= 7.17 CY
93	TOTAL ITEM 302										= 8406.87 CY	
MAINLINE SUBTOTAL CARRIED TO GENERAL SUMMARY											= 8407 CY	
ITEM 304 - 6" AGGREGATE BASE												
94	FROM LINE 39											= 205199.31 SF
95	FROM LINE 44											= 6910.00 SF
EDGE COURSE STEP												
96	FROM STATION 54+00.00	NB	TO STATION 60+27.88	NB	=	627.88	FT	X	(17"/12)	FT	= 889.50 SF	
97	FROM STATION 64+53.28	NB	TO STATION 72+93.00	NB	=	839.72	FT	X	(17"/12)	FT	= 1189.60 SF	
98	FROM STATION 80+11.08	NB	TO STATION 86+47.91	NB	=	636.83	FT	X	(17"/12)	FT	= 902.18 SF	
99	FROM STATION 65+66.59	SB	TO STATION 74+40.06	SB	=	873.47	FT	X	(17"/12)	FT	= 1237.42 SF	
100	FROM STATION 82+17.00	SB	TO STATION 87+48.84	SB	=	531.84	FT	X	(17"/12)	FT	= 753.44 SF	
101	SUM OF LINES 94 TO	100										= 217081.45 SF
102	FROM LINE 101	=	217081.45	SF	X	(6" / 12)	/	27			= 4020.03 CY	
103	ADDITION FOR OUTSIDE MOMENT SLAB	=	249.02	FT X	9.67	FT X	1.04	FT + 5.75	IN /	2	=	
		+	1.00	FT +	2.00	FT /	2	X	1.00	/	27	= 67.87 CY
104	ADDITION FOR MEDIAN MOMENT SLAB	=	141.24	FT X	9.67	FT X	0.85	FT + 5.75	IN /	2	=	
		+	1.00	FT +	2.00	FT /	2	X	0.78	/	27	= 33.65 CY
105	ADDITION FOR CONCRETE BARRIER, TYPE D AS PER PLAN						63.00	FT X 5.08	FT X	6	IN / 27	= 5.93 CY
106	TOTAL ITEM 304										= 4127.48 CY	
MAINLINE SUBTOTAL CARRIED TO GENERAL SUMMARY											= 4128 CY	
ITEM 204 - SUBGRADE COMPACTION												
107	FROM LINE 39											= 205199.31 SF
108	FROM LINE 44											= 6910.00 SF
EDGE COURSE STEP												
109	FROM STATION 54+00.00	NB	TO STATION 60+27.88	NB	=	627.88	FT	X	(18"/12)	FT	= 941.82 SF	
110	FROM STATION 64+53.28	NB	TO STATION 73+25.00	NB	=	871.72	FT	X	(18"/12)	FT	= 1307.58 SF	
111	FROM STATION 79+96.08	NB	TO STATION 87+48.84	NB	=	752.76	FT	X	(18"/12)	FT	= 1129.14 SF	
112	FROM STATION 65+66.59	SB	TO STATION 74+55.06	SB	=	888.47	FT	X	(18"/12)	FT	= 1332.71 SF	
113	FROM STATION 81+85.00	SB	TO STATION 87+48.84	SB	=	563.84	FT	X	(18"/12)	FT	= 845.76 SF	
114	ADDITION FOR OUTSIDE MOMENT SLAB						249.02	FT X	9.67	FT	= 2407.28 SF	
115	ADDITION FOR MEDIAN MOMENT SLAB						141.24	FT X	9.67	FT	= 1365.37 SF	
116	ADDITION FOR CONCRETE BARRIER, TYPE D AS PER PLAN						63.00	FT X	5.25	FT	= 330.75 SF	
117	SUM OF LINES 107 TO	116	=	221769.72	SF	/	9				= 24641.08 SY	
118	TOTAL ITEM 204										= 24641.08 SY	
MAINLINE SUBTOTAL CARRIED TO GENERAL SUMMARY											= 24642 SY	
ITEM 204 - PROOF ROLLING												
119	FROM LINE 117	=	24641.08	SY	/	3000	SQ YD / HOUR				= 8.21 HR	
120	TOTAL ITEM 204										= 8.21 HR	
MAINLINE SUBTOTAL CARRIED TO GENERAL SUMMARY											= 9 HR	

NOTE: TOTALS CARRIED TO THE GENERAL SUMMARY ARE THE SUM OF THE MAINLINE, RAMP S-E AND RAMP S-W SUBTOTALS.

CALCULATED MESS CHECKED TJF
 CALCULATIONS - MAINLINE
 CUY-77-14.35
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LINE	DESCRIPTION	CALCULATION										QUANTITY	
ITEM 209 - LINEAR GRADING													
121	FROM STATION	62+50.00	SB	TO STATION	65+66.59	SB	=					316.59 FT	
122	LINE	121	=	316.59	FT	/	100	FT	/	STA	SUBTOTAL	= 3.17 STA	
123											TOTAL ITEM 209	= 3.17 STA	
											MAINLINE SUBTOTAL CARRIED TO GENERAL SUMMARY	= 4 STA	
ITEM 618 - RUMBLE STRIPS, (ASPHALT CONCRETE)													
<i>OUTSIDE SHOULDER</i>													
124	FROM STATION	54+00.00	NB	TO STATION	60+27.88	NB	=					627.88 FT	
125	FROM STATION	63+53.28	NB	TO STATION	73+90.44	NB	=					1037.16 FT	
126	FROM STATION	79+62.44	NB	TO STATION	87+23.51	NB	=					761.07 FT	
127	<i>MEDIAN SHOULDER</i>												
128	FROM STATION	54+00.00	NB	TO STATION	73+90.44	NB	=					1990.44 FT	
129	FROM STATION	79+62.44	NB	TO STATION	87+48.09	NB	=					785.65 FT	
130	<i>OUTSIDE SHOULDER</i>												
131	FROM STATION	62+50.00	SB	TO STATION	63+50.00	SB	=					100.00 FT	
132	FROM STATION	63+50.00	SB	TO STATION	74+92.56	SB	=					1142.56 FT	
133	FROM STATION	80+64.56	SB	TO STATION	87+80.96	SB	=					716.40 FT	
134	<i>MEDIAN SHOULDER</i>												
135	FROM STATION	64+65.00	SB	TO STATION	74+92.56	SB	=					1027.56 FT	
136	FROM STATION	80+64.56	SB	TO STATION	87+49.84	SB	=					685.28 FT	
137	SUM OF LINES	124	TO	136							=	8874.00 FT	
138											TOTAL ITEM 618	= 8874.00 FT	
											MAINLINE SUBTOTAL CARRIED TO GENERAL SUMMARY	= 8874 FT	
ITEM 609 - CURB, TYPE 4-C													
139	FROM STATION	72+93.00	NB	TO STATION	73+25.00	NB	=					32.00 FT	
140	FROM STATION	74+40.06	SB	TO STATION	74+55.06	SB	=					15.00 FT	
141	FROM STATION	79+96.08	NB	TO STATION	80+11.08	NB	=					15.00 FT	
142	FROM STATION	81+85.00	SB	TO STATION	82+17.00	SB	=					32.00 FT	
143	FROM STATION	86+47.91	NB	TO STATION	87+22.91	NB	=					75.00 FT	
144	SUM OF LINES	139	TO	143							=	169.00 FT	
										TOTAL ITEM 609	= 169.00 FT		
											MAINLINE SUBTOTAL CARRIED TO GENERAL SUMMARY	= 169 FT	
ITEM 202 - CURB REMOVED													
145	FROM STATION	74+83.00	SB	TO STATION	74+98.00	SB	=					15.00 FT	
146	FROM STATION	86+48.06	NB	TO STATION	87+16.76	NB	=					68.70 FT	
147	SUM OF LINES	145	TO	146							=	83.70 FT	
										TOTAL ITEM 202	= 83.70 FT		
											MAINLINE SUBTOTAL CARRIED TO GENERAL SUMMARY	= 84 FT	
ITEM 202 - PAVEMENT REMOVED													
148	FROM STATION	55+48.36	NB	TO STATION	60+95.00	NB	=	546.64	FT	X	12	FT	= 6559.68 SF
149	FROM STATION	66+75.00	NB	TO STATION	74+85.27	NB	=	810.27	FT	X	29	FT	= 23497.83 SF
150	FROM STATION	79+65.34	NB	TO STATION	87+48.84	NB	=	783.50	FT	X	29	FT	= 22721.5 SF
151	FROM STATION	64+50.00	SB	TO STATION	65+49.00	SB	=	99.00	FT	X	21	FT	+ 35 FT / 2 = 2772 SF
152	FROM STATION	66+75.00	SB	TO STATION	74+85.27	SB	=	810.27	FT	X	29	FT	= 23497.83 SF
153	FROM STATION	79+65.34	SB	TO STATION	87+48.84	SB	=	783.50	FT	X	29	FT	= 22721.5 SF
154	SUM OF LINES	148	TO	153	=	101770.34	SF	/	9				= 11307.82 SY
										TOTAL ITEM 202	= 11307.82 SY		
											MAINLINE SUBTOTAL CARRIED TO GENERAL SUMMARY	= 11308 SY	
ITEM 202 - PAVEMENT REMOVED, ASPHALT													
155	FROM STATION	71+00.00	NB	TO STATION	74+85.27	NB	=	385.27	FT	X	10	FT	= 3852.7 SF
156	FROM STATION	79+65.34	NB	TO STATION	81+70.00	NB	=	204.66	FT	X	10	FT	= 2046.6 SF
157	FROM STATION	81+70.00	NB	TO STATION	83+00.00	NB	=	130.00	FT	X	10	FT	+ 27 FT / 2 = 2405 SF
158	FROM STATION	83+00.00	NB	TO STATION	83+50.00	NB	=	50.00	FT	X	27	FT	= 1350 SF
159	FROM STATION	71+00.00	SB	TO STATION	74+85.27	SB	=	385.27	FT	X	10	FT	= 3852.7 SF
160	FROM STATION	79+65.34	SB	TO STATION	81+70.00	SB	=	204.66	FT	X	10	FT	= 2046.6 SF
161	FROM STATION	81+70.00	SB	TO STATION	83+00.00	SB	=	130.00	FT	X	10	FT	+ 27 FT / 2 = 2405 SF
162	FROM STATION	83+00.00	SB	TO STATION	83+50.00	SB	=	50.00	FT	X	27	FT	= 1350 SF
163	SUM OF LINES	155	TO	162	=	19308.60	SF	/	9				= 2145.4 SY
										TOTAL ITEM 202	= 2145.40 SY		
											MAINLINE SUBTOTAL CARRIED TO GENERAL SUMMARY	= 2146 SY	

NOTE: TOTALS CARRIED TO THE GENERAL SUMMARY ARE THE SUM OF THE MAINLINE, RAMP S-E AND RAMP S-W SUBTOTALS.

CALCULATIONS - MAINLINE

CUY - 77 - 14.35

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LINE	DESCRIPTION	CALCULATION										QUANTITY
PLANING AND RESURFACING												
	LOCATION	FROM STATION	TO STATION	LENGTH		WIDTH						
						FROM	TO					
1	S-E	170+50.00	170+75.00	=	25.00 FT	38.00	37.16					939.50 SF
2												TOTAL AREA = 939.50 SF
FULL DEPTH PAVEMENT												
	LOCATION	FROM STATION	TO STATION	LENGTH		WIDTH						
						FROM	TO					
3	S-E	160+27.88	162+02.90	=	175.02 FT	24.00	28.00					4550.52 SF
4	S-E	162+02.90	164+56.99	=	254.09 FT	28.00	28.00					7114.52 SF
5	S-E	164+56.99	165+07.74	=	50.75 FT	32.00	30.00					1573.25 SF
6	S-E	165+07.74	165+57.00	=	49.26 FT	30.00	30.00					1477.80 SF
7	S-E	165+57.00	169+02.49	=	345.49 FT	26.00	26.00					8982.74 SF
8	S-E	169+02.49	169+76.82	=	74.33 FT	26.00	26.00					1932.58 SF
9	S-E	169+76.82	170+50.00	=	73.18 FT	38.00	38.00					2780.84 SF
10												TOTAL AREA = 28412.25 SF
ITEM 254 - PAVEMENT PLANING, ASPHALT CONCRETE (THICKNESS = 1 1/2")												
11	FROM LINE	2	=	939.50	SF	/	9					104.39 SY
12												TOTAL ITEM 254 = 104.39 SY
												RAMP S-E SUBTOTAL CARRIED TO GENERAL SUMMARY = 105 SY
ITEM 407 - NON-TRACKING TACK COAT (FOR PLANING AND RESURFACING) (APPLICATION RATE 0.085 GAL./S.Y.)												
13	FROM LINE	2	=	939.50	SF	/	9	X	0.085	GAL/SQ YD		8.87 GAL
14												TOTAL ITEM 407 = 8.87 GAL
												RAMP S-E SUBTOTAL CARRIED TO GENERAL SUMMARY = 9 GAL
ITEM 442 - 1 1/2" ASPHALT CONCRETE SURFACE COURSE, 12.5MM, TYPE A (446), PG 76-22M, AS PER PLAN												
15	FROM LINE	2										939.50 SF
16	FROM LINE	10										28412.25 SF
17	SUM OF LINES	15	TO	16	=	29351.75	SF	X	(1 1/2"	/	12)	/ 27 = 135.89 CY
18												TOTAL ITEM 442 = 135.89 CY
												RAMP S-E SUBTOTAL CARRIED TO GENERAL SUMMARY = 136 CY
ITEM 407 - NON-TRACKING TACK COAT (FOR INTERMEDIATE COURSE) (APPLICATION RATE 0.055 GAL./S.Y.)												
19	FROM LINE	10										28412.25 SF
20	FROM LINE	19	=	28412.25	SF	/	9	X	0.055	GAL/SQ YD		173.63 GAL
21												TOTAL ITEM 407 = 173.63 GAL
												RAMP S-E SUBTOTAL CARRIED TO GENERAL SUMMARY = 174 GAL
ITEM 442 - 1 3/4" ASPHALT CONCRETE INTERMEDIATE COURSE, 19MM, TYPE A (446)												
22	FROM LINE	10										28412.25 SF
23	FROM LINE	22	=	28412.25	SF	X	(1 3/4"	/	12)		/ 27 = 153.46 CY	
24												TOTAL ITEM 442 = 153.46 CY
												RAMP S-E SUBTOTAL CARRIED TO GENERAL SUMMARY = 154 CY
ITEM 302 - 13" ASPHALT CONCRETE BASE, PG64-22												
25	FROM LINE	10										28412.25 SF
EDGE COURSE STEP												
26	FROM STATION	160+27.88	S-E	TO STATION	170+50.00	S-E	=	1022.12	FT	X	(4"	/ 12) = 340.71 SF
27	FROM STATION	164+56.99	S-E	TO STATION	165+57.00	S-E	=	100.01	FT	X	(4"	/ 12) = 33.34 SF
28	FROM STATION	160+27.88	S-E	TO STATION	170+50.00	S-E	=	1022.12	FT	X	(6 1/2"	/ 12) = 553.65 SF
29	FROM STATION	164+56.99	S-E	TO STATION	165+57.00	S-E	=	100.01	FT	X	(6 1/2"	/ 12) = 54.17 SF
30	SUM LINES	25	TO	27	=	28786.30	SF	X	(13"	/	12)	/ 27 = 1155.01 CY
31	SUM LINES	28	TO	29	=	607.82	SF	X	(6 1/2"	/	12)	/ 27 = 12.19 CY
32												TOTAL ITEM 302 = 1167.20 CY
												RAMP S-E SUBTOTAL CARRIED TO GENERAL SUMMARY = 1168 CY

NOTE: TOTALS CARRIED TO THE GENERAL SUMMARY ARE THE SUM OF THE MAINLINE, RAMP S-E AND RAMP S-W SUBTOTALS.

CALCULATED MESS CHECKED TJF
CALCULATIONS - RAMP S-E
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LINE	DESCRIPTION	CALCULATION										QUANTITY
	ITEM 304 - 6" AGGREGATE BASE											
33	FROM LINE 10	=										28412.25 SF
	EDGE COURSE STEP											
34	FROM STATION 160+27.88	S-E	TO STATION 170+50.00	S-E =	1022.12 FT	X	(17" / 12)	=			1448.00 SF	
35	FROM STATION 164+56.99	S-E	TO STATION 165+57.00	S-E =	100.01 FT	X	(17" / 12)	=			141.68 SF	
36	SUM LINES 33 TO 35	=		30001.93 SF	X	(6" / 12)	=			555.59 CY		
37	TOTAL ITEM 304										555.59 CY	
	RAMP S-E SUBTOTAL CARRIED TO GENERAL SUMMARY										556 CY	
	ITEM 204 - SUBGRADE COMPACTION											
38	FROM LINE 10	=										28412.25 SF
	EDGE COURSE STEP											
39	FROM STATION 160+27.88	S-E	TO STATION 170+50.00	S-E =	1022.12 FT	X	(18"/12)	=			1533.18 SF	
40	FROM STATION 164+56.99	S-E	TO STATION 165+57.00	S-E =	100.01 FT	X	(18"/12)	=			150.01 SF	
41	SUM OF LINES 38 TO 40	=		30095.44 SF	/	9	=			3343.94 SY		
42	TOTAL ITEM 204										3343.94 SY	
	RAMP S-E SUBTOTAL CARRIED TO GENERAL SUMMARY										3344 SY	
	ITEM 204 - PROOF ROLLING											
43	FROM LINE 41	=		3343.94 SY	/	3000 SQ YD / HOUR	=			1.11 HR		
44	TOTAL ITEM 204										1.11 HR	
	RAMP S-E SUBTOTAL CARRIED TO GENERAL SUMMARY										2 HR	
	ITEM 618 - RUMBLE STRIPS, (ASPHALT CONCRETE)											
	OUTSIDE SHOULDER											
45	FROM STATION 160+27.88	S-E	TO STATION 170+74.58	S-E	=						1046.70 FT	
46	FROM STATION 164+56.99	S-E	TO STATION 165+57.00	S-E	=						100.01 FT	
47	FROM STATION 169+74.07	S-E	TO STATION 170+74.58	S-E	=						100.51 FT	
48	SUM LINES 45 TO 47	=		1247.22 FT	=						1247.22 FT	
49	TOTAL ITEM 618										1247.22 FT	
	RAMP S-E SUBTOTAL CARRIED TO GENERAL SUMMARY										1248 FT	
	ITEM 202 - PAVEMENT REMOVED											
50	FROM STATION 160+95.00	S-E	TO STATION 165+48.00	S-E =	453.00 FT	X	12 FT + 50 FT / 2	=			14043 SF	
51	FROM STATION 165+48.00	S-E	TO STATION 168+97.00	S-E =	349.00 FT	X	24 FT + 36 FT / 2	=			10470 SF	
52	FROM STATION 168+97.00	S-E	TO STATION 169+90.00	S-E =	93.00 FT	X	24 FT + 50 FT / 2	=			3441 SF	
53	FROM STATION 169+90.00	S-E	TO STATION 170+50.00	S-E =	60.00 FT	X	24 FT + 24 FT / 2	=			1440 SF	
54	SUM OF LINES 50 TO 53	=		29394.00 SF	/	9	=			3266 SY		
	TOTAL ITEM 202										3266.00 SY	
	RAMP S-E SUBTOTAL CARRIED TO GENERAL SUMMARY										3266 SY	
	ITEM 202 - PAVEMENT REMOVED, ASPHALT											
55	FROM STATION 165+50.00	S-E	TO STATION 170+50.00	S-E =	500.00 FT	X	((10 FT + 10 FT) / 2)	=			5000 SF	
56	FROM STATION 165+50.00	S-E	TO STATION 168+97.00	S-E =	347.00 FT	X	((4 FT + 4 FT) / 2)	=			1388 SF	
57	FROM STATION 169+90.00	S-E	TO STATION 170+50.00	S-E =	60.00 FT	X	((4 FT + 4 FT) / 2)	=			240 SF	
58	SUM LINES 55 TO 57	=		6628.00 SF	/	9	=			736.44 SY		
	TOTAL ITEM 202										736.44 SY	
	RAMP S-E SUBTOTAL CARRIED TO GENERAL SUMMARY										737 SY	

NOTE: TOTALS CARRIED TO THE GENERAL SUMMARY ARE THE SUM OF THE MAINLINE, RAMP S-E AND RAMP S-W SUBTOTALS.

CALCULATED	MES	CHECKED	TJF
CALCULATIONS - RAMP S-E			
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LINE	DESCRIPTION		CALCULATION						QUANTITY
PLANING AND RESURFACING									
	LOCATION	FROM STATION	TO STATION	LENGTH	WIDTH	FROM	TO		
1	S-W	274+00.00	275+42.77 =	142.77 FT		30.44	24.00	3886.20 SF	
2								TOTAL AREA = 3886.20 SF	
FULL DEPTH PAVEMENT									
	LOCATION	FROM STATION	TO STATION	LENGTH	WIDTH	FROM	TO		
3	S-W	265+57.00	269+03.51 =	346.51 FT		4.00	20.00	4158.12 SF	
4	S-W	269+03.51	269+76.23 =	72.72 FT		20.00	20.00	1454.40 SF	
5	S-W	269+76.23	273+74.86 =	398.63 FT		30.00	30.00	11958.90 SF	
6	S-W	273+74.86	274+00.00 =	25.14 FT		30.00	30.44	759.73 SF	
7	S-W GORE	269+03.51	269+76.23 =	72.72 FT		0.00	20.00	727.20 SF	
8								TOTAL AREA = 19058.35 SF	
ITEM 254 - PAVEMENT PLANING, ASPHALT CONCRETE (THICKNESS = 1 1/2")									
9	FROM LINE	2	=	3886.20 SF	/	9		431.80 SY	
10								TOTAL ITEM 254 = 431.80 SY	
								RAMP S-W SUBTOTAL CARRIED TO GENERAL SUMMARY = 432 SY	
ITEM 407 - NON-TRACKING TACK COAT (FOR PLANING AND RESURFACING) (APPLICATION RATE 0.085 GAL./S.Y.)									
11	FROM LINE	2	=	3886.20 SF	/	9	X 0.085 GAL/SQ YD	36.70 GAL	
12								TOTAL ITEM 407 = 36.70 GAL	
								RAMP S-W SUBTOTAL CARRIED TO GENERAL SUMMARY = 37 GAL	
ITEM 442 - 1 1/2" ASPHALT CONCRETE SURFACE COURSE, 12.5MM, TYPE A (446), PG 76-22M, AS PER PLAN									
13	FROM LINE	2						3886.20 SF	
14	FROM LINE	8						19058.35 SF	
15	SUM OF LINES	13	TO	14 =	22944.55 SF	X	(1 1/2" / 12)	106.22 CY	
16								TOTAL ITEM 442 = 106.22 CY	
								RAMP S-W SUBTOTAL CARRIED TO GENERAL SUMMARY = 107 CY	
ITEM 407 - NON-TRACKING TACK COAT (FOR INTERMEDIATE COURSE) (APPLICATION RATE 0.055 GAL./S.Y.)									
17	FROM LINE	8						19058.35 SF	
18	FROM LINE	17	=	19058.35 SF	/	9	X 0.055 GAL/SQ YD	116.47 GAL	
19								TOTAL ITEM 407 = 116.47 GAL	
								RAMP S-W SUBTOTAL CARRIED TO GENERAL SUMMARY = 117 GAL	
ITEM 442 - 1 3/4" ASPHALT CONCRETE INTERMEDIATE COURSE, 19MM, TYPE A (446)									
20	FROM LINE	8						19058.35 SF	
21	FROM LINE	20	=	19058.35 SF	X	(1 3/4" / 12)	/ 27	102.94 CY	
22								TOTAL ITEM 442 = 102.94 CY	
								RAMP S-W SUBTOTAL CARRIED TO GENERAL SUMMARY = 103 CY	
ITEM 302 - 13" ASPHALT CONCRETE BASE, PG64-22									
23	FROM LINE	8						19058.35 SF	
24	FROM STATION	265+57.00	S-W TO STATION	274+00.00	S-W =	843.00 FT	X (4" / 12)	281.00 SF	
25	FROM STATION	269+76.23	S-W TO STATION	274+00.00	S-W =	423.77 FT	X (4" / 12)	141.26 SF	
26	FROM STATION	265+57.00	S-W TO STATION	274+00.00	S-W =	843.00 FT	X (6 1/2" / 12)	456.63 SF	
27	FROM STATION	269+76.23	S-W TO STATION	274+00.00	S-W =	423.77 FT	X (6 1/2" / 12)	229.54 SF	
28	SUM LINES	23	TO	25	=	19480.61 SF	X (13" / 12)	781.63 CY	
29	SUM LINES	26	TO	27	=	686.17 SF	X (6 1/2" / 12)	13.77 CY	
30								TOTAL ITEM 302 = 795.40 CY	
								RAMP S-W SUBTOTAL CARRIED TO GENERAL SUMMARY = 796 CY	

NOTE: TOTALS CARRIED TO THE GENERAL SUMMARY ARE THE SUM OF THE MAINLINE, RAMP S-E AND RAMP S-W SUBTOTALS.

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CALCULATIONS - RAMP S - W

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LINE	DESCRIPTION	CALCULATION										QUANTITY
ITEM 304 - 6" AGGREGATE BASE												
31	FROM LINE 8	=										19058.35 SF
EDGE COURSE STEP												
32	FROM STATION 265+57.00	S-W	TO STATION 274+00.00	S-E	=	843.00 FT	X	(17"	/	12)	=	1194.25 SF
33	FROM STATION 269+76.23	S-W	TO STATION 274+00.00	S-E	=	423.77 FT	X	(17"	/	12)	=	600.34 SF
34	SUM LINES 31 TO 33	=	20852.94 SF	X	(6"	/	12)	/	27	=	386.17 CY	
35	TOTAL ITEM 304										=	386.17 CY
RAMP S-W SUBTOTAL CARRIED TO GENERAL SUMMARY											=	387 CY
ITEM 204 - SUBGRADE COMPACTION												
36	FROM LINE 8	=										19058.35 SF
EDGE COURSE STEP												
37	FROM STATION 265+57.00	S-W	TO STATION 274+00.00	S-W	=	843.00 FT	X	(18"/12)	FT	=	1264.50 SF	
38	FROM STATION 269+76.23	S-W	TO STATION 274+00.00	S-W	=	423.77 FT	X	(18"/12)	FT	=	635.66 SF	
39	SUM OF LINES 36 TO 38	=	20958.51 SF	/	9	=	2328.72 SY					
40	TOTAL ITEM 204										=	2328.72 SY
RAMP S-W SUBTOTAL CARRIED TO GENERAL SUMMARY											=	2329 SY
ITEM 204 - PROOF ROLLING												
41	FROM LINE 39	=	2328.72 SY	/	3000 SQ YD / HOUR	=	0.78 HR					
42	TOTAL ITEM 204										=	0.78 HR
RAMP S-W SUBTOTAL CARRIED TO GENERAL SUMMARY											=	1 HR
ITEM 618 - RUMBLE STRIPS, (ASPHALT CONCRETE)												
OUTSIDE SHOULDER												
43	FROM STATION 265+57.00	S-W	TO STATION 274+00.00	S-W	=	843.00 FT						
44	FROM STATION 269+76.23	S-W	TO STATION 274+00.00	S-W	=	423.77 FT						
45	SUM LINES 43 TO 44	=	1266.77 FT									
46	TOTAL ITEM 618										=	1266.77 FT
RAMP S-W SUBTOTAL CARRIED TO GENERAL SUMMARY											=	1267 FT
ITEM 202 - PAVEMENT REMOVED												
47	FROM STATION 268+99.00	S-W	TO STATION 269+95.00	S-W	=	96.00 FT	X	16 FT	+	16 FT / 2	=	1536 SF
48	FROM STATION 269+95.00	S-W	TO STATION 274+00.00	S-W	=	405.00 FT	X	16 FT	+	16 FT / 2	=	6480.00 SF
49	SUM OF LINES 47 TO 48	=	8016.00 SF	/	9	=	890.67 SY					
TOTAL ITEM 202										=	890.67 SY	
RAMP S-W SUBTOTAL CARRIED TO GENERAL SUMMARY											=	891 SY
ITEM 202 - PAVEMENT REMOVED, ASPHALT												
50	FROM STATION 268+99.00	S-W	TO STATION 271+00.00	S-W	=	201.00 FT	X	4 FT	+	4 FT / 2	=	804.00 SF
51	FROM STATION 269+95.00	S-W	TO STATION 271+00.00	S-W	=	105.00 FT	X	10 FT	+	10 FT / 2	=	1050.00 SF
52	SUM LINES 50 TO 51	=	1854.00 SF	/	9	=	206.00 SY					
TOTAL ITEM 202										=	206.00 SY	
RAMP S-W SUBTOTAL CARRIED TO GENERAL SUMMARY											=	206 SY
ITEM 609 - CURB, TYPE 4-C												
53	FROM STATION 275+00.13	S-W	TO STATION 275+25.13	S-W	=	25.00 FT						
TOTAL ITEM 609										=	25.00 FT	
RAMP S-W SUBTOTAL CARRIED TO GENERAL SUMMARY											=	25 FT

NOTE: TOTALS CARRIED TO THE GENERAL SUMMARY ARE THE SUM OF THE MAINLINE, RAMP S-E AND RAMP S-W SUBTOTALS.

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CALCULATIONS - RAMP S-W

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LINE	DESCRIPTION	CALCULATION	QUANTITY
	ITEM 659 - SEEDING AND MULCHING		
1	SEEDING AND MULCHING-MAINLINE	TOTAL CARRIED FROM CROSS SECTIONS, SHEET <u>155</u> =	27544.00 SQ YD
2	SEEDING AND MULCHING-RAMP SE	TOTAL CARRIED FROM CROSS SECTIONS, SHEET <u>164</u> =	2378.00 SQ YD
3	SEEDING AND MULCHING-RAMP SW	TOTAL CARRIED FROM CROSS SECTIONS, SHEET <u>169</u> =	2801.00 SQ YD
4	SEEDING AND MULCHING SUBTOTAL	=	32723.00 SQ YD
5	DEDUCT SLOPE EROSION PROTECTION AND DITCH EROSION PROTECTION		-4700 SQ YD
6		TOTAL ITEM 659 =	28023.00 SQ YD
		TOTAL CARRIED TO GENERAL NOTES =	28023 SQ YD
	ITEM 659 - TOPSOIL		
7	FROM LINE 4 = 32723.00 SQ YD X 111 CU. YD. / 1000 SQ YD	=	3632.25 CU YD
		TOTAL CARRIED TO GENERAL NOTES =	3633 CU YD
	ITEM 659 - SOIL ANALYSIS TEST		
8	FROM LINE 7 = 3632.25 CU YD X 1 TEST / 10000 CU YD (MINIMUM OF 2 TESTS)	TOTAL ITEM 659 =	0.36 EACH
		TOTAL CARRIED TO GENERAL NOTES =	2 EACH
	ITEM 659 - COMMERCIAL FERTILIZER		
9	FROM LINE 4 = 32723.00 SQ YD X 1 TON / 7410 SQ YD	=	4.42 TON
10	FROM LINE 4 = 32723.00 SQ YD X 5% X 9 SQ FT / SQ YD X 20 LBS. / 100 SQ FT / 2000 LB / TON	=	0.15 TON
11	SUM OF LINES 9 AND 10	TOTAL ITEM 659 =	4.57 TON
		TOTAL CARRIED TO GENERAL NOTES =	5 TON
	ITEM 659 - LIME		
12	FROM LINE 4 = 32723.00 SQ YD / 4840 SQ. YD. / 1 ACRE	TOTAL ITEM 659 =	6.76 ACRE
		TOTAL CARRIED TO GENERAL NOTES =	7 ACRE
	ITEM 659 - INTERSEEDING		
13	FROM LINE 4 = 32723.00 SQ YD X 5%	TOTAL ITEM 659 =	1636.15 SQ YD
		TOTAL CARRIED TO GENERAL NOTES =	1637 SQ YD
	ITEM 659 - WATER		
14	FROM LINE 4 = 32723.00 SQ YD X 0.0027 MGAL / SQ YD X 2 APPLICATIONS	=	176.70 M GAL
15	FROM LINE 4 = 32723.00 SQ YD X 5% X 0.0027 MGAL / SQ YD X 1 APPLICATIONS	=	4.42 M GAL
16	SUM OF LINES 14 AND 15	TOTAL ITEM 659 =	181.12 M GAL
		TOTAL CARRIED TO GENERAL NOTES =	182 M GAL
	ITEM 659 - REPAIR SEEDING AND MULCHING		
17	FROM LINE 4 = 32723.00 SQ YD X 5%	TOTAL ITEM 659 =	1636.15 SQ YD
		TOTAL CARRIED TO GENERAL NOTES =	1637 SQ YD
	ITEM 659 - MOWING		
18	FROM LINE 4 = 32723.00 SQ YD X 25% X 9 / 1000 X 9 SQ FT/SQ YD	TOTAL ITEM 659 =	73.63 M SQ FT
		TOTAL CARRIED TO GENERAL NOTES =	74 M SQ FT

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PRE-LEVELING TABLE - I.R. 77 NORTHBOUND

I 77 STATION	PG (6'RT)	LANE 1 (18'RT)				LANE 2 (30'RT)				LANE 3 (42'RT)				TOTAL END AREA	442	407
	PROFILE GRADE ELEVATION	PROPOSED ELEVATION	EXISTING ELEVATION	ELEVATION DIFFERENCE	END AREA- 1 1/2" SURF	PROPOSED ELEVATION	EXISTING ELEVATION	ELEVATION DIFFERENCE	END AREA- 1 1/2" SURF	PROPOSED ELEVATION	EXISTING ELEVATION	ELEVATION DIFFERENCE	END AREA- 1 1/2" SURF		ASPHALT CONCRETE INTERMEDIATE COURSE, 9.5MM, TYPE B (448) VOLUME (CY)	NON-TRACKING TACK COAT (APPLICATION RATE 0.055 GAL/S.Y.)
54+00.00	662.09	661.82	661.82	0.00	-0.75	661.59	661.59	0.00	-1.50	661.35	661.35	0.00	-1.50	0.00	0.00 CY	
54+25.00	662.02	661.73	661.73	0.00	-0.75	661.51	661.46	0.05	-1.20	661.27	661.22	0.05	-1.20	0.00	0.00 CY	
54+50.00	661.85	661.64	661.56	0.08	-0.27	661.43	661.28	0.15	-0.60	661.19	661.01	0.18	-0.42	0.00	0.00 CY	
54+75.00	661.78	661.55	661.47	0.08	-0.27	661.35	661.17	0.18	-0.42	661.11	660.88	0.23	-0.12	0.00	0.00 CY	
55+00.00	661.65	661.46	661.35	0.11	-0.09	661.27	661.04	0.23	-0.12	661.03	660.67	0.36	0.66	0.66	0.39 CY	4.58 GAL
55+25.00	661.46	661.27	661.12	0.15	0.15	661.08	660.77	0.31	0.36	660.84	660.41	0.43	1.08	1.59	1.04 CY	4.58 GAL
55+48.36	661.05	660.86	660.83	0.03	-0.57	660.67	660.52	0.15	-0.60	660.43	660.16	0.27	0.12	0.12	0.74 CY	4.28 GAL
55+50.00	661.02	660.83	660.74	0.09	-0.21	660.64	660.45	0.19	-0.36					0.00	0.00 CY	
55+75.00	660.57	660.38	660.29	0.09	-0.21	660.19	660.06	0.13	-0.72					0.00	0.00 CY	
56+00.00	660.07	659.91	659.94	-0.03	-0.93	659.75	659.74	0.01	-1.44					0.00	0.00 CY	
56+25.00	659.51	659.38	659.40	-0.02	-0.87	659.25	659.30	-0.05	-1.80					0.00	0.00 CY	
56+50.00	659.11	659.01	659.01	0.00	-0.75	658.91	658.89	0.02	-1.38					0.00	0.00 CY	
56+75.00	658.80	658.73	658.68	0.05	-0.45	658.66	658.54	0.12	-0.78					0.00	0.00 CY	
57+00.00	658.29	658.24	658.19	0.05	-0.45	658.19	658.09	0.10	-0.90					0.00	0.00 CY	
57+25.00	657.90	657.88	657.79	0.09	-0.21	657.86	657.69	0.17	-0.48					0.00	0.00 CY	
57+50.00	657.41	657.42	657.30	0.12	-0.03	657.43	657.25	0.18	-0.42					0.00	0.00 CY	
57+75.00	656.92	656.96	656.86	0.10	-0.15	657.00	656.81	0.19	-0.36					0.00	0.00 CY	
58+00.00	656.48	656.55	656.43	0.12	-0.03	656.62	656.37	0.25	0.00					0.00	0.00 CY	
58+25.00	656.04	656.14	655.99	0.15	0.15	656.24	655.96	0.28	0.18					0.33	0.15 CY	2.75 GAL
58+50.00	655.58	655.70	655.54	0.16	0.21	655.82	655.52	0.30	0.30					0.51	0.39 CY	2.75 GAL
58+75.00	654.98	655.13	655.12	0.01	-0.69	655.28	654.95	0.33	0.48					0.48	0.46 CY	2.75 GAL
59+00.00	654.37	654.55	654.68	-0.13	-1.53	654.73	654.65	0.08	-1.02					0.00	0.22 CY	2.75 GAL
59+25.00	653.93	653.49	653.49	0.00	-0.75	653.70	653.66	0.04	-1.26					0.00	0.00 CY	
59+50.00	653.49	653.20	653.31	-0.11	-1.41	653.44	653.47	-0.03	-1.68					0.00	0.00 CY	
59+75.00	653.04	653.01	653.13	-0.12	-1.47	653.27	653.27	0.00	-1.50					0.00	0.00 CY	
60+00.00	652.60	652.89	653.02	-0.13	-1.53	653.18	653.01	0.17	-0.48					0.00	0.00 CY	
60+25.00	652.35	652.67	652.78	-0.11	-1.41	652.99	652.79	0.20	-0.30					0.00	0.00 CY	
60+50.00	652.09	652.41	652.52	-0.11	-1.41	652.73	652.53	0.20	-0.30					0.00	0.00 CY	
60+75.00	651.91	652.23	652.35	-0.12	-1.47	652.55	652.38	0.17	-0.48					0.00	0.00 CY	
61+00.00	651.72	652.04	652.17	-0.13	-1.53	652.36	652.23	0.13	-0.72					0.00	0.00 CY	
61+25.00	651.65	651.97	652.15	-0.18	-1.83	652.29	652.20	0.09	-0.96					0.00	0.00 CY	
61+50.00	651.59	651.91	652.13	-0.22	-2.07	652.23	652.17	0.06	-1.14					0.00	0.00 CY	
61+75.00	651.71	652.03	652.22	-0.19	-1.89	652.35	652.25	0.10	-0.90					0.00	0.00 CY	
62+00.00	651.84	652.16	652.31	-0.15	-1.65	652.48	652.33	0.15	-0.60					0.00	0.00 CY	
62+25.00	652.04	652.36	652.49	-0.13	-1.53	652.68	652.53	0.15	-0.60					0.00	0.00 CY	
62+50.00	652.24	652.56	652.66	-0.10	-1.35	652.88	652.72	0.16	-0.54					0.00	0.00 CY	
62+75.00	652.51	652.83	652.94	-0.11	-1.41	653.15	652.98	0.17	-0.48					0.00	0.00 CY	
63+00.00	652.78	653.10	653.22	-0.12	-1.47	653.42	653.24	0.18	-0.42					0.00	0.00 CY	
63+25.00	653.15	653.47	653.59	-0.12	-1.47	653.79	653.62	0.17	-0.48					0.00	0.00 CY	
63+50.00	653.52	653.84	653.97	-0.13	-1.53	654.16	653.99	0.17	-0.48					0.00	0.00 CY	
63+75.00	653.99	654.31	654.46	-0.15	-1.65	654.63	654.53	0.10	-0.90					0.00	0.00 CY	
64+00.00	654.47	654.79	654.95	-0.16	-1.71	655.11	655.06	0.05	-1.20					0.00	0.00 CY	
64+25.00	655.06	655.38	655.55	-0.17	-1.77	655.70	655.66	0.04	-1.26					0.00	0.00 CY	
64+50.00	655.65	655.97	656.14	-0.17	-1.77	656.29	656.25	0.04	-1.26					0.00	0.00 CY	
64+75.00	656.32	656.64	656.83	-0.19	-1.89	656.96	656.91	0.05	-1.20					0.00	0.00 CY	
65+00.00	656.99	657.31	657.52	-0.21	-2.01	657.63	657.59	0.04	-1.26					0.00	0.00 CY	
65+25.00	657.76	658.08	658.28	-0.20	-1.95	658.40	658.39	0.01	-1.44					0.00	0.00 CY	
65+50.00	658.53	658.85	659.04	-0.19	-1.89	659.17	659.18	-0.01	-1.56					0.00	0.00 CY	
65+75.00	659.33	659.65	659.79	-0.14	-1.59	659.97	659.92	0.05	-1.20					0.00	0.00 CY	
66+00.00	660.13	660.45	660.55	-0.10	-1.35	660.77	660.67	0.10	-0.90					0.00	0.00 CY	
66+25.00	660.83	661.15	661.30	-0.15	-1.65	661.47	661.43	0.04	-1.26					0.00	0.00 CY	
66+50.00	661.53	661.85	662.05	-0.20	-1.95	662.17	662.18	-0.01	-1.56					0.00	0.00 CY	
66+75.00	662.31	662.63	662.80	-0.17	-1.77	662.95	662.93	0.02	-1.38					0.00	0.00 CY	
SUBTOTAL															3.31 CY	24.44 GAL
TOTAL CARRIED TO GENERAL SUMMARY															4 CY	25 GAL

PRE-LEVELING TABLE

CUY - 77 - 14.35

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PRE-LEVELING TABLE - I.R. 77 NORTHBOUND

																442	407
USE SAME DIFF AT 30' LT. AS 28' LT.	PROPOSED ELEVATION ALONG EXIST. EDGE OF PAVEMENT AT 28' LT.	EXISTING ELEVATION ALONG EXIST. EDGE OF PAVEMENT AT 28' LT.	DIFF ALONG LANE LINE	PROPOSED ELEVATION ALONG NEW LANE LINE AT 12' LT.	EXISTING ELEVATION ALONG NEW LANE LINE AT 12' LT.	DIFF ALONG NEW PROFILE TRANSITION	PROPOSED ELEVATION ALONG NEW PROFILE TRANSITION	EXISTING ELEVATION ALONG NEW PROFILE TRANSITION	OFFSET TO NEW PROFILE TRANSITION	DIFF ALONG EXIST. EDGE OF PAVEMENT	PROPOSED ELEVATION AT 6' LT.	EXISTING ELEVATION AT EXIST. EDGE OF PAVEMENT	EXISTING ELEVATION AT TOE OF BARRIER	CENTER LINE I.R. 77	END AREA- 1 1/2" SURF	ASPHALT CONCRETE INTERMEDIATE COURSE, 9.5MM, TYPE B (448) VOLUME (CY)	NON-TRACKING TACK COAT (APPLICATION RATE 0.055 GAL/S.Y.)
0.00	655.45	655.45	0.00	655.78	655.78	0.00	655.85	655.85	6	0.00	655.85	655.85	655.83	64+65.00	0		
-0.01	655.73	655.74	-0.01	656.04	656.05	0.02	656.14	656.12	6.17	0.01	656.13	656.12	656.09	64+75.00	0	0 CY	
-0.03	656.44	656.47	-0.02	656.73	656.75	0.10	656.90	656.80	6.58	0.06	656.86	656.80	656.76	65+00.00	0	0 CY	
-0.01	657.21	657.22	-0.03	657.47	657.50	0.11	657.70	657.59	7	0.07	657.66	657.59	657.58	65+25.00	0	0 CY	
-0.03	657.95	657.98	-0.06	658.19	658.25	0.12	658.49	658.37	7.42	0.07	658.45	658.38	658.39	65+50.00	0	0 CY	
0.02	658.75	658.73	-0.03	658.97	659.00	0.13	659.29	659.16	7.83	0.08	659.25	659.17	659.19	65+75.00	0.03	0.02 CY	4.58 GAL
0.08	659.55	659.47	0.02	659.76	659.74	0.15	660.08	659.93	8.25	0.10	660.04	659.94	659.98	66+00.00	0.18	0.1 CY	4.58 GAL
0.14	660.36	660.22	0.10	660.56	660.46	0.26	660.88	660.62	8.67	0.14	660.78	660.64	660.66	66+25.00	1.92	0.98 CY	4.58 GAL
0.19	661.16	660.97	0.15	661.35	661.20	0.32	661.67	661.35	9.08	0.16	661.51	661.35	661.34	66+50.00	2.19	1.91 CY	4.58 GAL
0.25	661.96	661.71	0.22	662.14	661.92	0.36	662.46	662.10	9.5	0.21	662.32	662.11	662.14	66+75.00	3.69	2.73 CY	4.58 GAL
SUBTOTAL															5.74 CY	22.90 GAL	
TOTAL CARRIED TO GENERAL SUMMARY															6 CY	23 GAL	

PRE-LEVELING TABLE

CUY-77-14.35

CALCULATED
GEW
CHECKED
TJF

PROJECT DESCRIPTION

THE PROJECT CONSISTS OF REPLACEMENT OF BRIDGE CUY-77-1433 L & R ON I.R. 77 OVER THE I.R. 490 INTERCHANGE. THE PROPOSED WORK INCLUDES THE REALIGNMENT OF RAMPS S-W AND S-E AND THE CONSTRUCTION OF ALL RELATED DRAINAGE, ROADWAY WORK, TRAFFIC CONTROL, AND MAINTENANCE OF TRAFFIC. THE PROJECT LENGTH ON I.R. 77 IS APPROXIMATELY 0.39 MILES.

INTERMEDIATE RECEIVING WATERS - CUYAHOGA RIVER

SUBSEQUENT RECEIVING WATERS - LAKE ERIE

SOIL DATA - SEE SOIL PROFILES.

USGS QUADRANGE

NO. CLEVELAND SOUTH - N4122.50 - W8137.5/7.5

*LATITUDE 41° 28' 50" N

*LONGITUDE 81° 39' 45" W

*LONGITUDE AND LATITUDE TO APPROXIMATE CENTER OF PROJECT.

PROJECT DATA

TOTAL AREA (RIGHT-OF-WAY):	63.72 ACRES	RUNOFF COEFFICIENT FOR PRE-CONSTRUCTION SITE:	0.67
PROJECT EARTH DISTURB AREA:	16.74 ACRES		
ESTIMATED CONTRACTOR EARTH DISTURB AREA:	3.00 ACRES	RUNOFF COEFFICIENT FOR POST CONSTRUCTION SITE:	0.69
NOTICE OF INTENT EARTH DISTURBED AREA:	19.74 ACRES	SOIL SURVEY OF CUYAHOGA CO. MAPS 22 & 23	
IMPERVIOUS (PAVED) AREA FOR PRE-CONSTRUCTION SITE:	7.81 ACRES		
IMPERVIOUS (PAVED) AREA FOR POST CONSTRUCTION SITE:	8.84 ACRES		

PROJECT POST CONSTRUCTION BMP'S - VEGETATED BIOFILTERS

	BMP LOCATION	STA.	OFFSET	SIDE	LATITUDE	LONGITUDE	LENGTH (FT.)	TOTAL DA TO BMP (ACRES)	PROJECT EDA TREATED (ACRES)
TREATMENT IN SW QUADRANT ALONG RAMP ES									
BEGIN	1	68+00.00	95.8	LT.	N41.477323	W81.661164			
END	1	75+50.00	115.8	LT.	N41.479298	W81.661922	784	3.09	3.09
TREATMENT IN SE QUADRANT ALONG RAMP SW									
BEGIN	2	75+00.00	82.5	RT.	N41.479302	W81.661176			
END	2	69+15.00	99.5	RT.	N41.477760	W81.660577	570	1.96	1.96
TREATMENT IN NE QUADRANT ALONG RAMP NW									
BEGIN	3	86+00.00	118.6	RT.	N41.482249	W81.662060			
END	3	80+10.00	180.1	RT.	N41.480724	W81.661300	668	2.89	2.89
TREATMENT IN NW QUADRANT ALONG RAMP NE									
BEGIN	4	86+11.00	72.8	LT.	N41.482249	W81.662782			
END	4	80+07.80	87.9	LT.	N41.480533	W81.662245	618	2.75	2.75
								TREATMENT PROVIDED	10.69
								TREATMENT REQUIRED *	3.95

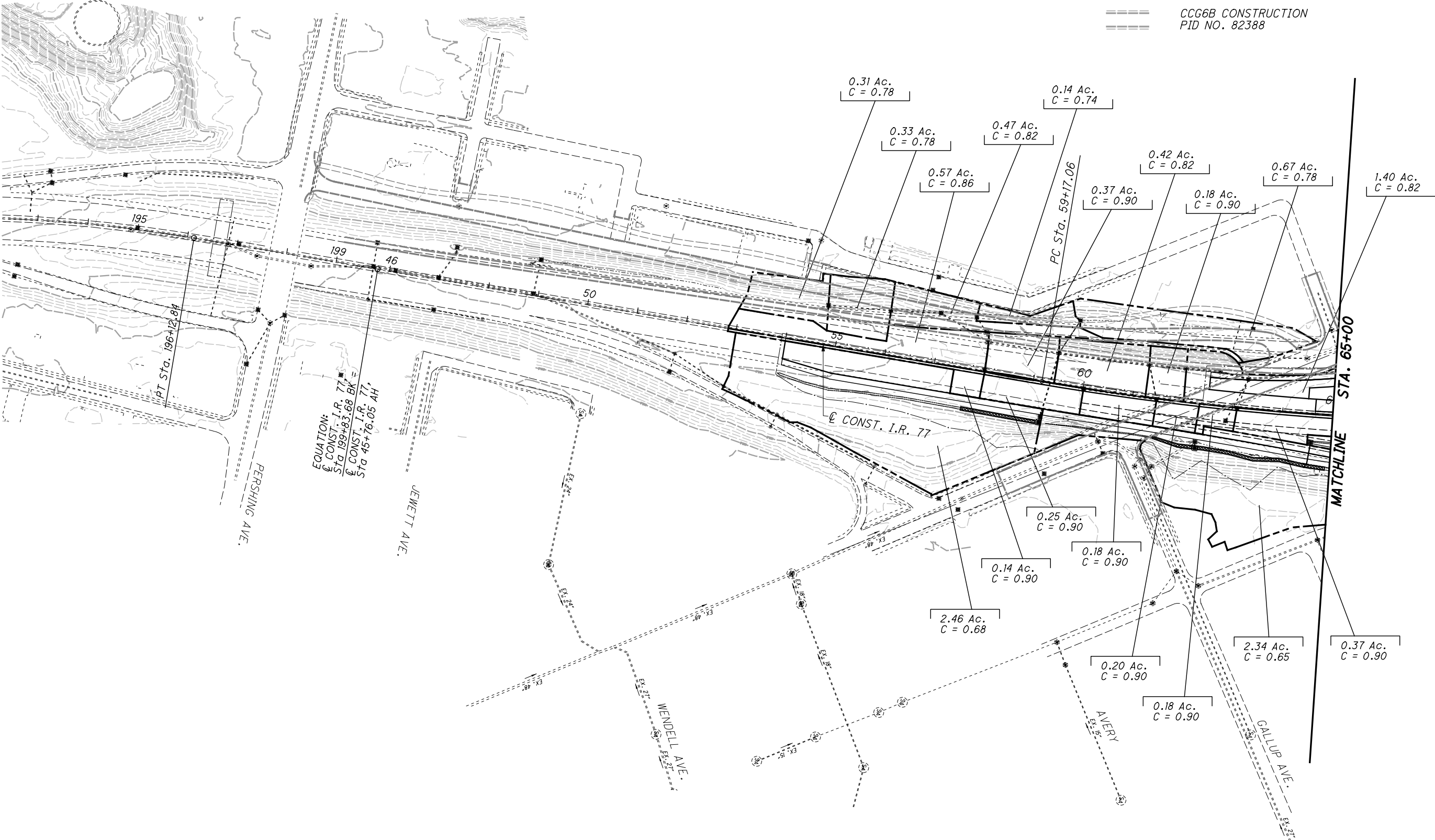
*CALCULATED PER L & D VOL. 2, SEC. 115.7

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CALCULATED
MAF
CHECKED
DAW

PROJECT SITE PLAN NOTES

CUY-77-14.35



CALCULATED
MAF
CHECKED
DAW

0 100 200
50
HORIZONTAL
SCALE IN FEET

PROJECT SITE PLAN

CUY-77-14.35

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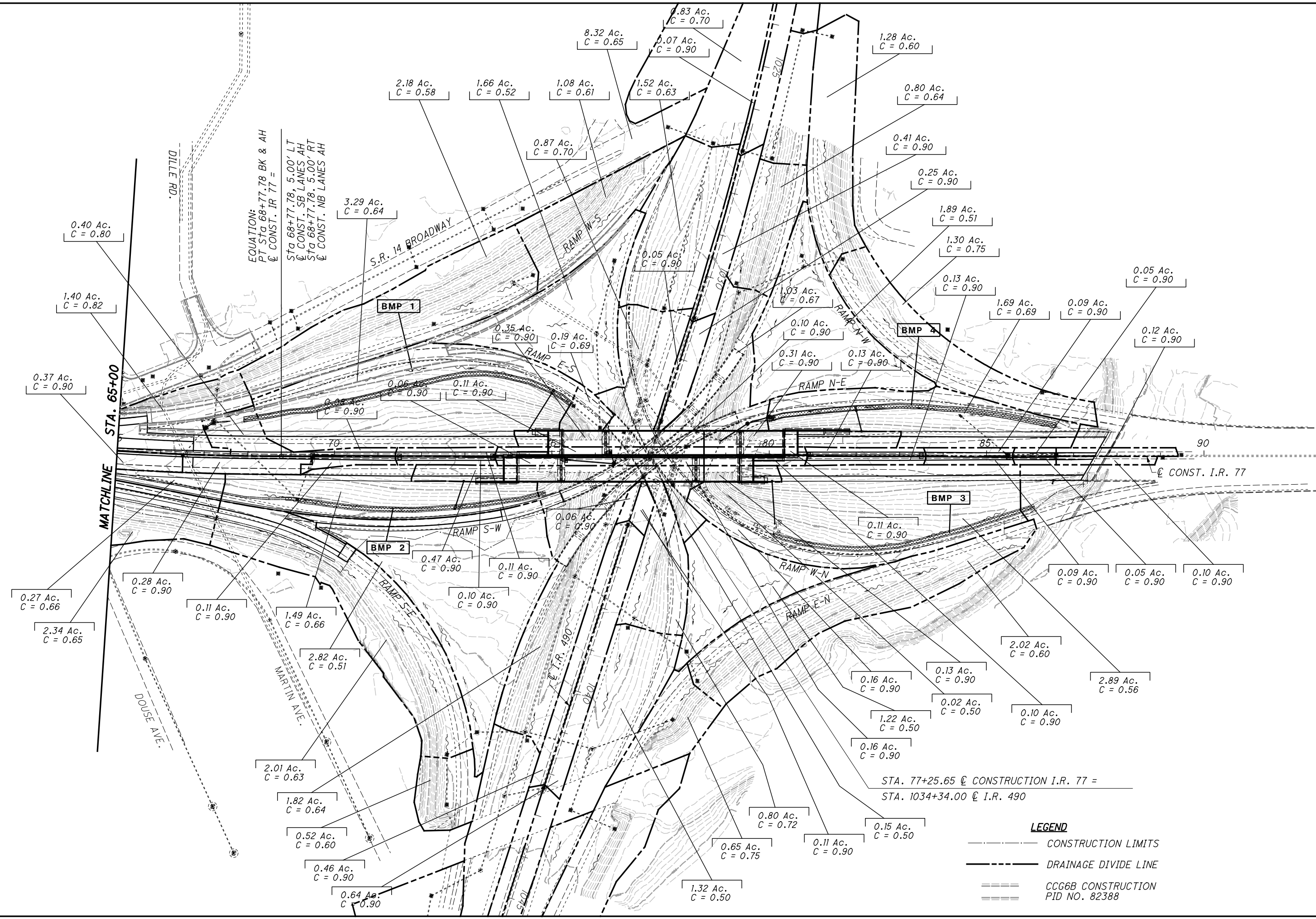


CALCULATED
MAF
CHECKED
DAW

PROJECT SITE PLAN

CUY-77-14.35

117
365



LEGEND

- CONSTRUCTION LIMITS
- DRAINAGE DIVIDE LINE
- ==== CCG6B CONSTRUCTION
PID NO. 82388

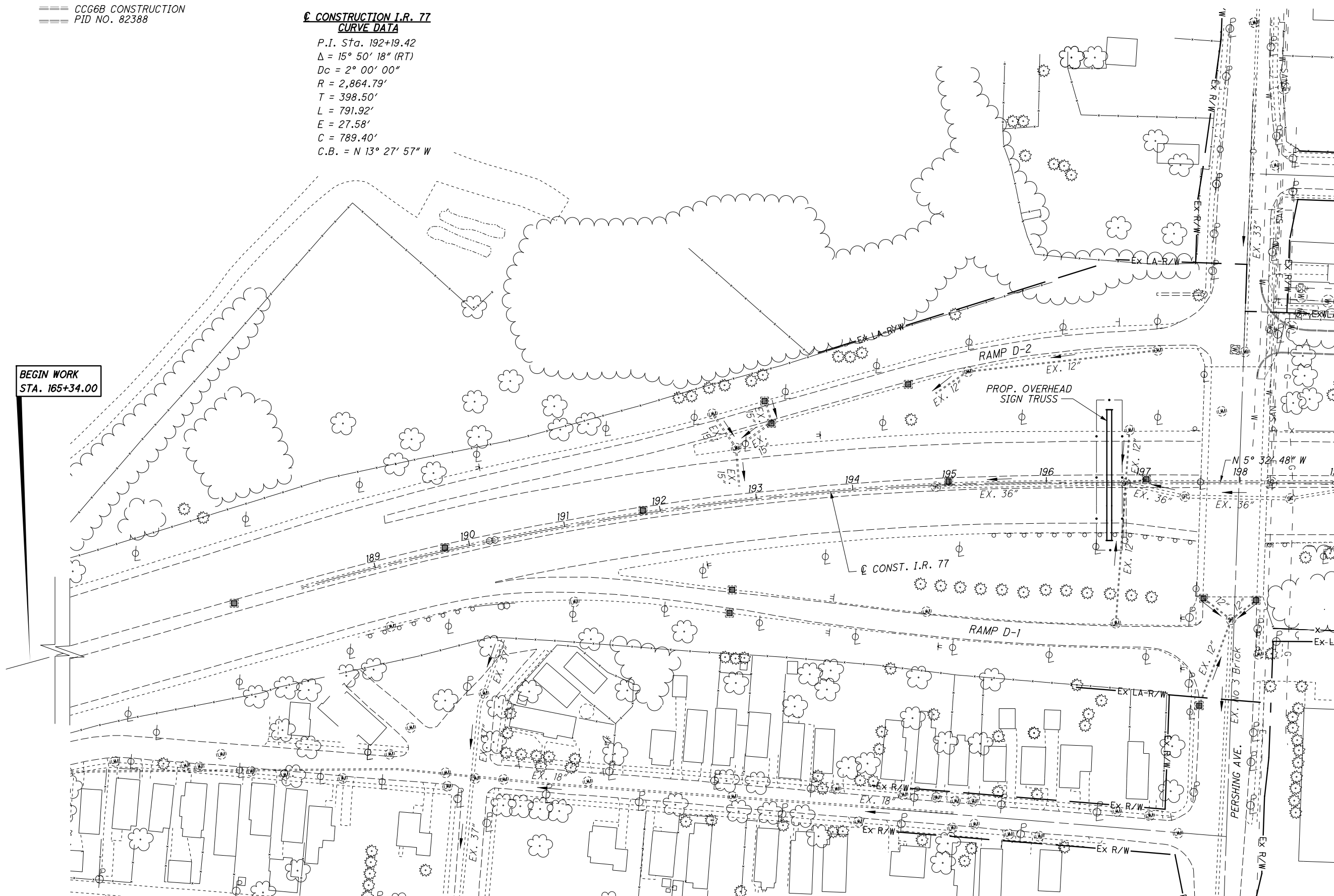
LEGEND

== CCG6B CONSTRUCTION
 == PID NO. 82388

**CONST. I.R. 77
 CURVE DATA**

P.I. Sta. 192+19.42
 $\Delta = 15^\circ 50' 18''$ (RT)
 $Dc = 2^\circ 00' 00''$
 $R = 2,864.79'$
 $T = 398.50'$
 $L = 791.92'$
 $E = 27.58'$
 $C = 789.40'$
 $C.B. = N 13^\circ 27' 57'' W$

**BEGIN WORK
 STA. 165+34.00**



MATCHLINE STA. 199+00

NOTES:

SEE TRAFFIC CONTROL SHEET 210
 FOR ADDITIONAL INFORMATION.

CALCULATED
 DAW
 CHECKED
 JDL

0 50 100
 HORIZONTAL
 SCALE IN FEET

**PLAN
 STA. 188+00 TO STA. 199+00**








CUY-77-14.35

118
 365

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NOTES:
 FOR ALL DRAINAGE ITEM INFORMATION SEE SHEET 188
 FOR ϕ CONST. NB & SB LANE INFORMATION SEE SHEET 4

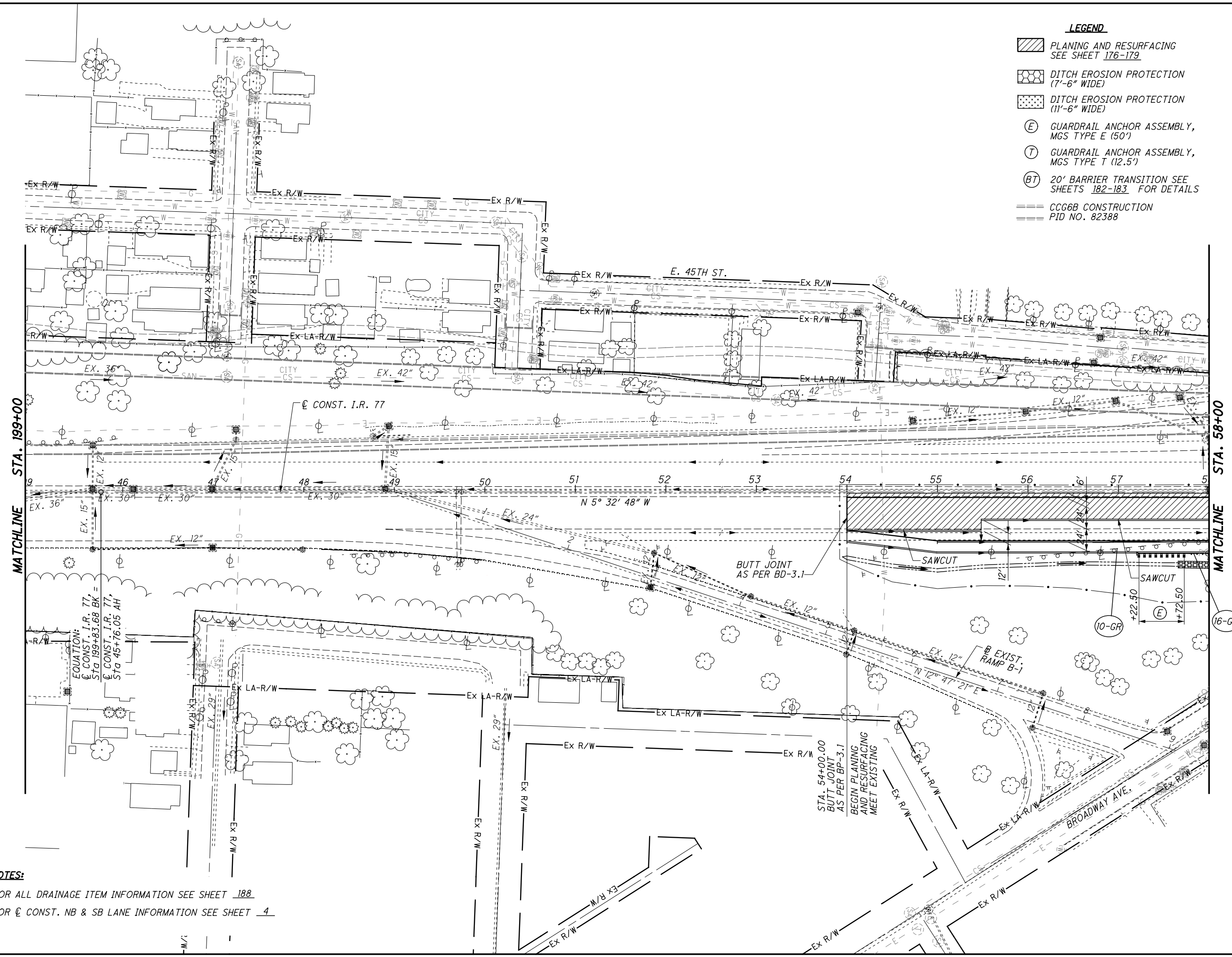
- LEGEND**
-  PLANING AND RESURFACING
SEE SHEET 176-179
 -  DITCH EROSION PROTECTION
(7'-6" WIDE)
 -  DITCH EROSION PROTECTION
(11'-6" WIDE)
 -  GUARDRAIL ANCHOR ASSEMBLY,
MGS TYPE E (50')
 -  GUARDRAIL ANCHOR ASSEMBLY,
MGS TYPE T (12.5')
 -  20' BARRIER TRANSITION SEE
SHEETS 182-183 FOR DETAILS
 -  CCG6B CONSTRUCTION
PID NO. 82388

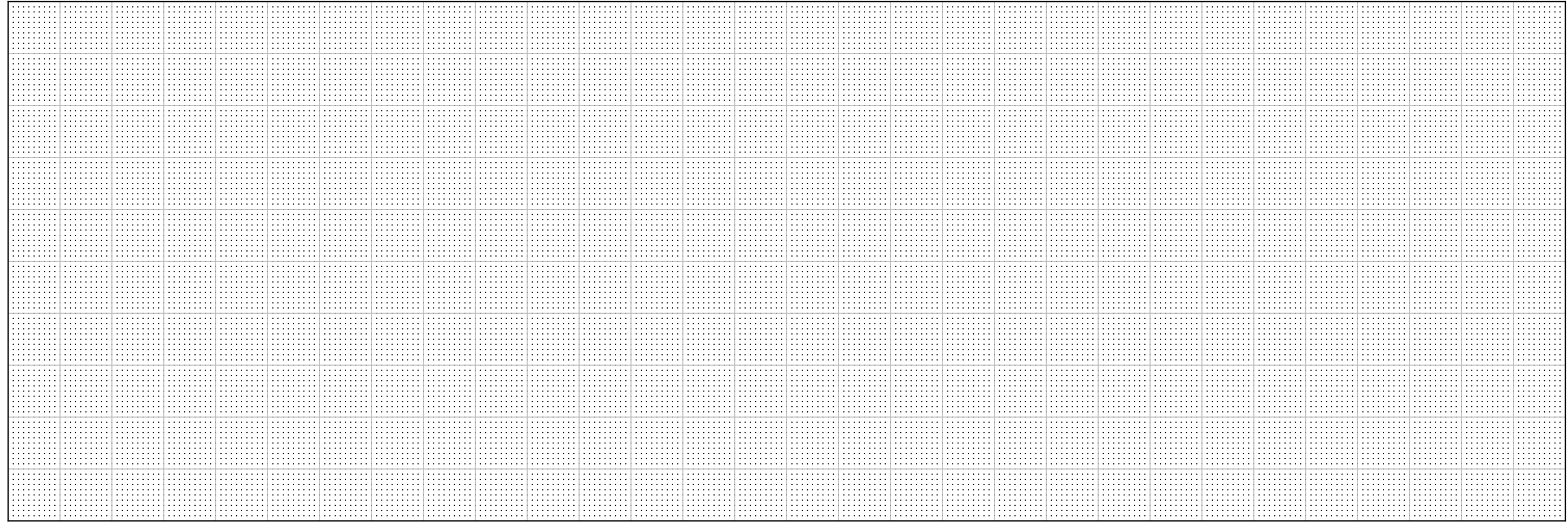
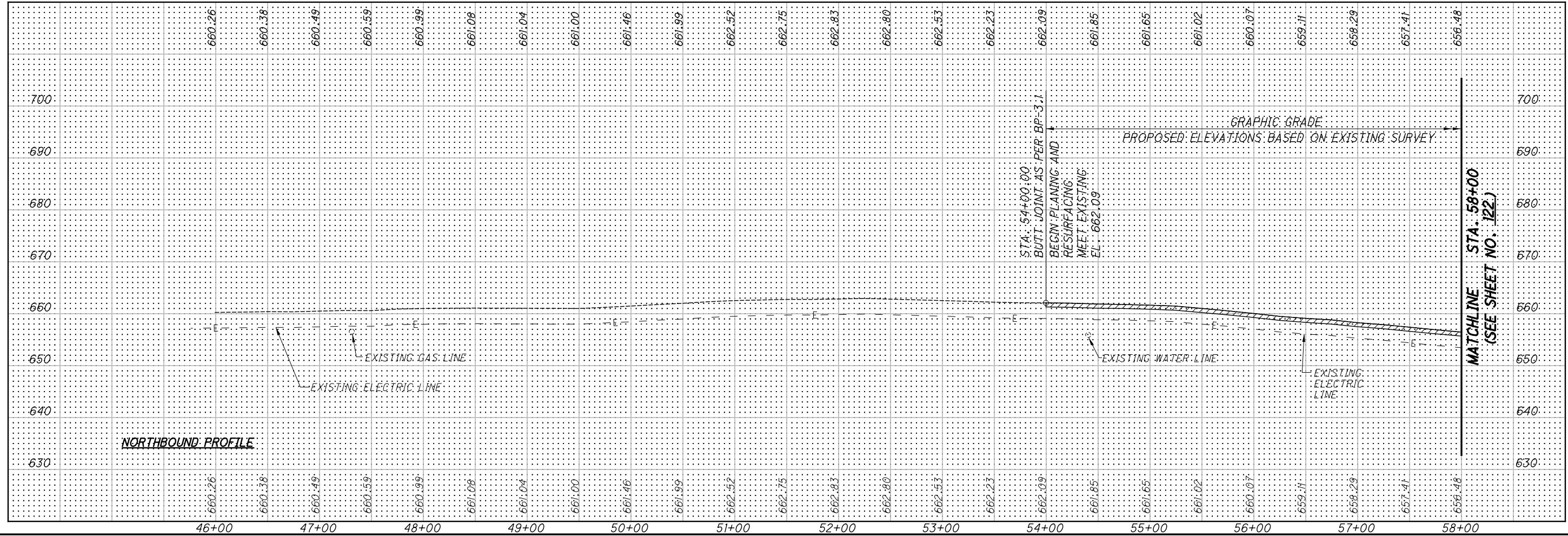
CALCULATED
 DAW
 CHECKED
 JDL

0 50 100
 HORIZONTAL
 SCALE IN FEET

PLAN
 STA. 199+00 TO STA. 58+00

CUY-77-14.35





PROFILE
STA. 46+00 TO STA. 58+00

CALCULATED
DAW
CHECKED
JDL

CUY-77-14.35

120
365

BENCH MARK 1 (SV 2004) SURVEY MARKER
 FOUND WITH 2" ALUMINUM CAP STAMPED
 "BARR & PREVOST"
 STA. 66+38.46, 55.47' LT. EL. 658.72

**CONSTRUCTION I.R. 77
 CURVE DATA**

P.I. Sta = 63+98.55
 $\Delta = 9^\circ 36' 26''$ (LT)
 $Dc = 1^\circ 00' 00''$
 $R = 5,729.57'$
 $T = 481.49'$
 $L = 960.72'$
 $E = 20.20'$
 $eMAX. = *0.027$ NDC
 *SB MEDIAN LANE = 0.006±
 WITHIN LIMITS OF PLANING
 AND RESURFACING

**BEGIN PROJECT
 STA. 66+75
 0775 (047)**

**CONSTRUCTION RAMP S-W
 SPIRAL DATA**

P.I. STA. 269+42.04
 $Ls = 450.00'$
 $fs = 9^\circ 00' 00''$
 $LT = 300.39'$
 $ST = 150.35'$
 $x = 448.89'$
 $y = 23.52'$
 $k = 224.82'$
 $p = 5.89'$

**CONSTRUCTION RAMP S-E
 CURVE DATA**

P.I. Sta. 163+82.31
 $\Delta = 3^\circ 32' 35''$ (RT)
 $Dc = 0^\circ 30' 00''$
 $R = 11,459.16'$
 $T = 354.42'$
 $L = 708.62'$
 $E = 5.48'$
 $C = 708.51'$
 $C.B. = N 4^\circ 53' 00'' W$
 $eMAX. = NC$








**CONSTRUCTION RAMP S-E
 SPIRAL DATA**

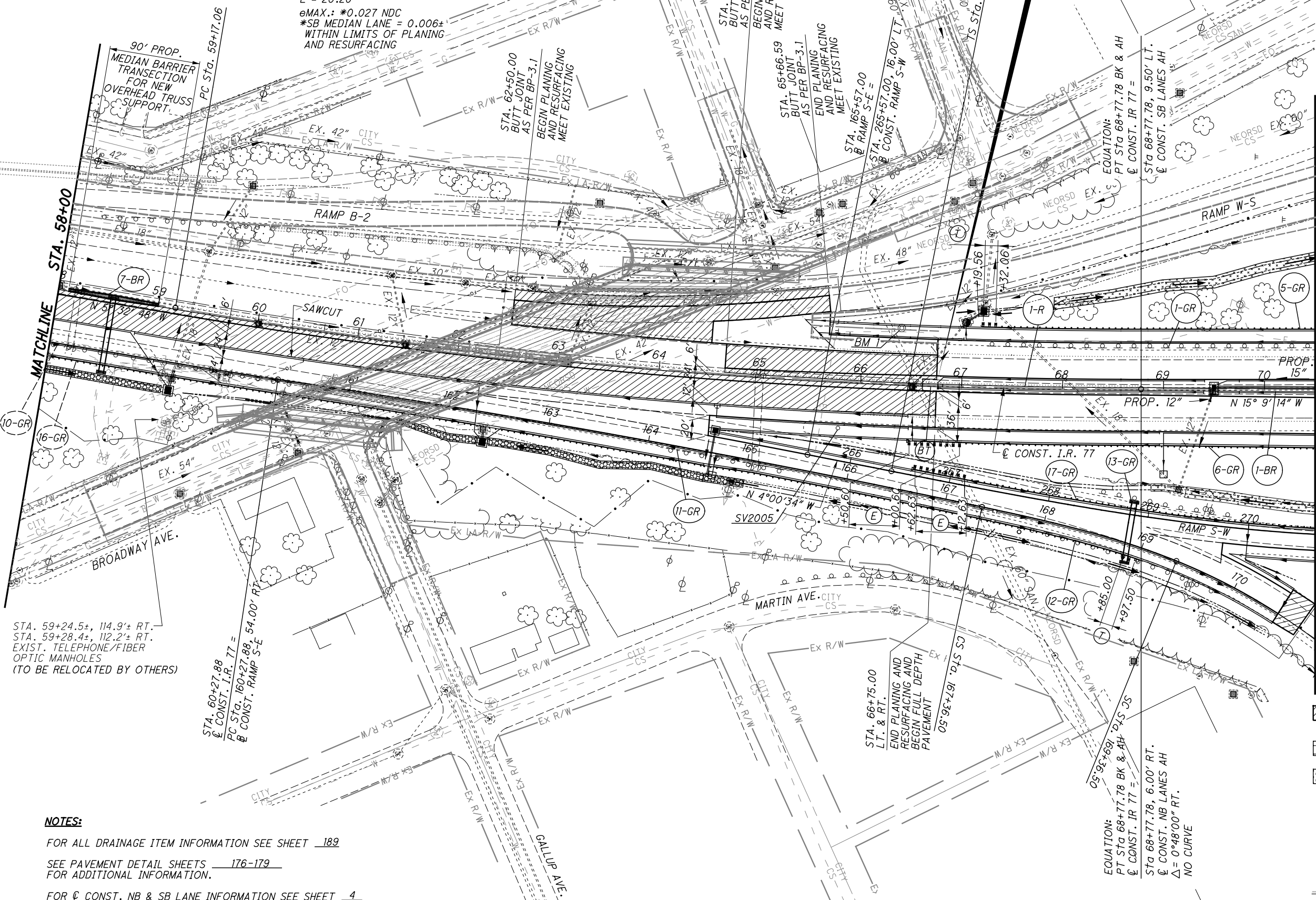
P.I. STA. 168+66.73
 $Ls = 200.00'$
 $fs = 10^\circ 00' 00''$
 $LT = 130.22'$
 $ST = 70.20'$
 $x = 199.36'$
 $y = 12.19'$
 $k = 99.90'$
 $p = 2.62'$

**CONSTRUCTION RAMP S-E
 CURVE DATA**

P.I. Sta. 173+17.41
 $\Delta = 64^\circ 33' 00''$ (RT)
 $Dc = 9^\circ 30' 00''$
 $R = 603.11'$
 $T = 380.90'$
 $L = 679.47'$
 $E = 110.21'$
 $C = 644.11'$
 $C.B. = N 39^\circ 09' 47'' E$
 $eMAX. = 0.058$
 DESIGN SPEED = 40 MPH

LEGEND

-  PLANING AND RESURFACING
SEE SHEET 176-179
-  DITCH EROSION PROTECTION
(7'-6" WIDE)
-  DITCH EROSION PROTECTION
(11'-6" WIDE)
-  GUARDRAIL ANCHOR ASSEMBLY,
MGS TYPE E
-  GUARDRAIL ANCHOR ASSEMBLY,
MGS TYPE T
-  20' BARRIER TRANSITION SEE
SHEETS 182-183 FOR DETAILS
-  CCG6B CONSTRUCTION
PID NO. 82388



STA. 59+24.5±, 114.9± RT.
 STA. 59+28.4±, 112.2± RT.
 EXIST. TELEPHONE/FIBER
 OPTIC MANHOLES
 (TO BE RELOCATED BY OTHERS)

STA. 60+27.88
 C CONST. I.R. 77 =
 PC Sta. 160+27.88, 54.00' RT.
 B CONST. RAMP S-E

STA. 66+75.00
 LT. & RT.
 END PLANING AND
 RESURFACING AND
 BEGIN FULL DEPTH
 PAVEMENT

EQUATION:
 PT Sta 68+77.78 BK & AH
 C CONST. NB LANES AH
 $\Delta = 0^\circ 48' 00''$ RT.
 NO CURVE

NOTES:

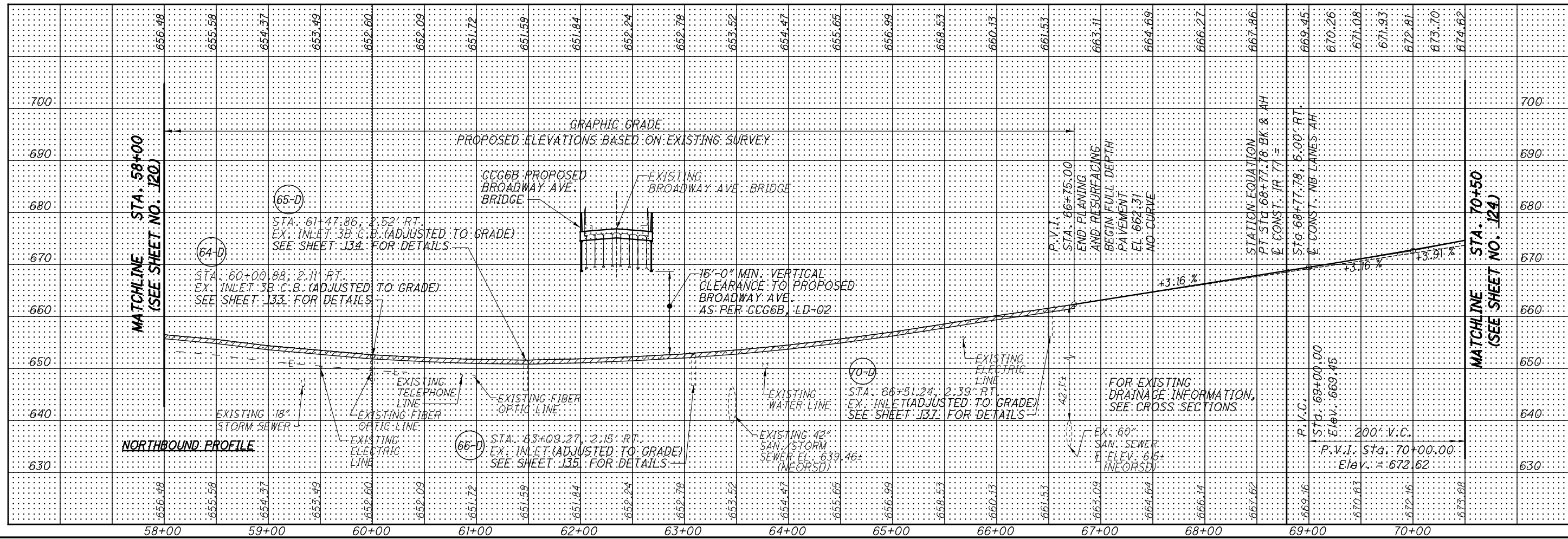
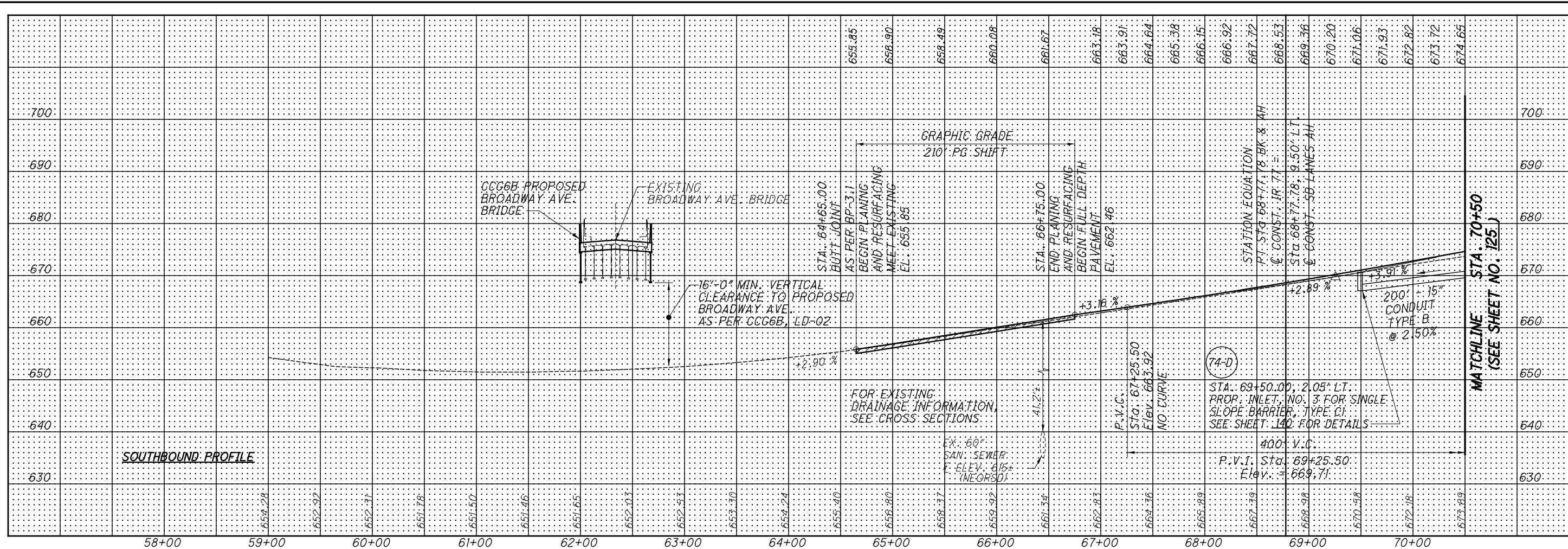
- FOR ALL DRAINAGE ITEM INFORMATION SEE SHEET 189
- SEE PAVEMENT DETAIL SHEETS 176-179
FOR ADDITIONAL INFORMATION.
- FOR C CONST. NB & SB LANE INFORMATION SEE SHEET 4



PLAN
 STA. 58+00 TO STA. 70+50

CUY-77-14.35

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CALCULATED
 DAW
 CHECKED
 JDL

PROFILE
 STA. 58+00 TO STA. 70+50

CUY-77-14.35
 122
 365

BENCH MARK 2 (SV 2003) SURVEY MARKER FOUND WITH 2" ALUMINUM CAP STAMPED "BARR & PREVOST"
 STA. 74+62.90, 281.76' LT.
 EL. 648.40

BENCH MARK 3 (132) 5/8" REBAR FOUND
 STA. 79+51.45, 151.16' LT.
 EL. 668.73

BENCH MARK 4 TOP WEST BOLT ODOT LIGHT POLE #BOW28
 STA. 80+12, 288' RT.
 EL. 649.75

BENCH MARK 5 (SV 2000) SURVEY MARKER SET WITH CAP STAMPED "RICHLAND ENG. TRAVERSE PT."
 STA. 82+88.39, 56.45' LT. EL. 687.04

B CONSTRUCTION RAMP S-W
CURVE DATA

P.I. Sta. 272+33.72
 $\Delta = 11^\circ 19' 43''$ (LT)
 $Dc = 4^\circ 00' 00''$
 $R = 1,432.39'$
 $T = 142.07'$
 $L = 283.21'$
 $E = 7.03'$
 $C = 282.75'$
 C.B. = N 18° 40' 25" W

B CONSTRUCTION RAMP S-W
CURVE DATA

P.I. Sta. 278+53.91
 $\Delta = 60^\circ 40' 43''$ (LT)
 $Dc = 7^\circ 00' 00''$
 $R = 818.51'$
 $T = 479.05'$
 $L = 866.84'$
 $E = 129.88'$
 $C = 826.89'$
 C.B. = N 54° 40' 38" W

MATCHLINE STA. 70+50

STA. 83+00

MATCHLINE

MATCHLINE

- LEGEND**
- DITCH EROSION PROTECTION (11'-6" WIDE)
 - 601 SLOPE PROTECTION, MISC.: GROUT FILLED FABRIC MATS
 - SLOPE EROSION PROTECTION
 - CGG6B CONSTRUCTION PID NO. 82388

- (B1) BRIDGE TERMINAL ASSEMBLY, MGS TYPE 1 (26.9)
- (B2) BRIDGE TERMINAL ASSEMBLY, MGS TYPE 2 (EACH)
- (GT) GUARDRAIL OFFSET TRANSITION AS PER MGS 6.1 (75')

NOTE:
 FOR ALL DRAINAGE ITEM INFORMATION SEE SHEET 190
 FOR \varnothing CONST. NB & SB LANE INFORMATION SEE SHEET 4

EQUATION:
 POT Sta 71+28.40 BK & AH
 \varnothing CONST. I.R. 77 =

P.I. Sta 71+28.43, 9.50' RT
 \varnothing CONST. NB LANES BK =

P.I. Sta 71+28.40, 9.50' RT
 \varnothing CONST. NB LANES AH
 $\Delta = 0^\circ 48' 00''$ LT.
 NO CURVES

- LEGEND**
- (P) POINT OF MINIMUM VERTICAL CLEARANCE (SEE PROFILE FOR DIMENSIONS)
 - (P1) STA. 76+27.20, 55.14' RT.
 - (P2) STA. 78+25.22, 54.70' LT.

EQUATION:
 POT Sta 83+00.00 BK & AH
 \varnothing CONST. I.R. 77 =

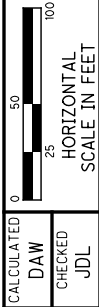
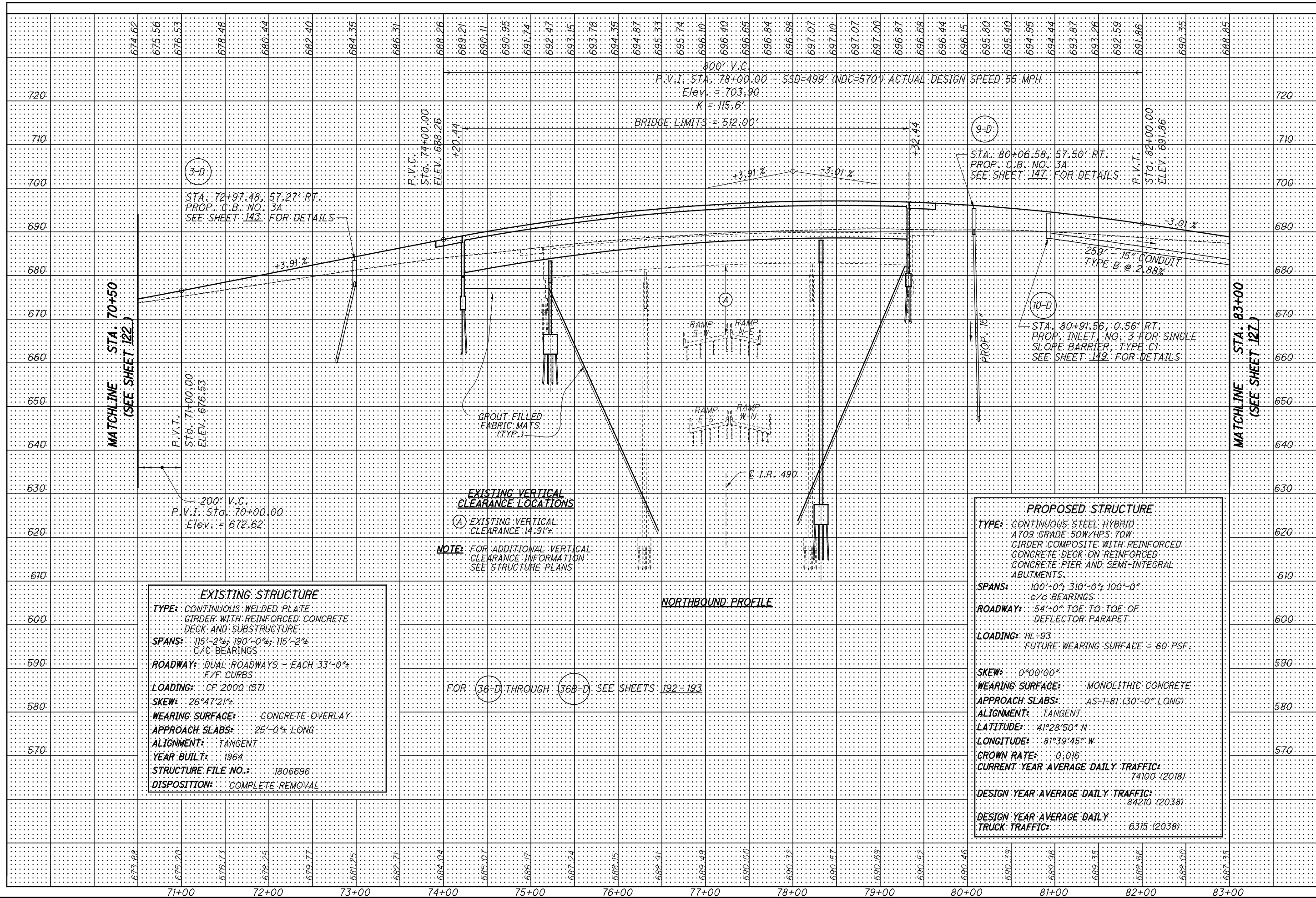
P.I. Sta 83+00.00, 9.50' RT.
 \varnothing CONST. NB LANES AH
 $\Delta = 0^\circ 25' 47''$ LT.
 NO CURVE



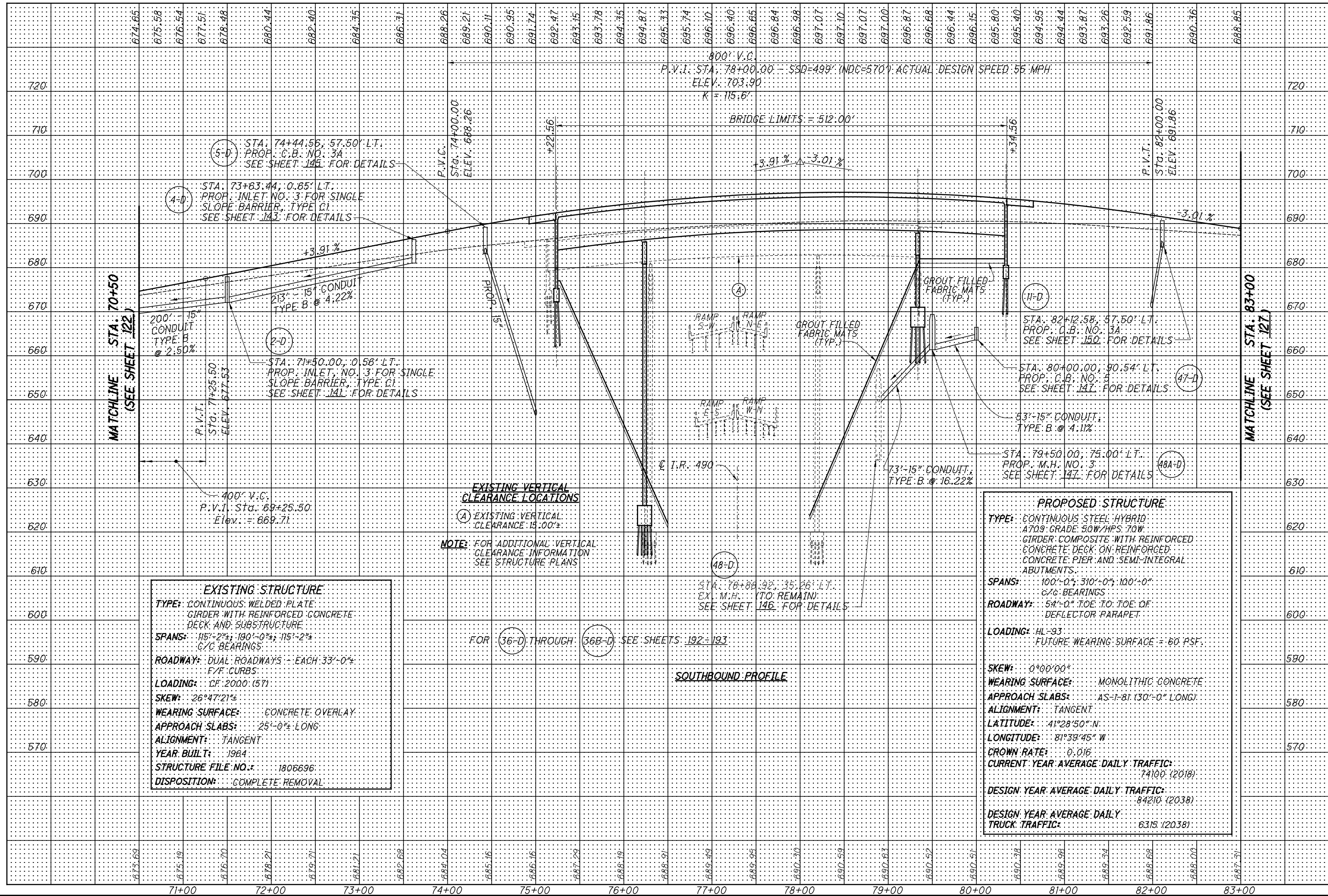
PLAN
 STA. 70+50 TO STA. 83+00

CUY-77-14.35
 123
 365

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NORTHBOUND PROFILE
 STA. 70+50 TO STA. 83+00



EXISTING STRUCTURE
 TYPE: CONTINUOUS WELDED PLATE GIRDER WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE
 SPANS: 115'-2"_±; 130'-0"_±; 115'-2"_±
 C/G BEARINGS
 ROADWAY: DUAL ROADWAYS - EACH 33'-0"_± F/F CURBS
 LOADING: LF 2000 (57)
 SKEW: 26°47'21"_±
 WEARING SURFACE: CONCRETE OVERLAY
 APPROACH SLABS: 25'-0"_± LONG
 ALIGNMENT: TANGENT
 YEAR BUILT: 1964
 STRUCTURE FILE NO.: 1806696
 DISPOSITION: COMPLETE REMOVAL

EXISTING VERTICAL CLEARANCE LOCATIONS
 (A) EXISTING VERTICAL CLEARANCE 13.00'_±
 NOTE: FOR ADDITIONAL VERTICAL CLEARANCE INFORMATION SEE STRUCTURE PLANS

PROPOSED STRUCTURE
 TYPE: CONTINUOUS STEEL HYBRID
 A709 GRADE 50W/HPS 70W
 GIRDER COMPOSITE WITH REINFORCED CONCRETE DECK ON REINFORCED CONCRETE PIER AND SEMI-INTEGRAL ABUTMENTS
 SPANS: 100'-0"_±; 310'-0"_±; 100'-0"_±
 C/G BEARINGS
 ROADWAY: 54'-0" TOE TO TOE OF DEFLECTOR PARAPET
 LOADING: HL-93
 FUTURE WEARING SURFACE = 60 PSF
 SKEW: 0°00'00"
 WEARING SURFACE: MONOLITHIC CONCRETE
 APPROACH SLABS: AS-1-81 130'-0" LONG
 ALIGNMENT: TANGENT
 LATITUDE: 41°28'50" N
 LONGITUDE: 81°39'45" W
 CROWN RATE: 0.016
 CURRENT YEAR AVERAGE DAILY TRAFFIC: 74100 (2018)
 DESIGN YEAR AVERAGE DAILY TRAFFIC: 84210 (2038)
 DESIGN YEAR AVERAGE DAILY TRUCK TRAFFIC: 6315 (2038)



SOUTHBOUND PROFILE
 STA. 70+50 TO STA. 83+00

CUY-77-14.35

EQUATION:
POT Sta 83+00.00 BK & AH
☐ CONST. IR 77 =

P.I. Sta 83+00.00,
9.50' LT.
☐ CONST. SB LANES AH
Δ= 0°25'47" RT.
NO CURVE

EQUATION:
POT Sta 85+00.00 BK & AH
☐ CONST. IR 77 =

Sta 85+00.01, 8.00' LT.
☐ CONST. SB LANES BK
Δ= 0°25'47" LT.

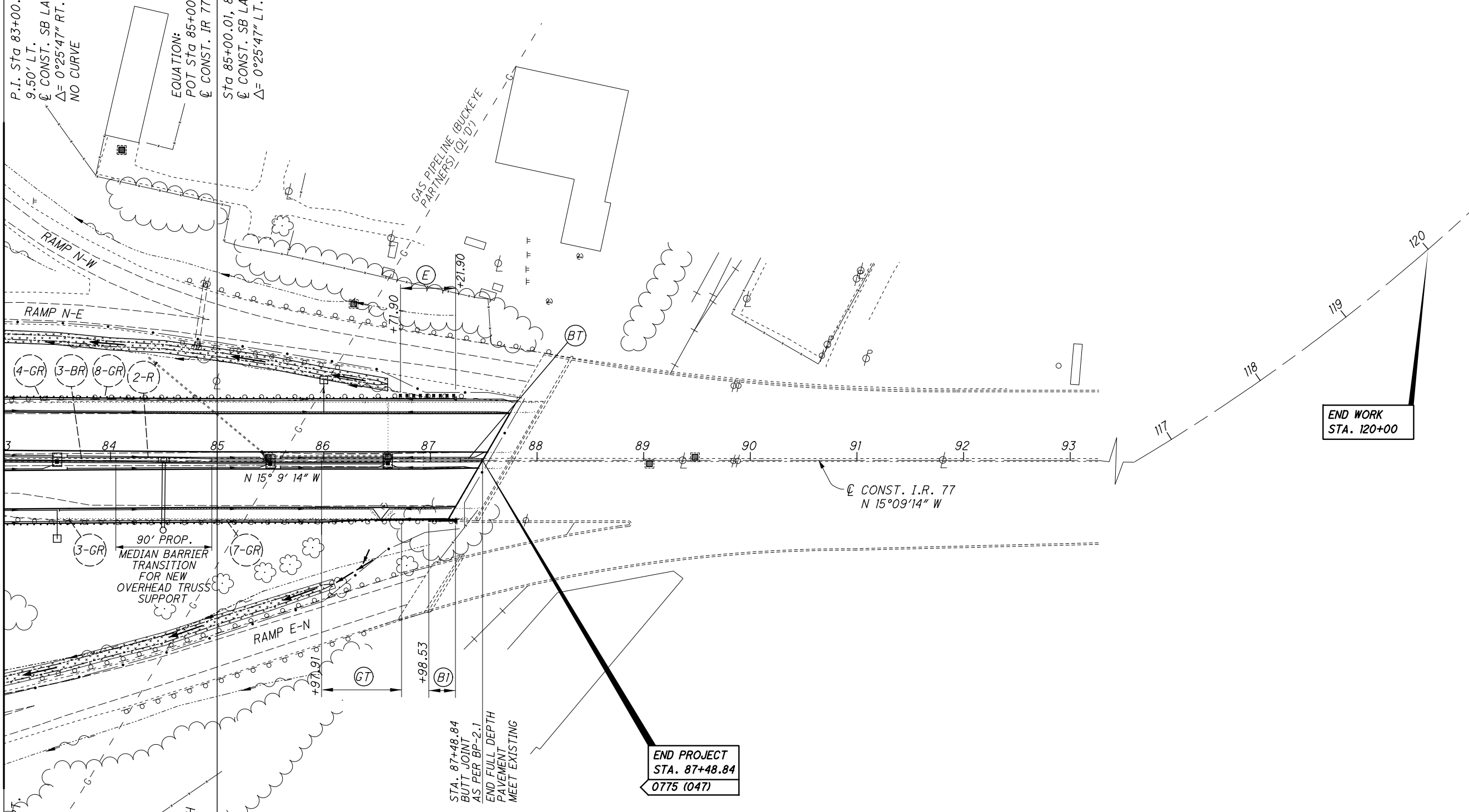
EQUATION:
POT Sta 83+00.00 BK & AH
☐ CONST. IR 77 =

P.I. Sta 83+00.00, 9.50' RT.
☐ CONST. NB LANES AH
Δ= 0°25'47" LT.
NO CURVE

EQUATION:
POT Sta 85+00.00 BK & AH
☐ CONST. IR 77 =

Sta 85+00.01, 8.00' RT.
☐ CONST. NB LANES BK
Δ= 0°25'47" RT.

MATCHLINE
STA. 83+00



- LEGEND**
- ☐ - DITCH EROSION PROTECTION (11'-6" WIDE)
 - (BI) BRIDGE TERMINAL ASSEMBLY, MGS TYPE 1 (26.9')
 - (E) GUARDRAIL ANCHOR ASSEMBLY, MGS TYPE E (50')
 - (BT) 20' BARRIER TRANSITION SEE SHEET 182 FOR DETAILS
 - (GT) GUARDRAIL OFFSET TRANSITION AS PER MGS 6.1 (75')

END PROJECT
STA. 87+48.84
0775 (047)

END WORK
STA. 120+00

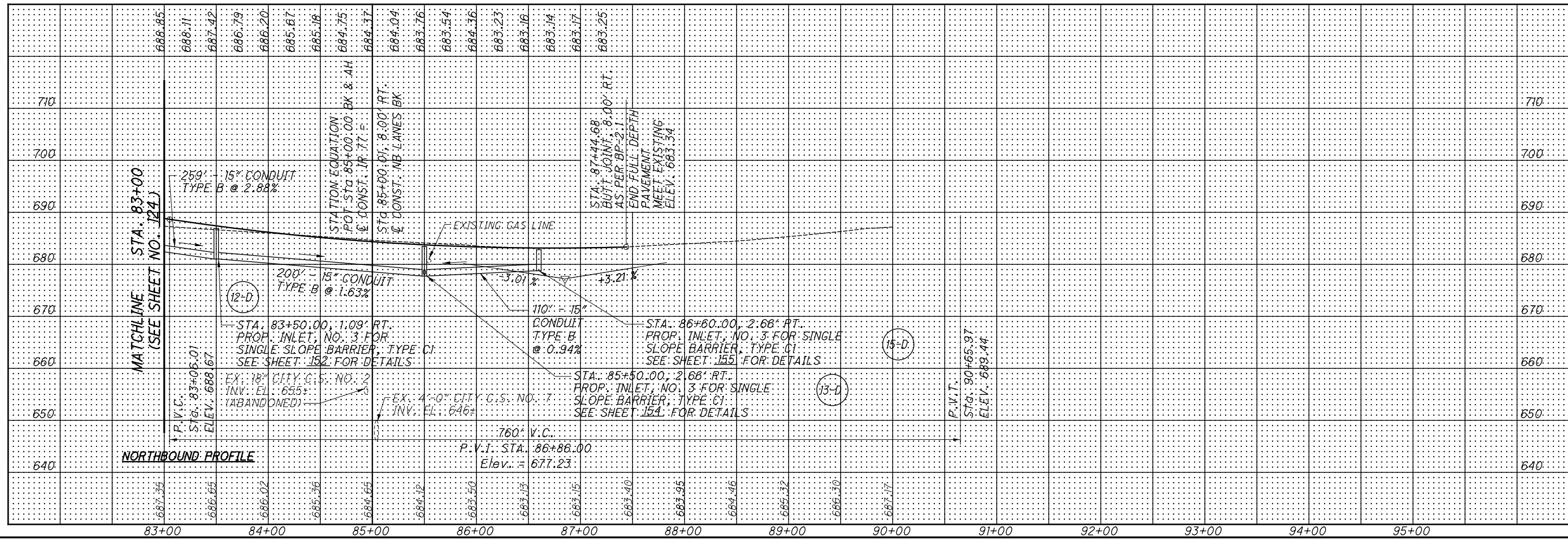
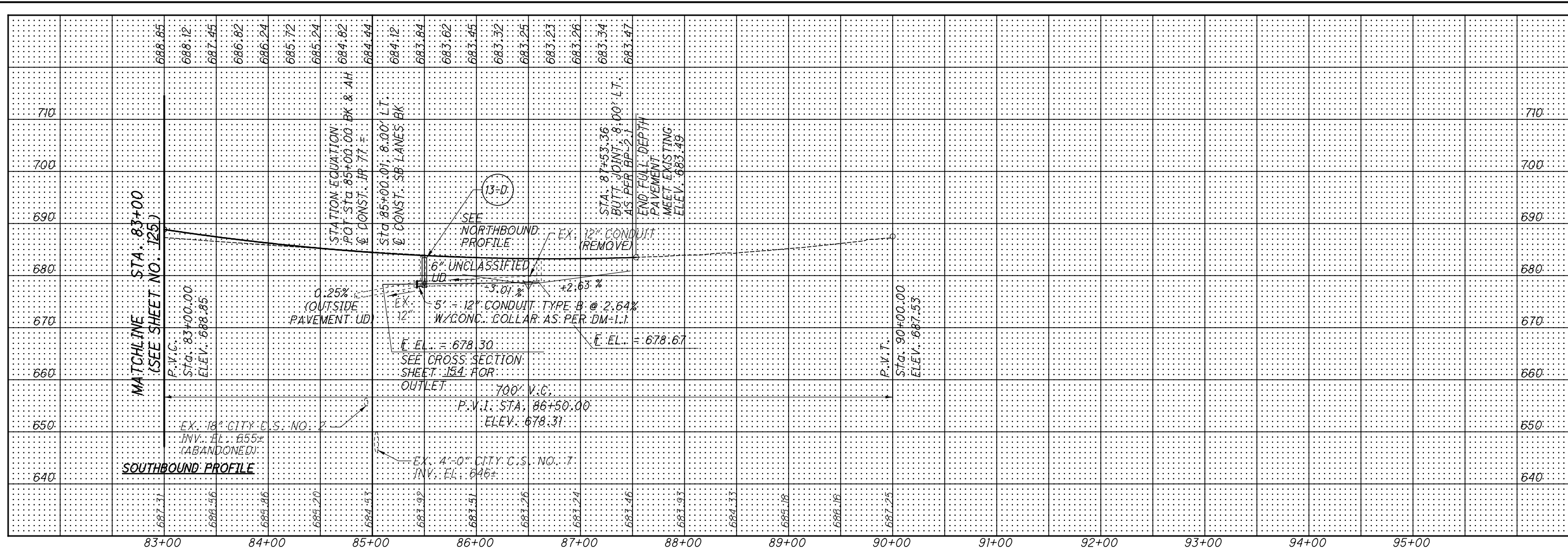
NOTE:
FOR ALL DRAINAGE ITEM INFORMATION SEE SHEET 191
FOR ☐ CONST. NB & SB LANE INFORMATION SEE SHEET 4

CALCULATED
DAW
CHECKED
JDL

0 50 100
25
HORIZONTAL
SCALE IN FEET

PLAN
STA. 83+00 TO STA. 93+00

CUY-77-14.35



CALCULATED
DAW
CHECKED
JDL

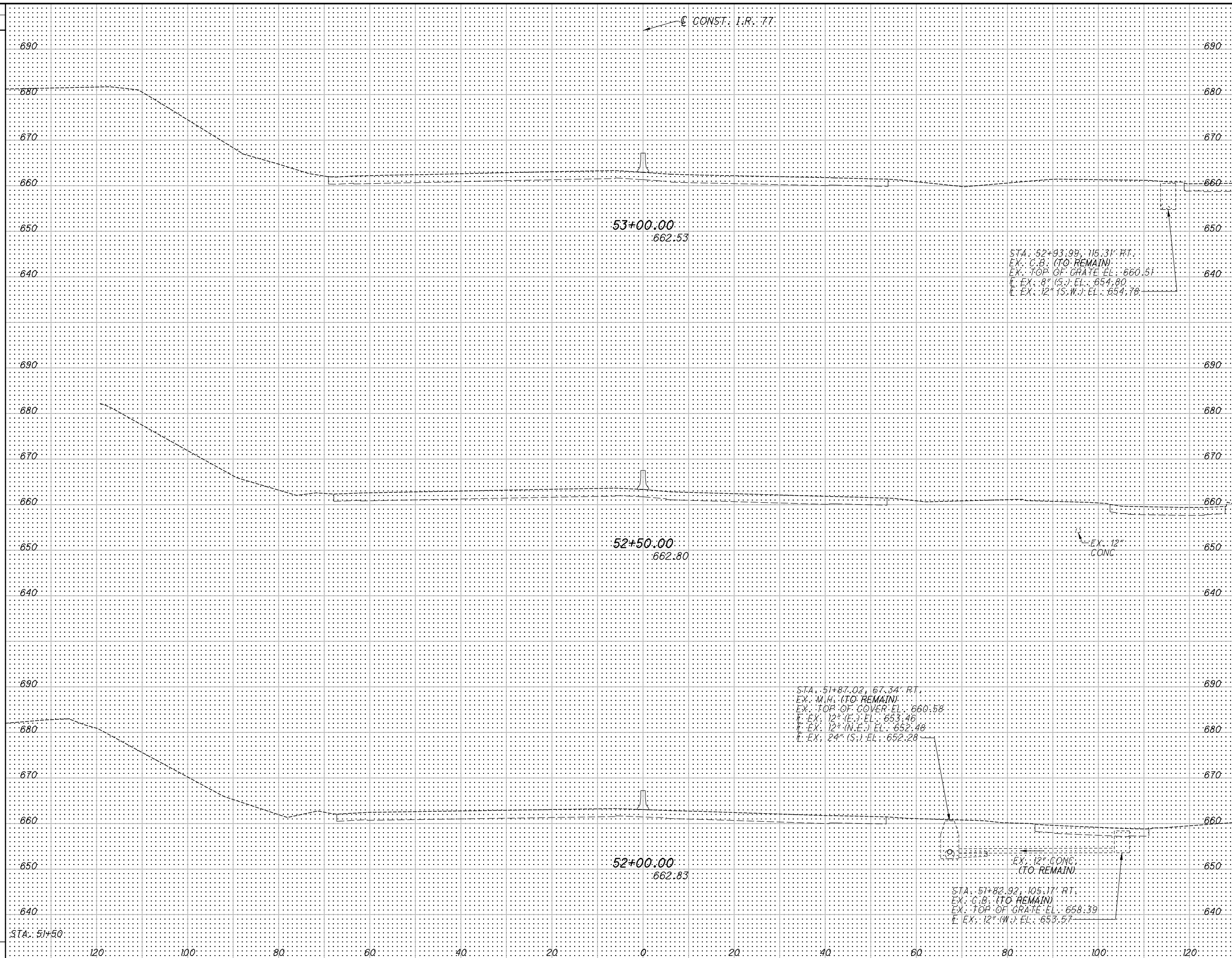
PROFILE
STA. 83+00 TO STA. 90+00

CUY-77-14.35
127
365



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SEEDING
END SO.
WIDTH YDS.

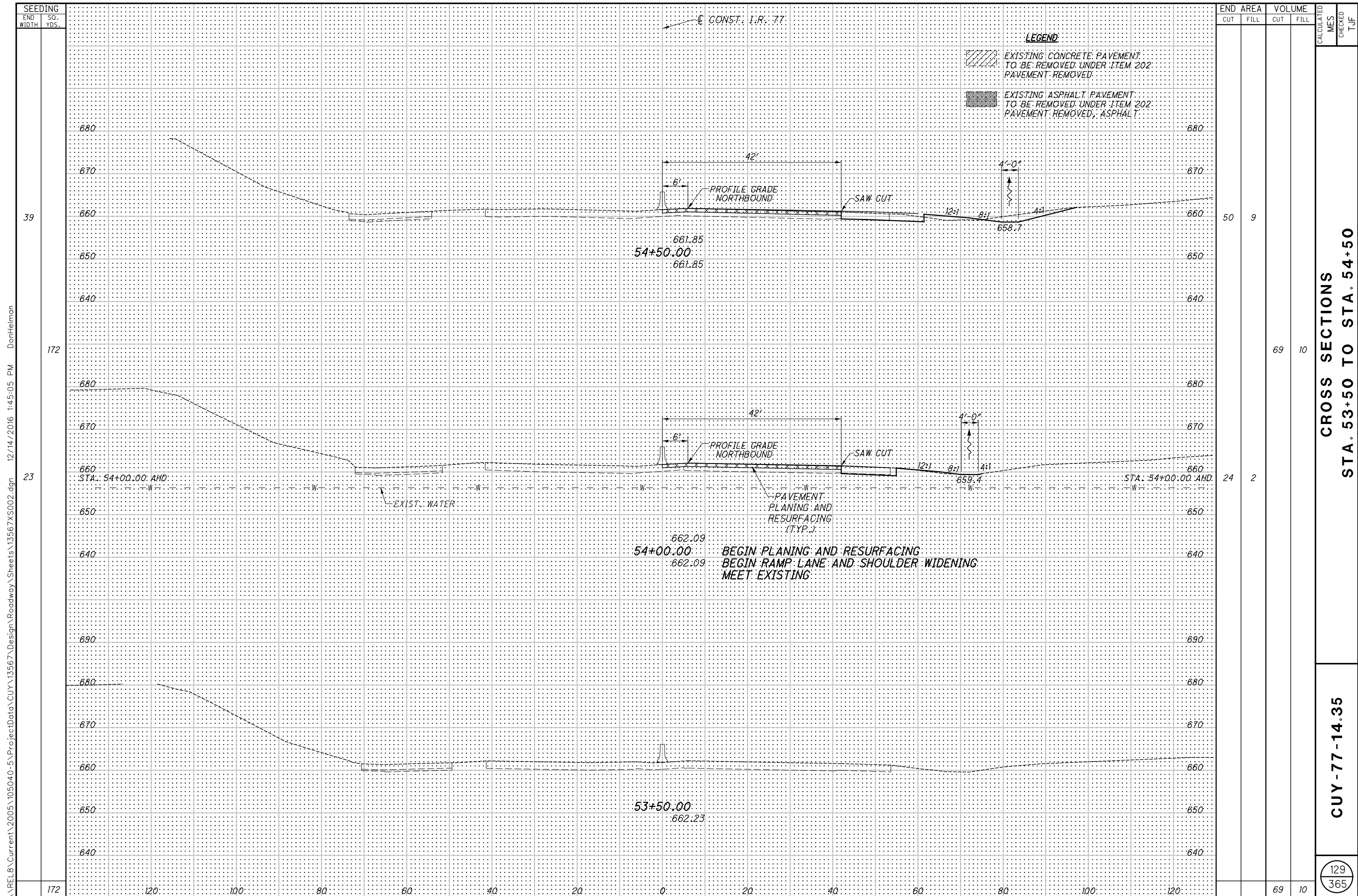


END AREA		VOLUME		CALCULATED MES	CHECKED TJF
CUT	FILL	CUT	FILL		

**CROSS SECTIONS
STA. 52+00 TO STA. 53+00**

CUY-77-14.35

128
365

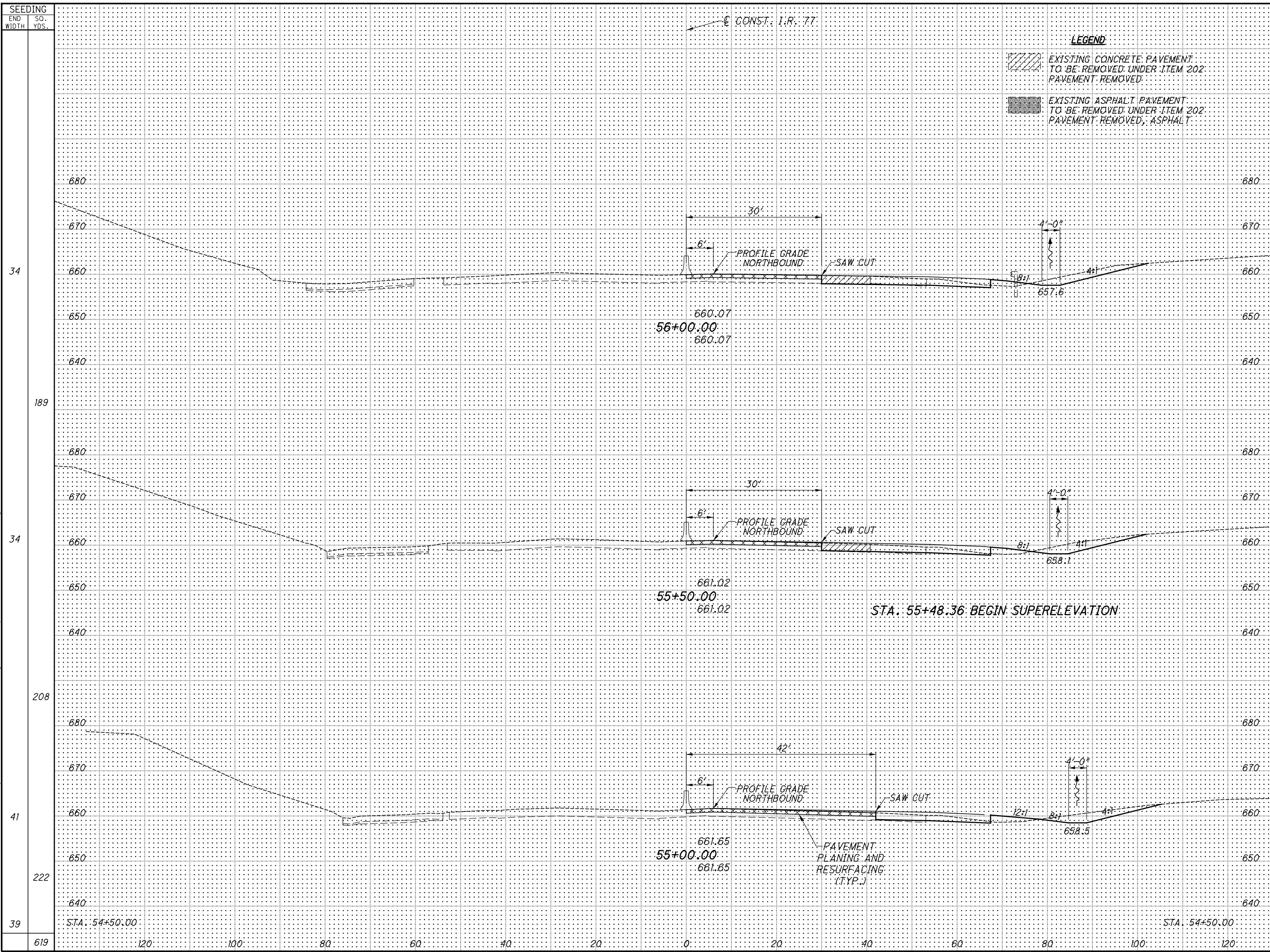


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**CROSS SECTIONS
STA. 53+50 TO STA. 54+50**

CUY-77-14.35

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END AREA	VOLUME	CALCULATED	CHECKED	TJF
67	8			
120	18			
63	11			
117	22			
63	13			
105	20			
50	9			
342	60			

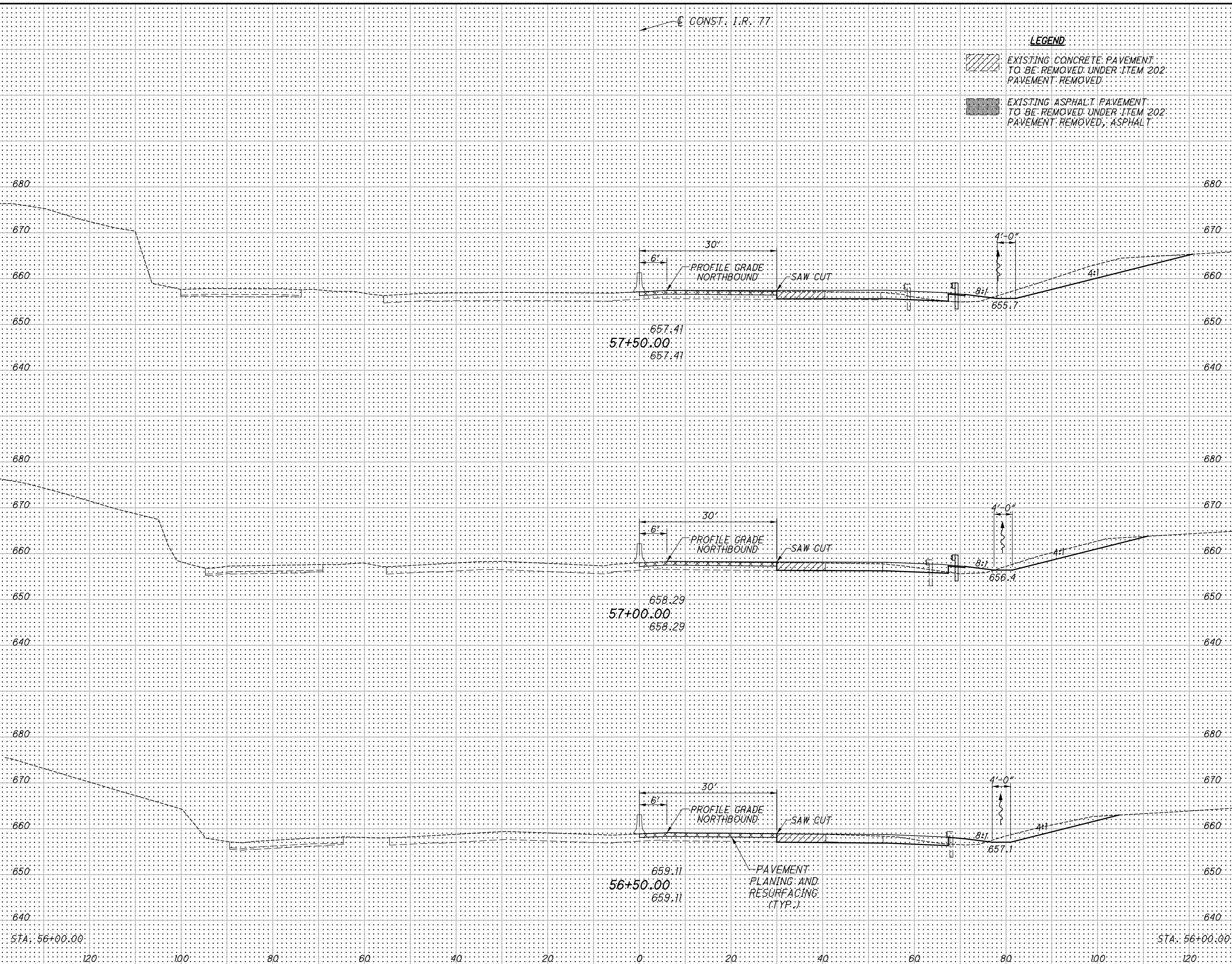
**CROSS SECTIONS
STA. 55+00 TO STA. 56+00**

CUY-77-14.35

130
365

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SEEDING	END AREA		VOLUME		CALCULATED	CHECKED	TJF
	CUT	FILL	CUT	FILL			
53	118	14	181	24			
267							
43	77	12					
222			135	19			
37	69	9					
197			126	16			
34	67	8					
686			442	59			



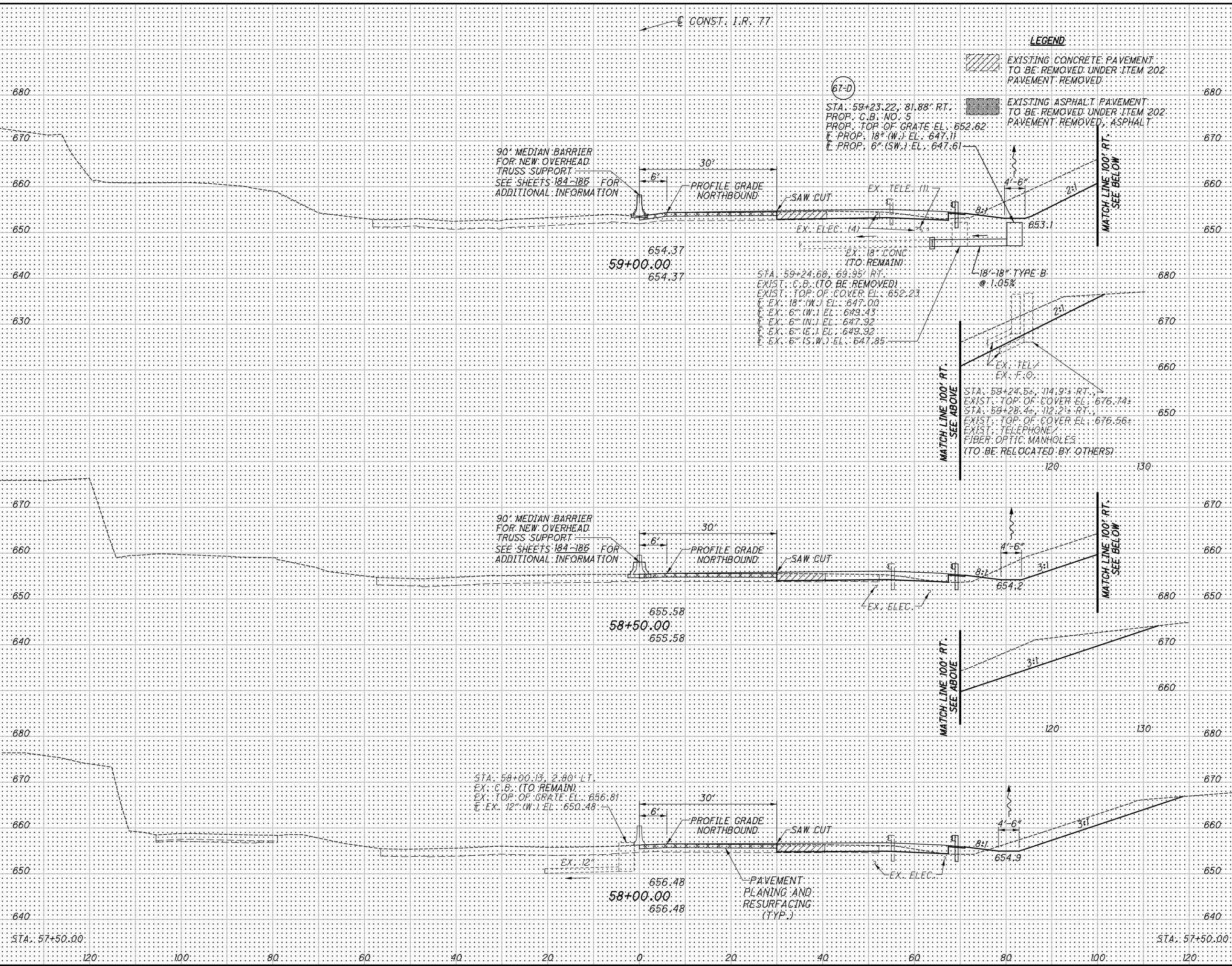
CROSS SECTIONS
STA. 56+50 TO STA. 57+50

CUY-77-14.35

131
365

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SEEDING	END AREA		VOLUME		CALCULATED	MES	CHECKED	TJF
	END WIDTH	SO. YDS.	CUT	FILL				
68			270	7				
78			288	13				
361			371	24				
52			113	13				
292					214	25		
53			118	14				
1059			1102	68				



LEGEND

EXISTING CONCRETE PAVEMENT TO BE REMOVED UNDER ITEM 202 PAVEMENT REMOVED.

EXISTING ASPHALT PAVEMENT TO BE REMOVED UNDER ITEM 202 PAVEMENT REMOVED, ASPHALT.

CONST. I.R. 77

90° MEDIAN BARRIER FOR NEW OVERHEAD TRUSS SUPPORT SEE SHEETS 184-186 FOR ADDITIONAL INFORMATION

90° MEDIAN BARRIER FOR NEW OVERHEAD TRUSS SUPPORT SEE SHEETS 184-186 FOR ADDITIONAL INFORMATION

STA. 58+00.13, 2.80' LT. EX. C.B. (TO REMAIN) EX. TOP OF GRATE EL. 656.81 EX. 12" (W.) EL. 650.48

PAVEMENT PLANING AND RESURFACING (TYP.)

67-D
STA. 59+23.22, 81.88' RT. PROP. C.B. NO. 5 PROP. TOP OF GRATE EL. 652.62 EX. PROP. 18" (W.) EL. 647.11 EX. PROP. 6" (SW.) EL. 647.6

STA. 59+24.68, 69.95' RT. EXIST. C.B. (TO BE REMOVED) EXIST. TOP OF COVER EL. 652.23 EX. 18" (W.) EL. 647.00 EX. 6" (W.) EL. 649.43 EX. 6" (N.) EL. 647.92 EX. 6" (E.) EL. 649.92 EX. 6" (S.W.) EL. 647.85

STA. 59+24.54, 114.93' RT. EXIST. TOP OF COVER EL. 676.74 STA. 59+28.44, 112.23' RT. EXIST. TOP OF COVER EL. 676.56 EXIST. TELEPHONE/FIBER OPTIC MANHOLES (TO BE RELOCATED BY OTHERS)

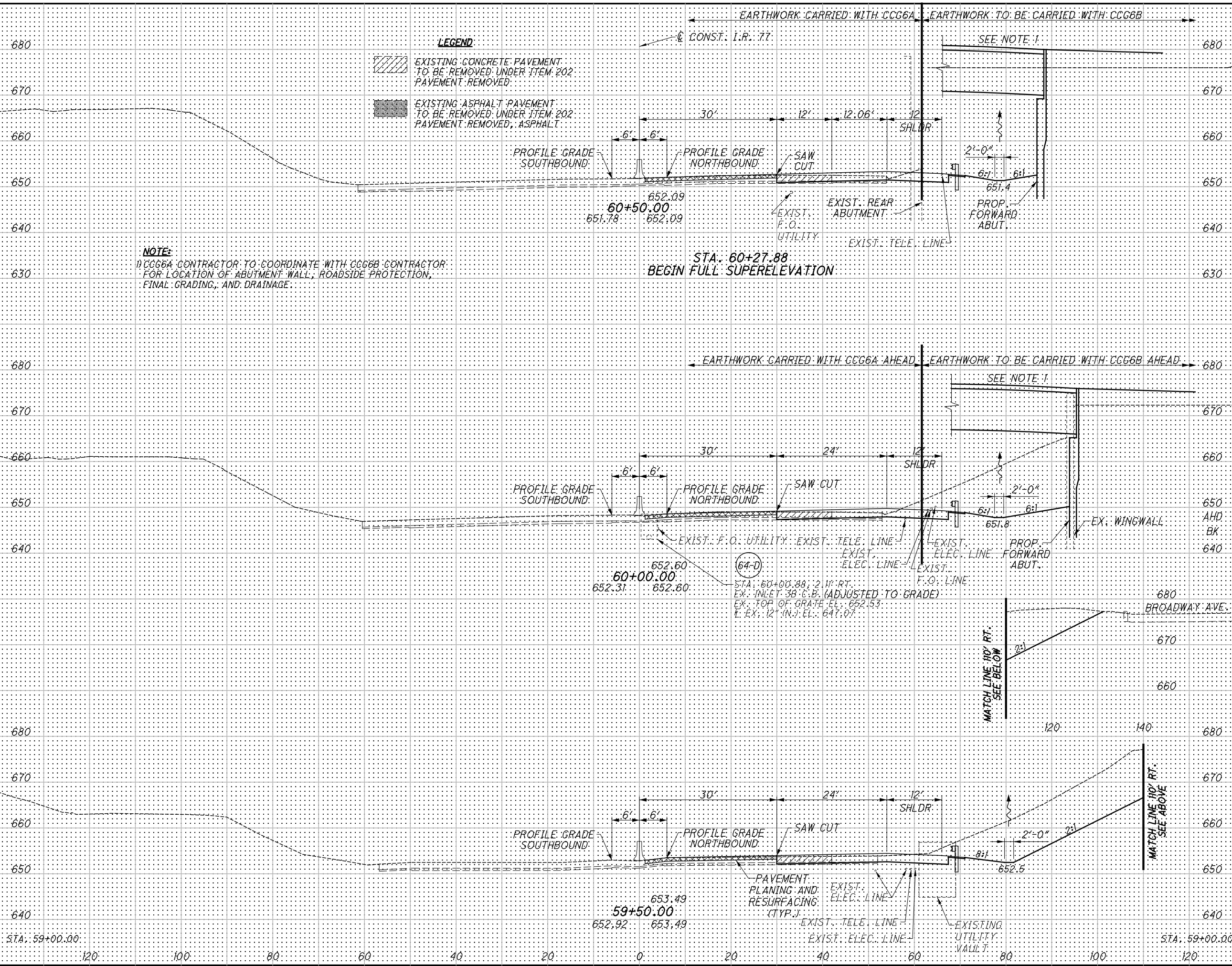
CROSS SECTIONS
STA. 58+00 TO STA. 59+00

CUY-77-14.35

132
365

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SEEDING	END AREA		VOLUME	
	CUT	FILL	CUT	FILL
21		0		
24		0		
264		0		
71		0		
386		6		6
68	270	7		
775	1997	6		



NOTE:
 1) CCG6A CONTRACTOR TO COORDINATE WITH CCG6B CONTRACTOR FOR LOCATION OF ABUTMENT WALL, ROADSIDE PROTECTION, FINAL GRADING, AND DRAINAGE.

LEGEND:
 [Hatched pattern] EXISTING CONCRETE PAVEMENT TO BE REMOVED UNDER ITEM 202. PAVEMENT REMOVED.
 [Solid grey pattern] EXISTING ASPHALT PAVEMENT TO BE REMOVED UNDER ITEM 202. PAVEMENT REMOVED; ASPHALT.

EARTHWORK CARRIED WITH CCG6A EARTHWORK TO BE CARRIED WITH CCG6B

STA. 60+27.88
 BEGIN FULL SUPERELEVATION

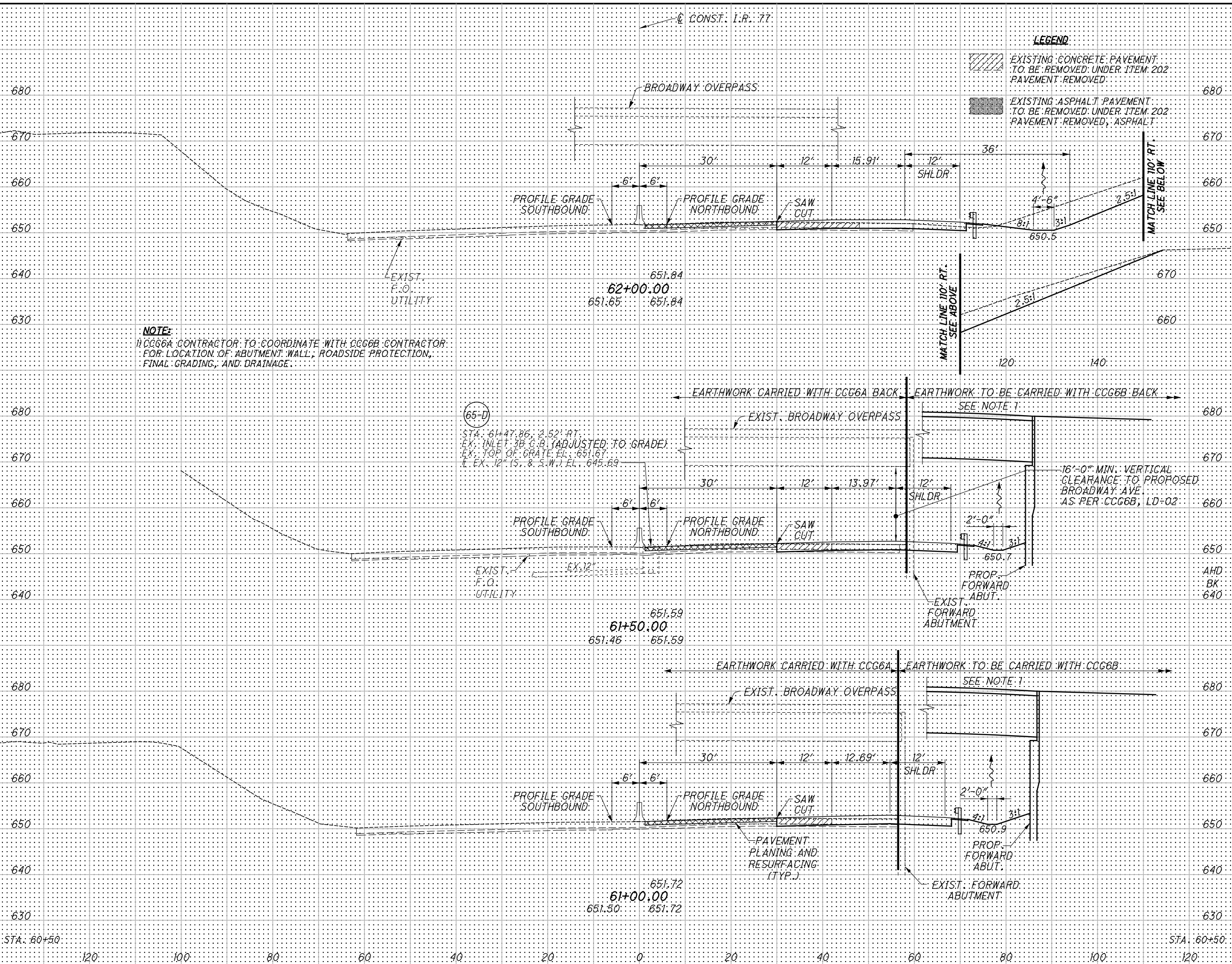
(64-D)
 STA. 60+00.88; 2 1/2" RT.
 EX. INLET 38" C.B. (ADJUSTED TO GRADE)
 EX. TOP OF GRADE EL. 652.53
 L. EX. 12" (N.) EL. 647.07

END AREA	VOLUME	
	CUT	FILL
26	0	
51	0	
29	0	
602	0	
1127	0	
615	0	
819	6	6
270	7	
1997	6	

CALCULATED
 MES
 CHECKED
 TJF
**CROSS SECTIONS
 STA. 59+50 TO STA. 60+50**
CUY-77-14.35
 133
 365

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\XSSHEETV8.dgn 12/14/2016 1:46:57 PM DonHelman

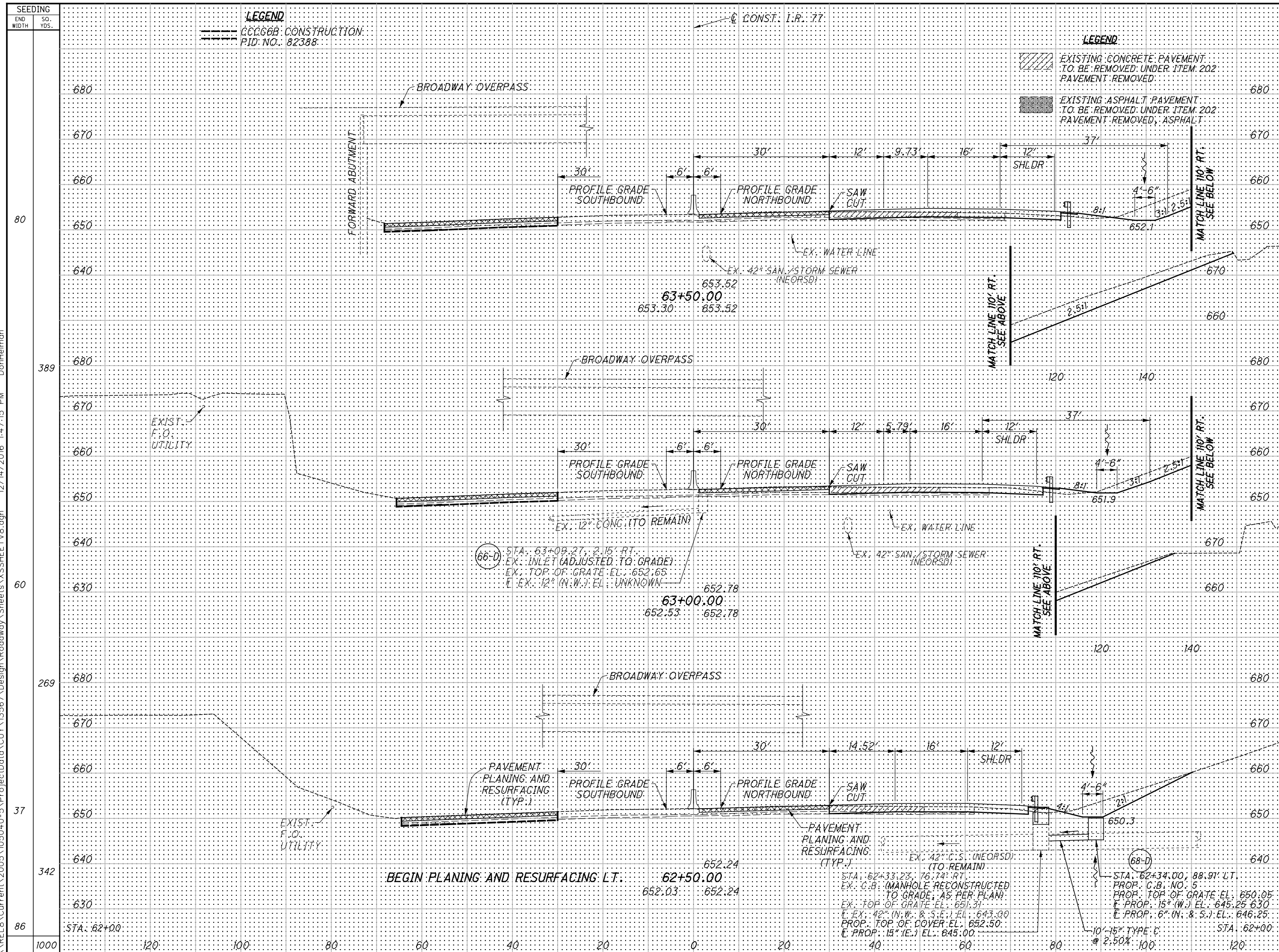
SEEDING	END	
	WIDTH	SO. YDS.
86		
281		
15		
89		
17		
106		
21		
476	120	100



END AREA	VOLUME	
	CUT	FILL
244	4	
459	7	
252	4	0
43	0	
21	0	
44	0	
26	0	
546	7	

CALCULATED MES T J F
 CHECKED
CROSS SECTIONS
STA. 61+00 TO STA. 62+00
CUY-77-14.35
 134
 365

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END STA.	END AREA		VOLUME	
	CUT	FILL	CUT	FILL
63+50	212	7	283	19
63+00	94	14	164	19
62+50	83	7	303	10
62+00	244	4	750	48

**CROSS SECTIONS
STA. 62+50 TO STA. 63+50**

CUY-77-14.35

135
365

LEGEND
 --- CCC66B CONSTRUCTION
 PID. NO. 82388

LEGEND
 [Hatched Box] EXISTING CONCRETE PAVEMENT TO BE REMOVED UNDER ITEM 202 PAVEMENT REMOVED
 [Solid Box] EXISTING ASPHALT PAVEMENT TO BE REMOVED UNDER ITEM 202 PAVEMENT REMOVED, ASPHALT

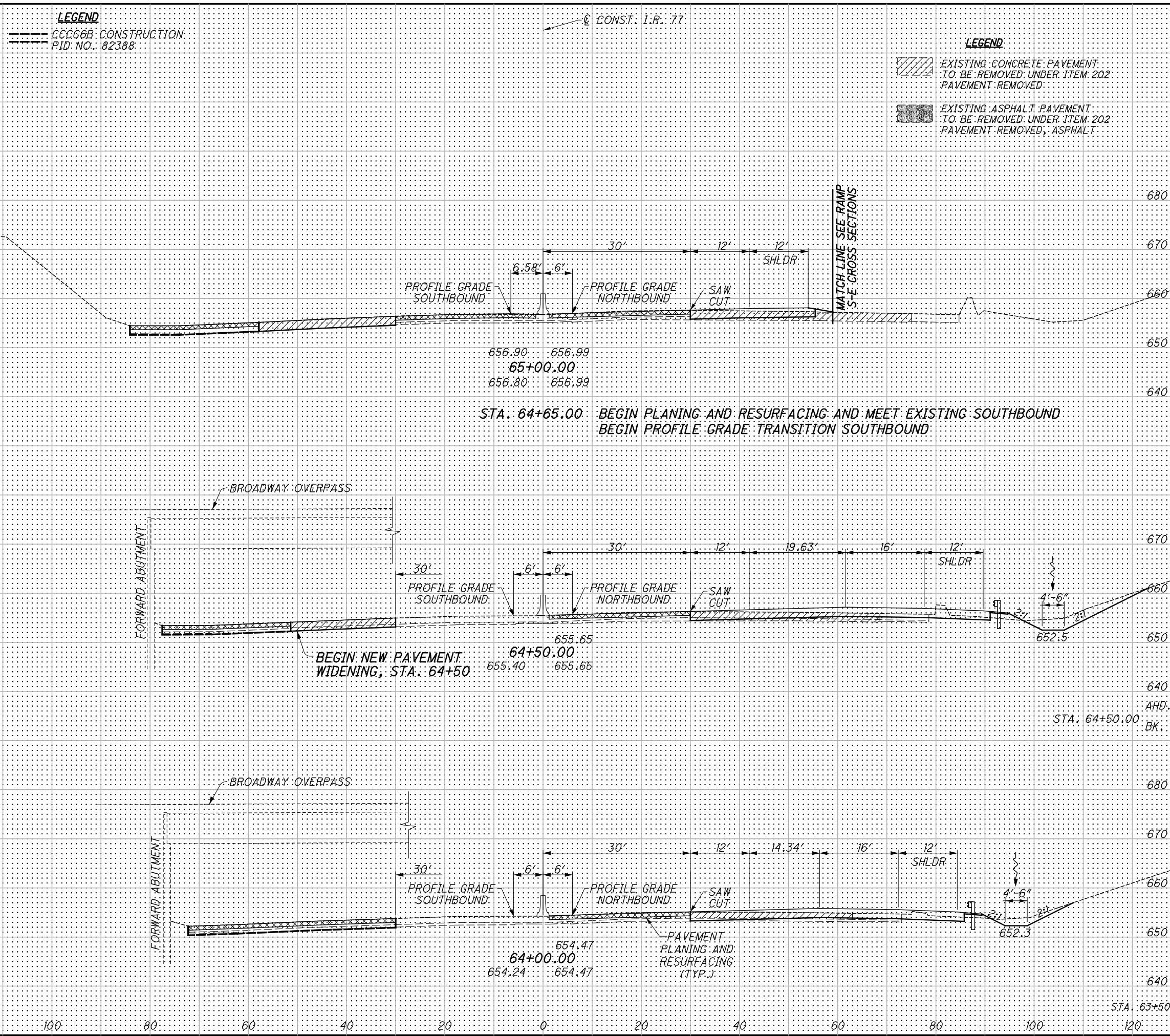
(66-D) STA. 63+09.27, 2.15' RT.
 EX. INLET (ADJUSTED TO GRADE)
 EX. TOP OF GRATE EL. 652.65
 EX. 12" (N.W.) EL. UNKNOWN

EX. 42" C.S. (NEORS) (TO REMAIN)
 STA. 62+33.23, 76.74' RT.
 EX. C.B. (MANHOLE RECONSTRUCTED TO GRADE, AS PER PLAN)
 EX. TOP OF GRATE EL. 651.31
 EX. 42" (N.W. & S.E.) EL. 643.00
 PROP. TOP OF COVER EL. 652.50
 EX. PROP. 15" (E.) EL. 645.00

(68-D) STA. 62+34.00, 88.91' LT.
 PROP. C.B. NO. 5
 PROP. TOP OF GRATE EL. 650.05
 EX. PROP. 15" (N.) EL. 645.25
 EX. PROP. 6" (N. & S.) EL. 646.25
 STA. 62+00

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SEEDING	
END WIDTH	SO. YDS.
5	
28	
5	
34	
156	
22	
283	
80	
467	



END AREA		VOLUME	
CUT	FILL	CUT	FILL
2	8		
2	20		
0	14		
57	30		
		94	33
44	6		
		237	12
212	7		
		333	65

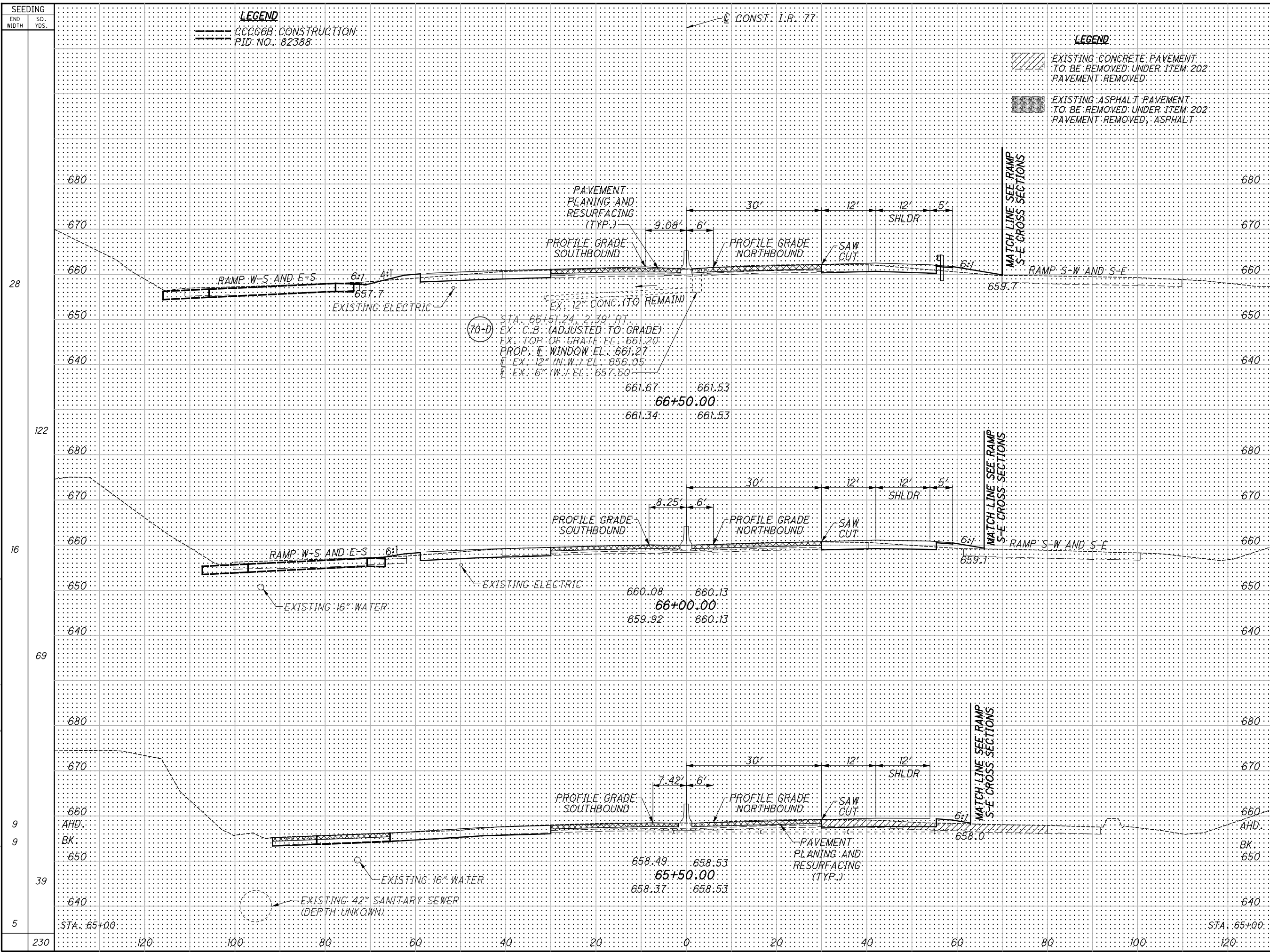
CALCULATED
 MES
 CHECKED
 TJF

**CROSS SECTIONS
 STA. 64+00 TO STA. 65+00**

CUY-77-14.35

136
 365

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END	AREA		VOLUME	
	CUT	FILL	CUT	FILL
77		14		
122		145		20
16		80		8
69		147		16
9	79	9		
9	63	4		
39		60		11
5	2	8		
230			352	47

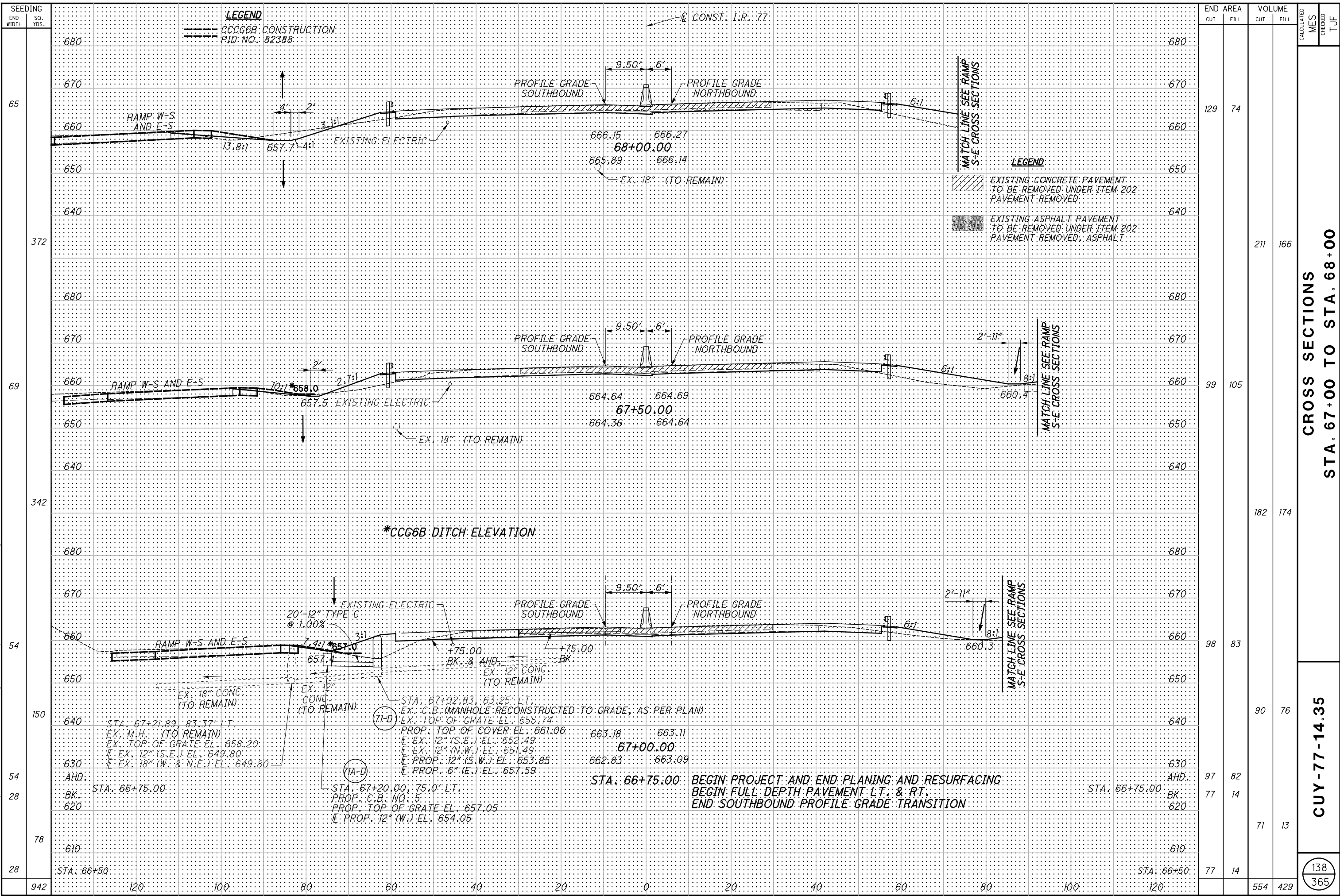
CROSS SECTIONS
 STA. 65+50 TO STA. 66+50

CALCULATED
 MES
 CHECKED
 TJF

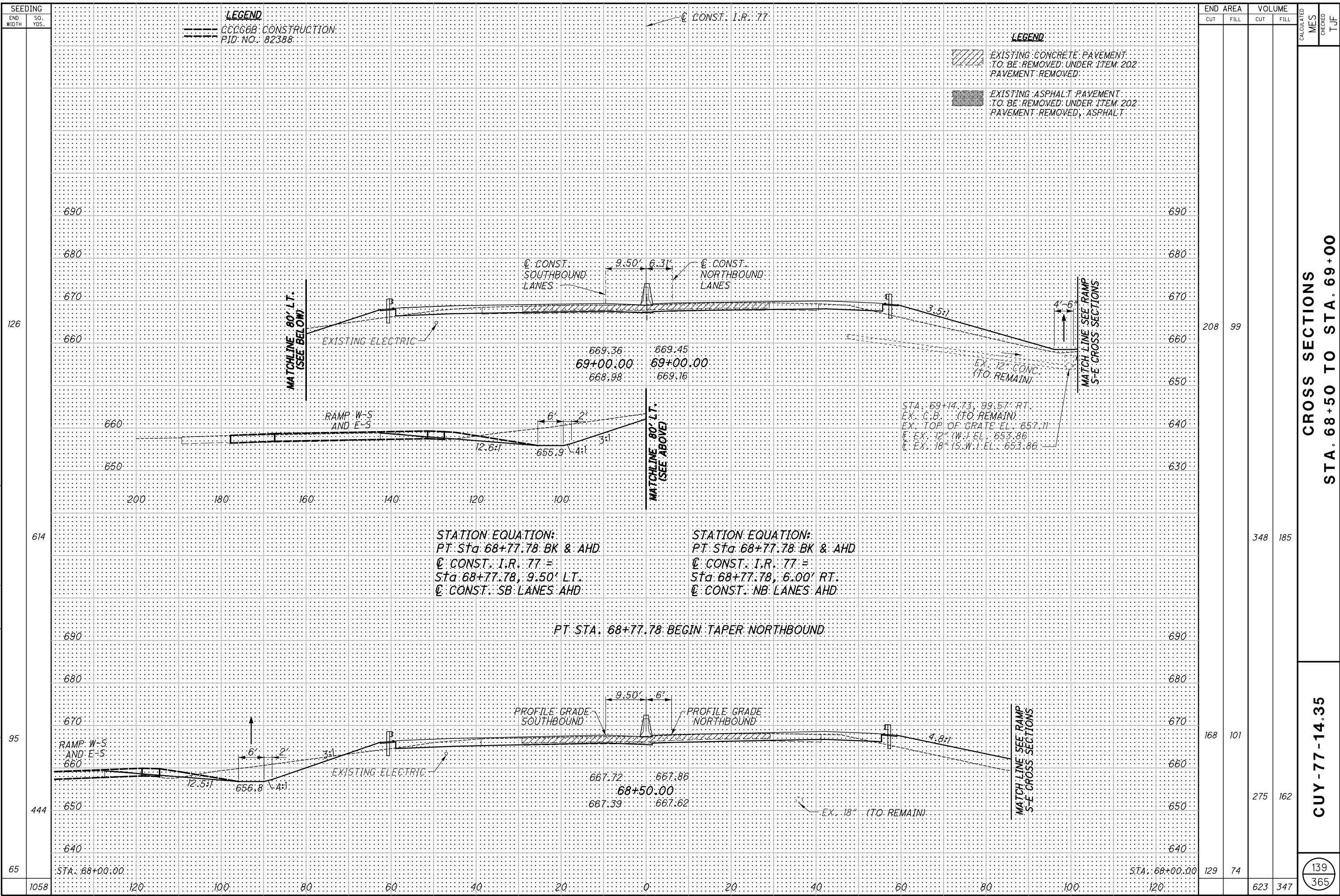
CUY-77-14.35

(137)
 (365)

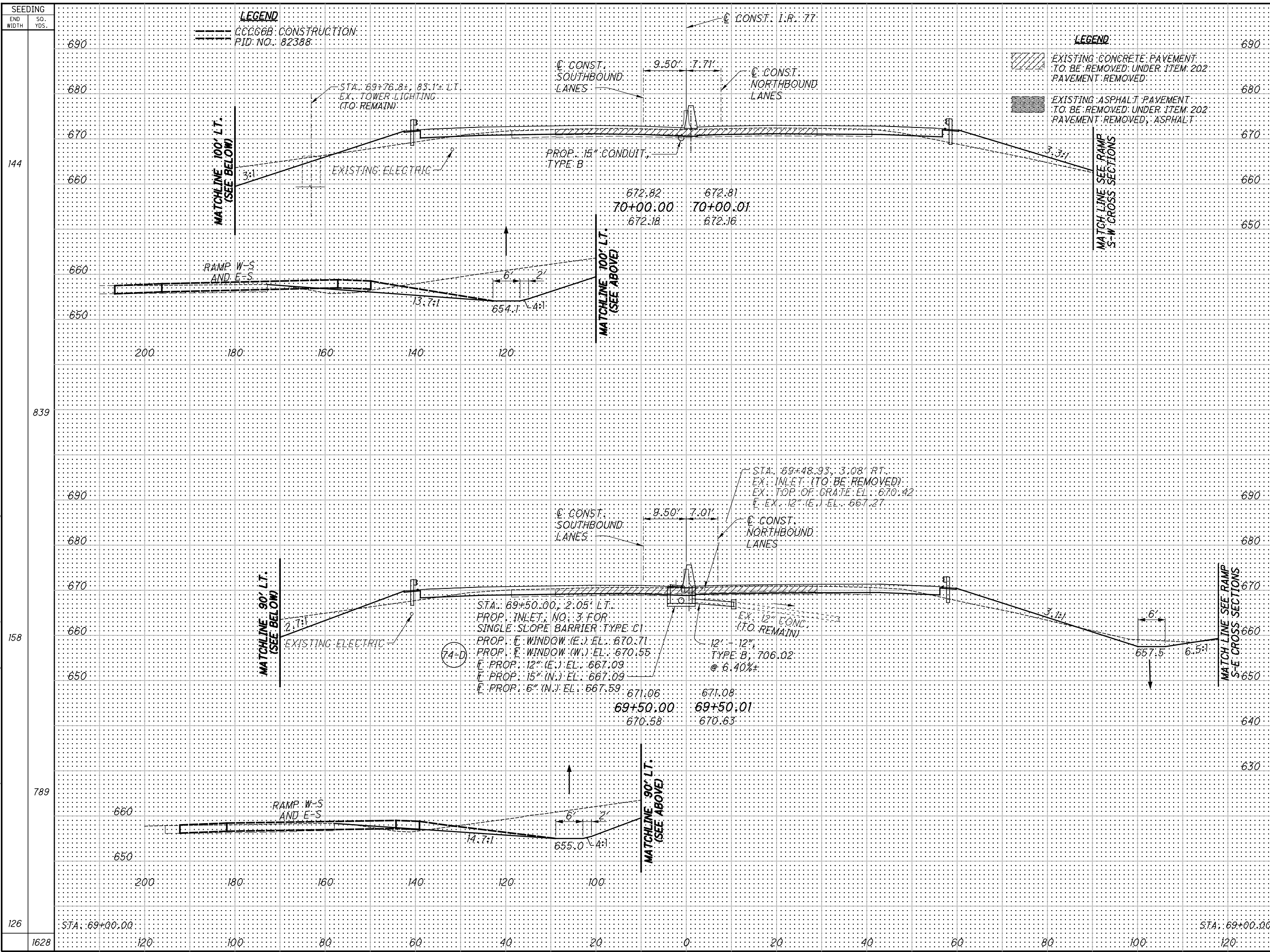
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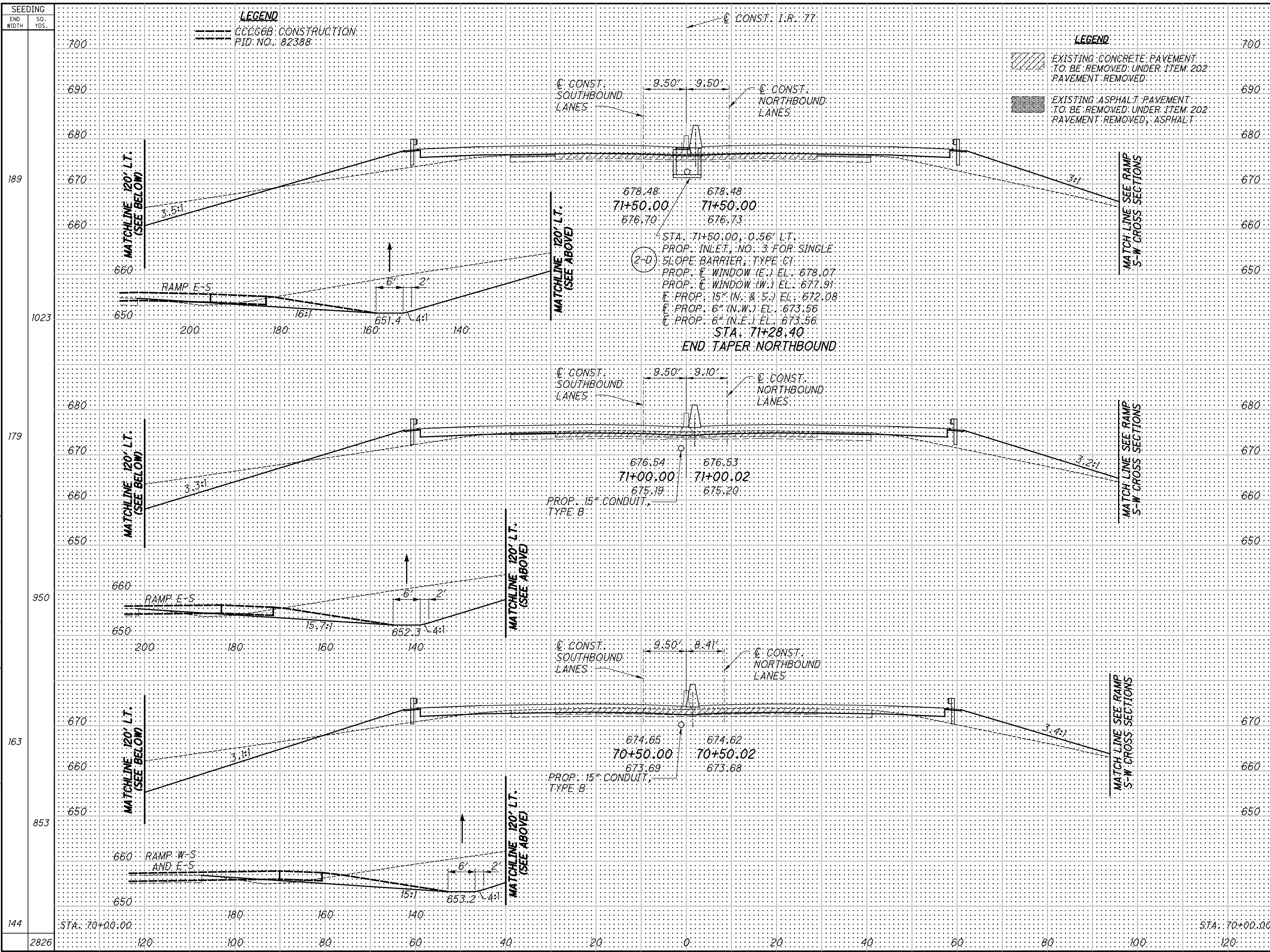
END AREA	VOLUME	CALCULATED	CHECKED	TJF
320	107			
577	167			
303	73			
473	159			
208	99			
1050	326			

CROSS SECTIONS
 STA. 69+50.00 TO STA. 70+00.01

CUY-77-14.35

140
 365

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\XSSHEETV8.dgn 12/14/2016 1:49:19 PM DonHelman



STATION	END AREA		VOLUME	
	CUT	FILL	CUT	FILL
700				
690				
680				
670	428	303		
660				
650				
1023			784	491
680				
670				
660	419	227		
650				
179				
680				
670				
660				
650				
950			738	351
680				
670				
660	378	152		
650				
163				
680				
670				
660				
650				
853			646	240
680				
670				
660				
650				
144				
STA. 70+00.00	320	107	2168	1082

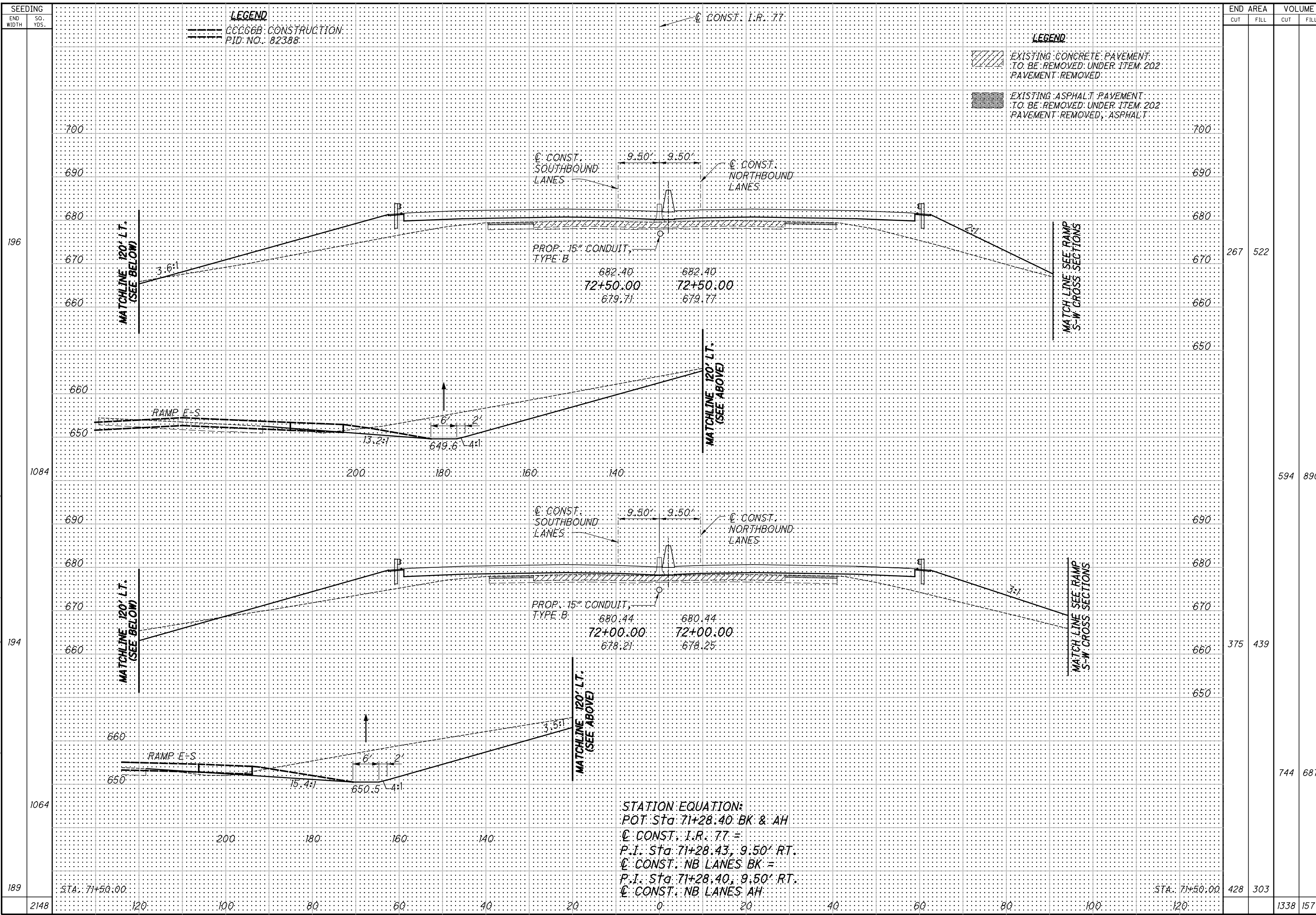
CROSS SECTIONS
 STA. 70+50.02 TO STA. 71+50.00

CUY-77-14.35

141
 365

CALCULATED
 MES
 CHECKED
 TJF

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\XSSHEETV8.dgn 12/14/2016 1:49:36 PM DonHelman



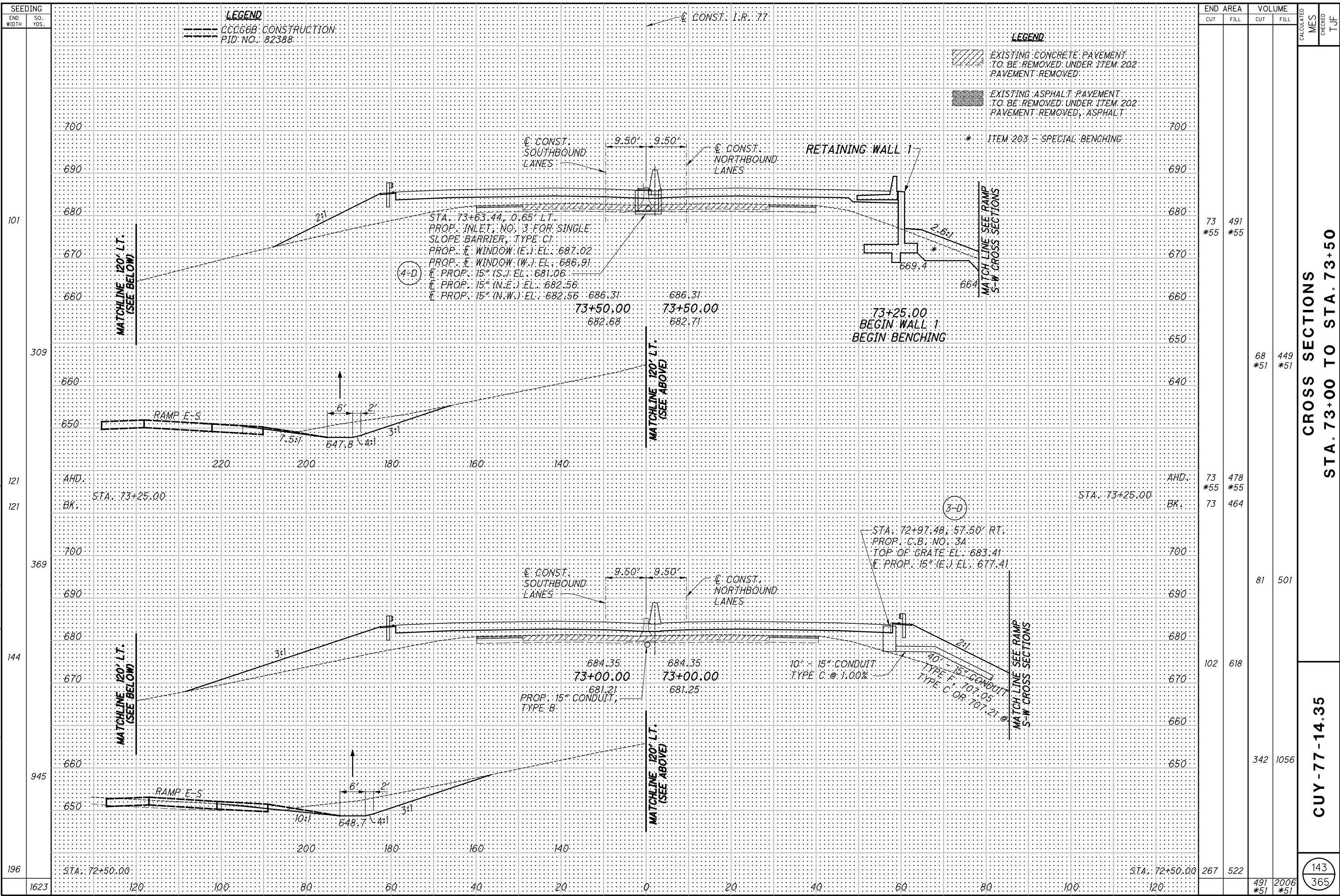
END	AREA		VOLUME	
	CUT	FILL	CUT	FILL
196	267	522		
1084	594	890		
194	375	439		
1064	744	687		
189	428	303		
2148	1338	1577		

CROSS SECTIONS
 STA. 72+00 TO STA. 72+50

CUY-77-14.35

142
 365

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\XSSHEETV8.dgn 12/14/2016 1:49:53 PM DonHelman



SEEDING	
END WIDTH	SO. YDS.
1623	120
196	100
945	80
144	60
369	40
121	20
121	0
309	20
101	40
101	60
101	80
101	100
101	120

END AREA		VOLUME	
CUT	FILL	CUT	FILL
73 *55	491 *55	73 *55	478 *55
68 *51	449 *51	73 *55	464
81	501	102	618
342	1056	267	522
491 *51	2006 *51	143	365

CROSS SECTIONS
STA. 73+00 TO STA. 73+50

CUY-77-14.35

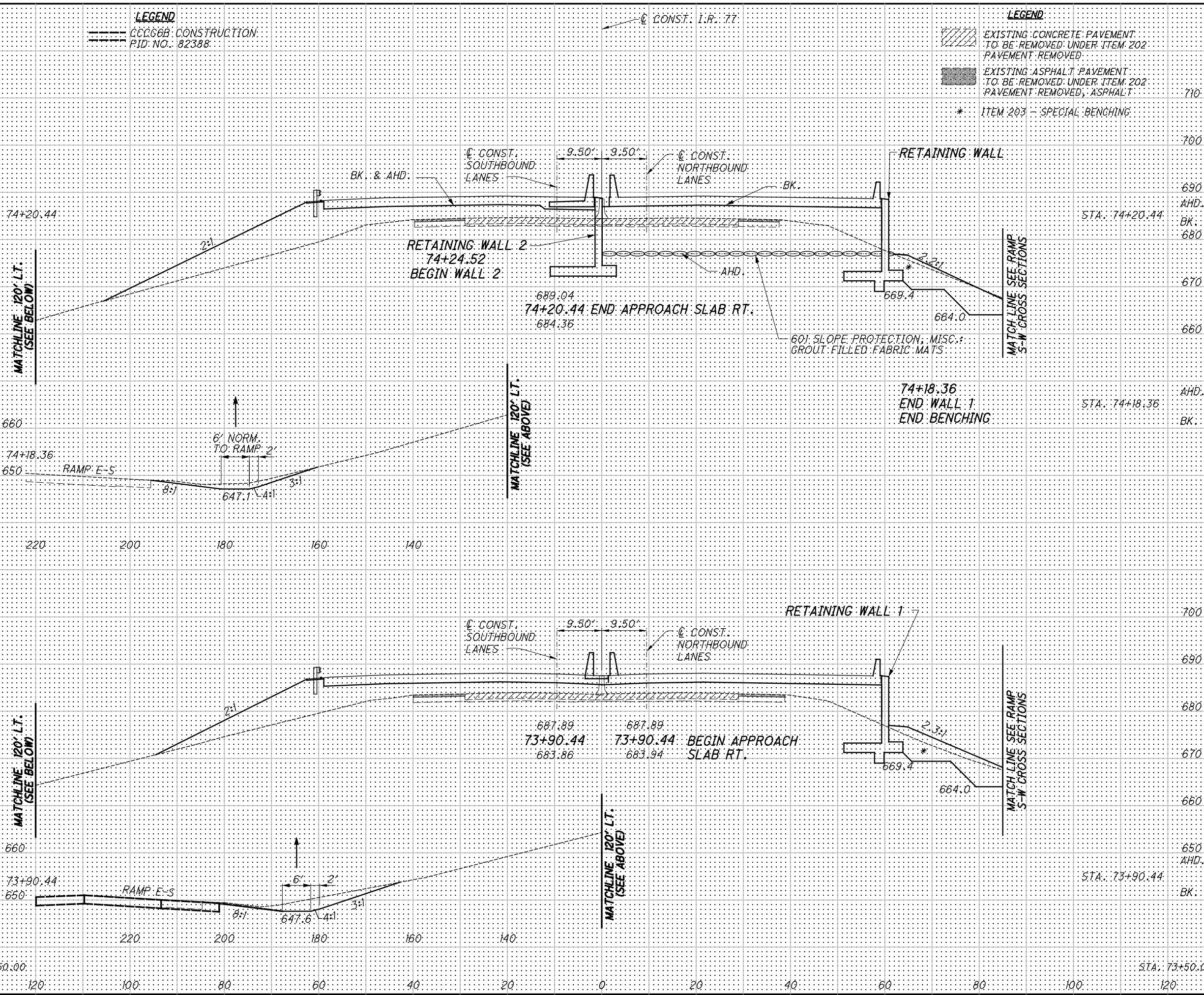
143
365

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\XSSHEETV8.dgn 12/14/2016 1:50:12 PM DonHelman

SEEDING	END WIDTH	SQ. YDS.	END AREA		VOLUME	
			CUT	FILL	CUT	FILL
115	115	710	374	457	24	705
27	27	680	24	705	2	54
115	115	660	24	705	*0	*0
115	115	650	24	705	*111	*111
348	348	700	36	680	*103	*103
109	109	660	46	610	*88	*88
109	109	650	46	610	*88	*88
472	472	660	89	825	*107	*107
101	101	660	73	491	*55	*55
847	847	120	127	1559	*210	*210

LEGEND
 CCG6B CONSTRUCTION
 PID. NO. 82388

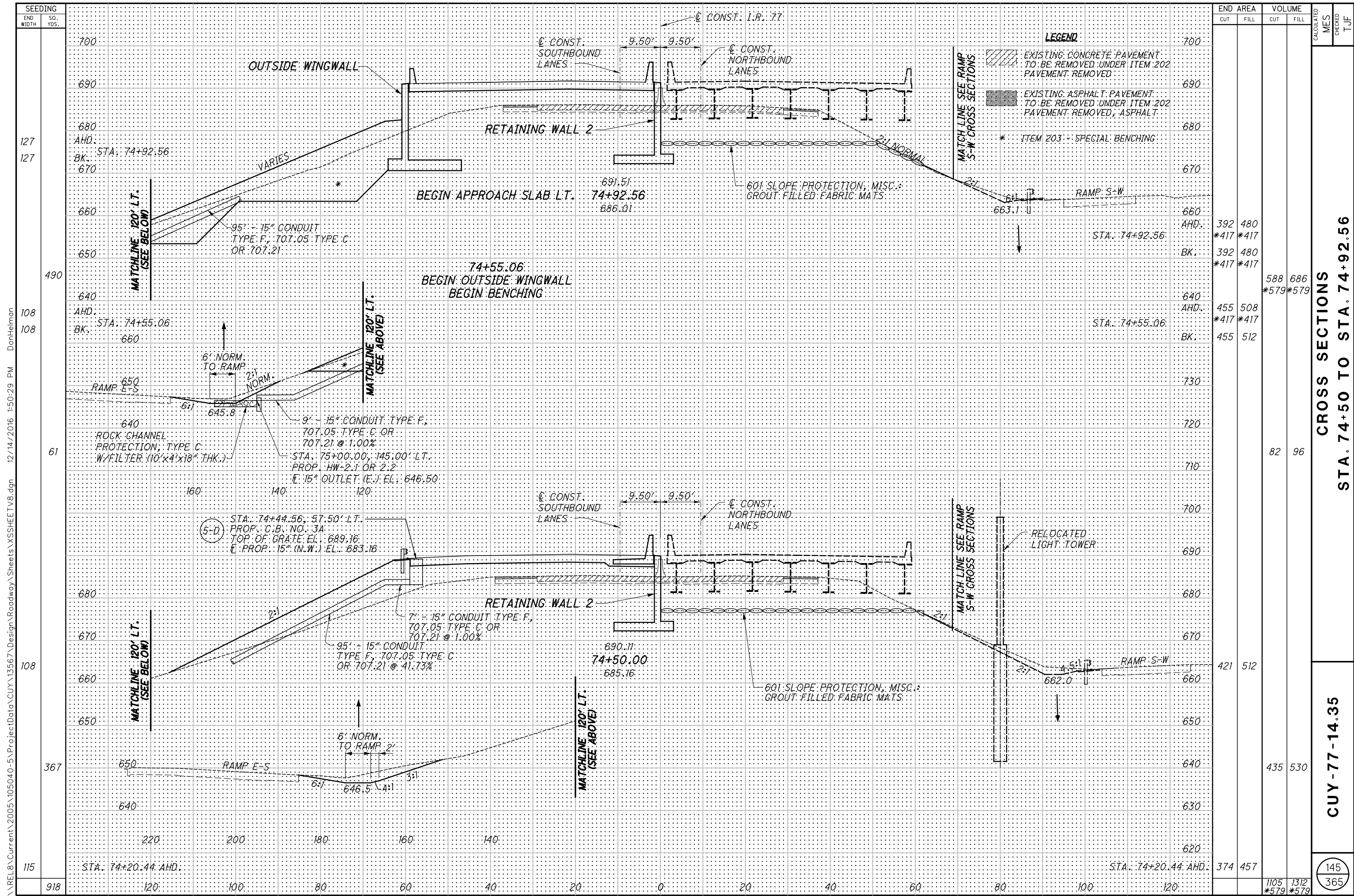
LEGEND
 EXISTING CONCRETE PAVEMENT TO BE REMOVED UNDER ITEM 202 PAVEMENT REMOVED
 EXISTING ASPHALT PAVEMENT TO BE REMOVED UNDER ITEM 202 PAVEMENT REMOVED, ASPHALT
 * ITEM 203 - SPECIAL BENCHING



CROSS SECTIONS
 STA. 73+90.44 TO STA. 74+20.44

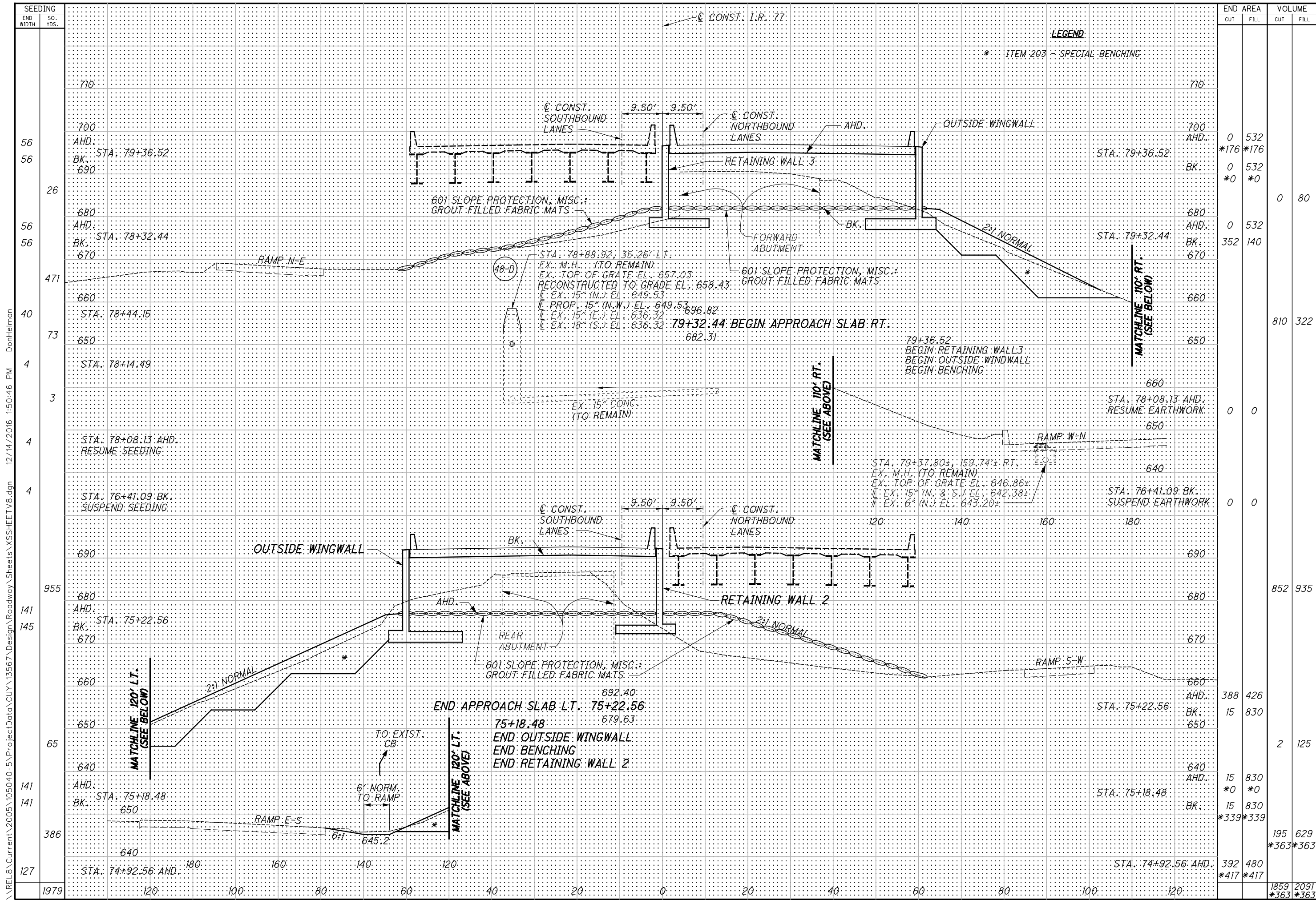
CUY-77-14.35

144
 365



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CROSS SECTIONS
 STA. 74+50 TO STA. 74+92.56
 CUY-77-14.35
 145
 365



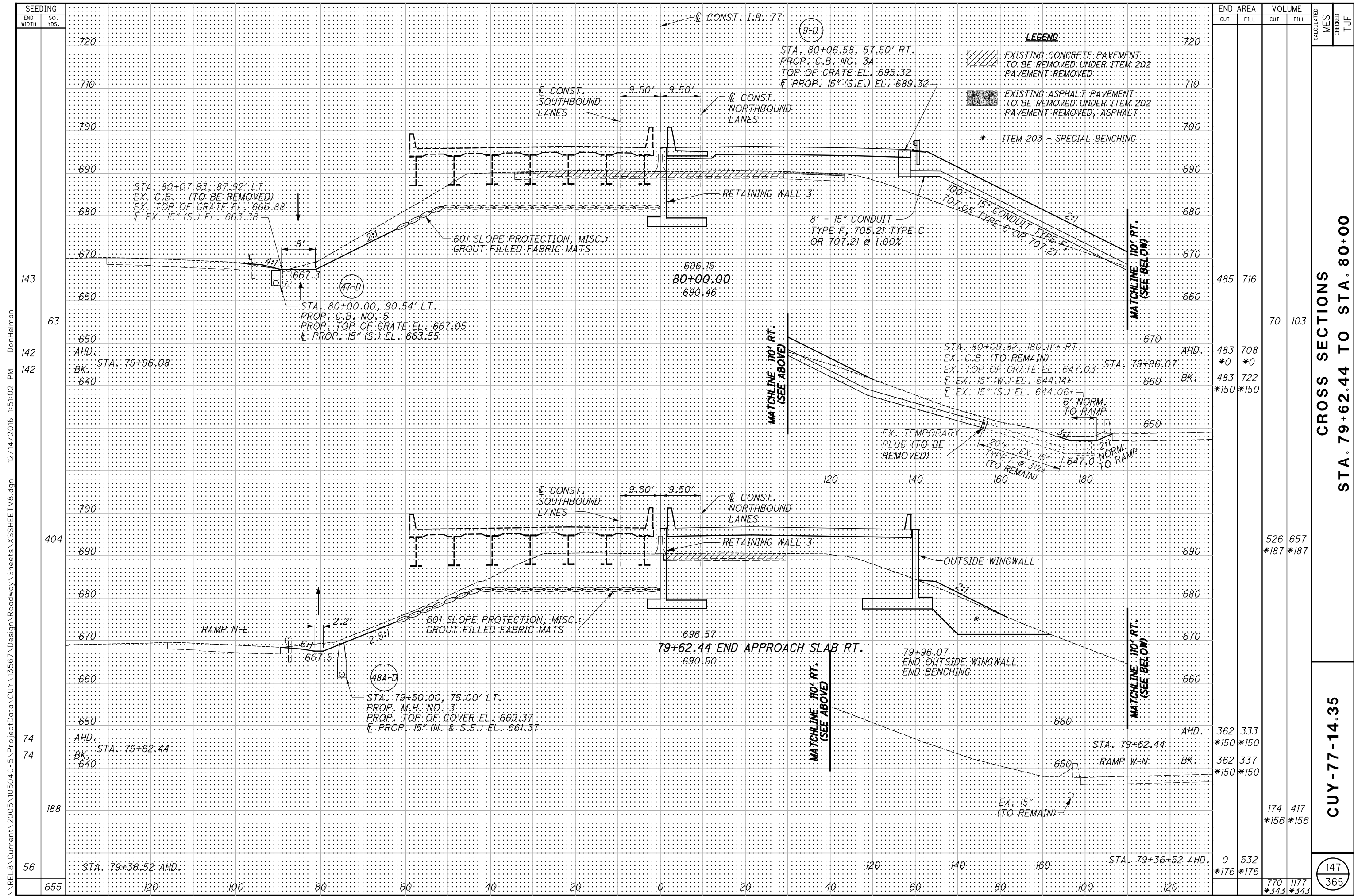
SEEDING	
END WIDTH	SQ. YDS.
127	386
141	141
141	65
141	145
141	955
56	56
56	26
56	471
40	73
4	4
4	3
4	4
4	4
1979	127

END AREA	VOLUME	CUT		FILL		CALCULATED	MES	CHECKED	TJF
		CUT	FILL	CUT	FILL				
710	710								
0	532	0	532						
0	532	0	532						
0	80								
0	532								
352	140								
0	0								
0	0								
0	0								
388	426								
15	830								
2	125								
15	830								
15	830								
195	629								
392	480								
1859	2091								
15	830								
15	830								

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CROSS SECTIONS
STA. 75+22.56 TO STA. 79+32.44

CUY-77-14.35



END AREA	VOLUME	CUT		FILL	
		MEAS	CHECKED	MEAS	CHECKED
720					
710					
700					
690					
680					
670					
660	485	716			
650			70	103	
AHD. STA. 79+96.08	483	708			
BK. STA. 79+96.08	483	722			
	*150	*150			
640					
630					
620					
610					
600					
590					
580					
570					
560					
550					
540					
530					
520					
510					
500					
490					
480					
470					
460					
450					
440					
430					
420					
410					
400					
390					
380					
370					
360	362	333			
AHD. STA. 79+62.44	*150	*150			
BK. STA. 79+62.44	362	337			
	*150	*150			
640					
630					
620					
610					
600					
590					
580					
570					
560					
550					
540					
530					
520					
510					
500					
490					
480					
470					
460					
450					
440					
430					
420					
410					
400					
390					
380					
370					
360					
350					
340					
330					
320					
310					
300					
290					
280					
270					
260					
250					
240					
230					
220					
210					
200					
190					
180					
170					
160					
150					
140					
130					
120					
110					
100					
90					
80					
70					
60					
50					
40					
30					
20					
10					
0					
770	177	417			
*343	*343	*343			

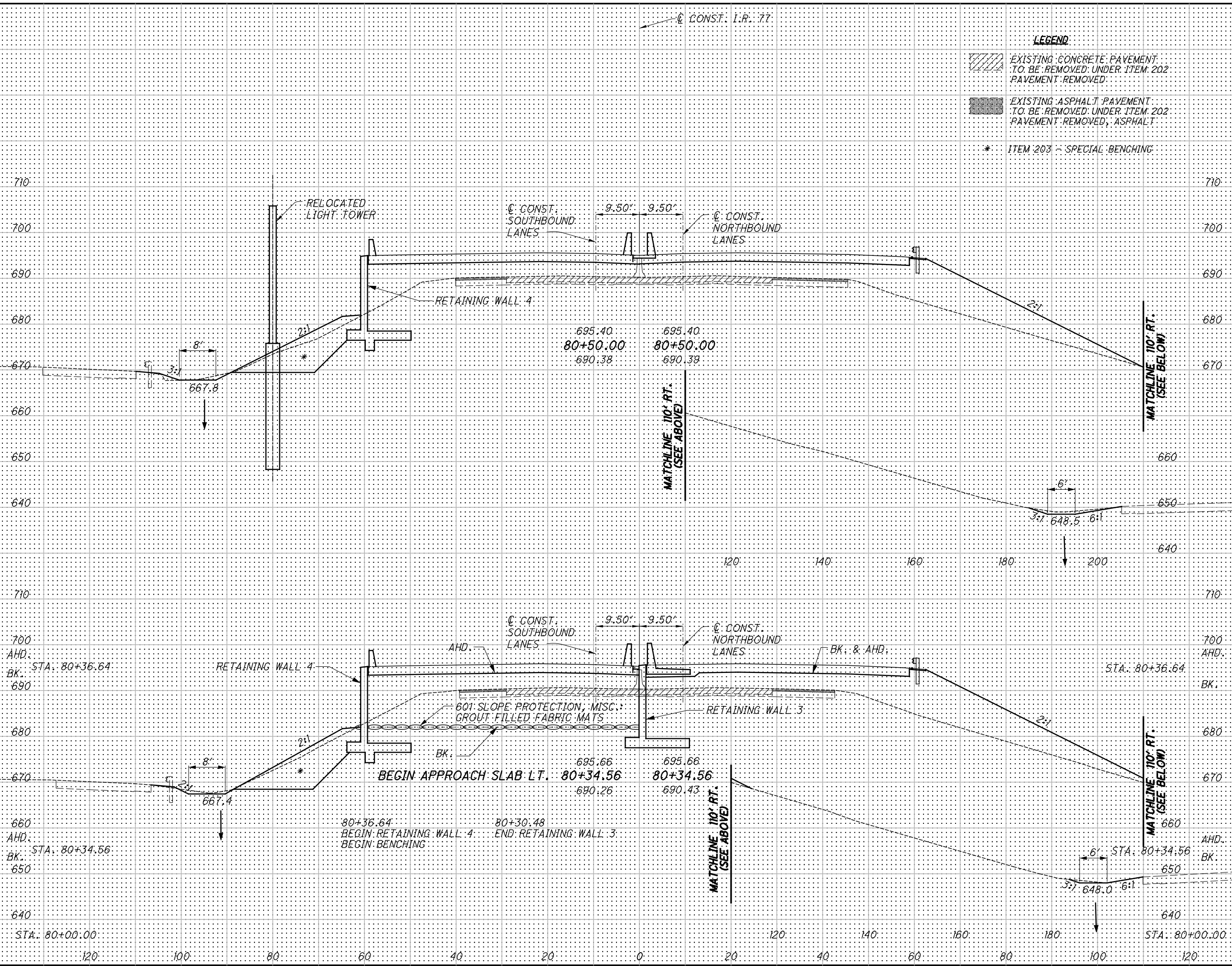
CROSS SECTIONS
 STA. 79+62.44 TO STA. 80+00

CUY-77-14.35

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SEEDING	
END WIDTH	SO. YDS.
130	194
131	131
131	31
131	131
527	
143	
752	

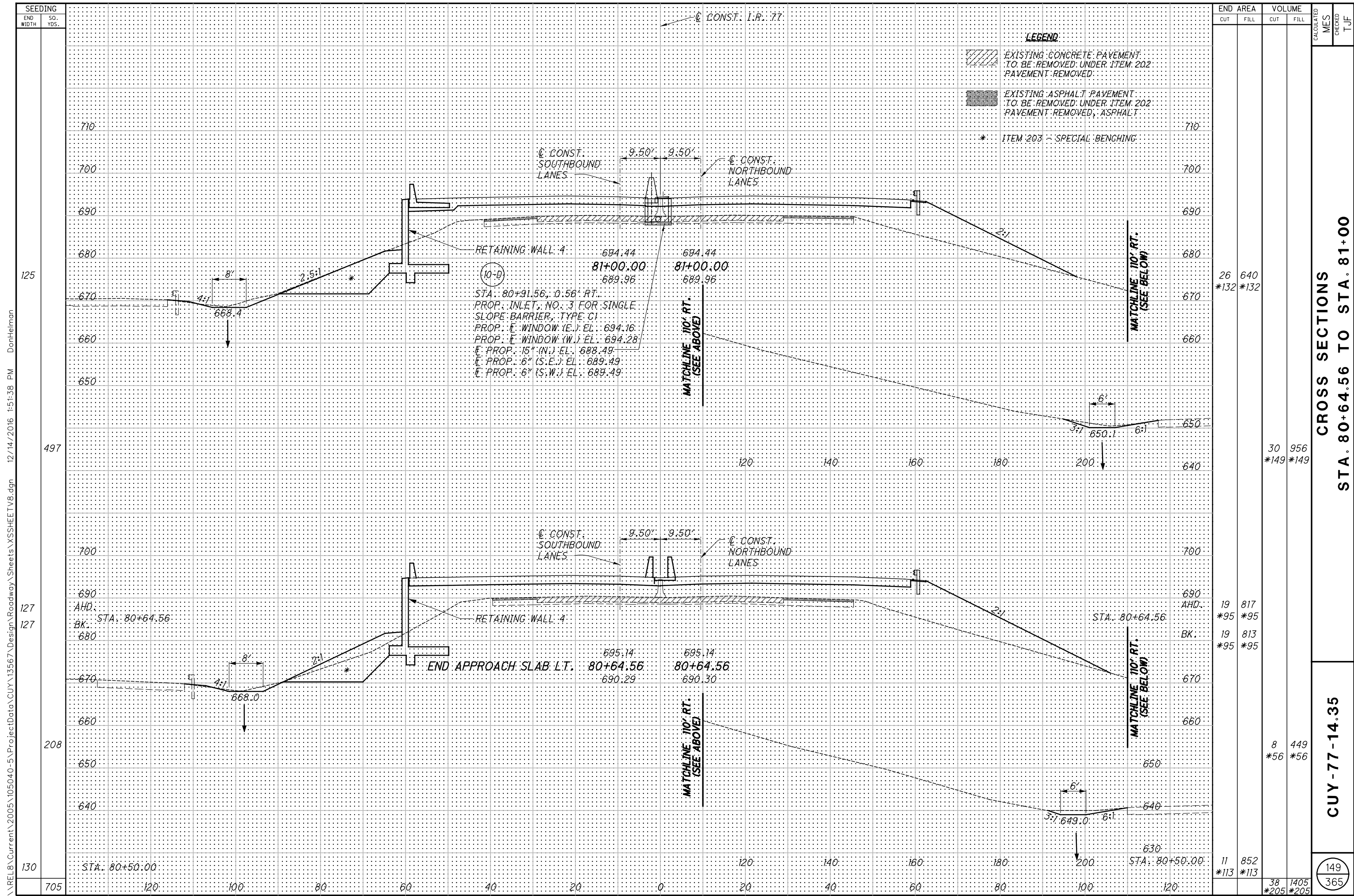


LEGEND:

- EXISTING CONCRETE PAVEMENT TO BE REMOVED UNDER ITEM 202 PAVEMENT REMOVED
- EXISTING ASPHALT PAVEMENT TO BE REMOVED UNDER ITEM 202 PAVEMENT REMOVED, ASPHALT
- * ITEM 203 - SPECIAL BENCHING

END AREA		VOLUME	
CUT	FILL	CUT	FILL
11	852	5	421
*113	*113	*60	*60
8	850	1	68
*131	*131	*0	*0
8	880	414	591
*0	*0	575	836
485	716	581	1325
		*60	*60

CROSS SECTIONS STA. 80+34.56 TO STA. 80+50
CUY-77-14.35
 CALCULATED: MES
 CHECKED: TJF
 148
 365

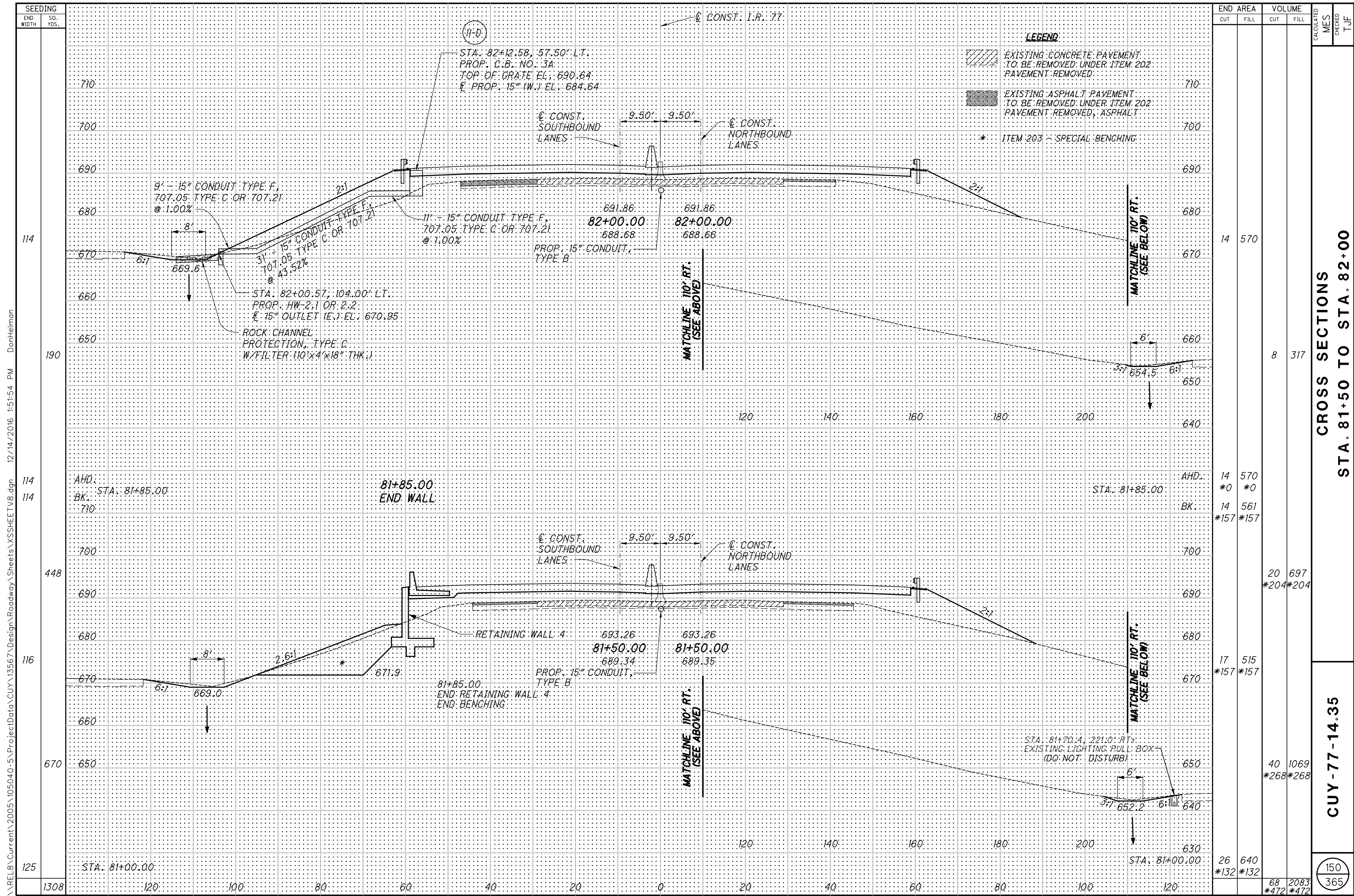


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CROSS SECTIONS
STA. 80+64.56 TO STA. 81+00

CUY-77-14.35

149
365



SEEDING	
END WIDTH	SO. YDS.
114	
190	
114	
114	
448	
116	
670	
125	
1308	

END AREA		VOLUME	
CUT	FILL	CUT	FILL
14	570		
8	317		
14	570		
*0	*0		
14	561		
*157	*157		
20	697		
*204	*204		
17	515		
*157	*157		
40	1069		
*268	*268		
26	640		
*132	*132		
68	2083		
*472	*472		

CALCULATED
 MES
 CHECKED
 T.J.F.

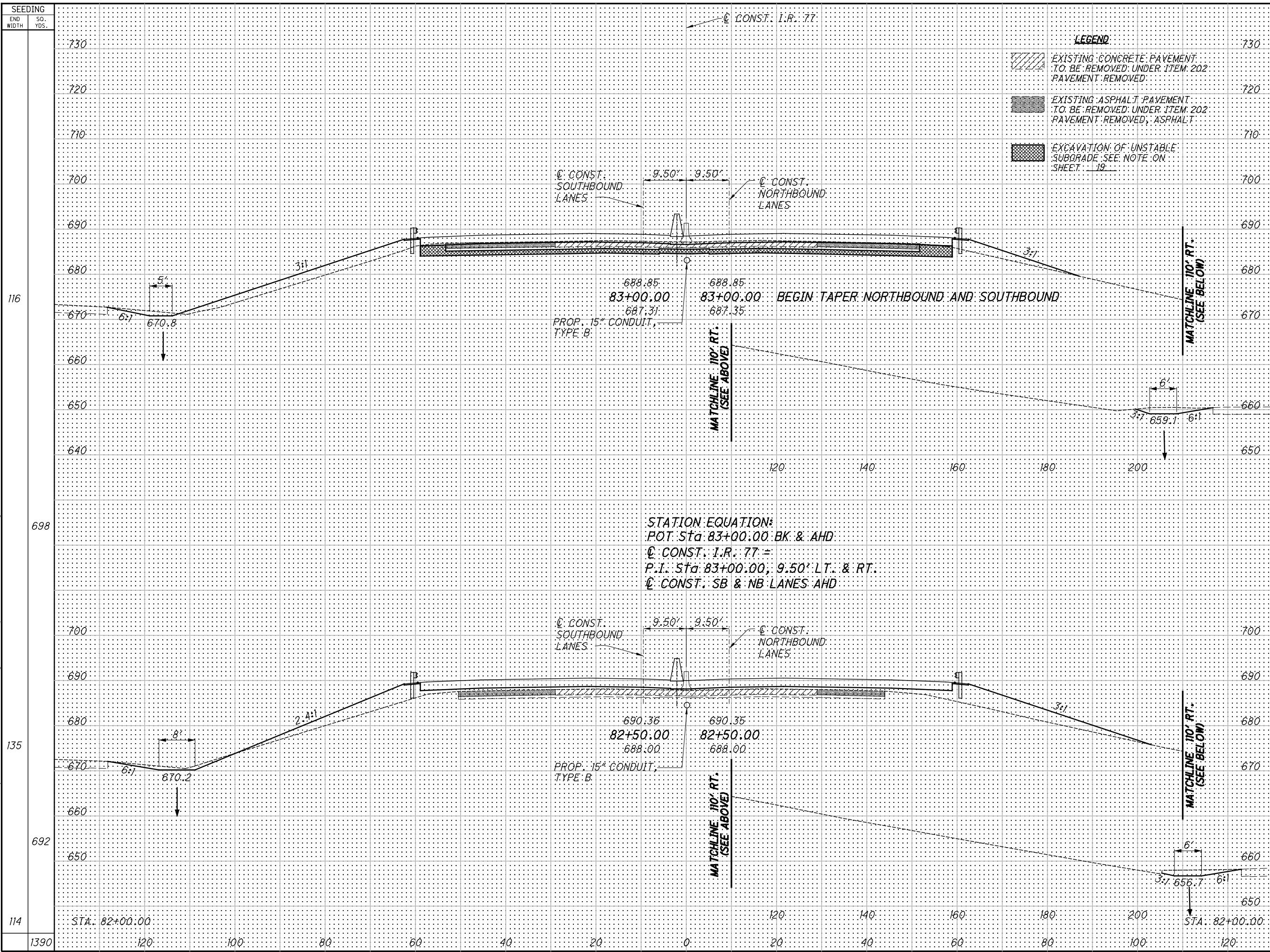
CROSS SECTIONS
STA. 81+50 TO STA. 82+00

CUY-77-14.35

(150)
 365

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LEGEND:
 EXISTING CONCRETE PAVEMENT TO BE REMOVED UNDER ITEM 202 PAVEMENT REMOVED
 EXISTING ASPHALT PAVEMENT TO BE REMOVED UNDER ITEM 202 PAVEMENT REMOVED, ASPHALT
 EXCAVATION OF UNSTABLE SUBGRADE SEE NOTE ON SHEET 19

STATION EQUATION:
 POT Sta 83+00.00 BK & AHD
 C CONST. I.R. 77 =
 P.I. Sta 83+00.00, 9.50' LT. & RT.
 C CONST. SB & NB LANES AHD

END	AREA		VOLUME	
	CUT	FILL	CUT	FILL
730				
720				
710				
700				
690				
680				
670				
660				
650				
640				
630				
620				
610				
600				
590				
580				
570				
560				
550				
540				
530				
520				
510				
500				
490				
480				
470				
460				
450				
440				
430				
420				
410				
400				
390				
380				
370				
360				
350				
340				
330				
320				
310				
300				
290				
280				
270				
260				
250				
240				
230				
220				
210				
200				
190				
180				
170				
160				
150				
140				
130				
120				
110				
100				
90				
80				
70				
60				
50				
40				
30				
20				
10				
0				
1390				

CROSS SECTIONS
STA. 82+50 TO STA. 83+00

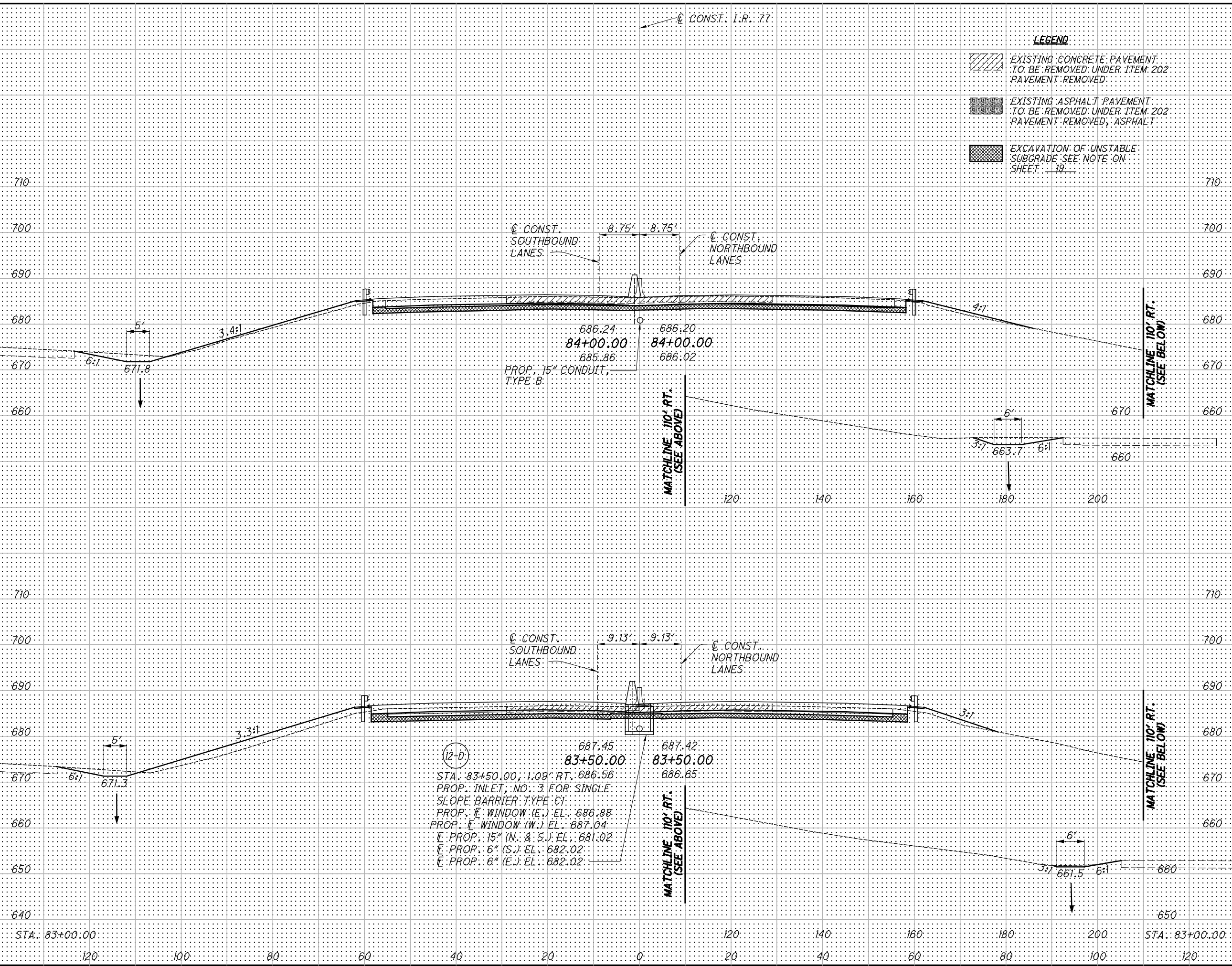
CUY-77-14.35

151
 365

CALCULATED
 MES
 CHECKED
 TJF

\\REL8\Current\2005\05040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\XSSHEETV8.dgn 12/14/2016 1:52:28 PM DonHelman

SEEDING	END AREA		VOLUME	
	CUT	FILL	CUT	FILL
113	143	36	143	36
603	71	115	198	140
104	71	115	71	115
612	100	328	100	328
116	37	239	37	239
1215	298	468	298	468



LEGEND:

- EXISTING CONCRETE PAVEMENT TO BE REMOVED UNDER ITEM 202 PAVEMENT REMOVED
- EXISTING ASPHALT PAVEMENT TO BE REMOVED UNDER ITEM 202 PAVEMENT REMOVED, ASPHALT
- EXCAVATION OF UNSTABLE SUBGRADE SEE NOTE ON SHEET 19

CROSS SECTIONS
STA. 83+50 TO STA. 84+00

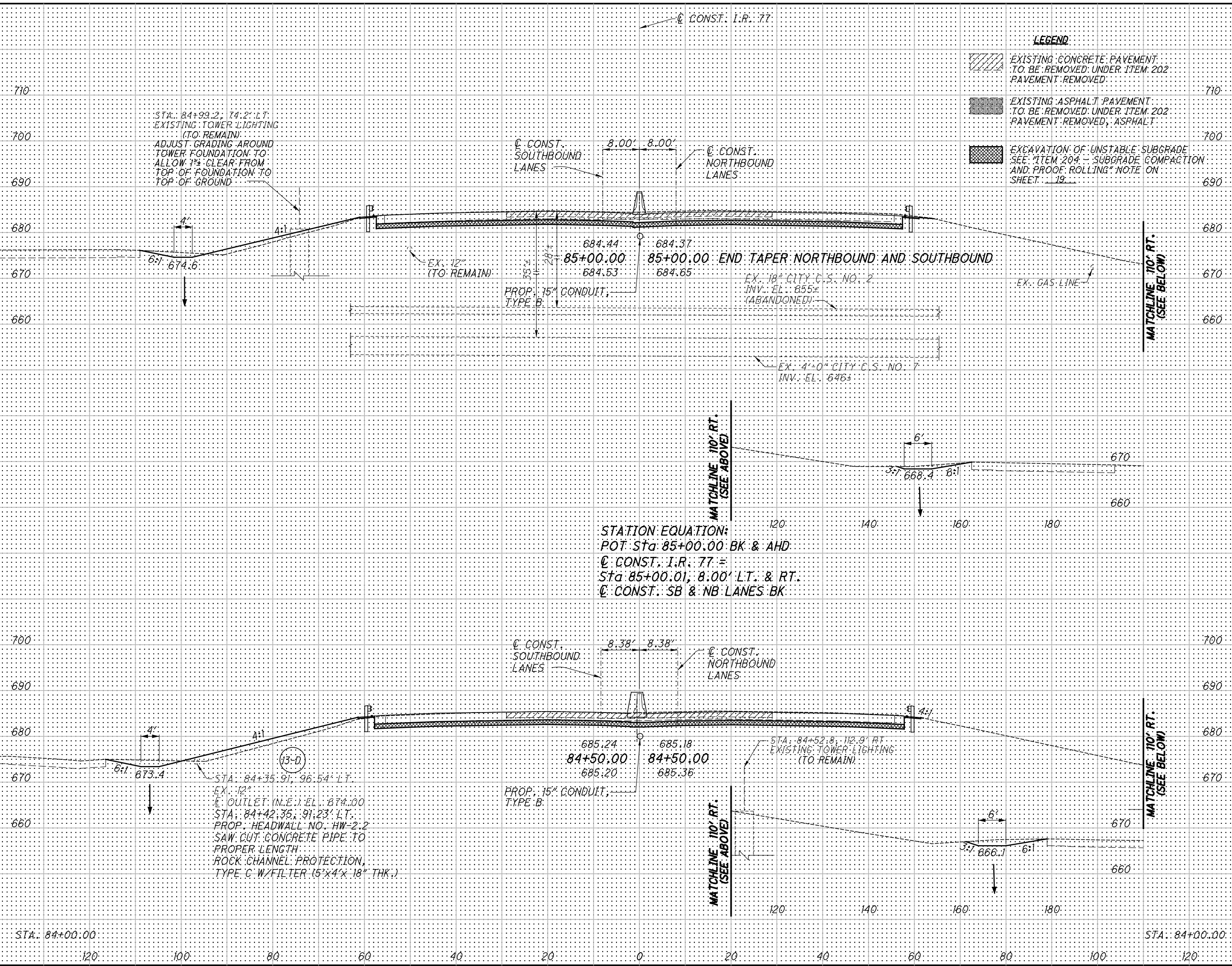
CALCULATED
MES
CHECKED
TJF

CUY-77-14.35

152
365

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\XSSHEETV8.dgn 12/14/2016 1:52:48 PM DonHelman

SEEDING	END AREA		VOLUME	
	CUT	FILL	CUT	FILL
73	180	24		
425			331	57
80	177	38		
537			296	69
113	143	36		
962			627	126



LEGEND:

- EXISTING CONCRETE PAVEMENT TO BE REMOVED UNDER ITEM 202 PAVEMENT REMOVED
- EXISTING ASPHALT PAVEMENT TO BE REMOVED UNDER ITEM 202 PAVEMENT REMOVED, ASPHALT
- EXCAVATION OF UNSTABLE SUBGRADE SEE ITEM 204 - SUBGRADE COMPACTION AND PROOF ROLLING NOTE ON SHEET 19

CALCULATED
 MES
 CHECKED
 T.J.F.

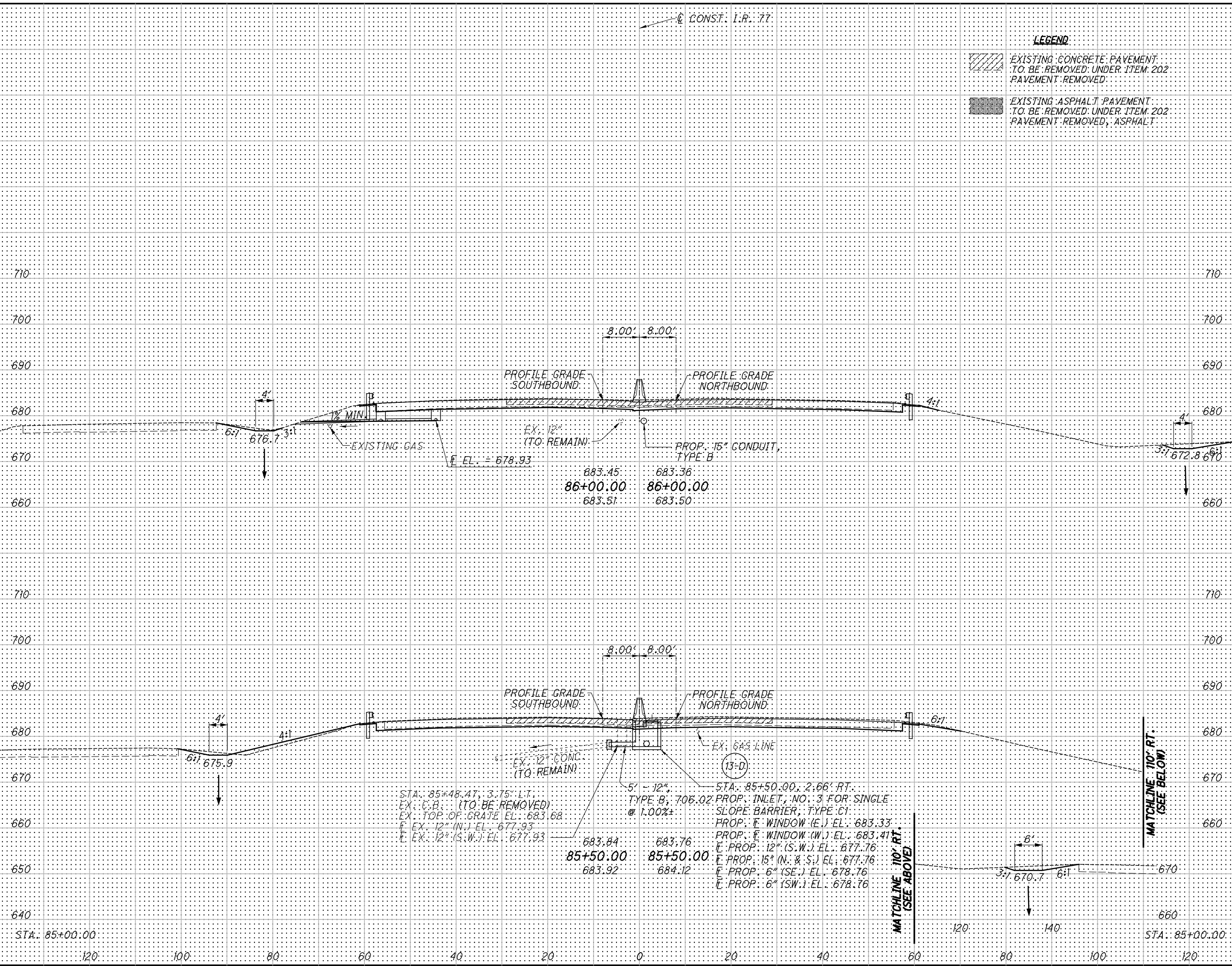
CROSS SECTIONS
STA. 84+50 TO STA. 85+00

CUY-77-14.35

153
 365

\\REL8\Current\2005\05040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\XSSHEETV8.dgn 12/14/2016 1:53:05 PM DonHelman

SEEDING	
END WIDTH	SO. YDS.
720	
73	
400	
71	
320	
44	



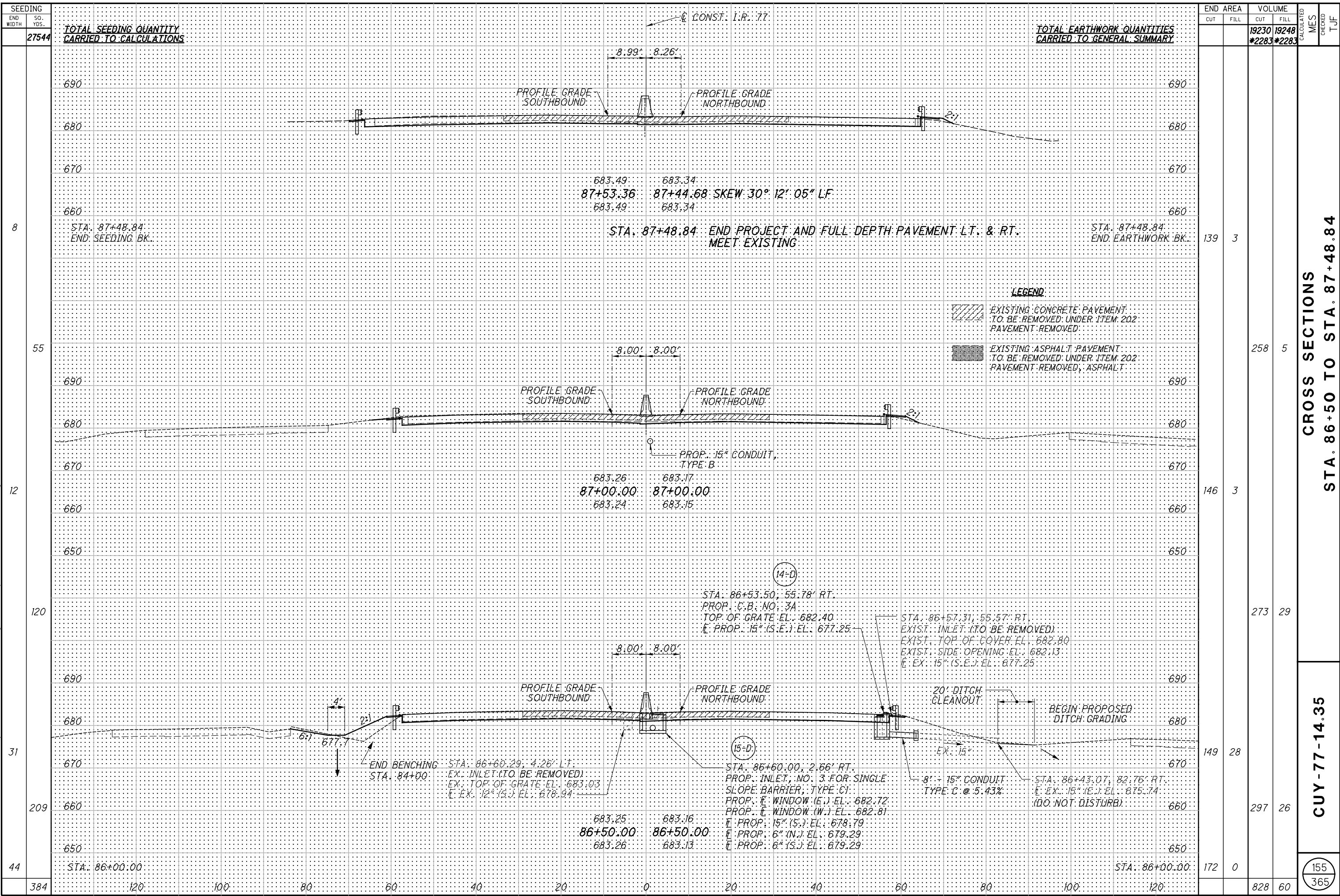
END AREA	VOLUME				
		CUT	FILL	CUT	FILL
172	0				
185	15				
180	24				
669	50				

CROSS SECTIONS
 STA. 85+50 TO STA. 86+00

CUY-77-14.35

154
 365

\\REL8\Current\2005\05040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\XSSHEETV8.dgn 12/14/2016 1:53:20 PM DonHelman



8

55

12

120

31

209

44

139

258

146

273

149

297

172

3

5

3

29

28

26

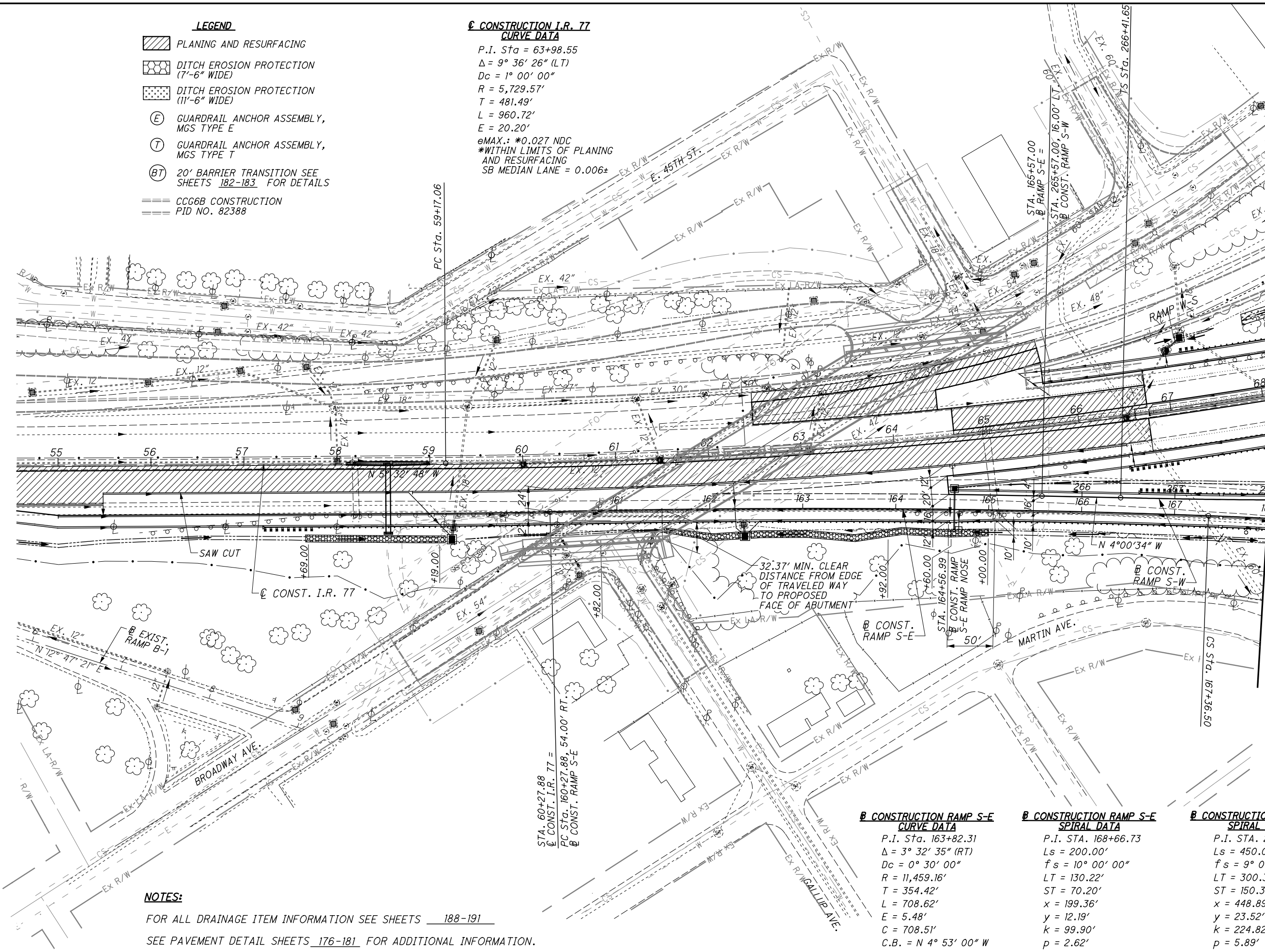
0

CALCULATED
MES
CHECKED
TJF

- LEGEND**
- PLANING AND RESURFACING
 - DITCH EROSION PROTECTION (7'-6" WIDE)
 - DITCH EROSION PROTECTION (11'-6" WIDE)
 - GUARDRAIL ANCHOR ASSEMBLY, MGS TYPE E
 - GUARDRAIL ANCHOR ASSEMBLY, MGS TYPE T
 - 20' BARRIER TRANSITION SEE SHEETS 182-183 FOR DETAILS
 - CCG6B CONSTRUCTION PID NO. 82388

CONST. I.R. 77 CURVE DATA

P.I. Sta = 63+98.55
 $\Delta = 9^\circ 36' 26''$ (LT)
 $Dc = 1^\circ 00' 00''$
 $R = 5,729.57'$
 $T = 481.49'$
 $L = 960.72'$
 $E = 20.20'$
 $eMAX.: *0.027$ NDC
 *WITHIN LIMITS OF PLANING AND RESURFACING
 SB MEDIAN LANE = 0.006±



NOTES:

FOR ALL DRAINAGE ITEM INFORMATION SEE SHEETS 188-191
 SEE PAVEMENT DETAIL SHEETS 176-181 FOR ADDITIONAL INFORMATION.
 FOR BENCH MARK INFORMATION SEE SHEETS 121 & 123

CONST. RAMP S-E CURVE DATA

P.I. Sta. 163+82.31
 $\Delta = 3^\circ 32' 35''$ (RT)
 $Dc = 0^\circ 30' 00''$
 $R = 11,459.16'$
 $T = 354.42'$
 $L = 708.62'$
 $E = 5.48'$
 $C = 708.51'$
 $C.B. = N 4^\circ 53' 00'' W$
 $eMAX. = NC$
 DESIGN SPEED = 60 MPH

CONST. RAMP S-E SPIRAL DATA

P.I. Sta. 168+66.73
 $Ls = 200.00'$
 $fs = 10^\circ 00' 00''$
 $LT = 130.22'$
 $ST = 70.20'$
 $x = 199.36'$
 $y = 12.19'$
 $k = 99.90'$
 $p = 2.62'$

CONST. RAMP S-W SPIRAL DATA

P.I. Sta. 269+42.04
 $Ls = 450.00'$
 $fs = 9^\circ 00' 00''$
 $LT = 300.39'$
 $ST = 150.35'$
 $x = 448.89'$
 $y = 23.52'$
 $k = 224.82'$
 $p = 5.89'$



CALCULATED DAW CHECKED JDL
 PLAN - RAMP S-E STA. 160+27.88 TO STA. 168+00
 RAMP S-W STA. 265+57.00 TO STA. 268+00

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MATCHLINE
STA. 168+00
RAMP S-E

MATCHLINE
STA. 268+00
RAMP S-W

**CONSTRUCTION RAMP S-W
SPIRAL DATA**

P.I. STA. 269+42.04
Ls = 450.00'
fs = 9° 00' 00"
LT = 300.39'
ST = 150.35'
x = 448.89'
y = 23.52'
k = 224.82'
p = 5.89'

**CONSTRUCTION RAMP S-W
CURVE DATA**

P.I. Sta. 272+33.72
 $\Delta = 11^\circ 19' 43''$ (LT)
Dc = 4° 00' 00"
R = 1,432.39'
T = 142.07'
L = 283.21'
E = 7.03'
C = 282.75'
C.B. = N 18° 40' 25" W
eMAX. = 0.046
DESIGN SPEED = 45 MPH

**CONSTRUCTION RAMP S-W
CURVE DATA**

P.I. Sta. 278+53.91
 $\Delta = 60^\circ 40' 43''$ (LT)
Dc = 7° 00' 00"
R = 818.51'
T = 479.05'
L = 866.84'
E = 129.88'
C = 826.89'
C.B. = N 54° 40' 38" W
eMAX. = 0.058
DESIGN SPEED = 45 MPH

**CONSTRUCTION RAMP S-E
SPIRAL DATA**

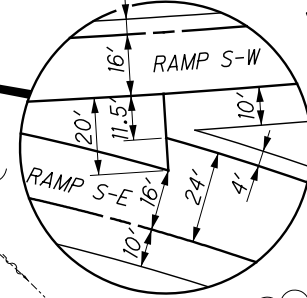
P.I. STA. 168+66.73
Ls = 200.00'
fs = 10° 00' 00"
LT = 130.22'
ST = 70.20'
x = 199.36'
y = 12.19'
k = 99.90'
p = 2.62'
eMAX. = 0.058
DESIGN SPEED = 40 MPH

**CONSTRUCTION RAMP S-E
CURVE DATA**

P.I. Sta. 173+17.41
 $\Delta = 64^\circ 33' 00''$ (RT)
Dc = 9° 30' 00"
R = 603.11'
T = 380.90'
L = 679.47'
E = 110.21'
C = 644.11'
C.B. = N 39° 09' 47" E
eMAX. = 0.058
DESIGN SPEED = 40 MPH

**CONSTRUCTION RAMP S-E
SPIRAL DATA**

P.I. STA. 177+16.57
Ls = 300.00'
fs = 14° 15' 00"
LT = 200.65'
ST = 100.59'
x = 298.15'
y = 24.76'
k = 149.69'
p = 6.20'



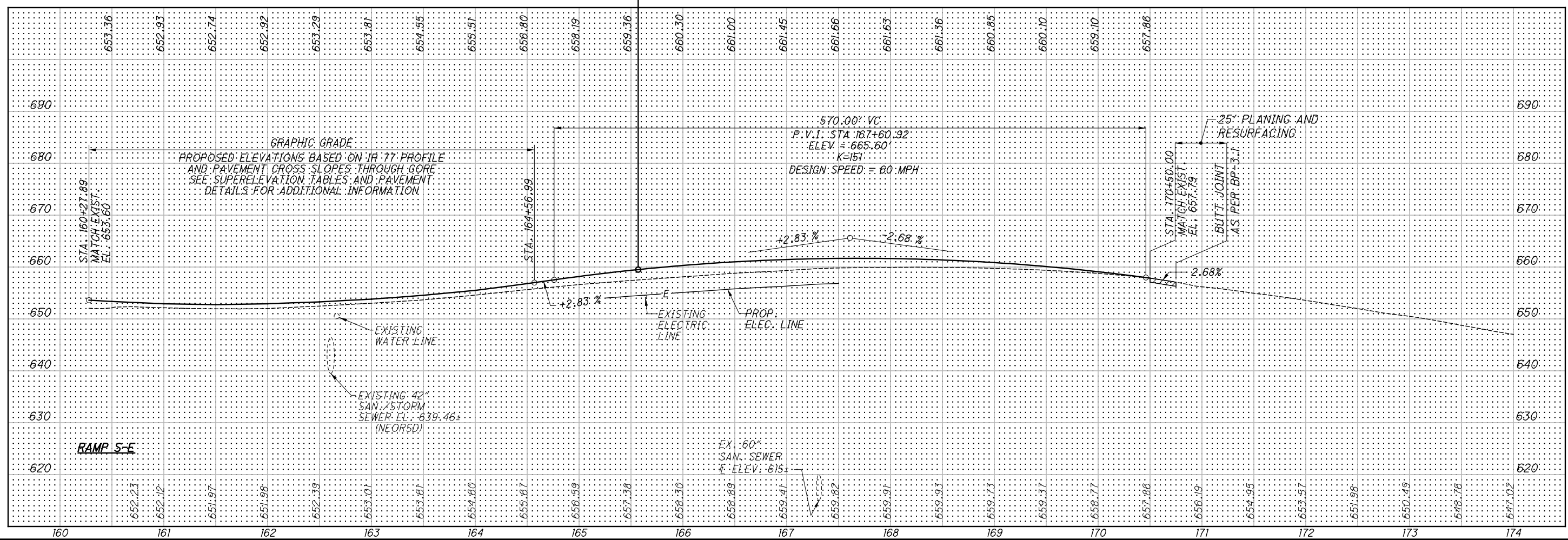
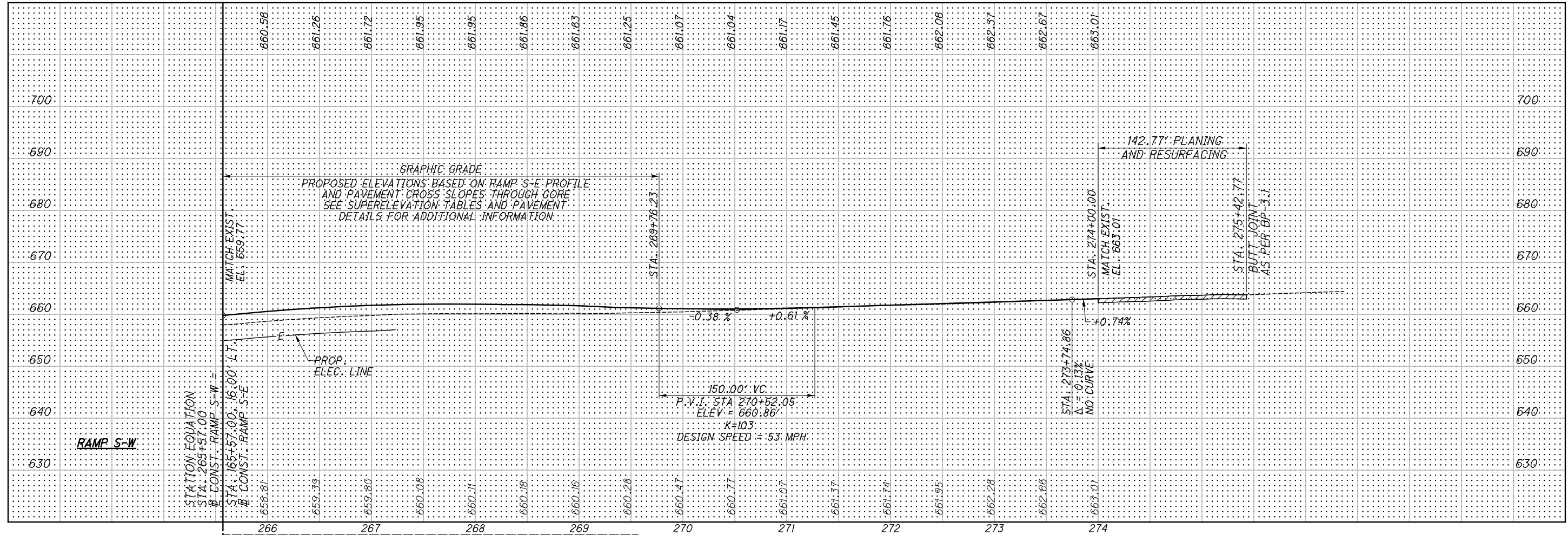
- LEGEND**
- PLANING AND RESURFACING
 - DITCH EROSION PROTECTION (11'-6" WIDE)
 - GUARDRAIL ANCHOR ASSEMBLY, MGS TYPE E
 - GUARDRAIL ANCHOR ASSEMBLY, MGS TYPE T
 - 20' BARRIER TRANSITION SEE SHEETS 182-183 FOR DETAILS
 - CCG6B CONSTRUCTION PID NO. 82388
 - BRDIFE TERMINAL ASSEMBLY, MGS TYPE I

NOTES:

FOR ALL DRAINAGE ITEM INFORMATION SEE SHEETS 188-191

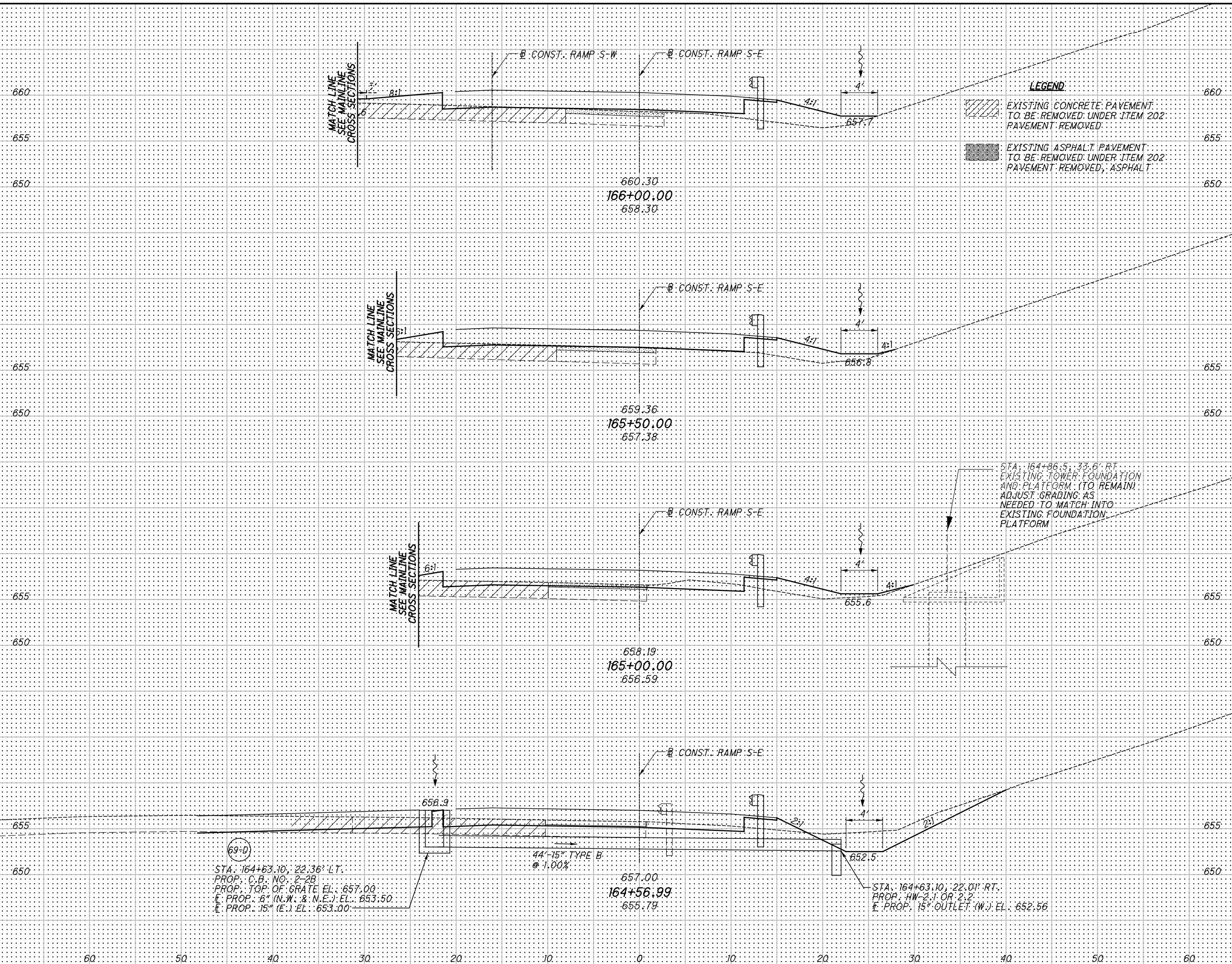
SEE PAVEMENT DETAIL SHEETS 176-181 FOR ADDITIONAL INFORMATION.

FOR BENCH MARK INFORMATION SEE SHEETS 121 & 123



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SEEDING	
END WIDTH	SO. YDS.
392	60
32	50
131	40
23	30
23	20
128	10
23	0
133	10
25	20
25	30
25	40
25	50
25	60



LEGEND

- EXISTING CONCRETE PAVEMENT TO BE REMOVED UNDER ITEM 202 PAVEMENT REMOVED
- EXISTING ASPHALT PAVEMENT TO BE REMOVED UNDER ITEM 202 PAVEMENT REMOVED, ASPHALT

STA. 164+86.5; 33.6' RT. EXISTING TOWER FOUNDATION AND PLATFORM (TO REMAIN) ADJUST GRADING AS NEEDED TO MATCH INTO EXISTING FOUNDATION PLATFORM

69-D
 STA. 164+63.10; 22.36' LT.
 PROP. C.B. NO. 2-2B
 PROP. TOP OF GRATE EL. 657.00
 E. PROP. 6" (N.W. & N.E.) EL. 653.50
 E. PROP. 15" (E.) EL. 653.00

STA. 164+63.10; 22.01' RT.
 PROP. HW-2.1 OR 2.2
 E. PROP. 15" OUTLET (W.) EL. 652.56

END AREA	VOLUME	CALCULATED	CHECKED	TJF
12	80			
14	64			
26	48			
51	31			
122	300			

CROSS SECTIONS - RAMP S-E
STA. 164+56.99 TO STA. 166+00



CUY-77-14.35

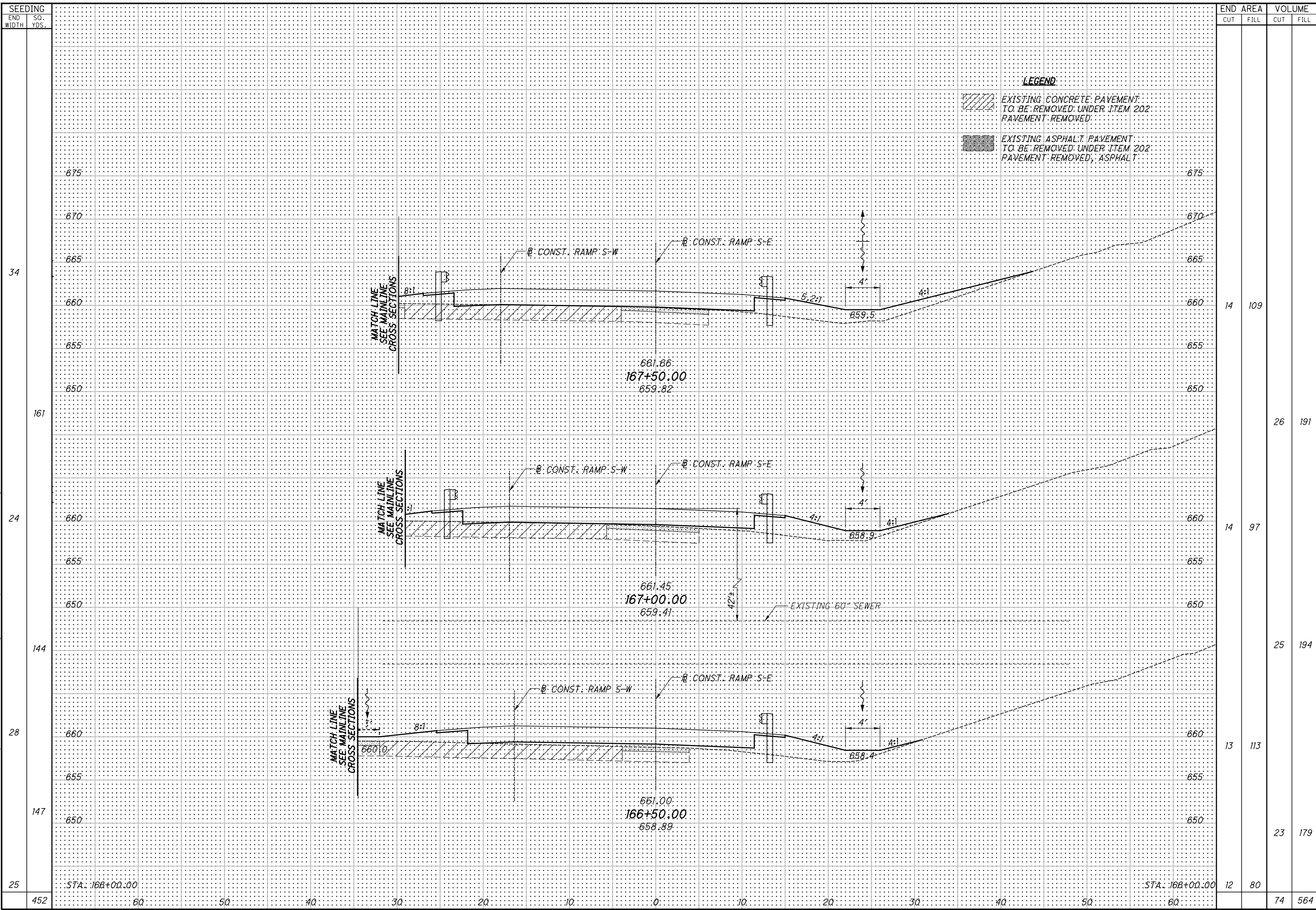
159
365

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SEEDING	END AREA		VOLUME		CALCULATED	CHECKED	TJF
	CUT	FILL	CUT	FILL			
34	14	109	26	191			
161	14	97	25	194			
24	13	113	23	179			
144	12	80	74	564			
28							
147							
25							
452							

LEGEND

-  EXISTING CONCRETE PAVEMENT TO BE REMOVED UNDER ITEM 202 PAVEMENT REMOVED
-  EXISTING ASPHALT PAVEMENT TO BE REMOVED UNDER ITEM 202 PAVEMENT REMOVED, ASPHALT



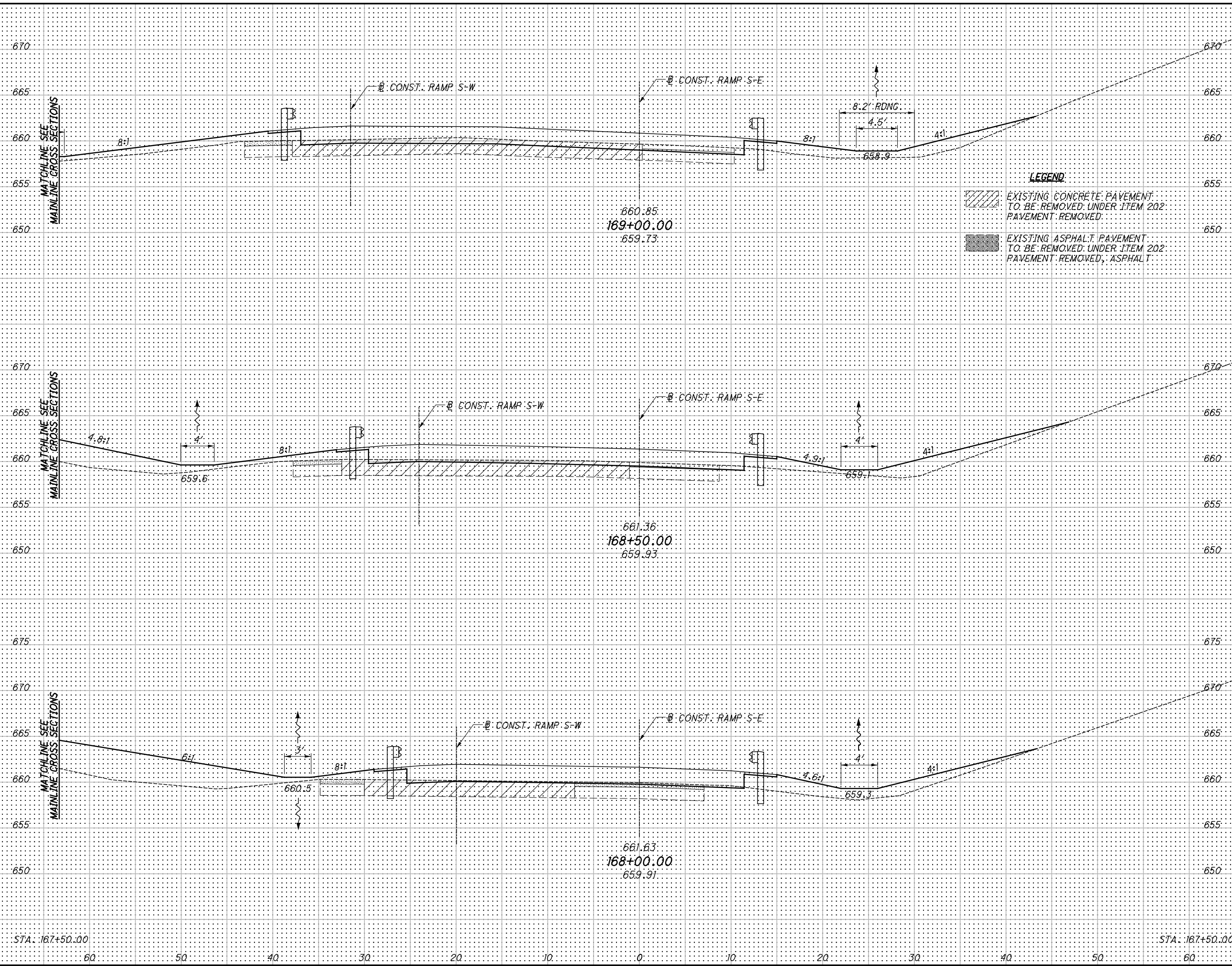
**CROSS SECTIONS - RAMP S-E
STA. 166+50 TO STA. 167+50**

CUY-77-14.35

160
365

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\13567XS010.dgn 12/14/2016 2:00:42 PM DonHeiman

SEEDING	
END WIDTH	SO. YDS.
34	973
278	60
66	50
364	40
65	30
331	20
54	10
	0
	10
	20
	30
	40
	50
	60





END AREA	VOLUME	CALCULATED	CHECKED	TJF
20	112			
36	247			
35	299			
19	168			
31	256			
14	109			
102	802			

CROSS SECTIONS - RAMP S-E
STA. 168+00 TO STA. 169+00
CUY-77-14.35
 161
 365

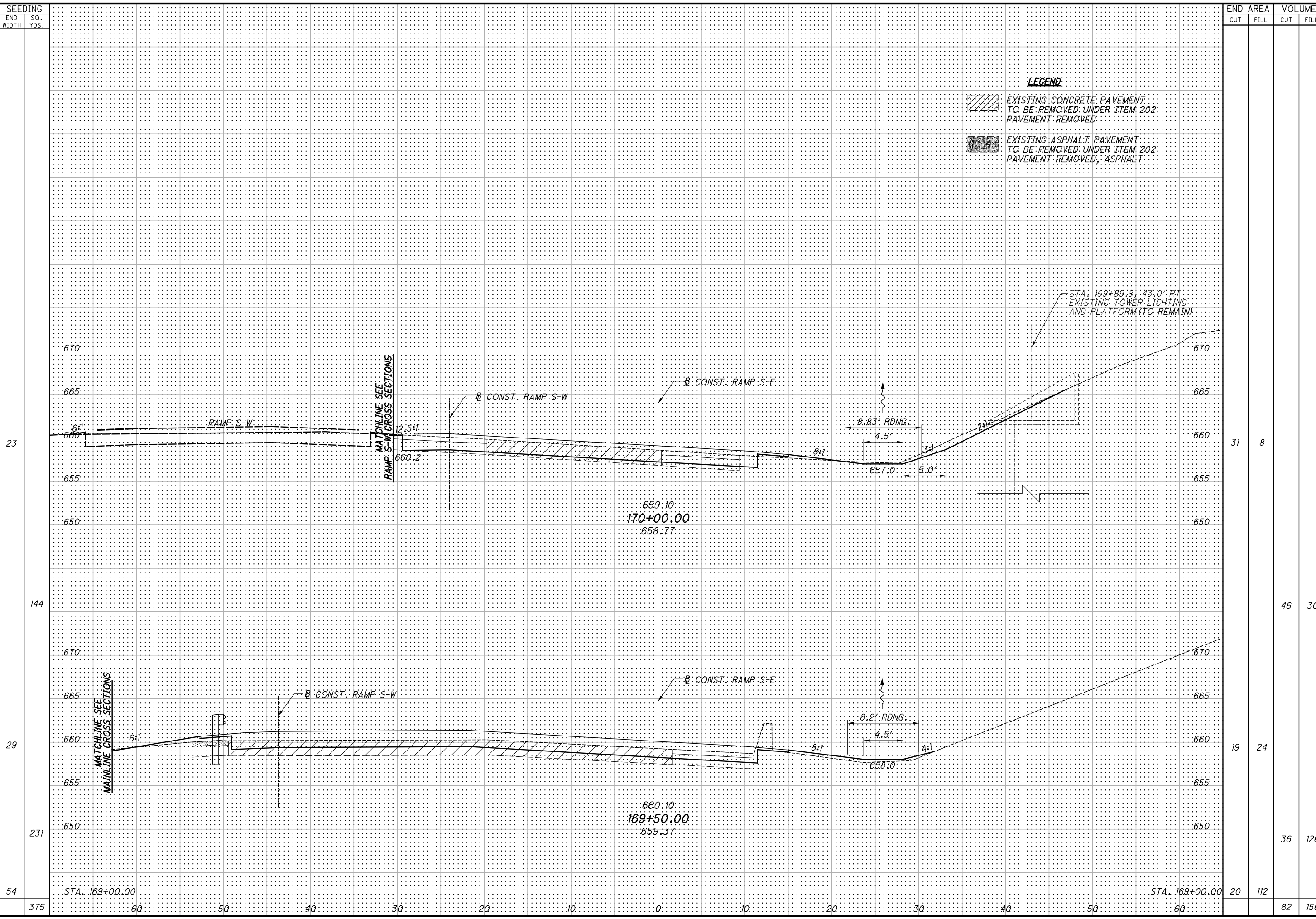
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SEEDING	END AREA		VOLUME		CALCULATED	CHECKED	TJF
	CUT	FILL	CUT	FILL			
END WIDTH	375						
SO. YDS.							
	60						
	50						
	40						
	30						
	20						
	10						
	0						
	10						
	20						
	30						
	40						
	50						
	60						
	70						
	80						
	90						
	100						
	110						
	120						
	130						
	140						
	150						
	160						
	170						
	180						
	190						
	200						
	210						
	220						
	230						
	240						
	250						
	260						
	270						
	280						
	290						
	300						
	310						
	320						
	330						
	340						
	350						
	360						
	370						
	380						
	390						
	400						
	410						
	420						
	430						
	440						
	450						
	460						
	470						
	480						
	490						
	500						
	510						
	520						
	530						
	540						
	550						
	560						
	570						
	580						
	590						
	600						
	610						
	620						
	630						
	640						
	650						
	660						
	670						
	680						
	690						
	700						
	710						
	720						
	730						
	740						
	750						
	760						
	770						
	780						
	790						
	800						
	810						
	820						
	830						
	840						
	850						
	860						
	870						
	880						
	890						
	900						
	910						
	920						
	930						
	940						
	950						
	960						
	970						
	980						
	990						
	1000						

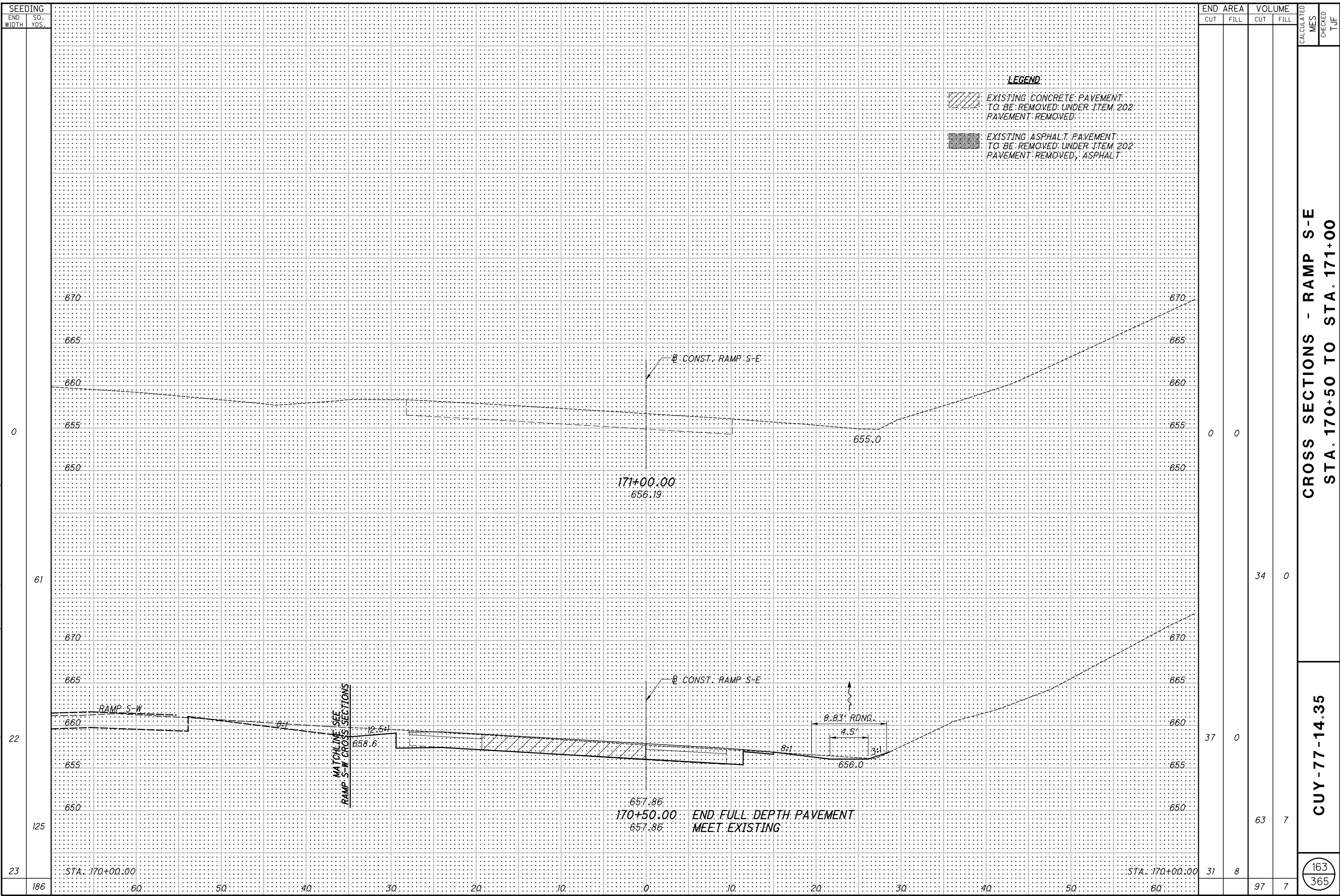
LEGEND
 EXISTING CONCRETE PAVEMENT TO BE REMOVED UNDER ITEM 202 PAVEMENT REMOVED
 EXISTING ASPHALT PAVEMENT TO BE REMOVED UNDER ITEM 202 PAVEMENT REMOVED, ASPHALT

END AREA	VOLUME	CALCULATED	CHECKED	TJF
CUT	FILL	CUT	FILL	MES
				TJF
31	8			
144	46	30		
29	19	24		
231	36	126		
54	20	112		
375	82	156		

CROSS SECTIONS - RAMP S-E
STA. 169+50 TO STA. 170+00
CUY-77-14.35
162
365



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SEEDING	
END WIDTH	SO. YDS.
186	60
125	50
22	40
61	30
0	20
0	10
0	0

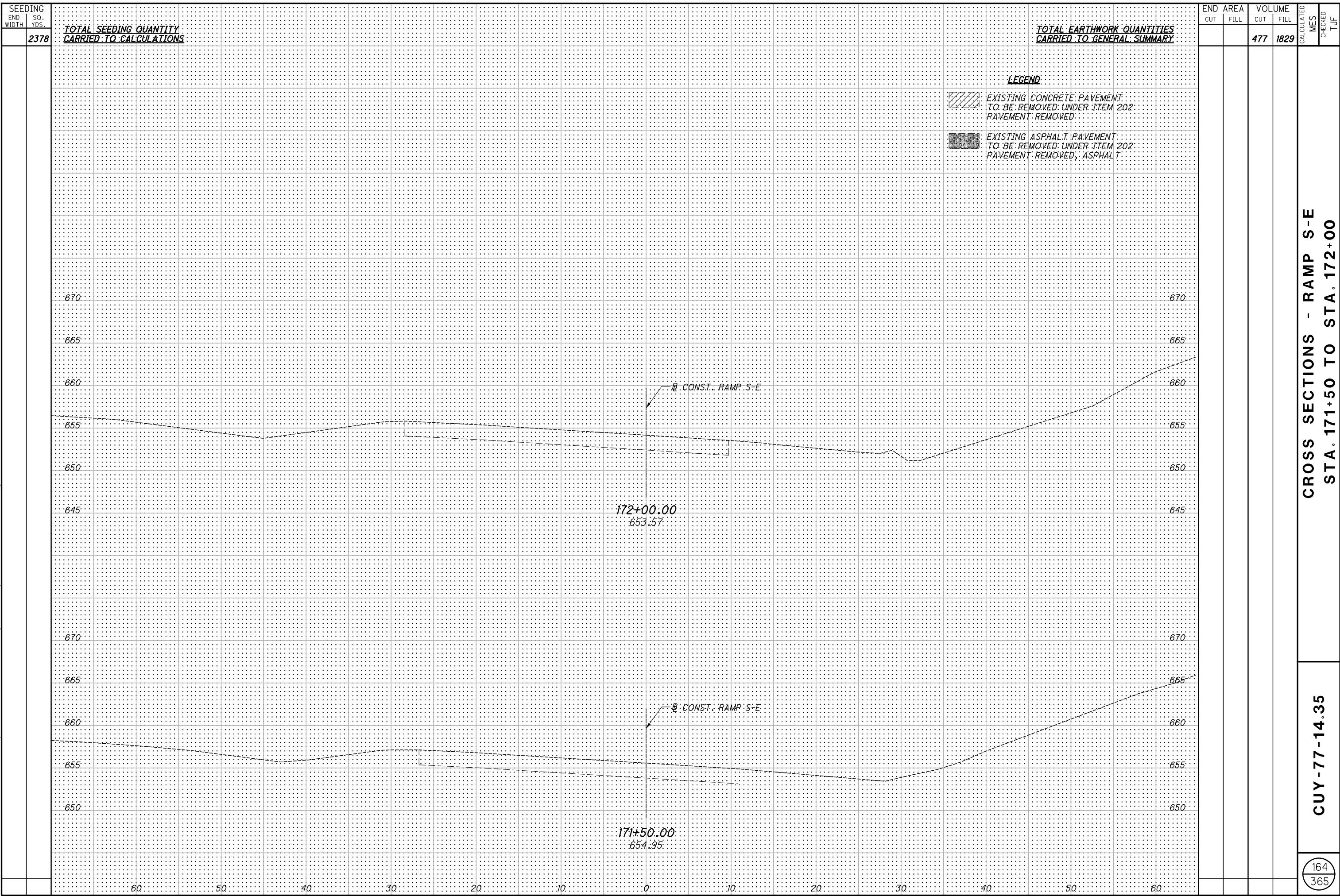
END AREA		VOLUME		CALCULATED		
CUT	FILL	CUT	FILL	MES	CHECKED	TJF
31	8	97	7			
37	0	63	7			
0	0	34	0			
0	0	0	0			

CROSS SECTIONS - RAMP S-E
STA. 170+50 TO STA. 171+00

CUY-77-14.35

163
365

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



SEEDING	
END WIDTH	SO. YDS.
2378	

TOTAL SEEDING QUANTITY CARRIED TO CALCULATIONS

TOTAL EARTHWORK QUANTITIES CARRIED TO GENERAL SUMMARY

END AREA		VOLUME		CALCULATED MES	CHECKED TJF
CUT	FILL	CUT	FILL		
		477	1829		

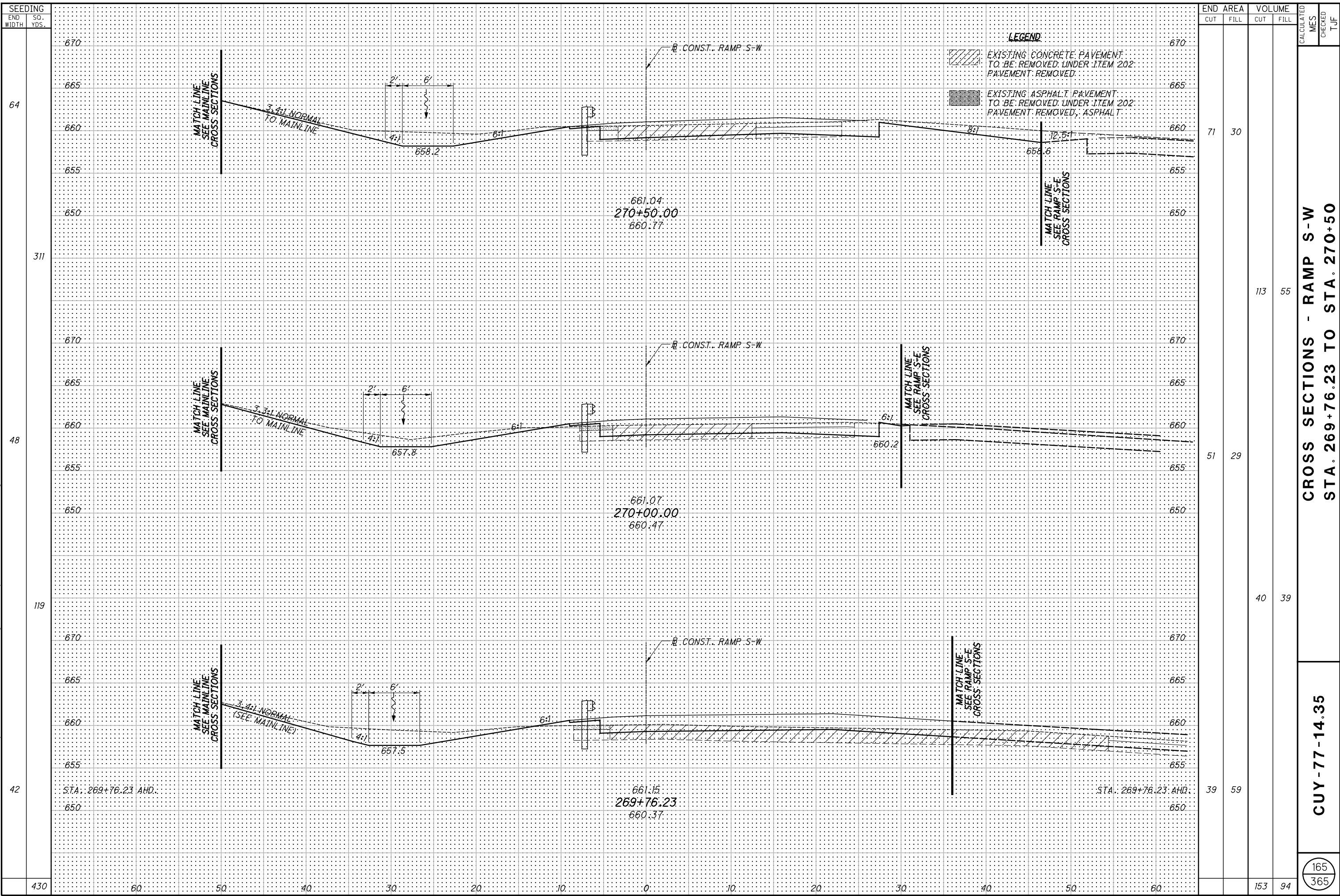
LEGEND:
 EXISTING CONCRETE PAVEMENT TO BE REMOVED UNDER ITEM 202 PAVEMENT REMOVED
 EXISTING ASPHALT PAVEMENT TO BE REMOVED UNDER ITEM 202 PAVEMENT REMOVED, ASPHALT

CROSS SECTIONS - RAMP S-E
 STA. 171+50 TO STA. 172+00

CUY-77-14.35

164
365

\\REL8\Current\2005\05040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\13567XS015.dgn 12/14/2016 2:02:37 PM DonHeiman



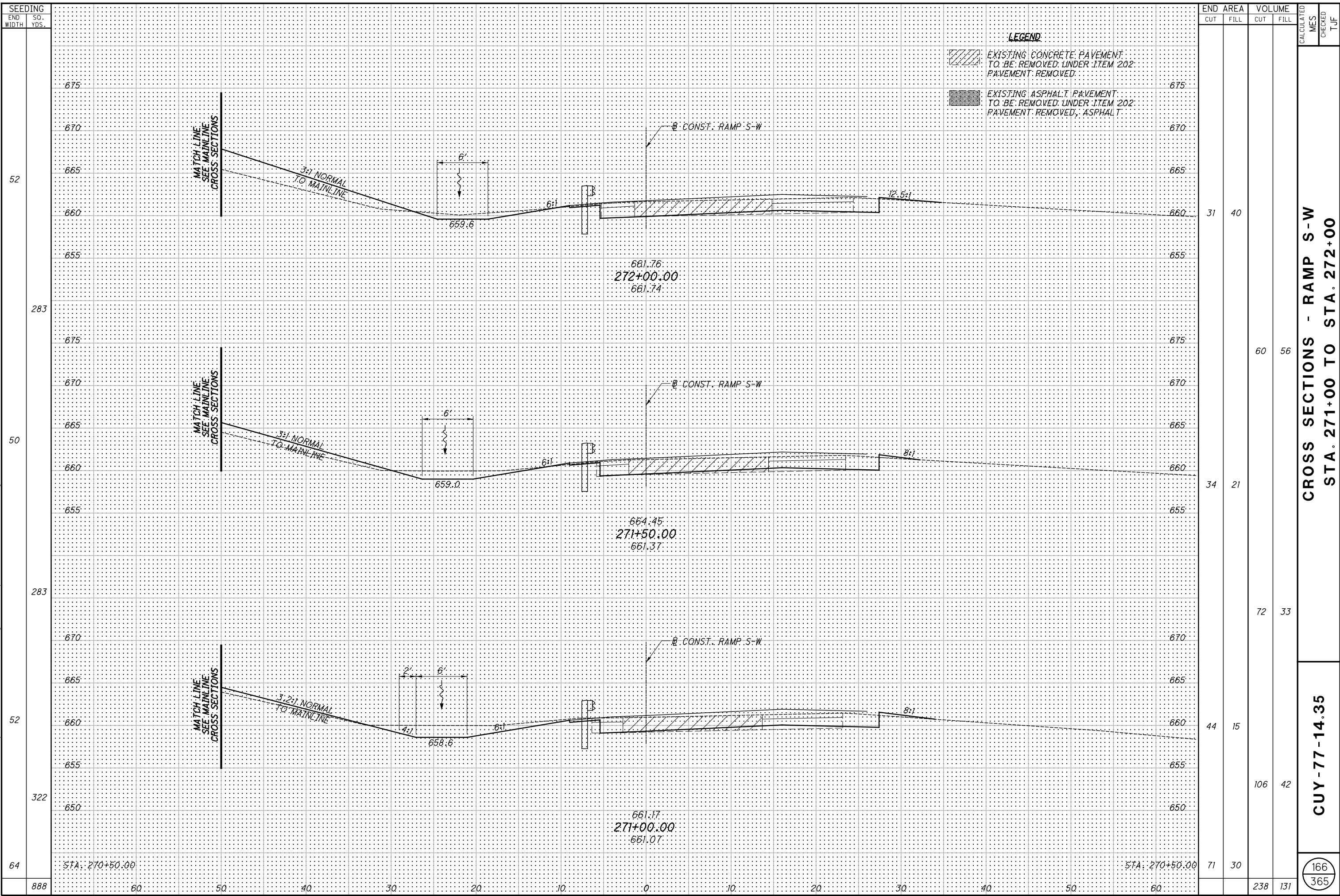
END AREA	VOLUME	CALCULATED	CHECKED	TJF
71	30			
51	29			
39	59			
113	55			
40	39			
		153	94	

**CROSS SECTIONS - RAMP S-W
STA. 269+76.23 TO STA. 270+50**

CUY-77-14.35

165
365

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\13567XS015.dgn 12/14/2016 2:02:53 PM DonHeiman

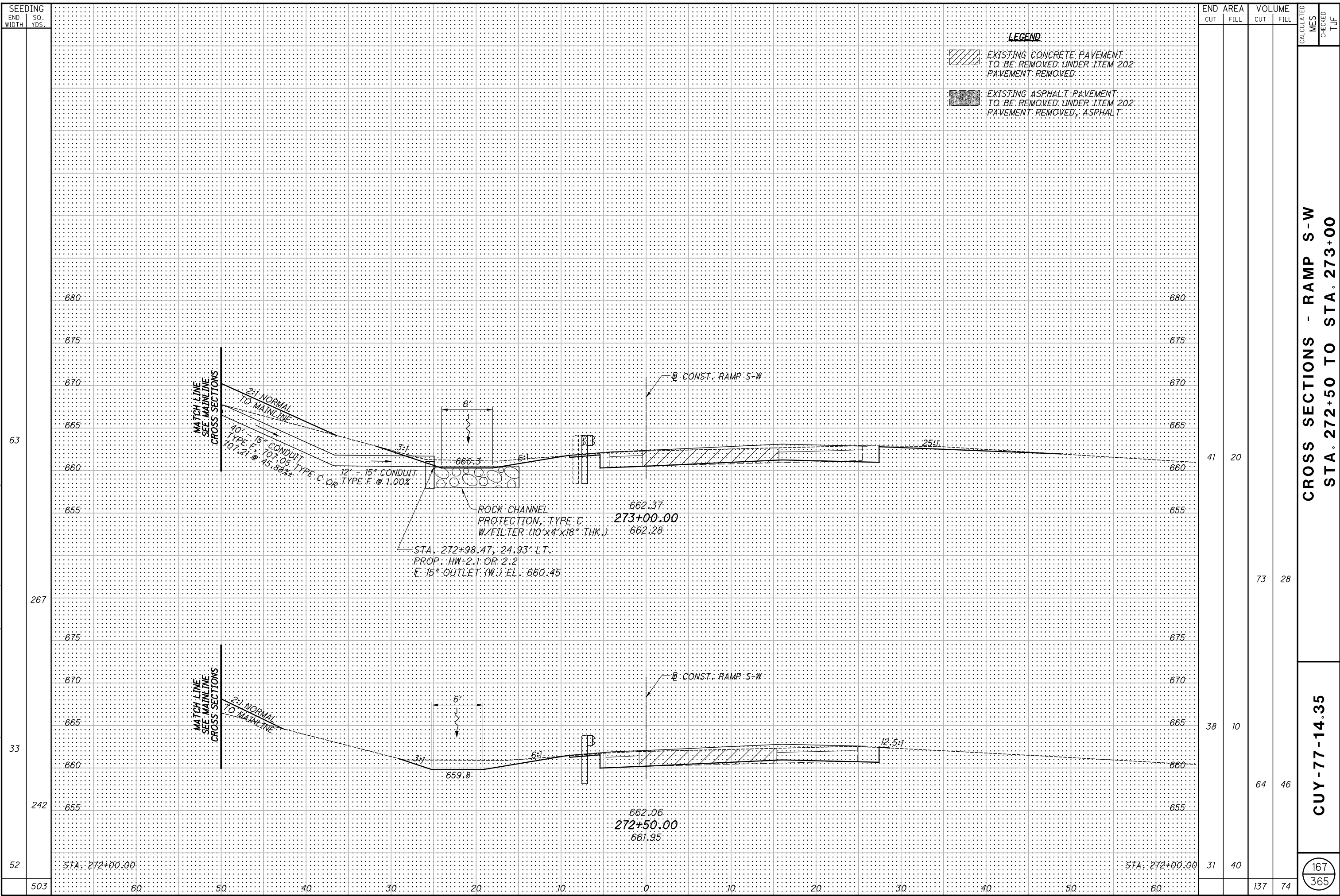


CROSS SECTIONS - RAMP S-W
STA. 271+00 TO STA. 272+00

CUY-77-14.35

166
365

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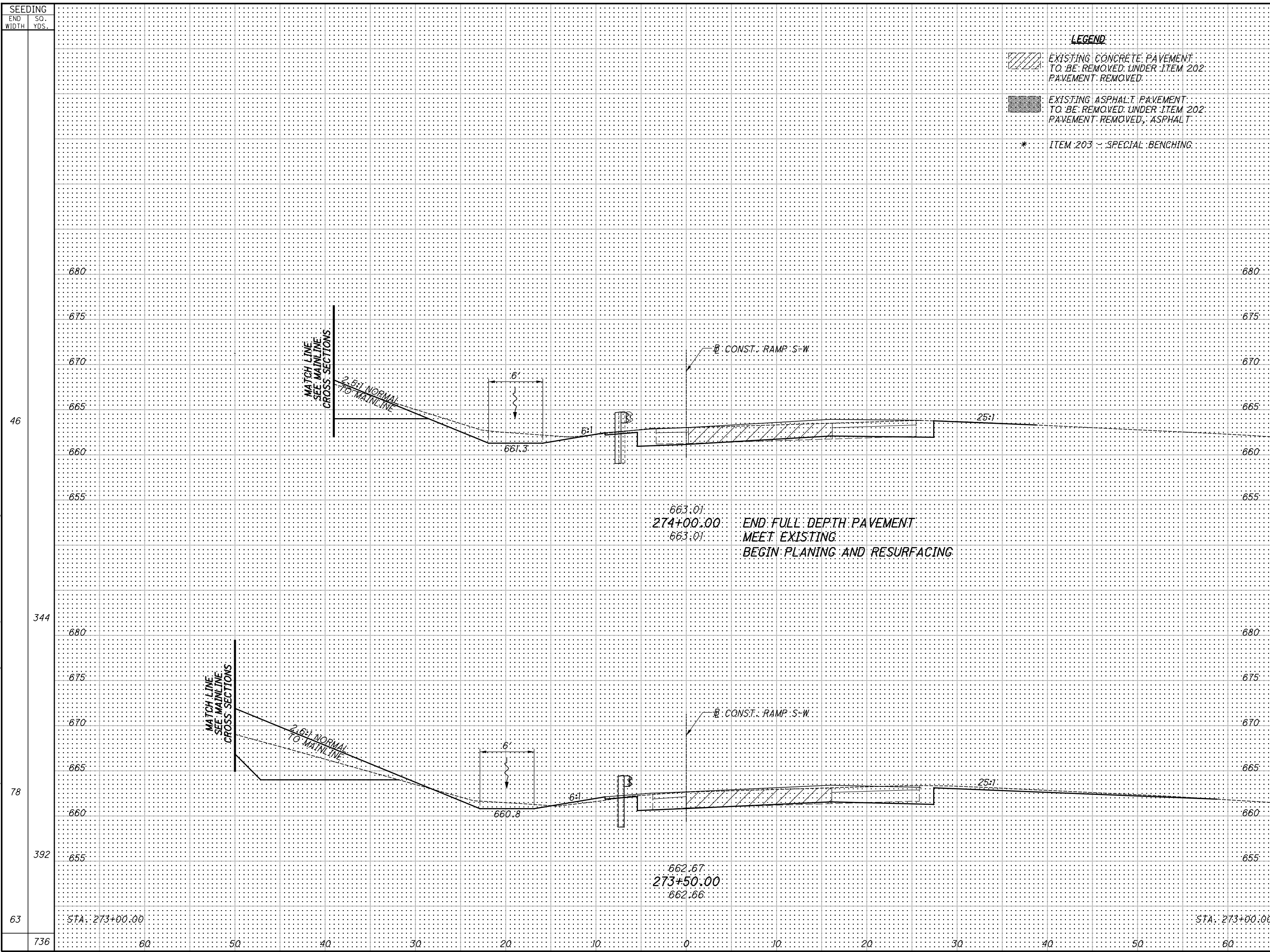


**CROSS SECTIONS - RAMP S-W
STA. 272+50 TO STA. 273+00**

CUY-77-14.35

167
365

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\13567XS015.dgn 12/14/2016 2:03:26 PM DonHeilman



LEGEND:
 EXISTING CONCRETE PAVEMENT TO BE REMOVED UNDER ITEM 202. PAVEMENT REMOVED.
 EXISTING ASPHALT PAVEMENT TO BE REMOVED UNDER ITEM 202. PAVEMENT REMOVED, ASPHALT.
 * ITEM 203 - SPECIAL BENCHING.

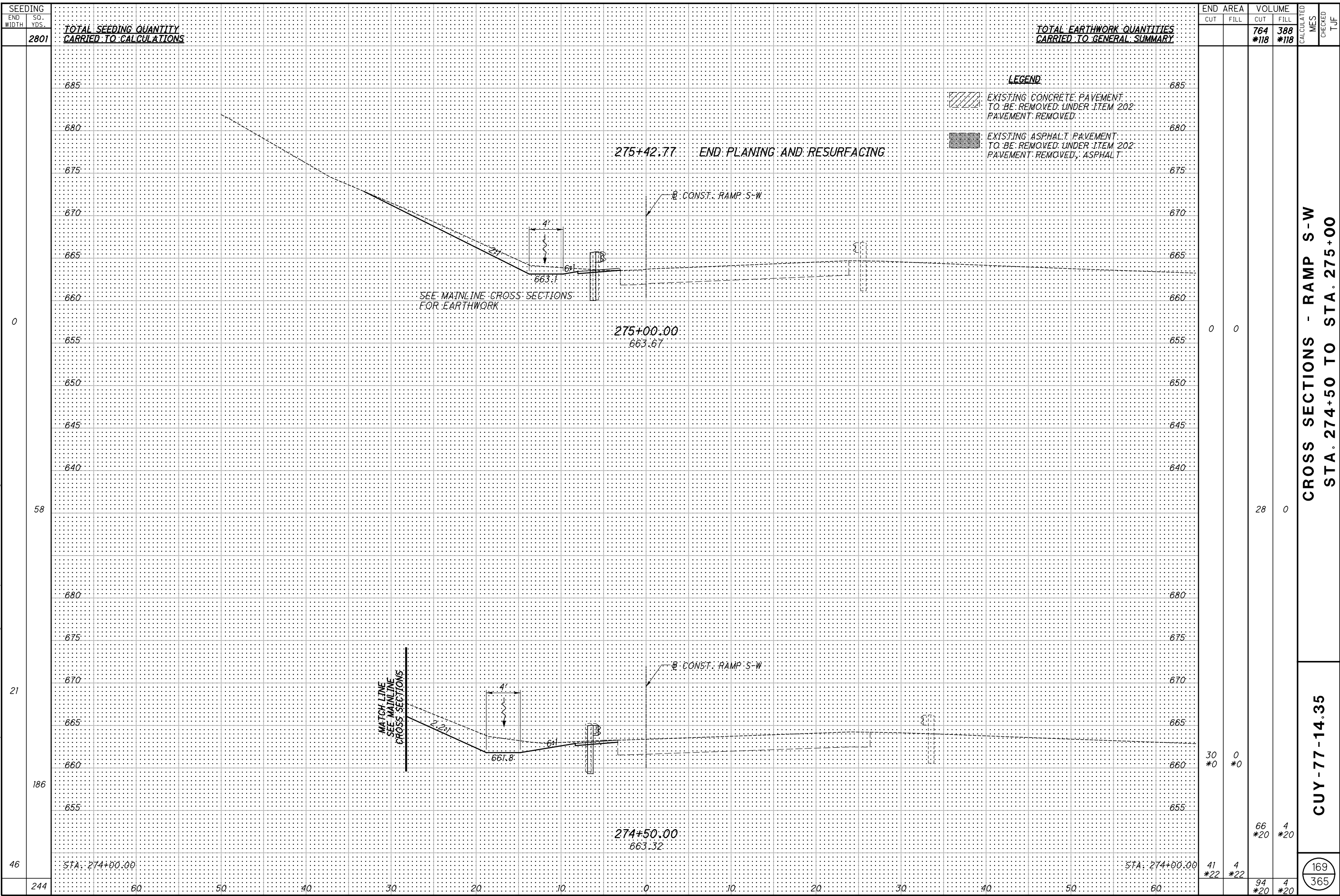
END AREA	VOLUME	CALCULATED	CHECKED	TJF
41 *22	4 *22			
		71 *59	35 *59	
36 *42	34 *42			
		71 *39	50 *39	
41	20			
		142 *98	85 *98	

CROSS SECTIONS - RAMP S-W
 STA. 273+50 TO STA. 274+00

CUY-77-14.35

168
 365

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\13567XS015.dgn 12/14/2016 2:03:40 PM DonHelman



SEEDING		TOTAL SEEDING QUANTITY CARRIED TO CALCULATIONS	TOTAL EARTHWORK QUANTITIES CARRIED TO GENERAL SUMMARY
END WIDTH	SO. YDS.		
2801			
0			
58			
21			
186			
46			
244			

END AREA		VOLUME		CALCULATED MES	CHECKED TJF
CUT	FILL	CUT	FILL		
		764	388		
		*118	*118		
0	0				
28	0				
30	0				
*0	*0				
		66	4		
		*20	*20		
41	4				
*22	*22				
		94	4		
		*20	*20		

CROSS SECTIONS - RAMP S-W
STA. 274+50 TO STA. 275+00

CUY-77-14.35

169
365

DESCRIPTION	NORTHBOUND LANES																					
	CONST. I.R. 77 STATION	RT. MEDIAN BARRIER ELEVATION	WIDTH OF RT. INSIDE SHOULDER	CROSS SLOPE	DISTANCE OFF CONST. I.R. 77	NORTHBOUND PG. ELEVATION	INSIDE LANE WIDTH	SLOPE	TRANSITION RATE	ELEVATION	CENTER LANE WIDTH	SLOPE	TRANSITION RATE	ELEVATION	OUTSIDE LANE WIDTH	SLOPE	TRANSITION RATE	EDGE ELEVATION	WIDTH	SLOPE	TRANSITION RATE	EDGE ELEVATION
	MEDIAN SHOULDER				INSIDE LANE 1				MIDDLE LANE 2				OUTSIDE LANE 3				OUTSIDE LANE 4					
BEGIN OUTSIDE LANE 3 & 4 TRANSITION	55+48.36		4.59		6.00	661.05	12.00	-0.016		660.86	12.00	-0.016		660.67	12.00	-0.020	222:1	660.43	12.00	-0.020	222:1	660.19
	55+50.00		4.59		6.00	661.02	12.00	-0.016		660.83	12.00	-0.016		660.64	12.00	-0.020		660.40	12.00	-0.020		660.16
BEGIN SUPERELEVATION TRANSITION	55+69.67		4.59		6.00	660.67	12.00	-0.016	222:1	660.48	12.00	-0.016	222:1	660.29	12.00	-0.016		660.10	12.00	-0.016		659.91
	55+75.00		4.59		6.00	660.57	12.00	-0.015		660.39	12.00	-0.015		660.21	12.00	-0.015		660.03	12.00	-0.015		659.85
	56+00.00		4.59		6.00	660.07	12.00	-0.013		659.91	12.00	-0.013		659.75	12.00	-0.013		659.59	12.00	-0.013		659.43
	56+25.00		4.59		6.00	659.51	12.00	-0.011		659.38	12.00	-0.011		659.25	12.00	-0.011		659.12	12.00	-0.011		658.99
	56+50.00		4.59		6.00	659.11	12.00	-0.008		659.01	12.00	-0.008		658.91	12.00	-0.008		658.81	12.00	-0.008		658.71
	56+75.00		4.59		6.00	658.80	12.00	-0.006		658.73	12.00	-0.006		658.66	12.00	-0.006		658.59	12.00	-0.006		658.52
	57+00.00		4.59		6.00	658.29	12.00	-0.004		658.24	12.00	-0.004		658.19	12.00	-0.004		658.14	12.00	-0.004		658.09
	57+25.00		4.59		6.00	657.90	12.00	-0.001		657.89	12.00	-0.001		657.88	12.00	-0.001		657.87	12.00	-0.001		657.86
FLAT	57+40.17		4.59		6.00	657.60	12.00	0.000		657.60	12.00	0.000		657.60	12.00	0.000		657.60	12.00	0.000		657.60
	57+50.00		4.59		6.00	657.41	12.00	0.001		657.42	12.00	0.001		657.43	12.00	0.001		657.44	12.00	0.001		657.45
	57+75.00		4.59		6.00	656.92	12.00	0.003		656.96	12.00	0.003		657.00	12.00	0.003		657.04	12.00	0.003		657.08
	58+00.00		4.59		6.00	656.48	12.00	0.006		656.55	12.00	0.006		656.62	12.00	0.006		656.69	12.00	0.006		656.76
	58+25.00		4.59		6.00	656.04	12.00	0.008		656.14	12.00	0.008		656.24	12.00	0.008		656.34	12.00	0.008		656.44
	58+50.00		4.59		6.00	655.58	12.00	0.010		655.70	12.00	0.010		655.82	12.00	0.010		655.94	12.00	0.010		656.06
	58+75.00		4.59		6.00	654.98	12.00	0.013		655.14	12.00	0.013		655.30	12.00	0.013		655.46	12.00	0.013		655.62
	59+00.00		4.59		6.00	654.37	12.00	0.015		654.55	12.00	0.015		654.73	12.00	0.015		654.91	12.00	0.015		655.09
	59+10.67		4.59		6.00	654.18	12.00	0.016		654.37	12.00	0.016		654.56	12.00	0.016		654.75	12.00	0.016		654.94
P.C. 77	59+17.06		4.59		6.00	654.07	12.00	0.017		654.27	12.00	0.017		654.47	12.00	0.017		654.67	12.00	0.017		654.87
	59+25.00		4.59		6.00	653.93	12.00	0.017		654.13	12.00	0.017		654.33	12.00	0.017		654.53	12.00	0.017		654.73
	59+50.00		4.59		6.00	653.49	12.00	0.020		653.73	12.00	0.020		653.97	12.00	0.020		654.21	12.00	0.020		654.45
	59+75.00		4.59		6.00	653.04	12.00	0.022		653.30	12.00	0.022		653.56	12.00	0.022		653.82	12.00	0.022		654.08
	60+00.00	MATCH EXISTING	4.59	MATCH EXISTING	6.00	652.60	12.00	0.024		652.89	12.00	0.024		653.18	12.00	0.024		653.47	12.00	0.024		653.76
	60+25.00		4.59		6.00	652.35	12.00	0.027		652.67	12.00	0.027		652.99	12.00	0.027		653.31	12.00	0.027		653.63
END SUPERELEVATION TRANSITION; P.C. RAMP S-E	60+27.88		4.59		6.00	652.32	12.00	0.027	222:1	652.64	12.00	0.027	222:1	652.96	12.00	0.027	222:1	653.28	12.00	0.027	222:1	653.60
	60+50.00		4.59		6.00	652.09	12.00	0.027		652.41	12.00	0.027		652.73	12.00	0.027		653.05				
	60+75.00	MATCH EXISTING	4.59	MATCH EXISTING	6.00	651.91	12.00	0.027		652.23	12.00	0.027		652.55	12.00	0.027		652.87				
	61+00.00		4.59		6.00	651.72	12.00	0.027		652.04	12.00	0.027		652.36	12.00	0.027		652.68				
	61+25.00		4.59		6.00	651.65	12.00	0.027		651.97	12.00	0.027		652.29	12.00	0.027		652.61				
	61+50.00		4.59		6.00	651.59	12.00	0.027		651.91	12.00	0.027		652.23	12.00	0.027		652.55				
	61+75.00		4.59		6.00	651.71	12.00	0.027		652.03	12.00	0.027		652.35	12.00	0.027		652.67				
	62+00.00		4.59		6.00	651.84	12.00	0.027		652.16	12.00	0.027		652.48	12.00	0.027		652.80				
	62+25.00		4.59		6.00	652.04	12.00	0.027		652.36	12.00	0.027		652.68	12.00	0.027		653.00				
	62+50.00		4.59		6.00	652.24	12.00	0.027		652.56	12.00	0.027		652.88	12.00	0.027		653.20				
	62+75.00		4.59		6.00	652.51	12.00	0.027		652.83	12.00	0.027		653.15	12.00	0.027		653.47				
	63+00.00		4.59		6.00	652.78	12.00	0.027		653.10	12.00	0.027		653.42	12.00	0.027		653.74				
	63+25.00		4.59		6.00	653.15	12.00	0.027		653.47	12.00	0.027		653.79	12.00	0.027		654.11				
	63+50.00		4.59		6.00	653.52	12.00	0.027		653.84	12.00	0.027		654.16	12.00	0.027		654.48				
	63+75.00		4.59		6.00	653.99	12.00	0.027		654.31	12.00	0.027		654.63	12.00	0.027		654.95				
	64+00.00		4.59		6.00	654.47	12.00	0.027		654.79	12.00	0.027		655.11	12.00	0.027		655.43				
	64+25.00		4.59		6.00	655.06	12.00	0.027		655.38	12.00	0.027		655.70	12.00	0.027		656.02				
	64+50.00		4.59		6.00	655.65	12.00	0.027		655.97	12.00	0.027		656.29	12.00	0.027		656.61				
	64+75.00		4.59		6.00	656.32	12.00	0.027		656.64	12.00	0.027		656.96	12.00	0.027		657.28				
	65+00.00		4.59		6.00	656.99	12.00	0.027		657.31	12.00	0.027		657.63	12.00	0.027		657.95				
	65+25.00		4.59		6.00	657.76	12.00	0.027		658.08	12.00	0.027		658.40	12.00	0.027		658.72				
	65+50.00		4.59		6.00	658.53	12.00	0.027		658.85	12.00	0.027		659.17	12.00	0.027		659.49				
	65+75.00		4.59		6.00	659.33	12.00	0.027		659.65	12.00	0.027		659.97	12.00	0.027		660.29				
	66+00.00		4.59		6.00	660.13	12.00	0.027		660.45	12.00	0.027		660.77	12.00	0.027		661.09				
	66+25.00		4.59		6.00	660.83	12.00	0.027		661.15	12.00	0.027		661.47	12.00	0.027		661.79				
	66+50.00		4.59		6.00	661.53	12.00	0.027		661.85	12.00	0.027		662.17	12.00	0.027		662.49				

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DESCRIPTION	NORTHBOUND LANES																		REMARKS
	Q CONST. I.R. 77 STATION	RT. MEDIAN BARRIER ELEVATION	WIDTH OF RT. INSIDE SHOULDER	CROSS SLOPE	DISTANCE OFF Q CONST. I.R. 77	NORTHBOUND PG ELEVATION	INSIDE LANE WIDTH	SLOPE	TRANSITION RATE	ELEVATION	CENTER LANE WIDTH	SLOPE	TRANSITION RATE	ELEVATION	OUTSIDE LANE WIDTH	SLOPE	TRANSITION RATE	EDGE ELEVATION	
<i>CURVE: P. I. STATION 63+98.55 Dc 1° 00' 00"</i>	<i>MEDIAN SHOULDER</i>				<i>INSIDE LANE 1</i>				<i>MIDDLE LANE 2</i>				<i>OUTSIDE LANE 3</i>						
MATCH EXISTING/FULL SUPER	66+75.00	662.13	4.59	0.040	6.00	662.31	12.00	0.027		662.63	12.00	0.027		662.95	12.00	0.027		663.27	
	67+00.00	662.93	4.59	0.040	6.00	663.11	12.00	0.027		663.43	12.00	0.027		663.75	12.00	0.027		664.07	
	67+25.00	663.72	4.59	0.040	6.00	663.90	12.00	0.027		664.22	12.00	0.027		664.54	12.00	0.027		664.86	
	67+50.00	664.51	4.59	0.040	6.00	664.69	12.00	0.027		665.01	12.00	0.027		665.33	12.00	0.027		665.65	
	67+75.00	665.30	4.59	0.040	6.00	665.48	12.00	0.027		665.80	12.00	0.027		666.12	12.00	0.027		666.44	
END FULL SUPER NB	67+91.20	665.82	4.59	0.040	6.00	666.00	12.00	0.027	222:1	666.32	12.00	0.027	222:1	666.64	12.00	0.027	222:1	666.96	
	68+00.00	666.09	4.59	0.040	6.00	666.27	12.00	0.026		666.58	12.00	0.026		666.89	12.00	0.026		667.20	
END FULL SUPER SB	68+12.51	666.49	4.59	0.040	6.00	666.67	12.00	0.024		666.96	12.00	0.024		667.25	12.00	0.024		667.54	
	68+25.00	666.89	4.59	0.040	6.00	667.07	12.00	0.023		667.35	12.00	0.023		667.63	12.00	0.023		667.91	
	68+50.00	667.68	4.59	0.040	6.00	667.86	12.00	0.020		668.10	12.00	0.020		668.34	12.00	0.020		668.58	
	68+75.00	668.47	4.59	0.040	6.00	668.65	12.00	0.017		668.85	12.00	0.017		669.05	12.00	0.017		669.25	
PT	68+77.78	668.56	4.59	0.040	6.00	668.74	12.00	0.016		668.93	12.00	0.016		669.12	12.00	0.016		669.31	
REVERSE CROWN NB	68+79.11	668.60	4.60	0.040	6.01	668.78	12.00	0.016	222:1	668.97	13.00	0.016		669.18	13.00	0.016		669.39	
	69+00.00	669.26	4.69	0.040	6.24	669.45	12.00	0.016		669.64	12.00	0.012		669.78	12.00	0.012		669.92	
REVERSE CROWN SB	69+00.24	669.27	4.69	0.040	6.24	669.46	12.00	0.016		669.65	13.00	0.012		669.81	13.00	0.012		669.97	
	69+25.00	670.07	4.80	0.040	6.51	670.26	12.00	0.016		670.45	12.00	0.007		670.53	12.00	0.007		670.61	
1/3 FLAT SB	69+43.05	670.65	4.88	0.040	6.71	670.85	12.00	0.016		671.04	12.00	0.004		671.09	12.00	0.004		671.14	
	69+50.00	670.88	4.91	0.040	6.78	671.08	12.00	0.016		671.27	12.00	0.003		671.31	12.00	0.003		671.35	
2/3 FLAT NB	69+64.36	671.37	4.97	0.040	6.94	671.57	12.00	0.016		671.76	12.00	0.000		671.76	12.00	0.000		671.76	
	69+70.00	671.56	5.00	0.040	7.00	671.76	12.00	0.016		671.95	12.00	-0.001		671.94	12.00	-0.001		671.93	
	69+75.00	671.73	5.02	0.040	7.06	671.93	12.00	0.016		672.12	12.00	-0.002		672.10	12.00	-0.002		672.08	
NORMAL SB	69+85.67	672.10	5.06	0.040	7.17	672.30	12.00	0.016		672.49	12.00	-0.004		672.44	12.00	-0.004		672.39	
	70+00.00	672.60	5.13	0.040	7.33	672.81	12.00	0.016		673.00	12.00	-0.007		672.92	12.00	-0.007		672.84	
	70+25.00	673.49	5.24	0.040	7.60	673.70	12.00	0.016		673.89	12.00	-0.011		673.76	12.00	-0.011		673.63	
NORMAL NB	70+49.61	674.40	5.34	0.040	7.87	674.61	12.00	0.016		674.80	12.00	-0.016	222:1	674.61	12.00	-0.016	222:1	674.42	
	SEE SHEET 173 FOR ADDITIONAL INFORMATION																		

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I.R. 77 SUPERELEVATION TABLE

CUY-77-14.35

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DESCRIPTION	SOUTHBOUND LANES																	REMARKS
	EDGE ELEVATION	TRANSITION RATE	SLOPE	OUTSIDE LANE WIDTH	EDGE ELEVATION	TRANSITION RATE	SLOPE	CENTER LANE WIDTH	EDGE ELEVATION	TRANSITION RATE	SLOPE	INSIDE LANE WIDTH	SOUTHBOUND PG ELEVATION	DISTANCE OFF & CONST. I.R. 77	CROSS SLOPE	WIDTH OF LT. INSIDE SHOULDER	LT. MEDIAN BARRIER ELEVATION	
CURVE: P. I. STATION 63+98.55 Dc 1° 00' 00"																		
BEGIN NEW PVMT/MATCH EXISTING, SB & NB FULL SUPER	661.50		-0.027	12.00	661.82		-0.027	12.00	662.14		-0.027	12.00	662.46	9.50	0.040	8.09	662.14	66+75.00
	662.22		-0.027	12.00	662.54		-0.027	12.00	662.86		-0.027	12.00	663.18	9.50	0.040	8.09	662.86	67+00.00
	662.95		-0.027	12.00	663.27		-0.027	12.00	663.59		-0.027	12.00	663.91	9.50	0.040	8.09	663.59	67+25.00
	663.68		-0.027	12.00	664.00		-0.027	12.00	664.32		-0.027	12.00	664.64	9.50	0.040	8.09	664.32	67+50.00
	664.42		-0.027	12.00	664.74		-0.027	12.00	665.06		-0.027	12.00	665.38	9.50	0.040	8.09	665.06	67+75.00
END FULL SUPER NB	664.92		-0.027	12.00	665.24		-0.027	12.00	665.56		-0.027	12.00	665.88	9.50	0.040	8.09	665.56	67+91.20
	665.19		-0.027	12.00	665.51		-0.027	12.00	665.83		-0.027	12.00	666.15	9.50	0.040	8.09	665.83	68+00.00
END FULL SUPER SB	665.57		-0.027	12.00	665.89		-0.027	12.00	666.21		-0.027	12.00	666.53	9.50	0.040	8.09	666.21	68+12.51
	666.02	222:1	-0.025	12.00	666.32	222:1	-0.025	12.00	666.62	222:1	-0.025	12.00	666.92	9.50	0.040	8.09	666.60	68+25.00
	666.94		-0.022	12.00	667.20		-0.022	12.00	667.46		-0.022	12.00	667.72	9.50	0.040	8.09	667.40	68+50.00
	667.84		-0.019	12.00	668.07		-0.019	12.00	668.30		-0.019	12.00	668.53	9.50	0.040	8.09	668.21	68+75.00
PT	667.93		-0.019	12.00	668.16		-0.019	12.00	668.39		-0.019	12.00	668.62	9.50	0.040	8.09	668.30	68+77.78
REVERSE CROWN NB	667.97		-0.019	12.00	668.20		-0.019	12.00	668.43		-0.019	12.00	668.66	9.50	0.040	8.10	668.34	68+79.11
	668.79	222:1	-0.016	12.00	668.98	222:1	-0.016	12.00	669.17		-0.016	12.00	669.36	9.50	0.040	8.24	669.03	69+00.00
REVERSE CROWN SB	668.77		-0.016	12.00	668.96		-0.016	12.00	669.15		-0.016	13.00	669.36	9.50	0.040	8.24	669.03	69+00.24
	669.74		-0.016	12.00	669.93		-0.016	12.00	670.12		-0.007	12.00	670.20	9.50	0.040	8.40	669.86	69+25.00
1/3 FLAT SB	670.44		-0.016	12.00	670.63		-0.016	12.00	670.82		0.000	12.00	670.82	9.50	0.040	8.52	670.48	69+43.05
	670.72		-0.016	12.00	670.91		-0.016	12.00	671.10		0.003	12.00	671.06	9.50	0.040	8.56	670.72	69+50.00
2/3 FLAT NB	671.28		-0.016	12.00	671.47		-0.016	12.00	671.66		0.008	12.00	671.56	9.50	0.040	8.66	671.21	69+64.36
	671.49		-0.016	12.00	671.68		-0.016	12.00	671.87		0.010	12.00	671.75	9.50	0.040	8.69	671.40	69+70.00
	671.69		-0.016	12.00	671.88		-0.016	12.00	672.07	222:1	0.012	12.00	671.93	9.50	0.040	8.73	671.58	69+75.00
NORMAL SB	672.12		-0.016	12.00	672.31		-0.016	12.00	672.50		0.016	12.00	672.31	9.50	0.040	8.79	671.96	69+85.67
	672.63		-0.016	12.00	672.82		-0.016	12.00	673.01		0.016	12.00	672.82	9.50	0.040	8.89	672.46	70+00.00
	673.53		-0.016	12.00	673.72		-0.016	12.00	673.91		0.016	12.00	673.72	9.50	0.040	9.05	673.36	70+25.00
NORMAL NB	674.44		-0.016	12.00	674.63		-0.016	12.00	674.82		0.016	12.00	674.63	9.50	0.040	9.21	674.26	70+49.61
SEE SHEET 173 FOR ADDITIONAL INFORMATION																		

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I.R. 77 SUPERELEVATION TABLE

CUY - 77 - 14.35

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DESCRIPTION	SOUTHBOUND						NORTHBOUND					REMARKS
	SOUTHBOUND PG ELEVATION	DISTANCE OFF ∇ CONST. I.R. 77	CROSS SLOPE	WIDTH OF LT. INSIDE SHOULDER	LT. MEDIAN BARRIER ELEVATION	∇ CONST. I.R. 77 STATION	RT. MEDIAN BARRIER ELEVATION	WIDTH OF RT. INSIDE SHOULDER	CROSS SLOPE	DISTANCE OFF ∇ CONST. I.R. 77	NORTHBOUND PG ELEVATION	
SEE SHEET 172 FOR ADDITIONAL INFORMATION						SEE SHEET 171 FOR ADDITIONAL INFORMATION						
	674.65	9.50	0.040	9.21	674.28	70+50.00	674.41	5.35	0.040	7.87	674.62	
	675.58	9.50	0.040	9.38	675.20	70+75.00	675.34	5.45	0.040	8.14	675.56	
	676.54	9.50	0.040	9.54	676.16	71+00.00	676.31	5.56	0.040	8.41	676.53	
	677.51	9.50	0.040	9.70	677.14	71+25.00	677.28	5.67	0.040	8.69	677.51	
	678.48	9.50	0.040	9.86	678.11	71+50.00	678.25	5.78	0.040	8.96	678.48	
	679.46	9.50	0.040	10.03	679.10	71+75.00	679.22	5.89	0.040	9.23	679.46	
	680.44	9.50	0.040	10.19	680.09	72+00.00	680.20	6.00	0.040	9.50	680.44	
	685.81	9.50	0.040	10.19	685.46	73+37.44	685.57	6.00	0.040	9.50	685.81	START CROSS SLOPE TRANSITION
	686.30	9.50	0.034	10.19	686.01	73+50.00	686.10	6.00	0.034	9.50	686.30	
	687.28	9.50	0.022	10.19	687.08	73+75.00	687.15	6.00	0.022	9.50	687.28	
	687.81	9.50	0.016	10.19	687.67	73+88.44	687.71	6.00	0.016	9.50	687.81	END CROSS SLOPE TRANSITION
	687.89	9.50	0.016	10.19	687.75	73+90.44	687.79	6.00	0.016	9.50	687.89	BEGIN APPROACH SLAB NB
	687.89	9.50	0.016	6.00	687.68	73+90.44	687.79	6.00	0.016	9.50	687.89	BEGIN D-WALL BARRIER SB
	688.26	9.50	0.016	6.00	688.05	74+00.00	688.16	6.00	0.016	9.50	688.26	
	695.66	9.50	0.016	6.00	695.56	80+34.56	695.56	6.00	0.016	9.50	695.66	BEGIN APPROACH SLAB SB
	695.40	9.50	0.016	6.00	695.30	80+50.00	695.30	6.00	0.016	9.50	695.40	
	695.11	9.50	0.016	6.00	695.01	80+66.56	695.01	6.00	0.016	9.50	695.11	END D-WALL BARRIER NB
	695.11	9.50	0.016	6.00	695.01	80+66.56	694.97	10.19	0.016	9.50	695.11	START CROSS SLOPE TRANSITION
	694.95	9.50	0.020	6.00	694.83	80+75.00	694.77	10.19	0.020	9.50	694.95	
	694.44	9.50	0.032	6.00	694.25	81+00.00	694.16	10.19	0.032	9.50	694.44	
	694.05	9.50	0.040	6.00	693.81	81+17.56	693.70	10.19	0.040	9.50	694.05	END CROSS SLOPE TRANSITION
	688.85	9.50	0.040	6.00	688.61	83+00.00	688.50	10.19	0.040	9.50	688.85	
	688.12	9.31	0.040	6.07	687.88	83+25.00	687.75	9.74	0.040	9.31	688.11	
	687.45	9.13	0.040	6.15	687.20	83+50.00	687.05	9.29	0.040	9.13	687.42	
	686.82	8.94	0.040	6.22	686.57	83+75.00	686.44	8.84	0.040	8.94	686.79	
	686.24	8.75	0.040	6.30	685.99	84+00.00	685.86	8.39	0.040	8.75	686.20	
	685.72	8.56	0.040	6.37	685.47	84+25.00	685.35	7.94	0.040	8.56	685.67	
	685.24	8.38	0.040	6.45	684.98	84+50.00	684.88	7.49	0.040	8.38	685.18	
	684.82	8.19	0.040	6.52	684.56	84+75.00	684.47	7.04	0.040	8.19	684.75	
	684.44	8.00	0.040	6.59	684.18	85+00.00	684.11	6.59	0.040	8.00	684.37	
	684.12	8.00	0.040	6.59	683.86	85+25.00	683.78	6.59	0.040	8.00	684.04	
	683.84	8.00	0.040	6.59	683.58	85+50.00	683.50	6.59	0.040	8.00	683.76	
	683.62	8.00	0.040	6.59	683.36	85+75.00	683.28	6.59	0.040	8.00	683.54	
	683.45	8.00	0.040	6.59	683.19	86+00.00	683.10	6.59	0.040	8.00	683.36	
	683.32	8.00	0.040	6.59	683.06	86+25.00	682.97	6.59	0.040	8.00	683.23	
	683.25	8.00	0.040	6.59	682.99	86+50.00	682.90	6.59	0.040	8.00	683.16	
	683.23	8.00	0.040	6.59	682.97	86+75.00	682.88	6.59	0.040	8.00	683.14	
	683.25	8.00	0.040	6.59	682.99	86+95.00	682.90	6.59	0.040	8.00	683.16	
	683.26	8.00	0.037	6.57	683.02	87+00.00	682.94	6.51	0.036	8.00	683.17	
	683.34	8.00	0.021	6.47	683.20	87+25.00	683.14	6.07	0.018	8.00	683.25	
	683.44	8.00	0.008	6.13	683.39	87+44.68	683.32	5.83	0.003	8.00	683.34	
	683.46	8.00	0.005	6.06	683.43	87+49.84						

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I.R. 77 MEDIAN SHOULDER TRANSITION TABLE

CUY - 77 - 14.35

DESCRIPTION	RAMP S-E					
	TRANSITION RATE	CONST. STATION	LEFT E.O.P. ELEVATION	WIDTH	CROSS SLOPE	PROFILE GRADE E.O.P. ELEVATION
RAMP S-E						
P.C./ BEGIN SUPER TRANS.	541:1	160+27.88	653.28	12.00	-0.027	653.60
		160+50.00	653.07	12.06	-0.024	653.36
		160+75.00	652.87	12.29	-0.022	653.15
		161+00.00	652.69	12.68	-0.019	652.93
		161+25.00	652.62	13.23	-0.016	652.83
		161+50.00	652.56	13.95	-0.013	652.74
		161+75.00	652.68	14.83	-0.010	652.83
		162+00.00	652.81	15.87	-0.007	652.92
		162+25.00	653.04	16.00	-0.004	653.10
		162+50.00	653.27	16.00	-0.001	653.29
FLAT		162+61.44	653.41	16.00	0.000	653.41
		162+75.00	653.58	16.00	0.002	653.55
		163+00.00	653.88	16.00	0.004	653.81
		163+25.00	654.29	16.00	0.007	654.18
		163+50.00	654.71	16.00	0.010	654.55
		163+75.00	655.23	16.00	0.013	655.02
END SUPER TRANS.	541:1	163+99.88	655.76	16.00	0.016	655.51
		164+00.00	655.76	16.00	0.016	655.51
		164+25.00	656.40	16.00	0.016	656.15
		164+50.00	657.05	16.00	0.016	656.80
		164+75.00	657.76	16.00	0.016	657.51
		165+00.00	658.44	16.00	0.016	658.19
		165+25.00	659.06	16.00	0.016	658.81
		165+36.50	659.33	16.00	0.016	659.07
		165+50.00	659.62	15.73	0.016	659.36
		165+57.00	659.76	15.59	0.016	659.51
		165+75.00	660.11	15.23	0.016	659.86
		166+00.00	660.54	14.73	0.016	660.30
		166+25.00	660.91	14.23	0.016	660.68
		166+50.00	661.22	13.73	0.016	661.00
		166+75.00	661.47	13.23	0.016	661.25
		167+00.00	661.65	12.73	0.016	661.45
		167+25.00	661.78	12.23	0.016	661.59
C.S.		167+36.50	661.82	12.00	0.016	661.63
		167+50.00	661.85	12.00	0.016	661.66
		167+75.00	661.87	12.00	0.016	661.68
		168+00.00	661.83	12.00	0.016	661.63
		168+25.00	661.72	12.00	0.016	661.53
BEGIN SUPER TRANS.	185:1	168+25.16	661.72	12.00	0.016	661.53
		168+50.00	661.66	12.02	0.025	661.36
		168+75.00	661.61	13.50	0.035	661.14
		169+00.00	661.54	15.73	0.044	660.85
		169+25.00	661.37	16.00	0.054	660.50
S.C./ END SUPER TRANS.	185:1	169+36.50	661.25	16.00	0.058	660.32
		169+50.00	661.02	16.00	0.058	660.10
		169+75.00	660.56	16.00	0.058	659.63
		170+00.00	660.03	16.00	0.058	659.10
		170+25.00	659.44	16.00	0.058	658.51
MATCH EXISTING		170+50.00	658.79	16.00	0.058	657.86

DESCRIPTION	RAMP S-W					
	TRANSITION RATE	R CONST. STATION	PROFILE GRADE E.O.P. ELEVATION	CROSS SLOPE	WIDTH	LEFT E.O.P. ELEVATION
RAMP S-W						
P.O.T. BEGIN RAMP SW		265+57.00	659.77	-0.016	0.41	659.76
		265+75.00	660.12	-0.016	0.78	660.11
		266+00.00	660.56	-0.016	1.35	660.54
		266+25.00	660.94	-0.016	1.97	660.91
T.S.		266+41.65	661.16	-0.016	2.41	661.12
		266+50.00	661.26	-0.016	2.64	661.22
		266+75.00	661.52	-0.016	3.38	661.46
		267+00.00	661.72	-0.016	4.21	661.65
		267+25.00	661.86	-0.016	5.15	661.78
		267+50.00	661.95	-0.016	5.96	661.85
		267+75.00	661.98	-0.016	6.76	661.87
		268+00.00	661.95	-0.016	7.94	661.83
		268+25.00	661.88	-0.016	9.64	661.72
BEGIN SUPER TRANS.	317:1	268+49.96	661.86	-0.016	12.00	661.67
		268+50.00	661.86	-0.016	12.00	661.67
		268+75.00	661.76	-0.011	13.74	661.61
		269+00.00	661.63	-0.006	15.70	661.54
FULL WIDTH RAMP		269+03.52	661.62	-0.005	16.00	661.54
		269+25.00	661.41	0.000	16.00	661.41
FLAT		269+26.40	661.39	0.000	16.00	661.39
		269+50.00	661.25	0.005	16.00	661.33
		269+75.00	661.15	0.010	16.00	661.31
		270+00.00	661.07	0.015	16.00	661.31
	317:1/185:1	270+02.85	661.07	0.016	16.00	661.32
		270+25.00	661.04	0.023	16.00	661.40
		270+50.00	661.04	0.032	16.00	661.55
		270+75.00	661.09	0.040	16.00	661.73
S.C./ FULL SUPER	185:1	270+91.65	661.14	0.046	16.00	661.88
		271+00.00	661.17	0.046	16.00	661.91
		271+25.00	661.30	0.046	16.00	662.04
		271+50.00	661.45	0.046	16.00	662.19
		271+75.00	661.61	0.046	16.00	662.34
		272+00.00	661.76	0.046	16.00	662.49
		272+25.00	661.91	0.046	16.00	662.65
		272+50.00	662.06	0.046	16.00	662.80
		272+75.00	662.22	0.046	16.00	662.95
		273+00.00	662.37	0.046	16.00	663.10
		273+25.00	662.52	0.046	16.00	663.26
		273+50.00	662.67	0.046	16.00	663.41
BEGIN SUPER TRANS.	185:1	273+57.10	662.72	0.046	16.00	663.45
P.C.C.		273+74.86	662.83	0.052	16.00	663.66
		273+75.00	662.83	0.052	16.00	663.66
END SUPER TRANS.	185:1	273+92.62	662.96	0.058	16.00	663.89
MATCH EXISTING		274+00.00	663.01	0.058	16.00	663.94

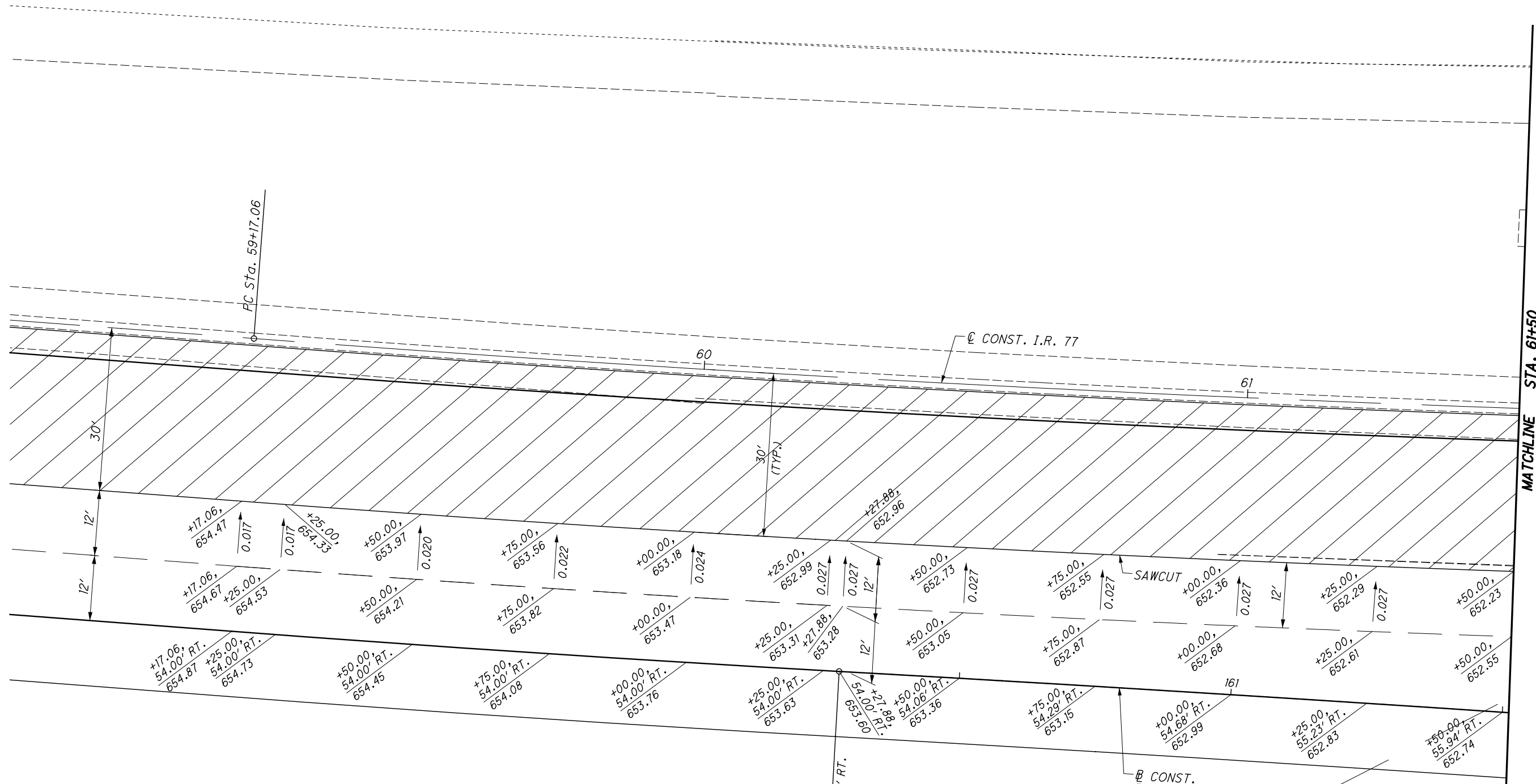
CALCULATED
TJF
CHECKED
DAW

RAMP S-W SUPERELEVATION TABLE

F:\2005\105040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\13567.gia.dgn 12/15/2016 10:13:08 AM DonHelman

CALCULATED
TJF
CHECKED
DAW

0 10 20
HORIZONTAL
SCALE IN FEET



**CONSTRUCTION I.R. 77
CURVE DATA**

P.I. Sta = 63+98.55
 $\Delta = 9^\circ 36' 26''$ (LT)
 $D_c = 1^\circ 00' 00''$
 $R = 5,729.57'$
 $T = 481.49'$
 $L = 960.72'$
 $E = 20.20'$
 $e_{MAX.} = *0.027$ NDC
 * WITHIN LIMITS OF PLANING
 AND RESURFACING
 - SB MEDIAN LANE = 0.006±
 - NB OUTSIDE LANE = 0.011±

LEGEND
 PLANING AND RESURFACING

**CONSTRUCTION RAMP S-E
CURVE DATA**

P.I. Sta. 163+82.31
 $\Delta = 3^\circ 32' 35''$ (RT)
 $D_c = 0^\circ 30' 00''$
 $R = 11,459.16'$
 $T = 354.42'$
 $L = 708.62'$
 $E = 5.48'$
 $C = 708.51'$
 $C.B. = N 4^\circ 53' 00'' W$
 $e_{MAX.} = NC$

RAMP S-E PAVEMENT DETAIL

NOTE: ALL STATIONS AND OFFSETS FOR RAMP W-S ARE REFERENCED TO CL CONSTRUCTION IR 77



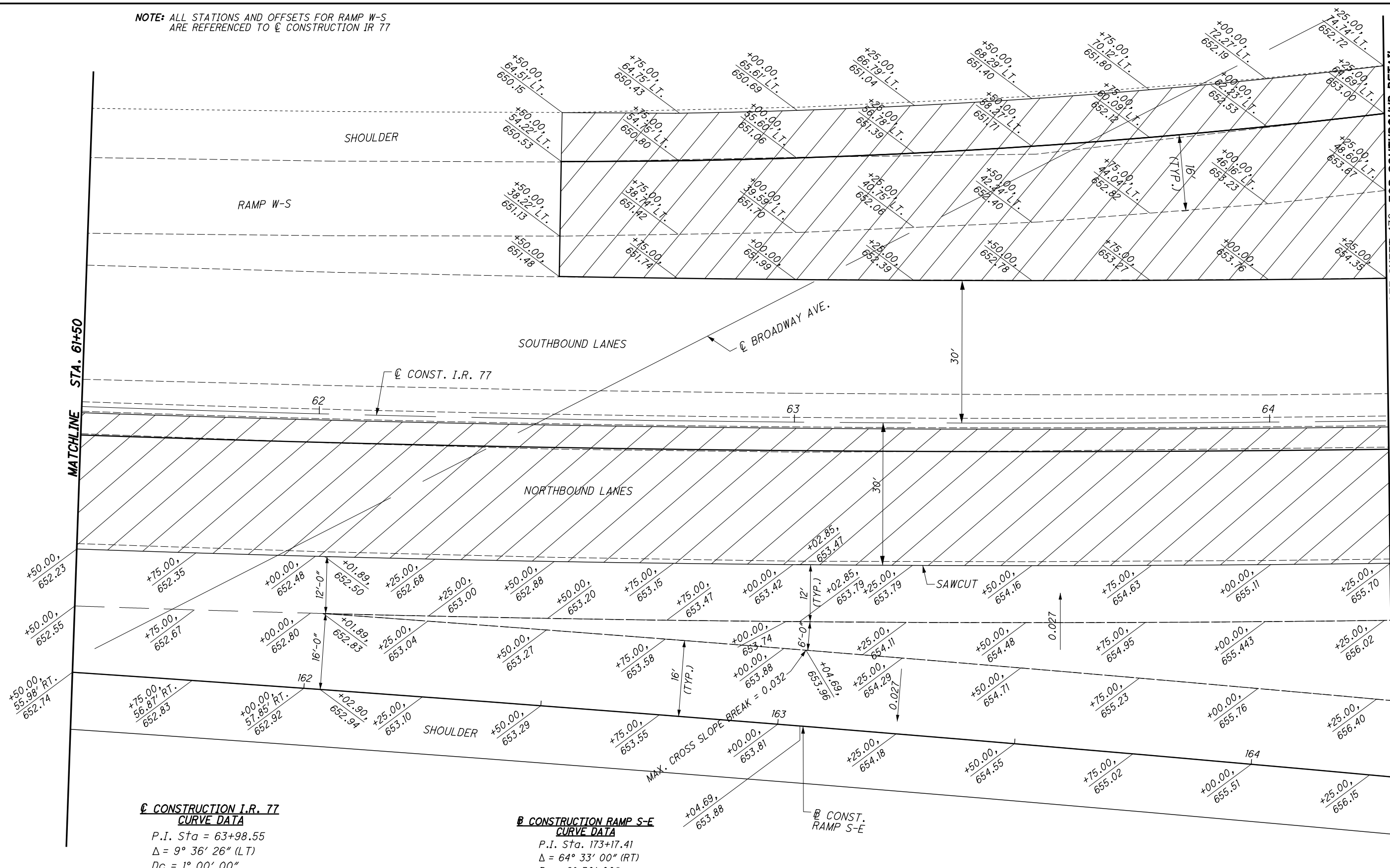
CALCULATED
TJF
CHECKED
DAW

0 10 20
HORIZONTAL
SCALE IN FEET

RAMP S-E & S-W PAVEMENT DETAIL

CUY-77-14.35

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**CL CONSTRUCTION I.R. 77
CURVE DATA**

P.I. Sta = 63+98.55
 $\Delta = 9^\circ 36' 26''$ (LT)
 $D_c = 1^\circ 00' 00''$
 $R = 5,729.57'$
 $T = 481.49'$
 $L = 960.72'$
 $E = 20.20'$
 $e_{MAX.} = *0.027$ NDC
 * WITHIN LIMITS OF PLANING
 AND RESURFACING
 - SB MEDIAN LANE = 0.006±

**BL CONSTRUCTION RAMP S-E
CURVE DATA**

P.I. Sta. 173+17.41
 $\Delta = 64^\circ 33' 00''$ (RT)
 $D_c = 9^\circ 30' 00''$
 $R = 603.11'$
 $T = 380.90'$
 $L = 679.47'$
 $E = 110.21'$
 $C = 644.11'$
 C.B. = N $39^\circ 09' 47''$ E
 $e_{MAX.} = 0.058$
 DESIGN SPEED = 40 MPH

LEGEND

PLANING AND RESURFACING

SEE SHEET 178 FOR SOUTHBOUND DETAIL

SEE SHEET 178 FOR SOUTHBOUND DETAIL

SEE SHEET 179 FOR NORTHBOUND DETAIL

SEE SHEET 178 FOR SOUTHBOUND DETAIL

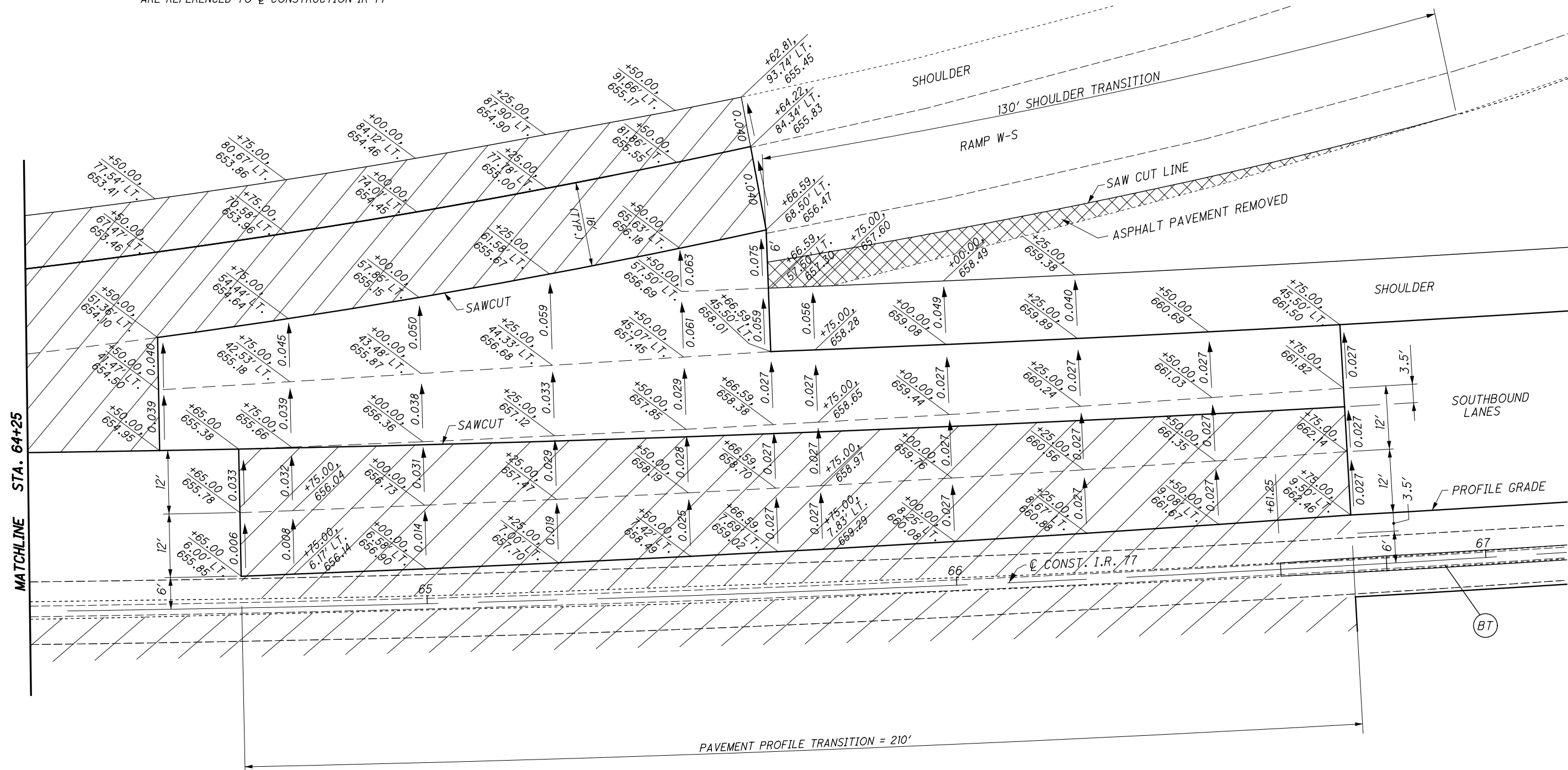
NOTE: ALL STATIONS AND OFFSETS FOR RAMP W-S ARE REFERENCED TO ϕ CONSTRUCTION I.R. 77



CALCULATED
TJF
CHECKED
DAW

SOUTHBOUND AND RAMP W-S
PAVEMENT TRANSITION DETAIL

CUY-77-14.35



MATCHLINE STA. 64+25




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NOTE:
SEE SHEET 179 FOR NORTHBOUND PAVEMENT DETAIL

ϕ CONSTRUCTION I.R. 77
CURVE DATA

P.I. Sta = 63+98.55
 D = 9° 36' 26" (LT)
 Dc = 1° 00' 00"
 R = 5,729.57'
 T = 481.49'
 L = 960.72'
 E = 20.20'
 eMAX.: *0.027 NDC
 * WITHIN LIMITS OF PLANING
 AND RESURFACING
 - SB MEDIAN LANE = 0.006±

LEGEND

-  PLANING AND RESURFACING
-  ASPHALT PAVEMENT REMOVED
-  (BT) 20' BARRIER TRANSITION
SEE SHEET 182-183 FOR DETAILS

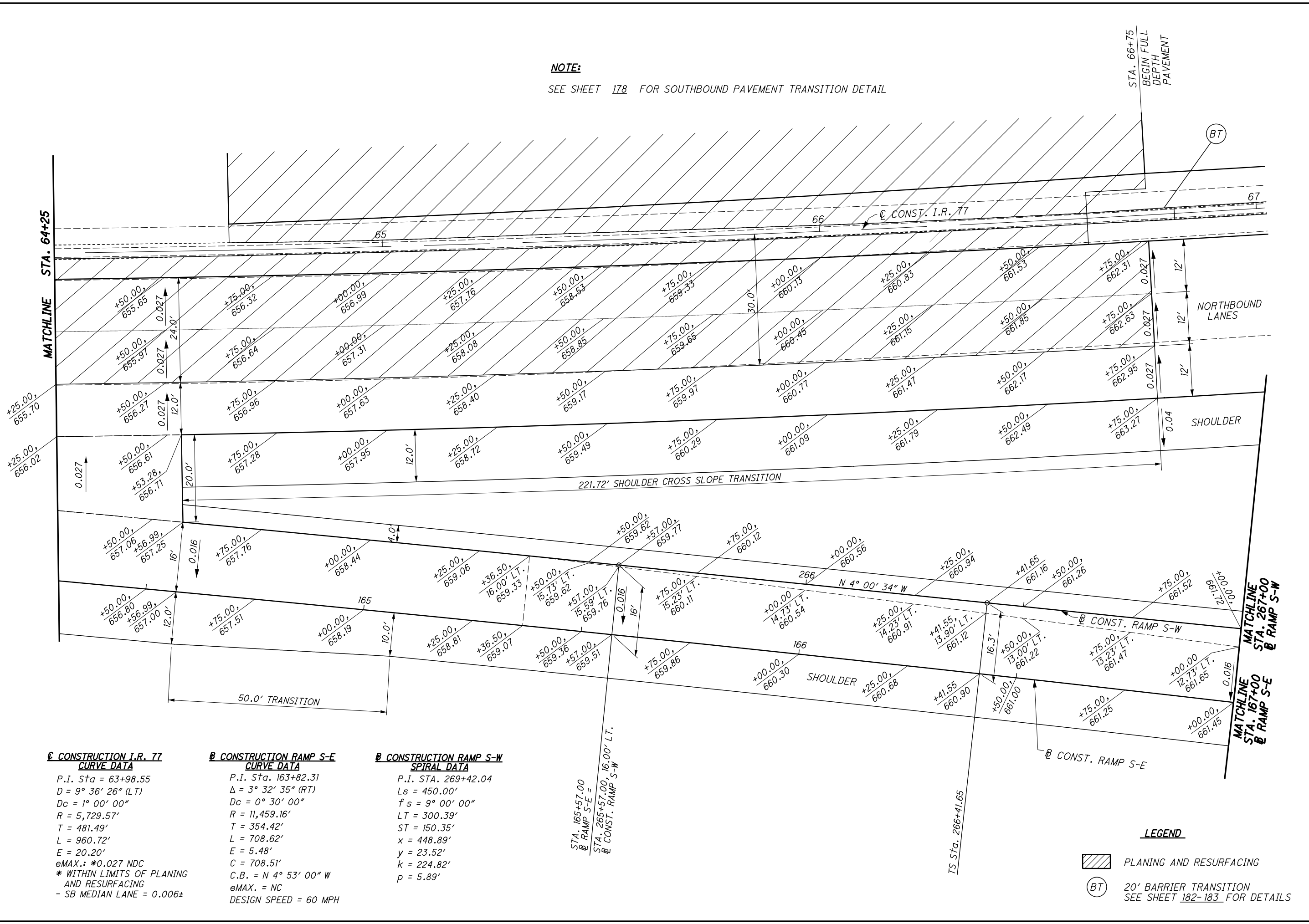


CALCULATED
TJF
CHECKED
DAW

**NORTHBOUND AND RAMP S-E / S-W
PAVEMENT DETAIL**

CUY-77-14.35

NOTE:
SEE SHEET 178 FOR SOUTHBOUND PAVEMENT TRANSITION DETAIL



**CONST. I.R. 77
CURVE DATA**

P.I. Sta = 63+98.55
 D = 9° 36' 26" (LT)
 Dc = 1° 00' 00"
 R = 5,729.57'
 T = 481.49'
 L = 960.72'
 E = 20.20'
 eMAX.: *0.027 NDC
 * WITHIN LIMITS OF PLANING
 AND RESURFACING
 - SB MEDIAN LANE = 0.006±

**CONST. RAMP S-E
CURVE DATA**

P.I. Sta. 163+82.31
 Δ = 3° 32' 35" (RT)
 Dc = 0° 30' 00"
 R = 11,459.16'
 T = 354.42'
 L = 708.62'
 E = 5.48'
 C = 708.51'
 C.B. = N 4° 53' 00" W
 eMAX. = NC
 DESIGN SPEED = 60 MPH

**CONST. RAMP S-W
SPIRAL DATA**

P.I. STA. 269+42.04
 Ls = 450.00'
 fs = 9° 00' 00"
 LT = 300.39'
 ST = 150.35'
 x = 448.89'
 y = 23.52'
 k = 224.82'
 p = 5.89'

STA. 165+57.00
 RAMP S-E =
 STA. 265+57.00, 16.00' LT.
 CONST. RAMP S-W

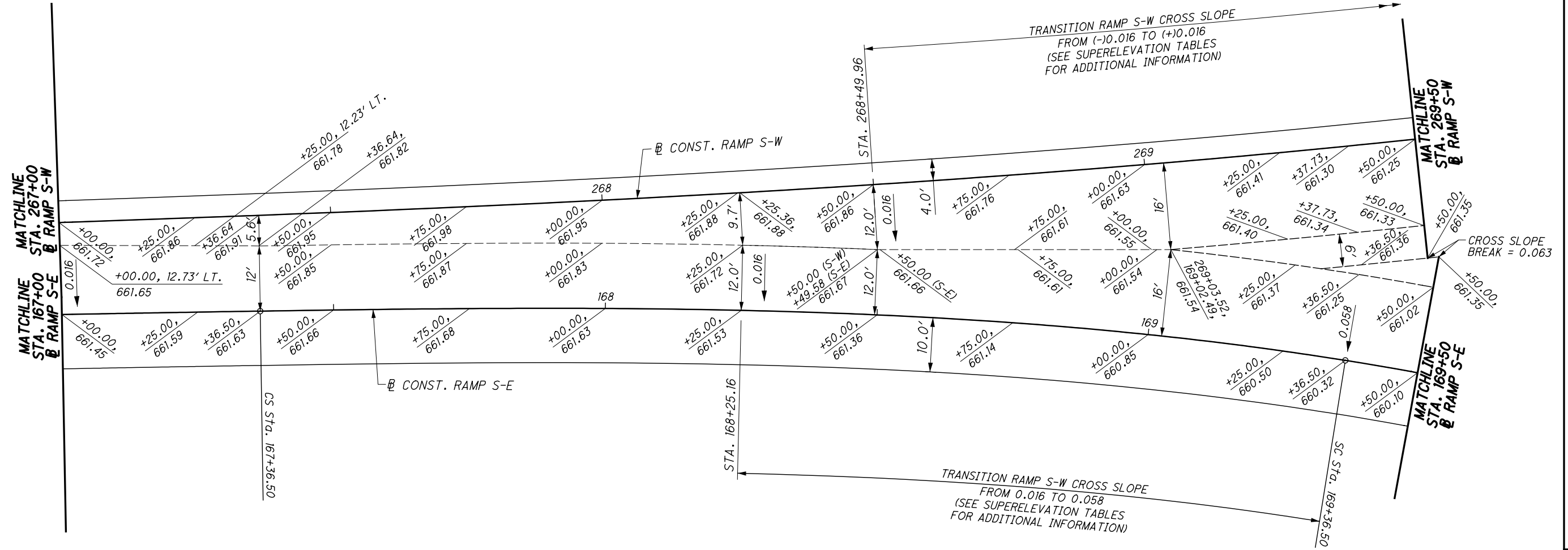
LEGEND

- PLANING AND RESURFACING
- 20' BARRIER TRANSITION
SEE SHEET 182-183 FOR DETAILS

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**B CONSTRUCTION RAMP S-W
SPIRAL DATA**

P.I. STA. 269+42.04
 Ls = 450.00'
 fs = 9° 00' 00"
 LT = 300.39'
 ST = 150.35'
 x = 448.89'
 y = 23.52'
 k = 224.82'
 p = 5.89'



**B CONSTRUCTION RAMP S-E
CURVE DATA**

P.I. Sta. 163+82.31
 $\Delta = 3^\circ 32' 35''$ (RT)
 Dc = 0° 30' 00"
 R = 11,459.16'
 T = 354.42'
 L = 708.62'
 E = 5.48'
 C = 708.51'
 C.B. = N 4° 53' 00" W
 eMAX. = NC

**B CONSTRUCTION RAMP S-E
SPIRAL DATA**

P.I. STA. 168+66.73
 Ls = 200.00'
 fs = 10° 00' 00"
 LT = 130.22'
 ST = 70.20'
 x = 199.36'
 y = 12.19'
 k = 99.90'
 p = 2.62'
 eMAX. = 0.058
 DESIGN SPEED = 40 MPH

**B CONSTRUCTION RAMP S-E
CURVE DATA**

P.I. Sta. 173+17.41
 $\Delta = 64^\circ 33' 00''$ (RT)
 Dc = 9° 30' 00"
 R = 603.11'
 T = 380.90'
 L = 679.47'
 E = 110.21'
 C = 644.11'
 C.B. = N 39° 09' 47" E
 eMAX. = 0.058
 DESIGN SPEED = 40 MPH



RAMP S-E AND S-W PAVEMENT DETAIL

CUY-77-14.35

180
365



0 5 10 20
HORIZONTAL
SCALE IN FEET

CALCULATED
TJF
CHECKED
DAW

RAMP S-E AND S-W PAVEMENT DETAIL

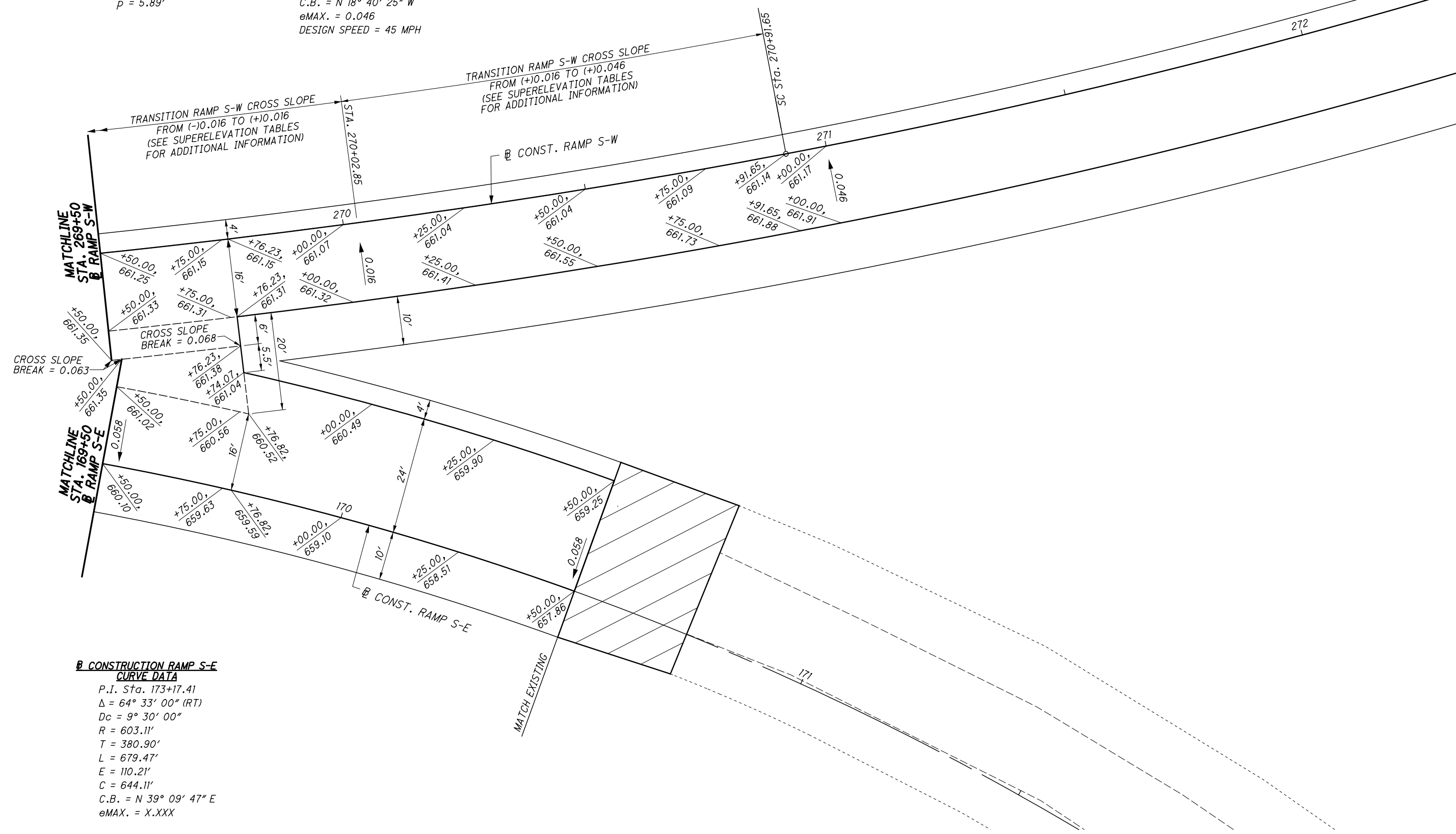
CUY-77-14.35

181
365

**CONSTRUCTION RAMP S-W
SPIRAL DATA**
 P.I. STA. 269+42.04
 $L_s = 450.00'$
 $f_s = 9^\circ 00' 00''$
 $LT = 300.39'$
 $ST = 150.35'$
 $x = 448.89'$
 $y = 23.52'$
 $k = 224.82'$
 $p = 5.89'$

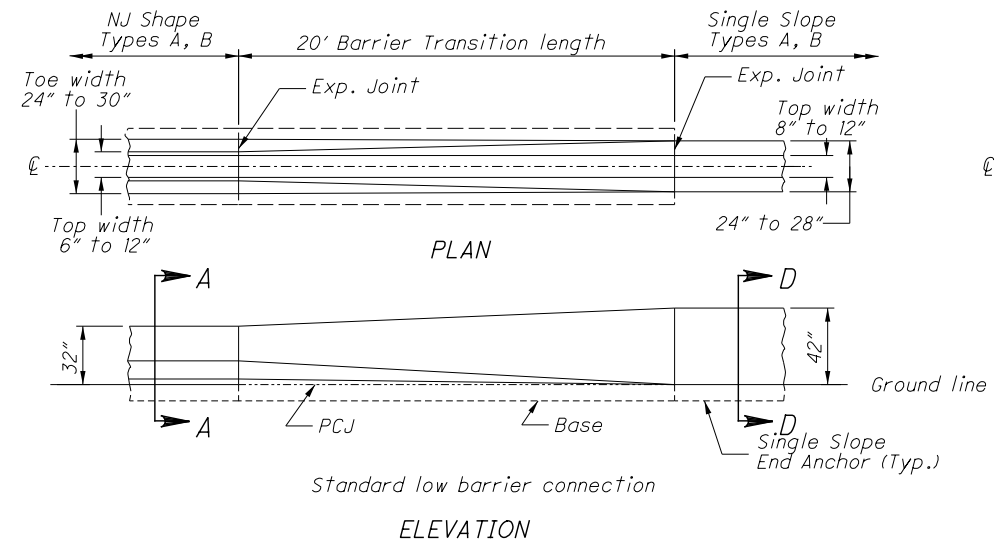
**CONSTRUCTION RAMP S-W
CURVE DATA**
 P.I. Sta. 272+33.72
 $\Delta = 11^\circ 19' 43''$ (LT)
 $D_c = 4^\circ 00' 00''$
 $R = 1,432.39'$
 $T = 142.07'$
 $L = 283.21'$
 $E = 7.03'$
 $C = 282.75'$
 C.B. = N $18^\circ 40' 25''$ W
 $e_{MAX.} = 0.046$
 DESIGN SPEED = 45 MPH

**CONSTRUCTION RAMP S-E
CURVE DATA**
 P.I. Sta. 173+17.41
 $\Delta = 64^\circ 33' 00''$ (RT)
 $D_c = 9^\circ 30' 00''$
 $R = 603.11'$
 $T = 380.90'$
 $L = 679.47'$
 $E = 110.21'$
 $C = 644.11'$
 C.B. = N $39^\circ 09' 47''$ E
 $e_{MAX.} = X.XXX$

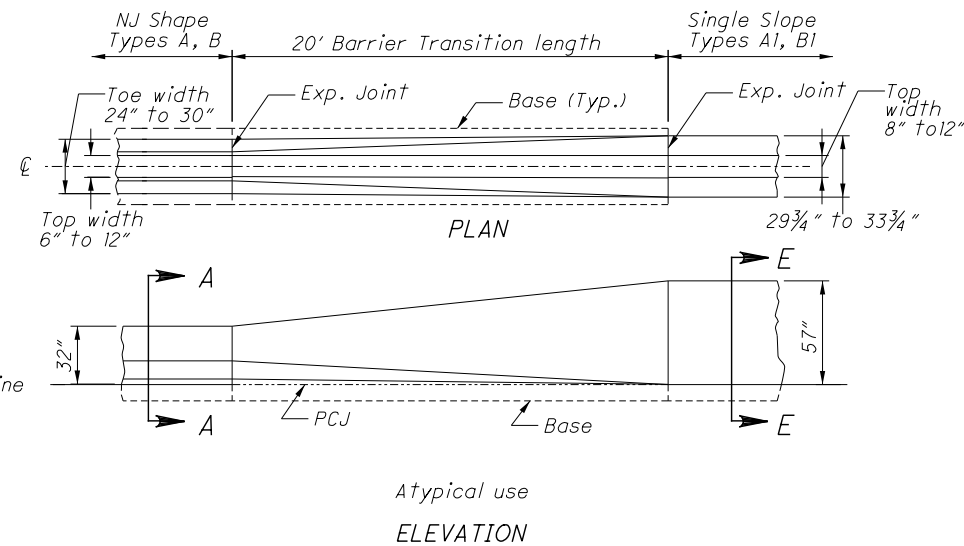


\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\1356701E.dgn 12/14/2016 2:12:25 PM DonHeiman

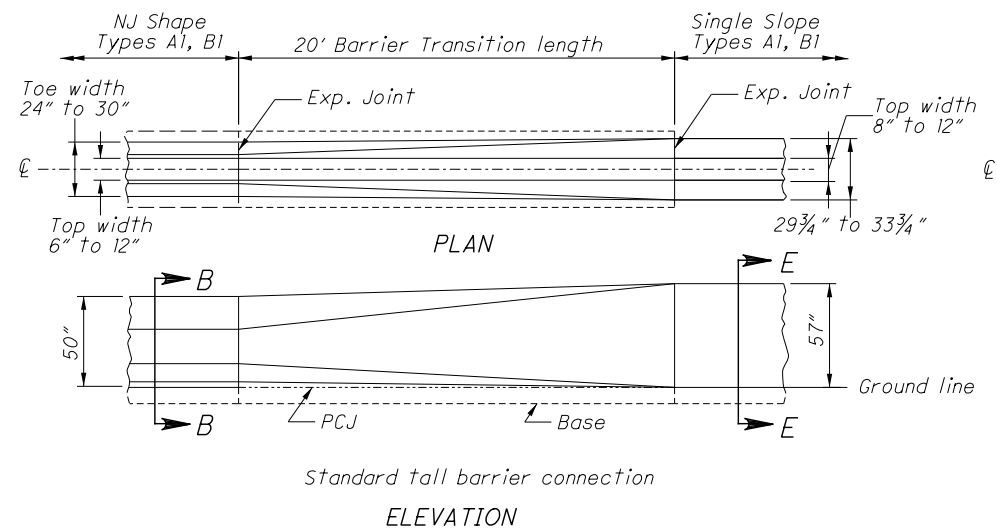
\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Roadway\Sheets\13567\GM001.dgn 12/14/2016 2:13:09 PM DonHelman



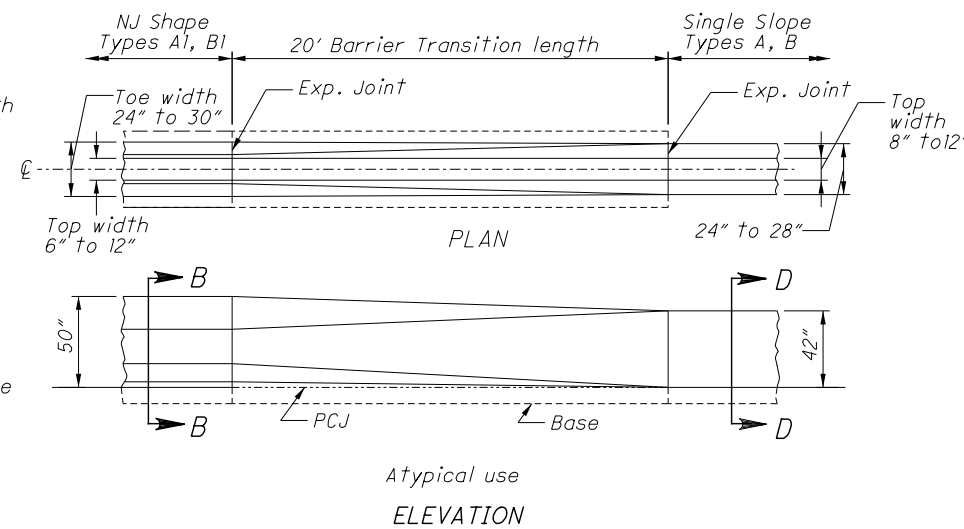
Standard low barrier connection
ELEVATION



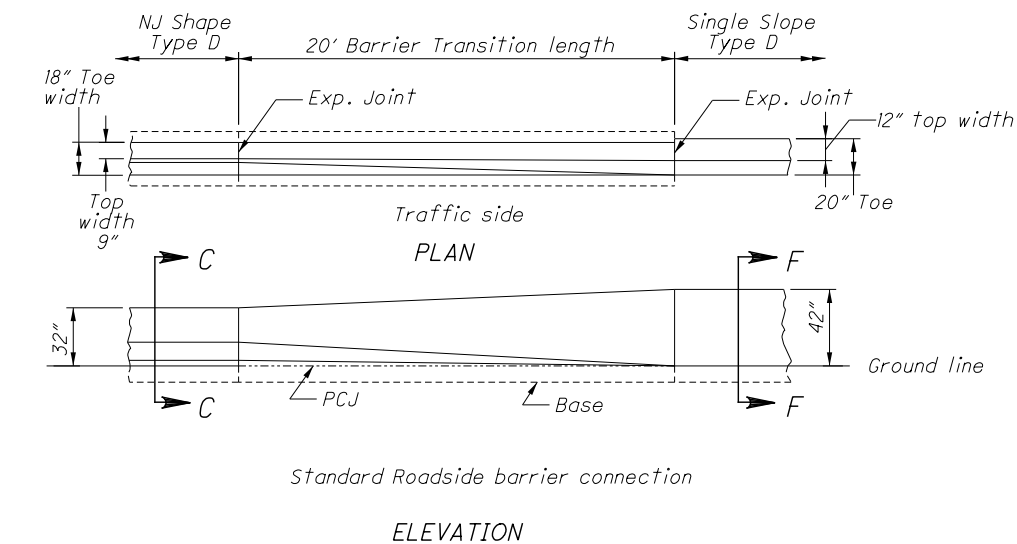
Atypical use
ELEVATION



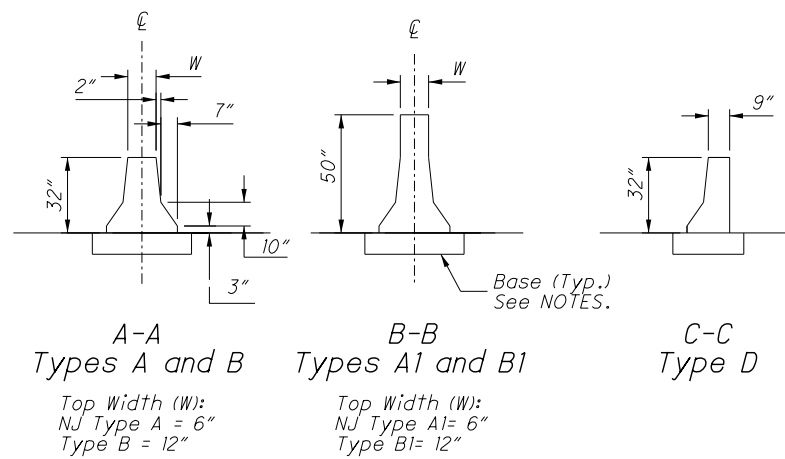
Standard tall barrier connection
ELEVATION



Atypical use
ELEVATION



Standard Roadside barrier connection
ELEVATION



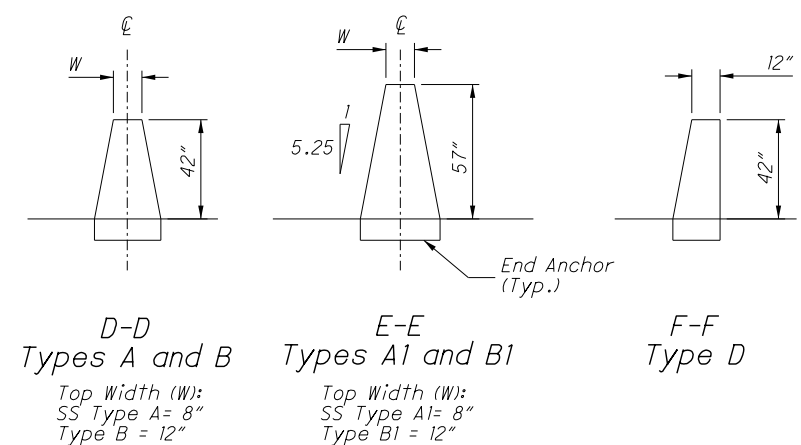
A-A
Types A and B
Top Width (W):
NJ Type A = 6"
Type B = 12"

B-B
Types A1 and B1
Top Width (W):
NJ Type A1 = 6"
Type B1 = 12"

C-C
Type D
Top Width (W):
NJ Type A = 6"
Type B1 = 12"

NJ SHAPE SECTIONS

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



D-D
Types A and B
Top Width (W):
SS Type A = 8"
Type B = 12"

E-E
Types A1 and B1
Top Width (W):
SS Type A1 = 8"
Type B1 = 12"

F-F
Type D
Top Width (W):
SS Type A1 = 8"
Type B1 = 12"

SINGLE SLOPE SECTIONS

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

NOTES

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

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

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

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

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

JOINTS: Construct joints as shown on respective barrier drawings.

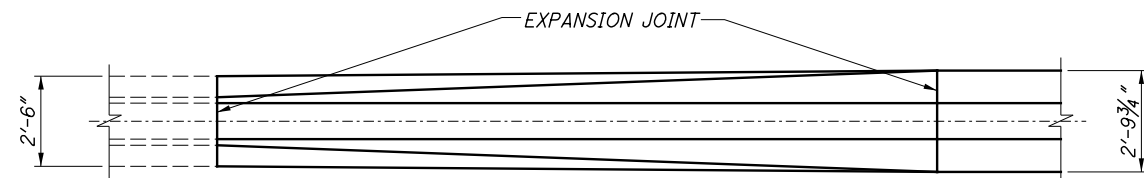
RACEWAYS: When specified, place raceway(s) to match raceway elevation in adjoining segments. Place to obtain maximum concrete cover.

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

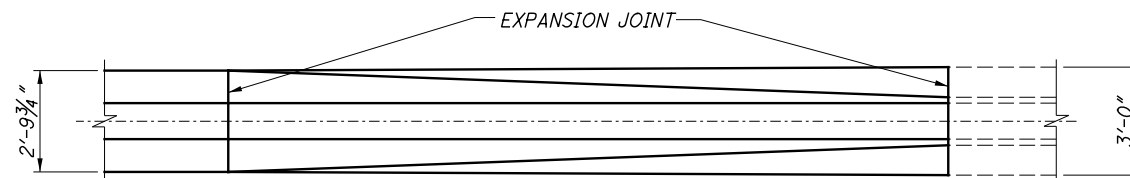
PAYMENT: This Barrier Transition shall include all material and labor needed to construct this 20' section, including any raceways, reinforcing steel, dowels and other necessary incidentals. Payment shall be made at the unit price for Item 622 - Barrier Transition, as per plan No. 1, Each.

REINFORCING STEEL: See sheet 183 for additional details.

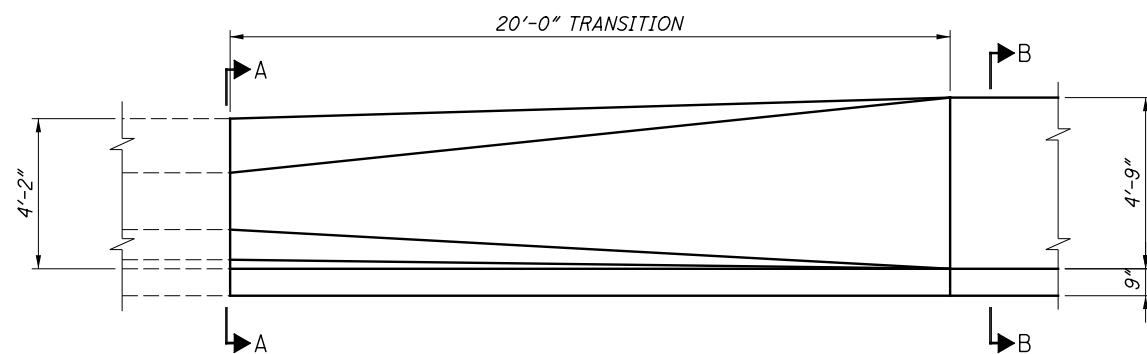
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BARRIER TRANSITION PLAN

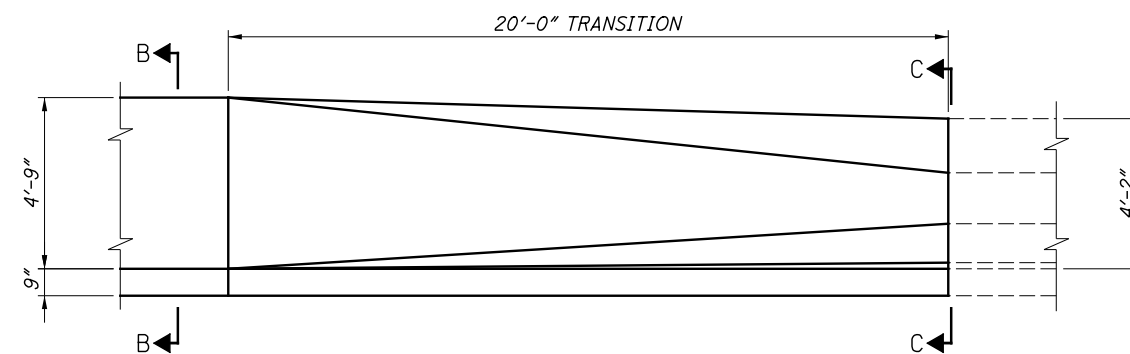


BARRIER TRANSITION PLAN



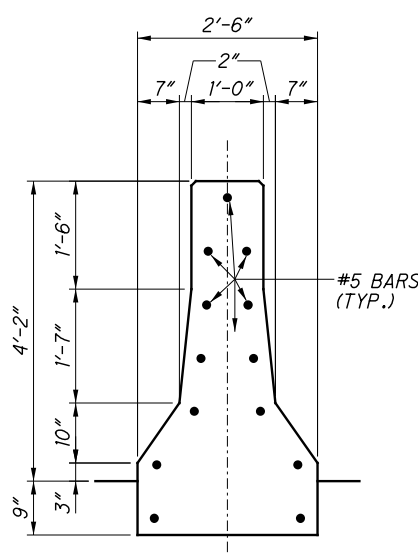
BARRIER TRANSITION ELEVATION

STA. 66+61.24 TO STA. 66+81.24

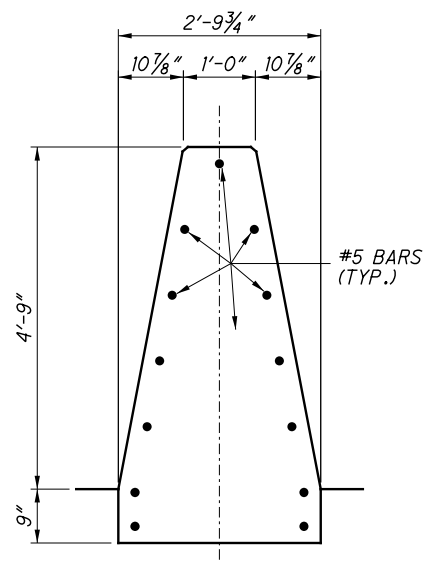


BARRIER TRANSITION ELEVATION

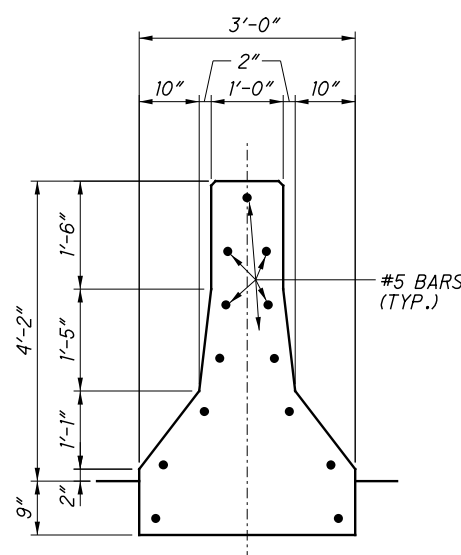
STA. 87+25.09 TO STA. 87+45.09



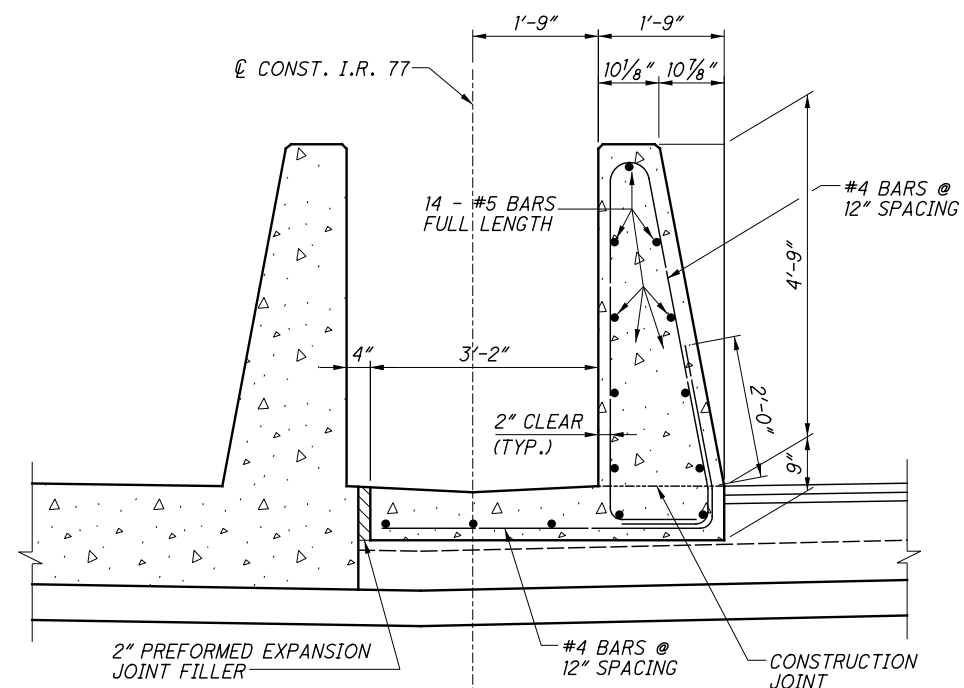
SECTION A-A



SECTION B-B



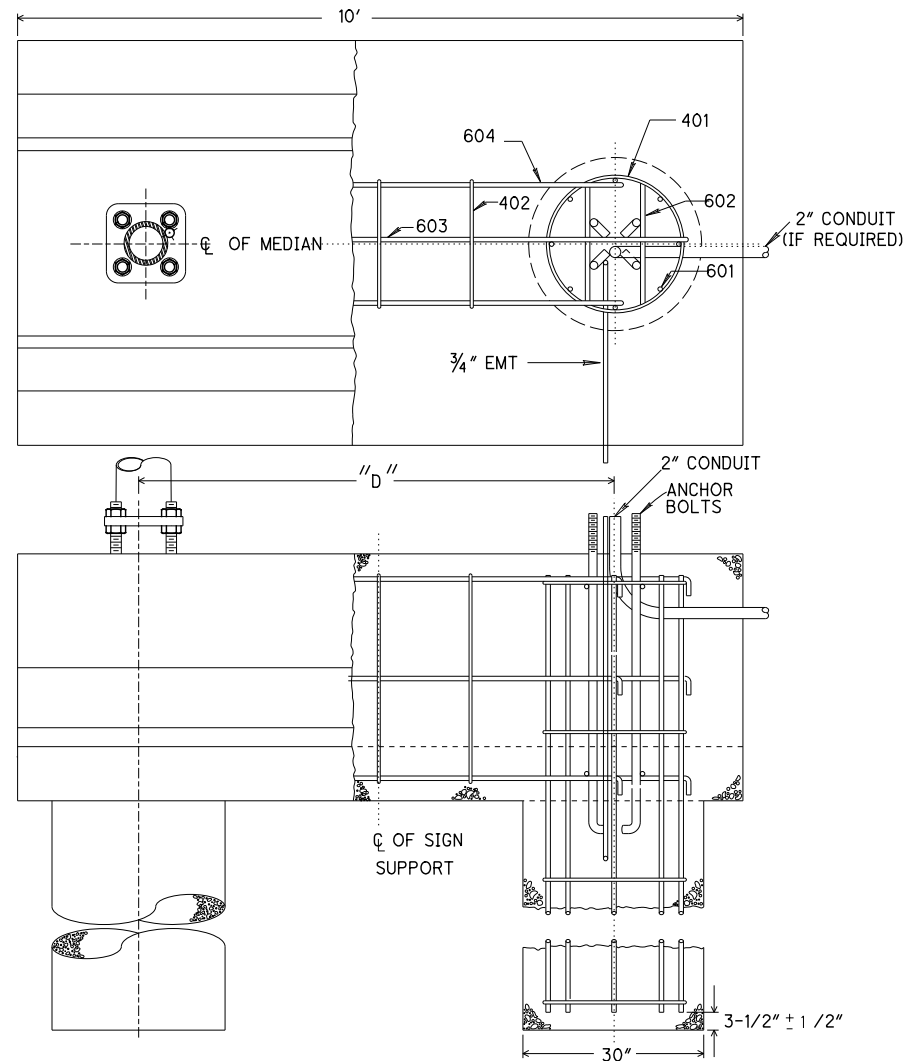
SECTION C-C



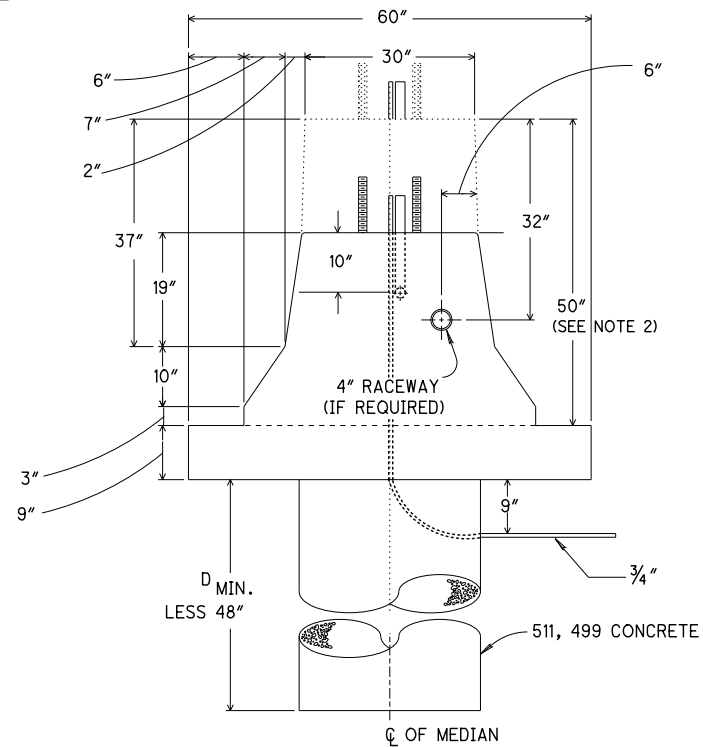
**ITEM 622 - CONCRETE BARRIER, SINGLE SLOPE
TYPE D, AS PER PLAN**

STA. 73+88.44 RT. TO STA. 74+19.94' RT. = 31.50 FT.
STA. 80+35.06 LT. TO STA. 80+66.56 LT. = 31.50 FT.

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SPAN TYPE



NOTES

1. This foundation is intended for use with concrete barrier as detailed in drawing MC-9.3 ON SHEET 185.
2. If a 50" wall is required the reinforcing steel and anchor bolts shall remain in the same position, relative to the top of the wall, as in the 32" (813 mm) wall.
3. Refer to drawings TC-21.10 and TC-32.10 for typical dimensions with the following modifications to the reinforcement schedules:

50" WALL
 MARK 601 LENGTH = D MIN. + 5"
 MARK 603 NUMBER = 4
 MARK 604 NUMBER = 8
 MARK 402 VERTICAL DIMENSION = 52"

4. For information regarding the transition sections of the barrier wall, see drawing MC-9.4 ON SHEET 186.

PAYMENT:

This item shall include the cost to construct the 10 foot median barrier foundation as detailed on this plan sheet where specified in the plans. Payment shall be made at the unit contract bid price per each for Item 630 Concrete barrier median overhead sign support foundation, TC-7.65, As Per Plan and shall include cost for all the labor, equipment materials, and incidentals.

NOTES

JOINTS: Unsealed contraction joints spaced at 20' max. shall be constructed throughout the run of Concrete Barrier except that expansion joints shall be used at the center line of and around each bridge pier column and on either side of overhead sign supports, inlets and light pole foundations. If inter top is slip formed, the expansion joints adjacent to it may be omitted.

Contraction joints may be constructed with metal inserts inside the forms, preformed full width joint filler, a grooving tool, or by sawing. Inserts, tooled or sawed joints shall have a 3" minimum depth. All joints shall be constructed for the full height of the barrier including the base. Sawing shall be done as soon as curing will allow, to prevent spalling.

BASE JOINTS: The vertical walls between the barrier base and a concrete pavement or concrete base shall be provided with a sealed, grooved joint as shown on Std. Const. Dwg. BP-2.1. Sealing material shall conform with CMS 705.04.

P.C.J. = Permissible Construction Joint

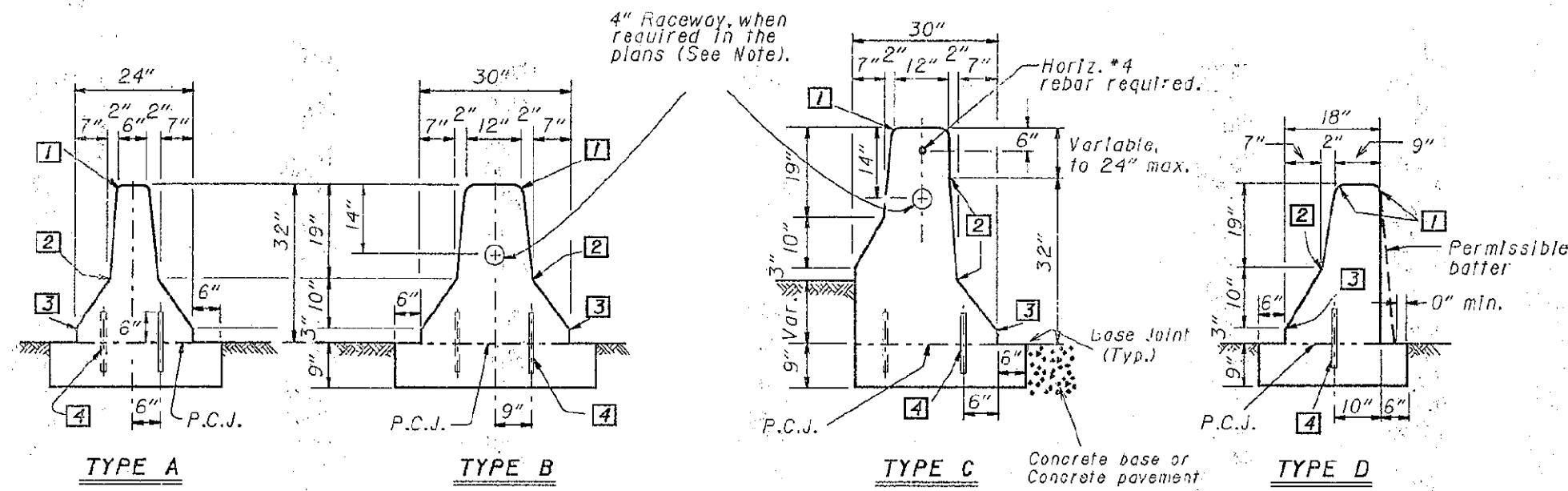
MEASUREMENT: 622 Concrete Barrier, including transitions and pier sections as per Standard Const. Drawing, MC-9.4, is paid for in linear feet as one of the four types (A, B, C or D) or as Type A50 and B50, (for 50" high barrier), with appropriate deductions for other items such as:

604 1-3 Median Inlet	20 Lin. Ft.
625 Light pole foundation or pullbox	2.5 Lin. Ft.
630 Overhead sign support foundation	10 Lin. Ft.
630 Barrier wall assembly	10 Lin. Ft.

50 INCH HIGH BARRIER shall be built in locations specified in the plans. Construct the lower 32" of the barrier and the barrier base using the same dimensions as shown in the corresponding Normal Section. The upper 18" may be constructed integral with the bottom, or separately with No. 4 rebar dowels at 4' foot maximum spacing. Start and end dowels 6" from barrier contraction joints.

RACEWAY: The contractor shall insure that the electrical raceway is clear of internal obstructions. Cost of the 4 inch polyvinyl chloride raceway and No. 10 AWG copper-clad or aluminum-clad wire if needed for future installation of circuits shall be included in the unit cost per linear foot for Item 622, Concrete Barrier.

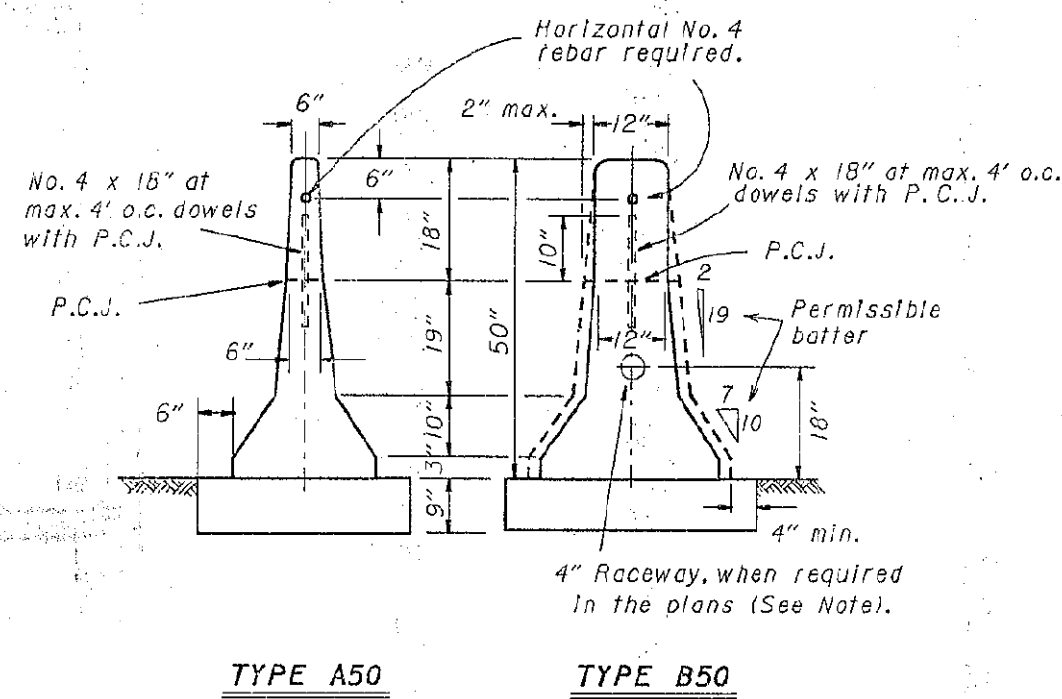
STATION MARKING shall be impressed in the "green" concrete on both sides at the top of the barrier if specified in the plans, which cost shall be incidental to the unit cost per linear foot bid for Item 622, Concrete Barrier.



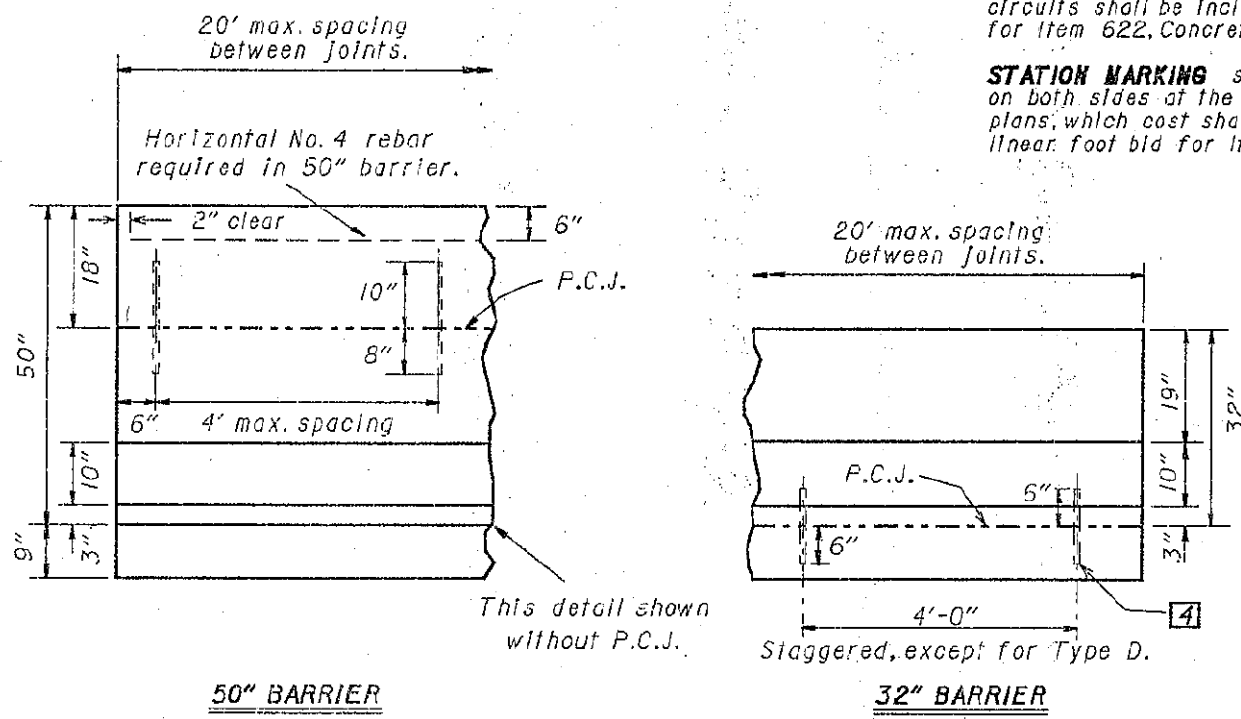
NORMAL SECTIONS

LEGEND

- 1 1" Radius or 3/4" chamfer.
- 2 Permissible 10" radius.
- 3 Permissible 1" radius.
- 4 No. 8 epoxy coated deformed steel bars, 12" long, spaced 4' between successive bars on a staggered (except Type D) pattern. Omit dowels when top is constructed integral with the base.



50" BARRIERS - TYPICAL SECTIONS



BARRIER ELEVATIONS

BUREAU OF LOCATION AND DESIGN OHIO DEPARTMENT OF TRANSPORTATION	
CONCRETE BARRIER	DATE 10-30-92
STANDARD CONSTRUCTION DRAWING	MC-9.3
APPROVED: <i>[Signature]</i> ENGR., L & D	

BARRIER DETAILS

CUY-77-14.35

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NOTE

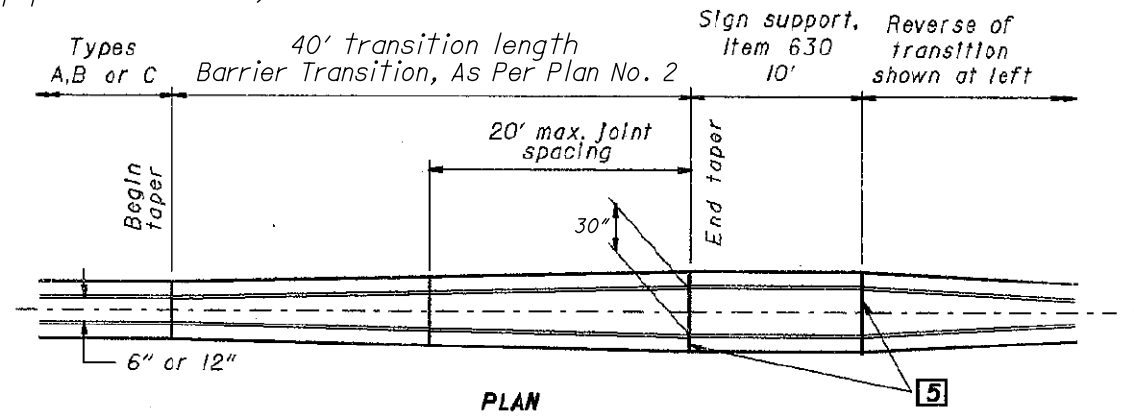
STANDARD BARRIERS: Types A, B, or C concrete barriers shall be constructed as per Std. Const. Drwg. MC-9.3 or as detailed in the plans.

PAYMENT:

This item shall include the cost to construct the 40 foot barrier transition as detailed on this plan sheet and included standard construction drawing MC-9.3 where specified in the plans. Payment shall be made at the unit contract bid price per each for Item 622 Barrier Transition, As Per Plan No. 2 and shall include cost for all the labor, equipment materials, and incidentals.

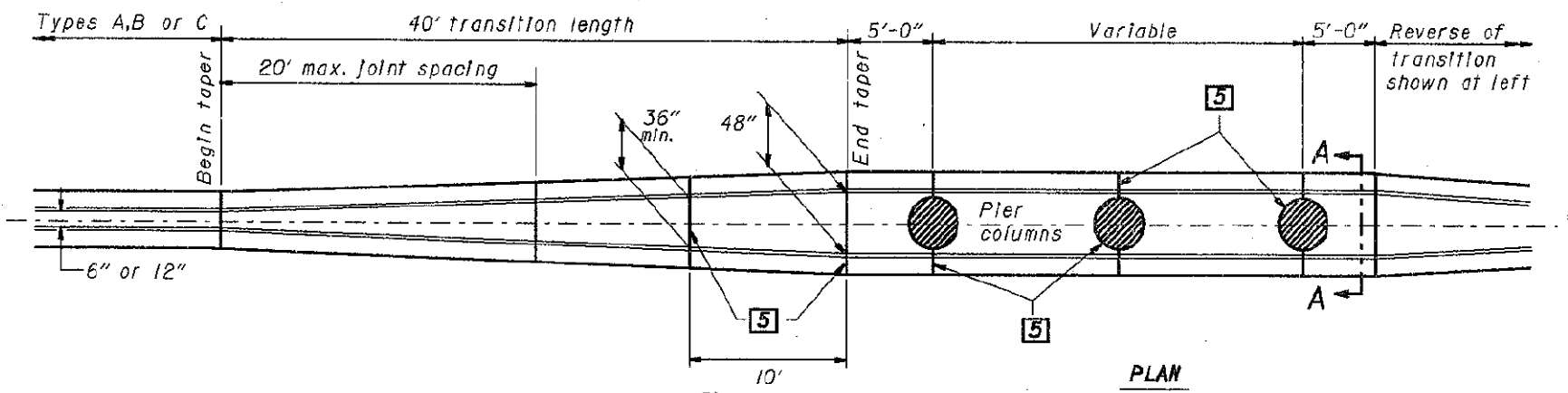
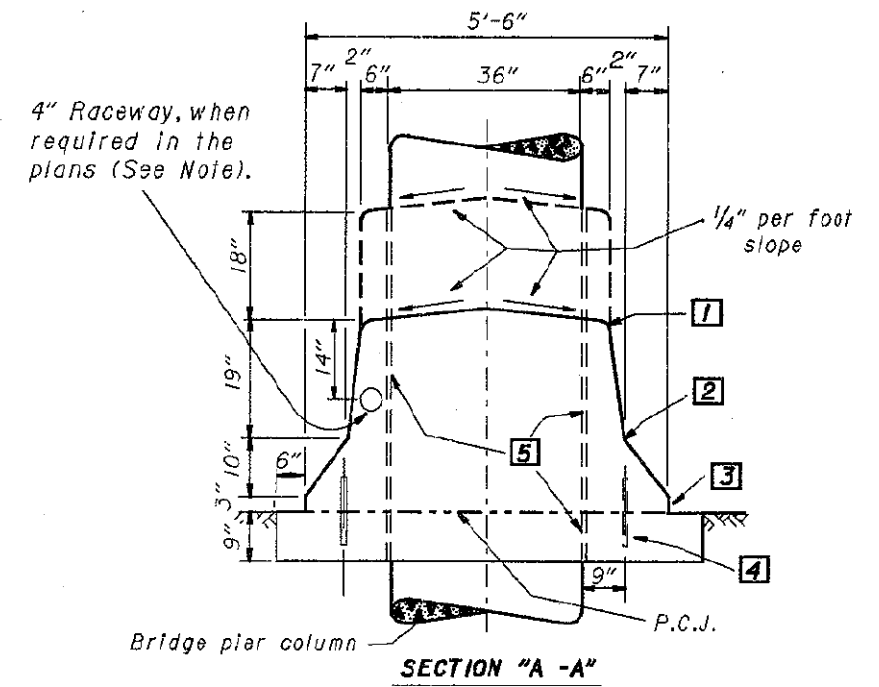
LEGEND

- 1 1" Radius or 3/4" chamfer.
- 2 Permissible 10" radius.
- 3 Permissible 1" radius.
- 4 No. 8 epoxy coated deformed steel bars, 12" long, spaced 2' between successive bars on a staggered (except Type D) pattern. Dowel bars shall begin 4' from the leading edge of the End Terminal. Omit dowels when top 1s constructed integral with the base.
- 5 Expansion joint, 3/4" min. Preformed Filler 705.03.



SIGN SUPPORT TRANSITION

(For 50" barriers, the upper 18" varies from 6" or 12" width to 30" width.)



BRIDGE PIER TRANSITION

(With Sign Support)

BUREAU OF LOCATION AND DESIGN OHIO DEPARTMENT OF TRANSPORTATION	
CONCRETE BARRIER TRANSITIONS	DATE 10-30-92
STANDARD CONSTRUCTION DRAWING	MC-9.4
APPROVED <i>J.K. Hillman</i> ENGR., L & D	

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\13567dd06.dgn 12/14/2016 2:16:58 PM DonHelman



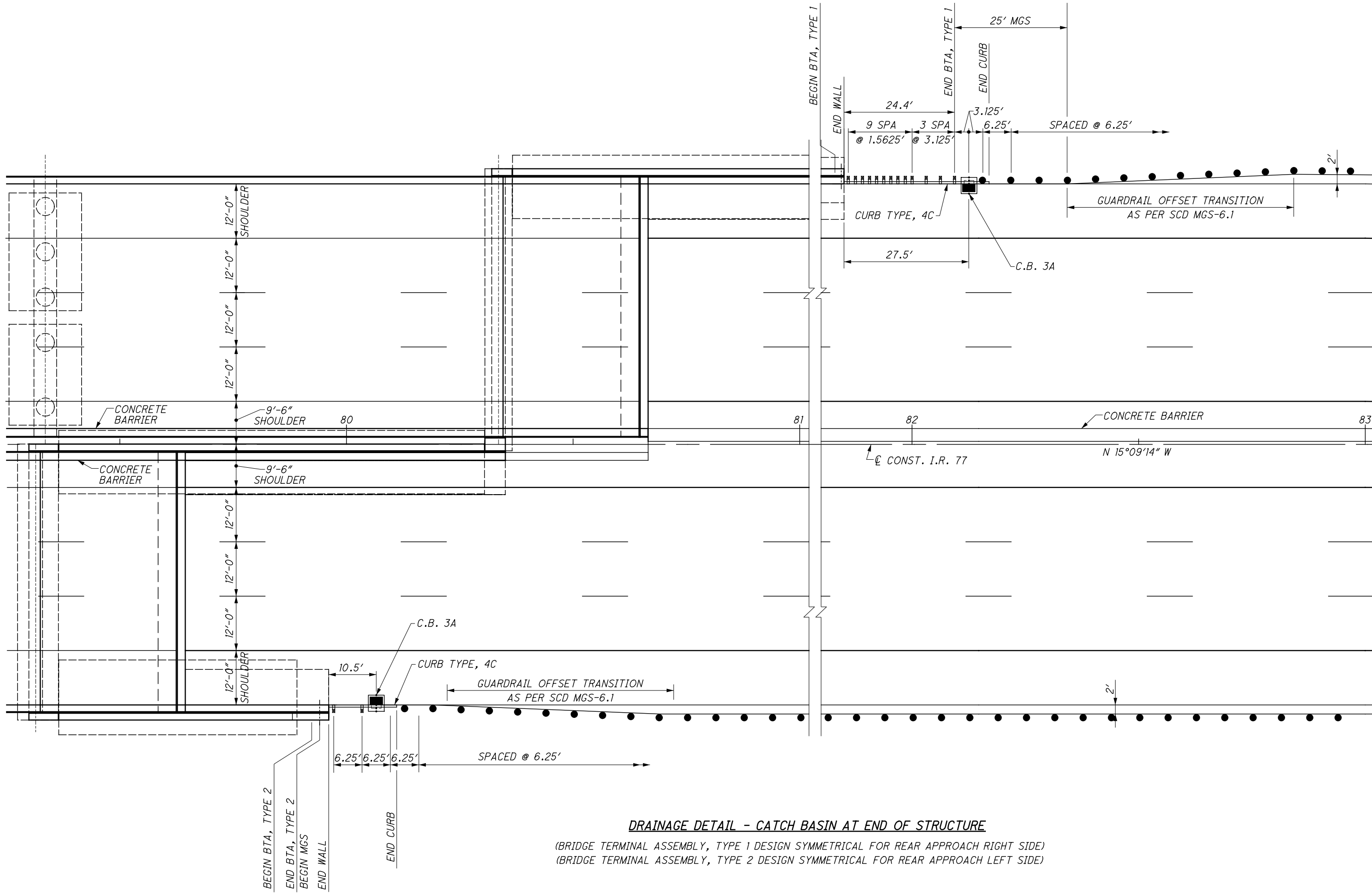
0 5 10 20
HORIZONTAL
SCALE IN FEET

CALCULATED
TJF
CHECKED
MAF

HIGHWAY STRUCTURE END DETAILS

CUY-77-14.35

187
365



DRAINAGE DETAIL - CATCH BASIN AT END OF STRUCTURE

(BRIDGE TERMINAL ASSEMBLY, TYPE 1 DESIGN SYMMETRICAL FOR REAR APPROACH RIGHT SIDE)
(BRIDGE TERMINAL ASSEMBLY, TYPE 2 DESIGN SYMMETRICAL FOR REAR APPROACH LEFT SIDE)

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DRAINAGE LEGEND

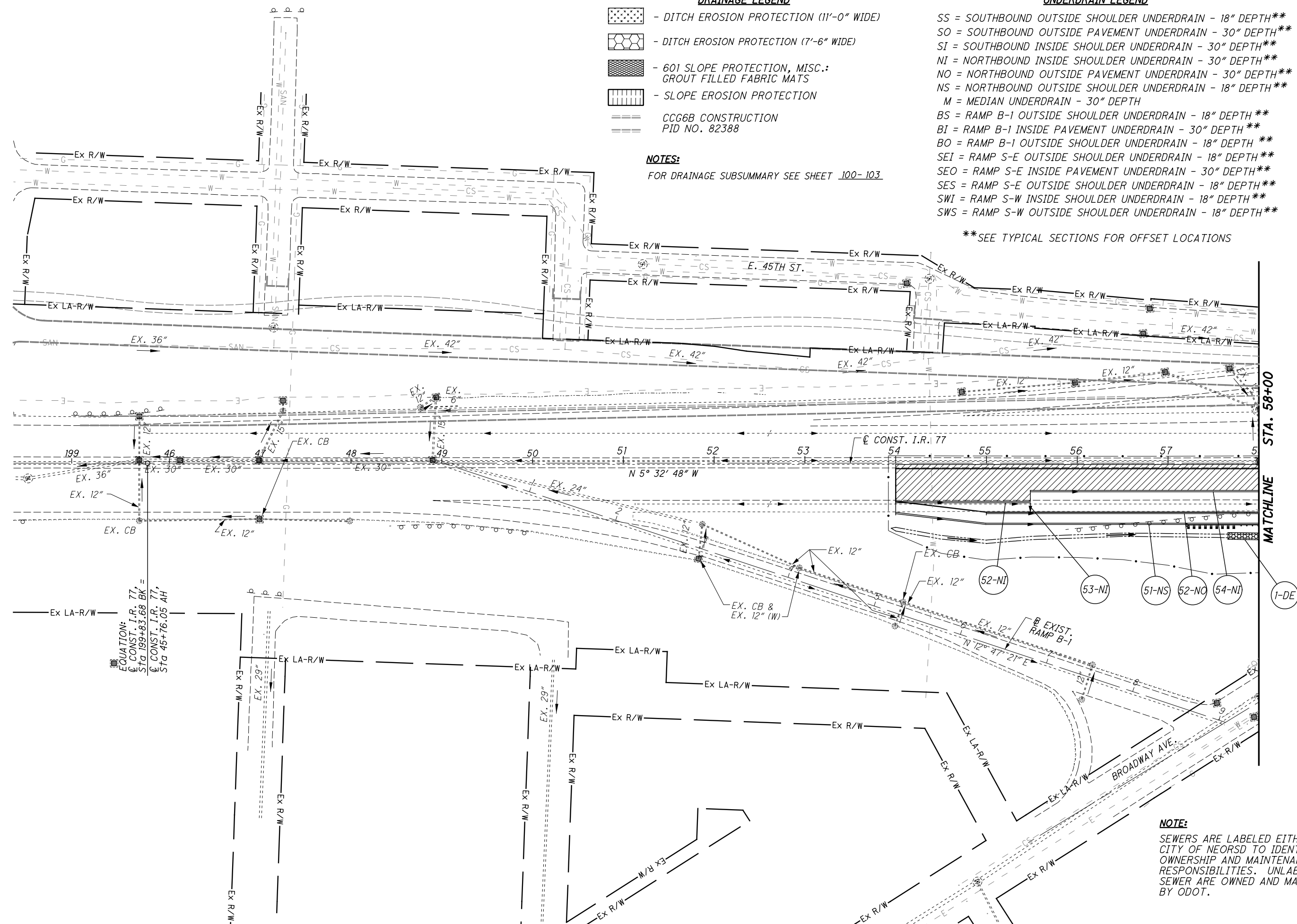
-
-
-
-
-
-

UNDERDRAIN LEGEND

- SS = SOUTHBOUND OUTSIDE SHOULDER UNDERDRAIN - 18" DEPTH**
- SO = SOUTHBOUND OUTSIDE PAVEMENT UNDERDRAIN - 30" DEPTH**
- SI = SOUTHBOUND INSIDE SHOULDER UNDERDRAIN - 30" DEPTH**
- NI = NORTHBOUND INSIDE SHOULDER UNDERDRAIN - 30" DEPTH**
- NO = NORTHBOUND OUTSIDE PAVEMENT UNDERDRAIN - 30" DEPTH**
- NS = NORTHBOUND OUTSIDE SHOULDER UNDERDRAIN - 18" DEPTH**
- M = MEDIAN UNDERDRAIN - 30" DEPTH
- BS = RAMP B-1 OUTSIDE SHOULDER UNDERDRAIN - 18" DEPTH**
- BI = RAMP B-1 INSIDE PAVEMENT UNDERDRAIN - 30" DEPTH**
- BO = RAMP B-1 OUTSIDE SHOULDER UNDERDRAIN - 18" DEPTH**
- SEI = RAMP S-E OUTSIDE SHOULDER UNDERDRAIN - 18" DEPTH**
- SEO = RAMP S-E INSIDE PAVEMENT UNDERDRAIN - 30" DEPTH**
- SES = RAMP S-E OUTSIDE SHOULDER UNDERDRAIN - 18" DEPTH**
- SWI = RAMP S-W INSIDE SHOULDER UNDERDRAIN - 18" DEPTH**
- SWS = RAMP S-W OUTSIDE SHOULDER UNDERDRAIN - 18" DEPTH**

**SEE TYPICAL SECTIONS FOR OFFSET LOCATIONS

NOTES:
FOR DRAINAGE SUBSUMMARY SEE SHEET 100-103



EQUATION:
 Q CONST. I.R. 77,
 Sta 199+83.68 BK =
 Q CONST. I.R. 77,
 Sta 45+76.05 AH

NOTE:
SEWERS ARE LABELED EITHER CITY OF NEORS D TO IDENTIFY OWNERSHIP AND MAINTENANCE RESPONSIBILITIES. UNLABELED SEWER ARE OWNED AND MAINTAINED BY ODOT.



DRAINAGE PLAN
 STA. 199+00 TO STA. 58+00

CUY-77-14.35

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CALCULATED
MAF
CHECKED
DAW

DRAINAGE PLAN STA. 58+00 TO STA. 70+50

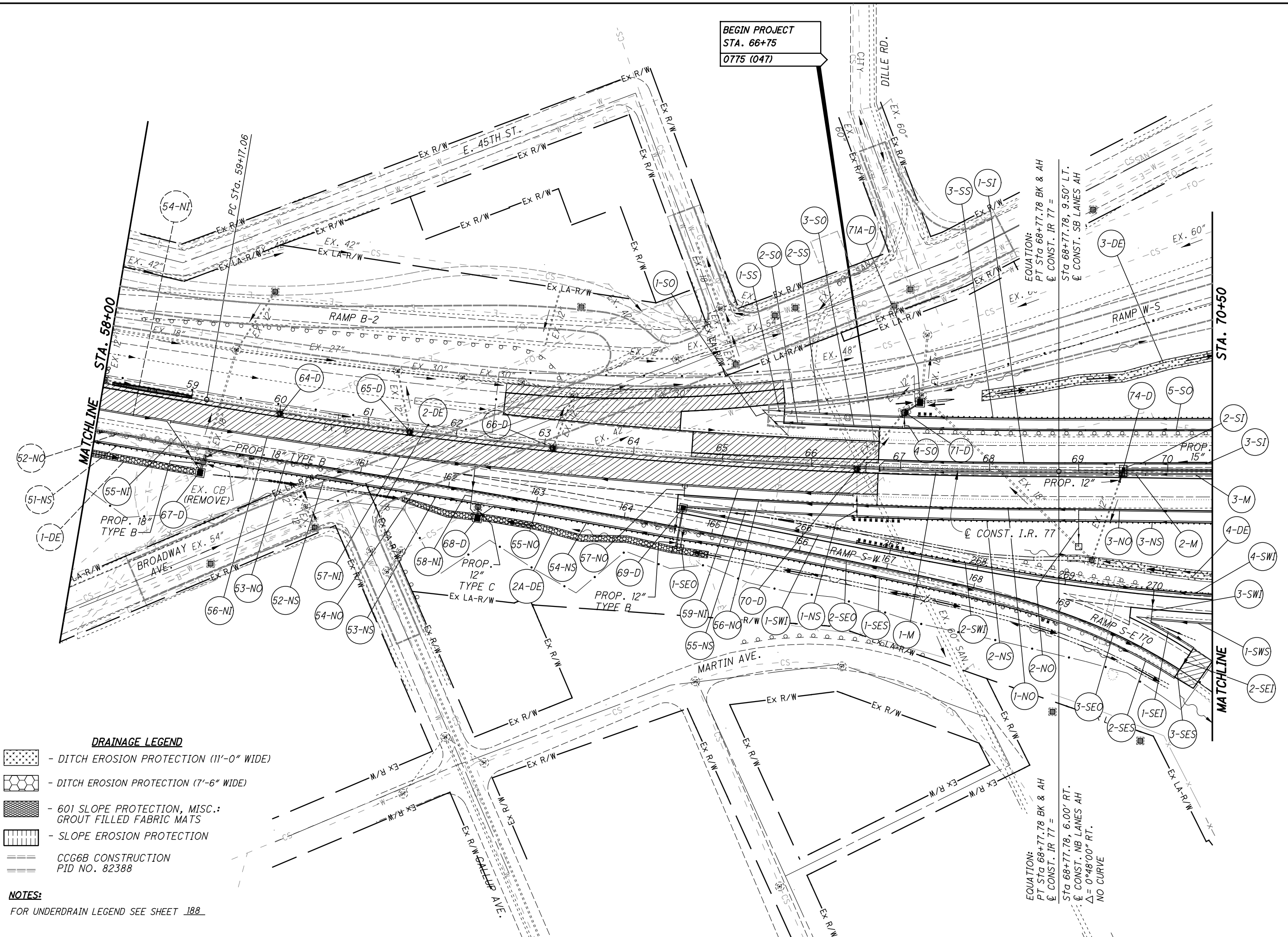
CUY-77-14.35

189
365

BEGIN PROJECT
STA. 66+75
0775 (047)

EQUATION:
PT STA 68+77.78 BK & AH
Q CONST. IR 77 =
Sta 68+77.78, 9.50' LT.
Q CONST. SB LANES AH

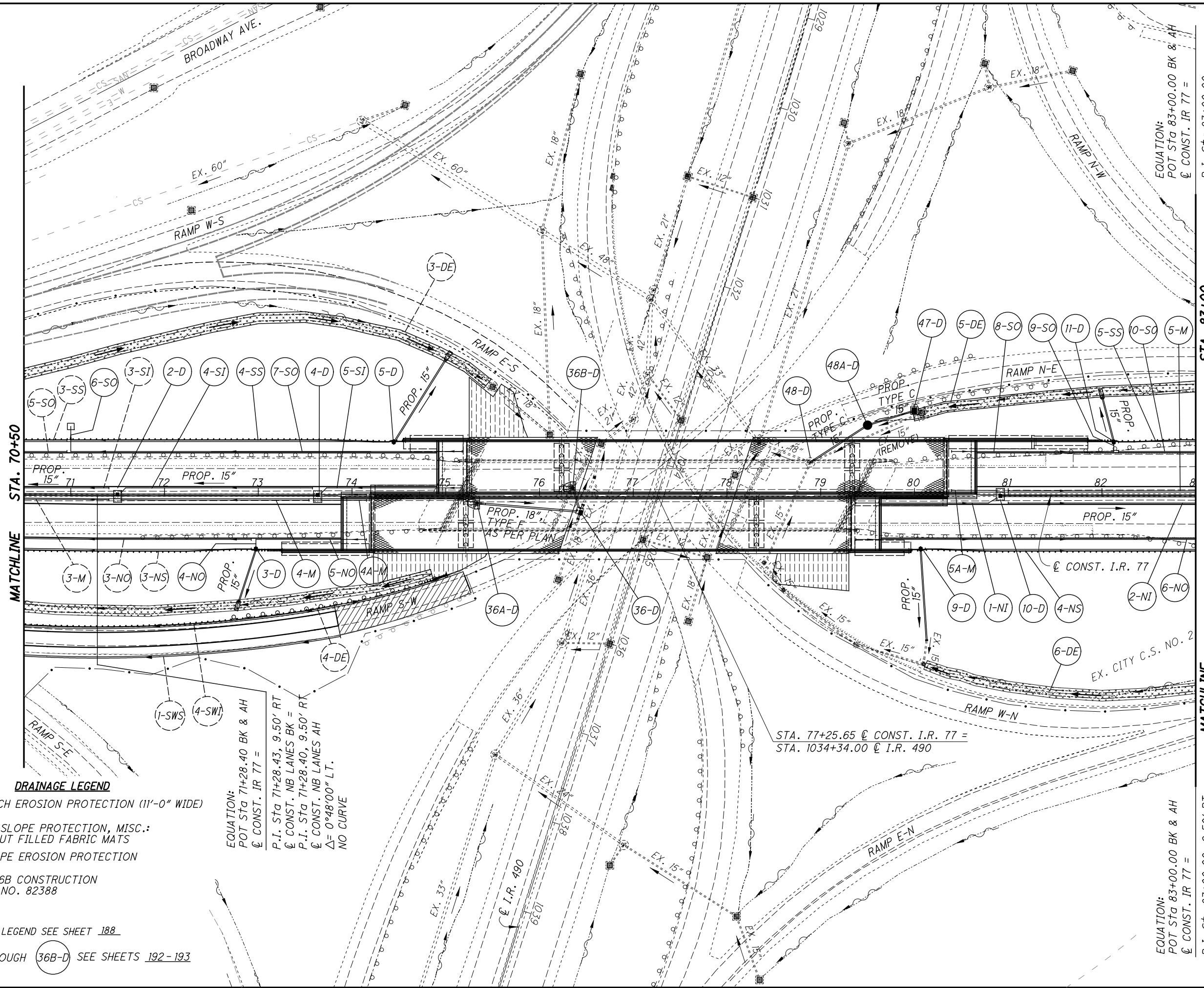
EQUATION:
PT STA 68+77.78 BK & AH
Q CONST. IR 77 =
Sta 68+77.78, 6.00' RT.
Q CONST. NB LANES AH
 $\Delta = 0^{\circ}48'00''$ RT.
NO CURVE



- DRAINAGE LEGEND**
- DITCH EROSION PROTECTION (11'-0" WIDE)
 - DITCH EROSION PROTECTION (7'-6" WIDE)
 - 601 SLOPE PROTECTION, MISC.: GROUT FILLED FABRIC MATS
 - SLOPE EROSION PROTECTION
 - CCG6B CONSTRUCTION PID NO. 82388

NOTES:
FOR UNDERDRAIN LEGEND SEE SHEET 188

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\13567DP002.dgn 12/14/2016 2:20:32 PM DonHelmon



MATCHLINE STA. 70+50

STA. 83+00

MATCHLINE

- DRAINAGE LEGEND**
- DITCH EROSION PROTECTION (11'-0" WIDE)
 - 601 SLOPE PROTECTION, MISC.: GROUT FILLED FABRIC MATS
 - SLOPE EROSION PROTECTION
 - CCG6B CONSTRUCTION
 - PID NO. 82388

EQUATION:
 POT Sta 71+28.40 BK & AH
 & CONST. I.R. 77 =
 P.I. Sta 71+28.43, 9.50' RT
 & CONST. NB LANES BK =
 P.I. Sta 71+28.40, 9.50' RT
 & CONST. NB LANES AH
 Δ = 0°48'00" LT.
 NO CURVE

STA. 77+25.65 & CONST. I.R. 77 =
 STA. 1034+34.00 & I.R. 490

EQUATION:
 POT Sta 83+00.00 BK & AH
 & CONST. I.R. 77 =
 P.I. Sta 83+00.00, 9.50' RT.
 & CONST. NB LANES AH
 Δ = 0°25'47" LT.
 NO CURVE

EQUATION:
 POT Sta 83+00.00 BK & AH
 & CONST. I.R. 77 =
 P.I. Sta 83+00.00,
 9.50' LT.
 & CONST. SB LANES AH
 Δ = 0°25'47" RT.
 NO CURVE

NOTES:
 FOR UNDERDRAIN LEGEND SEE SHEET 188
 FOR (36-D) THROUGH (36B-D) SEE SHEETS 192-193

CALCULATED 0
 MAF 25
 CHECKED 100
 DAW

HORIZONTAL SCALE IN FEET

DRAINAGE PLAN
 STA. 70+50 TO STA. 83+00

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Roadway\Sheets\13567DP003.dgn 12/19/2016 8:22:22 AM DonHelman

EQUATION:
 POT Sta 83+00.00 BK & AH
 @ CONST. IR 77 =

P.I. Sta 83+00.00,
 9.50' LT.
 @ CONST. SB LANES AH
 $\Delta = 0^{\circ}25'47''$ RT.
 NO CURVE

EQUATION:
 POT Sta 85+00.00 BK & AH
 @ CONST. IR 77 =

Sta 85+00.01, 8.00' LT.
 @ CONST. SB LANES BK
 $\Delta = 0^{\circ}25'47''$ LT.
 EX. CITY C.S. NO. 2
 EX. CITY C.S. NO. 7

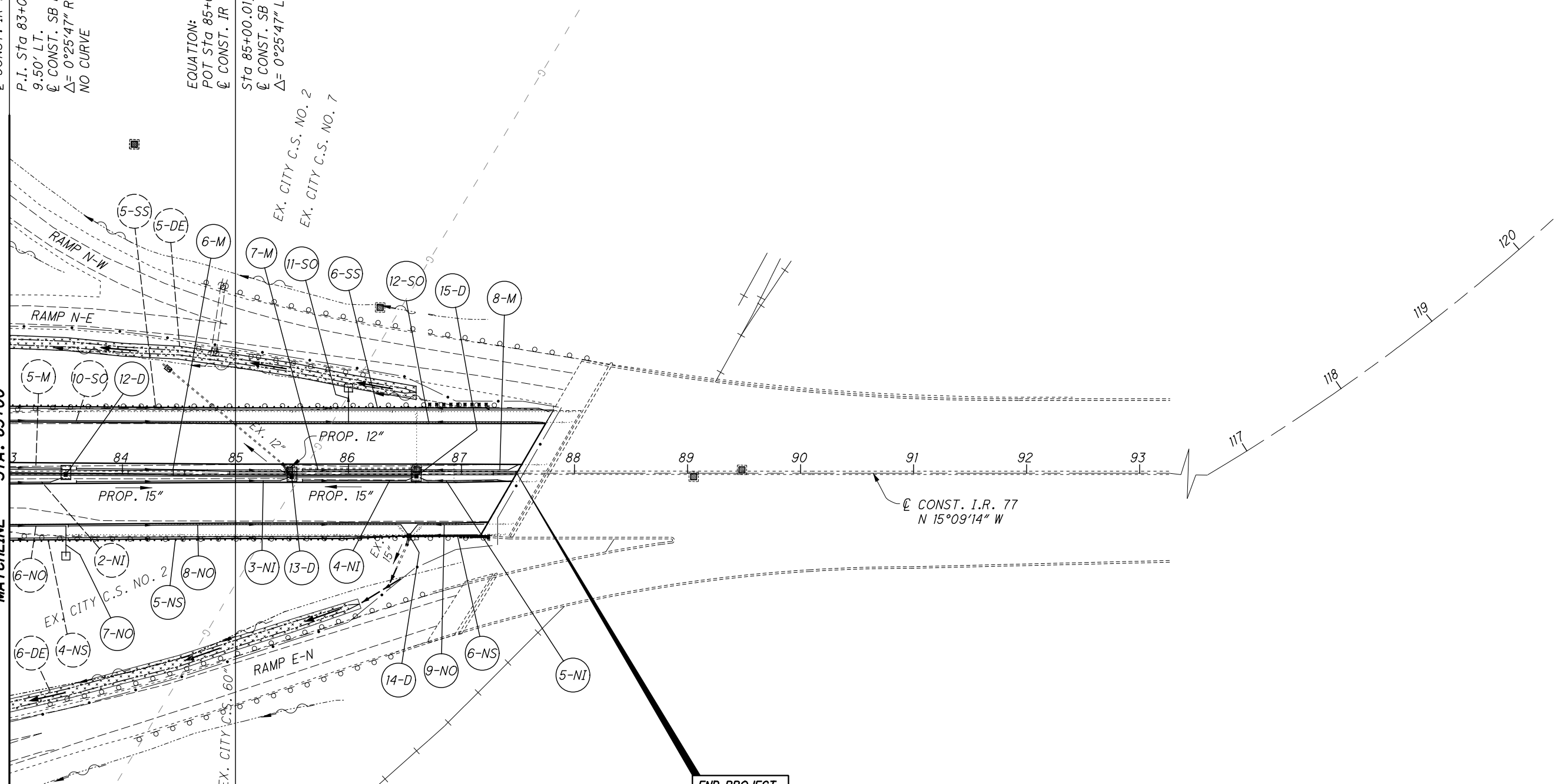
EQUATION:
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 @ CONST. IR 77 =

P.I. Sta 83+00.00, 9.50' RT.
 @ CONST. NB LANES AH
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 NO CURVE

EQUATION:
 POT Sta 85+00.00 BK & AH
 @ CONST. IR 77 =


Sta 85+00.01, 8.00' RT.
 @ CONST. NB LANES BK
 $\Delta = 0^{\circ}25'47''$ RT.

MATCHLINE
 STA. 83+00



END PROJECT
 STA. 87+48.84
 0775 (047)

LEGEND

-  - DITCH EROSION PROTECTION (11'-0" WIDE)
-  - 601 SLOPE PROTECTION, MISC.: GROUT FILLED FABRIC MATS
-  - SLOPE EROSION PROTECTION
-  CCG6B CONSTRUCTION
PID NO. 82388

NOTES:
 FOR UNDERDRAIN LEGEND SEE SHEET 188

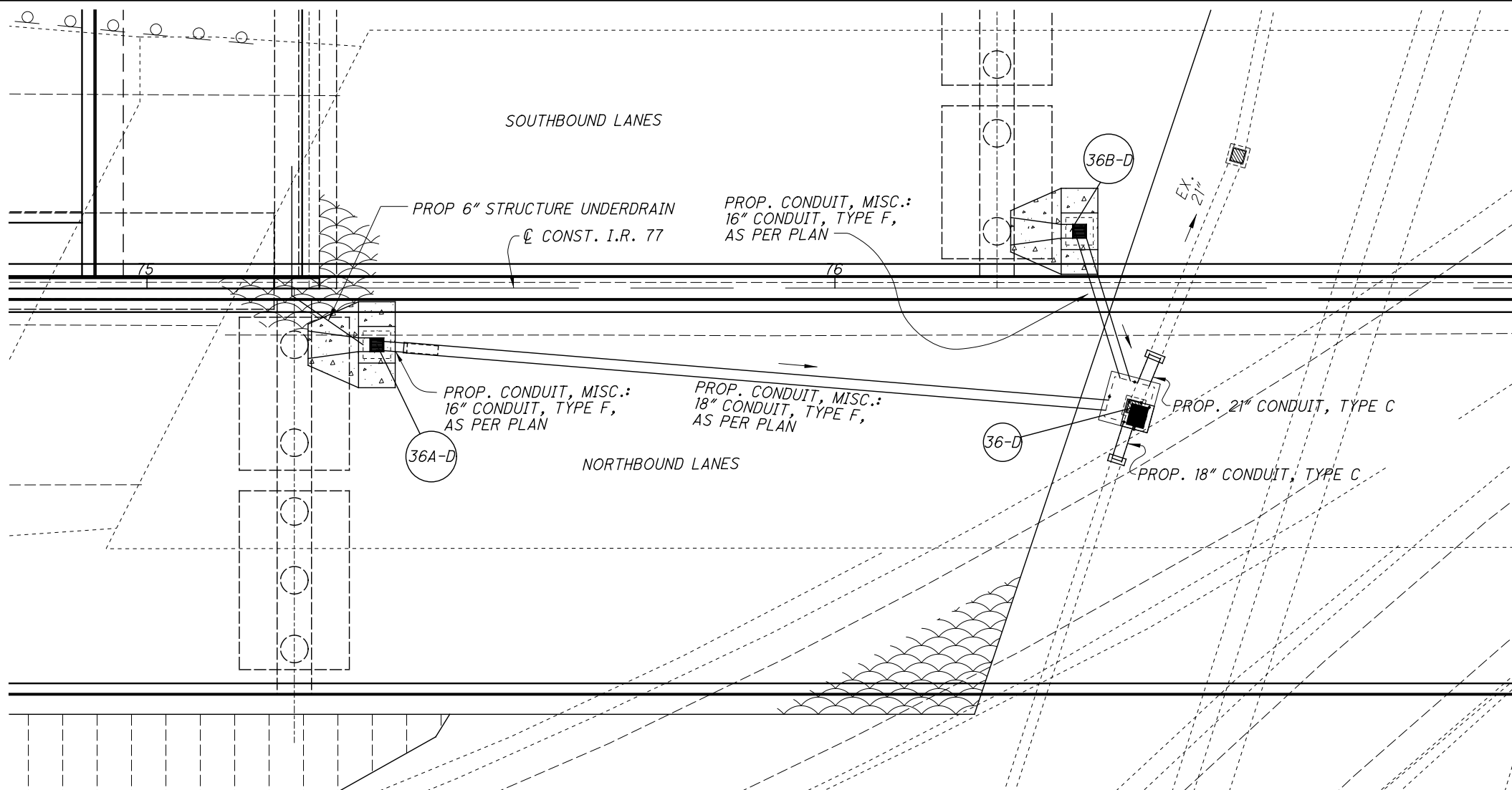
CALCULATED
 MAF
 CHECKED
 DAW

0 50 100
 25
 HORIZONTAL
 SCALE IN FEET

DRAINAGE PLAN
STA. 83+00 TO STA. 93+00

CUY-77-14.35

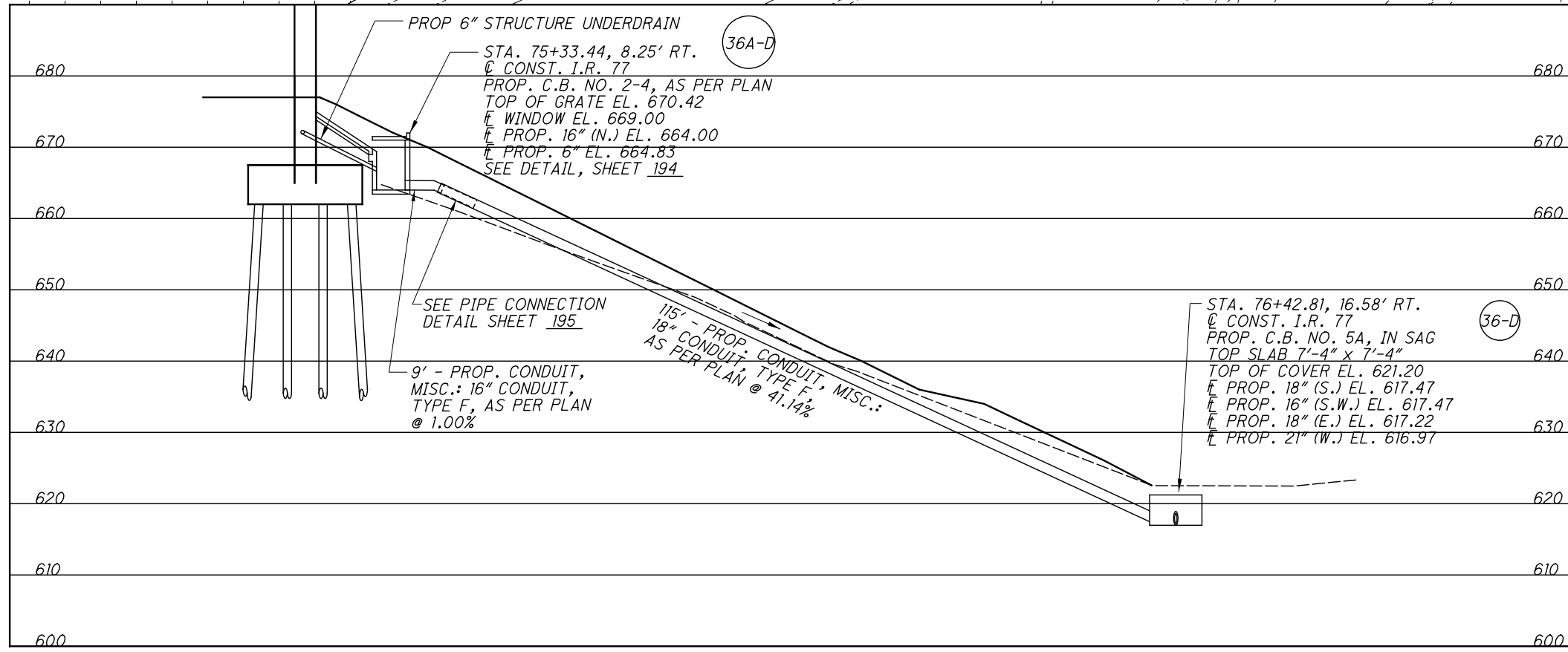
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CROSS REFERENCES	
123-125	PLAN & PROFILE
194-195	DRAINAGE DETAILS



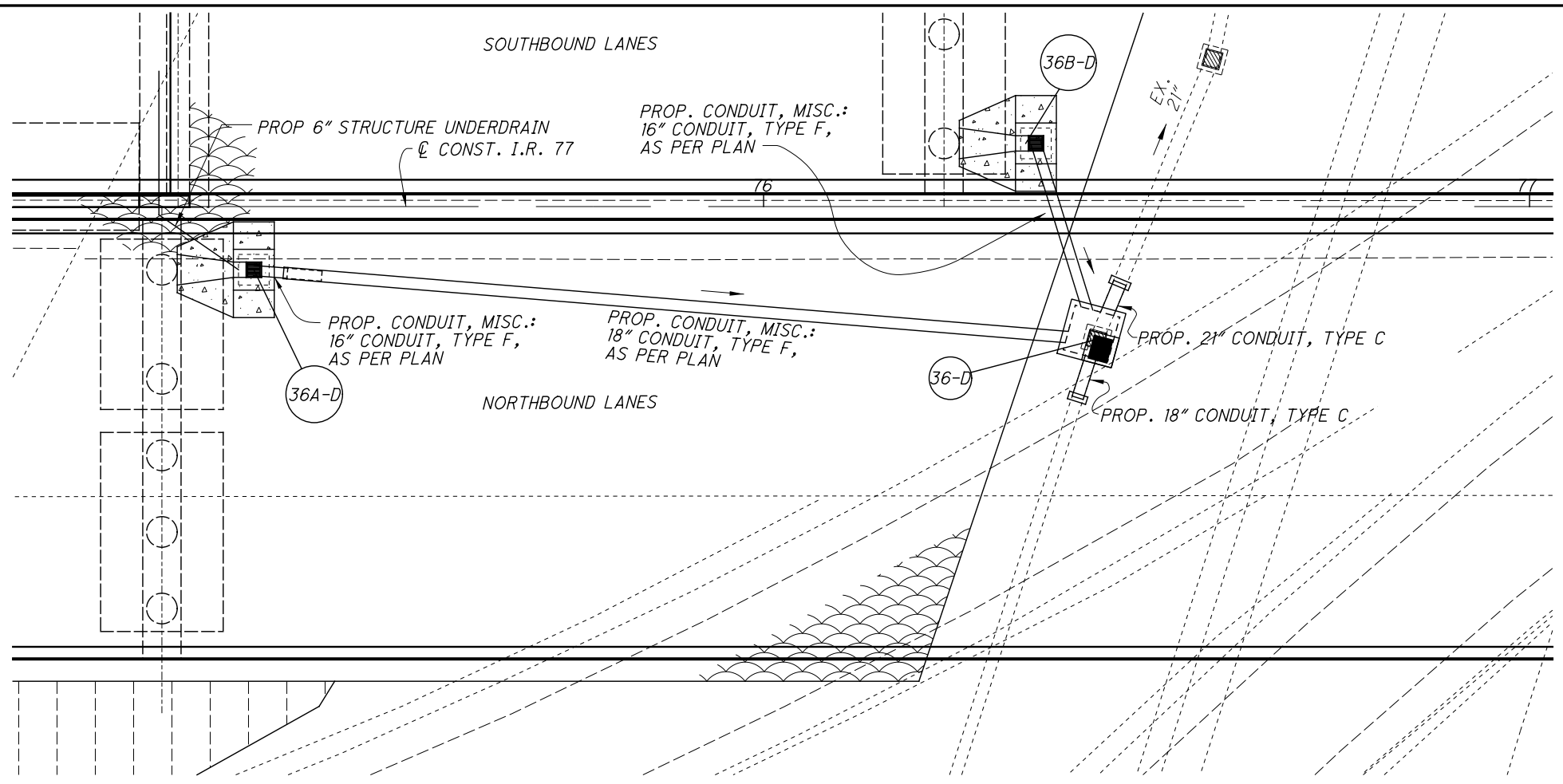
- LEGEND**
- 601 SLOPE PROTECTION, MISC.: GROUT FILLED FABRIC MATS
 - SLOPE EROSION PROTECTION



STORM SEWER PROFILES

CUY-77-14.35

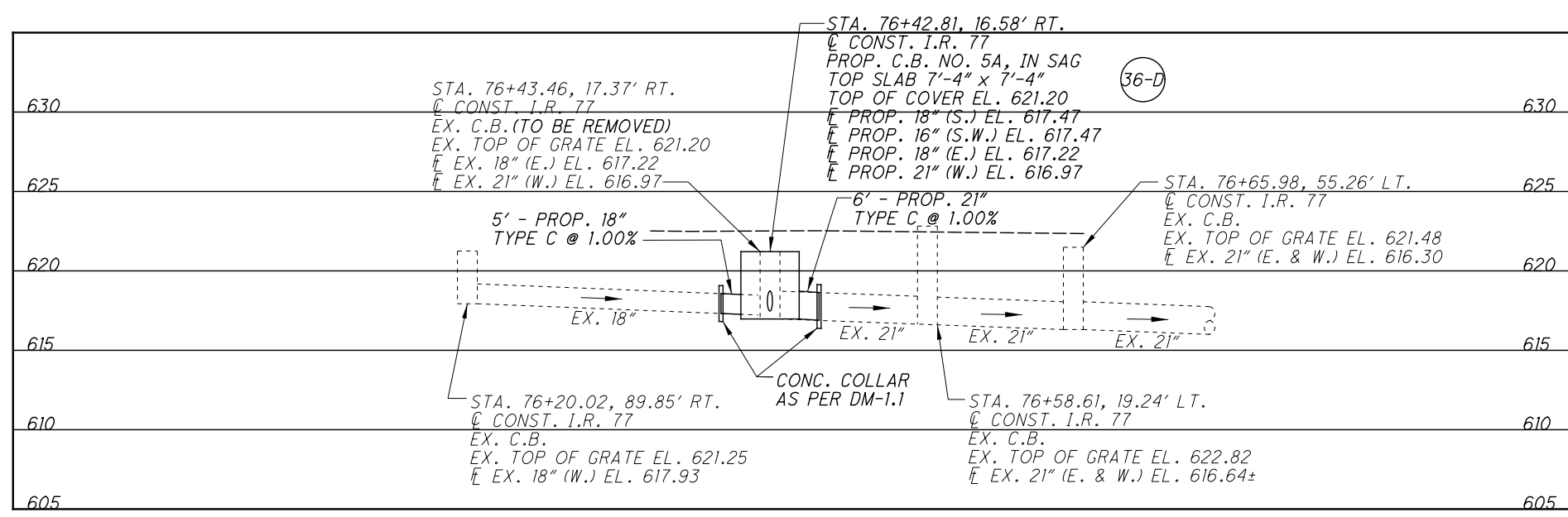
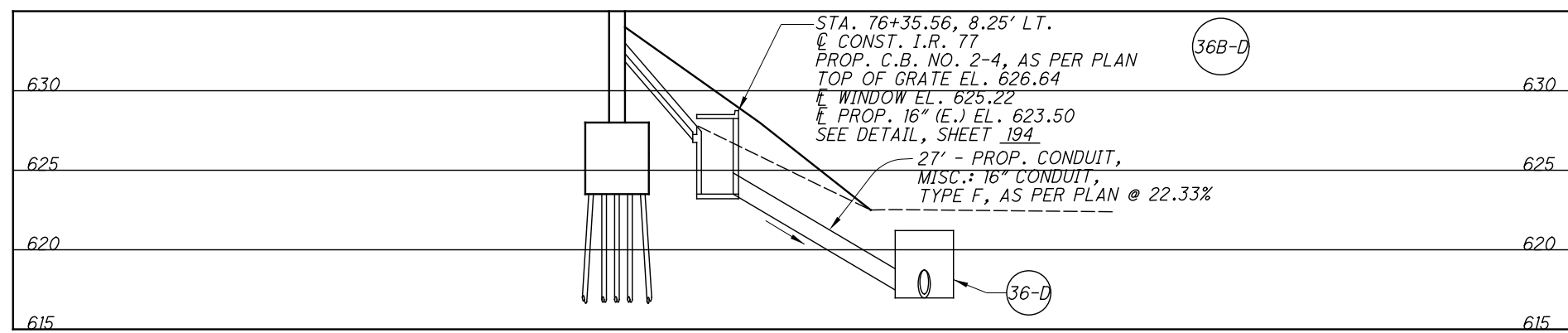
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CROSS REFERENCES	
123-125	PLAN & PROFILE
194-195	DRAINAGE DETAILS

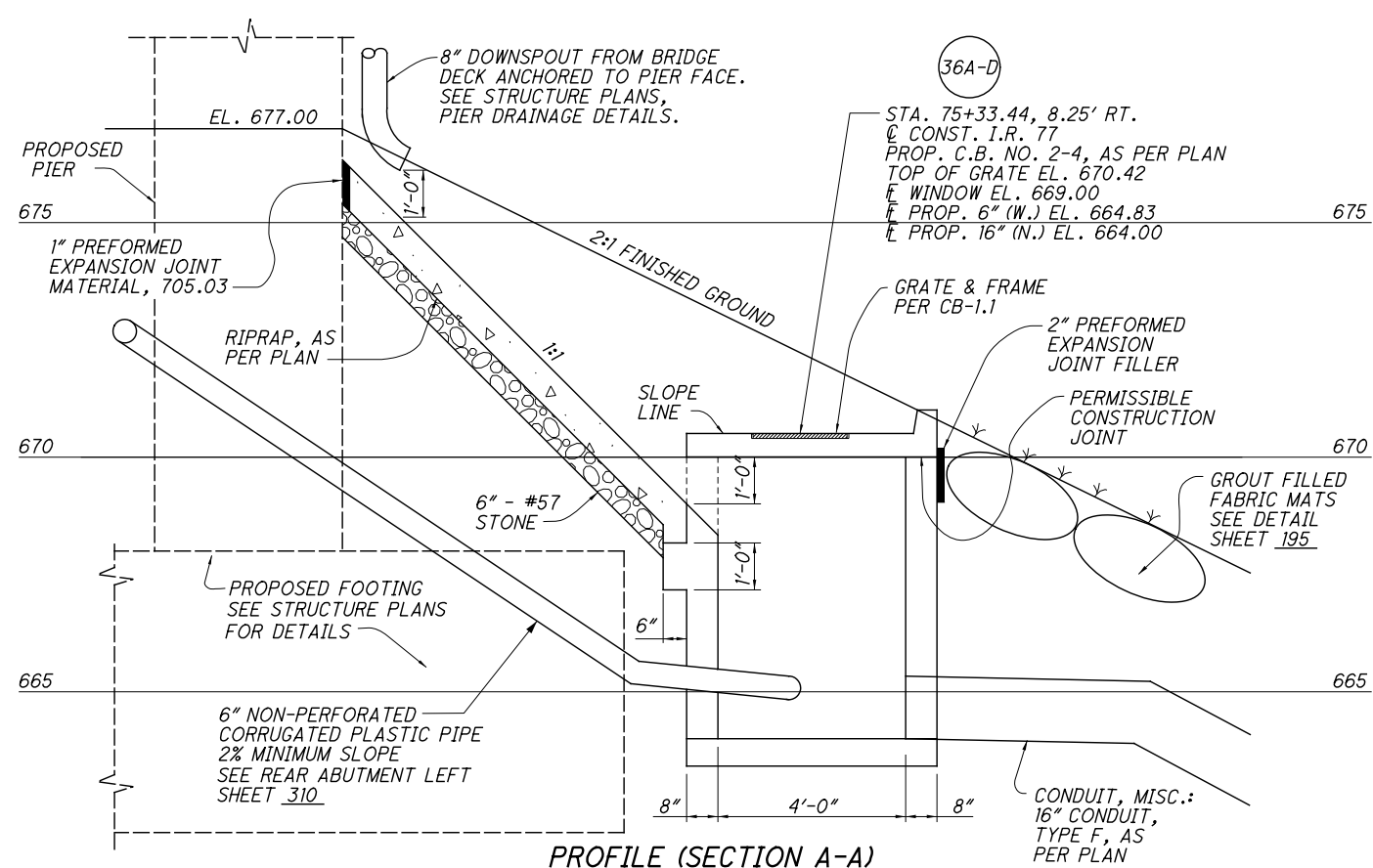


- LEGEND**
- 601 SLOPE PROTECTION, MISC.: GROUT FILLED FABRIC MATS
 - SLOPE EROSION PROTECTION

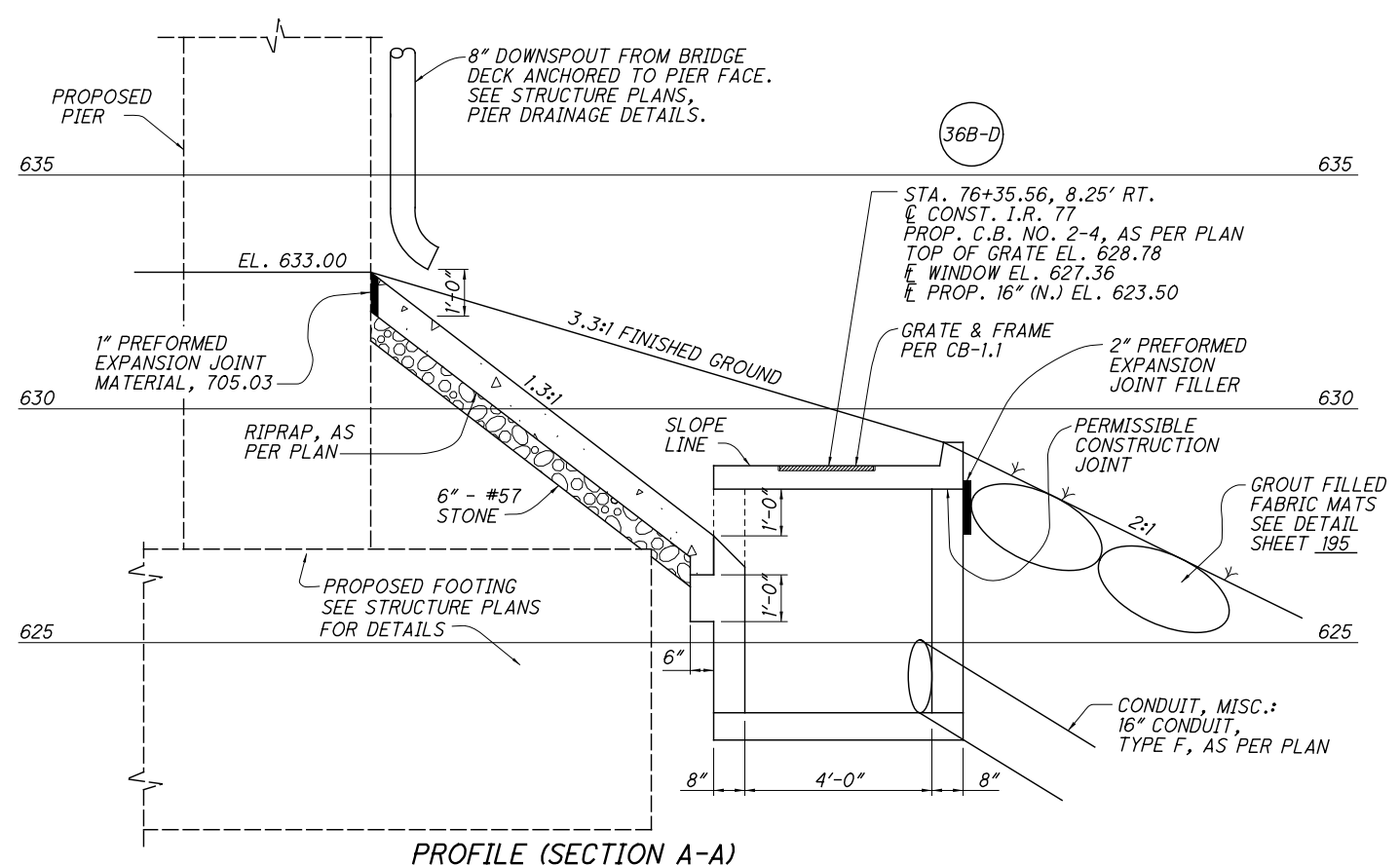


STORM SEWER PROFILES

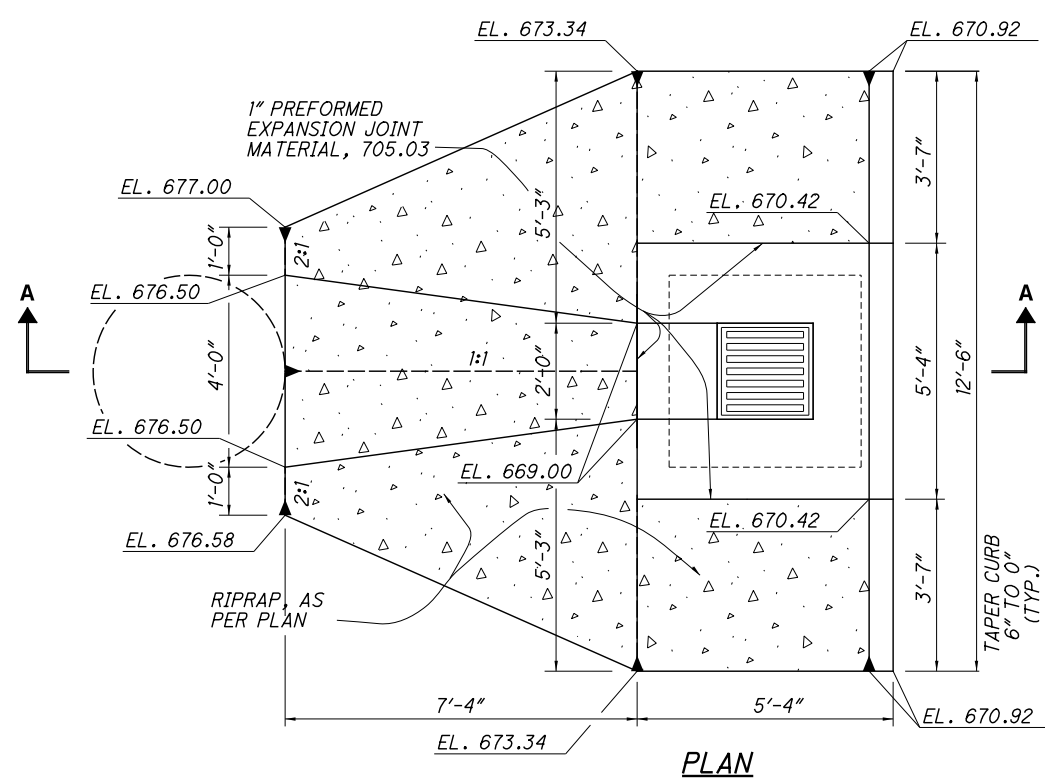
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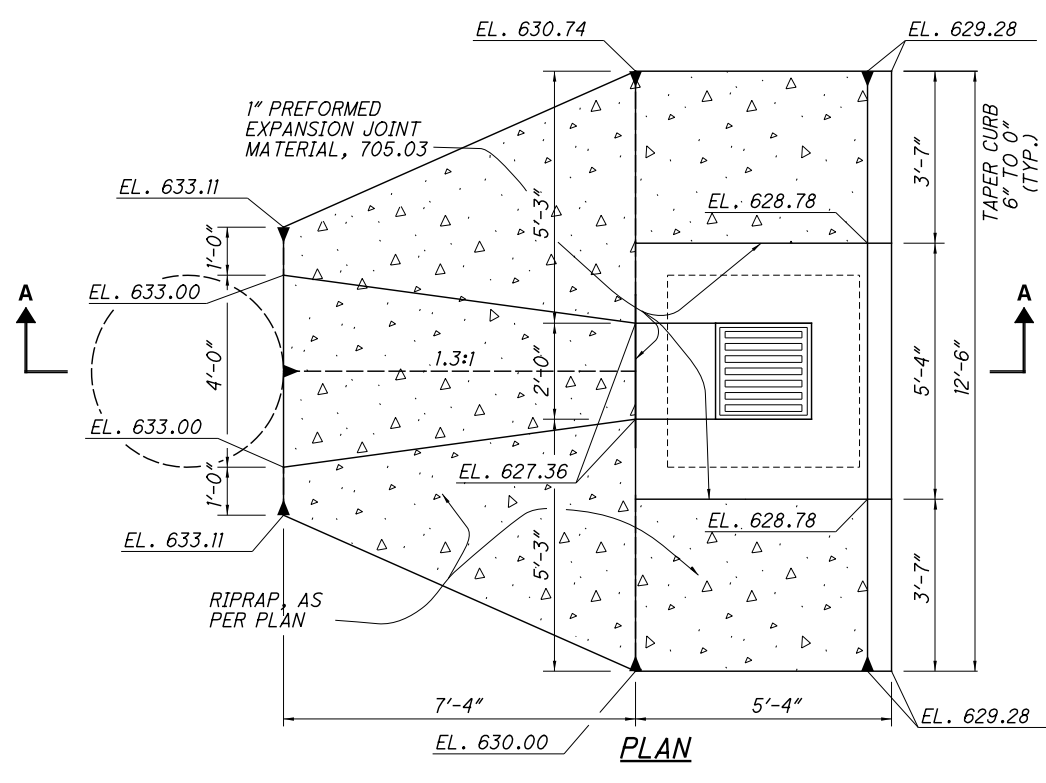
PROFILE (SECTION A-A)



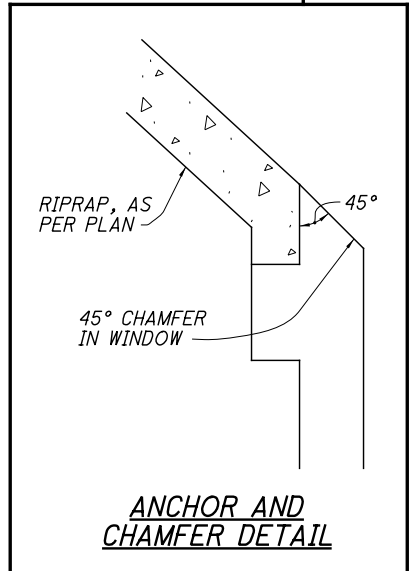
PROFILE (SECTION A-A)



PLAN



PLAN



ANCHOR AND CHAMFER DETAIL

SCUPPER OUTLET TO OFFSET CATCH BASIN, NO. 2-4, AS PER PLAN 36A-D

THE CATCH BASIN, CONCRETE APRON, EXPANSION JOINT MATERIAL, AND 6" - #57 STONE SHALL BE INCLUDED FOR PAYMENT IN ITEM 604 - CATCH BASIN, NO. 2-4, AS PER PLAN

ITEM 601, RIPRAP, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF CONSTRUCTION AND MATERIAL SPECIFICATION 601.04, THE FOLLOWING SHALL APPLY:

1. THE SLAB THICKNESS SHALL BE 8" MINIMUM.
2. THE REINFORCING SHALL BE NO. 5 BARS ON 12" CENTERS IN TWO DIRECTIONS. WIRE MESH REINFORCING SHALL NOT BE ALLOWED.

ITEM 604, CATCH BASIN, NO. 2-4, AS PER PLAN

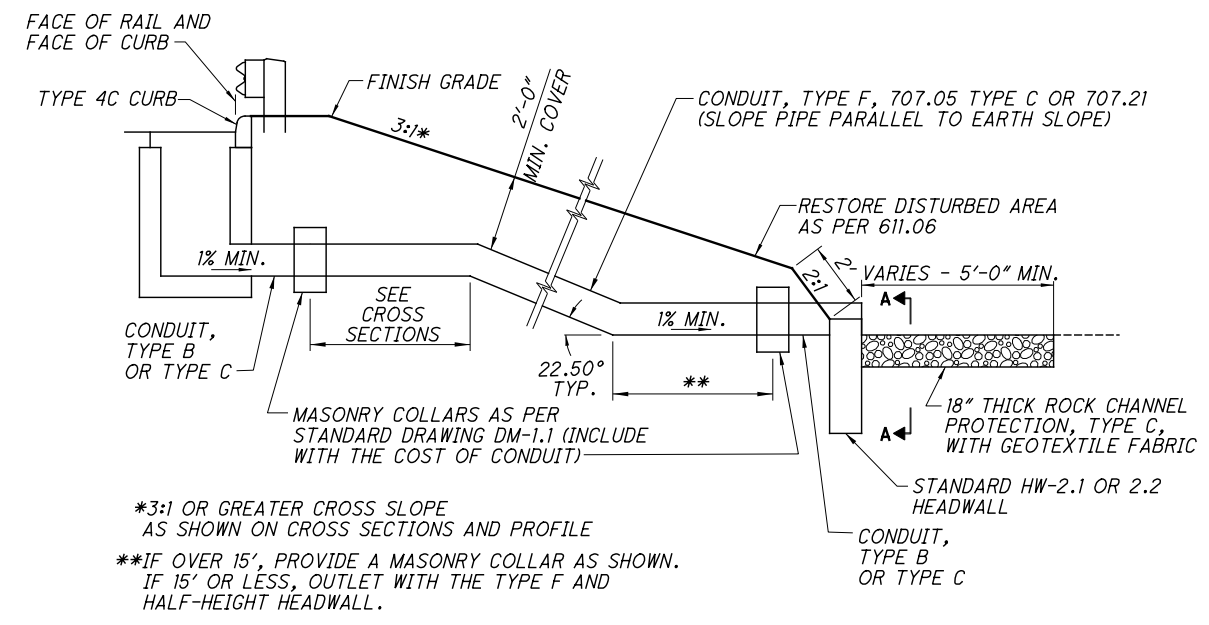
IN ADDITION TO THE DETAILS SHOWN ON STANDARD CONSTRUCTION DRAWING CB-1.2 THE FOLLOWING SHALL APPLY:

1. A TYPE 6 CURB SHALL BE CAST INTEGRALLY INTO THE TOP OF THE CATCH BASIN.
2. A 12" WINDOW HEIGHT SHALL BE USED IN LIEU OF A 6" SIDE WINDOW.
3. THE MINIMUM WALL THICKNESS, WHETHER CAST IN PLACE OR PRECAST, SHALL BE 8".
4. THE 6" WIDE BY 12" HIGH RIPRAP SEAT SHALL BE CAST INTEGRALLY WITH THE WALLS.

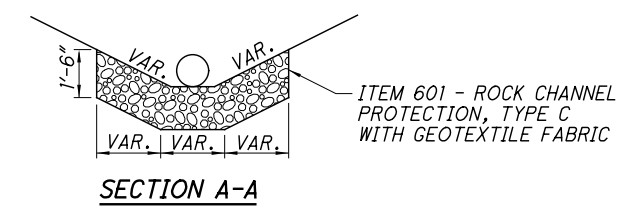
SCUPPER OUTLET TO OFFSET CATCH BASIN, NO. 2-4, AS PER PLAN 36B-D

THE CATCH BASIN, CONCRETE APRON, EXPANSION JOINT MATERIAL, AND 6" - #57 STONE SHALL BE INCLUDED FOR PAYMENT IN ITEM 604 - CATCH BASIN, NO. 2-4, AS PER PLAN

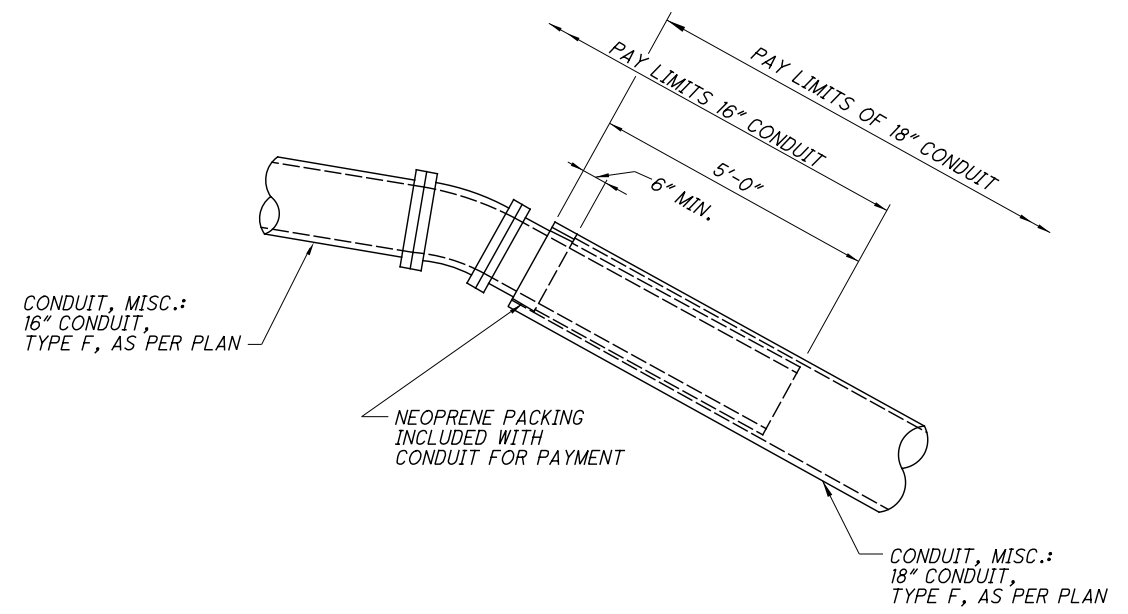
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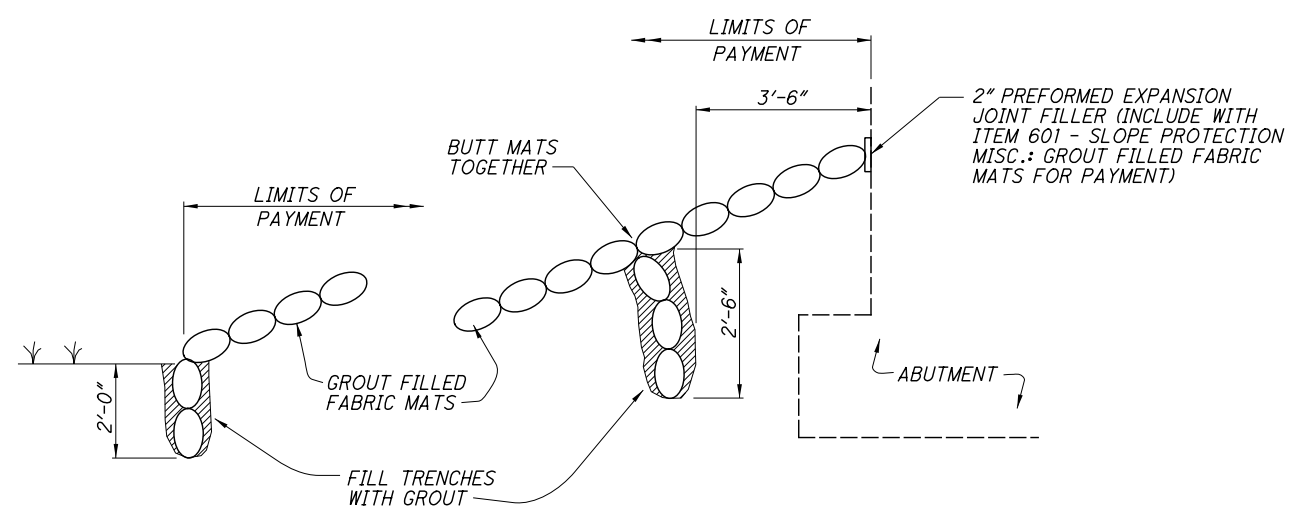
*3:1 OR GREATER CROSS SLOPE AS SHOWN ON CROSS SECTIONS AND PROFILE
 **IF OVER 15', PROVIDE A MASONRY COLLAR AS SHOWN. IF 15' OR LESS, OUTLET WITH THE TYPE F AND HALF-HEIGHT HEADWALL.



STORM SEWER OUTLET DETAIL UNDER AN EMBANKMENT SLOPE OF 3:1 OR GREATER
 N.T.S.



PIPE CONNECTION DETAIL
 NOT TO SCALE

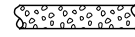


GROUT FILLED FABRIC MATS DETAIL
 SEE SHEET 21 FOR ADDITIONAL INFORMATION

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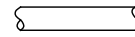
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LEGEND

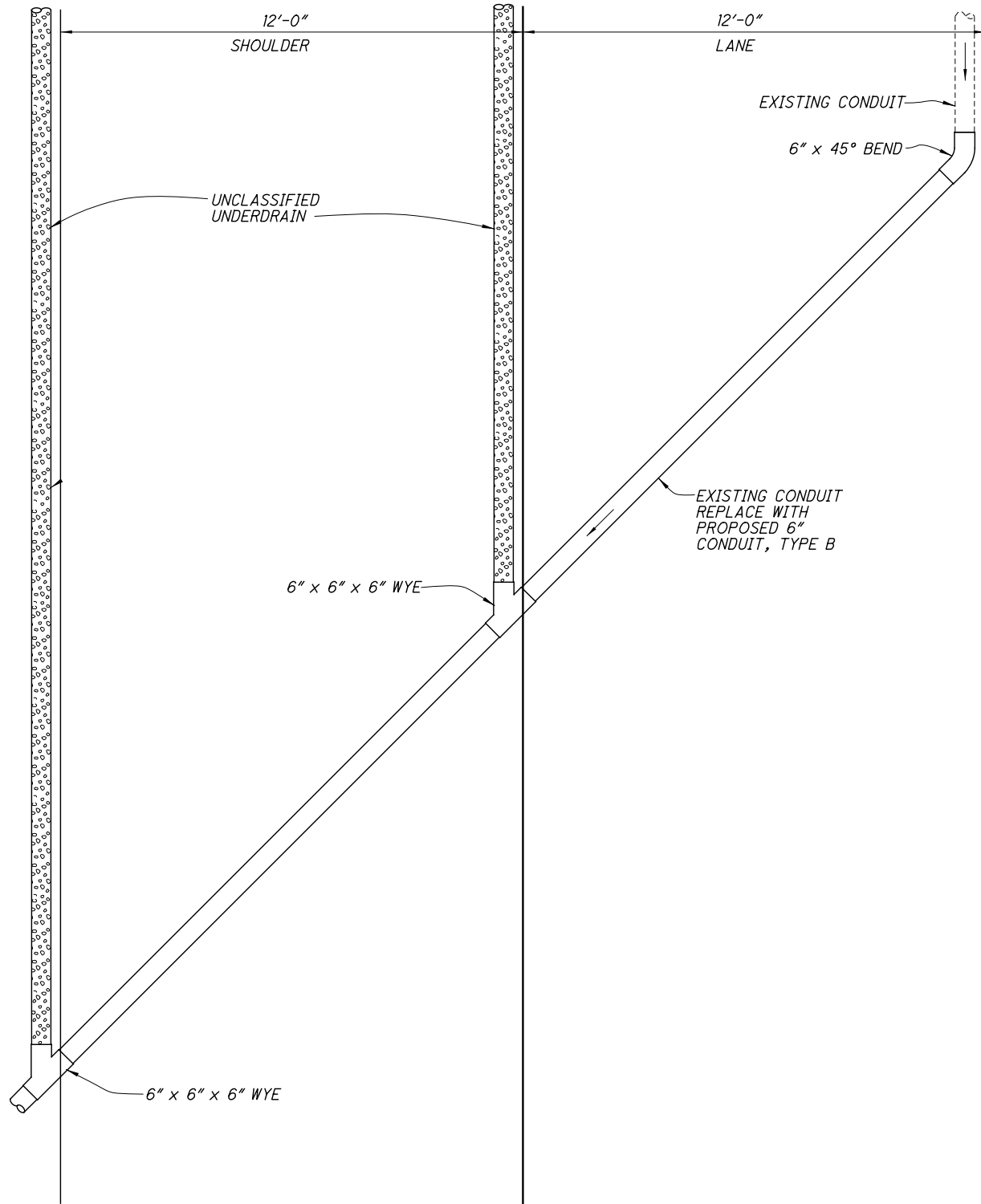


6" BY TYPE PIPE UNDERDRAIN WITH GEOTEXTILE FABRIC,
707.31 OR 707.41 (18" NORMAL DEPTH)
OR

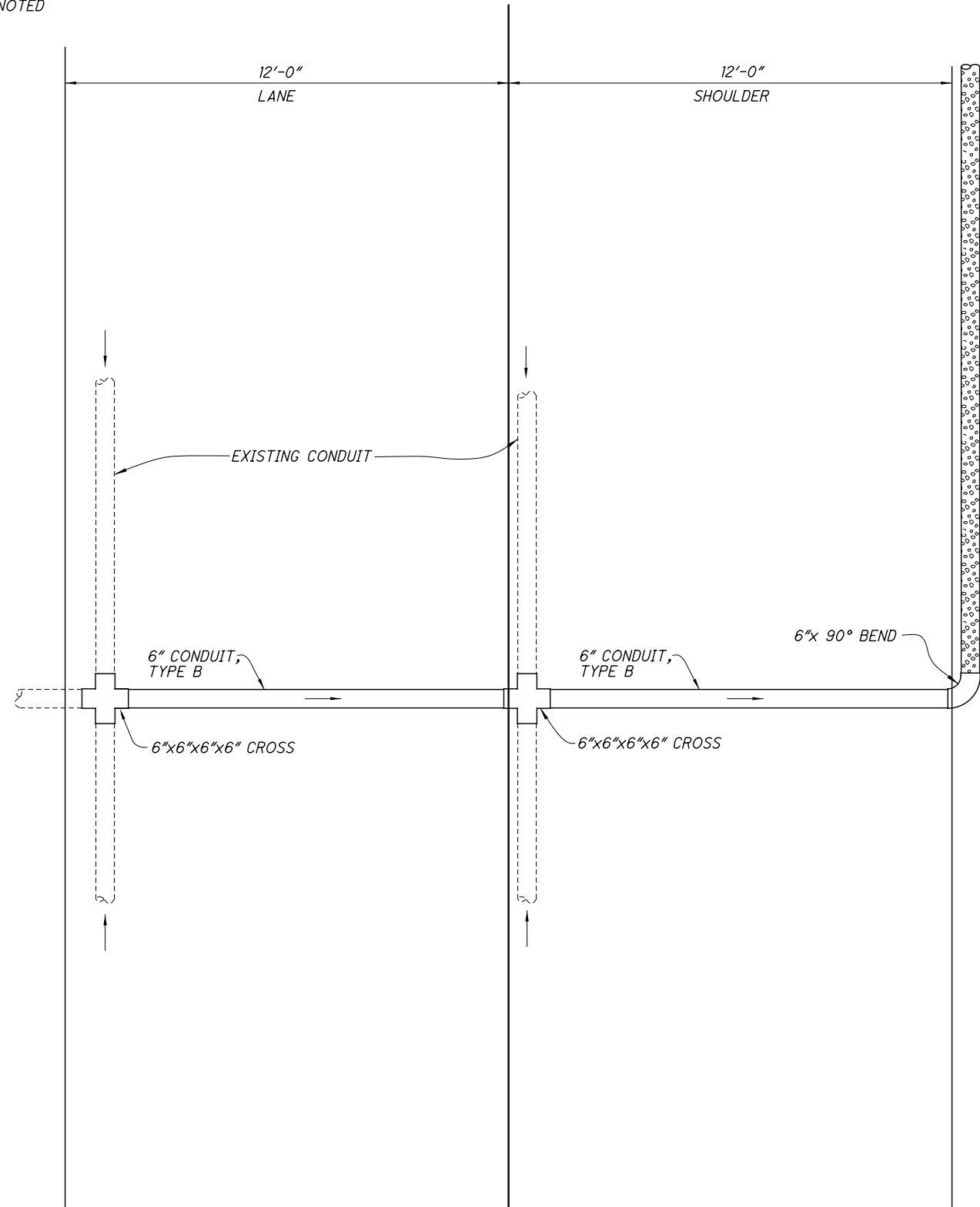
6" BY TYPE PIPE UNDERDRAIN WITH GEOTEXTILE FABRIC,
707.31 OR 707.41 (30" NORMAL DEPTH)



OUTLET PIPE, AS NOTED



PLAN
UNDERDRAIN DETAIL A



PLAN
UNDERDRAIN DETAIL B

UNDERDRAIN DETAILS

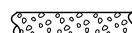

CUY - 77 - 14.35

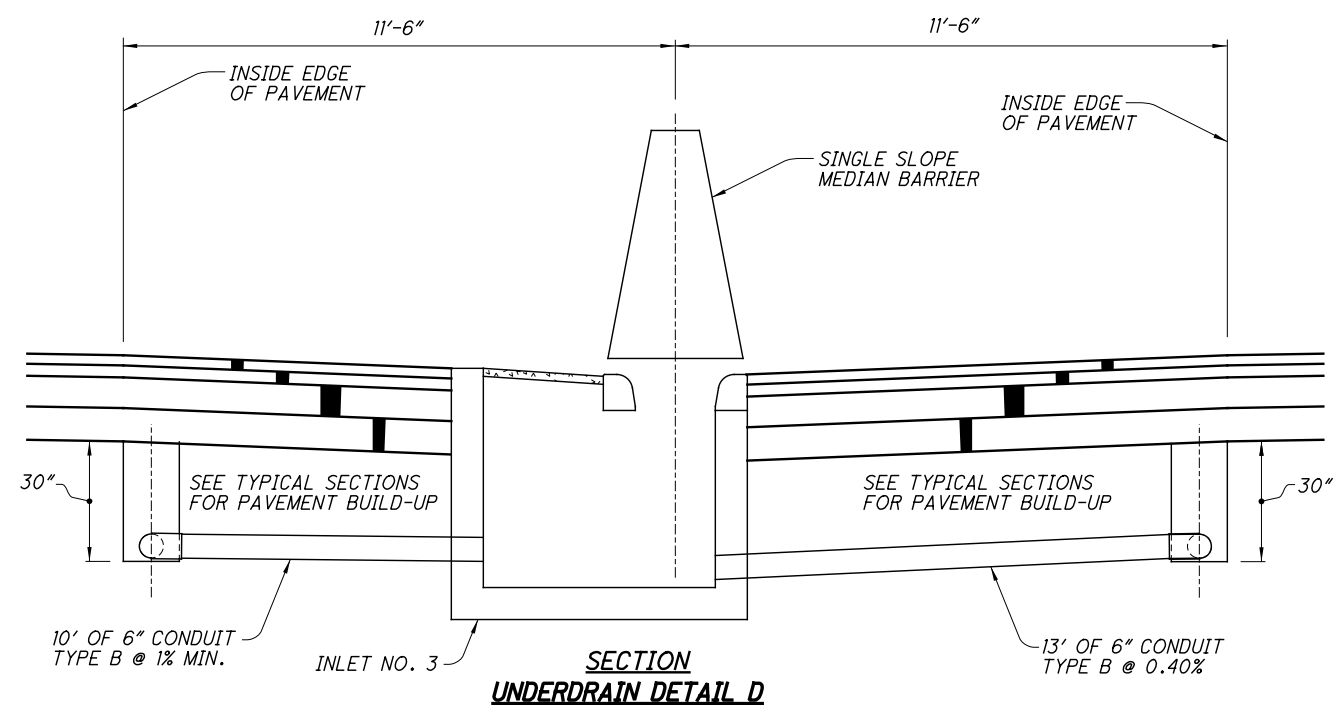
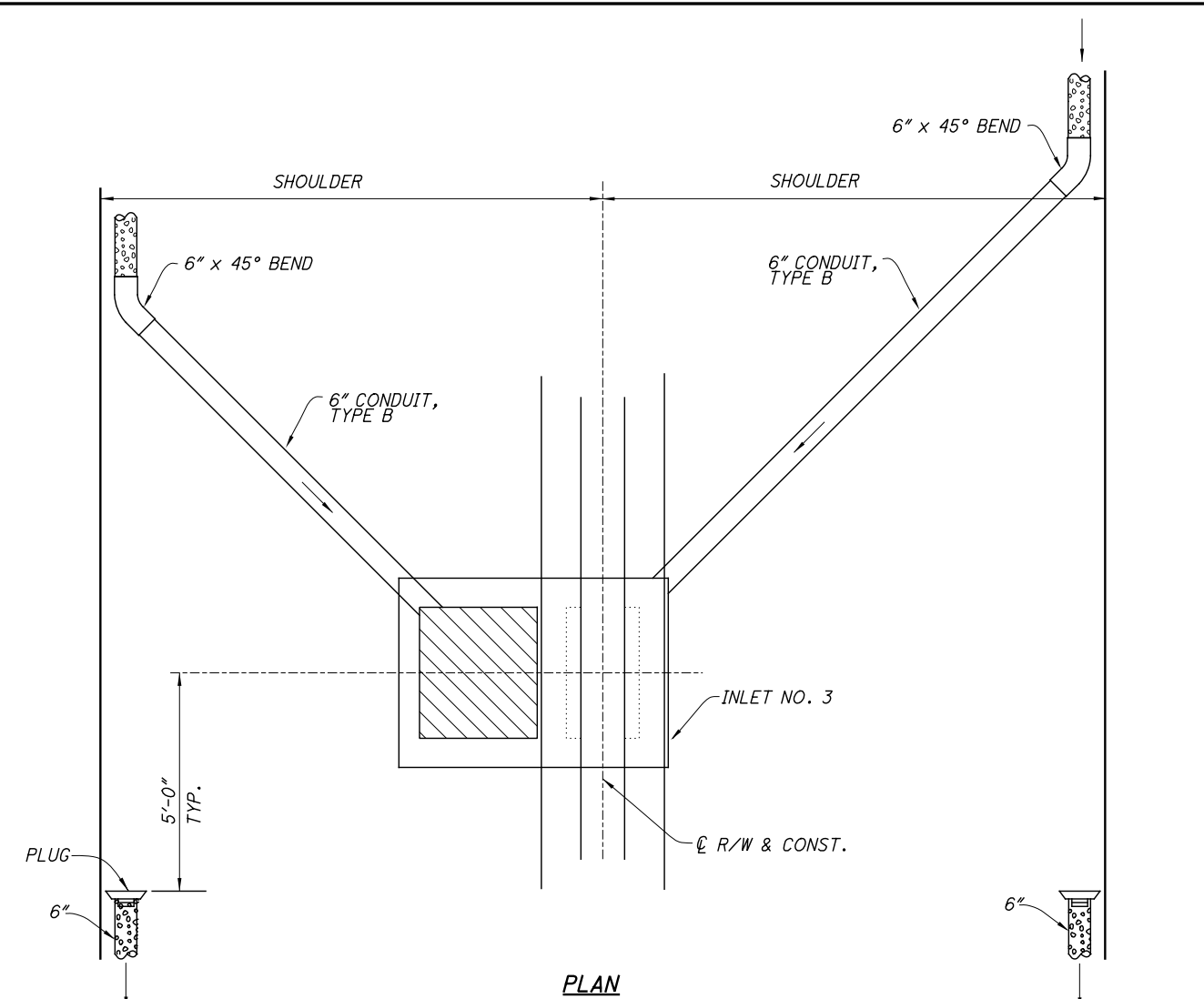
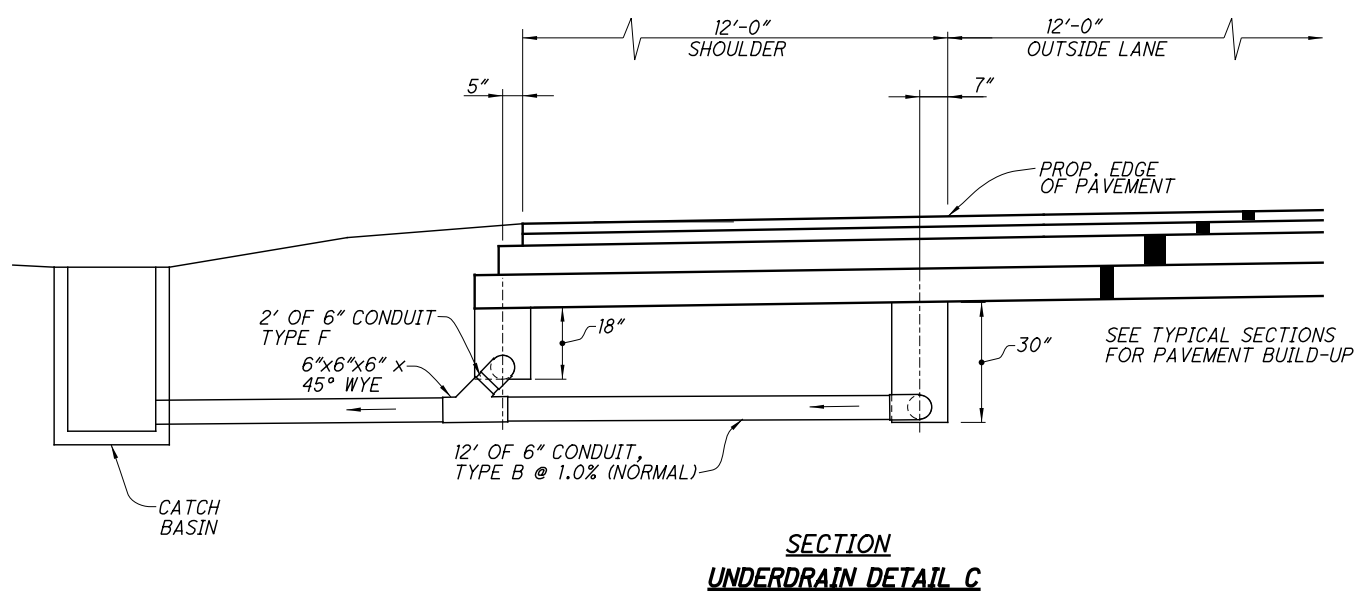
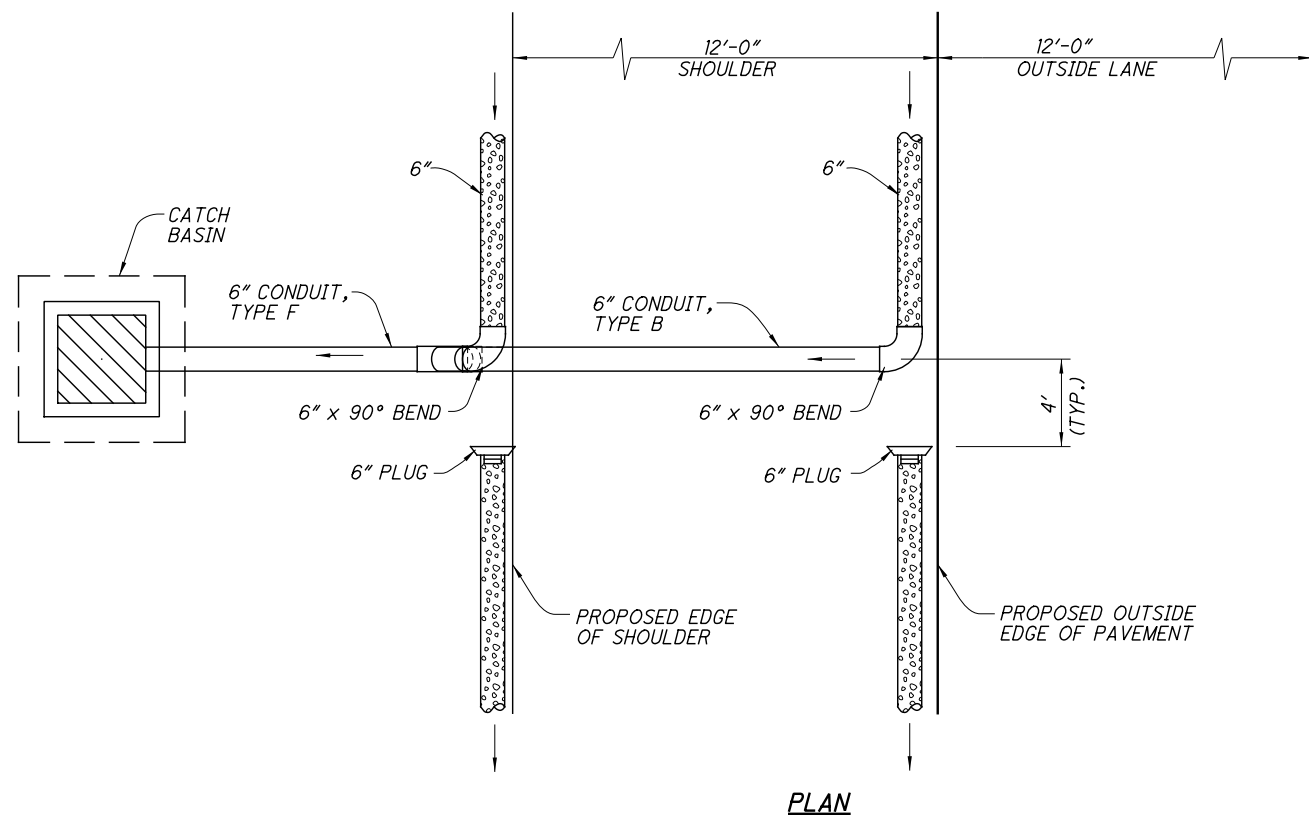
196
365

CALCULATED
MAF
CHECKED
DAW

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\13567dd02.dgn 12/14/2016 2:25:48 PM DonHeiman

LEGEND

-  6" BY TYPE PIPE UNDERDRAIN WITH GEOTEXTILE FABRIC, 707.31 OR 707.41 (18" NORMAL DEPTH)
OR
6" BY TYPE PIPE UNDERDRAIN WITH GEOTEXTILE FABRIC, 707.31 OR 707.41 (30" NORMAL DEPTH)
-  OUTLET PIPE, AS NOTED

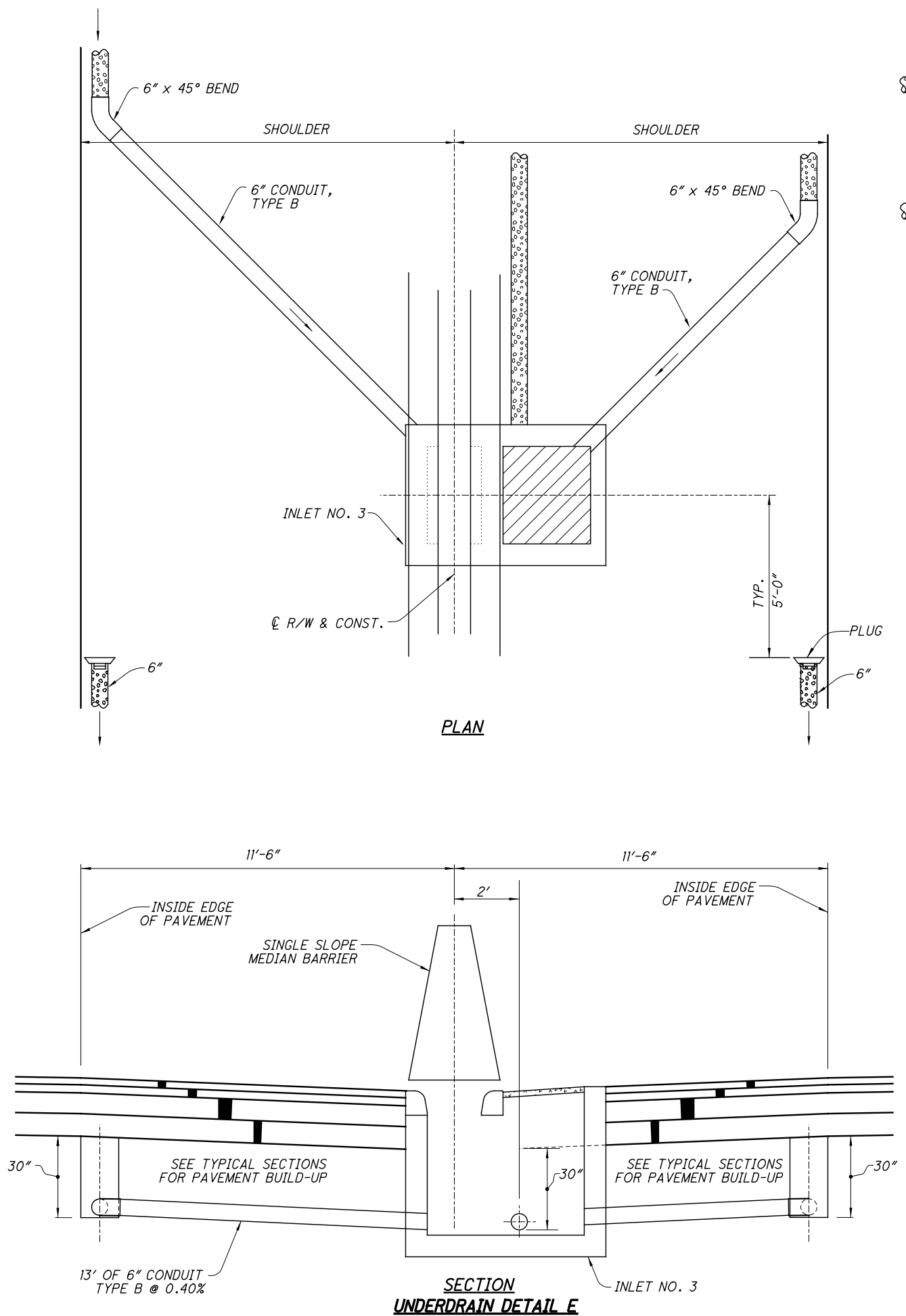


CALCULATED
MAF
CHECKED
DAW

UNDERDRAIN DETAILS

CUY-77-14.35

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LEGEND

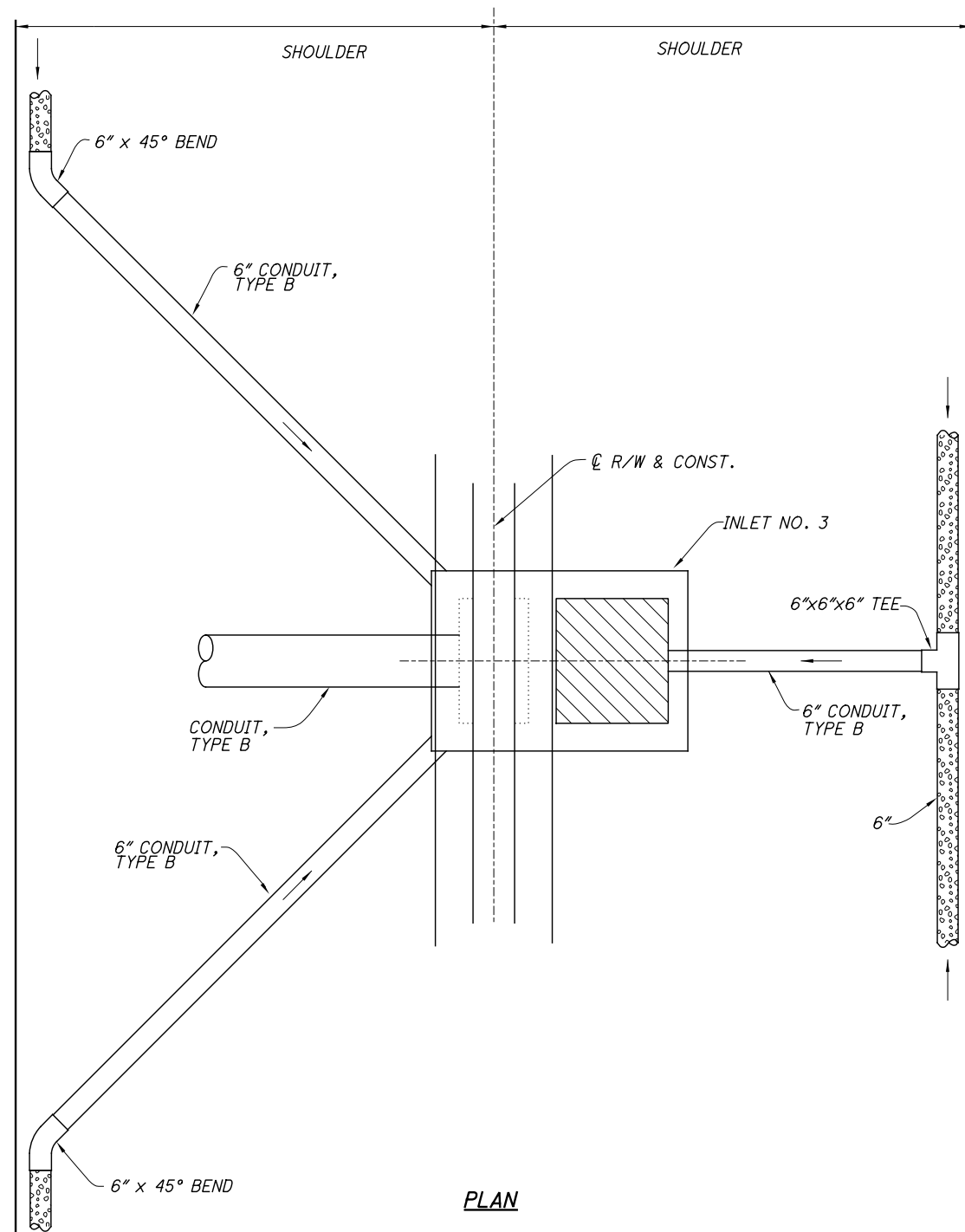
- 6" BY TYPE PIPE UNDERDRAIN WITH GEOTEXTILE FABRIC, 707.31 OR 707.41 (18" NORMAL DEPTH) OR 707.31 OR 707.41 (30" NORMAL DEPTH)
- OUTLET PIPE, AS NOTED

CALCULATED
MAF
CHECKED
DAW

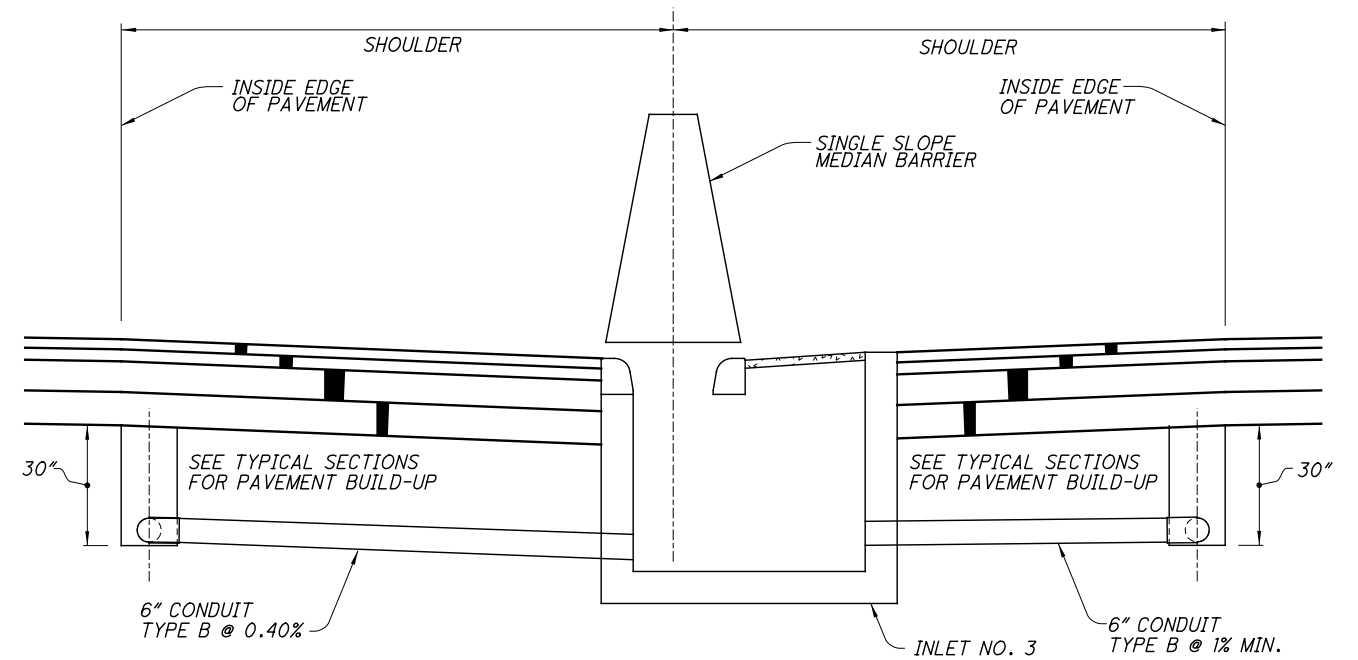
UNDERDRAIN DETAILS

CUY-77-14.35

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\13567dd01.dgn 12/14/2016 2:28:28 PM DonHelman






PLAN
UNDERDRAIN DETAIL F






SECTION
UNDERDRAIN DETAIL F

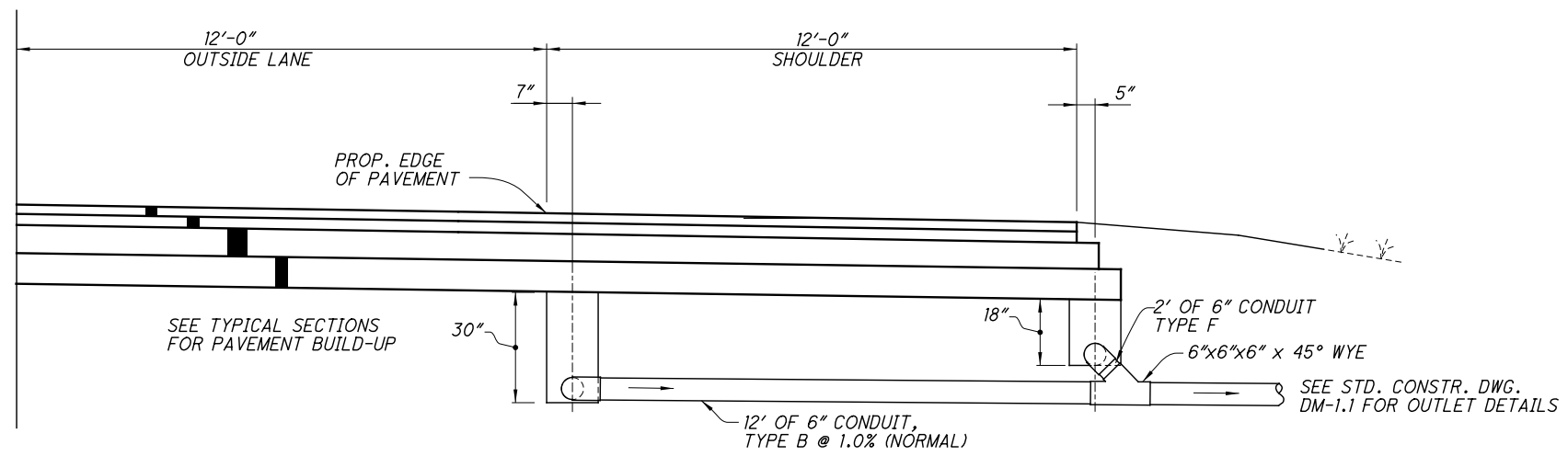
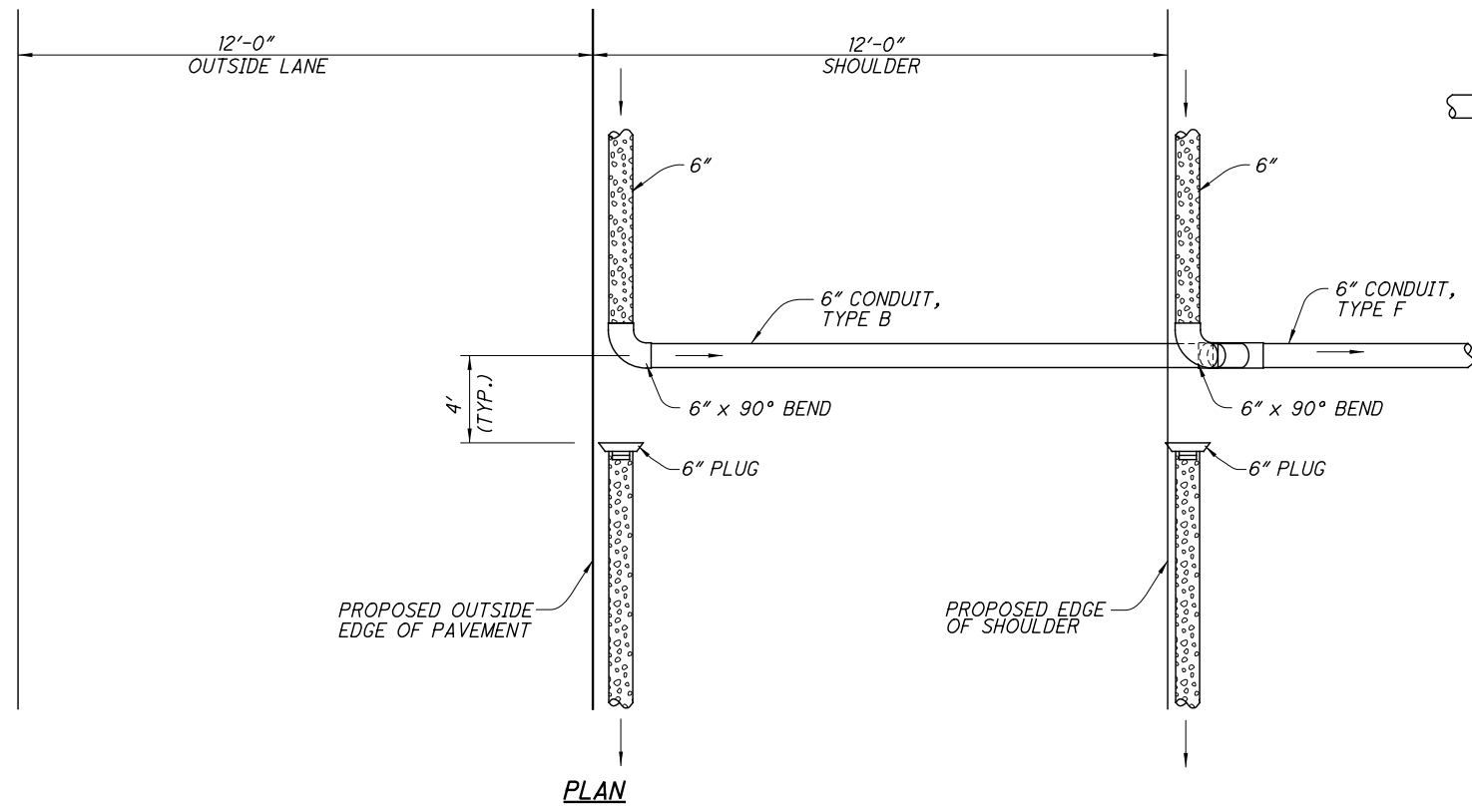
LEGEND

-  6" BY TYPE PIPE UNDERDRAIN WITH GEOTEXTILE FABRIC, 707.31 OR 707.41 (18" NORMAL DEPTH)
- OR
-  6" BY TYPE PIPE UNDERDRAIN WITH GEOTEXTILE FABRIC, 707.31 OR 707.41 (30" NORMAL DEPTH)
-  OUTLET PIPE, AS NOTED

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\13567dd05.dgn 12/14/2016 2:29:22 PM DonHelman

LEGEND

-  6" BY TYPE PIPE UNDERDRAIN WITH GEOTEXTILE FABRIC, 707.31 OR 707.41 (18" NORMAL DEPTH)
OR
-  6" BY TYPE PIPE UNDERDRAIN WITH GEOTEXTILE FABRIC, 707.31 OR 707.41 (30" NORMAL DEPTH)
-  OUTLET PIPE, AS NOTED



SECTION
UNDERDRAIN DETAIL G




UNDERDRAIN DETAILS

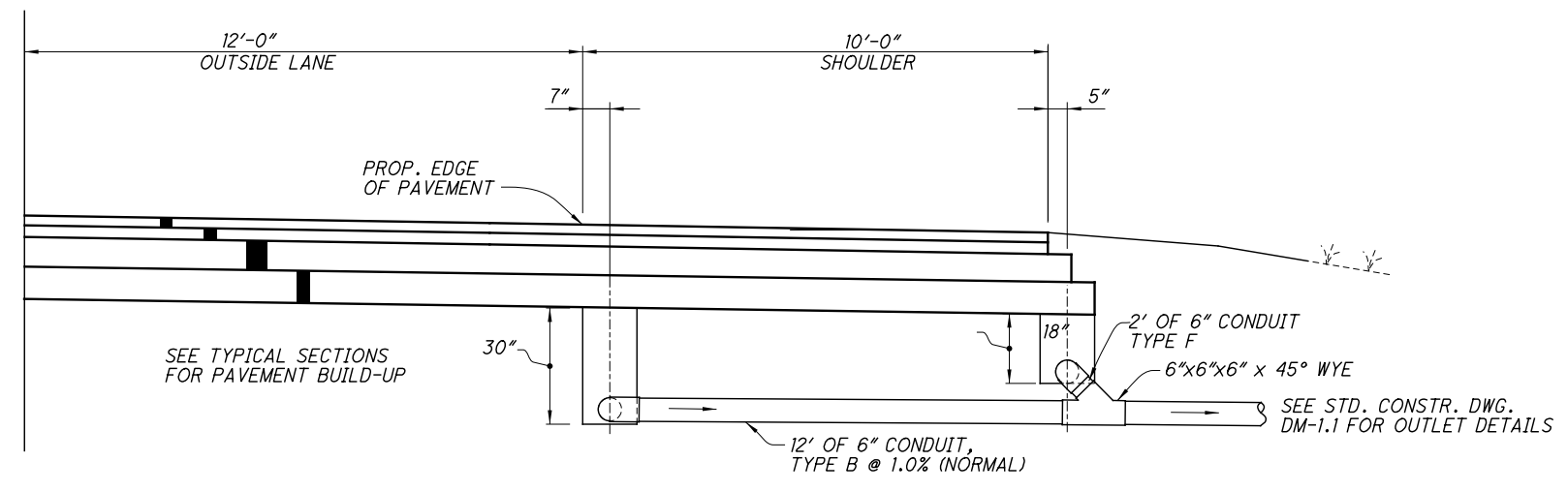
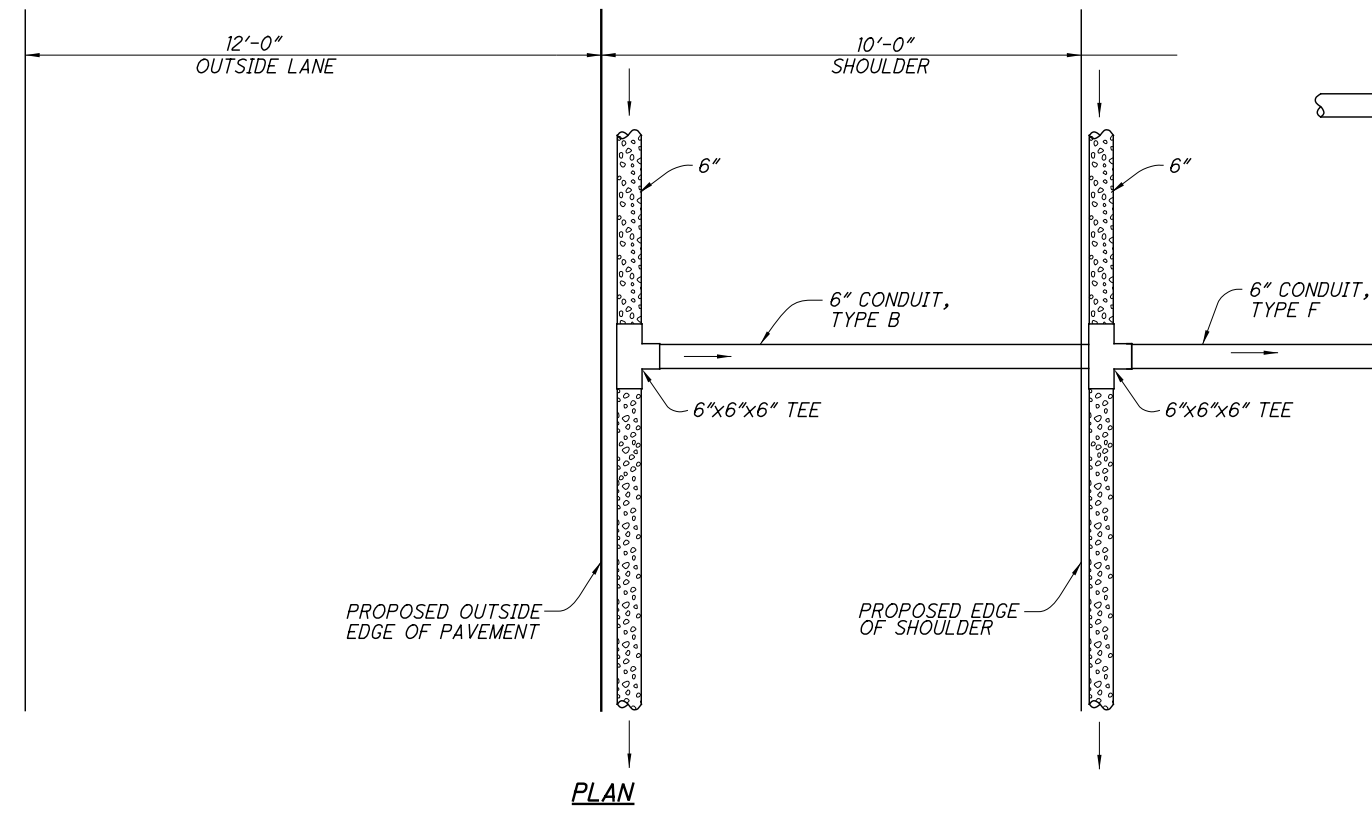
CUY-77-14.35

CALCULATED
MAF
CHECKED
DAW

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LEGEND

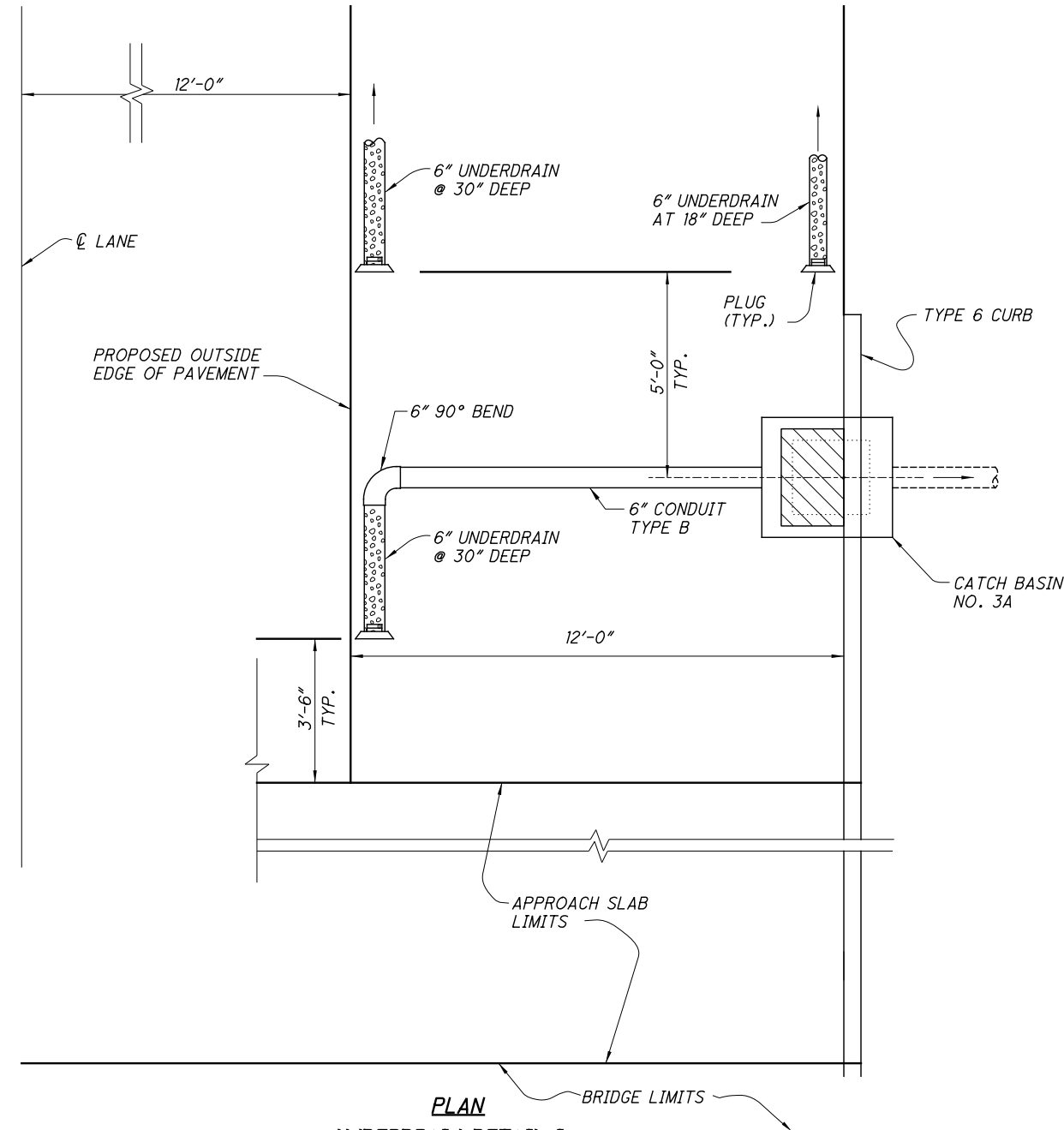
-  6" BY TYPE PIPE UNDERDRAIN WITH GEOTEXTILE FABRIC, 707.31 OR 707.41 (18" NORMAL DEPTH)
OR
-  6" BY TYPE PIPE UNDERDRAIN WITH GEOTEXTILE FABRIC, 707.31 OR 707.41 (30" NORMAL DEPTH)
-  OUTLET PIPE, AS NOTED



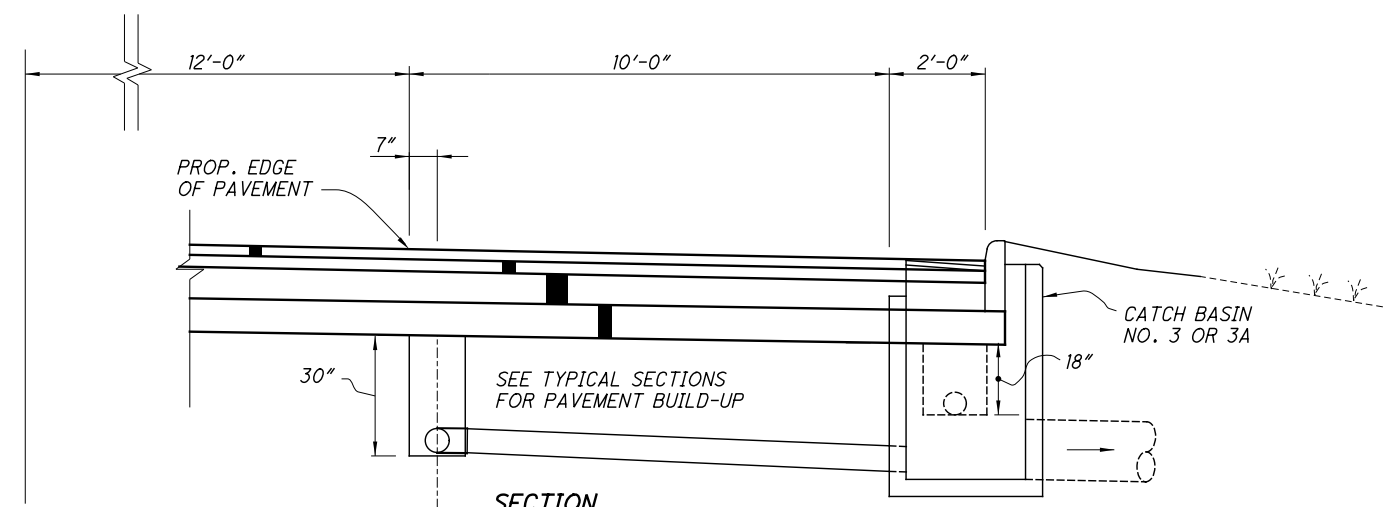
UNDERDRAIN DETAILS

CUY-77-14.35

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PLAN
UNDERDRAIN DETAIL I



SECTION
UNDERDRAIN DETAIL I

LEGEND

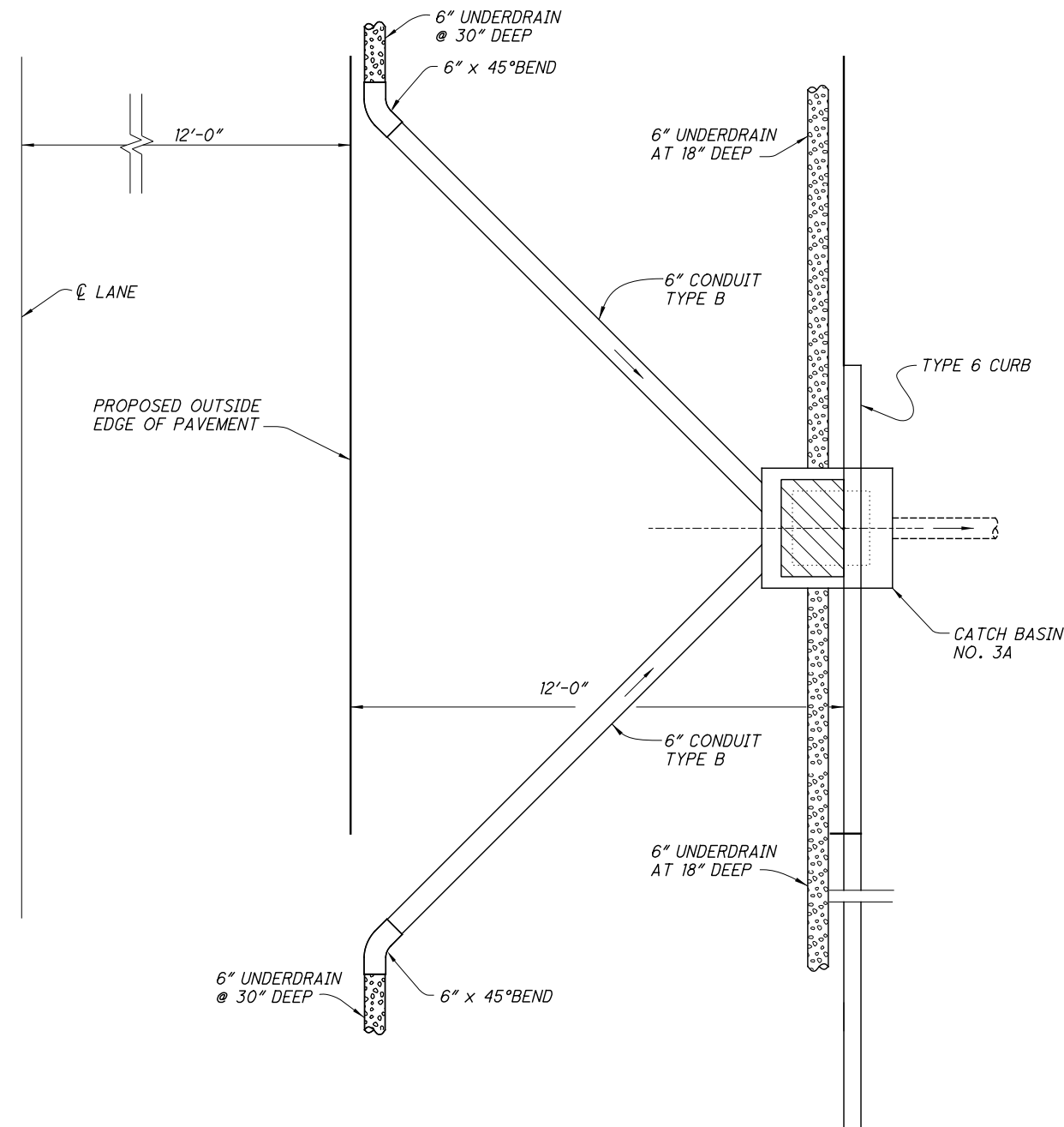
- 6" BY TYPE PIPE UNDERDRAIN WITH GEOTEXTILE FABRIC, 707.31 OR 707.41 (18" NORMAL DEPTH)
- OR
- 6" BY TYPE PIPE UNDERDRAIN WITH GEOTEXTILE FABRIC, 707.31 OR 707.41 (30" NORMAL DEPTH)
- OUTLET PIPE, AS NOTED

CALCULATED
MAF
CHECKED
DAW

UNDERDRAIN DETAILS

CUY-77-14.35

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\13567dd011.dgn 12/14/2016 2:31:28 PM DonHelman

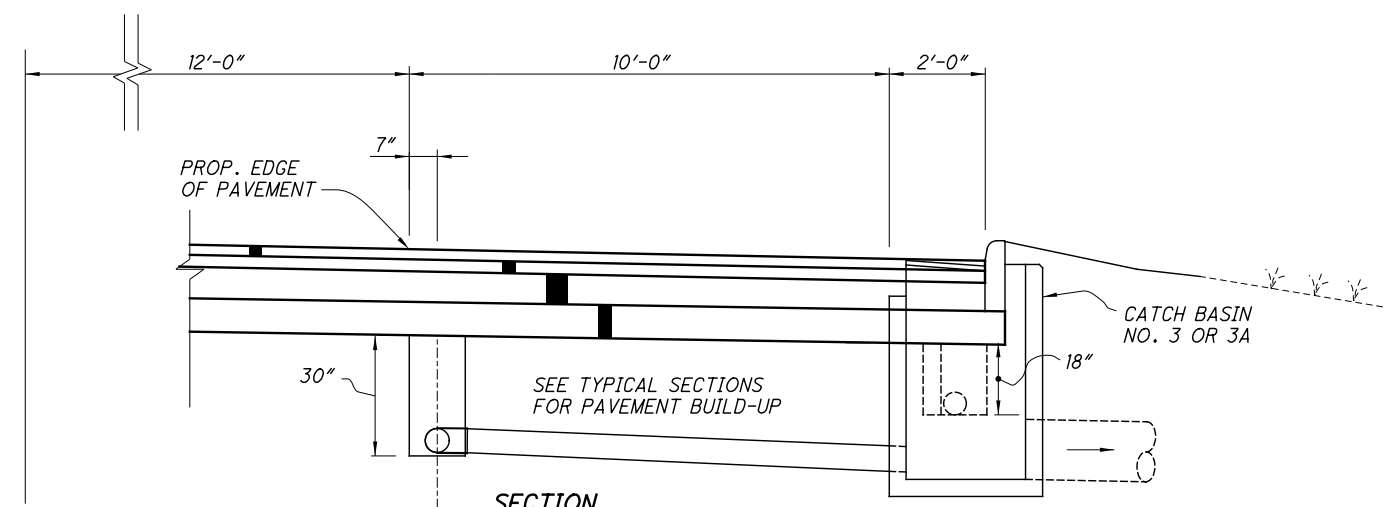


LEGEND

6" BY TYPE PIPE UNDERDRAIN WITH GEOTEXTILE FABRIC, 707.31 OR 707.41 (18" NORMAL DEPTH) OR 707.31 OR 707.41 (30" NORMAL DEPTH)

OUTLET PIPE, AS NOTED

PLAN
UNDERDRAIN DETAIL J



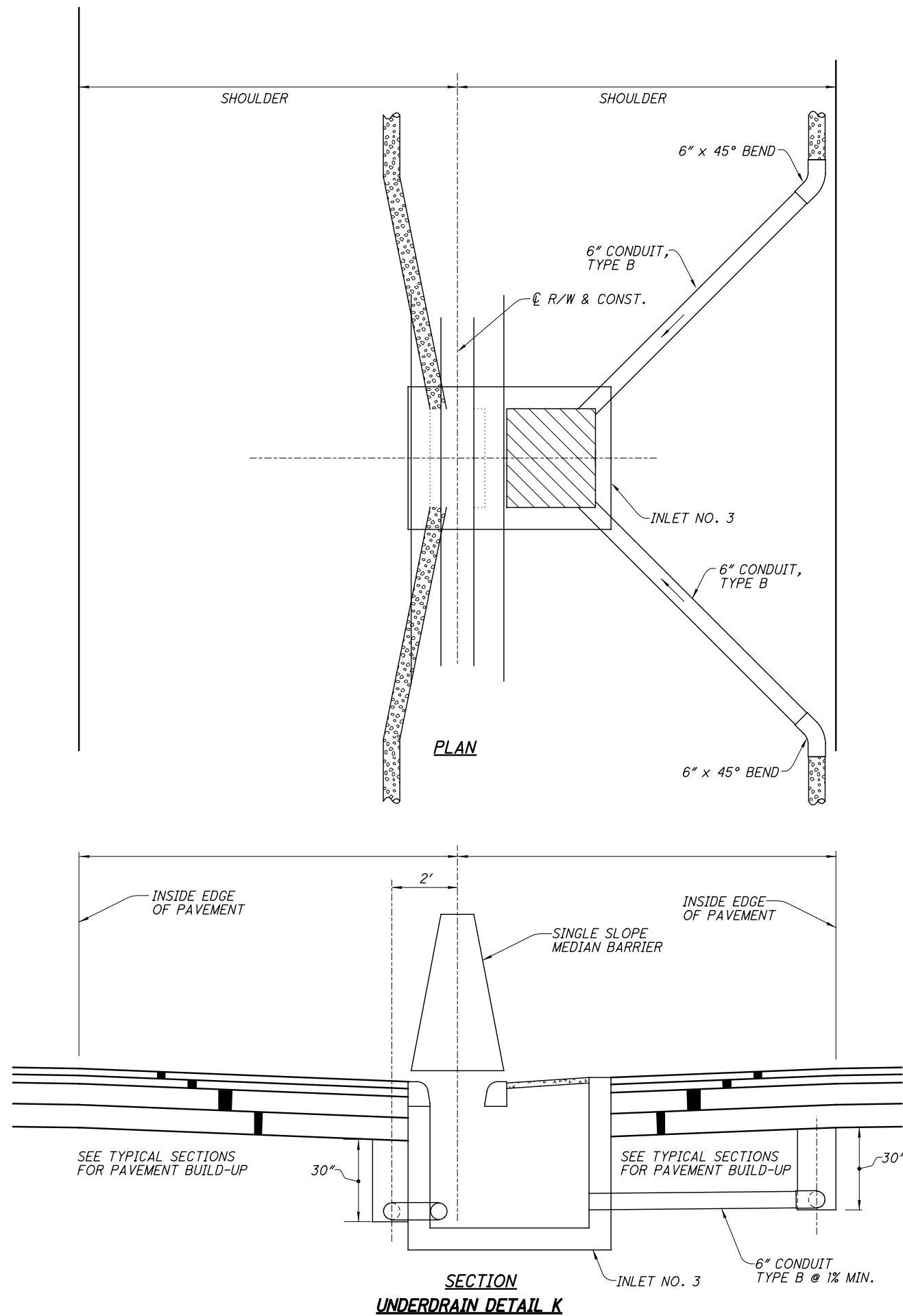
SECTION
UNDERDRAIN DETAIL J

CALCULATED
MAF
CHECKED
DAW


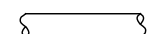
UNDERDRAIN DETAILS

CUY-77-14.35

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\13567dd04.dgn 12/14/2016 2:32:10 PM DonHelman



LEGEND

-  6" BY TYPE PIPE UNDERDRAIN WITH GEOTEXTILE FABRIC, 707.31 OR 707.41 (18" NORMAL DEPTH) OR 6" BY TYPE PIPE UNDERDRAIN WITH GEOTEXTILE FABRIC, 707.31 OR 707.41 (30" NORMAL DEPTH)
-  OUTLET PIPE, AS NOTED

SECTION
UNDERDRAIN DETAIL K

CALCULATED
MAF
CHECKED
DAW

UNDERDRAIN DETAILS

CUY-77-14.35

\\REL8\Current\2005\05040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\13567TS002.dgn 12/14/2016 2:33:57 PM DonHelman

SHEET NO.	STATION		LOCATION	SIGN CODE	SIGN SIZE	625				630																						
	EXISTING	PROPOSED				IN	X	IN	EACH	FT	FT	FT	FT	FT	FT	FT	FT	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	SF	SF	SF		
	CUY-77																															
210	196+80.00±	196+65.00	NB	CL	E1-HI-168	168	x	144	2																							
					E1-H3-156	156	x	156																								
					E1-H5P-120	120	x	30																								
					E1-H5P-120	120	x	30																								
					E6-H2-156	156	x	96																								
211	49+95.00±	49+95.00±	NB	CL	E1-MISC.	180	x	36																								
211	51+90.00±	52+00.00±	NB	RT	E5-HIC-48	48	x	84																								
211		54+00.00	NB	RT	E1-H5P-120	120	x	30																								
					E1-HI-204	204	x	108																								
212	58+20.00±	58+55.00	NB	CL	E6-H2-348	348	x	120	2																							
					E1-HI-180	180	x	120																								
					E11-1-180	180	x	36																								
					E1-H5P-120	120	x	30																								
212	65+00.00±		NB	CL																												
212	66+19.00±	65+53.00	NB	RT	E5-HIC-48	48	x	84																								
212	65+75.00±	67+50.00	SB	LT	W4-3R-48	48	x	48																								
212	72+60.00±	69+50.00	SB	LT		180	x	48																								
212	69+70.00±	69+70.00	MED	CL	D10-5-18	18	x	60																								
					D10-5-18	18	x	60	6.3																							
213	71+14.00±	71+00.00	NB	RT		204	x	108																								
						96	x	30																								
213	73+92.00±	73+00.00	NB	RT		228	x	84																								
213	73+47.00±	73+00.00	SB	LT		192	x	60																								
213	74+80.00±	74+10.00	NB	RT	OM-3R-12	12	x	36																								
213	74+72.00±	74+10.00	NB	CL	OM-3L-12	12	x	36																								
TOTALS CARRIED TO SHEET 208									4	6.3		34.4	46.1	39.7	77.3	84.6	38.0			12	2		1		1	1	2	1	93.0	178.0	1001	

CALCULATED	TJF		
CHECKED	JDL		
SIGNING SUBSUMMARY			
CUY-77-14.35			
<table border="1"> <tr> <td>206</td> </tr> <tr> <td>365</td> </tr> </table>		206	365
206			
365			

\\REL8\Current\2005\05040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\13567TS002.dgn 12/14/2016 2:34:24 PM DonHelman

SHEET NO.	STATION		LOCATION	SIGN CODE	SIGN SIZE			625											630										
	EXISTING	PROPOSED			IN	X	IN	GROUND ROD	GROUND MOUNTED SUPPORT, NO. 2 POST	GROUND MOUNTED SUPPORT, NO. 3 POST	GROUND MOUNTED SUPPORT, NO. 4 POST	GROUND MOUNTED STRUCTURAL BEAM SUPPORT, W10X12	GROUND MOUNTED STRUCTURAL BEAM SUPPORT, W12X30	GROUND MOUNTED SUPPORT, PIPE	SIGN POST REFLECTOR	BREAKAWAY STRUCTURAL BEAM CONNECTION	TRIANGULAR SLIP BASE CONNECTION	OVERHEAD SIGN SUPPORT, TYPE TC-7.65, DESIGN 6	OVERHEAD SIGN SUPPORT, TYPE TC-7.65, DESIGN 8	CONCRETE BARRIER MEDIAN OVERHEAD SIGN SUPPORT FOUNDATION, TC-7.65	CONCRETE BARRIER MEDIAN OVERHEAD SIGN SUPPORT FOUNDATION, TC-7.65, AS PER PLAN	OVERHEAD SIGN SUPPORT, TYPE TC-15.115	SIGN SUPPORT ASSEMBLY, BRIDGE MOUNTED, TYPE 1	SIGN SUPPORT ASSEMBLY, BARRIER MOUNTED, AS PER PLAN	SIGN, FLAT SHEET	SIGN, GROUND MOUNTED EXTRUSHEET	SIGN, OVERHEAD EXTRUSHEET		
								EACH	FT	FT	FT	FT	FT	FT	FT	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	SF	SF	SF
213	79+70.00±	80+40.00	SB	CL	OM-3L-12	12	X	36																1		3.0			
213	79+88.00±	80+40.00	SB	LT	OM-3R-12	12	X	36																1		3.0			
213	80+30.00±	81+00.00	MED	CL	D10-5-18	18	X	60	6.3																1	7.5			
					D10-5-18	18	X	60																		7.5			
214	84+15.00±	84+00.00	SB	LT	R2-1-48	48	X	60				35.2														20.0			
214	84+00.00±	84+50.00	NB	RT		156	X	156	2																				
						120	X	120																					
						240	X	108																					
						120	X	48																					
214		86+00.00	SB	LT	E5-HIC-48	48	X	84																		28.0			
214	85+04.00±	86+60.00	NB	RT		168	X	48				19.1	21.6																
						108	X	24																					
212	167+02.00±	167+10.00	RAMP S-E/S-W	RT	D10-H5A-30	30	X	30				13.98														6.3			
216	169+75.00±	168+85.00	RAMP S-E/S-W	CL	E1-H3-144	144	X	72	2																		72.0		
					E1-H3-120	120	X	48																			40.0		
216		171+00.00	RAMP S-E	LT	W1-8R-30	30	X	36				11.5														7.5			
216		172+20.00	RAMP S-E	LT	W1-8R-30	30	X	36				11.5														7.5			
216		173+40.00	RAMP S-E	LT	W1-8R-30	30	X	36				11.5														7.5			
216		174+60.00	RAMP S-E	LT	W1-8R-30	30	X	36				11.5														7.5			
216		175+80.00	RAMP S-E	LT	W1-8R-30	30	X	36				11.5														7.5			
216	273+00.00±	273+00.00	RAMP S-W	RT	W1-2-36	36	X	36																		9.0			
					W13-1P-24	24	X	24																		4.0			
216	273+00.00±	273+00.00	RAMP S-W	LT	W1-2-36	36	X	36																		9.0			
					W13-1P-24	24	X	24																		4.0			

SHEET TOTALS
TOTALS FROM SHEET 206

TOTALS CARRIED TO GENERAL SUMMARY

4	77.7	62.5	35.2	19.1	21.6					19.7	5	2	1	1	1	1				2	1	138.8					
4	6.3		34.4	46.1	39.7	77.3	84.6			38.0		12	2			1			1	2	1	93.0	178.0	1001			
8	84.0	62.5	69.6	126.5	161.9	57.7					5	14	3	1	2	1	1	1	4	2	231.8	178	1113				

CALCULATED TJF
 CHECKED JDL
SIGNING SUBSUMMARY
CUY-77-14.35
 208
 365

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\13567TS002.dgn 12/14/2016 2:34:37 PM DonHelman

SHEET NO.	STATION		LOCATION	SIGN CODE	SIGN SIZE			SIGN, PERMANENT OVERLAY	SIGN BACKING ASSEMBLY	GROUND MOUNTED STRUCTURAL BEAM SUPPORT FOUNDATION	RIGID OVERHEAD SIGN SUPPORT FOUNDATION	GROUND MOUNTED PIPE SUPPORT FOUNDATION	REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL	REMOVAL OF GROUND MOUNTED SIGN AND REERECTION	REMOVAL OF GROUND MOUNTED MAJOR SIGN AND DISPOSAL	REMOVAL OF GROUND MOUNTED MAJOR SIGN AND REERECTION	REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL	REMOVAL OF GROUND MOUNTED STRUCTURAL BEAM SUPPORT AND DISPOSAL	REMOVAL OF OVERHEAD MOUNTED SIGN AND REERECTION	REMOVAL OF OVERHEAD MOUNTED SIGN AND DISPOSAL	REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-12.30	REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-7.65															
	EXISTING	PROPOSED					IN																X	IN	SF	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH
213	79+70.00±	80+40.00	SB	CL	OM-3L-12	12	x	36						1			1																				
213	79+88.00±	80+40.00	SB	LT	OM-3R-12	12	x	36						1			1																				
213	80+30.00±	81+00.00	MED	CL	D10-5-18	18	x	60						1			1																				
					D10-5-18	18	x	60						1			1																				
214	84+15.00±	84+00.00	SB	LT	R2-1-48	48	x	60						1			1																				
214	84+00.00±	84+50.00	NB	RT		156	x	156				1		1					4																		
						120	x	120																													
						240	x	108																													
						120	x	48																													
214	86+00.00	86+00.00	SB	LT	E5-HIC-48	48	x	84					1																								
214	85+04.00±	86+60.00	NB	RT		168	x	48						1			1																				
						108	x	24																													
212	167+02.00±	167+10.00	RAMP S-E/S-W	RT	D10-H5A-30	30	x	30								1																					
216	169+75.00±	168+85.00	RAMP S-E/S-W	CL	E1-H3-144	144	x	72												2																	
					E1-H3-120	120	x	48																													
216	171+00.00	171+00.00	RAMP S-E	LT	W1-8R-30	30	x	36																													
216	172+20.00	172+20.00	RAMP S-E	LT	W1-8R-30	30	x	36																													
216	173+40.00	173+40.00	RAMP S-E	LT	W1-8R-30	30	x	36																													
216	174+60.00	174+60.00	RAMP S-E	LT	W1-8R-30	30	x	36																													
216	175+80.00	175+80.00	RAMP S-E	LT	W1-8R-30	30	x	36																													
216	273+00.00±	273+00.00	RAMP S-W	RT	W1-2-36	36	x	36								2																					
					W13-1P-24	24	x	24																													
216	273+00.00±	273+00.00	RAMP S-W	LT	W1-2-36	36	x	36								2																					
					W13-1P-24	24	x	24																													
	SHEET TOTALS									2	2	3	1	9	1		1	10	1	4	2		2														
	TOTALS FROM SHEET 202								45.0	1	10	3	2	5	2	1	4	5	6	10	1		2														
TOTALS CARRIED TO GENERAL SUMMARY								45.0	3	12	6	3	14	3	1	5	15	7	4	12	1	4															

CALCULATED
TJF
CHECKED
JDL

SIGNING SUBSUMMARY

CUY - 77 - 14.35

209
365

PAVEMENT MARKING LEGEND

- (A) 646 EDGE LINE, 6" (WHITE)
- (B) 646 EDGE LINE, 6" (YELLOW)
- (C) 646 LANE LINE, 6"
- (D) 646 CHANNELIZING LINE, 12" (WHITE)
- (E) 646 TRANSVERSE/DIAGONAL LINE, (WHITE)
- (F) 646 DOTTED LINE, 6" (WHITE)
- (G) 646 CHEVRON MARKING (WHITE)
- ← TRAFFIC DIRECTION

RAISED PAVEMENT MARKER (RPM) LEGEND

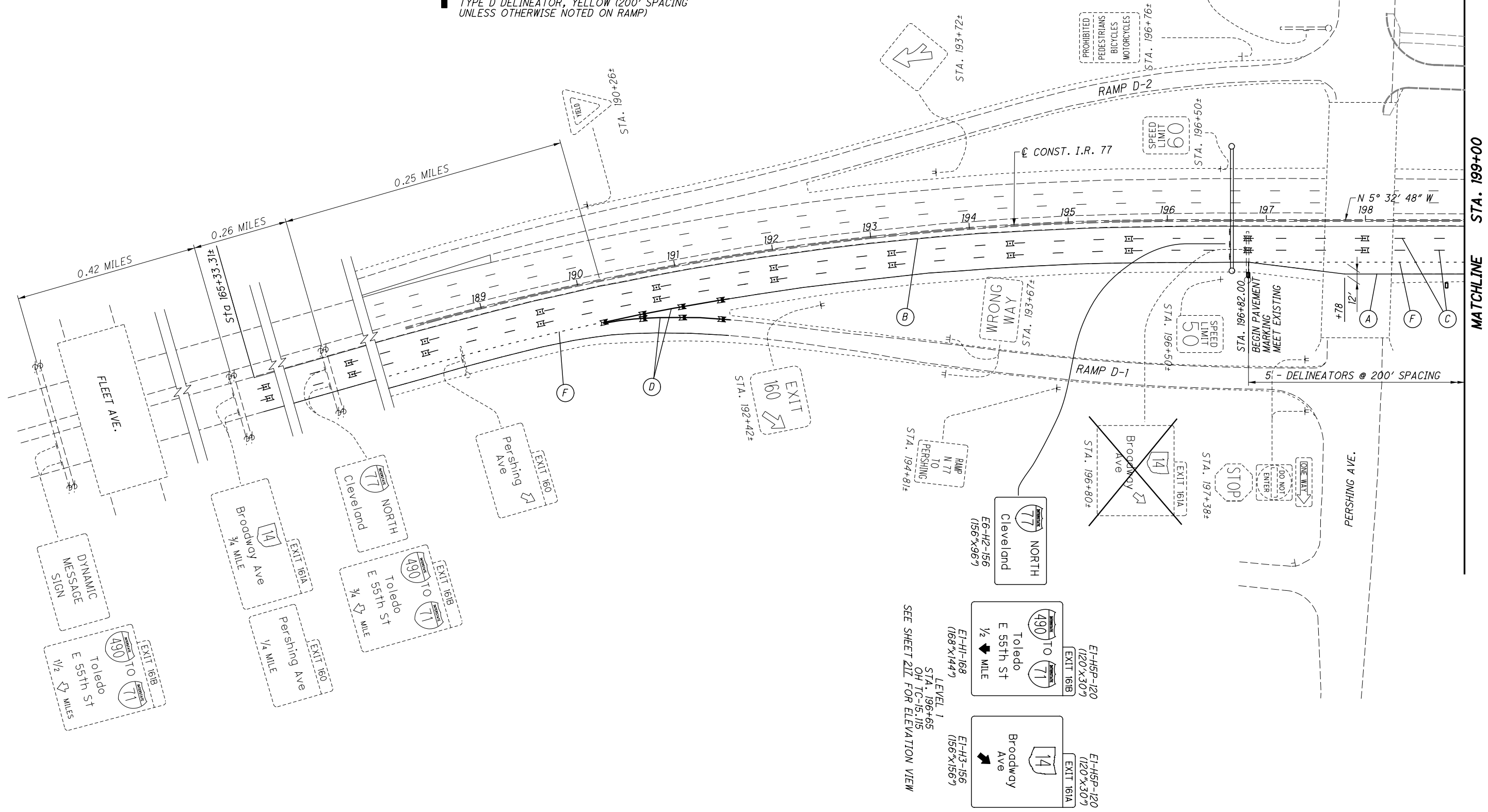
- ≡ 1 WAY (WHITE) @ 80' C/C (ON CHANNELIZING LINE)
- ≡ 1 WAY (WHITE) @ 120' C/C (ON LANE LINE)
- ≡ 2 WAY (WHITE/RED) @ 40' C/C (ON CHANNELIZING LINE)
- ≡ 2 WAY (YELLOW/RED) @ 80' C/C (ON RAMP EDGE LINE, YELLOW)

DELINEATOR LEGEND

- TYPE C DELINEATOR, WHITE (400' SPACING UNLESS OTHERWISE DIMENTIONED ON PLANS)
- TYPE D DELINEATOR, YELLOW (200' SPACING UNLESS OTHERWISE NOTED ON RAMP)

SIGNING LEGEND

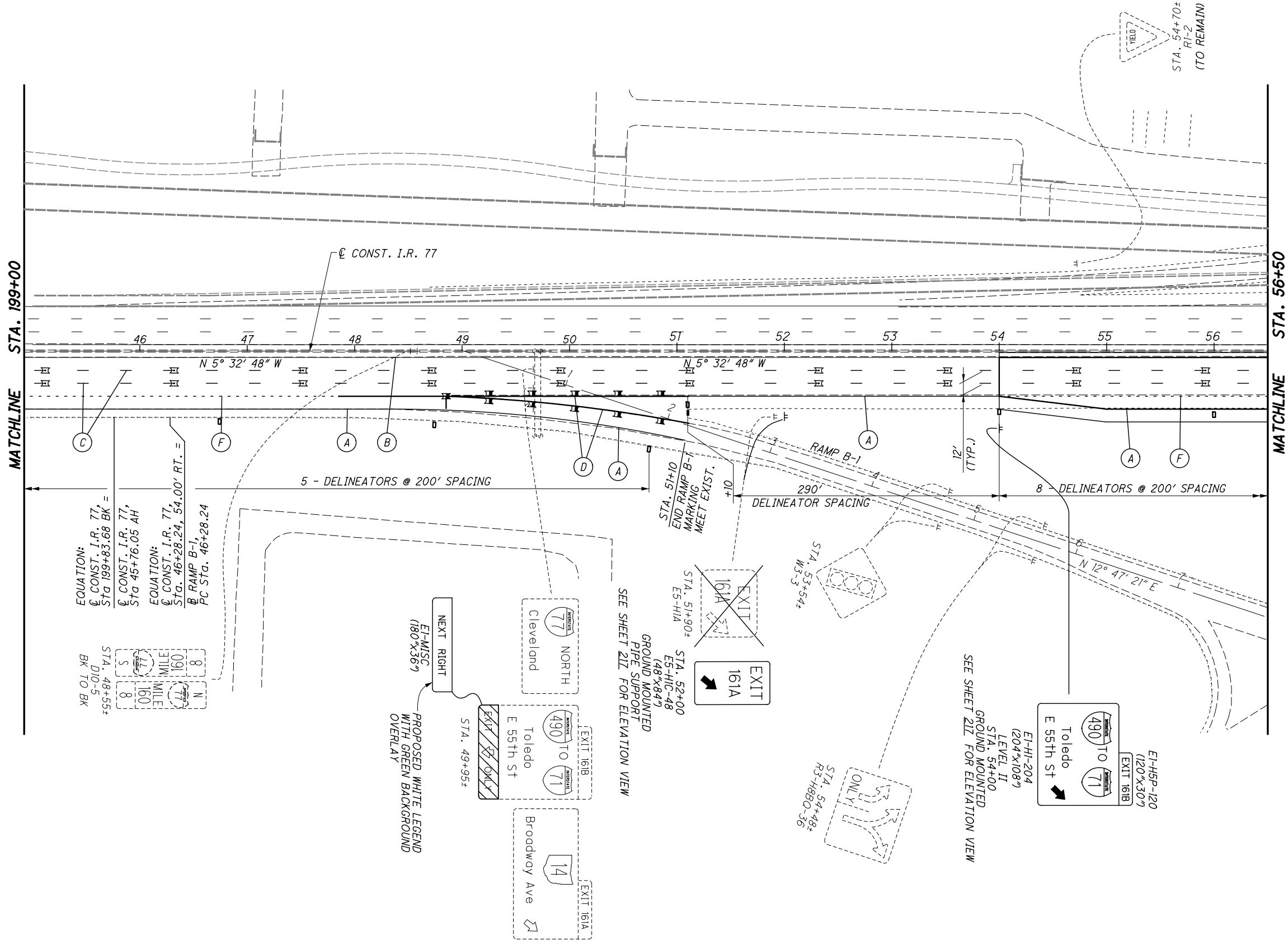
- PROPOSED SIGN, FLAT SHEET
- ⊗ EXISTING SIGN TO BE REMOVED
- ▨ REMOVAL OF SIGN AND REERECTION
- TT EXISTING SIGN LOCATIONS
- TT PROPOSED SIGN LOCATIONS
- == CCG6B CONSTRUCTION
- == PID NO. 82388



CALCULATED TJF CHECKED JDL

0 50 100
HORIZONTAL SCALE IN FEET

TRAFFIC CONTROL PLAN
STA. 188+00 TO STA. 199+00



EQUATION:
 C CONST. I.R. 77,
 Sta 199+83.68 BK =

EQUATION:
 C CONST. I.R. 77,
 Sta 45+76.05 AH,

EQUATION:
 C CONST. I.R. 77,
 Sta. 46+28.24, 54.00' RT. =

B RAMP B-1,
 Pc Sta. 46+28.24

STA. 48+55+
 D10-5
 BK TO BK

8	8
160	160
0.8	0.8
1.6	1.6
160	160
0.8	0.8

PROPOSED WHITE LEGEND
 WITH GREEN BACKGROUND
 OVERLAY

STA. 49+95+

SEE SHEET 211 FOR ELEVATION VIEW

SEE SHEET 211 FOR ELEVATION VIEW

FOR SIGNING AND MARKING LEGENDS: SEE SHEET 210.

CALCULATED
 TJF
 CHECKED
 JDL

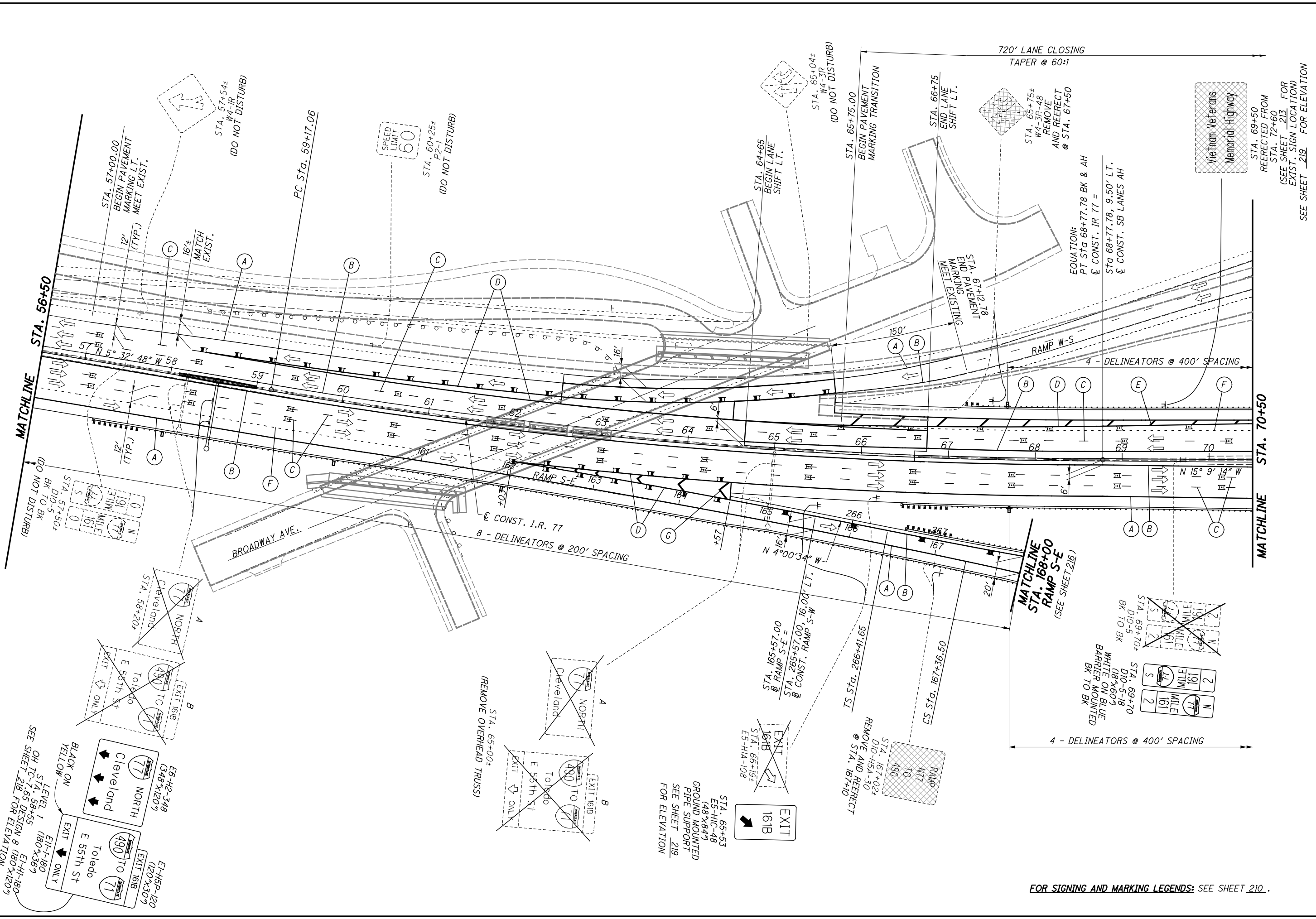
0 50 100
 25
 HORIZONTAL
 SCALE IN FEET

211
 365

TRAFFIC CONTROL PLAN
 STA. 199+00 TO STA. 56+50

CUY-77-14.35

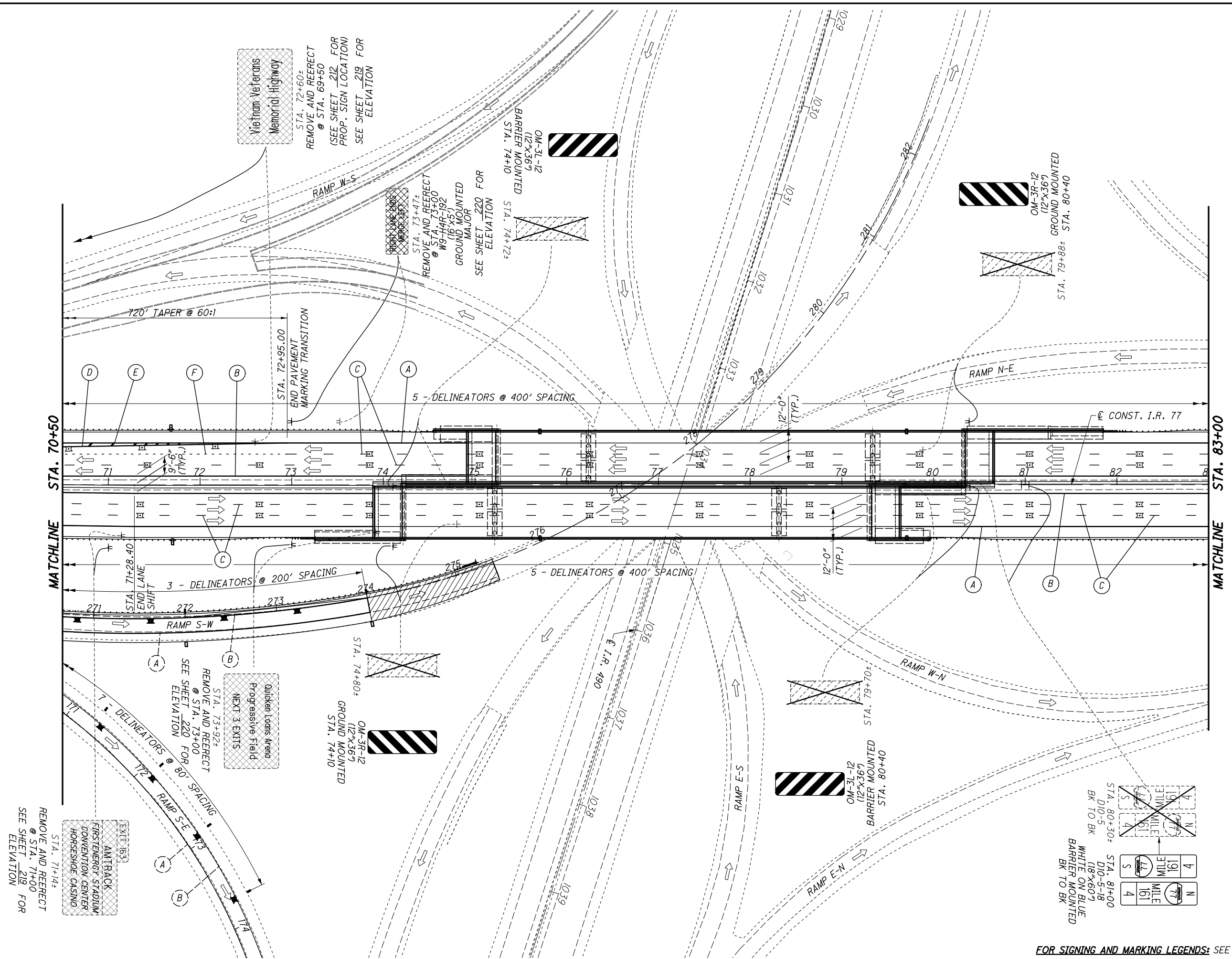
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CALCULATED: T J F
 CHECKED: JDL
 SCALE IN FEET: 0, 25, 50, 100
 HORIZONTAL SCALE IN FEET

TRAFFIC CONTROL PLAN
STA. 56+50 TO STA. 70+50

FOR SIGNING AND MARKING LEGENDS: SEE SHEET 210.



REMOVE AND REERECT @ STA. 71+00 FOR ELEVATION SEE SHEET 219

ANTIBACK FIRSTENERGY STADIUM CONVENTION CENTER HORSESHOE CASINO
 STA. 71+14+
 EXIT 163

REMOVE AND REERECT @ STA. 73+00 FOR ELEVATION SEE SHEET 220

Quicken Loans Arena Progressive Field
 STA. 73+92+
 REMOVE AND REERECT @ STA. 73+00 FOR ELEVATION SEE SHEET 220

Vietnam Veterans Memorial Highway
 STA. 72+60+
 REMOVE AND REERECT @ STA. 69+50 (SEE SHEET 212 FOR PROP. SIGN LOCATION) SEE SHEET 219 FOR ELEVATION

OM-3R-12 (12"x36") GROUND MOUNTED
 STA. 74+10

REMOVE AND REERECT @ STA. 73+00 W9-H4R-192 (16"x5') GROUND MOUNTED MAJOR
 SEE SHEET 220 FOR ELEVATION
 STA. 73+47+
 OM-3L-12 (12"x36") BARRIER MOUNTED
 STA. 74+10

OM-3L-12 (12"x36") BARRIER MOUNTED
 STA. 74+10

OM-3L-12 (12"x36") BARRIER MOUNTED
 STA. 80+40

OM-3R-12 (12"x36") GROUND MOUNTED
 STA. 79+88+
 STA. 80+40

WHITE ON BLUE BARRIER MOUNTED BK TO BK
 STA. 81+00 (18"x60")
 STA. 80+30+ (10"x60")
 STA. 80+30+ (10"x60") BK TO BK

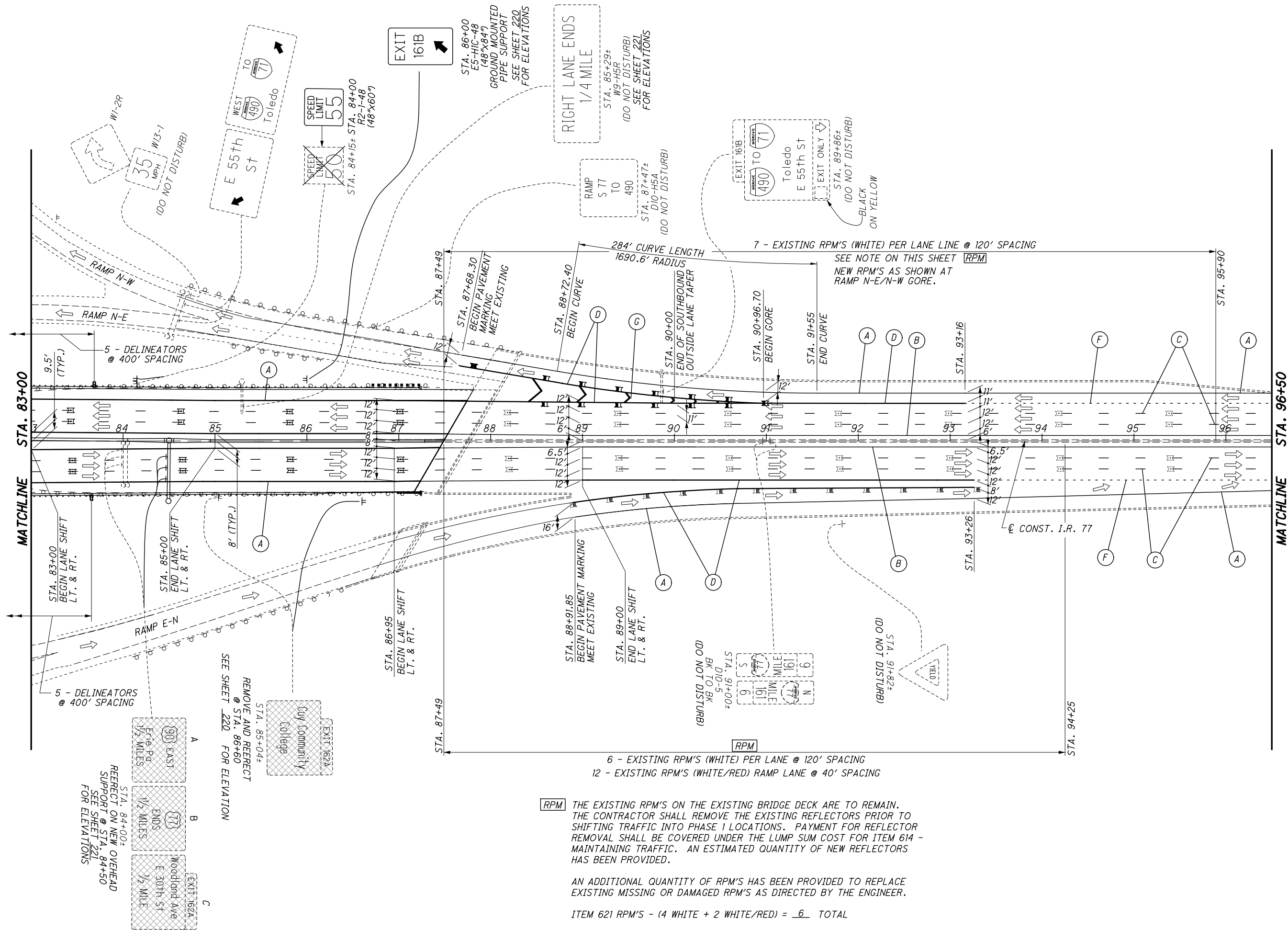
CALCULATED T J F
 CHECKED JDL

0 50 100
 HORIZONTAL SCALE IN FEET

TRAFFIC CONTROL PLAN
 STA. 70+50 TO STA. 83+00

CUY-77-14.35

FOR SIGNING AND MARKING LEGENDS: SEE SHEET 210.

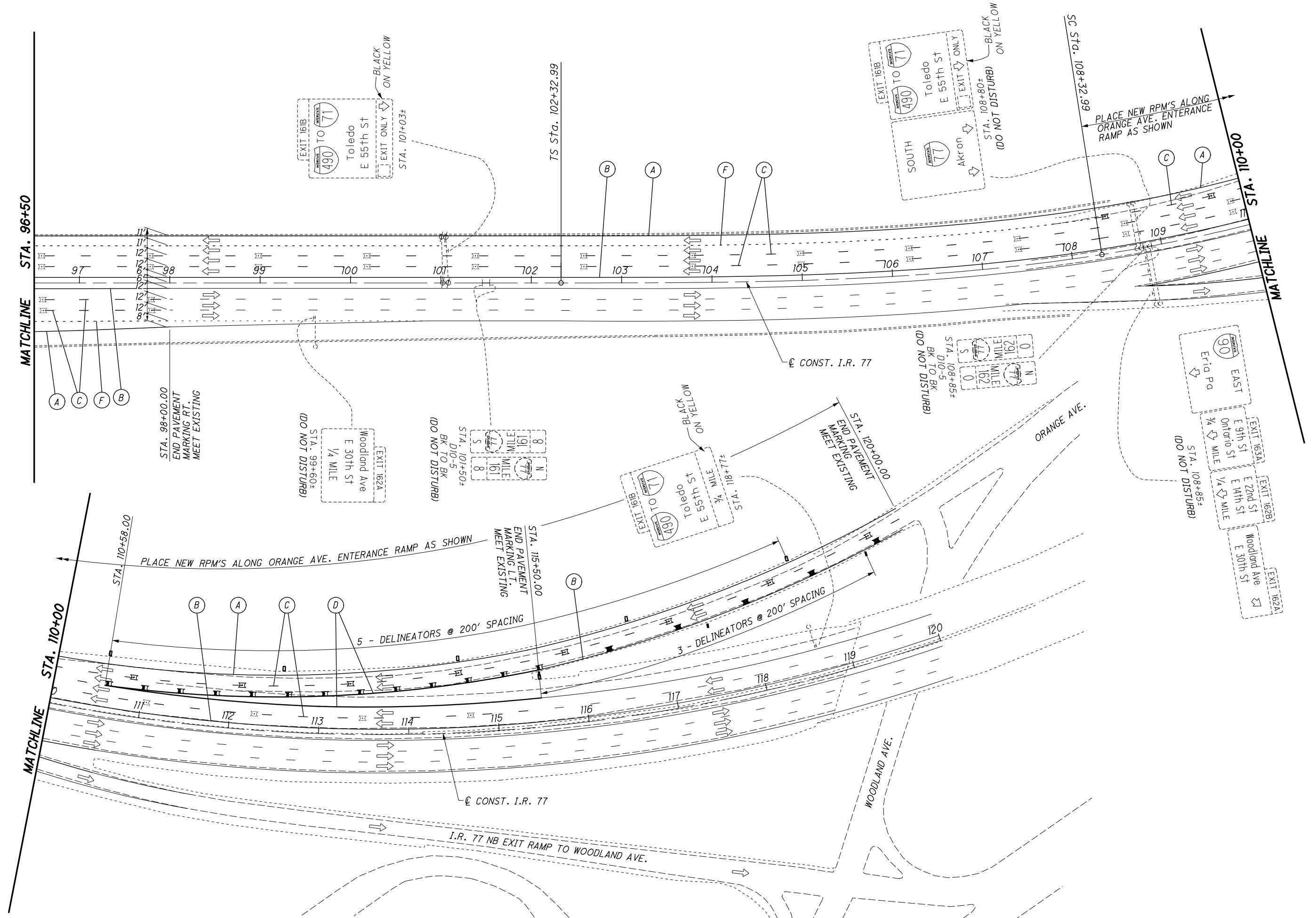


RPM THE EXISTING RPM'S ON THE EXISTING BRIDGE DECK ARE TO REMAIN. THE CONTRACTOR SHALL REMOVE THE EXISTING REFLECTORS PRIOR TO SHIFTING TRAFFIC INTO PHASE 1 LOCATIONS. PAYMENT FOR REFLECTOR REMOVAL SHALL BE COVERED UNDER THE LUMP SUM COST FOR ITEM 614 - MAINTAINING TRAFFIC. AN ESTIMATED QUANTITY OF NEW REFLECTORS HAS BEEN PROVIDED.

AN ADDITIONAL QUANTITY OF RPM'S HAS BEEN PROVIDED TO REPLACE EXISTING MISSING OR DAMAGED RPM'S AS DIRECTED BY THE ENGINEER.

ITEM 621 RPM'S - (4 WHITE + 2 WHITE/RED) = 6 TOTAL

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\13567tpd.dgn 12/14/2016 2:39:00 PM DonHeiman



CALCULATED
TJF
CHECKED
JDL

0 50 100
25
HORIZONTAL
SCALE IN FEET

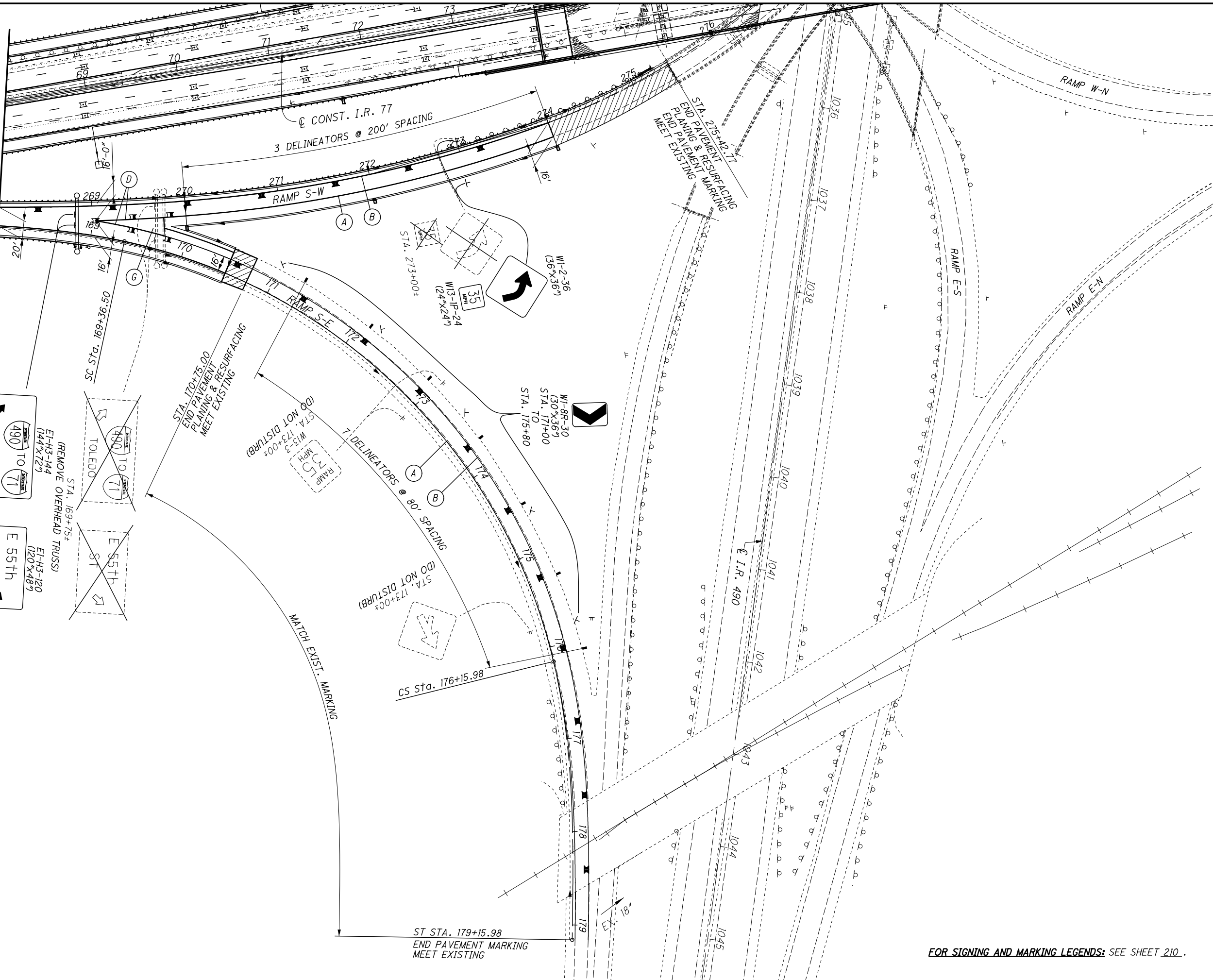
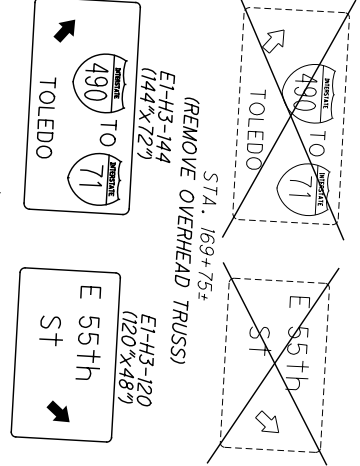
TRAFFIC CONTROL PLAN
STA. 96+50 TO STA. 120+00

CUY-77-14.35

FOR SIGNING AND MARKING LEGENDS: SEE SHEET 210.

MATCHLINE
STA. 168+00
RAMP S-E
(SEE SHEET 212)

LEVEL III
STA. 168+85
OH TC-7.65 DESIGN 6
SEE SHEET 218 FOR ELEVATION



CALCULATED T J F
CHECKED JDL

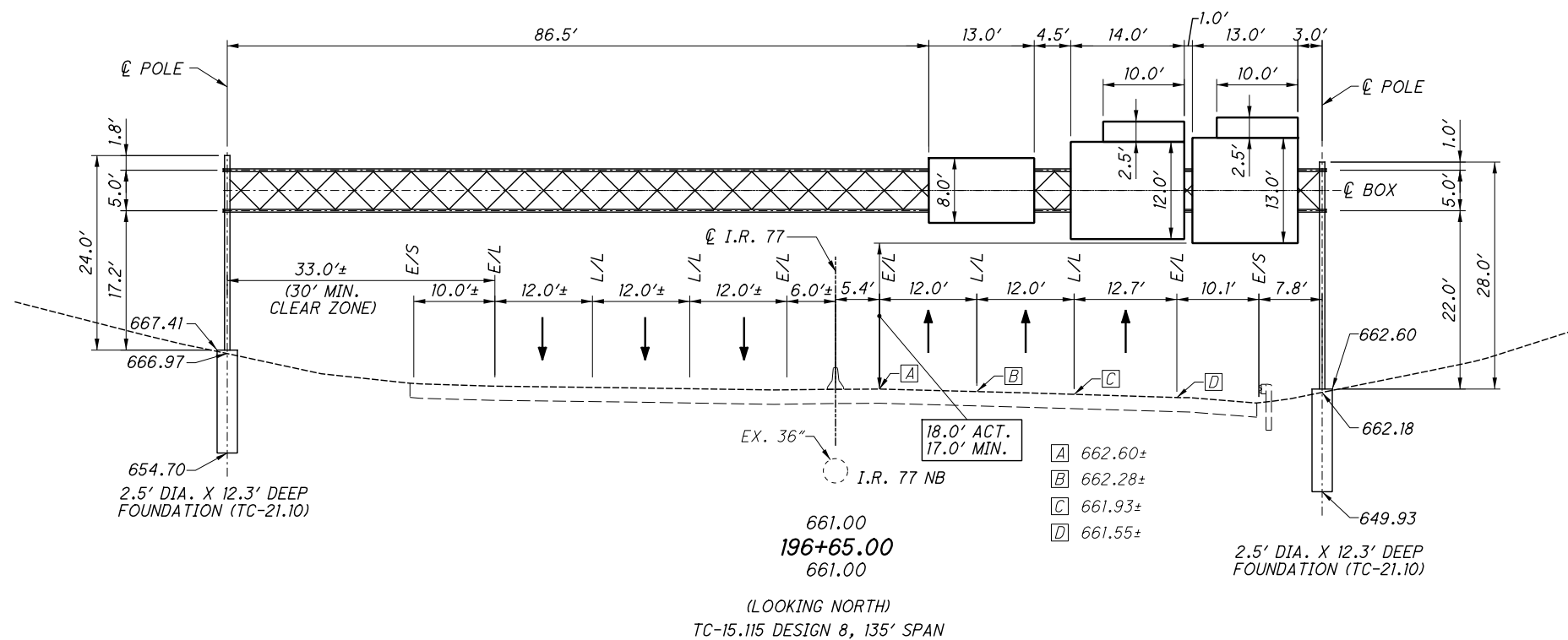
0 50 100
25
HORIZONTAL
SCALE IN FEET

TRAFFIC CONTROL PLAN - RAMP S-E
STA. 168+00 TO STA. 179+15.98

CUY-77-14.35

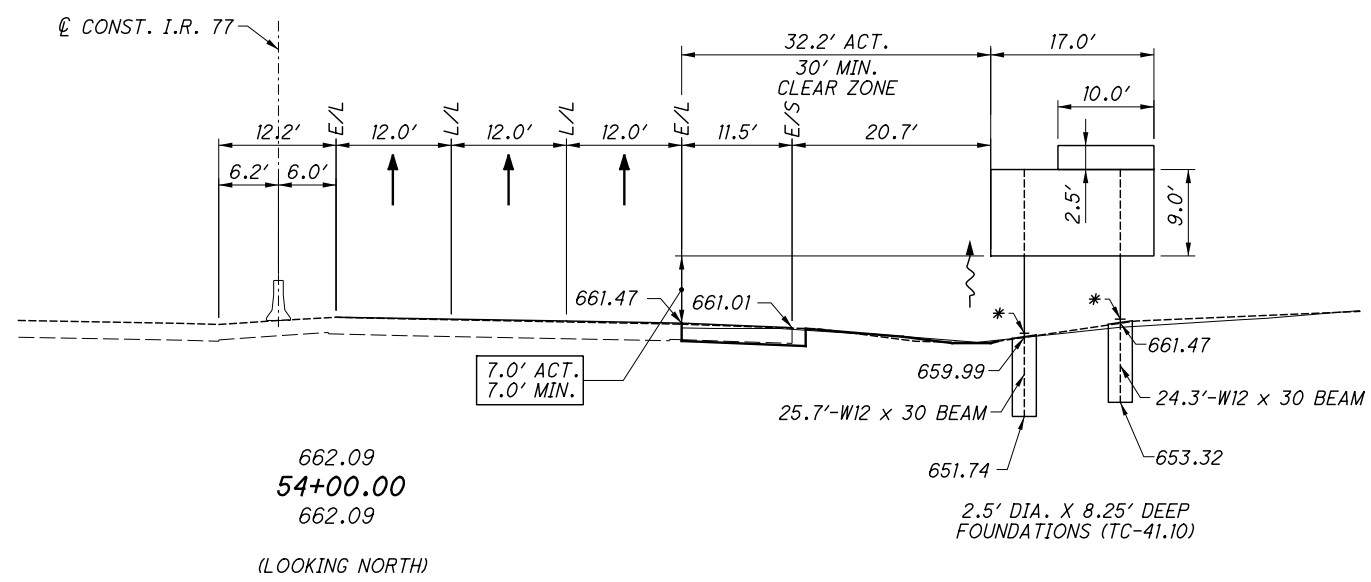
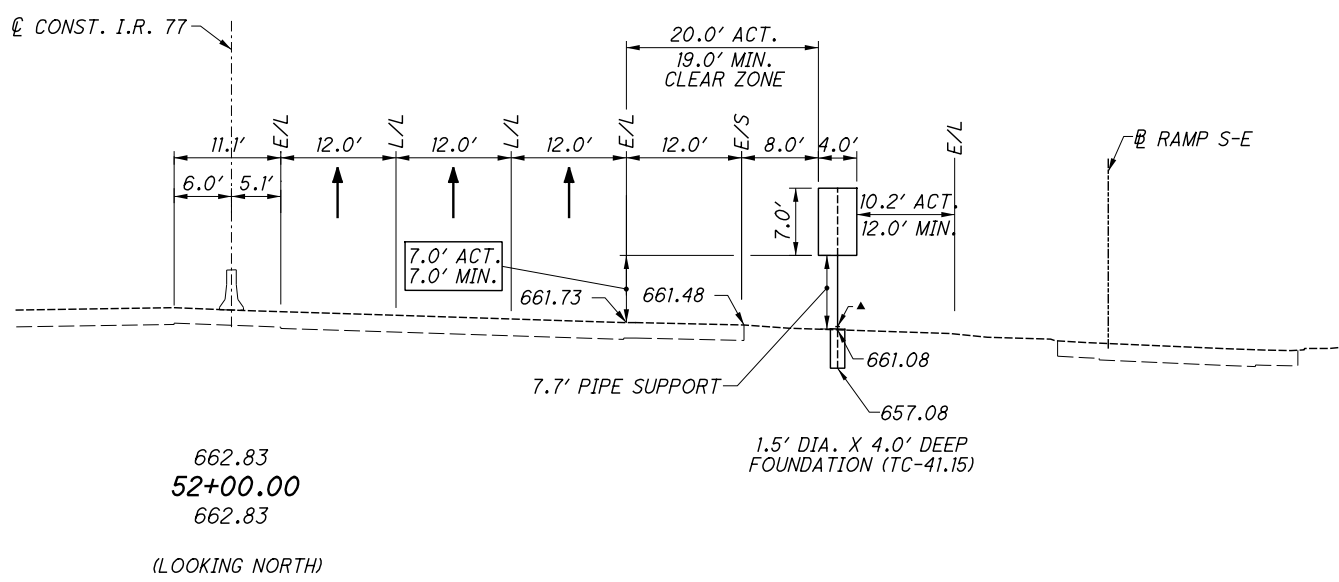
FOR SIGNING AND MARKING LEGENDS: SEE SHEET 210.

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\13567TE004.dgn 12/14/2016 2:40:23 PM DonHelman



LEGEND

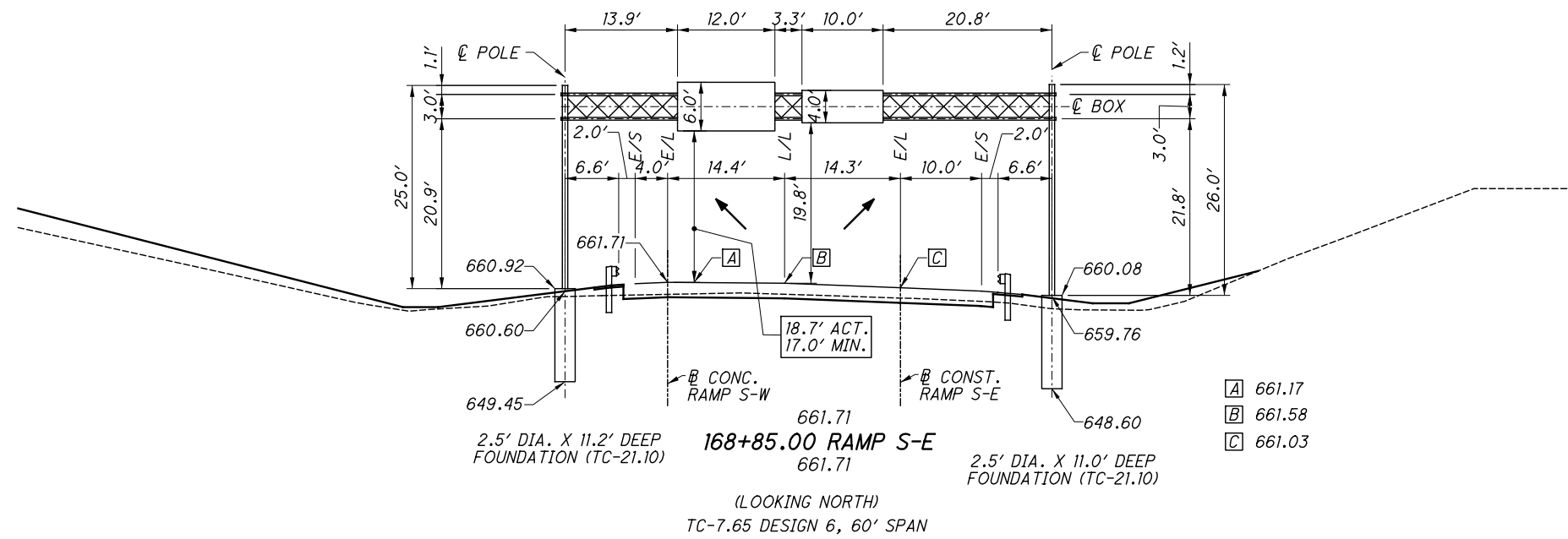
E/S - EDGE OF SHOULDER
E/L - EDGE LINE
L/L - LANE LINE
CH/L - CHANNELIZING LINE
* - BREAKAWAY BEAM CONNECTION
▲ - TRIANGULAR SLIP BASE (TC-41.15)



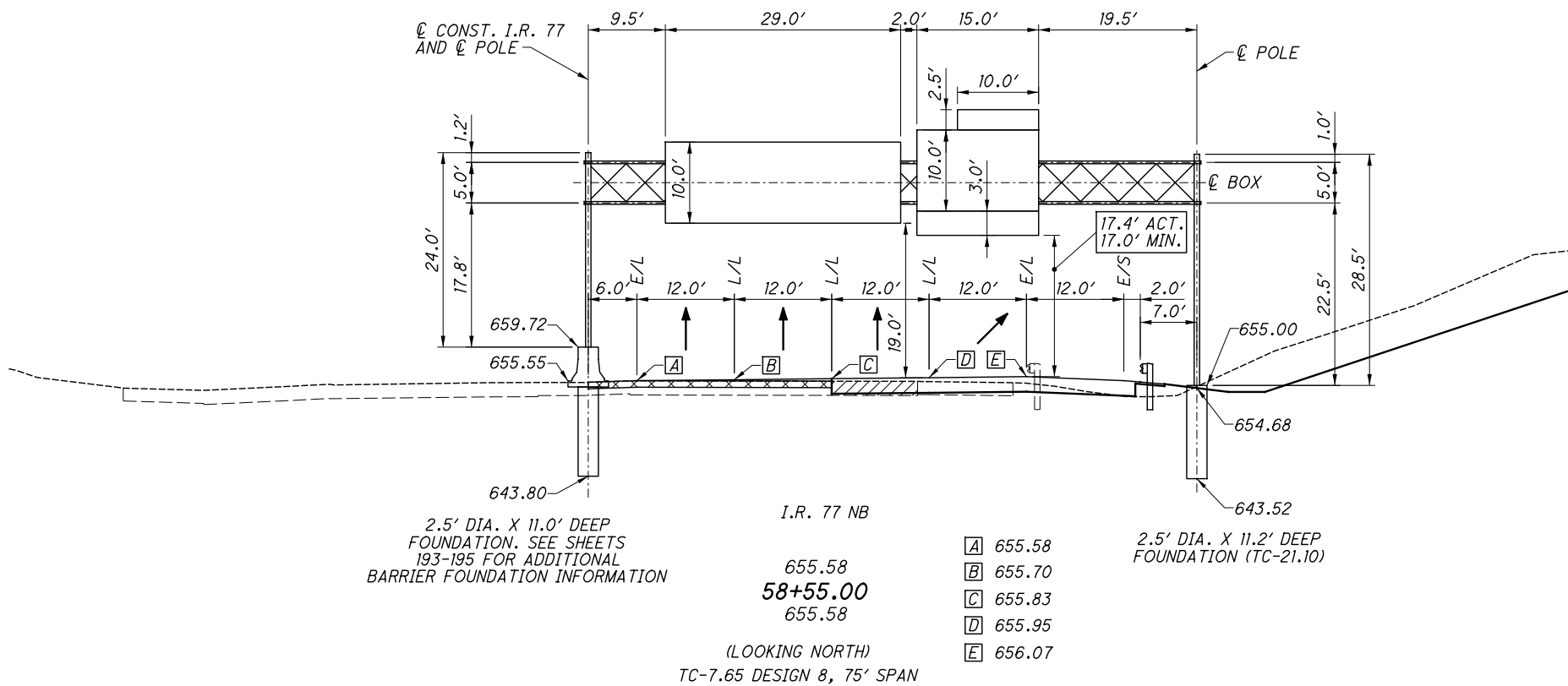
CALCULATED
TJF
CHECKED
JDL

TRAFFIC CONTROL DETAILS
SIGN ELEVATION VIEWS

CUY-77-14.35



- A 661.17
- B 661.58
- C 661.03



- A 655.58
- B 655.70
- C 655.83
- D 655.95
- E 656.07

LEGEND
E/S - EDGE OF SHOULDER
E/L - EDGE LINE
L/L - LANE LINE
CH/L - CHANNELIZING LINE

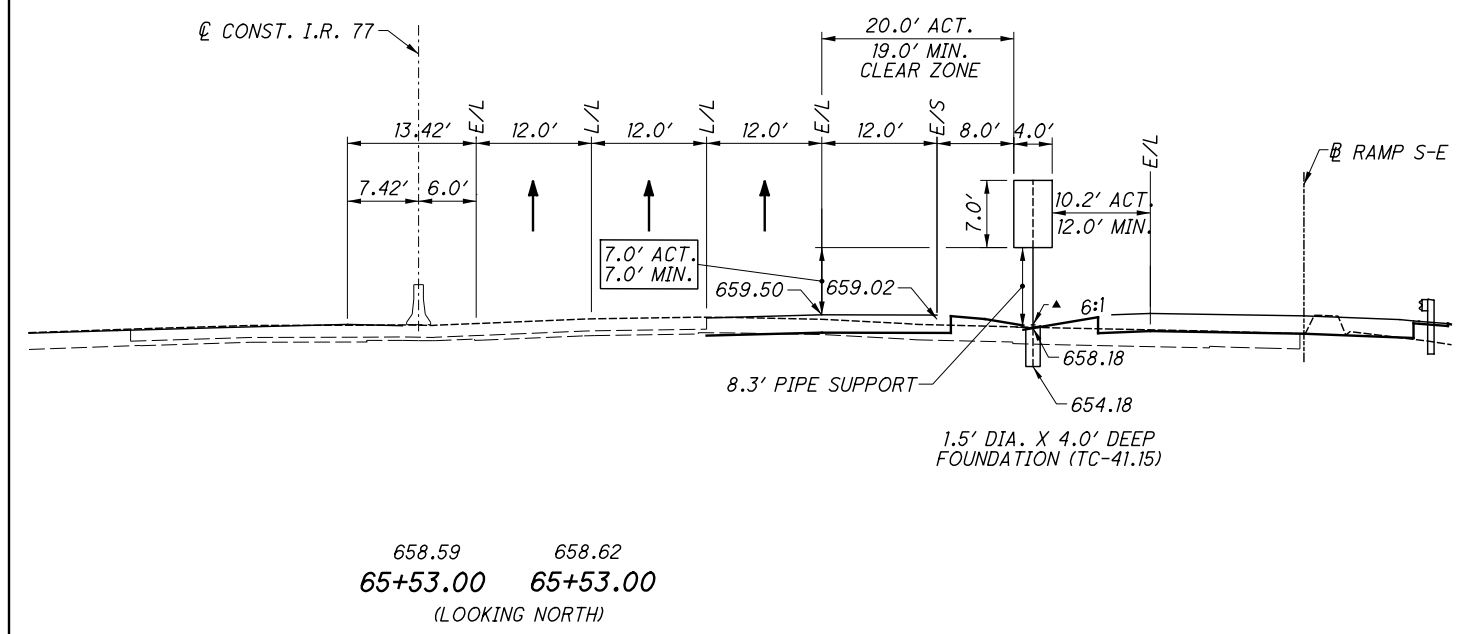
\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\13567TE002.dgn 12/14/2016 2:41:44 PM DonHelman

CALCULATED
TJF
CHECKED
JDL

TRAFFIC CONTROL DETAILS
SIGN ELEVATION VIEWS

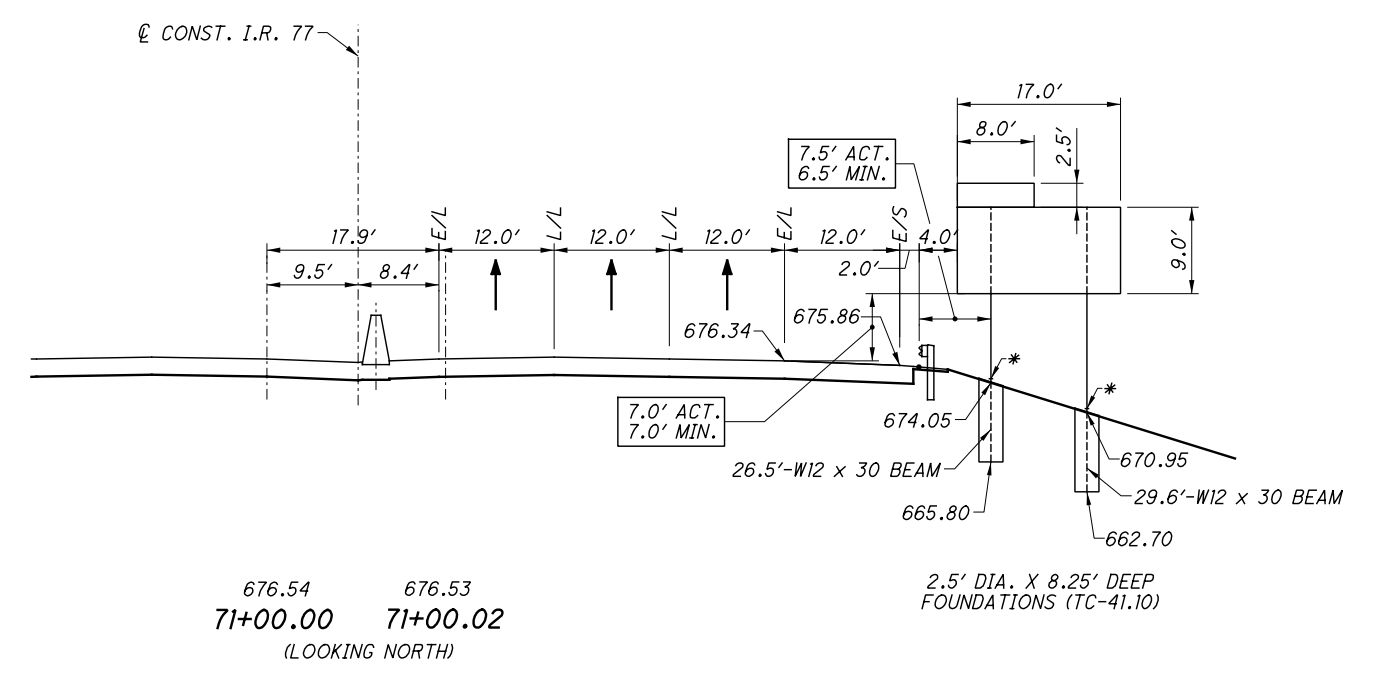
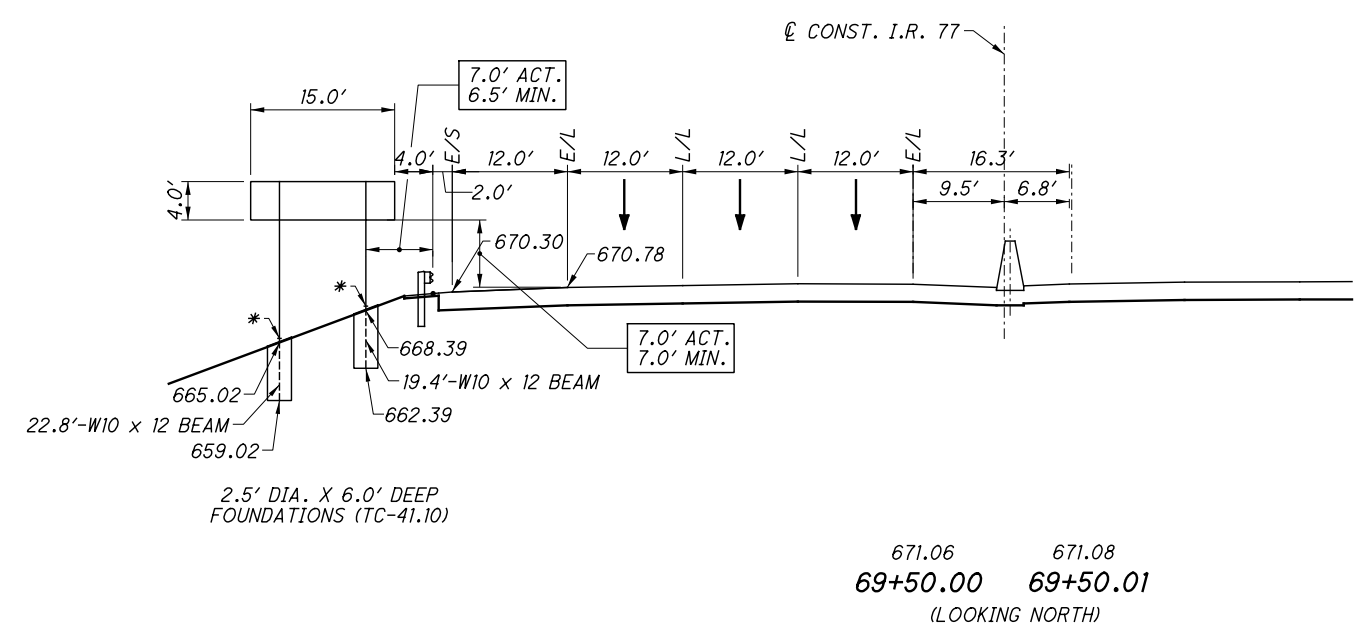
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LEGEND

E/S - EDGE OF SHOULDER
 E/L - EDGE LINE
 L/L - LANE LINE
 CH/L - CHANNELIZING LINE
 * - BREAKAWAY BEAM CONNECTION
 ▲ - TRIANGULAR SLIP BASE (TC-41.15)



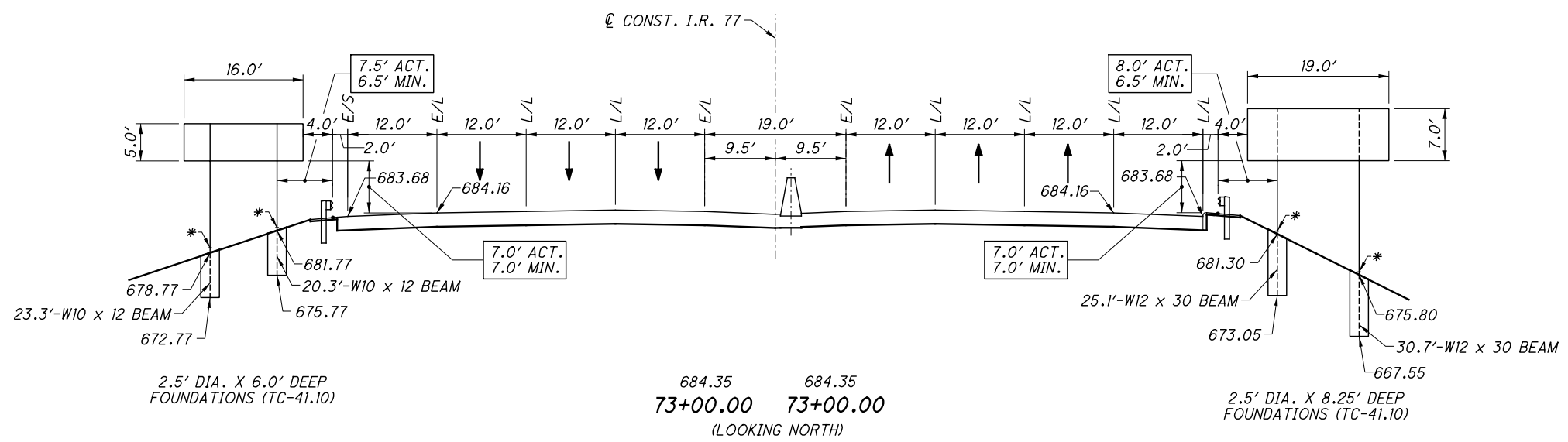
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TRAFFIC CONTROL DETAILS
SIGN ELEVATION VIEWS

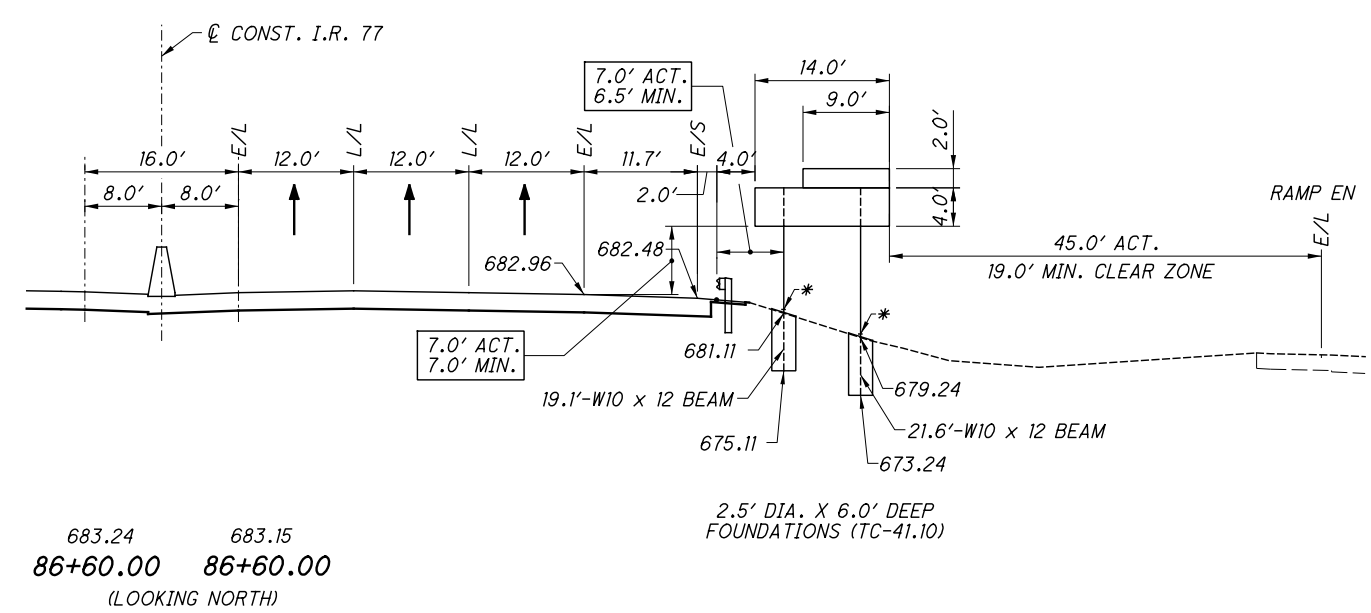
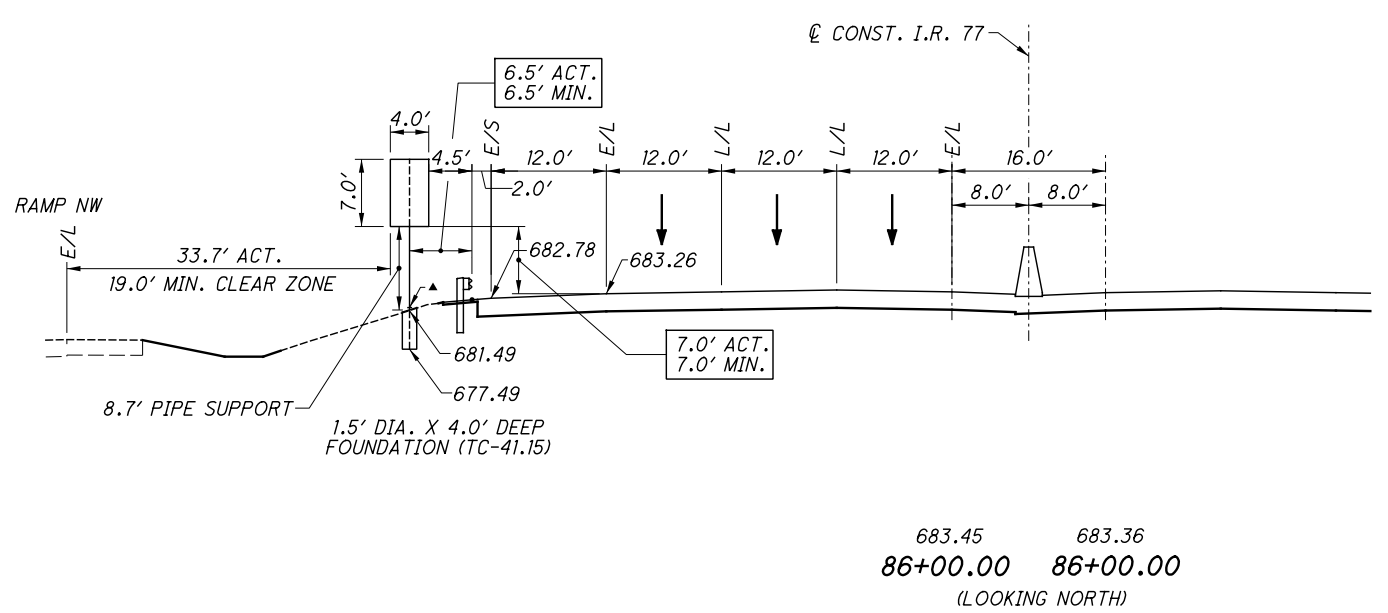
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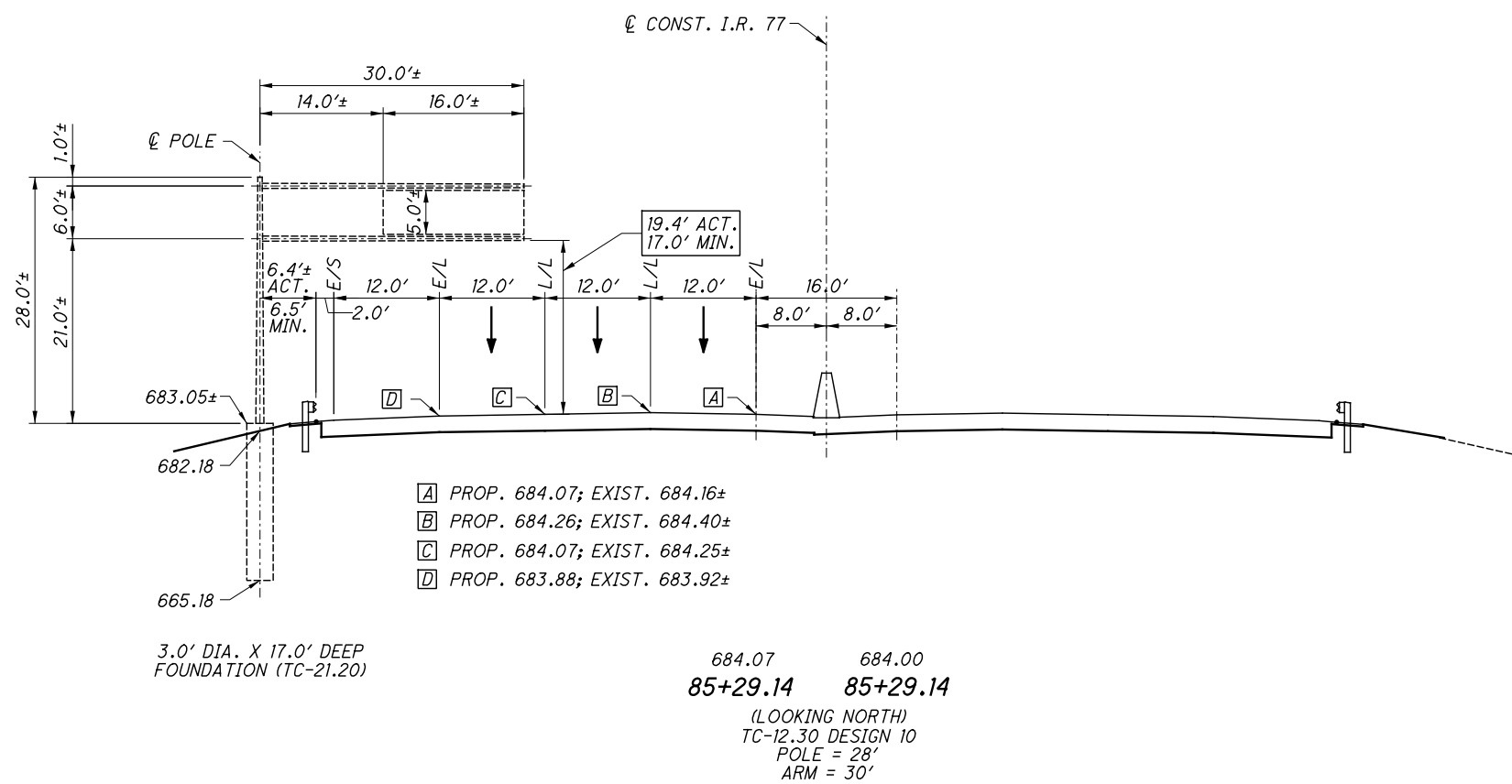
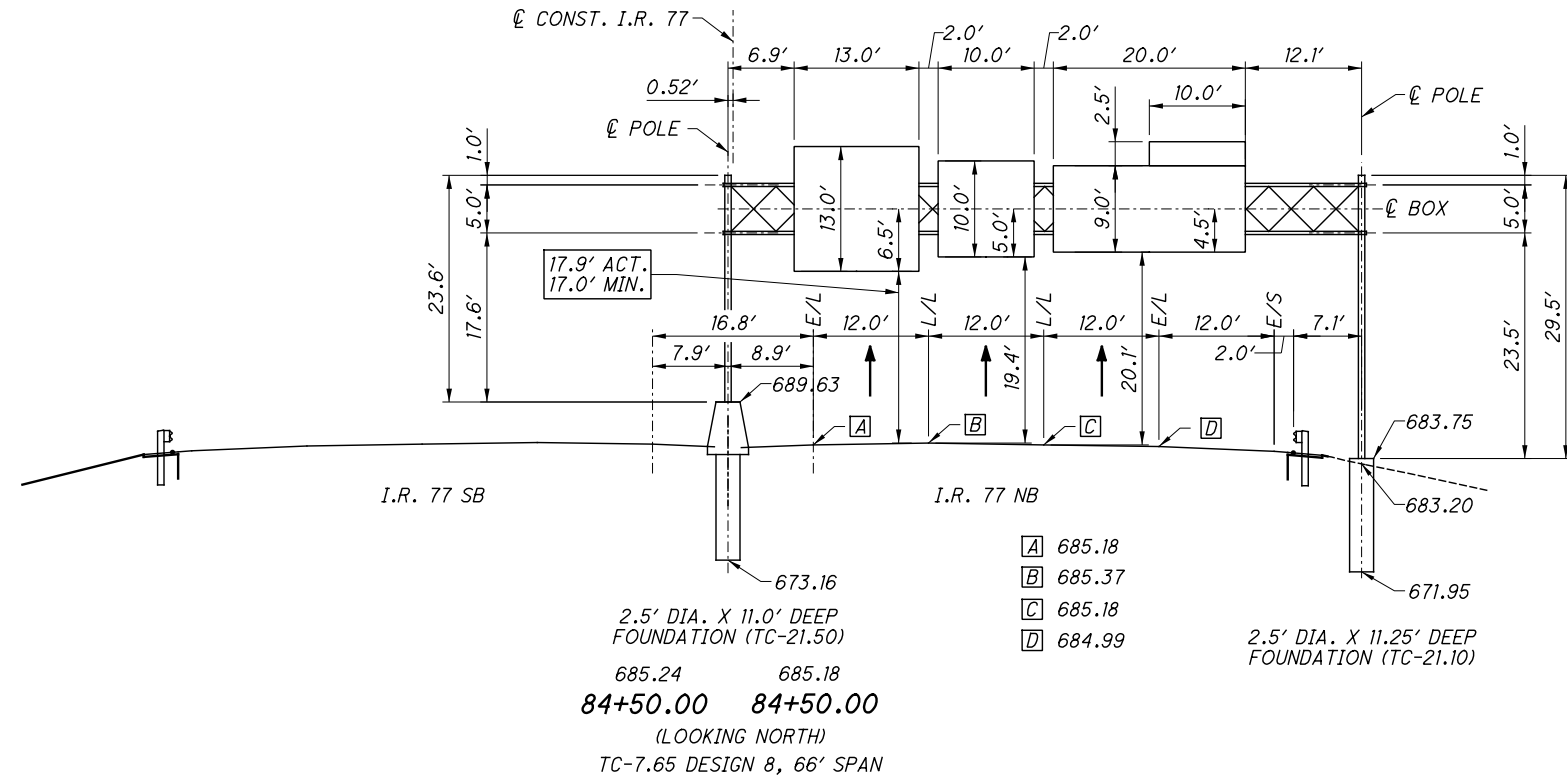
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LEGEND

- E/S - EDGE OF SHOULDER
- E/L - EDGE LINE
- L/L - LANE LINE
- CH/L - CHANNELIZING LINE
- * - BREAKAWAY BEAM CONNECTION
- ▲ - TRIANGULAR SLIP BASE (TC-41.15)





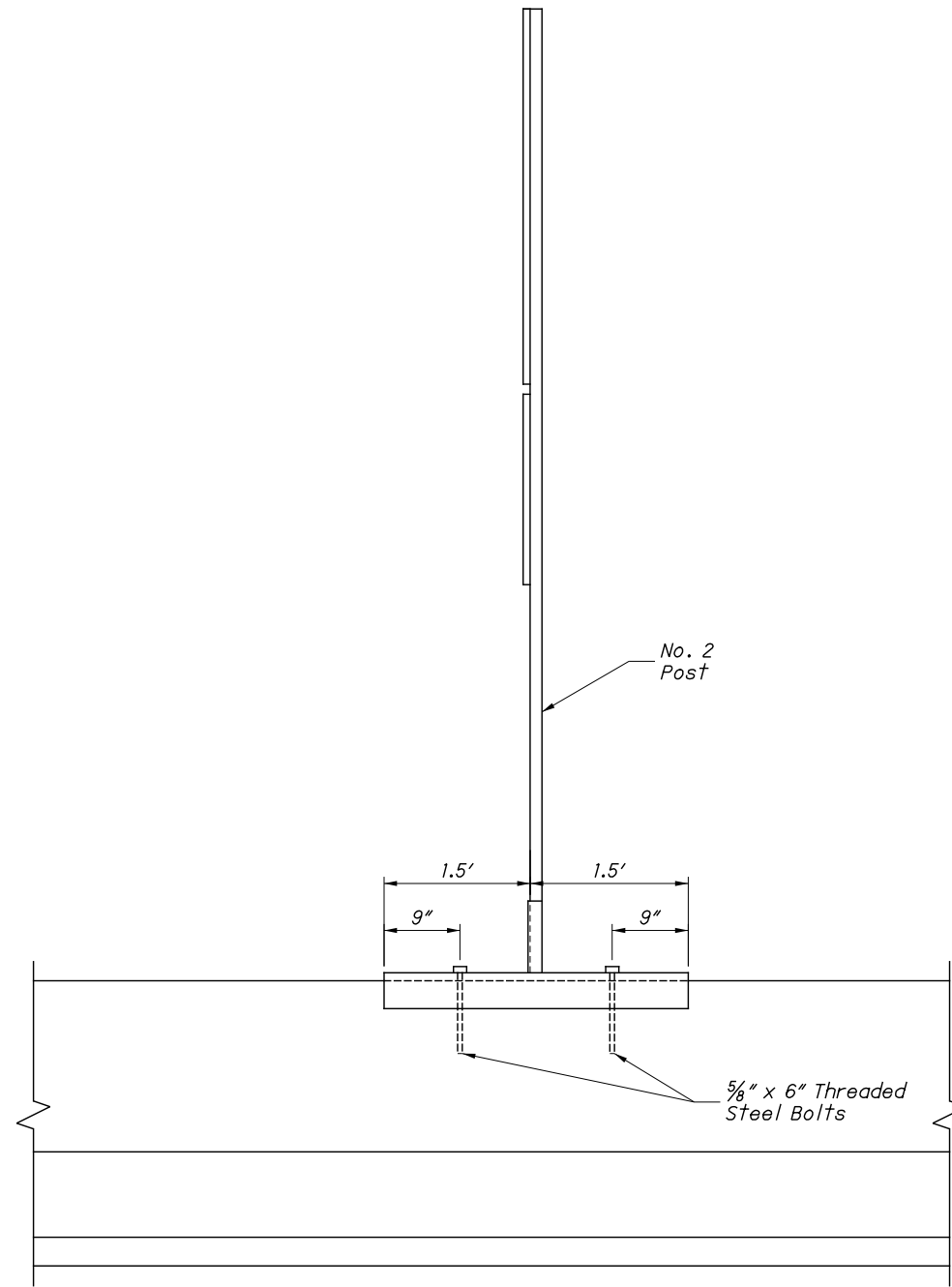
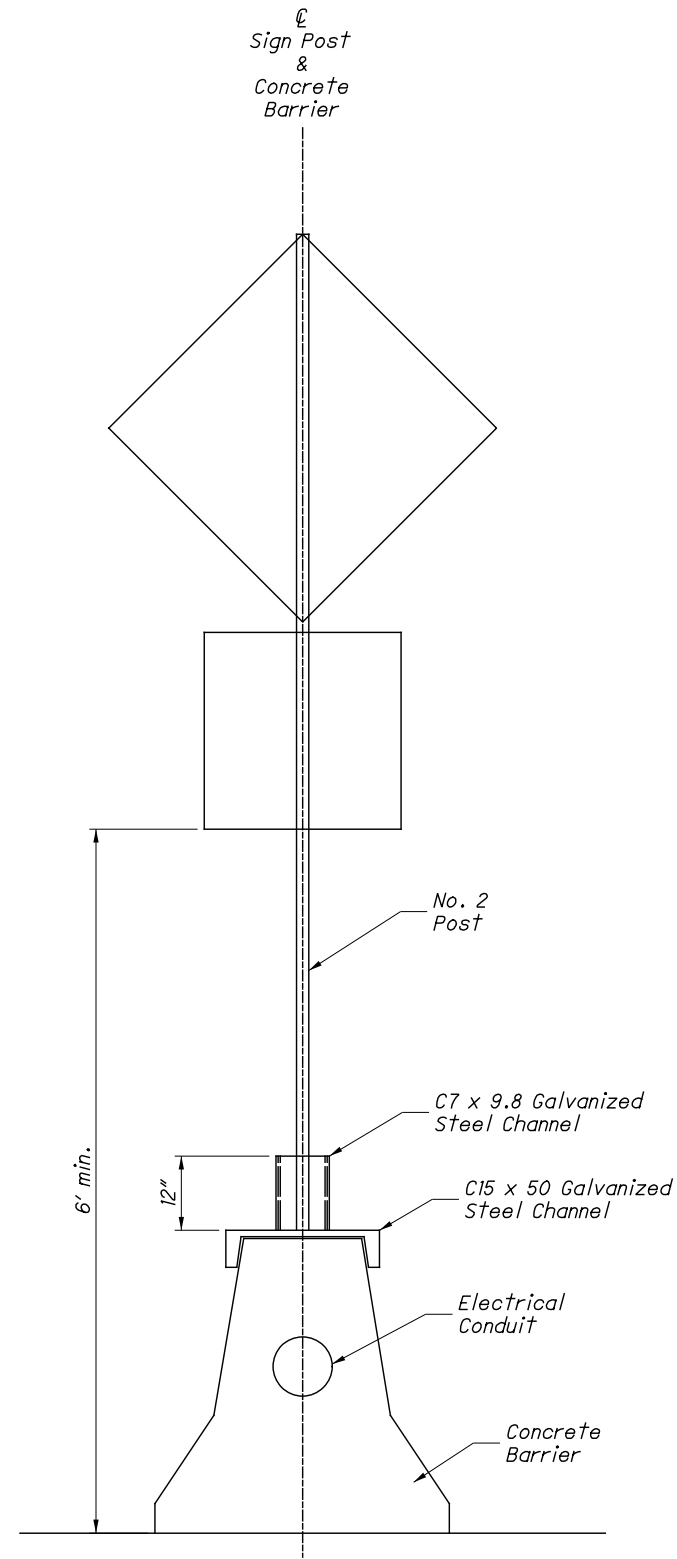
LEGEND
 E/S - EDGE OF SHOULDER
 E/L - EDGE LINE
 L/L - LANE LINE
 CH/L - CHANNELIZING LINE

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**TRAFFIC CONTROL DETAILS
 SIGN ELEVATION VIEWS**

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NOTES:

1. The C7 x 9.8 galvanized steel channel shall be welded to the C15 x 50 galvanized steel channel.
2. The No. 2 post shall be attached to the C7 x 9.8 galvanized steel channel with two 5/8" steel hex head bolts. The holes in the C7 x 9.8 steel channel shall be drilled before galvanizing. The holes shall be 9" center to center.
3. The 5/8" threaded steel bolts shall be attached to the concrete barrier with grout meeting the requirements of CMS 255.02.

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REVIEWED	XXX
REVISION	DATE
07-18-2014	CHECKED
	XXX



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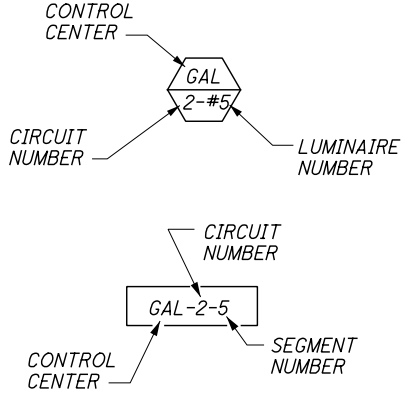
LIGHTING SCHEMATIC PLAN

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PROPOSED SYMBOLS LEGEND

EXISTING SYMBOLS LEGEND



SYMBOL	DESCRIPTION
GAL ▲	PROPOSED POWER SERVICE, 480 VOLT, 3 WIRE, SINGLE PHASE GROUNDING NEUTRAL
GAL 2-#5 ▲	PROPOSED 480 VOLT, HIGH MAST LUMINAIRE, SOLID-STATE (LED), ASYMETRIC EQUIVALENT TO 400W HPS LAMPS BBB100, REERECTED
C 44-#5	PROPOSED 480 VOLT, LUMINAIRE, CONVENTIONAL, SOLID-STATE (LED), IES-III-M-SC, LED EQUIVALENT TO 400W HPS LAMP
PB 9	PROPOSED PULL BOX, BY SIZE, 725.08
UJB 9	PROPOSED UNDERPASS JUNCTION BOX

SYMBOL	DESCRIPTION
GAL-1-1	PROPOSED CONDUIT IN BARRIER, PARAPET OR STRUCTURE MOUNTED BY SIZE AND TYPE
GAL-1-1	PROPOSED CONDUIT BORED AND JACKED 4", 725.04
GAL-1-1	PROPOSED CONDUIT, BY SIZE, 725.04
SG 1	PROPOSED STRUCTURE GROUNDING
GAL 2-#5	PROPOSED 480 VOLT, UNDERPASS LUMINAIRE, SOLID-STATE (LED), EQUIVALENT TO 100W HPS LAMP

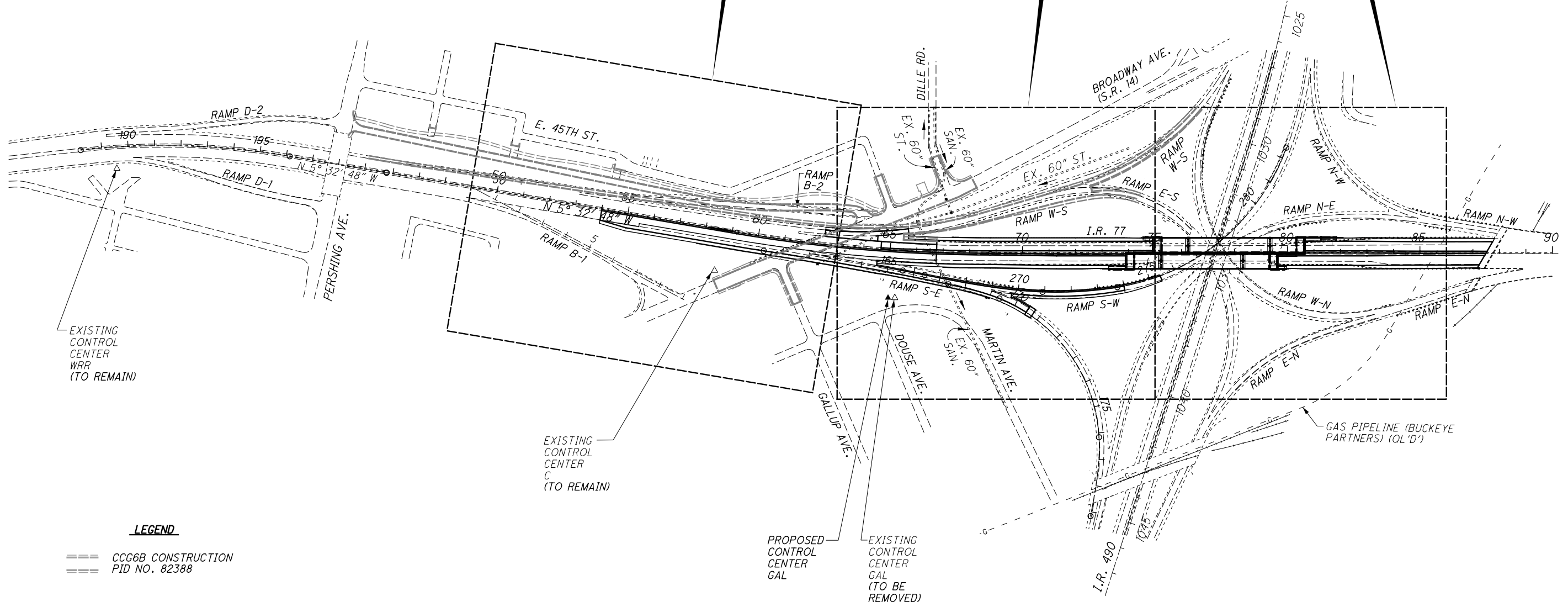
SYMBOL	DESCRIPTION
JB 9	PROPOSED JUNCTION BOX
—/—	PROPOSED 1/2" DUCT CABLE WITH 2-#4 AWG, 2400 VOLT CABLES (UNLESS OTHERWISE NOTED ON THE PLANS)
—/—	PROPOSED 1/2" DUCT CABLE WITH 3-#2 AWG, 2400 VOLT CABLES (UNLESS OTHERWISE NOTED ON THE PLANS)

SYMBOL	DESCRIPTION
—/—	EXISTING HIGH MAST LIGHTING ASYMETRIC
□	EXISTING PULL BOX
⊕	EXISTING UTILITY POLE
▷	EXISTING POWER SERVICE, 480 VOLT, 2 WIRE, SINGLE PHASE
GAL-1-1	EXISTING CIRCUIT

SEE SHEET NO. 247 FOR LIGHTING REMOVAL
SEE SHEET NO. 243 FOR PROPOSED LIGHTING

SEE SHEET NO. 248 FOR LIGHTING REMOVAL
SEE SHEET NO. 244 FOR PROPOSED LIGHTING

SEE SHEET NO. 249 FOR LIGHTING REMOVAL
SEE SHEET NO. 245 FOR PROPOSED LIGHTING



LEGEND
==== CCG6B CONSTRUCTION
==== PID NO. 82388

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EXISTING LIGHTING ITEMS, POLES, JUNCTION BOXES, CABLE AND CONDUIT

THE LOCATIONS OF EXISTING LIGHTING ITEMS, CONDUIT AND DUCT CABLE SHOWN ON THE PLANS HAVE BEEN OBTAINED BY SEARCHES OF AVAILABLE RECORDS AND FIELD CHECKS. THE CONTRACTOR SHALL FIELD VERIFY ALL CIRCUITS.

ITEM 625 - LUMINAIRE REMOVED (UNDERPASS)

THIS ITEM OF WORK SHALL CONSIST OF REMOVING AN EXISTING UNDERPASS LUMINAIRE AND THE SURFACE-MOUNTED CONDUIT AND DISTRIBUTION CABLES SERVICING THAT LUMINAIRE. THE LUMINAIRE, CONDUIT, AND CABLES SHALL BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE PROPERLY DISPOSED OF OFF OF THE PROJECT SITE.

PAYMENT WILL BE MADE AT THE UNIT PRICE BID UNDER CMS ITEM 625 - "LUMINAIRE REMOVED (UNDERPASS)" FOR EACH LUMINAIRE REMOVED WHICH SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.

ITEM 625 - LUMINAIRE, UNDERPASS, SOLID-STATE (LED), AS PER PLAN, TYPE III

IN ADDITION TO THE REQUIREMENTS OF ODOT'S CONSTRUCTION AND MATERIAL SPECIFICATIONS, LUMINAIRES FOR UNDERPASS LIGHTING UNITS SHALL BE AS FOLLOWS:

LUMINAIRES FOR UNDERPASS LED LIGHTING UNITS SHALL BE IN CONFORMANCE WITH SUPPLEMENTAL SPECIFICATION 813 AND 913 AND SHALL BE LISTED ON ODOT'S APPROVED MATERIALS LIST OR BE AN EQUAL AS APPROVED BY THE ENGINEER.

UNDERPASS LUMINAIRES SHALL BE ELECTRO-MATIC LE3T2M090GF2G02S-OH.

IES DISTRIBUTION OF THE LUMINAIRE SHALL BE TYPE III. LUMINAIRES SHALL BE WALL MOUNT STYLE. THE THRU-WIRING REQUIREMENT OF CMS 725.11 SHALL BE WAIVED FOR THIS APPLICATION. TOP ENTRY SHALL BE THE WIRING METHOD USED UNLESS OTHERWISE SHOWN IN THE PLAN.

LUMINAIRE LED DRIVERS SHALL BE COMPATIBLE WITH 480V INPUT, BE MODULAR, HAVE THE MANUFACTURER NAME AND PART NUMBER CLEARLY MARKED ON THE DRIVER ENCLOSURE AND SHALL CARRY A MINIMUM 5 YEAR REPLACEMENT WARRANTY. EACH UNIT SHALL INCLUDE AN INTERNAL LINE FUSE.

THE LED EMITTER ASSEMBLY SHALL CARRY A MINIMUM 5 YEAR REPLACEMENT WARRANTY AND A 10 YEAR STANDARD MANUFACTURER LIMITED WARRANTY. THE LUMINAIRE ENCLOSURE SHALL BE RATED A MINIMUM IP65 AS PER IEC 60529 AND SHALL CARRY A MINIMUM 5 YEAR REPLACEMENT WARRANTY WITH A 10 YEAR STANDARD MANUFACTURER LIMITED WARRANTY.

A WRITTEN WARRANTY STATEMENT, SPARE PARTS LIST AND MANUAL FROM THE LED SUPPLIER SHALL BE SUPPLIED TO THE ENGINEER BEFORE LUMINAIRES SHALL BE ACCEPTED BY ODOT.

SURGE PROTECTION SHALL BE 10KV/ 5KV MINIMUM PER ANSI C62.41.2 AND THE MODULAR PACKAGE SHALL BE CLEARLY MARKED WITH THE MANUFACTURER AND PART NUMBER. COLOR TEMPERATURE SHALL BE 4000K +/- 400K UNLESS OTHERWISE APPROVED BY THE ENGINEER.

PAYMENT FOR UNDERPASS LUMINAIRES SHALL ALSO INCLUDE COST FOR FURNISHING AND INSTALLING THE UNDERPASS LUMINAIRE MOUNTING PLATE, AN UNDERPASS LUMINAIRE MOUNTING BRACKET TO ORIENT THE LUMINAIRE AS NOTED, ADEQUATE LIQUID TIGHT FLEXIBLE CONDUIT AND NO. 10 AWG DISTRIBUTION CABLE TO RUN BETWEEN THE ADJACENT UNDERPASS JUNCTION BOX AND THE UNDERPASS LUMINAIRE AND ALL NECESSARY EQUIPMENT, LABOR AND MATERIALS TO MAKE THE WIRING CONNECTIONS FROM THE ADJACENT UNDERPASS JUNCTION BOX TO THE UNDERPASS LUMINAIRE. THIS ITEM SHALL ALSO INCLUDE GALVANIZING OF THE LUMINAIRE MOUNTING BRACKET AND ATTACHMENT HARDWARE AS DETAILED ON SHEET 255 AND ANY FASTENERS, ANCHORS AND BRACKETS NECESSARY BASE ON THE MANUFACTURES REQUIREMENTS.

PAYMENT WILL BE MADE AT THE UNIT PRICE BID UNDER CMS ITEM 625 - "LUMINAIRE, UNDERPASS, SOLID-STATE (LED), AS PER PLAN, TYPE III" FOR EACH LUMINAIRE WHICH SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.

ITEM 625 - LUMINAIRE, CONVENTIONAL, SOLID-STATE (LED), IES-III-M-SC, LED, EQUIVALENT TO 400W HPS LAMP, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF ODOT'S CONSTRUCTION AND MATERIAL SPECIFICATIONS, LUMINAIRES FOR CONVENTIONAL LIGHTING UNITS SHALL BE AS FOLLOWS:

LUMINAIRES FOR CONVENTIONAL LED LIGHTING UNITS SHALL BE IN CONFORMANCE WITH SUPPLEMENTAL SPECIFICATION 813 AND 913 AND SHALL BE ON ODOT'S APPROVED MATERIAL LIST OR AN EQUAL AS APPROVED BY THE ENGINEER.

PAYMENT WILL BE MADE AT THE UNIT BID PRICE FOR EACH CMS ITEM 625 - "LUMINAIRE, CONVENTIONAL, SOLID-STATE (LED), IES-III-M-SC, LED EQUIVALENT TO 400W HPS LAMP, AS PER PLAN" FOR EACH LUMINAIRE WHICH SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.

ITEM 625 - LIGHT POLES, CONVENTIONAL, AS PER PLAN (BY TYPE)

IN ADDITION TO CMS 625.09 AND 725.21 THE CONVENTIONAL LIGHT POLES (POLE, BRACKET ARM AND TRANSFORMER BASE) FOR THIS PROJECT SHALL BE CONSTRUCTED FROM ALUMINUM. IF THE BRACKET ARM IS TO BE OF THE CLAMP-ON TYPE, A MANUFACTURER-APPROVED METHOD OF THROUGH BOLTING PER STANDARD CONSTRUCTION DRAWING HL-10.12 SHALL BE USED TO PREVENT ROTATION.

PAYMENT WILL BE MADE AT THE UNIT BID PRICE UNDER CMS ITEM 625 - LUMINAIRE CONVENTIONAL, AS PER PLAN (BY TYPE) FOR EACH CONVENTIONAL LIGHT POLE AND SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.

ITEM 625 - LIGHT TOWER REMOVED FOR STORAGE

THIS ITEM OF WORK SHALL CONSIST OF REMOVING AN EXISTING LIGHT TOWER, INCLUDING LOWERING DEVICE AND PROPERLY STORING IT ON THE PROJECT SITE FOR RE-ERECTION.

THE TOWER SHALL BE PROPERLY SUPPORTED TO PREVENT BENDING OF THE POLE OR DAMAGE TO THE LOWERING DEVICE DURING STORAGE ON THE PROJECT SITE.

TOWERS WHICH ARE NOT BEING RE-ERECTED AS PART OF THIS PROJECT WILL BE PICKED UP AND MOVED TO OFFSITE STORAGE BY ODOT FORCES.

PAYMENT WILL BE MADE AT THE UNIT PRICE BID UNDER CMS ITEM 625 - "LIGHT TOWER REMOVED FOR STORAGE" FOR EACH TOWER REMOVED AND STORED AND SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.

ITEM 625 - RE-ERECT EXISTING LIGHT TOWER, AS PER PLAN

THIS ITEM OF WORK SHALL CONSIST OF RE-ERECTING AN EXISTING LIGHT TOWER PREVIOUSLY REMOVED AND STORED BY THIS PROJECT.

WHEN REQUIRED, ADDITIONAL LUMINAIRE BRACKET ARMS SHALL BE ADDED TO THE EXISTING LUMINAIRE BRACKETS RELOCATED ALONG WITH THE NECESSARY ADJUSTMENTS AND ADDITIONS TO THE LUMINAIRE WIRING TO ENABLE THE LUMINAIRES TO BE MOUNTED SYMMETRICALLY AROUND THE LUMINAIRE MOUNTING RING.

THE TOWER AND LOWERING MECHANISM SHALL BE CLEANED AND LUBRICATED.

WHERE THE TOWER WILL BE INSTALLED ON A NEW FOUNDATION, NEW ANCHOR BOLTS SHALL BE FURNISHED ALONG WITH A MOUNTING TEMPLATE MADE SPECIFICALLY FOR THE LIGHT TOWER TO BE RE-ERECTED. ANCHOR BOLTS SHALL BE AS SHOWN ON STANDARD CONSTRUCTION DRAWING HL-20.21.

ANY REPAIRS AND ADJUSTMENTS NECESSARY TO RETURN THE TOWER AND MECHANISM TO GOOD OPERATING CONDITION SHALL BE MADE.

THE EXISTING LIGHT TOWER IDENTIFICATION DECAL SHALL BE REMOVED, AND A NEW DECAL FOR THE NEW IDENTIFICATION NUMBER FURNISHED AND INSTALLED.

PAYMENT SHALL BE MADE AT THE UNIT PRICE BID UNDER CMS ITEM 625 - "RE-ERECT EXISTING LIGHT TOWER, AS PER PLAN" FOR EACH TOWER RE-ERECTED WHICH SHALL INCLUDE ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.

ITEM 625 - LUMINAIRE REMOVED FOR STORAGE

THIS ITEM OF WORK SHALL CONSIST OF REMOVING AN EXISTING HIGH MAST LUMINAIRE AND PROPERLY STORING IT ON THE PROJECT SITE FOR PICK UP BY ODOT FORCES.

PAYMENT WILL BE MADE AT THE UNIT PRICE BID UNDER CMS ITEM 625 - "LUMINAIRE REMOVED FOR STORAGE" FOR EACH LUMINAIRE REMOVED AND STORED WHICH SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.

ITEM 625 - LUMINAIRE, HIGH MAST, SOLID STATE (LED), ASYMMETRIC, EQUIVALENT TO 400W HPS LAMPS.

THE LUMINAIRE ARRAYS AND ASSOCIATED ILLUMINATION TEST AREAS SPECIFIED IN CMS 725.11 ARE HEREBY WAIVED. INSTEAD, THE LUMINAIRES FOR HIGH-MAST LIGHTING SHALL MEET THE FOLLOWING REQUIREMENTS:

LUMINAIRES FOR HIGH MAST LED LIGHTING UNITS SHALL BE IN CONFORMANCE WITH SUPPLEMENTAL SPECIFICATION 813 AND 913 AND SHALL BE ON ODOT'S APPROVED MATERIALS LIST OR BE AN EQUAL AS APPROVED BY THE ENGINEER.

IN ADDITION, OTHER LED LUMINAIRES WILL BE CONSIDERED IF THE DESIGNED INTENSITY AND UNIFORMITY ARE PROVIDED USING THE DESIGNED POLE LOCATIONS AND THE DESIGNED NUMBER AND TYPE OF FIXTURES PER POLE.

PAYMENT WILL BE MADE AT THE UNIT BID PRICE FOR EACH CMS 625 - LUMINAIRE, HIGH MAST, SOLID STATE (LED), ASYMMETRIC, EQUIVALENT TO 400W HPS LAMPS FOR EACH LUMINAIRE WHICH SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.

ITEM 625 - STRUCTURE JUNCTION BOXES, AS PER PLAN

WHEN ENCASED IN CONCRETE, THE JUNCTION BOX SHALL HAVE INWARD FLANGED COVERS AND MAY HAVE IN LIEU OF BOSSED DRILLED AND TAPPED CONNECTIONS, SLIP HOLES FIELD DRILLED TO ACCOMMODATE THE CONDUITS ENTERING THE BOX SO LONG AS EACH METALLIC CONDUIT IS EQUIPPED WITH A GROUNDING BUSHING JUMPED TO THE BOX ITSELF.

ITEM 625 - JUNCTION BOX, AS PER PLAN NO. 1

IN ADDITION TO THE REQUIREMENTS OF CMS ITEM 625 THIS ITEM SHALL ALSO INCLUDE PAINTING OF THE UNDERPASS JUNCTION BOX AND ATTACHMENT EQUIPMENT LIGHT NEUTRAL (FEDERAL COLOR NUMBER 17778) TO MATCH THE SEALING OF THE CONCRETE PIERS. THIS ITEM SHALL ALSO INCLUDE THE ATTACHMENT OF THE UNDERPASS JUNCTION BOX TO THE FACE OF THE CONCRETE PIER CAP.

THE JUNCTION BOX SHALL HAVE AN EMBOSSEMENT IN THE BACK OF THE BOX THAT SHALL BE DRILLED & TAPPED FOR A 1/4" - 20 CAP SCREW FOR CONNECTION OF GROUNDS.

WHEN SURFACE MOUNTED, THE JUNCTION BOX MAY HAVE IN LIEU OF BOSSED DRILLED & TAPPED CONNECTIONS, FIELD INSTALLED HUBS TO ACCOMMODATE THE CONDUITS ENTERING THE BOX.

PAYMENT FOR THIS ITEM WILL BE MADE AT THE UNIT CONTRACT BID PRICE FOR EACH ITEM 625 - JUNCTION BOX, AS PER PLAN NO. 1 AND SHALL INCLUDE ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.

ITEM 625 - JUNCTION BOX, AS PER PLAN NO. 2

IN ADDITION TO THE REQUIREMENTS OF CMS ITEM 625 THIS ITEM SHALL ALSO INCLUDE THE ATTACHMENT OF THE UNDERPASS JUNCTION BOX TO THE STRUCTURE CROSS FRAME. THE JUNCTION BOX SHALL BE ATTACHED TO THE STRUCTURE WITH BRACKETS AND HARDWARE AS DETAILED ON SHEET 254. WELDING OF THE JUNCTION BOX, BRACKETS AND/OR HARDWARE TO THE STRUCTURE SHALL NOT BE PERMITTED. THE UNDERPASS JUNCTION BOX, ATTACHMENT BRACKETS AND HARDWARE SHALL BE GALVANIZED.

THE JUNCTION BOX SHALL HAVE AN EMBOSSEMENT IN THE BACK OF THE BOX THAT SHALL BE DRILLED & TAPPED FOR A 1/4" - 20 CAP SCREW FOR CONNECTION OF GROUNDS.

WHEN SURFACE MOUNTED, THE JUNCTION BOX MAY HAVE IN LIEU OF BOSSED DRILLED & TAPPED CONNECTIONS, FIELD INSTALLED HUBS TO ACCOMMODATE THE CONDUITS ENTERING THE BOX.

PAYMENT FOR THIS ITEM WILL BE MADE AT THE UNIT CONTRACT BID PRICE FOR EACH ITEM 625 - JUNCTION BOX, AS PER PLAN NO. 2 AND SHALL INCLUDE ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.

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ITEM 625 - 2" & 2 1/2" CONDUIT, 725.04, AS PER PLAN NO. 1

IN ADDITION TO THE REQUIREMENTS OF 625 THIS ITEM SHALL ALSO INCLUDE PAINTING OF THE CONDUIT AND ATTACHMENT EQUIPMENT LIGHT NEUTRAL (FEDERAL COLOR NUMBER 17778) TO MATCH THE SEALING OF THE CONCRETE PIERS. THIS ITEM SHALL ALSO INCLUDE THE ATTACHMENT OF THE CONDUIT TO THE FACE OF THE CONCRETE PIER CAP AS DETAILED ON SHEETS 250-253.

PAYMENT FOR THIS ITEM WILL BE MADE AT THE UNIT CONTRACT BID PRICE PER FOOT FOR ITEM 625 - 2" & 2-1/2" CONDUIT, 725.04, AS PER PLAN NO. 1 AND SHALL INCLUDE ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.

ITEM 625 - 2 1/2" CONDUIT, 725.04, AS PER PLAN NO. 2

IN ADDITION TO THE REQUIREMENTS OF 625 THIS ITEM SHALL ALSO INCLUDE THE ATTACHMENT OF THE CONDUIT TO THE STRUCTURE CROSS FRAME. THE CONDUIT SHALL BE ATTACHED TO THE STRUCTURE WITH BRACKETS AND HARDWARE AS DETAILED ON SHEET 254. WELDING OF THE CONDUIT BRACKETS AND/OR HARDWARE TO THE STRUCTURE SHALL NOT BE PERMITTED. THE CONDUIT BRACKETS AND HARDWARE SHALL BE GALVANIZED.

PAYMENT FOR THIS ITEM WILL BE MADE AT THE UNIT CONTRACT BID PRICE PER FOOT FOR ITEM 625 - 2 1/2" CONDUIT, 725.04, AS PER PLAN NO. 2 AND SHALL INCLUDE ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.

ITEM 625 - CONDUIT, MISC.: 2 1/2", WATERTIGHT, FLEXIBLE CONDUIT, 731.08

THIS ITEM SHALL CONFORM WITH ODOT'S CONSTRUCTION AND MATERIAL SPECIFICATION 625.12 AND 731.08

PAYMENT FOR THIS ITEM SHALL BE AT THE UNIT CONTRACT PRICE BID PER FOOT FOR ITEM 625 - CONDUIT, MISC.: 2 1/2", WATERTIGHT, FLEXIBLE CONDUIT, 731.08 AND SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIAL, EQUIPMENT AND INCIDENTALS NECESSARY TO FURNISH NEW MATERIALS AND INSTALL THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.

CONDUIT EXPANSION AND DEFLECTION

EXPANSION FITTINGS SHALL BE OZ TYPE AX, CROUSE HINDS TYPE XJG, APPLETON TYPE AX, OR EQUAL APPROVED BY THE ENGINEER. EACH EXPANSION FITTING SHALL PROVIDE EITHER 4 OR 8 INCHES TOTAL MOVEMENT AS SPECIFIED BY THE PLAN DETAILS AND SHALL HAVE AN EXTERNAL COPPER BONDING JUMPER, UNLESS SPECIFIED OTHERWISE BY THE PLAN DETAILS.

DEFLECTION COUPLINGS SHALL BE OZ TYPE DX, CROUSE HINDS TYPE XD, APPLETON TYPE DF, OR EQUAL APPROVED BY THE ENGINEER. EACH DEFLECTION COUPLING SHALL HAVE AN EXTERNAL COPPER BONDING JUMPER, UNLESS SPECIFIED OTHERWISE BY THE PLAN DETAILS.

ITEM 625 - CONDUIT CLEANED AND CABLES REMOVED

THIS ITEM SHALL CONSIST OF CLEANING AN EXISTING CONDUIT BY REMOVING EXISTING CABLES, MUD AND DEBRIS SO THAT NEW CABLE CAN BE INSTALLED. INCIDENTAL TO THE CLEANING IS THE INSTALLATION OF BUSHINGS AND/OR COUPLINGS ON THE ENDS OF EXISTING CONDUIT AS REQUIRED. MATERIALS REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR FOR PROPER DISPOSAL OFF OF THE PROJECT SITE. DISTURBED AREAS SHALL BE PROPERLY RESTORED.

PAYMENT WILL BE MADE AT THE UNIT PRICE BID UNDER CMS ITEM 625 - "CONDUIT CLEANED AND CABLES REMOVED" PER FOOT OF CONDUIT CLEANED WHICH SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS AN INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.

ITEM 625 - CONDUIT, MISC.: CONDUIT REMOVED

THIS ITEM OF WORK SHALL CONSIST OF THE REMOVAL OF 2" ELECTRICAL CONDUIT, CONNECTORS, CLAMPS, BRACKETS AND SUPPORTS AS CALLED FOR ON THE PLANS. DISPOSAL SHALL BE OFF THE PROJECT SITE IN AN ACCEPTABLE DISPOSAL OR RECYCLING CENTER.

PAYMENT SHALL BE MADE AT THE UNIT PRICE BID PER LINEAR FOOT FOR ITEM 625 - CONDUIT, MISC.: CONDUIT REMOVED, WHICH PRICE AND PAYMENT SHALL INCLUDE ALL LABOR, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.

ITEM 625 - POWER SERVICE REMOVED, AS PER PLAN

THIS ITEM OF WORK SHALL CONSIST OF THE REMOVAL AND DISPOSAL OF AN EXISTING POWER SERVICE.

INCLUDED FOR REMOVAL WILL BE ALL POWER SERVICE COMPONENTS SUCH AS THE WEATHER HEAD AND ALL ABOVE GRADE WIRING, CONTROL CENTER ENCLOSURE, PHOTOELECTRIC CELL AND ALL OTHER APPURTENANCES. THE EXISTING WOOD POLE AND CONDUIT RUN BETWEEN EXISTING CONTROL CENTER AND SUBSEQUENT PULL BOX SHALL BE PROTECTED FROM DAMAGE TO BE REUSED IN THE NEW POWER SERVICE, AS PER PLAN INSTALLATION.

ALL POWER SERVICE COMPONENTS INCLUDING THE CONTROL CENTER, PHOTOELECTRIC CELL, 2-INCH CONDUIT, WEATHER HEAD AND ALL ABOVE-GROUND WIRING SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE PROPERLY DISPOSED OF OFF THE PROJECT SITE.

THIS ITEM WILL ALSO COMPENSATE THE CONTRACTOR FOR COORDINATING WITH THE POWER COMPANY TO INSURE THAT THE COMPANY DISCONNECTS THE SERVICE, AND THAT ITEMS WHICH BELONG TO THE POWER COMPANY AND ARE REMOVED BY THE CONTRACTOR SUCH AS THE METER BASE SHALL BE RETURNED TO THE POWER COMPANY.

PAYMENT WILL BE MADE AT THE UNIT PRICE BID UNDER CMS ITEM 625 - "POWER SERVICE REMOVED, AS PER PLAN" FOR EACH SERVICE REMOVED WHICH SHALL INCLUDE ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.

ITEM 625 - POWER SERVICE, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF THE SPECIFICATIONS, THE FOLLOWING IS ADDED.

THE POWER SUPPLYING AGENCY FOR THIS PROJECT IS:

CLEVELAND PUBLIC POWER
1300 LAKESIDE AVENUE
CLEVELAND, OHIO 44114
ATTN: JAMES FERGUSON
(216) 420-7704 (EXT) 183

THE ENGINEER SHALL ENSURE THAT EACH POWER SERVICE ELECTRICAL ENERGY ACCOUNT IS IN THE NAME OF AND THAT THE BILLING ADDRESS IS TO THE MAINTAINING AGENCY NOTED IN THE PLANS. THIS SHALL BE DONE NOT ONLY FOR EACH NEW POWER SERVICE ESTABLISHED BY THIS PROJECT BUT ALSO FOR EACH EXISTING POWER SERVICE, SINCE THERE MAY BE A REASSIGNMENT OF THE RESPONSIBILITY FOR AN EXISTING SERVICE AS A RESULT OF THE WORK PERFORMED BY THIS PROJECT.

PAYMENT WILL BE MADE AT THE UNIT BID PRICE FOR EACH CMS ITEM 625 - "POWER SERVICE, AS PER PLAN" WHICH SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.

PADLOCKS AND KEYS

PADLOCKS FURNISHED SHALL BE EITHER BRASS OR BRONZE, EQUAL TO MASTER NO. 4BKA OR WILSON BOHANNAN 660A, AND SHALL BE KEYED IN ACCORDANCE WITH CMS 631.06. PAYMENT SHALL BE INCLUDED IN THE BID FOR THE ITEM(S) BEING LOCKED.

ITEM 625 - DISCONNECT CIRCUIT, AS PER PLAN

THIS ITEM OF WORK SHALL CONSIST OF THE DISCONNECTION OF AN EXISTING LIGHT CIRCUIT AT A PULL BOX OR TRANSFORMER BASE.

DISCONNECTION AT A PULL BOX SHALL INVOLVE CUTTING THE EXISTING CIRCUIT AND REMOVING ALL SPLICE KITS. ANY CABLE THAT IS TO BE ABANDONED SHALL BE TERMINATED FROM THE PULL BOX SO THAT NO CABLE IS LEFT IN THE BOX.

DISCONNECTION AT A TRANSFORMER BASE SHALL INVOLVE CUTTING THE EXISTING CIRCUIT AND REMOVING ALL CONNECTOR KITS. ALL DUCT-CABLE NOT TO BE REUSED SHALL BE REMOVED FROM THE TRANSFORMER BASE AND THE EXISTING CONDUIT IN THE FOUNDATION SHALL BE CLEANED OF ALL CABLE AND DEBRIS SO THAT THE NEW DUCT-CABLE CAN BE INSTALLED. ALL EXISTING CABLE TO REMAIN ACTIVE SHALL BE CUT IN A MANNER SO THAT THERE IS SUFFICIENT CABLE LEFT FOR RECONNECTION.

THOSE WIRES THAT ARE TO REMAIN ON ACTIVE CIRCUITS SHALL HAVE A WATER-RESISTANT SEAL AT THE CUT END. THE WATER-RESISTANT SEAL SHALL BE ACCOMPLISHED BY PLUGGING THE DEACTIVATED PORT OF AN EXISTING CONNECTOR KIT OR BY INSTALLING A CABLE SPLICE KIT ON THE CUT END OF THE CABLE.

PAYMENT SHALL BE MADE AT THE UNIT BID PRICE UNDER CMS ITEM 625 - "DISCONNECT CIRCUIT, AS PER PLAN" AT EACH LOCATION WHERE DISCONNECTION IS REQUIRED WHICH SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.

ITEM 625 - SERVICE TO UNDERPASS LIGHTING, AS PER PLAN

THIS ITEM SHALL CONFORM TO CMS 625 AND 725 AND SHALL INCLUDE THE COST FOR ALL EQUIPMENT NECESSARY TO PROVIDE SERVICE TO THE UNDERPASS LUMINAIRES FROM THE DISCONNECT SWITCH TO THE PROPOSED UNDERPASS LUMINAIRES EXCEPT FOR THE ITEMS ITEMIZED IN THE PLANS. THE UNDERPASS DISCONNECT SWITCH WITH 10 AMP FUSES SHALL BE INCLUDED IN THIS ITEM.

PAYMENT SHALL BE MADE AT THE UNIT CONTRACT BID PRICE PER EACH FOR ITEM 625 - SERVICE TO UNDERPASS LIGHTING, AS PER PLAN AND SHALL INCLUDE PAYMENT FOR ALL LABOR, MATERIAL, EQUIPMENT AND INCIDENTALS TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.

SPECIAL - MAINTAIN EXISTING LIGHTING

EXISTING ROADWAYS WHICH ARE TO REMAIN OPEN TO TRAFFIC DURING CONSTRUCTION OF THIS PROJECT AND WHICH ARE LIGHTED SHALL HAVE THE LIGHTING MAINTAINED AS DESCRIBED HEREIN.

BEFORE ANY WORK IS STARTED IN THE IMMEDIATE VICINITY OF THE EXISTING LIGHTING CIRCUITS, REPRESENTATIVES OF ODOT, THE MAINTAINING AGENCY AND THE CONTRACTOR SHALL MAKE A VISUAL INSPECTION OF THE EXISTING ROADWAY LIGHTING CIRCUITS TO BE MAINTAINED. DURING THIS INSPECTION, A WRITTEN RECORD OF THE CONDITION OF EXISTING LIGHTING SHALL BE MADE BY ODOT'S REPRESENTATIVE. THIS WRITTEN REPORT SHALL NOTE INDIVIDUAL LUMINAIRES WHICH ARE NOT IN WORKING ORDER, INDIVIDUAL POLES WHICH ARE NOT STANDING, AND INDIVIDUAL CIRCUITS WHICH ARE NOT IN WORKING ORDER. THE COMPLETED REPORT SHALL BE SIGNED BY THE REPRESENTATIVES OF ODOT, THE MAINTAINING AGENCY AND THE CONTRACTOR.

IF, AS A RESULT OF THIS INSPECTION, IT IS DETERMINED THAT THE CONDITION OF THE EXISTING SYSTEM IS BELOW THAT REQUIRED FOR THE SAFETY OF THE TRAVELING PUBLIC, THEN THE MAINTAINING AGENCY SHALL MAKE THE REPAIRS NECESSARY TO RETURN THE SYSTEM TO AN ACCEPTABLE CONDITION. FOLLOWING THESE REPAIRS, THE SYSTEM SHALL AGAIN BE INSPECTED AND A REPORT SHALL BE MADE AND SIGNED AS OUTLINED HEREIN.

WHEN THE EXISTING SYSTEM IS IN AN ACCEPTABLE CONDITION, IT SHALL BE TURNED OVER TO THE CONTRACTOR WHO SHALL THEN BE REQUIRED TO MAINTAIN THE EXISTING LIGHTING TO THE CONDITION OUTLINED IN THIS REPORT WITH THE EXCEPTION OF KNOCKDOWNS DUE TO TRAFFIC ACCIDENTS.

REPLACEMENT OF KNOCKED DOWN UNITS SHALL BE DONE ONLY WHEN THE ENGINEER HAS DETERMINED THAT THE REPLACEMENT OF THE KNOCKED DOWN UNIT IS NECESSARY AND SHALL BE PAID SEPARATELY ON A UNIT BASIS.

BETTERMENTS SHALL BE COVERED IN ITEMS OF WORK PERTAINING TO THE CONSTRUCTION OF PERMANENT IMPROVEMENT.

WHEN THE SEQUENCE OF CONSTRUCTION ACTIVITIES REQUIRES, OR SHOULD THE CONTRACTOR DESIRE, THE REMOVAL OF THE EXISTING LIGHTING BEFORE THE NEW LIGHTING IS OPERATIONAL, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TEMPORARY LIGHTING OF THIS PORTION OF THE ROADWAY.

PRIOR TO INSTALLING SUCH LIGHTING, THE CONTRACTOR SHALL PREPARE AND SUBMIT FOUR SETS OF THE TEMPORARY LIGHTING PLAN TO THE ENGINEER FOR REVIEW AND APPROVAL.

THIS PLAN SHALL SHOW LOCATIONS OF POLES, LENGTHS OF BRACKET ARMS, STYLES OF LUMINAIRES, MOUNTING HEIGHTS, WIRING METHODS AND OTHER PERTINENT INFORMATION. THE TEMPORARY LIGHTING SHALL PROVIDE AN AVERAGE INITIAL INTENSITY OF 1.2 FOOTCANDLES WITH AN AVERAGE TO MINIMUM UNIFORMITY NOT TO EXCEED 3:1. MOUNTING HEIGHT OF TEMPORARY LUMINAIRES SHALL NOT BE LESS THAN 30 FEET, AND THE MINIMUM OVERHEAD CONDUCTOR CLEARANCE SHALL BE 20 FEET. TEMPORARY OVERHEAD CONSTRUCTION SHALL NOT BE LESS THAN GRADE "A" FOR STRENGTH REQUIREMENTS AS DEFINED BY THE NATIONAL ELECTRIC SAFETY CODE. WOOD POLES WITH OVERHEAD WIRING MAY BE USED. HOWEVER, TEMPORARY LIGHTING SHALL MEET FEDERAL AND STATE SAFETY CRITERIA. IF BREAKAWAY POLES ARE USED TO MEET THESE CRITERIA, THEN UNDERGROUND WIRING SHALL BE USED. RECONDITIONED OR USED MATERIALS MAY BE FURNISHED FOR TEMPORARY LIGHTING.

ALL MATERIALS NECESSARY TO COMPLETE THE TEMPORARY LIGHTING SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR. WHEN NO LONGER NEEDED, THE TEMPORARY LIGHTING INSTALLATION SHALL BE REMOVED AND PROPERLY DISPOSED OF BY THE CONTRACTOR.

THE MAINTAINING AGENCY WILL PAY FOR ELECTRICAL ENERGY CONSUMED BY EXISTING POWER SERVICES AND BY PROPOSED PERMANENT POWER SERVICES AFTER ACCEPTANCE OF THE LIGHTING WORK. THE CONTRACTOR WILL PAY FOR ELECTRICAL ENERGY, INSTALLATION, REMOVAL AND MAINTENANCE OF ANY TEMPORARY POWER SERVICES.

THE LUMP SUM PRICE BID FOR ITEM SPECIAL "MAINTAIN EXISTING LIGHTING" SHALL INCLUDE PAYMENT FOR ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS NECESSARY TO MAINTAIN THE EXISTING LIGHTING AS SPECIFIED HEREIN.

THE UNIT PRICE BID FOR ITEM SPECIAL "REPLACEMENT OF EXISTING LIGHTING UNIT" SHALL BE FULL PAYMENT FOR THE REPLACEMENT OF AN EXISTING LIGHTING UNIT WHICH HAS BEEN KNOCKED DOWN AFTER THE AFOREMENTIONED INSPECTION AND SHALL INCLUDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS NECESSARY TO PROVIDE A REPLACEMENT FOR SUCH UNIT.

ITEM SPECIAL - REPLACING EXISTING LIGHTING UNIT 2 EACH
ITEM SPECIAL - MAINTAIN EXISTING LIGHTING LUMP

CALCULATED
JDL
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LIGHTING GENERAL NOTES

CUY - 77 - 14.35

225
365

ITEM 625 - PULL BOX REMOVED

THIS ITEM OF WORK WILL CONSIST OF REMOVING AND PROPERLY DISPOSING OF AN EXISTING PULL BOX. THE RESULTANT OPENING SHALL THEN BE BACKFILLED TO GRADE WITH SUITABLE COMPACTED SOIL AND RESTORED TO MATCH THE SURROUNDING AREA.

PAYMENT WILL BE MADE AT THE UNIT PRICE BID UNDER CMS ITEM 625 - "PULL BOX REMOVED" FOR EACH PULL BOX REMOVED WHICH SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.

ITEM 625 - PULL BOX CLEANED

THIS ITEM OF WORK SHALL CONSIST OF CLEANING AN EXISTING PULL BOX BY REMOVING ANY EXISTING CABLES NOT BEING RECONNECTED, AND DEBRIS SO THAT NEW CABLES CAN BE INSTALLED. ANY UNUSED OPENINGS SHALL BE CLOSED. DISTURBED AREAS NEAR THE PULL BOX SHALL BE CLEARED OF WEEDS OR DEBRIS AND SHALL BE FULLY RESTORED. MATERIAL REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE PROPERLY DISPOSED OF OFF OF THE PROJECT SITE.

PAYMENT WILL BE MADE AT THE UNIT PRICE BID UNDER CMS ITEM 625 - "PULL BOX CLEANED" FOR EACH PULL BOX CLEANED WHICH SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.

UNDERDRAINS FOR PULL BOXES

REFERENCE IS MADE TO THE STANDARD CONSTRUCTION DRAWINGS FOR DETAILS OF DRAINING PULL BOXES. UNDERDRAINS FOR PULL BOXES SHALL BE USED AS DIRECTED BY THE ENGINEER AND SHALL BE PROVIDED WHERE THE LENGTH REQUIRED FOR A SATISFACTORY OUTLET DOES NOT EXCEED APPROXIMATELY 20 FEET. AN ANIMAL GUARD SHALL BE INCLUDED AT THE OUTLET END OF THE DRAIN. AN ESTIMATED QUANTITY OF CMS ITEM 611 - "4" CONDUIT, TYPE E" IS INCLUDED AT EACH PULL BOX FOR THIS PURPOSE.

LIGHTING SEQUENCE OF CONSTRUCTION ACTIVITIES

THE FOLLOWING IS THE SEQUENCE OF CONSTRUCTION ACTIVITIES RECOMMENDED TO MAINTAIN THE EXISTING LIGHTING FOR CUY-77-14.35 AND THE ADJACENT ROADWAYS. THE CONSTRUCTION PHASES LISTED ARE CONCURRENT WITH THE MAINTENANCE OF TRAFFIC PHASES DESCRIBED IN THE MAINTENANCE OF TRAFFIC NOTES ON SHEET 34-36 .

PRE-PHASE 1

1. CONSTRUCT PROPOSED TOWER FOUNDATIONS.
2. PROVIDE TEMPORARY LIGHTING TO ILLUMINATE PORTIONS OF I.R. 77 AND ADJACENT ROADWAYS (I.R. 77/ I.R. 490 RAMPS) THE EXISTING TOWERS TO BE RELOCATED ARE ILLUMINATING. THIS MAY BE ACCOMPLISHED WITH TEMPORARY CONVENTIONAL LIGHTING OR TEMPORARY TOWER LIGHTING AS APPROVED BY THE ENGINEER. POWER FOR THE TEMPORARY LIGHTING WILL BE PROVIDED FROM A TEMPORARY POWER SERVICE.
3. RELOCATE TOWER LIGHTING AND SUPPLY POWER THROUGH A TEMPORARY POWER SERVICE.
4. REMOVE TEMPORARY LIGHTING FROM PRE-PHASE 1 STEP 2.
5. SUPPLY POWER VIA A TEMPORARY POWER SERVICE TO ALL TOWER LIGHTING AND UNDERPASS LIGHTING ON CIRCUIT "GAL" TO REMAIN IN PLACE DURING PHASE 1 CONSTRUCTION. PROVIDE ADDITIONAL UNDERPASS LIGHTING FOR RAMPS S-W AND N-E AS NEEDED. SEE MAINTENANCE OF TRAFFIC SHEETS 49-52 FOR PHASE 1 CONSTRUCTION PLANS.

PHASE 1

1. REMOVE EXISTING POWER SERVICE AND REPLACE WITH A NEW POWER SERVICE.
2. INSTALL PROPOSED UNDERGROUND LIGHTING CONDUIT AND WIRING.
3. INSTALL PROPOSED UNDERPASS LIGHTING ON PORTIONS OF STRUCTURE INSTALLED DURING PHASE 1.
4. INSTALL PROPOSED CONVENTIONAL LIGHTING ON CIRCUIT C-44 SOUTH OF THE BROADWAY OVERPASS. THE CIRCUIT CAN BE SWITCHED OVER TO THE NEW CONVENTIONAL LIGHTING FOR MAINTENANCE OF LIGHTING DURING PHASE 2 CONSTRUCTION. THE CONTRACTOR SHALL NOT DISCONNECT THE EXISTING CIRCUIT C-45 UNTIL NO LONGER IN USE BY THE ADJACENT PROJECT.

PHASE 2

1. TURN ON PROPOSED TOWER AND UNDERPASS LIGHTING CONSTRUCTED IN PHASE 1 AND REMOVE TEMPORARY LIGHTING AND TEMPORARY POWER SERVICE CONSTRUCTED IN PRE-PHASE 1.
2. PROVIDE TEMPORARY UNDERPASS LIGHTING AS NEEDED IN ADDITION TO THE PROPOSED UNDERPASS LIGHTING CONSTRUCTED IN PHASE 1 FOR RAMPS S-W AND N-E DURING PHASE 2 CONSTRUCTION.
3. INSTALL PROPOSED UNDERPASS LIGHTING ON PORTIONS OF STRUCTURE CONSTRUCTED DURING PHASE 2.
4. TURN ON UNDERPASS LIGHTING INSTALLED DURING PHASE 2 CONSTRUCTION AND REMOVE ALL TEMPORARY LIGHTING.
5. WHEN NO LONGER NEEDED BY THE ADJACENT PROJECT THE CONTRACTOR SHALL DISCONNECT CIRCUIT C-45 AND ABANDON THE EXISTING CIRCUIT IN PLACE.

GROUNDING AND BONDING

THE REQUIREMENTS OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS (CMS) AND THE TC SERIES OF STANDARD CONSTRUCTION DRAWINGS ARE MODIFIED AS FOLLOWS:

1. ALL METALLIC PARTS CONTAINING ELECTRICAL CONDUCTORS SHALL BE PERMANENTLY JOINED TO FORM AN EFFECTIVE GROUND FAULT CURRENT PATH BACK TO THE GROUNDED CONDUCTOR IN THE POWER SERVICE DISCONNECT SWITCH.
 - A. PROVIDE AN EQUIPMENT GROUNDING CONDUCTOR IN METALLIC CONDUITS (725.04) IN ADDITION TO THE CONDUCTORS SPECIFIED AND BOND THE CONDUIT TO THIS GROUNDING CONDUCTOR.
 - B. WHEN AN EQUIPMENT GROUNDING CONDUCTOR IS REQUIRED IN PLASTIC CONDUIT (725.05), THE INSTALLATION SHALL INCLUDE A SEPARATE EQUIPMENT GROUNDING CONDUCTOR IN ADDITION TO THE CONDUCTORS SPECIFIED.
 - C. METALLIC CONDUIT CARRYING THE LOOP WIRES FROM IN THE PAVEMENT TO THE PULL BOX SPLICE LOCATION WILL ONLY BE BONDED AT THE PULL BOX END, AND WILL NOT CONTAIN AN EQUIPMENT GROUNDING CONDUCTOR.
 - D. IF MULTIPLE CONDUIT RUNS BEGIN AND END AT THE SAME POINTS, ONLY ONE EQUIPMENT GROUNDING CONDUCTOR IS REQUIRED.
 - E. IF AN EQUIPMENT GROUNDING CONDUCTOR IS NEEDED IN CONDUIT BETWEEN SIGNALIZED INTERSECTIONS FOR UNDERGROUND INTERCONNECT CABLE, THE GROUNDING SYSTEM FOR EACH SIGNALIZED INTERSECTION WILL BE SEPARATED ABOUT MIDWAY BETWEEN THE INTERSECTIONS.
 - F. THE MESSENGER WIRE AT SIGNALIZED INTERSECTIONS WILL BE USED AS THE CONDUCTIVE PATH FROM CORNER TO CORNER IF CONDUIT IS NOT PROVIDED UNDER THE ROADWAY. WHEN CONDUIT CONNECTS THE CORNERS OF AN INTERSECTION, AN EQUIPMENT GROUNDING CONDUCTOR SHALL BE USED IN THE CONDUIT.

GROUNDING AND BONDING (CONTINUED)

2. CONDUITS.
 - A. THE 725.04 CONDUIT SHALL HAVE GROUNDING BUSHINGS INSTALLED AT ALL TERMINATION POINTS. THE BUSHING MATERIAL SHALL BE COMPATIBLE WITH GALVANIZED STEEL CONDUIT AND THE GROUNDING LUG MATERIAL SHALL BE COMPATIBLE FOR USE WITH COPPER WIRE. THREADED OR COMPRESSION TYPE BUSHINGS MAY BE USED.
 - B. THE 725.05 CONDUIT SHALL HAVE THE INSIDE AND OUTSIDE DIAMETERS OF THE CONDUIT DEBURRED AT ALL TERMINATION POINTS.
 - C. BOTH ENDS OF METALLIC CONDUIT SHALL BE BONDED TO THE EQUIPMENT GROUNDING CONDUCTOR.
 - D. METALLIC CONDUIT MAY BE BONDED TO METALLIC BOXES THROUGH THE USE OF CONDUIT FITTINGS UL APPROVED FOR THIS TYPE OF CONNECTION, WITH THE BOX BONDED TO THE EQUIPMENT GROUNDING CONDUCTOR.
3. WIRE FOR GROUNDING AND BONDING.
 - A. USE INSULATED, COPPER WIRE FOR THE EQUIPMENT GROUNDING CONDUCTOR. BONDING JUMPERS IN BOXES AND ENCLOSURES MAY BE BARE OR INSULATED COPPER WIRE. WIRE SIZE SHALL BE AS FOLLOWS:
 - I. USE 4 AWG BETWEEN THE POWER SERVICE AND SUPPORTS, POLES, PEDESTALS, CONTROLLER OR FLASHER CABINETS.
 - II. USE A MINIMUM 8 AWG BETWEEN LOOP DETECTOR PULL BOXES AND THE FIRST CONDUIT THAT REQUIRES A LARGER SIZE AS SPECIFIED IN 3.A.I ABOVE.
 - III. USE A MINIMUM 8 AWG BETWEEN THE "PREPARE TO STOP WHEN FLASHING" INSTALLATION (INCLUDING SUPPORT) AND THE FIRST CONDUIT THAT REQUIRES A LARGER SIZE AS SPECIFIED IN 3.A.I ABOVE.
 - IV. THE INSULATION SHALL BE GREEN OR GREEN WITH YELLOW STRIPE(S). FOR 4 AWG OR LARGER, INSULATION MAY ALSO BE BLACK WITH GREEN TAPE/LABELS INSTALLED AT ALL ACCESS POINTS.
 - B. IN A HIGHWAY LIGHTING SYSTEM, THE EQUIPMENT GROUNDING CONDUCTOR SHALL BE THE SAME WIRE SIZE AS THE DUCT CABLE OR DISTRIBUTION CABLE CIRCUIT CONDUCTORS, WITH THE MINIMUM CONDUCTOR SIZE OF 4 AWG. BONDING JUMPERS WILL BE MINIMUM SIZE 4 AWG.
4. GROUND ROD.
 - A. A 3/4 INCH SCHEDULE 40 PVC CONDUIT WILL BE USED IN FOUNDATIONS AND CONCRETE WALLS FOR THE GROUNDING CONDUCTOR (GROUND WIRE) RACEWAY TO THE GROUND ROD. SHOULD METALLIC CONDUIT BE USED, BOTH ENDS OF THE CONDUIT SHALL BE BONDED TO THE GROUNDING CONDUCTOR.
 - B. THE TYPICAL GROUNDING CONDUCTOR (GROUND WIRE) SHALL BE 4 AWG INSULATED, COPPER.
5. THE GREEN CONDUCTOR IN SIGNAL CABLES (CONDUCTOR #4) SHALL NOT BE USED TO SUPPLY POWER TO A SIGNAL INDICATION. IT WILL BE CONNECTED TO THE SIGNAL BODY AS AN EQUIPMENT GROUND IN ALUMINUM HEADS AND IT WILL BE UNUSED IN PLASTIC HEADS. UNUSED CONDUCTORS SHALL BE GROUNDED IN THE CABINET. TYPICAL USE OF CONDUCTORS IS AS FOLLOWS:

COND. NO.	COLOR	VEHICLE SIGNAL	PEDESTRIAN SIGNAL
1	BLACK	GREEN BALL	#1 WALK
2	WHITE	AC NEUTRAL	AC NEUTRAL
3	RED	RED BALL	#1 DW/FDW
4	GREEN	EQUIPMENT GROUND	EQUIPMENT GROUND
5	ORANGE	YELLOW BALL	#2 DW/FDW
6	BLUE	GREEN ARROW	#2 WALK
7	WHITE/BLACK STRIPE	YELLOW ARROW	NOT USED

6. POWER SERVICE AND DISCONNECT SWITCH.
 - A. AT THE POWER SERVICE LOCATION, THE GROUNDING CONDUCTOR (GROUND WIRE) FROM THE DISCONNECT SWITCH NEUTRAL (AC-) BAR TO THE GROUND ROD SHALL BE A CONTINUOUS, UNSPLICED CONDUCTOR. IF SPLICED, IT SHALL BE AN EXOTHERMIC WELD BUTT SPLICE.
 - B. THE SERVICE NEUTRAL (AC-) SHALL ONLY BE CONNECTED TO GROUND AT THE PRIMARY POWER SERVICE DISCONNECT SWITCH.
 - I. NEMA CONTROLLER CABINETS: IF A POWER SERVICE DISCONNECT SWITCH IS LOCATED BEFORE THE CONTROLLER CABINET, THE NEUTRAL (AC-) AND THE GROUNDING BARS IN THE CONTROLLER CABINET SHALL NOT BE CONNECTED TOGETHER AS SHOWN IN NEMA TS-2, FIGURE 5-4.
 - II. IF SECONDARY DISCONNECT SWITCHES ARE CONNECTED AFTER THE PRIMARY DISCONNECT SWITCH, THE NEUTRAL (AC-) SHALL ONLY BE GROUNDED AT THE PRIMARY SWITCH. EQUIPMENT GROUNDING CONDUCTORS SHALL BE BROUGHT TO THE PRIMARY SWITCH, BUT SHALL BE GROUNDED AT BOTH SECONDARY AND PRIMARY SWITCHES.
7. PAYMENT - ALL MATERIALS AND WORK REQUIRED TO COMPLETE THE EFFECTIVE GROUND FAULT CURRENT PATH SYSTEM ARE INCIDENTAL TO THE CONDUCTORS INSTALLED BY CONTRACT.

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LIGHTING GENERAL NOTES

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SUBSUMMARY SHEET NUMBERS / PLAN SHEET NUMBERS								ITEM	ITEM EXT.	FUNDING PARTICIPATION	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.	
	228 TO 230	231 TO 233	234 TO 236	237 TO 239	240 TO 242		01/ IMS / BR								
		12			12			625	00450	24	24	EACH	CONNECTION, FUSED PULL APART		
		4	24	9	12			625	00480	49	49	EACH	CONNECTION, UNFUSED PERMANENT		
		6						625	10491	6	6	EACH	LIGHT POLE, CONVENTIONAL, AT30B40, AS PER PLAN	224	
		6						625	14100	6	6	EACH	LIGHT POLE FOUNDATION, 24" X 8' DEEP		
			1	1				625	15200	2	2	EACH	LIGHT TOWER FOUNDATION, 36" X 25' DEEP		
			5,994	2,913	1,092			625	23300	9,999	9,999	FT	NO. 2 AWG 2400 VOLT DISTRIBUTION CABLE		
		492			3,075			625	23400	3,567	3,567	FT	NO. 10 AWG POLE AND BRACKET CABLE		
		750						625	24100	750	750	FT	1-1/2" DUCT CABLE WITH TWO NO. 4 AWG 2400 VOLT CABLES		
			1,396	470				625	24330	1,866	1,866	FT	1-1/2" DUCT CABLE WITH THREE NO. 2 AWG 2400 VOLT CABLES		
			819	656	304			625	25400	1,779	1,779	FT	CONDUIT, 2", 725.04		
								625	25401	20	20	FT	CONDUIT, 2", 725.04, AS PER PLAN NO. 1	225	
								625	25405	145	145	FT	CONDUIT, 2-1/2", 725.04, AS PER PLAN NO. 1	225	
								625	25405	720	720	FT	CONDUIT, 2-1/2", 725.04, AS PER PLAN NO. 2	225	
			476	260				625	25600	736	736	FT	CONDUIT, 4", 725.04		
			181					625	25902	181	181	FT	CONDUIT, JACKED OR DRILLED, 4", 725.04		
			61					625	25910	61	61	FT	CONDUIT CLEANED AND CABLES REMOVED		
						187	141	625	25920	328	328	FT	CONDUIT, MISC.: CONDUIT REMOVED	225	
					60			625	25920	60	60	FT	CONDUIT, MISC.: 2 1/2", WATERTIGHT, FLEXIBLE CONDUIT, 731.08	225	
		6						625	26253	6	6	EACH	LUMINAIRE, CONVENTIONAL, SOLID STATE (LED), IES-III-M-SC, LED, EQUIVALENT 400W HPS LAMP, AS PER PLAN	224	
			10	5				625	26263	15	15	EACH	LUMINAIRE, HIGH MAST, SOLID STATE (LED), ASYMETRIC, EQUIVALENT 400W HPS LAMP, AS PER PLAN	224	
					6			625	27503	6	6	EACH	LUMINAIRE, UNDERPASS, SOLID STATE (LED), AS PER PLAN, TYPE III	224	
		680	1,837	880	296			625	29000	3,693	3,693	FT	TRENCH		
					4			625	29901	4	4	EACH	JUNCTION BOX, AS PER PLAN NO. 1	224	
					12			625	29901	12	12	EACH	JUNCTION BOX, AS PER PLAN NO. 2	224	
				2				625	29921	2	2	EACH	STRUCTURE JUNCTION BOX, AS PER PLAN	224	
		1	7	6				625	30700	14	14	EACH	PULL BOX, 725.08, 18"		
			1					625	30706	1	1	EACH	PULL BOX, 725.08, 24"		
		6	3	2		1	5	4	625	31510	10	10	EACH	PULL BOX REMOVED	
				2				625	32000	11	11	EACH	GROUND ROD		
				2				625	33000	2	2	EACH	STRUCTURE GROUNDING SYSTEM		
			1					625	34001	1	1	EACH	POWER SERVICE, AS PER PLAN	225	
			1	1				625	35021	2	2	EACH	RE-ERECT EXISTING LIGHT TOWER, AS PER PLAN	224	
		680	1,837	880	296			625	36000	3,693	3,693	FT	PLASTIC CAUTION TAPE		
					4			625	37101	4	4	EACH	SERVICE TO UNDERPASS LIGHTING, AS PER PLAN	225	
		1						625	39520	1	1	EACH	PULL BOX CLEANED		
	LS							SPECIAL	62540000	LS	LS		MAINTAIN EXISTING LIGHTING	225	
	2							SPECIAL	62540010	2	2	EACH	REPLACEMENT OF EXISTING LIGHTING UNIT	225	
						1	1	625	75360	2	2	EACH	LIGHT TOWER REMOVED FOR STORAGE		
						7		625	75400	7	7	EACH	LIGHT POLE REMOVED		
						7		625	75500	7	7	EACH	LIGHT POLE FOUNDATION REMOVED		
						7		625	75506	7	7	EACH	LUMINAIRE REMOVED (CONVENTIONAL)		
							6	625	75506	6	6	EACH	LUMINAIRE REMOVED (UNDERPASS)		
			10	5				625	75504	15	15	EACH	LUMINAIRE REMOVED FOR STORAGE		
						1		625	75511	1	1	EACH	POWER SERVICE REMOVED, AS PER PLAN	225	
						1	1	625	75540	2	2	EACH	LIGHT TOWER FOUNDATION REMOVED		
		1	2	1			1	625	75801	5	5	EACH	DISCONNECT CIRCUIT, AS PER PLAN	225	

CALCULATED JDL CHECKED DLR
LIGHTING GENERAL SUMMARY
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REFERENCE NO.	SHEET NO.								625																			
		STATION	OFFSET	BL	STATION	OFFSET	BL	FEET	CONNECTION, FUSED PULL APART	CONNECTION, UNFUSED PERMANENT	LIGHT POLE, CONVENTIONAL, AT30B40, AS PER PLAN	LIGHT POLE FOUNDATION, 24"x8' DEEP	LIGHT TOWER FOUNDATION, 36"x25' DEEP	NO. 2 AWG 2400 VOLT DISTRIBUTION CABLE	NO. 10 AWG POLE AND BRACKET CABLE	1-1/2" DUCT CABLE WITH TWO NO. 4 AWG 2400 VOLT CABLES	1-1/2" DUCT CABLE WITH THREE NO. 2 AWG 2400 VOLT CABLES	CONDUIT, 2", 725.04	CONDUIT, 2", 725.04, AS PER PLAN NO. 1	CONDUIT, 2-1/2", 725.04, AS PER PLAN NO. 1	CONDUIT, 2-1/2", 725.04, AS PER PLAN NO. 2	CONDUIT, 4", 725.04	CONDUIT, JACKED OR DRILLED, 4", 725.04					
CARRIED FROM LIGHTING GENERAL NOTES																												
C-44-#3	NOT USED																											
C-44-1	NOT USED																											
C-44-#4	243	53+25.00	74.50 RT	IR-77																								
C-44-2	243	53+25.00	74.50 RT	IR-77	54+45.00	74.50 RT	IR-77	120	2		1	1			82		130											
C-44-#5	243	54+45.00	74.50 RT	IR-77					2		1	1			82													
C-44-3	243	54+45.00	74.50 RT	IR-77	55+65.00	74.50 RT	IR-77	120	2		1	1			82		130											
C-44-#6	243	55+65.00	74.50 RT	IR-77					2		1	1			82													
C-44-4	243	55+65.00	74.50 RT	IR-77	56+85.00	74.50 RT	IR-77	120	2		1	1			82		130											
C-44-#7	243	56+85.00	74.50 RT	IR-77					2		1	1			82													
C-44-5	243	56+85.00	74.50 RT	IR-77	58+05.00	74.50 RT	IR-77	120	2		1	1			82		130											
C-44-#8	243	58+05.00	74.50 RT	IR-77					2		1	1			82													
C-44-6	243	58+05.00	74.50 RT	IR-77	58+30.00	74.50 RT	IR-77	25									35											
PB-17	243	58+30.00	74.50 RT	IR-77																								
C-44-7	243	58+30.00	74.50 RT	IR-77	59+10.00	74.50 RT	IR-77	80									90											
C-44-#9	243	59+10.00	74.50 RT	IR-77					2		1	1			82													
PB-17	243	58+30.00	74.50 RT	IR-77						2																		
C-44-8	243	58+30.00	74.50 RT	IR-77	58+71.00	160.00 RT	IR-77	95									105											
EXPB-1	243	58+71.00	160.00 RT	IR-77						2																		
TOTALS CARRIED TO LIGHTING GENERAL SUMMARY									12	4	6	6			492	750												

CUY - 77 - 14.35	CALCULATED JDL
	CHECKED DLR

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REFERENCE NO.	SHEET NO.	STATION	OFFSET	BL	STATION	OFFSET	BL	LENGTH FEET	625																
									CONDUIT CLEANED AND CABLES REMOVED FT	CONDUIT, MISC.: CONDUIT REMOVED FT	CONDUIT, MISC.: 2 1/2" WATERTIGHT, FLEXIBLE CONDUIT, 731.08 FT	LUMINAIRE, CONVENTIONAL, SOLID STATE (LED), IES-III-M-SC, LED, EQUIVALENT TO 400W HPS LAMP, AS PER PLAN EACH	LUMINAIRE, HIGH MAST, SOLID STATE (LED), ASYMMETRIC, EQUIVALENT 400W HPS LAMP, AS PER PLAN EACH	LUMINAIRE, UNDERPASS, SOLID STATE (LED), AS PER PLAN, TYPE III EACH	TRENCH FT	JUNCTION BOX, AS PER PLAN NO. 1 EACH	JUNCTION BOX, AS PER PLAN NO. 2 EACH	STRUCTURE JUNCTION BOX, AS PER PLAN EACH	PULL BOX, 725.08, 18" EACH	PULL BOX, 725.08, 24" EACH	PULL BOX REMOVED EACH	GROUND ROD EACH	STRUCTURE GROUNDING SYSTEM EACH	POWER SERVICE, AS PER PLAN EACH	
CARRIED FROM LIGHTING GENERAL NOTES																									
C-44-#3	NOT USED																								
C-44-1	NOT USED																								
C-44-#4	243	53+25.00	74.50 RT	IR-77									1										1		
C-44-2	243	53+25.00	74.50 RT	IR-77	54+45.00	74.50 RT	IR-77	120								120									
C-44-#5	243	54+45.00	74.50 RT	IR-77									1										1		
C-44-3	243	54+45.00	74.50 RT	IR-77	55+65.00	74.50 RT	IR-77	120								120									
C-44-#6	243	55+65.00	74.50 RT	IR-77									1										1		
C-44-4	243	55+65.00	74.50 RT	IR-77	56+85.00	74.50 RT	IR-77	120								120									
C-44-#7	243	56+85.00	74.50 RT	IR-77									1										1		
C-44-5	243	56+85.00	74.50 RT	IR-77	58+05.00	74.50 RT	IR-77	120								120									
C-44-#8	243	58+05.00	74.50 RT	IR-77									1										1		
C-44-6	243	58+05.00	74.50 RT	IR-77	58+30.00	74.50 RT	IR-77	25								25									
PB-17	243	58+30.00	74.50 RT	IR-77																					
C-44-7	243	58+30.00	74.50 RT	IR-77	59+10.00	74.50 RT	IR-77	80								80									
C-44-#9	243	59+10.00	74.50 RT	IR-77									1										1		
PB-17	243	58+30.00	74.50 RT	IR-77																	1				
C-44-8	243	58+30.00	74.50 RT	IR-77	58+71.00	160.00 RT	IR-77	95								95									
EXPB-1	243	58+71.00	160.00 RT	IR-77																					
TOTALS CARRIED TO LIGHTING GENERAL SUMMARY													6			680				1			6		

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LIGHTING SUBSUMMARY	
CUY-77-14.35	
229 365	

REFERENCE NO.	SHEET NO.	STATION	OFFSET	BL	STATION	OFFSET	BL	LENGTH FEET	625				SPECIAL		625																	
									RE-ERECT EXISTING LIGHT TOWER, AS PER PLAN	PLASTIC CAUTION TAPE	SERVICE TO UNDERPASS LIGHTING, AS PER PLAN	PULL BOX CLEANED	MAINTAIN EXISTING LIGHTING	REPLACEMENT OF EXISTING LIGHTING UNIT	LIGHT TOWER REMOVED FOR STORAGE	LIGHT POLE REMOVED	LIGHT POLE FOUNDATION REMOVED	LUMINAIRE REMOVED (CONVENTIONAL)	LUMINAIRE REMOVED (UNDERPASS)	LUMINAIRE REMOVED FOR STORAGE	POWER SERVICE REMOVED, AS PER PLAN	LIGHT TOWER FOUNDATION REMOVED	DISCONNECT CIRCUIT, AS PER PLAN									
CARRIED FROM LIGHTING GENERAL NOTES													LUMP	2																		
C-44-#3	NOT USED																															
C-44-1	NOT USED																															
C-44-#4	243	53+25.00	74.50 RT	IR-77																												
C-44-2	243	53+25.00	74.50 RT	IR-77	54+45.00	74.50 RT	IR-77	120		120																						
C-44-#5	243	54+45.00	74.50 RT	IR-77																												
C-44-3	243	54+45.00	74.50 RT	IR-77	55+65.00	74.50 RT	IR-77	120		120																						
C-44-#6	243	55+65.00	74.50 RT	IR-77																												
C-44-4	243	55+65.00	74.50 RT	IR-77	56+85.00	74.50 RT	IR-77	120		120																						
C-44-#7	243	56+85.00	74.50 RT	IR-77																												
C-44-5	243	56+85.00	74.50 RT	IR-77	58+05.00	74.50 RT	IR-77	120		120																						
C-44-#8	243	58+05.00	74.50 RT	IR-77																												
C-44-6	243	58+05.00	74.50 RT	IR-77	58+30.00	74.50 RT	IR-77	25		25																						
PB-17	243	58+30.00	74.50 RT	IR-77																												
C-44-7	243	58+30.00	74.50 RT	IR-77	59+10.00	74.50 RT	IR-77	80		80																						
C-44-#9	243	59+10.00	74.50 RT	IR-77																												
PB-17	243	58+30.00	74.50 RT	IR-77																												
C-44-8	243	58+30.00	74.50 RT	IR-77	58+71.00	160.00 RT	IR-77	95		95																						
EXPB-1	243	58+71.00	160.00 RT	IR-77								1																1				
TOTALS CARRIED TO LIGHTING GENERAL SUMMARY										680		1	LUMP	2																		

<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">CALCULATED</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">JDJ</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">CHECKED</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">DLR</div> </div>	LIGHTING SUBSUMMARY	CUY - 77 - 14.35	<div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center;"> 230 365 </div>
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REFERENCE NO.	SHEET NO.	625																								
		STATION	OFFSET	BL	STATION	OFFSET	BL	LENGTH FEET	CONDUIT CLEANED AND CABLES REMOVED	CONDUIT, MISC.: CONDUIT REMOVED	CONDUIT, MISC.: 2 1/2" WATERTIGHT, FLEXIBLE CONDUIT, 731.08	LUMINAIRE, CONVENTIONAL, SOLID STATE (LED), IES-III-M-SC, LED, EQUIVALENT TO 400W HPS LAMP, AS PER PLAN	LUMINAIRE, HIGH MAST, SOLID STATE (LED), ASYMMETRIC, EQUIVALENT 400W HPS LAMP, AS PER PLAN	LUMINAIRE, UNDERPASS, SOLID STATE (LED), AS PER PLAN, TYPE III	TRENCH	JUNCTION BOX, AS PER PLAN NO. 1	JUNCTION BOX, AS PER PLAN NO. 2	STRUCTURE JUNCTION BOX, AS PER PLAN	PULL BOX, 725.08, 18"	PULL BOX, 725.08, 24"	PULL BOX REMOVED	GROUND ROD	STRUCTURE GROUNDING SYSTEM	POWER SERVICE, AS PER PLAN		
		FT	FT	FT	EACH	EACH	EACH		FT	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH			
GAL	244	65+10.00	175.00 RT	IR-77																			1		1	
GAL-1-1/ GAL-2-1	244	65+10.00	175.00 RT	IR-77	65+09.00	165.00 RT	IR-77	10							10											
PB-1	244	65+09.00	165.00 RT	IR-77																						
GAL-1-2	244	65+09.00	165.00 RT	IR-77	64+76.18	114.00 RT	IR-77	61	61																	
GAL-1-#1	244	64+76.18	114.00 RT	IR-77																						
PB-1	244	65+09.00	165.00 RT	IR-77																						
GAL-1-3/GAL-2-2	244	65+09.00	165.00 RT	IR-77	67+06.00	134.50 RT	IR-77	232							232											
PB-2	244	67+06.00	134.50 RT	IR-77																						
GAL-1-4/GAL-2-3	244	67+06.00	134.50 RT	IR-77	67+20.50	62.50 RT	IR-77	74												1						
PB-3	244	67+20.50	62.50 RT	IR-77																						
GAL-1-5/GAL-2-4	244	67+20.50	62.50 RT	IR-77	69+95.00	64.50 RT	IR-77	275																		
PB-4	244	69+95.00	64.50 RT	IR-77																						
GAL-1-6	244	69+95.00	64.50 RT	IR-77	73+08.43	64.00 RT	IR-77	314																		
PB-7	244	73+08.43	64.00 RT	IR-77																						
GAL-1-7	244	73+08.43	64.00 RT	IR-77	74+40.00	75.00 RT	IR-77	133																		
PB-8	244	74+40.00	75.00 RT	IR-77																						
GAL-1-8	244	74+40.00	75.00 RT	IR-77	74+50.00	80.00 RT	IR-77	12																		
GAL-1-#2	244	74+50.00	80.00 RT	IR-77																						
PB-7	244	73+08.43	64.00 RT	IR-77																						
GAL-1-12	244-245	73+08.43	64.00 RT	IR-77	76+15.94	57.50 RT	IR-77	318																		
JB-1	245	76+15.94	57.50 RT	IR-77																						
PB-4	244	69+95.00	64.50 RT	IR-77																						
GAL-2-5	244	69+95.00	64.50 RT	IR-77	69+95.00	66.00 LT	IR-77	131																		
PB-5	244	69+95.00	66.00 LT	IR-77																						
GAL-2-6	244	69+95.00	66.00 LT	IR-77	69+76.72	83.72 LT	IR-77	26																		
GAL-2-#1	244	69+76.72	83.72 LT	IR-77																						
PB-5	244	69+95.00	66.00 LT	IR-77																						
GAL-2-7	244	69+95.00	66.00 LT	IR-77	74+50.81	64.00 LT	IR-77	456																		
PB-6	244	74+50.81	64.00 LT	IR-77																						
GAL-2-8	244-245	74+50.81	64.00 LT	IR-77	75+95.00	68.00 LT	IR-77	145																		
PB-9	245	75+95.00	68.00 LT	IR-77																						
PB-6	244	74+50.81	64.00 LT	IR-77																						
GAL-2-11	244-245	74+50.81	64.00 LT	IR-77	78+60.91	57.50 LT	IR-77	421																		
JB-2	245	78+60.91	57.50 LT	IR-77																						
TOTALS CARRIED TO LIGHTING GENERAL SUMMARY									61					10					7	1		3		1		

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LIGHTING SUBSUMMARY

CUY - 77 - 14.35

232
365

REFERENCE NO.	SHEET NO.	625						LENGTH FEET	CONNECTION, FUSED PULL APART EACH	CONNECTION, UNFUSED PERMANENT EACH	LIGHT POLE, CONVENTIONAL, AT30B40, AS PER PLAN EACH	LIGHT POLE FOUNDATION, 24"x8' DEEP EACH	LIGHT TOWER FOUNDATION, 36"x25' DEEP EACH	NO. 2 AWG 2400 VOLT DISTRIBUTION CABLE FT	NO. 10 AWG POLE AND BRACKET CABLE FT	1-1/2" DUCT CABLE WITH TWO NO. 4 AWG 2400 VOLT CABLES FT	1-1/2" DUCT CABLE WITH THREE NO. 2 AWG 2400 VOLT CABLES FT	CONDUIT, 2", 725.04 FT	CONDUIT, 2", 725.04, AS PER PLAN NO. 1 FT	CONDUIT, 2-1/2", 725.04, AS PER PLAN NO. 1 FT	CONDUIT, 2-1/2", 725.04, AS PER PLAN NO. 2 FT	CONDUIT, 4", 725.04 FT	CONDUIT, JACKED OR DRILLED, 4", 725.04 FT				
		STATION	OFFSET	BL	STATION	OFFSET	BL																				
SG-1	245	75+21.44	RT	IR-77																							
SG-2	245	76+23.56	LT	IR-77																							
PB-9	245	75+95.00	68.00 LT	IR-77																							
JB-1	245	76+15.94	57.50 RT	IR-77																							
GAL-1-13	245	76+15.94	57.50 RT	IR-77	80+00.33	64.00 RT	IR-77	395					1215				315						80				
PB-11	245	80+00.33	64.00 RT	IR-77																							
GAL-1-14	245	80+00.33	64.00 RT	IR-77	78+50.00	68.00 RT	IR-77	151					483				151										
PB-10	245	78+50.00	68.00 RT	IR-77																							
JB-2	245	78+60.91	57.50 LT	IR-77																							
GAL-2-12	245	78+60.91	57.50 LT	IR-77	82+01.58	64.00 LT	IR-77	351					1083				171					180					
PB-13	245	82+01.58	64.00 LT	IR-77						3																	
GAL-2-13	245	82+01.58	64.00 LT	IR-77	80+50.00	88.00 LT	IR-77	154								164											
PB-12	245	80+50.00	88.00 LT	IR-77						3																	
GAL-2-14	245	80+50.00	88.00 LT	IR-77	80+50.00	80.00 LT	IR-77	8					54				8										
GAL-2-#5	245	80+50.00	80.00 LT	IR-77								1															
PB-13	245	82+01.58	64.00 LT	IR-77																							
GAL-2-18	245	82+01.58	64.00 LT	IR-77	84+97.00	64.00 LT	IR-77	296								306											
PB-14	245	84+97.00	64.00 LT	IR-77						3																	
GAL-2-19	245	84+97.00	64.00 LT	IR-77	84+99.00	74.20 LT	IR-77	11					78				11										
GAL-2-#6	245	84+99.00	74.20 LT	IR-77																							
TOTALS CARRIED TO LIGHTING GENERAL SUMMARY									9			1	2913			470	656					260					

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REFERENCE NO.	SHEET NO.	625																								
		STATION	OFFSET	BL	STATION	OFFSET	BL	LENGTH FEET	CONDUIT CLEANED AND CABLES REMOVED FT	CONDUIT, MISC.: CONDUIT REMOVED FT	CONDUIT, MISC.: 2 1/2" WATERTIGHT, FLEXIBLE CONDUIT, 731.08 FT	LUMINAIRE, CONVENTIONAL, SOLID STATE (LED), IES-III-M-SC, LED, EQUIVALENT TO 400W HPS LAMP, AS PER PLAN EACH	LUMINAIRE, HIGH MAST, SOLID STATE (LED), ASYMMETRIC, EQUIVALENT 400W HPS LAMP, AS PER PLAN EACH	LUMINAIRE, UNDERPASS, SOLID STATE (LED), AS PER PLAN, TYPE III EACH	TRENCH FT	JUNCTION BOX, AS PER PLAN NO. 1 EACH	JUNCTION BOX, AS PER PLAN NO. 2 EACH	STRUCTURE JUNCTION BOX, AS PER PLAN EACH	PULL BOX, 725.08, 18" EACH	PULL BOX, 725.08, 24" EACH	PULL BOX REMOVED EACH	GROUND ROD EACH	STRUCTURE GROUNDING SYSTEM EACH	POWER SERVICE, AS PER PLAN EACH		
SG-1	245	75+21.44	RT	IR-77																					1	
SG-2	245	76+23.56	LT	IR-77																					1	
PB-9	245	75+95.00	68.00 LT	IR-77															1							
JB-1	245	76+15.94	57.50 RT	IR-77														1								
GAL-1-13	245	76+15.94	57.50 RT	IR-77	80+00.33	64.00 RT	IR-77	395							80											
PB-11	245	80+00.33	64.00 RT	IR-77															1							
GAL-1-14	245	80+00.33	64.00 RT	IR-77	78+50.00	68.00 RT	IR-77	151							151											
PB-10	245	78+50.00	68.00 RT	IR-77															1							
JB-2	245	78+60.91	57.50 LT	IR-77														1								
GAL-2-12	245	78+60.91	57.50 LT	IR-77	82+01.58	64.00 LT	IR-77	351							180											
PB-13	245	82+01.58	64.00 LT	IR-77															1							
GAL-2-13	245	82+01.58	64.00 LT	IR-77	80+50.00	88.00 LT	IR-77	154							154											
PB-12	245	80+50.00	88.00 LT	IR-77															1							
GAL-2-14	245	80+50.00	88.00 LT	IR-77	80+50.00	80.00 LT	IR-77	8							8											
GAL-2-#5	245	80+50.00	80.00 LT	IR-77								3										2				
PB-13	245	82+01.58	64.00 LT	IR-77																						
GAL-2-18	245	82+01.58	64.00 LT	IR-77	84+97.00	80.00 LT	IR-77	296							296											
PB-14	245	84+97.00	80.00 LT	IR-77															1							
GAL-2-19	245	84+97.00	80.00 LT	IR-77	84+99.00	74.20 LT	IR-77	11							11											
GAL-2-#6	245	84+99.00	74.20 LT	IR-77								2														
TOTALS CARRIED TO LIGHTING GENERAL SUMMARY													5		880			2	6			2	2			

LIGHTING SUBSUMMARY

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REFERENCE NO.	SHEET NO.							LENGTH	625				SPECIAL		625										
		STATION	OFFSET	BL	STATION	OFFSET	BL		FEET	RE-ERECT EXISTING LIGHT TOWER, AS PER PLAN	PLASTIC CAUTION TAPE	SERVICE TO UNDERPASS LIGHTING, AS PER PLAN	PULL BOX CLEANED	MAINTAIN EXISTING LIGHTING	REPLACEMENT OF EXISTING LIGHTING UNIT	LIGHT TOWER REMOVED FOR STORAGE	LIGHT POLE REMOVED	LIGHT POLE FOUNDATION REMOVED	LUMINAIRE REMOVED (CONVENTIONAL)	LUMINAIRE REMOVED (UNDERPASS)	LUMINAIRE REMOVED FOR STORAGE	POWER SERVICE REMOVED, AS PER PLAN	LIGHT TOWER FOUNDATION REMOVED	DISCONNECT CIRCUIT, AS PER PLAN	
SG-1	245	75+21.44	RT	IR-77																					
SG-2	245	76+23.56	LT	IR-77																					
PB-9	245	75+95.00	68.00 LT	IR-77																					
JB-1	245	76+15.94	57.50 RT	IR-77																					
GAL-1-13	245	76+15.94	57.50 RT	IR-77	80+00.33	64.00 RT	IR-77	395		80															
PB-11	245	80+00.33	64.00 RT	IR-77																					
GAL-1-14	245	80+00.33	64.00 RT	IR-77	78+50.00	68.00 RT	IR-77	151		151															
PB-10	245	78+50.00	68.00 RT	IR-77																					
JB-2	245	78+60.91	57.50 LT	IR-77																					
GAL-2-12	245	78+60.91	57.50 LT	IR-77	82+01.58	64.00 LT	IR-77	351		180															
PB-13	245	82+01.58	64.00 LT	IR-77																					
GAL-2-13	245	82+01.58	64.00 LT	IR-77	80+50.00	88.00 LT	IR-77	154		154															
PB-12	245	80+50.00	88.00 LT	IR-77																					
GAL-2-14	245	80+50.00	88.00 LT	IR-77	80+50.00	80.00 LT	IR-77	8		8															
GAL-2-#5	245	80+50.00	80.00 LT	IR-77					1												3				
PB-13	245	82+01.58	64.00 LT	IR-77																					
GAL-2-18	245	82+01.58	64.00 LT	IR-77	84+97.00	80.00 LT	IR-77	296		296															
PB-14	245	84+97.00	80.00 LT	IR-77																					
GAL-2-19	245	84+97.00	80.00 LT	IR-77	84+99.00	74.20 LT	IR-77	11		11															
GAL-2-#6	245	84+99.00	74.20 LT	IR-77																		2		1	
TOTALS CARRIED TO LIGHTING GENERAL SUMMARY									1	880											5			1	

CALCULATED JDL CHECKED DLR
LIGHTING SUBSUMMARY
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REFERENCE NO.	SHEET NO.	625																							
		STATION	OFFSET	BL	STATION	OFFSET	BL	LENGTH FEET	CONNECTION, FUSED PULL APART EACH	CONNECTION, UNFUSED PERMANENT EACH	LIGHT POLE, CONVENTIONAL, AT30B40, AS PER PLAN EACH	LIGHT POLE FOUNDATION, 24"x8' DEEP EACH	LIGHT TOWER FOUNDATION, 36"x25' DEEP EACH	NO. 2 AWG 2400 VOLT DISTRIBUTION CABLE FT	NO. 10 AWG POLE AND BRACKET CABLE FT	1-1/2" DUCT CABLE WITH TWO NO. 4 AWG 2400 VOLT CABLES FT	1-1/2" DUCT CABLE WITH THREE NO. 2 AWG 2400 VOLT CABLES FT	CONDUIT, 2", 725.04 FT	CONDUIT, 2", 725.04, AS PER PLAN NO. 1 FT	CONDUIT, 2-1/2", 725.04, AS PER PLAN NO. 1 FT	CONDUIT, 2-1/2", 725.04, AS PER PLAN NO. 2 FT	CONDUIT, 4", 725.04 FT	CONDUIT, JACKED OR DRILLED, 4", 725.04 FT		
PB-8	246	74+40.00	75.00 RT	IR-77																					
GAL-1-9	246	74+40.00	75.00 RT	IR-77	75+19.20	32.50 RT	IR-77	98					345	42				100	5	4					
UJB-1	246	75+19.20	32.50 RT	IR-77						3															
GAL-1-10	246	75+19.20	32.50 RT	IR-77	76+24.00	33.00 RT	IR-77	105						369								105			
UJB-3	246	76+24.00	33.00 RT	IR-77					2																
GAL-1-#3	246	76+26.00	35.00 RT	IR-77																					
UJB-1	246	75+19.20	32.50 RT	IR-77																					
GAL-1-11	246	75+19.20	32.50 RT	IR-77	76+69.00	7.00 RT	IR-77	152						576							24	150			
UJB-4	246	76+69.00	7.00 RT	IR-77					2																
GAL-1-#4	246	76+71.00	9.00 RT	IR-77																					
PB-10	246	78+50.00	68.00 RT	IR-77																					
GAL-1-15	246	78+50.00	68.00 RT	IR-77	78+33.70	42.50 RT	IR-77	31					144	162				31	5	38					
UJB-8	246	78+33.70	42.50 RT	IR-77						3															
GAL-1-16	246	78+33.70	42.50 RT	IR-77	77+14.00	46.00 RT	IR-77	120						414								120			
UJB-5	246	77+14.00	46.00 RT	IR-77					2																
GAL-1-#5	246	77+12.00	44.00 RT	IR-77																					
PB-9	246	75+95.00	68.00 LT	IR-77																					
GAL-2-9	246	75+95.00	68.00 LT	IR-77	76+21.30	42.50 LT	IR-77	37					162	159				39	5	37					
UJB-2	246	76+21.30	42.50 LT	IR-77						3															
GAL-2-10	246	76+21.30	42.50 LT	IR-77	77+26.00	36.50 LT	IR-77	105						375							2	105			
UJB-6	246	77+26.00	36.50 LT	IR-77					2																
GAL-2-#2	246	77+30.00	34.50 LT	IR-77																					
PB-12	246	80+50.00	88.00 LT	IR-77																					
GAL-2-15	246	80+50.00	88.00 LT	IR-77	79+35.80	32.50 LT	IR-77	130					441	48				132	5	6					
UJB-10	246	79+35.80	32.50 LT	IR-77						3															
GAL-2-16	246	79+35.80	32.50 LT	IR-77	78+46.00	44.00 LT	IR-77	90						354							10	90			
UJB-9	246	78+46.00	44.00 LT	IR-77					2																
GAL-2-#4	246	78+44.00	42.00 LT	IR-77																					
UJB-10	246	79+35.80	32.50 LT	IR-77																					
GAL-2-17	246	79+35.80	32.50 LT	IR-77	77+86.00	6.00 LT	IR-77	153						576							24	150			
UJB-7	246	77+86.00	6.00 LT	IR-77					2																
GAL-2-#3	246	77+81.00	8.00 LT	IR-77																					
TOTALS CARRIED TO LIGHTING GENERAL SUMMARY									12	12				1092	3075			304	20	145	720				

CALCULATED	JDL
	CHECKED
DLR	
LIGHTING SUBSUMMARY	
CUY-77-14.35	
237 365	

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REFERENCE NO.	SHEET NO.	625																										
		STATION	OFFSET	BL	STATION	OFFSET	BL	LENGTH FEET	CONDUIT CLEANED AND CABLES REMOVED FT	CONDUIT, MISC.: CONDUIT REMOVED FT	CONDUIT, MISC.: 2 1/2" WATERTIGHT, FLEXIBLE CONDUIT, 731.08 FT	LUMINAIRE, CONVENTIONAL, SOLID STATE (LED), IES-III-M-SC, LED, EQUIVALENT TO 400W HPS LAMP, AS PER PLAN EACH	LUMINAIRE, HIGH MAST, SOLID STATE (LED), ASYMMETRIC, EQUIVALENT 400W HPS LAMP, AS PER PLAN EACH	LUMINAIRE, UNDERPASS, SOLID STATE (LED), AS PER PLAN, TYPE III EACH	TRENCH FT	JUNCTION BOX, AS PER PLAN NO. 1 EACH	JUNCTION BOX, AS PER PLAN NO. 2 EACH	STRUCTURE JUNCTION BOX, AS PER PLAN EACH	PULL BOX, 725.08, 18" EACH	PULL BOX, 725.08, 24" EACH	PULL BOX REMOVED EACH	GROUND ROD EACH	STRUCTURE GROUNDING SYSTEM EACH	POWER SERVICE, AS PER PLAN EACH				
PB-8	246	74+40.00	75.00 RT	IR-77																								
GAL-1-9	246	74+40.00	75.00 RT	IR-77	75+19.20	32.50 RT	IR-77	98							98													
UJB-1	246	75+19.20	32.50 RT	IR-77												1												
GAL-1-10	246	75+19.20	32.50 RT	IR-77	76+24.00	33.00 RT	IR-77	105			8						1											
UJB-3	246	76+24.00	33.00 RT	IR-77													1											
GAL-1-#3	246	76+26.00	35.00 RT	IR-77											1													
UJB-1	246	75+19.20	32.50 RT	IR-77																								
GAL-1-11	246	75+19.20	32.50 RT	IR-77	76+69.00	7.00 RT	IR-77	152			8						1											
UJB-4	246	76+69.00	7.00 RT	IR-77													1											
GAL-1-#4	246	76+71.00	9.00 RT	IR-77											1													
PB-10	246	78+60.00	52.70 RT	IR-77																								
GAL-1-15	246	78+60.00	52.70 RT	IR-77	78+33.70	42.50 RT	IR-77	29			6				31													
UJB-8	246	78+33.70	42.50 RT	IR-77												1												
GAL-1-16	246	78+33.70	42.50 RT	IR-77	77+14.00	46.00 RT	IR-77	120			8						1											
UJB-5	246	77+14.00	46.00 RT	IR-77													1											
GAL-1-#5	246	77+12.00	44.00 RT	IR-77											1													
PB-9	246	75+95.00	68.00 LT	IR-77																								
GAL-2-9	246	75+95.00	68.00 LT	IR-77	76+21.30	42.50 LT	IR-77	37			6				37													
UJB-2	246	76+21.30	42.50 LT	IR-77												1												
GAL-2-10	246	76+21.30	42.50 LT	IR-77	77+26.00	36.50 LT	IR-77	105			8						1											
UJB-6	246	77+26.00	36.50 LT	IR-77													1											
GAL-2-#2	246	77+30.00	34.50 LT	IR-77											1													
PB-12	246	80+50.00	88.00 LT	IR-77																								
GAL-2-15	246	80+50.00	88.00 LT	IR-77	79+35.80	32.50 LT	IR-77	130							130													
UJB-10	246	79+35.80	32.50 LT	IR-77												1												
GAL-2-16	246	79+35.80	32.50 LT	IR-77	78+46.00	44.00 LT	IR-77	90			8						1											
UJB-9	246	78+46.00	44.00 LT	IR-77													1											
GAL-2-#4	246	78+44.00	42.00 LT	IR-77											1													
UJB-10	246	79+35.80	32.50 LT	IR-77																								
GAL-2-17	246	79+35.80	32.50 LT	IR-77	77+86.00	6.00 LT	IR-77	153			8						1											
UJB-7	246	77+86.00	6.00 LT	IR-77													1											
GAL-2-#3	246	77+81.00	8.00 LT	IR-77											1													
TOTALS CARRIED TO LIGHTING GENERAL SUMMARY											60			6	296	4	12											

LIGHTING SUBSUMMARY	CALCULATED JDL CHECKED DLR
CUY-77-14.35	238 365

REFERENCE NO.	SHEET NO.	625																								
		STATION	OFFSET	BL	STATION	OFFSET	BL	LENGTH FEET	CONNECTION, FUSED FULL APART EACH	CONNECTION, UNFUSED PERMANENT EACH	LIGHT POLE, CONVENTIONAL, AT30B40, AS PER PLAN EACH	LIGHT POLE FOUNDATION, 24"x8' DEEP EACH	LIGHT TOWER FOUNDATION, 36"x25' DEEP EACH	NO. 2 AWG 2400 VOLT DISTRIBUTION CABLE FT	NO. 10 AWG POLE AND BRACKET CABLE FT	1-1/2" DUCT CABLE WITH TWO NO. 4 AWG 2400 VOLT CABLES FT	1-1/2" DUCT CABLE WITH THREE NO. 2 AWG 2400 VOLT CABLES FT	CONDUIT, 2", 725.04 FT	CONDUIT, 2", 725.04, AS PER PLAN NO. 1 FT	CONDUIT, 2-1/2", 725.04, AS PER PLAN NO. 1 FT	CONDUIT, 2-1/2", 725.04, AS PER PLAN NO. 2 FT	CONDUIT, 4", 725.04 FT	CONDUIT, JACKED OR DRILLED, 4", 725.04 FT			
R-1 TO R-9	NOT USED																									
R-10	247	54+20.00	66.60 RT	IR-77																						
R-11	247	54+40.00	66.60 RT	IR-77																						
R-12	247	55+60.00	66.30 RT	IR-77																						
R-13	247	56+79.00	66.70 RT	IR-77																						
R-14	247	57+99.00	66.60 RT	IR-77																						
R-15	247	59+14.00	66.50 RT	IR-77																						
R-16	247	59+39.00	60.80 RT	IR-77																						
R-17	247	60+35.00	68.20 RT	IR-77																						
TOTALS CARRIED TO LIGHTING GENERAL SUMMARY																										
R-18	248	65+10.00	168.00 RT	IR-77																						
R-19	248	65+10.00	168.00 RT	IR-77	65+46.00	100.50 RT	IR-77	95																		
R-20	248	65+46.00	100.50 RT	IR-77																						
R-21	248	65+46.00	100.50 RT	IR-77	65+58.00	50.00 RT	IR-77	52																		
R-22	248	65+58.00	50.00 RT	IR-77																						
R-23	248	65+58.00	48.00 LT	IR-77																						
R-24	248	74+73.00	43.80 RT	IR-77																						
R-25	248	74+55.00	43.50 RT	IR-77																						
RR-1	248	74+82.50	61.10 RT	IR-77																						
TOTALS CARRIED TO LIGHTING GENERAL SUMMARY																										
R-26	249																									
R-27	249	79+36.00	36.20 RT	IR-77	79+60.00	39.00 RT	IR-77	25																		
R-28	249	79+60.00	39.00 RT	IR-77																						
R-29	249	81+30.00	49.00 RT	IR-77																						
R-30	249	84+09.00	63.80 RT	IR-77																						
R-31	249	79+74.00	36.00 LT	IR-77	80+89.00	45.00 LT	IR-77	116																		
R-32	249	80+89.00	45.00 LT	IR-77																						
RR-2	249	80+27.25	63.55 LT	IR-77																						
TOTALS CARRIED TO LIGHTING GENERAL SUMMARY																										

CALCULATED

JDL

CHECKED

DLR

LIGHTING SUBSUMMARY

CUY - 77 - 14.35

240
365

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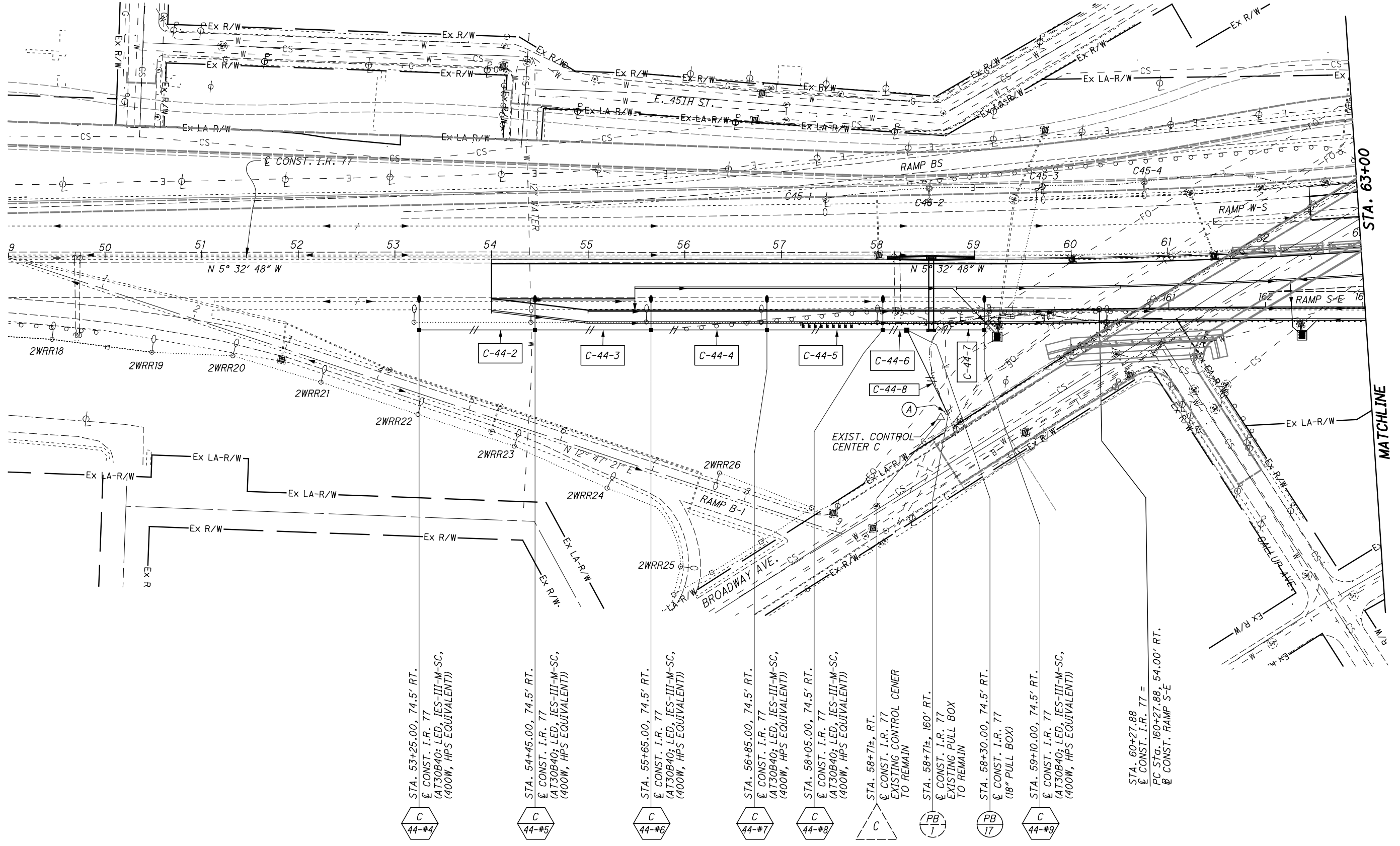
REFERENCE NO.	SHEET NO.				625				SPECIAL					625																																		
		STATION	OFFSET	BL	STATION	OFFSET	BL	LENGTH FEET	RE-ERECT EXISTING LIGHT TOWER, AS PER PLAN	PLASTIC CAUTION TAPE	SERVICE TO UNDERPASS LIGHTING, AS PER PLAN	PULL BOX CLEANED	MAINTAIN EXISTING LIGHTING	REPLACEMENT OF EXISTING LIGHTING UNIT	LIGHT TOWER REMOVED FOR STORAGE	LIGHT POLE REMOVED	LIGHT POLE FOUNDATION REMOVED	LUMINAIRE REMOVED (CONVENTIONAL)	LUMINAIRE REMOVED (UNDERPASS)	LUMINAIRE REMOVED FOR STORAGE	POWER SERVICE REMOVED, AS PER PLAN	LIGHT TOWER FOUNDATION REMOVED	DISCONNECT CIRCUIT, AS PER PLAN																									
R-1 TO R-9	NOT USED																																															
R-10	247	54+20.00	66.60 RT	IR-77													1	1	1																													
R-11	247	54+40.00	66.60 RT	IR-77													1	1	1																													
R-12	247	55+60.00	66.30 RT	IR-77													1	1	1																													
R-13	247	56+79.00	66.70 RT	IR-77													1	1	1																													
R-14	247	57+99.00	66.60 RT	IR-77													1	1	1																													
R-15	247	59+14.00	66.50 RT	IR-77													1	1	1																													
R-16	247	59+39.00	60.80 RT	IR-77													1																															
R-17	247	60+35.00	68.20 RT	IR-77													1	1	1																													
TOTALS CARRIED TO LIGHTING GENERAL SUMMARY																							7	7	7																							
R-18	248	65+10.00	168.00 RT	IR-77																																												
R-19	248	65+10.00	168.00 RT	IR-77	65+46.00	100.50 RT	IR-77	95																																								
R-20	248	65+46.00	100.50 RT	IR-77																																												
R-21	248	65+46.00	100.50 RT	IR-77	65+58.00	50.00 RT	IR-77	52																																								
R-22	248	65+58.00	50.00 RT	IR-77																																												
R-23	248	65+58.00	48.00 LT	IR-77																																												
R-24	248	74+73.00	43.80 RT	IR-77																																												
R-25	248	74+55.00	43.50 RT	IR-77																																												
RR-1	248	74+82.50	61.10 RT	IR-77														1								1																						
TOTALS CARRIED TO LIGHTING GENERAL SUMMARY																							1												1	1												
R-26	249																																															
R-27	249	79+36.00	36.20 RT	IR-77	79+60.00	39.00 RT	IR-77	25																																								
R-28	249	79+60.00	39.00 RT	IR-77																																												
R-29	249	81+30.00	49.00 RT	IR-77																																												
R-30	249	84+09.00	63.80 RT	IR-77																																												
R-31	249	79+74.00	36.00 LT	IR-77	80+89.00	45.00 LT	IR-77	116																																								
R-32	249	80+89.00	45.00 LT	IR-77																																												
RR-2	249	80+27.25	63.55 LT	IR-77														1								1																						
TOTALS CARRIED TO LIGHTING GENERAL SUMMARY																							1												6									1	1			


CALCULATED	JDL	CHECKED	DLR
LIGHTING SUBSUMMARY			
CUY - 77 - 14.35			
242		365	


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
SEE SHEET NO. 223 FOR LIGHTING SYMBOLS LEGEND


- (A) MAKE NEW SPLICE CONNECTION IN EXISTING PULL BOX TO CIRCUITS C-44. ABANDON CIRCUIT C-45.






44-#4
 STA. 53+25.00, 74.5' RT.
 Ⓞ CONST. I.R. 77
 (AT30B40; LED, IES-III-M-SC,
 (400W, HPS EQUIVALENT))



44-#5
 STA. 54+45.00, 74.5' RT.
 Ⓞ CONST. I.R. 77
 (AT30B40; LED, IES-III-M-SC,
 (400W, HPS EQUIVALENT))



44-#6
 STA. 55+65.00, 74.5' RT.
 Ⓞ CONST. I.R. 77
 (AT30B40; LED, IES-III-M-SC,
 (400W, HPS EQUIVALENT))



44-#7
 STA. 56+85.00, 74.5' RT.
 Ⓞ CONST. I.R. 77
 (AT30B40; LED, IES-III-M-SC,
 (400W, HPS EQUIVALENT))


44-#8
 STA. 58+05.00, 74.5' RT.
 Ⓞ CONST. I.R. 77
 (AT30B40; LED, IES-III-M-SC,
 (400W, HPS EQUIVALENT))


C
 STA. 58+71. RT.
 Ⓞ CONST. I.R. 77
 EXISTING CONTROL CENTER
 TO REMAIN


1
 STA. 58+71. 160' RT.
 Ⓞ CONST. I.R. 77
 EXISTING PULL BOX
 TO REMAIN


17
 STA. 58+30.00, 74.5' RT.
 Ⓞ CONST. I.R. 77
 (18" PULL BOX)


44-#9
 STA. 59+10.00, 74.5' RT.
 Ⓞ CONST. I.R. 77
 (AT30B40; LED, IES-III-M-SC,
 (400W, HPS EQUIVALENT))

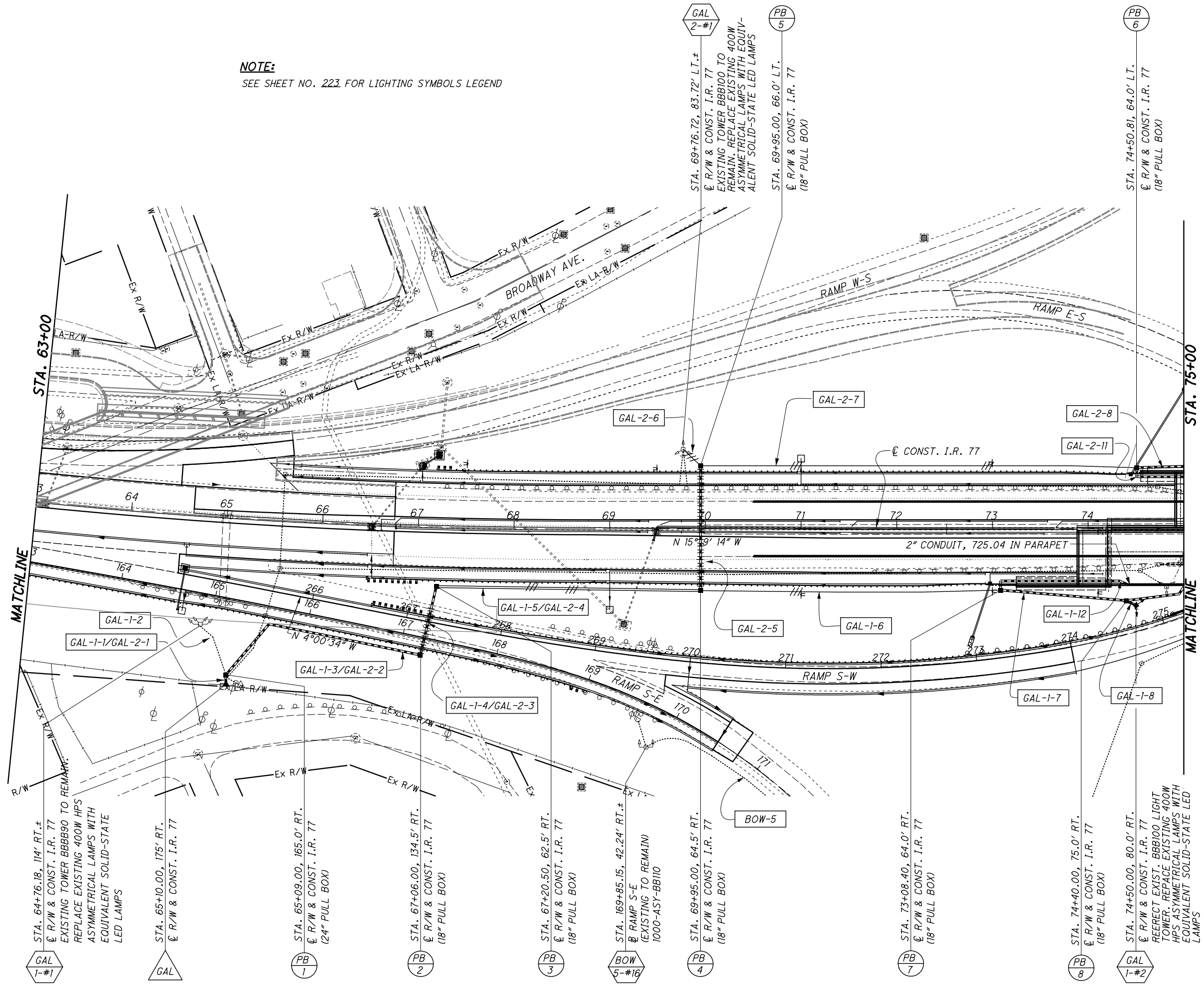
STA. 60+27.88
 Ⓞ CONST. I.R. 77 =
 PC STA. 160+27.88, 54.00' RT.
 Ⓞ CONST. RAMP S-E

PROPOSED LIGHTING PLAN - I.R. 77
STA. 49+00 TO STA. 63+00

CUY-77-14.35

CALCULATED JDL
 CHECKED DLR
 HORIZONTAL SCALE IN FEET
 0 25 50 100

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NOTE:
SEE SHEET NO. 223 FOR LIGHTING SYMBOLS LEGEND

GAL 1-#1
STA. 64+76.18, 114' RT. ±
R/W & CONST. I.R. 77
EXISTING TOWER BBBB90 TO REMAIN.
REPLACE EXISTING 400W HPS
ASYMMETRICAL LAMPS WITH
EQUIVALENT SOLID-STATE
LED LAMPS

GAL
STA. 65+10.00, 175' RT.
R/W & CONST. I.R. 77

PB 1
STA. 65+09.00, 165.0' RT.
R/W & CONST. I.R. 77
(24" PULL BOX)

PB 2
STA. 67+06.00, 134.5' RT.
R/W & CONST. I.R. 77
(18" PULL BOX)

PB 3
STA. 67+20.50, 62.5' RT.
R/W & CONST. I.R. 77
(18" PULL BOX)

BOW 5-#18
STA. 169+85.15, 42.24' RT. ±
RAMP S-E
(EXISTING TO REMAIN)
1000-ASY-BB110

PB 4
STA. 69+95.00, 64.5' RT.
R/W & CONST. I.R. 77
(18" PULL BOX)

PB 7
STA. 73+08.40, 64.0' RT.
R/W & CONST. I.R. 77
(18" PULL BOX)

PB 8
STA. 74+40.00, 75.0' RT.
R/W & CONST. I.R. 77
(18" PULL BOX)

GAL 1-#2
STA. 74+50.00, 80.0' RT.
R/W & CONST. I.R. 77
REERECT EXIST. BBB100 LIGHT
TOWER. REPLACE EXISTING 400W
HPS ASYMMETRICAL LAMPS WITH
EQUIVALENT SOLID-STATE LED
LAMPS

GAL 2-#1
STA. 69+76.72, 83.72' LT. ±
R/W & CONST. I.R. 77
EXISTING TOWER BBB100 TO
REMAIN. REPLACE EXISTING 400W
ASYMMETRICAL LAMPS WITH EQUIV-
ALENT SOLID-STATE LED LAMPS

PB 5
STA. 69+95.00, 66.0' LT.
R/W & CONST. I.R. 77
(18" PULL BOX)

PB 6
STA. 74+50.81, 64.0' LT.
R/W & CONST. I.R. 77
(18" PULL BOX)

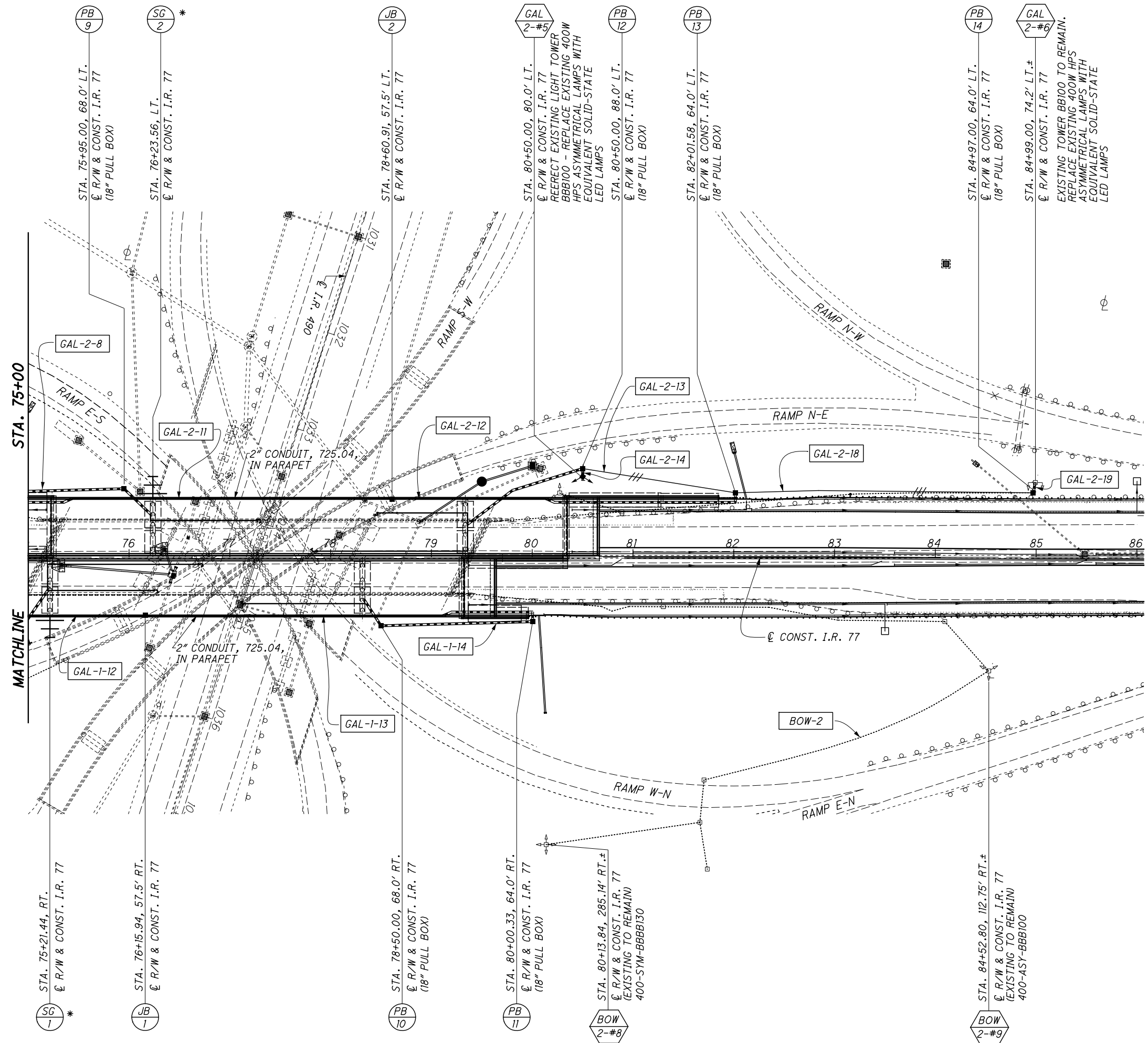


PROPOSED LIGHTING PLAN - I.R. 77
STA. 63+00 TO STA. 75+00

CUY-77-14.35
244
365

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NOTE:
SEE SHEET NO. 223 FOR LIGHTING SYMBOLS LEGEND
FOR UNDERPASS LIGHTING LOCATIONS DETAILS SEE SHEET 254-255.
*FOR STRUCTURE GROUNDING DETAILS SEE SHEET 250-251.

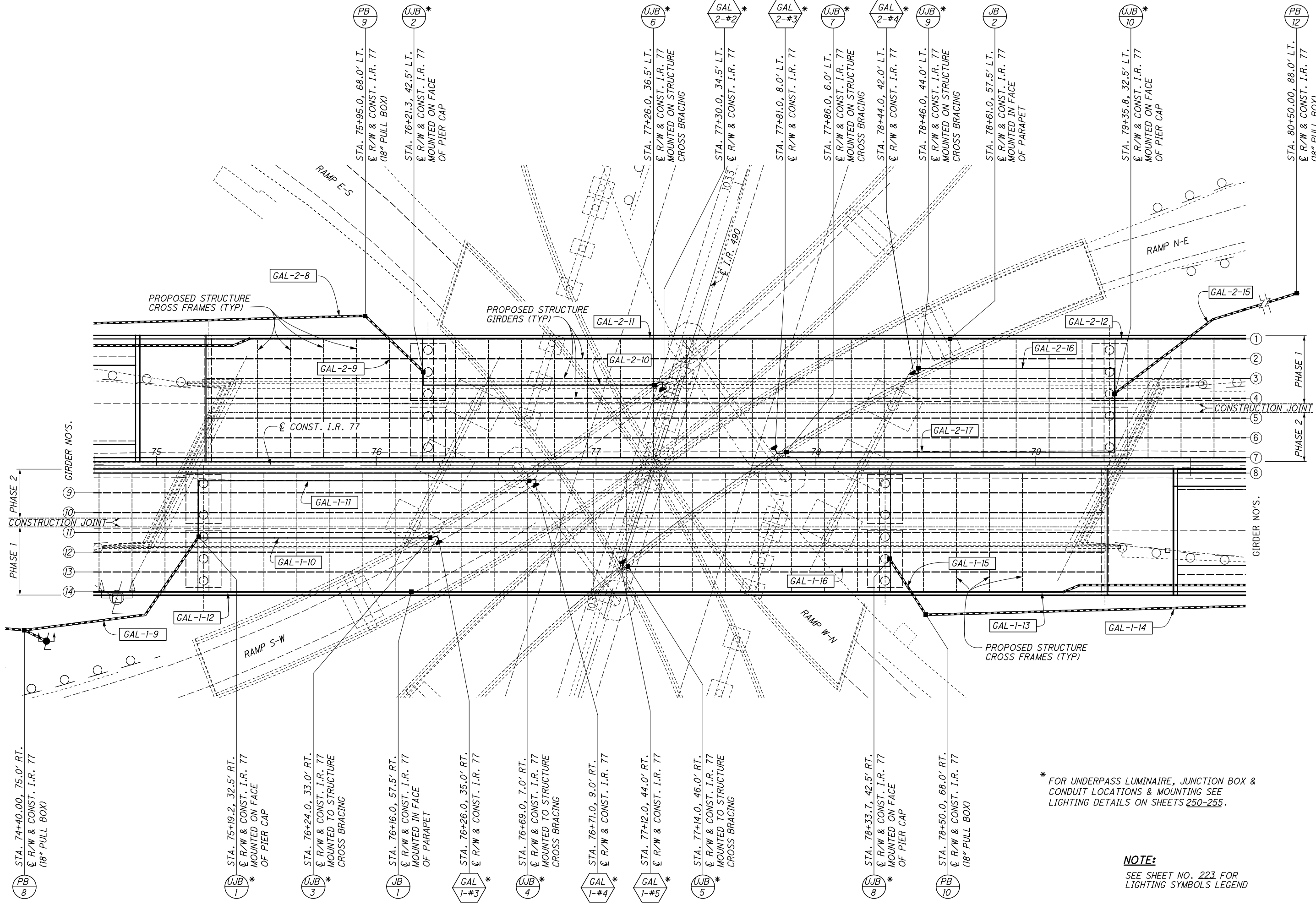


CALCULATED
JDJ
CHECKED
DLR

0 50 100
25
HORIZONTAL
SCALE IN FEET

PROPOSED LIGHTING PLAN - I.R. 77
STA. 75+00 TO STA. 86+00

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PB 8
 STA. 74+40.00, 75.0' RT.
 ⌀ R/W & CONST. I.R. 77
 (18" PULL BOX)

UJB 1
 STA. 75+19.2, 32.5' RT.
 ⌀ R/W & CONST. I.R. 77
 MOUNTED ON FACE
 OF PIER CAP

UJB 3
 STA. 76+24.0, 33.0' RT.
 ⌀ R/W & CONST. I.R. 77
 MOUNTED TO STRUCTURE
 CROSS BRACING

JB 1
 STA. 76+16.0, 57.5' RT.
 ⌀ R/W & CONST. I.R. 77
 MOUNTED IN FACE
 OF PARAPET

GAL 1-#3
 STA. 76+26.0, 35.0' RT.
 ⌀ R/W & CONST. I.R. 77

UJB 4
 STA. 76+69.0, 7.0' RT.
 ⌀ R/W & CONST. I.R. 77
 MOUNTED TO STRUCTURE
 CROSS BRACING

GAL 1-#4
 STA. 76+71.0, 9.0' RT.
 ⌀ R/W & CONST. I.R. 77

GAL 1-#5
 STA. 77+12.0, 44.0' RT.
 ⌀ R/W & CONST. I.R. 77

UJB 5
 STA. 77+14.0, 46.0' RT.
 ⌀ R/W & CONST. I.R. 77
 MOUNTED TO STRUCTURE
 CROSS BRACING

UJB 8
 STA. 78+33.7, 42.5' RT.
 ⌀ R/W & CONST. I.R. 77
 MOUNTED ON FACE
 OF PIER CAP

PB 10
 STA. 78+50.0, 68.0' RT.
 ⌀ R/W & CONST. I.R. 77
 (18" PULL BOX)

PB 9
 STA. 75+95.0, 68.0' LT.
 ⌀ R/W & CONST. I.R. 77
 (18" PULL BOX)

UJB 2
 STA. 76+21.3, 42.5' LT.
 ⌀ R/W & CONST. I.R. 77
 MOUNTED ON FACE
 OF PIER CAP

UJB 6
 STA. 77+26.0, 36.5' LT.
 ⌀ R/W & CONST. I.R. 77
 MOUNTED ON STRUCTURE
 CROSS BRACING

GAL 2-#2
 STA. 77+30.0, 34.5' LT.
 ⌀ R/W & CONST. I.R. 77

GAL 2-#3
 STA. 77+81.0, 8.0' LT.
 ⌀ R/W & CONST. I.R. 77

UJB 7
 STA. 77+86.0, 6.0' LT.
 ⌀ R/W & CONST. I.R. 77
 MOUNTED ON STRUCTURE
 CROSS BRACING

GAL 2-#4
 STA. 78+44.0, 42.0' LT.
 ⌀ R/W & CONST. I.R. 77

UJB 9
 STA. 78+46.0, 44.0' LT.
 ⌀ R/W & CONST. I.R. 77
 MOUNTED ON STRUCTURE
 CROSS BRACING

JB 2
 STA. 78+61.0, 57.5' LT.
 ⌀ R/W & CONST. I.R. 77
 MOUNTED IN FACE
 OF PARAPET

UJB 10
 STA. 79+35.8, 32.5' LT.
 ⌀ R/W & CONST. I.R. 77
 MOUNTED ON FACE
 OF PIER CAP

PB 12
 STA. 80+50.00, 88.0' LT.
 ⌀ R/W & CONST. I.R. 77
 (18" PULL BOX)

* FOR UNDERPASS LUMINAIRE, JUNCTION BOX & CONDUIT LOCATIONS & MOUNTING SEE LIGHTING DETAILS ON SHEETS 250-255.

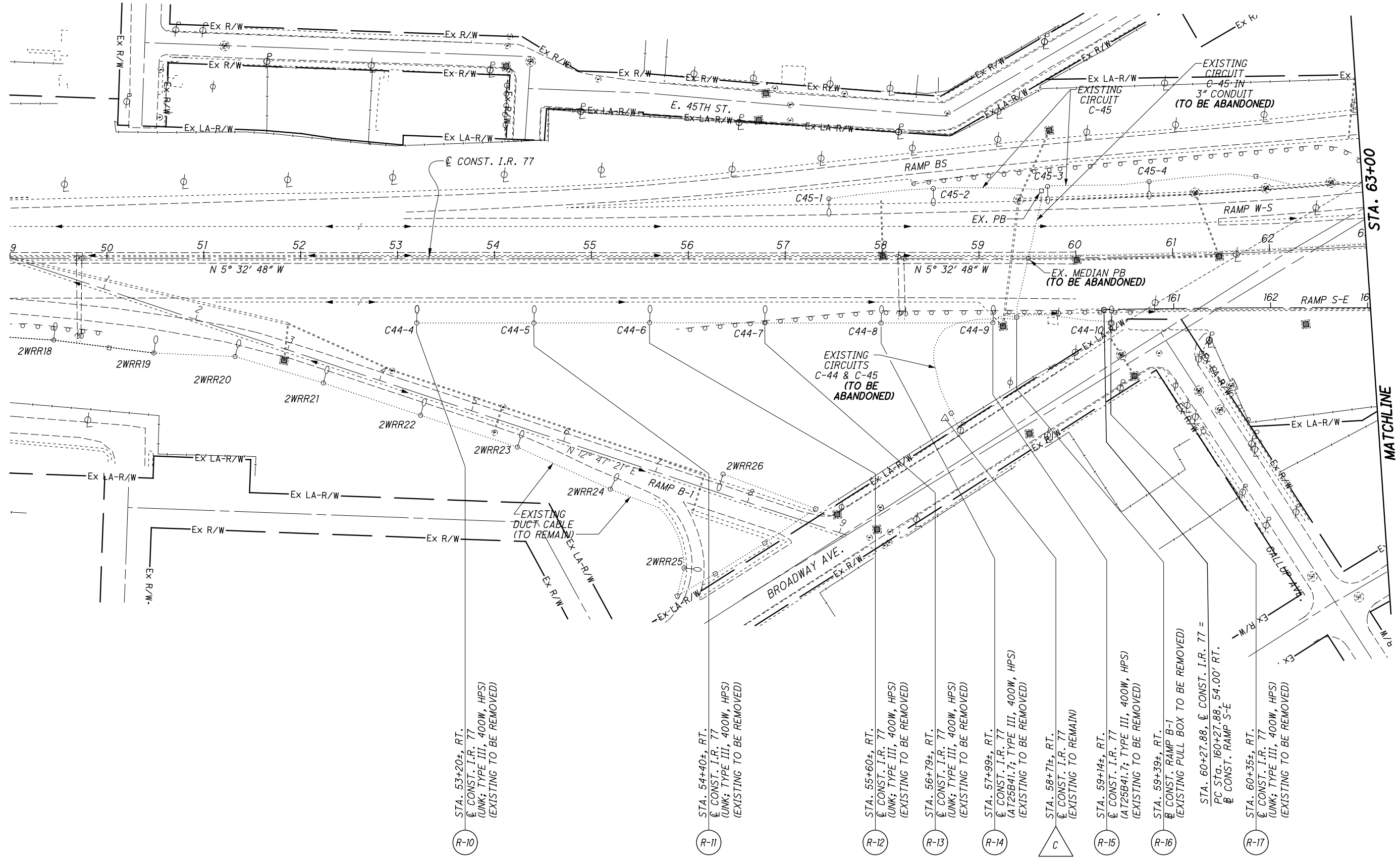
NOTE:
 SEE SHEET NO. 223 FOR LIGHTING SYMBOLS LEGEND



PROPOSED UNDERPASS LIGHTING PLAN - I.R. 77
STA. 74+00 TO STA. 81+00

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NOTE:
SEE SHEET NO. 223 FOR
LIGHTING SYMBOLS LEGEND



R-10
STA. 53+20±, RT.
⊙ CONST. I.R. 77
(UNK; TYPE III, 400W, HPS)
(EXISTING TO BE REMOVED)

R-11
STA. 54+40±, RT.
⊙ CONST. I.R. 77
(UNK; TYPE III, 400W, HPS)
(EXISTING TO BE REMOVED)

R-12
STA. 55+60±, RT.
⊙ CONST. I.R. 77
(UNK; TYPE III, 400W, HPS)
(EXISTING TO BE REMOVED)

R-13
STA. 56+79±, RT.
⊙ CONST. I.R. 77
(UNK; TYPE III, 400W, HPS)
(EXISTING TO BE REMOVED)

R-14
STA. 57+99±, RT.
⊙ CONST. I.R. 77
(AT25B41.7; TYPE III, 400W, HPS)
(EXISTING TO BE REMOVED)

C
STA. 58+71±, RT.
⊙ CONST. I.R. 77
(EXISTING TO REMAIN)

R-15
STA. 59+14±, RT.
⊙ CONST. I.R. 77
(AT25B41.7; TYPE III, 400W, HPS)
(EXISTING TO BE REMOVED)

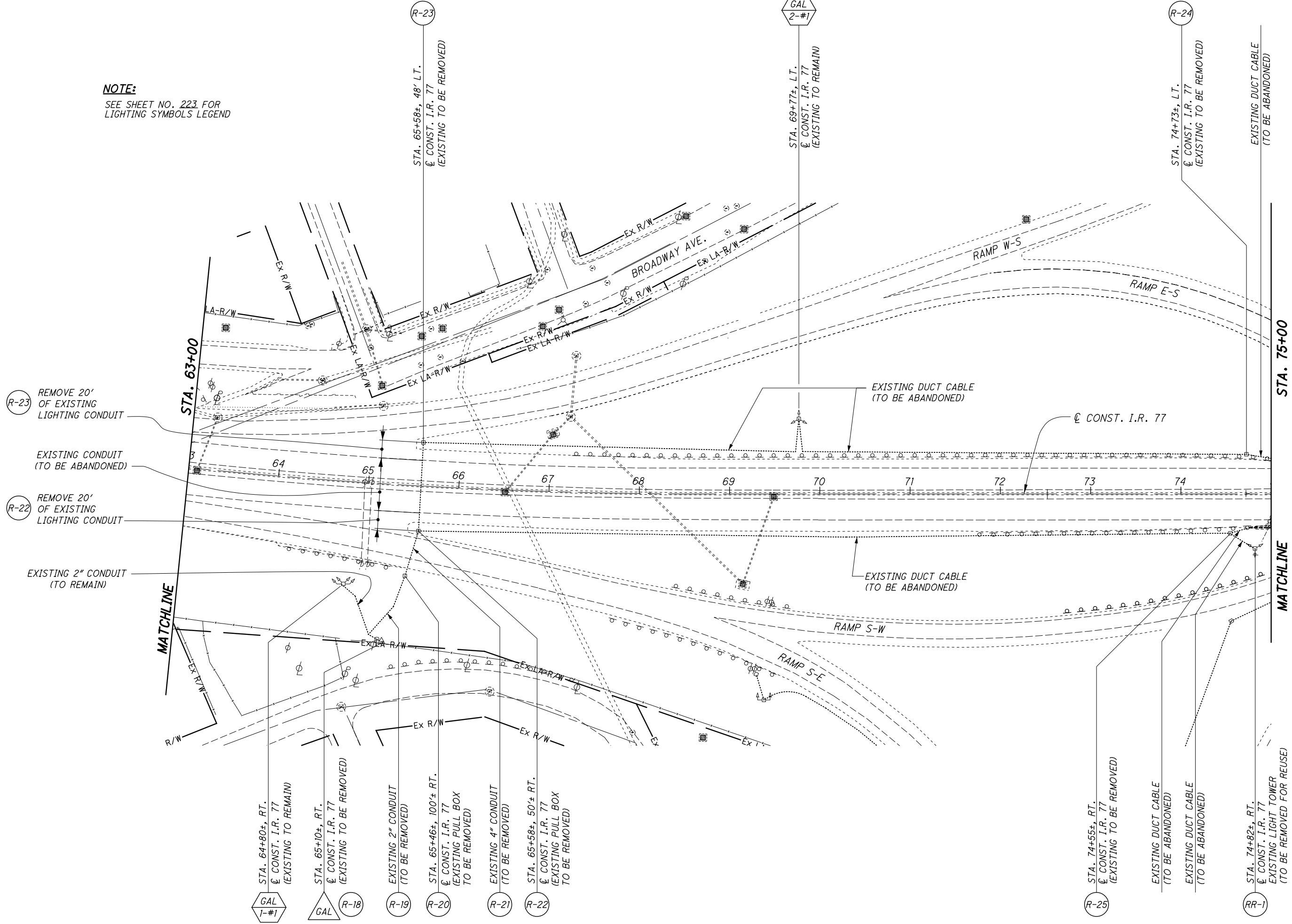
R-16
STA. 59+39±, RT.
⊙ CONST. RAMP B-1
(EXISTING PULL BOX TO BE REMOVED)

R-17
STA. 60+35±, RT.
⊙ CONST. I.R. 77
(UNK; TYPE III, 400W, HPS)
(EXISTING TO BE REMOVED)

CALCULATED JDL CHECKED DLR
LIGHTING REMOVAL PLAN - I.R. 77
STA. 49+00 TO STA. 63+00

CUY-77-14.35
247
365

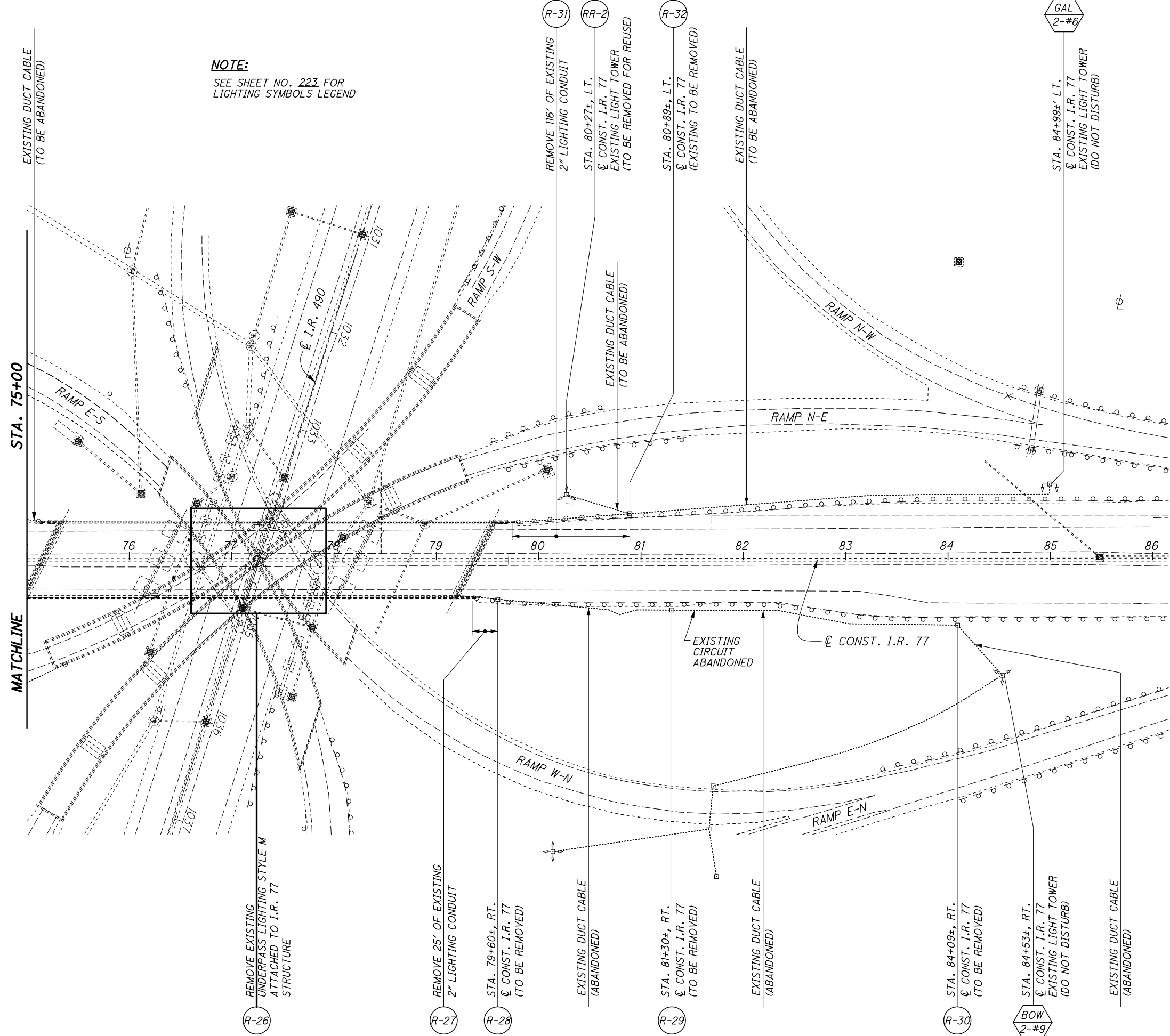
NOTE:
SEE SHEET NO. 223 FOR
LIGHTING SYMBOLS LEGEND



CALCULATED JDL
CHECKED DLR

0 50 100
25
HORIZONTAL
SCALE IN FEET

LIGHTING REMOVAL PLAN - I.R. 77
STA. 63+00 TO STA. 75+00



NOTE:
SEE SHEET NO. 223 FOR
LIGHTING SYMBOLS LEGEND

R-26 REMOVE EXISTING UNDERPASS LIGHTING STYLE M ATTACHED TO I.R. 77 STRUCTURE

R-27 REMOVE 25' OF EXISTING 2" LIGHTING CONDUIT

R-28 STA. 79+60±, RT. \emptyset CONST. I.R. 77 (TO BE REMOVED)

EXISTING DUCT CABLE (ABANDONED)

R-29 STA. 81+30±, RT. \emptyset CONST. I.R. 77 (TO BE REMOVED)

EXISTING DUCT CABLE (ABANDONED)

R-30 STA. 84+09±, RT. \emptyset CONST. I.R. 77 (TO BE REMOVED)

BOW 2-#9 STA. 84+53±, RT. \emptyset CONST. I.R. 77 EXISTING LIGHT TOWER (DO NOT DISTURB)

EXISTING DUCT CABLE (ABANDONED)

R-31 REMOVE 116' OF EXISTING 2" LIGHTING CONDUIT

RR-2 STA. 80+27±, LT. \emptyset CONST. I.R. 77 EXISTING LIGHT TOWER (TO BE REMOVED FOR REUSE)

R-32 STA. 80+89±, LT. \emptyset CONST. I.R. 77 (EXISTING TO BE REMOVED)

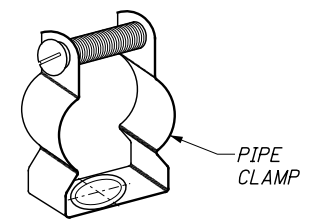
EXISTING DUCT CABLE (TO BE ABANDONED)

GAL 2-#6 STA. 84+99±, LT. \emptyset CONST. I.R. 77 EXISTING LIGHT TOWER (DO NOT DISTURB)

CALCULATED	JDL
CHECKED	DLR

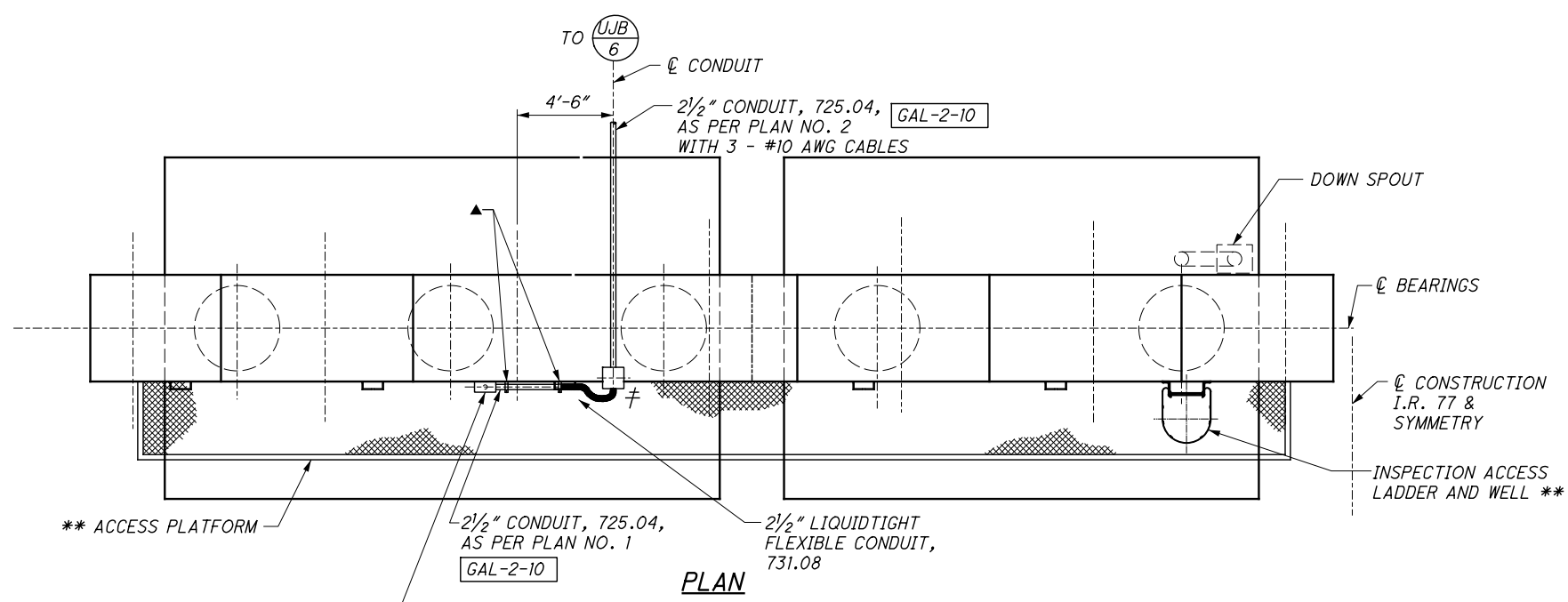
0 50 100
25
HORIZONTAL SCALE IN FEET

LIGHTING REMOVAL PLAN - I.R. 77
STA. 75+00 TO STA. 86+00

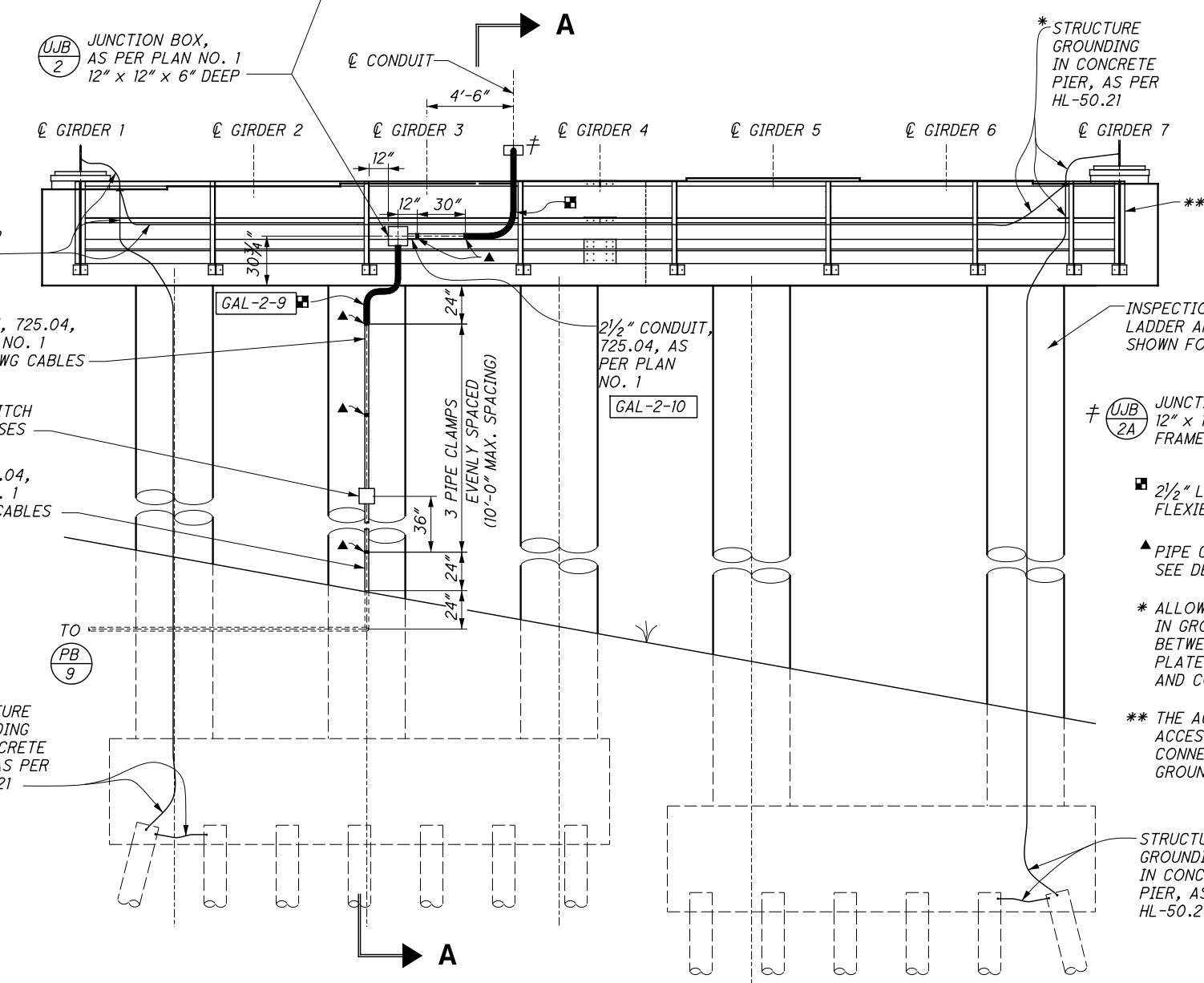


PIPE CLAMP DETAIL

ATTACH LIGHTING CONDUITS TO PIER USING PIPE CLAMPS. PIPE CLAMPS SHALL BE STAINLESS STEEL "BL 1400 SERIES" CONDUIT HANGER AS MANUFACTURED BY COOPER B-LINE; CADDY "CD 5B & 6B" CONDUIT HANGER AS MANUFACTURED BY ERICO OR AN APPROVED EQUAL.



PLAN

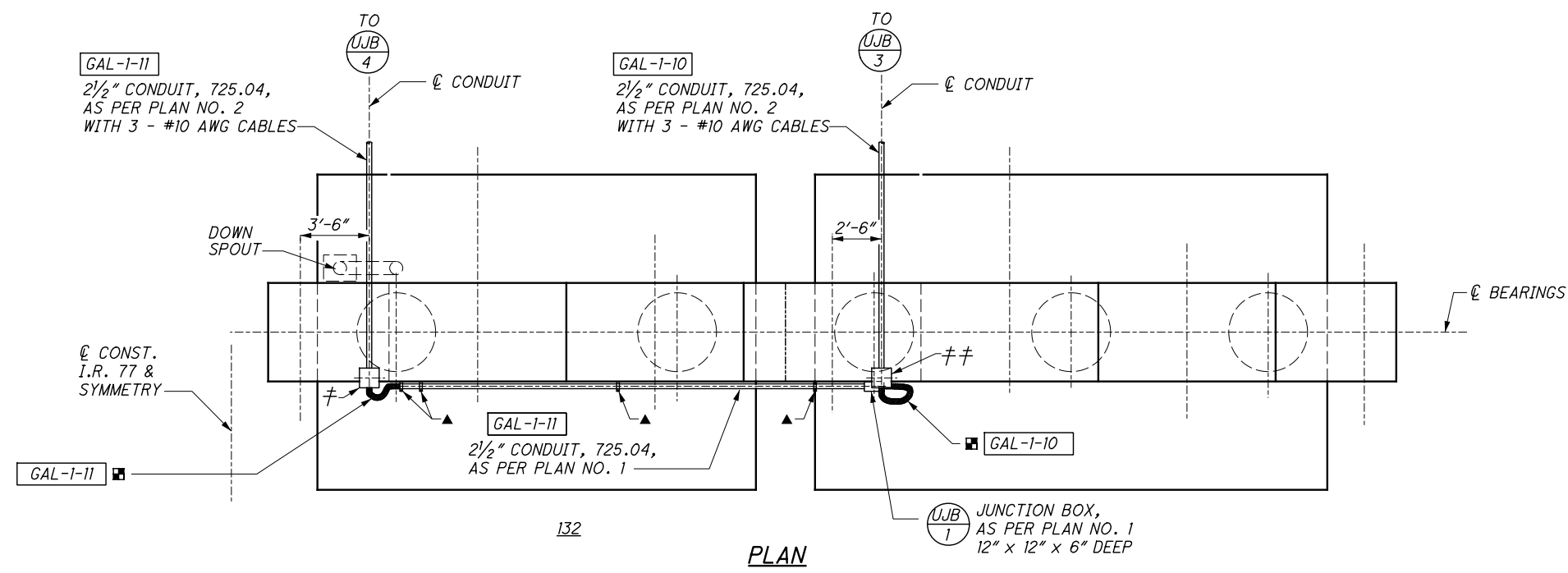


PIER 1L

SECTION A-A

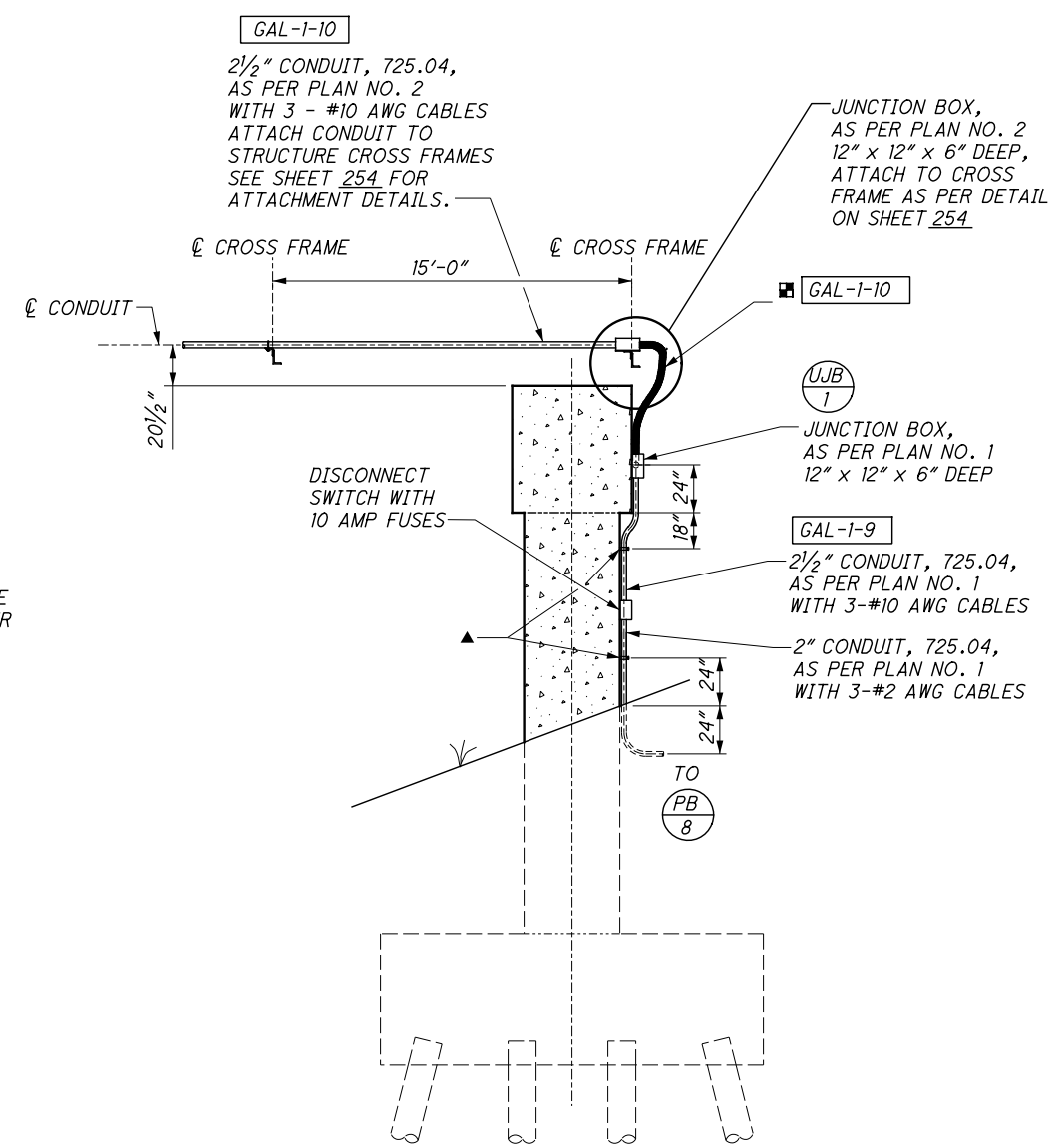
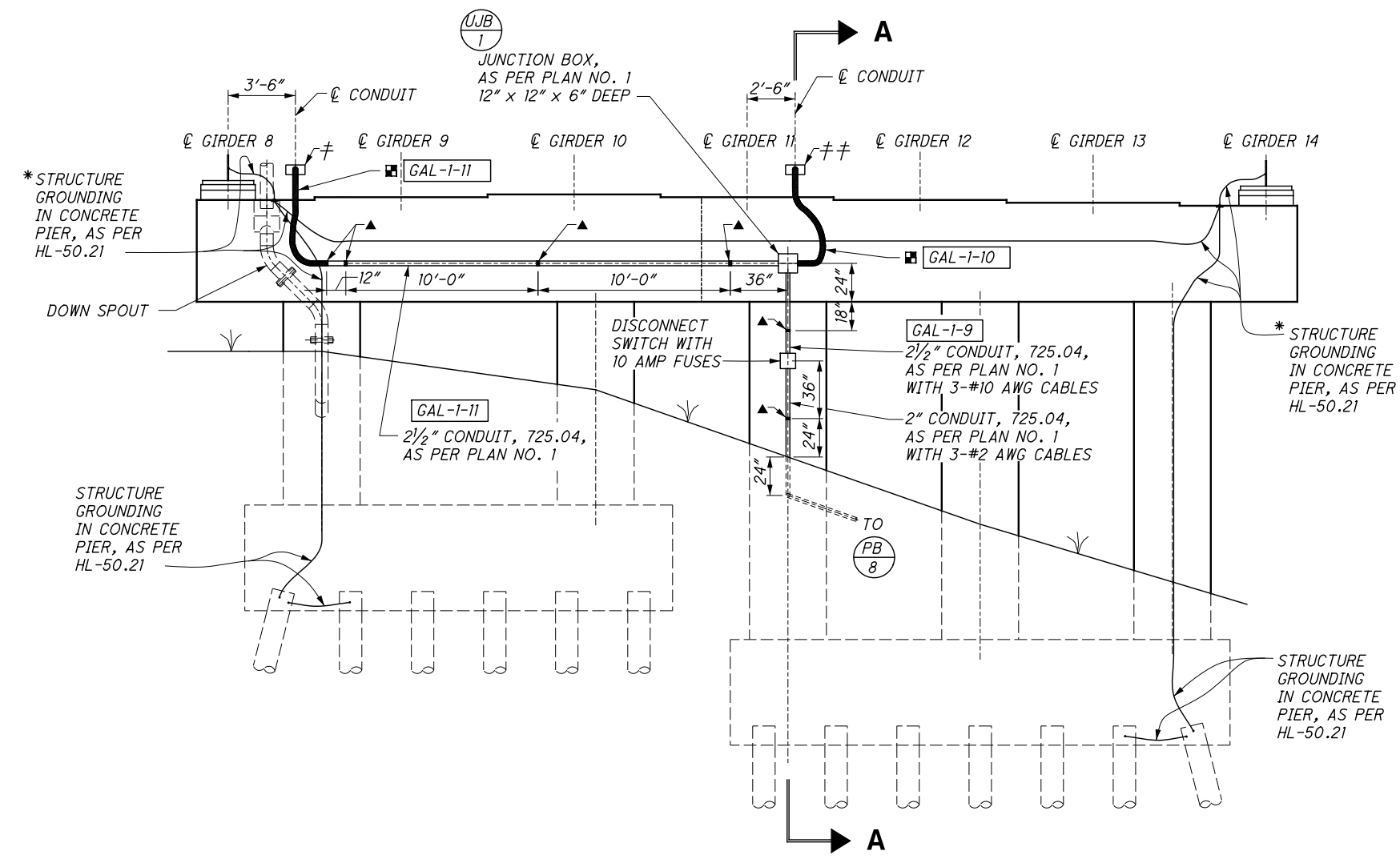
NOTE:
FOR ADDITIONAL PIER DETAILS SEE STRUCTURE PLANS SHEETS 321 AND 326.

\\REL8\Current\105040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\13567\do.dgn 12/14/2016 2:56:33 PM DonHelman



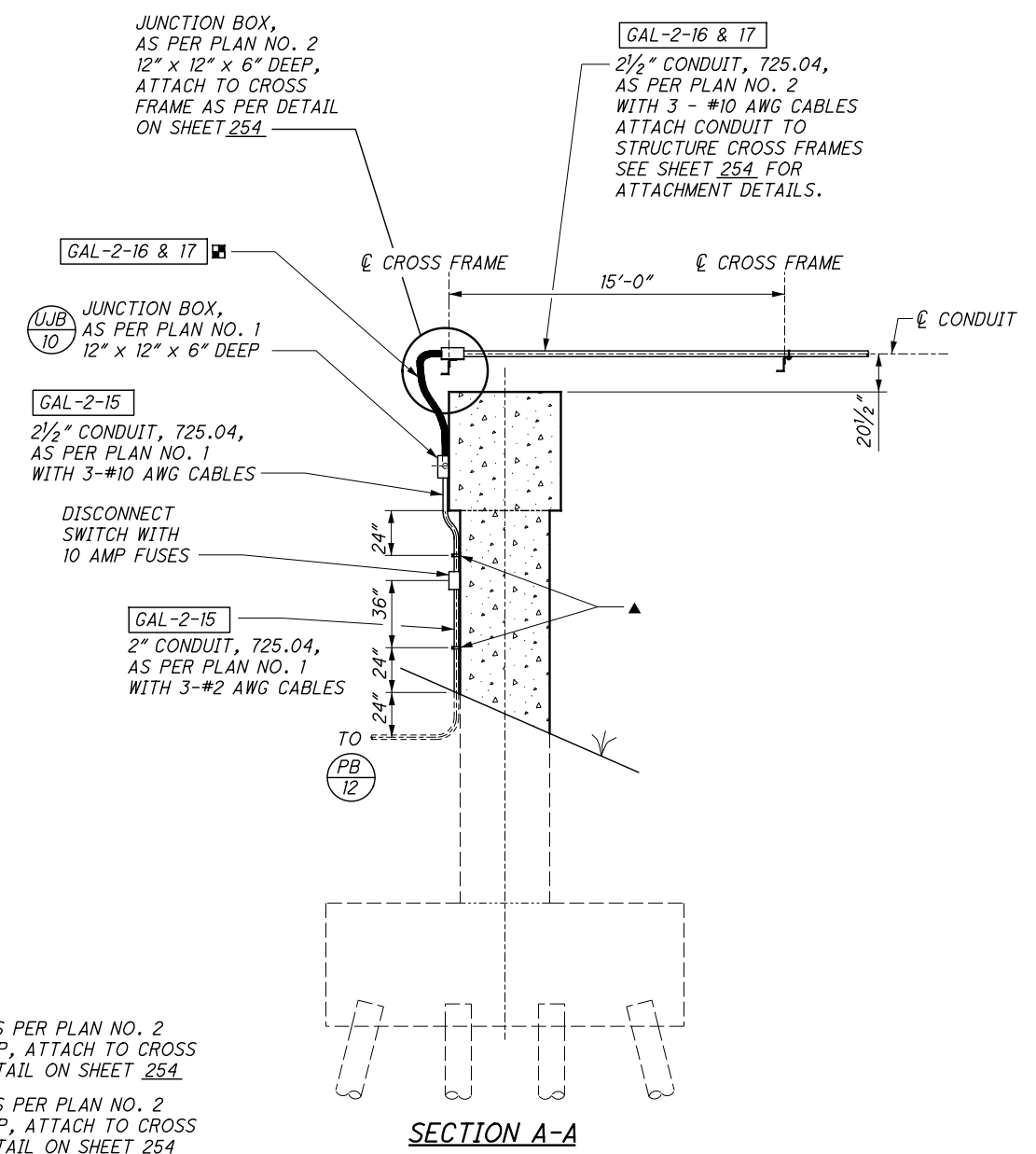
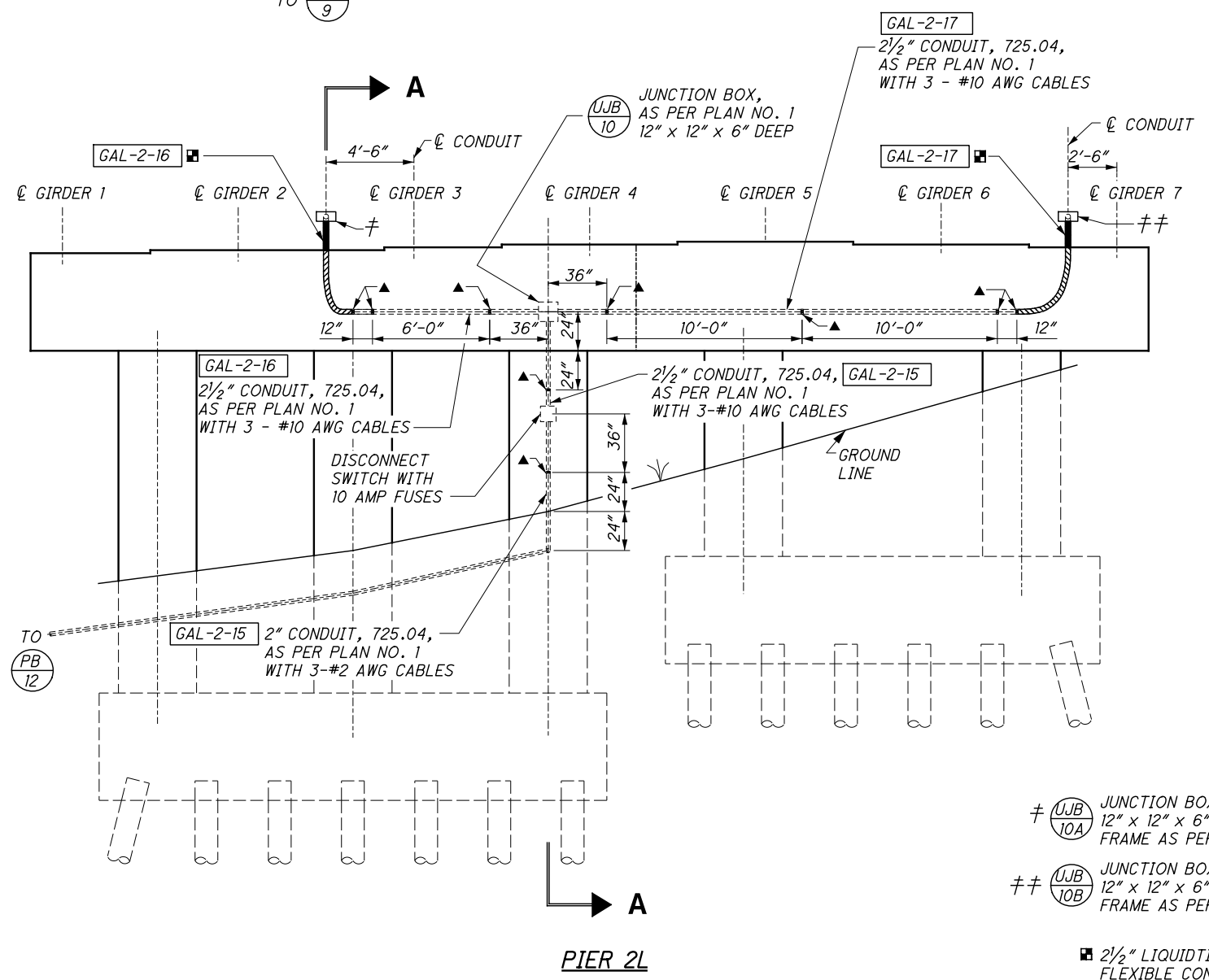
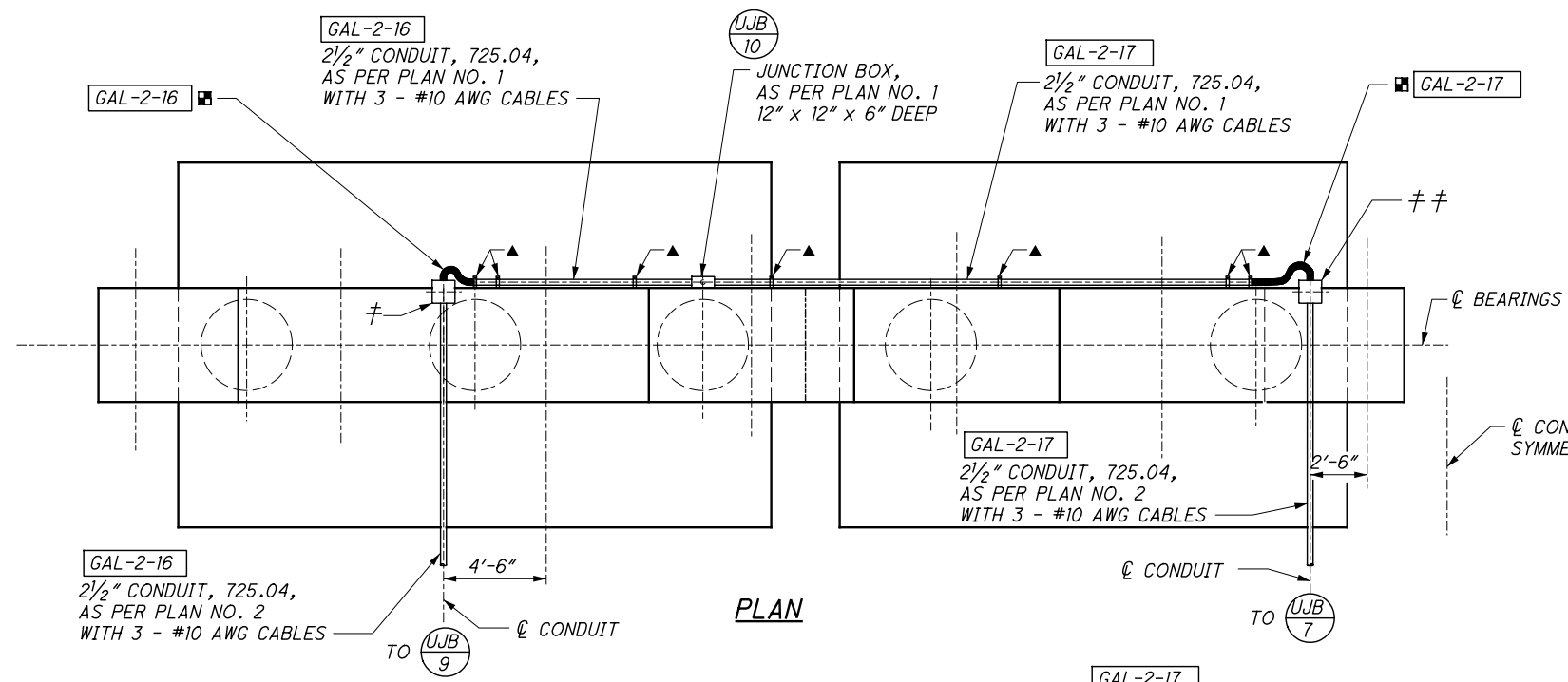
- ≠ UJB 1A JUNCTION BOX, AS PER PLAN NO. 2
12" x 12" x 6" DEEP, ATTACH TO CROSS
FRAME AS PER DETAIL ON SHEET 254
- ≠ UJB 1B JUNCTION BOX, AS PER PLAN NO. 2
12" x 12" x 6" DEEP, ATTACH TO CROSS
FRAME AS PER DETAIL ON SHEET

- 2 1/2" LIQUIDTIGHT FLEXIBLE CONDUIT, 731.08
- ▲ PIPE CLAMP (TYP) SEE DETAIL & NOTE ON SHEET 250
- * ALLOW AN ADDITIONAL 1'-0" OF SLACK IN GROUNDING CABLE CONNECTION BETWEEN GIRDER AND GROUNDING PLATE TO ALLOW FOR EXPANSION AND CONTRACTION OF GIRDER.



NOTE:
FOR ADDITIONAL PIER DETAILS SEE
STRUCTURE PLANS SHEET 323.

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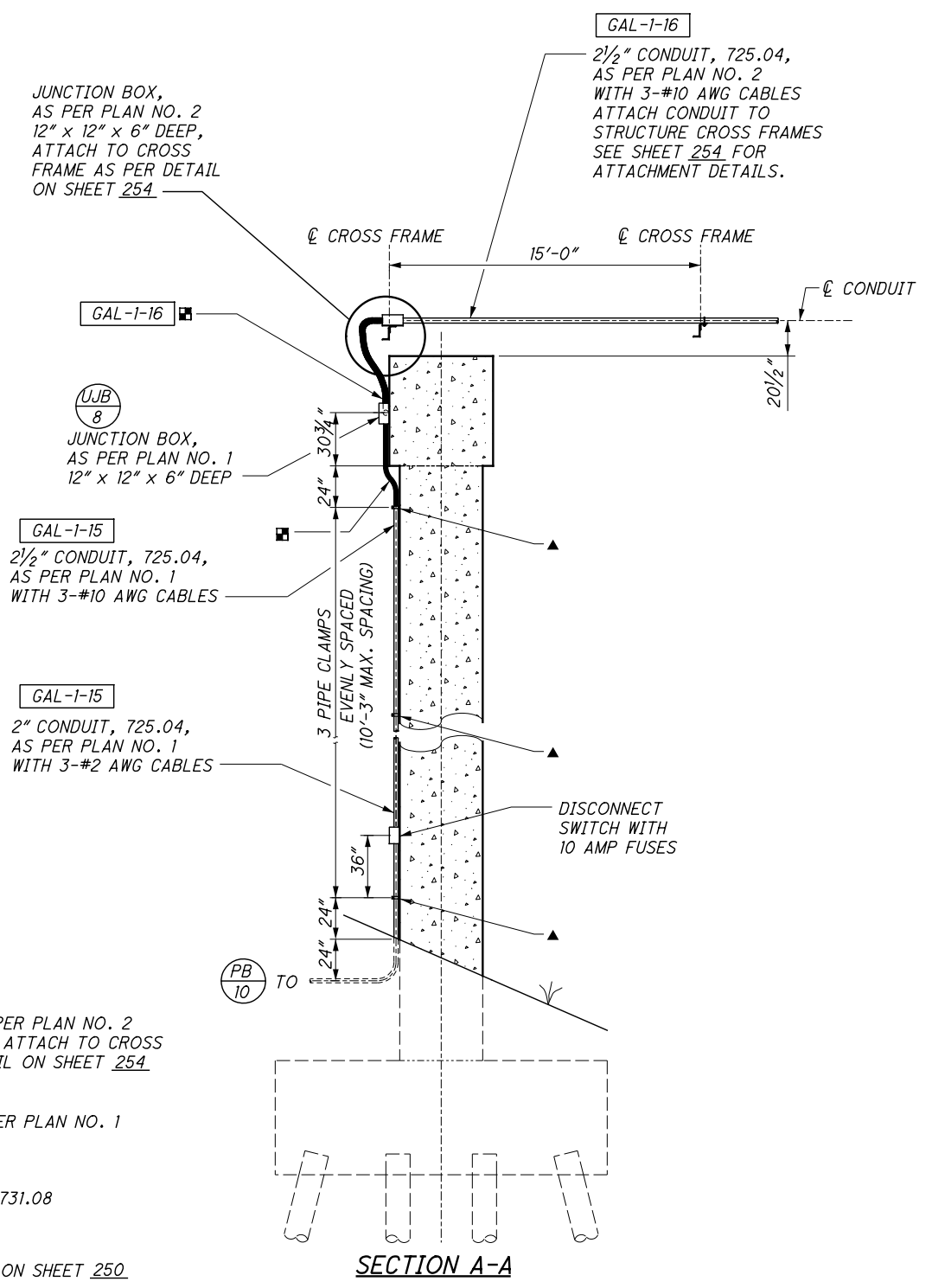
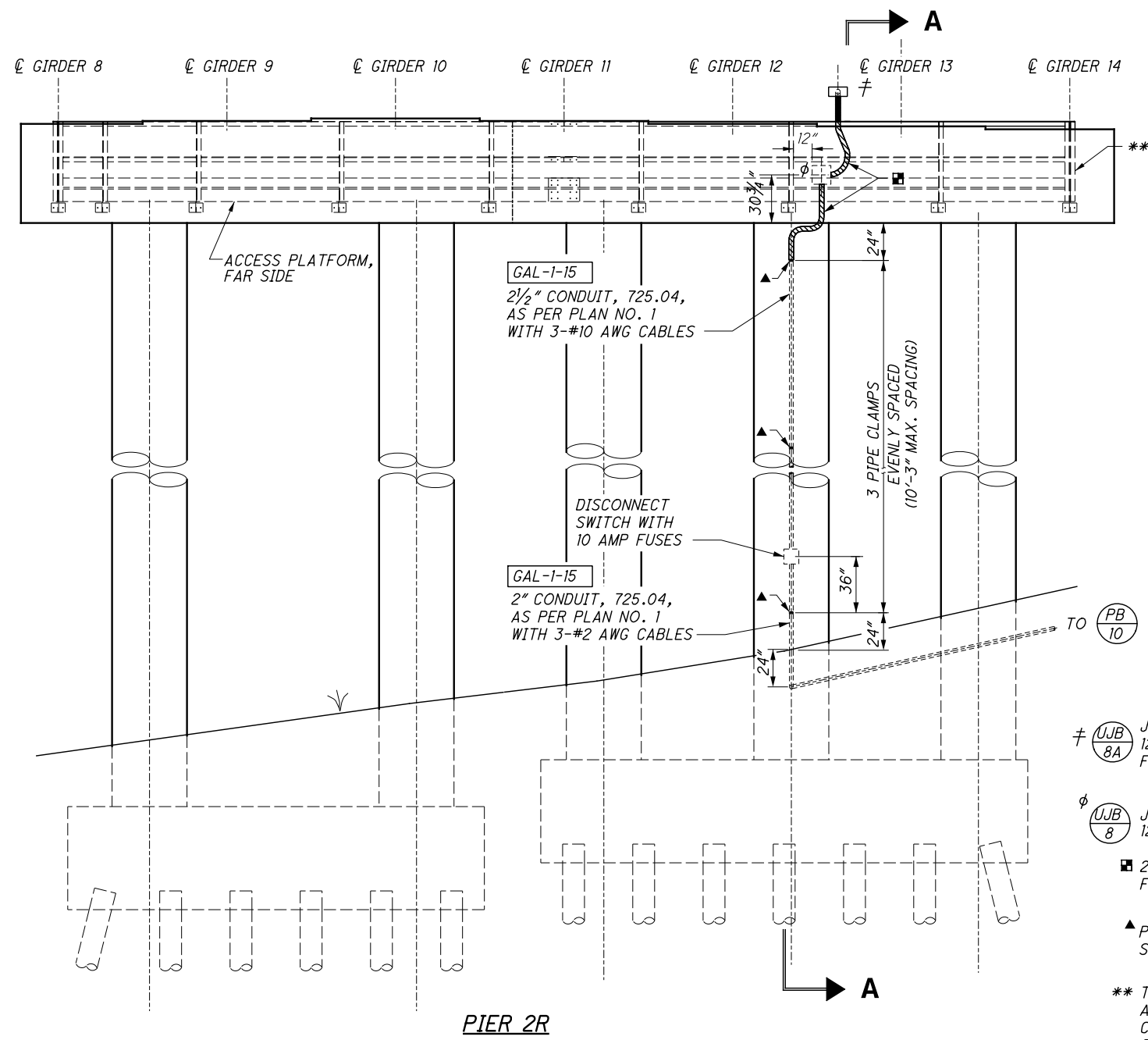
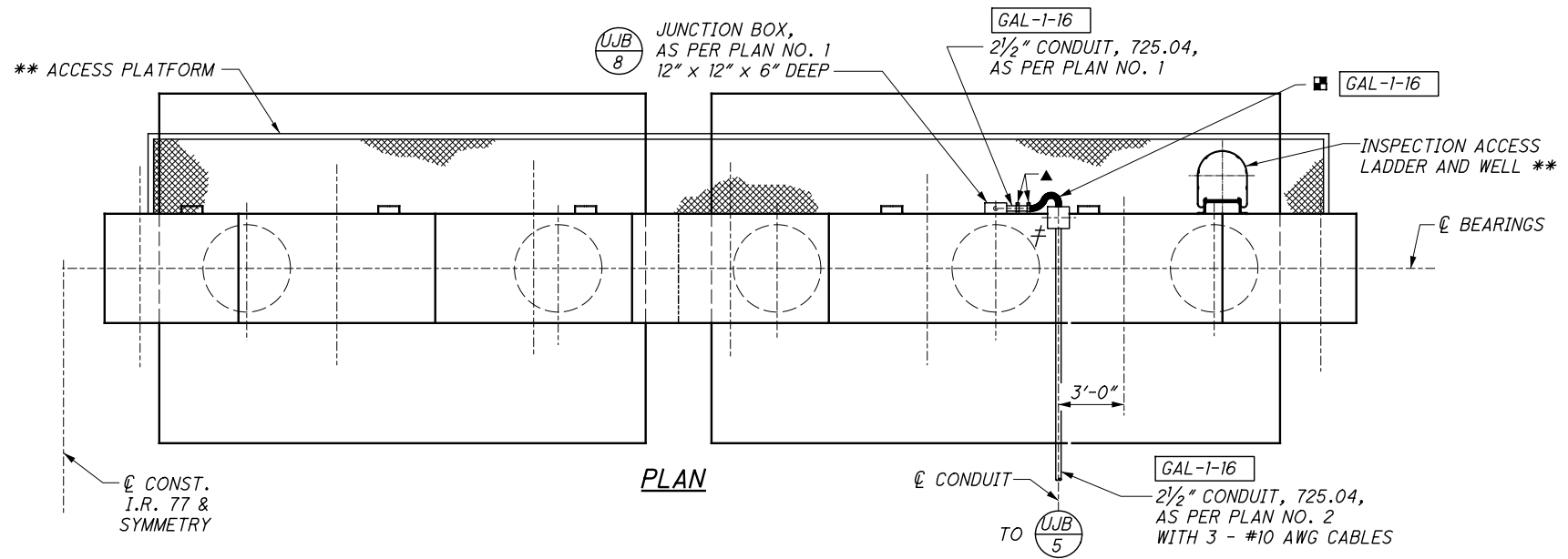


- UJB 10A JUNCTION BOX, AS PER PLAN NO. 2
12" x 12" x 6" DEEP, ATTACH TO CROSS
FRAME AS PER DETAIL ON SHEET 254
- UJB 10B JUNCTION BOX, AS PER PLAN NO. 2
12" x 12" x 6" DEEP, ATTACH TO CROSS
FRAME AS PER DETAIL ON SHEET 254

- 2 1/2" LIQUIDTIGHT FLEXIBLE CONDUIT, 731.06
- PIPE CLAMP (TYP) SEE DETAIL & NOTE ON SHEET 250

NOTE:
FOR ADDITIONAL PIER DETAILS SEE
STRUCTURE PLANS SHEET 322.

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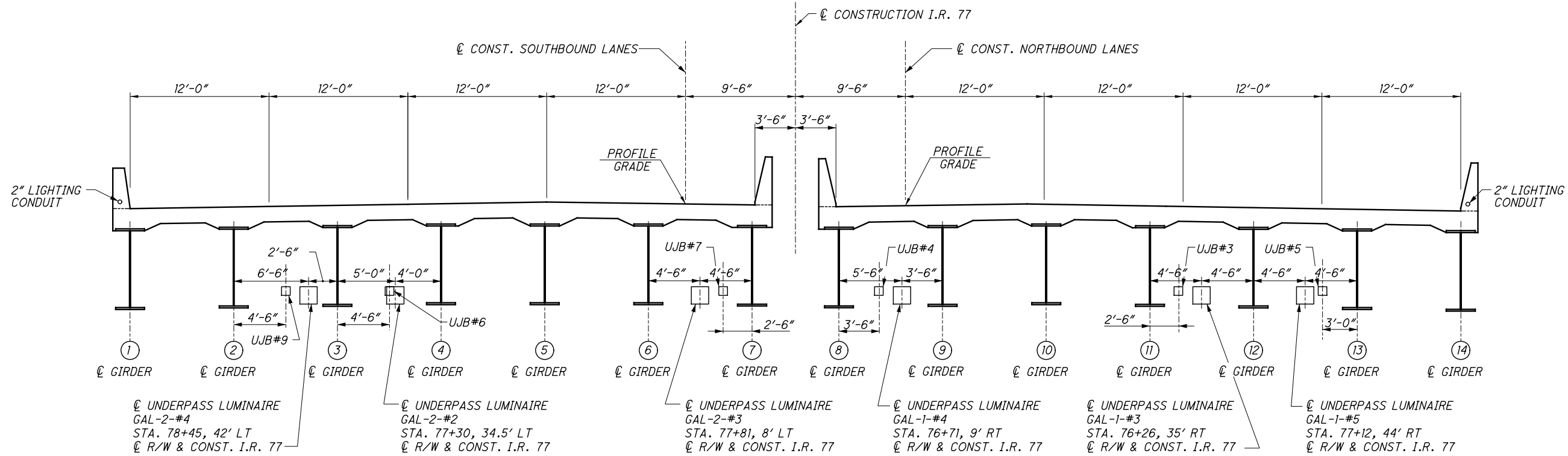


- ≠ UJB 8A JUNCTION BOX, AS PER PLAN NO. 2
12" x 12" x 6" DEEP, ATTACH TO CROSS
FRAME AS PER DETAIL ON SHEET 254
- φ UJB 8 JUNCTION BOX, AS PER PLAN NO. 1
12" x 12" x 6" DEEP
- 2 1/2" LIQUIDTIGHT
FLEXIBLE CONDUIT, 731.08
- ▲ PIPE CLAMP (TYP)
SEE DETAIL & NOTE ON SHEET 250

** THE ACCESS PLATFORM, INSPECTION
ACCESS LADDER AND STEPS SHALL BE
CONNECTED TO THE STRUCTURE
GROUNDING SYSTEM.

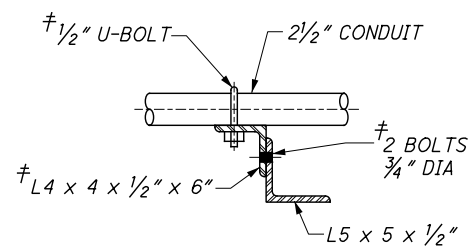
NOTE:
FOR ADDITIONAL PIER DETAILS SEE
STRUCTURE PLANS SHEETS 324 AND 327.

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\13567\lad.dgn 12/14/2016 2:58:03 PM DonHelman

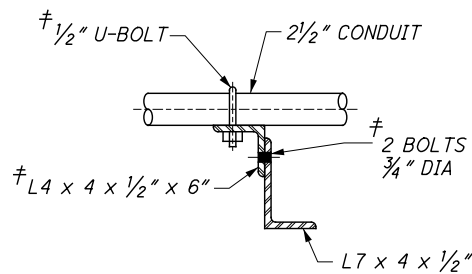


UNDERPASS LUMINAIRE LOCATIONS TYPICAL SECTION

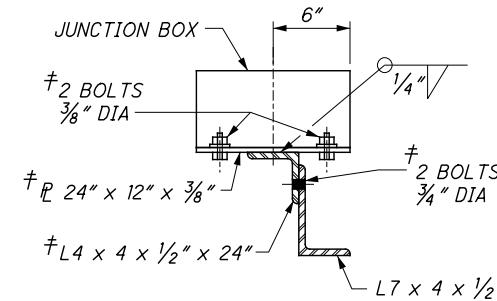
NOTE: SEE SHEET 255 FOR LUMINAIRE ATTACHMENT DETAIL.



VIEW A-A

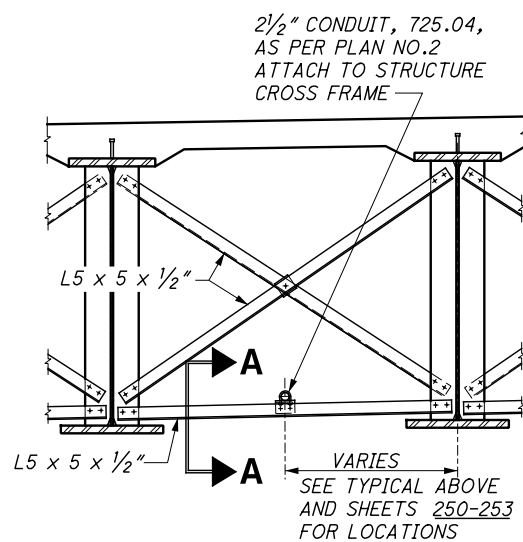


VIEW B-B

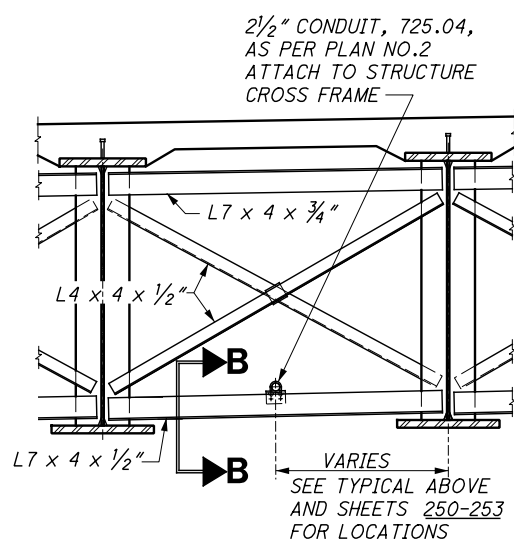


VIEW C-C

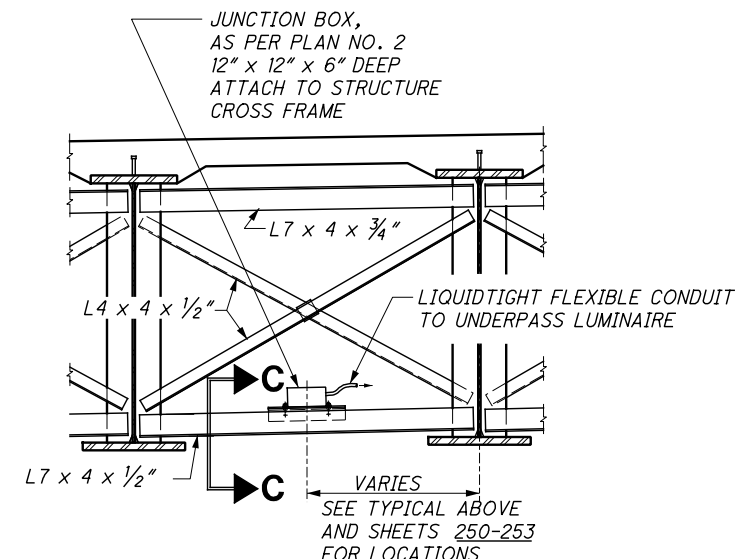
† LIGHTING ATTACHMENT BRACKETS AND HARDWARE TO BE GALVANIZED



TYPE 1 CROSS FRAME



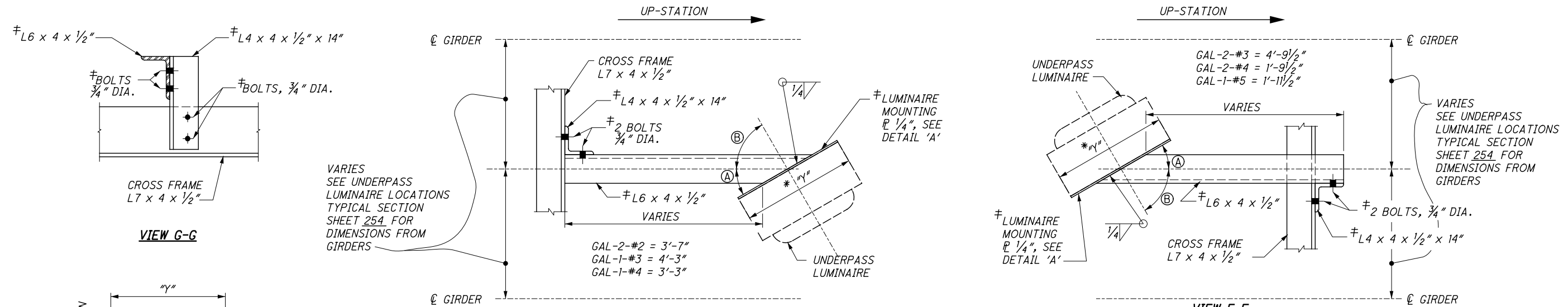
TYPE 2 CROSS FRAME



TYPE 2 CROSS FRAME

UNDERPASS JUNCTION BOX ATTACHMENT DETAIL

CONDUIT ATTACHMENT DETAIL



VARIES
SEE UNDERPASS
LUMINAIRE LOCATIONS
TYPICAL SECTION
SHEET 254 FOR
DIMENSIONS FROM
GIRDERS

VARIES
SEE UNDERPASS
LUMINAIRE LOCATIONS
TYPICAL SECTION
SHEET 254 FOR
DIMENSIONS FROM
GIRDERS

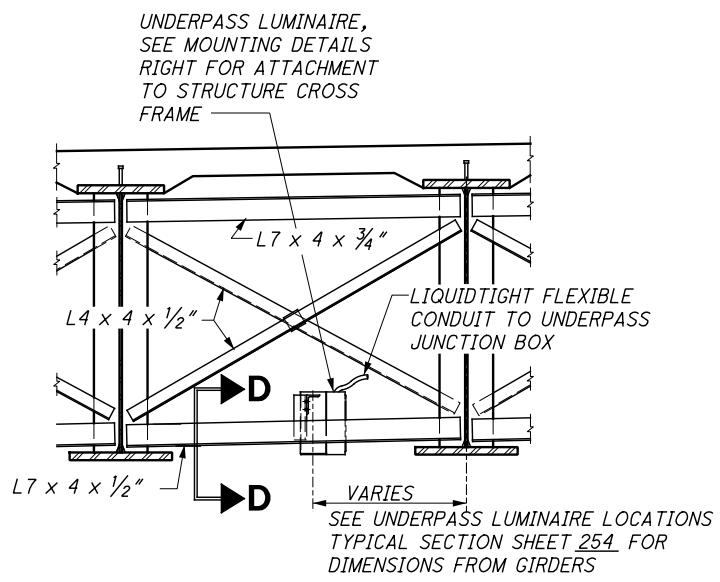
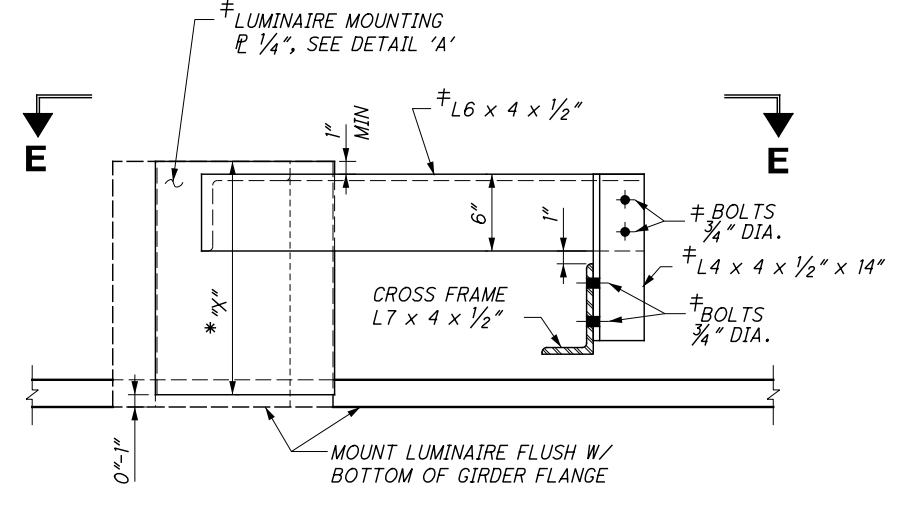
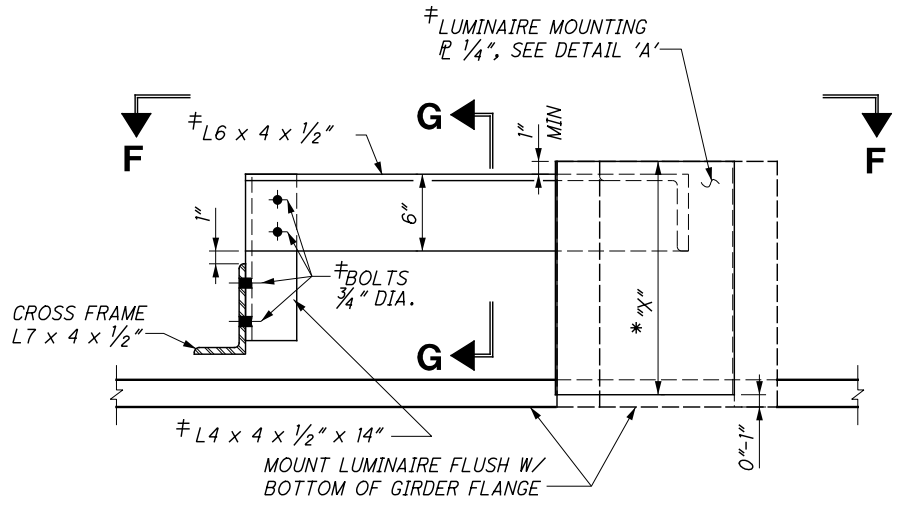
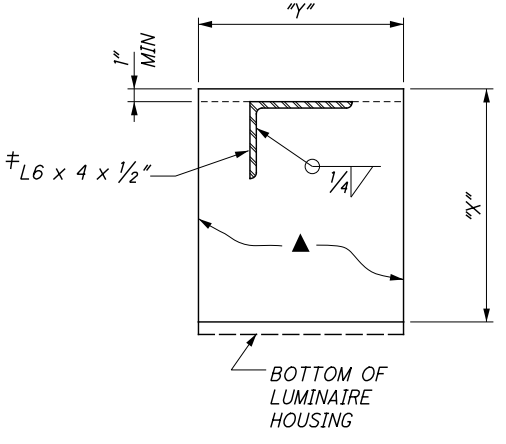
VIEW F-F

	(A)	(B)
GAL-1-#3	30°	60°
GAL-1-#4	38°	52°
GAL-2-#2	47°	43°

* LUMINAIRE MOUNTING PLATE DIMENSIONS "X" & "Y" SHALL BE ADEQUATE TO ALLOW ATTACHMENT OF LUMINAIRE BUT SHALL NOT EXTEND PAST EDGES OF THE LUMINAIRE EXCEPT AT THE TOP. FINAL MOUNTING PLATE DIMENSIONS SHALL BE VERIFIED BY THE ENGINEER PRIOR TO FURNISHING. THE LUMINAIRE MOUNTING PLATE SHALL BE WELDED TO THE LUMINAIRE MOUNTING BRACKET.

VIEW E-E

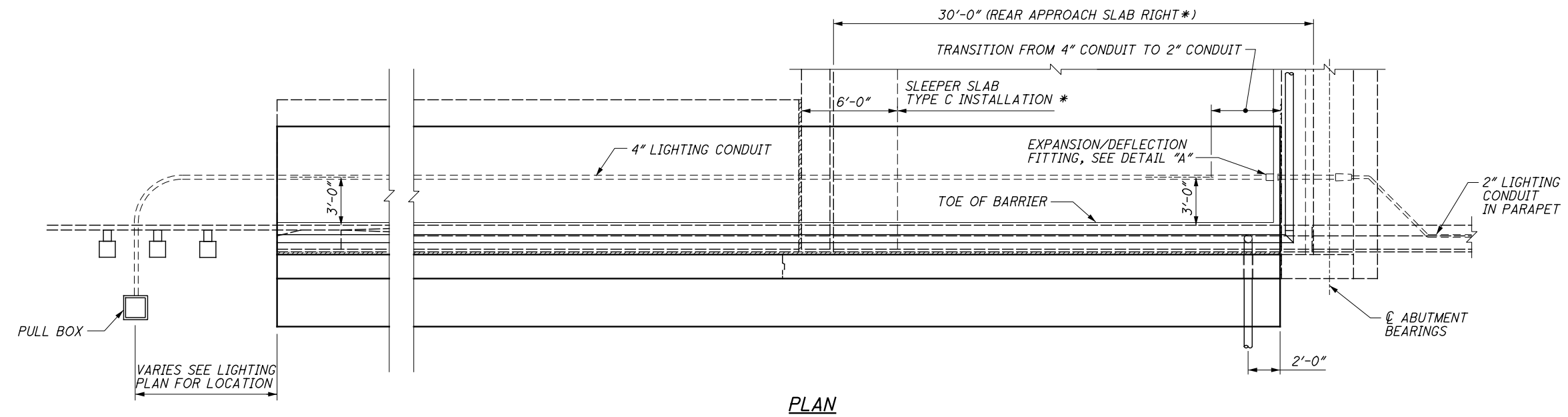
	(A)	(B)
GAL-1-#5	42°	48°
GAL-2-#3	40°	50°
GAL-2-#4	30°	60°



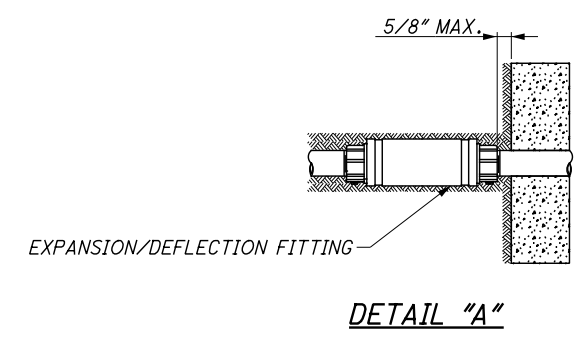
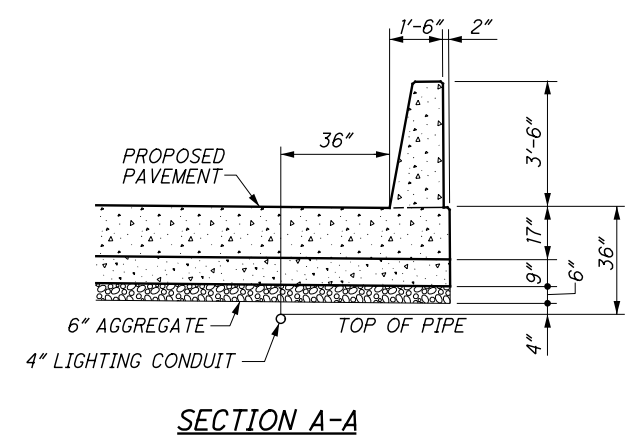
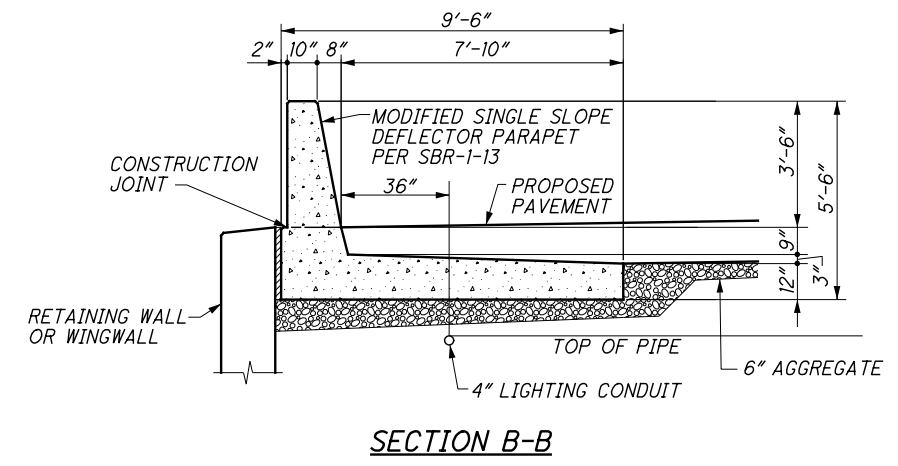
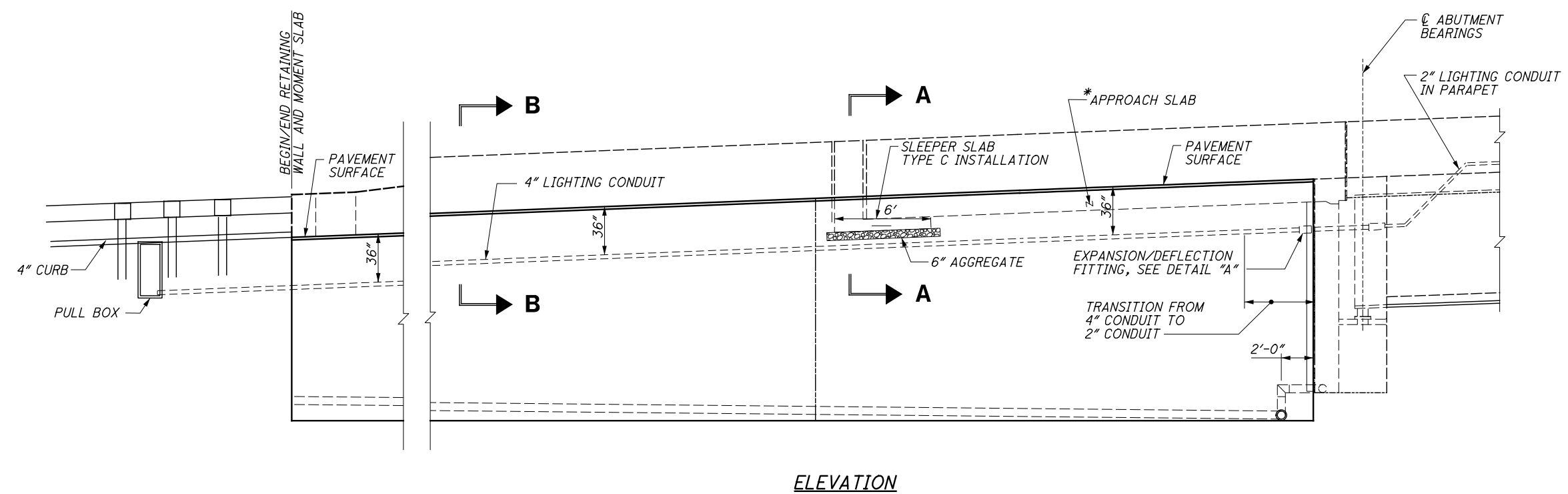
‡ LIGHTING ATTACHMENT BRACKETS AND HARDWARE TO BE GALVANIZED

UNDERPASS LUMINAIRE ATTACHMENT DETAIL

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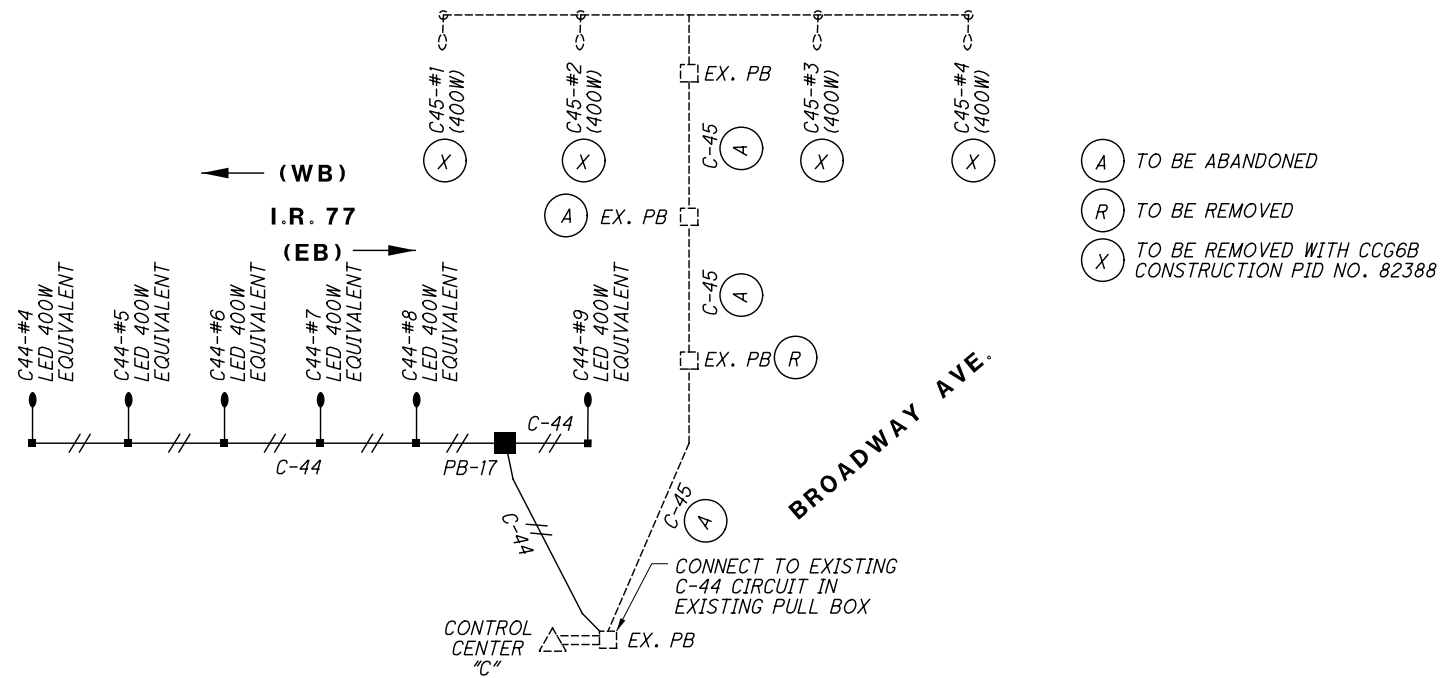


NOTE:
SEE SCD HL-30.22
FOR ADDITIONAL
INFORMATION.



\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\13567.dwg 12/14/2016 2:59:24 PM DonHeiman

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LIGHTING CIRCUIT "C"

LEGEND

- PROPOSED PULL BOX
- PROPOSED 480 VOLT, LUMINAIRE, CONVENTIONAL, SOLID-STATE (LED), IES-III-M-SC, LED EQUIVALENT TO 400W HPS LAMP
- //— PROPOSED CIRCUIT (2-NO. 4 AWG CONDUCTOR)
- △ EXISTING CONTROL CENTER 480 VOLT, 2 WIRE, SINGLE PHASE
- EXISTING PULL BOX
- ⊕---⊕ EXISTING HPS LUMINAIRE
- EXISTING CIRCUIT (2-NO. 4 AWG CONDUCTORS)

EXISTING POWER SERVICE DATA										
POWER SERVICE	LINE VOLTAGE (VOLTS)	CONNECTED LOAD (KVA)	SERVICE ENTRANCE CABLE (AWG)	ENCLOSURE RATING (AMPS)	CIRCUIT NO.	CIRCUIT LOAD (AMPS)	CIRCUIT FUSE SIZE (AMPS)	CIRCUIT CABLE SIZE (AWGS)	MAINTAINING AGENCY	POWER SERVICE AGENCY
* C	480	4.5	4	60	44	(E) 5.10	20	4	ODOT	CPP
					45	(A)	20	4		

* EXISTING POWER SERVICE DATA TAKEN FROM ORIGINAL PLAN INFORMATION. CONTRACTOR TO CONFIRM EXISTING POWER SERVICE DATA PRIOR TO CONSTRUCTION.

(A) TO BE ABANDONED

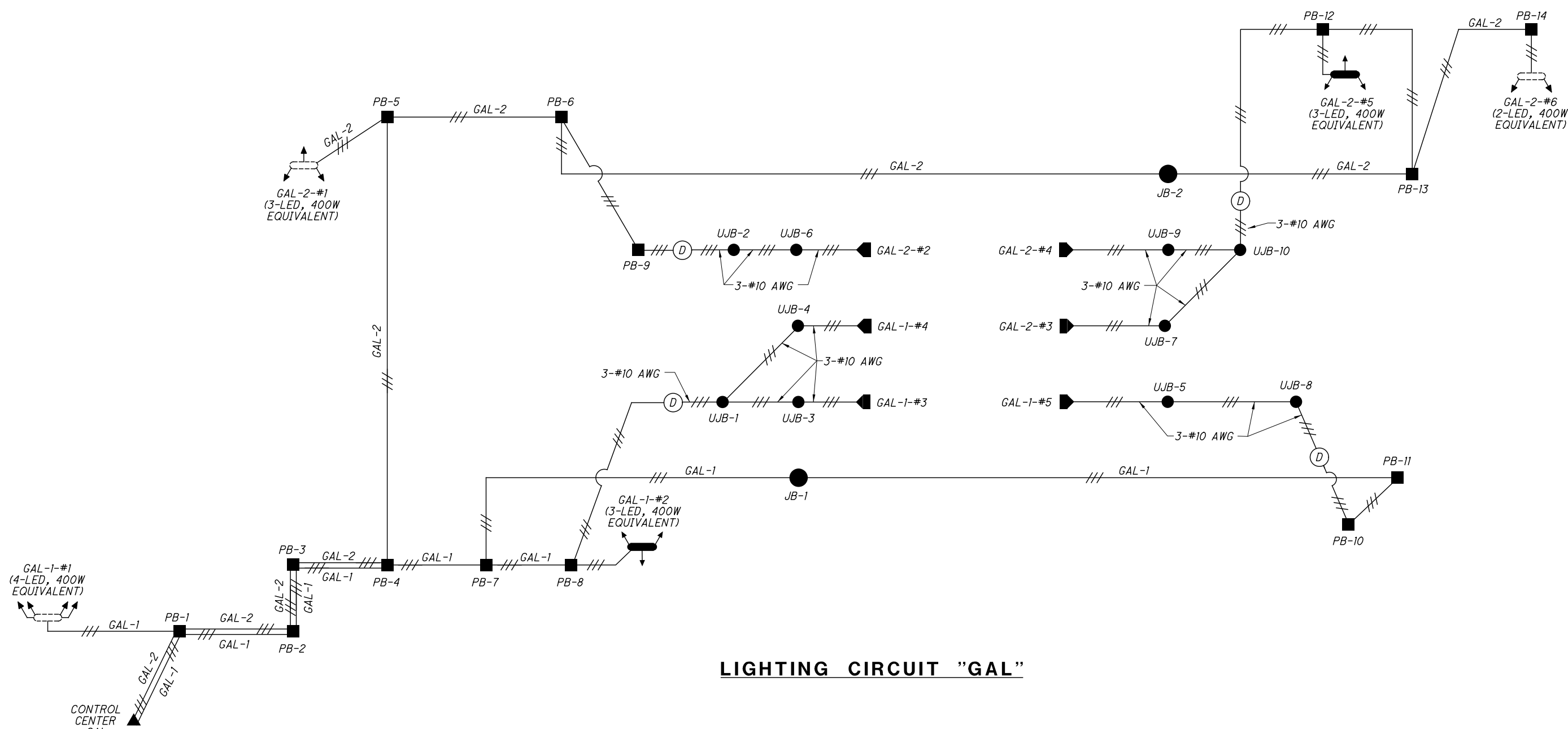
(E) ESTIMATED LOAD BASED ON LED LUMINAIRE WITH 315 WATTS MAX EACH. FINAL LOADING TO BE DETERMINED BY CONTRACTOR BASED ON LUMINAIRES PROVIDED. FINAL POWER SERVICE DATA TO BE PROVIDED TO ODOT FOR RECORDS.

CALCULATED
JDL
CHECKED
DLR

LIGHTING CIRCUIT SCHEMATIC

CUY-77-14.35

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LIGHTING CIRCUIT "GAL"

LEGEND

- ▲ PROPOSED CONTROL CENTER
480 VOLT, 3 WIRE, SINGLE
PHASE GROUNDED NEUTRAL
- PROPOSED JUNCTION BOX
- PROPOSED PULL BOX
- Ⓧ UNDERPASS LIGHTING DISCONNECT
SWITCH WITH 10 AMP FUSES
- ▶ PROPOSED 480 VOLT, UNDERPASS LUMINAIRE,
SOLID-STATE (LED), EQUIVALENT TO 100W
HPS LAMP
- ▬ PROPOSED 480 VOLT, HIGH MAST LUMINAIRE,
SOLID-STATE (LED), ASYMETRIC EQUIVALENT
TO 400W HPS LAMPS BBB100, REERECTED
- /// PROPOSED CIRCUIT
(3 NO. 2 AWG CONDUCTOR UNLESS OTHERWISE
NOTED ON CIRCUIT DIAGRAM)
- △ EXISTING CONTROL CENTER
- EXISTING PULL BOX
- ▬ EXISTING HIGH MAST LIGHTING,
400 WATT, HPS LUMINAIRE TO BE
REPLACED WITH LED EQUIVALENT
- EXISTING CIRCUIT

PROPOSED POWER SERVICE DATA

POWER SERVICE	LINE VOLTAGE (VOLTS)	CONNECTED LOAD (KVA)	SERVICE ENTRANCE CABLE (AWG)	ENCLOSURE RATING (AMPS)	CIRCUIT NO.	CIRCUIT LOAD (AMPS)	CIRCUIT FUSE SIZE (AMPS)	CIRCUIT CABLE SIZE (AWGS)	MAINTAINING AGENCY	POWER SERVICE AGENCY
GAL	480	10.4	2	60	1	(E) 11.5	30	4	ODOT	CPP
					2	(E) 10.2	30	4		

(E) ESTIMATED LOAD BASED ON HIGH MAST LED LUMINAIRE WITH 501 WATTS MAX EACH AND UNDERPASS LED LUMINAIRE WITH 85 WATTS MAX EACH. FINAL LOADING TO BE DETERMINED BY CONTRACTOR BASED ON LUMINAIRES PROVIDED. FINAL POWER SERVICE DATA TO BE PROVIDED TO ODOT FOR RECORDS.

CALCULATED
JDL
CHECKED
DLR

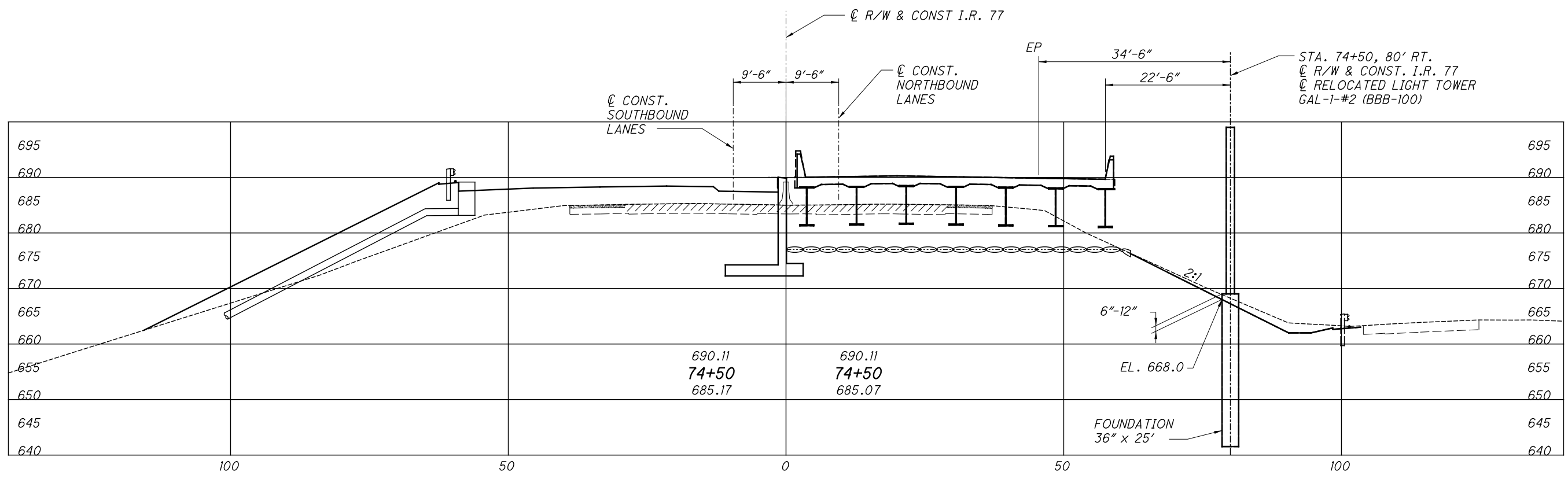
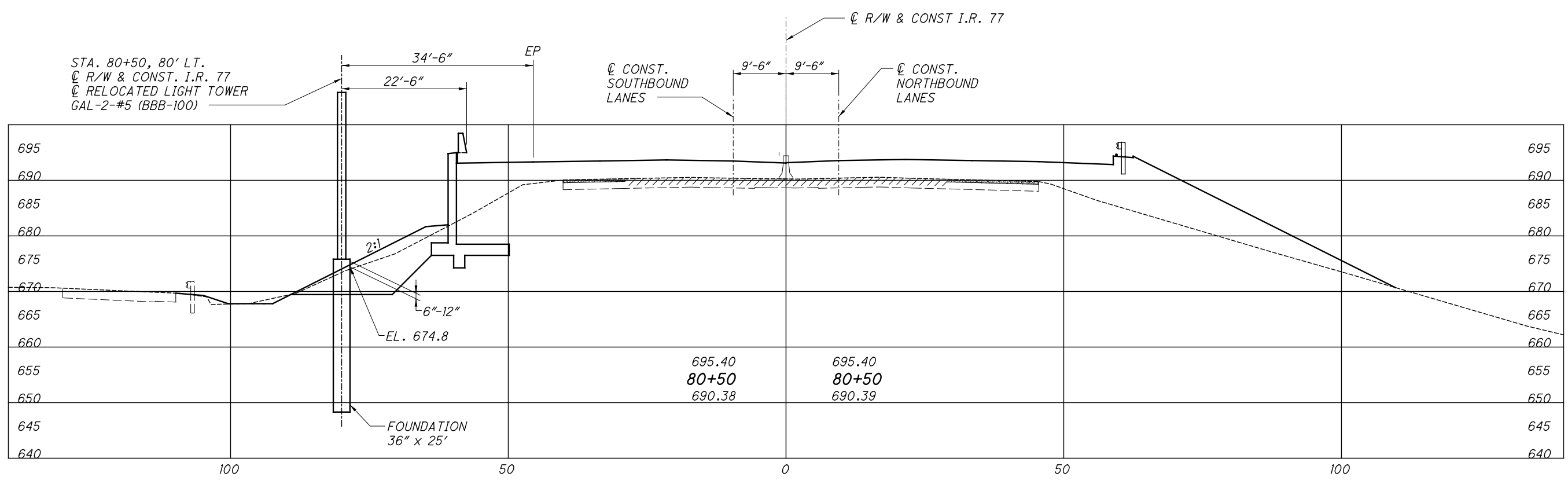
LIGHTING CIRCUIT SCHEMATIC

CUY-77-14.35

LIGHTING SECTIONS
STA. 74+50 AND STA. 80+50

CUY-77-14.35

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Roadway\Sheets\13567\slights.dgn 12/14/2016 3:00:53 PM DonHerman



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BENCH MARK 2 (SV 2003) SURVEY MARKER
 FOUND WITH 2" ALUMINUM CAP STAMPED
 "BARR & PREVOST"
 STA. 74+62.90, 281.76' LT. EL. 648.40

RICHLAND ENGINEERING LIMITED
 29 NORTH PARK STREET
 MANSFIELD, OHIO 44902





DESIGNED	BLN	CHECKED	DLR
DRAWN	JLS	REVISED	
REVIEWED	DAP	DATE	11/15/16

RETAINING WALLS 1 AND 2 SITE PLAN

CUY-77-14.35
 PID No. 13567

1/22
 260
 365

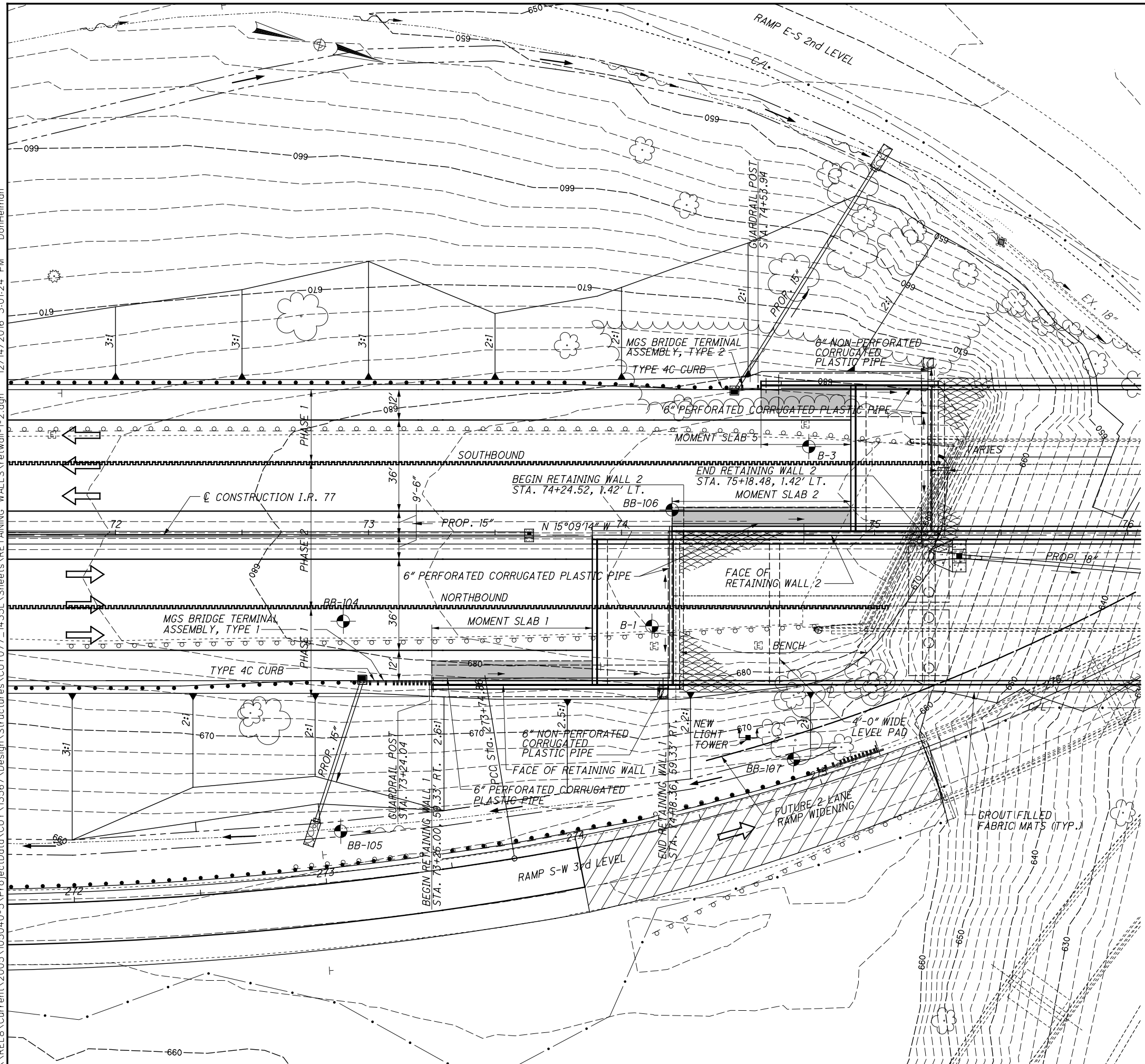
LEGEND

-  - TEMPORARY SHEETING
-  - MOMENT SLAB
-  - PLANING AND RESURFACING
-  - ITEM 601 SLOPE PROTECTION, MISC.: GROUT FILLED FABRIC MATS

NOTES

- RETAINING WALL 1:** SEE SHEET 4/22.
- RETAINING WALL 2:** SEE SHEET 5/22.
- MOMENT SLAB 1:** SEE SHEET 11/22.
- MOMENT SLAB 2:** SEE SHEET 12/22.
- MOMENT SLAB 5:** SEE SHEET 15/22.

EARTHWORK LIMITS SHOWN ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS SECTIONS.

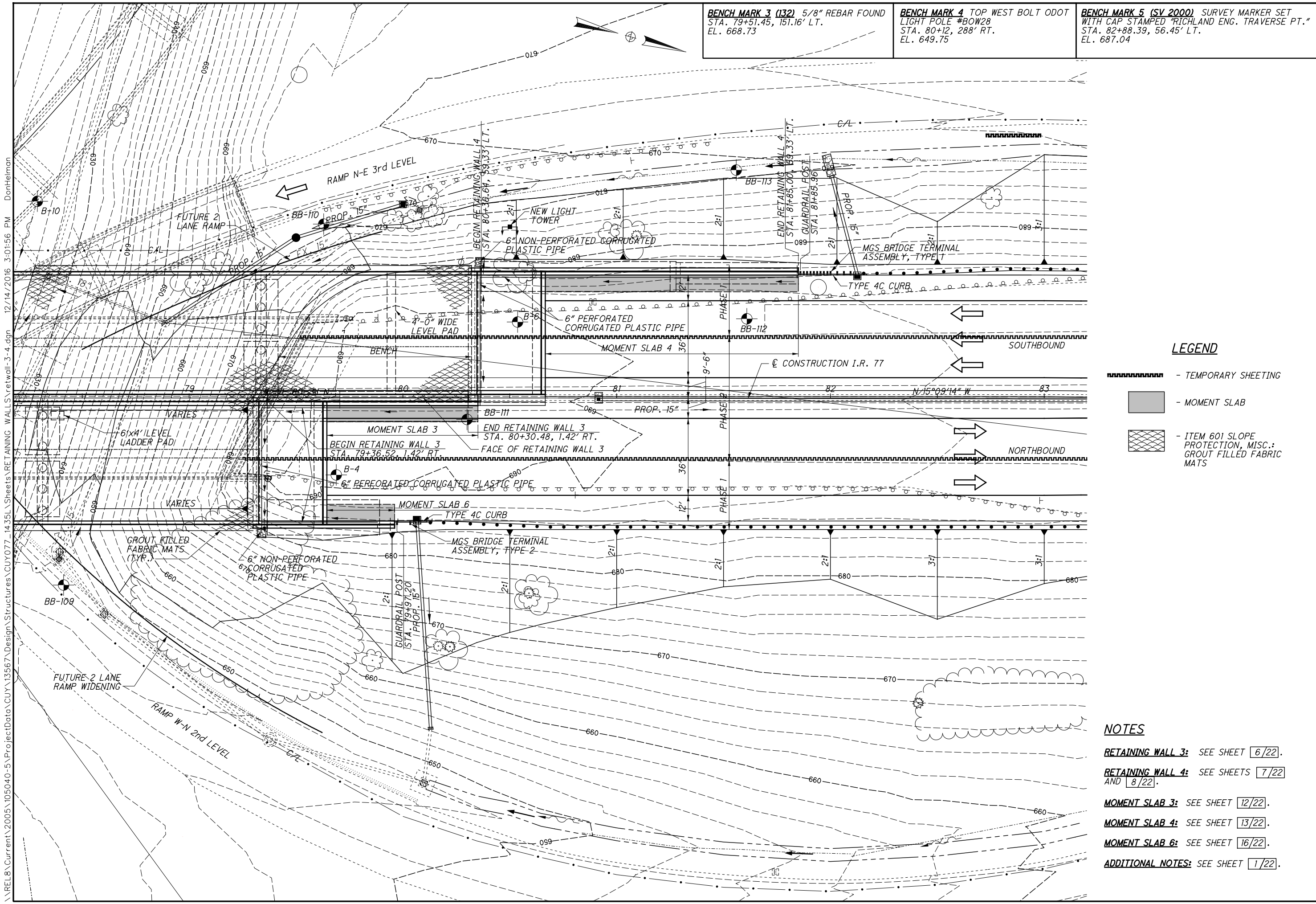


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BENCH MARK 3 (132) 5/8" REBAR FOUND
 STA. 79+51.45, 151.16' LT.
 EL. 668.73

BENCH MARK 4 TOP WEST BOLT ODOT
 LIGHT POLE #BOW28
 STA. 80+12, 288" RT.
 EL. 649.75

BENCH MARK 5 (SV 2000) SURVEY MARKER SET
 WITH CAP STAMPED "RICHLAND ENG. TRAVERSE PT."
 STA. 82+88.39, 56.45' LT.
 EL. 687.04



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 29 NORTH PARK STREET
 MANSFIELD, OHIO 44902

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RETAINING WALLS 3 AND 4 SITE PLAN

CUY-77-14.35
 PID No. 13567
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 365

- LEGEND**
- TEMPORARY SHEETING
 - MOMENT SLAB
 - ITEM 601 SLOPE PROTECTION, MISC.: GROUT FILLED FABRIC MATS

- NOTES**
- RETAINING WALL 3:** SEE SHEET 6/22.
 - RETAINING WALL 4:** SEE SHEETS 7/22 AND 8/22.
 - MOMENT SLAB 3:** SEE SHEET 12/22.
 - MOMENT SLAB 4:** SEE SHEET 13/22.
 - MOMENT SLAB 6:** SEE SHEET 16/22.
 - ADDITIONAL NOTES:** SEE SHEET 1/22.

ESTIMATED QUANTITIES (FUNDING PARTICIPATION: 01/IMS/BR)

CALCULATED JLS DATED 1/16
CHECKED JSB DATED 1/16

ITEM	ITEM EXT.	TOTAL	UNIT	DESCRIPTION	RETAINING WALL				MOMENT SLAB WITH SINGLE SLOPE RAILING OR MEDIAN BARRIER						SEE SHEET	
					1	2	3	4	1	2	3	4	5	6		
503	11100	LS		COFFERDAMS AND EXCAVATION BRACING												
503	21301	LS		UNCLASSIFIED EXCAVATION, AS PER PLAN												3/22
509	10000	127,511	POUND	EPOXY COATED REINFORCING STEEL	22,032	31,243	30,872	43,364								
511	46213	837	CY	CLASS QC1 CONCRETE WITH QC/OA, RETAINING/WINGWALL INCLUDING FOOTING, AS PER PLAN	176	186	187	288								3-9/22
511	53010	249	CY	CLASS QC1 CONCRETE, MISC.: MOMENT SLAB INCLUDING RAILING AND MEDIAN BARRIER					38	49	49	72	22	19		3/22
512	10100	1005	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	108	158	163	190	56	83	83	105	31	28		
512	33000	57	SY	TYPE 2 WATERPROOFING	10	15	15	17								
516	13900	918	SF	2" PREFORMED EXPANSION JOINT FILLER	174	177	177	284	17	19	19	17	17	17		
518	21200	417	CY	POROUS BACKFILL WITH GEOTEXTILE FABRIC	76	105	107	129								
518	40000	455	FT	6" PERFORATED CORRUGATED PLASTIC PIPE	96	105	103	151								
518	40010	22	FT	6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS	11			11								

GENERAL NOTES

REFER TO THE FOLLOWING STANDARD DRAWING:
SBR-1-13 (REV 01-17-2014)
SBR-2-13 (REV 01-17-2014)

DESIGN SPECIFICATIONS: THIS STRUCTURE CONFORMS TO THE LRFD BRIDGE DESIGN SPECIFICATIONS ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 2012, SIXTH EDITION, INCLUDING INTERIM SPECIFICATIONS AND THE ODOT BRIDGE DESIGN MANUAL, 2007.

DESIGN DATA:

OPERATIONAL IMPORTANCE: A LOAD MODIFIER OF 1.05 HAS BEEN ASSUMED FOR THE DESIGN OF THE RETAINING WALLS IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATION, ARTICLE 1.3.5. AND ODOT BRIDGE DESIGN MANUAL, 2007.

CONCRETE CLASS QC1 - COMPRESSIVE STRENGTH 4.0 KSI (WALLS AND FOOTINGS)
REINFORCING STEEL - MINIMUM YIELD STRENGTH 60 KSI

FOUNDATION BEARING PRESSURE:

WALL NUMBER	MAXIMUM SERVICE LOAD PRESSURE	MAXIMUM STRENGTH LOAD PRESSURE	FACTORED BEARING RESISTANCE	
			SERVICE LIMIT	STRENGTH LIMIT
1	2.5 KSF	3.5 KSF	6.0 KSF	26.2 KSF
2	2.9 KSF	4.0 KSF	6.0 KSF	22.6 KSF
3	2.9 KSF	4.0 KSF	6.0 KSF	24.8 KSF
4	2.9 KSF	4.0 KSF	6.0 KSF	21.2 KSF

MOMENT SLAB AND RAILING OR MEDIAN BARRIER: ITEM 511 CLASS QC1 CONCRETE, MISC.: MOMENT SLAB INCLUDING RAILING AND MEDIAN BARRIER SHALL INCLUDE ALL MATERIALS INCLUDING EXCAVATION, CONCRETE, EPOXY REINFORCING STEEL AND THAT ARE REQUIRED FOR THE RAILING OR MEDIAN BARRIER DEFLECTION JOINTS PER PLAN DETAILS.

ITEM 503 - UNCLASSIFIED EXCAVATION, AS PER PLAN

UNCLASSIFIED EXCAVATION SHALL BE IN ACCORDANCE WITH CMS ITEM 503 EXCEPT THAT THE BACKFILL MATERIAL UNDER THE APPROACH SLABS AND MOMENT SLABS SHALL BE MATERIAL CONFORMING TO CMS 703.17 (CMS 304 MATERIAL) AND MEET THE COMPACTION REQUIREMENTS OF CMS 304.05. IN ADDITION, THE BACKFILL MATERIAL SHALL BE PLACED AND COMPACTED IN 6" LIFTS. EXCAVATION OF THE EXISTING POROUS BACKFILL SHALL BE INCLUDED IN THIS ITEM.

ITEM 511 - CLASS QC1 CONCRETE WITH QC/OA, AS PER PLAN, RETAINING WALL AND FOOTING

IN ADDITION TO THE REQUIREMENTS OF 511, INSTALL A REFERENCE MONUMENT IN THE RETAINING WALL FOOTING AT THE LOCATIONS SHOWN IN THE TABLE BELOW. THE REFERENCE MONUMENT SHALL CONSIST OF A #8, OR LARGER, EPOXY COATED REBAR EMBEDDED AT LEAST 6" INTO THE FOOTING AND EXTENDED VERTICALLY 4 TO 6 INCHES ABOVE THE TOP OF THE FOOTING. INSTALL A SIX INCH DIAMETER, SCHEDULE 40, PLASTIC PIPE AROUND THE REFERENCE MONUMENT. CENTER THE PIPE ON THE REFERENCE MONUMENT AND PLACE THE PIPE VERTICAL WITH ITS TOP AT THE FINISHED GRADE. THE PIPE SHALL HAVE A REMOVABLE, SCHEDULE 40, PLASTIC CAP. PERMANENTLY ATTACH THE BOTTOM OF THE PIPE TO THE TOP OF THE FOOTING.

ESTABLISH A BENCH MARK TO DETERMINE THE ELEVATIONS OF THE REFERENCE MONUMENTS AT VARIOUS MONITORING PERIODS THROUGHOUT THE LENGTH OF THE CONSTRUCTION PROJECT. THE BENCHMARK SHALL BE THE SAME THROUGHOUT THE PROJECT AND SHALL BE INDEPENDENT OF ALL STRUCTURES.

RECORD THE ELEVATION OF EACH REFERENCE MONUMENT AT EACH MONITORING PERIOD SHOWN IN THE TABLE BELOW.

THE ORIGINAL COMPLETED TABLES WILL BECOME PART OF THE DISTRICT'S PROJECT PLAN RECORDS.

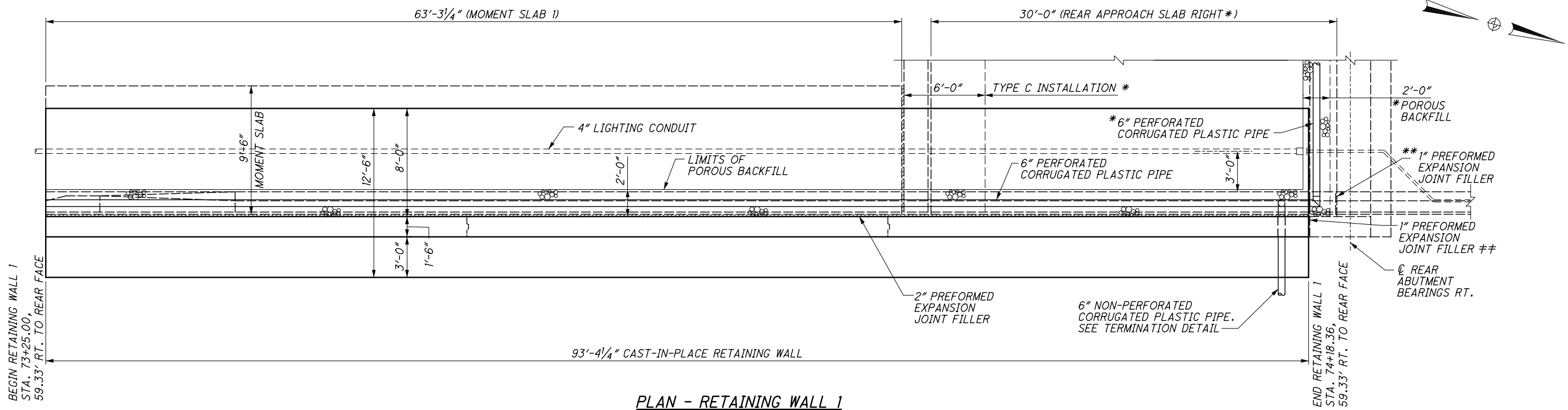
INDEX OF SHEETS

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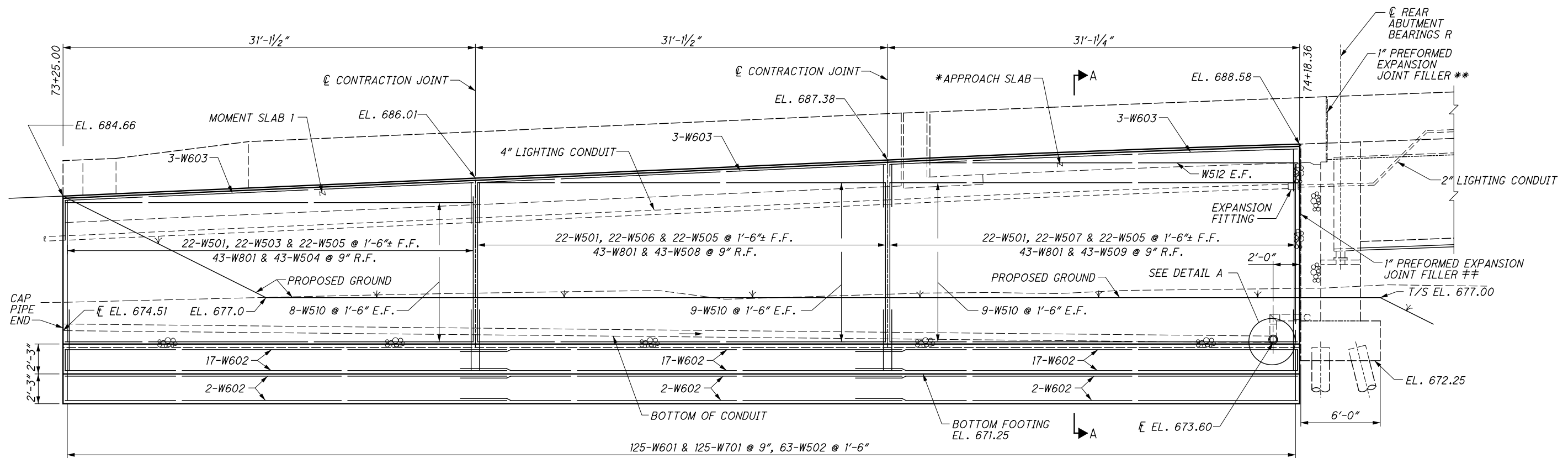
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	WALL NUMBER: 1		WALL NUMBER: 2		WALL NUMBER: 3		WALL NUMBER: 4		WALL NUMBER: 1		WALL NUMBER: 2	
BENCHMARK LOCATION:	MONUMENT #1 RETAINING WALL 1 STA. 73+25.50 OFFSET: 62' RT.		MONUMENT #2 RETAINING WALL 1 STA. 74+17.86 OFFSET: 62' RT.		MONUMENT #1 RETAINING WALL 2 STA. 74+25.02 OFFSET: 1'-0" RT.		MONUMENT #2 RETAINING WALL 2 STA. 75+17.98 OFFSET: 1'-0" RT.		MONUMENT #1 RETAINING WALL 3 STA. 79+37.02 OFFSET: 1'-0" LT.		MONUMENT #2 RETAINING WALL 3 STA. 80+29.98 OFFSET: 1'-0" LT.	
MONITORING PERIOD:	MONUMENT #1 RETAINING WALL 1 STA. 73+25.50 OFFSET: 62' RT.		MONUMENT #2 RETAINING WALL 1 STA. 74+17.86 OFFSET: 62' RT.		MONUMENT #1 RETAINING WALL 2 STA. 74+25.02 OFFSET: 1'-0" RT.		MONUMENT #2 RETAINING WALL 2 STA. 75+17.98 OFFSET: 1'-0" RT.		MONUMENT #1 RETAINING WALL 3 STA. 79+37.02 OFFSET: 1'-0" LT.		MONUMENT #2 RETAINING WALL 3 STA. 80+29.98 OFFSET: 1'-0" LT.	
AFTER FOOTING CONCRETE IS PLACED:												
AFTER STEM CONCRETE IS PLACED:												
PROJECT COMPLETION:												

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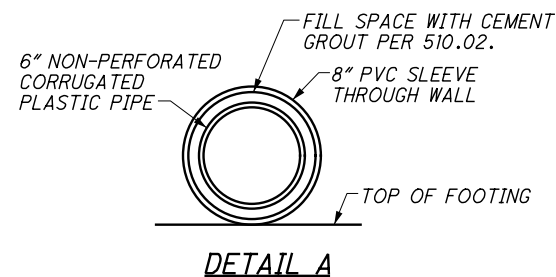
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PLAN - RETAINING WALL 1



ELEVATION - RETAINING WALL 1



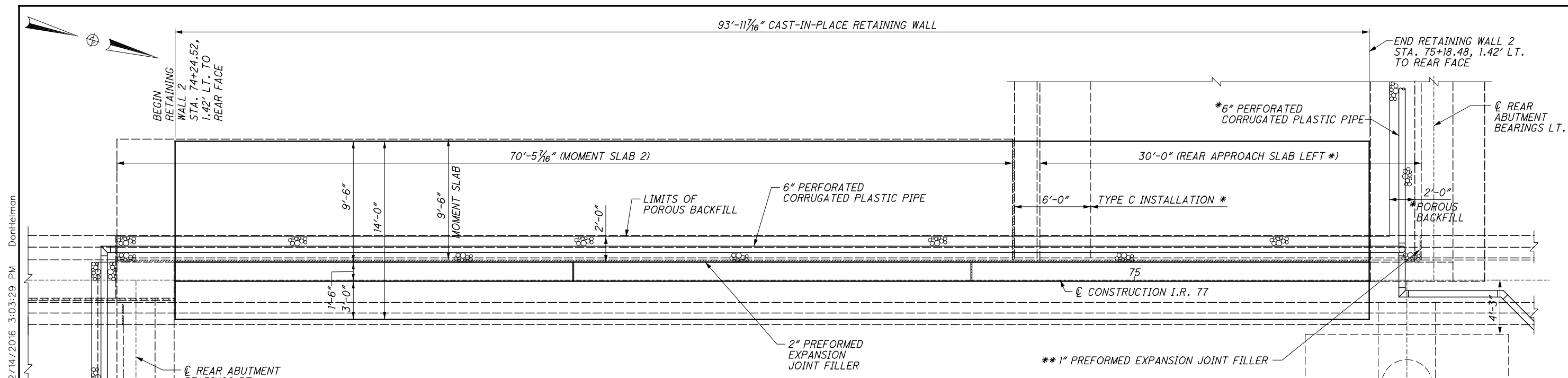
LEGEND

- * TO BE INCLUDED WITH STRUCTURE QUANTITIES FOR PAYMENT.
- ** TO BE INCLUDED WITH ITEM 526 - REINFORCED CONCRETE APPROACH SLABS (T=17"), AS PER PLAN FOR PAYMENT.
- ## TO BE INCLUDED WITH ITEM 511 - CLASS QC1 CONCRETE WITH QC/OA, AS PER PLAN, RETAINING WALL AND FOOTING FOR PAYMENT.

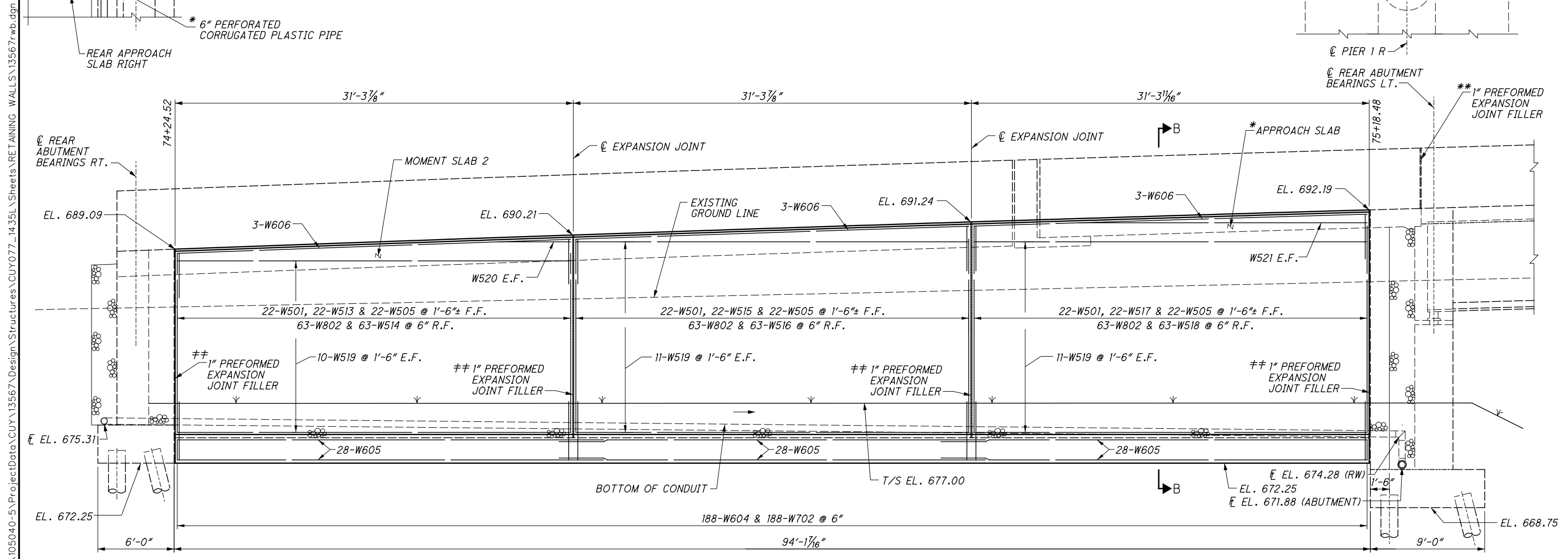
NOTES

- REINFORCING STEEL SPLICE LENGTHS SHALL BE 2'-1" FOR VERTICAL #5 BARS AND 3'-6" FOR HORIZONTAL #6 BARS.
- PIPE TERMINATION DETAIL: SEE SHEET 10/22.
- SECTION A-A: SEE SHEET 9/22.
- CONTRACTION JOINT DETAIL SEE SHEET 9/22.

DESIGNED	BLN	CHECKED	DLR
DRAWN	JLS	REVISED	
REVIEWED	DAP		
DATE	11/15/16		



PLAN - RETAINING WALL 2



ELEVATION - RETAINING WALL 2

LEGEND

NOTES

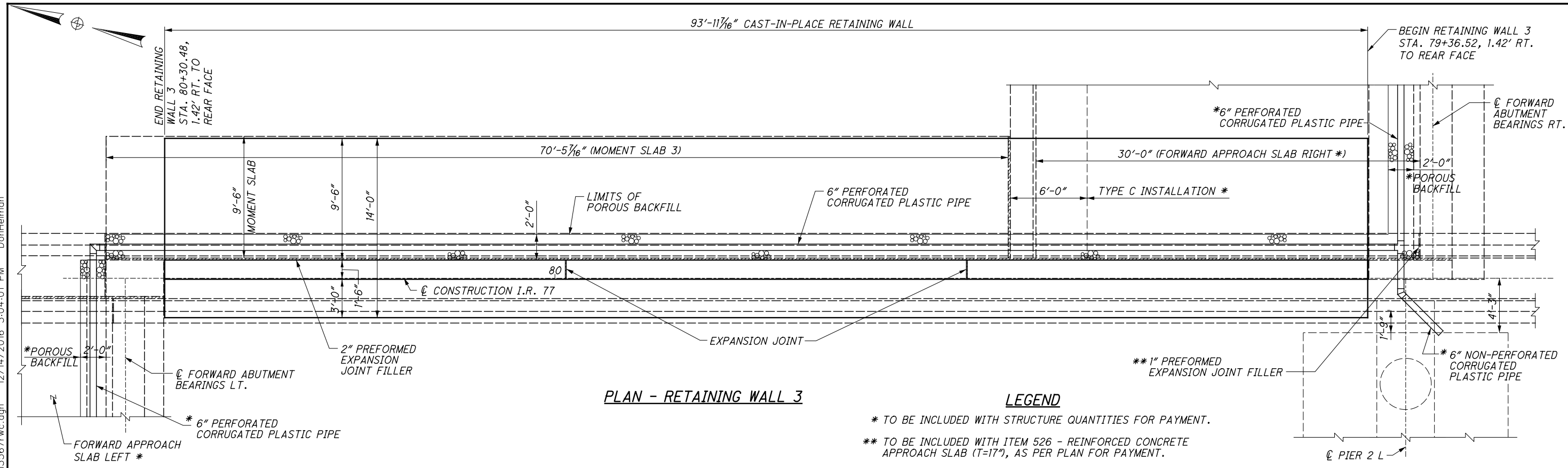
- * TO BE INCLUDED WITH STRUCTURE QUANTITIES FOR PAYMENT.
- ** TO BE INCLUDED WITH ITEM 526 - REINFORCED CONCRETE APPROACH SLABS (T=17"), AS PER PLAN FOR PAYMENT.
- ## TO BE INCLUDED WITH ITEM 511 - CLASS QC1 CONCRETE WITH QC/QA, AS PER PLAN, RETAINING WALL AND FOOTING FOR PAYMENT.

ADDITIONAL NOTES: SEE SHEET 4/22.
SECTION B-B: SEE SHEET 9/22.

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RETAINING WALL 2	CUY - 77 - 14.35 PID No. 13567	5 / 22 <div style="border: 1px solid black; border-radius: 50%; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center; margin: 0 auto;"> 264 365 </div>	RICHLAND ENGINEERING LIMITED 29 NORTH PARK STREET MANSFIELD, OHIO 44902 DATE: 11/15/16 REVIEWED: DAP DRAWN: JLS DESIGNED: BLN CHECKED: DLR
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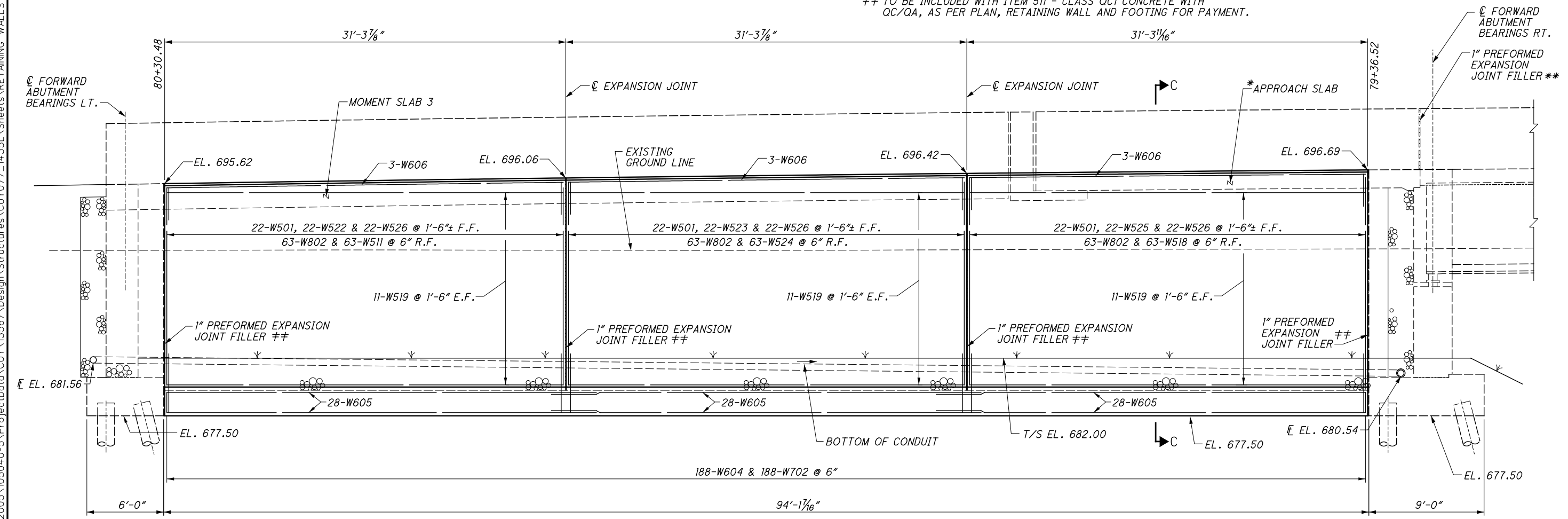
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PLAN - RETAINING WALL 3

LEGEND

- * TO BE INCLUDED WITH STRUCTURE QUANTITIES FOR PAYMENT.
- ** TO BE INCLUDED WITH ITEM 526 - REINFORCED CONCRETE APPROACH SLAB (T=17"), AS PER PLAN FOR PAYMENT.
- ## TO BE INCLUDED WITH ITEM 511 - CLASS QC1 CONCRETE WITH QC/QA, AS PER PLAN, RETAINING WALL AND FOOTING FOR PAYMENT.

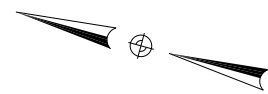


ELEVATION - RETAINING WALL 3

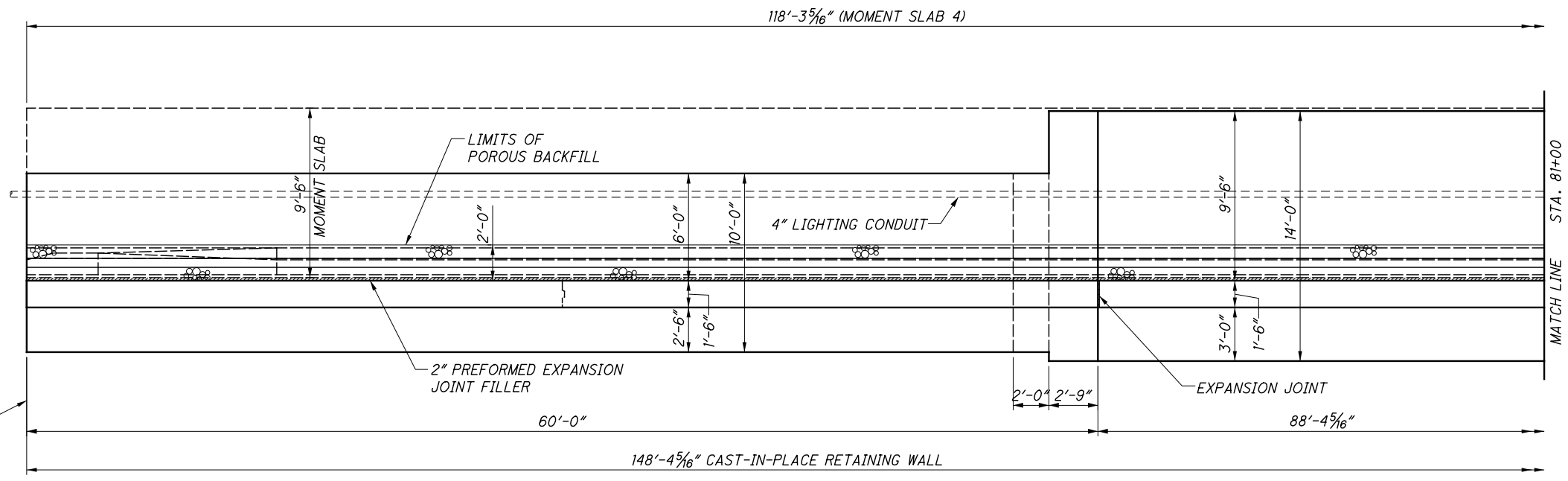
NOTES
ADDITIONAL NOTES: SEE SHEET 4/22.
SECTION C-C: SEE SHEET 9/22.
EXPANSION JOINT DETAIL: SEE SHEET 9/22.

RICHLAND ENGINEERING LIMITED 29 NORTH PARK STREET MANSFIELD, OHIO 44902	
REVIEWED DAP	DATE 11/15/16
DRAWN JLS	REVISIONS (None listed)
DESIGNED BLN	CHECKED DLR
RETAINING WALL 3	
CUY - 77 - 14.35 PID No. 13567	
6 / 22	
(265 / 365)	

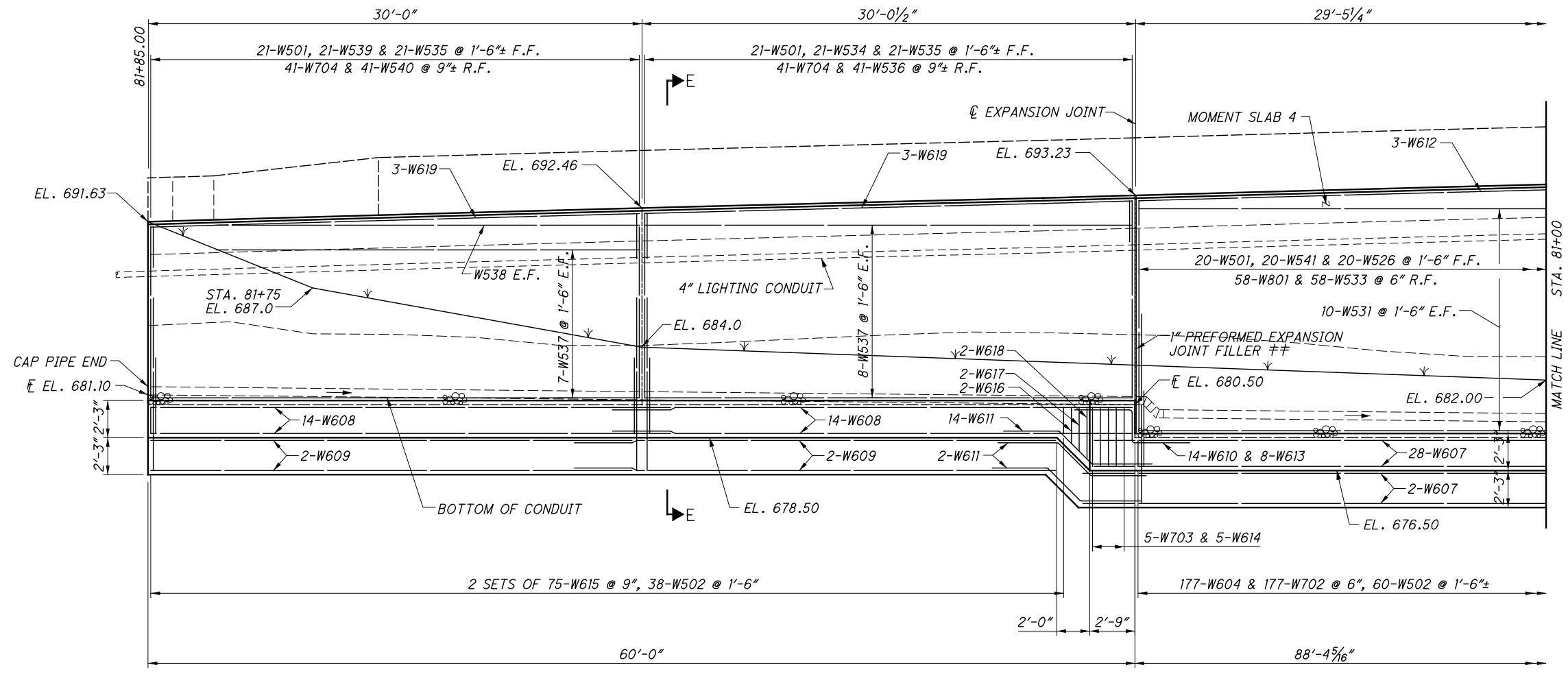
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END RETAINING WALL 4
STA. 81+85.00,
59.33' LT. TO REAR FACE



PLAN - RETAINING WALL 4



LEGEND

- * TO BE INCLUDED WITH STRUCTURE QUANTITIES FOR PAYMENT.
- ** TO BE INCLUDED WITH ITEM 526 - REINFORCED CONCRETE APPROACH SLABS (T=17\"), AS PER PLAN FOR PAYMENT.
- ## TO BE INCLUDED WITH ITEM 511 - CLASS QC1 CONCRETE WITH QC/QA, AS PER PLAN, RETAINING WALL AND FOOTING FOR PAYMENT.

ELEVATION - RETAINING WALL 4

NOTES

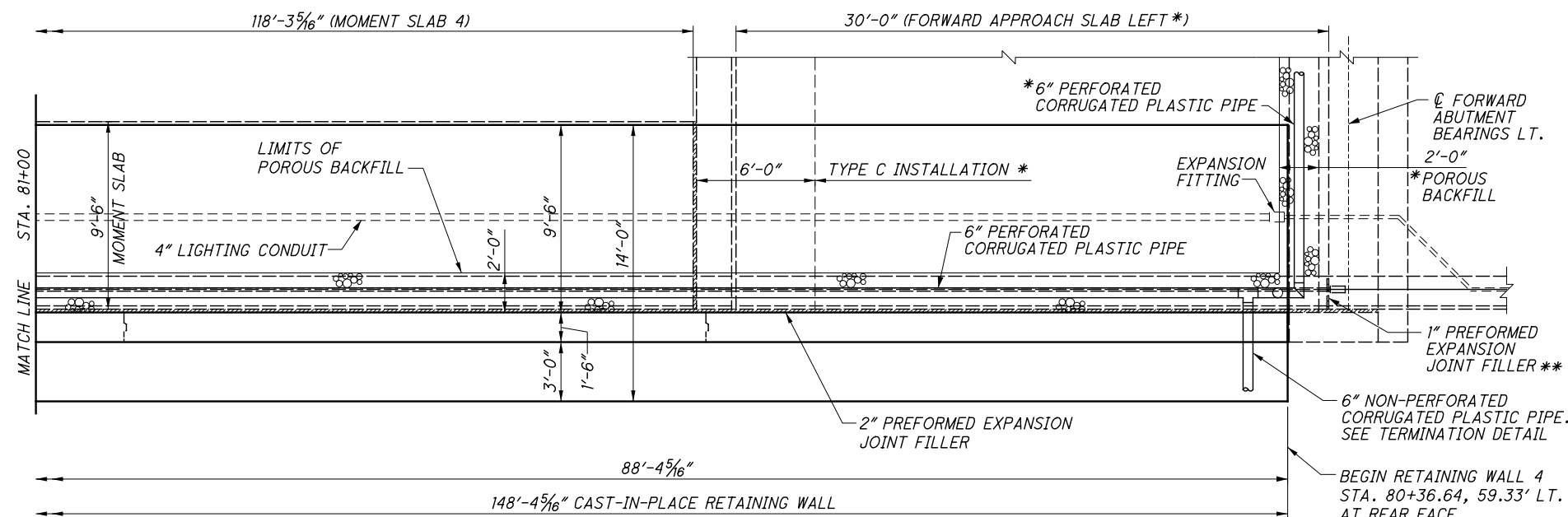
ADDITIONAL NOTES: SEE SHEET 4/22.
SECTION E-E: SEE SHEET 10/22.

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REVIEWED	DAP	DATE	11/15/16

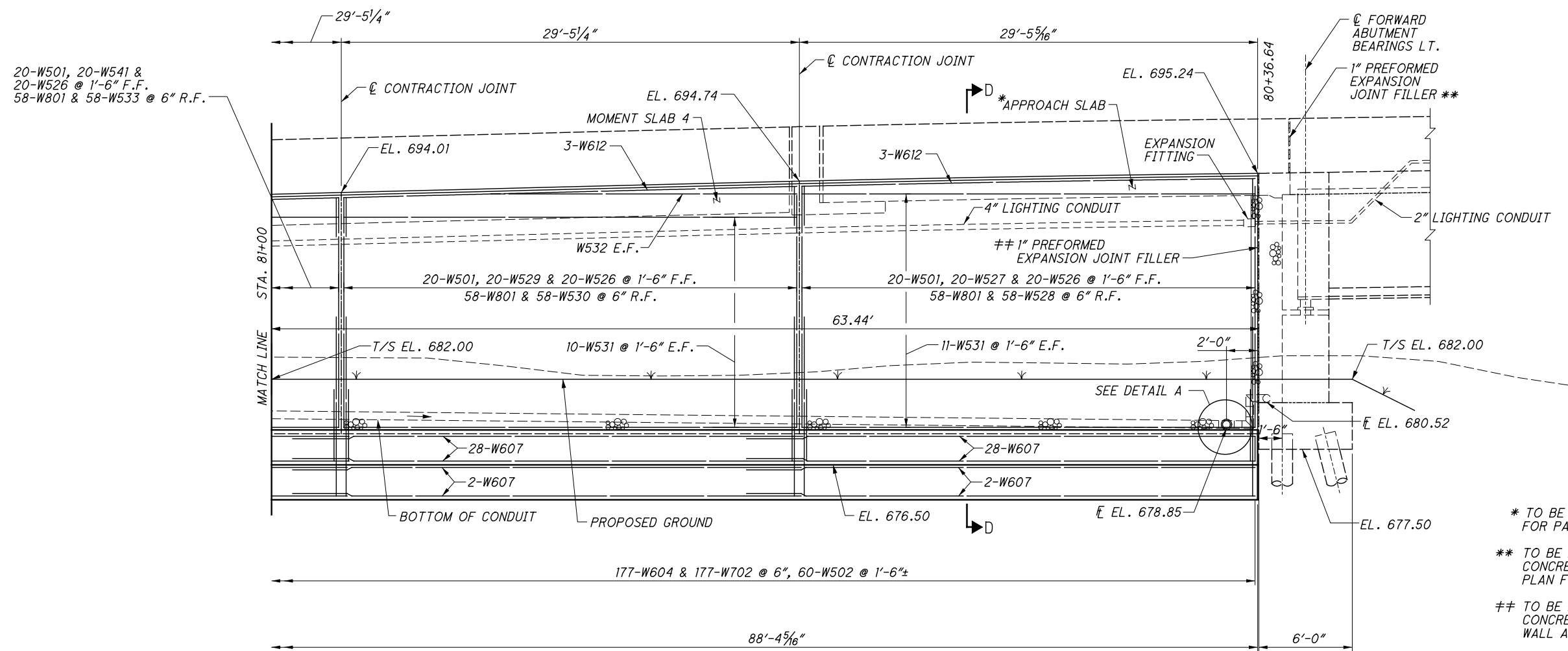
RETAINING WALL 4 - 1

CUY - 77 - 14.35
PID No. 13567

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PLAN - RETAINING WALL 4



ELEVATION - RETAINING WALL 4

LEGEND

- * TO BE INCLUDED WITH STRUCTURE QUANTITIES FOR PAYMENT.
- ** TO BE INCLUDED WITH ITEM 526 - REINFORCED CONCRETE APPROACH SLABS (T=17"), AS PER PLAN FOR PAYMENT.
- ## TO BE INCLUDED WITH ITEM 511 - CLASS QC1 CONCRETE WITH QC/QA, AS PER PLAN, RETAINING WALL AND FOOTING FOR PAYMENT.

NOTES

- ADDITIONAL NOTES:** SEE SHEET 4/22.
- SECTION D-D:** SEE SHEET 10/22.
- PIPE TERMINATION DETAIL:** SEE SHEET 10/22.
- DETAIL A:** SEE SHEET 4/22.

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

DESIGNED	BLN	CHECKED	DLR
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REVIEWED	DAP	DATE	11/15/16

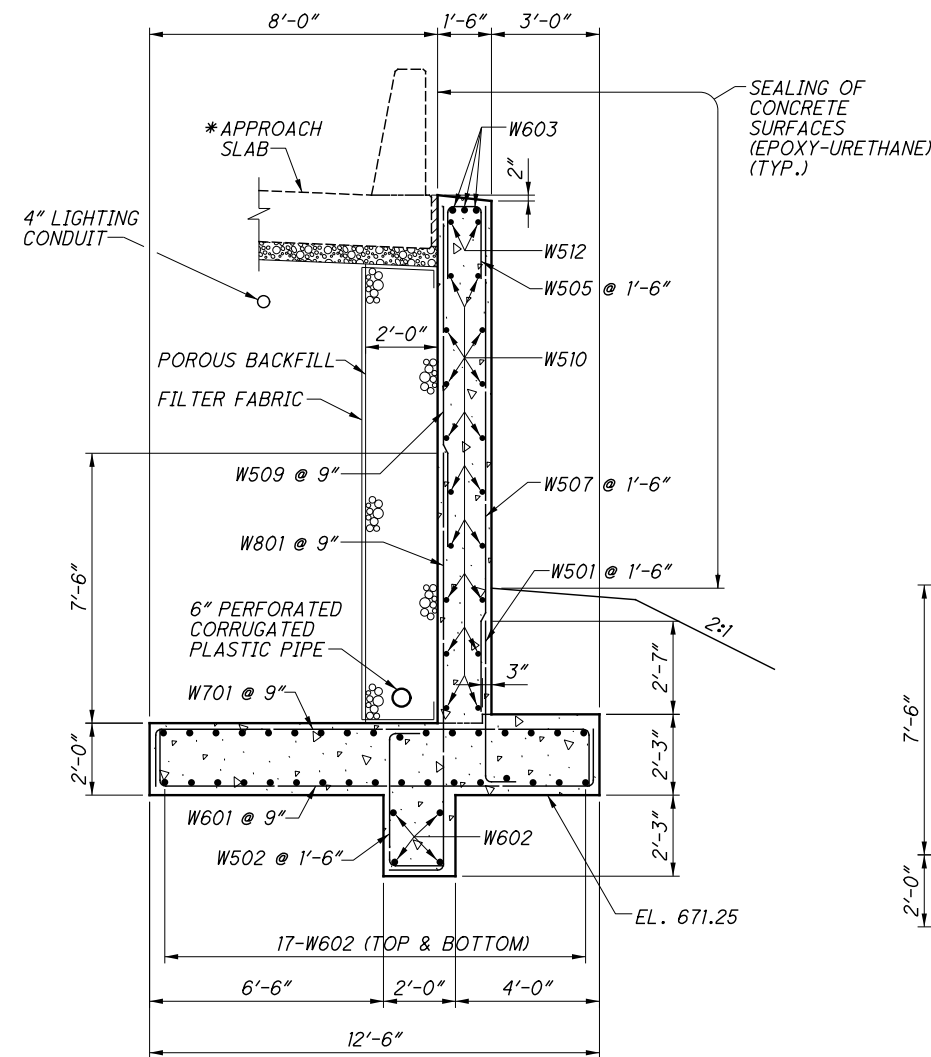
RETAINING WALL 4 - 2

CUY - 77 - 14.35
PID No. 13567

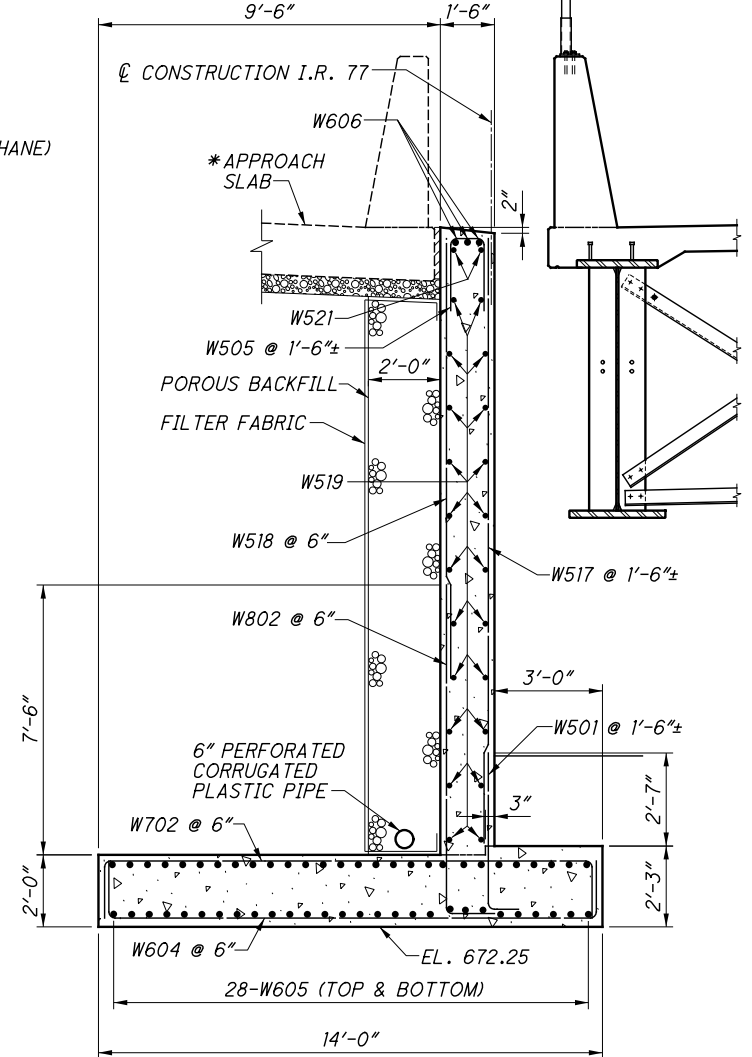
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267
365

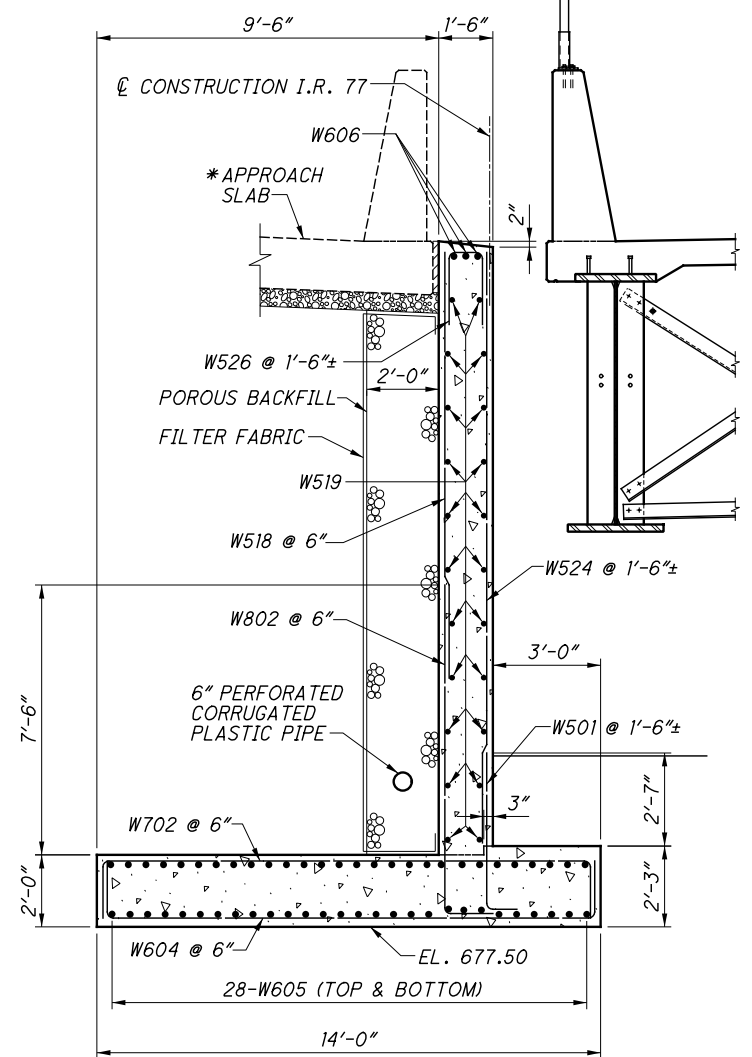
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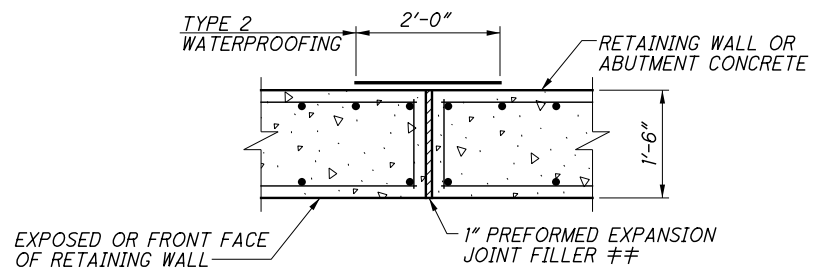
SECTION A-A
(RETAINING WALL 1)



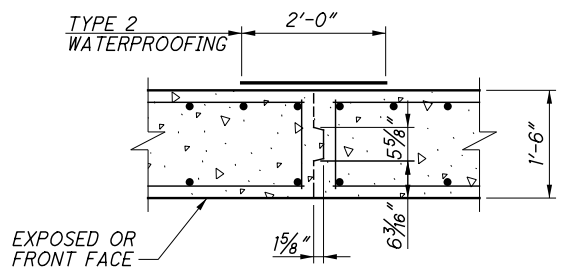
SECTION B-B
(RETAINING WALL 2)



SECTION C-C
(RETAINING WALL 3)



EXPANSION JOINT DETAIL



CONTRACTION JOINT DETAIL

LEGEND

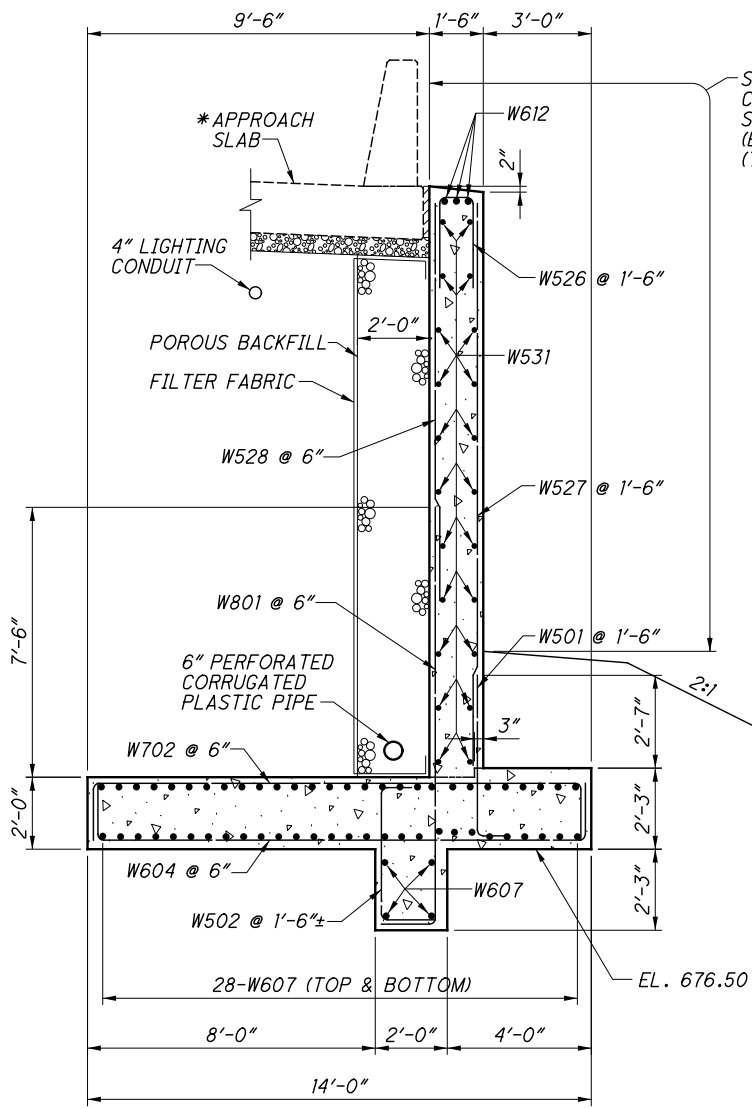
- * TO BE INCLUDED WITH STRUCTURE QUANTITIES FOR PAYMENT.
- ## TO BE INCLUDED WITH ITEM 511 - GLASS QC1 CONCRETE WITH QC/QA, AS PER PLAN, RETAINING WALL AND FOOTING FOR PAYMENT.

NOTES

- ADDITIONAL NOTES:** SEE SHEET 4/22.
- SECTION A-A:** FOR LOCATION SEE SHEET 4/22.
- SECTION B-B:** FOR LOCATION SEE SHEET 5/22.
- SECTION C-C:** FOR LOCATION SEE SHEET 6/22.

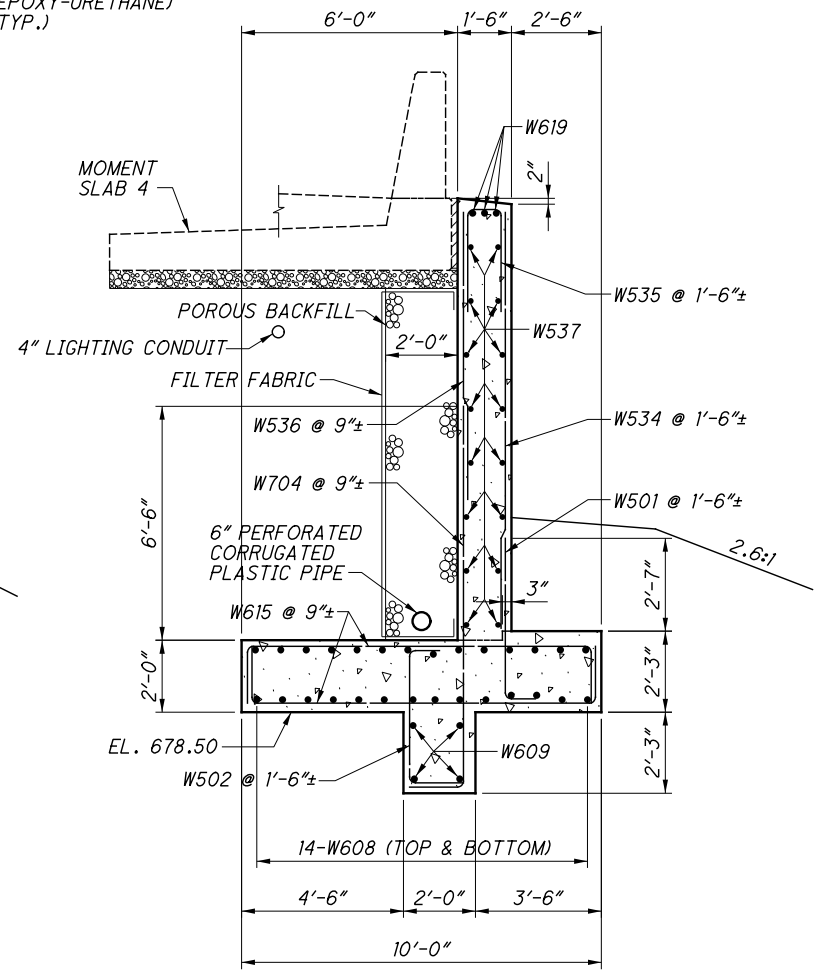
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REVIEWED	DAP		
DATE	11/15/16		

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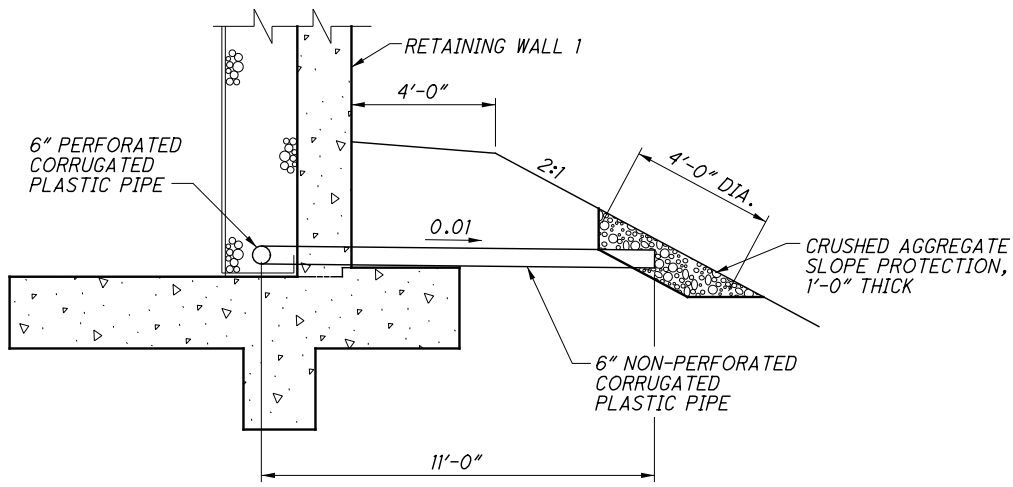


SECTION D-D
(RETAINING WALL 4)

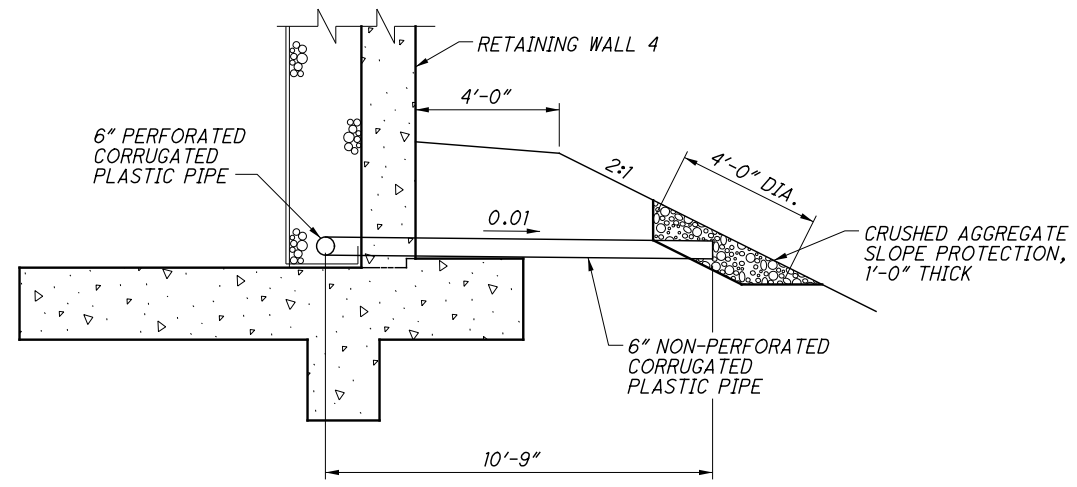
SEALING OF CONCRETE SURFACES (EPOXY-URETHANE) (TYP.)



SECTION E-E
(RETAINING WALL 4)



TERMINATION OF 6" NON-PERFORATED CONDUIT



* TO BE INCLUDED WITH STRUCTURE QUANTITIES FOR PAYMENT.

NOTES

ADDITIONAL NOTES: SEE SHEET 4/22.

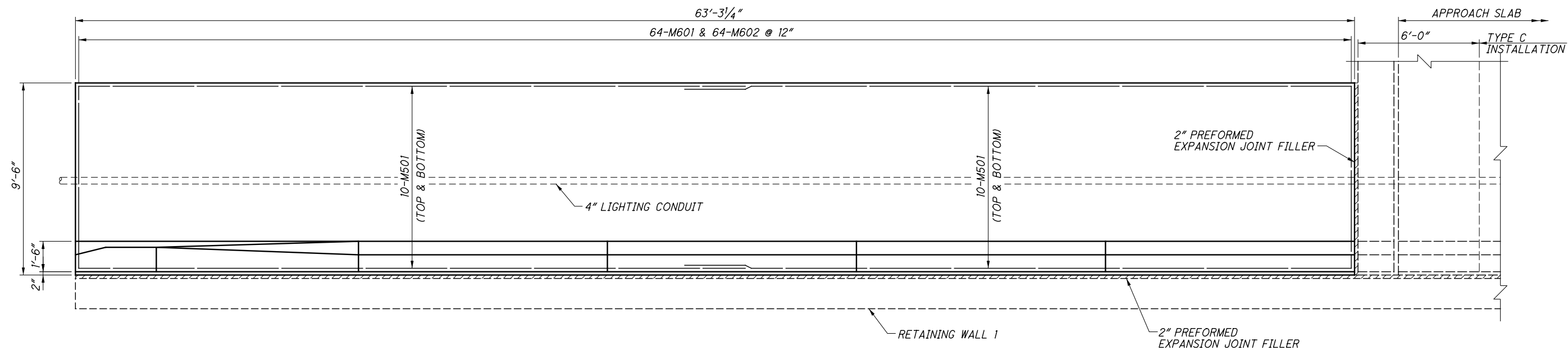
SECTION D-D: FOR LOCATION SEE SHEET 8/22.

SECTION E-E: FOR LOCATION SEE SHEET 7/22.

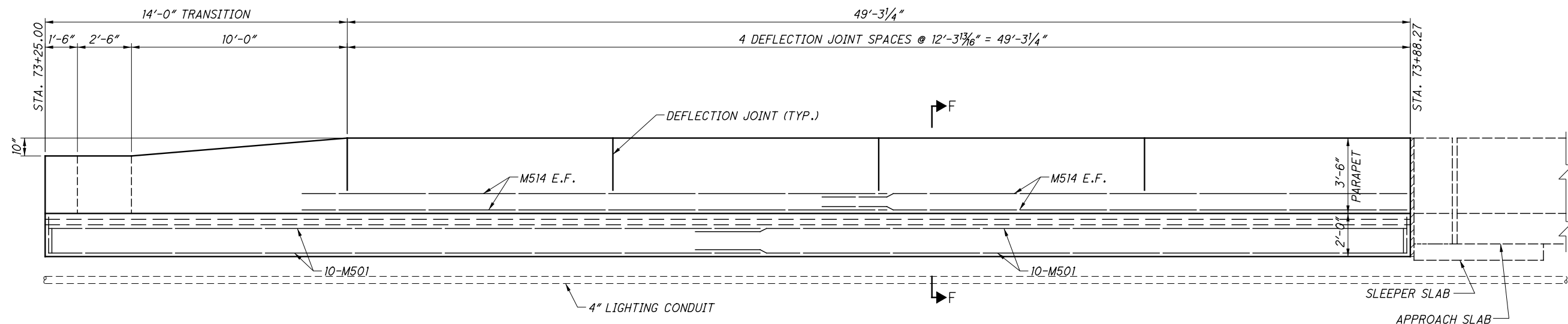
PIPE TERMINATION DETAILS: FOR LOCATIONS SEE SHEETS 4/22 & 8/22.

DESIGNED	BLN	CHECKED	DLR
DRAWN	JLS	REVISED	
REVIEWED	DAP		
DATE	11/15/16		

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Structures\CUY077_1435L\Sheets\RETAINING WALLS\077_14_35RWJ.dgn 12/14/2016 3:06:23 PM DonHeiman



PLAN - MOMENT SLAB 1



ELEVATION - MOMENT SLAB 1

NOTES

REINFORCING STEEL SPLICE LENGTHS SHALL BE 3'-0" FOR HORIZONTAL #5 BARS.

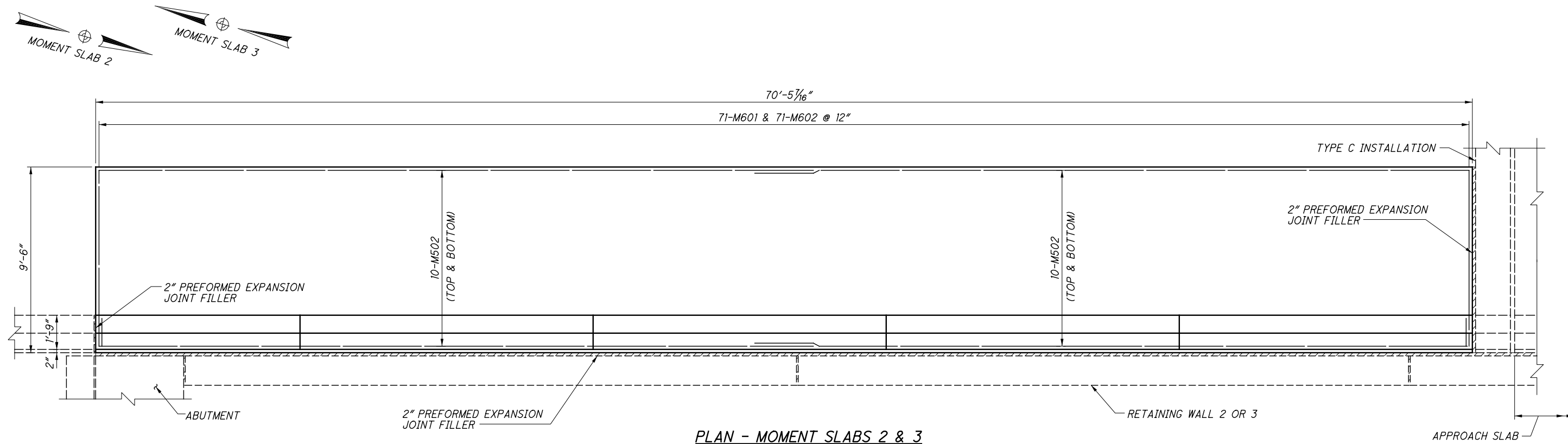
NOTATION: E.F. - EACH FACE

SECTION F-F: SEE SHEET 17/22.

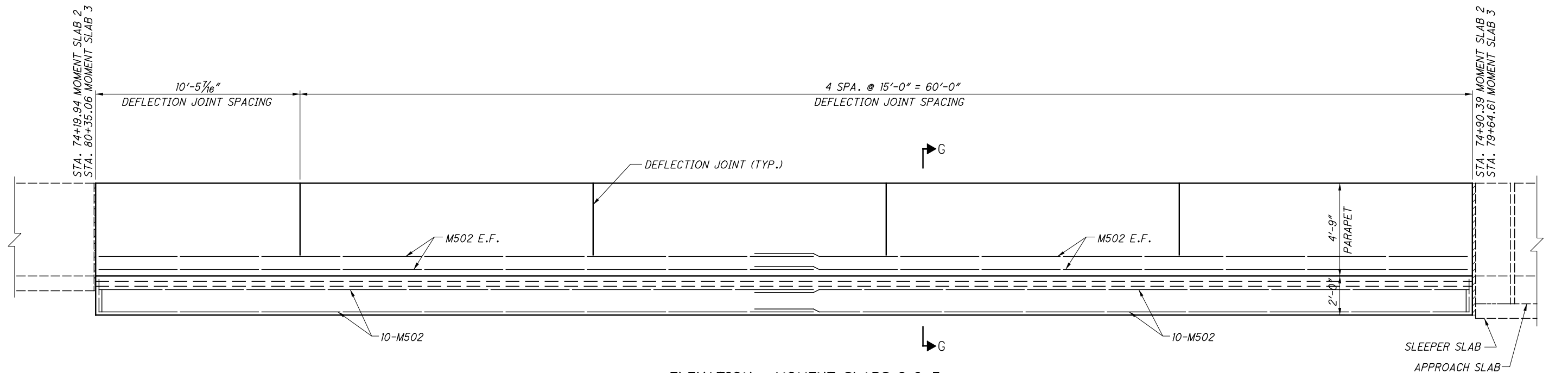
PARAPET REINFORCING DETAILS: SEE SHEET 18/22.

PARAPET TRANSITION DETAILS AND REINFORCING: SEE SHEET 20/22.

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Structures\CUY077_1435L\Sheets\RETAINING WALLS\077_1435RWK.dgn 12/14/2016 3:06:50 PM DonHeiman



PLAN - MOMENT SLABS 2 & 3



ELEVATION - MOMENT SLABS 2 & 3

NOTES

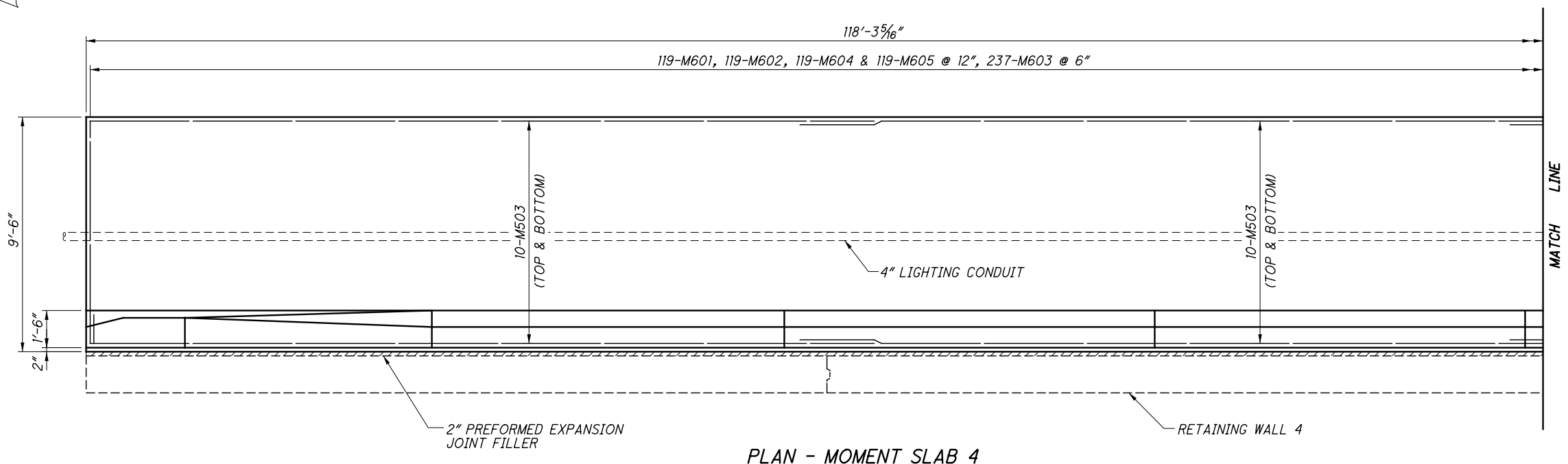
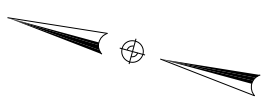
- NOTATION:** E.F. - EACH FACE
- SECTION G-G:** SEE SHEET 17/22.
- PARAPET REINFORCING DETAILS:** SEE SHEET 19/22.
- ADDITIONAL NOTES:** SEE SHEET 11/22.

DESIGNED	BLN	CHECKED	DLR
DRAWN	SJK	REVISED	
REVIEWED	DAP		
DATE	11/15/16		

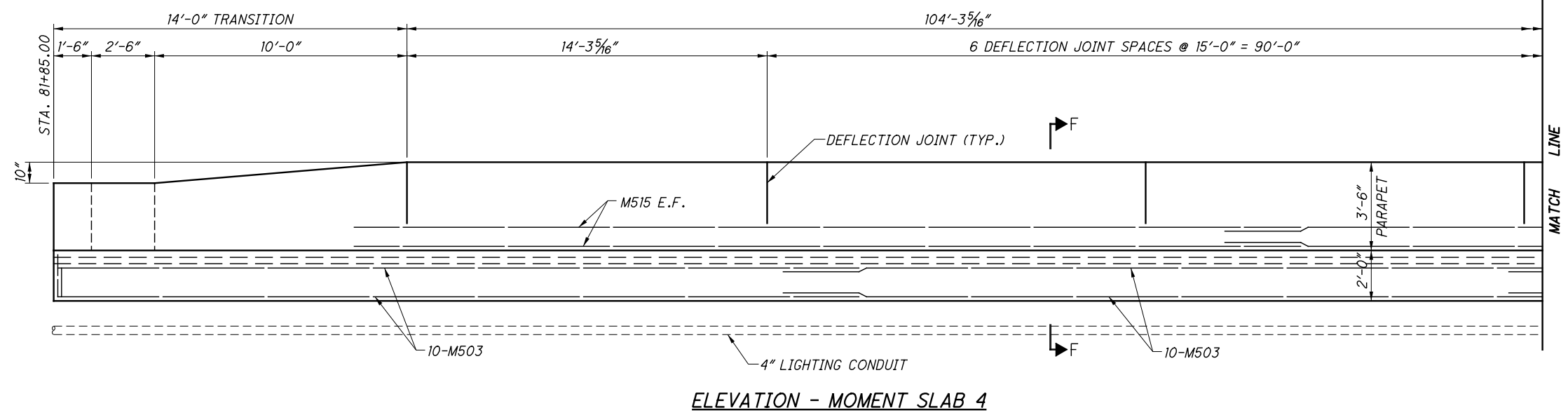
MOMENT SLABS 2 & 3 AT RETAINING WALLS 2 & 3

CUY - 77 - 14.35
 PID No. 13567

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Structures\CUY077_14\35L\Sheets\RETAINING WALLS\077_14_35RWL.dgn 12/14/2016 3:08:01 PM DonHelman



PLAN - MOMENT SLAB 4



ELEVATION - MOMENT SLAB 4

NOTES

NOTATION: E.F. - EACH FACE.

SECTION F-F: SEE SHEET 17/22.

PARAPET REINFORCING DETAILS: SEE SHEET 18/22.

PARAPET TRANSITION DETAILS AND REINFORCING: SEE SHEET 20/22.

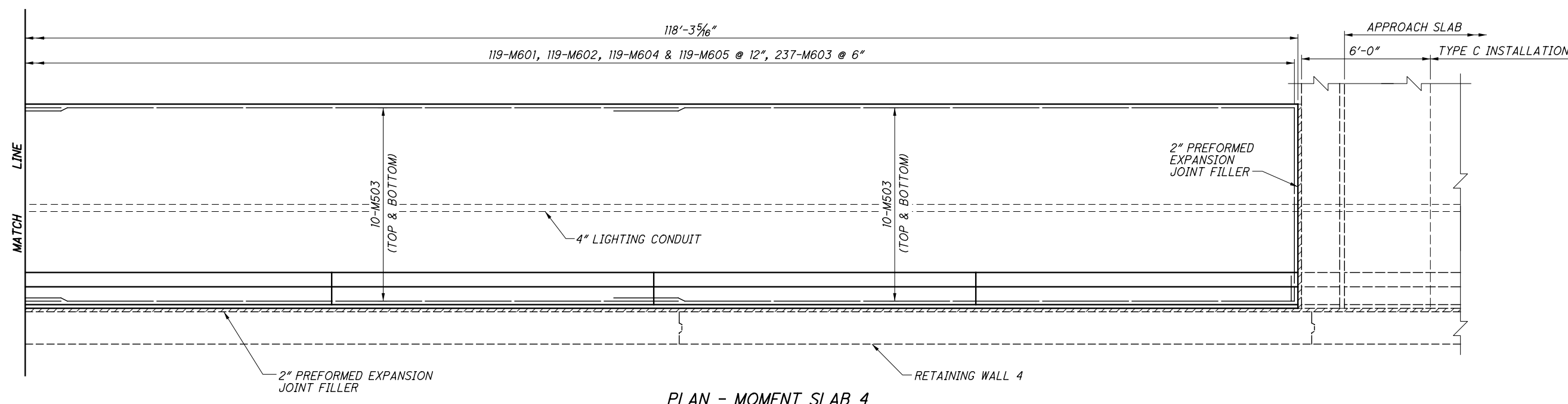
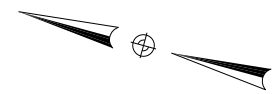
ADDITIONAL NOTES: SEE SHEET 11/22.

DESIGNED	BLN	CHECKED	DLR
DRAWN	SJK	REVISED	
REVIEWED	DAP	DATE	11/15/16

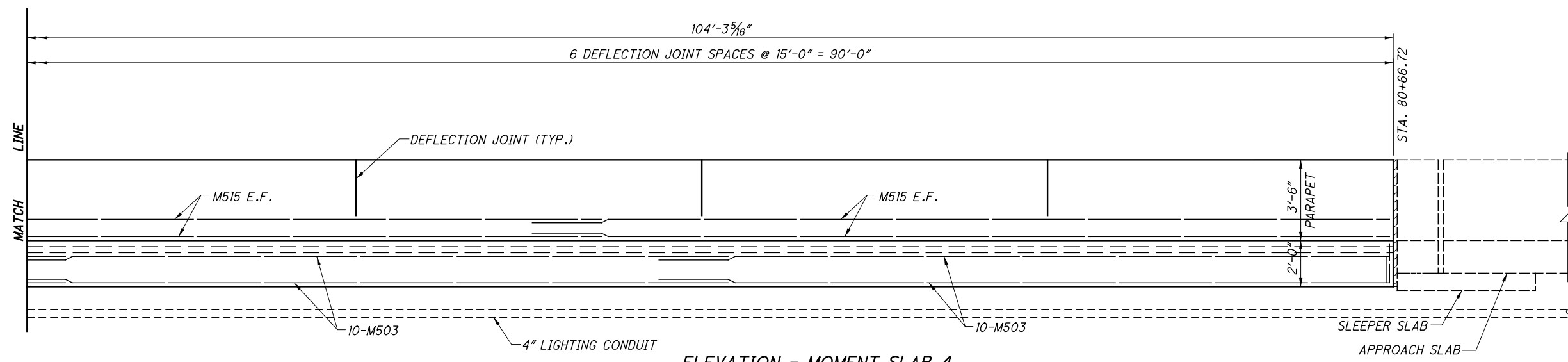
MOMENT SLAB 4 AT RETAINING WALL 4 - 1

CUY - 77 - 14.35
 PID No. 13567

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Structures\CUY077_1435L\Sheets\RETAINING WALLS\077_1435RWM.dgn 12/14/2016 3:08:28 PM DonHelman



PLAN - MOMENT SLAB 4



ELEVATION - MOMENT SLAB 4

NOTES

NOTATION: E.F. - EACH FACE

PARAPET REINFORCING DETAILS: SEE SHEET 18/22.

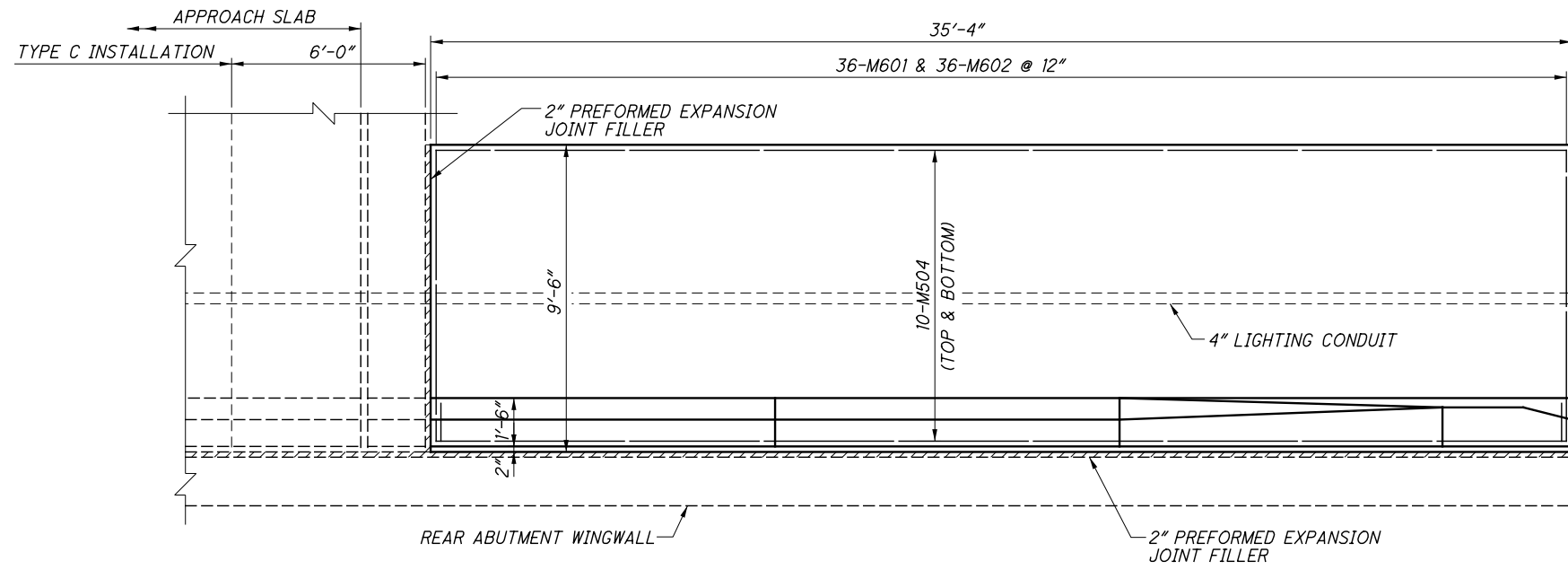
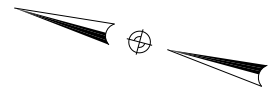
ADDITIONAL NOTES: SEE SHEET 11/22.

DESIGNED	BLN	CHECKED	DLR
DRAWN	SJK	REVISED	
REVIEWED	DAP		
DATE	11/15/16		

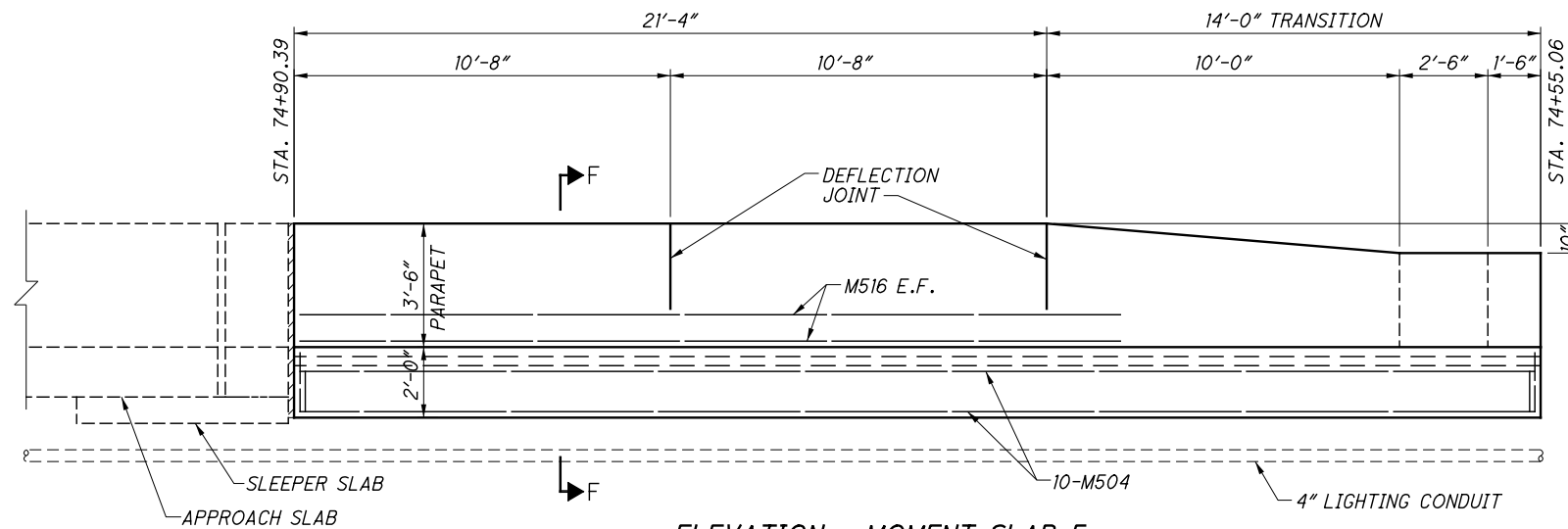
MOMENT SLAB 4 AT RETAINING WALL 4 - 2

CUY - 77 - 14.35
PID No. 13567

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Structures\CUY077_1435L\Sheets\RETAINING WALLS\077_14_35RWP.dgn 12/14/2016 3:08:58 PM DonHelman



PLAN - MOMENT SLAB 5



ELEVATION - MOMENT SLAB 5

NOTES

NOTATION: E.F. - EACH FACE

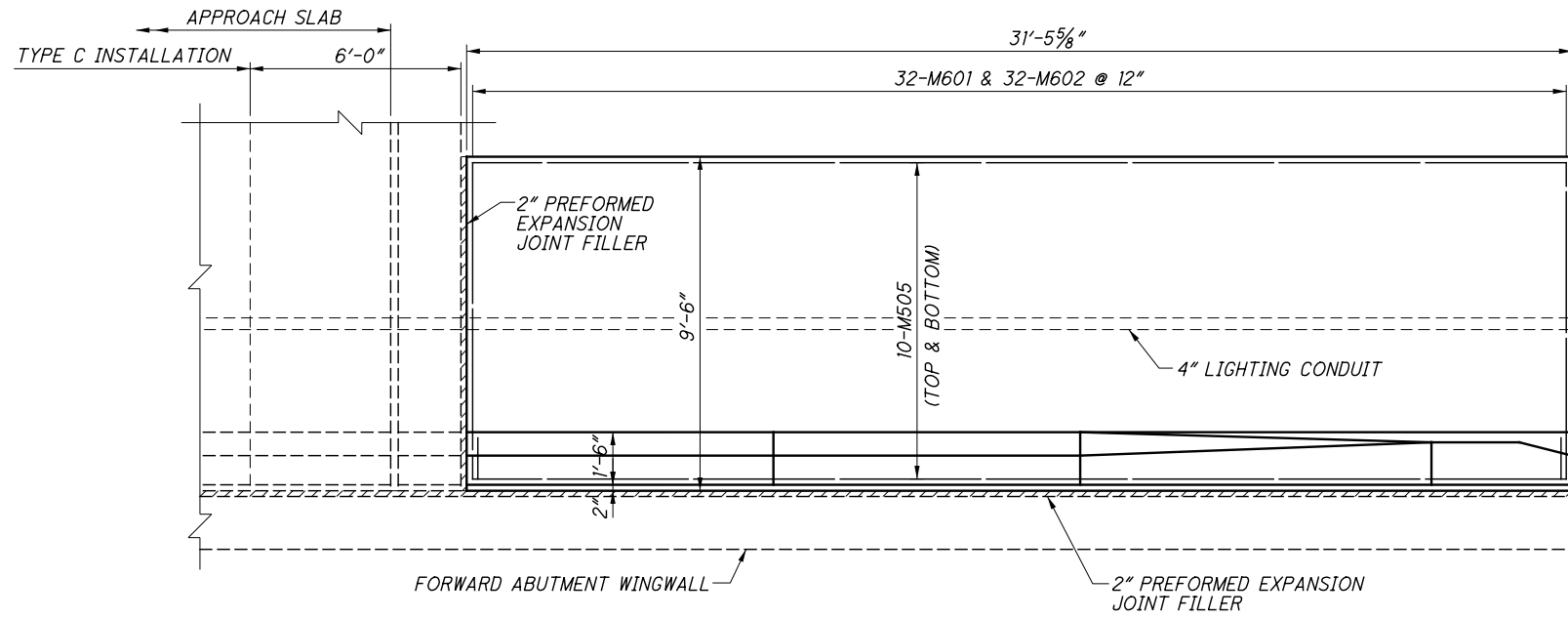
SECTION F-F: SEE SHEET 17/22.

PARAPET REINFORCING DETAILS: SEE SHEET 18/22.

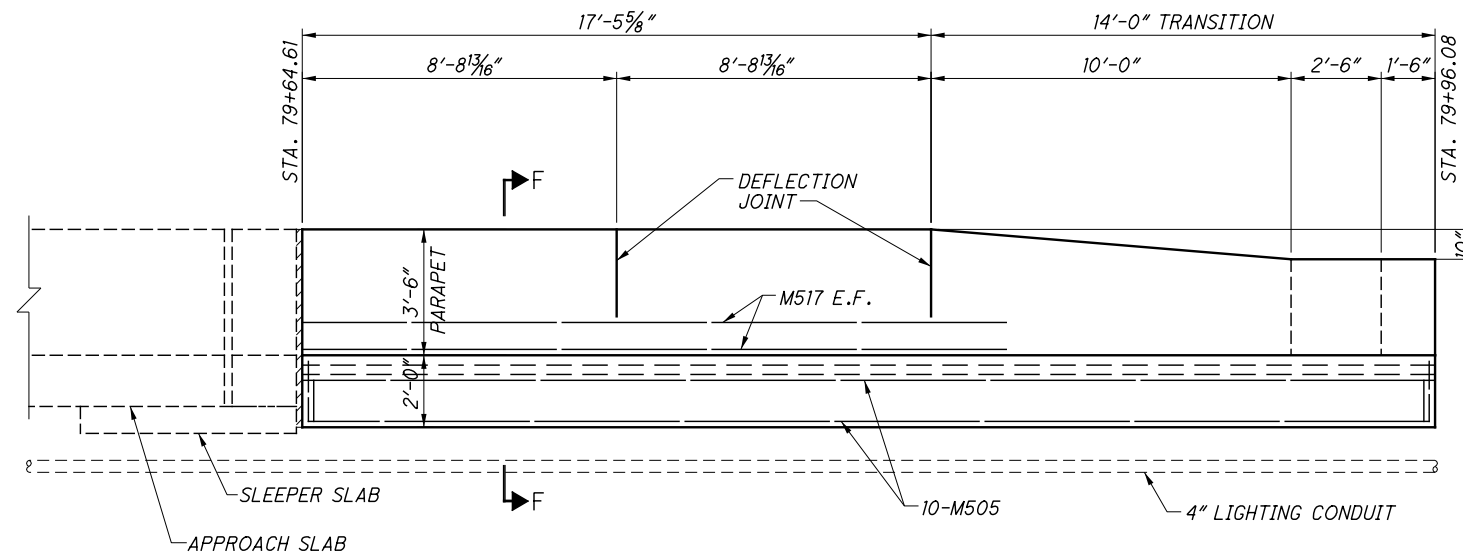
PARAPET TRANSITION DETAILS AND REINFORCING: SEE SHEET 20/22.

ADDITIONAL NOTES: SEE SHEET 11/22.

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PLAN - MOMENT SLAB 6



ELEVATION - MOMENT SLAB 6

NOTES

NOTATION: E.F. - EACH FACE

SECTION F-F: SEE SHEET [17/22](#).

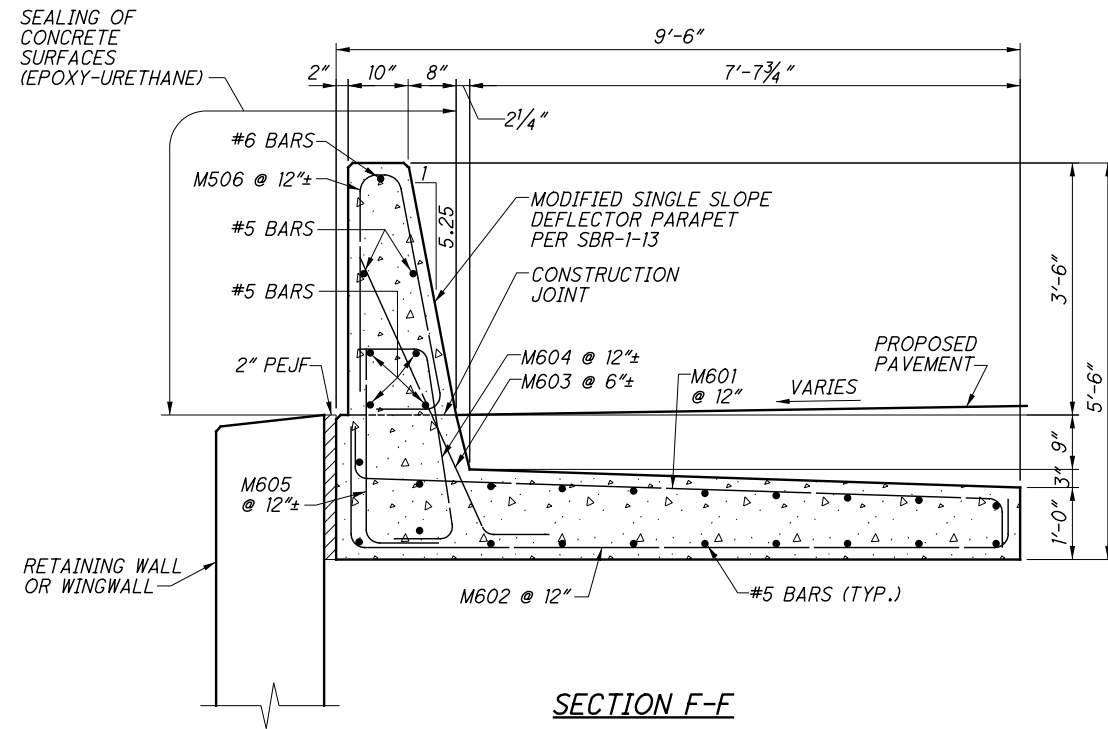
PARAPET REINFORCING DETAILS: SEE SHEET [18/22](#).

PARAPET TRANSITION DETAILS AND REINFORCING: SEE SHEET [20/22](#).

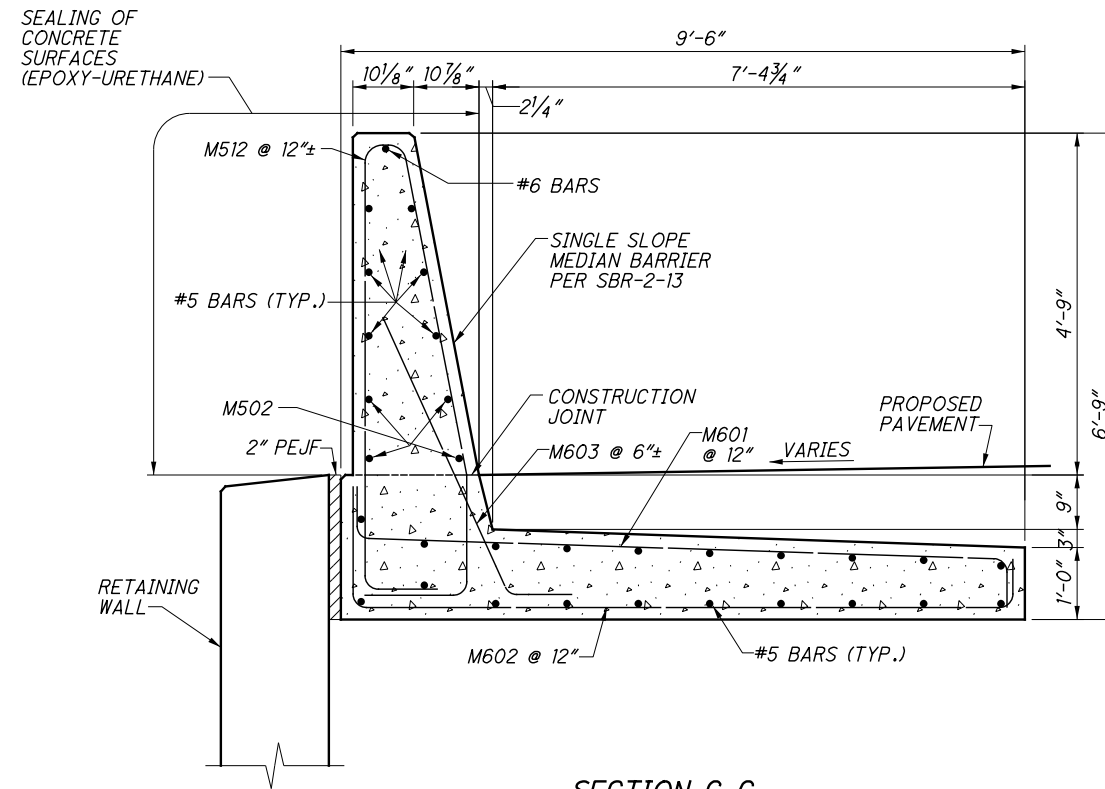
ADDITIONAL NOTES: SEE SHEET [11/22](#).

DESIGNED	BLN	CHECKED	DLR
DRAWN	SJK	REVISED	
REVIEWED	DAP		
DATE	11/15/16		

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Structures\CUY077_14\35L\Sheets\RETAINING WALLS\077_14_35RWN.dgn 12/14/2016 3:09:57 PM DonHelman



SECTION F-F



SECTION G-G

NOTES

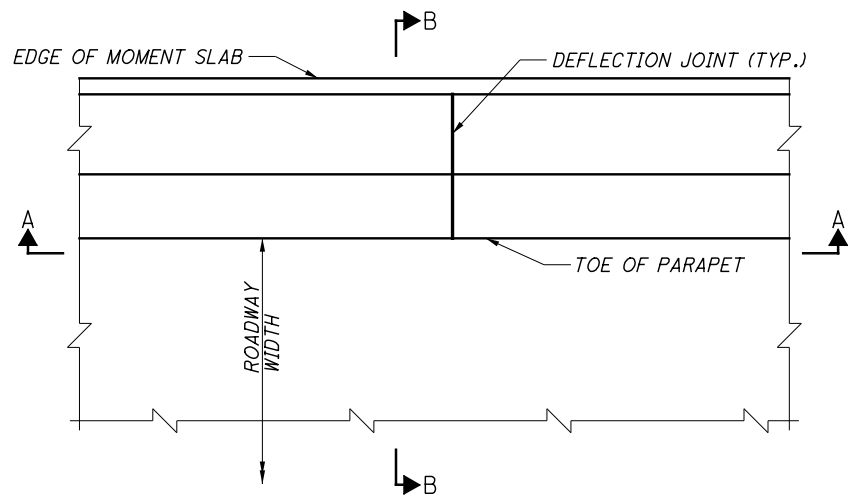
NOTATION: PEJF - PREFORMED EXPANSION JOINT FILLER

SECTION F-F: FOR LOCATIONS SEE SHEETS 11/22, 13/22, 15/22 & 16/22.

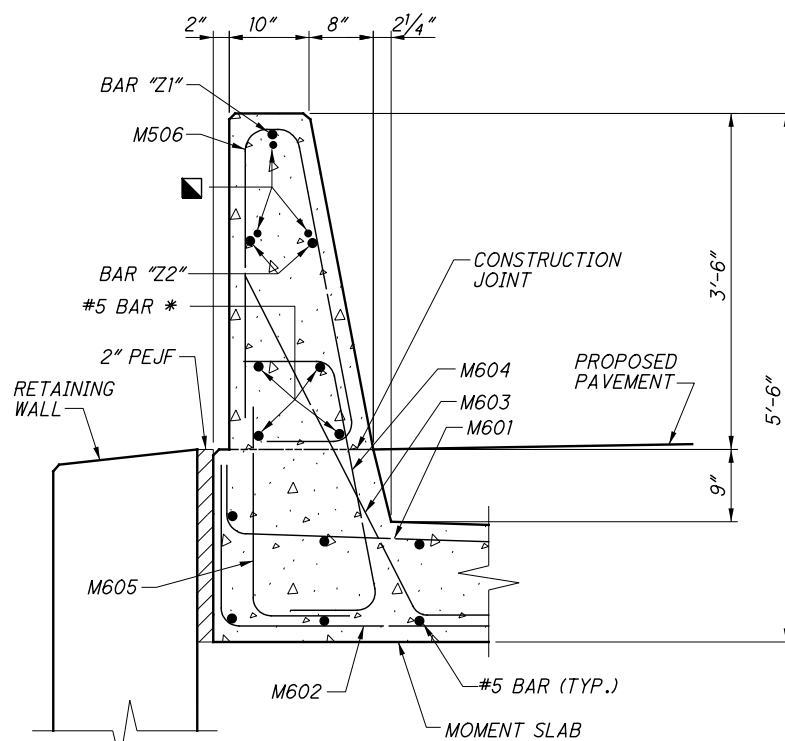
SECTION G-G: FOR LOCATIONS SEE SHEET 12/22.

DEFLECTION JOINTS: SEE SHEETS 18/22 AND 19/22.

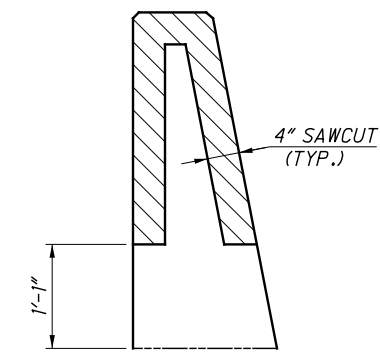
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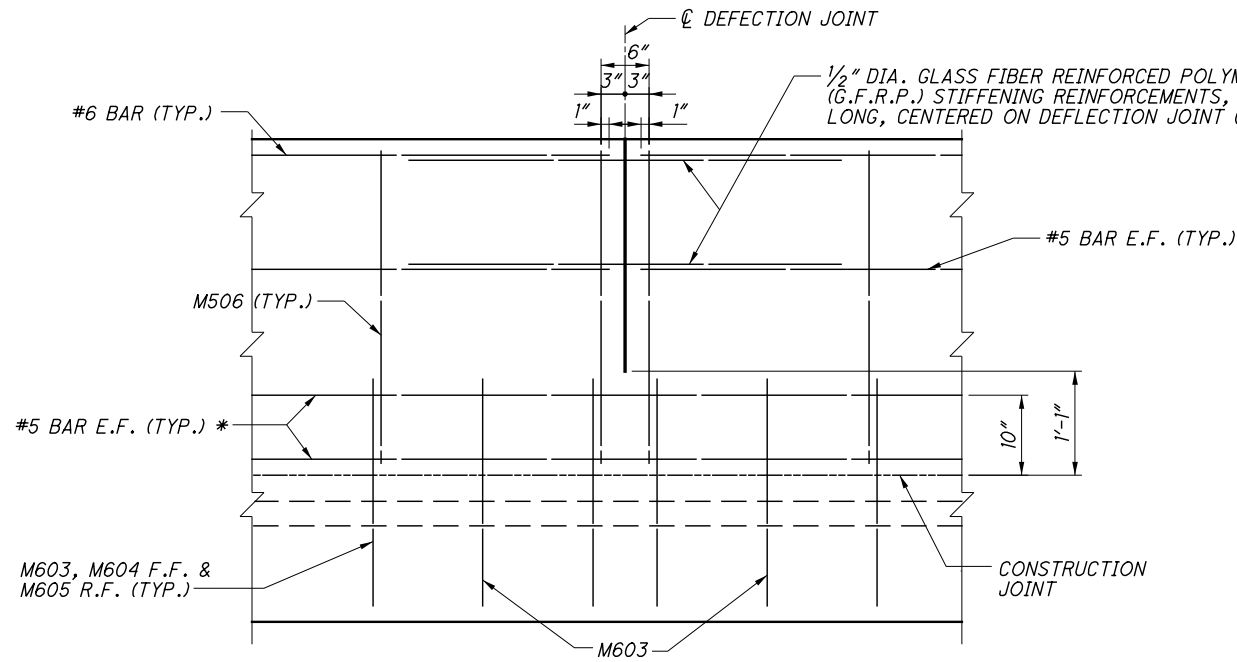
PLAN VIEW
DEFLECTION JOINT DETAIL



SECTION B-B

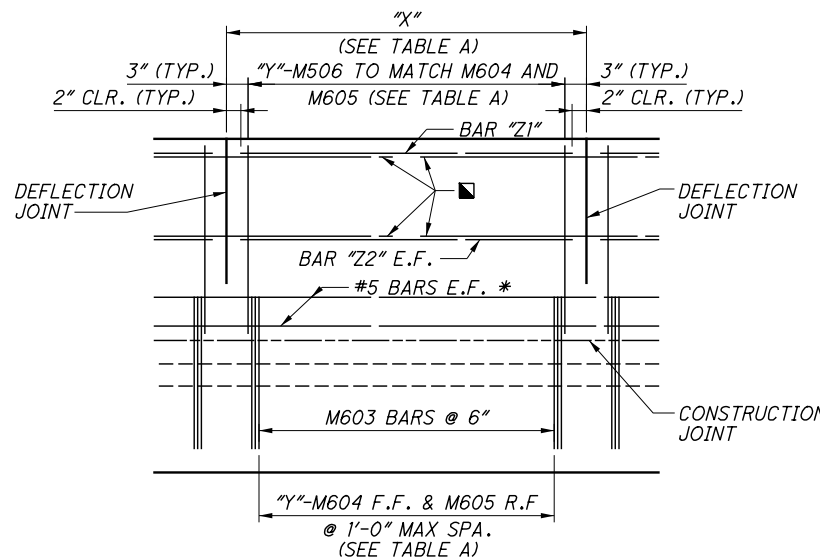


DETAIL C
SECTION THROUGH SAWCUT



SECTION A-A

GFRP REBAR STIFFENING DETAIL AT DEFLECTION JOINTS (MOMENT SLAB REINFORCING NOT SHOWN FOR CLARITY)



PARTIAL PARAPET ELEVATION

(MOMENT SLAB REINFORCING NOT SHOWN FOR CLARITY)

TABLE A

NO. OF PANELS SLAB 1	NO. OF PANELS SLAB 4	NO. OF PANELS SLAB 5	NO. OF PANELS SLAB 6	LENGTH "X"	NO. OF BARS IN EA. PANEL "Y"	NO. OF M603 BARS IN EA. PANEL "Y"	BAR "Z1"	BAR "Z2"
4	-	-	-	12'-3 13/16"	13	25	M606	M507
-	6	-	-	15'-0"	16	30	M607	M508
-	1	-	-	14'-3 5/16"	15	29	M608	M509
-	-	2	-	10'-8"	12	22	M609	M510
-	-	-	2	8'-8 13/16"	10	18	M610	M511

DEFLECTION JOINTS

SAWCUT 1/4" DEEP DEFLECTION JOINTS ALONG THE PERIMETER OF THE PARAPET WHEN THE CONCRETE IS STILL GREEN OR AS SOON AS THE SAW CAN BE OPERATED WITHOUT DAMAGING THE CONCRETE.

AFTER THE CONCRETE CURING PERIOD SPECIFIED IN CMS 511.14 HAS BEEN REACHED, PERFORM 4" SAWCUT THROUGH THE GFRP AS SHOWN IN DETAIL C ON THIS SHEET.

THE CONTRACTOR HAS AN OPTION TO PERFORM FULL DEPTH SAWCUT. HOWEVER, THE SAWCUT SHALL NOT BE LESS THAN 1'-0 1/2" FROM THE TOP OF PAVEMENT.

USE AN EDGE GUIDE, FENCE OR JIG TO ENSURE THAT THE CUT JOINT IS STRAIGHT, TRUE AND ALIGNED ON ALL FACES OF THE PARAPET. THE JOINT WIDTH SHALL BE THE WIDTH OF THE SAW BLADE, A NOMINAL WIDTH OF 1/4".

SEAL THE PERIMETER OF THE DEFLECTION JOINTS TO A MINIMUM DEPTH OF 1" WITH A POLYURETHANE OR POLYMERIC MATERIAL CONFORMING TO ASTM C920, TYPE S. LEAVE THE BOTTOM 1/2" OF BOTH THE INSIDE AND OUTSIDE FACES OF THE PARAPET UNSEALED TO ALLOW ANY WATER WHICH MAY ENTER THE JOINT TO ESCAPE.

AT EACH DEFLECTION JOINT LOCATION, USE GLASS FIBER REINFORCED POLYMER (GFRP) REINFORCEMENT TO MAINTAIN THE RIGIDITY OF THE CAGE ACROSS THE PROPOSED JOINTS AT THOSE LONGITUDINAL BARS AS SHOWN IN SECTIONS A-A & B-B ON THIS SHEET. OTHER NON-FERROUS REINFORCEMENT MAY BE PROPOSED FOR USE, SUBJECT TO APPROVAL BY THE ENGINEER.

FOR TRANSITION SECTION, PLACE A DEFLECTION JOINT AT THE BEGINNING OF THE 14'-0" TRANSITION. DEFLECTION JOINTS ARE NOT REQUIRED WITHIN THE 14'-0" TRANSITION SECTION. SEE MOMENT SLAB SHEET [20/22].

LEGEND

■ = 1/2" DIA. GLASS FIBER REINFORCED POLYMER (GFRP) STIFFENING REINFORCEMENT

- * 2 SETS OF 4-M514 (MOMENT SLAB 1)
- 4 SETS OF 4-M515 (MOMENT SLAB 4)
- 1 SET OF 4-M516 (MOMENT SLAB 5)
- 1 SET OF 4-M517 (MOMENT SLAB 6)

NOTES

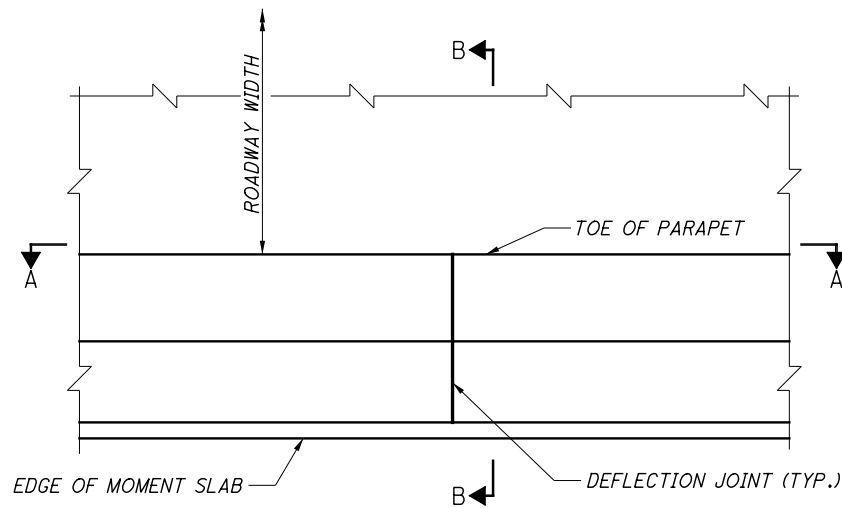
REINFORCING STEEL LIST: SEE SHEET [22/22].

MOMENT SLAB DETAIL: SEE SHEET [17/22].

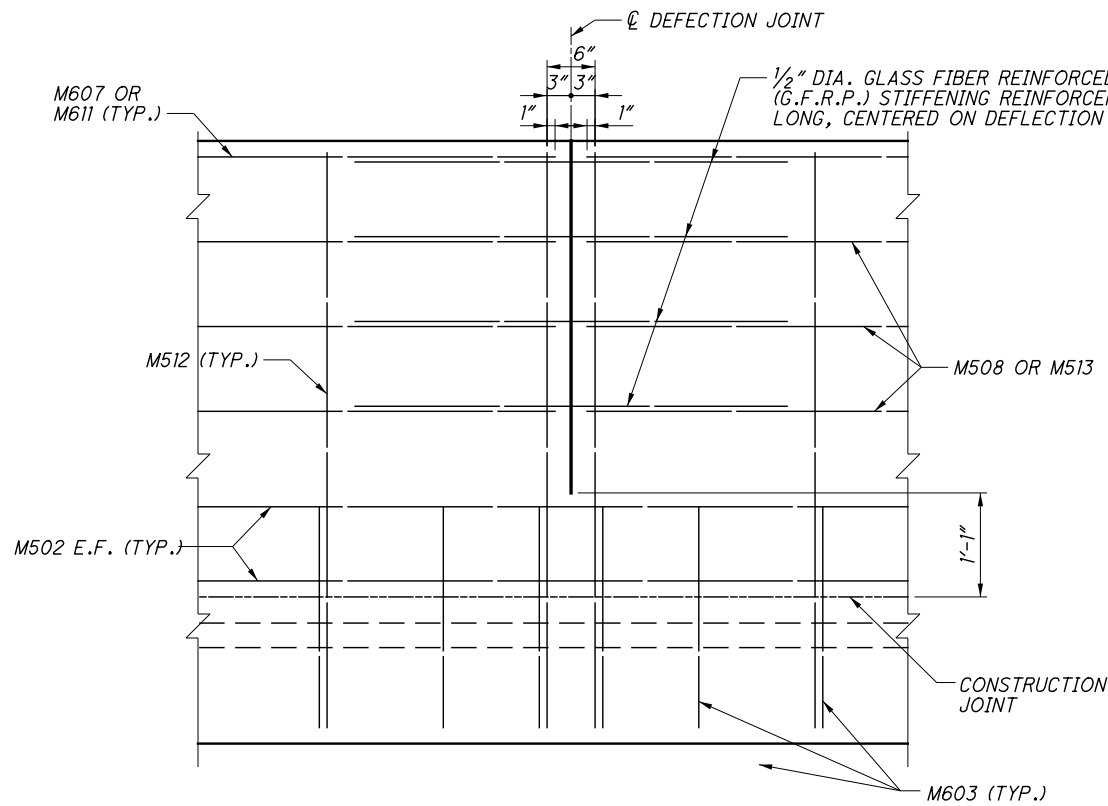
NOTATIONS: E.F. - EACH FACE
F.F. - FRONT FACE
R.F. - REAR FACE
PEJF - PREFORMED EXPANSION JOINT FILLER

ADDITIONAL DETAILS: REFER TO STANDARD DRAWING SBR-1-13.

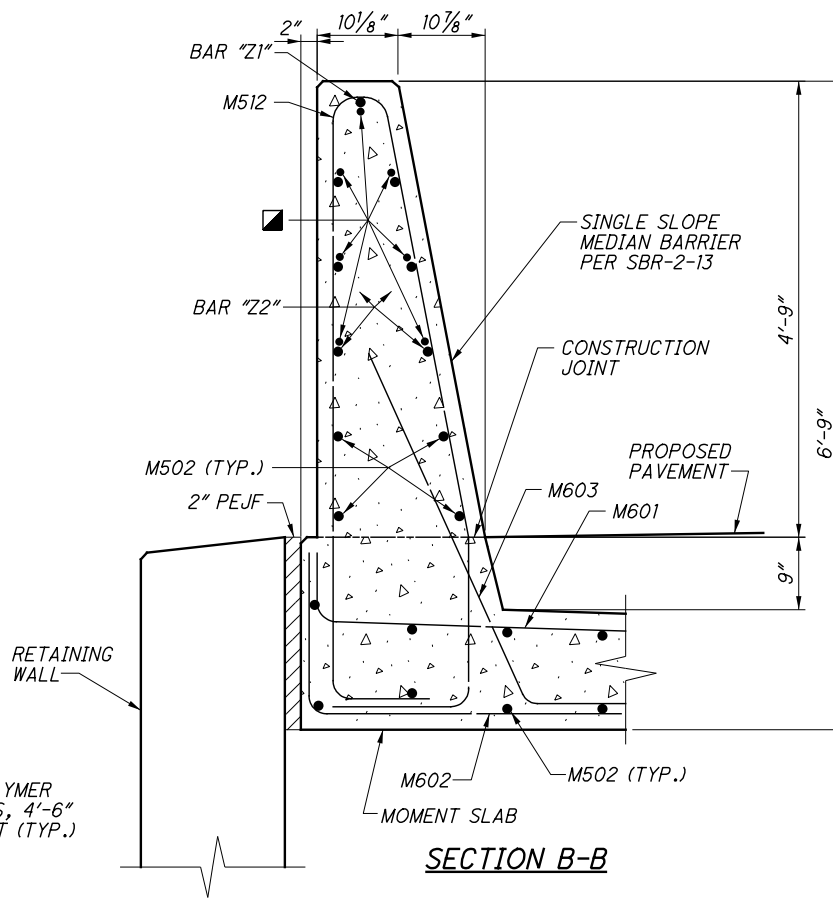
\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Structures\CUY077_14\35L\Sheets\RETAINING WALLS\077_14_35RWR.dgn 12/14/2016 3:10:53 PM DonHelman



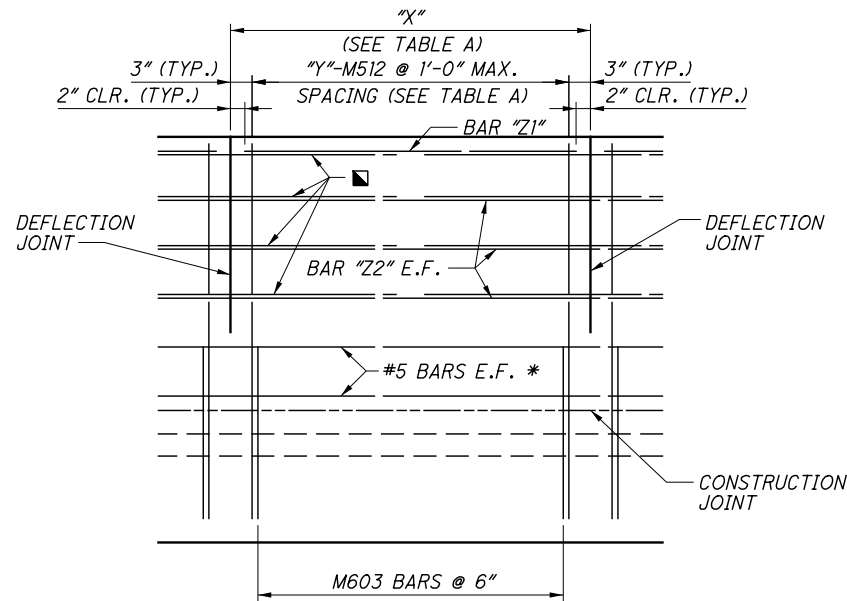
PLAN VIEW
DEFLECTION JOINT DETAIL



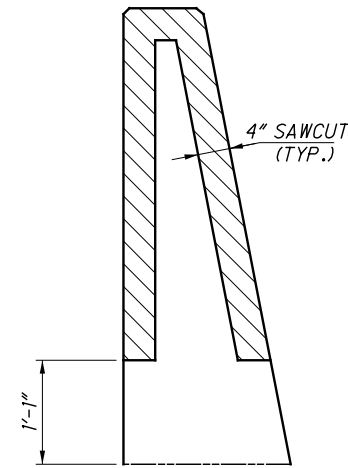
SECTION A-A
GFRP REBAR STIFFENING DETAIL AT DEFLECTION JOINTS (MOMENT SLAB REINFORCING NOT SHOWN FOR CLARITY)



SECTION B-B
PARTIAL PARAPET ELEVATION
(MOMENT SLAB REINFORCING NOT SHOWN FOR CLARITY)



PARTIAL PARAPET ELEVATION
(MOMENT SLAB REINFORCING NOT SHOWN FOR CLARITY)



DETAIL C
SECTION THROUGH SAWCUT

DEFLECTION JOINTS

SAWCUT 1/4" DEEP DEFLECTION JOINTS ALONG THE PERIMETER OF THE PARAPET WHEN THE CONCRETE IS STILL GREEN OR AS SOON AS THE SAW CAN BE OPERATED WITHOUT DAMAGING THE CONCRETE.

AFTER THE CONCRETE CURING PERIOD SPECIFIED IN CMS 511.14 HAS BEEN REACHED, PERFORM 4" SAWCUT THROUGH THE GFRP AS SHOWN IN DETAIL C ON THIS SHEET.

THE CONTRACTOR HAS AN OPTION TO PERFORM FULL DEPTH SAWCUT. HOWEVER, THE SAWCUT SHALL NOT BE LESS THAN 1'-0 1/2" FROM THE TOP OF PAVEMENT.

USE AN EDGE GUIDE, FENCE OR JIG TO ENSURE THAT THE CUT JOINT IS STRAIGHT, TRUE AND ALIGNED ON ALL FACES OF THE PARAPET. THE JOINT WIDTH SHALL BE THE WIDTH OF THE SAW BLADE, A NOMINAL WIDTH OF 1/4".

SEAL THE PERIMETER OF THE DEFLECTION JOINTS TO A MINIMUM DEPTH OF 1" WITH A POLYURETHANE OR POLYMERIC MATERIAL CONFORMING TO ASTM C920, TYPE S. LEAVE THE BOTTOM 1/2" OF BOTH THE INSIDE AND OUTSIDE FACES OF THE PARAPET UNSEALED TO ALLOW ANY WATER WHICH MAY ENTER THE JOINT TO ESCAPE.

AT EACH DEFLECTION JOINT LOCATION, USE GLASS FIBER REINFORCED POLYMER (GFRP) REINFORCEMENT TO MAINTAIN THE RIGIDITY OF THE CAGE ACROSS THE PROPOSED JOINTS AT THOSE LONGITUDINAL BARS AS SHOWN IN SECTIONS A-A & B-B ON THIS SHEET. OTHER NON-FERROUS REINFORCEMENT MAY BE PROPOSED FOR USE, SUBJECT TO APPROVAL BY THE ENGINEER.

LEGEND

■ = 1/2" DIA. GLASS FIBER REINFORCED POLYMER (GFRP) STIFFENING REINFORCEMENT

* 2 SETS OF 4-M502

NOTES

REINFORCING STEEL LIST: SEE SHEET 22/22.

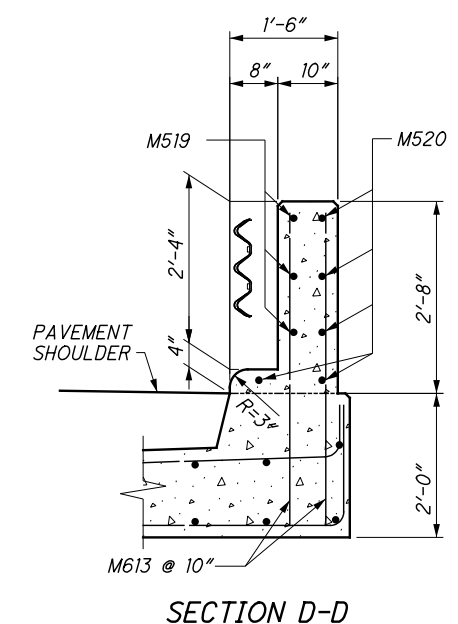
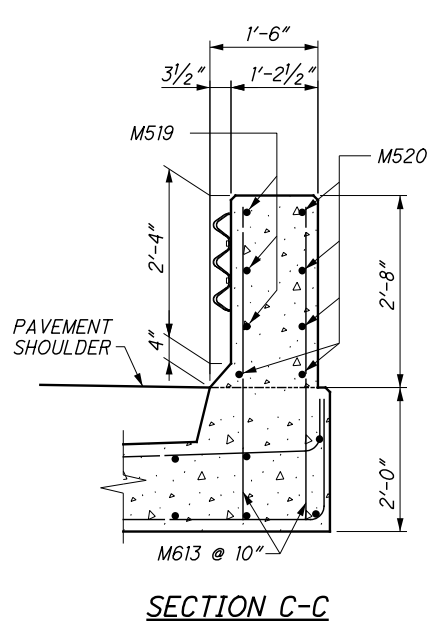
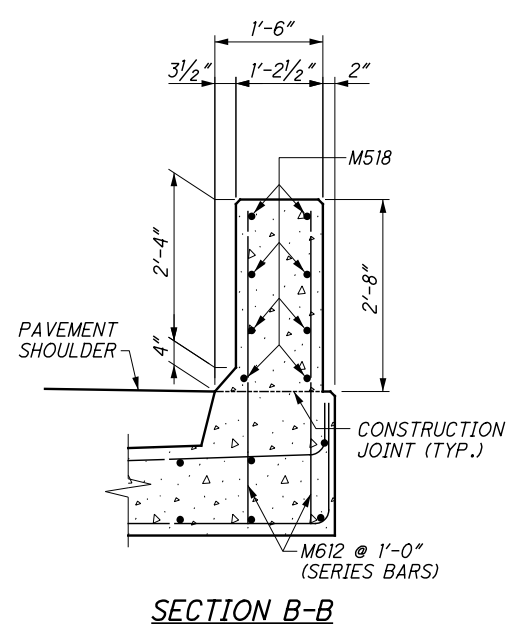
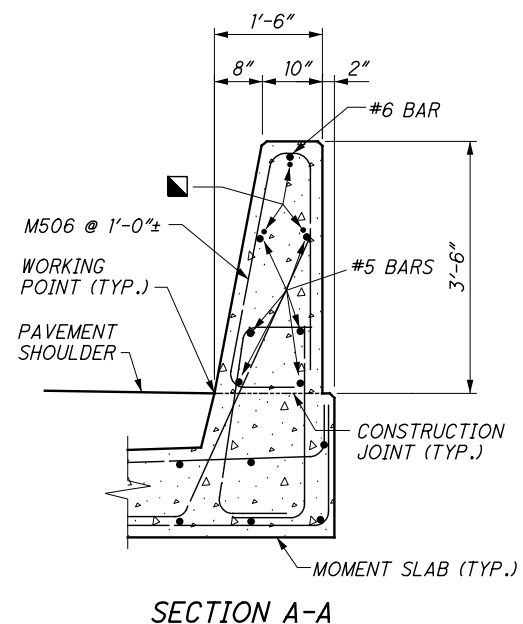
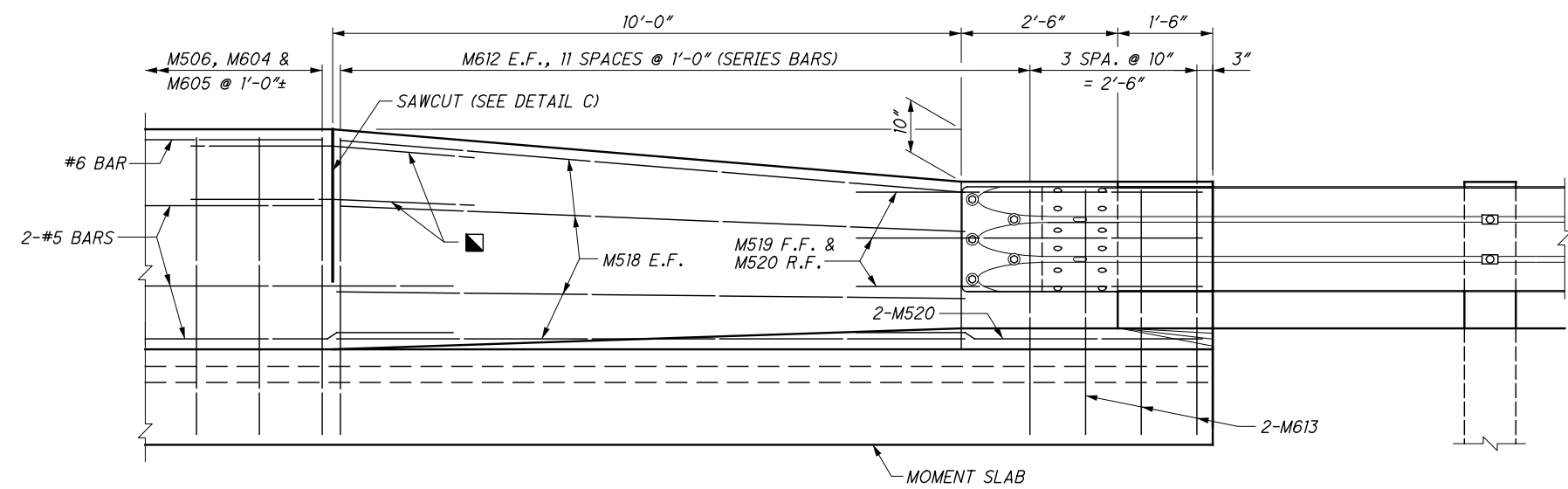
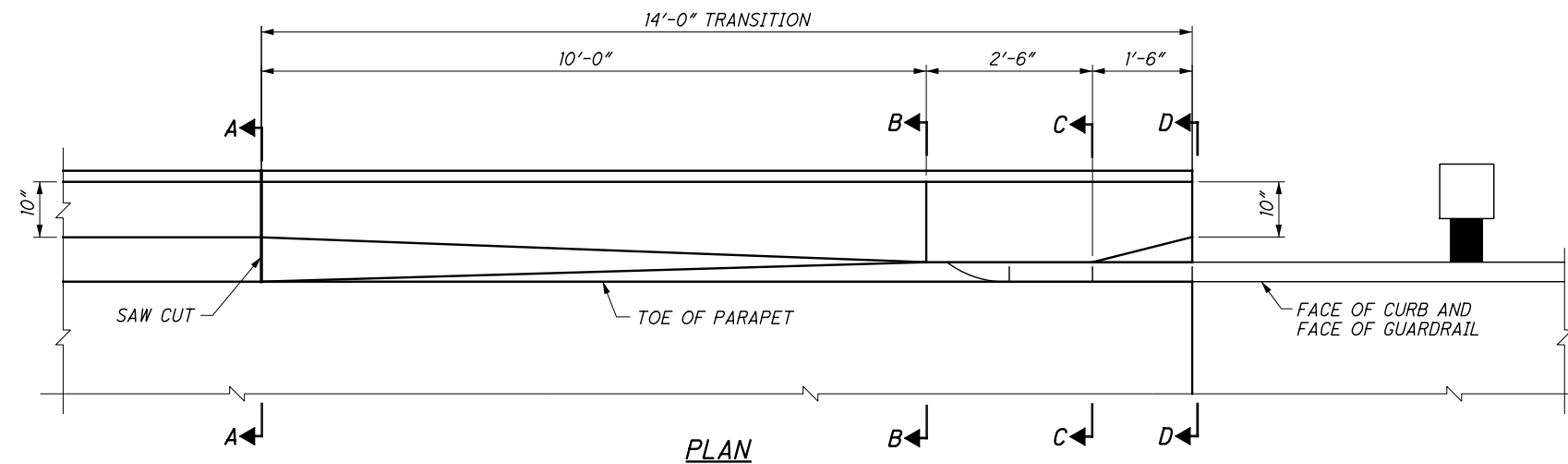
MOMENT SLAB DETAIL: SEE SHEET 17/22.

NOTATIONS: E.F. - EACH FACE
PEJF - PREFORMED EXPANSION JOINT FILLER

ADDITIONAL DETAILS: REFER TO STANDARD DRAWING SBR-2-13.

TABLE A						
NO. OF PANELS SLAB 2	NO. OF PANELS SLAB 3	LENGTH "X"	NO. OF BARS IN EA. PANEL "Y"	NO. OF M603 BARS IN EA. PANEL "Y"	BAR "Z1"	BAR "Z2"
4	4	15'-0"	16	30	M607	M508
1	1	10'-5 7/16"	11	21	M611	M513

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LEGEND
 ■ 1/2" DIA. GLASS FIBER REINFORCED POLYMER (G.F.R.P.) STIFFENING REINFORCEMENTS, 4'-6" LONG, CENTERED ON DEFLECTION JOINT.

NOTES
MOMENT SLAB DETAIL: SEE SHEET 17/22.
BRIDGE TERMINAL ASSEMBLIES: SEE STANDARD CONSTRUCTION DRAWINGS MGS-3.1 AND MGS-3.2.
ADDITIONAL RAILING DETAILS: SEE STANDARD DRAWING SBR-1-13.
NOTATION: F.F. - FRONT FACE
 R.F. - REAR FACE
 E.F. - EACH FACE
DETAIL C: SEE SHEET 18/22.

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RETAINING WALLS														CALCULATED JLS DATE 10/15		CALCULATED JSB DATE 1/16	
MARK	RETAINING WALL				TOTAL	LENGTH	TYPE	A	B	C	D	INC.	WEIGHT (LBS.)				
	1	2	3	4									1	2	3	4	
W501	66	66	66	102	300	5'-3"	1	0'-10"	4'-7"				361	361	361	559	
W502	63			98	161	6'-1"	2	0'-10"	3'-10"	1'-8"			400			622	
W503	22				22	10'-8"	STR						245				
W504	43				43	5'-8"	STR						254				
W505	66	66			132	7'-9"	2	3'-5"	1'-2"	3'-5"			533	533			
W506	22				22	12'-0"	STR						275				
W507	22				22	13'-4"	STR						306				
W508	43				43	7'-0"	STR						314				
W509	43				43	8'-4"	STR						374				
W510	52				52	30'-9"	STR						1,668				
W511			63		63	10'-11"	STR								717		
W512	2				2	28'-3"	STR						59				
W513		22			22	14'-1"	STR							323			
W514		63			63	9'-7"	STR							630			
W515		22			22	15'-2"	STR							348			
W516		63			63	10'-9"	STR							706			
W517		22			22	16'-3"	STR							373			
W518		63	63		126	11'-9"	STR							772	772		
W519		64	66		130	30'-11"	STR							2,064	2,128		
W520		2			2	5'-9"	STR							12			
W521		2			2	22'-9"	STR							47			
W522			22		22	15'-4"	STR								352		
W523			22		22	15'-10"	STR								363		
W524			63		63	11'-4"	STR								745		
W525			22		22	16'-2"	STR								371		
W526			66	60	126	5'-11"	2	2'-6"	1'-2"	2'-6"					407	370	
W527				20	20	15'-6"	STR									323	
W528				58	58	10'-6"	STR									635	
W529				20	20	14'-9"	STR									308	
W530				58	58	9'-9"	STR									590	
W531				62	62	29'-1"	STR									1,881	
W532				2	2	19'-8"	STR									41	
W533				58	58	9'-0"	STR									544	
W534				21	21	11'-2"	STR									245	
W535				42	42	6'-7"	2	2'-10"	1'-2"	2'-10"						288	
W536				41	41	7'-3"	STR									310	
W537				30	30	29'-8"	STR									928	
W538				2	2	25'-8"	STR									54	
W539				21	21	10'-4"	STR									226	
W540				41	41	6'-6"	STR									278	
W541				20	20	13'-11"	STR									290	
W601	125				125	15'-0"	2	1'-7"	12'-2"	1'-7"				2,816			
W602	114				114	33'-5"	STR							5,722			
W603	9				9	30'-9"	STR							416			
W604		188	188	177	553	16'-6"	2	1'-7"	13'-8"	1'-7"				4,659	4,659	4,387	
W605		168	168		336	33'-7"	STR							8,474	8,474		
W606		9			9	30'-11"	STR							418			
W607				180	180	32'-11"	STR									8,899	
W608				56	56	31'-7"	STR									2,657	
W609				8	8	29'-4"	STR									352	
W610				14	14	8'-8"	8	3'-6"	2'-0"	3'-6"						182	
W611				18	18	9'-8"	37	3'-6"	2'-0"	3'-6"	2'-0"					261	
W612				9	9	29'-1"	STR									393	
W613				8	8	14'-6"	30	3'-6"	2'-5"	3'-8"	2'-0"					174	
W614				5	5	20'-4"	2	3'-6"	13'-8"	3'-6"						153	
W615				150	150	12'-6"	2	1'-7"	9'-8"	1'-7"						2,816	
W616				2	2	13'-8"	2	2'-2"	9'-8"	2'-2"						41	
W617				2	2	14'-8"	2	2'-8"	9'-8"	2'-8"						44	
W618				2	2	15'-6"	2	3'-1"	9'-8"	3'-1"						47	
W619				6	6	29'-8"	STR									267	
SUB-TOTAL													13,743	19,720	19,349	29,165	

RETAINING WALLS (CONTINUED)														CALCULATED JLS DATE 10/15		CALCULATED JSB DATE 1/16	
MARK	RETAINING WALL				TOTAL	LENGTH	TYPE	A	B	C	D	INC.	WEIGHT (LBS.)				
	1	2	3	4									1	2	3	4	
W701	125				125	14'-11"	2	1'-7"	12'-2"	1'-7"					3,811		
W702		188	188	177	553	16'-5"	2	1'-7"	13'-8"	1'-7"					6,308	6,308	5,939
W703				5	5	20'-5"	2	3'-7"	13'-8"	3'-7"							209
W704					82	12'-0"	1	1'-8"	10'-6"								2,011
W801	129				129	13'-0"	1	1'-8"	11'-6"						4,478		6,040
W802		189	189		378	10'-4"	1	1'-4"	9'-3"						5,215	5,215	
SUB-TOTAL													8,289	11,523	11,523	14,199	
TOTAL													22,032	31,243	30,872	43,364	

RETAINING WALL REINFORCING STEEL LIST - 1

CUI-77-14.35
PID No. 13567

REVIEWED DATE 11/15/16
DAP

DRAWN JLS
BLN CHECKED REVISOR
DLR

RICHLAND ENGINEERING LIMITED
29 NORTH PARK STREET
MANSFIELD, OHIO 44902

NOTES
ADDITIONAL NOTES: SEE SHEET 22/22.
BENDING DIAGRAM: SEE SHEET 22/22.

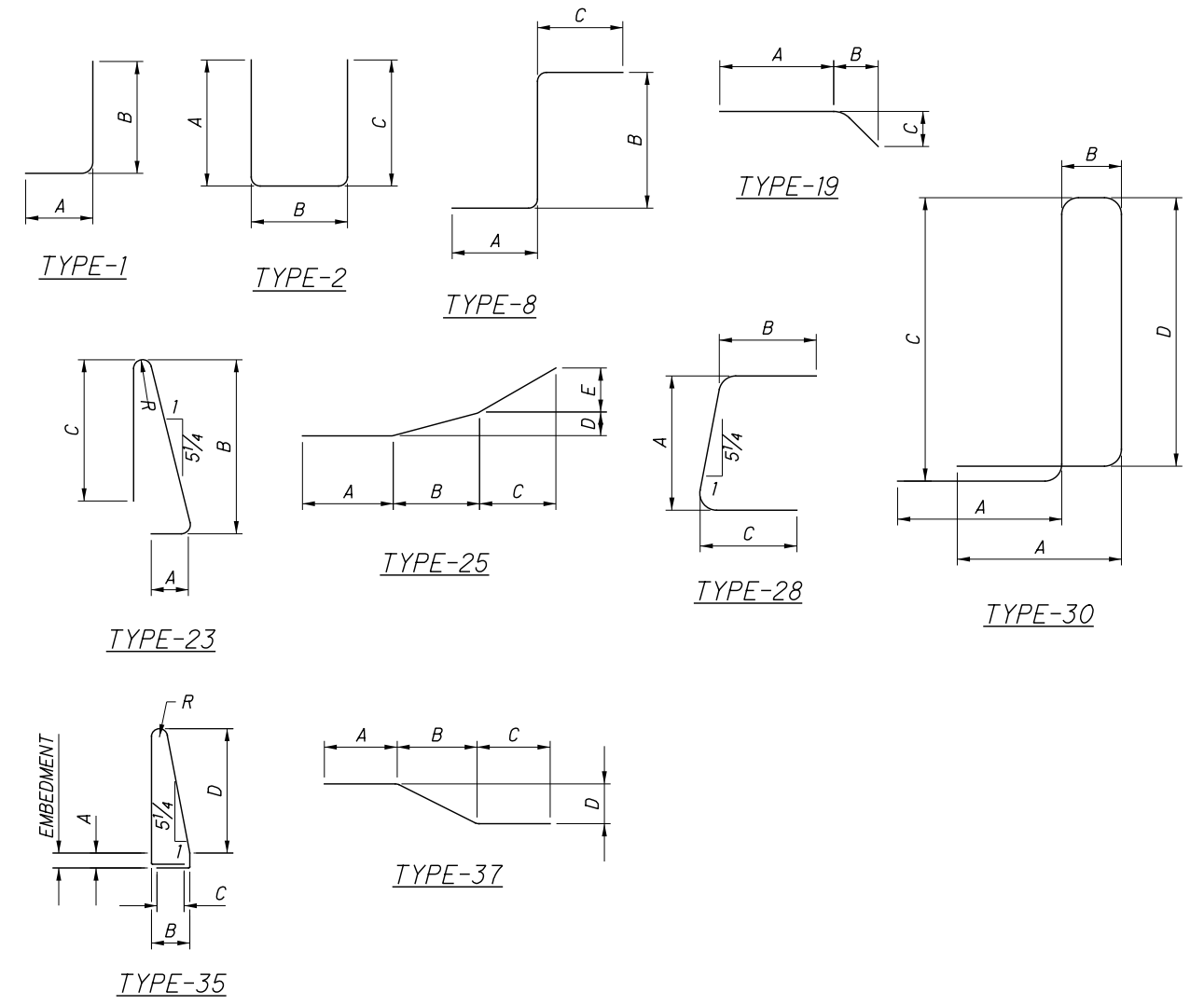
\\REL8\Current\2005\105040-5\ProjectData\CUY\077_143567\Structures\Design\CUY077_143567\Sheets\RETAINING WALLS\13567.rid.dgn 12/14/2016 3:12:14 PM DonHelman

MOMENT SLABS

CALCULATED JLS DATE 10/15
 CHECKED JSB DATE 1/16

MARK	MOMENT SLAB						TOTAL	LENGTH	TYPE	A	B	C	D	E	R	INC.	WEIGHT (LBS.)
	1	2	3	4	5	6											
M501	40						40	33'-0"	STR								1377
M502		48	48				96	36'-6"	STR								3655
M503				80			80	31'-9"	STR								2649
M504					20		20	35'-0"	STR								730
M505						20	20	31'-1"	STR								648
M506	52			111	24	20	207	7'-4"	23	0'-11"	3'-3"	3'-0"			0'-3"		1583
M507	8						8	11'-11"	STR								99
M508		24	24	12			60	14'-8"	STR								918
M509				2			2	13'-11"	STR								29
M510					4		4	10'-4"	STR								43
M511						4	4	8'-4"	STR								35
M512		75	75				150	15'-3"	35	1'-9"	1'-5"	1'-0"	4'-7"		0'-3"		2386
M513		6	6				12	10'-1"	STR								126
M514	8						8	27'-7"	STR								230
M515				12			12	37'-9"	STR								472
M516					4		4	24'-2"	STR								101
M517						4	4	20'-4"	STR								85
M518	8			8	8	8	32	10'-0"	STR								334
M519	3			3	3	3	12	5'-8"	25	1'-10"	2'-5"	1'-4"	0'-1 1/2"	0'-5"			71
M520	5			5	5	5	20	5'-8"	STR								118
<hr/>																	
M601	64	71	71	119	36	32	393	10'-3"	8	0'-10"	9'-2"	0'-7"					6050
M602	64	71	71	119	36	32	393	11'-0"	2	1'-7"	9'-2"	0'-7"					6493
M603	100	141	141	209	44	36	671	4'-11"	19	4'-0"	0'-5"	0'-11"					4955
M604	52			111	24	20	207	4'-8"	28	2'-9"	1'-1"	1'-1"					1451
M605	52			111	24	20	207	3'-1"	1	1'-0"	2'-3"						959
M606	4						4	11'-11"	STR								72
M607		4	4	6			14	14'-8"	STR								308
M608				1			1	13'-11"	STR								21
M609					2		2	10'-4"	STR								31
M610						2	2	8'-4"	STR								25
M611		1	1				2	10'-1"	STR								30
M612	2 SR OF 12			2 SR OF 12	2 SR OF 12	2 SR OF 12	8 SR OF 12	4'-2"								0'-1"	667
M613	6			6	6	6	24	4'-3"	STR								153
<hr/>																	
TOTAL																36,904 *	

* WEIGHT FOR INFORMATIONAL PURPOSES ONLY.

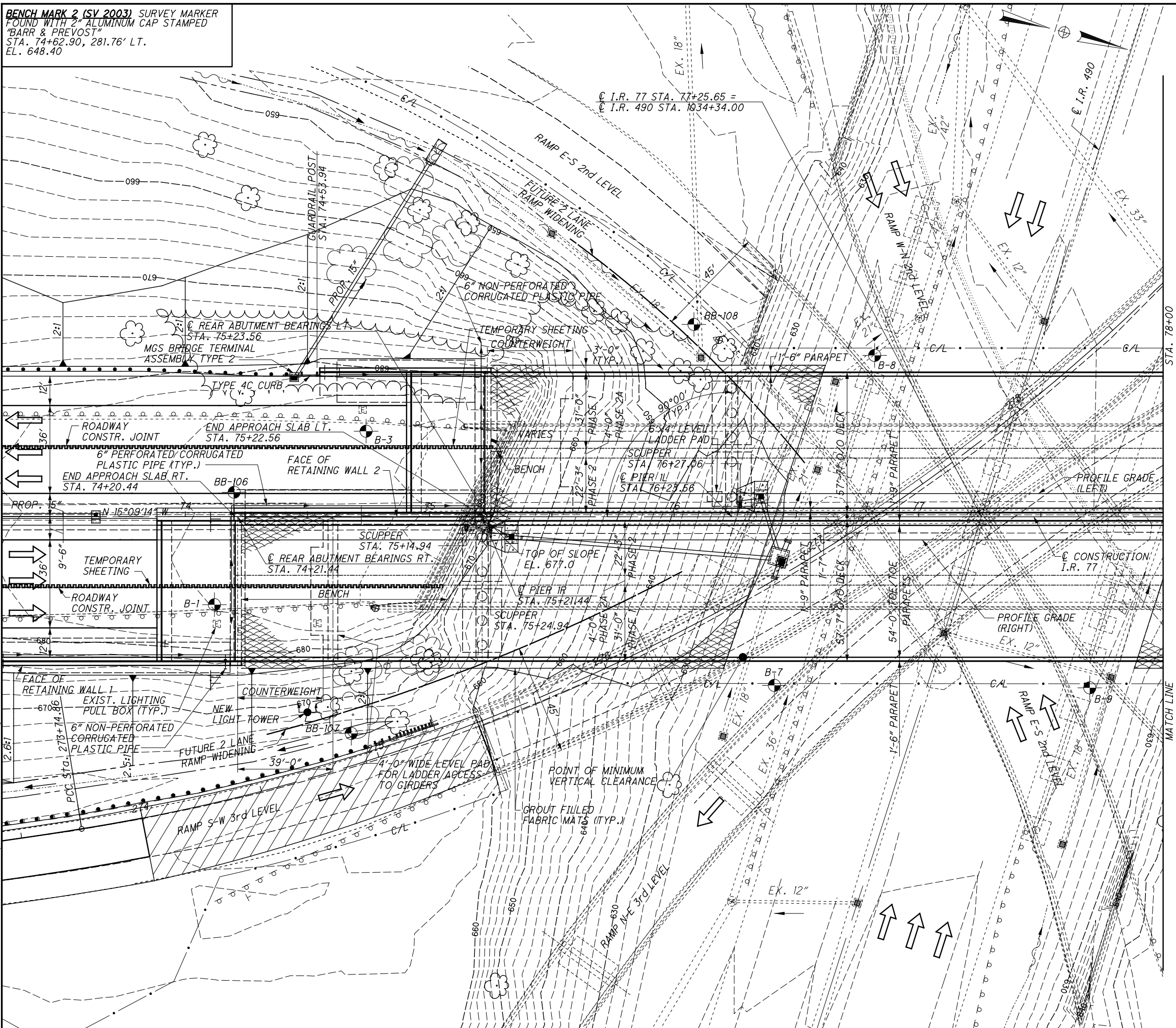


NOTES

BAR SIZE IS INDICATED IN THE BAR MARK. THE FIRST LETTER IDENTIFIES BAR LOCATION, THE NEXT DIGIT INDICATES THE BAR SIZE DESIGNATION, THE REMAINING DIGITS STATE THE SEQUENCE NUMBER.
 EXAMPLE: W511
 W = LOCATION OF THE BAR IN RETAINING WALL
 5 = BAR SIZE DESIGNATION
 11 = SEQUENCE NUMBER
 BAR DIMENSIONS SHOWN ARE OUT TO OUT UNLESS OTHERWISE INDICATED. R INDICATES INSIDE RADIUS, UNLESS OTHERWISE NOTED.
 ALL REINFORCING STEEL TO BE EPOXY COATED.

BENCH MARK 2 (SV 2003) SURVEY MARKER
 FOUND WITH 2" ALUMINUM CAP STAMPED
 "BARR & PREVOST"
 STA. 74+62.90, 281.76' LT.
 EL. 648.40

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NOTES

EARTHWORK LIMITS SHOWN ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS SECTIONS.

MINIMUM VERTICAL CLEARANCE:
 SEE SHEETS 3/84 AND 4/84.

TEMPORARY SHORING DETAILS:
 SEE SHEETS 17/84 THROUGH 23/84.

LEGEND

- TEMPORARY SHEETING
- PLANING AND RESURFACING
- ITEM 601 SLOPE PROTECTION, MISC.: GROUT FILLED FABRIC MATS

EXISTING STRUCTURE

TYPE: CONTINUOUS WELDED PLATE GIRDER WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE.

SPANS: 115'-2"±; 190'-0"±; 115'-2"± c/c BEARINGS

ROADWAY: DUAL ROADWAYS - EACH 33'-0"± F/F CURBS

LOADING: CF 2000 (57)

SKEW: 26°47'21"±

WEARING SURFACE: CONCRETE OVERLAY

APPROACH SLABS: 25'-0"± LONG

ALIGNMENT: TANGENT

YEAR BUILT: 1964

STRUCTURE FILE NO.: 1806696

DISPOSITION: COMPLETE REMOVAL

PROPOSED STRUCTURE

TYPE: CONTINUOUS STEEL HYBRID AT09 GRADE METALLIZED 50W/HPS 70W GIRDER COMPOSITE WITH REINFORCED CONCRETE DECK ON REINFORCED CONCRETE PIER AND SEMI-INTEGRAL ABUTMENTS.

SPANS: 100'-0"; 310'-0"; 100'-0" c/c BEARINGS

ROADWAY: 54'-0" TOE TO TOE OF DEFLECTOR PARAPET

LOADING: HL-93, FUTURE WEARING SURFACE = 60 PSF.

SKEW: 0°00'00"

WEARING SURFACE: MONOLITHIC CONCRETE

APPROACH SLABS: AS-1-81 (30'-0" LONG)

ALIGNMENT: TANGENT

LATITUDE: 41°28'50" N

LONGITUDE: 81°39'45" W

CROWN RATE: 0.016

CURRENT YEAR AVERAGE DAILY TRAFFIC: 74100 (2018)

DESIGN YEAR AVERAGE DAILY TRAFFIC: 84210 (2038)

DESIGN YEAR AVERAGE DAILY TRUCK TRAFFIC: 6315 (2038)

FOUNDATION INVESTIGATION LEGEND

- INDICATES BORING LOCATION

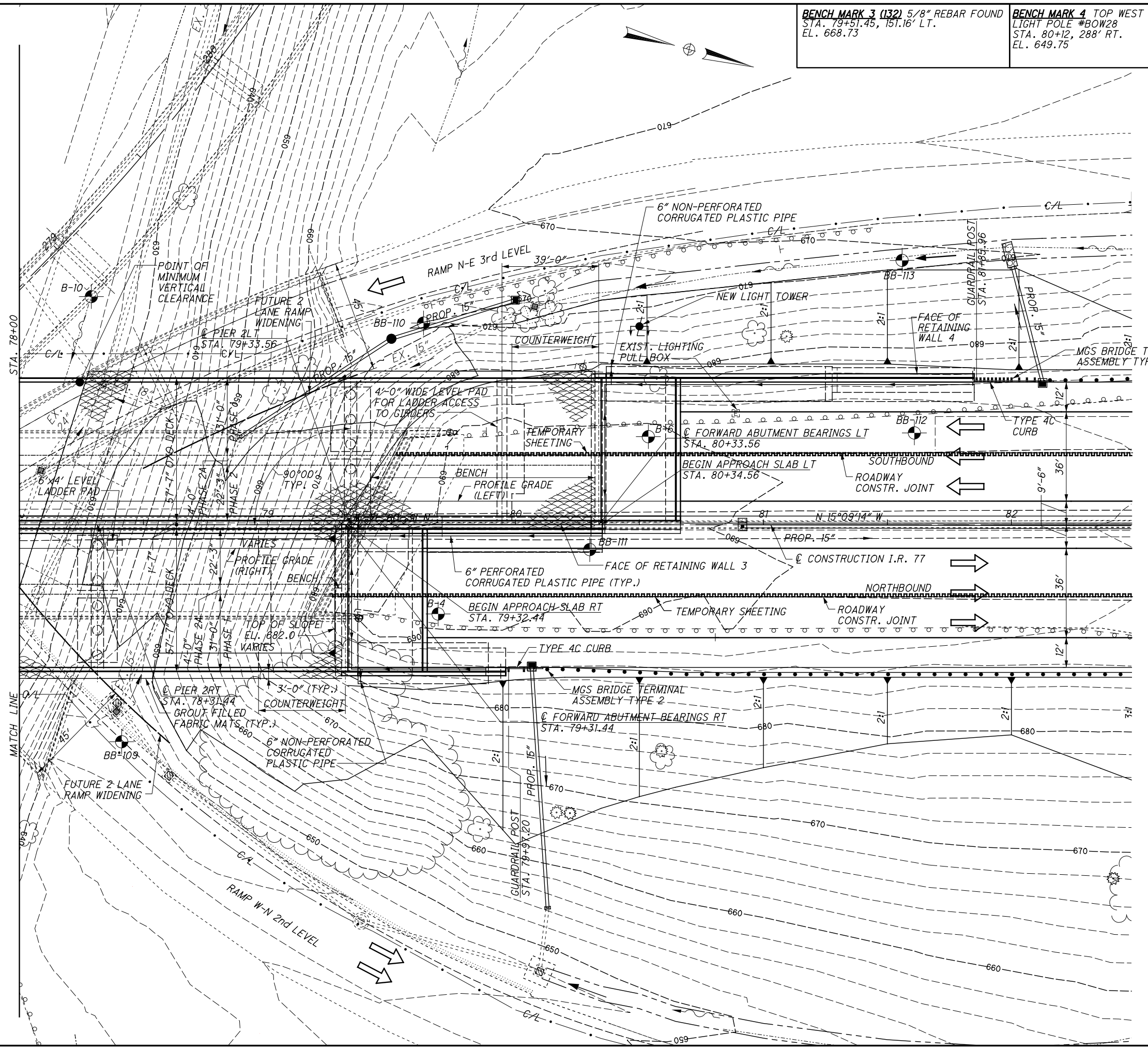
RICHLAND ENGINEERING LIMITED 29 NORTH PARK STREET MANSFIELD, OHIO 44902	DATE: 11/15/16 REVIEWED: DAP STRUCTURE FILE NUMBER: 1806688 (L) DRAWN: JLS CHECKED: BLN
	CUYAHOGA COUNTY STA. 74+20.44 STA. 79+32.44 (RIGHT)
CUYAHOGA COUNTY STA. 75+22.56 STA. 80+34.56 (LEFT)	CUYAHOGA COUNTY STA. 77-1433 L & R OVER I.R. 490 AND RAMPS
CUY-77-14.35 PID No. 13567	1/84 282 365

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BENCH MARK 3 (132) 5/8" REBAR FOUND
 STA. 79+51.45, 151.16' LT.
 EL. 668.73

BENCH MARK 4 TOP WEST BOLT ODOT
 LIGHT POLE #BOW28
 STA. 80+12, 288' RT.
 EL. 649.75

BENCH MARK 5 (SV 2000) SURVEY MARKER SET
 WITH CAP STAMPED "RICHLAND ENG. TRAVERSE PT."
 STA. 82+88.39, 56.45' LT.
 EL. 687.04



LEGEND

~~~~~ - TEMPORARY SHEETING

▨ - ITEM 601 SLOPE PROTECTION, MISC.: GROUT FILLED FABRIC MATS

**NOTES**

ADDITIONAL NOTES: SEE SHEET 1/84.

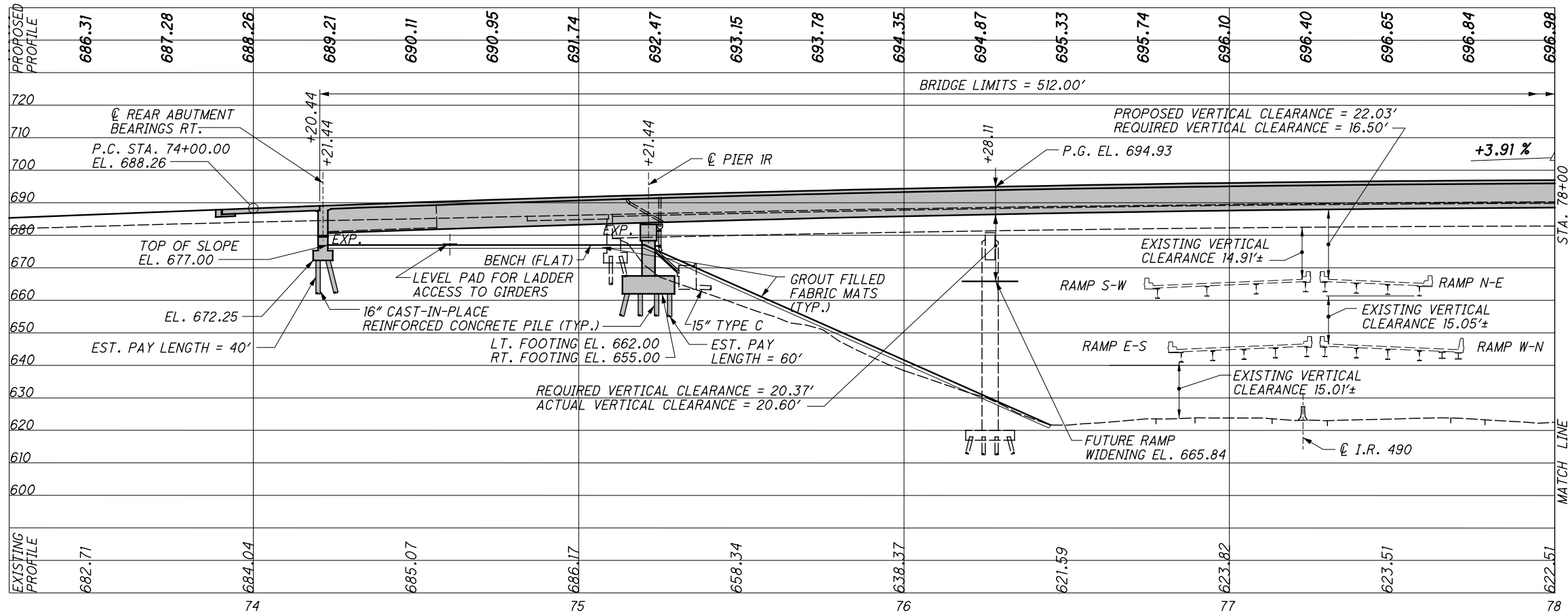
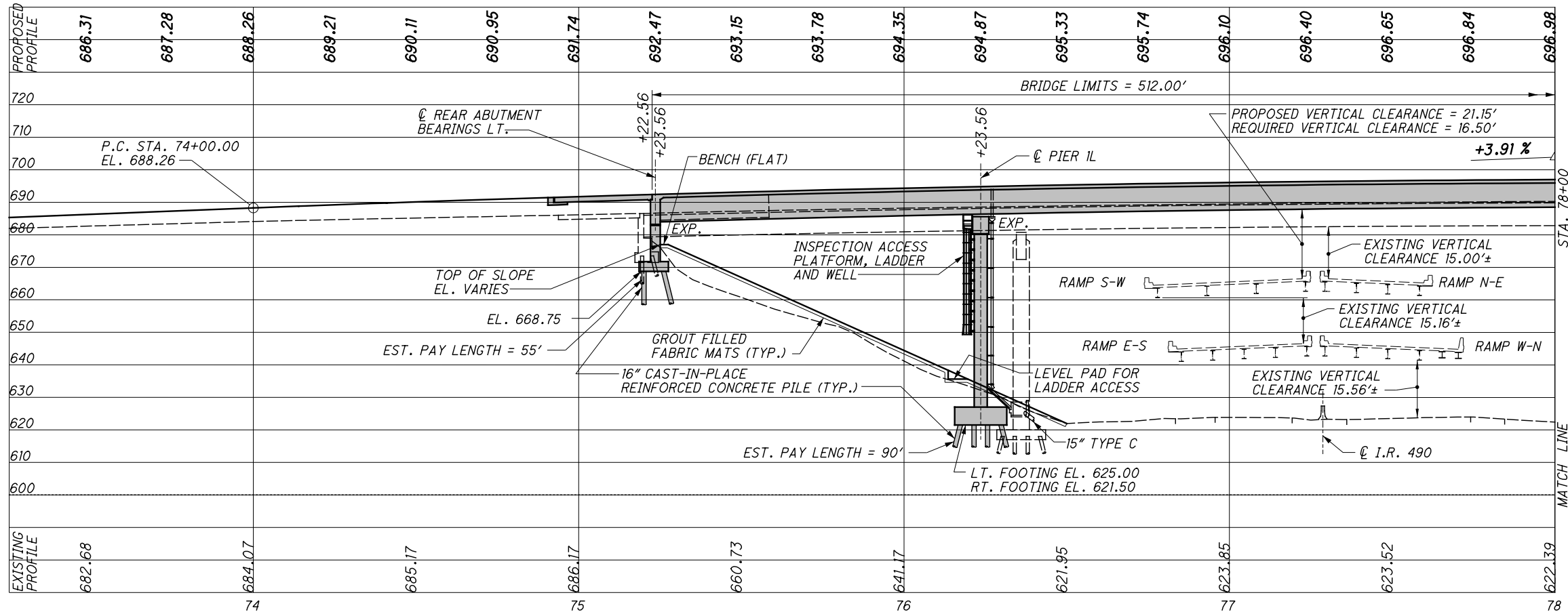
**FOUNDATION INVESTIGATION LEGEND**

● - INDICATES BORING LOCATION

|                                                                                          |                       |                   |
|------------------------------------------------------------------------------------------|-----------------------|-------------------|
| <b>RICHLAND ENGINEERING LIMITED</b><br><br>29 NORTH PARK STREET<br>MANSFIELD, OHIO 44902 | DATE                  | 11/15/16          |
|                                                                                          | REVIEWED              | DAP               |
|                                                                                          | DRAWN                 | JLS               |
|                                                                                          | DESIGNED              | ALP               |
| <b>CUYAHOGA COUNTY</b><br>STA. 74+20.44<br>STA. 79+32.44<br>(RIGHT)                      | STRUCTURE FILE NUMBER | 1806688 (L)       |
|                                                                                          | CHECKED               | BLN               |
|                                                                                          | REVISIONS             |                   |
|                                                                                          | DATE                  |                   |
| <b>CUYAHOGA COUNTY</b><br>STA. 75+22.56<br>STA. 80+34.56<br>(LEFT)                       | BRIDGE NO.            | CUY-77-1433 L & R |
|                                                                                          | OVER I.R.             | 490 AND RAMP      |
|                                                                                          | SITE PLAN - 2         |                   |
|                                                                                          | BRIDGE NO.            | CUY-77-1433 L & R |
| <b>CUY-77-14.35</b><br>PID No. 13567                                                     | DATE                  | 11/15/16          |
|                                                                                          | REVISIONS             |                   |
| 2 / 84                                                                                   |                       |                   |
|                                                                                          |                       | 283 / 365         |



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**RICHLAND ENGINEERING LIMITED**  
29 NORTH PARK STREET  
MANSFIELD, OHIO 44902

DATE: 11/15/16  
REVIEWED: DAP  
DRAWN: JLS  
DESIGNED: ALP  
CHECKED: BLN

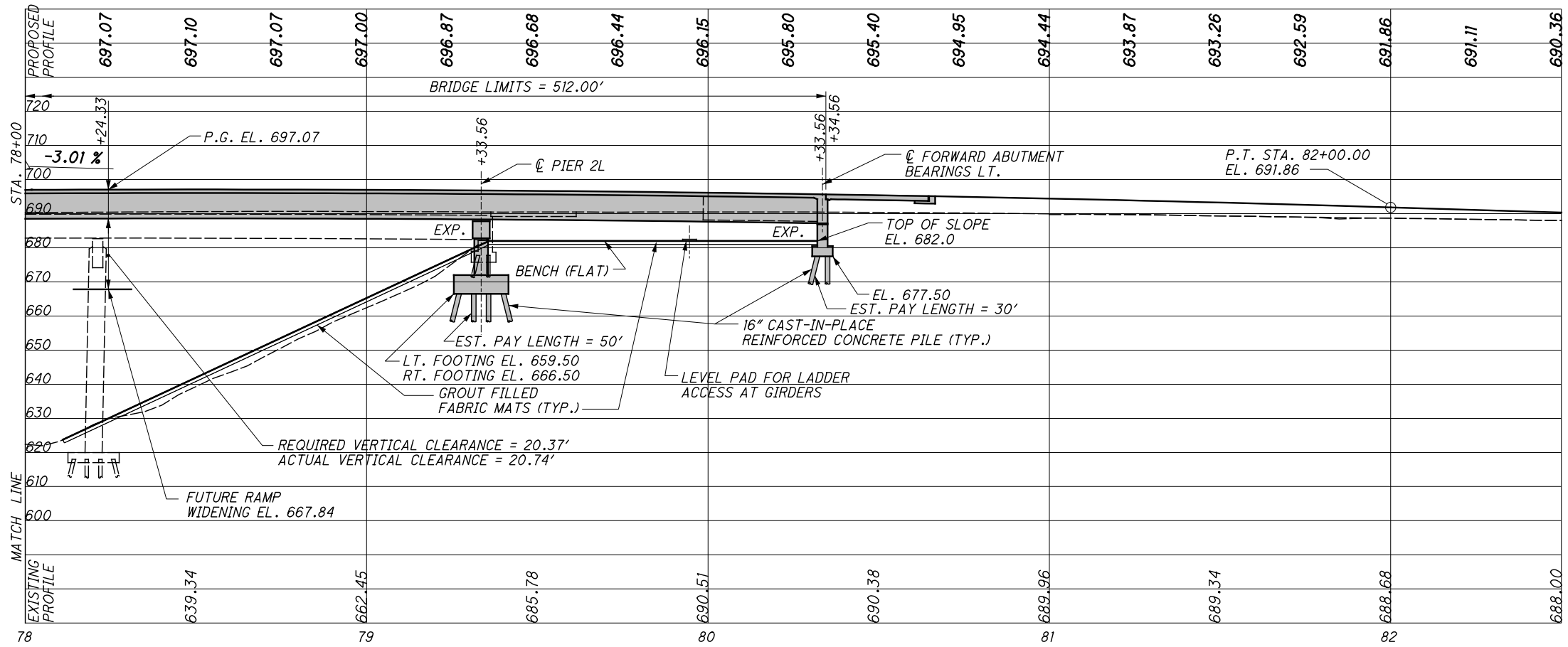
**SITE PLAN - 3**  
BRIDGE NO. CUY-77-1433 L & R  
OVER I.R. 490 AND RAMPS

**CUY-77-14.35**  
PID No. 13567

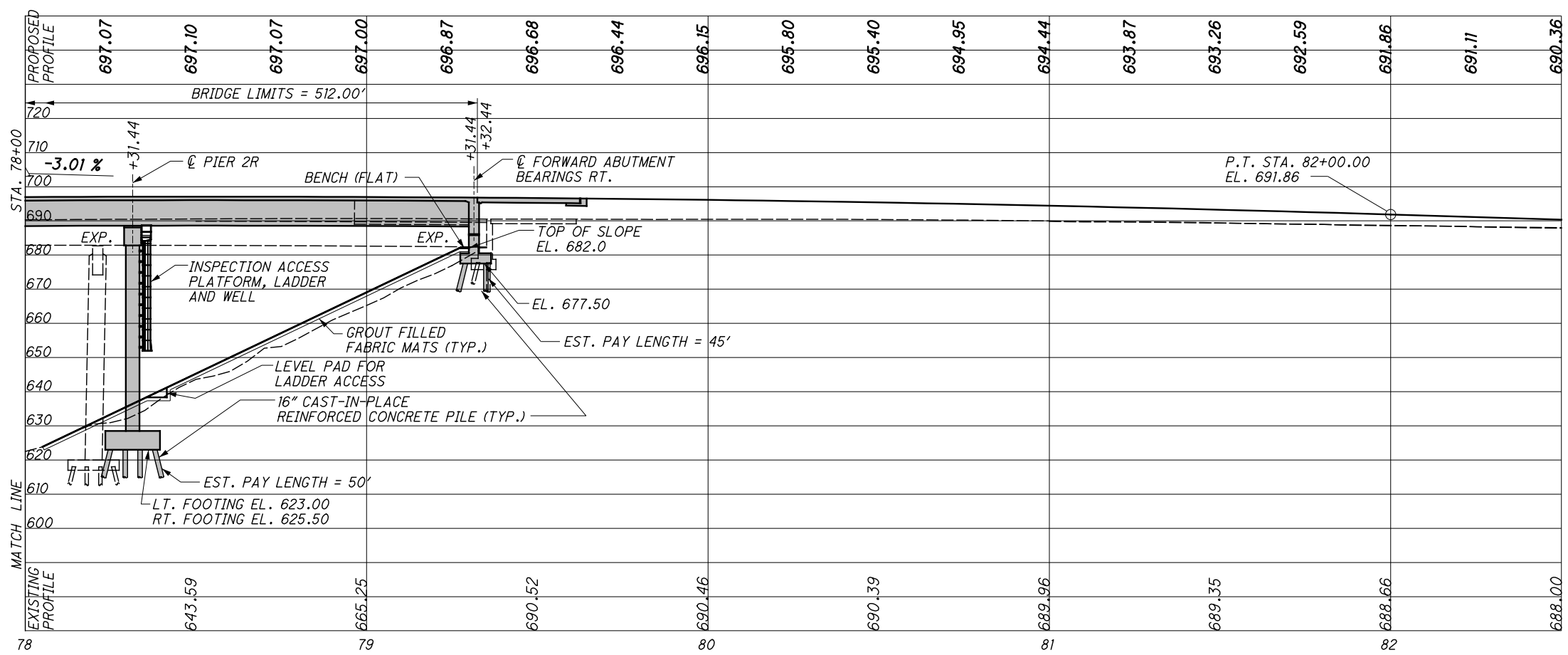
3 / 84

284  
365

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PROFILE ALONG  $\phi$  CONSTRUCTION - LEFT






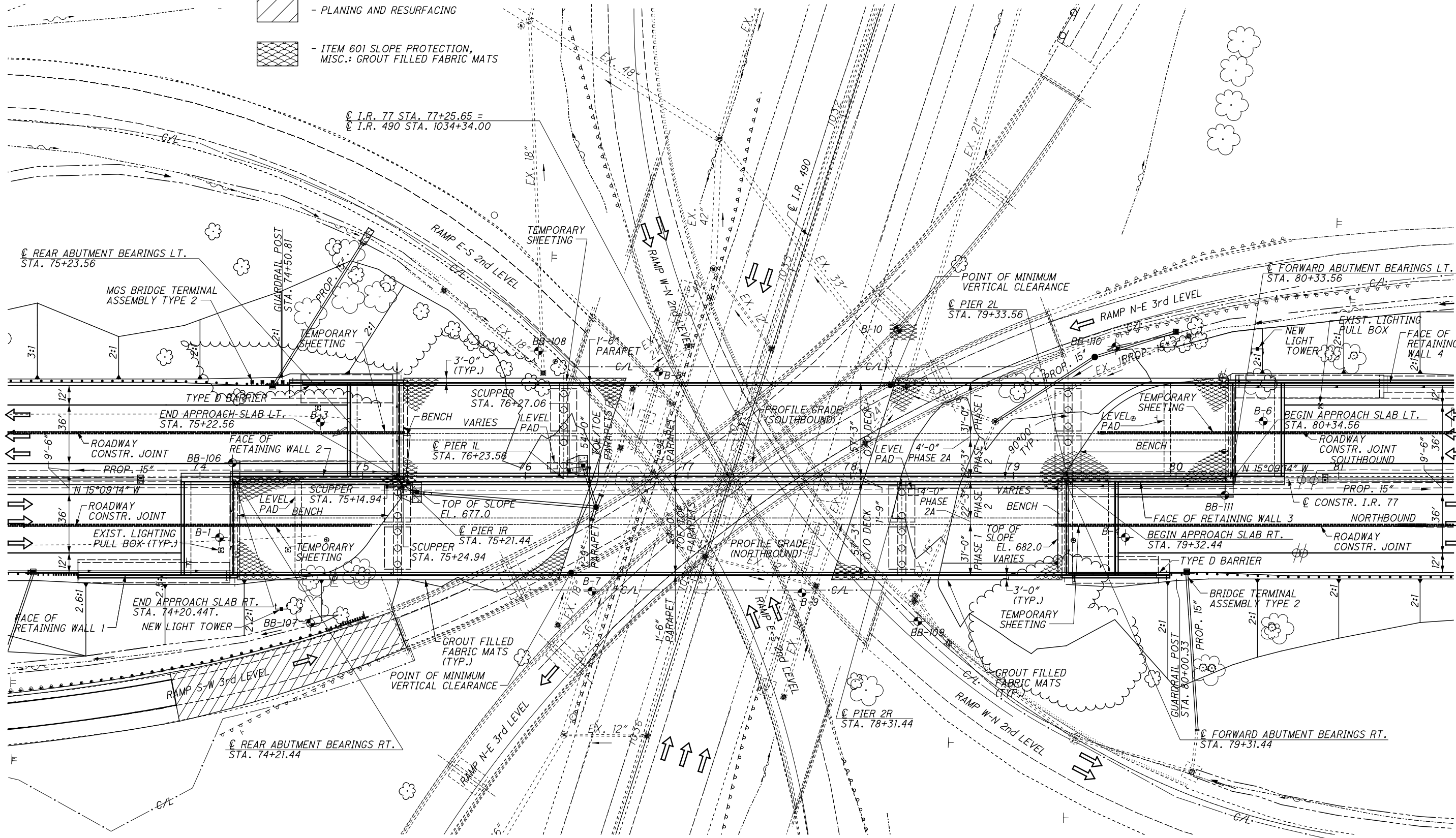
PROFILE ALONG  $\phi$  CONSTRUCTION - RIGHT

P.V.I. Sta. 78+00.00  
Elev. = 703.90  
800' V.C.

P.V.I. Sta. 78+00.00  
Elev. = 703.90  
800' V.C.

**LEGEND**

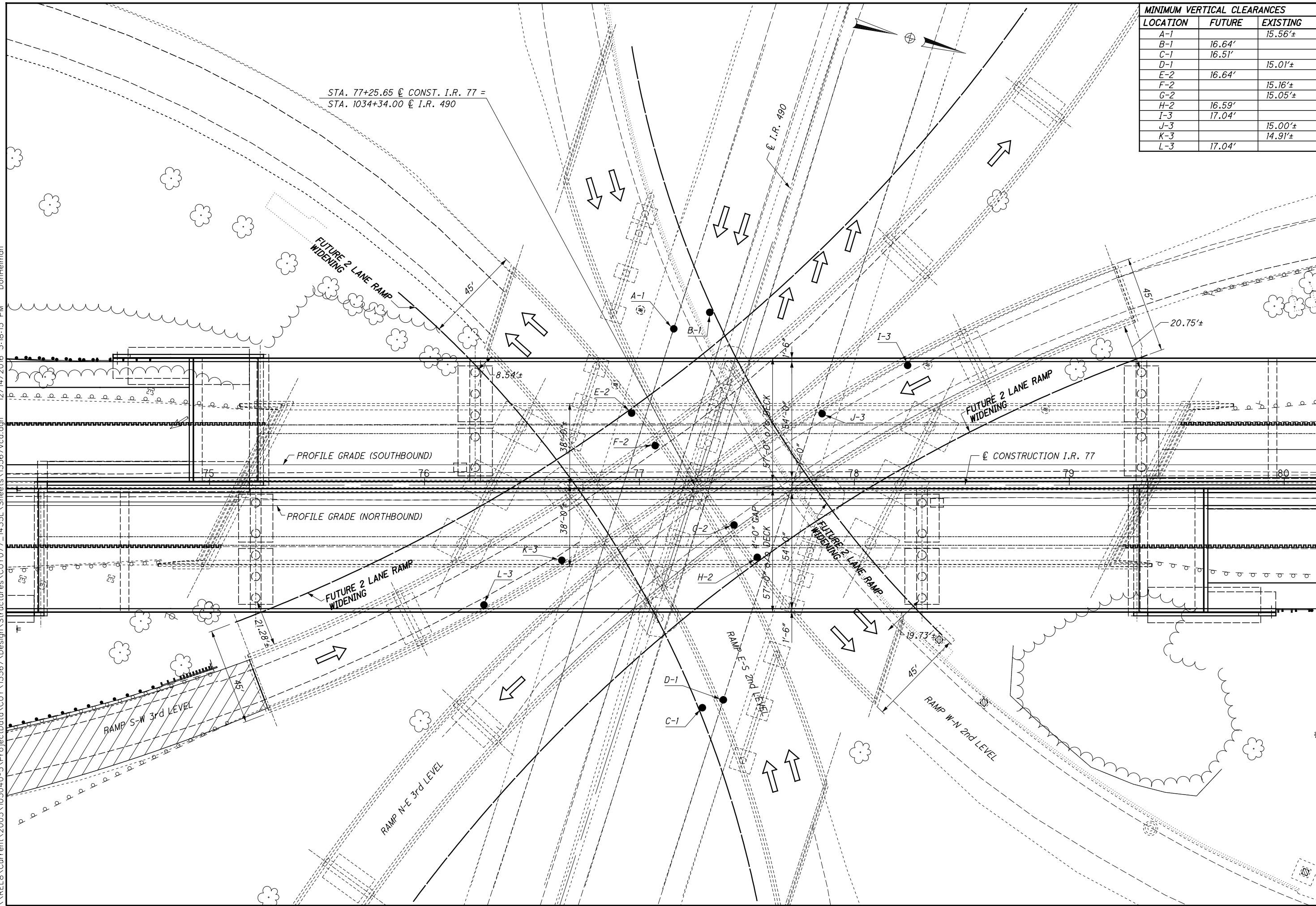
-  - TEMPORARY SHEETING
-  - PLANING AND RESURFACING
-  - ITEM 601 SLOPE PROTECTION, MISC.: GROUT FILLED FABRIC MATS



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|                                                                                |                                                                                      |
|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| RICHLAND ENGINEERING LIMITED<br>29 NORTH PARK STREET<br>MANSFIELD, OHIO 44902  |                                                                                      |
| DRAWN: SCB<br>CHECKED: BLN                                                     | DATE: 11/15/16<br>REVIEWED: DAP<br>STRUCTURE FILE NUMBER: 1806688 (L)<br>1806718 (R) |
| <b>GENERAL PLAN</b><br>BRIDGE NO. CUY-77-1433 L & R<br>OVER I.R. 490 AND RAMPS |                                                                                      |
| <b>CUY-77-14.35</b><br>PID No. 13567                                           |                                                                                      |
| 5 / 84                                                                         |                                                                                      |
| (286)<br>365                                                                   |                                                                                      |

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STA. 77+25.65 @ CONST. I.R. 77 =  
STA. 1034+34.00 @ I.R. 490

| MINIMUM VERTICAL CLEARANCES |        |          |
|-----------------------------|--------|----------|
| LOCATION                    | FUTURE | EXISTING |
| A-1                         |        | 15.56'±  |
| B-1                         | 16.64' |          |
| C-1                         | 16.51' |          |
| D-1                         |        | 15.01'±  |
| E-2                         | 16.64' |          |
| F-2                         |        | 15.16'±  |
| G-2                         |        | 15.05'±  |
| H-2                         | 16.59' |          |
| I-3                         | 17.04' |          |
| J-3                         |        | 15.00'±  |
| K-3                         |        | 14.91'±  |
| L-3                         | 17.04' |          |

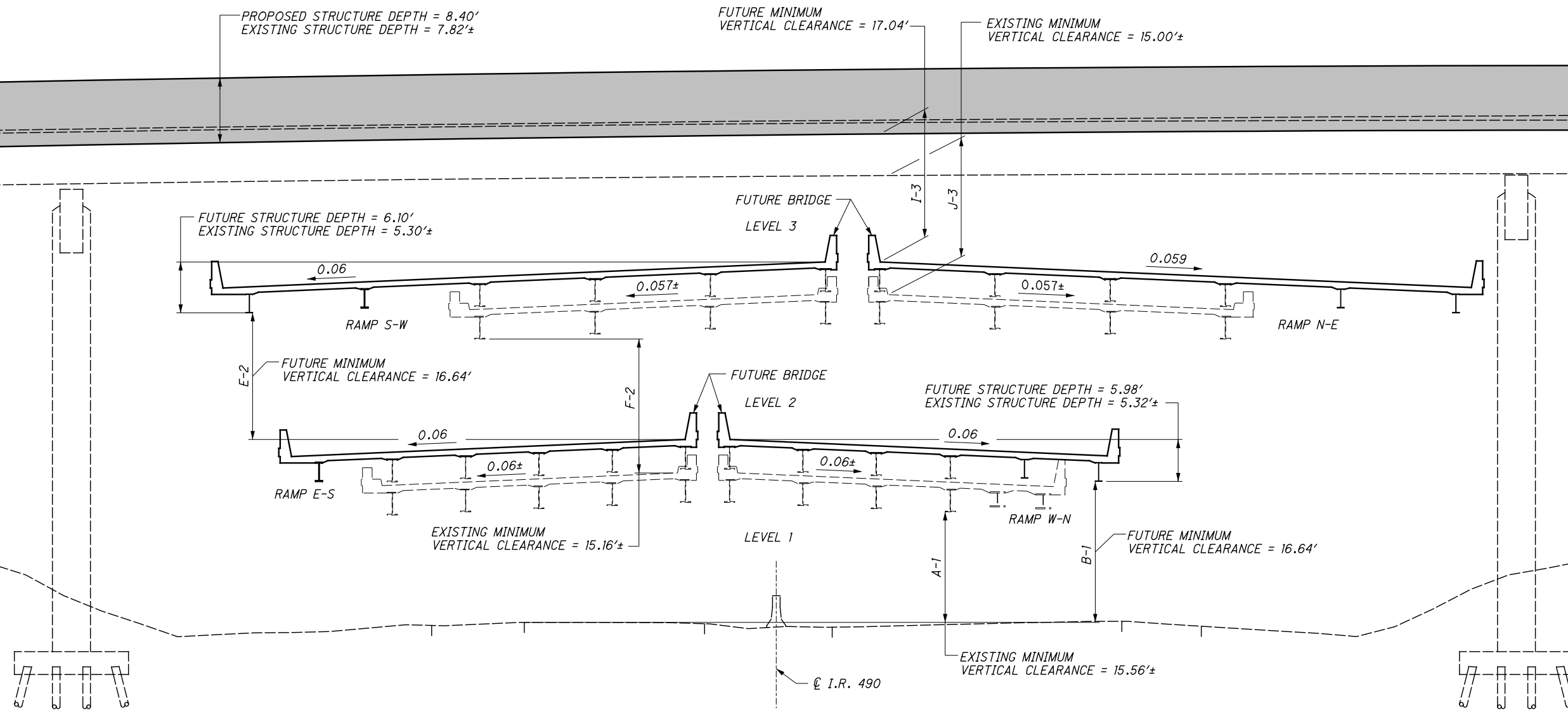
RICHLAND ENGINEERING LIMITED  
29 NORTH PARK STREET  
MANFIELD, OHIO 44902

DATE 11/15/16  
REVIEWED DAP  
DRAWN JLS  
DESIGNED ALP  
CHECKED BLN

VERTICAL CLEARANCE LOCATIONS  
BRIDGE NO. CUY-77-1433 L & R  
OVER I.R. 490 AND RAMPS

CUY-77-14.35  
PID No. 13567  
6/84  
287  
365

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PROFILE ALONG PROFILE GRADE - SOUTHBOUND

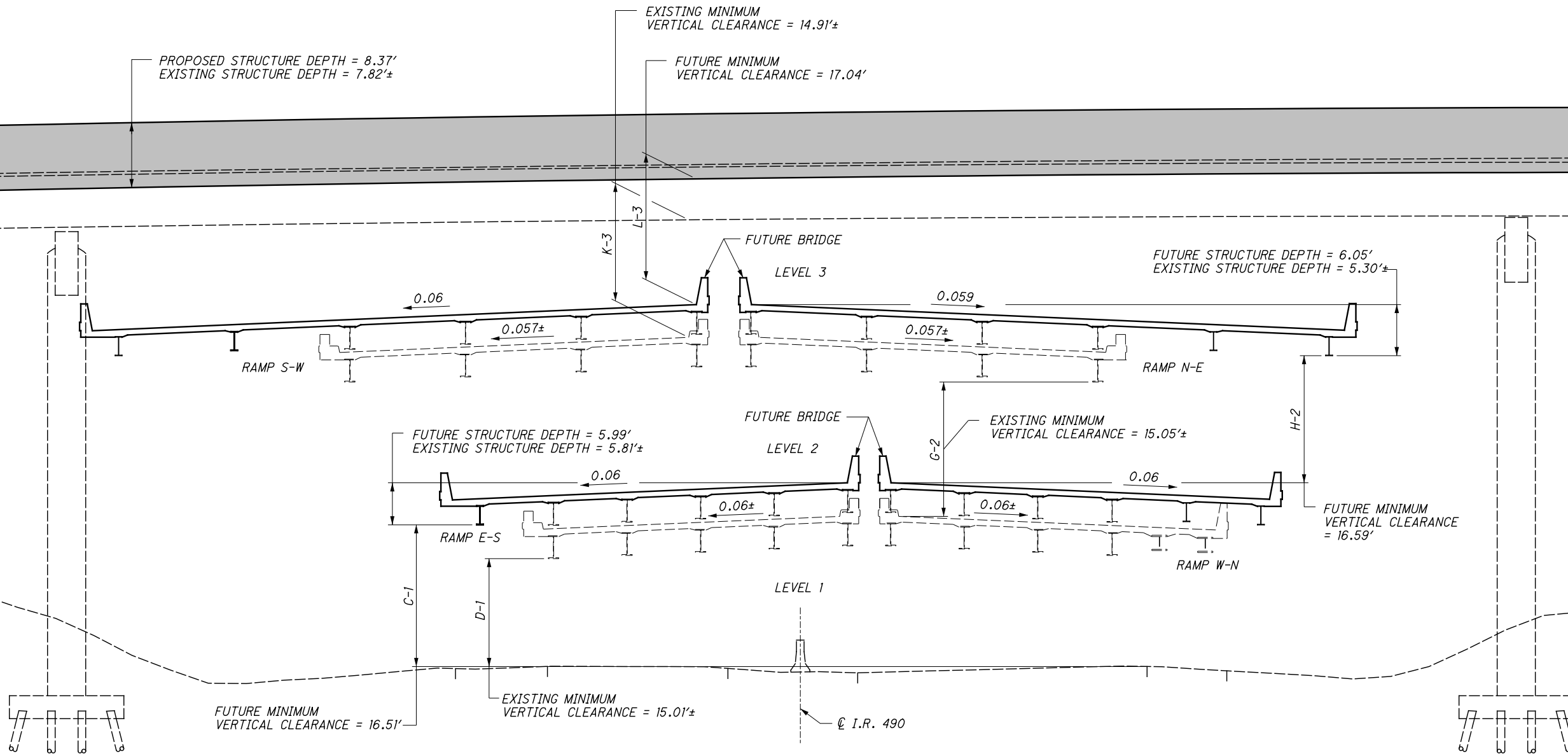
**NOTES**

**SUPERELEVATION** RATES ARE NORMAL TO CENTERLINE.

**VERTICAL CLEARANCES** SHOWN ARE FUTURE VERTICAL CLEARANCES DUE TO RAISING AND WIDENING THE RAMPS.

**ITEM 623 - CONSTRUCTION LAYOUT STAKES, AS PER PLAN:**  
MEASURE VERTICAL CLEARANCE AFTER CONSTRUCTION PER NOTE ON SHEET 22.

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PROFILE ALONG PROFILE GRADE - NORTHBOUND

**NOTES**

**SUPERELEVATION** RATES ARE NORMAL TO CENTERLINE.  
**VERTICAL CLEARANCES** SHOWN ARE FUTURE VERTICAL CLEARANCES DUE TO RAISING AND WIDENING THE RAMPS.

**ITEM 623 - CONSTRUCTION LAYOUT STAKES, AS PER PLAN:**  
 MEASURE VERTICAL CLEARANCE AFTER CONSTRUCTION PER NOTE ON SHEET 22.

|          |          |                       |                            |
|----------|----------|-----------------------|----------------------------|
| DESIGNED | ALP      | CHECKED               | BLN                        |
| DRAWN    | JLS      | REVISED               |                            |
| REVIEWED | DAP      | STRUCTURE FILE NUMBER | 1806688 (L)<br>1806718 (R) |
| DATE     | 11/15/16 |                       |                            |

**VERTICAL CLEARANCE - RIGHT BRIDGE**  
 BRIDGE NO. CUY-77-1433 R  
 OVER I.R. 490 AND RAMPS

**CUY-77-14.35**  
 PID No. 13567



**REFER TO THE FOLLOWING STANDARD BRIDGE DRAWINGS:**

- AS-1-15 (REVISED 07-17-2015)
- AS-2-15 (REVISED 07-15-2015)
- GSD-1-96 (REVISED 07-19-2002)
- MH-1.1 (REVISED 01-15-2016)
- PCB-91 (REVISED 01-18-2013)
- SBR-1-13 (REVISED 01-17-2014)
- SBR-2-13 (REVISED 01-17-2014)
- SICD-1-96 (REVISED 07-18-2014)
- SICD-2-14 (DATED 07-18-2014)

AND TO THE FOLLOWING SUPPLEMENTAL SPECIFICATION:  
845 (DATED 01-19-2007)

**DESIGN SPECIFICATIONS:** THIS STRUCTURE CONFORMS TO THE "LRFD BRIDGE DESIGN SPECIFICATIONS" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 2012, 6th EDITION INCLUDING INTERIM SPECIFICATIONS AND THE ODOT BRIDGE DESIGN MANUAL, 2007.

**SPECIAL DESIGN SPECIFICATIONS:** THIS BRIDGE REQUIRED THE USE OF A TWO-DIMENSIONAL MODEL USING THE GRILLAGE DESIGN METHOD TO ANALYZE THE STRUCTURE. THE COMPUTER PROGRAM USED FOR STRUCTURAL ANALYSIS WAS MDX. THE BRIDGE COMPONENTS DESIGNED BY THIS METHOD AND THE LIVE LOAD DISTRIBUTION FACTORS USED WERE:

**COMPONENTS:** BEAMS, CROSSFRAMES.  
**DEAD LOAD DISTRIBUTION:** THE INITIAL DEAD LOAD (BEAM SELF-WEIGHT, WEIGHT OF STIFFENERS AND CROSSFRAMES, AND WEIGHT OF CONCRETE DECK, HAUNCHES AND COUNTERWEIGHT, AND THE WEIGHT OF THE STAY-IN-PLACE FORMS) WAS DISTRIBUTED TO THE BEAMS USING SIMPLE DISTRIBUTION. THE COMPOSITE DEAD LOAD (WEIGHT OF PARAPETS AND FUTURE WEARING SURFACE ALLOWANCE) WAS APPLIED EQUALLY TO EACH BEAM.

**LIVE LOAD DISTRIBUTION FACTORS:** THE DESIGN PROGRAM DISTRIBUTED THE LIVE LOADS BASED ON BOTH LONGITUDINAL AND LATERAL STIFFNESSES. THE LIVE LOAD DISTRIBUTION VARIES ALONG THE LENGTH AND WIDTH OF THE STRUCTURE.

**OPERATIONAL IMPORTANCE:** A LOAD MODIFIER OF 1.05 HAS BEEN ASSUMED FOR THE DESIGN OF THIS STRUCTURE IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, ARTICLE 1.3.5 AND THE ODOT BRIDGE DESIGN MANUAL, 2007.

**DESIGN LOADING:** - HL-93  
- FUTURE WEARING SURFACE (FWS) OF 0.060 KIPS/FT<sup>2</sup>

**DESIGN DATA:**

CONCRETE CLASS QC2 - COMPRESSIVE STRENGTH 4.5 KSI (SUPERSTRUCTURE)

CONCRETE CLASS QC1 - COMPRESSIVE STRENGTH 4.0 KSI (SUBSTRUCTURE)

CONCRETE CLASS QC4 MASS CONCRETE - COMPRESSIVE STRENGTH 4.0 KSI (COUNTERWEIGHT)

REINFORCING STEEL - MINIMUM YIELD STRENGTH 60 KSI

STRUCTURAL STEEL - ASTM A709 GRADE 50W - YIELD STRENGTH 50 KSI (WEB, FLANGES, CROSSFRAMES AND INCIDENTALS).  
ASTM A709 GRADE HPS 70W - YIELD STRENGTH 70 KSI (FLANGES).

**DECK PROTECTION METHOD:**

EPOXY COATED REINFORCING STEEL  
2 1/2" CONCRETE COVER  
CLASS QC2 CONCRETE

**MONOLITHIC WEARING SURFACE** IS ASSUMED, FOR DESIGN PURPOSES, TO BE 1 INCH THICK.

**CONSTRUCTION SEQUENCE:**

SEE MAINTENANCE OF TRAFFIC PLAN SHEETS 49 THROUGH 56. THE FOLLOWING SEQUENCE OF CONSTRUCTION IS REQUIRED:

**PHASE 1 CONSTRUCTION:**

- A. WITH TWO LANES OF TRAFFIC MAINTAINED (IN EACH DIRECTION) ON THE EXISTING STRUCTURES, INSTALL THE PHASE-LINE SHEETING AT THE REAR AND FORWARD ABUTMENTS AS DETAILED IN THE PLANS.
- B. REMOVE THE OUTSIDE PORTIONS OF THE ABUTMENTS AND SUPERSTRUCTURE AS DETAILED IN THE REMOVAL DETAILS.
- C. REMOVE REQUIRED EXISTING PILES AS INDICATED IN THE PLANS.
- D. DRIVE PILES AND CONSTRUCT THE OUTSIDE PORTIONS OF THE ABUTMENTS AND PIERS.
- E. ERECT THE NEW STEEL BEAMS AND CROSSFRAMES ON THE NEW BEARINGS.
- F. CONSTRUCT THE NEW COUNTERWEIGHT, BRIDGE DECK, PARAPET AND APPROACH SLABS FOR THE OUTSIDE PORTIONS OF THE STRUCTURES.
- G. SWITCH TRAFFIC TO THE NEW STRUCTURES.

**PHASE 2 CONSTRUCTION:**

- A. WITH TWO LANES OF TRAFFIC MAINTAINED IN EACH DIRECTION ON THE PROPOSED STRUCTURES, REMOVE THE REMAINING PORTION OF THE EXISTING ABUTMENTS, REMOVE THE EXISTING PIERS AND REMOVE THE REMAINING PORTION OF THE EXISTING SUPERSTRUCTURE AS DETAILED IN THE PLANS.
- B. REMOVE REQUIRED EXISTING PILES AS INDICATED IN THE PLANS.
- C. DRIVE PILES AND CONSTRUCT THE REMAINING PORTIONS OF THE ABUTMENTS AND PIERS.
- D. ERECT THE NEW STEEL BEAMS AND CROSSFRAMES ON THE NEW BEARINGS.
- E. CONSTRUCT THE NEW COUNTERWEIGHT, BRIDGE DECK, PARAPET AND APPROACH SLABS FOR THE INSIDE PORTIONS OF THE STRUCTURES.

**PHASE 2A CONSTRUCTION:**

- A. WITH TWO LANES OF TRAFFIC MAINTAINED IN EACH DIRECTION ON THE PROPOSED STRUCTURES, ERECT CROSSFRAMES BETWEEN PHASE 1 AND PHASE 2 CONSTRUCTION AND CONSTRUCT THE CLOSURE PORTION OF THE DECK.
- B. APPLY THE HMWM RESIN TO THE CONCRETE DECK AND SEAL OTHER CONCRETE SURFACES.
- C. SWITCH TRAFFIC TO THE FINAL POSITION ON THE LEFT AND RIGHT STRUCTURES.

**OHIO EPA NOTIFICATION OF DEMOLITION FOR ASBESTOS**

AN ASBESTOS SURVEY OF THE CUY-77-14.35 BRIDGE OVER IR-490 WAS COMPLETED IN NOVEMBER 30, 1998 BY A CERTIFIED ASBESTOS HAZARD EVALUATION SPECIALIST. NO ASBESTOS CONTAINING MATERIAL (ACM) WAS IDENTIFIED ON THE BRIDGES.

A COPY OF THE OHIO ENVIRONMENTAL PROTECTION AGENCY (OEPA) NOTIFICATION OF DEMOLITION AND RENOVATION FORM WITH SECTIONS I-IV, VI, VII, AND XVI COMPLETED IS INCLUDED WITH THE BID PACKAGE. THE CONTRACTOR SHALL COMPLETE SECTIONS V, VIII-XVIII OF THE SIGNED FORM AND SUBMIT THE COMPLETED FORM TO THE LOCAL AIR AUTHORITY AT LEAST TEN (10) DAYS PRIOR TO DEMOLITION OF THE BRIDGE. THE CONTRACTOR SHALL PROVIDE A COPY OF THE COMPLETED FORM TO THE ENGINEER. THE LOCAL AIR AUTHORITY IS:

THE DEPARTMENT OF PUBLIC HEALTH  
DIVISION OF ENVIRONMENT  
1925 ST. CLAIR AVENUE  
CLEVELAND, OHIO 44114  
PHONE: (216) 664-2300

THE CONTRACTOR SHALL FURNISH ALL LABOR, EQUIPMENT, AND MATERIALS NECESSARY TO COMPLETE, SUBMIT, AND COMPLY WITH THE OEPA NOTIFICATION FORM.

PAYMENT SHALL BE INCLUDED AS INCIDENTAL TO ITEM 202 STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN.

**ITEM 202 - REMOVAL, MISC.: EXISTING PILE**

THE PROPOSED PILING HAS BEEN ARRANGED TO AVOID THE EXISTING PILES, AS PRACTICAL, SUPPORTING THE EXISTING ABUTMENTS AND PIERS. THE LOCATION OF THE EXISTING PILES WAS DERIVED FROM THE EXISTING PLANS. SHOULD EXISTING PILES INTERFERE WITH THE PILE DRIVING OPERATIONS, THE INTERFERING EXISTING PILES SHALL BE REMOVED.

THE LOCATION OF THE PROPOSED PILES MAY BE ADJUSTED WITHIN THE TOLERANCES OF 507.10 WHEN ENCOUNTERING EXISTING PILES THAT CANNOT BE PARTIALLY OR FULLY REMOVED. MAINTAIN A MINIMUM FOOTING EDGE DISTANCE OF 1'-6" TO CENTER OF PILES AND 3'-6" MINIMUM CENTER TO CENTER PILE SPACING. ALL BATTERED PILES ARE REQUIRED FOR THE ABUTMENTS. ABUTMENT REAR PILES MAY BE BATTERED IN A SIMILAR MANNER IF THE FRONT ONES CANNOT BE. VERTICAL PILES CAN BE BATTERED TO MISS EXISTING PILES IF REQUIRED.

SEE PILE LOCATION PLANS [24/84] THROUGH [27/84] FOR LOCATIONS AND NUMBERS OF PILES REMOVED OR PARTIALLY REMOVED. AN ADDITIONAL QUANTITY OF 6 PILES IS INCLUDED BEYOND THOSE SHOWN IN THE PLANS FOR USE IF REQUIRED AND APPROVED BY THE ENGINEER.

WORK UNDER THIS ITEM SHOULD INCLUDE ALL LABOR, TOOLS, MATERIALS, AND INCIDENTALS REQUIRED TO COMPLETELY OR PARTIALLY REMOVE THE PILE. PAYMENT FOR THE REMOVAL OF INDIVIDUAL PILES WILL BE MADE PER EACH UNDER ITEM 202-REMOVAL, MISC.: EXISTING PILE.

**PILE DESIGN LOADS (ULTIMATE BEARING VALUE):**

**REAR ABUTMENT LEFT PILES:**

16 INCH DIAMETER CAST-IN-PLACE REINFORCED CONCRETE PILES THE ULTIMATE BEARING VALUE IS 430 KIPS. THIS INCLUDES THAT REQUIRED FOR LATERAL LOADING OF THE STRUCTURE THAT IS TRANSFERRED TO THE PILES.  
24 PILES 60 FEET LONG, ORDER LENGTH  
1 DYNAMIC LOAD TESTING ITEMS

**REAR ABUTMENT RIGHT PILES:**

16 INCH DIAMETER CAST-IN-PLACE REINFORCED CONCRETE PILES THE ULTIMATE BEARING VALUE IS 342 KIPS. THIS INCLUDES THAT REQUIRED FOR LATERAL LOADING OF THE STRUCTURE THAT IS TRANSFERRED TO THE PILES.  
20 PILES 45 FEET LONG, ORDER LENGTH  
1 DYNAMIC LOAD TESTING ITEMS

**PIER 1 LEFT PILES:**

16 INCH DIAMETER CAST-IN-PLACE REINFORCED CONCRETE PILES THE ULTIMATE BEARING VALUE IS 436 KIPS.

52 PILES 95 FEET LONG, ORDER LENGTH  
1 DYNAMIC LOAD TESTING ITEMS

**PIER 1 RIGHT PILES:**

16 INCH DIAMETER CAST-IN-PLACE REINFORCED CONCRETE PILES THE ULTIMATE BEARING VALUE IS 436 KIPS.

52 PILES 65 FEET LONG, ORDER LENGTH  
2 DYNAMIC LOAD TESTING ITEMS

**PIER 2 LEFT PILES:**

16 INCH DIAMETER CAST-IN-PLACE REINFORCED CONCRETE PILES THE ULTIMATE BEARING VALUE IS 436 KIPS.

52 PILES 55 FEET LONG, ORDER LENGTH  
1 DYNAMIC LOAD TESTING ITEMS

**PIER 2 RIGHT PILES:**

16 INCH DIAMETER CAST-IN-PLACE REINFORCED CONCRETE PILES THE ULTIMATE BEARING VALUE IS 436 KIPS.

52 PILES 55 FEET LONG, ORDER LENGTH  
1 DYNAMIC LOAD TESTING ITEMS

**FORWARD ABUTMENT LEFT PILES:**

16 INCH DIAMETER CAST-IN-PLACE REINFORCED CONCRETE PILES THE ULTIMATE BEARING VALUE IS 418 KIPS. THIS INCLUDES THAT REQUIRED FOR LATERAL LOADING OF THE STRUCTURE THAT IS TRANSFERRED TO THE PILES.  
20 PILES 35 FEET LONG, ORDER LENGTH  
1 DYNAMIC LOAD TESTING ITEMS

**FORWARD ABUTMENT RIGHT PILES:**

16 INCH DIAMETER CAST-IN-PLACE REINFORCED CONCRETE PILES THE ULTIMATE BEARING VALUE IS 436 KIPS. THIS INCLUDES THAT REQUIRED FOR LATERAL LOADING OF THE STRUCTURE THAT IS TRANSFERRED TO THE PILES.  
19 PILES 50 FEET LONG, ORDER LENGTH  
1 DYNAMIC LOAD TESTING ITEMS

**FOUNDATION BEARING PRESSURE:**

| LOCATION                        | MAXIMUM SERVICE LOAD PRESSURE | MAXIMUM STRENGTH LOAD PRESSURE | FACTORED BEARING RESISTANCE |                |
|---------------------------------|-------------------------------|--------------------------------|-----------------------------|----------------|
|                                 |                               |                                | SERVICE LIMIT               | STRENGTH LIMIT |
| LEFT REAR ABUTMENT WINGWALL     | 2.7 KSF                       | 3.6 KSF                        | 6.0 KSF                     | 15.8 KSF       |
| RIGHT FORWARD ABUTMENT WINGWALL | 2.4 KSF                       | 3.2 KSF                        | 6.0 KSF                     | 17.0 KSF       |

GENERAL NOTES CONTINUED: SEE SHEET 10/84.

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**DECK PLACEMENT DESIGN ASSUMPTIONS:**

THE FOLLOWING ASSUMPTIONS OF CONSTRUCTION MEANS AND METHODS WERE MADE FOR THE ANALYSIS AND DESIGN OF THE SUPERSTRUCTURE. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF THE FALSEWORK SUPPORT SYSTEM WITHIN THESE PARAMETERS AND WILL ASSUME RESPONSIBILITY FOR SUPERSTRUCTURE ANALYSIS FOR DEVIATION FROM THESE DESIGN ASSUMPTIONS.

AN EIGHT WHEEL FINISHING MACHINE WITH A MAXIMUM WHEEL LOAD OF 2.2 KIPS.

A MINIMUM OUT-TO-OUT WHEEL SPACING AT EACH END OF THE MACHINE OF 103".

A MAXIMUM SPACING OF OVERHANG FALSEWORK BRACKETS OF 48 INCHES.

A MAXIMUM DISTANCE FROM THE CENTERLINE OF THE FASCIA GIRDER TO THE FACE OF THE SAFETY HANDRAIL OF 65".

**ITEM 503 - UNCLASSIFIED EXCAVATION, AS PER PLAN**

UNCLASSIFIED EXCAVATION SHALL BE IN ACCORDANCE WITH CMS ITEM 503 EXCEPT THAT THE BACKFILL MATERIALS UNDER THE APPROACH SLABS AND MOMENT SLABS SHALL BE MATERIAL CONFORMING TO CMS 703.17 (CMS 304 MATERIAL) AND MEET THE COMPACTION REQUIREMENTS OF CMS 304.05. IN ADDITION, THE BACKFILL MATERIAL SHALL BE PLACED AND COMPACTED IN 6" LIFTS. EXCAVATION OF THE EXISTING POROUS BACKFILL SHALL BE INCLUDED IN THIS ITEM.

**ITEM 511 - ALL CLASS QC1 & CLASS QC2 CONCRETE WITH QC/QA, AS PER PLAN**

**GENERAL REQUIREMENTS:**

THE PROVISIONS OF ITEM 511 SHALL APPLY EXCEPT AS NOTED.

**MIX DESIGN:**

ALL COURSE AGGREGATE BASE SHALL HAVE AN ABSORPTION OF 1.00% OR GREATER AS DEFINED PER ASTM C127.

**PARAPET CONSTRUCTION:**

ANCHOR BOLTS FOR FENCE POSTS SHALL BE CAST-IN-PLACE.

**ITEM 511 - CLASS QC1 CONCRETE WITH QC/QA, AS PER PLAN, WINGWALL AND FOOTING**

IN ADDITION TO THE REQUIREMENTS OF ITEM 511, INSTALL A REFERENCE MONUMENT IN THE WINGWALL FOOTINGS AT THE LOCATIONS SHOWN IN THE TABLE BELOW. THE REFERENCE MONUMENT SHALL CONSIST OF A #8, OR LARGER, EPOXY COATED REBAR EMBEDDED AT LEAST 6" INTO THE FOOTING AND EXTENDED VERTICALLY 4 TO 6 INCHES ABOVE THE TOP OF THE FOOTING. INSTALL A SIX INCH DIAMETER, SCHEDULE 40, PLASTIC PIPE AROUND THE REFERENCE MONUMENT. CENTER THE PIPE ON THE REFERENCE MONUMENT AND PLACE THE PIPE VERTICAL WITH ITS TOP AT THE FINISHED GRADE. THE PIPE SHALL HAVE A REMOVABLE, SCHEDULE 40, PLASTIC CAP. PERMANENTLY ATTACH THE BOTTOM OF THE PIPE TO THE TOP OF THE FOOTING.

ESTABLISH A BENCHMARK TO DETERMINE THE ELEVATIONS OF THE REFERENCE MONUMENTS AT VARIOUS MONITORING PERIODS THROUGHOUT THE LENGTH OF THE CONSTRUCTION PROJECT. THE BENCHMARK SHALL BE THE SAME THROUGHOUT THE PROJECT AND SHALL BE INDEPENDENT OF ALL STRUCTURES.

RECORD THE ELEVATION OF EACH REFERENCE MONUMENT AT EACH MONITORING PERIOD SHOWN IN THE TABLE BELOW.

THE ORIGINAL COMPLETED TABLES WILL BECOME A PART OF THE DISTRICT'S PROJECT PLAN RECORDS.

**ITEM 513 - STRUCTURAL STEEL MEMBERS, LEVEL UF, AS PER PLAN**

WORK UNDER THIS ITEM SHALL INCLUDE FURNISHING AND INSTALLING INSPECTION ACCESS CATWALK AND LADDER MATERIALS AS DETAILED IN THE PLANS. INSPECTION HANDRAIL AND STEEL BAR GRATING ARE INCLUDED FOR PAYMENT SEPARATELY.

THE INSPECTION ACCESS CATWALK, HANDRAIL AND LADDER MATERIALS SHALL BE ASTM A709 GRADE 50 STEEL, GALVANIZED PER 711.02. ALL FASTENERS AND CONNECTIONS SHALL BE GALVANIZED.

GALVANIZED COATINGS DAMAGED IN THE SHOP SHALL BE REPAIRED PER ASTM A780 METHOD A3. GALVANIZED COATINGS DAMAGED IN THE FIELD SHALL BE REPAIRED PER ASTM A780 METHOD A1 AS DIRECTED BY THE ENGINEER.

ALL REQUIREMENTS OF 513 APPLY TO SHOP FABRICATED MEMBERS. PERFORM WORK FOR FIELD-FABRICATED MEMBERS ACCORDING TO ITEM 513, EXCEPT AS MODIFIED HEREIN. THE DEPARTMENT WILL NOT REQUIRE THE CONTRACTOR PERFORMING FIELD FABRICATION TO BE PRE-QUALIFIED AS SPECIFIED IN SUPPLEMENT 1078. SUBMIT A WRITTEN LETTER OF MATERIAL ACCEPTANCE, 501.06, TO THE ENGINEER. PROVIDE SHOP DRAWINGS ACCORDING TO 513.04 OR SUPPLY ENGINEER WITH "AS-BUILT" DRAWINGS MEETING 513.04 AFTER COMPLETION OF FIELD FABRICATION. THE ENGINEER WILL REVIEW THE SUBMITTED DRAWINGS FOR CONCURRENCE WITH THE FINAL AS-BUILT CONDITION. IF NECESSARY, THE ENGINEER MAY CONTACT THE OFFICE OF STRUCTURAL ENGINEERING FOR TECHNICAL ASSISTANCE. IF THE ENGINEER IS SATISFIED WITH THE "AS-BUILT" DRAWINGS AND THE DELIVERED MATERIALS, SUPPLY A COPY OF THE DRAWINGS, STAMPED AND DATED, ALONG WITH MICROFILM, TO THE STRUCTURAL, WELDING AND MATERIAL SECTION OF THE OFFICE OF MATERIALS MANAGEMENT FOR RECORD PURPOSES.

PAYMENT FOR ALL LABOR, MATERIALS, AND EQUIPMENT FOR INSTALLATION OF THE INSPECTION ACCESS CATWALKS AND LADDERS SHALL BE INCLUDED IN THE CONTRACT BID PRICE PER POUND FOR ITEM 513 - STRUCTURAL STEEL MEMBERS, LEVEL UF, AS PER PLAN.

**ITEM 513 - STRUCTURAL STEEL MEMBERS LEVEL 6, HYBRID GIRDER, AS PER PLAN**

**1. DESCRIPTION**

- 1.01 THIS WORK CONSISTS OF FURNISHING ALL NECESSARY LABOR, MATERIALS, AND EQUIPMENT TO FURNISH AND ERECT STRUCTURAL STEEL MEMBERS, DESIGNED AS A HYBRID/MIX OF STEEL MATERIALS CONSISTING OF: ASTM A709, HIGH PERFORMANCE GRADE HPS70W IN COMBINATION WITH GRADE 50W STEEL.
- 1.02 THIS WORK SHALL BE PERFORMED PER ITEM 513 STRUCTURAL STEEL MEMBERS, LEVEL SIX (6) EXCEPT AS MODIFIED BY THE JUNE 2003 2ND EDITION OF THE "GUIDE FOR HIGHWAY BRIDGE FABRICATION WITH HPS70W STEEL (HPS485W), A SUPPLEMENT TO ANSI/AASHTO AWS D1.5-95" AND AS MODIFIED BY THESE PLAN NOTES.

**2. MATERIALS**

- 2.01 STEEL FOR GIRDER WEBS AND FLANGES SHALL BE A COMBINATION OF ASTM A709 GRADE HPS70W MANUFACTURED BY THE THERMO-MECHANICAL CONTROLLED PROCESSING (TMCP) OR QUENCHED AND TEMPERED HEAT TREATMENT PROCESSING ALONG WITH ASTM A588/709 GRADE 50W. ALL OTHER STEEL SHALL BE ASTM A709 GRADE 50W.
- 2.02 STEEL DESIGNATED CVN SHALL BE IMPACT TESTED TO EXCEED THE TEST VALUES OF ASTM A709 TABLE S1.2 "NON-FRACTURE CRITICAL IMPACT TEST REQUIREMENTS" FOR ZONE 2, TEMPERATURE RANGE.

**3. ADDITIONAL FABRICATION RESTRICTIONS/WARNINGS:**

- 3.01 APPLICATION OF HEAT FOR CURVING AND STRAIGHTENING APPLICATIONS, CAMBER AND SWEEP ADJUSTMENT, OR OTHER REASON HEATING IS LIMITED TO 1100° F/590° C MAXIMUM, AND MUST BE DONE BY PROCEDURES APPROVED BY THE DIRECTOR OR HIS AUTHORIZED REPRESENTATIVE.

- 3.02 THE MATCHING SUBMERGED ARC WELDING CONSUMABLES ESAB EN14 ELECTRODE IN COMBINATION WITH LINCOLN MIL800H, RECOMMENDED IN APPENDIX A OF THE AASHTO GUIDE FOR HIGHWAY BRIDGE FABRICATION WITH HPS70W STEEL, HAS PRODUCED WELDMENT CONTAINING UNACCEPTABLE DISCONTINUITIES IN A SUBSTANTIAL NUMBER OF COMPLETE PENETRATION GROOVE WELDS IN ONE STRUCTURE, BASED ON THE PARAMETERS USED AND EXPERIENCE OF ONE FABRICATOR. EXTREME CAUTION SHOULD BE EXERCISED WHEN USING THIS ELECTRODE/FLUX COMBINATION.
- 3.03 CONSIDERATION WILL BE GIVEN TO OTHER WELDING PROCESSES IF A WRITTEN REQUEST IS SUBMITTED TO THE OFFICE OF MATERIALS MANAGEMENT IN ACCORDANCE WITH CMS 108.05. OTHER WELDING PROCESSES MUST BE QUALIFIED AND TESTED AS REQUIRED BY THE REFERENCED SPECIFICATIONS AND THESE NOTES.
- 3.04 IN ADDITION TO THE REQUIREMENTS OF ANSI/AASHTO/AWS D1.5 SECTION 5.17, ALL PROCEDURE QUALIFICATION TESTS MUST BE ULTRASONICALLY TESTED IN COMFORMANCE WITH THE REQUIREMENTS OF AWS D1.5, SECTION 6, PART C. EVALUATION MUST BE IN ACCORDANCE WITH AWS D1.5, TABLE 6.3, ULTRASONIC ACCEPTANCE - REJECTION CRITERIA - TENSILE STRESS. INDICATIONS FOUND AT THE INTERFACE OF THE BACKING BAR MAY BE DISREGARDED, REGARDLESS OF THE DEFECT RATING.
- 3.05 WHENEVER MAGNETIC PARTICLE TESTING IS DONE, ONLY THE YOKE TECHNIQUE WILL BE ALLOWED, AS DESCRIBED IN SECTION 6.7.6.2 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE, MODIFIED TO TEST USING ALTERNATING CURRENT ONLY. THE PROD TECHNIQUE WILL NOT BE ALLOWED.

**4. BASIS OF PAYMENT**

PAYMENT FOR THE ABOVE COMPLETED AND ACCEPTED QUANTITIES WILL BE MADE AT THE CONTRACT BID PRICE FOR ITEM 513 - STRUCTURAL STEEL MEMBERS LEVEL 6, HYBRID GIRDER, AS PER PLAN.

**ITEM 513 - STRUCTURAL STEEL, MISC.: 1" GALVANIZED STEEL BAR CATWALK GRATING**

WORK UNDER THIS ITEM SHALL CONSIST OF THE FURNISHING AND INSTALLATION OF 1" STEEL BAR GRATING FOR THE CATWALKS AT PIERS 1L AND 2R.

THE STEEL GRID SHALL CONFORM TO ASTM A1011, ASTM A709 GRADE 36 OR GRADE 50. THE MAIN BARS SHALL BE 1" x 3/16" ON 1 3/16" CENTERS. CROSSBARS SHALL BE ON 4" CENTERS. ALL EDGES SHALL BE BANDED. THE GRATING SHALL BE ATTACHED TO SUPPORTS WITH BOLTS AND SADDLE CLIPS AT A MAXIMUM OF TWO FOOT CENTERS.

THE STEEL GRID SHALL BE GALVANIZED AFTER FABRICATION PER CMS 711.02. THE CONTRACTOR SHALL BE VERY CAREFUL IN HANDLING THE GALVANIZED STEEL TO MINIMIZE SCRATCHES AND ABRASIONS OF THE FINISH. WIRE ROPE SLINGS AND METAL HOOKS SHALL BE PADDED WITH WOOD, OR REINFORCED FABRIC WEBBING SHALL BE USED FOR MATERIAL HANDLING. SCRATCHES AND ABRASIONS OF THE GALVANIZED FINISH SHALL BE TOUCHED UP IN THE FIELD IN ACCORDANCE WITH ASTM A780, METHOD A2 AND TO THE SATISFACTION OF THE ENGINEER. CONNECTION BOLTS FOR GALVANIZED STEEL MEMBERS SHALL BE MECHANICALLY GALVANIZED.

THE GRATING SHALL BE PRESSURE LOCKED GRATING AS MANUFACTURED BY OHIO GRATINGS, IKG INDUSTRIES, GRATING PACIFIC OR OTHER GRATING CONFORMING TO THE LATEST EDITION OF ANSI/NAAMM MBG 531, METAL BAR GRATING MANUAL.

PAYMENT FOR ACCEPTED QUANTITIES, COMPLETE AND IN PLACE SHALL BE MADE AT THE CONTRACT PRICE BID, PER SQUARE FOOT, UNDER ITEM 513 - STRUCTURAL STEEL, MISC.: 1" GALVANIZED STEEL BAR CATWALK GRATING.

|                                   | PROJECT NUMBER:<br>CUY-77-14.35, PID: 13567              |                                                          | PROJECT NUMBER:<br>CUY-77-14.35, PID: 13567              |                                                          |
|-----------------------------------|----------------------------------------------------------|----------------------------------------------------------|----------------------------------------------------------|----------------------------------------------------------|
|                                   | MAXIMUM FACTORED BEARING PRESSURE: 3.6 KIPS PER SQ. FT.  |                                                          | MAXIMUM FACTORED BEARING PRESSURE: 3.2 KIPS PER SQ. FT.  |                                                          |
|                                   | WALL NUMBER: LEFT REAR ABUTMENT WINGWALL                 |                                                          | WALL NUMBER: RIGHT FORWARD ABUTMENT WINGWALL             |                                                          |
|                                   | BENCHMARK LOCATION:                                      |                                                          | BENCHMARK LOCATION:                                      |                                                          |
| MONITORING PERIOD:                | MONUMENT #1<br>WINGWALL STA. 75+18.48<br>OFFSET: 62' LT. | MONUMENT #2<br>WINGWALL STA. 74+63.56<br>OFFSET: 62' LT. | MONUMENT #1<br>WINGWALL STA. 79+37.02<br>OFFSET: 62' RT. | MONUMENT #2<br>WINGWALL STA. 79+87.58<br>OFFSET: 62' RT. |
| AFTER FOOTING CONCRETE IS PLACED: |                                                          |                                                          |                                                          |                                                          |
| AFTER STEM CONCRETE IS PLACED:    |                                                          |                                                          |                                                          |                                                          |
| PROJECT COMPLETION:               |                                                          |                                                          |                                                          |                                                          |

GENERAL NOTES CONTINUED: SEE SHEET 11/84.

RICHLAND ENGINEERING LIMITED  
 29 NORTH PARK STREET  
 MANSFIELD, OHIO 44902  
 DATE: 11/15/16  
 REVIEWED: DAP  
 STRUCTURE FILE NUMBER: 1806668 (U)  
 1806718 (R)  
 DRAWN: JLS  
 CHECKED: REVISED  
 DESIGNED: BLN  
 CHECKED: DLR  
 GENERAL NOTES - 2  
 BRIDGE NO. CUY-77-1433 L & R  
 OVER I.R. 490 AND RAMPS  
 CUY-77-14.35  
 PID No. 13567  
 10/84  
 291  
 365



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**ITEM 514 - FIELD PAINTING STRUCTURAL STEEL, FINISH COAT, AS PER PLAN**

THE STEEL TO BE PAINTED SHALL INCLUDE APPLYING A URETHANE FINISH COAT TO METALLIZED SURFACES OF ALL EXTERIOR SURFACES ON THE FASCIA GIRDERS OF THE STRUCTURES. THE PAINTED AREA SHALL INCLUDE THE EXTERIOR SURFACES OF THE FASCIA GIRDER TOP FLANGE, WEB, BOTTOM FLANGE, STIFFENERS, AND FASCIA BEARING DEVICES. THE WORK SHALL BE PERFORMED IN ACCORDANCE WITH CMS 514.

THE URETHANE FINISH COAT SHALL BE APPLIED DIRECTLY TO THE METALLIZED SURFACE ONLY IF THE COMPATIBILITY OF THE SYSTEM HAS BEEN DEMONSTRATED. A SEALER IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS SHALL BE APPLIED TO THE METALLIZING PRIOR TO APPLYING THE URETHANE FINISH COAT IF THE URETHANE FINISH COAT IS NOT COMPATIBLE WITH THE METALLIZING. NO ADDITIONAL PAYMENT SHALL BE MADE FOR THE USE OF A SEALER. THE FINISH COAT COLOR SHALL BE 595B-16440 (LIGHT GREY - GLOSS).

THE PAINT MAY BE FIELD APPLIED OR SHOP APPLIED. IF THE PAINT IS SHOP APPLIED, THE URETHANE TOP COAT SHALL BE APPLIED IN A STRUCTURAL STEEL FABRICATION SHOP HAVING PERMANENT BUILDINGS PER CMS 513.04 AND PRE-QUALIFIED AT THE 513 LEVEL UF, OR HIGHER. THE PAINTER SHALL BE UNDER THE SUPERVISION OF A QUALITY CONTROL PAINT SPECIALIST PER CMS 514.04A AND SHALL BE A 513 FABRICATOR; THE FIELD PAINTING SUBCONTRACTOR PERFORMING TOUCH-UP WORK IN THE FIELD AND/OR SHOP PAINTING AT THE 513 FABRICATOR'S FACILITY; OR AN INDEPENDENT PAINTER THAT IS CERTIFIED.

FIELD REPAIRS AND TOUCH-UPS SHALL FOLLOW WORK LIMITATIONS SPECIFIED PER CMS 514 AND BE AS DIRECTED BY THE ENGINEER. BOLTS, NUTS AND WASHERS SHALL BE PAINTED IN THE FIELD.

PAYMENT FOR THE URETHANE TOP COAT SHALL BE MADE PER SQUARE FOOT UNDER ITEM 514 - FIELD PAINTING STRUCTURAL STEEL, FINISH COAT, AS PER PLAN.

**ITEM 526 - REINFORCED CONCRETE APPROACH SLAB (T=17"), AS PER PLAN**

CONCRETE FOR THE APPROACH SLABS SHALL BE CLASS QC2 CONCRETE.

THE PARAPETS AND MEDIAN PARAPETS WILL BE CARRIED ONTO THE APPROACH SLABS. CONCRETE, REINFORCING STEEL, DEFLECTION JOINT SAW CUT, CAULKING MATERIAL, PREFORMED EXPANSION JOINT MATERIAL, AND SEALING OF CONCRETE SURFACES FOR THE PARAPETS SHALL BE INCLUDED WITH ITEM 526 - REINFORCED CONCRETE APPROACH SLAB (T=17"), AS PER PLAN FOR PAYMENT. SEE SHEETS [75/84] THROUGH [81/84] FOR PARAPET AND APPROACH SLAB DETAILS.

**ITEM 530 STRUCTURE, MISC.: STRUCTURAL SURVEY AND MONITORING OF VIBRATIONS**

A. DESCRIPTION

THIS WORK CONSISTS OF CONDUCTING A SURVEY OF THE CONDITION OF THE PROPERTY AND STRUCTURES ADJACENT TO THE PROJECT AND THE MONITORING OF GROUND VIBRATIONS CAUSED BY THE PROJECT. THE SURVEY WORK IS TO BE CONDUCTED BEFORE AND AFTER ALL CONSTRUCTION WORK IS PERFORMED WHICH COULD CAUSE UNDESIRABLE GROUND VIBRATIONS. GROUND VIBRATIONS AND ACOUSTICS SHALL BE MONITORED AT THE APPROPRIATE TIMES DURING THE DURATION OF THE PROJECT. DOCUMENTATION OF ALL SURVEYS SHALL BE PROVIDED TO THE DEPARTMENT.

B. PERSONNEL QUALIFICATIONS

A PROFESSIONAL ENGINEER, REGISTERED IN THE STATE OF OHIO, SHALL BE ENGAGED BY THE CONTRACTOR TO BE IN CHARGE OF CONDUCTING A STRUCTURAL SURVEY AND IN CHARGE OF MONITORING VIBRATIONS AND ACOUSTICS. THE ENGINEER IN CHARGE OF PERFORMING THE REQUIRED WORK IS HEREIN REFERRED TO AS THE MONITORING FOREMAN. THE MONITORING FOREMAN AND/OR HIS TEAM OF EXPERTS SHALL HAVE COLLECTIVELY WORKED ON TWO SIMILAR PROJECTS OR SHALL HAVE COLLECTIVELY ACCRUED NOT LESS THAN TWO YEARS OF SUCCESSFUL EXPERIENCE IN PERFORMING THE TYPE OF WORK SPECIFIED BY THIS NOTE. THE MONITORING FOREMAN AND/OR HIS TEAM OF EXPERTS SHALL HAVE EXPERTISE IN (1) CONDUCTING STRUCTURAL SURVEYS BY VIDEO METHODS, (2) MONITORING VIBRATIONS WITH A SEISMOGRAPH OR WITH OTHER APPROPRIATE INSTRUMENTATION, AND (3) ASSESSING SITES FOR POTENTIAL DAMAGE THAT MAY OCCUR AS A RESULT OF THE PROPOSED CONSTRUCTION. DOCUMENTATION OF THIS EXPERIENCE SHALL BE FURNISHED AT THE PRECONSTRUCTION MEETING.

THE REQUIREMENT FOR THE MONITORING FOREMAN TO BE AN ENGINEER CAN BE WAIVED PROVIDED THAT THE MONITORING FOREMAN'S EXPERIENCE OR THE COLLECTIVE EXPERIENCE OF THE MONITORING TEAM SHOWS SUBSTANTIAL EXPERTISE IN PERFORMING THE REQUIRED WORK AS DETERMINED BY THE DEPARTMENT.

C. STRUCTURAL SURVEY

THE STRUCTURAL SURVEY SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:

BASED ON THE CONTRACTORS PROPOSED MEANS AND METHODS OF DEMOLITION, CONSTRUCTION, AND PILE DRIVING; THE MONITORING FOREMAN SHALL ESTABLISH THE LIMITS OF PROPERTY AND STRUCTURES TO BE SURVEYED AND THE LOCATIONS AND ELEVATIONS OF REFERENCE POINTS FOR DOCUMENTATION OF MEASUREMENTS.

THE STRUCTURES MAY INCLUDE, BUT NOT BE LIMITED TO, RESIDENCES, COMMERCIAL PROPERTIES, UTILITIES, AND RAILROAD FACILITIES LOCATED WITHIN AND ADJACENT TO THE PROJECT.

RECORD DOCUMENTATION OF THE INTEGRITY OF EXISTING BUILDING MATERIALS AND THE GENERAL OVERALL CONDITION OF THE PROPERTY AND STRUCTURES BY WRITTEN TEXT, PHOTOGRAPHS, AND VIDEO CASSETTE OR DIGITAL RECORDING.

DOCUMENT ALL STRUCTURAL DEFICIENCIES WITH REGARD TO LOCATION, SIZE, TYPE, ETC.

CONDUCT A DETAILED ON-SITE INTERIOR AND EXTERIOR INSPECTION IN THE PRESENCE OF THE DEPARTMENT, PROPERTY OWNERS, PROPERTY TENANTS, AND REPRESENTATIVES OF ANY INVOLVED UTILITY OWNERS. IF OWNERS OR OCCUPANTS FAIL TO ALLOW ACCESS TO THE PROPERTY FOR THE PRE-CONSTRUCTION SURVEY, SEND A CERTIFIED LETTER TO THE OWNER OR OCCUPANT. MAKE THE NOTIFICATION EFFORT AND THE CERTIFIED LETTER PART OF THE STRUCTURAL SURVEY RECORDS.

D. MONITORING OF VIBRATIONS AND ACOUSTICS

THE MONITORING OF VIBRATIONS AND ACOUSTICS SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:

1. DETERMINATION AND DOCUMENTATION OF EXISTING LEVELS OF VIBRATIONS AND NOISE.
2. MONITORING OF ALL CONSTRUCTION OPERATIONS THAT SIGNIFICANTLY CONTRIBUTE TO THE PRODUCTION OF VIBRATIONS AND NOISE WITH A SPECIAL EFFORT MADE TO DOCUMENT THE VIBRATION AND SOUND LEVELS ASSOCIATED WITH BLASTING, DEMOLITION, AND/OR PILE INSTALLATION PROCEDURES.
3. THE DEVELOPMENT OF CRITERIA FOR CONTROLLING CONSTRUCTION ACTIVITIES SO THAT THE MONITORING FOREMAN'S ALLOWABLE PREDETERMINED VIBRATION LEVELS ARE NOT EXCEEDED DURING CONSTRUCTION.

E. GROUND VIBRATION

VIBRATION MONITORING GUIDELINES CAN BE FOUND IN FHWA'S MAY 1985 MANUAL ENTITLED "ROCK BLASTING" AND IN VARIOUS OTHER REPORTS. THE PEAK PARTICLE VELOCITY (PPV) OF GROUND VIBRATIONS IS GENERALLY USED TO MONITOR THE EFFECT OF VIBRATIONS ON STRUCTURES. WHEN MONITORING VIBRATIONS CONSIDERATION MUST BE GIVEN TO (1) THE TYPE OF STRUCTURE BEING EVALUATED AND (2) THE FREQUENCY OF THE VIBRATIONS (LOW FREQUENCY 40 HZ). GENERALLY ALLOWABLE GROUND VIBRATION PEAK PARTICLE VELOCITIES RANGE FROM 13MM/SECOND (0.5 INCHES PER SECOND) TO 50MM/SECOND (2.0 INCHES PER SECOND) DEPENDING ON THE TYPE OF STRUCTURE UNDER CONSIDERATION. WHEN AN ALLOWABLE PPV IS EXCEEDED, THE VIBRATION PRODUCING OPERATION SHALL BE SUSPENDED AND ALTERNATIVE CONSTRUCTION PROCEDURES SHOULD BE EVALUATED. THE DEPARTMENT SHALL BE NOTIFIED WHENEVER THE MEASURED MAGNITUDE OF THE VIBRATION LEVEL IS CONSIDERED POTENTIALLY CAPABLE OF PRODUCING STRUCTURAL DAMAGE.

**ITEM 530 - STRUCTURE, MISC.: SHOP METALLIZING AND FIELD TOUCH-UP OF STRUCTURAL STEEL**

THE STEEL TO BE METALLIZED SHALL INCLUDE ALL SURFACES OF THE GIRDERS, STIFFENERS, AND CROSSFRAMES. THE WORK SHALL BE PERFORMED IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 845, EXCEPT THE WORK SHALL BE PERFORMED IN THE FABRICATION SHOP.

THE METALLIZING SHALL BE APPLIED IN A STRUCTURAL STEEL FABRICATION SHOP QUALIFIED PER CMS 513.03 FOR LEVEL 6 AND HAVING PERMANENT BUILDINGS PER CMS 513.04. THE CONTRACTOR MAY SELECT AN INDEPENDENT METALLIZER WITH APPROVAL BY THE DIRECTOR. THE CONTRACTOR SHALL REQUEST SUCH APPROVAL IN WRITING. THE DIRECTOR'S APPROVAL IS BASED ON A FACILITY INSPECTION VERIFYING A METALLIZING FACILITY WITH PERMANENT BUILDINGS OF ADEQUATE SIZE WITH EQUIPMENT, HEATING, LIGHTING, AND EXPERIENCED PERSONNEL TO SATISFACTORILY PERFORM ALL SPECIFIED OPERATIONS. THE FABRICATOR'S QCS (QUALITY CONTROL SPECIALIST) REQUIRED UNDER 845.03A, IS RESPONSIBLE FOR ALL SPECIFIED QUALITY CONTROL REQUIREMENTS AT THE INDEPENDENT METALLIZING FACILITY.

IN ADDITION TO THE PRE-FABRICATION MEETING REQUIREMENTS UNDER CMS 513.07, BOTH THE FABRICATOR'S QUALITY CONTROL SPECIALIST AND THE METALLIZING APPLICATOR SHALL PRESENT AND DISCUSS METHODS OF OPERATION, INCLUDING REPAIRS, TO ACCOMPLISH ALL PHASES OF PREPARATION AND COATING WORK REQUIRED BY THIS SPECIFICATION.

THE MINIMUM SPECIFIED THICKNESS OF THE METALLIZING SHALL BE 10.0 MILS, EXCEPT WITHIN 10 FEET OF A SCUPPER IT SHALL BE 12 MILS.

REASONABLE CARE MUST BE EXERCISED IN HANDLING THE METALLIZED STEEL DURING SHIPPING, ERECTION, AND SUBSEQUENT CONSTRUCTION OF THE BRIDGE. THE STEEL MUST BE PROTECTED FROM LIFTING CHAINS, HOOKS, OR SLINGS BY SOFTENERS AND PADS.

FIELD REPAIRS AND TOUCH-UPS SHALL FOLLOW WORK LIMITATIONS SPECIFIED PER SUPPLEMENTAL SPECIFICATION 845 AND BE AS DIRECTED BY THE ENGINEER. BOLTS, NUTS AND WASHERS SHALL BE METALLIZED IN THE FIELD.

PAYMENT FOR THE METALLIZING SHALL BE MADE PER SQUARE FOOT UNDER ITEM 530 - STRUCTURE, MISC.: SHOP METALLIZING AND FIELD TOUCH-UP OF STRUCTURAL STEEL. THIS PAYMENT SHALL INCLUDE SURFACE PREPARATION OF STRUCTURAL STEEL; GRINDING FINS, TEARS, AND SLIVERS ON STRUCTURAL STEEL; AND METALLIZING OF STRUCTURAL STEEL.


**ITEM 607 - VANDAL PROTECTION FENCE, 6 FOOT STRAIGHT, COATED FABRIC, AS PER PLAN**

THIS ITEM SHALL BE AS PER THE DETAILS IN THE PLAN WITH THE APPLICABLE PORTIONS OF STANDARD DRAWING VPF-1-90 AND THE MANUFACTURER'S RECOMMENDATIONS.

THE ANCHORS SHALL BE CAST-IN-PLACE WITH 7" MINIMUM EMBEDMENT OR INSTALLED IN THREADED FERRULE CONCRETE INSERTS. THE INSERTS SHALL BE APPROVED BY THE DIRECTOR.

THE COLOR OF THE FENCE FABRIC, RAILS, POSTS, PLATES, TIE WIRES, AND ADDITIONAL VISUAL HARDWARE AND CAULK SHALL BE GRAY.

PAYMENT FOR ALL OF THE ABOVE SHALL BE AT THE UNIT PRICE BID PER LINEAR FOOT FOR ITEM 607 - VANDAL PROTECTION FENCE, 6 FOOT STRAIGHT, COATED FABRIC, AS PER PLAN WHICH SHALL INCLUDE ALL LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.

|                                                                                                                                                                      |                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|
| <br>RICHLAND ENGINEERING LIMITED<br>29 NORTH PARK STREET<br>MANSFIELD, OHIO 44902 |                                                      |
| DATE<br>11/15/16                                                                                                                                                     | REVIEWED<br>DAP                                      |
| DRAWN<br>JLS                                                                                                                                                         | STRUCTURE FILE NUMBER<br>18066688 (U)<br>1806718 (R) |
| DESIGNED<br>BLN                                                                                                                                                      | CHECKED<br>DLR                                       |
| GENERAL NOTES - 3<br>BRIDGE NO. CUY-77-1433 L & R<br>OVER I.R. 490 AND RAMPS                                                                                         |                                                      |
| CUY-77-14-35<br>PID No. 13567                                                                                                                                        |                                                      |
| 11 / 84                                                                                                                                                              |                                                      |
| 292<br>365                                                                                                                                                           |                                                      |

ESTIMATED QUANTITIES (FUNDING PARTICIPATION: 01/IMS/BR)

CALCULATED JLS DATED 2/16  
CHECKED JSB DATED 5/16

| ITEM    | ITEM EXT. | TOTAL LEFT BRIDGE | TOTAL RIGHT BRIDGE | UNIT  | DESCRIPTION                                                                                                                                                                                | LEFT BRIDGE |        |         |       | RIGHT BRIDGE |        |         |       | SEE SHEET                           |
|---------|-----------|-------------------|--------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--------|---------|-------|--------------|--------|---------|-------|-------------------------------------|
|         |           |                   |                    |       |                                                                                                                                                                                            | SUPER.      | ABUTS. | PIERS   | GEN'L | SUPER.       | ABUTS. | PIERS   | GEN'L |                                     |
| 202     | 11003     | LS                | LS                 |       | STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN                                                                                                                                          |             |        |         | LS    |              |        |         | LS    | 9/84                                |
| 202     | 22900     | 199               | 198                | SY    | APPROACH SLAB REMOVED                                                                                                                                                                      |             |        |         | 199   |              |        |         | 198   |                                     |
| 202     | 98100     | 16                | 15                 | EACH  | REMOVAL MISC.: EXISTING PILE                                                                                                                                                               |             |        |         | 16    |              |        |         | 15    | 9/84                                |
| 503     | 11101     | LS                | LS                 |       | COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN                                                                                                                                             |             |        |         | LS    |              |        |         | LS    | 19/84                               |
| 503     | 21301     | LS                | LS                 |       | UNCLASSIFIED EXCAVATION, AS PER PLAN                                                                                                                                                       |             |        |         | LS    |              |        |         | LS    | 10/84                               |
| 505     | 11100     | LS                | LS                 |       | PILE DRIVING EQUIPMENT MOBILIZATION                                                                                                                                                        |             |        |         | LS    |              |        |         | LS    |                                     |
| 507     | 00700     | 9200              | 7375               | FT    | 16" CAST-IN-PLACE REINFORCED CONCRETE PILES, DRIVEN                                                                                                                                        |             | 1920   | 7280    |       |              | 1655   | 5720    |       |                                     |
| 507     | 00750     | 9940              | 8090               | FT    | 16" CAST-IN-PLACE REINFORCED CONCRETE PILES, FURNISHED                                                                                                                                     |             | 2140   | 7800    |       |              | 1850   | 6240    |       |                                     |
| 509     | 10000     | 488,380           | 481,190            | POUND | EPOXY COATED REINFORCING STEEL                                                                                                                                                             | 304,935     | 49,318 | 134,127 |       | 304,974      | 41,361 | 134,855 |       |                                     |
| 511     | 33500     | 2                 | 2                  | EACH  | SEMI-INTEGRAL DIAPHRAGM GUIDE                                                                                                                                                              |             | 2      |         |       |              | 2      |         |       |                                     |
| 511     | 34447     | 943               | 943                | CY    | CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK, AS PER PLAN                                                                                                                                    | 943         |        |         |       | 943          |        |         |       | 10/84 66/84                         |
| 511     | 34451     | 195               | 195                | CY    | CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET), AS PER PLAN                                                                                                                          | 195         |        |         |       | 195          |        |         |       | 10/84                               |
| 511     | 41013     | 271               | 275                | CY    | CLASS QC1 CONCRETE WITH QC/QA, PIER ABOVE FOOTINGS, AS PER PLAN                                                                                                                            |             |        | 271     |       |              |        | 275     |       | 10/84                               |
| 511     | 43513     | 236               | 195                | CY    | CLASS QC1 CONCRETE WITH QC/QA, ABUTMENT INCLUDING FOOTING, AS PER PLAN                                                                                                                     |             | 236    |         |       |              | 195    |         |       | 10/84                               |
| 511     | 45653     | 849               | 849                | CY    | CLASS QC4 MASS CONCRETE, SUPERSTRUCTURE WITH QC/QA (COUNTERWEIGHT), AS PER PLAN                                                                                                            | 849         |        |         |       | 849          |        |         |       | 10/84 64/84                         |
| 511     | 46213     | 152               | 134                | CY    | CLASS QC1 CONCRETE WITH QC/QA, AS PER PLAN, WINGWALL AND FOOTING                                                                                                                           |             | 152    |         |       |              | 134    |         |       | 10/84 29/84 31/84 36/84 37/84 39/84 |
| 511     | 46513     | 315               | 315                | CY    | CLASS QC1 CONCRETE WITH QC/QA, FOOTING, AS PER PLAN                                                                                                                                        |             |        | 315     |       |              |        | 315     |       | 10/84                               |
| 512     | 10100     | 2000              | 2005               | SY    | SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)                                                                                                                                              | 1259        | 174    | 567     |       | 1259         | 171    | 575     |       |                                     |
| 512     | 33000     | 25                | 22                 | SY    | TYPE 2 WATERPROOFING                                                                                                                                                                       |             | 25     |         |       |              | 22     |         |       |                                     |
| 513     | 10201     | 5141              | 5265               | POUND | STRUCTURAL STEEL MEMBERS, LEVEL UF, AS PER PLAN                                                                                                                                            |             |        | 5141    |       |              |        | 5265    |       | 10/84                               |
| 513     | 10401     | 2,213,000         | 2,213,000          | POUND | STRUCTURAL STEEL MEMBERS, HYBRID GIRDER, LEVEL SIX (6) FABRICATION, AS PER PLAN                                                                                                            | 2,213,000   |        |         |       | 2,213,000    |        |         |       | 10/84 55/84                         |
| 513     | 20000     | 8652              | 8652               | EACH  | WELDED STUD SHEAR CONNECTORS                                                                                                                                                               | 8652        |        |         |       | 8652         |        |         |       |                                     |
| 513     | 95050     | 185               | 185                | SF    | STRUCTURAL STEEL, MISC.: 1" GALVANIZED STEEL BAR CATWALK GRATING                                                                                                                           |             |        | 185     |       |              |        | 185     |       | 10/84                               |
| 514     | 00067     | 12,278            | 12,278             | SF    | FIELD PAINTING STRUCTURAL STEEL, FINISH COAT, AS PER PLAN                                                                                                                                  | 12,278      |        |         |       | 12,278       |        |         |       | 11/84                               |
| 514     | 10000     | 7                 | 7                  | EACH  | FINAL INSPECTION REPAIR                                                                                                                                                                    | 7           |        |         |       | 7            |        |         |       |                                     |
| 516     | 10010     | 110               | 110                | FT    | ARMORLESS PREFORMED JOINT SEAL                                                                                                                                                             |             |        |         | 110   |              |        |         | 110   |                                     |
| 516     | 13900     | 237               | 229                | SF    | 2" PREFORMED EXPANSION JOINT FILLER                                                                                                                                                        |             | 237    |         |       |              | 229    |         |       |                                     |
| 516     | 14020     | 161               | 161                | FT    | SEMI-INTEGRAL ABUTMENT EXPANSION JOINT SEAL                                                                                                                                                |             | 161    |         |       |              | 161    |         |       |                                     |
| 516     | 44401     | 14                | 14                 | EACH  | ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), (5.231"x20"x36" WITH 21"x3"-1" BEVELED LOAD PLATE), AS PER PLAN                                                     | 14          |        |         |       | 14           |        |         |       | 60/84                               |
| 516     | 44401     | 14                | 14                 | EACH  | ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), (7.119"x21 1/2"x21 1/2" PAD WITH 3"x22 1/2"x22 1/2" AND 2"x14"x2'-9" LOAD PLATES AND HP 10x57 SECTION), AS PER PLAN | 14          |        |         |       | 14           |        |         |       | 59/84                               |
| 518     | 12301     | 1                 | 2                  | EACH  | SCUPPERS, INCLUDING SUPPORTS, AS PER PLAN                                                                                                                                                  | 1           |        |         |       | 2            |        |         |       | 73/84 74/84                         |
| 518     | 21200     | 215               | 180                | CY    | POROUS BACKFILL WITH GEOTEXTILE FABRIC                                                                                                                                                     |             | 215    |         |       |              | 180    |         |       |                                     |
| 518     | 40000     | 176               | 171                | FT    | 6" PERFORATED CORRUGATED PLASTIC PIPE                                                                                                                                                      |             | 176    |         |       |              | 171    |         |       |                                     |
| 518     | 40010     | 37                | 14                 | FT    | 6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS                                                                                                                              |             | 37     |         |       |              | 14     |         |       |                                     |
| 518     | 51100     | 53                | 9                  | FT    | 8" PIPE DOWNSPOUT, INCLUDING SPECIALS                                                                                                                                                      |             |        | 53      |       |              |        | 9       |       |                                     |
| 523     | 20000     | 4                 | 5                  | EACH  | DYNAMIC LOAD TESTING                                                                                                                                                                       |             | 2      | 2       |       |              | 2      | 3       |       |                                     |
| 526     | 30001     | 384               | 384                | SY    | REINFORCED CONCRETE APPROACH SLAB (T=17"), AS PER PLAN                                                                                                                                     |             |        |         | 384   |              |        |         | 384   | 11/84 77/84                         |
| 526     | 90030     | 116               | 116                | FT    | TYPE C INSTALLATION                                                                                                                                                                        |             |        |         | 116   |              |        |         | 116   |                                     |
| SPECIAL | 53000200  | LS                | LS                 |       | STRUCTURES, STRUCTURAL SURVEY AND MONITORING OF VIBRATIONS                                                                                                                                 |             |        |         | LS    |              |        |         | LS    | 11/84                               |
| SPECIAL | 53000600  | 106,560           | 106,560            | SF    | STRUCTURES, SHOP METALLIZING AND FIELD TOUCH-UP OF STRUCTURAL STEEL                                                                                                                        | 106,560     |        |         |       | 106,560      |        |         |       | 11/84                               |
| 607     | 39901     | 1010              | 1010               | FT    | VANDAL PROTECTION FENCE, 6' STRAIGHT, COATED FABRIC, AS PER PLAN                                                                                                                           | 1010        |        |         |       | 1010         |        |         |       | 11/84                               |

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29 NORTH PARK STREET  
MANSFIELD, OHIO 44902

DATE 11/15/16  
REVIEWED DAP  
STRUCTURE FILE NUMBER 1806688 (L)  
1806718 (R)

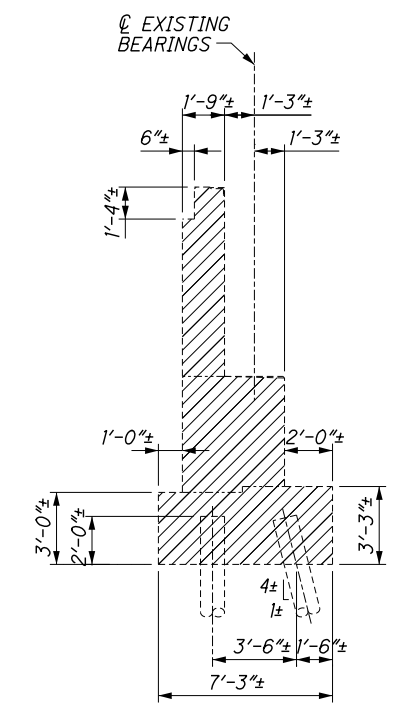
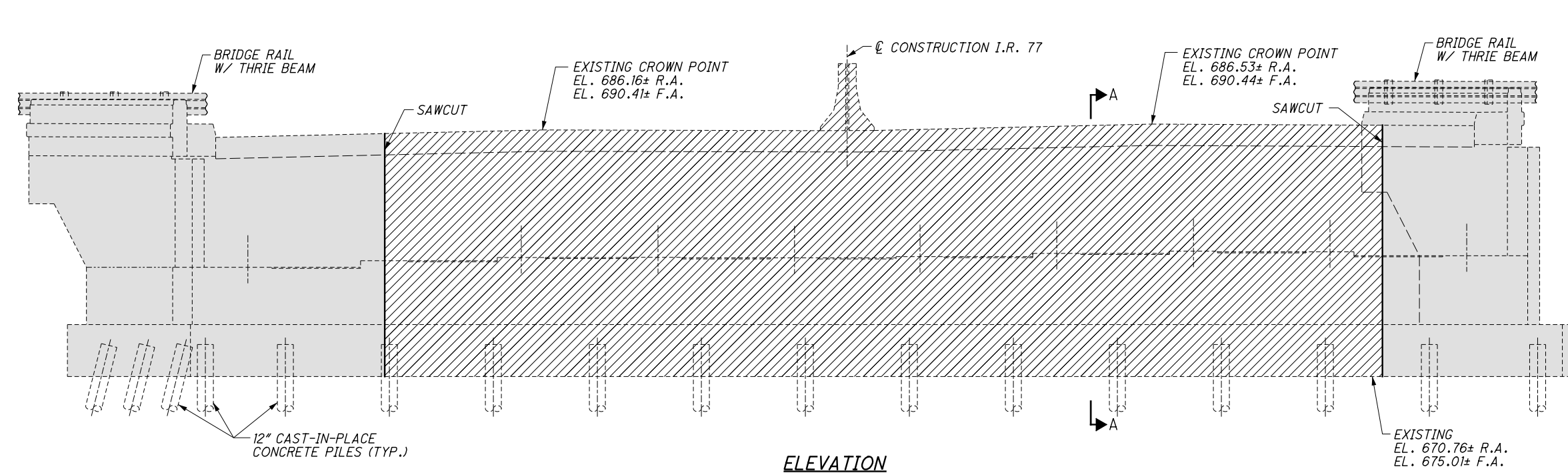
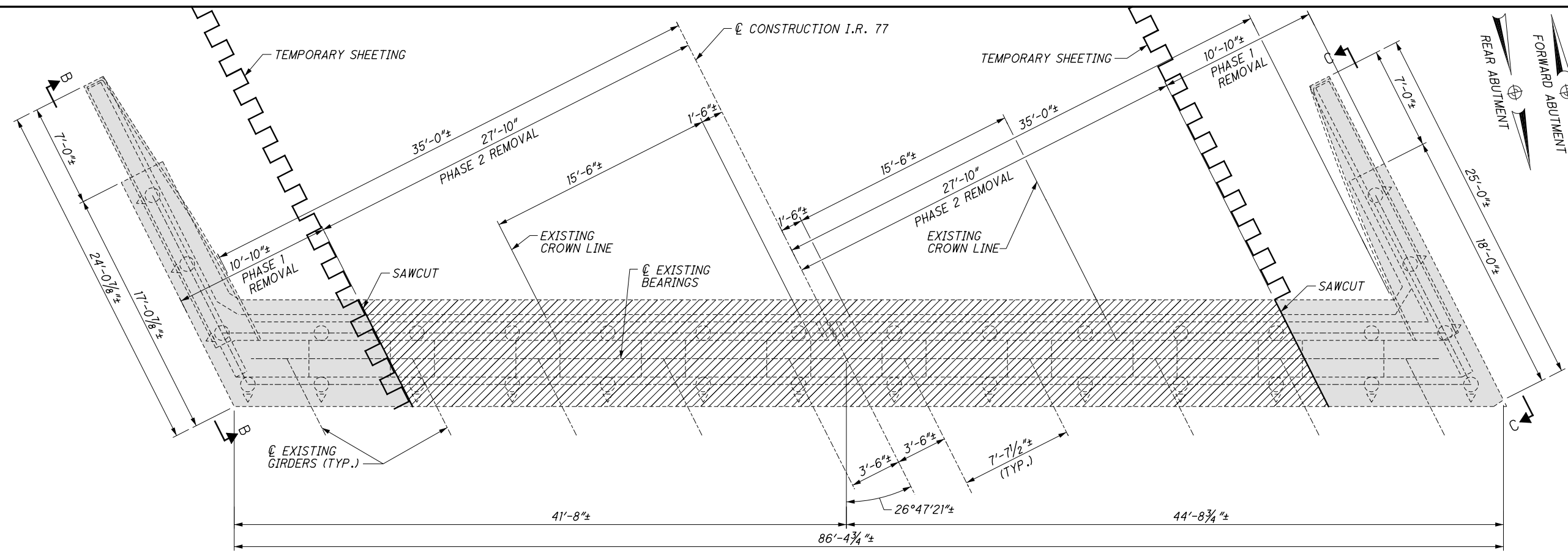
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DESIGNED BLN  
CHECKED DLR

ESTIMATED QUANTITIES  
BRIDGE NO. CUY-77-1433 L & R  
OVER I.R. 490 AND RAMPS

CUY-77-14.35  
PID No. 13567

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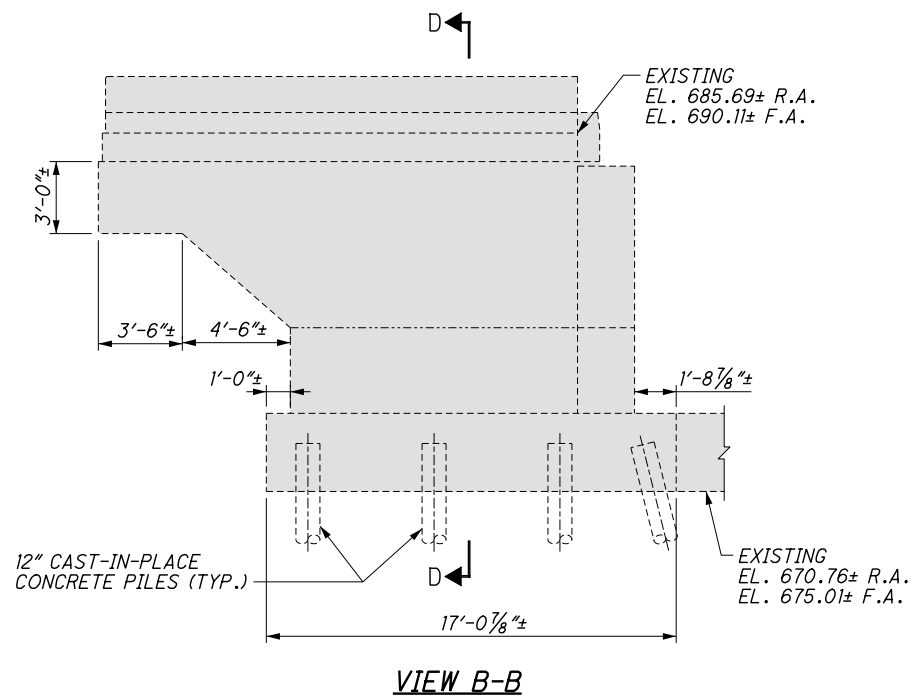


- LEGEND**
- INDICATES MATERIALS TO BE REMOVED DURING PHASE 1 REMOVAL AND INCLUDED WITH ITEM 202 - STRUCTURE REMOVED, OVER 20 FOOT SPAN, FOR PAYMENT.
  - INDICATES MATERIALS TO BE REMOVED DURING PHASE 2 REMOVAL AND INCLUDED WITH ITEM 202 - STRUCTURE REMOVED, OVER 20 FOOT SPAN, FOR PAYMENT.

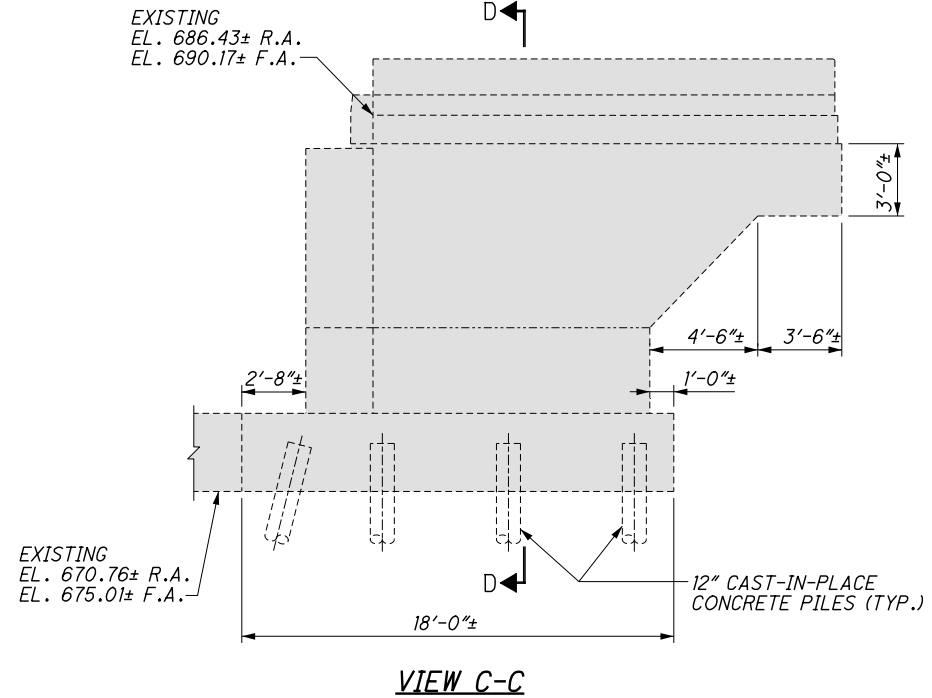
- NOTES**
- MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.**
  - TEMPORARY SHORING DETAILS:** SEE SHEETS [17/84] THROUGH [23/84].
  - REINFORCING STEEL IS NOT SHOWN.**
  - VIEWS B-B & C-C:** SEE SHEET [14/84].
  - PILE REMOVAL:** FOR LOCATIONS OF EXISTING PILES TO BE REMOVED PER ITEM 202 - REMOVAL, MISC.: EXISTING PILE, SEE SHEETS [24/84] AND [27/84].
  - NOTATION:** R.A. - REAR ABUTMENT  
F.A. - FORWARD ABUTMENT

|                                                                                                                                                                                                                                                                                  |                                                                               |                                                                                      |                                            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------|
| <b>EXISTING ABUTMENT REMOVAL - 1</b>                                                                                                                                                                                                                                             | RICHLAND ENGINEERING LIMITED<br>29 NORTH PARK STREET<br>MANSFIELD, OHIO 44902 | DATE: 11/15/16<br>REVIEWED: DAP<br>STRUCTURE FILE NUMBER: 1806688 (L)<br>1806718 (R) | DRAWN: KH<br>CHECKED: BLN<br>DESIGNED: ALP |
| BRIDGE NO. CUY-77-1433 L & R<br>OVER I.R. 490 AND RAMPS                                                                                                                                                                                                                          |                                                                               |                                                                                      |                                            |
| CUY-77-14.35                                                                                                                                                                                                                                                                     | PID No. 13567                                                                 | 13 / 84                                                                              |                                            |
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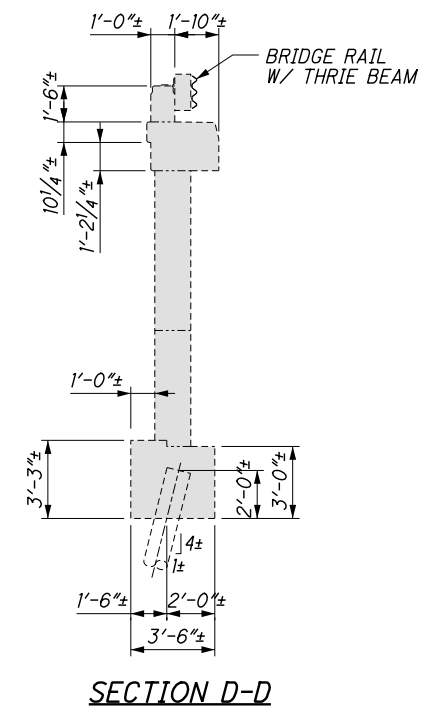
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**VIEW B-B**



**VIEW C-C**



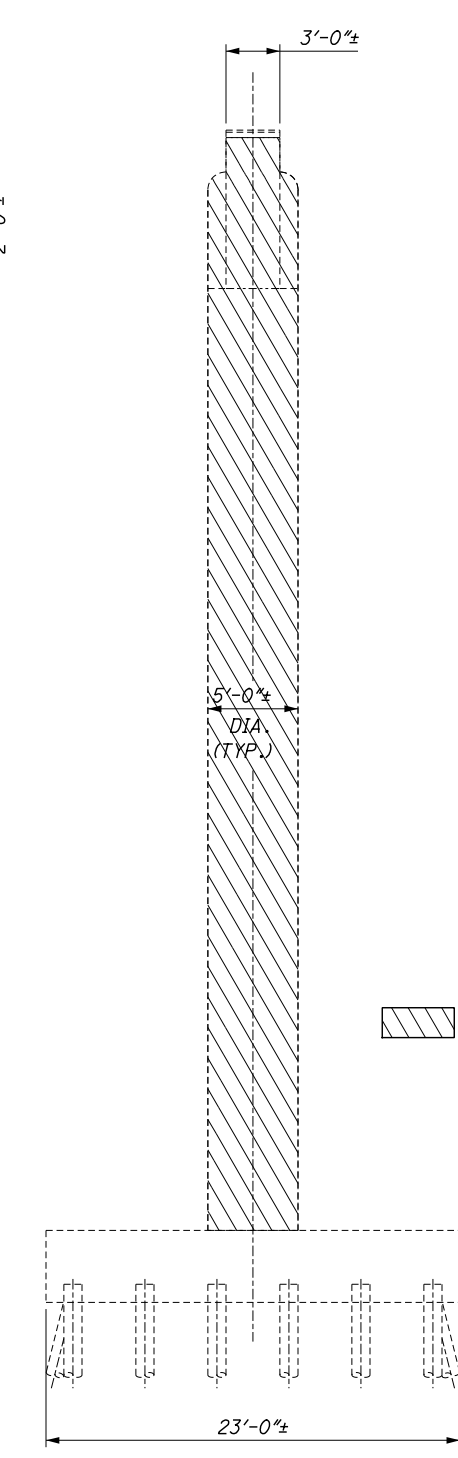
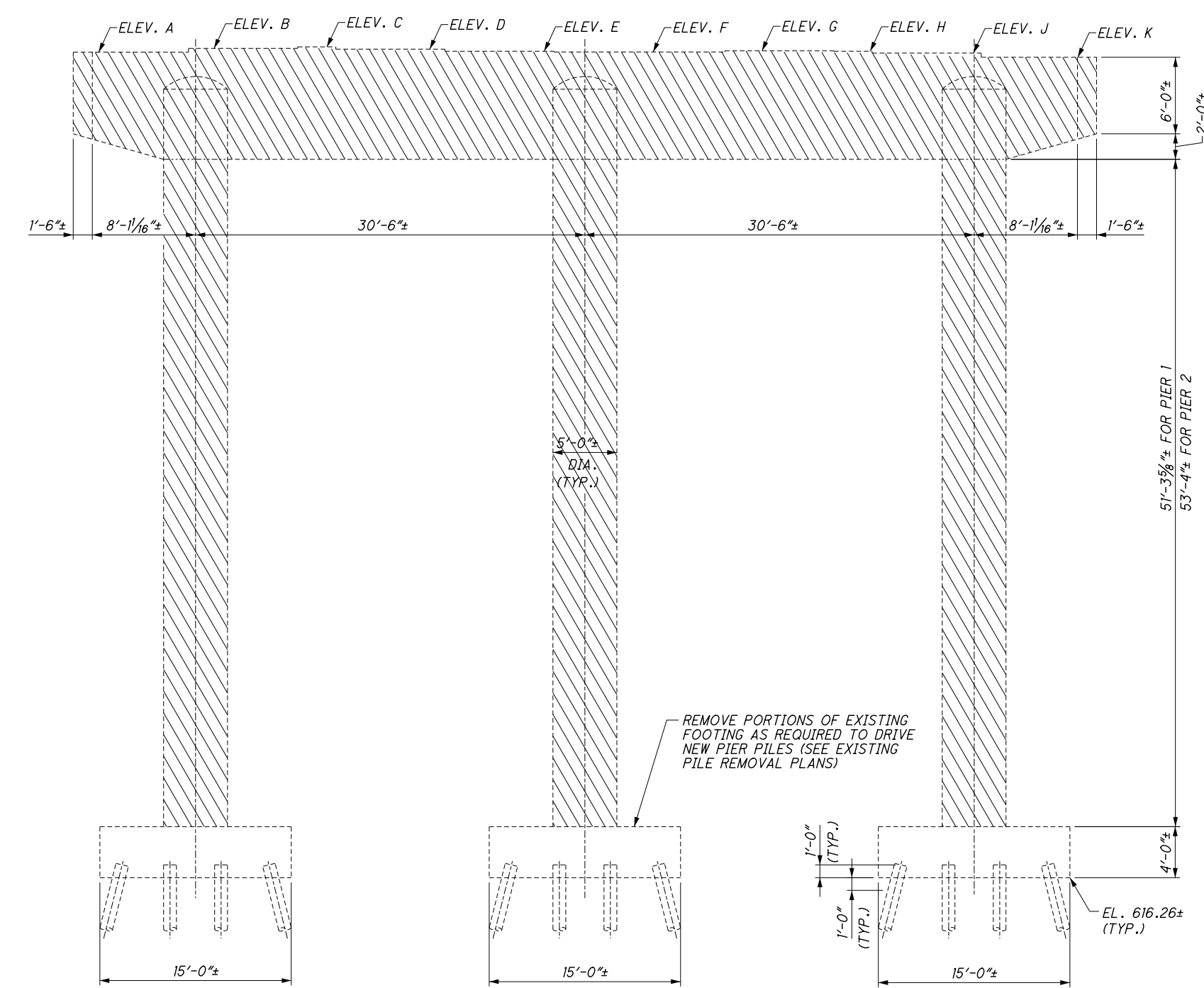
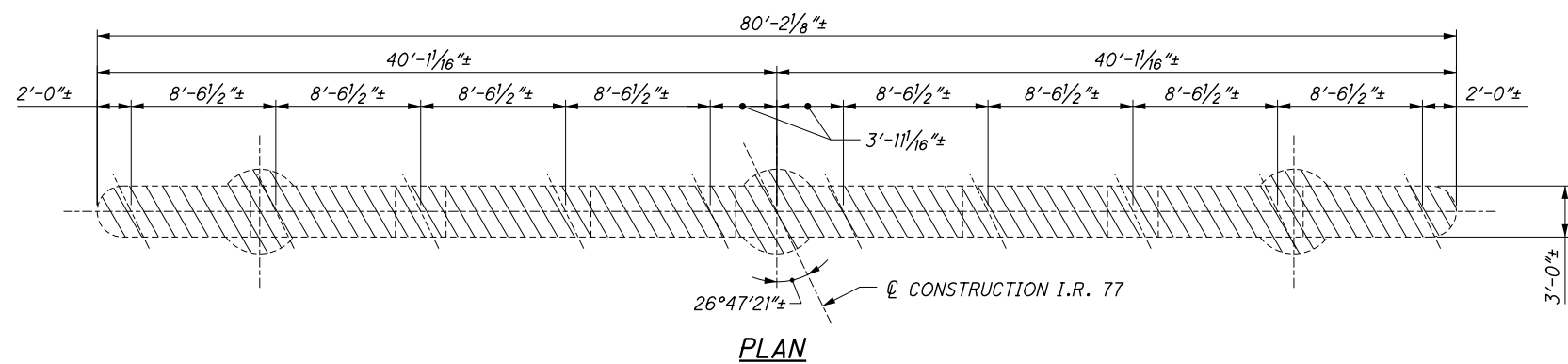
**SECTION D-D**

**LEGEND**  
 - INDICATES MATERIALS TO BE REMOVED DURING PHASE 1 REMOVAL AND INCLUDED WITH ITEM 202 - STRUCTURE REMOVED, OVER 20 FOOT SPAN, FOR PAYMENT.

**NOTES**  
**MATERIALS** SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.  
**REINFORCING STEEL** IS NOT SHOWN.  
**NOTATION:** R.A. - REAR ABUTMENT  
 F.A. - FORWARD ABUTMENT  
**ADDITIONAL NOTES:** SEE SHEET 13/84.

|                                                         |                                                                               |                                                                                      |                                            |
|---------------------------------------------------------|-------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------|
| <b>EXISTING ABUTMENT REMOVAL - 2</b>                    | RICHLAND ENGINEERING LIMITED<br>29 NORTH PARK STREET<br>MANSFIELD, OHIO 44902 | DATE: 11/15/16<br>REVIEWED: DAP<br>STRUCTURE FILE NUMBER: 1806688 (L)<br>1806718 (R) | DRAWN: KH<br>CHECKED: BLN<br>DESIGNED: ALP |
| BRIDGE NO. CUY-77-1433 L & R<br>OVER I.R. 490 AND RAMPS |                                                                               | CUY-77-14.35<br>PID No. 13567                                                        | 14 / 84<br>295 / 365                       |

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| BRIDGE SEAT ELEVATIONS |         |         |
|------------------------|---------|---------|
| ELEV.                  | PIER 1  | PIER 2  |
| A                      | 680.06± | 681.75± |
| B                      | 680.34± | 682.06± |
| C                      | 680.40± | 682.17± |
| D                      | 680.28± | 682.09± |
| E                      | 680.11± | 681.95± |
| F                      | 680.05± | 681.93± |
| G                      | 680.12± | 682.04± |
| H                      | 680.12± | 682.08± |
| J                      | 679.95± | 681.94± |
| K                      | 679.56± | 681.59± |

**LEGEND**

- INDICATES MATERIALS TO BE REMOVED DURING PHASE 2 REMOVAL AND INCLUDED WITH ITEM 202 - STRUCTURE REMOVED, OVER 20 FOOT SPAN, FOR PAYMENT.

**NOTES**

MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.

EXISTING PILE REMOVAL: SEE PILE LOCATION PLANS SHEETS [24/84] THROUGH [27/84].

REINFORCING STEEL IS NOT SHOWN.

RICHLAND ENGINEERING LIMITED  
29 NORTH PARK STREET  
MANSFIELD, OHIO 44902

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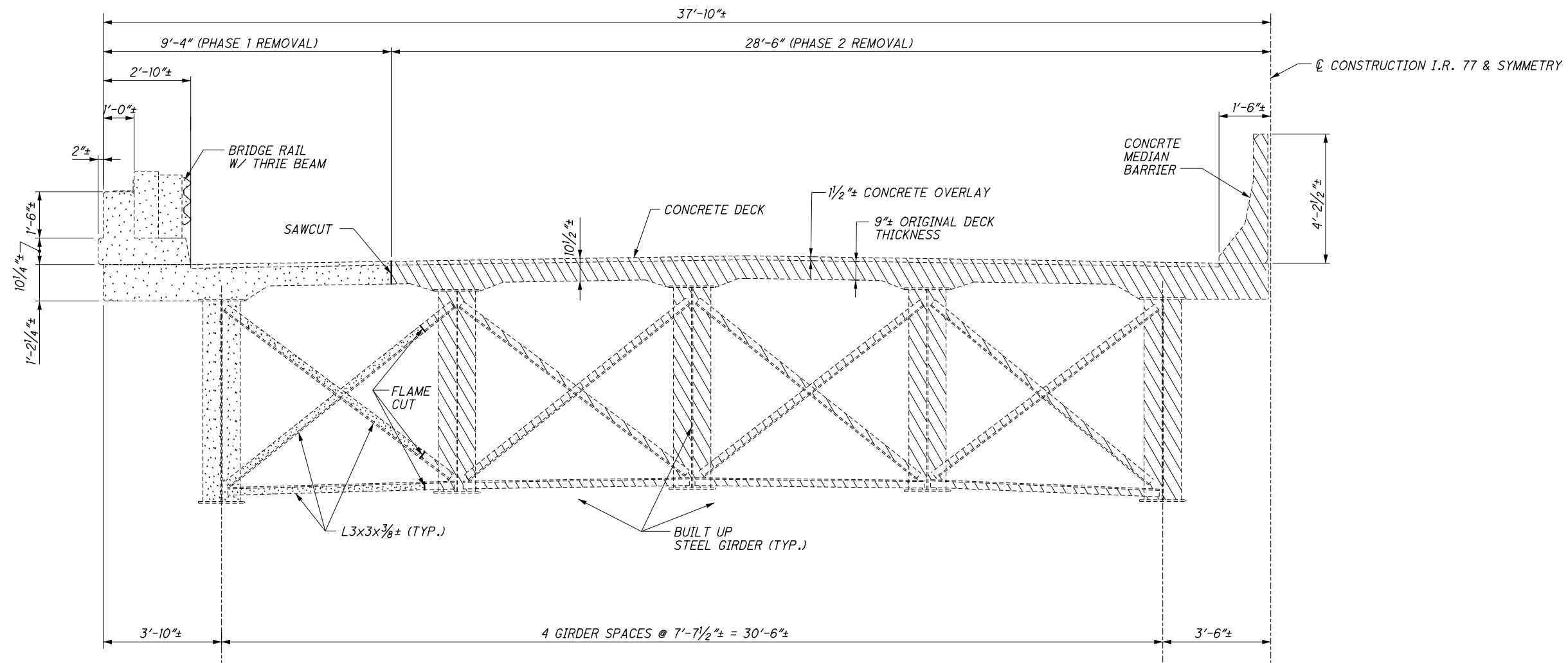
**EXISTING PIER 1 AND PIER 2 REMOVAL**  
BRIDGE NO. CUY-77-1433 L & R  
OVER I.R. 490 AND RAMPS

CUY-77-14.35  
PID No. 13567

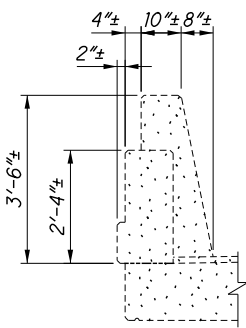
15 / 84

296  
365

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TRANSVERSE SECTION

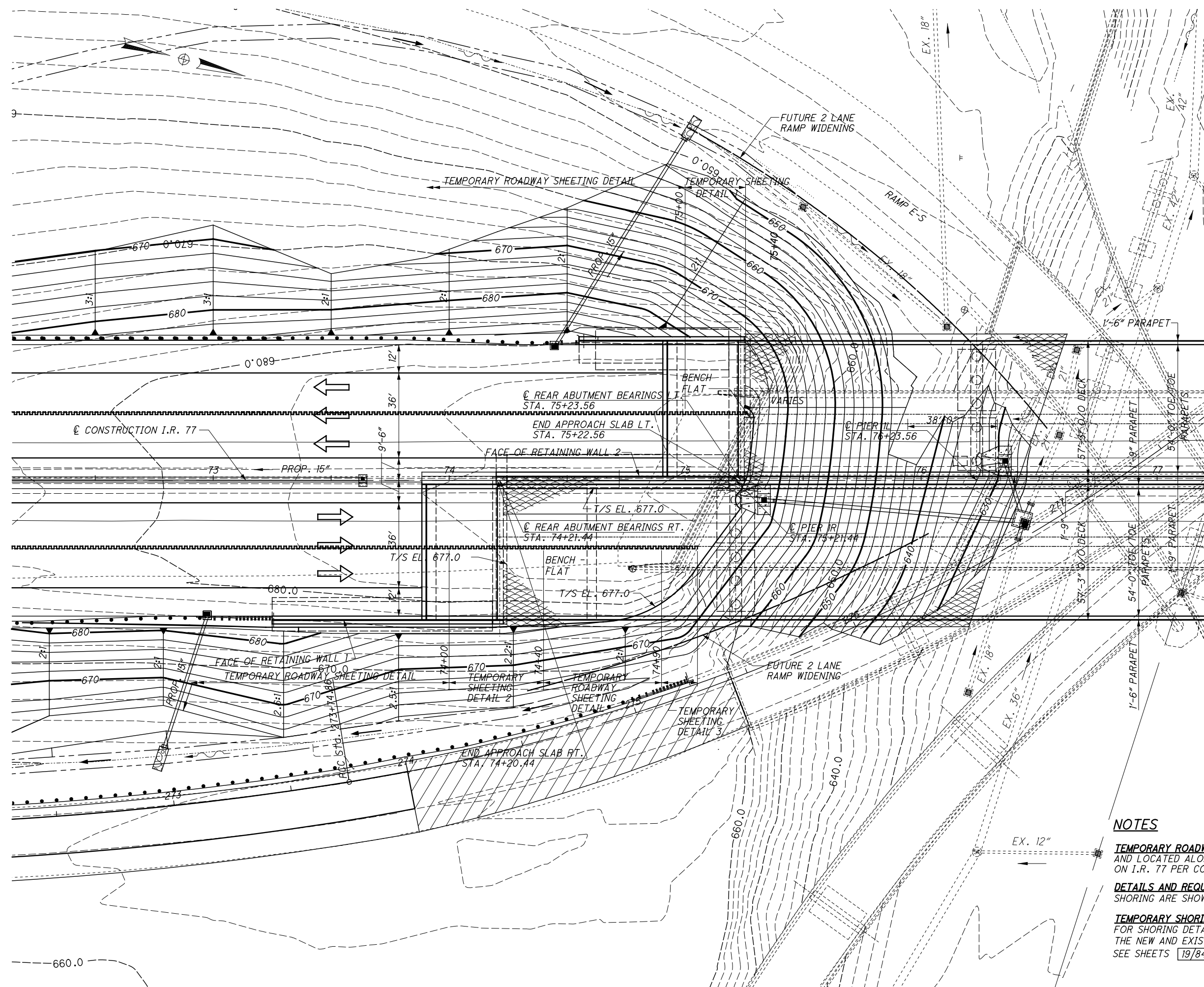


OUTSIDE PARAPET  
SOUTHBOUND BRIDGE

- LEGEND**
- INDICATES MATERIALS TO BE REMOVED DURING PHASE 1 REMOVAL AND INCLUDED WITH ITEM 202 - STRUCTURE REMOVED, OVER 20 FOOT SPAN, FOR PAYMENT.
  - INDICATES MATERIALS TO BE REMOVED DURING PHASE 2 REMOVAL AND INCLUDED WITH ITEM 202 - STRUCTURE REMOVED, OVER 20 FOOT SPAN, FOR PAYMENT.

**NOTES**  
 MATERIALS SHOWN ARE EXISTING UNLESS OTHERWISE NOTED.  
 REINFORCING STEEL IS NOT SHOWN.

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**NOTES**

**TEMPORARY ROADWAY SHEETING** SHALL BE CONSTRUCTED AND LOCATED ALONG THE PHASED CONSTRUCTION JOINT ON I.R. 77 PER CONTRACTOR DESIGN.

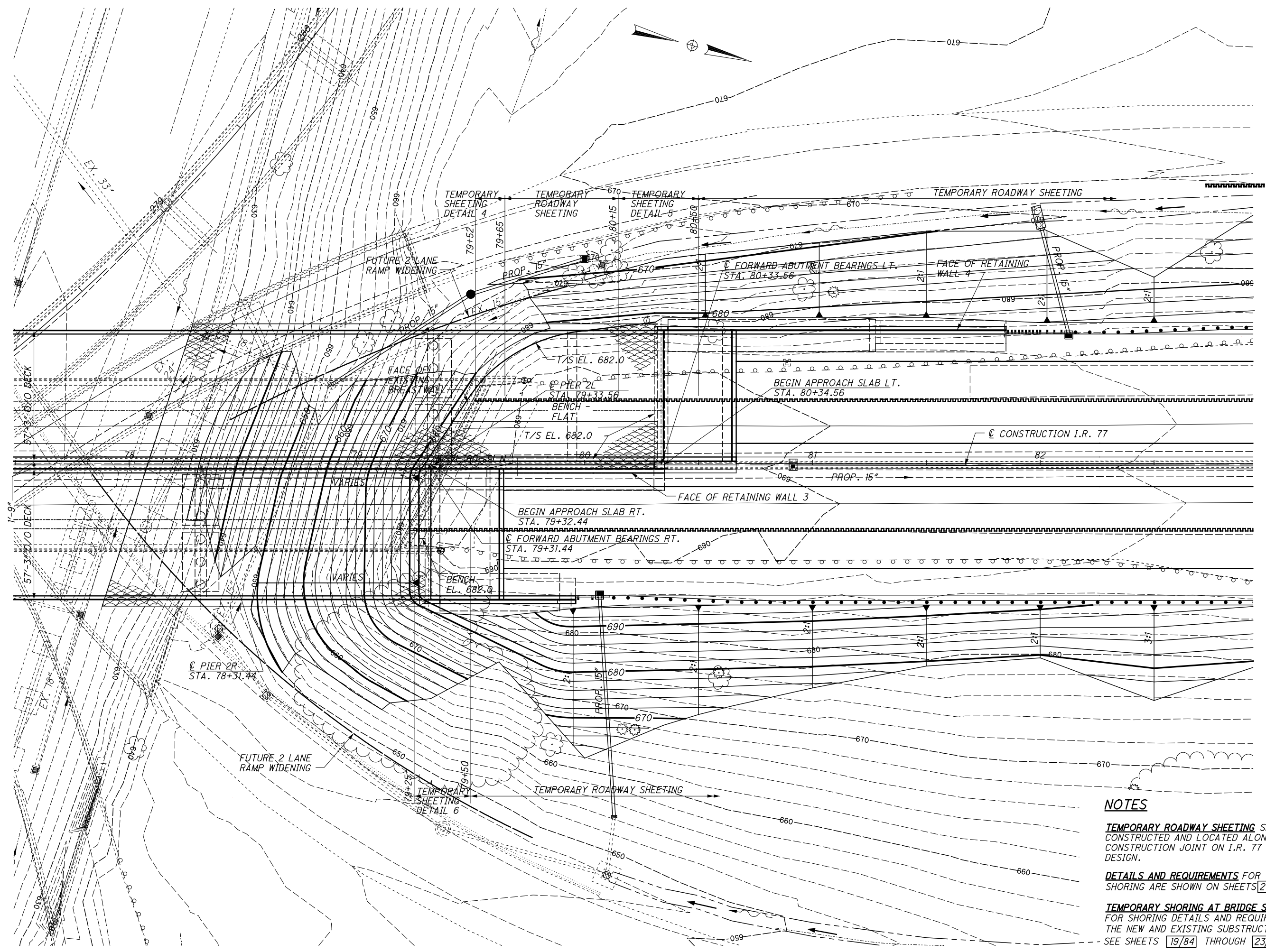
**DETAILS AND REQUIREMENTS** FOR THIS SHORING ARE SHOWN ON SHEETS [27/84] & [28/84].

**TEMPORARY SHORING AT BRIDGE SUBSTRUCTURE:** FOR SHORING DETAILS AND REQUIREMENTS AT THE NEW AND EXISTING SUBSTRUCTURE SEE SHEETS [19/84] THROUGH [23/84].

|                                                                                              |  |                                   |                         |                                                                        |                  |                                                                               |
|----------------------------------------------------------------------------------------------|--|-----------------------------------|-------------------------|------------------------------------------------------------------------|------------------|-------------------------------------------------------------------------------|
| <b>TEMPORARY SHORING PLAN - 1</b><br>BRIDGE NO. CUY-77-1433 L & R<br>OVER I.R. 490 AND RAMPS |  | DESIGNED<br>ALP<br>CHECKED<br>DLR | DRAWN<br>TWH<br>REVISED | REVIEWED<br>DAP<br>STRUCTURE FILE NUMBER<br>1806688 (L)<br>1806718 (R) | DATE<br>11/15/16 | RICHLAND ENGINEERING LIMITED<br>29 NORTH PARK STREET<br>MANSFIELD, OHIO 44902 |
|                                                                                              |  | CUY-77-14.35<br>PID No. 13567     | 17 / 84                 | 298<br>365                                                             |                  |                                                                               |



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**NOTES**

**TEMPORARY ROADWAY SHEETING** SHALL BE CONSTRUCTED AND LOCATED ALONG THE PHASED CONSTRUCTION JOINT ON I.R. 77 PER CONTRACTOR DESIGN.

**DETAILS AND REQUIREMENTS** FOR THIS SHORING ARE SHOWN ON SHEETS [27/84] & [28/84].

**TEMPORARY SHORING AT BRIDGE SUBSTRUCTURE:** FOR SHORING DETAILS AND REQUIREMENTS AT THE NEW AND EXISTING SUBSTRUCTURE SEE SHEETS [19/84] THROUGH [23/84].

|          |          |                       |             |
|----------|----------|-----------------------|-------------|
| DESIGNED | ALP      | CHECKED               | DLR         |
| DRAWN    | TWH      | REVISED               |             |
| REVIEWED | DAP      | STRUCTURE FILE NUMBER | 1806688 (L) |
| DATE     | 11/15/16 |                       |             |

**TEMPORARY SHORING PLAN - 2**  
 BRIDGE NO. CUY-77-1433 L & R  
 OVER I.R. 490 AND RAMPS

**CUY-77-14.35**  
 PID No. 13567



**GENERAL NOTES**

**ITEM 503 - COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN:** MANDATORY WORK UNDER THIS ITEM INCLUDES THE CONSTRUCTION, MAINTENANCE, AND REMOVAL OF SHEETING, SHORING AND BRACING SUPPORTING EXCAVATIONS ADJACENT TO ROADWAY TRAFFIC AND ADJACENT TO NEW AND EXISTING SUBSTRUCTURE UNITS SUPPORTING TRAFFIC. THE WORK MAY ALSO INCLUDE ADDITIONAL SHORING AS DETERMINED BY THE CONTRACTOR FOR HIS METHOD OF CONSTRUCTION.

LIMITS, DETAILS, MINIMUM SIZE REQUIREMENTS AND CONSTRUCTION SEQUENCES, IF NECESSARY, OF THE REQUIRED SHORING LOCATIONS ARE SHOWN IN THE TEMPORARY SHORING PLAN SHEETS. THE WORK SHALL BE PERFORMED IN ACCORDANCE WITH 503.

TEMPORARY SHORING FOR THE ROADWAY EMBANKMENT PHASED CONSTRUCTION JOINTS OUTSIDE OF THE LIMITS SHOWN FOR THE STRUCTURE SHORING IN THE TEMPORARY SHORING PLAN SHEETS IS DETAILED IN THE MAINTENANCE OF TRAFFIC SECTION OF THESE PLANS.

THE DESIGN SHOWN ON THE PLANS FOR THE TEMPORARY SUPPORT OF EXCAVATION IS ONE REPRESENTATIVE DESIGN THAT MAY BE USED TO CONSTRUCT THE PROJECT. THE CONTRACTOR MAY CONSTRUCT THE DESIGN SHOWN ON THE PLANS OR PREPARE AN ALTERNATE DESIGN TO SUPPORT THE SIDES OF EXCAVATIONS. IF CONSTRUCTING AN ALTERNATE DESIGN FOR TEMPORARY SUPPORT OF EXCAVATION, PREPARE PLANS IN ACCORDANCE WITH C & MS 501.05. ALTERNATE DESIGNS OF SHORING SUPPORTING EXCAVATIONS ADJACENT TO TRAFFIC AT THE EXISTING AND PROPOSED ABUTMENTS SHALL INCLUDE A HIGHWAY DESIGN LOADING EQUAL TO TWO FEET OF EQUIVALENT SOIL HEIGHT AS A SURCHARGE. THE ALTERNATE DESIGNS SHALL LIMIT SHORING DEFLECTIONS TO THE AMOUNTS SPECIFIED ON THE INDIVIDUAL DETAILS.

THE DEPARTMENT WILL PAY FOR THE TEMPORARY SUPPORT OF EXCAVATION AT THE CONTRACT LUMP SUM PRICE FOR COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN. NO ADDITIONAL PAYMENT WILL BE MADE FOR PROVIDING AN ALTERNATE DESIGN.

\* SINCE THE SUPERSTRUCTURE WILL BE CONSTRUCTED OVER THE SHEETING, COMPLETE EXTRACTING OF THE SHEETS MAY BE IMPOSSIBLE. IN THIS CASE, THE SHEETING SHALL BE CUT OFF ONE FOOT BELOW THE FINISHED GRADE AND THE REMAINING PORTION SHALL BE LEFT IN PLACE. NO ADDITIONAL COMPENSATION SHALL BE PAID FOR ANY PORTION OF SHEETING LEFT IN PLACE.

**DESIGN INFORMATION FOR REQUIRED STRUCTURE COFFERDAMS AND EXCAVATION BRACING**

| TEMPORARY SHEETING DESIGNATION | LOCATION                                     | PROTECTED SUBSTRUCTURE UNIT                                                                 | PHASE OF SHORING CONSTRUCTION                       | MINIMUM REQUIRED SECTION MODULUS | MINIMUM REQUIRED MOMENT OF INERTIA | MAXIMUM PERMITTED WALL DEFLECTIONS FOR ALTERNATE DESIGNS | SHEETING BOTTOM TIP ELEVATION | ADDITIONAL COMMENTS                                                                        | SEE SHEET        |
|--------------------------------|----------------------------------------------|---------------------------------------------------------------------------------------------|-----------------------------------------------------|----------------------------------|------------------------------------|----------------------------------------------------------|-------------------------------|--------------------------------------------------------------------------------------------|------------------|
|                                |                                              |                                                                                             |                                                     | (IN <sup>3</sup> /FT OF WALL)    | (IN <sup>4</sup> /FT OF WALL)      | (INCHES)                                                 |                               |                                                                                            |                  |
| DETAIL 1                       | PROPOSED AND EXISTING REAR LEFT ABUTMENT     | EXISTING ROADWAY EMBANKMENT DURING NEW PHASE 1 ABUTMENT CONSTRUCTION                        | PHASE 1 - BOTH SETS DRIVING AND TEMPORARY ANCHORAGE | 44.0<br>1.0                      | N/A<br>13.75                       | 1.0<br>0.25                                              | 594.0<br>674.2                | SEE CONSTRUCTION SEQUENCE AND DETAILS                                                      | 20/84 &<br>21/84 |
|                                |                                              | NEW PHASE 1 ROADWAY PAVEMENT DURING NEW ABUTMENT CONSTRUCTION AND EXISTING ABUTMENT REMOVAL | (DRIVEN IN PHASE 1)<br>PHASE 1 - ANCHORAGE          | 44.0                             | N/A                                | 1.0                                                      | 594.0                         | THIS IS THE SAME SHEETING USED FOR PHASE 1, EXCEPT THAT IT IS ANCHORED                     |                  |
| DETAIL 2                       | PROPOSED REAR RIGHT ABUTMENT                 | EXISTING ROADWAY EMBANKMENT DURING NEW PHASE 1 ABUTMENT CONSTRUCTION                        | PHASE 1 - BOTH SETS OF TEMPORARY SHEETS             | 44.0<br>1.0                      | 330.0<br>13.75                     | 1.0<br>0.25                                              | 650.0<br>677.56               | SEE CONSTRUCTION SEQUENCE AND DETAILS*                                                     | 22/84            |
|                                |                                              | NEW PHASE 1 ROADWAY PAVEMENT DURING PHASE 2 ABUTMENT CONSTRUCTION                           | (DRIVEN IN PHASE 1)<br>PHASE 1 - ANCHORAGE          | 44.0                             | 330.0                              | 1.0                                                      | 650.0                         | THIS IS THE SAME SHEETING USED FOR PHASE 1 EXCEPT THAT IT IS ANCHORED TO THE APPROACH SLAB |                  |
| DETAIL 3                       | EXISTING REAR RIGHT ABUTMENT                 | EXISTING ROADWAY EMBANKMENT DURING NEW PHASE 1 ABUTMENT CONSTRUCTION                        | PHASE 1 - DRIVING AND TEMPORARY ANCHORAGE           | 33.0                             | 250.0                              | 0.75                                                     | 662.0                         | SEE CONSTRUCTION SEQUENCE AND DETAILS*                                                     | 23/84            |
|                                |                                              | NEW PHASE 1 BENCHED EMBANKMENT DURING PHASE 2 ABUTMENT CONSTRUCTION                         | (DRIVEN IN PHASE 1)                                 | 33.0                             | 250.0                              | 0.75                                                     | 662.0                         | THIS IS THE SAME SHEETING USED FOR PHASE 1                                                 |                  |
| DETAIL 4                       | EXISTING FORWARD LEFT ABUTMENT               | EXISTING ROADWAY EMBANKMENT DURING NEW PHASE 1 ABUTMENT CONSTRUCTION                        | PHASE 1 - DRIVING AND TEMPORARY ANCHORAGE           | 22.0                             | 130.0                              | 0.75                                                     | 664.2                         | SEE CONSTRUCTION SEQUENCE AND DETAILS*                                                     | 23/84            |
|                                |                                              | NEW PHASE 1 ROADWAY PAVEMENT DURING NEW ABUTMENT CONSTRUCTION AND EXISTING ABUTMENT REMOVAL | (DRIVEN IN PHASE 1)<br>PHASE 1 - ANCHORAGE          | 22.0                             | 130.0                              | 0.75                                                     | 664.2                         | THIS IS THE SAME SHEETING USED FOR PHASE 1                                                 |                  |
| DETAIL 5                       | PROPOSED FORWARD LEFT ABUTMENT               | EXISTING ROADWAY EMBANKMENT DURING NEW PHASE 1 ABUTMENT CONSTRUCTION                        | PHASE 1 - DRIVING AND TEMPORARY ANCHORAGE           | 44.0<br>1.0                      | 330.0<br>13.75                     | 1.0<br>0.25                                              | 655.3<br>680.8                | SEE CONSTRUCTION SEQUENCE AND DETAILS*                                                     | 22/84            |
|                                |                                              | NEW PHASE 1 BENCHED EMBANKMENT DURING PHASE 2 ABUTMENT CONSTRUCTION                         | (DRIVEN IN PHASE 1)                                 | 44.0                             | 330.0                              | 1.0                                                      | 655.3                         | THIS IS THE SAME SHEETING USED FOR PHASE 1 EXCEPT THAT IT IS ANCHORED TO THE APPROACH SLAB |                  |
| DETAIL 6                       | PROPOSED AND EXISTING FORWARD RIGHT ABUTMENT | EXISTING ROADWAY EMBANKMENT DURING NEW PHASE 1 ABUTMENT CONSTRUCTION                        | PHASE 1 - BOTH SETS OF TEMPORARY SHEETS             | 44.0<br>1.0                      | N/A<br>13.75                       | 1.0<br>0.25                                              | 654.0<br>680.3                | SEE CONSTRUCTION SEQUENCE AND DETAILS                                                      |                  |
|                                |                                              | NEW PHASE 1 ROADWAY PAVEMENT DURING NEW ABUTMENT CONSTRUCTION AND EXISTING ABUTMENT REMOVAL | (DRIVEN IN PHASE 1)<br>PHASE 1 - ANCHORAGE          | 44.0                             | N/A                                | 1.0                                                      | 654.0                         | THIS IS THE SAME SHEETING USED FOR PHASE 1, EXCEPT THAT IT IS ANCHORED                     |                  |

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RICHLAND ENGINEERING LIMITED  
29 NORTH PARK STREET  
MANFIELD, OHIO 44902

REVIEWED DATE 11/15/16  
DAP  
STRUCTURE FILE NUMBER 1806688 (L)  
1806718 (R)

DRAWN TWH  
REVISED

DESIGNED BLN  
CHECKED DLR

TEMPORARY SHORING GENERAL NOTES  
BRIDGE NO. CUY-77-1433 L & R  
OVER I.R. 490 AND RAMPS

CUY - 77 - 14.35  
PID No. 13567

19 / 84

300  
365

**DETAIL 1 (DETAIL 6 SIMILAR)**

**NOTES:**

PROVIDE TEMPORARY SHEETING WITHIN THE LIMITS SHOWN ON THE TEMPORARY SHORING PLAN. THE SHEETING IS DESIGNED AS A BRACED SHEET WALL TO SUPPORT THE EXCAVATION FOR THE NEW AND EXISTING ABUTMENTS IN PHASE 1. THE BRACING CONSISTS OF TEMPORARY STRUTS AND ANCHORAGES. THE SHEETING IS THEN DESIGNED AS A TIED-BACK SHEET WALL WITH ANCHORAGES BURIED IN THE PHASE 1 ROADWAY EMBANKMENT TO SUPPORT THE EXCAVATION FOR THE NEW ABUTMENT CONSTRUCTION AND EXISTING ABUTMENT REMOVAL IN PHASE 2.

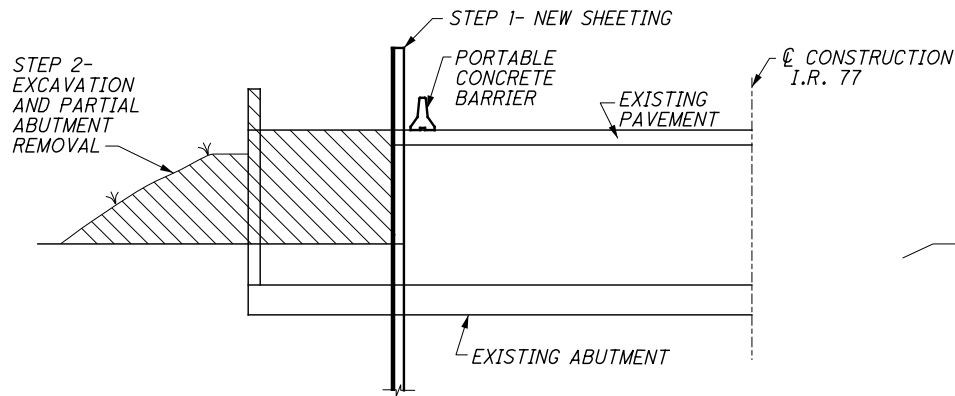
**CONSTRUCTION SEQUENCE:**

**PHASE 1**

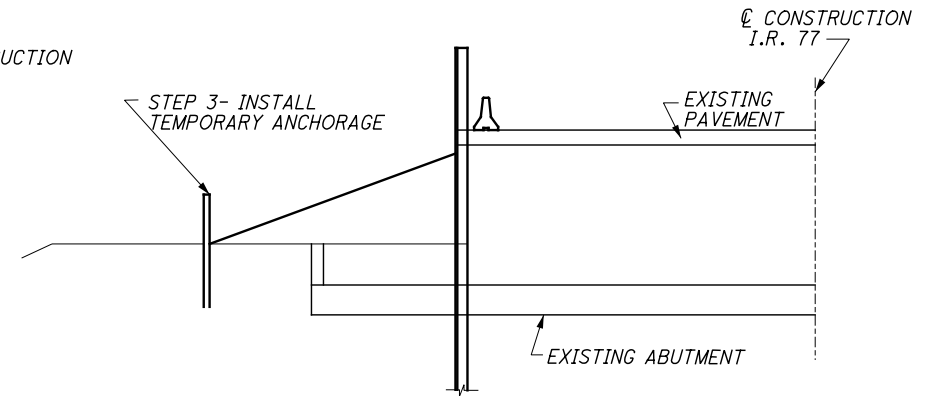
- 1) DRIVE SHEETING FOR THE ABUTMENT CONSTRUCTION WITHIN THE LIMITS SPECIFIED ON THE PLAN SHEET.
- 2) REMOVE THE EXISTING ABUTMENT TO A POINT NO LOWER THAN 9.5 FEET BELOW THE EXISTING TOP OF PAVEMENT AT THE PHASED CONSTRUCTION JOINT.
- 3) INSTALL THE TEMPORARY STRUTS AND ANCHORAGES TO SECURE THE TOP OF THE SHEET PILE WALL WITHIN THE LIMITS OF THE ABUTMENT REMOVAL AND ABUTMENT CONSTRUCTION SHEETING AS SHOWN ON THE TEMPORARY SHORING PLAN. THE STRUTS SHALL BE SPACED SUCH THAT THEY STRADDLE THE WIDTH OF THE PROPOSED FOOTING.
- 4) REMOVE THE REMAINDER OF THE EXISTING ABUTMENT.
- 5) CONSTRUCT NEW ABUTMENT TO SUPERSTRUCTURE SEAT ELEVATION. INCLUDE A FORM TO SUPPORT THE CANTILEVERED PORTION OF THE SUPERSTRUCTURE AT THE PHASED CONSTRUCTION LINE.
- 6) BACKFILL TO A LEVEL NO LOWER THAN 9.5 FEET BELOW THE EXISTING TOP OF PAVEMENT AT THE PHASED CONSTRUCTION JOINT.
- 7) REMOVE THE TEMPORARY STRUTS AND ANCHORAGE SUPPORTING THE SHEET PILE WALL.
- 8) DRIVE ADDITIONAL TEMPORARY SHEETING ALONG THE CONSTRUCTION PHASE LINE BETWEEN THE PORTABLE CONCRETE BARRIER PROTECTING MAINLINE TRAFFIC AND THE TEMPORARY SHEETING DRIVEN IN STEP 1. THE LONGITUDINAL LIMITS OF THE ADDITIONAL SHEETING MUST EXTEND AT LEAST THE WIDTH OF THE NEW ABUTMENT FOOTING.
- 9) PULL THE TEMPORARY SHEETING DRIVEN IN STEP 1 BETWEEN THE NEW ABUTMENT CONSTRUCTED IN PHASE 1 AND THE LOCATION OF THE PROPOSED ABUTMENT CONSTRUCTED IN PHASE 2. THE REMOVED SHEETING MUST NOT EXCEED THE WIDTH OF THE PROPOSED ABUTMENT FOOTING.
- 10) EXCAVATE ANY EARTH BETWEEN THE TEMPORARY SHEETING DRIVEN IN STEP 8 AND REMOVED SHEETING.
- 11) CONSTRUCT THE PHASE 1 SUPERSTRUCTURE.
- 12) CONSTRUCT THE EMBANKMENT BEHIND THE PHASE 1 SUPERSTRUCTURE. PLACE PERMANENT TIE-BACKS AND ANCHORS IN THE EMBANKMENT AT A LEVEL 4 FEET BELOW THE TOP OF THE PROPOSED PAVEMENT AT THE CONSTRUCTION JOINT.
- 13) CONSTRUCT THE REMAINDER OF THE PHASE 1 EMBANKMENT TO THE FINAL GRADE.

**PHASE 2**

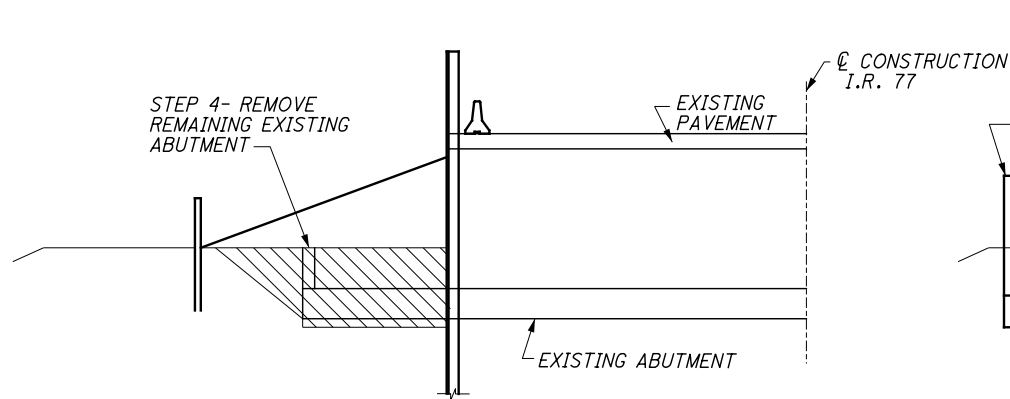
- 14) AT THE PROPOSED ABUTMENT, EXCAVATE EXISTING EMBANKMENT TO PROPOSED FOOTING ELEVATION.
- 15) CONSTRUCT REMAINDER OF ABUTMENT.
- 16) CONSTRUCT REMAINDER OF SUPERSTRUCTURE.
- 17) CONSTRUCT EMBANKMENT BEHIND NEW ABUTMENT AND SUPERSTRUCTURE TO A LEVEL NO MORE THAN 9.5 FEET BELOW THE TOP SURFACE OF THE NEW PAVEMENT AT THE PHASED CONSTRUCTION JOINT. RELEASE THE TIED-BACK ANCHORS ON THE SHEETING.
- 18) CUT OFF THE SHEETING BEHIND THE ABUTMENT TO A LEVEL AT LEAST ONE FOOT BELOW THE SUBGRADE AND CONSTRUCT THE ROADWAY EMBANKMENT TO FINAL GRADE.



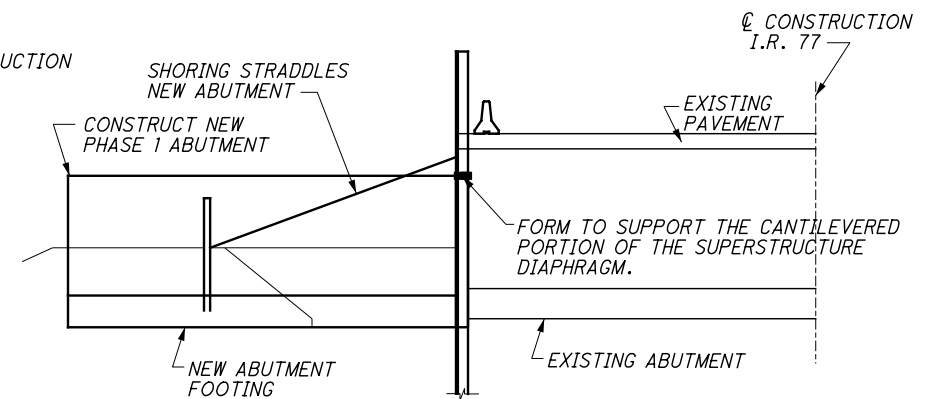
**STEPS 1 & 2 SECTION THROUGH EXISTING ABUTMENT PHASE CONSTRUCTION JOINT**  
(LOOKING AHEAD - TYPICAL)



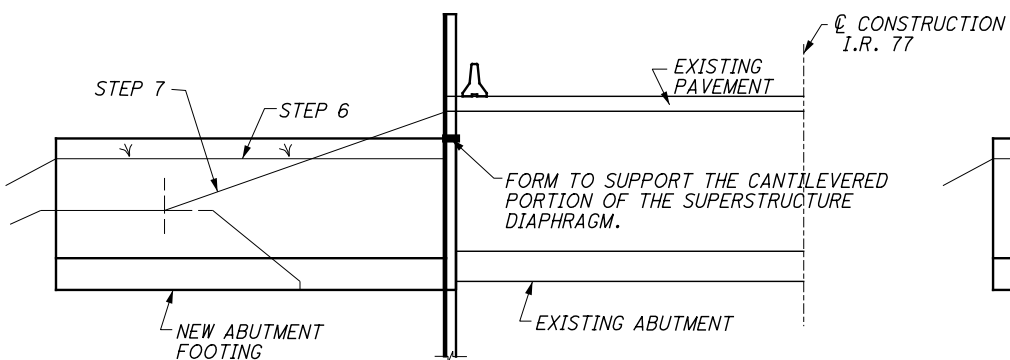
**STEP 3 SECTION THROUGH EXISTING ABUTMENT AND ADJOINING EXCAVATION ALONG PHASE CONSTRUCTION JOINT**



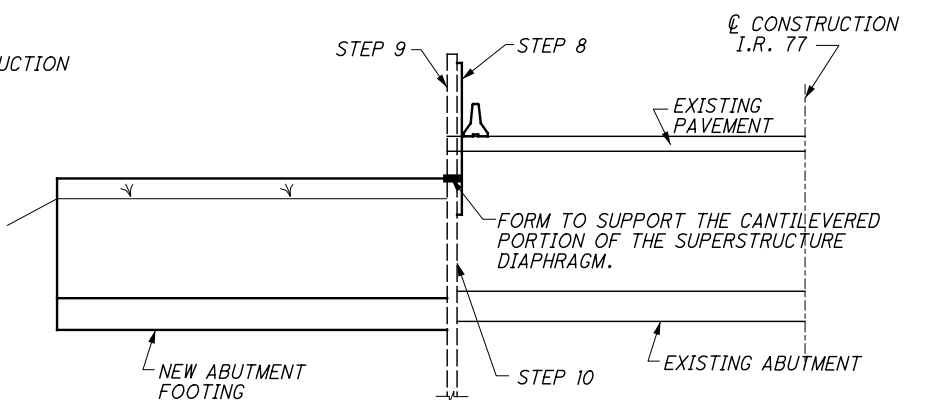
**STEP 4 SECTION THROUGH EXISTING ABUTMENT PHASE CONSTRUCTION JOINT**



**STEP 5 SECTION THROUGH NEW ABUTMENT**



**STEPS 6 & 7 SECTION THROUGH NEW & EXISTING ABUTMENT EXCAVATION**



**STEPS 8 - 10 SECTION THROUGH NEW ABUTMENT SECTION**

**NOTES**

**FOR DETAIL LOCATIONS:**

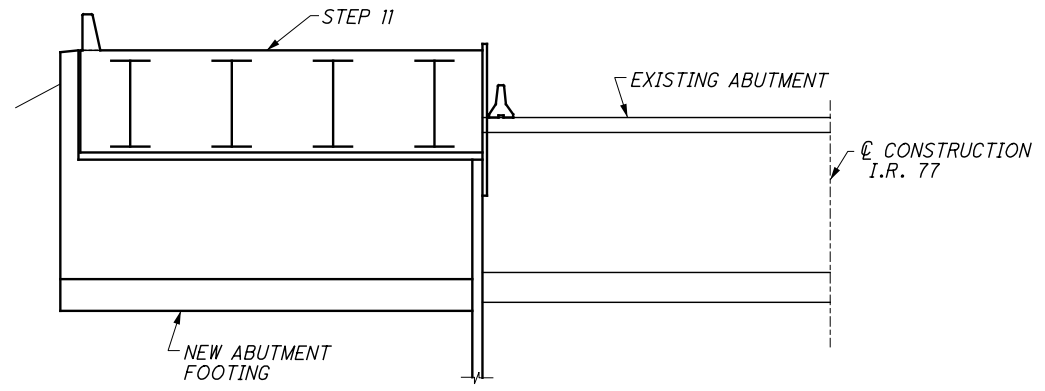
SEE SHEETS 17/84 AND 18/84 .

**FOR 11 THROUGH 17 STEPS:**

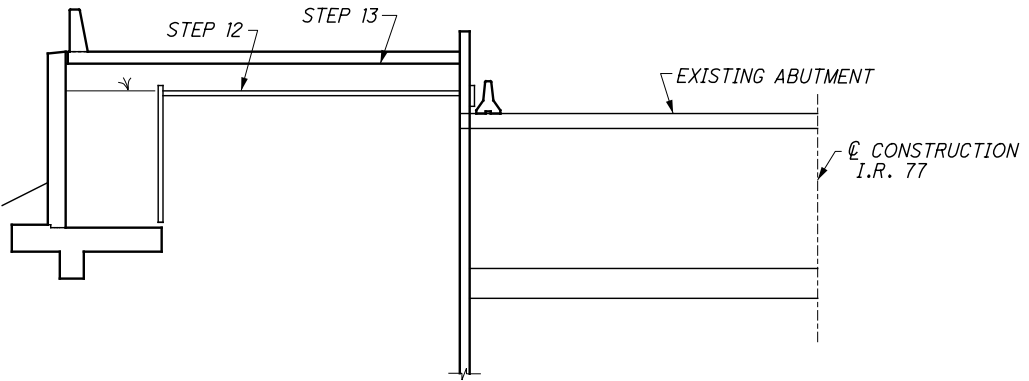
SEE SHEET 21/84 .

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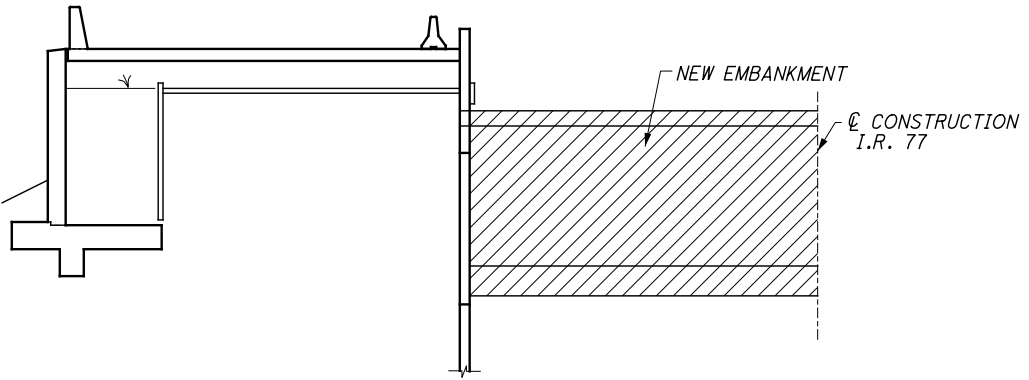
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**STEP 11 SECTION  
THROUGH NEW ABUTMENT  
SECTION**




**STEPS 12 & 13 SECTION  
THROUGH EMBANKMENT  
NEAR EXISTING AND PROPOSED  
ABUTMENT**



**STEP 17 SECTION  
THROUGH EMBANKMENT  
NEAR EXISTING AND PROPOSED  
ABUTMENT**

**NOTES**

**FOR DETAIL LOCATIONS:**  
SEE SHEETS 17/84 AND 18/84 .

|                                                         |         |                                      |                 |                  |                                                                                                                                                                      |
|---------------------------------------------------------|---------|--------------------------------------|-----------------|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DESIGNED<br>BLN                                         |         | DRAWN<br>TWH                         | REVIEWED<br>DAP | DATE<br>11/15/16 | RICHLAND ENGINEERING LIMITED<br><br>29 NORTH PARK STREET<br>MANSFIELD, OHIO 44902 |
| CHECKED<br>DLR                                          | REVISED | STRUCTURE FILE NUMBER<br>1806688 (L) | 1806678 (R)     |                  |                                                                                                                                                                      |
| <b>TEMPORARY SHORING DETAILS - 2</b>                    |         |                                      |                 |                  |                                                                                                                                                                      |
| BRIDGE NO. CUY-77-1433 L & R<br>OVER I.R. 490 AND RAMPS |         |                                      |                 |                  |                                                                                                                                                                      |
| <b>CUY - 77 - 14.35</b>                                 |         |                                      |                 |                  |                                                                                                                                                                      |
| <b>PID No. 13567</b>                                    |         |                                      |                 |                  |                                                                                                                                                                      |
| 21 / 84                                                 |         |                                      |                 |                  |                                                                                                                                                                      |
| 302<br>365                                              |         |                                      |                 |                  |                                                                                                                                                                      |

**DETAIL 2 & 5**

**NOTES:**

PROVIDE TEMPORARY SHEETING WITHIN THE LIMITS SHOWN ON THE TEMPORARY SHORING PLAN. THE SHEETING IS DESIGNED AS A CANTILEVERED WALL TO SUPPORT THE EXCAVATION FOR THE CONSTRUCTION OF THE NEW ABUTMENT IN PHASE 1 AND A TIED-BACKED SHEET WALL WITH ATTACHMENT TO THE PHASE 1 APPROACH SLAB TO SUPPORT THE EXCAVATION FOR THE ABUTMENT IN PHASE 2.

THE LONGITUDINAL SHEETING DRIVEN IN STEP 1 OF THE CONSTRUCTION SEQUENCE SHALL HAVE A MINIMUM SECTION MODULUS OF  $S = 44.0 \text{ IN}^3/\text{FT}$  OF WALL AND A MOMENT OF INERTIA OF AT LEAST  $I = 330 \text{ IN}^4/\text{FT}$  OF WALL. THE SHEETING SHALL HAVE A HEIGHT CAPABLE OF FITTING BETWEEN THE TEMPORARY SHEETING DRIVEN IN STEP 4 OF THE CONSTRUCTION SEQUENCE AND FACE OF THE NEW ABUTMENT CONSTRUCTED IN PHASE 1. THIS SHEET PILING MAY REQUIRE PLATING TO MEET THE DESIGN REQUIREMENTS. DEFLECTION OF THE PROPOSED SHEET PILE SECTION SHALL BE LIMITED TO ONE INCH.

THE CONTRACTOR SHALL DESIGN AND CONSTRUCT AN ANCHORAGE SYSTEM AND WALE SYSTEM FOR THE SHEETING PRIOR TO EXCAVATION FOR THE PHASE 2 ABUTMENT. A WALE SYSTEM AND THE ANCHORAGE SYSTEM EMBEDDED INTO THE APPROACH SLAB SHALL BE CAPABLE OF SUPPORTING A LOAD OF 5800 LBS/ FOOT OF WALL.

THE PHASED CONSTRUCTION OF THE ABUTMENT REQUIRES ADDITIONAL SHEETING TO BE DRIVEN AT THE PHASE 1 ABUTMENT AFTER CONSTRUCTION OF THE NEW ABUTMENT. THE SHEETING DRIVEN IN STEP 1 OF THE CONSTRUCTION SEQUENCE MUST ALSO BE REMOVED AT THE PHASED CONSTRUCTION JOINT OF THE NEW ABUTMENT TO FACILITATE THE CONSTRUCTION OF THE PHASE 2 PORTION OF THE ABUTMENT.

THE TEMPORARY SHEETING DRIVEN IN STEP 4 OF THE CONSTRUCTION SEQUENCE SHALL HAVE A MINIMUM SECTION MODULUS OF  $S = 1.0 \text{ IN}^3/\text{FT}$ , A MINIMUM MOMENT OF INERTIA OF NO LESS THAN  $13.75 \text{ IN}^4/\text{FT}$  AND A HEIGHT LESS THAN 6 INCHES. THE DEFLECTION OF THE TEMPORARY SHEETING SHALL BE LIMITED TO LESS THAN 0.25 INCHES. THE SHEETING SHALL HAVE A HEIGHT CAPABLE OF FITTING BETWEEN THE TEMPORARY SHEETING DRIVEN IN STEP 1 OF THE CONSTRUCTION SEQUENCE AND THE BACK SIDE OF THE PORTABLE CONCRETE BARRIER.

THE CONSTRUCTION ALSO REQUIRES A FORM TO SUPPORT A PORTION OF THE SUPERSTRUCTURE IN PHASE 1. THIS FORM MUST SUPPORT THE CANTILEVERED PORTION OF THE SUPERSTRUCTURE SEMI-INTEGRAL BLOCK CONSTRUCTED IN PHASE 1.

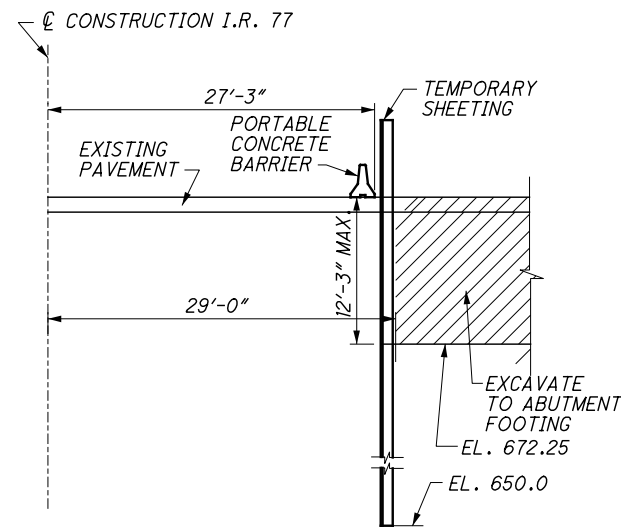
**CONSTRUCTION SEQUENCE:**

**PHASE 1**

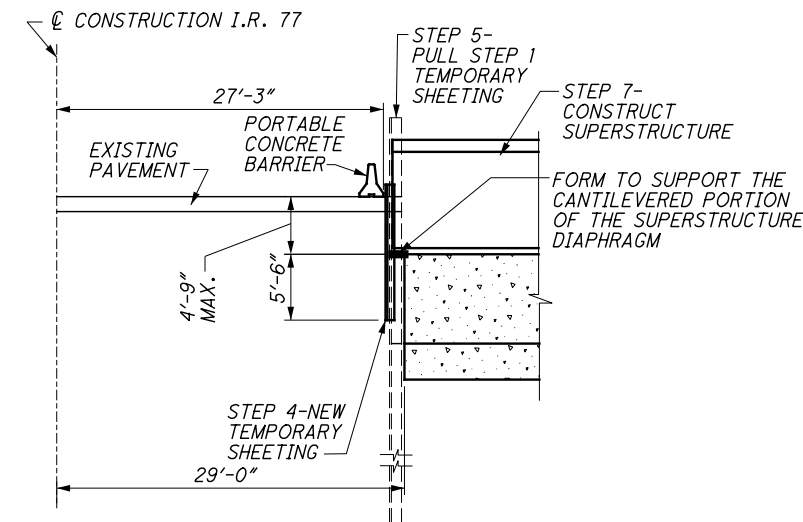
- 1) DRIVE SHEETING FOR THE ABUTMENT CONSTRUCTION WITHIN THE LIMITS SPECIFIED ON THE TEMPORARY SHORING PLAN SHEETS.
- 2) EXCAVATE FOR NEW ABUTMENT.
- 3) CONSTRUCT NEW ABUTMENT TO SUPERSTRUCTURE SEAT ELEVATION. INCLUDE A FORM TO SUPPORT THE CANTILEVERED PORTION OF THE SUPERSTRUCTURE AT THE PHASED CONSTRUCTION LINE.
- 4) DRIVE ADDITIONAL TEMPORARY SHEETING ALONG THE CONSTRUCTION PHASE LINE BETWEEN THE PORTABLE CONCRETE BARRIER PROTECTING MAINLINE TRAFFIC AND THE TEMPORARY SHEETING DRIVEN IN STEP 1. THE LONGITUDINAL LIMITS OF THE ADDITIONAL SHEETING MUST EXTEND AT LEAST THE WIDTH OF THE NEW ABUTMENT FOOTING.
- 5) PULL THE TEMPORARY SHEETING DRIVEN IN STEP 1 BETWEEN THE NEW ABUTMENT CONSTRUCTED IN PHASE 1 AND THE LOCATION OF THE PROPOSED ABUTMENT CONSTRUCTED IN PHASE 2. THE REMOVED SHEETING MUST NOT EXCEED THE WIDTH OF THE PROPOSED ABUTMENT FOOTING.
- 6) EXCAVATE ANY EARTH BETWEEN THE TEMPORARY SHEETING DRIVEN IN STEP 4 AND REMOVED SHEETING.
- 7) CONSTRUCT THE PHASE 1 SUPERSTRUCTURE.
- 8) CONSTRUCT THE EMBANKMENT BEHIND THE PHASE 1 SUPERSTRUCTURE.
- 9) CONSTRUCT THE PHASE 1 APPROACH SLAB, PROVIDING ANCHORAGE POINTS IN THE VERTICAL FACE OF THE SLAB TO SUPPORT THE TEMPORARY SHEETING DRIVEN IN PHASE 1.
- 10) CONNECT THE TEMPORARY SHEETING DRIVEN IN PHASE 1 TO APPROACH SLAB.
- 11) REMOVE THE TEMPORARY SHEETING DRIVEN IN STEP 4.

**PHASE 2**

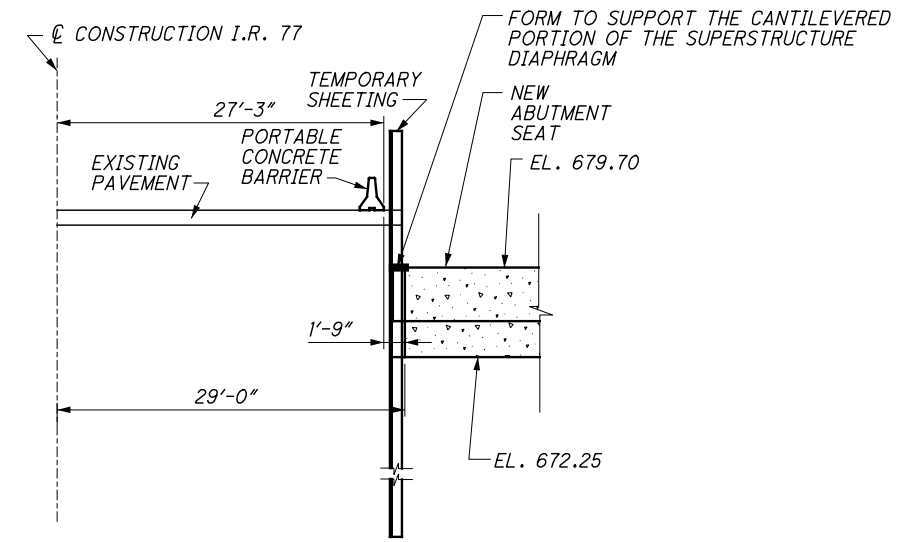
- 12) EXCAVATE FOR NEW ABUTMENT.
- 13) REMOVE TEMPORARY ABUTMENT SEAT AND CONSTRUCT NEW ABUTMENT.
- 14) CONSTRUCT NEW SUPERSTRUCTURE.
- 15) CONSTRUCT EMBANKMENT BEHIND NEW PHASE 2 ABUTMENT.
- 16) RELEASE TEMPORARY SHEETING FROM PHASE 1 APPROACH SLAB ANCHORAGES AFTER THE ELEVATION DIFFERENCE BETWEEN THE TOP OF THE PHASE 1 APPROACH SLAB AND THE NEW PHASE 2 EMBANKMENT IS LESS THAN 12 FEET.
- 17) REMOVE THE TEMPORARY SHEETING WHEN THE NEW EMBANKMENT IS LEVEL WITH THE BOTTOM OF THE NEW APPROACH SLAB.



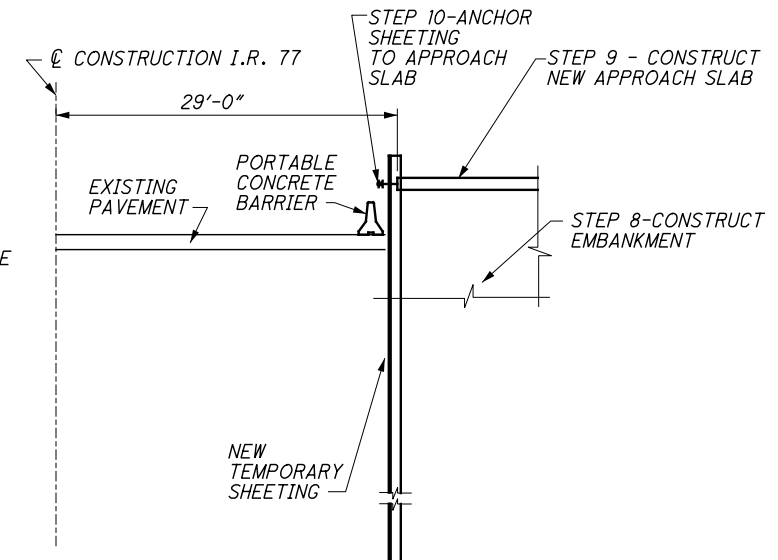
**STEP 1 SECTION AT PHASED CONSTRUCTION JOINT**  
(LOOKING FORWARD)



**STEPS 4-7 AT ABUTMENT PHASED CONSTRUCTION JOINT**  
(LOOKING FORWARD)



**STEP 3 SECTION AT ABUTMENT PHASED CONSTRUCTION JOINT**  
(LOOKING FORWARD)



**STEPS 8-10 SECTION AT APPROACH EMBANKMENT BEHIND ABUTMENT AT PHASED CONSTRUCTION JOINT**  
(LOOKING FORWARD)

**NOTE**

**FOR DETAIL LOCATIONS:**

SEE SHEETS 17/84 AND 18/84 .

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**DETAIL 3 & 4**

**NOTES:**

THE TEMPORARY STRUTS AND ANCHORAGE REQUIRED TO SUPPORT THE CANTILEVERED SHEET PILE WALL AT THE EXISTING ABUTMENT SHALL BE DESIGNED BY THE CONTRACTOR TO SUIT HIS METHOD OF CONSTRUCTION. THE STRUTS AND ANCHORAGE SHALL BE CAPABLE OF SUPPORTING A HORIZONTAL FORCE OF 7000 LBS./ FT. OF WALL.

THE EXISTING ABUTMENT SHEETING SHALL BE COORDINATED WITH THE RIGHT PIER FOOTING EXCAVATION TO LIMIT THE CANTILEVERED HEIGHT OF THE PIER TRANSVERSE SHEETING AS SPECIFIED IN DETAIL 7.

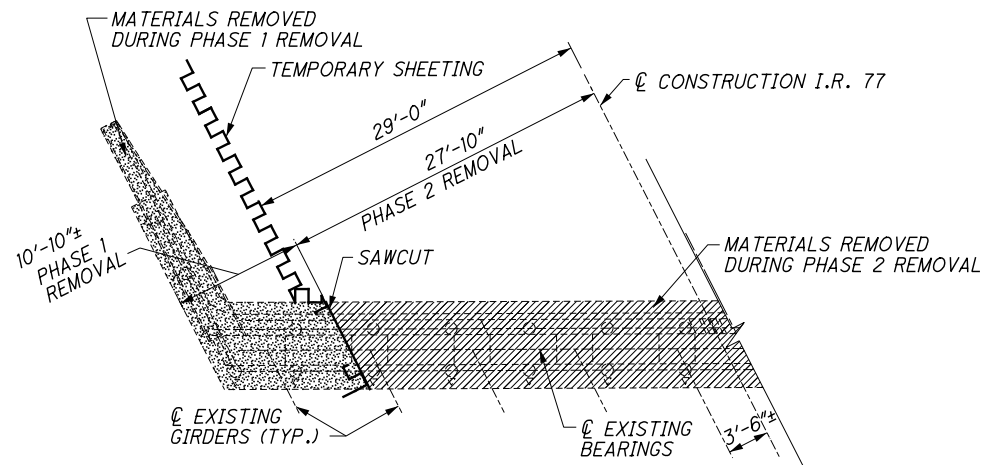
**CONSTRUCTION SEQUENCE:**

**PHASE 1**

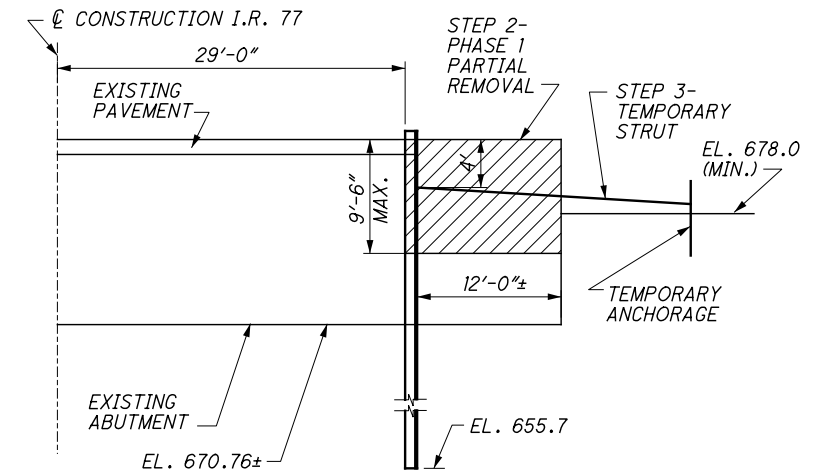
- 1) DRIVE TEMPORARY SHEETING ALONG THE MAINLINE PHASED CONSTRUCTION JOINT TO THE BACK OF THE EXISTING ABUTMENT BACKWALL. DRIVE TEMPORARY SHEETING FROM THE FRONT FACE OF THE EXISTING ABUTMENT FOOTING TO THE END OF THE PIER 1 LONGITUDINAL SHEETING.
- 2) REMOVE THE EXISTING ABUTMENT TO A POINT NO LOWER THAN 9.5 FEET BELOW THE EXISTING TOP OF PAVEMENT AT THE PHASED CONSTRUCTION JOINT.
- 3) INSTALL THE TEMPORARY STRUTS AND ANCHORAGES TO SECURE THE TOP OF THE SHEET PILE WALL WITHIN THE LIMITS OF THE ABUTMENT REMOVAL SHEETING.
- 4) REMOVE THE REMAINDER OF THE ABUTMENT.
- 5) BACKFILL TO A LEVEL NO LOWER THAN 9.5' BELOW THE EXISTING TOP OF PAVEMENT AT THE PHASED CONSTRUCTION JOINT.
- 6) REMOVE THE TEMPORARY STRUTS AND ANCHORAGE SUPPORTING THE SHEET PILE WALL.
- 7) CONSTRUCT THE REMAINDER OF THE PHASE 1 EMBANKMENT TO THE FINAL GRADE. (ASSUMED AS ACCESS TO THE GROUND WILL BE LIMITED BY THE PHASE 1 SUPERSTRUCTURE).
- 8) IF SO CHOSEN BY THE CONTRACTOR, DRIVE TEMPORARY SHEETING (DESIGNED BY CONTRACTOR), ADJACENT TO THE ABUTMENT REMOVAL CUT LINE TO PREVENT PHASE 1 EMBANKMENT FROM COLLAPSING INTO THE PHASE 2 ABUTMENT REMOVAL EXCAVATION.

**PHASE 2**

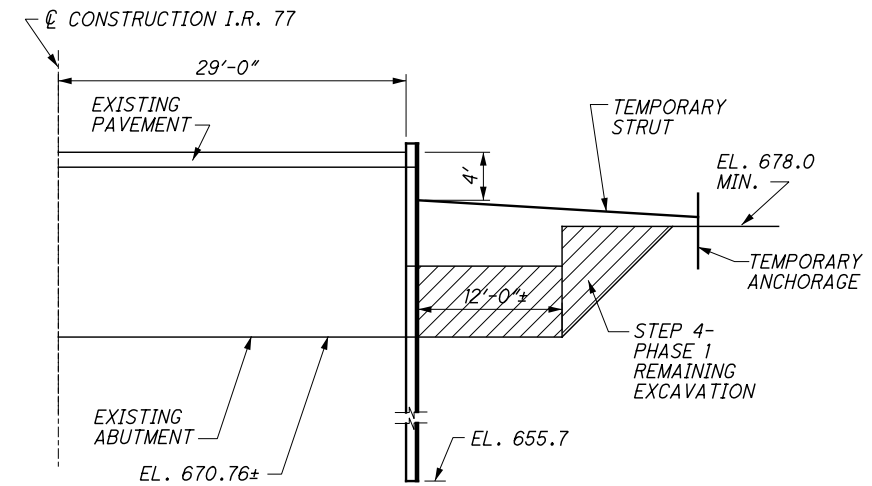
- 9) WITH THE PHASE 1 TEMPORARY SHEETING IN PLACE, EXCAVATE AND REMOVE THE REMAINDER OF THE EXISTING FOOTING.



**SHEETING PLAN VIEW AT EXISTING ABUTMENT**



**CONSTRUCTION SEQUENCE STEPS 2 & 3 SECTION AT EXISTING REAR RIGHT ABUTMENT (LOOKING AHEAD)**



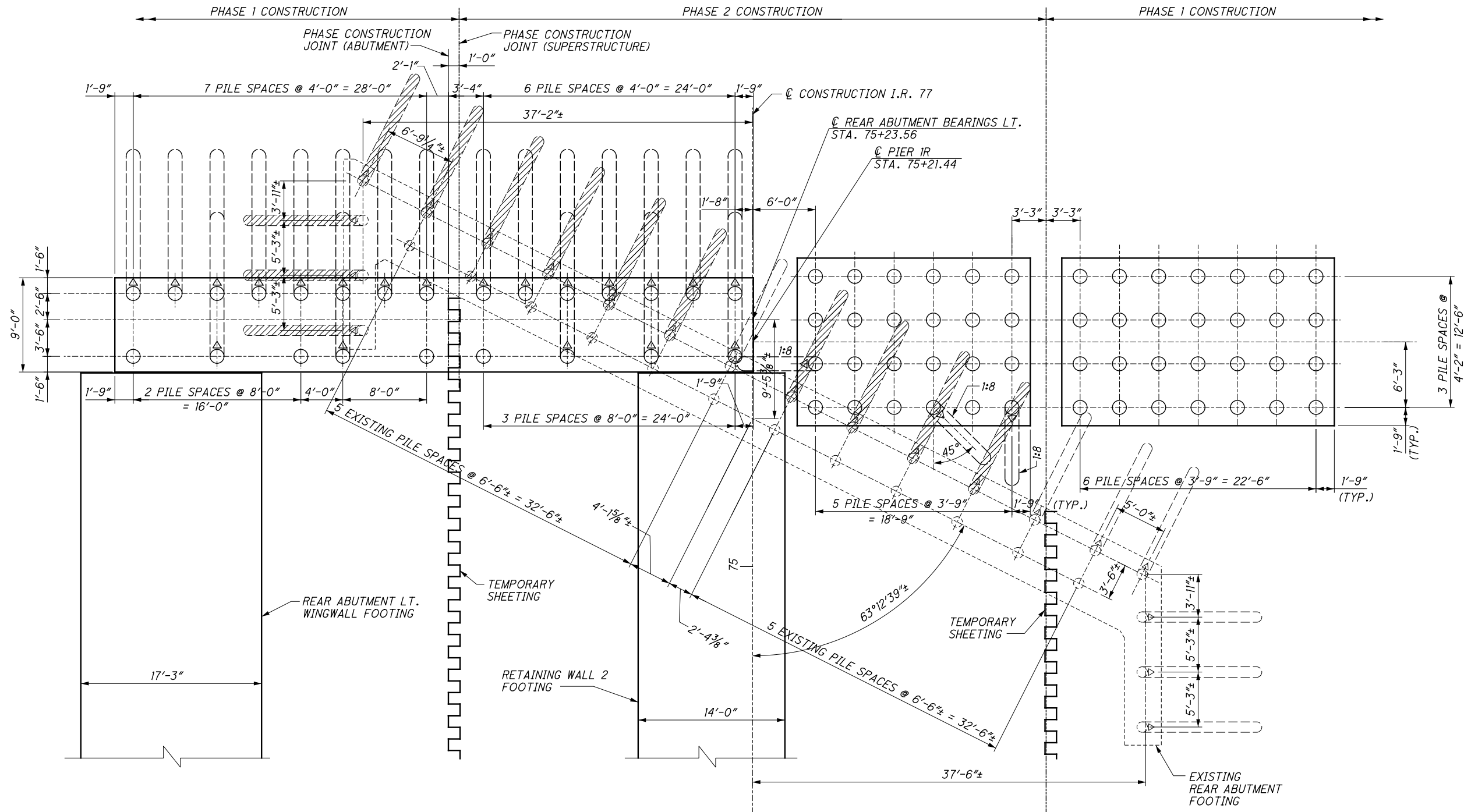
**CONSTRUCTION SEQUENCE STEP 4 SECTION AT EXISTING REAR RIGHT ABUTMENT**

**NOTE**  
FOR DETAIL LOCATIONS:  
SEE SHEETS 17/84 AND 18/84.

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|                                                                                                 |                                                                 |
|-------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| RICHLAND ENGINEERING LIMITED<br>29 NORTH PARK STREET<br>MANSFIELD, OHIO 44902                   |                                                                 |
| DATE: 11/15/16<br>REVIEWED: DAP<br>STRUCTURE FILE NUMBER: 1806688 (L)<br>1806718 (R)            | DRAWN: TWH<br>CHECKED: REVISED<br>DESIGNED: BLN<br>CHECKED: DLR |
| <b>TEMPORARY SHORING DETAILS - 4</b><br>BRIDGE NO. CUY-77-1433 L & R<br>OVER I.R. 490 AND RAMPS |                                                                 |
| CUY-77-14.35<br>PID No. 13567                                                                   |                                                                 |
| 23 / 84                                                                                         |                                                                 |
| 304<br>365                                                                                      |                                                                 |

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**PILE LAYOUT AT REAR ABUTMENT LEFT AND PIER 1 RIGHT**

**LEGEND**

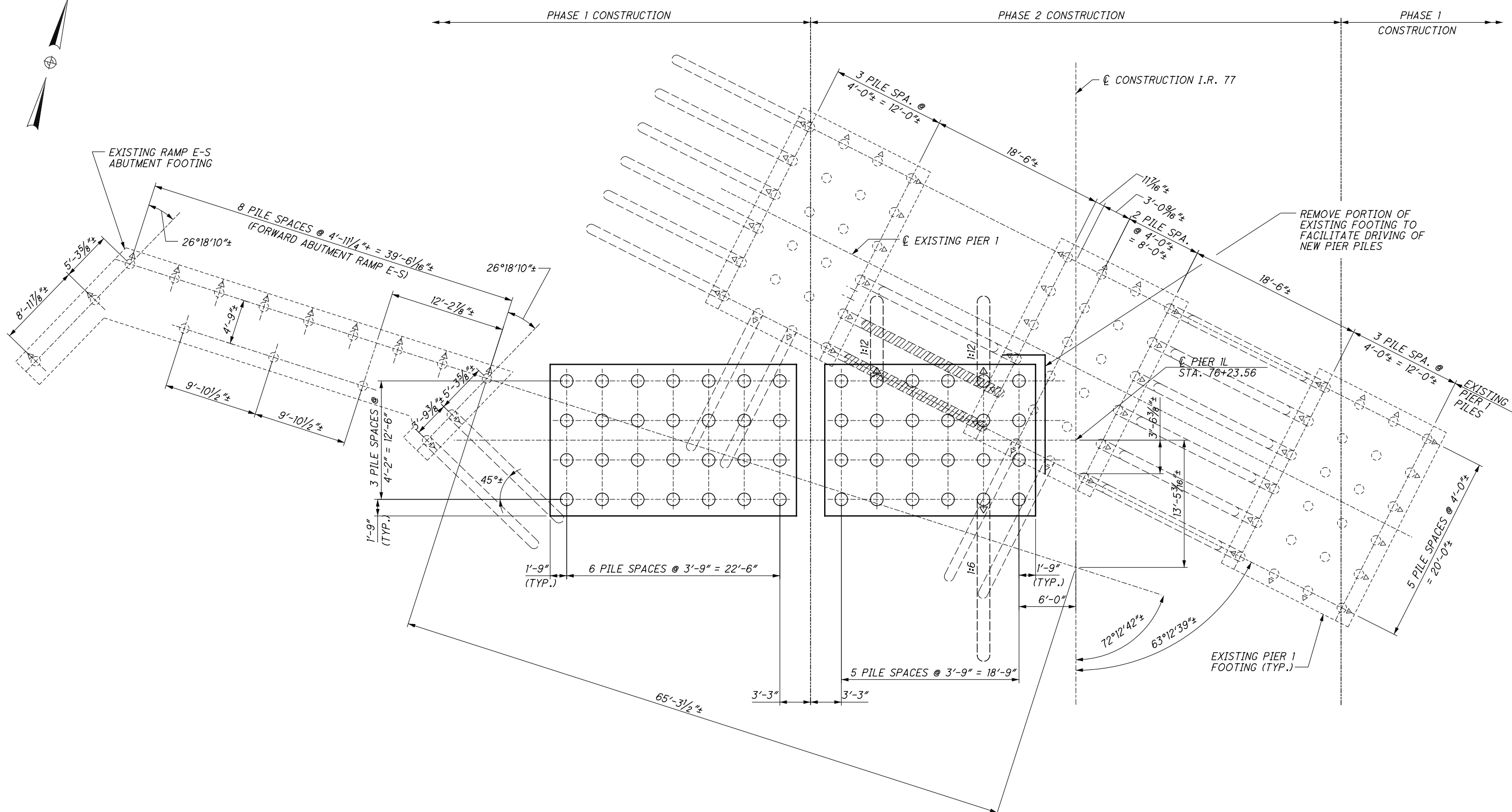
- ⊙ - INDICATES EXISTING 12" CAST-IN-PLACE REINFORCED CONCRETE PILES, BATTERED 1:4±
- - INDICATES EXISTING 12" CAST-IN-PLACE REINFORCED CONCRETE PILES, NO BATTER
- ⊙ - INDICATES PROPOSED 16" CAST-IN-PLACE REINFORCED CONCRETE PILES, BATTERED 1:4 (ABUTMENT) & 1:6 (PIER) UNLESS OTHERWISE NOTED.
- - INDICATES PROPOSED 16" CAST-IN-PLACE REINFORCED CONCRETE PILES, NO BATTER
- ▨ - INDICATES EXISTING PILES TO BE REMOVED OR PARTIALLY REMOVED (UPPER PORTION) TO FACILITATE DRIVING OF NEW PILES. THE REMOVAL IS TO BE INCLUDED WITH ITEM 202 - REMOVAL, MISC.: EXISTING PILE, FOR PAYMENT

**NOTES**






**ESTIMATED PAY LENGTH** FOR PILES IS AS FOLLOWS:  
 EXISTING REAR ABUTMENT PILES = 45'±  
 PROPOSED REAR ABUTMENT PILES = 60'  
 PROPOSED PIER 1R PILES = 60'

**PROPOSED PILE LOCATION:** THE LOCATION OF THE PROPOSED PILES MAY BE ADJUSTED WITHIN THE TOLERANCES OF 507.10 WHEN ENCOUNTERING EXISTING PILES THAT CANNOT BE PARTIALLY OR FULLY REMOVED. MAINTAIN A MINIMUM FOOTING EDGE DISTANCE OF 1'-6" TO CENTER OF PILES AND 3'-6" MINIMUM CENTER TO CENTER PILE SPACING. ALL BATTERED PILES ARE REQUIRED FOR THE ABUTMENTS. ABUTMENT REAR PILES MAY BE BATTERED IN A SIMILAR MANNER IF THE FRONT ONES CANNOT BE. VERTICAL PILES CAN BE BATTERED TO MISS EXISTING PILES IF REQUIRED.

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**LEGEND**

-  - INDICATES EXISTING 12" CAST-IN-PLACE REINFORCED CONCRETE PILES, BATTERED 1:4±
-  - INDICATES EXISTING 12" CAST-IN-PLACE REINFORCED CONCRETE PILES, NO BATTER
-  - INDICATES PROPOSED 16" CAST-IN-PLACE REINFORCED CONCRETE PILES, BATTERED AS SHOWN
-  - INDICATES PROPOSED 16" CAST-IN-PLACE REINFORCED CONCRETE PILES, NO BATTER
-  - INDICATES EXISTING PILES TO BE REMOVED OR PARTIALLY REMOVED (UPPER PORTION) TO FACILITATE DRIVING OF NEW PILES. THE REMOVAL IS TO BE INCLUDED WITH ITEM 202 - REMOVAL, MISC.: EXISTING PILE, FOR PAYMENT

**PILE LAYOUT AT PIER 1L**

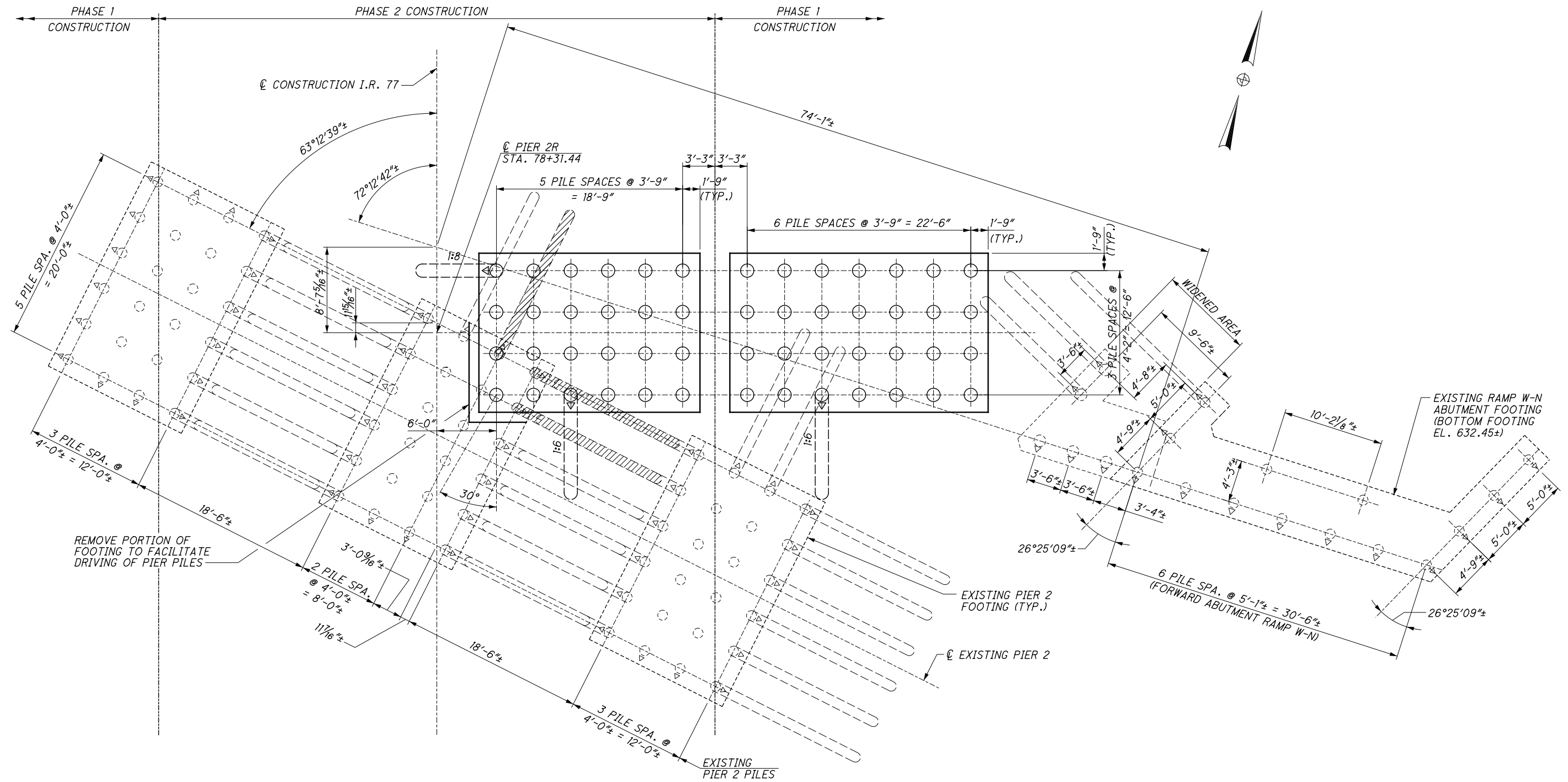
**NOTES**

**ESTIMATED PAY LENGTH** FOR PILES IS AS FOLLOWS:  
 EXISTING RAMP E-S ABUTMENT PILES = 65'±  
 EXISTING SOUTH PIER PILES = 65'±  
 PROPOSED PIER 1L PILES = 100'

**PROPOSED PILE LOCATION:** THE LOCATION OF THE PROPOSED PILES MAY BE ADJUSTED WITHIN THE TOLERANCES OF 507.10 WHEN ENCOUNTERING EXISTING PILES THAT CANNOT BE PARTIALLY OR FULLY REMOVED. MAINTAIN A MINIMUM FOOTING EDGE DISTANCE OF 1'-6" TO CENTER OF PILES AND 3'-6" MINIMUM CENTER TO CENTER PILE SPACING. ALL BATTERED PILES ARE REQUIRED FOR THE ABUTMENTS. ABUTMENT REAR PILES MAY BE BATTERED IN A SIMILAR MANNER IF THE FRONT ONES CANNOT BE. VERTICAL PILES CAN BE BATTERED TO MISS EXISTING PILES IF REQUIRED.

|                                                                                              |     |                                                                               |                                                                                              |          |          |
|----------------------------------------------------------------------------------------------|-----|-------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|----------|----------|
| <b>PILE LOCATION PLAN - 2</b>                                                                |     | RICHLAND ENGINEERING LIMITED<br>29 NORTH PARK STREET<br>MANSFIELD, OHIO 44902 |                                                                                              |          |          |
| DESIGNED                                                                                     | BLN | CHECKED                                                                       | DLR                                                                                          | DATE     | 11/15/16 |
| DRAWN                                                                                        | JLS | REVIS                                                                         |                                                                                              | REVIEWED | DAP      |
| STRUCTURE FILE NUMBER                                                                        |     |                                                                               | 1806688 (L)                                                                                  |          |          |
| BRIDGE NO. CUY-77-1433                                                                       |     |                                                                               | OVER I.R. 490 AND RAMPS                                                                      |          |          |
| PID No. 13567                                                                                |     |                                                                               | 25 / 84                                                                                      |          |          |
| <br>306 |     |                                                                               | <br>365 |          |          |

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**LEGEND**

- △ - INDICATES EXISTING 12" OR 14" CAST-IN-PLACE REINFORCED CONCRETE PILES, BATTERED 1:4±
- - INDICATES EXISTING 12" OR 14" CAST-IN-PLACE REINFORCED CONCRETE PILES, NO BATTER
- - INDICATES PROPOSED 16" CAST-IN-PLACE REINFORCED CONCRETE PILES, BATTERED AS SHOWN
- - INDICATES PROPOSED 16" CAST-IN-PLACE REINFORCED CONCRETE PILES, NO BATTER
- ▨ - INDICATES EXISTING PILES TO BE REMOVED OR PARTIALLY REMOVED (UPPER PORTION) TO FACILITATE DRIVING OF NEW PILES. THE REMOVAL IS TO BE INCLUDED WITH ITEM 202 - REMOVAL, MISC.: EXISTING PILE, FOR PAYMENT

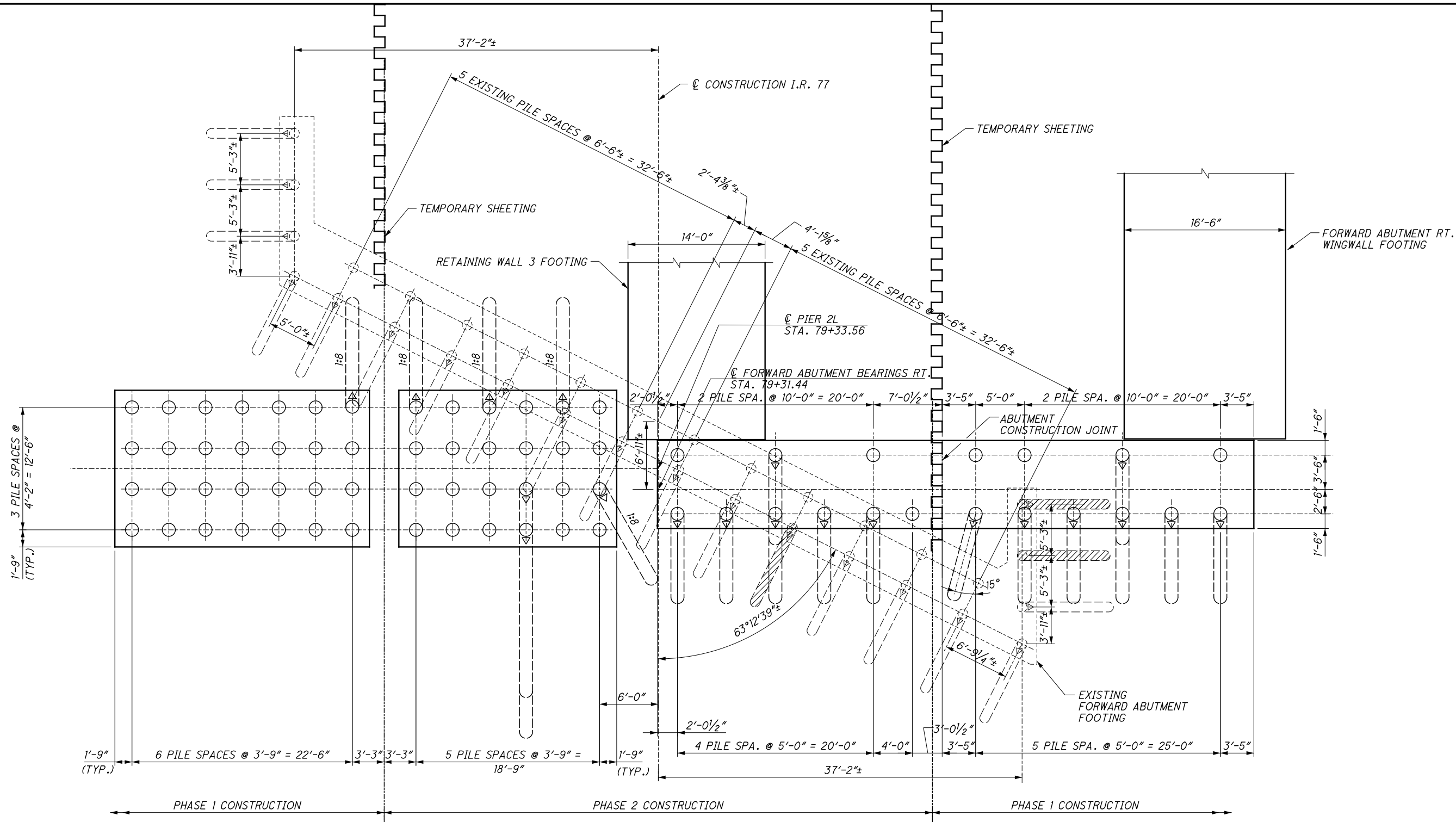
**NOTES**

**ESTIMATED PAY LENGTH** FOR PILES IS AS FOLLOWS:  
 EXISTING RAMP W-N ABUTMENT PILES = 75' ±  
 EXISTING RAMP W-N WIDENED ABUTMENT PILES = 55' ±  
 EXISTING NORTH PIER PILES = 65' ±  
 PROPOSED PIER 2R PILES = 60'

**PROPOSED PILE LOCATION:** THE LOCATION OF THE PROPOSED PILES MAY BE ADJUSTED WITHIN THE TOLERANCES OF 507.10 WHEN ENCOUNTERING EXISTING PILES THAT CANNOT BE PARTIALLY OR FULLY REMOVED. MAINTAIN A MINIMUM FOOTING EDGE DISTANCE OF 1'-6" TO CENTER OF PILES AND 3'-6" MINIMUM CENTER TO CENTER PILE SPACING. ALL BATTERED PILES ARE REQUIRED FOR THE ABUTMENTS. ABUTMENT REAR PILES MAY BE BATTERED IN A SIMILAR MANNER IF THE FRONT ONES CANNOT BE. VERTICAL PILES CAN BE BATTERED TO MISS EXISTING PILES IF REQUIRED.



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**PILE LAYOUT AT PIER 2L AND FORWARD ABUTMENT RIGHT**

**LEGEND**

- INDICATES EXISTING 12" CAST-IN-PLACE REINFORCED CONCRETE PILES, BATTERED 1:4±
- INDICATES EXISTING 12" CAST-IN-PLACE REINFORCED CONCRETE PILES, NO BATTER
- INDICATES PROPOSED 16" CAST-IN-PLACE REINFORCED CONCRETE PILES, BATTERED 1:4 (ABUTMENT) & 1:6 (PIER) UNLESS OTHERWISE NOTED.
- INDICATES PROPOSED 16" CAST-IN-PLACE REINFORCED CONCRETE PILES, NO BATTER
- INDICATES EXISTING PILES TO BE REMOVED OR PARTIALLY REMOVED (UPPER PORTION) TO FACILITATE DRIVING OF NEW PILES. THE REMOVAL IS TO BE INCLUDED WITH ITEM 202 - REMOVAL, MISC.: EXISTING PILE, FOR PAYMENT

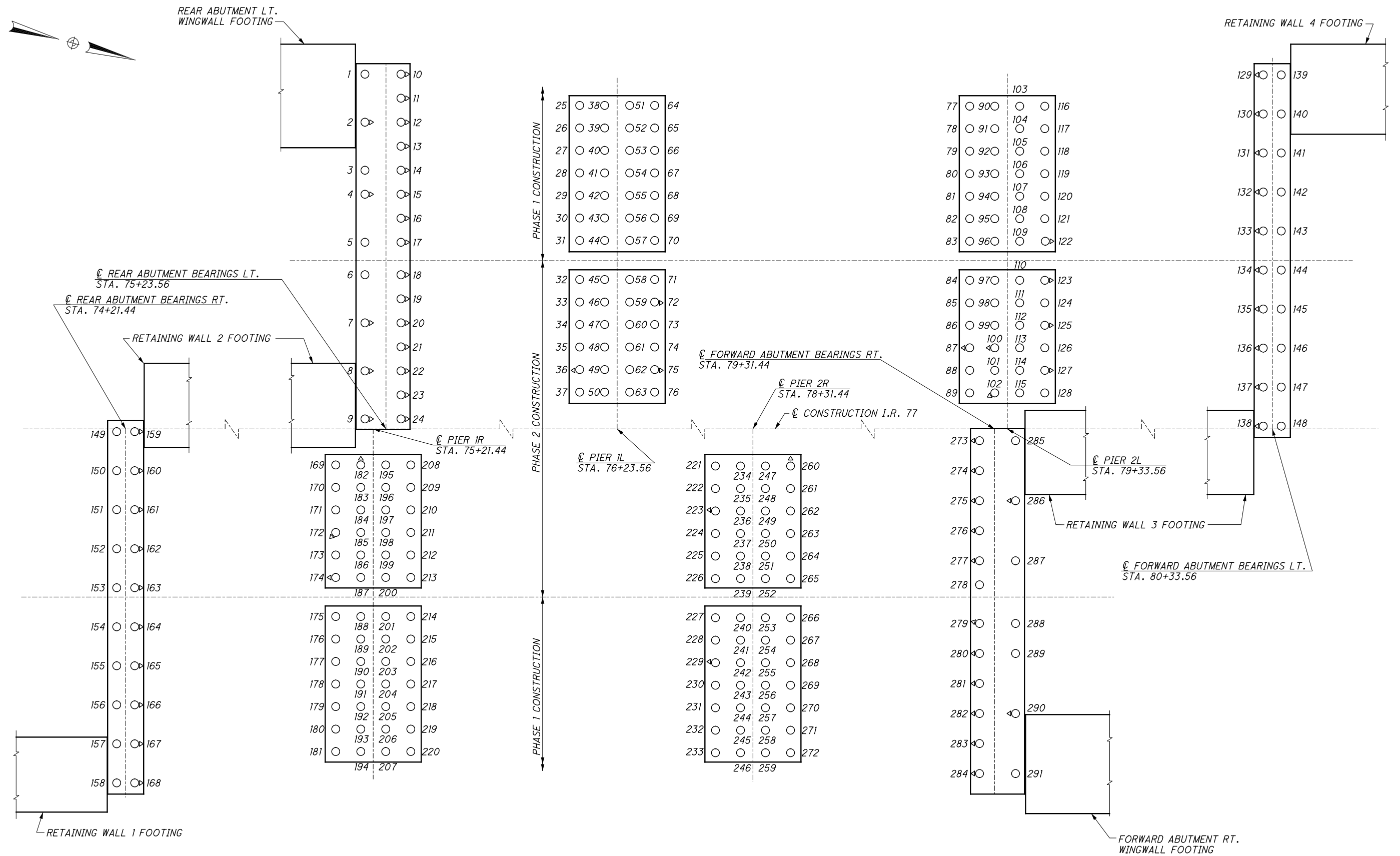
**NOTES**

**ESTIMATED PILE LENGTH** FOR PILES IS AS FOLLOWS:  
 EXISTING FORWARD ABUTMENT PILES = 35'±  
 PROPOSED FORWARD ABUTMENT PILES = 45'  
 PROPOSED PIER 2L PILES = 65'

**PROPOSED PILE LOCATION:** THE LOCATION OF THE PROPOSED PILES MAY BE ADJUSTED WITHIN THE TOLERANCES OF 507.10 WHEN ENCOUNTERING EXISTING PILES THAT CANNOT BE PARTIALLY OR FULLY REMOVED. MAINTAIN A MINIMUM FOOTING EDGE ALL BATTERED PILES ARE REQUIRED FOR THE ABUTMENTS. ABUTMENT REAR PILES MAY BE BATTERED IN A SIMILAR MANNER IF THE FRONT ONES CANNOT BE. VERTICAL PILES CAN BE BATTERED TO MISS EXISTING PILES IF REQUIRED.

|                                                                                          |          |                       |                            |
|------------------------------------------------------------------------------------------|----------|-----------------------|----------------------------|
| <b>RICHLAND ENGINEERING LIMITED</b><br>29 NORTH PARK STREET<br>MANSFIELD, OHIO 44902     |          |                       |                            |
| DESIGNED                                                                                 | BLN      | CHECKED               | DLR                        |
| DRAWN                                                                                    | JLS      | REVISED               |                            |
| REVIEWED                                                                                 | DAP      | STRUCTURE FILE NUMBER | 1806688 (L)<br>1806718 (R) |
| DATE                                                                                     | 11/15/16 |                       |                            |
| <b>PILE LOCATION PLAN - 4</b><br>BRIDGE NO. CUY-77-1433 L & R<br>OVER I.R. 490 AND RAMPS |          |                       |                            |
| <b>CUY - 77 - 14.35</b>                                                                  |          | <b>PID No. 13567</b>  |                            |
| 27 / 84                                                                                  |          | <br>                  |                            |

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**LEGEND**

- - 16" CAST-IN-PLACE REINFORCED CONCRETE PILES
- ◐ - 16" CAST-IN-PLACE REINFORCED CONCRETE PILES, BATTERED 1:4

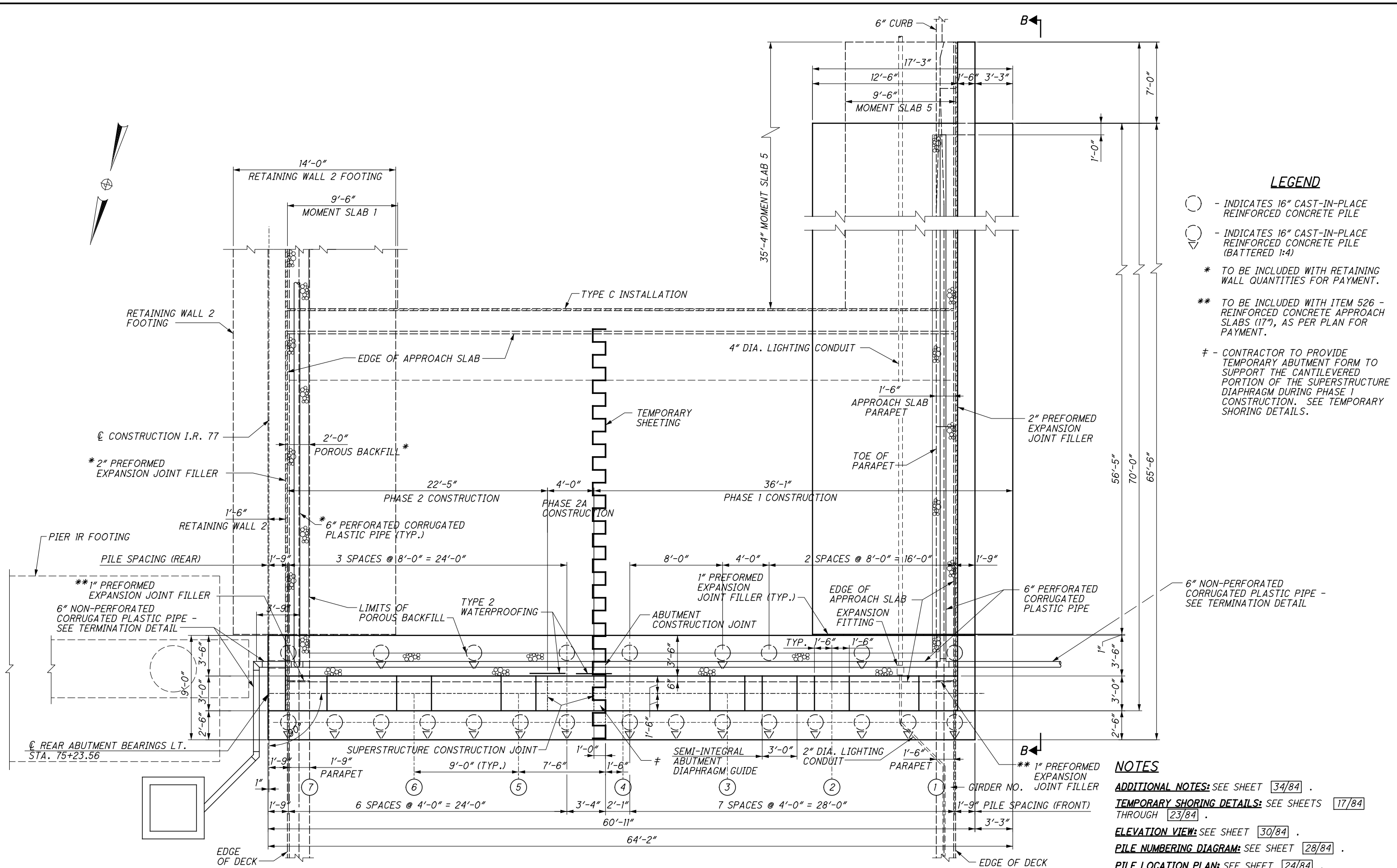
**NOTES**

**ABUTMENT PILE SPACINGS:** SEE SHEETS [29/84] THROUGH [38/84].

**PIER PILE SPACINGS:** SEE SHEETS [40/84] THROUGH [43/84].

|                                                                                          |                                                                                   |
|------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| <b>PILE NUMBERING DIAGRAM</b><br>BRIDGE NO. CUY-77-1433 L & R<br>OVER I.R. 490 AND RAMPS |                                                                                   |
| <b>CUY-77-14.35</b><br>PID No. 13567                                                     | RICHLAND ENGINEERING LIMITED<br>29 NORTH PARK STREET<br>MANSFIELD, OHIO 44902<br> |
| DESIGNED<br>BLN                                                                          | REVIEWED<br>DAP                                                                   |
| CHECKED<br>DLR                                                                           | DATE<br>11/15/16                                                                  |
| STRUCTURE FILE NUMBER<br>1806688 (L)                                                     |                                                                                   |
| STRUCTURE FILE NUMBER<br>1806718 (R)                                                     |                                                                                   |
| 28 / 84                                                                                  |                                                                                   |
| 309<br>365                                                                               |                                                                                   |

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PLAN

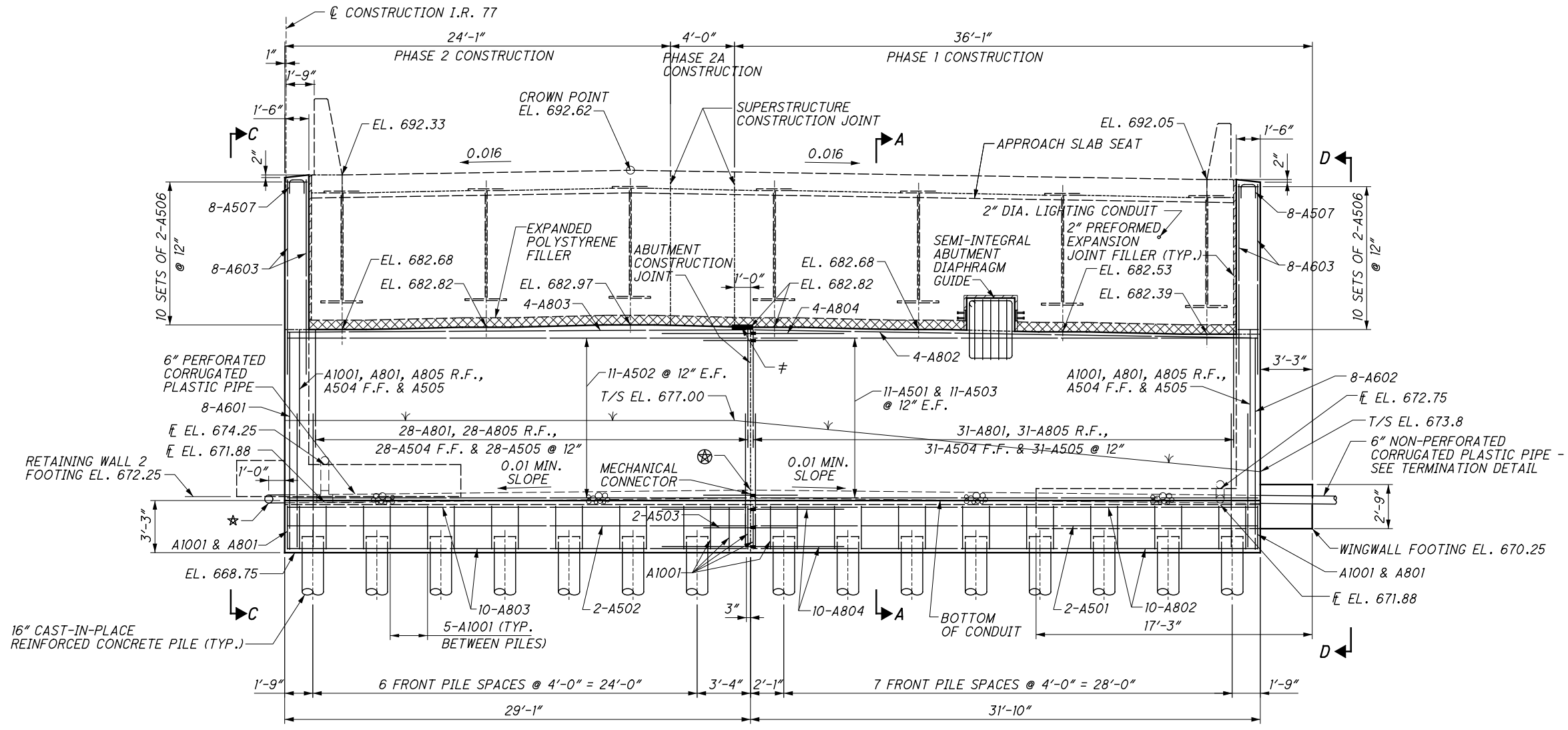
**LEGEND**

- - INDICATES 16" CAST-IN-PLACE REINFORCED CONCRETE PILE
- ◐ - INDICATES 16" CAST-IN-PLACE REINFORCED CONCRETE PILE (BATTERED 1:4)
- \* TO BE INCLUDED WITH RETAINING WALL QUANTITIES FOR PAYMENT.
- \*\* TO BE INCLUDED WITH ITEM 526 - REINFORCED CONCRETE APPROACH SLABS (17"), AS PER PLAN FOR PAYMENT.
- ‡ - CONTRACTOR TO PROVIDE TEMPORARY ABUTMENT FORM TO SUPPORT THE CANTILEVERED PORTION OF THE SUPERSTRUCTURE DIAPHRAGM DURING PHASE 1 CONSTRUCTION. SEE TEMPORARY SHORING DETAILS.

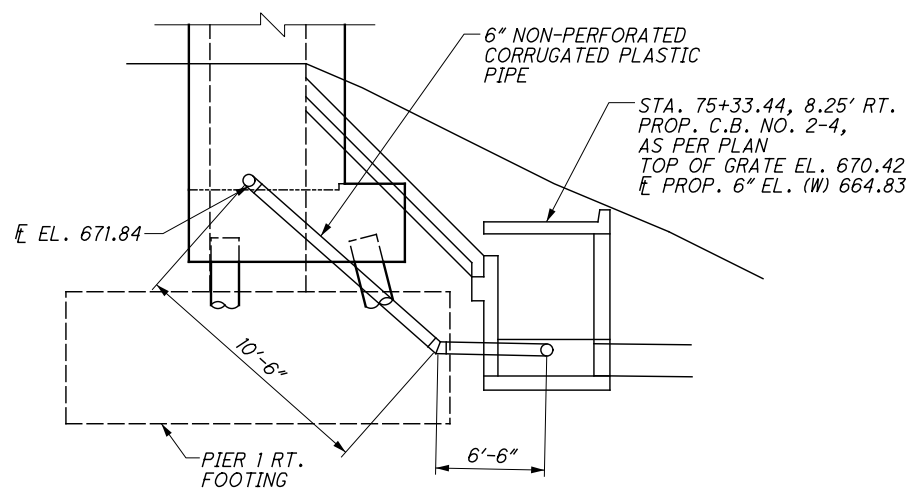
**NOTES**

- ADDITIONAL NOTES:** SEE SHEET [34/84].
- TEMPORARY SHORING DETAILS:** SEE SHEETS [17/84] THROUGH [23/84].
- ELEVATION VIEW:** SEE SHEET [30/84].
- PILE NUMBERING DIAGRAM:** SEE SHEET [28/84].
- PILE LOCATION PLAN:** SEE SHEET [24/84].
- PIPE TERMINATION DETAIL EAST END:** SEE SHEET [30/84].
- PIPE TERMINATION DETAIL WEST END:** SEE SHEET [31/84].
- RETAINING WALL 2:** SEE SHEET [5/22].
- VIEW B-B:** SEE SHEET [31/84].
- PIER IR:** SEE SHEET [42/84].

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ELEVATION



LEGEND

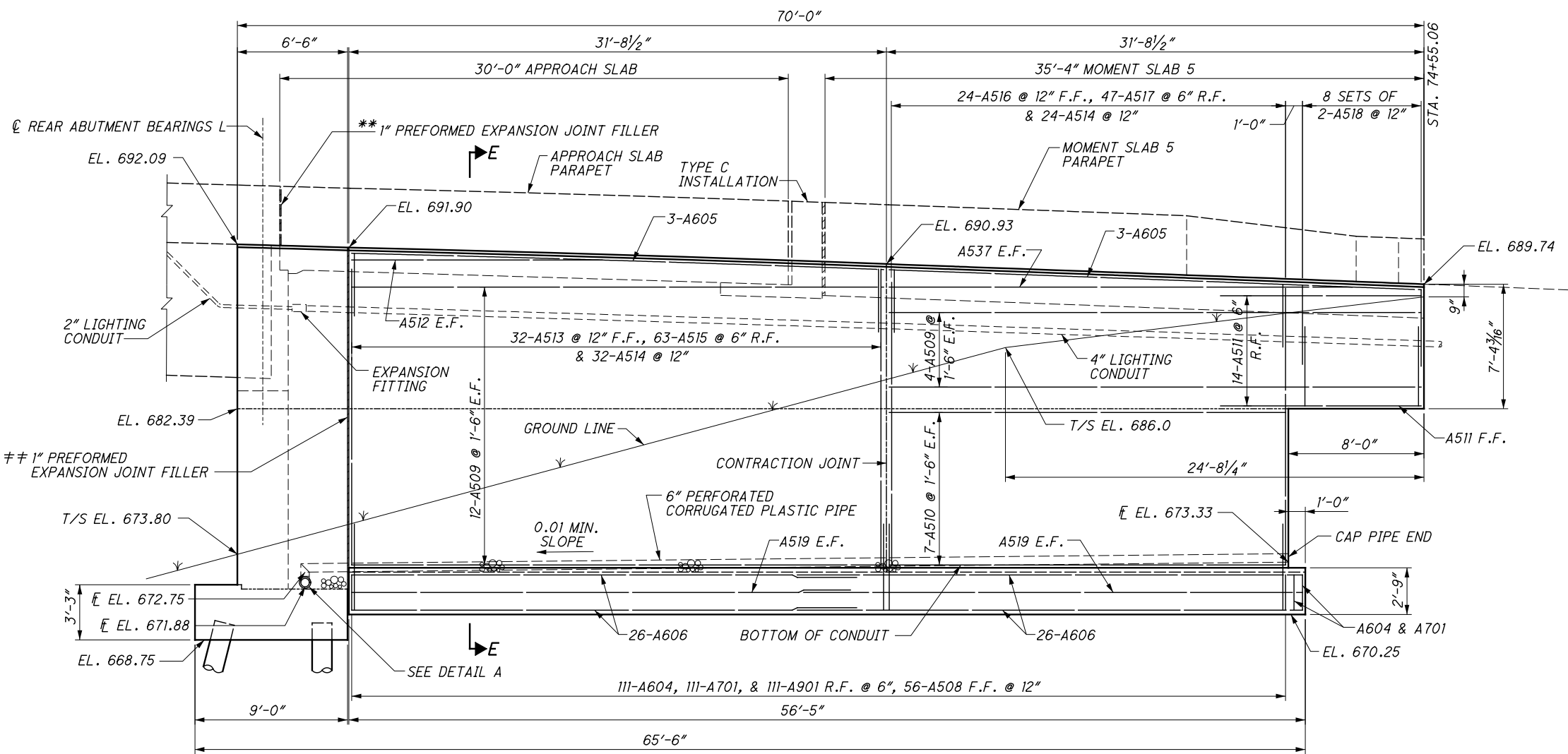
- # - CONTRACTOR TO PROVIDE TEMPORARY ABUTMENT FORM TO SUPPORT THE CANTILEVERED PORTION OF THE SUPERSTRUCTURE DIAPHRAGM DURING PHASE 1 CONSTRUCTION. SEE TEMPORARY SHORING DETAILS.
- ★ - 6" NON-PERFORATED CORRUGATED PLASTIC PIPE - SEE TERMINATION DETAIL THIS SHEET.
- ⊗ - CAP PIPE ENDS AT THE PHASE CONSTRUCTION JOINT (TYP.)

NOTES

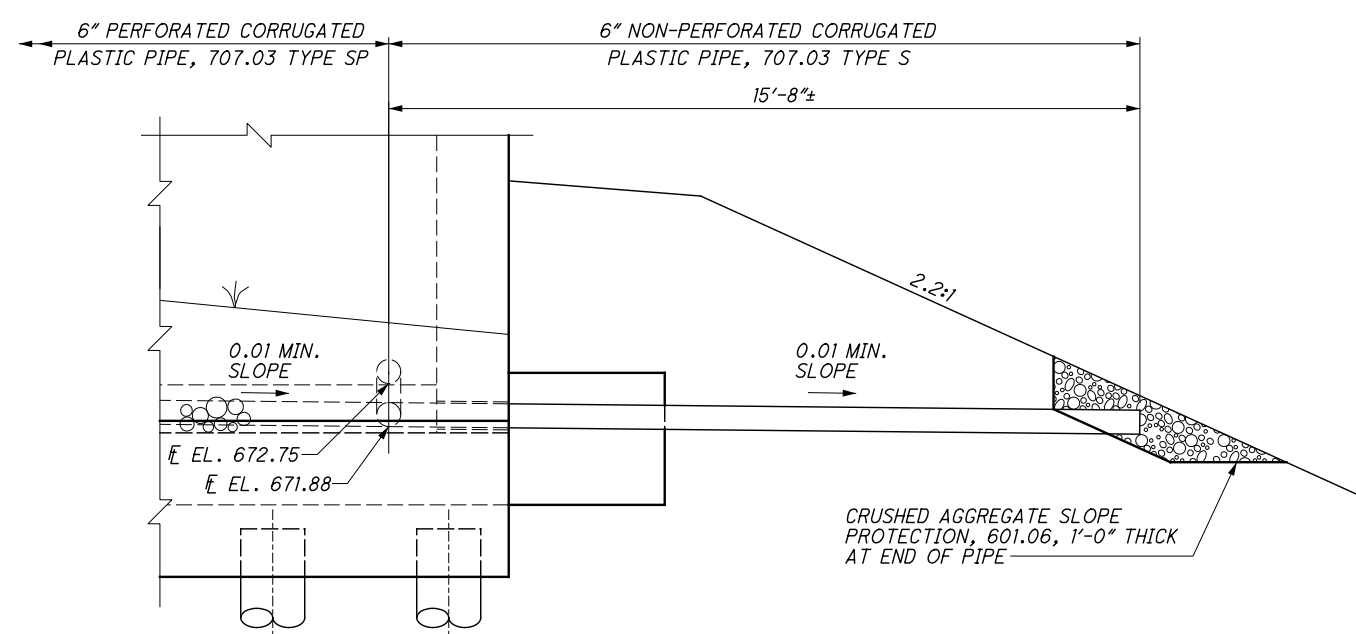
- ADDITIONAL NOTES: SEE SHEET [34/84].
- PLAN VIEW: SEE SHEET [29/84].
- PIPE TERMINATION DETAIL WEST FACE: SEE SHEET [31/84].
- SECTION A-A & VIEWS C-C & D-D: SEE SHEET [32/84].
- SEMI-INTEGRAL ABUTMENT DIAPHRAGM GUIDE: SEE STANDARD DRAWING SICD-2-14.

|                                                                                                      |                                                                                               |
|------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| <p><b>REAR ABUTMENT LEFT BRIDGE - 2</b><br/>BRIDGE NO. CUY-77-1433 L<br/>OVER I.R. 490 AND RAMPS</p> | <p><b>RICHLAND ENGINEERING LIMITED</b><br/>29 NORTH PARK STREET<br/>MANSFIELD, OHIO 44902</p> |
| <p>DESIGNED<br/>BLN</p>                                                                              | <p>DATE<br/>11/15/16</p>                                                                      |
| <p>CHECKED<br/>DLR</p>                                                                               | <p>REVIEWED<br/>DAP</p>                                                                       |
| <p>DRAWN<br/>KH</p>                                                                                  | <p>STRUCTURE FILE NUMBER<br/>1806688</p>                                                      |
| <p>REVISIONS</p>                                                                                     | <p>REVISED</p>                                                                                |
| <p>CUY-77-14.35</p>                                                                                  | <p>PID No. 13567</p>                                                                          |
| <p>30/84</p>                                                                                         | <p>311<br/>365</p>                                                                            |

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VIEW B-B



TERMINATION OF 6" NON-PERFORATED CONDUIT AT REAR ABUTMENT LEFT WEST FACE

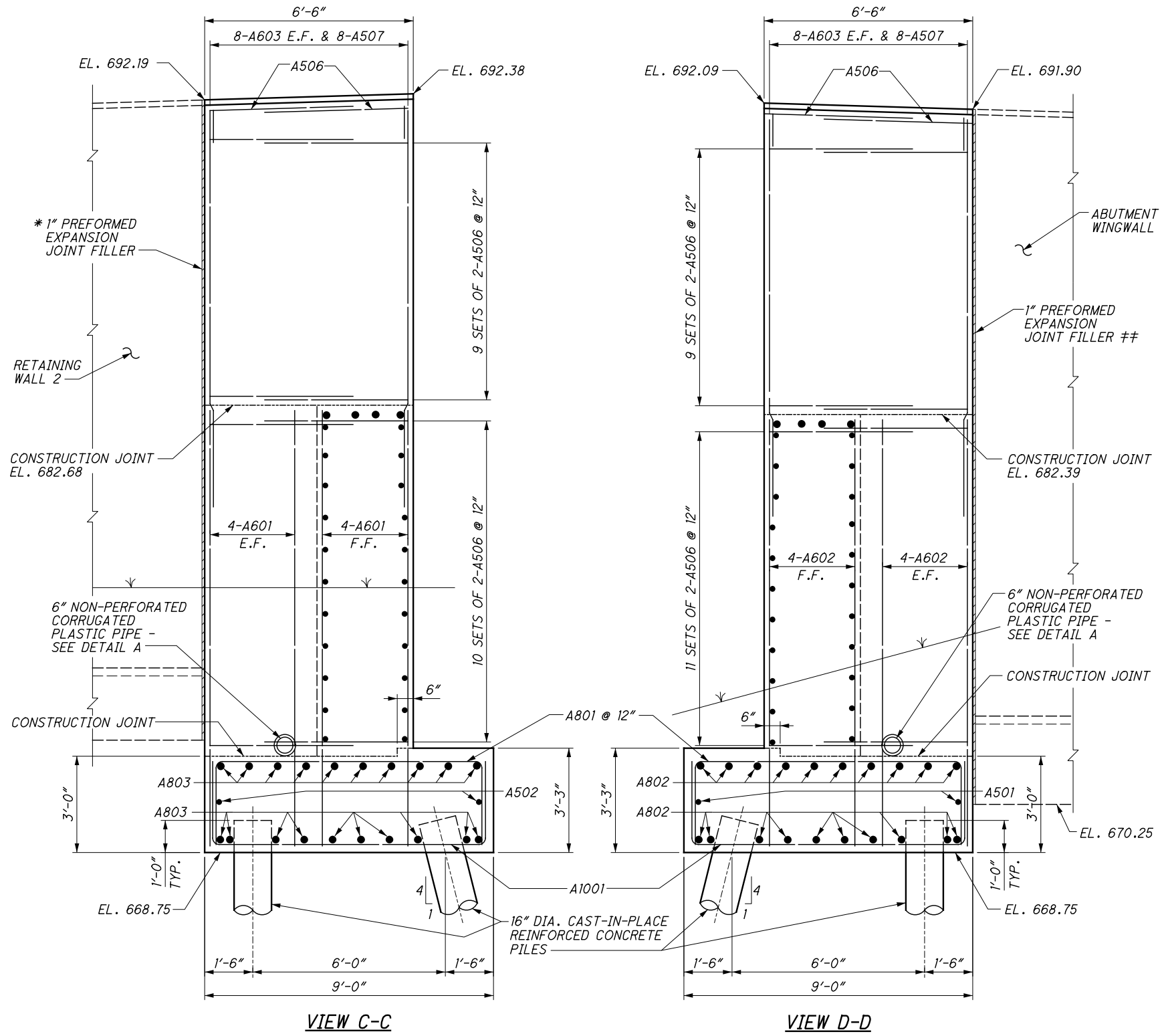
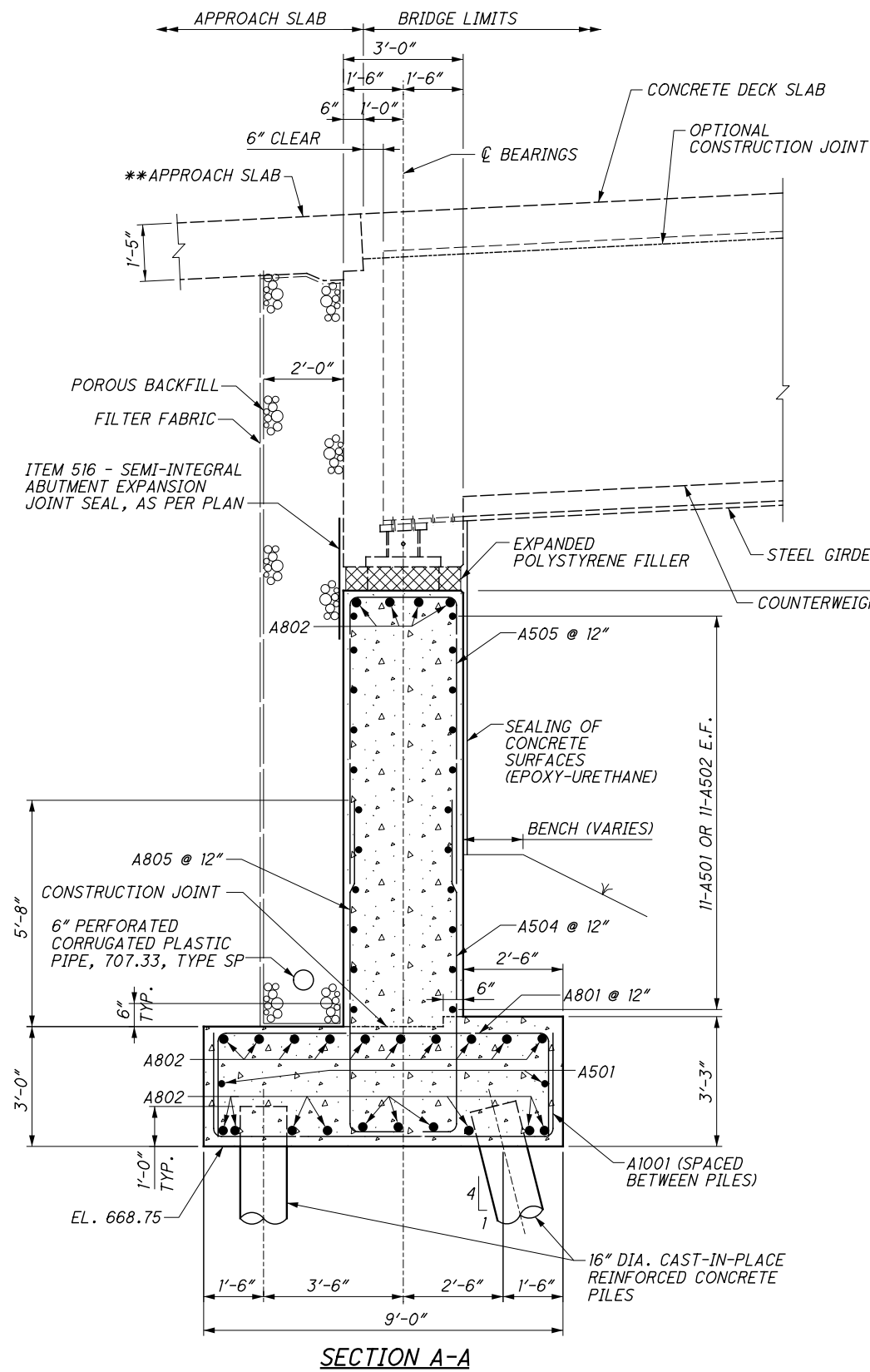
LEGEND

- \*\* TO BE INCLUDED WITH ITEM 526 - REINFORCED CONCRETE APPROACH SLABS (17"), AS PER PLAN FOR PAYMENT.
- ## TO BE INCLUDED WITH ITEM 511 - CLASS QC1 CONCRETE WITH QC/QA, AS PER PLAN, WINGWALL AND FOOTING FOR PAYMENT.

NOTES

- ADDITIONAL NOTES: SEE SHEET 34/84 .
- NOTATION: E.F. - EACH FACE.
- PLAN VIEW: SEE SHEET 29/84 .
- SECTION E-E: SEE SHEET 39/84 .
- DETAIL A: SEE SHEET 37/84 .
- VIEW B-B: FOR LOCATION SEE SHEET 29/84 .
- EXPANSION & CONTRACTION JOINT DETAILS: SEE SHEET 39/84 .

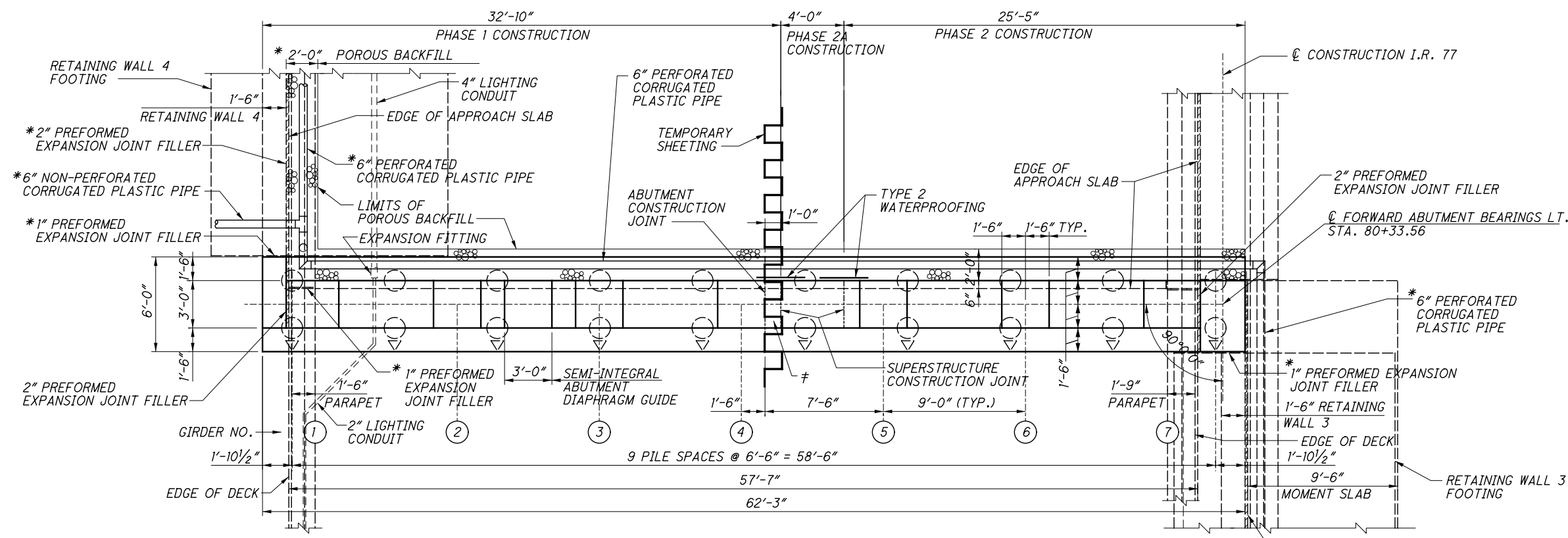
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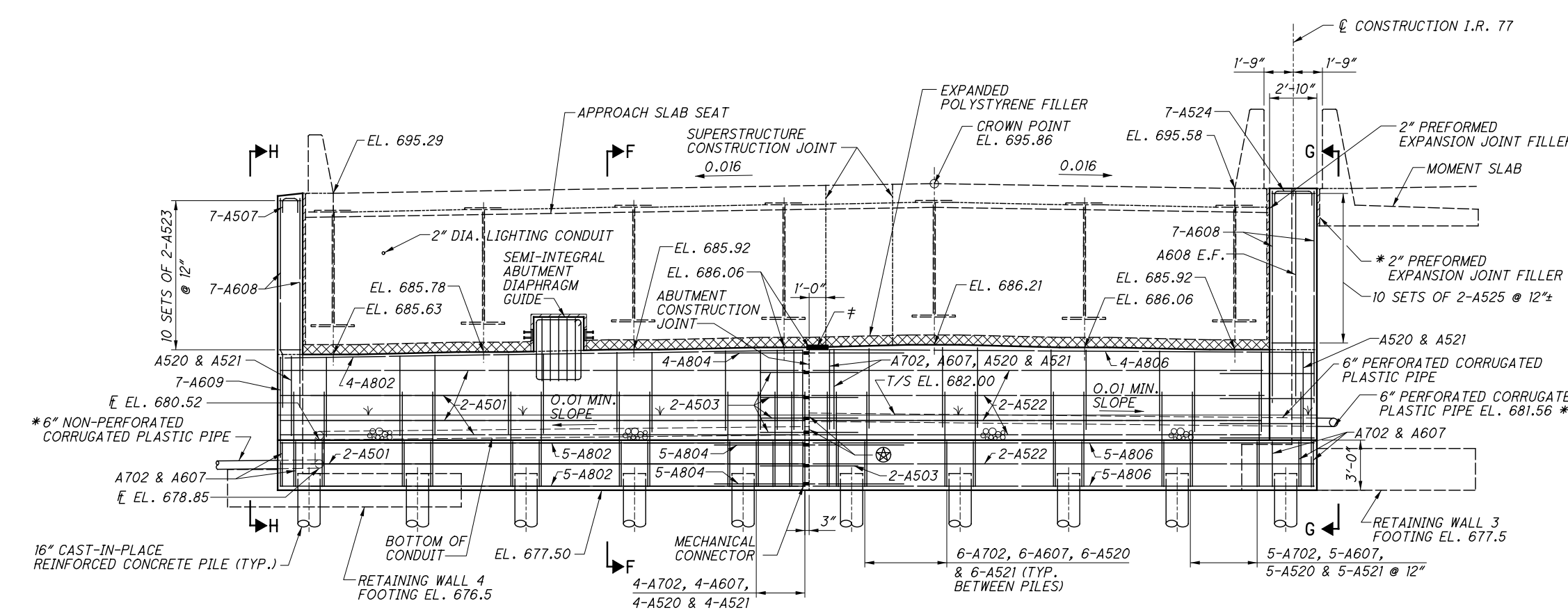
- LEGEND**
- \* TO BE INCLUDED WITH RETAINING WALL QUANTITIES.
  - \*\* TO BE INCLUDED WITH ITEM 526 - REINFORCED CONCRETE APPROACH SLABS (17"), AS PER PLAN FOR PAYMENT.
  - ## TO BE INCLUDED WITH ITEM 511 - CLASS QC1 CONCRETE WITH QC/QA, AS PER PLAN, WINGWALL AND FOOTING FOR PAYMENT.

- NOTES**
- NOTATION:** E.F. - EACH FACE  
F.F. - FRONT FACE
- COUNTERWEIGHT DETAILS:** SEE SHEETS [62/84] THROUGH [65/84].
- SECTION A-A & VIEWS C-C & D-D:** FOR LOCATIONS SEE SHEETS [29/84] THROUGH [35/84].
- PIPE TERMINATION:** FOR LOCATIONS SEE SHEETS [30/84] AND [31/84].
- DETAIL A:** SEE SHEET [37/84].
- ADDITIONAL NOTES:** SEE SHEET [34/84].

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PLAN



ELEVATION

LEGEND

- - INDICATES 16" CAST-IN-PLACE REINFORCED CONCRETE PILE
- ◐ - INDICATES 16" CAST-IN-PLACE REINFORCED CONCRETE PILE (BATTERED 1:4)
- \* TO BE INCLUDED WITH RETAINING WALL QUANTITIES FOR PAYMENT.
- \*\* TO BE INCLUDED WITH ITEM 526 - REINFORCED CONCRETE APPROACH SLABS (17'), AS PER PLAN FOR PAYMENT.
- # - CONTRACTOR TO PROVIDE TEMPORARY ABUTMENT FORM TO SUPPORT THE CANTILEVERED PORTION OF THE SUPERSTRUCTURE DIAPHRAGM DURING PHASE 1 CONSTRUCTION. SEE TEMPORARY SHORING DETAILS.
- ⊗ - CAP PIPE ENDS AT THE PHASE CONSTRUCTION JOINT (TYP.)

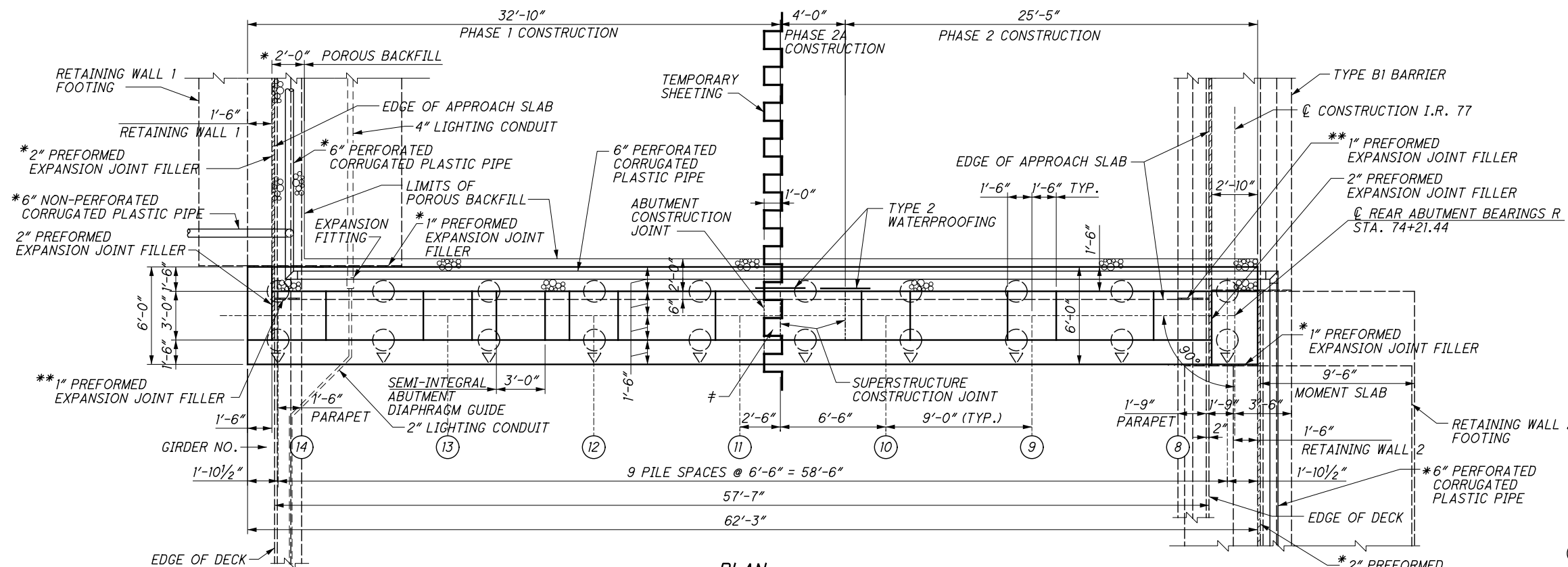
NOTES

- ADDITIONAL NOTES: SEE SHEET [34/84].
- TEMPORARY SHORING DETAILS: SEE SHEETS [17/84] THROUGH [23/84].
- PILE LOCATION PLAN: SEE SHEET [27/84].
- PILE NUMBERING DIAGRAM: SEE SHEET [28/84].
- RETAINING WALL 3: SEE SHEET [6/22].
- RETAINING WALL 4: SEE SHEETS [7/22] THROUGH [8/22].
- SECTIONS F-F & VIEWS H-H & G-G: SEE SHEET [35/84].
- PIPE TERMINATION DETAIL: SEE SHEET [31/84].

NOTATION: F.F. - FRONT FACE  
R.F. - REAR FACE  
E.F. - EACH FACE

SEMI-INTEGRAL ABUTMENT DIAPHRAGM GUIDE: SEE STANDARD DRAWING SICD-2-14.

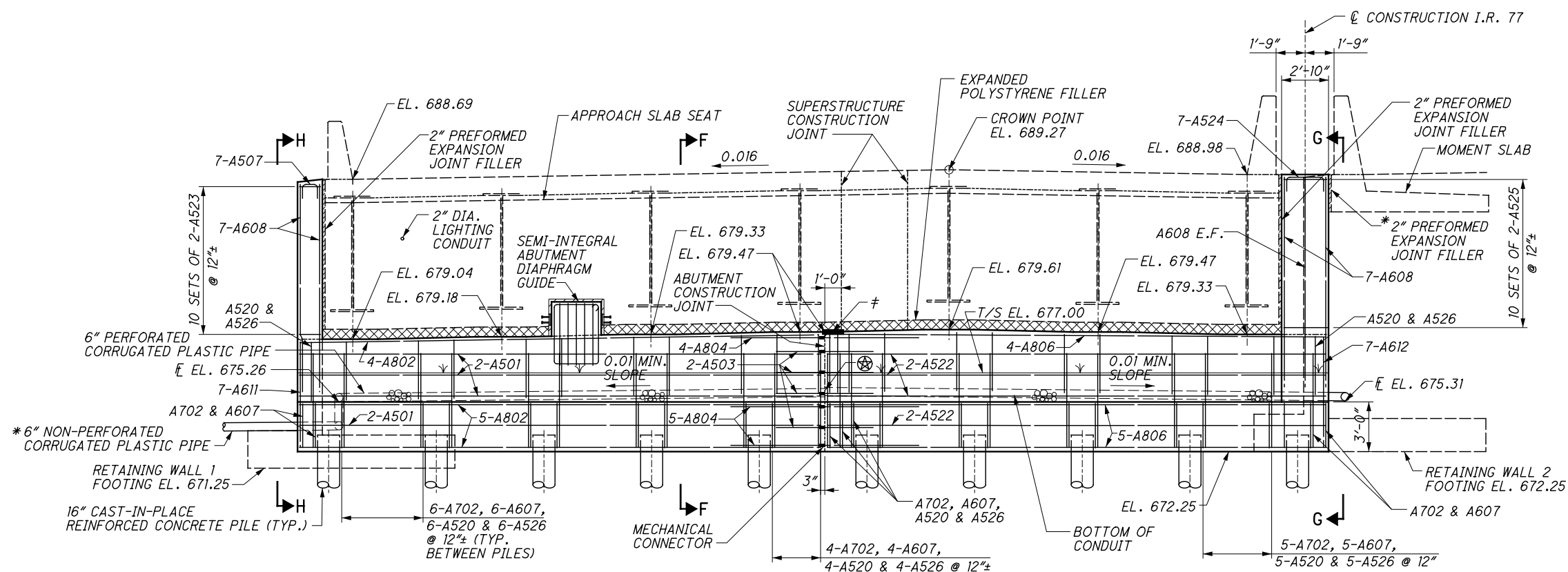
\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Structures\CUY077\_14\351\Sheets\13567\raa.dgn 12/14/2016 3:31:51 PM DonHeiman



PLAN

LEGEND

- - INDICATES 16" CAST-IN-PLACE REINFORCED CONCRETE PILE
- ⊙ - INDICATES 16" CAST-IN-PLACE REINFORCED CONCRETE PILE (BATTERED 1:4)
- \* TO BE INCLUDED WITH RETAINING WALL QUANTITIES FOR PAYMENT.
- \*\* TO BE INCLUDED WITH ITEM 526 - REINFORCED CONCRETE APPROACH SLABS (17'), AS PER PLAN FOR PAYMENT.
- # - CONTRACTOR TO PROVIDE TEMPORARY ABUTMENT FORM TO SUPPORT THE CANTILEVERED PORTION OF THE SUPERSTRUCTURE DIAPHRAGM DURING PHASE 1 CONSTRUCTION. SEE TEMPORARY SHORING DETAILS.
- ⊗ - CAP PIPE ENDS AT THE PHASE CONSTRUCTION JOINT (TYP.)



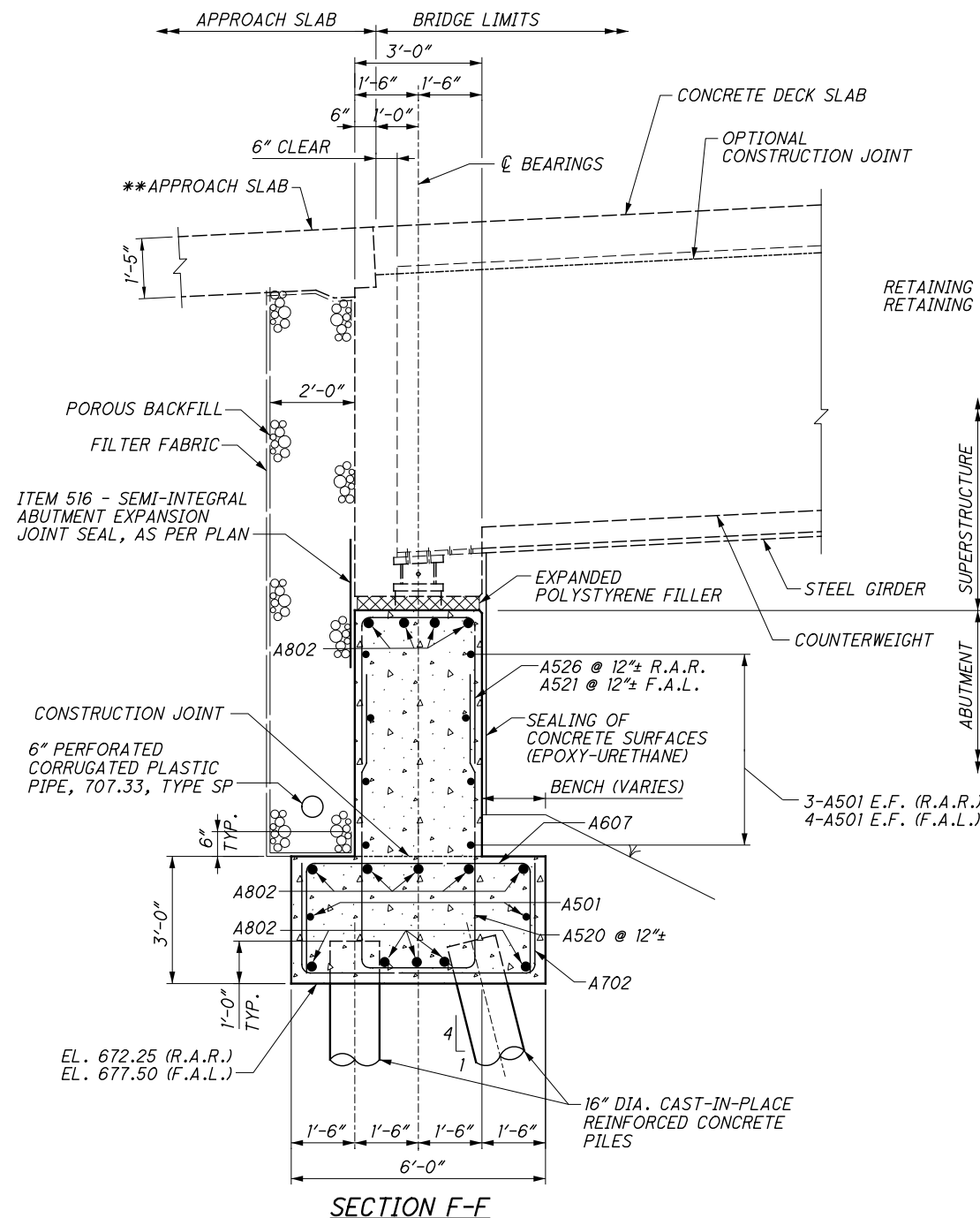
ELEVATION

NOTES

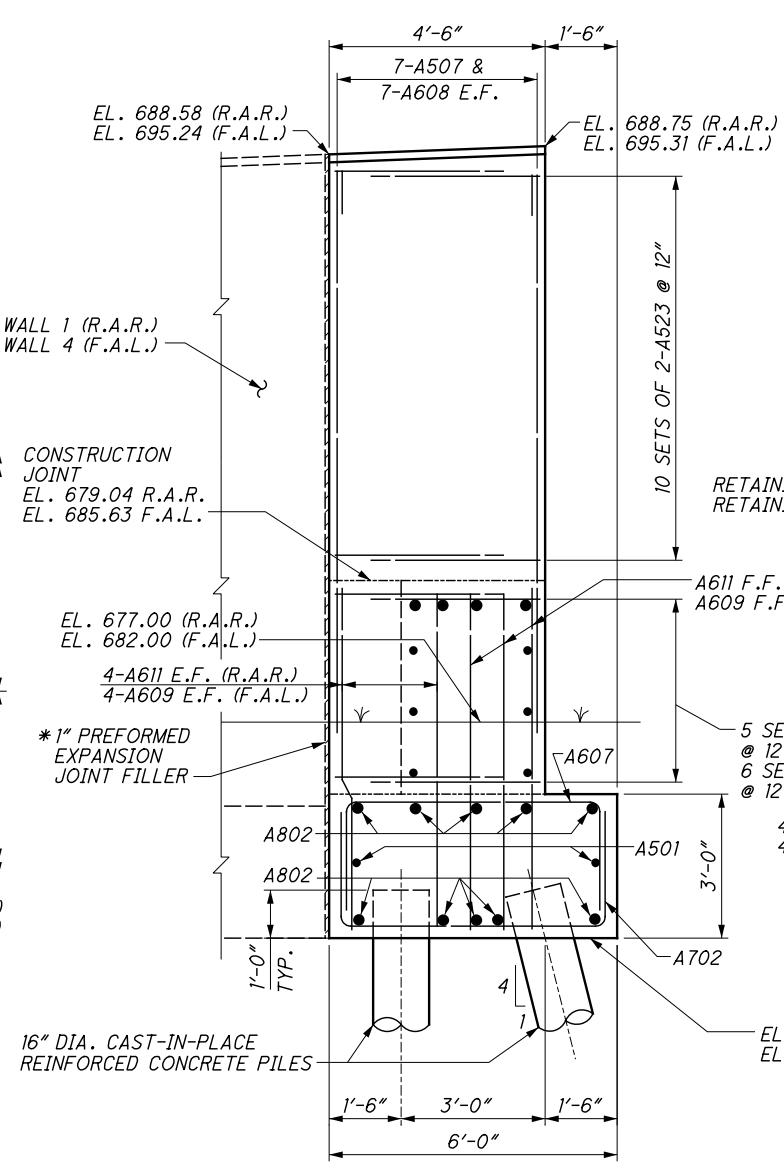
- REINFORCING STEEL SPLICE LENGTHS SHALL BE 2'-0" FOR VERTICAL #5 BARS, 2'-9" FOR HORIZONTAL #5 BARS, 3'-0" FOR VERTICAL #6 BARS, 3'-6" FOR HORIZONTAL #6 BARS, AND 5'-6" FOR HORIZONTAL #8 BARS.
- TYPE 2 WATERPROOFING IS TO BE 3'-0" WIDE, CENTERED ON THE CONSTRUCTION JOINT AND SEALED FROM THE TOP OF THE FOOTING TO THE APPROACH SLAB SEAT.
- TEMPORARY SHORING DETAILS: SEE SHEETS [17/84] THROUGH [23/84].
- PILE NUMBERING DIAGRAM: SEE SHEET [28/84].
- RETAINING WALL 1: SEE SHEET [4/22].
- RETAINING WALL 2: SEE SHEET [5/22].
- SECTION F-F & VIEWS G-G & H-H: SEE SHEET [35/84].
- NOTATION: F.F. - FRONT FACE  
R.F. - REAR FACE  
E.F. - EACH FACE
- SEMI-INTEGRAL ABUTMENT DIAPHRAGM GUIDE: SEE STANDARD DRAWING SICD-2-14.



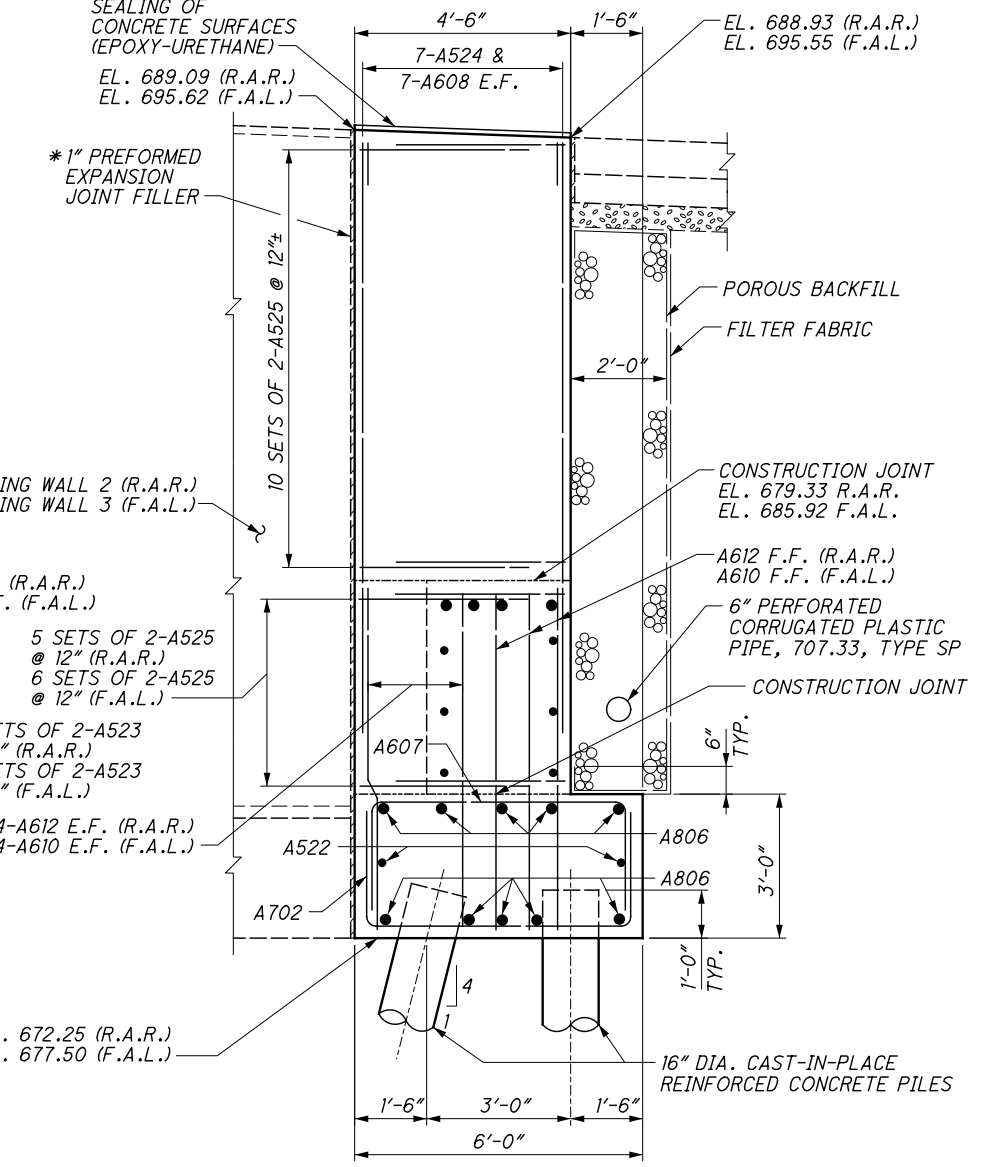
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**SECTION F-F**



**VIEW H-H**



**VIEW G-G**

**LEGEND**

- \* TO BE INCLUDED WITH RETAINING WALL QUANTITIES FOR PAYMENT.
- \*\* TO BE INCLUDED WITH ITEM 526 - REINFORCED CONCRETE APPROACH SLABS (17'), AS PER PLAN FOR PAYMENT.

**NOTES**

**NOTATION:** E.F. - EACH FACE  
 F.F. - FRONT FACE  
 F.A.L. - FORWARD ABUTMENT LEFT  
 R.A.R. - REAR ABUTMENT RIGHT

**ADDITIONAL NOTES:** SEE SHEET 34/84 .

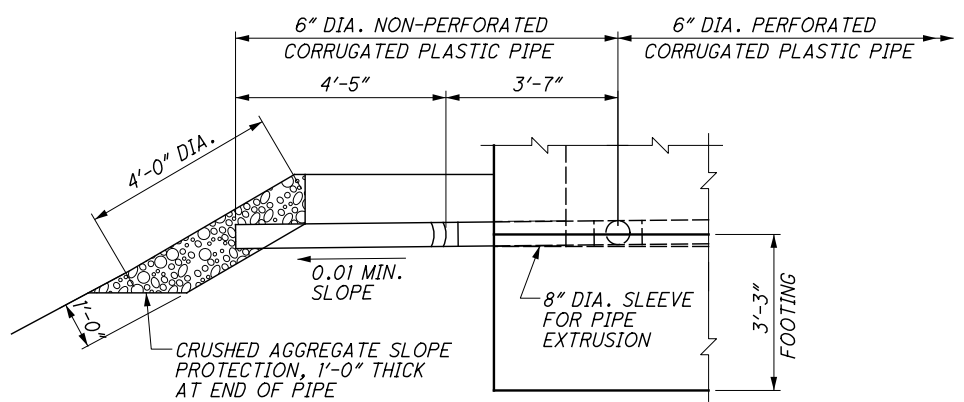
**COUNTERWEIGHT DETAILS:** SEE SHEETS 62/84 THROUGH 65/84 .

**SECTION F-F & VIEWS G-G & H-H:** FOR LOCATIONS SEE SHEETS 33/84 AND 34/84 .

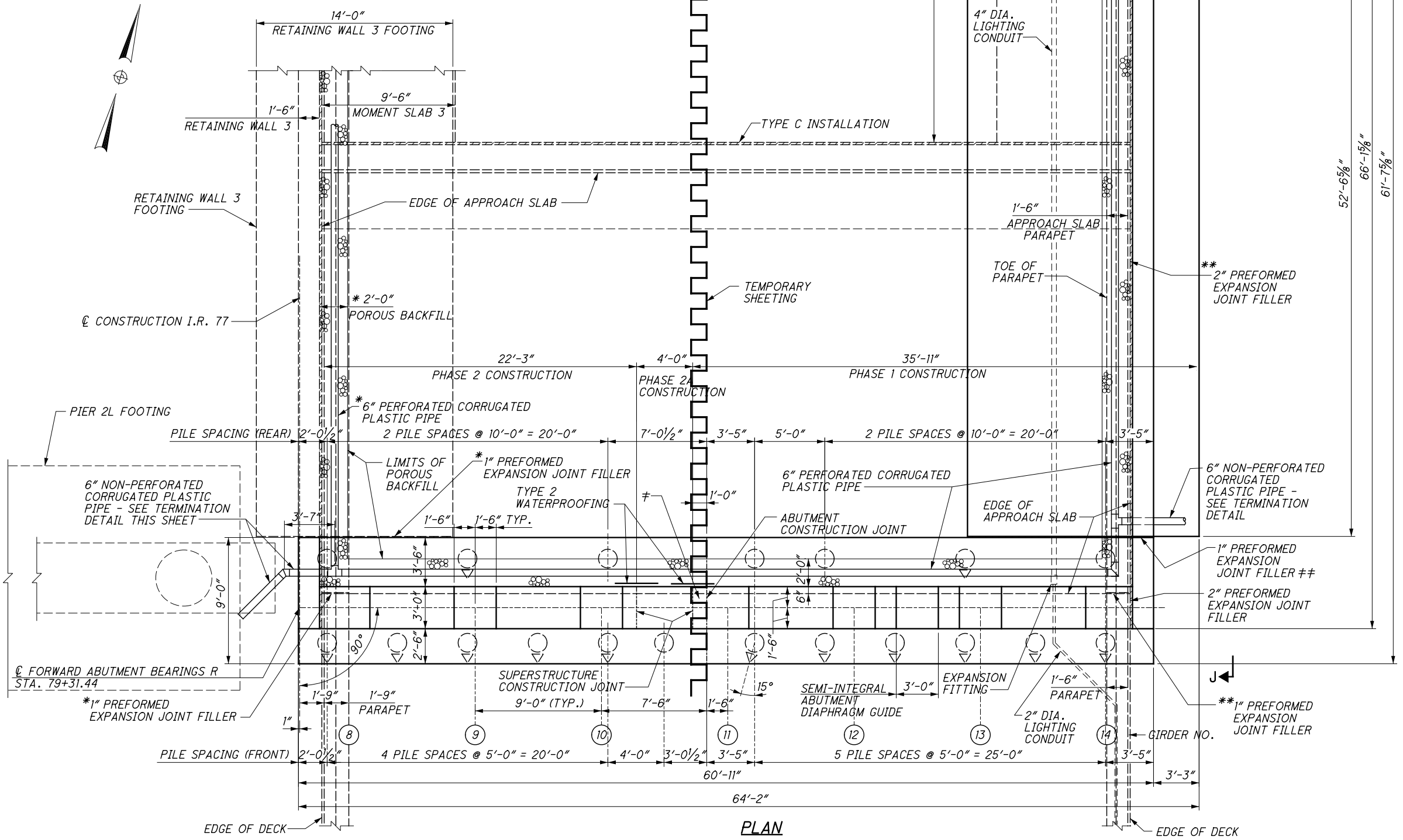
**PIPE TERMINATION:** FOR LOCATION SEE SHEET 36/84 AND 37/84 .

|                                                                |                                                                                                                                                                                                             |
|----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>REAR ABUTMENT RIGHT &amp; FORWARD ABUTMENT LEFT DETAILS</b> |                                                                                                                                                                                                             |
| BRIDGE NO. CUY-77-1433 L & R<br>OVER I.R. 490 AND RAMPS        | RICHLAND ENGINEERING LIMITED<br>29 NORTH PARK STREET<br>MANSFIELD, OHIO 44902<br>                                                                                                                           |
| CUY - 77 - 14.35<br>PID No. 13567                              | DATE: 11/15/16<br>REVIEWED: DAP<br>STRUCTURE FILE NUMBER: 1806688 (L)<br>1806718 (R)<br>DESIGNED: BLN<br>CHECKED: DLR                                                                                       |
| 35 / 84                                                        | <div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center;"> <span style="font-size: 10px;">316<br/>365</span> </div> |

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**TERMINATION OF 6" NON-PERFORATED CONDUIT AT WEST ABUTMENT END**



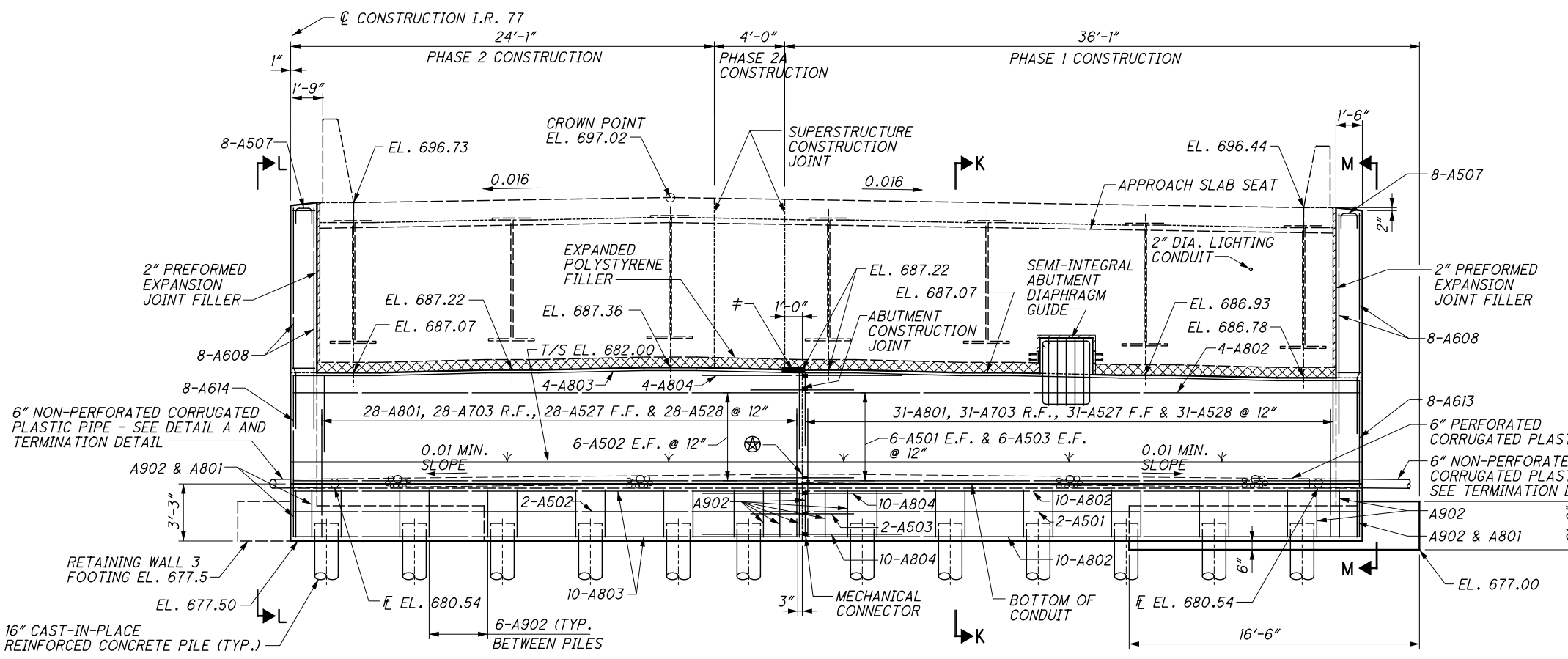
**PLAN**

**LEGEND**

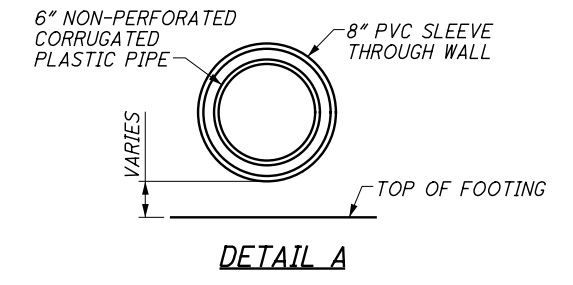
- - INDICATES 16" CAST-IN-PLACE REINFORCED CONCRETE PILE
- ◐ - INDICATES 16" CAST-IN-PLACE REINFORCED CONCRETE PILE (BATTERED 1:4)
- \* TO BE INCLUDED WITH RETAINING WALL QUANTITIES FOR PAYMENT.
- \*\* TO BE INCLUDED WITH ITEM 526 - REINFORCED CONCRETE APPROACH SLABS (17'), AS PER PLAN FOR PAYMENT.
- ‡ - CONTRACTOR TO PROVIDE TEMPORARY ABUTMENT FORM TO SUPPORT THE CANTILEVERED PORTION OF THE SUPERSTRUCTURE DIAPHRAGM DURING PHASE 1 CONSTRUCTION. SEE TEMPORARY SHORING DETAILS.
- ‡‡ - TO BE INCLUDED WITH ITEM 511 - CLASS QC1 CONCRETE WITH QC/QA, AS PER PLAN, WINGWALL AND FOOTING FOR PAYMENT.

**NOTES**

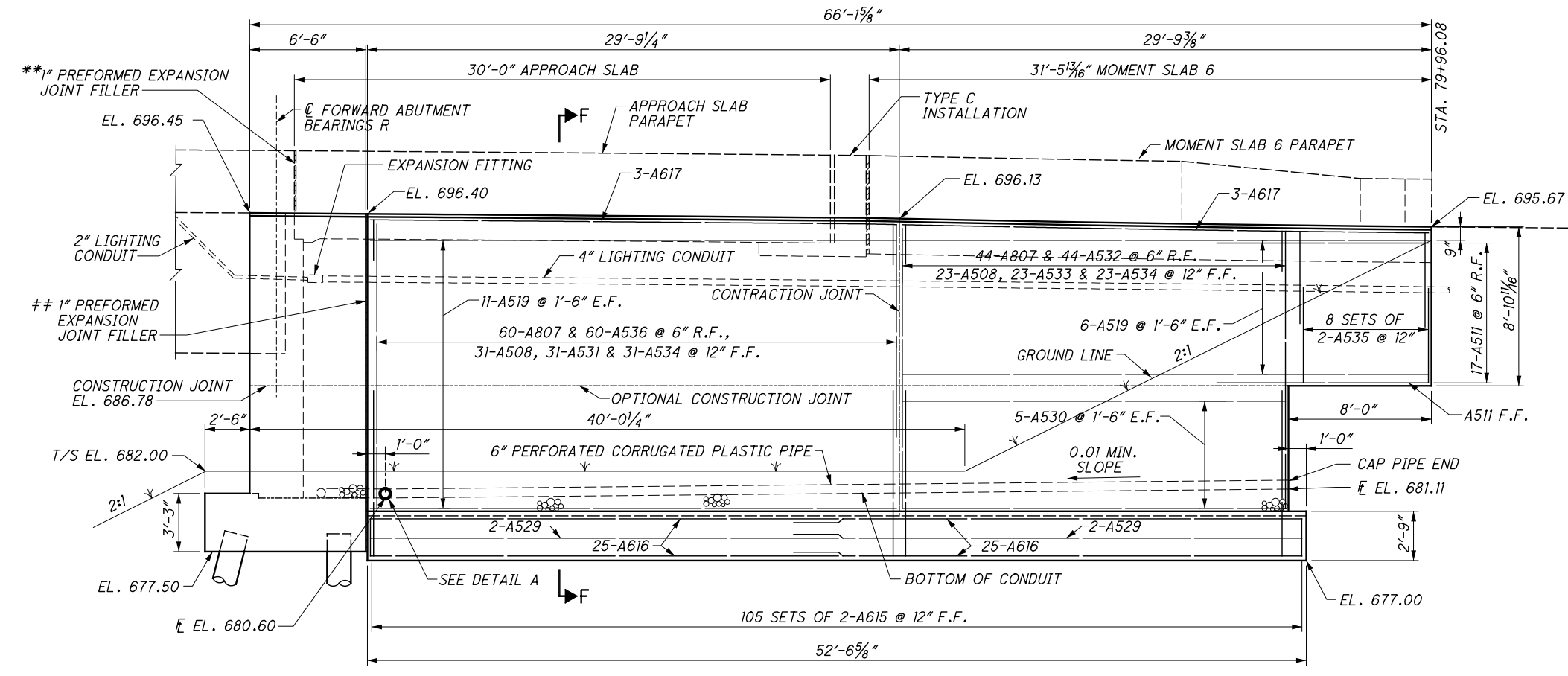
- ADDITIONAL NOTES:** SEE SHEET [34/84].
- TEMPORARY SHORING DETAILS:** SEE SHEETS [17/84] THROUGH [23/84].
- PIER 2L:** SEE SHEET [41/84].
- ELEVATION VIEW:** SEE SHEET [37/84].
- PILE LOCATION PLAN:** SEE SHEET [27/84].
- PILE NUMBERING DIAGRAM:** SEE SHEET [28/84].
- PIPE TERMINATION DETAIL EAST WALL:** SEE SHEET [38/84].
- RETAINING WALL 3:** SEE SHEET [6/22].
- VIEW J-J:** SEE SHEET [37/84].



**ELEVATION**



**DETAIL A**



**VIEW J-J**

**LEGEND**

- \*\* TO BE INCLUDED WITH ITEM 526 - REINFORCED CONCRETE APPROACH SLABS (17"), AS PER PLAN FOR PAYMENT.
- # - CONTRACTOR TO PROVIDE TEMPORARY ABUTMENT FORM TO SUPPORT THE CANTILEVERED PORTION OF THE SUPERSTRUCTURE DIAPHRAGM DURING PHASE 1 CONSTRUCTION. SEE TEMPORARY SHORING DETAILS.
- #+ - INCLUDED WITH ITEM 511 - CLASS QC1 CONCRETE WITH QC/QA, AS PER PLAN, WINGWALL AND FOOTING FOR PAYMENT.
- ⊗ - CAP PIPE ENDS AT THE PHASE CONSTRUCTION JOINT (TYP.)

**NOTES**

- ADDITIONAL NOTES:** SEE SHEET [34/84].
- PIPE TERMINATION DETAIL WEST END:** SEE SHEET [36/84].
- PIPE TERMINATION DETAIL EAST END WINGWALL:** SEE SHEET [38/84].
- VIEW J-J:** FOR LOCATION SEE SHEET [36/84].
- PLAN VIEW:** SEE SHEET [36/84].
- SECTION K-K & VIEWS L-L & M-M:** SEE SHEET [38/84].
- SECTION F-F:** SEE SHEET [39/84].
- SEMI-INTEGRAL ABUTMENT DIAPHRAGM GUIDE:** SEE STANDARD DRAWING SICD-2-14.
- EXPANSION & CONTRACTION JOINT DETAILS:** SEE SHEET [39/84].

**FORWARD ABUTMENT RIGHT BRIDGE - 2**

BRIDGE NO. CUY-77-1433  
OVER I.R. 490 AND RAMPS

|                 |                 |                                  |                                                                                       |
|-----------------|-----------------|----------------------------------|---------------------------------------------------------------------------------------|
| DRAWN<br>KH     | REVIEWED<br>DAP | DATE<br>11/15/16                 | FIRM<br>RICHLAND ENGINEERING LIMITED<br>29 NORTH PARK STREET<br>MANSFIELD, OHIO 44902 |
| DESIGNED<br>BLN | CHECKED<br>DLR  | STRUCTURE FILE NUMBER<br>1806718 |                                                                                       |

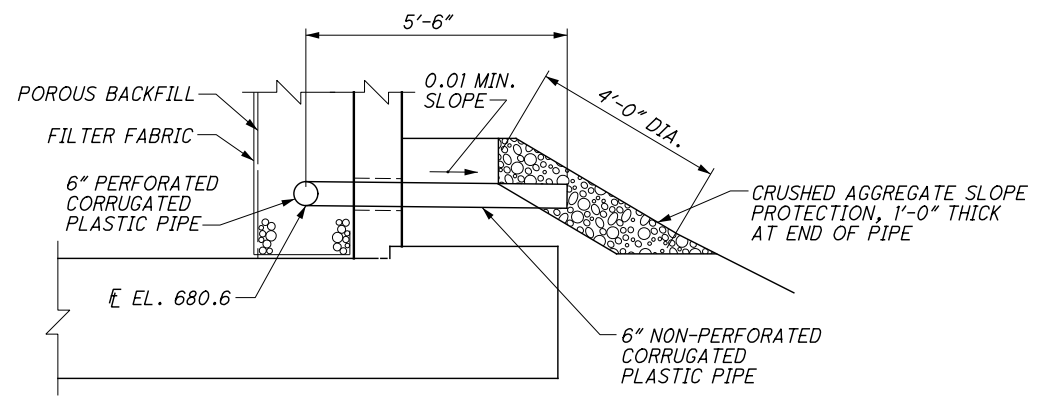
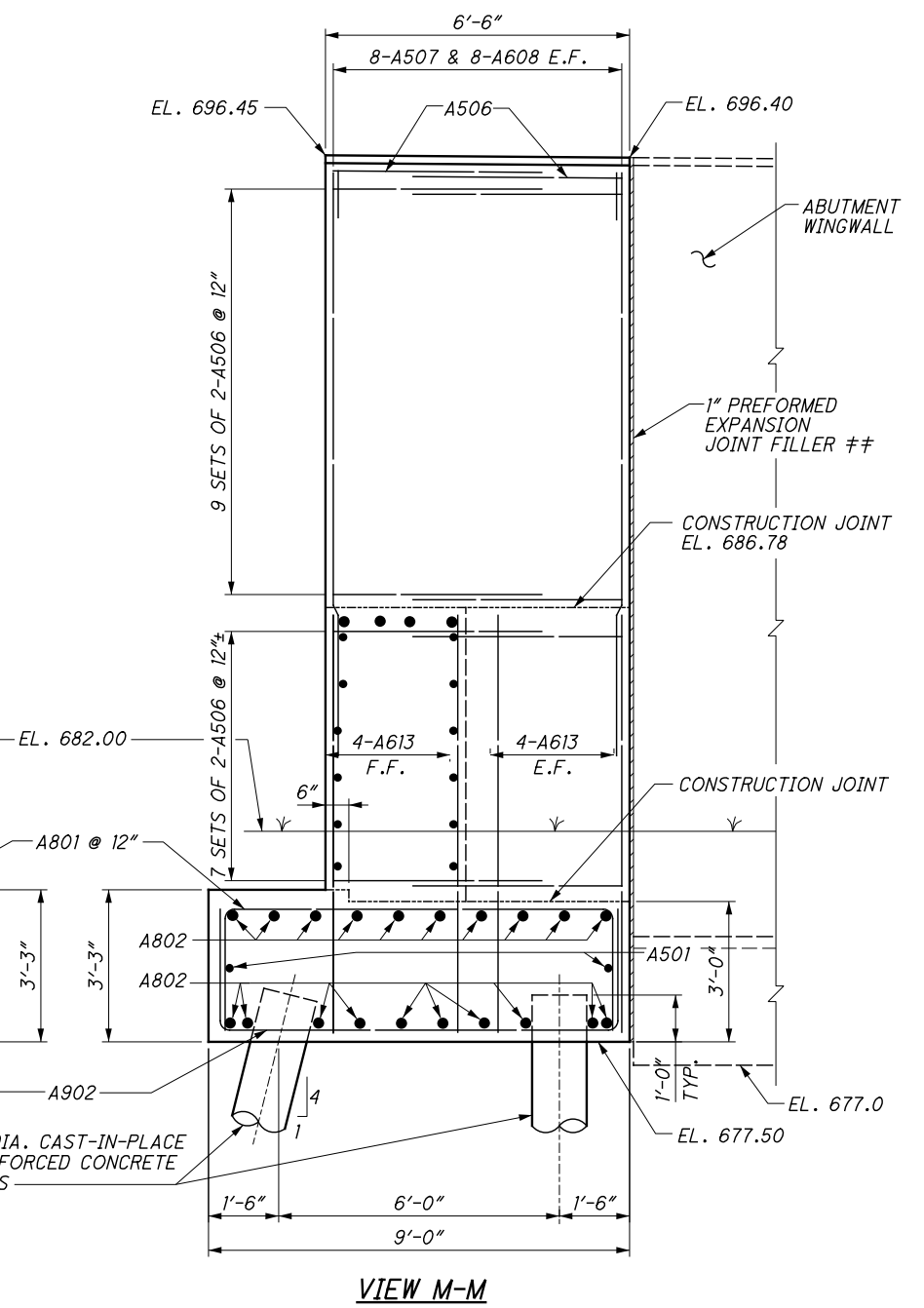
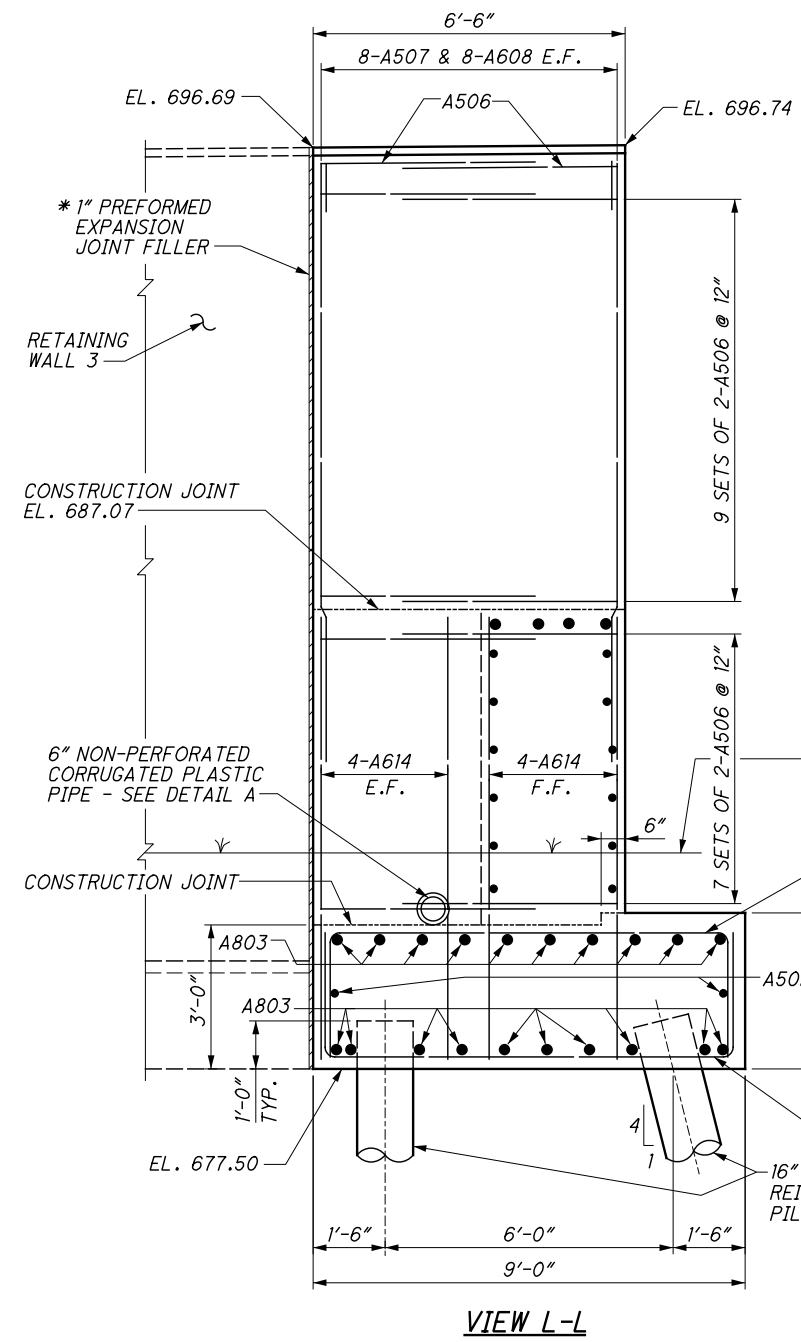
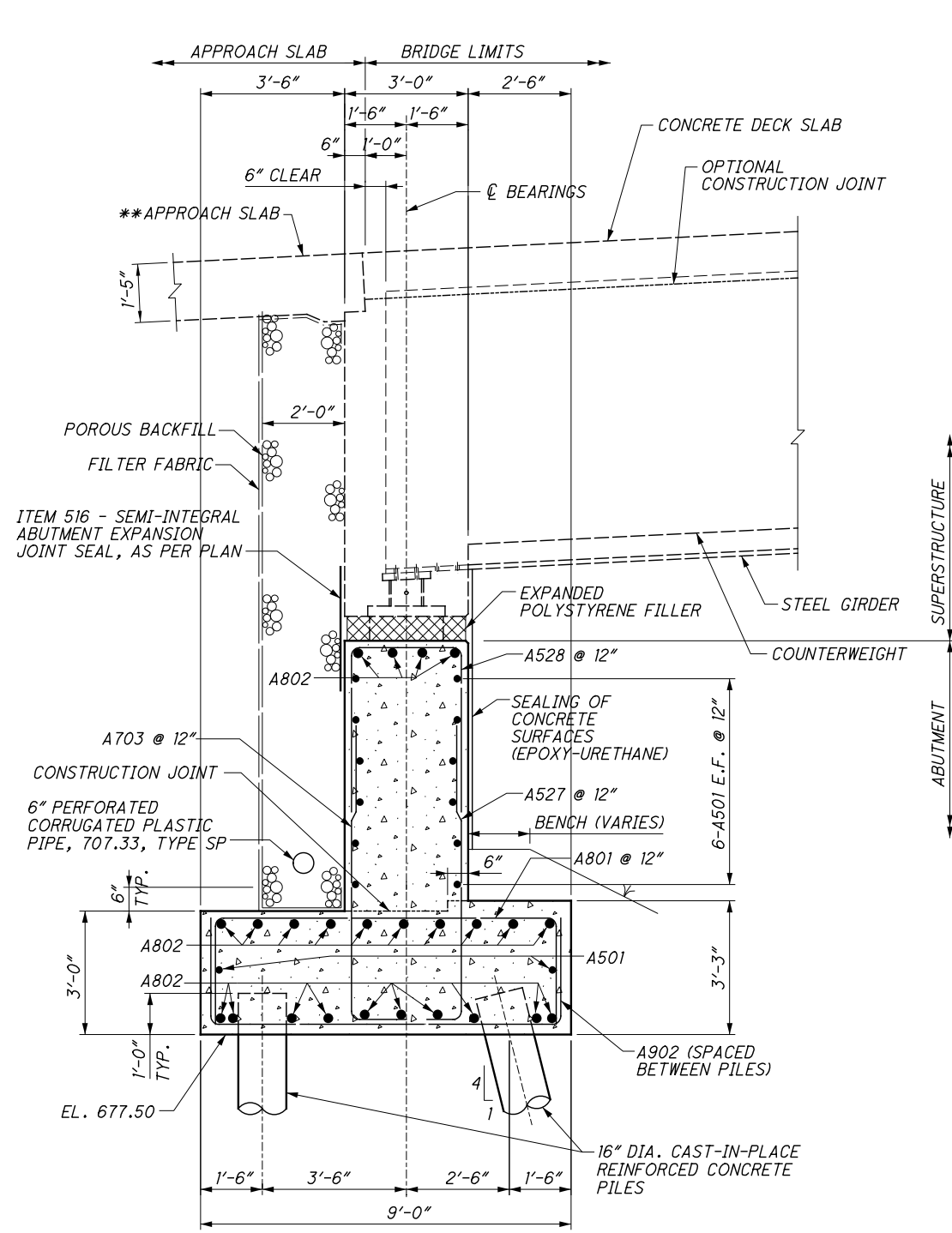
**CUY-77-14.35**  
PID No. 13567

37/84

318  
365

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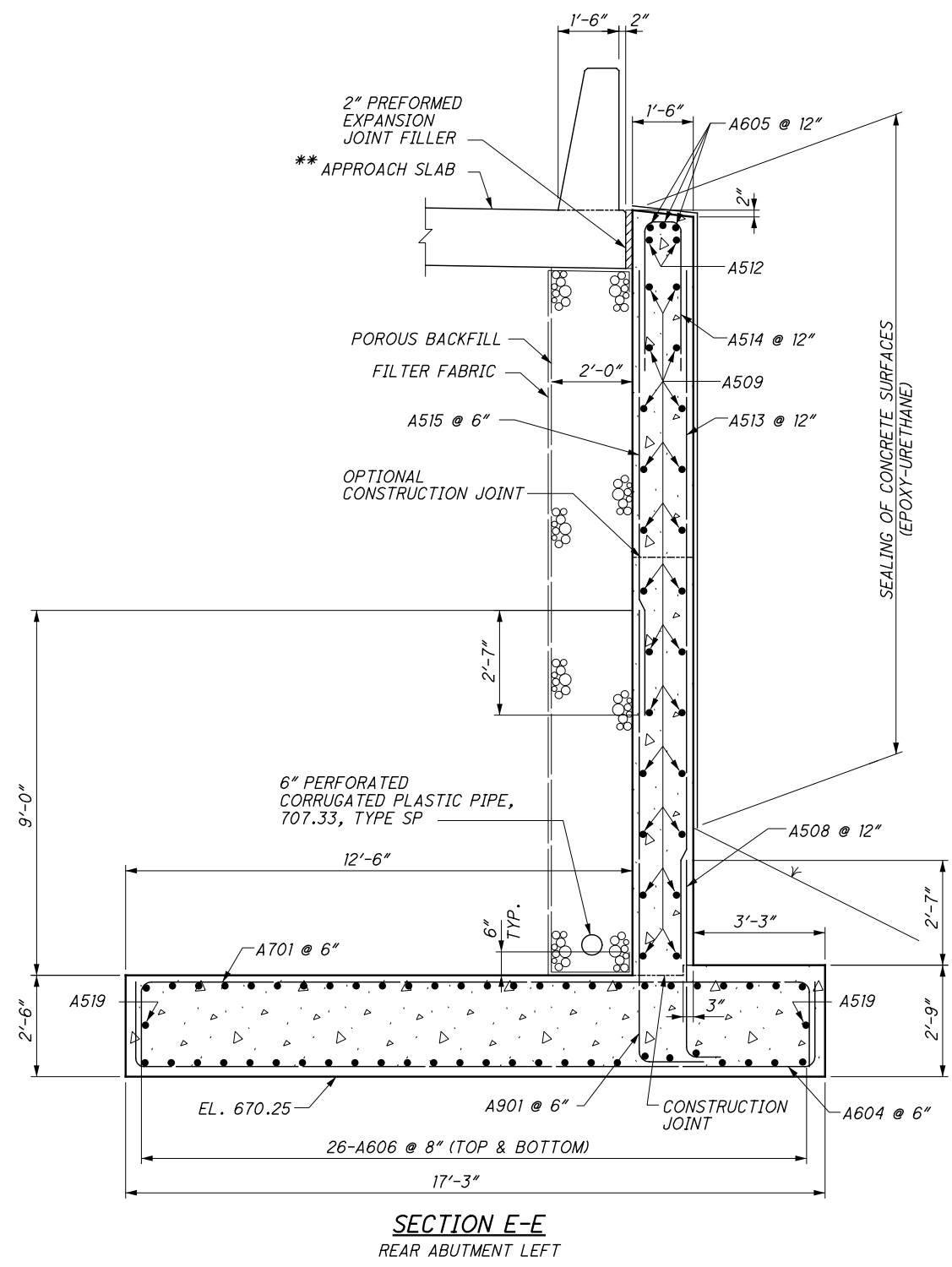
**LEGEND**

- \* - TO BE INCLUDED WITH RETAINING WALL QUANTITIES.
- \*\* - TO BE INCLUDED WITH ITEM 526 - REINFORCED CONCRETE APPROACH SLABS (17'), AS PER PLAN FOR PAYMENT.
- ## - TO BE INCLUDED WITH ITEM 511 - CLASS QC1 CONCRETE WITH QC/QA, AS PER PLAN, WINGWALL AND FOOTING FOR PAYMENT.

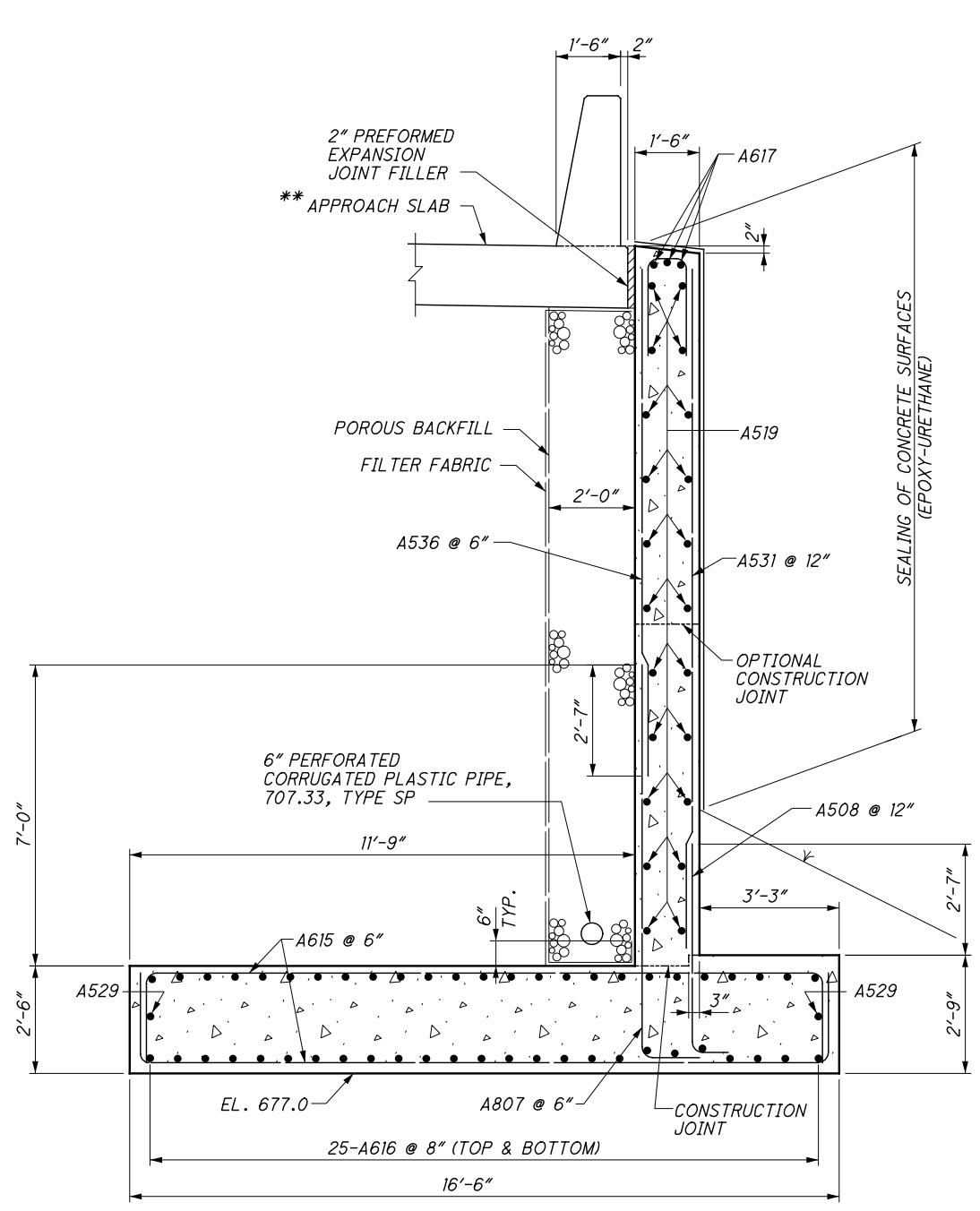
**NOTES**

- ADDITIONAL NOTES:** SEE SHEET [34/84].
- NOTATION:** E.F. - EACH FACE  
F.F. - FRONT FACE
- DETAIL A:** SEE SHEET [37/84].
- COUNTERWEIGHT DETAILS:** SEE SHEETS [62/84] THROUGH [65/84].
- SECTION K-K & VIEWS L-L & M-M:** FOR LOCATIONS SEE SHEET [37/84].
- PIPE TERMINATION WEST END:** SEE SHEET [36/84].

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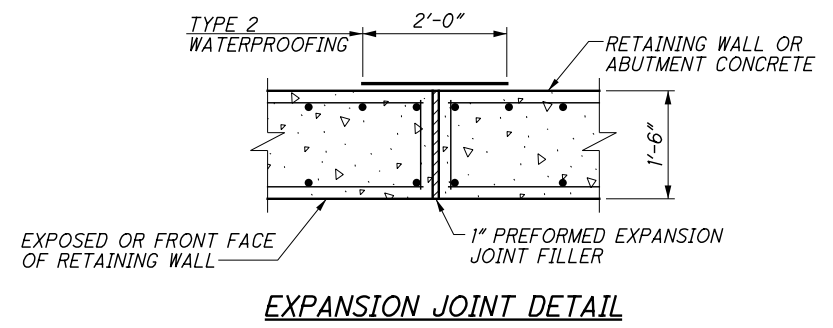


**SECTION E-E**  
REAR ABUTMENT LEFT

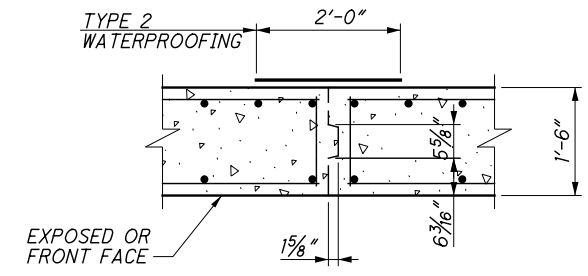


**SECTION F-F**  
FORWARD ABUTMENT RIGHT

\*\* TO BE INCLUDED WITH ITEM 526 - REINFORCED CONCRETE APPROACH SLABS (17'), AS PER PLAN FOR PAYMENT.



**EXPANSION JOINT DETAIL**



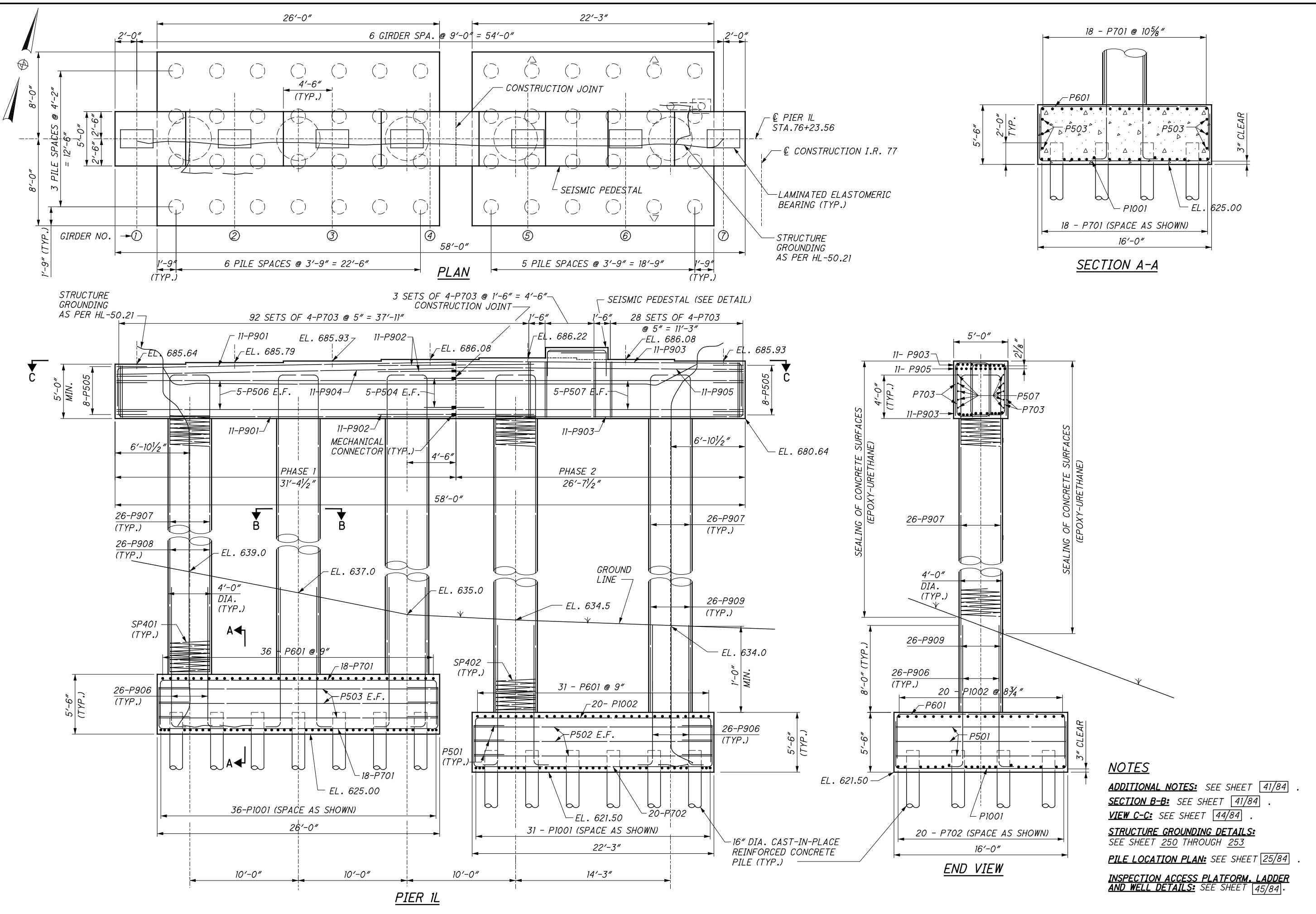
**CONTRACTION JOINT DETAIL**

**NOTES**

- ADDITIONAL NOTES: SEE SHEET 34/84 .
- SECTION E-E: FOR LOCATION SEE SHEET 31/84 .
- SECTION F-F: FOR LOCATION SEE SHEET 37/84 .

|                                                                                       |                                                     |
|---------------------------------------------------------------------------------------|-----------------------------------------------------|
| RICHLAND ENGINEERING LIMITED<br>29 NORTH PARK STREET<br>MANSFIELD, OHIO 44902         |                                                     |
| DATE<br>11/15/16                                                                      | STRUCTURE FILE NUMBER<br>1806688 (L)<br>1806718 (R) |
| REVIEWED<br>DAP                                                                       | CHECKED<br>DLR                                      |
| DRAWN<br>KH                                                                           | REVISED                                             |
| ABUTMENT WINGWALL SECTIONS<br>BRIDGE NO. CUY-77-1433 L & R<br>OVER I.R. 490 AND RAMPS |                                                     |
| CUY-77-14.35<br>PID No. 13567                                                         | 39/84<br>320<br>365                                 |

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**NOTES**

**ADDITIONAL NOTES:** SEE SHEET 41/84 .

**SECTION B-B:** SEE SHEET 41/84 .

**VIEW C-C:** SEE SHEET 44/84 .

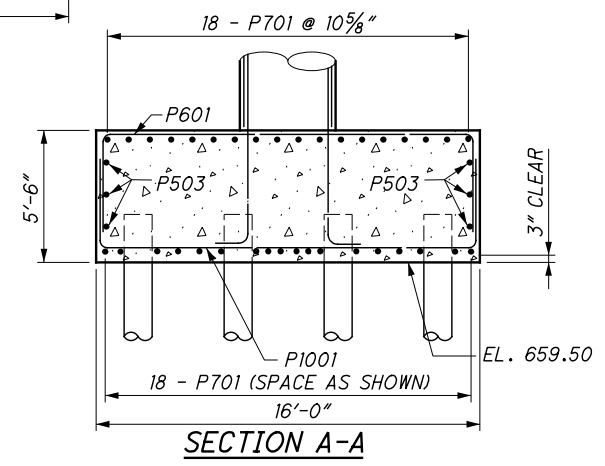
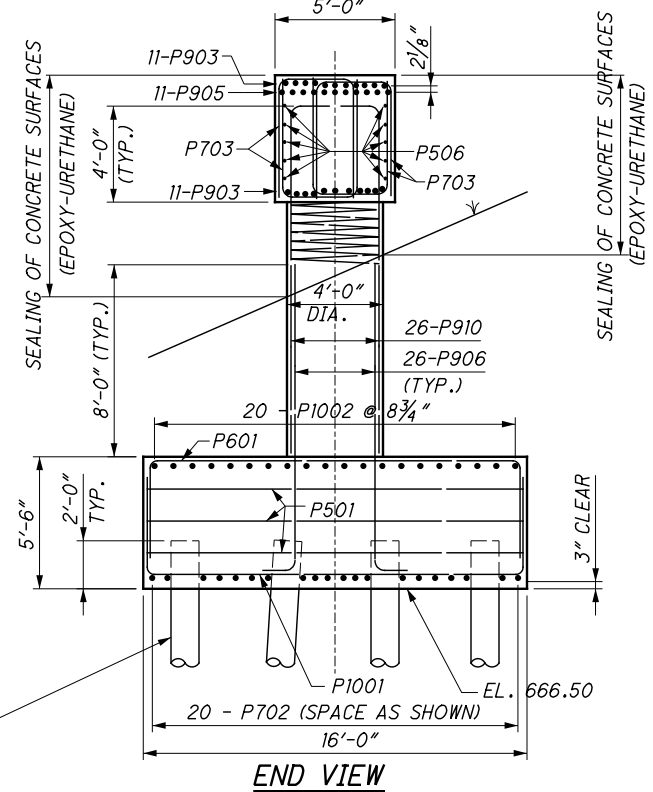
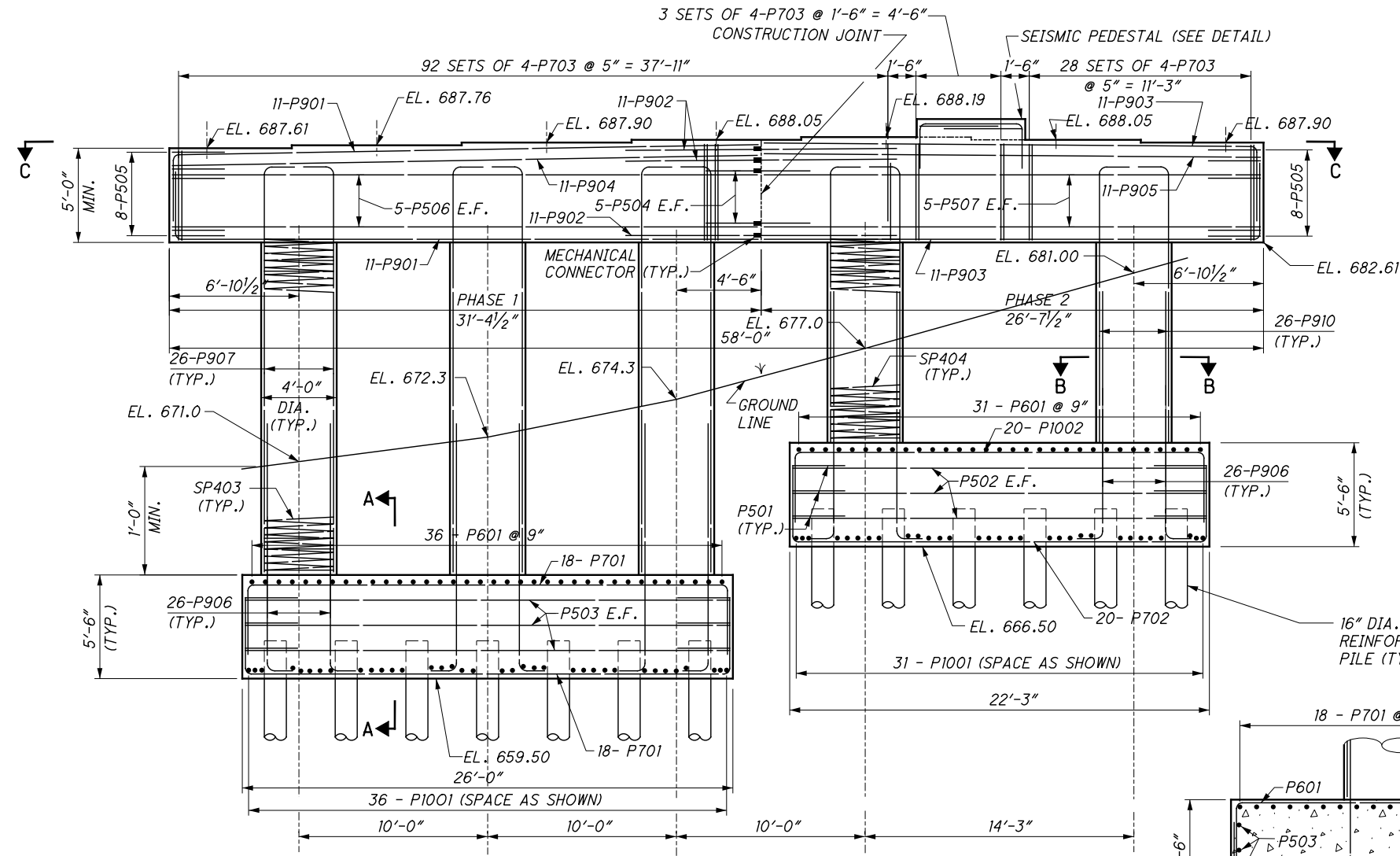
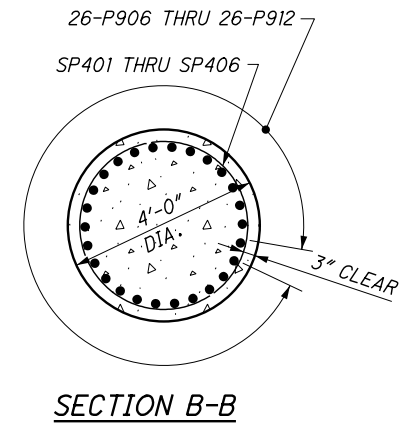
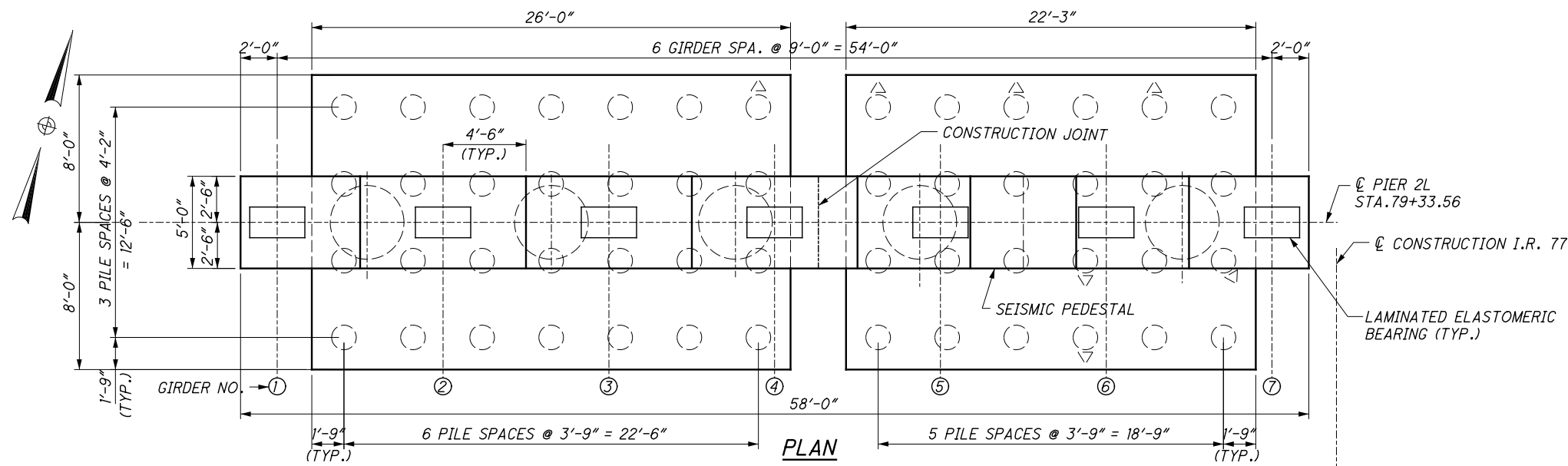
**STRUCTURE GROUNDING DETAILS:** SEE SHEET 250 THROUGH 253

**PILE LOCATION PLAN:** SEE SHEET 25/84 .

**INSPECTION ACCESS PLATFORM, LADDER AND WELL DETAILS:** SEE SHEET 45/84 .

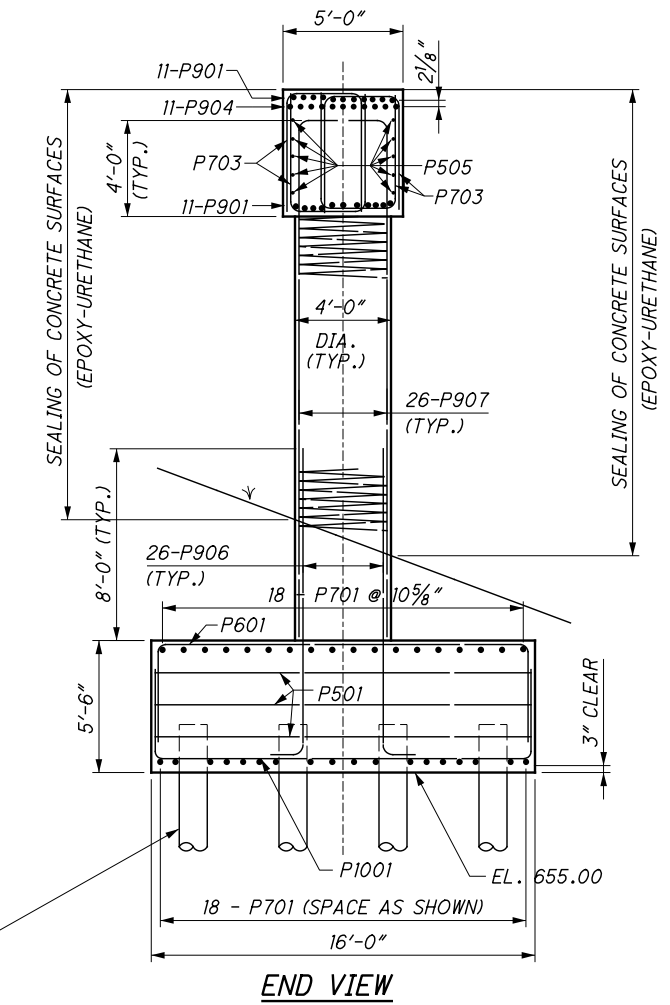
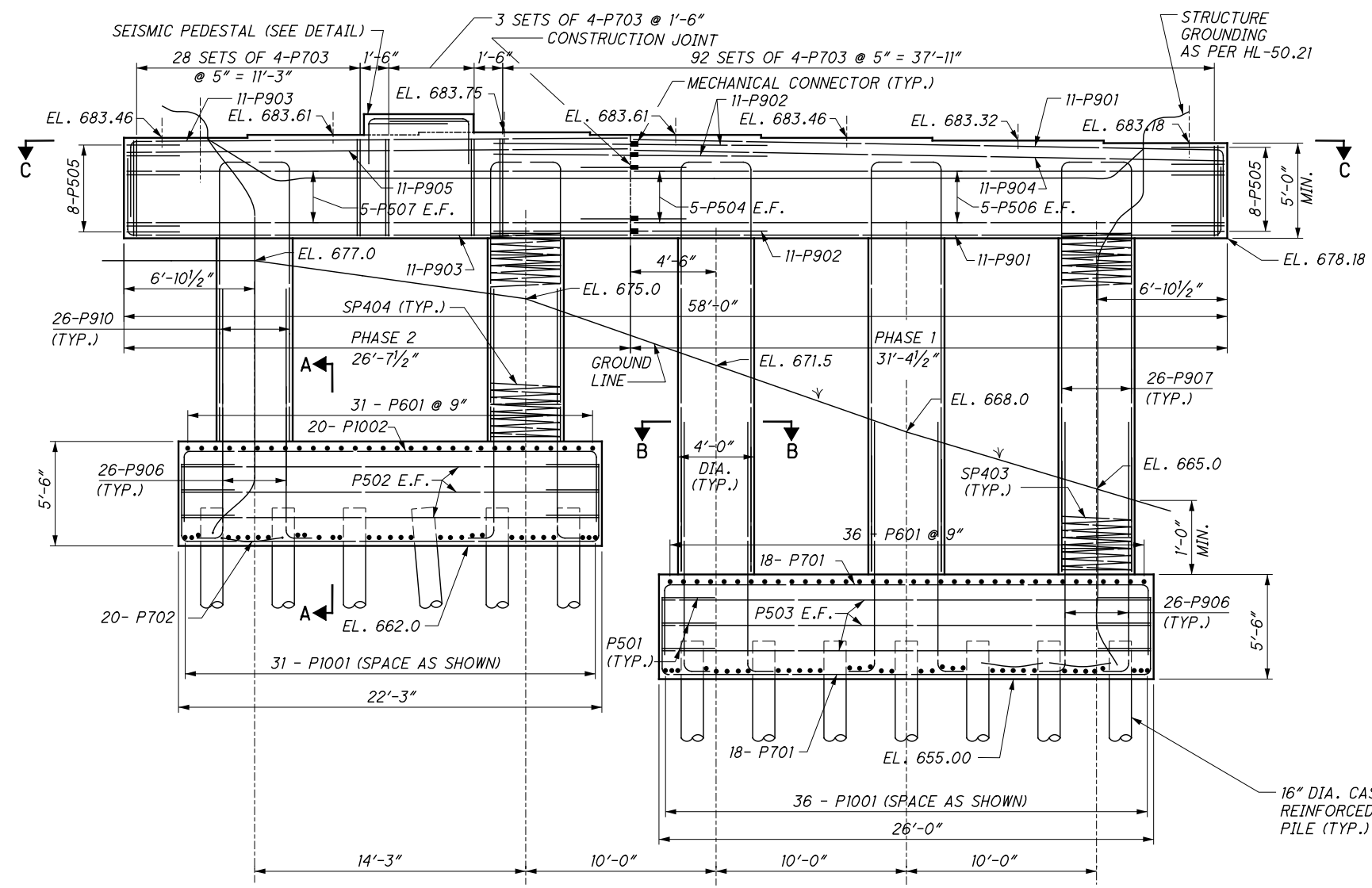
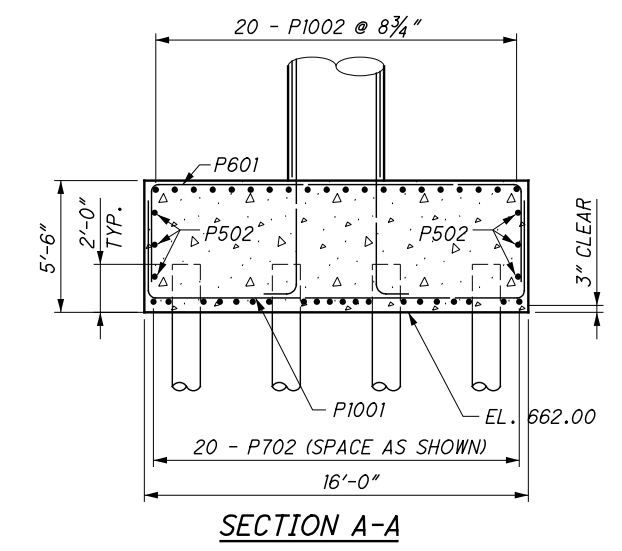
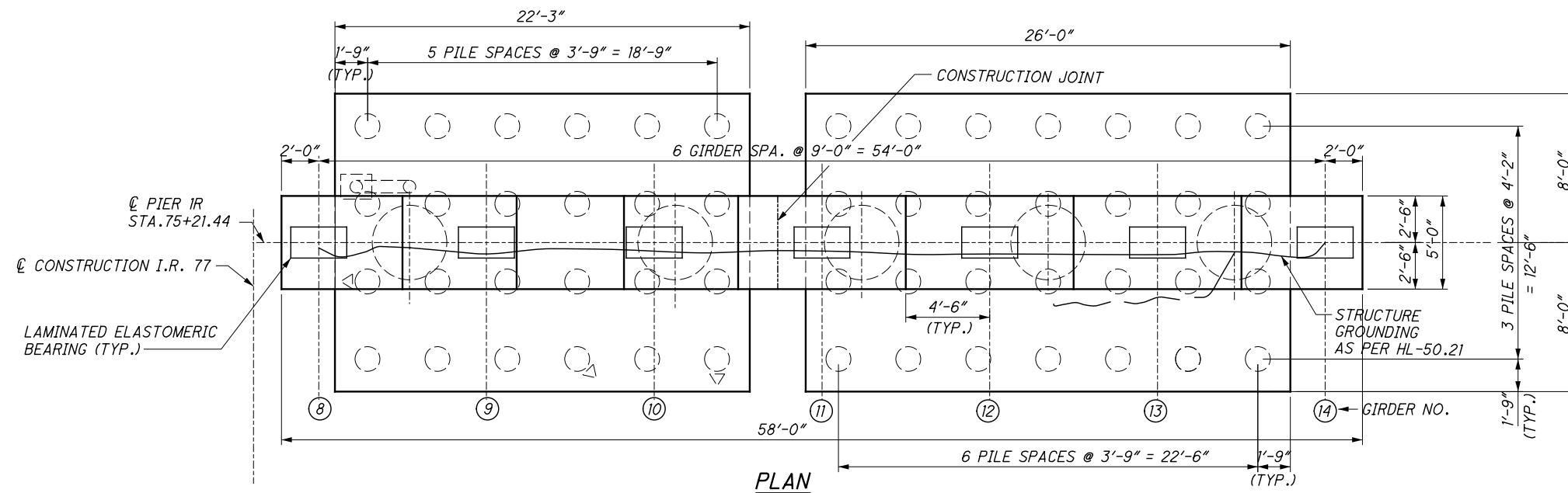
|                                                                                        |                                              |
|----------------------------------------------------------------------------------------|----------------------------------------------|
| <p>RICHLAND ENGINEERING LIMITED<br/>29 NORTH PARK STREET<br/>MANSFIELD, OHIO 44902</p> |                                              |
| <p>REVIEWED<br/>DAP</p>                                                                | <p>DATE<br/>11/15/16</p>                     |
| <p>DRAWN<br/>TWH</p>                                                                   | <p>STRUCTURE FILE NUMBER<br/>1806688 (L)</p> |
| <p>DESIGNED<br/>ALP</p>                                                                | <p>CHECKED<br/>BLN</p>                       |
| <p><b>PIER 1 LEFT</b><br/>BRIDGE NO. CUY-77-1433 L<br/>OVER I.R. 490 AND RAMPS</p>     |                                              |
| <p><b>CUY-77-14.35</b><br/>PID No. 13567</p>                                           |                                              |
| <p>40 / 84</p>                                                                         |                                              |
| <p>321<br/>365</p>                                                                     |                                              |

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- NOTES**
- NOTATION:** E.F. - EACH FACE
  - REINFORCING STEEL SPLICE LENGTHS** SHALL BE 2'-0" FOR #5 VERTICAL BARS, 2'-9" FOR #5 HORIZONTAL BARS, 2'-6" FOR #6 VERTICAL BARS, 4'-8" FOR #7 VERTICAL BARS, 8'-0" FOR #9 VERTICAL BARS, AND 7'-0" FOR #9 HORIZONTAL BARS. SPIRALS SHALL HAVE A SPLICE OF 1/2 TURNS.
  - SEISMIC PEDESTAL DETAIL:** SEE SHEET 44/84 .
  - VIEW C-C:** SEE SHEET 44/84 .
  - DRAINAGE DETAILS:** SEE SHEETS 72/84 THROUGH 74/84 .
  - PILE LOCATION PLAN:** SEE SHEET 27/84 .
  - SECTION B-B:** FOR LOCATION SEE SHEETS 40/84 THROUGH 43/84 .

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PIER 1R

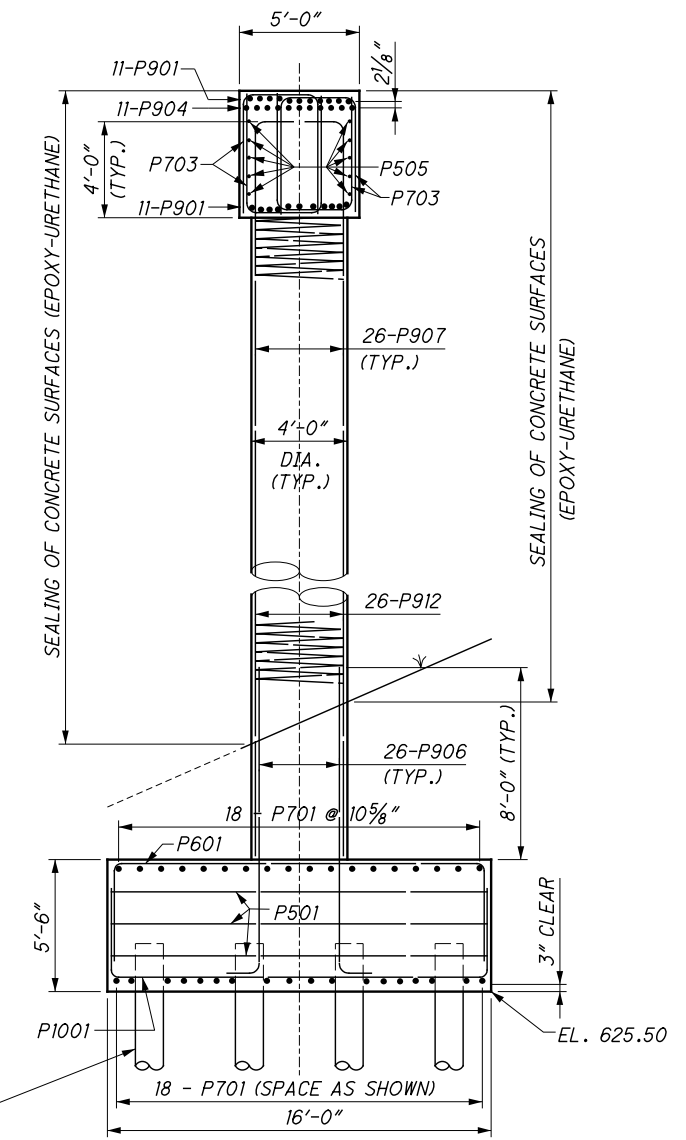
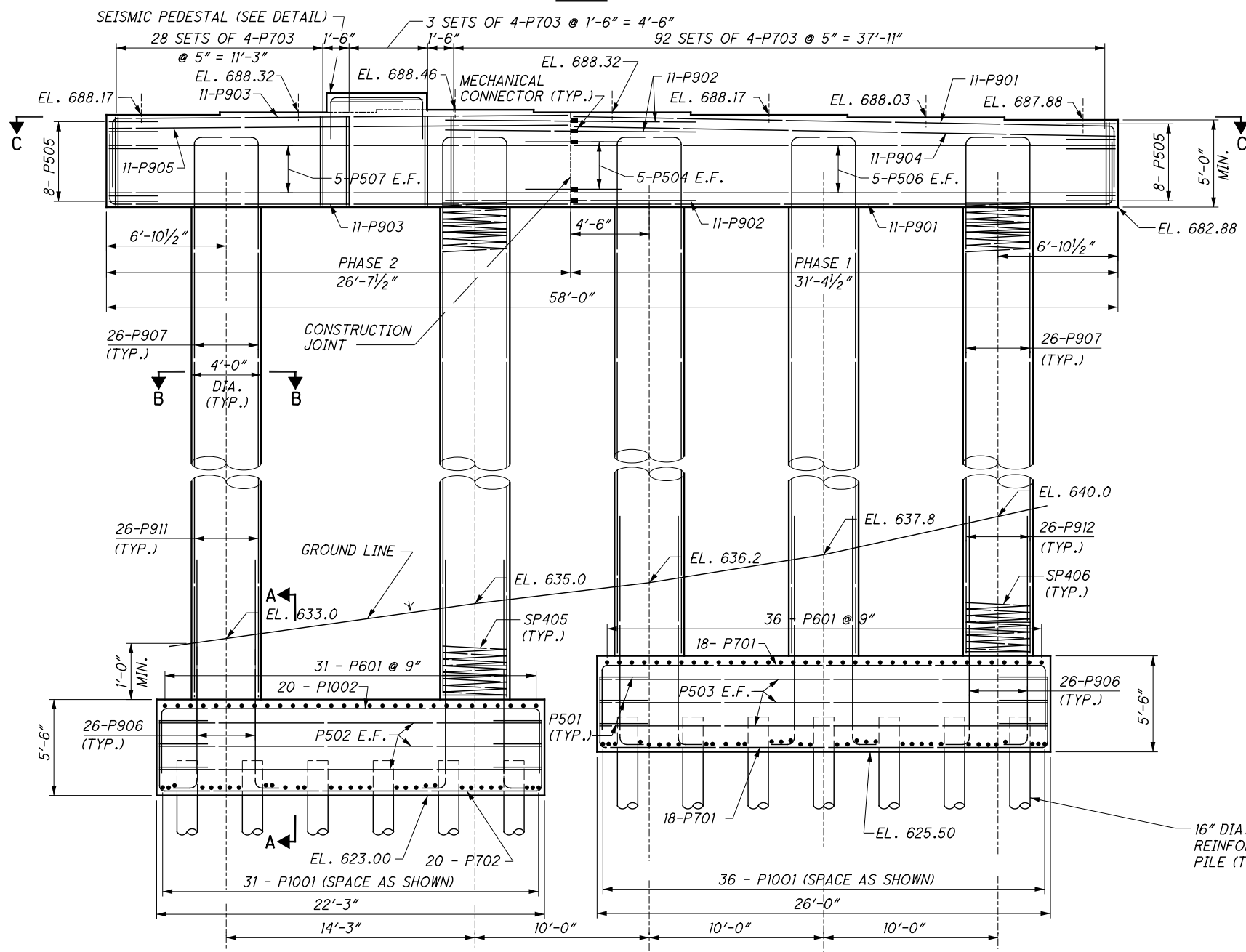
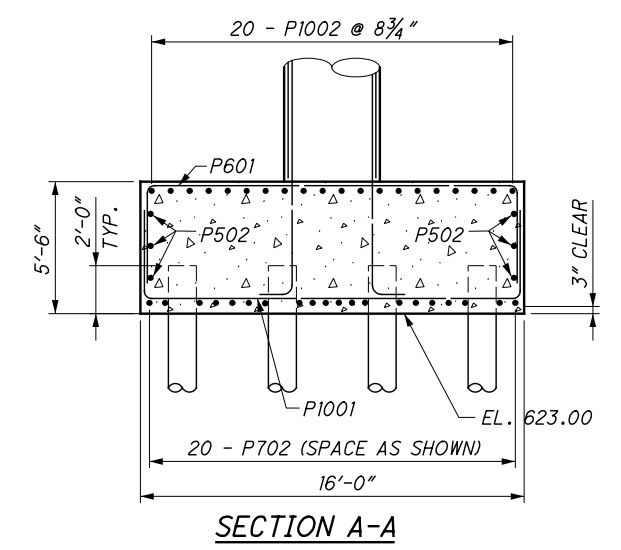
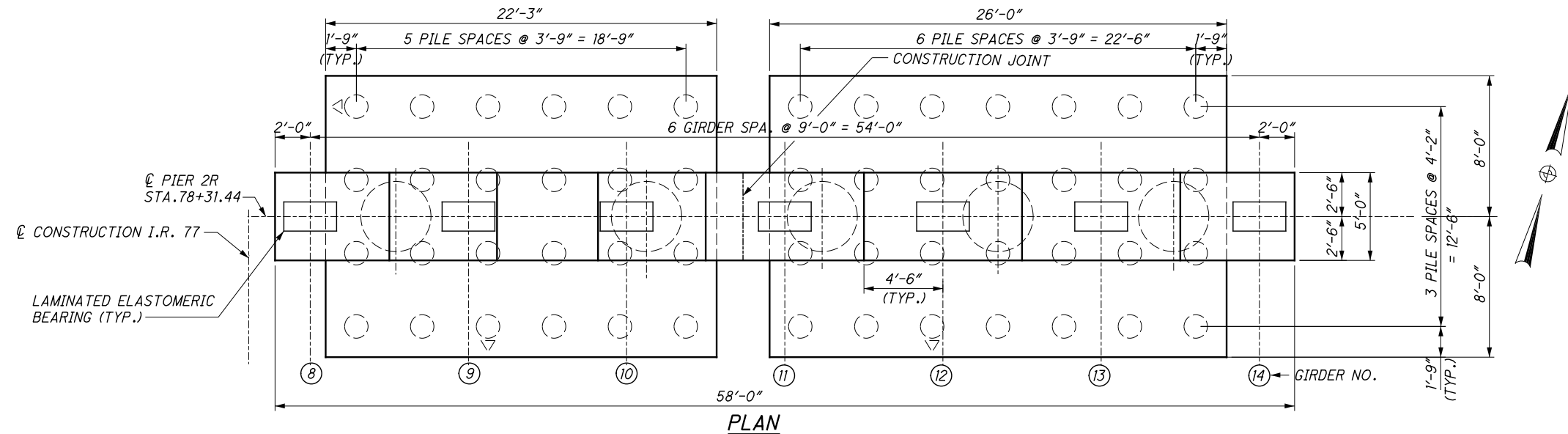
\* INDICATES BAR TO BE CUT IN FIELD TO MISS PILE

**NOTES**  
**ADDITIONAL NOTES:** SEE SHEET 41/84 .  
**SECTION B-B:** SEE SHEET 41/84 .  
**VIEW C-C:** SEE SHEET 44/84 .  
**STRUCTURE GROUNDING DETAILS:** SEE SHEET 250 THROUGH 253  
**PILE LOCATION PLAN:** SEE SHEET 24/84 .

|                                                                                                                          |                                                                |
|--------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|
| <p>RICHLAND ENGINEERING LIMITED<br/>                 29 NORTH PARK STREET<br/>                 MANSFIELD, OHIO 44902</p> |                                                                |
| <p>DATE: 11/15/16<br/>                 REVIEWED: DAP<br/>                 STRUCTURE FILE NUMBER: 1806718 (R)</p>         | <p>DESIGNED: ALP<br/>                 CHECKED: BLN</p>         |
| <p>PIER 1 RIGHT<br/>                 BRIDGE NO. CUY-77-1433 R<br/>                 OVER I.R. 490 AND RAMPS</p>           |                                                                |
| <p>CUY-77-14.35<br/>                 PID No. 13567</p>                                                                   | <p>42/84<br/>                 323<br/>                 365</p> |

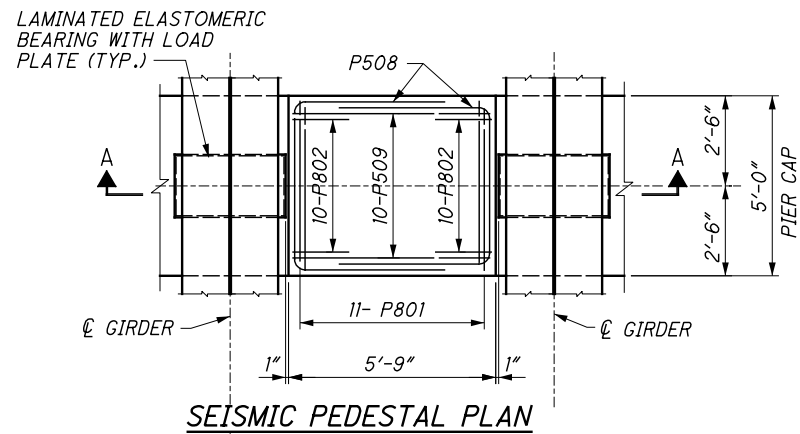


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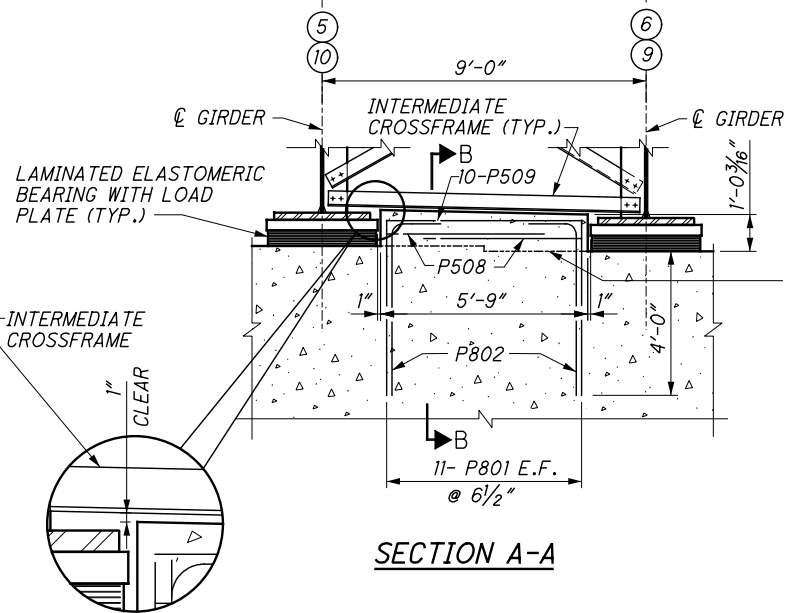


**NOTES**  
**ADDITIONAL NOTES:** SEE SHEET 41/84 .  
**SECTION B-B:** SEE SHEET 41/84 .  
**VIEW C-C:** SEE SHEET 44/84 .  
**PILE LOCATION PLAN:** SEE SHEET 26/84 .  
**INSPECTION ACCESS PLATFORM, LADDER AND WELL DETAILS:** SEE SHEET 46/84 .

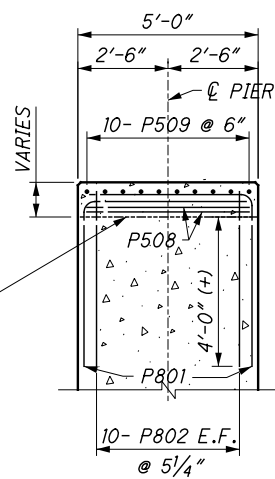
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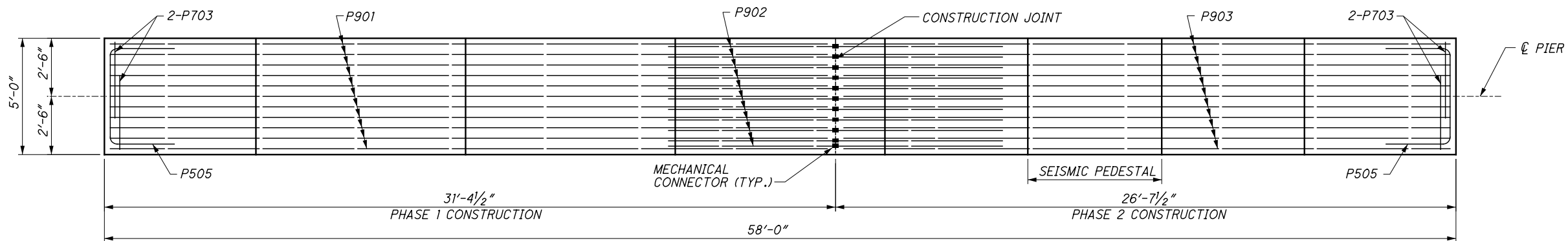
SEISMIC PEDESTAL PLAN



SECTION A-A



SECTION B-B



VIEW C-C

PIER 1L & 2L SHOWN  
PIER 1R & 2R OPPOSITE HAND

**NOTES**

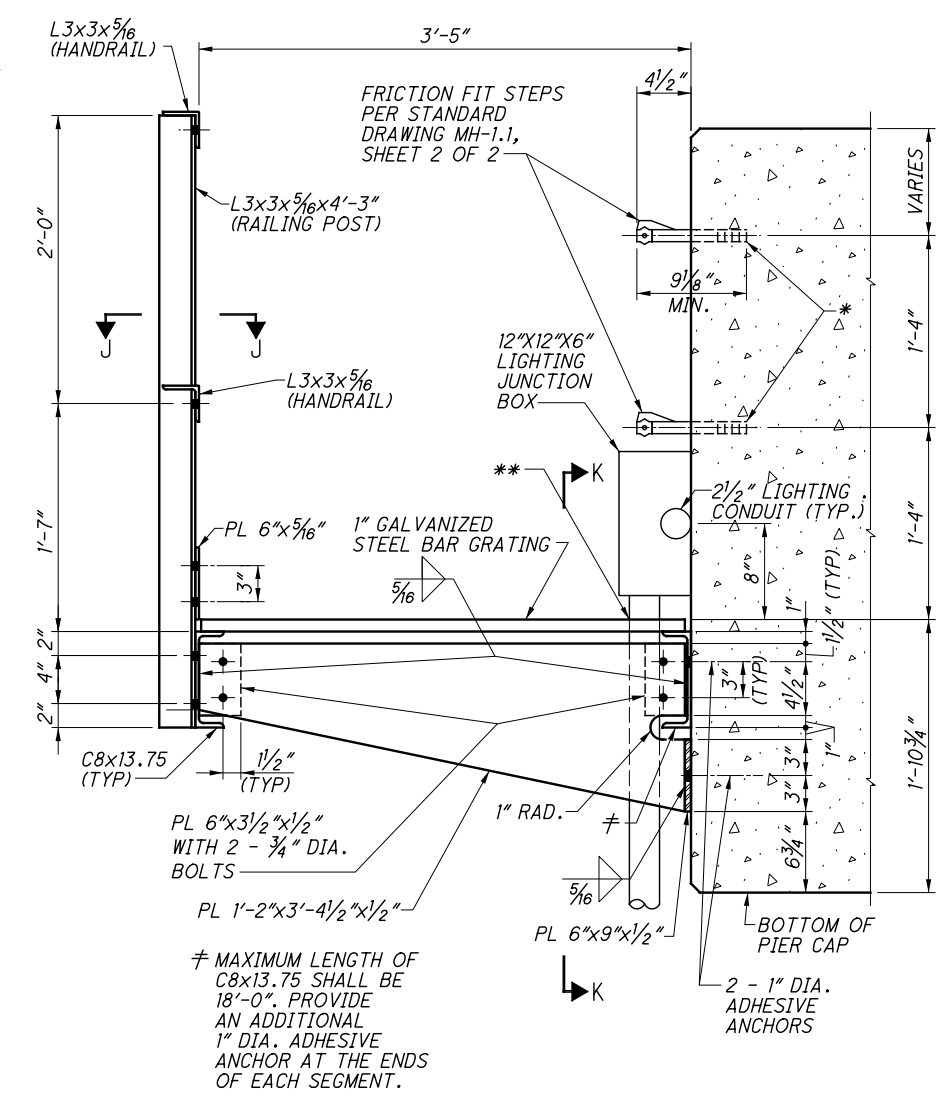
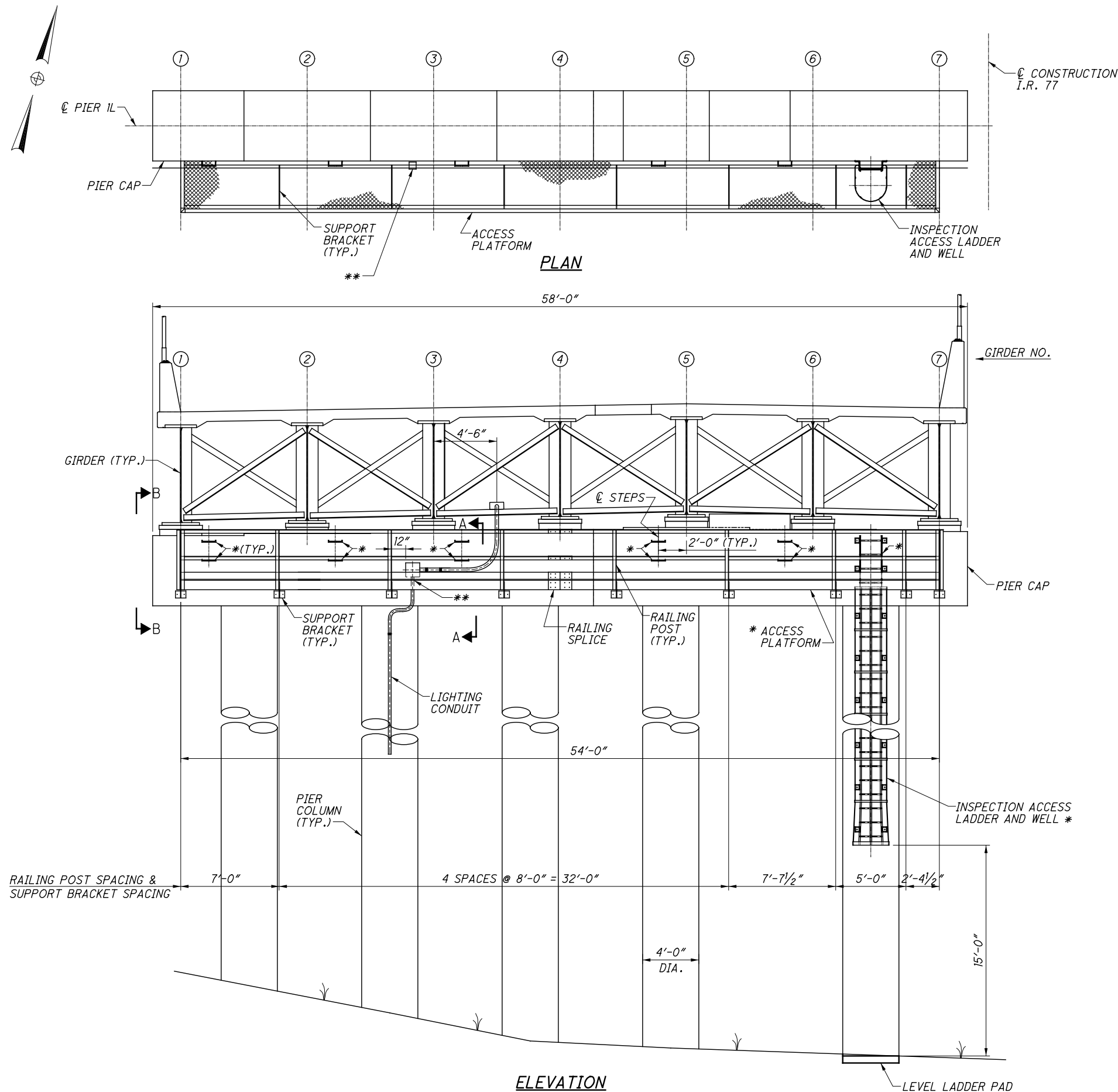
**SEISMIC PEDESTAL:** FOR LOCATIONS SEE SHEETS 40/84 THROUGH 43/84 .

**ADDITIONAL NOTES:** SEE SHEET 41/84 .

**VIEW C-C:** FOR LOCATIONS SEE SHEETS 40/84 THROUGH 43/84 .

|                                                                                        |                                              |
|----------------------------------------------------------------------------------------|----------------------------------------------|
| <p>RICHLAND ENGINEERING LIMITED<br/>29 NORTH PARK STREET<br/>MANSFIELD, OHIO 44902</p> |                                              |
| <p>REVIEWED<br/>DAP</p>                                                                | <p>DATE<br/>11/15/16</p>                     |
| <p>DESIGNED<br/>ALP</p>                                                                | <p>STRUCTURE FILE NUMBER<br/>1806688 (L)</p> |
| <p>DRAWN<br/>TWH</p>                                                                   | <p>REVISIONS<br/>18066718 (R)</p>            |
| <p>PIER DETAILS<br/>BRIDGE NO. CUY-77-1433 L &amp; R<br/>OVER I.R. 490 AND RAMPS</p>   |                                              |
| <p>CUY-77-14.35</p>                                                                    | <p>PID No. 13567</p>                         |
| <p>44/84</p>                                                                           | <p>325<br/>365</p>                           |

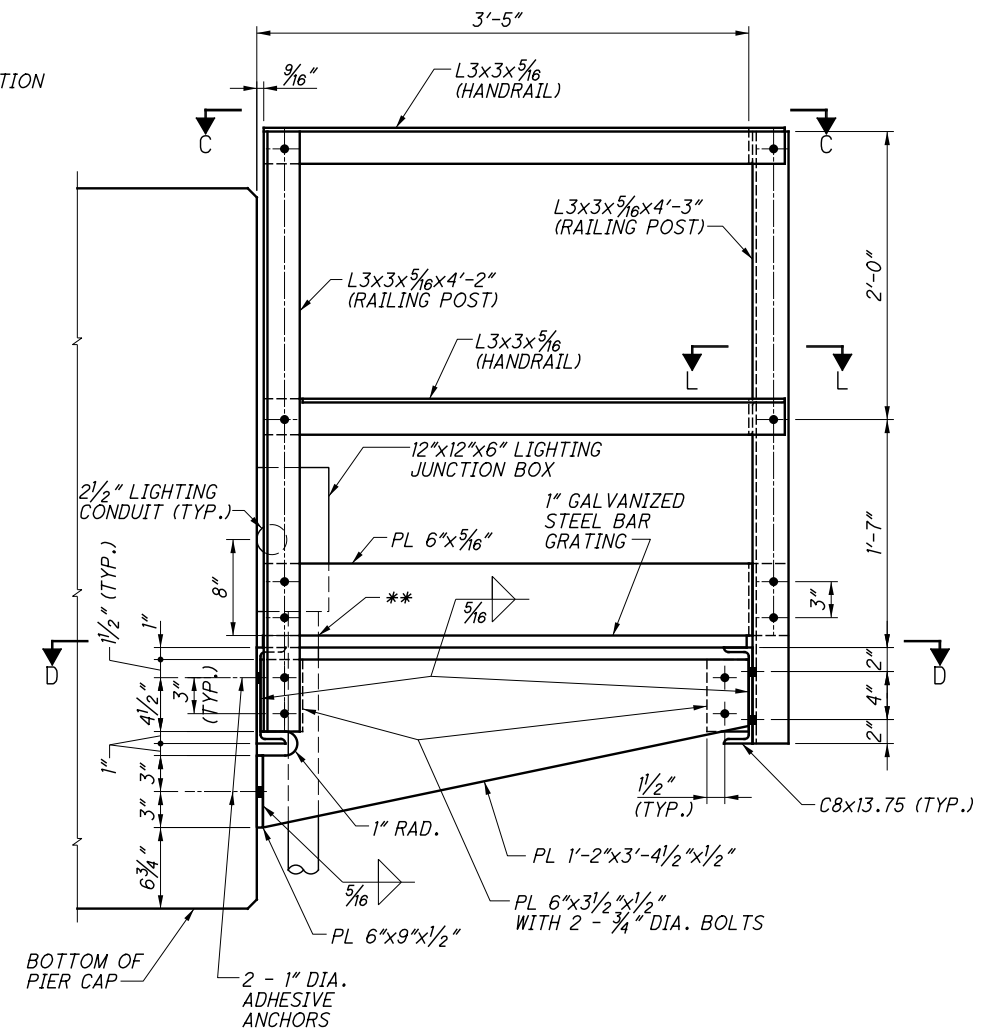
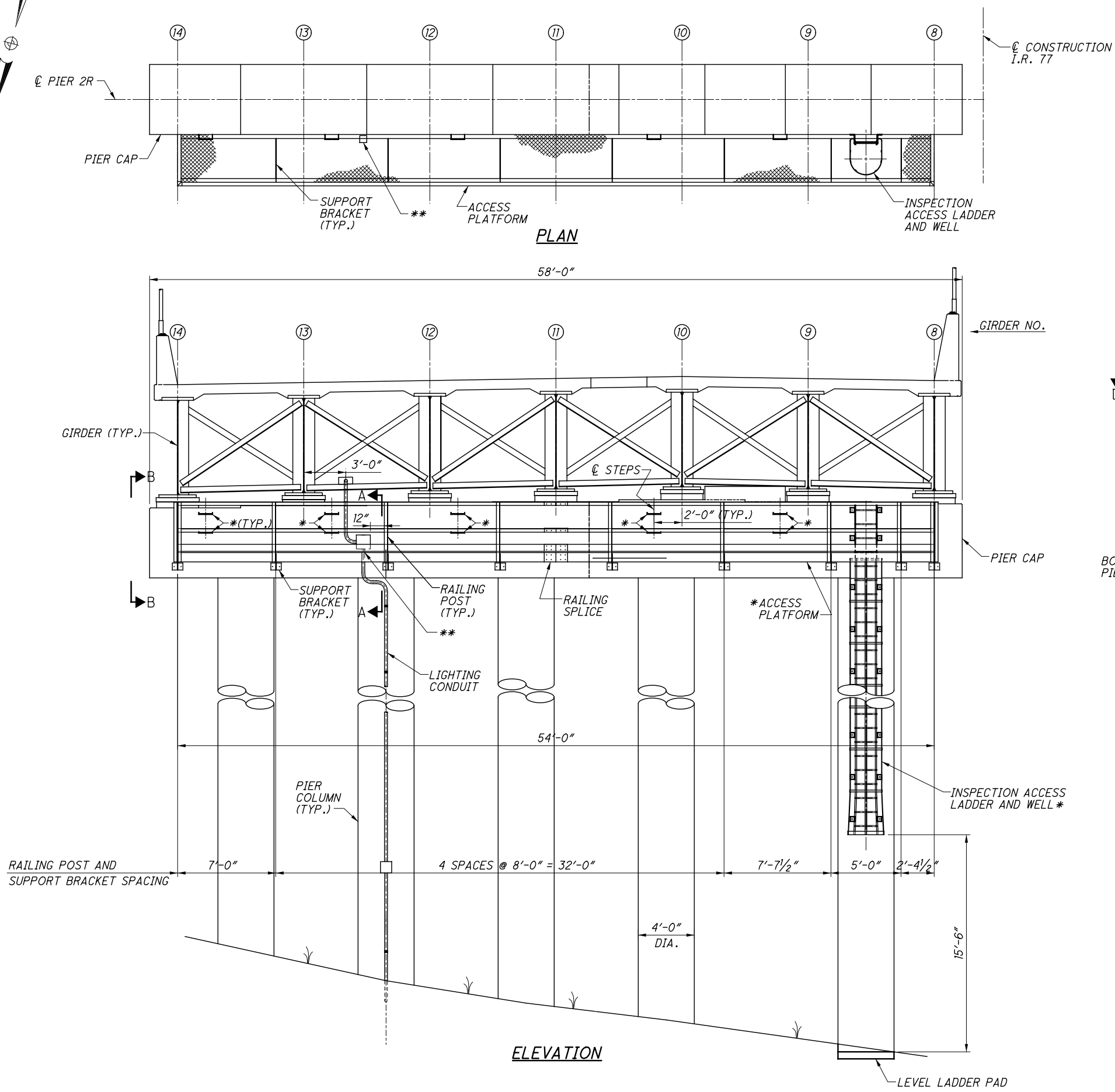
\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Structures\CUY077\_1435L\Drawings\077\_1435L\MD005.dgn 12/14/2016 3:37:02 PM DonHeiman



- NOTES**
- \* PROVIDE A CONNECTION TO THE STRUCTURE GROUNDING SYSTEM FOR ALL METALLIC MAINTENANCE AND INSPECTION EQUIPMENT.
  - SEE LIGHTING PLANS FOR ADDITIONAL INFORMATION.
  - \*\* FABRICATOR TO SUPPLY A 6" SQUARE OPENING IN STEEL BAR GRATING FOR CONDUIT ACCESS.

- NOTES**
- INSPECTION ACCESS LADDER AND WELL:** SEE SHEET 47/84.
  - PIER ACCESS PLATFORM:** SEE SHEET 48/84.
  - RAILING SPLICE DETAILS:** SEE SHEET 48/84.
  - SECTION B-B:** SEE SHEET 46/84.
  - SECTIONS J-J & K-K:** SEE SHEET 48/84.
  - STRUCTURE GROUNDING DETAILS:** SEE SHEETS 250 THROUGH SHEET 253.
  - ADDITIONAL NOTES:** SEE SHEET 48/84.

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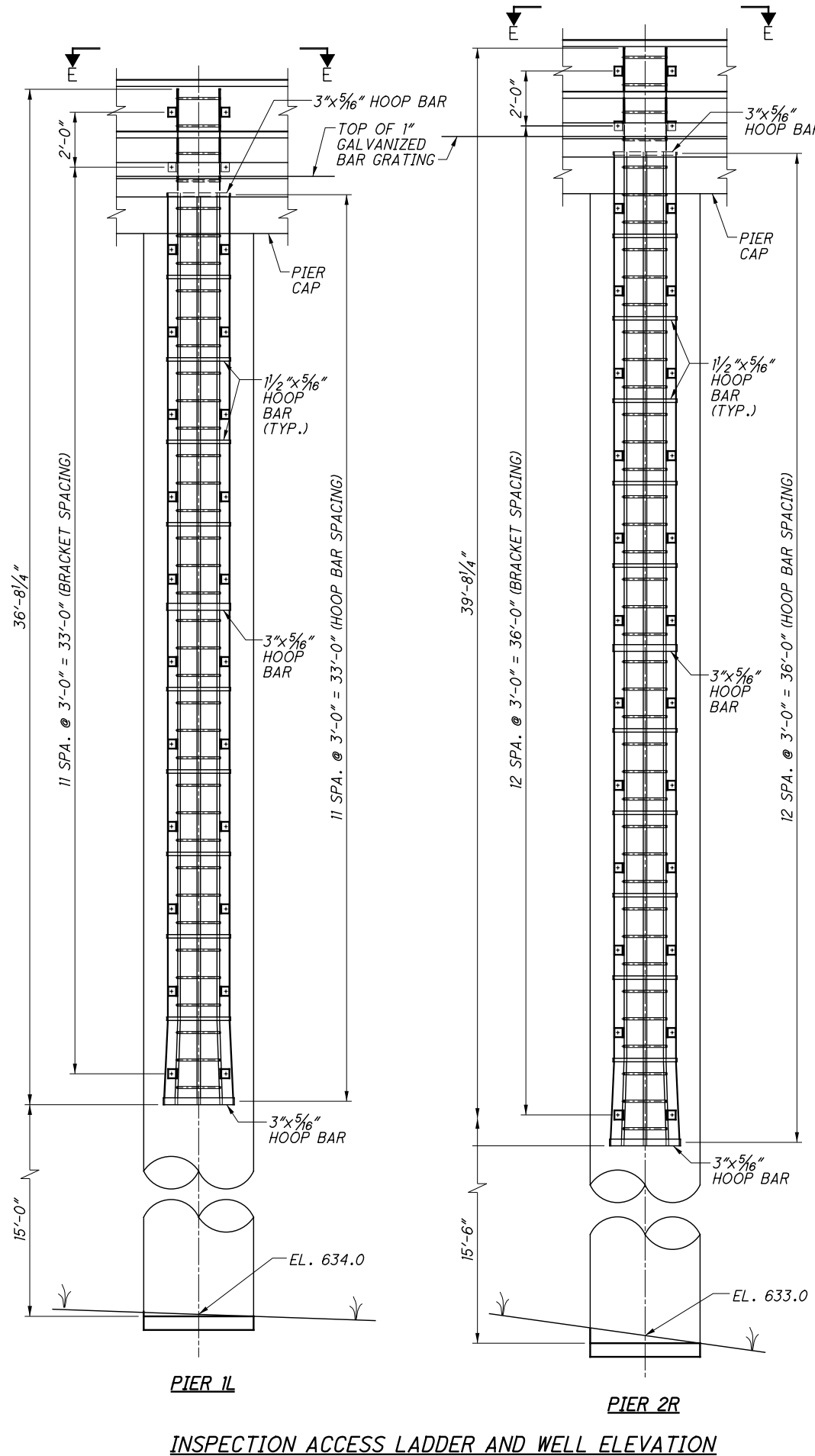
- \* PROVIDE A CONNECTION TO THE STRUCTURE GROUNDING SYSTEM FOR ALL METALLIC MAINTENANCE AND INSPECTION EQUIPMENT.
- SEE LIGHTING PLANS FOR ADDITIONAL INFORMATION.
- \*\* FABRICATOR TO SUPPLY A 6" SQUARE OPENING IN STEEL BAR GRATING FOR CONDUIT ACCESS.

**NOTES**

- INSPECTION ACCESS LADDER AND WELL:** SEE SHEET [47/84].
- PIER ACCESS PLATFORM:** SEE SHEET [48/84].
- RAILING SPLICE DETAILS:** SEE SHEET [48/84].
- SECTION A-A:** SEE SHEET [45/84].
- SECTIONS C-C, D-D & L-L:** SEE SHEET [48/84].
- ADDITIONAL NOTES:** SEE SHEET [48/84].

|                                                                                          |
|------------------------------------------------------------------------------------------|
| <br><b>RICHLAND ENGINEERING LIMITED</b><br>29 NORTH PARK STREET<br>MANSFIELD, OHIO 44902 |
| DATE: 11/15/16<br>REVIEWED: DAP<br>STRUCTURE FILE NUMBER: 1806688 (L)                    |
| DRAWN: JLS<br>CHECKED: DLR<br>DESIGNED: BLN                                              |
| <b>PIER 2R ACCESS PLATFORM</b><br>BRIDGE NO. CUY-77-1433 L<br>OVER I.R. 490 AND RAMPS    |
| CUY-77-14.35<br>PID No. 13567                                                            |
| 46 / 84                                                                                  |
| 327<br>365                                                                               |

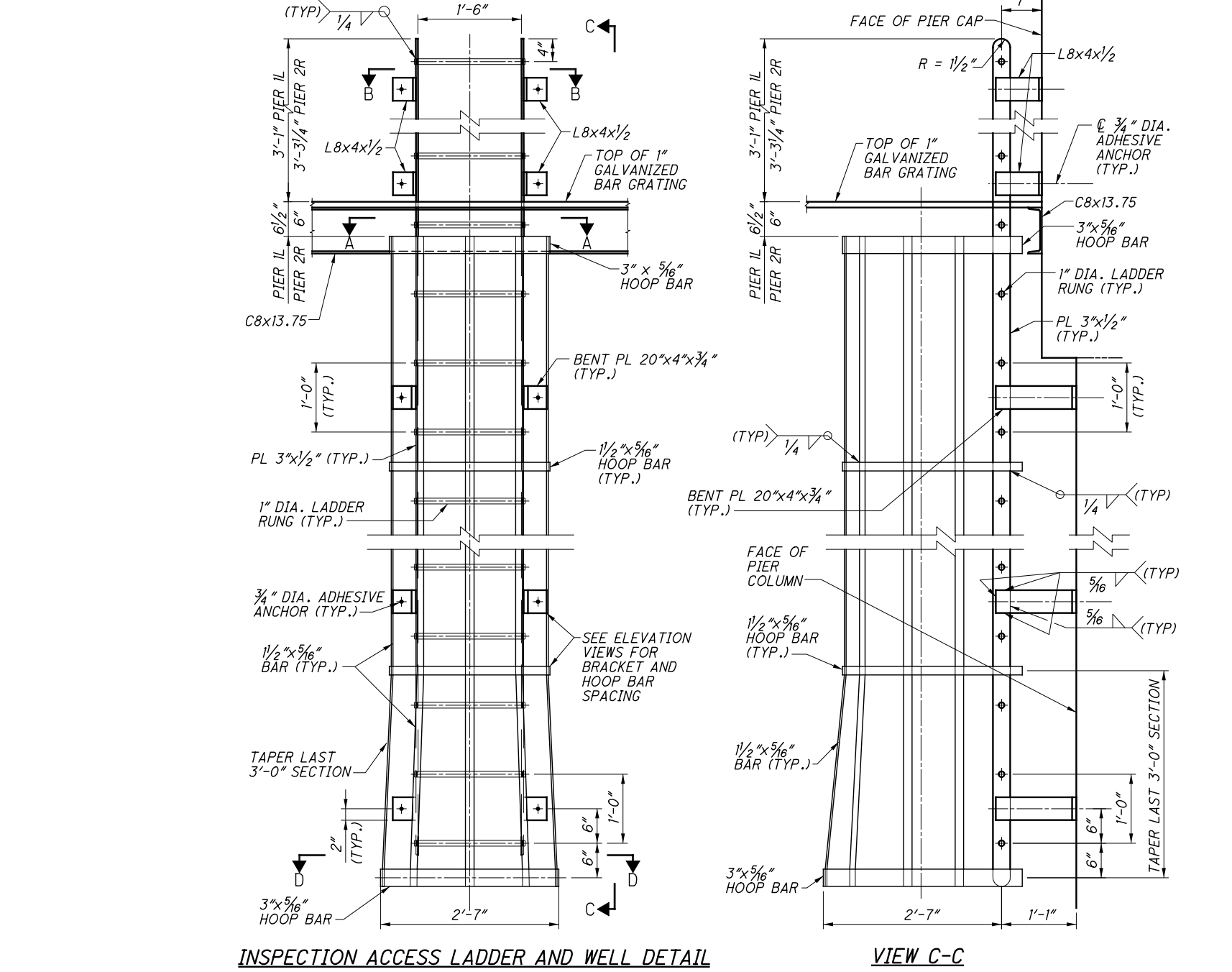
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PIER 1L

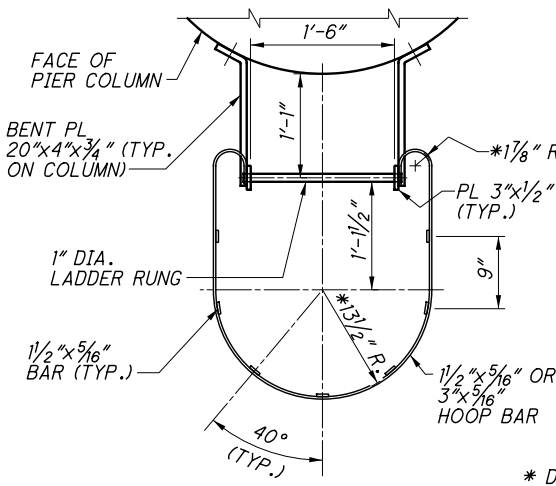
INSPECTION ACCESS LADDER AND WELL ELEVATION

PIER 2R

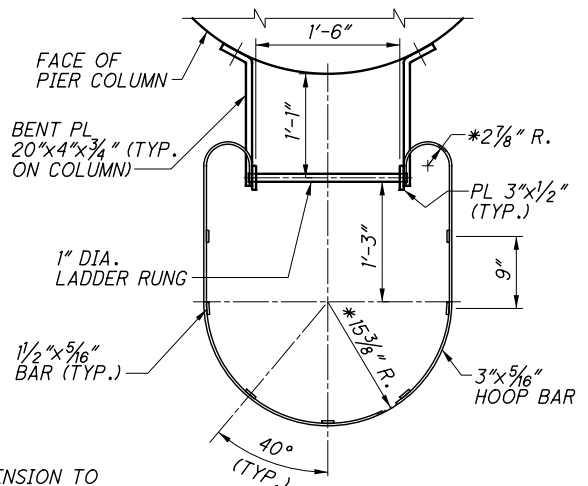


INSPECTION ACCESS LADDER AND WELL DETAIL

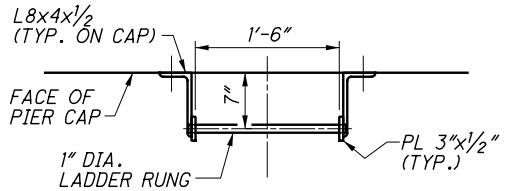
VIEW C-C



SECTION A-A



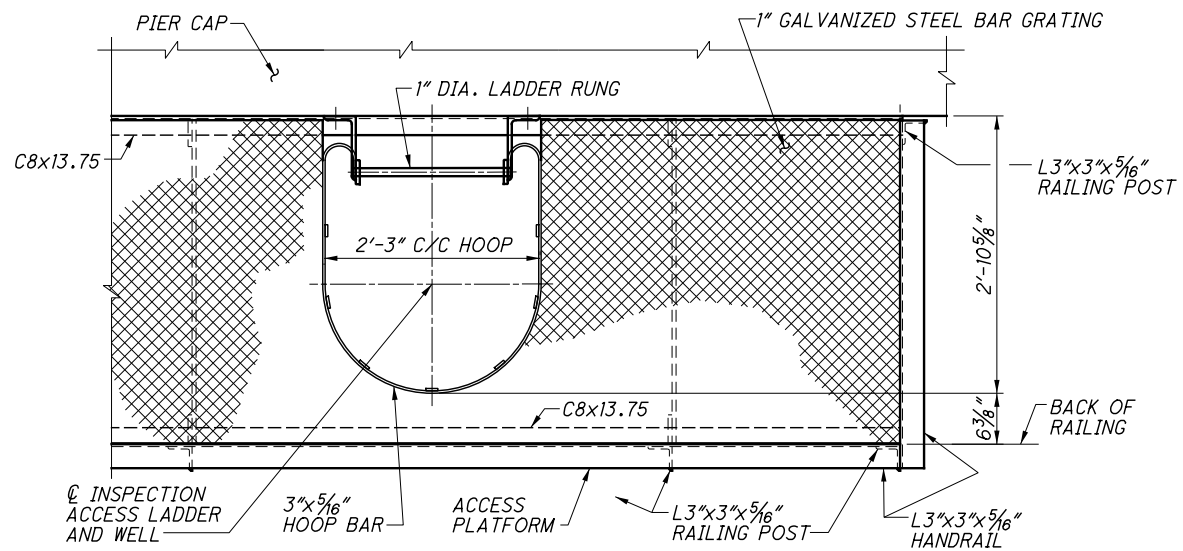
SECTION D-D



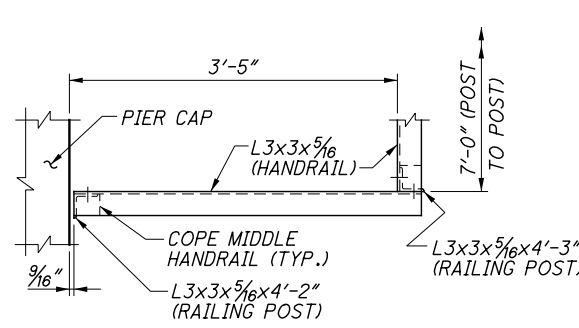
SECTION B-B

**NOTES**  
**INSPECTION ACCESS LADDER AND WELL:** FOR LOCATIONS SEE SHEET 45/84 AND 46/84.  
**VIEW E-E:** SEE SHEET 48/84.  
**ADDITIONAL NOTES:** SEE SHEET 48/84.

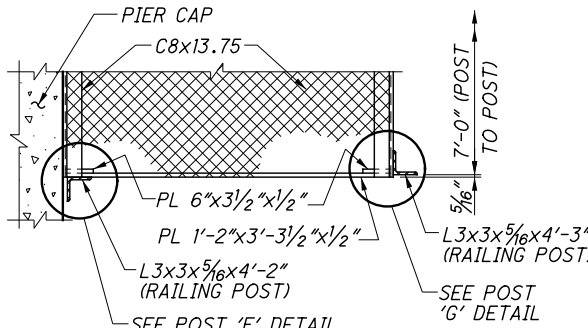
\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Structures\CUY077\_1435L\MD008.dgn 12/14/2016 3:38:33 PM DonHeiman  
 \\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Structures\CUY077\_1435L\MD008.dgn 12/14/2016 3:38:33 PM DonHeiman



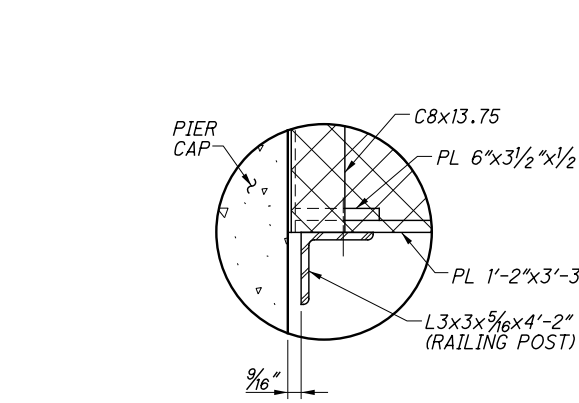
**VIEW E-E**



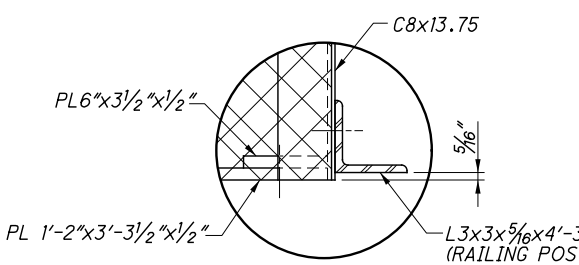
**VIEW C-C**



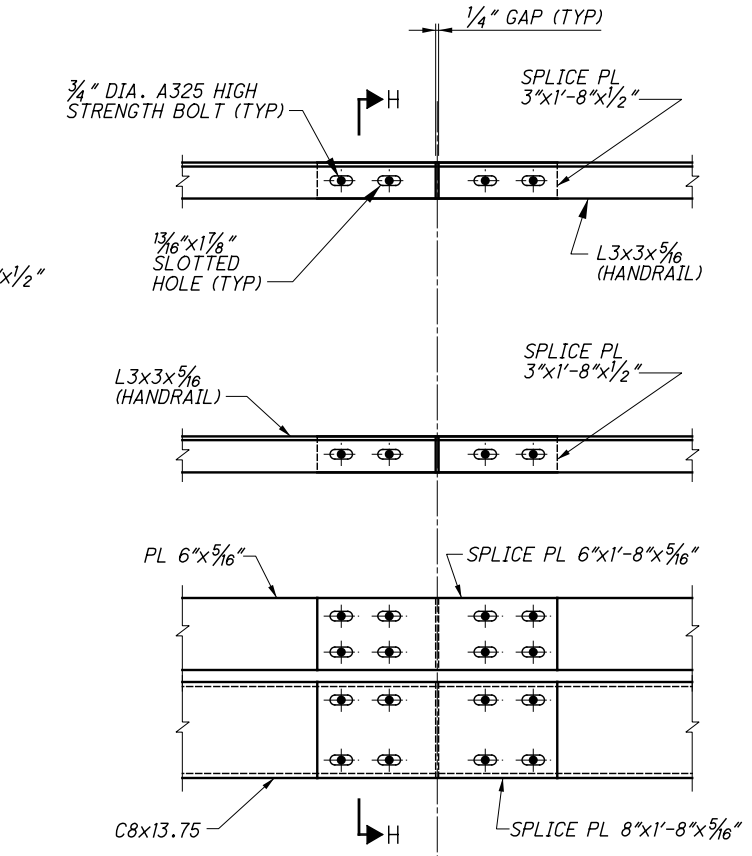
**SECTION D-D**



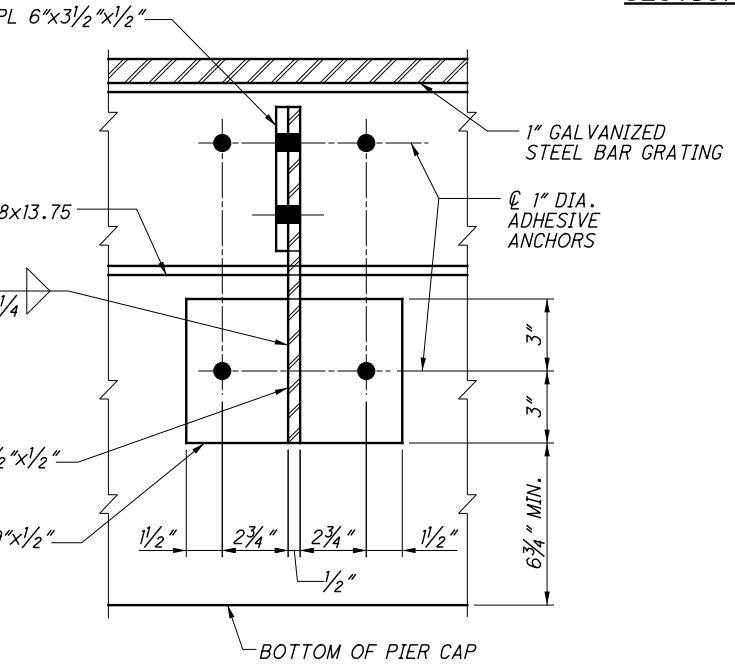
**POST 'F' DETAIL**



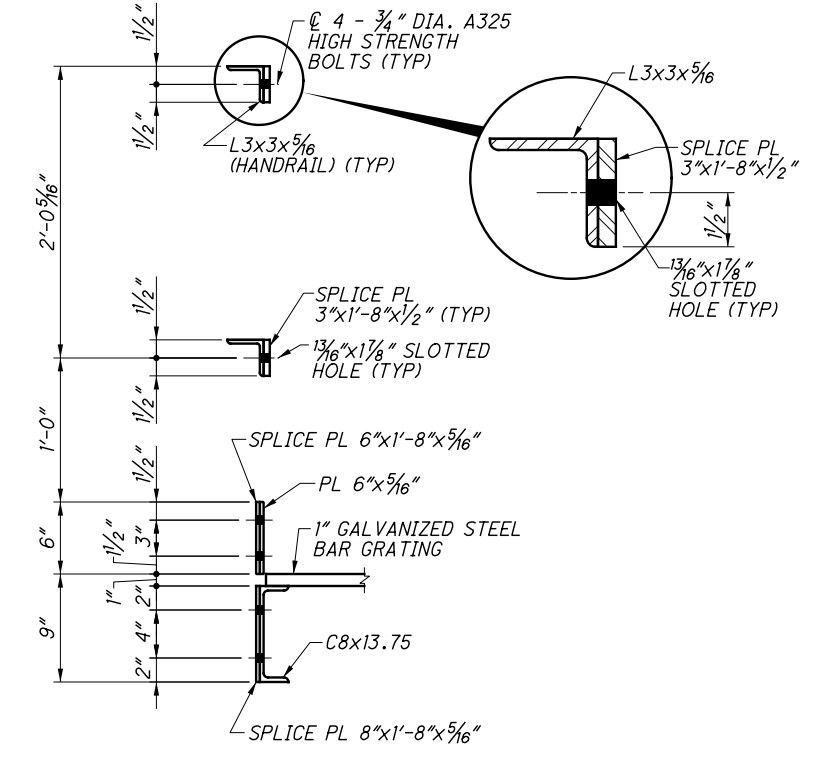
**POST 'G' DETAIL**



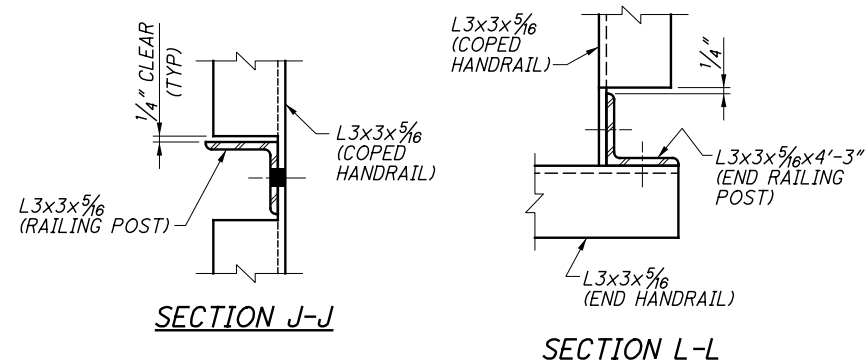
**SPlice DETAIL**



**SECTION K-K**

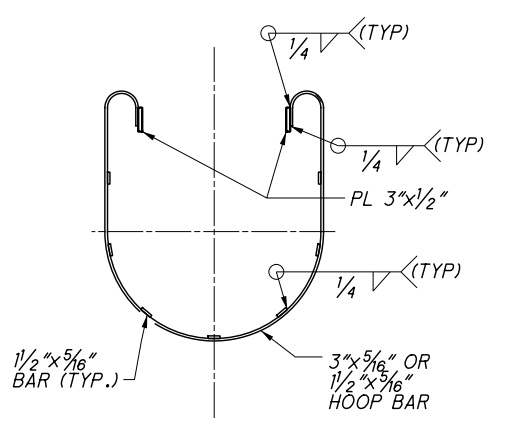


**SECTION H-H**

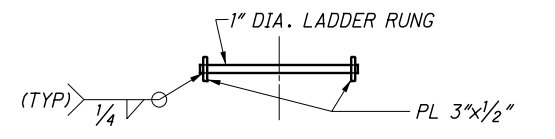


**SECTION J-J**

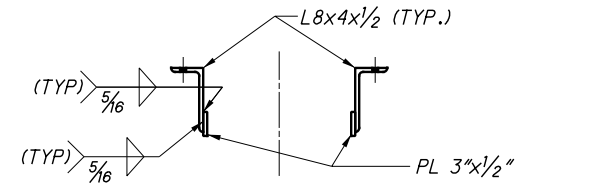
**SECTION L-L**



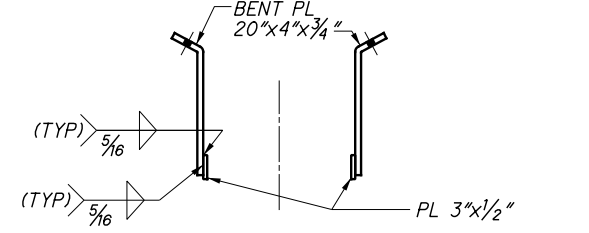
**HOOP BAR CONNECTION TO LADDER**



**RUNG CONNECTION TO LADDER**



**BRACKET CONNECTION TO LADDER (PIER CAP)**



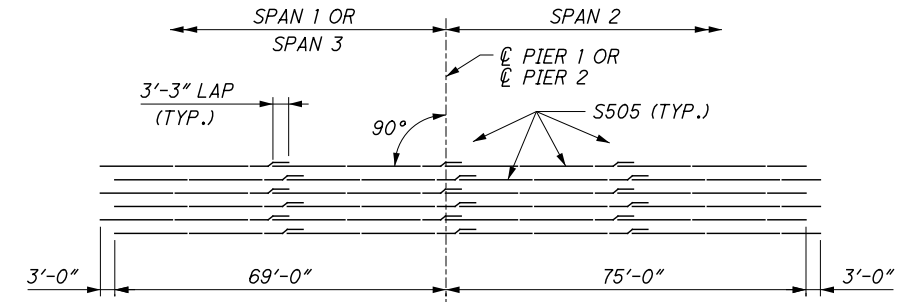
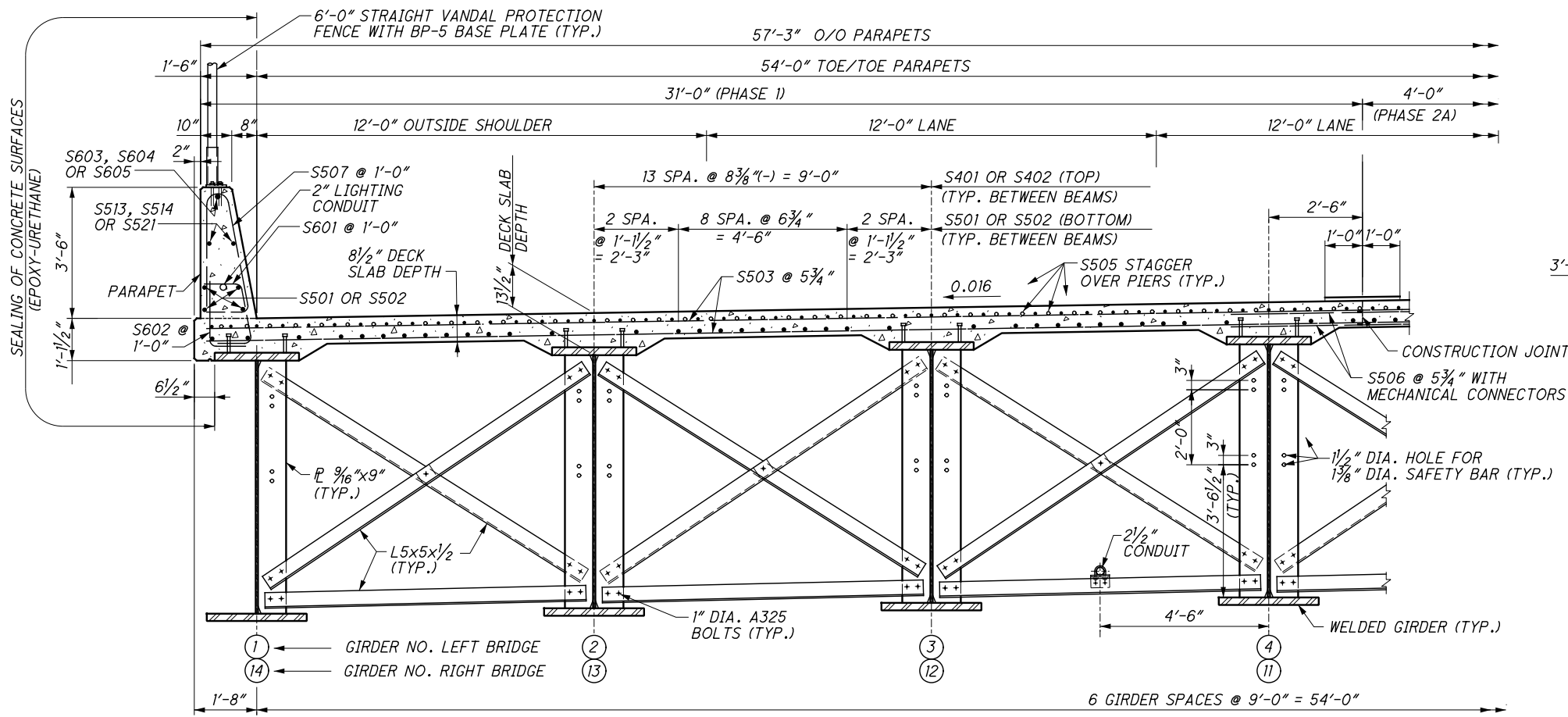
**BRACKET CONNECTION TO LADDER (PIER COLUMN)**

**CONNECTION DETAILS**

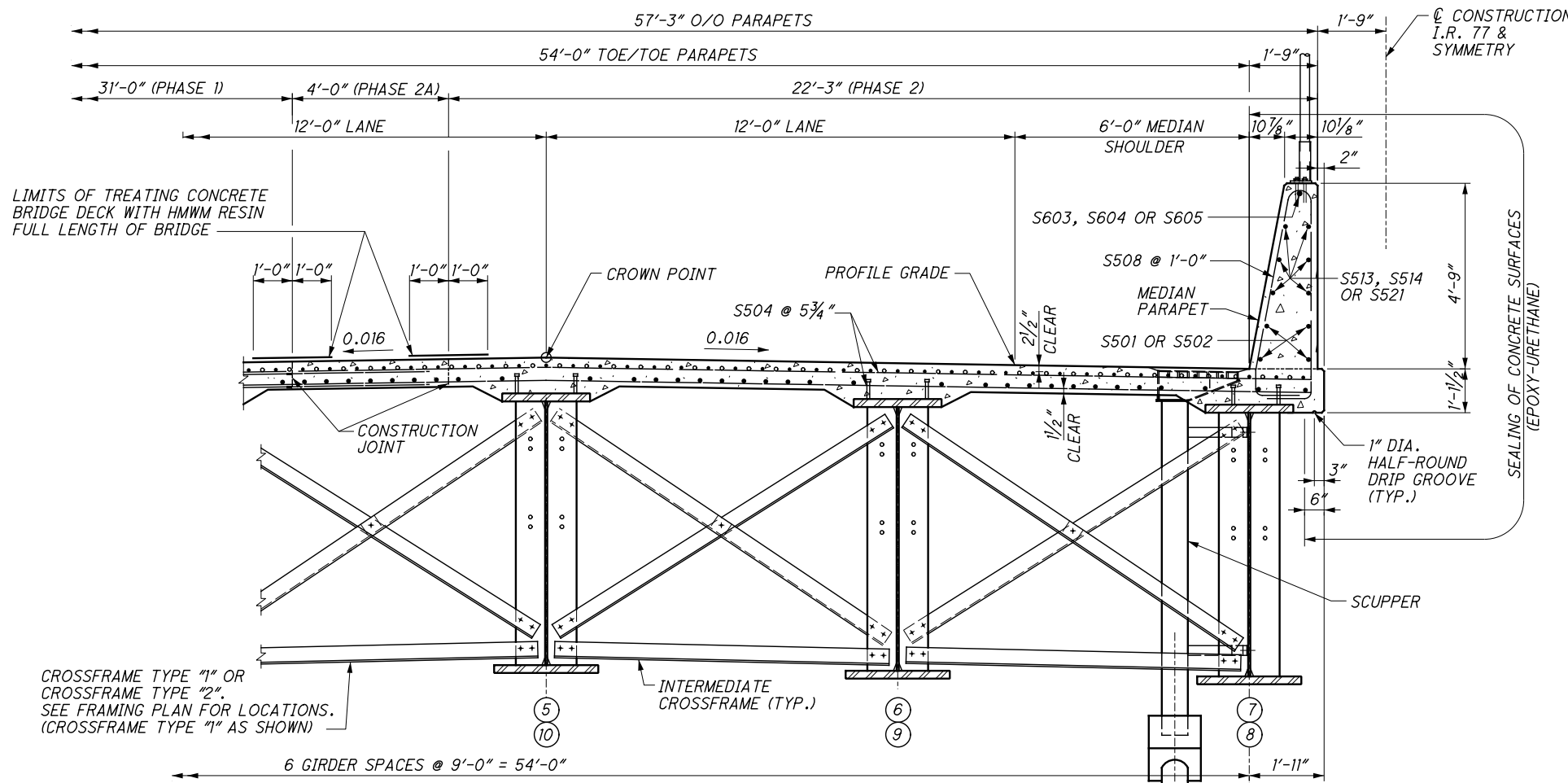
**NOTES**

- VIEW C-C & SECTIONS D-D & L-L:** FOR LOCATIONS SEE SHEET 46/84.
- VIEW E-E:** FOR LOCATION SEE SHEET 47/84.
- SECTIONS J-J & K-K:** FOR LOCATIONS SEE SHEET 45/84.
- RAILING POSTS** AND BRACKETS SPACED AT 8'-0" MAXIMUM.
- ALL BOLTS** SHALL BE 3/4" DIA. A325 HIGH STRENGTH BOLTS.
- 1" DIA. ADHESIVE ANCHORS** SHALL HAVE 14" MINIMUM EMBEDMENT INTO CONCRETE.
- 3/4" DIA. ADHESIVE ANCHORS** SHALL HAVE 10" MINIMUM EMBEDMENT INTO CONCRETE.
- ADHESIVE ANCHORS AND FRICTION FIT STEPS** ARE INCIDENTAL TO ITEM 513 - STRUCTURAL STEEL MEMBERS, LEVEL UF, AS PER PLAN.
- DOWEL HOLES** FOR ADHESIVE ANCHORS SHALL BE PER 510. USE NON-SHRINK, NON-METALLIC GROUT.

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STAGGER OF S505 OVER PIERS



TRANSVERSE SECTION  
LEFT BRIDGE (SHOWN)  
RIGHT BRIDGE (OPPOSITE HAND)

NOTES

**DECK SLAB CONCRETE QUANTITY:** THE ESTIMATED QUANTITY OF DECK SLAB CONCRETE IS BASED ON THE CONSTANT DECK SLAB THICKNESS, AS SHOWN, PLUS THE QUANTITY OF CONCRETE THAT FORMS EACH GIRDER HAUNCH. THE ESTIMATE ASSUMES A CONSTANT HAUNCH THICKNESS OF 5 INCHES AND A CONSTANT HAUNCH WIDTH OUTSIDE THE EDGE OF EACH GIRDER FLANGE OF 9 INCHES. DEVIATE FROM THIS HAUNCH THICKNESS AS NECESSARY TO PLACE THE DECK SURFACE AT THE FINISHED GRADE. THE ALLOWABLE TOLERANCE FOR THE HAUNCH WIDTH OUTSIDE THE EDGE OF EACH GIRDER FLANGE IS ± 3 INCHES.

THE HAUNCH THICKNESS WAS MEASURED AT THE CENTERLINE OF THE GIRDER, FROM THE SURFACE OF THE DECK TO THE BOTTOM OF THE TOP FLANGE MINUS THE DECK SLAB THICKNESS. THE AREA OF ALL EMBEDDED STEEL PLATES HAS BEEN DEDUCTED FROM THE HAUNCH QUANTITY IN ACCORDANCE WITH 511.24.

**REINFORCING STEEL SPLICE LENGTHS** SHALL BE 2'-3" FOR HORIZONTAL #4 BARS AND 3'-3" FOR HORIZONTAL #5 BARS.

**CROSSFRAME DETAILS:** SEE SHEET 56/84 .

**FRAMING PLAN:** SEE SHEETS 50/84 AND 51/84 .

**PARAPET DETAILS:** SEE STANDARD DRAWING SBR-1-13 & SHEET 70/84 .

**MEDIAN PARAPET DETAILS:** SEE STANDARD DRAWING SBR-2-13 & SHEET 71/84 .

**SCUPPER DETAILS:** SEE SHEET 74/84 .

**DECK PLACEMENT SEQUENCE:** SEE SHEET 67/84 .

**GENERAL STEEL DETAILS:** SEE STANDARD DRAWING GSD-1-96.

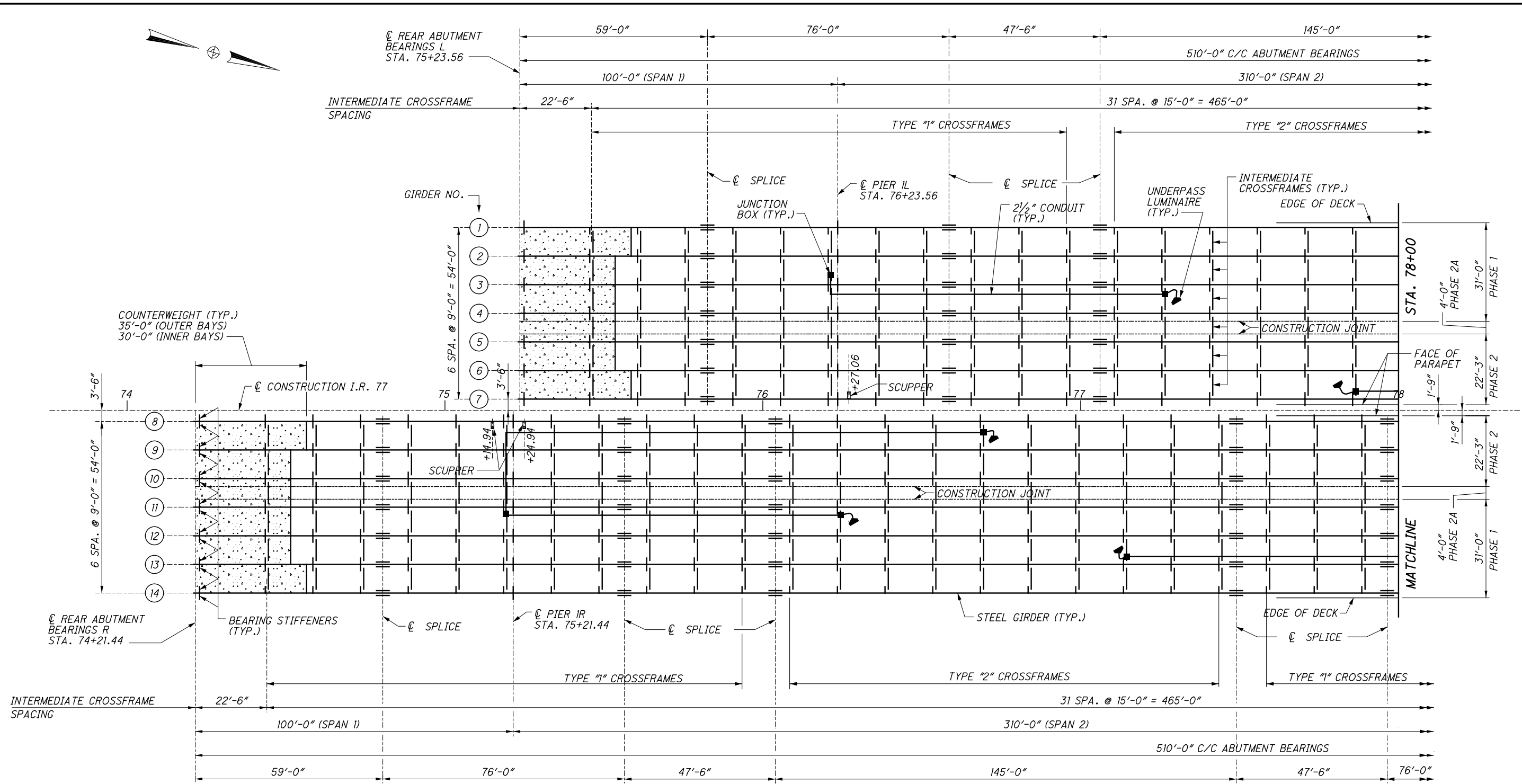
**PHASE CONSTRUCTION DETAILS:** SEE SHEET 48 FOR MAINTENANCE OF TRAFFIC DETAILS.

**LIGHTING PLANS:** SEE SHEETS 223 THROUGH 259 .

**VANDAL PROTECTION FENCE:** SEE STANDARD DRAWING VPF-1-90.

|                                                                                            |                                              |
|--------------------------------------------------------------------------------------------|----------------------------------------------|
| <p>RICHLAND ENGINEERING LIMITED<br/>29 NORTH PARK STREET<br/>MANFIELD, OHIO 44902</p>      |                                              |
| <p>DATE<br/>11/15/16</p>                                                                   | <p>REVIEWED<br/>DAP</p>                      |
| <p>STRUCTURE FILE NUMBER<br/>1806688 (L)</p>                                               | <p>STRUCTURE FILE NUMBER<br/>1806718 (R)</p> |
| <p>DESIGNED<br/>ALP</p>                                                                    | <p>DRAWN<br/>JLS</p>                         |
| <p>CHECKED<br/>BLN</p>                                                                     | <p>REVISED</p>                               |
| <p>TRANSVERSE SECTION<br/>BRIDGE NO. CUY-77-1433 L &amp; R<br/>OVER I.R. 490 AND RAMPS</p> |                                              |
| <p>CUY-77-14-35<br/>PID No. 13567</p>                                                      |                                              |
| <p>49/84</p>                                                                               |                                              |
| <p>330<br/>365</p>                                                                         |                                              |

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**FRAMING PLAN**

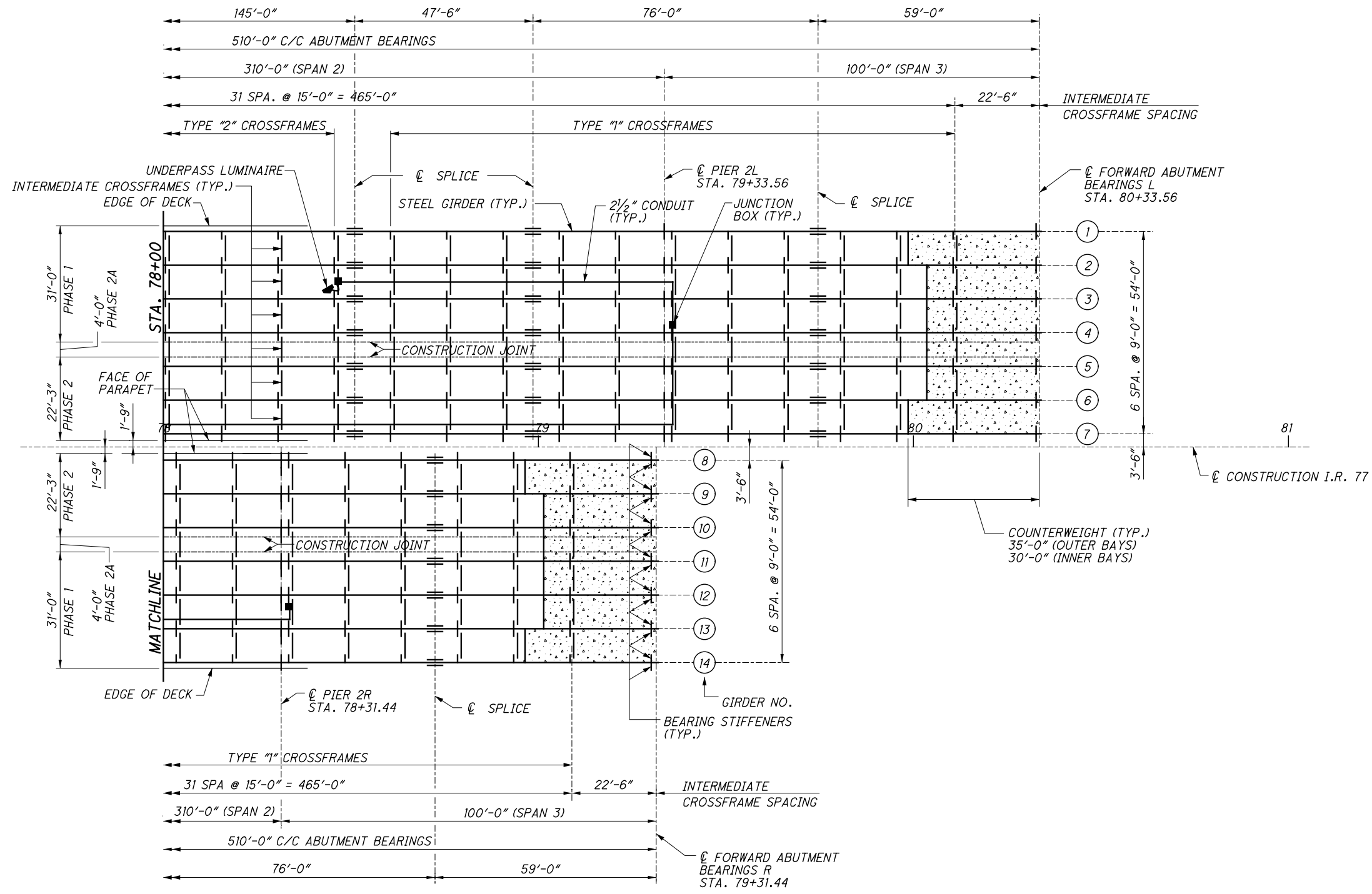
**NOTES**

- FRAMING PLAN CONTINUED:** SEE SHEET 51/84.
- TRANSVERSE SECTION:** SEE SHEET 49/84.
- GIRDER ELEVATION:** SEE SHEET 52/84.
- SPLICE DETAILS:** SEE SHEETS 53/84 AND 54/84.
- INTERMEDIATE CROSSFRAME AND BEARING STIFFENER DETAILS:** SEE SHEET 56/84.
- BEARING DETAILS:** SEE SHEETS 59/84 AND 60/84.
- COUNTERWEIGHT DETAILS:** SEE SHEETS 62/84 THROUGH 65/84.
- SCUPPER DETAILS:** SEE SHEET 74/84.
- UNDERPASS LUMINAIRE, JUNCTION BOX, CONDUIT LOCATIONS AND MOUNTING:** SEE LIGHTING DETAILS ON SHEETS 254 AND 255.

|                                                                                                                                                                                                                                        |                                                                                |                                                                                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| <b>FRAMING PLAN - 1</b>                                                                                                                                                                                                                |                                                                                | RICHLAND ENGINEERING LIMITED<br>29 NORTH PARK STREET<br>MANSFIELD, OHIO 44902<br> |
| BRIDGE NO. CUY-77-1433 L & R<br>OVER I.R. 490 AND RAMPS                                                                                                                                                                                | DATE: 11/15/16<br>REVIEWED: DAP<br>DRAWN: MLB<br>DESIGNED: ALP<br>CHECKED: BLN | STRUCTURE FILE NUMBER: 1806688 (L)<br>1806718 (R)                                 |
| <b>CUY - 77 - 14.35</b>                                                                                                                                                                                                                | PID No. 13567                                                                  | 50/84                                                                             |
| <div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; margin: 0 auto;"> <span style="margin-right: 5px;">331</span> <span>365</span> </div> |                                                                                |                                                                                   |



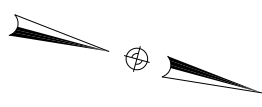
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**FRAMING PLAN**

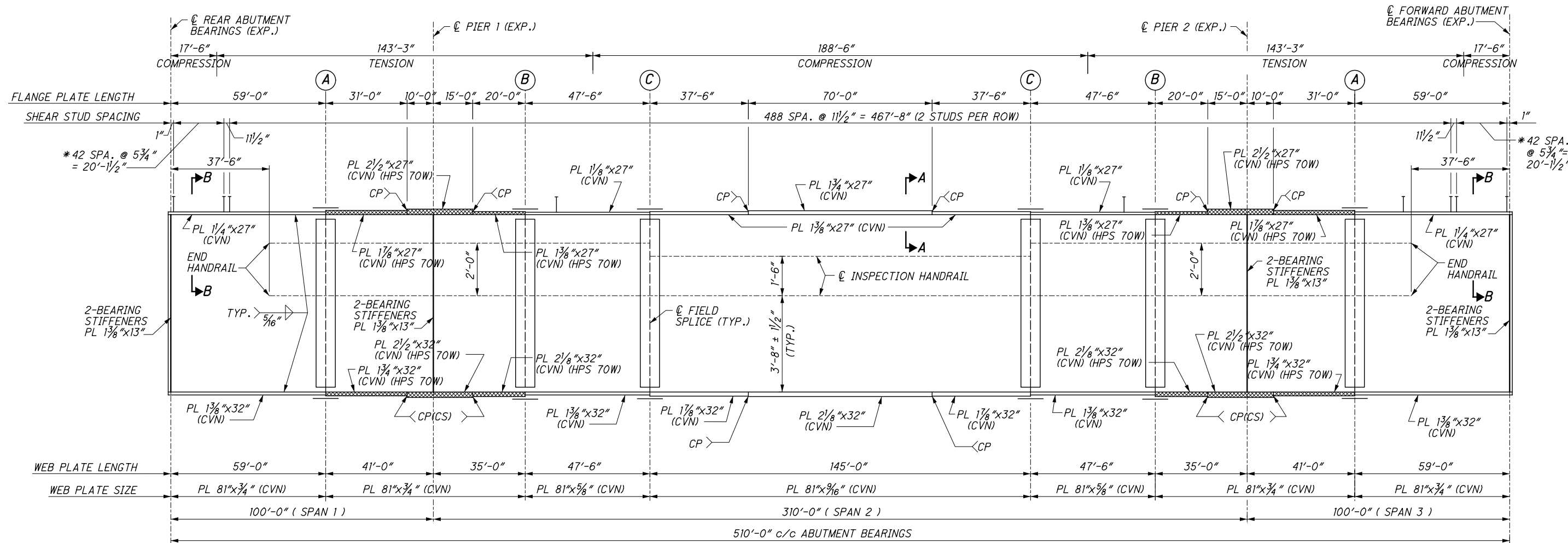
**NOTES**

ADDITIONAL NOTES: SEE SHEET 50/84 .



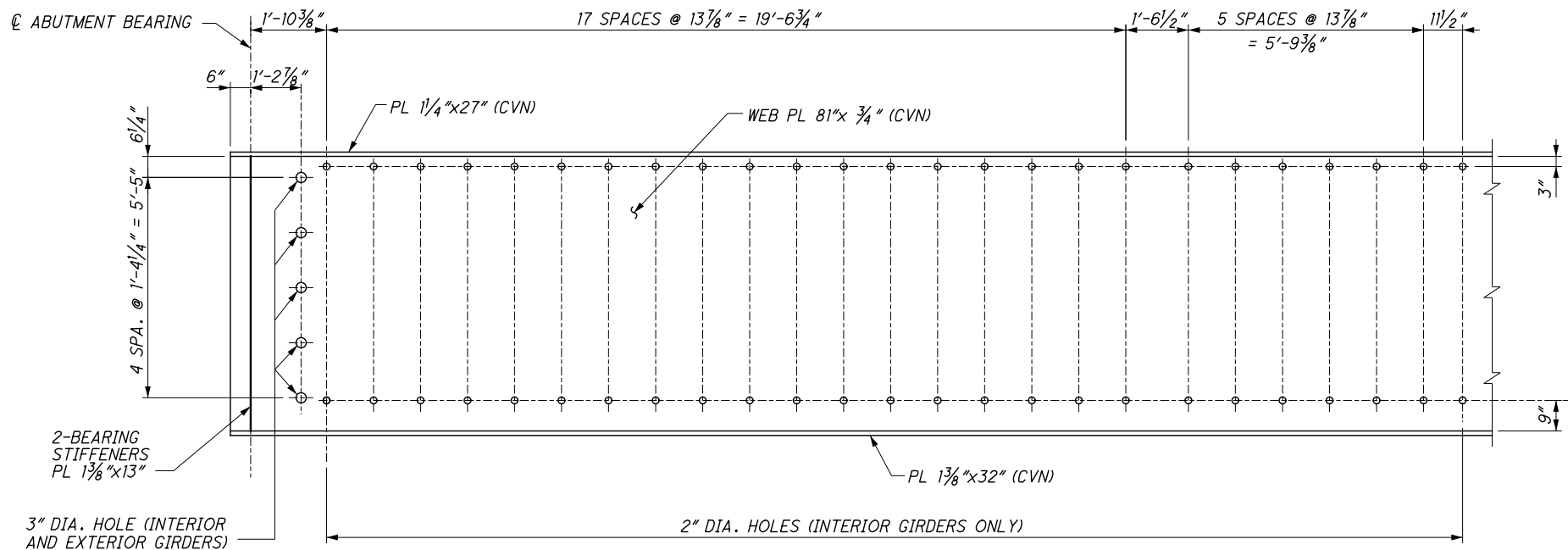
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|------------------------------------------------------------------------------------|-----------------|
| RICHLAND ENGINEERING LIMITED<br>29 NORTH PARK STREET<br>MANSFIELD, OHIO 44902      |                 |
| DATE<br>11/15/16                                                                   | REVIEWED<br>DAP |
| STRUCTURE FILE NUMBER<br>1806688 (L)                                               | DRAWN<br>MLB    |
| DESIGNED<br>ALP                                                                    | CHECKED<br>BLN  |
| <b>FRAMING PLAN - 2</b><br>BRIDGE NO. CUY-77-1433 L & R<br>OVER I.R. 490 AND RAMPS |                 |
| CUY-77-14.35<br>PID No. 13567                                                      |                 |
| 51 / 84                                                                            |                 |
| 332<br>365                                                                         |                 |

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DENOTES GRADE 70 STEEL  
 \* INDICATES 3 STUDS PER ROW

**GIRDER ELEVATION**  
 (TYPICAL FOR LEFT AND RIGHT BRIDGES)



**TYPICAL GIRDER END DETAIL**

**NOTES**

- WELD ATTACHMENT OF SUPPORTS FOR CONCRETE DECK FINISHING MACHINE TO AREAS OF THE FASCIA GIRDER FLANGES DESIGNATED "COMPRESSION". DO NOT WELD ATTACHMENTS TO AREAS DESIGNATED "TENSION". FILLET WELDS TO COMPRESSION FLANGES SHALL BE AT LEAST 1" FROM EDGE OF FLANGE, BE NO MORE THAN 2" LONG, AND BE AT LEAST 1/4" FOR THICKNESSES UP TO 3/4" OR 5/16" FOR GREATER THAN 3/4" THICK.**
- STEEL SHALL BE ASTM A709 50W OR ASTM A709 HPS 70W. STEEL SHOWN IN ELEVATION IS A709 50W UNLESS NOTED OTHERWISE.**
- CP INDICATES COMPLETE PENETRATION WELD.**
- CS INDICATES BUTT WELD SPLICES SUBJECT TO COMPRESSION ONLY.**
- CVN: WHERE A SHAPE OR PLATE IS DESIGNATED (CVN), THE MATERIAL SHALL MEET REQUIREMENTS AS SPECIFIED IN THE GENERAL NOTES ON SHEET 10/84.**
- INTERMEDIATE CROSSFRAME STIFFENERS NOT SHOWN.**
- SECTIONS A-A & B-B: SEE SHEET 53/84.**
- HANDRAIL DETAILS: SEE SHEET 55/84.**
- SPLICE DETAILS: SEE SHEETS 53/84 AND 54/84.**
- SCUPPER ATTACHMENTS NOT SHOWN. SEE SHEETS 50/84 AND 51/84 FOR SCUPPER LOCATIONS AND SHEET 74/84 FOR SCUPPER DETAILS.**
- GIRDER ENDS SHALL BE FABRICATED TO BE VERTICAL AFTER ERECTION.**
- COUNTERWEIGHT AT ABUTMENTS NOT SHOWN. SEE SHEETS 62/84 THROUGH 65/84 FOR DETAILS.**
- ADDITIONAL NOTES: SEE SHEET 49/84.**

**RICHLAND ENGINEERING LIMITED**  
 29 NORTH PARK STREET  
 MANSFIELD, OHIO 44902

DATE: 11/15/16  
 REVIEWED: DAP  
 STRUCTURE FILE NUMBER: 1806688 (L)  
 1806718 (R)

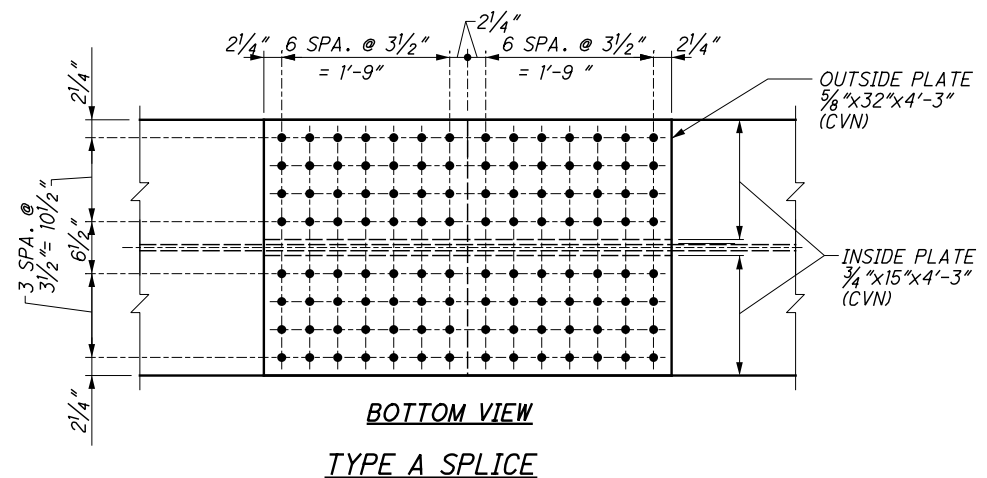
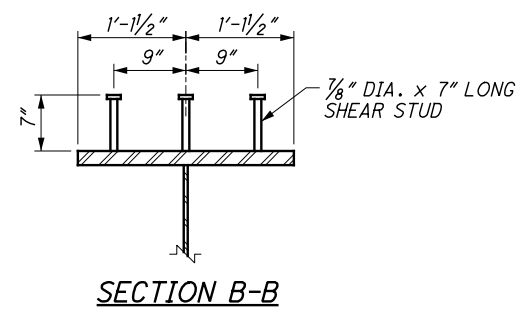
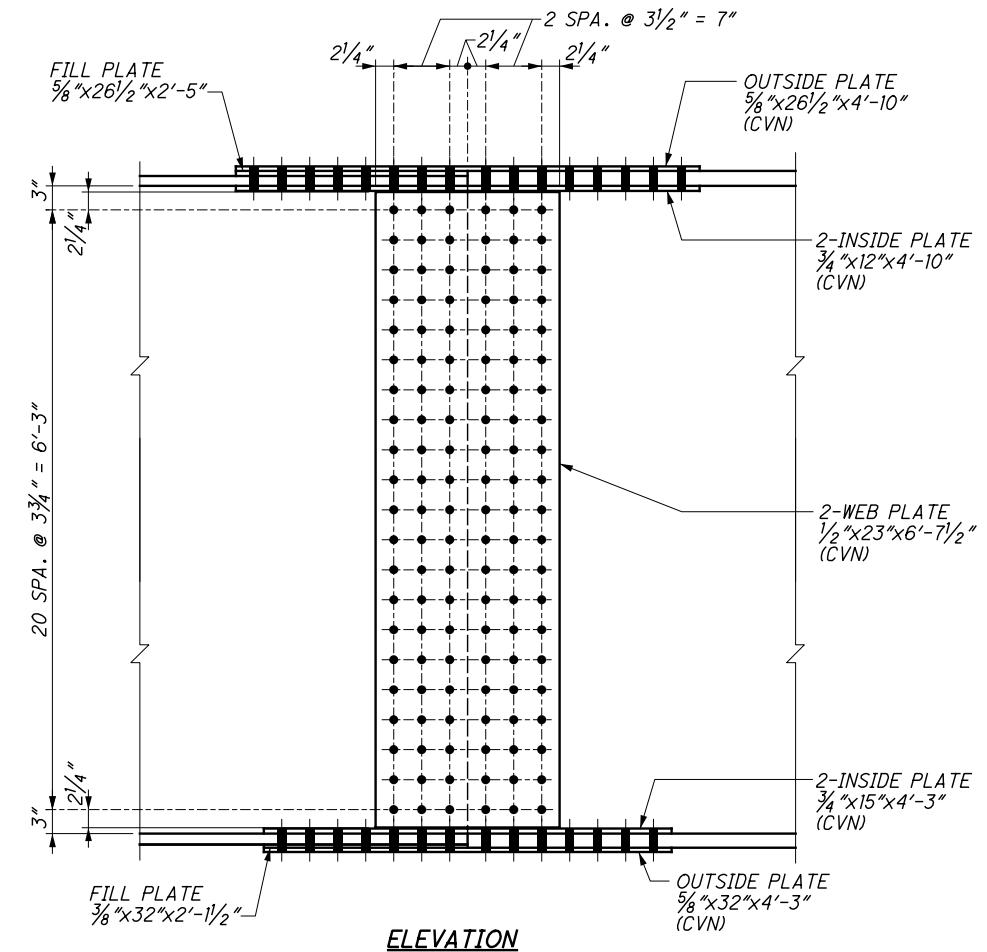
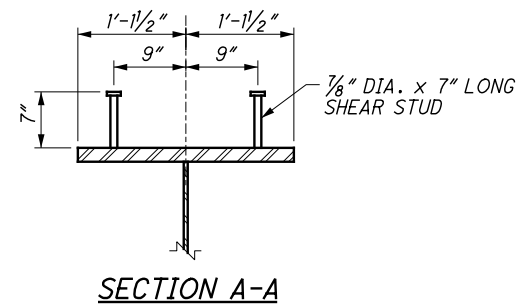
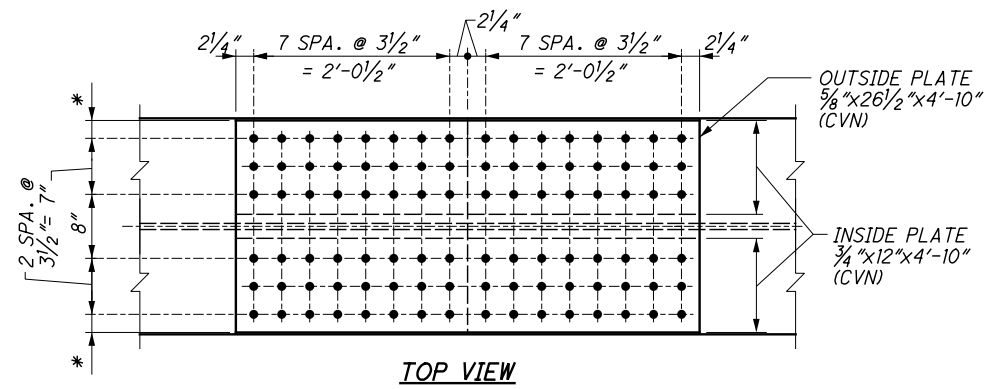
DESIGNED: ALP  
 CHECKED: BLN

**GIRDER ELEVATION**  
 BRIDGE NO. CUY-77-1433 L & R  
 OVER I.R. 490 AND RAMPS

**CUY-77-14.35**  
 PID No. 13567

52/84  
 333  
 365

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**LEGEND**

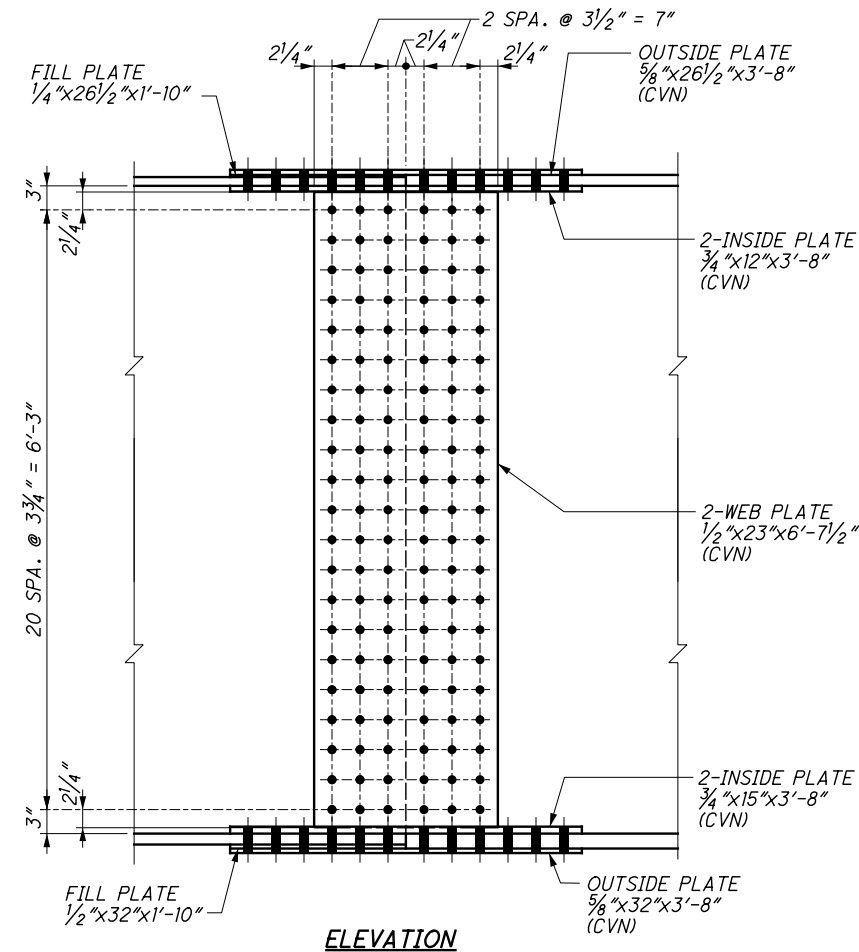
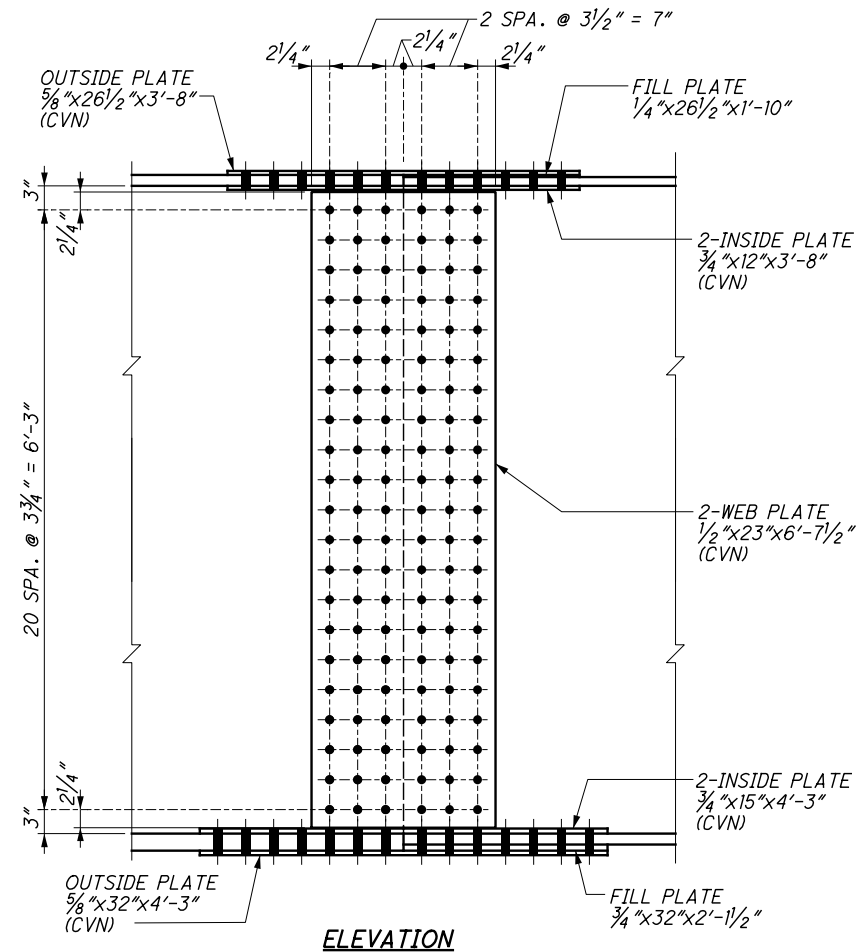
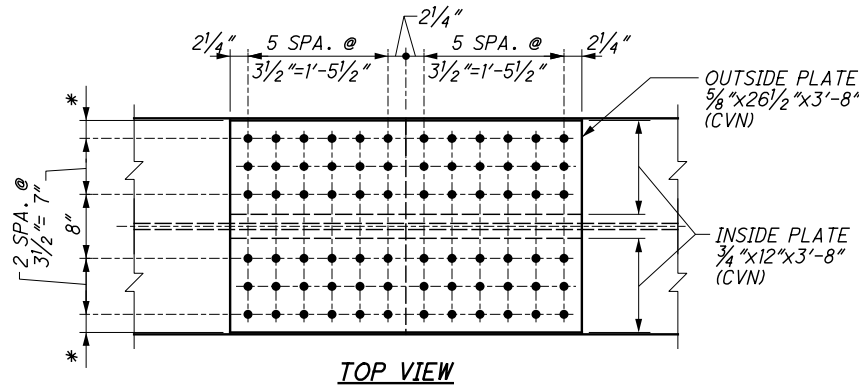
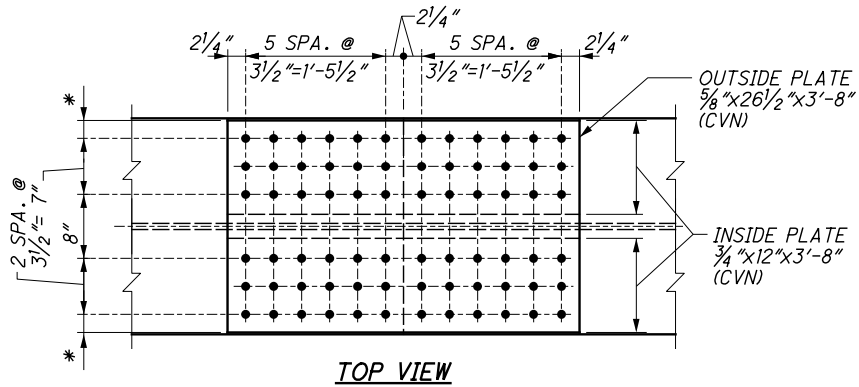
- ◆ 1/8" DIAMETER BOLT
- \* 2/4" (OUTSIDE PLATE)  
2/2" (INSIDE PLATE)

**NOTES**

- WELDED STUDS AT GIRDER SPLICE PLATES:** ADJUST STUD SPACING TO MISS SPLICE PLATE EDGES AND BOLTS AS NEEDED.
- SPLICE PLATES** SHALL BE ASTM A709 GRADE 50W STEEL.
- HIGH STRENGTH BOLTS** SHALL BE 1/8" DIAMETER A325, TYPE 1, UNLESS OTHERWISE NOTED.
- CVN:** WHERE A SHAPE OR PLATE IS DESIGNATED (CVN), THE MATERIAL SHALL MEET THE REQUIREMENTS AS SPECIFIED IN THE GENERAL NOTES ON SHEET 10/84.
- SPLICE LOCATIONS:** SEE GIRDER ELEVATION SHEET 52/84.
- FRAMING PLANS:** SEE SHEETS 50/84 AND 51/84.
- SECTIONS A-A & B-B:** FOR LOCATIONS SEE SHEETS 52/84.

|                                                                                                             |                                                                                                                                               |                                                                                        |
|-------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| <p><b>GIRDER SPLICE DETAILS - 1</b></p> <p>BRIDGE NO. CUY-77-1433 L &amp; R<br/>OVER I.R. 490 AND RAMPS</p> | <p>DATE: 11/15/16<br/>REVIEWED: DAP<br/>STRUCTURE FILE NUMBER: 1806688 (L)<br/>1806718 (R)</p> <p>DRAWN: HK<br/>CHECKED: BLN<br/>REVISED:</p> | <p>RICHLAND ENGINEERING LIMITED<br/>29 NORTH PARK STREET<br/>MANSFIELD, OHIO 44902</p> |
| <p><b>CUY-77-14.35</b></p> <p>PID No. 13567</p>                                                             | <p>53/84</p> <p>334<br/>365</p>                                                                                                               |                                                                                        |

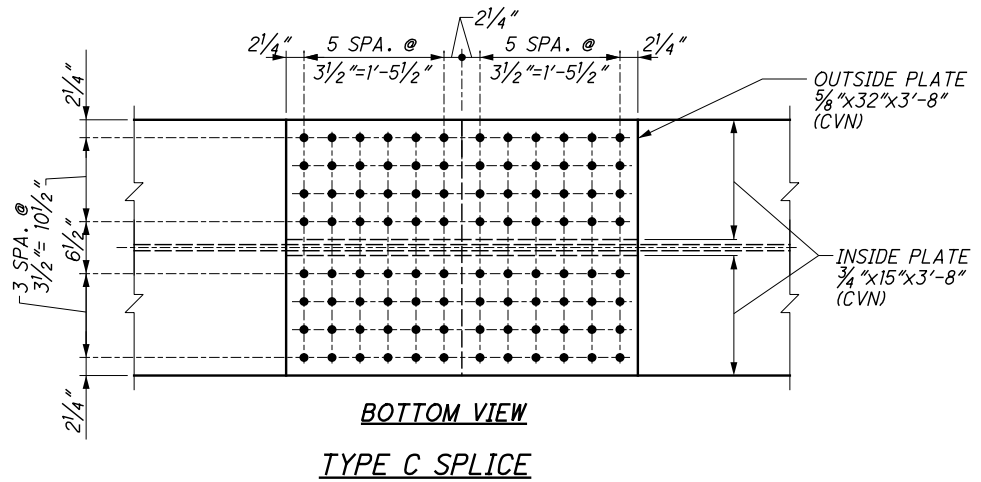
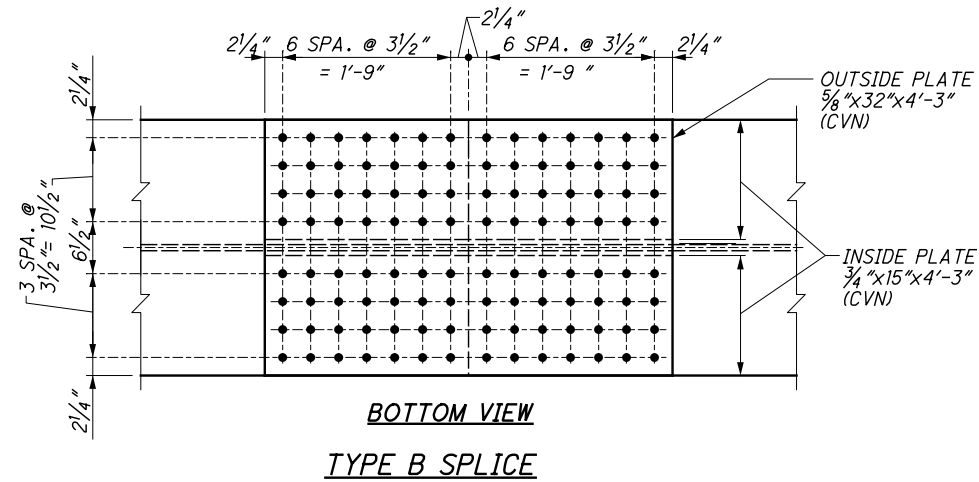
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**LEGEND**

◆ 1/8" DIAMETER BOLT

\* 2 1/4" (OUTSIDE PLATE)  
2 1/2" (INSIDE PLATE)

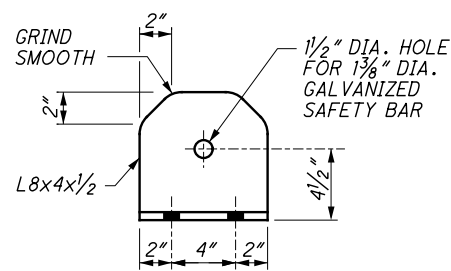


**NOTES**

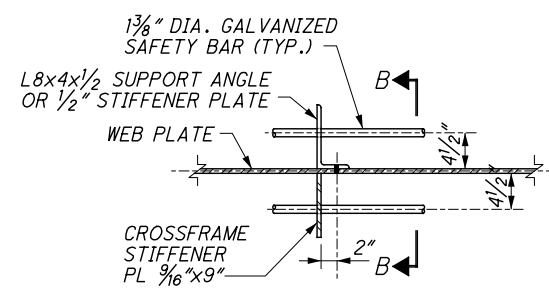
ADDITIONAL NOTES: SEE SHEET 53/84

|                                                                                                          |                                                                   |
|----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| <p><b>RICHLAND ENGINEERING LIMITED</b><br/>29 NORTH PARK STREET<br/>MANSFIELD, OHIO 44902</p>            |                                                                   |
| <p>DATE: 11/15/16<br/>REVIEWED: DAP<br/>DRAWN: HK<br/>DESIGNED: ALP</p>                                  | <p>FILE NUMBER: 1806688 (L)<br/>STRUCTURE NUMBER: 1806718 (R)</p> |
| <p><b>GIRDER SPLICE DETAILS - 2</b><br/>BRIDGE NO. CUY-77-1433 L &amp; R<br/>OVER I.R. 490 AND RAMPS</p> |                                                                   |
| <p>CUY-77-14.35<br/>PID No. 13567</p>                                                                    |                                                                   |
| <p>54/84</p>                                                                                             |                                                                   |
| <p>335<br/>365</p>                                                                                       |                                                                   |

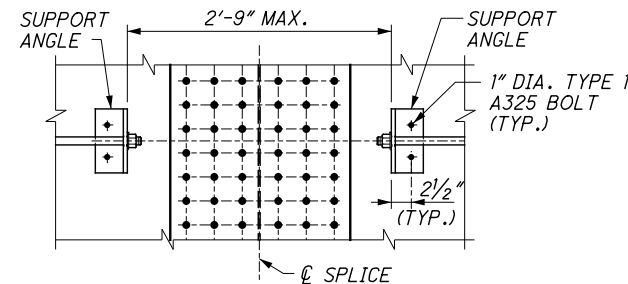
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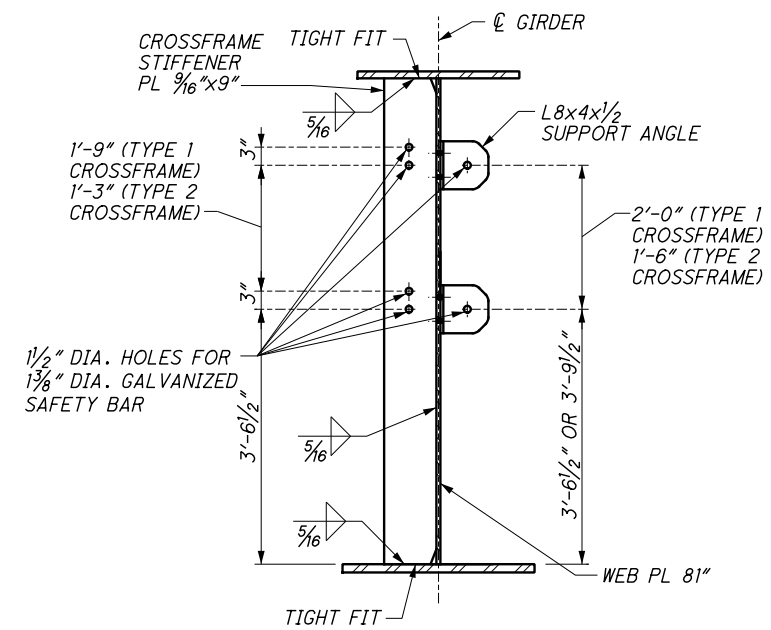
**SUPPORT ANGLE DETAIL**



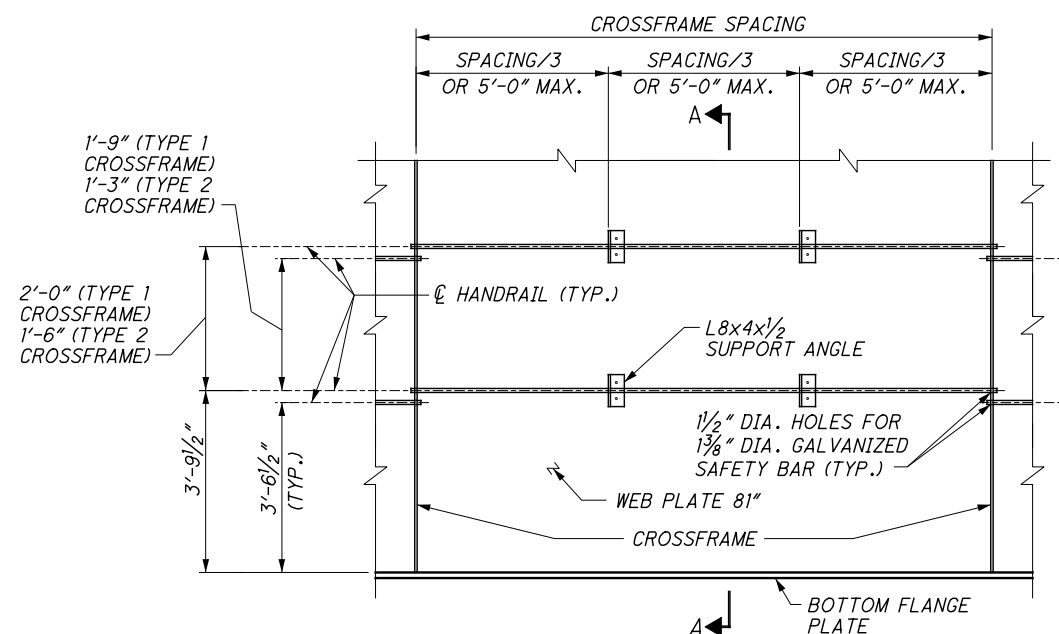
**DETAIL AT INTERMEDIATE CROSSFRAME OR SUPPORT ANGLE**



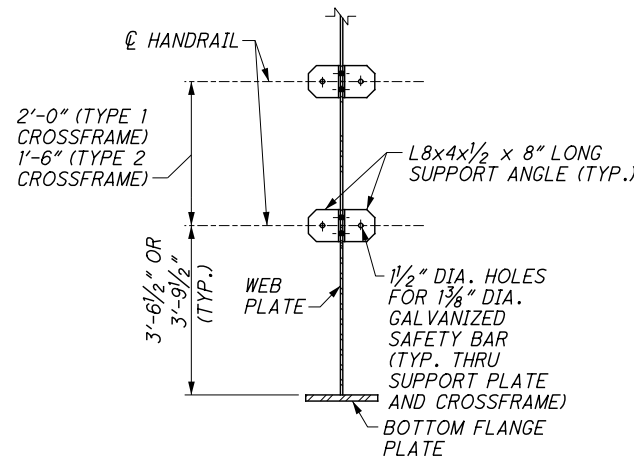
**TERMINATION DETAIL AT GIRDER FIELD SPLICES**



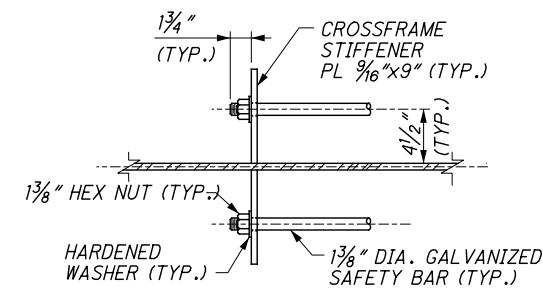
**SECTION B-B**



**GIRDER ELEVATION**



**SECTION A-A**



**END DETAIL**

**INSPECTION HANDRAIL AND SUPPORT DETAILS**

NOTE: THERE ARE NO HANDRAILS ON THE OUTSIDE OF GIRDERS 1 AND 14.

EACH SECTION OF HANDRAIL SHALL BE SUPPORTED IN A MINIMUM OF FOUR (4) LOCATIONS.

THREAD ONLY THAT PORTION OF THE SAFETY BAR REQUIRED FOR NUT PLACEMENT.

BURR THREADS AFTER SNUG TIGHTENING NUTS.

SAFETY BARS, NUTS AND WASHERS SHALL BE GALVANIZED PER 711.02 AFTER FABRICATION.

GALVANIZED COATINGS DAMAGED IN THE SHOP SHALL BE REPAIRED PER ASTM A780 METHOD A3. GALVANIZED COATINGS DAMAGED IN THE FIELD SHALL BE REPAIRED PER ASTM A780 METHOD A1 AS DIRECTED BY THE ENGINEER.

MATERIALS AND INSTALLATION FOR SAFETY BARS, SUPPORT ANGLES AND HARDWARE ARE INCLUDED FOR PAYMENT WITH ITEM 513 - STRUCTURAL STEEL MEMBERS, LEVEL 6, HYBRID GIRDER, AS PER PLAN.

**NOTES**

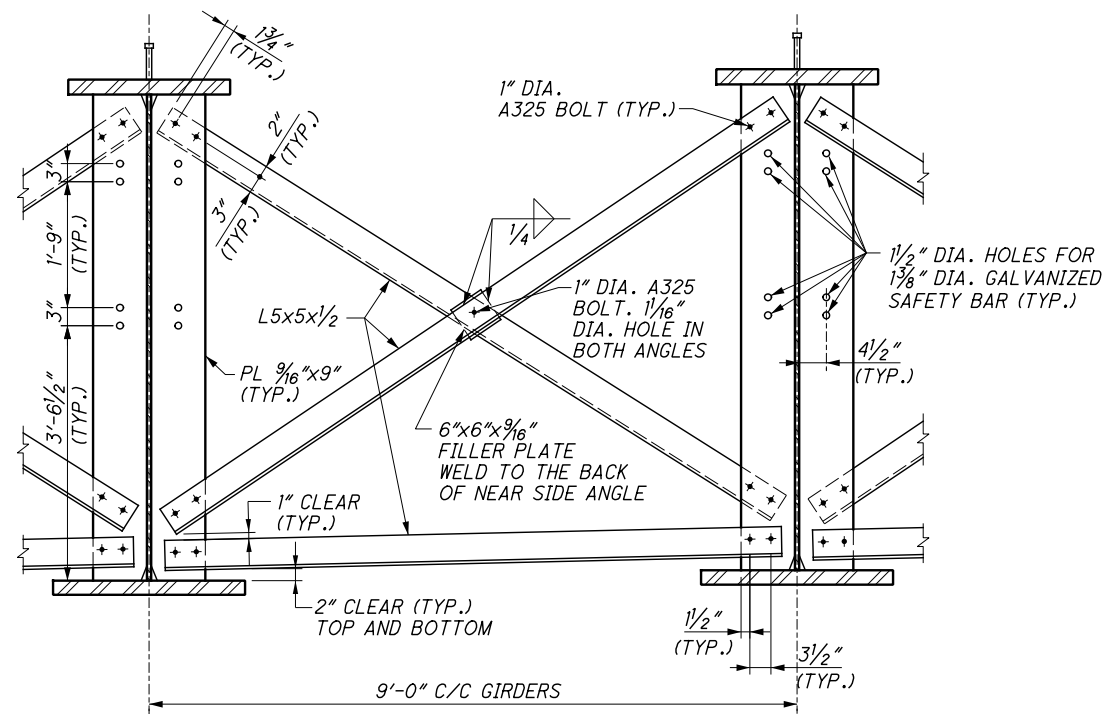
ALL ANGLES, RODS, AND STIFFENERS SHALL BE ASTM A709 GRADE 50W STEEL.

TRANSVERSE SECTION: SEE SHEET 49/84.

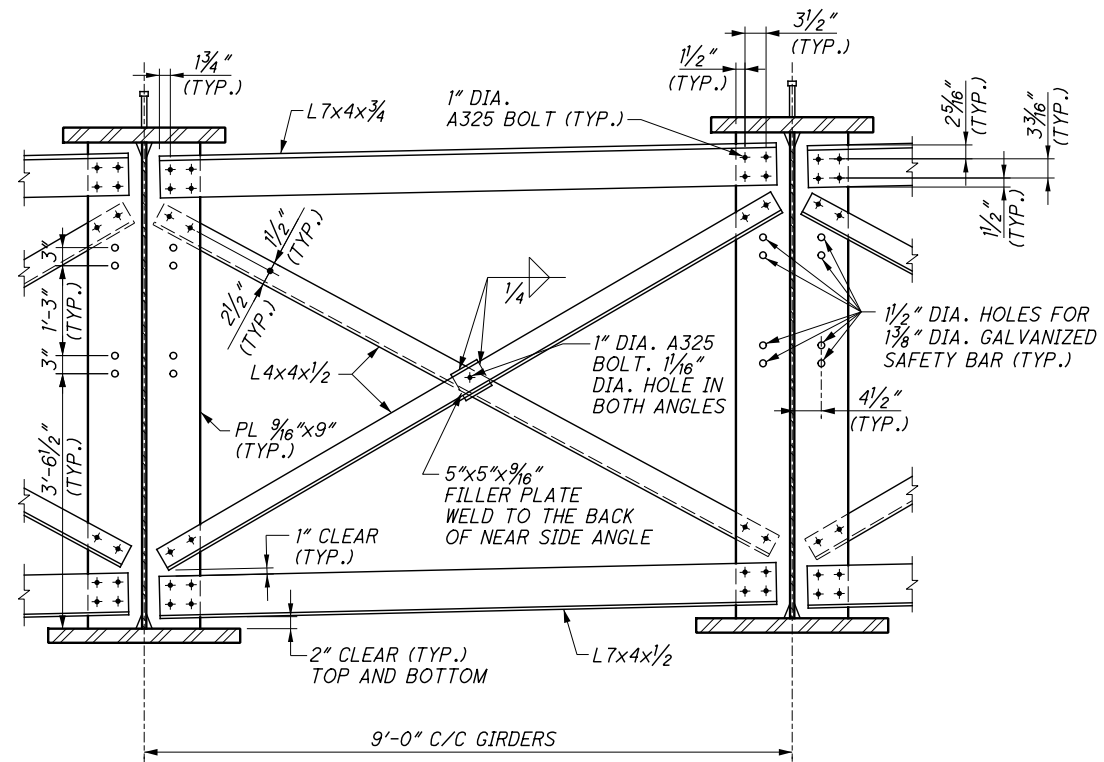
FRAMING PLANS: SEE SHEETS 50/84 AND 51/84.

GIRDER ELEVATION: SEE SHEET 52/84.

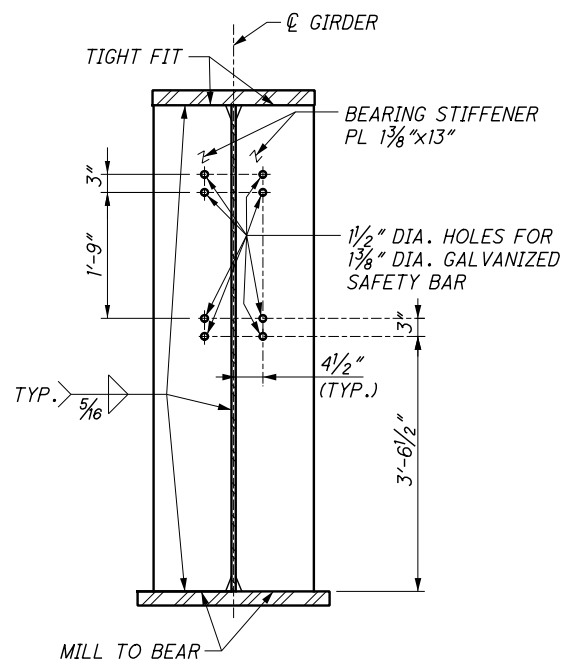
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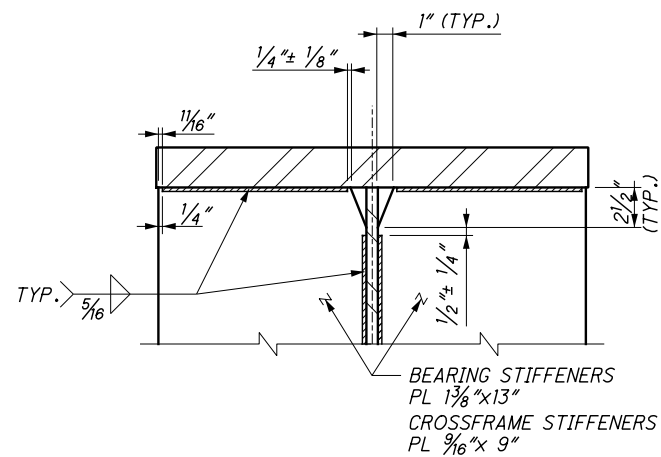
**TYPE "1" CROSSFRAME DETAILS**



**TYPE "2" CROSSFRAME DETAILS**



**TYPICAL BEARING STIFFENER DETAIL**



**TYPICAL WELD AND CORNER CLIP DETAIL**

**NOTE**

HIGH STRENGTH BOLTS SHALL BE A325, TYPE 1 BOLTS IN STANDARD 1/16" DIAMETER HOLES. EACH ANCHOR ASSEMBLY SHALL INCLUDE A BOLT, NUT AND TWO (2) HARDENED WASHERS, TIGHTENED ACCORDING TO 513. PERMANENTLY ATTACH CROSSFRAMES TO INTERMEDIATE STIFFENERS PRIOR TO PLACING THE CONCRETE DECK.

**NOTES**

**ALL ANGLES, RODS, AND STIFFENERS SHALL BE ASTM A709 GRADE 50W STEEL.**

**TRANSVERSE SECTION:** SEE SHEET [49/84].

**FRAMING PLANS:** SEE SHEETS [50/84] AND [51/84].

**GIRDER ELEVATION:** SEE SHEET [52/84].

|                                                                                                   |  |                         |                     |                         |                          |                                    |                                       |                                                                                                  |
|---------------------------------------------------------------------------------------------------|--|-------------------------|---------------------|-------------------------|--------------------------|------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------------------|
| <p><b>CROSSFRAME DETAILS</b><br/>BRIDGE NO. CUY-77-1433 L &amp; R<br/>OVER I.R. 490 AND RAMPS</p> |  | <p>DESIGNED<br/>ALP</p> | <p>DRAWN<br/>HK</p> | <p>REVIEWED<br/>DAP</p> | <p>DATE<br/>11/15/16</p> | <p>FILE NUMBER<br/>1806688 (L)</p> | <p>PROJECT NUMBER<br/>1806718 (R)</p> | <p>CLIENT<br/>RICHLAND ENGINEERING LIMITED<br/>29 NORTH PARK STREET<br/>MANFIELD, OHIO 44902</p> |
| <p>CUY-77-14.35</p>                                                                               |  | <p>PID No. 13567</p>    |                     | <p>56/84</p>            |                          | <p>337<br/>365</p>                 |                                       |                                                                                                  |

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**BRIDGE CAMBER TABLE - GIRDERS 1 & 14**

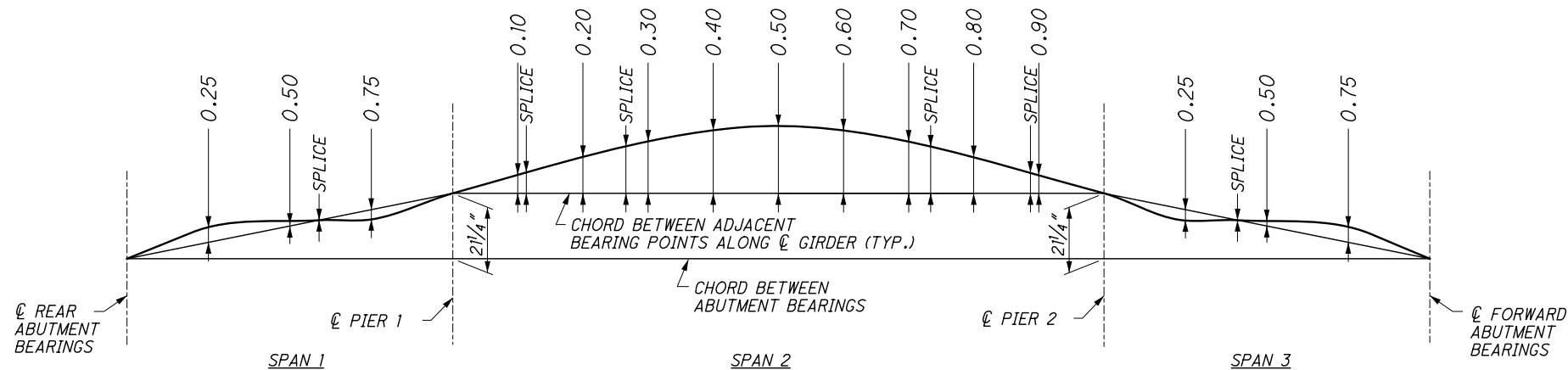
|                                         | BEARING POINT | SPAN 1 |       |        |       | BEARING POINT | SPAN 2 |        |         |        |         |        |         |        |         |        | BEARING POINT | SPAN 3 |        |      |       | BEARING POINT |        |       |      |
|-----------------------------------------|---------------|--------|-------|--------|-------|---------------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------------|--------|--------|------|-------|---------------|--------|-------|------|
|                                         |               | 0.25   | 0.50  | SPLICE | 3/4   |               | 0.10   | SPLICE | 0.20    | SPLICE | 0.30    | 0.40   | 0.50    | 0.60   | 0.70    | SPLICE |               | 0.80   | SPLICE | 0.90 | 0.25  |               | SPLICE | 0.50  | 0.75 |
| DEFLECTION DUE TO WEIGHT OF STEEL       | 0             | -5/16  | -1/2  | -1/2   | -7/16 | 0             | 13/16  | 1/16   | 213/16  | 33/4   | 4/4     | 5/4    | 55/8    | 5/4    | 4/4     | 33/4   | 213/16        | 13/8   | 13/16  | 0    | -7/16 | -1/2          | -1/2   | -5/16 | 0    |
| DEFLECTION DUE TO COUNTERWEIGHT         | 0             | 1/2    | 5/8   | 9/16   | 3/8   | 0             | -7/16  | -1/2   | -13/16  | -15/16 | -1/16   | -13/16 | -13/16  | -1/16  | -15/16  | -13/16 | -1/2          | -7/16  | 0      | 3/8  | 9/16  | 5/8           | 1/2    | 0     |      |
| DEFLECTION DUE TO * REMAINING DEAD LOAD | 0             | -9/16  | -1/16 | -1/16  | -1    | 0             | 25/8   | 3/16   | 61/16   | 85/16  | 95/16   | 117/16 | 123/16  | 117/16 | 95/16   | 85/16  | 6/8           | 31/16  | 25/8   | 0    | -1    | -1/8          | -1/16  | -9/16 | 0    |
| ADJUSTMENT FOR VERTICAL CURVE           | 0             | 1      | 15/16 | 1/4    | 1     | 0             | 4 1/2  | 5      | 8       | 9 3/4  | 10 1/2  | 12     | 12 1/2  | 12     | 10 1/2  | 9 3/4  | 8             | 5      | 4 1/2  | 0    | 1     | 1/4           | 15/16  | 1     | 0    |
| REQUIRED SHOP * CAMBER                  | 0             | 5/8    | 3/8   | 3/16   | -1/16 | 0             | 7 7/8  | 8 5/8  | 16 1/16 | 20 7/8 | 23 1/16 | 27 1/2 | 29 1/16 | 27 1/2 | 23 1/16 | 20 7/8 | 16 1/8        | 8 5/16 | 7 5/16 | 0    | -1/16 | 3/16          | 3/8    | 5/8   | 0    |

**BRIDGE CAMBER TABLE - GIRDERS 2 & 13**

|                                         | BEARING POINT | SPAN 1 |       |        |       | BEARING POINT | SPAN 2 |        |        |         |        |          |        |          |        |         | BEARING POINT | SPAN 3 |        |       |       | BEARING POINT |        |        |      |
|-----------------------------------------|---------------|--------|-------|--------|-------|---------------|--------|--------|--------|---------|--------|----------|--------|----------|--------|---------|---------------|--------|--------|-------|-------|---------------|--------|--------|------|
|                                         |               | 0.25   | 0.50  | SPLICE | 3/4   |               | 0.10   | SPLICE | 0.20   | SPLICE  | 0.30   | 0.40     | 0.50   | 0.60     | 0.70   | SPLICE  |               | 0.80   | SPLICE | 0.90  | 0.25  |               | SPLICE | 0.50   | 0.75 |
| DEFLECTION DUE TO WEIGHT OF STEEL       | 0             | -5/16  | -1/2  | -1/2   | -7/16 | 0             | 13/16  | 1/16   | 213/16 | 33/4    | 45/16  | 55/16    | 55/16  | 45/16    | 33/4   | 213/16  | 1/16          | 13/16  | 0      | -7/16 | -1/2  | -1/2          | -5/16  | 0      |      |
| DEFLECTION DUE TO COUNTERWEIGHT         | 0             | 9/16   | 5/8   | 9/16   | 3/8   | 0             | -7/16  | -1/2   | -3/4   | -7/8    | -15/16 | -1/16    | -1/8   | -1/16    | -15/16 | -7/8    | -3/4          | -1/2   | -7/16  | 0     | 3/8   | 9/16          | 5/8    | 9/16   | 0    |
| DEFLECTION DUE TO * REMAINING DEAD LOAD | 0             | -9/16  | -1/16 | -1/16  | -1    | 0             | 25/8   | 3      | 61/16  | 85/16   | 95/16  | 117/16   | 123/16 | 117/16   | 95/16  | 85/16   | 61/16         | 31/16  | 25/8   | 0     | -1    | -1/16         | -1/16  | -9/16  | 0    |
| ADJUSTMENT FOR VERTICAL CURVE           | 0             | 1      | 15/16 | 1/4    | 1     | 0             | 4 1/2  | 5      | 8      | 9 3/4   | 10 1/2 | 12       | 12 1/2 | 12       | 10 1/2 | 9 3/4   | 8             | 5      | 4 1/2  | 0     | 1     | 1/4           | 15/16  | 1      | 0    |
| REQUIRED SHOP * CAMBER                  | 0             | 1/16   | 7/16  | 3/16   | -1/16 | 0             | 7 5/16 | 9      | 16 1/8 | 20 5/16 | 23 1/8 | 27 11/16 | 29 1/4 | 27 11/16 | 23 1/8 | 20 5/16 | 16 1/8        | 9      | 7 5/16 | 0     | -1/16 | 3/16          | 7/16   | 1 1/16 | 0    |

**BRIDGE CAMBER TABLE - GIRDERS 3 & 12**

|                                         | BEARING POINT | SPAN 1 |       |        |        | BEARING POINT | SPAN 2 |        |         |         |        |        |         |        |        |         | BEARING POINT | SPAN 3 |        |      |        | BEARING POINT |        |        |      |
|-----------------------------------------|---------------|--------|-------|--------|--------|---------------|--------|--------|---------|---------|--------|--------|---------|--------|--------|---------|---------------|--------|--------|------|--------|---------------|--------|--------|------|
|                                         |               | 0.25   | 0.50  | SPLICE | 3/4    |               | 0.10   | SPLICE | 0.20    | SPLICE  | 0.30   | 0.40   | 0.50    | 0.60   | 0.70   | SPLICE  |               | 0.80   | SPLICE | 0.90 | 0.25   |               | SPLICE | 0.50   | 0.75 |
| DEFLECTION DUE TO WEIGHT OF STEEL       | 0             | -5/16  | -1/2  | -1/2   | -7/16  | 0             | 13/16  | 1/16   | 213/16  | 313/16  | 45/16  | 55/16  | 51/16   | 55/16  | 45/16  | 313/16  | 213/16        | 1/16   | 1/4    | 0    | -7/16  | -1/2          | -1/2   | -5/16  | 0    |
| DEFLECTION DUE TO COUNTERWEIGHT         | 0             | 9/16   | 5/8   | 9/16   | 3/8    | 0             | -3/8   | -7/16  | -1/16   | -13/16  | -7/8   | -1     | -1/16   | -1     | -7/8   | -13/16  | -1/16         | -7/16  | -3/8   | 0    | 3/8    | 9/16          | 5/8    | 9/16   | 0    |
| DEFLECTION DUE TO * REMAINING DEAD LOAD | 0             | -9/16  | -1    | -1/16  | -15/16 | 0             | 25/8   | 3      | 61/16   | 83/8    | 93/8   | 11 1/2 | 12 5/16 | 11 1/2 | 93/8   | 83/8    | 61/8          | 31/16  | 25/8   | 0    | -15/16 | -1/16         | -1     | -9/16  | 0    |
| ADJUSTMENT FOR VERTICAL CURVE           | 0             | 1      | 15/16 | 1/4    | 1      | 0             | 4 1/2  | 5      | 8       | 9 3/4   | 10 1/2 | 12     | 12 1/2  | 12     | 10 1/2 | 9 3/4   | 8             | 5      | 4 1/2  | 0    | 1      | 1/4           | 15/16  | 1      | 0    |
| REQUIRED SHOP * CAMBER                  | 0             | 1/16   | 3/8   | 3/16   | -1/16  | 0             | 7 5/16 | 9      | 16 3/16 | 21 1/16 | 23 1/4 | 27 7/8 | 29 7/16 | 27 7/8 | 23 1/4 | 21 1/16 | 16 1/4        | 9      | 7 5/16 | 0    | -1/16  | 3/16          | 3/8    | 1 1/16 | 0    |



**CAMBER AND BLOCKING DIAGRAM**  
(LEFT AND RIGHT STRUCTURES)

\* THE USE OF STAY-IN-PLACE DECK FORMS DEVIATING MORE THAN 3 PSF FROM THE 21 PSF ASSUMED IN THE DEFLECTION CALCULATIONS, OR A DECK PLACEMENT SEQUENCE DIFFERING FROM THE SEQUENCE DESCRIBED IN THESE PLANS WILL REQUIRE REVISED CAMBERS AND SCREED ELEVATIONS PREPARED BY AN OHIO REGISTERED PROFESSIONAL ENGINEER.

**NOTES**

**POSITIVE CAMBER VALUES** INDICATE CAMBER ABOVE CHORD BETWEEN ADJACENT BEARINGS.

**CAMBER VALUES** ARE IN INCHES.

**CAMBER TABLES CONTINUED:** SEE SHEET 58 / 84.

**DECK PLACEMENT SEQUENCE:** SEE SHEET 67 / 84.

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BRIDGE CAMBER TABLE - GIRDERS 4 & 11

|                                         | BEARING POINT | SPAN 1 |        |         |        | BEARING POINT | SPAN 2 |        |         |         |         |         |         |         |        |         |         |        | BEARING POINT | SPAN 3 |        |         |        | BEARING POINT |      |
|-----------------------------------------|---------------|--------|--------|---------|--------|---------------|--------|--------|---------|---------|---------|---------|---------|---------|--------|---------|---------|--------|---------------|--------|--------|---------|--------|---------------|------|
|                                         |               | 0.25   | 0.50   | SPLICE  | 3/4    |               | 0.10   | SPLICE | 0.20    | SPLICE  | 0.30    | 0.40    | 0.50    | 0.60    | 0.70   | SPLICE  | 0.80    | SPLICE |               | 0.90   | 0.25   | SPLICE  | 0.50   |               | 0.75 |
| DEFLECTION DUE TO WEIGHT OF STEEL       | 0             | -5/16  | -1/2   | -9/16   | -7/16  | 0             | 1/4    | 1/16   | 2 13/16 | 3 13/16 | 4 5/16  | 5 5/16  | 5 11/16 | 5 5/16  | 4 5/16 | 3 13/16 | 2 13/16 | 1 7/16 | 1/4           | 0      | -7/16  | -9/16   | -1/2   | -5/16         | 0    |
| DEFLECTION DUE TO COUNTERWEIGHT         | 0             | 3/8    | 1/2    | 7/16    | 5/16   | 0             | -3/8   | -3/8   | -5/8    | -3/4    | -13/16  | -15/16  | -15/16  | -15/16  | -13/16 | -3/4    | -5/8    | -3/8   | -3/8          | 0      | 5/16   | 7/16    | 1/2    | 3/8           | 0    |
| DEFLECTION DUE TO * REMAINING DEAD LOAD | 0             | -1/2   | -1     | -1 1/16 | -15/16 | 0             | 2 5/8  | 3 1/16 | 6 1/8   | 8 7/16  | 9 7/16  | 11 1/16 | 12 7/16 | 11 1/16 | 9 7/16 | 8 7/16  | 6 3/16  | 3 1/16 | 2 5/8         | 0      | -15/16 | -1 1/16 | -1     | -1/2          | 0    |
| ADJUSTMENT FOR VERTICAL CURVE           | 0             | 1      | 1 5/16 | 1 1/4   | 1      | 0             | 4 1/2  | 5      | 8       | 9 3/4   | 10 1/2  | 12      | 12 1/2  | 12      | 10 1/2 | 9 3/4   | 8       | 5      | 4 1/2         | 0      | 1      | 1 1/4   | 1 5/16 | 1             | 0    |
| REQUIRED SHOP * CAMBER                  | 0             | 9/16   | 5/16   | 1/8     | -1/8   | 0             | 8      | 9 1/16 | 16 5/16 | 21 1/4  | 23 7/16 | 28 1/16 | 29 1/16 | 28 1/8  | 23 1/2 | 21 1/4  | 16 3/8  | 9 1/16 | 8             | 0      | -1/8   | 1/8     | 5/16   | 9/16          | 0    |

BRIDGE CAMBER TABLE - GIRDERS 5 & 10

|                                         | BEARING POINT | SPAN 1 |        |         |       | BEARING POINT | SPAN 2  |        |         |         |         |         |          |         |         |         |         |        | BEARING POINT | SPAN 3 |       |        |         | BEARING POINT |      |
|-----------------------------------------|---------------|--------|--------|---------|-------|---------------|---------|--------|---------|---------|---------|---------|----------|---------|---------|---------|---------|--------|---------------|--------|-------|--------|---------|---------------|------|
|                                         |               | 0.25   | 0.50   | SPLICE  | 3/4   |               | 0.10    | SPLICE | 0.20    | SPLICE  | 0.30    | 0.40    | 0.50     | 0.60    | 0.70    | SPLICE  | 0.80    | SPLICE |               | 0.90   | 0.25  | SPLICE | 0.50    |               | 0.75 |
| DEFLECTION DUE TO WEIGHT OF STEEL       | 0             | -5/16  | -1/2   | -1/2    | -7/16 | 0             | 1 3/16  | 1 3/8  | 2 3/4   | 3 3/16  | 4 1/4   | 5 1/4   | 5 5/8    | 5 1/4   | 4 1/4   | 3 13/16 | 2 3/4   | 1 3/8  | 1 3/16        | 0      | -7/16 | -1/2   | -1/2    | -5/16         | 0    |
| DEFLECTION DUE TO COUNTERWEIGHT         | 0             | 3/8    | 1/2    | 7/16    | 5/16  | 0             | -5/16   | -3/8   | -5/8    | -3/4    | -3/4    | -7/8    | -7/8     | -7/8    | -3/4    | -3/4    | -5/8    | -3/8   | -5/16         | 0      | 5/16  | 7/16   | 1/2     | 3/8           | 0    |
| DEFLECTION DUE TO * REMAINING DEAD LOAD | 0             | -9/16  | -1     | -1 1/16 | -1    | 0             | 2 11/16 | 3 1/8  | 6 1/4   | 8 5/8   | 9 5/8   | 11 7/8  | 12 11/16 | 11 7/8  | 9 5/8   | 8 5/8   | 6 1/4   | 3 1/8  | 2 11/16       | 0      | -1    | -1 1/8 | -1 1/16 | -9/16         | 0    |
| ADJUSTMENT FOR VERTICAL CURVE           | 0             | 1      | 1 5/16 | 1 1/4   | 1     | 0             | 4 1/2   | 5      | 8       | 9 3/4   | 10 1/2  | 12      | 12 1/2   | 12      | 10 1/2  | 9 3/4   | 8       | 5      | 4 1/2         | 0      | 1     | 1 1/4  | 1 5/16  | 1             | 0    |
| REQUIRED SHOP * CAMBER                  | 0             | 1/2    | 1/4    | 1/16    | -1/8  | 0             | 8       | 9 1/16 | 16 7/16 | 21 1/16 | 23 5/16 | 28 5/16 | 29 5/16  | 28 5/16 | 23 5/16 | 21 1/16 | 16 1/16 | 9 1/8  | 8 1/16        | 0      | -1/8  | 1/16   | 1/4     | 1/2           | 0    |

BRIDGE CAMBER TABLE - GIRDERS 6 & 9

|                                         | BEARING POINT | SPAN 1  |        |         |         | BEARING POINT | SPAN 2  |        |         |         |          |          |         |         |          |        |         |        | BEARING POINT | SPAN 3 |         |         |        | BEARING POINT |      |
|-----------------------------------------|---------------|---------|--------|---------|---------|---------------|---------|--------|---------|---------|----------|----------|---------|---------|----------|--------|---------|--------|---------------|--------|---------|---------|--------|---------------|------|
|                                         |               | 0.25    | 0.50   | SPLICE  | 3/4     |               | 0.10    | SPLICE | 0.20    | SPLICE  | 0.30     | 0.40     | 0.50    | 0.60    | 0.70     | SPLICE | 0.80    | SPLICE |               | 0.90   | 0.25    | SPLICE  | 0.50   |               | 0.75 |
| DEFLECTION DUE TO WEIGHT OF STEEL       | 0             | -5/16   | -1/2   | -1/2    | -7/16   | 0             | 1 3/16  | 1 3/8  | 2 3/4   | 3 3/4   | 4 1/4    | 5 1/4    | 5 5/8   | 5 1/4   | 4 1/4    | 3 3/4  | 2 3/4   | 1 3/8  | 1 3/16        | 0      | -7/16   | -1/2    | -1/2   | -5/16         | 0    |
| DEFLECTION DUE TO COUNTERWEIGHT         | 0             | 1/2     | 9/16   | 1/2     | 5/16    | 0             | -3/8    | -7/16  | -1 1/16 | -13/16  | -7/8     | -1       | -1      | -1      | -7/8     | -13/16 | -1 1/16 | -7/16  | -3/8          | 0      | 5/16    | 1/2     | 9/16   | 1/2           | 0    |
| DEFLECTION DUE TO * REMAINING DEAD LOAD | 0             | -1 1/16 | -1 1/8 | -1 3/16 | -1 1/16 | 0             | 2 13/16 | 3 1/4  | 6 9/16  | 9       | 10 1/16  | 12 7/16  | 13 1/4  | 12 7/16 | 10 1/16  | 9      | 6 9/16  | 3 1/4  | 2 13/16       | 0      | -1 1/16 | -1 3/16 | -1 1/8 | -1 1/16       | 0    |
| ADJUSTMENT FOR VERTICAL CURVE           | 0             | 1       | 1 5/16 | 1 1/4   | 1       | 0             | 4 1/2   | 5      | 8       | 9 3/4   | 10 1/2   | 12       | 12 1/2  | 12      | 10 1/2   | 9 3/4  | 8       | 5      | 4 1/2         | 0      | 1       | 1 1/4   | 1 5/16 | 1             | 0    |
| REQUIRED SHOP * CAMBER                  | 0             | 9/16    | 1/4    | 1/16    | -3/16   | 0             | 8 1/8   | 9 3/16 | 16 5/8  | 21 1/16 | 23 15/16 | 28 11/16 | 30 5/16 | 28 1/16 | 23 15/16 | 21 3/4 | 16 5/8  | 9 3/16 | 8 1/8         | 0      | -3/16   | 1/16    | 1/4    | 9/16          | 0    |

BRIDGE CAMBER TABLE - GIRDERS 7 & 8

|                                         | BEARING POINT | SPAN 1  |         |        |        | BEARING POINT | SPAN 2 |        |         |         |         |         |          |         |         |         |         |        | BEARING POINT | SPAN 3 |        |        |         | BEARING POINT |      |
|-----------------------------------------|---------------|---------|---------|--------|--------|---------------|--------|--------|---------|---------|---------|---------|----------|---------|---------|---------|---------|--------|---------------|--------|--------|--------|---------|---------------|------|
|                                         |               | 0.25    | 0.50    | SPLICE | 3/4    |               | 0.10   | SPLICE | 0.20    | SPLICE  | 0.30    | 0.40    | 0.50     | 0.60    | 0.70    | SPLICE  | 0.80    | SPLICE |               | 0.90   | 0.25   | SPLICE | 0.50    |               | 0.75 |
| DEFLECTION DUE TO WEIGHT OF STEEL       | 0             | -5/16   | -1/2    | -1/2   | -7/16  | 0             | 1 1/8  | 1 5/16 | 2 11/16 | 3 3/4   | 4 3/16  | 5 3/16  | 5 1/2    | 5 3/16  | 4 3/16  | 3 3/4   | 2 11/16 | 1 5/16 | 1 1/8         | 0      | -7/16  | -1/2   | -1/2    | -5/16         | 0    |
| DEFLECTION DUE TO COUNTERWEIGHT         | 0             | 1/2     | 9/16    | 9/16   | 3/8    | 0             | -7/16  | -7/16  | -3/4    | -7/8    | -15/16  | -1 1/16 | -1 1/8   | -1 1/16 | -15/16  | -7/8    | -3/4    | -7/16  | -7/16         | 0      | 3/8    | 9/16   | 9/16    | 1/2           | 0    |
| DEFLECTION DUE TO * REMAINING DEAD LOAD | 0             | -1 1/16 | -1 3/16 | -1 1/4 | -1 1/8 | 0             | 3      | 3 7/16 | 6 15/16 | 9 7/16  | 10 9/16 | 13      | 13 13/16 | 13      | 10 9/16 | 9 1/2   | 6 15/16 | 3 7/16 | 3             | 0      | -1 1/8 | -1 1/4 | -1 3/16 | -1 1/16       | 0    |
| ADJUSTMENT FOR VERTICAL CURVE           | 0             | 1       | 1 5/16  | 1 1/4  | 1      | 0             | 4 1/2  | 5      | 8       | 9 3/4   | 10 1/2  | 12      | 12 1/2   | 12      | 10 1/2  | 9 3/4   | 8       | 5      | 4 1/2         | 0      | 1      | 1 1/4  | 1 5/16  | 1             | 0    |
| REQUIRED SHOP * CAMBER                  | 0             | 1/2     | 3/16    | 0      | -3/16  | 0             | 8 1/4  | 9 5/16 | 16 7/8  | 22 1/16 | 24 5/16 | 29 1/16 | 30 3/4   | 29 1/16 | 24 5/16 | 22 1/16 | 16 7/8  | 9 5/16 | 8 1/4         | 0      | -3/16  | 0      | 3/16    | 1/2           | 0    |

\* THE USE OF STAY-IN-PLACE DECK FORMS DEVIATING MORE THAN 3 PSF FROM THE 21 PSF ASSUMED IN THE DEFLECTION CALCULATIONS, OR A DECK PLACEMENT SEQUENCE DIFFERING FROM THE SEQUENCE DESCRIBED IN THESE PLANS WILL REQUIRE REVISED CAMBERS AND SCREED ELEVATIONS PREPARED BY AN OHIO REGISTERED PROFESSIONAL ENGINEER.

NOTES

POSITIVE CAMBER VALUES INDICATE CAMBER ABOVE CHORD BETWEEN ADJACENT BEARINGS.

CAMBER VALUES ARE IN INCHES.

DECK PLACEMENT SEQUENCE: SEE SHEET 67/84.

RICHLAND ENGINEERING LIMITED  
29 NORTH PARK STREET  
MANSFIELD, OHIO 44902

DATE 11/15/16  
REVIEWED DAP  
STRUCTURE FILE NUMBER 1806688 (L)  
1806718 (R)

DRAWN JLS  
REVISOR

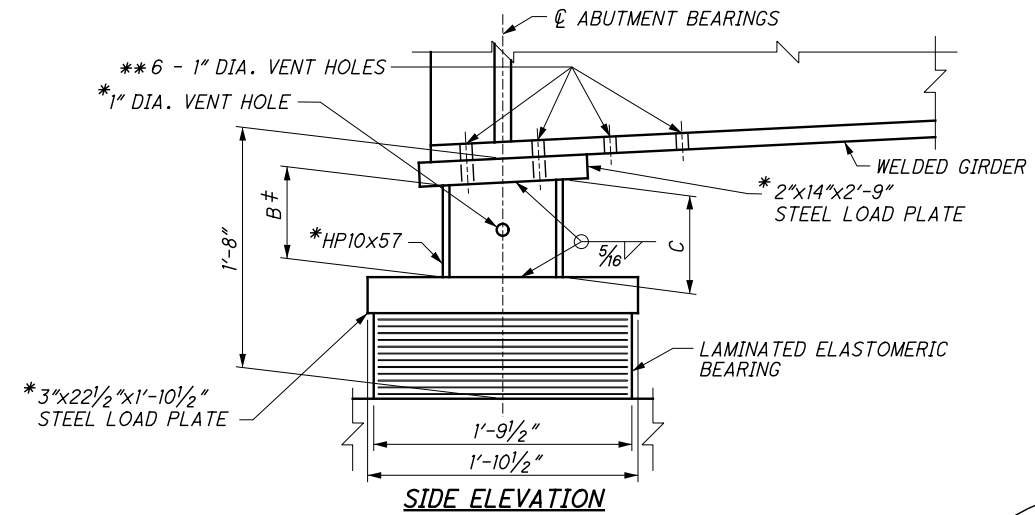
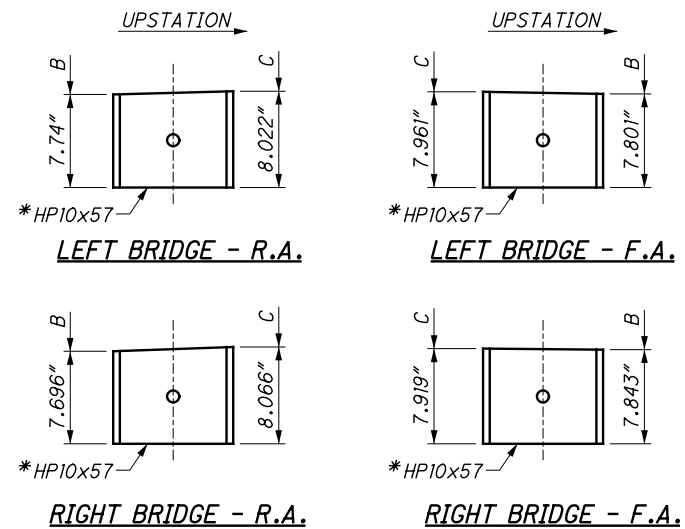
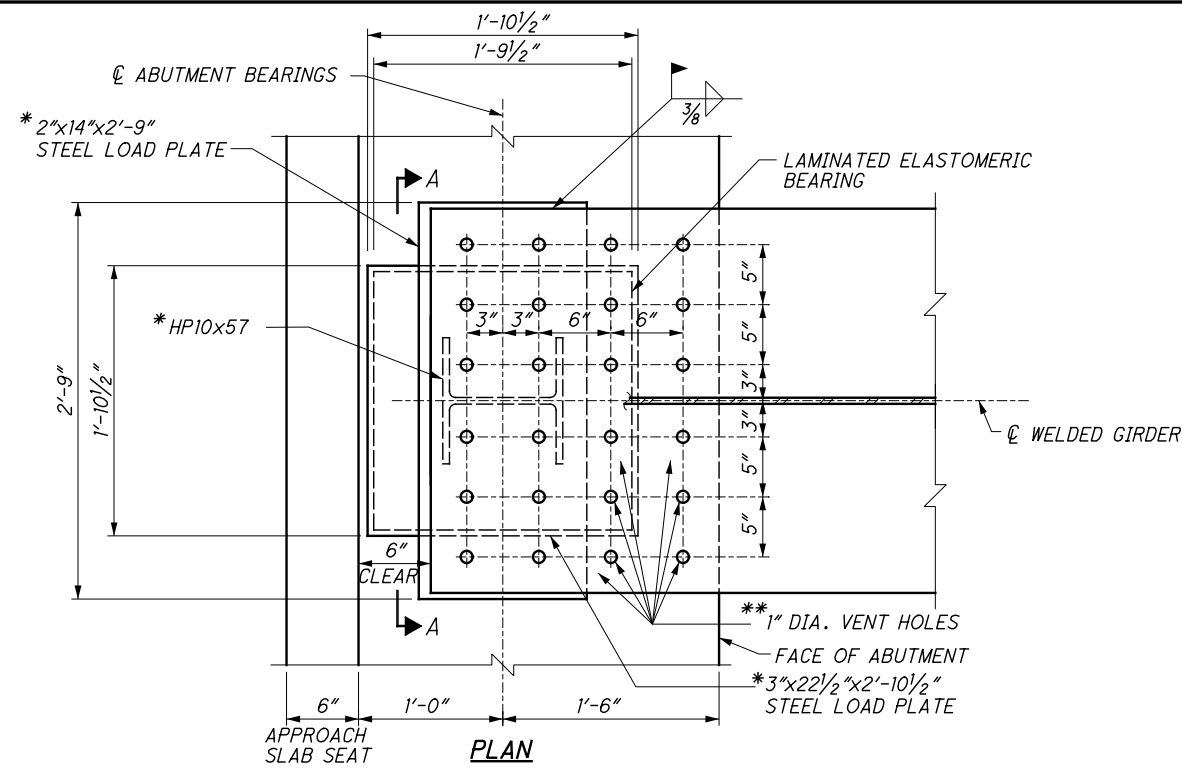
DESIGNED BLN  
CHECKED DLR

CAMBER DIAGRAM - 2  
BRIDGE NO. CUY-77-1433 L & R  
OVER I.R. 490 AND RAMPS

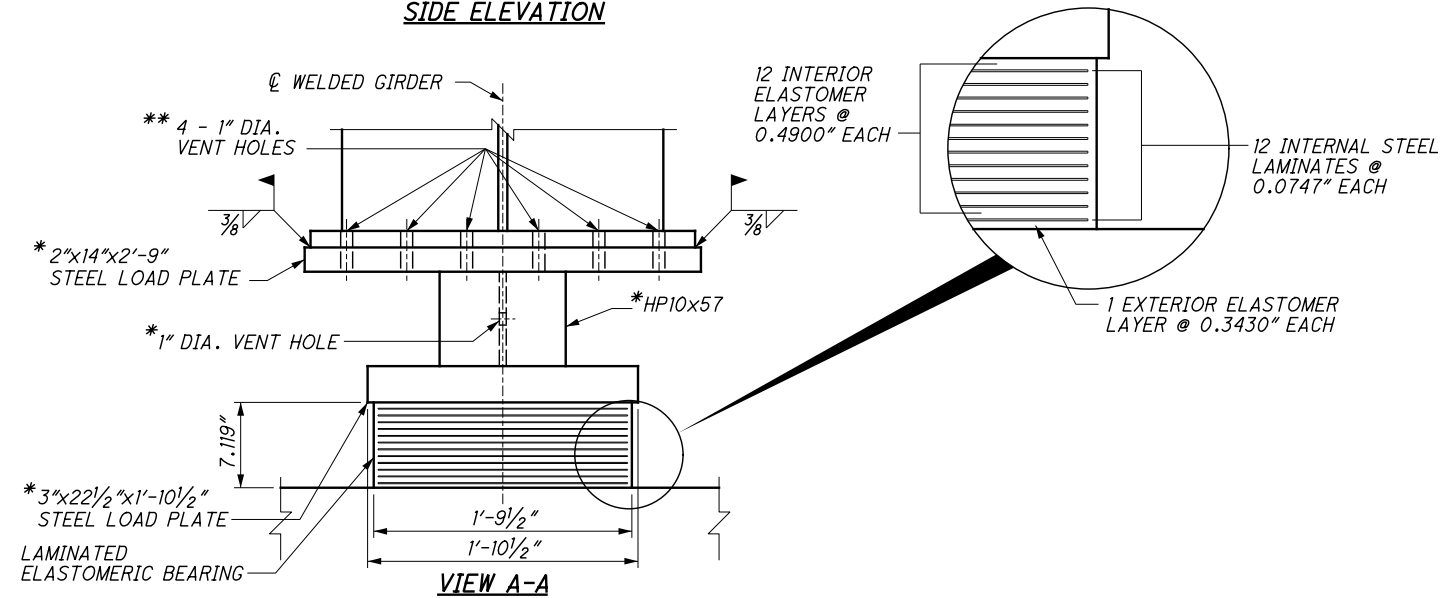
CUY-77-14.35  
PID No. 13567



\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Structures\13567\Sheets\13567\sk.dgn 12/14/2016 3:43:37 PM DonHeiman



\* INCLUDED WITH BEARING FOR PAYMENT.  
 \*\* INCLUDED WITH GIRDER FOR PAYMENT.  
 † "B" DIMENSION IS LOCATED AT THE APPROACH SLAB SIDE OF BEARING AT REAR AND FORWARD ABUTMENTS.



**LAMINATED ELASTOMERIC ABUTMENT BEARING**

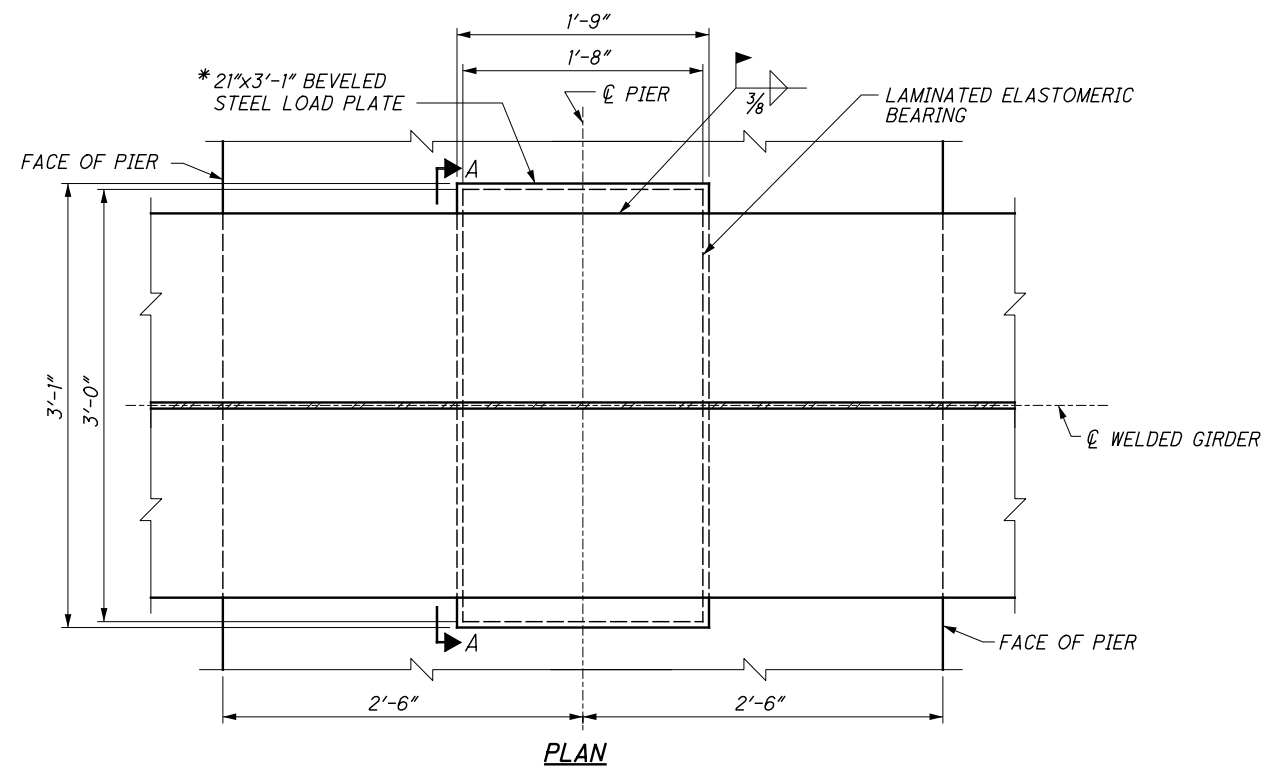
DEAD LOAD REACTION = 239 K  
 LIVE LOAD REACTION = 76 K  
 TOTAL = 315 K

**NOTES**

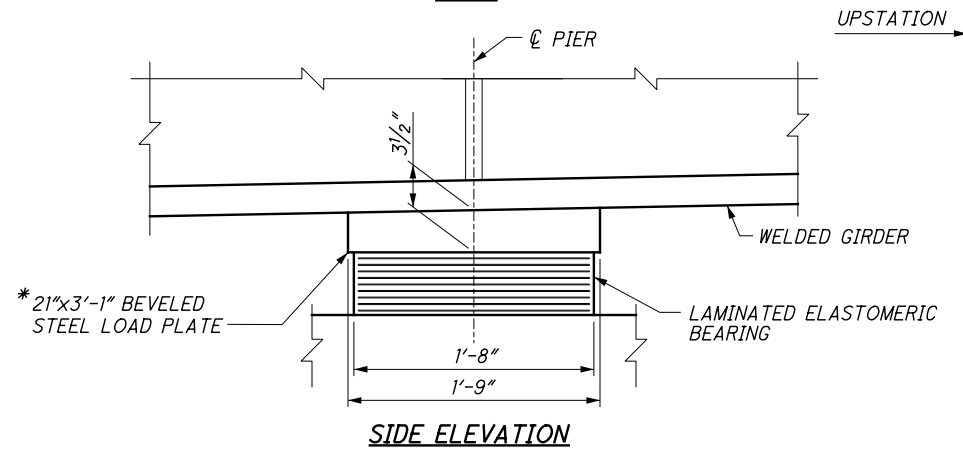
- ELASTOMERIC BEARINGS: THE ELASTOMER SHALL HAVE A HARDNESS OF 50 DUROMETER. THE BEARINGS WERE DESIGNED IN ACCORDANCE WITH SECTION 14.7.6 (METHOD A) OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS. THE LONG TERM COMPRESSION PROOF LOAD TEST (AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, DIVISION II, SECTION 18.7.2.6) IS NOT REQUIRED.
- THE STEEL PIER LOAD PLATES SHALL BE ASTM A709 GRADE 50W STEEL. EXPOSED SURFACE SHALL BE METALLIZED PER ITEM SPECIAL - STRUCTURES, SHOP METALLIZING AND FIELD TOUCH-UP OF STRUCTURAL STEEL, TO MATCH THE GIRDERS AT THE PIER FASCIAS.
- THE HP10x57 STEEL SHAPE SHALL BE ASTM A572/A709, GRADE 50 STEEL. THE ABUTMENT STEEL SHAPES AND LOAD PLATES SHALL BE METALLIZED PER ITEM SPECIAL - STRUCTURES, SHOP METALLIZING AND FIELD TOUCH-UP OF STRUCTURAL STEEL.
- THE BOTTOM STEEL LOAD PLATE SHALL BE BONDED BY VULCANIZATION TO THE ELASTOMER DURING THE MOLDING PROCESS.
- ALL BEARINGS SHALL BE MARKED PRIOR TO SHIPPING. THE MARKS SHALL INCLUDE THE BEARING LOCATION ON THE BRIDGE, AND A DIRECTION ARROW THAT POINTS UP-STATION. ALL MARKS SHALL BE PERMANENT AND BE VISIBLE AFTER THE BEARING IS INSTALLED.
- TOTAL DESIGN LOAD FOR BEARINGS EQUALS THE SUM OF THE DEAD LOADS AND LIVE LOADS.
- THE UNIT PRICE FOR BEARINGS SHALL INCLUDE ALL MATERIALS, LABOR, TESTING, HP SHAPES, METALLIZING, AND INCIDENTALS NECESSARY TO FURNISH AND INSTALL LAMINATED ELASTOMERIC EXPANSION BEARINGS. PAYMENT SHALL BE MADE AT THE CONTRACT PRICE FOR ITEM 516 - EACH, ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE, AS PER PLAN.
- LOADS SHOWN ARE SERVICE LOADS WITH NO LOAD FACTOR OR IMPACT FACTORS INCLUDED.

**NOTATION:** R.A. - REAR ABUTMENT  
 F.A. - FORWARD ABUTMENT

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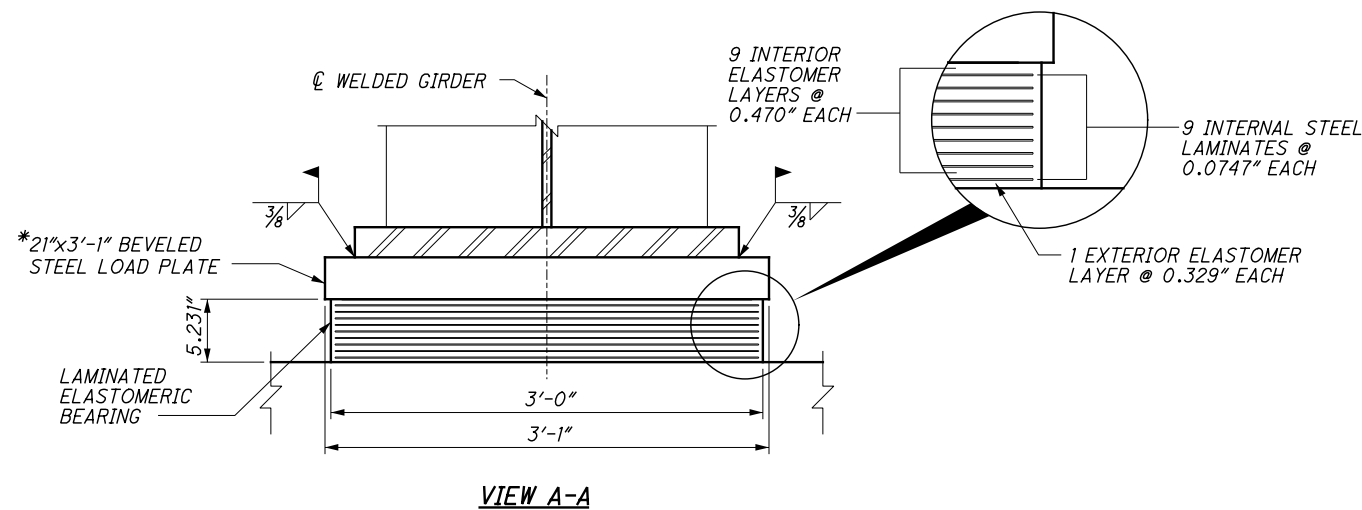


**PLAN**



**SIDE ELEVATION**

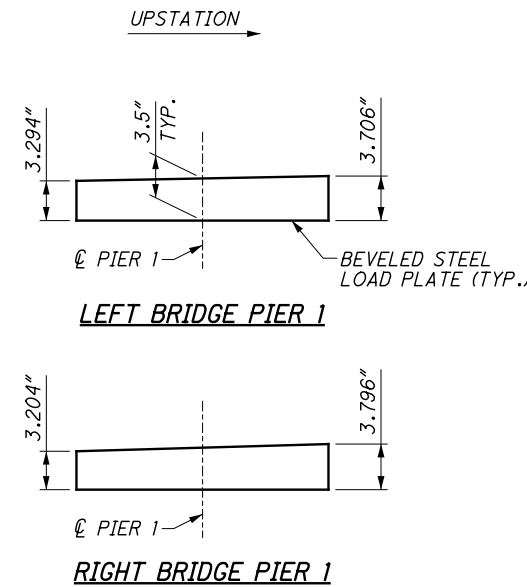
\* INCLUDED WITH BEARING FOR PAYMENT.



**VIEW A-A**

**LAMINATED ELASTOMERIC PIER EXPANSION BEARING**

DEAD LOAD REACTION = 718 K  
 LIVE LOAD REACTION = 177 K  
 TOTAL = 895 K

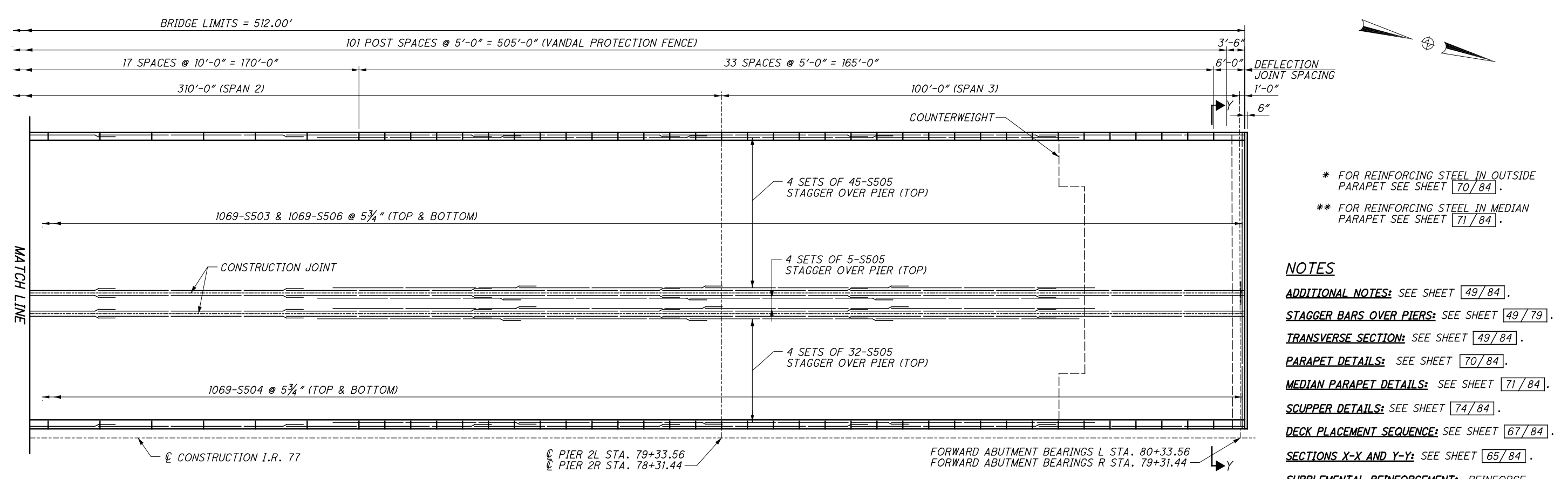
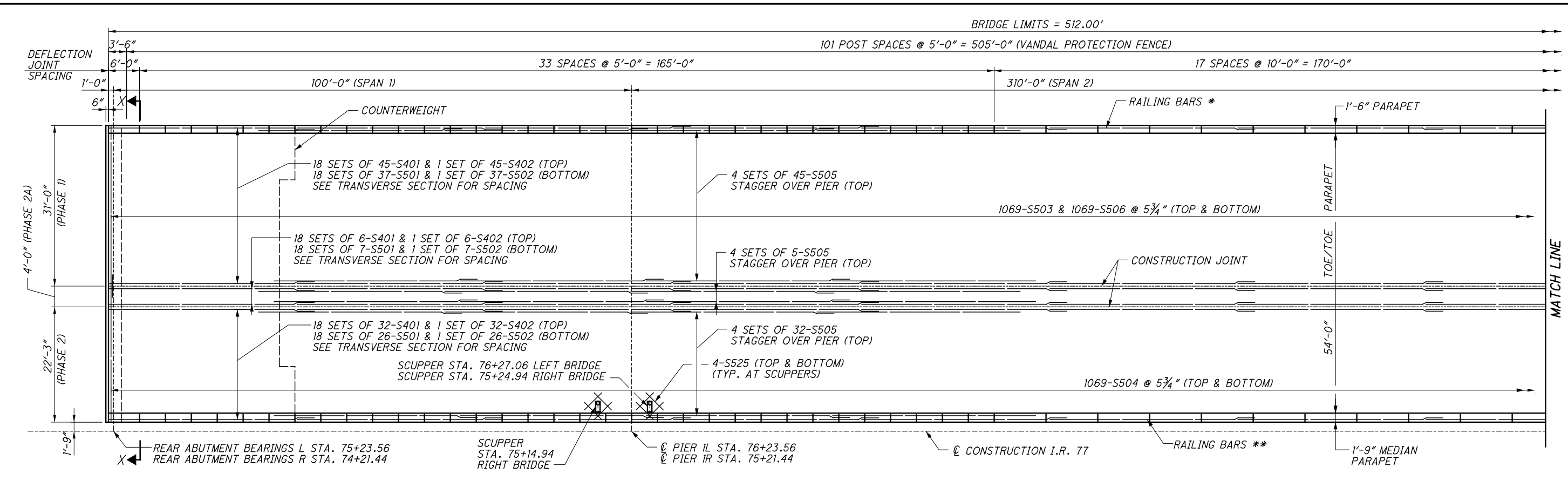


**NOTES**

ADDITIONAL NOTES: SEE SHEET 59/84.

|                                                                                        |                                                     |
|----------------------------------------------------------------------------------------|-----------------------------------------------------|
| RICHLAND ENGINEERING LIMITED<br>29 NORTH PARK STREET<br>MANSFIELD, OHIO 44902          |                                                     |
| DATE<br>11/15/16                                                                       | STRUCTURE FILE NUMBER<br>1806688 (L)<br>1806718 (R) |
| REVIEWED<br>DAP                                                                        | DRAWN<br>JLS                                        |
| DESIGNED<br>BLN                                                                        | CHECKED<br>DLR                                      |
| <b>PIER BEARING DETAILS</b><br>BRIDGE NO. CUY-77-1433 L & R<br>OVER I.R. 490 AND RAMPS |                                                     |
| <b>CUY-77-14.35</b><br>PID No. 13567                                                   |                                                     |
| 60/84                                                                                  |                                                     |
| 341<br>365                                                                             |                                                     |

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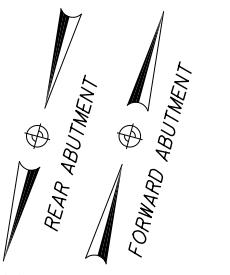
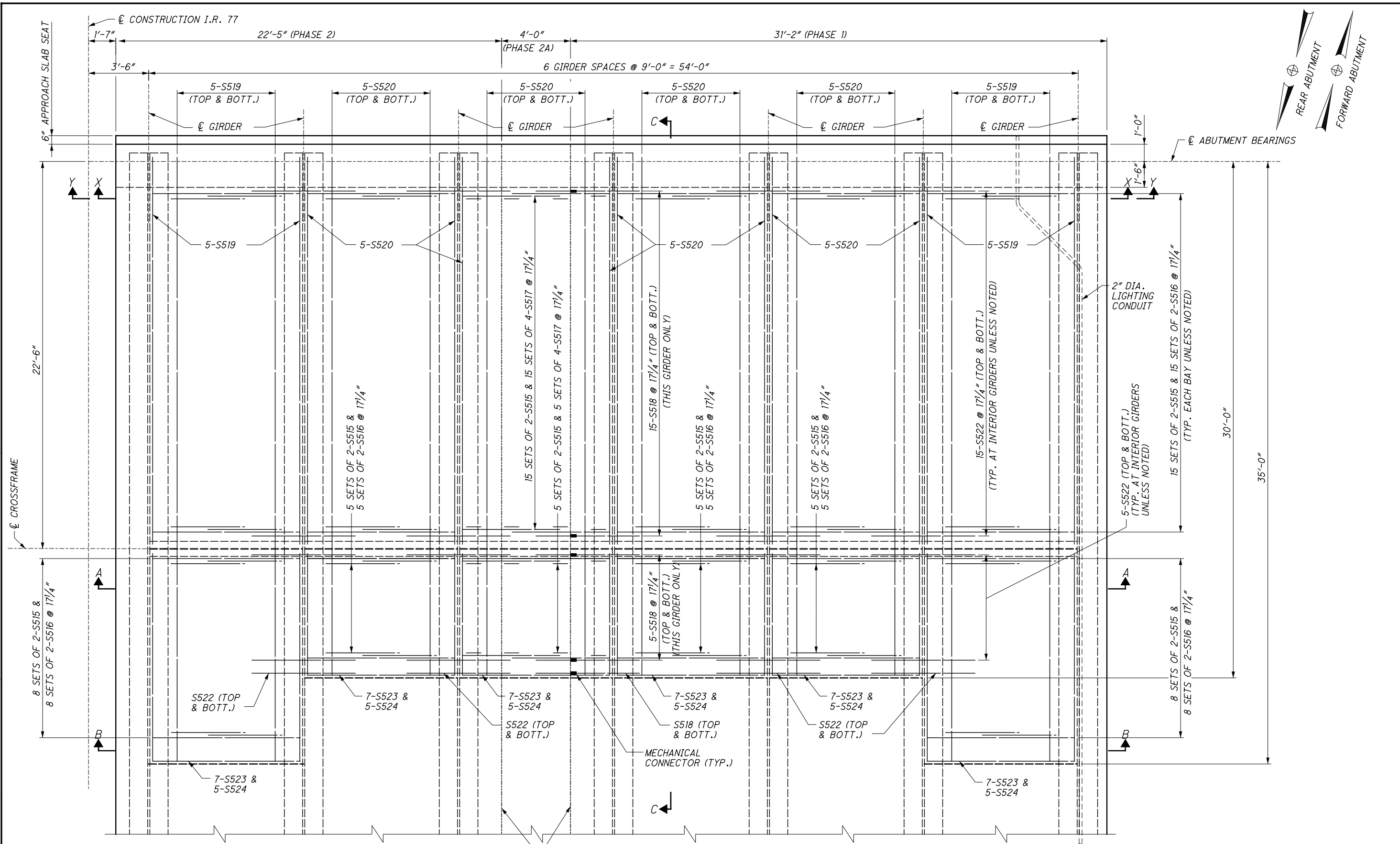
- \* FOR REINFORCING STEEL IN OUTSIDE PARAPET SEE SHEET [70/84].
- \*\* FOR REINFORCING STEEL IN MEDIAN PARAPET SEE SHEET [71/84].

- NOTES**
- ADDITIONAL NOTES:** SEE SHEET [49/84].
  - STAGGER BARS OVER PIERS:** SEE SHEET [49/79].
  - TRANSVERSE SECTION:** SEE SHEET [49/84].
  - PARAPET DETAILS:** SEE SHEET [70/84].
  - MEDIAN PARAPET DETAILS:** SEE SHEET [71/84].
  - SCUPPER DETAILS:** SEE SHEET [74/84].
  - DECK PLACEMENT SEQUENCE:** SEE SHEET [67/84].
  - SECTIONS X-X AND Y-Y:** SEE SHEET [65/84].
  - SUPPLEMENTAL REINFORCEMENT:** REINFORCE THE CONCRETE DECK AT THE SCUPPER CORNERS WITH S525 BARS, 4'-8" LONG ORIENTED AT 45° TO THE LONG AXIS OF THE SCUPPER AND LOCATED JUST BELOW THE TRANSVERSE BARS IN THE TOP MAT OF STEEL. WORK INCLUDED IN ITEM 509 - EPOXY COATED REINFORCING STEEL.

**SLAB PLAN**  
LEFT BRIDGE (SHOWN)  
RIGHT BRIDGE (OPPOSITE HAND)

|                                                                             |                                                                                      |
|-----------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|                                                                             | <b>RICHLAND ENGINEERING LIMITED</b><br>29 NORTH PARK STREET<br>MANSFIELD, OHIO 44902 |
| DESIGNED<br>ALP                                                             | DRAWN<br>JLS                                                                         |
| CHECKED<br>BLN                                                              | REVIEWED<br>DAP                                                                      |
| DATE<br>11/15/16                                                            | STRUCTURE FILE NUMBER<br>1806688 (L)<br>1806718 (R)                                  |
| <b>SLAB PLAN</b><br>BRIDGE NO. CUY-77-1433 L & R<br>OVER I.R. 490 AND RAMPS |                                                                                      |
| PID No. 13567                                                               |                                                                                      |
| 61/84                                                                       |                                                                                      |
| 342<br>365                                                                  |                                                                                      |

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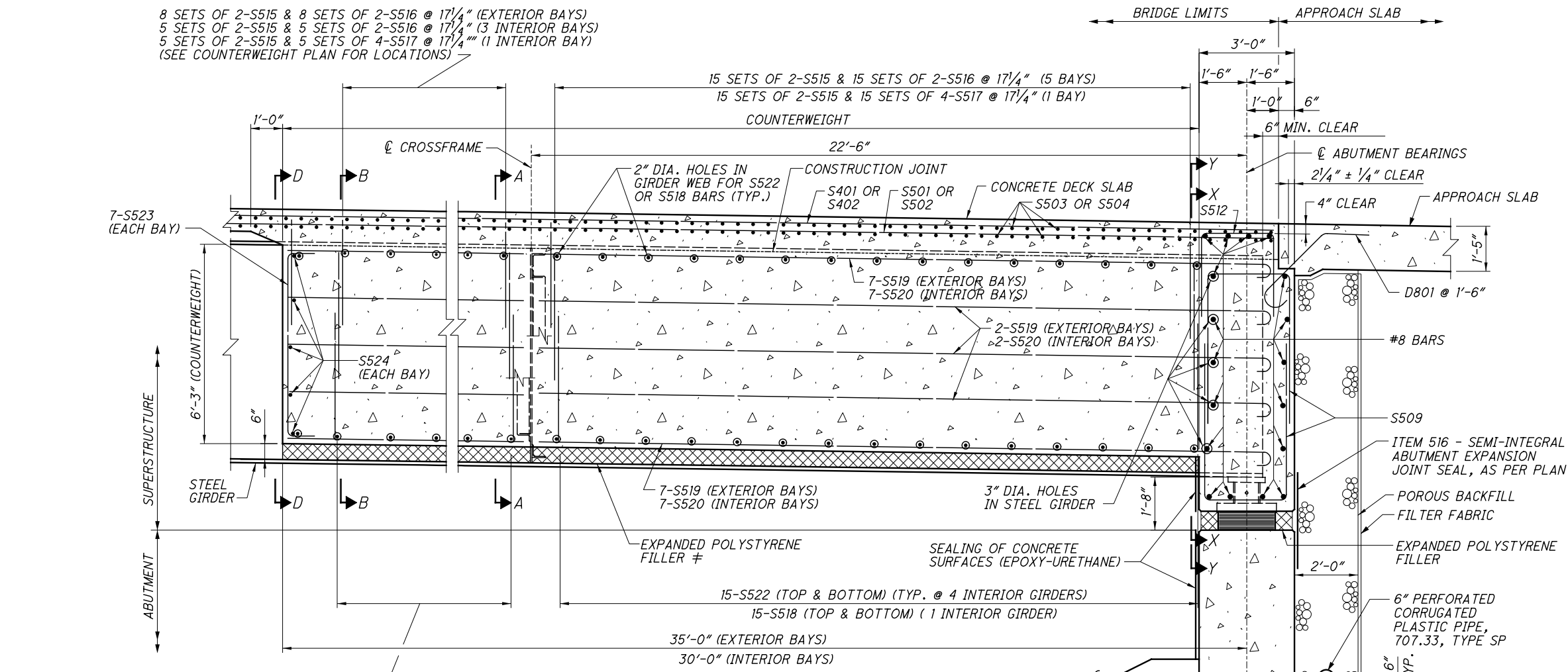
**COUNTERWEIGHT PLAN**  
 REAR ABUTMENT LEFT & FORWARD ABUTMENT RIGHT (SHOWN)  
 REAR ABUTMENT RIGHT & FORWARD ABUTMENT LEFT (OPPOSITE HAND)

**NOTES**  
**REINFORCING STEEL SPLICE LENGTHS** SHALL BE 2'-0" FOR VERTICAL #5 BARS 2'-9" FOR HORIZONTAL #5 BARS AND 6'-6" FOR HORIZONTAL #8 BARS.  
**SECTIONS A-A & B-B:** SEE SHEET [64/84].  
**SECTION C-C:** SEE SHEET [63/84].  
**SECTIONS X-X & Y-Y:** SEE SHEET [65/84].

**ABUTMENT DIAPHRAGM AND COUNTERWEIGHT CONCRETE, PHASED CONSTRUCTION:** PLACE THE DIAPHRAGM AND COUNTERWEIGHT CONCRETE ENCASEING THE STRUCTURAL MEMBER ENDS OF AN INDIVIDUAL PHASE AT LEAST 48 HOURS BEFORE PLACEMENT OF THE DECK CONCRETE. PLACE CLOSURE POUR CONCRETE IN THE DIAPHRAGM AND COUNTERWEIGHT AND THEN PLACE DECK CLOSURE POUR.

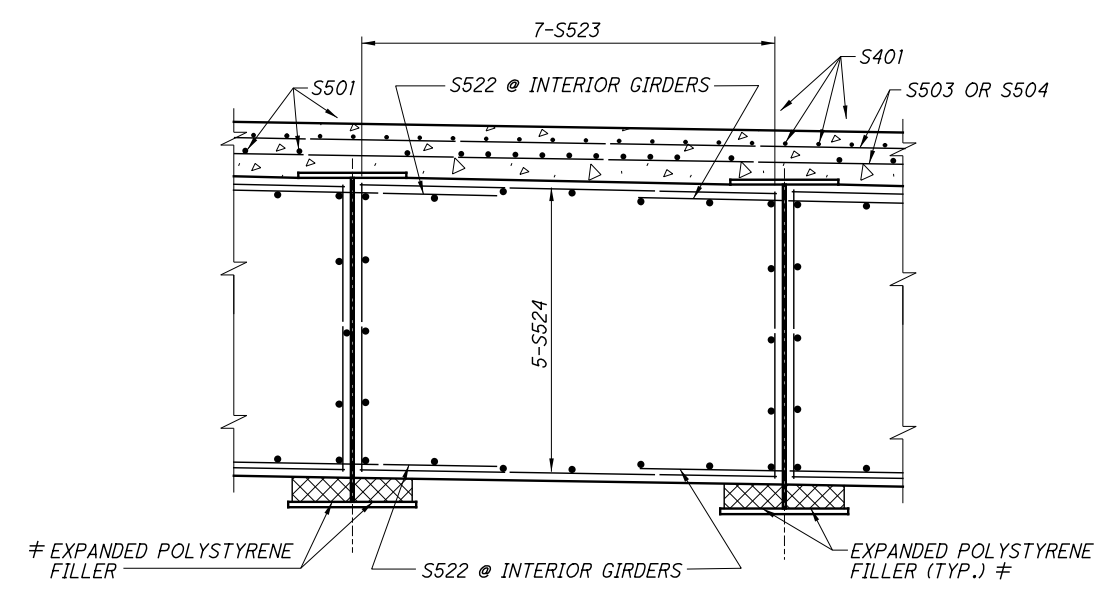
|                                                                                      |  |                                   |                         |                                                                        |                  |                                                                               |
|--------------------------------------------------------------------------------------|--|-----------------------------------|-------------------------|------------------------------------------------------------------------|------------------|-------------------------------------------------------------------------------|
| <b>COUNTERWEIGHT PLAN</b><br>BRIDGE NO. CUY-77-1433 L & R<br>OVER I.R. 490 AND RAMPS |  | DESIGNED<br>ALP<br>CHECKED<br>BLN | DRAWN<br>JLS<br>REVISED | REVIEWED<br>DAP<br>STRUCTURE FILE NUMBER<br>1806688 (L)<br>1806718 (R) | DATE<br>11/15/16 | RICHLAND ENGINEERING LIMITED<br>29 NORTH PARK STREET<br>MANSFIELD, OHIO 44902 |
| <b>CUY-77-14.35</b><br>PID No. 13567                                                 |  | 62/84                             |                         | 343<br>365                                                             |                  |                                                                               |

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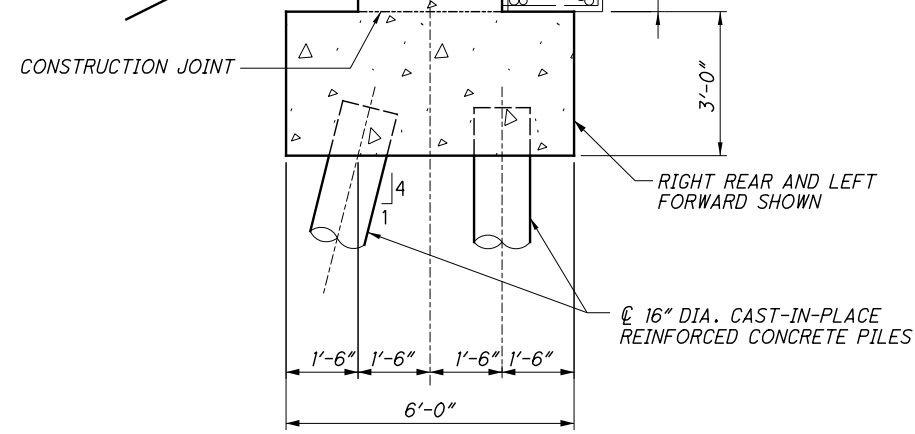


5-S522 (TOP & BOTTOM) (TYP. @ 4 INTERIOR GIRDERS)  
5-S518 (TOP & BOTTOM) (1 INTERIOR GIRDER)

**SECTION C-C**



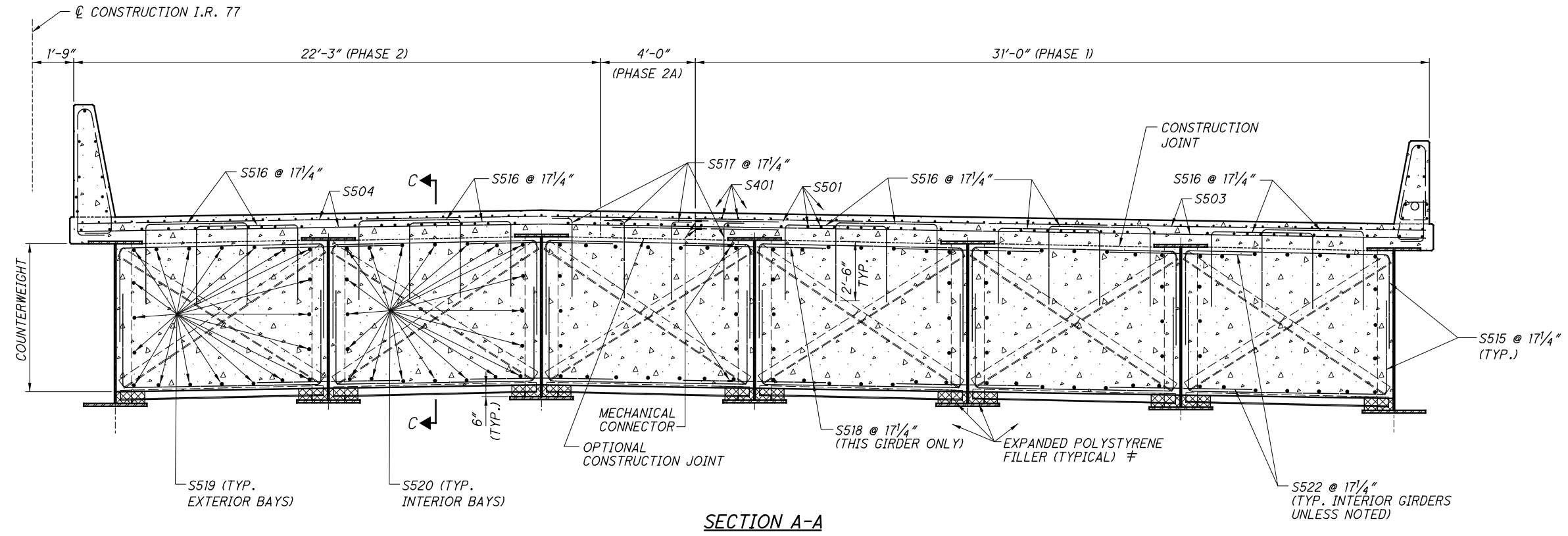
**VIEW D-D**  
(TYP. BETWEEN GIRDERS)



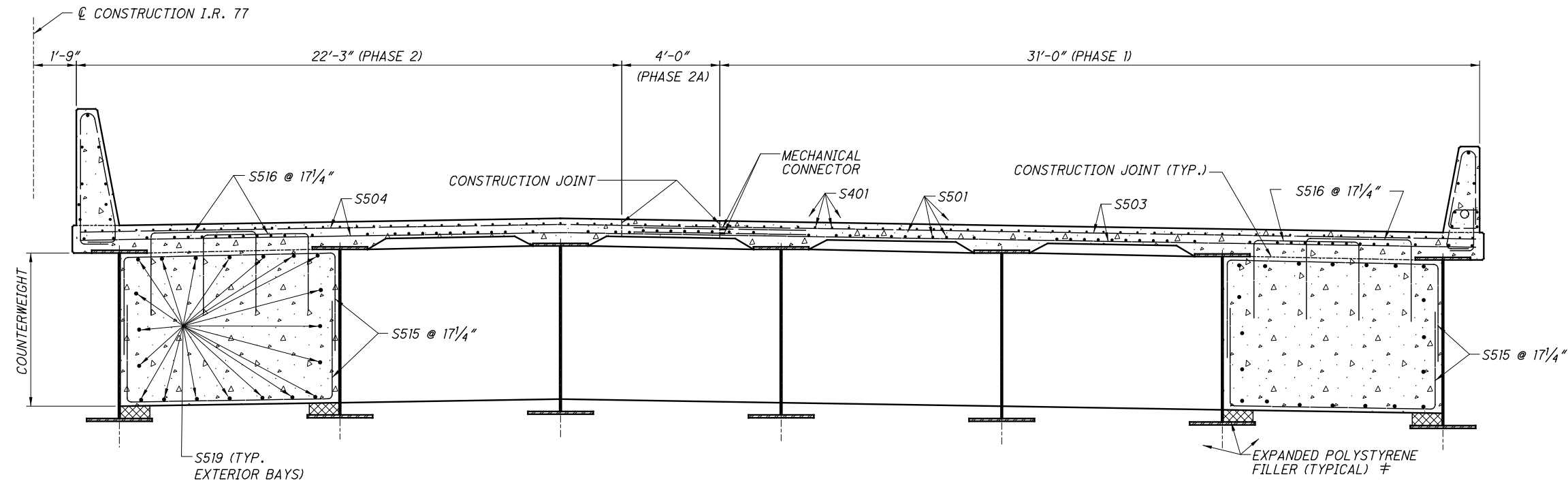
≠ EXPANDED POLYSTYRENE FILLER INCLUDED WITH COUNTERWEIGHT CONCRETE FOR PAYMENT.

- NOTES**
- SECTION C-C:** FOR LOCATION SEE SHEET 62/84 .
  - GIRDER DETAILS:** SEE SHEET 52/84 .
  - ABUTMENT SECTION:** SEE SHEET 35/84 .
  - SECTIONS A-A & B-B:** SEE SHEET 64/84 .
  - SECTIONS X-X & Y-Y:** SEE SHEET 65/84 .
  - ADDITIONAL NOTES:** SEE SHEET 62/84 .

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**SECTION A-A**



**SECTION B-B**

**NOTES**

‡ EXPANDED POLYSTYRENE FILLER INCLUDED WITH COUNTERWEIGHT CONCRETE FOR PAYMENT.

**SECTIONS A-A & B-B:** FOR LOCATIONS SEE SHEET 62/84.

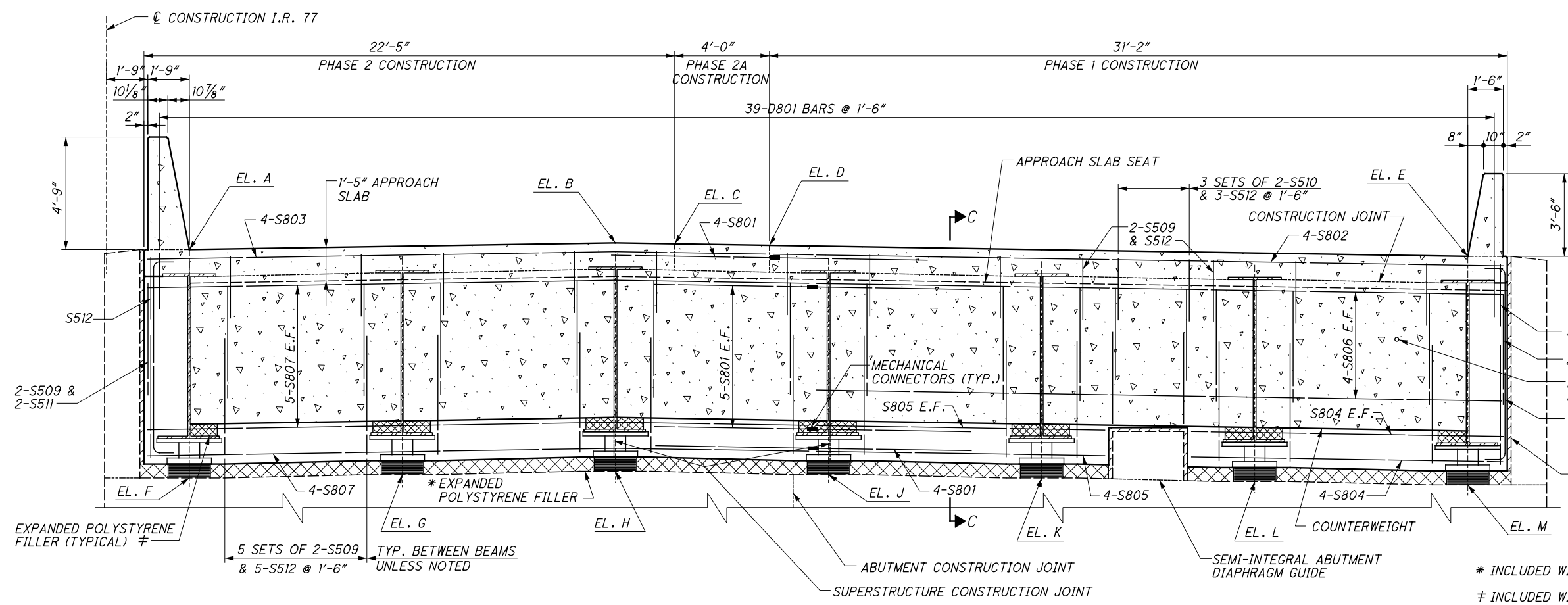
**SECTION C-C:** SEE SHEET 63/84.

**ADDITIONAL NOTES:** SEE SHEET 62/84.

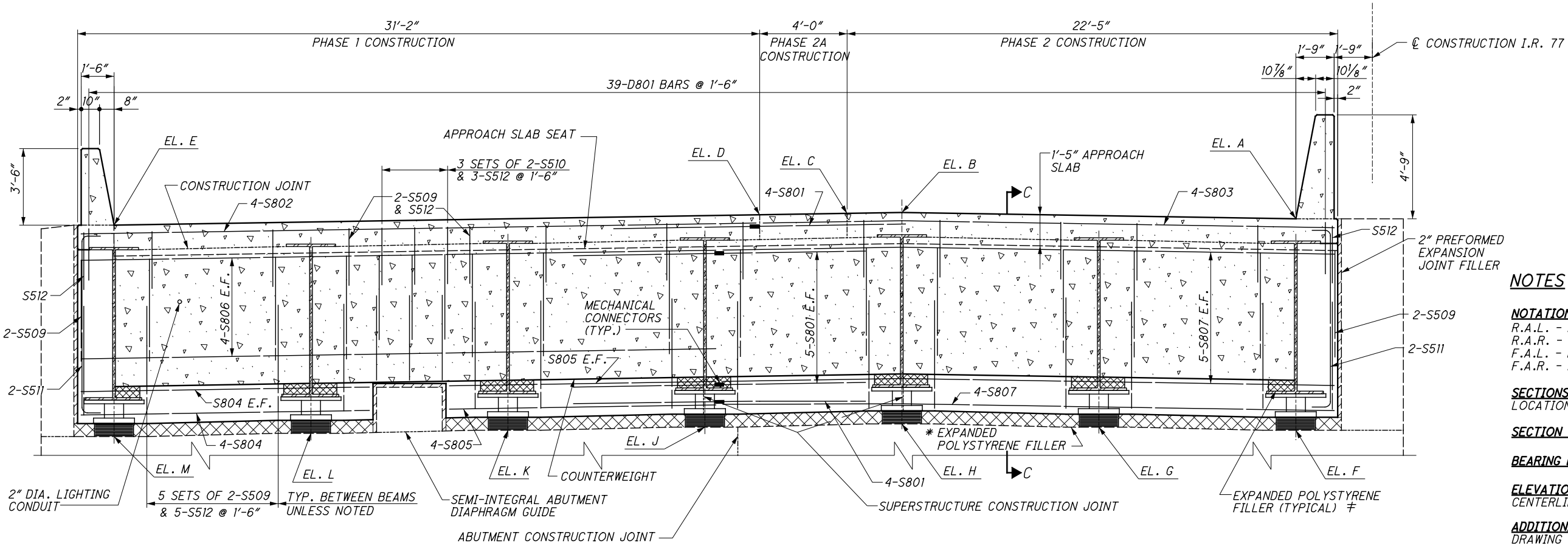
|          |          |                       |             |
|----------|----------|-----------------------|-------------|
| DESIGNED | ALP      | CHECKED               | BLN         |
| DRAWN    | JLS      | REVISED               |             |
| REVIEWED | DAP      | STRUCTURE FILE NUMBER | 1806688 (L) |
| DATE     | 11/15/16 |                       | 1806718 (R) |

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| TABLE OF ELEVATIONS |        |        |        |        |
|---------------------|--------|--------|--------|--------|
| EL.                 | R.A.L. | R.A.R. | F.A.L. | F.A.R. |
| A                   | 692.33 | 688.98 | 695.58 | 696.73 |
| B                   | 692.62 | 689.27 | 695.86 | 697.02 |
| C                   | 692.58 | 689.23 | 695.82 | 696.98 |
| D                   | 692.52 | 689.17 | 695.76 | 696.91 |
| E                   | 692.05 | 688.69 | 695.29 | 696.44 |
| F                   | 682.68 | 679.33 | 685.92 | 687.07 |
| G                   | 682.82 | 679.47 | 686.06 | 687.22 |
| H                   | 682.97 | 679.61 | 686.21 | 687.36 |
| J                   | 682.82 | 679.47 | 686.06 | 687.22 |
| K                   | 682.68 | 679.33 | 685.92 | 687.07 |
| L                   | 682.53 | 679.18 | 685.78 | 686.93 |
| M                   | 682.39 | 679.04 | 685.63 | 686.78 |



\* INCLUDED WITH BEARING FOR PAYMENT.  
 † INCLUDED WITH COUNTERWEIGHT CONCRETE FOR PAYMENT.



**NOTES**

**NOTATION:**  
 R.A.L. - REAR ABUTMENT LEFT  
 R.A.R. - REAR ABUTMENT RIGHT  
 F.A.L. - FORWARD ABUTMENT LEFT  
 F.A.R. - FORWARD ABUTMENT RIGHT

**SECTIONS X-X AND Y-Y:** FOR LOCATIONS SEE SHEET 62/84.

**SECTION C-C:** SEE SHEET 63/84.

**BEARING DETAILS:** SEE SHEET 59/84.

**ELEVATIONS** SHOWN ARE AT THE CENTERLINE OF BEARING.

**ADDITIONAL DETAILS:** SEE STANDARD DRAWING SICD-1-96.

**SEMI-INTEGRAL ABUTMENT DIAPHRAGM GUIDE:** SEE STANDARD DRAWING SICD-2-14.

**ADDITIONAL NOTES:** SEE SHEET 62/84.

**COUNTERWEIGHT DETAILS - 2**  
 BRIDGE NO. CUY-77-1433 L & R  
 OVER I.R. 490 AND RAMPS  
 RICHLAND ENGINEERING LIMITED  
 29 NORTH PARK STREET  
 MANSFIELD, OHIO 44902  
 DATE 11/15/16  
 REVIEWED DAP  
 STRUCTURE FILE NUMBER 1806688 (L)  
 1806718 (R)  
 DESIGNED ALP  
 CHECKED BLN  
**CUY-77-14.35**  
 PID No. 13567  
 65/84  
 346  
 365

## GALVANIZED STAY-IN-PLACE FORMS

GALVANIZED STEEL, STAY-IN-PLACE (SIP) DECK FORMS MAY BE USED BY THE CONTRACTOR IN PLACE OF REMOVABLE FORMS.

### DESCRIPTION:

IN ADDITION TO THE WORK REQUIREMENTS OF 511, EITHER PROVIDE TRADITIONAL BRIDGE DECK FORMS CONFORMING TO CMS 508 OR DESIGN, BUILD, PROVIDE AND CONSTRUCT GALVANIZED STEEL STAY-IN-PLACE (SIP) FABRICATED METAL FORMS CONFORMING TO CMS 508 AND THESE ADDITIONAL REQUIREMENTS. THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR THE STEEL DECK FORMS.

DESIGN, BUILD, CONSTRUCT AND REMOVE TIMBER FORMS AT OVERHANGS, BAY 4 (BETWEEN GIRDERS 4 AND 5), WITHIN EIGHT FEET OF ALL EXPANSION JOINTS AND FOUR FEET OF ALL THROUGH DECK DRAINAGE SYSTEMS.

### DESIGN:

SUBMIT CONSTRUCTION PLANS ACCORDING TO 501.05.B.3. DESIGN SIP FORMS TO SUPPORT THE SELF WEIGHT OF SIP FORMS, REINFORCEMENT, WET CONCRETE FOR THE DECK, ANY CONSTRUCTION EQUIPMENT LOADS, AND AT LEAST A 50 POUNDS PER SQUARE FOOT (PSF) LOAD FOR CONSTRUCTION LIVE LOADS.

THE SIP FORMS SHALL MEET THE DEFLECTION REQUIREMENTS OF 508.02. THE PERMISSIBLE FORM CAMBER SHALL BE BASED ON THE ACTUAL DEAD LOAD CONDITION. CAMBER SHALL NOT BE USED TO COMPENSATE FOR DEFLECTION IN EXCESS OF THE FOREGOING LIMITS.

THE USE OF STAY-IN-PLACE DECK FORMS DEVIATING MORE THAN 3 PSF FROM THE 21 PSF ASSUMED IN THE DEFLECTION CALCULATIONS, OR A DECK PLACEMENT SEQUENCE DIFFERING FROM THE SEQUENCE DESCRIBED IN THESE PLANS WILL REQUIRE REVISED CAMBER AND SCREED ELEVATIONS PREPARED BY AN OHIO REGISTERED PROFESSIONAL ENGINEER.

INCLUDE THE FOLLOWING INFORMATION IN THE CONSTRUCTION PLANS:

- A. DESIGN CALCULATIONS.
- B. PHYSICAL PROPERTIES OF THE SIP FORMS (GAGE, SECTION MODULUS, GRADE OF STEEL, WEIGHT, DEPTH AND PITCH)
- C. CROSS SECTION VIEW AND DIMENSIONS OF: SIP FORMS, SUPPORT ANGLES, CHANNEL CLOSURES, SAFETY STOPS, CLIPS, PLATES AND HARDWARE.
- D. INCLUDE AN OVERALL LAYOUT PLAN WITH:
  1. WORKING POINTS OR CONTROL ELEVATIONS NECESSARY TO SET SUPPORT ANGLES.
  2. TYPICAL AND SPECIFIC CROSS SECTIONS OR DETAILS: SUPPORT CONNECTIONS TO THE STRUCTURAL MEMBERS, SIP FORM CONNECTIONS TO SUPPORTS, FORM LAPS AND CLOSURE SECTIONS.
  3. MINIMUM BEARING LENGTHS (EDGE DISTANCES) OF SIP FORMS TO THE SUPPORT ANGLES.
  4. WELDING DETAILS: SIZE, LENGTH, LOCATIONS, ELECTRODES AND PROCESS.
- E. WORKER SAFETY RESTRICTIONS.
- F. INSTALLATION INSPECTION CHECK LISTS.

### MATERIALS:

SUBMIT 501.06 TEST REPORTS AND WRITTEN ACCEPTANCE LETTERS TO THE ENGINEER. MATERIALS INSPECTION AND ACCEPTANCE IS PERFORMED BY THE ENGINEER AT THE PROJECT SITE. FURNISH FORMS, SUPPORT MATERIALS AND HARDWARE CONFORMING THE FOLLOWING:

- A. SIP FORM AND SUPPORT MATERIAL, ASTM A653 HAVING A COATING DESIGNATION OF G235, AND CONFORMING TO THE MECHANICAL PROPERTIES THE DESIGN REQUIRES.
- B. PROVIDE DECK FORMS WITH A 2 INCH MINIMUM FORM DEPTH.
- C. PROVIDE MINIMUM MATERIAL THICKNESS AS FOLLOWS: SIP FORMS (20 GAGE), SUPPORT ANGLES (12 GAGE) AND SUPPORT BARS (12 GAGE).
- D. SUPPLY DECK, SELF DRILLING FASTENERS WITH CADMIUM PLATING PER ASTM B766 WITH MINIMUM THICKNESS OF 5 TEN-THOUSANDTHS (0.0005 INCH). THE HEADS OF THESE FASTENERS SHALL BE A HIGHLY VISIBLE COLOR, RED OR OTHER, TO AID INSPECTION.

### HANDLING AND STORAGE OF MATERIALS:

FABRICATED METAL SIP FORMING MATERIALS SHALL NOT BE UNLOADED OR HANDLED IN SUCH A MANNER AS TO DAMAGE OR ALTER THE CONFIGURATION OF THE FORMS. DAMAGED MATERIALS SHALL BE REPLACED AT NO ADDITIONAL COST TO THE STATE. ALL SIP FORM MATERIALS WHICH ARE STORED AT THE PROJECT SITE SHALL BE STORED AT LEAST 4 INCHES ABOVE THE GROUND ON PLATFORMS, SKIDS OR OTHER SUITABLE SUPPORTS AND SHALL BE PROTECTED AGAINST CORROSION AND DAMAGE FROM ANY SOURCE.

### WELDING:

DO NOT WELD SIP FORMS OR THEIR SUPPORTS TO THE STEEL BRIDGE MEMBERS. PERFORM WELDING PER 513.21 EXCEPT THAT 1/8 INCH FILLET WELDS WILL BE PERMITTED.

### INSTALLATION LIMITATIONS:

- A. FIELD CUT SIP FORMS USING MECHANICAL CUTTING METHODS. THERMAL CUTTING IS NOT PERMITTED.
- B. PLACE FORMS ON FORM SUPPORTS. DO NOT INSTALL SIP FORMS DIRECTLY TO THE BRIDGE'S STRUCTURAL MEMBERS.
- C. SET THE HEIGHT OF THE FORM SUPPORTS TO DEVELOP THE SPECIFIED DECK THICKNESS AND PLAN PROFILE.
- D. PLACE SIP FORMS ON FORM SUPPORTS TO ACHIEVE MINIMUM BEARING LENGTH PER THE MANUFACTURER'S DESIGN.
- E. CONNECT SIP FORMS TO FORM SUPPORTS BEFORE USING THE SIP FORMS AS A WORKING SURFACE AND BEFORE THE END OF EACH WORK SHIFT.
- F. PROVIDE SAFETY STOPS TO ELIMINATE HAZARDS FROM SUDDEN UPLIFT AND LATERAL MOVEMENT.
- G. COATINGS DAMAGED BY MECHANICAL CUTTING OR FIELD WELDING, WHICH WILL BE COVERED WITH CONCRETE, NEED NOT BE REPAIRED UNLESS SPECIFIED BY THE SIP FORM MANUFACTURER.

H. ANY SIP FORM METAL, WHERE THE GALVANIZED COATING HAS BEEN DAMAGED, THAT WILL BE EXPOSED AFTER THE CONCRETE DECK HAS BEEN PLACED SHALL BE THOROUGHLY CLEANED, WIRE BRUSHED, THEN PAINTED WITH TWO COATS OF ZINC OXIDE DUST PRIMER, FEDERAL SPECIFICATION TT-P-641D, TYPE II, NO COLOR ADDED, TO THE SATISFACTION OF THE ENGINEER. MINOR HEAT DISCOLORATION IN AREAS OF WELDS NEED NOT BE TOUCHED UP.

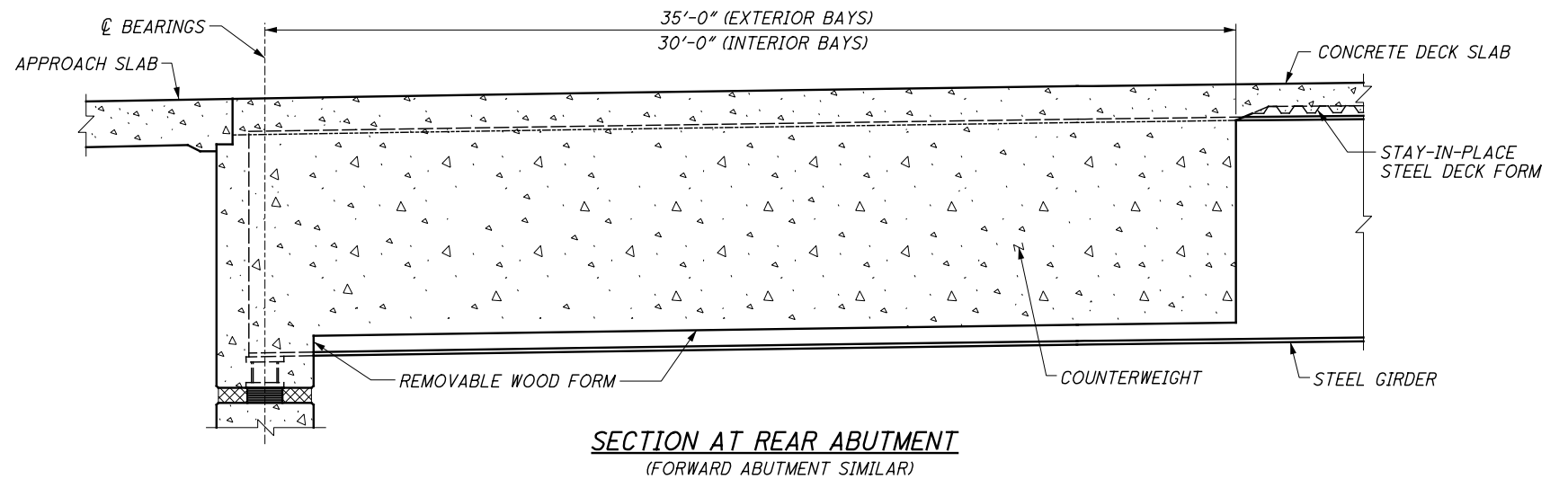
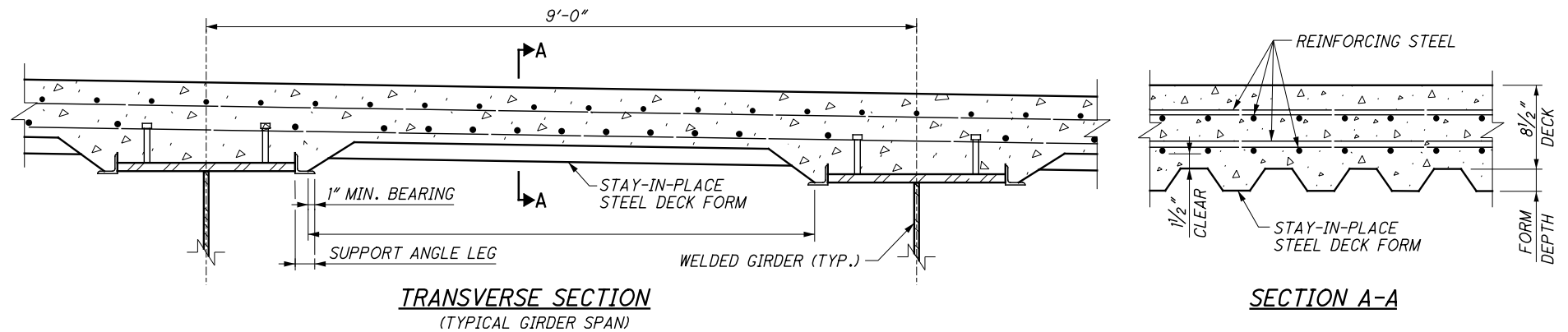
I. REMOVABLE FORMS SHALL BE USED WITHIN 5'-0" OF ALL SCUPPERS FOR FUTURE DECK INSPECTION PURPOSES.

### INSPECTION:

THE ENGINEER WILL CHECK TO ENSURE SIP MATERIALS MEET DESIGN REQUIREMENTS AND EVALUATE INSTALLATION BASED ON THE CONSTRUCTION PLANS.

### BASIS OF PAYMENT:

NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING AND INSTALLING SIP FORMS, ADDITIONAL CONCRETE, STRUCTURAL STEEL, INCIDENTALS, FURNISHING ALL REQUIRED CALCULATIONS AND DRAWINGS, AND ANY TIME DELAYS ASSOCIATED WITH THE USE OF SIP FORMS. THE COST THEREOF SHALL BE INCLUDED IN THE COST OF ITEM 511 - CLASS QC2 CONCRETE, WITH QC/QA BRIDGE DECK, AS PER PLAN. NO EXTENSION OF TIME WILL BE ALLOWED DUE TO ANY TIME DELAYS DUE TO THE USE OF SIP FORMS.

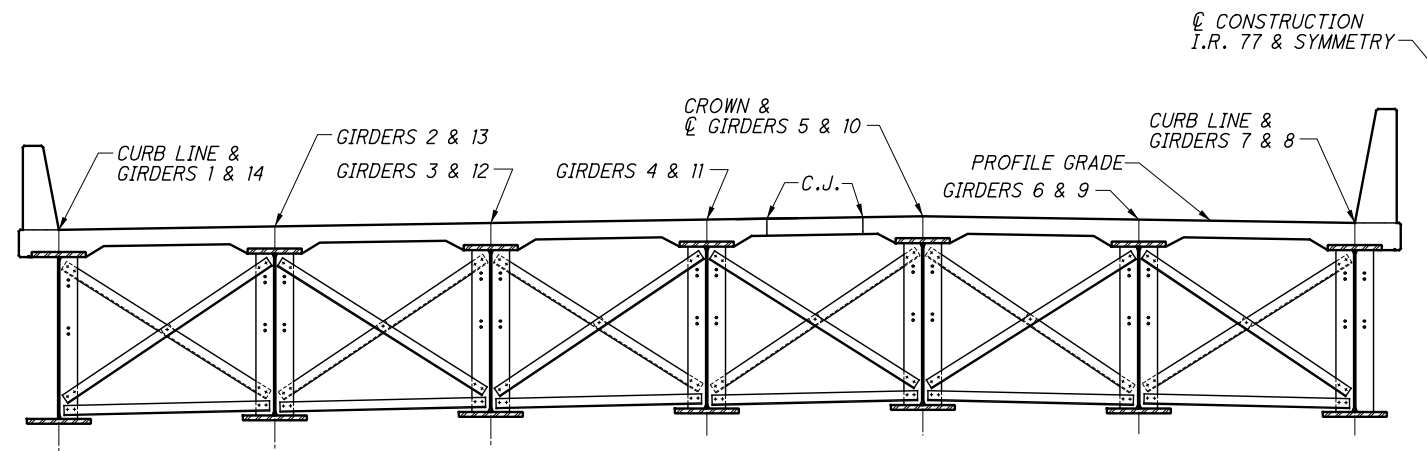


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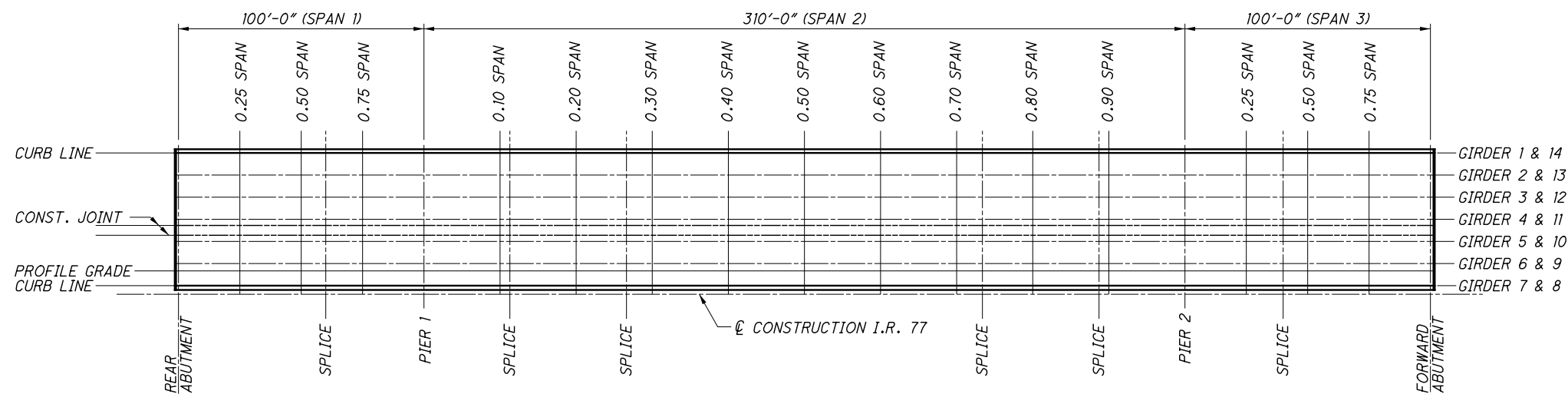
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|--------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------|-------------------------------|
| <b>STAY-IN-PLACE DECK FORMS</b><br>BRIDGE NO. CUY-77-1433 L & R<br>OVER I.R. 490 AND RAMPS | RICHLAND ENGINEERING LIMITED<br>29 NORTH PARK STREET<br>MANSFIELD, OHIO 44902<br> | DATE: 11/15/16<br>REVIEWED: DAP<br>STRUCTURE FILE NUMBER: 1806688 (L)<br>1806718 (R) | DRAWN: TWH<br>CHECKED: BLN<br>DESIGNED: ALP | CUY-77-14.35<br>PID No. 13567 |
| 66 / 84                                                                                    |                                                                                   | 347<br>365                                                                           |                                             |                               |



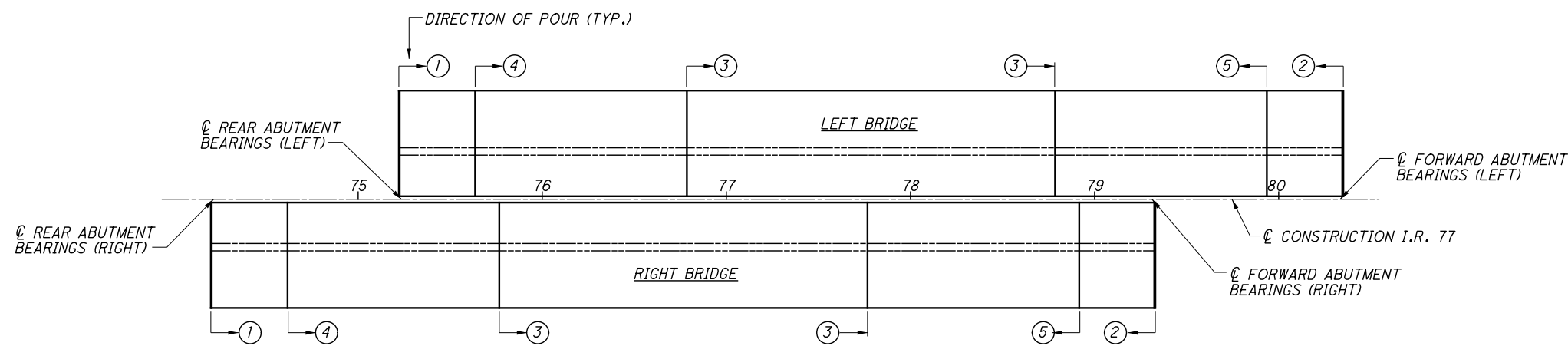
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**SCREED/DECK ELEVATION POINTS**



**SPAN POINT PLAN**  
(LEFT BRIDGE SHOWN)  
(RIGHT BRIDGE SIMILAR)



**BRIDGE DECK PLACEMENT SEQUENCE**

**NOTES:**

**STRUCTURAL STEEL UPLIFT AT ABUTMENT BEARINGS:**  
THERE WILL BE APPROXIMATELY 13K OF UPLIFT AT EACH ABUTMENT BEARING AFTER THE ERECTION OF THE STRUCTURAL STEEL. THE CONTRACTOR SHALL ACCOUNT FOR THIS BEFORE THE CENTER SPAN IS ERECTED BY INSTALLING TIE-DOWNS, WEIGHTS OR OTHER MEANS TO RESIST UPLIFT TO THE ABUTMENT BEARINGS.

**DECK ELEVATION TABLE - LEFT BRIDGE:** SEE SHEET [68/84].

**DECK ELEVATION TABLE - RIGHT BRIDGE:** SEE SHEET [69/84].

**DECK ELEVATION LOCATIONS & DECK PLACEMENT SEQUENCE**

BRIDGE NO. CUY-77-1433 L & R  
OVER I.R. 490 AND RAMPS

**CUY - 77 - 14.35**  
PID No. 13567

**DECK ELEVATIONS - LEFT BRIDGE**

|                      | STATION             | € BRGS. REAR ABUT. | SPAN 1    |           |                |           | € PIER 1 | SPAN 2    |                 |           |                 |           |           |           |           |           |                |
|----------------------|---------------------|--------------------|-----------|-----------|----------------|-----------|----------|-----------|-----------------|-----------|-----------------|-----------|-----------|-----------|-----------|-----------|----------------|
|                      |                     |                    | 0.25 SPAN | 0.50 SPAN | SPLICE (-.590) | 0.75 SPAN |          | 0.10 SPAN | SPLICE (-.1129) | 0.20 SPAN | SPLICE (-.2661) | 0.30 SPAN | 0.40 SPAN | 0.50 SPAN | 0.60 SPAN | 0.70 SPAN | SPLICE (-.734) |
|                      |                     | 75+23.56           | 75+48.56  | 75+73.56  | 75+82.56       | 75+98.56  | 76+23.56 | 74+54.56  | 76+58.56        | 76+85.56  | 77+06.06        | 77+16.56  | 77+47.56  | 77+78.56  | 78+09.56  | 78+40.56  | 78+51.06       |
| CURB LINE & GIRDER 1 | FINAL DECK ELEV.    | 692.05             | 692.73    | 693.36    | 693.57         | 693.93    | 694.46   | 695.03    | 695.09          | 695.51    | 695.79          | 695.92    | 696.24    | 696.48    | 696.64    | 696.71    | 696.71         |
|                      | SCREED ELEV.        | 692.05             | 692.68    | 693.27    | 693.48         | 693.85    | 694.46   | 695.24    | 695.34          | 696.00    | 696.45          | 696.66    | 697.15    | 697.45    | 697.55    | 697.45    | 697.37         |
|                      | TOP OF HAUNCH ELEV. | 691.34             | 691.97    | 692.56    | 692.77         | 693.15    | 693.75   | 694.53    | 694.63          | 695.29    | 695.74          | 695.95    | 696.45    | 696.74    | 696.84    | 696.74    | 696.66         |
| GIRDER 2             | FINAL DECK ELEV.    | 692.19             | 692.87    | 693.50    | 693.72         | 694.08    | 694.60   | 695.17    | 695.24          | 695.66    | 695.94          | 696.06    | 696.39    | 696.62    | 696.78    | 696.85    | 696.86         |
|                      | TOP OF HAUNCH ELEV. | 691.48             | 692.12    | 692.71    | 692.92         | 693.29    | 693.89   | 694.68    | 694.78          | 695.45    | 695.91          | 696.12    | 696.62    | 696.92    | 697.01    | 696.91    | 696.83         |
| GIRDER 3             | FINAL DECK ELEV.    | 692.33             | 693.02    | 693.65    | 693.86         | 694.22    | 694.74   | 695.31    | 695.38          | 695.80    | 696.08          | 696.21    | 696.53    | 696.77    | 696.92    | 697.00    | 697.00         |
|                      | TOP OF HAUNCH ELEV. | 691.63             | 692.27    | 692.86    | 693.07         | 693.43    | 694.04   | 694.83    | 694.93          | 695.61    | 696.07          | 696.28    | 696.79    | 697.09    | 697.18    | 697.07    | 696.99         |
| GIRDER 4             | FINAL DECK ELEV.    | 692.48             | 693.16    | 693.79    | 694.00         | 694.37    | 694.89   | 695.46    | 695.53          | 695.95    | 696.22          | 696.35    | 696.67    | 696.91    | 697.07    | 697.14    | 697.15         |
|                      | TOP OF HAUNCH ELEV. | 691.77             | 692.42    | 693.01    | 693.21         | 693.58    | 694.18   | 694.97    | 695.08          | 695.76    | 696.23          | 696.45    | 696.96    | 697.26    | 697.35    | 697.23    | 697.15         |
| C.J.                 | FINAL DECK ELEV.    | 692.52             | 693.20    | 693.83    | 694.04         | 694.41    | 694.93   | 695.50    | 695.57          | 695.99    | 696.26          | 696.39    | 696.71    | 696.95    | 697.11    | 697.18    | 697.19         |
|                      | SCREED ELEV.        | 692.52             | 693.16    | 693.75    | 693.96         | 694.33    | 694.93   | 695.72    | 695.83          | 696.51    | 696.98          | 697.19    | 697.70    | 698.01    | 698.10    | 697.98    | 697.90         |
| C.J.                 | FINAL DECK ELEV.    | 692.58             | 693.27    | 693.90    | 694.11         | 694.47    | 694.99   | 695.56    | 695.63          | 696.05    | 696.33          | 696.46    | 696.78    | 697.02    | 697.17    | 697.24    | 697.25         |
|                      | SCREED ELEV.        | 692.58             | 693.23    | 693.82    | 694.02         | 694.39    | 694.99   | 695.79    | 695.89          | 696.57    | 697.04          | 697.26    | 697.77    | 698.07    | 698.16    | 698.05    | 697.97         |
| CROWN & GIRDER 5     | FINAL DECK ELEV.    | 692.62             | 693.31    | 693.94    | 694.15         | 694.51    | 695.03   | 695.60    | 695.67          | 696.09    | 696.37          | 696.50    | 696.82    | 697.06    | 697.21    | 697.28    | 697.29         |
|                      | SCREED ELEV.        | 692.62             | 693.27    | 693.86    | 694.06         | 694.43    | 695.03   | 695.63    | 695.73          | 696.15    | 696.43          | 696.56    | 696.88    | 697.12    | 697.27    | 697.34    | 697.35         |
|                      | TOP OF HAUNCH ELEV. | 691.91             | 692.56    | 693.15    | 693.36         | 693.72    | 694.32   | 695.12    | 695.22          | 695.90    | 696.38          | 696.59    | 697.10    | 697.40    | 697.49    | 697.38    | 697.30         |
| GIRDER 6             | FINAL DECK ELEV.    | 692.48             | 693.16    | 693.79    | 694.00         | 694.37    | 694.89   | 695.46    | 695.53          | 695.95    | 696.22          | 696.35    | 696.67    | 696.91    | 697.07    | 697.14    | 697.15         |
|                      | TOP OF HAUNCH ELEV. | 691.77             | 692.41    | 693.00    | 693.21         | 693.58    | 694.18   | 694.97    | 695.07          | 695.74    | 696.20          | 696.41    | 696.90    | 697.20    | 697.30    | 697.19    | 697.12         |
| PROFILE GRADE        | FINAL DECK ELEV.    | 692.43             | 693.11    | 693.74    | 693.96         | 694.32    | 694.84   | 695.41    | 695.48          | 695.90    | 696.18          | 696.30    | 696.63    | 696.86    | 697.02    | 697.09    | 697.10         |
|                      | SCREED ELEV.        | 692.43             | 693.07    | 693.66    | 693.87         | 694.24    | 694.84   | 695.41    | 695.48          | 695.90    | 696.18          | 696.30    | 696.63    | 696.86    | 697.02    | 697.09    | 697.10         |
| CURB LINE & GIRDER 7 | FINAL DECK ELEV.    | 692.33             | 693.02    | 693.65    | 693.86         | 694.22    | 694.74   | 695.31    | 695.38          | 695.80    | 696.08          | 696.21    | 696.53    | 696.77    | 696.92    | 697.00    | 697.00         |
|                      | SCREED ELEV.        | 692.33             | 692.97    | 693.56    | 693.77         | 694.14    | 694.74   | 695.31    | 695.38          | 695.80    | 696.08          | 696.21    | 696.53    | 696.77    | 696.92    | 697.00    | 697.00         |
|                      | TOP OF HAUNCH ELEV. | 691.63             | 692.26    | 692.85    | 693.06         | 693.43    | 694.04   | 694.82    | 694.92          | 695.58    | 696.03          | 696.24    | 696.73    | 697.03    | 697.13    | 697.03    | 696.95         |

**DECK ELEVATIONS - LEFT BRIDGE**

|                      | STATION             | SPAN 2    |                 |           | € PIER 2 | SPAN 3    |                |           |           | € BRG. FWD. ABUT. |
|----------------------|---------------------|-----------|-----------------|-----------|----------|-----------|----------------|-----------|-----------|-------------------|
|                      |                     | 0.80 SPAN | SPLICE (-.8871) | 0.90 SPAN |          | 0.25 SPAN | SPLICE (-.410) | 0.50 SPAN | 0.75 SPAN |                   |
|                      |                     | 78+71.56  | 78+98.56        | 79+02.56  | 79+33.56 | 79+58.56  | 79+74.56       | 79+83.56  | 80+08.56  | 80+33.56          |
| CURB LINE & GIRDER 1 | FINAL DECK ELEV.    | 696.70    | 696.62          | 696.60    | 696.43   | 696.22    | 696.06         | 695.96    | 695.65    | 695.29            |
|                      | SCREED ELEV.        | 697.18    | 696.86          | 696.81    | 696.43   | 696.14    | 695.97         | 695.88    | 695.60    | 695.29            |
|                      | TOP OF HAUNCH ELEV. | 696.47    | 696.16          | 696.11    | 695.72   | 695.43    | 695.26         | 695.17    | 694.90    | 694.58            |
| GIRDER 2             | FINAL DECK ELEV.    | 696.84    | 696.76          | 696.75    | 696.57   | 696.37    | 696.21         | 696.11    | 695.80    | 695.43            |
|                      | TOP OF HAUNCH ELEV. | 696.63    | 696.31          | 696.25    | 695.86   | 695.58    | 695.41         | 695.32    | 695.04    | 694.72            |
| GIRDER 3             | FINAL DECK ELEV.    | 696.98    | 696.91          | 696.89    | 696.71   | 696.51    | 696.35         | 696.25    | 695.94    | 695.58            |
|                      | TOP OF HAUNCH ELEV. | 696.79    | 696.46          | 696.40    | 696.01   | 695.72    | 695.56         | 695.46    | 695.19    | 694.87            |
| GIRDER 4             | FINAL DECK ELEV.    | 697.13    | 697.05          | 697.03    | 696.86   | 696.65    | 696.50         | 696.40    | 696.09    | 695.72            |
|                      | TOP OF HAUNCH ELEV. | 696.94    | 696.60          | 696.55    | 696.15   | 695.87    | 695.70         | 695.61    | 695.34    | 695.01            |
| C.J.                 | FINAL DECK ELEV.    | 697.17    | 697.09          | 697.07    | 696.90   | 696.69    | 696.54         | 696.44    | 696.13    | 695.76            |
|                      | SCREED ELEV.        | 697.69    | 697.35          | 697.30    | 696.90   | 696.62    | 696.45         | 696.36    | 696.09    | 695.76            |
| C.J.                 | FINAL DECK ELEV.    | 697.23    | 697.16          | 697.14    | 696.96   | 696.76    | 696.60         | 696.50    | 696.19    | 695.82            |
|                      | SCREED ELEV.        | 697.76    | 697.42          | 697.36    | 696.96   | 696.68    | 696.52         | 696.42    | 696.15    | 695.82            |
| CROWN & GIRDER 5     | FINAL DECK ELEV.    | 697.27    | 697.20          | 697.18    | 697.00   | 696.80    | 696.64         | 696.54    | 696.23    | 695.86            |
|                      | SCREED ELEV.        | 697.80    | 697.46          | 697.40    | 697.00   | 696.72    | 696.56         | 696.46    | 696.19    | 695.86            |
|                      | TOP OF HAUNCH ELEV. | 697.09    | 696.75          | 696.69    | 696.29   | 696.01    | 695.85         | 695.75    | 695.48    | 695.16            |
| GIRDER 6             | FINAL DECK ELEV.    | 697.13    | 697.05          | 697.03    | 696.86   | 696.65    | 696.50         | 696.40    | 696.09    | 695.72            |
|                      | TOP OF HAUNCH ELEV. | 696.92    | 696.59          | 696.54    | 696.15   | 695.87    | 695.70         | 695.60    | 695.33    | 695.01            |
| PROFILE GRADE        | FINAL DECK ELEV.    | 697.08    | 697.00          | 696.99    | 696.81   | 696.61    | 696.45         | 696.35    | 696.04    | 695.67            |
|                      | SCREED ELEV.        | 697.58    | 697.25          | 697.20    | 696.81   | 696.53    | 696.36         | 696.26    | 695.99    | 695.67            |
| CURB LINE & GIRDER 7 | FINAL DECK ELEV.    | 696.98    | 696.91          | 696.89    | 696.71   | 696.51    | 696.35         | 696.25    | 695.94    | 695.58            |
|                      | SCREED ELEV.        | 697.47    | 697.15          | 697.10    | 696.71   | 696.43    | 696.26         | 696.17    | 695.89    | 695.58            |
|                      | TOP OF HAUNCH ELEV. | 696.76    | 696.44          | 696.39    | 696.01   | 695.72    | 695.55         | 695.46    | 695.18    | 694.87            |

**NOTES:**

**NOTATION:** ELEV. - ELEVATION  
 BRGS. - BEARINGS  
 ABUT. - ABUTMENT  
 C.J. - CONSTRUCTION JOINT

**SCREED ELEVATIONS** SHOWN REPRESENT THE THEORETICAL DECK SURFACE LOCATION PRIOR TO DEFLECTIONS CAUSED BY DECK PLACEMENT AND OTHER ANTICIPATED DEAD LOADS. AN ADDITIONAL CONCRETE DEAD LOAD OF 21 PSF FOR THE STAY-IN-PLACE FORMS IS INCLUDED IN THE ANTICIPATED DEAD LOADS.

**TOP OF HAUNCH ELEVATIONS** SHOWN REPRESENT THE THEORETICAL LOCATION OF THE BOTTOM OF THE DECK ABOVE THE GIRDER HAUNCH PRIOR TO DEFLECTIONS CAUSED BY DECK PLACEMENT AND OTHER ANTICIPATED DEAD LOADS. AN ADDITIONAL CONCRETE DEAD LOAD OF 21 PSF FOR THE STAY-IN PLACE FORMS IS INCLUDED IN THE ANTICIPATED DEAD LOADS.

**FINAL DECK SURFACE ELEVATIONS** SHOWN REPRESENT THE DECK SURFACE LOCATION AFTER ALL ANTICIPATED DEAD LOAD DEFLECTIONS HAVE OCCURRED.

**DECK PLACEMENT LEFT STRUCTURE:** THE DIAPHRAGM AND COUNTERWEIGHT CONCRETE FOR EACH PHASE SHALL BE PLACED AT LEAST 48 HOURS BEFORE THE PLACEMENT OF ANY DECK CONCRETE.

THE FIRST POUR SHALL BE BETWEEN THE REAR ABUTMENT AND STATION 75+63.56. THE SECOND POUR SHALL BE BETWEEN STATION 79+93.56 AND THE FORWARD ABUTMENT. THE THIRD POUR SHALL BE BETWEEN STATION 76+78.56 AND STATION 78+78.56. THE FOURTH POUR SHALL BE BETWEEN STATION 75+63.56 AND STATION 76+78.56. THE FIFTH POUR SHALL BE BETWEEN STATION 78+78.56 AND STATION 79+93.56. CALCULATIONS HAVE ASSUMED THAT EACH SEGMENT MEETS THE REQUIREMENTS OF 511.14 CURING AND LOADING BEFORE THE NEXT SEGMENT IS PLACED. THE TRANSVERSE CONSTRUCTION JOINTS AT STATIONS 75+63.56, 76+78.56, 78+78.56 AND 79+93.56 SHALL BE FORMED IN ACCORDANCE WITH CMS 511.12. THE PROPOSED POUR SEQUENCE MAY DIFFER FROM THE SEQUENCE DESCRIBED ABOVE. REGARDLESS OF THE PLACEMENT METHOD, THE CONTRACTOR SHALL MEET THE CURING AND LOADING REQUIREMENTS ABOVE AND SHALL SUBMIT HIS PLACEMENT PROCEDURE FOR APPROVAL NOT LESS THAN 21 DAYS BEFORE THE PLANNED PLACEMENT.

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Structures\CUY077\_1435L\Sheets\077\_1435LSD0002.dwg 12/14/2016 3:48:18 PM DonHelman

RICHLAND ENGINEERING LIMITED  
 29 NORTH PARK STREET  
 MANSFIELD, OHIO 44902

DATE 11/15/16  
 REVIEWED DAP  
 STRUCTURE FILE NUMBER 1806688 (L)

DESIGNED BLN  
 CHECKED DLR  
 DRAWN JLS  
 REVISED

**DECK ELEVATION TABLES - 1**  
 BRIDGE NO. CUY-77-1433 L  
 OVER I.R. 490 AND RAMPS

CUY - 77 - 14 - 35  
 PID No. 13567

DECK ELEVATIONS - RIGHT BRIDGE

| STATION               | € BRGS. REAR ABUT.  | SPAN 1    |           |                |           |           | € PIER 1 | SPAN 2          |           |                 |           |           |           |           |           |                |        |
|-----------------------|---------------------|-----------|-----------|----------------|-----------|-----------|----------|-----------------|-----------|-----------------|-----------|-----------|-----------|-----------|-----------|----------------|--------|
|                       |                     | 0.25 SPAN | 0.50 SPAN | SPLICE (-.590) | 0.75 SPAN | 0.10 SPAN |          | SPLICE (-.1129) | 0.20 SPAN | SPLICE (-.2661) | 0.30 SPAN | 0.40 SPAN | 0.50 SPAN | 0.60 SPAN | 0.70 SPAN | SPLICE (-.734) |        |
| 74+21.44              | 74+46.44            | 74+71.44  | 74+80.44  | 74+96.44       | 75+21.44  | 75+52.44  | 75+56.44 | 75+83.44        | 76+03.94  | 76+14.44        | 76+45.44  | 76+76.44  | 77+07.44  | 77+38.44  | 77+48.94  |                |        |
| CURB LINE & GIRDER 8  | FINAL DECK ELEV.    | 688.98    | 689.89    | 690.74         | 691.03    | 691.53    | 692.27   | 693.12          | 693.22    | 693.88          | 694.34    | 694.56    | 695.16    | 695.67    | 696.10    | 696.44         | 696.54 |
|                       | SCREED ELEV.        | 688.98    | 689.84    | 690.65         | 690.94    | 691.45    | 692.27   | 693.33          | 693.47    | 694.37          | 694.99    | 695.30    | 696.07    | 696.64    | 697.01    | 697.19         | 697.20 |
|                       | TOP OF HAUNCH ELEV. | 688.27    | 689.13    | 689.94         | 690.23    | 690.74    | 691.57   | 692.62          | 692.76    | 693.66          | 694.29    | 694.59    | 695.36    | 695.93    | 696.30    | 696.48         | 696.49 |
| PROFILE GRADE         | FINAL DECK ELEV.    | 689.08    | 689.98    | 690.83         | 691.13    | 691.63    | 692.37   | 693.22          | 693.32    | 693.98          | 694.44    | 694.66    | 695.25    | 695.76    | 696.19    | 696.54         | 696.64 |
|                       | SCREED ELEV.        | 689.08    | 689.93    | 690.75         | 691.04    | 691.55    | 692.37   | 693.43          | 693.57    | 694.47          | 695.11    | 695.41    | 696.18    | 696.76    | 697.12    | 697.30         | 697.31 |
| GIRDER 9              | FINAL DECK ELEV.    | 689.13    | 690.03    | 690.88         | 691.17    | 691.68    | 692.42   | 693.26          | 693.37    | 694.03          | 694.48    | 694.70    | 695.30    | 695.81    | 696.24    | 696.59         | 696.69 |
|                       | TOP OF HAUNCH ELEV. | 688.42    | 689.27    | 690.09         | 690.38    | 690.89    | 691.71   | 692.77          | 692.91    | 693.82          | 694.46    | 694.76    | 695.53    | 696.10    | 696.47    | 696.64         | 696.66 |
| CROWN & GIRDER 10     | FINAL DECK ELEV.    | 689.27    | 690.17    | 691.02         | 691.32    | 691.82    | 692.56   | 693.41          | 693.51    | 694.17          | 694.63    | 694.85    | 695.44    | 695.96    | 696.38    | 696.73         | 696.83 |
|                       | SCREED ELEV.        | 689.27    | 690.14    | 690.95         | 691.23    | 691.74    | 692.56   | 693.63          | 693.77    | 694.69          | 695.34    | 695.65    | 696.43    | 697.01    | 697.38    | 697.53         | 697.55 |
|                       | TOP OF HAUNCH ELEV. | 688.56    | 689.43    | 690.24         | 690.52    | 691.03    | 691.85   | 692.92          | 693.06    | 693.98          | 694.63    | 694.94    | 695.73    | 696.30    | 696.67    | 696.83         | 696.84 |
| C.J.                  | FINAL DECK ELEV.    | 689.23    | 690.13    | 690.98         | 691.28    | 691.78    | 692.52   | 693.37          | 693.47    | 694.13          | 694.59    | 694.81    | 695.40    | 695.92    | 696.34    | 696.69         | 696.79 |
|                       | SCREED ELEV.        | 689.23    | 690.10    | 690.91         | 691.19    | 691.70    | 692.52   | 693.59          | 693.73    | 694.65          | 695.30    | 695.61    | 696.39    | 696.97    | 697.34    | 697.49         | 697.51 |
| C.J.                  | FINAL DECK ELEV.    | 689.17    | 690.07    | 690.92         | 691.21    | 691.72    | 692.46   | 693.30          | 693.41    | 694.07          | 694.52    | 694.74    | 695.34    | 695.85    | 696.28    | 696.63         | 696.73 |
|                       | SCREED ELEV.        | 689.17    | 690.03    | 690.84         | 691.13    | 691.64    | 692.46   | 693.53          | 693.67    | 694.59          | 695.24    | 695.55    | 696.33    | 696.91    | 697.27    | 697.43         | 697.44 |
| GIRDER 11             | FINAL DECK ELEV.    | 689.13    | 690.03    | 690.88         | 691.17    | 691.68    | 692.42   | 693.26          | 693.37    | 694.03          | 694.48    | 694.70    | 695.30    | 695.81    | 696.24    | 696.59         | 696.69 |
|                       | TOP OF HAUNCH ELEV. | 688.42    | 689.28    | 690.09         | 690.38    | 690.89    | 691.71   | 692.78          | 692.92    | 693.84          | 694.49    | 694.80    | 695.58    | 696.16    | 696.52    | 696.68         | 696.69 |
| GIRDER 12             | FINAL DECK ELEV.    | 688.98    | 689.89    | 690.74         | 691.03    | 691.53    | 692.27   | 693.12          | 693.22    | 693.88          | 694.34    | 694.56    | 695.16    | 695.67    | 696.10    | 696.44         | 696.54 |
|                       | TOP OF HAUNCH ELEV. | 688.27    | 689.13    | 689.95         | 690.23    | 690.74    | 691.57   | 692.63          | 692.77    | 693.68          | 694.33    | 694.64    | 695.41    | 695.99    | 696.35    | 696.52         | 696.53 |
| GIRDER 13             | FINAL DECK ELEV.    | 688.84    | 689.74    | 690.59         | 690.89    | 691.39    | 692.13   | 692.98          | 693.08    | 693.74          | 694.20    | 694.42    | 695.01    | 695.52    | 695.95    | 696.30         | 696.40 |
|                       | TOP OF HAUNCH ELEV. | 688.13    | 688.99    | 689.80         | 690.09    | 690.60    | 691.42   | 692.48          | 692.62    | 693.53          | 694.17    | 694.47    | 695.24    | 695.82    | 696.18    | 696.35         | 696.37 |
| CURB LINE & GIRDER 14 | FINAL DECK ELEV.    | 688.69    | 689.60    | 690.45         | 690.74    | 691.24    | 691.99   | 692.83          | 692.93    | 693.59          | 694.05    | 694.27    | 694.87    | 695.38    | 695.81    | 696.16         | 696.25 |
|                       | SCREED ELEV.        | 688.69    | 689.55    | 690.36         | 690.65    | 691.16    | 691.99   | 693.04          | 693.18    | 694.08          | 694.71    | 695.01    | 695.78    | 696.35    | 696.72    | 696.90         | 696.91 |
|                       | TOP OF HAUNCH ELEV. | 687.99    | 688.84    | 689.65         | 689.94    | 690.46    | 691.28   | 692.33          | 692.47    | 693.37          | 694.00    | 694.31    | 695.07    | 695.64    | 696.01    | 696.19         | 696.20 |

DECK ELEVATIONS - RIGHT BRIDGE

| STATION               | SPAN 2              |                 |           | € PIER 2 | SPAN 3    |                |           |           | € BRG. FWD. ABUT. |        |
|-----------------------|---------------------|-----------------|-----------|----------|-----------|----------------|-----------|-----------|-------------------|--------|
|                       | 0.80 SPAN           | SPLICE (-.8871) | 0.90 SPAN |          | 0.25 SPAN | SPLICE (-.410) | 0.50 SPAN | 0.75 SPAN |                   |        |
| 77+69.44              | 77+96.44            | 78+00.44        | 78+31.44  | 78+56.44 | 78+72.44  | 78+81.44       | 78+81.44  | 78+81.44  | 79+31.44          |        |
| CURB LINE & GIRDER 8  | FINAL DECK ELEV.    | 696.71          | 696.87    | 696.89   | 696.98    | 697.00         | 696.98    | 696.96    | 696.87            | 696.73 |
|                       | SCREED ELEV.        | 697.19          | 697.11    | 697.10   | 696.98    | 696.92         | 696.89    | 696.88    | 696.82            | 696.73 |
|                       | TOP OF HAUNCH ELEV. | 696.48          | 696.40    | 696.39   | 696.27    | 696.21         | 696.18    | 696.17    | 696.11            | 696.02 |
| PROFILE GRADE         | FINAL DECK ELEV.    | 696.80          | 696.96    | 696.98   | 697.08    | 697.10         | 697.08    | 697.06    | 696.97            | 696.82 |
|                       | SCREED ELEV.        | 697.30          | 697.21    | 697.20   | 697.08    | 697.02         | 696.99    | 696.97    | 696.92            | 696.82 |
| GIRDER 9              | FINAL DECK ELEV.    | 696.85          | 697.01    | 697.03   | 697.13    | 697.14         | 697.13    | 697.11    | 697.02            | 696.87 |
|                       | TOP OF HAUNCH ELEV. | 696.64          | 696.55    | 696.54   | 696.42    | 696.36         | 696.33    | 696.31    | 696.26            | 696.16 |
| CROWN & GIRDER 10     | FINAL DECK ELEV.    | 696.99          | 697.16    | 697.17   | 697.27    | 697.29         | 697.27    | 697.25    | 697.16            | 697.02 |
|                       | SCREED ELEV.        | 697.52          | 697.42    | 697.40   | 697.27    | 697.21         | 697.19    | 697.17    | 697.12            | 697.02 |
|                       | TOP OF HAUNCH ELEV. | 696.81          | 696.71    | 696.69   | 696.56    | 696.50         | 696.48    | 696.47    | 696.41            | 696.31 |
| C.J.                  | FINAL DECK ELEV.    | 696.95          | 697.12    | 697.13   | 697.23    | 697.25         | 697.23    | 697.21    | 697.12            | 696.98 |
|                       | SCREED ELEV.        | 697.48          | 697.38    | 697.36   | 697.23    | 697.17         | 697.15    | 697.13    | 697.08            | 696.98 |
| C.J.                  | FINAL DECK ELEV.    | 696.89          | 697.05    | 697.07   | 697.17    | 697.18         | 697.17    | 697.15    | 697.06            | 696.91 |
|                       | SCREED ELEV.        | 697.41          | 697.31    | 697.29   | 697.17    | 697.11         | 697.08    | 697.07    | 697.02            | 696.91 |
| GIRDER 11             | FINAL DECK ELEV.    | 696.85          | 697.01    | 697.03   | 697.13    | 697.14         | 697.13    | 697.11    | 697.02            | 696.87 |
|                       | TOP OF HAUNCH ELEV. | 696.67          | 696.56    | 696.55   | 696.42    | 696.36         | 696.33    | 696.32    | 696.27            | 696.16 |
| GIRDER 12             | FINAL DECK ELEV.    | 696.71          | 696.87    | 696.89   | 696.98    | 697.00         | 696.98    | 696.96    | 696.87            | 696.73 |
|                       | TOP OF HAUNCH ELEV. | 696.51          | 696.42    | 696.40   | 696.27    | 696.21         | 696.19    | 696.17    | 696.12            | 696.02 |
| GIRDER 13             | FINAL DECK ELEV.    | 696.56          | 696.72    | 696.74   | 696.84    | 696.86         | 696.84    | 696.82    | 696.73            | 696.58 |
|                       | TOP OF HAUNCH ELEV. | 696.35          | 696.27    | 696.25   | 696.13    | 696.07         | 696.04    | 696.03    | 695.97            | 695.88 |
| CURB LINE & GIRDER 14 | FINAL DECK ELEV.    | 696.42          | 696.58    | 696.60   | 696.69    | 696.71         | 696.70    | 696.68    | 696.58            | 696.44 |
|                       | SCREED ELEV.        | 696.90          | 696.82    | 696.81   | 696.69    | 696.63         | 696.60    | 696.59    | 696.54            | 696.44 |
|                       | TOP OF HAUNCH ELEV. | 696.20          | 696.12    | 696.10   | 695.99    | 695.92         | 695.90    | 695.88    | 695.83            | 695.73 |

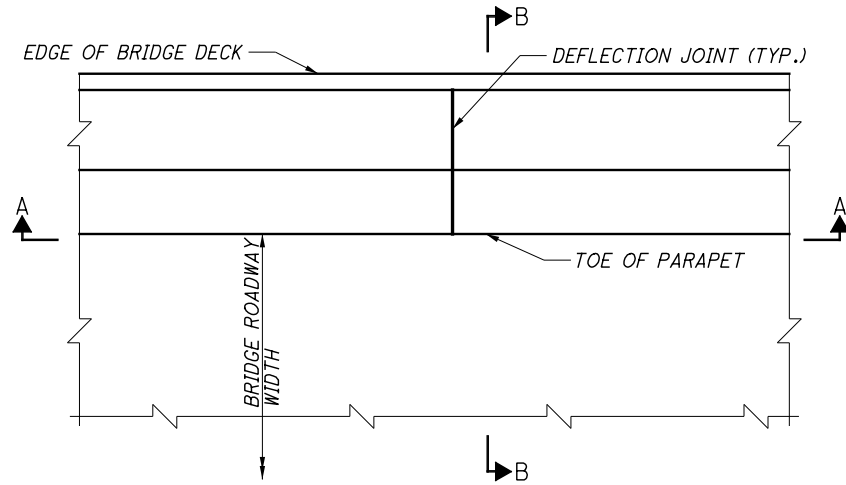
NOTES:

**DECK PLACEMENT RIGHT STRUCTURE:** THE DIAPHRAGM AND COUNTERWEIGHT CONCRETE FOR EACH PHASE SHALL BE PLACED AT LEAST 48 HOURS BEFORE THE PLACEMENT OF ANY DECK CONCRETE.

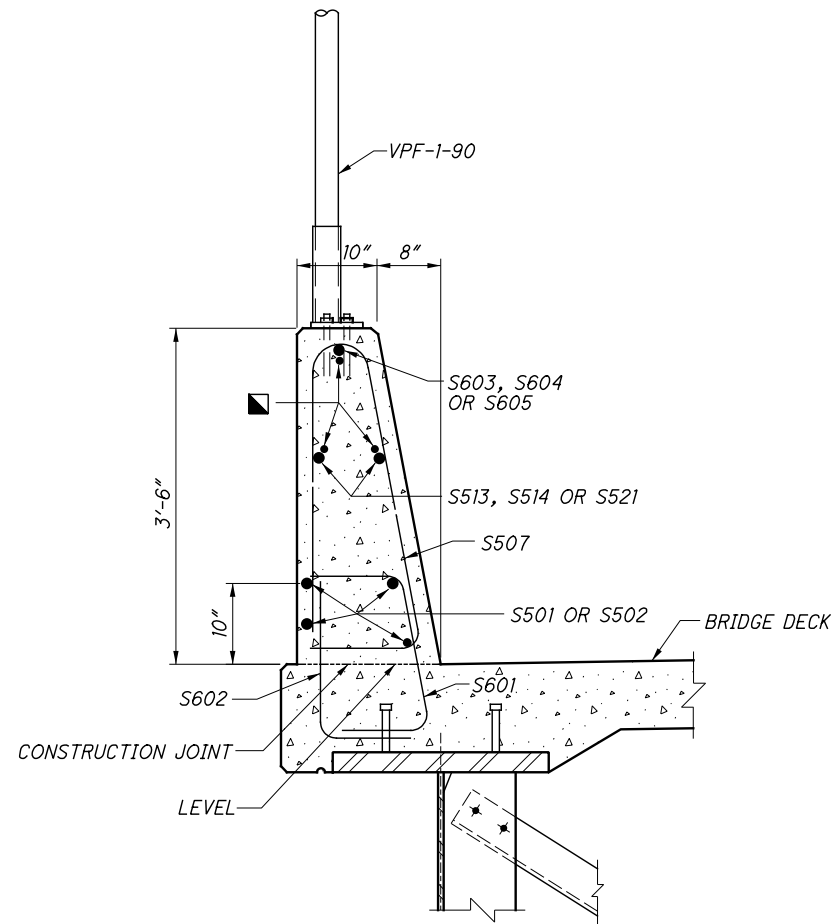
THE FIRST POUR SHALL BE BETWEEN THE REAR ABUTMENT AND STATION 74+61.44. THE SECOND POUR SHALL BE BETWEEN STATION 78+91.44 AND THE FORWARD ABUTMENT. THE THIRD POUR SHALL BE BETWEEN STATION 75+76.44 AND STATION 77+76.44. THE FOURTH POUR SHALL BE BETWEEN STATION 74+61.44 AND STATION 75+76.44. THE FIFTH POUR SHALL BE BETWEEN STATION 77+76.44 AND STATION 78+91.44. CALCULATIONS HAVE ASSUMED THAT EACH SEGMENT MEETS THE REQUIREMENTS OF 511.14 CURING AND LOADING BEFORE THE NEXT SEGMENT IS PLACED. THE TRANSVERSE CONSTRUCTION JOINTS AT STATIONS 74+61.44, 75+76.44, 77+76.44 AND 78+91.44 SHALL BE FORMED IN ACCORDANCE WITH CMS 511.12. THE PROPOSED POUR SEQUENCE MAY DIFFER FROM THE SEQUENCE DESCRIBED ABOVE. REGARDLESS OF THE PLACEMENT METHOD, THE CONTRACTOR SHALL MEET THE CURING AND LOADING REQUIREMENTS ABOVE AND SHALL SUBMIT HIS PLACEMENT PROCEDURE FOR APPROVAL NOT LESS THAN 21 DAYS BEFORE THE PLANNED PLACEMENT.

ADDITIONAL NOTES: SEE SHEET 68/84.

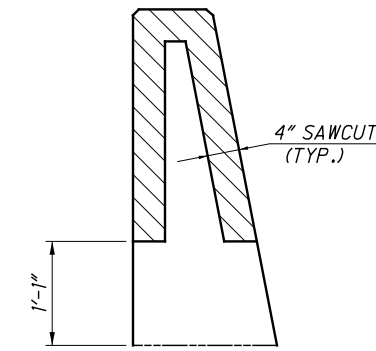
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**PLAN VIEW**  
DEFLECTION JOINT DETAIL



**SECTION B-B**  
(BRIDGE DECK REINFORCING NOT SHOWN FOR CLARITY)



**DETAIL C**  
SECTION THROUGH SAWCUT

**DEFLECTION JOINTS**

SAWCUT 1/4" DEEP DEFLECTION JOINTS ALONG THE PERIMETER OF THE PARAPET WHEN THE CONCRETE IS STILL GREEN OR AS SOON AS THE SAW CAN BE OPERATED WITHOUT DAMAGING THE CONCRETE.

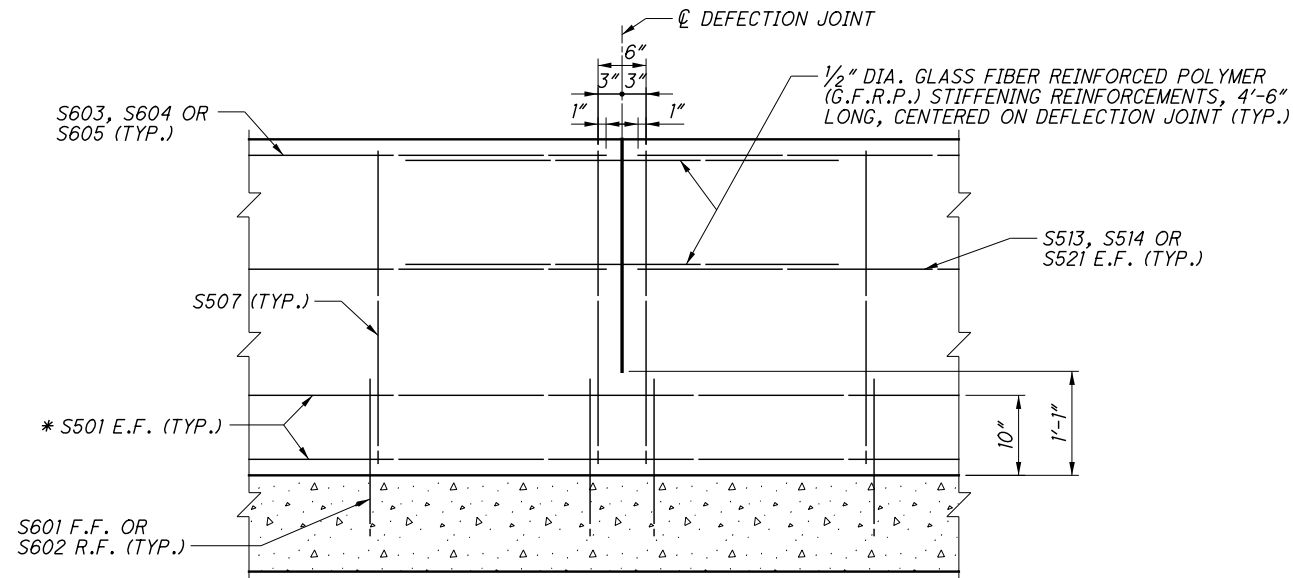
AFTER THE CONCRETE CURING PERIOD SPECIFIED IN CMS 511.14 HAS BEEN REACHED, PERFORM 4" SAWCUT THROUGH THE GFRP AS SHOWN IN DETAIL C ON THIS SHEET.

THE CONTRACTOR HAS AN OPTION TO PERFORM FULL DEPTH SAWCUT. HOWEVER, THE SAWCUT SHALL NOT BE LESS THE 1'-0 1/2" FROM THE TOP OF CONCRETE DECK SLAB.

USE AN EDGE GUIDE, FENCE OR JIG TO ENSURE THAT THE CUT JOINT IS STRAIGHT, TRUE AND ALIGNED ON ALL FACES OF THE PARAPET. THE JOINT WIDTH SHALL BE THE WIDTH OF THE SAW BLADE, A NOMINAL WIDTH OF 1/4".

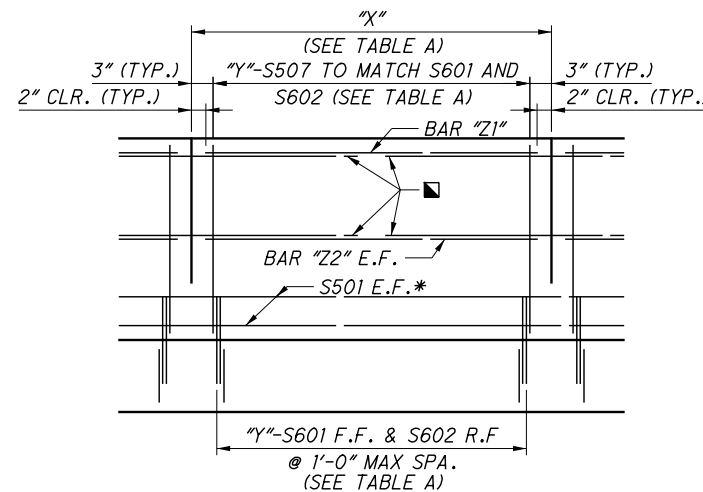
SEAL THE PERIMETER OF THE DEFLECTION JOINTS TO A MINIMUM DEPTH OF 1" WITH A POLYURETHANE OR POLYMERIC MATERIAL CONFORMING TO ASTM C920, TYPE S. LEAVE THE BOTTOM 1/2" OF BOTH THE INSIDE AND OUTSIDE FACES OF THE PARAPET UNSEALED TO ALLOW ANY WATER WHICH MAY ENTER THE JOINT TO ESCAPE.

AT EACH DEFLECTION JOINT LOCATION, USE GLASS FIBER REINFORCED POLYMER (GFRP) REINFORCEMENT TO MAINTAIN THE RIGIDITY OF THE CAGE ACROSS THE PROPOSED JOINTS AT THOSE LONGITUDINAL BARS AS SHOWN IN SECTIONS A-A & B-B ON THIS SHEET. OTHER NON-FERROUS REINFORCEMENT MAY BE PROPOSED FOR USE, SUBJECT TO APPROVAL BY THE ENGINEER.



**SECTION A-A**

GFRP REBAR STIFFENING DETAIL AT DEFLECTION JOINTS (BRIDGE DECK REINFORCING NOT SHOWN FOR CLARITY)



**PARTIAL PARAPET ELEVATION**  
(BRIDGE DECK REINFORCING NOT SHOWN FOR CLARITY)

| TABLE A                   |                            |           |                             |          |          |
|---------------------------|----------------------------|-----------|-----------------------------|----------|----------|
| NO. OF PANELS LEFT BRIDGE | NO. OF PANELS RIGHT BRIDGE | LENGTH X" | NO. OF BARS IN EA. PANEL Y" | BAR "Z1" | BAR "Z2" |
| 66                        | 66                         | 5'-0"     | 6                           | S603     | S513     |
| 2                         | 2                          | 6'-0"     | 7                           | S604     | S514     |
| 17                        | 17                         | 10'-0"    | 11                          | S605     | S521     |

**LEGEND**

■ = 1/2" DIA. GLASS FIBER REINFORCED POLYMER (GFRP) STIFFENING REINFORCEMENT

\* 18 SETS OF 4-S501 & 1 SET OF 4-S502

**NOTES**

**SLAB PLAN:** SEE SHEET 61/84.

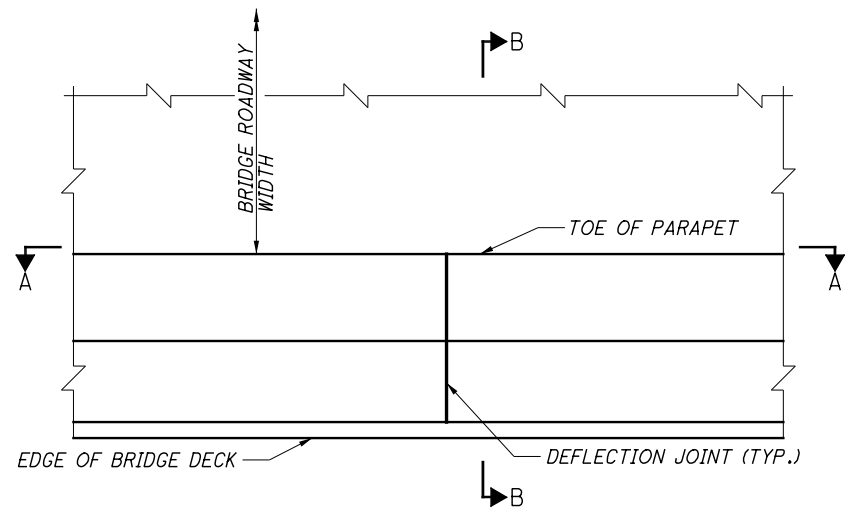
**TRANSVERSE SECTION:** SEE SHEET 49/84.

**REINFORCING STEEL LIST:** SEE SHEET 84/84.

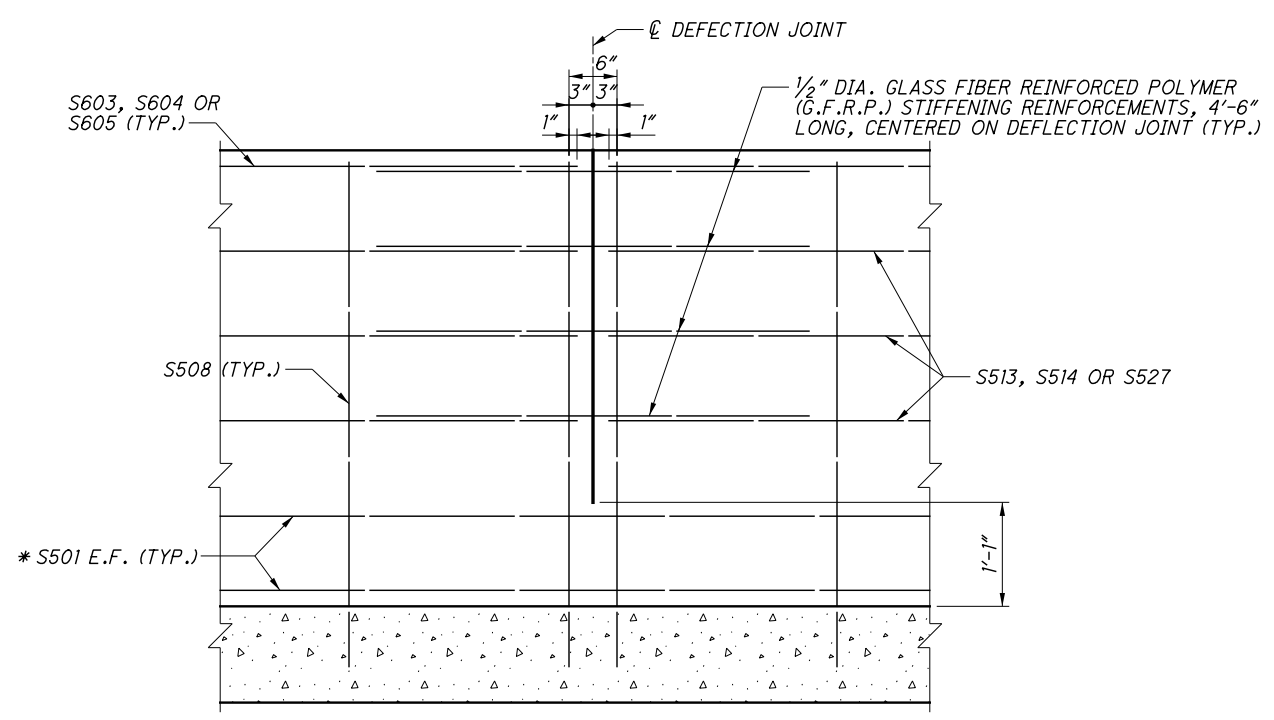
**NOTATIONS:** E.F. - EACH FACE  
F.F. - FRONT FACE  
R.F. - REAR FACE

**ADDITIONAL DETAILS:** REFER TO STD. DWG. SBR-1-13.

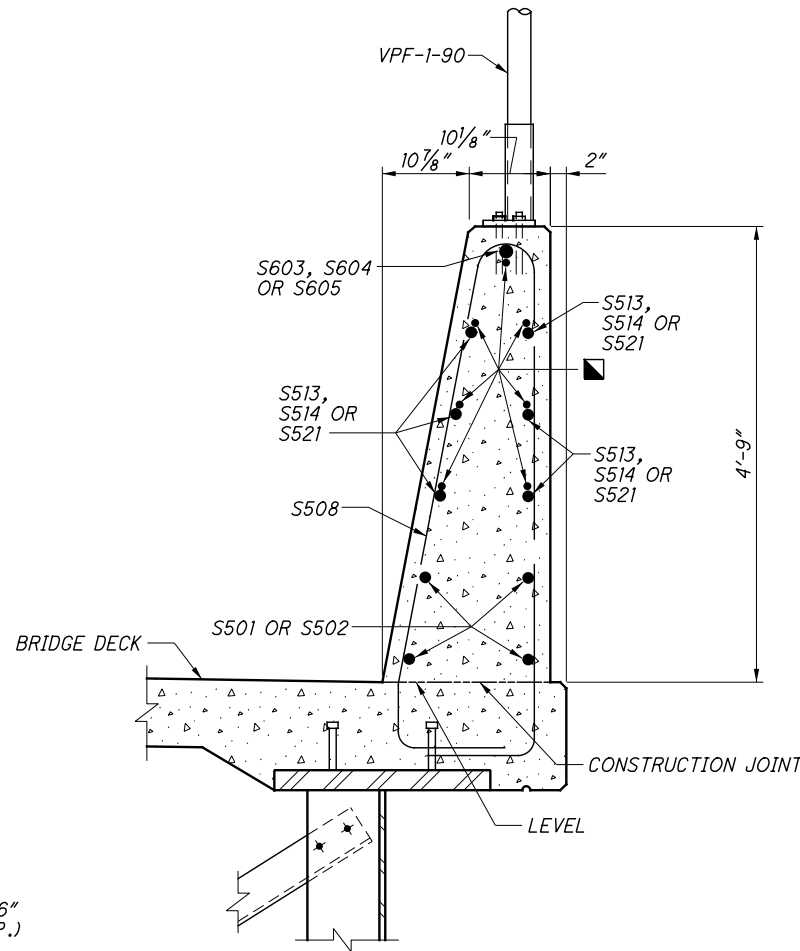
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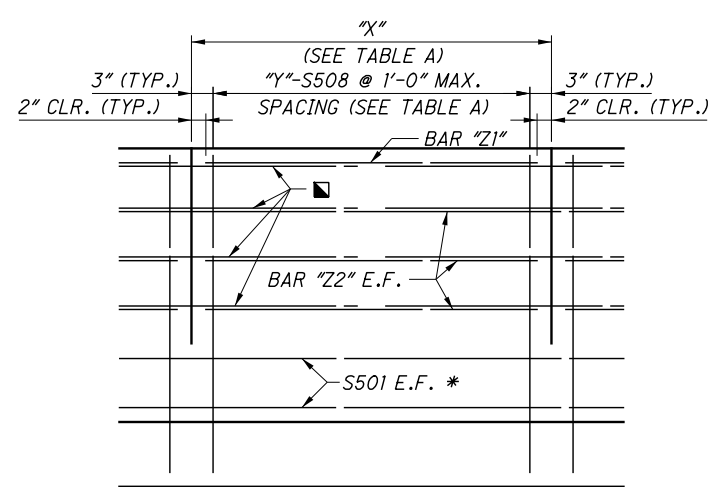
**PLAN VIEW**  
DEFLECTION JOINT DETAIL



**SECTION A-A**  
GFRP REBAR STIFFENING DETAIL AT DEFLECTION JOINTS (BRIDGE DECK REINFORCING NOT SHOWN FOR CLARITY)

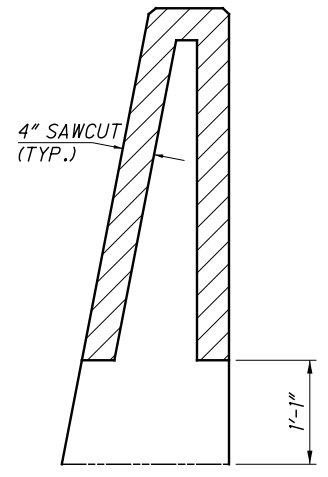


**SECTION B-B**  
(BRIDGE DECK REINFORCING NOT SHOWN FOR CLARITY)



**PARTIAL PARAPET ELEVATION**  
(BRIDGE DECK REINFORCING NOT SHOWN FOR CLARITY)

| TABLE A                   |                            |            |                              |          |          |
|---------------------------|----------------------------|------------|------------------------------|----------|----------|
| NO. OF PANELS LEFT BRIDGE | NO. OF PANELS RIGHT BRIDGE | LENGTH "X" | NO. OF BARS IN EA. PANEL "Y" | BAR "Z1" | BAR "Z2" |
| 66                        | 66                         | 5'-0"      | 6                            | S603     | S513     |
| 2                         | 2                          | 6'-0"      | 7                            | S604     | S514     |
| 17                        | 17                         | 10'-0"     | 11                           | S605     | S521     |



**DETAIL C**  
SECTION THROUGH SAWCUT

**DEFLECTION JOINTS**

SAWCUT 1/4" DEEP DEFLECTION JOINTS ALONG THE PERIMETER OF THE PARAPET WHEN THE CONCRETE IS STILL GREEN OR AS SOON AS THE SAW CAN BE OPERATED WITHOUT DAMAGING THE CONCRETE.

AFTER THE CONCRETE CURING PERIOD SPECIFIED IN CMS 511.14 HAS BEEN REACHED, PERFORM 4" SAWCUT THROUGH THE GFRP AS SHOWN IN DETAIL C ON THIS SHEET.

THE CONTRACTOR HAS AN OPTION TO PERFORM FULL DEPTH SAWCUT. HOWEVER, THE SAWCUT SHALL NOT BE LESS THE 1'-0 1/2" FROM THE TOP OF CONCRETE DECK SLAB.

USE AN EDGE GUIDE, FENCE OR JIG TO ENSURE THAT THE CUT JOINT IS STRAIGHT, TRUE AND ALIGNED ON ALL FACES OF THE PARAPET. THE JOINT WIDTH SHALL BE THE WIDTH OF THE SAW BLADE, A NOMINAL WIDTH OF 1/4".

SEAL THE PERIMETER OF THE DEFLECTION JOINTS TO A MINIMUM DEPTH OF 1" WITH A POLYURETHANE OR POLYMERIC MATERIAL CONFORMING TO ASTM C920, TYPE S. LEAVE THE BOTTOM 1/2" OF BOTH THE INSIDE AND OUTSIDE FACES OF THE PARAPET UNSEALED TO ALLOW ANY WATER WHICH MAY ENTER THE JOINT TO ESCAPE.

AT EACH DEFLECTION JOINT LOCATION, USE GLASS FIBER REINFORCED POLYMER (GFRP) REINFORCEMENT TO MAINTAIN THE RIGIDITY OF THE CAGE ACROSS THE PROPOSED JOINTS AT THOSE LONGITUDINAL BARS AS SHOWN IN SECTIONS A-A & B-B ON THIS SHEET. OTHER NON-FERROUS REINFORCEMENT MAY BE PROPOSED FOR USE, SUBJECT TO APPROVAL BY THE ENGINEER.

**LEGEND**

■ = 1/2" DIA. GLASS FIBER REINFORCED POLYMER (GFRP) STIFFENING REINFORCEMENT

\* 18 SETS OF 4-S501 & 1 SET OF 4-S502

**NOTES**

**SLAB PLAN:** SEE SHEET 61/84.

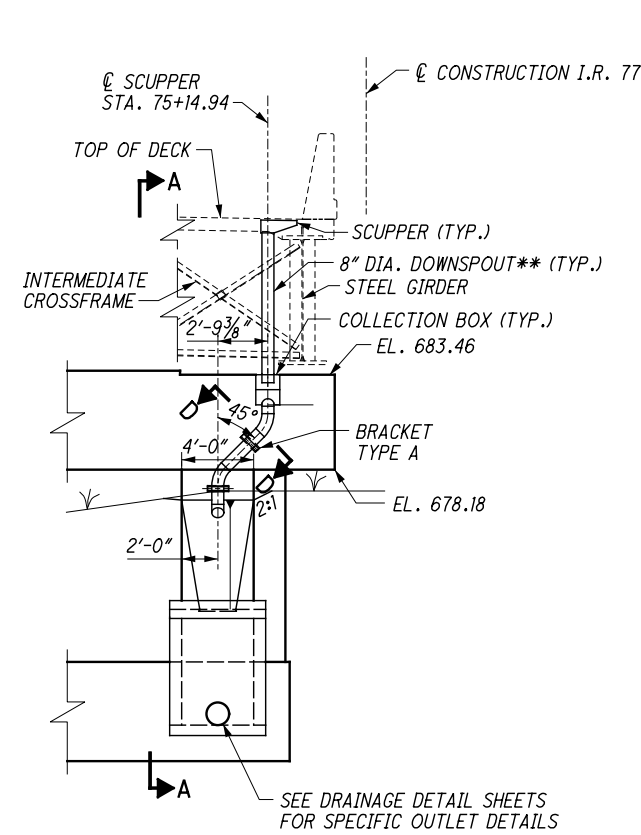
**TRANSVERSE SECTION:** SEE SHEET 49/84.

**REINFORCING STEEL LIST:** SEE SHEET 84/84.

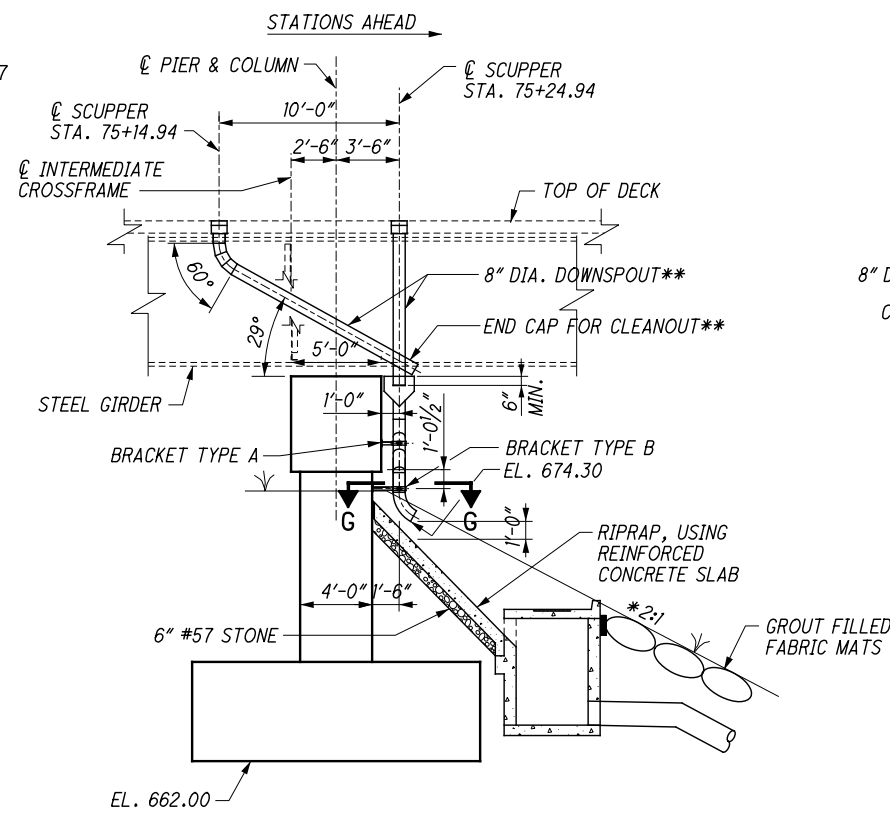
**NOTATIONS:** E.F. - EACH FACE

**ADDITIONAL DETAILS:** REFER TO STD. DWG. SBR-2-13.

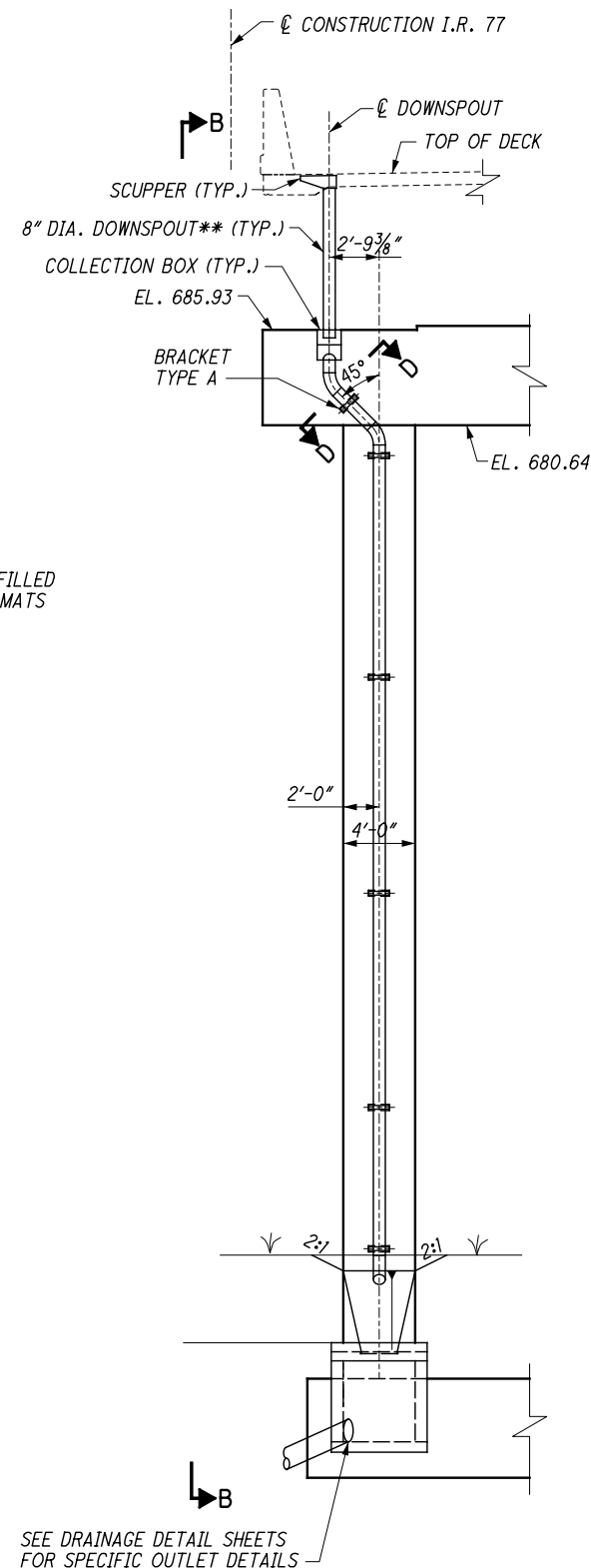
\\REL8\Current\105040-5\ProjectData\CUY\13567\Design\Structures\CUY077\_1435L\Sheets\13567.pif.dgn 12/14/2016 3:50:13 PM DonHelman



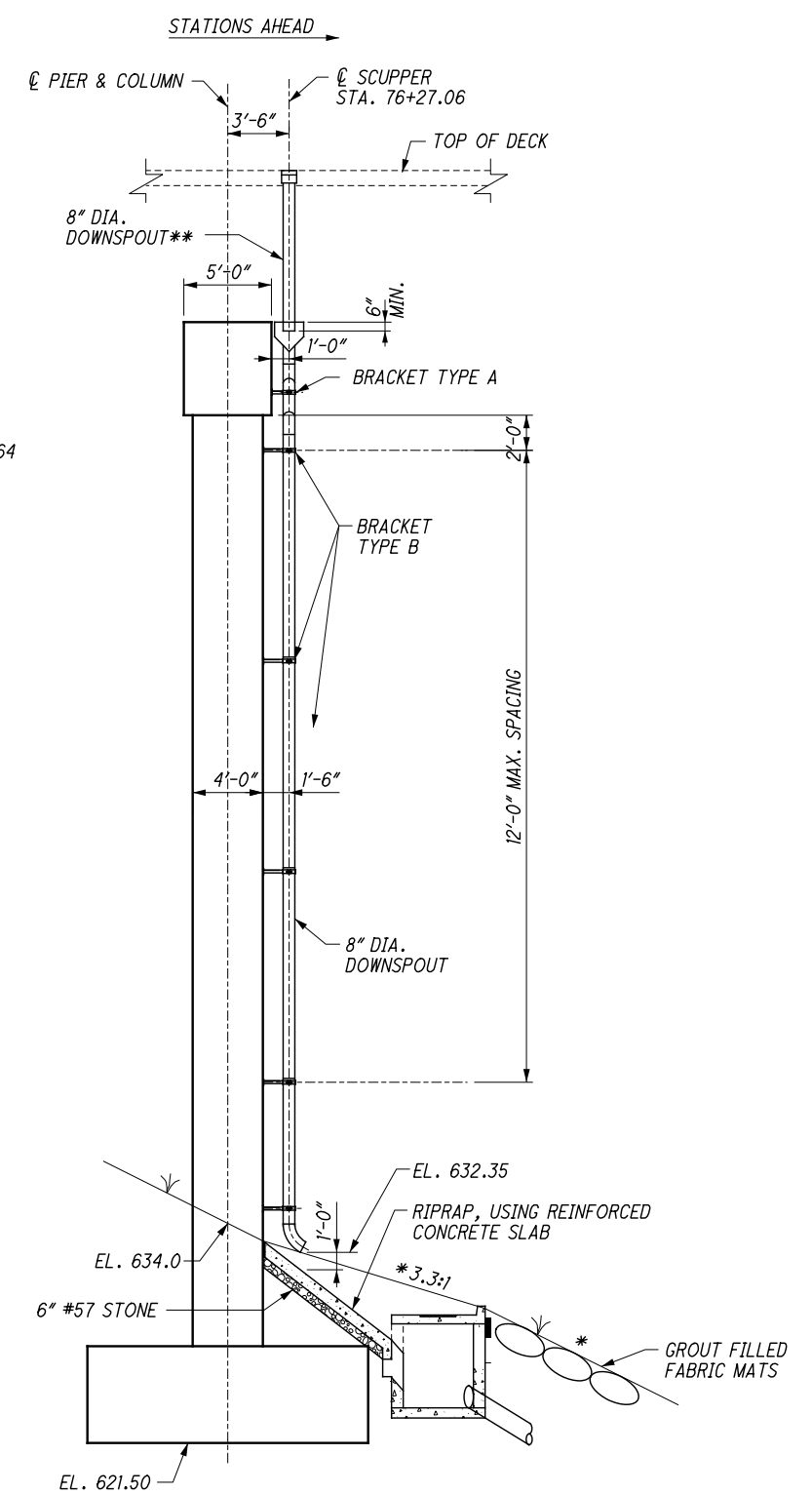
**PIER 1 RIGHT  
LEFT COLUMN  
ELEVATION  
(LOOKING BACK)**



**VIEW A-A**



**PIER 1 LEFT  
RIGHT COLUMN  
ELEVATION  
(LOOKING BACK)**



**VIEW B-B**

**LEGEND**

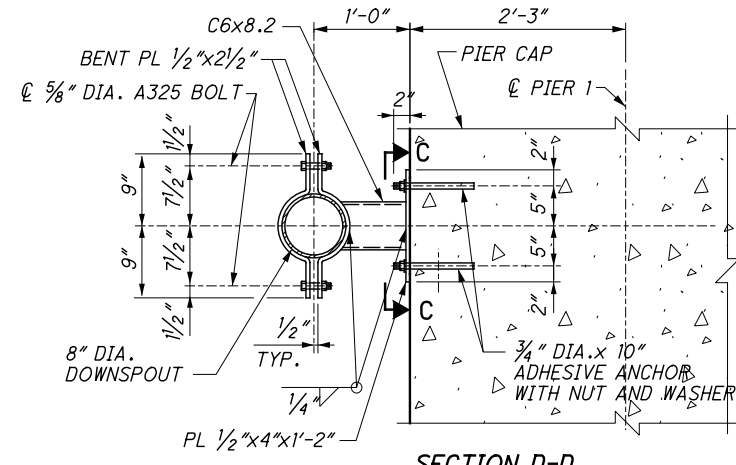
- \* SEE DRAINAGE DETAILS ON SHEET 194 FOR SLOPES AROUND CATCH BASINS AT PIERS.
- \*\* INCLUDED WITH ITEM 518 - SCUPPER, INCLUDING SUPPORTS FOR PAYMENT.

**NOTES**

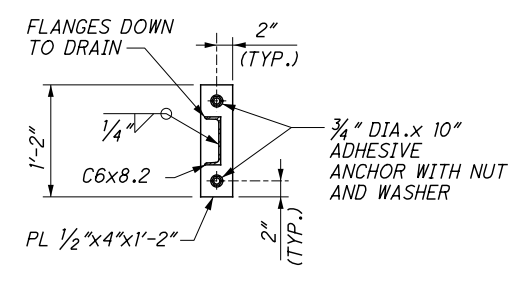
- DOWNSPOUT DETAILS:** SEE SHEET [73/84].
- SCUPPER DETAILS:** SEE SHEET [74/84].
- ROADWAY DRAINAGE DETAIL SHEETS:** SEE SHEET 194.
- SECTIONS D-D & G-G:** SEE SHEET [73/84].

|                                                                                                     |                                                              |                          |
|-----------------------------------------------------------------------------------------------------|--------------------------------------------------------------|--------------------------|
| <p><b>DRAINAGE DETAILS - 1</b><br/>BRIDGE NO. CUY-77-1433 L &amp; R<br/>OVER I.R. 490 AND RAMPS</p> | <p><b>CUY-77-14.35</b><br/>PID No. 13567</p>                 | <p>72/84</p>             |
| <p>DESIGNED<br/>ALP<br/>CHECKED<br/>BLN</p>                                                         | <p>DRAWN<br/>TWH<br/>REVISED</p>                             | <p>REVIEWED<br/>DAP</p>  |
| <p>DATE<br/>11/15/16</p>                                                                            | <p>STRUCTURE FILE NUMBER<br/>1806688 (L)<br/>1806718 (R)</p> | <p>DATE<br/>11/15/16</p> |
| <p>RICHLAND ENGINEERING LIMITED<br/>29 NORTH PARK STREET<br/>MANSFIELD, OHIO 44902</p>              |                                                              |                          |

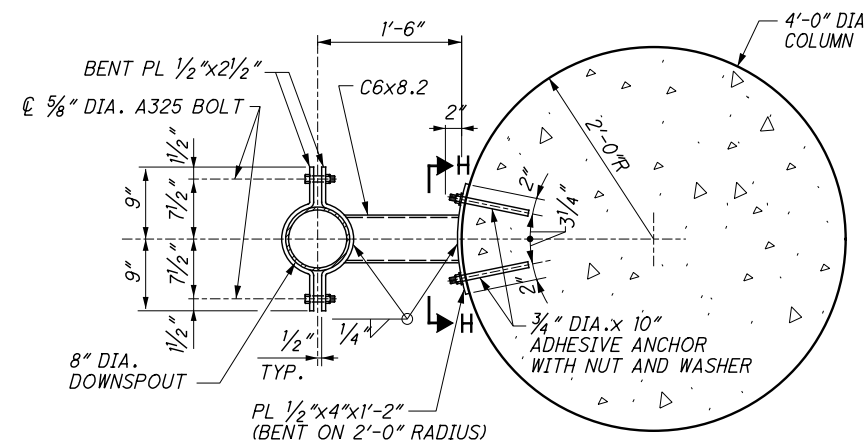
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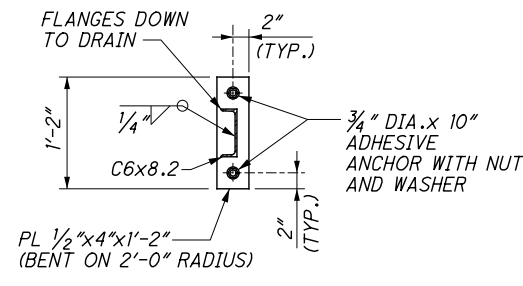
**SECTION D-D**  
**DOWNSPOUT MOUNTING BRACKET TYPE A**



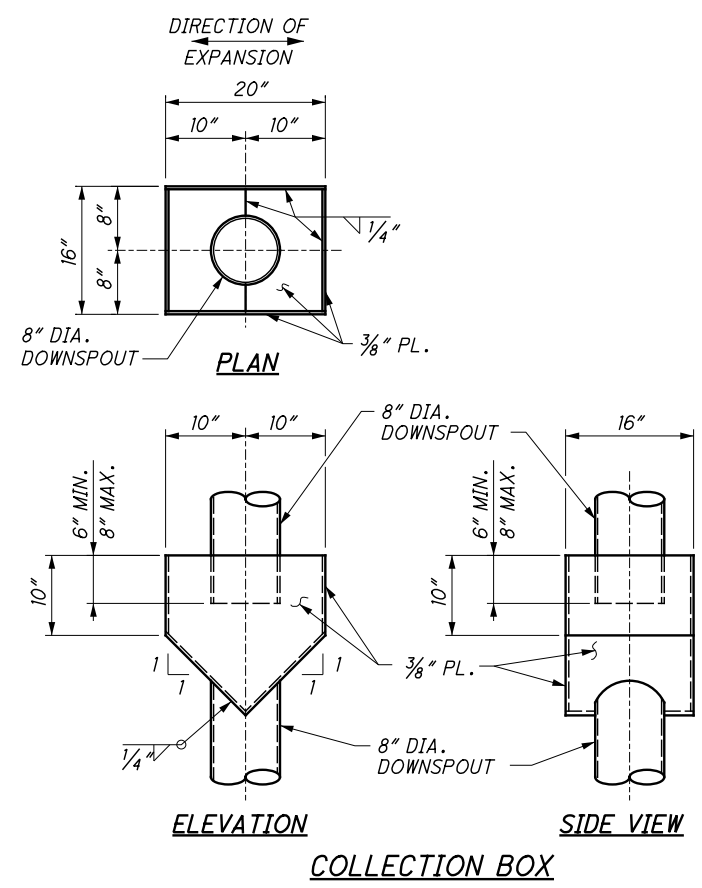
**SECTION C-C**



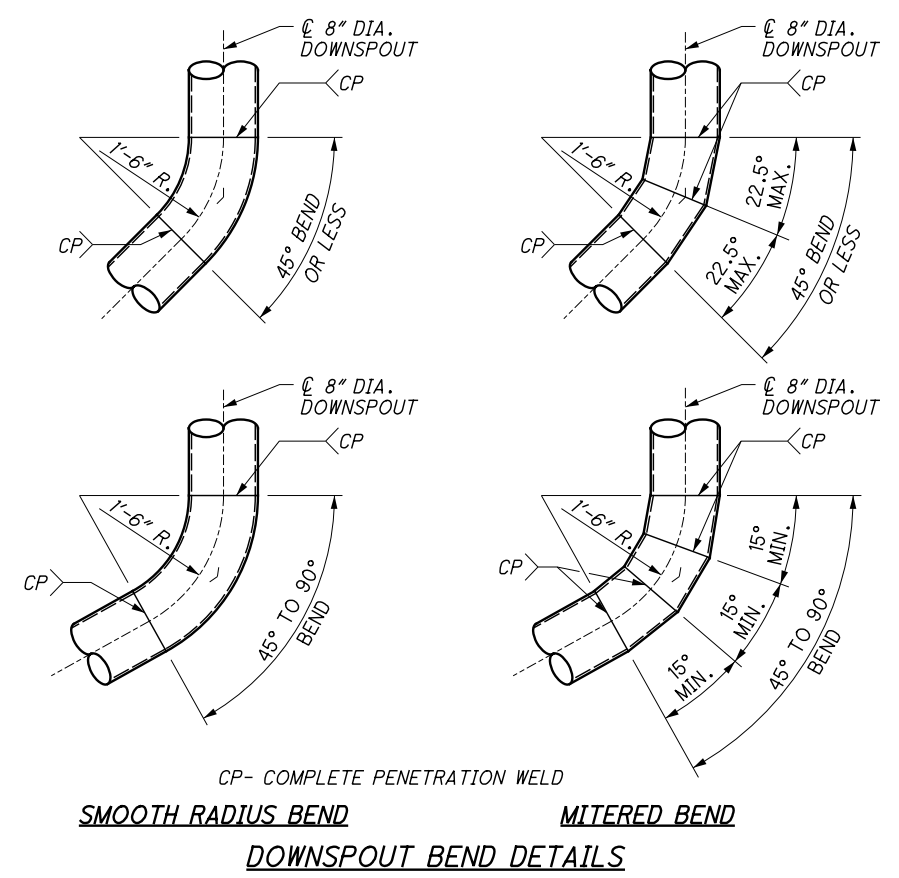
**SECTION G-G**  
**DOWNSPOUT MOUNTING BRACKET TYPE B**



**SECTION H-H**



**COLLECTION BOX**



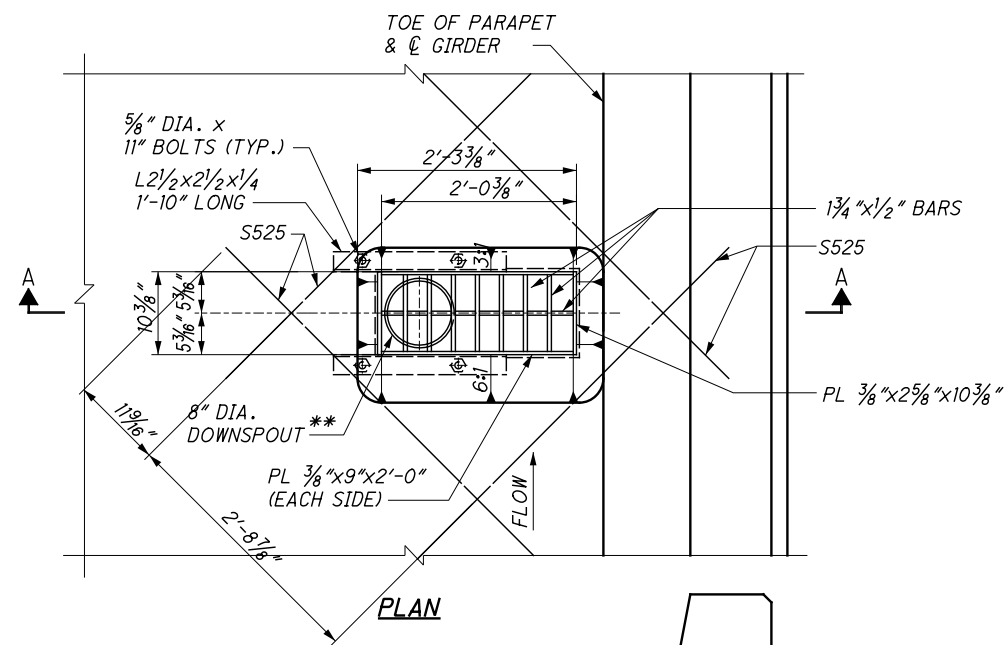
**DOWNSPOUT BEND DETAILS**

**NOTES**

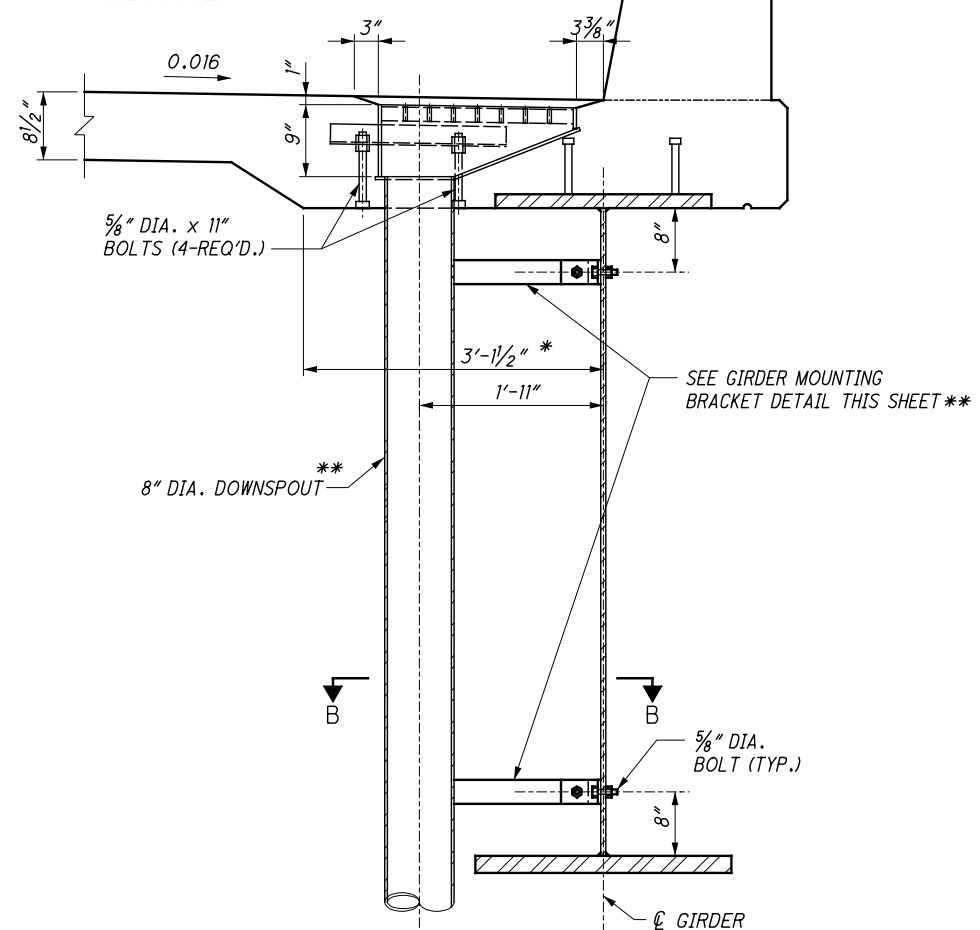
- ADHESIVE ANCHORS** SHALL BE ANCHOR BOLTS IN HOLES FILLED WITH NONSHRINKING EPOXY GROUT MEETING THE REQUIREMENTS OF 705.20. CARE SHALL BE TAKEN NOT TO DAMAGE REINFORCING STEEL WHILE DRILLING FOR ADHESIVE ANCHORS.
- COLLECTION BOXES** SHALL BE INCLUDED FOR PAYMENT WITH ITEM 518 - 8" PIPE DOWNSPOUT, INCLUDING SPECIALS.
- DOWNSPOUT MOUNTING BRACKETS** SHALL BE INCLUDED FOR PAYMENT WITH ITEM 518 - 8" PIPE DOWNSPOUT, INCLUDING SPECIALS.
- SECTIONS D-D & G-G:** FOR LOCATIONS SEE SHEET 72/84.
- DOWNSPOUT:** SHALL BE STANDARD WEIGHT (28.55 P.L.F.) SCHEDULE 40, 8" DIAMETER STEEL PIPE WITH A WALL THICKNESS OF 0.322". ELBOWS SHALL BE SCHEDULE 40 WELDED FITTINGS WITH FULL PENETRATION BUTT WELDS. ELBOW AND COLLECTION BOXES SHALL BE SHOP FABRICATED WITH THE DOWNSPOUTS. FIELD SPLICES IN THE DOWNSPOUTS SHALL BE VICTAULIC COUPLING STYLE 99, DRESSER COUPLING STYLE 38, OR EQUAL.
- ELBOWS AND BENDS** SHALL BE STANDARD LONG RADIUS OR DOUBLE MITERED. THE CENTERLINE RADIUS SHALL BE 1'-6".
- MATERIALS** FOR SCUPPERS, DOWNSPOUTS, COLLECTION BOXES, MOUNTING BRACKETS, COUPLINGS AND HARDWARE SHALL BE GALVANIZED PER 711.02 AFTER FABRICATION. TOUGHNESS TESTING IN ACCORDANCE WITH ASTM E436 IS NOT REQUIRED.
- SEE SHEET 74/84 FOR ADDITIONAL SCUPPER DETAILS.
- PAYMENT:** SCUPPER SUPPORT ANGLES, SUPPORT BOLTS, PIPE OUTLETS, GIRDER MOUNTING BRACKETS AND HARDWARE ARE INCLUDED FOR PAYMENT WITH ITEM 518 - SCUPPERS, INCLUDING SUPPORTS, AS PER PLAN.
- CATCH BASIN DETAILS:** SEE SHEET 194.

|                                                         |                                                                                                                                                                                                                        |                                                                                      |                                                         |
|---------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------|
| <b>DRAINAGE DETAILS - 2</b>                             | RICHLAND ENGINEERING LIMITED<br>29 NORTH PARK STREET<br>MANSFIELD, OHIO 44902                                                                                                                                          | DATE: 11/15/16<br>REVIEWED: DAP<br>STRUCTURE FILE NUMBER: 1806688 (L)<br>1806718 (R) | DESIGNED: ALP<br>CHECKED: BLN<br>DRAWN: TWH<br>REVISED: |
| BRIDGE NO. CUY-77-1433 L & R<br>OVER I.R. 490 AND RAMPS |                                                                                                                                                                                                                        |                                                                                      |                                                         |
| CUY-77-14.35<br>PID No. 13567                           |                                                                                                                                                                                                                        |                                                                                      |                                                         |
| 73/84                                                   | <div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center;"> <span style="margin-right: 5px;">354</span> <span>365</span> </div> |                                                                                      |                                                         |

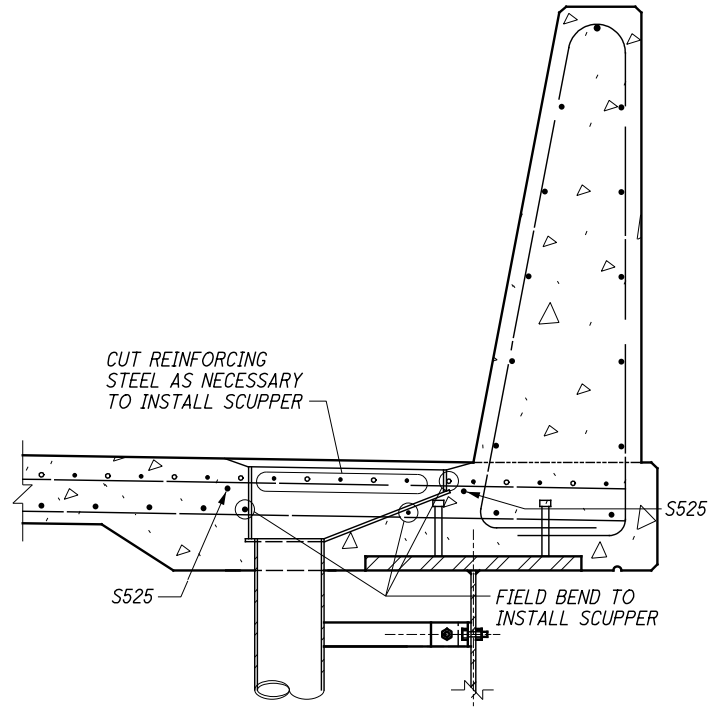
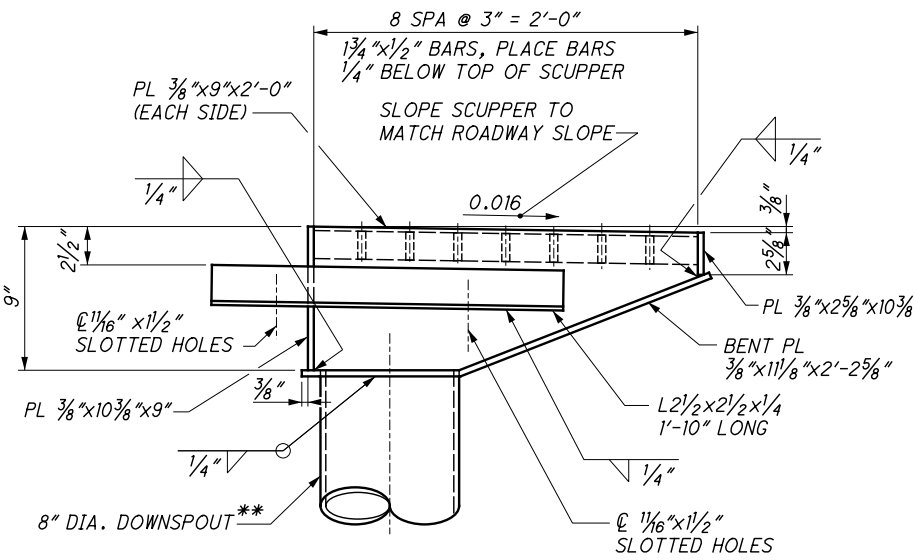
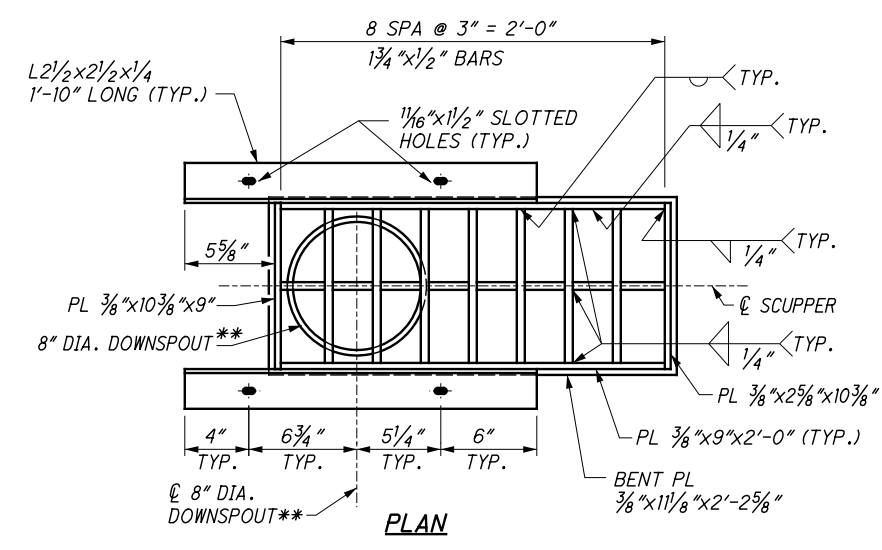
\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Structures\CUY077\_1435L\Sheets\13567.pig.dgn 12/14/2016 3:51:12 PM DonHelman



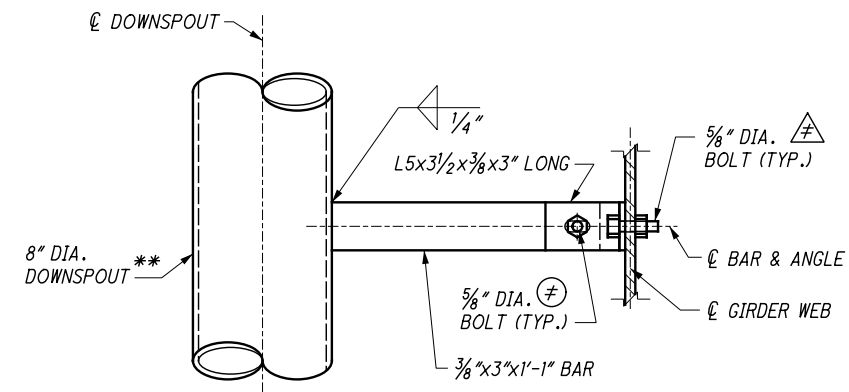
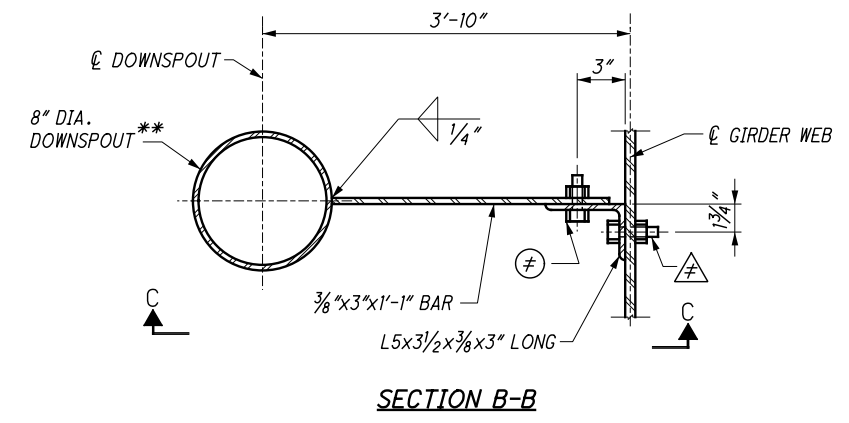
\* EXTEND CONCRETE HAUNCH AS SHOWN TO PROVIDE ADEQUATE CONCRETE COVER FOR SCUPPERS. ADDITIONAL HAUNCH WIDTH SHALL BE A MINIMUM OF 2'-0" LONG LONGITUDINALLY, CENTERED ON THE SCUPPER.



**SECTION A-A**  
SCUPPER LAYOUT



**DECK REINFORCEMENT AT SCUPPER**



\*\* INCLUDED WITH ITEM 518- SCUPPER, INCLUDING SUPPORTS, AS PER PLAN FOR PAYMENT.

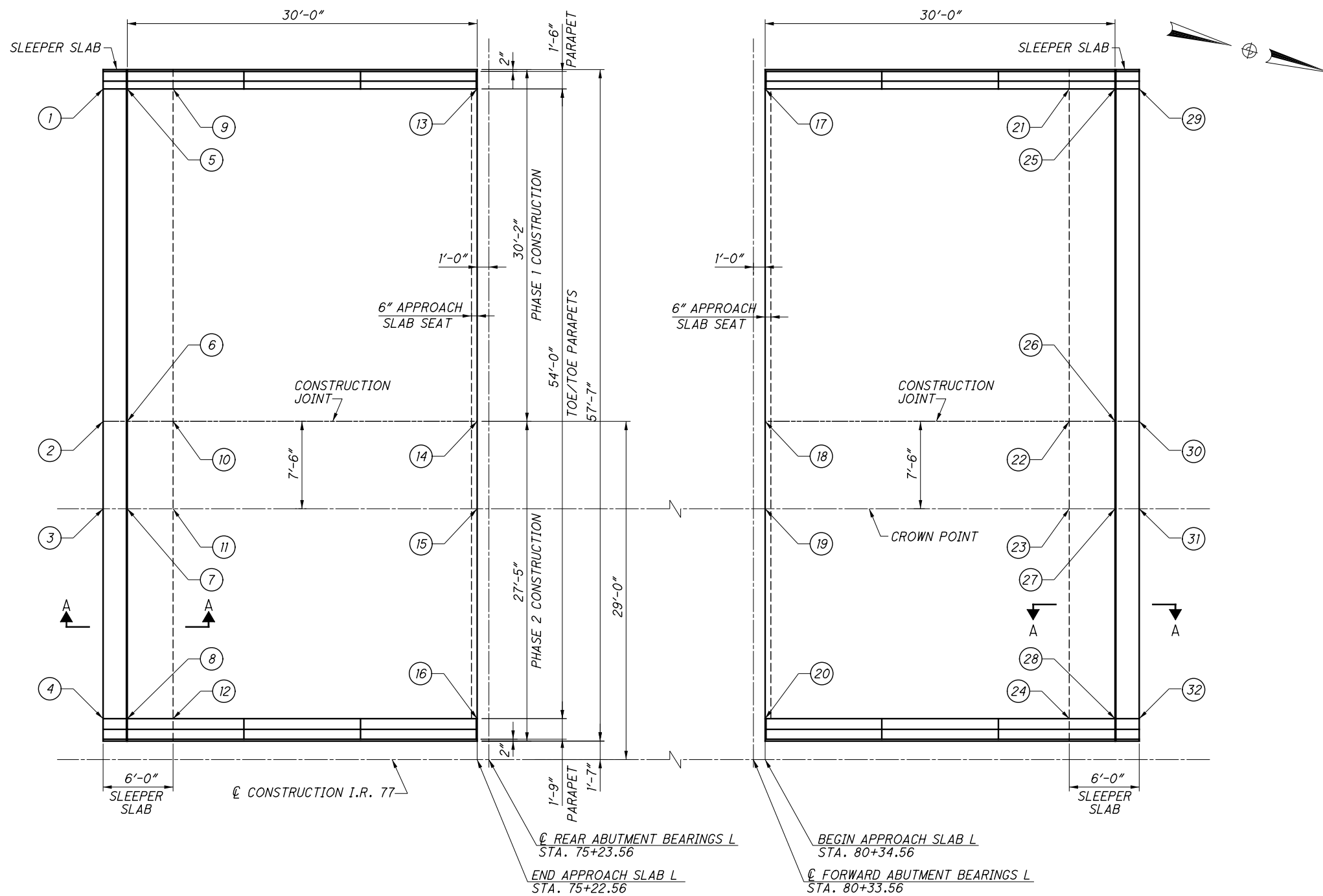
**FASTENER NOTES:**

- ⊕ THE SIZE OF THE SLOTTED HOLES SHALL BE 11/16" x 1 1/8". THE SLOT SHALL BE HORIZONTAL IN THE 3/8" x 3" BAR AND VERTICAL IN THE ANGLE. BOLTS SHALL BE 5/8" DIA. A325 TYPE 1, GALVANIZED, WITH HEX NUT AND TWO WASHERS. TIGHTEN ACCORDING TO 513.
- ⊕ THE BOLTS SHALL BE 5/8" DIA. A325 TYPE 1, GALVANIZED FOR GALVANIZED OR PAINTED STRUCTURES OR A325 TYPE 3, FOR BARE WEATHERING STEEL STRUCTURES. EACH ASSEMBLY SHALL INCLUDE A BOLT, NUT AND TWO WASHERS. TIGHTEN ACCORDING TO 513. FOR WEATHERING STEEL STRUCTURES, PROVIDE A 3 1/2" x 3 1/2" x 1/8" PREFORMED BEARING PAD, 711.21, WITH A 1/16" DIA. HOLE BETWEEN THE GIRDER WEB AND THE ANGLE. AFTER THE CONCRETE DECK HAS BEEN POURED, FIELD DRILL THE 1/16" DIA. HOLE IN THE WEB.

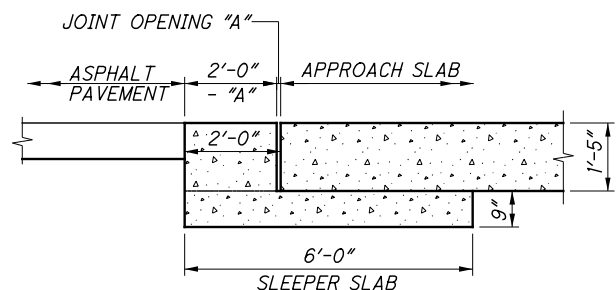
**ADDITIONAL NOTES:** SEE SHEET [73/84].



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**LEFT BRIDGE APPROACH SLAB PLAN**



**SECTION A-A**  
(TYPE C INSTALLATION)

| LEFT APPROACH SLABS SURFACE ELEVATIONS |                                 |                 |             |                       |                 |                                 |                 |
|----------------------------------------|---------------------------------|-----------------|-------------|-----------------------|-----------------|---------------------------------|-----------------|
| REAR APPROACH SLAB                     |                                 |                 |             | FORWARD APPROACH SLAB |                 |                                 |                 |
| STATION                                |                                 |                 |             | STATION               |                 |                                 |                 |
| 74+90.56                               | 74+92.56                        | 74+96.56        | 75+22.56    | 80+34.56              | 80+60.56        | 80+64.56                        | 80+66.56        |
| TOP SURFACE                            | TOP SURFACE/<br>SLEEPER SURFACE | SLEEPER SURFACE | TOP SURFACE | SLEEPER SURFACE       | SLEEPER SURFACE | TOP SURFACE/<br>SLEEPER SURFACE | SLEEPER SURFACE |
| ① 691.06                               | ⑤ 691.12/689.71                 | ⑨ 689.83        | ⑬ 692.02    | ⑰ 695.27              | ⑳ 693.42        | ㉓ 694.76/693.34                 | ㉗ 694.72        |
| ② 691.52                               | ⑥ 691.58/690.16                 | ⑩ 690.29        | ⑭ 692.47    | ⑱ 695.73              | ㉑ 693.87        | ㉔ 695.22/693.80                 | ⑳ 695.18        |
| ③ 691.64                               | ⑦ 691.70/690.28                 | ⑪ 690.41        | ⑮ 692.59    | ⑲ 695.85              | ㉒ 693.99        | ㉖ 695.34/693.92                 | ㉙ 695.30        |
| ④ 691.35                               | ⑧ 691.41/690.00                 | ⑫ 690.12        | ⑯ 692.31    | ㉘ 695.56              | ㉔ 693.70        | ㉖ 695.05/693.63                 | ㉚ 695.01        |

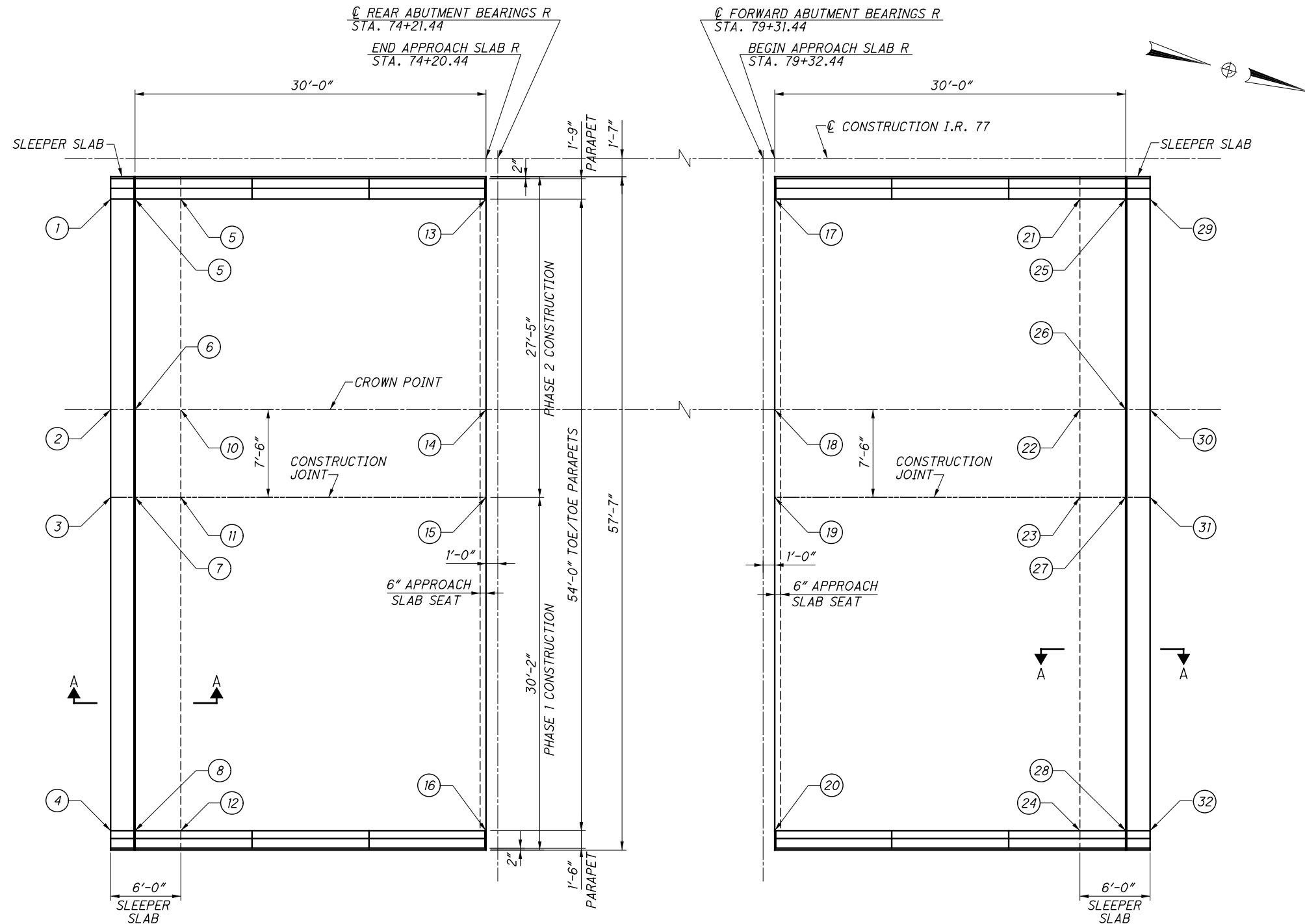
**NOTES**

**APPROACH SLAB DETAILS & REINFORCING:** SEE SHEETS 77/84 THROUGH 78/84 AND STANDARD DRAWING AS-1-15.

**APPROACH SLAB DETAILS & REINFORCING (TYPE C INSTALLATION):** SEE SHEET 79/84 AND STANDARD DRAWING AS-2-15.

**JOINT OPENING "A":** SEE STANDARD DRAWING AS-2-15.

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**RIGHT BRIDGE APPROACH SLAB PLAN**

| RIGHT APPROACH SLABS SURFACE ELEVATIONS |                                 |                 |             |                       |                 |                                 |                 |
|-----------------------------------------|---------------------------------|-----------------|-------------|-----------------------|-----------------|---------------------------------|-----------------|
| REAR APPROACH SLAB                      |                                 |                 |             | FORWARD APPROACH SLAB |                 |                                 |                 |
| STATION                                 |                                 |                 |             | STATION               |                 |                                 |                 |
| TOP SURFACE                             | TOP SURFACE/<br>SLEEPER SURFACE | SLEEPER SURFACE | TOP SURFACE | SLEEPER SURFACE       | SLEEPER SURFACE | TOP SURFACE/<br>SLEEPER SURFACE | SLEEPER SURFACE |
| 73+88.44                                | 73+90.44                        | 73+94.44        | 74+20.44    | 79+32.44              | 79+58.44        | 79+62.44                        | 79+64.44        |
| ① 687.71                                | ⑤ 687.79/686.37                 | ⑨ 686.53        | ⑬ 688.95    | ⑰ 696.72              | ⑳ 695.09        | ㉓ 696.47/695.06                 | ㉗ 696.45        |
| ② 688.00                                | ⑥ 688.08/686.66                 | ⑩ 686.82        | ⑭ 689.23    | ⑱ 697.01              | ㉑ 695.38        | ㉔ 696.76/695.35                 | ⑳ 696.74        |
| ③ 687.88                                | ⑦ 687.96/686.54                 | ⑪ 686.70        | ⑮ 689.11    | ⑲ 696.89              | ㉒ 695.26        | ㉖ 696.64/695.23                 | ㉙ 696.62        |
| ④ 687.42                                | ⑧ 687.50/686.09                 | ⑫ 686.24        | ⑯ 688.66    | ㉀ 696.43              | ㉔ 694.81        | ㉘ 696.19/694.77                 | ㉚ 696.17        |

**NOTES**

**SECTION A-A:** SEE SHEET 75/84.

**ADDITIONAL NOTES:** SEE SHEET 75/84.

**APPROACH SLAB PLAN - RIGHT BRIDGE**  
BRIDGE NO. CUY-77-1433 R  
OVER I.R. 490 AND RAMPS

**CUY-77-14.35**  
PID No. 13567

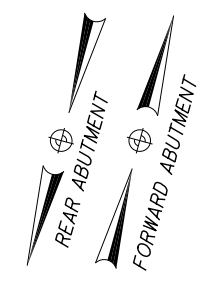
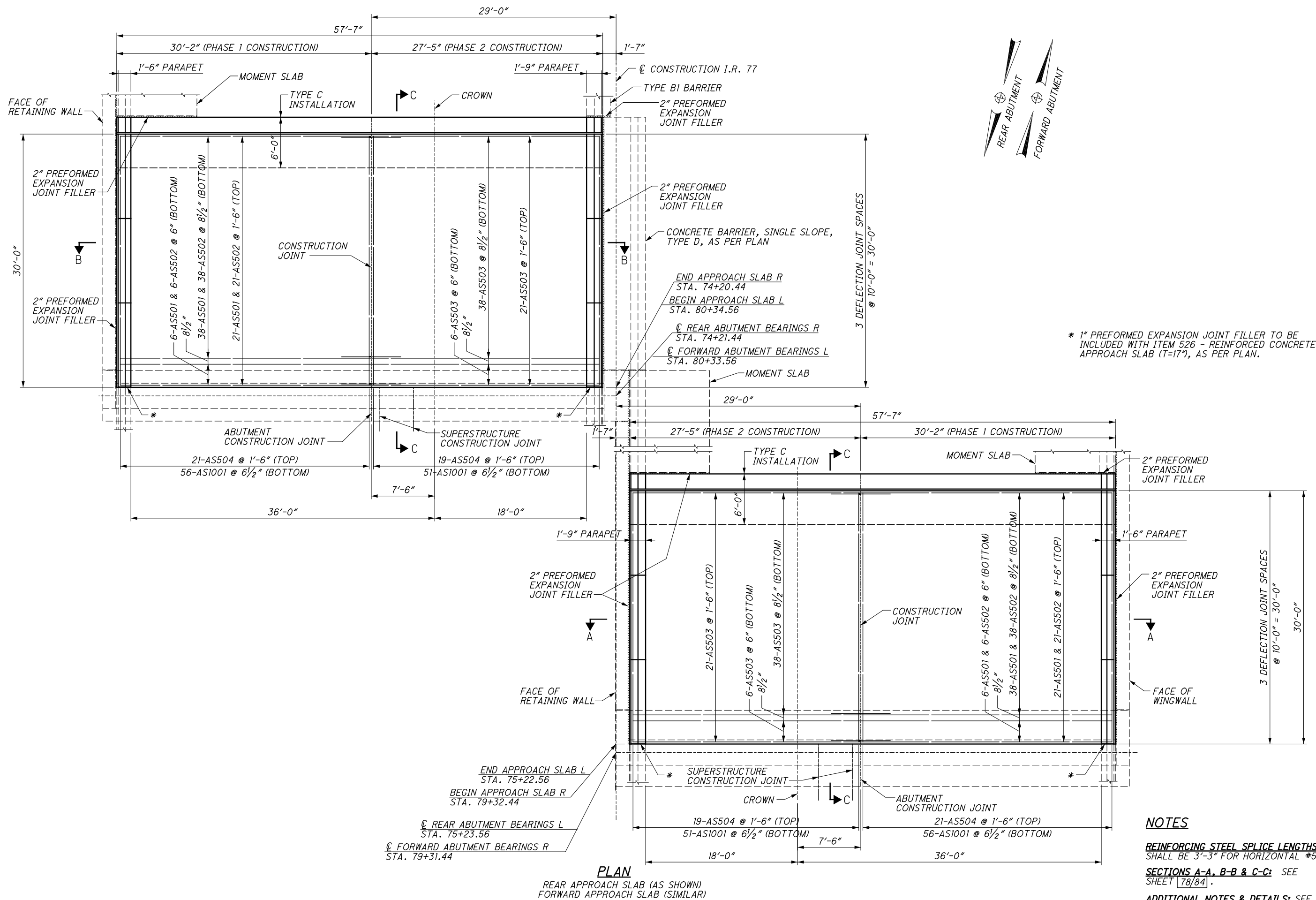
|          |          |                       |         |
|----------|----------|-----------------------|---------|
| DESIGNED | BLN      | CHECKED               | DLR     |
| DRAWN    | SJK      | REVISED               |         |
| REVIEWED | DAP      | STRUCTURE FILE NUMBER | 1806718 |
| DATE     | 11/15/16 |                       |         |

RICHLAND ENGINEERING LIMITED  
29 NORTH PARK STREET  
MANSFIELD, OHIO 44902

76 / 84

357  
365

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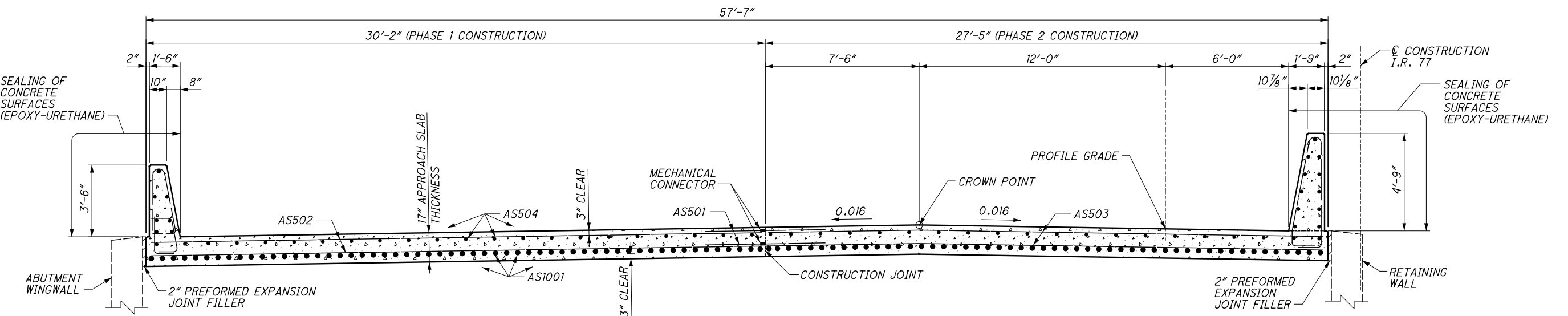
**PLAN**  
 REAR APPROACH SLAB (AS SHOWN)  
 FORWARD APPROACH SLAB (SIMILAR)

\* 1" PREFORMED EXPANSION JOINT FILLER TO BE INCLUDED WITH ITEM 526 - REINFORCED CONCRETE APPROACH SLAB (T=17"), AS PER PLAN.

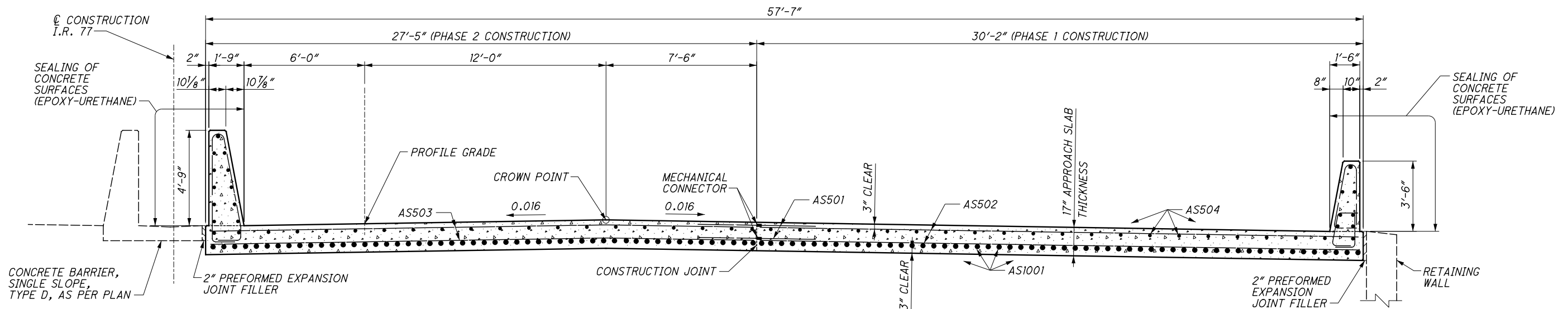
**NOTES**  
 REINFORCING STEEL SPLICE LENGTHS SHALL BE 3'-3" FOR HORIZONTAL #5 BARS.  
 SECTIONS A-A, B-B & C-C: SEE SHEET 178/84.  
 ADDITIONAL NOTES & DETAILS: SEE STANDARD DRAWING AS-1-15.

|                                                                                      |                                                     |
|--------------------------------------------------------------------------------------|-----------------------------------------------------|
| RICHLAND ENGINEERING LIMITED<br>29 NORTH PARK STREET<br>MANSFIELD, OHIO 44902        |                                                     |
| DATE<br>11/15/16                                                                     | STRUCTURE FILE NUMBER<br>1806688 (L)<br>1806718 (R) |
| REVIEWED<br>DAP                                                                      | DESIGNED<br>BLN                                     |
| DRAWN<br>KH                                                                          | CHECKED<br>DLR                                      |
| APPROACH SLAB DETAILS - 1<br>BRIDGE NO. CUY-77-1433 L & R<br>OVER I.R. 490 AND RAMPS |                                                     |
| CUY-77-14.35<br>PID No. 13567                                                        | 77/84<br>358<br>365                                 |

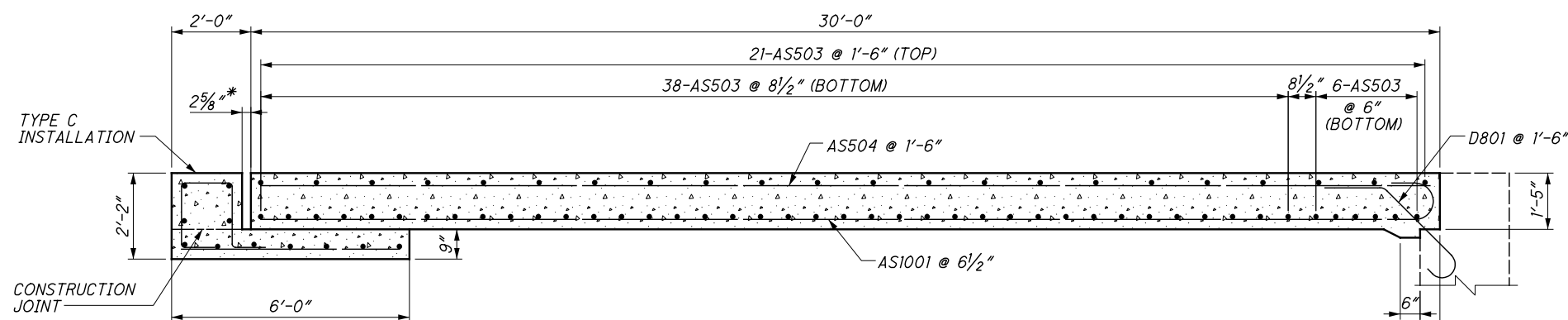
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**SECTION A-A**



**SECTION B-B**



**SECTION C-C**

\* DIMENSION AT 60° F.

**NOTES**

**ADDITIONAL NOTES:** SEE SHEET [75/84].

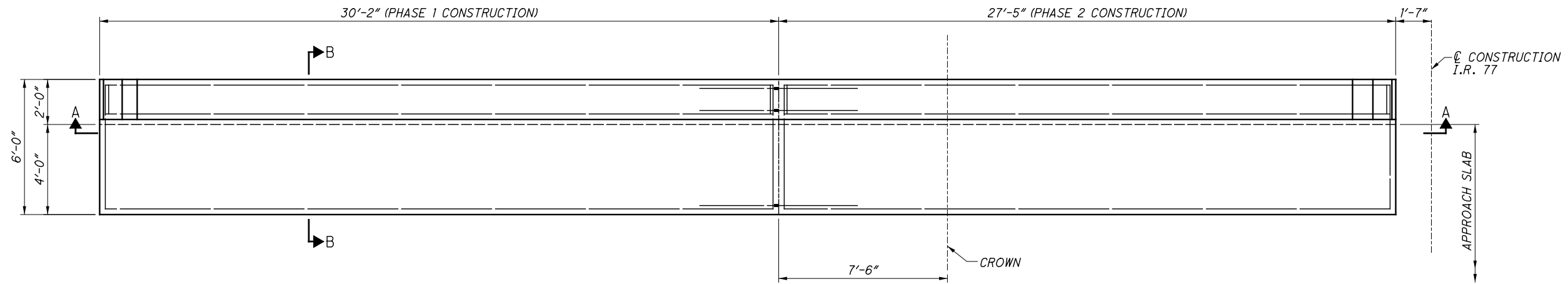
**SECTIONS A-A, B-B & C-C:** FOR LOCATIONS SEE SHEET [77/84].

**TYPE C INSTALLATION:** SEE STANDARD DRAWING AS-2-15. FOR ADDITIONAL DETAILS AND REINFORCING SEE SHEET [79/84].

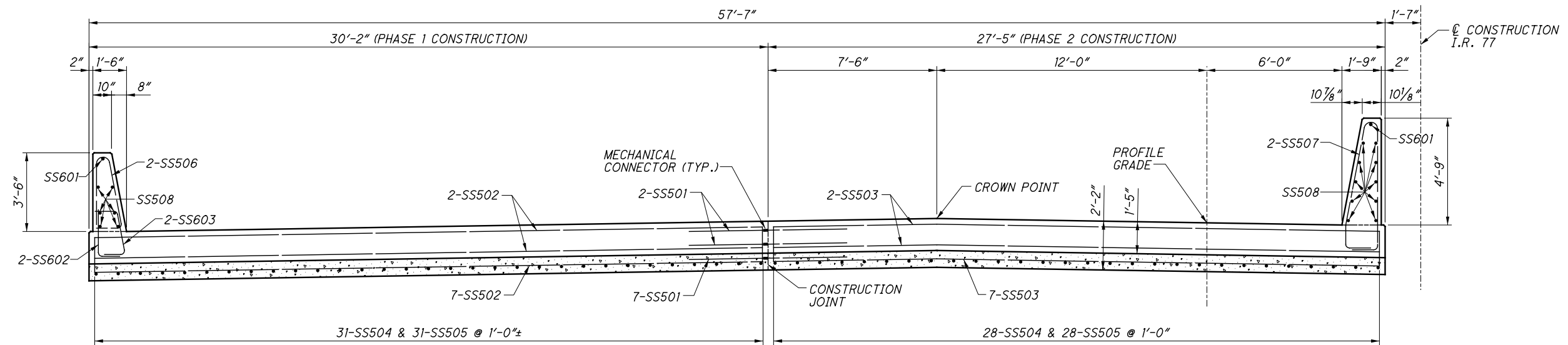
**PARAPET REINFORCING STEEL:** SEE DETAILS ON SHEET [84/84].

**MEDIAN PARAPET REINFORCING STEEL:** SEE DETAILS ON SHEET [84/84].

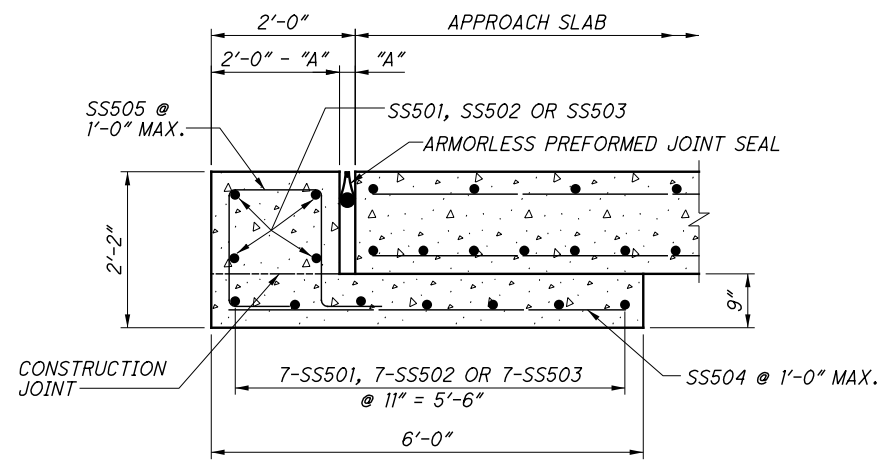
\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Structures\CUY077\_1435L\Sheets\077\_1435L\MD004.dgn 12/14/2016 3:53:37 PM DonHelmon



**PLAN - TYPE C INSTALLATION**



**SECTION A-A**



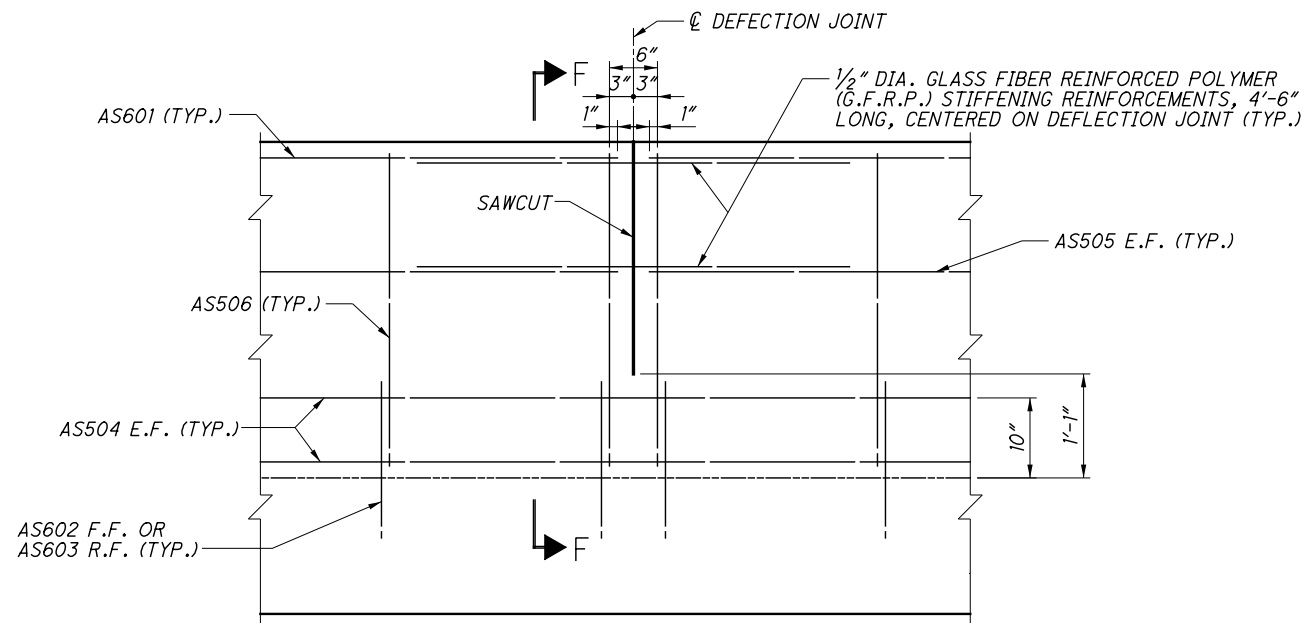
**SECTION B-B**  
A = 2 3/8" @ 60°F

**NOTES**

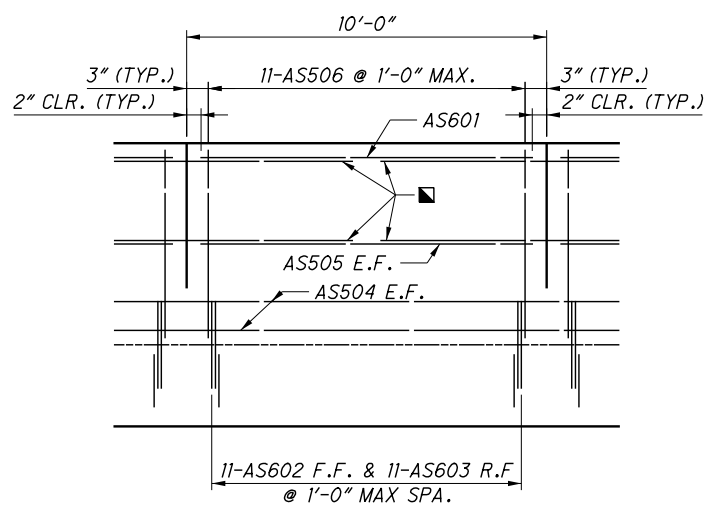
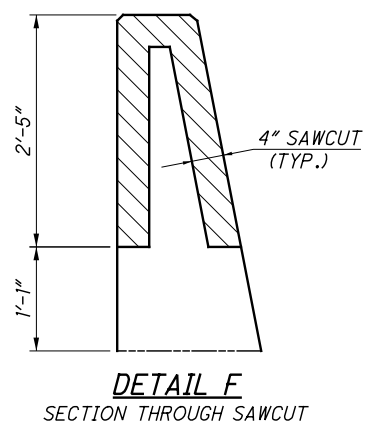
**REINFORCING STEEL SPLICE LENGTHS** SHALL BE 3'-3" FOR HORIZONTAL #5 BARS.

**ADDITIONAL DETAILS:** SEE STANDARD DRAWING AS-2-15.

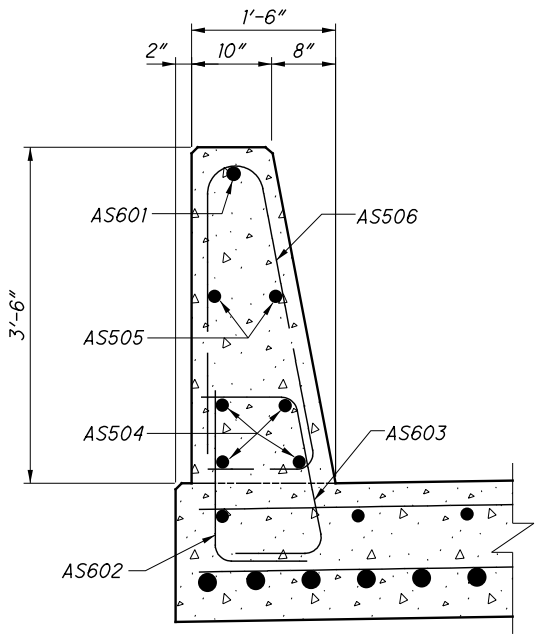
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**PARAPET SAWCUT DETAIL**  
GFRP REBAR STIFFENING DETAIL AT DEFLECTION JOINTS (APPROACH SLAB REINFORCING NOT SHOWN FOR CLARITY)



**PARTIAL PARAPET ELEVATION**  
(APPROACH SLAB REINFORCING NOT SHOWN FOR CLARITY)  
(THERE ARE THREE 10'-0" PANELS PER APPROACH SLAB)



**OUTSIDE PARAPET SECTION**

**DEFLECTION JOINTS**

SAWCUT 1/4" DEEP DEFLECTION JOINTS ALONG THE PERIMETER OF THE PARAPET WHEN THE CONCRETE IS STILL GREEN OR AS SOON AS THE SAW CAN BE OPERATED WITHOUT DAMAGING THE CONCRETE.

AFTER THE CONCRETE CURING PERIOD SPECIFIED IN CMS 511.14 HAS BEEN REACHED, PERFORM 4" SAWCUT THROUGH THE GFRP AS SHOWN IN DETAIL C ON THIS SHEET.

THE CONTRACTOR HAS AN OPTION TO PERFORM FULL DEPTH SAWCUT. HOWEVER, THE SAWCUT SHALL NOT BE LESS THE 1'-0 1/2" FROM THE TOP OF CONCRETE DECK SLAB.

USE AN EDGE GUIDE, FENCE OR JIG TO ENSURE THAT THE CUT JOINT IS STRAIGHT, TRUE AND ALIGNED ON ALL FACES OF THE PARAPET. THE JOINT WIDTH SHALL BE THE WIDTH OF THE SAW BLADE, A NOMINAL WIDTH OF 1/4".

SEAL THE PERIMETER OF THE DEFLECTION JOINTS TO A MINIMUM DEPTH OF 1" WITH A POLYURETHANE OR POLYMERIC MATERIAL CONFORMING TO ASTM C920, TYPE S. LEAVE THE BOTTOM 1/2" OF BOTH THE INSIDE AND OUTSIDE FACES OF THE PARAPET UNSEALED TO ALLOW ANY WATER WHICH MAY ENTER THE JOINT TO ESCAPE.

AT EACH DEFLECTION JOINT LOCATION, USE GLASS FIBER REINFORCED POLYMER (GFRP) REINFORCEMENT TO MAINTAIN THE RIGIDITY OF THE CAGE ACROSS THE PROPOSED JOINTS AT THOSE LONGITUDINAL BARS AS SHOWN ON THIS SHEET. OTHER NON-FERROUS REINFORCEMENT MAY BE PROPOSED FOR USE, SUBJECT TO APPROVAL BY THE ENGINEER.

**LEGEND**

■ = 1/2" DIA. GLASS FIBER REINFORCED POLYMER (GFRP) STIFFENING REINFORCEMENT

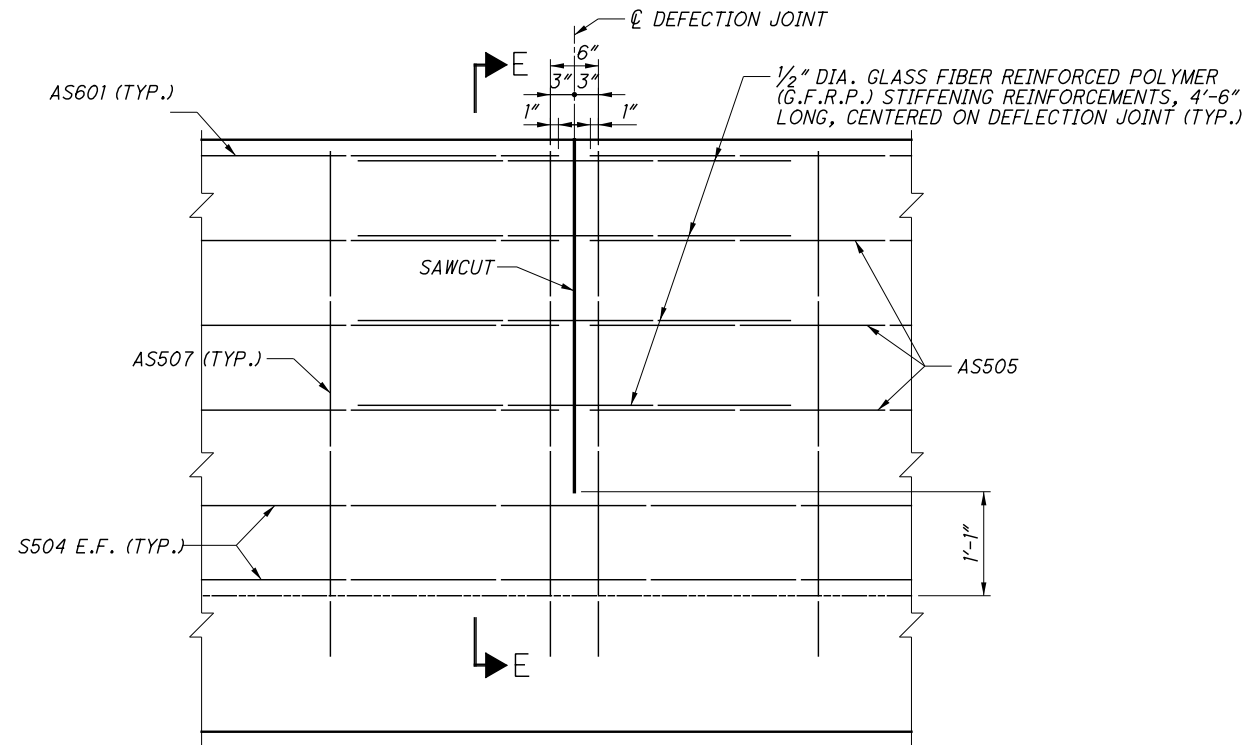
**NOTES**

**NOTATIONS:** E.F. - EACH FACE

**ADDITIONAL DETAILS:** REFER TO STD. DWG. SBR-1-13.

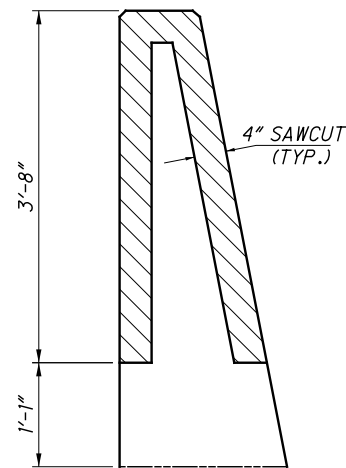
**ADDITIONAL NOTES:** SEE SHEET [77/84].

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Structures\CUY077\_1435L\Sheets\077\_1435LMD002.dgn 12/14/2016 3:54:39 PM DonHelman

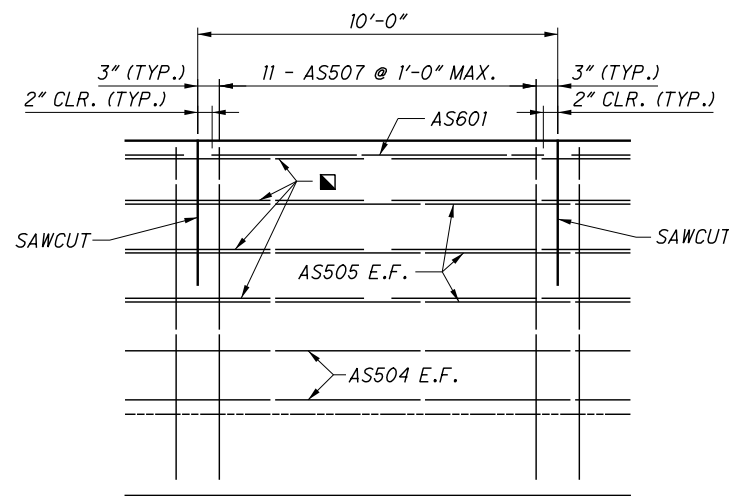


**MEDIAN PARAPET SAWCUT DETAIL**

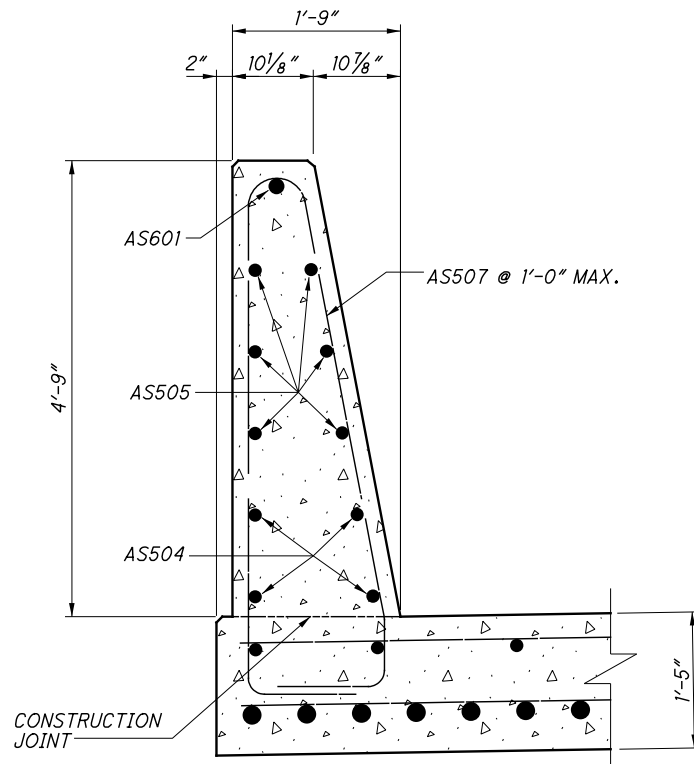
GFRP REBAR STIFFENING DETAIL AT DEFLECTION JOINTS (APPROACH SLAB REINFORCING NOT SHOWN FOR CLARITY)



**DETAIL E**  
SECTION THROUGH SAWCUT



**PARTIAL PARAPET ELEVATION**  
(APPROACH SLAB REINFORCING NOT SHOWN FOR CLARITY)  
(THERE ARE THREE 10'-0" PANELS PER APPROACH SLAB)



**MEDIAN PARAPET SECTION**

**LEGEND**

▣ = 1/2" DIA. GLASS FIBER REINFORCED POLYMER (GFRP) STIFFENING REINFORCEMENT

**NOTES**

**NOTATIONS:** E.F. - EACH FACE

**ADDITIONAL DETAILS:** REFER TO STD. DWG. SBR-2-13.

**ADDITIONAL NOTES:** SEE SHEET 77/84.

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Structures\CUY077\_1435L\Sheets\13567.rtd.dgn 12/14/2016 3:55:06 PM DonHelman

| ABUTMENTS        |             |      |              |      |       |         |      |        |         |        |   |      | CALCULATED         | JLS                 | DATE | 11/16 |
|------------------|-------------|------|--------------|------|-------|---------|------|--------|---------|--------|---|------|--------------------|---------------------|------|-------|
|                  |             |      |              |      |       |         |      |        |         |        |   |      | CHECKED            | JSB                 | DATE | 1/16  |
| MARK             | LEFT BRIDGE |      | RIGHT BRIDGE |      | TOTAL | LENGTH  | TYPE | A      | B       | C      | D | INC. | LEFT WEIGHT (LBS.) | RIGHT WEIGHT (LBS.) |      |       |
|                  | REAR        | FWD. | REAR         | FWD. |       |         |      |        |         |        |   |      |                    |                     |      |       |
| A501             | 24          | 10   | 8            | 14   | 56    | 31'-6"  | STR  |        |         |        |   |      | 1117               | 723                 |      |       |
| A502             | 24          |      |              | 14   | 38    | 28'-9"  | STR  |        |         |        |   |      | 720                | 420                 |      |       |
| A503             | 24          | 10   | 8            | 14   | 56    | 5'-10"  | 38   |        |         |        |   |      | 207                | 207                 |      |       |
| A504             | 61          |      |              | 54   | 115   | 8'-11"  | 1    | 0'-10" | 8'-3"   |        |   |      | 567                | 502                 |      |       |
| A505             | 61          |      |              |      | 61    | 17'-9"  | 2    | 7'-8"  | 2'-8"   | 7'-8"  |   |      | 1129               |                     |      |       |
| A506             | 82          |      |              | 68   | 150   | 9'-1"   | 2    | 4'-1"  | 1'-2"   | 4'-1"  |   |      | 777                | 644                 |      |       |
| A507             | 16          | 7    | 7            | 16   | 46    | 2'-7"   | 2    | 0'-10" | 1'-2"   | 0'-10" |   |      | 62                 | 62                  |      |       |
| A508             | 56          |      |              |      | 56    | 5'-9"   | 1    | 0'-10" | 5'-1"   |        |   |      | 336                |                     |      |       |
| A509             | 32          |      |              |      | 32    | 31'-4"  | STR  |        |         |        |   |      | 1046               |                     |      |       |
| A510             | 14          |      |              |      | 14    | 23'-4"  | STR  |        |         |        |   |      | 341                |                     |      |       |
| A511             | 15          |      | 18           |      | 33    | 11'-10" | STR  |        |         |        |   |      | 185                | 222                 |      |       |
| A512             | 2           |      |              |      | 2     | 14'-10" | STR  |        |         |        |   |      | 31                 |                     |      |       |
| A513             | 32          |      |              |      | 32    | 17'-5"  | STR  |        |         |        |   |      | 581                |                     |      |       |
| A514             | 56          |      |              |      | 56    | 8'-3"   | 2    | 3'-8"  | 1'-2"   | 3'-8"  |   |      | 482                |                     |      |       |
| A515             | 63          |      |              |      | 63    | 11'-6"  | STR  |        |         |        |   |      | 756                |                     |      |       |
| A516             | 24          |      |              |      | 24    | 16'-6"  | STR  |        |         |        |   |      | 413                |                     |      |       |
| A517             | 47          |      |              |      | 47    | 10'-6"  | STR  |        |         |        |   |      | 515                |                     |      |       |
| A518             | 16          |      |              |      | 16    | 10'-1"  | 2    | 4'-7"  | 1'-2"   | 4'-7"  |   |      | 168                |                     |      |       |
| A519             | 4           |      |              | 34   | 38    | 29'-5"  | STR  |        |         |        |   |      | 123                | 1,043               |      |       |
| A520             |             | 55   | 56           |      | 111   | 13'-9"  | 2    | 5'-8"  | 2'-8"   | 5'-8"  |   |      | 789                | 803                 |      |       |
| A521             |             | 55   |              |      | 55    | 11'-11" | 2    | 4'-9"  | 2'-8"   | 4'-9"  |   |      | 684                |                     |      |       |
| A522             |             | 10   | 8            |      | 18    | 30'-1"  | STR  |        |         |        |   |      | 314                | 251                 |      |       |
| A523             |             | 32   | 30           |      | 62    | 7'-11"  | 2    | 3'-6"  | 1'-2"   | 3'-6"  |   |      | 264                | 264                 |      |       |
| A524             |             | 7    | 7            |      | 14    | 3'-11"  | 2    | 0'-10" | 2'-6"   | 0'-10" |   |      | 29                 | 29                  |      |       |
| A525             |             | 32   | 30           |      | 62    | 9'-4"   | 2    | 3'-6"  | 2'-6"   | 3'-7"  |   |      | 312                | 292                 |      |       |
| A526             |             |      | 56           |      | 56    | 9'-5"   | 2    | 3'-6"  | 2'-8"   | 3'-6"  |   |      |                    | 550                 |      |       |
| A527             |             |      |              | 59   | 59    | 7'-11"  | 1    | 0'-10" | 7'-3"   |        |   |      |                    | 487                 |      |       |
| A528             |             |      |              | 59   | 59    | 11'-1"  | 2    | 4'-4"  | 2'-8"   | 4'-4"  |   |      |                    | 682                 |      |       |
| A529             |             |      |              | 4    | 4     | 27'-6"  | STR  |        |         |        |   |      |                    | 115                 |      |       |
| A530             |             |      |              | 10   | 10    | 21'-5"  | STR  |        |         |        |   |      |                    | 223                 |      |       |
| A531             |             |      |              | 31   | 31    | 15'-10" | STR  |        |         |        |   |      |                    | 512                 |      |       |
| A532             |             |      |              | 44   | 44    | 11'-6"  | STR  |        |         |        |   |      |                    | 528                 |      |       |
| A533             |             |      |              | 23   | 23    | 15'-6"  | STR  |        |         |        |   |      |                    | 372                 |      |       |
| A534             |             |      |              | 54   | 54    | 5'-5"   | 2    | 2'-3"  | 1'-2"   | 2'-3"  |   |      |                    | 305                 |      |       |
| A535             |             |      |              | 16   | 16    | 11'-5"  | 2    | 5'-3"  | 1'-2"   | 5'-3"  |   |      |                    | 191                 |      |       |
| A536             |             |      |              | 60   | 60    | 11'-11" | STR  |        |         |        |   |      |                    | 746                 |      |       |
| A537             | 2           |      |              |      | 2     | 27'-4"  | STR  |        |         |        |   |      |                    | 57                  |      |       |
| A601             | 12          |      |              |      | 12    | 13'-6"  | STR  |        |         |        |   |      |                    | 243                 |      |       |
| A602             | 12          |      |              |      | 12    | 13'-3"  | STR  |        |         |        |   |      |                    | 239                 |      |       |
| A603             | 32          |      |              |      | 32    | 12'-5"  | STR  |        |         |        |   |      |                    | 597                 |      |       |
| A604             | 113         |      |              |      | 113   | 20'-9"  | 2    | 2'-1"  | 16'-11" | 2'-1"  |   |      |                    | 3,522               |      |       |
| A605             | 6           |      |              |      | 6     | 31'-4"  | STR  |        |         |        |   |      |                    | 282                 |      |       |
| A606             | 104         |      |              |      | 104   | 29'-10" | STR  |        |         |        |   |      |                    | 4,660               |      |       |
| A607             |             | 58   | 58           | 32   | 116   | 10'-6"  | 2    | 2'-7"  | 5'-8"   | 2'-7"  |   |      |                    | 915                 |      |       |
| A608             |             | 30   | 30           |      | 92    | 12'-4"  | STR  |        |         |        |   |      |                    | 915                 |      |       |
| A609             |             | 11   |              |      | 11    | 7'-8"   | STR  |        |         |        |   |      |                    | 127                 |      |       |
| A610             |             | 11   |              |      | 11    | 8'-0"   | STR  |        |         |        |   |      |                    | 132                 |      |       |
| A611             |             |      | 11           |      | 11    | 6'-4"   | STR  |        |         |        |   |      |                    | 105                 |      |       |
| A612             |             |      | 11           |      | 11    | 6'-8"   | STR  |        |         |        |   |      |                    | 110                 |      |       |
| A613             |             |      |              | 12   | 12    | 8'-10"  | STR  |        |         |        |   |      |                    | 159                 |      |       |
| A614             |             |      |              | 12   | 12    | 9'-1"   | STR  |        |         |        |   |      |                    | 164                 |      |       |
| A615             |             |      |              | 210  | 210   | 20'-0"  | 2    | 2'-1"  | 16'-2"  | 2'-1"  |   |      |                    | 6,308               |      |       |
| A616             |             |      |              | 100  | 100   | 27'-10" | STR  |        |         |        |   |      |                    | 4181                |      |       |
| A167             |             |      |              | 6    | 6     | 29'-5"  | STR  |        |         |        |   |      |                    | 265                 |      |       |
| <b>SUB-TOTAL</b> |             |      |              |      |       |         |      |        |         |        |   |      | <b>23,278</b>      | <b>23,529</b>       |      |       |

| ABUTMENTS           |             |      |              |      |       |        |      |       |         |       |   |      | CALCULATED         | JLS                 | DATE | 11/16 |
|---------------------|-------------|------|--------------|------|-------|--------|------|-------|---------|-------|---|------|--------------------|---------------------|------|-------|
|                     |             |      |              |      |       |        |      |       |         |       |   |      | CHECKED            | JSB                 | DATE | 1/16  |
| MARK                | LEFT BRIDGE |      | RIGHT BRIDGE |      | TOTAL | LENGTH | TYPE | A     | B       | C     | D | INC. | LEFT WEIGHT (LBS.) | RIGHT WEIGHT (LBS.) |      |       |
|                     | REAR        | FWD. | REAR         | FWD. |       |        |      |       |         |       |   |      |                    |                     |      |       |
| A701                | 113         |      |              |      | 113   | 20'-8" | 2    | 2'-1" | 16'-11" | 2'-1" |   |      |                    | 4,773               |      |       |
| A702                |             | 58   | 58           |      | 116   | 10'-5" | 2    | 2'-7" | 5'-8"   | 2'-7" |   |      |                    | 1,235               |      |       |
| A703                |             |      |              |      | 59    | 8'-3"  | 1    | 1'-2" | 7'-3"   |       |   |      |                    | 995                 |      |       |
| A801                | 63          |      |              |      | 62    | 13'-5" | 2    | 2'-7" | 8'-8"   | 2'-7" |   |      |                    | 2,257               |      |       |
| A802                | 24          | 14   | 14           | 24   | 76    | 31'-6" | STR  |       |         |       |   |      |                    | 3,196               |      |       |
| A803                | 24          |      |              | 24   | 48    | 28'-9" | STR  |       |         |       |   |      |                    | 1,842               |      |       |
| A804                | 24          | 14   | 14           | 24   | 76    | 11'-4" | 38   |       |         |       |   |      |                    | 1,150               |      |       |
| A805                | 61          |      |              |      | 61    | 9'-4"  | 1    | 1'-4" | 8'-3"   |       |   |      |                    | 1,520               |      |       |
| A806                |             | 14   | 14           |      | 28    | 30'-1" | STR  |       |         |       |   |      |                    | 1,125               |      |       |
| A807                |             |      |              | 104  | 104   | 10'-4" | 1    | 1'-4" | 9'-3"   |       |   |      |                    | 2,869               |      |       |
| A901                | 111         |      |              |      | 111   | 12'-7" | 1    | 1'-7" | 11'-3"  |       |   |      |                    | 4,749               |      |       |
| A902                |             |      |              | 71   | 71    | 13'-3" | 2    | 2'-7" | 8'-8"   | 2'-7" |   |      |                    | 3,199               |      |       |
| A1001               | 74          |      |              |      | 74    | 13'-2" | 2    | 2'-7" | 8'-8"   | 2'-7" |   |      |                    | 4,193               |      |       |
| <b>SUB-TOTAL</b>    |             |      |              |      |       |        |      |       |         |       |   |      | <b>26,040</b>      | <b>17,832</b>       |      |       |
| <b>TOTAL WEIGHT</b> |             |      |              |      |       |        |      |       |         |       |   |      | <b>49,318</b>      | <b>41,361</b>       |      |       |

\* WEIGHT DOES NOT INCLUDE THE WEIGHT OF THE MECHANICAL CONNECTOR.

**NOTES**

**ADDITIONAL NOTES:** SEE SHEET 84/84 .

**BENDING DIAGRAM:** SEE SHEET 84/84 .

RICHLAND ENGINEERING LIMITED  
29 NORTH PARK STREET  
MANFIELD, OHIO 44902

DATE 11/15/16  
REVIEWED DAP  
STRUCTURE FILE NUMBER 1806688 (L)  
1806718 (R)

DRAWN TWH  
REVISED

DESIGNED BLN  
CHECKED DLR

REINFORCING STEEL LIST - 1  
BRIDGE NO. CUY-77-1433 L & R  
OVER I.R. 490 AND RAMPS

CUY-77-14.35  
PID No. 13567





# SUPERSTRUCTURE

CALCULATED J.S.B. DATE 12/15  
CHECKED J.L.S. DATE 1/16

| MARK         | BRIDGE |       | TOTAL | LENGTH  | TYPE | A      | B      | C      | D     | R      | INC. | WEIGHT (LBS.) |         |
|--------------|--------|-------|-------|---------|------|--------|--------|--------|-------|--------|------|---------------|---------|
|              | LEFT   | RIGHT |       |         |      |        |        |        |       |        |      | LEFT          | RIGHT   |
| S401         | 1494   | 1494  | 2988  | 30'-0"  | STR  |        |        |        |       |        |      | 29,940        | 29,940  |
| S402         | 83     | 83    | 166   | 12'-2"  | STR  |        |        |        |       |        |      | 675           | 675     |
| S501         | 1404   | 1404  | 2808  | 30'-0"  | STR  |        |        |        |       |        |      | 43,931        | 43,931  |
| S502         | 78     | 78    | 156   | 30'-2"  | STR. |        |        |        |       |        |      | 2454          | 2454    |
| S503         | 2138   | 2138  | 4276  | 30'-10" | STR  |        |        |        |       |        |      | 68,756        | 68,756  |
| S504         | 2138   | 2138  | 4276  | 26'-1"  | STR  |        |        |        |       |        |      | 58,164        | 58,164  |
| S505         | 656    | 656   | 1312  | 39'-3"  | STR  |        |        |        |       |        |      | 26,855        | 26,855  |
| S506         | 2138   | 2138  | 4276  | 6'-10"  | 38   |        |        |        |       |        |      | 15,238        | 15,238  |
| S507         | 597    | 597   | 1194  | 7'-4"   | 23   | 0'-11" | 3'-3"  | 3'-0"  |       | 2 3/4" |      | 4566          | 4566    |
| S508         | 597    | 597   | 1194  | 12'-11" | 35   | 0'-7"  | 1'-5"  | 1'-0"  | 4'-7" | 3"     |      | 8043          | 8043    |
| S509         | 116    | 116   | 232   | 12'-1"  | 2    | 4'-10" | 2'-8"  | 4'-10" |       |        |      | 1462          | 1462    |
| S510         | 12     | 12    | 24    | 10'-3"  | 2    | 3'-11" | 2'-8"  | 3'-11" |       |        |      | 128           | 128     |
| S511         | 8      | 8     | 16    | 9'-11"  | 2    | 0'-10" | 8'-6"  | 0'-10" |       |        |      | 83            | 83      |
| S512         | 64     | 64    | 128   | 8'-5"   | 2    | 3'-3"  | 2'-2"  | 3'-3"  |       |        |      | 562           | 562     |
| S513         | 528    | 528   | 1056  | 4'-8"   | STR  |        |        |        |       |        |      | 2570          | 2570    |
| S514         | 16     | 16    | 32    | 5'-8"   | STR  |        |        |        |       |        |      | 95            | 95      |
| S515         | 504    | 504   | 1008  | 16'-3"  | 2    | 4'-0"  | 8'-6"  | 4'-0"  |       |        |      | 8542          | 8542    |
| S516         | 424    | 424   | 848   | 10'-9"  | 2    | 3'-4"  | 4'-4"  | 3'-4"  |       |        |      | 4754          | 4754    |
| S517         | 160    | 160   | 320   | 4'-0"   | 1    | 0'-10" | 3'-4"  |        |       |        |      | 668           | 668     |
| S518         | 84     | 84    | 168   | 6'-0"   | 39   |        |        |        |       |        |      | 526           | 526     |
| S519         | 80     | 80    | 160   | 36'-3"  | 16   | 35'-8" |        |        |       |        |      | 3025          | 3025    |
| S520         | 160    | 160   | 320   | 31'-3"  | 16   | 30'-8" |        |        |       |        |      | 5215          | 5215    |
| S521         | 136    | 136   | 272   | 9'-8"   | STR  |        |        |        |       |        |      | 1371          | 1371    |
| S522         | 336    | 336   | 672   | 6'-0"   | STR  |        |        |        |       |        |      | 2103          | 2103    |
| S523         | 84     | 84    | 168   | 7'-3"   | 2    | 0'-10" | 5'-10" | 0'-10" |       |        |      | 635           | 635     |
| S524         | 60     | 60    | 120   | 9'-11"  | 2    | 0'-10" | 8'-6"  | 0'-10" |       |        |      | 621           | 621     |
| S525         | 8      | 16    | 24    | 4'-8"   | STR  |        |        |        |       |        |      | 39            | 78      |
| S601         | 597    | 597   | 1194  | 3'-0"   | 28   | 1'-6"  | 0'-11" | 1'-0"  |       |        |      | 2690          | 2690    |
| S602         | 597    | 597   | 1194  | 2'-4"   | 1    | 1'-0"  | 1'-6"  |        |       |        |      | 2092          | 2092    |
| S603         | 132    | 132   | 264   | 4'-8"   | STR  |        |        |        |       |        |      | 925           | 925     |
| S604         | 4      | 4     | 8     | 5'-8"   | STR  |        |        |        |       |        |      | 34            | 34      |
| S605         | 34     | 34    | 68    | 9'-8"   | STR  |        |        |        |       |        |      | 494           | 494     |
| S801         | 36     | 36    | 72    | 13'-4"  | 38   |        |        |        |       |        |      | 1282          | 1282    |
| S802         | 8      | 8     | 16    | 30'-10" | STR  |        |        |        |       |        |      | 659           | 659     |
| S803         | 8      | 8     | 16    | 26'-1"  | STR  |        |        |        |       |        |      | 557           | 557     |
| S804         | 12     | 12    | 24    | 13'-2"  | STR  |        |        |        |       |        |      | 422           | 422     |
| S805         | 12     | 12    | 24    | 12'-3"  | STR  |        |        |        |       |        |      | 392           | 392     |
| S806         | 16     | 16    | 32    | 29'-0"  | STR  |        |        |        |       |        |      | 1239          | 1239    |
| S807         | 28     | 28    | 56    | 27'-11" | STR  |        |        |        |       |        |      | 2087          | 2087    |
| D801         | 78     | 78    | 156   | 5'-0"   | 18   | 2'-10" | 1'-0"  | 1'-0"  |       |        |      | 1041          | 1041    |
| <b>TOTAL</b> |        |       |       |         |      |        |        |        |       |        |      | 304,935       | 304,974 |

# SLEEPER SLABS (TYPE C INSTALLATION)

CALCULATED J.S.B. DATE 12/15  
CHECKED J.L.S. DATE 1/16

| MARK         | LEFT |         | RIGHT |         | TOTAL | LENGTH | TYPE | A      | B      | C     | D     | R      | INC. | WEIGHT (LBS.) |       |
|--------------|------|---------|-------|---------|-------|--------|------|--------|--------|-------|-------|--------|------|---------------|-------|
|              | REAR | FORWARD | REAR  | FORWARD |       |        |      |        |        |       |       |        |      | LEFT          | RIGHT |
| SS501        | 11   | 11      | 11    | 11      | 44    | 6'-10" | 38   |        |        |       |       |        |      | 157           | 157   |
| SS502        | 11   | 11      | 11    | 11      | 44    | 29'-8" | STR. |        |        |       |       |        |      | 683           | 683   |
| SS503        | 11   | 11      | 11    | 11      | 44    | 27'-0" | STR. |        |        |       |       |        |      | 620           | 620   |
| SS504        | 59   | 59      | 59    | 59      | 236   | 5'-6"  | STR. |        |        |       |       |        |      | 677           | 677   |
| SS505        | 59   | 59      | 59    | 59      | 236   | 5'-9"  | 30   | 0'-10" | 1'-3"  | 1'-8" | 1'-8" |        |      | 708           | 708   |
| SS506        | 2    | 2       | 2     | 2       | 8     | 7'-4"  | 23   | 0'-11" | 3'-3"  | 3'-0" |       | 2 3/4" |      | 31            | 31    |
| SS507        | 2    | 2       | 2     | 2       | 8     | 13'-9" | 35   | 1'-0"  | 1'-5"  | 1'-0" | 4'-7" | 3"     |      | 57            | 57    |
| SS508        | 16   | 16      | 16    | 16      | 64    | 1'-6"  | STR. |        |        |       |       |        |      | 50            | 50    |
| SS601        | 2    | 2       | 2     | 2       | 8     | 1'-6"  | STR. |        |        |       |       |        |      | 9             | 9     |
| SS602        | 2    | 2       | 2     | 2       | 8     | 2'-9"  | 1    | 1'-0"  | 2'-0"  |       |       |        |      | 17            | 17    |
| SS603        | 2    | 2       | 2     | 2       | 8     | 3'-5"  | 28   | 1'-11" | 0'-11" | 1'-0" |       |        |      | 21            | 21    |
| <b>TOTAL</b> |      |         |       |         |       |        |      |        |        |       |       |        |      | 3030          | 3030  |

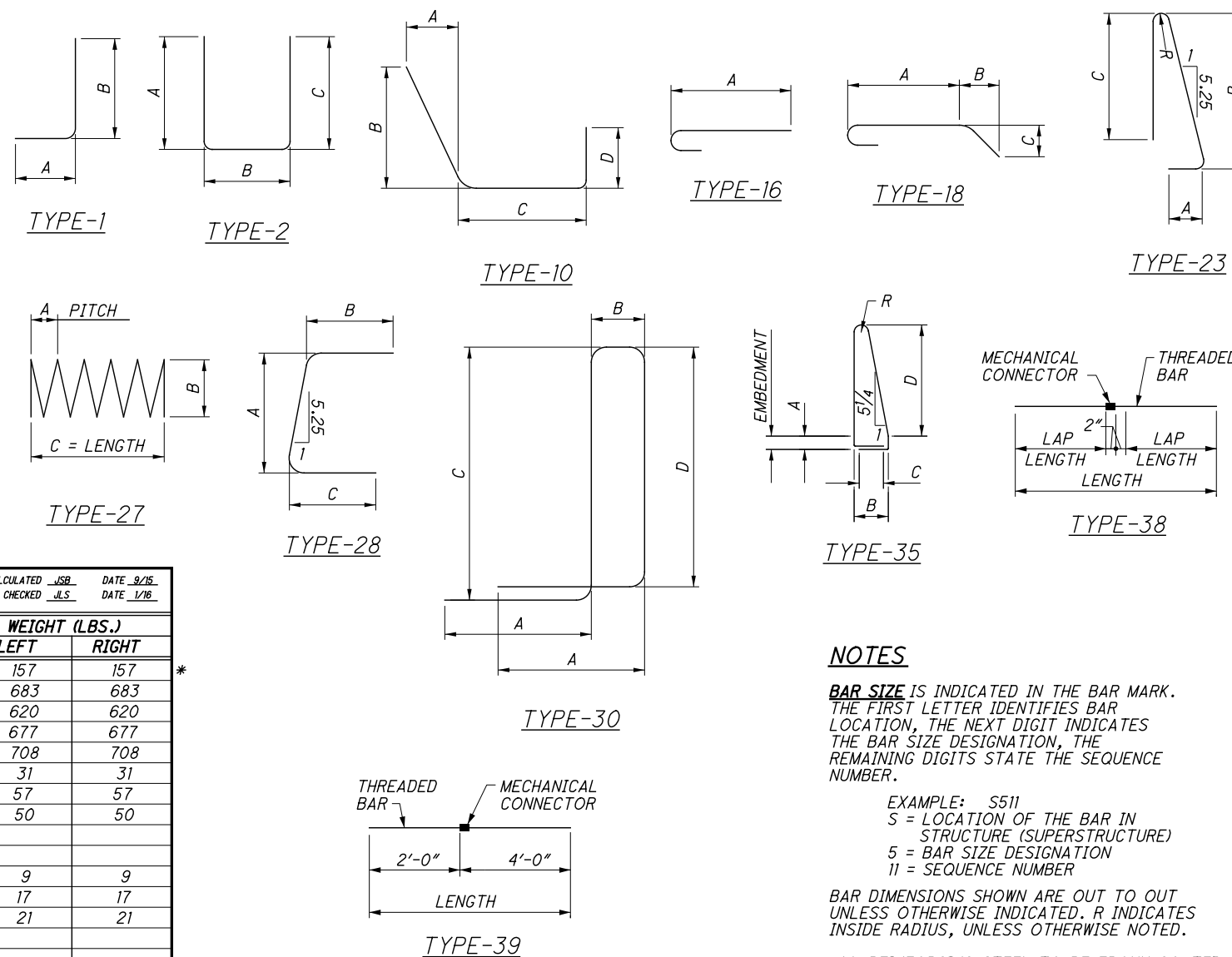
# APPROACH SLABS

CALCULATED J.S.B. DATE 12/15  
CHECKED J.L.S. DATE 1/16

| MARK         | LEFT |         | RIGHT |         | TOTAL | LENGTH  | TYPE | A      | B      | C     | D     | R      | INC. | WEIGHT (LBS.) |        |
|--------------|------|---------|-------|---------|-------|---------|------|--------|--------|-------|-------|--------|------|---------------|--------|
|              | REAR | FORWARD | REAR  | FORWARD |       |         |      |        |        |       |       |        |      | LEFT          | RIGHT  |
| AS501        | 65   | 65      | 65    | 65      | 260   | 6'-10"  | 38   |        |        |       |       |        |      | 927           | 927    |
| AS502        | 65   | 65      | 65    | 65      | 240   | 29'-9"  | STR. |        |        |       |       |        |      | 4034          | 4034   |
| AS503        | 65   | 65      | 65    | 65      | 240   | 27'-0"  | STR. |        |        |       |       |        |      | 3661          | 3661   |
| AS504        | 48   | 48      | 48    | 48      | 192   | 29'-6"  | STR. |        |        |       |       |        |      | 2954          | 2954   |
| AS505        | 24   | 24      | 24    | 24      | 96    | 9'-8"   | STR. |        |        |       |       |        |      | 484           | 484    |
| AS506        | 33   | 33      | 33    | 33      | 132   | 7'-4"   | 23   | 0'-11" | 3'-3"  | 3'-0" |       | 2 3/4" |      | 505           | 505    |
| AS507        | 33   | 33      | 33    | 33      | 132   | 13'-9"  | 35   | 1'-0"  | 1'-5"  | 1'-0" | 4'-7" | 3"     |      | 947           | 947    |
| AS601        | 6    | 6       | 6     | 6       | 24    | 9'-8"   | STR. |        |        |       |       |        |      | 174           | 174    |
| AS602        | 33   | 33      | 33    | 33      | 132   | 2'-9"   | 1    | 1'-0"  | 1'-11" |       |       |        |      | 273           | 273    |
| AS603        | 33   | 33      | 33    | 33      | 132   | 3'-5"   | 28   | 1'-11" | 0'-11" | 1'-0" |       |        |      | 339           | 339    |
| AS1001       | 107  | 107     | 107   | 107     | 428   | 30'-11" | 16   | 29'-6" |        |       |       |        |      | 28,469        | 28,469 |
| <b>TOTAL</b> |      |         |       |         |       |         |      |        |        |       |       |        |      | 42,767        | 42,767 |

\* WEIGHT DOES NOT INCLUDE WEIGHT OF MECHANICAL CONNECTOR.

\*\* WEIGHT FOR INFORMATIONAL PURPOSES ONLY.



## NOTES

**BAR SIZE** IS INDICATED IN THE BAR MARK. THE FIRST LETTER IDENTIFIES BAR LOCATION, THE NEXT DIGIT INDICATES THE BAR SIZE DESIGNATION, THE REMAINING DIGITS STATE THE SEQUENCE NUMBER.

EXAMPLE: S511  
S = LOCATION OF THE BAR IN STRUCTURE (SUPERSTRUCTURE)  
5 = BAR SIZE DESIGNATION  
11 = SEQUENCE NUMBER

BAR DIMENSIONS SHOWN ARE OUT TO OUT UNLESS OTHERWISE INDICATED. R INDICATES INSIDE RADIUS, UNLESS OTHERWISE NOTED.

ALL REINFORCING STEEL TO BE EPOXY COATED.

\\REL8\Current\2005\105040-5\ProjectData\CUY\13567\Design\Structures\CUY077\_1435L\Sheets\13567rib.dgn 12/14/2016 3:56:09 PM DonHelman

**REINFORCING STEEL LIST - 3**  
 BRIDGE NO. CUY-77-1433 L & R OVER I.R. 490 AND RAMPS  
**CUY-77-14.35**  
 PID No. 13567  
 84/84  
 365  
 365  
 RICHLAND ENGINEERING LIMITED  
 29 NORTH PARK STREET  
 MANSFIELD, OHIO 44902  
 DATE 11/15/16  
 REVIEWED DAP  
 DRAWN JLS  
 DESIGNED BLN  
 CHECKED DLR

**GENERAL INFORMATION**

**INTRODUCTION**

AS PART OF THE CUY-77-14.35 BRIDGE REPLACEMENT PROJECT, THE EXISTING IR-77 BRIDGES OVER IR-490 (CUY-77-1433 L&R BRIDGES) ARE PROPOSED TO BE WIDENED TO SUPPORT THREE LANES OF TRAFFIC IN EACH OF THE NORTHBOUND AND SOUTHBOUND DIRECTIONS. THE APPROACH ROADWAY PAVEMENT IS PROPOSED TO BE RAISED AS MUCH AS 5.75 FEET AT THE ABUTMENTS AND WIDENED TO MATCH THE ELEVATION AND WIDTH OF THE PROPOSED BRIDGES. THE OVERALL PROJECT LIMITS EXTEND FROM STA. 67+00 TO STA. 86+95.

**GEOLOGY**

GEOLOGIC REFERENCES INDICATE THE SITE IS LOCATED WITHIN THE ERIE LAKE PLAIN SECTION OF THE HURON-ERIE LAKE PLAINS WHICH OVERLIES A DEEP BURIED VALLEY OF A POST-ILLINOIAN RIVER. THIS DEEP BURIED VALLEY IS FILLED WITH SOIL DEPOSITS CONSISTING OF INTERBEDDED FINE-GRAINED DEPOSITS OF SILT, FINE SAND, AND CLAYEY SILTS. BASED ON BEDROCK TOPOGRAPHIC MAPPING, IT IS ANTICIPATED THAT THE BEDROCK SURFACE LIES IN EXCESS OF 370 FEET BENEATH THE EXISTING GROUND SURFACE, WITH THE BEDROCK STRATA DIPPING TOWARD THE EAST. THE UPPERMOST BEDROCK IS COMPOSED OF BLACK CARBONACEOUS, BLUE-GRAY TO DARK-GRAY CLEVELAND SHALE, AND CHAGRIN SHALE OF THE OHIO SHALE GROUP OF DEVONIAN AGE. BEDROCK WAS NOT ENCOUNTERED IN ANY OF THE BORINGS PERFORMED FOR THIS INVESTIGATION.

**PROGRAM OF INVESTIGATION**

DURING THE PERIOD OF DECEMBER 5 THROUGH 16, 2005, A TOTAL OF TEN (10) BORINGS, TERMED BB-101 THROUGH BB-104, BB-106, BB-111, BB-112, AND BB-114 THROUGH BB-116, WERE PERFORMED FOR THE PURPOSE OF INVESTIGATING THE PAVEMENT SUBGRADES. BORINGS BB-103, BB-104, BB-106, BB-111, BB-112, AND BB-114 WERE ALSO PERFORMED FOR OTHER ASPECTS OF THE PROJECT. THESE BORINGS WERE PERFORMED TO DEPTHS RANGING FROM ABOUT 10 TO 90 FEET BELOW THE EXISTING GROUND SURFACE. BORING BB-101 WAS PERFORMED PRIMARILY FOR THE PROPOSED REHABILITATION OF THE RAMP S-E.

THE BORINGS WERE ADVANCED WITH A TRUCK-MOUNTED DRILL RIG USING 3-1/4-INCH I.D. HOLLOW-STEM AUGERS BETWEEN SAMPLING ATTEMPTS. IN SOME BORINGS, WATER WAS ADDED INSIDE THE HOLLOW-STEM AUGERS TO FACILITATE DRILLING. DISTURBED BUT REPRESENTATIVE SOIL SAMPLES WERE PROCURED BY LOWERING A 2-INCH O.D. SPLIT-BARREL SAMPLER TO THE BOTTOM OF THE BORING AND THEN DRIVING THE SAMPLER INTO THE SOIL WITH A 140-POUND HAMMER FREELY FALLING 30 INCHES (ASTM D1586-STANDARD PENETRATION TEST). WHEN THE INITIAL SAMPLING ATTEMPT FAILED TO RECOVER A REPRESENTATIVE SAMPLE, A 2-1/2-INCH SPLIT-BARREL SAMPLER WAS THEN USED IN AN ATTEMPT TO RETRIEVE THE SAMPLE. SPLIT BARREL SAMPLES WERE EXAMINED IMMEDIATELY AFTER RECOVERY AND REPRESENTATIVE PORTIONS WERE PRESERVED IN AIRTIGHT GLASS JARS. AT THE COMPLETION OF DRILLING, THE BORINGS WERE BACKFILLED OR SEALED AS REQUIRED AND THE SURFACE OF THE EXISTING PAVEMENT AT THE BORING LOCATIONS WAS REPAIRED USING COLD-PATCH ASPHALT OR CONCRETE.

**FINDINGS OF THE INVESTIGATION**

BEGINNING AT THE GROUND SURFACE, BORINGS BB-101 THROUGH BB-104, BB-106, BB-112, BB-114, AND BB-115 ENCOUNTERED NEAR SURFACE MATERIALS CONSISTING OF ABOUT 5 TO 9 INCHES OF ASPHALT OVERLYING ABOUT 6 TO 9.5 INCHES OF CONCRETE. BORINGS BB-111 AND BB-116 ENCOUNTERED 16 TO 17 INCHES OF ASPHALT ONLY.

BENEATH THE SURFICIAL MATERIALS, THE BORINGS ENCOUNTERED EXISTING FILL OR POSSIBLE FILL RANGING FROM ABOUT 1.7 TO 30.8 FEET IN THICKNESS. THE FILL MATERIALS WERE ENCOUNTERED BEGINNING AT ABOUT ELEVATION 689 AND GENERALLY EXTENDED TO ABOUT ELEVATION 662. THE FILL MATERIALS CONSISTED PRIMARILY OF MEDIUM-DENSE TO VERY-DENSE BROWN FINE TO COARSE SAND CONTAINING VARIOUS AMOUNTS OF GRAVEL, SILT, AND CLAY (A-1-b, A-3a, AND A-4a). A LAYER OF LOOSE TO MEDIUM-DENSE BROWN FINE TO COARSE SAND (A-1-b) WAS ENCOUNTERED IN BORING BB-102. OCCASIONAL LAYERS OF LOOSE TO MEDIUM-DENSE BROWN AND GRAY FINE SAND (Est. A-3), DENSE BROWN SILT (A-4b), AND STIFF TO HARD BROWN CLAY WITH VARIOUS AMOUNTS OF SILT AND SAND (A-6a) WERE ENCOUNTERED IN THE BORINGS.

UNDERLYING THE SURFICIAL MATERIALS AND FILL OR POSSIBLE FILL, NATURAL LOOSE TO DENSE BROWN FINE SAND, WITH VARIOUS AMOUNTS OF COARSE SAND, SILT, AND CLAY (A-3 AND A-3a), WAS ENCOUNTERED TO ABOUT ELEVATION 618. IN BORING BB-103, A LAYER OF LOOSE TO MEDIUM-DENSE GRAY SILT (Est. A-4a) WAS ENCOUNTERED WITHIN THE LAYERS OF FINE SAND. ALSO IN BORING BB-103, AN 11.5-FOOT THICK LAYER OF VERY-LOOSE TO LOOSE BROWN FINE TO COARSE SAND (Est. A-3a) WAS ENCOUNTERED STARTING AT ABOUT ELEVATION 654.4. OCCASIONAL LAYERS OF MEDIUM-DENSE TO VERY-DENSE BROWN FINE SAND (A-3 AND A-3a) WERE ALSO ENCOUNTERED IN THE BORINGS.

**LEGEND FOR PROJECT AVERAGE RESULTS OF TESTS - 34 SAMPLES TESTED**

| DESCRIPTION                             | ODOT CLASS. | % AGG. | % C. SAND | % F. SAND | % SILT | % CLAY | LIQUID LIMIT | PLASTICITY INDEX | WATER CONTENT | SAMPLES TESTED |
|-----------------------------------------|-------------|--------|-----------|-----------|--------|--------|--------------|------------------|---------------|----------------|
| GRAVEL AND/OR STONE FRAGMENTS WITH SAND | A-1-b (0)   | 20     | 37        | 26        | 9      | 8      | NP           | NP               | 9             | 6              |
| FINE SAND                               | A-3 (0)     | 0      | 15        | 77        | 4      | 4      | NP           | NP               | 9             | 3              |
| COARSE AND FINE SAND                    | A-3a (0)    | 7      | 17        | 49        | 17     | 10     | NP           | NP               | 11            | 10             |
| SANDY SILT                              | A-4a (2)    | 5      | 14        | 34        | 29     | 18     | NP/21#       | NP/6#            | 15            | 9              |
| SILT                                    | A-4b (8)    | 0      | 1         | 13        | 66     | 20     | NP/24#       | NP/7#            | 20            | 3              |
| SILT AND CLAY                           | A-6a (9)    | 1      | 1         | 3         | 51     | 44     | 34           | 12               | 26            | 2              |
| SILTY CLAY                              | A-6b (10)   | 0      | 1         | 2         | 37     | 60     | 37           | 12               | 26            | 1              |

|                                            |                                                            |
|--------------------------------------------|------------------------------------------------------------|
| ASPHALT = "X" = APPROXIMATE DEPTH          | WATER CONTENT NEARLY EQUAL TO OR GREATER THAN LIQUID LIMIT |
| GRANULAR BASE = "X" = APPROXIMATE DEPTH    | INDICATES A NON-PLASTIC MATERIAL WITH A HIGH WATER CONTENT |
| CONCRETE = "X" = APPROXIMATE DEPTH         | NUMBER OF BLOWS FOR "STANDARD PENETRATION TEST"            |
| SOIL BORING - PLAN VIEW                    | X = NUMBER OF BLOWS FOR FIRST 6 INCHES                     |
| SOIL BORING PLOTTED TO VERTICAL SCALE ONLY | Y = NUMBER OF BLOWS FOR SECOND 6 INCHES                    |
|                                            | Z = NUMBER OF BLOWS FOR THIRD 6 INCHES                     |
|                                            | —W FREE WATER LEVEL                                        |
|                                            | —S STATIC WATER LEVEL                                      |
|                                            | P SHELBY TUBE SAMPLER, 3" O.D., HYDRAULICALLY PUSHED.      |

**NOTES:** NUMERALS ADJACENT TO THE BORINGS IN PROFILE VIEW INDICATE THE NATURAL MOISTURE CONTENT IN PERCENT. NP SHOWN IN THE LIQUID LIMIT AND PLASTICITY INDEX COLUMNS INDICATES THAT THE MATERIAL IS NON-PLASTIC # NUMERICAL VALUES IN ABOVE TABLE ARE REPRESENTATIVE OF SOIL SAMPLES NOT IDENTIFIED AS BEING "NON-PLASTIC".

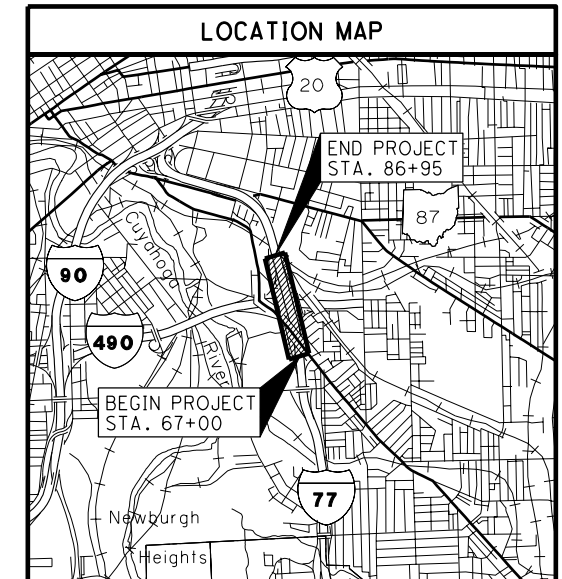
IN BORING BB-112, A 3.5-FOOT LAYER OF SOFT TO MEDIUM-STIFF GRAY SILT, "AND" CLAY (A-6a) WAS ENCOUNTERED BEGINNING AT ABOUT ELEVATION 665.9. THIS SOFT TO MEDIUM-STIFF COHESIVE LAYER WAS ENCOUNTERED JUST BELOW THE FILL MATERIAL, INDICATING THIS LAYER MAY BE BURIED TOPSOIL. A LOSS-ON-IGNITION TEST PERFORMED ON SAMPLE S-11 IN BORING BB-112 INDICATES THIS SOFT LAYER HAS AN ORGANIC CONTENT OF 2.9%, WHICH MAY BE CONSIDERED SLIGHTLY ORGANIC.

UNDERLYING THE FINE SAND STRATUM, LAYERS OF MEDIUM-DENSE TO VERY-DENSE AND/OR MEDIUM-STIFF TO HARD GRAY SILT WITH VARIOUS AMOUNTS OF FINE SAND AND CLAY (A-4b, A-4a) WERE INTERBEDDED WITH LAYERS OF MEDIUM-STIFF TO HARD GRAY SILT, "AND" CLAY AND/OR SILTY CLAY (A-6a, A-6b). THESE FINE-GRAINED SOILS WERE ENCOUNTERED TO THE TERMINATION DEPTHS OF BORINGS BB-106 AND BB-111, WHICH WERE PERFORMED AS DEEP AS ELEVATION 594.4. THE MAJORITY OF THE SOIL SAMPLES IN THESE STRATA CONTAINED SILT, FINE SAND, OR SILTY CLAY SEAMS AND/OR LENSES.

SLIGHT TO MODERATE AMOUNTS OF SEEPAGE WERE ENCOUNTERED IN THREE (3) OF THE TEN (10) BORINGS (BB-103, BB-111, AND BB-114) AT VARIOUS DEPTHS BETWEEN ABOUT ELEVATION 664.9 AND 631.8. WATER WAS ENCOUNTERED DURING DRILLING AND PRIOR TO INTRODUCTION OF ANY WATER INTO THE BOREHOLE IN BORING BB-106 AT ABOUT ELEVATION 625.9. WATER WAS MEASURED INSIDE THE HOLLOW-STEM AUGERS PRIOR TO INTRODUCTION OF ANY WATER INTO THE BOREHOLE OF BORING BB-111 AT ABOUT ELEVATION 631.8. IN BORING BB-106, DRILLING WAS STOPPED AT ABOUT 68.5 FEET AND THE BOREHOLE WAS THEN COVERED AT THE END OF THE DAY ON DECEMBER 5, 2005. THE FOLLOWING MORNING, PRIOR TO RESUMING DRILLING, APPROXIMATELY 3 FEET OF HEAVE WAS MEASURED TO HAVE OCCURRED INSIDE THE HOLLOW-STEM AUGER.

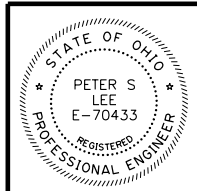
**NOTE:**

ALL AVAILABLE SOIL AND BEDROCK INFORMATION WHICH CAN BE CONVENIENTLY SHOWN ON THE SOIL PROFILE SHEETS HAS BEEN SO REPORTED. ADDITIONAL SUBSURFACE INVESTIGATIONS, SOIL TESTS, AND BEDROCK BORINGS MAY HAVE BEEN MADE TO STUDY SOME SPECIAL ASPECT OF THE PROJECT. COPIES OF THIS DATA, IF ANY, MAY BE INSPECTED IN THE DISTRICT 12 DEPUTY DIRECTOR'S OFFICE, THE OFFICE OF GEOTECHNICAL ENGINEERING AT 1600 WEST BROAD STREET, THE OFFICE OF PAVEMENT ENGINEERING, OR THE OFFICE OF STRUCTURAL ENGINEERING AT 1980 WEST BROAD STREET, IN COLUMBUS, OHIO.



RECON - PSL (4/19/05 AND 4/21/05)  
 DRILLING - OTB (12/5/05 - 12/16/05)  
 DRAFTING - BLR (3/5/06 - 3/24/06, 11/21/07)

| PROJECT INDEX           |            |                                     |                                    |
|-------------------------|------------|-------------------------------------|------------------------------------|
| STATION FROM            | STATION TO | PLAN AND PROFILE VIEW SHEET NUMBERS | € CUT (MAXIMUM) / € FILL (MAXIMUM) |
| <u>I.R. 77 MAINLINE</u> |            |                                     |                                    |
| 67+00                   | 86+95      | 3 AND 4                             | 0.25' / 5.75'                      |



|                 |                    |                      |                |
|-----------------|--------------------|----------------------|----------------|
| DRAWN BY<br>BLR | REVIEWED BY<br>JLS | DATE<br>3/24/06      | CHECKED<br>PSL |
|                 |                    | REVISION<br>11/21/07 |                |

SOIL PROFILE

**CUY-77-14.35**  
 PID No. 13567

BBCKM File name: ...8012-00951-300010 020.dgn  
 Tab: Default  
 Plot Date: 11/19/2007 8:05:32 AM  
 By: BRush

**SUMMARY OF SOIL TEST DATA**

NOTE: THE LOCATIONS OF THE BORINGS ARE GIVEN WITH RESPECT TO STATIONING ALONG THE PROPOSED CENTERLINE OF THIS PROJECT.  
 NP SHOWN IN THE LIQUID LIMIT AND PLASTICITY INDEX COLUMNS INDICATES THAT THE MATERIAL IS NON-PLASTIC  
 \* DENOTES SAMPLE OBTAINED AT OR NEAR PROPOSED SUBGRADE

| STATION & OFFSET | RECOVERED SAMPLE         |                                              |        |        |        | LIQUID LIMIT | PLASTICITY INDEX | % W.C. | ODOT CLASS.   | STATION & OFFSET                 | RECOVERED SAMPLE                               |                                                     |          |        |        | LIQUID LIMIT | PLASTICITY INDEX | % W.C. | ODOT CLASS. |           |           |           |
|------------------|--------------------------|----------------------------------------------|--------|--------|--------|--------------|------------------|--------|---------------|----------------------------------|------------------------------------------------|-----------------------------------------------------|----------|--------|--------|--------------|------------------|--------|-------------|-----------|-----------|-----------|
|                  | DEPTH (ft)               | % AGG.                                       | % C.S. | % F.S. | % SILT |              |                  |        |               |                                  | % CLAY                                         | DEPTH (ft)                                          | % AGG.   | % C.S. | % F.S. |              |                  |        |             | % SILT    | % CLAY    |           |
| 64+05 68' Rt.    | 1.5- 2.5                 | 6                                            | 21     | 58     | 8      | 7            | NP               | NP     | 7             | 80+30 10' Rt.                    | 1.5- 2.5                                       | 5                                                   | 14       | 26     | 37     | 18           | NP               | NP     | 14          | A-4a (4)  |           |           |
|                  | 3.0- 4.1                 | 1                                            | 12     | 77     | 5      | 5            | NP               | NP     | 8             |                                  | 3.0- 4.2                                       | 5                                                   | 21       | 38     | 20     | 16           | NP               | NP     | 11          | A-4a (0)  |           |           |
|                  | 4.5- 5.7                 | Brown fine sand                              |        |        |        |              |                  |        | 10            |                                  | 4.5- 5.5                                       | Brown fine sand (Fill)                              |          |        |        |              |                  |        | 11          | Est. A-3a |           |           |
|                  | 6.0- 7.3                 | Brown fine sand                              |        |        |        |              |                  |        | 13            |                                  | 6.0- 7.3                                       | Brown fine sand (Fill)                              |          |        |        |              |                  |        | 11          | Est. A-3a |           |           |
|                  | 8.5- 9.7                 | Brown fine sand                              |        |        |        |              |                  |        |               |                                  | 8.5- 10.0                                      | Brown fine sand (Fill)                              |          |        |        |              |                  |        |             |           |           |           |
| 67+50 27' Rt.    | 1.5- 3.0                 | 19                                           | 36     | 25     | 11     | 9            | NP               | NP     | 7             | 81+61 37' Lt.                    | 1.5- 2.5                                       | 3                                                   | 10       | 24     | 40     | 23           | NP               | NP     | 15          | A-4a (6)  |           |           |
|                  | 3.0- 4.5                 | 26                                           | 37     | 23     | 7      | 7            | NP               | NP     | 9             |                                  | 3.0- 4.3                                       | 24                                                  | 27       | 26     | --     | 23           | --               | NP     | NP          | 10        | A-1-b (0) |           |
|                  | 4.5- 5.8                 | Brown fine to coarse sand (Fill)             |        |        |        |              |                  |        | 7             |                                  | 4.5- 6.0                                       | Brown fine to coarse sand (Fill)                    |          |        |        |              |                  |        |             |           |           |           |
|                  | 6.0- 7.3                 | Brown fine to coarse sand (Fill)             |        |        |        |              |                  |        | 3             |                                  | 6.0- 7.5                                       | Brown fine to coarse sand (Fill)                    |          |        |        |              |                  |        |             |           |           |           |
|                  | 8.5- 10.0                | Brown fine sand                              |        |        |        |              |                  |        |               |                                  | 8.5- 9.7                                       | Brown fine to coarse sand (Fill)                    |          |        |        |              |                  |        |             |           |           |           |
| 70+99 35' Lt.    | 1.5- 2.8                 | 4                                            | 9      | 43     | --     | 44           | --               | NP     | NP            | 13                               | 82+00 40' Rt.                                  | 1.5- 2.7                                            | 3        | 16     | 45     | 21           | 15               | NP     | NP          | 11        | A-4a (0)  |           |
|                  | 3.0- 4.5                 | 13                                           | 20     | 34     | --     | 33           | --               | NP     | NP            | 9                                |                                                | 3.0- 4.5                                            | 5        | 21     | 40     | 18           | 16               | NP     | NP          | 11        | A-3a (0)  |           |
|                  | 4.5- 6.0                 | 9                                            | 26     | 30     | 25     | 10           | NP               | NP     | 10            | 4.5- 6.0                         |                                                | Brown fine to coarse sand (Fill)                    |          |        |        |              |                  |        |             |           |           |           |
|                  | 6.0- 7.5                 | Brown fine to coarse sand (Fill)             |        |        |        |              |                  |        | 13            | 6.0- 7.5                         |                                                | Brown fine to coarse sand (Fill)                    |          |        |        |              |                  |        |             |           |           |           |
|                  | 8.5- 10.0                | Brown fine to coarse sand (Fill)             |        |        |        |              |                  |        |               | 8.5- 10.0                        |                                                | Brown fine to coarse sand (Fill)                    |          |        |        |              |                  |        |             |           |           |           |
|                  | 11.0- 12.3               | Gray silt                                    |        |        |        |              |                  |        |               | 11.0- 12.5                       |                                                | Brown fine to coarse sand (Fill)                    |          |        |        |              |                  |        |             |           |           |           |
|                  | 13.5- 14.8               | Gray silt                                    |        |        |        |              |                  |        |               | 13.5- 15.0                       |                                                | Brown fine to coarse sand (Fill)                    |          |        |        |              |                  |        |             |           |           |           |
|                  | 16.0- 17.0               | Brown fine sand                              |        |        |        |              |                  |        |               | 16.0- 17.5                       |                                                | Brown fine to coarse sand (Fill)                    |          |        |        |              |                  |        |             |           |           |           |
|                  | 18.5- 19.6               | Brown fine sand                              |        |        |        |              |                  |        |               | 18.5- 20.0                       |                                                | Brown fine to coarse sand (Fill)                    |          |        |        |              |                  |        |             |           |           |           |
|                  | 21.0- 22.0               | Brown fine to coarse sand                    |        |        |        |              |                  |        |               | 21.0- 22.5                       |                                                | Brown silt, "and" fine to coarse sand (Fill)        |          |        |        |              |                  |        |             |           |           |           |
|                  | 23.5- 24.5               | Brown fine to coarse sand                    |        |        |        |              |                  |        |               | 23.5- 25.0                       |                                                | Brown fine to coarse sand, some silt (Fill)         |          |        |        |              |                  |        |             |           |           |           |
|                  | 28.5- 29.8               | Brown fine to coarse sand                    |        |        |        |              |                  |        |               | 26.0- 27.5                       |                                                | Brown fine sand                                     |          |        |        |              |                  |        |             |           |           |           |
|                  | 33.5- 34.5               | Brown fine to coarse sand                    |        |        |        |              |                  |        |               | 28.5- 30.0                       |                                                | Brown fine sand                                     |          |        |        |              |                  |        |             |           |           |           |
|                  | 38.5- 40.0               | Brown fine sand                              |        |        |        |              |                  |        |               | 33.5- 35.0                       |                                                | Brown fine sand                                     |          |        |        |              |                  |        |             |           |           |           |
|                  | 72+90 34' Rt.            | 1.5- 2.8                                     | 8      | 14     | 33     | 28           | 17               | NP     | NP            | 11                               |                                                | 83+50 27' Rt.                                       | 1.5- 2.5 | 6      | 15     | 33           | 31               | 15     | NP          | NP        | 17        | A-4a (2)* |
| 3.0- 4.5         |                          | Brown and gray fine to coarse sand (Fill)    |        |        |        |              |                  |        | 13            | 3.0- 4.5                         | 5                                              |                                                     | 20       | 53     | 11     | 11           | NP               | NP     | 8           | A-3a (0)  |           |           |
| 4.5- 5.6         |                          | 5                                            | 14     | 31     | 27     | 23           | 21               | 6      | 4.5- 5.5      | Brown fine to coarse sand (Fill) |                                                |                                                     |          |        |        |              |                  |        |             |           |           |           |
| 6.0- 7.5         |                          | Gray and brown fine to coarse sand (Fill)    |        |        |        |              |                  |        | 7             | 6.0- 7.5                         | Brown fine to coarse sand (Fill)               |                                                     |          |        |        |              |                  |        |             |           |           |           |
| 8.5- 10.0        |                          | Gray and brown fine to coarse sand (Fill)    |        |        |        |              |                  |        |               | 8.5- 10.0                        | Brown fine to coarse sand (Fill)               |                                                     |          |        |        |              |                  |        |             |           |           |           |
| 11.0- 12.5       |                          | Gray and brown fine to coarse sand (Fill)    |        |        |        |              |                  |        |               | 11.0- 12.5                       | Brown fine to coarse sand (Fill)               |                                                     |          |        |        |              |                  |        |             |           |           |           |
| 13.5- 15.0       |                          | Gray and brown fine to coarse sand (Fill)    |        |        |        |              |                  |        |               | 13.5- 15.0                       | Brown fine to coarse sand                      |                                                     |          |        |        |              |                  |        |             |           |           |           |
| 16.0- 17.5       |                          | Gray and brown fine to coarse sand (Fill)    |        |        |        |              |                  |        |               | 16.0- 17.5                       | Brown fine to coarse sand                      |                                                     |          |        |        |              |                  |        |             |           |           |           |
| 18.5- 20.0       |                          | Gray and brown fine to coarse sand (Fill)    |        |        |        |              |                  |        |               | 18.5- 20.0                       | Brown fine to coarse sand                      |                                                     |          |        |        |              |                  |        |             |           |           |           |
| 21.0- 22.5       |                          | Brown silt, "and" fine to coarse sand (Fill) |        |        |        |              |                  |        |               | 21.0- 22.5                       | Brown fine to coarse sand (Fill)               |                                                     |          |        |        |              |                  |        |             |           |           |           |
| 23.5- 25.0       |                          | Brown fine to coarse sand, some silt (Fill)  |        |        |        |              |                  |        |               | 23.5- 25.0                       | 0                                              |                                                     | 1        | 4      | 53     | 42           | 34               | 11     | 31          | 31        | A-6a (8)  |           |
| 26.0- 27.5       |                          | Brown fine sand                              |        |        |        |              |                  |        |               | 25.0- 27.0                       | 1                                              |                                                     | 1        | 3      | 49     | 46           | 34               | 13     | 28          | 28        | A-6a (9)  |           |
| 28.5- 30.0       |                          | Brown fine sand                              |        |        |        |              |                  |        |               | 28.5- 29.7                       | Brown fine to coarse sand                      |                                                     |          |        |        |              |                  |        |             |           |           |           |
| 33.5- 35.0       |                          | Brown fine sand                              |        |        |        |              |                  |        |               | 33.5- 35.0                       | Brown fine to coarse sand                      |                                                     |          |        |        |              |                  |        |             |           |           |           |
| 38.5- 40.0       |                          | Brown fine sand                              |        |        |        |              |                  |        |               | 38.5- 40.0                       | Brown fine sand                                |                                                     |          |        |        |              |                  |        |             |           |           |           |
| 74+20 10' Lt.    | 1.5- 2.7                 | 7                                            | 21     | 48     | 14     | 10           | NP               | NP     | 8             | 86+45 49' Lt.                    | 1.5- 2.5                                       | 10                                                  | 16       | 50     | --     | 24           | --               | NP     | NP          | 9         | A-3a (0)* |           |
|                  | 3.0- 4.3                 | 16                                           | 34     | 29     | 13     | 8            | NP               | NP     | 8             |                                  | 3.0- 4.5                                       | 9                                                   | 19       | 49     | --     | 23           | --               | NP     | NP          | 11        | A-3a (0)  |           |
|                  | 4.5- 5.8                 | Brown fine to coarse sand (Fill)             |        |        |        |              |                  |        | 10            |                                  | 4.5- 6.0                                       | Brown and dark-gray fine to coarse sand (Fill)      |          |        |        |              |                  |        |             |           |           |           |
|                  | 6.0- 7.5                 | Brown fine to coarse sand (Fill)             |        |        |        |              |                  |        | 8             |                                  | 6.0- 7.5                                       | Brown and dark-gray fine to coarse sand (Fill)      |          |        |        |              |                  |        |             |           |           |           |
|                  | 8.5- 10.0                | Brown fine to coarse sand (Fill)             |        |        |        |              |                  |        |               |                                  | 8.5- 10.0                                      | Brown fine sand, some silt                          |          |        |        |              |                  |        |             |           |           |           |
|                  | 11.0- 12.5               | Brown fine to coarse sand (Fill)             |        |        |        |              |                  |        | 10            |                                  | 11.0- 12.5                                     | Brown fine to coarse sand (Fill)                    |          |        |        |              |                  |        |             |           |           |           |
|                  | 13.5- 15.0               | Brown fine to coarse sand (Fill)             |        |        |        |              |                  |        |               |                                  | 13.5- 15.0                                     | Brown fine to coarse sand                           |          |        |        |              |                  |        |             |           |           |           |
|                  | 16.0- 17.5               | 18                                           | 33     | 32     | 10     | 7            | NP               | NP     | 11            |                                  | 16.0- 17.5                                     | Brown fine to coarse sand                           |          |        |        |              |                  |        |             |           |           |           |
|                  | 18.5- 20.0               | Brown fine to coarse sand (Fill)             |        |        |        |              |                  |        |               |                                  | 18.5- 20.0                                     | Brown fine to coarse sand                           |          |        |        |              |                  |        |             |           |           |           |
|                  | 21.0- 22.3               | Brown fine to coarse sand (Fill)             |        |        |        |              |                  |        | 10            |                                  | 21.0- 22.5                                     | Brown fine to coarse sand                           |          |        |        |              |                  |        |             |           |           |           |
|                  | 23.5- 25.0               | Brown fine to coarse sand (Possible Fill)    |        |        |        |              |                  |        |               |                                  | 23.5- 24.8                                     | Brown fine sand                                     |          |        |        |              |                  |        |             |           |           |           |
|                  | 26.0- 27.2               | Brown fine to coarse sand (Possible Fill)    |        |        |        |              |                  |        |               |                                  | 1.5- 2.5                                       | 6                                                   | 15       | 33     | 31     | 15           | NP               | NP     | 17          | 17        | A-4a (2)* |           |
|                  | 28.5- 29.7               | 19                                           | 53     | 21     | 3      | 4            | NP               | NP     | 4             |                                  | 3.0- 4.5                                       | 5                                                   | 20       | 53     | 11     | 11           | NP               | NP     | 8           | A-3a (0)  |           |           |
|                  | 33.5- 34.5               | Brown fine sand                              |        |        |        |              |                  |        |               |                                  | 4.5- 5.5                                       | Brown fine to coarse sand (Fill)                    |          |        |        |              |                  |        |             |           |           |           |
|                  | 38.5- 40.0               | Brown fine sand                              |        |        |        |              |                  |        |               |                                  | 5.5- 6.0                                       | Brown and orange mottled with gray clay, "and" silt |          |        |        |              |                  |        |             |           |           |           |
| 43.5- 45.0       | 0                        | 21                                           | 73     | 2      | 4      | NP           | NP               | 9      | 6.0- 7.3      | Brown fine sand, some silt       |                                                |                                                     |          |        |        |              |                  |        |             |           |           |           |
| 48.5- 49.7       | Brown fine sand          |                                              |        |        |        |              |                  |        | 8.5- 10.0     | 4                                | 10                                             | 41                                                  | 28       | 17     | NP     | NP           | 11               | 11     | A-4a (2)    |           |           |           |
| 53.5- 54.8       | Brown and gray fine sand |                                              |        |        |        |              |                  |        | 88+50 27' Rt. | 1.5- 2.5                         | 10                                             | 16                                                  | 50       | --     | 24     | --           | NP               | NP     | 9           | A-3a (0)* |           |           |
| 58.5- 60.0       | 0                        | 0                                            | 79     | 17     | 4      | NP           | NP               | 27     |               | 3.0- 4.5                         | 9                                              | 19                                                  | 49       | --     | 23     | --           | NP               | NP     | 11          | A-3a (0)  |           |           |
| 63.5- 65.0       | Brown and gray fine sand |                                              |        |        |        |              |                  | 23     |               | 4.5- 6.0                         | Brown and dark-gray fine to coarse sand (Fill) |                                                     |          |        |        |              |                  |        |             |           |           |           |
| 68.5- 70.0       | Brown and gray fine sand |                                              |        |        |        |              |                  |        |               | 6.0- 7.5                         | Brown and dark-gray fine to coarse sand (Fill) |                                                     |          |        |        |              |                  |        |             |           |           |           |
| 73.5- 74.8       | 1                        | 1                                            | 6      | 67     | 25     | 24           | 7                | 19     |               | 8.5- 9.7                         | Brown fine to coarse sand                      |                                                     |          |        |        |              |                  |        |             |           |           |           |
| 78.5- 79.9       | Gray silt                |                                              |        |        |        |              |                  |        |               |                                  |                                                |                                                     |          |        |        |              |                  |        |             |           |           |           |
| 83.5- 84.9       | Gray silty clay          |                                              |        |        |        |              |                  |        |               |                                  |                                                |                                                     |          |        |        |              |                  |        |             |           |           |           |
| 88.5- 90.0       | 0                        | 1                                            | 2      | 37     | 60     | 37           | 16               | 26     |               |                                  |                                                |                                                     |          |        |        |              |                  |        |             |           |           |           |
|                  |                          |                                              |        |        |        |              |                  | 26     |               |                                  |                                                |                                                     |          |        |        |              |                  |        |             |           |           |           |

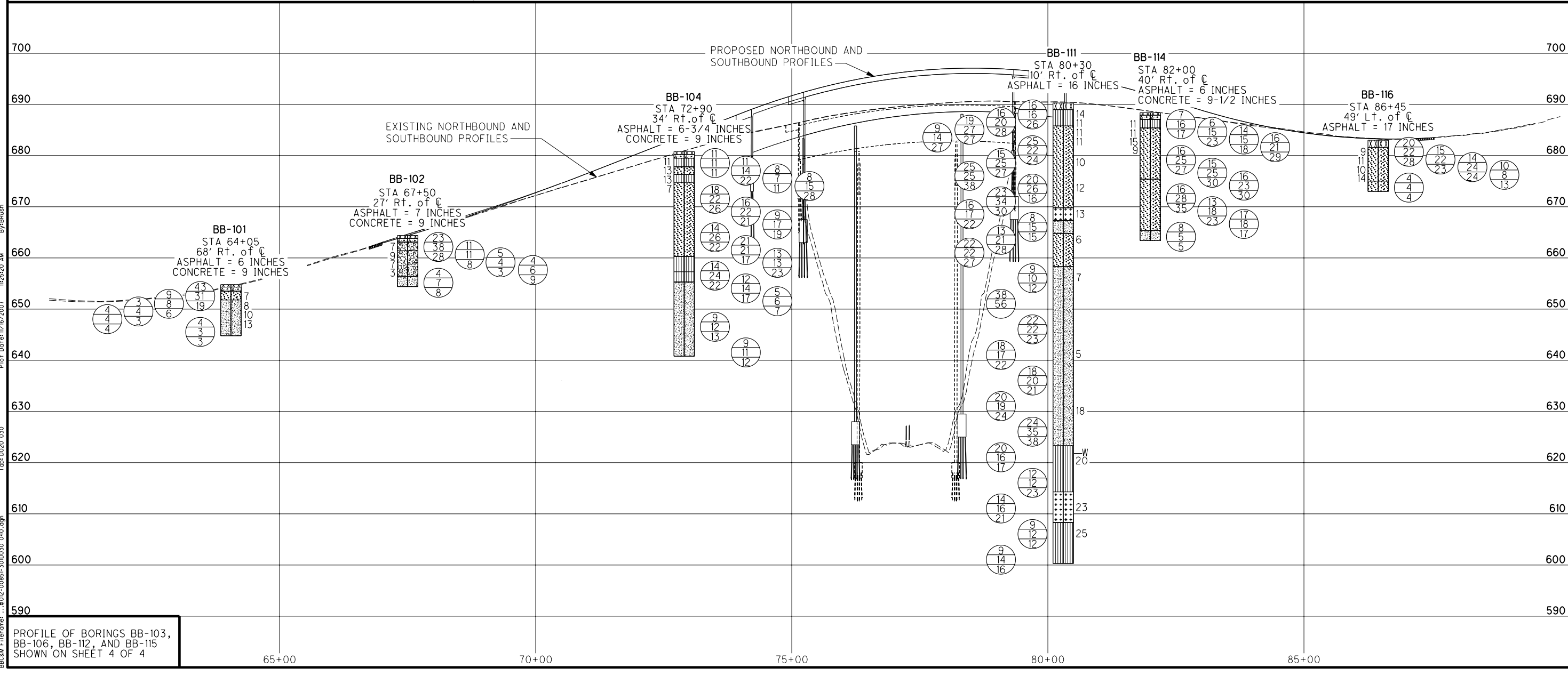
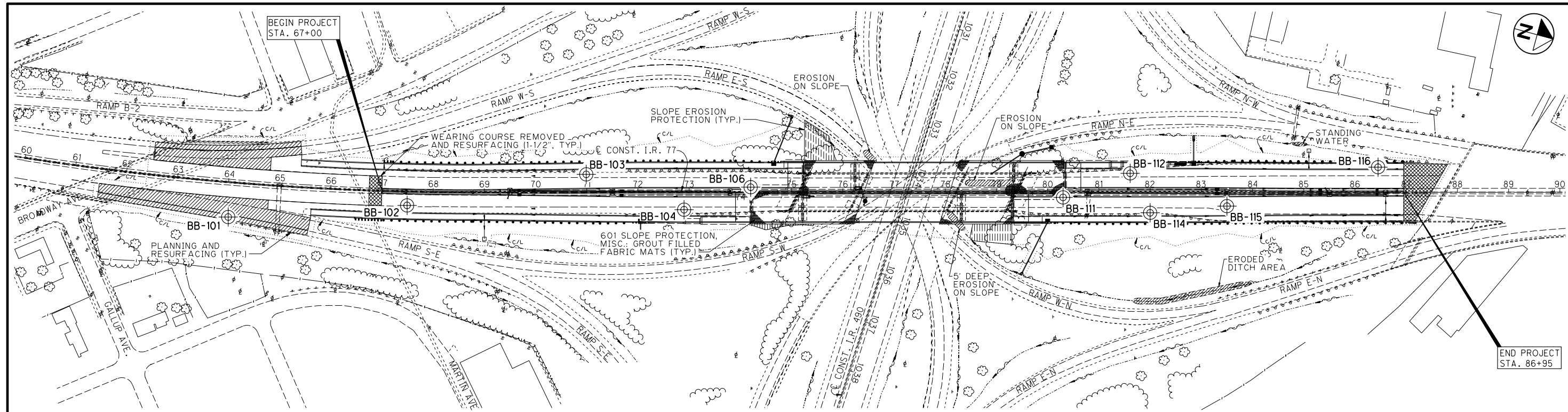
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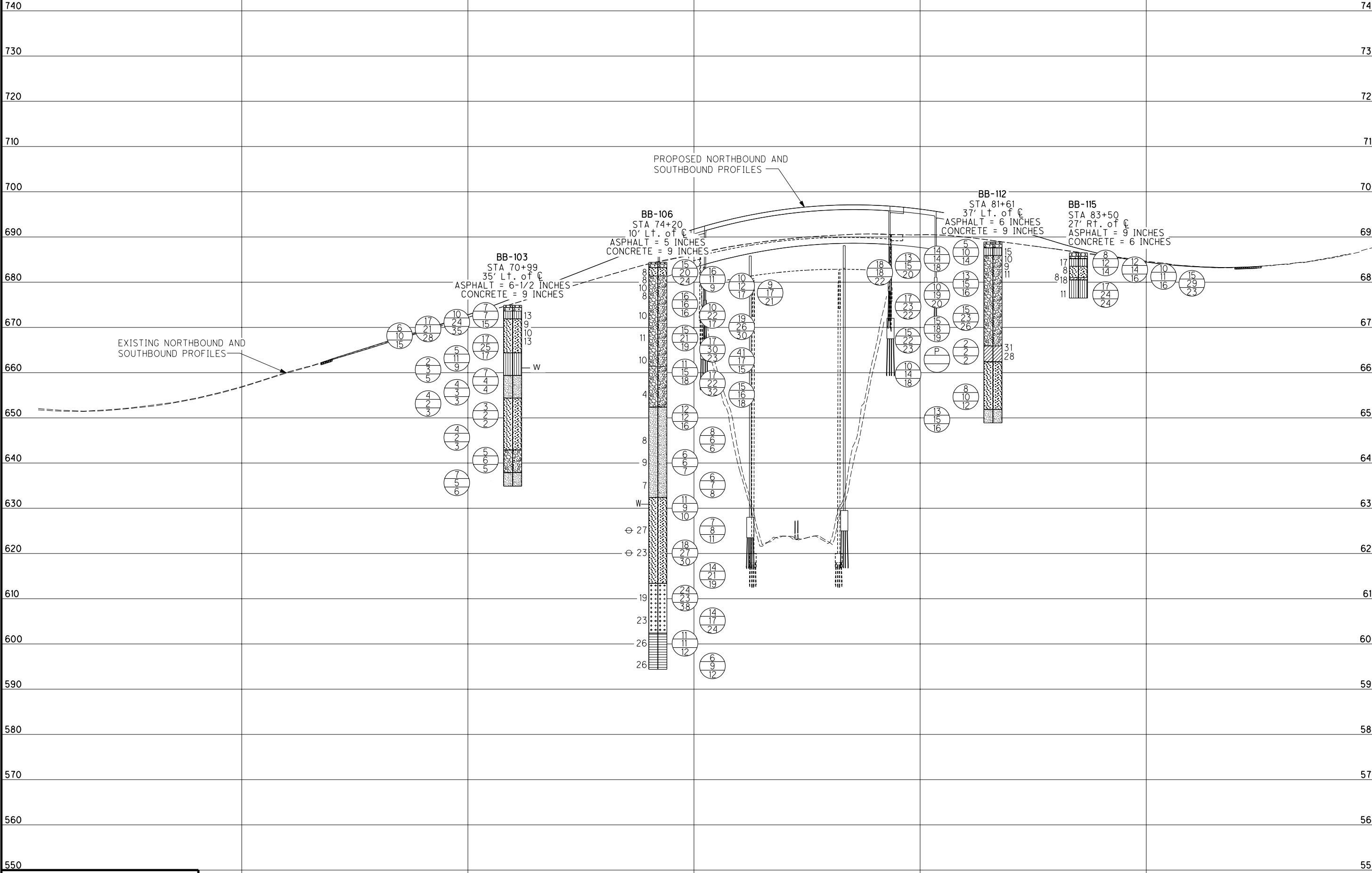
**SOIL PROFILE**

**CUY-77-14.35**  
 PID No. 13567



PROFILE OF BORINGS BB-103, BB-106, BB-112, AND BB-115 SHOWN ON SHEET 4 OF 4

BB&M File name: ...8012-00851-300030\_040.dgn  
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 Plot Date: 11/16/2007 11:25:20 AM  
 By: BRUSH



PLAN VIEW AND PROFILE OF BORINGS BB-101, BB-102, BB-104, BB-111, BB-114, AND BB-116 SHOWN ON SHEET 3 OF 4

BBGM File name: ...8012-00851-300030\_040.dgn  
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 11/25/06 AM  
 By: BRush  
 Plot Date: 11/16/2007

SOIL PROFILE

CUY-77-14.35  
 PID No. 13567

**GENERAL INFORMATION**

**INTRODUCTION**

AS PART OF THE CUY-77-14.35 BRIDGE REPLACEMENT PROJECT, THE EXISTING IR-77 BRIDGES OVER IR-490 (CUY-77-1433 L&R BRIDGES) ARE PROPOSED TO BE WIDENED TO SUPPORT THREE LANES OF TRAFFIC IN EACH OF THE NORTHBOUND AND SOUTHBOUND DIRECTIONS. THE PROPOSED CONSTRUCTION WILL INCLUDE TWO THREE-SPAN NORTHBOUND AND SOUTHBOUND BRIDGE STRUCTURES, AND FOUR REINFORCED CONCRETE CANTILEVER RETAINING WALLS (TWO EXTERIOR AND TWO INTERIOR) ALONG THE BRIDGE APPROACHES NEAR THE PROPOSED BRIDGE ABUTMENTS. EACH BRIDGE WILL BE CONSTRUCTED AS A THREE-SPAN CONTINUOUS STEEL HYBRID GIRDER COMPOSITE WITH A REINFORCED CONCRETE DECK SUPPORTED ON REINFORCED CONCRETE PILE-SUPPORTED PIERS AND SEMI-INTEGRAL ABUTMENTS. THE OVERALL PROJECT LIMITS EXTEND FROM STA. 67+00 TO STA. 86+95.

THE TWO INTERIOR RETAINING WALLS ARE PROPOSED TO BE LOCATED IN BETWEEN THE ABUTMENTS FOR THE BRIDGE PAIR WHICH ARE OFFSET BY APPROXIMATELY 102 FEET. THE NORTH INTERIOR RETAINING WALL (RETAINING WALL 3) IS PROPOSED TO BE LOCATED FROM ABOUT STA. 79+33 TO STA. 80+33 (100 FEET) WITH A MAXIMUM HEIGHT OF ABOUT 19 FEET. THE SOUTH INTERIOR RETAINING WALL (RETAINING WALL 2) IS PROPOSED TO BE LOCATED FROM ABOUT STA. 74+22 TO STA. 75+22 (100 FEET) WITH A MAXIMUM HEIGHT OF ABOUT 20 FEET.

THE NORTH EXTERIOR RETAINING WALL (RETAINING WALL 4) IS PROPOSED TO BE LOCATED ON THE WEST SIDE OF THE NORTH APPROACH EMBANKMENT FROM ABOUT STA. 80+35 TO STA. 82+71 (236 FEET). THE SOUTH EXTERIOR RETAINING WALL (RETAINING WALL 1) IS PROPOSED TO BE LOCATED ON THE EAST SIDE OF THE SOUTH APPROACH EMBANKMENT FROM ABOUT STA. 72+19 TO STA. 74+20 (201 FEET). THE MAXIMUM AMOUNT OF ADDITIONAL FILL TO BE PLACED AT THE NORTH AND SOUTH EXTERIOR RETAINING WALLS ARE ABOUT 12 FEET AND 11 FEET, RESPECTIVELY.

**GEOLOGY**

GEOLOGIC REFERENCES INDICATE THE SITE IS LOCATED WITHIN THE ERIE LAKE PLAIN SECTION OF THE HURON-ERIE LAKE PLAINS WHICH OVERLIES A DEEP BURIED VALLEY OF A POST-ILLINOIAN RIVER. THIS DEEP BURIED VALLEY IS FILLED WITH SOIL DEPOSITS CONSISTING OF INTERBEDDED FINE-GRAINED DEPOSITS OF SILT, FINE SAND, AND CLAYEY SILTS. BASED ON BEDROCK TOPOGRAPHIC MAPPING, IT IS ANTICIPATED THAT THE BEDROCK SURFACE LIES IN EXCESS OF 370 FEET BENEATH THE EXISTING GROUND SURFACE, WITH THE BEDROCK STRATA DIPPING TOWARD THE EAST. THE UPPERMOST BEDROCK IS COMPOSED OF BLACK CARBONACEOUS, BLUE-GRAY TO DARK-GRAY CLEVELAND SHALE, AND CHAGRIN SHALE OF THE OHIO SHALE GROUP OF DEVONIAN AGE. BEDROCK WAS NOT ENCOUNTERED IN ANY OF THE BORINGS PERFORMED FOR THIS INVESTIGATION.

**AVAILABLE INFORMATION**

APPLIED CONSTRUCTION TECHNOLOGIES, INC. (ACT) WAS RETAINED TO PERFORM BORINGS AND LABORATORY TESTING AS PART OF THE 1998 STUDY BY BURGESS AND NIPLE, INC. TO REPLACE THE IR-77 BRIDGE DECK. ALTHOUGH THIS PROJECT WAS ABANDONED BY ODOT DISTRICT 12, EIGHT (8) BORINGS (TERMED B-1, B-3, B-4, AND B-6 THROUGH B-10) WERE PERFORMED AT THE ABUTMENTS AND PIER LOCATIONS AND LABORATORY TESTING WAS COMPLETED. THE ABUTMENT BORINGS WERE GENERALLY EXTENDED TO ABOUT 70 FEET BELOW THE EXISTING IR-77 BRIDGE APPROACH GRADE, WHILE THE INTERMEDIATE PIER BORINGS WERE GENERALLY EXTENDED TO ABOUT 100 FEET BELOW THE LEVEL OF THE EXISTING IR-490 MAINLINE. BENEATH THE SANDY EMBANKMENT FILL MATERIAL, INTERBEDDED DEPOSITS OF SILTS AND CLAYEY SILTS WERE ENCOUNTERED, WITH SOME OCCASIONAL SILTY CLAY STRATA ENCOUNTERED. THE OVERALL STRENGTH OF THE DEPOSITS DID NOT GENERALLY IMPROVE WITH DEPTH BELOW THE EXISTING EMBANKMENT FILL.

**PROGRAM OF INVESTIGATION**

DURING THE PERIOD OF DECEMBER 5 THROUGH 23, 2005, A TOTAL OF TEN (10) STRUCTURE AND/OR RETAINING WALL BORINGS, TERMED BB-104 THROUGH BB-113, WERE PERFORMED NEAR THE PROPOSED ABUTMENTS AND INTERMEDIATE PIER LOCATIONS AS WELL AS THE INTERIOR AND EXTERIOR RETAINING WALL LOCATIONS. THESE BORINGS WERE PERFORMED TO DEPTHS RANGING FROM 20 TO 100 FEET BELOW THE EXISTING GROUND SURFACE. BORINGS BB-104, BB-106, BB-111, AND BB-112 WERE ALSO PERFORMED FOR OTHER ASPECTS OF THE PROJECT.

THE BORINGS WERE ADVANCED WITH, EITHER, AN ATV-MOUNTED (ALL-TERRAIN VEHICLE) OR A TRUCK-MOUNTED DRILL RIG USING 3-1/4-INCH I.D. HOLLOW-STEM AUGERS BETWEEN SAMPLING ATTEMPTS. IN SOME BORINGS, EITHER WATER WAS ADDED INSIDE THE HOLLOW-STEM AUGERS TO FACILITATE DRILLING OR A 3-1/8-INCH O.D. TRICONE ROLLER BIT WITH WATER AS THE DRILLING FLUID (WASH-BORE) WAS USED TO CONTINUE TO ADVANCE THE BORING. DISTURBED BUT REPRESENTATIVE SOIL SAMPLES WERE PROCURED BY LOWERING A 2-INCH O.D. SPLIT-BARREL SAMPLER TO THE BOTTOM OF THE BORING AND THEN DRIVING THE SAMPLER INTO THE SOIL WITH A 140-POUND HAMMER FREELY FALLING 30 INCHES (ASTM D1586-STANDARD PENETRATION TEST). WHEN THE INITIAL SAMPLING ATTEMPT FAILED TO RECOVER A REPRESENTATIVE SAMPLE, A 2-1/2-INCH SPLIT-BARREL SAMPLER WAS THEN USED IN AN ATTEMPT TO RETRIEVE THE SAMPLE. SPLIT BARREL SAMPLES WERE EXAMINED IMMEDIATELY AFTER RECOVERY AND REPRESENTATIVE PORTIONS WERE PRESERVED IN AIRTIGHT GLASS JARS. THE STRUCTURE BORINGS WERE EXTENDED TO A DEPTH WHERE A DESIRED PILE CAPACITY WAS BELIEVED TO BE ACHIEVED. THE STRUCTURE BORINGS GENERALLY DID NOT ENCOUNTER 30 FEET OF 30 BLOW-COUNT PER FOOT SOIL RESISTANCE WITH SPT SAMPLING EFFORT TO THE TERMINATION DEPTHS OF THE BORINGS. THE RETAINING WALL BORINGS WERE EXTENDED AT LEAST 25 FEET BELOW THE ANTICIPATED BOTTOM OF FOOTING ELEVATIONS. AT THE COMPLETION OF DRILLING, THE BORINGS WERE BACKFILLED OR SEALED AS REQUIRED AND THE SURFACE OF THE EXISTING PAVEMENT AT THE BORING LOCATIONS WAS REPAIRED USING COLD-PATCH ASPHALT OR CONCRETE, WHERE NECESSARY.

**FINDINGS OF THE INVESTIGATION**

BEGINNING AT THE GROUND SURFACE, BORINGS BB-105 (SOUTH EXTERIOR RETAINING WALL), BB-107 THROUGH BB-110 (INTERMEDIATE BRIDGE PIERS), AND BB-113 (NORTH EXTERIOR RETAINING WALL) ENCOUNTERED NEAR SURFACE MATERIALS CONSISTING OF ABOUT 8 TO 24 INCHES OF TOPSOIL. BORINGS BB-104 (SOUTH EXTERIOR RETAINING WALL), BB-106 (REAR ABUTMENT AND SOUTH INTERIOR RETAINING WALL), AND BB-112 (NORTH EXTERIOR RETAINING WALL) ENCOUNTERED ABOUT 5 TO 6.75 INCHES OF ASPHALT OVERLYING ABOUT 9 INCHES OF CONCRETE. BORING BB-111 (FORWARD ABUTMENT AND NORTH INTERIOR RETAINING WALL) ENCOUNTERED ABOUT 16 INCHES OF ASPHALT ONLY.

BENEATH THE SURFICIAL MATERIALS, NINE (9) OF TEN (10) STRUCTURE AND/OR RETAINING WALL BORINGS ENCOUNTERED EXISTING FILL OR POSSIBLE FILL RANGING FROM ABOUT 2.3 TO 30.8 FEET IN THICKNESS. UNDERLYING THE TOPSOIL IN BORING BB-110, NATURAL SOILS WERE ENCOUNTERED. THE FILL MATERIALS WERE ENCOUNTERED BEGINNING AT ABOUT ELEVATION 689 AND GENERALLY EXTENDED TO ABOUT ELEVATION 657. IN BORINGS BB-108 AND BB-109, FILL WAS IDENTIFIED TO EXTEND AS DEEP AS ABOUT ELEVATION 637. THE FILL MATERIALS CONSISTED PRIMARILY OF MEDIUM-DENSE TO VERY-DENSE BROWN FINE TO COARSE SAND CONTAINING VARIOUS AMOUNTS OF GRAVEL, SILT, AND CLAY (A-1-b, A-3a, AND A-4a). OCCASIONAL LAYERS OF LOOSE TO MEDIUM-DENSE BROWN AND GRAY FINE SAND (Est. A-3), DENSE BROWN SILT (A-4b), AND STIFF TO HARD BROWN CLAY WITH VARIOUS AMOUNTS OF SILT AND SAND (A-6a) WERE ENCOUNTERED IN THE BORINGS.

UNDERLYING THE SURFICIAL MATERIALS AND/OR FILL AND POSSIBLE FILL, NATURAL LOOSE TO DENSE BROWN FINE SAND, WITH VARIOUS AMOUNTS OF COARSE SAND, SILT, AND CLAY (A-3 AND A-3a) WERE ENCOUNTERED TO ABOUT ELEVATION 621. IN BORING BB-106, THESE FINE SANDS WERE ENCOUNTERED AS DEEP AS ELEVATION 613.4. IN BORINGS BB-109 AND BB-110, LOOSE TO MEDIUM-DENSE BROWN AND GRAY SILT WITH VARIOUS AMOUNTS OF FINE SAND AND CLAY (A-4b AND Est. A-4a) WERE ENCOUNTERED INTERBEDDED WITHIN THE LAYERS OF FINE SAND. OCCASIONAL LAYERS OF MEDIUM-DENSE TO VERY-DENSE BROWN FINE SAND (A-3 AND A-3a) WERE ENCOUNTERED IN THE BORINGS.

IN BORINGS BB-112 AND BB-113, AN ESTIMATED 1.8 TO 3.5-FOOT THICK LAYER OF VERY-SOFT TO MEDIUM-STIFF BROWN AND GRAY SILT, "AND" CLAY OR SILTY CLAY (A-6a AND A-6b) WAS ENCOUNTERED BEGINNING AT ABOUT ELEVATION 665.9. THIS VERY-SOFT TO MEDIUM-STIFF COHESIVE LAYER WAS ENCOUNTERED JUST BELOW THE FILL MATERIAL, INDICATING THIS LAYER MAY BE BURIED TOPSOIL. IN BORING BB-113, THE SAMPLES FROM THIS LAYER CONTAINED DECAYED ROOTS. A LOSS-ON-IGNITION TEST PERFORMED ON SAMPLE S-11 IN BORING BB-112 INDICATES THIS SOFT LAYER HAS AN ORGANIC CONTENT OF 2.9%, WHICH IS CONSIDERED TO BE SLIGHTLY ORGANIC.

UNDERLYING THE FINE SAND STRATUM, LAYERS OF MEDIUM-DENSE TO VERY-DENSE AND/OR MEDIUM-STIFF TO HARD GRAY SILT WITH VARIOUS AMOUNTS OF FINE SAND AND CLAY (A-4b, A-4c) WERE INTERBEDDED WITH LAYERS OF MEDIUM-STIFF TO HARD GRAY SILT, "AND" CLAY AND/OR SILTY CLAY (A-6a AND A-6b). THESE FINE-GRAINED SOILS WERE ENCOUNTERED TO THE TERMINATION DEPTHS OF THE BORINGS, WHICH WERE PERFORMED AS DEEP AS ELEVATION 544.5. THE MAJORITY OF THE SOIL SAMPLES IN THESE STRATA WERE IDENTIFIED TO CONTAIN SILT, FINE SAND, OR SILTY CLAY SEAMS/LENSES. IN BORING B-110, AN APPROXIMATE 3-FOOT THICK LAYER OF LOOSE BROWN SILT (Est. A-4b) OVERLYING ABOUT 4 FEET OF LOOSE GRAY AND DARK GRAY SILT, "AND" FINE SAND (A-4b) WAS ENCOUNTERED BEGINNING AT ABOUT ELEVATION 623.2. ALSO IN BORING BB-110, A 10-FOOT THICK LAYER BEGINNING AT ABOUT ELEVATION 592.2 COMPOSED OF SOFT TO MEDIUM-STIFF GRAY CLAY, "AND" SILT (A-6a) WAS ENCOUNTERED AND WAS IDENTIFIED TO BE POSSIBLY VARVED. IN BORING BB-108, AN APPROXIMATE 10-FOOT THICK LAYER OF SOFT TO STIFF GRAY MOTTLED WITH RED SILT, "AND" CLAY (A-4b) OVERLYING ABOUT 3 FEET OF SOFT TO MEDIUM-STIFF GRAY SILTY CLAY (Est. A-6b) WAS ENCOUNTERED BEGINNING AT APPROXIMATELY ELEVATION 607.7.

MODERATE AMOUNTS OF SEEPAGE WERE ENCOUNTERED IN FOUR (4) OF THE TEN (10) STRUCTURE AND/OR RETAINING WALL BORINGS (BB-109 THROUGH BB-111, AND BB-113) AT VARIOUS DEPTHS BETWEEN ABOUT ELEVATION 665 AND 626. WATER WAS ENCOUNTERED DURING DRILLING AND PRIOR TO INTRODUCTION OF ANY WATER INTO THE BOREHOLES IN BORINGS BB-106, BB-107, BB-108, AND BB-110 BETWEEN ABOUT ELEVATION 625.9 AND 623.7. WATER WAS MEASURED INSIDE THE HOLLOW-STEM AUGERS PRIOR TO INTRODUCTION OF ANY WATER INTO THE BOREHOLES OF BORINGS BB-108, BB-110, AND BB-111 BETWEEN ABOUT ELEVATION 631.8 FEET AND 595.7 FEET. IN BORING BB-106, DRILLING WAS STOPPED AT ABOUT 68.5 FEET AND THE BOREHOLE WAS COVERED AT THE END OF THE DAY ON DECEMBER 5, 2005. THE FOLLOWING MORNING, PRIOR TO RESUMING DRILLING, APPROXIMATELY 3 FEET OF HEAVE WAS OBSERVED BY THE DRILLERS INSIDE THE HOLLOW-STEM AUGERS.

**NOTE:**  
ALL AVAILABLE SOIL AND BEDROCK INFORMATION WHICH CAN BE CONVENIENTLY SHOWN ON THE STRUCTURE FOUNDATION INVESTIGATION SHEETS HAS BEEN SO REPORTED. ADDITIONAL SUBSURFACE INVESTIGATIONS, SOIL TESTS, AND BEDROCK BORINGS MAY HAVE BEEN MADE TO STUDY SOME SPECIAL ASPECT OF THE PROJECT. COPIES OF THIS DATA IF ANY, MAY BE INSPECTED IN THE DISTRICT 12 DEPUTY DIRECTOR'S OFFICE, THE OFFICE OF GEOTECHNICAL ENGINEERING AT 1600 WEST BROAD STREET, OR THE OFFICE OF STRUCTURAL ENGINEERING AT 1980 WEST BROAD STREET, IN COLUMBUS, OHIO.

**SYMBOLS OF SOIL TYPES**

| DESCRIPTION                                       | ODOT CLASS. |
|---------------------------------------------------|-------------|
| GRAVEL AND/OR STONE FRAGMENTS WITH SAND           | A-1-b       |
| FINE SAND                                         | A-3         |
| COARSE AND FINE SAND                              | A-3a        |
| GRAVEL AND/OR STONE FRAGMENTS WITH SAND, AND SILT | A-2-4       |
| SANDY SILT                                        | A-4a        |
| SILT                                              | A-4b        |
| SILT AND CLAY                                     | A-6a        |
| SILTY CLAY                                        | A-6b        |
| RANDOM FILL                                       |             |

**OTHER SYMBOLS**

|                                    |
|------------------------------------|
| TOPSOIL = "X" ≡ APPROXIMATE DEPTH  |
| ASPHALT = "X" ≡ APPROXIMATE DEPTH  |
| CONCRETE = "X" ≡ APPROXIMATE DEPTH |

**LEGEND**

|  |                                                                                                                                                                                |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | SOIL BORING - PLAN VIEW                                                                                                                                                        |
|  | SOIL BORING PLOTTED TO VERTICAL SCALE ONLY                                                                                                                                     |
|  | NUMBER OF BLOWS FOR "STANDARD PENETRATION TEST"<br>X = NUMBER OF BLOWS FOR FIRST 6 INCHES<br>Y = NUMBER OF BLOWS FOR SECOND 6 INCHES<br>Z = NUMBER OF BLOWS FOR THIRD 6 INCHES |
|  | FREE WATER LEVEL                                                                                                                                                               |
|  | STATIC WATER LEVEL                                                                                                                                                             |
|  | SHELBY TUBE SAMPLER, 3" O.D., HYDRAULICALLY PUSHED                                                                                                                             |

NOTES: NUMERALS ADJACENT TO THE BORINGS IN PROFILE VIEW INDICATE THE NATURAL MOISTURE CONTENT

LOGS OF BORINGS PERFORMED BY APPLIED CONSTRUCTION TECHNOLOGIES ARE IN METRIC UNITS

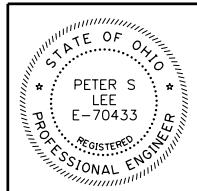


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| CALCULATED BY | PSL      |
| CHECKED BY    |          |
| DATE          | 3/24/06  |
| REVISION      | 11/21/07 |
| REVIEWED BY   | JLS      |
| DRAWN BY      | BLR      |

STRUCTURE FOUNDATION INVESTIGATION  
BRIDGE NO. CUY-77-1433 OVER I.R. 490 AND RAMPS

CUY-77-14.35  
PID No. 13567

|    |    |
|----|----|
| 1  | 26 |
| 5  |    |
| 30 |    |



BBC&M ENGINEERING, INC. DRAWING NO. ...1402-00851-301000 STRUCTURE.dgn



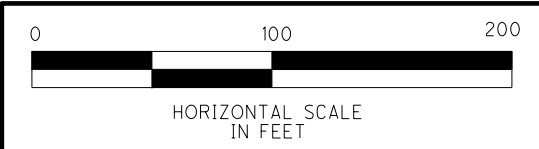
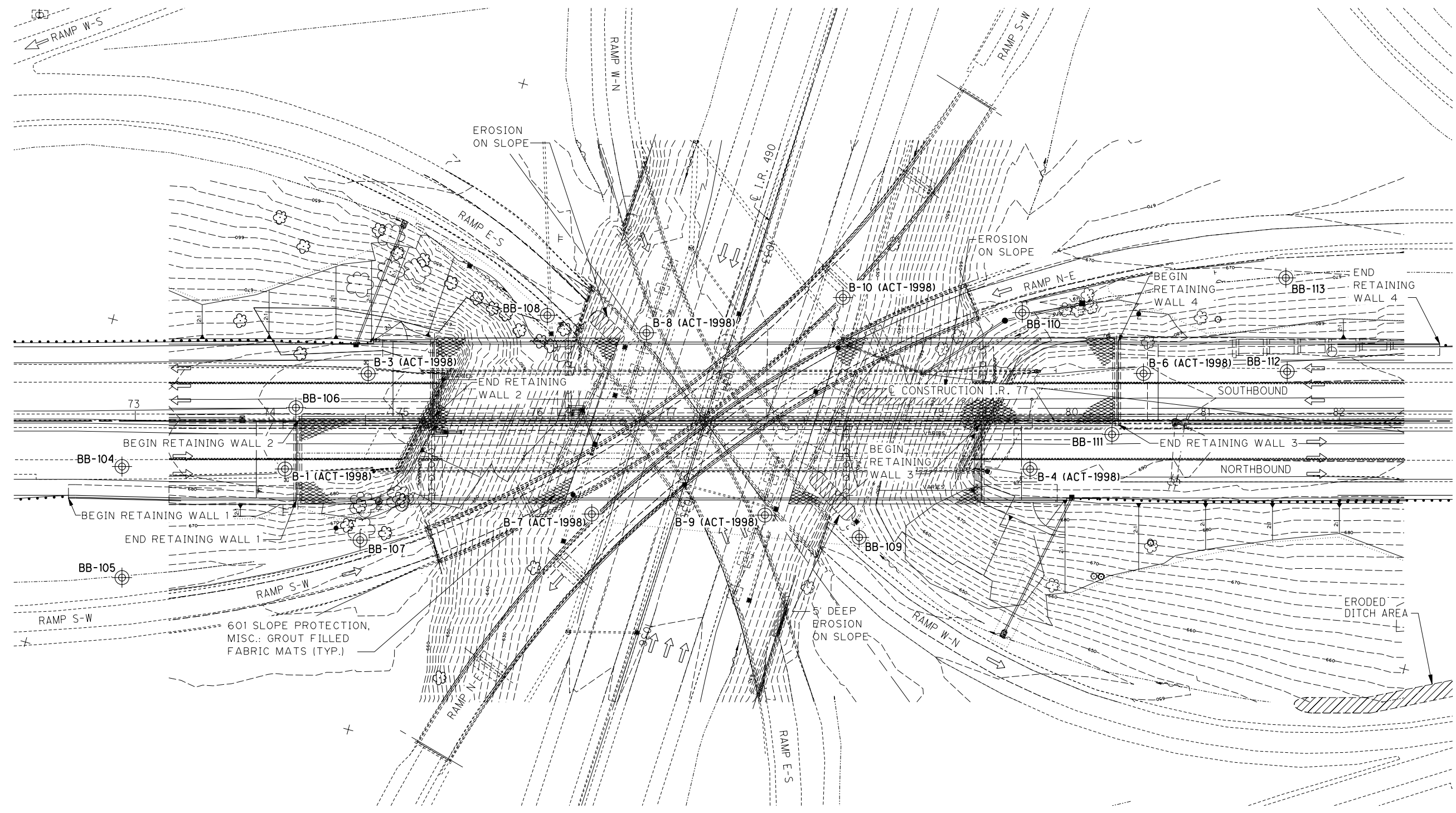


**BBC&M**

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|-------------|---------|------------|----------|
| DATE        | 3/24/06 | CHECKED BY | PSL      |
| REVIEWED BY | JLS     | REVISION   | 11/21/07 |
| DRAWN BY    | BLR     |            |          |

**STRUCTURE FOUNDATION INVESTIGATION**  
**BRIDGE NO. CUY-77-1433 OVER I.R. 490 AND RAMPS**

**CUY-77-14.35**  
PID No. 13567



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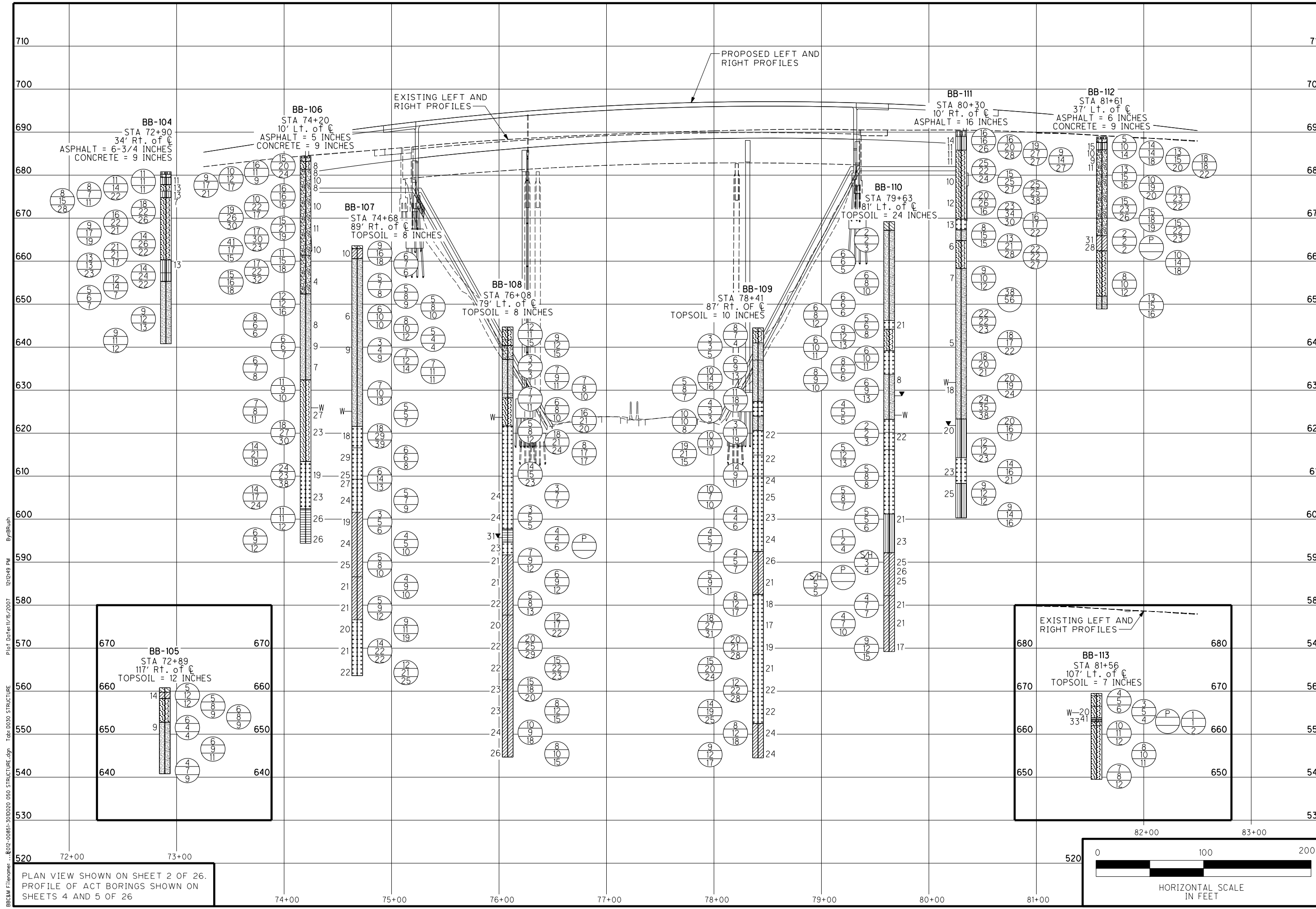
PROFILE OF BORINGS SHOWN ON SHEETS 3 THROUGH 5 OF 26



|             |         |            |     |
|-------------|---------|------------|-----|
| DATE        | 3/24/06 | CHECKED BY | PSL |
| REVISION    |         |            |     |
| REVIEWED BY | JLS     |            |     |
| DRAWN BY    | BLR     |            |     |

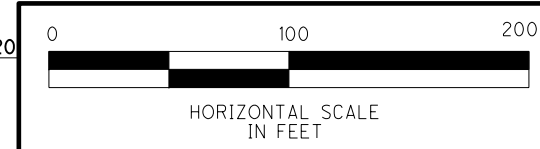
STRUCTURE FOUNDATION INVESTIGATION  
BRIDGE NO. CUY-77-1433 OVER I.R. 490 AND RAMP

**CUY-77-14.35**  
PID No. 13567



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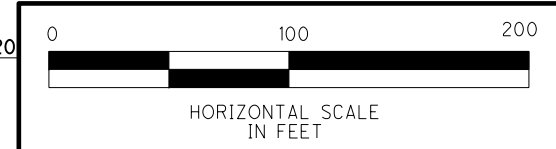
PLAN VIEW SHOWN ON SHEET 2 OF 26.  
PROFILE OF ACT BORINGS SHOWN ON  
SHEETS 4 AND 5 OF 26



BBC&M File name: ...8012-00851-300020 050 STRUCTURE.dgn Tab: D040 STRUCTURE Plot Date: 11/16/2007 8:03:10 AM By: BRUSH



PLAN VIEW SHOWN ON SHEET 2 OF 26.  
PROFILE OF BBCM BORINGS SHOWN ON  
SHEET 3 OF 26



**BBCM**

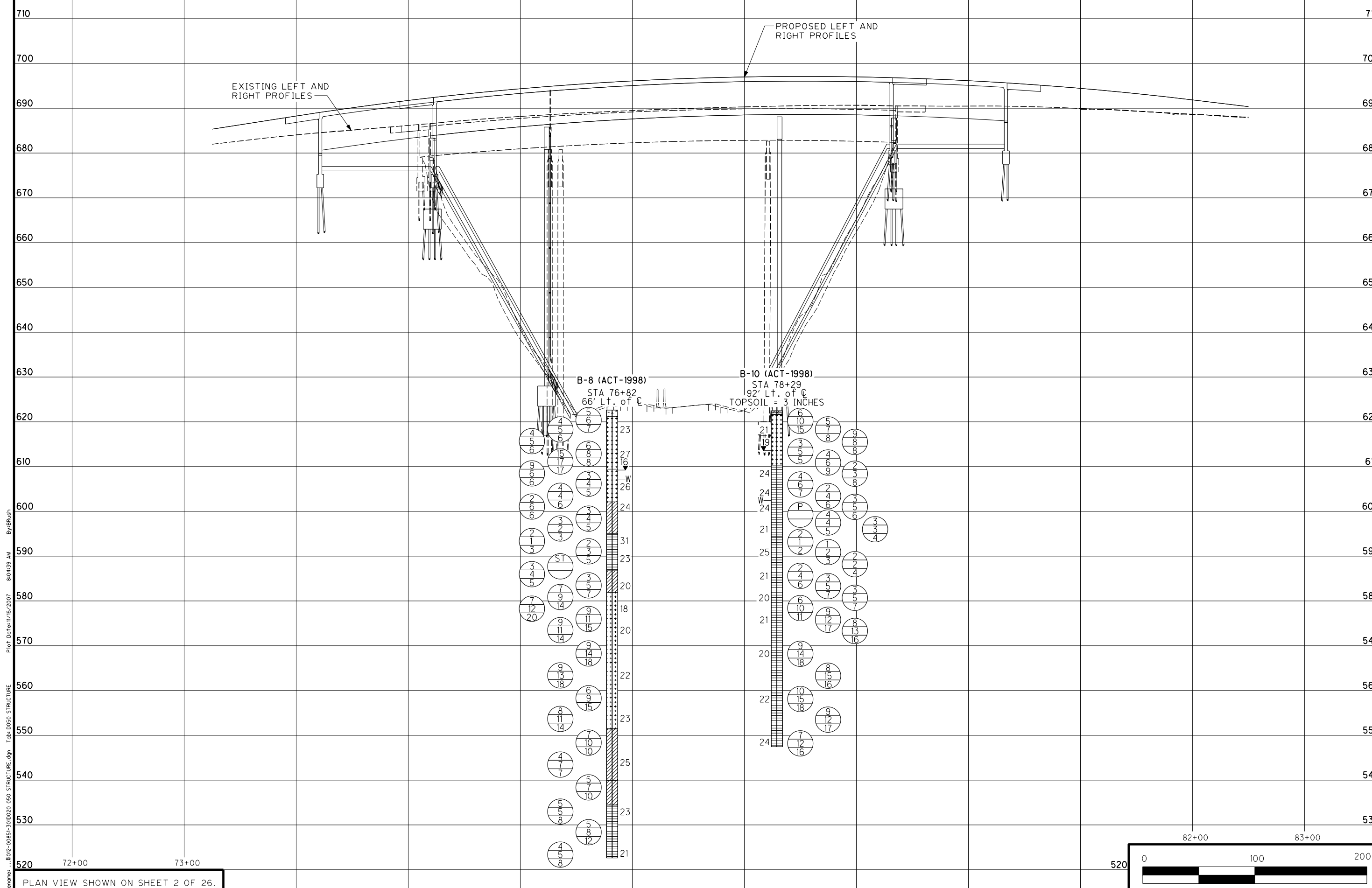
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| REVISION    |         |            |     |
| REVIEWED BY | JLS     |            |     |
| DRAWN BY    | BLR     |            |     |

**STRUCTURE FOUNDATION INVESTIGATION**  
**BRIDGE NO. CUY-77-14.35**

**CUY-77-14.35**  
PID No. 13567

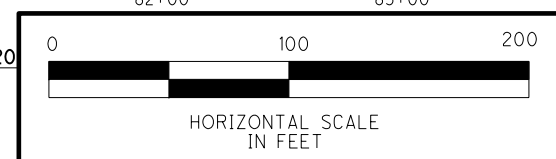
4 / 26

8  
30



BBC&M File name: ...8012-00851-300020 050 STRUCTURE.dgn Tab: D050 STRUCTURE By: BRush Plot Date: 11/16/2007 8:50:43 AM

PLAN VIEW SHOWN ON SHEET 2 OF 26.  
 PROFILE OF BBCM BORINGS SHOWN ON  
 SHEET 3 OF 26



|             |          |
|-------------|----------|
| CALCULATED  | PSL      |
| CHECKED BY  | PSL      |
| DATE        | 3/24/06  |
| REVISION    | 11/21/07 |
| REVIEWED BY | JLS      |
| DRAWN BY    | BLR      |

**STRUCTURE FOUNDATION INVESTIGATION**  
**BRIDGE NO. CUY-77-1433 OVER I.R. 490 AND RAMPS**

**CUY-77-14.35**  
 PID No. 13567



LOG OF BORING NO. BB-104  
 CUY-77-14.35  
 CLEVELAND, OHIO

BBC&M JOB: 012 00851.301

TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: IR - 77 COMPLETION DEPTH: 40.0'  
 2" O.D. Split-barrel Sampler Sta. 72+90 ELEVATION: 680.8  
 34' Rt. of Centerline DATE: 12/14/05

| Elev. (feet) | Depth (feet)      | Samp. No. | Std. Pen. / RQD | Hand Pen. (tsf) | Rec./Loss (feet) | CLASSIFICATION: DESCRIPTION                                                                                                                                                                         | Physical Characteristics |        |        |        |        |    |    | ODOT Class |           |  |  |
|--------------|-------------------|-----------|-----------------|-----------------|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------|--------|--------|--------|----|----|------------|-----------|--|--|
|              |                   |           |                 |                 |                  |                                                                                                                                                                                                     | % AGG.                   | % C.S. | % F.S. | % SILT | % CLAY | LL | PI |            | WC        |  |  |
| 680.2        | 0                 |           |                 |                 |                  | 0.6 ASPHALT - 6 3/4 INCHES                                                                                                                                                                          |                          |        |        |        |        |    |    |            |           |  |  |
| 679.5        |                   |           |                 |                 |                  | 1.3 CONCRETE - 9 INCHES                                                                                                                                                                             |                          |        |        |        |        |    |    |            |           |  |  |
| 677.8        | 11/11/11          | 1         |                 |                 |                  | SANDY SILT (FILL): Medium-dense brown fine to coarse sand, some silt, little clay, trace fine to coarse gravel.                                                                                     | 8                        | 14     | 33     | 28     | 17     | NP | NP | 11         | A-4a(2)   |  |  |
| 676.3        | 11/14/22          | 2         |                 |                 |                  | 3.0 COARSE AND FINE SAND (FILL): Dense brown and gray fine to coarse sand, little fine to coarse gravel, little silt, trace clay, contains few brick fragments.                                     |                          |        |        |        |        |    |    | 13         | Est. A-3a |  |  |
| 674.8        | 5- 8/7/11 4.5+    | 3         |                 |                 |                  | 4.5 SANDY SILT (FILL): Hard brown and dark gray silt, some clay, "and" fine to coarse sand, trace fine gravel, slightly organic.                                                                    | 5                        | 14     | 31     | 27     | 23     | 21 | 6  | 13         | A-4a(3)   |  |  |
|              | 8/15/28           | 4         |                 |                 |                  | 6.0 COARSE AND FINE SAND (FILL): Dense gray and brown fine to coarse sand, trace to little fine to coarse gravel, trace to little silt, trace clay, contains few brick fragments, slightly organic. |                          |        |        |        |        |    |    | 7          | Est. A-3a |  |  |
|              | 18/22/26          | 5         |                 |                 |                  |                                                                                                                                                                                                     |                          |        |        |        |        |    |    |            |           |  |  |
|              | 16/22/21          | 6         |                 |                 |                  |                                                                                                                                                                                                     |                          |        |        |        |        |    |    |            |           |  |  |
|              | 9/17/19           | 7         |                 |                 |                  |                                                                                                                                                                                                     |                          |        |        |        |        |    |    |            |           |  |  |
|              | 14/26/22          | 8         |                 |                 |                  |                                                                                                                                                                                                     |                          |        |        |        |        |    |    |            |           |  |  |
|              | 21/21/17          | 9         |                 |                 |                  |                                                                                                                                                                                                     |                          |        |        |        |        |    |    |            |           |  |  |
| 660.3        | 20- 13/13/23 4.5+ | 10        |                 |                 |                  | 20.5 SANDY SILT (FILL): Hard brown silt, some clay, some to "and" fine to coarse sand, trace to little fine gravel, slightly organic.                                                               |                          |        |        |        |        |    |    | 13         | Est. A-4a |  |  |
| 657.3        | 14/24/22          | 11        |                 |                 |                  | 23.5 SANDY SILT (FILL): Dense brown fine to coarse sand, some silt, little clay, trace to little fine gravel.                                                                                       |                          |        |        |        |        |    |    |            |           |  |  |
| 655.3        | 25- 12/14/17      | 12        |                 |                 |                  | 25.5 FINE SAND: Medium-dense brown fine sand, little silt, trace coarse sand, trace clay.                                                                                                           |                          |        |        |        |        |    |    |            |           |  |  |
|              | 5/6/7             | 13        |                 |                 |                  |                                                                                                                                                                                                     |                          |        |        |        |        |    |    |            |           |  |  |
|              | 9/12/13           | 14        |                 |                 |                  |                                                                                                                                                                                                     |                          |        |        |        |        |    |    |            |           |  |  |
| 640.8        | 40- 9/11/12       | 15        |                 |                 |                  | 40.0                                                                                                                                                                                                |                          |        |        |        |        |    |    |            |           |  |  |
|              |                   |           |                 |                 |                  | NOTES:<br>- No seepage encountered.                                                                                                                                                                 |                          |        |        |        |        |    |    |            |           |  |  |

WATER LEVEL: ▽ "Dry" ▽ "Dry" ▽  
 WATER NOTE: Inside HSA - At Completion Augers Pulled - Caved at 31.0'  
 DATE: 12/14/05 12/14/05



LOG OF BORING NO. BB-105  
 CUY-77-14.35  
 CLEVELAND, OHIO

BBC&M JOB: 012 00851.301

TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: IR - 77 COMPLETION DEPTH: 20.0'  
 2" O.D. Split-barrel Sampler Sta. 72+89 ELEVATION: 660.8  
 117' Rt. of Centerline DATE: 12/21/05

| Elev. (feet) | Depth (feet)    | Samp. No. | Std. Pen. / RQD | Hand Pen. (tsf) | Rec./Loss (feet) | CLASSIFICATION: DESCRIPTION                                                                                                  | Physical Characteristics |        |        |        |        |    |    | ODOT Class |         |  |  |
|--------------|-----------------|-----------|-----------------|-----------------|------------------|------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------|--------|--------|--------|----|----|------------|---------|--|--|
|              |                 |           |                 |                 |                  |                                                                                                                              | % AGG.                   | % C.S. | % F.S. | % SILT | % CLAY | LL | PI |            | WC      |  |  |
| 659.8        | 0               |           |                 |                 |                  | 1.0 TOPSOIL - 12 INCHES                                                                                                      |                          |        |        |        |        |    |    |            |         |  |  |
| 658.3        | 5/12/12 1.5-4.0 | 1         |                 |                 |                  | 2.5 SILT AND CLAY (FILL): Stiff to very-stiff brown clay, some silt, "and" fine to coarse sand, trace fine to coarse gravel. | 8                        | 18     | 24     | 22     | 28     | 27 | 13 | 14         | A-6a(4) |  |  |
|              | 5/8/9           | 2         |                 |                 |                  | COARSE AND FINE SAND (FILL): Medium-dense brown fine to coarse sand, little fine to coarse gravel, trace silt.               |                          |        |        |        |        |    |    |            |         |  |  |
|              | 6/8/9           | 3         |                 |                 |                  |                                                                                                                              |                          |        |        |        |        |    |    |            |         |  |  |
| 652.8        | 6/4/4           | 4         |                 |                 |                  | 8.0 FINE SAND: Loose to medium-dense brown fine to coarse sand, trace silt, trace fine gravel.                               | 3                        | 38     | 55     | 4      |        | NP | NP | 9          | A-3(0)  |  |  |
|              | 6/9/11          | 5         |                 |                 |                  |                                                                                                                              |                          |        |        |        |        |    |    |            |         |  |  |
| 640.8        | 20- 4/7/9       | 6         |                 |                 |                  | 20.0                                                                                                                         |                          |        |        |        |        |    |    |            |         |  |  |
|              |                 |           |                 |                 |                  | NOTES:<br>- No seepage encountered.                                                                                          |                          |        |        |        |        |    |    |            |         |  |  |

WATER LEVEL: ▽ "Dry" ▽ "Dry" ▽  
 WATER NOTE: Inside HSA - At Completion Augers Pulled - Caved at 15.0'  
 DATE: 12/21/05 12/21/05

BBC&M ENGINEERING, INC. DRAWING NO. ... 012-00851-3010060 3D STRUCTURE.dgn



STRUCTURE FOUNDATION INVESTIGATION  
 BRIDGE NO. CUY-77-1433 OVER I.R. 490 AND RAMPS

CUY-77-14.35  
 PID No. 13567

6/26  
 10  
 30

|               |          |
|---------------|----------|
| CALCULATED BY | PSL      |
| CHECKED BY    |          |
| DATE          | 3/24/06  |
| REVISION      | 11/21/07 |
| REVIEWED BY   | JLS      |
| DRAWN BY      | BLR      |

TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: IR - 77 COMPLETION DEPTH: 90.0'  
 2" O.D. Split-barrel Sampler Sta. 74+20 ELEVATION: 684.4  
 10' LL of Centerline DATE: 12/5/05 - 12/6/05

| Elev. (feet) | Depth (feet) | Samp.    | Std. Pen. / RQD | Hand Pen. (tf) | Rec./Loss (feet) | CLASSIFICATION: DESCRIPTION                                                                                                                                                                                       | Samp. No. | Physical Characteristics |        |        |        |        |    |    |    | ODOT Class |  |            |
|--------------|--------------|----------|-----------------|----------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------------------------|--------|--------|--------|--------|----|----|----|------------|--|------------|
|              |              |          |                 |                |                  |                                                                                                                                                                                                                   |           | % AGG.                   | % C.S. | % F.S. | % SILT | % CLAY | LL | PI | WC |            |  |            |
| 684.0        | 0            |          |                 |                |                  | 0.4 ASPHALT - 5 INCHES                                                                                                                                                                                            |           |                          |        |        |        |        |    |    |    |            |  |            |
| 683.2        |              |          |                 |                |                  | 1.2 CONCRETE - 9 INCHES                                                                                                                                                                                           |           |                          |        |        |        |        |    |    |    |            |  |            |
| 681.4        |              | 15/20/24 |                 |                |                  | 3.0 COARSE AND FINE SAND (FILL): Dense brown fine to coarse sand, little silt, trace clay, trace fine gravel, contains iron oxide staining.                                                                       | 1         | 7                        | 21     | 48     | 14     | 10     | NP | NP | 8  |            |  | A-3a(0)    |
|              |              | 16/11/9  |                 |                |                  | GRAVEL WITH SAND (FILL): Medium-dense to very-dense brown fine to coarse sand, little fine to coarse gravel, trace to little silt, trace clay, contains many brick fragments and few coal and concrete fragments. | 2         | 16                       | 34     | 29     | 13     | 8      | NP | NP | 8  |            |  | A-1-b(0)   |
|              | 5            | 10/12/17 |                 |                |                  |                                                                                                                                                                                                                   | 3         |                          |        |        |        |        |    |    |    |            |  | Est. A-1-b |
|              |              | 9/17/21  |                 |                |                  |                                                                                                                                                                                                                   | 4         |                          |        |        |        |        |    |    |    |            |  | Est. A-1-b |
|              | 10           | 16/16/16 |                 |                |                  |                                                                                                                                                                                                                   | 5         |                          |        |        |        |        |    |    |    |            |  | Est. A-1-b |
|              |              | 10/22/17 |                 |                |                  |                                                                                                                                                                                                                   | 6         |                          |        |        |        |        |    |    |    |            |  | Est. A-1-b |
|              | 15           | 19/26/30 |                 |                |                  |                                                                                                                                                                                                                   | 7         |                          |        |        |        |        |    |    |    |            |  | Est. A-1-b |
|              |              | 15/21/19 |                 |                |                  |                                                                                                                                                                                                                   | 8         | 18                       | 33     | 32     | 10     | 7      | NP | NP | 11 |            |  | A-1-b(0)   |
|              | 20           | 17/30/23 |                 |                |                  |                                                                                                                                                                                                                   | 9         |                          |        |        |        |        |    |    |    |            |  | Est. A-1-b |
|              |              | 41/17/15 |                 |                |                  |                                                                                                                                                                                                                   | 10        |                          |        |        |        |        |    |    |    |            |  | Est. A-1-b |
| 661.4        |              | 11/15/18 |                 |                |                  | 23.0 GRAVEL WITH SAND (POSSIBLE FILL): Dense to very-dense brown fine to coarse sand, little fine to coarse gravel, trace silt, trace clay.                                                                       | 11        |                          |        |        |        |        |    |    |    |            |  | Est. A-1-b |
|              | 25           | 17/22/32 |                 |                |                  |                                                                                                                                                                                                                   | 12        |                          |        |        |        |        |    |    |    |            |  | Est. A-1-b |
|              | 30           | 15/16/18 |                 |                |                  |                                                                                                                                                                                                                   | 13        | 19                       | 53     | 21     | 3      | 4      | NP | NP | 4  |            |  | A-1-b(0)   |
| 652.4        |              | 12/12/16 |                 |                |                  | 32.0 FINE SAND: Medium-dense brown fine sand, some coarse sand, trace silt, trace clay.                                                                                                                           | 14        |                          |        |        |        |        |    |    |    |            |  | Est. A-3   |
|              | 35           | 8/6/6    |                 |                |                  |                                                                                                                                                                                                                   | 15        |                          |        |        |        |        |    |    |    |            |  | Est. A-3   |
|              | 40           | 6/6/7    |                 |                |                  |                                                                                                                                                                                                                   | 16        | 0                        | 21     | 73     | 2      | 4      | NP | NP | 9  |            |  | A-3(0)     |
|              | 45           | 6/7/8    |                 |                |                  |                                                                                                                                                                                                                   | 17        |                          |        |        |        |        |    |    |    |            |  | Est. A-3   |
| 632.4        |              | 11/9/10  |                 |                |                  | 52.0 COARSE AND FINE SAND: Medium-dense to very-dense brown and gray fine sand, little silt, trace clay.                                                                                                          | 18        |                          |        |        |        |        |    |    |    |            |  | Est. A-3a  |

WATER LEVEL: 58.5 "Dry"  
 WATER NOTE: Encountered Augers Pulled - Caved at 35.0'  
 DATE: 12/5/05 12/6/05

TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: IR - 77 COMPLETION DEPTH: 90.0'  
 2" O.D. Split-barrel Sampler Sta. 74+20 ELEVATION: 684.4  
 10' LL of Centerline DATE: 12/5/05 - 12/6/05

| Elev. (feet) | Depth (feet) | Samp.    | Std. Pen. / RQD | Hand Pen. (tf) | Rec./Loss (feet) | CLASSIFICATION: DESCRIPTION                                                                                  | Samp. No. | Physical Characteristics |        |        |        |        |    |    |    | ODOT Class |  |           |
|--------------|--------------|----------|-----------------|----------------|------------------|--------------------------------------------------------------------------------------------------------------|-----------|--------------------------|--------|--------|--------|--------|----|----|----|------------|--|-----------|
|              |              |          |                 |                |                  |                                                                                                              |           | % AGG.                   | % C.S. | % F.S. | % SILT | % CLAY | LL | PI | WC |            |  |           |
|              |              | 7/8/11   |                 |                |                  | COARSE AND FINE SAND: Medium-dense to very-dense brown and gray fine sand, little silt, trace clay.          | 19        | 0                        | 0      | 79     | 17     | 4      | NP | NP | 27 |            |  | A-3a(0)   |
|              | 60           | 18/27/30 |                 |                |                  |                                                                                                              | 20        |                          |        |        |        |        |    |    |    |            |  | Est. A-3a |
|              | 65           | 14/21/19 |                 |                |                  |                                                                                                              | 21        |                          |        |        |        |        |    |    |    |            |  | Est. A-3a |
| 613.4        |              | 24/23/38 |                 |                |                  | 71.0 SILT: Stiff to very-stiff gray silt, some clay, trace fine to coarse sand, trace fine gravel.           | 22        | 1                        | 1      | 6      | 67     | 25     | 24 | 7  | 19 |            |  | A-4b(8)   |
|              | 75           | 14/17/24 |                 | 1.5-4.0        |                  |                                                                                                              | 23        |                          |        |        |        |        |    |    |    |            |  | Est. A-4b |
| 602.4        |              | 11/11/12 |                 | 0.5-1.5        |                  | 82.0 SILTY CLAY: Medium-stiff to stiff gray silty clay, trace fine to coarse sand, contains many silt seams. | 24        |                          |        |        |        |        |    |    |    |            |  | Est. A-6b |
|              | 85           | 6/9/12   |                 | 0.75-1.5       |                  |                                                                                                              | 25        | 0                        | 1      | 2      | 37     | 60     | 37 | 16 | 26 |            |  | A-6b(10)  |
| 594.4        | 90           |          |                 |                |                  |                                                                                                              |           |                          |        |        |        |        |    |    |    |            |  |           |
|              | 95           |          |                 |                |                  |                                                                                                              |           |                          |        |        |        |        |    |    |    |            |  |           |
|              | 100          |          |                 |                |                  |                                                                                                              |           |                          |        |        |        |        |    |    |    |            |  |           |
|              | 105          |          |                 |                |                  |                                                                                                              |           |                          |        |        |        |        |    |    |    |            |  |           |
|              | 110          |          |                 |                |                  |                                                                                                              |           |                          |        |        |        |        |    |    |    |            |  |           |

WATER LEVEL: 58.5 "Dry"  
 WATER NOTE: Encountered Augers Pulled - Caved at 35.0'  
 DATE: 12/5/05 12/6/05

NOTES:  
 - Encountered seepage at 53.5'.  
 - Encountered water at 58.5'.  
 - After the augers were covered at the end of the day (12/5/05), 3' of heave was observed at 68.5' the next morning (12/6/05).  
 - Added water inside the HSA prior to drilling on 12/6/05 starting at 70.0'.

BB&M ENGINEERING, INC. DRAWING NO. ...B012-00851-3010060 130 STRUCTURE.dgn



LOG OF BORING NO. BB-107  
CUY-77-14.35  
CLEVELAND, OHIO

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TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: IR - 77 COMPLETION DEPTH: 100.0'  
2" O.D. Split-barrel Sampler Sta. 74+68 ELEVATION: 663.6  
89' Rt. of Centerline DATE: 12/21/05 - 12/22/05

| Elev. (feet) | Depth (feet) | Samp.    | Std. Pen. / RQD | Hand Pen. (tsf) | Rec./Loss (feet) | CLASSIFICATION: DESCRIPTION                                                                                                             | Samp. No. | Physical Characteristics |      |      |      |      |    |    | ODOT Class |    |  |              |
|--------------|--------------|----------|-----------------|-----------------|------------------|-----------------------------------------------------------------------------------------------------------------------------------------|-----------|--------------------------|------|------|------|------|----|----|------------|----|--|--------------|
|              |              |          |                 |                 |                  |                                                                                                                                         |           | AGG.                     | C.S. | F.S. | SILT | CLAY | LL | PI |            | WC |  |              |
| 662.9        | 0            |          |                 |                 |                  | 0.7 TOPSOIL - 8 INCHES                                                                                                                  |           |                          |      |      |      |      |    |    |            |    |  |              |
| 660.6        | 2.3          | 9/16/18  | 3.0-4.5         |                 |                  | SILT AND CLAY (FILL): Very-stiff to hard brown clay, some silt, some to "and" fine to coarse sand, trace fine to coarse gravel.         | 1         |                          |      |      |      |      |    |    |            |    |  | 10 Est. A-6a |
|              | 5            | 6/7/6    |                 |                 |                  | FINE SAND: Loose to medium-dense brown fine sand, little coarse sand, trace silt.                                                       | 2         |                          |      |      |      |      |    |    |            |    |  | Est. A-3     |
|              | 10           | 5/7/8    |                 |                 |                  |                                                                                                                                         | 3         |                          |      |      |      |      |    |    |            |    |  | Est. A-3     |
|              | 15           | 5/8/9    |                 |                 |                  |                                                                                                                                         | 4         |                          |      |      |      |      |    |    |            |    |  | Est. A-3     |
|              | 20           | 5/8/10   |                 |                 |                  |                                                                                                                                         | 5         |                          |      |      |      |      |    |    |            |    |  | Est. A-3     |
|              | 25           | 6/10/10  |                 |                 |                  |                                                                                                                                         | 6         | 0                        | 13   | 81   | 6    | NP   | NP | 6  |            |    |  | A-3(0)       |
|              | 30           | 8/10/12  |                 |                 |                  |                                                                                                                                         | 7         |                          |      |      |      |      |    |    |            |    |  | Est. A-3     |
|              | 35           | 5/4/4    |                 |                 |                  |                                                                                                                                         | 8         |                          |      |      |      |      |    |    |            |    |  | Est. A-3     |
|              | 40           | 3/4/9    |                 |                 |                  |                                                                                                                                         | 9         |                          |      |      |      |      |    |    |            |    |  | Est. A-3     |
|              | 45           | 7/12/14  |                 |                 |                  |                                                                                                                                         | 10        |                          |      |      |      |      |    |    |            |    |  | Est. A-3     |
|              | 50           | 7/11/11  |                 |                 |                  |                                                                                                                                         | 11        |                          |      |      |      |      |    |    |            |    |  | Est. A-3     |
|              | 55           | 7/10/13  |                 |                 |                  |                                                                                                                                         | 12        |                          |      |      |      |      |    |    |            |    |  | Est. A-3     |
| 621.6        | 60           | 5/5/7    |                 |                 |                  |                                                                                                                                         | 13        |                          |      |      |      |      |    |    |            |    |  | Est. A-3     |
| 616.6        | 65           | 18/29/39 |                 |                 |                  | SILT: Very-dense gray and brown silt, some fine sand, trace clay, trace coarse sand.                                                    | 14        | 0                        | 1    | 24   | 67   | 8    | NP | NP | 18         |    |  | A-4b(8)      |
|              | 70           | 6/6/8    | 0.5-1.5         |                 |                  | SILT: Medium-stiff to stiff gray silt, some clay, trace fine to coarse sand, trace fine gravel, contains many silt and fine sand seams. | 15        |                          |      |      |      |      |    |    |            |    |  | 29 Est. A-4b |
| 609.3        | 75           | 6/14/13  | 1.0-1.5         |                 |                  | SILT: Medium-dense gray silt, some clay, trace fine to coarse sand, trace fine gravel, contains many fine sand seams.                   | 16A       | 1                        | 1    | 2    | 63   | 33   | NP | NP | 7          |    |  | A-4b(8)      |
|              | 80           |          |                 |                 |                  |                                                                                                                                         | 16B       | 2                        | 1    | 2    | 74   | 21   | NP | NP | 27         |    |  | A-4b(8)      |

WATER LEVEL: 38.5 "Dry" "Dry"  
 WATER NOTE: Encountered Inside HSA - At Completion Augers Pulled - Caved at 6.5'  
 DATE: 12/21/05 12/22/05 12/22/05



LOG OF BORING NO. BB-107  
CUY-77-14.35  
CLEVELAND, OHIO

Page 2 of 2

TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: IR - 77 COMPLETION DEPTH: 100.0'  
2" O.D. Split-barrel Sampler Sta. 74+68 ELEVATION: 663.6  
89' Rt. of Centerline DATE: 12/21/05 - 12/22/05

| Elev. (feet) | Depth (feet) | Samp.    | Std. Pen. / RQD | Hand Pen. (tsf) | Rec./Loss (feet) | CLASSIFICATION: DESCRIPTION                                                                                                                                         | Samp. No. | Physical Characteristics |      |      |      |      |    |    | ODOT Class |    |  |              |
|--------------|--------------|----------|-----------------|-----------------|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------------------------|------|------|------|------|----|----|------------|----|--|--------------|
|              |              |          |                 |                 |                  |                                                                                                                                                                     |           | AGG.                     | C.S. | F.S. | SILT | CLAY | LL | PI |            | WC |  |              |
|              | 60           | 5/7/9    |                 |                 |                  | SILT: Medium-dense gray silt, some clay, trace fine to coarse sand, trace fine gravel, contains many fine sand seams.                                               | 17        |                          |      |      |      |      |    |    |            |    |  | 24 Est. A-4b |
| 601.6        | 65           | 3/5/6    | 0.5-1.5         |                 |                  | SILT AND CLAY: Medium-stiff to stiff gray mottled with red clay, some silt, trace fine to coarse sand, trace fine gravel, contains a silt seam from 64.5' to 64.8'. | 18        |                          |      |      |      |      |    |    |            |    |  | 19 Est. A-6a |
|              | 70           | 4/5/10   | 0.5-1.25        |                 |                  |                                                                                                                                                                     | 19        | 2                        | 1    | 2    | 34   | 61   | 33 | 14 |            |    |  | 24 A-6a(10)  |
|              | 75           | 5/8/10   | 0.5-0.75        |                 |                  |                                                                                                                                                                     | 20        |                          |      |      |      |      |    |    |            |    |  | 25 Est. A-6a |
| 586.6        | 80           | 4/9/10   | 1.0-2.0         |                 |                  | SILT AND CLAY: Stiff to very-stiff gray and brown clay, some silt, trace fine to coarse, trace fine gravel.                                                         | 21        |                          |      |      |      |      |    |    |            |    |  | 21 Est. A-6a |
|              | 85           | 5/9/12   | 2.0-2.5         |                 |                  |                                                                                                                                                                     | 22        |                          |      |      |      |      |    |    |            |    |  | 21 Est. A-6a |
| 576.6        | 90           | 9/11/19  | 4.5+            |                 |                  | SILT: Very-stiff to hard gray silt, some clay, trace fine to coarse sand, contains many silty clay seams and pockets.                                               | 23        | 0                        | 1    | 2    | 63   | 34   | 26 | 7  |            |    |  | 20 A-4b(8)   |
|              | 95           | 14/22/22 | 4.5+            |                 |                  |                                                                                                                                                                     | 24        |                          |      |      |      |      |    |    |            |    |  | 21 Est. A-4b |
| 563.6        | 100          | 12/21/25 | 3.5-4.5+        |                 |                  |                                                                                                                                                                     | 25        |                          |      |      |      |      |    |    |            |    |  | 22 Est. A-4b |

NOTES:  
- Encountered water at 38.5'.

WATER LEVEL: 38.5 "Dry" "Dry"  
 WATER NOTE: Encountered Inside HSA - At Completion Augers Pulled - Caved at 6.5'  
 DATE: 12/21/05 12/22/05 12/22/05

BBC&M ENGINEERING, INC. DRAWING NO. ...B012-00851-3010060 130 STRUCTURE.dgn



STRUCTURE FOUNDATION INVESTIGATION  
BRIDGE NO. CUY-77-1433 OVER I.R. 490 AND RAMPS

CUY-77-14.35  
PID No. 13567

8/26  
12/30

|               |          |
|---------------|----------|
| CALCULATED BY | PSL      |
| CHECKED BY    |          |
| DATE          | 3/24/06  |
| REVISION      | 11/21/07 |
| REVIEWED BY   | JLS      |
| DRAWN BY      | BLR      |



LOG OF BORING NO. BB-108  
 CUY-77-14.35  
 CLEVELAND, OHIO

BBC&M JOB: 012 00851.301

TYPE: 3-1/4" I.D. Hollow-stem Auger 3-1/8" Tricone Roller Bit LOCATION: IR - 77 COMPLETION DEPTH: 100.0'  
 2" O.D. Split-barrel Sampler 3" O.D. Shelby Tube Sampler Sta. 76+08 ELEVATION: 644.7  
 79' Lt. of Centerline DATE: 12/20/05 - 12/21/05

| Elev. (feet) | Depth (feet) | Samp.    | Std. Pen. / RQD | Hand Pen. (tsf) | Rec./Loss (feet) | CLASSIFICATION: DESCRIPTION                                                                                                                       | Samp. No. | Physical Characteristics |        |        |        |        |    |    | ODOT Class |    |            |
|--------------|--------------|----------|-----------------|-----------------|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------------------------|--------|--------|--------|--------|----|----|------------|----|------------|
|              |              |          |                 |                 |                  |                                                                                                                                                   |           | % AGG.                   | % C.S. | % F.S. | % SILT | % CLAY | LL | PI |            | WC |            |
| 644.0        | 0            |          |                 |                 |                  | 0.7 TOPSOIL - 8 INCHES                                                                                                                            |           |                          |        |        |        |        |    |    |            |    |            |
| 641.7        | 2.3          | 12/11/15 |                 |                 |                  | COARSE AND FINE SAND (FILL): Medium-dense brown fine to coarse sand, little fine gravel, some silt, trace clay.                                   | 1         |                          |        |        |        |        |    |    |            |    | Est. A-3a  |
| 640.4        | 3.6          | 9/12/15  |                 |                 |                  | COARSE AND FINE SAND (FILL): Medium-dense brown fine to coarse sand, little fine gravel, some silt, trace to little clay, slightly organic.       | 2A        |                          |        |        |        |        |    |    |            |    | Est. A-3a  |
| 637.2        | 6.8          |          |                 |                 |                  | GRAVEL WITH SAND (FILL): Medium-dense brown and gray fine to coarse sand, "and" fine gravel, trace silt, contains few to many slag fragments.     | 2B        |                          |        |        |        |        |    |    |            |    | Est. A-1-b |
|              | 7.5          |          |                 |                 |                  | FINE SAND: Loose to medium-dense brown fine sand, trace coarse sand, trace silt.                                                                  | 3         |                          |        |        |        |        |    |    |            |    | Est. A-3   |
|              | 10           | 3/2/3    |                 |                 |                  |                                                                                                                                                   | 4         |                          |        |        |        |        |    |    |            |    | Est. A-3   |
|              | 11           | 7/9/11   |                 |                 |                  |                                                                                                                                                   | 5         |                          |        |        |        |        |    |    |            |    | Est. A-3   |
| 629.2        | 15           | 7/8/10   |                 |                 |                  |                                                                                                                                                   | 6A        |                          |        |        |        |        |    |    |            |    | Est. A-3   |
| 628.2        | 16           | 7/7/11   |                 |                 |                  | FINE SAND: Medium-dense orange-brown fine sand, some coarse sand, trace silt.                                                                     | 6B        |                          |        |        |        |        |    |    |            |    | Est. A-3a  |
|              | 20           | 6/8/10   |                 |                 |                  | COARSE AND FINE SAND: Medium-dense to dense brown fine sand, some to "and" silt, trace coarse sand, trace clay, contains iron oxide staining.     | 7         |                          |        |        |        |        |    |    |            |    | Est. A-3a  |
|              | 21           | 16/21/20 |                 |                 |                  |                                                                                                                                                   | 8         |                          |        |        |        |        |    |    |            |    | Est. A-3a  |
| 621.7        | 23           | 5/8/12   |                 |                 |                  | SILT: Medium-dense to dense gray silt, some to "and" fine sand, trace clay, contains few silty clay pockets, slightly organic.                    | 9         |                          |        |        |        |        |    |    |            |    | Est. A-4b  |
|              | 25           | 18/21/24 |                 |                 |                  |                                                                                                                                                   | 10        |                          |        |        |        |        |    |    |            |    | Est. A-4b  |
|              | 30           | 8/17/17  |                 |                 |                  |                                                                                                                                                   | 11        |                          |        |        |        |        |    |    |            |    | Est. A-4b  |
|              | 35           | 14/15/23 |                 |                 |                  |                                                                                                                                                   | 12        |                          |        |        |        |        |    |    |            |    | Est. A-4b  |
| 607.7        | 37           |          |                 |                 |                  |                                                                                                                                                   | 13        |                          |        |        |        |        |    |    |            |    | Est. A-4b  |
|              | 40           | 3/7/7    | 0.5-2.0         |                 |                  | SILT: Soft to stiff gray mottled with red silt, "and" clay, trace fine to coarse sand, trace fine gravel, contains many silt and fine sand seams. | 14        | 1                        | 3      | 6      | 52     | 38     | 24 | 7  | 24         |    | A-4b(8)    |
|              | 45           | 3/5/5    | 0.25-1.25       |                 |                  |                                                                                                                                                   | 15        |                          |        |        |        |        |    |    |            |    | Est. A-6b  |
| 597.7        | 47           |          |                 |                 |                  | SILTY CLAY: Soft to medium-stiff gray silty clay, trace fine sand, trace fine gravel.                                                             | 16        | 0                        | 0      | 1      | 53     | 46     | 29 | 9  | 23         |    | A-4b(8)    |
| 594.7        | 50           | 4/4/6    | 0.25-1.0        |                 |                  | SILT: Stiff gray mottled with brown silt, "and" clay, trace fine sand.                                                                            | 17        |                          |        |        |        |        |    |    |            |    | Est. A-6a  |
|              | 51           | P        | 1.25-1.75       |                 |                  |                                                                                                                                                   |           |                          |        |        |        |        |    |    |            |    |            |
| 591.7        | 53           | 7/9/12   | 1.75-3.25       |                 |                  | SILT AND CLAY: Stiff to very-stiff gray clay, "and" silt, little fine to coarse sand, contains few to many silt and fine sand pockets.            |           |                          |        |        |        |        |    |    |            |    | Est. A-6a  |

WATER LEVEL: 21.0 49.0 15.0 "Dry"  
 WATER NOTE: Encountered Inside HSA - Prior to Washbore Inside HSA - At Completion Augers Pulled - Caved at 3.0'  
 DATE: 12/20/05 12/21/05 12/21/05 12/21/05



LOG OF BORING NO. BB-108  
 CUY-77-14.35  
 CLEVELAND, OHIO

BBC&M JOB: 012 00851.301

TYPE: 3-1/4" I.D. Hollow-stem Auger 3-1/8" Tricone Roller Bit LOCATION: IR - 77 COMPLETION DEPTH: 100.0'  
 2" O.D. Split-barrel Sampler 3" O.D. Shelby Tube Sampler Sta. 76+08 ELEVATION: 644.7  
 79' Lt. of Centerline DATE: 12/20/05 - 12/21/05

| Elev. (feet) | Depth (feet) | Samp.    | Std. Pen. / RQD | Hand Pen. (tsf) | Rec./Loss (feet) | CLASSIFICATION: DESCRIPTION                                                                                                                     | Samp. No. | Physical Characteristics |        |        |        |        |    |    | ODOT Class |    |           |
|--------------|--------------|----------|-----------------|-----------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------------------------|--------|--------|--------|--------|----|----|------------|----|-----------|
|              |              |          |                 |                 |                  |                                                                                                                                                 |           | % AGG.                   | % C.S. | % F.S. | % SILT | % CLAY | LL | PI |            | WC |           |
|              | 60           | 6/9/12   | 1.25-2.25       |                 |                  | SILT AND CLAY: Stiff to very-stiff gray clay, "and" silt, little fine to coarse sand, contains few to many silt and fine sand pockets.          | 18        |                          |        |        |        |        |    |    |            |    | Est. A-6a |
|              | 65           | 5/8/13   | 1.0-2.25        |                 |                  |                                                                                                                                                 | 19        |                          |        |        |        |        |    |    |            |    | Est. A-6a |
| 577.7        | 67           |          |                 |                 |                  |                                                                                                                                                 | 20        |                          |        |        |        |        |    |    |            |    | Est. A-6a |
|              | 70           | 12/17/22 | 3.5-4.5+        |                 |                  | SILT AND CLAY: Very-stiff to hard gray silt, some clay, trace fine to coarse sand, trace fine gravel, contains many silt and fine sand seams.   | 21        |                          |        |        |        |        |    |    |            |    | Est. A-6a |
|              | 75           | 20/25/29 | 4.5+            |                 |                  |                                                                                                                                                 | 22        |                          |        |        |        |        |    |    |            |    | Est. A-6a |
|              | 80           | 15/22/23 | 3.75-4.5+       |                 |                  |                                                                                                                                                 | 23        | 1                        | 1      | 2      | 64     | 32     | 29 | 12 | 22         |    | A-6a(9)   |
| 562.7        | 82           |          |                 |                 |                  |                                                                                                                                                 | 24        |                          |        |        |        |        |    |    |            |    | Est. A-6a |
|              | 85           | 15/18/20 | 1.5-3.5         |                 |                  | SILT AND CLAY: Stiff to very-stiff gray silt, "and" clay, trace fine to coarse sand, trace fine gravel, contains many silt and fine sand seams. | 25        |                          |        |        |        |        |    |    |            |    | Est. A-6a |
|              | 90           | 8/12/15  | 1.25-1.75       |                 |                  |                                                                                                                                                 | 26        |                          |        |        |        |        |    |    |            |    | Est. A-6a |
|              | 95           | 10/9/18  | 1.75-2.25       |                 |                  |                                                                                                                                                 | 27        | 0                        | 1      | 2      | 50     | 47     | 31 | 13 | 24         |    | A-6a(9)   |
| 544.7        | 100          | 8/10/15  | 1.0-1.75        |                 |                  |                                                                                                                                                 | 28        |                          |        |        |        |        |    |    |            |    | Est. A-6a |

NOTES:  
 - Encountered water at 21.0'.  
 - Used 3 1/4" I.D. Hollow-stem Augers from 0.0' to 70.0'.  
 - Used 3 1/8" O.D. Tricone Roller Bit with water from 70.0' to 100.0'.

WATER LEVEL: 21.0 49.0 15.0 "Dry"  
 WATER NOTE: Encountered Inside HSA - Prior to Washbore Inside HSA - At Completion Augers Pulled - Caved at 3.0'  
 DATE: 12/20/05 12/21/05 12/21/05 12/21/05



STRUCTURE FOUNDATION INVESTIGATION  
 BRIDGE NO. CUY-77-1433 OVER I.R. 490 AND RAMP

CUY-77-14.35  
 PID No. 13567





LOG OF BORING NO. BB-109  
 CUY-77-14.35  
 CLEVELAND, OHIO

BBC&M JOB: 012 00851.301

TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: IR - 77 COMPLETION DEPTH: 100.0'  
 2" O.D. Split-barrel Sampler Sta. 78+41 ELEVATION: 644.5  
 87' Rt. of Centerline DATE: 12/19/05

| Elev. (feet) | Depth (feet) | Samp.    | Std. Pen. / RQD | Hand Pen. (tef) | Rec./Loss (feet) | CLASSIFICATION: DESCRIPTION                                                                                                                                                         | Samp. No. | Physical Characteristics |        |        |        |        |    |    | ODOT Class |    |           |
|--------------|--------------|----------|-----------------|-----------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------------------------|--------|--------|--------|--------|----|----|------------|----|-----------|
|              |              |          |                 |                 |                  |                                                                                                                                                                                     |           | % AGG.                   | % C.S. | % F.S. | % SILT | % CLAY | LL | PI |            | WC |           |
| 643.7        | 0            |          |                 |                 |                  | 0.8 TOPSOIL - 10 INCHES                                                                                                                                                             |           |                          |        |        |        |        |    |    |            |    |           |
| 641.0        | 2.7          | 8/7/4    |                 |                 |                  | COARSE AND FINE SAND (FILL): Medium-dense brown fine to coarse sand, little to some fine to coarse gravel, trace silt, trace clay, contains few asphalt and concrete fragments.     | 1         |                          |        |        |        |        |    |    |            |    | Est. A-3a |
| 637.0        | 6.7          | 3/3/5    |                 |                 |                  | FINE SAND (FILL): Loose brown fine sand, trace coarse sand, trace silt, trace clay, contains few coal fragments.                                                                    | 2         |                          |        |        |        |        |    |    |            |    | Est. A-3  |
| 627.4        | 16.3         | 6/9/13   |                 |                 |                  | FINE SAND: Medium-dense to dense brown fine sand, trace to little coarse sand, trace fine gravel, trace silt, trace clay, contains few sandstone fragments and iron oxide staining. | 3         |                          |        |        |        |        |    |    |            |    | Est. A-3  |
| 626.0        | 17.7         | 10/14/16 |                 |                 |                  |                                                                                                                                                                                     | 4         |                          |        |        |        |        |    |    |            |    | Est. A-3  |
| 624.0        | 19.7         | 5/8/7    |                 |                 |                  |                                                                                                                                                                                     | 5         |                          |        |        |        |        |    |    |            |    | Est. A-3  |
| 620.6        | 23.3         | 11/18/17 |                 |                 |                  |                                                                                                                                                                                     | 6A        |                          |        |        |        |        |    |    |            |    | Est. A-3  |
| 620.6        | 23.3         | 11/18/17 |                 |                 |                  |                                                                                                                                                                                     | 6B        |                          |        |        |        |        |    |    |            |    | Est. A-4b |
| 614.9        | 29.7         | 4/3/3    |                 |                 |                  | SILT: Dense orange-brown silt, some fine sand, trace clay.                                                                                                                          | 7         |                          |        |        |        |        |    |    |            |    | Est. A-4b |
| 610.0        | 33.7         | 10/10/8  |                 |                 |                  | SILT: Loose gray silt, some fine sand, trace to little clay.                                                                                                                        | 8         |                          |        |        |        |        |    |    |            |    | Est. A-3  |
| 600.0        | 43.7         | 3/11/19  | 0.75-1.75       |                 |                  | FINE SAND: Medium-dense gray and brown fine sand, trace to little silt, trace coarse sand.                                                                                          | 9A        |                          |        |        |        |        |    |    |            |    | Est. A-3  |
| 592.5        | 51.2         | 10/10/17 |                 |                 |                  | SILT: Medium-dense to dense gray silt, little clay, little fine sand, slightly organic.                                                                                             | 9B        | 0                        | 0      | 15     | 69     | 16     | NP | NP | 22         |    | A-4b(8)   |
|              |              | 19/21/15 |                 |                 |                  |                                                                                                                                                                                     | 10        |                          |        |        |        |        |    |    |            |    | Est. A-4b |
|              |              | 14/9/11  |                 |                 |                  | SILT: Medium-dense to dense gray silt, little clay, trace fine sand, contains few interbedded silty clay seams, slightly organic.                                                   | 11A       |                          |        |        |        |        |    |    |            |    | Est. A-4b |
|              |              | 10/7/10  | 0.5-2.75        |                 |                  |                                                                                                                                                                                     | 11B       | 0                        | 0      | 6      | 78     | 16     | NP | NP | 22         |    | A-4b(8)   |
|              |              | 4/4/6    | 1.25            |                 |                  | SILT: Stiff to very-stiff gray silt, some clay, trace fine sand, contains many silty clay seams, and few zones of medium-stiff silt.                                                | 12A       |                          |        |        |        |        |    |    |            |    | Est. A-4b |
|              |              | 4/5/7    | 0.5-2.75        |                 |                  |                                                                                                                                                                                     | 12B       |                          |        |        |        |        |    |    |            |    | Est. A-4b |
|              |              | 4/5/7    | 0.75-1.5        |                 |                  |                                                                                                                                                                                     | 13        | 0                        | 0      | 2      | 67     | 31     | 25 | 6  | 25         |    | A-4b(8)   |
|              |              |          |                 |                 |                  |                                                                                                                                                                                     | 14        |                          |        |        |        |        |    |    |            |    | Est. A-4b |
|              |              |          |                 |                 |                  |                                                                                                                                                                                     | 15        |                          |        |        |        |        |    |    |            |    | Est. A-4b |
|              |              |          |                 |                 |                  |                                                                                                                                                                                     | 16        | 1                        | 1      | 2      | 35     | 61     | 36 | 15 | 26         |    | A-6a(10)  |

WATER LEVEL: ▽ "Dry" ▽ "Dry" ▽  
 WATER NOTE: Inside HSA - At Completion Augers Pulled - Caved at 3.0'  
 DATE: 12/19/05 12/19/05



LOG OF BORING NO. BB-109  
 CUY-77-14.35  
 CLEVELAND, OHIO

BBC&M JOB: 012 00851.301

TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: IR - 77 COMPLETION DEPTH: 100.0'  
 2" O.D. Split-barrel Sampler Sta. 78+41 ELEVATION: 644.5  
 87' Rt. of Centerline DATE: 12/19/05

| Elev. (feet) | Depth (feet) | Samp.    | Std. Pen. / RQD | Hand Pen. (tef) | Rec./Loss (feet) | CLASSIFICATION: DESCRIPTION                                                                                                                                                       | Samp. No. | Physical Characteristics |        |        |        |        |    |    | ODOT Class |    |           |
|--------------|--------------|----------|-----------------|-----------------|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------------------------|--------|--------|--------|--------|----|----|------------|----|-----------|
|              |              |          |                 |                 |                  |                                                                                                                                                                                   |           | % AGG.                   | % C.S. | % F.S. | % SILT | % CLAY | LL | PI |            | WC |           |
| 582.5        | 17.5         | 5/9/11   | 1.5-3.5         |                 |                  | SILT AND CLAY: Stiff to very-stiff gray clay, some silt, trace fine to coarse sand, trace fine gravel, contains few silt and fine sand seams, and few zones of medium-stiff clay. | 17        |                          |        |        |        |        |    |    |            |    | Est. A-6a |
| 620.0        | 37.5         | 8/12/17  | 2.5-4.5+        |                 |                  |                                                                                                                                                                                   | 18        |                          |        |        |        |        |    |    |            |    | Est. A-4b |
| 620.0        | 37.5         | 18/27/31 | 4.5+            |                 |                  |                                                                                                                                                                                   | 19        | 0                        | 1      | 2      | 63     | 34     | 27 | 7  | 17         |    | A-4b(8)   |
| 620.0        | 37.5         | 20/21/28 | 4.5+            |                 |                  |                                                                                                                                                                                   | 20        |                          |        |        |        |        |    |    |            |    | Est. A-4b |
| 620.0        | 37.5         | 15/20/24 | 3.75-4.5+       |                 |                  |                                                                                                                                                                                   | 21        |                          |        |        |        |        |    |    |            |    | Est. A-4b |
| 620.0        | 37.5         | 12/22/28 | 4.5+            |                 |                  |                                                                                                                                                                                   | 22        |                          |        |        |        |        |    |    |            |    | Est. A-4b |
| 620.0        | 37.5         | 14/19/25 | 3.75-4.5+       |                 |                  |                                                                                                                                                                                   | 23        |                          |        |        |        |        |    |    |            |    | Est. A-4b |
| 552.5        | 92.0         | 8/12/18  | 2.0-3.75        |                 |                  | SILT AND CLAY: Stiff to very-stiff gray clay, "and" silt, trace fine to coarse sand, contains many silt seams.                                                                    | 24        | 0                        | 1      | 2      | 42     | 55     | 31 | 11 | 24         |    | A-6a(8)   |
| 544.5        | 100.0        | 9/12/17  | 1.5-2.5         |                 |                  |                                                                                                                                                                                   | 25        |                          |        |        |        |        |    |    |            |    | Est. A-6a |

NOTES:  
 - Encountered seepage from 18.5' to 23.9'.

WATER LEVEL: ▽ "Dry" ▽ "Dry" ▽  
 WATER NOTE: Inside HSA - At Completion Augers Pulled - Caved at 3.0'  
 DATE: 12/19/05 12/19/05



STRUCTURE FOUNDATION INVESTIGATION  
 BRIDGE NO. CUY-77-1433 OVER I.R. 490 AND RAMP

CUY-77-14.35  
 PID No. 13567

BBC&M ENGINEERING, INC. DRAWING NO. ...B012-00851-3010060 130 STRUCTURE.dgn





LOG OF BORING NO. BB-110  
 CUY-77-14.35  
 CLEVELAND, OHIO

BBC&M JOB: 012 00851.301

TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: IR - 77 COMPLETION DEPTH: 100.0'  
 2" O.D. Split-barrel Sampler 3" O.D. Shelby Tube Sampler Sta. 79+63 ELEVATION: 669.2  
 81' LL of Centerline DATE: 12/22/05 - 12/23/05

| Elev. (feet) | Depth (feet) | Samp.   | Std. Pen. / RQD | Hand Pen. (tof) | Rec./Loss (feet) | CLASSIFICATION: DESCRIPTION                                                                            | Physical Characteristics |        |        |        |        |        |    |    | ODOT Class |           |
|--------------|--------------|---------|-----------------|-----------------|------------------|--------------------------------------------------------------------------------------------------------|--------------------------|--------|--------|--------|--------|--------|----|----|------------|-----------|
|              |              |         |                 |                 |                  |                                                                                                        | Samp. No.                | % AGG. | % C.S. | % F.S. | % SILT | % CLAY | LL | PI |            | WC        |
| 667.2        | 0            |         |                 |                 |                  | TOPSOIL - 24 INCHES                                                                                    |                          |        |        |        |        |        |    |    |            |           |
| 667.2        | 2.0          |         |                 |                 |                  | FINE SAND: Loose to medium-dense brown fine sand, trace silt, trace coarse sand.                       |                          |        |        |        |        |        |    |    |            | Est. A-3  |
| 667.2        | 5            | 2/2/3   |                 |                 |                  |                                                                                                        |                          |        |        |        |        |        |    |    |            |           |
| 667.2        | 10           | 6/6/5   |                 |                 |                  |                                                                                                        |                          |        |        |        |        |        |    |    |            | Est. A-3  |
| 667.2        | 15           | 6/8/10  |                 |                 |                  |                                                                                                        |                          |        |        |        |        |        |    |    |            | Est. A-3  |
| 667.2        | 20           | 6/6/6   |                 |                 |                  |                                                                                                        |                          |        |        |        |        |        |    |    |            | Est. A-3  |
| 667.2        | 25           | 6/8/12  |                 |                 |                  |                                                                                                        |                          |        |        |        |        |        |    |    |            | Est. A-3  |
| 646.2        | 23.0         |         |                 |                 |                  | SILT: Medium-dense brown silt, some fine sand, little clay, trace coarse sand.                         |                          |        |        |        |        |        |    |    |            | A-4b(8)   |
| 644.2        | 25.0         | 5/6/8   |                 |                 |                  | COARSE AND FINE SAND: Medium-dense brown fine sand, little to some silt, trace coarse sand.            |                          |        |        |        |        |        |    |    |            | Est. A-3a |
| 639.2        | 30           | 6/10/11 |                 |                 |                  | SILT: Medium-dense brown silt, some to "and" fine sand, trace clay, trace coarse sand.                 |                          |        |        |        |        |        |    |    |            | Est. A-3a |
| 639.2        | 35           | 6/10/11 |                 |                 |                  |                                                                                                        |                          |        |        |        |        |        |    |    |            | Est. A-4b |
| 633.7        | 35.5         | 8/6/6   |                 |                 |                  |                                                                                                        |                          |        |        |        |        |        |    |    |            | Est. A-4b |
| 633.7        | 40           | 8/9/10  |                 |                 |                  | FINE SAND: Loose to medium-dense brown fine to coarse sand, trace silt, trace clay, trace fine gravel. |                          | 1      | 33     | 58     | 8      |        | NP | NP | 8          | A-3(0)    |
| 633.7        | 45           | 6/9/13  |                 |                 |                  |                                                                                                        |                          |        |        |        |        |        |    |    |            | Est. A-3  |
| 623.2        | 45           | 4/5/5   |                 |                 |                  |                                                                                                        |                          |        |        |        |        |        |    |    |            | Est. A-3  |
| 623.2        | 46.0         |         |                 |                 |                  | SILT: Loose brown silt, some fine sand, trace clay, trace coarse sand.                                 |                          |        |        |        |        |        |    |    |            | Est. A-4b |
| 620.2        | 50           | 2/2/3   |                 |                 |                  | SILT: Loose gray and dark gray silt, "and" fine sand, trace clay, trace coarse sand, slightly organic. | 14A                      |        |        |        |        |        |    |    |            | Est. A-4b |
| 620.2        | 53.0         |         |                 |                 |                  |                                                                                                        | 14B                      | 0      | 1      | 36     | 56     | 7      | NP | NP | 22         | A-4b(6)   |
| 616.2        | 55           | 5/12/13 |                 |                 |                  | SILT: Medium-dense gray silt, "and" fine sand, trace clay, trace coarse sand.                          |                          |        |        |        |        |        |    |    |            | Est. A-4b |

WATER LEVEL: 45.0 "Dry" 40.5 "Dry"  
 WATER NOTE: Encountered Inside HSA - End of 1st day Inside HSA - At Completion Augers Pulled - Caved at 26.0'  
 DATE: 12/22/05 12/22/05 12/23/05 12/23/05



LOG OF BORING NO. BB-110  
 CUY-77-14.35  
 CLEVELAND, OHIO

BBC&M JOB: 012 00851.301

TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: IR - 77 COMPLETION DEPTH: 100.0'  
 2" O.D. Split-barrel Sampler 3" O.D. Shelby Tube Sampler Sta. 79+63 ELEVATION: 669.2  
 81' LL of Centerline DATE: 12/22/05 - 12/23/05

| Elev. (feet) | Depth (feet) | Samp.   | Std. Pen. / RQD | Hand Pen. (tof) | Rec./Loss (feet) | CLASSIFICATION: DESCRIPTION                                                                                                                                          | Physical Characteristics |        |        |        |        |        |    |    | ODOT Class |           |
|--------------|--------------|---------|-----------------|-----------------|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------|--------|--------|--------|--------|----|----|------------|-----------|
|              |              |         |                 |                 |                  |                                                                                                                                                                      | Samp. No.                | % AGG. | % C.S. | % F.S. | % SILT | % CLAY | LL | PI |            | WC        |
| 601.2        | 60           | 5/8/8   |                 |                 |                  | SILT: Medium-dense gray silt, "and" fine sand, trace clay, trace coarse sand.                                                                                        |                          |        |        |        |        |        |    |    |            | Est. A-4b |
| 601.2        | 65           | 5/8/7   |                 |                 |                  |                                                                                                                                                                      |                          |        |        |        |        |        |    |    |            | Est. A-4b |
| 601.2        | 70           | 5/5/6   |                 | 1.25-2.0        |                  | SANDY SILT: Stiff gray silt, "and" clay, little fine to coarse sand, trace fine gravel, contains many silt and fine sand seams and pockets.                          |                          |        |        |        |        |        |    |    |            | Est. A-4a |
| 601.2        | 75           | 1/2/4   |                 | 1.0-1.5         |                  |                                                                                                                                                                      |                          |        |        |        |        |        |    |    |            | A-4a(8)   |
| 592.2        | 80           | SH/3/4  |                 | 0.5-0.75        |                  | SILT AND CLAY: Soft to medium-stiff gray clay, "and" silt, trace fine to coarse sand, trace fine gravel, contains many fine sand and silt seams and lenses (varved). |                          |        |        |        |        |        |    |    |            | Est. A-6a |
| 592.2        | 85           | P       |                 | 0.25-0.5        |                  |                                                                                                                                                                      |                          |        |        |        |        |        |    |    |            | Est. A-6a |
| 592.2        | 85           | SH/5/5  |                 | 0.5-0.75        |                  |                                                                                                                                                                      |                          |        |        |        |        |        |    |    |            | Est. A-6a |
| 582.2        | 87.0         |         |                 |                 |                  | SILT AND CLAY: Very-stiff to hard gray silt, "and" clay, trace fine to coarse sand, contains many fine sand and silt lenses.                                         |                          |        |        |        |        |        |    |    |            | Est. A-6a |
| 582.2        | 90           | 4/7/7   |                 | 2.5-4.0         |                  |                                                                                                                                                                      |                          |        |        |        |        |        |    |    |            | Est. A-6a |
| 582.2        | 95           | 4/7/10  |                 | 3.0-4.5+        |                  |                                                                                                                                                                      |                          |        |        |        |        |        |    |    |            | A-6a(8)   |
| 569.2        | 100          | 9/12/15 |                 | 3.0-4.5+        |                  |                                                                                                                                                                      |                          |        |        |        |        |        |    |    |            | Est. A-6a |

NOTES:  
 - Encountered seepage at 31.0'.  
 - Encountered water at 45.0'.  
 - Loss-on-Ignition test performed on Sample S-14B, LOI=1.3%.

WATER LEVEL: 45.0 "Dry" 40.5 "Dry"  
 WATER NOTE: Encountered Inside HSA - End of 1st day Inside HSA - At Completion Augers Pulled - Caved at 26.0'  
 DATE: 12/22/05 12/22/05 12/23/05 12/23/05



|               |          |
|---------------|----------|
| CALCULATED BY | PSL      |
| CHECKED BY    |          |
| DATE          | 3/24/06  |
| REVISION      | 11/21/07 |
| REVIEWED BY   | JLS      |
| DRAWN BY      | BLR      |

STRUCTURE FOUNDATION INVESTIGATION  
 BRIDGE NO. CUY-77-1433 OVER I.R. 490 AND RAMPS

CUY-77-14.35  
 PID No. 13567



LOG OF BORING NO. BB-111  
 CUY-77-14.35  
 CLEVELAND, OHIO

BBC&M JOB: 012 00851.301

TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: IR - 77 COMPLETION DEPTH: 90.0'  
 2" O.D. Split-barrel Sampler Sta. 80+30 ELEVATION: 690.3  
 10' Rt. of Centerline DATE: 12/7/05 - 12/13/05

| Elev. (feet) | Depth (feet) | Samp. | Std. Pen. / RQD | Hand Pen. (tsf) | Rec./Loss (feet) | CLASSIFICATION: DESCRIPTION                                                                                                                        | Physical Characteristics |        |        |        |        |        |    |    | ODOT Class |           |  |
|--------------|--------------|-------|-----------------|-----------------|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------|--------|--------|--------|--------|----|----|------------|-----------|--|
|              |              |       |                 |                 |                  |                                                                                                                                                    | Samp. No.                | % AGG. | % C.S. | % F.S. | % SILT | % CLAY | LL | PI |            | WC        |  |
| 689.0        | 0            |       |                 |                 |                  | 1.3 ASPHALT - 16 INCHES                                                                                                                            |                          |        |        |        |        |        |    |    |            |           |  |
|              | 16/16/26     |       |                 |                 |                  |                                                                                                                                                    |                          |        |        |        |        |        |    |    |            |           |  |
| 685.8        | 5            |       |                 |                 |                  | 4.5 SANDY SILT (FILL): Dense brown fine to coarse sand, some to "and" silt, little clay, trace fine gravel.                                        | 1                        | 5      | 14     | 26     | 37     | 18     | NP | NP | 14         | A-4a(4)   |  |
|              | 16/20/28     |       |                 |                 |                  |                                                                                                                                                    | 2                        | 5      | 21     | 38     | 20     | 16     | NP | NP | 11         | A-4a(0)   |  |
|              | 19/27/27     |       |                 |                 |                  | COARSE AND FINE SAND (FILL): Dense to very-dense brown fine sand, little coarse sand, little silt, little clay, contains few brick fragments.      | 3                        |        |        |        |        |        |    |    | 11         | Est. A-3a |  |
|              | 9/14/27      |       |                 |                 |                  |                                                                                                                                                    | 4                        |        |        |        |        |        |    |    | 11         | Est. A-3a |  |
|              | 25/22/24     |       |                 |                 |                  |                                                                                                                                                    | 5                        |        |        |        |        |        |    |    |            | Est. A-3a |  |
|              | 15/25/27     |       |                 |                 |                  |                                                                                                                                                    | 6                        | 9      | 11     | 49     | 19     | 12     | NP | NP | 10         | A-3a(0)   |  |
|              | 25/25/38     |       |                 |                 |                  |                                                                                                                                                    | 7                        |        |        |        |        |        |    |    |            | Est. A-3a |  |
|              | 20/26/16     |       |                 |                 |                  |                                                                                                                                                    | 8                        |        |        |        |        |        |    |    | 12         | Est. A-3a |  |
|              | 23/34/30     |       |                 |                 |                  |                                                                                                                                                    | 9                        |        |        |        |        |        |    |    |            | Est. A-3a |  |
| 669.8        | 20           |       |                 |                 |                  | 20.5 SILT (FILL): Dense brown silt, little fine sand, little clay, trace coarse sand.                                                              | 10                       | 0      | 1      | 20     | 61     | 18     | NP | NP | 13         | A-4b(8)   |  |
| 667.3        |              |       |                 |                 |                  | 23.0 FINE SAND (FILL): Medium-dense gray and brown fine sand, trace silt.                                                                          | 11                       |        |        |        |        |        |    |    |            | Est. A-3  |  |
| 664.8        | 25           |       |                 |                 |                  | 25.5 COARSE AND FINE SAND (FILL): Dense brown and gray fine to coarse sand, trace fine gravel, trace silt, contains few brick and shale fragments. | 12                       |        |        |        |        |        |    |    | 6          | Est. A-3a |  |
|              | 13/21/28     |       |                 |                 |                  |                                                                                                                                                    | 13                       |        |        |        |        |        |    |    |            | Est. A-3a |  |
|              | 22/22/27     |       |                 |                 |                  |                                                                                                                                                    | 14                       |        |        |        |        |        |    |    | 7          | Est. A-3  |  |
| 658.3        | 30           |       |                 |                 |                  | 32.0 FINE SAND: Medium-dense to very-dense brown fine sand, little coarse sand, trace silt.                                                        | 15                       |        |        |        |        |        |    |    |            | Est. A-3  |  |
|              | 9/10/12      |       |                 |                 |                  |                                                                                                                                                    | 16                       |        |        |        |        |        |    |    |            | Est. A-3  |  |
|              | 38/56        |       |                 |                 |                  |                                                                                                                                                    | 17                       | 0      | 11     | 82     | 7      | NP     | NP | 5  | A-3(0)     |           |  |
|              | 22/22/23     |       |                 |                 |                  |                                                                                                                                                    | 18                       |        |        |        |        |        |    |    |            | Est. A-3  |  |
|              | 18/17/22     |       |                 |                 |                  |                                                                                                                                                    |                          |        |        |        |        |        |    |    |            |           |  |
|              | 18/20/21     |       |                 |                 |                  |                                                                                                                                                    |                          |        |        |        |        |        |    |    |            |           |  |

WATER LEVEL: 68.5 "Dry"  
 WATER NOTE: Inside HSA - At Completion Augers Pulled - Caved at 31.0'  
 DATE: 12/13/05 12/13/05



LOG OF BORING NO. BB-111  
 CUY-77-14.35  
 CLEVELAND, OHIO

BBC&M JOB: 012 00851.301

TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: IR - 77 COMPLETION DEPTH: 90.0'  
 2" O.D. Split-barrel Sampler Sta. 80+30 ELEVATION: 690.3  
 10' Rt. of Centerline DATE: 12/7/05 - 12/13/05

| Elev. (feet) | Depth (feet) | Samp. | Std. Pen. / RQD | Hand Pen. (tsf) | Rec./Loss (feet) | CLASSIFICATION: DESCRIPTION                                                                                         | Physical Characteristics |        |        |        |        |        |    |    | ODOT Class |         |           |
|--------------|--------------|-------|-----------------|-----------------|------------------|---------------------------------------------------------------------------------------------------------------------|--------------------------|--------|--------|--------|--------|--------|----|----|------------|---------|-----------|
|              |              |       |                 |                 |                  |                                                                                                                     | Samp. No.                | % AGG. | % C.S. | % F.S. | % SILT | % CLAY | LL | PI |            | WC      |           |
|              | 60           |       |                 |                 |                  | FINE SAND: Medium-dense to very-dense brown fine sand, little coarse sand, trace silt.                              | 19                       |        |        |        |        |        |    |    |            | 18      | Est. A-3  |
|              | 20/19/24     |       |                 |                 |                  |                                                                                                                     | 20                       |        |        |        |        |        |    |    |            |         | Est. A-3  |
|              | 24/35/38     |       |                 |                 |                  |                                                                                                                     | 21                       |        |        |        |        |        |    |    |            |         | Est. A-4a |
| 623.3        | 65           |       |                 |                 |                  | 67.0 SANDY SILT: Dense gray silt, "and" fine sand, little clay, contains few silty clay seams and pockets.          | 22                       |        |        |        |        |        |    |    |            |         | Est. A-4a |
|              | 20/16/17     |       |                 |                 |                  |                                                                                                                     | 23                       | 0      | 1      | 13     | 70     | 16     | NP | NP | 23         | A-4b(8) |           |
| 614.3        | 75           |       |                 |                 |                  | 76.0 SILT: Dense brown and gray silt, little clay, little fine sand, contains a diagonal dark gray silty clay seam. | 24                       |        |        |        |        |        |    |    |            | 25      | Est. A-4a |
|              | 12/12/23     |       |                 |                 |                  |                                                                                                                     | 25                       |        |        |        |        |        |    |    |            |         | Est. A-4a |
| 608.3        | 80           |       |                 |                 |                  | 82.0 SANDY SILT: Medium-stiff to stiff gray silt, some to "and" clay, little fine to coarse sand.                   |                          |        |        |        |        |        |    |    |            |         |           |
|              | 9/12/12      |       |                 | 0.5-1.0         |                  |                                                                                                                     |                          |        |        |        |        |        |    |    |            |         |           |
|              | 9/14/16      |       |                 | 1.0-1.75        |                  |                                                                                                                     |                          |        |        |        |        |        |    |    |            |         |           |
| 600.3        | 90           |       |                 |                 |                  | 90.0                                                                                                                |                          |        |        |        |        |        |    |    |            |         |           |

NOTES:  
 - Encountered seepage at 58.5'.  
 - Added water inside HSA at 60.0'.

WATER LEVEL: 68.5 "Dry"  
 WATER NOTE: Inside HSA - At Completion Augers Pulled - Caved at 31.0'  
 DATE: 12/13/05 12/13/05



STRUCTURE FOUNDATION INVESTIGATION  
 BRIDGE NO. CUY-77-1433 OVER I.R. 490 AND RAMPS

CUY-77-14.35  
 PID No. 13567



LOG OF BORING NO. BB-112  
 CUY-77-14.35  
 CLEVELAND, OHIO

BBC&M JOB: 012 00851.301  
 Page 1 of 2

TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: IR - 77 COMPLETION DEPTH: 40.0'  
 2" O.D. Split-barrel Sampler 3" O.D. Shelby Tube Sampler Sta. 81+61 ELEVATION: 688.9  
 37' LL of Centerline DATE: 12/16/05

| Elev. (feet) | Depth (feet) | Samp. | Std. Pen. / RQD | Hand Pen. (tsf) | Rec./Loss (feet) | CLASSIFICATION: DESCRIPTION                                                                                                                            | Physical Characteristics |        |        |        |        |        |    | ODOT Class |    |            |  |
|--------------|--------------|-------|-----------------|-----------------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------|--------|--------|--------|--------|----|------------|----|------------|--|
|              |              |       |                 |                 |                  |                                                                                                                                                        | Samp. No.                | % AGG. | % C.S. | % F.S. | % SILT | % CLAY | LL |            | PI | WC         |  |
| 688.4        | 0            |       |                 |                 |                  | 0.5' ASPHALT - 6 INCHES                                                                                                                                |                          |        |        |        |        |        |    |            |    |            |  |
| 687.6        |              |       |                 |                 |                  | 1.3' CONCRETE - 9 INCHES                                                                                                                               |                          |        |        |        |        |        |    |            |    |            |  |
| 685.9        |              |       | 5/10/14         |                 |                  | 3.0' SANDY SILT (FILL): Medium-dense brown silt, some clay, some fine to coarse sand, trace fine gravel.                                               | 1                        | 3      | 10     | 24     | 40     | 23     | NP | NP         | 15 | A-4a(6)    |  |
|              |              |       | 14/14/18        |                 |                  | GRAVEL WITH SAND (FILL): Dense brown fine to coarse sand, some fine to coarse gravel, little silt, trace to little clay, contains few brick fragments. | 2                        | 24     | 27     | 26     | 23     |        | NP | NP         | 10 | A-1-b(0)   |  |
|              | 5            |       | 13/15/20        |                 |                  |                                                                                                                                                        | 3                        |        |        |        |        |        |    |            | 9  | Est. A-1-b |  |
|              |              |       | 18/18/22        |                 |                  |                                                                                                                                                        | 4                        |        |        |        |        |        |    |            | 11 | Est. A-1-b |  |
|              |              |       | 13/15/16        |                 |                  |                                                                                                                                                        | 5                        |        |        |        |        |        |    |            |    | Est. A-1-b |  |
|              | 10           |       | 10/19/20        |                 |                  |                                                                                                                                                        | 6                        |        |        |        |        |        |    |            |    | Est. A-1-b |  |
|              |              |       | 17/23/22        |                 |                  |                                                                                                                                                        | 7                        |        |        |        |        |        |    |            |    | Est. A-1-b |  |
|              | 15           |       | 15/23/26        |                 |                  |                                                                                                                                                        | 8                        |        |        |        |        |        |    |            |    | Est. A-1-b |  |
|              |              |       | 15/18/19        |                 |                  |                                                                                                                                                        | 9                        |        |        |        |        |        |    |            |    | Est. A-1-b |  |
|              | 20           |       | 15/22/23        |                 |                  |                                                                                                                                                        | 10                       |        |        |        |        |        |    |            |    | Est. A-1-b |  |
| 665.9        |              |       |                 | 0.25-0.75       |                  | 23.0' SILT AND CLAY: Soft to medium-stiff gray silt, "and" clay, trace fine to coarse sand, contains few silt and fine sand seams, slightly organic.   | 11                       | 0      | 1      | 4      | 53     | 42     | 34 | 11         | 31 | A-6a(8)    |  |
| 662.4        |              |       |                 | 0.25            |                  | 26.5'                                                                                                                                                  | 12                       | 1      | 1      | 3      | 49     | 46     | 34 | 13         | 28 | A-6a(9)    |  |
|              | 30           |       | 10/14/18        |                 |                  | COARSE AND FINE SAND: Medium-dense to dense brown fine to coarse sand, trace fine gravel, trace silt, trace clay.                                      | 13                       |        |        |        |        |        |    |            |    | Est. A-3a  |  |
|              | 35           |       | 8/10/12         |                 |                  |                                                                                                                                                        | 14                       |        |        |        |        |        |    |            |    | Est. A-3a  |  |
| 651.9        |              |       |                 |                 |                  | 37.0' FINE SAND: Dense brown fine sand, trace coarse sand, trace silt, trace clay.                                                                     | 15                       |        |        |        |        |        |    |            |    | Est. A-3   |  |
| 648.9        | 40           |       | 13/15/16        |                 |                  |                                                                                                                                                        |                          |        |        |        |        |        |    |            |    |            |  |
|              | 45           |       |                 |                 |                  | NOTES:<br>- No seepage encountered.<br>- Loss-on-Ignition test performed on Sample S-11, LOI=2.9%.                                                     |                          |        |        |        |        |        |    |            |    |            |  |
|              | 50           |       |                 |                 |                  |                                                                                                                                                        |                          |        |        |        |        |        |    |            |    |            |  |
|              | 55           |       |                 |                 |                  |                                                                                                                                                        |                          |        |        |        |        |        |    |            |    |            |  |

WATER LEVEL: ▽ "Dry" ▽ "Dry" ▽  
 WATER NOTE: Inside HSA - At Completion Augers Pulled - Caved at 32.0'  
 DATE: 12/16/05 12/16/05



LOG OF BORING NO. BB-113  
 CUY-77-14.35  
 CLEVELAND, OHIO

BBC&M JOB: 012 00851.301  
 Page 1 of 1

TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: IR - 77 COMPLETION DEPTH: 20.0'  
 2" O.D. Split-barrel Sampler 3" O.D. Shelby Tube Sampler Sta. 81+56 ELEVATION: 669.5  
 107' LL of Centerline DATE: 12/22/05

| Elev. (feet) | Depth (feet) | Samp. | Std. Pen. / RQD | Hand Pen. (tsf) | Rec./Loss (feet) | CLASSIFICATION: DESCRIPTION                                                                                                                                                  | Physical Characteristics |        |        |        |        |        |    | ODOT Class |    |           |
|--------------|--------------|-------|-----------------|-----------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------|--------|--------|--------|--------|----|------------|----|-----------|
|              |              |       |                 |                 |                  |                                                                                                                                                                              | Samp. No.                | % AGG. | % C.S. | % F.S. | % SILT | % CLAY | LL |            | PI | WC        |
| 668.9        | 0            |       |                 |                 |                  | 0.5' TOPSOIL - 7 INCHES                                                                                                                                                      |                          |        |        |        |        |        |    |            |    |           |
|              |              |       | 4/5/6           |                 |                  | COARSE AND FINE SAND (FILL): Medium-dense brown fine to coarse sand, trace silt, trace clay, trace fine gravel.                                                              | 1                        |        |        |        |        |        |    |            |    | Est. A-3a |
| 666.5        |              |       | 3/5/4           |                 |                  | COARSE AND FINE SAND (POSSIBLE FILL): Loose brown fine to coarse sand, little silt, trace clay, trace fine gravel.                                                           | 2                        | 1      | 30     | 47     | 12     | 10     | NP | NP         | 20 | A-3a(0)   |
| 663.8        | 5            |       |                 | 0.0-0.25        |                  | 5.7' SILTY CLAY: Very-soft brown and gray silty clay, little fine to coarse sand, trace fine gravel, contains few fine sand and silt seams, contains decayed roots.          | 7                        | 1      | 4      | 8      | 40     | 47     | 40 | 18         | 41 | A-6b(11)  |
| 663.3        |              |       | P               | 0.0-0.5         |                  | 6.2' SILT AND CLAY: Very-soft to soft gray becoming brown silt, "and" clay, trace fine to coarse sand, trace fine gravel, contains many silt and fine sand lenses and seams. | 3                        | 1      | 1      | 7      | 52     | 39     | 34 | 14         | 33 | A-6a(10)  |
| 662.0        |              |       | 1/1/2           | 0.0-0.5         |                  | 7.5' COARSE AND FINE SAND: Medium-dense brown fine to coarse sand, trace silt, trace clay, trace fine to coarse gravel.                                                      | 4                        |        |        |        |        |        |    |            |    | Est. A-3a |
|              | 10           |       | 10/11/12        |                 |                  |                                                                                                                                                                              | 5                        |        |        |        |        |        |    |            |    | Est. A-3a |
|              | 15           |       | 8/10/11         |                 |                  |                                                                                                                                                                              | 6                        |        |        |        |        |        |    |            |    | Est. A-3a |
|              | 20           |       | 7/8/12          |                 |                  |                                                                                                                                                                              |                          |        |        |        |        |        |    |            |    | Est. A-3a |
| 649.5        | 20           |       |                 |                 |                  | NOTES:<br>- Encountered seepage at 4.5'.<br>- Offset borehole to attempt Shelby Tube, S-7 from 5.5' to 7.5'.                                                                 |                          |        |        |        |        |        |    |            |    |           |

WATER LEVEL: ▽ "Dry" ▽ "Dry" ▽  
 WATER NOTE: Inside HSA - At Completion Augers Pulled - Caved at 15.6'  
 DATE: 12/22/05 12/22/05



|               |          |
|---------------|----------|
| CALCULATED BY | PSL      |
| CHECKED BY    | PSL      |
| DATE          | 3/24/06  |
| REVISION      | 11/21/07 |
| REVIEWED BY   | JLS      |
| DRAWN BY      | BLR      |

STRUCTURE FOUNDATION INVESTIGATION  
 BRIDGE NO. CUY-77-1433 OVER I.R. 490 AND RAMPS

CUY-77-14.35  
 PID No. 13567

13/26

17  
30

### TEST BORING LOG

ACT PROJECT NO. 9712.12 BORING NO. B-1 SHEET 1 OF 2  
 CLIENT: BURGESS & NIPLE, LIMITED DATE DRILLED: 2-26-98  
 PROJECT: I-77 WIDENING OVER I-490, CLEVELAND, OHIO  
 DRILLING METHOD: CONTINUOUS FLIGHT HOLLOW STEM AUGERS SURFACE ELEVATION: \_\_\_\_\_

| Depth (m.) | SAMPLE |      | SYMBOL | SAMPLE IDENTIFICATION                                                                                                                              | BLOW COUNT ON SS/150 mm | PROPERTIES |       |                                 |             |             |
|------------|--------|------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|------------|-------|---------------------------------|-------------|-------------|
|            | No.    | Type |        |                                                                                                                                                    |                         | W (%)      | LL/PI | $\gamma_d$ (kg/m <sup>3</sup> ) | $q_u$ (kPa) | $q_p$ (kPa) |
| 0          |        |      |        | 10cm asphalt (Driller's Note)                                                                                                                      |                         |            |       |                                 |             |             |
|            |        |      |        | 26cm concrete (Driller's Note)                                                                                                                     |                         |            |       |                                 |             |             |
|            | 1      | SS   |        | Brown gravel and sand, trace silt, slag, cinders. Driller's Note: small seams of fine to coarse sand with clay. Medium dense. Moist. (A-1-b, fill) | 9-6-4                   |            |       |                                 |             |             |
| 1.5        | 2      | SS   |        |                                                                                                                                                    | 4-10-9                  |            |       |                                 |             |             |
|            | 3      | SS   |        |                                                                                                                                                    | 8-11-15                 | 11         |       |                                 |             |             |
| 3.0        | 4      | SS   |        | Brown gravel and stone fragments, with sand and silt, trace red brick fragments. Medium dense to dense. Moist. (A-2-4, fill)                       | 13-13-10                |            |       |                                 |             |             |
|            | 5      | SS   |        | Driller's Note: small seams of red brick fragments, cinders and slag.                                                                              | 11-16-19                |            |       |                                 |             |             |
| 4.5        | 6      | SS   |        |                                                                                                                                                    | 11-19-29                |            |       |                                 |             |             |
|            | 7      | SS   |        | Brown and reddish brown fine sand, trace silt, clay. Loose. Moist. (A-3, possible fill)                                                            | 5-4-4                   | 13         |       |                                 |             |             |
| 6.0        | 8      | SS   |        | Brown gravel and stone fragments with sand, trace quartz pebbles. Medium dense. Moist. (A-1-b)                                                     | 3-6-10                  |            |       |                                 |             |             |
|            | 9      | SS   |        |                                                                                                                                                    | 8-9-11                  | 5          | NP    |                                 |             |             |
| 7.5        | 10     | SS   |        |                                                                                                                                                    | 8-9-10                  |            |       |                                 |             |             |
|            | 11     | SS   |        |                                                                                                                                                    | 8-9-10                  |            |       |                                 |             |             |
| 9.0        | 12     | SS   |        |                                                                                                                                                    | 11-12-9                 |            |       |                                 |             |             |
|            | 13     | SS   |        | Brown coarse and fine sand, trace silt. Medium dense. Moist. (A-3a)                                                                                | 10-10-12                |            |       |                                 |             |             |
| 10.5       | 14     | SS   |        |                                                                                                                                                    | 5-9-9                   |            |       |                                 |             |             |

GROUNDWATER  
 ENCOUNTERED AT: 17.7m  
 ON COMPLETION: 9.8m, caved dry  
 AFTER: \_\_\_\_\_  
 REMARKS: Moved 5.2m north

AS - Auger Sample  
 ST - Shelby Tube Sample  
 SS - Split Spoon Sample  
 50 mm O.D.  
 W - Moisture Content  
 NX - 54 mm I.D.  
 Core Barrel

LL/PI - Liquid Limit/Plasticity Index  
 NP - Non Plastic Material  
 $\gamma_d$  - Dry Density  
 $q_u$  - Unconfined Strength  
 $q_p$  - Pocket Penetrometer Reading



APPLIED CONSTRUCTION TECHNOLOGIES, INC.

### TEST BORING LOG

ACT PROJECT NO. 9712.12 BORING NO. B-1 SHEET 2 OF 2  
 CLIENT: BURGESS & NIPLE, LIMITED  
 PROJECT: I-77 WIDENING OVER I-490, CLEVELAND, OHIO

| Depth (m.) | SAMPLE |      | SYMBOL | SAMPLE IDENTIFICATION                                                      | BLOW COUNT ON SS/150 mm | PROPERTIES |       |                                 |             |             |
|------------|--------|------|--------|----------------------------------------------------------------------------|-------------------------|------------|-------|---------------------------------|-------------|-------------|
|            | No.    | Type |        |                                                                            |                         | W (%)      | LL/PI | $\gamma_d$ (kg/m <sup>3</sup> ) | $q_u$ (kPa) | $q_p$ (kPa) |
| 10.5       |        |      |        | Brown coarse and fine sand, trace silt. Medium dense. Moist. (A-3a)        | 8-9-10                  |            |       |                                 |             |             |
|            | 15     | SS   |        |                                                                            |                         |            |       |                                 |             |             |
| 12.0       | 16     | SS   |        |                                                                            | 7-8-11                  |            |       |                                 |             |             |
|            | 17     | SS   |        |                                                                            | 9-11-9                  |            |       |                                 |             |             |
| 13.5       | 18     | SS   |        | Brown fine sand, Medium dense. Moist. (A-3)                                | 5-6-10                  |            |       |                                 |             |             |
|            | 19     | SS   |        | Brown fine sand, trace medium sand, trace silt. Medium dense. Moist. (A-3) | 10-12-12                |            |       |                                 |             |             |
| 15.0       | 20     | SS   |        |                                                                            | 8-10-10                 | 6          |       |                                 |             |             |
| 16.5       | 21     | SS   |        |                                                                            | 6-12-9                  |            |       |                                 |             |             |
| 18.0       | 22     | SS   |        | +++ Brown silt. Medium dense. Wet. (A-4b)                                  | 4-8-10                  |            |       |                                 |             |             |
| 19.5       | 23     | SS   |        | +++ Brownish gray silt and clay. Very stiff. Wet. (A-6a)                   | 4-8-6                   | 23         |       |                                 |             |             |
|            |        |      |        | +++ Brownish gray silt. Medium dense. Moist to wet. (A-4b)                 |                         |            |       |                                 |             |             |
| 21.0       | 24     | SS   |        | +++                                                                        | 4-6-9                   |            |       |                                 |             |             |

End of Boring @ 21.3m



APPLIED CONSTRUCTION TECHNOLOGIES, INC.



CALCULATED BY: \_\_\_\_\_  
 CHECKED BY: \_\_\_\_\_  
 DATE: 3/24/06  
 REVISION: 11/21/07

STRUCTURE FOUNDATION INVESTIGATION  
 BRIDGE NO. CUY-77-1433 OVER I.R. 490 AND RAMPS

CUY-77-14.35  
 PID No. 13567

BBC&M ENGINEERING, INC. DRAWING NO. ... 8012-00851-301040 230 STRUCTURE.dgn



### TEST BORING LOG

ACT PROJECT NO. 9712.12 BORING NO. B-3 SHEET 1 OF 2  
 CLIENT: BURGESS & NIPLÉ, LIMITED DATE DRILLED: 3-6-98  
 PROJECT: I-77 WIDENING OVER I-490, CLEVELAND, OHIO  
 DRILLING METHOD: CONTINUOUS FLIGHT HOLLOW STEM AUGERS SURFACE ELEVATION: \_\_\_\_\_

| Depth (m.) | SAMPLE |      | SYMBOL | SAMPLE IDENTIFICATION                                                                                                                                                                                          | BLOW COUNT ON SS/150 mm | PROPERTIES |              |                                 |             |             |  |  |  |  |  |
|------------|--------|------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|------------|--------------|---------------------------------|-------------|-------------|--|--|--|--|--|
|            | No.    | Type |        |                                                                                                                                                                                                                |                         | W (%)      | LL/PI        | $\gamma_d$ (kg/m <sup>3</sup> ) | $q_u$ (kPa) | $q_p$ (kPa) |  |  |  |  |  |
| 0          |        |      |        | 5cm asphalt (Driller's Note)                                                                                                                                                                                   |                         |            |              |                                 |             |             |  |  |  |  |  |
|            |        |      |        | 28cm concrete (Driller's Note)                                                                                                                                                                                 |                         |            |              |                                 |             |             |  |  |  |  |  |
|            | 1      | SS   |        | Brown trace gray, black, coarse and fine sand, little gravel, silt, trace clay, red brick fragments, cinders and slag. Few seams of gray silt and brown silty clay. Medium dense to dense. Moist. (A-3a, fill) | 12-13-8                 |            |              |                                 |             |             |  |  |  |  |  |
| 1.5        | 2      | SS   |        | Driller's note: Wet layer @ 5.9m                                                                                                                                                                               | 6-12-10                 | 12         | NP           |                                 |             |             |  |  |  |  |  |
|            | 3      | SS   |        |                                                                                                                                                                                                                | 10-14-19                |            |              |                                 |             |             |  |  |  |  |  |
| 3.0        | 4      | SS   |        |                                                                                                                                                                                                                | 13-16-12                |            |              |                                 |             |             |  |  |  |  |  |
|            | 5      | SS   |        |                                                                                                                                                                                                                | 16-14-21                |            |              |                                 |             |             |  |  |  |  |  |
| 4.5        | 6      | SS   |        |                                                                                                                                                                                                                | 16-28-30                |            |              |                                 |             |             |  |  |  |  |  |
|            | 7      | SS   |        |                                                                                                                                                                                                                | 7-9-12                  |            |              |                                 |             |             |  |  |  |  |  |
| 6.0        | 8      | SS   |        |                                                                                                                                                                                                                | 9-13-23                 |            |              |                                 |             |             |  |  |  |  |  |
|            | 9      | SS   |        | Brown coarse and fine sand, trace gravel, silt. Medium dense. Moist. (A-3a)                                                                                                                                    | 12-10-8                 | 7          |              |                                 |             |             |  |  |  |  |  |
| 7.5        | 10     | SS   |        |                                                                                                                                                                                                                | 3-4-12                  |            | small cobble |                                 |             |             |  |  |  |  |  |
|            | 11     | SS   |        | Brown fine sand, trace coarse sand to fine gravel, trace silt. Layer of coarse and fine sand, little gravel @ 9.6m. Very loose to medium dense. Moist. (A-3)                                                   | 4-4-2                   |            |              |                                 |             |             |  |  |  |  |  |
| 9.0        | 12     | SS   |        |                                                                                                                                                                                                                | 1-1-2                   | 7          |              |                                 |             |             |  |  |  |  |  |
|            | 13     | SS   |        | Driller's note: trace wet lenses.                                                                                                                                                                              | 4-4-6                   |            |              |                                 |             |             |  |  |  |  |  |
| 10.5       |        |      |        |                                                                                                                                                                                                                |                         |            |              |                                 |             |             |  |  |  |  |  |

GROUNDWATER

ENCOUNTERED AT: 18m  
 ON COMPLETION: @ 18.7 in augers after  
 AFTER: 2 hours.  
 REMARKS: Moved 7.3m south

AS - Auger Sample  
 ST - Shelby Tube Sample  
 SS - Split Spoon Sample  
 50 mm O.D.  
 W - Moisture Content  
 NX - 54 mm I.D.  
 Core Barrel

LL/PI - Liquid Limit/Plasticity Index  
 NP - Non Plastic Material  
 $\gamma_d$  - Dry Density  
 $q_u$  - Unconfined Strength  
 $q_p$  - Pocket Penetrometer Reading



APPLIED CONSTRUCTION TECHNOLOGIES, INC.

### TEST BORING LOG

ACT PROJECT NO. 9712.12 BORING NO. B-3 SHEET 2 OF 2  
 CLIENT: BURGESS & NIPLÉ, LIMITED  
 PROJECT: I-77 WIDENING OVER I-490, CLEVELAND, OHIO

| Depth (m.) | SAMPLE |      | SYMBOL | SAMPLE IDENTIFICATION                                                                                              | BLOW COUNT ON SS/150 mm | PROPERTIES |       |                                 |             |             |  |  |  |  |  |
|------------|--------|------|--------|--------------------------------------------------------------------------------------------------------------------|-------------------------|------------|-------|---------------------------------|-------------|-------------|--|--|--|--|--|
|            | No.    | Type |        |                                                                                                                    |                         | W (%)      | LL/PI | $\gamma_d$ (kg/m <sup>3</sup> ) | $q_u$ (kPa) | $q_p$ (kPa) |  |  |  |  |  |
| 10.5       | 14     | SS   |        | Brown fine sand, trace coarse sand to fine gravel, trace silt. Medium dense to loose. Moist. (A-3)                 | 5-5-5                   |            |       |                                 |             |             |  |  |  |  |  |
|            | 15     | SS   |        |                                                                                                                    | 4-5-5                   |            |       |                                 |             |             |  |  |  |  |  |
| 12.0       | 16     | SS   |        |                                                                                                                    | 5-4-5                   |            |       |                                 |             |             |  |  |  |  |  |
|            | 17     | SS   |        |                                                                                                                    | 4-4-5                   |            |       |                                 |             |             |  |  |  |  |  |
| 13.5       | 18     | SS   |        | Brown fine sand, trace coarse sand to fine gravel, trace rock fragments, silt. Medium dense to dense. Moist. (A-3) | 10-13-17                |            |       |                                 |             |             |  |  |  |  |  |
|            | 19     | SS   |        |                                                                                                                    | 11-11-13                | 5          |       |                                 |             |             |  |  |  |  |  |
| 15.0       | 20     | SS   |        |                                                                                                                    | 11-13-17                |            |       |                                 |             |             |  |  |  |  |  |
| 16.5       | 21     | SS   | +++    | Brown silt, some fine sand. Medium dense. Moist. Layers of brown fine sand, little silt. (A-4b)                    | 9-10-12                 | 20         |       |                                 |             |             |  |  |  |  |  |
| 18.0       | 22     | SS   | +++    | Gray fine sand, trace silt. Medium dense. Very moist. (A-3)                                                        | 5-6-9                   |            |       |                                 |             |             |  |  |  |  |  |
| 19.5       | 23     | SS   | +++    | Gray silt, trace to little fine sand. Medium dense to very dense. Very moist to moist. (A-4b)                      | 14-13-9                 |            |       |                                 |             |             |  |  |  |  |  |
| 21.0       | 24     | SS   | +++    |                                                                                                                    | 11-23-30                | 17         |       |                                 |             |             |  |  |  |  |  |

End of Boring @ 21.5m



APPLIED CONSTRUCTION TECHNOLOGIES, INC.

### TEST BORING LOG

ACT PROJECT NO. 9712.12 BORING NO. B-4 SHEET 1 OF 2  
 CLIENT: BURGESS & NIPLE, LIMITED DATE DRILLED: 3-5-98  
 PROJECT: I-77 WIDENING OVER I-490, CLEVELAND, OHIO  
 DRILLING METHOD: CONTINUOUS FLIGHT HOLLOW STEM AUGERS SURFACE ELEVATION: \_\_\_\_\_

| SAMPLE     |     |      | SYMBOL | SAMPLE IDENTIFICATION                                                                                                                                                            | BLOW COUNT ON SS/150 mm | PROPERTIES |       |                                  |             |             |  |  |
|------------|-----|------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|------------|-------|----------------------------------|-------------|-------------|--|--|
| Depth (m.) | No. | Type |        |                                                                                                                                                                                  |                         | W (%)      | LL/PI | $\gamma_d$ (kg/ m <sup>3</sup> ) | $q_u$ (kPa) | $q_p$ (kPa) |  |  |
| 0          |     |      | 4.4    | 8cm asphalt (Driller's note)                                                                                                                                                     |                         |            |       |                                  |             |             |  |  |
|            |     |      | 4.4    | 28cm concrete (Driller's note)                                                                                                                                                   |                         |            |       |                                  |             |             |  |  |
|            | 1   | SS   | +++    | Brown silt, some sand, trace gravel. Medium dense. Moist. (A-4b, fill)                                                                                                           | 5-9-9                   |            |       |                                  |             |             |  |  |
| 1.5        | 2   | SS   | +++    |                                                                                                                                                                                  | 10-15-15                |            |       |                                  |             |             |  |  |
|            | 3   | SS   | +++    | Brown trace black coarse and fine sand, some silt, trace fine gravel, with brown silt layers, cinders, red brick, wood, quartz pebbles. Dense to very dense. Moist. (A-3a, fill) | 14-18-23                |            |       |                                  |             |             |  |  |
| 3.0        | 4   | SS   | +++    |                                                                                                                                                                                  | 18-20-26                |            |       |                                  |             |             |  |  |
|            | 5   | SS   | +++    |                                                                                                                                                                                  | 15-25-26                | 10         |       |                                  |             |             |  |  |
| 4.5        | 6   | SS   | +++    |                                                                                                                                                                                  | 20-26-18                |            |       |                                  |             |             |  |  |
|            | 7   | SS   | +++    |                                                                                                                                                                                  | 13-22-20                |            |       |                                  |             |             |  |  |
| 6.0        | 8   | SS   | +++    |                                                                                                                                                                                  | 18-18-17                |            |       |                                  |             |             |  |  |
|            | 9   | SS   | +++    | Brown coarse and fine sand, trace fine gravel, with silt layers. Medium dense. Moist. (A-3a)                                                                                     | 6-7-8                   | 5          |       |                                  |             |             |  |  |
| 7.5        | 10  | SS   | +++    |                                                                                                                                                                                  | 6-4-6                   |            |       |                                  |             |             |  |  |
|            | 11  | SS   | +++    | Brown fine and coarse sand with fine gravel, trace silt. Layers of gravel with sand. Very dense. Moist. (A-3a)                                                                   | 20-44-56                |            |       |                                  |             |             |  |  |
| 9.0        | 12  | SS   | +++    |                                                                                                                                                                                  | 23-34-44                | 5          | NP    |                                  |             |             |  |  |
|            | 13  | SS   | +++    | Brown coarse and fine sand, trace silt, fine gravel. Dense to medium dense. Moist. (A-3a)                                                                                        | 19-20-18                |            |       |                                  |             |             |  |  |
| 10.5       |     |      | +++    |                                                                                                                                                                                  |                         |            |       |                                  |             |             |  |  |

GROUNDWATER ENCOUNTERED AT: 19.5m  
 ON COMPLETION: Caved dry @ 19.6m  
 AFTER: \_\_\_\_\_  
 REMARKS: Driller's note - wet lenses from 8.1m to 19.5m. Moved 4.6m north

AS - Auger Sample  
 ST - Shelby Tube Sample  
 SS - Split Spoon Sample 50 mm O.D.  
 W - Moisture Content  
 NX - 54 mm I.D. Core Barrel

LL/PI - Liquid Limit/Plasticity Index  
 NP - Non Plastic Material  
 $\gamma_d$  - Dry Density  
 $q_u$  - Unconfined Strength  
 $q_p$  - Pocket Penetrometer Reading



APPLIED CONSTRUCTION TECHNOLOGIES, INC.

### TEST BORING LOG

ACT PROJECT NO. 9712.12 BORING NO. B-4 SHEET 2 OF 2  
 CLIENT: BURGESS & NIPLE, LIMITED  
 PROJECT: I-77 WIDENING OVER I-490, CLEVELAND, OHIO

| SAMPLE     |     |      | SYMBOL | SAMPLE IDENTIFICATION                                                                     | BLOW COUNT ON SS/150 mm | PROPERTIES |       |                                  |             |             |  |  |
|------------|-----|------|--------|-------------------------------------------------------------------------------------------|-------------------------|------------|-------|----------------------------------|-------------|-------------|--|--|
| Depth (m.) | No. | Type |        |                                                                                           |                         | W (%)      | LL/PI | $\gamma_d$ (kg/ m <sup>3</sup> ) | $q_u$ (kPa) | $q_p$ (kPa) |  |  |
| 10.5       | 14  | SS   | +++    | Brown coarse and fine sand, trace silt, fine gravel. Dense to medium dense. Moist. (A-3a) | 8-15-22                 |            |       |                                  |             |             |  |  |
|            | 15  | SS   | +++    |                                                                                           | 14-14-12                | 5          |       |                                  |             |             |  |  |
| 12.0       | 16  | SS   | +++    | Brown fine sand, trace medium sand with layer of sandy silt. Very dense. Moist. (A-3)     | 24-30-32                |            |       |                                  |             |             |  |  |
|            | 17  | SS   | +++    |                                                                                           | 20-36-34                |            |       |                                  |             |             |  |  |
| 13.5       | 18  | SS   | +++    | Brown fine to coarse sand, trace silt. Very dense to dense. Moist. (A-3a)                 | 14-25-34                |            |       |                                  |             |             |  |  |
|            | 19  | SS   | +++    |                                                                                           | 18-26-30                | 4          |       |                                  |             |             |  |  |
| 15.0       | 20  | SS   | +++    |                                                                                           | 10-10-19                |            |       |                                  |             |             |  |  |
|            |     |      | +++    | Brown sandy silt. Medium dense. Moist. (A-4a)                                             |                         |            |       |                                  |             |             |  |  |
| 16.5       | 21  | SS   | +++    |                                                                                           | 9-9-12                  |            |       |                                  |             |             |  |  |
|            |     |      | +++    | Brown medium and fine sand, trace silt. Dense. Moist. (A-3)                               |                         |            |       |                                  |             |             |  |  |
| 18.0       | 22  | SS   | +++    |                                                                                           | 13-16-19                | 4          |       |                                  |             |             |  |  |
|            |     |      | +++    | Brown silt, trace sand. Medium dense. Wet. (A-4b)                                         |                         |            |       |                                  |             |             |  |  |
| 19.5       | 23  | SS   | +++    |                                                                                           | 5-7-10                  |            |       |                                  |             |             |  |  |
|            |     |      | +++    | Gray silt, trace sand. Medium dense. Wet. (A-4b)                                          |                         |            |       |                                  |             |             |  |  |
| 21.0       | 24  | SS   | +++    |                                                                                           | 4-7-8                   |            |       |                                  |             |             |  |  |

End of Boring @ 21.5m



APPLIED CONSTRUCTION TECHNOLOGIES, INC.



CALCULATED BY: \_\_\_\_\_  
 DATE: 3/24/06  
 REVISION: 11/21/07  
 CHECKED BY: \_\_\_\_\_  
 DATE: \_\_\_\_\_

STRUCTURE FOUNDATION INVESTIGATION  
 BRIDGE NO. CUY-77-1433 OVER I.R. 490 AND RAMP

CUY-77-14.35  
 PID No. 13567

16 / 26  
 20  
 30

### TEST BORING LOG

ACT PROJECT NO. 9712.12 BORING NO. B-6 SHEET 1 OF 2  
 CLIENT: BURGESS & NIPLE, LIMITED DATE DRILLED: 2-25-98  
 PROJECT: I-77 WIDENING OVER I-490, CLEVELAND, OHIO  
 DRILLING METHOD: CONTINUOUS FLIGHT HOLLOW STEM AUGERS SURFACE ELEVATION: \_\_\_\_\_

| Depth (m.) | SAMPLE |      | SYMBOL | SAMPLE IDENTIFICATION                                                                                                                            | BLOW COUNT ON SS/150 mm | PROPERTIES |       |                                 |             |             |  |  |  |  |
|------------|--------|------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|------------|-------|---------------------------------|-------------|-------------|--|--|--|--|
|            | No.    | Type |        |                                                                                                                                                  |                         | W (%)      | LL/PI | $\gamma_d$ (kg/m <sup>3</sup> ) | $q_u$ (kPa) | $q_p$ (kPa) |  |  |  |  |
| 0          |        |      |        | 15cm asphalt (Driller's note)<br>27cm concrete (Driller's note)                                                                                  |                         |            |       |                                 |             |             |  |  |  |  |
|            | 1      | SS   |        | Brown gravel and sandstone fragments with sand, silt, trace red brick. (A-2-4, fill)                                                             | 6-18-15                 |            |       |                                 |             |             |  |  |  |  |
| 1.5        | 2      | SS   |        | Brown sandy silt, little gravel, trace coal. Medium dense. Moist. (A-4a, fill)                                                                   | 12-15-15                |            |       |                                 |             |             |  |  |  |  |
|            | 3      | SS   |        | Driller's note: trace cinders, slag and red brick fragments.                                                                                     | 13-12-16                |            |       |                                 |             |             |  |  |  |  |
| 3.0        | 4      | SS   |        |                                                                                                                                                  | 12-9-10                 |            |       |                                 |             |             |  |  |  |  |
|            | 5      | SS   |        | Brown gravel with fine and coarse sand, trace silt, few silt and clay layers, red brick, sand seams. Medium dense to dense. Moist. (A-1-b, fill) | 9-16-18                 |            |       |                                 |             |             |  |  |  |  |
| 4.5        | 6      | SS   |        |                                                                                                                                                  | 11-15-15                | 11         | NP    |                                 |             |             |  |  |  |  |
|            | 7      | SS   |        |                                                                                                                                                  | 12-16-21                |            |       |                                 |             |             |  |  |  |  |
| 6.0        | 8      | SS   |        |                                                                                                                                                  | 11-9-12                 |            |       |                                 |             |             |  |  |  |  |
|            | 9      | SS   |        |                                                                                                                                                  | 12-14-12                |            |       |                                 |             |             |  |  |  |  |
| 7.5        | 10     | SS   |        | Brown fine gravel with fine and coarse sand, trace silt. Medium dense. Moist. (A-1-b)                                                            | 9-9-7                   |            |       |                                 |             |             |  |  |  |  |
|            | 11     | SS   |        |                                                                                                                                                  | 7-12-18                 | 7          |       |                                 |             |             |  |  |  |  |
| 9.0        | 12     | SS   |        |                                                                                                                                                  | 17-13-10                |            |       |                                 |             |             |  |  |  |  |
|            | 13     | SS   |        | Brown coarse and fine sand, trace silt. Medium dense. Moist with seepage seams. (A-3a)                                                           | 6-10-12                 |            |       |                                 |             |             |  |  |  |  |
| 10.5       | 14     | SS   |        |                                                                                                                                                  | 6-8-11                  |            |       |                                 |             |             |  |  |  |  |

**GROUNDWATER**

ENCOUNTERED AT: 19.6m  
 ON COMPLETION: caved @ 11.6m  
 AFTER: \_\_\_\_\_  
 REMARKS: Moved 1.5m north

AS - Auger Sample  
 ST - Shelby Tube Sample  
 SS - Split Spoon Sample  
 50 mm O.D.  
 W - Moisture Content  
 NX - 54 mm I.D.  
 Core Barrel

LL/PI - Liquid Limit/Plasticity Index  
 NP - Non Plastic Material  
 $\gamma_d$  - Dry Density  
 $q_u$  - Unconfined Strength  
 $q_p$  - Pocket Penetrometer Reading



APPLIED CONSTRUCTION TECHNOLOGIES, INC.

### TEST BORING LOG

ACT PROJECT NO. 9712.12 BORING NO. B-6 SHEET 2 OF 2  
 CLIENT: BURGESS & NIPLE, LIMITED  
 PROJECT: I-77 WIDENING OVER I-490, CLEVELAND, OHIO

| Depth (m.) | SAMPLE |      | SYMBOL | SAMPLE IDENTIFICATION                                                                     | BLOW COUNT ON SS/150 mm | PROPERTIES |       |                                 |             |             |  |  |  |  |
|------------|--------|------|--------|-------------------------------------------------------------------------------------------|-------------------------|------------|-------|---------------------------------|-------------|-------------|--|--|--|--|
|            | No.    | Type |        |                                                                                           |                         | W (%)      | LL/PI | $\gamma_d$ (kg/m <sup>3</sup> ) | $q_u$ (kPa) | $q_p$ (kPa) |  |  |  |  |
| 10.5       | 15     | SS   |        | Brown coarse and fine sand, trace silt. Medium dense. Moist with seepage seams. (A-3a)    | 9-11-13                 |            |       |                                 |             |             |  |  |  |  |
| 12.0       | 16     | SS   |        | Brown gravel and stone fragments with sand. Dense to very dense. Moist. (A-1-b)           | 12-17-25                |            |       |                                 |             |             |  |  |  |  |
|            | 17     | SS   |        |                                                                                           | 32-43-51                |            |       |                                 |             |             |  |  |  |  |
| 13.5       | 18     | SS   |        | Brown fine and coarse sand, little silt, trace coal. Dense to medium dense. Moist. (A-3a) | 13-14-16                | 13         | NP    |                                 |             |             |  |  |  |  |
|            | 19     | SS   |        |                                                                                           | 17-20-22                |            |       |                                 |             |             |  |  |  |  |
| 15.0       | 20     | SS   |        |                                                                                           | 14-16-16                |            |       |                                 |             |             |  |  |  |  |
| 16.5       | 21     | SS   |        |                                                                                           | 12-13-13                |            |       |                                 |             |             |  |  |  |  |
| 18.0       | 22     | SS   |        | Brown sandy silt, trace clay. Dense. Moist. (A-4a)                                        | 12-17-16                | 19         |       |                                 |             |             |  |  |  |  |
| 19.5       | 23     | SS   |        | Brown coarse and fine sand, trace silt. Medium dense. Moist. (A-3a)                       | 10-10-9                 |            |       |                                 |             |             |  |  |  |  |
| 21.0       | 24     | SS   |        | Gray fine sand with layers of gray silt. Medium dense. Wet. (A-3)                         | 5-6-7                   | 26         |       |                                 |             |             |  |  |  |  |

End of Boring @ 21.3m



APPLIED CONSTRUCTION TECHNOLOGIES, INC.



|               |          |
|---------------|----------|
| CALCULATED BY | PSL      |
| CHECKED BY    |          |
| DATE          | 3/24/06  |
| REVISION      | 11/21/07 |
| REVIEWED BY   | JLS      |
| DRAWN BY      | BLR      |

STRUCTURE FOUNDATION INVESTIGATION  
 BRIDGE NO. CUY-77-1433 OVER I.R. 490 AND RAMPS

**CUY-77-14.35**  
 PID No. 13567

BBC&M ENGINEERING, INC. DRAWING NO. ...B012-00851-301040 230 STRUCTURE.dgn

### TEST BORING LOG

ACT PROJECT NO. 9712.12 BORING NO. B-7 SHEET 1 OF 3  
 CLIENT: BURGESS & NIPLE, LIMITED DATE DRILLED: 2-11-98  
 PROJECT: I-77 WIDENING OVER I-490, CLEVELAND, OHIO  
 DRILLING METHOD: CONTINUOUS FLIGHT HOLLOW STEM AUGERS SURFACE ELEVATION: \_\_\_\_\_

| Depth (m.) | SAMPLE |      | SYMBOL | SAMPLE IDENTIFICATION                                                                                                                           | BLOW COUNT ON SS/150 mm | PROPERTIES |       |                                 |             |             |  |
|------------|--------|------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|------------|-------|---------------------------------|-------------|-------------|--|
|            | No.    | Type |        |                                                                                                                                                 |                         | W (%)      | LL/PI | $\gamma_d$ (kg/m <sup>3</sup> ) | $q_u$ (kPa) | $q_p$ (kPa) |  |
| 0          |        |      |        | Brown coarse and fine sand, trace concrete fragments, silt, few roots. Medium dense. Moist. (A-3a, fill)                                        |                         |            |       |                                 |             |             |  |
|            | 1      | SS   | 7      | Gray concrete fragments, cinders and slag. Medium dense. Moist. (Fill)                                                                          | 4-7-21                  | 18         |       |                                 |             |             |  |
| 1.5        | 2      | SS   |        | Brownish gray sandy silt, trace clay, organics. Medium dense.                                                                                   | 5-8-7                   |            |       |                                 |             |             |  |
|            | 3      | SS   |        | Moist with wet lenses. (A-4a)<br>Driller's note: Some seams and small layers of fine sand.                                                      | 5-7-10                  | 21         | NP    |                                 |             |             |  |
| 3.0        | 4      | SS   |        |                                                                                                                                                 | 9-11-8                  |            |       |                                 |             |             |  |
|            | 5      | SS   | +++    | Gray silt, some clay, trace sand, gravel. Layers of coarse and fine sand, and silt and clay. Stiff to very stiff. Moist with wet layers. (A-4b) | 3-8-10                  |            |       |                                 |             | 86          |  |
| 4.5        | 6      | SS   | +++    |                                                                                                                                                 | 3-6-6                   | 22         |       |                                 |             | 143         |  |
|            | 7      | SS   | +++    |                                                                                                                                                 | 6-9-8                   |            |       |                                 |             | 124         |  |
| 6.0        | 8      | SS   | +++    |                                                                                                                                                 | 5-5-6                   | 23         | 25/8  |                                 |             | 134         |  |
|            | 9      | SS   | +++    | Gray silt and clay, trace sand, fine gravel. Layers of gray silt and silty sand. Medium stiff to stiff. Moist. (A-6a)                           | 2-2-3                   |            |       |                                 |             | 48          |  |
| 7.5        | 10     | SS   | +++    |                                                                                                                                                 | 2-3-4                   | 20         |       |                                 |             | 131         |  |
|            | 11     | SS   | +++    |                                                                                                                                                 | 2-3-4                   | 21         |       |                                 |             |             |  |
| 9.0        | 12     | SS   | +++    |                                                                                                                                                 | 2-4-4                   |            |       |                                 |             | 88          |  |
|            | 13     | SS   | +++    |                                                                                                                                                 | 3-4-5                   |            |       |                                 |             | 104         |  |
| 10.5       | 14     | SS   | +++    |                                                                                                                                                 | 3-4-6                   | 22         | 31/14 |                                 |             | 149         |  |

**GROUNDWATER**

ENCOUNTERED AT: 2.3m  
 ON COMPLETION: \_\_\_\_\_  
 AFTER: \_\_\_\_\_  
 REMARKS: Started wash bore @ 15.2m

AS - Auger Sample  
 ST - Shelby Tube Sample  
 SS - Split Spoon Sample  
 50 mm O.D.  
 W - Moisture Content  
 NX - 54 mm I.D.  
 Core Barrel

LL/PI - Liquid Limit/Plasticity Index  
 NP - Non Plastic Material  
 $\gamma_d$  - Dry Density  
 $q_u$  - Unconfined Strength  
 $q_p$  - Pocket Penetrometer Reading



APPLIED CONSTRUCTION TECHNOLOGIES, INC.

### TEST BORING LOG

ACT PROJECT NO. 9712.12 BORING NO. B-7 SHEET 2 OF 3  
 CLIENT: BURGESS & NIPLE, LIMITED  
 PROJECT: I-77 WIDENING OVER I-490, CLEVELAND, OHIO

| Depth (m.) | SAMPLE |      | SYMBOL | SAMPLE IDENTIFICATION                                                                                                                   | BLOW COUNT ON SS/150 mm | PROPERTIES |       |                                 |             |             |      |
|------------|--------|------|--------|-----------------------------------------------------------------------------------------------------------------------------------------|-------------------------|------------|-------|---------------------------------|-------------|-------------|------|
|            | No.    | Type |        |                                                                                                                                         |                         | W (%)      | LL/PI | $\gamma_d$ (kg/m <sup>3</sup> ) | $q_u$ (kPa) | $q_p$ (kPa) |      |
| 10.5       | 15     | SS   | +++    | Gray silt and clay, trace sand, fine gravel. Layers of gray silt, and silty sand. Medium stiff to stiff. Moist. with wet layers. (A-6a) | 4-6-8                   |            |       |                                 |             |             | 274  |
| 12.0       | 16     | SS   | +++    | Interbedded layers of gray silty clay and gray silt, trace sand. Very stiff to hard. Moist with wet seams. (A-6b and A-4b)              | 2-6-13                  |            |       |                                 |             |             | 250  |
|            | 17     | SS   | +++    |                                                                                                                                         | 10-12-16                | 16         |       |                                 |             |             | 432+ |
| 13.5       | 18     | SS   | +++    | Driller's note: Trace fine sand and silty fine sand seams.                                                                              | 10-12-16                |            |       |                                 |             |             | 432+ |
|            | 19     | SS   | +++    |                                                                                                                                         | 10-15-15                | 18         |       |                                 |             |             | 362  |
| 15.0       | 20     | SS   | +++    |                                                                                                                                         | 7-11-15                 |            |       |                                 |             |             | 397  |
| 16.5       | 21     | SS   | +++    |                                                                                                                                         | 9-10-14                 | 20         |       |                                 |             |             | 288  |
| 18.0       | 22     | SS   | +++    |                                                                                                                                         | 6-9-13                  |            |       |                                 |             |             | 253  |
| 19.5       | 23     | SS   | +++    |                                                                                                                                         | 7-9-14                  | 22         |       |                                 |             |             | 224  |
| 21.0       | 24     | SS   | +++    |                                                                                                                                         | 9-11-14                 |            |       |                                 |             |             | 150  |



APPLIED CONSTRUCTION TECHNOLOGIES, INC.



CALCULATED BY: \_\_\_\_\_  
 DATE: 3/24/06  
 CHECKED BY: \_\_\_\_\_  
 REVISION: 11/21/07

STRUCTURE FOUNDATION INVESTIGATION  
 BRIDGE NO. CUY-77-1433 OVER I.R. 490 AND RAMPS

CUY-77-14.35  
 PID No. 13567

BBC&M ENGINEERING, INC. DRAWING NO. ...B012-00851-301040 230 STRUCTURE.dgn



### TEST BORING LOG

ACT PROJECT NO. 9712.12 BORING NO. B-7 SHEET 3 OF 3  
 CLIENT: BURGESS & NIPLE, LIMITED  
 PROJECT: I-77 WIDENING OVER I-490, CLEVELAND, OHIO

| Depth (m.) | SAMPLE |      | SYMBOL | SAMPLE IDENTIFICATION                                                                                                      | BLOW COUNT ON SS/50 mm | PROPERTIES |       |                                 |             |
|------------|--------|------|--------|----------------------------------------------------------------------------------------------------------------------------|------------------------|------------|-------|---------------------------------|-------------|
|            | No.    | Type |        |                                                                                                                            |                        | W (%)      | LL/PI | $\gamma_d$ (kg/m <sup>3</sup> ) | $q_u$ (kPa) |
| 21.0       | 24     | SS   |        | Interbedded layers of gray silty clay and gray silt, trace sand. Very stiff to hard. Moist with wet seams. (A-6b and A-4b) | 9-11-14                |            |       |                                 | 150         |
| 22.5       | 25     | SS   | +++    | Driller's note: trace fine sand and silty fine sand seams.                                                                 | 10-7-12                | 24         |       |                                 | 109         |
| 24.0       | 26     | SS   |        |                                                                                                                            | 5-7-8                  |            |       |                                 | 126         |
| 25.5       | 27     | SS   | +++    |                                                                                                                            | 10-15-21               | 16         |       |                                 | 291         |
| 27.0       | 28     | SS   |        | Gray silty clay, little sand, trace fine gravel and rock fragments. Hard to very stiff. Moist. (A-6b)                      | 8-13-18                |            |       |                                 | 216         |
| 28.5       | 29     | SS   |        |                                                                                                                            | 8-12-14                | 21         |       |                                 | 182         |
| 30.0       | 30     | SS   |        |                                                                                                                            | 7-9-13                 |            |       |                                 | 125         |
| 31.5       |        |      |        | End of Boring @ 30.5m                                                                                                      |                        |            |       |                                 |             |

### TEST BORING LOG

ACT PROJECT NO. 9712.12 BORING NO. B-8 SHEET 1 OF 3  
 CLIENT: BURGESS & NIPLE, LIMITED DATE DRILLED: 2-10-98  
 PROJECT: I-77 WIDENING OVER I-490, CLEVELAND, OHIO  
 DRILLING METHOD: CONTINUOUS FLIGHT HOLLOW STEM AUGERS SURFACE ELEVATION: \_\_\_\_\_

| Depth (m.) | SAMPLE |      | SYMBOL | SAMPLE IDENTIFICATION                                                                                                             | BLOW COUNT ON SS/50 mm | PROPERTIES |       |                                 |             |
|------------|--------|------|--------|-----------------------------------------------------------------------------------------------------------------------------------|------------------------|------------|-------|---------------------------------|-------------|
|            | No.    | Type |        |                                                                                                                                   |                        | W (%)      | LL/PI | $\gamma_d$ (kg/m <sup>3</sup> ) | $q_u$ (kPa) |
| 0          |        |      | >      | Driller's note: Brown fine silty sand, some cobble size limestone gravel. (Fill)                                                  | 5-6-7                  |            |       |                                 |             |
| 1.5        | 2      | SS   | +++    | Brownish gray silt, some sand, trace clay. Medium dense to dense. Moist. (A-4b)<br>Note: becomes slightly more clayey with depth. | 4-5-6                  | 23         | NP    |                                 |             |
| 3.0        | 4      | SS   | +++    |                                                                                                                                   | 4-5-6                  |            |       |                                 | 251         |
| 4.5        | 6      | SS   | +++    | Brownish gray silt, some sand, trace clay seams, trace fine silty sand layers. Medium dense to loose. Moist to wet. (A-4b)        | 9-6-6                  |            |       |                                 | 67          |
| 7.5        | 10     | SS   | +++    |                                                                                                                                   | 3-4-5                  | 26         |       |                                 | 46          |
| 6.0        | 8      | SS   | +++    |                                                                                                                                   | 4-4-6                  |            |       |                                 | 102         |
| 9.0        | 12     | SS   |        | Gray trace red silt and clay, trace gravel, with layers of silt with sand. Stiff to medium stiff. Moist with wet layers. (A-6a)   | 2-6-6                  | 24         |       |                                 | 24          |
| 10.5       | 13     | SS   |        | Gray silty clay, trace gravel, sand. Medium stiff. Moist. (A-6b)                                                                  | 2-1-3                  | 31         |       |                                 | 48          |
|            |        |      |        |                                                                                                                                   | 2-3-5                  |            |       |                                 | 58          |

GROUNDWATER  
 ENCOUNTERED AT: 4.7m  
 ON COMPLETION: @ 4.1m  
 AFTER: \_\_\_\_\_  
 REMARKS: \_\_\_\_\_

AS - Auger Sample  
 ST - Shelby Tube Sample  
 SS - Split Spoon Sample  
 W - Moisture Content  
 NX - 54 mm I.D. Core Barrel

LL/PI - Liquid Limit/Plasticity Index  
 NP - Non Plastic Material  
 $\gamma_d$  - Dry Density  
 $q_u$  - Unconfined Strength  
 $q_p$  - Pocket Penetrometer Reading



APPLIED CONSTRUCTION TECHNOLOGIES, INC.



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### TEST BORING LOG

ACT PROJECT NO. 9712.12 BORING NO. B-8 SHEET 2 OF 3  
 CLIENT: BURGESS & NIPLE, LIMITED  
 PROJECT: I-77 WIDENING OVER I-490, CLEVELAND, OHIO

| SAMPLE     |     |      | SYMBOL    | SAMPLE IDENTIFICATION                                                                                                    | BLOW COUNT ON SS/150 mm | PROPERTIES |       |                                 |             |             |
|------------|-----|------|-----------|--------------------------------------------------------------------------------------------------------------------------|-------------------------|------------|-------|---------------------------------|-------------|-------------|
| Depth (m.) | No. | Type |           |                                                                                                                          |                         | W (%)      | LL/PI | $\gamma_d$ (kg/m <sup>3</sup> ) | $q_u$ (kPa) | $q_p$ (kPa) |
| 10.5       | 14  | ST   | [Hatched] | Gray silty clay. Medium stiff. Moist. (A-6b)                                                                             | Rec = 24"               | 23         |       | 1648                            | 152         |             |
|            | 15  | SS   |           | Gray silt and clay, trace sand. Stiff. Moist. (A-6b)                                                                     | 3-4-5                   |            |       |                                 |             |             |
| 12.0       | 16  | SS   | [Hatched] |                                                                                                                          | 3-5-7                   | 20         |       |                                 |             | 256         |
|            | 17  | SS   | +++       | Brownish gray silt, some clay, trace sand, with trace silty sand seams. Very stiff to hard. Moist with wet seams. (A-4b) | 7-9-14                  |            |       |                                 |             | 348         |
| 13.5       | 18  | SS   | +++       |                                                                                                                          | 7-12-20                 | 18         | 28/10 |                                 |             | 422         |
|            | 19  | SS   | +++       |                                                                                                                          | 9-11-15                 |            |       |                                 |             | 345         |
| 15.0       | 20  | SS   | +++       |                                                                                                                          | 9-11-14                 | 20         |       |                                 |             | 374         |
|            |     |      | +++       |                                                                                                                          |                         |            |       |                                 |             |             |
|            |     |      | +++       |                                                                                                                          |                         |            |       |                                 |             |             |
| 16.5       | 21  | SS   | +++       |                                                                                                                          | 9-14-18                 |            |       |                                 |             | 342         |
|            |     |      | +++       |                                                                                                                          |                         |            |       |                                 |             |             |
|            |     |      | +++       |                                                                                                                          |                         |            |       |                                 |             |             |
| 18.0       | 22  | SS   | +++       |                                                                                                                          | 9-13-18                 | 22         |       |                                 |             | 251         |
|            |     |      | +++       |                                                                                                                          |                         |            |       |                                 |             |             |
|            |     |      | +++       |                                                                                                                          |                         |            |       |                                 |             |             |
| 19.5       | 23  | SS   | +++       |                                                                                                                          | 6-9-15                  |            |       |                                 |             | 259         |
|            |     |      | +++       |                                                                                                                          |                         |            |       |                                 |             |             |
|            |     |      | +++       |                                                                                                                          |                         |            |       |                                 |             |             |
| 21.0       | 24  | SS   | +++       |                                                                                                                          | 8-11-14                 | 23         |       |                                 |             | 243         |



APPLIED CONSTRUCTION TECHNOLOGIES, INC.

### TEST BORING LOG

ACT PROJECT NO. 9712.12 BORING NO. B-8 SHEET 3 OF 3  
 CLIENT: BURGESS & NIPLE, LIMITED  
 PROJECT: I-77 WIDENING OVER I-490, CLEVELAND, OHIO

| SAMPLE     |     |      | SYMBOL    | SAMPLE IDENTIFICATION                                                                                              | BLOW COUNT ON SS/150 mm | PROPERTIES |       |                                 |             |             |
|------------|-----|------|-----------|--------------------------------------------------------------------------------------------------------------------|-------------------------|------------|-------|---------------------------------|-------------|-------------|
| Depth (m.) | No. | Type |           |                                                                                                                    |                         | W (%)      | LL/PI | $\gamma_d$ (kg/m <sup>3</sup> ) | $q_u$ (kPa) | $q_p$ (kPa) |
| 21.0       | 24  | SS   | +++       | Brownish gray silt, some clay, trace sand, with silty sand seams. Very stiff to hard. Moist with wet seams. (A-4b) | 8-11-14                 | 23         |       |                                 |             | 243         |
|            |     |      | +++       |                                                                                                                    |                         |            |       |                                 |             |             |
| 22.5       | 25  | SS   | [Hatched] | Brownish gray silt and clay, trace sand, with small silt seams. Very stiff to stiff. Moist. (A-6a)                 | 7-10-10                 |            |       |                                 |             | 156         |
|            |     |      | [Hatched] |                                                                                                                    |                         |            |       |                                 |             |             |
| 24.0       | 26  | SS   | [Hatched] |                                                                                                                    | 4-7-7                   | 25         |       |                                 |             | 153         |
|            |     |      | [Hatched] |                                                                                                                    |                         |            |       |                                 |             |             |
| 25.5       | 27  | SS   | [Hatched] | Brownish gray trace red silt and clay, trace sand, gravel. Very stiff. Moist. (A-6a)                               | 5-7-10                  |            |       |                                 |             | 105         |
|            |     |      | [Hatched] |                                                                                                                    |                         |            |       |                                 |             |             |
| 27.0       | 28  | SS   | [Hatched] | Grayish brown to brown silty clay, trace gravel, sand. Stiff to very stiff. Moist. (A-6b)                          | 5-5-8                   | 23         | 35/16 |                                 |             | 131         |
|            |     |      | [Hatched] |                                                                                                                    |                         |            |       |                                 |             |             |
| 28.5       | 29  | SS   | [Hatched] |                                                                                                                    | 5-8-12                  |            |       |                                 |             | 118         |
|            |     |      | [Hatched] |                                                                                                                    |                         |            |       |                                 |             |             |
| 30.0       | 30  | SS   | [Hatched] |                                                                                                                    | 4-5-8                   | 21         |       |                                 |             | 124         |
|            |     |      | [Hatched] |                                                                                                                    |                         |            |       |                                 |             |             |
| 31.5       |     |      |           | End of Boring @ 30.5m                                                                                              |                         |            |       |                                 |             |             |



APPLIED CONSTRUCTION TECHNOLOGIES, INC.



CALCULATED BY: PSL  
 DATE: 3/24/06  
 CHECKED BY: JLS  
 REVISION: 11/21/07

STRUCTURE FOUNDATION INVESTIGATION  
 BRIDGE NO. CUY-77-1433 OVER I.R. 490 AND RAMP

CUY-77-14.35  
 PID No. 13567

20/26

24  
30

BBC&M ENGINEERING, INC. DRAWING NO. ...B012-00851-301040 230 STRUCTURE.dgn

### TEST BORING LOG

ACT PROJECT NO. 9712.12 BORING NO. B-9 SHEET 1 OF 3  
 CLIENT: BURGESS & NIPLE, LIMITED DATE DRILLED: 2-13-98  
 PROJECT: I-77 WIDENING OVER I-490, CLEVELAND, OHIO  
 DRILLING METHOD: CONTINUOUS FLIGHT HOLLOW STEM AUGERS SURFACE ELEVATION: \_\_\_\_\_

| Depth (m.) | SAMPLE |      | SYMBOL | SAMPLE IDENTIFICATION                                                                | BLOW COUNT ON SS/150 mm | PROPERTIES |       |                                  |             |             |
|------------|--------|------|--------|--------------------------------------------------------------------------------------|-------------------------|------------|-------|----------------------------------|-------------|-------------|
|            | No.    | Type |        |                                                                                      |                         | W (%)      | LL/PI | $\gamma_d$ (kg/ m <sup>3</sup> ) | $q_u$ (kPa) | $q_p$ (kPa) |
| 0          |        |      |        | 15cm topsoil (Driller's note)                                                        |                         |            |       |                                  |             |             |
|            | 1      | SS   | +++    | Brown sandy silt, trace slag. Medium dense. Moist. (A-4a, fill)                      | 6-10-12                 | 15         |       |                                  |             |             |
| 1.5        | 2      | SS   | +++    | Grayish brown silt, trace sand, sand seams, little clay. Medium dense. Moist. (A-4b) | 6-6-8                   |            |       |                                  |             |             |
|            | 3      | SS   | +++    |                                                                                      | 4-5-6                   | 17         |       |                                  |             |             |
| 3.0        | 4      | SS   | +++    |                                                                                      | 3-3-7                   |            |       |                                  |             |             |
|            | 5      | SS   | +++    |                                                                                      | 4-8-8                   | 21         | 23/2  |                                  |             |             |
| 4.5        | 6      | SS   | +++    |                                                                                      | 5-8-8                   |            |       |                                  |             |             |
|            | 7      | SS   | +++    |                                                                                      | 3-8-10                  | 19         |       |                                  |             |             |
| 6.0        | 8      | SS   | +++    | Gray silt, little clay, trace sand. Loose. Moist. (A-4b)                             | 3-3-3                   |            |       |                                  |             |             |
|            | 9      | SS   | +++    |                                                                                      | 3-4-3                   | 24         |       |                                  |             |             |
| 7.5        | 10     | SS   | +++    | Gray silt and clay with sand seams. Medium stiff. Moist. (A-6a)                      | 3-3-3                   | 18         |       |                                  | 57          |             |
|            | 11     | SS   | +++    | Gray silty clay, trace sand, gravel. Medium stiff to very stiff. Moist. (A-6b)       | 2-2-3                   |            |       |                                  | 0           |             |
| 9.0        | 12     | SS   | +++    |                                                                                      | 2-2-2                   | 24         | 34/17 |                                  | 38          |             |
|            | 13     | ST   | +++    |                                                                                      | Rec = 10"               |            |       |                                  |             |             |
|            | 14     | SS   | +++    |                                                                                      | 2-4-5                   |            |       |                                  | 72          |             |
| 10.5       | 15     | SS   | +++    |                                                                                      | 3-4-7                   |            |       |                                  | 259         |             |

GROUNDWATER ENCOUNTERED AT: 4.0m  
 ON COMPLETION: @ 1.5m  
 AFTER:  
 REMARKS: Started wash bore @ 5.6m

AS - Auger Sample  
 ST - Shelby Tube Sample  
 SS - Split Spoon Sample 50 mm O.D.  
 W - Moisture Content  
 NX - 54 mm I.D. Core Barrel

LL/PI - Liquid Limit/Plasticity Index  
 NP - Non Plastic Material  
 $\gamma_d$  - Dry Density  
 $q_u$  - Unconfined Strength  
 $q_p$  - Pocket Penetrometer Reading



APPLIED CONSTRUCTION TECHNOLOGIES, INC.

### TEST BORING LOG

ACT PROJECT NO. 9712.12 BORING NO. B-9 SHEET 2 OF 3  
 CLIENT: BURGESS & NIPLE, LIMITED  
 PROJECT: I-77 WIDENING OVER I-490, CLEVELAND, OHIO

| Depth (m.) | SAMPLE |      | SYMBOL | SAMPLE IDENTIFICATION                                                          | BLOW COUNT ON SS/150 mm | PROPERTIES |       |                                  |             |             |
|------------|--------|------|--------|--------------------------------------------------------------------------------|-------------------------|------------|-------|----------------------------------|-------------|-------------|
|            | No.    | Type |        |                                                                                |                         | W (%)      | LL/PI | $\gamma_d$ (kg/ m <sup>3</sup> ) | $q_u$ (kPa) | $q_p$ (kPa) |
| 10.5       | 16     | SS   | +++    | Gray silty clay, trace sand, gravel. Medium stiff to very stiff. Moist. (A-6b) | 7-9-13                  |            |       |                                  |             | 365         |
| 12.0       | 17     | SS   | +++    | Brownish gray silt and clay. Hard. Moist. (A-6a)                               | 9-12-19                 | 18         |       |                                  |             | 432         |
|            | 18     | SS   | +++    | Gray silty clay with silt seams, trace gravel, sand. Stiff to hard. (A-6b)     | 7-11-14                 |            |       |                                  |             | 432         |
| 13.5       | 19     | SS   | +++    |                                                                                | 7-10-16                 | 21         |       |                                  |             | 332         |
|            | 20     | SS   | +++    |                                                                                | 6-8-12                  |            |       |                                  |             | 304         |
| 15.0       | 21     | SS   | +++    |                                                                                | 6-8-13                  | 20         |       |                                  |             | 297         |
| 16.5       | 22     | SS   | +++    |                                                                                | 10-14-18                |            |       |                                  |             | 387         |
| 18.0       | 23     | SS   | +++    |                                                                                | 7-14-18                 | 22         |       |                                  |             | 272         |
| 19.5       | 24     | SS   | +++    |                                                                                | 6-11-17                 |            |       |                                  |             | 256         |
| 21.0       | 25     | SS   | +++    |                                                                                | 6-8-11                  | 23         |       |                                  |             | 224         |



APPLIED CONSTRUCTION TECHNOLOGIES, INC.



CALCULATED BY: \_\_\_\_\_  
 DATE: 3/24/06  
 REVISION: 11/21/07  
 CHECKED BY: \_\_\_\_\_  
 PSL

STRUCTURE FOUNDATION INVESTIGATION  
 BRIDGE NO. CUY-77-1433 OVER I.R. 490 AND RAMPS

CUY-77-14.35  
 PID No. 13567

BBC&M ENGINEERING, INC. DRAWING NO. ...B012-00851-301040 230 STRUCTURE.dgn

### TEST BORING LOG

ACT PROJECT NO. 9712.12 BORING NO. B-9 SHEET 3 OF 3  
 CLIENT: BURGESS & NIPLE, LIMITED  
 PROJECT: I-77 WIDENING OVER I-490, CLEVELAND, OHIO

| SAMPLE     |     |      |        | SAMPLE IDENTIFICATION                                                      | BLOW COUNT ON SS150 mm | PROPERTIES |       |                                 |             |             |
|------------|-----|------|--------|----------------------------------------------------------------------------|------------------------|------------|-------|---------------------------------|-------------|-------------|
| Depth (m.) | No. | Type | SYMBOL |                                                                            |                        | W (%)      | LL/PI | $\gamma_d$ (kg/m <sup>3</sup> ) | $q_u$ (kPa) | $q_p$ (kPa) |
| 21.0       | 25  | SS   |        | Gray silty clay with silt seams, trace gravel, sand. Stiff to hard. (A-6b) | 6-8-11                 | 23         |       |                                 | 224         |             |
| 22.5       | 26  | SS   |        |                                                                            | 6-7-8                  |            |       |                                 | 72          |             |
| 24.0       | 27  | SS   |        |                                                                            | 3-4-7                  | 24         |       |                                 | 96          |             |
|            |     |      |        | End of Boring @ 24.4m                                                      |                        |            |       |                                 |             |             |
| 25.5       |     |      |        |                                                                            |                        |            |       |                                 |             |             |

### TEST BORING LOG

ACT PROJECT NO. 9712.12 BORING NO. B-10 SHEET 1 OF 3  
 CLIENT: BURGESS & NIPLE, LIMITED DATE DRILLED: 2-12-98  
 PROJECT: I-77 WIDENING OVER I-490, CLEVELAND, OHIO  
 DRILLING METHOD: CONTINUOUS FLIGHT HOLLOW STEM AUGERS SURFACE ELEVATION: \_\_\_\_\_

| SAMPLE     |     |      |        | SAMPLE IDENTIFICATION                                                                           | BLOW COUNT ON SS150 mm | PROPERTIES |       |                                 |             |             |
|------------|-----|------|--------|-------------------------------------------------------------------------------------------------|------------------------|------------|-------|---------------------------------|-------------|-------------|
| Depth (m.) | No. | Type | SYMBOL |                                                                                                 |                        | W (%)      | LL/PI | $\gamma_d$ (kg/m <sup>3</sup> ) | $q_u$ (kPa) | $q_p$ (kPa) |
| 0          |     |      |        | 8cm topsoil (Driller's note)<br>25cm Loose brown fine sand. *                                   |                        |            |       |                                 |             |             |
|            | 1   | SS   | +++    | Grayish brown silt, trace sand, trace silty clay seams. Medium dense. Moist. (A-4b)             | 6-10-15                |            |       |                                 |             |             |
| 1.5        | 2   | SS   | +++    |                                                                                                 | 5-7-8                  | 21         | NP    |                                 |             |             |
|            | 3   | SS   | +++    |                                                                                                 | 9-8-8                  |            |       |                                 |             |             |
| 3.0        | 4   | SS   | +++    | Gray silty clay with some silt layers, trace gravel, sand. Medium stiff to stiff. Moist. (A-6b) | 3-5-5                  | 19         |       |                                 |             |             |
|            | 5   | SS   | +++    |                                                                                                 | 4-6-9                  |            |       |                                 |             |             |
| 4.5        | 6   | SS   |        |                                                                                                 | 2-3-8                  | 24         |       |                                 | 29          |             |
|            | 7   | SS   |        |                                                                                                 | 4-6-7                  |            |       |                                 | 76          |             |
| 6.0        | 8   | SS   |        |                                                                                                 | 2-4-6                  | 24         |       |                                 | 67          |             |
|            | 9   | SS   |        |                                                                                                 | 3-5-6                  |            |       |                                 | 83          |             |
| 7.5        | 10  | ST   |        | Rec=24"                                                                                         | 24                     | 1706       |       |                                 |             |             |
|            | 11  | SS   |        | 4-4-5                                                                                           |                        |            |       | 81                              |             |             |
|            | 12  | SS   |        | 3-3-4                                                                                           | 21                     |            |       | 83                              |             |             |
| 9.0        | 13  | SS   |        | Gray silty clay, trace sand, gravel, few sand seams. Soft to medium stiff. Moist. (A-6b)        | 2-1-2                  |            |       |                                 | 28          |             |
|            | 14  | SS   |        |                                                                                                 | 1-2-3                  | 25         | 34/16 |                                 | 67          |             |
| 10.5       | 15  | SS   |        |                                                                                                 | 2-2-4                  |            |       |                                 | 115         |             |

\*Driller's Note: GROUNDWATER

ENCOUNTERED AT: 6.1m  
 ON COMPLETION: 2.7m  
 AFTER: \_\_\_\_\_  
 REMARKS: \_\_\_\_\_

- AS - Auger Sample
- ST - Shelby Tube Sample
- SS - Split Spoon Sample 50 mm O.D.
- WY - Moisture Content
- NX - 54 mm I.D. Core Barrel
- LL/PI - Liquid Limit/Plasticity Index
- NP - Non Plastic Material
- $\gamma_d$  - Dry Density
- $q_u$  - Unconfined Strength
- $q_p$  - Pocket Penetrometer Reading



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|               |          |
|---------------|----------|
| CALCULATED BY | PSL      |
| CHECKED BY    |          |
| DATE          | 3/24/06  |
| REVISION      | 11/21/07 |
| REVIEWED BY   | JLS      |
| DRAWN BY      | BLR      |

STRUCTURE FOUNDATION INVESTIGATION  
 BRIDGE NO. CUY-77-1433 OVER I.R. 490 AND RAMPS

CUY-77-14.35  
 PID No. 13567

### TEST BORING LOG

ACT PROJECT NO. 9712.12 BORING NO. B-10 SHEET 2 OF 3  
 CLIENT: BURGESS & NIPLE, LIMITED  
 PROJECT: I-77 WIDENING OVER I-490, CLEVELAND, OHIO

| SAMPLE     |     |      | SYMBOL | SAMPLE IDENTIFICATION                                                | BLOW COUNT ON SS/150 mm | PROPERTIES |       |                                  |             |             |
|------------|-----|------|--------|----------------------------------------------------------------------|-------------------------|------------|-------|----------------------------------|-------------|-------------|
| Depth (m.) | No. | Type |        |                                                                      |                         | W (%)      | LL/PI | $\gamma_d$ (kg/ m <sup>3</sup> ) | $q_u$ (kPa) | $q_p$ (kPa) |
| 10.5       |     |      |        | Gray silty clay, trace thin silt seams. Stiff to hard. Moist. (A-6b) |                         |            |       |                                  |             |             |
|            | 16  | SS   |        |                                                                      | 2-4-6                   | 21         |       |                                  | 115         |             |
|            |     |      |        |                                                                      |                         |            |       |                                  | 126         |             |
| 12.0       | 17  | SS   |        |                                                                      | 3-5-7                   |            |       |                                  | 185         |             |
|            | 18  | SS   |        |                                                                      | 3-5-7                   | 20         |       |                                  | 307         |             |
| 13.5       | 19  | SS   |        |                                                                      | 6-10-11                 |            |       |                                  | 313         |             |
|            | 20  | SS   |        |                                                                      | 9-12-17                 | 21         |       |                                  | 360         |             |
| 15.0       | 21  | SS   |        |                                                                      | 8-13-16                 |            |       |                                  | 371         |             |
|            |     |      |        |                                                                      |                         |            |       |                                  | 339         |             |
| 16.5       | 22  | SS   |        |                                                                      | 9-14-18                 | 20         |       |                                  | 288         |             |
|            |     |      |        |                                                                      |                         |            |       |                                  |             |             |
| 18.0       | 23  | SS   |        |                                                                      | 8-15-16                 |            |       |                                  |             |             |
|            |     |      |        |                                                                      |                         |            |       |                                  |             |             |
| 19.5       | 24  | SS   |        |                                                                      | 10-15-18                | 22         |       |                                  |             |             |
|            |     |      |        |                                                                      |                         |            |       |                                  |             |             |
| 21.0       | 25  | SS   |        |                                                                      | 9-12-17                 |            |       |                                  | 288         |             |



APPLIED CONSTRUCTION TECHNOLOGIES, INC.

### TEST BORING LOG

ACT PROJECT NO. 9712.12 BORING NO. B-10 SHEET 3 OF 3  
 CLIENT: BURGESS & NIPLE, LIMITED  
 PROJECT: I-77 WIDENING OVER I-490, CLEVELAND, OHIO

| SAMPLE     |     |      | SYMBOL | SAMPLE IDENTIFICATION                                                | BLOW COUNT ON SS/150 mm | PROPERTIES |       |                                  |             |             |
|------------|-----|------|--------|----------------------------------------------------------------------|-------------------------|------------|-------|----------------------------------|-------------|-------------|
| Depth (m.) | No. | Type |        |                                                                      |                         | W (%)      | LL/PI | $\gamma_d$ (kg/ m <sup>3</sup> ) | $q_u$ (kPa) | $q_p$ (kPa) |
| 21.0       | 25  | SS   |        | Gray silty clay, trace thin silt seams. Stiff to hard. Moist. (A-6b) | 9-12-17                 |            |       |                                  | 288         |             |
|            |     |      |        |                                                                      |                         |            |       |                                  |             |             |
| 22.5       | 26  | SS   |        |                                                                      | 7-12-16                 | 24         |       |                                  | 162         |             |
|            |     |      |        | End of Boring @ 22.9m                                                |                         |            |       |                                  |             |             |



APPLIED CONSTRUCTION TECHNOLOGIES, INC.

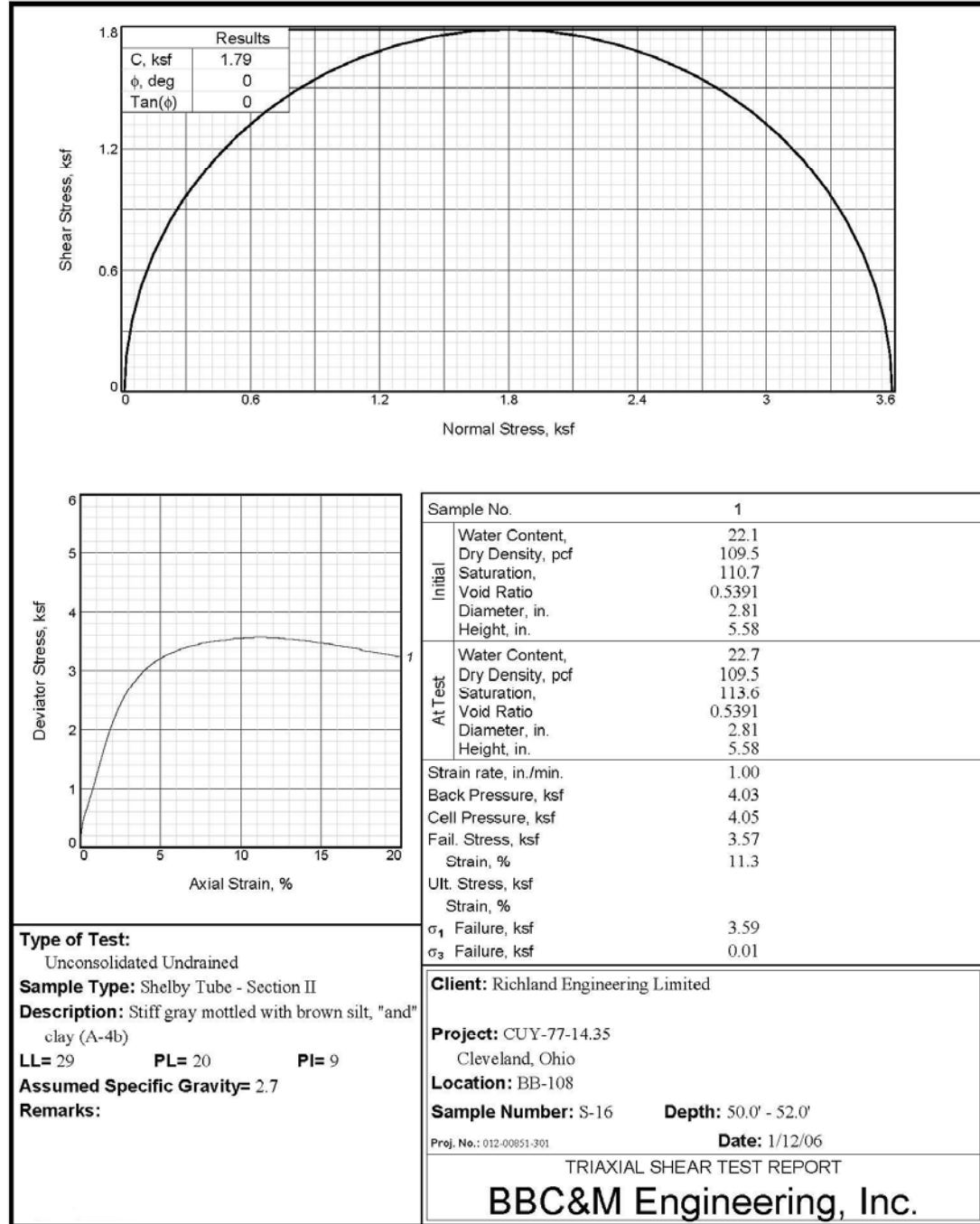


CALCULATED BY: PSL  
 CHECKED BY: PSL  
 DATE: 3/24/06  
 REVISION: 11/21/07

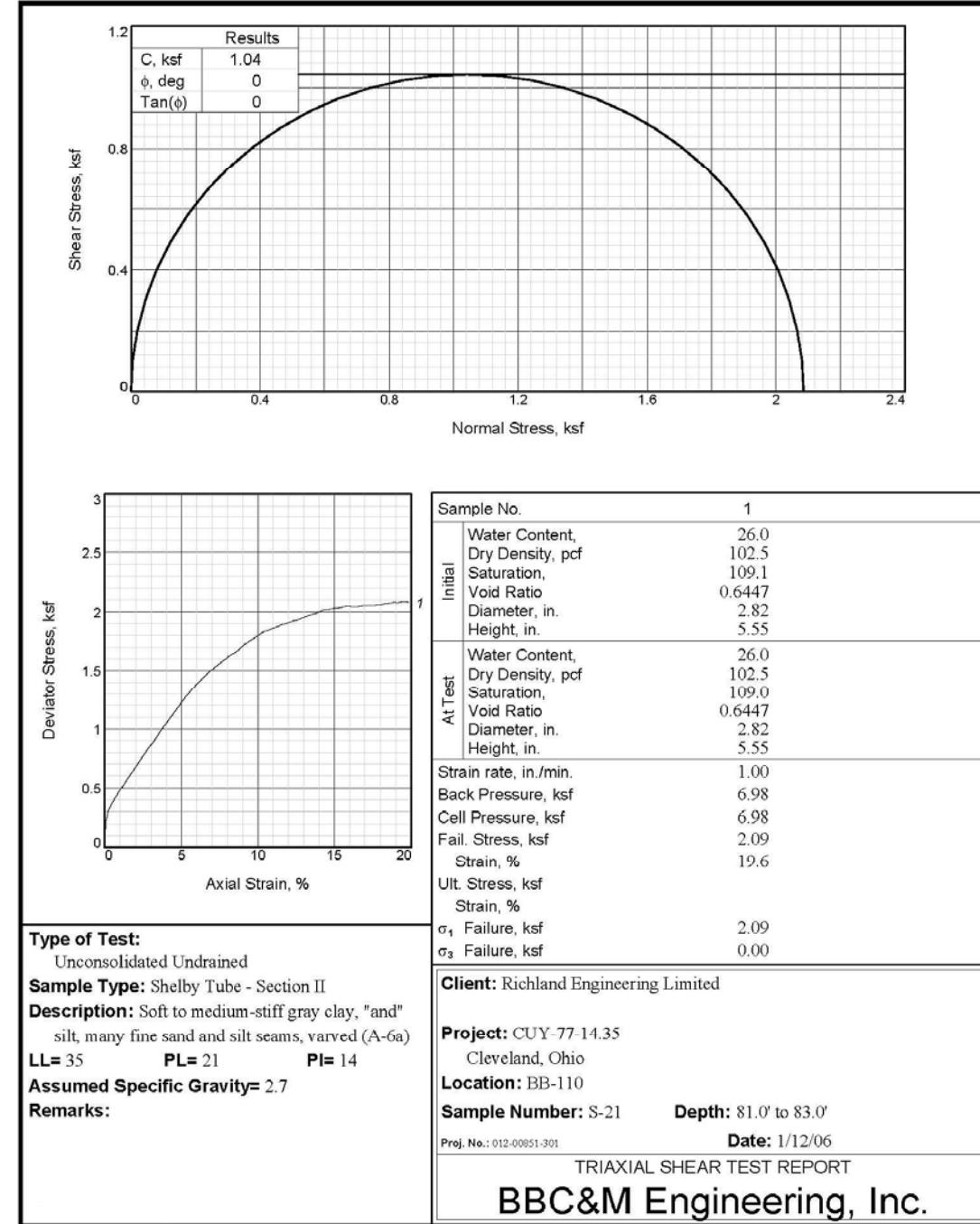
STRUCTURE FOUNDATION INVESTIGATION  
 BRIDGE NO. CUY-77-1433 OVER I.R. 490 AND RAMPS

CUY-77-14.35  
 PID No. 13567

23 / 26  
 27  
 30



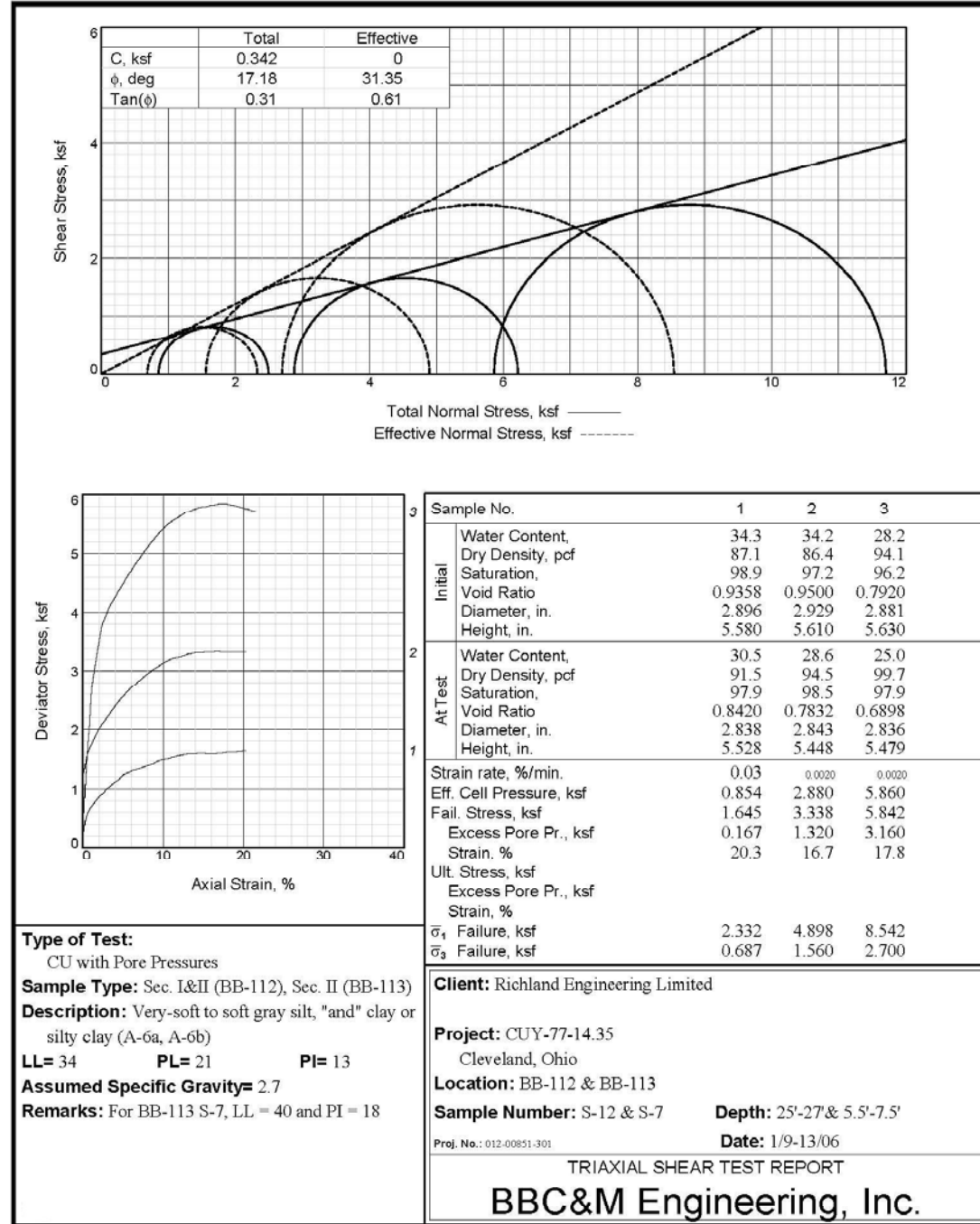
Tested By: RAK \_\_\_\_\_ Checked By: RAK \_\_\_\_\_



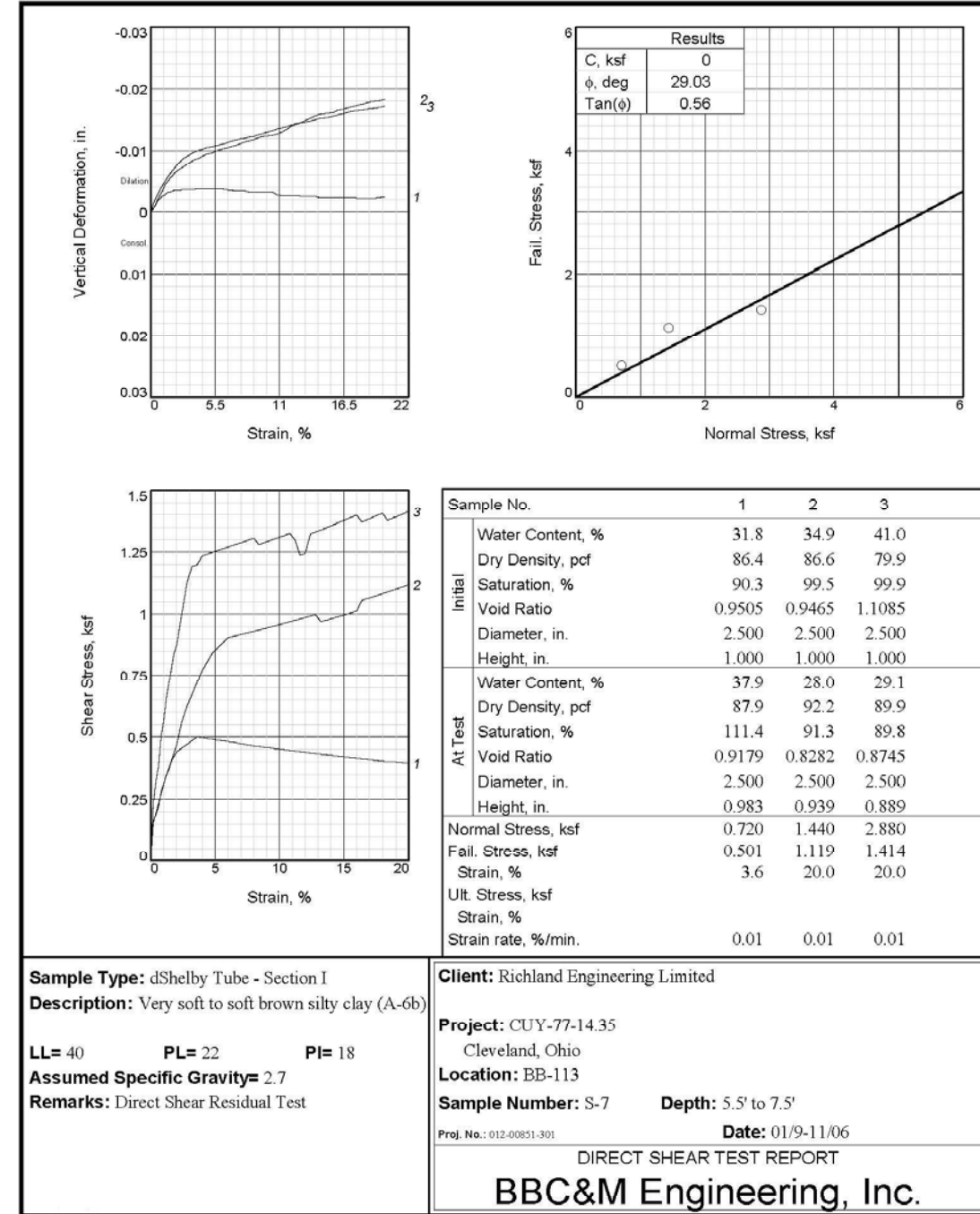
Tested By: RAK \_\_\_\_\_ Checked By: RAK \_\_\_\_\_

|             |          |            |
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| CALCULATED  | DATE     | CHECKED BY |
|             | 3/24/06  | PSL        |
| REVIEWED BY | REVISION |            |
| BLR         | 11/21/07 |            |
| DRAWN BY    | JLS      |            |





Tested By: JDJ \_\_\_\_\_ Checked By: PJW \_\_\_\_\_



Tested By: JDJ \_\_\_\_\_ Checked By: PJW \_\_\_\_\_



|             |         |            |          |
|-------------|---------|------------|----------|
| CALCULATED  | DATE    | CHECKED BY | PSL      |
|             | 3/24/06 | REVISOR    | 11/21/07 |
| REVIEWED BY | JLS     |            |          |
| DRAWN BY    | BLR     |            |          |

STRUCTURE FOUNDATION INVESTIGATION  
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**CUY-77-14.35**  
PID No. 13567