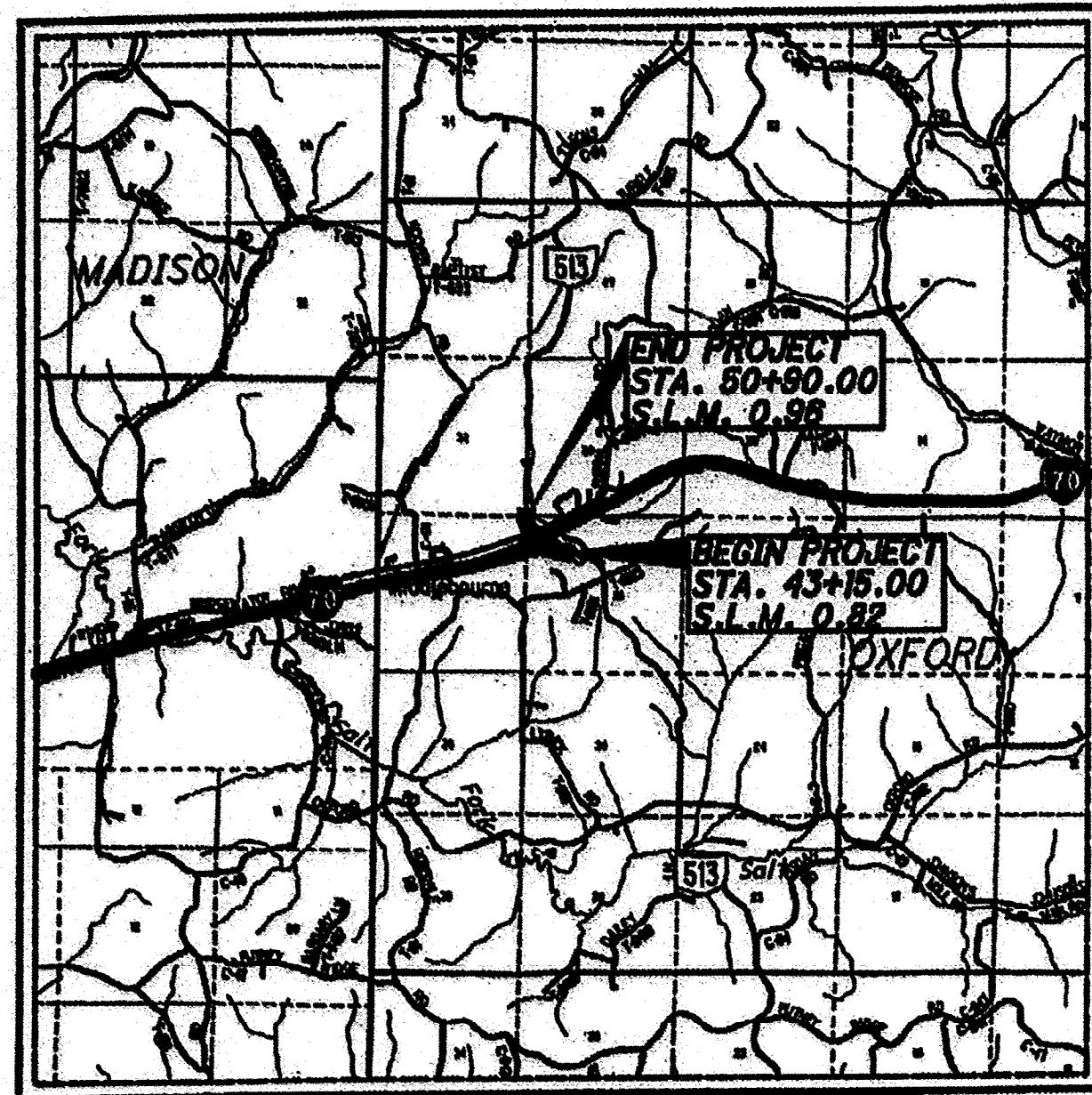


STATE OF OHIO  
DEPARTMENT OF TRANSPORTATION

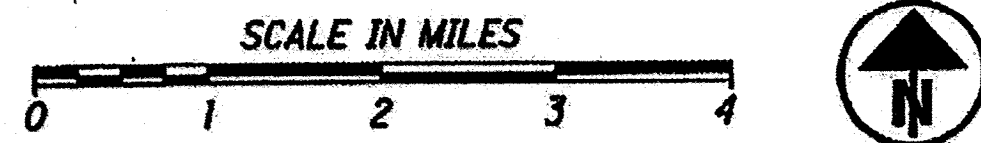
**GUE-513-8.65**

**OXFORD TOWNSHIP  
GUERNSEY COUNTY**



LOCATION MAP

LATITUDE: 40° 03' 07" N LONGITUDE: 81° 19' 26" W



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

**DESIGN DESIGNATION**

	IR-70	SR-513
CURRENT ADT (2018)	29,130	2,640
DESIGN YEAR ADT (2038)	39,680	2,670
DESIGN HOURLY VOLUME (2038)	3,630	270
DIRECTIONAL DISTRIBUTION	53%	56%
TRUCKS (24 HOUR B&C)	38%	13%
LEGAL SPEED	70	55
DESIGN SPEED	75	55
DESIGN FUNCTIONAL CLASSIFICATION	INTERSTATE (RURAL)	MAJOR COLLECTOR (RURAL)
NHS PROJECT	YES	NO

**DESIGN EXCEPTIONS**

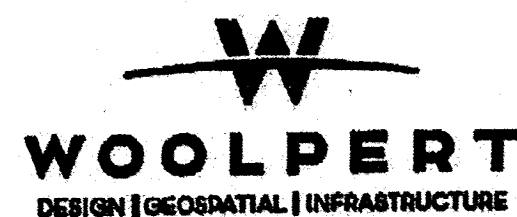
DESIGN FEATURE	APPROVAL DATES	SHEET NUMBERS
K* VALUE	09/29/15	28
SUPERELEVATION RATE	09/29/15	3

**UNDERGROUND UTILITIES**  
CONTACT BOTH SERVICES  
CALL TWO WORKING DAYS  
BEFORE YOU DIG

CALL  
**1-800-362-2764**  
(TOLL FREE)

OHIO UTILITIES PROTECTION SERVICE  
NON-MEMBERS  
MUST BE CALLED DIRECTLY

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

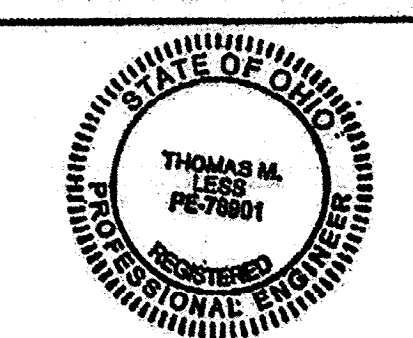


ONE EASTON OVAL  
SUITE 310  
COLUMBUS, OH 43219  
T 614-476-6000  
F 614-476-6225

**INDEX OF SHEETS:**

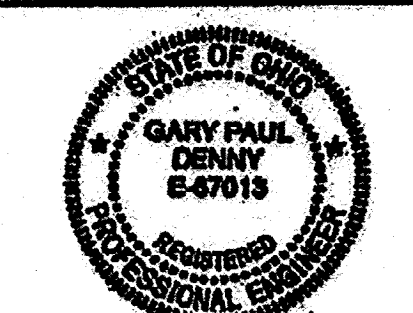
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**FOR STRUCTURES OVER 20' SPAN:**



SIGNED: *Thomas M. Less*  
DATE: 6-7-17

**FOR ENTIRE PLAN EXCEPT STRUCTURES OVER 20' SPAN:**



SIGNED: *Gary Paul Denny*  
DATE: 6-7-17

STANDARD CONSTRUCTION DRAWINGS								SUPPLEMENTAL SPECIFICATIONS	SPECIAL PROVISIONS	
BP-3.1	7/18/14	AS-F-15	7/17/15	MT-95.30	7/15/16	MT-106.10	7/18/13	800	7/21/17	ASBESTOS
BP-5.1	7/19/13	AS-2-15	7/17/15	MT-95.45	1/20/17	MT-120.00	1/20/17	832	1/17/14	SURVEY
				MT-95.40	1/20/17	TC-61.10	1/17/14	840	4/15/16	REPORT
DM-4.1	1/15/16	GSD-1-96	7/18/02	MT-95.50	10/16/15	TC-61.30	1/20/17			06/20/17
DM-4.4	1/15/16			MT-98.11	1/20/17	TC-65.10	1/17/14			
		PCB-81	1/18/13	MT-98.20	7/15/16	TC-65.11	7/15/16			
MGS-1.1	7/19/13			MT-96.26	7/19/13	TC-85.22	1/20/17			
MGS-2.1	7/19/13	SBR-1-13	1/17/14	MT-97.10	7/18/14					
MGS-3.1	7/18/14			MT-97.11	1/20/17					
MGS-4.3	1/18/13	SICD-2-14	7/18/14	MT-97.12	1/20/17					
MGS-6.1	7/19/13			MT-97.20	7/15/16					
				MT-99.30	1/16/15					
RM-4.1	7/19/13			MT-99.60	7/15/16					
RM-4.2	4/18/14			MT-101.70	1/17/14					
RM-4.5	7/18/14			MT-101.75	7/15/16					
RM-4.6	7/19/13			MT-101.90	7/17/15					

**PROJECT DESCRIPTION**

REHABILITATION OF THE EXISTING FOUR SPAN, CURVED, REINFORCED CONCRETE DECK ON DOG-LEGGED STEEL BEAM BRIDGE SUPPORTED ON CAP AND COLUMN PIERS AND STUB ABUTMENTS ON PILES. BRIDGE WORK TO INCLUDE SUPERSTRUCTURE REPLACEMENT, PIER CAP REPLACEMENT, ABUTMENT REHABILITATION AND CONVERSION TO SEMI-INTEGRAL, AND RAISING OF THE STRUCTURE TO ACHIEVE MINIMUM REQUIRED VERTICAL CLEARANCE OVER IR-70. ROADWAY WORK INCLUDES WIDENING, PROFILE ADJUSTMENT, AND APPROACH RECONSTRUCTION.

**EARTH DISTURBED AREAS**

PROJECT EARTH DISTURBED AREA: 0.85 ACRES  
ESTIMATED CONTRACTOR EARTH DISTURBED AREA: 0.13 ACRES  
NOTICE OF INTENT EARTH DISTURBED AREA: NO NOI

**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 AND THAT PROVISIONS FOR THE MAINTENANCE AND SAFETY OF TRAFFIC WILL BE AS SET FORTH ON THE PLANS AND ESTIMATES.

APPROVED: *[Signature]*  
DATE: 6/13/17 DISTRICT DEPUTY DIRECTOR

APPROVED: *[Signature]*  
DATE: 7-6-17 DIRECTOR, DEPARTMENT OF TRANSPORTATION

FEDERAL PROJECT NO. E140 (878)

PID NO. 93289

CONSTRUCTION PROJECT NO.

RAILROAD INVOLVEMENT NONE

GUE-513-8.65

1/100

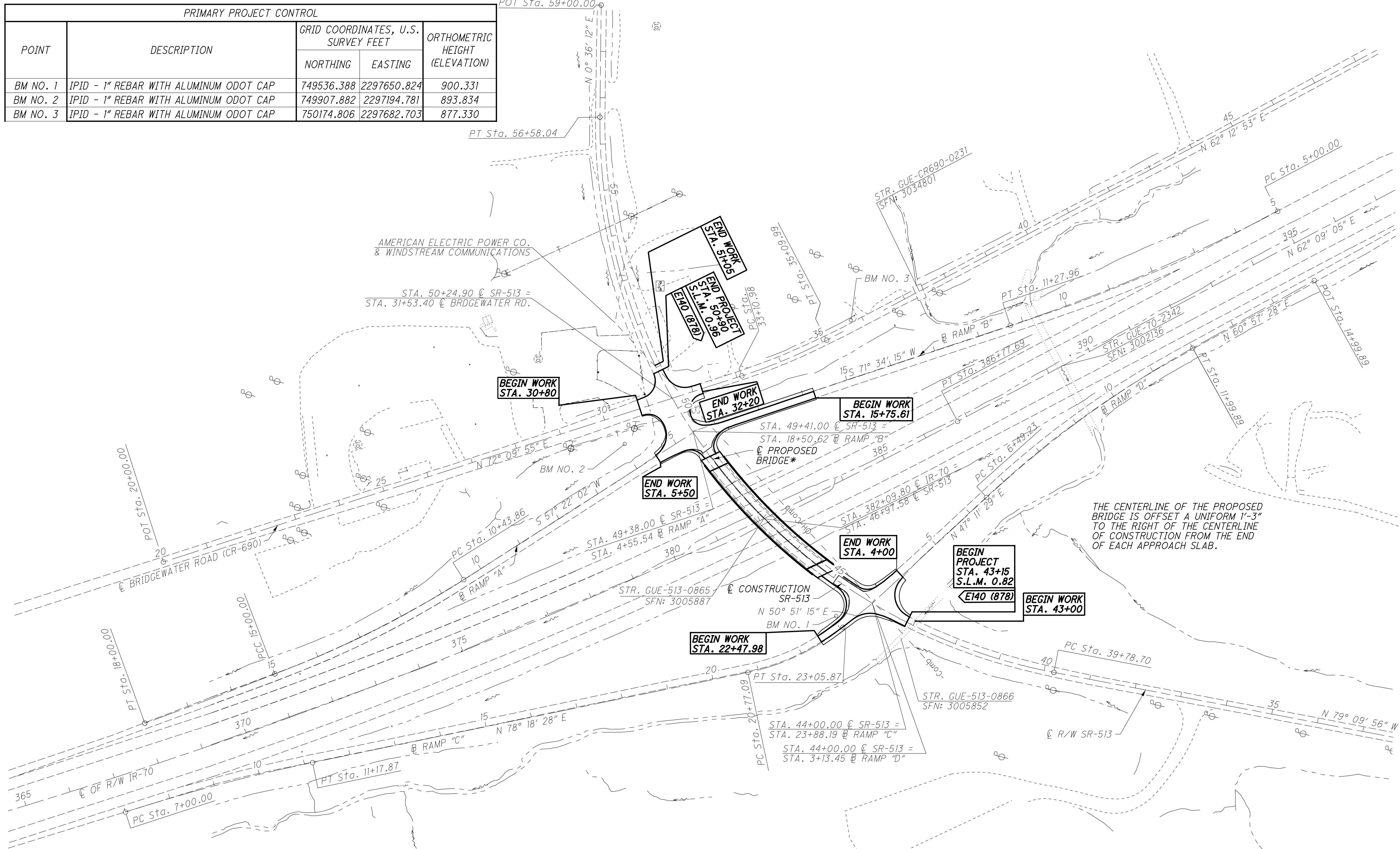
GUE - SR 513-08.65  
170520 PID - 93289  
Dist 5 9/21/2017

Conformed Set

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

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PRIMARY PROJECT CONTROL				
POINT	DESCRIPTION	GRID COORDINATES, U.S. SURVEY FEET		ORTHOMETRIC HEIGHT (ELEVATION)
		NORTHING	EASTING	
BM NO. 1	IPID - 1" REBAR WITH ALUMINUM ODOT CAP	749536.388	2297650.824	900.331
BM NO. 2	IPID - 1" REBAR WITH ALUMINUM ODOT CAP	749907.882	2297194.781	893.834
BM NO. 3	IPID - 1" REBAR WITH ALUMINUM ODOT CAP	750174.806	2297682.703	877.330



IR-70 CURVE DATA  
P.I. Sta. 369+27.24  
 $\Delta = 17^\circ 38' 43''$  (LT)  
 $Dc = 0^\circ 30' 00''$   
 $R = 11,459.16'$   
 $T = 1,778.61'$   
 $L = 3,529.06'$   
 $E = 137.21'$   
 $C = 3,515.13'$   
C.B. =  $N 70^\circ 58' 26'' E$

RAMP "C" CURVE DATA  
P.I. Sta. 9+09.14  
 $\Delta = 6^\circ 16' 05''$  (RT)  
 $Dc = 1^\circ 30' 00''$   
 $R = 3,819.72'$   
 $T = 209.14'$   
 $L = 417.87'$   
 $E = 5.72'$   
 $C = 417.66'$   
C.B. =  $N 75^\circ 10' 26'' E$

RAMP "C" CURVE DATA  
P.I. Sta. 21+93.72  
 $\Delta = 27^\circ 27' 13''$  (LT)  
 $Dc = 12^\circ 00' 00''$   
 $R = 477.46'$   
 $T = 116.63'$   
 $L = 228.78'$   
 $E = 14.04'$   
 $C = 226.60'$   
C.B. =  $N 64^\circ 34' 52'' E$

RAMP "A" CURVE DATA  
P.I. Sta. 16+50.01  
 $\Delta = 1^\circ 30' 00''$  (RT)  
 $Dc = 0^\circ 30' 00''$   
 $R = 11,459.16'$   
 $T = 150.01'$   
 $L = 300.00'$   
 $E = 0.98'$   
 $C = 299.99'$   
C.B. =  $S 69^\circ 14' 52'' W$

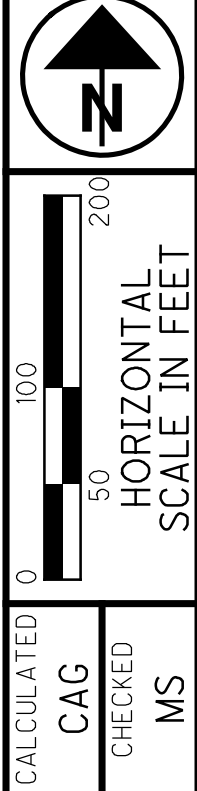
RAMP "A" CURVE DATA  
P.I. Sta. 12+72.69  
 $\Delta = 11^\circ 24' 13''$  (RT)  
 $Dc = 2^\circ 30' 00''$   
 $R = 2,291.83'$   
 $T = 228.83'$   
 $L = 456.14'$   
 $E = 11.40'$   
 $C = 455.39'$   
C.B. =  $S 63^\circ 28' 30'' W$

SR-513 CURVE DATA  
P.I. Sta. 49+86.70  
 $\Delta = 79^\circ 46' 07''$  (RT)  
 $Dc = 4^\circ 45' 00''$   
 $R = 1,206.23'$   
 $T = 1,008.00'$   
 $L = 1,679.34'$   
 $E = 365.73'$   
 $C = 1,546.97'$   
C.B. =  $N 39^\circ 16' 52'' W$

RAMP "D" CURVE DATA  
P.I. Sta. 9+25.89  
 $\Delta = 13^\circ 45' 59''$  (RT)  
 $Dc = 2^\circ 30' 00''$   
 $R = 2,291.83'$   
 $T = 276.66'$   
 $L = 550.66'$   
 $E = 16.64'$   
 $C = 549.33'$   
C.B. =  $N 54^\circ 04' 28'' E$

RAMP "B" CURVE DATA  
P.I. Sta. 8+14.69  
 $\Delta = 9^\circ 25' 10''$  (RT)  
 $Dc = 1^\circ 30' 00''$   
 $R = 3,819.72'$   
 $T = 314.69'$   
 $L = 627.96'$   
 $E = 12.94'$   
 $C = 627.26'$   
C.B. =  $S 66^\circ 51' 40'' W$

BRIDGEWATER RD. CURVE DATA  
P.I. Sta. 34+10.74  
 $\Delta = 9^\circ 57' 01''$  (LT)  
 $Dc = 5^\circ 00' 00''$   
 $R = 1,145.92'$   
 $T = 99.75'$   
 $L = 199.01'$   
 $E = 4.33'$   
 $C = 198.76'$   
C.B. =  $N 67^\circ 11' 24'' E$



CALCULATED  
CAG  
CHECKED  
MS

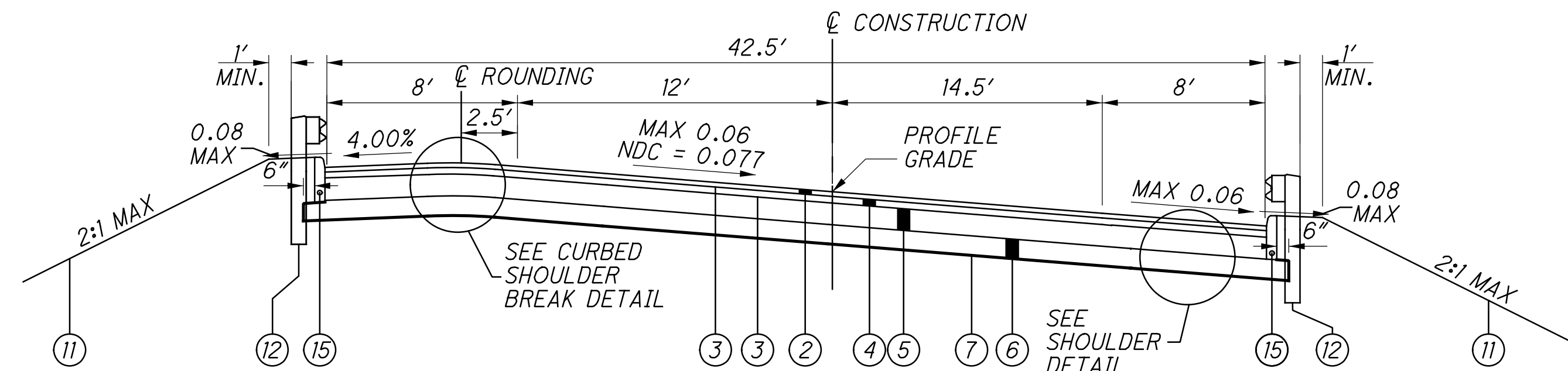
**SCHEMATIC PLAN**

**GUE-513-8.65**

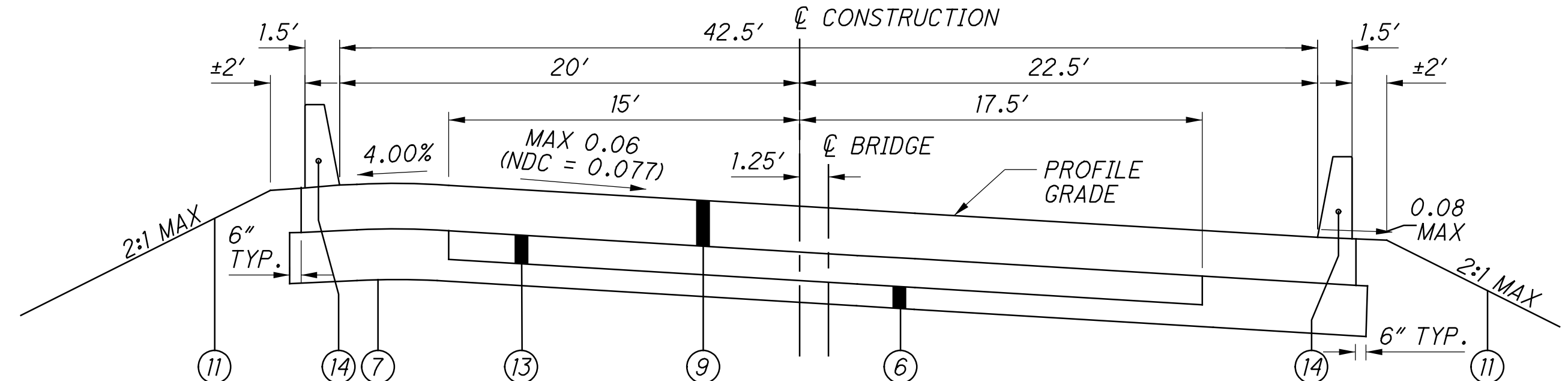
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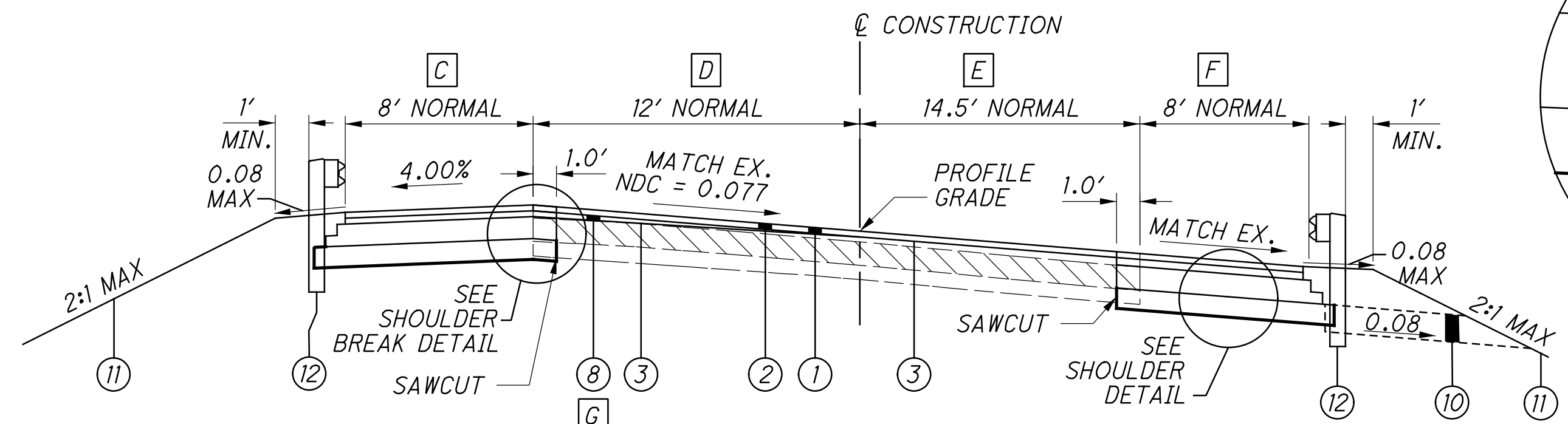
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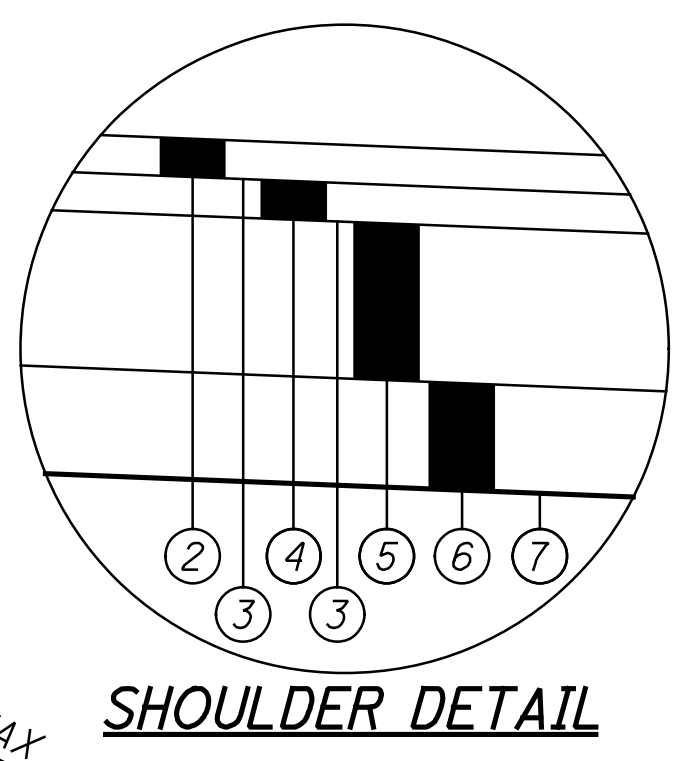
**SR-513 TYPICAL SUPERELEVATED FULL DEPTH SECTION**  
 STA 44+94.00 TO STA 45+05.75  
 STA. 48+90.62 TO STA. 48+90.00



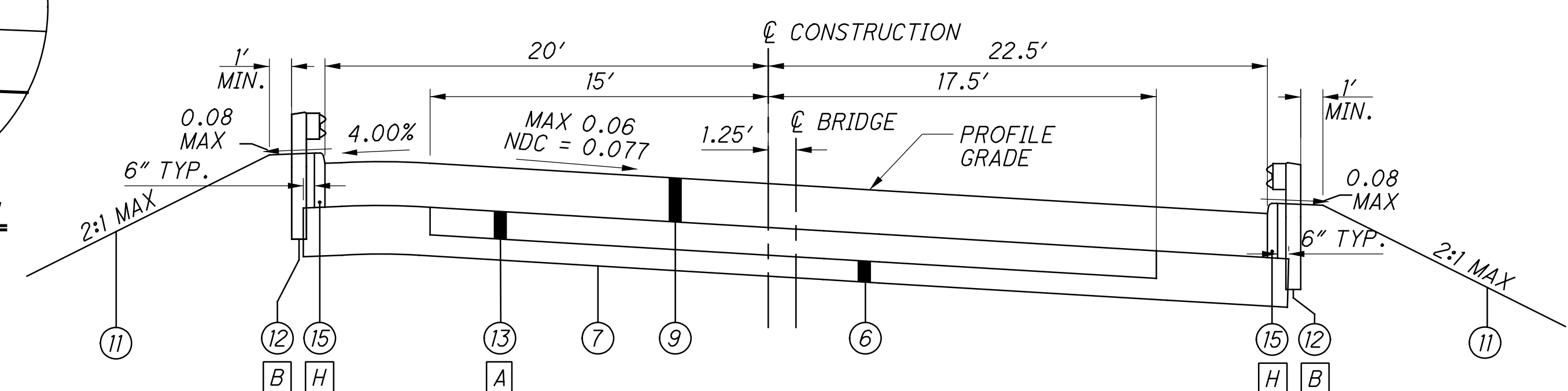
**SR-513 TYPICAL APPROACH SLAB SECTION WITH CONCRETE BARRIER**  
 APPROACH SLAB LIMITS  
 STA. 45+41.10 TO STA. 45+47.07  
 STA. 48+45.39 TO STA. 48+56.72



**SR-513 TYPICAL SUPERELEVATED RESURFACING SECTION**  
 STA 43+15.00 TO STA 44+94.00  
 STA. 48+90.00 TO STA. 50+90.00

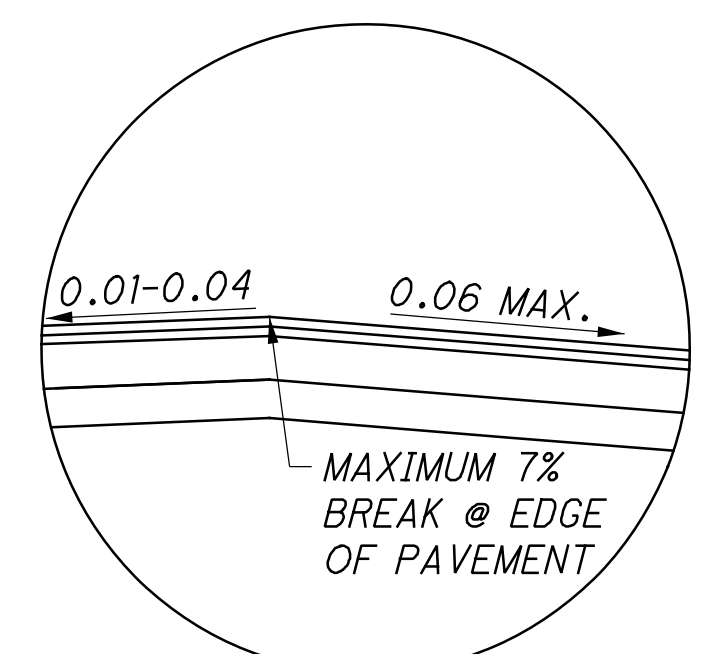


**SHOULDER DETAIL**

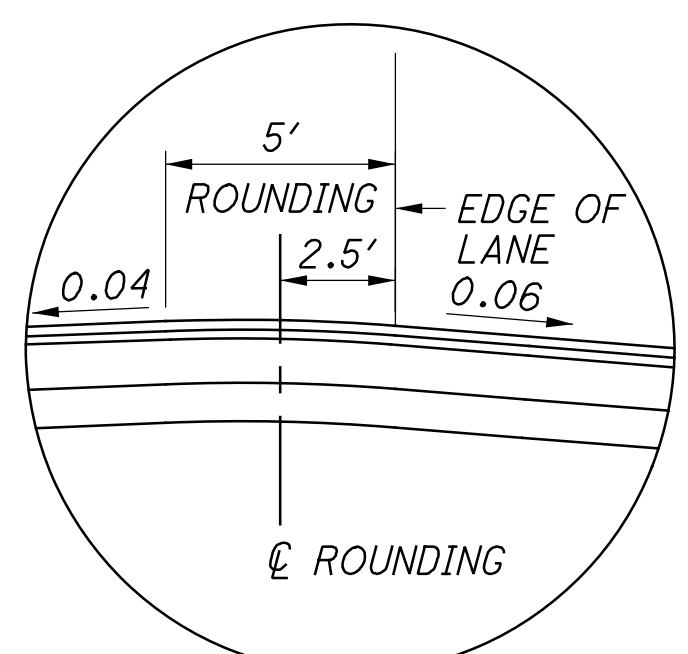


**SR-513 TYPICAL APPROACH SLAB SECTION WITH BRIDGE TERMINAL ASSEMBLY**  
 APPROACH SLAB LIMITS  
 STA. 45+17.07 TO STA. 45+41.10  
 STA. 48+56.72 TO STA. 48+75.39

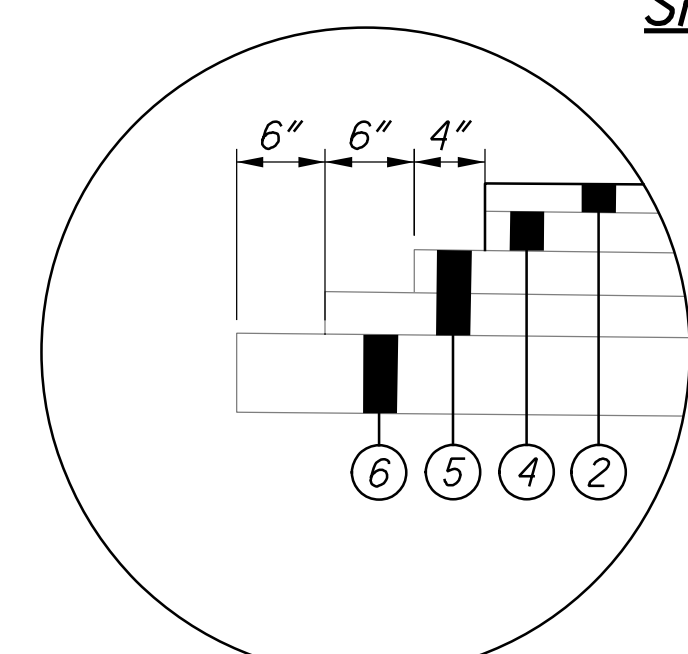
- C** PAVED SHOULDER WIDTH VARIES FROM 1.5' TO 8' FROM STA. 43+15.00 TO STA. 44+81.37 AND VARIES FROM 8' TO 1'± FROM STA. 48+83.48 TO STA. 50+90.00
- D** PAVEMENT WIDTH VARIES FROM 9.5' TO 12' STA. 43+15.00 TO STA. 44+81.37 AND VARIES FROM 12' TO 10.6' FROM STA. 48+83.48 TO STA. 50+90.00
- E** PAVEMENT WIDTH VARIES FROM 12.7' TO 14.5' FROM STA. 43+15.00 TO STA. 44+44.65 AND VARIES FROM 14.5' TO 11.1' FROM STA. 48+73.29 TO STA. 50+90.00
- F** PAVED SHOULDER WIDTH VARIES FROM 4.3' TO 8.0' FROM STA. 43+15.00 TO STA. 44+44.65 AND VARIES FROM 8' TO 3.8'± FROM STA. 43+73.29 TO STA. 50+90.00
- G** VARIABLE DEPTH LEVELING COURSE (SEE NOTE "A") FROM STA. 43+11.00 TO 44+50.00 AND FROM STA. 49+00 TO STA 49+29.00



**SHOULDER BREAK DETAIL**



**CURBED SHOULDER BREAK DETAIL**



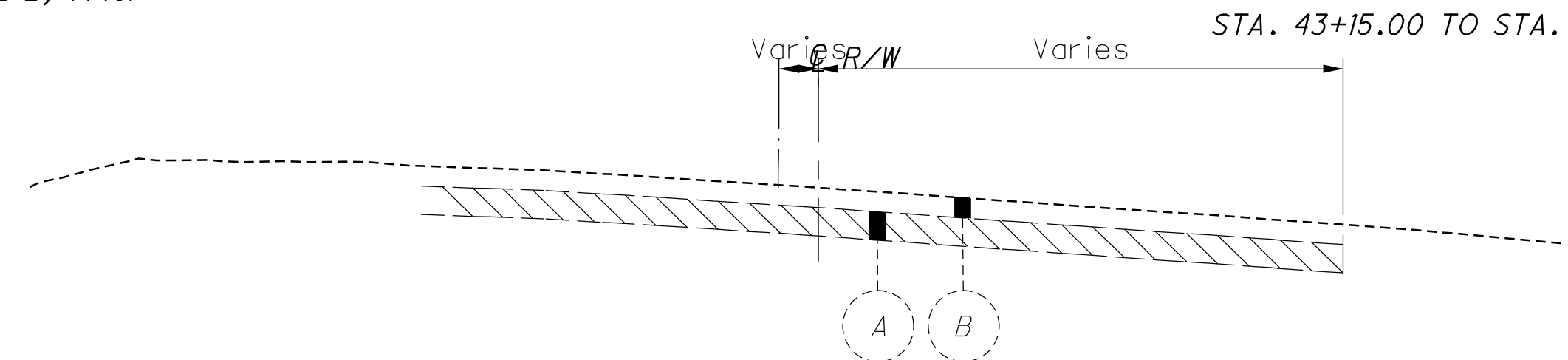
**STEP DETAIL**

NOTE: CENTERLINE ROUNDING LATERAL POSITION SHALL TRANSITION FROM 2.5' FROM THE EDGE OF THE LANE TO 5.25' FROM THE EDGE OF THE LANE OVER THE LENGTH OF THE APPROACH SLAB.

**LEGEND**

- 1 ITEM 254 - 1.25" PAVEMENT PLANING, ASPHALT CONCRETE
- 2 ITEM 441 - 1.25" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), PG64-22
- 3 ITEM 407 - TACK COAT
- 4 ITEM 441 - 1.75" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, (448)
- 5 ITEM 301 - 8" ASPHALT CONCRETE BASE, PG64-22
- 6 ITEM 304 - 6" AGGREGATE BASE
- 7 ITEM 204 - SUBGRADE COMPACTION
- 8 ITEM 441 - ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, (448), VARIABLE DEPTH (0" MIN., 1" MAX.)
- 9 ITEM 526 - REINFORCED CONCRETE APPROACH SLAB, 15"
- 10 ITEM 605 - AGGREGATE DRAINS
- 11 ITEM 659 - SEEDING AND MULCHING
- 12 ITEM 606 - GUARDRAIL, TYPE MGS
- 13 9" SLEEPER SLAB (INCIDENTAL TO ITEM 526 - APPROACH SLAB)
- 14 ITEM 622 - CONCRETE BARRIER, SINGLE SLOPE, TYPE D
- 15 ITEM 609 - CURB, TYPE 4-C
- 16 ITEM 441 - 3" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), PG64-22
- 17 ITEM 301 - 9" ASPHALT CONCRETE BASE, PG64-22

**SR-513 TYPICAL EXISTING ASPHALT SECTION**

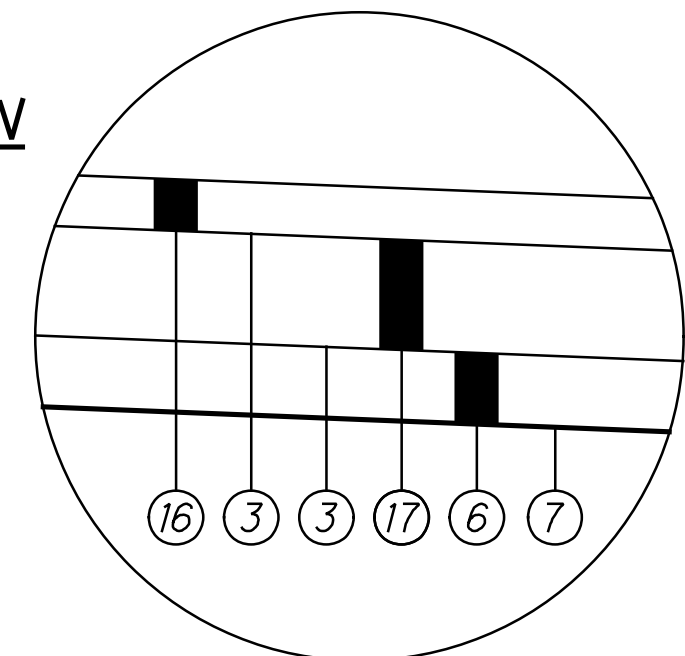


**SR-513 TYPICAL EXISTING ASPHALT SECTION**  
 STA. 43+15.00 TO STA. 45+22.30

STA. 48+70.63 TO STA. 50+90.00

NOTE "A"

ITEM 441 - VARIABLE DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, (448) IS TO BE USED AS A LEVELING COURSE TO ESTABLISH A 6.00% CROSS SLOPE AT THE LOCATIONS INDICATED HEREIN WITH AN ESTIMATED MAXIMUM THICKNESS OF 0.5"



**IR-70 FULL DEPTH SHOULDER SECTION**  
 STA. 381+56.05 TO STA. 382+21.62  
 STA. 382+13.82 TO STA. 382+78.58

- A** SLEEPER SLAB LIMITS  
 STA. 45+12.54 TO STA. 45+21.60  
 STA. 48+71.32 TO STA. 48+79.47
- B** BRIDGE TERMINAL ASSEMBLY ON APPROACH SLABS  
 STA. 44+94.01 (RIGHT) TO STA. 45+23.16 (RIGHT)  
 STA. 45+15.95 (LEFT) TO STA. 45+45.10 (LEFT)  
 STA. 48+52.72 (RIGHT) TO STA. 48+85.87 (RIGHT)  
 STA. 48+61.56 (LEFT) TO STA. 48+94.71 (LEFT)
- H** CURB LIMITS  
 STA. 45+22.65 (LEFT) TO STA. 45+41.10 (LEFT)  
 STA. 44+92.67 (RIGHT) TO STA. 45+19.16 (RIGHT)  
 STA. 48+65.56 (LEFT) TO STA. 48+84.00 (LEFT)  
 STA. 48+56.72 (RIGHT) TO STA. 48+83.07 (RIGHT)

**SUPERELEVATION RATE = 0.60**  
 (NORMAL DESIGN CRITERIA (NDC) = 0.77)

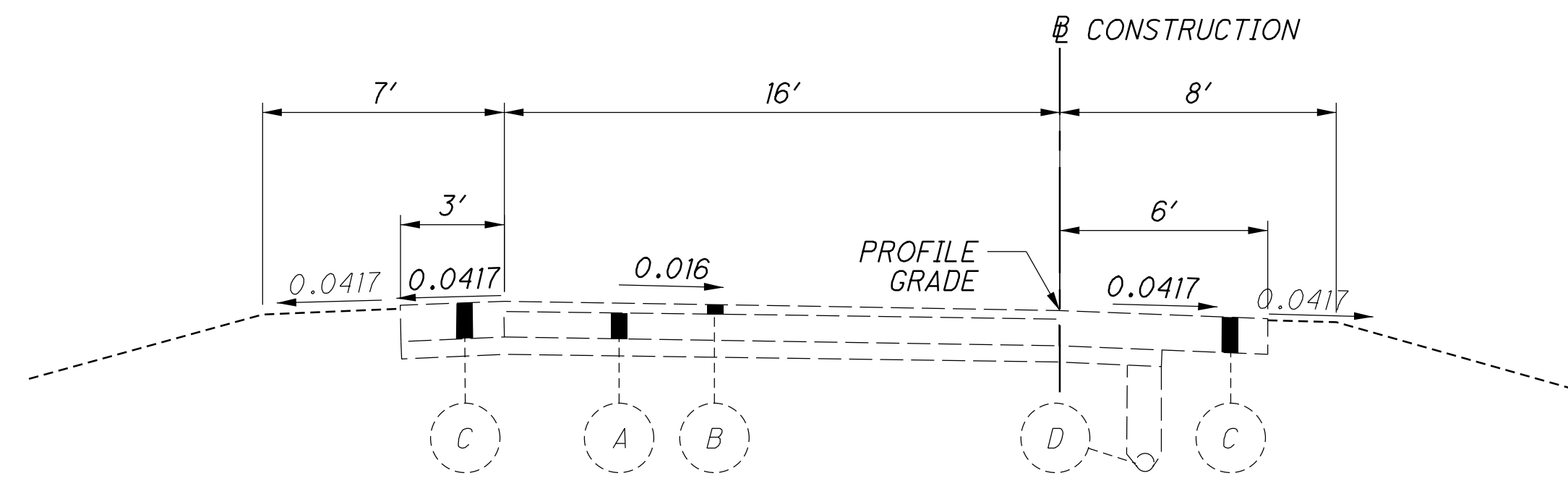
**LEGEND**

- A** ±4" REINFORCED CONCRETE PAVEMENT
- B** ±3.00" ASPHALT
- C** ±5" ASPHALT

**TYPICAL SECTIONS**

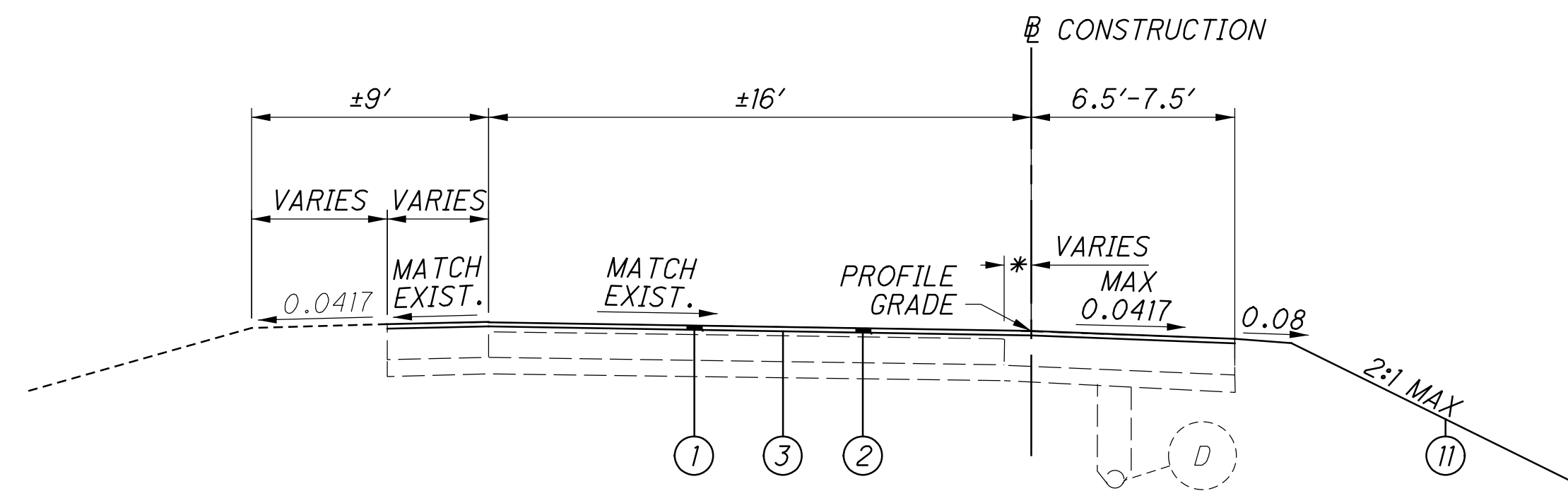
**GUE-513-8.65**

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**EXISTING RAMP TYPICAL NORMAL SECTION**

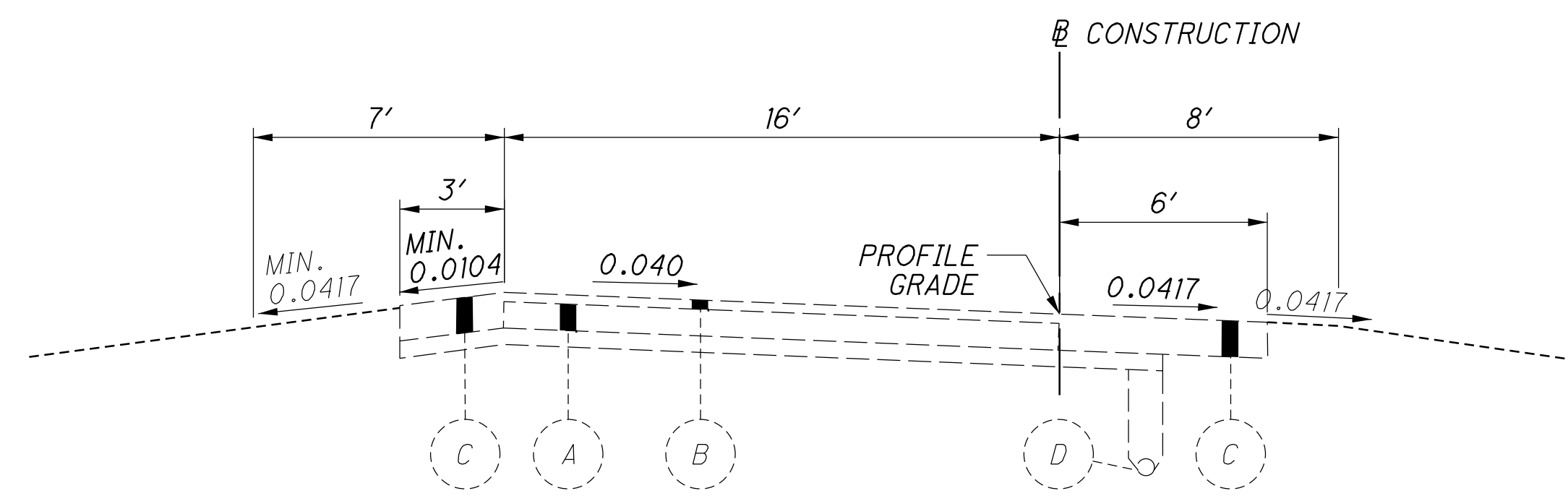
RAMP A - STA. 5+51.28 TO STA. 10+43.86  
 RAMP B - STA. 11+28.15 TO STA. 17+70.00  
 RAMP C - STA. 11+17.87 TO STA. 20+77.09  
 RAMP D - STA. 4+34.00 TO STA. 6+49.18  
 STA. 12+00.00 TO STA. 15+00.00



**RAMP NORMAL SECTION**

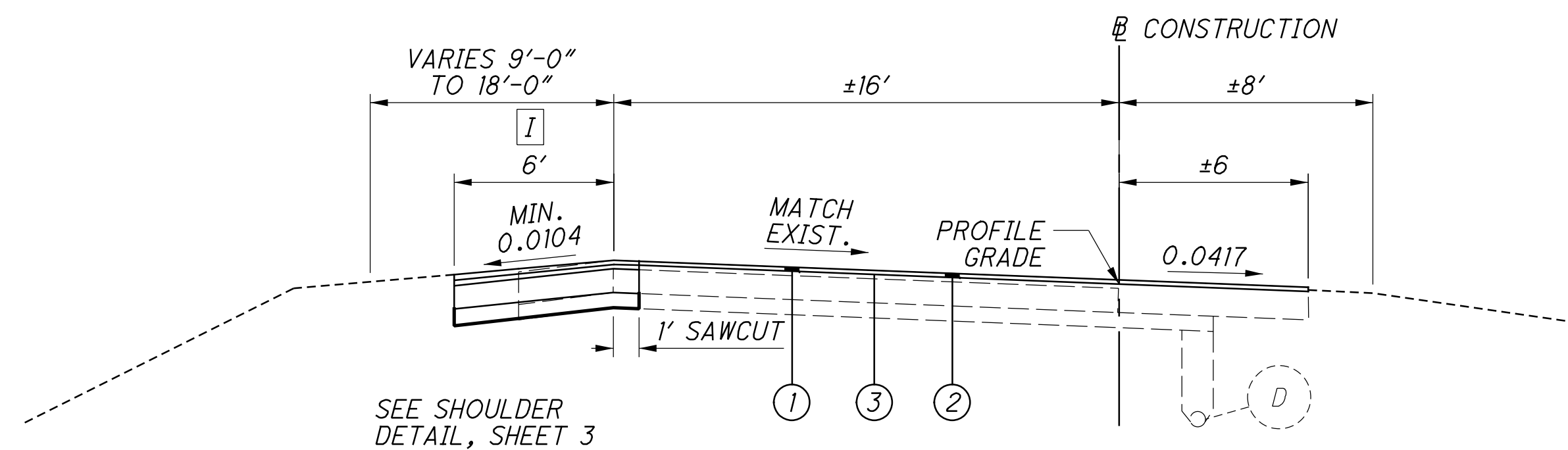
RAMP B - STA. 15+75.61 TO STA. 17+75.00

\* THERE IS SOME VARIANCE BETWEEN THE BASELINE OF EACH RAMP AND THE ACTUAL EXISTING PAVEMENT EDGE. THE PROPOSED WORK IS BASED OFF THE ACTUAL EDGE OF PAVEMENT SO AS TO PROVIDE CONTINUITY WITH ESTABLISHED PAVEMENT WIDTHS. THE MAXIMUM VARIATION ENCOUNTERED IS 1.5'±



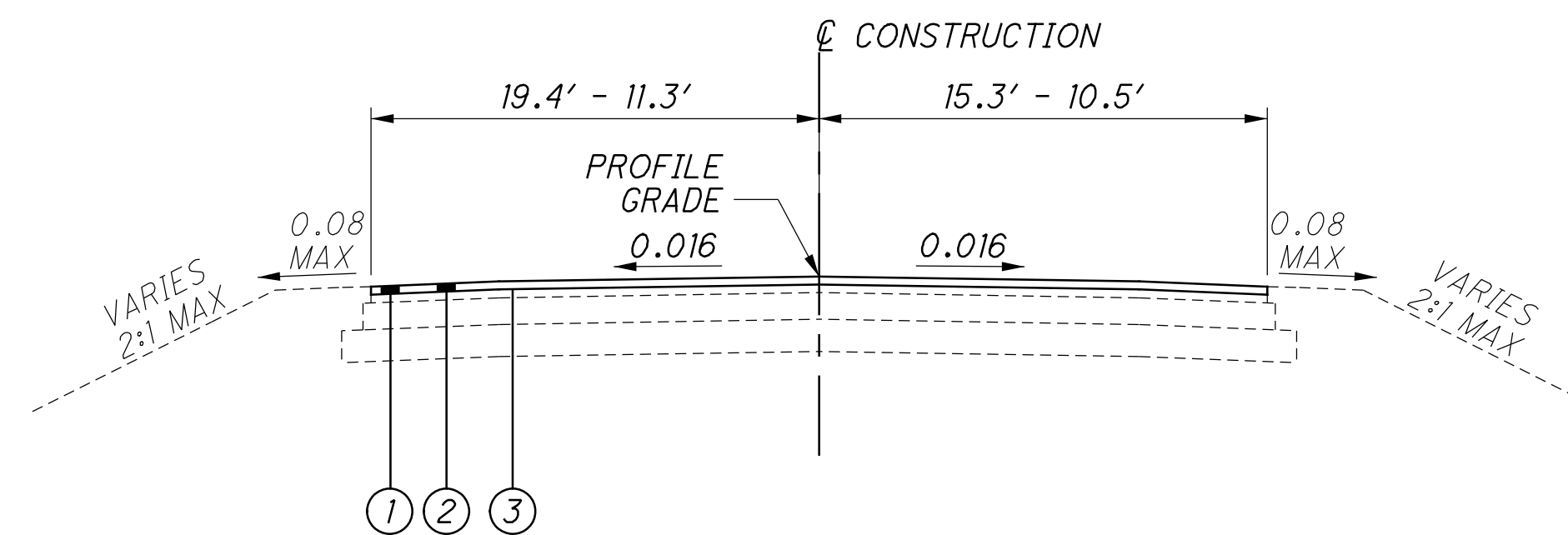
**EXISTING RAMP TYPICAL SUPERELEVATED SECTION**

RAMP A - STA. 10+43.86 TO STA. 18+00.00  
 RAMP B - STA. 9+46.00 TO STA. 11+28.15  
 RAMP C - STA. 10+94.00 TO STA. 11+17.87  
 STA. 20+77.09 TO STA. 23+05.73  
 RAMP D - STA. 6+49.18 TO STA. 12+00.00



**RAMP SUPERELEVATED SECTION**

RAMP C - STA. 22+50.00 TO STA. 23+08.45



**NORMAL SECTION**

BRIDGEWATER RD. STA. 30+80.00 TO STA. 32+20.00  
 BRIDGEWATER RD. WIDTHS VARY THROUGHOUT APRON AREAS

**I** PROPOSED SHOULDER TAPERS FROM 3.3' TO 6.0' BETWEEN STA. 22+50.00 AND STA. 22+65.74 LT., AND THEREAFTER REMAINS AT 6.0'.

**NOTES**

RAMP WIDTHS VARY THROUGHOUT APRON AREAS:

RAMP A - STA. 4+43.54 TO STA. 5+51.28 (25.73' AVG.)  
 RAMP B - STA. 17+70.00 TO STA. 18+38.50 (34.18' AVG.)  
 RAMP C - STA. 23+08.45 TO STA. 23+76.05 (34.66' AVG.)  
 RAMP D - STA. 3+47.71 TO STA. 4+00.00 (46.86' AVG.)

**LEGEND**

- ① ITEM 254 - 1.25" PAVEMENT PLANING, ASPHALT CONCRETE
- ② ITEM 441 - 1.25" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), PG64-22
- ③ ITEM 407 - TACK COAT
- ④ ITEM 659 - SEEDING AND MULCHING
- ⓐ ±8" REINFORCED CONCRETE PAVEMENT
- ⓑ ±3.00" ASPHALT
- ⓒ ±9" ASPHALT CONCRETE BASE
- ⓓ 6" PIPE UNDERDRAIN

TYPICAL SECTIONS

GUE-513-8.65



**ROUNDING**

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

**UTILITIES**

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

GAS ECLIPSE RESOURCES 4900 BOGGS ROAD ZANESVILLE, OHIO 43701 ATTN: EDDIE MOSS PHONE: (740) 452-4503 E-MAIL: EMOSS@ECLIPSERESOURCES.COM	ELECTRIC GUERNSEY MUSKINGUM ELEC. COOP., INC. 17 SOUTH LIBERTY STREET NEW CONCORD, OHIO 43762 ATTN: BOB CAMPBELL PHONE: (740) 826-7661 E-MAIL: BCAMPBELL@GMENERGY.COM
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MARKWEST UTICA EMG SOUTHPOINT CORPORATE OFFICE 4600 J. BARRY COURT, STE 500 CANONSBURG, PA 15317 ATTN: SANDRA HENSLEY PHONE: (724) 416-0160 E-MAIL:	WATER GUERNSEY COUNTY WATER DEPARTMENT 11272 EAST PIKE ROAD CAMBRIDGE, OHIO 43725 ATTN: CLARENCE RIDGLEY PHONE: (740) 439-1269 E-MAIL:
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TELECOMMUNICATION  
WINDSTREAM OHIO  
226 N 5TH MAIN STREET STE 210  
COLUMBUS, OH 43215  
ATTN: GREG KUHNASH  
PHONE: (740) 758-5819  
E-MAIL:  
GREG.KUHNASH@WINDSTREAM.COM

THERE ARE NO KNOWN UNDERGROUND UTILITIES ON THIS PROJECT.

**EXISTING PLANS**

ANY EXISTING PLANS MAY BE INSPECTED IN THE ODOT DISTRICT 05 OFFICE IN JACKSONTOWN

**SURVEYING PARAMETERS**

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

**VERTICAL POSITIONING**

ORTHOMETRIC HEIGHT DATUM: NAVD88  
GEOID: G12A(OHIO)

**HORIZONTAL POSITIONING**

REFERENCE FRAME: NAD83 (2011)  
ELLIPSOID: GRS 80  
MAP PROJECTION: LAMBERT CONIC CONFORMAL  
COORDINATE SYSTEM: OHIO SOUTH 3402  
COMBINED SCALE FACTOR: 1.00000000 (COORDINATES PROVIDED ARE GRID)

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

**GENERAL PROVISIONS**

THE CONTRACTOR'S ATTENTION IS CALLED TO ALL OF SECTION 100 OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS OF THE OHIO DEPARTMENT OF TRANSPORTATION.

**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.

**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.

**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 605 - AGGREGATE DRAINS**

AGGREGATE DRAINS SHALL BE PLACED AT 50 FOOT INTERVALS ON EACH SIDE OF NORMAL CROWNED SECTIONS, STAGGERED SO THAT EACH DRAIN IS 25 FEET FROM THE ADJACENT DRAIN ON THE OPPOSITE SIDE, AND AT 25 FOOT INTERVALS ON THE LOW SIDE ONLY OF SUPERELEVATED SECTIONS. AN AGGREGATE DRAIN SHALL BE PLACED AT THE LOW POINT OF EACH SAG VERTICAL CURVE.

**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.

**CONTINGENCY QUANTITIES**

THE CONTRACTOR SHALL NOT ORDER MATERIALS OR PERFORM WORK FOR ITEMS DESIGNATED BY PLAN A NOTE TO BE USED "AS DIRECTED BY THE ENGINEER" UNLESS AUTHORIZED BY THE ENGINEER. THE ACTUAL WORK LOCATIONS AND QUANTITIES USED FOR SUCH ITEMS SHALL BE INCORPORATED INTO THE FINAL CHANGE ORDER GOVERNING COMPLETION OF THIS PROJECT.

**GUARDRAIL REBUILT, AS PER PLAN**

THE CONTRACTOR SHALL REMOVE THE EXISTING GUARDRAIL AND BRIDGE TERMINAL ASSEMBLY ON THE NORTHWEST CORNER OF THE BRIDGE AND REBUILD IT AT A MODIFIED OFFSET TO ALLOW PLACEMENT OF PAVEMENT FOR MAINTAINING TRAFFIC, TO THE SATISFACTION OF THE ENGINEER.

PAYMENT SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED TO COMPLETE THE ABOVE-MENTIONED WORK.

**MOBILIZATION**

THE CONTRACTOR SHALL ON ANY CONTRACT FOR WHICH HIS BID EXCEEDS \$50,000.00 INCLUDE AND AMOUNT TO COVER ANY APPLICABLE EXPENDITURES REFERRED TO UNDER ITEM 624 OF THE 2016 CONSTRUCTION AND MATERIAL SPECIFICATIONS. PAYMENT SHALL BE THE LUMP SUM BID PRICE FOR ITEM 624, MOBILIZATION.

**CONSTRUCTION NOTIFICATION**

THE CONTRACTOR WILL ADVISE THE PROJECT ENGINEER A MINIMUM OF TWENTY ONE (21) DAYS PRIOR TO THE FOLLOWING: THE START OF CONSTRUCTION ACTIVITIES, LANE RESTRICTIONS, LANE CLOSURES, AND OR ROAD CLOSURES. THE PROJECT ENGINEER WILL FORWARD THIS INFORMATION TO THE FOLLOWING:

DISTRICT PUBLIC INFORMATION OFFICER (PIO) BY FAX AT (614) 887-4510 OR EMAIL AT: [D05.PIO@dot.state.oh.us](mailto:D05.PIO@dot.state.oh.us)

DISTRICT PERMIT SECTION BY FAX AT (614) 887-4525 OR EMAIL AT: [brian.bosch@dot.state.oh.us](mailto:brian.bosch@dot.state.oh.us)

CENTRAL OFFICE SPECIAL HAUL PERMITS SECTION BY FAX AT (614) 728-4099 OR EMAIL AT: [hauling.permits@dot.state.oh.us](mailto:hauling.permits@dot.state.oh.us)

DEBBIE ROBINSON WITH THE VISTORS & CONVENTION BUREAU FOR GUERNSEY COUNTY @ (740) 432-2022

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

**LOCATION OF GUARDRAIL**

THE LOCATIONS OF THE GUARDRAIL RUNS, AS SHOWN IN THESE PLANS ARE SUBJECT TO ADJUSTMENTS PRIOR TO FINAL ACCEPTANCE. THE ENGINEER SHALL BE SATISFIED THAT ALL INSTALLATION WILL AFFORD MAXIMUM PROTECTION FOR TRAFFIC.

**REMOVED MATERIALS**

ALL REMOVED MATERIALS EXCEPT AS NOTED ELSEWHERE IN THE PLANS SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED BY THE CONTRACTOR FROM THE JOB SITE.

**EROSION CONTROL**

ITEM 601 IS PROVIDED IN THE PLANS FOR EROSION CONTROL. ROCK OF A STABLE NATURE SHALL NOT BE REMOVED IN ORDER TO PLACE THIS ITEM. THE ENGINEER SHALL CHECK AND NON-PERFORM QUANTITIES OR ADJUST LOCATIONS AND QUANTITIES FOR THESE ITEMS WHERE INDICATED BY FIELD CONDITIONS DURING CONSTRUCTION.

**ROUNDING**

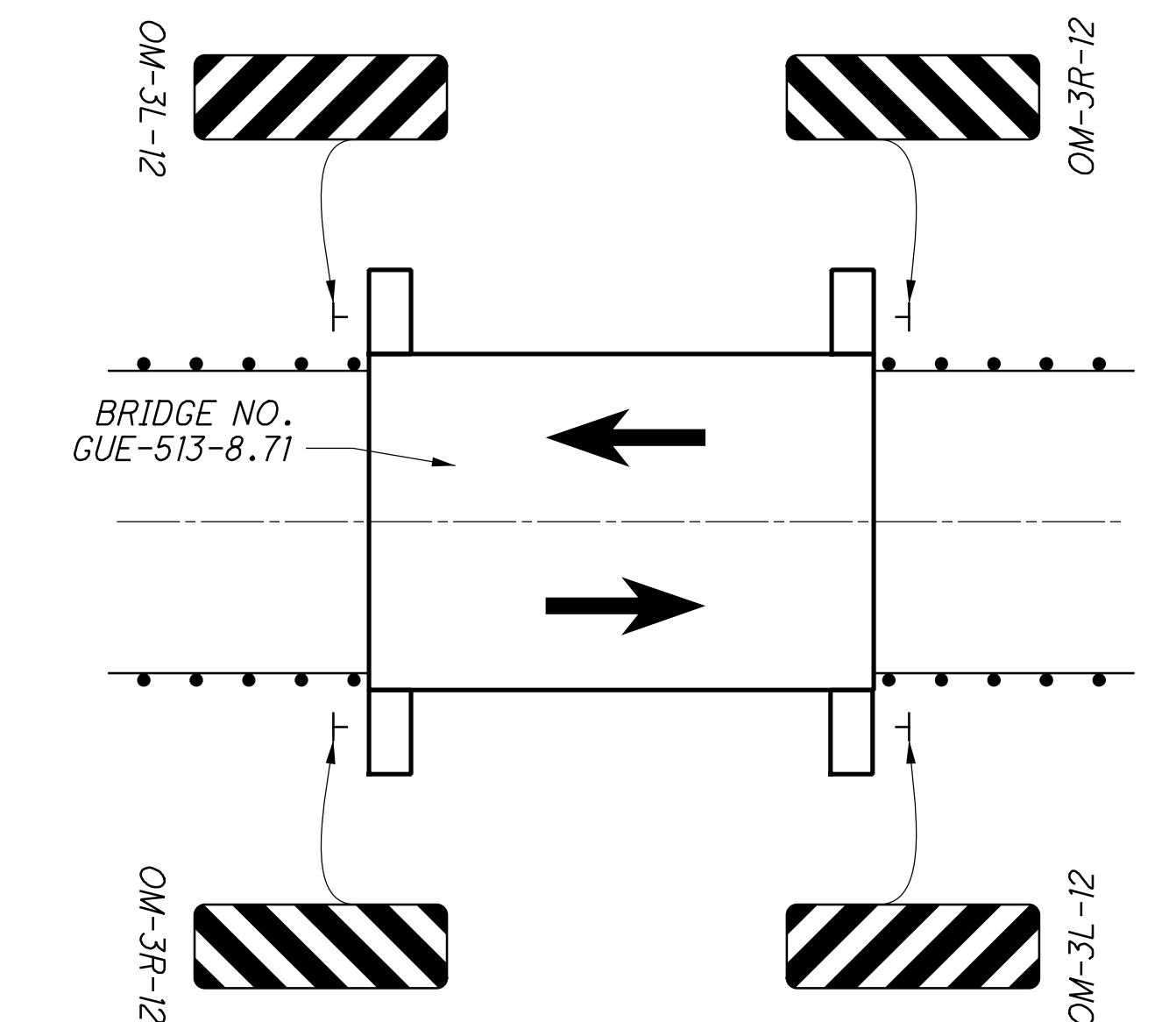
THE ROUNDING AT SLOPE BREAKPOINTS SHOWN ON THE TYPICAL SECTIONS APPLIES TO ALL CROSS-SECTIONS EVEN THOUGH OTHERWISE SHOWN.

**BRIDGE NO. GUE-513-8.71 OBJECT MARKERS**

THE CONTRACTOR SHALL INSTALL OM-3L & OM-3R (36"x12") SIGNS AT ALL FOUR (4) WINGWALLS OF THE BRIDGE. SIGNS SHALL BE INSTALLED 1'-0" BEHIND THE GUARDRAIL POST AND BRIDGE WINGWALL. THE BOTTOM OF THE GROUND MOUNTED SIGN SHALL BE 5'-0" ABOVE PAVEMENT.

THE FOLLOWING ITEMS HAVE BEEN CARRIED TO THE GENERAL SUMMARY TO INSTALL THE SIGNS:

- ITEM 630 - GROUND MOUNTED SUPPORT, NO. 3 POST 46.0 FT
- ITEM 630 - SIGN, FLAT SHEET 12.0 SF



**SEEDING AND MULCHING**

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

- 659, SOIL ANALYSIS TEST 2 EACH
- 659, TOPSOIL 152 CU. YD.
- 659, SEEDING AND MULCHING 1365 SQ. YD.
- 659, REPAIR SEEDING AND MULCHING 68 SQ. YD.
- 659, INTER-SEEDING 68 SQ. YD.
- 659, COMMERCIAL FERTILIZER 0.19 TON
- 659, LIME 0.28 ACRES
- 659, WATER 8 M. GAL.
- 659, MOWING 3 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.

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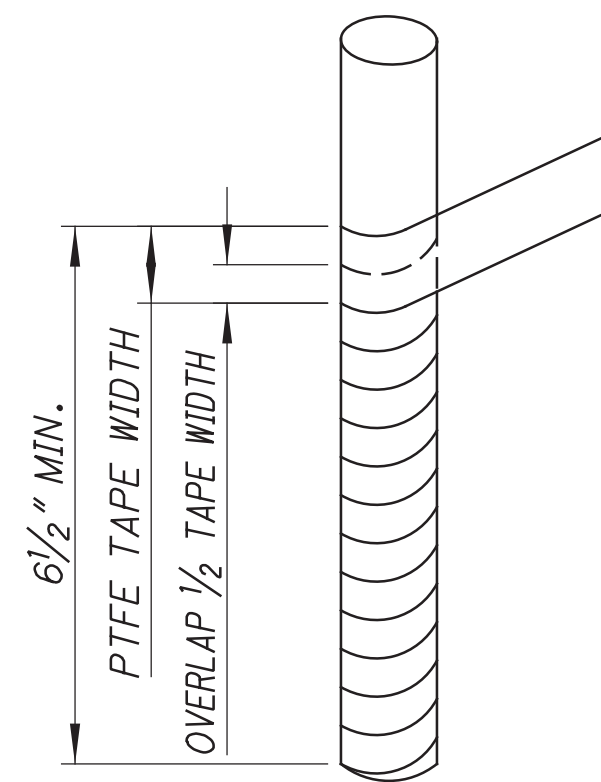
**ITEM 622 - PORTABLE CONCRETE BARRIER, 32", BRIDGE MOUNTED, AS PER PLAN**

THE CONTRACTOR SHALL INSTALL A PORTABLE CONCRETE BARRIER, 32", BRIDGE MOUNTED AS PER STANDARD DRAWING PCB-91. CONNECTIONS OF THE SEGMENTS SHALL BE ACCOMPLISHED BY USING 1/4" DIA. HIGH STRENGTH BOLTS. ANCHORING OF PORTABLE CONCRETE BARRIER ON THE BRIDGE WHEN REQUIRED SHALL BE AS SPECIFIED IN STD. DWG. PCB-91 WITH THE EXCEPTION THAT THE ANCHOR BOLTS THREADS SHALL BE WRAPPED WITH A PTFE TAPE AS PER THE DETAIL SHOWN BELOW TO FACILITATE THE REMOVAL OF THE ANCHOR BOLTS.

ITEM 622 PORTABLE CONCRETE BARRIER, 32", BRIDGE MOUNTED HAS BEEN PROVIDED FOR MAINTAINING TRAFFIC AS SHOWN ON THE MAINTENANCE OF TRAFFIC SHEETS.

FLAGGERS SHALL BE UTILIZED FOR PROTECTION OF VEHICULAR TRAFFIC UNTIL THE MOVEMENT OF THE BARRIERS IS COMPLETE AND TRAFFIC IS MAINTAINED. AFTER THE PROJECT HAS BEEN COMPLETED THE PORTABLE CONCRETE BARRIER SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED BY HIM FROM THE PROJECT SITE.

PAYMENT FOR ALL LABOR, EQUIPMENT AND MATERIALS SHALL BE INCLUDED IN THE CONTRACT PRICE BID FOR ITEM 622 PORTABLE BARRIER, 32", BRIDGE MOUNTED, AS PER PLAN.



PTFE TAPING DETAIL

**ITEM 601 - SLOPE PROTECTION, MISC.: CONCRETE CANVAS**

PLACE THIS ITEM WHERE SHOWN IN THE PLAN:

THE FURNISHED SLOPE PROTECTION MATERIAL AND INSTALLATION TECHNIQUES WILL BE AS PROVIDED BY THE MANUFACTURE'S SPECIFICATIONS. ACCEPTED MANUFACTURES ARE (AS FURTHER DESCRIBED IN THE TABLE BELOW):

SITE SUPPLY, INC.  
713 STIMMEL ROAD  
COLUMBUS, OHIO 43223  
PHONE: (614) 443-4545

MILLIKEN INFRASTRUCTURE  
920 MILLIKEN RD.  
SPARTANBURG, SC 29304  
PHONE: (855) 655-6750

OR AN APPROVED EQUIVALENT

IT IS NOT NECESSARY TO SCALP THE EXISTING OR PROPOSED SLOPES PRIOR TO PLACEMENT OF THIS ITEM. EXISTING CRUSHED AGGREGATE MATERIAL MAY REMAIN UNDER THE CANVAS; HOWEVER, LARGER STONE VOIDS WILL NEED FILLED TO SMOOTH OUT THE PREPARED SURFACE. THE CONTRACTOR WILL PERFORM INCIDENTAL SPOT EXCAVATION AND/OR EMBANKMENT, AS PER C&MS 203, IN ORDER TO PROVIDE AN EVEN PLANE TO INSTALL THIS ITEM. FINAL GRADE PREPARATION WILL BE APPROVED BY THE PROJECT ENGINEER PRIOR TO FINAL INSTALLATION OF THE SLOPE PROTECTION.

PAYMENT: MEASUREMENT OF THE SLOPE PROTECTION, FOR PAYMENT PURPOSES, SHALL BE THE EXPOSED AREA DEFINED BY THE PLAN SURFACE DIMENSIONS OF THE CLOTH/CANVAS. PAYMENT SHALL BE PER SQUARE YARD OF ITEM 601 - SLOPE PROTECTION, MISC.: CONCRETE CANVAS AND SHALL INCLUDE SUPPLIED CANVAS MATERIAL, SCREWS, METAL J-PEGS/ANCHOR RODS, WATER SUPPLIED TO CURE, GROUND SLOPE PREPARATION, AND ALL OTHER LABOR, MATERIALS AND INCIDENTALS REQUIRED TO CONSTRUCT THIS PROPOSED ITEM IN PLACE.

THE FOLLOWING SHALL BE USED:

COMPANY NAME:	DESCRIPTION:	SPECIFICATIONS:
SITE SUPPLY, INC.	CURE-IN-PLACE CONCRETE CLOTH/CANVAS MATERIAL	CC8 = (8 MM OR 0.3 INCHES)
MILLIKEN INFRASTRUCTURE	CURE-IN-PLACE CONCRETE CLOTH/CANVAS MATERIAL	CC8 = (8 MM OR 0.3 INCHES)
APPROVED EQUAL	APPROVED EQUAL	APPROVED EQUAL

**OEPA NOTIFICATION OF DEMOLITION AND RENOVATION**

AN ASBESTOS SURVEY FOR THE GUE-513-8.65 (PID 93289) BRIDGE SCHEDULED FOR DEMOLITION WORK WAS CONDUCTED BY A CERTIFIED ASBESTOS HAZARD EVALUATION SPECIALIST. A COPY OF THE ASBESTOS SURVEY REPORT FOR THE BRIDGES HAS BEEN INCLUDED IN THE PLAN PACKAGE FOR THIS PROJECT. THE ASBESTOS SURVEY REPORT DID NOT IDENTIFY THE PRESENCE OF ANY ASBESTOS CONTAINING MATERIALS.

A COPY OF THE OHIO ENVIRONMENTAL PROTECTION AGENCY (OEPA) NOTIFICATION OF DEMOLITION AND RENOVATION FORM, PARTIALLY COMPLETED BY THE ASBESTOS HAZARD EVALUATION SPECIALIST, HAS BEEN INCLUDED AT THE END OF THE ASBESTOS SURVEY REPORT. THE CONTRACTOR SHALL COMPLETE AND SIGN THE FORMS AND SUBMIT IT TO:

OHIO EPA, SEDO  
2195 FRONT STREET  
LOGAN OHIO 43138  
ATTN: KRISTIN PARRISH  
(740) 380-5267

AT LEAST 10 WORKING DAYS PRIOR TO THE START OF ANY DEMOLITION WORK. THE CONTRACTOR SHALL PROVIDE A COPY OF THE COMPLETED AND SIGNED FORM TO THE ENGINEER. INFORMATION REQUIRED ON THE FORMS SHALL INCLUDE AT A MINIMUM: 1) THE ODOT PROJECT NUMBER, 2) THE CONTRACTORS NAME, ADDRESS AND TELEPHONE NUMBER, 3) THE SCHEDULED DATES FOR THE START AND COMPLETION OF BRIDGE DEMOLITION WORK.

BASIS FOR PAYMENT: THE CONTRACTOR SHALL FURNISH ALL FEES, LABOR, AND MATERIAL NECESSARY TO COMPLETE AND SUBMIT THE OEPA NOTIFICATION FORMS. PAYMENTS FOR THIS WORK SHALL BE INCLUDED IN ITEM 202 PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN.

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**GENERAL NOTES**

**GUE - 513 - 8.65**



**ITEM 614, MAINTAINING TRAFFIC**

TRAFFIC ON SR-513 SHALL BE MAINTAINED AS TWO-WAY, ONE-LANE TRAFFIC AS SHOWN ON THE PLAN SHEETS. TRAFFIC SHALL BE MAINTAINED BY USE OF THE TEMPORARY SIGNALS, THE EXISTING PAVEMENT, THE COMPLETED PAVEMENT, AND ITEM 615 PAVEMENT FOR MAINTAINING TRAFFIC.

ALLOWING LANE CLOSURES ON IR-70

A MINIMUM OF 1 LANE OF TRAFFIC IN EACH DIRECTION SHALL BE MAINTAINED AT ALL TIMES BY USE OF THE EXISTING PAVEMENT ON IR-70.

NO WORK SHALL BE PERFORMED AND ALL EXISTING LANES SHALL BE OPEN TO TRAFFIC DURING THE FOLLOWING DESIGNATED HOLIDAYS OR EVENTS ON IR-70:

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

SHOULD THE CONTRACTOR FAIL TO MEET ANY OF THESE REQUIREMENTS, THE CONTRACTOR SHALL BE ASSESSED A DISINCENTIVE IN THE AMOUNT OF \$50 FOR EACH MINUTE THE ABOVE DESCRIBED LANE CLOSURE RESTRICTIONS ARE VIOLATED.

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

THE CONTRACTOR SHALL PROVIDE, ERECT AND MAINTAIN SIGNS AND SIGN SUPPORTS, AS DETAILED IN THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, AND TYPE III BARRICADES OF THE TYPE AND LOCATION AS SHOWN IN PLANS.

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

**REQUIRED TRAFFIC RESTRICTIONS**

DECK/BEAM REMOVAL AND DECK/BEAM REPLACEMENT- SHORT DURATION CLOSURES OF I-70 SHALL BE IN CONFORMANCE TO SCD MT-99.60 EXCEPT THAT THE CLOSURE DURATION SHALL NOT EXCEED 15 MINUTES AND CLOSURES WILL NOT BE PERMITTED DURING THE HOURS OF 7 AM AND 8 PM. NO OTHER LANE CLOSURES ON I-70 INCLUSIVE OF RAMPS, WILL BE PERMITTED DURING THIS OPERATION.

FOR CONSTRUCTION ACTIVITIES REQUIRING LANE CLOSURES ON I-70 THE CONTRACTOR SHALL BE RESTRICTED BY THE LANE VALUE CONTRACT TABLE ON THIS SHEET. ALL LANE CLOSURES SHALL CONFORM TO STD. DWG. MT-95.30. NOTE: ALL PROVISIONS SET FORTH IN STD. DWG. MT-95.30 SHALL BE FOLLOWED EXCEPT FOR PAVEMENT MARKING REMOVALS AND TEMPORARY PAVEMENT MARKINGS SHALL BE OMITTED AND SIGNS SHALL BE COVERED WHEN ALL LANES ARE OPEN TO TRAFFIC.

BRIDGE PAINTING- PAINTING OF THE BRIDGE STRUCTURE SHALL CONFROM TO THE LANE VALUE CONTRACT TABLE. THE CONTRACTOR HAS THE OPTION TO PARK THE NECESSARY PAINTING EQUIPMENT 6 FT BEHIND THE EXISTING GUARDRAIL OR USE PORTABLE BARRIER. REFLECTORS AND OBJECT MARKERS HAVE BEEN CARRIED TO THE GENERAL SUMMARY FOR THIS PURPOSE AND SHALL BE USED AT THE OPTION OF THE PROJECT ENGINEER. THE CONTRACTOR MAY PLACE ROCK, CONCRETE OR ASPHALT (FOR LEVELING AND GROUND STABILITY). AFTER THE PAINTING AND INSPECTION WORK HAS BEEN COMPLETED, THE CONTRACTOR SHALL REMOVE THE ROCK, CONCRETE OR ASPHALT AND RESTORE THE GROUND TO ITS ORIGINAL CONDITION AT NO ADDITIONAL COST TO THE STATE.

PRIOR TO THE ARRIVAL OF THE BRIDGE PAINTERS, THE PRIME CONTRACTOR SHALL COMPLETE ALL CLEARING AND GRUBBING FROM ABUTMENT TO ABUTMENT INCLUDING REMOVAL OF ALL TREES. PAYMENT FOR THE CLEARING AND GRUBBING IS INCLUDED IN ITEM 201 CLEARING AND GRUBBING.

PRIOR TO THE ARRIVAL OF THE BRIDGE PAINTERS THE PRIME CONTRACTOR SHALL REMOVE ALL SIGNS AND SUPPORTS ON THE ROADWAY AND MOUNTED ON THE BRIDGE THAT MAY BE IN THE WAY OF THE PAINTERS AND THEIR EQUIPMENT. THE CONTRACTOR SHALL STORE THESE SIGNS AND SUPPORTS AND REERECT THEM AS PER 630.12 OF C.M.S AT THE ORIGINAL LOCATION WHEN THE PAINTING HAS BEEN COMPLETED. PAYMENT FOR SIGN REMOVAL AND REERECTION SHALL BE INCIDENTAL TO THE CONTRACT WORK AS PER C.M.S. 107.10.

PAYMENT FOR ALL LABOR, EQUIPMENT, SIGNS, MATERIALS, AND TOOLS SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE FOR ITEM 614, MAINTAINING TRAFFIC, UNLESS SEPARATELY ITEMIZED IN THE PLANS.

**TRENCH FOR WIDENING**

TRENCH EXCAVATION FOR BASE WIDENING SHALL BE ONLY ON ONE SIDE OF THE PAVEMENT AT A TIME. THE OPEN TRENCH SHALL BE ADEQUATELY MAINTAINED AND PROTECTED WITH DRUMS OR BARRICADES AT ALL TIMES. PLACEMENT OF PROPOSED SUBBASE AND BASE MATERIAL SHALL FOLLOW AS CLOSELY AS POSSIBLE BEHIND EXCAVATION OPERATIONS. THE LENGTH OF WIDENING TRENCH WHICH IS OPEN AT ANY ONE TIME SHALL BE HELD TO A MINIMUM AND SHALL AT ALL TIMES BE SUBJECT TO APPROVAL OF THE ENGINEER.

**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 5 M. GAL

**ITEM 614, REPLACEMENT DRUM**

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

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

AN ESTIMATED QUANTITY OF 50 EACH HAS BEEN PROVIDED IN THE GENERAL SUMMARY.

**LANE VALUE CONTRACT**

AS PER P.N. 127, THE CONTRACTOR SHALL BE ASSESSED DISINCENTIVES AS DESIGNATED IN THE LANE VALUE CONTRACT TABLE FOR EACH UNIT OF TIME THE DESCRIBED CRITICAL LANE/RAMP IS RESTRICTED FROM FULL USE BY THE TRAVELING PUBLIC WITHIN THE RESTRICTED TIME PERIOD. THE DISINCENTIVES WILL BE ASSESSED FOR ALL RESTRICTIONS OF THE CRITICAL WORK.

CRITICAL WORK IS SHOWN IN THE LANE VALUE CONTRACT TABLE.

CRITICAL WORK IS DEFINED AS HAVING THE DESIGNATED SECTIONS OPEN TO UNRESTRICTED TRAFFIC AS SHOWN IN THE TABLE, OR THE ENTIRE PROJECT IF NOT OTHERWISE LISTED.

UNRESTRICTED TRAFFIC IS DEFINED AS ALL TRAFFIC LANES BEING AVAILABLE FOR USE WITH SPECIFIED STRIPING AND SAFETY FEATURES IN PLACE.

<b>DESCRIPTION OF CRITICAL LANE/RAMP TO BE MAINTAINED</b>	ALL LANES/ RAMPS OPEN TO TRAFFIC ON IR-70
<b>RESTRICTED TIME PERIOD</b>	SEE PERMITTED LANE CLOSURE SCHEDULE
<b>TIME UNIT</b>	15 MINUTE PERIOD
<b>DISINCENTIVE \$ PER TIME UNIT</b>	\$2,500

**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 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 APPROVED PRODUCTS.

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.

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**MAINTENANCE OF TRAFFIC GENERAL NOTES**

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**FULLY-ACTUATED OPERATION OF WORK ZONE TRAFFIC SIGNAL**

THE WORK ZONE SIGNAL CONTROL REQUIRED FOR THIS PROJECT AND SHOWN ON PLAN SHEETS AND TRAFFIC SCDS MT-96.11, 96.20 AND 96.26 SHALL BE FULLY TRAFFIC-ACTUATED AND OPERATE IN A MANNER SIMILAR TO THAT DESCRIBED IN SECTION 733.02 OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS.

THE INITIAL CONTROLLER TIMING SHALL BE AS SHOWN IN PLANS.

THE CONTRACTOR SHALL ALSO DESIGN, FURNISH, INSTALL AND MAINTAIN A TRAFFIC DETECTOR ON EACH TRAFFIC APPROACH WHICH WILL RELIABLY DETECT ALL LEGAL TRAFFIC APPROACHING (BUT NOT LEAVING) THE SIGNAL AS IT PASSES OR WAITS IN THE DESIGNATED DETECTOR ZONE SHOWN IN THE PLANS. DETECTOR DESIGNS WHICH DO NOT PROVIDE RELIABLE DETECTION, FREE FROM FALSE CALLS, SHALL BE IMMEDIATELY REPLACED BY THE CONTRACTOR.

**OVERHEAD-MOUNTED WORK ZONE SIGNALS**

SIGNALS SHALL BE OVERHEAD MOUNTED IN ACCORDANCE WITH THE DETAILS SHOWN ON TRAFFIC SCD MT-96.20.

**SIGNAL EQUIPMENT**

ALL TRAFFIC SIGNAL EQUIPMENT USED IN THIS INSTALLATION, SUCH AS SIGNAL CABLE, SIGNAL HEADS, OR SIGNAL CONTROLLER SHALL BE IN CONFORMANCE WITH SPECIFICATIONS CMS 632, 633, 732 AND 733.

THE PERFORMANCE TEST OF CMS 632.28G, THE WORKING DRAWING REQUIREMENTS OF 632.04 AND 633.04, THE WIRING DIAGRAM AND SERVICE MANUAL REQUIREMENT OF 633.05 AND THE TESTING AND PREQUALIFICATION REQUIREMENT OF 633.06 ARE WAIVED.

USED EQUIPMENT IS ACCEPTABLE.

CONFLICT MONITORS OR MALFUNCTION MANAGEMENT UNITS (MMUS) TYPICAL OF TRADITIONAL TRAFFIC CONTROL SIGNAL OPERATION SHALL BE USED.

BOTH OF THE SIGNAL FACES FOR THE THROUGH MOVEMENT SHALL BE LOCATED PER OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (OMUTCD) FIGURE 4D-4.

FOR CONVENTIONAL SIGNAL MOUNTING, SEE STANDARD CONSTRUCTION DRAWING (SCD) MT-96.20.

THE MINIMUM NUMBER OF OVERHEAD SIGNAL HEADS SHALL BE PER OMUTCD TABLE 4D-1.

**SIGNAL OPERATION**

SIGNALS SHALL BE INSTALLED AND OPERATED IN ACCORDANCE WITH THE REQUIREMENTS OF PART 4 OF THE OMUTCD, EXCEPT AS EXCEEDED OTHERWISE IN THE SPECIFICATIONS.

SIGNAL TIMING SETTINGS SHALL BE AS SHOWN IN THE PLANS OR PROVIDED TO THE CONTRACTOR BY THE ENGINEER PRIOR TO IMPLEMENTATION OF THE SIGNAL CONTROL.

IF THE SIGNAL FAILS OR IS CHANGED TO FLASHING OPERATION, RED SHALL BE FLASHED TO ALL APPROACHES ON ALL SIGNAL HEADS.

**SIGNING**

SIGN SPACING SHOULD BE ADJUSTED TO AVOID CONFLICT WITH EXISTING SIGNS. MINIMUM SPACING TO EXISTING SIGNS SHALL BE 200' FOR SPEEDS OF 45 MPH OR LESS AND A MINIMUM OF 400' FOR SPEEDS OF 50 MPH OR GREATER.

THE LOCATION OF THE ADVANCE WARNING SIGNS SHOULD BE ADJUSTED TO PROVIDE FOR ADEQUATE SIGHT DISTANCE FOR THE EXISTING VERTICAL AND HORIZONTAL ROADWAY ALIGNMENT.

OVERLAPPING OF SIGNING FOR ADJACENT PROJECTS SHOULD BE AVOIDED WHERE THE MESSAGES COULD BE CONFUSING. ANY ROAD WORK AHEAD (W20-1) SIGN OR END ROAD WORK (G20-2) SIGN WHICH FALLS WITHIN THE LIMITS OF ANOTHER WORK ZONE SHALL BE OMITTED OR COVERED DURING THE PERIOD WHEN BOTH PROJECTS ARE ACTIVE.

PROVIDE A NO TURN ON RED (R10-11B-24) SIGN ON EACH APPROACH. MOUNTING SHALL BE AS FOLLOWS:

A) IF THE SIGNAL HEADS ARE SIDE-MOUNTED, THE SIGN SHOULD BE PLACED BELOW THE RIGHT-MOST SIGNAL HEAD.

B) IF THE SIGNAL HEADS ARE OVERHEAD MOUNTED, THE SIGN SHOULD BE PLACED TO THE RIGHT OF THE RIGHT-MOST SIGNAL HEAD.

END ROAD WORK (G20-2) SIGNS ARE ONLY REQUIRED FOR LANE CLOSURES OF MORE THAN ONE DAY.

ALL EXISTING SIGNS (STOP, STOP AHEAD, ETC.) WHICH CONFLICT WITH THE WORK ZONE TRAFFIC SIGNALS OR OTHER TRAFFIC CONTROL SHALL BE COVERED OR REMOVED.

**TREE AND BRUSH TRIMMING**

TREE OR BRUSH TRIMMING TO PROVIDE ADEQUATE SIGHT DISTANCE TO SIGN AND SIGNALS SHALL BE PROVIDED AS DETERMINED BY THE ENGINEER. PAYMENT FOR THIS WORK SHALL BE INCLUDED IN THE LUMP SUM BID FOR CMS 614 - MAINTAINING TRAFFIC.

**ITEM 614, PORTABLE CHANGEABLE MESSAGE SIGNS, AS PER PLAN**

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

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

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

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

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

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

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

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

ITEM 614, PORTABLE CHANGEABLE MESSAGE SIGN, AS PER PLAN 14 SIGN MONTHS

**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.

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

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MAINTENANCE OF TRAFFIC GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

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

ITEM 614, LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE 120 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.

**SEQUENCE OF CONSTRUCTION**

PHASE 1 CONSISTS OF INSTALLATION OF TEMPORARY TRAFFIC CONTROL DEVICES AND TEMPORARY PAVEMENT (PAVEMENT FOR MAINTAINING TRAFFIC) TO BE USED DURING SUBSEQUENT PHASES OF CONSTRUCTION, FOLLOWED BY THE CONSTRUCTION OF THE RIGHT SIDE OF THE STRUCTURE AND ROADWAY ON SR-513.

PHASE 1(A)

INSTALL NECESSARY TRAFFIC CONTROL DEVICES AND CONSTRUCT TEMPORARY PAVEMENT ON THE RIGHT SIDE OF RAMP "C" FROM STA. 23+19 TO STA. 23+63 USING NON-PEAK CLOSURES AND IN ACCORDANCE WITH THE GUIDELINES AS SHOWN IN TYPICAL APPLICATION 43 (TA-43) OF THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (OMUTCD). QUEUING RAMP TRAFFIC SHALL NOT BE PERMITTED TO EXTEND DOWN PAST THE GORE AREA AT THE RAMP ENTRANCE.

INSTALL NECESSARY TRAFFIC CONTROL DEVICES AND CONSTRUCT TEMPORARY PAVEMENT ON THE LEFT SIDE OF SR-513 FROM RAMP "C" TO STA. 45+48 IN ACCORDANCE WITH MT-97.11, THE PROVISIONS OF WHICH, SHALL ENCOMPASS THE WORK ON THE LEFT SIDE OF THE RAMP WHEREAS THE TRAFFIC CONTROL DEVICES PREVIOUSLY INSTALLED UNDER TA-43 SHALL BE SHIFTED TO THE LEFT SIDE OF THE RAMP.

CLOSURES SHALL BE DURING NON-PEAK HOURS AND QUEUING RAMP TRAFFIC SHALL NOT BE PERMITTED TO EXTEND DOWN PAST THE GORE AREA AT THE RAMP ENTRANCE.

REOPEN RAMP "C" AND SR-513 TO NORMAL TRAFFIC OPERATIONS.

PHASE 1(B)

INSTALL NECESSARY TRAFFIC CONTROL DEVICES AND CONSTRUCT TEMPORARY PAVEMENT ON THE LEFT SIDE OF SR-513 FROM FROM STA. 48+47 TO RAMP "A" IN ACCORDANCE WITH MT-97.11, THE PROVISIONS OF WHICH, SHALL ENCOMPASS THE WORK ON THE LEFT SIDE OF THE RAMP WHICH SHALL ALSO CONFORM TO THE PROVISIONS OF TA-43, AS APPLICABLE.

THE CONTRACTOR SHALL REMOVE AND REERECT THE GUARDRAIL AND BRIDGE TERMINAL ASSEMBLY, AS SHOWN IN THE PLANS PRIOR TO INSTALLING THE TEMPORARY PAVEMENT.

CLOSURES SHALL BE DURING NON-PEAK HOURS.

REOPEN RAMP "A" AND SR-513 TO NORMAL TRAFFIC OPERATIONS.

INSTALL NECESSARY TRAFFIC CONTROL DEVICES AND CONSTRUCT TEMPORARY PAVEMENT ON THE RIGHT SIDE OF RAMP "B" FROM STA. 15+75 TO SR-513 USING NON-PEAK CLOSURES AND IN ACCORDANCE WITH THE GUIDELINES SHOWN IN TA-43 OF THE OMUTCD. QUEUING RAMP TRAFFIC SHALL NOT BE PERMITTED TO EXTEND DOWN PAST THE GORE AREA AT THE RAMP ENTRANCE

INSTALL NECESSARY TRAFFIC CONTROL DEVICES AS SHOWN IN THE PLANS AND SHIFT TRAFFIC TO THE RIGHT ON RAMP "B" IN PREPARATION FOR PHASE 1(C). RELOCATION OF SIGNS WILL BE NECESSARY NEAR RAMP B. REMOVE AND RELOCATE WITH TEMPORARY SUPPORTS DURING MOT PHASES.

THE CLOSURES ON SR-513 DURING PHASE 1(A) AND 1(B) MAY NOT BE PERFORMED CONCURRENTLY. THE CONTRACTOR SHALL ERECT THE NECESSARY TRAFFIC CONTROL DEVICES INCLUDING THE ADVANCE WARNING SIGNS ON IR-70 BEFORE ANY OF THE RAMP WORK IS STARTED.

PHASE 1(C)

INSTALL THE NECESSARY TRAFFIC CONTROL DEVICES, INCLUDING TEMPORARY SIGNALS, IN ACCORDANCE WITH MT-95.45 AND AS SHOWN IN THE PLANS AND CLOSE THE SHOULDERS ON IR-70 TO PROTECT THE WORKERS AND EQUIPMENT UNDER THE BRIDGE AS WELL AS PROVIDE PROTECTION FOR THE POLES CARRYING THE CONDUIT TO POWER THE TEMPORARY TRAFFIC SIGNALS. THIS PROTECTION SHALL BE IN PLACE PRIOR TO ANY WORK BEING STARTED ON THE BRIDGE.

INSTALL NECESSARY TRAFFIC CONTROL DEVICES ALONG IR-70 PER MT-95.30, MT-95.45, MT-99.60, AND MT-101.75, PRIOR TO CONSTRUCTION ACTIVITIES THAT REQUIRE LANE CLOSURES ON IR-70. THIS WORK SHALL FOLLOW THE REQUIREMENTS OUTLINED IN THE "REQUIRED TRAFFIC RESTRICTIONS" NOTE TO BE USED FOR ROLLING CLOSURES.

THE CONTRACTOR SHALL ENSURE THAT TRAFFIC CONTROL DEVICES PREVIOUSLY INSTALLED FOR RAMP WORK DO NOT INTERFERE OR CONFLICT WITH THOSE NEEDED FOR THE WORK ON THE BRIDGE.

PHASE 1(D)

INSTALL THE NECESSARY TRAFFIC CONTROL DEVICES PER MT-96.11 AND AS SHOWN IN THE PLANS PRIOR TO THE CLOSURE OF THE RIGHT SIDE OF SR-513. CLOSE THE RIGHT SIDE OF SR-513 AND ACTIVATE THE TEMPORARY TRAFFIC SIGNALS, SHIFTING TWO-WAY ALTERNATING TRAFFIC ONTO THE LEFT SIDE OF SR-513.

CONSTRUCT THE RIGHT SIDE OF THE STRUCTURE AND THE ASSOCIATED FULL DEPTH PAVEMENT EXCEPT FOR THE ASPHALT SURFACE COURSE.

PHASE 2 CONSISTS OF THE CONSTRUCTION OF THE LEFT SIDE OF THE STRUCTURE AND ROADWAY.

PHASE 2

MODIFY NECESSARY TRAFFIC CONTROL DEVICES PREVIOUSLY INSTALLED UNDER MT-96.11 TO ACCOMMODATE THE CHANGES SHOWN IN THE PLANS, INCLUDING REMOVAL OF CONFLICTING TEMPORARY PAVEMENT MARKINGS FROM PHASE 1, PRIOR TO SHIFTING TRAFFIC ONTO THE NEWLY CONSTRUCTED RIGHT SIDE OF SR-513.

RELOCATE TEMPORARY SIGNAL HEADS AND INITIATE ONE-LANE, TWO-WAY BIDIRECTIONAL TRAFFIC ON SR-513.

MODIFY TRAFFIC CONTROL DEVICES AS NEEDED ALONG IR-70 PRIOR TO CONSTRUCTION ACTIVITIES THAT REQUIRE LANE CLOSURES ON IR-70. THIS WORK SHALL FOLLOW THE REQUIREMENTS OUTLINED IN THE "REQUIRED TRAFFIC RESTRICTIONS" NOTE TO BE USED FOR ROLLING CLOSURES.

CONSTRUCT THE LEFT SIDE OF THE STRUCTURE AND THE ASSOCIATED FULL DEPTH PAVEMENT, AS WELL AS THE FULL DEPTH ASPHALT SHOULDER IMPROVEMENTS ON THE LEFT SIDE OF RAMP "C", EXCEPT FOR THE ASPHALT SURFACE COURSE. THE PROVISIONS OF TA-43 REMAIN APPLICABLE TO THE RAMP WORK DURING CONSTRUCTION.

REMOVE THE TEMPORARY SIGNALS AND REOPEN SR-513 AND THE RAMPS TO NORMAL TRAFFIC OPERATIONS INCLUDING ANY SIGNING THAT WAS RELOCATED FOR MOT PURPOSES.

PHASE 3 CONSISTS OF THE PAVEMENT PLANING AND RESURFACING OPERATION ON BOTH SIDES OF SR-513 AND THE RAMPS, AND BRIDGE PAINTING.

PHASE 3(A)

MODIFY TRAFFIC CONTROL DEVICES AS NEEDED ALONG IR-70 AS REQUIRED FOR BRIDGE PAINTING. THIS WORK SHALL FOLLOW THE REQUIREMENTS OUTLINED IN THE "REQUIRED TRAFFIC RESTRICTIONS" NOTE.

UNDER THE PROVISIONS OF TA-43, REMOVE ANY TEMPORARY PAVEMENT NOT BEING RETAINED ON RAMP "B", AS DIRECTED BY THE ENGINEER.

CONDUCT THE PLANING AND RESURFACING OPERATION ON SR-513, THE RAMPS, AND SIDE STREET APPROACHES, UNDER FLAGGING OPERATIONS IN ACCORDANCE WITH MT-97.11. THE RAMP AREAS ASSOCIATED WITH THE RESPECTIVE SIDE OF SR-513 MAY BE ENCOMPASSED UNDER MT-97.11, AS APPLICABLE FOR TRAFFIC CONTROL, BUT SUCH RAMP WORK SHALL STILL CONFORM TO THE PROVISIONS OF TA-43, AS APPLICABLE. ALL RAMPS AND ROADWAYS SHALL REMAIN ACCESSIBLE FOR THE DURATION.

PHASE 3(B)

INSTALL FINAL PAVEMENT MARKINGS, PERMANENT SIGNING AND ALL REMAINING ROADWAY ITEMS ON SR-513 AND THE RAMPS. REMOVE TEMPORARY SIGNING AND REOPEN THE FACILITY TO NORMAL TRAFFIC OPERATIONS.

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MAINTENANCE OF TRAFFIC GENERAL NOTES

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**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 GUERNSEY-MUSKINGUM ELECTRIC COOPERATIVE, INC.  
 ADDRESS: 17 LIBERTY ROAD, NEW CONCORD, OH 437625  
 PHONE: 740-826-7664

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 INCLUDED IN THE UNIT PRICE BID FOR ITEM 614, SPECIAL - WORKZONE TRAFFIC SIGNAL, WHICH SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.

**ITEM 632 COVERING OF VEHICULAR SIGNAL HEAD**

COVER VEHICULAR SIGNAL HEADS IF ERECTED AT INTERSECTIONS WHERE TRAFFIC IS MAINTAINED BEFORE ENERGIZING THE SIGNALS. USE A STURDY OPAQUE COVERING MATERIAL SPECIFICALLY MADE FOR USE WITH TRAFFIC SIGNALS, AND ENSURE THAT THE COLOR OF THE COVER IS DIFFERENT THAN THE SIGNAL HEAD, TAN OR BEIGE, SO THAT IT IS CLEAR TO DRIVERS THE HEADS ARE COVERED, NOT DARK. USE A METHOD OF COVERING TO COVER ATTACHMENT AND MATERIALS, INCLUDING BACKPLATES, AS APPROVED BY THE ENGINEER. COVERS ARE TO BE FREE OF TEXT, PICTURES, OR ANY TYPE OF ADVERTISING. MAINTAIN COVERS, AND REMOVE THEM WHEN DIRECTED BY THE ENGINEER.

**GROUNDING AND BONDING**

THE REQUIREMENTS OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS (C&MS) 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 GROUND 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.
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 GROUND 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

1. 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 GROUND AT THE PRIMARY SWITCH. EQUIPMENT GROUNDING CONDUCTORS SHALL BE BROUGHT TO THE PRIMARY SWITCH, BUT SHALL BE GROUND AT BOTH SECONDARY AND PRIMARY SWITCHES.
2. PAYMENT ALL MATERIALS AND WORK REQUIRED TO COMPLETE THE EFFECTIVE GROUND FAULT CURRENT PATH SYSTEM ARE INCIDENTAL TO THE CONDUCTORS INSTALLED BY CONTRACT.

**ITEM 809 ADVANCE RADAR DETECTION**

THIS ITEM OF WORK SHALL CONSIST OF FURNISHING AND INSTALLING A WAVETRONIX SMARTSENSOR ADVANCE DETECTION UNIT (MODEL SS-200E). THE DETECTION UNIT SHALL INCLUDE THE FOLLOWING:

1. POWER SHALL BE PROVIDED FROM THE TRAFFIC CABINET.
2. ALL REQUIRED INPUTS CARDS SHALL BE INCLUDED IN THE TRAFFIC CABINET AND SHALL BE COMPATIBLE WITH CALTRANS, NEMA TS1 AND NEMA TS2 DETECTOR RACKS. THE CARDS SHALL PROVIDE TRUE PRESENCE DETECTOR CALLS OR CONTACT CLOSURE TO THE TRAFFIC CONTROLLER.
3. THE UNIT SHALL BE MOUNTED DIRECTLY TO A POLE OR MAST ARM, AS RECOMMENDED BY THE MANUFACTURER. CABLE(S) SHALL BE PROVIDED AS REQUIRED AND RECOMMENDED BY THE MANUFACTURER.
4. SURGE PROTECTION DEVICES, AS RECOMMENDED BY THE MANUFACTURER SHALL BE INCLUDED BOTH AT THE POLE WHERE THE UNIT IS LOCATED TO PROTECT THE UNIT AND IN THE TRAFFIC CABINET TO PROTECT THE CABINET ELECTRONICS.
5. THE MANUFACTURER'S REPRESENTATIVE SHALL BE ON SITE DURING INSTALLATION AND TESTING AND SHALL PROVIDE ONSITE TRAINING ON THE SETUP, OPERATION AND MAINTENANCE OF THE UNIT.
6. A SERIAL TO ETHERNET COMMUNICATIONS MODULE AND ETHERNET CABLE (MINIMUM 7 FEET)
7. THE POWER SUPPLY AND COMMUNICATION MODULES SHALL BE SECURED TO A SINGLE PANEL THAT CAN BE MOUNTED INTERIOR TO THE TRAFFIC CABINET. THE PANEL SHALL INCLUDE MODULAR-PLUG STYLE CONNECTIONS FOR UP TO FOUR (4) SENSOR CABLES. ADDITIONAL SENSORS MAY BE HARD-WIRED TO THE COMMUNICATION MODULES, AS NECESSARY.

PAYMENT FOR ITEM 809 ADVANCE RADAR DETECTION SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 614, SPECIAL - WORKZONE TRAFFIC SIGNAL AND WILL INCLUDE EACH UNIT, COMPLETE AND IN PLACE INCLUDING ALL REQUIRED CABINET HARDWARE, MOUNTING BRACKETS, CABLES, CONDUIT, CONNECTIONS TESTED AND ACCEPTED, AND ANY OTHER NECESSARY HARDWARE TO ESTABLISH A FULLY FUNCTIONAL DETECTION SYSTEM.

**ITEM 614 - SPECIAL - WORKZONE TRAFFIC SIGNAL**

IN ADDITION TO 614.10, THE TEMPORARY TRAFFIC SIGNAL SHALL INCLUDE THE CONTRACTOR FURNISHING, ERECTING, MAINTAINING AND SUBSEQUENTLY REMOVING ADVANCE RADAR DETECTION CONFORMING TO ITEM 809.

ADDITIONAL NOTES AND DETAILS ARE PROVIDED IN THE PLANS FOR OPERATIONAL GUIDANCE UNDER THE AEGIS OF THE PERTINENT 625, 632, 732, 733 AND 809 ITEM, RESPECTIVELY.

PAYMENT WILL BE MADE AT THE UNIT PRICE BID FOR ITEM 614, SPECIAL - WORKZONE TRAFFIC SIGNAL, WHICH SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.

THE FOLLOWING QUANTITY HAS BEEN FORWARDED TO THE GENERAL SUMMARY FOR PAYMENT FOR THE WORK INDICATED HEREIN:

ITEM 614- SPECIAL - WORKZONE TRAFFIC SIGNAL 1 EACH

**ITEM 622, PORTABLE BARRIER, 50", AS PER PLAN**

THIS WORK SHALL CONSIST OF FURNISHING, MAINTAINING, AND SUBSEQUENTLY REMOVING A 50-INCH PORTABLE BARRIER AT THE LOCATIONS SHOWN ON THE PLANS. FOR DETAILS, SEE SCD RM-4.1.

PORTABLE STEEL BARRIER IS AN APPROVED ALTERNATIVE TO PORTABLE CONCRETE BARRIER. FOR INFORMATION ON APPROVED VENDORS, SEE THE APPROVED PRODUCTS LIST MAINTAINED BY THE OFFICE OF ROADWAY ENGINEERING.

PORTABLE BARRIER, 32 INCHES HIGH WITH AN 18-INCH MINIMUM HEIGHT GLARE SCREEN MAY BE USED AT THE OPTION OF THE CONTRACTOR. THE GLARE SCREEN SHALL BE CONSTRUCTED USING ONE OF THE SCREENS PROVIDED ON THE APPROVED LIST, AVAILABLE ON THE OFFICE OF ROADWAY ENIGNEERING WEBSITE.

PADDLE OR INTERMITTENT TYPE GLARE SCREENS SHALL BE DESIGNED USING A 20 DEGREE CUT-OFF ANGLE BASED ON TANGENT ALIGNMENT. THAT SPACING SHALL BE USED THROUGHOUT THE BARRIER LENGTH WITHOUT REGARD TO BARRIER CURVATURE.

THE GLARE SCREEN SYSTEM SHALL BE SECURELY FASTENED TO THE 32-INCH PORTABLE BARRIER USING THE HARDWARE AND PROCEDURES SPECIFIED BY THE MANUFACTURER.

FOR DIRECTIONS ON HOW TO INSTALL THE GLARE SCREEN AND THE BARRIER, SEE THE MANUFACTURER'S INSTRUCTIONS.

PAYMENT SHALL INCLUDE ALL LABOR, MATERIAL, AND EQUIPMENT NECESSARY TO PERFORM THE WORK AND SHALL BE PAID FOR AT THE CONTRACT PRICE PER FOOT FOR ITEM 622, PORTABLE BARRIER, 50", AS PER PLAN.

**ITEM 615, PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A, AS PER PLAN**

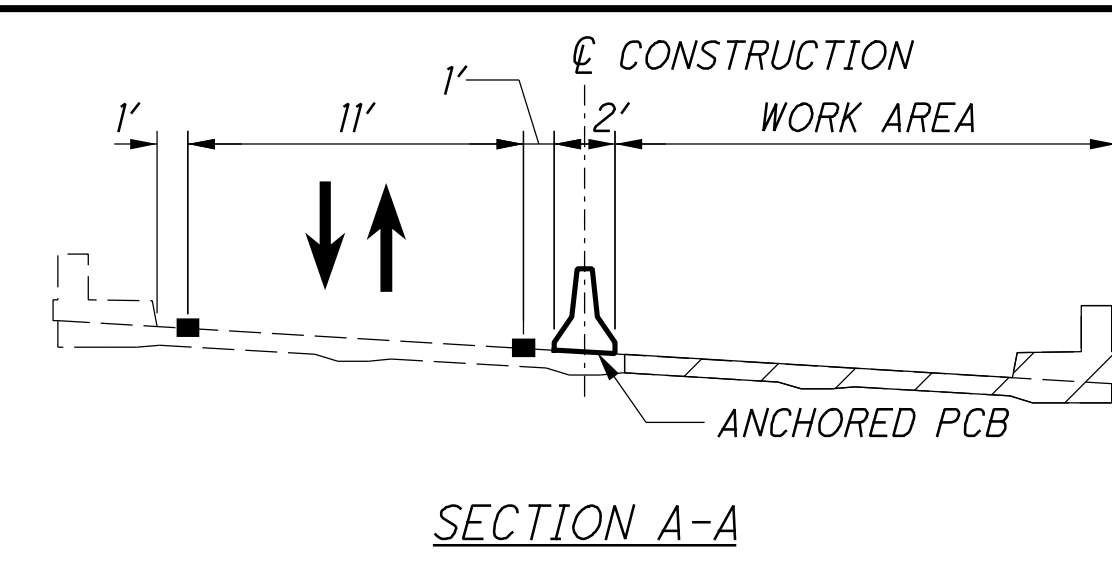
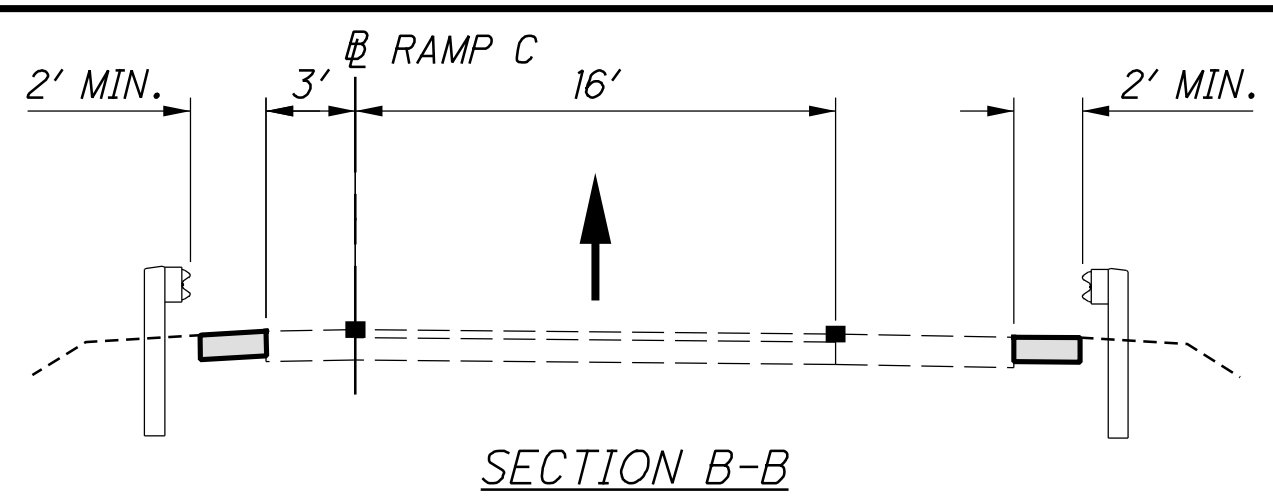
INSTALL TEMPORARY PAVEMENT WHERE REQUIRED TO MAINTAIN TRAFFIC IN ACCORDANCE WITH ITEM 615 PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A. PAYMENT SHALL INCLUDE ALL LABOR, EQUIPMENT AND MATERIALS REQUIRED TO COMPLETE THE WORK, INCLUDING EXCAVATION, SUBGRADE PREPARATION, PAVEMENT REPLACEMENT, MAINTENANCE, REMOVAL, AND SUBSEQUENT PLACEMENT OF EMBANKMENT AND APPURTENANCES USED TO RESTORE THE AREA TO ITS ORIGINAL CONDITION.

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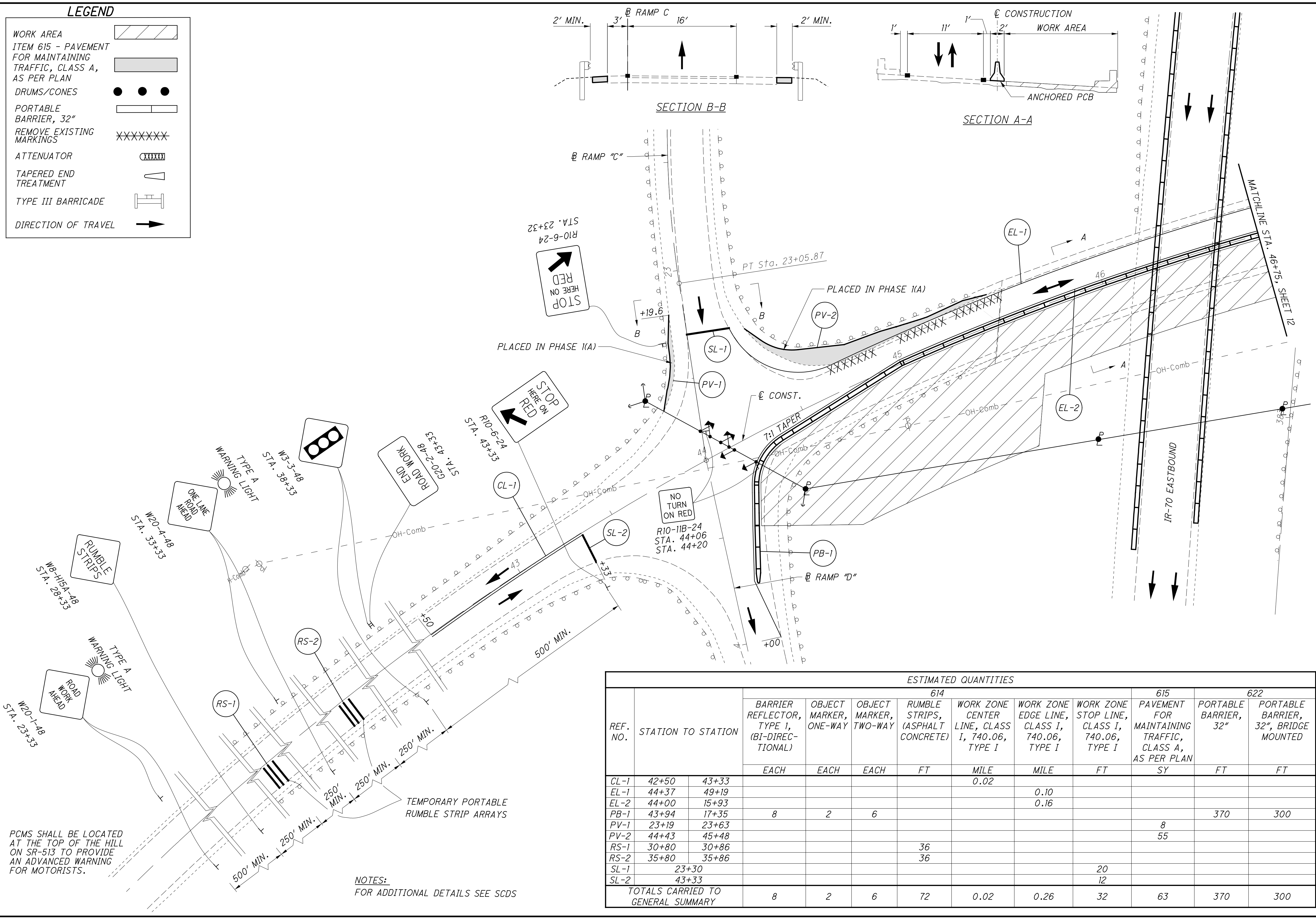


**LEGEND**

WORK AREA	
ITEM 615 - PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A, AS PER PLAN	
DRUMS/CONES	
PORTABLE BARRIER, 32"	
REMOVE EXISTING MARKINGS	
ATTENUATOR	
TAPERED END TREATMENT	
TYPE III BARRICADE	
DIRECTION OF TRAVEL	



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CALCULATED MS CHECKED GPD  
**PHASE 1(D) MOT  
STA. 23+33 TO STA. 46+75**

PCMS SHALL BE LOCATED AT THE TOP OF THE HILL ON SR-513 TO PROVIDE AN ADVANCED WARNING FOR MOTORISTS.

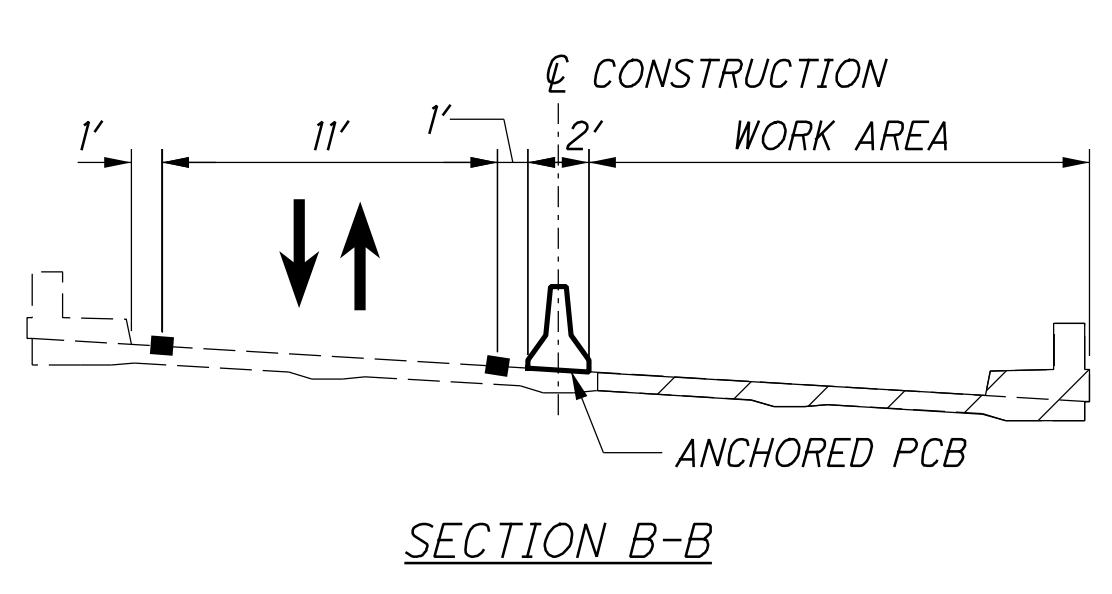
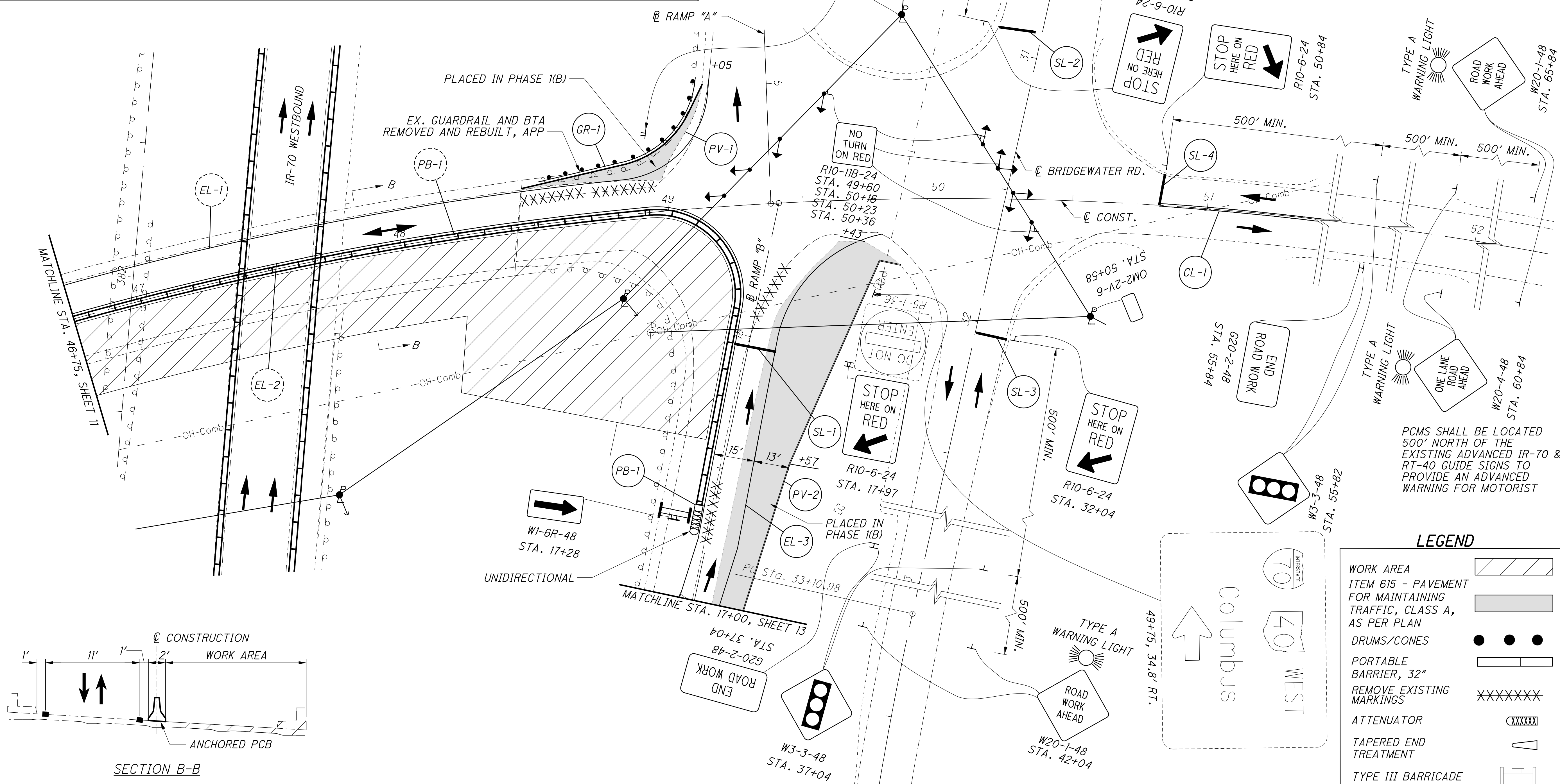
NOTES:  
FOR ADDITIONAL DETAILS SEE SCDS

REF. NO.	STATION TO STATION	ESTIMATED QUANTITIES									
		614				615	622				
		BARRIER REFLECTOR, TYPE 1, (BI-DIRECTIONAL)	OBJECT MARKER, ONE-WAY	OBJECT MARKER, TWO-WAY	RUMBLE STRIPS, (ASPHALT CONCRETE)	WORK ZONE CENTER LINE, CLASS I, 740.06, TYPE I	WORK ZONE EDGE LINE, CLASS I, 740.06, TYPE I	WORK ZONE STOP LINE, CLASS I, 740.06, TYPE I	PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A, AS PER PLAN	PORTABLE BARRIER, 32"	PORTABLE BARRIER, 32", BRIDGE MOUNTED
	EACH	EACH	EACH	FT	MILE	MILE	FT	SY	FT	FT	
CL-1	42+50 43+33					0.02					
EL-1	44+37 49+19						0.10				
EL-2	44+00 15+93						0.16				
PB-1	43+94 17+35	8	2	6					370	300	
PV-1	23+19 23+63							8			
PV-2	44+43 45+48							55			
RS-1	30+80 30+86				36						
RS-2	35+80 35+86				36						
SL-1	23+30								20		
SL-2	43+33								12		
<b>TOTALS CARRIED TO GENERAL SUMMARY</b>		<b>8</b>	<b>2</b>	<b>6</b>	<b>72</b>	<b>0.02</b>	<b>0.26</b>	<b>32</b>	<b>63</b>	<b>370</b>	<b>300</b>

**GUE-513-8.65**  
11/100

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ESTIMATED QUANTITIES										
REF. NO.	STATION TO STATION		614				615			
			WORK ZONE IMPACT ATTENUATOR (UNIDIRECTIONAL)	BARRIER REFLECTOR, TYPE 2 (BI-DIRECTIONAL)	OBJECT MARKER, ONE-WAY	OBJECT MARKER, TWO-WAY	WORK ZONE CENTER LINE, CLASS I, 740.06, TYPE I	WORK ZONE EDGE LINE, CLASS I, 740.06, TYPE I	WORK ZONE STOP LINE, CLASS I, 740.06, TYPE I	PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A, AS PER PLAN
			EACH	EACH	EACH	EACH	MILE	FT	SY	
CL-1	50+83	51+63					0.02			
EL-3	15+93	18+47						0.05		
GR-1	48+53	49+14		2	1	1				
PB-1	17+35		1							
PV-1	48+47	49+16							36	
PV-2	15+76	18+43							391	
SL-1	17+96								15	
SL-2	30+92								13	
SL-3	32+04								11	
SL-4	50+83								11	
TOTALS CARRIED TO GENERAL SUMMARY			1	2	1	1	0.02	0.05	50	427



**LEGEND**

WORK AREA	
ITEM 615 - PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A, AS PER PLAN	
DRUMS/CONES	
PORTABLE BARRIER, 32"	
REMOVE EXISTING MARKINGS	
ATTENUATOR	
TAPERED END TREATMENT	
TYPE III BARRICADE	
DIRECTION OF TRAVEL	

NOTES:  
FOR ADDITIONAL DETAILS SEE SCDS

CALCULATED MS CHECKED GPD

PHASE 1(D) MOT  
STA. 46+75 TO STA. 53+00

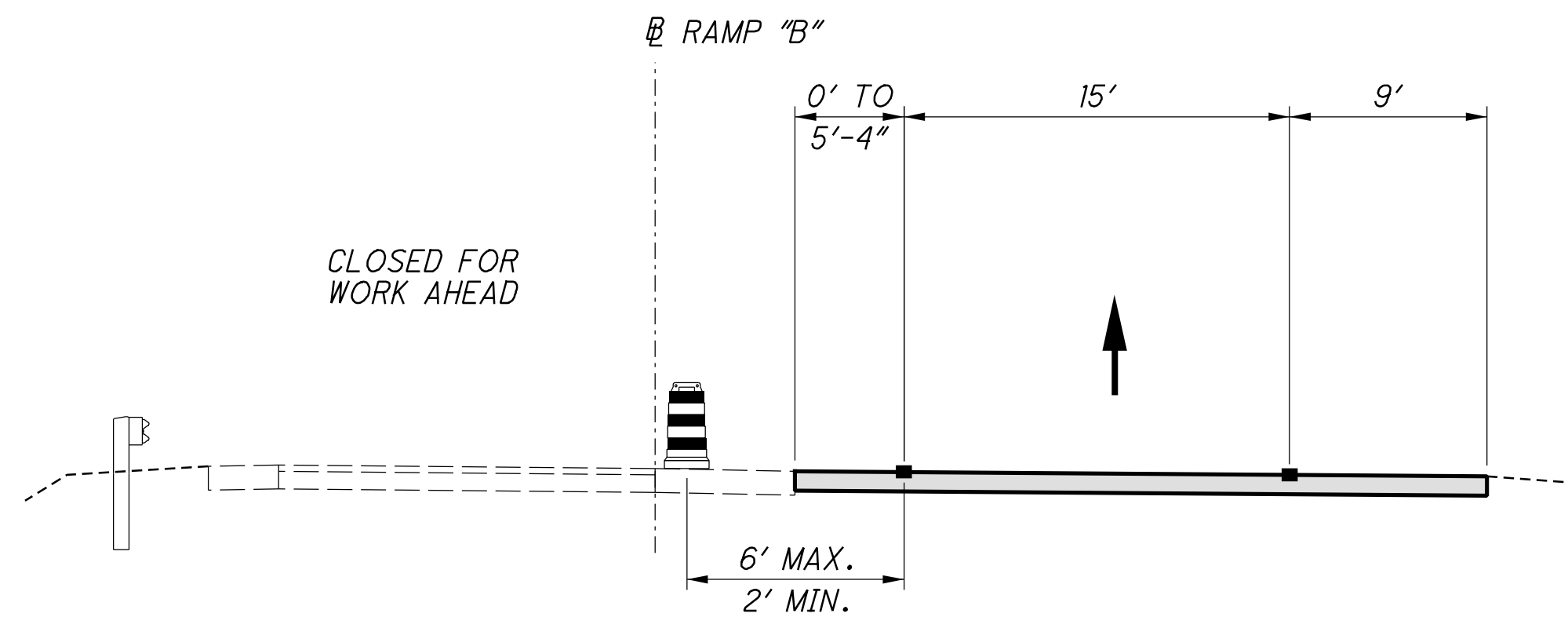
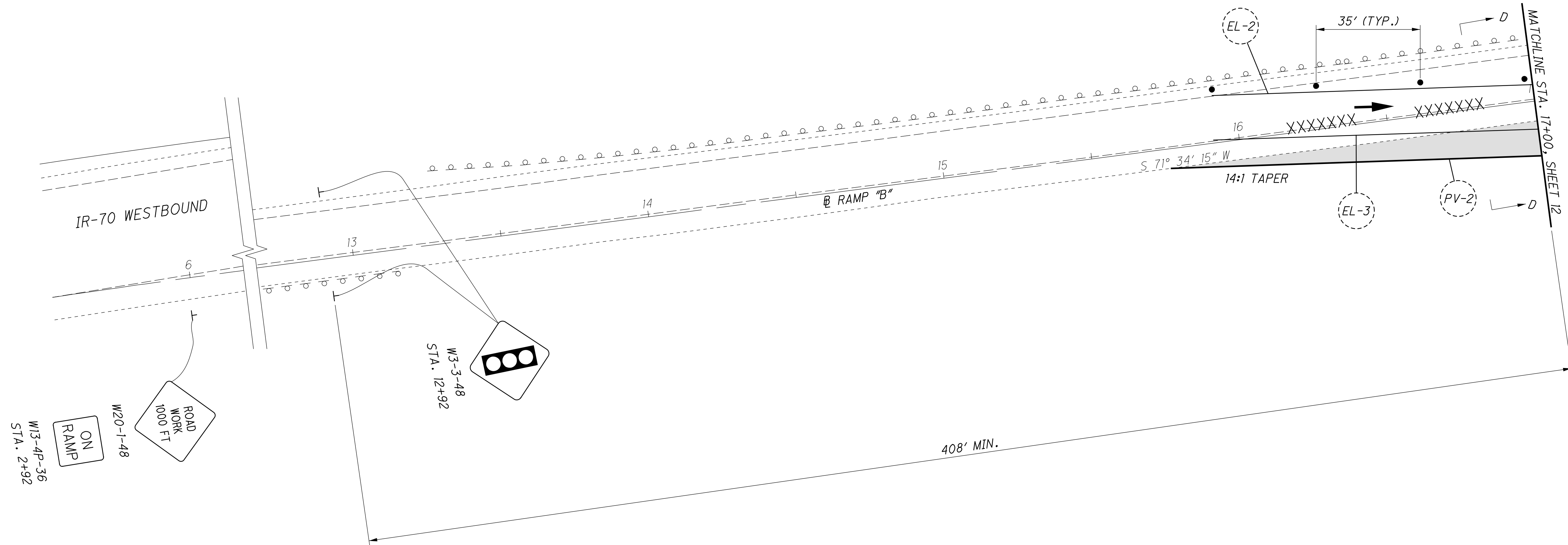
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12/100

HORIZONTAL SCALE IN FEET



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SECTION D-D

W13-4P-36  
STA. 2+92  
ON RAMP

W20-1-48

ROAD WORK  
1000 FT

W3-3-48  
STA. 12+92

LEGEND

ITEM 615 - PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A	
DRUMS/CONES	
PORTABLE BARRIER, 32"	
REMOVE EXISTING MARKINGS	
ATTENUATOR	
TYPE III BARRICADE	
DIRECTION OF TRAVEL	

CALCULATED MS  
CHECKED GPD

0 20 40  
HORIZONTAL SCALE IN FEET

PHASE 1(D) MOT RAMP "B"

GUE-513-8.65



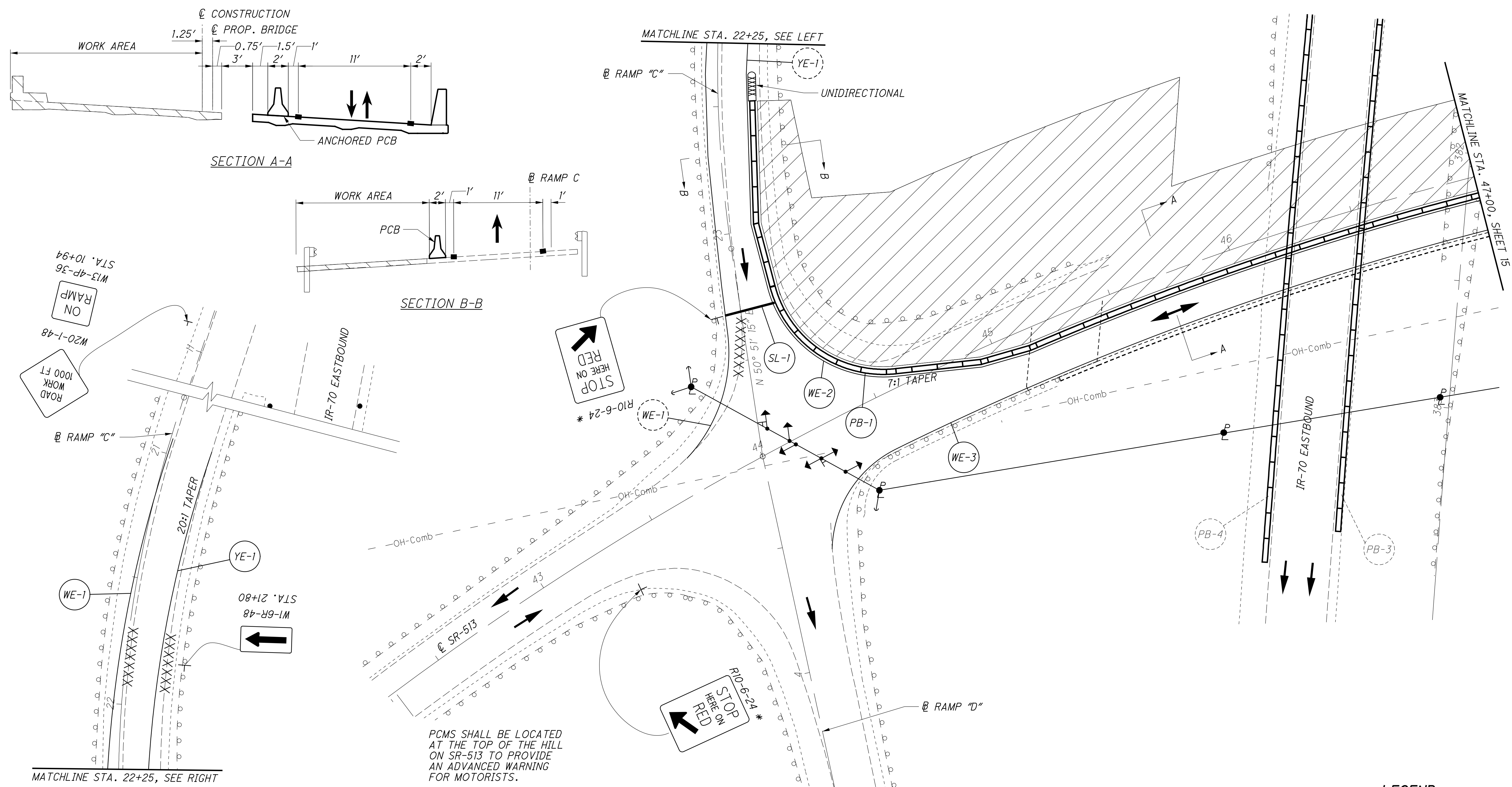
0 20 40  
HORIZONTAL SCALE IN FEET

CALCULATED CAG CHECKED GPD

PHASE 2  
STA. 42+00 STA. 47+00

GUE-513-8.65

14  
100



MATCHLINE STA. 22+25, SEE RIGHT

MATCHLINE STA. 22+25, SEE LEFT

MATCHLINE STA. 47+00, SHEET 15

PCMS SHALL BE LOCATED AT THE TOP OF THE HILL ON SR-513 TO PROVIDE AN ADVANCED WARNING FOR MOTORISTS.

NOTES:  
\* SIGNS PLACED IN PHASE 1  
REMOVE CONFLICTING TEMPORARY PAVEMENT MARKINGS FROM PHASE 1.  
TEMPORARY MOT SIGNING TO REMAIN THE SAME AS PHASE 1 UNLESS OTHERWISE SHOWN.

ESTIMATED QUANTITIES

REF. NO.	STATION TO STATION		614				622		
			BARRIER REFLECTOR, TYPE I (BI-DIRECTIONAL)	OBJECT MARKER, ONE-WAY	OBJECT MARKER, TWO-WAY	WORK ZONE EDGE LINE, CLASS I, 740.06, TYPE I	WORK ZONE STOP LINE, CLASS I, 740.06, TYPE I	PORTABLE BARRIER, 32"	PORTABLE BARRIER, 32", BRIDGE MOUNTED, AS PER PLAN
			EACH	EACH	EACH	MILE	FT	FT	FT
PB-1	22+36	49+24	8	2	6			360	300
SL-1	23+29	23+31					20		
WE-1	43+74	20+94				0.06			
WE-2	23+30	49+24				0.10			
WE-3	44+07	17+81				0.10			
YE-1	20+94	23+30				0.04			
TOTALS CARRIED TO GENERAL SUMMARY			8	2	6	0.30	20	360	300

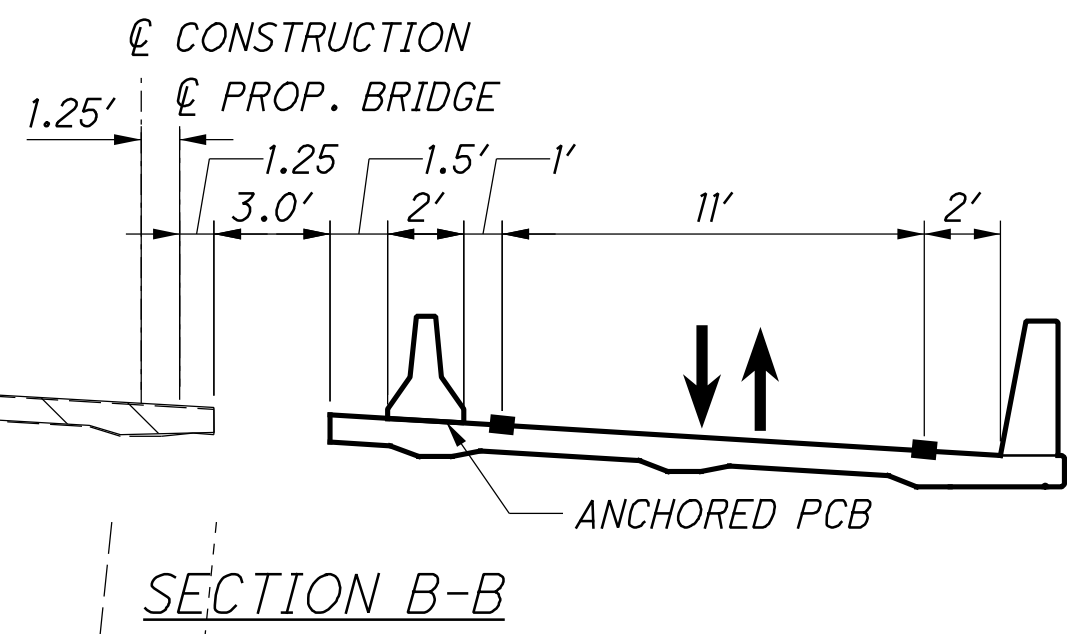
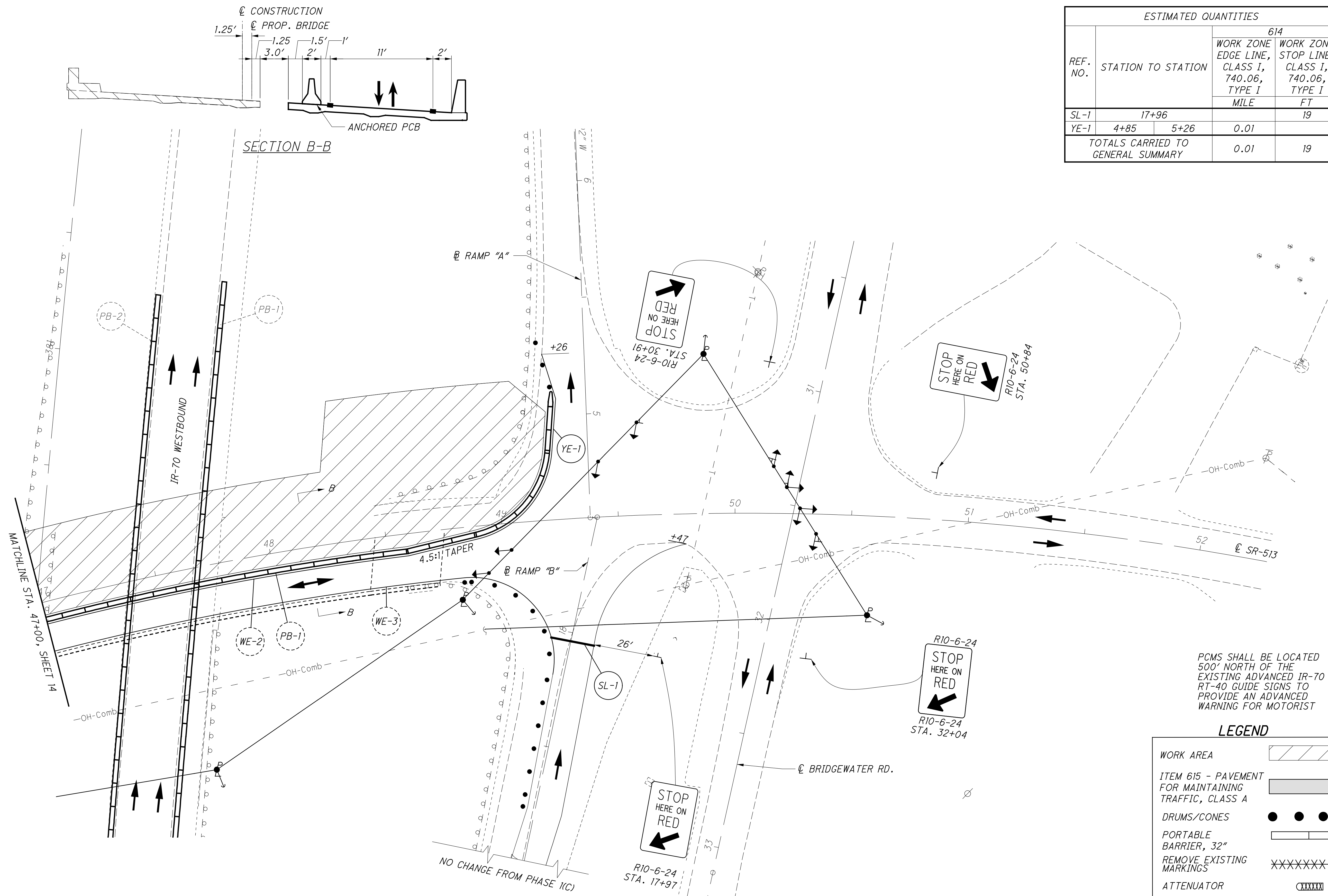
LEGEND

- WORK AREA
- ITEM 615 - PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A
- DRUMS/CONES
- PORTABLE BARRIER, 32"
- REMOVE EXISTING MARKINGS
- ATTENUATOR
- TAPERED END TREATMENT
- TYPE III BARRICADE
- DIRECTION OF TRAVEL

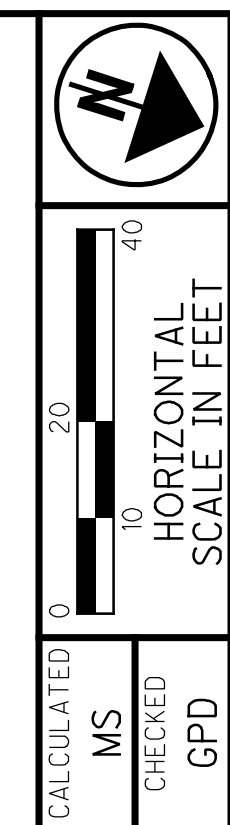
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ESTIMATED QUANTITIES			
REF. NO.	STATION TO STATION	614	
		WORK ZONE EDGE LINE, CLASS I, TYPE I MILE	WORK ZONE STOP LINE, CLASS I, TYPE I FT
SL-1	17+96		19
YE-1	4+85 5+26	0.01	
TOTALS CARRIED TO GENERAL SUMMARY		0.01	19



**PHASE 2**  
**STA. 47+00 TO STA. 52+50**

**GUE-513-8.65**

15/100

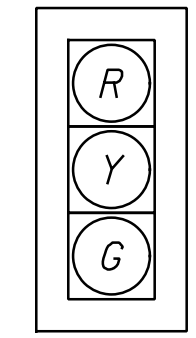
PCMS SHALL BE LOCATED 500' NORTH OF THE EXISTING ADVANCED IR-70 & RT-40 GUIDE SIGNS TO PROVIDE AN ADVANCED WARNING FOR MOTORIST

LEGEND	
WORK AREA	
ITEM 615 - PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A	
DRUMS/CONES	
PORTABLE BARRIER, 32"	
REMOVE EXISTING MARKINGS	
ATTENUATOR	
TAPERED END TREATMENT	
TYPE III BARRICADE	
DIRECTION OF TRAVEL	

**NOTES:**  
 TEMPORARY MOT SIGNING TO REMAIN THE SAME AS PHASE 1, UNLESS OTHERWISE SHOWN.

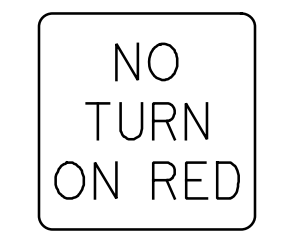
NOTES: TEMPORARY SIGNAL SHALL FOLLOW TC-85.22 FOR VERTICAL CLEARANCE REQUIREMENTS.

SIGNAL HEADS



2A, 2B, 4A, 4B, 5A, 5B  
ALL VEHICULAR SIGNAL HEADS SHALL BE 12" LED WITH BACKPLATES WITH CUTAWAY VISORS AND COLORED YELLOW AND SHALL BE TETHERED

SIGNS



R10-11B-36

(A)

0 20 40  
 HORIZONTAL SCALE IN FEET  
 CALCULATED JML  
 CHECKED GPD

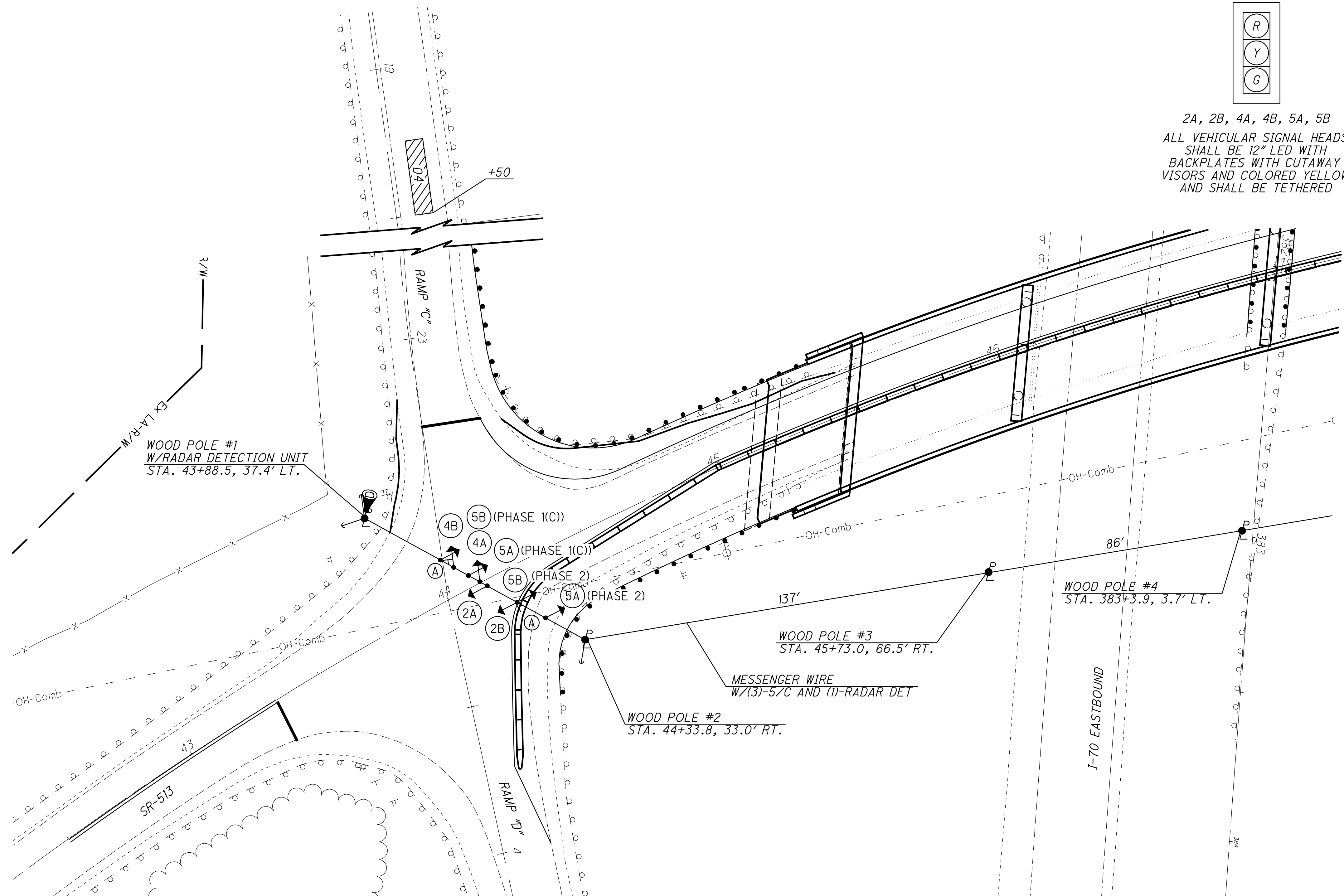
MOT TRAFFIC SIGNAL PLAN  
SR-513 AT I-70 EASTBOUND RAMP

GUE-513-8.65

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**LEGEND**

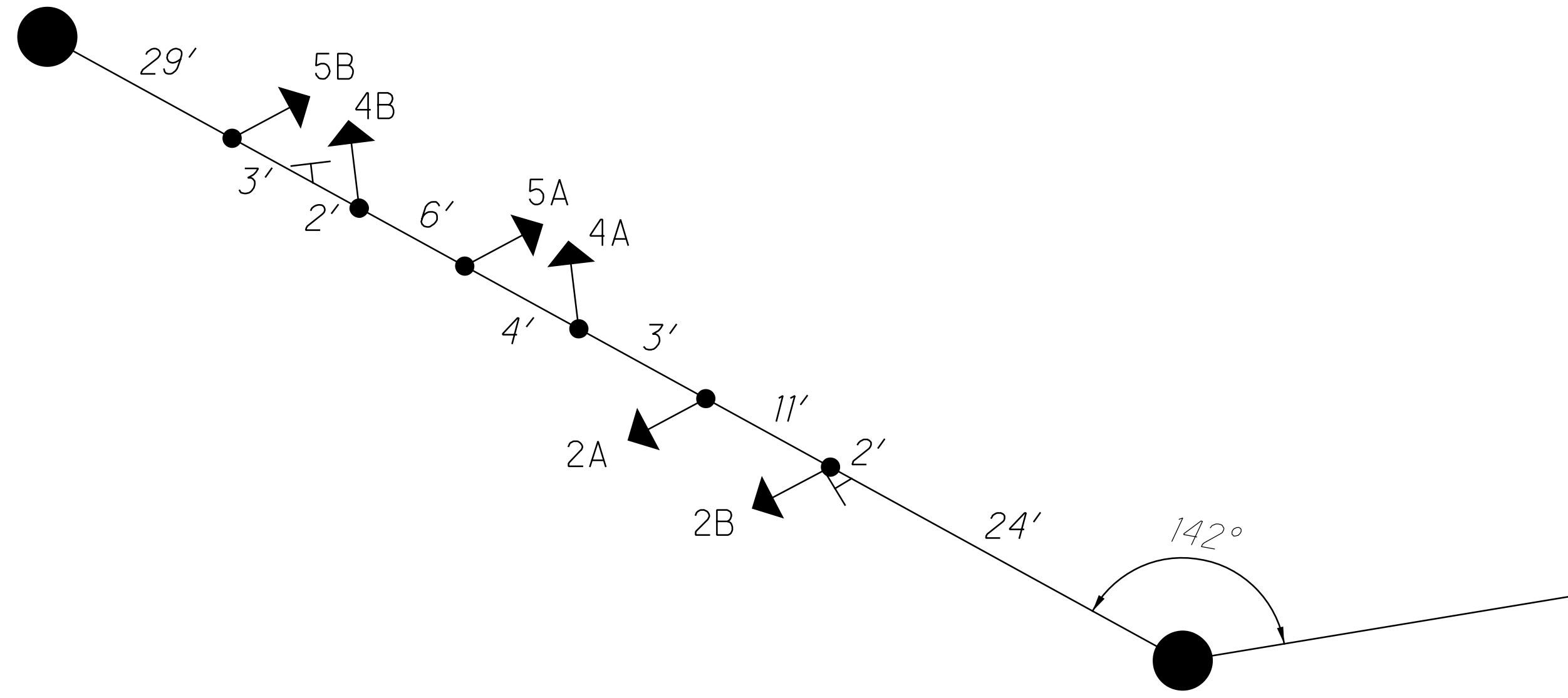
- TRAFFIC SIGNAL, 3 UNIT HEAD, 12"
- TRAFFIC SIGNAL, 5 UNIT HEAD, 12"
- WOOD POLE
- CONTROLLER CABINET AND WORK PAD (TS-2)
- TRAFFIC PULL BOX
- RADAR DETECTION UNIT
- DETECTION ZONE



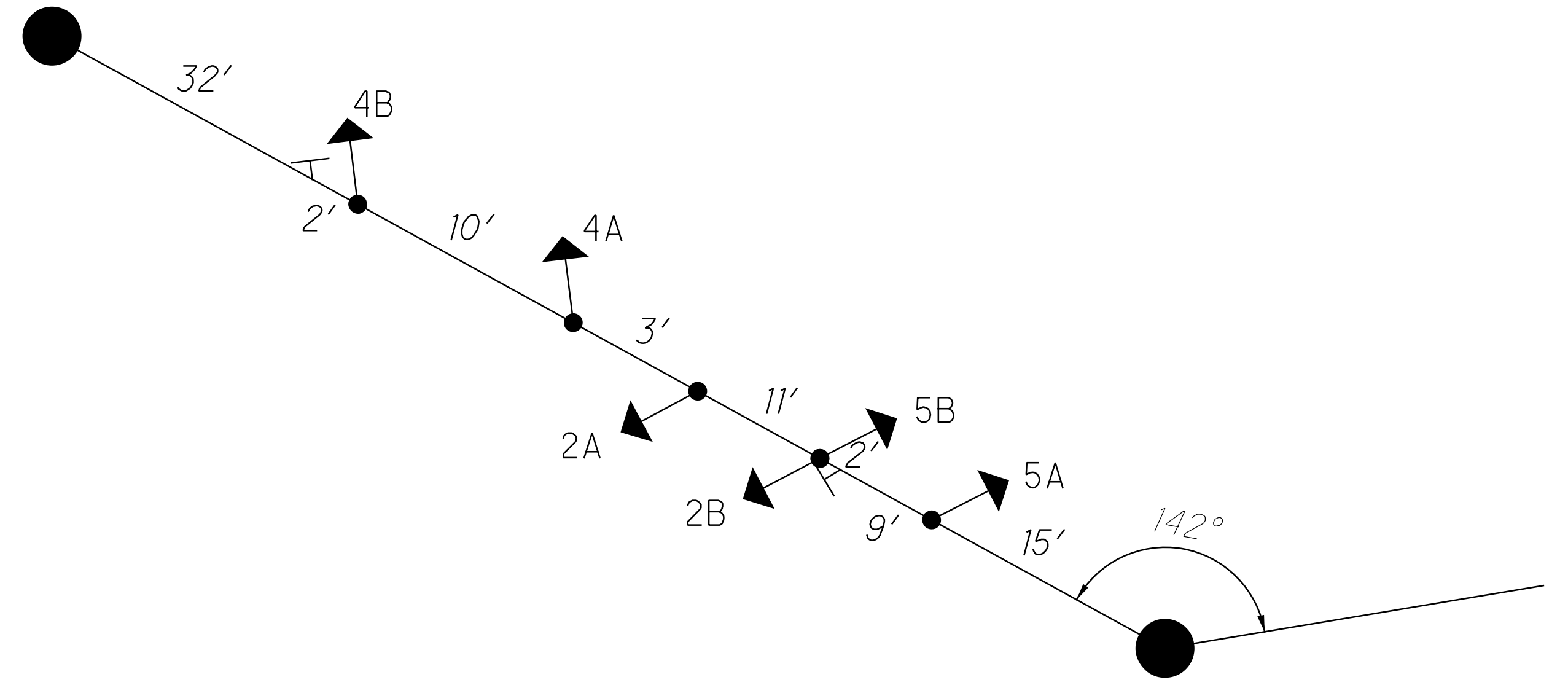


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PLAN VIEW FOR PHASE 1(C)



PLAN VIEW FOR PHASE 2



NOTES: TEMPORARY SIGNAL SHALL FOLLOW TC-85.22 FOR VERTICAL CLEARANCE REQUIREMENTS.

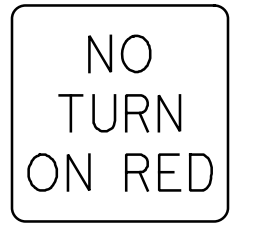
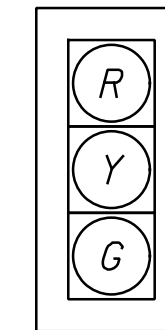
CONTRACTOR SHALL CONTACT GUERNSEY MUSKINGUM ELECTRIC AT (740) 826-7664 FOR POWER BEFORE INSTALLING TEMPORARY SIGNALS.

SIGNAL HEADS

SIGNS

**LEGEND**

- TRAFFIC SIGNAL, 3 UNIT HEAD, 12"
- TRAFFIC SIGNAL, 5 UNIT HEAD, 12"
- WOOD POLE
- CONTROLLER CABINET AND WORK PAD (TS-2)
- TRAFFIC PULL BOX
- RADAR DETECTION UNIT
- DETECTION ZONE

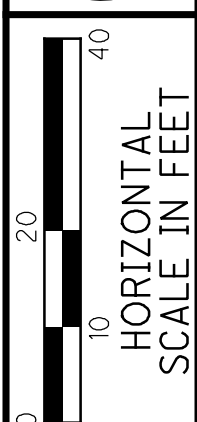
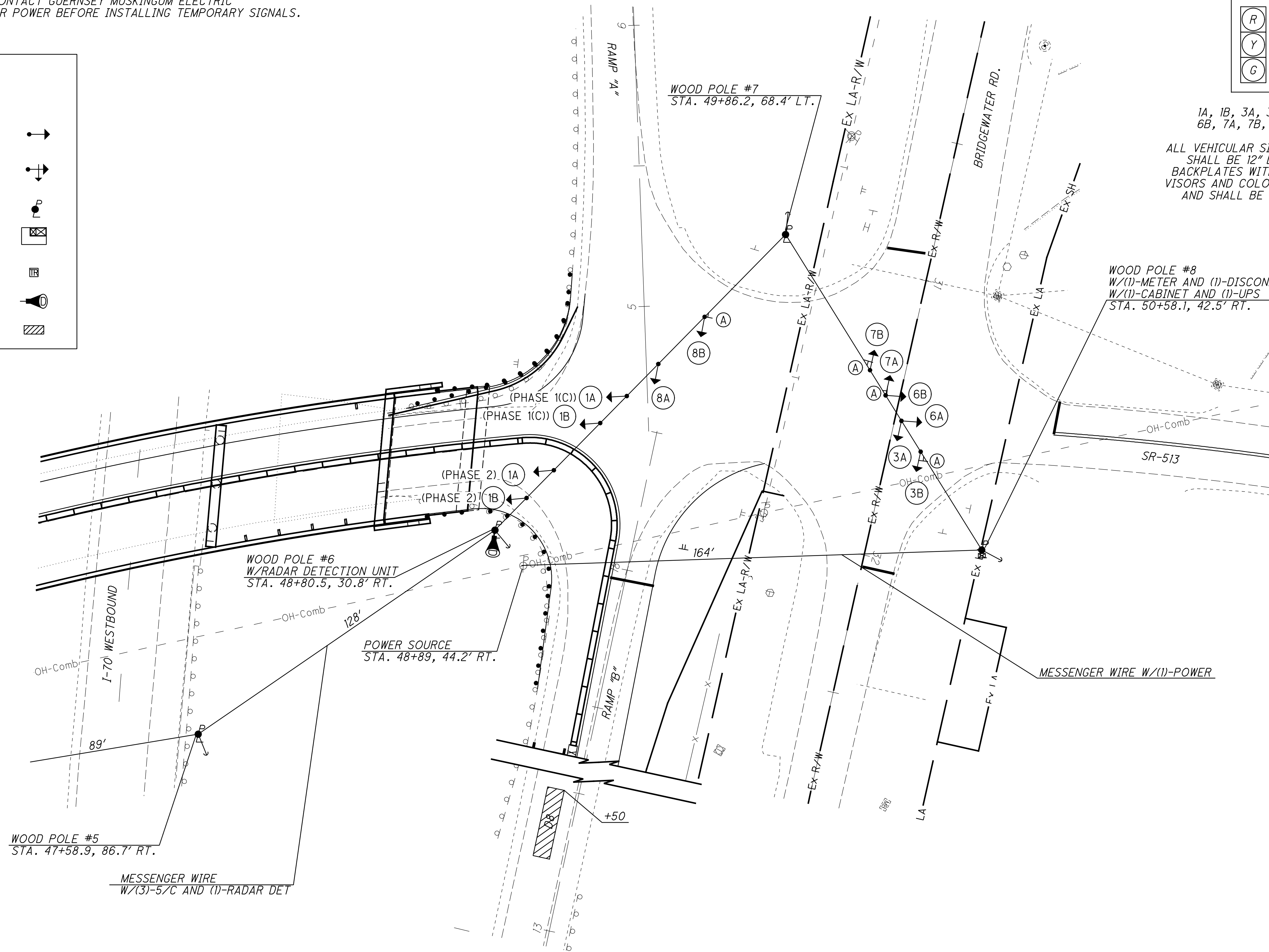


R10-11B-36

(A)

1A, 1B, 3A, 3B, 6A, 6B, 7A, 7B, 8A, 8B  
 ALL VEHICULAR SIGNAL HEADS SHALL BE 12" LED WITH BACKPLATES WITH CUTAWAY VISORS AND COLORED YELLOW AND SHALL BE TETHERED

WOOD POLE #8  
 W/(1)-METER AND (1)-DISCONNECT SWITCH  
 W/(1)-CABINET AND (1)-UPS  
 STA. 50+58.1, 42.5' RT.



CALCULATED JML CHECKED GPD

MOT TRAFFIC SIGNAL PLAN  
 SR-513 AT I-70 WESTBOUND RAMP/ BRIDGEWATER RD

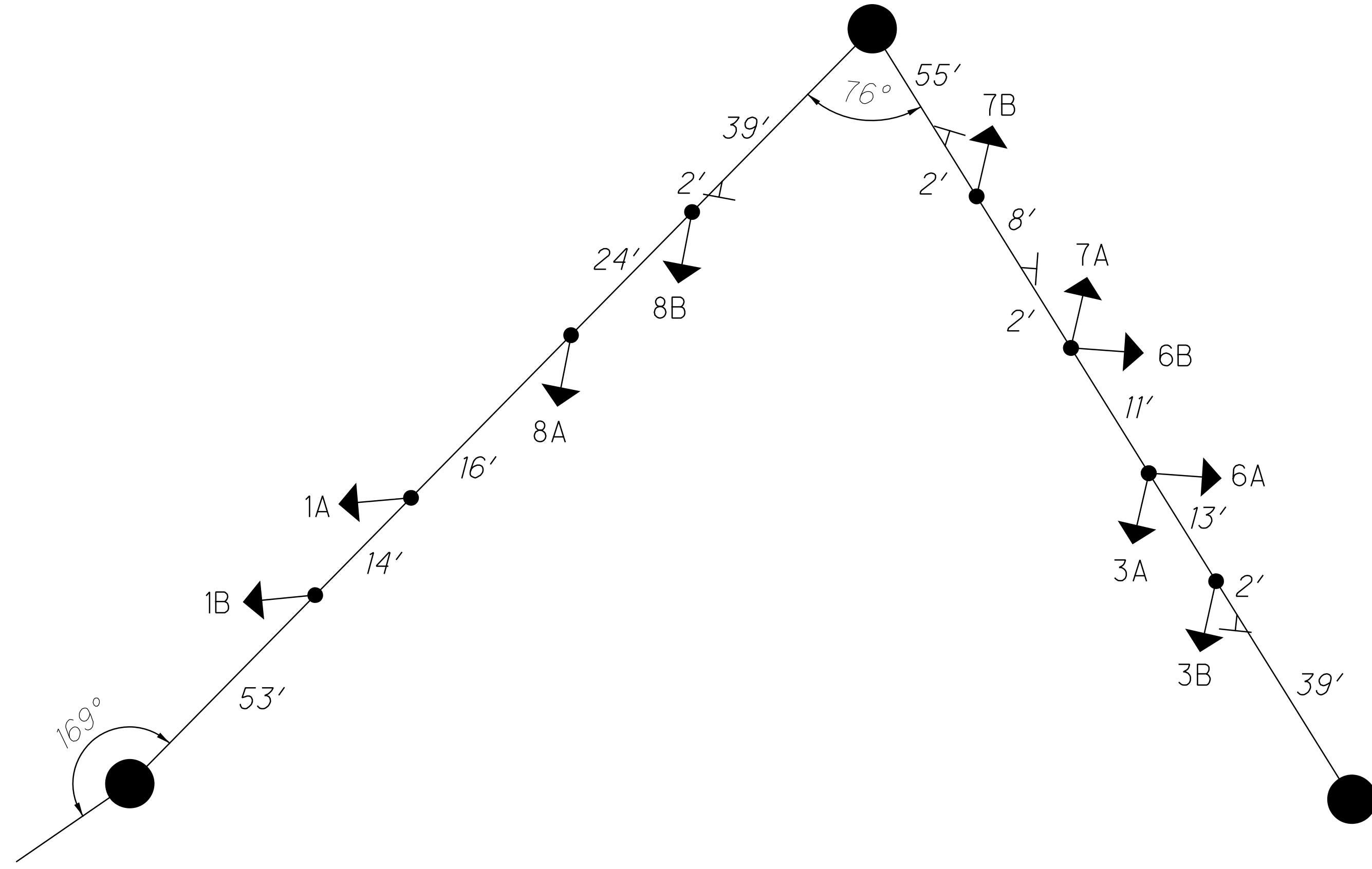
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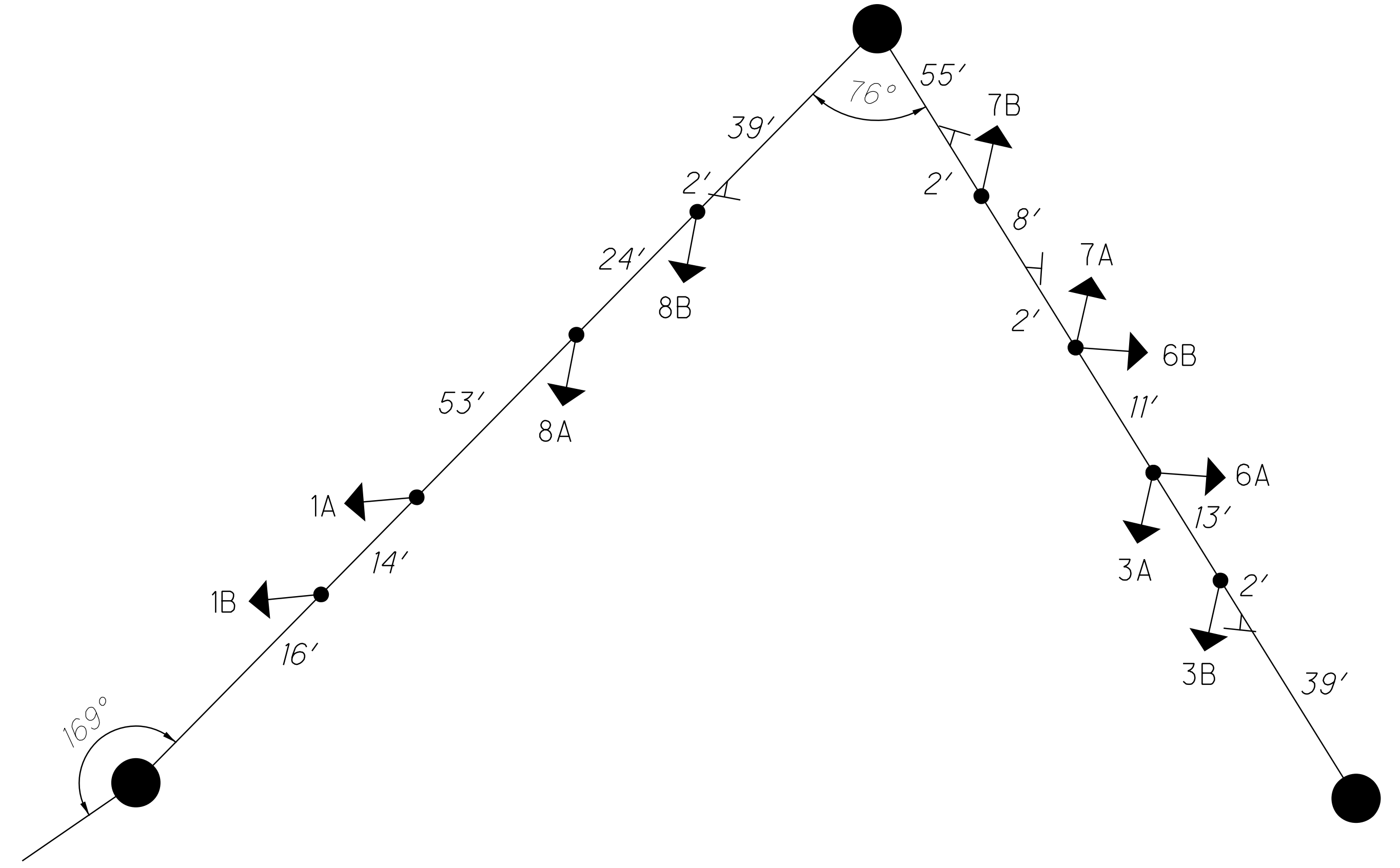


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PLAN VIEW FOR PHASE 1C)



PLAN VIEW FOR PHASE 2



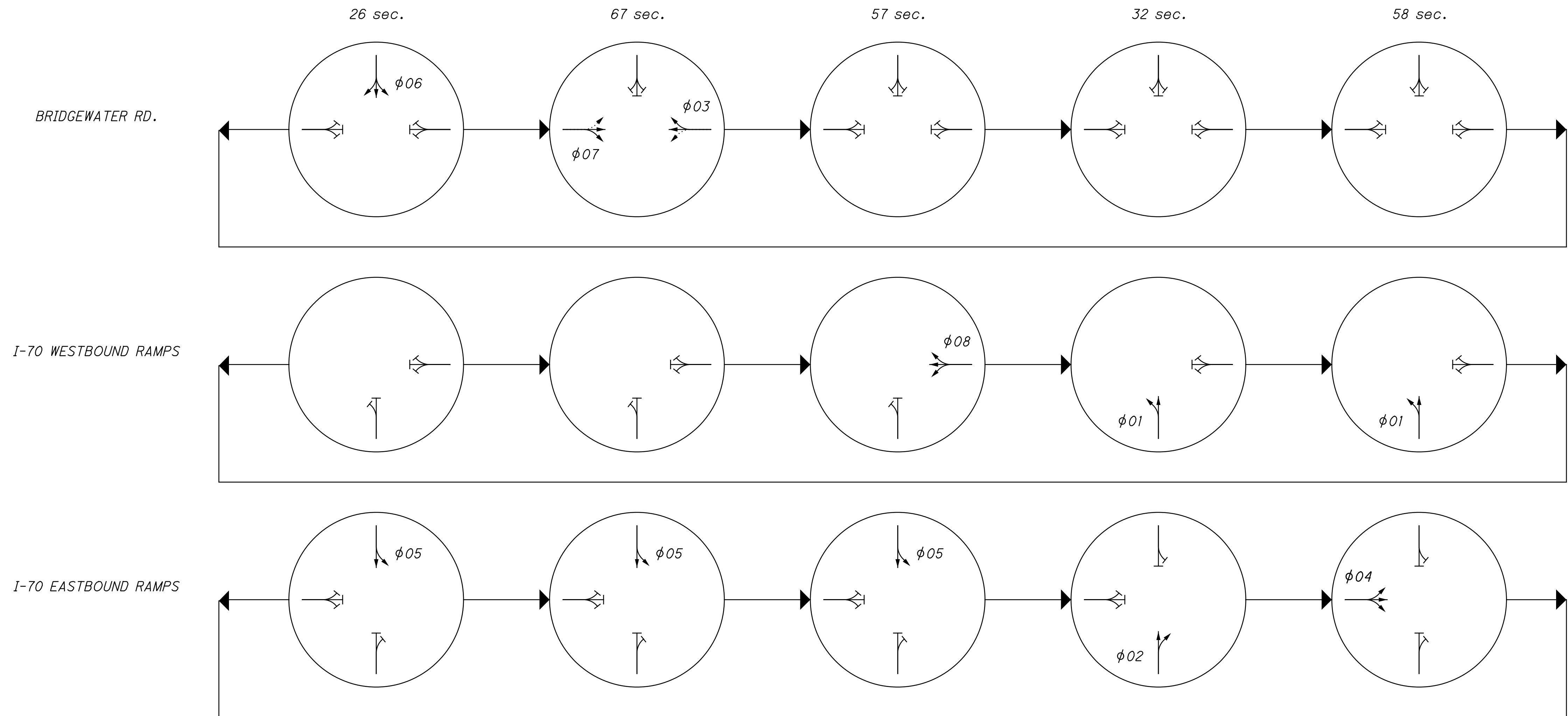
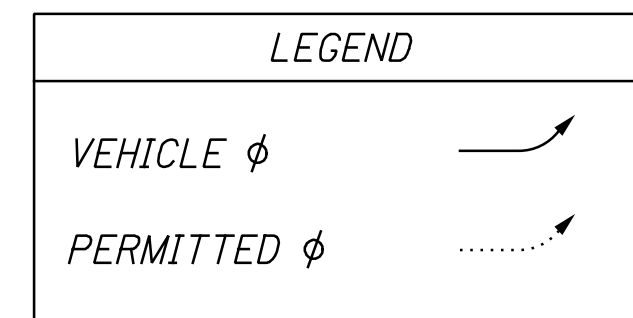
CALCULATED
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**MOT TRAFFIC SIGNAL PLAN DETAILS**  
**SR-513 AT I-70 WESTBOUND RAMP/ BRIDGEWATER RD**

**GUE-513-8.65**

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**PHASING DIAGRAM (TYPICAL)**



**SIGNAL TIMING CHART**

INTERSECTION: SR-513 AT I-70 EB RAMPS, I-70 RAMPS, AND BRIDGEWATER RD MAINTAINING AGENCY: ODOT										
START UP		DUAL ENTRY:	PHASES:							
START IN:	ALL RED	NO	RING 1				RING 2			
TIME FOR FLASH OR ALL RED:	5	REST IN RED:	-				-			
FIRST PHASE(S):	6	OVERLAP	A	B	C	D				
COLOR DISPLAYED:	GREEN	PHASES	-	-	-	-				
INTERVAL OR FEATURE	CONTROLLER MOVEMENT NO.									
INTERSECTION MOVEMENT (PHASE)	1	2	3	4	5	6	7	8		
DIRECTION	NB	NB	WB	EB	SB	SB	EB	WB		
MINIMUM GREEN (INITIAL) (SEC.)	7	7	7	7	7	7	7	7		
ADDED INITIAL *(SEC./ACTUATION)	-	-	-	-	-	-	-	-		
MAXIMUM INITIAL (SEC.)	-	-	-	-	-	-	-	-		
PASSAGE TIME (PRESET GAP) (SEC.)	3	3	3	3	3	3	3	3		
TIME BEFORE REDUCTION *(SEC.)	-	-	-	-	-	-	-	-		
MINIMUM GAP *(SEC.)	-	-	-	-	-	-	-	-		
TIME TO REDUCE *(SEC.)	-	-	-	-	-	-	-	-		
MAXIMUM GREEN I (SEC.)	79	21	29	17	139	16	29	20		
MAXIMUM GREEN II (SEC.)	-	-	-	-	-	-	-	-		
YELLOW CHANGE (SEC.)	3	3	3	7	3	3	3	7		
ALL RED CLEARANCE (SEC.)	8	8	25	24	8	7	25	20		
WALK (SEC.)	-	-	-	-	-	-	-	-		
PEDESTRIAN CLEARANCE (SEC.)	-	-	-	-	-	-	-	-		
RECALL	MAXIMUM	(ON/OFF)	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
	MINIMUM	(ON/OFF)	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
	PEDESTRIAN	(ON/OFF)	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
MEMORY	(ON/OFF)	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

\*VOLUME DENSITY CONTROLS

**NOTES:**

- PROVIDE CONTROLLER CAPABLE OF TIMING SHOWN.
- ENABLE  $\phi 4$  TO INTERRUPT GREEN TIME OF  $\phi 2$  WHEN DETECTOR IS CALLED.
- ENABLE  $\phi 8$  TO INTERRUPT GREEN TIME OF  $\phi 3$  AND  $\phi 7$  WHEN DETECTOR IS CALLED.
- ENABLE ANTI-BACKUP FEATURES. IMPLEMENT PHASE OMITTS DURING OPPOSING THROUGH MOVEMENT PHASES TO AVOID TWO-WAY BRIDGE TRAFFIC AS FOLLOWS:

OMIT PHASE 1 DURING PHASE 5 ON  
 OMIT PHASE 1 DURING PHASE 8 ON  
 OMIT PHASE 2 DURING PHASE 5 ON  
 OMIT PHASE 2 DURING PHASE 8 ON  
 OMIT PHASES 3 AND 7 DURING PHASE 6 ON  
 OMIT PHASE 4 DURING PHASE 2 ON  
 OMIT PHASE 6 DURING PHASE 4 ON  
 OMIT PHASE 8 DURING PHASE 3 AND 7 ON

**RADAR DETECTION CHART**

DETECTION ZONE	MOVEMENT	PULSE OR PRESENCE	ASSOCIATED PHASE	DELAY IN CONTROLLER (SEC)	DELAY INHIBIT PHASE	PURPOSE	DETECTION ZONE LENGTH (FT)
D4	EB THRU	PRESENCE	4	-	4	CALL/EXTEND PHASE 4	25
D8	WB THRU	PRESENCE	8	-	8	CALL/EXTEND PHASE 8	25

**MOT TRAFFIC SIGNAL PLAN DETAILS  
SR-513 AT I-70 EASTBOUND RAMPS**

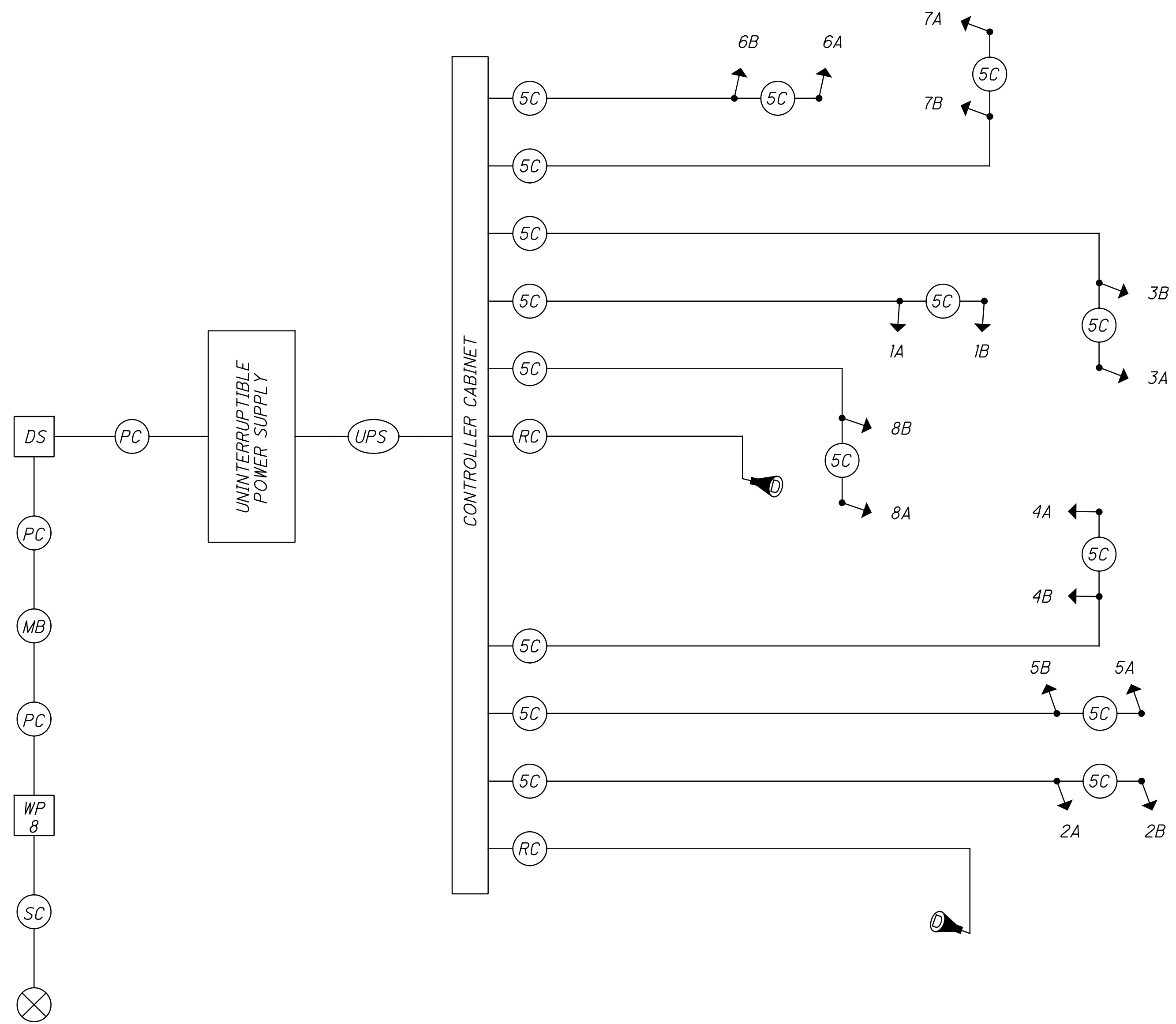
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WIRING DIAGRAM



FIELD WIRING HOOK-UP CHART

SIGNAL HEAD	INDICATION	FIELD TERMINAL	FLASH	SIGNAL HEAD	INDICATION	FIELD TERMINAL	FLASH
1A,1B (NB)	R	Φ1 R	R	5A,5B (SB)	R	Φ5 R	R
	Y	Φ1 Y			Y	Φ5 Y	
	G	Φ1 G			G	Φ5 G	
2A,2B (NB)	R	Φ2 R	R	6A,6B (SB)	R	Φ6 R	R
	Y	Φ2 Y			Y	Φ6 Y	
	G	Φ2 G			G	Φ6 G	
3A,3B (WB)	R	Φ3 R	R	7A,7B (EB)	R	Φ7 R	R
	Y	Φ3 Y			Y	Φ7 Y	
	G	Φ3 G			G	Φ7 G	
4A,4B (EB)	R	Φ4 R	R	8A,8B (WB)	R	Φ8 R	R
	Y	Φ4 Y			Y	Φ8 Y	
	G	Φ4 G			G	Φ8 G	

LEGEND

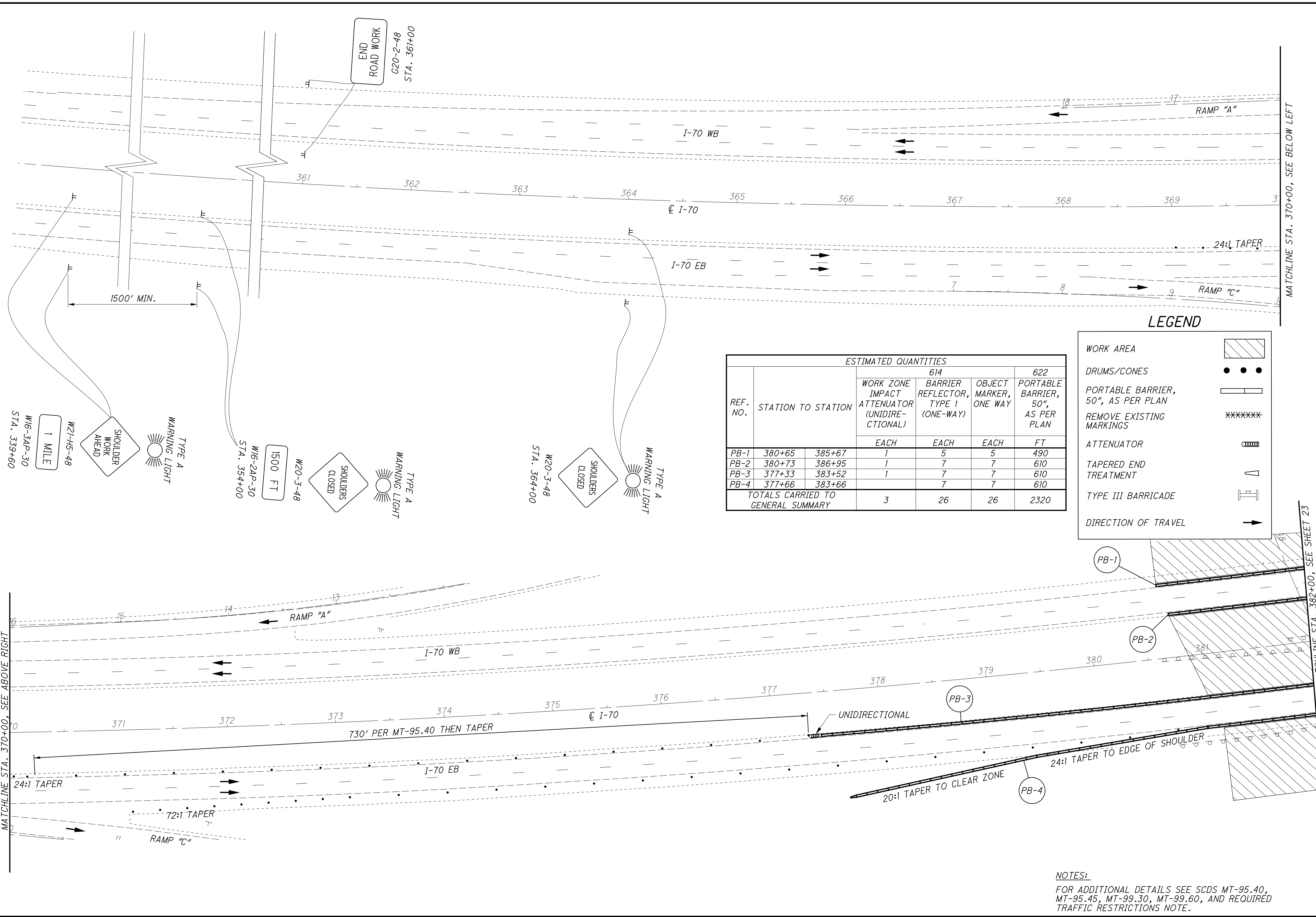
	3 SECTION VEHICULAR SIGNAL HEAD, 1-WAY		SIGNAL SUPPORT WOOD POLE
	RADAR DETECTION UNIT		METER BASE
	SIGNAL CABLE, 5 CONDUCTOR, NO. 14 AWG		POWER SOURCE
	RADAR DETECTION CABLE		UNINTERRUPTIBLE POWER SUPPLY CABLE
	SERVICE CABLE, 3 CONDUCTOR, NO. 6 AWG		SIGNAL DISCONNECT SWITCH
	POWER CABLE, 3 CONDUCTOR, NO. 6 AWG		

CALCULATED  
JML  
CHECKED  
GPD

MOT TRAFFIC SIGNAL PLAN DETAILS  
SR-513 AT I-70 RAMPS / BRIDGEWATER RD

GUE-513-8.65

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REF. NO.	STATION TO STATION		ESTIMATED QUANTITIES			
			WORK ZONE IMPACT ATTENUATOR (UNIDIRECTIONAL)	614		622
				BARRIER REFLECTOR, TYPE 1 (ONE-WAY)	OBJECT MARKER, ONE WAY	PORTABLE BARRIER, 50", AS PER PLAN
		EACH	EACH	EACH	FT	
PB-1	380+65	385+67	1	5	5	490
PB-2	380+73	386+95	1	7	7	610
PB-3	377+33	383+52	1	7	7	610
PB-4	377+66	383+66		7	7	610
TOTALS CARRIED TO GENERAL SUMMARY			3	26	26	2320

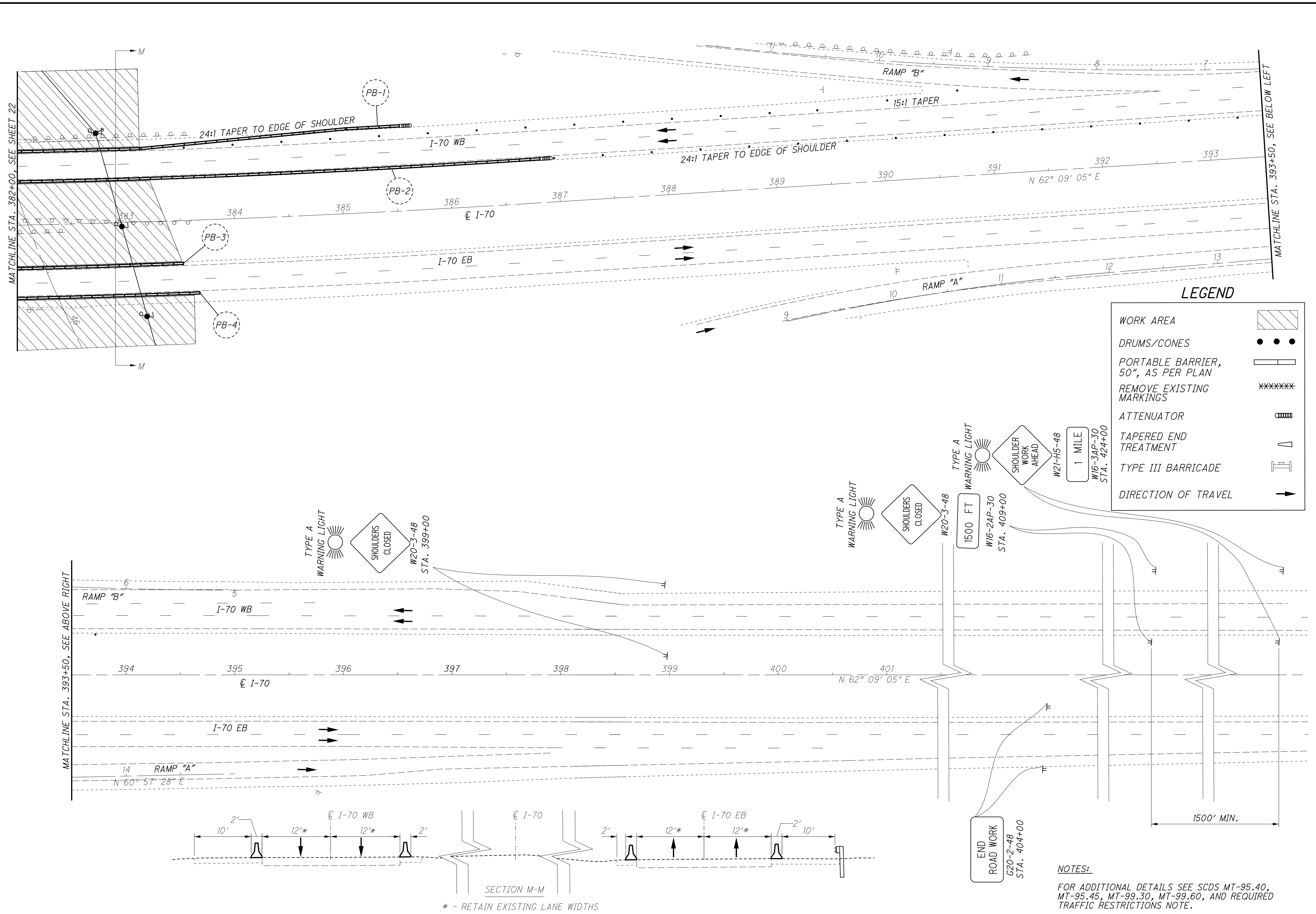
**LEGEND**

- WORK AREA
- DRUMS/CONES
- PORTABLE BARRIER, 50", AS PER PLAN
- REMOVE EXISTING MARKINGS
- ATTENUATOR
- TAPERED END TREATMENT
- TYPE III BARRICADE
- DIRECTION OF TRAVEL

**NOTES:**  
FOR ADDITIONAL DETAILS SEE SCDS MT-95.40, MT-95.45, MT-99.30, MT-99.60, AND REQUIRED TRAFFIC RESTRICTIONS NOTE.

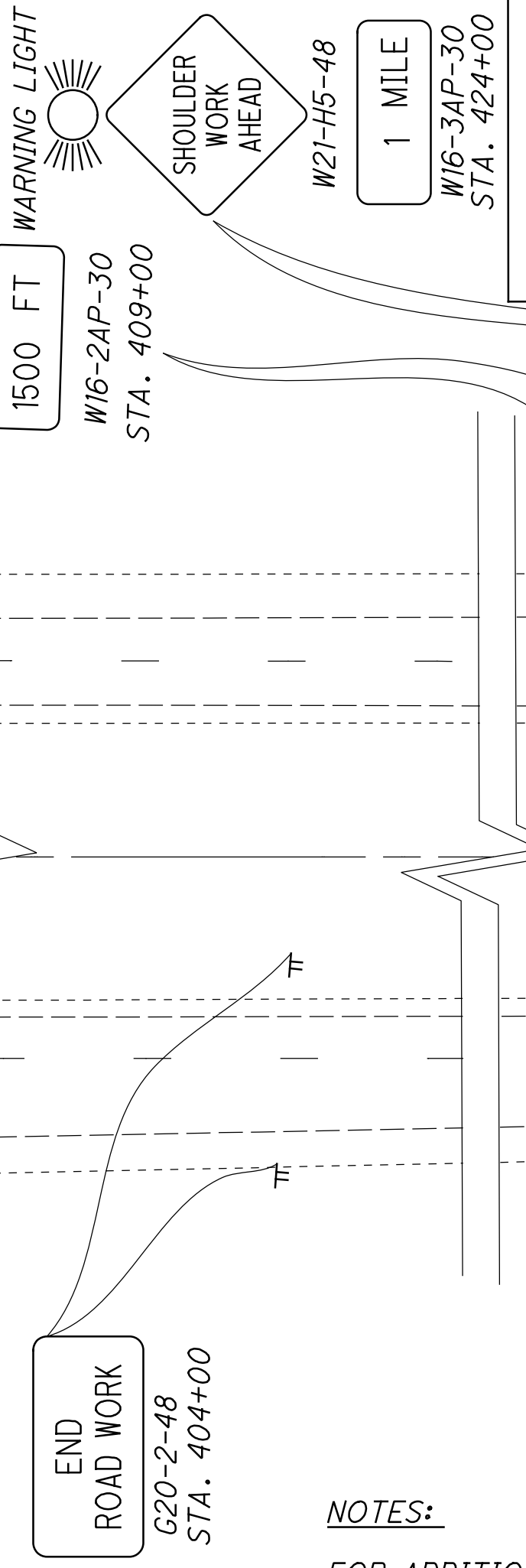
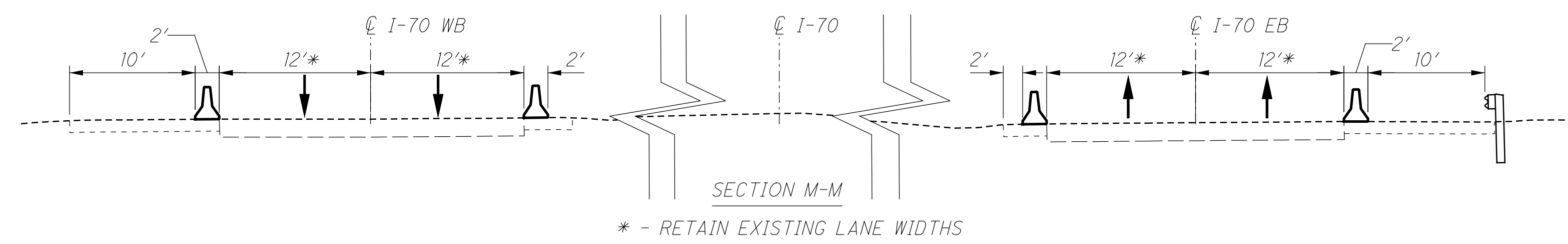


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**LEGEND**

WORK AREA	
DRUMS/CONES	
PORTABLE BARRIER, 50", AS PER PLAN	
REMOVE EXISTING MARKINGS	
ATTENUATOR	
TAPERED END TREATMENT	
TYPE III BARRICADE	
DIRECTION OF TRAVEL	



**NOTES:**  
 FOR ADDITIONAL DETAILS SEE SCDS MT-95.40, MT-95.45, MT-99.30, MT-99.60, AND REQUIRED TRAFFIC RESTRICTIONS NOTE.

0 20 40 60  
 HORIZONTAL SCALE IN FEET  
 CALCULATED CAG CHECKED GPD

**MOT IR-70 SHOULDER CLOSURE**  
**STA. 389+00 TO STA. 424+00**

GUE-513-8.65

23  
100







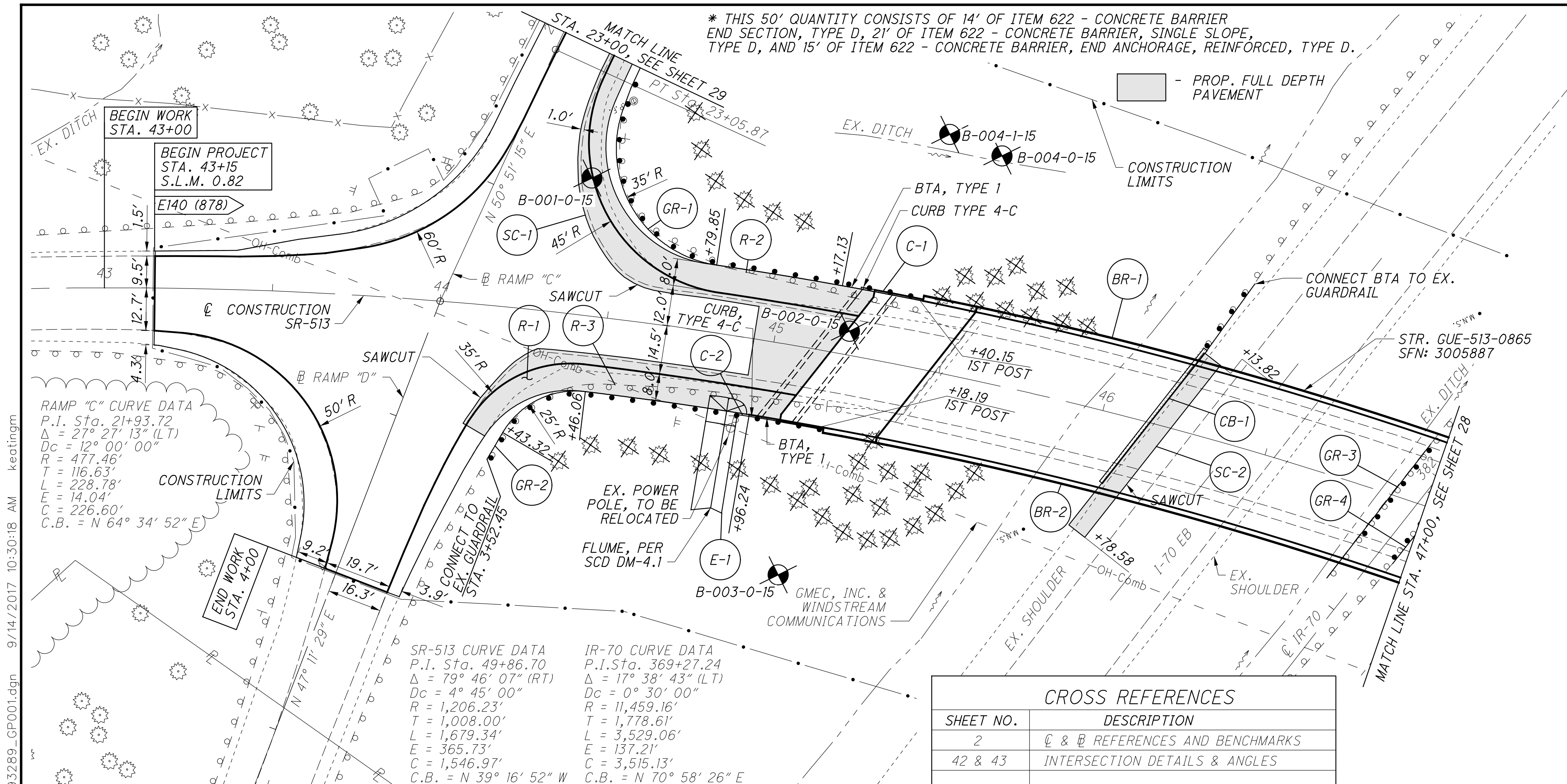
STATION TO STATION	ALIGNMENT	SIDE	CADD MEASURED AREA	204	254	301	301	304	407	441	441	441												CALCULATED	NRH	CHECKED	GPD																							
				SUBGRADE COMPACTION	PAVEMENT PLANING, ASPHALT CONCRETE (1.25")	ASPHALT CONCRETE BASE, PG64-22 (8")	ASPHALT CONCRETE BASE, PG64-22 (9")	AGGREGATE BASE (6")	TACK COAT	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), PG64-22 (1.25")	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), PG64-22 (3")	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, (448) (1.75")	SY	SY	CY	CY	CY	GAL	CY	CY	CY	SY	SY	CY	CY	CY	SY	SY	CY	CY	CY	CY																		
<b>PAVEMENT PLANING</b>																																																		
43+15.00	45+48.52	SR-513	LTRT	6425		714																																												
48+43.63	50+90.00	SR-513	LTRT	6269		697																																												
4+65.97	5+50.00	RAMP A	LTRT	4046		450																																												
15+75.61	18+34.33	RAMP B	LTRT	7497		833																																												
22+50.00	23+75.37	RAMP C	LTRT	3815		424																																												
3+29.65	4+00	RAMP D	LTRT	3875		431																																												
30+80.00	31+43.55	BRIDGEWATER RD	LTRT	4763		530																																												
31+68.00	32+20.00	BRIDGEWATER RD	LTRT	2162		241																																												
<b>SURFACE COURSE</b>																																																		
43+15.00	45+17.07	SR-513	LTRT	6624																																														
48+75.40	50+90.00	SR-513	LTRT	5568						67	26																																							
381+56.05	382+21.62	IR-70	LT	426						56	22																																							
382+13.82	382+78.58	IR-70	RT	393						3		4																																						
4+65.97	5+50.00	RAMP A	LTRT	4117						3		4																																						
15+75.61	18+34.33	RAMP B	LTRT	7546						3		4																																						
22+50.00	23+75.37	RAMP C	LTRT	4771						3		4																																						
3+29.65	4+00	RAMP D	LTRT	3917						42	16																																							
30+80.00	31+43.55	BRIDGEWATER RD	LTRT	4763						76	30																																							
31+68.00	32+20.00	BRIDGEWATER RD	LTRT	2162						48	19																																							
<b>INTERMEDIATE COURSE</b>																																																		
44+30.58	45+17.07	SR-513	LTRT	2058																																														
48+75.40	48+96.17	SR-513	LTRT	689						14		12																																						
4+62.45	4+94.91	RAMP A	LT	234						5		4																																						
17+75.00	18+22.00	RAMP B	LT	353						2		2																																						
22+50.00	23+59.06	RAMP C	LT	957						3		2																																						
3+16.19	3+46.22	RAMP D	LT	272						7		6																																						
<b>ASPHALT BASE COURSE (2 x 4" LIFTS)</b>																																																		
44+30.58	45+17.07	SR-513	LTRT	4276		53				2		2																																						
48+75.40	48+96.17	SR-513	LTRT	1411		18				3		2																																						
381+56.05	382+21.62	IR-70	LT	448			13			3		2																																						
382+13.82	382+78.58	IR-70	RT	414			12			3		2																																						
4+62.45	4+94.91	RAMP A	LT	503		7				4		2																																						
17+75.00	18+22.00	RAMP B	LT	760		10				6		2																																						
22+50.00	23+59.06	RAMP C	LT	2037		26				14		6																																						
3+16.19	3+46.22	RAMP D	LT	571		8				4		2																																						
<b>AGGREGATE BASE</b>																																																		
44+30.58	45+17.07	SR-513	LTRT	2240	252			42																																										
48+75.40	48+96.17	SR-513	LTRT	723	90			14																																										
381+56.05	382+21.62	IR-70	LT	480	54			9																																										
382+13.82	382+78.58	IR-70	RT	447	50			9																																										
4+62.45	4+94.91	RAMP A	LT	273	25			6																																										
17+75.00	18+22.00	RAMP B	LT	415	45			8																																										
22+50.00	23+59.06	RAMP C	LT	1098	124			21																																										
3+16.19	3+46.22	RAMP D	LT	302	34			6																																										
REAR APPROACH SLAB				SR-513	LTRT	1433																																												
FORWARD APPROACH SLAB				SR-513	LTRT	1432																																												
<b>SUBTOTALS</b>							122	25		157	8																																							
<b>TOTALS CARRIED TO GENERAL SUMMARY</b>					994	4320	147	115	511	165	28																																							

**PAVEMENT CALCULATIONS**

**GUE - 513 - 8.65**

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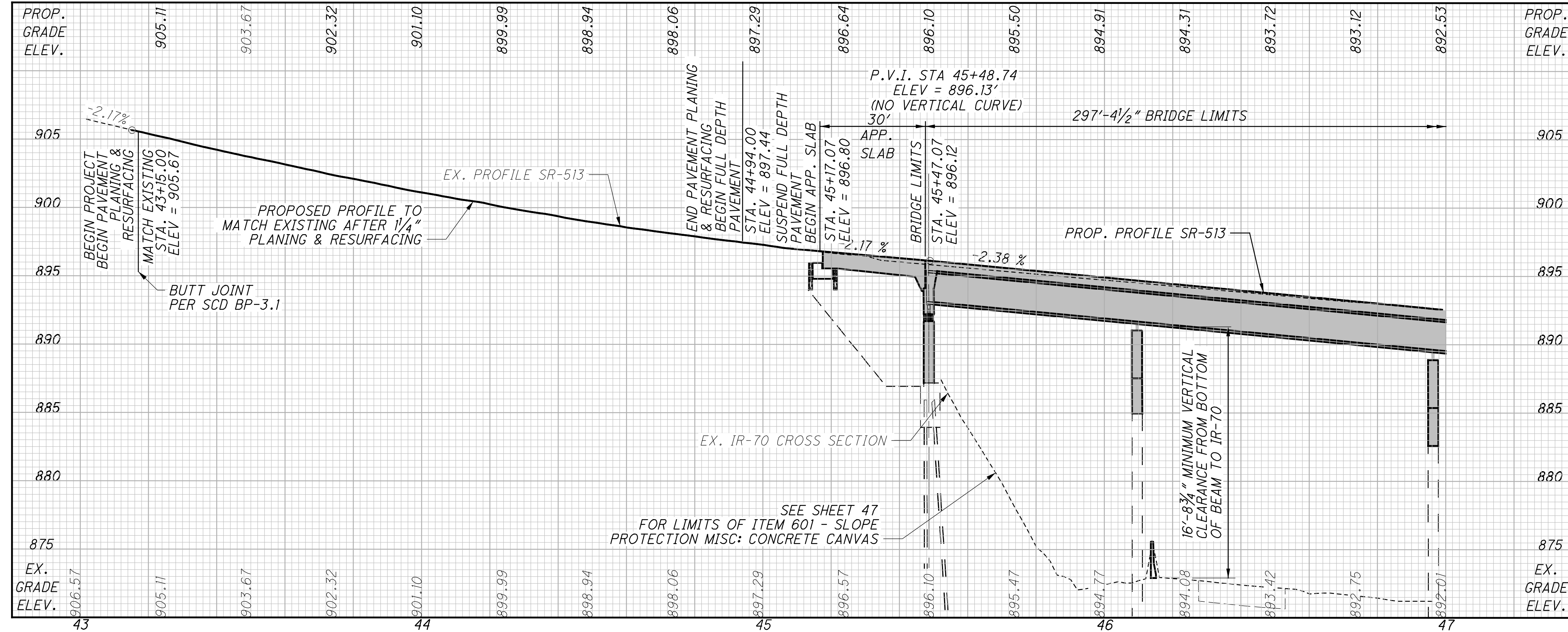




**SR-513 CURVE DATA**  
 P.I. Sta. 49+86.70  
 $\Delta = 79^\circ 46' 07''$  (RT)  
 $Dc = 4^\circ 45' 00''$   
 $R = 1,206.23'$   
 $T = 1,008.00'$   
 $L = 1,679.34'$   
 $E = 365.73'$   
 $C = 1,546.97'$   
 C.B. = N 39° 16' 52" W

**IR-70 CURVE DATA**  
 P.I. Sta. 369+27.24  
 $\Delta = 17^\circ 38' 43''$  (LT)  
 $Dc = 0^\circ 30' 00''$   
 $R = 11,459.16'$   
 $T = 1,778.61'$   
 $L = 3,529.06'$   
 $E = 137.21'$   
 $C = 3,515.13'$   
 C.B. = N 70° 58' 26" E

SHEET NO.	DESCRIPTION
2	☉ & B REFERENCES AND BENCHMARKS
42 & 43	INTERSECTION DETAILS & ANGLES



REF. NO.	STATION		SIDE	DESCRIPTION	UNIT	QUANTITY
	FROM	TO				
BR-1	45+41	48+66	LT	BARRIER REFLECTOR, TYPE 1 (BI-DIRECTIONAL)	EA	4
BR-2	45+19	48+57	RT	BARRIER REFLECTOR, TYPE 1 (ONE-WAY)	EA	4
C-1	45+23	45+27	LT	BARRIER REFLECTOR, TYPE 2 (ONE-WAY)	EA	3
C-2	44+93	45+08	RT	BARRIER REFLECTOR, TYPE 2 (BI-DIRECTIONAL)	EA	3
CB-1	381+89	382+63	RT	CONCRETE BARRIER, SINGLE SLOPE, TYPE D	FT	50*
E-1	44+84	44+95	RT	CURB, TYPE 4-C	FT	13
GR-1	22+48	45+44	LT	MGS BRIDGE TERMINAL ASSEMBLY, TYPE 1	EA	1
GR-2	44+18	45+22	RT	ANCHOR ASSEMBLY, MGS TYPE T	EA	1
GR-3	381+93	382+43	RT	GUARDRAIL, TYPE MGS	FT	162.5
GR-4	381+78	382+28	LT	TIED CONCRETE BLOCK MAT, TYPE 2	SY	35
R-1	44+10	45+42	LT	FULL DEPTH PAVEMENT SAWING	FT	38
R-2	44+46	45+41	LT	BRIDGE TERMINAL ASSEMBLY REMOVED	EA	1
R-3	44+18	45+24	RT	ANCHOR ASSEMBLY REMOVED, TYPE T	EA	1
SC-1	44+10	44+94	LTRT	CONCRETE BARRIER REMOVED	FT	186
SC-2	382+14	382+79	RT	PAVEMENT REMOVED	SY	716
TOTALS CARRIED TO GEN. SUM.						313
TOTALS CARRIED TO GEN. SUM.						368

**PLAN AND PROFILE - SR-513**  
**STA. 43+00 TO STA. 47+00**

**GUE-513-8.65**

27  
100

CALCULATED: CAG  
 CHECKED: GPD

HORIZONTAL SCALE IN FEET  
 0 10 20 40

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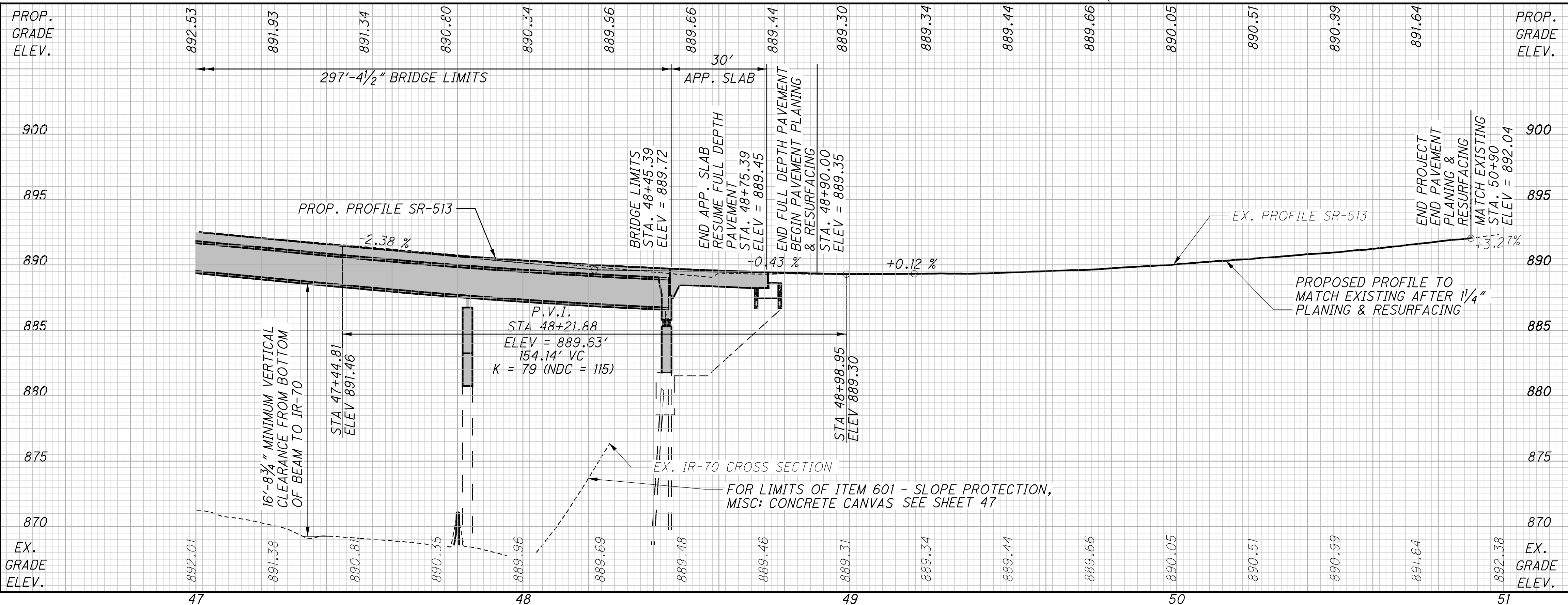
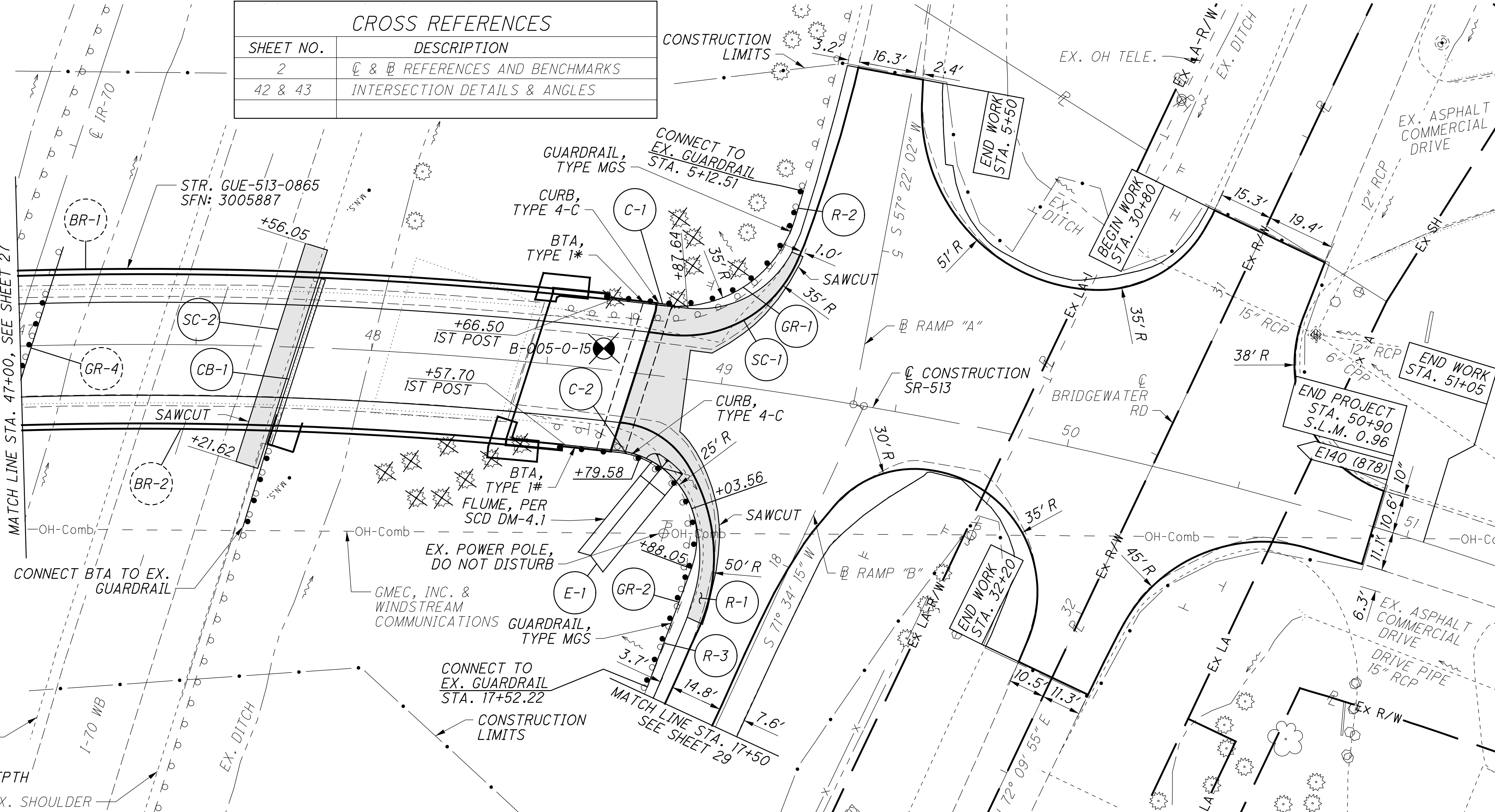


IR-70 CURVE DATA  
 P.I. Sta. 369+27.24  
 $\Delta = 17^\circ 38' 43''$  (LT)  
 $Dc = 0^\circ 30' 00''$   
 $R = 11,459.16'$   
 $T = 1,778.61'$   
 $L = 3,529.06'$   
 $E = 137.21'$   
 $C = 3,515.13'$   
 C.B. = N  $70^\circ 58' 26''$  E

\* - BEGIN 35' RADIUS ON BTA AT STA. 48+80.62 AND END BTA AT STA. 48+87.64  
 # - BEGIN 25' RADIUS ON BTA AT STA. 48+73.22 AND END BTA AT STA. 48+79.58

SR-513 CURVE DATA  
 P.I. Sta. 49+86.70  
 $\Delta = 79^\circ 46' 07''$  (RT)  
 $Dc = 4^\circ 45' 00''$   
 $R = 1,206.23'$   
 $T = 1,008.00'$   
 $L = 1,679.34'$   
 $E = 365.73'$   
 $C = 1,546.97'$   
 C.B. = N  $39^\circ 16' 52''$  W

CROSS REFERENCES	
SHEET NO.	DESCRIPTION
2	C & B REFERENCES AND BENCHMARKS
42 & 43	INTERSECTION DETAILS & ANGLES



\* THIS 50' QUANTITY CONSISTS OF 14' OF ITEM 622 - CONCRETE BARRIER END SECTION, TYPE D, 21' OF ITEM 622 - CONCRETE BARRIER, SINGLE SLOPE, TYPE D, AND 15' OF ITEM 622 - CONCRETE BARRIER, END ANCHORAGE, REINFORCED, TYPE D.

REF. NO.	STATION	SIDE	TOTALS CARRIED TO GEN. SUM.		ITEM	UNIT	QUANTITY	REMARKS
			FROM	TO				
C-1	48+79	LT	48+84	48+84	BARRIER REFLECTOR, TYPE 2 (BI-DIRECTIONAL)	EA	1	
C-2	48+71	RT	48+83	48+83	BARRIER REFLECTOR, TYPE 1 (ONE-WAY)	EA	3	
CB-1	381+64	LT	382+39	382+39	CONCRETE BARRIER, SINGLE SLOPE, TYPE D	FT	50*	
E-1	48+65	RT	48+92	48+92	CURB, TYPE 4-C	FT	6	
GR-1	48+63	LT	49+15	49+15	MGS BRIDGE TERMINAL ASSEMBLY, TYPE 1	EA	1	
GR-2	48+54	RT	48+97	48+97	ANCHOR ASSEMBLY, MGS TYPE T	EA	1	
R-1	45+55	LTRT	44+10	44+10	GUARDRAIL, TYPE MGS	FT	50	
R-2	48+53	LT	49+15	49+15	TIED CONCRETE BLOCK MAT, TYPE 2	SY	36	
R-3	48+53	RT	48+97	48+97	FULL DEPTH PAVEMENT SAWING	FT	135	
SC-1	17+75	LTRT	4+95	4+95	GUARDRAIL REBUILT, AS PER PLAN	FT	79	
SC-2	381+56	LT	382+22	382+22	GUARDRAIL REMOVED	FT	214	
TOTALS CARRIED TO GEN. SUM.							203	

**PLAN AND PROFILE - SR-513  
 STA. 47+00 TO STA. 51+05**

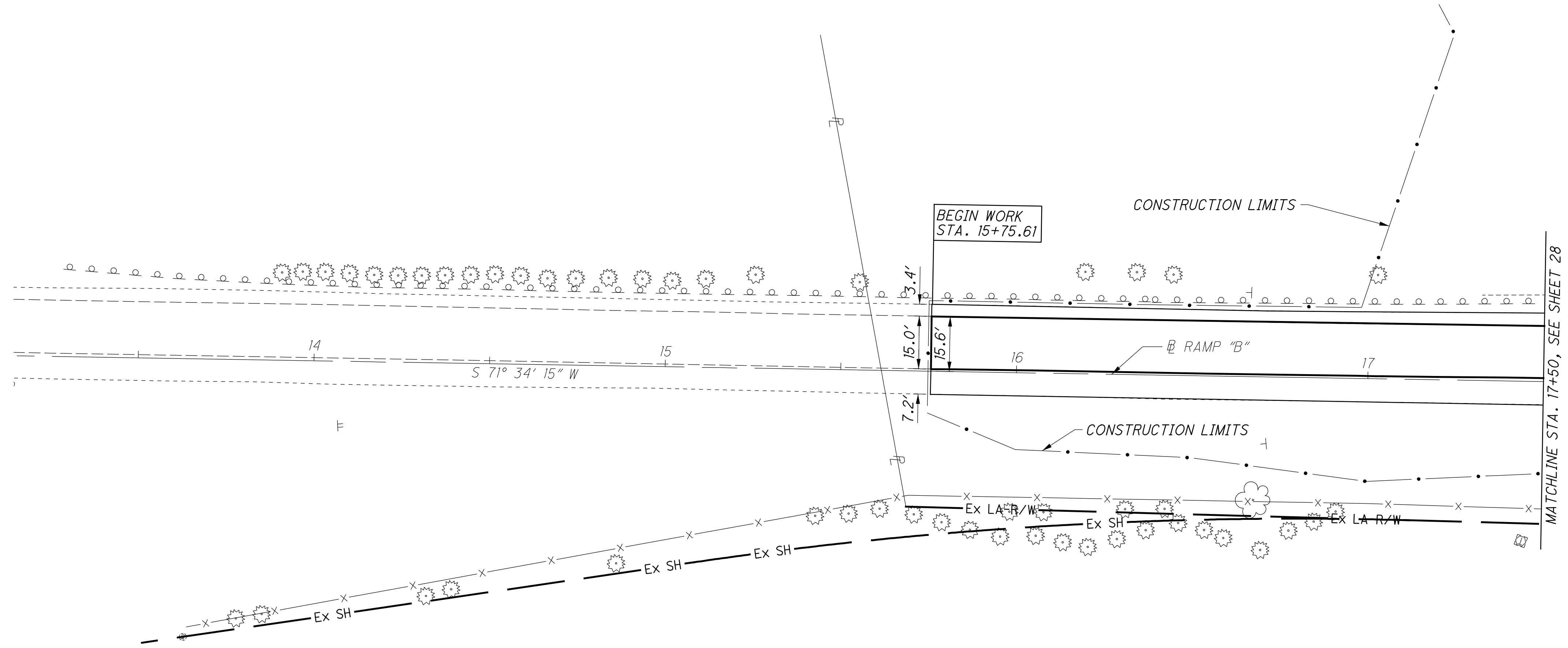
**GUE-513-8.65**

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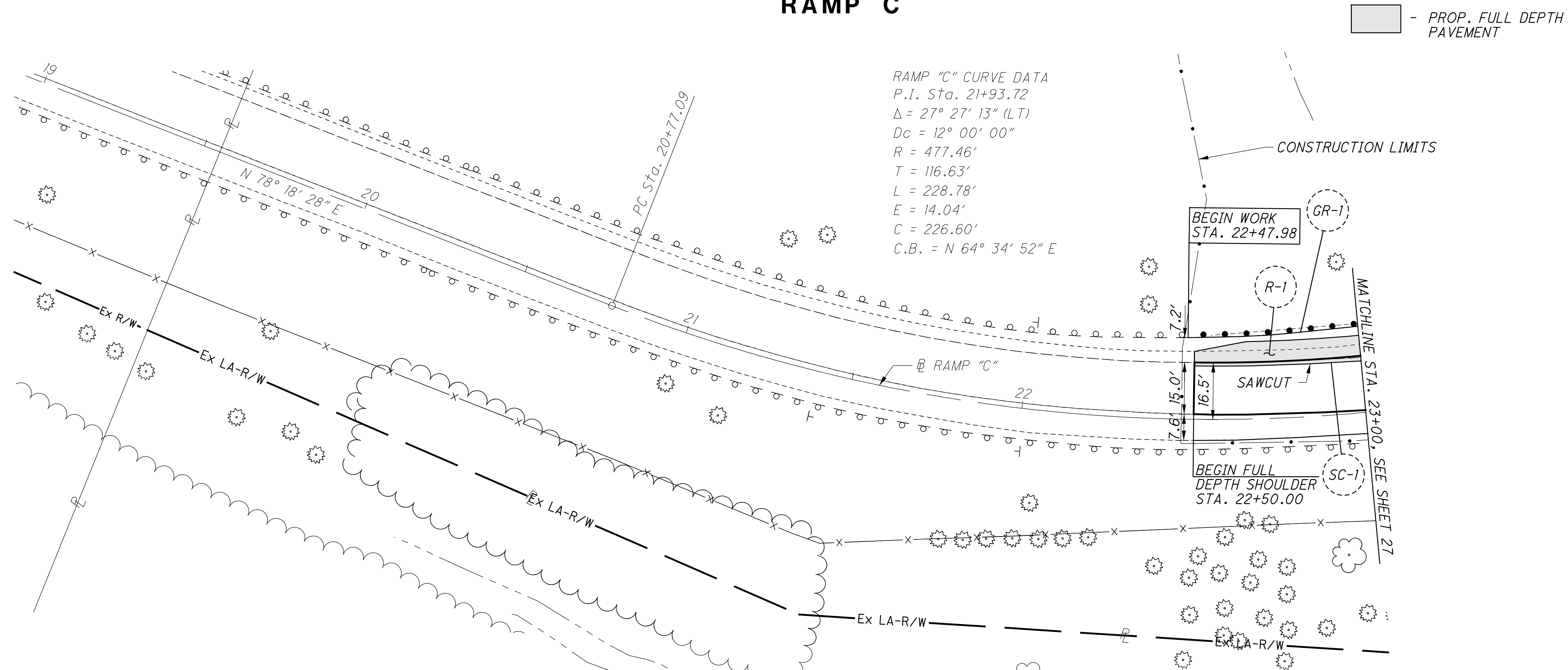
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### RAMP B

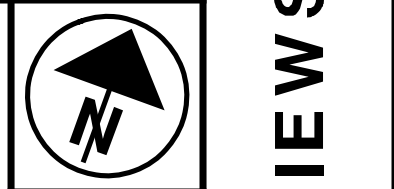


### RAMP C

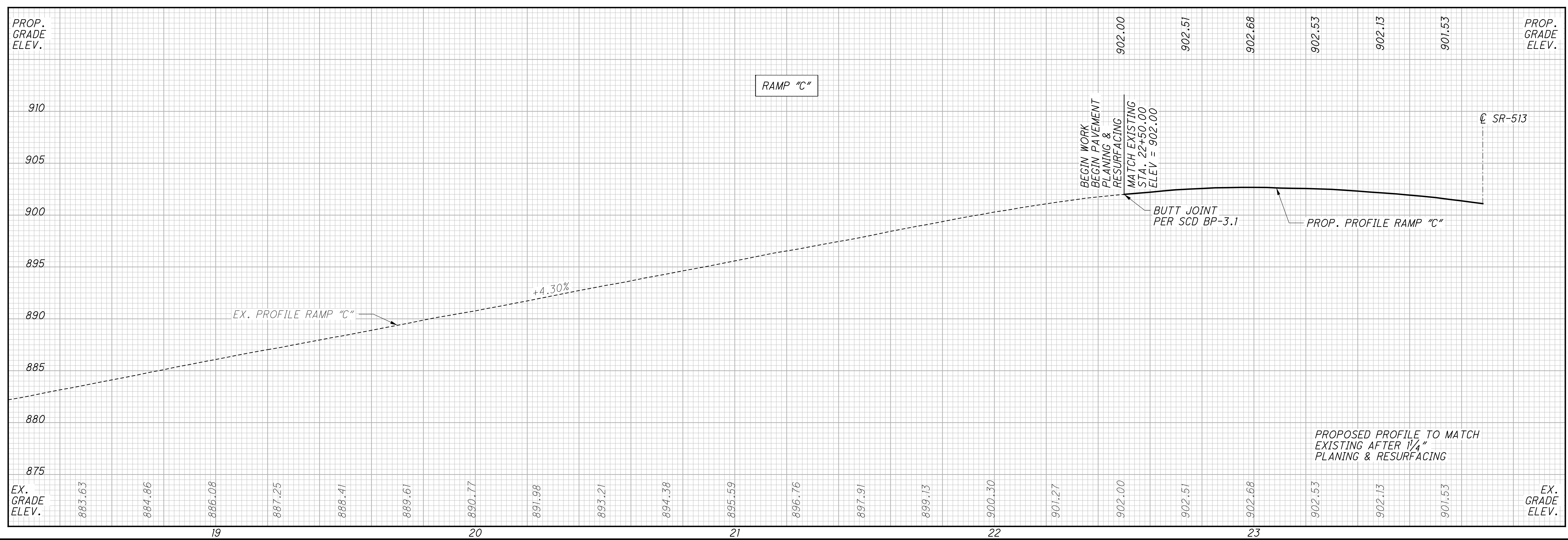
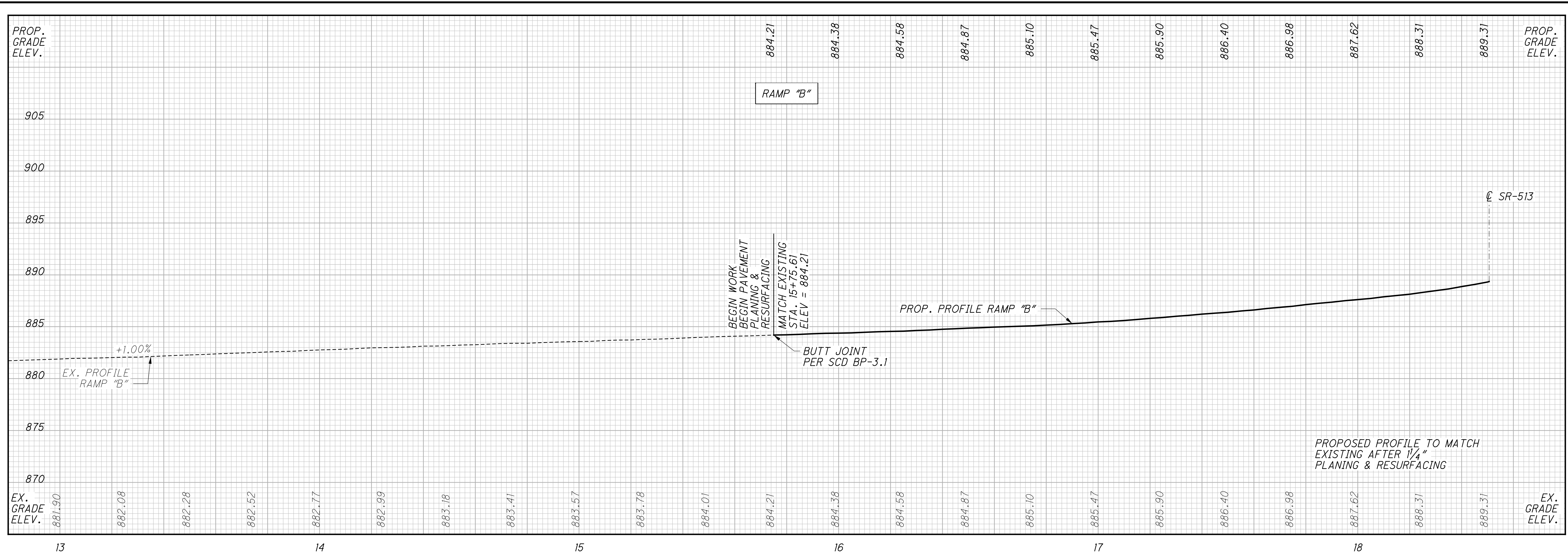


CALCULATED  
 CAG  
 CHECKED  
 GPD

HORIZONTAL SCALE IN FEET



G:\DE\Clients\ODOT\075542\_GUE\_513\_0865\93289\_GUE\_513-08.65\Design\Roadway\Sheets\93289\_CF001.dgn 6/8/2017 12:04:34 hollin



**PROFILES - RAMPS B & C**

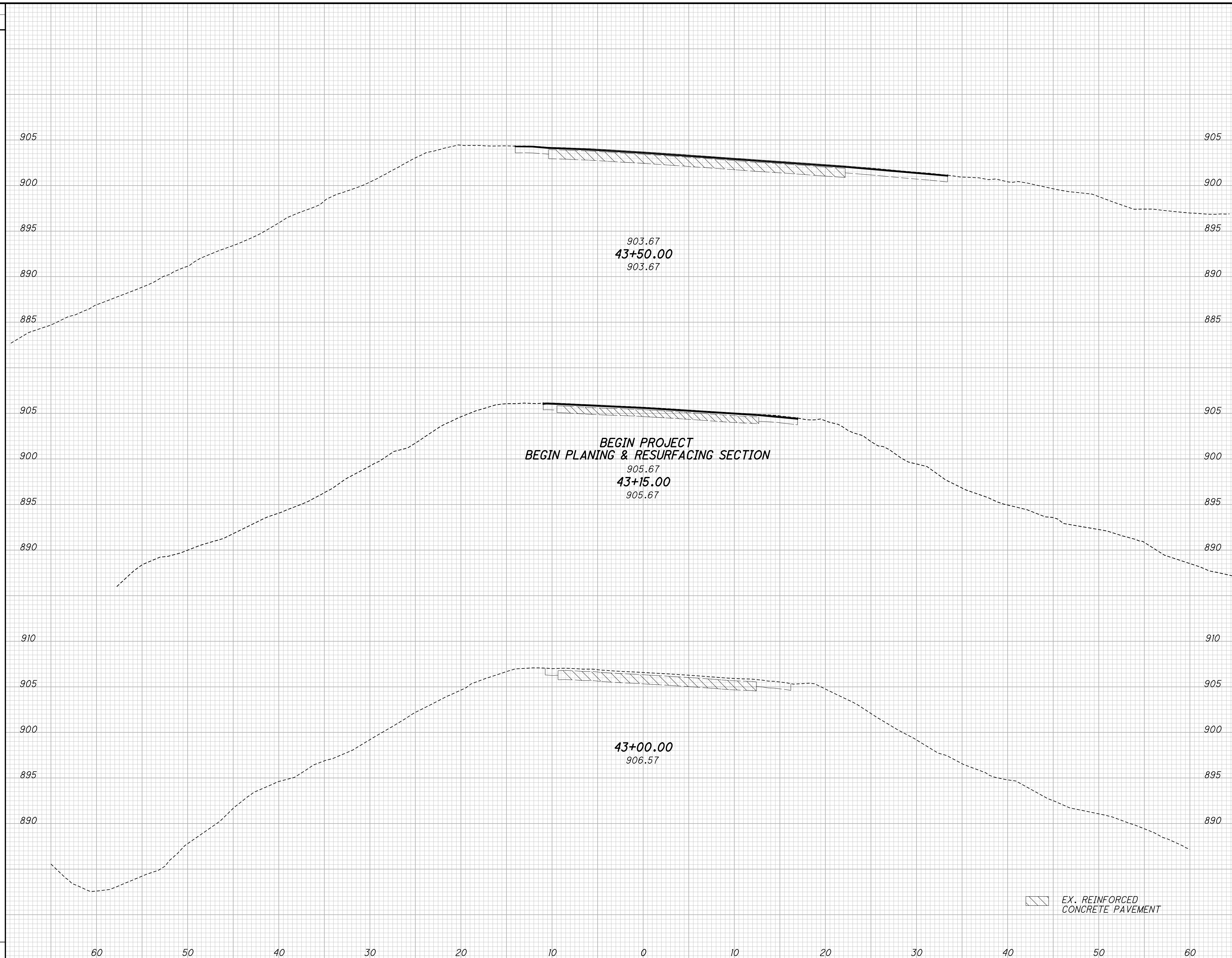
**GUE-513-8.65**

CALCULATED	CAG
CHECKED	NGF

30  
100



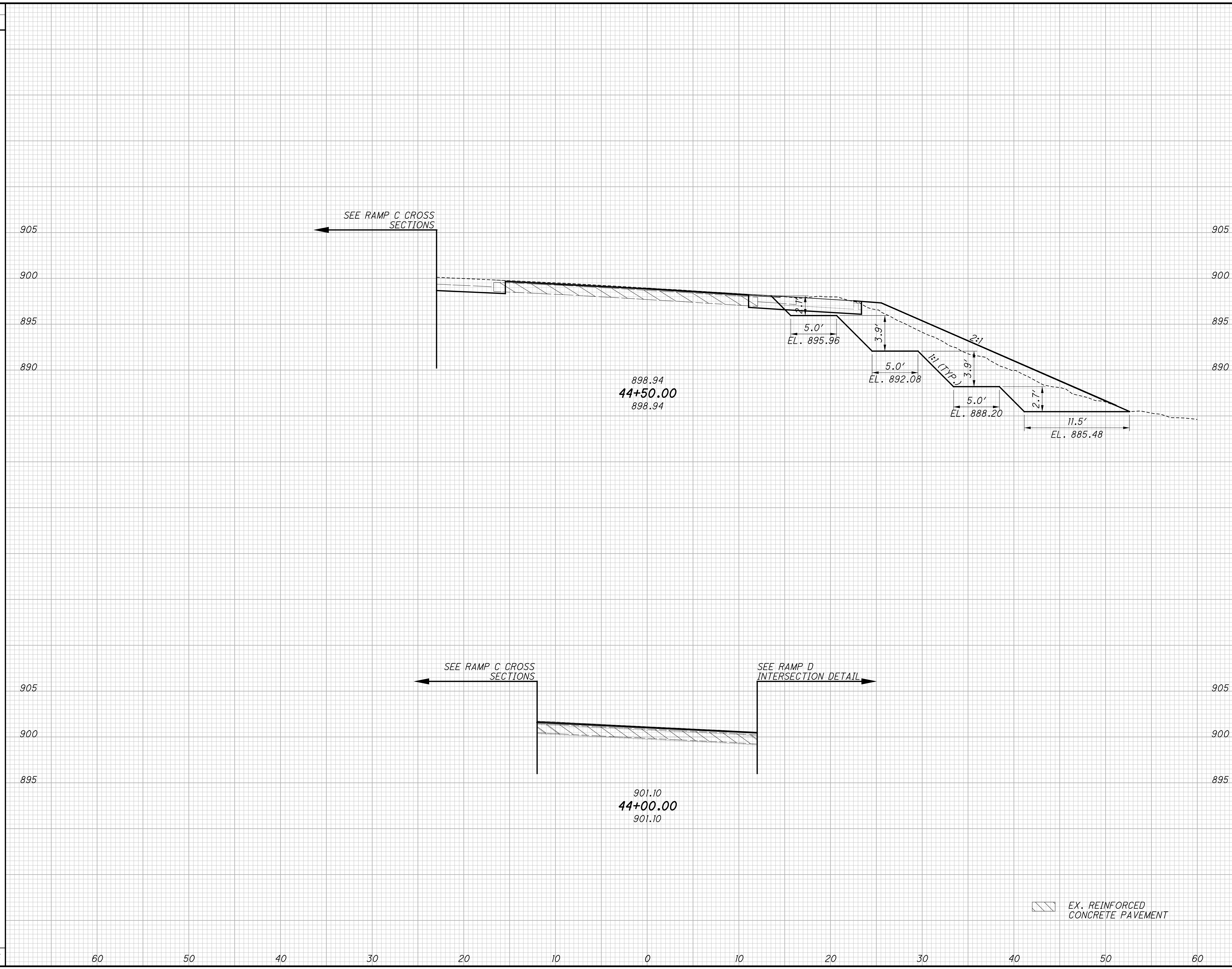
G:\DE\Clients\ODOT\075542\_GUE\_513\_0865\93289\_GUE\_513-08.65\Design\Roadway\Sheets\93289\_XS001.dgn 6/8/2017 12:04:35 holln



SEEDING		END AREA		VOLUME		CALCULATED	
END WIDTH	SO. YDS.	CUT	FILL	CUT	FILL	CAG	GPD
<b>CROSS SECTIONS - SR-513 STA. 43+00 TO STA. 43+50</b>							
<b>GUE-513-8.65</b>							
31 100							

SEEDING  
 END WIDTH SO. YDS.  
 33 536  
 444  
 33  
 92  
 0  
 33 536

G:\DE\Clients\ODOT\075542\_GUE\_513\_0865\93289\_GUE-513-08.65\Design\Roadway\Sheets\93289\_XS001.dgn 6/8/2017 12:04:35 holln



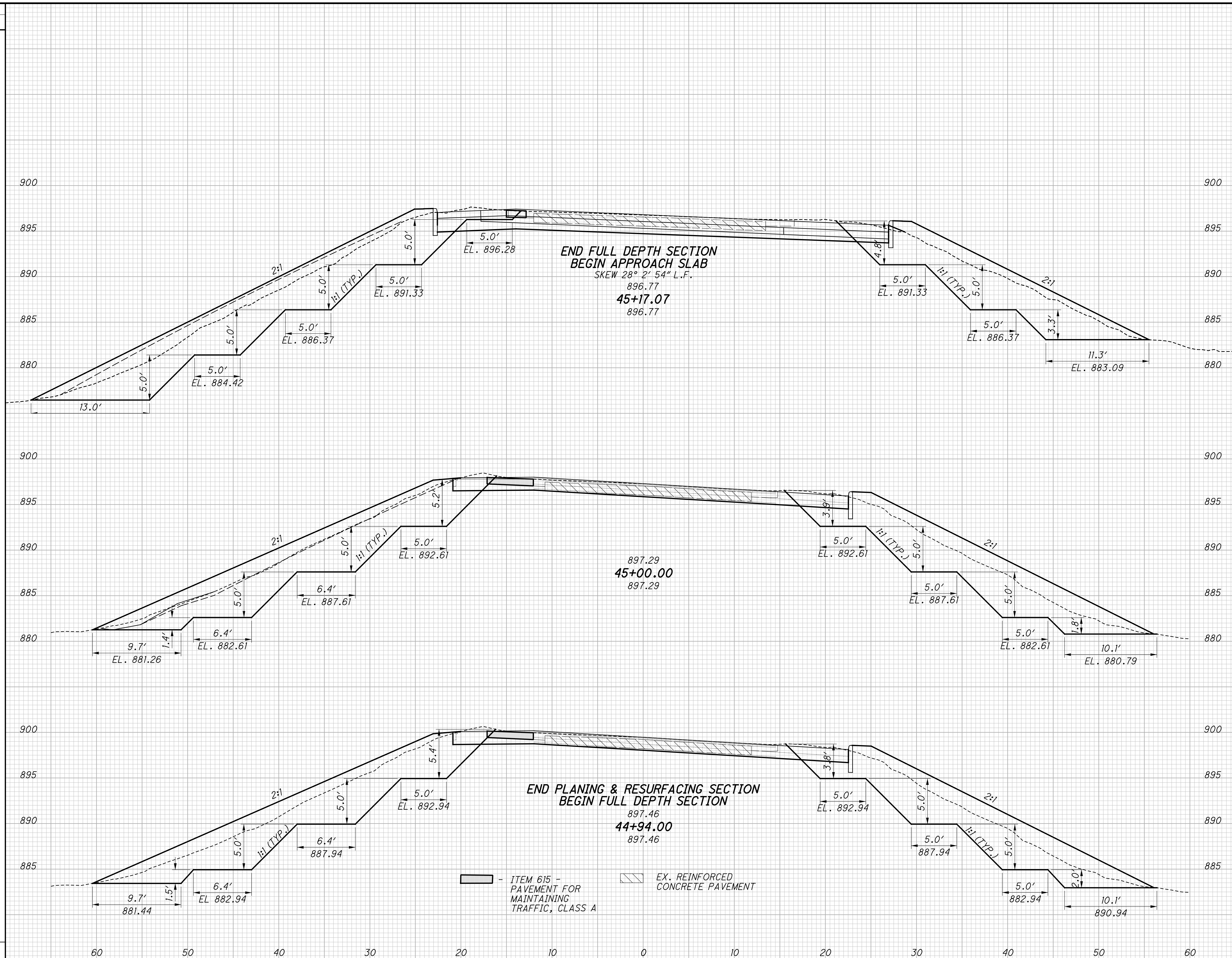
END AREA		VOLUME		CALCULATED	
CUT	FILL	CUT	FILL	CAG	GPD
109	117	428	542		
0	0	101	108		
		529	650		

**CROSS SECTIONS - SR-513  
 STA. 44+00 TO STA. 44+50**

**GUE-513-8.65**

32  
 100

SEEDING  
 END WIDTH SO. YDS.  
 232 215  
 6/8/2017 12:04:36  
 hollin  
 G:\NDE\Clients\DOT\075542\_GUE\_513\_0865\93289\_GUE-513-0865\Design\Roadway\Sheets\93289\_XS001.dgn



END AREA		VOLUME		CALCULATED	
CUT	FILL	CUT	FILL	CAG	GPD
285	332	171	206		
256	321	56	70		
246	312	227	276		

**CROSS SECTIONS - SR-513  
 STA. 44+94 TO STA. 45+17.07**

**GUE-513-8.65**

33  
100



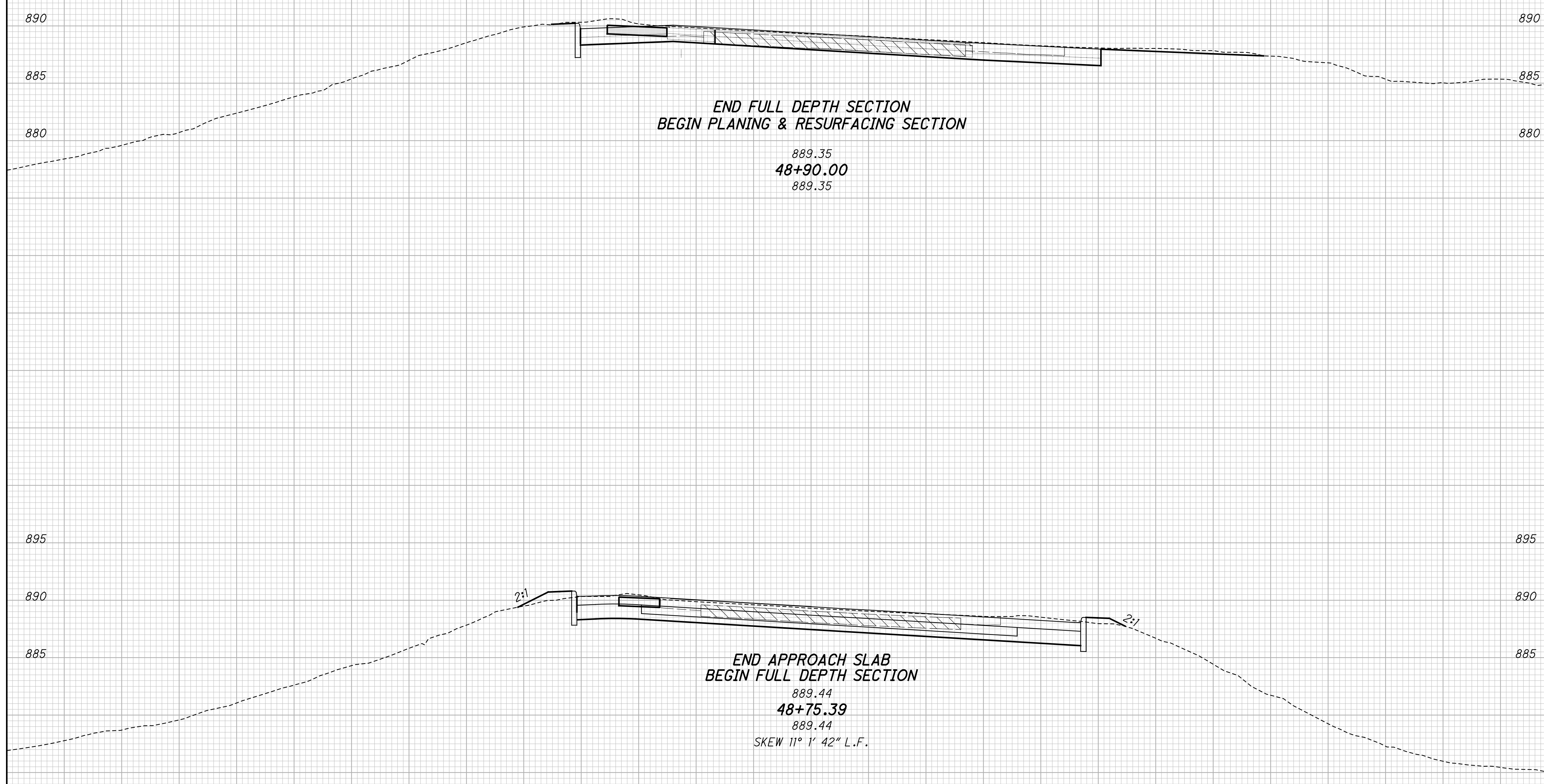
SEEDING  
 END WIDTH SO. YDS.  
 33 47  
 20  
 27  
 13  
 60 50 40 30 20 10 0 10 20 30 40 50 60

END AREA	VOLUME		CALCULATED CAG	CHECKED GPD
	FILL	CUT		
		12	0	
32	0			
	14	1		
22	4			
	26	1		

CROSS SECTIONS - SR-513  
 STA. 48+75 TO STA. 48+90  
 GUE-513-8.65

34  
 100

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END FULL DEPTH SECTION  
 BEGIN PLANING & RESURFACING SECTION

889.35  
 48+90.00  
 889.35

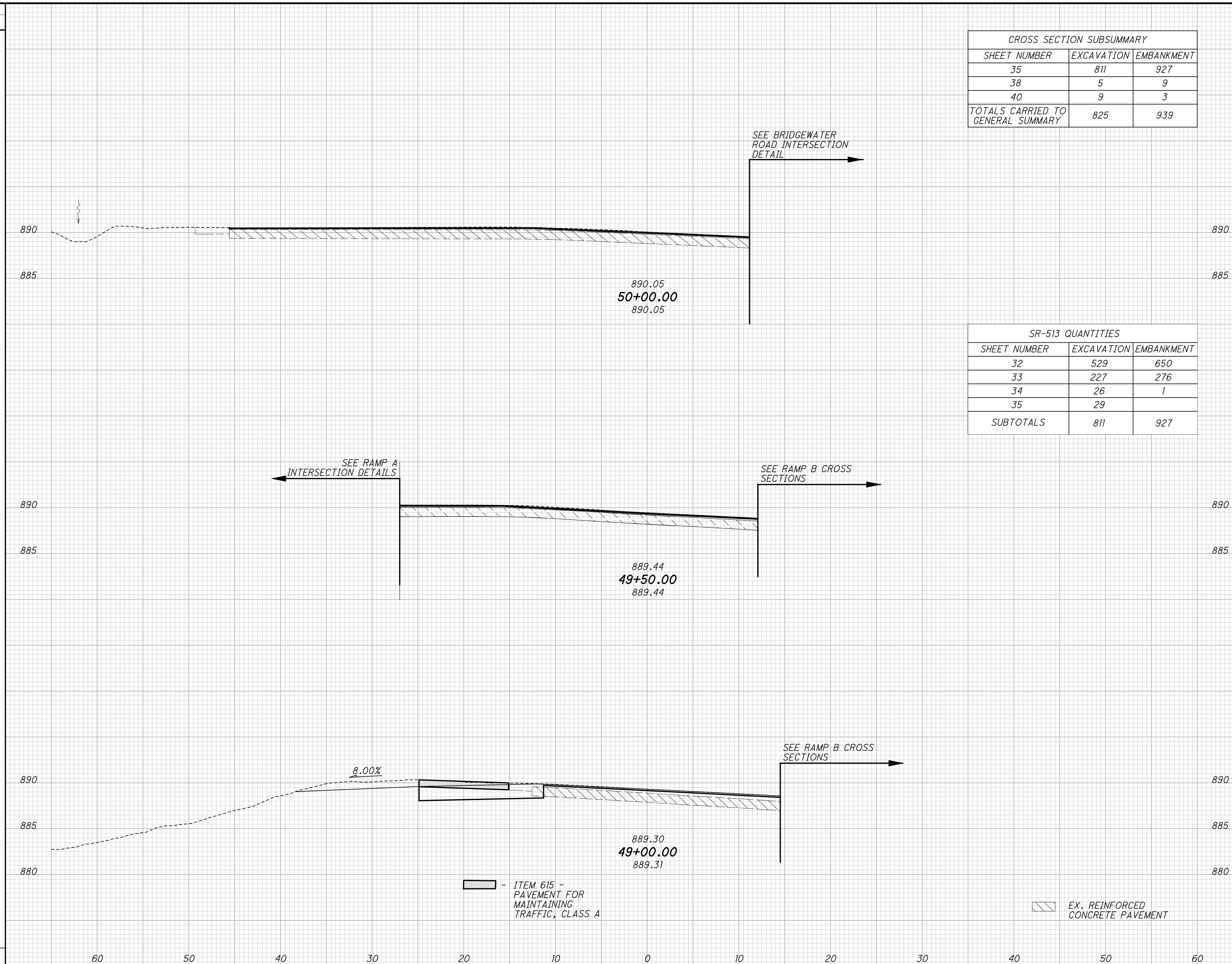
END APPROACH SLAB  
 BEGIN FULL DEPTH SECTION

889.44  
 48+75.39  
 889.44  
 SKEW 11° 1' 42" L.F.

ITEM 615 -  
 PAVEMENT FOR  
 MAINTAINING  
 TRAFFIC, CLASS A

EX. REINFORCED  
 CONCRETE PAVEMENT

SEEDING  
 END SO.  
 WIDTH YDS.  
 16 43  
 60 50 40 30 20 10 0 10 20 30 40 50 60  
 6/8/2017 12:04:37 holln  
 G:\DE\Clients\075542\_GUE\_513\_0865\93289\_GUE\_513-08.65\Design\Roadway\Sheets\93289\_XS001.dgn



CROSS SECTION SUBSUMMARY		
SHEET NUMBER	EXCAVATION	EMBANKMENT
35	811	927
38	5	9
40	9	3
TOTALS CARRIED TO GENERAL SUMMARY	825	939

SR-513 QUANTITIES		
SHEET NUMBER	EXCAVATION	EMBANKMENT
32	529	650
33	227	276
34	26	1
35	29	
SUBTOTALS	811	927

END	AREA		VOLUME	
	CUT	FILL	CUT	FILL
890				
885				
890	0	0		
885				
890			29	0
885				
890				
885	31	0		
880				
			29	0

CROSS SECTIONS - SR-513  
 STA. 49+00 TO STA. 50+00

GUE-513-8.65

35  
100

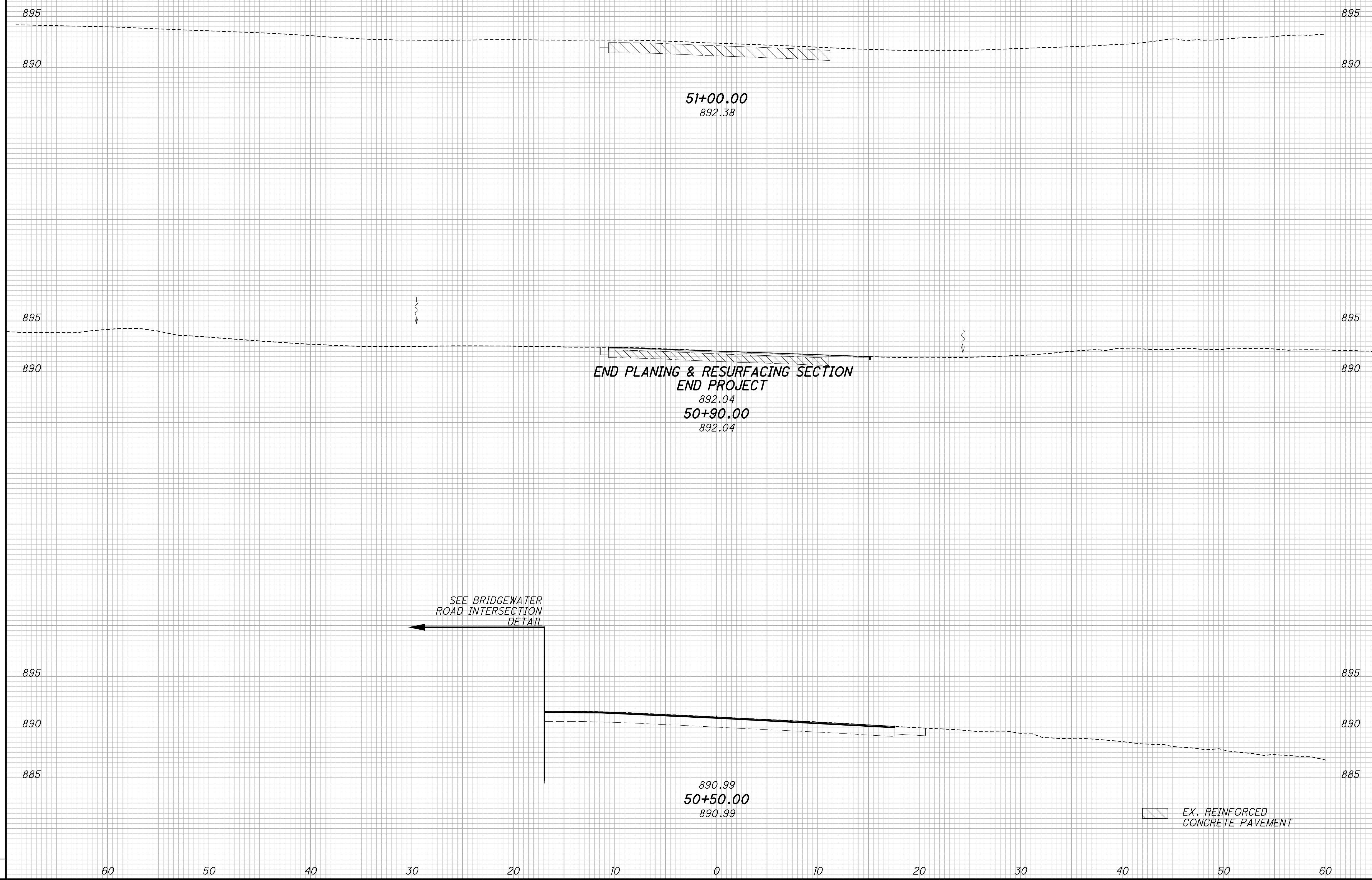
ITEM 615 - PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A

EX. REINFORCED CONCRETE PAVEMENT

G:\DE\Clients\ODOT\075542\_GUE\_513\_0865\93289\_GUE\_513-08.65\Design\Roadway\Sheets\93289\_XS001.dgn 6/8/2017 12:04:37 holln

SEEDING	
END WIDTH	SO. YDS.

END AREA		VOLUME		CALCULATED CAG	CHECKED GPD
CUT	FILL	CUT	FILL		

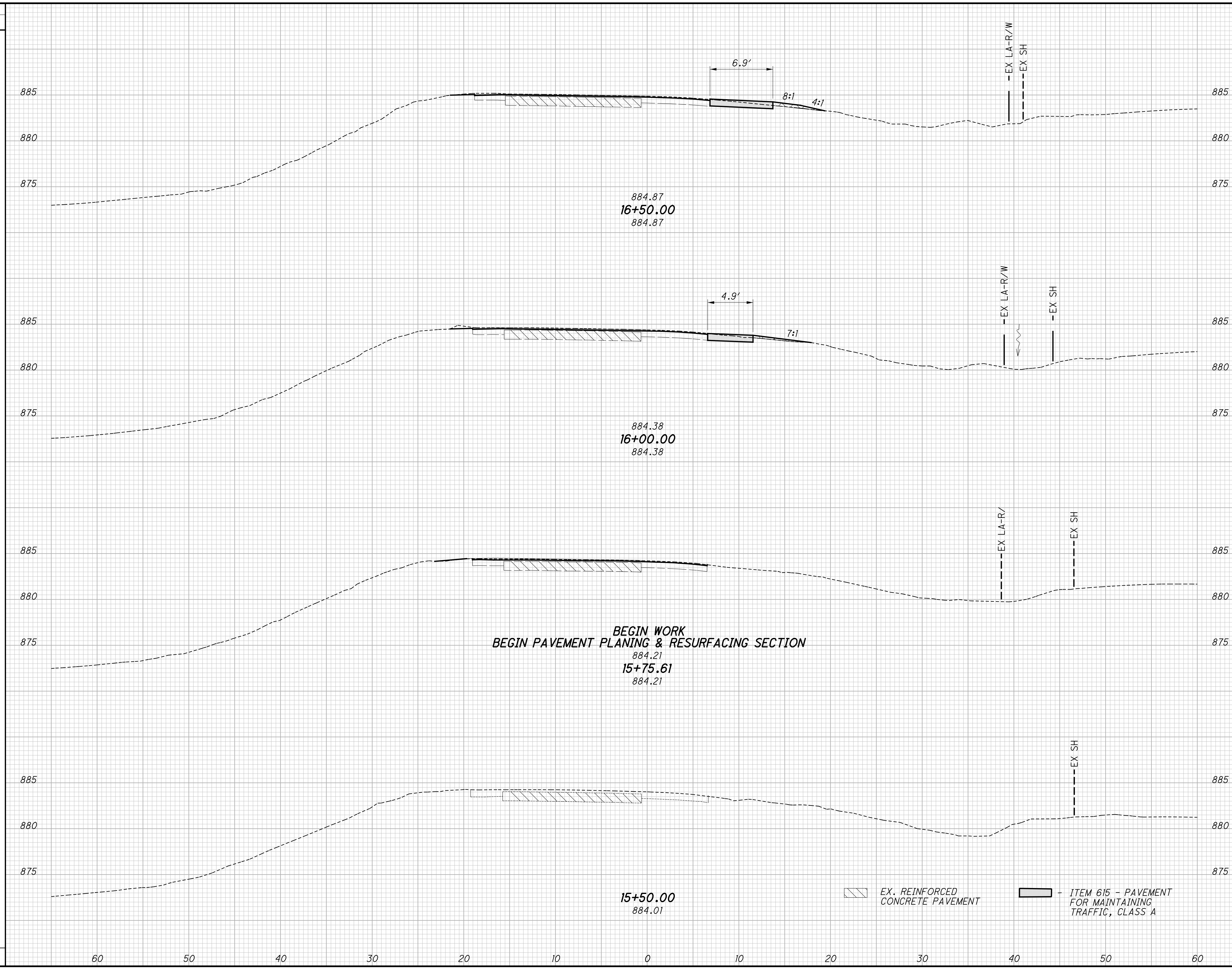


CROSS SECTIONS - SR-513  
STA. 50+50 TO STA. 51+00

GUE-513-8.65



SEEDING  
 END WIDTH SO. YDS.  
 71  
 13  
 70  
 13  
 26  
 6  
 32 167  
 60 50 40 30 20 10 0 10 20 30 40 50 60  
 G:\DE\Clients\DOT\075542\_GUE\_513\_0865\93289\_GUE-513-0865\Design\Roadway\Sheets\93289\_XS002.dgn 6/8/2017 12:04:38 hain



END AREA		VOLUME		CALCULATED	
CUT	FILL	CUT	FILL	CAG	GPD
		1	2		
1	2				
		1	2		
1	1				
		1	1		
0	1				
		3	5		

**CROSS SECTIONS - RAMP B**  
**STA. 15+50 TO STA. 16+50**

**GUE-513-8.65**

37  
100

SEEDING  
 END SO.  
 WIDTH YDS.  
 23 80  
 60 50 40 30 20 10 0 10 20 30 40 50 60  
 3  
 26  
 6  
 54  
 14  
 6/8/2017 12:04:38  
 hain  
 6/8/2017 12:04:38  
 hain  
 6/8/2017 12:04:38  
 hain  
 6/8/2017 12:04:38  
 hain

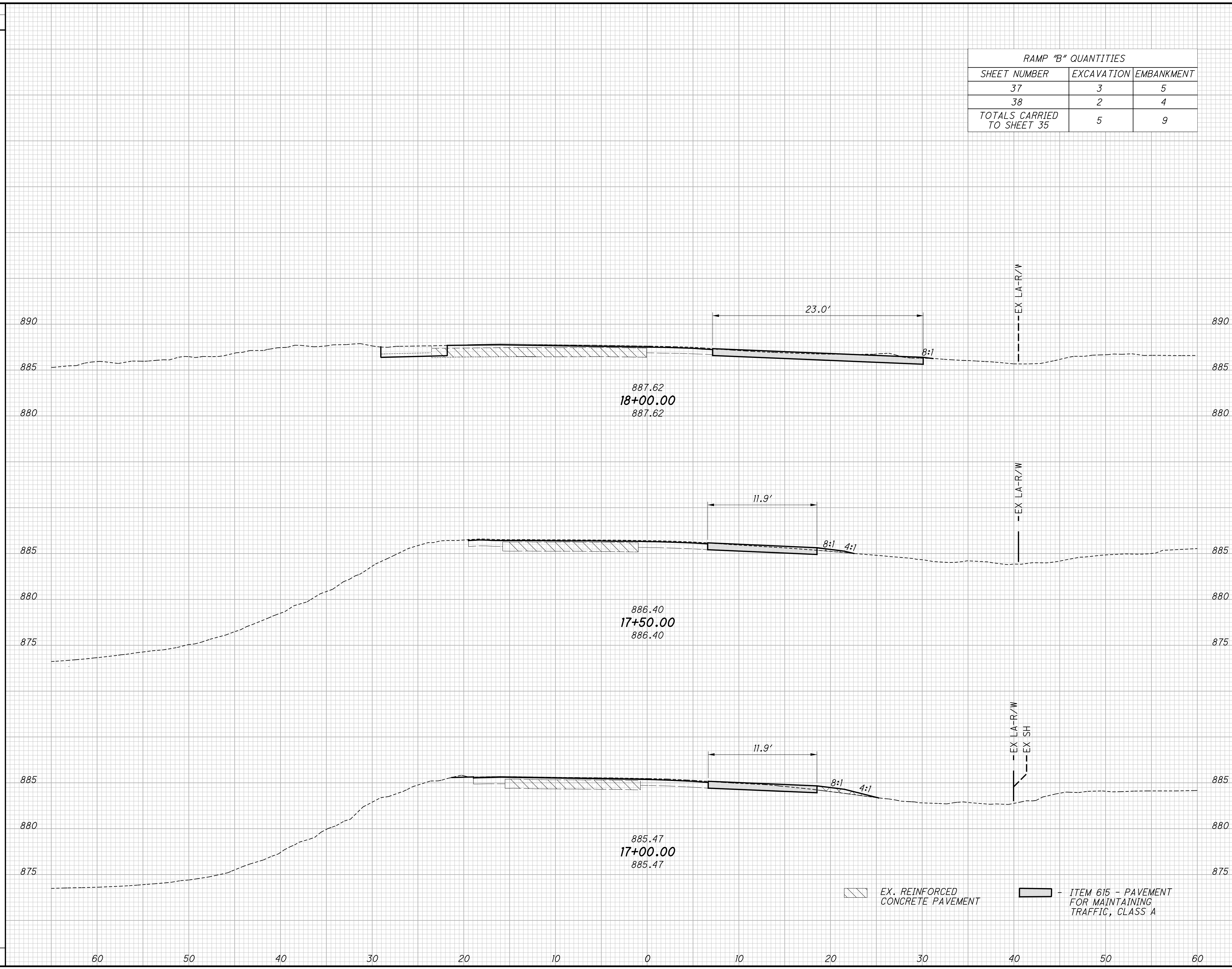
RAMP "B" QUANTITIES		
SHEET NUMBER	EXCAVATION	EMBANKMENT
37	3	5
38	2	4
TOTALS CARRIED TO SHEET 35	5	9

END AREA	VOLUME	CALCULATED	CHECKED		
				CUT	FILL
2	1				
1	3				
2	4				

**CROSS SECTIONS - RAMP B  
 STA. 17+00 TO STA 18+00**

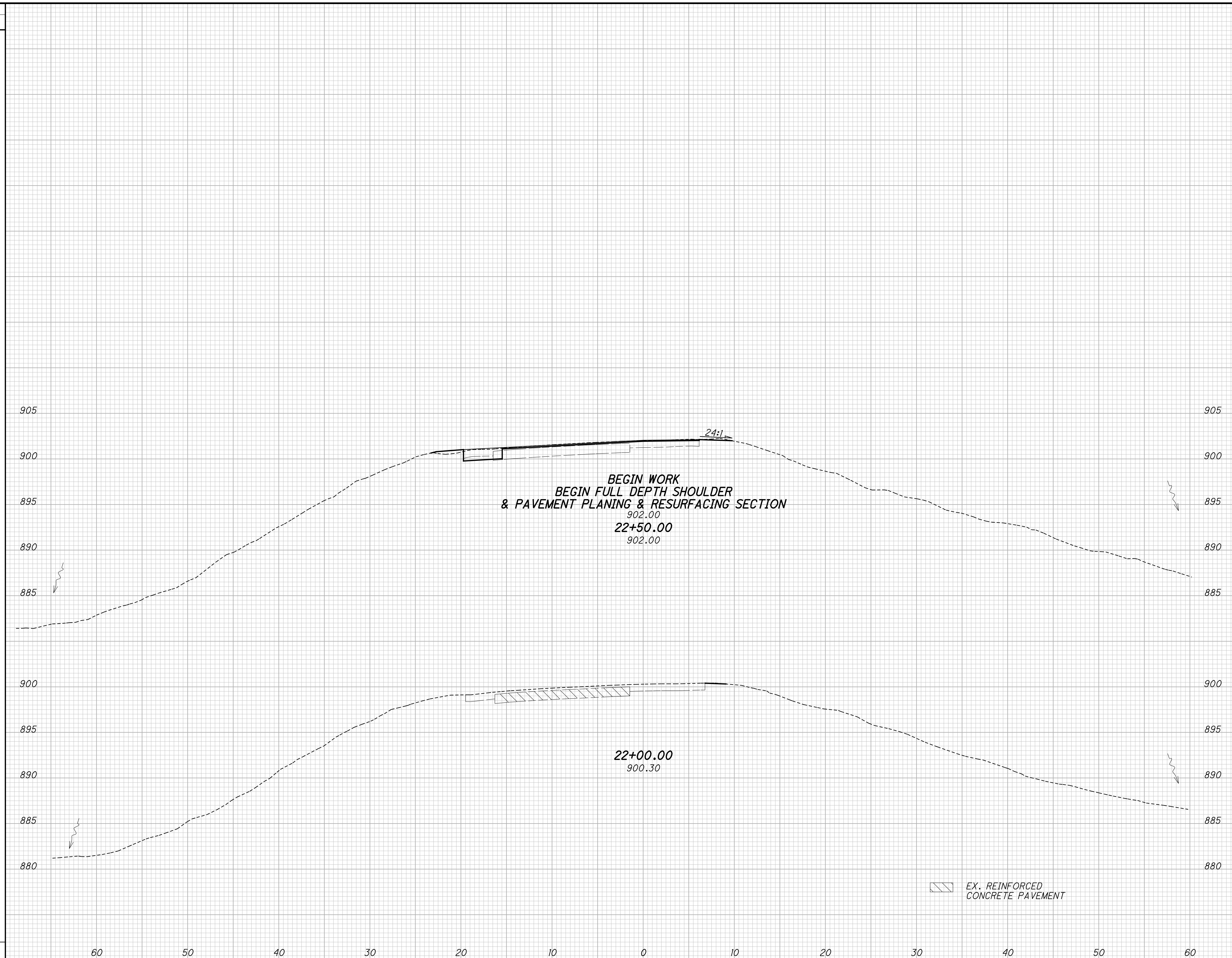
**GUE-513-8.65**

38  
100



G:\DE\Clients\ODOT\075542\_GUE\_513\_0865\93289\_GUE\_513-08.65\Design\Roadway\Sheets\93289\_XS003.dgn 6/8/2017 12:04:39 hain

SEEDING	
END WIDTH	SO. YDS.
6	34



END AREA		VOLUME	
CUT	FILL	CUT	FILL
2	1	5	2

**CROSS SECTIONS - RAMP C  
STA. 22+00 TO STA. 22+50**

**GUE-513-8.65**

39  
100

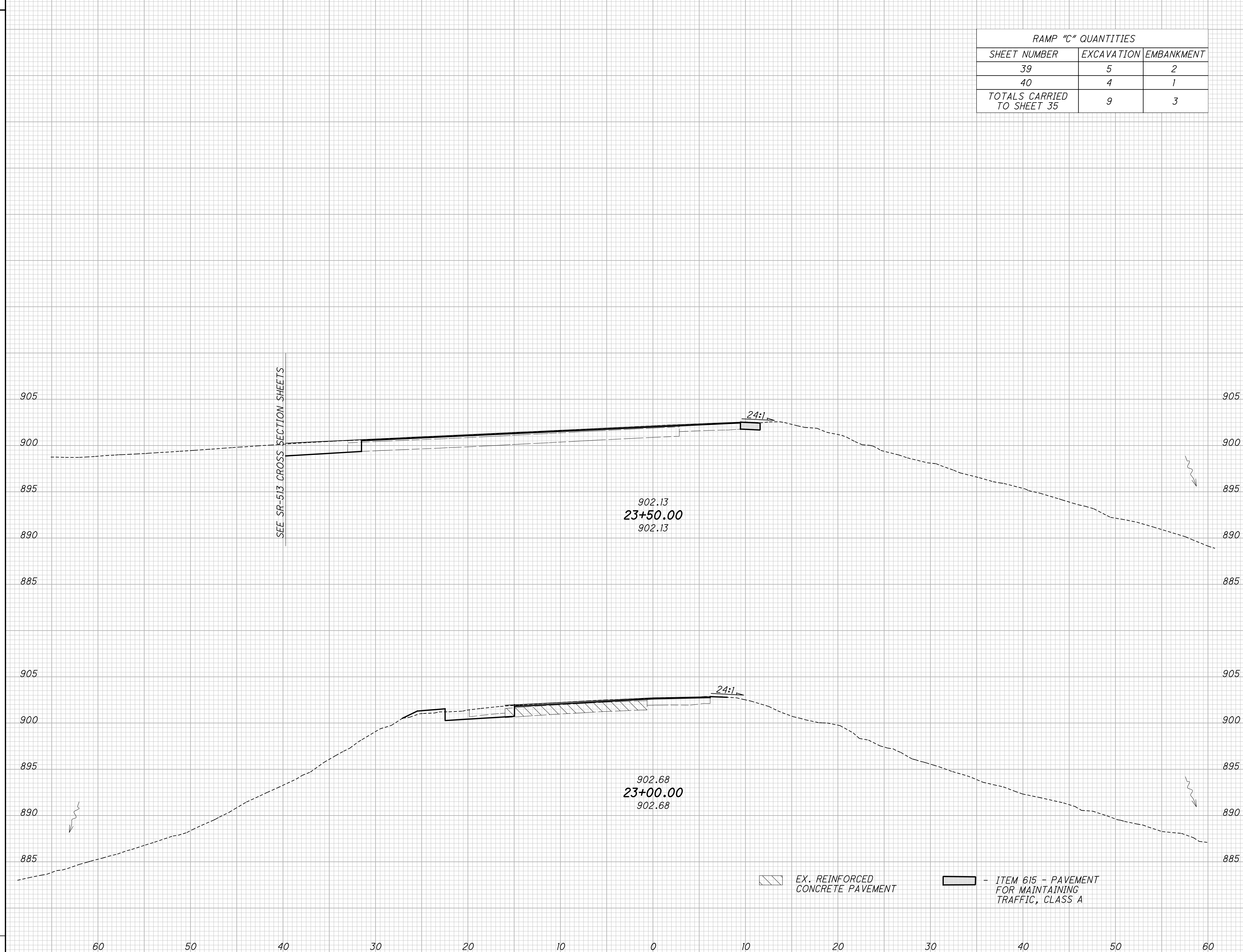



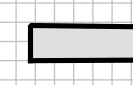
G:\DE\Clients\ODOT\075542\_GUE\_513\_0865\93289\_GUE-513-08.65\Design\Roadway\Sheets\93289\_XS003.dgn 6/8/2017 12:04:39 halln

SEEDING	
END WIDTH	SO. YDS.
7	19
7	19

END AREA		VOLUME		CALCULATED CAG	CHECKED GPD
CUT	FILL	CUT	FILL		
		4	2		
		4	1		

RAMP "C" QUANTITIES		
SHEET NUMBER	EXCAVATION	EMBANKMENT
39	5	2
40	4	1
TOTALS CARRIED TO SHEET 35	9	3



 EX. REINFORCED CONCRETE PAVEMENT  
 - ITEM 615 - PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A

CROSS SECTIONS - RAMP C  
STA. 23+00 TO STA. 23+50

GUE-513-8.65

40/100

**SUPERELEVATION TABLE**

PI STA. 49+86.70

Dc = 4° 45' 00"

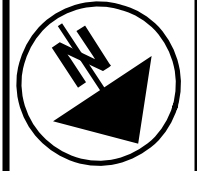
		LEFT SIDE					CENTERLINE CONTROL		RIGHT SIDE					REMARKS
ROUNDING P.I. POINT ELEVATION	ADDITIONAL OFFSET FROM EOP	EDGE ELEVATION	TRANSITION RATE	ELEVATION CORRECTION	CROSS SLOPE	WIDTH	STATION	PROFILE GRADE	WIDTH	CROSS SLOPE	ELEVATION CORRECTION	TRANSITION RATE	EDGE ELEVATION	
		901.21	196:1	0.59	0.0494	12.00	44+11.00 R 1	900.62	14.02	-0.0484	-0.68	196:1	899.94	B.T
		900.63	196:1	0.64	0.0532	12.00	44+25.00 R 1	899.99	14.30	-0.0526	-0.75	196:1	899.24	
		899.66	196:1	0.72	0.0600	12.00	44+50.00 R 1	898.94	14.50	-0.0600	-0.87	196:1	898.07	F.S.
		898.78		0.72	0.0600	12.00	44+75.00 R 1	898.06	14.50	-0.0600	-0.87		897.19	
898.16	2.50	898.01		0.72	0.0600	12.00	45+00.00 R 1	897.29	14.50	-0.0600	-0.87		896.42	
897.51	2.52	897.36		0.72	0.0600	12.00	45+25.00 R 1	896.64	14.50	-0.0600	-0.87		895.77	
897.10	4.69	896.82		0.72	0.0600	12.00	45+50.00 R 1	896.10	14.50	-0.0600	-0.87		895.23	
896.54	5.25	896.22		0.72	0.0600	12.00	45+75.00 R 1	895.50	14.50	-0.0600	-0.87		894.63	
895.95	5.25	895.63		0.72	0.0600	12.00	46+00.00 R 1	894.91	14.50	-0.0600	-0.87		894.04	
895.35	5.25	895.03		0.72	0.0600	12.00	46+25.00 R 1	894.31	14.50	-0.0600	-0.87		893.44	
894.76	5.25	894.44		0.72	0.0600	12.00	46+50.00 R 1	893.72	14.50	-0.0600	-0.87		892.85	
894.16	5.25	893.84		0.72	0.0600	12.00	46+75.00 R 1	893.12	14.50	-0.0600	-0.87		892.25	
893.57	5.25	893.25		0.72	0.0600	12.00	47+00.00 R 1	892.53	14.50	-0.0600	-0.87		891.66	
892.97	5.25	892.65		0.72	0.0600	12.00	47+25.00 R 1	891.93	14.50	-0.0600	-0.87		891.06	
892.38	5.25	892.06		0.72	0.0600	12.00	47+50.00 R 1	891.34	14.50	-0.0600	-0.87		890.47	
891.84	5.25	891.52		0.72	0.0600	12.00	47+75.00 R 1	890.80	14.50	-0.0600	-0.87		889.93	
891.38	5.25	891.06		0.72	0.0600	12.00	48+00.00 R 1	890.34	14.50	-0.0600	-0.87		889.47	
891.00	5.25	890.68		0.72	0.0600	12.00	48+25.00 R 1	889.96	14.50	-0.0600	-0.87		889.09	
890.69	5.17	890.38		0.72	0.0600	12.00	48+50.00 R 1	889.66	14.50	-0.0600	-0.87		888.79	
890.33	2.77	890.16		0.72	0.0600	12.00	48+75.00 R 1	889.44	14.50	-0.0600	-0.87		888.57	
		890.02	196:1	0.72	0.0600	12.00	49+00.00 R 1	889.30	14.43	-0.0600	-0.87	196:1	888.44	F.S.
		890.02	196:1	0.68	0.0567	12.00	49+25.00 R 1	889.34	14.25	-0.0514	-0.73	196:1	888.61	
		890.02	196:1	0.67	0.0562	12.00	49+29.00 R 1	889.34	14.21	-0.0500	-0.71	196:1	888.63	E.T.
B.T. = BEGIN TRANSITION TO FULL SUPERELEVATION														
E.T. = END TRANSITION FROM FULL SUPERELEVATION														

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CALCULATED MS  
CHECKED GPD

**SUPERELEVATION TABLE**

**GUE - 513 - 8.65**

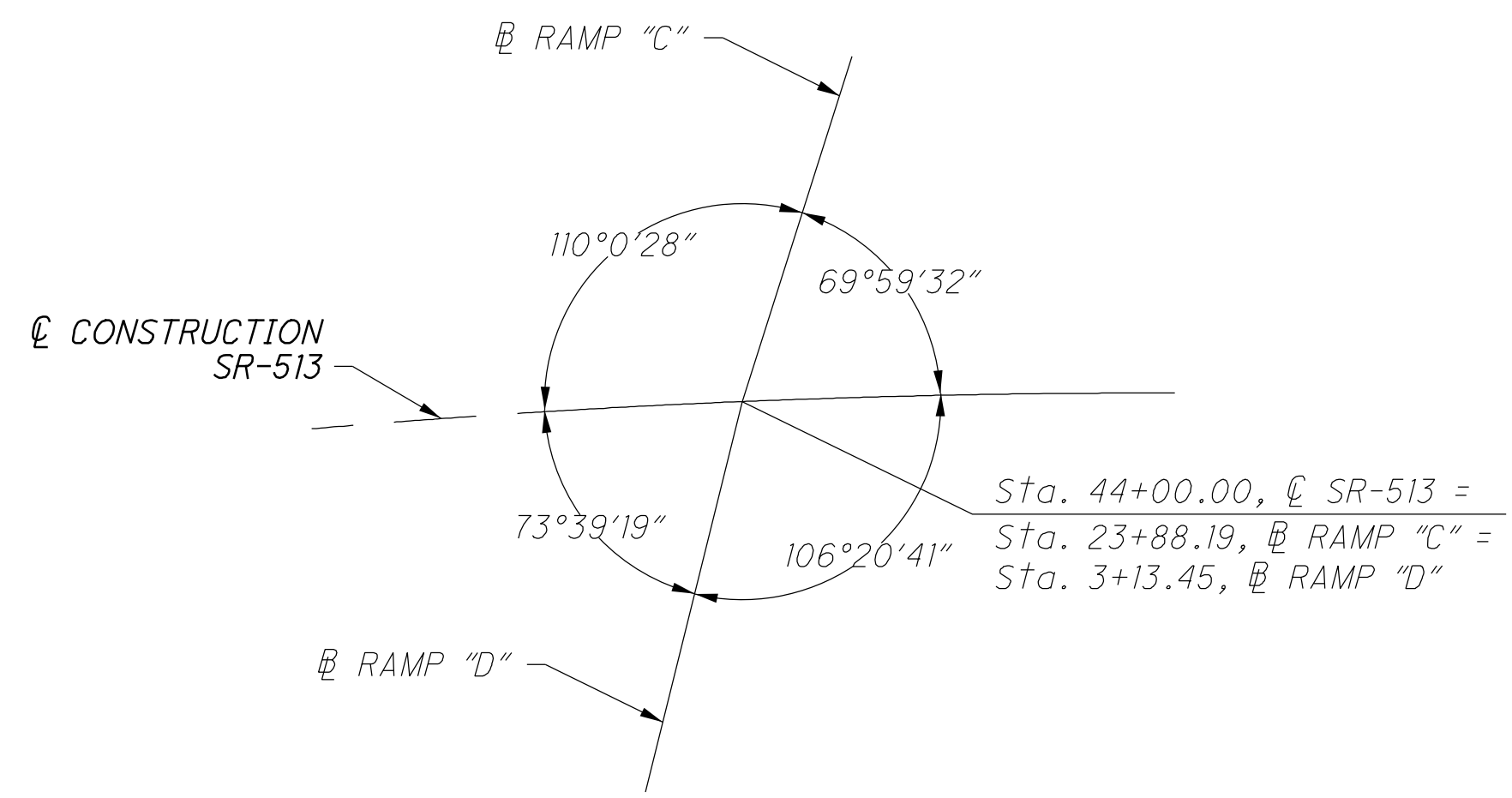


0 20 40  
 HORIZONTAL  
 SCALE IN FEET

CALCULATED  
 CAG  
 CHECKED  
 GPD

**INTERSECTION DETAIL - SR-513 & RAMP C & D**

**GUE-513-8.65**



RAMP C CURVE DATA  
 P.I. Sta. 21+93.72  
 $\Delta = 27^\circ 27' 13''$  (LT)  
 $D_c = 12^\circ 00' 00''$   
 $R = 477.46'$   
 $T = 116.63'$   
 $L = 228.78'$   
 $E = 14.04'$   
 $C = 226.60'$   
 $C.B. = N 64^\circ 34' 52'' E$

$\text{Sta. } 43+64.12, 72.89' \text{ Lt.}, \varnothing \text{ SR-513}$   
 $\text{Sta. } 23+33.25, 60.5' \text{ Rt.}, \text{ } \text{RAMP "C"}$   
 $\Delta = 51^\circ 23' 24''$   
 $R = 60.00'$   
 $L = 53.82'$

$\text{Sta. } 44+81.37, 57' \text{ Lt.}, \varnothing \text{ SR-513}$   
 $\text{Sta. } 23+08.20, 61.49' \text{ Lt.}, \text{ } \text{RAMP "C"}$   
 $\Delta = 105^\circ 49' 19''$   
 $R = 45.00'$   
 $L = 83.11'$

$\text{Sta. } 43+20.21, 63.15' \text{ Rt.}, \varnothing \text{ SR-513}$   
 $\text{Sta. } 3+97.71, 54.03' \text{ Rt.}, \text{ } \text{RAMP "D"}$   
 $\Delta = 99^\circ 58' 42''$   
 $R = 50.00'$   
 $L = 87.25'$

$\text{Sta. } 44+44.65, 49.5' \text{ Rt.}, \varnothing \text{ SR-513}$   
 $\text{Sta. } 3+49.66, 55.23' \text{ Lt.}, \text{ } \text{RAMP "D"}$   
 $\Delta = 62^\circ 07' 52''$   
 $R = 35.00'$   
 $L = 37.95'$

STR. GUE-513-0865  
 SFN: 3005887

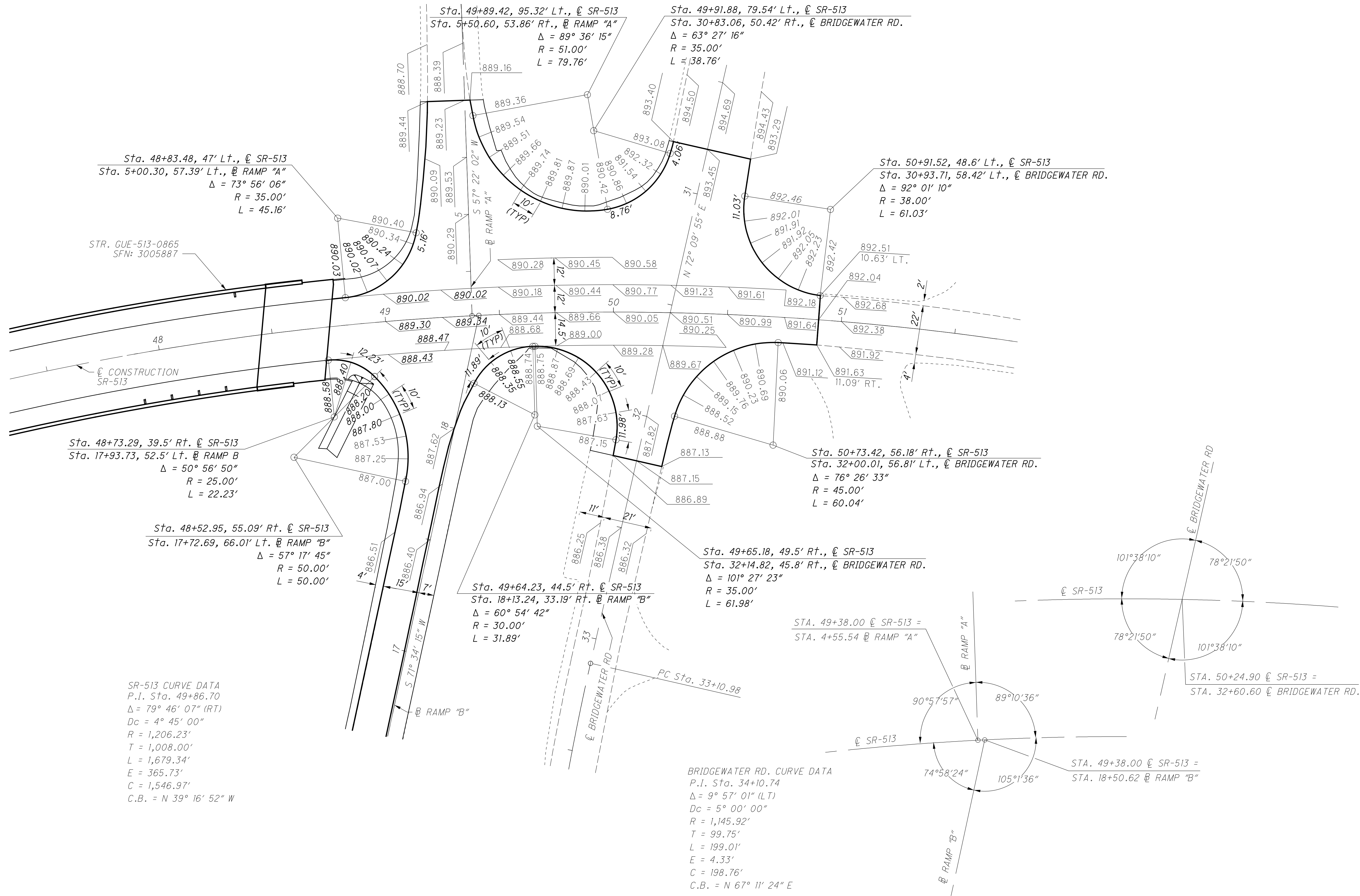
SR-513 CURVE DATA  
 P.I. Sta. 49+86.70  
 $\Delta = 79^\circ 46' 07''$  (RT)  
 $D_c = 4^\circ 45' 00''$   
 $R = 1,206.23'$   
 $T = 1,008.00'$   
 $L = 1,679.34'$   
 $E = 365.73'$   
 $C = 1,546.97'$   
 $C.B. = N 39^\circ 16' 52'' W$

NOTES:  
 ALL ELEVATIONS ARE AT 25' INTERVALS UNLESS OTHERWISE NOTED.

G:\DE\Clients\ODOT\075542\_GUE\_513\_0865\93289\_GUE-513-0865\Design\Roadway\Sheets\93289\_C1001.dgn 6/8/2017 12:04:41 halln



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0 20 40  
 HORIZONTAL  
 SCALE IN FEET

CALCULATED  
 CAG  
 CHECKED  
 GPD

**INTERSECTION DETAIL - SR-513 & RAMP A & B**

**GUE-513-8.65**

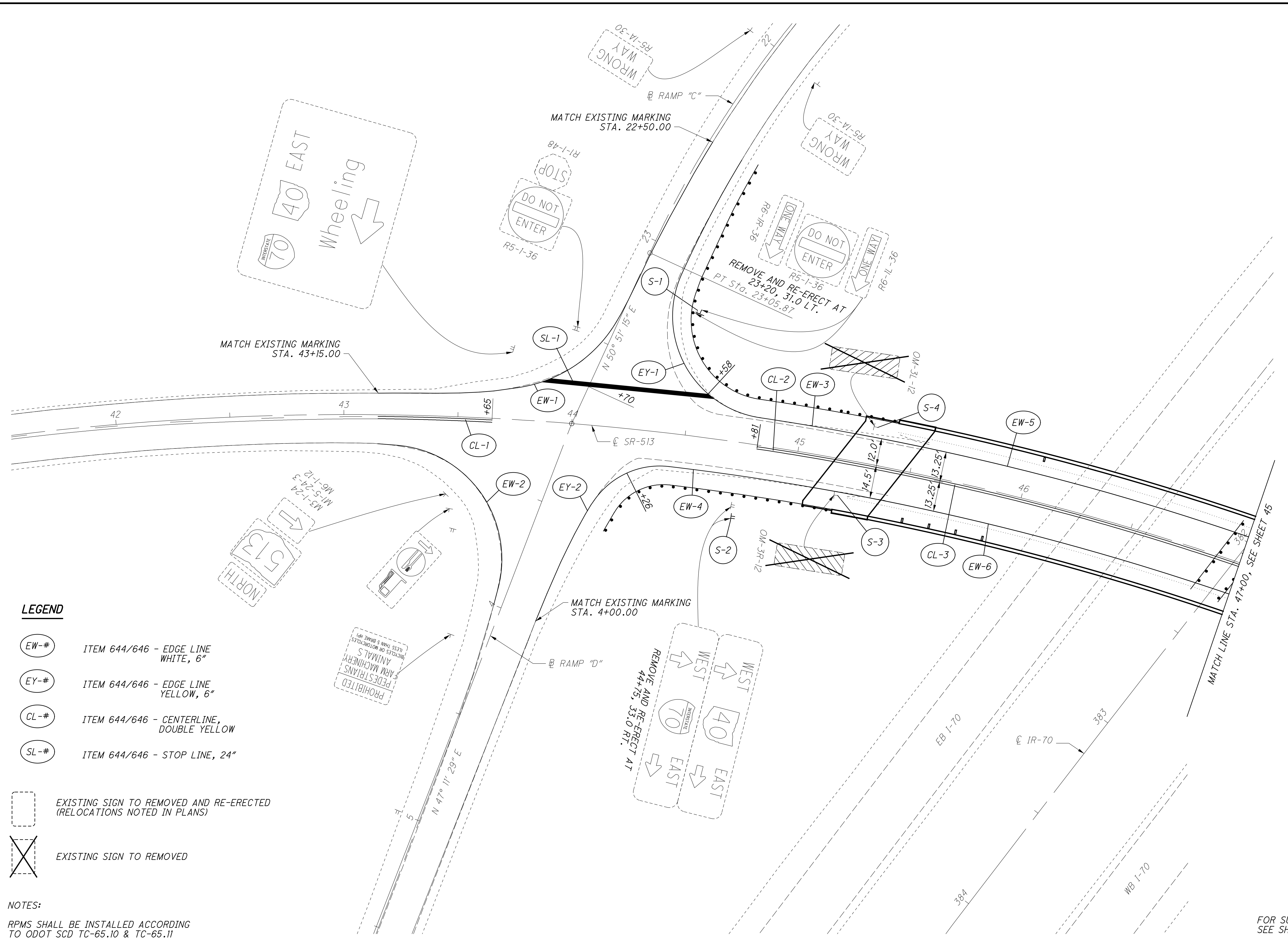
G:\DE\clients\ODOT\075542\_GUE\_513\_0865\93289\_GUE-513-0865\Design\Traffic\Sheets\93289\_IP001.dgn 6/8/2017 12:04:42 hollin

CALCULATED  
CAG  
CHECKED  
GPD

0 20 40  
10 HORIZONTAL  
SCALE IN FEET

# SIGNING AND PAVEMENT MARKING PLAN

## GUE-513-8.65



### LEGEND

- EW-# ITEM 644/646 - EDGE LINE WHITE, 6"
- EY-# ITEM 644/646 - EDGE LINE YELLOW, 6"
- CL-# ITEM 644/646 - CENTERLINE, DOUBLE YELLOW
- SL-# ITEM 644/646 - STOP LINE, 24"

EXISTING SIGN TO REMOVED AND RE-ERECTED (RELOCATIONS NOTED IN PLANS)

EXISTING SIGN TO REMOVED

### NOTES:

RPMS SHALL BE INSTALLED ACCORDING TO ODOT SCD TC-65.10 & TC-65.11

FOR SUBSUMMARY SEE SHEET 46



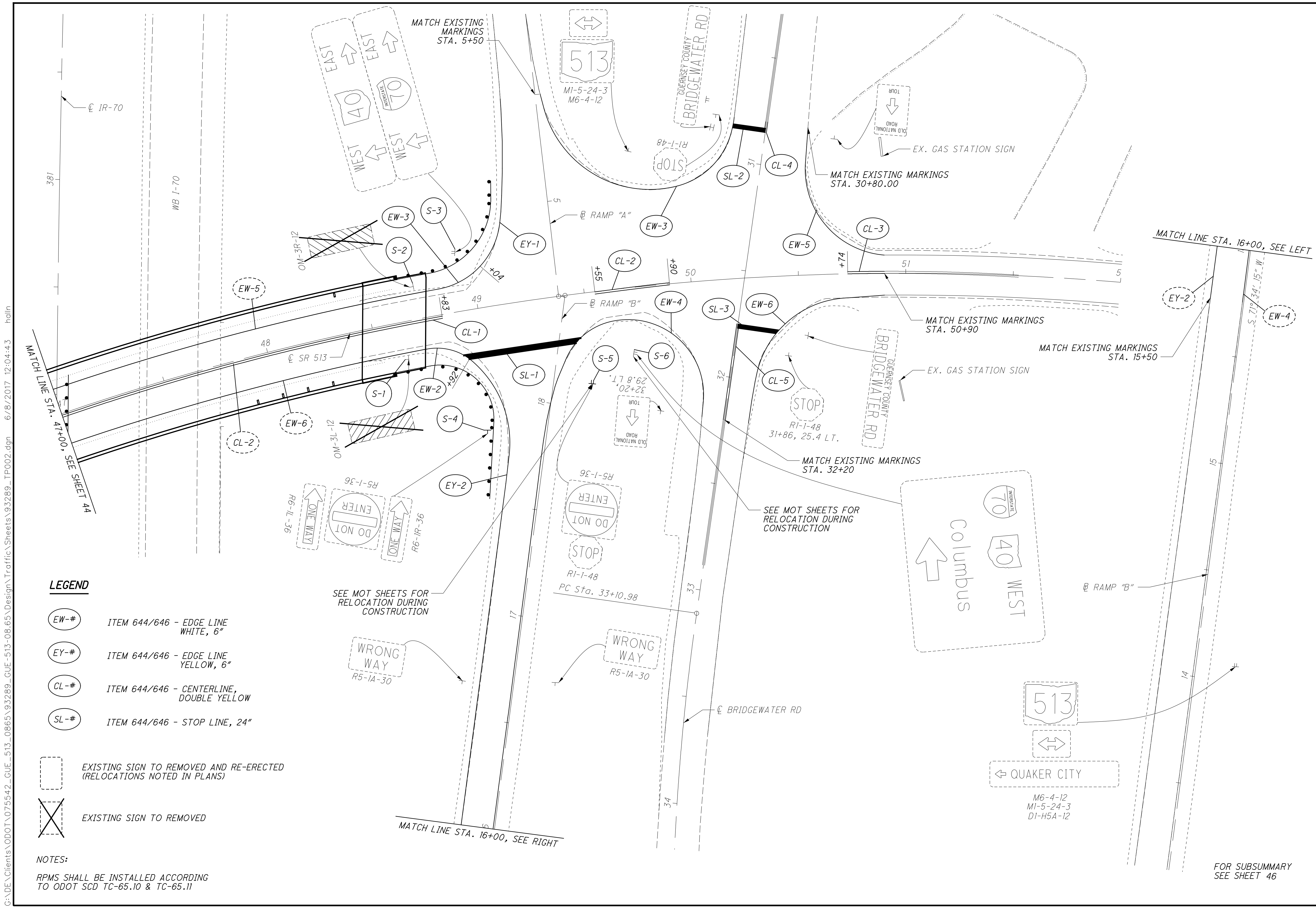
0 20 40  
10  
HORIZONTAL  
SCALE IN FEET

CALCULATED  
CAG  
CHECKED  
GPD

**SIGNING AND PAVEMENT MARKING PLAN**

**GUE-513-8.65\*\***

45  
100



**LEGEND**

- ITEM 644/646 - EDGE LINE WHITE, 6"
- ITEM 644/646 - EDGE LINE YELLOW, 6"
- ITEM 644/646 - CENTERLINE, DOUBLE YELLOW
- ITEM 644/646 - STOP LINE, 24"

EXISTING SIGN TO REMOVED AND RE-ERECTED (RELOCATIONS NOTED IN PLANS)

EXISTING SIGN TO REMOVED

**NOTES:**

RPMS SHALL BE INSTALLED ACCORDING TO ODOT SCD TC-65.10 & TC-65.11

FOR SUBSUMMARY SEE SHEET 46

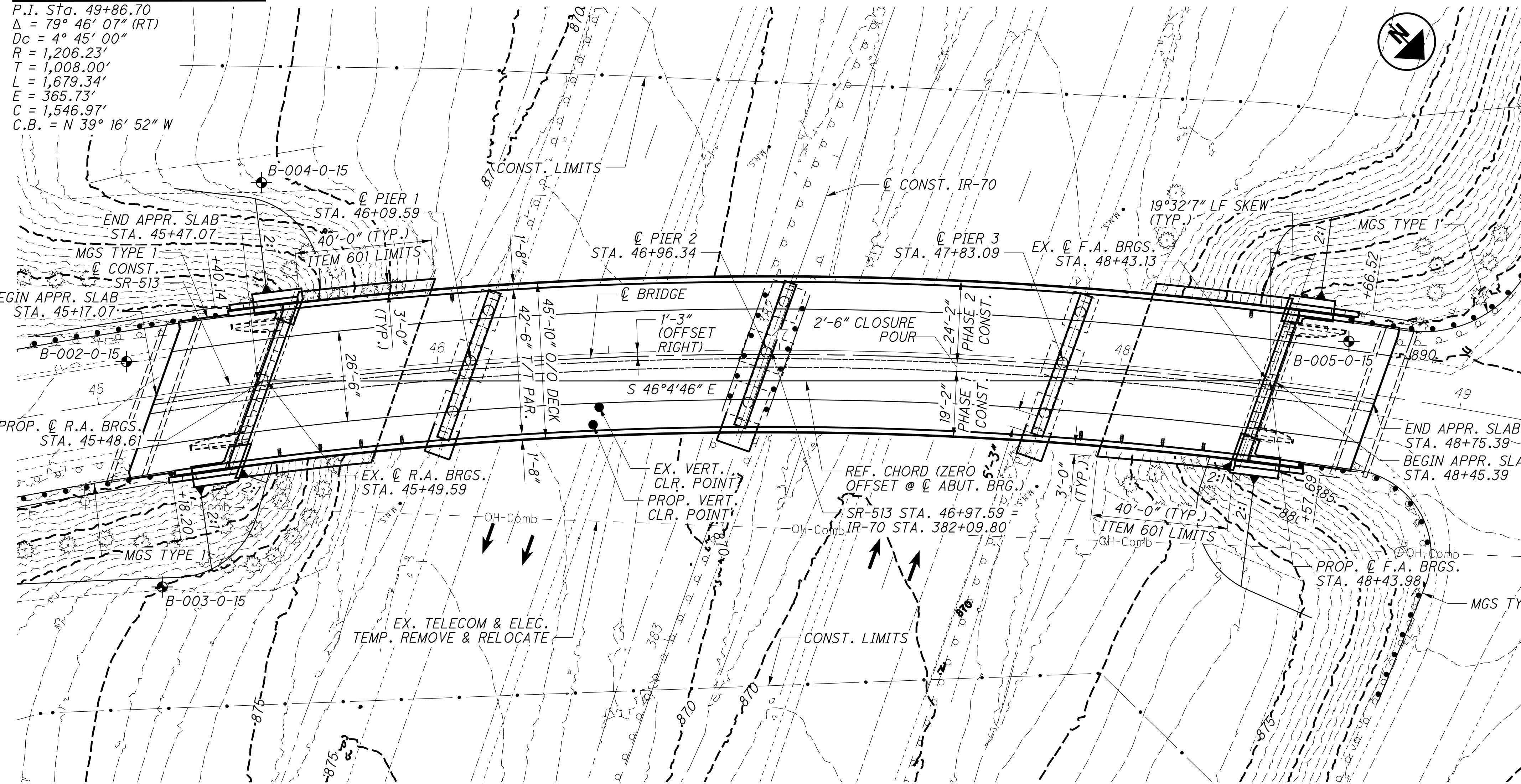
G:\DE\Clients\ODOT\075542\_GUE\_513\_0865\93289\_GUE\_513-08.65\Design\Traffic\Sheets\93289\_IP002.dgn 6/8/2017 12:04:43 haln



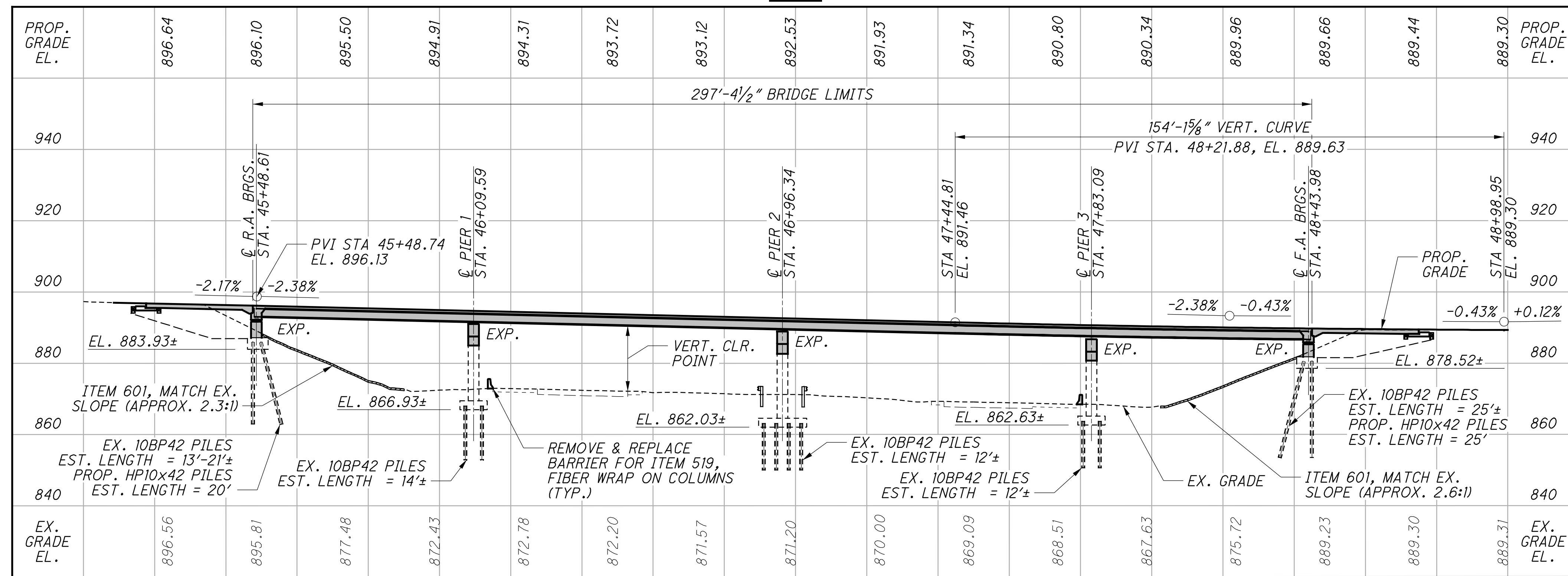


**HORIZONTAL CURVE DATA**

P.I. Sta. 49+86.70  
 $\Delta = 79^\circ 46' 07''$  (RT)  
 $D_c = 4^\circ 45' 00''$   
 $R = 1,206.23'$   
 $T = 1,008.00'$   
 $L = 1,679.34'$   
 $E = 365.73'$   
 $C = 1,546.97'$   
 $C.B. = N 39^\circ 16' 52'' W$



**PLAN**



**PROFILE**

**BENCHMARK DATA**

BM #1 STA. 23+10.18, ELEV. 900.33, OFFSET 27.61', LT.  
 BM #2 STA. 5+93.21, ELEV. 893.83, OFFSET 58.98', RT.  
 BM #3 STA. 35+76.36, ELEV. 877.33, OFFSET 6.37', LT.

FOR ADDITIONAL BENCHMARK INFORMATION. SEE ROADWAY PLAN SHEET 2/100

**NOTES**

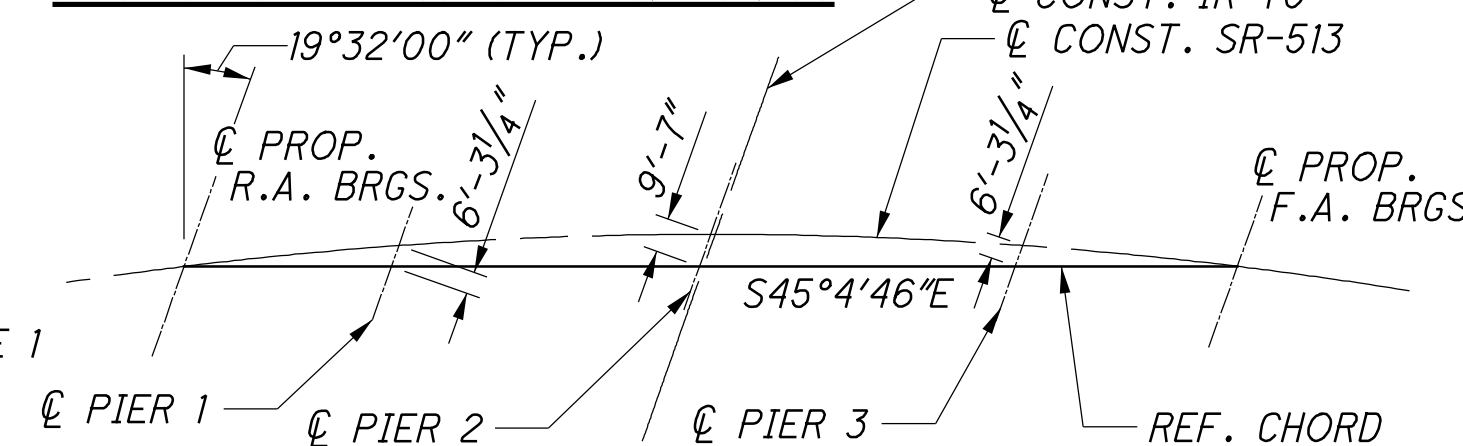
EARTHWORK LIMITS SHOWN ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS SECTIONS.

DESIGN TRAFFIC:  
 2018 ADT = 2,640      2018 ADTT = 343  
 2038 ADT = 2,670      2038 ADTT = 347  
 DIRECTIONAL DISTRIBUTION = 56%

**LEGEND**

- ⊕ BORING LOCATION (APPROX.)      ▬ SCUPPER LOCATION
- \* - PHASE 1 CONSTRUCTION
- \*\* - PHASE 2 CONSTRUCTION
- 16'-6" REQUIRED MINIMUM VERTICAL CLEARANCE
- 16'-0 1/2" ACTUAL EX. MINIMUM VERTICAL CLEARANCE
- 16'-8 3/4" PROPOSED MINIMUM VERTICAL CLEARANCE

**REFERENCE CHORD DIAGRAM**



**EXISTING STRUCTURE**

TYPE: CONTINUOUS ROLLED STEEL BEAM STRUCTURE WITH REINFORCED NON-COMPOSITE CONCRETE DECK SUPPORTED ON CONCRETE STUB ABUTMENT AND CAP AND COLUMN PIERS ON STEEL PILES.

SPANS: 60'-0"±, 86'-9"±, 86'-9"±, 60'-0"±  
 ROADWAY: 28'-0"± F/F SAFETY CURBS W/ PARAPET AND RAILINGS  
 LOADING: CF-130 (1957)  
 SKEW: 19°32'00"± LT. FWD. FROM EX. REFERENCE CHORD  
 APPROACH SLABS: 25'-0" LONG AS-1-54 MODIFIED  
 ALIGNMENT: 4°45'00"± CURVE RT.  
 SUPERELEVATION: 0.06 FT/FT  
 STRUCTURAL FILE NUMBER: 3005887  
 DATE BUILT: 1965, OVERLAID IN 1979  
 DISPOSITION: SUPERSTRUCTURE REPLACEMENT AND STRUCTURE WIDENING, REPLACE PIER CAPS, CONVERT ABUTMENTS TO SEMI-INTEGRAL, AND REPLACE APPROACH SLABS.

**PROPOSED STRUCTURE**

TYPE: CONTINUOUS CURVED ROLLED STEEL BEAM STRUCTURE WITH REINFORCED COMPOSITE CONCRETE DECK SUPPORTED ON EXISTING CONCRETE ABUTMENTS (CONVERTED TO SEMI-INTEGRAL AND WIDENED) AND EXISTING CAP AND COLUMN PIERS (W/ NEW CAPS) ON STEEL PILES.

SPANS: 60'-11 3/4"±, 86'-9"±, 86'-9"±, 60'-10 3/4"±  
 ROADWAY: 42'-6"± T/T PARAPET  
 LOADING: HL-93 AND ALTERNATE MILITARY LOADING  
 SKEW: 19°32'07"± LT. FWD. FROM PROP. REFERENCE CHORD  
 APPROACH SLABS: 30'-0" LONG AS-1-15  
 ALIGNMENT: 4°45'00"± CURVE RT. (C S.R. 513)  
 SUPERELEVATION: 0.06 FT/FT  
 COORDINATES: LATITUDE: 40.0525910 N  
 LONGITUDE: 81.3248000 W  
 STRUCTURAL FILE NUMBER: 3005887

DESIGN AGENCY: EASTON OVAL SUITE 910 COLUMBUS, OH 43219 T 614-476-8000 F 614-476-8225  
**WOOLPERT**  
 CONSULTING ENGINEERS  
 DATE: 02/2017  
 RKM: 3005887  
 TML: 3005887  
 MAA: 3005887  
 GUERNSEY COUNTY  
 STA. 45+47.08  
 STA. 48+45.40  
**SITE PLAN**  
 BRIDGE NO. GUE-513-0871  
 SR-513 OVER IR-70  
**GUE-513-8.65**  
 PID No. 93289  
 1/54  
 47/100



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**REFER TO THE FOLLOWING STANDARD BRIDGE DRAWING(S):**

AS-1-15 REVISED 07-17-15  
GSD-1-96 REVISED 07-19-02  
SBR-1-13 REVISED 01-17-14  
SICD-1-96 REVISED 07-18-14  
SICD-2-14 REVISED 07-18-14  
VPF-1-90 REVISED 07-17-15

**REFERENCE**

EXISTING BRIDGE PLANS MAY BE INSPECTED AND ARE PROVIDED WITH THIS PROJECT'S BIDDING DOCUMENTS.

**EXISTING STRUCTURE VERIFICATION**

DETAILS AND DIMENSIONS SHOWN ON THESE PLANS PERTAINING TO THE EXISTING STRUCTURE HAVE BEEN OBTAINED FROM PLAN OF THE EXISTING STRUCTURE AND FROM FIELD OBSERVATIONS AND MEASUREMENTS. CONSEQUENTLY, THEY ARE INDICATIVE OF THE EXISTING STRUCTURE AND THE PROPOSED WORK BUT THEY SHALL BE CONSIDERED TENTATIVE AND APPROXIMATE. THE CONTRACTOR IS REFERRED TO CMS SECTIONS 102.05, 105.02, AND 513.04.

BASE CONTRACT BID PRICES UPON A RECOGNITION OF THE UNCERTAINTIES DESCRIBED ABOVE AND UPON A PREBID EXAMINATION OF THE EXISTING STRUCTURE. HOWEVER, THE DEPARTMENT WILL PAY FOR ALL PROJECT WORK BASED UPON ACTUAL DETAILS AND DIMENSIONS THAT HAVE BEEN VERIFIED IN THE FIELD.

**DESIGN SPECIFICATIONS:**

THIS SUPERSTRUCTURE CONFORMS TO THE "LRFD BRIDGE DESIGN SPECIFICATIONS" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 2014, INCLUDING THE 2015 INTERIM REVISIONS AND THE ODOT BRIDGE DESIGN MANUAL, 2007, DATED 7-17-15.

THIS SUBSTRUCTURE CONFORMS TO THE "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 2002, AND THE ODOT BRIDGE DESIGN MANUAL, 2004, DATED 7-17-15.

**SPECIAL DESIGN SPECIFICATIONS:**

THIS BRIDGE REQUIRED THE USE OF A GRILLAGE FINITE ELEMENT (DECK AS SHELL/PLATE, BEAM AS BEAM/FRAME) DESIGN METHOD TO ANALYZE THE STRUCTURE. THE COMPUTER PROGRAM USED FOR STRUCTURAL ANALYSIS WAS MIDAS CIVIL. THE BRIDGE COMPONENTS DESIGNED BY THIS METHOD ARE THE BEAMS, SPLICES, AND CROSSFRAMES.

DEAD LOAD DISTRIBUTION: SELF WEIGHT OF COMPONENTS WAS APPLIED USING THE SELF WEIGHT LOAD COMMAND. THE PARAPET LOAD WAS APPLIED AS A PARTIAL PLATE PRESSURE, 20" WIDE, ON THE EXTERIOR DECK PLATES. THE FUTURE WEARING SURFACE WAS APPLIED AS A PLATE PRESSURE FOR DECK PLATES WITHOUT A PARAPET LOAD, OR PARTIAL PLATE PRESSURE FOR THOSE WITH THE PARAPET TO MODEL THE PLACEMENT OF THE FUTURE WEARING SURFACE ONLY WITHIN THE TOE-TO-TOE PARAPET WIDTH.

A STAGED CONSTRUCTION MODEL WAS USED FOR EACH PHASE OF CONSTRUCTION, WITH A CHECK OF THE FINAL STRUCTURE FOR ALL DEAD AND LIVE LOADS. THE STAGED CONSTRUCTION MODEL ASSUMED THE FOLLOWING CONSTRUCTION SEQUENCE:

1. SUBSTRUCTURE PLACEMENT (WITH TEMPORARY SUPPORTS).
2. STRUCTURAL STEEL BEAMS AND CROSSFRAMES IN PLACE.
3. APPLICATION OF WET DECK, AND CONSTRUCTION AND SCREED LIVE LOADS TO NON-COMPOSITE STEEL BEAMS.
4. COMPOSITE SECTION WITH SELF WEIGHT DEAD LOADS.
5. COMPOSITE SECTION WITH SUPER-IMPOSED DEAD LOADS.
6. LONG TERM STRUCTURE WITH ALL DEAD LOADS AND VEHICULAR LIVE LOADS.

**LIVE LOAD DISTRIBUTION FACTORS:**

EXTERIOR MEMBERS - 0.586 HL-93 LOADING, POSITIVE MOMENT.  
- 0.602 HL-93 LOADING, NEGATIVE MOMENT.  
- 0.932 HL-93, LOAD SHEAR.

INTERIOR MEMBERS - 0.475 HL-93 LOADING, POSITIVE MOMENT.  
- 0.428 HL-93 LOADING, NEGATIVE MOMENT.  
- 0.722 HL-93, LOAD SHEAR.

**DESIGN LOADING:**

HL-93

FWS = 0.060 KSF

**DESIGN DATA :**

CONCRETE CLASS QC2 - COMPRESSIVE STRENGTH 4.5 KSI (SUPERSTRUCTURE)

CONCRETE CLASS QC1 - COMPRESSIVE STRENGTH 4.0 KSI (SUBSTRUCTURE)

REINFORCING STEEL - ASTM A615 - YIELD STRENGTH 60 KSI

STRUCTURAL STEEL SHAPES - ASTM A709 GRADE 50 - YIELD STRENGTH 50 KSI

STRUCTURAL STEEL PLATE - ASTM A709 GRADE 36 - YIELD STRENGTH 36 KSI

STEEL H-PILES - ASTM A572 - YIELD STRENGTH 50 KSI

**DECK PROTECTION METHOD:**

EPOXY COATED REINFORCING STEEL

2½" CONCRETE COVER

PARAPETS AND SCUPPERS

**MONOLITHIC WEARING SURFACE:**

MONOLITHIC WEARING SURFACE IS ASSUMED, FOR DESIGN PURPOSES, TO BE 1 INCH THICK.

**PILES TO BEDROCK:**

DRIVE PILES TO REFUSAL ON BEDROCK. THE DEPARTMENT WILL CONSIDER REFUSAL TO BE OBTAINED WHEN THE PILE PENETRATION IS AN INCH OR LESS AFTER RECEIVING AT LEAST 20 BLOWS FROM THE PILE HAMMER. SELECT THE HAMMER SIZE TO ACHIEVE THE REQUIRED DEPTH TO BEDROCK AND REFUSAL.

THE TOTAL FACTORED LOAD IS 206 KIPS PER PILE FOR THE ABUTMENT PILES.

**REAR ABUTMENT PILES:**

HPI0X42 PILES 20 FEET LONG, ORDER LENGTH

**FORWARD ABUTMENT PILES:**

HPI0X42 PILES 25 FEET LONG, ORDER LENGTH

**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 IN.

A MAXIMUM DISTANCE FROM THE CENTERLINE OF THE FASCIA GIRDER TO THE FACE OF THE SAFETY HANDRAIL OF 65".

**PAINTING OF STRUCTURAL STEEL:**

ALL STRUCTURAL STEEL SHALL BE PAINTED IN ACCORDANCE WITH SECTION 514 OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS. THE FINISH COAT COLOR SHALL BE GREEN FS-595B-14260.

SCUPPERS - BRIDGE PAINTING WILL EXCLUDE SCUPPERS TO BE GALVANIZED.

**BRIDGE PAINTING LIMITATIONS:**

PRIOR TO THE ARRIVAL OF THE BRIDGE PAINTERS THE PRIME CONTRACTOR SHALL COMPLETE ALL CLEARING AND GRUBBING FROM ABUTMENT TO ABUTMENT AND RIGHT-OF-WAY FENCE TO RIGHT-OF-WAY FENCE INCLUDING REMOVAL OF ALL TREES. PAYMENT FOR THE CLEARING AND GRUBBING IS INCLUDED IN ITEM 201 CLEARING AND GRUBBING.

**SURFACE SMOOTHNESS FOR BRIDGES AND APPROACHES:**

AT THE COMPLETION OF WORK FOR ALL PHASES OF CONSTRUCTION THE CONTRACTOR SHALL CONTACT THE DISTRICT 5 SMOOTHNESS COORDINATOR AND THEN PERFORM THE FOLLOWING AS PER PROPOSAL NOTE 555:

1. CLEAN, SWEEP, AND PREPARE THE FINAL DECK AND FINAL ROADWAY SURFACE.

2. MEASURE, GRIND, AND RE-MEASURE THE BRIDGE AND/OR ROADWAY AS NECESSARY.

3. PERFORM GROOVING OF THE BRIDGE DECK.

**CUT LINE CONSTRUCTION JOINT PREPARATION**

FOR ABUTMENT BREASTWALL REMOVALS, SAW CUT BOUNDARIES OF PROPOSED CONCRETE REMOVAL 1 INCH DEEP. REMOVE CONCRETE TO A ROUGH SURFACE. LEAVE THE EXISTING REINFORCING STEEL, IF REQUIRED IN THE PLANS, IN PLACE. INSTALL DOWEL BARS IF SPECIFIED. PRIOR TO CONCRETE PLACEMENT ABRASIVELY CLEAN JOINT SURFACES AND EXISTING EXPOSED REINFORCEMENT TO REMOVE LOOSE AND DISINTEGRATED CONCRETE AND LOOSE RUST. THOROUGHLY CLEAN THE JOINT SURFACE AND EXPOSED REINFORCEMENT OF ALL DIRT, DUST, RUST OR OTHER FOREIGN MATERIAL BY THE USE OF WATER, AIR UNDER PRESSURE, OR OTHER METHODS THAT PRODUCE SATISFACTORY RESULTS. EXISTING REINFORCING STEEL DOES NOT HAVE TO HAVE A BRIGHT STEEL FINISH, BUT REMOVE ALL PACK AND LOOSE RUST. THOROUGHLY DRENCH EXISTING CONCRETE SURFACES WITH CLEAN WATER AND ALLOW TO DRY TO A DAMP CONDITION BEFORE PLACING CONCRETE.

**POROUS BACKFILL WITH GEOTEXTILE**

POROUS BACKFILL WITH GEOTEXTILE, 2 FEET THICK, SHALL EXTEND UP TO THE PLANE OF THE SUBGRADE, UNLESS OTHERWISE STATED IN THE PLAN, TO 1 FOOT BELOW THE EMBANKMENT SURFACE, AND LATERALLY TO THE ENDS OF WINGWALLS.

**DECK END DIAPHRAGM CONCRETE, PHASED CONSTRUCTION:**

**PHASE 1 AND 2:**

PLACE THE DIAPHRAGM CONCRETE ENCASING THE STRUCTURAL MEMBER ENDS OF AN INDIVIDUAL PHASE WITH THE DECK CONCRETE. DO NOT PLACE CLOSURE POUR CONCRETE IN THE DIAPHRAGM BELOW THE APPROACH SLAB SEAT. PLACE THE CLOSURE POUR CONCRETE IN THE DIAPHRAGM, ABOVE THE APPROACH SLAB SEAT. PLACE THE DECK CLOSURE POUR, AS SHOWN IN THE PLAN AFTER BOTH RESPECTIVE RIGHT/LEFT MAIN DECK POURS HAVE BEEN PLACED.

THE CONTRACTOR SHALL PROVIDE A CONCRETE PLACEMENT SUBMITTAL THAT WILL ASSURE THAT THE DECK CONCRETE IN THE ADJACENT SPAN WILL BE PLACED BEFORE CONCRETE IN THE DIAPHRAGM HAS REACHED ITS INITIAL SET. THIS SUBMITTAL SHALL BE SUPPLIED TO THE ENGINEER IN SUFFICIENT TIME FOR HIS REVIEW FOR APPROVAL.

**BRIDGE SEAT ELEVATIONS**

BRIDGE SEAT ELEVATIONS AND PIER FILL PLATE THICKNESSES HAVE NOT BEEN ADJUSTED FOR THE VERTICAL DEFORMATION OF THE BEARINGS. THE ESTIMATED VERTICAL DEFORMATIONS ARE 0.013 INCHES AT THE ABUTMENTS, 0.038 INCHES AT PIER 1 AND PIER 3, AND 0.022 INCHES AT PIER 2.

**ITEM 202, PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN:**

REMOVE AND REPLACE THE BRIDGE DECK, SUPERSTRUCTURE, PIER CAPS, ABUTMENTS, AND APPROACH SLABS. REMOVE THESE PORTIONS WITH SUFFICIENT CARE AS TO AVOID DAMAGE TO THE REMAINING PORTIONS OF THE STRUCTURE. IN CASE OF DAMAGE TO EXISTING STRUCTURE, REPAIR OR REPLACE THE STRUCTURE AT NO EXPENSE TO THE DEPARTMENT.

THERE SHALL BE NO SAWCUTS BELOW THE TOP OF FOOTING ELEVATION AT ANY LOCATION EXCEPT AS DETAILED IN THE PLAN. ALL CONCRETE REMOVED DOWN TO THE TOP OF FOOTING SHALL BE REMOVED BY MEANS OF APPROVED PNEUMATIC HAMMERS EMPLOYING POINTED AND BLUNT CHISEL TOOLS. HYDRAULIC HOE-RAM TYPE HAMMERS WILL NOT BE PERMITTED. THE WEIGHT OF THE HAMMER SHALL NOT BE MORE THAN 35 POUNDS FOR REMOVAL WITHIN 18 INCHES OF PORTIONS TO BE PRESERVED. OUTSIDE THE 18 INCH LIMIT, THE CONTRACTOR MAY USE HAMMERS NOT EXCEEDING 90 POUNDS UPON THE APPROVAL OF THE ENGINEER. DO NOT PLACE PNEUMATIC HAMMERS IN DIRECT CONTACT WITH REINFORCING STEEL THAT IS TO BE RETAINED IN THE REBUILT STRUCTURE.


REMOVE THE WEARING COURSE SEPARATELY BEFORE REMOVING THE BRIDGE PORTION OF THE BRIDGE.

RAZE, REMOVE AND DISPOSE OF ALL STRUCTURES, FENCES, GUARDRAILS, OLD PAVEMENTS, AND OTHER OBSTRUCTIONS WITHIN THE RIGHT-OF-WAY, EXCEPT FOR UTILITIES AND THOSE ITEMS WHERE OTHER PROVISIONS HAVE BEEN MADE FOR REMOVAL. REMOVE AND STORE, AT THE SPECIFIED LOCATIONS WITHIN THE PROJECT LIMITS.

DISPOSE OF THE MATERIAL ACCORDING TO CMS 105.16 AND CMS 105.17.

DO NOT REMOVE ANY ITEM IN USE BY TRAFFIC UNTIL AFTER MAKING ARRANGEMENTS TO ACCOMMODATE TRAFFIC.

BACKFILL THE CAVITY CREATED BY THE REMOVAL ITEM ACCORDING TO CMS 202.02, EXCEPT WHEN THE CAVITY LIES WITHIN THE LIMITS OF SUBSEQUENT EXCAVATION OR OTHER WORK

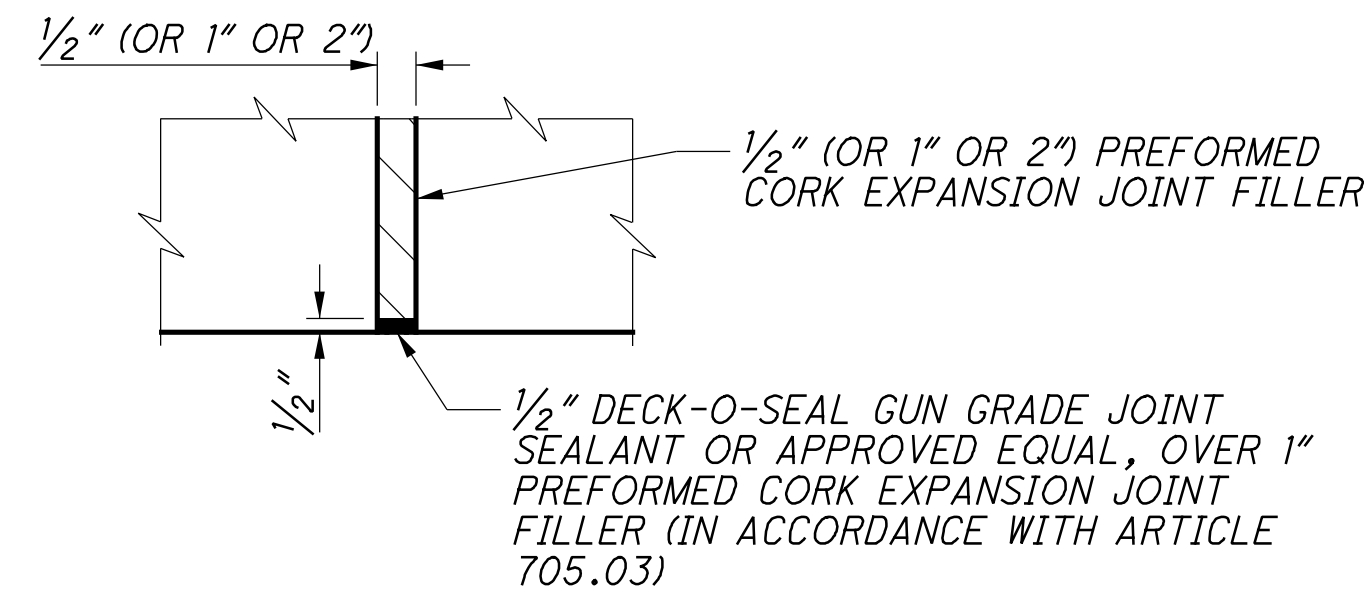
<b>DESIGN AGENCY</b> ONE EASTON OVAL COLUMBUS, OH 43219 T 614-476-6000 F 614-476-6225 		DATE	02/2017
		REVIEWED	RKM
DESIGNED	JMM	CHECKED	TML
DRAWN	JMM	REVISIED	
STRUCTURE FILE NUMBER	3005887		
<b>STRUCTURAL GENERAL NOTES</b>			
BRIDGE NO. GUE-513-0871			
SR-513 OVER IR-70			
<b>GUE - 513 - 8.65</b>		<b>PID No. 93289</b>	
2 / 54		48 100	



**ITEM 516 - 1/2" (OR 1" OR 2") PREFORMED EXPANSION JOINT FILLER, AS PER PLAN**

ALL 1/2" (OR 1" OR 2") P.E.J.F. CALLED FOR IN THE PLANS SHALL BE PREFORMED CORK JOINT FILLER (IN ACCORDANCE WITH ARTICLE 705.03). RECESS JOINT FILLER 1/2" FOR ALL JOINTS (SEE DETAIL). SEAL ALL JOINTS THAT ARE ABOVE GRADE WITH DECK-O SEAL GUN GRADE-JOINT SEALANT OR AN APPROVED EQUAL. THE COLOR SHALL BE STONE GRAY. APPROVED MANUFACTURER'S APPLICATION METHODS SHALL BE FOLLOWED DURING SURFACE PREPARATION AND APPLICATION FOR MAXIMUM EFFECTIVENESS.

DECK-O-SEAL  
P.O. BOX 397  
HAMPSHIRE, IL 60140  
PHONE: 800-542-7665



PAYMENT FOR THE ABOVE WORK SHALL BE MADE AT THE UNIT PRICE BID FOR ITEM 516 - 1/2" (OR 1" OR 2") PEJF, A.P.P., SQ.FT., AND SHALL INCLUDE ALL LABOR, EQUIPMENT, AND INCIDENTALS REQUIRED TO COMPLETE THE WORK DESCRIBED.

**ITEM 516 - JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN**

THE DESIGN SHOWN ON THE PLANS FOR TEMPORARY SUPPORT OF PIERS AND SUPERSTRUCTURE 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 PIERS AND SUPERSTRUCTURE. IF CONSTRUCTING AN ALTERNATE DESIGN FOR TEMPORARY SUPPORT, PREPARE AND PROVIDE PLANS IN ACCORDANCE WITH CMS 501.05. THE CONTRACTOR'S ATTENTION IS DRAWN TO THE ENGINEERING AND DOCUMENTATION PROVISIONS.

IF, DURING THE JACKING OPERATIONS, CRACKING OF THE CONCRETE SUPERSTRUCTURE, SEPARATION OF THE CONCRETE DECK FROM THE STEEL STRINGERS, OR OTHER DAMAGE TO THE STRUCTURE IS VISUALLY OBSERVED, IMMEDIATELY CEASE THE JACKING OPERATION AND INSTALL SUPPORTS TO THE SATISFACTION OF THE ENGINEER. ANALYZE THE DAMAGE AND SUBMIT A METHOD OF CORRECTION TO THE ENGINEER FOR APPROVAL. EPOXY INJECT ALL BEAMS THAT SEPARATE FROM THE DECK FOR THE DISTANCE OF THE SEPARATION IN ACCORDANCE WITH CMS 512.07. THE DEPARTMENT WILL NOT PAY FOR THE COST OF THIS EPOXY INJECTION OR OTHER REQUIRED REPAIRS. THE BRIDGE BEARINGS SHALL BE FULLY SEATED AT ALL CONTACT AREAS. IF FULL SEATING IS NOT ATTAINED, SUBMIT A REPAIR PLAN TO THE ENGINEER. THE DEPARTMENT WILL NOT PAY FOR THE REPAIR COSTS TO ENSURE FULL SEATING ON BEARINGS.

THE DEPARTMENT WILL PAY FOR THE TEMPORARY SUPPORT AT THE CONTRACT LUMP SUM PRICE FOR JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE. NO ADDITIONAL PAYMENT WILL BE MADE FOR PROVIDING AN ALTERNATE DESIGN. THE DESIGN LOADS ARE SHOWN ON THE TEMPORARY SUPPORT DETAIL SHEETS. THE CONTRACTOR SHALL ENSURE THAT THE DESIGN LOADS ARE NOT GREATER THAN THE DESIGNED VALUES. THE CONTRACTOR IS RESPONSIBLE FOR THE SUPPORT OF ALL CONSTRUCTION LOADS WHICH CANNOT BE SUPPORTED BY THE TEMPORARY SUPPORT SYSTEM SHOWN IN THE PLANS.

PAYMENT FOR THE TEMPORARY SUPPORT SHALL INCLUDE ALL WORK NECESSARY TO CONSTRUCT THE SUPPORT, INCLUDING DOWELS, ALL MATERIALS, FALSEWORK, AND ANY EQUIPMENT OR LABOR NECESSARY.

**ITEM 526 - REINFORCED CONCRETE APPROACH SLAB (T=17"), AS PER PLAN**

FURNISH APPROACH SLABS CONFORMING TO CMS 526. THE ACCEPTED QUANTITIES SHALL INCLUDE: CONCRETE, CURBS, REINFORCING STEEL, JOINT FILLERS, JOINT SEALS, WATERPROOFING, AND ANY OTHER INCIDENTALS SHOWN ON THE APPROACH SLAB DETAIL SHEETS. THE DEPARTMENT WILL MEASURE APPROACH SLABS BY THE NUMBER OF SQUARE YARDS.

**ITEM 601 - SLOPE PROTECTION, MISC.: CONCRETE CANVAS**

PLACE THIS ITEM WHERE SHOWN IN THE PLAN:

THE FURNISHED SLOPE PROTECTION MATERIAL AND INSTALLATION TECHNIQUES SHALL BE AS PROVIDED BY THE MANUFACTURER'S SPECIFICATIONS. ACCEPTED MANUFACTURERS ARE (AS FURTHER DESCRIBED IN THE TABLE BELOW):

SITE SUPPLY, INC.  
713 STIMMEL ROAD  
COLUMBUS, OHIO 43223  
PHONE: (614) 443-4545

MILLIKEN INFRASTRUCTURE  
920 MILIKEN RD.  
SPARTANBURG, SC 29304  
PHONE: (855) 655-6750

OR AN APPROVED EQUIVALENT

IT IS NOT NECESSARY TO SCALP THE EXISTING OR PROPOSED SLOPES PRIOR TO PLACEMENT OF THIS ITEM. EXISTING CRUSHED AGGREGATE MATERIAL MAY REMAIN UNDER THE CANVAS; HOWEVER, LARGER STONE VOIDS WILL NEED FILLED TO SMOOTH OUT THE PREPARED SURFACE. THE CONTRACTOR WILL PERFORM INCIDENTAL SPOT EXCAVATION AND/OR EMBANKMENT, AS PER C&MS 203, IN ORDER TO PROVIDE AN EVEN PLANE TO INSTALL THIS ITEM. FINAL GRADE PREPARATION WILL BE APPROVED BY THE PROJECT ENGINEER PRIOR TO FINAL INSTALLATION OF THE SLOPE PROTECTION.

PAYMENT: MEASUREMENT OF THE SLOPE PROTECTION, FOR PAYMENT PURPOSES, SHALL BE THE EXPOSED AREA DEFINED BY THE PLAN SURFACE DIMENSIONS OF THE CLOTH/CANVAS. PAYMENT SHALL BE PER SQUARE YARD OF ITEM 601 - SLOPE PROTECTION, MISC.: CONCRETE CANVAS AND SHALL INCLUDE SUPPLIED CANVAS MATERIAL, SCREWS, METAL J-PEGS/ANCHOR RODS, WATER SUPPLIED TO CURE, GROUND SLOPE PREPARATION, AND ALL OTHER LABOR, MATERIALS AND INCIDENTALS REQUIRED TO CONSTRUCT THIS PROPOSED ITEM IN PLACE.

THE FOLLOWING SHALL BE USED:

COMPANY NAME:	DESCRIPTION:	SPECIFICATIONS:
SITE SUPPLY, INC.	CURE-IN-PLACE CONCRETE CLOTH/CANVAS MATERIAL	CC8 = (8 MM OR 0.3 INCHES)
MILLIKEN INFRASTRUCTURE	CURE-IN-PLACE CONCRETE CLOTH/CANVAS MATERIAL	CC8 = (8 MM OR 0.3 INCHES)
APPROVED EQUAL	APPROVED EQUAL	APPROVED EQUAL

**ABBREVIATIONS:**

- APPR. - APPROACH
- AVG. - AVERAGE
- Ⓟ - BASELINE
- BOT. - BOTTOM
- BRG. - BEARING
- B.T.A. - BRIDGE TERMINAL ASSEMBLY
- BTW. - BETWEEN
- Ⓢ - CENTERLINE
- CLR. - CLEAR
- C.J. - CONSTRUCTION JOINT
- CONST. - CONSTRUCTION
- DIA. - DIAMETER
- EL. - ELEVATION
- EMBED. - EMBEDMENT
- E.S. - EACH SIDE
- EST. - ESTIMATED
- EQ. - EQUAL
- EX. - EXISTING
- EXP. - EXPANSION
- F.A. - FORWARD ABUTMENT
- F.S. - FAR SIDE
- FTG. - FOOTING
- INCR. - INCREMENT
- IR. - INTERSTATE ROUTE
- LT. - LEFT
- MAX. - MAXIMUM
- MECH. CONN. - MECHANICAL CONNECTOR
- MIN. - MINIMUM
- M.O.T. - MAINTENANCE OF TRAFFIC
- NO. - NUMBER
- N.S. - NEAR SIDE
- NPCPP - NON-PERFORATED CORRUGATED PLASTIC PIPE
- O/O - OUT-TO-OUT
- PCB - PORTABLE CONCRETE BARRIER
- PCPP - PERFORATED CORRUGATED PLASTIC PIPE
- PEJF - PREFORMED EXPANSION JOINT FILLER
- P/G - PROFILE GRADE
- Ⓟ - PLATE
- PROP. - PROPOSED
- PVMT. - PAVEMENT
- R.A. - REAR ABUTMENT
- REF. - REFERENCE
- REQ'D - REQUIRED
- RT. - RIGHT
- SER. - SERIES
- SPA. - SPACES
- SR - STATE ROUTE
- STA. - STATION
- TBR - TO BE REMOVED
- TEMP. - TEMPORARY
- T/S - TOE OF SLOPE
- T/T - TOE-TO-TOE
- TYP. - TYPICAL

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**STRUCTURAL GENERAL NOTES**

BRIDGE NO. GUE-513-0871  
SR-513 OVER IR-70

GUE - 513 - 8.65  
PID No. 93289

3 / 54

49  
100

DESIGN AGENCY: ONE EASTON OVAL COLUMBUS, OH 43219 T 614-776-6000 F 614-776-6225

**WOOLPERT**  
CONSTRUCTION MANAGEMENT

DATE: 02/2017  
REVIEWED: RKM  
DRAWN: JMM  
DESIGNED: JMM  
CHECKED: TML

STRUCTURE FILE NUMBER: 3005887  
REVISED:

**ITEM 519: SPECIAL - COMPOSITE FIBER WRAP SYSTEM**

**DESCRIPTION:**

THIS WORK SHALL CONSIST OF PROVIDING AND INSTALLING A FIBER WRAP COLUMN PREPARATION, WRAPPING THE COLUMN, AND ALL INCIDENTALS NECESSARY TO COMPLETE THE WORK.

THE INSTALLATION SHALL BE PER THE MANUFACTURER'S REQUIREMENTS.

**MATERIALS:**

SUPPLIERS SHALL HAVE A MINIMUM OF 10 INSTALLATIONS AND FURNISH CERTIFIED TEST REPORTS INCLUDING 1000 HOUR TESTS FOR 140° F WATER, SALT WATER, ALKALINE SOIL, OZONE, EFFERVESCENCE IN ADDITION TO THE REQUIREMENTS LISTED BELOW.

THE FABRIC FOR THE COMPOSITE CASTING SHALL BE CONTINUOUS FILAMENT WOVEN FABRIC. PRIMARY FIBERS FOR THE FABRIC SHALL BE (E) ELECTRICAL GLASS FIBERS. THE FABRIC SHALL HAVE A MINIMUM NOMINAL THICKNESS OF 0.05 INCHES. THE MINIMUM WEIGHT OF THE FABRIC SHALL BE 27.0 OUNCES PER SQUARE YARD.

THE EPOXY SHALL BE AS SUPPLIED BY THE MANUFACTURER TO MEET THE COMPOSITE STRENGTH GIVEN BELOW. POLYESTER RESIN SHALL NOT BE ALLOWED AS A SUBSTITUTE FOR EPOXY RESIN.

THE COMPOSITE OF THE FIBER WRAPPED COLUMN CASING SYSTEM SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

PROPERTY	REQUIREMENTS	ASTM TEST METHOD
ULTIMATE TENSILE STRENGTH, PSI. MIN. IN PRIMARY FIBER DIRECTION	60,000 PSI	D3039, AVERAGE OF 7, 1" BY 10", NORMALIZED TO .80" THICK, 0.01" PER MINUTE TESTING SPEED
ULTIMATE TENSILE STRENGTH, PSI. MIN. IN ORTHOGONAL FIBER DIRECTION	3000 PSI	D3039, AVERAGE OF 7, 1" BY 10", NORMALIZED TO .80" THICK, 0.01" PER MINUTE TESTING SPEED
TENSILE STRENGTH (MIN. AFTER TEST), 1000 HOUR EXPOSURE TO 100% HUMIDITY	60,000 PSI	C581
TENSILE STRENGTH (MIN. AFTER TEST), 1000 HOUR EXPOSURE TO OZONE	60,000 PSI	D1149 EXCEPT NOT UNDER STRESS DURING OZONE EXPOSURE
TENSILE STRENGTH (MIN. AFTER TEST), 1000 HOUR EXPOSURE TO ALKALI	60,000 PSI	D3083 USING SOIL BURIAL - WATER CONTENT OF 73% ± 3%
TENSILE STRENGTH (MIN. AFTER TEST), 1000 HOUR EXPOSURE TO SALT WATER	60,000 PSI	C581 & D1141 OMITTING ADDITION OF HEAVY METAL REAGENTS
TENSILE STRENGTH (MIN. AFTER TEST), 1000 HOUR EXPOSURE AT 140° F	60,000 PSI	D3045
TENSILE STRENGTH (MIN. AFTER TEST), ULTRAVIOLET (UV) EXPOSURE	60,000 PSI	G154 USING FS40 UV-B BULBS FOR MIN. 40 CYCLES. THE CYCLE SHALL BE 4 HOURS OF CONDENSATE EXPOSURE AT 40° C
ELONGATION: PERCENT, MIN.	1.7%	
PERCENT, MAX.	5.0%	
TENSILE MODULUS, PSI MIN. OF PRIMARY FIBERS	3,000,000	D3039
VISUAL DEFECTS	ACCEPTANCE LEVEL 3	D2563
COEFFICIENT OF THERMAL EXPANSION IN THE PRIMARY DIRECTION	4,300,000 PPM/DEG. F (+15%)	D696

**ITEM 519: SPECIAL - COMPOSITE FIBER WRAP SYSTEM (CONT.)**

ACCEPTABLE COMPOSITE FIBER WRAP SYSTEMS INCLUDE THE FOLLOWING:

- 1) MBRACE EG 900, AS MANUFACTURED BY:

BASF BUILDING SYSTEMS  
889 VALLEY PARK DRIVE  
SHAKOPEE, MN 55379  
PHONE: 800-433-9517  
www.buildingsystems.basf.com

- 2) SIKAWRAP HEX 107G, AS MANUFACTURED BY:

SIKA CORPORATION  
201 POLITO AVENUE  
LYNDHURST, NJ 07071  
PHONE: 800-933-7452  
www.sikausa.com

OR APPROVED EQUAL. THE PROPOSED ALTERNATE COMPOSITE SYSTEM MUST BE APPROVED BY THE ENGINEER TWO WEEKS PRIOR TO THE START OF THE INSTALLATION OF THE WRAP.

**SURFACE PREPARATION:**

THE SURFACE TO RECEIVE THE COMPOSITE WRAP SHALL BE FREE FROM FINES, SHARP EDGES AND THE PROTRUSIONS THAT WILL CAUSE VOIDS BEHIND THE CASTING OF THAT, IN THE OPINION OF THE ENGINEER, WILL DAMAGE THE FIBER. IF FIBERS ARE TO WRAP AROUND CORNERS OF RECTANGLE CROSS-SECTIONS, THE CORNERS SHALL BE ROUNDED TO 1/2 INCH RADIUS. THIS WILL HELP PREVENT STRESS CONCENTRATIONS IN THE FIBER WRAP AND VOIDS BETWEEN THE FIBER WRAP AND THE CONCRETE. IN ADDITION, THE SURFACE SHALL BE SMOOTH AND FREE OF VOIDS OR UNDULATIONS THAT WOULD PREVENT FULL CONTACT BETWEEN THE CONCRETE AND THE FIBER WRAP.

THE CONTACT SURFACES OF THE CONCRETE SHALL BE COMPLETELY DRY OF MOISTURE AND FROST AT THE TIME OF APPLICATION OF THE COMPOSITE. THE CONTRACTOR SHALL EVALUATE MOISTURE TRANSMISSION IN ACCORDANCE WITH ASTM D4263 "INDICATING MOISTURE IN CONCRETE BY THE PLASTIC SHEET METHOD."

ALL CONCRETE SURFACES SHALL BE SOUND. REMOVE DETERIORATED CONCRETE, DUST, LAITANCE, GREASE, PAINT, CURING COMPOUNDS, WAXES, IMPREGNATIONS, FOREIGN PARTICLES, AND OTHER BOND INHIBITING MATERIALS FROM THE SURFACE BY BLAST CLEANING OR EQUIVALENT MEANS.

THE PATCHED SURFACES SHALL BE ALLOWED TO CURE FOR 14 DAYS BEFORE APPLICATION OF THE COMPOSITE FIBER WRAP SYSTEM. ALL CONCRETE SHALL BE CURED ACCORDING TO THE CMS 511 PRIOR TO INSTALLATION OF THE COMPOSITE.

ALL CONCRETE SURFACES SHALL BE AIR BLASTED AND VACUUMED CLEAN TO A DUST FREE CONDITION.

THE CONCRETE SURFACE SHOULD BE PREPARED TO A MINIMUM CONCRETE SURFACE PROFILE (CSP) 3 AS DEFINED BY THE ICRI SURFACE PROFILE CHIPS.

CONCRETE SURFACE IRREGULARITIES LESS THAN ONE INCH SHALL BE GROUND AND SMOOTHED AND/OR FILLED WITH AN APPROVED REPAIR MORTAR WITH THE ADDITION OF 1 PART OVEN DRIED SAND TO MAKE AN EPOXY MORTAR. SURFACE IRREGULARITIES SHALL BE LIMITED TO LESS THAN 0.04 INCHES (1 MM). SURFACE IRREGULARITIES GREATER THAN ONE INCH SHALL BE REPAIRED USING AN APPROVED CEMENTITIOUS REPAIR MORTAR. ANY SHARP EDGES (E.G. FINES, FORM LINES, ETC.) MUST BE GROUND SMOOTH AND FLUSH.

**COMPOSITE APPLICATION:**

THE AMBIENT TEMPERATURE AND THE TEMPERATURE OF THE EPOXY RESIN COMPONENTS SHALL BE BETWEEN 55° F AND 95° F AT THE TIME OF MIXING. THE COMPOSITE SHALL BE APPLIED WHEN THE RELATIVE HUMIDITY IS LESS THAN 85% AND THE SURFACE TEMPERATURE IS MORE THAN 5° F ABOVE THE DEW POINT. APPLICATION SHALL BEGIN WITHIN ONE HOUR AFTER THE BATCH HAS BEEN MIXED.

THE COMPONENTS OF THE EPOXY RESIN SHALL BE MIXED WITH A MECHANICAL MIXER AND APPLIED UNIFORMLY TO THE FIBER AT A RATE THAT SHALL ENSURE COMPLETE SATURATION OF THE FABRIC.

THE FABRIC/EPOXY COMPOSITE SHALL BE APPLIED TO THE SURFACE OF THE COLUMN BY WRAPPING USING METHODS THAT PRODUCE A UNIFORM FORCE THAT IS DISTRIBUTED ACROSS THE ENTIRE WIDTH OF THE FABRIC. THE PRIMARY FIBERS OF THE FABRIC SHALL NOT DEVIATE FROM A HORIZONTAL LINE MORE THAN \* INCH PER FOOT. ENTRAPPED AIR SHALL BE RELEASED OR ROLLED OUT BEFORE THE EPOXY SETS.

**ITEM 519: SPECIAL - COMPOSITE FIBER WRAP SYSTEM (CONT.)**

SUCCESSIVE LAYERS OF COMPOSITE MATERIALS SHALL BE PLACED BEFORE POLYMERIZATION OF THE PREVIOUS LAYER OF EPOXY IS TOO DRY TO ACHIEVE ADEQUATE BOND BETWEEN LAYERS. IF POLYMERIZATION DOES OCCUR BETWEEN LAYERS, THE SURFACE MUST BE ROUGHENED USING A LIGHT ABRASIVE THAT WILL NOT DAMAGE THE FIBER.

THE FINAL LAYER OF EPOXY SHALL BE APPLIED TO THE FINAL LAYER OF FABRIC, WITH CARE TAKEN TO ENSURE COATING OF ALL EDGES AND SEAMS. SPACES BETWEEN THE BANDS OR FABRIC SHALL BE FILLED WITH EPOXY THICKENED AS DIRECTED BY THE MANUFACTURER.

A FINAL INSPECTION SHALL BE PERFORMED ON ALL FIBER WRAPPED COLUMNS AFTER THE EPOXY SETS YET PRIOR TO THE APPLICATION OF THE URETHANE TOP COAT. ALL DEFECTS (INCLUDING BUBBLES, DELAMINATIONS, AND FABRIC TEARS) MORE THAN 1 SQUARE INCH OF THE SURFACE AREA, OR AS SPECIFIED BY THE PROJECT ENGINEER, SHALL BE REPAIRED AS SUCH:

- 1) SMALL DEFECTS (ON THE ORDER OF 6" DIAMETER) SHALL BE INCLUDED OR BACK FILLED WITH EPOXY.

- 2) BUBBLES LESS THAN 12" IN DIAMETER SHALL BE REPAIRED BY INJECTING WITH EPOXY. TWO HOLES SHALL BE DRILLED INTO THE BUBBLE TO ALLOW INJECTION OF THE EPOXY AND ESCAPE OF THE ENTRAPPED AIR.

- 3) BUBBLES, DEFLAMATIONS, AND FABRIC TEARS GREATER THAN 12" IN DIAMETER SHALL BE REPAIRED BY REMOVING AND REAPPLYING THE REQUIRED NUMBER OF LAYERS OF THE COMPOSITE AND THE REQUIRED FINISH COATINGS. ALL REPAIRS SHALL BE APPROVED BY THE PROJECT ENGINEER.

**COATING SYSTEM APPLICATION:**

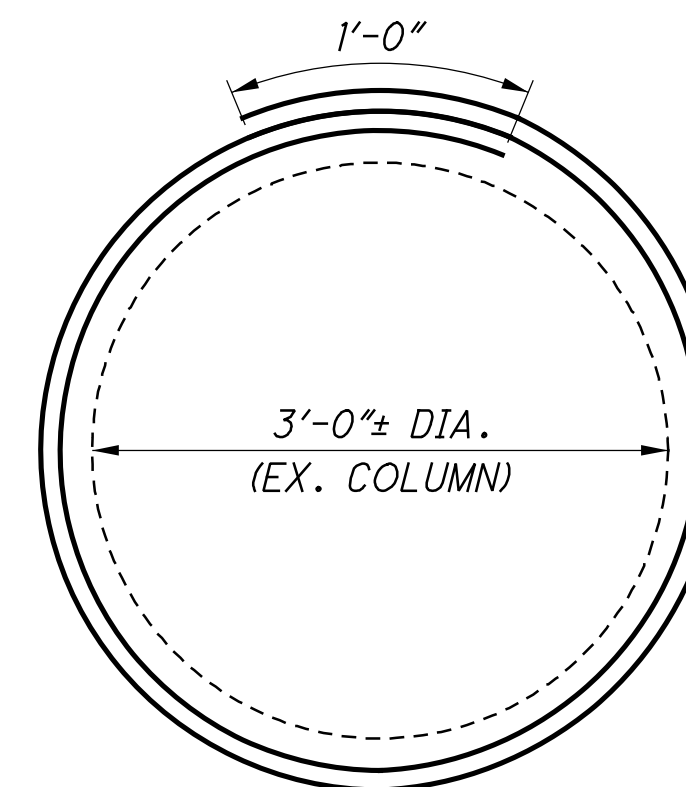
A FINAL URETHANE COATING IS REQUIRED TO PROTECT THE FIBERS FROM THE ELEMENTS, SPECIFICALLY UV RADIATION, AND TO GIVE THE FINAL AESTHETIC EFFECT. FINAL URETHANE COATING COLOR SHALL BE FS-595B-17778: LIGHT NEUTRAL.

AFTER 96 HOURS FROM THE FINAL APPLICATION OF THE EPOXY, IF THE FINAL EPOXY COAT IS COMPLETELY POLYMERIZED, THE EXTERIOR SURFACES OF THE COMPOSITE WRAP SHALL BE CLEANED AND ROUGHENED BY A LIGHT ABRASIVE. CARE SHOULD BE TAKEN DURING THE ROUGHENING PROCESSES SO THAT FIBERS ARE NOT DAMAGED. ALL CLEANED AND ROUGHENED SURFACES SHALL BE DRY BEFORE APPLYING THE URETHANE COATING.

**MEASUREMENT AND PAYMENT:**

THE BID PRICE SHALL INCLUDE ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY TO PROVIDE AND INSTALL A FIBER WRAP COLUMN CASTING SYSTEM USING HIGH STRENGTH, HYBRID FIBER/EPOXY COMPOSITES FIELD APPLIED TO THE COLUMN, INCLUDING ERECTION OF SCAFFOLDING, CLEANING, SURFACE PREPARATION, WRAPPING THE COLUMN, AND ALL INCIDENTALS NECESSARY TO COMPLETE THE INSTALLATION PER THE MANUFACTURERS REQUIREMENTS. THE BID PRICE SHALL ALSO INCLUDE EXCAVATION, TEMPORARY BRACING, AND EMBANKMENT FILL PER CDMS 203 AND 503 TO EXCAVATE AND RE-BURY THE COLUMNS TO TOP OF FOOTING TO ALLOW FOR THE COMPOSITE FIBER WRAP INSTALLATION.

PIER COLUMNS TO BE FIBER WRAPPED ARE IDENTIFIED IN THE PLANS. ESTIMATED PAY QUANTITY IS BASED ON TWO WRAPS PLUS 1'-0" OVERLAP, AS SHOWN BELOW.



**COMPOSITE FIBER WRAP DETAIL**  
(TWO WRAPS)


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<b>DESIGN AGENCY</b>	<b>ONE EASTON OVAL COLUMBUS, OH 43219 T 614-776-6000 F 614-776-6225</b>	<b>DATE</b>	05/2017	<b>DESIGNED</b>	AKB	<b>CHECKED</b>	TML
<b>DRAWN</b>	AKB	<b>REVIEWED</b>	RKM	<b>STRUCTURE FILE NUMBER</b>	3005887		
<b>STRUCTURAL GENERAL NOTES</b>							
BRIDGE NO. GUE-513-0871							
SR-513 OVER IR-70							
<b>GUE-513-8.65</b>							
<b>PID No. 93289</b>							
4/54							
50 100							



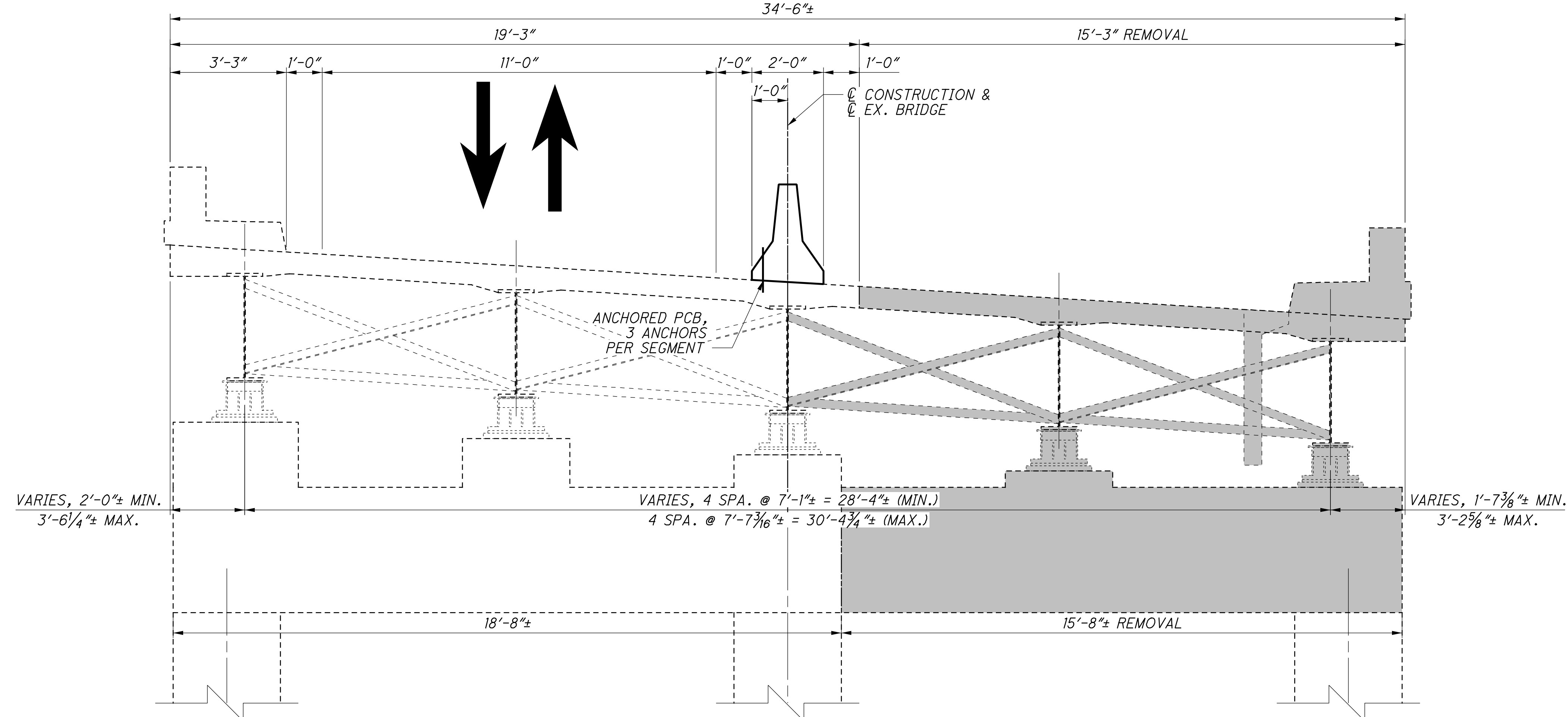
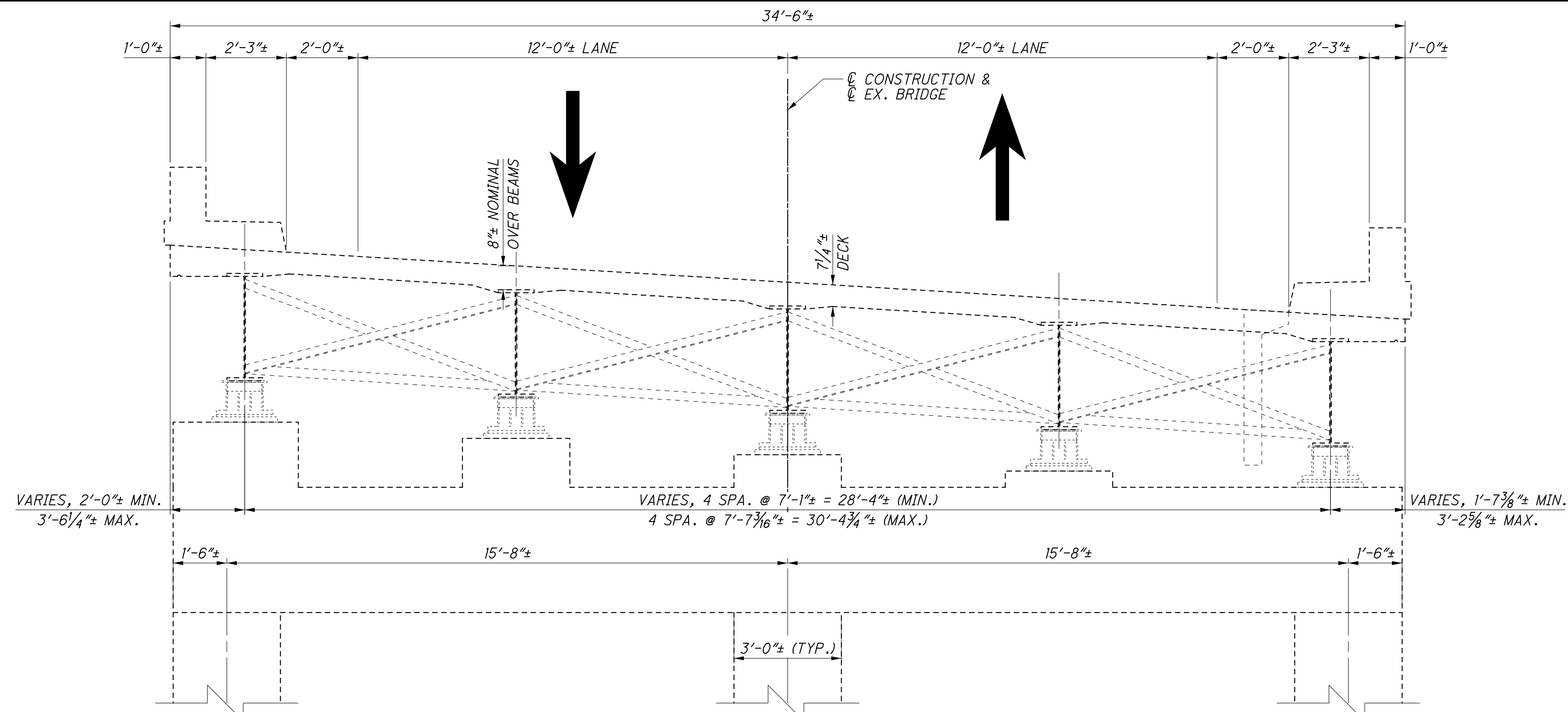
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ESTIMATED QUANTITIES					DATE: 1/27/2017
CALC BY: PES/JMM					DATE: 2/2/2017
CHECK BY: BWB					SHEET
ITEM	EXT	QUANTITY	UNIT	DESCRIPTION	
202	11203	1	LS	PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN	2/54
202	22900	213	SQ YD	APPROACH SLAB REMOVED	
202	23500	213	SQ YD	WEARING COURSE REMOVED	
203	10000	176	CU YD	EXCAVATION	
204	30010	84	CU YD	GRANULAR MATERIAL, TYPE B	
204	50001	446	SQ YD	GEOTEXTILE FABRIC, AS PER PLAN	
503	11100	1	LS	COFFERDAMS AND EXCAVATION BRACING	
503	21300	1	LS	UNCLASSIFIED EXCAVATION	
505	11100	1	LS	PILE DRIVING EQUIPMENT MOBILIZATION	
507	100	880	FT	STEEL PILES, HP10X42, FURNISHED	
507	150	720	FT	STEEL PILES, HP10X42, DRIVEN	
509	10000	193,815	LB	EPOXY COATED REINFORCING STEEL	
510	10000	183	EACH	DOWEL HOLES WITH NON-SHRINK, NON-METALLIC GROUT	
511	33500	2	EACH	SEMI-INTEGRAL DIAPHRAGM GUIDE	
511	34446	453	CU YD	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK	
511	34450	87	CU YD	CLASS QC2 CONCRETE WITH QC/QA, BRIDGE DECK (PARAPET)	
511	42512	86	CU YD	CLASS QC1 CONCRETE WITH QC/QA, PIER CAP	
511	44112	84	CU YD	CLASS QC1 CONCRETE WITH QC/QA, ABUTMENT NOT INCLUDING FOOTING	
511	46512	52	CU YD	CLASS QC1 CONCRETE WITH QC/QA, FOOTING	
512	10050	1,035	SQ YD	SEALING OF CONCRETE SURFACES (NON-EPOXY)	
513	10260	749,329	LB	STRUCTURAL STEEL MEMBERS, LEVEL 3	
513	20000	12,587	EACH	WELDED STUD SHEAR CONNECTORS	
514	60	25,000	SQ FT	FIELD PAINTING STRUCTURAL STEEL, INTERMEDIATE COAT	
514	66	25,000	SQ FT	FIELD PAINTING STRUCTURAL STEEL, FINISH COAT	
514	10000	24	EACH	FINAL INSPECTION REPAIR	
516	13201	19	SQ FT	1/2" PREFORMED EXPANSION JOINT FILLER, AS PER PLAN	3/54
516	13901	229	SQ FT	2" PREFORMED EXPANSION JOINT FILLER, AS PER PLAN	3/54
516	14020	98	FT	SEMI-INTEGRAL ABUTMENT EXPANSION JOINT SEAL	
516	14600	94	FT	STRUCTURAL JOINT OR JOINT SEALER, MISC.: JEENE SEAL	
516	44101	14	EACH	ELASTOMERIC BEARINGS WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), (12"x18"x2.50"), AS PER PLAN	43/54
516	44101	7	EACH	ELASTOMERIC BEARINGS WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), (12"x21"x2.95"), AS PER PLAN	44/54
516	44201	14	EACH	ELASTOMERIC BEARINGS WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), (16"x18"x3.81"), AS PER PLAN	44/54
516	46501	14	EACH	BEARING, PTFE (TEFLON), AS PER PLAN	43/54
516	47001	1	LS	JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN	3/54
518	12201	10	EACH	SCUPPERS, INCLUDING SUPPORTS, AS PER PLAN	44/54
518	21200	20	CU YD	POROUS BACKFILL WITH GEOTEXTILE FABRIC	2/54
518	40000	139	FT	6" PERFORATED CORRUGATED PLASTIC PIPE	
518	40010	60	FT	6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS	
519	100	1,239	SQ FT	SPECIAL - COMPOSITE FIBER WRAP SYSTEM	4/54
526	30011	299	SQ YD	REINFORCED CONCRETE APPROACH SLABS WITH QC/QA (T=17"), AS PER PLAN	3/54
526	90030	94	FT	TYPE C INSTALLATION	
601	21100	461	SQ YD	SLOPE PROTECTION, MISC.: CONCRETE CANVAS	
840	23000	240	CU YD	SELECT GRANULAR BACKFILL	

<b>DESIGN AGENCY</b> ONE EASTON OVAL COLUMBUS, OH 43219 T 614-776-6000 F 614-776-6225 	<b>DATE</b> 02/2017
	<b>REVIEWED</b> RKM
<b>DESIGNED</b> JMM	<b>STRUCTURE FILE NUMBER</b> 3005887
<b>DRAWN</b> JMM	<b>REVISIONS</b>
<b>CHECKED</b> TML	
<b>ESTIMATED QUANTITIES</b> BRIDGE NO. GUE-513-0871 SR-513 OVER IR-70	
<b>GUE-513-8.65</b> <b>PID No. 93289</b>	
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51 100	



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**LEGEND**

■ - REMOVAL

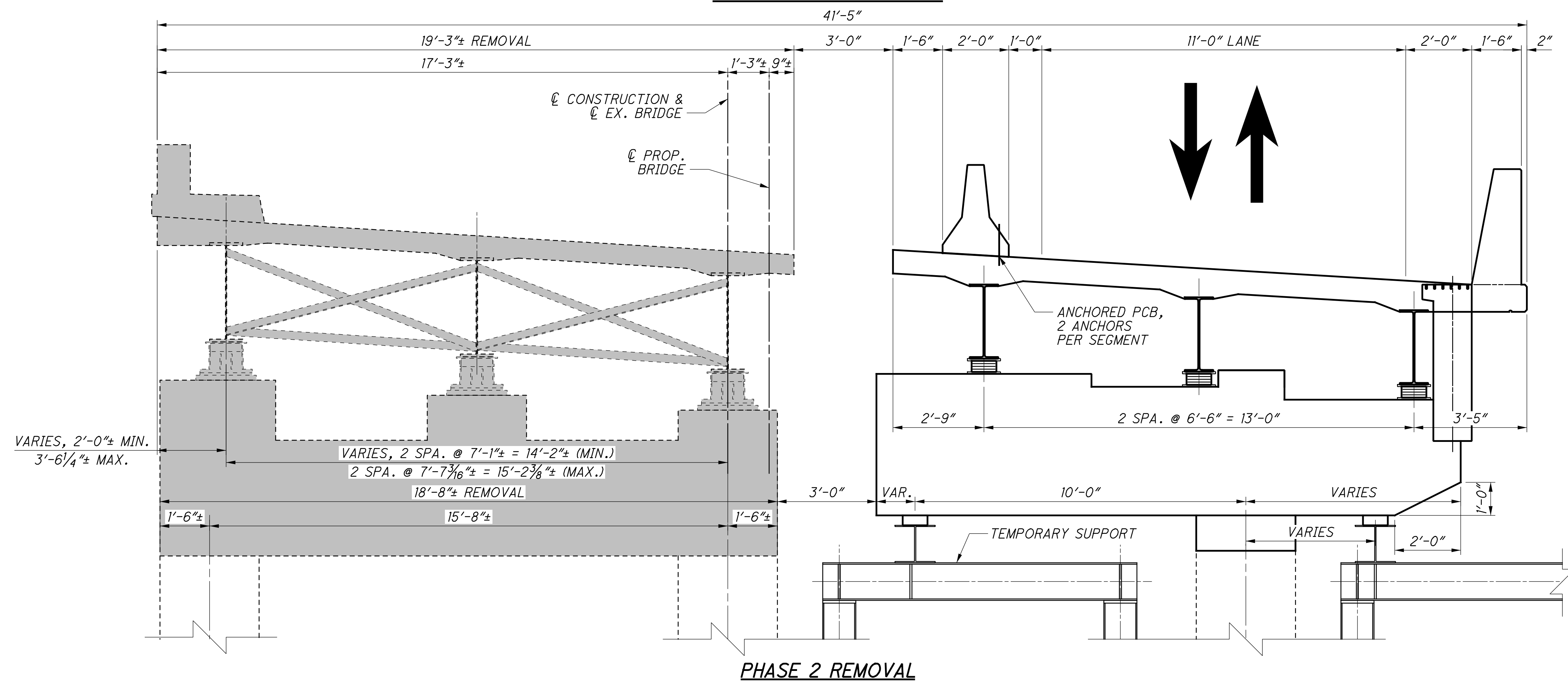
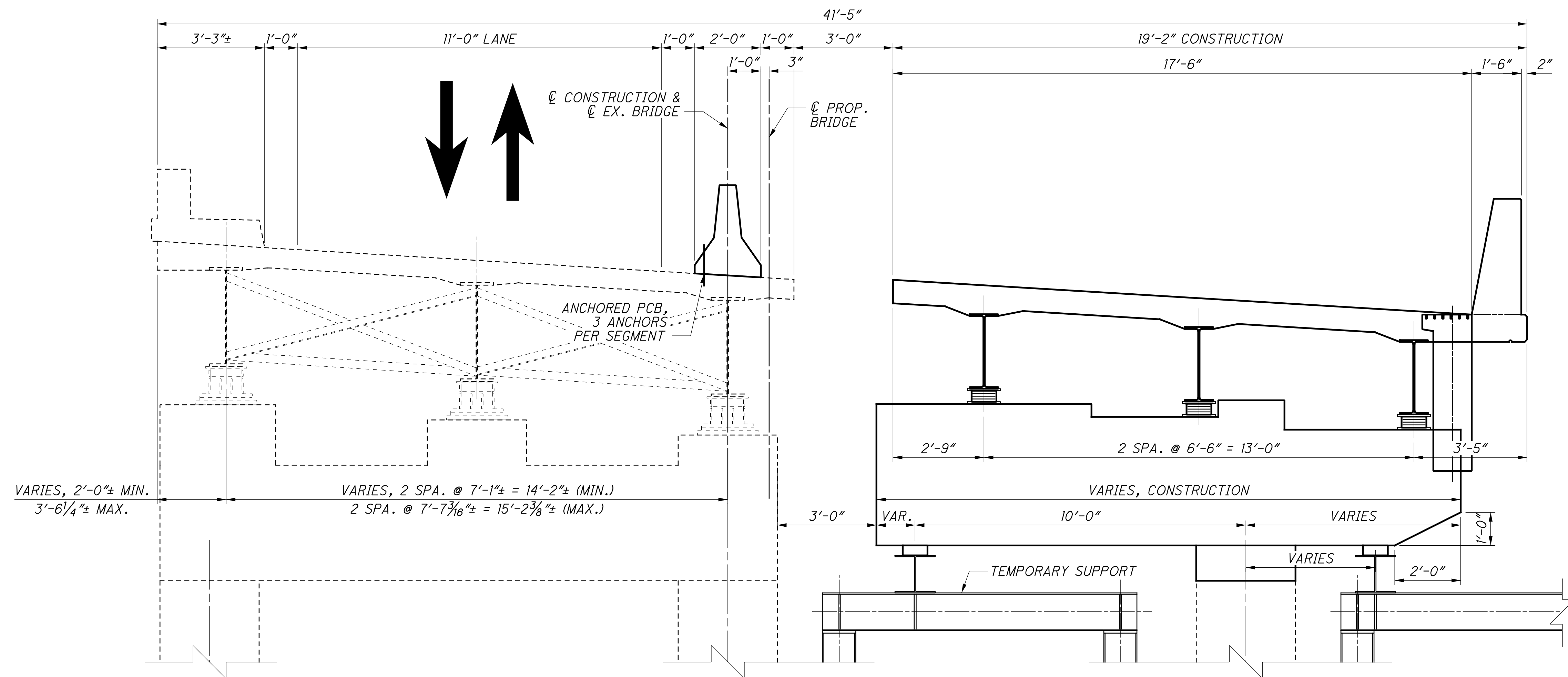
**SEQUENCE OF CONSTRUCTION**

PHASE 1 REMOVAL:

1. INSTALL TEMPORARY SIGNALS.
2. PLACE ANCHORED PORTABLE BARRIER AND SHIFT TRAFFIC.
3. REMOVE RIGHT SECTION OF EXISTING SUPERSTRUCTURE, APPROACH SLABS, ABUTMENT BACKWALLS, PORTIONS OF EXISTING WINGWALLS, AND PIER SECTIONS WHILE MAINTAINING ONE-LANE, TWO-DIRECTIONAL TRAFFIC.

<p><b>PHASED CONSTRUCTION DIAGRAMS</b></p> <p>BRIDGE NO. GUE-513-0871</p> <p>SR-513 OVER IR-70</p>	<p>DESIGN AGENCY</p> <p>WOLPERT</p> <p>DESIGN   ENGINEERING   INFRASTRUCTURE</p>	<p>DATE: 02/2017</p> <p>FILE NUMBER: 3005887</p> <p>REVIEWED: RKM</p> <p>STRUCTURE FILE NUMBER: 3005887</p> <p>DRAWN: TML</p> <p>REVISER: MAA</p> <p>DESIGNED: TML</p> <p>CHECKED: MAA</p>
<p>GUE - 513 - 8.65</p> <p>PID No. 93289</p>	<p>52</p> <p>100</p>	<p>6 / 54</p>

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**LEGEND**  
 [Hatched Box] - REMOVAL

**SEQUENCE OF CONSTRUCTION**

- PHASE 1 CONSTRUCTION:**
- EXCAVATE TO TOP OF PIER FOOTINGS AND INSTALL TEMPORARY SUPPORTS. SHORE ABUTMENT EXCAVATION.
  - CONSTRUCT RIGHT SECTION OF ABUTMENTS, PIERS, AND APPROACH SLABS.
  - PLACE BEARINGS AND BEAMS THEN CONSTRUCT RIGHT PORTION OF DECK AND PARAPETS.

SEE SHEETS 12/54 - 14/54 FOR TEMPORARY SUPPORT DETAILS.

- PHASE 2 REMOVAL:**
- ADJUST TEMPORARY SIGNALS AND MAINTENANCE OF TRAFFIC SIGNAGE AND SHIFT PORTABLE BARRIER AND TRAFFIC.
  - REMOVE LEFT SECTION OF EXISTING SUPERSTRUCTURE, APPROACH SLABS, ABUTMENT BACKWALLS, AND PIER SECTIONS WHILE MAINTAINING ONE-LANE, TWO-DIRECTIONAL TRAFFIC.

DESIGN AGENCY: WOOLPERT  
 100 EASTON OVAL  
 SUITE 300  
 COLUMBUS, OH 43219  
 T 614-476-6000  
 F 614-476-6225

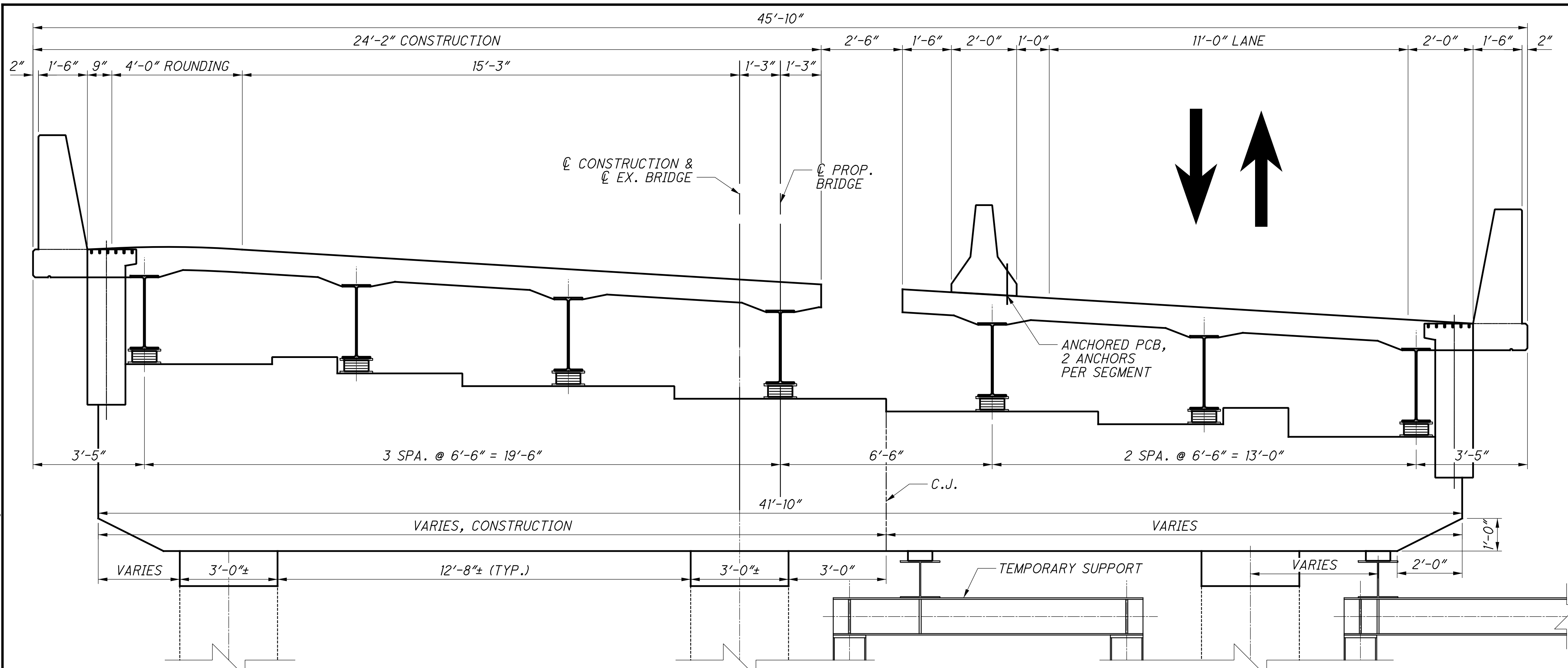
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 DESIGNED: TML  
 CHECKED: MAA  
 STRUCTURE FILE NUMBER: 3005887

**PHASED CONSTRUCTION DIAGRAMS**  
 BRIDGE NO. GUE-513-0871  
 SR-513 OVER IR-70

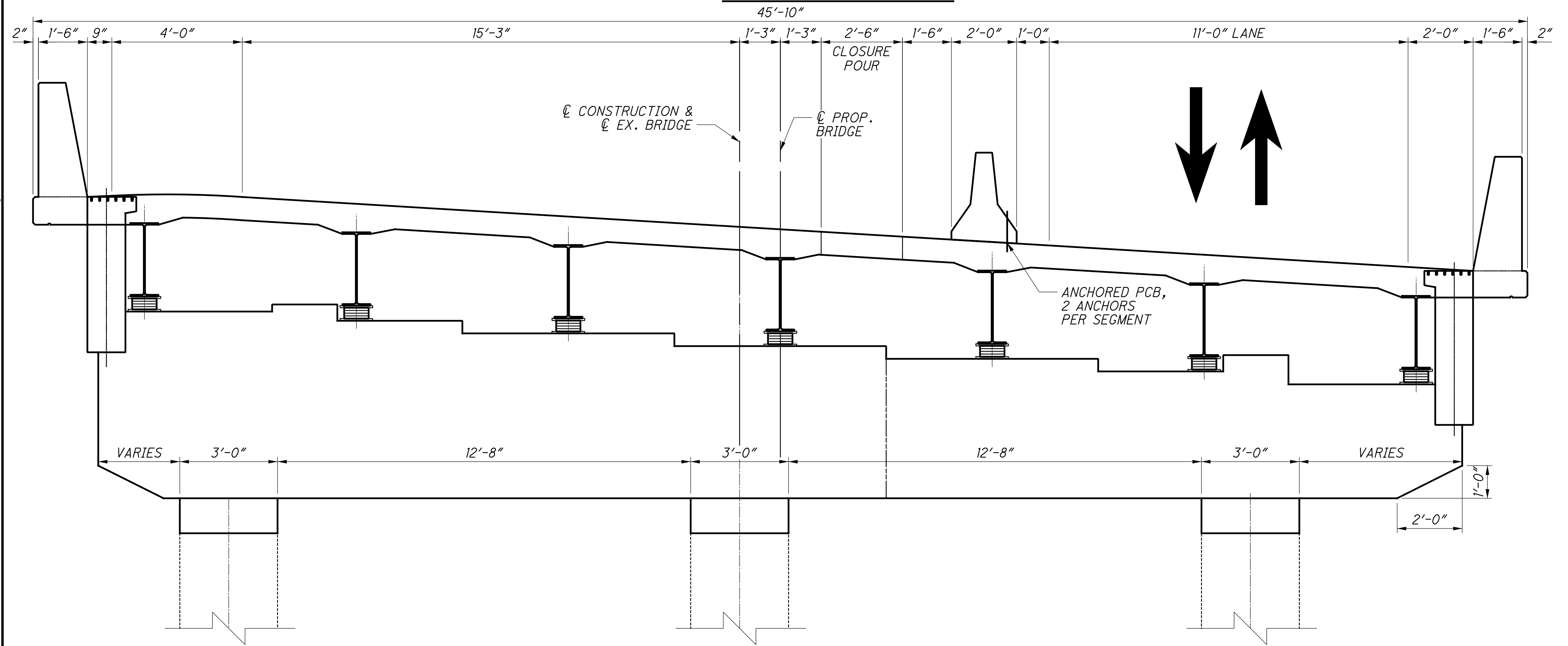
**GUE-513-8-65**  
 PID No. 93289

7/54  
 53/100

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**PHASE 2 CONSTRUCTION**



**PHASE 2 CLOSURE POUR**

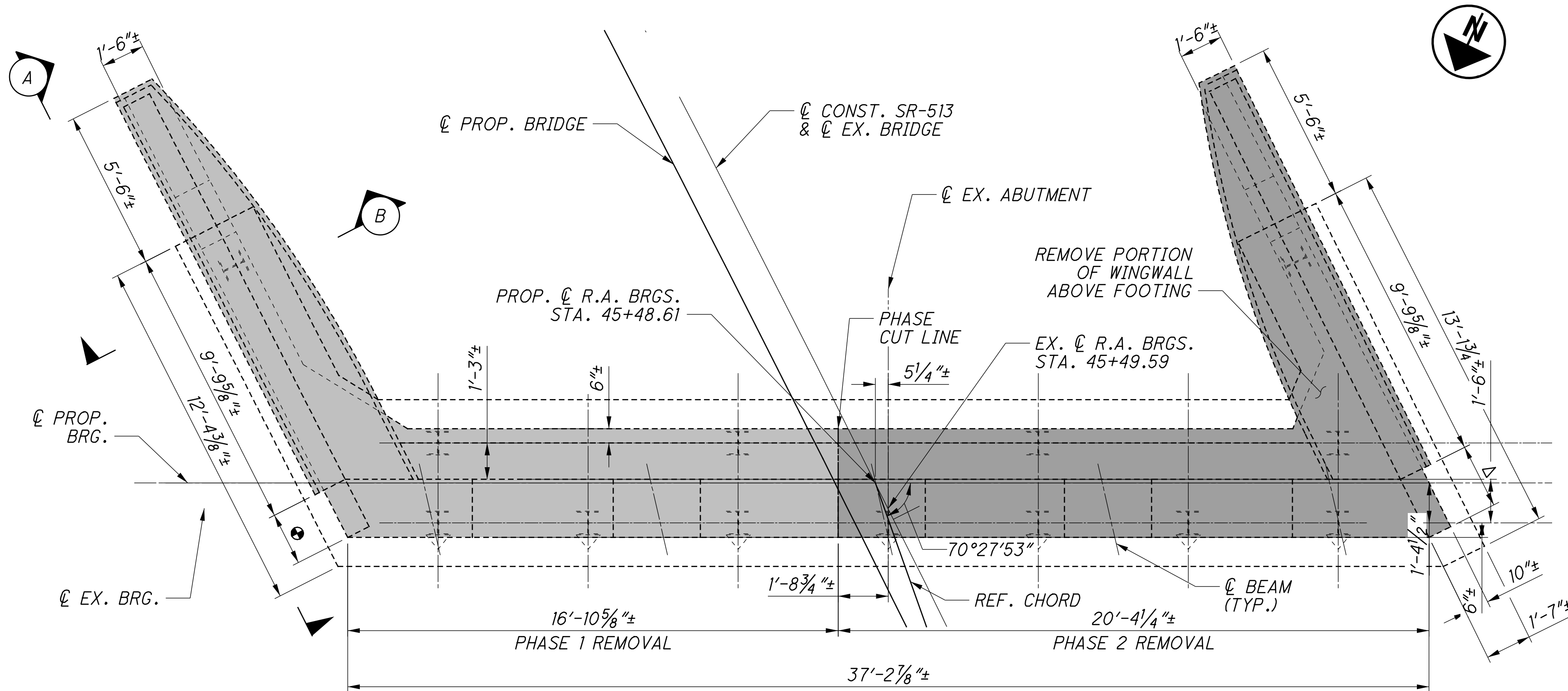
**SEQUENCE OF CONSTRUCTION**

- PHASE 2 CONSTRUCTION:
1. CONSTRUCT LEFT SECTION OF ABUTMENTS, PIERS, AND APPROACH SLABS.
  2. REMOVE PIER TEMPORARY SUPPORTS AND BURY FOOTING TO ORIGINAL GRADE.
  3. PLACE BEARINGS AND BEAMS THEN CONSTRUCT LEFT PORTION OF DECK AND PARAPETS.
- PHASE 2 CLOSURE POUR & FINAL:
1. CONSTRUCT CLOSURE POUR.
  2. REMOVE PORTABLE CONCRETE BARRIER AND TEMPORARY SIGNALS.
  3. RETURN ROADWAY TO TWO-DIRECTIONAL TRAFFIC AND PLACE FINAL SIGNING AND STRIPING.

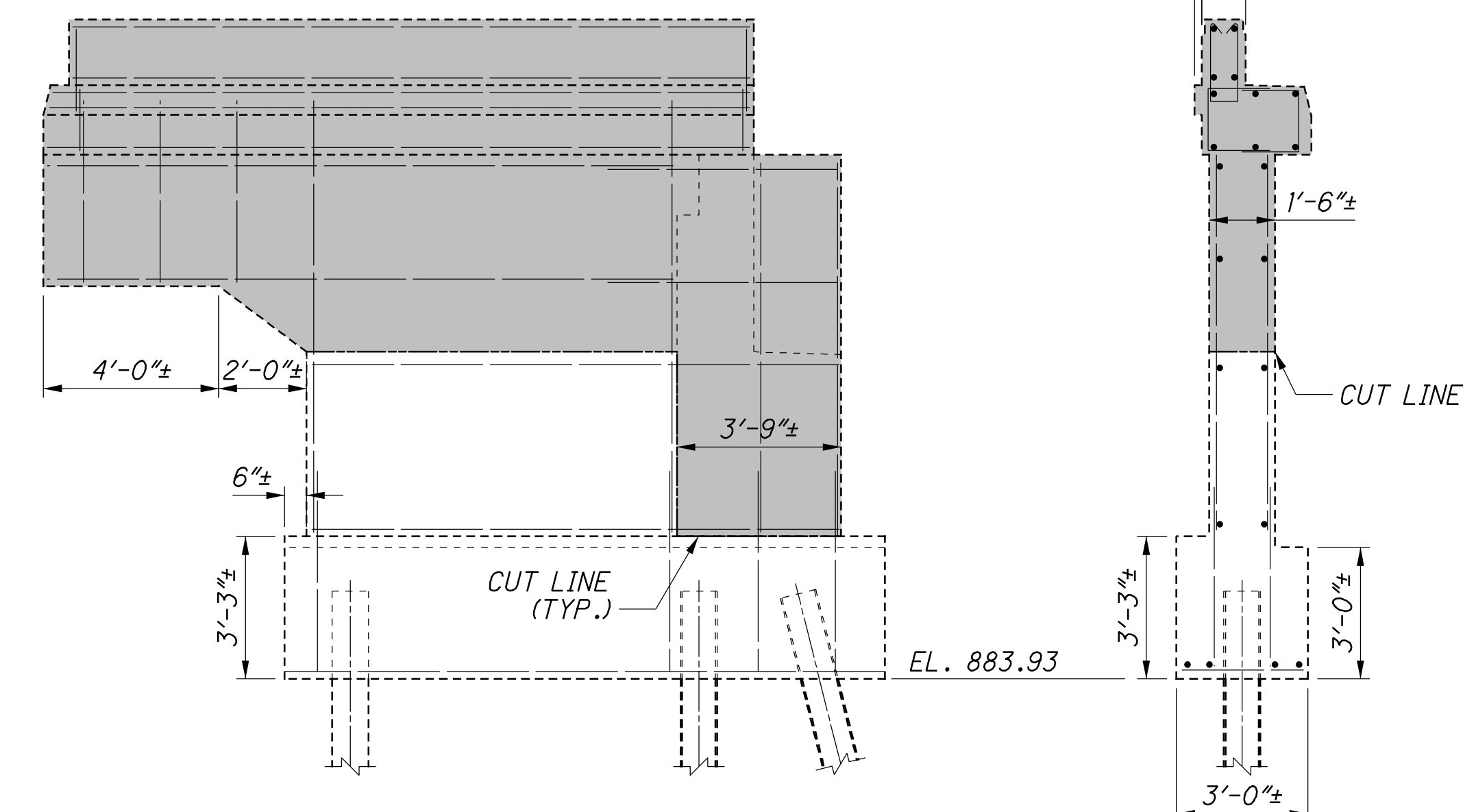
<p>DESIGN AGENCY: EASTON OVAL          SUITE 300          COLUMBUS, OH 43219          T 614-476-6000          F 614-476-6225</p> <p><b>WOOLPERT</b>  <i>CONSTRUCTION PROFESSIONALS</i></p>	<p>DATE: 02/2017</p>
	<p>REVIEWED: RKM</p>
<p>DRAWN: TML</p>	<p>STRUCTURE FILE NUMBER: 3005887</p>
<p>DESIGNED: TML</p>	<p>CHECKED: MAA</p>
<p><b>PHASED CONSTRUCTION DIAGRAMS</b></p>	
<p>BRIDGE NO. GUE-513-0871</p>	
<p>SR-513 OVER IR-70</p>	
<p><b>GUE-513-8.65</b></p>	<p><b>PID No. 93289</b></p>
<p>8 / 54</p>	<p>54 / 100</p>



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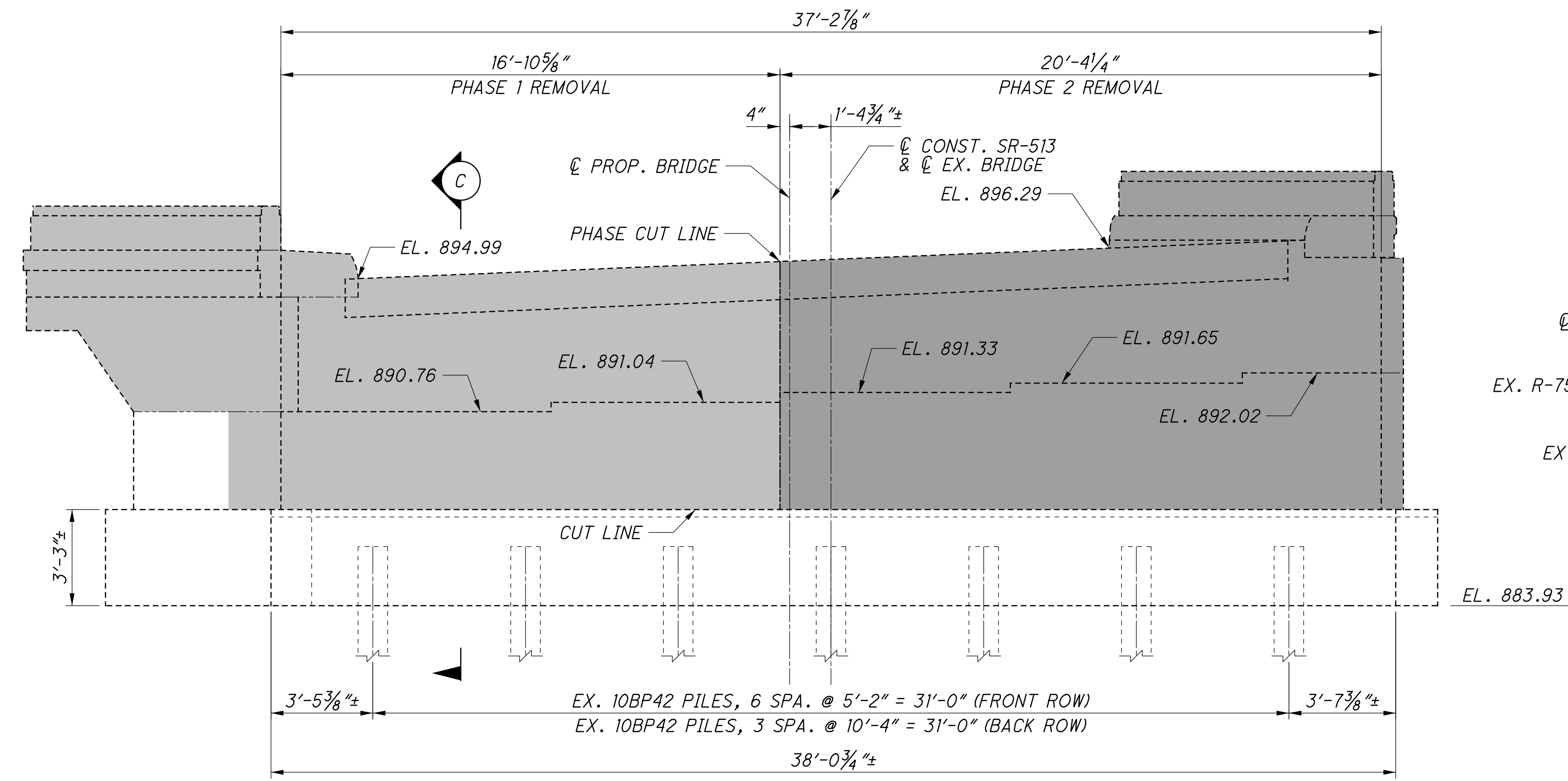


**REAR ABUTMENT PLAN**

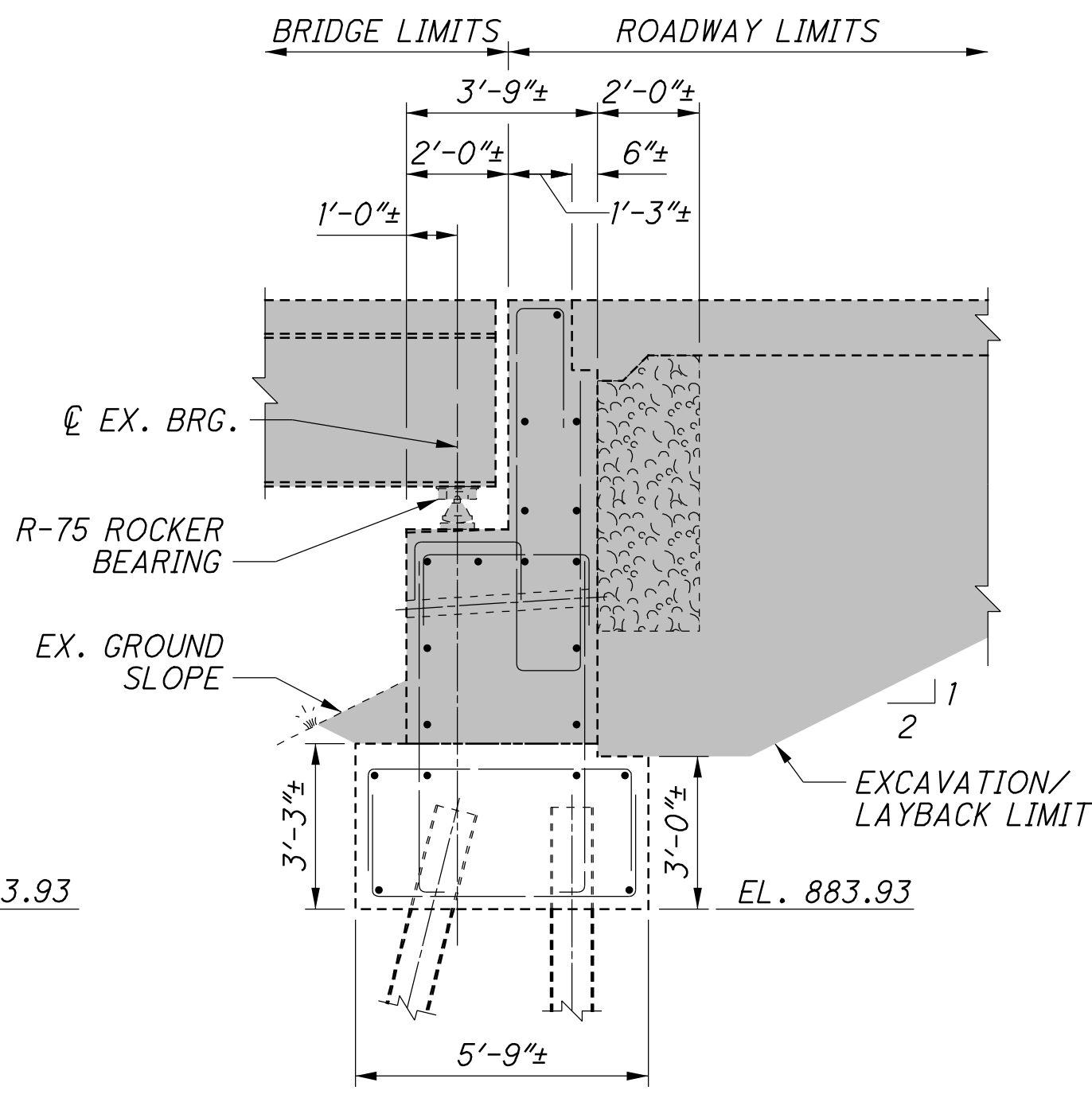


**VIEW A**

**SECTION B**



**REAR ABUTMENT ELEVATION**



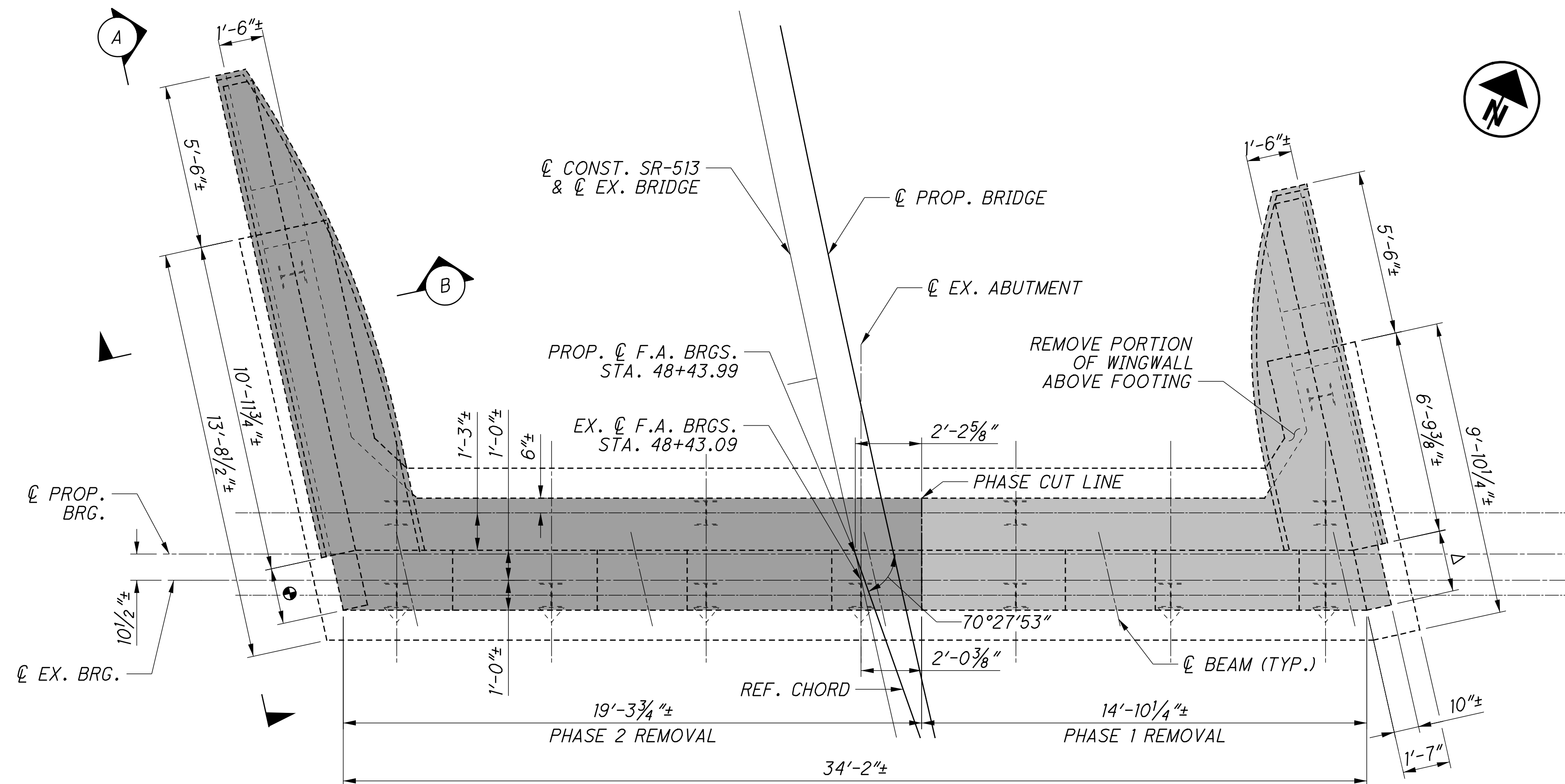
**SECTION C**

- LEGEND:**
- 1'-9 7/8"±
  - △ 2'-2 3/4"±
  - PHASE 1 REMOVAL
  - PHASE 2 REMOVAL
  - EXISTING 10BP42 VERTICAL PILE
  - EXISTING 10BP42 BATTERED PILE

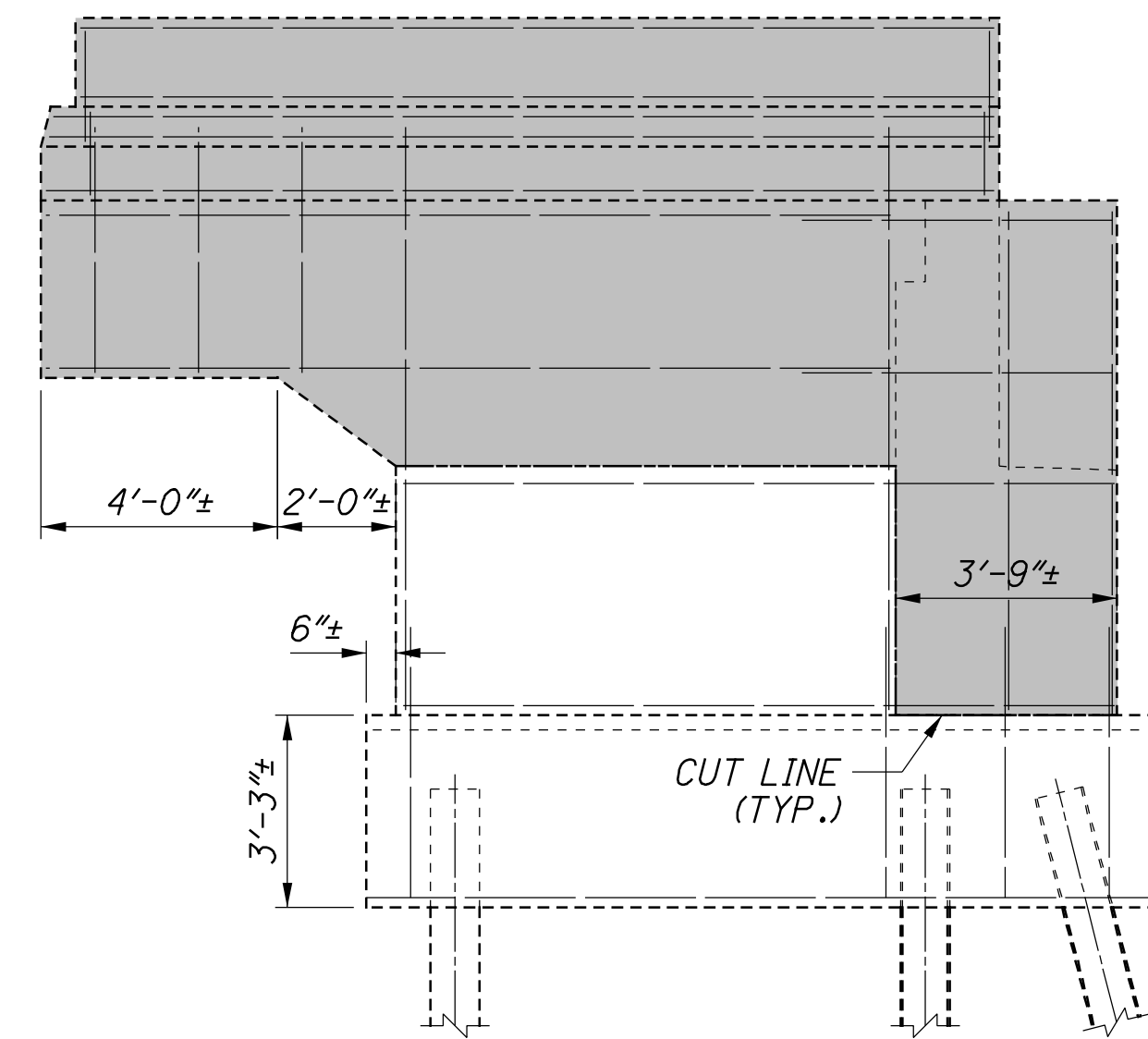
- NOTES:**
1. ALL ELEVATIONS ARE ±.
  2. REMOVE ABUTMENT AND WINGWALLS TO CONSTRUCTION JOINTS. CONTRACTOR SHALL SAWCUT EXISTING CONCRETE FOR REMOVAL.

	DESIGN AGENCY EASTON OVAL SUITE 401 COLUMBUS, OH 43219 T 614-476-8000 F 614-476-8225	DATE 02/2017	REVIEWED RKM	STRUCTURE FILE NUMBER 3005887
DRAWN PES	CHECKED TML	DESIGNED PES	REVISED	FILE NUMBER 3005887
REAR ABUTMENT REMOVAL DETAILS				
BRIDGE NO. GUE-513-0871 SR-513 OVER IR-70				
GUE-513-8.65				
PID No. 93289				
9 / 54				
55 100				

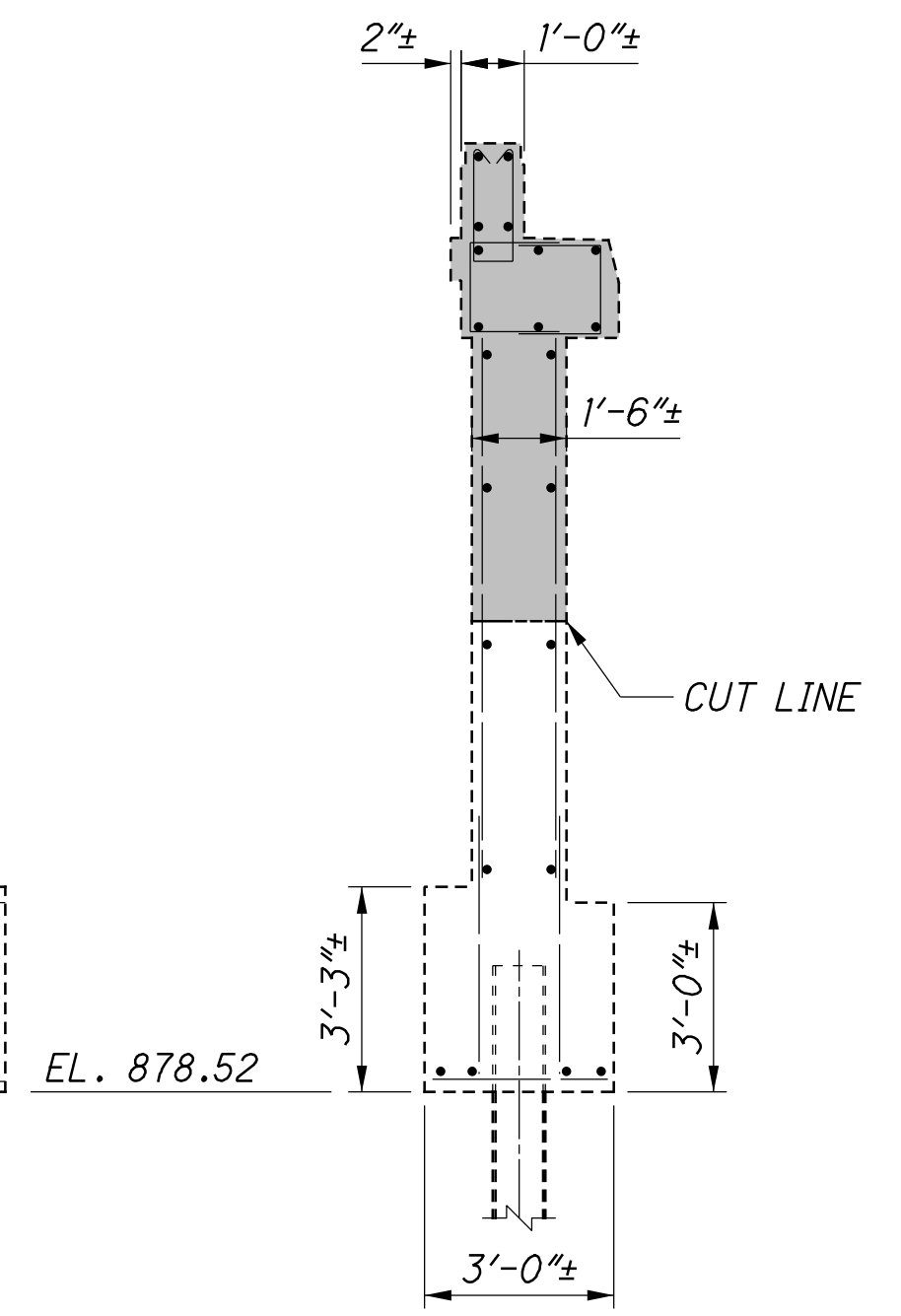
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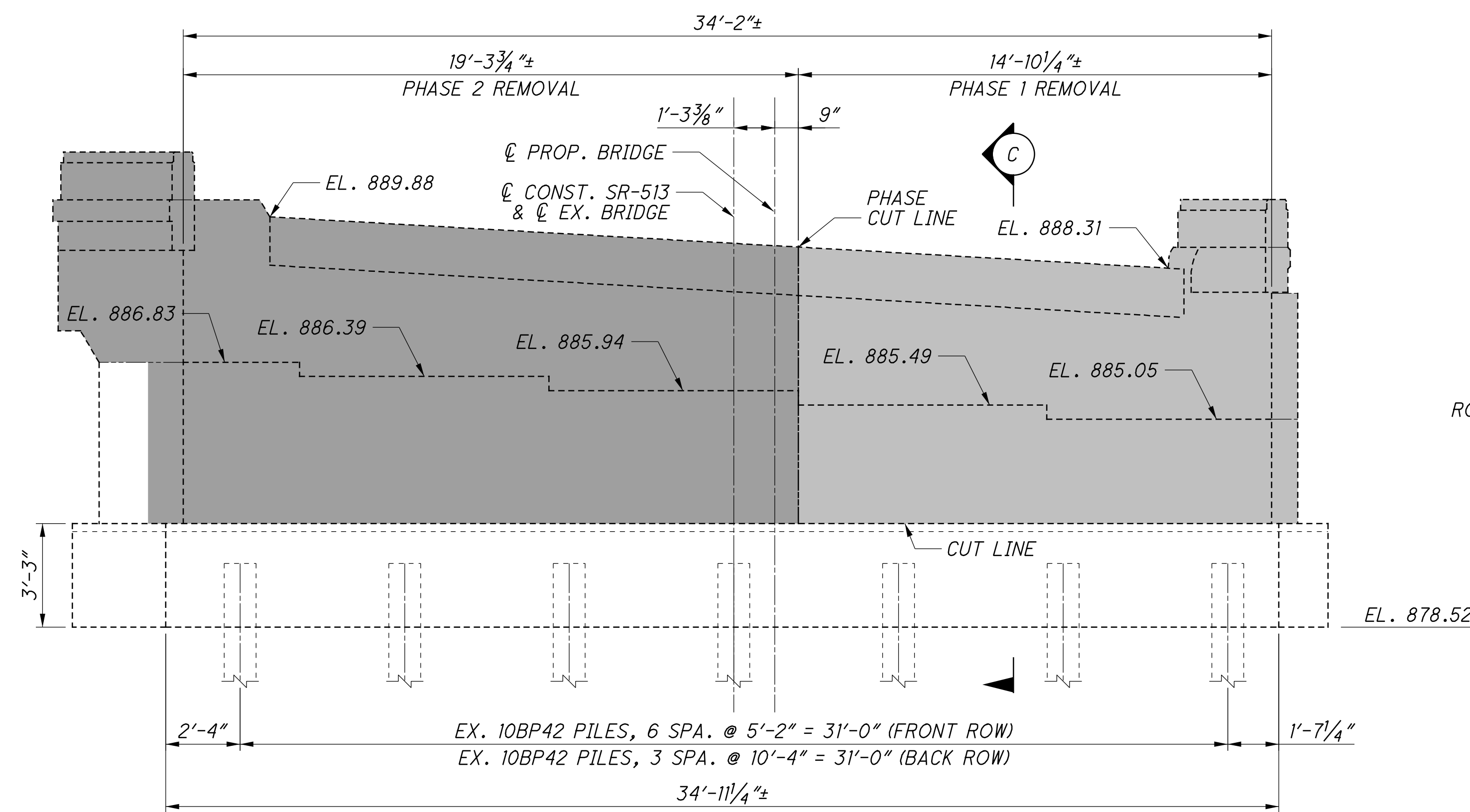
**FORWARD ABUTMENT PLAN**



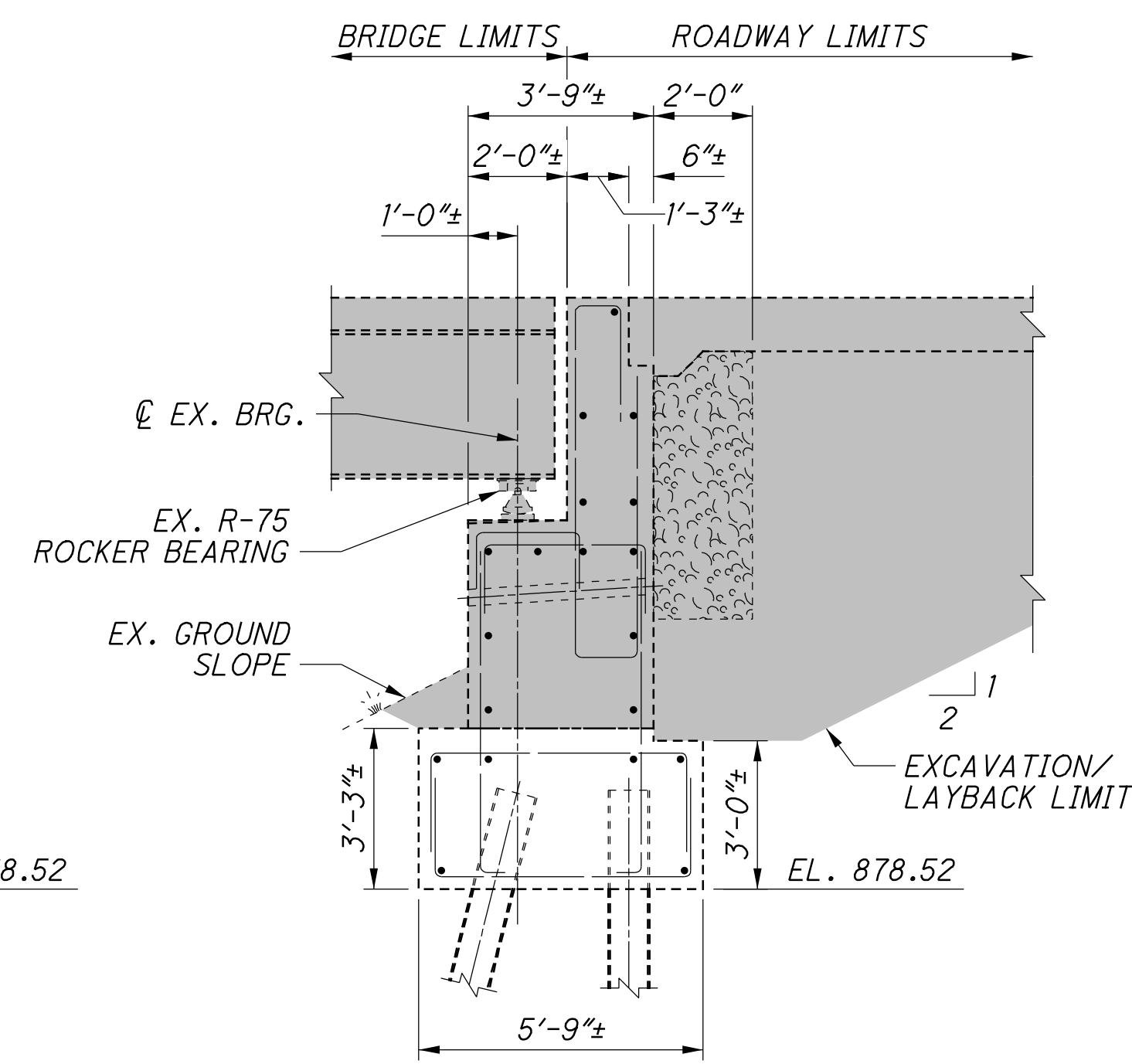
**VIEW A**



**SECTION B**



**FORWARD ABUTMENT ELEVATION**



**SECTION C**

**LEGEND:**

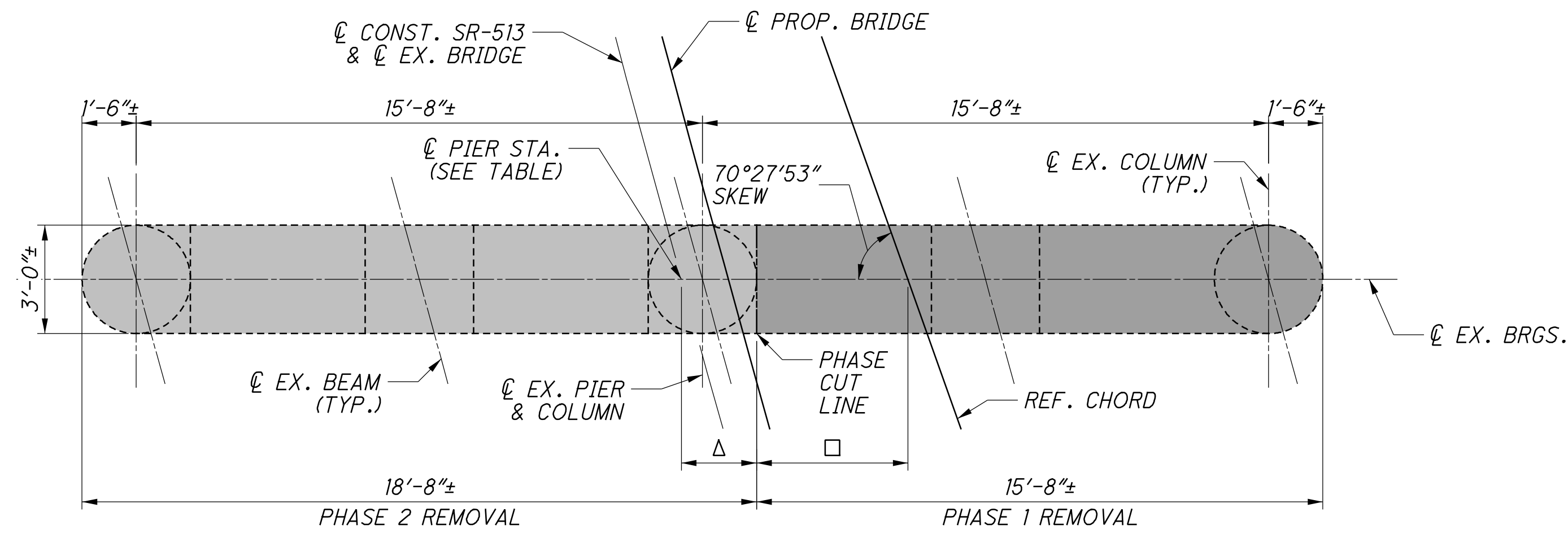
- ⊙ 1'-10 3/8"±
- △ 2'-0 5/8"±
- PHASE 1 REMOVAL
- PHASE 2 REMOVAL
- ⋯ EXISTING 10BP42 VERTICAL PILE
- ⋯ EXISTING 10BP42 BATTERED PILE

**NOTES:**

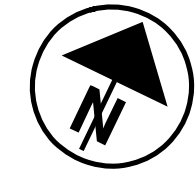
1. ALL ELEVATIONS ARE ±.
2. REMOVE ABUTMENT AND WINGWALLS TO CONSTRUCTION JOINTS. CONTRACTOR SHALL SAWCUT EXISTING CONCRETE FOR REMOVAL.

<p><b>WOLPERT</b> DESIGN/ENGINEERING/CONSTRUCTION</p>	<p>DESIGN AGENCY EASTON OVAL SUITE 401 COLUMBUS, OH 43219 T 614-476-8000 F 614-476-8225</p>	<p>DATE 02/2017</p>
<p>DESIGNED PES</p>	<p>REVIEWED RKM</p>	<p>STRUCTURE FILE NUMBER 3005887</p>
<p>DRAWN PES</p>	<p>CHECKED TML</p>	<p>REVISED</p>
<p><b>FORWARD ABUTMENT REMOVAL DETAILS</b></p>		
<p>BRIDGE NO. GUE-513-0871 SR-513 OVER IR-70</p>		
<p><b>GUE-513-8.65</b></p>	<p><b>PID No. 93289</b></p>	<p>10/54</p>
<p>56 100</p>		

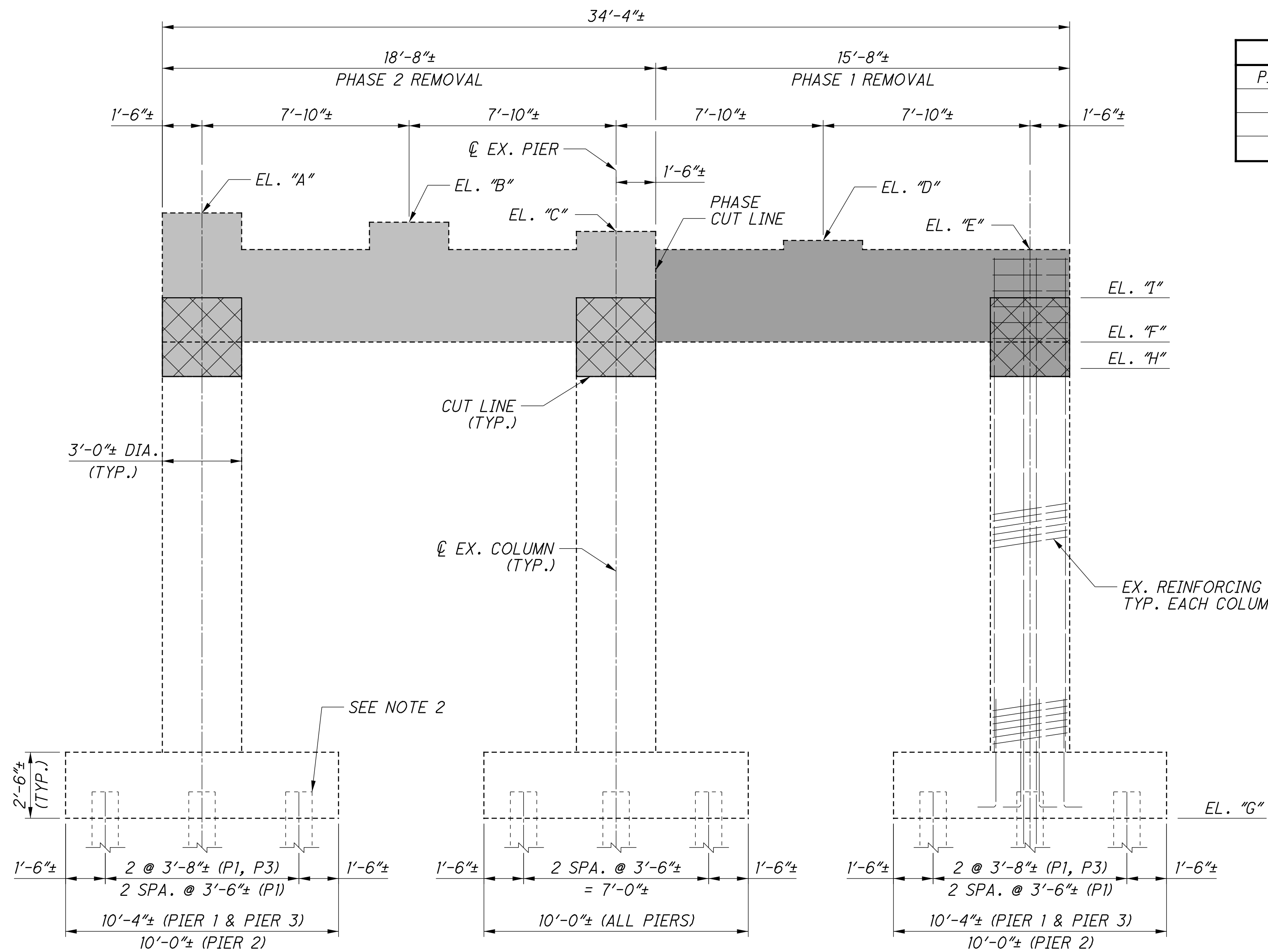
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**PLAN**



DIMENSION TABLE		
PIER	Δ	□
1	1'-6"	4'-9 5/16"
2	2'-1"	7'-6"
3	2'-1"	4'-2 1/4"



**ELEVATION**

(PIER 3 SHOWN, OTHERS SIMILAR)

EXISTING PIER ELEVATIONS (SEE NOTE 1)										
PIER	STATION	ELEV. A	ELEV. B	ELEV. C	ELEV. D	ELEV. E	ELEV. F	ELEV. G	ELEV. H	ELEV. I
1	46+09.59	890.04	889.69	889.34	888.98	888.66	884.89	866.93	883.50	886.56
2	46+96.34	887.56	887.17	886.79	886.41	886.09	882.38	862.03	881.43	884.38
3	47+83.09	885.93	885.49	885.06	884.63	884.25	880.66	862.63	879.35	882.33

**LEGEND:**

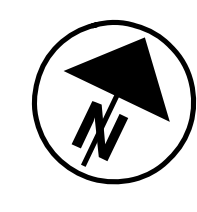
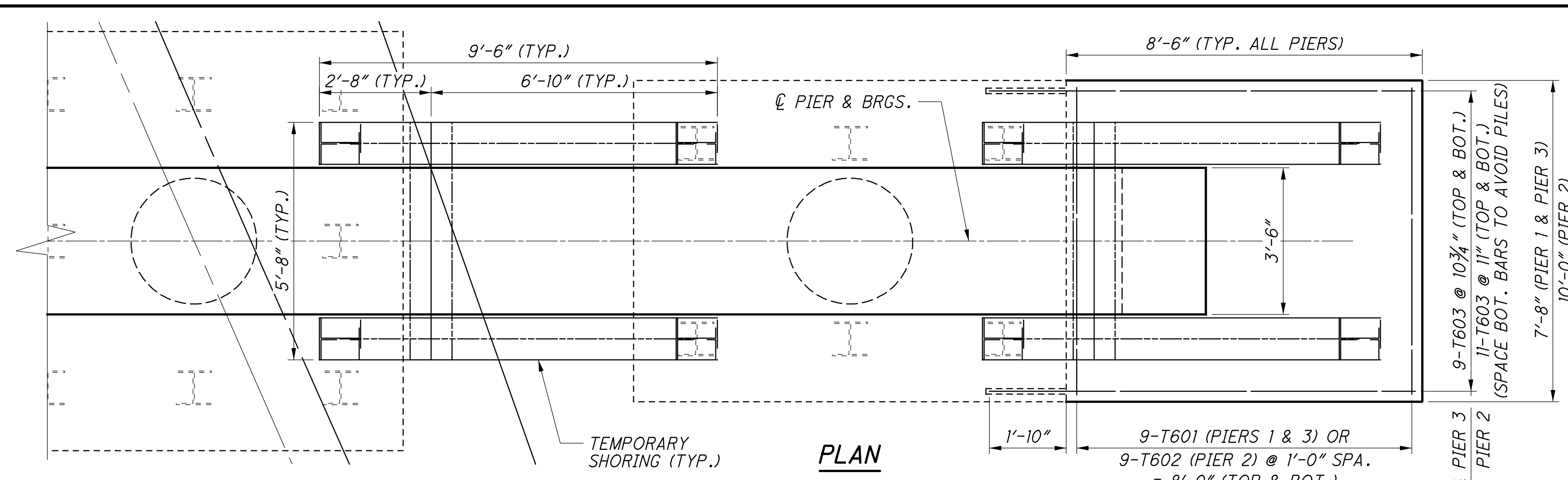
- PHASE 1 REMOVAL
- PHASE 2 REMOVAL
- REMOVE EXISTING CONCRETE & NO. 4 SPIRAL REINFORCING, SALVAGE VERTICAL BARS

**NOTES:**

1. ALL ELEVATIONS ARE ±.
2. ALL EXISTING PILES ARE 10BP42 STEEL PILES.
3. EXPOSE EXISTING COLUMN REINFORCEMENT STEEL FOR REUSE. SEE PIER DETAILS, SHEET 29/54, FOR PROPOSED CONFIGURATION.
4. INTERFACE BETWEEN EXISTING CONCRETE AND NEW CONCRETE SHALL BE CLEAN AND FREE OF LAITANCE PER CMS 512.03.
5. FINISH SURFACE OF COLUMN AT INTERFACE BETWEEN EXISTING CONCRETE AND NEW CONCRETE PER CMS 511.15.



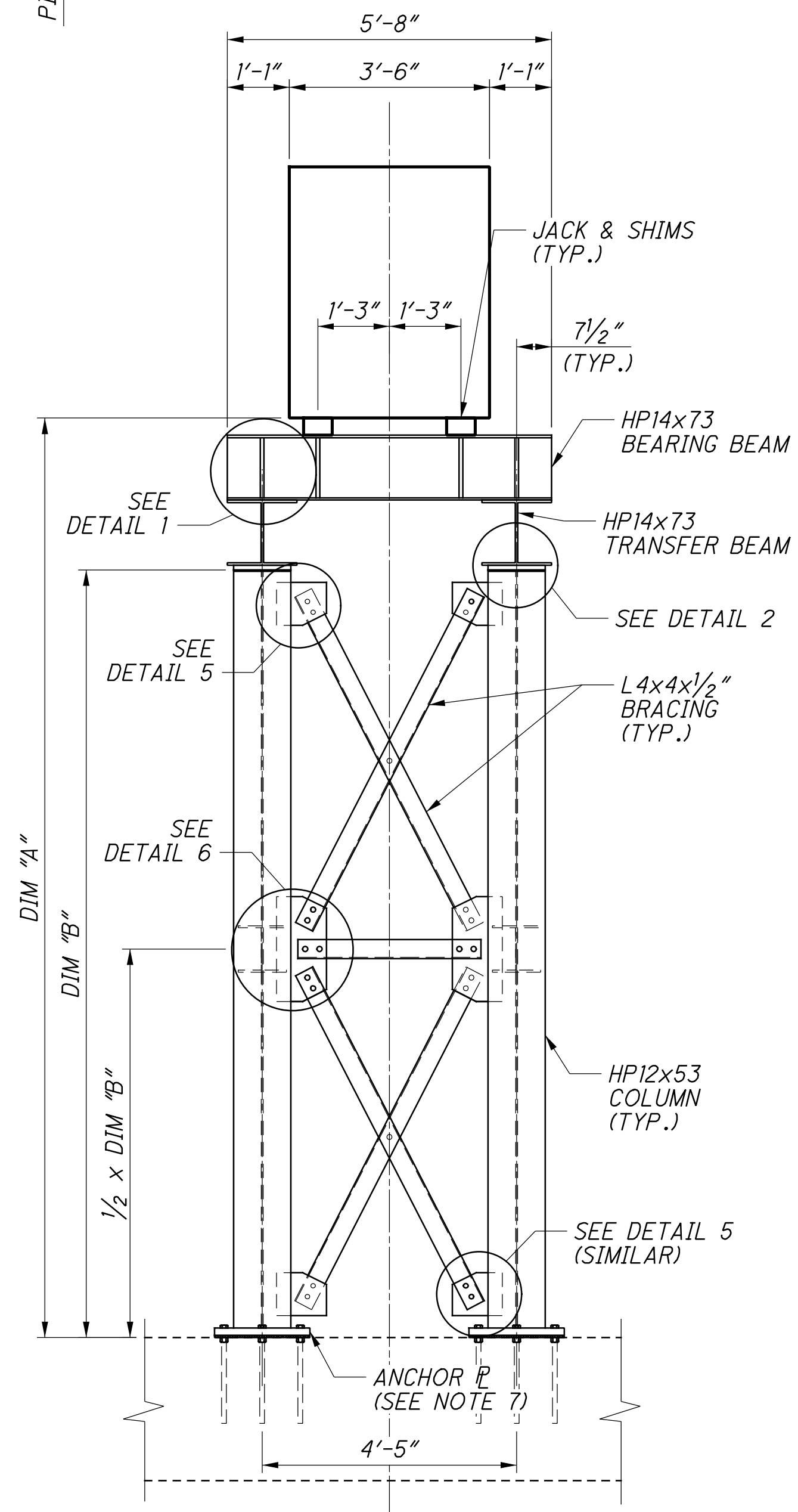
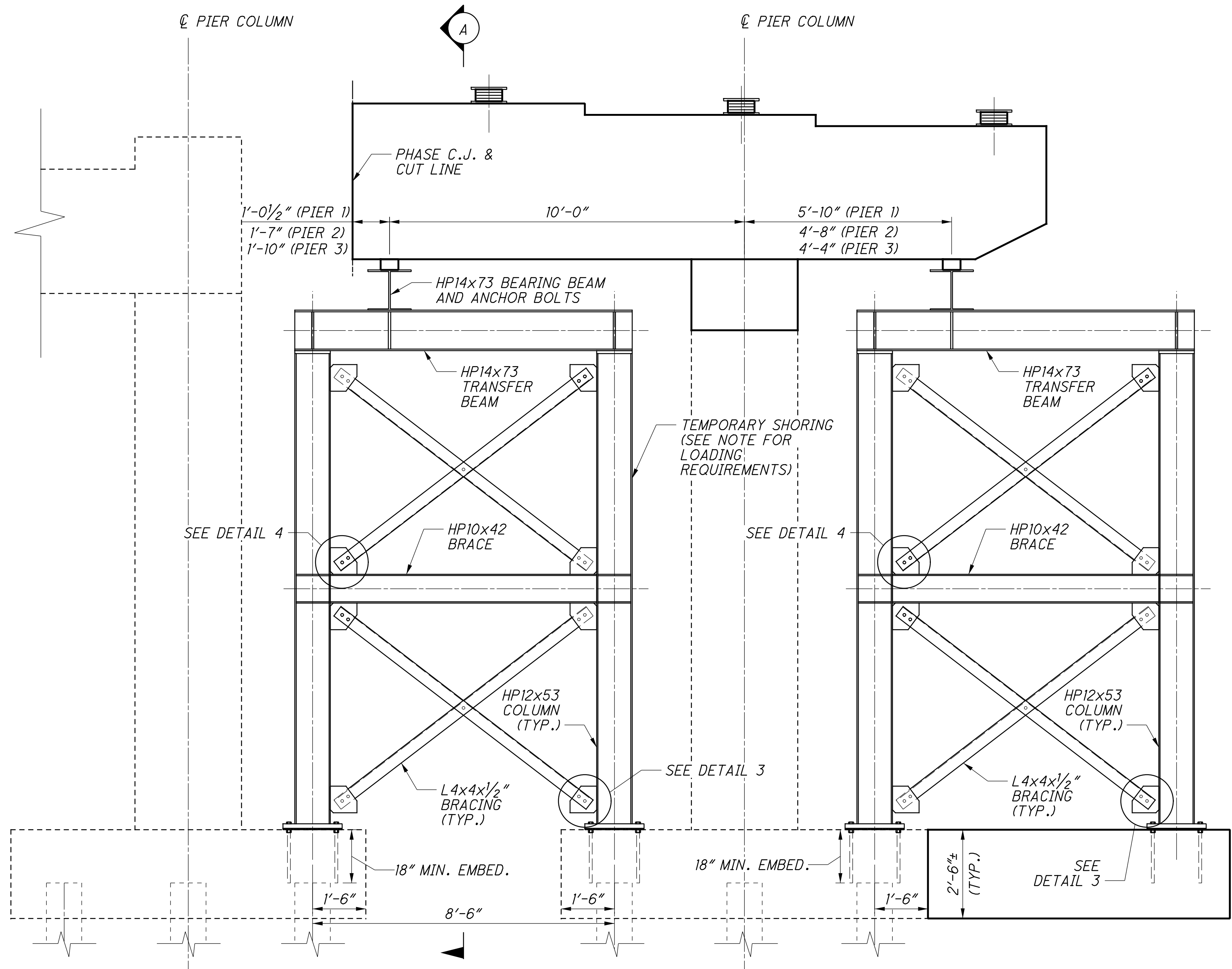
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**TEMP. SUPPORT FOOTING  
(FOR INFORMATIONAL  
PURPOSES ONLY)**

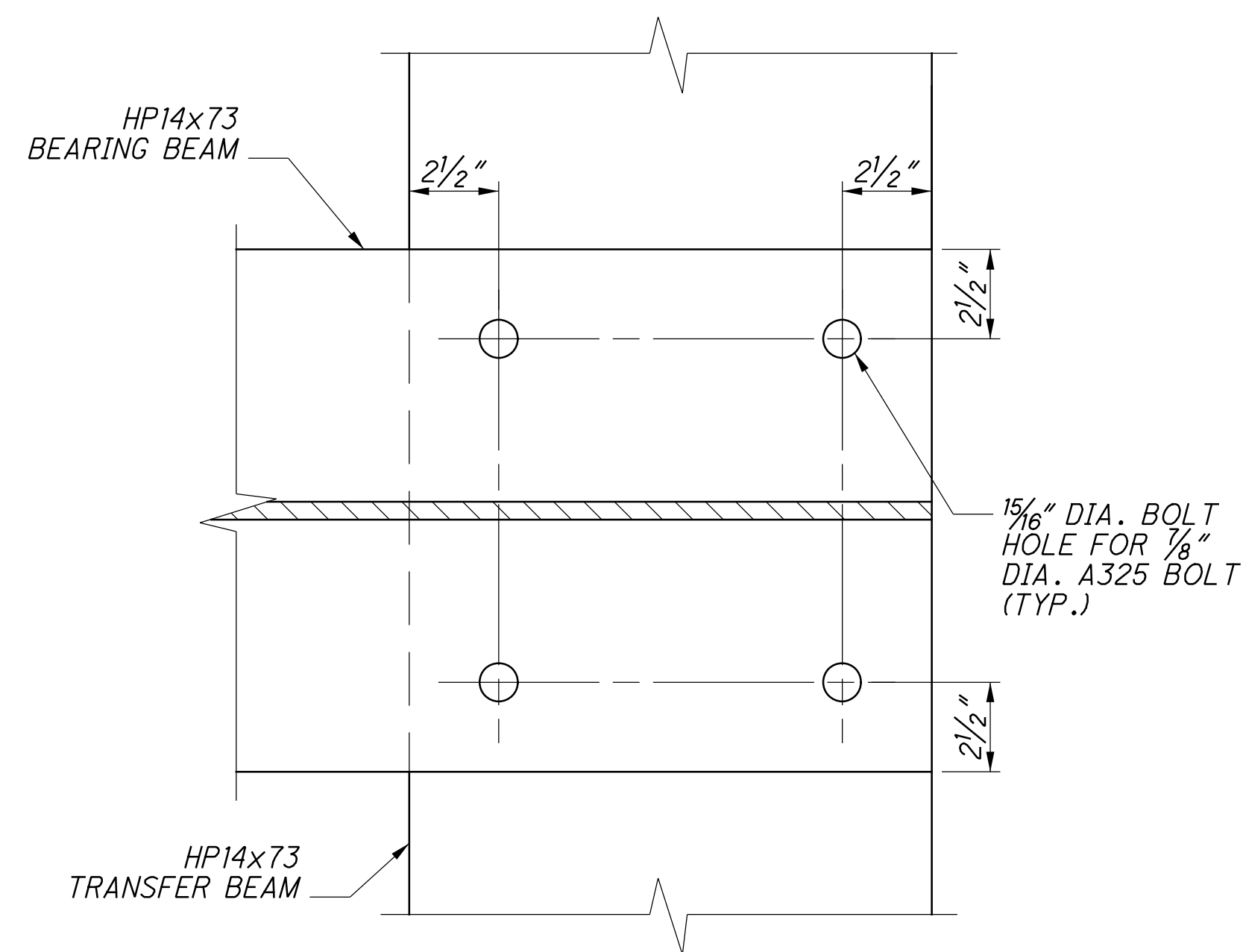
MARK	TOTAL	LENGTH	WEIGHT (LBS)	TYPE
T601	36	7'-2"	388	ST.
T602	18	9'-6"	257	ST.
T603	58	10'-1"	879	ST.
TOTAL			1524	

PIER	DIM. A	DIM. B
1	16'-0 7/8"	13'-3 5/8"
2	18'-10 3/4"	16'-1 5/8"
3	16'-2 5/8"	13'-5 1/2"

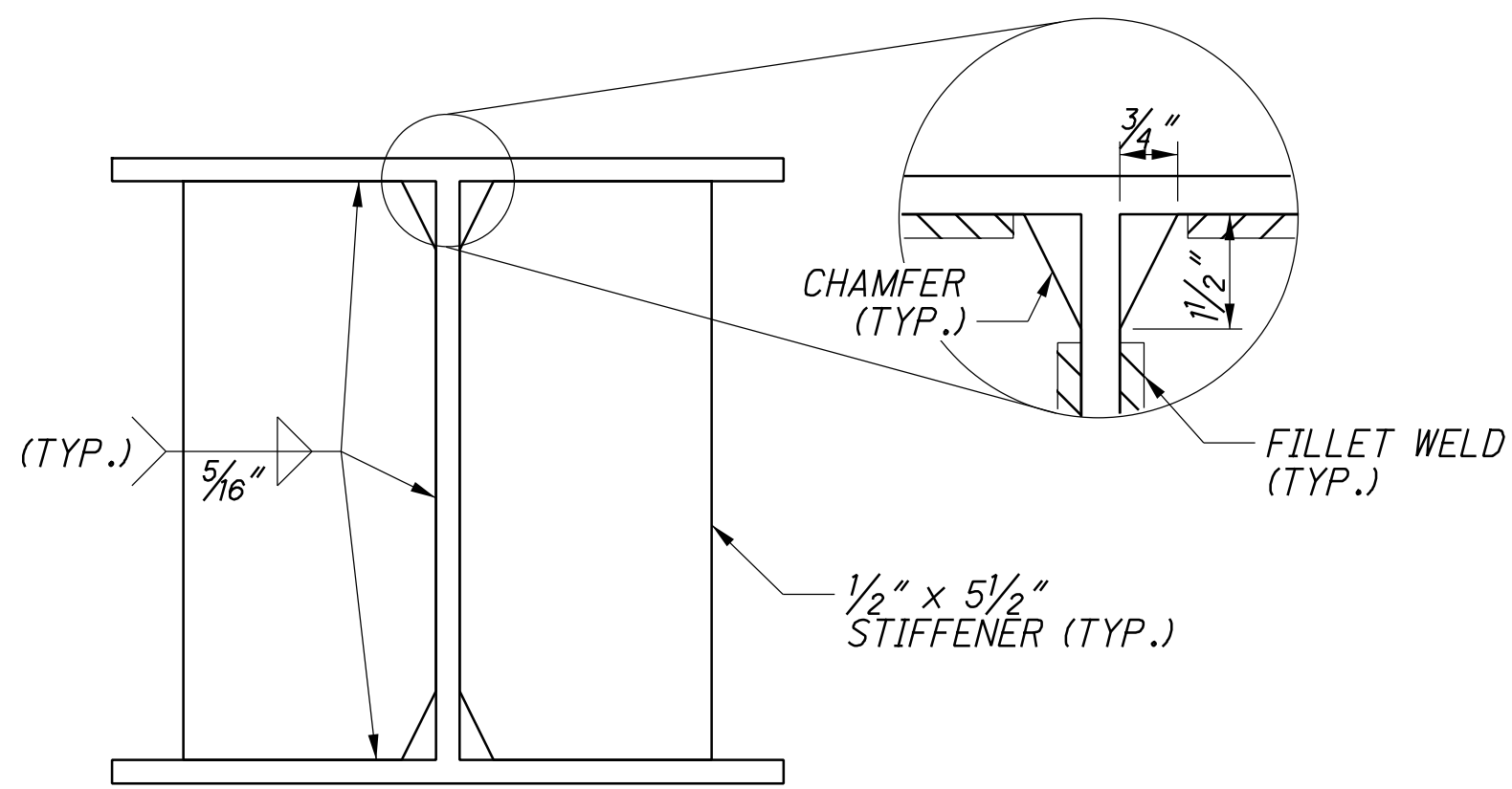


- NOTES:**
- TEMPORARY SHORING SHALL BE PLACED FOLLOWING PHASE 1 PIER CAP REMOVAL AND PRIOR TO PHASE 1 CONSTRUCTION. PIER BEARINGS AND ANCHORS SHALL BE IN PLACE BEFORE CONCRETE DECK IS POURED.
  - THE TEMPORARY SUPPORT IS DESIGNED TO RESIST THE FOLLOWING FACTORED LOADING, WHICH INCLUDES DEAD, LIVE, AND WIND LOADS (LRFD METHOD):  
 AXIAL COMPRESSION (DOWNWARDS): 117.2 KIPS  
 HORIZONTAL FORCE IN THE Y-AXIS (PARALLEL TO PIER CAP): 6.5 KIPS  
 HORIZONTAL FORCE IN THE X-AXIS (PERPENDICULAR TO PIER CAP): 13.0 KIPS  
 THESE FACTORED LOADS ARE APPLIED AT THE MIDSPAN OF THE BEARING BEAM. THESE LOADS WERE DEVELOPED BASED ON THE STIFFNESS OF THE TEMPORARY SUPPORT AND THE CONCRETE CAP AND COLUMN, AND ANY DESIGN ALTERNATIVE PROPOSED BY THE CONTRACTOR SHALL ACCOUNT FOR THE STIFFNESSES IN THE PROPOSED SYSTEM WHEN DETERMINING DESIGN LOADS.
  - TEMPORARY SUPPORT STEEL SHALL BE ASTM A709 GRADE 50 UNLESS OTHERWISE NOTED. HP SECTIONS SHALL BE ASTM A572 GRADE 50. ALL STEEL SHALL BE CVN.
  - ALL BOLTS AND ANCHORS SHALL BE ASTM A325 AND INCLUDE WASHERS AND NUTS.
  - SHIM AND JACK TO PROVIDE FULL CONTACT AND SUPPORT OF PIER CAP. JACKS WITH SHIMS WERE ASSUMED TO BE 6 INCHES IN HEIGHT. ADJUST STEEL HEIGHT AS NEEDED BASED ON ACTUAL DIMENSIONS.
  - SEE SHEETS 26/54 - 28/54 FOR PIER CAP ELEVATIONS.
  - SEE SHEET 13/54 FOR DETAIL 1, DETAIL 2, AND PIER CAP ANCHOR BOLT ASSEMBLY.
  - SEE SHEET 14/54 FOR DETAIL 3 THRU DETAIL 5, AND FOOTING ANCHOR PLATE LAYOUT.
  - TEMPORARY SUPPORT AND ASSOCIATED FOOTING, FOOTING REINFORCING, EXCAVATION, EMBANKMENT, AND DOWELS SHALL BE PAID FOR UNDER ITEM 516 - JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN.

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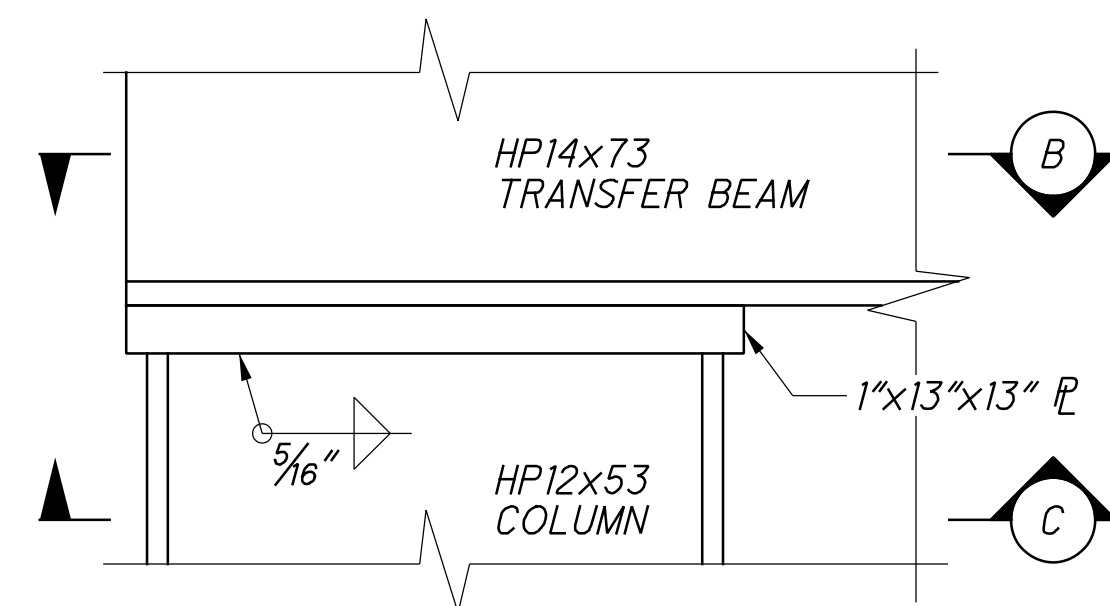


**DETAIL 1**

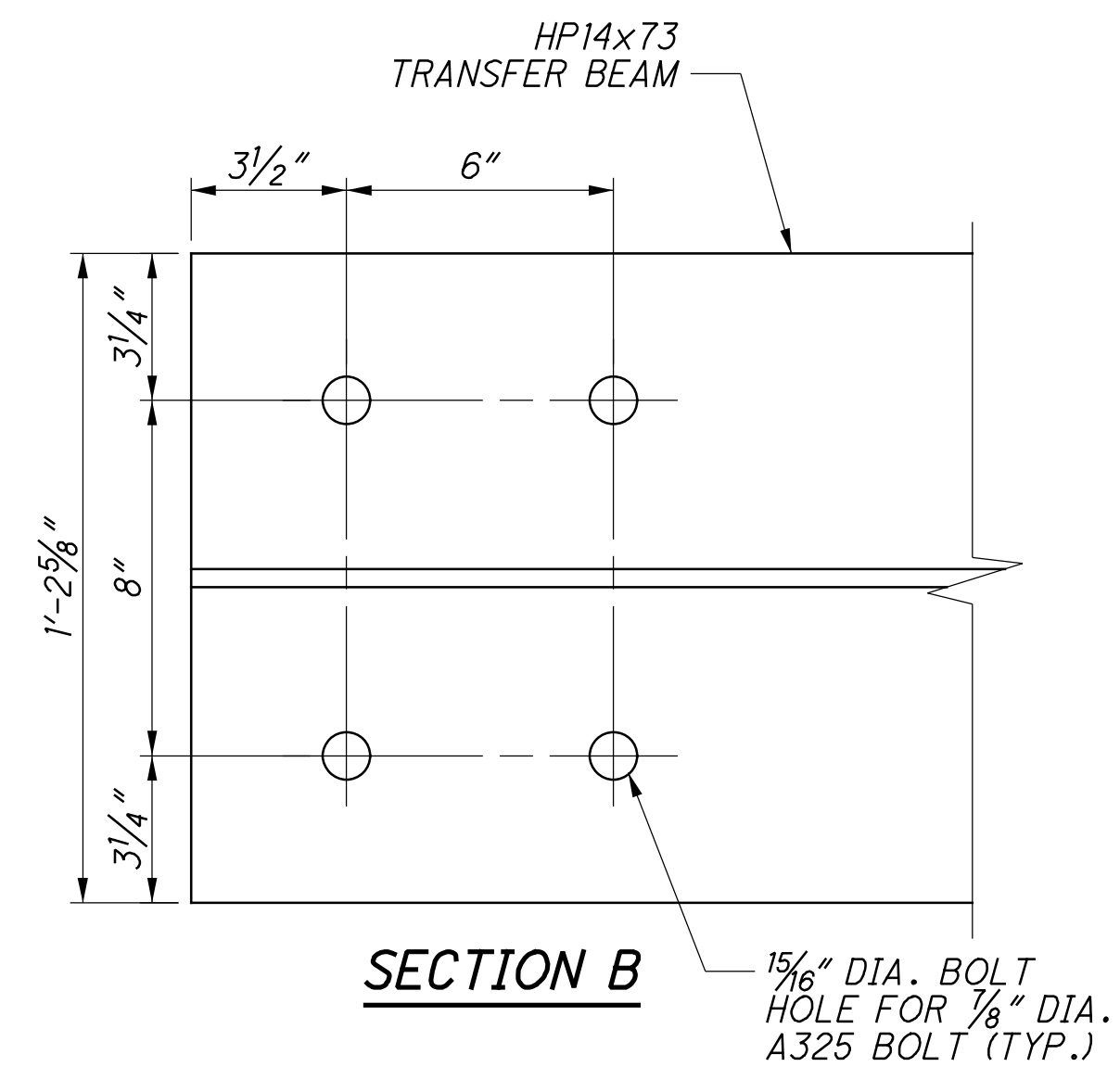


**STIFFENER DETAIL**

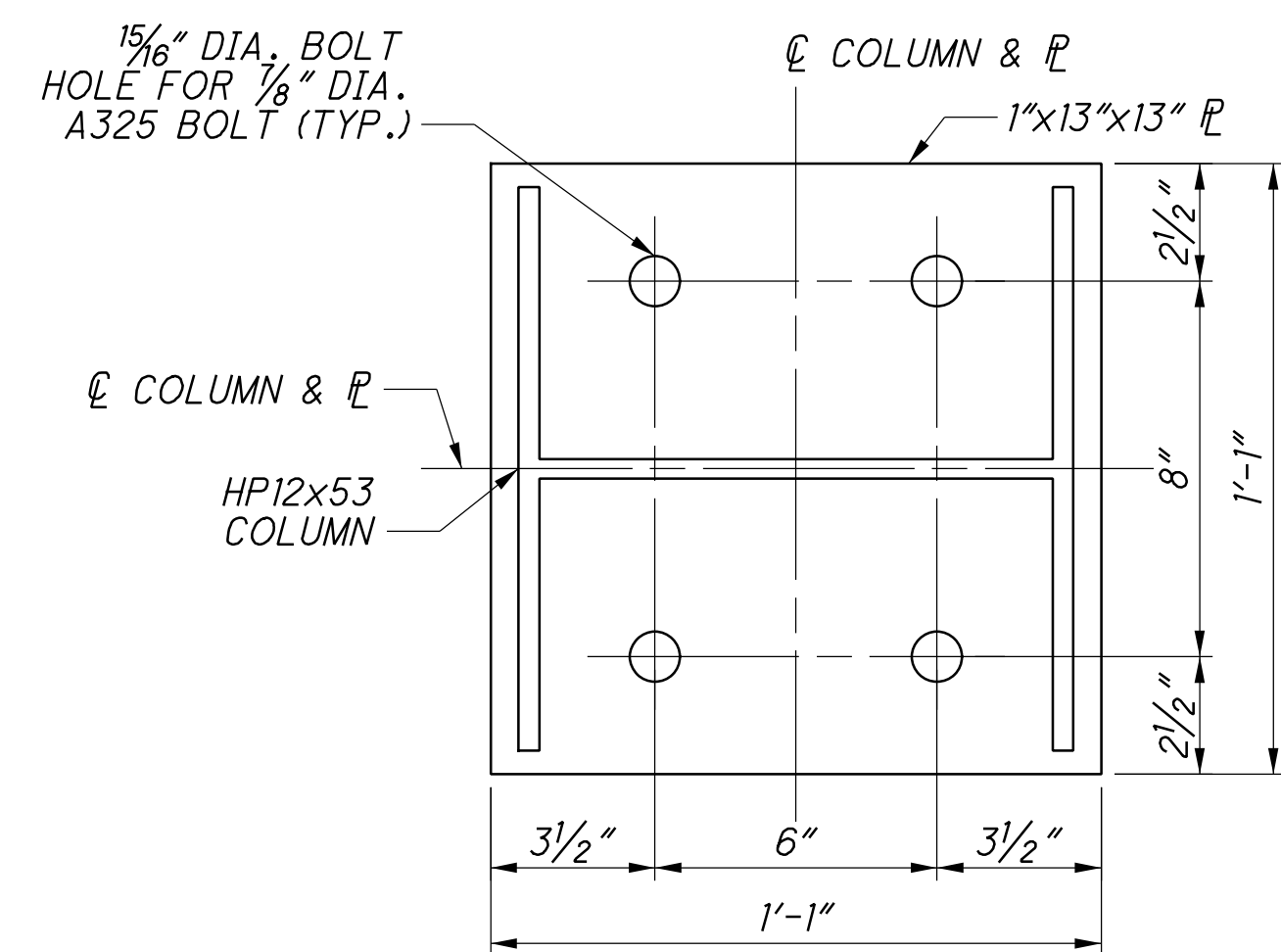
(TYPICAL)



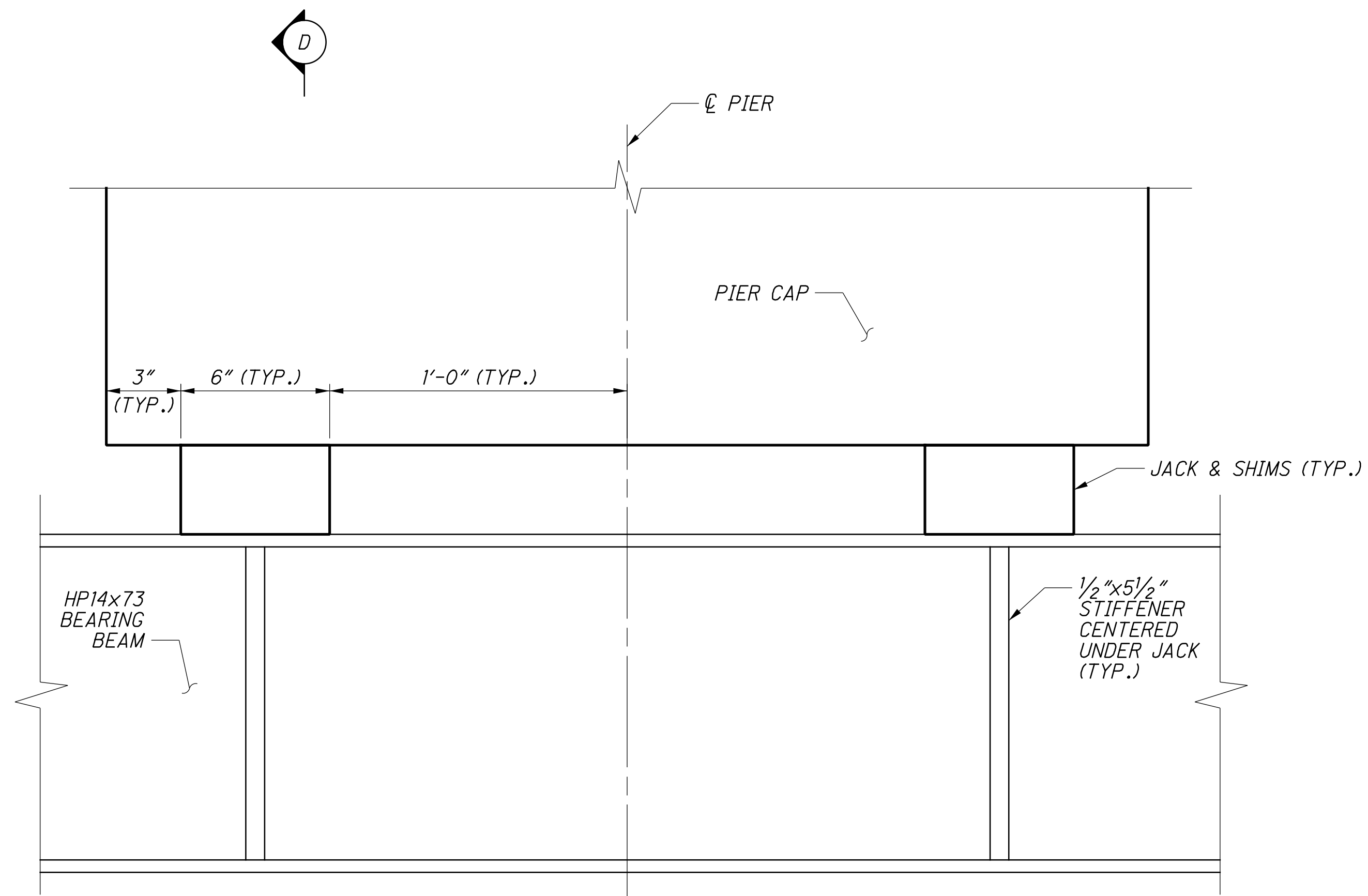
**DETAIL 2**



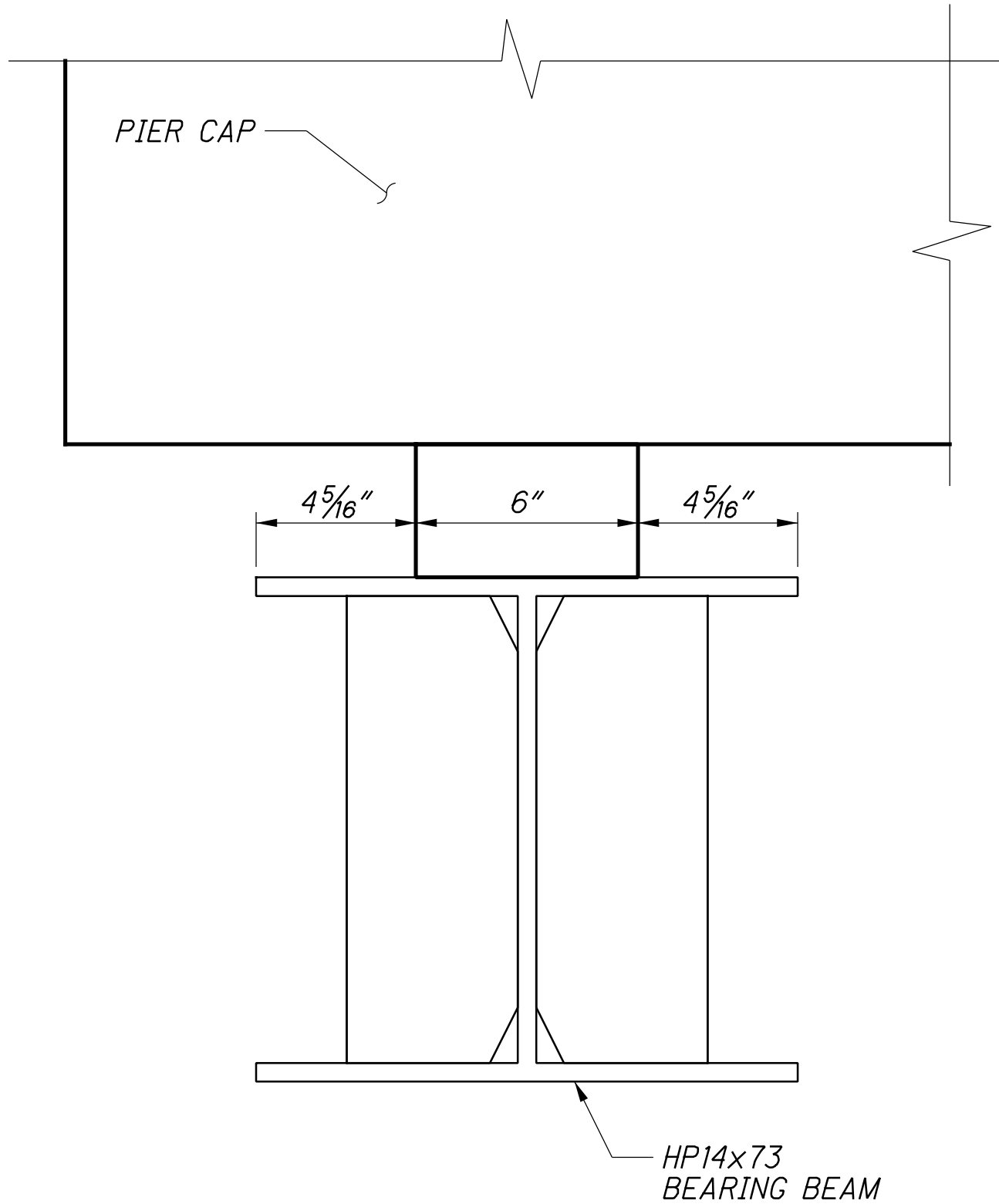
**SECTION B**



**SECTION C**



**PIER TO SUPPORT DETAIL**



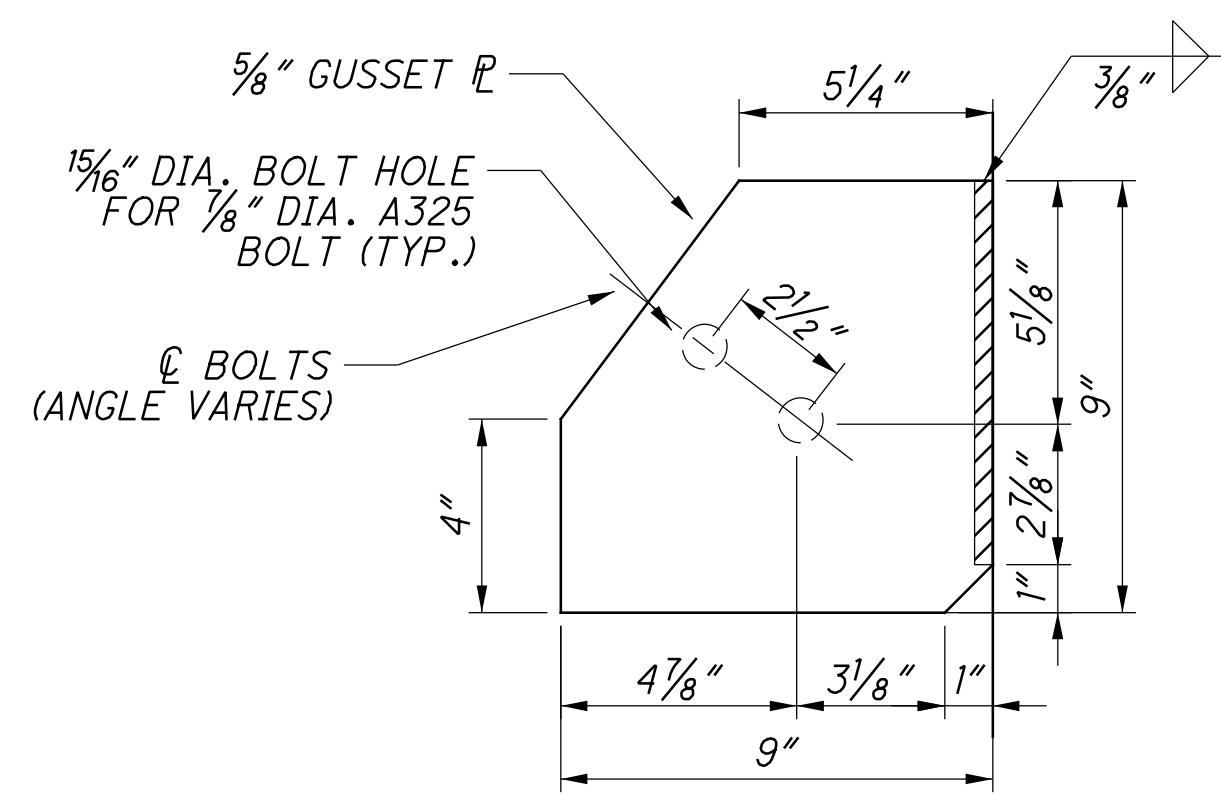
**SECTION D**

**NOTES:**

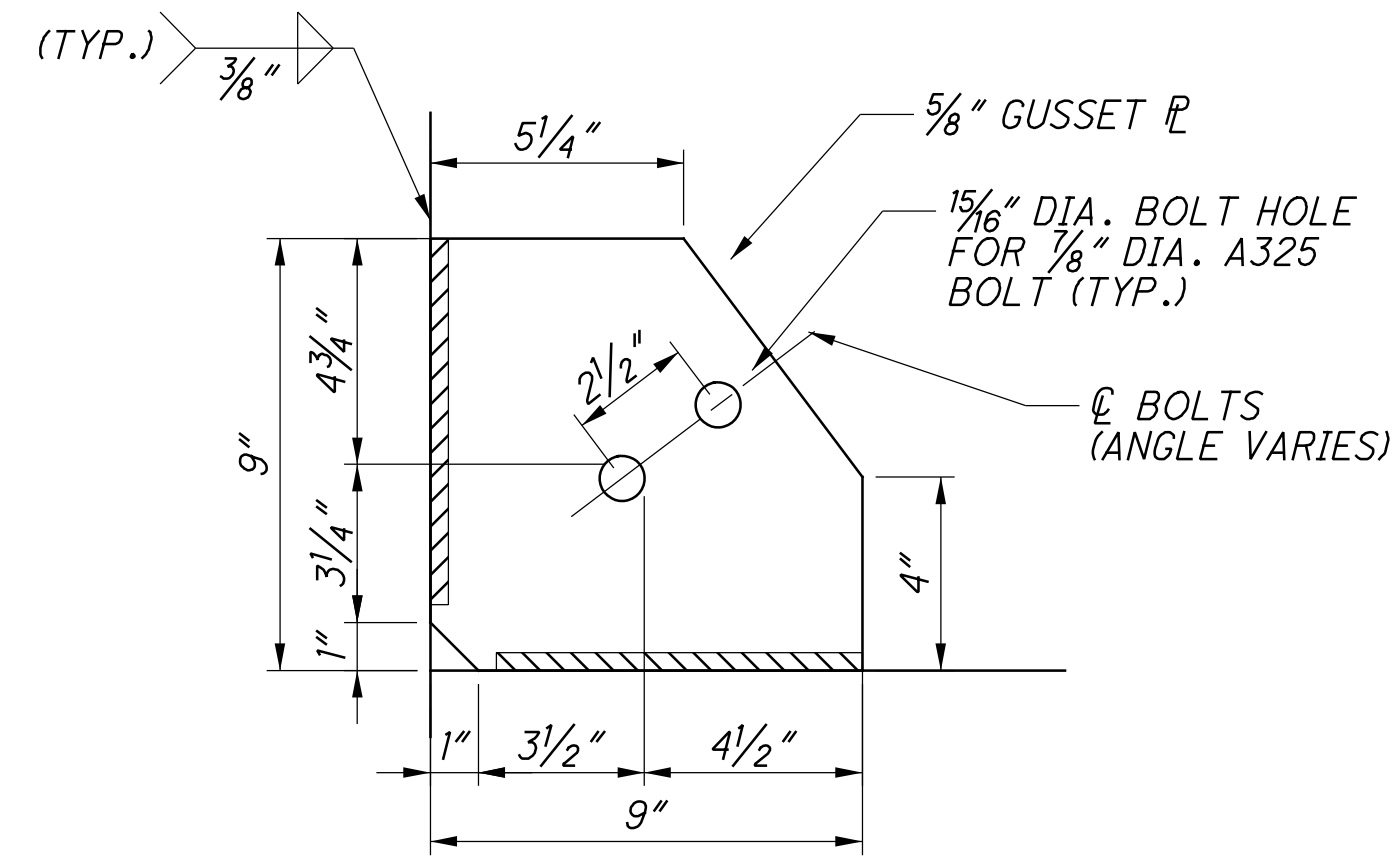
1. SEE SHEET 12/54 FOR TEMPORARY SUPPORT PLAN AND ELEVATION.

DESIGNED TML	CHECKED MAA	DRAWN PES	REVISED	REVIEWED RKM	DATE 02/2017	DESIGN AGENCY <b>WOOLPERT</b> DESIGN/ENGINEERING/CONSTRUCTION
				STRUCTURE FILE NUMBER 3005887	FILE NUMBER 3005887	
<b>TEMPORARY SUPPORT DETAILS</b>						
BRIDGE NO. GUE-513-0871						
SR-513 OVER IR-70						
<b>GUE-513-8.65</b>		<b>PID No. 93289</b>				
				13 / 54		
				59 100		

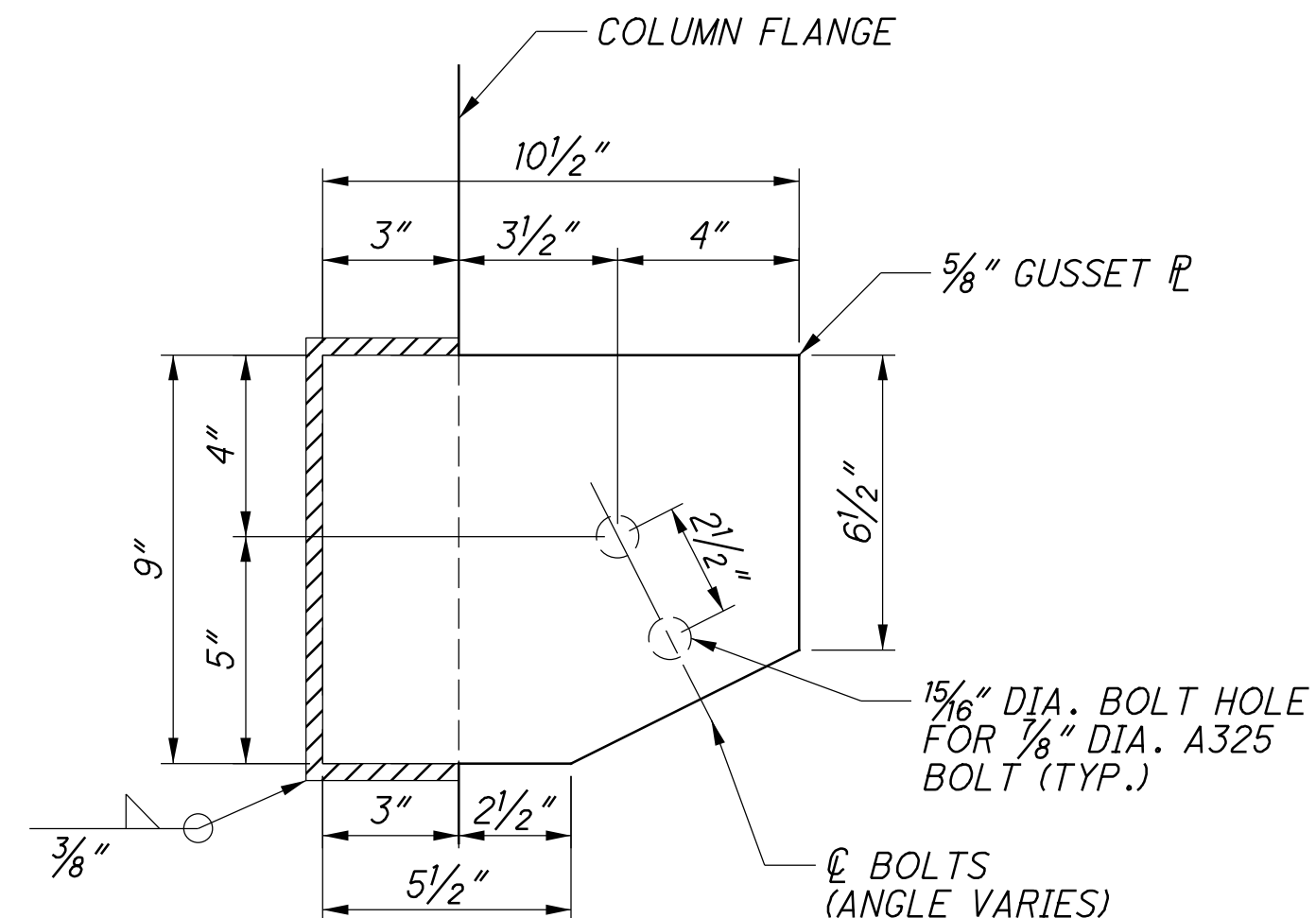
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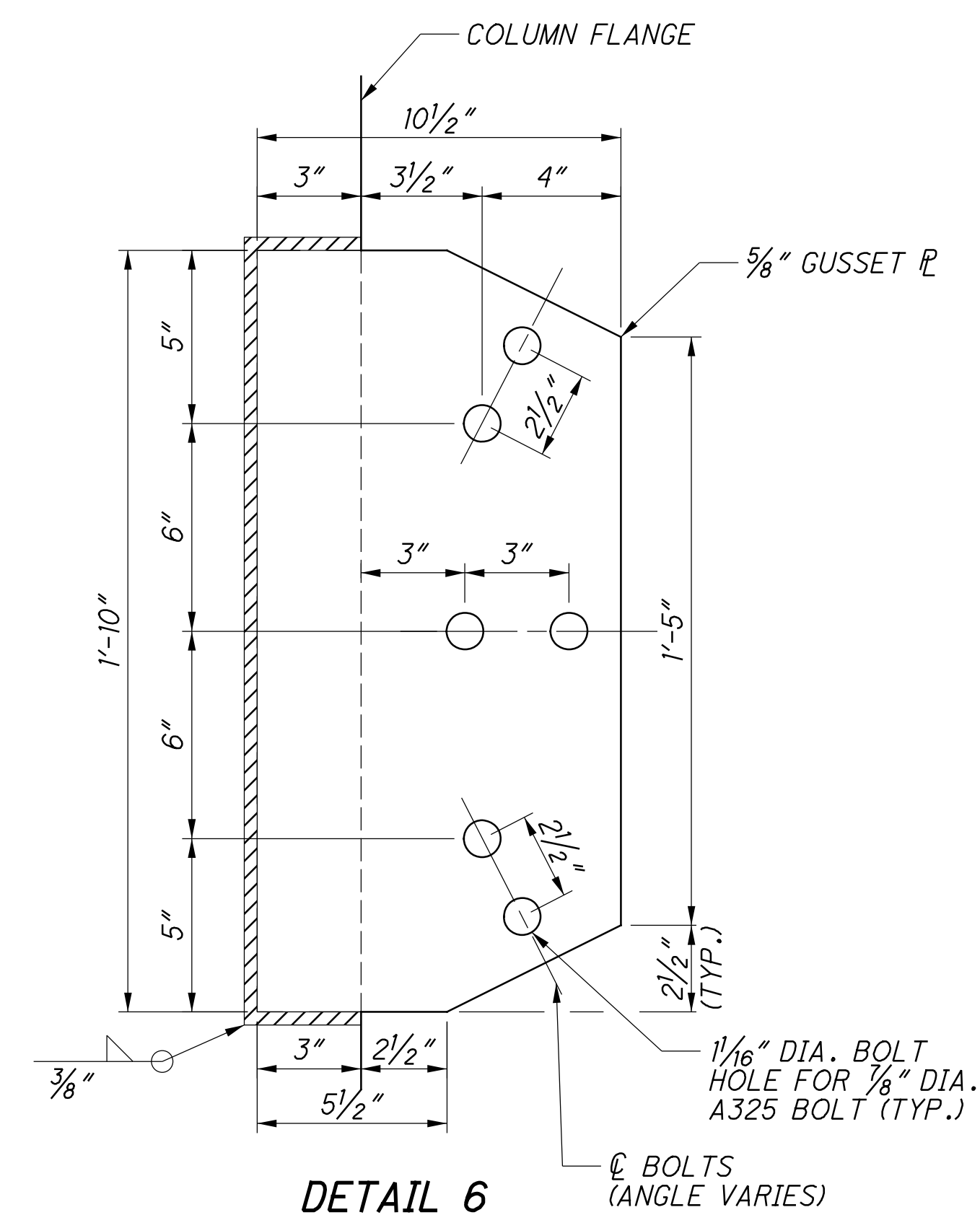
**DETAIL 3**



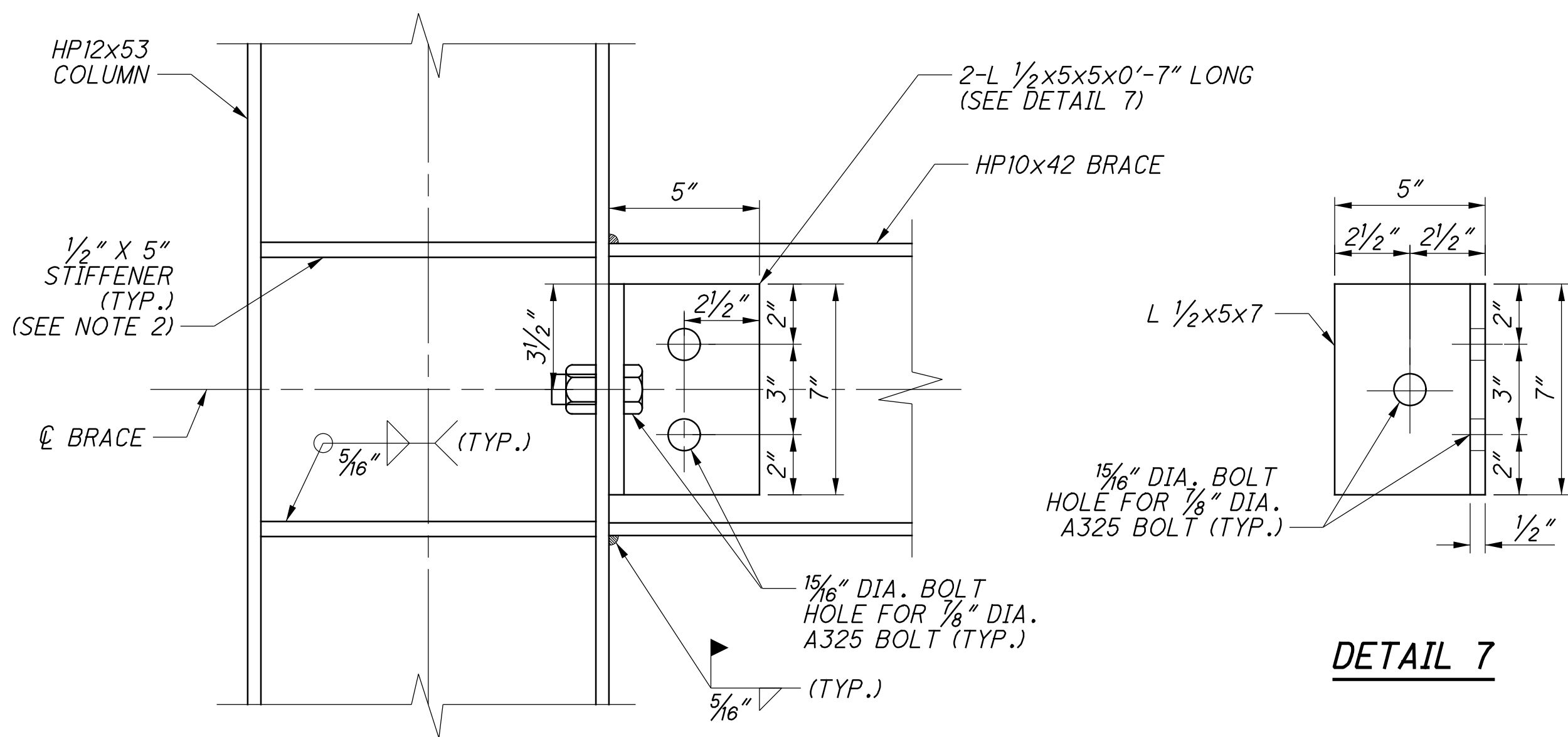
**DETAIL 4**



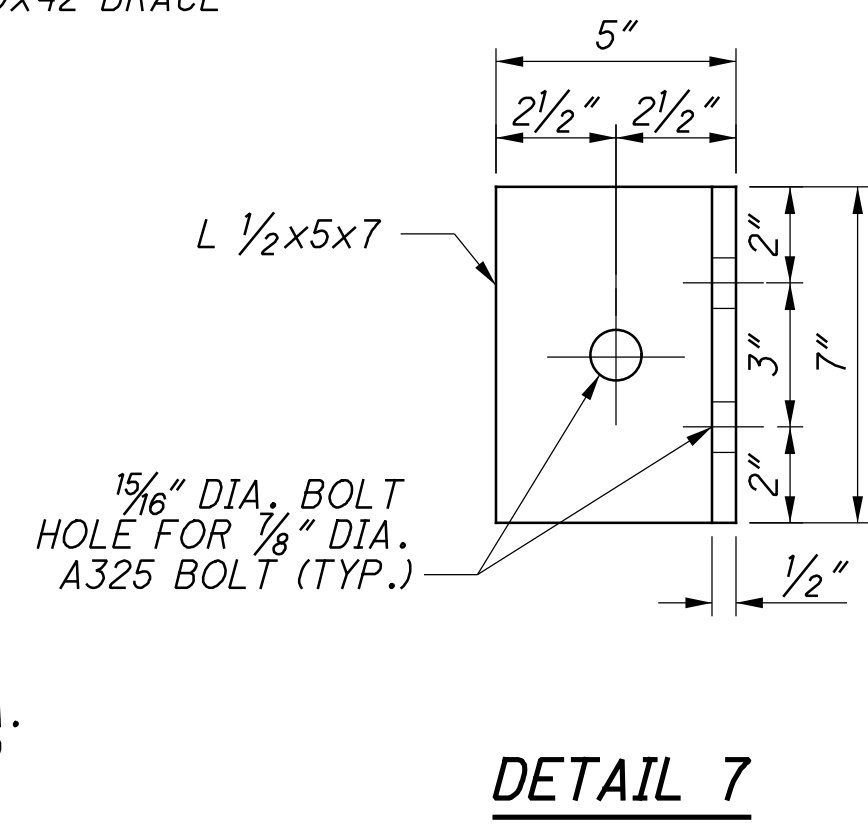
**DETAIL 5**  
(TOP CONNECTION SHOWN)



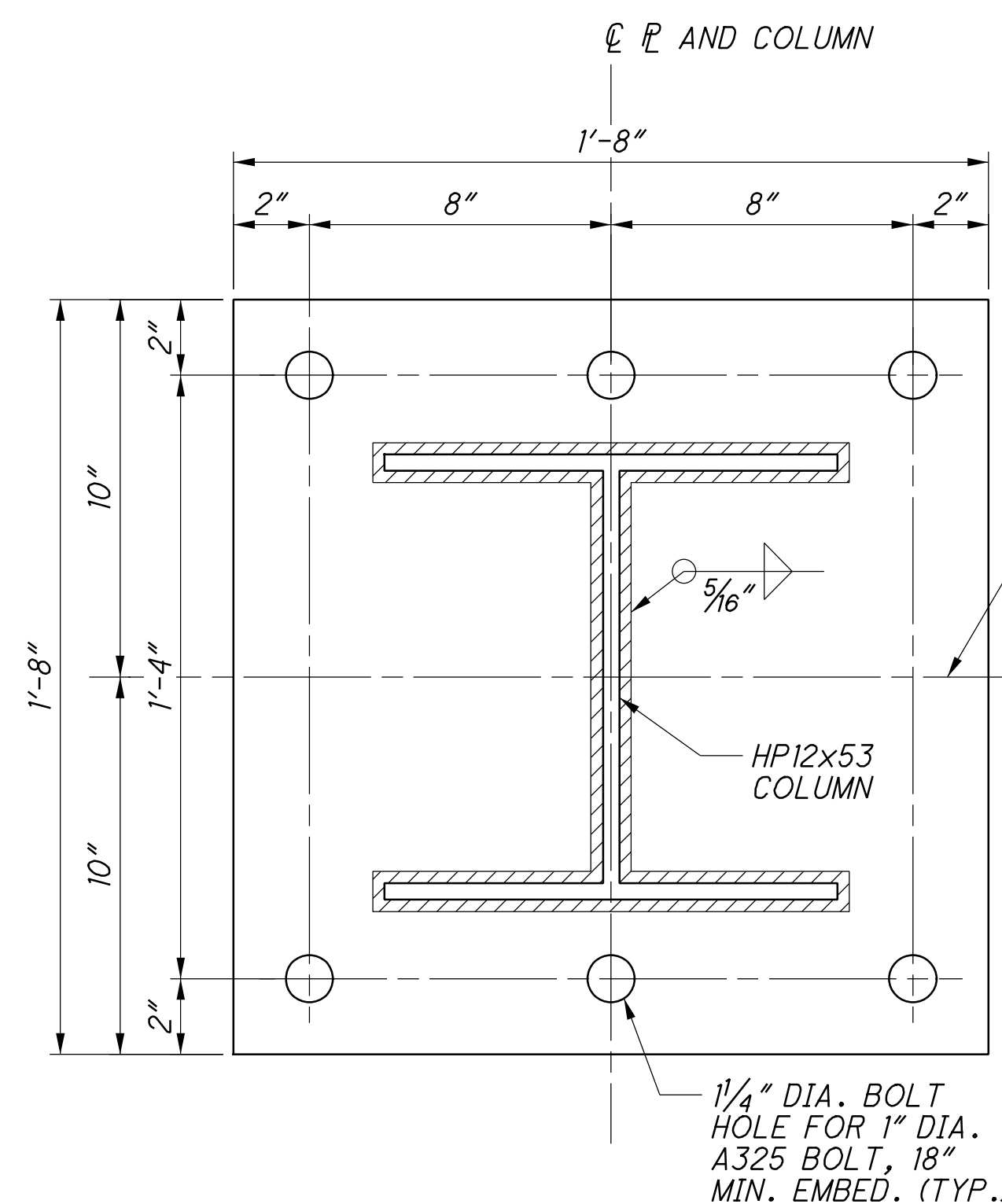
**DETAIL 6**



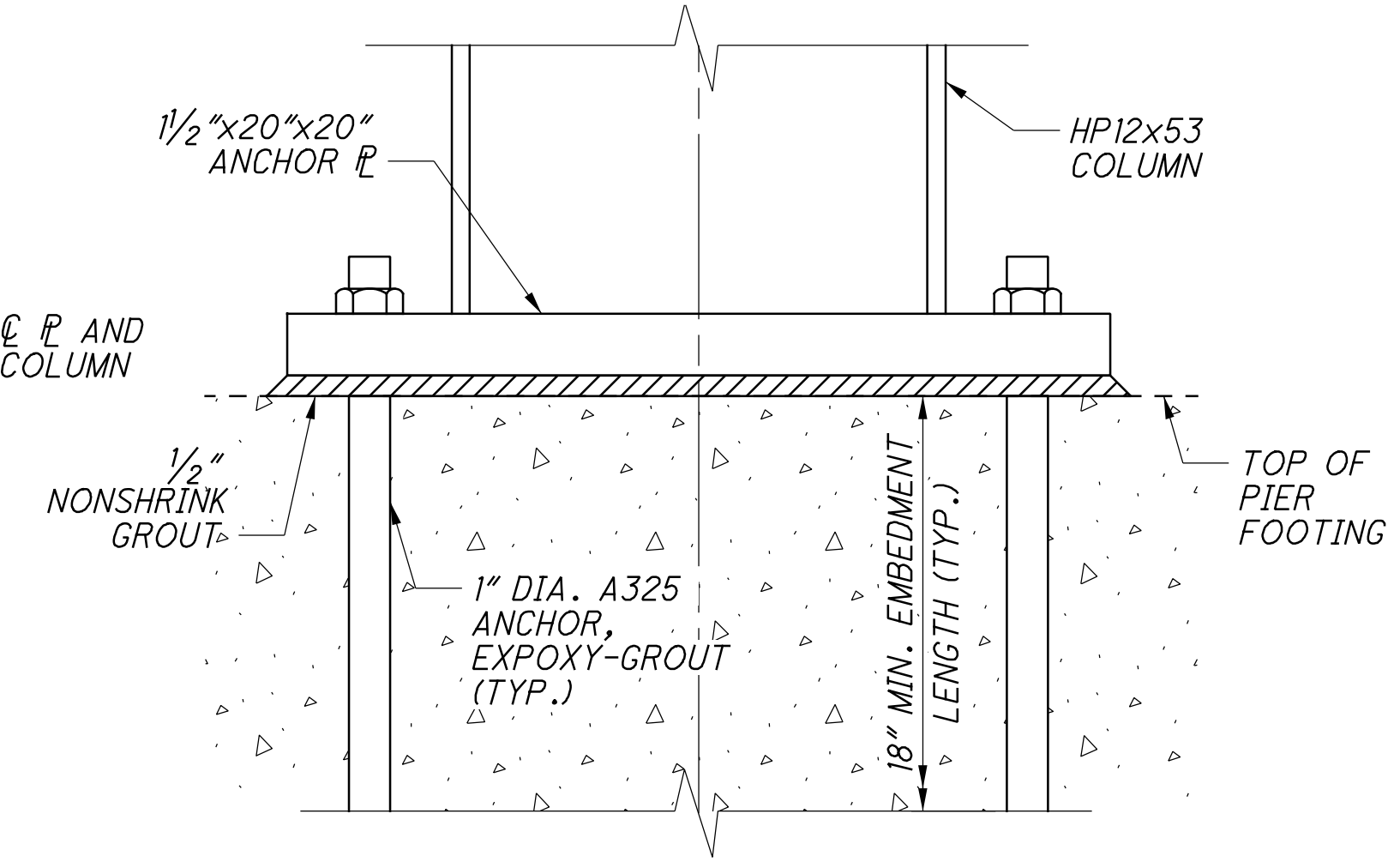
**BRACE CONNECTION DETAIL**  
(GUSSET PLATE AND ANGLES NOT SHOWN FOR CLARITY)



**DETAIL 7**



**ANCHOR PLATE PLAN**

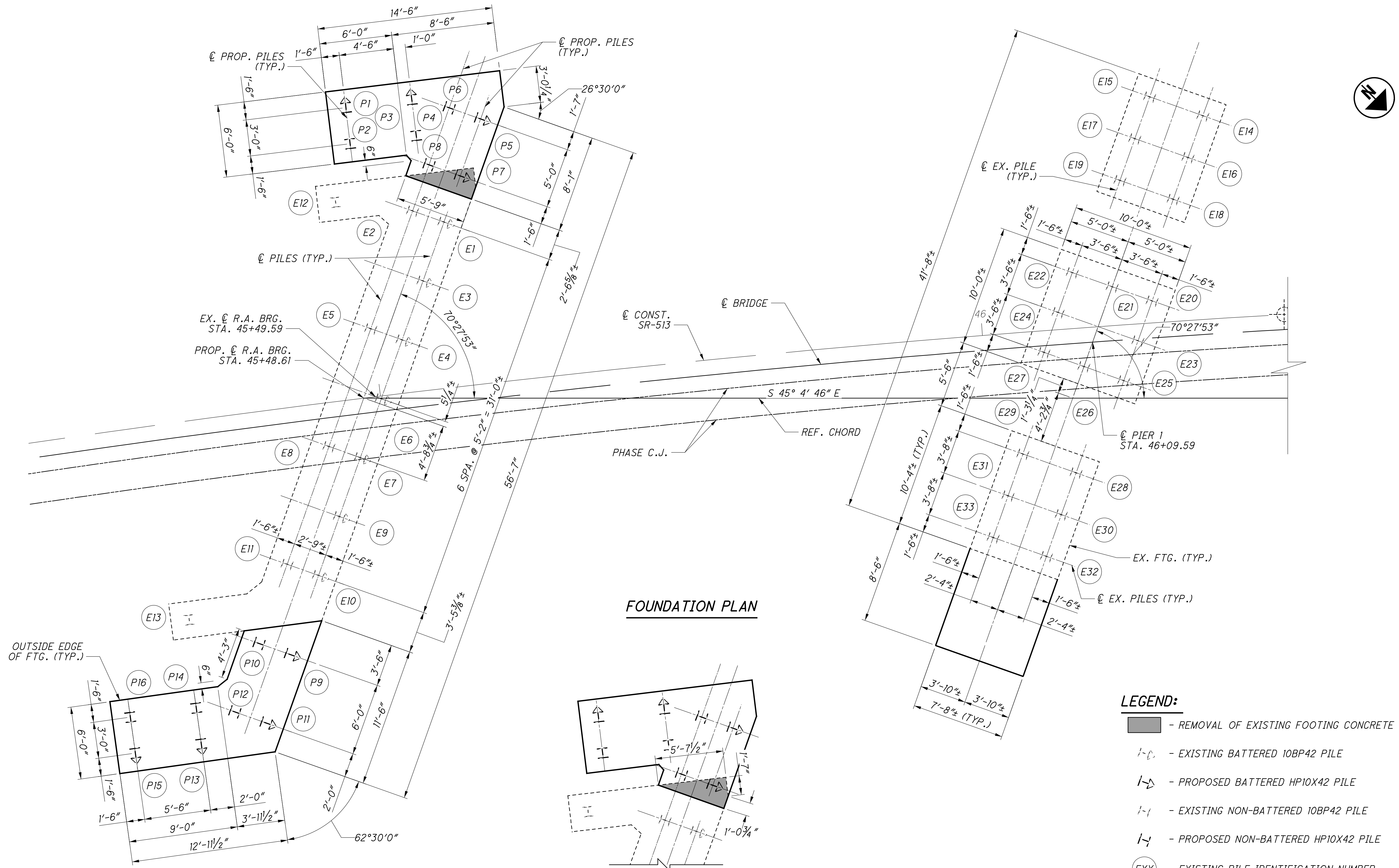


**ANCHOR PLATE ELEVATION**

**NOTES:**  
1. SEE SHEET 12/54 FOR TEMPORARY SUPPORT PLAN AND ELEVATION.  
2. SEE SHEET 13/54 FOR STIFFENER DETAIL.

DESIGN AGENCY WOLPERT CORPORATION		DATE 02/2017	
DESIGNED TML		REVIEWED RKM	
DRAWN PES		STRUCTURE FILE NUMBER 3005887	
CHECKED MAA		REVISED	
TEMPORARY SUPPORT DETAILS BRIDGE NO. GUE-513-0871 SR-513 OVER IR-70			
GUE-513-8.65		PID No. 93289	
14/54		60/100	





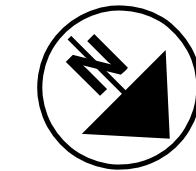
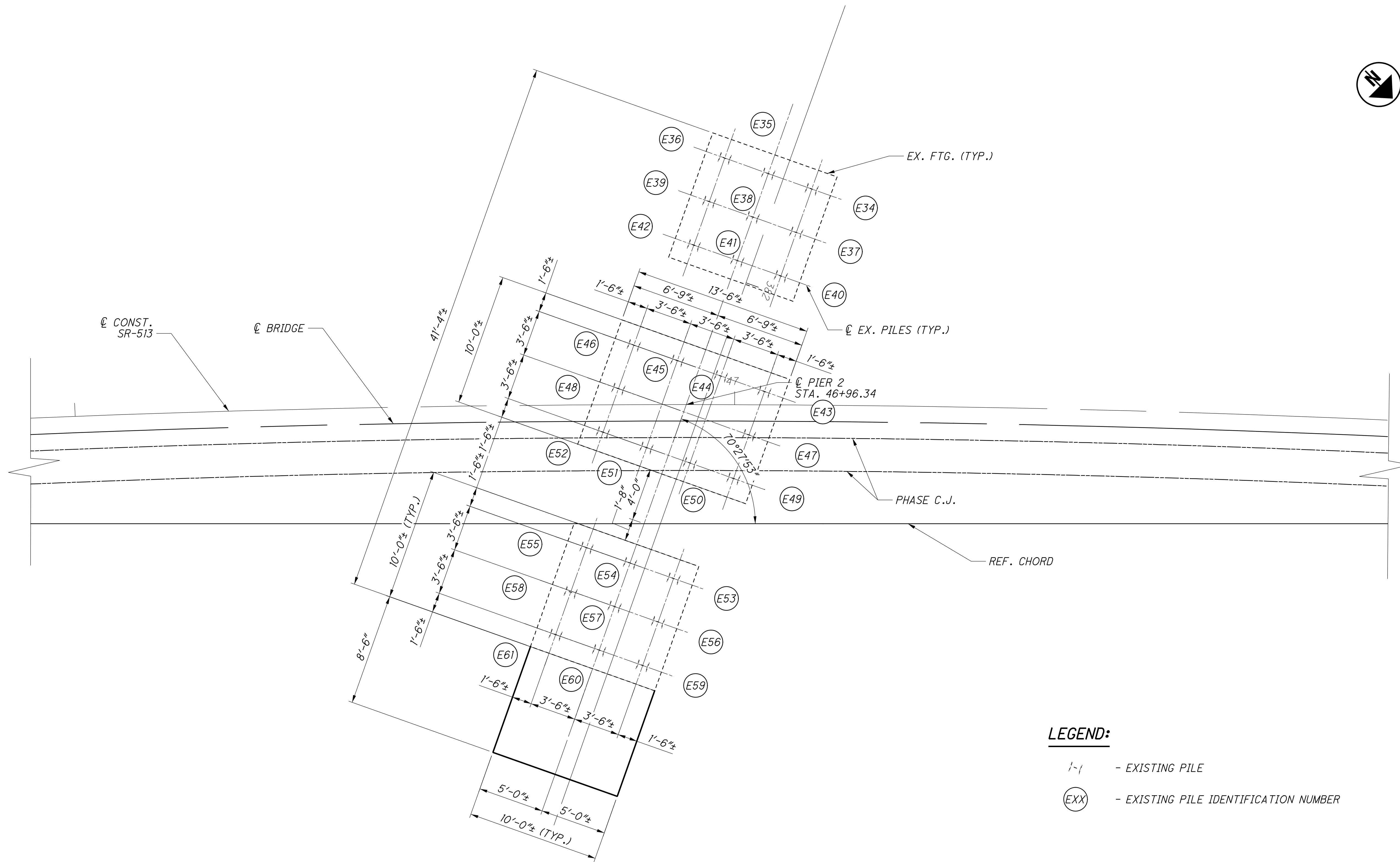
**FOUNDATION PLAN**

**FOOTING REMOVAL DETAIL**

- LEGEND:**
- REMOVAL OF EXISTING FOOTING CONCRETE
  - EXISTING BATTERED 10BP42 PILE
  - PROPOSED BATTERED HPI0X42 PILE
  - EXISTING NON-BATTERED 10BP42 PILE
  - PROPOSED NON-BATTERED HPI0X42 PILE
  - EXISTING PILE IDENTIFICATION NUMBER
  - PROPOSED PILE IDENTIFICATION NUMBER

- NOTES**
1. REAR ABUTMENT ESTIMATED PILE LENGTH = 20'-0".
  2. ALL EXISTING PILES WERE LOCATED FROM ORIGINAL CONSTRUCTION PLANS.

DESIGN AGENCY <b>WOOLPERT</b> DESIGN ENGINEERING & CONSTRUCTION	DATE 02/2017	DESIGN AGENCY EASTON OVAL SUITE 901 COLUMBUS, OH 43219 T 614-476-8000 F 614-476-8225
	REVIEWED RKM	STRUCTURE FILE NUMBER 3005887
DRAWN JMM	CHECKED TML	DESIGNED JMM
<b>FOUNDATION PLAN</b> BRIDGE NO. GUE-513-0871 SR-513 OVER IR-70		
GUE-513-8.65 PID No. 93289		
15/54		
61 100		



**FOUNDATION PLAN**

**LEGEND:**

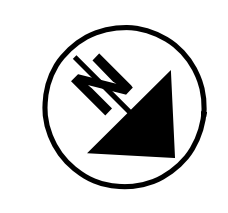
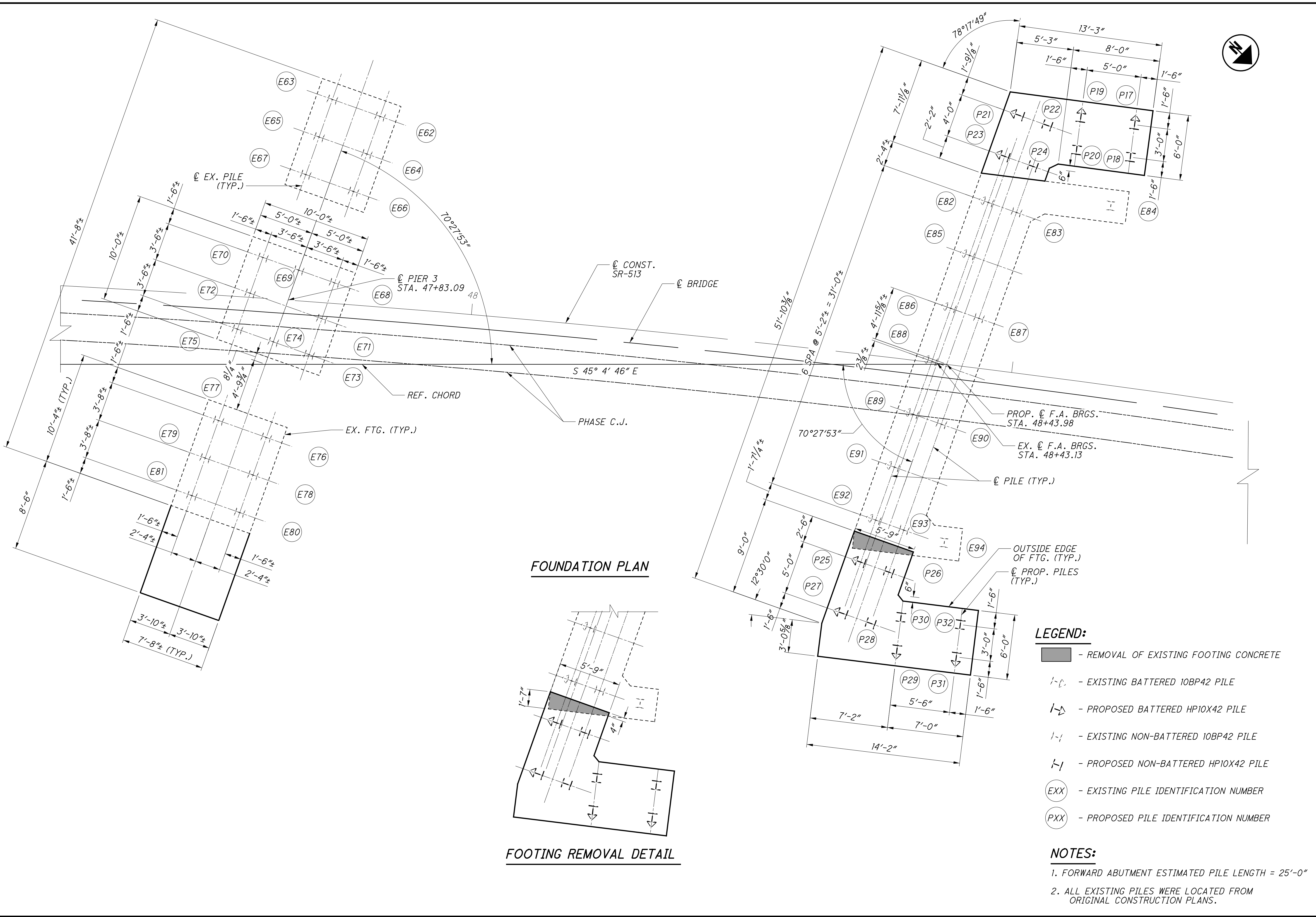
- $1-1$  - EXISTING PILE
- (EXX) - EXISTING PILE IDENTIFICATION NUMBER

**NOTES:**

1. ALL EXISTING PILES WERE LOCATED FROM ORIGINAL CONSTRUCTION PLANS.

<p><b>GUE - 513 - 8.65</b>  <b>PID No. 93289</b></p>	<p><b>FOUNDATION PLAN</b>                  BRIDGE NO. GUE-513-0871                  SR-513 OVER IR-70</p>	<p>DESIGNED: JMM                  CHECKED: TML</p>	<p>DRAWN: JMM                  REVISED:</p>	<p>REVIEWED: RKM                  STRUCTURE FILE NUMBER: 3005887</p>	<p>DATE: 02/2017</p>	<p>DESIGN AGENCY:                  EASTON OVAL                  SUITE 401                  COLUMBUS, OH 43219                  T 614-476-8000                  F 614-476-8225</p> <p><b>WOOLPERT</b>                  DESIGN   ENGINEERING   CONSTRUCTION</p>
<p>16 / 54</p>	<p>62 / 100</p>					

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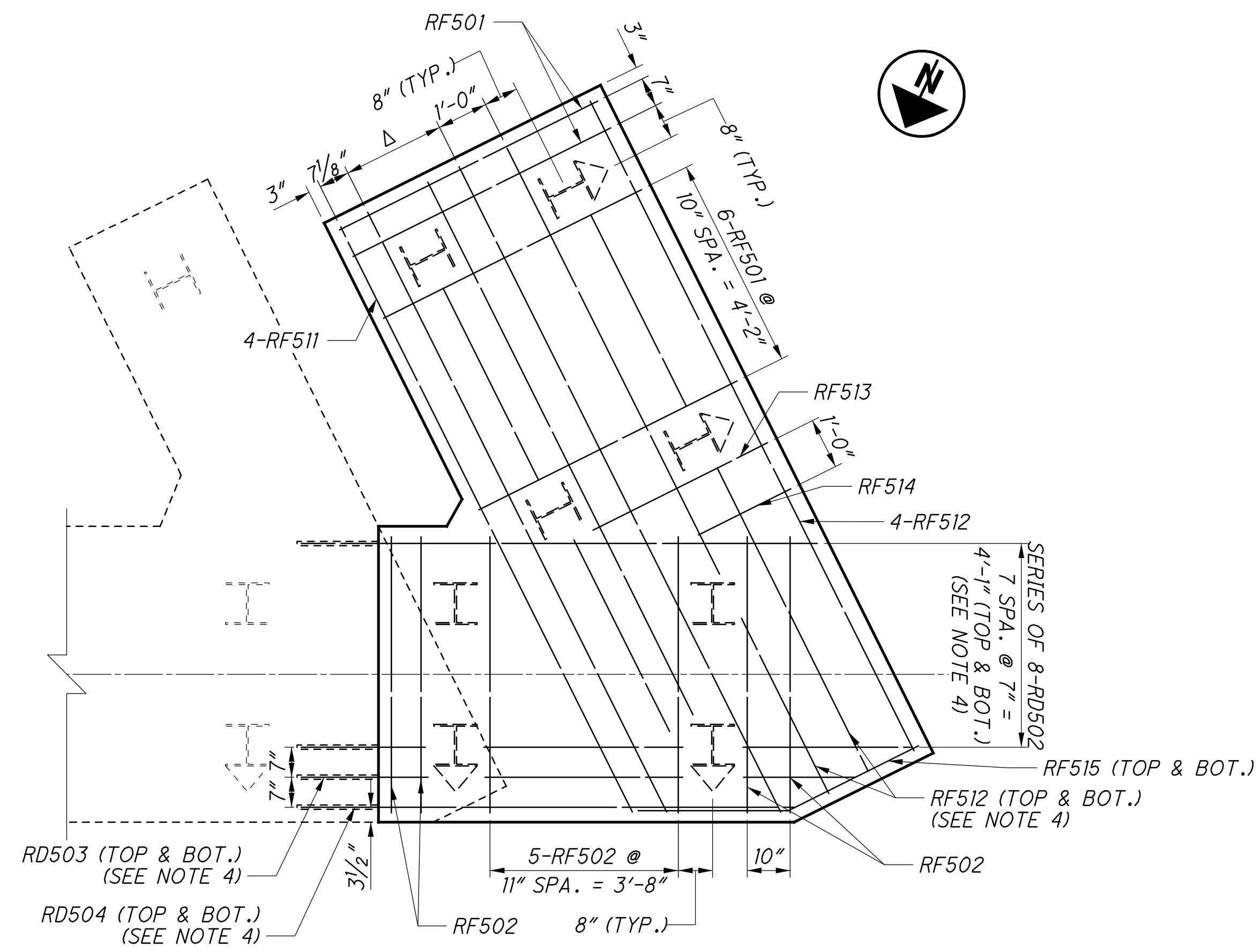
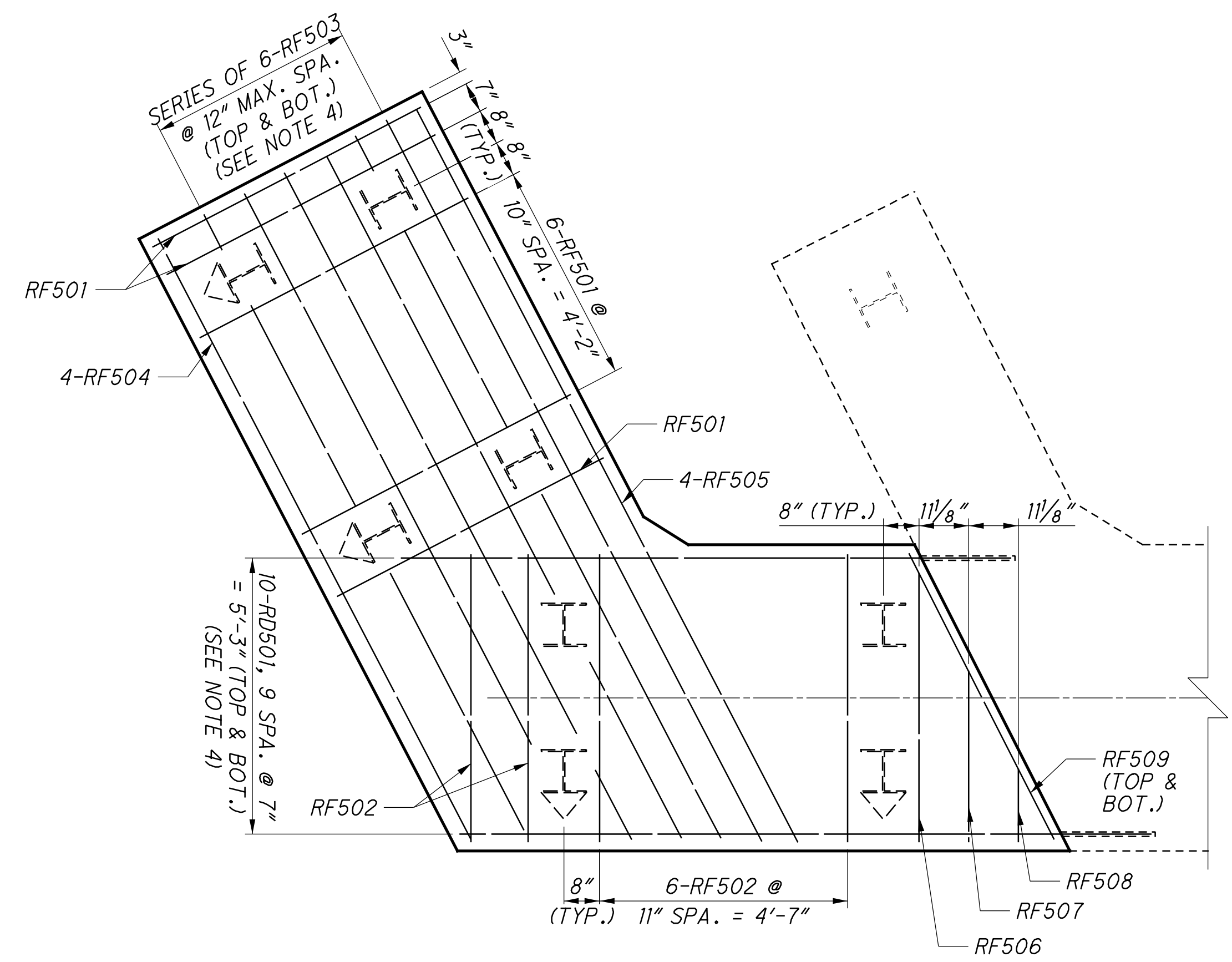
<b>DESIGN AGENCY:</b> EASTON OVAL SUITE 901 COLUMBUS, OH 43219 T 614-476-8000 F 614-476-8225 <b>WOOLPERT</b> CONSULTING ENGINEERS	<b>DESIGNED:</b> JMM	<b>DRAWN:</b> JMM	<b>REVIEWED:</b> RKM	<b>DATE:</b> 02/2017
	<b>CHECKED:</b> TML	<b>REVISED:</b>	<b>STRUCTURE FILE NUMBER:</b> 3005887	<b>FILE NUMBER:</b> 3005887
	<b>FOUNDATION PLAN</b> BRIDGE NO. GUE-513-0871 SR-513 OVER IR-70			
	<b>GUE-513-8.65</b> <b>PID No. 93289</b>			

- LEGEND:**
- REMOVAL OF EXISTING FOOTING CONCRETE
  - EXISTING BATTERED 10BP42 PILE
  - PROPOSED BATTERED HP10X42 PILE
  - EXISTING NON-BATTERED 10BP42 PILE
  - PROPOSED NON-BATTERED HP10X42 PILE
  - EXISTING PILE IDENTIFICATION NUMBER
  - PROPOSED PILE IDENTIFICATION NUMBER

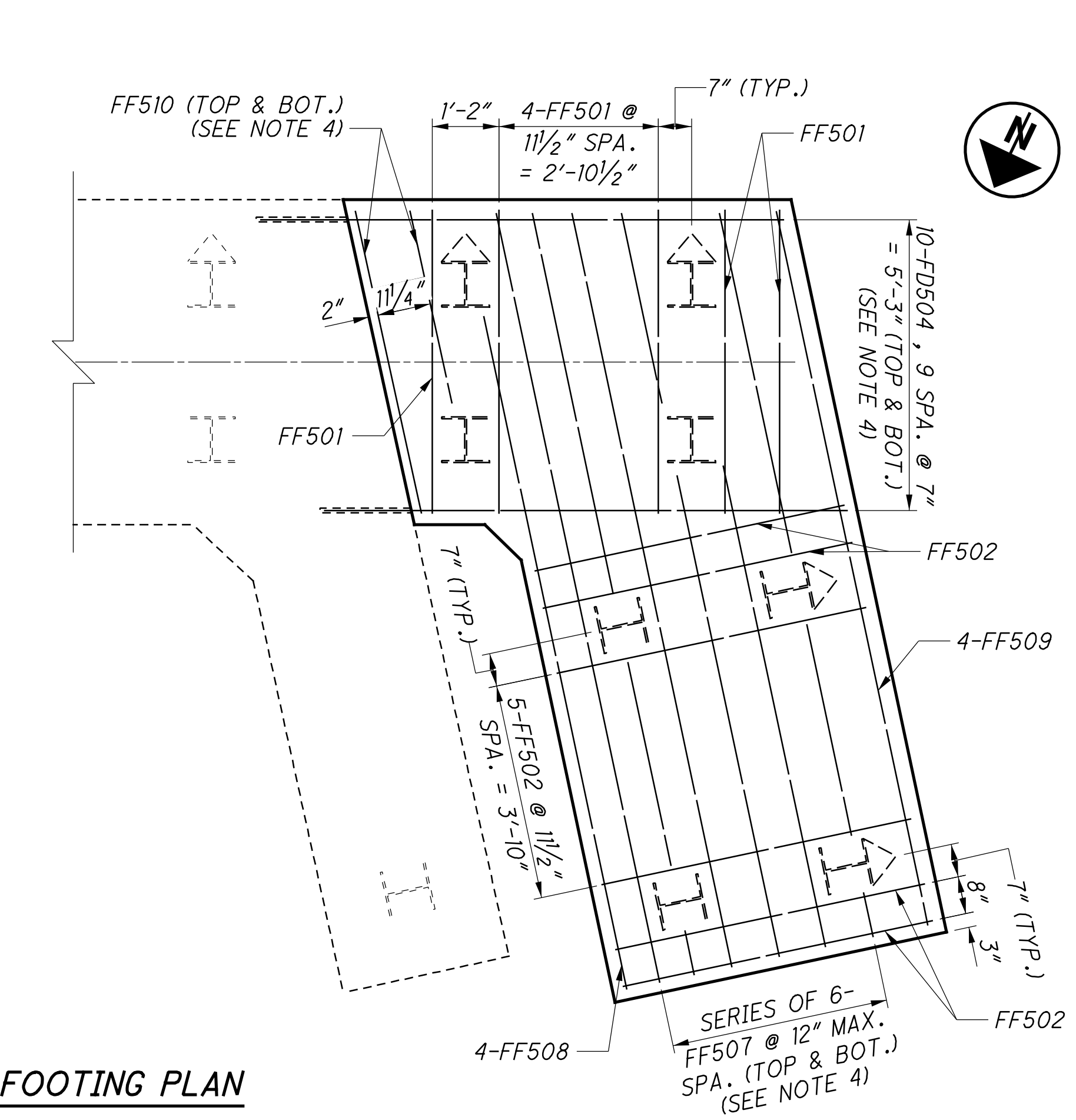
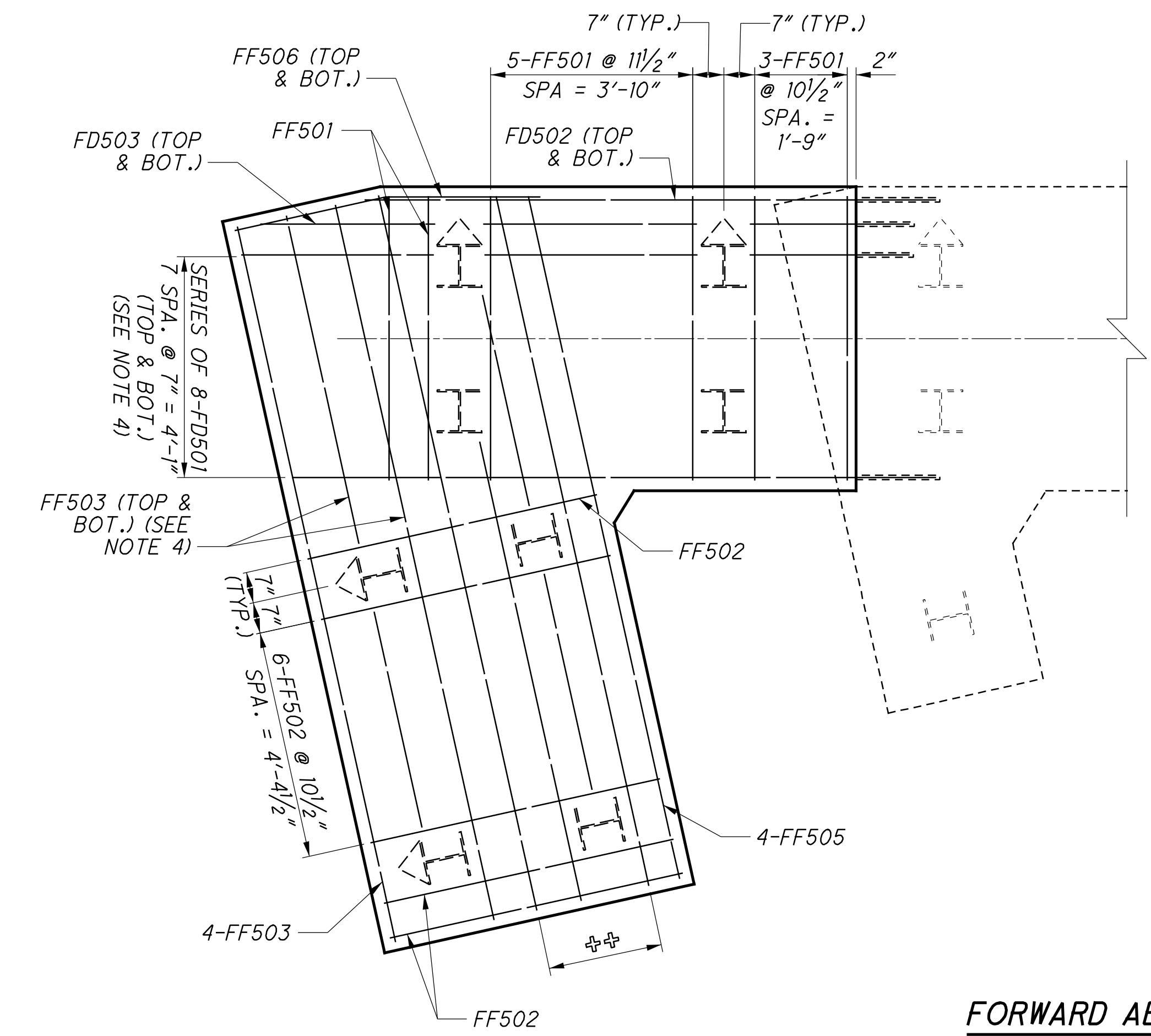
- NOTES:**
- FORWARD ABUTMENT ESTIMATED PILE LENGTH = 25'-0"
  - ALL EXISTING PILES WERE LOCATED FROM ORIGINAL CONSTRUCTION PLANS.



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**REAR ABUTMENT FOOTING PLAN**



**FORWARD ABUTMENT FOOTING PLAN**

**LEGEND:**

- EXISTING 10BP42 VERTICAL PILE
- EXISTING 10BP42 BATTERED PILE
- PROPOSED VERTICAL PILE
- PROPOSED BATTERED PILE (4:1)
- SERIES OF 4-RF510 @ 12" MAX. SPA. (TOP & BOT.) (SEE NOTE 4)
- SERIES OF 4-FF504 @ 12" MAX. SPA. (TOP & BOT.) (SEE NOTE 4)

**NOTES:**

1. SEE SHEETS 15/54 - 17/54 FOR ADDITIONAL FOUNDATION AND PILE INFORMATION.
2. SEE SHEET 19/54 FOR REAR ABUTMENT PLAN AND ELEVATION.
3. SEE SHEET 20/54 FOR FORWARD ABUTMENT PLAN AND ELEVATION.
4. FIELD CUT BOTTOM BARS AROUND PILES. ALL LABOR AND MATERIALS SHALL BE INCIDENTAL TO ITEM 509. BOTTOM BARS SHOWN IN PLAN.
5. MINIMUM DOWEL LENGTHS:  
#5 BARS = 1'-10"

**ABUTMENT FOOTING PLAN**

BRIDGE NO. GUE-513-0871  
SR-513 OVER IR-70

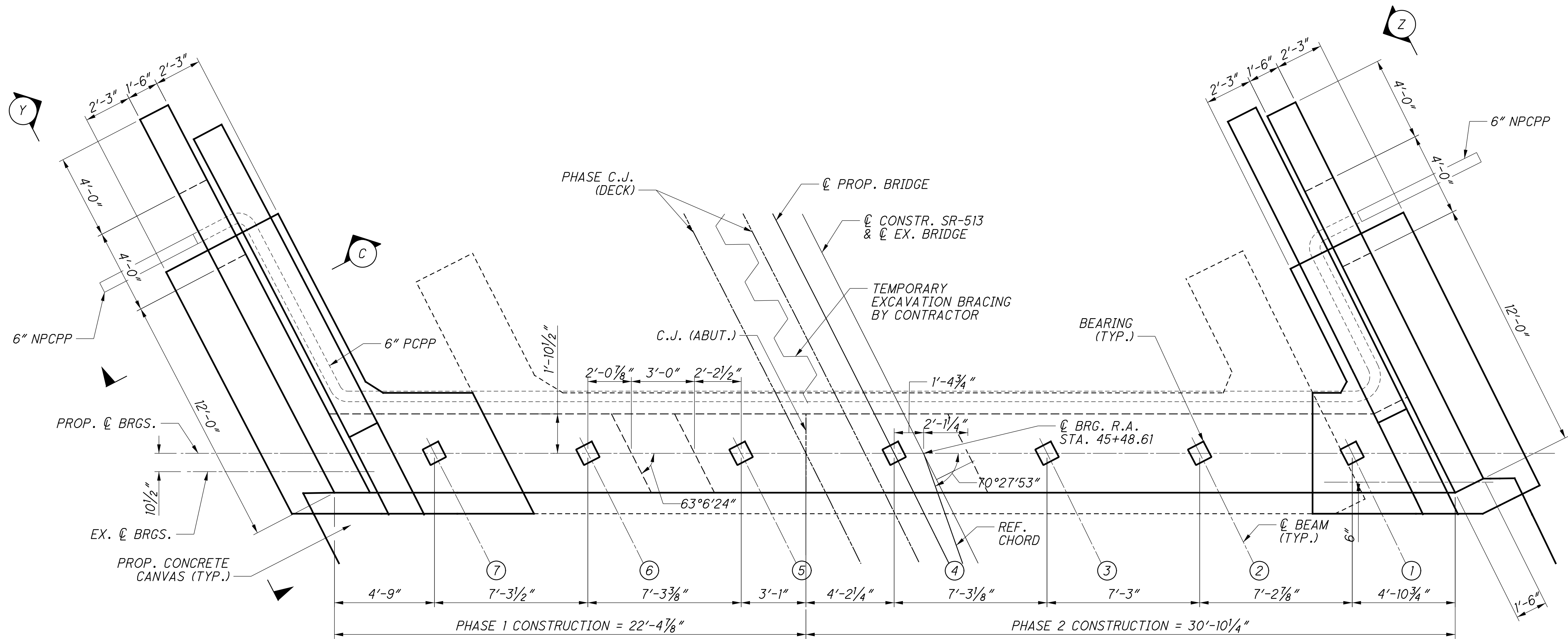
DESIGNED	PES	CHECKED	TML	REVIEWED	RKM	DATE	02/2017	
DRAWN				STRUCTURE FILE NUMBER				3005887
DESIGN AGENCY				WOOLPERT				WOOLPERT
1500 EASTON OVAL				SUITE 900				COLUMBUS, OH 43219
T 614-476-6000				F 614-476-6225				

**GUE-513-8.65**  
PID No. 93289

18 / 54

64  
100

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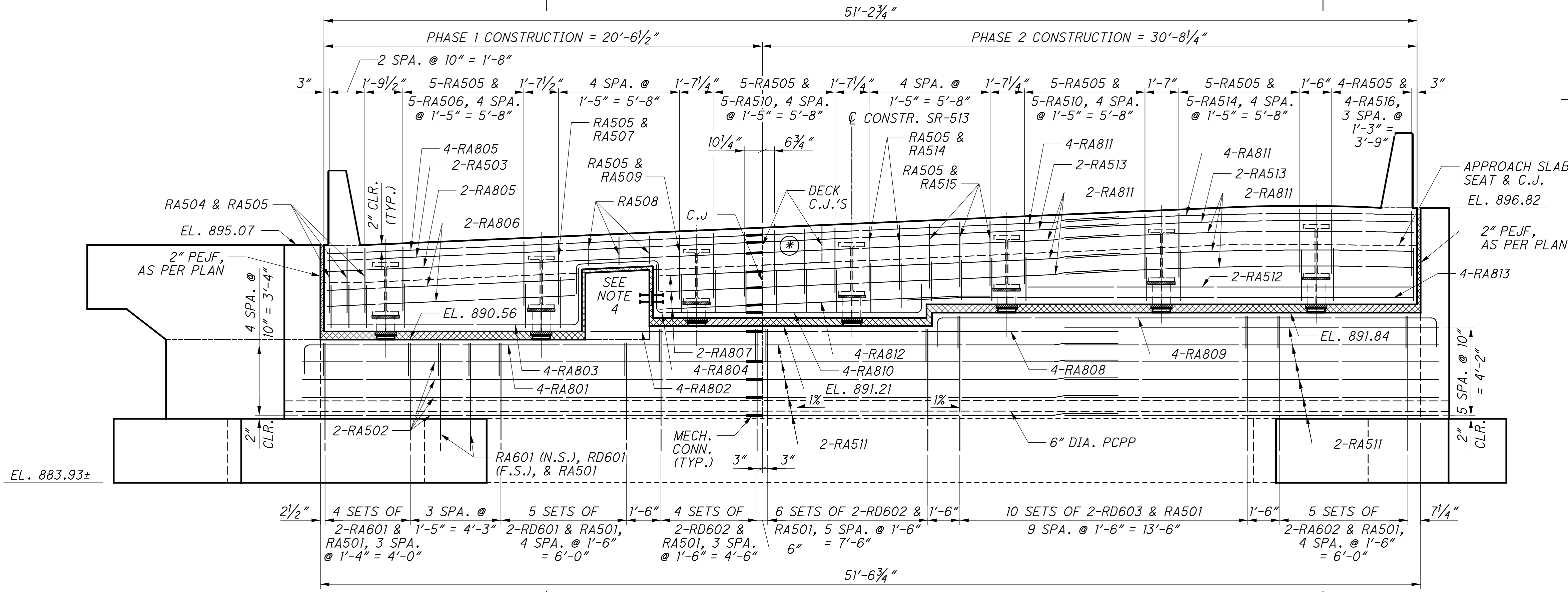


**REAR ABUTMENT PLAN**

(FOOTING PILES AND REINFORCING NOT SHOWN)

**LEGEND:**

- ⊙ PROPOSED BEAM NUMBER
- ⊛ THIS CONCRETE SHALL BE CAST WITH THE FINAL DECK CLOSURE POUR
- MECHANICAL CONNECTOR

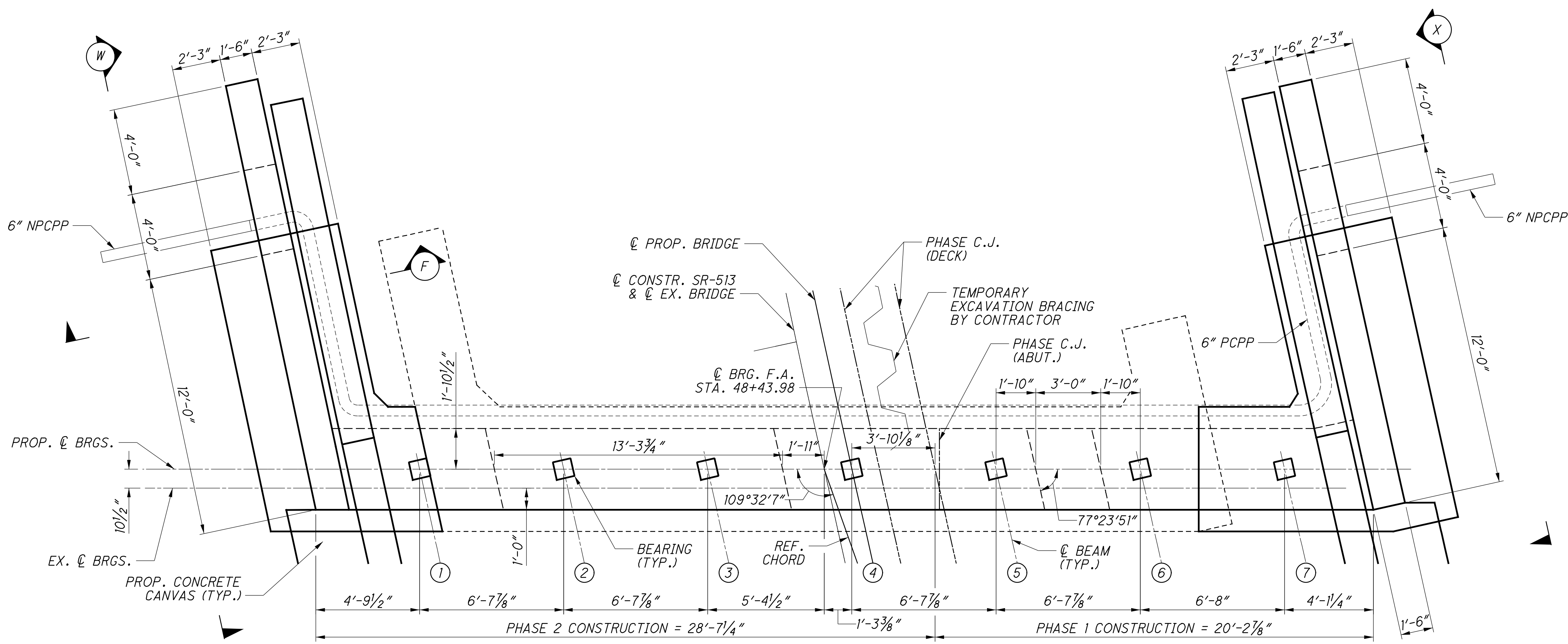


**REAR ABUTMENT ELEVATION**

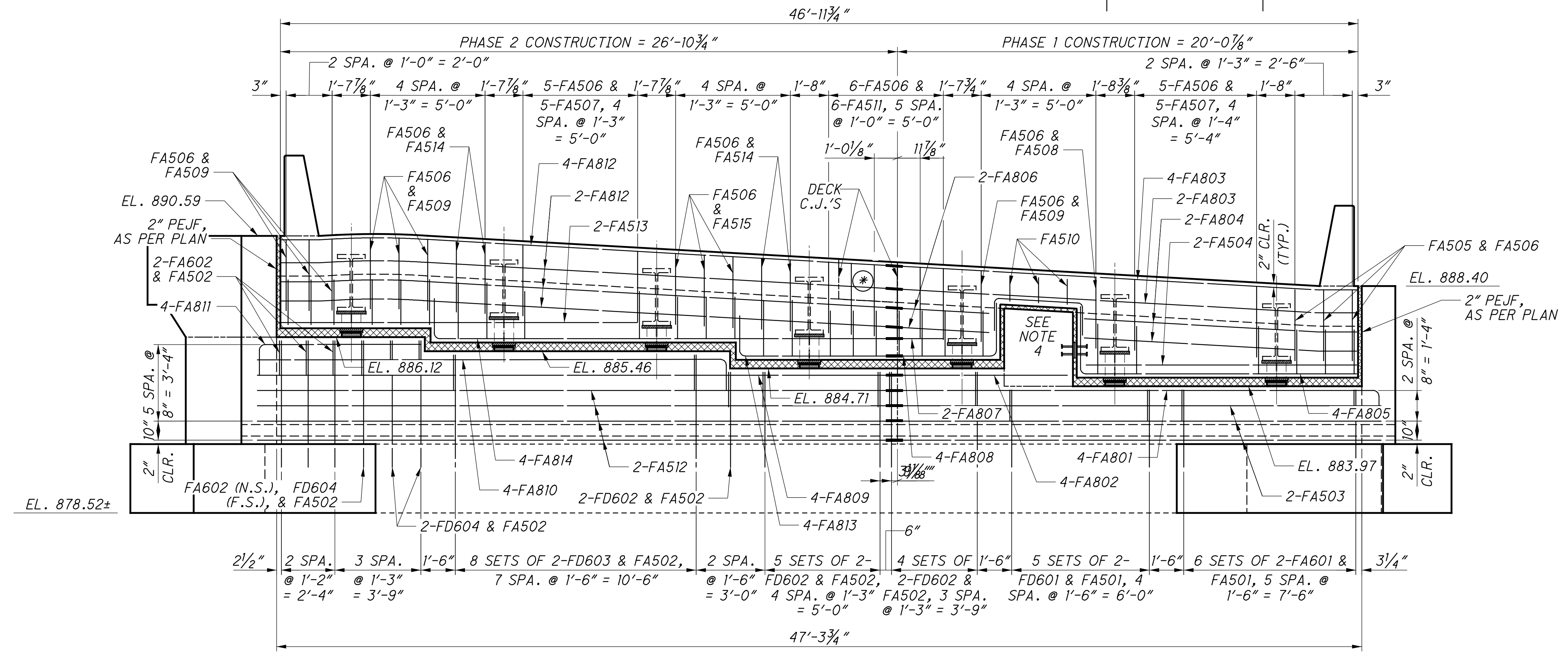
**NOTES:**

1. SEE SHEET 18/54 FOR REAR ABUTMENT FOOTING REINFORCING PLAN.
2. SEE SHEET 21/54 FOR SECTION A.
3. SEE SHEET 23/54 FOR REAR WINGWALL DETAILS, SECTION B AND VIEWS Y & Z.
4. SEE SHEET 25/54 FOR DIAPHRAGM GUIDE REINFORCING DETAILS.
5. MINIMUM REINFORCING STEEL LAP LENGTHS SHALL BE AS FOLLOWS:  
 #5 = 2'-5"  
 #8 = 4'-11"
6. EXCAVATION BRACING SHALL BE DESIGNED TO INCLUDE A LIVE LOAD SURCHARGE OF 2'-0".

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**FORWARD ABUTMENT PLAN**  
(FOOTING PILES AND REINFORCING NOT SHOWN FOR CLARITY)



**FORWARD ABUTMENT ELEVATION**

- LEGEND:**
- ⊙ PROPOSED BEAM NUMBER
  - ⊛ THIS CONCRETE SHALL BE CAST WITH THE FINAL DECK CLOSURE POUR
  - MECHANICAL CONNECTOR

- NOTES:**
1. SEE SHEET 18/54 FOR FORWARD ABUTMENT FOOTING REINFORCING PLAN.
  2. SEE SHEET 23/54 FOR SECTION C.
  3. SEE SHEET 24/54 FOR FORWARD WINGWALL DETAILS, SECTION D AND VIEWS W & X.
  4. SEE SHEET 25/54 FOR DIAPHRAGM GUIDE REINFORCING DETAILS.
  5. MINIMUM REINFORCING STEEL LAP LENGTHS SHALL BE AS FOLLOWS:  
#5 = 2'-5"  
#8 = 4'-11"
  6. EXCAVATION BRACING SHALL BE DESIGNED TO INCLUDE A LIVE LOAD SURCHARGE OF 2'-0".

DESIGN AGENCY: EASTON OVAL  
SUITE 300  
COLUMBUS, OH 43219  
T 614-476-6000  
F 614-476-6225

**WOOLPERT**  
CONSTRUCTION MANAGEMENT

DESIGNED	PES	CHECKED	TML
DRAWN	PES	REVISED	
REVIEWED	RKM	STRUCTURE FILE NUMBER	3005887
DATE	02/2017		

**FORWARD ABUTMENT PLAN**  
BRIDGE NO. GUE-513-0871  
SR-513 OVER IR-70

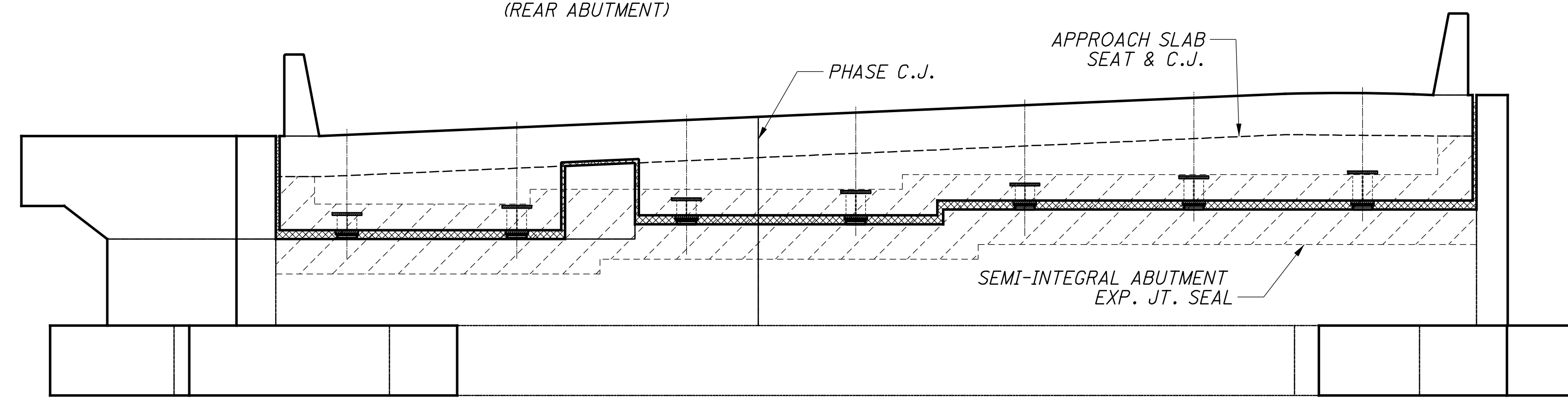
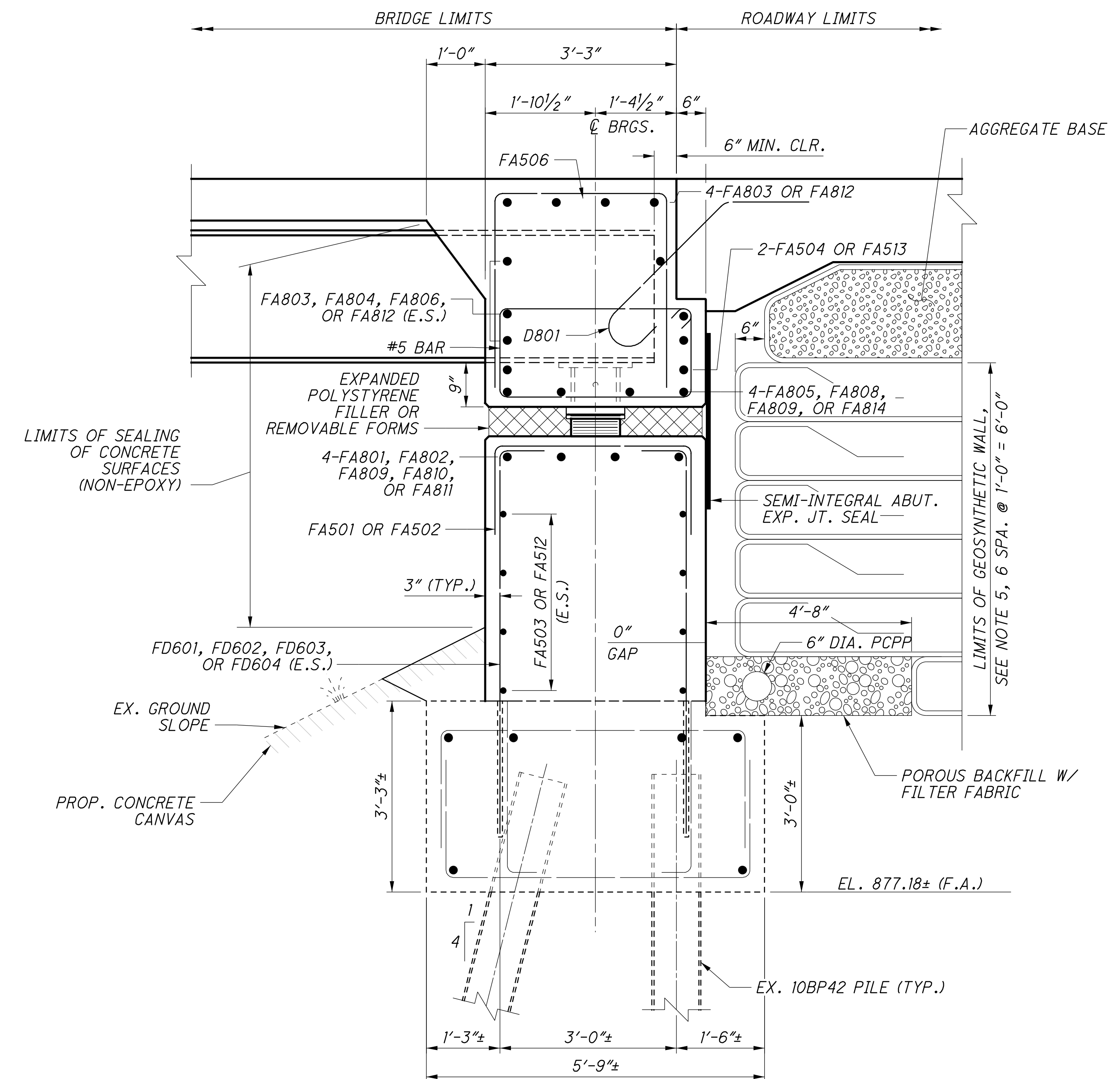
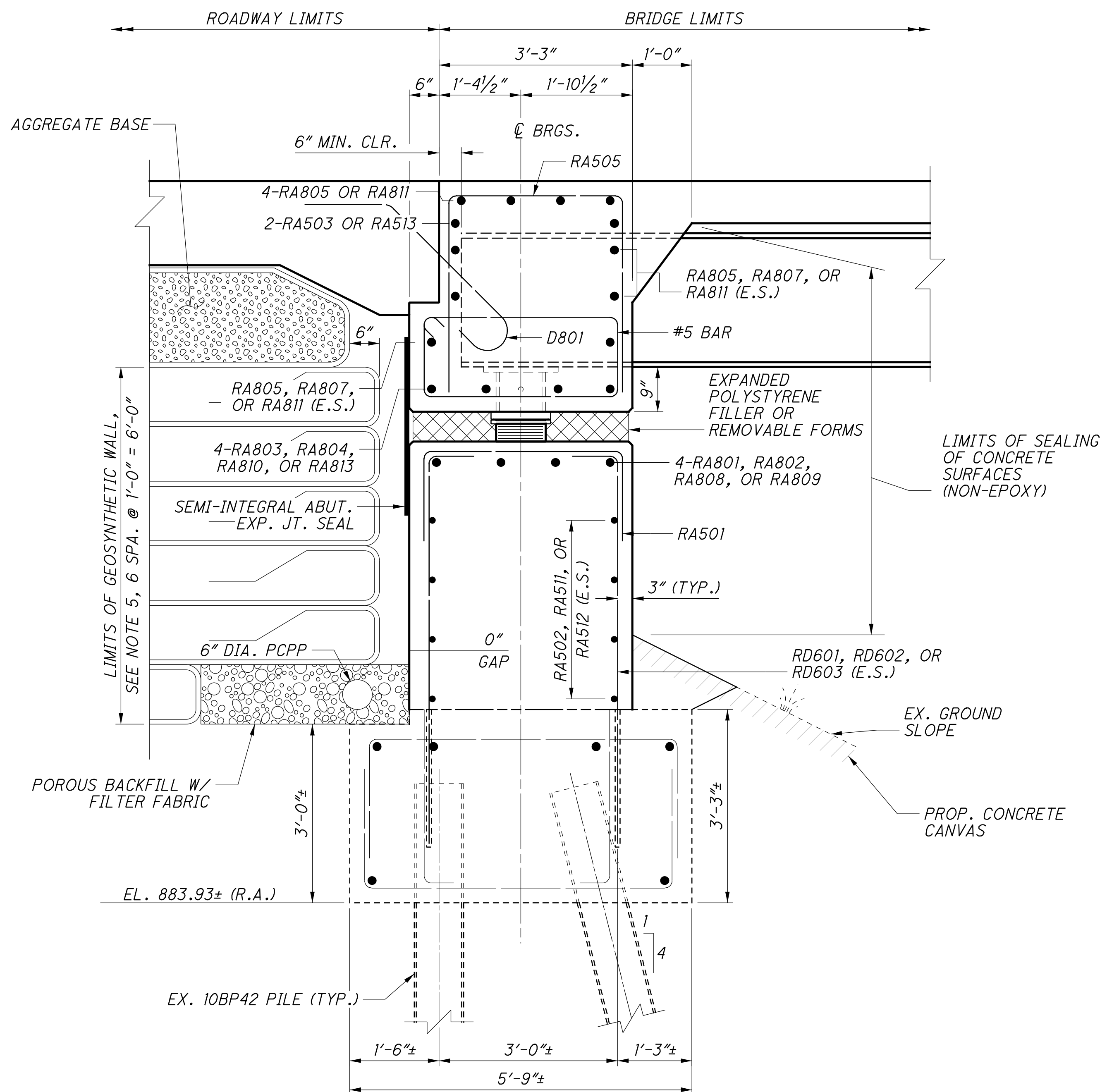
**GUE-513-8.65**  
PID No. 93289

20/54

66  
100



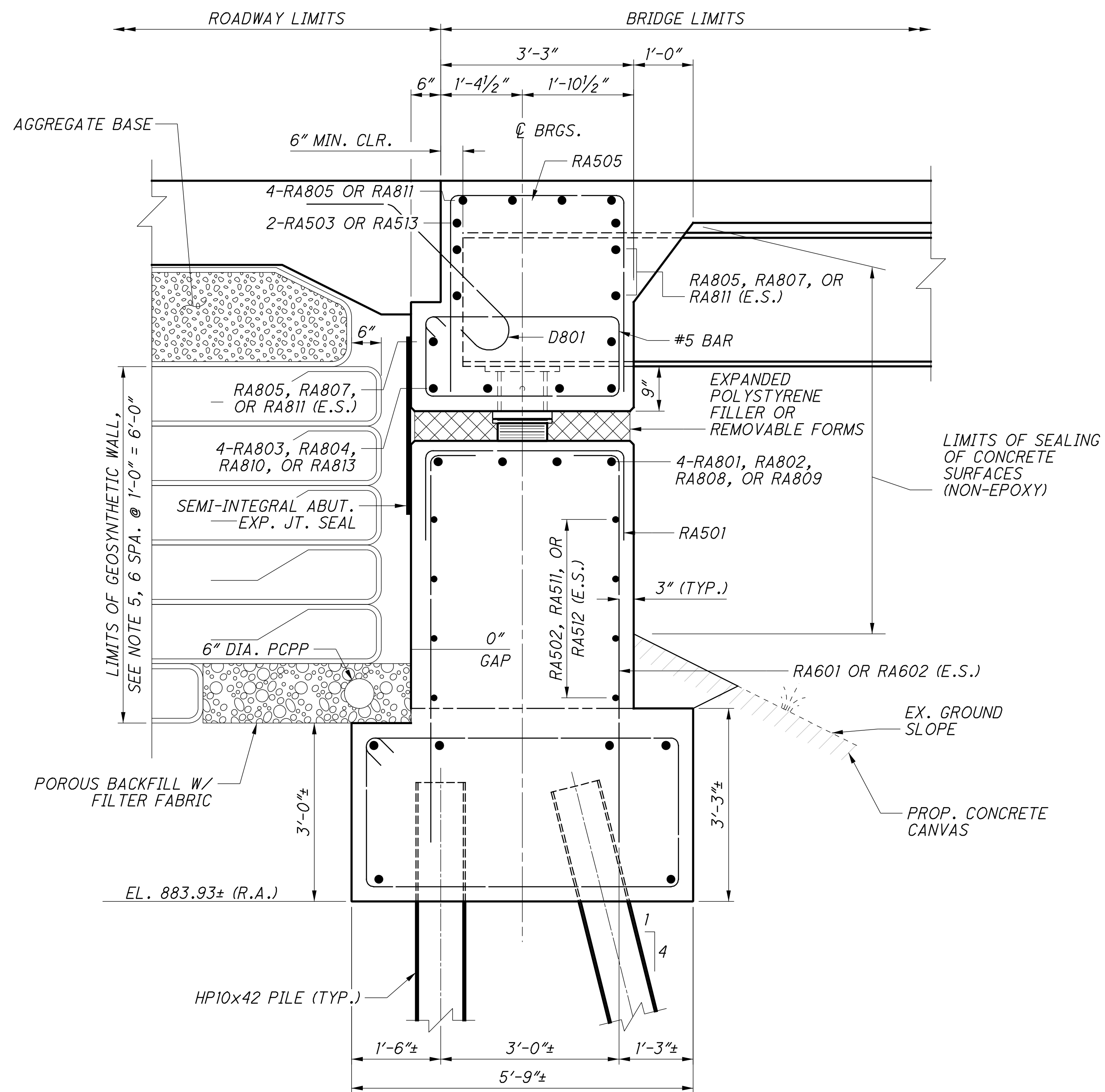
G:\DE\Clients\075542\_GUE-513-0865\93289\_GUE-513-0865\Design\Structures\GUE513-0865C\_Sheets\513-0865C\_SR002.dgn 6/8/2017 12:04:58 holln



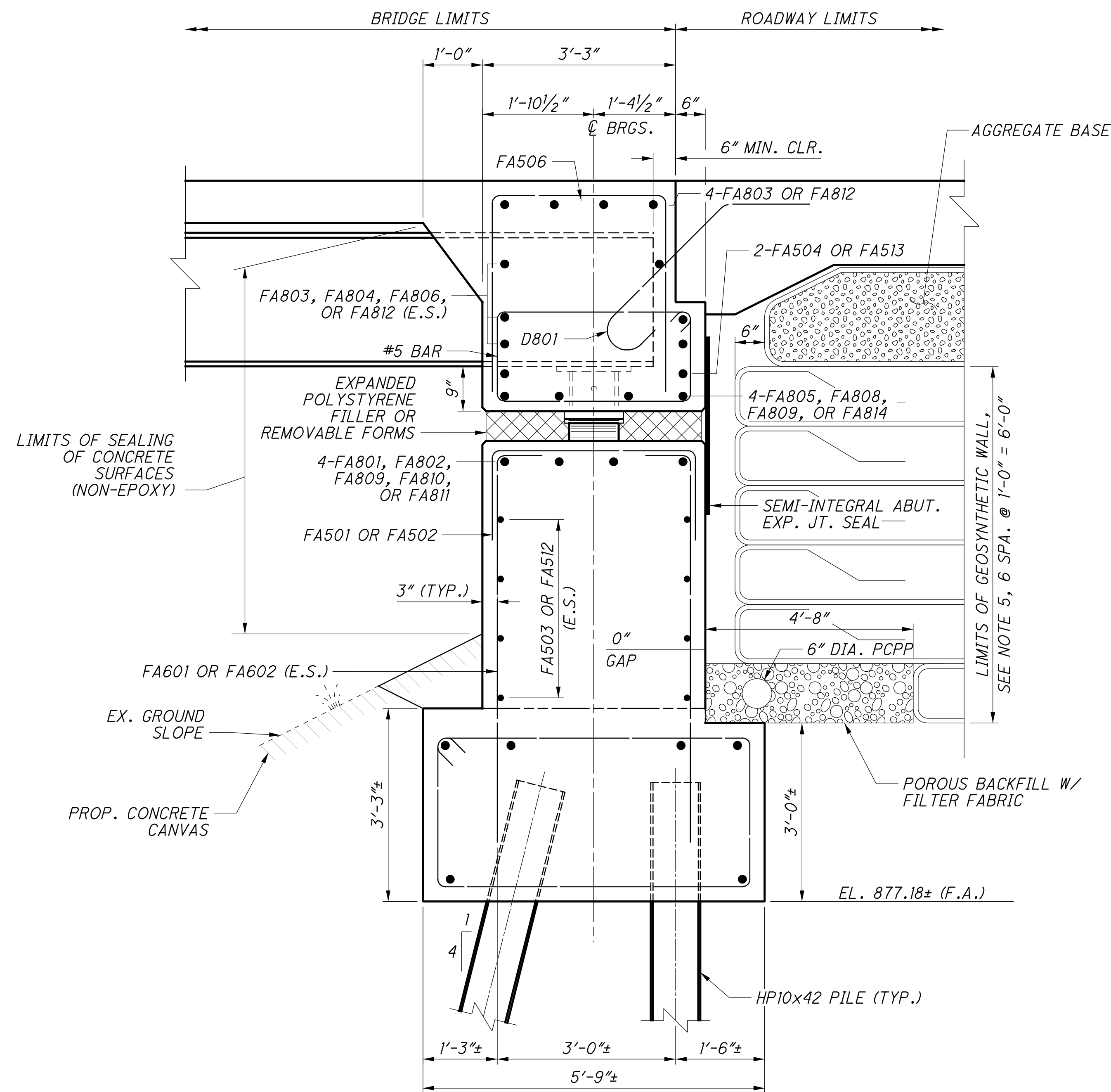
- NOTES:**
- SEE SHEET 18/54 FOR ABUTMENT FOOTING DETAILS.
  - SEE SHEET 19/54 FOR REAR ABUTMENT PLAN AND ELEVATION.
  - SEE SHEET 20/54 FOR FORWARD ABUTMENT PLAN AND ELEVATION.
  - SEE SHEETS 46/54 - 47/54, SCD AS-1-15, AND SCD AS-2-15 FOR ADDITIONAL APPROACH SLAB DETAILS.
  - GEOSYNTHETIC WALL SHALL CONSIST OF SELECT GRANULAR BACKFILL WITH GEOGRID AND FILTER FABRIC. EXCAVATION LENGTH AND EQUAL LENGTH OF GEOGRID AND LIMITS ARE DEPENDENT ON PROPOSED PRODUCT AND DESIGN. THE CONTRACTOR SHALL SUBMIT A DESIGN AND CALCULATIONS FOR THE GEOSYNTHETIC WALL STAMPED BY AN ENGINEER REGISTERED IN THE STATE OF OHIO FOR APPROVAL BY THE ENGINEER PRIOR TO CONSTRUCTION.
  - DIAPHRAGM SHALL BE CAST WITH RESPECTIVE PHASE DECK POUR. SEE GENERAL NOTES "DECK END DIAPHRAGM CONCRETE, PHASE CONSTRUCTION" ON SHEET 2/54
  - MINIMUM DOWEL LENGTHS:  
#6 BARS = 1'-10"
  - EXPANDED POLYSTYRENE FILLER SHALL BE INCIDENTAL TO SUPERSTRUCTURE CONCRETE.

DESIGN AGENCY WOLPERT COLUMBUS, OH 43219 T 614-476-6000 F 614-476-6225	DATE 02/2017	REVIEWED RKM	DRAWN TML	DESIGNED TML	BRIDGE NO. GUE-513-0871 SR-513 OVER IR-70
FILE NUMBER 3005887	STRUCTURE FILE NUMBER 3005887	REVISED	CHECKED MAA	ABUTMENT SECTION	GUE-513-8.65 PID No. 93289
					21/54
					67 100

G:\DE\Clients\ODOT\075542\_GUE\_513-0865\Design\Structures\GUE513-0865C\_Sheets\513-0865C\_SRO005.dgn 6/8/2017 12:04:59 halin



**SECTION B**  
(PARAPETS NOT SHOWN)  
(REAR ABUTMENT)



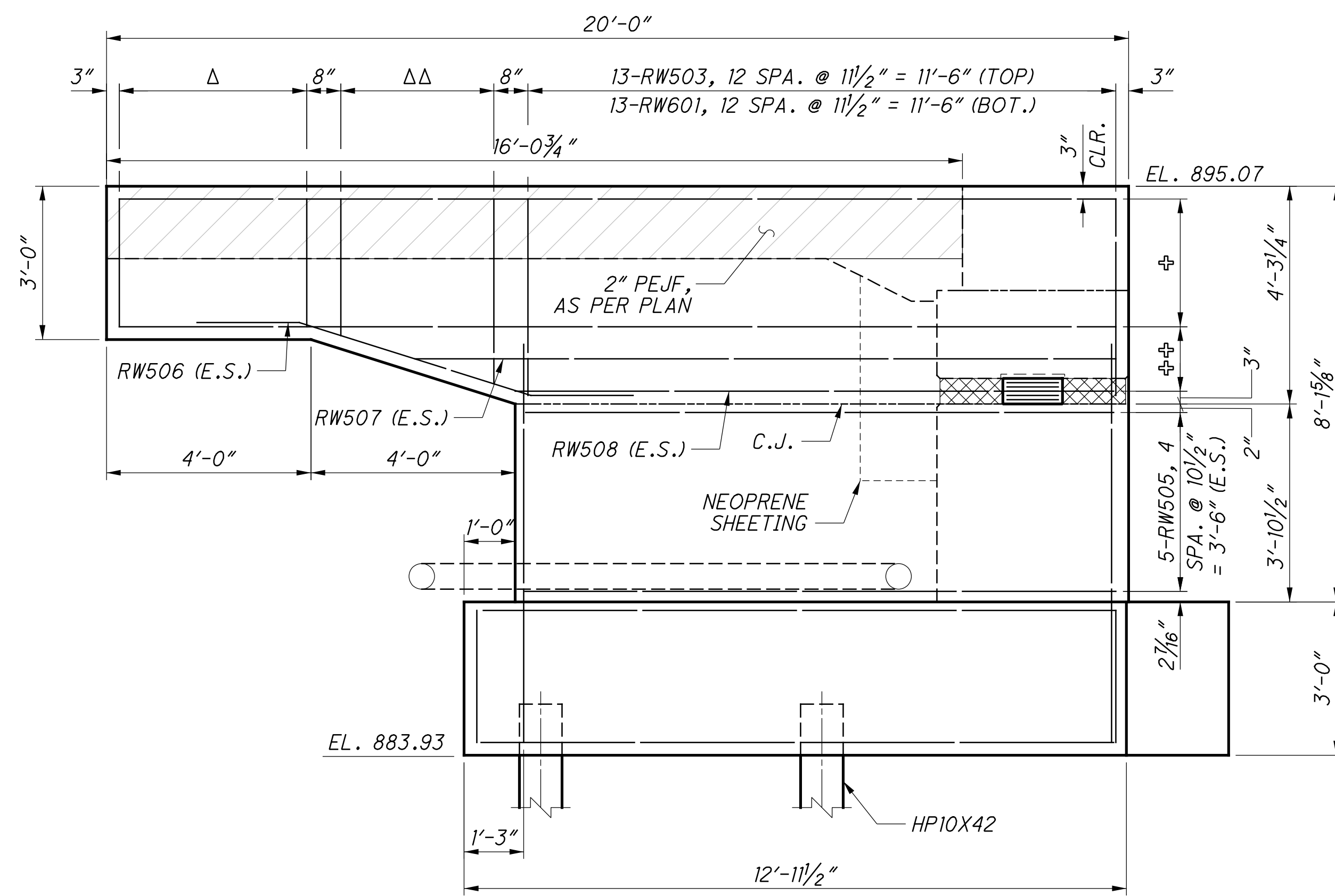
**SECTION E**  
(PARAPETS NOT SHOWN)  
(FORWARD ABUTMENT)

**NOTES:**

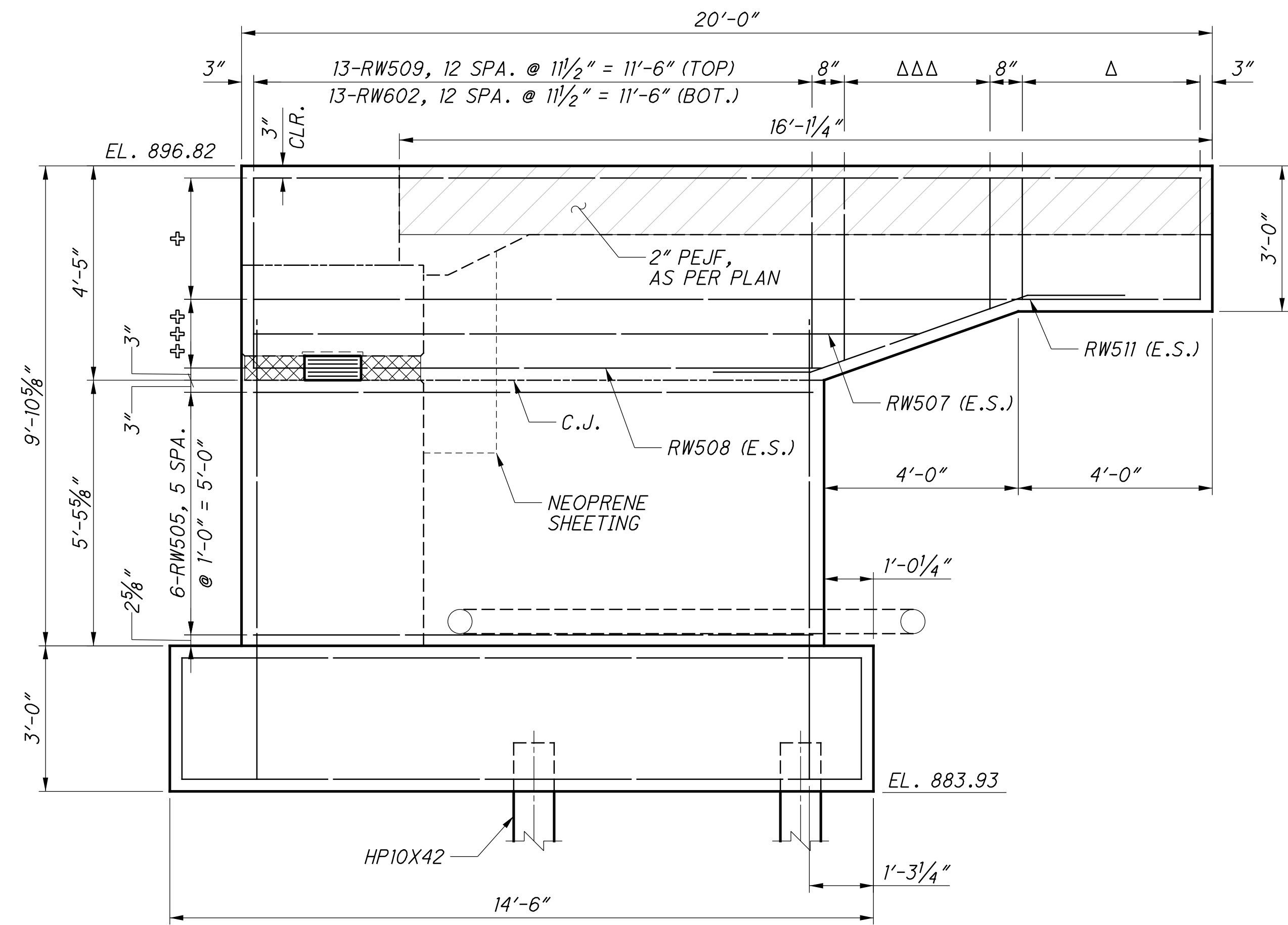
1. SEE SHEET 18/54 FOR ABUTMENT FOOTING DETAILS.
2. SEE SHEET 19/54 FOR REAR ABUTMENT PLAN AND ELEVATION.
3. SEE SHEET 20/54 FOR FORWARD ABUTMENT PLAN AND ELEVATION.
4. SEE SHEETS 46/54 - 47/54, SCD AS-1-15, AND SCD AS-2-15 FOR ADDITIONAL APPROACH SLAB DETAILS.
5. GEOSYNTHETIC WALL SHALL CONSIST OF SELECT GRANULAR BACKFILL WITH GEOGRID AND FILTER FABRIC. EXCAVATION LENGTH AND EQUAL LENGTH OF GEOGRID AND LIMITS ARE DEPENDENT ON PROPOSED PRODUCT AND DESIGN. THE CONTRACTOR SHALL SUBMIT A DESIGN AND CALCULATIONS FOR THE GEOSYNTHETIC WALL STAMPED BY AN ENGINEER REGISTERED IN THE STATE OF OHIO FOR APPROVAL BY THE ENGINEER PRIOR TO CONSTRUCTION.
6. DIAPHRAGM SHALL BE CAST WITH RESPECTIVE PHASE DECK POUR. SEE GENERAL NOTES "DECK END DIAPHRAGM CONCRETE, PHASE CONSTRUCTION" ON SHEET 2/54.
7. MINIMUM DOWEL LENGTHS:  
#6 BARS = 1'-10"
8. EXPANDED POLYSTYRENE FILLER SHALL BE INCIDENTAL TO SUPERSTRUCTURE CONCRETE.

<b>DESIGN AGENCY</b> EASTON OVAL SUITE 300 COLUMBUS, OH 43219 T 614-476-6000 F 614-476-6225 <b>WOOLPERT</b> CONSTRUCTION MANAGEMENT	<b>DATE</b> 02/2017
	<b>REVIEWED</b> RKM <b>STRUCTURE FILE NUMBER</b> 3005887
<b>DRAWN</b> TML <b>REVISED</b>	<b>CHECKED</b> MAA
<b>ABUTMENT SECTION</b> BRIDGE NO. GUE-513-0871 SR-513 OVER IR-70	
<b>GUE - 513 - 8.65</b> <b>PID No. 93289</b>	22 / 54
68 100	

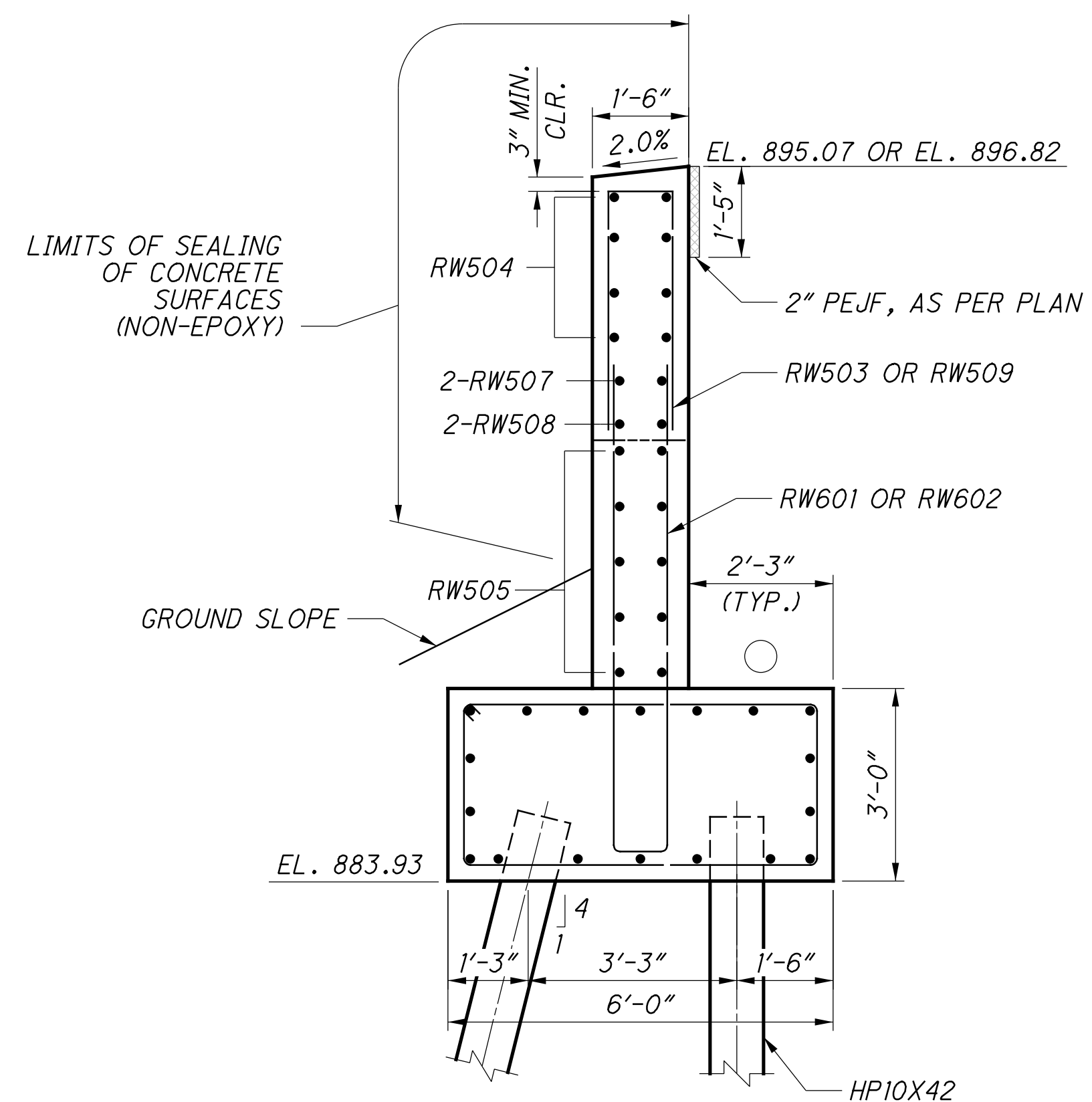
G:\DE\Clients\075542\_GUE\_513\_0865\93289\_GUE-513-0865\Design\Structures\GUE513\_0865C\_Sheets\513\_0865C\_SR003.dgn 6/8/2017 12:05:00 halin



**VIEW Y**



**VIEW Z**



**SECTION C**

**LEGEND:**

- △ 5-RW501, 4 SPA. @ 11" = 3'-8"
- △△ SERIES OF 4-RW502, 3 SPA. @ 1'-0" = 3'-0"
- △△△ SERIES OF 4-RW510, 3 SPA. @ 1'-0" = 3'-0"
- ⊕ 4-RW504, 3 SPA. @ 10" = 2'-6" (E.S.)
- ⊕⊕ 2 SPA. @ 7 5/8" = 1'-3 1/4"
- ⊕⊕⊕ 2 SPA. @ 8 1/2" = 1'-5"

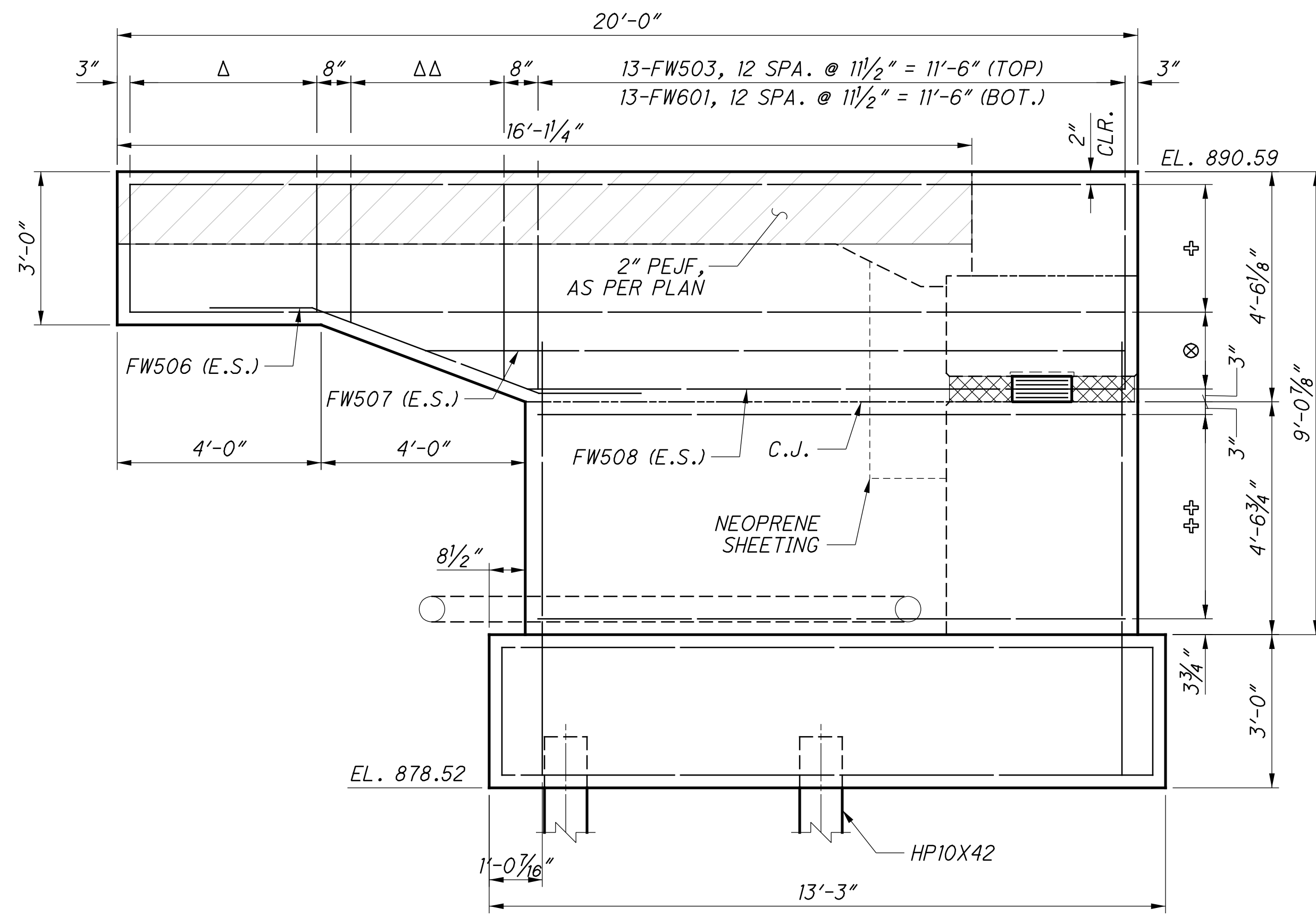
**NOTES:**

1. SEE SHEET 18/54 FOR ABUTMENT FOOTING PLAN.
2. SEE SHEET 19/54 FOR REAR ABUTMENT PLAN.
3. SEE STANDARD DRAWING SICD-1-96 FOR ADDITIONAL DETAILS.
4. CLEAR DISTANCES ARE 3" UNLESS OTHERWISE NOTED.
5. MINIMUM REINFORCING STEEL LAP LENGTHS SHALL BE AS FOLLOWS:  
#5 BARS = 2'-5"

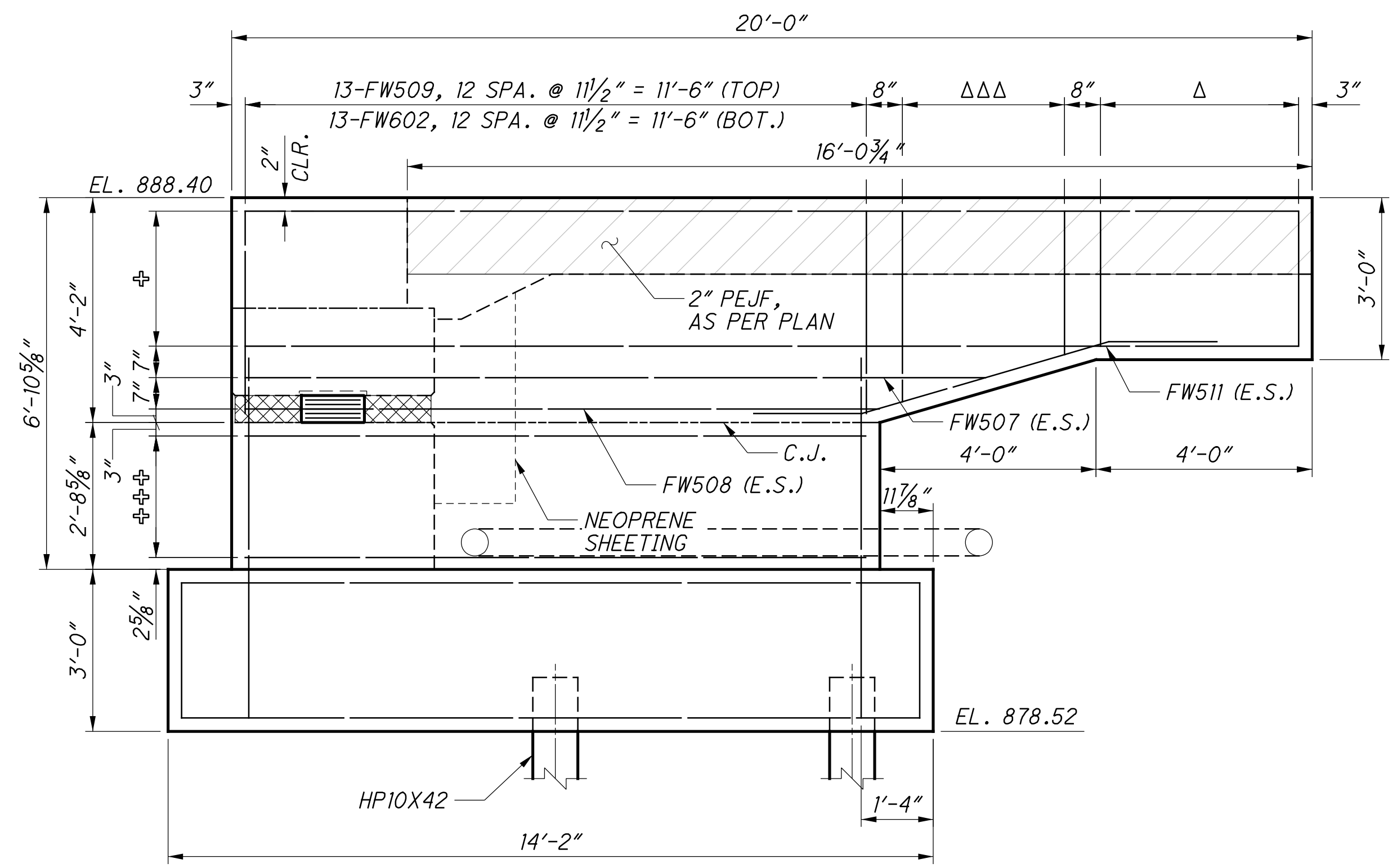
<b>REAR ABUTMENT WINGWALL DETAILS</b> BRIDGE NO. GUE-513-0871 SR-513 OVER IR-70	<b>GUE-513-8.65</b> PID No. 93289	DESIGN AGENCY <b>WOOLPERT</b> ENGINEERING ARCHITECTURE 1150 EASTON OVAL SUITE 300 COLUMBUS, OH 43219 T 614-476-6000 F 614-476-6225
DESIGNED PES TML	DRAWN PES REVISED	REVIEWED RKM STRUCTURE FILE NUMBER 3005887
DATE 02/2017		
23 / 54		
69 100		



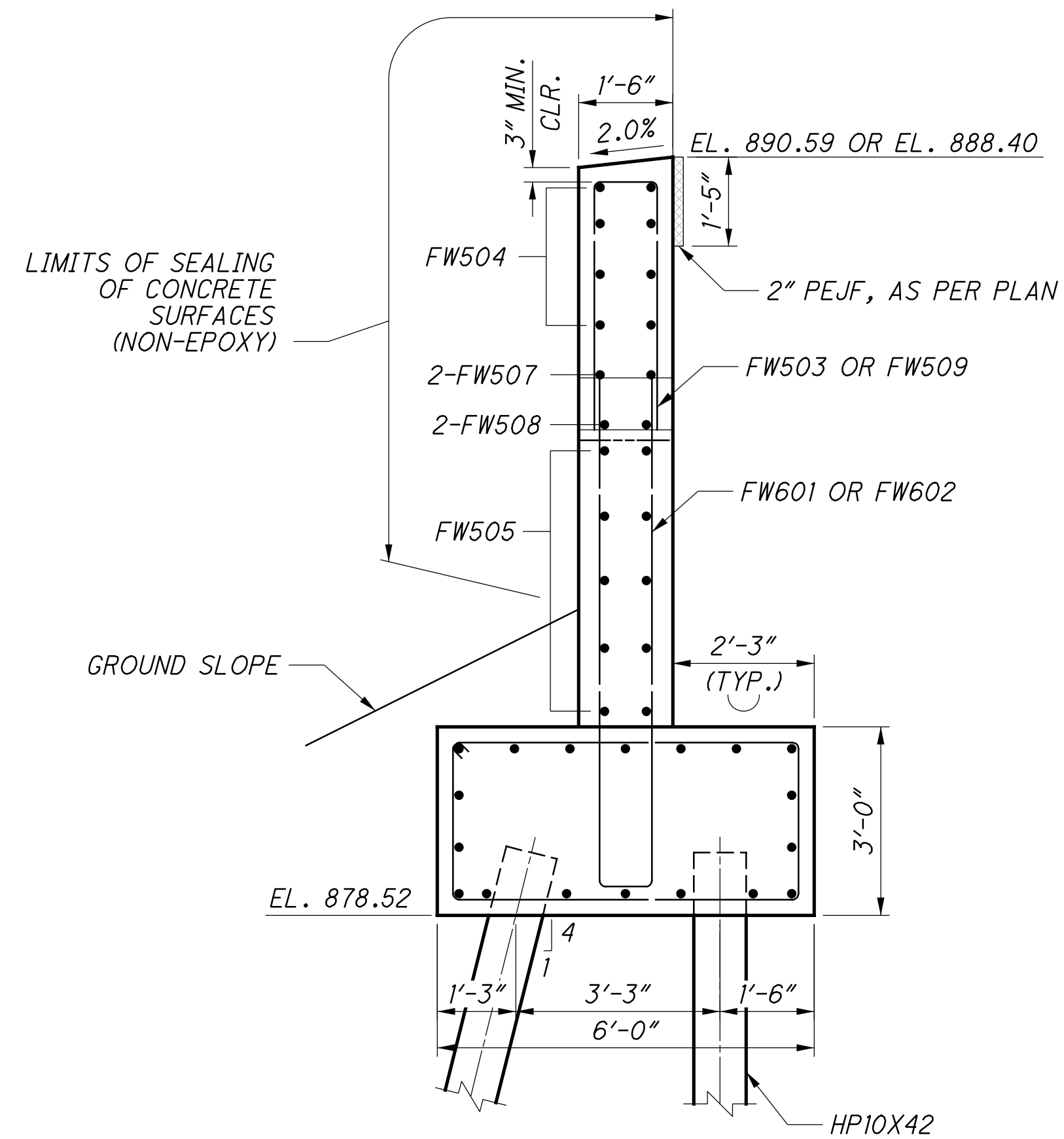
G:\DE\Clients\ODOT\075542\_GUE\_513\_0865\93289\_GUE-513-08.65\Design\Structures\GUE513\_0865C\_Sheets\513\_0865C\_SF002.dgn 6/8/2017 12:05:00 hollin



VIEW W



VIEW X



SECTION F

**LEGEND:**

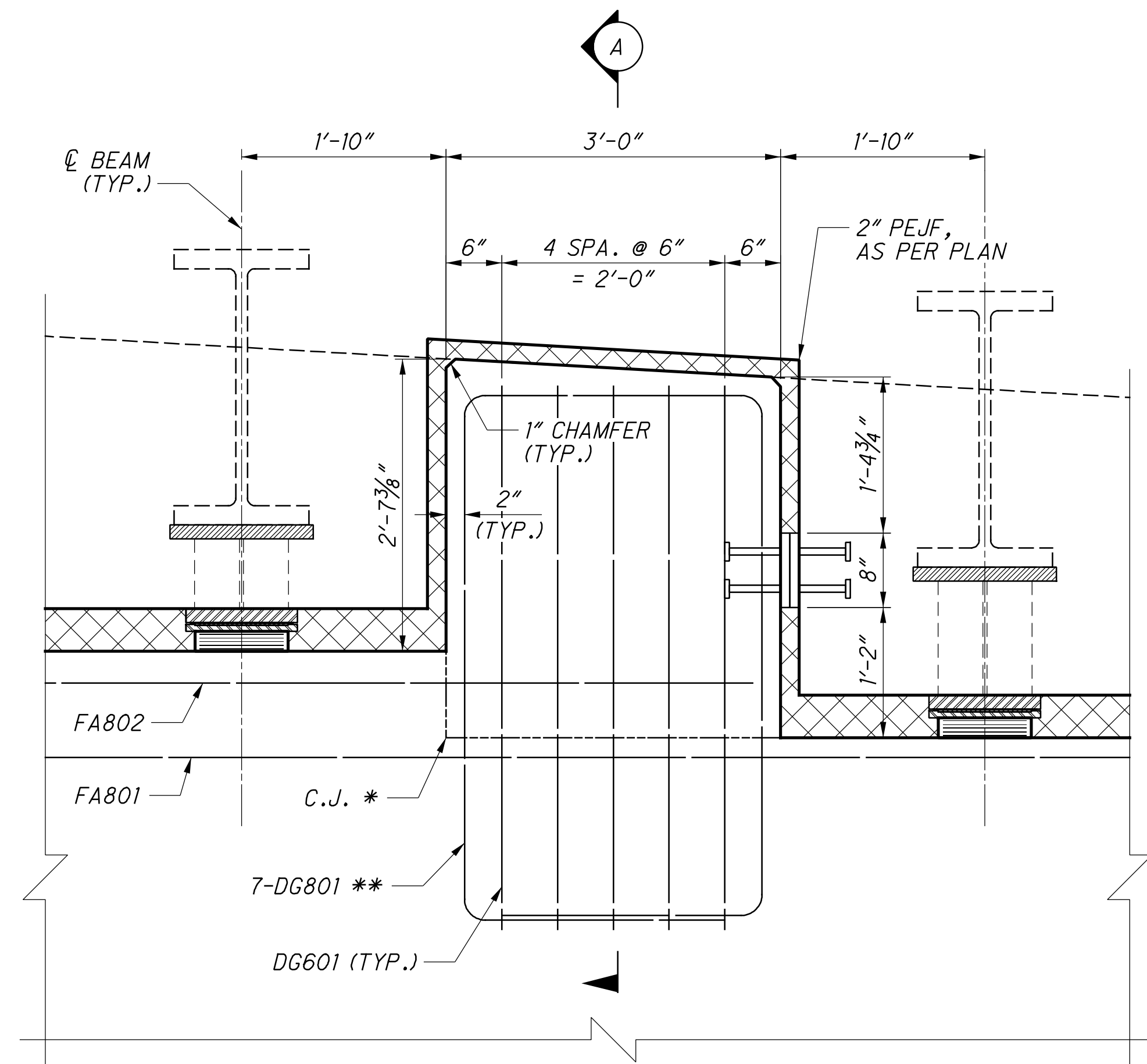
- Δ 5-FW501, 4 SPA. @ 11" = 3'-8"
- ΔΔ SERIES OF 4-FW502, 3 SPA. @ 1'-0" = 3'-0"
- ΔΔΔ SERIES OF 4-FW510, 3 SPA. @ 1'-0" = 3'-0"
- ⊕ 4-FW504, 3 SPA. @ 10" = 2'-6" (E.S.)
- ⊕⊕ 5-FW505, 4 SPA. @ 1'-0" = 4'-0" (E.S.)
- ⊕⊕⊕ 4-FW505, 3 SPA. @ 9" = 2'-3" (E.S.)
- ⊗ 2 SPA. @ 9 1/16" = 1'-6 1/8"

**NOTES:**

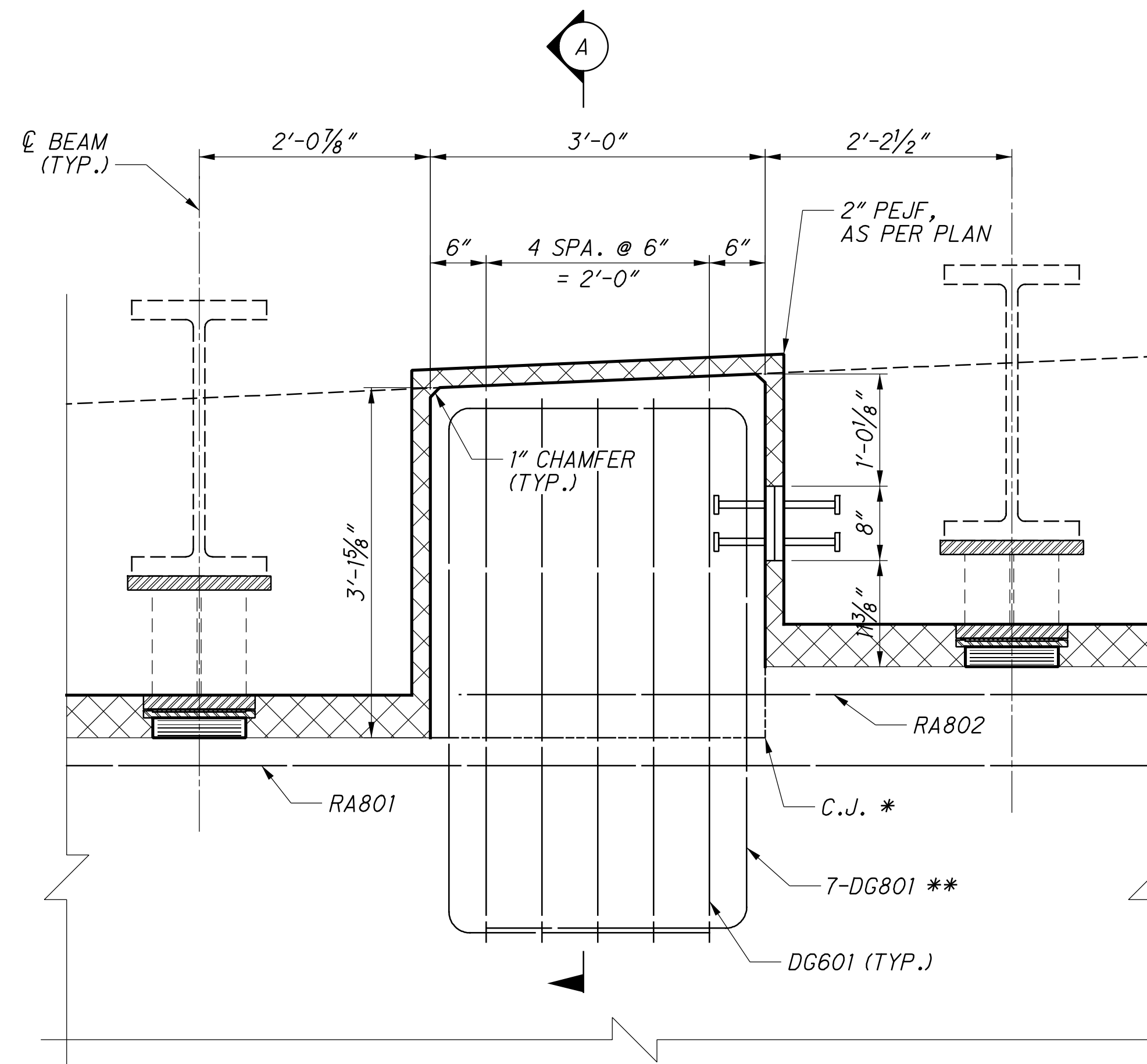
1. SEE SHEET 18/54 FOR ABUTMENT FOOTING PLAN.
2. SEE SHEET 20/54 FOR FORWARD ABUTMENT PLAN.
3. SEE STANDARD DRAWING SICD-1-96 FOR ADDITIONAL DETAILS.
4. CLEAR DISTANCES ARE 3" UNLESS OTHERWISE NOTED.
5. MINIMUM REINFORCING STEEL LAP LENGTHS SHALL BE AS FOLLOWS:  
#5 BARS = 2'-5"

<p><b>WOLPERT</b> DESIGN AGENCY</p>	<p>DESIGN AGENCY WOLPERT DESIGN AGENCY 100 EASTON OVAL SUITE 900 COLUMBUS, OH 43219 T 614-476-6000 F 614-476-6225</p>
<p>DESIGNED PES</p>	<p>DATE 02/2017</p>
<p>DRAWN PES</p>	<p>REVIEWED RKM</p>
<p>CHECKED TML</p>	<p>STRUCTURE FILE NUMBER 3005887</p>
<p><b>FORWARD ABUTMENT WINGWALL DETAILS</b></p>	
<p>BRIDGE NO. GUE-513-0871</p>	
<p>SR-513 OVER IR-70</p>	
<p><b>GUE-513-8.65</b></p>	<p><b>PID No. 93289</b></p>
<p>24/54</p>	
<p>70 100</p>	

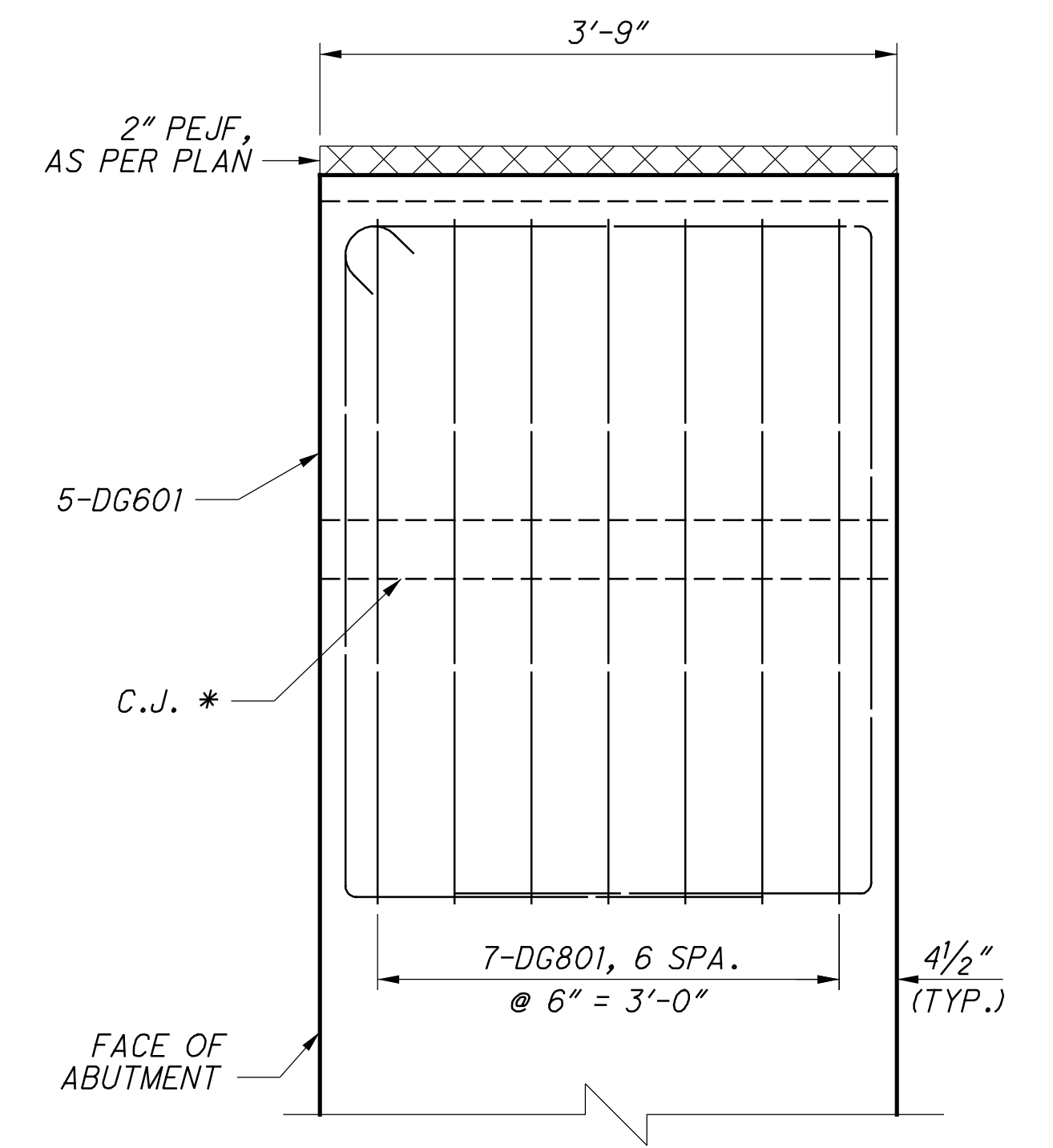
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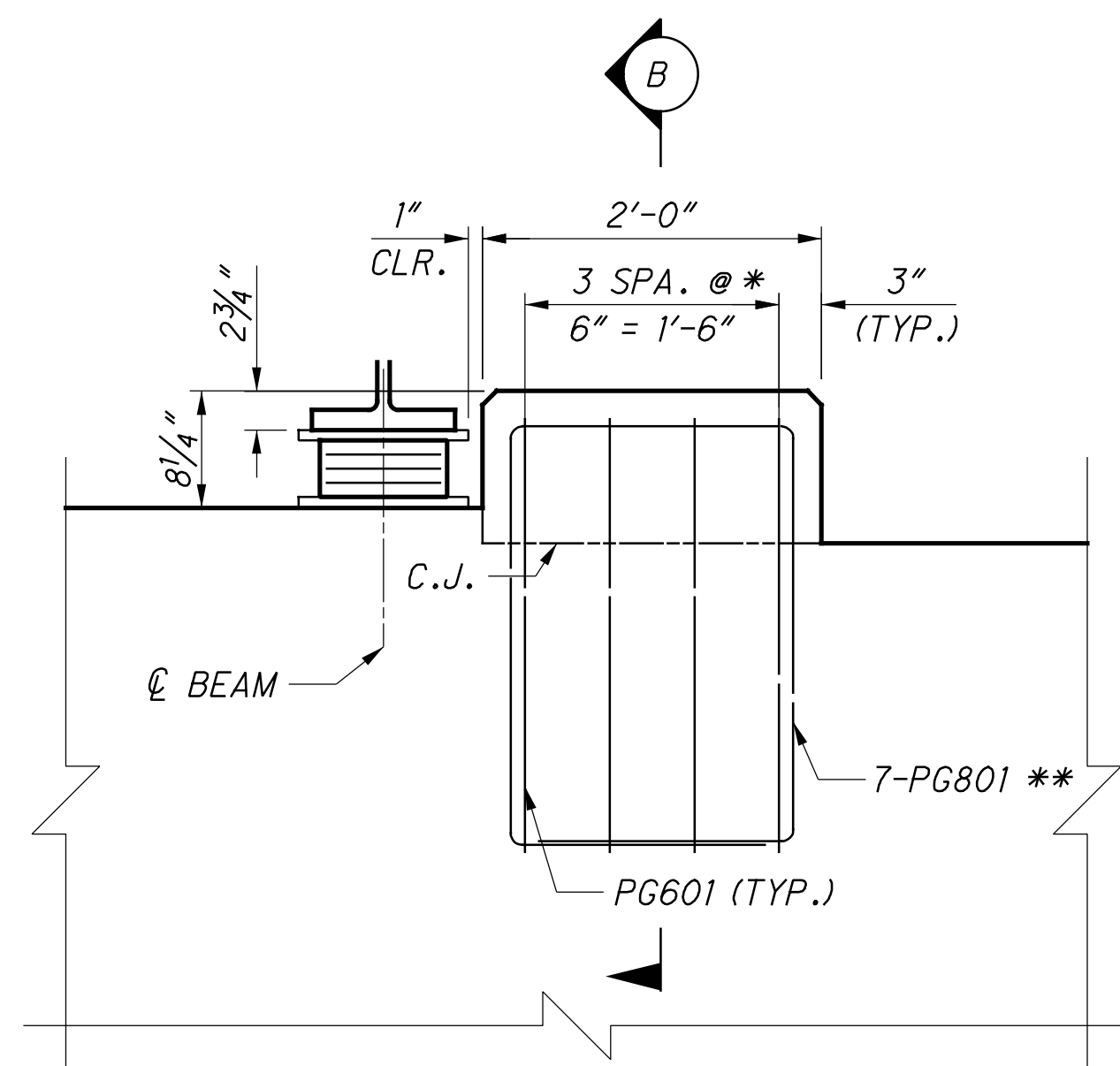
**FORWARD ABUTMENT DIAPHRAGM GUIDE ELEVATION**



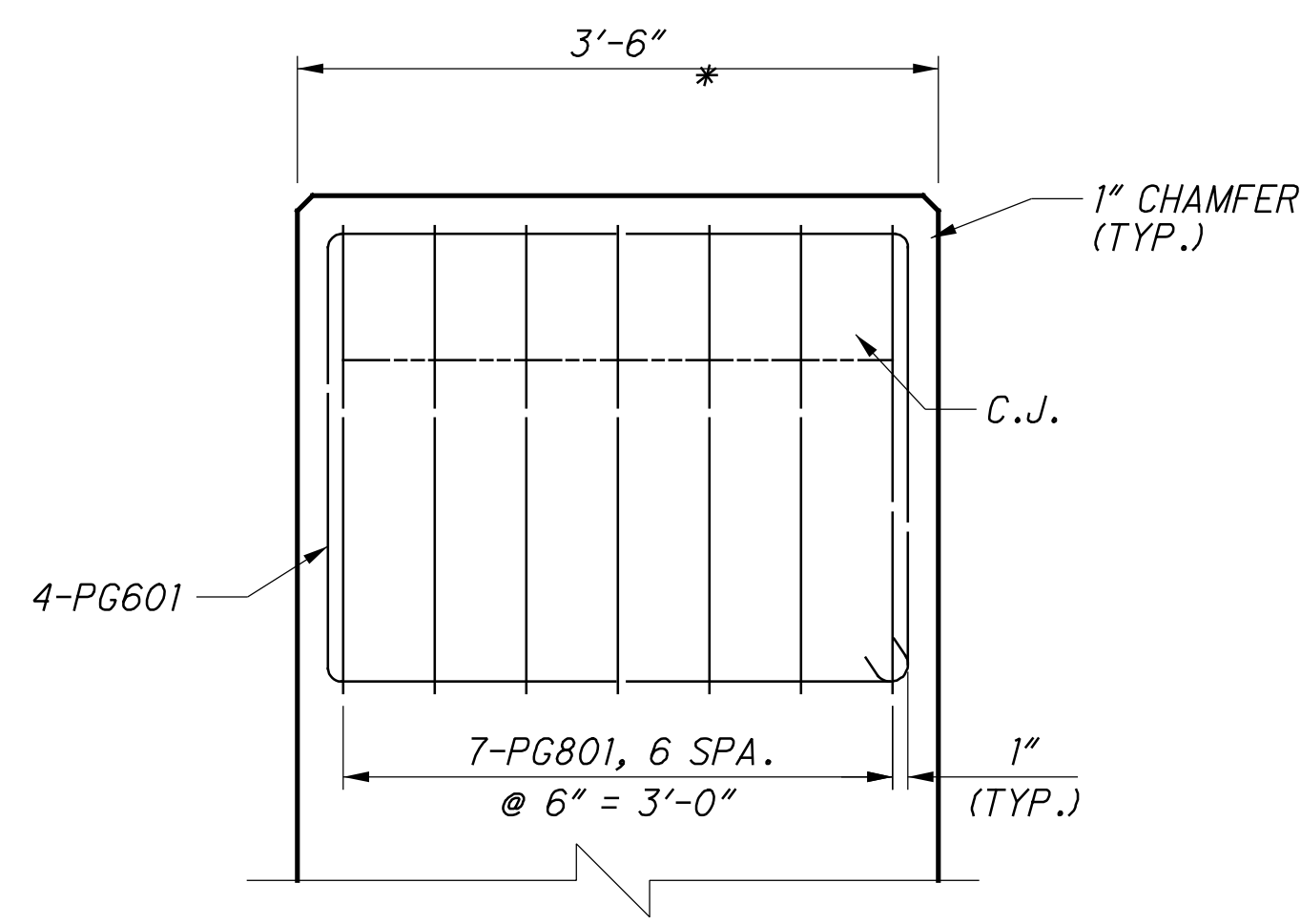
**REAR ABUTMENT DIAPHRAGM GUIDE ELEVATION**



**SECTION A**



**PIER SEISMIC PEDESTAL ELEVATION**



**SECTION B**

**LEGEND:**

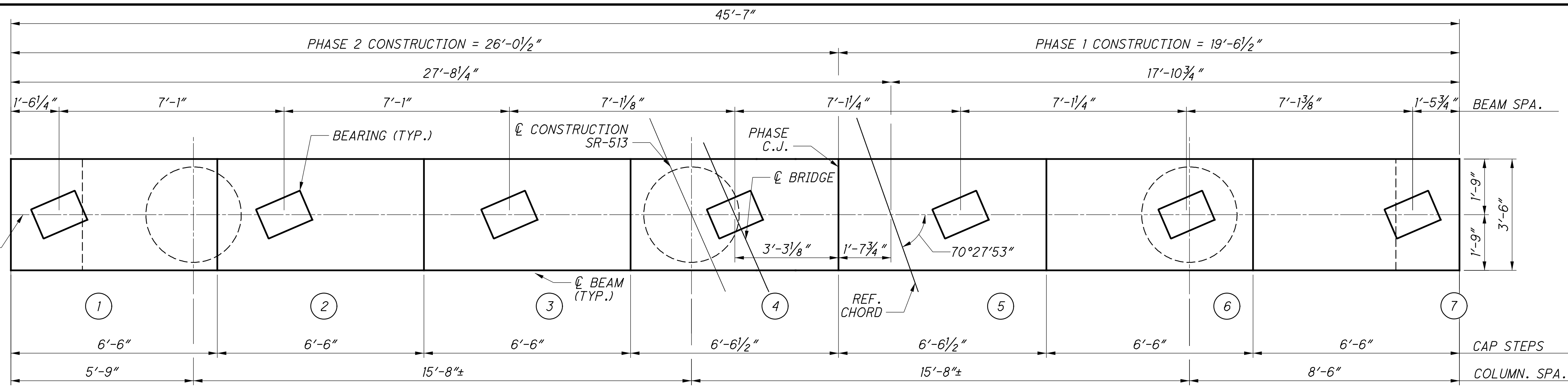
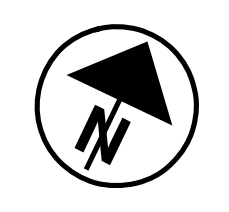
- \* THE SURFACE OF THE BEAM SEAT IN THIS AREA SHALL BE FINISHED WITH A SERRATED TROWEL. THE SERRATIONS SHALL BE 1/4" DEEP MINIMUM.
- \*\* PLACE TO AVOID INTERFERENCE WITH LONGITUDINAL REINFORCEMENT IN THE BEAM SEAT.

**NOTES:**

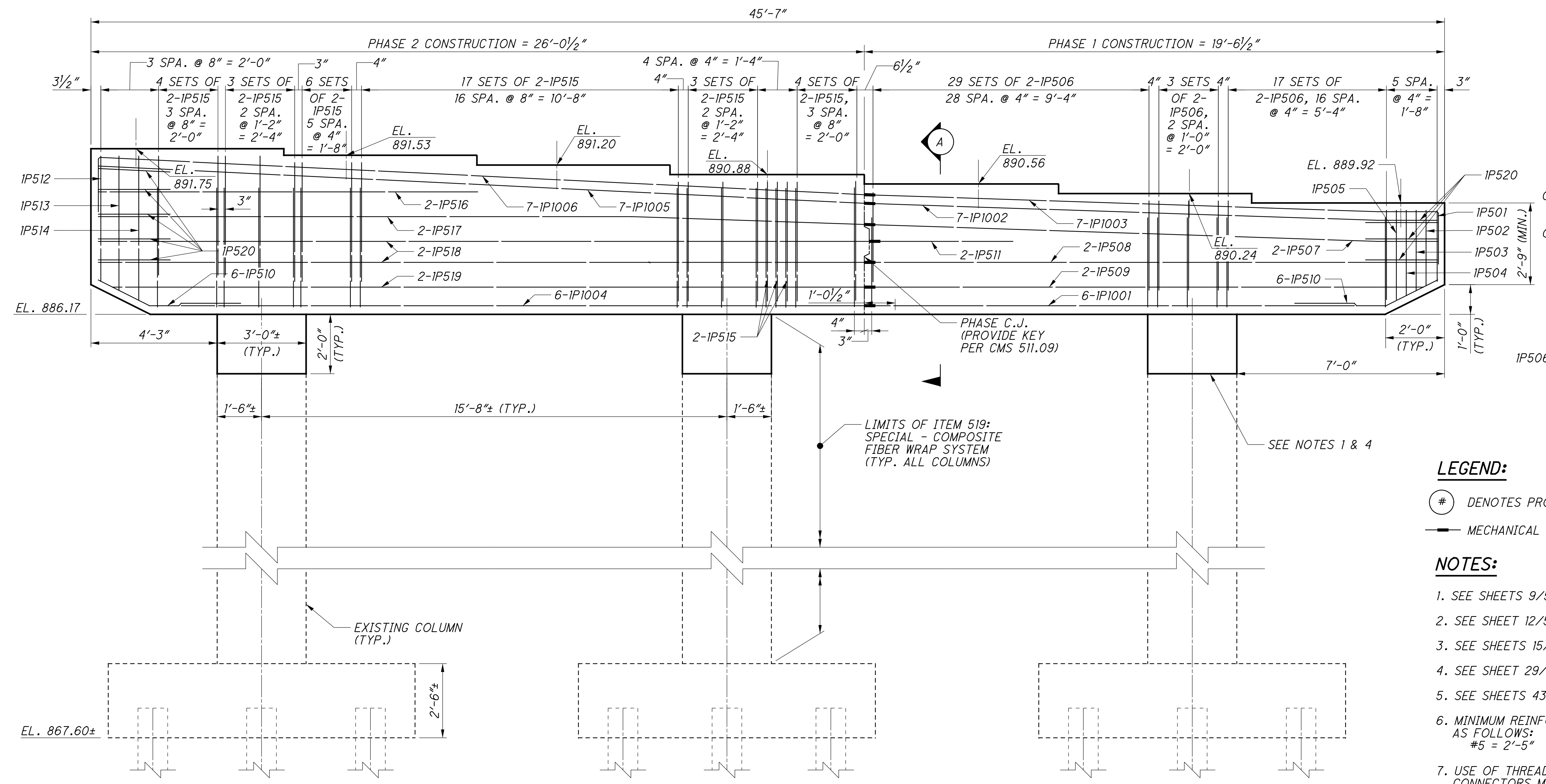
1. CLEAR DISTANCES ARE 2" UNLESS OTHERWISE NOTED.
2. THE LOCATION OF THE MAIN REINFORCEMENT IN THE BEAM SEAT MAY BE ADJUSTED HORIZONTALLY TO ACCOMMODATE THE PG8XX BARS.
3. SEE SHEET 19/54 FOR REAR ABUTMENT PLAN.
4. SEE SHEET 20/54 FOR FORWARD ABUTMENT PLAN.
5. SEE SHEETS 26/54 - 28/54 FOR PIER PLANS.
6. FOR ADDITIONAL DIAPHRAGM GUIDE DETAILS, SEE ODOT STANDARD CONSTRUCTION DRAWING SICD-2-14.
7. FOR ADDITIONAL SEISMIC PEDESTAL DETAILS, SEE ODOT STANDARD CONSTRUCTION DRAWING A-1-69.

<p><b>WOOLPERT</b> DESIGN ENGINEERING ARCHITECTURE</p>	<p>DESIGN AGENCY: EASTON OVAL SUITE 400 COLUMBUS, OH 43219 T 614-476-8000 F 614-476-8225</p>
<p>DESIGNED BY: PES CHECKED BY: TML</p>	<p>DATE: 02/2017 REVIEWED BY: RKM STRUCTURE FILE NUMBER: 3005887</p>
<p><b>MISC. SUBSTRUCTURE DETAILS</b> BRIDGE NO. GUE-513-0871 SR-513 OVER IR-70</p>	
<p><b>GUE-513-8.65</b></p>	<p><b>PID No. 93289</b></p>
<p>25 / 54</p>	
<p>71 100</p>	

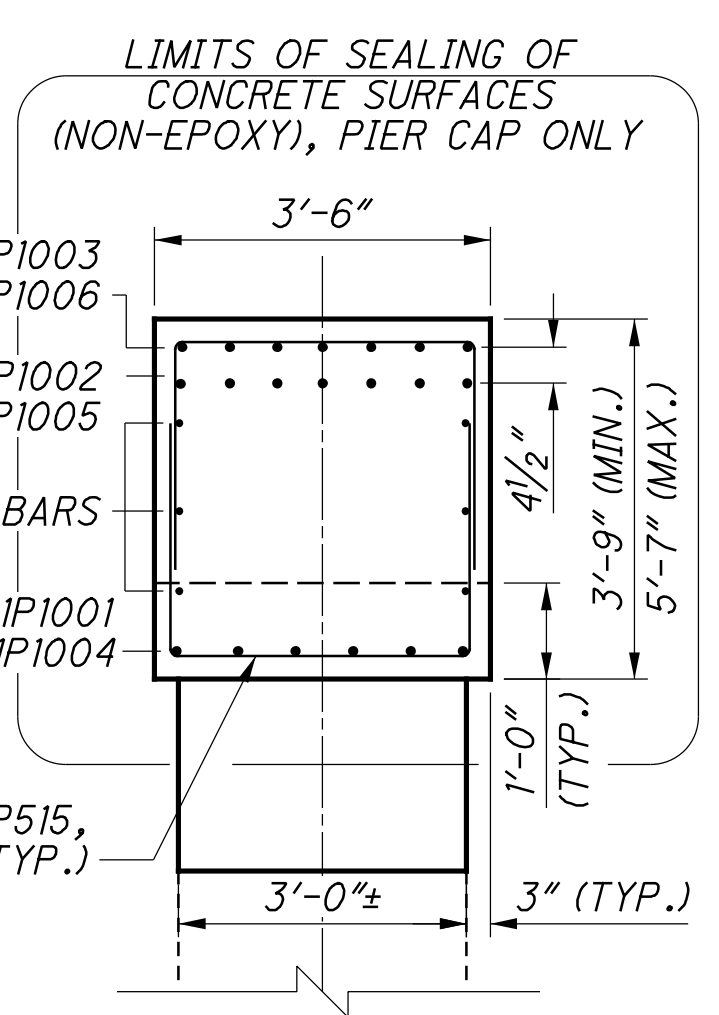
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**PLAN - PIER 1**



**ELEVATION - PIER 1**  
 (LOOKING UPSTATION)



**SECTION A**

**LEGEND:**

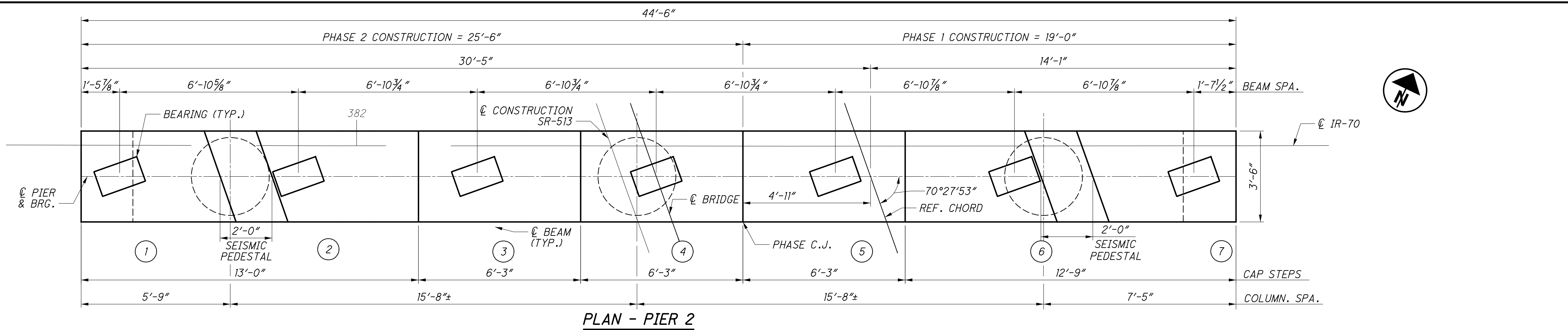
- ⊙ DENOTES PROPOSED BEAM NUMBER
- MECHANICAL CONNECTOR

**NOTES:**

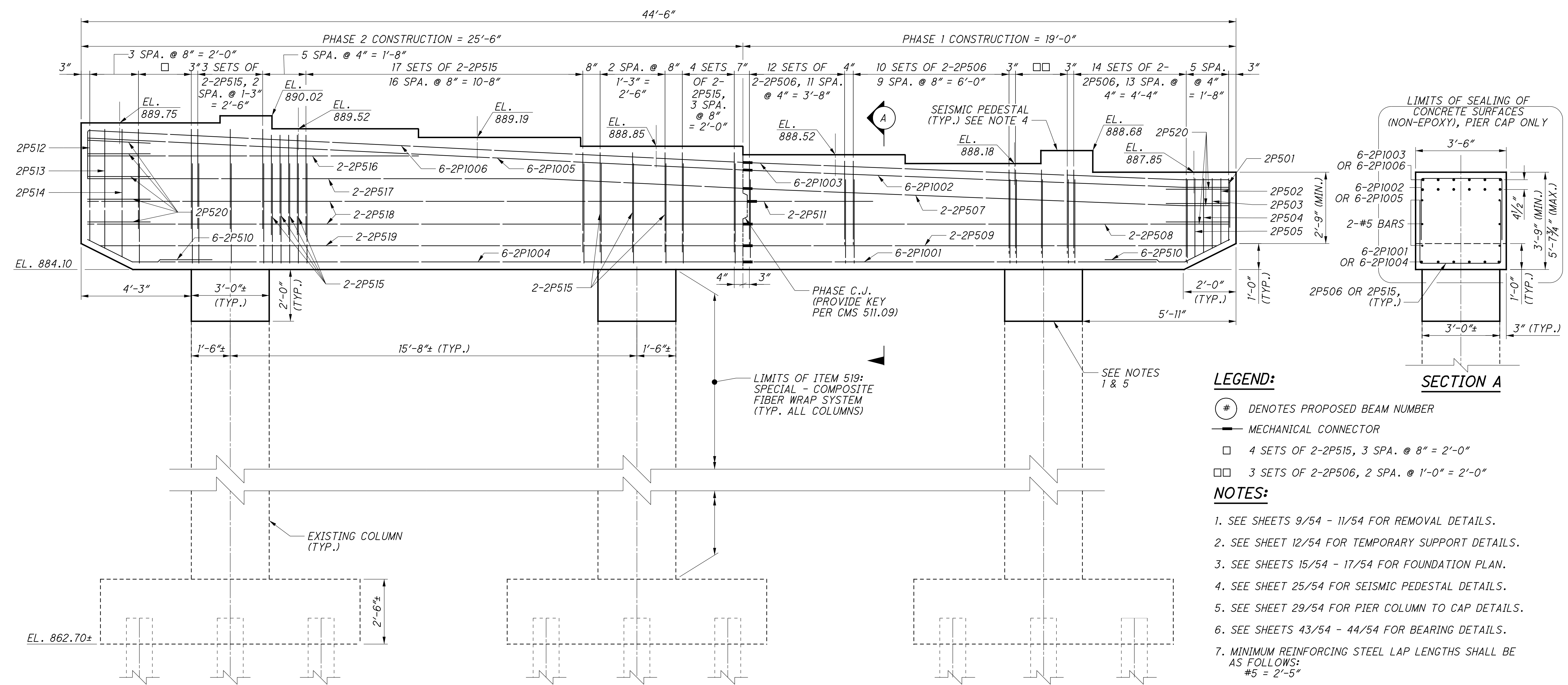
1. SEE SHEETS 9/54 - 11/54 FOR REMOVAL DETAILS.
2. SEE SHEET 12/54 FOR TEMPORARY SUPPORT DETAILS.
3. SEE SHEETS 15/54 - 17/54 FOR FOUNDATION PLAN.
4. SEE SHEET 29/54 FOR PIER COLUMN TO CAP DETAILS.
5. SEE SHEETS 43/54 - 44/54 FOR BEARING DETAILS.
6. MINIMUM REINFORCING STEEL LAP LENGTHS SHALL BE AS FOLLOWS:  
 #5 = 2'-5"
7. USE OF THREADED BARS IS ANTICIPATED. MECHANICAL CONNECTORS MUST PROVIDE ADEQUATE ROOM FOR PLACEMENT.
8. NUMBER AND SPACING OF LONGITUDINAL REINFORCING STEEL AS SHOWN, NOT TO EXCEED 12" SPACING.



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**PLAN - PIER 2**

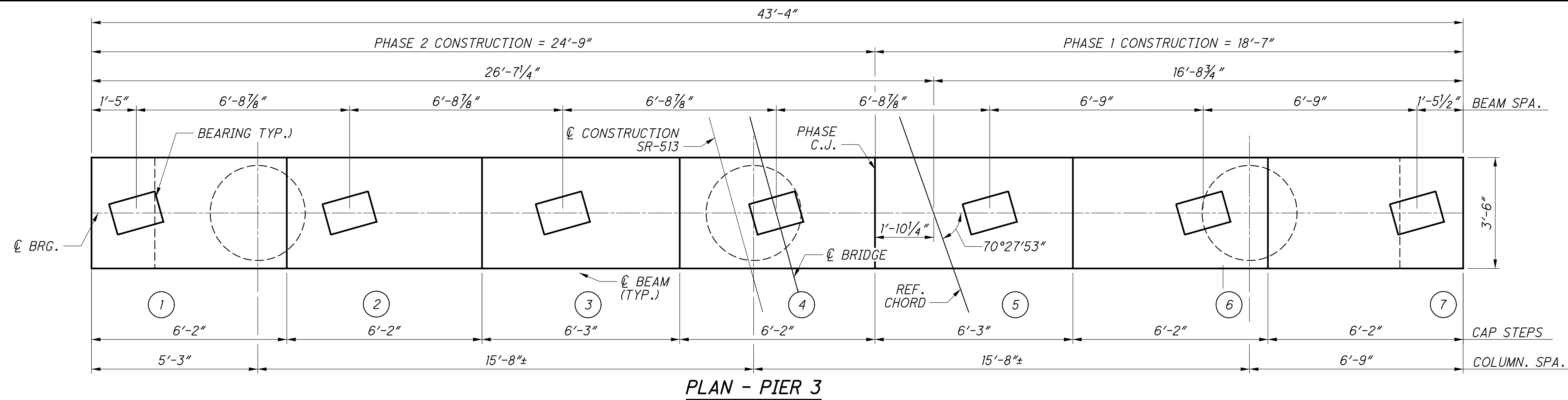


**ELEVATION - PIER 2**  
(LOOKING UPSTATION)

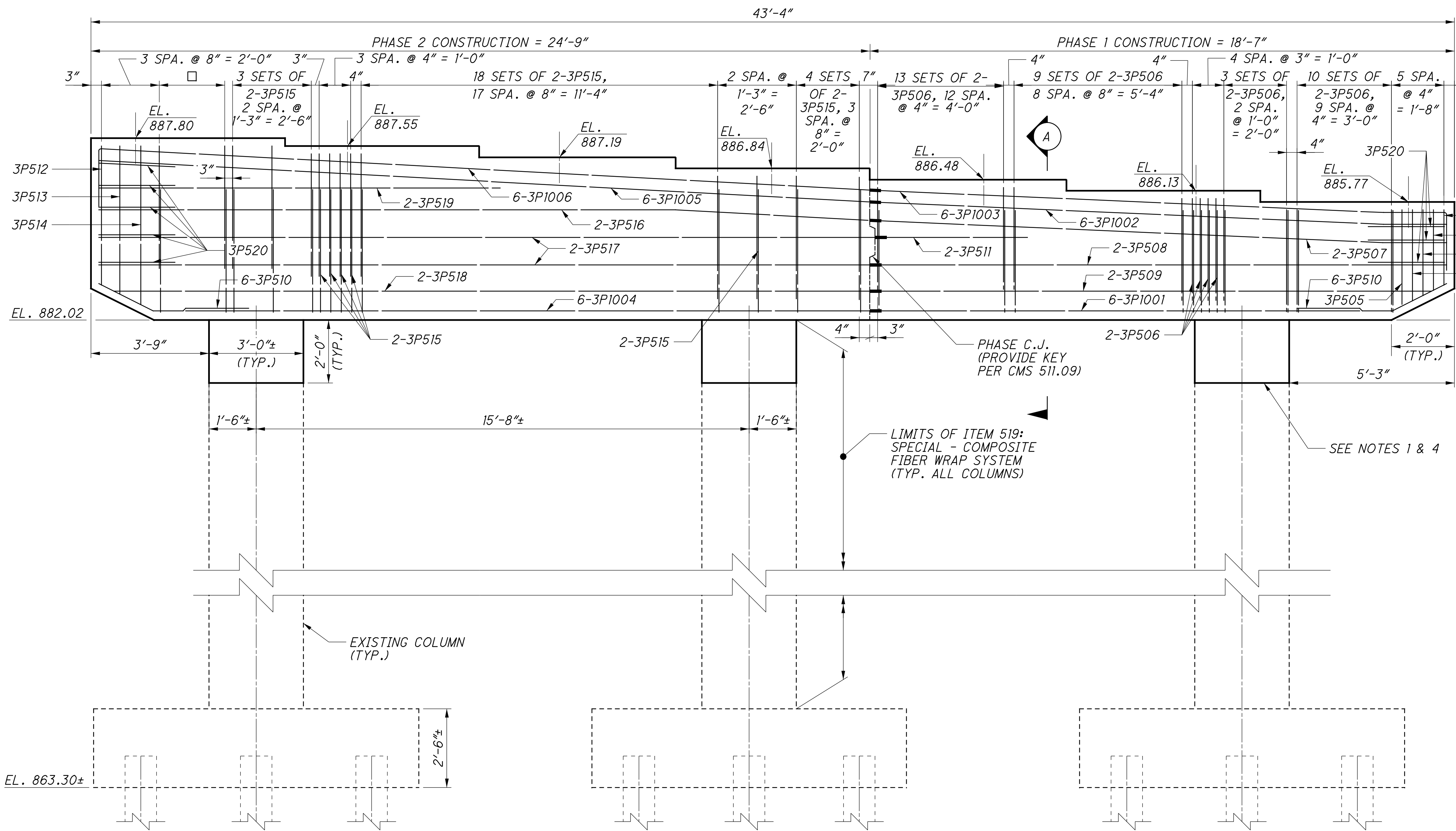
- LEGEND:**
- ⊕ DENOTES PROPOSED BEAM NUMBER
  - MECHANICAL CONNECTOR
  - 4 SETS OF 2-2P515, 3 SPA. @ 8" = 2'-0"
  - 3 SETS OF 2-2P506, 2 SPA. @ 1'-0" = 2'-0"
- NOTES:**
1. SEE SHEETS 9/54 - 11/54 FOR REMOVAL DETAILS.
  2. SEE SHEET 12/54 FOR TEMPORARY SUPPORT DETAILS.
  3. SEE SHEETS 15/54 - 17/54 FOR FOUNDATION PLAN.
  4. SEE SHEET 25/54 FOR SEISMIC PEDESTAL DETAILS.
  5. SEE SHEET 29/54 FOR PIER COLUMN TO CAP DETAILS.
  6. SEE SHEETS 43/54 - 44/54 FOR BEARING DETAILS.
  7. MINIMUM REINFORCING STEEL LAP LENGTHS SHALL BE AS FOLLOWS:  
#5 = 2'-5"
  8. USE OF THREADED BARS IS ANTICIPATED. MECHANICAL CONNECTORS MUST PROVIDE ADEQUATE ROOM FOR PLACEMENT.
  9. NUMBER AND SPACING OF LONGITUDINAL REINFORCING STEEL AS SHOWN, NOT TO EXCEED 12" SPACING.

DESIGNED BY PES	CHECKED BY TML	DRAWN BY PES	REVISED BY REVISED	REVIEWED BY RKM	DATE 02/2017
STRUCTURE FILE NUMBER 3005887			DESIGN AGENCY WOLPERT CORPORATION		
<b>PIER 2 DETAILS</b> BRIDGE NO. GUE-513-0871 SR-513 OVER IR-70					
<b>GUE-513-8.65</b> PID No. 93289					
27/54					
<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="font-size: 12px;">73</span>  <span style="font-size: 10px;">100</span> </div>					

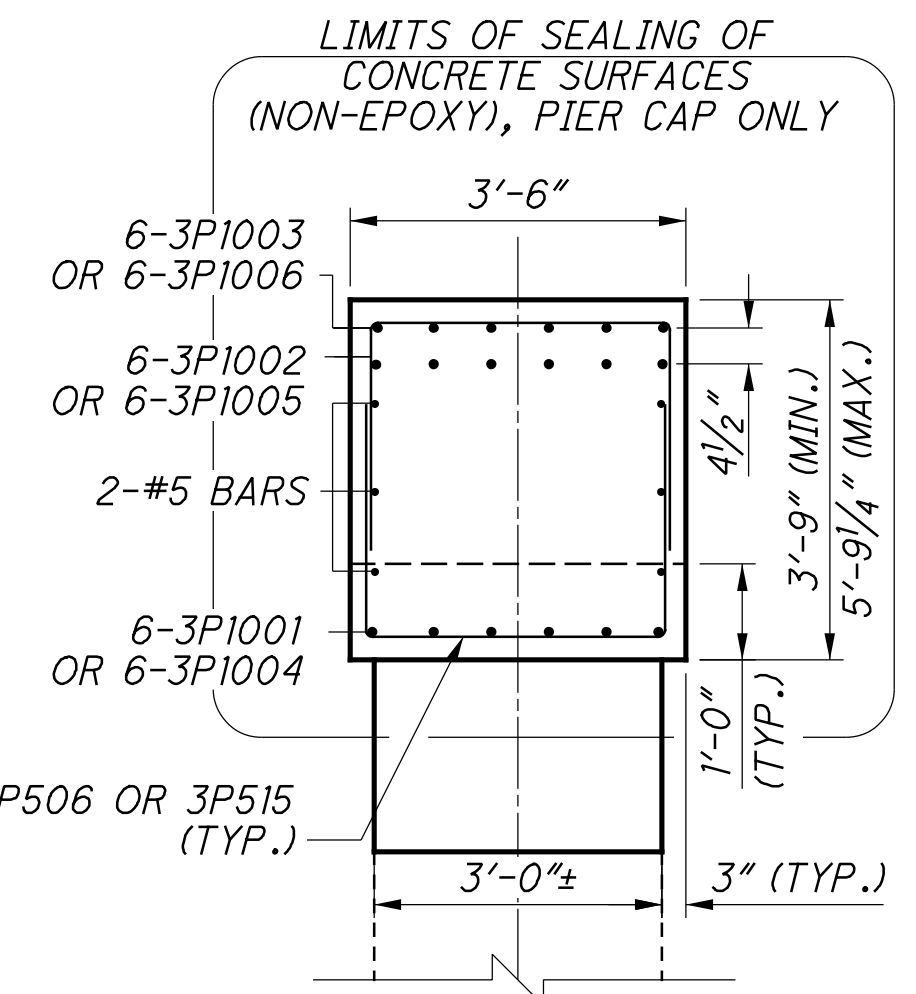
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**PLAN - PIER 3**



**ELEVATION - PIER 3**  
(LOOKING UPSTATION)



LIMITS OF SEALING OF CONCRETE SURFACES (NON-EPOXY), PIER CAP ONLY

**LEGEND:**

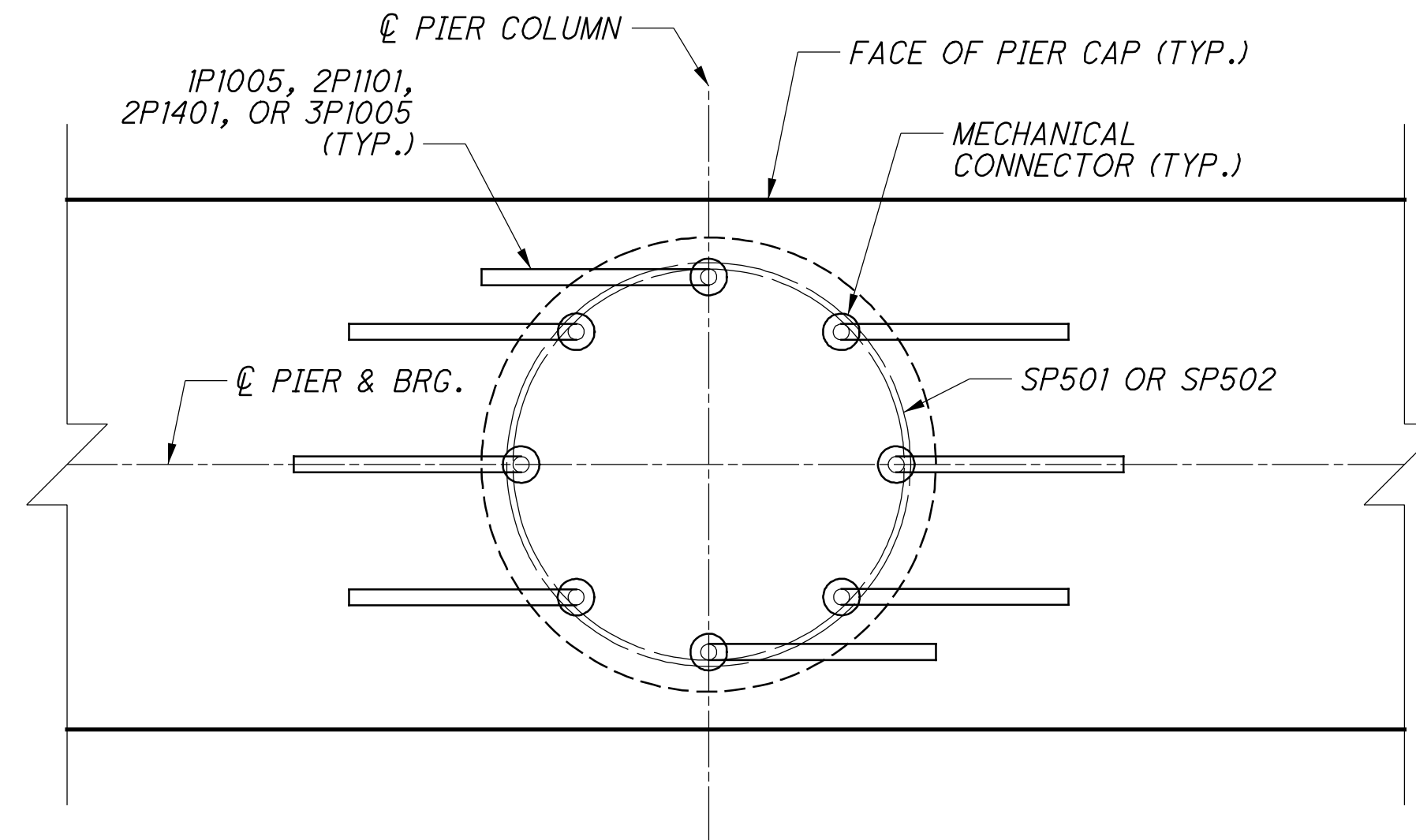
- ⊙ # DENOTES PROPOSED BEAM NUMBER
- MECHANICAL CONNECTOR
- 4 SETS OF 2-3P515, 3 SPA. @ 8" = 2'-0"

**NOTES:**

1. SEE SHEETS 9/54 - 11/54 FOR REMOVAL DETAILS.
2. SEE SHEET 12/54 FOR TEMPORARY SHORING DETAILS.
3. SEE SHEETS 15/54 - 17/54 FOR FOUNDATION PLAN.
4. SEE SHEET 29/54 FOR PIER COLUMN TO CAP DETAILS.
5. SEE SHEETS 43/54 - 44/54 FOR BEARING DETAILS.
6. MINIMUM REINFORCING STEEL LAP LENGTHS SHALL BE AS FOLLOWS:  
#5 = 2'-5"  
#6 = 2'-11"
7. USE OF THREADED BARS IS ANTICIPATED. MECHANICAL CONNECTORS MUST PROVIDE ADEQUATE ROOM FOR PLACEMENT.
8. NUMBER AND SPACING OF LONGITUDINAL REINFORCING STEEL AS SHOWN, NOT TO EXCEED 12" SPACING.

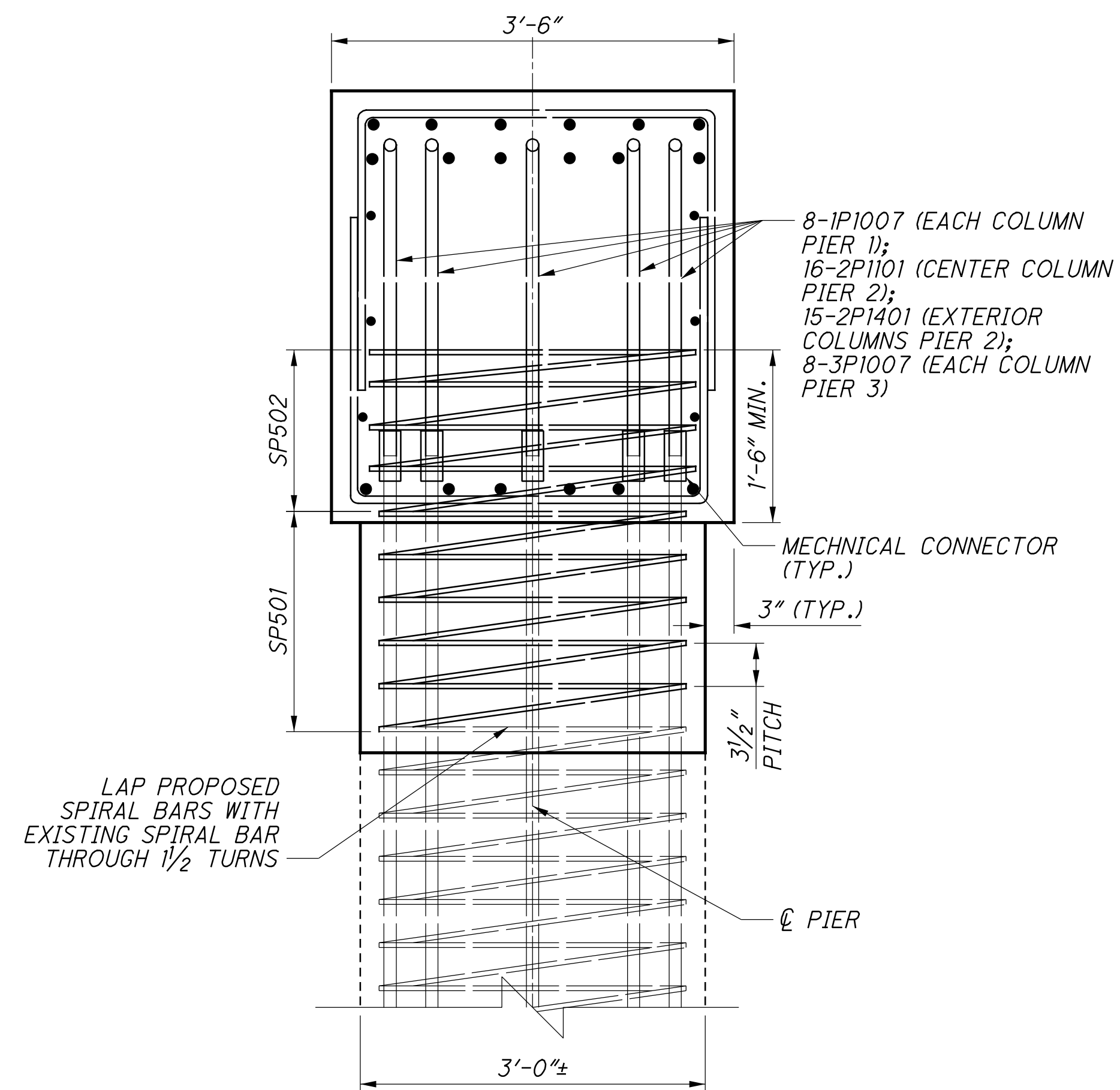
<p><b>WOOLPERT</b> DESIGN ENGINEERING ARCHITECTURE</p>	DESIGN AGENCY EASTON OVAL SUITE 400 COLUMBUS, OH 43219 T 614-476-8000 F 614-476-8225
DRAWN PES REVISED	DATE 02/2017 STRUCTURE FILE NUMBER 3005887
DESIGNED PES CHECKED TML	REVIEWED RKM FILE NUMBER 3005887
<b>PIER 3 DETAILS</b> BRIDGE NO. GUE-513-0871 SR-513 OVER IR-70	
GUE-513-8.65 PID No. 93289	
28 / 54	
74 100	

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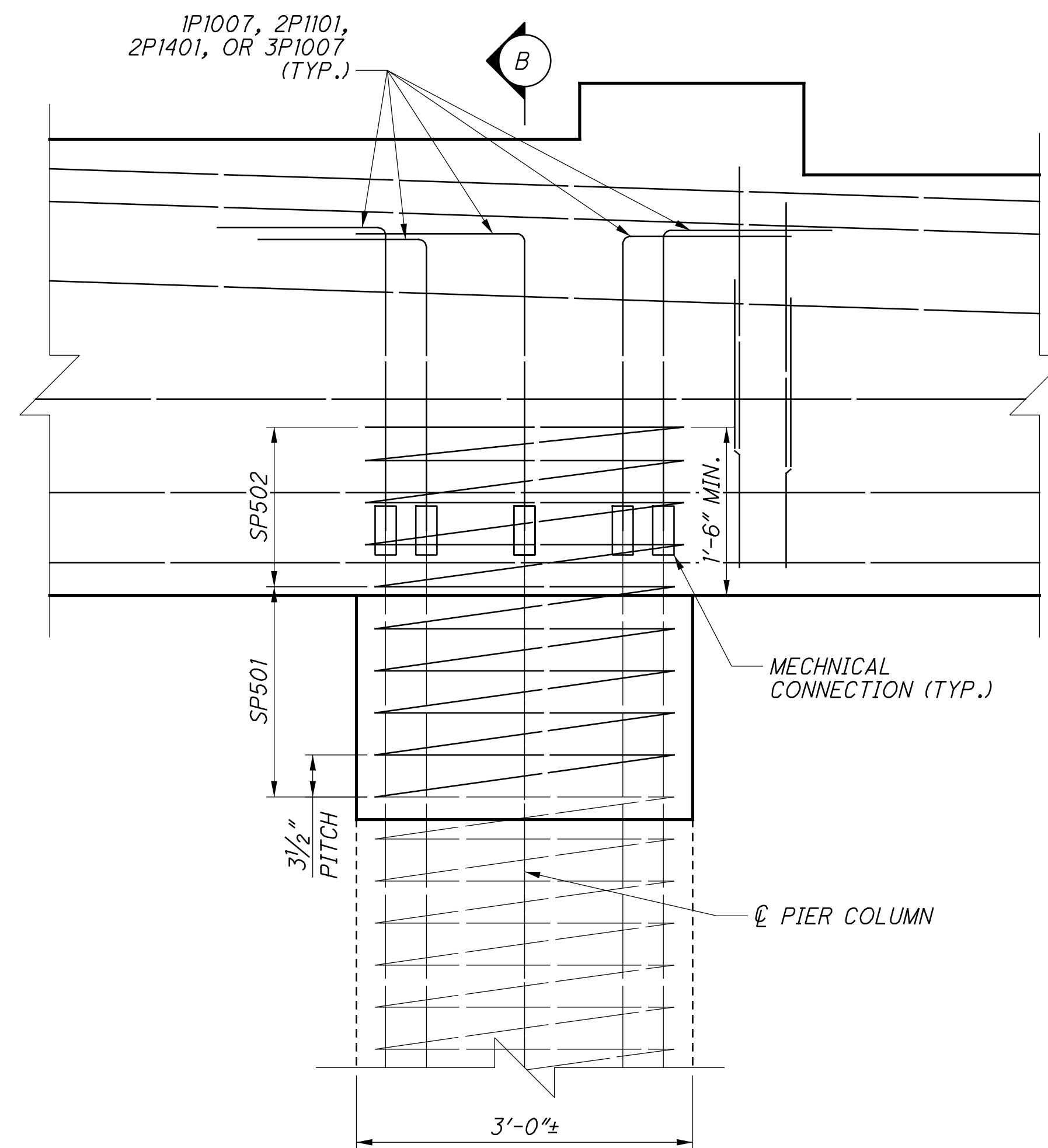
**COLUMN PLAN**

(PIER CAP REINFORCING NOT SHOWN FOR CLARITY)



**SECTION B**

(PIER CAP REINFORCING NOT LABELED FOR CLARITY)



**COLUMN ELEVATION**

(PIER CAP REINFORCING NOT LABELED FOR CLARITY)

**LEGEND:**

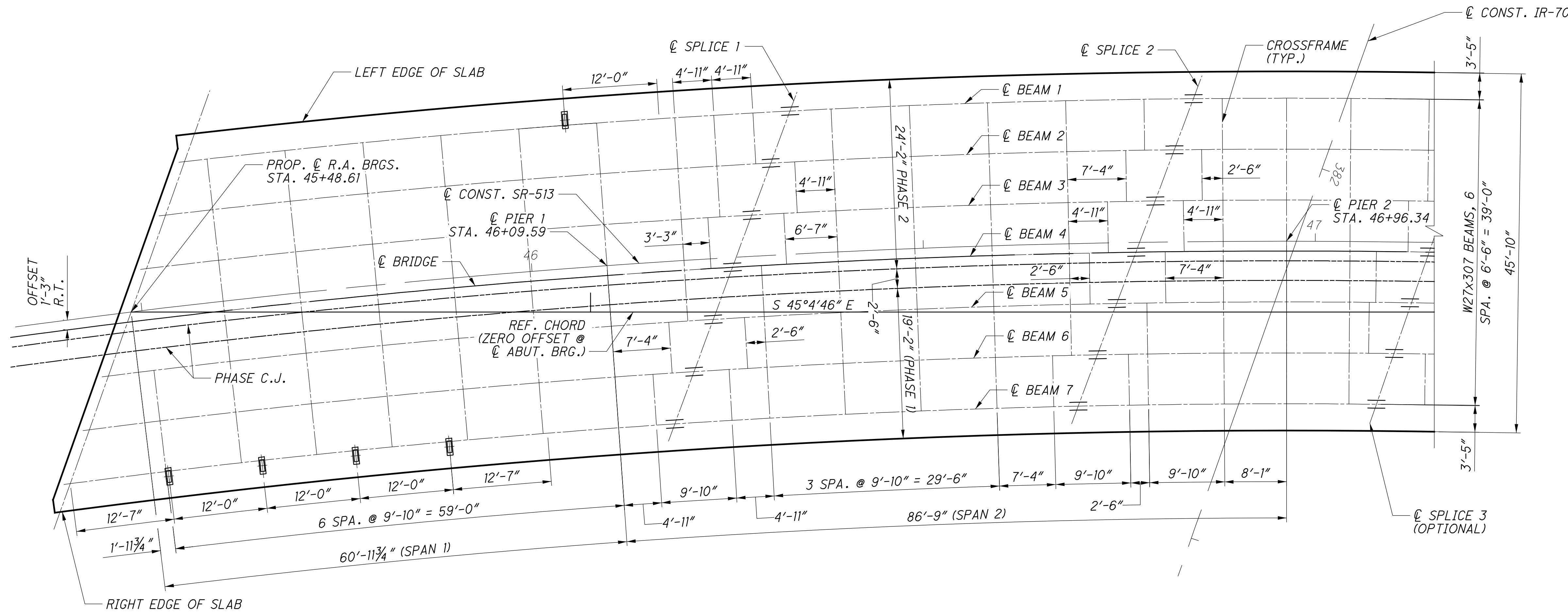
MECHANICAL CONNECTOR

**NOTES:**

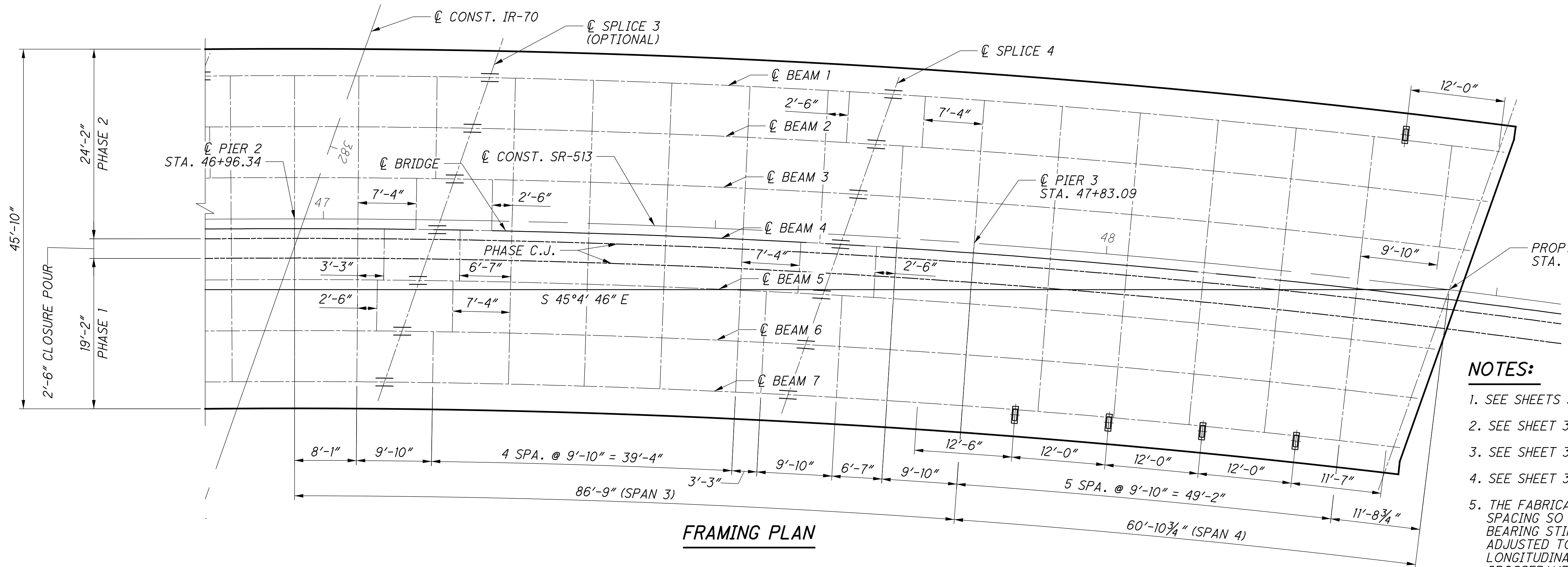
- SEE SHEETS 26/54 - 28/54 FOR PIERS 1-3 PLAN AND ELEVATION, AND ADDITIONAL REINFORCING DETAILS.
- MECHANICAL CONNECTORS SHALL BE THREADED TYPE FOR BAR SIZES NO. 11 AND NO. 14. CONTRACTOR MAY HAVE THE OPTION OF USING POSITION COUPLERS FOR BEND BARS.



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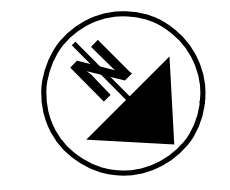


RADII	
BEAM	RADIUS
1	1224.48'
2	1217.98'
3	1211.48'
4	1204.98'
5	1198.48'
6	1191.98'
7	1185.48'



**FRAMING PLAN**

- NOTES:**
1. SEE SHEETS 31/54 - 32/54 FOR BEAM DETAILS.
  2. SEE SHEET 33/54 FOR SPLICE DETAILS.
  3. SEE SHEET 34/54 FOR CROSSFRAME DETAILS.
  4. SEE SHEET 36/54 FOR TRANSVERSE SECTION.
  5. THE FABRICATOR SHALL CHECK LONGITUDINAL CROSSFRAME SPACING SO THAT INTERFERENCE WITH BOLTED SPLICES AND BEARING STIFFENERS CAN BE AVOIDED. SPACING SHALL BE ADJUSTED TO PROVIDE AT LEAST SIX (6) INCHES OF LONGITUDINAL CLEARANCE. THE FABRICATOR MAY ADJUST CROSSFRAME SPACES UP TO A MAXIMUM OF 5'-0" CENTER TO CENTER.



DESIGN AGENCY: EASTON OVAL SUITE 600 COLUMBUS, OH 43219 T 614-476-8000 F 614-476-8225

**WOOLPERT**  
DESIGN/ENGINEERING/CONSTRUCTION

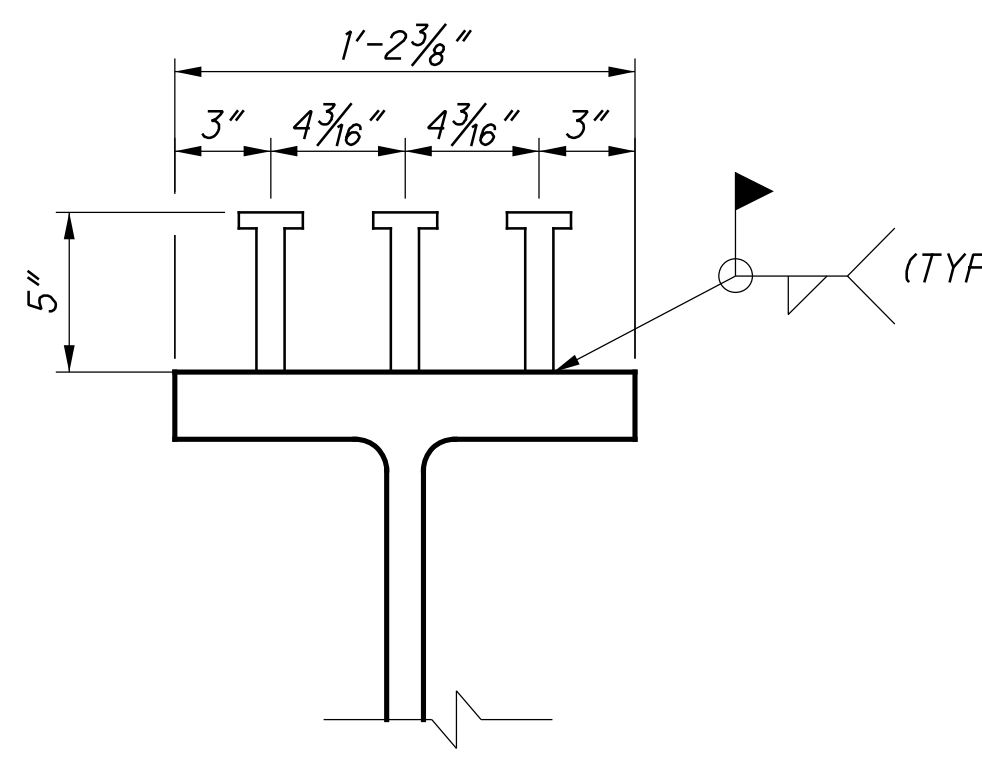
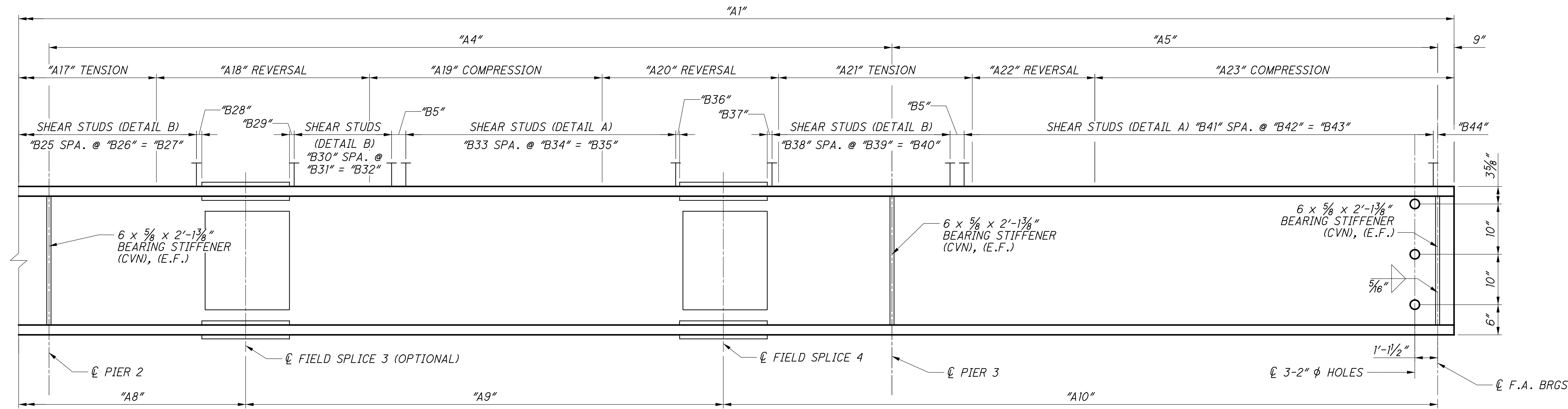
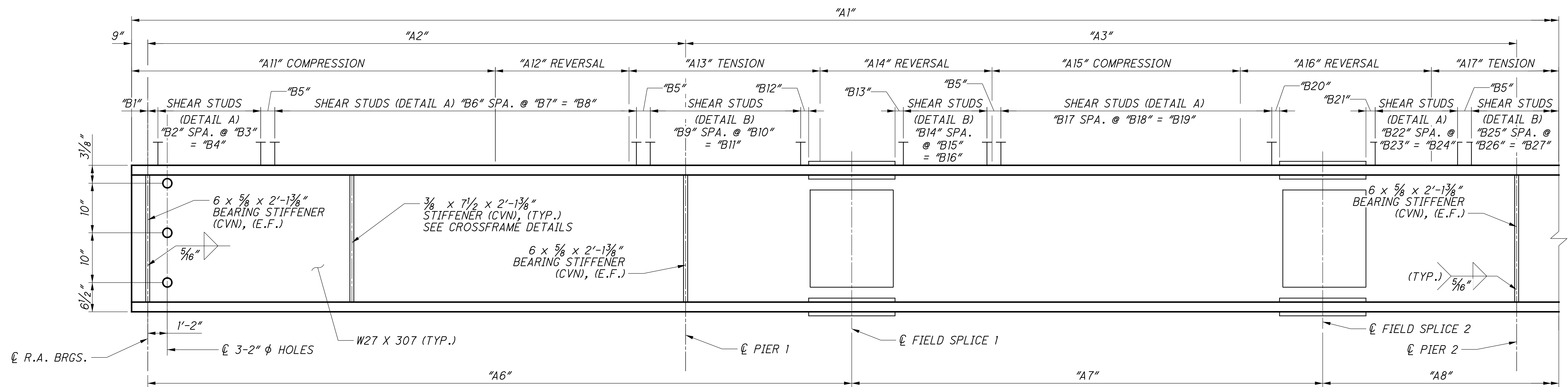
DATE: 02/2017  
REVIEWED: RKM  
DRAWN: JMM  
DESIGNED: JMM  
CHECKED: TML  
STRUCTURE FILE NUMBER: 3005887

**FRAMING PLAN**  
BRIDGE NO. GUE-513-0871  
SR-513 OVER IR-70

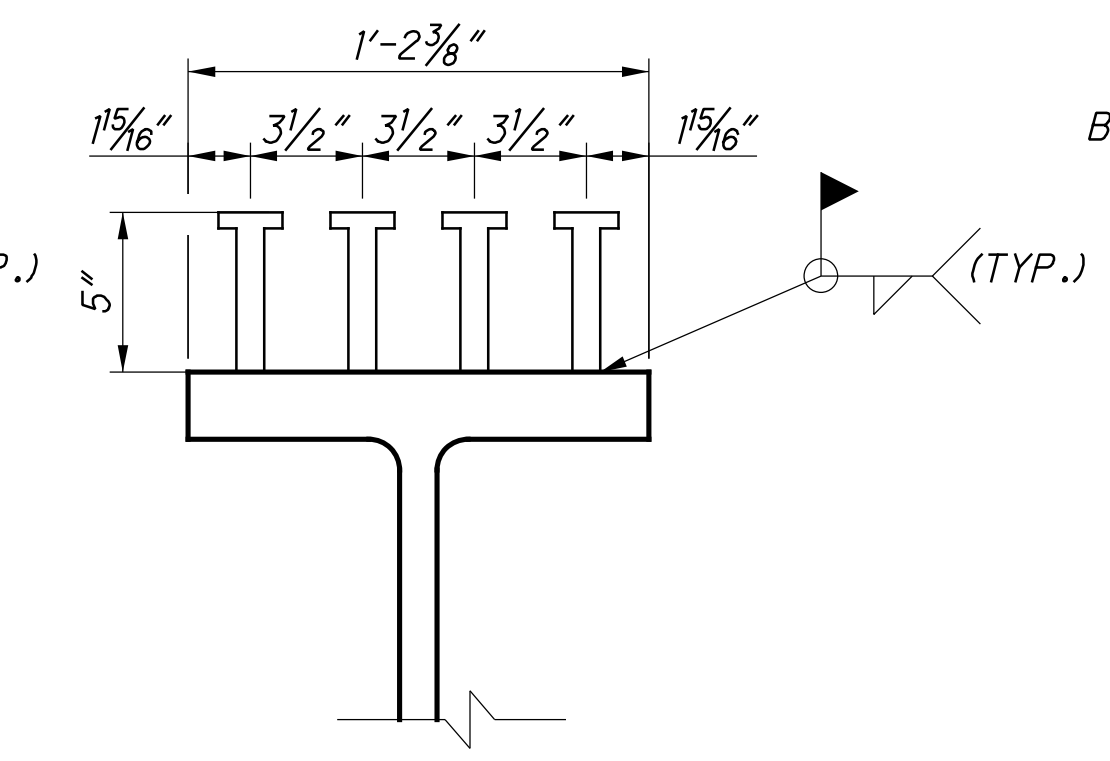
GUE-513-8.65  
PID No. 93289

30/54  
76/100

G:\DE\clients\ODOT\075542\_GUE\_513\_0865\93289\_GUE\_513-08.65\Design\Structures\GUE513\_0865C\_Sheets\513\_0865C\_SS002.dgn 6/8/2017 12:05:06 hollin

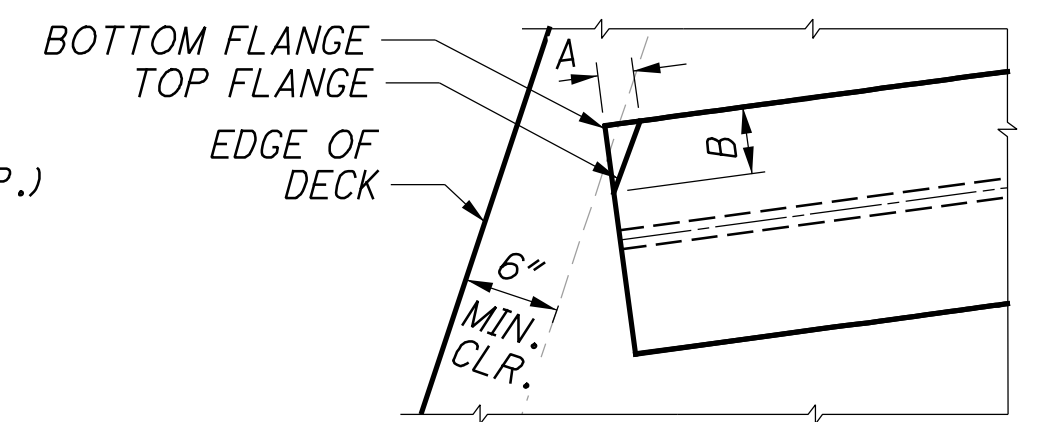


SHEAR STUD DETAIL A



SHEAR STUD DETAIL B

BEAM ELEVATION



BEAM CLIP DIMENSIONS		
DIMENSION	REAR	FORWARD
A	2"	1"
B	4"	4 1/2"

BEAM CLIP DETAIL

(TYP OF ALL BEAMS @ REAR; TYP OF BEAMS 2-6 @ FORWARD)

NOTES:

- SEE SHEET 30/54 FRAMING PLAN.
- SEE SHEET 33/54 FOR SPLICE DETAILS.
- SEE SHEET 34/54 FOR CROSS FRAME DETAILS.
- SEE SHEET 36/54 FOR TRANSVERSE SECTION.
- ALL STEEL SHALL BE ASTM A709 GRADE 50, AND SHALL HAVE A THREE COAT PAINT SYSTEM APPLIED PER CMS 514. WHERE A SHAPE OR PLATE IS DESIGNATED (CVN) FURNISH MATERIAL THAT MEETS THE MINIMUM NOTCH TOUGHNESS REQUIREMENTS AS SPECIFIED IN CMS 711.01.
- WELD ATTACHMENT OF SUPPORTS FOR CONCRETE DECK FINISHING MACHINE TO AREAS OF THE FASCIA STRINGER 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 AT LEAST 5#16" THICK.

DESIGN AGENCY: EASTON OVAL SUITE 401 COLUMBUS, OH 43219 T 614-476-8000 F 614-476-8225

WOLPERT DESIGN ENGINEERING & ARCHITECTURE

DATE: 02/2017

REVIEWED: RKM STRUCTURE FILE NUMBER: 3005887

DRAWN: JMM REVISED:

DESIGNED: TML CHECKED: MAA

BEAM DETAILS

BRIDGE NO. GUE-513-0871

SR-513 OVER IR-70

GUE-513-8.65

PID No. 93289

31/54

77

100

BEAM DIMENSIONS (ALONG CENTERLINE OF BEAM)																
BEAM	"A1"	"A2"	"A3"	"A4"	"A5"	"A6"	"A7"	"A8"	"A9"	"A10"	"A11"	"A12"	"A13"	"A14"	"A15"	"A16"
1	296' -3 1/2"	60' -9 3/8"	86' -6 9/16"	86' -7 7/16"	60' -10 1/16"	77' -6"	51' -6"	36' -9 1/8"	51' -6"	77' -6 3/8"	36' -11 15/16"	14' -2 5/8"	20' -4 1/8"	17' -10 11/16"	26' -9 7/8"	20' -4 1/16"
2	296' -5 15/16"	60' -10 3/16"	86' -7 7/16"	86' -8"	60' -10 5/16"	77' -6"	51' -6"	36' -11 5/8"	51' -6"	77' -6 5/16"	39' -11 11/16"	10' -1 3/8"	24' -3 7/16"	14' -1 3/4"	30' -4 1/8"	18' -2 1/2"
3	296' -8 7/16"	60' -11 1/16"	86' -8 5/16"	86' -8 9/16"	60' -10 9/16"	77' -6"	51' -6"	37' -2 3/16"	51' -6"	77' -6 1/4"	40' -11 13/16"	10' -1"	24' -1 7/16"	14' -0 1/2"	30' -2 1/16"	18' -1 1/16"
4	296' -11"	60' -11 7/8"	86' -9 3/16"	86' -9 1/8"	60' -10 13/16"	77' -6"	51' -6"	37' -4 3/4"	51' -6"	77' -6 1/4"	40' -0"	10' -0 3/16"	24' -0 3/16"	13' -11 11/16"	29' -11 15/16"	17' -11 7/8"
5	297' -1 9/16"	61' -0 3/4"	86' -10 1/16"	86' -9 11/16"	60' -11 1/16"	77' -6"	51' -6"	37' -7 5/16"	51' -6"	77' -6 1/4"	39' -0 5/8"	11' -11"	21' -10 15/16"	15' -10 15/16"	29' -9 15/16"	17' -11 1/16"
6	297' -4 3/16"	61' -1 11/16"	86' -11"	86' -10 1/4"	60' -11 5/16"	77' -6"	51' -6"	37' -9 7/8"	51' -6"	77' -6 5/16"	40' -1 3/4"	11' -10 3/16"	21' -9 5/16"	15' -10 1/8"	27' -8 3/16"	19' -9 1/2"
7	297' -6 7/8"	61' -2 9/16"	86' -11 7/8"	86' -10 13/16"	60' -11 9/16"	77' -6"	51' -6"	38' -0 7/16"	51' -6"	77' -6 7/16"	39' -3 11/16"	13' -9"	21' -7 3/4"	15' -8 15/16"	25' -7 3/16"	21' -7 9/16"

BEAM DIMENSIONS (ALONG CENTERLINE OF BEAM)							
BEAM	"A17"	"A18"	"A19"	"A20"	"A21"	"A22"	"A23"
1	20' -3 3/4"	22' -3 11/16"	24' -5 7/16"	18' -3 3/8"	20' -3 3/4"	14' -2 5/8"	39' -9 5/8"
2	20' -2 3/16"	20' -2 5/8"	28' -3 5/8"	16' -2 1/16"	22' -3"	10' -1 1/16"	42' -2 9/16"
3	22' -1 7/16"	18' -1 1/8"	28' -1 7/8"	16' -1 3/16"	22' -1 5/16"	12' -0 13/16"	40' -6 3/4"
4	22' -0 1/8"	17' -11 13/16"	30' -0 1/16"	14' -0 3/8"	23' -11 5/8"	12' -0"	40' -11 1/8"
5	19' -10 11/16"	19' -10 3/4"	29' -10"	13' -11 1/16"	23' -10 5/16"	11' -11 1/4"	41' -3"
6	21' -9 3/8"	17' -9 5/16"	29' -8 5/16"	15' -9 13/16"	21' -8 7/8"	11' -10 13/16"	41' -6 5/8"
7	19' -7 15/16"	21' -7 3/4"	25' -6 3/4"	17' -8 1/2"	21' -7 13/16"	13' -9 1/4"	39' -10 3/4"

SHEAR STUD SPACING (ALONG CENTERLINE OF BEAM)																
BEAM	"B1"	"B2"	"B3"	"B4"	"B5"	"B6"	"B7"	"B8"	"B9"	"B10"	"B11"	"B12"	"B13"	"B14"	"B15"	"B16"
1	9"	24	5 1/2"	11' -0"	6"	86	6"	43' -0"	39	6"	19' -6"	4 1/2"	4 1/2"	7	6"	3' -6"
2	1' -2 7/16"	30	5 1/2"	13' -8 1/8"	5 15/16"	83	5 15/16"	41' -3 3/8"	36	5 15/16"	17' -10 13/16"	6 13/16"	7 13/16"	7	5 15/16"	3' -5 3/4"
3	9 1/2"	38	5 7/16"	17' -2 11/16"	5 15/16"	69	5 15/16"	34' -1 5/8"	45	5 15/16"	22' -3 1/8"	2 11/16"	5 9/16"	7	5 15/16"	3' -5 9/16"
4	10 5/16"	45	5 7/16"	20' -3 9/16"	5 7/8"	68	5 7/8"	33' -5 1/2"	40	5 7/8"	19' -8 3/16"	4 1/8"	3 3/4"	7	5 7/8"	3' -5 5/16"
5	11 9/16"	52	5 3/8"	23' -4 1/16"	5 7/8"	68	5 7/8"	33' -3 3/8"	34	5 7/8"	16' -7 11/16"	5 1/8"	2 5/16"	7	5 7/8"	3' -5 1/16"
6	1' -1 9/16"	59	5 3/8"	26' -3 13/16"	5 7/8"	57	5 7/8"	27' -8 15/16"	39	5 7/8"	18' -11 13/16"	5 11/16"	7 3/16"	7	5 7/8"	3' -4 7/8"
7	9 1/4"	67	5 5/16"	29' -9 15/16"	5 13/16"	57	5 13/16"	27' -7 1/8"	33	5 13/16"	15' -11 11/16"	5 7/8"	6 11/16"	7	5 13/16"	3' -4 5/8"

SHEAR STUD SPACING (ALONG CENTERLINE OF BEAM)																
BEAM	"B17"	"B18"	"B19"	"B20"	"B21"	"B22"	"B23"	"B24"	"B25"	"B26"	"B27"	"B28"	"B29"	"B30"	"B31"	"B32"
1	83	6"	41' -6"	4 1/2"	6"	16	6"	8' -0"	44	6"	22' -0"	6 1/8"	4 1/2"	7	6"	3' -6"
2	84	5 15/16"	41' -3 3/8"	4 1/8"	6 1/16"	18	5 15/16"	8' -11 3/8"	43	5 15/16"	21' -4 1/2"	4 5/8"	5 5/8"	7	5 15/16"	3' -5 3/4"
3	85	5 15/16"	41' -6 3/4"	3 5/16"	6 7/16"	23	5 15/16"	11' -4 1/2"	39	5 15/16"	19' -3 1/2"	2 3/4"	7"	7	5 15/16"	3' -5 9/16"
4	86	5 7/8"	41' -9 13/16"	2 3/16"	7 3/16"	13	5 7/8"	6' -4 3/4"	49	5 7/8"	24' -1 3/8"	6 9/16"	2 7/8"	7	5 7/8"	3' -5 5/16"
5	86	5 7/8"	41' -7 1/8"	6 1/2"	2 7/16"	20	5 7/8"	9' -9 7/16"	44	5 7/8"	21' -6 7/16"	4 3/16"	4 7/8"	7	5 7/8"	3' -5 1/8"
6	86	5 7/8"	41' -4 7/16"	4 5/8"	3 15/16"	17	5 7/8"	8' -3 5/16"	47	5 7/8"	22' -10 1/2"	7 1/4"	7 1/4"	7	5 7/8"	3' -4 7/8"
7	87	5 13/16"	41' -7 9/16"	2 5/16"	4 3/8"	22	5 13/16"	10' -9 1/4"	43	5 13/16"	20' -9 3/4"	4 3/16"	4 1/16"	7	5 13/16"	3' -4 5/8"

SHEAR STUD SPACING (ALONG CENTERLINE OF BEAM)												
BEAM	"B33"	"B34"	"B35"	"B36"	"B37"	"B38"	"B39"	"B40"	"B41"	"B42"	"B43"	"B44"
1	83	6"	41' -6"	4 1/2"	4 1/2"	41	6"	20' -6"	106	6"	53' -0"	1' -3 3/8"
2	84	5 15/16"	41' -3 3/8"	6 1/4"	2 3/8"	45	5 15/16"	22' -4 3/4"	103	5 15/16"	51' -2 3/4"	1' -4 1/4"
3	85	5 15/16"	41' -6 5/8"	1 13/16"	6 3/8"	48	5 15/16"	23' -8 15/16"	100	5 15/16"	49' -5 5/8"	1' -4 13/16"
4	86	5 7/8"	41' -9 7/8"	3 1/16"	4 13/16"	52	5 7/8"	25' -7 1/16"	98	5 7/8"	48' -2 5/8"	11 3/8"
5	86	5 7/8"	41' -7 3/16"	3 15/16"	3 9/16"	56	5 7/8"	27' -4 3/4"	94	5 7/8"	46' -0 1/16"	1' -5 1/2"
6	86	5 7/8"	41' -4 7/16"	4 9/16"	2 1/2"	60	5 7/8"	29' -2 1/2"	92	5 7/8"	44' -9 3/8"	11 11/16"
7	87	5 13/16"	41' -7 9/16"	4 15/16"	1 13/16"	64	5 13/16"	30' -11 3/4"	89	5 13/16"	43' -1"	11 9/16"

**NOTES:**

1. SEE SHEET 31/54 FOR BEAM DETAILS.

**BEAM DETAILS**

BRIDGE NO. GUE-513-0871  
SR-513 OVER IR-70

GUE - 513 - 8.62  
PID No. 93289

32 / 54

78  
100

DESIGNED: TML  
CHECKED: MAA

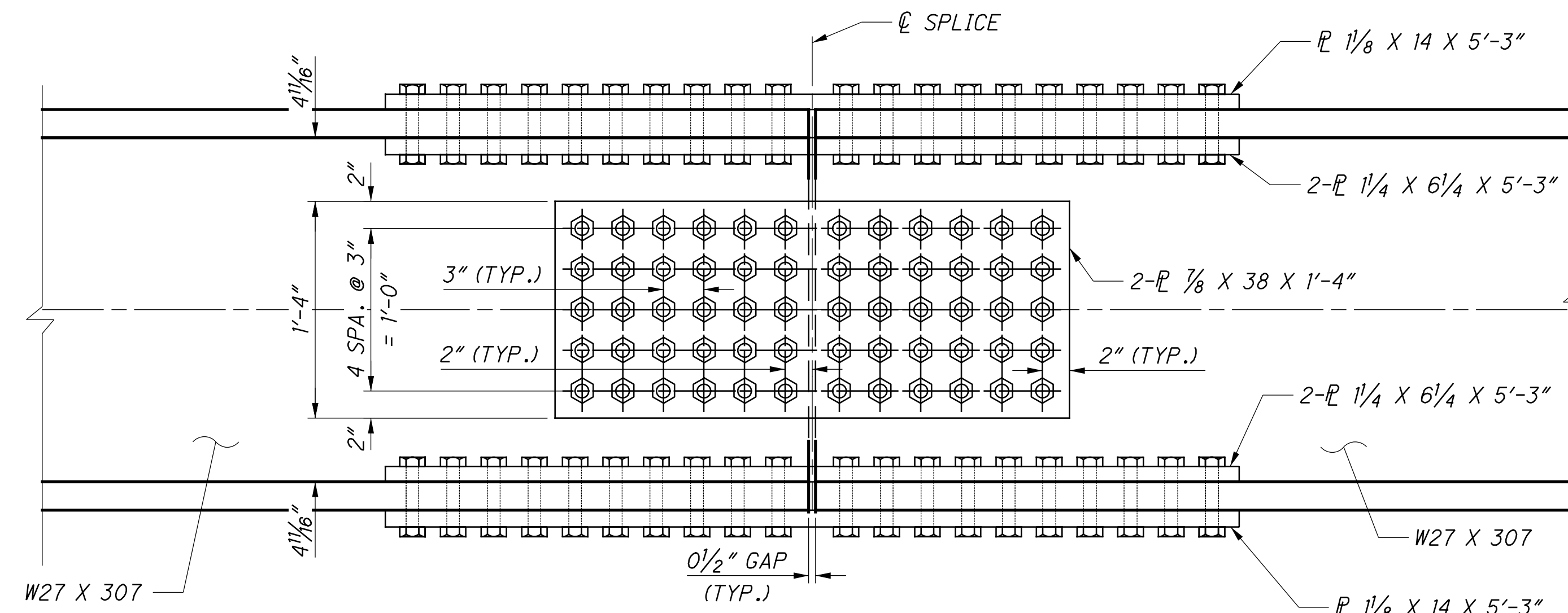
DRAWN: JMM  
REVISED:

REVIEWED: RKM  
STRUCTURE FILE NUMBER: 3005887

DATE: 02/2017

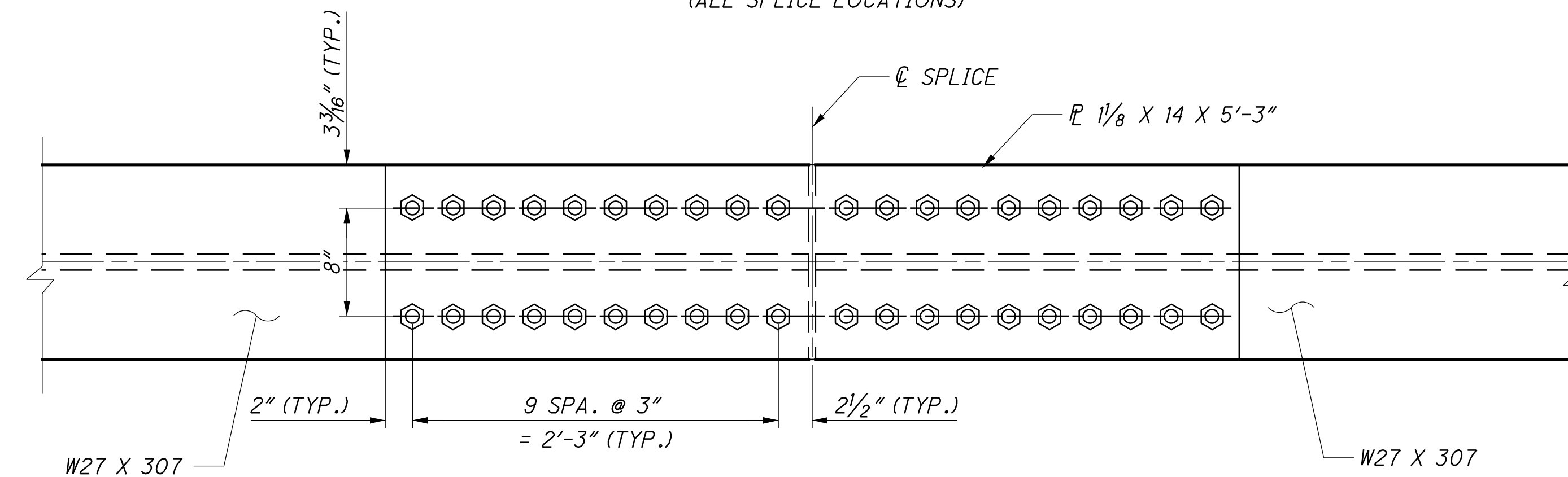
DESIGN AGENCY: WOOLPERT  
100 EASTON OVAL  
SUITE 401  
COLUMBUS, OH 43219  
TEL: 614-776-8000  
F: 614-776-8225





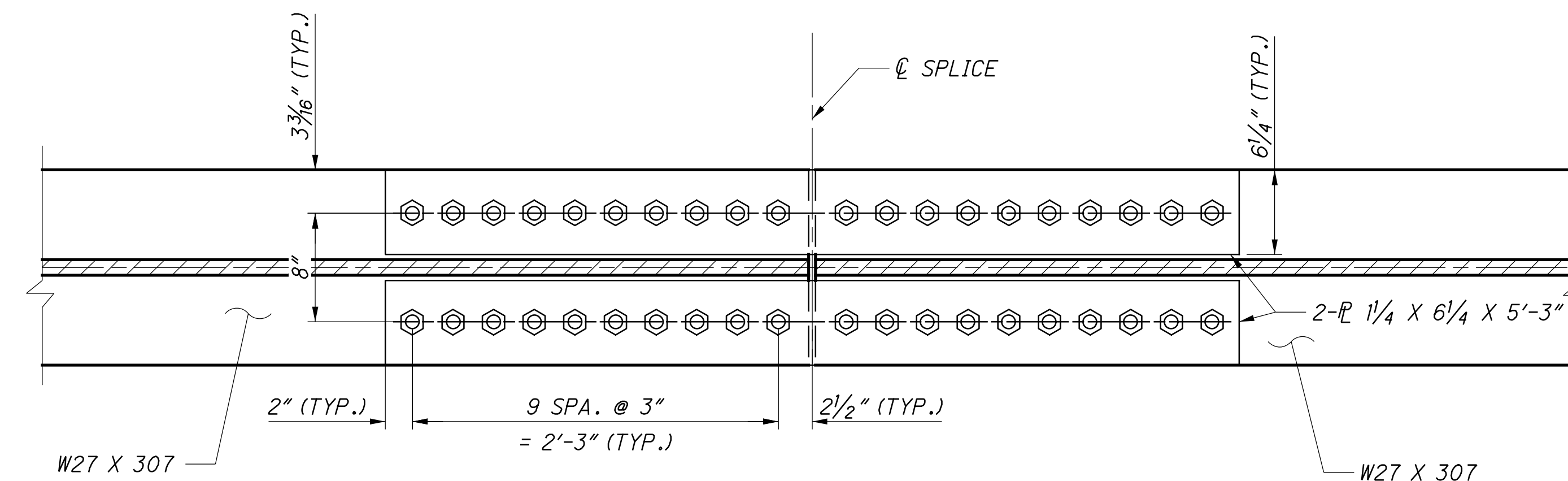
**FIELD SPLICE DETAIL - TYPE 1**

SYMMETRICAL ABOUT C SPLICE  
(ALL SPLICE LOCATIONS)



**OUTER FLANGE SPLICE DETAIL - TYPE 1**

SYMMETRICAL ABOUT C SPLICE & ABOUT C BEAM  
(ALL SPLICE LOCATIONS)



**INNER FLANGE SPLICE DETAIL - TYPE 1**

SYMMETRICAL ABOUT C SPLICE & ABOUT C BEAM  
(ALL SPLICE LOCATIONS)

**NOTES:**

1. ALL MATERIAL IN FIELD SPLICES SHALL BE "CVN". FURNISH MATERIAL THAT MEETS THE MINIMUM NOTCH TOUGHNESS REQUIREMENTS AS SPECIFIED IN 711.01. ALL PLATES SHALL BE ASTM A709 GRADE 50W UNLESS OTHERWISE NOTED.
2. HIGH STRENGTH BOLTS SHALL BE 1" DIAMETER A325 TYPE I UNLESS OTHERWISE NOTED.
3. SEE SHEET 3/54 FOR LIST OF ABBREVIATIONS.

DESIGNED		DRAWN		REVIEWED		DATE		DESIGN AGENCY	
JMM	JMM	RKM	JMM	RKM	RKM	02/2017	02/2017	WOLPER INC.	EASTON OVAL
CHECKED	CHECKED	STRUCTURE FILE NUMBER	STRUCTURE FILE NUMBER	STRUCTURE FILE NUMBER	STRUCTURE FILE NUMBER	3005887	3005887	WOLPER INC.	COLUMBUS, OH 43219
TML	TML	REVISED	REVISED	REVISED	REVISED			WOLPER INC.	TEL: 614-476-8000
								WOLPER INC.	FAX: 614-476-8225

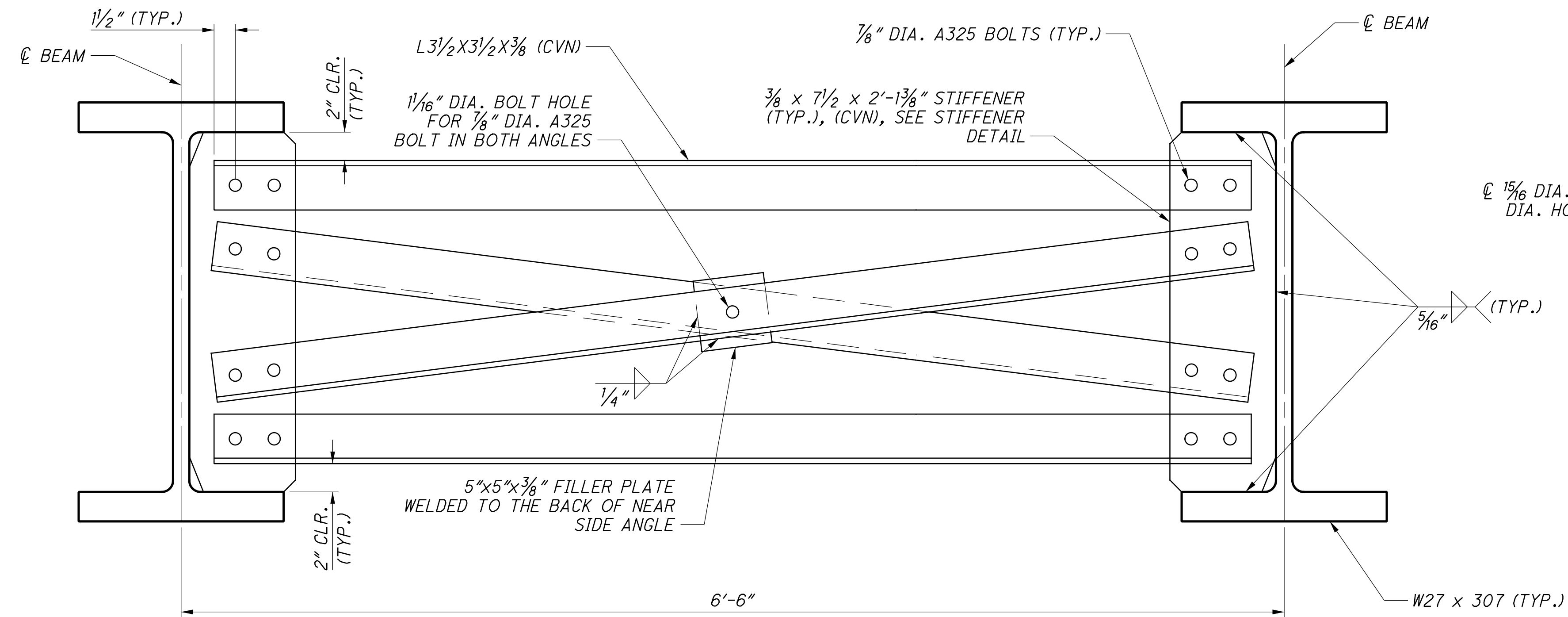
**SPLICE DETAILS**  
BRIDGE NO. GUE-513-0871  
SR-513 OVER IR-70

**GUE-513-8.65**  
**PID No. 93289**

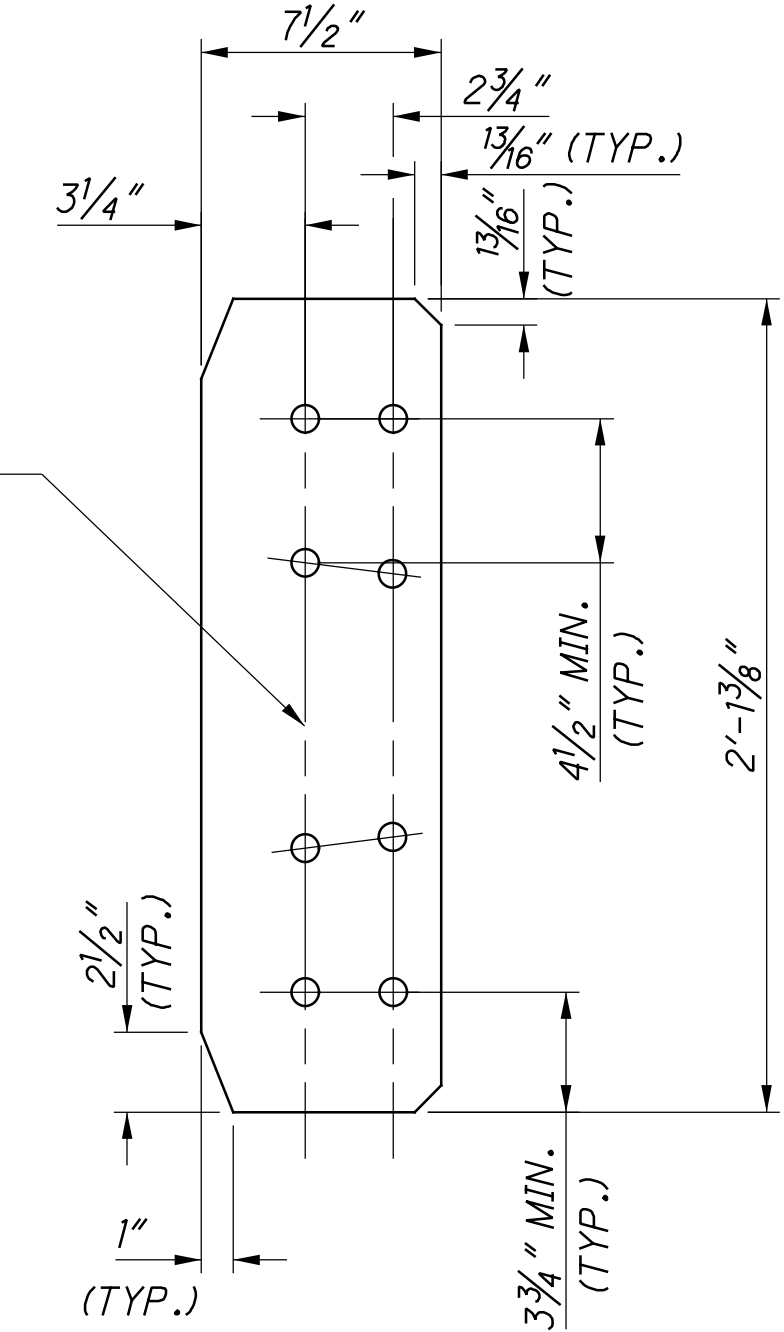
33/54

79/100

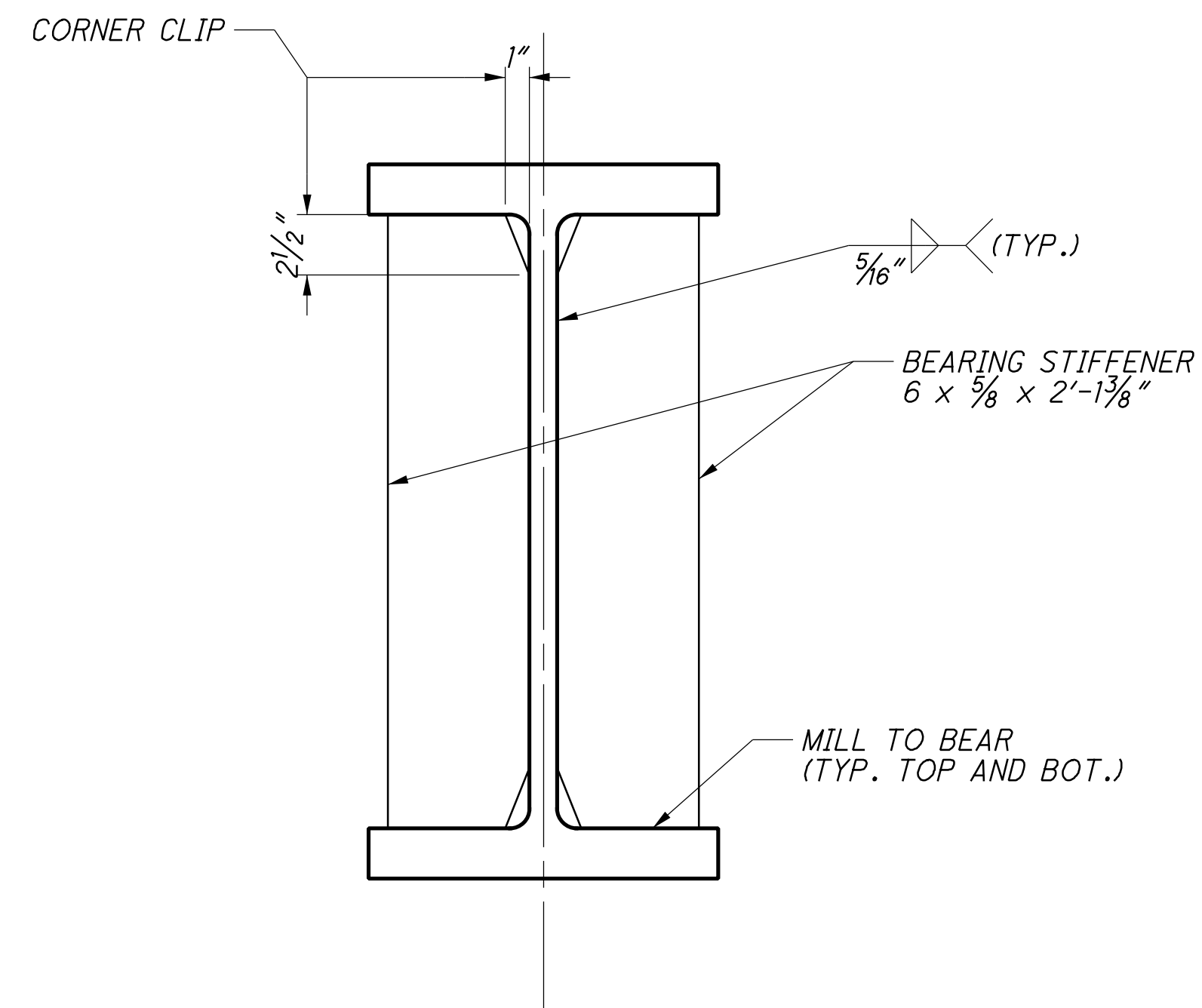
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**INTERMEDIATE CROSSFRAME DETAILS**



**CROSSFRAME STIFFENER DETAIL**



**BEARING STIFFENER DETAIL**

**NOTES:**

1. SEE SHEET 30/54 FOR FRAMING PLAN AND CROSSFRAME SPACING.
2. SEE SHEET 31/54 FOR BEAM DETAILS.
3. SEE SHEET 36/54 FOR TRANSVERSE SECTION.
4. ALL STEEL SHALL BE ASTM A709 GRADE 50 UNLESS OTHERWISE NOTED. HIGH STRENGTH BOLTS SHALL BE 7/8" DIAMETER A325 TYPE I UNLESS OTHERWISE NOTED. EACH BOLT ASSEMBLY SHALL INCLUDE A BOLT, NUT, AND TWO WASHERS THAT ARE TIGHTENED ACCORDING TO CMS 513.
5. WHERE A SHAPE OR PLATE IS DESIGNED (CVN) FURNISH MATERIAL THAT MEETS THE MINIMUM NOTCH TOUGHNESS REQUIREMENTS AS SPECIFIED IN CMS 711.01.
6. CROSSFRAMES SHALL BE PERPENDICULAR (RADIAL) TO BEAMS.
7. THE FABRICATOR SHALL CHECK LONGITUDINAL CROSSFRAME SPACING SO THAT INTERFERENCE WITH BOLTED SPLICES AND BEARING STIFFENERS CAN BE AVOIDED. SPACING SHALL BE ADJUSTED TO PROVIDE AT LEAST SIX (6) INCHES OF LONGITUDINAL CLEARANCE. THE FABRICATOR MAY ADJUST CROSSFRAME SPACES UP TO A MAXIMUM OF 5'-0" CENTER TO CENTER.

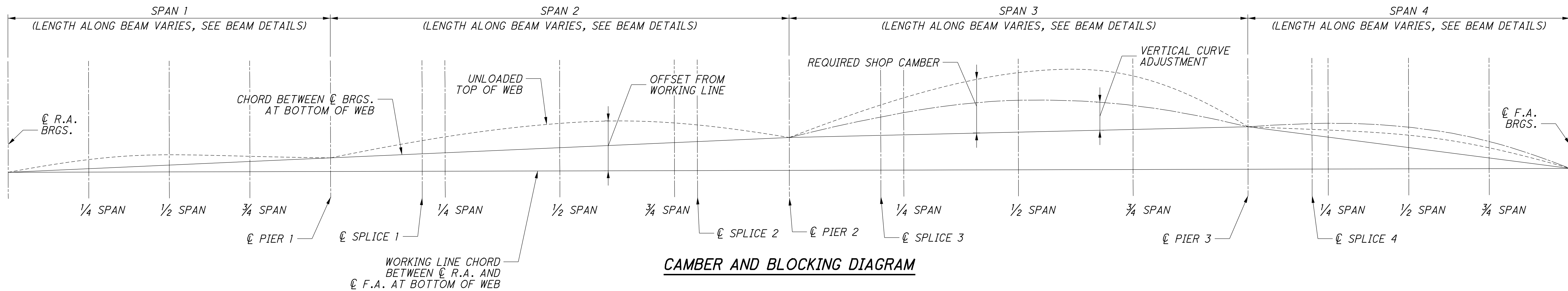
DESIGN AGENCY  
**WOOLPERT**  
 CIVIL ENGINEERING | ARCHITECTURE

DATE 02/2017  
 REVIEWED RKM  
 DRAWN JMM  
 DESIGNED TML  
 CHECKED MAA  
 STRUCTURE FILE NUMBER 3005887

**CROSSFRAME DETAILS**  
 BRIDGE NO. GUE-513-0871  
 SR 513 OVER IR-70

**GUE-513-8.65**  
**PID No. 93289**

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**CAMBER AND BLOCKING DIAGRAM**

LOCATION		R.A. C BRGS.	CAMBER TABLE																				
			SPAN 1			PIER 1 C BRGS.	SPAN 2				PIER 2 C BRGS.	SPAN 3				PIER 3 C BRGS.	SPAN 4			F.A. C BRGS.			
			1/4 SPAN	1/2 SPAN	3/4 SPAN		SPLICE 1	1/4 SPAN	1/2 SPAN	3/4 SPAN		SPLICE 2	SPLICE 3	1/4 SPAN	1/2 SPAN		3/4 SPAN	SPLICE 4	1/4 SPAN		1/2 SPAN	3/4 SPAN	
BEAM 1	DEFLECTION DUE TO WEIGHT OF STEEL	0"	1/16"	1/16"	0"	0"	0"	3/16"	1/4"	1/8"	0"	0"	0"	1/8"	1/4"	3/16"	0"	0"	0"	1/16"	1/16"	1/16"	0"
	DEFLECTION DUE TO REMAINING DEAD LOAD	0"	5/16"	5/16"	1/8"	0"	1/16"	11/16"	1 1/8"	9/16"	1/16"	0"	1/16"	5/8"	1 1/8"	11/16"	1/16"	0"	1/8"	3/8"	5/16"	0"	
	ADJUSTMENT REQUIRED FOR VERTICAL CURVE	0"	0"	0"	0"	0"	0"	0"	0"	0"	0"	0"	- 5/16"	- 3/8"	- 11/16"	- 11/16"	- 5/8"	0"	- 1/2"	- 11/16"	- 1/2"	0"	
	REQUIRED SHOP CAMBER	0"	3/8"	7/16"	1/8"	0"	1/16"	7/8"	1 3/8"	11/16"	1/16"	0"	- 1/4"	7/16"	11/16"	3/16"	- 9/16"	0"	- 3/8"	- 1/4"	- 1/16"	0"	
	OFFSET FROM WORKING LINE	0"	13/16"	1 1/4"	1 3/8"	1 11/16"	2 3/16"	3 1/8"	4 1/4"	4 1/8"	3 9/16"	4 1/16"	4"	4 11/16"	5 3/16"	4 15/16"	4 1/4"	5"	3 3/8"	2 1/4"	1 3/16"	0"	
BEAM 2	DEFLECTION DUE TO WEIGHT OF STEEL	0"	1/16"	1/16"	0"	0"	0"	3/16"	1/4"	1/8"	0"	0"	0"	1/8"	1/4"	3/16"	0"	0"	1/16"	1/16"	1/16"	0"	
	DEFLECTION DUE TO REMAINING DEAD LOAD	0"	3/8"	5/16"	1/16"	0"	1/16"	11/16"	1 1/16"	1/2"	1/16"	0"	1/16"	5/8"	1 1/16"	11/16"	1/16"	0"	1/8"	3/8"	5/16"	0"	
	ADJUSTMENT REQUIRED FOR VERTICAL CURVE	0"	0"	0"	0"	0"	0"	0"	0"	0"	0"	0"	- 1/4"	- 5/16"	- 11/16"	- 11/16"	- 9/16"	0"	- 1/2"	- 11/16"	- 1/2"	0"	
	REQUIRED SHOP CAMBER	0"	7/16"	3/8"	1/8"	0"	1/16"	13/16"	1 5/16"	11/16"	1/16"	0"	- 1/4"	7/16"	11/16"	3/16"	- 9/16"	0"	- 3/8"	- 1/4"	- 1/8"	0"	
	OFFSET FROM WORKING LINE	0"	7/8"	1 3/16"	1 5/16"	1 5/8"	2 1/8"	3 1/16"	4 1/8"	4"	3 7/16"	3 15/16"	3 15/16"	4 5/8"	5 1/8"	4 7/8"	4 3/16"	4 15/16"	3 3/8"	2 3/16"	1 1/16"	0"	
BEAM 3	DEFLECTION DUE TO WEIGHT OF STEEL	0"	1/16"	1/16"	0"	0"	0"	3/16"	1/4"	1/8"	0"	0"	0"	1/8"	1/4"	3/16"	0"	0"	0"	1/16"	1/16"	0"	
	DEFLECTION DUE TO REMAINING DEAD LOAD	0"	5/16"	5/16"	1/8"	0"	1/16"	11/16"	1"	9/16"	1/16"	0"	1/16"	9/16"	1 1/16"	11/16"	1/16"	0"	1/8"	5/16"	5/16"	0"	
	ADJUSTMENT REQUIRED FOR VERTICAL CURVE	0"	0"	0"	0"	0"	0"	0"	0"	0"	0"	0"	- 1/4"	- 5/16"	- 5/8"	- 5/8"	- 9/16"	0"	- 1/2"	- 11/16"	- 1/2"	0"	
	REQUIRED SHOP CAMBER	0"	3/8"	3/8"	1/8"	0"	1/16"	13/16"	1 5/16"	3/4"	1/16"	0"	- 3/16"	7/16"	11/16"	3/16"	- 1/2"	0"	- 3/8"	- 5/16"	- 1/8"	0"	
	OFFSET FROM WORKING LINE	0"	3/4"	1 3/16"	1 5/16"	1 9/16"	2 1/16"	3"	4"	4"	3 5/16"	3 13/16"	3 13/16"	4 1/2"	5 1/16"	4 13/16"	4 3/16"	4 7/8"	3 1/4"	2 1/8"	1 1/16"	0"	
BEAM 4	DEFLECTION DUE TO WEIGHT OF STEEL	0"	1/16"	1/16"	0"	0"	0"	3/16"	1/4"	1/8"	0"	0"	0"	1/8"	1/4"	3/16"	0"	0"	0"	1/16"	1/16"	0"	
	DEFLECTION DUE TO REMAINING DEAD LOAD	0"	5/16"	5/16"	1/8"	0"	1/16"	5/8"	1"	9/16"	1/16"	0"	1/16"	9/16"	1"	11/16"	1/16"	0"	1/8"	5/16"	1/4"	0"	
	ADJUSTMENT REQUIRED FOR VERTICAL CURVE	0"	0"	0"	0"	0"	0"	0"	0"	0"	0"	0"	- 1/4"	- 1/4"	- 9/16"	- 5/8"	- 9/16"	0"	- 1/2"	- 11/16"	- 1/2"	0"	
	REQUIRED SHOP CAMBER	0"	3/8"	7/16"	1/8"	0"	1/16"	3/4"	1 1/4"	11/16"	1/16"	0"	- 3/16"	7/16"	3/4"	1/4"	- 1/2"	0"	- 3/8"	- 5/16"	- 3/16"	0"	
	OFFSET FROM WORKING LINE	0"	3/4"	1 3/16"	1 1/4"	1 1/2"	2"	2 7/8"	3 7/8"	3 7/8"	3 1/4"	3 11/16"	3 3/4"	4 7/16"	5"	4 3/4"	4 1/8"	4 13/16"	3 3/16"	2 1/8"	1"	0"	
BEAM 5	DEFLECTION DUE TO WEIGHT OF STEEL	0"	1/16"	1/16"	0"	0"	0"	3/16"	1/4"	1/8"	0"	0"	0"	1/8"	1/4"	1/8"	0"	0"	0"	1/16"	1/16"	0"	
	DEFLECTION DUE TO REMAINING DEAD LOAD	0"	5/16"	5/16"	1/16"	0"	1/16"	5/8"	1"	9/16"	1/16"	0"	1/16"	1/2"	1"	11/16"	1/16"	0"	1/8"	5/16"	5/16"	0"	
	ADJUSTMENT REQUIRED FOR VERTICAL CURVE	0"	* 1/16"	* 1/16"	0"	0"	0"	0"	0"	0"	0"	0"	- 3/16"	- 1/4"	- 1/2"	- 9/16"	- 1/2"	0"	- 9/16"	- 11/16"	- 9/16"	0"	
	REQUIRED SHOP CAMBER	0"	7/16"	7/16"	1/8"	0"	1/16"	13/16"	1 5/16"	11/16"	1/16"	0"	- 3/16"	3/8"	13/16"	- 9/16"	- 1/2"	0"	- 3/8"	- 5/16"	- 3/16"	0"	
	OFFSET FROM WORKING LINE	0"	13/16"	1 3/16"	1 3/16"	1 7/16"	1 7/8"	2 3/4"	3 3/4"	3 11/16"	3 1/16"	3 9/16"	3 5/8"	4 1/4"	4 15/16"	4 11/16"	4"	4 11/16"	3 1/8"	2 1/16"	1"	0"	
BEAM 6	DEFLECTION DUE TO WEIGHT OF STEEL	0"	1/16"	1/16"	0"	0"	0"	3/16"	1/4"	1/8"	0"	0"	0"	1/8"	1/4"	1/8"	0"	0"	0"	1/16"	1/16"	0"	
	DEFLECTION DUE TO REMAINING DEAD LOAD	0"	5/16"	3/8"	1/8"	0"	1/16"	11/16"	1 1/16"	9/16"	1/16"	0"	1/16"	5/8"	1 1/16"	5/8"	1/16"	0"	1/8"	5/16"	5/16"	0"	
	ADJUSTMENT REQUIRED FOR VERTICAL CURVE	0"	* 1/8"	* 1/16"	* 1/16"	0"	0"	0"	0"	0"	0"	0"	- 3/16"	- 1/4"	- 7/16"	- 9/16"	- 1/2"	0"	- 9/16"	- 3/4"	- 9/16"	0"	
	REQUIRED SHOP CAMBER	0"	1/2"	1/2"	3/16"	0"	1/16"	7/8"	1 5/16"	11/16"	1/16"	0"	- 1/8"	1/2"	7/8"	1/4"	- 7/16"	0"	- 7/16"	- 5/16"	- 3/16"	0"	
	OFFSET FROM WORKING LINE	0"	13/16"	1 3/16"	1 3/16"	1 5/16"	1 3/4"	2 11/16"	3 11/16"	3 9/16"	2 15/16"	3 7/16"	3 1/2"	4 1/4"	4 7/8"	4 9/16"	3 15/16"	4 5/8"	3 1/16"	2"	1"	0"	
BEAM 7	DEFLECTION DUE TO WEIGHT OF STEEL	0"	1/16"	1/16"	1/16"	0"	0"	1/8"	1/4"	1/8"	0"	0"	0"	1/8"	1/4"	3/16"	0"	0"	0"	1/16"	1/16"	0"	
	DEFLECTION DUE TO REMAINING DEAD LOAD	0"	5/16"	3/8"	3/16"	0"	1/16"	5/8"	1 1/16"	9/16"	1/16"	0"	1/16"	9/16"	1 1/16"	11/16"	1/16"	0"	1/8"	3/8"	5/16"	0"	
	ADJUSTMENT REQUIRED FOR VERTICAL CURVE	0"	* 3/16"	* 1/8"	* 1/16"	0"	0"	0"	0"	0"	0"	0"	- 3/16"	- 3/16"	- 3/8"	- 1/2"	- 7/16"	0"	- 9/16"	- 3/4"	- 9/16"	0"	
	REQUIRED SHOP CAMBER	0"	5/8"	5/8"	1/4"	0"	1/16"	13/16"	1 5/16"	11/16"	1/16"	0"	- 1/8"	1/2"	15/16"	3/8"	- 7/16"	0"	- 7/16"	- 5/16"	- 3/16"	0"	
	OFFSET FROM WORKING LINE	0"	15/16"	1 3/16"	1 1/8"	1 3/16"	1 5/8"	2 1/2"	3 9/16"	3 7/16"	2 13/16"	3 1/4"	3 7/16"	4 1/16"	4 13/16"	4 9/16"	3 7/8"	4 1/2"	3"	1 15/16"	15/16"	0"	

**LEGEND:**

\* VERTICAL ALIGNMENT CORRECTION DUE TO CHANGE IN STRAIGHT GRADE

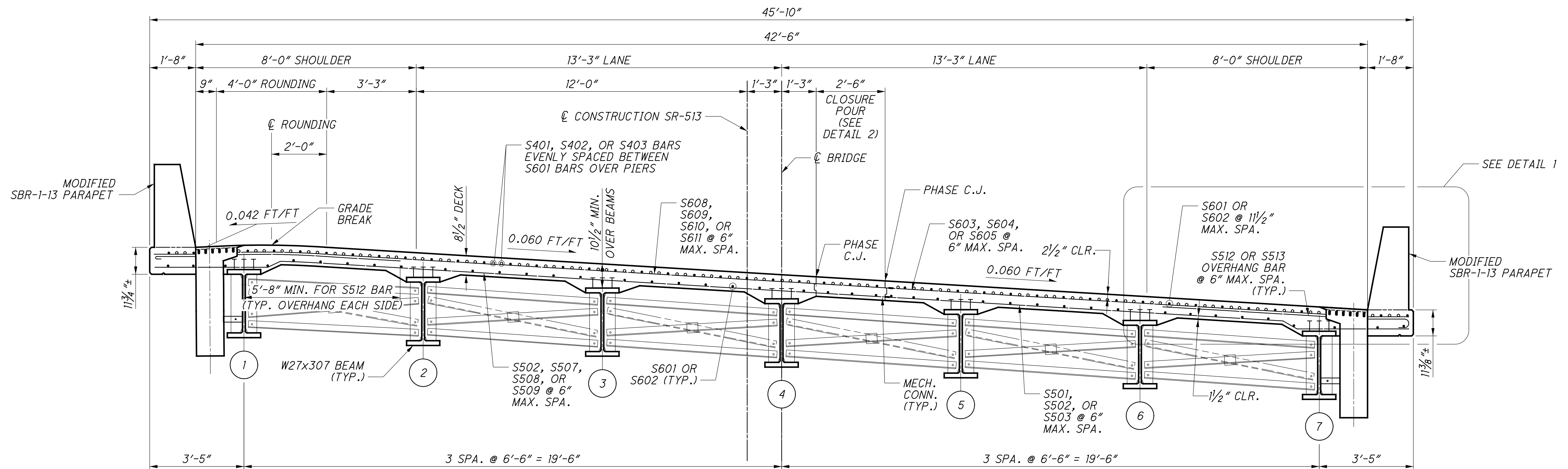
**NOTES:**

- DEFLECTIONS AND ADJUSTMENT FOR VERTICAL CURVES ARE GIVEN TO THE NEAREST 1/16TH INCH.
- POSITIVE VALUE FOR DEFLECTIONS INDICATE DOWNWARD DEFLECTIONS.
- DEFLECTION DUE TO REMAINING DEAD LOAD IS THE SUM OF DEFLECTIONS DUE TO SLAB AND COMPOSITE DECK LOADS.
- IF THE BEAMS ARE HEAT CURVED, ADDITIONAL CAMBER SHALL BE ADDED PER AASHTO 6.7.7.3.
- SEE SHEETS 31/54 - 32/54 FOR BEAM DETAILS AND FIELD SPLICE LOCATIONS.

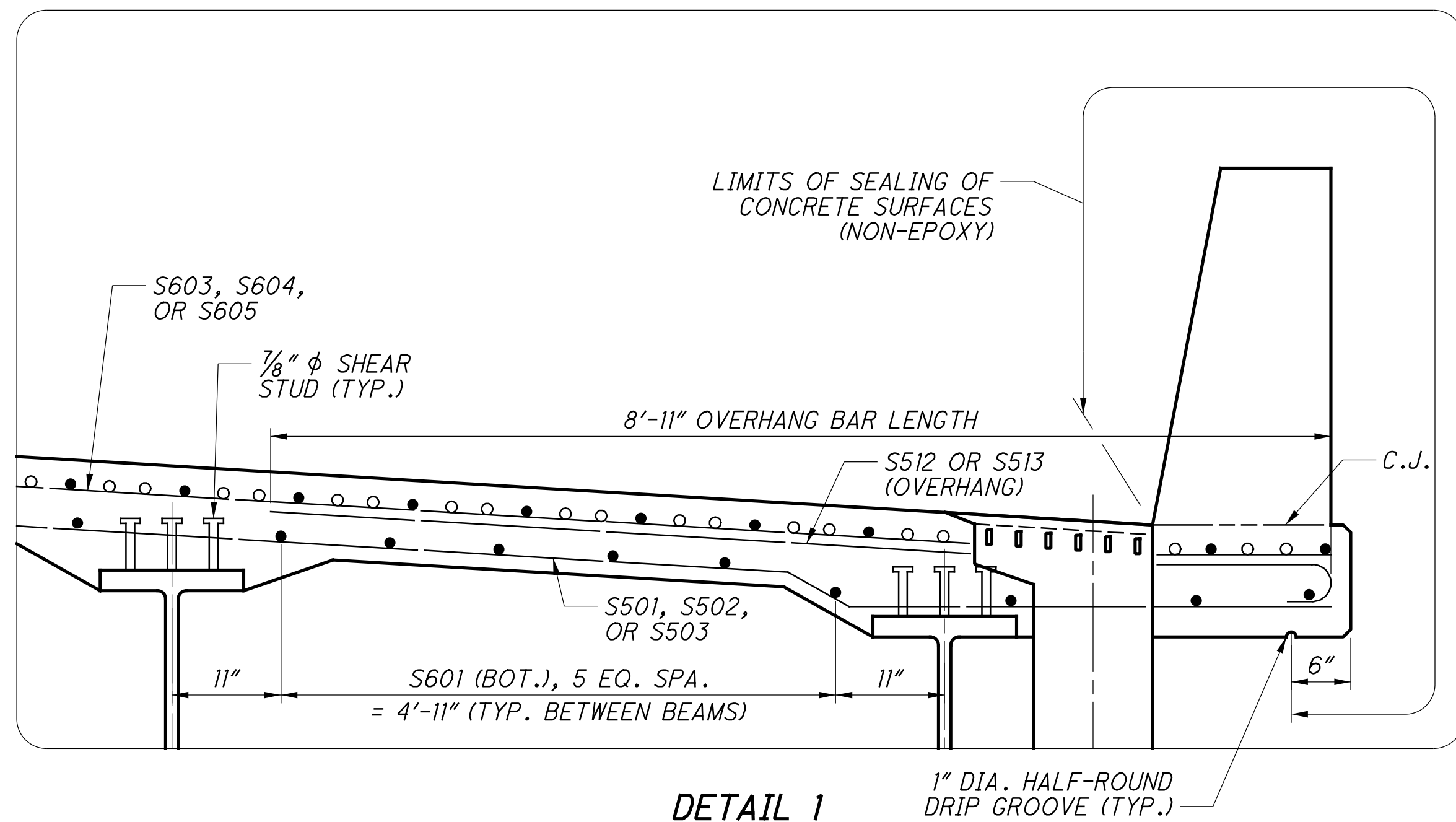
DESIGN AGENCY: EASTON OVAL SUITE 400 COLUMBUS, OH 43219 T 614-476-8000 F 614-476-8225  
**WOOLPERT**  
 DESIGN/CONSTRUCTION/MAINTENANCE  
 DATE: 02/2017  
 REVIEWED: RKM  
 DRAWN: PES  
 DESIGNED: PES  
 CHECKED: BWB  
 STRUCTURE FILE NUMBER: 3005887  
**BEAM CAMBER AND BLOCKING**  
 BRIDGE NO.: GUE-513-0871  
 SR-513 OVER IR-70  
**GUE-513-8.65**  
 PID No. 93289  
 35/54  
 81/100



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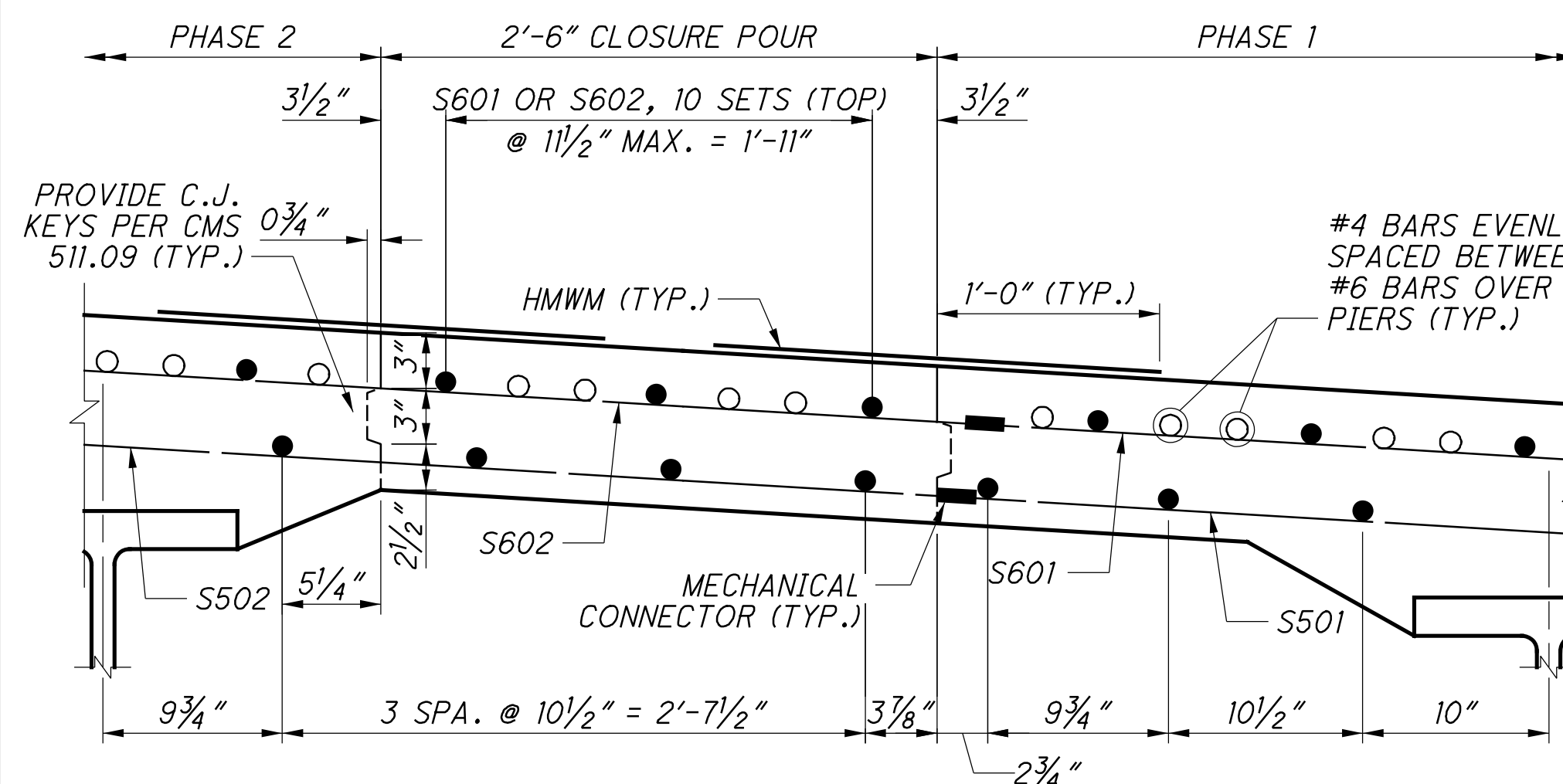


**TRANSVERSE SECTION**



**DETAIL 1**

(PARAPET REINFORCING NOT SHOWN)



**DETAIL 2**

(CLOSURE POUR)

**LEGEND:**

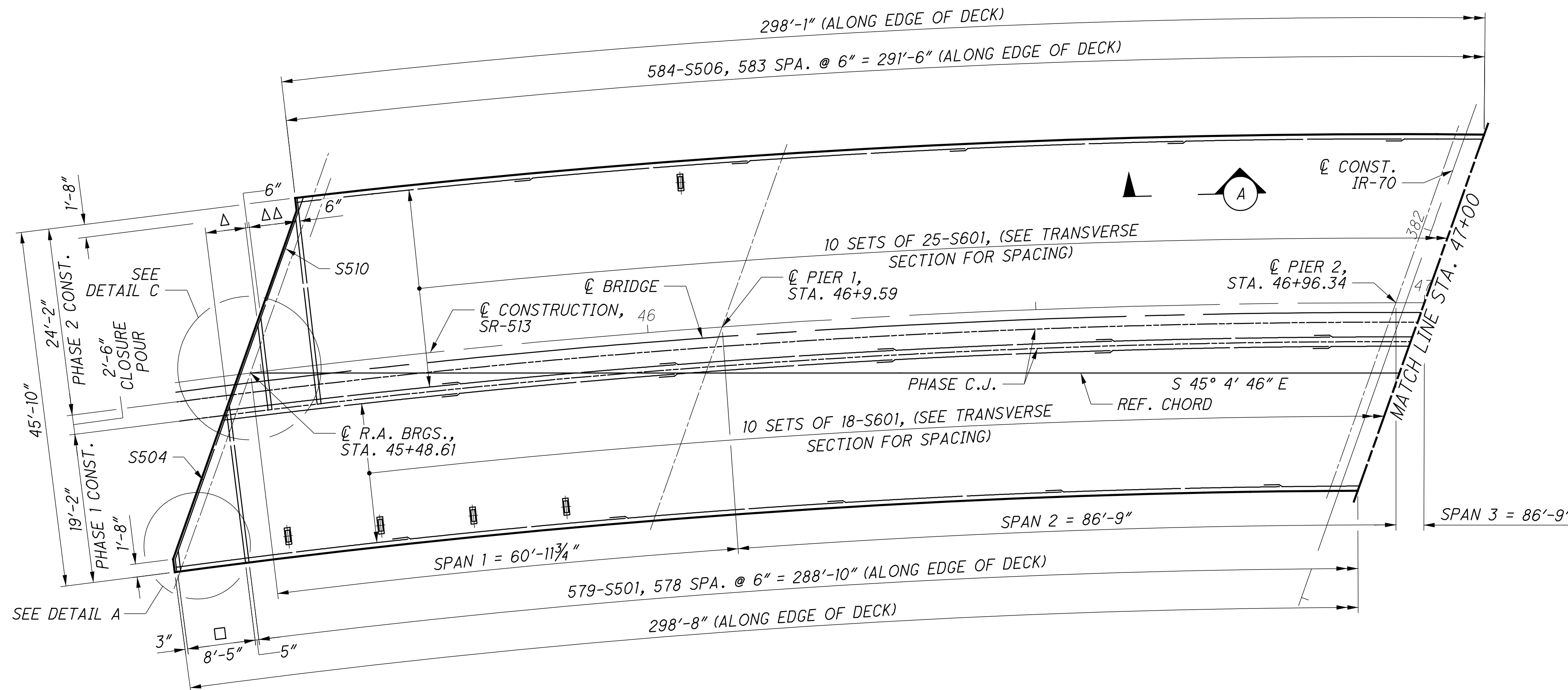
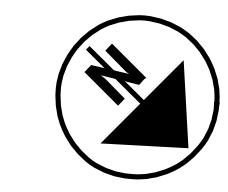
⊙ PROPOSED BEAM NUMBER

**NOTES:**

1. 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 BEAM HAUNCH. THE ESTIMATE ASSUMES A CONSTANT HAUNCH THICKNESS OF 2" AND A CONSTANT HAUNCH WIDTH 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 BEAM FLANGE IS ±3 INCHES.
2. THE HAUNCH THICKNESS WAS MEASURED AT THE CENTERLINE OF THE BEAM, FROM THE SURFACE OF THE DECK TO THE BOTTOM OF THE FLANGE MINUS THE DECK SLAB THICKNESS. THE AREA OF ALL EMBEDDED STEEL PLATES HAS BEEN DEDUCTED FROM THE HAUNCH QUANTITY IN ACCORDANCE WITH CMS 511.24.
3. SEE SHEETS 31/54 - 32/54 FOR STUD CONNECTOR DETAILS.
4. SEE SHEETS 37/54 - 38/54 FOR DECK PLAN.
5. SEE SHEET 41/54 AND SCD SBR-1-13 FOR ADDITIONAL PARAPET DETAILS NOT SHOWN.
6. SEE SHEET 45/54 FOR SCUPPER DETAILS.

DESIGN AGENCY WOLPERT CORPORATION COLUMBUS, OH 43219 T 614-476-6000 F 614-476-6225	DATE 02/2017	REVIEWED RKM	DESIGNED PES	DRAWN PES	STRUCTURE FILE NUMBER 3005887
<b>TRANSVERSE SECTION</b>					
BRIDGE NO. GUE-513-0871					
SR-513 OVER IR-70					
<b>GUE-513-8.65</b>					
PID No. 93289					
36/54					
82					
100					

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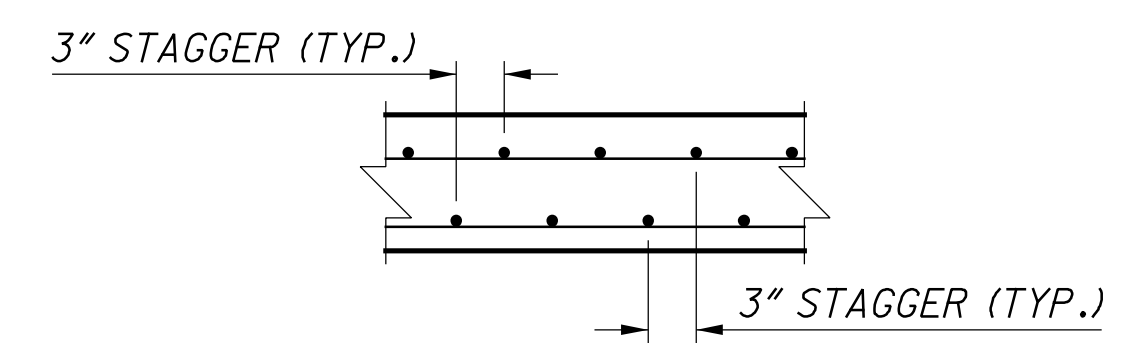


**LEGEND:**

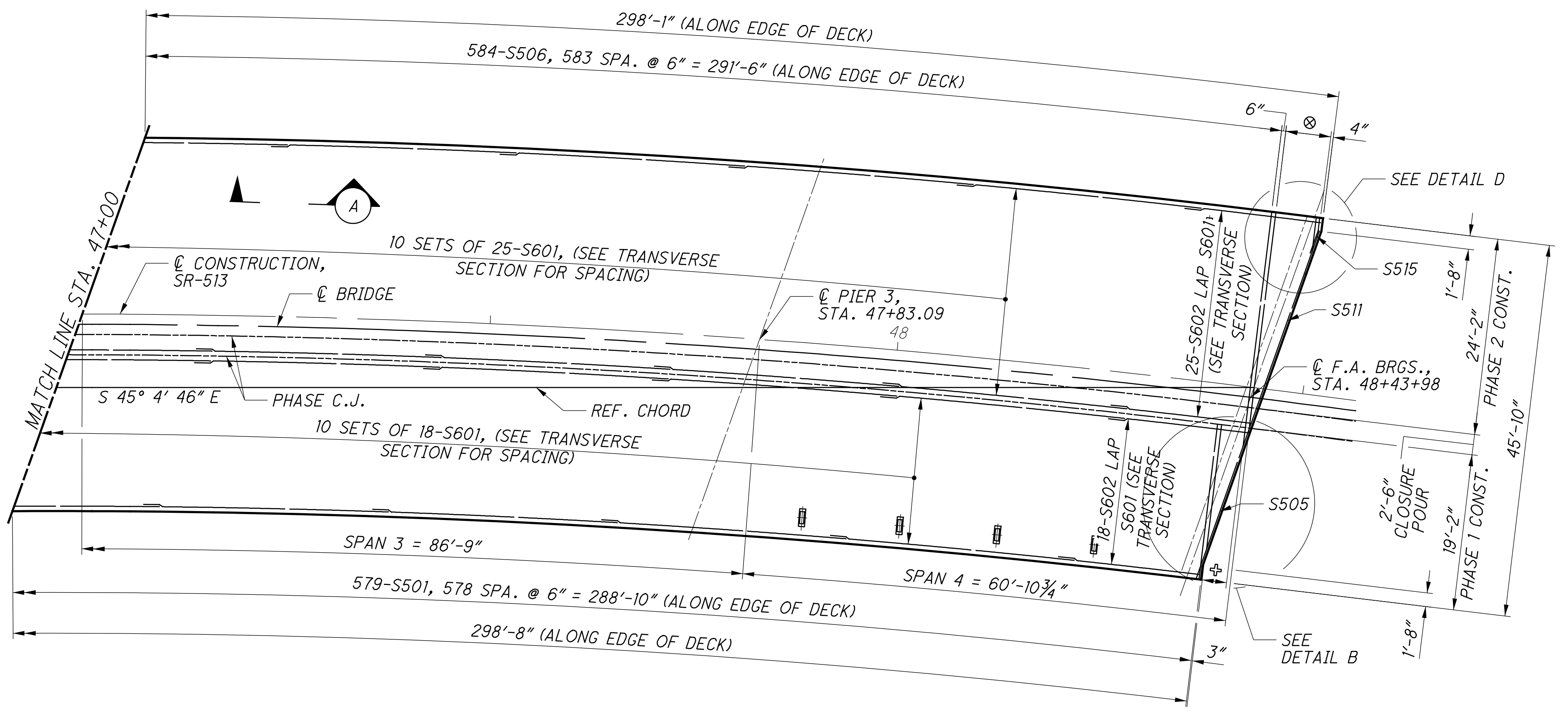
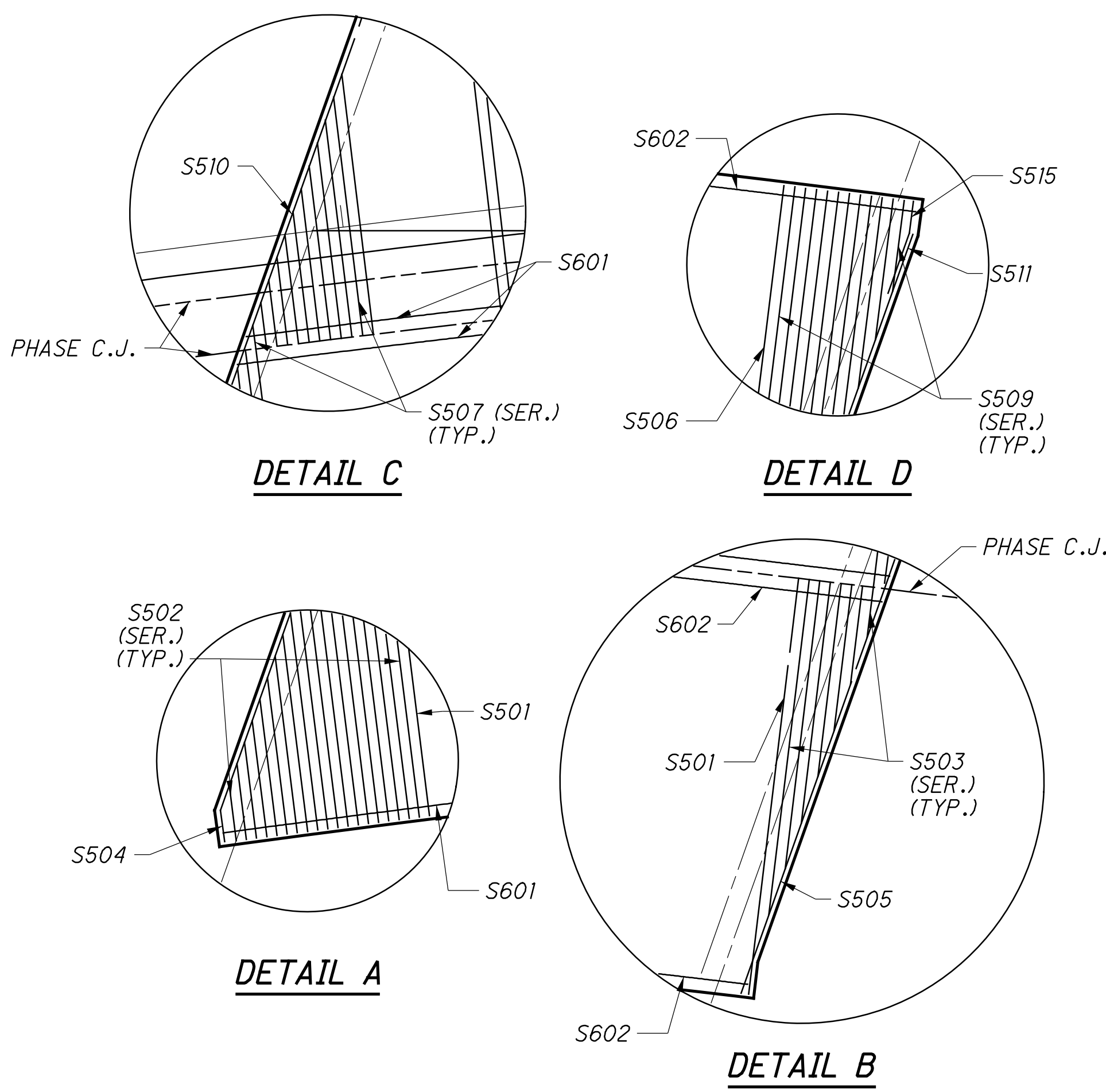
- △ SERIES OF 11-S507, 10 SPA @ 6" MAX. = 4'-11"
- △△ SERIES OF 13-S508, 12 SPA. @ 6" = 6'-0"
- SERIES OF 18-S502, 17 SPA. @ 6" MAX. = 8'-5"
- ⊗ SERIES OF 11-S509, 10 SPA. @ 6" = 5'-0"
- ⊕ SERIES OF 7-S503, 6 SPA. @ 6" MAX. = 2'-11"
- ⊥ SCUPPER

**NOTES:**

1. SEE SHEET 36/54 FOR TRANSVERSE SECTION.
2. MINIMUM LAP LENGTHS:  
 #4 BARS = 1'-11"  
 #5 BARS = 2'-5"  
 #6 BARS = 2'-11"
3. ALL TRANSVERSE REINFORCING STEEL TO BE PLACED RADIALLY.
4. MINIMUM REINFORCING STEEL CLEAR COVER SHALL BE 2" UNLESS NOTED OTHERWISE.
5. SEE SHEET 45/54 FOR SCUPPER REINFORCING DETAILS.



**SECTION A**



**DECK REINFORCING PLAN**

	DESIGN AGENCY EASTON OVAL SUITE 401 COLUMBUS, OH 43219 T 614-476-8000 F 614-476-8225
DATE 02/2017	REVIEWED RKM
DRAWN PES	REVISION REVISED
DESIGNED PES	CHECKED TML
STRUCTURE FILE NUMBER 3005887	
BRIDGE NO. GUE-513-0871 SR-513 OVER IR-70	
<b>GUE-513-8.65</b> <b>PID No. 93289</b>	
37/54	
83 100	

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DESIGN AGENCY: EASTON OVAL  
SUITE 401  
COLUMBUS, OH 43219  
T 614-476-8000  
F 614-476-8225  
**WOOLPERT**  
CORPORATE INFRASTRUCTURE

DATE: 02/2017  
REVIEWED: RKM  
DRAWN: PES  
DESIGNED: PES  
CHECKED: TML  
STRUCTURE FILE NUMBER: 3005887

DECK REINFORCING PLAN (TOP MAT)  
BRIDGE NO. GUE-513-0871  
SR-513 OVER IR-70

GUE-513-8.65  
PID No. 93289

38/54

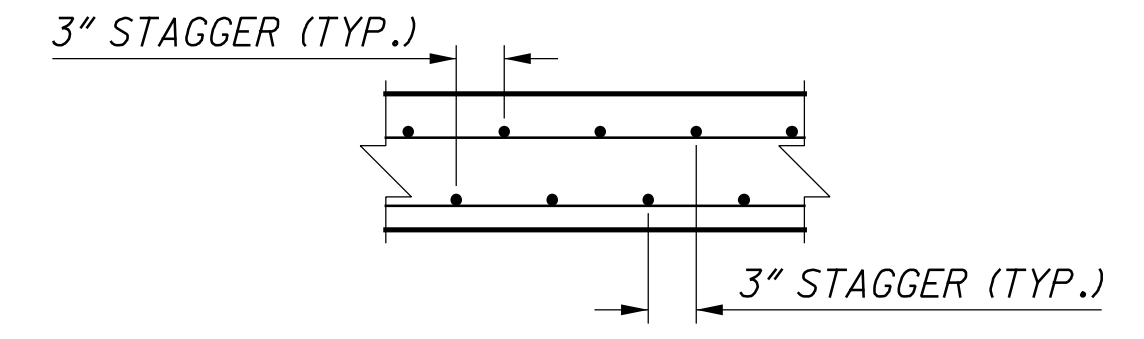
84  
100

**LEGEND:**

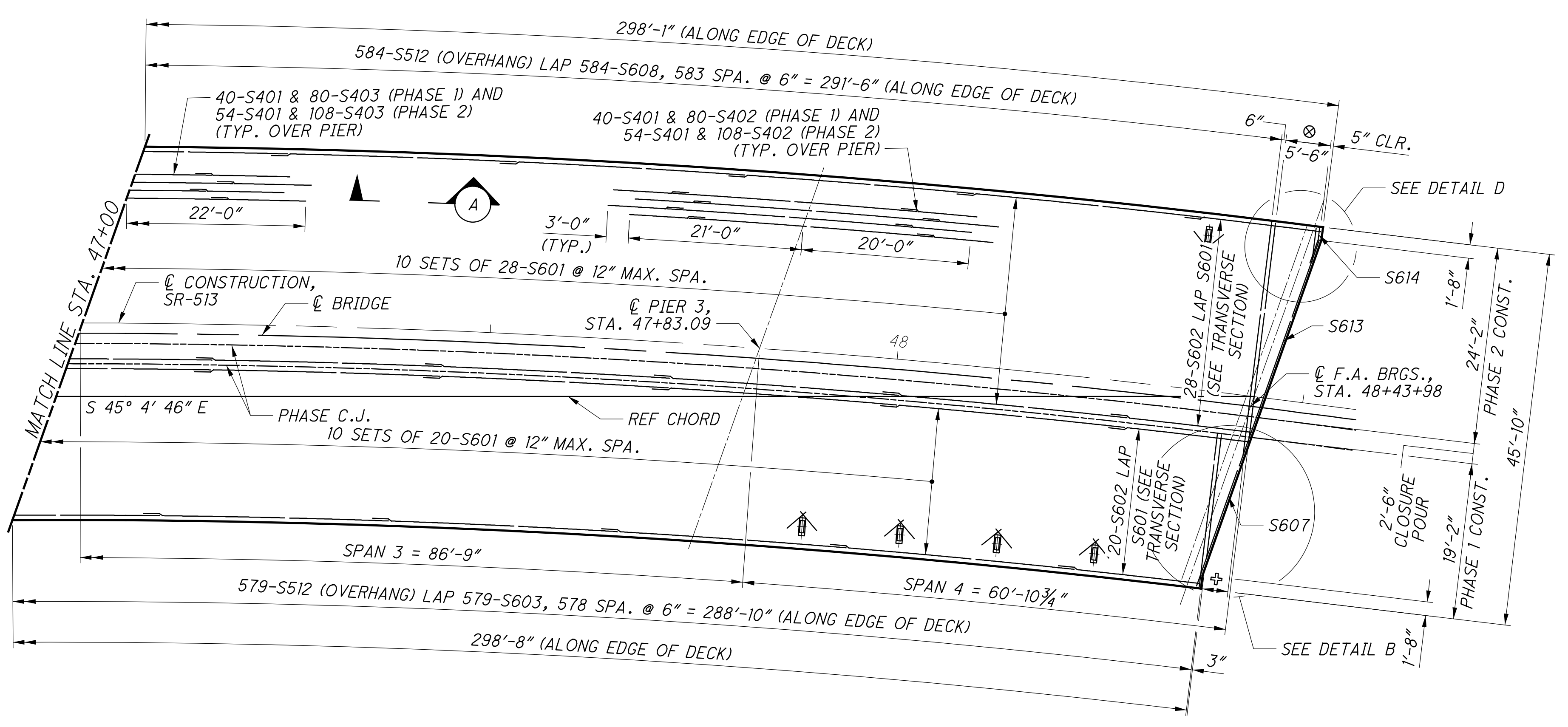
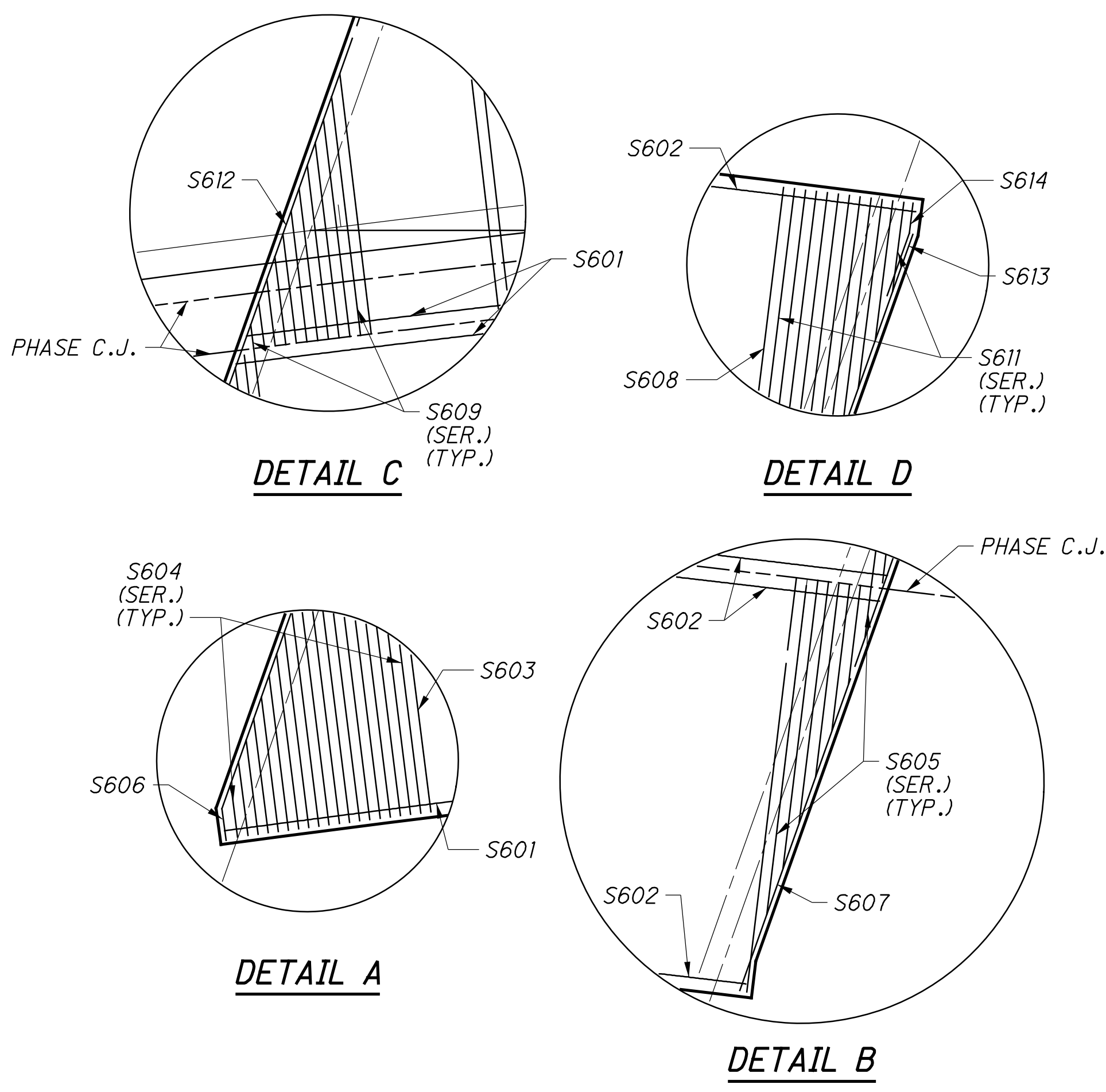
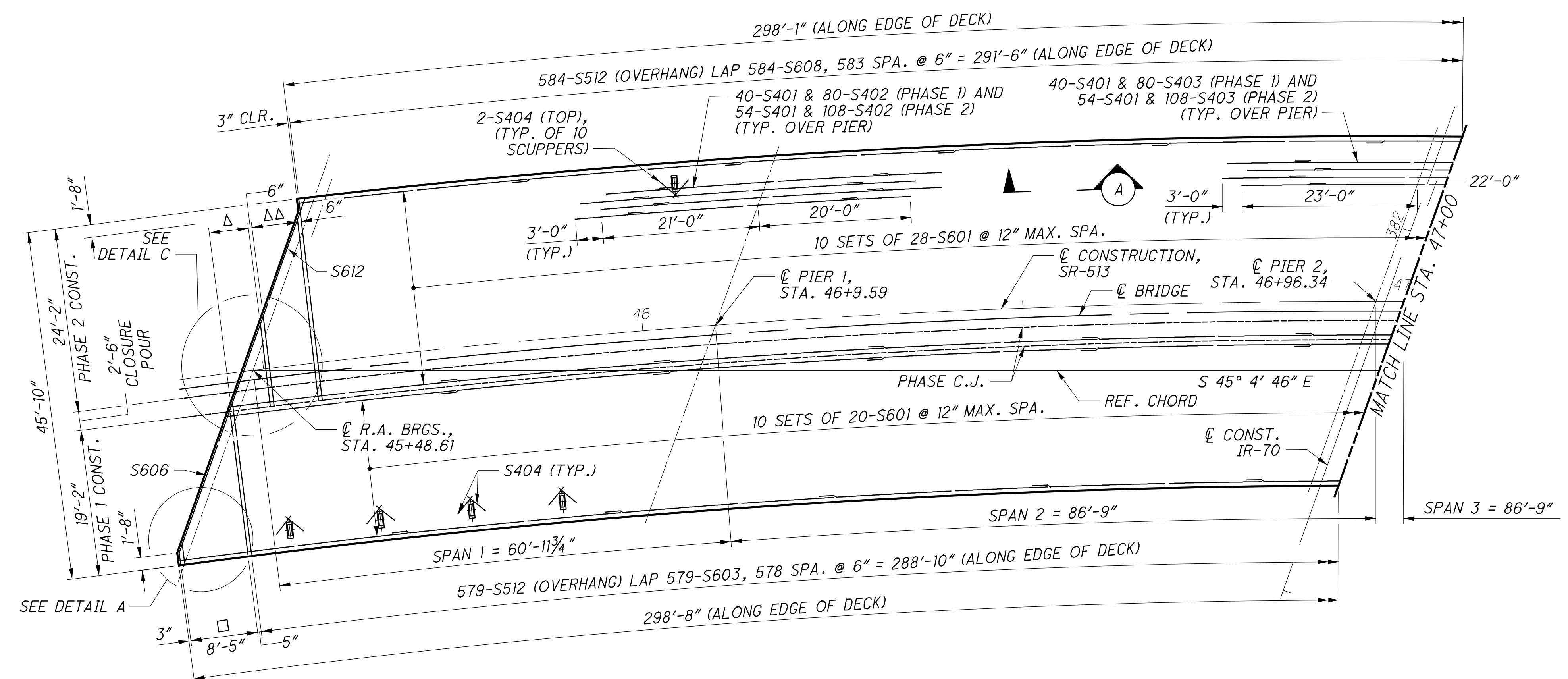
- △ SERIES OF 11-S609, 10 SPA. @ 6" MAX. = 4'-11"
- △△ SERIES OF 13-S610, 12 SPA. @ 6" = 6'-0"
- SERIES OF 18-S604, 17 SPA. @ 6" MAX. = 8'-5" & SERIES OF 17-S513 LAP S604
- ⊗ SERIES OF 11-S611, 10 SPA. @ 6" = 5'-0" & SERIES OF 11-S514 LAP S611
- ⊕ SERIES OF 7-S605, 6 SPA. @ 6" MAX. = 2'-11"
- ▮ SCUPPER

**NOTES:**

1. SEE SHEET 36/54 FOR TRANSVERSE SECTION.
2. MINIMUM LAP LENGTHS:  
#4 BARS = 1'-11"  
#5 BARS = 2'-5"  
#6 BARS = 2'-11"
3. ALL TRANSVERSE REINFORCING STEEL TO BE PLACED RADIIALLY.
4. MINIMUM REINFORCING STEEL CLEAR COVER SHALL BE 2" UNLESS NOTED OTHERWISE.
5. SEE SHEET 45/54 FOR SCUPPER REINFORCING DETAILS.



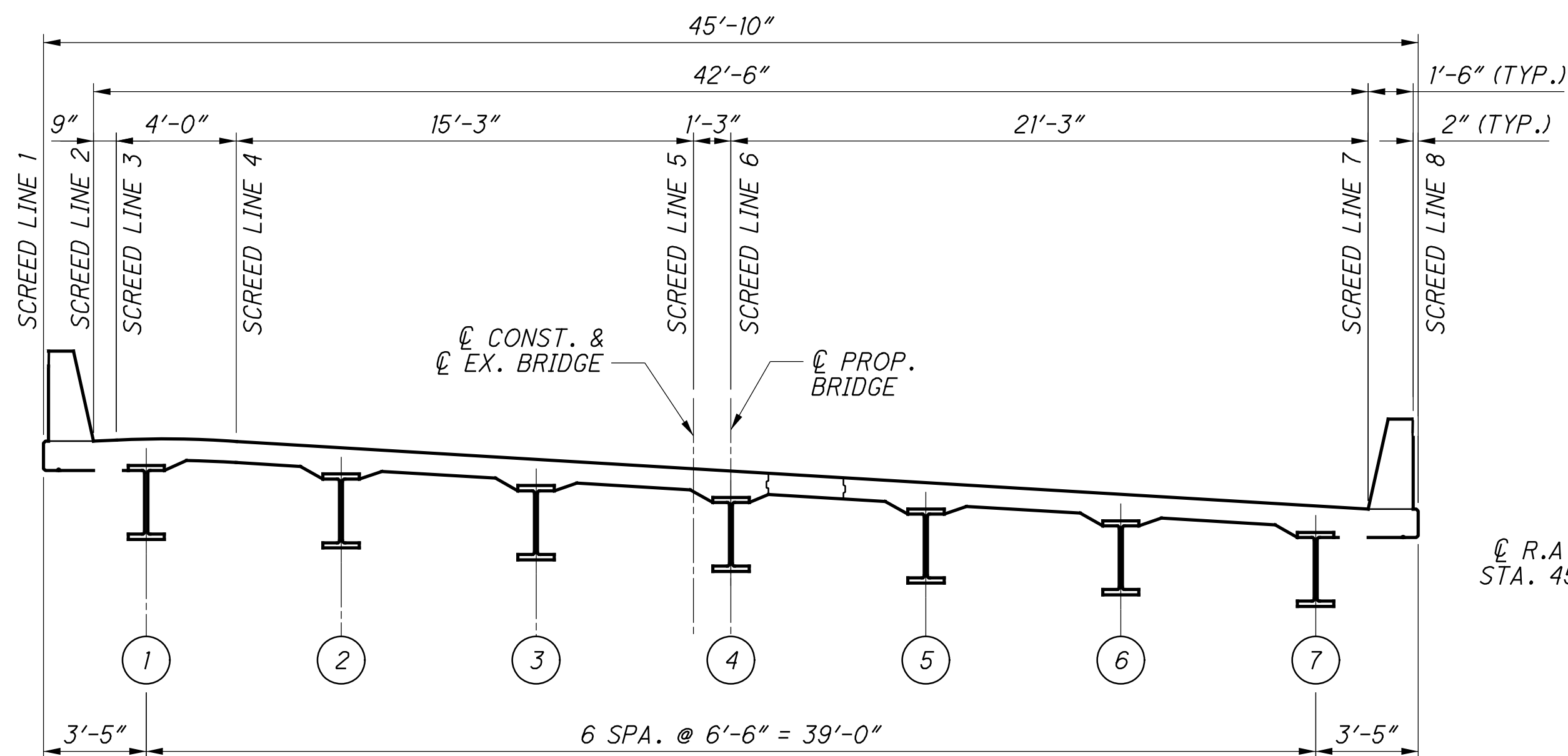
**SECTION A**



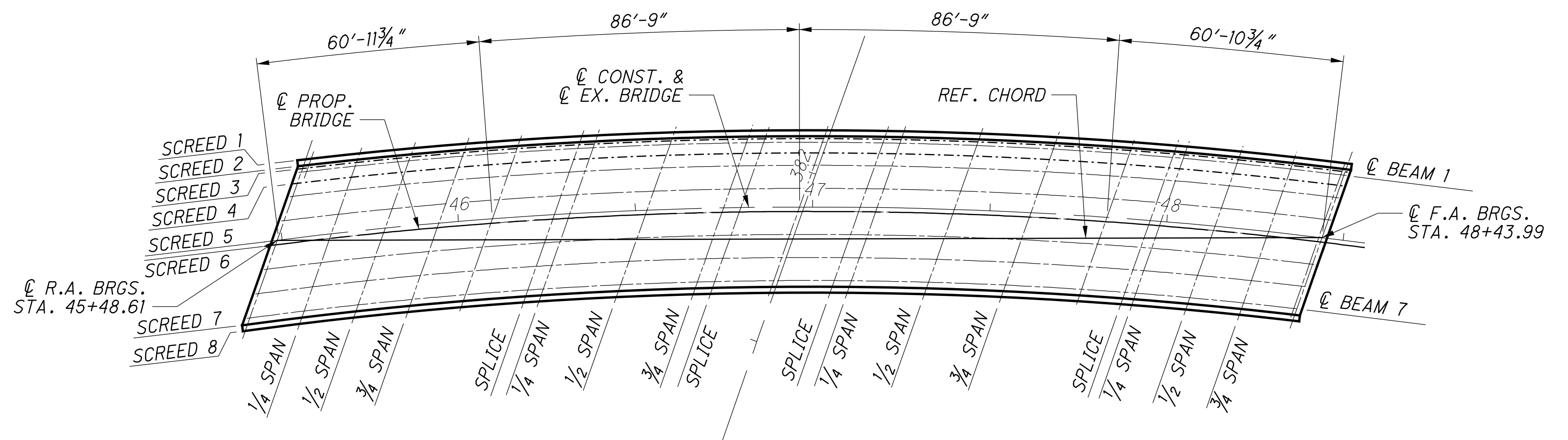
**DECK REINFORCING PLAN**



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**TRANSVERSE SECTION**



**PLAN SCHEMATIC**

**FINAL DECK SURFACE AND SCREED ELEVATION TABLE**

LOCATION	R.A. $\bar{C}$ BRGS.	SPAN 1			PIER 1 $\bar{C}$ BRGS.	SPAN 2			PIER 2 $\bar{C}$ BRGS.	SPAN 3			PIER 3 $\bar{C}$ BRGS.	SPAN 4			F.A. $\bar{C}$ BRGS.					
		1/4 SPAN	1/2 SPAN	3/4 SPAN		SPLICE 1	1/4 SPAN	1/2 SPAN		3/4 SPAN	SPLICE 2	1/4 SPAN		1/2 SPAN	3/4 SPAN	SPLICE 3		1/4 SPAN	1/2 SPAN	3/4 SPAN		
LEFT EDGE OF DECK SCREED LINE 1	STATION	45+59.20	45+74.12	45+89.04	46+03.96	46+18.88	46+35.36	46+40.13	46+61.38	46+82.62	46+85.93	47+03.87	47+21.94	47+25.14	47+46.41	47+67.68	47+72.53	47+88.95	48+03.89	48+18.83	48+33.77	48+48.71
	SCREED ELEVATION	896.80	896.47	896.12	895.74	895.38	894.99	894.93	894.46	893.91	893.79	893.35	892.93	892.90	892.44	891.93	891.77	891.45	891.20	890.99	890.79	890.59
	DEAD LOAD DEFLECTION	0"	5/16"	5/16"	1/8"	0"	1/16"	1/16"	1 1/8"	9/16"	1/16"	0"	1/16"	5/8"	1 1/8"	1/16"	1/16"	0"	1/8"	3/8"	5/16"	0"
	FINAL DECK ELEVATION	896.80	896.45	896.09	895.73	895.38	894.99	894.87	894.37	893.86	893.78	893.35	892.92	892.85	892.34	891.87	891.77	891.45	891.19	890.96	890.76	890.59
LEFT TOE OF PARAPET SCREED LINE 2	STATION	45+58.40	45+73.34	45+88.29	46+03.23	46+18.18	46+34.66	46+39.46	46+60.74	46+82.02	46+85.30	47+03.30	47+21.41	47+24.60	47+45.90	47+67.20	47+72.07	47+88.50	48+03.47	48+18.43	48+33.39	48+48.35
	SCREED ELEVATION	896.82	896.49	896.14	895.76	895.40	895.01	894.95	894.47	893.92	893.80	893.37	892.94	892.91	892.45	891.94	891.78	891.46	891.21	891.00	890.80	890.59
	DEAD LOAD DEFLECTION	0"	5/16"	5/16"	1/8"	0"	1/16"	1/16"	1 1/8"	9/16"	1/16"	0"	1/16"	5/8"	1 1/8"	1/16"	1/16"	0"	1/8"	3/8"	5/16"	0"
	FINAL DECK ELEVATION	896.82	896.46	896.11	895.75	895.40	895.00	894.89	894.38	893.88	893.80	893.37	892.94	892.86	892.35	891.88	891.78	891.46	891.20	890.97	890.77	890.59
LEFT EDGE OF ROUNDING SCREED LINE 3	STATION	45+58.04	45+72.99	45+87.95	46+02.90	46+17.86	46+34.34	46+39.15	46+60.45	46+81.75	46+85.01	47+03.05	47+21.17	47+24.36	47+45.68	47+66.99	47+71.86	47+88.30	48+03.28	48+18.25	48+33.22	48+48.19
	SCREED ELEVATION	896.86	896.53	896.17	895.80	895.43	895.05	894.99	894.51	893.96	893.84	893.41	892.98	892.95	892.48	891.97	891.82	891.49	891.24	891.03	890.83	890.63
	DEAD LOAD DEFLECTION	0"	5/16"	5/16"	1/8"	0"	1/16"	1/16"	1 1/8"	9/16"	1/16"	0"	1/16"	5/8"	1 1/8"	1/16"	1/16"	0"	1/8"	3/8"	5/16"	0"
	FINAL DECK ELEVATION	896.86	896.50	896.15	895.79	895.43	895.04	894.93	894.42	893.91	893.84	893.41	892.97	892.90	892.39	891.91	891.81	891.49	891.23	891.00	890.80	890.63
RIGHT EDGE OF ROUNDING SCREED LINE 4	STATION	45+56.11	45+71.12	45+86.14	46+01.15	46+16.17	46+32.65	46+37.54	46+58.92	46+80.30	46+83.49	47+01.67	47+19.89	47+23.06	47+44.45	47+65.84	47+70.75	47+87.23	48+02.26	48+17.28	48+32.30	48+47.33
	SCREED ELEVATION	896.87	896.54	896.18	895.80	895.44	895.05	894.99	894.51	893.96	893.84	893.40	892.97	892.94	892.47	891.96	891.75	891.48	891.23	891.01	890.80	890.60
	DEAD LOAD DEFLECTION	0"	3/8"	5/16"	1/16"	0"	1/16"	1/16"	1 1/16"	1/2"	1/16"	0"	1/16"	5/8"	1 1/16"	1/16"	1/16"	0"	1/8"	3/8"	5/16"	0"
	FINAL DECK ELEVATION	896.87	896.51	896.15	895.80	895.44	895.05	894.93	894.42	893.91	893.84	893.40	892.97	892.89	892.38	891.90	891.80	891.48	891.22	890.98	890.78	890.60
CENTERLINE CONSTR. SCREED LINE 5	STATION	45+48.61	45+63.85	45+79.10	45+94.34	46+09.59	46+26.65	46+31.27	46+52.96	46+74.65	46+78.08	46+96.34	47+15.36	47+18.02	47+39.71	47+61.40	47+68.80	47+83.09	47+98.31	48+13.54	48+28.76	48+43.98
	SCREED ELEVATION	896.13	895.80	895.43	895.05	894.68	894.28	894.22	893.73	893.18	893.05	892.61	892.16	892.15	891.67	891.14	890.93	890.64	890.38	890.15	889.93	889.72
	DEAD LOAD DEFLECTION	0"	5/16"	5/16"	1/8"	0"	1/16"	5/8"	1"	9/16"	1/16"	0"	1/16"	9/16"	1"	1/16"	1/16"	0"	1/8"	5/16"	1/4"	0"
	FINAL DECK ELEVATION	896.13	895.77	895.41	895.04	894.68	894.27	894.16	893.65	893.13	893.05	892.61	892.16	892.10	891.58	891.08	890.93	890.64	890.37	890.12	889.91	889.72
CENTERLINE PROP. BRIDGE SCREED LINE 6	STATION	45+47.98	45+63.25	45+78.51	45+93.78	46+09.04	46+26.10	46+30.75	46+52.47	46+74.18	46+77.59	46+95.89	47+14.94	47+17.61	47+39.32	47+61.03	47+66.45	47+82.74	47+97.98	48+13.22	48+28.46	48+43.71
	SCREED ELEVATION	896.07	895.73	895.37	894.99	894.62	894.22	894.15	893.67	893.11	892.99	892.55	892.10	892.08	891.60	891.07	890.90	890.57	890.31	890.08	889.86	889.65
	DEAD LOAD DEFLECTION	0"	5/16"	5/16"	1/8"	0"	1/16"	5/8"	1"	9/16"	1/16"	0"	1/16"	9/16"	1"	1/16"	1/16"	0"	1/8"	5/16"	1/4"	0"
	FINAL DECK ELEVATION	896.07	895.71	895.35	894.98	894.62	894.21	894.10	893.58	893.07	892.99	892.55	892.10	892.03	891.52	891.02	890.90	890.57	890.30	890.05	889.84	889.65
RIGHT TOE OF PARAPET SCREED LINE 7	STATION	45+37.10	45+52.70	45+68.30	45+83.90	45+99.51	46+16.10	46+21.68	46+43.85	46+66.01	46+68.58	46+88.18	47+07.40	47+10.33	47+32.47	47+54.61	47+59.89	47+76.76	47+92.29	48+07.82	48+23.35	48+38.89
	SCREED ELEVATION	895.03	894.71	894.35	893.96	893.57	893.18	893.10	892.61	892.03	891.93	891.46	891.00	890.98	890.49	889.94	889.77	889.41	889.13	888.89	888.66	888.43
	DEAD LOAD DEFLECTION	0"	5/16"	3/8"	3/16"	0"	1/16"	5/8"	1 1/16"	9/16"	1/16"	0"	1/16"	9/16"	1 1/16"	1/16"	1/16"	0"	1/8"	3/8"	5/16"	0"
	FINAL DECK ELEVATION	895.03	894.69	894.31	893.94	893.57	893.18	893.04	892.51	891.99	891.93	891.46	891.00	890.93	890.40	889.88	889.77	889.41	889.12	888.86	888.63	888.43
RIGHT EDGE OF DECK SCREED LINE 8	STATION	45+36.22	45+51.85	45+67.48	45+83.11	45+98.74	46+15.34	46+20.95	46+43.15	46+65.36	46+67.90	46+87.57	47+06.83	47+09.74	47+31.92	47+54.10	47+59.39	47+76.28	47+91.83	48+07.39	48+22.95	48+38.50
	SCREED ELEVATION	895.05	894.73	894.37	893.97	893.59	893.20	893.11	892.62	892.05	891.95	891.47	891.02	890.99	890.51	889.95	889.78	889.42	889.14	888.90	888.66	888.43
	DEAD LOAD DEFLECTION	0"	5/16"	3/8"	3/16"	0"	1/16"	5/8"	1 1/16"	9/16"	1/16"	0"	1/16"	9/16"	1 1/16"	1/16"	1/16"	0"	1/8"	3/8"	5/16"	0"
	FINAL DECK ELEVATION	895.05	894.71	894.33	893.96	893.59	893.19	893.06	892.53	892.00	891.94	891.47	891.01	890.95	890.42	889.89	889.78	889.42	889.13	888.87	888.64	888.43

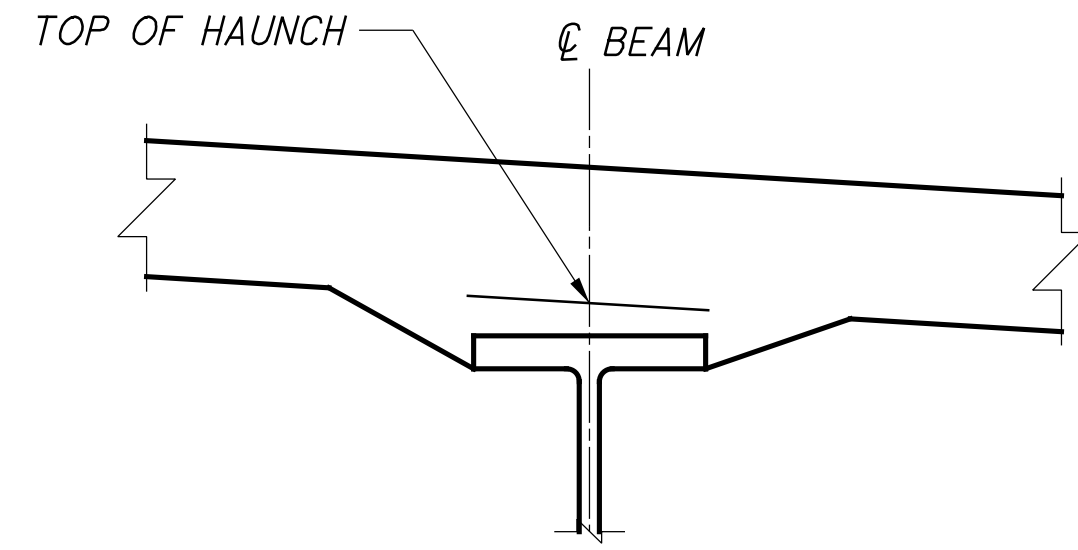
**LEGEND:**

⊙ DENOTES BEAM NUMBER

**NOTES:**

- SCREED ELEVATIONS SHOWN REPRESENT THE THEORETICAL DECK SURFACE LOCATION PRIOR TO DEFLECTIONS CAUSED BY DECK PLACEMENT AND OTHER ANTICIPATED DEAD LOADS.
- FINAL DECK SURFACE ELEVATIONS SHOWN REPRESENT THE DECK SURFACE LOCATION AFTER ALL ANTICIPATED DEAD LOAD DEFLECTIONS HAVE OCCURRED.

DESIGN AGENCY: EASTON OVAL SUITE 400 COLUMBUS, OH 43219 T 614-476-8000 F 614-476-8225  
**WOOLPERT**  
 CONSULTING ENGINEERS  
 DATE: 02/2017  
 REVIEWED: RKM  
 DRAWN: PES  
 DESIGNED: PES  
 CHECKED: BWB  
 STRUCTURE FILE NUMBER: 3005887  
**SCREED AND FINAL DECK ELEVATIONS**  
 BRIDGE NO. GUE-513-0871  
 SR-513 OVER IR-70  
**GUE-513-8.65**  
 PID No. 93289  
 39/54  
 85/100



**TOP OF HAUNCH DETAIL**

**FINAL DECK SURFACE AND TOP OF HAUNCH ELEVATION TABLE**

LOCATION	R.A. CL BRGS.	SPAN 1			PIER 1 CL BRGS.	SPAN 2					PIER 2 CL BRGS.	SPAN 3					PIER 3 CL BRGS.	SPAN 4			F.A. CL BRGS.	
		1/4 SPAN	1/2 SPAN	3/4 SPAN		SPLICE 1	1/4 SPAN	1/2 SPAN	3/4 SPAN	SPLICE 2		SPLICE 3	1/4 SPAN	1/2 SPAN	3/4 SPAN	SPLICE 4		1/4 SPAN	1/2 SPAN	3/4 SPAN		
BEAM 1	STATION	45+57.56	45+72.53	45+87.50	46+02.47	46+17.44	46+33.92	46+38.76	46+60.07	46+81.39	46+84.63	47+02.70	47+20.85	47+24.04	47+45.37	47+66.70	47+71.58	47+88.04	48+03.02	48+18.01	48+32.99	48+47.97
	TOP OF HAUNCH ELEVATION	896.20	895.87	895.51	895.14	894.77	894.38	894.32	893.85	893.30	893.18	892.74	892.31	892.29	891.82	891.31	891.86	890.83	890.58	890.37	890.16	889.96
	DEAD LOAD DEFLECTION	0"	5/16"	5/16"	1/8"	0"	1/16"	1/16"	1 1/8"	9/16"	1/16"	0"	1/16"	5/8"	1 1/8"	11/16"	1/16"	0"	1/8"	3/8"	5/16"	0"
	FINAL DECK ELEVATION	896.91	896.55	896.19	895.84	895.48	895.09	894.97	894.47	893.96	893.88	893.45	893.02	892.94	892.43	891.96	891.86	891.54	891.28	891.04	890.84	890.66
BEAM 2	STATION	45+54.41	45+69.48	45+84.54	45+99.61	46+14.67	46+31.17	46+36.12	46+57.57	46+79.01	46+82.15	47+00.46	47+18.77	47+21.92	47+43.38	47+64.83	47+69.77	47+86.29	48+01.36	48+16.43	48+31.50	48+46.57
	TOP OF HAUNCH ELEVATION	895.99	895.66	895.30	894.92	894.56	894.17	894.10	893.62	893.07	892.95	892.51	892.08	892.05	891.58	891.06	890.91	890.58	890.32	890.10	889.89	889.69
	DEAD LOAD DEFLECTION	0"	3/8"	5/16"	1/16"	0"	1/16"	11/16"	1 1/16"	1/2"	1/16"	0"	1/16"	5/8"	1 1/16"	11/16"	1/16"	0"	1/8"	3/8"	5/16"	0"
	FINAL DECK ELEVATION	896.70	896.34	895.98	895.62	895.26	894.87	894.75	894.24	893.73	893.66	893.22	892.79	892.71	892.20	891.71	891.61	891.29	891.02	890.78	890.58	890.40
BEAM 3	STATION	45+51.22	45+66.38	45+81.55	45+96.71	46+11.87	46+28.38	46+33.45	46+55.03	46+76.61	46+79.64	46+98.19	47+16.66	47+19.77	47+41.36	47+62.94	47+67.94	47+84.53	47+99.68	48+14.84	48+29.99	48+45.14
	TOP OF HAUNCH ELEVATION	895.68	895.34	894.98	894.60	894.23	893.84	893.77	893.29	892.74	892.62	892.18	891.74	891.71	891.24	890.71	890.55	890.22	889.96	889.74	889.52	889.31
	DEAD LOAD DEFLECTION	0"	5/16"	5/16"	1/8"	0"	1/16"	11/16"	1"	9/16"	1/16"	0"	1/16"	9/16"	1 1/16"	11/16"	1/16"	0"	1/8"	5/16"	5/16"	0"
	FINAL DECK ELEVATION	896.39	896.02	895.66	895.30	894.94	894.55	894.43	893.91	893.40	893.33	892.89	892.45	892.37	891.86	891.36	891.26	890.93	890.66	890.42	890.21	890.02
BEAM 4	STATION	45+47.98	45+63.25	45+78.51	45+93.78	46+09.04	46+25.56	46+30.75	46+52.47	46+74.18	46+77.10	46+95.89	47+14.53	47+17.61	47+39.32	47+61.03	47+66.09	47+82.74	47+97.98	48+13.22	48+28.46	48+43.71
	TOP OF HAUNCH ELEVATION	895.36	895.03	894.66	894.28	893.91	893.52	893.45	892.96	892.41	892.29	891.84	891.40	891.37	890.89	890.36	890.20	889.86	889.60	889.37	889.15	888.94
	DEAD LOAD DEFLECTION	0"	5/16"	5/16"	1/8"	0"	1/16"	5/8"	1"	9/16"	1/16"	0"	1/16"	9/16"	1"	11/16"	1/16"	0"	1/8"	5/16"	1/4"	0"
	FINAL DECK ELEVATION	896.07	895.71	895.35	894.98	894.62	894.23	894.10	893.58	893.07	893.00	892.55	892.11	892.03	891.52	891.02	890.91	890.57	890.30	890.05	889.84	889.65
BEAM 5	STATION	45+44.71	45+60.07	45+75.44	45+90.80	46+06.17	46+22.70	46+28.02	46+49.87	46+71.72	46+74.53	46+93.57	47+12.38	47+15.41	47+37.25	47+59.09	47+64.22	47+80.94	47+96.26	48+11.59	48+26.92	48+42.25
	TOP OF HAUNCH ELEVATION	895.04	894.71	894.35	893.96	893.59	893.20	893.12	892.63	892.07	891.96	891.51	891.06	891.03	890.55	890.02	889.85	889.51	889.24	889.01	888.78	888.57
	DEAD LOAD DEFLECTION	0"	5/16"	5/16"	1/16"	0"	1/16"	5/8"	1"	9/16"	1/16"	0"	1/16"	1/2"	1"	11/16"	1/16"	0"	1/8"	5/16"	5/16"	0"
	FINAL DECK ELEVATION	895.75	895.40	895.03	894.66	894.30	893.90	893.78	893.26	892.74	892.67	892.22	891.77	891.70	891.18	890.67	890.56	890.22	889.94	889.69	889.47	889.28
BEAM 6	STATION	45+41.38	45+56.85	45+72.32	45+87.79	46+03.26	46+19.82	46+25.25	46+47.23	46+69.22	46+71.93	46+91.21	47+10.20	47+13.19	47+35.16	47+57.13	47+62.32	47+79.11	47+94.53	48+09.94	48+25.36	48+40.78
	TOP OF HAUNCH ELEVATION	894.73	894.40	894.04	893.65	893.27	892.88	892.80	892.31	891.74	891.64	891.17	890.72	890.70	890.21	889.66	889.50	889.15	888.88	888.64	888.41	888.19
	DEAD LOAD DEFLECTION	0"	5/16"	3/8"	1/8"	0"	1/16"	11/16"	1 1/16"	9/16"	1/16"	0"	1/16"	5/8"	1 1/16"	5/8"	1/16"	0"	1/8"	5/16"	5/16"	0"
	FINAL DECK ELEVATION	895.43	895.08	894.71	894.34	893.98	893.58	893.45	892.93	892.41	892.34	891.88	891.43	891.36	890.83	890.32	890.21	889.86	889.58	889.32	889.10	888.90
BEAM 7	STATION	45+38.01	45+53.59	45+69.16	45+84.73	46+00.31	46+16.89	46+22.44	46+44.57	46+66.70	46+69.29	46+88.83	47+07.99	47+10.94	47+33.04	47+55.15	47+60.41	47+77.26	47+92.77	48+08.27	48+23.78	48+39.29
	TOP OF HAUNCH ELEVATION	894.41	894.09	893.72	893.33	892.95	892.56	892.48	891.98	891.41	891.31	890.84	890.39	890.36	889.88	889.33	889.15	888.80	888.52	888.28	888.05	887.82
	DEAD LOAD DEFLECTION	0"	5/16"	3/8"	3/16"	0"	1/16"	5/8"	1 1/16"	9/16"	1/16"	0"	1/16"	9/16"	1 1/16"	11/16"	1/16"	0"	1/8"	3/8"	5/16"	0"
	FINAL DECK ELEVATION	895.12	894.77	894.40	894.03	893.66	893.26	893.13	892.60	892.08	892.01	891.55	891.09	891.02	890.50	889.98	889.86	889.51	889.22	888.96	888.73	888.53

**NOTES:**

1. TOP OF HAUNCH ELEVATIONS SHOWN REPRESENT THE THEORETICAL LOCATION OF THE BOTTOM OF THE DECK ABOVE THE BEAM HAUNCH PRIOR TO DEFLECTIONS CAUSED BY DECK PLACEMENT AND OTHER ANTICIPATED DEAD LOADS.
2. FINAL DECK SURFACE ELEVATIONS SHOWN REPRESENT THE DECK SURFACE LOCATION AFTER ALL ANTICIPATED DEAD LOAD DEFLECTIONS HAVE OCCURRED.
3. SEE SHEET 39/54 FOR TRANSVERSE SECTION AND PLAN SCHEMATIC.

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DESIGN AGENCY  
**WOOLPERT**  
 CONSULTING ENGINEERS

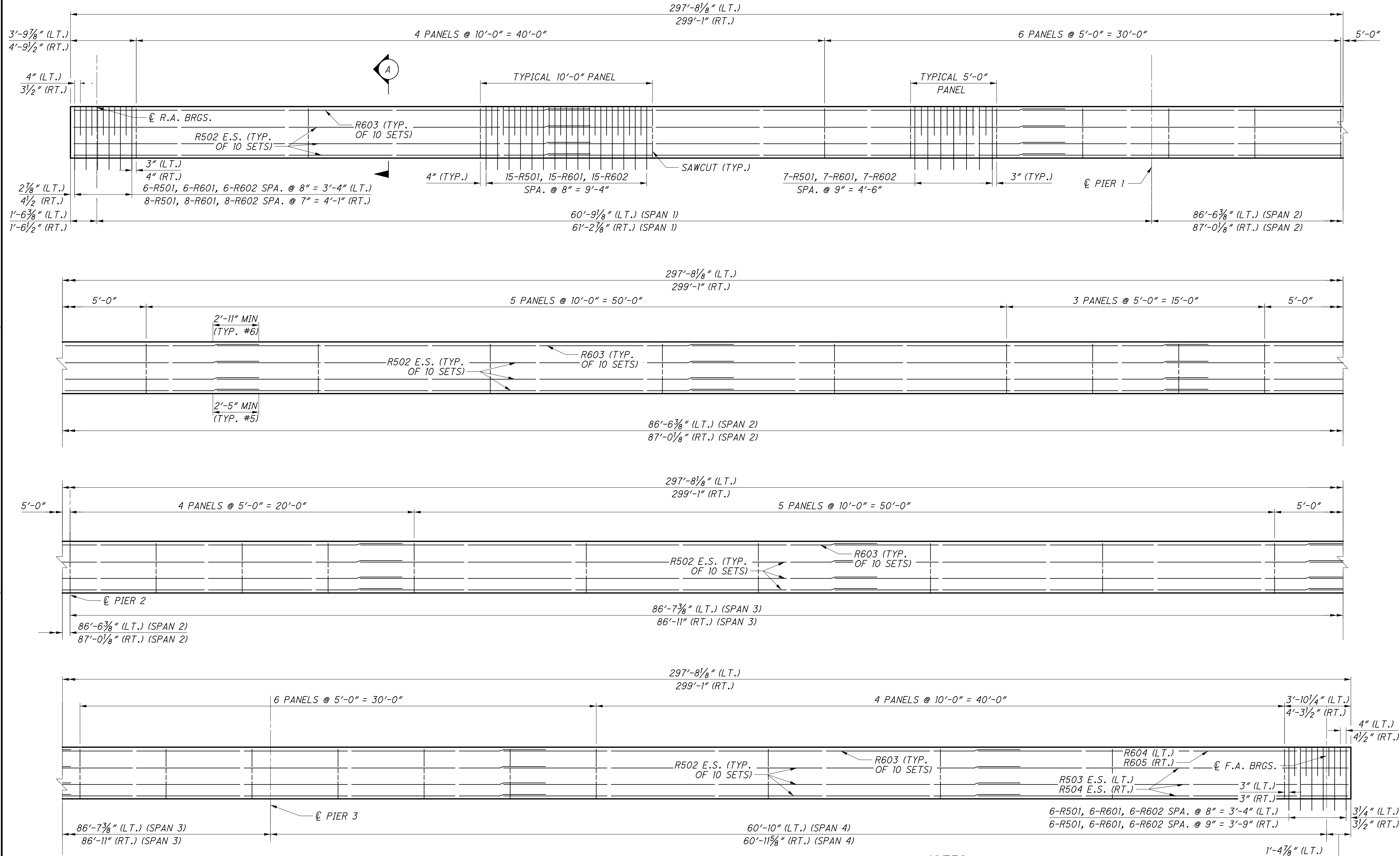
DATE  
 02/2017  
 REVIEWED  
 RKM  
 STRUCTURE FILE NUMBER  
 3005887

DRAWN  
 PES  
 CHECKED  
 BWB

**TOP OF HAUNCH AND FINAL DECK ELEVATIONS**  
 BRIDGE NO. GUE-513-0871  
 SR-513 OVER IIR-70

**GUE - 513 - 8.65**  
 PID No. 93289

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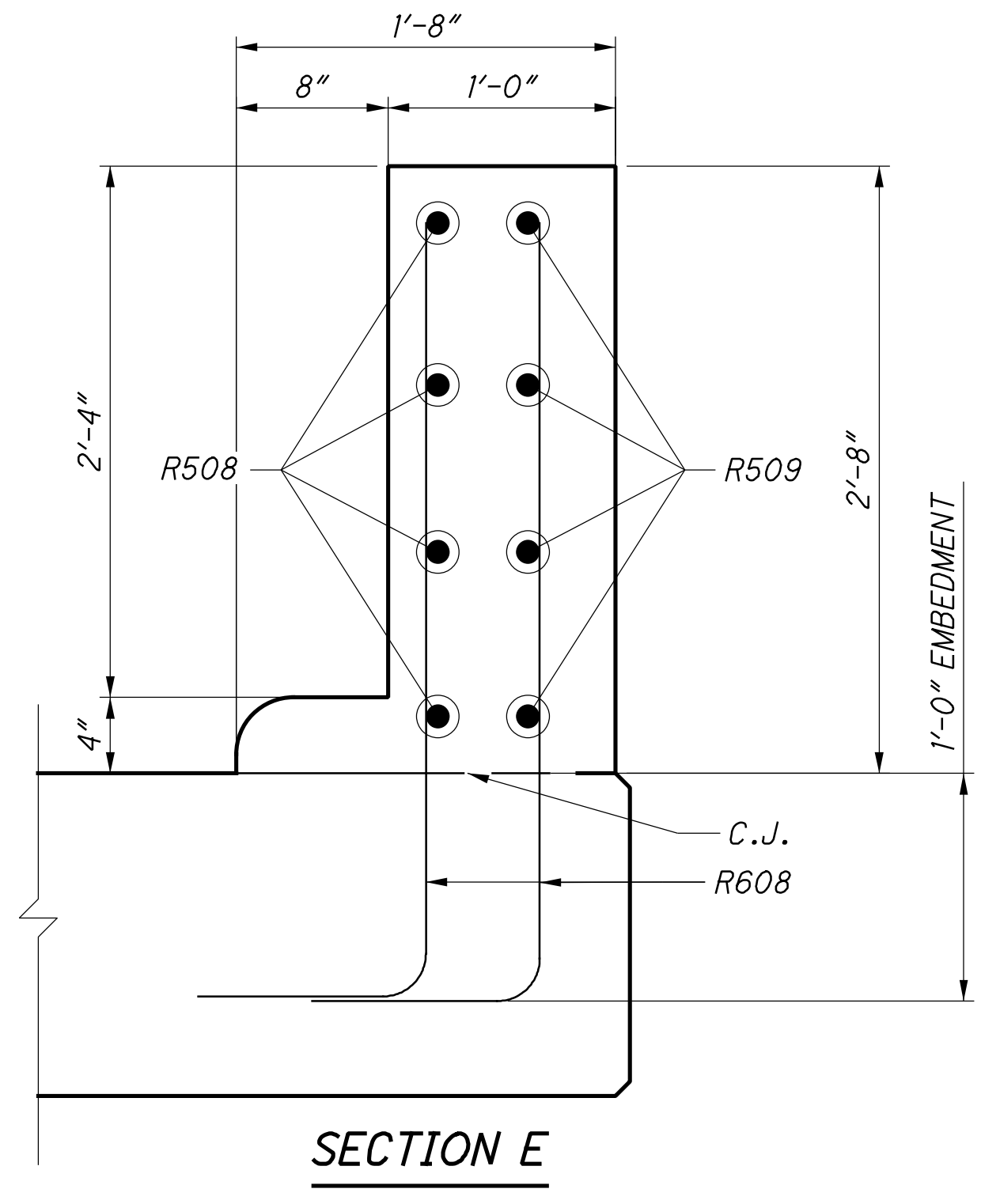
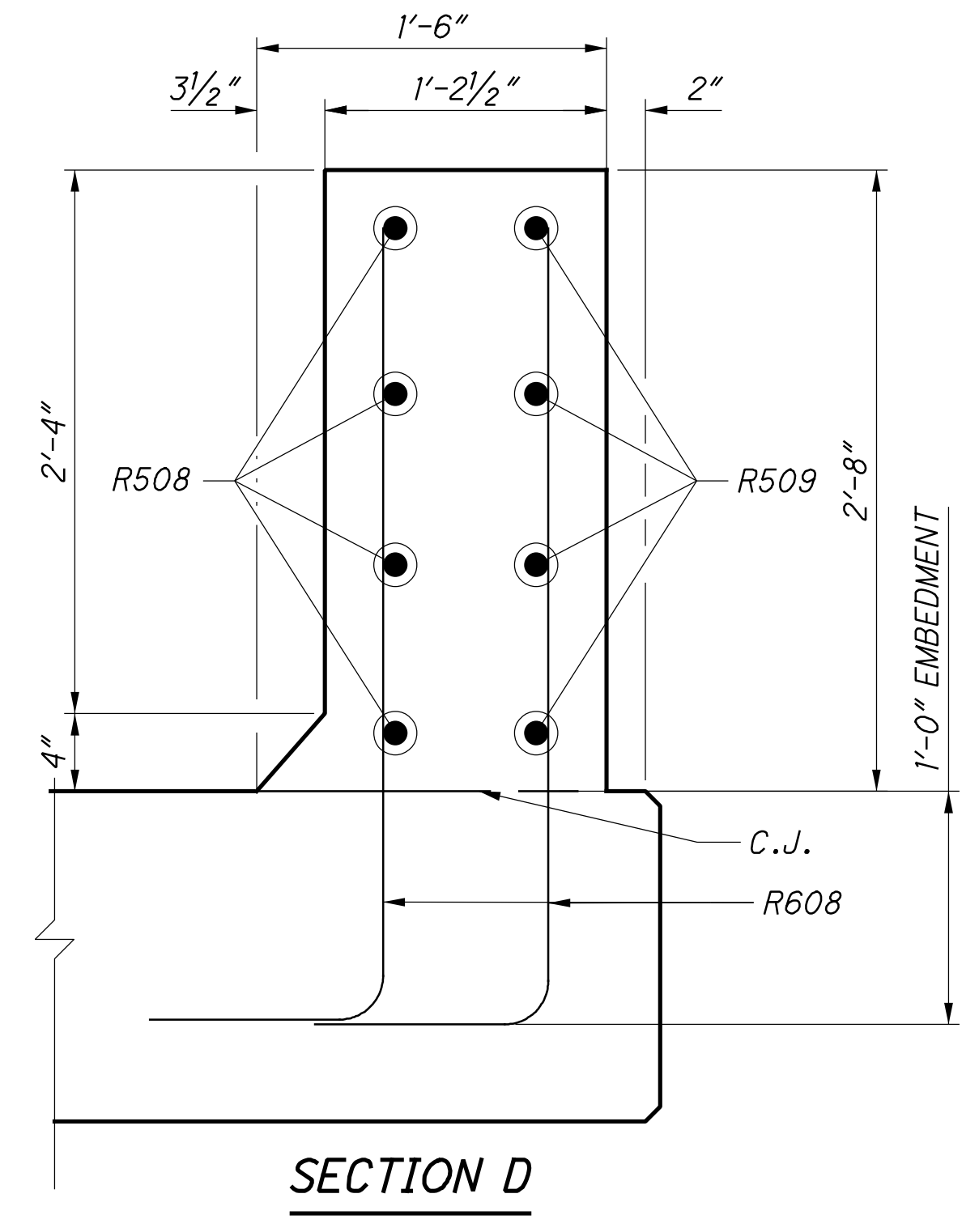
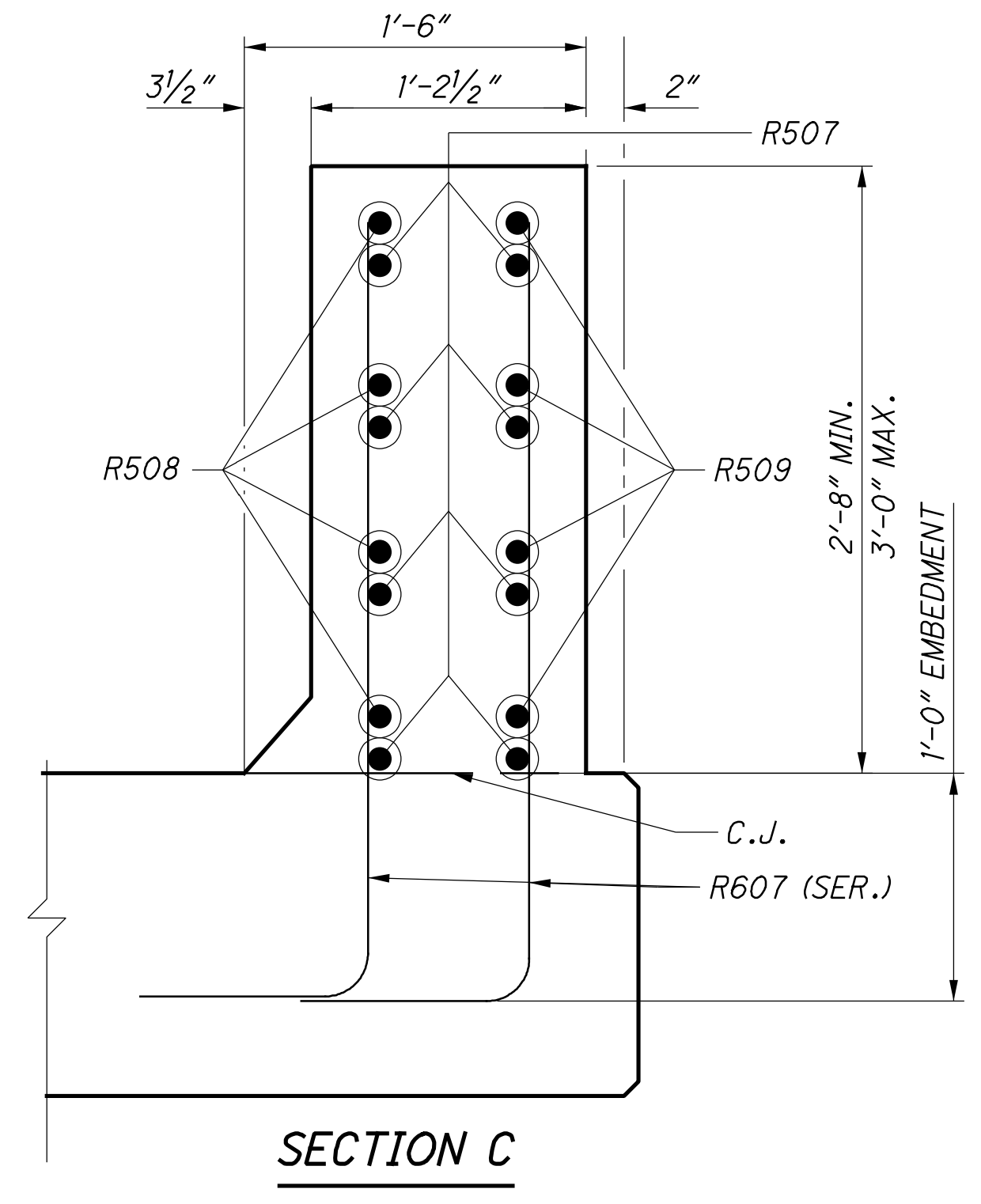
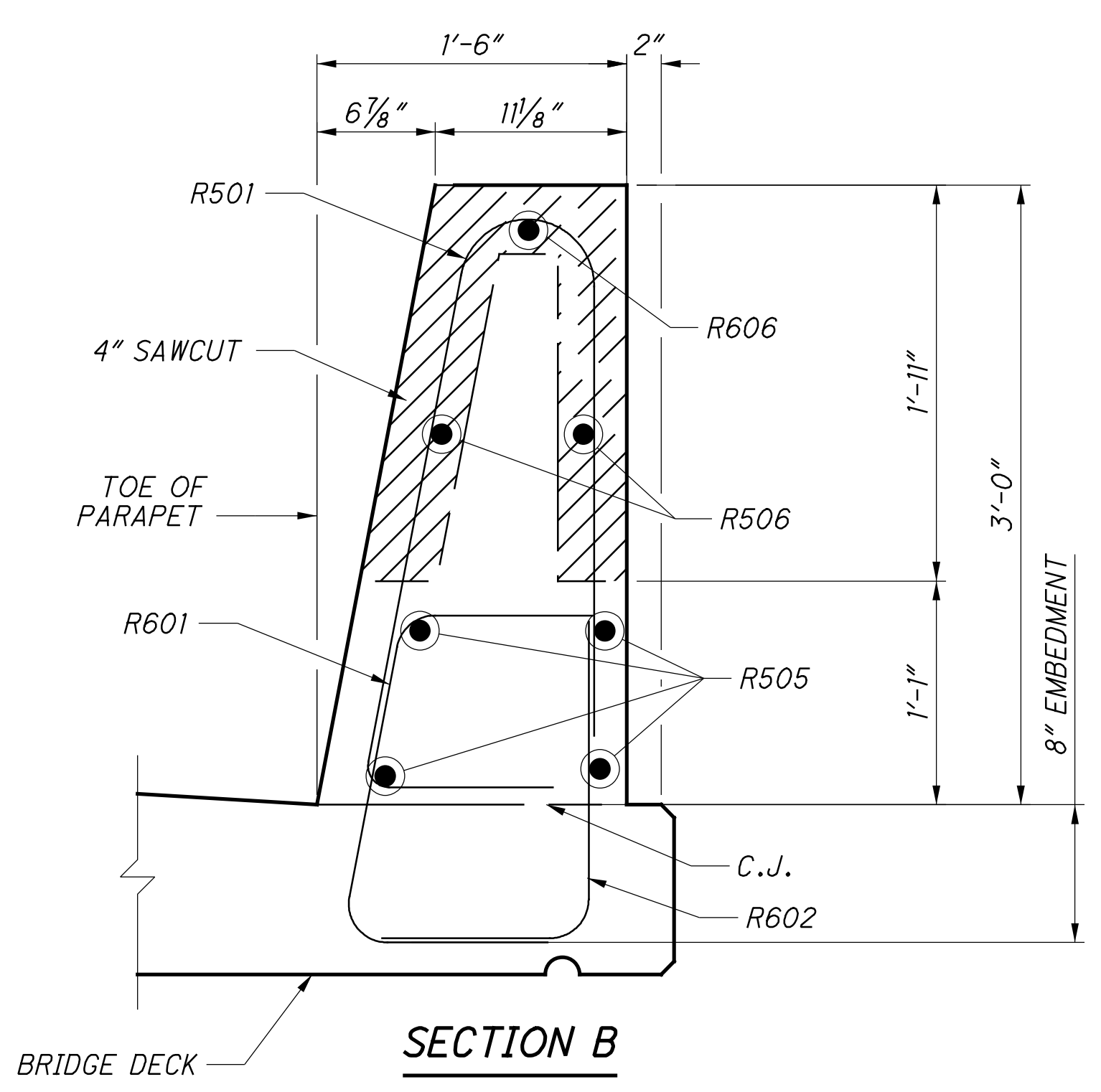
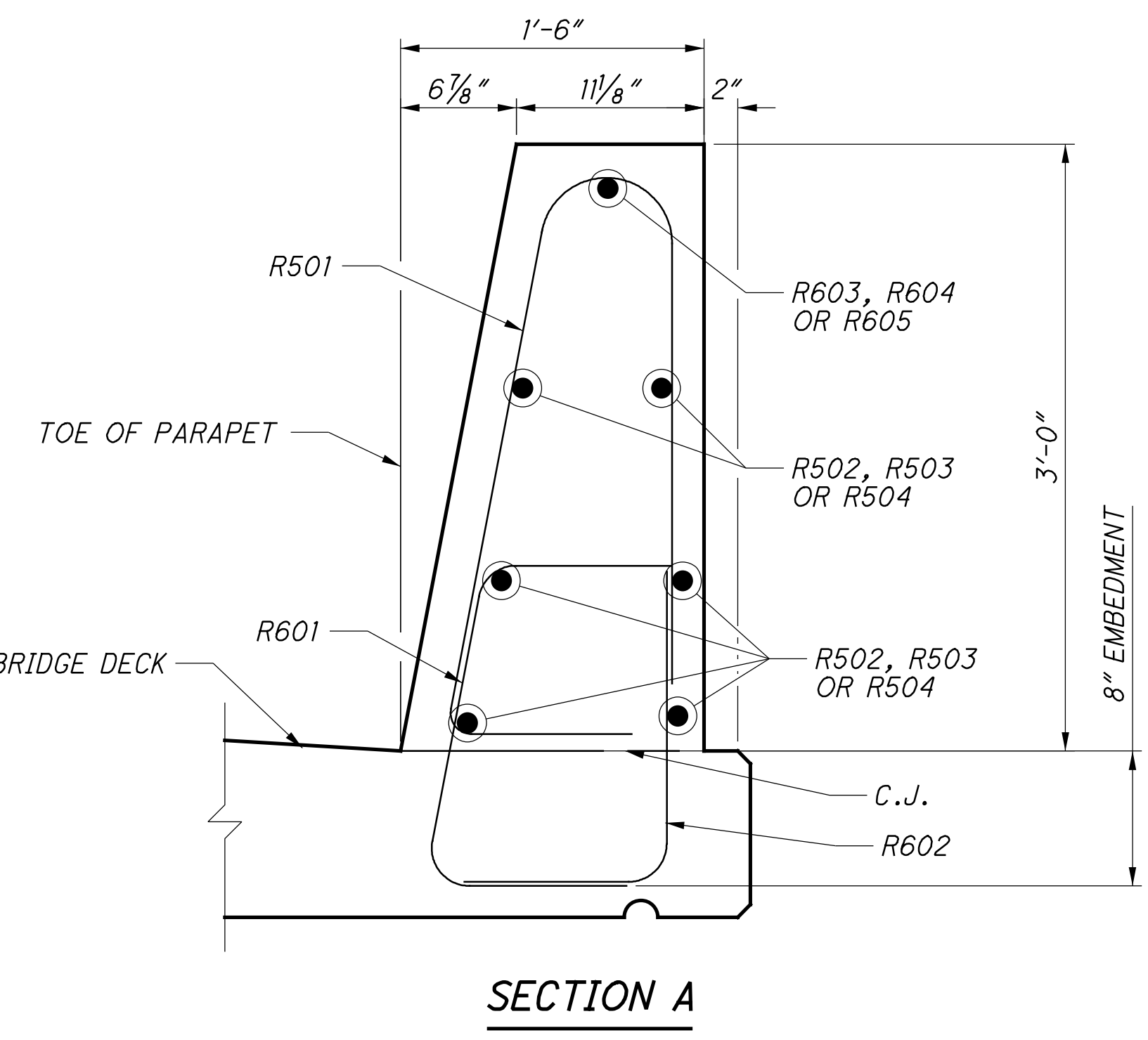
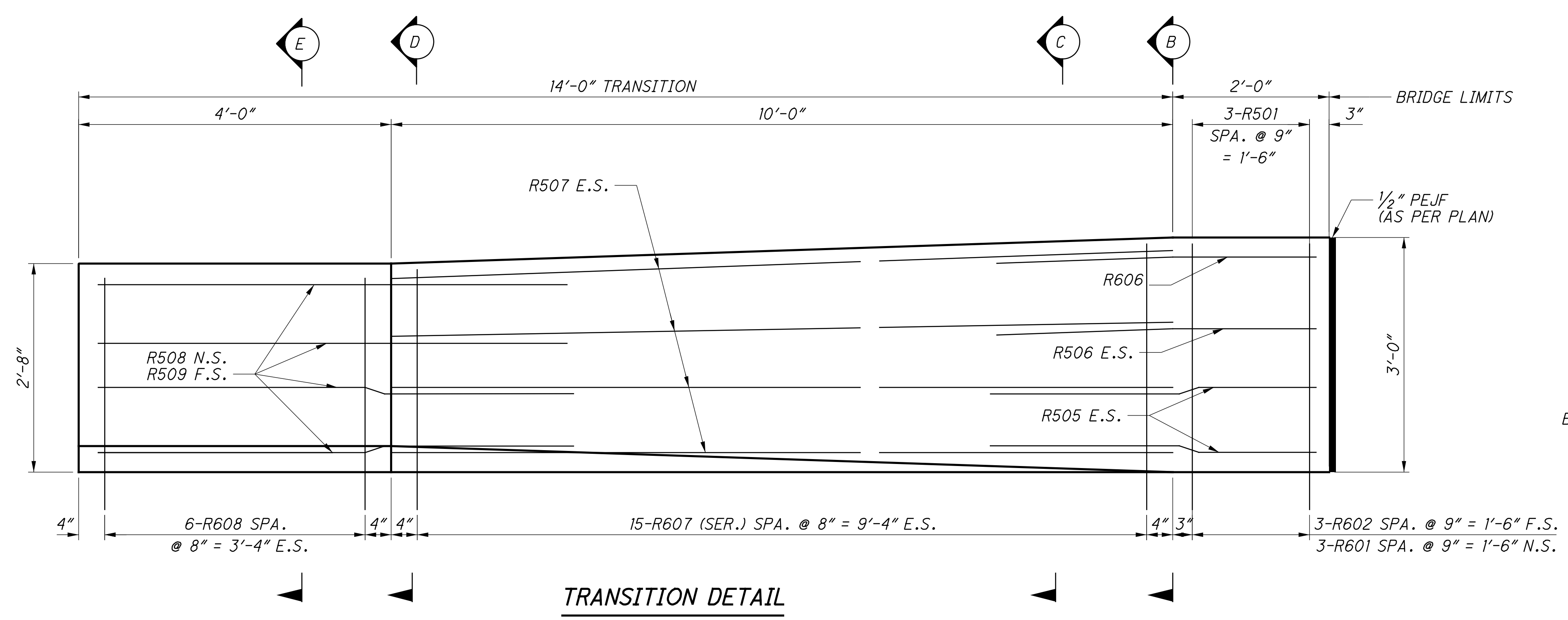
**PARAPET ELEVATION**

- NOTES:**
- SEE STD. DRAWING SBR-1-13 FOR ADDITIONAL PARAPET DETAILS.
  - SEE SHEET 42/54 FOR PARAPET SECTION A.

DESIGNED BY	TML	CHECKED BY	MAA
DRAWN BY	JMM	REVIEWED BY	
REVIEWED BY	RKM	DATE	02/2017
STRUCTURE FILE NUMBER	3005887	DESIGN AGENCY	WOLPERT CORPORATION
BRIDGE NO.	GUE-513-0871	DESIGN AGENCY	WOLPERT CORPORATION
PID No.	93289	DESIGN AGENCY	WOLPERT CORPORATION
SR	513 OVER IR-70	DESIGN AGENCY	WOLPERT CORPORATION
GUE-513-8.65		41/54	
87		100	



G:\DE\Clients\ODOT\075542\_GUE\_513\_0865\93289\_GUE\_513\_0865\Design\Structures\GUE513\_0865C\_Sheets\513\_0865C\_SA002.dgn 6/8/2017 12:05:14 halln



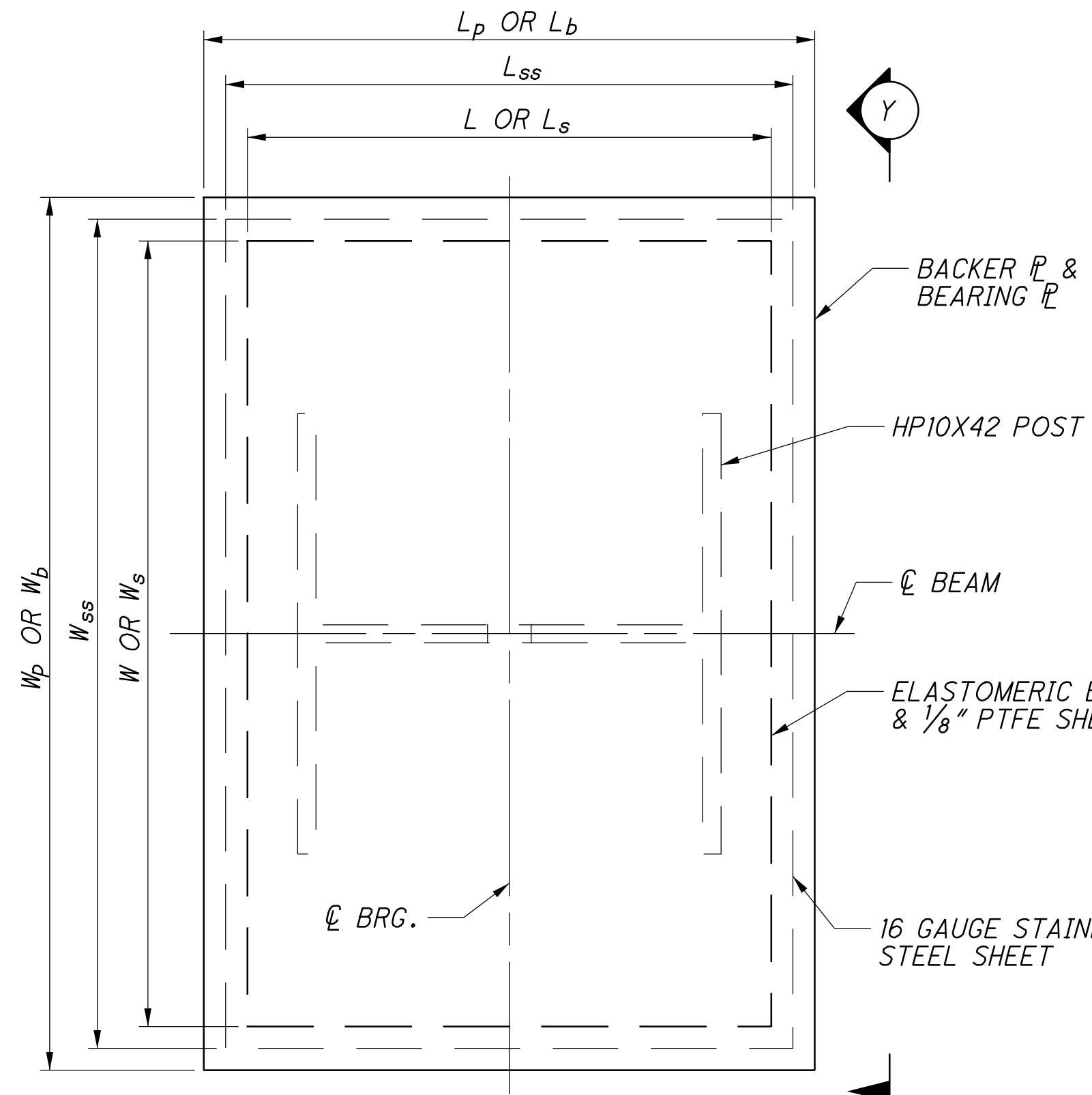
**NOTES:**

1. SEE STD DRAWING SBR-1-13 FOR ADDITIONAL PARAPET DETAILS.
2. SEE SHEET 41/54 FOR PARAPET ELEVATION VIEW OVER BRIDGE.
3. PAYMENT FOR 1/2" DIA. GFRP STIFFENING REINFORCEMENT SHALL BE INCLUDED IN THE CONTRACT PRICE FOR ITEM 511 - BRIDGE DECK (PARAPET).

DESIGNED TML	DRAWN JMM	REVIEWED RKM	DATE 02/2017	DESIGN AGENCY WOLPERT CORPORATION COLUMBUS, OH 43219 T 614-476-6000 F 614-476-6225
CHECKED TML	REVISED	STRUCTURE FILE NUMBER 3005887	FILE NUMBER 3005887	
<b>PARAPET DETAILS</b>				
BRIDGE NO. GUE-513-0871				
SR-513 OVER IR-70				
<b>GUE-513-8.65</b>				
<b>PID No. 93289</b>				
42 / 54				
88				
100				

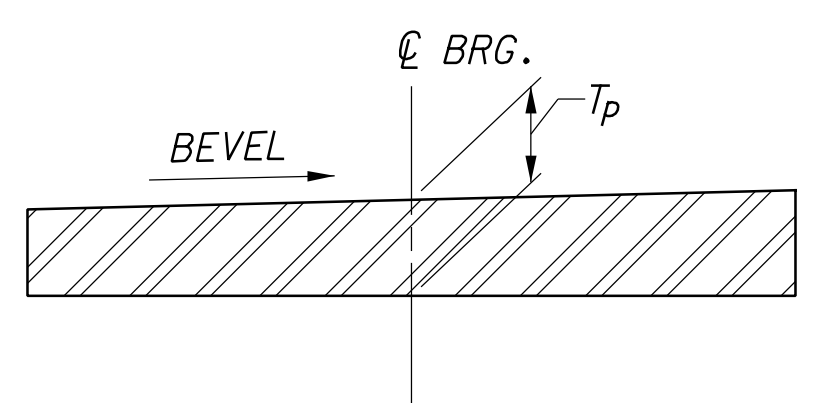
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SUBSTRUCTURE UNIT	BEAM	BEARING TYPE	BEARING DIMENSIONS								LOAD PLATE				BEARING/BACKER PLATE			STAINLESS STEEL SHEET		PTFE SHEET		SERVICE REACTIONS (KIP)				DESIGN ROTATION (RAD)
			L	W	T <sub>e</sub>	T <sub>i</sub>	N <sub>e</sub>	N <sub>i</sub>	T	H	L <sub>p</sub>	W <sub>p</sub>	T <sub>p</sub>	BEVEL	L <sub>b</sub>	W <sub>b</sub>	T <sub>b</sub>	L <sub>ss</sub>	W <sub>ss</sub>	L <sub>s</sub>	W <sub>s</sub>	DL	LL <sub>max</sub>	LL <sub>min</sub>	TOTAL	
REAR ABUTMENT	INTERIOR	EXP.	1'-0"	1'-6"	3/16"	5/16"	1	6	2 1/2"	4 13/16"	1'-0"	1'-4"	1 1/2"	-2.50%	1'-2"	1'-8"	1 1/2"	1'-1"	1'-7"	1'-0"	1'-6"	107.5	88.0	-3.7	195.5	0.007390
FORWARD ABUTMENT	INTERIOR	EXP.	1'-0"	1'-6"	3/16"	5/16"	1	6	2 1/2"	4 13/16"	1'-0"	1'-4"	1 1/2"	-0.50%	1'-2"	1'-8"	1 1/2"	1'-1"	1'-7"	1'-0"	1'-6"	106.9	88.0	-3.7	194.9	0.007390
REAR ABUTMENT	EXTERIOR	EXP.	1'-0"	1'-6"	3/16"	5/16"	1	6	2 1/2"	4 13/16"	1'-0"	1'-4"	1 1/2"	-2.50%	1'-2"	1'-8"	1 1/2"	1'-1"	1'-7"	1'-0"	1'-6"	105.4	88.0	-3.7	193.4	0.007889
FORWARD ABUTMENT	EXTERIOR	EXP.	1'-0"	1'-6"	3/16"	5/16"	1	6	2 1/2"	4 13/16"	1'-0"	1'-4"	1 1/2"	-0.50%	1'-2"	1'-8"	1 1/2"	1'-1"	1'-7"	1'-0"	1'-6"	97.9	88.0	-3.7	185.9	0.007889

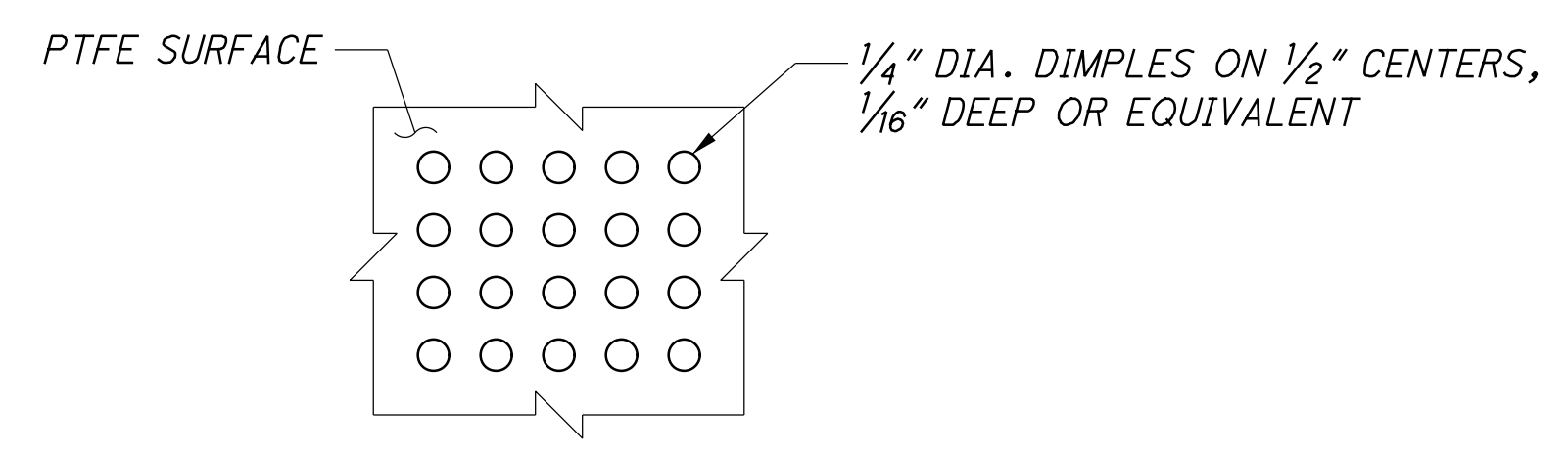


**BEARING PLAN**

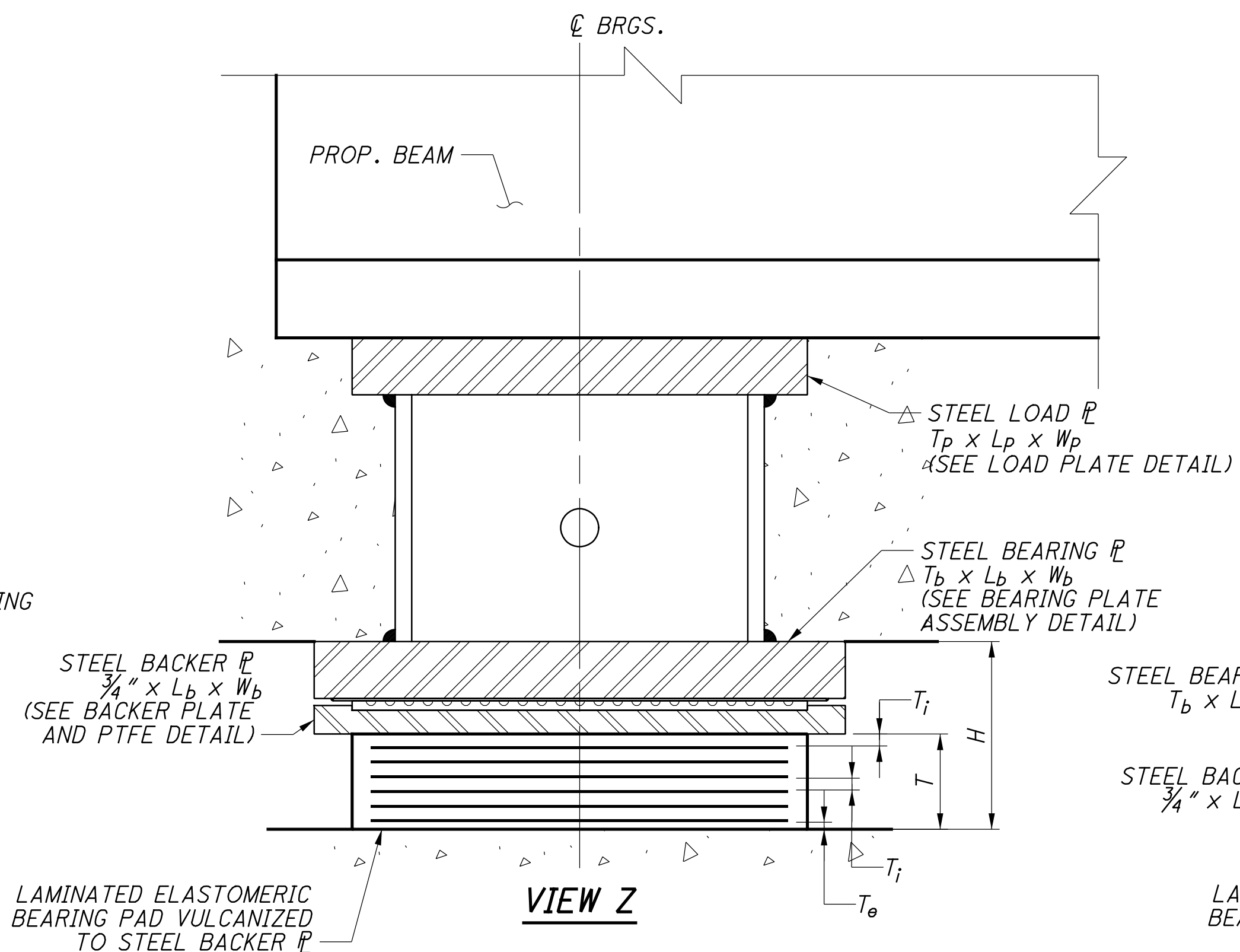
(ALL PLATES CENTERED ABOUT INTERSECTION OF  $\phi$  BRG. &  $\phi$  BEAM)



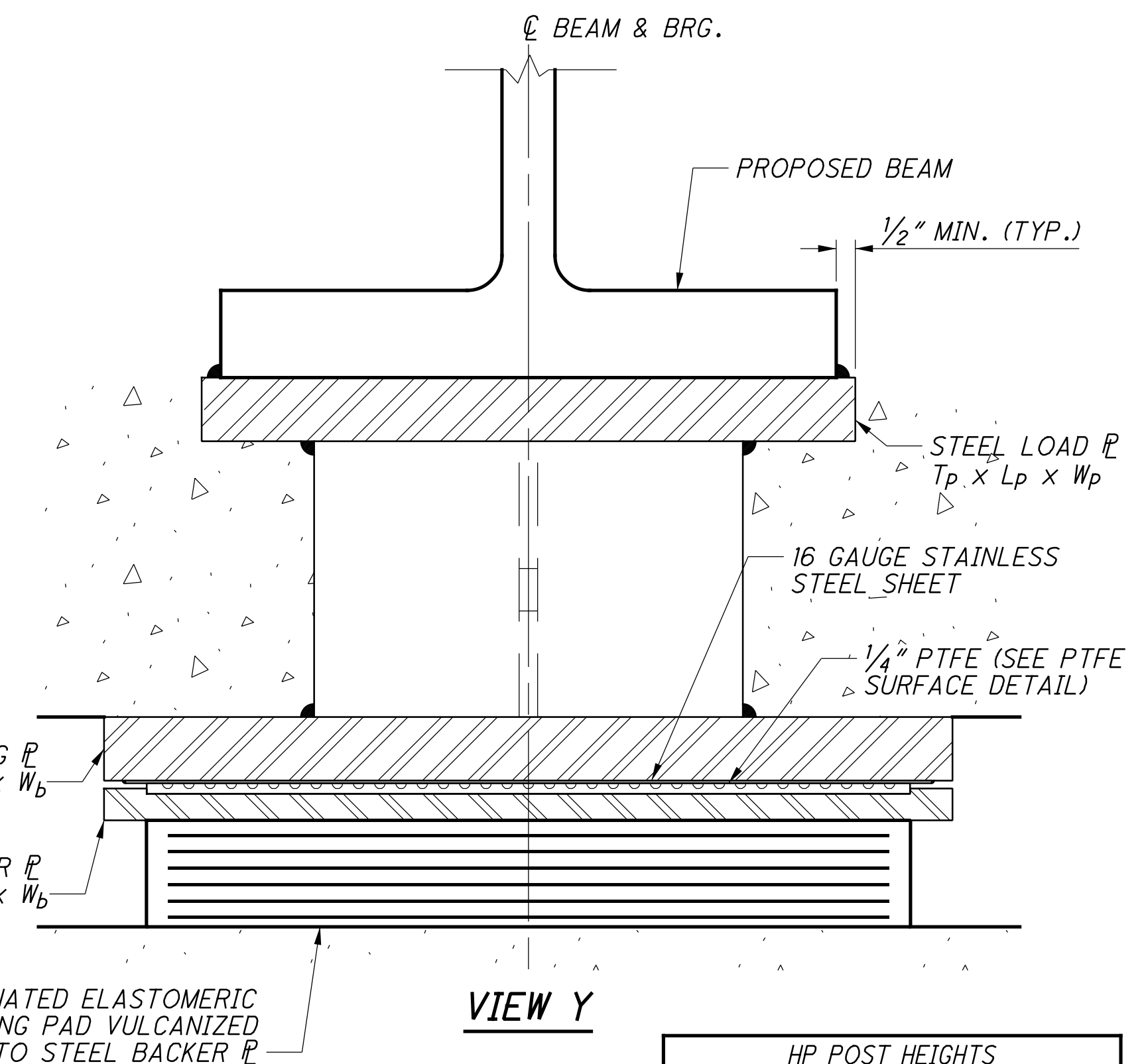
**LOAD PLATE DETAIL**



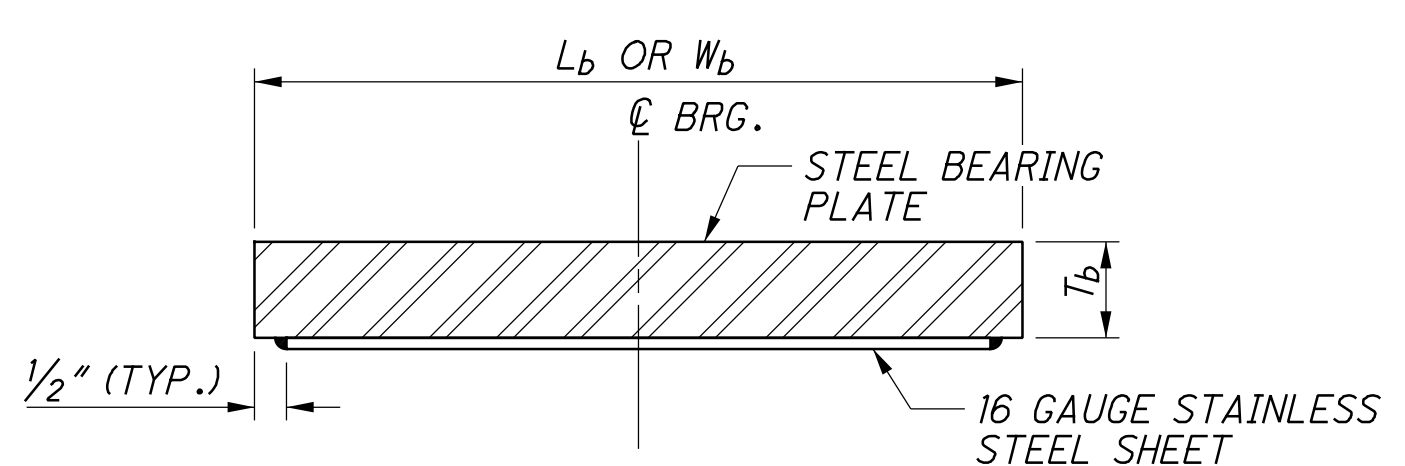
**PTFE SURFACE DETAIL**



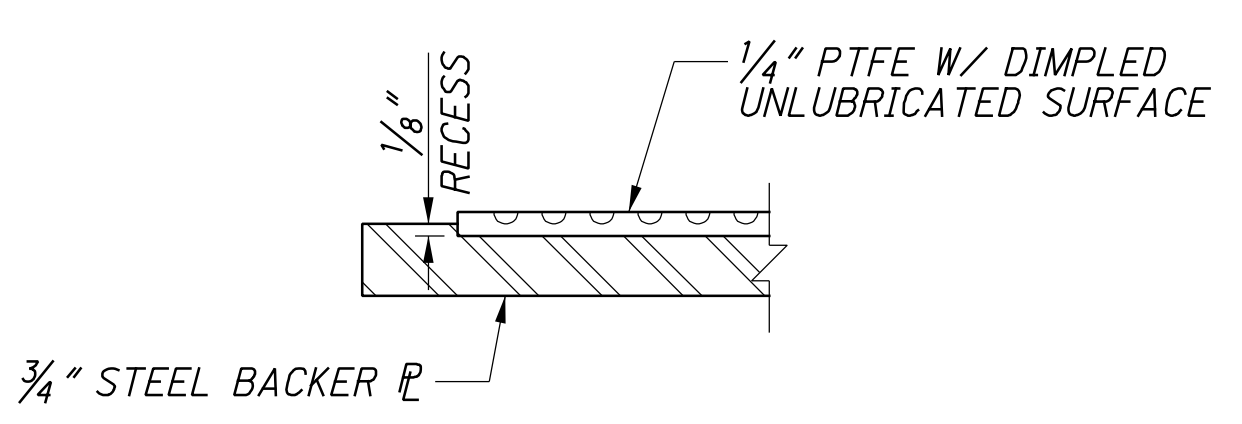
**VIEW Z**



**VIEW Y**



**BEARING PLATE ASSEMBLY**



**BACKER PLATE AND PTFE DETAIL**

(SECTION THROUGH PTFE)

**LEGEND:**

- T<sub>e</sub> = EXTERIOR LAYER THICKNESS
- N<sub>e</sub> = NUMBER OF EXTERIOR LAYERS
- T<sub>i</sub> = INTERIOR LAYER THICKNESS
- N<sub>i</sub> = NUMBER OF INTERIOR LAYERS
- DL = DEAD LOAD
- LL = LIVE LOAD (WITHOUT IMPACT)

**NOTES:**

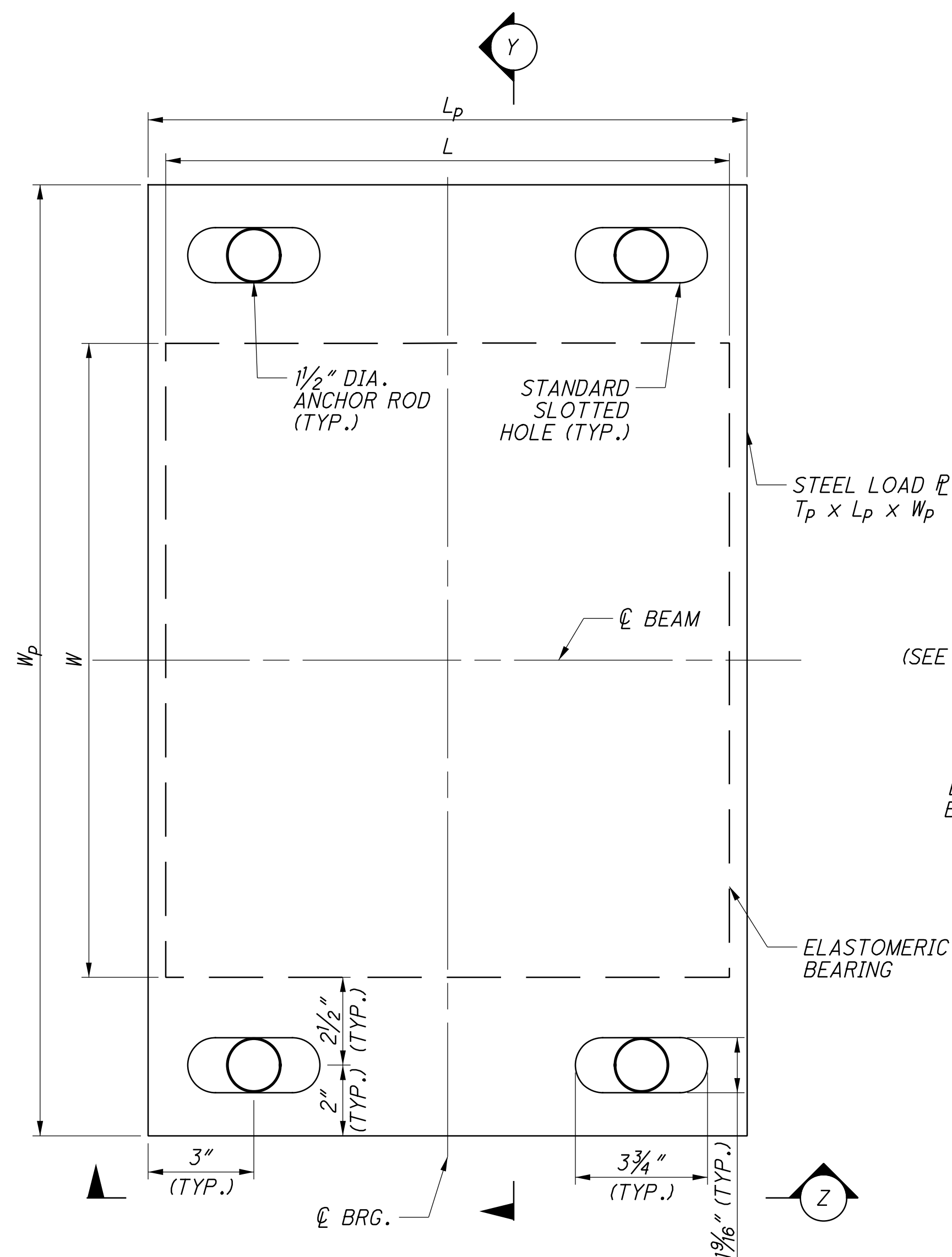
1. THE ELASTOMER SHALL HAVE A HARDNESS OF 60 DUROMETER. THE BEARINGS WERE DESIGNED IN ACCORDANCE WITH SECTION 14.7.6 (METHOD A) OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS. THE LONG-TERM COMPRESSION PROOF LOAD TEST (AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, DIVISION II, SECTION 18.7.2.6) IS NOT REQUIRED.
2. 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.
3. STEEL PLATES SHALL BE ASTM A709 GRADE 50 STRUCTURAL STEEL AND SHALL BE CLEANED AND COATED. SURFACE PREPARATION AND PRIMING SHALL BE PERFORMED IN THE SHOP AND BE INCLUDED IN THE PRICE BID FOR BEARINGS. FIELD COATS SHALL BE INCLUDED IN THE PRICE FOR ITEM 514. THE STEEL LOAD PLATES SHALL BE BONDED BY VULCANIZATION TO THE ELASTOMER DURING THE MOLDING PROCESS.
4. THE BEARINGS, STEEL PLATES, AND MISCELLANEOUS COMPONENTS SHALL BE PAID FOR UNDER ITEM 516: ELASTOMERIC BEARINGS WITH INTERNAL LAMINATES AND LOAD PLATE, AS PER PLAN. THE PTFE SURFACE AND STAINLESS STEEL SHEET SHALL BE PAID FOR UNDER ITEM 516: BEARING, PTFE (TEFLON), AS PER PLAN.
5. THE PTFE SHEET SHALL BE BONDED DIRECTLY TO THE BACKER PLATE WITH A TWO COMPONENT, MEDIUM VISCOSITY EPOXY RESIN CONFORMING TO FEDERAL SPECIFICATION MMM-A-134, TYPE I. THE BOND AGENT SHALL BE APPLIED TO THE FULL AREA OF THE CONTACT SURFACES.
6. BONDING OF THE PTFE SHEET DURING THE VULCANIZATION PROCESS WILL BE PERMITTED PROVIDED THE PROCESS AND METHOD OF ADJUSTING THE ASSEMBLY HEIGHT IS APPROVED BY THE ENGINEER.
7. INTERNAL STEEL LAMINATE THICKNESS = 0.074 INCHES (14 GAUGE).
8. SECURELY CLAMP THE TOP AND BOTTOM ASSEMBLIES (BEARING PLATE TO BACKER PLATE) TOGETHER PRIOR TO LIFTING AND PLACEMENT OF THE BEARINGS. THESE CLAMPS SHALL REMAIN IN PLACE UNTIL THE CONCRETE DIAPHRAGM HAS BEEN POURED. CARE SHALL BE TAKEN TO EVENLY CLAMP THE BEARING ASSEMBLIES. SUBMIT A CLAMPING AND PLACEMENT PROCEDURE PRIOR TO CONSTRUCTION FOR APPROVAL BY THE ENGINEER.

HP POST HEIGHTS		
BEAM	REAR ABUTMENT	FORWARD ABUTMENT
1	1'-3"	9"
2	1'-1"	1'-2"
3	9"	9"
4	1'-1"	1'-2"
5	13 1/2"	14 1/2"
6	1'-1"	1'-2"
7	9"	9"

DESIGN AGENCY: EASTON OVAL SUITE 901 COLUMBUS, OH 43219 T: 614-76-8000 F: 614-76-8225  
**WOOLPERT**  
 DESIGN/CONSTRUCTION/PERFORMANCE  
 DATE: 02/2017  
 REVIEWED: RKM  
 DRAWN: PES  
 DESIGNED: PES  
 CHECKED: TML  
 STRUCTURE FILE NUMBER: 3005887  
**BEARING DETAILS**  
 BRIDGE NO. GUE-513-0871  
 SR-513 OVER IR-70  
**GUE-513-8.65**  
 PID No. 93289  
 43/54  
 89  
 100

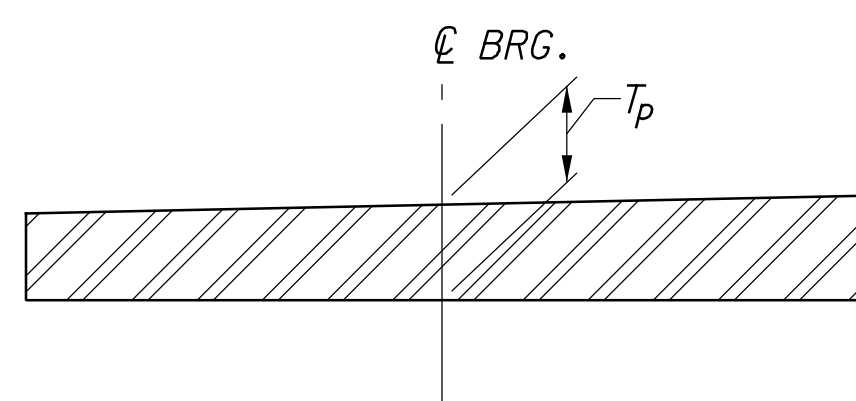
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BEARING DATA																			
SUBSTRUCTURE UNIT	BEAM	BEARING TYPE	BEARING DIMENSIONS							LOAD PLATE				SERVICE REACTIONS (KIP)				DESIGN ROTATION (RAD)	
			L	W	$T_e$	$T_i$	$N_e$	$N_i$	T	H	$L_p$	$W_p$	$T_p$	BEVEL	DL	$LL_{max}$	$LL_{min}$		TOTAL
PIER 1 & 3	INTERIOR	EXP.	1'-4"	1'-6"	1/4"	7/16"	1	7	3 13/16"	5 1/8"	1'-7"	2'-3"	1 1/2"	-2.50%	157.2	106.7	-43.9	263.9	0.006414
	EXTERIOR	EXP.	1'-4"	1'-6"	1/4"	7/16"	1	7	3 13/16"	5 1/8"	1'-7"	2'-3"	1 1/2"	-2.50%	187.4	106.7	-43.9	294.1	0.006414
PIER 2	INTERIOR	EXP.	1'-0"	1'-9"	1/4"	3/8"	1	6	2 15/16"	4 5/16"	1'-3"	2'-6"	1 1/2"	-2.50%	119.5	105.3	-39.6	224.8	0.006374
	EXTERIOR	EXP.	1'-0"	1'-9"	1/4"	3/8"	1	6	2 15/16"	4 5/16"	1'-3"	2'-6"	1 1/2"	-2.50%	138.9	105.3	-39.6	244.2	0.006374

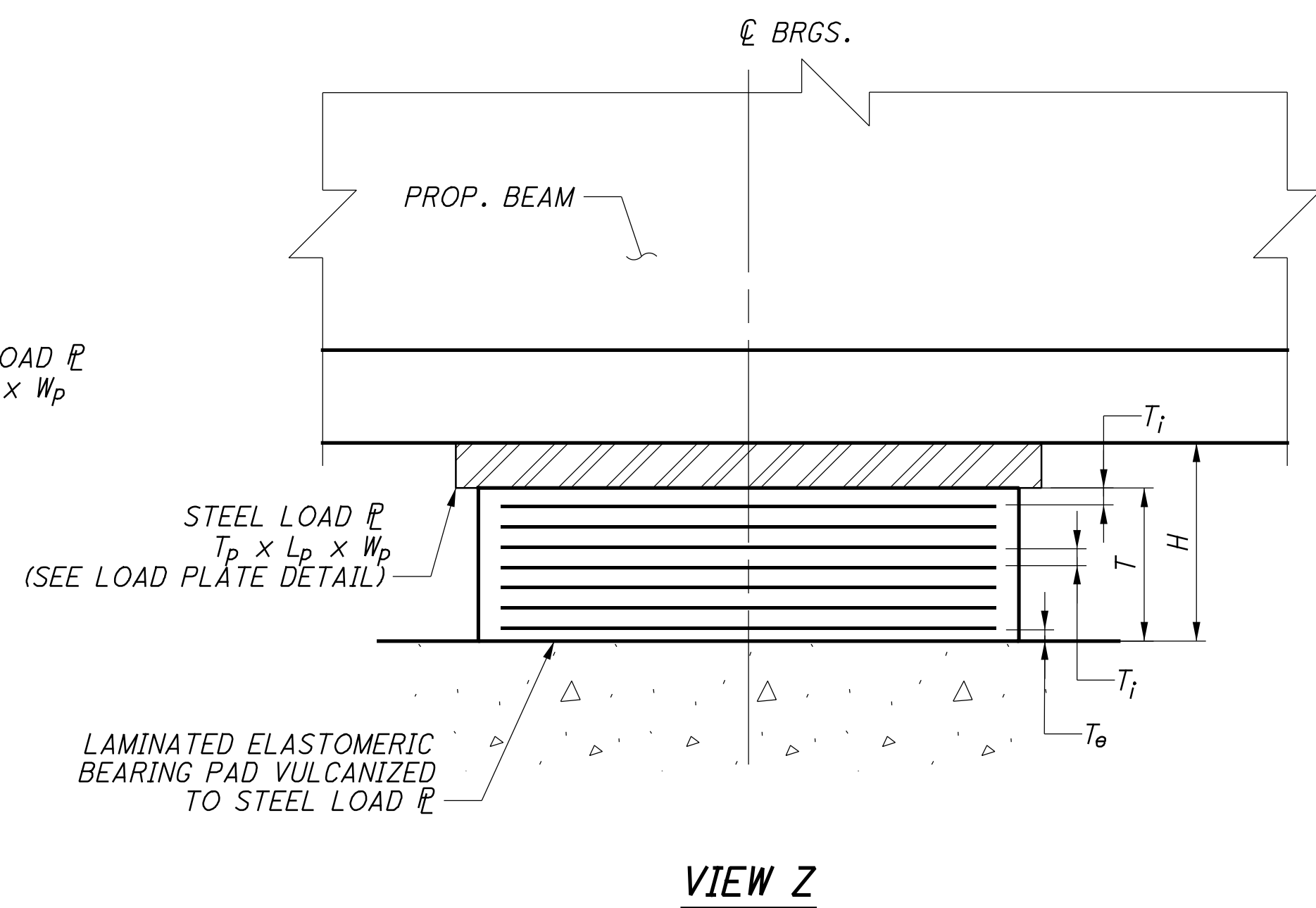


**BEARING PLAN**

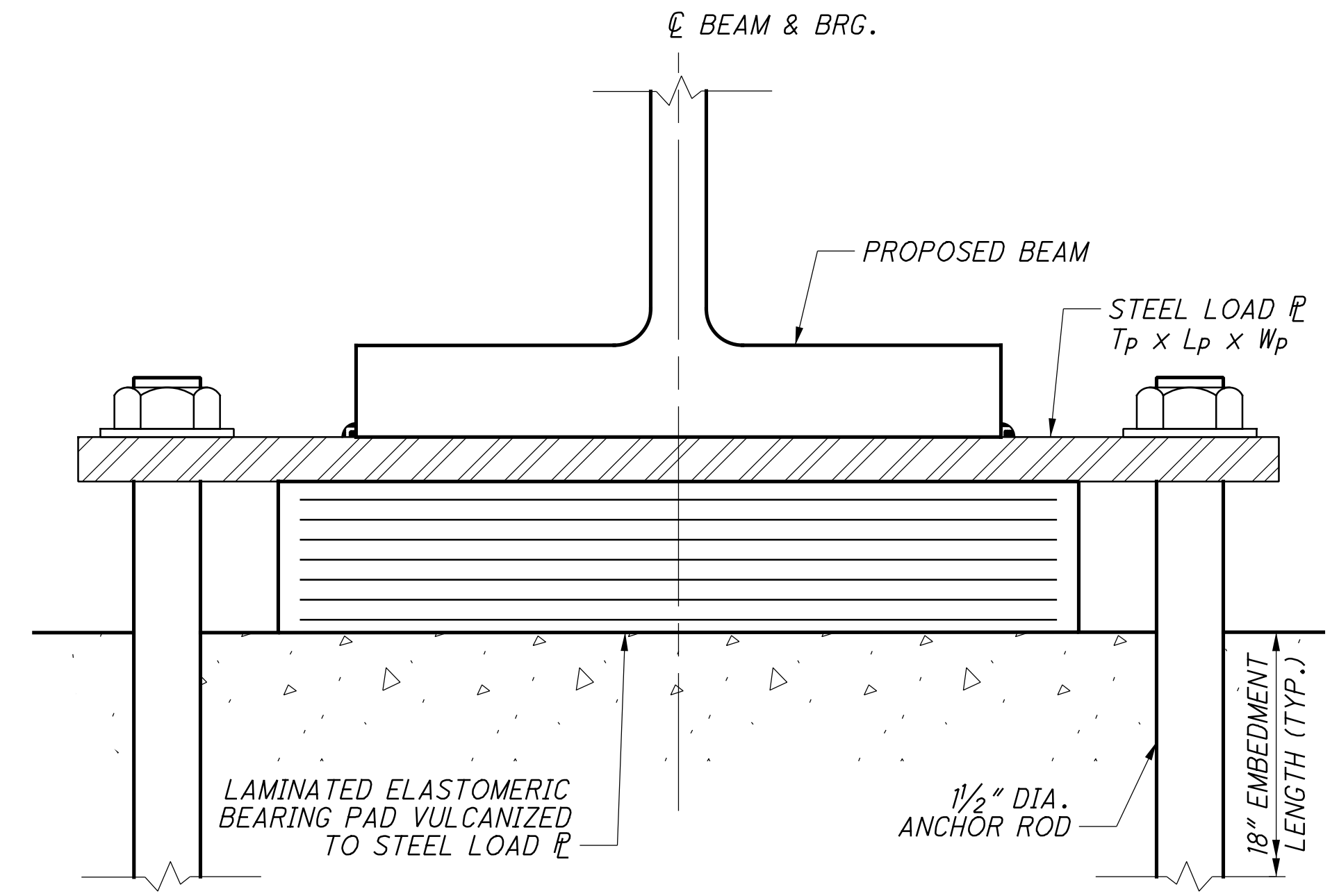
(ALL PLATES CENTERED ABOUT INTERSECTION OF  $\phi$  BRG. &  $\phi$  BEAM)



**LOAD PLATE DETAIL**



**VIEW Z**



**VIEW Y**

**LEGEND:**

- $T_e$  = EXTERIOR LAYER THICKNESS
- $N_e$  = NUMBER OF EXTERIOR LAYERS
- $T_i$  = INTERIOR LAYER THICKNESS
- $N_i$  = NUMBER OF INTERIOR LAYERS
- DL = DEAD LOAD
- LL = LIVE LOAD (WITHOUT IMPACT)

**NOTES:**

1. THE ELASTOMER SHALL HAVE A HARDNESS OF 60 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.
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3. STEEL PLATES SHALL BE ASTM A709 GRADE 50 STRUCTURAL STEEL AND SHALL BE CLEANED AND COATED. SURFACE PREPARATION AND PRIMING SHALL BE PERFORMED IN THE SHOP AND BE INCLUDED IN THE PRICE BID FOR BEARINGS. FIELD COATS SHALL BE INCLUDED IN THE PRICE FOR ITEM 514. THE STEEL LOAD PLATES SHALL BE BONDED BY VULCANIZATION TO THE ELASTOMER DURING THE MOLDING PROCESS.
4. THE BEARINGS, STEEL PLATES, AND ANCHOR BOLT ASSEMBLIES SHALL BE PAID FOR UNDER ITEM 516: ELASTOMERIC BEARINGS WITH INTERNAL LAMINATES AND LOAD PLATE, AS PER PLAN. ANCHOR BOLT ASSEMBLIES SHALL INCLUDE A WASHER AND NUT FOR EACH ANCHOR BOLT.
5. WELDING: CONTROL THE WELDING SO THE PLATE TEMPERATURE AT THE ELASTOMER BONDED SURFACE DOES NOT EXCEED 300° F AS DETERMINED BY THE USE OF PYROMETRIC STICKS OR OTHER TEMPERATURE MONITORING DEVICES.
6. BEARINGS SHALL BE FULLY ANCHORED AND SECURED PRIOR TO DECK POURING OR SCREED MACHINE PLACEMENT.
7. ENSURE ANCHOR RODS ARE CENTERED IN PLATE HOLES AT 60° F. ADJUST AS NECESSARY FOR DIFFERENT SETTING TEMPERATURES.
8. AFTER ALL CONSTRUCTION IS COMPLETE, MECHANICALLY CUT ALL ANCHOR RODS AT TOP FACE OF PIER CAP AND SEAL CUT END OF BAR PER CMS 509.09.

DESIGN AGENCY: EASTON OVAL SUITE 601 COLUMBUS, OH 43219 T 614-476-8000 F 614-476-8225  
**WOOLPERT**  
 DESIGN | ENGINEERING | CONSTRUCTION

DATE: 02/2017  
 REVIEWED: RKM  
 DRAWN: PES  
 DESIGNED: PES  
 CHECKED: TML  
 STRUCTURE FILE NUMBER: 3005887  
 REVISED:

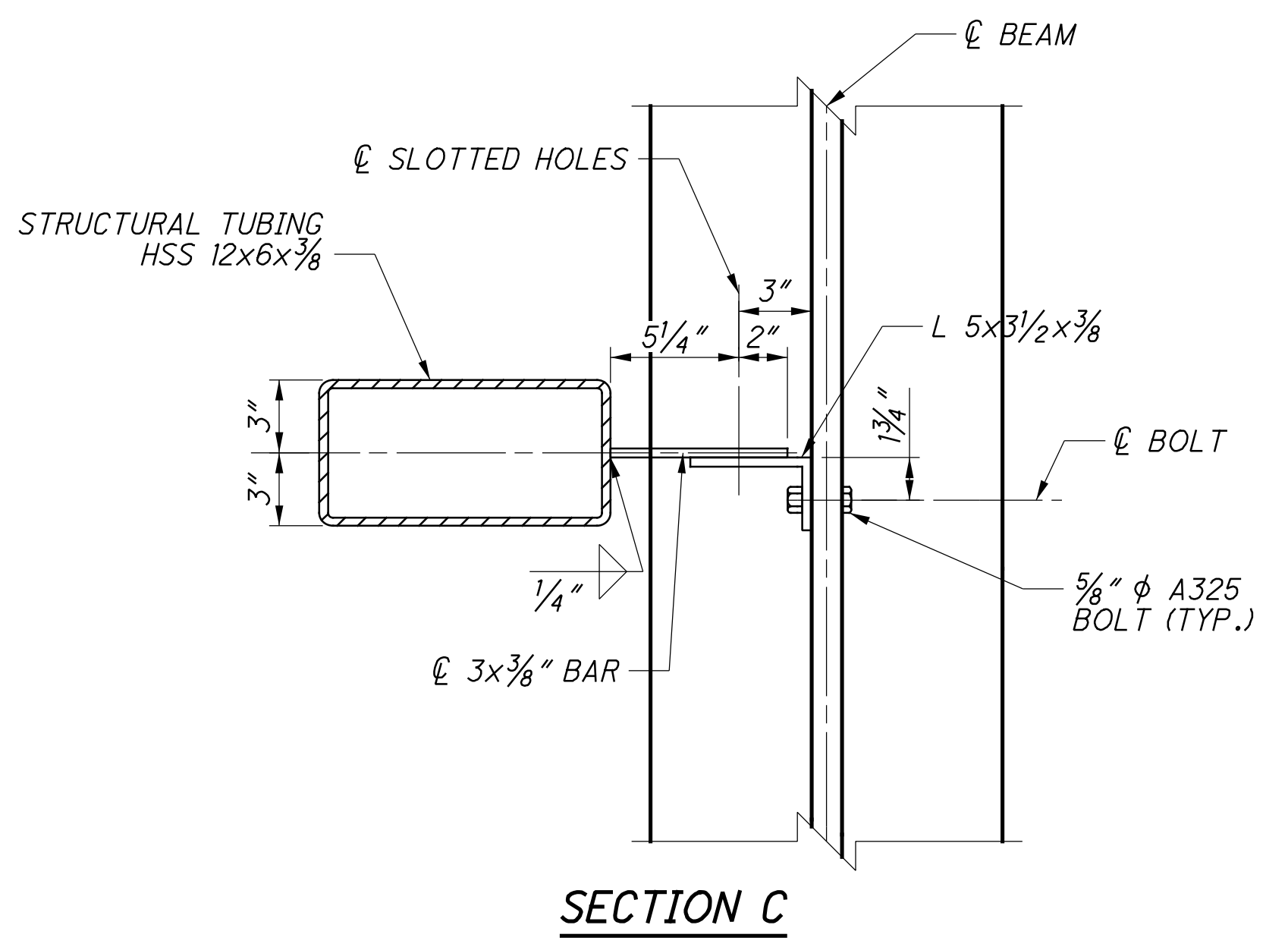
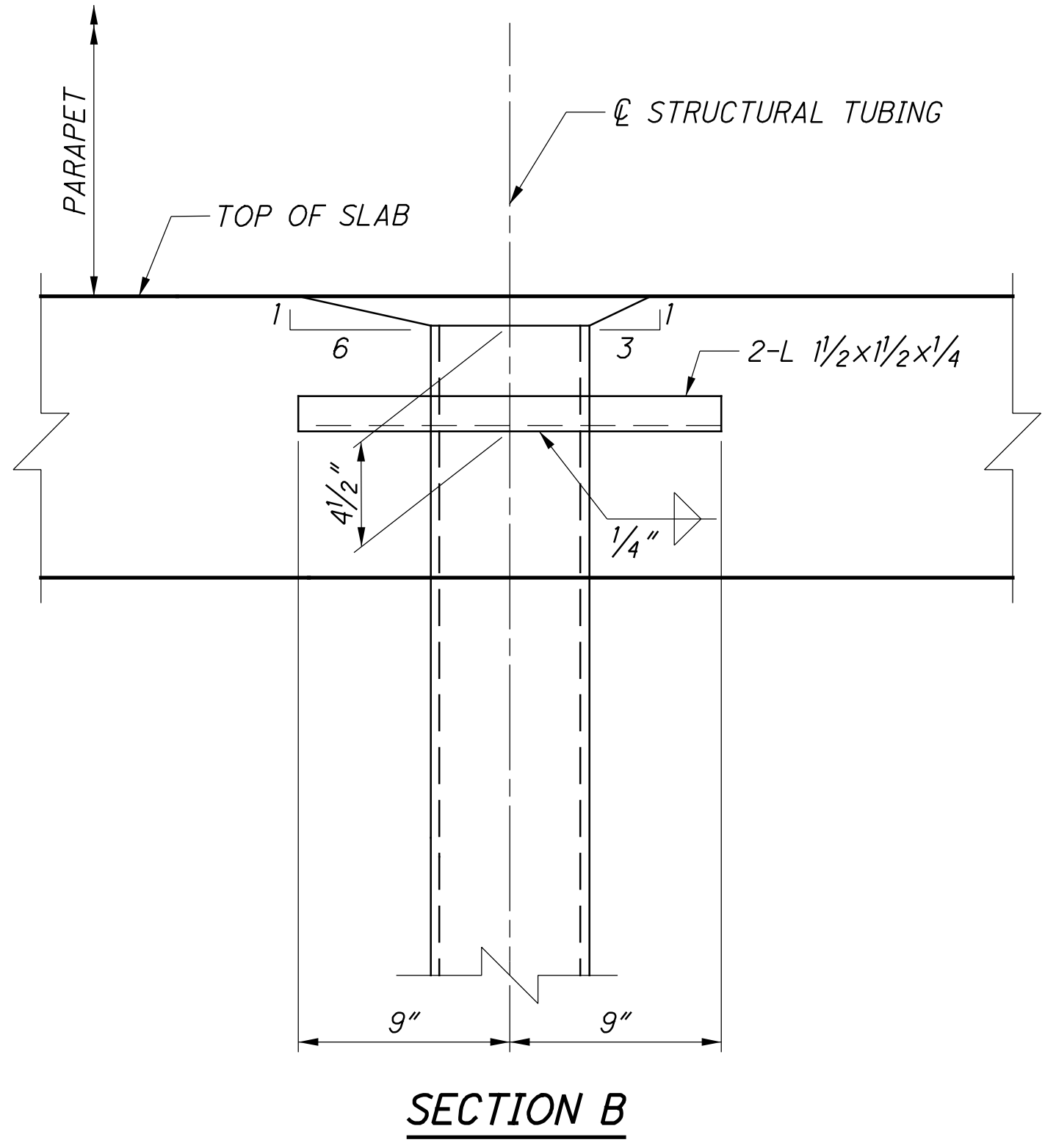
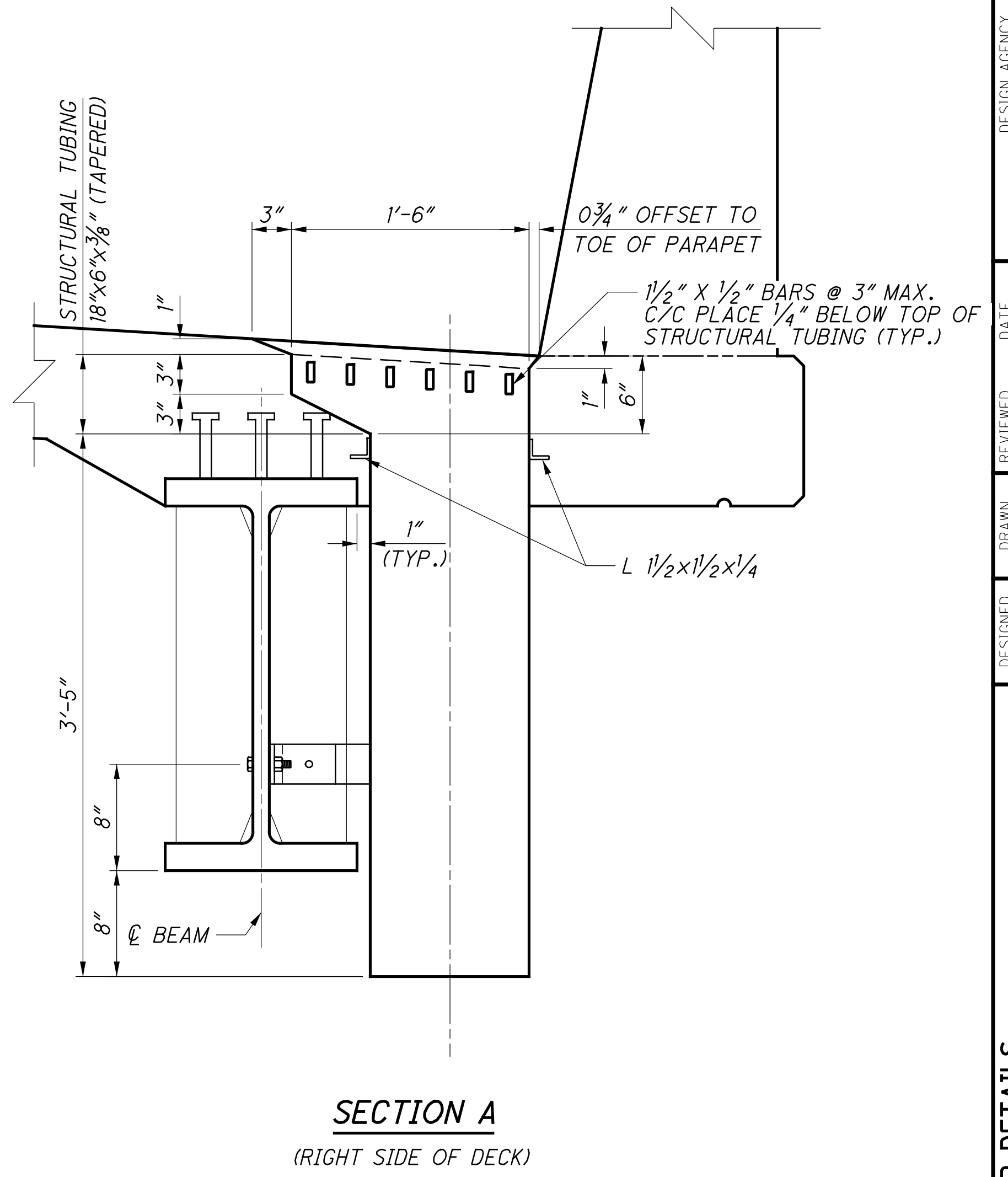
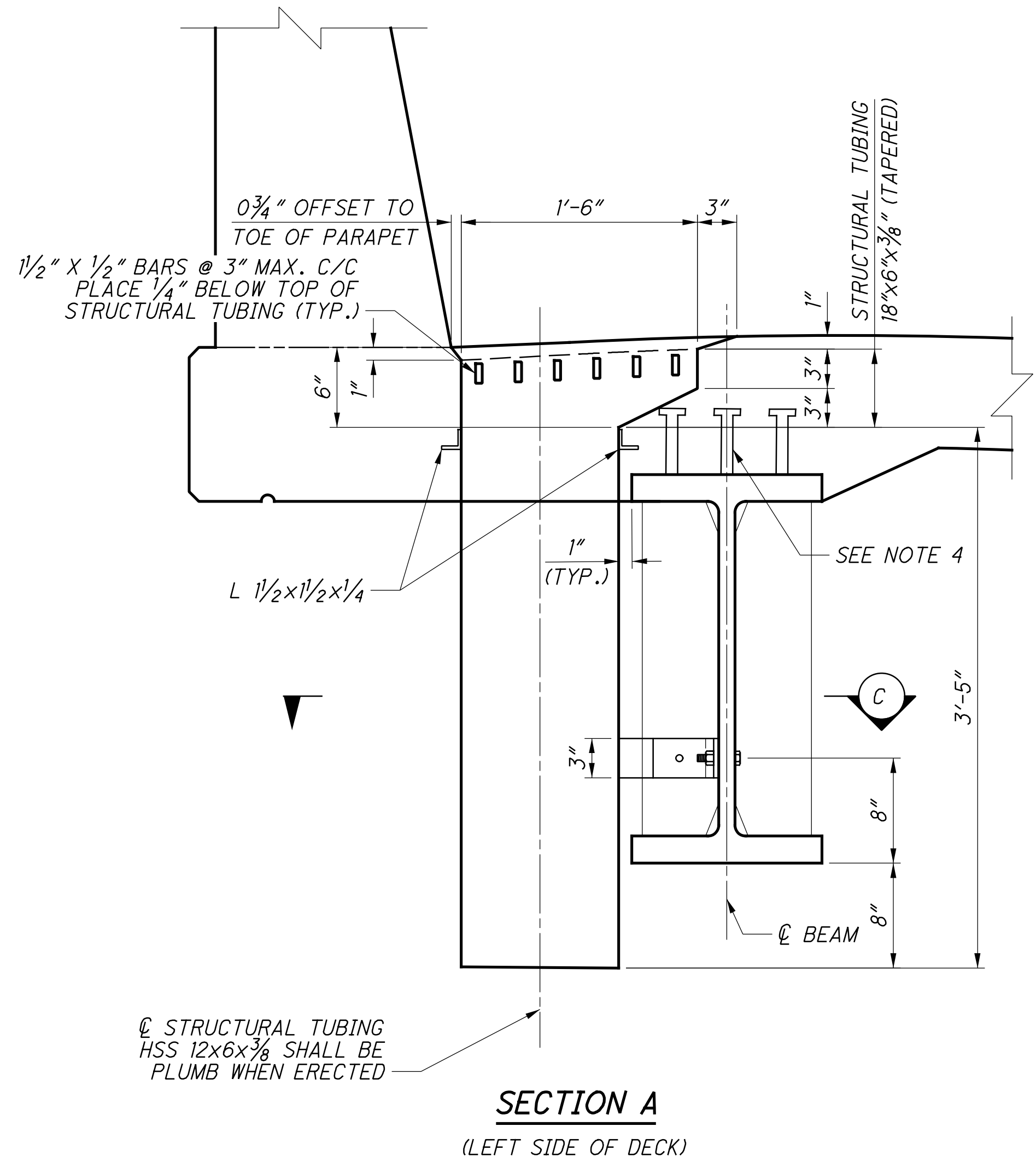
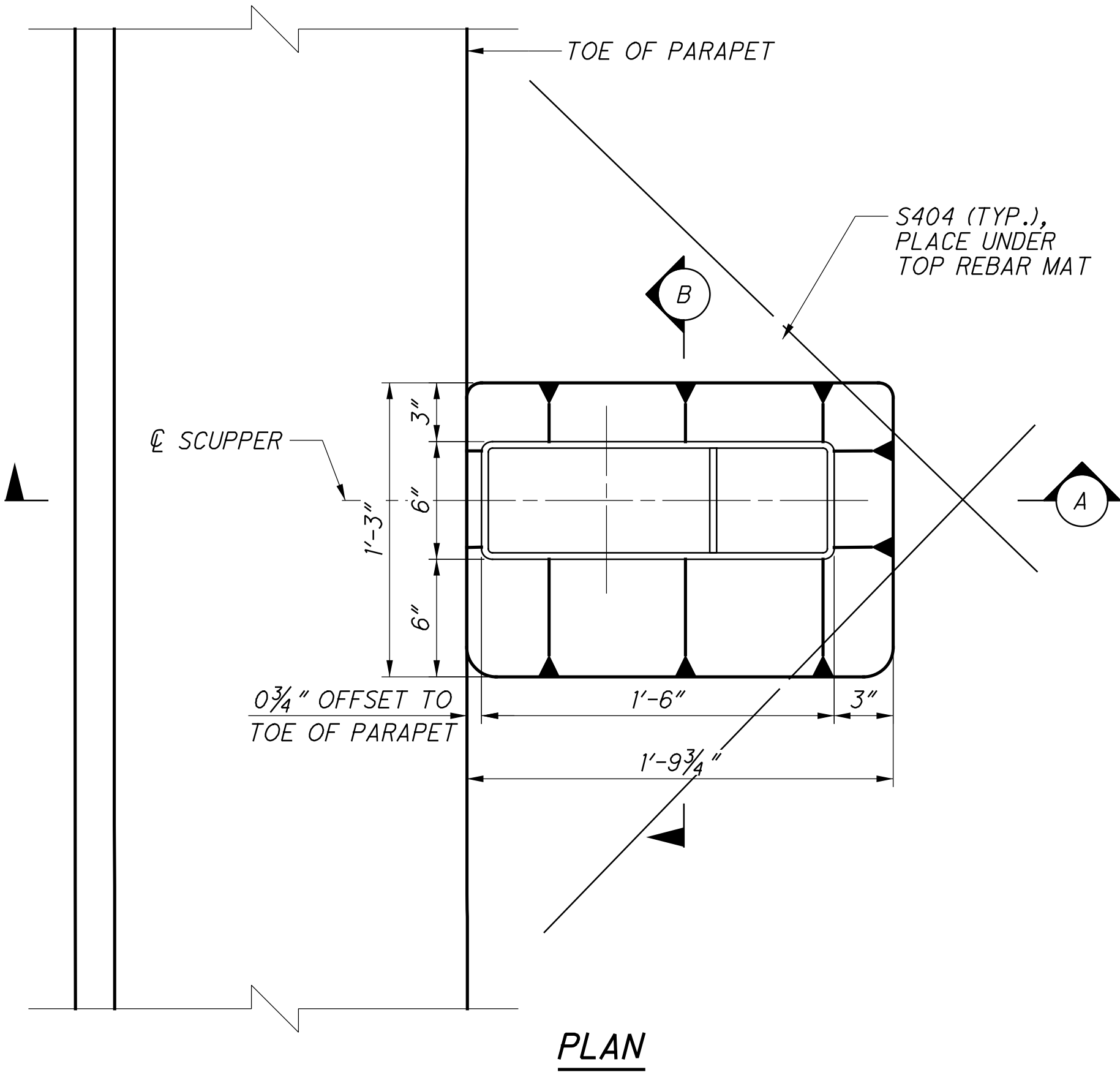
**BEARING DETAILS**  
 BRIDGE NO. GUE-513-0871  
 SR-513 OVER IR-70

**GUE-513-8.65**  
**PID No. 93289**

44 / 54  
 90 / 100



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**SCUPPER LOCATIONS**

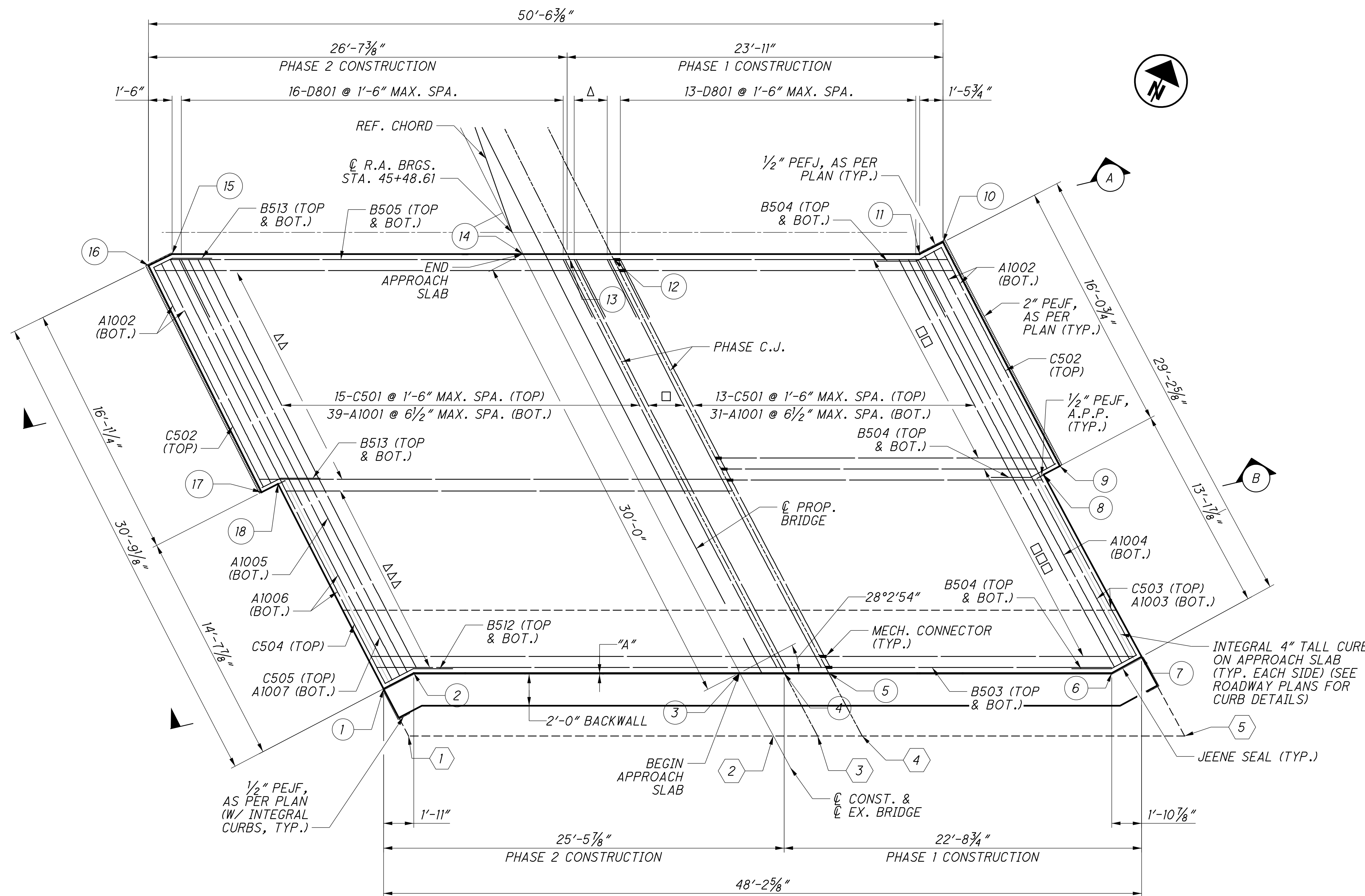
STA. 45+53.50 RT  
 STA. 45+73.07 LT  
 STA. 48+24.64 RT  
 STA. 48+34.12 LT

**NOTES:**

- SEE SCD GSD-1-96 FOR ADDITIONAL SCUPPER DETAILS.
- SEE SHEET 36/54 FOR TRANSVERSE SECTION.
- SEE SHEETS 37/54 AND 38/54 FOR DECK REINFORCING PLAN.
- CONTRACTOR SHALL COORDINATE SHEAR STUD PLACEMENT WITH SCUPPERS.

DESIGN AGENCY WOLPERT DESIGN/ENGINEERING/CONSTRUCTION		DATE 02/2017
DESIGNED PES		STRUCTURE FILE NUMBER 3005887
DRAWN PES	REVIEWED RKM	DATE 02/2017
CHECKED TML	REVISER	FILE NUMBER 3005887
<b>SCUPPER DETAILS</b> BRIDGE NO. GUE-513-0871 SR-513 OVER IR-70		
GUE-513-8.65 PID No. 93289		
91		54
100		

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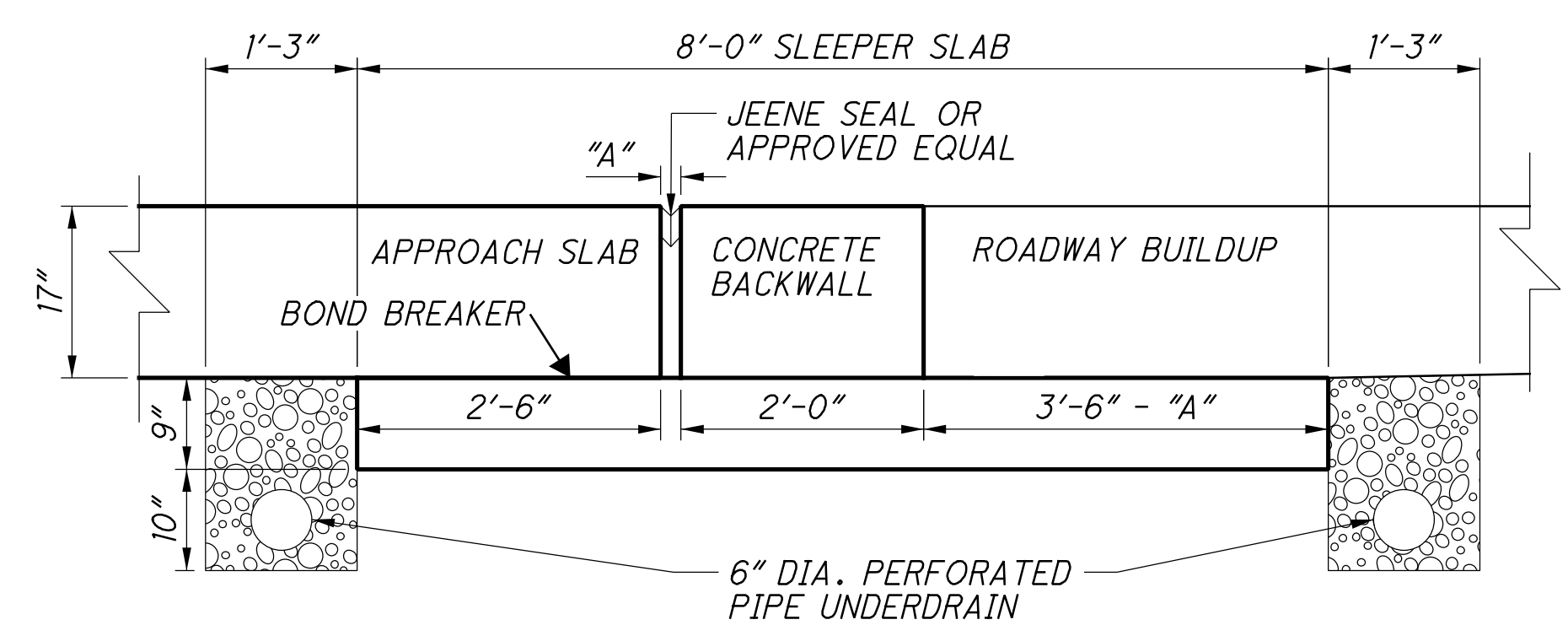


REAR APPROACH SLAB SURFACE ELEVATIONS			
	STATION	OFFSET	ELEVATION
1	45+26.67	20.50	897.25
2	45+26.67	18.33	897.34
3	45+17.07	0.00	896.82
4	45+15.74	2.50	896.70
5	45+14.40	5.00	896.58
6	45+05.75	20.83	895.81
7	45+05.75	23.00	895.71
8	45+19.16	23.00	895.42
9	45+19.16	24.17	895.42
10	45+35.55	24.17	895.07
11	45+35.55	22.50	895.07
12	45+44.55	5.00	895.92
13	45+45.82	2.50	896.04
14	45+47.07	0.00	896.17
15	45+56.91	20.00	896.86
16	45+56.91	21.67	896.86
17	45+41.09	21.67	897.08
18	45+41.09	20.50	897.08

REAR SLEEPER SLAB SURFACE ELEVATIONS			
	STATION	OFFSET	ELEVATION
1	45+23.34	20.50	895.90
2	45+12.53	0.00	895.50
3	45+11.19	2.50	895.38
4	45+09.83	5.00	895.26
5	44+99.91	22.98	894.39

TEMP.	DIM. A
40	3 5/16"
45	3 1/4"
50	3 3/16"
60	3"
70	2 13/16"
80	2 11/16"
90	2 1/2"

ASSUMES SETTING AT 60° WITH NOMINAL "A" = 3"



**SLEEPER SLAB DETAIL**

(ALL DIMENSIONS PERPENDICULAR TO JOINT)

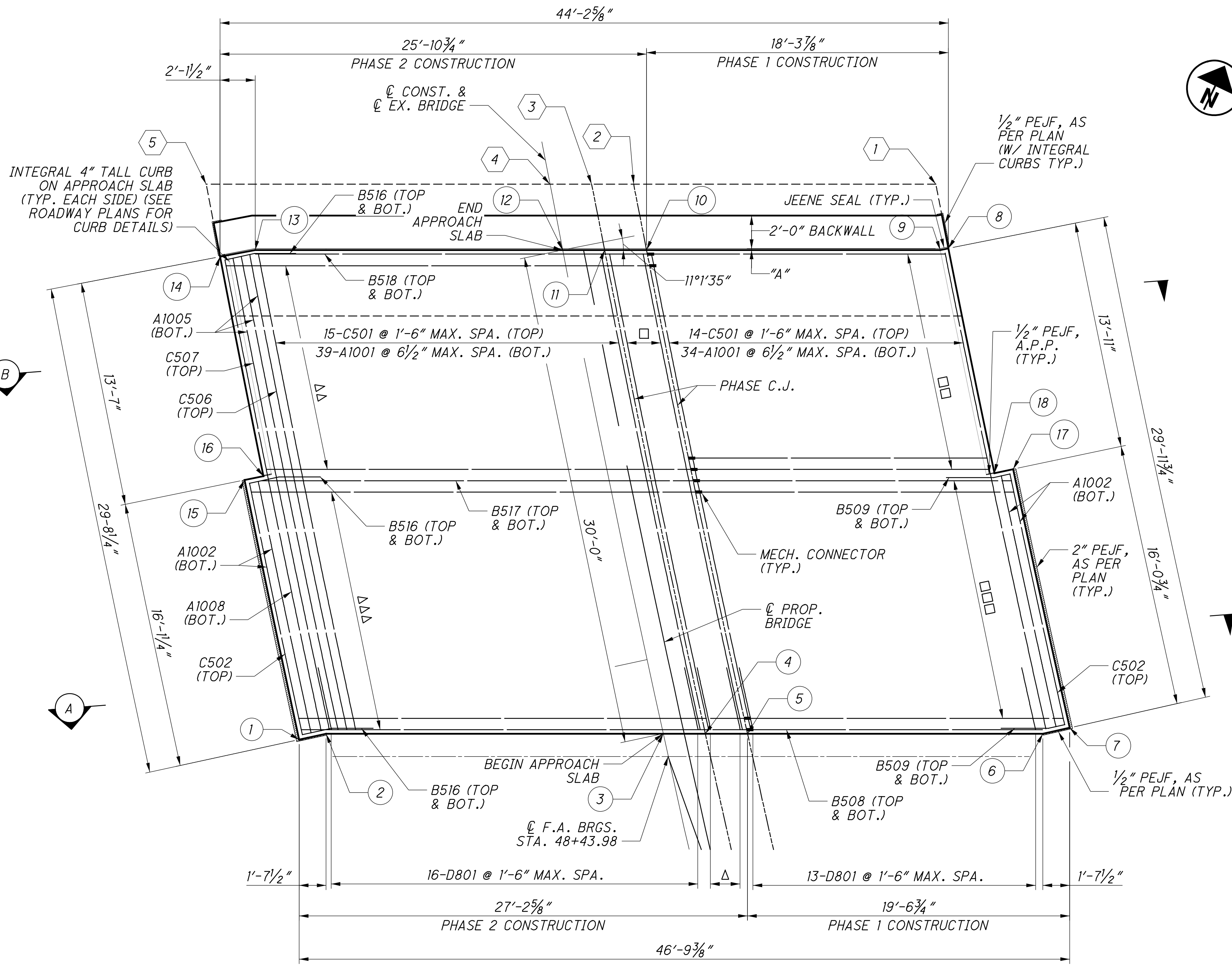
**LEGEND:**

- Δ 3-D801 @ 1'-6" MAX. SPA.
- ΔΔ 10-B510 @ 1'-6" MAX. SPA. (TOP)  
20-B510 @ 8 1/2" MAX. SPA. (BOT.)
- ΔΔΔ 9-B511 @ 1'-6" MAX. SPA. (TOP)  
17-B511 @ 8 1/2" MAX. SPA. (BOT.)
- 3-C501 @ 1'-6" MAX. SPA. (TOP)  
5-A1001 @ 6 1/2" MAX. SPA. (BOT.)
- 10-B501 @ 1'-6" MAX. SPA. (TOP)  
19-B501 @ 8 1/2" MAX. SPA. (BOT.)
- 10-B502 @ 1'-6" MAX. SPA. (TOP)  
18-B502 @ 8 1/2" MAX. SPA. (BOT.)

**NOTES:**

1. FOR SECTIONS A AND B, SEE SHEET 48/54.
2. FOR ADDITIONAL APPROACH SLAB REINFORCING AND DETAILS, SEE ODOT STANDARD BRIDGE DRAWINGS AS-1-15.
3. PROVIDE TYPE 75W JEENE SEAL MANUFACTURED BY WATSON BOWMAN ACME CORPORATION, AMHERST, NEW YORK 00) 677-4922, OR AN APPROVED EQUAL. MATERIAL SHALL CONFORM TO C&MS 705.11. INSTALL THE SEAL ACCORDING TO MANUFACTURER'S SPECIFICATIONS AND UNDER THE SUPERVISION OF THE MANUFACTURER'S DESIGNATED REPRESENTATIVE. FURNISH SEALS AS ONE CONTINUOUS PIECE UNLESS OTHERWISE APPROVED BY THE ENGINEER. PAYMENT FOR JEENE SEAL SHALL BE PER FOOT AND MADE UNDER ITEM 516 - STRUCTURAL JOINT OR JOINT SEALER, MISC.: JEENE SEAL.
4. A BOND BREAKER CONSISTING OF TWO 4-FOOT SHEETS OF CLEAR OR OPAQUE POLYETHYLENE FILM, PER C&MS 705.06, SHALL BE CENTERED ABOVE THE JOINT BETWEEN THE APP. SLAB AND THE SLEEPER SLAB. CARE SHALL BE TAKEN IN THE AREA BENEATH THE POLYETHYLENE FILM TO ENSURE THE SURFACE OF THE SUBBASE IS FINISHED SMOOTH AND IS FLUSH WITH OR SLIGHTLY HIGHER THAN THE SURFACE OF THE SLEEPER SLAB. THE FILM SHALL HAVE A NOMINAL THICKNESS OF 4 MILS.

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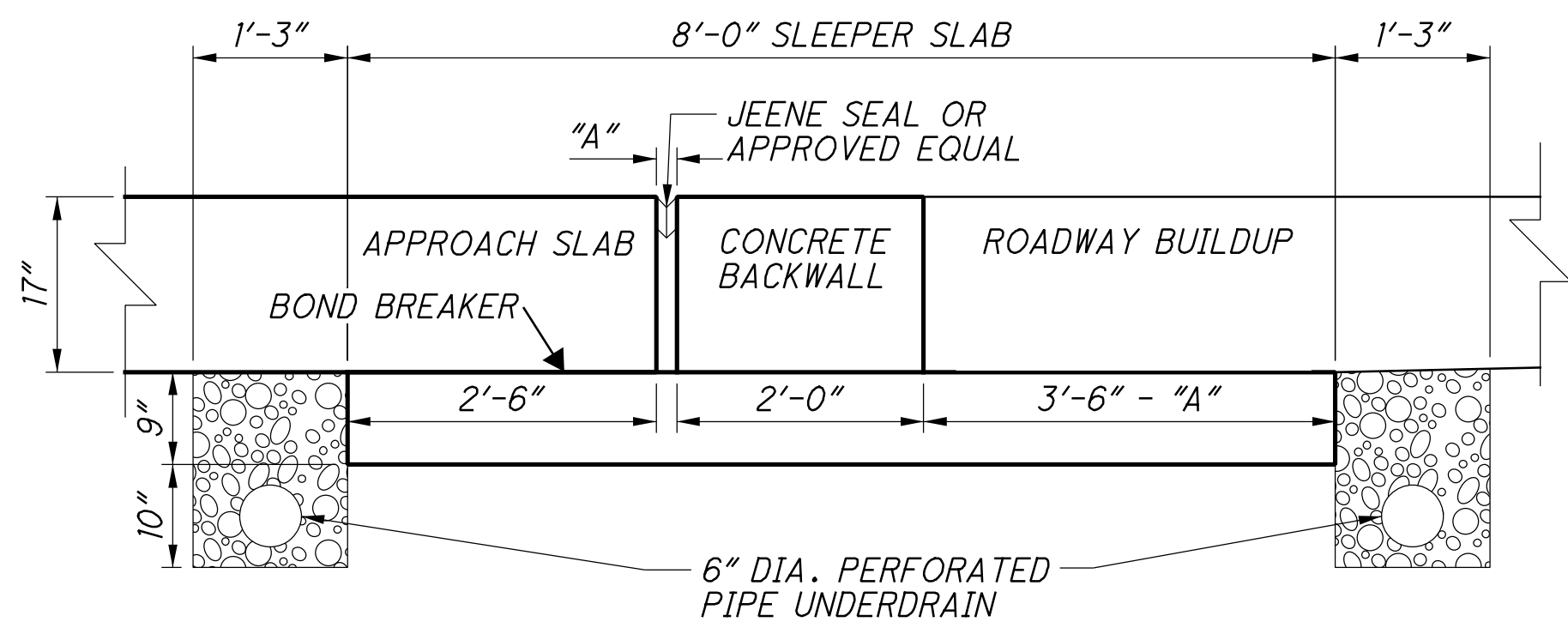


FORWARD APPROACH SLAB SURFACE ELEVATIONS			
	STATION	OFFSET	ELEVATION
①	48+49.73	21.67	890.58
②	48+49.73	20.00	890.58
③	48+45.39	0.00	889.70
④	48+44.84	2.50	889.56
⑤	48+44.28	5.00	889.42
⑥	48+40.33	22.50	888.41
⑦	48+40.33	24.17	888.41
⑧	48+70.91	23.00	888.11
⑨	48+70.92	22.50	888.11
⑩	48+74.41	5.00	889.14
⑪	48+74.90	2.50	889.28
⑫	48+75.39	0.00	889.43
⑬	48+78.91	18.33	890.12
⑭	48+78.91	20.50	890.03
⑮	48+65.56	21.67	890.27
⑯	48+65.56	20.50	890.27
⑰	48+56.73	24.17	890.94
⑱	48+56.73	23.00	890.94

FORWARD SLEEPER SLAB SURFACE ELEVATIONS			
	STATION	OFFSET	ELEVATION
①	48+74.98	23.00	886.67
②	48+78.50	5.00	887.69
③	48+78.99	2.50	887.84
④	48+79.47	0.00	887.98
⑤	48+83.32	20.50	888.61

TEMP.	DIM. A
40	3 3/8"
45	3 1/4"
50	3 3/16"
60	3"
70	2 13/16"
80	2 5/8"
90	2 1/2"

ASSUMES SETTING AT 60° WITH NOMINAL "A" = 3"



**SLEEPER SLAB DETAIL**  
(ALL DIMENSIONS PERPENDICULAR TO JOINT)

- LEGEND:**
- △ 3-D801 @ 1'-6" MAX. SPA.
  - △△ 10-B514 @ 1'-6" MAX. SPA. (TOP)  
19-B514 @ 8 1/2" MAX. SPA. (BOT.)
  - △△△ 12-B515 @ 1'-6" MAX. SPA. (TOP)  
22-B515 @ 8 1/2" MAX. SPA. (BOT.)
  - 3-C501 @ 1'-6" MAX. SPA. (TOP)  
5-A1001 @ 6 1/2" MAX. SPA. (BOT.)
  - 11-B506 @ 1'-6" MAX. SPA. (TOP)  
20-B506 @ 8 1/2" MAX. SPA. (BOT.)
  - 12-B507 @ 1'-6" MAX. SPA. (TOP)  
22-B507 @ 8 1/2" MAX. SPA. (BOT.)

**NOTES:**

1. FOR SECTIONS A AND B, SEE SHEET 48/54.
2. FOR ADDITIONAL APPROACH SLAB REINFORCING AND DETAILS, SEE ODOT STANDARD BRIDGE DRAWINGS AS-1-15.
3. PROVIDE TYPE 75W JEENE SEAL MANUFACTURED BY WATSON BOWMAN ACME CORPORATION, AMHERST, NEW YORK 00) 677-4922, OR AN APPROVED EQUAL. MATERIAL SHALL CONFORM TO C&MS 705.11. INSTALL THE SEAL ACCORDING TO MANUFACTURER'S SPECIFICATIONS AND UNDER THE SUPERVISION OF THE MANUFACTURER'S DESIGNATED REPRESENTATIVE. FURNISH SEALS AS ONE CONTINUOUS PIECE UNLESS OTHERWISE APPROVED BY THE ENGINEER. PAYMENT FOR JEENE SEAL SHALL BE PER FOOT AND MADE UNDER ITEM 516 - STRUCTURAL JOINT OR JOINT SEALER, MISC.: JEENE SEAL.
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DESIGN AGENCY: EASTON OVAL  
SUITE 601  
COLUMBUS, OH 43219  
T 614-476-8000  
F 614-476-8225

**WOOLPERT**  
DESIGN ENGINEERING & CONSTRUCTION

DATE: 02/2017  
REVIEWED: RKM  
DRAWN: PES  
DESIGNED: PES  
CHECKED: BWB

STRUCTURE FILE NUMBER: 3005887

**FORWARD APPROACH SLAB DETAILS**

BRIDGE NO. GUE-513-0871  
SR-513 OVER IR-70

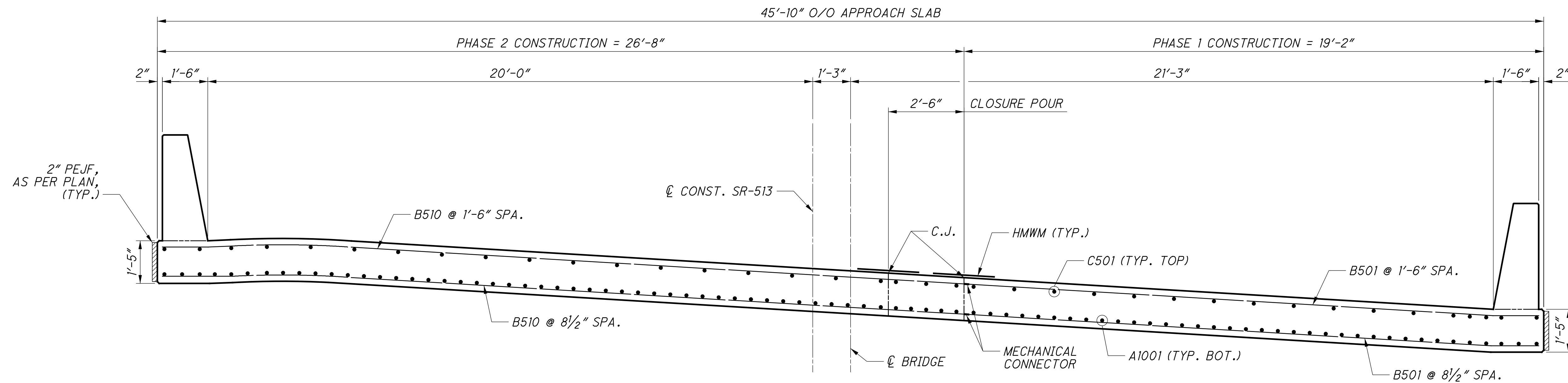
**GUE - 513 - 8.65**  
PID No. 93289

47/54

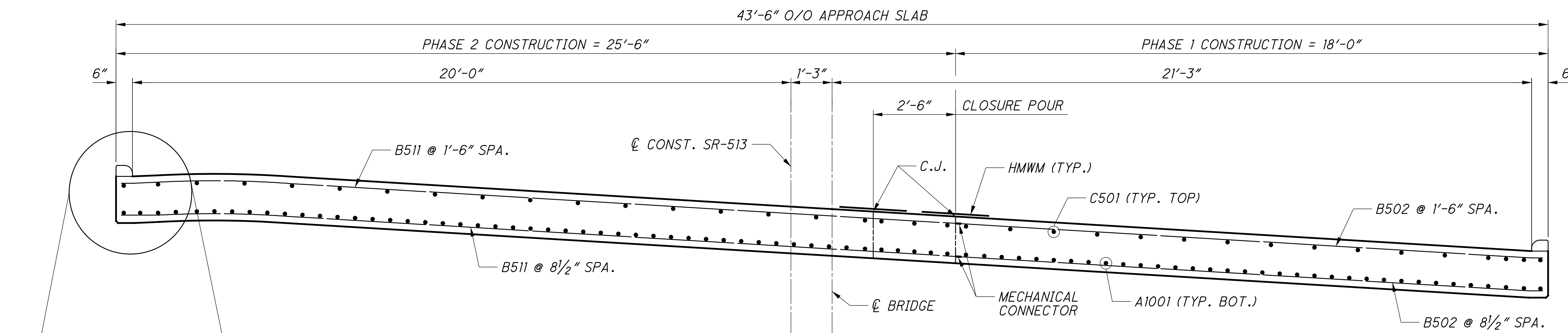
93  
100



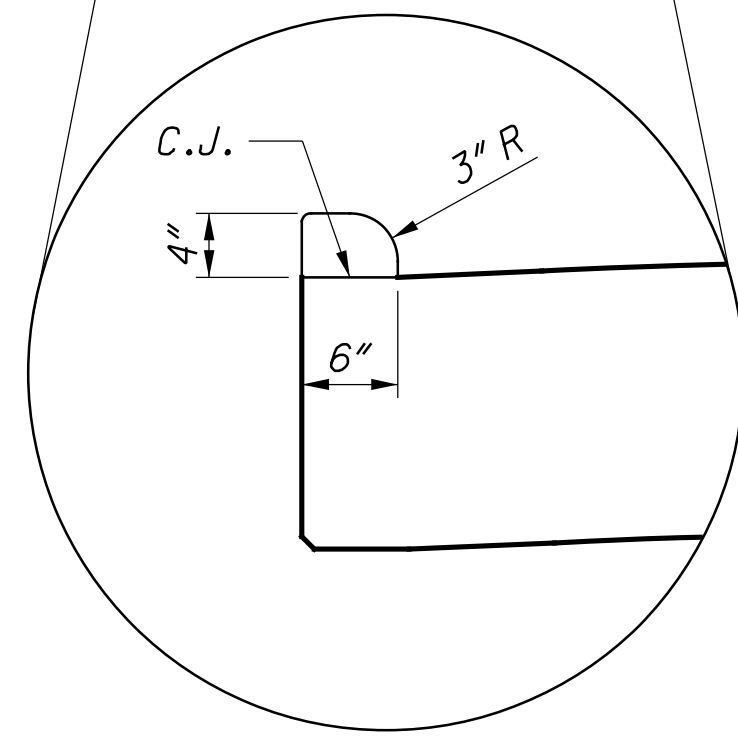
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**SECTION A**  
(REAR APPROACH SHOWN, FWD. APPROACH SIMILAR)



**SECTION B**  
(REAR APPROACH SHOWN, FWD. APPROACH SIMILAR)

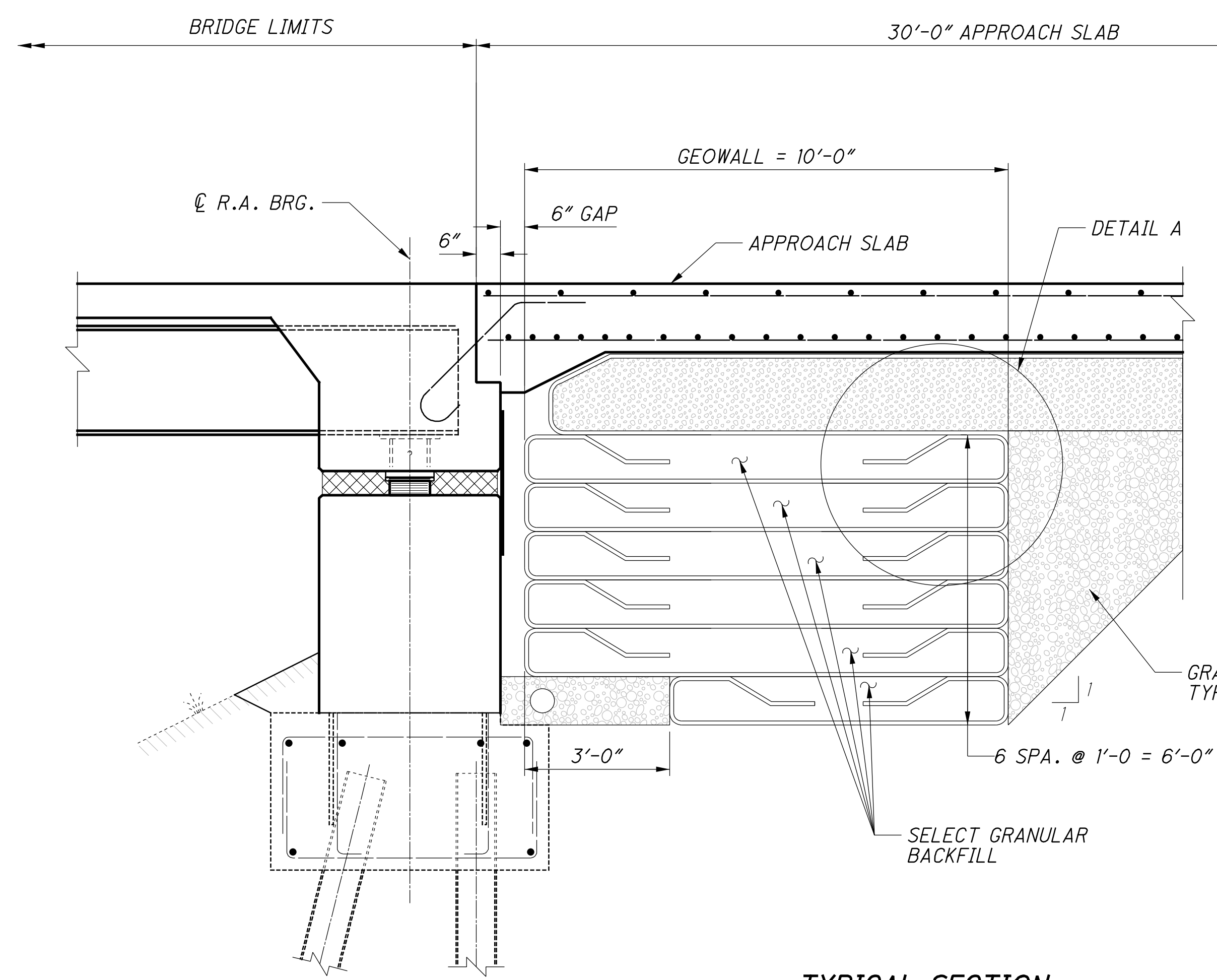


**NOTES:**

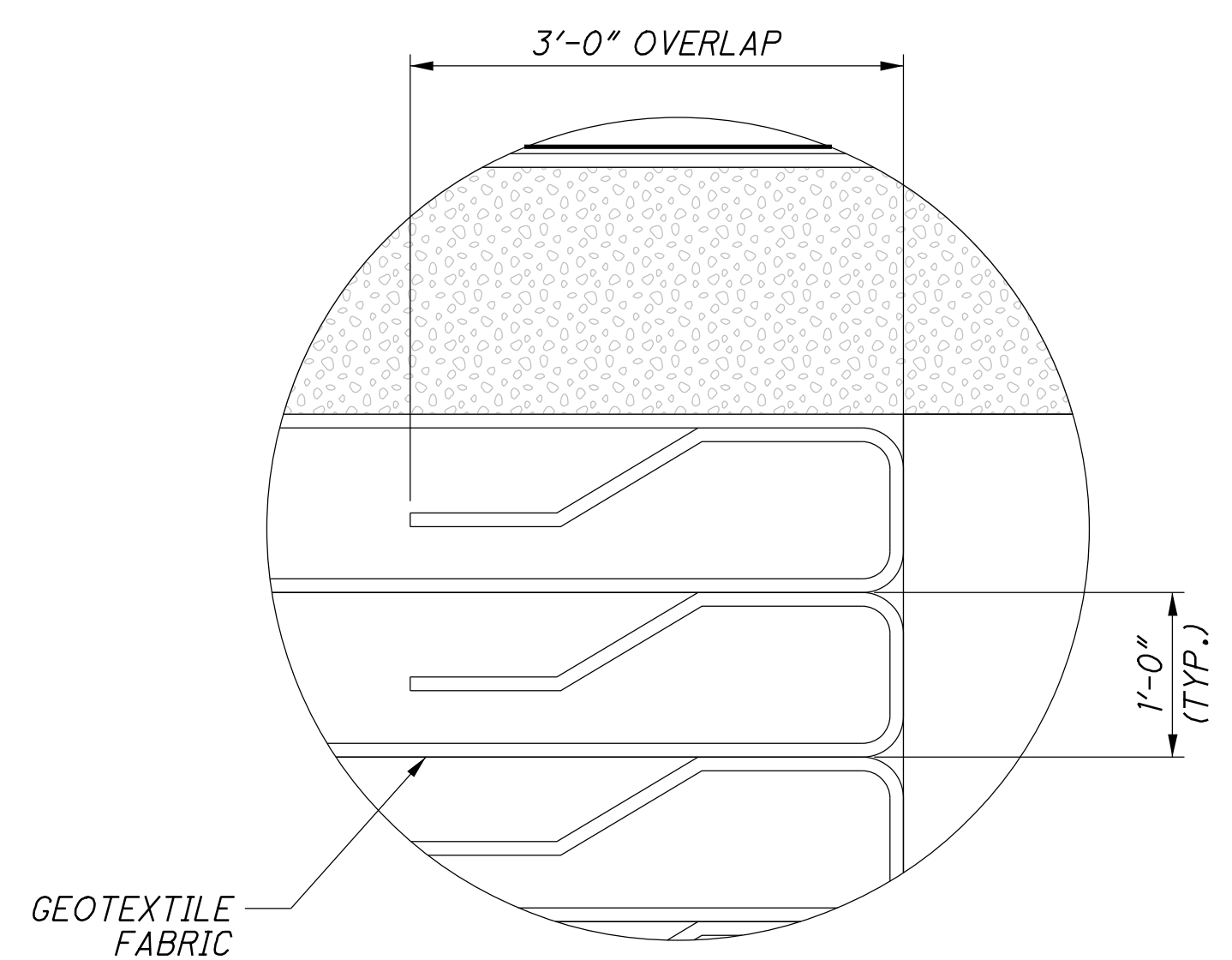
1. FOR REAR APPROACH SLAB REINFORCING PLAN, SEE SHEET 46/54.
2. FOR FORWARD APPROACH SLAB REINFORCING PLAN, SEE SHEET 47/54.
3. FOR ADDITIONAL APPROACH SLAB REINFORCING AND DETAILS, SEE ODOT STANDARD BRIDGE DRAWINGS AS-1-15.
4. FOR ADDITIONAL CURB AND BRIDGE TERMINAL ASSEMBLY DETAILS, SEE ROADWAY PLANS AND ODOT STANDARD ROADWAY DRAWING MGS-3.1.
5. PROVIDE TYPE 65W JEENE SEAL MANUFACTURED BY WATSON BOWMAN ACME CORPORATION, AMHERST, NEW YORK 00) 677-4922, OR AN APPROVED EQUAL. MATERIAL SHALL CONFORM TO C&MS 705.11. INSTALL THE SEAL ACCORDING TO MANUFACTURER'S SPECIFICATIONS AND UNDER THE SUPERVISION OF THE MANUFACTURER'S DESIGNATED REPRESENTATIVE. FURNISH SEALS AS ONE CONTINUOUS PIECE UNLESS OTHERWISE APPROVED BY THE ENGINEER. PAYMENT FOR JEENE SEAL SHALL BE PER FOOT AND MADE UNDER ITEM 516 - STRUCTURAL JOINT OR JOINT SEALER, MISC.: JEENE SEAL.
6. A BOND BREAKER CONSISTING OF TWO 4-FOOT SHEETS OF CLEAR OR OPAQUE POLYETHYLENE FILM, PER C&MS 705.06, SHALL BE CENTERED ABOVE THE JOINT BETWEEN THE APP. SLAB AND THE SLEEPER SLAB. CARE SHALL BE TAKEN IN THE AREA BENEATH THE POLYETHYLENE FILM TO ENSURE THE SURFACE OF THE SUBBASE IS FINISHED SMOOTH AND IS FLUSH WITH OR SLIGHTLY HIGHER THAN THE SURFACE OF THE SLEEPER SLAB. THE FILM SHALL HAVE A NOMINAL THICKNESS OF 4 MILS.

<b>DESIGN AGENCY</b> EASTON OVAL SUITE 401 COLUMBUS, OH 43219 T 614-476-8000 F 614-476-8225 	<b>DATE</b> 02/2017	<b>REVIEWED</b> RKM	<b>STRUCTURE FILE NUMBER</b> 3005887	
<b>DRAWN</b> PES	<b>CHECKED</b> BWB	<b>DESIGNED</b> PES	<b>REVISED</b>	
<b>APPROACH SLAB DETAILS</b> BRIDGE NO. GUE-513-0871 SR-513 OVER IR-70				
<b>GUE-513-8.65</b> PID No. 93289				
48 / 54				
94 100				

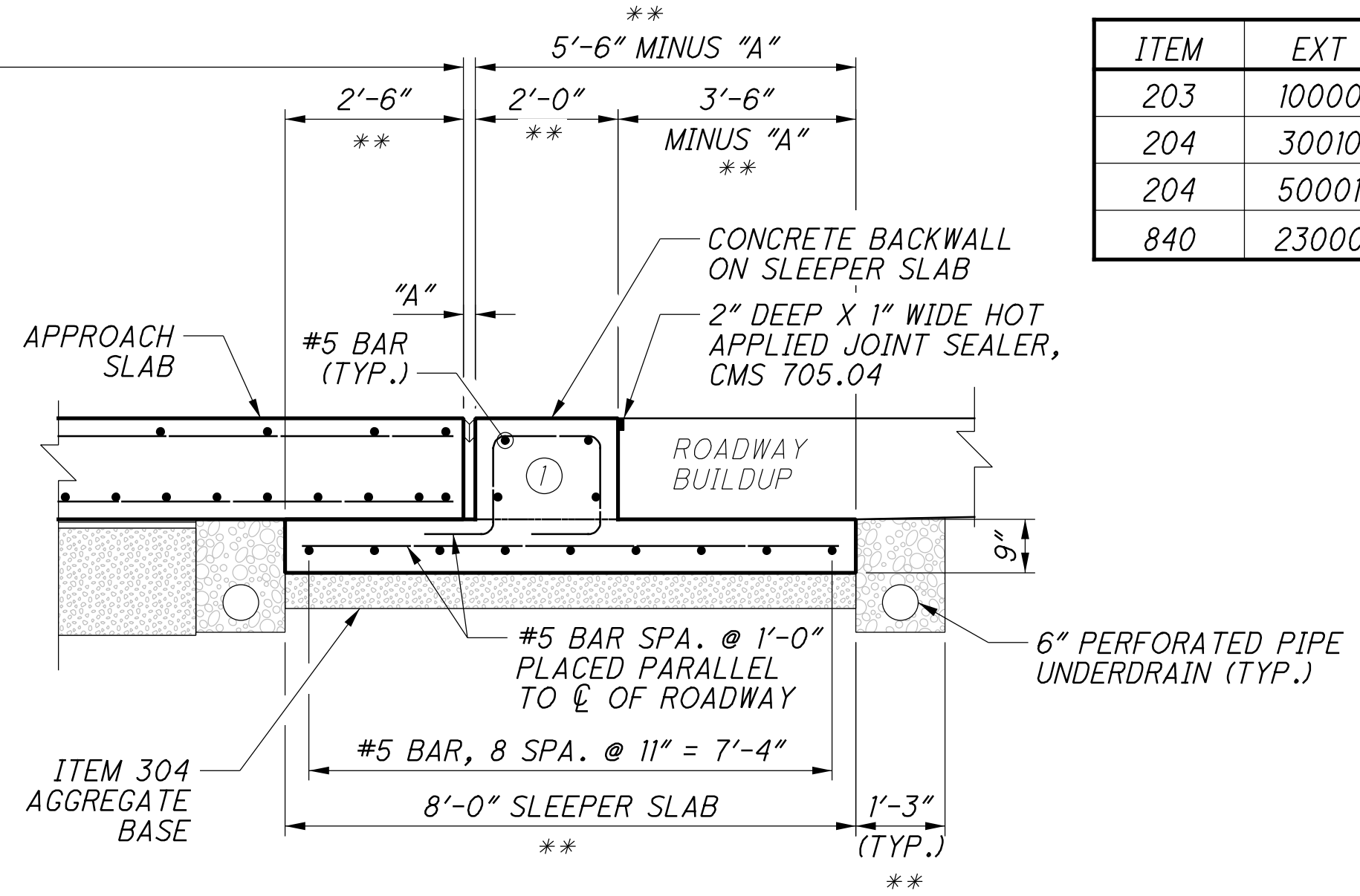
G:\DE\Clients\075542\_GUE\_513\_0865\93289\_GUE-513-08.65\Design\Structures\GUE513\_0865C\_Sheets\513\_0865C\_SR006.dgn 6/8/2017 12:05:20 hollin



**TYPICAL SECTION**



**DETAIL A**



ITEM	EXT	QUANTITY	UNIT	DESCRIPTION
203	10000	176	CU YD	EXCAVATION
204	30010	84	CU YD	GRANULAR MATERIAL, TYPE B
204	50001	446	SQ YD	GEOTEXTILE FABRIC, AS PER PLAN
840	23000	240	CU YD	SELECT GRANULAR BACKFILL

**LEGEND:**

- ① THIS SECTION OF THE SLEEPER SLAB SHALL NOT BE POURED UNTIL AFTER THE APPROACH SLAB HAS BEEN CONSTRUCTED.
- \*\* ALL DIMENSIONS TAKEN PERPENDICULAR TO JOINT

**NOTES:**

1. INSTALL GEOTEXTILE FABRIC DIRECTLY BELOW THE SELECT GRANULAR BACKFILL AND THE AGGREGATE BASE.
2. MINIMUM GEOTEXTILE FABRIC OVERLAP LENGTH IS 3'-0", REFER TO DETAIL A.
3. COMPACT GRANULAR BACKFILL AND SUBGRADE ACCORDING TO CMS 204.
4. FURNISH SELECT GRANULAR BACKFILL (SGB) ACCORDING TO SUPPLEMENTAL SPECIFICATION 840 USING THE REQUIREMENTS APPROPRIATE FOR GEOSYNTHETIC SOIL REINFORCEMENT. PLACE AND COMPACT THE SGB ACCORDING TO CMS 204.
5. REFER TO ITEM 204 FOR MATERIAL SPECIFICATIONS OF THE GEOTEXTILE FABRIC AND TYPE B GRANULAR MATERIAL.
6. ESTIMATED QUANTITIES FOR AGGREGATE BASE ARE SHOWN WITH ROADWAY USAGE.
7. EXCAVATION LENGTH AND EQUAL LENGTH OF GEOGRID AND LIMITS ARE DEPENDENT ON PROPOSED PRODUCT AND DESIGN. LENGTH SHOWN IS PROVIDED FOR BIDDING PURPOSES; HOWEVER, PAYMENT SHALL BE MADE FOR THE QUANTITIES OF 204 AND 840 MATERIALS ACCEPTED, IN PLACE.

**CONSTRUCTION SEQUENCE:**

1. PERFORM PHASE I EXCAVATION FOR THE ABUTMENT GEOSYNTHETIC WALL.
2. CONSTRUCT THE ABUTMENT INCLUDING FOOTING AND STEM.
3. SET THE ELASTOMERIC BEARING PADS AND POLYSTYRENE, THEN CONSTRUCT THE SEMI-INTEGRAL DIAPHRAGM AND DECK.
4. ATTACH NEOPRENE SHEETING TO THE BACK FACE OF THE ABUTMENT WALL TO PROTECT THE HORIZONTAL EXPANSION JOINT.
5. CONSTRUCT FORMWORK TO MAINTAIN 6" GAP.
6. CONSTRUCT THE GEOSYNTHETIC WALL IN 1 FOOT LIFTS.
7. PLACE THE AGGREGATE BASE ON TOP OF THE GEOSYNTHETIC WALL.
8. REMOVE FORMWORK FROM 6" GAP. TAKE CARE NOT TO DAMAGE GEOTEXTILE FABRIC.
9. CONSTRUCT THE APPROACH SLABS.
10. PERFORM PHASE II EXCAVATION FOR THE ABUTMENT AND GEOSYNTHETIC WALL.
11. CONSTRUCT THE ABUTMENT INCLUDING FOOTING AND STEM.
12. SET THE ELASTOMERIC BEARING PADS AND POLYSTYRENE, THEM CONSTRUCT THE SEMI-INTEGRAL DIAPHRAGM AND DECK.
13. ATTACH NEOPRENE SHEETING TO THE BACK FACE OF THE ABUTMENT WALL TO PROTECT THE HORIZONTAL EXPANSION JOINT.
14. CONSTRUCT THE GEOSYNTHETIC WALL IN 1 FOOT LIFTS.
15. PLACE THE AGGREGATE BASE ON TOP OF THE GEOSYNTHETIC WALL.
16. CONSTRUCT THE APPROACH SLABS.
17. REMOVE THE PORTIONS OF GEOSYNTHETIC WALL AS INDICATED IN THE ELEVATION DURING PHASE IV AFTER THE APPROACH SLAB IS REMOVED.
18. CONSTRUCT THE APPROACH SLABS TO THE FINAL LIMITS.

DESIGN AGENCY: EASTON OVAL  
 SUITE 401  
 COLUMBUS, OH 43219  
 XXX  
 T 614-476-8000  
 F 614-476-8225  
**WOOLPER**  
 DESIGN ENGINEERING & ARCHITECTURE

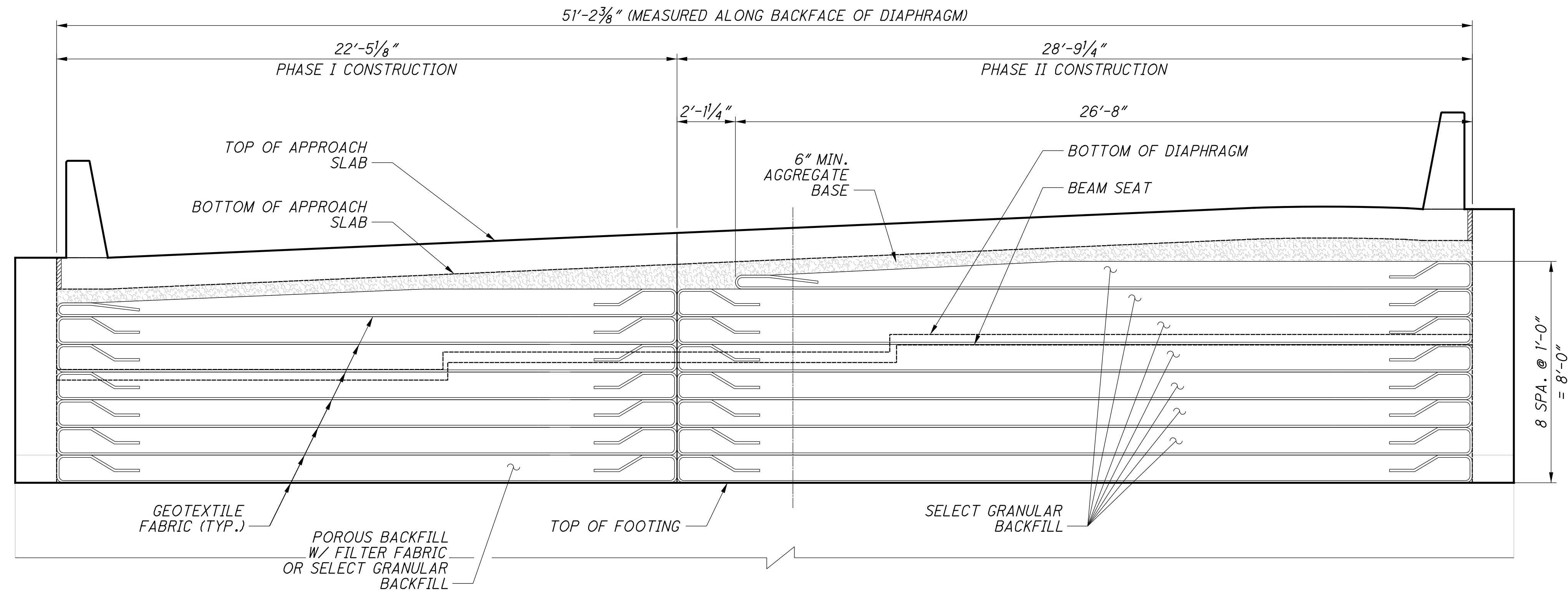
DATE: 02/2017  
 REVIEWED: RKM  
 STRUCTURE FILE NUMBER: 3005887  
 DRAWN: JYR  
 REVISION: XXX  
 DESIGNED: JYR  
 CHECKED: TML

**GEOTEXTILE FABRIC WALL DETAILS**  
 BRIDGE NO. GUE-513-0871  
 SR-513 OVER IR-70

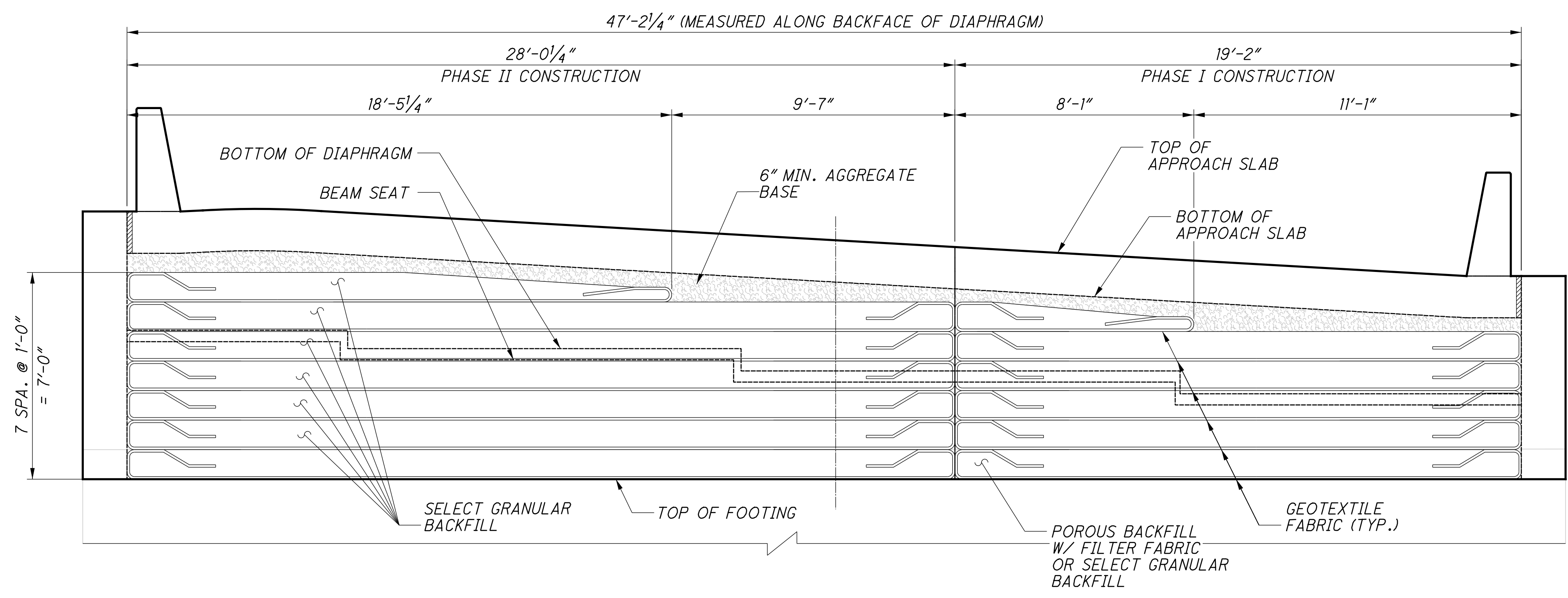
**GUE-513-8.65**  
**PID No. 93289**

49/54  
 95/100

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**REAR ABUTMENT ELEVATION**



**FORWARD ABUTMENT ELEVATION**

**NOTES:**

SEE SHEET 49/54 FOR GEOTEXTILE FABRIC WALL DETAILS.

DESIGN AGENCY  
 EASTON OVAL  
 SUITE 401  
 COLUMBUS, OH 43219  
 T 614-476-8000  
 F 614-476-8225  
**WOOLPERT**  
 DESIGN/ENGINEERING/CONSTRUCTION

DESIGNED	JYR	CHECKED	TML
DRAWN	JYR	REVISED	
REVIEWED	RKM	STRUCTURE FILE NUMBER	3005887
DATE	02/2017		

**GEOTEXTILE FABRIC WALL ELEVATION**  
 BRIDGE NO. GUE-513-0871  
 SR-513 OVER IR-70

**GUE - 513 - 8.65**  
**PID No. 93289**



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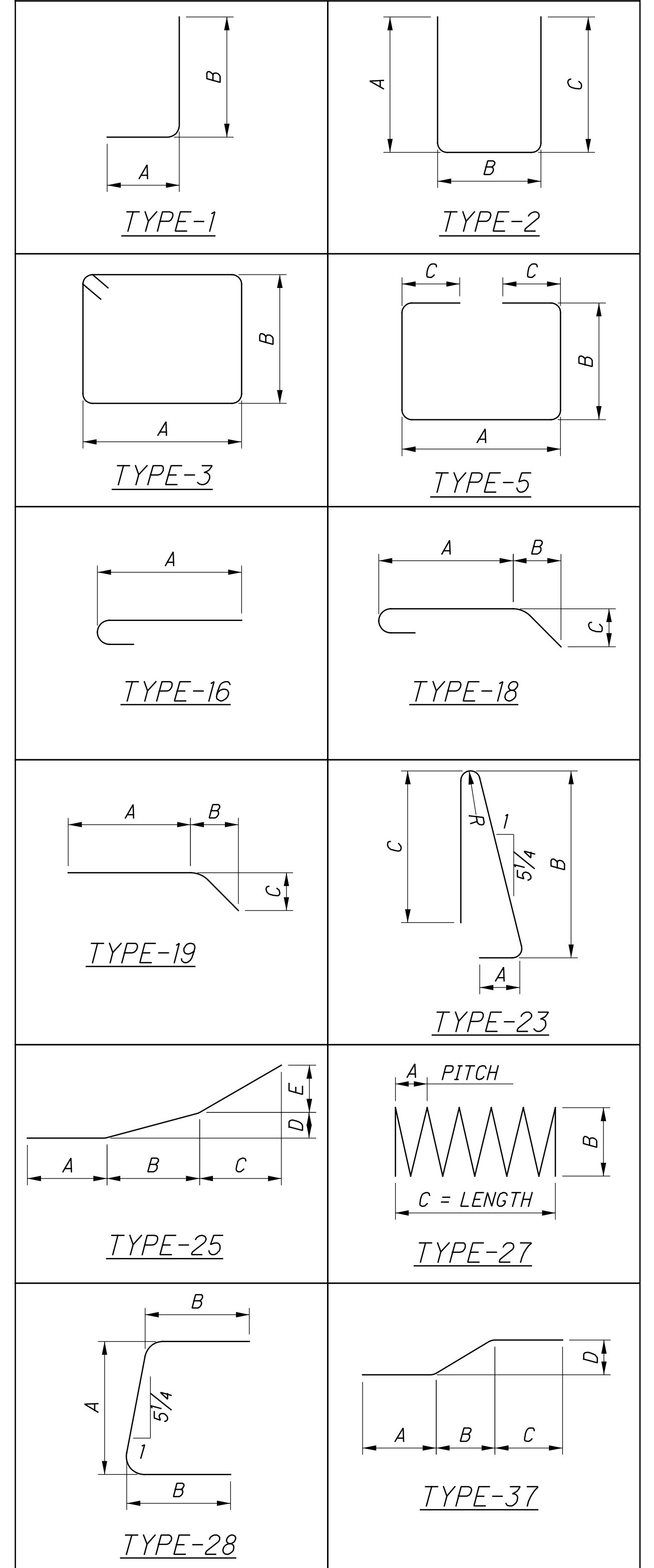
REAR ABUTMENT

MARK	NUMBER			LENGTH	WEIGHT (LBS)	TYPE	DIMENSIONS								
	PHASE 1	PHASE 2	TOTAL				A	B	C	D	E	R	INC.		
RA501	15	21	36	6'-2"	232	2	1'-6"	3'-5"	1'-6"						
RA502	8	0	8	21'-7"	181	ST.									
RA503	2	0	2	20'-5"	43	ST.									
RA504	3	0	3	11'-3"	36	3	1'-11"	3'-5"							
RA505	12	22	34	9'-2"	326	2	3'-0"	3'-5"	3'-0"						
RA506	5	0	5	11'-6"	60	3	2'-1"	3'-5"							
RA507	1	0	1	12'-0"	13	3	2'-4"	3'-5"							
RA508	3	0	3	9'-11"	32	3	1'-3"	3'-5"							
RA509	1	0	1	10'-11"	12	3	1'-9"	3'-5"							
RA510	2	8	10	11'-5"	120	3	2'-0"	3'-5"							
RA511	0	22	22	17'-6"	402	ST.									
RA512	0	2	2	18'-1"	38	ST.									
RA513	0	4	4	16'-6"	69	ST.									
RA514	0	7	7	11'-11"	88	3	2'-3"	3'-5"							
RA515	0	3	3	11'-0"	35	3	1'-10"	3'-5"							
RA516	0	4	4	12'-5"	52	3	2'-6"	3'-5"							
RA601	10	0	10	5'-10"	88	1	1'-0"	5'-0"							
RA602	0	10	10	7'-2"	108	1	1'-0"	6'-4"							
RD601	12	0	12	5'-10"	106	1	1'-0"	5'-0"							
RD602	8	12	20	6'-6"	196	1	1'-0"	5'-8"							
RD603	0	20	20	7'-1"	213	1	1'-0"	6'-3"							
RA801	4	0	4	22'-7"	242	1	1'-4"	21'-5"							
RA802	4	0	4	7'-10"	84	ST.									
RA803	0	4	4	14'-3"	153	1	2'-8"	11'-9"							
RA804	0	4	4	7'-1"	76	1	2'-3"	5'-0"							
RA805	6	0	6	20'-5"	328	ST.									
RA806	4	0	4	11'-8"	125	ST.									
RA807	6	0	6	4'-9"	77	ST.									
RA808	0	4	4	16'-8"	178	ST.									
RA809	0	4	4	25'-8"	275	2	1'-4"	23'-5"	1'-4"						
RA810	0	4	4	8'-8"	93	1	7'-6"	1'-4"							
RA811	0	20	20	16'-6"	882	ST.									
RA812	0	4	4	10'-9"	115	ST.	10'-9"	0'-0"	0'-0"						
RA813	0	4	4	23'-8"	253	ST.	23'-8"	0'-0"	0'-0"						
D801	13	19	32	6'-2"	527	19	3'-11"	1'-0"	1'-0"						
TOTAL					5858										

REAR ABUTMENT WINGWALLS AND FOOTINGS

MARK	NUMBER			LENGTH	WEIGHT (LBS)	TYPE	DIMENSIONS								
	PHASE 1	PHASE 2	TOTAL				A	B	C	D	E	R	INC.		
RW501	5	5	10	7'-11"	83	3	2'-6"	1'-2"							
RW502	SER. OF 1	0	SER. OF 1	8'-3"	39	3	2'-8"	1'-2"							8"
RW503	4	0	4	10'-3"		3	3'-8"	1'-2"							
RW504	13	0	13	8'-7"	117	2	3'-10"	1'-2"	3'-10"						
RW505	8	8	16	19'-8"	329	ST.									
RW506	10	12	22	11'-6"	264	ST.									
RW507	2	0	2	8'-9"	19	37	2'-0"	4'-7"	2'-0"	1'-5"					
RW508	2	2	4	13'-9"	58	ST.									
RW509	2	2	4	11'-9"	50	ST.									
RW510	0	SER. OF 1	SER. OF 1	8'-3"	119	2	3'-11"	1'-2"	3'-11"						
RW511	0	2	2	10'-5"	39	3	2'-8"	1'-2"							9"
RW601	0	2	2	8'-8"	19	37	2'-0"	4'-5"	2'-0"	1'-7"					
RW602	13	0	13	16'-6"	323	2	7'-10"	1'-2"	7'-10"						
RW602	0	13	13	19'-10"	388	2	9'-6"	1'-2"	9'-6"						
RF501	9	8	17	16'-11"	300	3	5'-8"	2'-6"							
RF502	8	9	17	16'-1"	286	3	5'-3"	2'-6"							
RF503	SER. OF 1	0	SER. OF 1	13'-2"	89	ST.									5"
RF504	6	0	6	15'-3"		ST.									
RF505	4	0	4	12'-8"	53	ST.									
RF506	1	0	1	15'-6"	66	ST.									
RF507	1	0	1	11'-11"	17	3	5'-0"	2'-6"							
RF508	1	0	1	11'-11"	13	3	3'-2"	2'-6"							
RF509	1	0	1	8'-3"	9	3	1'-4"	2'-6"							
RF510	2	0	2	6'-0"	13	ST.									
RF510	0	SER. OF 2	SER. OF 2	13'-0"	113	ST.									4"
RF511	4	4	8	14'-0"		ST.									
RF512	0	4	4	12'-9"	54	ST.									
RF513	0	8	8	14'-0"	117	ST.									
RF514	0	1	1	13'-0"	14	3	3'-9"	2'-6"							
RF515	0	1	1	9'-6"	10	3	2'-0"	2'-6"							
RF515	0	2	2	5'-5"	12	19	2'-11"	2'-6"	1'-3"						
RD501	20	0	20	13'-0"	272	ST.									
RD502	2	2	4	10'-0"	184	ST.									5"
RD503	0	SER. OF 8	SER. OF 8	12'-0"		ST.									
RD504	0	2	2	10'-9"	23	ST.									
RD504	0	2	2	9'-8"	21	ST.									
TOTAL					3513										

REINFORCING STEEL BAR BEND DIAGRAM



NOTES:

1. THE BAR SIZE NUMBER IS SPECIFIED ON THE PLANS IN THE BAR MARK COLUMN. THE FIRST DIGIT WHERE THREE DIGITS ARE USED, AND THE FIRST TWO DIGITS WHERE FOUR ARE USED, INDICATES THE BAR SIZE NUMBER. FOR EXAMPLE, 1P501 IS A NO. 5 BAR.
2. BAR DIMENSIONS SHOWN ARE OUT-TO-OUT UNLESS OTHERWISE INDICATED.
3. "R" INDICATES INSIDE RADIUS, UNLESS OTHERWISE NOTED.
4. ALL REINFORCING STEEL SHALL BE EPOXY COATED.
5. MECHANICAL SPLICE CONNECTORS SHALL BE INCLUDED FOR PAYMENT WITH THE REINFORCING STEEL. MECHANICALLY CONNECTED BARS ARE INDICATED BY THE "\*" SYMBOL.

DESIGN AGENCY: EASTON OVAL SUITE 600 COLUMBUS, OH 43219 T 614-476-8000 F 614-476-8225  
**WOOLPERT**  
 DESIGN/ENGINEERING/CONSTRUCTION  
 DATE: 02/2017  
 REVIEWED: RKM  
 DRAWN: PES  
 DESIGNED: PES  
 CHECKED: BWB  
 STRUCTURE FILE NUMBER: 3005887  
**REINFORCING STEEL LIST (1 OF 4)**  
 BRIDGE NO. GUE-513-0871  
 SR-513 OVER IR-70  
**GUE - 513 - 8.65**  
**PID No. 93289**  
 51/54  
 97/100

FORWARD ABUTMENT

MARK	NUMBER			LENGTH	WEIGHT (LBS)	TYPE	DIMENSIONS							
	PHASE 1	PHASE 2	TOTAL				A	B	C	D	E	R	INC.	
FA501	11	0	11	6'-0"	69	2	1'-6"	3'-5"	1'-4"					
FA502	4	20	24	6'-0"	151	2	1'-6"	3'-3"	1'-6"					
FA503	6	0	6	21'-7"	136	ST.								
FA504	2	0	2	11'-10"	25	ST.								
FA505	3	0	3	11'-0"	35	3	1'-10"	3'-5"						
FA506	13	21	34	8'-8"	308	2	3'-1"	2'-9"	3'-1"					
FA507	5	5	10	11'-6"	120	3	2'-1"	3'-5"						
FA508	1	0	1	11'-11"	13	3	2'-3"	3'-5"						
FA509	1	6	7	11'-3"	83	3	1'-11"	3'-5"						
FA510	3	0	3	8'-3"	26	3	1'-1"	2'-9"						
FA511	3	3	6	11'-5"	72	3	2'-0"	3'-5"						
FA512	0	8	8	27'-4"	229	ST.								
FA513	0	2	2	26'-5"	56	ST.								
FA514	0	4	4	11'-11"	50	3	2'-5"	3'-3"						
FA515	0	3	3	10'-6"	33	3	1'-9"	3'-3"						
FA601	12	0	12	4'-2"	76	1	1'-0"	3'-4"						
FA602	0	7	7	6'-4"	67	1	1'-0"	5'-6"						
FD601	10	0	10	4'-2"	63	1	1'-0"	3'-4"						
FD602	8	12	20	5'-0"	151	1	1'-0"	4'-2"						
FD603	0	16	16	5'-8"	137	1	1'-0"	4'-10"						
FD604	0	5	5	6'-4"	48	1	1'-0"	5'-6"						
FA801	4	0	4	22'-8"	243	1	1'-4"	21'-6"						
FA802	4	0	4	7'-11"	85	ST.								
FA803	6	0	6	20'-7"	330	ST.								
FA804	4	0	4	11'-10"	127	ST.								
FA805	4	0	4	14'-9"	158	1	12'-0"	2'-11"						
FA806	4	0	4	4'-8"	50	ST.								
FA807	2	0	2	2'-6"	14	ST.								
FA808	4	0	4	6'-11"	74	1	4'-10"	2'-3"						
FA809	0	4	4	27'-4"	292	ST.								
FA810	0	4	4	21'-7"	231	1	20'-5"	1'-4"						
FA811	0	4	4	8'-3"	89	1	7'-1"	1'-4"						
FA812	0	6	6	26'-5"	424	ST.								
FA813	0	4	4	7'-11"	85	1	6'-4"	1'-9"						
FA814	0	4	4	21'-2"	227	1	19'-8"	1'-9"						
D801	13	19	32	6'-2"	527	19	3'-11"	1'-0"	1'-0"					
TOTAL					4904									

FORWARD ABUTMENT WINGWALLS AND FOOTINGS

MARK	NUMBER			LENGTH	WEIGHT (LBS)	TYPE	DIMENSIONS							
	PHASE 1	PHASE 2	TOTAL				A	B	C	D	E	R	INC.	
FW501	5	5	10	7'-11"	83	3	2'-6"	1'-2"						
	0		1	8'-0"			2'-7"	1'-2"						
FW502	0	SER. OF	SER. OF	TO	39	3							10"	
	0		4	10'-6"			3'-10"	1'-2"						
FW503	0	13	13	8'-11"	121	2	4'-0"	1'-2"	4'-0"					
FW504	4	4	8	19'-6"	163	ST.								
FW505	4	5	9	11'-6"	108	ST.								
FW506	0	2	2	8'-8"	19	37	2'-0"	4'-5"	2'-0"	1'-8"				
FW507	2	2	4	13'-9"	58	ST.								
FW508	2	2	4	11'-9"	50	ST.								
FW509	13	0	13	8'-5"	115	2	3'-9"	1'-2"	3'-9"					
		0	1	8'-3"			2'-8"	1'-2"						
FW510	SER. OF	0	SER. OF	TO	39	3	0'-0"	0'-0"					7"	
		0	4	10'-0"			3'-7"	1'-2"						
FW511	2	0	2	8'-9"	19	37	2'-0"	4'-7"	2'-0"	1'-4"				
FW601	0	13	13	17'-10"	349	2	8'-6"	1'-2"	8'-6"					
FW602	13	0	13	14'-2"	277	2	6'-8"	1'-2"	6'-8"					
FF501	10	7	17	16'-2"	287	3	5'-4"	2'-6"						
FF502	9	9	18	16'-8"	313	3	5'-7"	2'-6"						
FF503	8	0	8	13'-10"	116	ST.								
	2		2	13'-4"										
FF504	SER. OF	0	SER. OF	TO	114	ST.							2"	
	4		4	13'-10"										
FF505	4	0	4	13'-2"	55	ST.								
FF506	2	0	2	5'-10"	13	19	2'-11"	2'-10"	8"					
		2	2	13'-1"										
FF507	0	SER. OF	SER. OF	TO	169	ST.							2"	
		6	6	13'-10"										
FF508	0	4	4	14'-1"	59	ST.								
FF509	0	4	4	12'-10"	54	ST.								
FF510	0	4	4	5'-6"	23	ST.								
	2		2	12'-2"										
FD501	SER. OF	0	SER. OF	TO	208	ST.							1"	
	8		8	12'-8"										
FD502	2	0	2	10'-9"	23	ST.								
FD503	2	0	2	12'-3"	26	ST.								
FD504	0	20	20	9'-3"	193	ST.								
TOTAL					3093									

NOTES:

- SEE SHEET 51/54 FOR REINFORCING STEEL NOTES AND BAR BEND DIAGRAM.

PIER 1													
MARK	NUMBER			LENGTH	WEIGHT (LBS)	TYPE	DIMENSIONS						
	PHASE 1	PHASE 2	TOTAL				A	B	C	D	E	R	INC.
IP501	1	0	1	11'-6"	12	3	2'-4"	3'-2"					
IP502	1	0	1	11'-11"	13	3	2'-6"	3'-2"					
IP503	1	0	1	12'-3"	13	3	2'-8"	3'-2"					
IP504	1	0	1	12'-6"	14	3	2'-10"	3'-2"					
IP505	1	0	1	12'-11"	14	3	3'-0"	3'-2"					
IP506	98	0	98	8'-11"	912	2	3'-0"	3'-2"	3'-0"				
IP507	2	0	2	19'-4"	41	ST.							
IP508	2	0	2	19'-3"	41	ST.							
IP509	2	0	2	18'-10"	40	ST.							
IP510	6	6	12	5'-0"	63	19	3'-1"	1'-9"	10"				
IP511	2	0	2	5'-0"	11	ST.							
IP512	0	1	1	15'-5"	17	3	4'-3"	3'-2"					
IP513	0	1	1	15'-11"	17	3	4'-6"	3'-2"					
IP514	0	1	1	16'-7"	18	3	4'-10"	3'-2"					
IP515	0	80	80	10'-11"	911	2	4'-0"	3'-2"	4'-0"				
IP516	0	2	2	12'-9"	27	ST.							
IP517	0	2	2	25'-10"	54	19	18'-0"	7'-10"	3"				
IP518	0	4	4	25'-9"	108	ST.							
IP519	0	2	2	25'-4"	53	ST.							
IP520	3	5	8	7'-10"	66	2	2'-5"	3'-0"	2'-5"				
IP1001	6	0	6	16'-6"	426	ST.							
IP1002	7	0	7	19'-4"	583	ST.							
IP1003	7	7	14	20'-9"	1251	1	19'-3"	1'-10"					
IP1004	0	6	6	23'-0"	594	ST.							
IP1005	0	7	7	25'-10"	779	ST.							
IP1006	0	7	7	27'-3"	821	1	25'-9"	1'-10"					
IP1007	8	16	24	4'-1"	422	1	2'-7"	1'-10"					
ISP501	1	2	3	58'-8"	184	27	3 1/2"	2'-8"	2'-0"	7"			
ISP502	1	2	3	40'-1"	126	27	3 1/2"	2'-10"	1'-3"	5"			
TOTAL					7631								

PIER 2													
MARK	NUMBER			LENGTH	WEIGHT (LBS)	TYPE	DIMENSIONS						
	PHASE 1	PHASE 2	TOTAL				A	B	C	D	E	R	INC.
2P501	1	0	1	11'-6"	12	3	2'-4"	3'-2"					
2P502	1	0	1	11'-11"	13	3	2'-6"	3'-2"					
2P503	1	0	1	12'-3"	13	3	2'-8"	3'-2"					
2P504	1	0	1	12'-6"	14	3	2'-10"	3'-2"					
2P505	1	0	1	12'-11"	14	3	3'-0"	3'-2"					
2P506	78	0	78	9'-5"	767	2	3'-3"	3'-2"	3'-3"				
2P507	2	0	2	18'-9"	40	ST.							
2P508	2	0	2	18'-8"	39	ST.							
2P509	2	0	2	18'-3"	39	ST.							
2P510	6	6	12	4'-12"	63	19	3'-1"	1'-9"	10"				
2P511	2	0	2	5'-0"	11	ST.							
2P512	0	1	1	15'-5"	17	3	4'-3"	3'-2"					
2P513	0	1	1	16'-1"	17	3	4'-7"	3'-2"					
2P514	0	1	1	16'-8"	18	3	4'-11"	3'-2"					
2P515	0	70	70	10'-7"	773	2	3'-10"	3'-2"	3'-10"				
2P516	0	2	2	12'-9"	27	ST.							
2P517	0	2	2	25'-3"	53	19	17'-6"	7'-9"	4"				
2P518	0	4	4	25'-3"	106	ST.							
2P519	0	2	2	24'-9"	52	ST.							
2P520	3	5	8	7'-10"	66	2	2'-5"	3'-0"	2'-5"				
2P1001	6	0	6	15'-11"	411	ST.							
2P1002	6	0	6	18'-9"	485	ST.							
2P1003	6	0	6	20'-3"	523	1	18'-9"	1'-10"					
2P1004	0	6	6	22'-6"	581	ST.							
2P1005	0	6	6	25'-3"	652	ST.							
2P1006	0	6	6	26'-9"	691	1	25'-3"	1'-10"					
2P1101	0	16	16	4'-3"	362	1	2'-7"	2'-0"					
2P1401	15	15	30	4'-8"	1071	1	2'-7"	2'-7"					
2SP501	1	2	3	58'-8"	184	27	3 1/2"	2'-8"	2'-0"	7"			
2SP502	1	2	3	40'-1"	126	27	3 1/2"	2'-10"	1'-3"	5"			
PG601	4	4	8	12'-4"	149	3	2'-7"	3'-2"					
PG801	7	7	14	8'-6"	318	5	1'-8"	2'-5"	1'-5"				
TOTAL					7707								

PIER 3													
MARK	NUMBER			LENGTH	WEIGHT (LBS)	TYPE	DIMENSIONS						
	PHASE 1	PHASE 2	TOTAL				A	B	C	D	E	R	INC.
3P501	1	0	1	11'-6"	12	3	2'-4"	3'-2"					
3P502	1	0	1	11'-11"	13	3	2'-6"	3'-2"					
3P503	1	0	1	12'-5"	13	3	2'-9"	3'-2"					
3P504	1	0	1	12'-6"	14	3	2'-10"	3'-2"					
3P505	1	0	1	13'-0"	14	3	3'-1"	3'-2"					
3P506	78	0	78	9'-5"	767	2	3'-3"	3'-2"	3'-3"				
3P507	2	0	2	18'-5"	39	ST.							
3P508	2	0	2	18'-4"	39	ST.							
3P509	2	0	2	17'-10"	38	ST.							
3P510	6	6	12	4'-11"	62	19	3'-0"	1'-9"	10"				
3P511	2	0	2	5'-0"	11	ST.							
3P512	0	1	1	15'-9"	17	3	4'-5"	3'-2"					
3P513	0	1	1	16'-2"	17	3	4'-8"	3'-2"					
3P514	0	1	1	16'-11"	18	3	5'-0"	3'-2"					
3P515	0	68	68	10'-7"	751	2	3'-10"	3'-2"	3'-10"				
3P516	0	2	2	24'-6"	52	19	18'-4"	6'-2"	4"				
3P517	0	4	4	24'-8"	103	ST.							
3P518	0	2	2	24'-0"	51	ST.							
3P519	0	2	2	12'-9"	27	ST.							
3P520	3	5	8	7'-10"	66	2	2'-5"	3'-0"	2'-5"				
3P1001	6	0	6	15'-7"	403	ST.							
3P1002	6	0	6	18'-4"	474	ST.							
3P1003	6	0	6	19'-10"	513	1	18'-4"	1'-10"					
3P1004	0	6	6	21'-9"	562	ST.							
3P1005	0	6	6	24'-6"	633	ST.							
3P1006	0	6	6	26'-0"	672	1	24'-6"	1'-10"					
3P1007	8	16	24	4'-1"	422	1	2'-7"	1'-10"					
3SP501	1	2	3	58'-8"	184	27	3 1/2"	2'-8"	2'-0"	7"			
3SP502	1	2	3	40'-1"	126	27	3 1/2"	2'-10"	1'-3"	5"			
TOTAL					6113								

**NOTES:**

- SEE SHEET 51/54 FOR REINFORCING STEEL NOTES AND BAR BEND DIAGRAM.



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SUPERSTRUCTURE													
MARK	NUMBER			LENGTH	WEIGHT (LBS)	TYPE	DIMENSIONS						
	PHASE 1	PHASE 2	TOTAL				A	B	C	D	E	R	INC.
S401	120	162	282	30'-0"	5652	ST.							
S402	160	216	376	8'-11"	2240	ST.							
S403	80	108	188	10'-11"	1371	ST.							
S404	16	4	20	3'-0"	41	ST.							
S501	579	0	579	19'-0"	11475	37	14'-6"	6"	4'-0"				
S502	SER. OF 19	0	SER. OF 19	TO 19'-0"	214	ST.							11"
S503	SER. OF 7	0	SER. OF 7	TO 15'-4"	65	ST.							2'-2"
S504	1	0	1	21'-1"	22	19	19'-6"	1'-5"	9"				
S505	1	0	1	19'-6"	21	ST.							
S506	0	584	584	26'-7"	16193	37	22'-0"	5"	4'-1"				
S507	0	SER. OF 11	SER. OF 11	TO 10'-10"	69	ST.							1'-0"
S508	0	SER. OF 13	SER. OF 13	TO 23'-11"	243	ST.							1'-0"
S509	0	SER. OF 11	SER. OF 11	TO 26'-3"	175	ST.							2'-3"
S510	0	1	1	29'-7"	31	ST.							
S511	0	1	1	25'-7"	27	ST.							
S512	579	584	1163	9'-6"	11524	16	8'-11"						
S513	SER. OF 17	0	SER. OF 17	TO 9'-6"	111	16	8'-11"						5"
S514	0	SER. OF 11	SER. OF 11	TO 9'-6"	82	16	8'-11"						5"
S515	0	1	1	4'-3"	5	19	2'-10"	1'-5"	4"				
S601	380	530	910	30'-0"	41005	ST.							
S602	38	53	91	29'-9"	4067	ST.							
S603	579	0	579	19'-0"	16524	ST.							
S604	SER. OF 18	0	SER. OF 18	TO 18'-8"	287	ST.							11"
S605	SER. OF 7	0	SER. OF 7	TO 15'-4"	93	ST.							2'-2"
S606	1	0	1	21'-1"	32	19	19'-8"	1'-3"	8"				
S607	1	0	1	19'-4"	30	ST.							
S608	0	584	584	26'-6"	23245	ST.							
S609	0	SER. OF 11	SER. OF 11	TO 10'-10"	100	ST.							11"
S610	0	SER. OF 13	SER. OF 13	TO 23'-11"	350	ST.							1'-0"
S611	0	SER. OF 11	SER. OF 11	TO 26'-2"	250	ST.							2'-2"
S612	0	1	1	29'-6"	45	ST.							
S613	0	1	1	25'-7"	39	ST.							
S614	0	1	1	4'-4"	7	19	3'-0"	1'-4"	4"				
TOTAL					135628								

DIAPHRAGM GUIDES (FOR INFORMATIONAL PURPOSES ONLY)													
MARK	TOTAL	LENGTH	WEIGHT (LBS)	TYPE	DIMENSIONS								
					A	B	C	D	E	R	INC.		
DG601	10	16'-6"	248	3	3'-5"	4'-5"							
DG801	14	16'-0"	599	5	2'-8"	4'-9"	2'-4"						
TOTAL			847										

APPROACH SLABS (FOR INFORMATIONAL PURPOSES ONLY)													
MARK	NUMBER			LENGTH	WEIGHT (LBS)	TYPE	DIMENSIONS						
	PHASE 1	PHASE 2	TOTAL				A	B	C	D	E	R	INC.
A1001	65	88	153	30'-11"	20355	16	29'-6"						
A1002	4	4	8	16'-11"	583	16	15'-6"						
A1003	2	0	2	30'-1"	259	16	28'-8"						
A1004	1	0	1	30'-2"	130	16	28'-9"						
A1005	0	4	4	30'-10"	531	16	29'-5"						
A1006	0	2	2	31'-8"	273	16	30'-3"						
A1007	0	1	1	31'-1"	134	16	29'-8"						
A1008	0	1	1	30'-7"	132	16	29'-2"						
B501	29	0	29	21'-3"	643	ST.							
B502	28	0	28	20'-1"	587	ST.							
B503	2	0	2	18'-2"	38	ST.	18'-2"	0'-0"	0'-0"				
B504	6	0	6	4'-3"	27	19	2'-6"	1'-7"	10"				
B505	2	0	2	28'-3"	59	ST.							
B506	31	0	31	18'-1"	585	ST.							
B507	34	0	34	19'-4"	686	ST.							
B508	2	0	2	18'-0"	38	ST.							
B509	4	0	4	3'-11"	17	19	2'-10"	1'-0"	4"				
B510	0	30	30	29'-6"	924	ST.							
B511	0	26	26	28'-5"	771	ST.							
B512	0	2	2	4'-6"	10	19	2'-0"	2'-3"	1'-2"				
B513	0	4	4	3'-9"	16	19	2'-6"	1'-2"	7"				
B514	0	29	29	25'-9"	779	ST.							
B515	0	34	34	26'-11"	955	ST.							
B516	0	6	6	4'-3"	27	19	2'-6"	1'-9"	5"				
B517	0	2	2	26'-2"	55	ST.							
B518	0	2	2	23'-9"	50	ST.							
C501	27	36	63	29'-6"	1939	ST.							
C502	2	2	4	15'-6"	65	ST.							
C503	2	0	2	28'-8"	60	ST.							
C504	0	1	1	30'-3"	32	ST.							
C505	0	1	1	29'-8"	31	ST.							
C506	0	1	1	29'-3"	31	ST.							
C507	0	1	1	29'-2"	31	ST.							
TOTAL					30853								

PARAPET													
MARK	NUMBER			LENGTH	WEIGHT (LBS)	TYPE	DIMENSIONS						
	PHASE 1	PHASE 2	TOTAL				A	B	C	D	E	R	INC.
R501	442	444	886	6'-0"	5545	23	1'-0"	2'-9"	2'-6"				2 3/4"
R502	60	60	120	30'-0"	3755	ST.							
R503	6	0	6	21'-4"	134	ST.							
R504	0	6	6	22'-9"	143	ST.							
R505	8	8	16	4'-2"	70	ST.							
R506	4	4	8	4'-0"	34	19	1'-9"	2'-3"	1"				
R507	16	16	32	10'-0"	334	ST.							
R508	8	8	16	5'-8"	95	25	1'-10"	2'-5"	1'-5"				
R509	8	8	16	6'-3"	105	ST.							
R601	442	444	886	3'-2"	4215	28	1'-7"	11"	1'-0"				
R602	442	444	886	2'-5"	3217	1	1'-0"	1'-7"					
R603	10	10	20	30'-0"	902	ST.							
R604	1	0	1	26'-4"	40	ST.							
R605	0	1	1	27'-9"	42	ST.							
R606	2	2	4	4'-0"	25	19	1'-9"	2'-3"	1"				
R607	SER. OF 15	SER. OF 15	SER. OF 30	TO 4'-7"	399	1							1/4"
R608	24	24	48	4'-4"	313	1	1'-0"	3'-9"					
TOTAL					19368								

**NOTES:**

- SEE SHEET 51/54 FOR REINFORCING STEEL NOTES AND BAR BEND DIAGRAM.

GUE - 513 - 8.65  
PID No. 93289

REINFORCING STEEL LIST (4 OF 4)

BRIDGE NO. GUE-513-0871  
SR-513 OVER IR-70

DESIGNED: PES  
CHECKED: BWB  
DRAWN: PES  
REVISED:  
REVIEWED: RKM  
STRUCTURE FILE NUMBER: 3005887  
DATE: 02/2017

DESIGN AGENCY: WOOLPERT  
CORPORATION  
100 EASTON OVAL  
SUITE 400  
COLUMBUS, OH 43219  
TEL: 614-766-8000  
FAX: 614-766-8225

**PROJECT DESCRIPTION**

REHABILITATION OF THE EXISTING FOUR SPAN, CURVED, REINFORCED CONCRETE DECK ON DOG-LEGGED STEEL BEAM BRIDGE SUPPORTED ON CAP AND COLUMN PIERS AND STUB ABUTMENTS ON PILES. BRIDGE WORK TO INCLUDE SUPERSTRUCTURE REPLACEMENT, PIER CAP REPLACEMENT, ABUTMENT REHABILITATION AND CONVERSION TO SEMI-INTEGRAL, AND RAISING OF THE STRUCTURE TO ACHIEVE MINIMUM REQUIRED VERTICAL CLEARANCE OVER IR-70. ROADWAY WORK INCLUDES WIDENING, PROFILE ADJUSTMENT, AND APPROACH RECONSTRUCTION.

**HISTORIC RECORDS**

TWO HISTORIC BORINGS SHOWN UNDER THE S.R. 513 BRIDGE ALIGNMENT FROM CONSTRUCTION PLANS, GUE-40-23.26, DATED 1962, ARE PRESENTED IN THESE PLANS.

**GEOLOGY**

THE PROJECT IS LOCATED WITHIN THE NON-GLACIATED MARIETTA PLATEAU PHYSIOGRAPHIC REGION. TYPICALLY, THE AREA IS CHARACTERIZED BY DISSECTED TERRAIN WITH MODERATE TO HIGH RELIEF WITH WIDE FLAT STEAM VALLEYS. THESE WIDE FLAT STREAM VALLEYS CONTAIN LACUSTRINE DEPOSITS WITH COLLUVIAL DEPOSITS AT THE BASE OF THE HILLSIDES AND RESIDUAL SOIL ALONG RIDGE AND HILL TOPS. THE SALT FORK FLOOD PLAIN, OVER WHICH THE PROJECT CROSSES, IS NOTED AS HAVING LACUSTRINE DEPOSITS. THE OVERBURDEN SOILS ARE UNDERLAIN BY SHALE, SANDSTONE, SILTSTONE, MUDSTONE, AND LIMESTONE OF THE PENNSYLVANIAN AGED CONEMAUGH GROUP. LANDSLIDES ARE COMMON WITHIN THE HILLSIDES.

**RECONNAISSANCE**

A SITE RECONNAISSANCE WAS COMPLETED BY PERSONNEL FROM THE OFFICE OF GEOTECHNICAL ENGINEERING (OGE) ON AUGUST 12, 2015. THE PROJECT CONSISTS OF IR 70, LOCATED WITHIN THE WIDE VALLEY OF SALT FORK, BEING CROSSED BY SR 513 VIA EMBANKMENT. SR 513 IS LOCATED ABOVE THE IR 70 ELEVATION RUNNING ALONG A RIDGELINE BOTH NORTH AND SOUTH OF THE SALT FORK VALLEY. THE SR 513 ROADWAY WAS NOTED AS BEING IN FAIR CONDITION DUE TO AGE, AND IR 70 WAS NOTED AS BEING IN GOOD CONDITION. THE EMBANKMENT DO NOT INDICATE ANY SIGNS OF INSTABILITY. THE EXISTING STRUCTURE IS IN POOR CONDITION DUE TO AGE. THE PROJECT CONSISTS OF A LARGE OPEN INTERCHANGE WITH COMMERCIAL PROPERTIES IMMEDIATELY NORTH WHEN SR 513 AND CR 690, BRIDGEWATER RD, INTERSECT. TO THE SOUTH IS A MIX OF OPEN, WOODED AND COMMERCIAL PROPERTIES. AN AREA OF SLOPE INSTABILITY WAS NOTED SOUTHWEST OF THE PROJECT LOCATED ALONG RELOCATED SALT FORK, BUT DOES NOT IMPACT THE PROJECT.

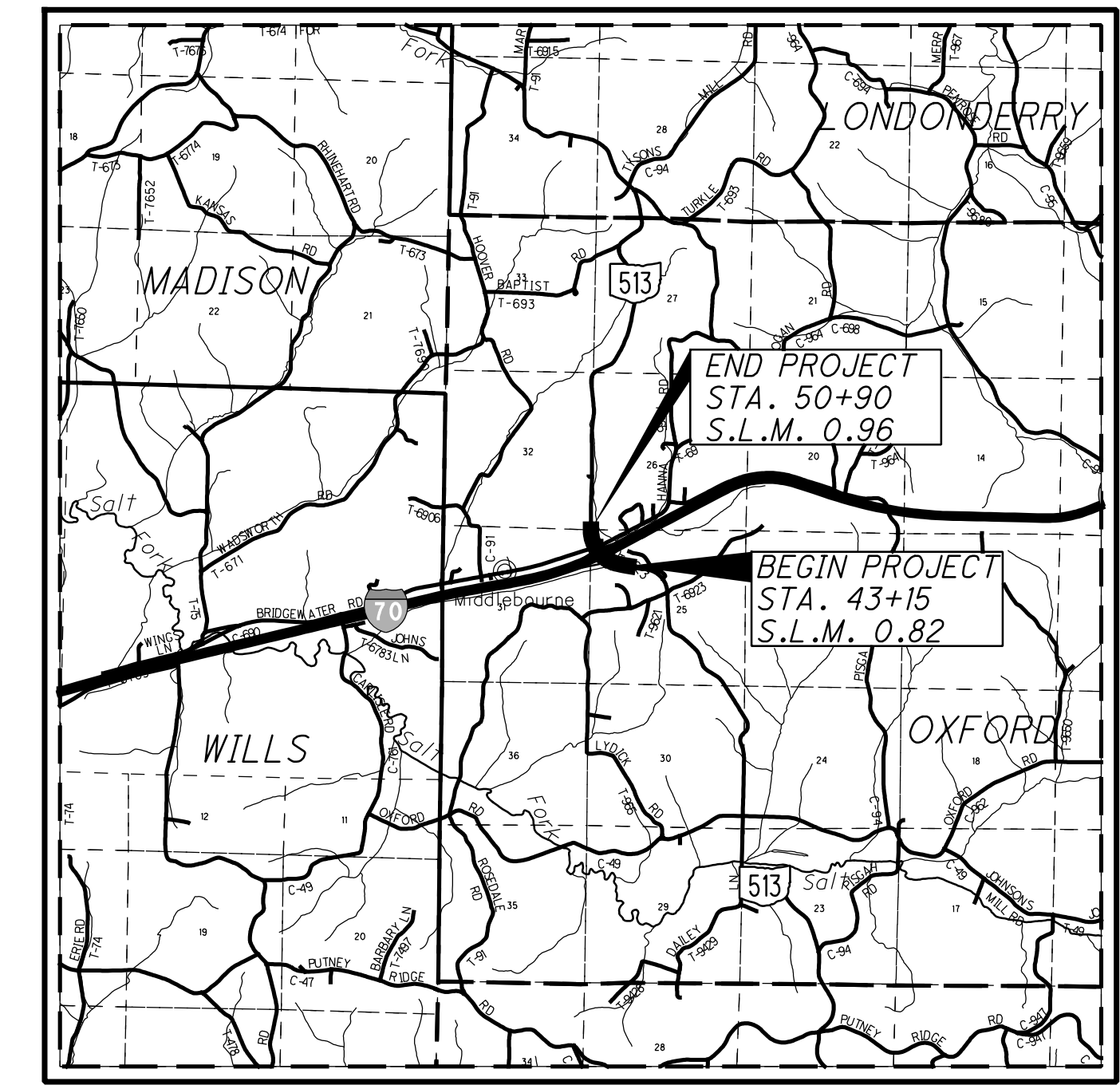
**SUBSURFACE EXPLORATION**

SIX (6) BORINGS, B-001-0-15 THROUGH B-005-0-15 AND B-004-1-15, WERE COMPLETED AS PART OF THE SUBSURFACE EXPLORATION. BORINGS WERE COMPLETED BETWEEN SEPTEMBER 9 AND OCTOBER 7, 2015 UTILIZING A TRUCK MOUNTED ROTARY DRILL RIG, USING 3-1/4 INCH I.D. HOLLOW STEM AUGERS TO ADVANCE THE BORINGS. DISTURBED SAMPLES WERE COLLECTED IN ACCORDANCE WITH THE STANDARD PENETRATION TEST (AASHTO T206) AT 2.5 FOOT INTERVALS WITHIN THE OVERBURDEN SOILS. THE HAMMER SYSTEM USED WAS CALIBRATED ON APRIL 26, 2015, AND THE AVERAGE DRILL ROD ENERGY RATIO (ER) WAS 87%. ALL BORINGS, EXCEPT B-004-1, WERE ADVANCED INTO BEDROCK AND SAMPLED (AASHTO T225) USING AN N SERIES WIRELINE CORE BARREL, WATER METHOD.

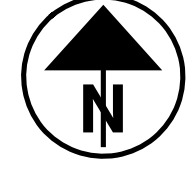
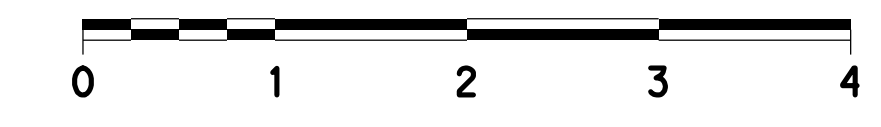
(GEONOTES CONTINUED TO SHEET 2)

**LEGEND**

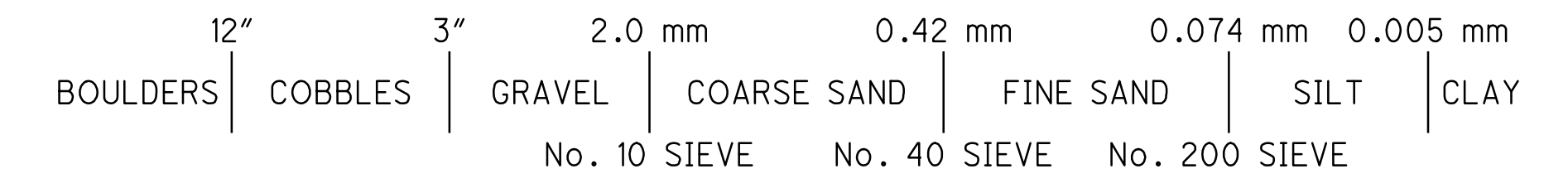
DESCRIPTION	ODOT CLASS	CLASSIFIED MECH./VISUAL
GRAVEL AND STONE FRAGS. WITH SAND & SILT	A-2-4	7 9
GR. AND ST. FRAGS. WITH SAND, SILT & CLAY	A-2-6	1 1
SANDY SILT	A-4a	3 3
SILT AND CLAY	A-6a	3 3
SILTY CLAY	A-6b	- 1
<b>TOTAL</b>	<b>TOTAL</b>	<b>14 17</b>
SANDSTONE	VISUAL	
SHALE	VISUAL	
SILTSTONE	VISUAL	
PAVEMENT OR BASE = X = APPROXIMATE THICKNESS	VISUAL	
SOD AND TOPSOIL = X = APPROXIMATE THICKNESS	VISUAL	
BORING LOCATION - PLAN VIEW.		
HISTORIC BORING LOCATION - PLAN VIEW - GUE-40-23.26, 1962		
DRIVE SAMPLE AND/OR ROCK CORE BORING PLOTTED TO VERTICAL SCALE ONLY. HORIZONTAL BAR INDICATES A CHANGE IN STRATIGRAPHY.		
<i>WC</i> INDICATES WATER CONTENT IN PERCENT.		
<i>N<sub>60</sub></i> INDICATES STANDARD PENETRATION RESISTANCE NORMALIZED TO 60% DRILL ROD ENERGY RATIO.		
<i>X/Y/D"</i> NUMBER OF BLOWS FOR STANDARD PENETRATION TEST (SPT): X= NUMBER OF BLOWS FOR 6 INCHES (UNCORRECTED). Y/D"= NUMBER OF BLOWS (UNCORRECTED) FOR D" OF PENETRATION AT REFUSAL.		
<i>X/Y/Z</i> NUMBER OF BLOWS FOR STANDARD PENETRATION TEST (SPT): X= NUMBER OF BLOWS FOR FIRST 6 INCHES. Y= NUMBER OF BLOWS FOR SECOND 6 INCHES. Z= NUMBER OF BLOWS FOR THIRD 6 INCHES.		
<i>X/Y</i> NUMBER OF BLOWS FOR STANDARD COLLECTION: X= NUMBER OF BLOWS FOR FIRST 6 INCHES. Y= NUMBER OF BLOWS FOR SECOND 6 INCHES.		
SS INDICATES A SPLIT SPOON SAMPLE.		
NP INDICATES A NON-PLASTIC SAMPLE.		
INDICATES STATIC WATER ELEVATION.		
N INDICATES PENETRATION RESISTANCE (1 FOOT).		
HISTORIC BORING DESCRIPTIONS	ODOT CLASS	CLASSIFIED MECH./VISUAL
GRAVEL WITH SAND	A-1-b	- 1
GRAVEL WITH SAND & SILT	A-2-4	4 -
SANDY SILT	A-4a	1 -
SILT	A-4b	1 -
<b>TOTAL</b>	<b>TOTAL</b>	<b>6 1</b>
SHALE	VISUAL	
COAL	VISUAL	
CLAYSTONE	VISUAL	



LOCATION MAP  
SCALE IN MILES



**PARTICLE SIZE DEFINITIONS**



RECON. - PPP 08/12/15  
 DRILLING - DML 09/09-10/07/15  
 DRAWN - GLM 03/2017  
 REVIEWED - SAT 03/2017

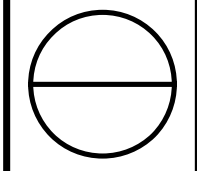
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DESIGN AGENCY  
OHIO DEPARTMENT OF TRANSPORTATION  
OFFICE OF GEOTECHNICAL ENGINEERING  
1960 W. BROAD ST., COLUMBUS, OH 43223

PID NO.  
**93289**

**STRUCTURE FOUNDATION EXPLORATION**  
**S.R. 513 BRIDGE OVER I.R. 70**

**GUE-513-8.65**



(GEONOTES CONTINUED FROM SHEET 1)

EXPLORATION FINDINGS

BORINGS B-001, AND B-005 WERE DRILLED ALONG SR 513, AND B-002 WAS DRILLED ALONG THE SHOULDER BETWEEN THE RAMP FROM I.R. 70 EASTBOUND TO S.R. 513. B-001 AND B-005 ENCOUNTERED 2 INCHES OF ASPHALT UNDERLAIN BY 8 AND 4 INCHES OF CONCRETE, RESPECTIVELY WHEREAS B-002 ENCOUNTERED 5 INCHES OF ASPHALT. BENEATH THE PAVEMENT THE BORINGS ENCOUNTERED EMBANKMENT FILLS CONSISTING PREDOMINATELY OF STONE FRAGMENTS WITH SAND AND SILT (A-2-4) AND STONE FRAGMENTS WITH SAND, SILT AND CLAY (A-2-6) WHICH CONTAINED COBBLES AND BOULDERS AND WAS IN MEDIUM DENSE TO VERY DENSE COMPACTNESS AND DAMP CONDITION. COHESIVE LAYERS CONSISTING OF SANDY SILT (A-4a), SILT AND CLAY (A-6a) AND SILTY CLAY (A-6b) WERE ENCOUNTERED THAT WERE STIFF OR VERY STIFF IN CONSISTENCY AND DAMP OR MOIST IN CONDITION. BENEATH THE EMBANKMENT FILL THE BORINGS ENCOUNTERED SIMILAR SOILS AS FOUND IN THE EMBANKMENT. BEDROCK WAS ENCOUNTERED IN B-001. B-002, AND B-005 AT ELEVATION 885.0, 875.9, AND 853.5 FEET, RESPECTIVELY. B-001 AND B-002 ENCOUNTERED SANDSTONE WHICH WAS HIGHLY WEATHERED AND WEAK. B-002 WAS TERMINATED IN THIS MATERIAL, AND B-001 ENCOUNTERED SILTSTONE AT ELEVATION 875.0 FEET IN WHICH THE BORING WAS TERMINATED. B-005 ENCOUNTERED SHALE WHICH WAS HIGHLY WEATHERED AND WEAK THAT WAS SPLIT SPOON SAMPLED FOR APPROXIMATELY 6.5 FEET PRIOR TO CORING. THE BORING WAS TERMINATED IN THIS MATERIAL. B-003, DRILLED AT THE TOE OF THE SOUTHEAST EMBANKMENT, ENCOUNTERED HIGHLY TO MODERATELY WEATHERED, VERY WEAK TO WEAK SANDSTONE AT A DEPTH OF 1.5 FEET, ELEVATION 876.6 FEET. B-004, DRILLED AT THE TOE OF THE SOUTHWEST EMBANKMENT, ENCOUNTERED HIGHLY WEATHERED, WEAK SANDSTONE AT A DEPTH OF 3.9 FEET, ELEVATION 871.5 FEET. B-004-1 WAS OFFSET DOWN STATION FROM B-004 TO CONFIRM THE PRESENCE OF SHALLOW BEDROCK, WHICH WAS ENCOUNTERED AT ELEVATION 873.2 FEET.

HISTORICAL BORINGS B-004-0-62 AND B-007-0-62 WERE UTILIZED IN THE CURRENT DESIGN. THESE BORINGS WERE COMPLETED FOR THE PROPOSED ALIGNMENT OF SR 513 WHICH IS CURRENTLY BEING UTILIZED. BOTH OF THESE BORINGS ENCOUNTERED PREDOMINATELY NON-COHESIVE SOILS CONSISTING OF GRAVEL WITH SAND (A-1-b) AND GRAVEL WITH SAND AND SILT (A-2-4) WITH LAYERS OF COHESIVE SANDY SILT (A-4a) AND SILT (A-4b) UNDERLAIN BY SHALLOW BEDROCK. BEDROCK IN B-004-0-62 AND B-007-0-62 WAS ENCOUNTERED AT ELEVATION 854.2 AND 853.2 FEET, RESPECTIVELY AND CONSISTED OF SHALE TO APPROXIMATELY ELEVATION 842.7 WHERE COAL WAS ENCOUNTERED. BELOW THE COAL BOTH BORINGS ENCOUNTERED INDURATED CLAY (CLAYSTONE) AT WHICH THE BORINGS WERE TERMINATED THEREIN.

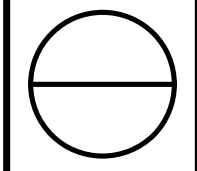
SPECIFICATIONS

THIS GEOTECHNICAL EXPLORATION WAS PERFORMED IN ACCORDANCE WITH THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, OFFICE OF GEOTECHNICAL ENGINEERING, SPECIFICATIONS FOR GEOTECHNICAL EXPLORATIONS, DATED JULY 17, 2015.

AVAILABLE INFORMATION

ALL AVAILABLE SOIL AND BEDROCK INFORMATION THAT CAN BE CONVENIENTLY SHOWN ON THE GEOTECHNICAL EXPLORATION SHEETS HAS BEEN SO REPORTED. ADDITIONAL EXPLORATIONS MAY HAVE BEEN MADE TO STUDY SOME SPECIAL ASPECT OF THE PROJECT. COPIES OF THIS DATA, IF ANY, MAY BE INSPECTED IN THE DISTRICT DEPUTY DIRECTOR'S OFFICE OR THE OFFICE OF GEOTECHNICAL ENGINEERING AT 1980 WEST BROAD STREET.

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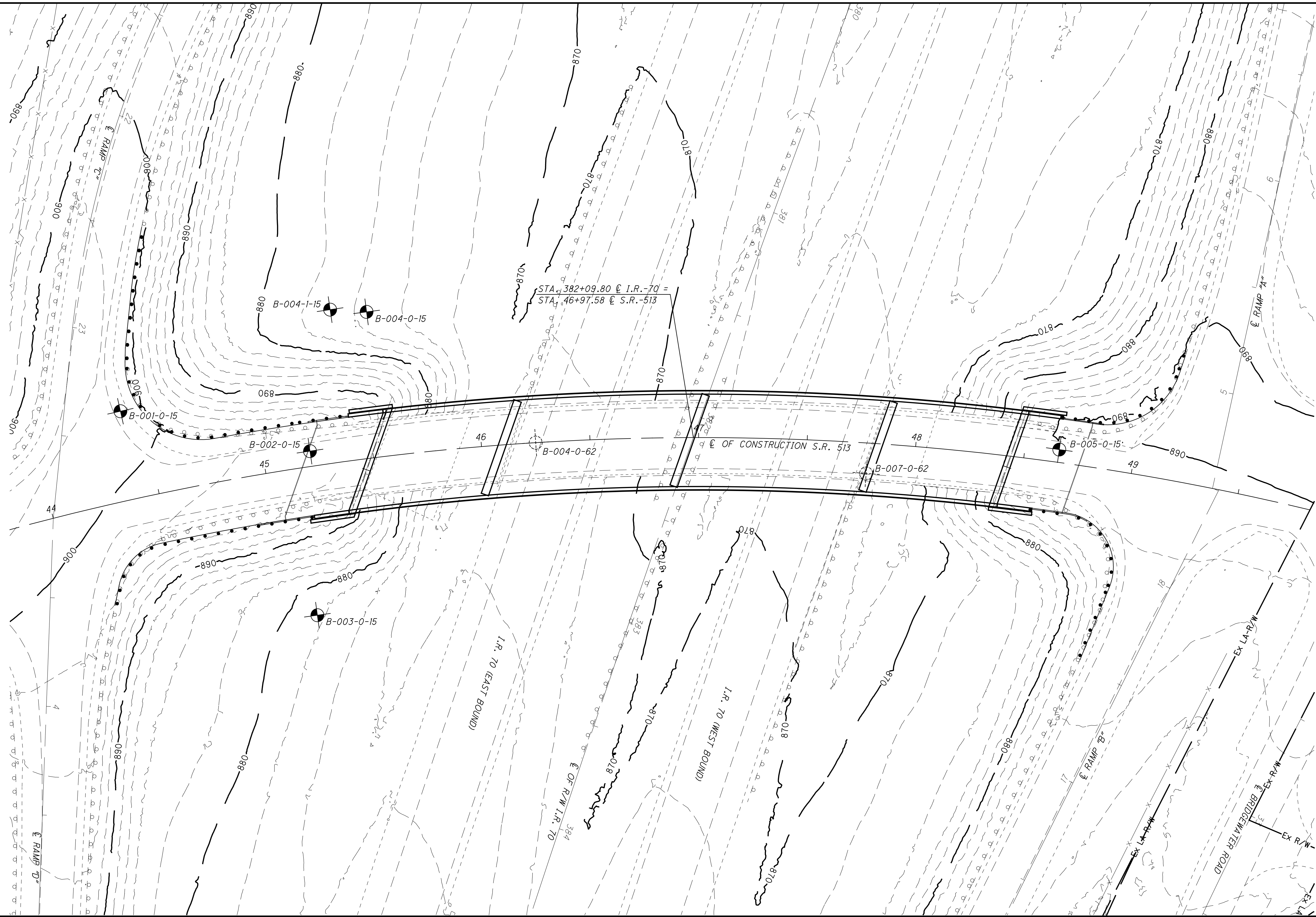
**GUE-513-8.65**

**STRUCTURE FOUNDATION EXPLORATION  
S.R. 513 BRIDGE OVER I.R. 70**

PID NO.  
**93289**

DESIGN AGENCY  
OHIO DEPARTMENT OF TRANSPORTATION  
OFFICE OF GEOTECHNICAL ENGINEERING  
1980 W. BROAD ST. COLUMBUS, OH 43223





DRAWN	GLM
CHECKED	SAT

0 10 20 40  
HORIZONTAL  
SCALE IN FEET

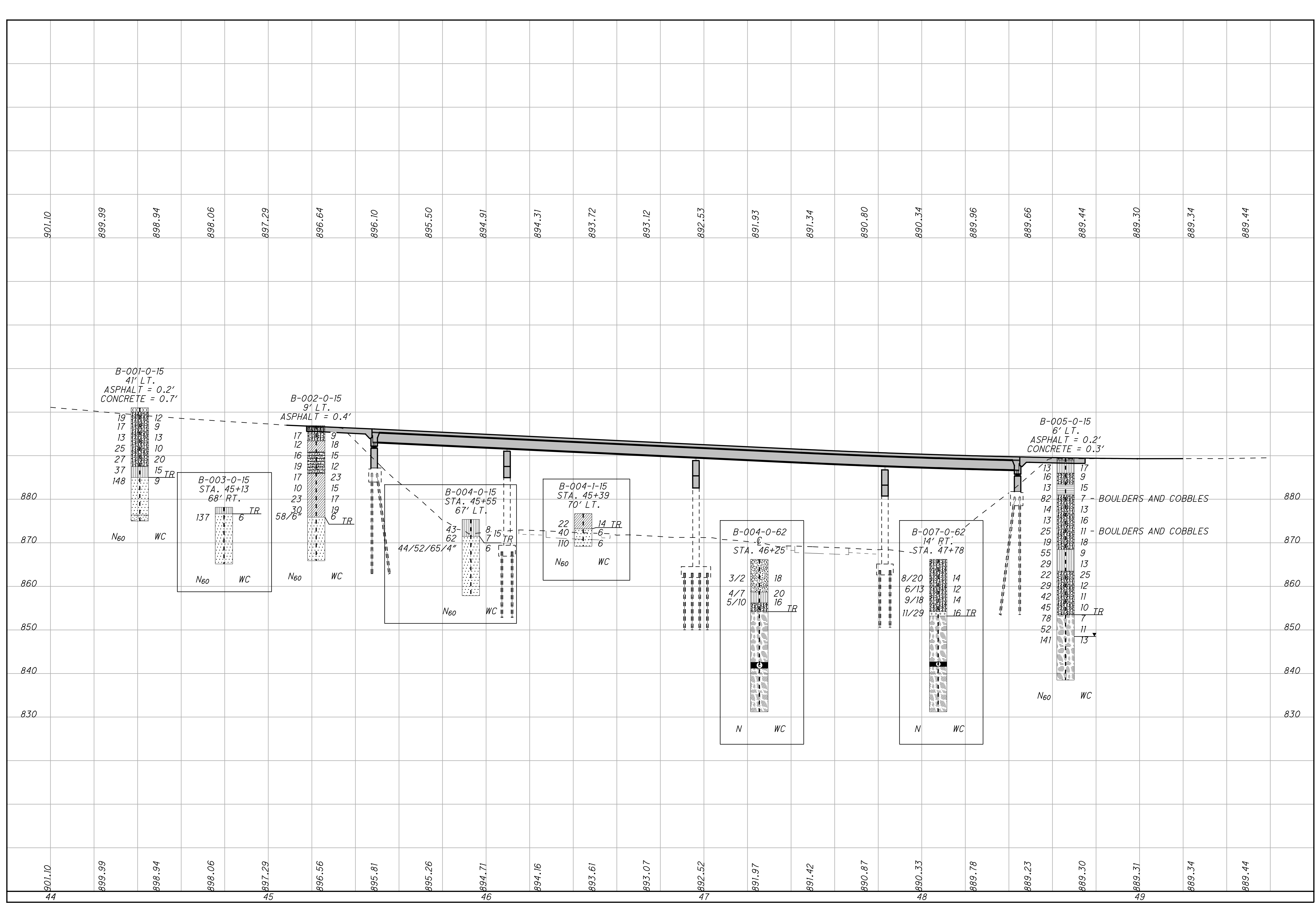
**STRUCTURE FOUNDATION EXPLORATION  
PLAN - S.R. 513 BRIDGE OVER I.R. 70**

**GUE-513-8.65**

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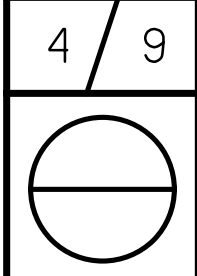
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DRAWN  
GLM  
CHECKED  
SAT

**STRUCTURE FOUNDATION EXPLORATION  
PROFILE - S.R. 513 BRIDGE OVER I.R. 70**

**GUE-513-8.65**



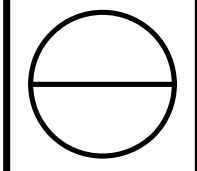
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PROJECT: GUE-513-08.65 TYPE: BRIDGE	DRILLING FIRM / OPERATOR: SAMPLING FIRM / LOGGER: DRILLING METHOD: SAMPLING METHOD:	ODOT / FAST ODOT / LEWIS 3.25" HSA SPT	DRILL RIG: CME 75 TRUCK HAMMER: CME AUTOMATIC CALIBRATION DATE: 5/27/15 ENERGY RATIO (%): 86.5	STATION / OFFSET: 44+41, 41' LT. ALIGNMENT: C.L. S.R. 513 ELEVATION: 901.0 (MSL) EOB: 26.0 ft. LAT / LONG: 40.052034, -81.324148										EXPLORATION ID B-001-0-15 PAGE 1 OF 1				
				GRADATION (%)		ATTERBERG		WC		BACK FILL								
MATERIAL DESCRIPTION AND NOTES				SPT/ RQD	N <sub>60</sub>	REC (%)	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS(GI)	
ASPHALT (2") & CONCRETE (8")																		
MEDIUM DENSE BROWN AND YELLOWISH BROWN, GRAVEL AND STONE FRAGMENTS WITH SAND AND SILT, LITTLE TO TRACE CLAY, DAMP, FILL				6	8	19	67	49	9	8	20	14	27	17	10	12	A-2-4 (0)	
@8.5': BROWN TO REDDISH BROWN				6	7	17	67	68	6	6	12	8	26	17	9	9	A-2-4 (0)	
@11.0': REDDISH BROWN				8	5	13	67	-	-	-	-	-	-	-	-	13	A-2-4 (V)	
HARD, REDDISH BROWN MOTTLED WITH YELLOWISH BROWN, SANDY SILT, SOME STONE FRAGMENTS, LITTLE CLAY, DAMP				17	8	25	56	53	9	9	17	12	28	18	10	10	A-2-4 (0)	
SANDSTONE, YELLOWISH BROWN, SEVERELY TO HIGHLY WEATHERED, WEAK, VERY FINE GRAINED TO FINE GRAINED, THIN BEDDED, ARGILLACEOUS; RQD 0%, REC 94%.				5	8	27	78	-	-	-	-	-	-	-	-	20	A-2-4 (V)	
SILTSTONE, YELLOWISH BROWN AND GRAYISH BROWN, HIGHLY WEATHERED, SLIGHTLY STRONG, THIN BEDDED, SLIGHTLY ARGILLACEOUS; RQD 0%, REC 100%.				6	10	37	78	26	6	16	33	19	26	20	6	15	A-4a (3)	
SPT SAMPLING 9/16/15 TO 9/17/15, ROCK CORE OBTAINED ON 10/5/15 AFTER CONTINUING DRILLING OPERATIONS				27	49	148	78	-	-	-	-	-	-	-	-	9	Rock (V)	
SPT SAMPLING 9/10/15 TO 9/17/15, ROCK CORE OBTAINED ON 10/6/15 AFTER CONTINUING DRILLING OPERATIONS				0		95	NQ2-1										CORE	

NOTES: HOLE DRY BEFORE CORING. LAT/LONG/ELEV FROM DISTRICT SURVEY GRADE INSTRUMENTS.  
ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH AUGER CUTTINGS

PROJECT: GUE-513-08.65 TYPE: BRIDGE	DRILLING FIRM / OPERATOR: SAMPLING FIRM / LOGGER: DRILLING METHOD: SAMPLING METHOD:	ODOT / FAST ODOT / LEWIS 3.25" HSA SPT	DRILL RIG: CME 75 TRUCK HAMMER: CME AUTOMATIC CALIBRATION DATE: 5/27/15 ENERGY RATIO (%): 86.5	STATION / OFFSET: 45+13, 68' RT. ALIGNMENT: C.L. S.R. 513 ELEVATION: 878.1 (MSL) EOB: 13.0 ft. LAT / LONG: 40.052392, -81.324133										EXPLORATION ID B-003-0-15 PAGE 1 OF 1				
				GRADATION (%)		ATTERBERG		WC		BACK FILL								
MATERIAL DESCRIPTION AND NOTES				SPT/ RQD	N <sub>60</sub>	REC (%)	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS(GI)	
BROWN, SANDY SILT				11	23	137	78	-	-	-	-	-	-	-	-	6	Rock (V)	
SANDSTONE, YELLOWISH BROWN, HIGHLY TO MODERATELY WEATHERED, VERY WEAK TO WEAK, VERY FINE GRAINED TO FINE GRAINED, THIN BEDDED, ARGILLACEOUS; RQD 0%, REC 90%.				0		90	NQ2-1										CORE	

NOTES: HOLE DRY BEFORE CORING. LAT/LONG/ELEV FROM DISTRICT SURVEY GRADE INSTRUMENTS.  
ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH AUGER CUTTINGS



GUE - 513 - 8.65

STRUCTURE FOUNDATION EXPLORATION  
S.R. 513 BRIDGE OVER I.R. 70  
BORINGS B-001-0-15 & B-003-0-15

DRAWN  
GLM  
CHECKED  
SAT

PROJECT: GUE-513-08.65  
 TYPE: BRIDGE  
 PID: 93289 SFN: 3005887(P)  
 START: 9/16/15 END: 10/7/15

DRILLING FIRM / OPERATOR: ODOT / FAST  
 SAMPLING FIRM / LOGGER: ODOT / LEWIS  
 DRILLING METHOD: 3.25" HSA  
 SAMPLING METHOD: SPT

DRILL RIG: CME 75 TRUCK  
 HAMMER: CME AUTOMATIC  
 CALIBRATION DATE: 5/27/15  
 ENERGY RATIO (%): 86.5

STATION / OFFSET: 45+22.9' LT.  
 ALIGNMENT: C.L. S.R. 513  
 ELEVATION: 896.9 (MSL) EOB: 31.0 ft.  
 LAT / LONG: 40.052241, -81.324318

EXPLORATION ID: B-002-0-15  
 PAGE: 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)								WC	ODOT CLASS (GI)	BACK FILL
								GR	CS	FS	SI	CL	LL	PL	PI			
ASPHALT (5") MEDIUM DENSE, BROWN, STONE FRAGMENTS WITH SAND AND SILT, LITTLE CLAY, DAMP, FILL	896.9	1																
	896.5	2	9	17	67	SS-1	-	56	7	8	13	28	18	10	9	A-2-4 (0)		
	893.4	3	4															
	890.9	4	4	4	12	56	SS-2	2.00	33	4	11	28	31	20	11	18	A-6a (4)	
MEDIUM DENSE, REDDISH BROWN, GRAVEL AND STONE FRAGMENTS WITH SAND, SILT, AND CLAY, DAMP, FILL	890.9	5																
		6	3	4	16	56	SS-3	-	51	6	8	17	31	18	13	15	A-2-6 (1)	
		7	4	7														
		8																
@8.5' - 10.0'; ENCOUNTERED BOULDERS AND COBBLES	885.9	9	10	8	19	11	SS-4	-	-	-	-	-	-	-	12	A-2-6 (V)		
		10	5	5	17	61	SS-5	1.50	-	-	-	-	-	-	23	A-6a (V)		
		11																
		12	7															
@13.5'; SOME SAND	875.9	13	4	3	10	44	SS-6	2.00	-	-	-	-	-	-	15	A-6a (V)		
		14	3	4														
		15																
		16	5	7	23	78	SS-7	4.50	-	16	7	14	34	29	31	18	13	A-6a (7)
@16.0'; HARD, LITTLE STONE FRAGMENTS	875.9	17	9															
		18																
		19	6	9	30	78	SS-8	4.50	-	-	-	-	-	-	-	19	A-6a (V)	
		20	12															
@18.5'; REDDISH BROWN MOTTLED WITH BROWN SANDSTONE, YELLOWISH BROWN, HIGHLY WEATHERED, WEAK, VERY FINE GRAINED TO FINE GRAINED, THIN BEDDED, ARGILLACEOUS; RQD 0%, REC 90%.	875.9	21	58	-	100	SS-9	-	-	-	-	-	-	-	-	6	Rock (V)		
		22																
		23																
		24																
@26.6'; MODERATELY WEATHERED, SLIGHTLY STRONG.	865.9	25																
		26	0		90	NQ2-1												
		27																
		28																
		29																
		30																
		31																

SPT SAMPLING 9/16/15, ROCK CORE OBTAINED ON 10/7/15 AFTER CONTINUING DRILLING OPERATIONS

NOTES: HOLE DRY BEFORE CORING. LAT/LONG/ELEV FROM DISTRICT SURVEY GRADE INSTRUMENTS. ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH AUGER CUTTINGS

GUE - 513 - 8.65

STRUCTURE FOUNDATION EXPLORATION  
 S.R. 513 BRIDGE OVER I.R. 70  
 BORING B-002-0-15

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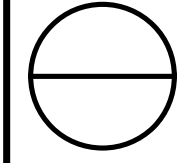
PROJECT: GUE-513-08.65	DRILLING FIRM / OPERATOR: ODOT / FAST	DRILL RIG: CME 75 TRUCK	STATION / OFFSET: 45+55.67 LT.	EXPLORATION ID																																																																																																																																																																																																																																																																																																																										
TYPE: BRIDGE	SAMPLING FIRM / LOGGER: ODOT / LEWIS	HAMMER: CME AUTOMATIC	ALIGNMENT: C.L. S.R. 513	B-004-0-15																																																																																																																																																																																																																																																																																																																										
PID: 93289 SFN: 3005887(P)	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 5/27/15	ELEVATION: 875.4 (MSL) EOB: 17.5 ft.	PAGE																																																																																																																																																																																																																																																																																																																										
START: 9/9/15 END: 10/6/15	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.5	LAT / LONG: 40.052169, -81.324547	1 OF 1																																																																																																																																																																																																																																																																																																																										
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<table border="1"> <thead> <tr> <th rowspan="2">DEPTH</th> <th rowspan="2">ELEV.</th> <th rowspan="2">SPT/ RQD</th> <th rowspan="2">N<sub>60</sub></th> <th rowspan="2">REC (%)</th> <th rowspan="2">SAMPLE ID</th> <th rowspan="2">HP (tsf)</th> <th colspan="7">GRADATION (%)</th> <th rowspan="2">WC</th> <th rowspan="2">ODOT CLASS (GI)</th> <th rowspan="2">BACK FILL</th> </tr> <tr> <th>GR</th> <th>CS</th> <th>FS</th> <th>SI</th> <th>CL</th> <th>LL</th> <th>PL</th> <th>PI</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>875.4</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td></td> <td>11</td> <td>43</td> <td>78</td> <td>SS-1</td> <td>4.00</td> <td>46</td> <td>3</td> <td>12</td> <td>25</td> <td>14</td> <td>27</td> <td>18</td> <td>9</td> <td>8</td> <td>A-4a (1)</td> </tr> <tr> <td>3</td> <td></td> <td>17</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>4</td> <td>871.5</td> <td>10</td> <td>62</td> <td>89</td> <td>SS-2</td> <td>4.50</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>15</td> <td>A-4a (V)</td> </tr> <tr> <td>5</td> <td></td> <td>12</td> <td>31</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>7</td> <td>Rock (V)</td> </tr> <tr> <td>6</td> <td></td> <td>44</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>7</td> <td></td> <td>52</td> <td></td> <td>90</td> <td>SS-3</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>6</td> <td>Rock (V)</td> </tr> <tr> <td>8</td> <td></td> <td>65/4"</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>9</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>10</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>11</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>12</td> <td></td> <td>0</td> <td></td> <td>70</td> <td>NQ2-1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>CORE</td> </tr> <tr> <td>13</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>14</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>15</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>16</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>17</td> <td>857.9</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>					DEPTH	ELEV.	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)							WC	ODOT CLASS (GI)	BACK FILL	GR	CS	FS	SI	CL	LL	PL	PI	1	875.4																2		11	43	78	SS-1	4.00	46	3	12	25	14	27	18	9	8	A-4a (1)	3		17															4	871.5	10	62	89	SS-2	4.50									15	A-4a (V)	5		12	31												7	Rock (V)	6		44															7		52		90	SS-3										6	Rock (V)	8		65/4"															9																	10																	11																	12		0		70	NQ2-1											CORE	13																	14																	15																	16																	17	857.9															
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SPT SAMPLING 9/9/15, ROCK CORE OBTAINED ON 10/6/15 AFTER CONTINUING DRILLING OPERATIONS

NOTES: HOLE DRY BEFORE CORING. LAT/LONG/ELEV FROM DISTRICT SURVEY GRADE INSTRUMENTS. ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH AUGER CUTTINGS

PROJECT: GUE-513-08.65	DRILLING FIRM / OPERATOR: ODOT / FAST	DRILL RIG: CME 75 TRUCK	STATION / OFFSET: 45+39.70 LT.	EXPLORATION ID																																																																																																																																																
TYPE: BRIDGE	SAMPLING FIRM / LOGGER: ODOT / LEWIS	HAMMER: CME AUTOMATIC	ALIGNMENT: C.L. S.R. 513	B-004-1-15																																																																																																																																																
PID: 93289 SFN: 3005887(P)	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 5/27/15	ELEVATION: 876.7 (MSL) EOB: 7.5 ft.	PAGE																																																																																																																																																
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NOTES: HOLE DRY BEFORE CORING. LAT/LONG/ELEV FROM DISTRICT SURVEY GRADE INSTRUMENTS. ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH AUGER CUTTINGS



PROJECT: GUE-513-08.65	DRILLING FIRM / OPERATOR: ODOT / FAST	DRILL RIG: CME 75 TRUCK	STATION / OFFSET: 48+66.6' L.T.	EXPLORATION ID
TYPE: BRIDGE	SAMPLING FIRM / LOGGER: ODOT / LEWIS	HAMMER: CME AUTOMATIC	ALIGNMENT: C.L. S.R. 513	B-005-0-15
PID: 93289 SFN: 3005887(P)	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 5/27/15	ELEVATION: 889.5 (MSL) EOB: 51.0 ft.	PAGE
START: 9/14/15 END: 10/7/15	SAMPLING METHOD: SPT	ENERGY RATIO (%): 86.5	LAT / LONG: 40.052918, -81.325177	1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC SAMPLE (%)	HP (tsf)	GRADATION (%)							ODOT CLASS (GI)	BACK FILL
							GR	CS	FS	SI	CL	LL	PL		
ASPHALT (2") & CONCRETE (4") STIFF, BROWN, SANDY SILT, AND STONE FRAGMENTS, LITTLE CLAY, MOIST, FILL	889.5	1													
	889.0	2	4	13	56	2.00	44	7	11	21	17	10	17	A-4a (1)	
MEDIUM DENSE, BROWN, STONE FRAGMENTS WITH SAND AND SILT, TRACE CLAY, DAMP, FILL	886.0	3													
	883.5	4	5	16	67	-	70	6	6	10	8	9	9	A-2-4 (0)	
STIFF, REDDISH BROWN, SILTY CLAY, LITTLE STONE FRAGMENTS, LITTLE SAND, DAMP, FILL	881.0	5													
	881.0	6	4	13	33	2.00	-	-	-	-	-	-	15	A-6b (V)	
VERY DENSE, BROWN AND REDDISH BROWN, STONE FRAGMENTS WITH SAND AND SILT, LITTLE CLAY, ENCOUNTERED BOULDERS AND COBBLES, DAMP, FILL	868.5	7													
	868.5	8	30	82	56	-	-	-	-	-	-	-	7	A-2-4 (V)	
@11.0': MEDIUM DENSE	863.5	9	4	14	44	-	-	-	-	-	-	-	13	A-2-4 (V)	
	863.5	10	6	13	33	-	-	-	-	-	-	-	16	A-2-4 (V)	
@15.0': ATTEMPTED SHELBY TUBE, PUSHED 2" WITH 500 PSI DOWN PRESSURE. @16.0': ENCOUNTERED BOULDERS AND COBBLES	863.5	11													
	863.5	12	4	25	44	-	-	-	-	-	-	-	11	A-2-4 (V)	
VERY STIFF, REDDISH BROWN TO BROWN, SANDY SILT, LITTLE CLAY, LITTLE STONE FRAGMENTS, ENCOUNTERED BOULDERS AND COBBLES	863.5	13													
	863.5	14	6	19	67	-	51	10	12	14	13	10	18	A-2-4 (0)	
MEDIUM DENSE, REDDISH BROWN, STONE FRAGMENTS WITH SAND AND SILT, LITTLE CLAY, DAMP	863.5	15													
	863.5	16	7	55	78	3.00	-	-	-	-	-	-	9	A-4a (V)	
@28.5': ATTEMPTED SHELBY TUBE, PUSHED 3" WITH 600 PSI DOWN PRESSURE.	863.5	17	24	29	67	3.00	-	-	-	-	-	-	13	A-4a (V)	
	863.5	18	10	29	67	3.00	-	-	-	-	-	-	13	A-4a (V)	
@31.0': DENSE	863.5	19													
	863.5	20	5	22	78	-	-	-	-	-	-	-	25	A-2-4 (V)	
SHALE, DARK GRAYISH BROWN, HIGHLY WEATHERED, VERY WEAK, LAMINATED TO VERY THIN BEDDED; RQD 45%, REC 89%.	863.5	21													
	863.5	22	7	29	67	-	-	-	-	-	-	-	12	A-2-4 (0)	
@38.5': GRAY, MODERATELY WEATHERED, WEAK.	863.5	23													
	863.5	24	10	42	78	-	-	-	-	-	-	-	11	A-2-4 (V)	
@46.3' - 48.7'; SLIGHTLY CARBONACEOUS	863.5	25													
	863.5	26	8	45	78	-	-	-	-	-	-	-	10	A-2-4 (V)	
SPT SAMPLING 9/14/15 TO 9/15/15, ROCK CORE OBTAINED ON 10/7/15 AFTER CONTINUING DRILLING OPERATIONS	863.5	27													
	863.5	28	24	78	78	-	-	-	-	-	-	-	7	Rock (V)	
CORE	863.5	29													
	863.5	30	10	52	67	-	-	-	-	-	-	-	11	Rock (V)	
CORE	863.5	31													
	863.5	32	30	141	78	-	-	-	-	-	-	-	13	Rock (V)	
CORE	863.5	33													
	863.5	34	45	89	89	-	-	-	-	-	-	-			

SPT SAMPLING 9/14/15 TO 9/15/15, ROCK CORE OBTAINED ON 10/7/15 AFTER CONTINUING DRILLING OPERATIONS

NOTES: LAT/LONG/ELEV FROM DISTRICT SURVEY GRADE INSTRUMENTS.  
ABANDONMENT METHODS, MATERIALS, QUANTITIES: AUGER CUTTINGS MIXED WITH 50 LB. BENTONITE CHIPS

STRUCTURE FOUNDATION EXPLORATION  
S.R. 513 BRIDGE OVER I.R. 70  
BORING B-005-0-15

GUE - 513 - 8.65

DRAWN  
GLM  
CHECKED  
SAT



State of Ohio  
Department of Highways  
Testing Laboratory

LOG OF BORING

Date Started 2-23-62 Sampler Type SS Dia. 1 3/8" Water Elev. \_\_\_\_\_  
 Date Completed 3-1-62 Casing Length 13' Dia. 3 1/2"  
 Project Identification: GUERNSEY  
GUE-40-17-57  
GUE-40-2326

Boring No. B-4 Station & Offset 46+25, CL (REAR PIER) Surface Elev. 866.2 UNDER SR 513

Elev.	Depth	SPL Pen (N)	Rec. Loss (ft)	Description	Field No.	Lab. Nos.	Physical Characteristics					SHTL Class		
							% Agg.	% C.S.	% F.S.	% Silt	% Clay		LL	PI
866.2	0													
	2													
	4													
861.2	6	3/2		Brown Silty Sandy Gravel	1	50869			V	I	S	U	A	18
858.7	8	4/7		Brown Sandy Silt	2	50870			2	25	41	32	29	9
856.2	10			Brown-Gray Silty Gravelly Sand	3	50871			24	15	26	23	12	NP
854.2	12	5/10												16
	14		1.9	TOP OF ROCK										
	16													
	18		4.9	Shale, black, argillaceous, slightly micaceous, carbonaceous, fissile, hard, broken; firm, weathered, crumbly above 13.5'. Core Loss 2%										
	20													
	22													
842.6	24		5.0	Coal, black, blocky, broken. No Core Loss.										
841.2	26													
	28		4.3											
	30													
	32		4.8	Indurated clay, gray grading to reddish-brown, argillaceous, pyritiferous from 30.0' to 33.0', slickensided, soft, crumbly to 33.0' and from 33.7' to 34.1; firm to hard and broken below 33.0'. Core Loss 9%										
831.2	34													
	36			BOTTOM OF BORING										

Particle Sizes: Agg. >2.00mm Coarse Sand=2.00-0.42mm Fine Sand=0.42-0.074mm Silt=0.074-0.005mm Clay <0.005mm

State of Ohio  
Department of Highways  
Testing Laboratory

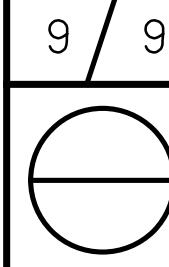
LOG OF BORING

Date Started 2-21-62 Sampler Type SS Dia. 1 3/8" Water Elev. \_\_\_\_\_  
 Date Completed 2-23-62 Casing Length 13' Dia. 3 1/2"  
 Project Identification: GUERNSEY  
GUE-40-17-57  
GUE-40-2326

Boring No. B-7 Station & Offset 47+78, 14' RT. (FORWARD PIER) Surface Elev. 866.2 UNDER SR 513

Elev.	Depth	SPL Pen (N)	Rec. Loss (ft)	Description	Field No.	Lab. Nos.	Physical Characteristics					SHTL Class		
							% Agg.	% C.S.	% F.S.	% Silt	% Clay		LL	PI
866.2	0													
	2													
	4													
861.2	6	8/20		Brown Silty Sandy Gravel	1	49987			5	11	12	18	29	7
858.7	8	6/13		Brown Silty Sandy Gravel	2	49988			9	17	13	17	25	6
856.2	10	9/18		Brown Silty Sandy Gravel	3	49989			4	10	14	15	16	5
854.2	12	11/29		Dark-Gray Clayey Silt	4	49990			5	1	2	53	39	31
853.2	14		2.0	TOP OF ROCK										16
	16													
	18		5.0	Shale, dark-gray to black, argillaceous, micaceous, carbonaceous, fissile, firm, badly broken. No Core Loss.										
	20													
	22													
842.7	24		5.0	Coal, black, blocky, broken. No Core Loss.										
841.6	26													
	28													
	30		4.8											
	32			Indurated clay, gray grading to red, argillaceous, soft, crumbly; firm and broken below 33.0'. Core Loss 3%										
	34		4.9											
831.2	36			BOTTOM OF BORING										

Particle Sizes: Agg. >2.00mm. Coarse Sand=2.00-0.42mm, Fine Sand=0.42-0.074mm, Silt=0.074-0.005mm, Clay <0.005mm



GUE-513-8.65

STRUCTURE FOUNDATION EXPLORATION  
S.R. 513 BRIDGE OVER I.R. 70  
HISTORICAL BORINGS B-004-0-62 & B-007-0-62

DRAWN  
GLM  
CHECKED  
SAT





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# SPECIAL PROVISIONS

## Asbestos Survey Report

CRS: GUE-513-8.65

PID: 93289

Date: June 20, 2017

GUE-513-8.65 (PID 3005887)

Asbestos Survey Report

May 2, 2016

5500 New Albany Road  
Columbus, Ohio 43054  
Phone: 614.775.4500  
Fax: 614.775.4800  
Toll Free: 1-888-775-EMHT

emht.com

2014-0554

Prepared For:  
Ohio Department of Transportation – District 5  
9600 Jacksontown Road  
Jackson, Ohio 43030  
Phone (740) 323-4400

Engineers

Surveyors

Planners

Scientists



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APPENDIX B:	Site Photographs
APPENDIX C:	Laboratory Analytical Results Chain of Custody Forms Field Sample Logs
APPENDIX D:	Certification
APPENDIX E:	Partially Completed "Notification of Demolition and Renovation" Form

## 1.0 INTRODUCTION

On behalf of the Ohio Department of Transportation, District 5 (ODOT) c/o EMH&T, the following report presents the findings of an Asbestos Hazard Evaluation Survey conducted by EMH&T.

ODOT Project Identification:

**GUE-513-8.65 (PID: 93289)**

- Structure GUE-513-8.65 (Structure File Number: 3005887)

This survey focused on one (1) existing bridge in Guernsey County, Ohio (hereinafter referred to as the "Subject Bridge"). This survey was conducted in order to confirm the presence of asbestos-containing materials (ACMs) in the bridge, if any, due to the proposed structural improvement of the subject bridge. Figures 1 and 2 identify the site and general location of the subject bridge, Figure 3 identifies the general location of the samples, and site photographs are included in Appendix A.

The continuous steel beam bridge structure is located along Batesville Road (S.R. 513) over Interstate 70, in Guernsey County, Ohio. The bridge structure consists of continuous steel beams with reinforced concrete decking and substructure. The bridge is overlain by concrete retaining walls with steel railings and asphalt paved roadway. The construction date of the bridge is 1965.

Materials are considered to be Regulated ACM (RACM) if the material is comprised of more than 1% asbestos fibers.

Category 1 Non-Friable materials, as defined in 40 CFR Part 61 Subpart M, include asbestos-containing packing, gaskets, resilient floor coverings, and asphalt roofing products. These materials, due to their extremely low probability of fiber release when damaged, are not required to be removed prior to demolition activities if they are in good condition and not friable (40 CFR 61.145 (c)(1)(i)). However, if structures are slated for demolition by intentional burning, all ACMs must be removed prior to burning, in compliance with 40 CFR 61.145 (c)(10).

## 2.0 PROJECT SCOPE

This Asbestos Survey was conducted by an Ohio Department of Health (ODH)-licensed Asbestos Hazard Evaluation Specialist (AHES) to locate and identify ACMs used in construction of the bridge. The survey was conducted in accordance with the applicable regulations and general guidelines set forth in EPA's Asbestos Hazardous Emergency Response Act (AHERA) and rules promulgated under 40 CFR 763, Subpart E. These guidelines are also referenced in Occupational Safety and Health Administration (OSHA), 29 CFR 1926.1101, which are designed to protect workers during demolition or renovation of buildings/structures containing ACMs.

The EPA's National Emission Standard for Asbestos, promulgated under 40 CFR Part 61 Subpart M, is also applicable when a potential of air emissions of ACMs exists during renovation and/or demolition activities.



In Ohio, the Ohio Environmental Protection Agency (Ohio EPA) adopted Chapter 3745-20 of the Ohio Administrative Code (OAC) "Asbestos Emission Control from Renovation Demolition and Waste Disposal Operation", May 29, 1990. These regulations implement the National Emission Standards for Hazardous Air Pollutants (NESHAP) Standard for Asbestos. Every demolition of a facility requires notification regardless of whether asbestos is involved. All notifications must be postmarked or delivered at least 10 working days before operations begin. Notifications must also be sent for renovation projects whenever the amount of regulated asbestos-containing materials (RACM) stripped, removed, dislodged, cut, drilled, or similarly disturbed exceeds 260 linear feet on pipes or 160 square feet on other facility components or 35 cubic feet off facility components.

The project scope-of-work included the following tasks:

- Review of available as-built construction plans and previous asbestos surveys
- An ACM survey including the collection of bulk samples of suspect ACM using the EPA's Asbestos Hazard Emergency Response Act (AHERA) as guidance.
- Polarized Light Microscopy (PLM) Analysis of bulk samples.
- Preparation of a survey report, including methodologies, findings, conclusions, and recommendations.

### 3.0 SURVEY METHODS AND LABORATORY ANALYSIS

Mr. Bryan Lombard, Asbestos Hazard Evaluation Specialist #35323, conducted the survey of the subject bridge on April 13, 2016. The survey was performed in general compliance with 40 CFR 763.85-86, ODOT's document entitled 'Asbestos Inspection for Bridges Guidelines', dated September 24, 2010, and other recommended EPA asbestos survey practices. The survey included a thorough visual review of the condition, location, and descriptions of any suspect ACMs. The bulk sampling procedure utilized for the collection of samples suspected of being ACMs required the establishment of homogeneous sampling areas. A homogeneous sampling area is defined as an area of friable or non-friable material of similar type that appeared to be applied or constructed during the same general period of time. Any conditions or materials that were not readily visible and accessible were not sampled and may differ from those observed. Contractors working with in the structures should be made aware of the possibility of concealed suspect ACMs that could be found during construction activities. Any concealed materials discovered during site activities, which are suspected to contain asbestos, should be sampled and analyzed to confirm the presence of asbestos prior to disturbing such materials.

Following the visual inspection of the bridge components, bulk samples collected during the survey were sent to Pace Analytical Services, Inc., Dublin, Ohio, an NVLAP-certified laboratory, for analysis by PLM using EPA Method 600-R93-116 incorporating visual estimates of identified material percentages. Any material that contains greater than one percent (>1%) of any type of asbestos fiber is considered by the EPA and OSHA (29 CFR 1926.1101) as ACM and must be handled according to regulations.

### 4.0 FINDINGS

#### Structure File Number (SFN): 3005887 (GUE-513-8.65)

Two (2) suspect asbestos-containing materials (A & B) were identified during the survey of GUE-513-8.65. The suspect materials are identified in Table 1 below, along with sample numbers, photograph numbers, and analytical results.

Table 1

Sample Number	Material	Photo Number	Analytical Results
A-01	Blue Paint	3	No asbestos detected
A-02			No asbestos detected
A-03			No asbestos detected
A-04			No asbestos detected
A-05			No asbestos detected
A-06			No asbestos detected
A-07			No asbestos detected
B-08	Gray Wall Caulking	4	No asbestos detected
B-09			No asbestos detected
B-10			No asbestos detected

### 5.0 CONCLUSION AND RECOMMENDATIONS

According to the laboratory analysis, no asbestos was detected in any of the ten (10) samples collected from the two (2) suspect materials when analyzed via PLM method. The analytical results, chain-of-custody form, and field sample logs are included in **Appendix C**, and the certification of the Asbestos Hazard Evaluation Specialist who conducted the Survey is included in **Appendix D**.

If additional suspect materials are encountered during the project, EMH&T recommends the work stopped and these materials should be considered ACM until sampled by an Ohio Asbestos Hazardous Evaluation Specialist and analyzed to confirm asbestos content.

Prior to any demolition, regardless of whether asbestos is involved, or major renovation activities (where RACM quantity limitations apply), a Notification of Demolition and Renovation must be submitted to the Ohio EPA.

EMH&T has included a partially completed notification form in **Appendix E** of this report.

### 6.0 LIMITATIONS AND EXCEPTIONS

EMH&T has prepared this report for the exclusive use of the Ohio Department of Transportation, District 5 (ODOT), in accordance with generally accepted asbestos survey practices. The results, findings and conclusions contained in this report are based only on conditions observed during the survey of the accessible areas of the structure.



This report is prepared to assist the client in locating ACM. The limitations of the survey may not qualify this report to be adequate for all regulatory applications. The scope of services performed in execution of this evaluation may not be appropriate to satisfy the needs of other users, and use or re-use of this document or the findings, conclusions, or recommendations is at the risk of said user. This asbestos survey covered the construction materials of the referenced structures, except as noted in the report. The liability of EMH&T, with regard to professional error and omissions, cannot be in excess of the fee charged for this project.

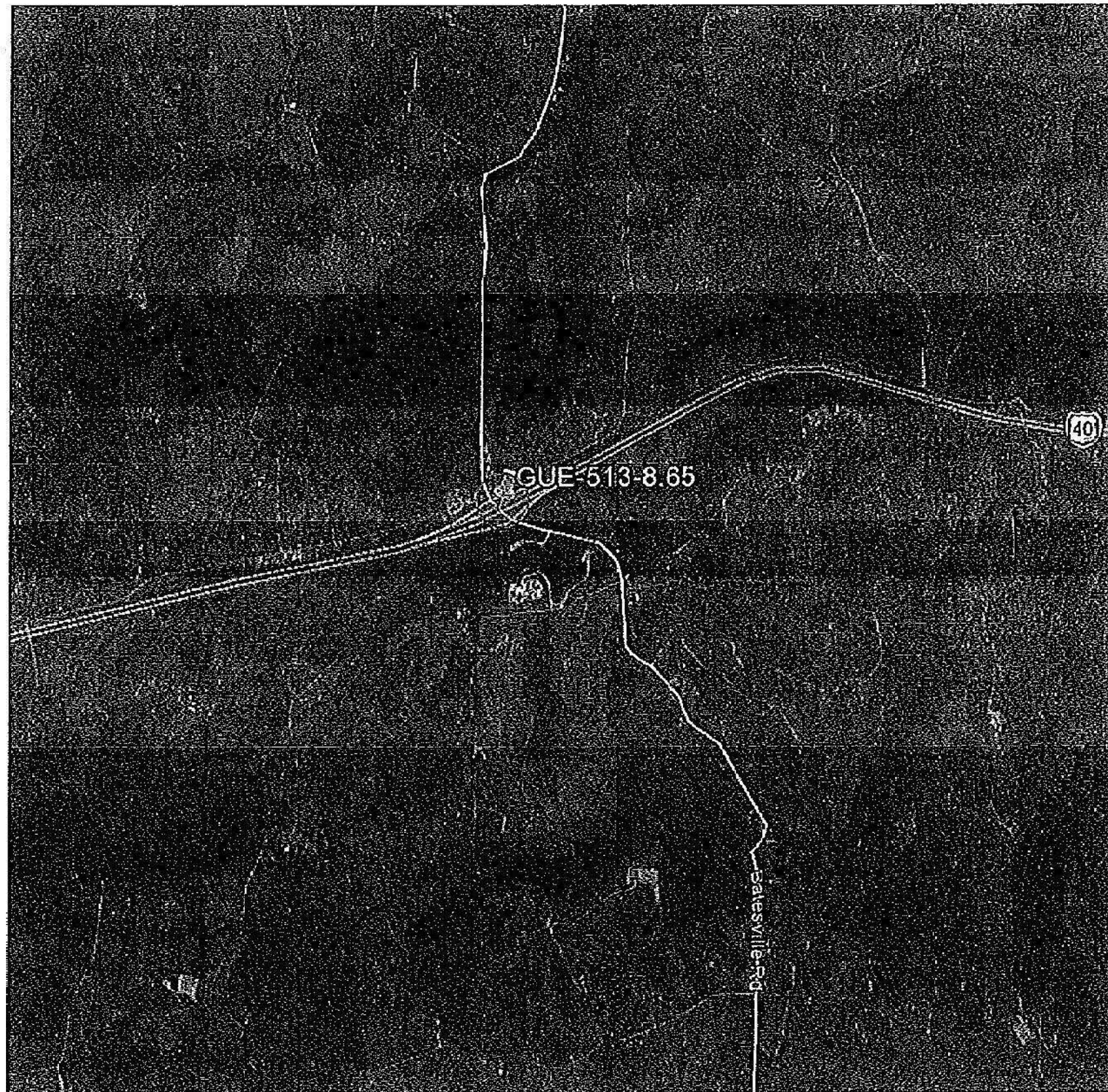
This asbestos survey was limited, in that only the ACMs at unobstructed and accessible locations within the structures were surveyed.

The opinions expressed in this asbestos survey report are based on EMH&T's experience and available information. This survey evaluated the conditions that existed at the time of investigation and does not warrant against future alteration of conditions at the site, or subsequent changes in environmental regulations.

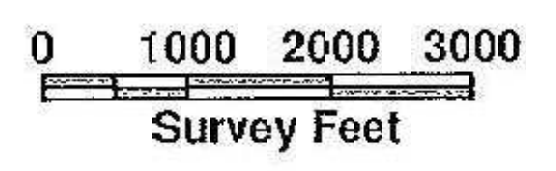
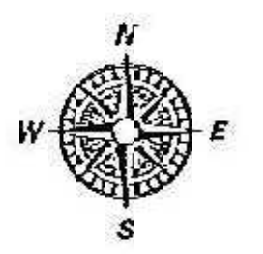
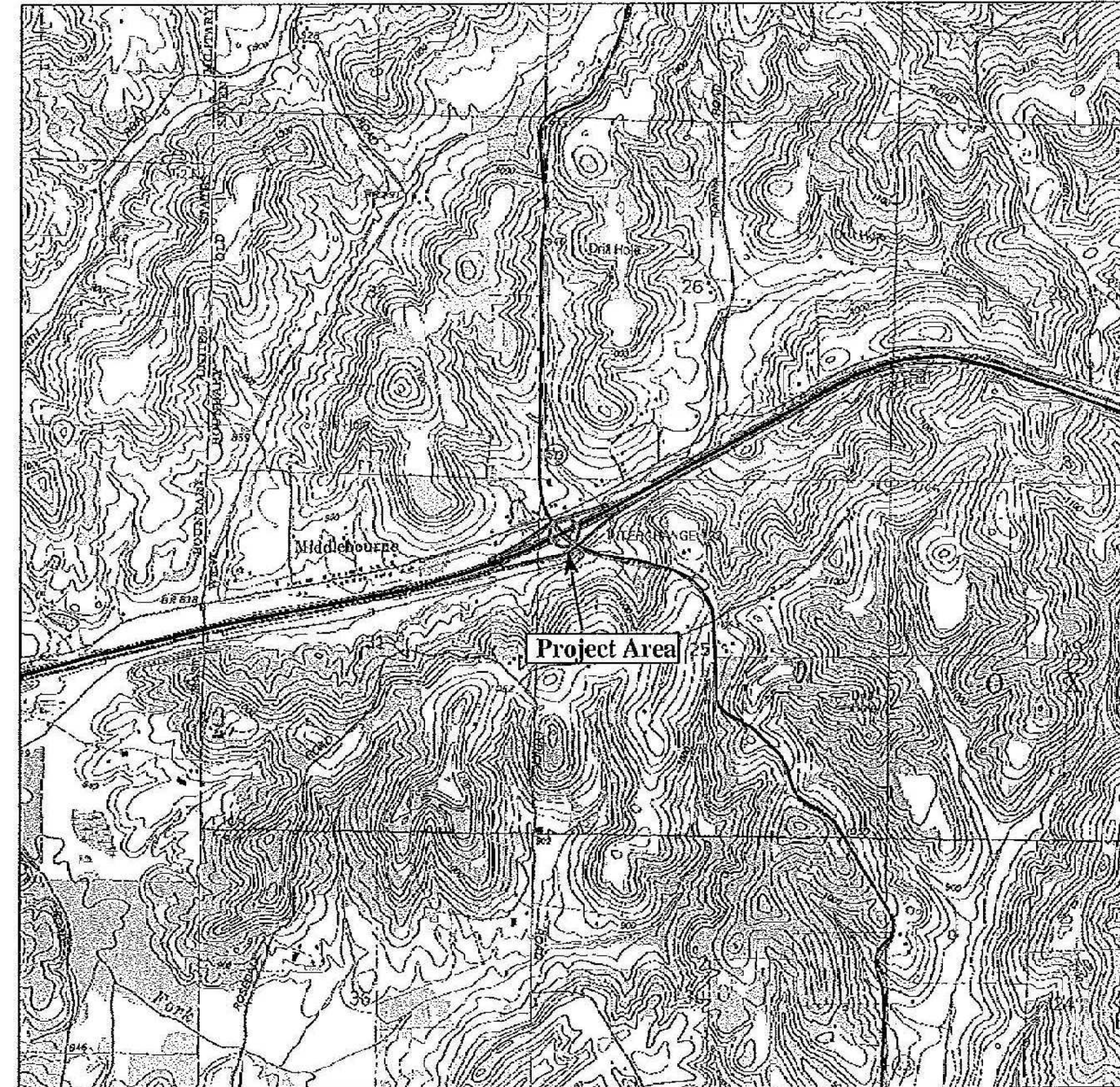
We appreciate the opportunity to provide you with these professional services. If you should have any questions, or need further information, please feel free to contact our office. Please refer to EMH&T Project No. 20140554 in all correspondence and inquiries.

## APPENDIX A: FIGURES





**Figure 2: Street Map**  
 Source: Google Maps  
 Asbestos Survey: ODOT VAR-District 5 Environmental Services  
 GUE-513-8.65



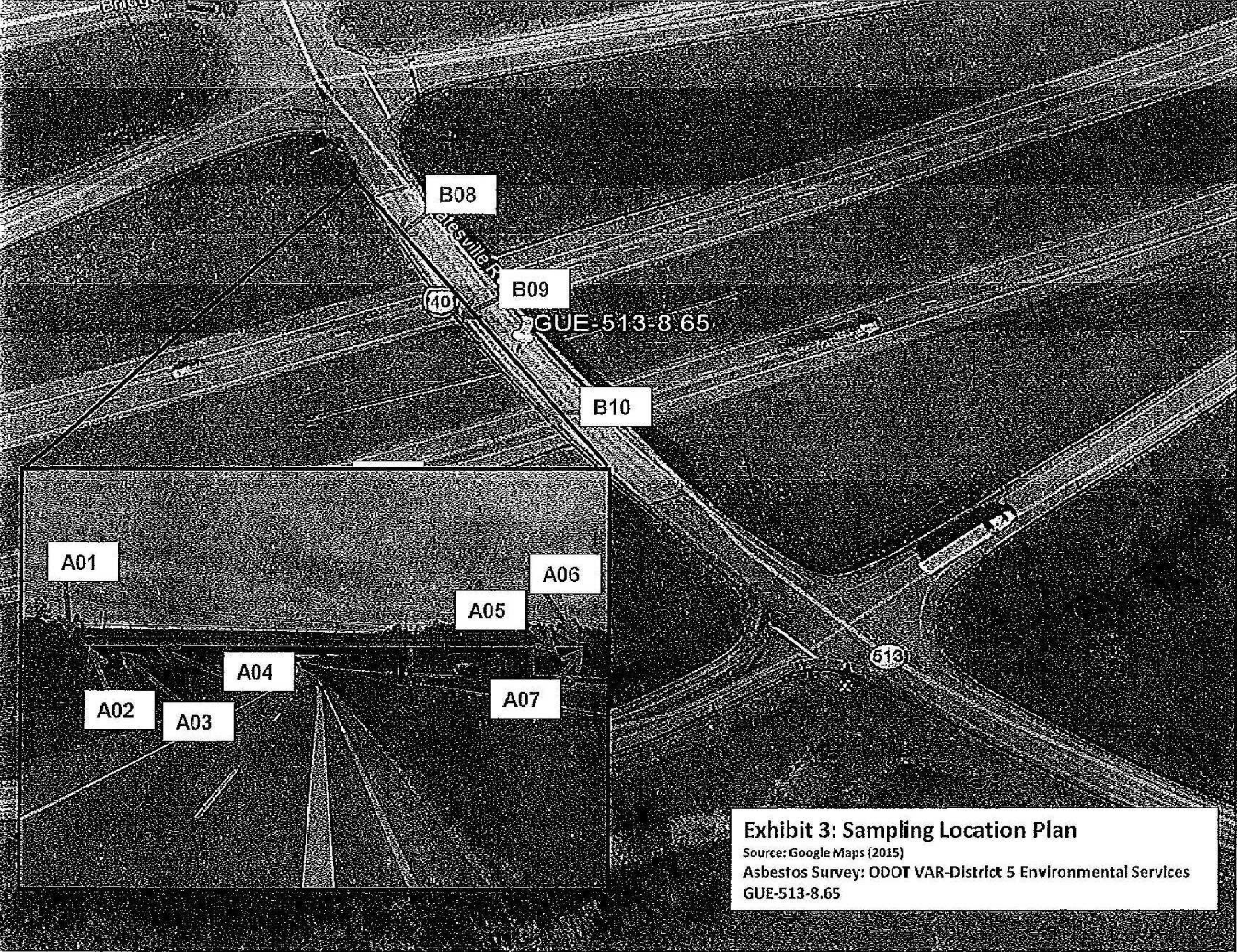
Prepared by ODOT District 5  
 Planning & Engineering Department

**GUE-513-8.65**  
**(PID 93289)**

Antrim 7.5' USGS  
 Quadrangle Map



APPENDIX B:  
SITE PHOTOGRAPHS







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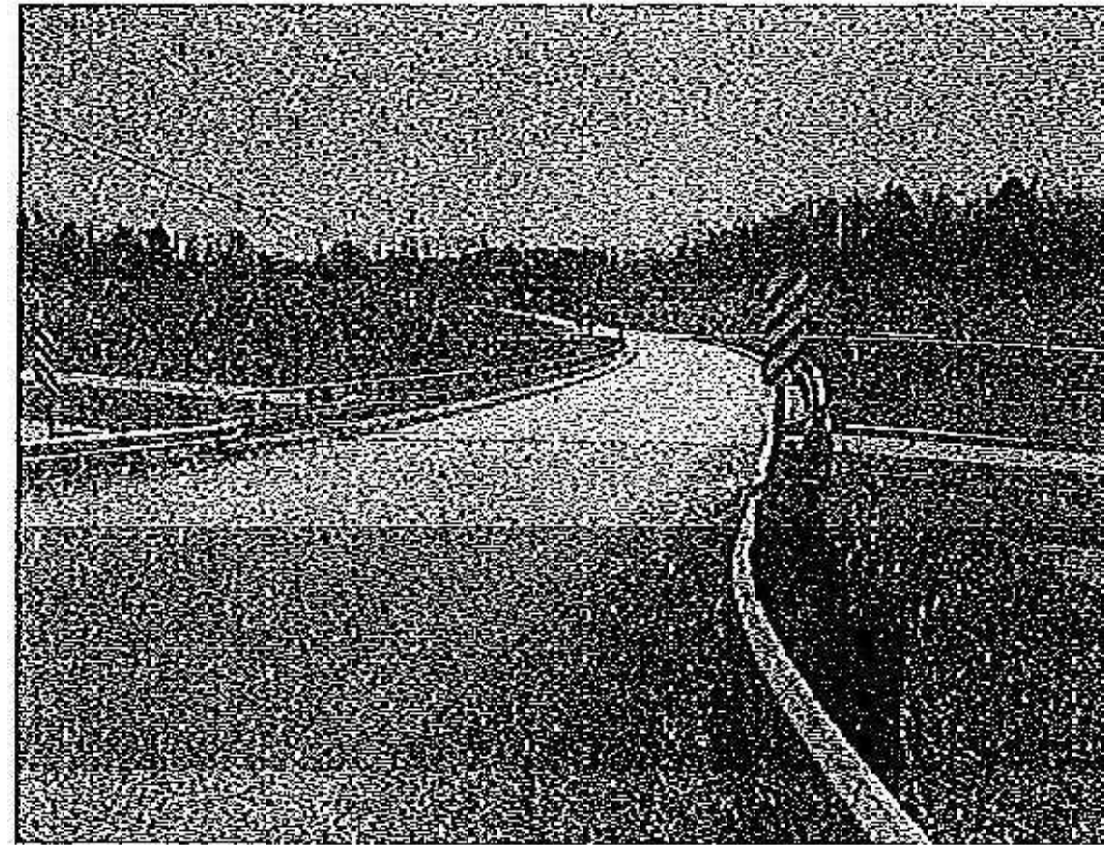


Photo 1) View of Subject Bridge (GUE-513-8.65) looking southeast.

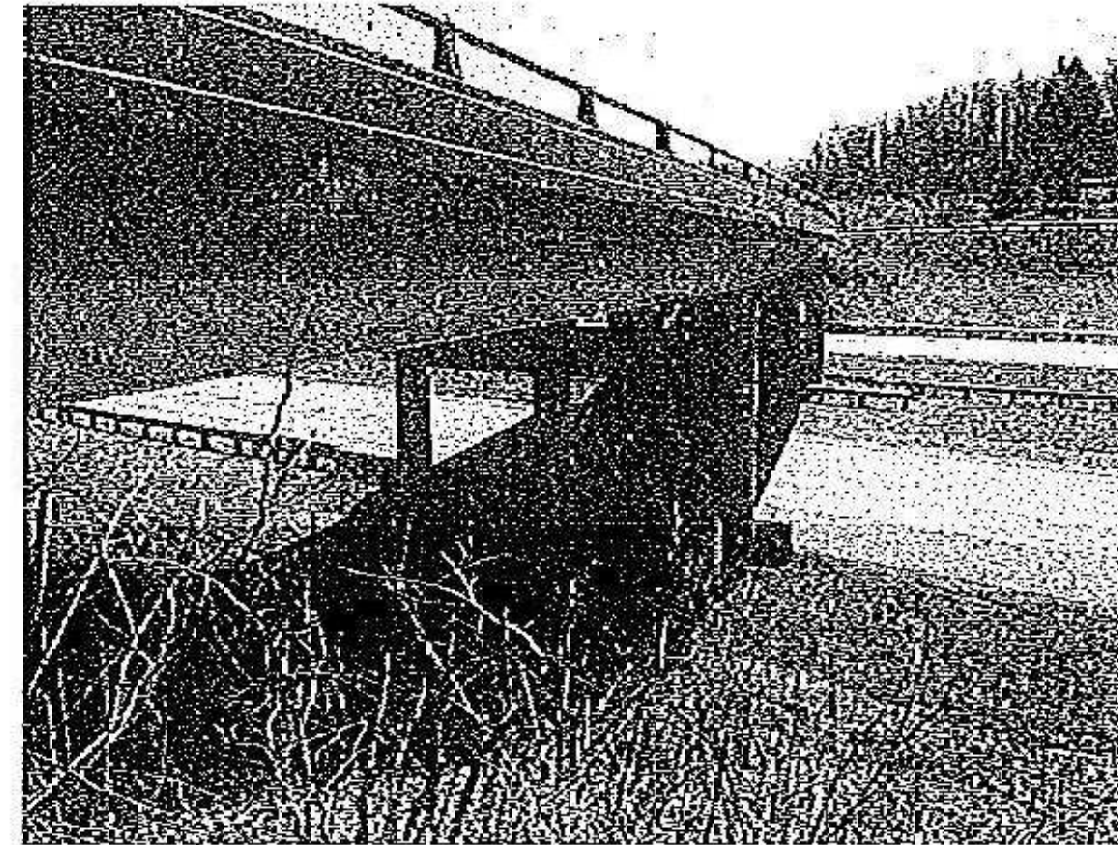


Photo 2) View of Subject Bridge (GUE-513-8.65) looking southeast.

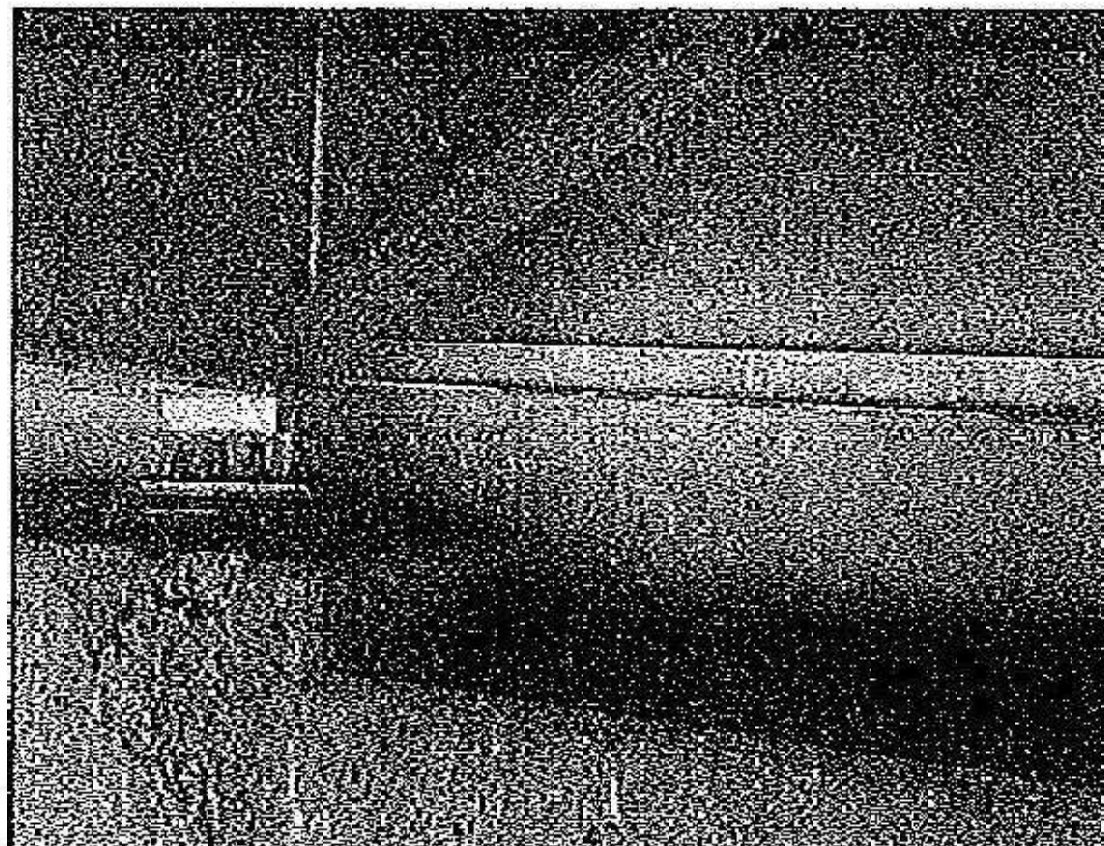


Photo 3) View of blue paint on steel beam of Subject Bridge (GUE-513-8.65).

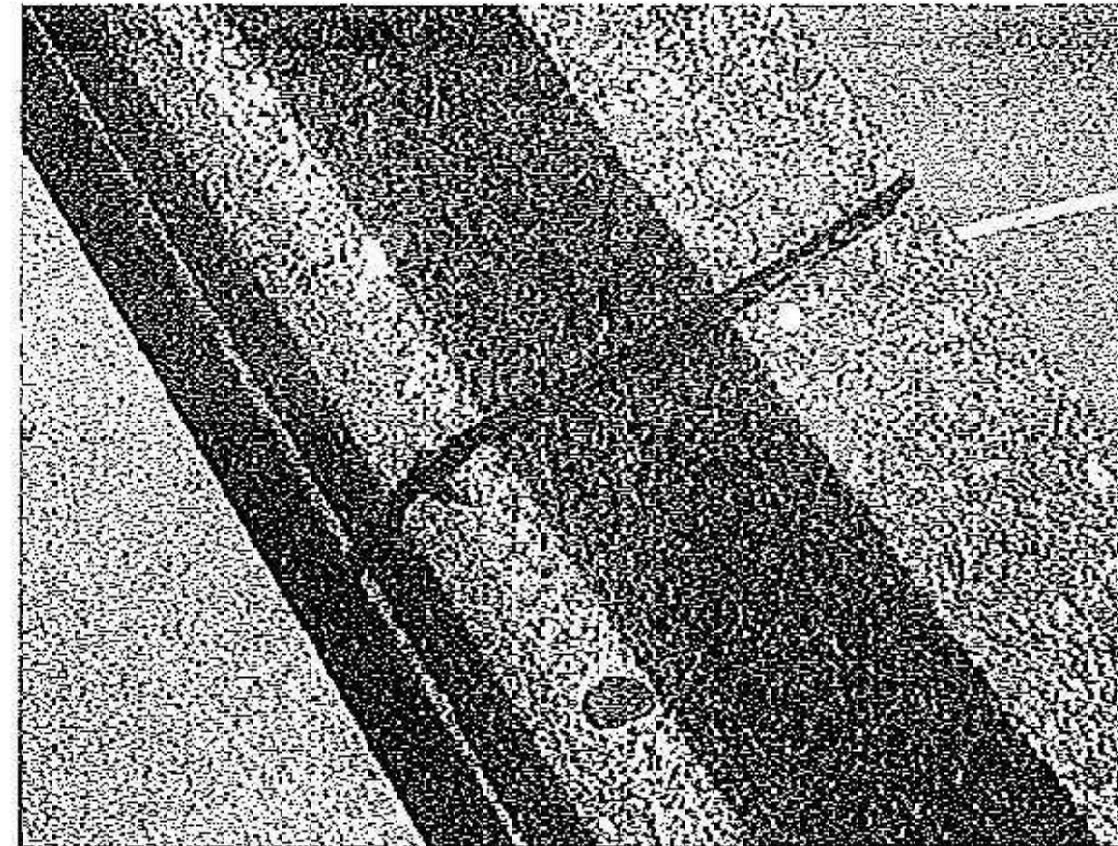


Photo 4) View of gray wall caulking on Subject Bridge (GUE-513-8.65).

APPENDIX C:  
LABORATORY ANALYTICAL RESULTS  
CHAIN OF CUSTODY FORM  
FIELD SAMPLE LOGS





Pace Analytical Services, Inc.  
 Not NELAP Accredited  
 4860 Blazer Parkway  
 Dublin, OH 43017  
 (614)486-5421

Pace Analytical Services, Inc.  
 7726 Moller Road  
 Indianapolis, IN 46268  
 (317)228-3100



Pace Analytical Services, Inc.  
 Not NELAP Accredited  
 4860 Blazer Parkway  
 Dublin, OH 43017  
 (614)486-5421

Pace Analytical Services, Inc.  
 7726 Moller Road  
 Indianapolis, IN 46268  
 (317)228-3100

April 18, 2016

Bryan Lombard  
 EMH&T Inc.  
 5500 New Albany Road  
 New Albany, OH 43054

RE: Project: VAR-D05 GUE-513-8.62 20140554  
 Pace Project No.: 50142792

Dear Bryan Lombard:

Enclosed are the analytical results for sample(s) received by the laboratory on April 13, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Max Overman  
 max.overman@pacelabs.com  
 Project Manager

Enclosures

**CERTIFICATIONS**

Project: VAR-D05 GUE-513-8.62 20140554  
 Pace Project No.: 50142792

Ohio Certification IDs  
 4860 Blazer Parkway, Dublin, OH 43017

NVLAP Lab Code #: 101170-0



**REPORT OF LABORATORY ANALYSIS**

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**REPORT OF LABORATORY ANALYSIS**

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**ANALYTICAL RESULTS**

Project: VAR-D05 GUE-513-8.62 20140554  
Pace Project No.: 50142792

Sample: A01 Lab ID: 50142792001 Collected: 04/13/16 08:00 Received: 04/13/16 15:30 Matrix: Bulk								
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>Asbestos PLM</b> Analytical Method: EPA 600/R-93/116								
Asbestos	0	%		1		04/15/16 09:41		1d
Number of Layers	2			1		04/15/16 09:41		
Homogeneous	No			1		04/15/16 09:41		

Sample: A02 Lab ID: 50142792002 Collected: 04/13/16 08:00 Received: 04/13/16 15:30 Matrix: Bulk								
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>Asbestos PLM</b> Analytical Method: EPA 600/R-93/116								
Asbestos	0	%		1		04/15/16 09:48		1d
Number of Layers	2			1		04/15/16 09:48		
Homogeneous	No			1		04/15/16 09:48		

Sample: A03 Lab ID: 50142792003 Collected: 04/13/16 08:00 Received: 04/13/16 15:30 Matrix: Bulk								
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>Asbestos PLM</b> Analytical Method: EPA 600/R-93/116								
Asbestos	0	%		1		04/15/16 09:51		1d
Number of Layers	2			1		04/15/16 09:51		
Homogeneous	No			1		04/15/16 09:51		

Sample: A04 Lab ID: 50142792004 Collected: 04/13/16 08:00 Received: 04/13/16 15:30 Matrix: Bulk								
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>Asbestos PLM</b> Analytical Method: EPA 600/R-93/116								
Asbestos	0	%		1		04/15/16 09:58		1d
Number of Layers	2			1		04/15/16 09:58		
Homogeneous	No			1		04/15/16 09:58		

Sample: A05 Lab ID: 50142792005 Collected: 04/13/16 08:00 Received: 04/13/16 15:30 Matrix: Bulk								
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>Asbestos PLM</b> Analytical Method: EPA 600/R-93/116								
Asbestos	0	%		1		04/15/16 10:03		1d
Number of Layers	2			1		04/15/16 10:03		
Homogeneous	No			1		04/15/16 10:03		

**REPORT OF LABORATORY ANALYSIS**

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**ANALYTICAL RESULTS**

Project: VAR-D05 GUE-513-8.62 20140554  
Pace Project No.: 50142792

Sample: A06 Lab ID: 50142792006 Collected: 04/13/16 08:00 Received: 04/13/16 15:30 Matrix: Bulk								
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>Asbestos PLM</b> Analytical Method: EPA 600/R-93/116								
Asbestos	0	%		1		04/15/16 10:08		1d
Number of Layers	2			1		04/15/16 10:08		
Homogeneous	No			1		04/15/16 10:08		

Sample: A07 Lab ID: 50142792007 Collected: 04/13/16 08:00 Received: 04/13/16 15:30 Matrix: Bulk								
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>Asbestos PLM</b> Analytical Method: EPA 600/R-93/116								
Asbestos	0	%		1		04/15/16 10:15		1d
Number of Layers	2			1		04/15/16 10:15		
Homogeneous	No			1		04/15/16 10:15		

Sample: B08 Lab ID: 50142792008 Collected: 04/13/16 08:00 Received: 04/13/16 15:30 Matrix: Bulk								
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>Asbestos PLM</b> Analytical Method: EPA 600/R-93/116								
Asbestos	0	%		1		04/15/16 10:20		2d
Number of Layers	1			1		04/15/16 10:20		
Homogeneous	Yes			1		04/15/16 10:20		

Sample: B09 Lab ID: 50142792009 Collected: 04/13/16 08:00 Received: 04/13/16 15:30 Matrix: Bulk								
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>Asbestos PLM</b> Analytical Method: EPA 600/R-93/116								
Asbestos	0	%		1		04/15/16 10:26		2d
Number of Layers	1			1		04/15/16 10:26		
Homogeneous	Yes			1		04/15/16 10:26		

Sample: B10 Lab ID: 50142792010 Collected: 04/13/16 08:00 Received: 04/13/16 15:30 Matrix: Bulk								
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>Asbestos PLM</b> Analytical Method: EPA 600/R-93/116								
Asbestos	0	%		1		04/15/16 10:31		2d
Number of Layers	1			1		04/15/16 10:31		
Homogeneous	Yes			1		04/15/16 10:31		

**REPORT OF LABORATORY ANALYSIS**

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### QUALIFIERS

Project: VAR-D05 GUE-513-8.62 20140554  
Pace Project No.: 50142792

#### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.  
 ND - Not Detected at or above adjusted reporting limit.  
 J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.  
 MDL - Adjusted Method Detection Limit.  
 PQL - Practical Quantitation Limit.  
 RL - Reporting Limit.  
 S - Surrogate  
 1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.  
 Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.  
 LCS(D) - Laboratory Control Sample (Duplicate)  
 MS(D) - Matrix Spike (Duplicate)  
 DUP - Sample Duplicate  
 RPD - Relative Percent Difference  
 NC - Not Calculable.  
 SG - Silica Gel - Clean-Up  
 U - Indicates the compound was analyzed for, but not detected.  
 N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.  
 Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.  
 TNI - The NELAC Institute.

#### ANALYTE QUALIFIERS

1d NO FIBERS TO ANALYZE.  
 05% BLUE DRIED PAINT - NONE  
 95% RUST COVERED METAL BACKING - NONE  
 HAMMER USED TO BREAK SAMPLE BEFORE ANALYSIS.  
 2d STEREOMICROSCOPE 0% ASBESTOS. NO ASBESTOS DETECTED.  
 NO FIBERS TO ANALYZE.  
 100% TAN, SPONGY CAULK MASS - NONE  
 SAMPLE BURNED AT 500 DEGREES CELSIUS FOR 1 HOUR BEFORE ANALYSIS.  
 STEREOMICROSCOPE 0% ASBESTOS. NO ASBESTOS DETECTED.

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: VAR-D05 GUE-513-8.62 20140554  
Pace Project No.: 50142792

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
50142792001	A01	EPA 600/R-93/116	OHIO/14155		
50142792002	A02	EPA 600/R-93/116	OHIO/14155		
50142792003	A03	EPA 600/R-93/116	OHIO/14155		
50142792004	A04	EPA 600/R-93/116	OHIO/14155		
50142792005	A05	EPA 600/R-93/116	OHIO/14155		
50142792006	A06	EPA 600/R-93/116	OHIO/14155		
50142792007	A07	EPA 600/R-93/116	OHIO/14155		
50142792008	B08	EPA 600/R-93/116	OHIO/14155		
50142792009	B09	EPA 600/R-93/116	OHIO/14155		
50142792010	B10	EPA 600/R-93/116	OHIO/14155		

### REPORT OF LABORATORY ANALYSIS

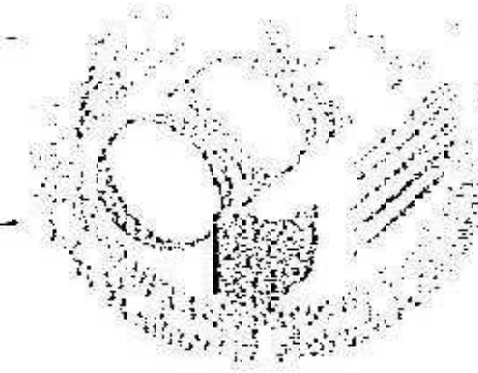
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APPENDIX D:  
CERTIFICATION



May 26, 2015

Bryan D Lombard  
EMH&T  
5500 New Albany Road  
Columbus OH 43054

RE: Asbestos Hazard Evaluation Specialist  
Certification Number: ES35323  
Expiration Date: 05/24/2016

Dear Bryan D Lombard:

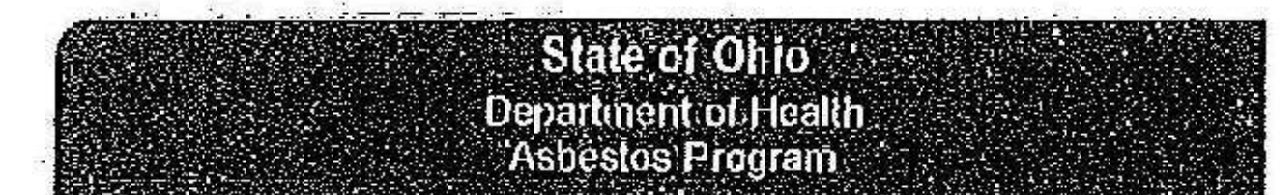
This letter and enclosed certification card approves your request to be certified as an Asbestos Hazard Evaluation Specialist. You must present your card upon request at any project site while performing duties. Copies of cards are not acceptable as proof of certification.

This certification may be revoked by the Director of Health for violation of any of the requirements of 3701-34 of the Ohio Administrative Code.

If you have any questions, please call Kathy Butcher, Licensure Specialist, at 614-644-0226.

Sincerely,

Bill Robbins, Section Chief  
Bureau of Licensure Operations  
Office of Health Assurance and Licensing



Asbestos Hazard Evaluation Specialist



Bryan D Lombard  
EMH&T  
5500 New Albany Road  
Columbus OH 43054

DOB: 10/16/1977	Certification Number ES35323	Expiration Date 05/24/2016
-----------------	---------------------------------	-------------------------------

This certification is issued pursuant to Chapter 3701 of the Revised Code and 3701-34 of the Ohio Administrative Code. Certification Card is not valid if altered.



OHIO ENVIRONMENTAL PROTECTION AGENCY  
INSTRUCTIONS FOR COMPLETING  
NOTIFICATION OF DEMOLITION AND RENOVATION FORM

**General Information**

APPENDIX E:

PARTIALLY COMPLETED "NOTIFICATION OF DEMOLITION AND RENOVATION"  
FORM

**Who must submit this notification?** [OAC 3745-20-03 and 40 CFR 61.145(b)]

- The owner or operator means any person who leases, operates, controls, or supervises the facility being demolished or renovated, or any person who owns, leases, operates, controls or supervises the demolition or renovation (activity), or both.

The Ohio EPA notification of demolition and renovation form is required for:

- Every demolition of a facility, regardless of whether asbestos is involved. This includes all structures that will be intentionally burned for fire training purposes.
- A renovation when the amount of regulated asbestos-containing material (RACM) stripped, removed, dislodged, cut, drilled, or similarly disturbed exceeds 260 linear feet on pipes or 160 square feet on other facility components or 35 cubic feet off facility components.

**When must I submit this notification?**

**ORIGINAL:** The original notification must be postmarked or hand delivered to the Ohio EPA district office or local air agency with jurisdiction in the county where the operations will occur at least 10 working days (Monday-Friday excluding weekends) before operations begin. Please see example table below to help determine when to submit the original notification.

*E-mail or FAX notification is not acceptable for original notification.*

July

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3 day 1	4 day 2	5 day 3	6
7	8 day 4	9 day 5	10 day 6	11 day 7	12 day 8	13
14	15 day 9	16 day 10	17 *	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

Post mark date (and Day 1 of 10-day clock): July 3<sup>rd</sup>.

Note: Holidays are counted when they fall on a working day.

Completion of 10-day prior notification period: July 16<sup>th</sup>.

\* First day work can commence (day following the 10<sup>th</sup> working day): July 17<sup>th</sup>.

**REVISIONS:** The notification must be updated if the amount of RACM changes by at least 20 percent, any changes in work schedules (dates or hours), any change in owner or operator, or any change in the name or location of selected waste disposal site. A revised notification may be provided by phone, email, or fax, followed in writing.

**EMERGENCY DEMOLITION OR RENOVATIONS:** The notification must be submitted as early as possible before, but not later than, the following working day from start of renovation or demolition activities. The notification must include the supplemental information required in Sections 14 or 15.

**Where do I send my notification?**

Send the notification directly to the Ohio EPA district office or local air agency with jurisdiction in the county where the operations will occur. A list of the counties and a jurisdiction map is available online at [www.epa.ohio.gov/dapc/atu/asbestos.aspx](http://www.epa.ohio.gov/dapc/atu/asbestos.aspx)

**How does Ohio EPA assess fees?** [ORC 3745.11(G)]

An owner or operator who is responsible for an asbestos demolition or renovation project shall pay the fees set forth in the following schedule. This applies when thresholds are greater than or equal to: 260 linear feet; 160 square feet; or 35 cubic feet.



- Each notification \$75 plus,
- Asbestos removal \$3/unit (1 unit = any combination of linear feet or square feet equal to fifty) and/or
- Asbestos cleanup \$4/cubic yard

The Ohio EPA will bill the facility owner or operator on a quarterly basis. Please be aware that some local air agencies may have additional fees.

### Who can help answer questions about completing this notification?

Contact the Ohio EPA district office or local air agency with jurisdiction in the county where the operations will occur. A list of these jurisdictions and the appropriate contacts is available at [www.epa.ohio.gov/dapc/atu/asbestos.aspx](http://www.epa.ohio.gov/dapc/atu/asbestos.aspx)

### Line-by-line Instructions

**Operator Project #** -- this is an optional space provided for the person submitting the notice to indicate their project or job number.

#### 1. Check the type of notification:

- "Original" is the first notification submitted for a project; hard copy is required to be post-marked or hand-delivered 10 working-days prior to start of work.
- "Revision" is any notification submitted after the original due to any change in the information on the form; required if the amount of RACM changes by at least 20 percent, any changes in work schedules (dates or hours), any change in owner or operator, or any change in the name or location of selected waste disposal site. Revisions shall be numbered chronologically with Revision #1 being the first time any items on the notification form were changed. If revision is marked, please include the Revision # and specify the Sections of the form in which items were revised.
- "Cancellation" is submitted to indicate a project has been cancelled and work will not be completed.

#### 2. Describe the building(s) or structure(s) affected by the operations. If the project includes more than one structure, be sure to complete and include the Multi-Structure Attachment Form with your Ohio EPA notification form. Include building size in square feet, specific site location, number of floors, and age in years. Also include the present and prior use (i.e., industrial, commercial, institutional, residential, vacant, etc.) of the building(s).

#### 3. Identify the type of operation. Definitions of these terms can be found in OAC 3745-20-01. Please note emergency demolitions and renovations require additional information, see Sections 14 and 15.

- "Demolition" means the wrecking, or taking out of any load-supporting structural member of a facility together with any related handling operations or the intentional burning of any facility.
- "Emergency demolition" means any demolition operation conducted under a written order issued by a state or local governmental agency because a facility is structurally unsound and in danger of imminent collapse.
- "Renovation" means altering a facility or one or more facility components in any way, including the stripping or removal of regulated asbestos-containing material from a facility component. Operations in which load-supporting structural members are wrecked or taken out are demolitions.
- "Emergency renovation operation" means a renovation operation that was not planned but results from a sudden, unexpected event that, if not immediately attended to, presents a safety or public health hazard, is necessary to protect equipment from damage, or is necessary to avoid imposing an unreasonable financial burden. This term includes operations necessitated by non-routine failures of equipment.
- "Fire Training" refers to the demolition of a facility by intentional burning. All asbestos containing material, including Category I and Category II nonfriable ACM, must be removed in accordance with OAC 3745-20 before burning. Additional requirements also apply; please contact the DO/LAA with jurisdiction for additional information. <http://epa.ohio.gov/portals/41/sb/publications/BurningHouse.pdf>
- "Courtesy" means you are submitting the notification of a demolition/renovation of a non-facility or abatement project below regulatory thresholds.

- "Annual" refers to planned renovation operations over a calendar year involving a series of non-scheduled operations that are collectively greater than the threshold limits; these notifications must be submitted in the month prior to the beginning of the calendar year.

#### 4. Declare whether or not asbestos is present in any quantity. This includes assumed asbestos containing materials such as roofing and flooring. Also specify if the facility was previously abated and year when previous asbestos abatement occurred (if applicable).

#### 5. Provide all owner/operator contact information.

- Specify if this project is part of a larger project or urban demolition (installation).
  - If Yes, list contact information for Entity Coordinating Larger Project in next line (Owner/Coordinating Entity).
  - If No, list the property owner information in next line (Owner/Entity Coordinator)
- Specify if this notification include more than one structure.
  - If Yes, ensure the Multi-Structure Attachment Form has been completed per Section 2; attach this to your notification form.
- In the "Owner/Coordinating Entity" line, list the property owner (individual(s) who own(s) the property at the time of demolition/renovation (Note, this may be a government or private entity)) if answered No above; or list the Coordinating Entity (i.e., land bank, municipality, etc.) for the larger project if answered Yes above. Include address, contact name, phone, fax, and email for the listed Owner/Coordinating Entity.
- Specify the name, address, contact name, phone, fax, email, and Ohio Department of Health license number (ACXXXX) for the "Asbestos Abatement Contractor" (if regulated asbestos containing material(s) is being abated).
- Specify the name, address, contact name, phone, fax, email, for the "Onsite Demolition Contactor" (if demolition is taking place) or "Fire Department" (if demolition of a facility is by intentional burning).

#### 6. Include the Asbestos Hazard "Evaluation Specialist Name", "License # (ESXXXX)", and "procedure used to detect and analyze asbestos". Analytical methods could include the collection of samples and sample analyses by polarized light microscopy (PLM) with dispersion staining. For samples that test under 10% asbestos content: An owner or operator may (a) elect to assume material to be greater than 1% asbestos, or, (b) require verification by point counting in which the point counting result will supercede the PLM estimation; Both choice and result should be stated on the notification. Explain any other method(s) used. All owners/operators should have the records of the asbestos assessment and analyses (inspection/survey report) on-site during active operations for reference and inspection. Such records would include a list of materials assessed, locations sampled and the sample results; this information can be found within the asbestos inspection report.

#### 7. Specify the amount of regulated asbestos-containing material (RACM) to be removed as follows: linear feet on pipes, square feet (surface area) on facility components, and total cubic feet or cubic yards (volume) on or off all facility components. Asbestos containing demolition debris and related materials shall be quantified in cubic feet/yards (volume). Estimate the approximate amount of Category I and Category II non-friable asbestos-containing material in the affected part of the facility that will be removed before demolition. Estimate the approximate amount of Category I and Category II non-friable asbestos-containing material in good condition in the affected part of the facility that will not be removed before demolition. If multiple addresses per notification, the combined total of all sites shall be listed in this table and individual quantities for each site shall be provided in the Multi-Structure Attachment Form.

#### 8. Specify the starting and ending dates for demolition or renovation even when no asbestos containing materials are present. Should the demolition or renovation not begin on the start date listed, a revised notification form shall be submitted prior to the listed start date. Please note, start date must be at least 10 working-days after postmark or hand-deliver date.

#### 9. Specify the scheduled dates for asbestos removal, the hours of operation, and the days of the week that asbestos removal operations will be active onsite. Please note, start date must be at least 10 working-days after postmark or hand-deliver date.

#### 10. Describe the demolition or renovation which will occur and the methods or operations that will be employed. Briefly describe the methods to be used to conduct the demolition or renovation. For renovations, these methods may include glove bag removal, hand stripping or scraping of asbestos containing materials. For demolitions, methods may include a wrecking ball, bulldozer, implosion, or unbolting panels or sections and carefully lowering to the ground. Examples of affected facility components may include pipe wrap, floor tile, sprayed-on insulation, transite, etc.



11. Describe the work practices and engineering controls to be used for abating (removing) each type of material listed in Section 7. Examples of work practices and engineering controls to prevent asbestos emissions at the site could include: the use of water or wetting agents, negative pressure enclosure, glove bag removal; placing into leak-tight containers or wrapping with twelve (12) mil thick polyethylene plastic sheeting which is properly labeled prior to disposal, etc. Examples of removal and waste handling procedures to prevent non-friable material from becoming friable would include: removing by sections or units taking care not to crumble, pulverize, or reduce to powder, using water to prevent any emissions, placing into leak-tight containers or wrapping with twelve (12) mil thick plastic which is properly labeled prior to disposal (including name or waste generator and location at which the waste was generated), etc.

**Examples:**

- A. *Wet methods to be used before, during and after removal of 2500 sq. ft. of acoustical plaster. Material will be placed into double 6-mil poly bags, properly labeled, and taken to an approved landfill.*
- B. *Full containment, negative air, adequately wet, proper PPE, double bagging when removing 600 sq. ft. of boiler breeching, 4 boiler door gaskets, and 35 flange gaskets. Bagged material will be properly labeled and taken to an EPA-approved landfill.*

12. Provide the names, addresses, and contact information of any asbestos waste transporters. Note you must also complete a Waste Shipment Record prior to consigning any asbestos containing waste materials (ACWM).

13. Provide the name, physical address, and contact information for the asbestos waste disposal site. Note it may be different from the mailing address. Check Ohio EPA website listed below for an updated list of approved asbestos accepting waste disposal sites. [www.epa.ohio.gov/dapc/atu/asbestos.aspx](http://www.epa.ohio.gov/dapc/atu/asbestos.aspx)

14. This section must be completed for emergency demolitions that meet the definitions and requirements of the regulation. If a facility is not in imminent danger of collapse, it is not an emergency demolition even though it may be ordered to be demolished due to hazardous conditions. Provide the name, title and agency of the state or local governmental representative who has ordered the demolition. The Authority of Order is the applicable state or local regulation under which the demolition order has been issued. You **MUST ATTACH** a copy of the demolition order to the notification.

15. This section shall be completed for emergency renovations that meet criteria described at 40 CFR 61.141 and OAC 3745-20-01. You **MUST ATTACH** a separate sheet including the four items listed on the notification form.

16. Describe the procedures to be followed in the event unexpected regulated asbestos containing (RACM) is found or nonfriable asbestos becomes material (RACM).

**Examples:**

- A. *Stop work, evacuate area, and demarcate the area.*
- B. *Wetting of ACM with amended water and using wet cleaning methods.*

Should the discovery of unexpected RACM change the original amount of asbestos to be abated by 20 percent or more, you must submit a revised notification pursuant to OAC 3745-20-03. A revised demolition/renovation notification must reflect the change in the amount of affected asbestos-containing material. The revised notification must also reflect the new asbestos removal start date, if applicable.

17. If asbestos is being removed or abated, you must certify a NESHAP trained person will be available during normal business hours at the demolition or renovation site. Signature must be by an authorized representative of the owner or operator.

18. In accordance with OAC 3745-20-03(E), all notifications (original and revised) shall identify the name, title, and organization of the person submitting the notification, and shall be signed and dated by the person submitting the notification.

The asbestos regulations, notification forms, guidance, local contacts, and other information can be found on Ohio EPA's asbestos program web site at [www.epa.ohio.gov/dapc/atu/asbestos.aspx](http://www.epa.ohio.gov/dapc/atu/asbestos.aspx)



**Notification of Demolition and Renovation Form**  
**Single & Multi-Structure**  
 Division of Air Pollution Control

Operator Project # :		For Official Use Only											
		<input type="checkbox"/> Hand-Delivered		Postmark: / /		Received by Office: / /		Notification # :					
1. Notification Type (check one)													
<input type="checkbox"/> Original		<input type="checkbox"/> Revision # :		Section #s Revised:		Offsite/Hand: <input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Cancellation					
2. Facility Description (Include building name, number and floor or room number). If more than one structure, use Multi-Structure Attachment form													
Building Name (if applicable): Bridge Gue-513-8.65				Site Location: Batesville Road (SR 513) over I-70									
Address:				County: Guernsey									
City: Quaker City				State: OH		Zip: 43773							
Building Size (ft <sup>2</sup> ):				No. of Floors:		Age (years): 51							
Present Use: Miscellaneous				Prior Use: Miscellaneous									
3. Type of Operation (check one)													
<input type="checkbox"/> Demolition <input type="checkbox"/> Emergency Demolition <input type="checkbox"/> Renovation <input type="checkbox"/> Emergency Renovation <input type="checkbox"/> Fire Training <input type="checkbox"/> Annual <input type="checkbox"/> Courtesy													
4. Is Asbestos Present? (check one)													
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> No, previously abated Year Abated (if applicable):													
5. Owner/Coordinating Entity, Asbestos Abatement Contractor and Onsite Demolition Contractor Information													
Is this project part of a larger project or urban demolition (installation)?						Does this notification include more than one structure?							
<input type="checkbox"/> Yes (list contact information for coordinating entity below)						<input type="checkbox"/> Yes (complete the Multi-Structure Attachment Form)							
<input type="checkbox"/> No (list contact information for property owner below)						<input type="checkbox"/> No							
Owner/Coordinating Entity:													
Address:				Email:									
City:				State:		Zip:							
Contact:				Phone: ( ) -		Fax: ( ) -							
Asbestos Abatement Contractor (if applicable)					On-site Demolition Contractor or Fire Department (if applicable)								
Name:					Name:								
Address:					Address:								
City:		State:		Zip:		City:		State:		Zip:			
Contact:					Contact:								
Phone: ( ) -		License #: AC		Fax: ( ) -		Phone: ( ) -		Fax: ( ) -		Email:			
Ohio Asbestos Hazard Evaluation Specialist and Evaluation Procedure					Evaluation Specialist: Bryan Lombard					License #: ES 35323		Expiration Date: 5 / 24 / 2016	
Procedure, including analytical methods, employed to detect the presence of and to estimate the quantity of regulated asbestos-containing material (RACM) and Category I and Category II nonfriable asbestos-containing material: <input checked="" type="checkbox"/> PLM <input type="checkbox"/> Point Count <input type="checkbox"/> TEM <input type="checkbox"/> Other Method (Explain Below):													
7. Approximate Amount of Asbestos-Containing Materials (complete table below and Section 11 if asbestos is present)													
Material to be Removed													
Material NOT to be Removed													
RACM													
Nonfriable Asbestos-Containing Material													
Category I													
Category II													
Pipes (linear feet)													
Surface Area (ft <sup>2</sup> )													
Facility Components													
<input type="checkbox"/> ft <sup>3</sup> <input type="checkbox"/> yd <sup>3</sup>													
8. Scheduled Dates of Demolition or Renovation (original notification is required 10 working days prior to the start of work)													
Start: / /				Complete: / /									
9. Asbestos Removal Dates and Work Hours (if applicable, for asbestos removal only)													
Start: / /				Complete: / /									
Hours Onsite													
Monday Tuesday Wednesday Thursday Friday Saturday Sunday													



10 Planned Demolition or Renovation Work (check all that apply)

Description of planned demolition or renovation work to be performed and method(s) to be employed, including demolition or renovation techniques to be used:

Implosion  Fire Training  Wet Methods  Manual Demolition  Mechanical Demolition  Other (Explain Below):

Description of affected facility components (Include attachment if necessary):

11 Asbestos Description and Engineering Controls (if asbestos is being abated)

For the amount of each material listed in Section 7, describe the type(s) of ACM to be abated as well as engineering controls and work practices to be used to minimize emissions and ensure proper waste handling:

12 Asbestos Waste Transporters (if applicable)

Asbestos Waste Transporter #1: Name, Address, City, State, Zip, Contact, Phone, Fax, Email

Asbestos Waste Transporter #2: Name, Address, City, State, Zip, Contact, Phone, Fax, Email

13 Asbestos Waste Disposal (if applicable)

Asbestos Waste Disposal Site: Address, City, State, Zip, Contact, Phone, Fax, Email

14 Emergency Demolition (complete this section if you checked Emergency Demolition in Section 3)

A copy of the issued order, including the following information, must be attached to this notification

Government Official Issuing Order: Title, Agency, Authority of Order (Citation of Code), Date of Order, Demolition Date

15 Emergency Renovation (complete this section if you checked Emergency Renovation in Section 3)

A separate sheet with the following information must be attached to this notification

Date of Emergency, Time of Emergency, Description of Sudden, Unexpected Event, Explanation of how the event caused unsafe conditions or equipment damage

16 Procedures to be followed should unexpected RACM be discovered (check all that apply)

Stop work and keep wet  Evacuate area  Contact licensed abatement contractor

Contact district office/local air authority  Demarcate area  Other (Explain Below):

17 Asbestos Abatement Signature (only sign below if asbestos is being removed)

In accordance with Ohio Administrative Code rule 3745-20-03(A)(4)(p), I certify that at least one person trained as required by paragraph (B) of rule 3745-20-04 of the Administrative Code will supervise the stripping and removal described by this notification.

Signature, Date, Name, Title and Organization (please print)

18 Demolition and Renovation Signature (required for all original and revised notifications)

I acknowledge the existence of laws prohibiting the submission of false or misleading statements and I certify that facts contained in this notification are true, accurate, and complete.

Signature, Date, Name, Title and Organization (please print)

Original notification must be mailed or hand-delivered at least 10 working days (Monday - Friday excluding weekends) before demolition or renovation begins, except emergency demolitions and emergency renovations which must be submitted as soon as possible before operations begin, but no later than the following work day.



Notification of Demolition and Renovation  
Multi-Structure Attachment Form  
Division of Air Pollution Control

Note: This form to be completed and attached to Notification Form when project involves more than one structure

Project Name: \_\_\_\_\_ Date Submitted: \_\_\_\_\_ Revision #: \_\_\_\_\_

Project Details		Structure 1	Structure 2	Structure 3	Structure 4	Structure 5
Structure Details	Site Address (include street, city, and zip)					
	Building Name					
	Present Use					
	Past Use					
Asbestos Quantities	RACM	Sf	Sf	Sf	Sf	Sf
		Lf	Lf	Lf	Lf	Lf
		Cf	Cf	Cf	Cf	Cf
	Cat. I NF to be Removed	Sf	Sf	Sf	Sf	Sf
	Cat. II NF to be Removed	Sf	Sf	Sf	Sf	Sf
	Cat. I NF to Remain	Sf	Sf	Sf	Sf	Sf
Work Schedule	Cat. II NF to Remain	Sf	Sf	Sf	Sf	Sf
	Asbestos Removal Start Date	/ /	/ /	/ /	/ /	/ /
	Asbestos Removal Complete Date	/ /	/ /	/ /	/ /	/ /
	Demolition/Renovation Start Date	/ /	/ /	/ /	/ /	/ /
Revised	Demolition/Renovation Complete Date	/ /	/ /	/ /	/ /	/ /
	Check box if details were revised	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>