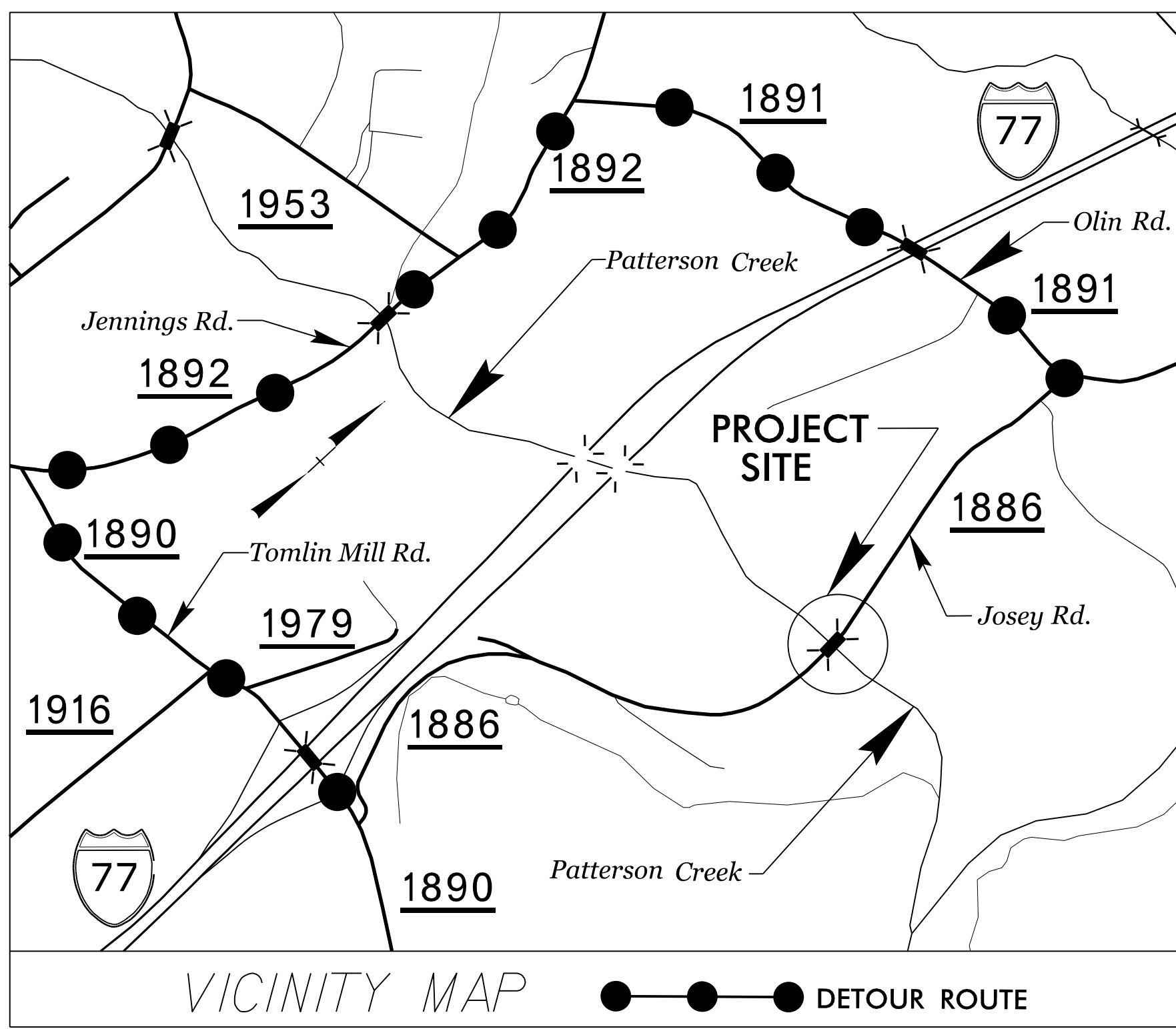


09\_08/2019

See Sheet 1A For Index of Sheets  
See Sheet 1B For Conventional Symbols

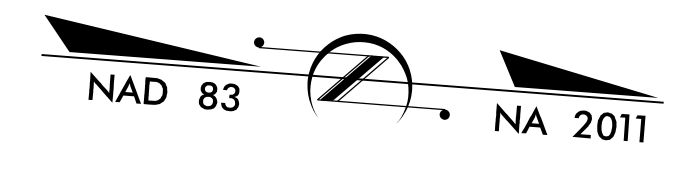


STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
**IREDELL COUNTY**

**LOCATION: REPLACE BRIDGE NO. 221 OVER PATTERSON CREEK  
ON SR 1886 (JOSEY ROAD)**

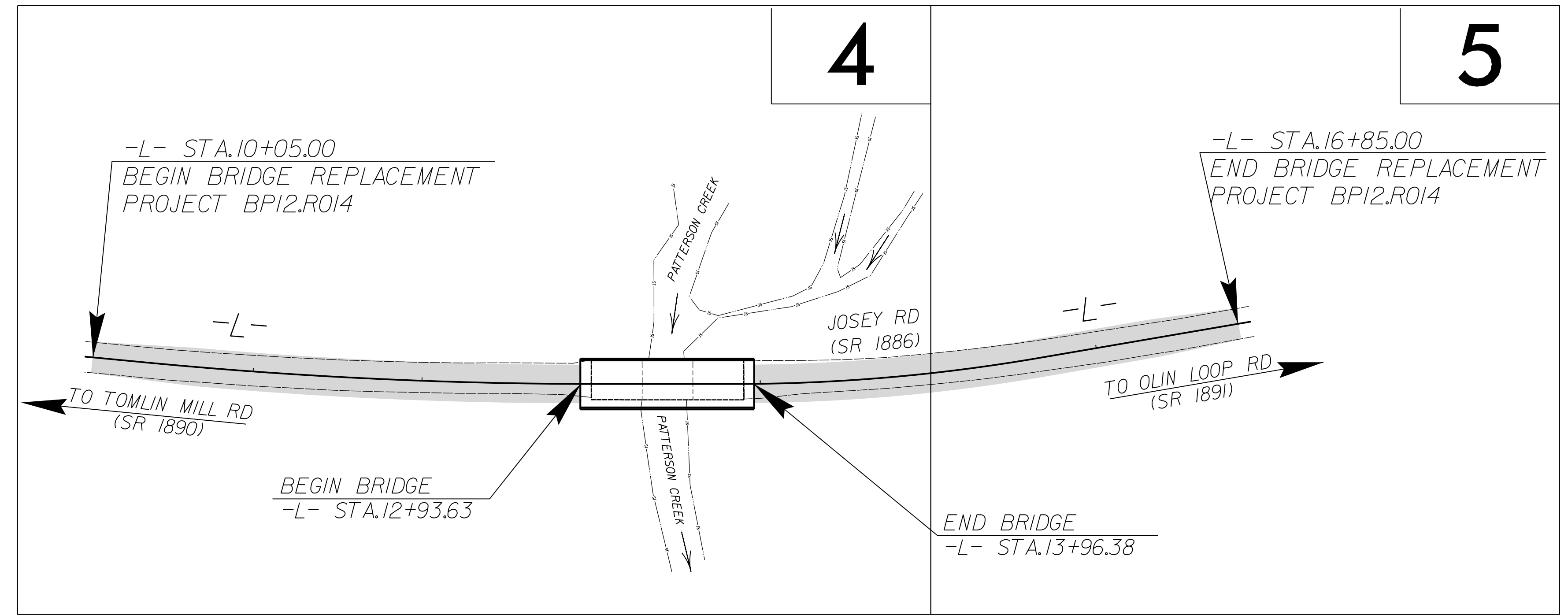
**TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	<b>BP12.R014</b>	<b>1</b>	
STATE WBS PROJ NO.	F.A. PROJ NO.	DESCRIPTION	
BP12.R014.1	NA	PE	
BP12.R014.2	NA	RW & UTIL.	
BP12.R014.3	NA	CONSTR.	
<b>FINAL PLANS</b>			

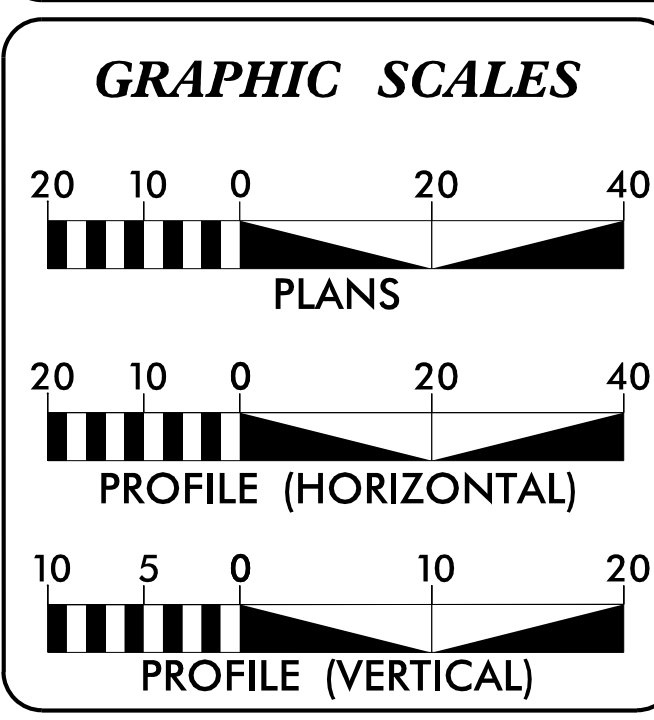


**WBS PROJECT: BP12.R014**

**CONTRACT: DL00334**



**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**



**DESIGN DATA**

ADT 2024 = 420

V = 60 MPH

FUNC CLASS = LOCAL

SUB - REGIONAL TIER

**PROJECT LENGTH**

LENGTH OF ROADWAY PROJECT BP12.R014 = 0.110 MILES

LENGTH OF STRUCTURE PROJECT BP12.R014 = 0.019 MILES

TOTAL LENGTH OF PROJECT BP12.R014 = 0.129 MILES

Prepared in the Office of:

**KCI**  
KCI ASSOCIATES OF N.C., P.A.  
4505 Falls of Neuse Road, Suite 400  
Raleigh, NC 27609  
Phone (919) 783-9214  
NC Firm License No: C-0764

Plans Prepared For:

**HIGHWAY DIVISION 12**  
1710 E. Marion St. (US 74 Bus)  
Shelby NC, 28151

**RIGHT OF WAY DATE:**  
May 31, 2023

**LETTING DATE:**  
October 22, 2024

**NCDOT CONTACT:**  
JOSH WHITE, P.E.  
DIVISION 12 BRIDGE PROGRAM MANAGER

**PROJECT ENGINEER:**  
BARRY SMITH, P.E.

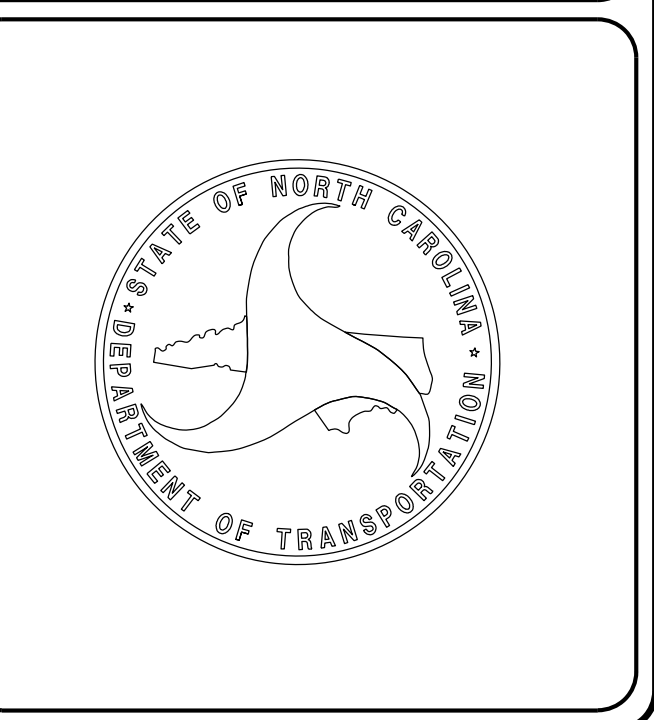
**PROJECT DESIGN ENGINEER:**  
TYLER CAREY, P.E.

**HYDRAULICS ENGINEER**

DocuSigned by:  
Joshua G Dalton  
8/7/2024  
SIGNATURE: *Joshua G Dalton*

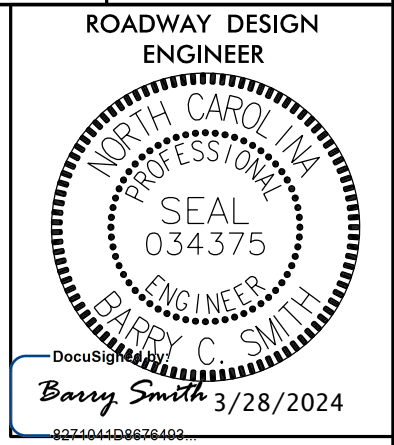
**ROADWAY DESIGN ENGINEER**

DocuSigned by:  
Barry Smith  
8/7/2024  
SIGNATURE: *Barry Smith*



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MA 2022 252201522.02 NCDOT BP12.R014 Bridge 22N Roadway\Proj\BP12.R014\_Rdy\_tsh.dgn  
\$\$\$\$\$USERNAME\$\$\$\$\$

8/17/99



EFF. 01-16-2024

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1	TYPICAL SECTIONS, PAVEMENT SCHEDULE, WEDGING DETAIL, PROFILE KEY-IN DETAIL, SHOULDER BERM GUTTER DETAIL AND GUARDRAIL DETAIL
3B-1	SUMMARY OF EARTHWORK, SUMMARY OF SHOULDER BERM GUTTER, SUMMARY OF PAVEMENT REMOVAL SUMMARY OF PAVEMENT BREAKING, SUMMARY OF GUARDRAIL, AND SUMMARY OF DRAINAGE
4 THRU 5	PLAN SHEET
6	PROFILE SHEET
RW-1 THRU RW-5	SURVEY CONTROL, EXISTING CENTERLINES, RIGHT OF WAY, EASEMENT AND PROPERTY TIES
TMP-1 THRU TMP-4	TRANSPORTATION MANAGEMENT PLANS
PMP-1	PAVEMENT MARKING PLANS
EC-1 THRU EC-7	EROSION CONTROL PLANS
UC-1 THRU UC-6	UTILITIES CONSTRUCTION PLANS
X-1	CROSS SECTION SUMMARY SHEET
X-2 THRU X-6	CROSS-SECTIONS
S-1 THRU SN	STRUCTURE PLANS

**GENERAL NOTES:**

2024 SPECIFICATIONS  
EFFECTIVE: 01-16-2024

**GRADING AND SURFACING**

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

**CLEARING:**

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD 11.

**SUPERELEVATION:**

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

**SHOULDER CONSTRUCTION:**

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01

**GUARDRAIL:**

THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.

**TEMPORARY SHORING:**

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.

**END BENTS:**

THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

**UTILITIES:**

UTILITY OWNERS ON THIS PROJECT ARE AT&T, DUKE ENERGY, AND IREDELL WATER CORPORATION

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

**RIGHT-OF-WAY MARKERS:**

ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY OTHERS.

2024 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January 16, 2024 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superlevation - Two Lane Pavement
275.01	Rock Paving
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
DIVISION 4 - MAJOR STRUCTURES	
423.01	Bridge Approach Fills - Type I Approach Fill for Bridge Abutment
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 6 - INCIDENTALS	
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.46	Traffic Bearing Precast Drainage Structure
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.01	Riprap in Channels
876.02	Guide for Riprap at Pipe Outlets
876.04	Drainage Ditches with Class "B" Rip Rap

**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**

28-MAR-2024 09:07  
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NCDDT BP12.R014.Bridge 221\Roadway\Design\BP12.R014.Rdy\_1A.dgn



# STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale

## BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin (EIP)	○
Computed Property Corner	✕
Existing Concrete Monument (ECM)	◻
Parcel/Sequence Number	⑫3
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	---WLB---
Proposed Wetland Boundary	WLB
Existing Endangered Animal Boundary	---EAB---
Existing Endangered Plant Boundary	---EPB---
Existing Historic Property Boundary	---HPB---
Known Contamination Area: Soil	-----
Potential Contamination Area: Soil	-----
Known Contamination Area: Water	-----
Potential Contamination Area: Water	-----
Contaminated Site: Known or Potential	☠ ?

## BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○
Well	○
Small Mine	✕
Foundation	▭
Area Outline	▭
Cemetery	▭
Building	▭
School	▭
Church	▭
Dam	▭

## HYDROLOGY:

Stream or Body of Water	-----
Hydro, Pool or Reservoir	▭
Jurisdictional Stream	---JS---
Buffer Zone 1	---BZ 1---
Buffer Zone 2	---BZ 2---
Flow Arrow	←
Disappearing Stream	→
Spring	○
Wetland	---WLB---
Proposed Lateral, Tail, Head Ditch	→
False Sump	▽

## RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○
Switch	□
RR Abandoned	-----
RR Dismantled	-----

## RIGHT OF WAY & PROJECT CONTROL:

Primary Horiz Control Point	○
Primary Horiz and Vert Control Point	●
Secondary Horiz and Vert Control Point	◆
Vertical Benchmark	⊕
Existing Right of Way Monument	△
Proposed Right of Way Monument (Rebar and Cap)	▲
Proposed Right of Way Monument (Concrete)	⊙
Existing Permanent Easement Monument	◇
Proposed Permanent Easement Monument (Rebar and Cap)	◆
Existing C/A Monument	△
Proposed C/A Monument (Rebar and Cap)	▲
Proposed C/A Monument (Concrete)	⊙
Existing Right of Way Line	-----
Proposed Right of Way Line	-----
Existing Control of Access Line	-----
Proposed Control of Access Line	-----
Proposed ROW and CA Line	-----
Existing Easement Line	-----
Proposed Temporary Construction Easement	-----
Proposed Temporary Drainage Easement	-----
Proposed Permanent Drainage Easement	-----
Proposed Permanent Drainage/Utility Easement	-----
Proposed Permanent Utility Easement	-----
Proposed Temporary Utility Easement	-----
Proposed Aerial Utility Easement	-----

## ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	---C---
Proposed Slope Stakes Fill	---F---
Proposed Curb Ramp	○
Existing Metal Guardrail	-----
Proposed Guardrail	-----
Existing Cable Guiderail	-----
Proposed Cable Guiderail	-----
Equality Symbol	⊕
Pavement Removal	▨
VEGETATION:	
Single Tree	○
Single Shrub	○
Hedge	-----

Woods Line	-----
Orchard	-----
Vineyard	-----

## EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	-----
Bridge Wing Wall, Head Wall and End Wall	-----
MINOR:	
Head and End Wall	-----
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	-----
Paved Ditch Gutter	-----
Storm Sewer Manhole	○
Storm Sewer	-----

## UTILITIES:

\* SUE - Subsurface Utility Engineering  
LOS - Level of Service - A, B, C or D (Accuracy)

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	⊕
Power Line Tower	⊕
Power Transformer	⊕
U/G Power Cable Hand Hole	⊕
H-Frame Pole	●
U/G Power Line Test Hole (SUE - LOS A)*	⊕
U/G Power Line (SUE - LOS B)*	-----
U/G Power Line (SUE - LOS C)*	-----
U/G Power Line (SUE - LOS D)*	-----
TELEPHONE:	
Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	⊕
Telephone Pedestal	⊕
Telephone Cell Tower	⊕
U/G Telephone Cable Hand Hole	⊕
U/G Telephone Test Hole (SUE - LOS A)*	⊕
U/G Telephone Cable (SUE - LOS B)*	-----
U/G Telephone Cable (SUE - LOS C)*	-----
U/G Telephone Cable (SUE - LOS D)*	-----
U/G Telephone Conduit (SUE - LOS B)*	-----
U/G Telephone Conduit (SUE - LOS C)*	-----
U/G Telephone Conduit (SUE - LOS D)*	-----
U/G Fiber Optics Cable (SUE - LOS B)*	-----
U/G Fiber Optics Cable (SUE - LOS C)*	-----
U/G Fiber Optics Cable (SUE - LOS D)*	-----

## WATER:

Water Manhole	⊕
Water Meter	○
Water Valve	⊗
Water Hydrant	⊕
U/G Water Line Test Hole (SUE - LOS A)*	⊕
U/G Water Line (SUE - LOS B)*	-----
U/G Water Line (SUE - LOS C)*	-----
U/G Water Line (SUE - LOS D)*	-----
Above Ground Water Line	-----

## TV:

TV Pedestal	⊕
TV Tower	⊗
U/G TV Cable Hand Hole	⊕
U/G TV Test Hole (SUE - LOS A)*	⊕
U/G TV Cable (SUE - LOS B)*	-----
U/G TV Cable (SUE - LOS C)*	-----
U/G TV Cable (SUE - LOS D)*	-----
U/G Fiber Optic Cable (SUE - LOS B)*	-----
U/G Fiber Optic Cable (SUE - LOS C)*	-----
U/G Fiber Optic Cable (SUE - LOS D)*	-----

## GAS:

Gas Valve	◇
Gas Meter	⊕
U/G Gas Line Test Hole (SUE - LOS A)*	⊕
U/G Gas Line (SUE - LOS B)*	-----
U/G Gas Line (SUE - LOS C)*	-----
U/G Gas Line (SUE - LOS D)*	-----
Above Ground Gas Line	-----

## SANITARY SEWER:

Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	-----
Above Ground Sanitary Sewer	-----
SS Force Main Line Test Hole (SUE - LOS A)*	⊕
SS Force Main Line (SUE - LOS B)*	-----
SS Force Main Line (SUE - LOS C)*	-----
SS Force Main Line (SUE - LOS D)*	-----

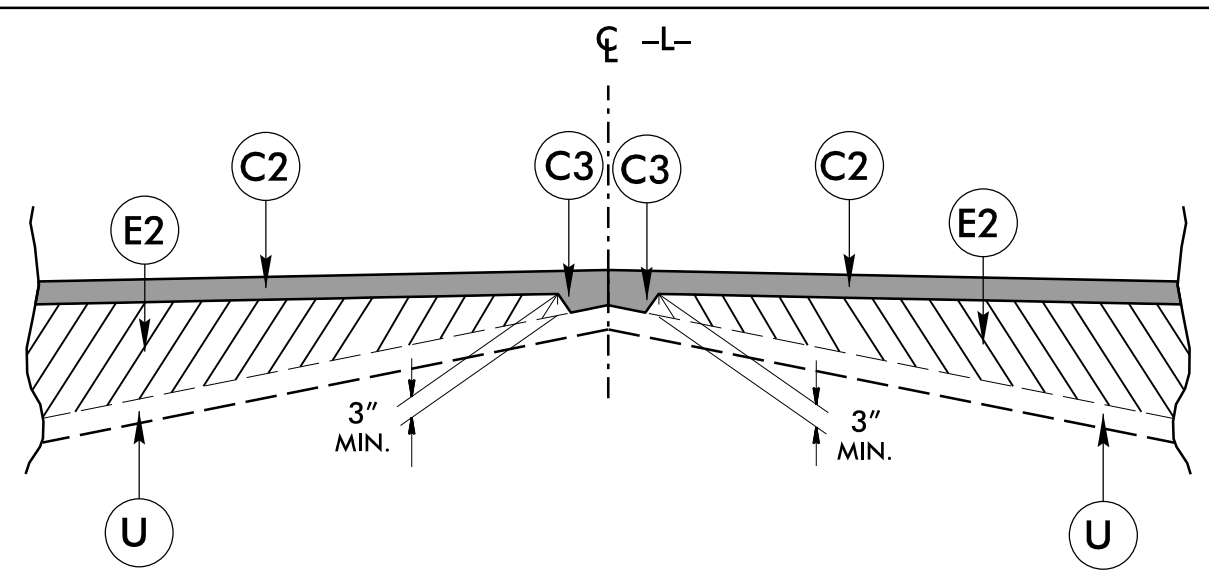
## MISCELLANEOUS:

Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	⊕
Utility Unknown U/G Line (SUE - LOS B)*	-----
U/G Tank; Water, Gas, Oil	▭
Underground Storage Tank, Approx. Loc.	⊕
A/G Tank; Water, Gas, Oil	▭
Geoenvironmental Boring	⊕
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

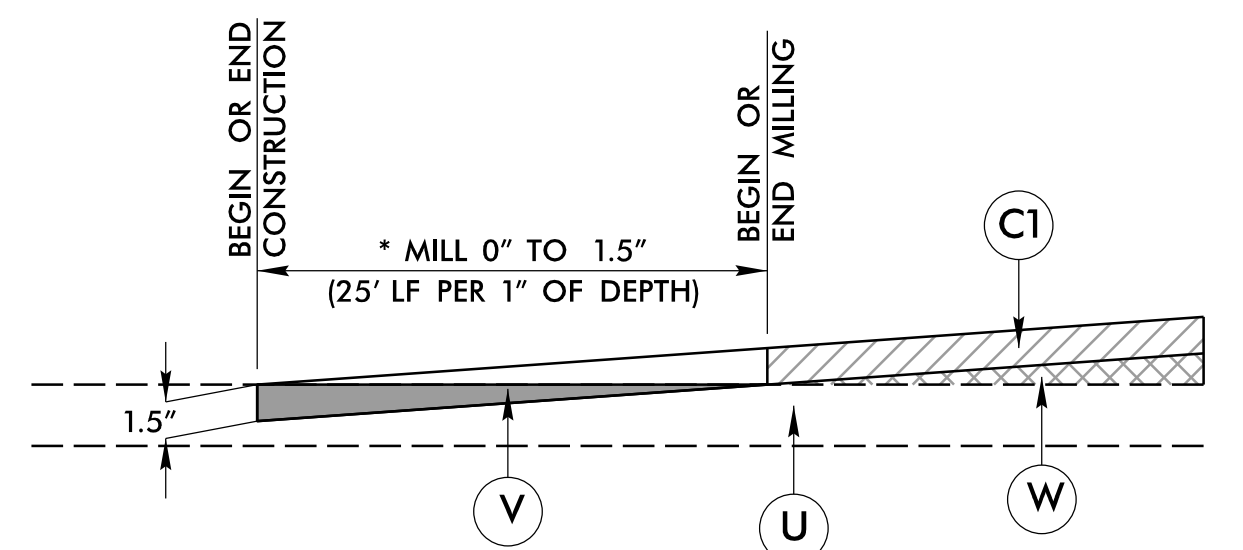
8/17/99

PAVEMENT SCHEDULE FINAL DESIGN	
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH.
R1	SHOULDER BERM GUTTER.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V	INCIDENTAL MILLING.
W	WEDGING DETAIL.

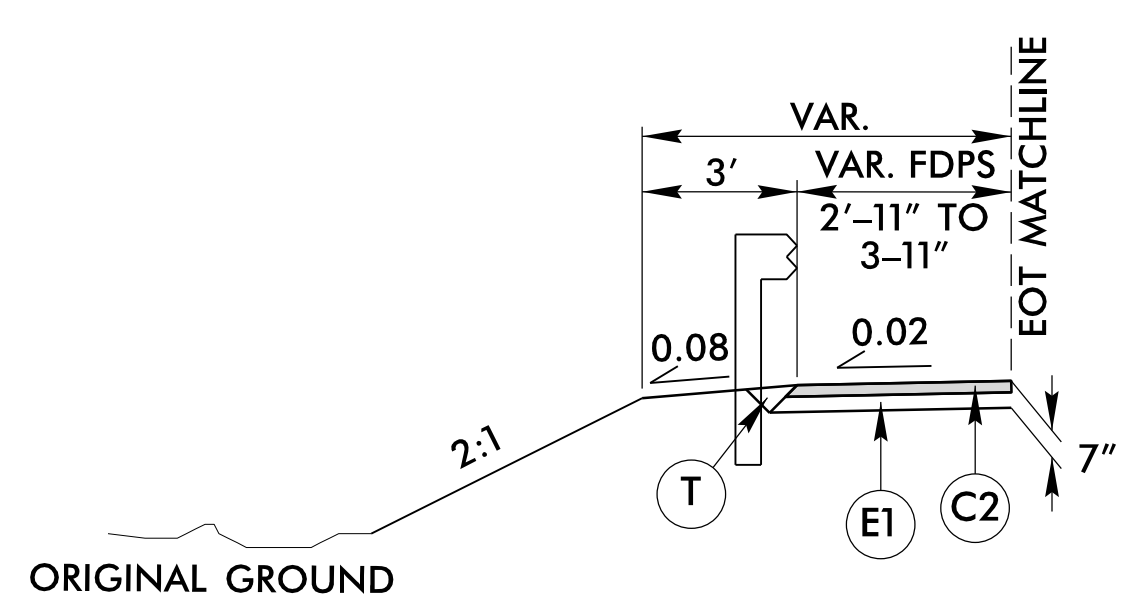
ALL PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE NOTED.



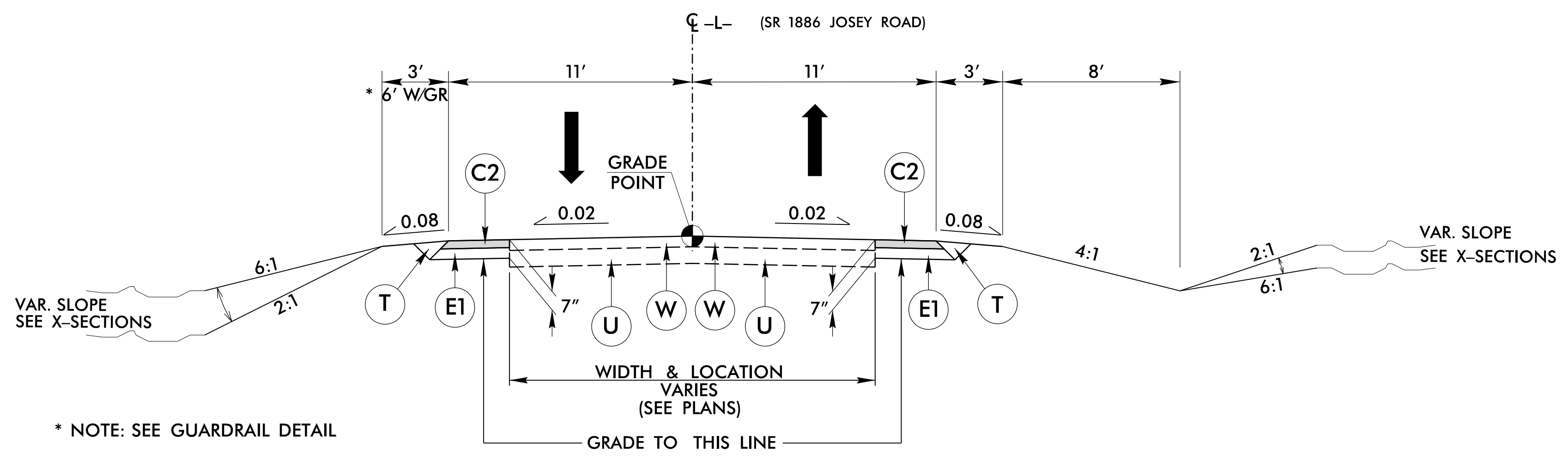
Detail Showing Method of Wedging



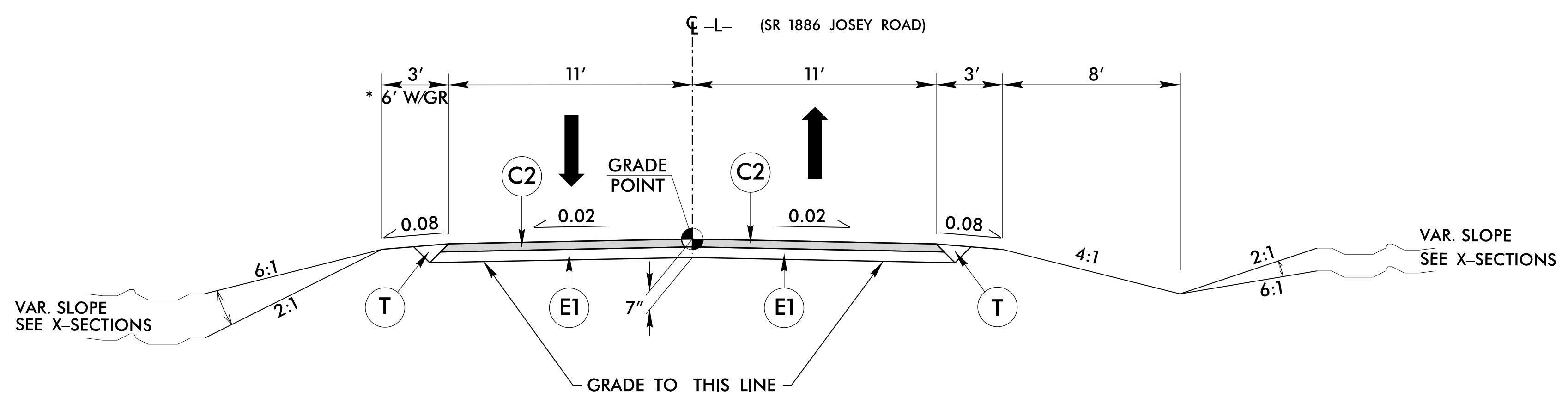
PAVEMENT MILLING DETAIL KEY-IN (TIE-IN)



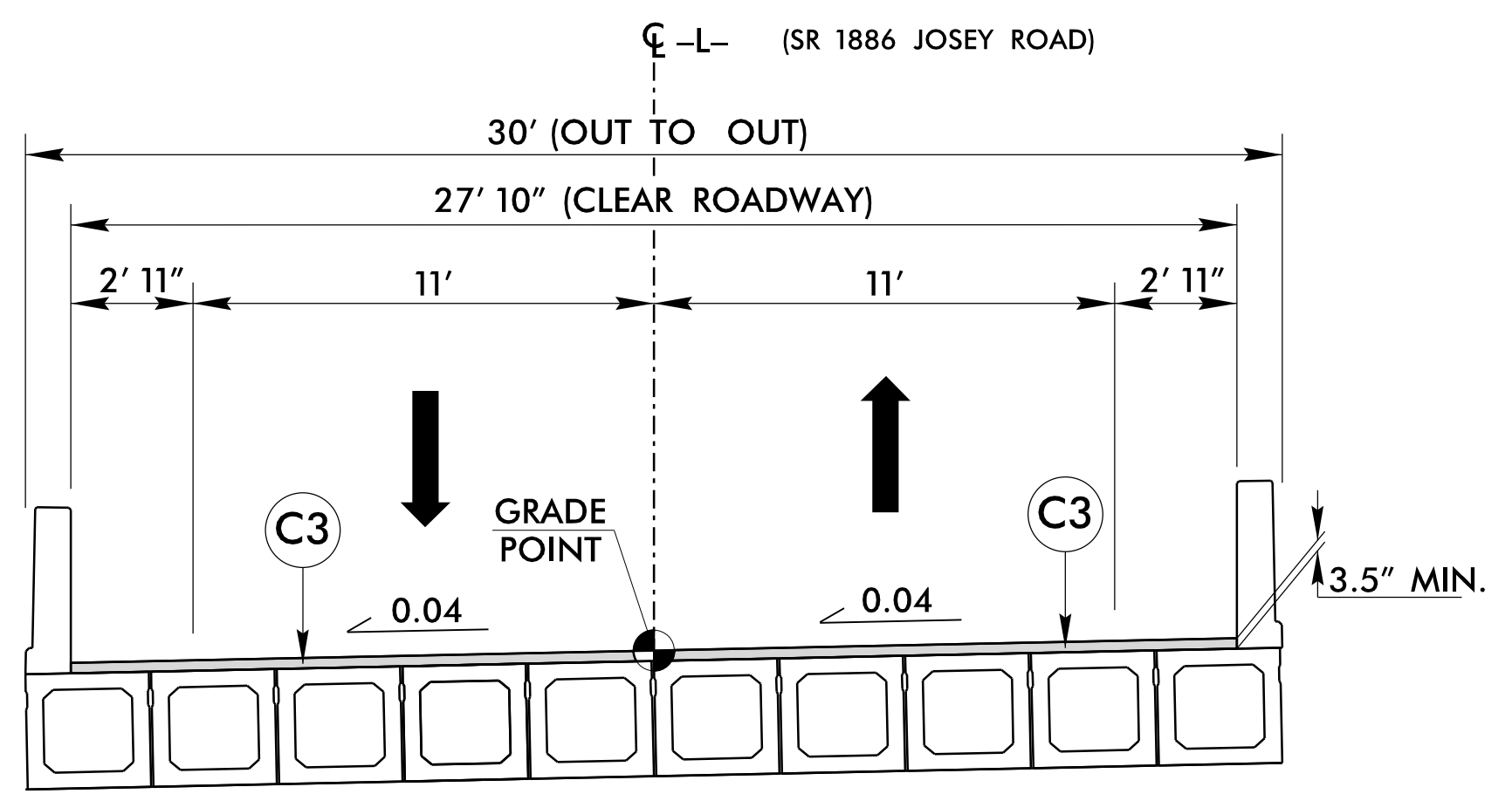
GUARDRAIL DETAIL



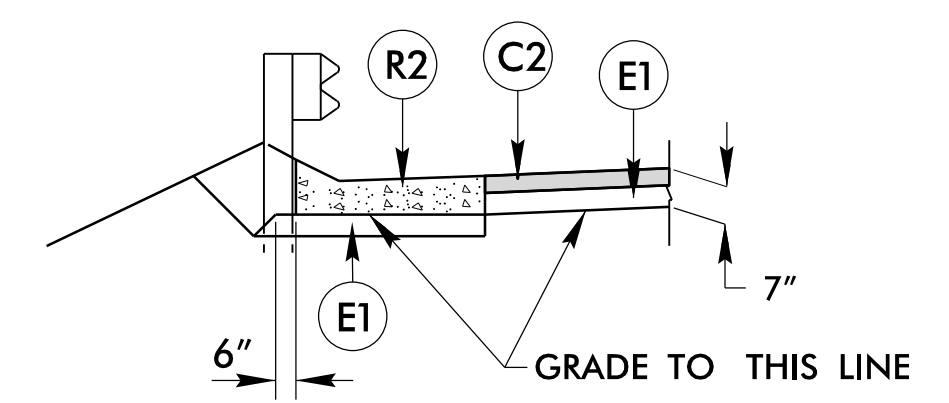
ROADWAY TYPICAL SECTION 1  
-L- STA 10+05.00 TO 10+80.00  
-L- STA 16+10.00 TO 16+85.00



ROADWAY TYPICAL SECTION 2  
-L- STA 10+80.00 TO 12+93.63 (BEG. BR.)  
-L- STA 13+96.38 (END BR.) TO 16+10.00



TYPICAL SECTION ON STRUCTURE  
39" BOX BEAM  
-L- STA 12+93.63 (BEG. BR.) TO 13+96.38 (END BR.)



DETAIL SHOWING SHOULDER BERM GUTTER (SBG)  
ON TOP OF SUBGRADE  
-L- STA 12+61.00 TO 12+82.99 (BEG APPR. SLAB) LT  
-L- STA 14+07.02 (END APPR. SLAB) TO 14+52.00 LT

PROJECT REFERENCE NO. BPI2.R014	SHEET NO. 2A-1
RW SHEET NO.	
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 034375 BARRY C. SMITH December 15, 2024	PAVEMENT DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 044590 ANDREW D. WARD December 15, 2024
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
KCI ASSOCIATES OF N.C., P.A. 4505 Falls of Nense Road, Suite 400 Raleigh, NC 27609-6270 Phone (919) 783-0214 NC Firm License No: C-0764	

REVISIONS

05-FEB-2024 08:34  
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221\Roadway\Proj\BPI2.R014\_Bridge 221\Roadway\Proj\BPI2.R014\_Rdwy\_tup.dgn





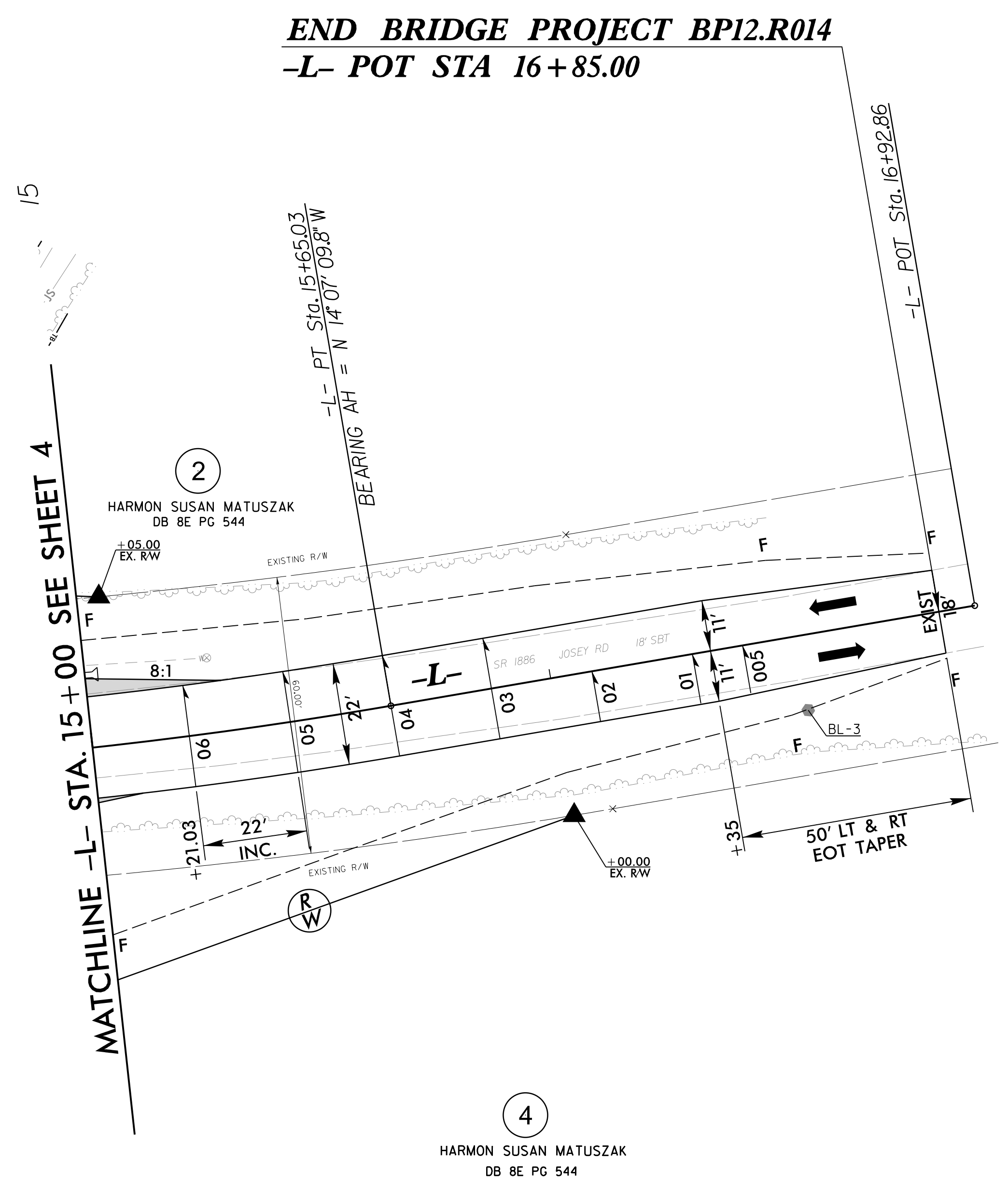




8/17/99

REVISIONS

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221\Roadway\Proj\BP12.R014\_Rdwy\_psh\_05.dgn





**END BRIDGE PROJECT BP12.R014**  
**-L- POT STA 16+85.00**

4  
 HARMON SUSAN MATUSZAK  
 DB BE PG 544

-L-
PI Sta 14+75.23
$\Delta = 9^{\circ} 43' 52.8''$ (LT)
$D = 5' 24' 18.9''$
$L = 180.03'$
$T = 90.23'$
$R = 1,060.00'$
SE = 0.06
RO = SEE PLANS
DS = 55mph



PROJECT REFERENCE NO. <i>BP12.R014</i>	SHEET NO. 5
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 034375 BARRY C. SMITH DocuSign Barry Smith/15/2024	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 26971 JOHN G. DALTON DocuSign John G Dalton/2024
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	
 KCI ASSOCIATES OF N.C., P.A. 4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-6370 Phone (919) 783-9214 NC Firm License No. C-0764	
 SUNGATE DESIGN GROUP, P.A. 905 JONES FRANKLIN ROAD RALEIGH, NORTH CAROLINA 27608 TEL (919) 859-2243 ENG PRM LICENSE NO. C-489	





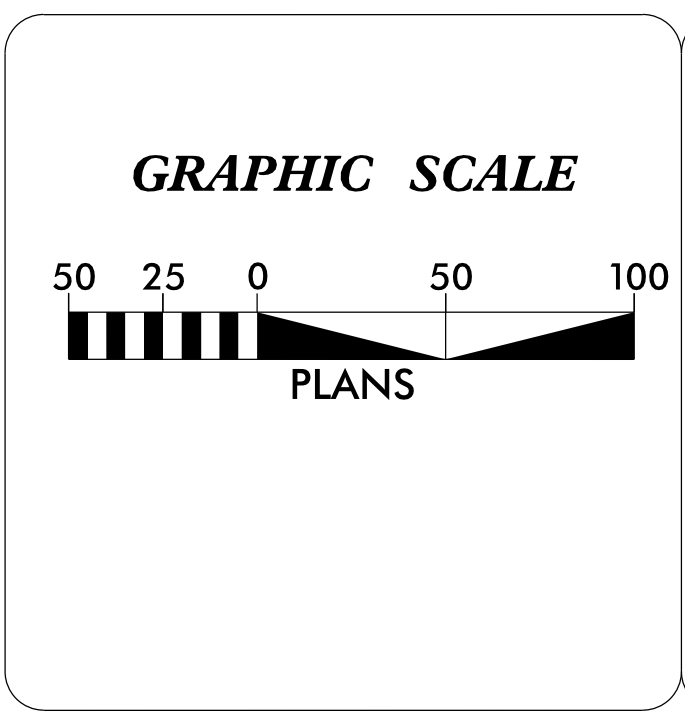
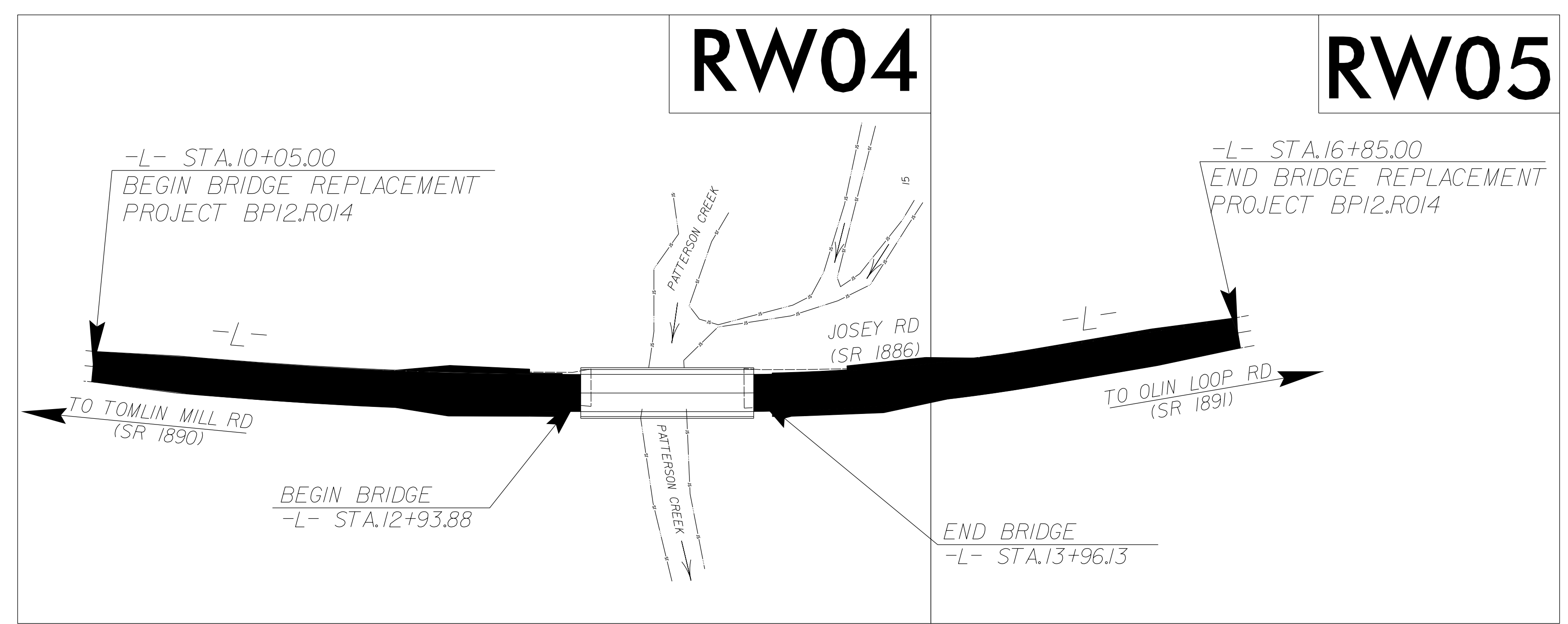
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP12.R014	RW01	05

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

SURVEY CONTROL, EXISTING CENTERLINES,  
RIGHT OF WAY, EASEMENTS AND PROPERTY TIES

**IREDELL COUNTY**

**TIP PROJECT: BP12.R014**



**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "BL-3" WITH NAD 83/NSRS 2011 STATE PLANE GRID COORDINATES OF NORTHING: 798,570.614(ft) EASTING: 1,453,275.755(ft) ELEVATION: 812.08(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9999089342

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BL-3" TO -L- STATION 10+05.00 IS S 04-33'22" E 396.50(ft)

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

Prepared in the Office of:

**DRMP**  
DRMP NC, INC.  
NC License No: C-4923  
4235 South Stream Blvd, Suite 150  
Charlotte, NC 28217  
PHONE: (833) 811 3767

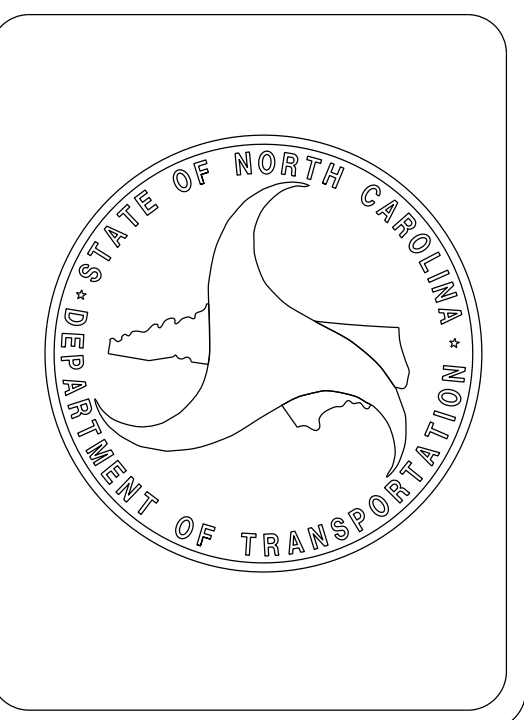
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2018 STANDARD SPECIFICATIONS

**RIGHT OF WAY DATE:** \_\_\_\_\_ **LETTING DATE:** 01/09/2024

**PROFESSIONAL LAND SURVEYOR**

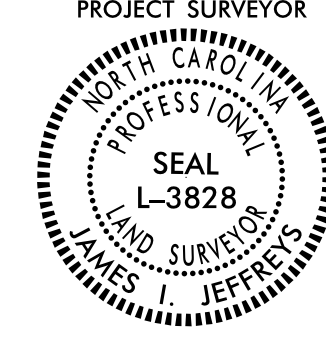
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91FF97CDED8946E... 7/27/2023  
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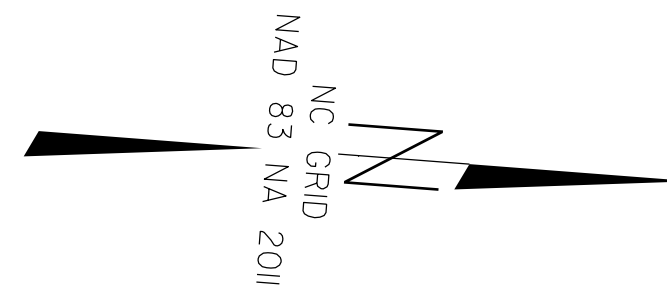
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# SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO. BP12.R014	SHEET NO. RW02C-1
<b>Location and Surveys</b>	
LOCATION & SURVEYS UNIT SHELBY FIELD OFFICE	
PROJECT SURVEYOR 	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	


BL	POINT	DESC.	NORTH	EAST	ELEVATION
1		BL-1	797992.3670	1453340.8220	814.86
2		BL-2	798318.9769	1453292.5017	806.99
3		BL-3	798570.6138	1453275.7548	812.08



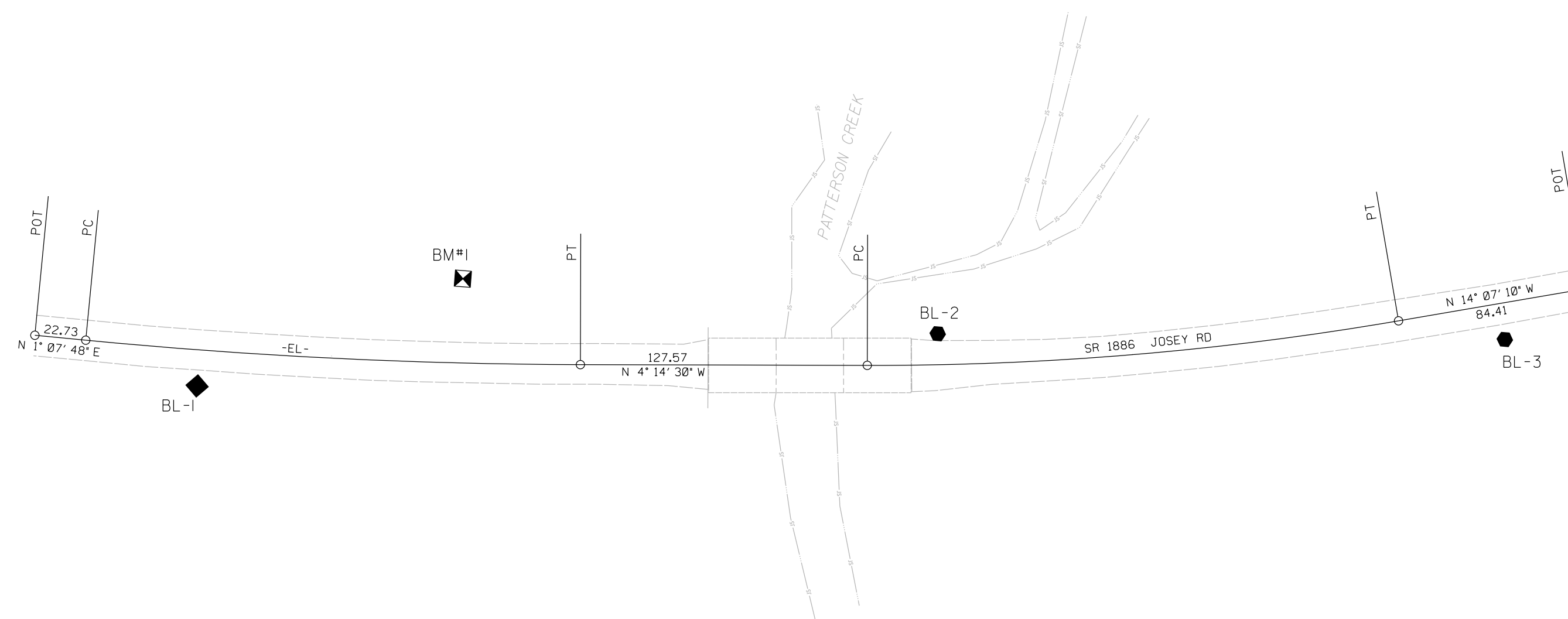
.....  
 BM1 ELEVATION = 809.54  
 N 798107 E 1453284  
 BENCH TIE SET IN 30' HICKORY  
 .....

I, James I. Jeffreys, PE PLS, certify that information shown on this page was provided to NCDOT by McKim & Creed, supervised by Jeffrey D. Aker, PLS, on August 8, 2017.

This day 08/02/2023

DocuSigned by:  
  
 A43045A207AEACA

James I. Jeffreys, PE PLS  
 Professional Land Surveyor L-3828



EL POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	797918.727	1453323.900							
LINE			N 01°07'48.0" E	22.73					
PC	797941.454	1453324.349							
CURVE			N 01°33'21.1" W	220.23	05°22'18.3"(L.T)	02°26'17.9"	220.31	110.23	2349.82
PT	798161.598	1453318.369							
LINE			N 04°14'30.3" W	127.57					
PC	798288.815	1453308.934							
CURVE			N 09°10'50.0" W	237.07	09°52'39.5"(L.T)	04°09'40.9"	237.37	118.98	1376.86
PT	798522.851	1453271.110							
LINE			N 14°07'09.8" W	84.41					
POT	798604.710	1453250.519							


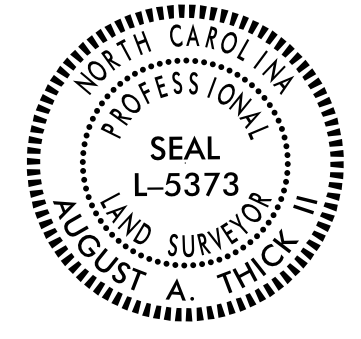
**NOTES:**

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

REVISIONS



# PROPOSED ALIGNMENT CONTROL SHEET

PROJECT REFERENCE NO. BP12.R014	SHEET NO. RW02D-1
<b>Location and Surveys</b>	
	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

I, August A. Thick, PLS, certify that the data compiled came from available surveys/mapping performed by others and provided to me by NCDOT and do not certify to the accuracy or quality of the individual data sources.

This 30th day of June, 2023.

DocuSigned by:  
  
Professional Land Surveyor L-5373

REVISIONS



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TYPE	STATION	NORTH	EAST
POT	10+00.00	797918.7270	1453323.9004
PC	10+32.82	797951.5433	1453324.5477
PT	13+03.45	798221.9561	1453316.8572
PC	13+85.00	798303.2632	1453310.6180
PT	15+65.03	798480.7409	1453281.7021
POT	16+92.86	798604.7101	1453250.5186

### NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE PROPOSED ALIGNMENT CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

# RIGHT OF WAY CONTROL SHEET

PROJECT REFERENCE NO. BP12.R014	SHEET NO. RW03E-1
Location and Surveys	
	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

I, August A. Thick, certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed from June 19 2023 to June 23 2023, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 27th day of July, 2023.



Professional Land Surveyor L-5373

### ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
L	11+00.00	29.53	798018.8406	1453354.6032
L	11+40.00	-30.88	798058.1453	1453293.7387
L	11+50.00	60.00	798070.0306	1453384.4011
L	12+10.00	-55.00	798126.2965	1453267.5083
L	12+40.00	-55.00	798155.6744	1453266.0774
L	12+60.00	-46.00	798175.8001	1453273.9325
L	14+90.00	53.00	798416.6526	1453349.6002
L	15+05.00	-32.19	798416.0684	1453263.0786
L	16+00.00	29.97	798521.9668	1453302.2404

REVISIONS

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#### NOTES:



1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED JUNE 2023.

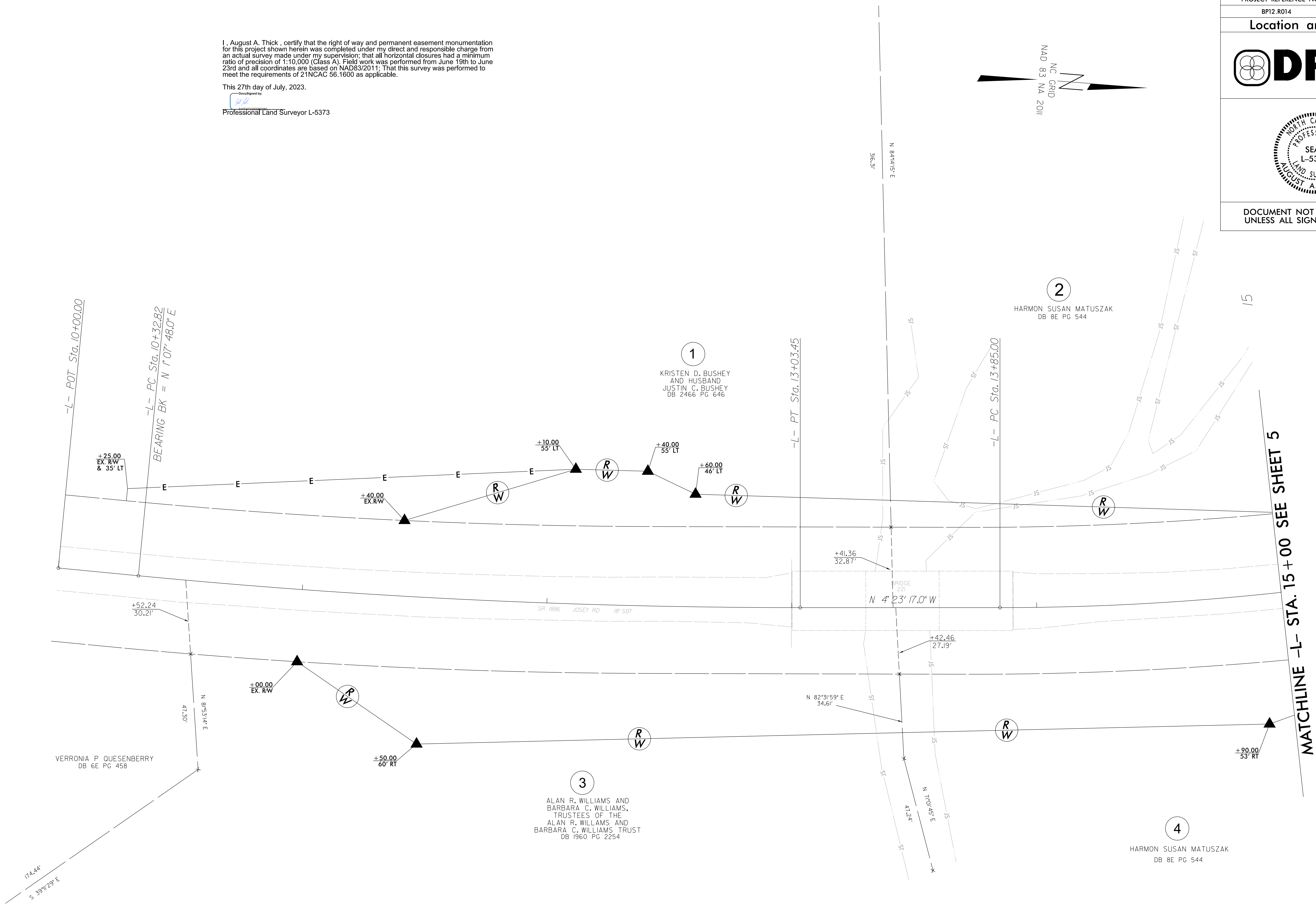
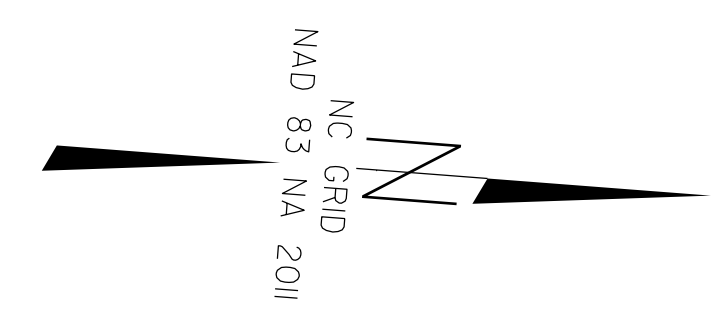


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I, August A. Thick, certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed from June 19th to June 23rd and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 27th day of July, 2023.  
August A. Thick  
Professional Land Surveyor L-5373

PROJECT REFERENCE NO. BPI2.R014	SHEET NO. RW04
<b>Location and Surveys</b>	
	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



REVISIONS

-L-	
PI Sta 11+68.24 Δ = 5° 31' 05.0" (LT) D = 2' 02' 20.4" L = 270.63' T = 135.42' R = 2,810.00' SE = 0.04 RO = SEE PLANS DS = 55mph	PI Sta 14+75.23 Δ = 9° 43' 52.8" (LT) D = 5° 24' 18.9" L = 180.03' T = 90.23' R = 1,060.00' SE = 0.06 RO = SEE PLANS DS = 55mph

**NOTES:**

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED JUNE 2023.

MATCHLINE -L- STA. 15 + 00 SEE SHEET 5

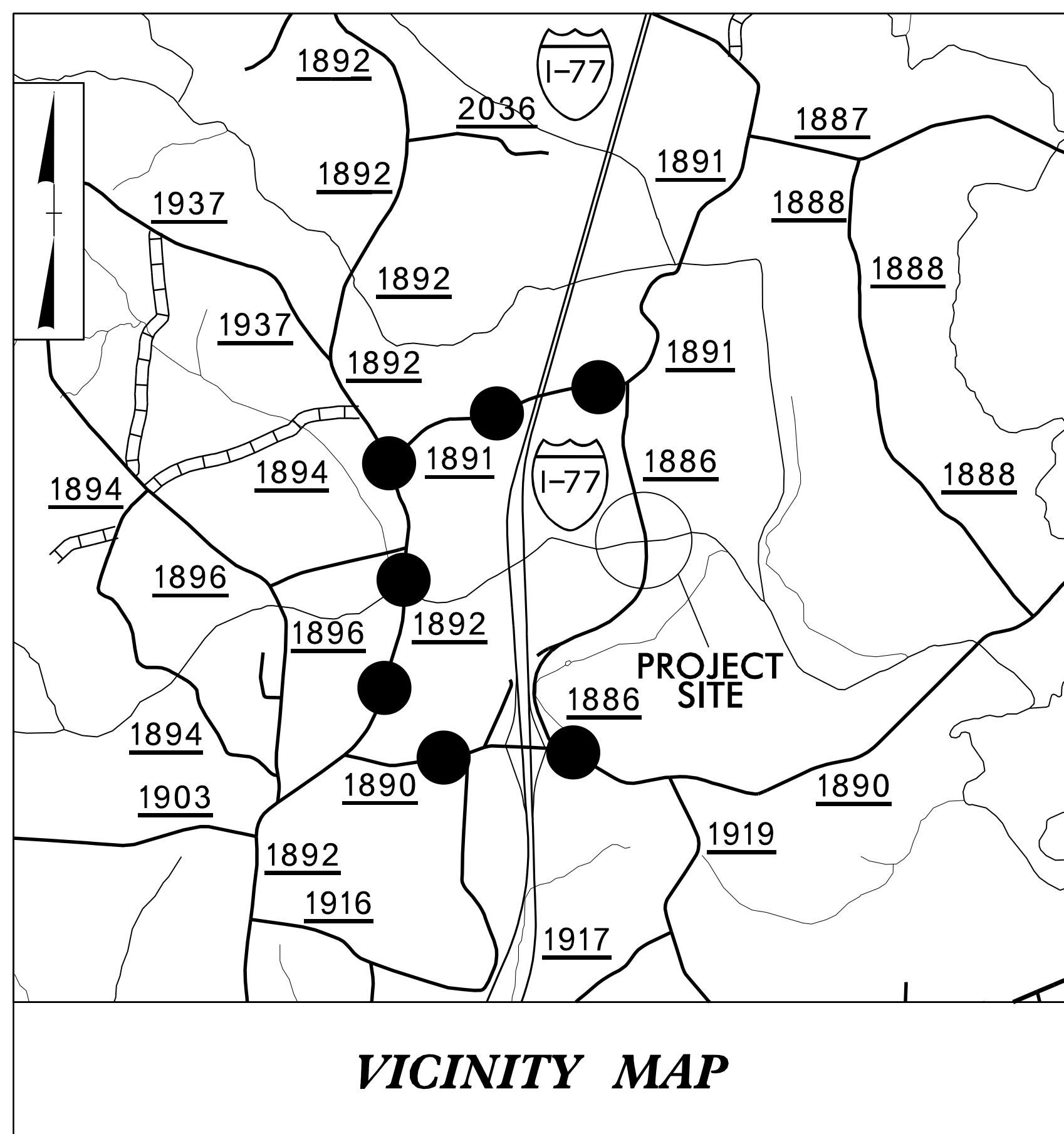
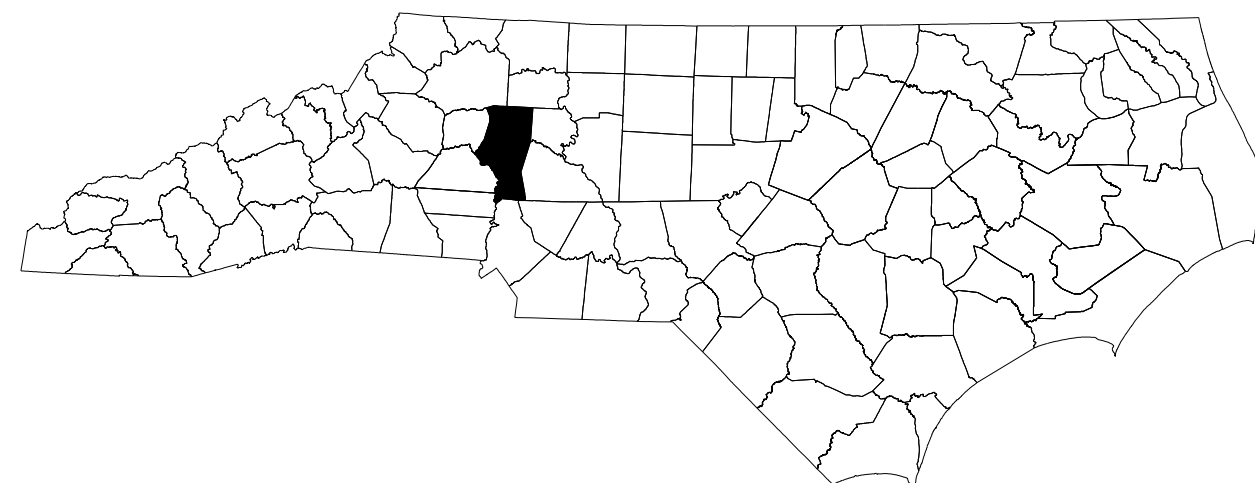




STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**TRANSPORTATION MANAGEMENT PLAN**

**IREDELL COUNTY**



●—●—● OFFSITE DETOUR ROUTE

**LOCATION: REPLACE BRIDGE NO. 221  
OVER PATTERSON CREEK  
ON SR 1886 (JOSEY RD.)**

**INDEX OF SHEETS**

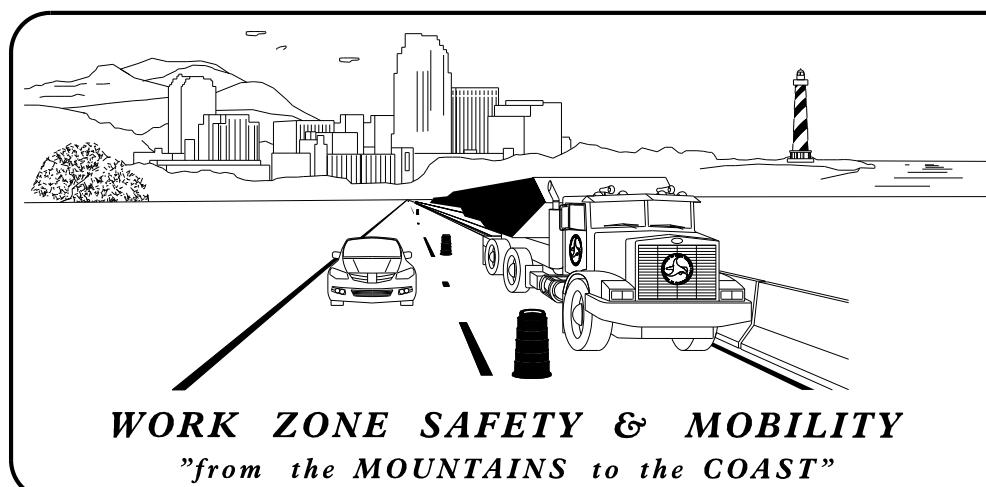
<u>SHEET NO.</u>	<u>TITLE</u>
TMP-1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS AND LEGEND
TMP-1B	TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES, GENERAL NOTES, LOCAL NOTES, AND TEMPORARY TRAFFIC CONTROL PHASING)
TMP-2	SPECIAL SIGN DESIGN
TMP-3	OFFSITE DETOUR
TMP-4	OFFSITE DETOUR (INSET A)

SHEET NO.  
TMP-1

**CONTRACT: DL00334**

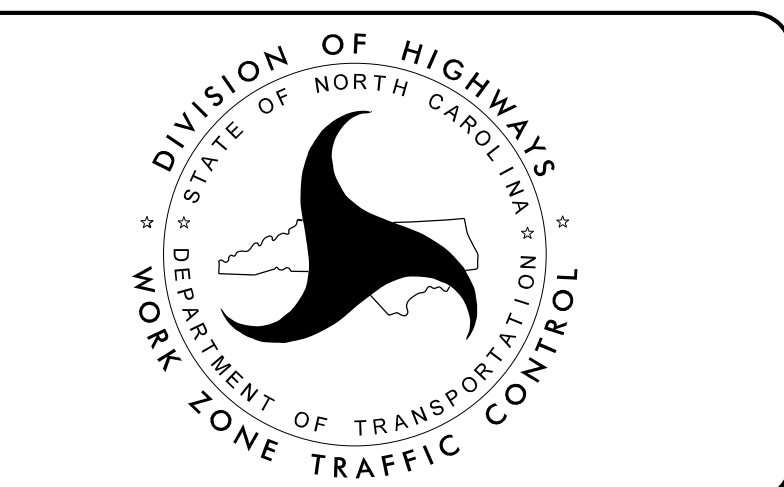
**PROJECT: BPI2.R014**

**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**



**N.C.D.O.T. WORK ZONE TRAFFIC CONTROL**  
1561 MAIL SERVICE CENTER (MSC) RALEIGH, NC 27699-1561  
750 N. GREENFIELD PARKWAY, GARNER, NC 27529 (DELIVERY)  
PHONE: (919) 773-2800 FAX: (919) 771-2745

J.E. HUMMER, P.E.	STATE TRAFFIC MANAGEMENT ENGINEER
ZACHARY CLARK, P.E.	TRAFFIC CONTROL PROJECT ENGINEER
KARMEN DAIS	TRAFFIC CONTROL PROJECT DESIGN ENGINEER
HABIB A. LAWANDOS	TRAFFIC CONTROL DESIGN ENGINEER



**KCI** ASSOCIATES OF N.C., P.A.  
4505 Falls of Neuse Road, Suite 400  
Raleigh, NC 27609  
Phone (919) 783-9214  
NC Firm License No: C-0764

APPROVED: Barry Smith  
DATE: 4/22/2024

SEAL

22-APR-2024 08:28  
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# ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2024 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1115.01	FLASHING ARROW BOARDS
1130.01	DRUM
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1160.01	TEMPORARY CRASH CUSHION
1165.01	WORK VEHICLE LIGHTING SYSTEMS AND TMA DELINEATION
1170.01	POSITIVE PROTECTION
1180.01	SKINNY-DRUM
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION
1264.01	OBJECT MARKERS - TYPES
1264.02	OBJECT MARKERS - INSTALLATION

# LEGEND

## GENERAL

- DIRECTION OF TRAFFIC FLOW
- DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- TEMP. SHORING (LOCATION PURPOSES ONLY)

- WORK AREA
- REMOVAL
- USER DEFINED (IF NEEDED)
- USER DEFINED (IF NEEDED)

## SIGNALS

- EXISTING
- PROPOSED
- TEMPORARY

## PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

## TRAFFIC CONTROL DEVICES

- BARRICADE (TYPE III)
- CONE
- DRUM SKINNY DRUM TUBULAR MARKER
- TEMPORARY CRASH CUSHION
- FLASHING ARROW BOARD
- FLAGGER
- LAW ENFORCEMENT
- TRUCK MOUNTED ATTENUATOR (TMA)
- CHANGEABLE MESSAGE SIGN

## TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

## PAVEMENT MARKERS

- CRYSTAL/CRYSTAL
- CRYSTAL/RED
- YELLOW/YELLOW

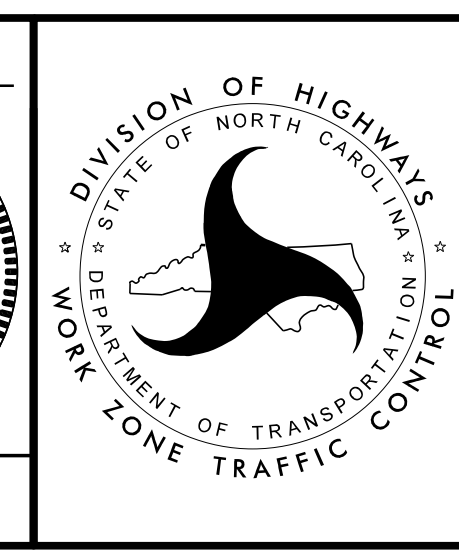
## PAVEMENT MARKING SYMBOLS

- PAVEMENT MARKING SYMBOLS

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\$\$\$\$\$USERNAME\$\$\$\$\$

KCI ASSOCIATES OF N.C., P.A.  
4505 Falls of Neuse Road, Suite 400  
Raleigh, NC 27609-6270  
Phone: (919) 783-9214  
NC Firm License No: C-0764

APPROVED: Barry Smith  
DATE: 2/8/2024  
SEAL



ROADWAY STANDARD DRAWINGS & LEGEND

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



PROJ. REFERENCE NO.	SHEET NO.
BP12.R014	TMP-1B

### MANAGEMENT STRATEGIES

1. CLOSE SR 1886 (JOSEY ROAD) AND DETOUR TRAFFIC OFF-SITE VIA SR 1890, SR 1892, SR 1891 AND SR 1886.
2. LOCAL ACCESS TO ALL RESIDENCES AND BUSINESSES WILL BE MAINTAINED BETWEEN CLOSURE POINTS AT ALL TIMES DURING CONSTRUCTION.

### GENERAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS, AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS OR RESULT IN DUPLICATE OR UNDESIRED OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER.

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT EXCEPT WHEN OTHERWISE NOTED IN THE PLAN OR DIRECTED BY THE ENGINEER.

#### TRAFFIC PATTERN ALTERATIONS

- A) NOTIFY THE ENGINEER, COUNTY EMS, AND COUNTY SCHOOL OFFICIALS THIRTY (30) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.
- B) NOTIFY THE ENGINEER FIFTEEN (15) DAYS PRIOR TO INSTALLATION OF A LANE CLOSURE AND SUBMIT DETAILS FOR APPROVAL BY THE ENGINEER.
- C) AS APPROVED BY THE ENGINEER, LANE CLOSURES WILL BE ALLOWED FOR GEOTECHNICAL BORINGS AND THE RELOCATION OF UTILITIES PRIOR TO THE ROAD CLOSURE.

#### SIGNING

- D) INSTALL ADVANCE WARNING SIGNS PRIOR TO BEGINNING CONSTRUCTION.
- E) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC MANAGEMENT PLANS.

PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRAFFIC MANAGEMENT PLANS.

- F) COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE IS NOT IN OPERATION.

COVER OR REMOVE ALL SIGNS REQUIRED FOR THE OFF-SITE DETOUR WHEN THE DETOUR IS NOT IN OPERATION.

- G) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

#### TRAFFIC CONTROL DEVICES

- H) PLACE TYPE III BARRICADES WITH "ROAD CLOSED" SIGN R11-2 ATTACHED OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

#### PAVEMENT MARKINGS AND MARKERS

- I) INSTALL PAVEMENT MARKINGS ON THE FINAL SURFACE AS SHOWN IN THE FINAL PAVEMENT MARKING PLANS.
- J) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

### PHASING

NOTE: BEFORE BEGINNING CONSTRUCTION THE CONTRACTOR SHALL PLACE ADVANCE WORK ZONE WARNING SIGNS ALONG JOSEY RD., (SEE RSD 1101.01, SHEET 3 OF 3)

- STEP 1) USING ROADWAY STD. DRAWING 1101.03, SHEET 1 OF 9, CLOSE JOSEY ROAD (SR 1886) AND DETOUR TRAFFIC OFF-SITE AS SHOWN ON TMP-3.
- STEP 2) REMOVE THE EXISTING STRUCTURE.
- STEP 3) CONSTRUCT THE PROPOSED STRUCTURE AND ROADWAY.
- STEP 4) PLACE FINAL PAVEMENT MARKINGS ACCORDING TO THE FINAL PAVEMENT MARKING PLANS.
- STEP 5) REMOVE ALL WORK ZONE TRAFFIC CONTROL DEVICES AND SIGNING. OPEN JOSEY ROAD (SR 1886) AND PLACE TRAFFIC INTO THE FINAL PATTERN.

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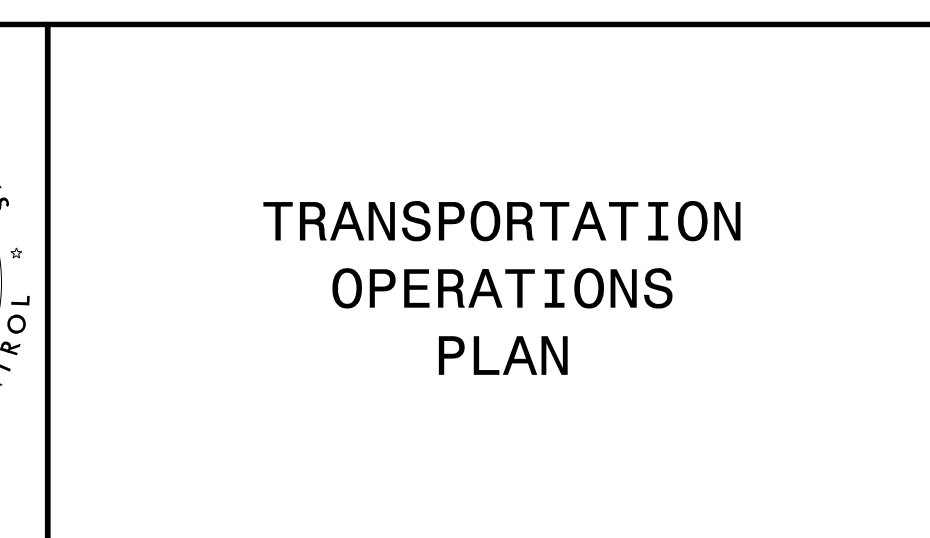
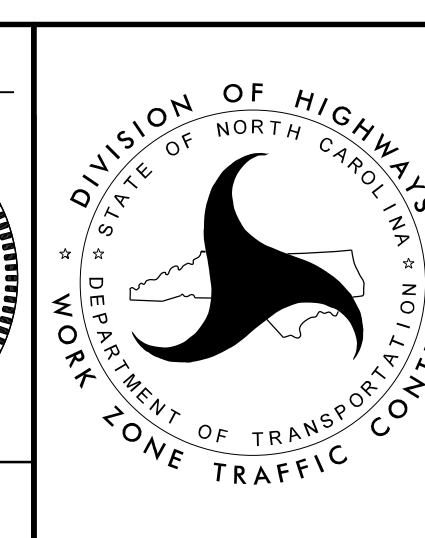


DocuSigned by:  
**Barry Smith**  
 802404408676400

APPROVED: \_\_\_\_\_  
 DATE: 2/8/2024

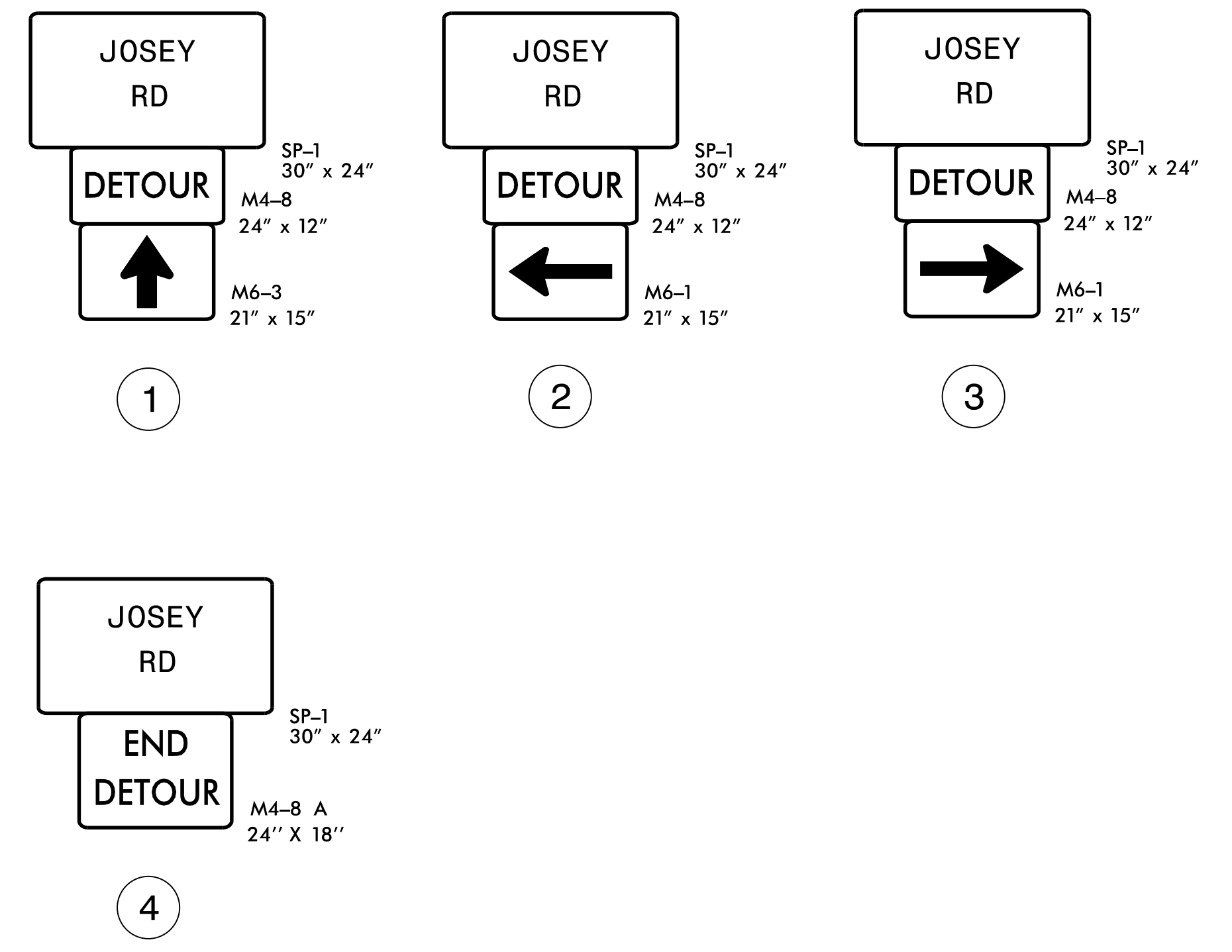
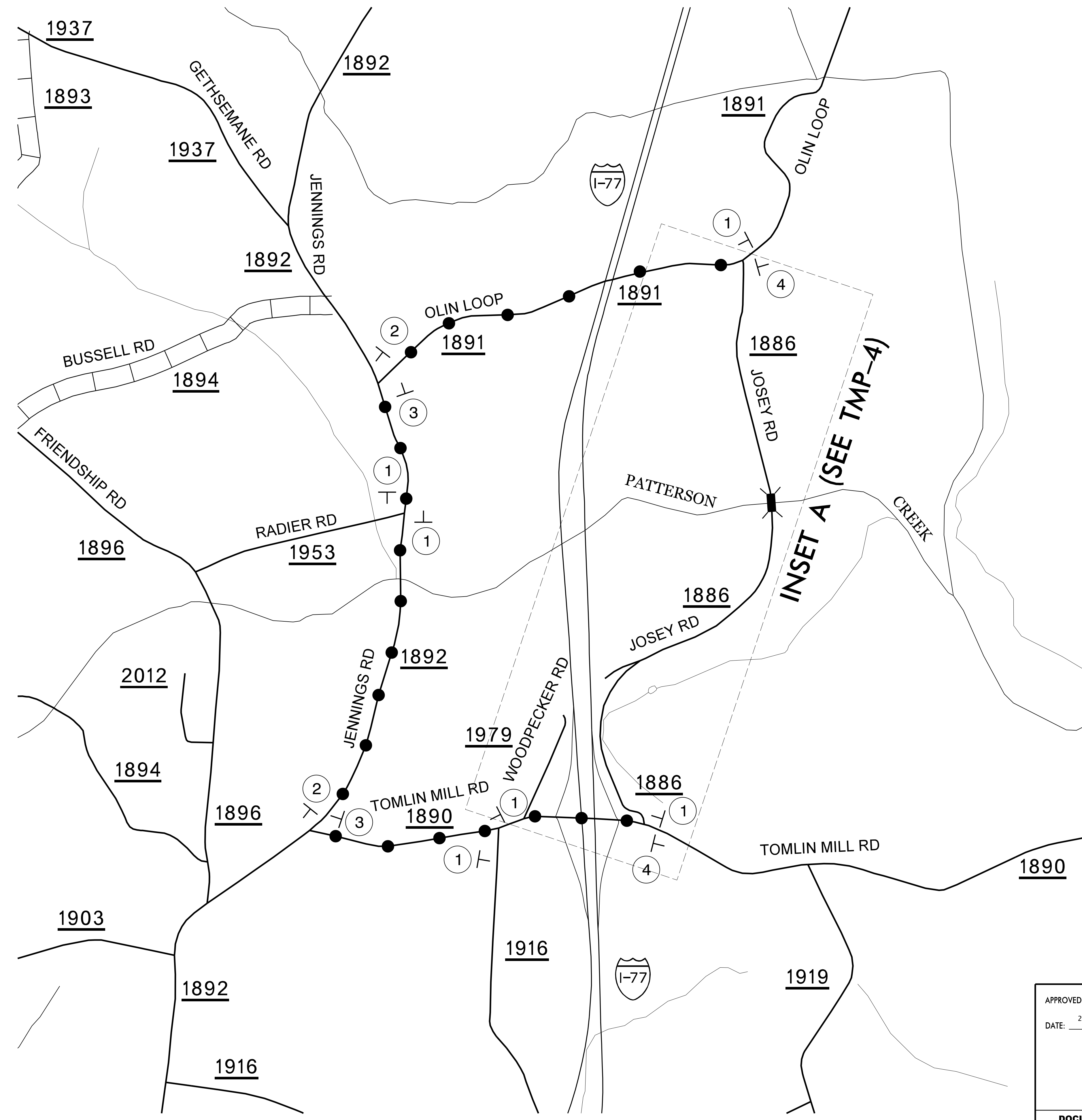
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 UNLESS ALL SIGNATURES COMPLETED**





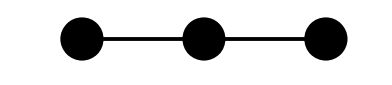




**NOTES:**

1. REFER TO ROADWAY STANDARD DRAWING 1101.03, SHEET 1 OF 9 FOR APPLICABLE NOTES.
2. ALL SIGN SPACING DIMENSIONS ARE APPROXIMATE. FIELD ADJUST AS NECESSARY OR AS DIRECTED BY THE ENGINEER.
3. SEE SHEET TMP-2 FOR THE SPECIAL SIGN DESIGN
4. ALL DETOUR SIGN LOCATIONS ARE APPROXIMATE.

DETOUR ROUTE

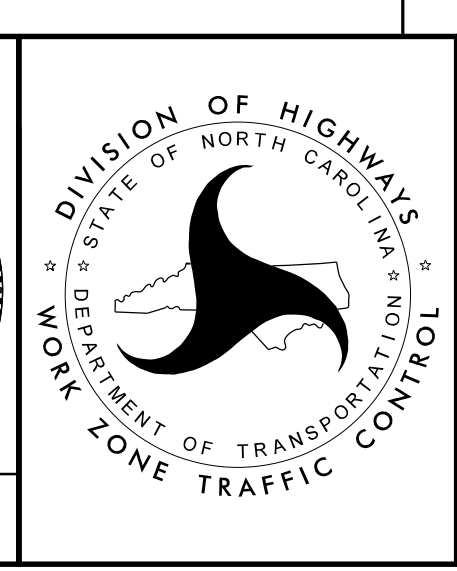


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APPROVED: *Barry Smith*  
 DATE: 2/8/2024

SEAL

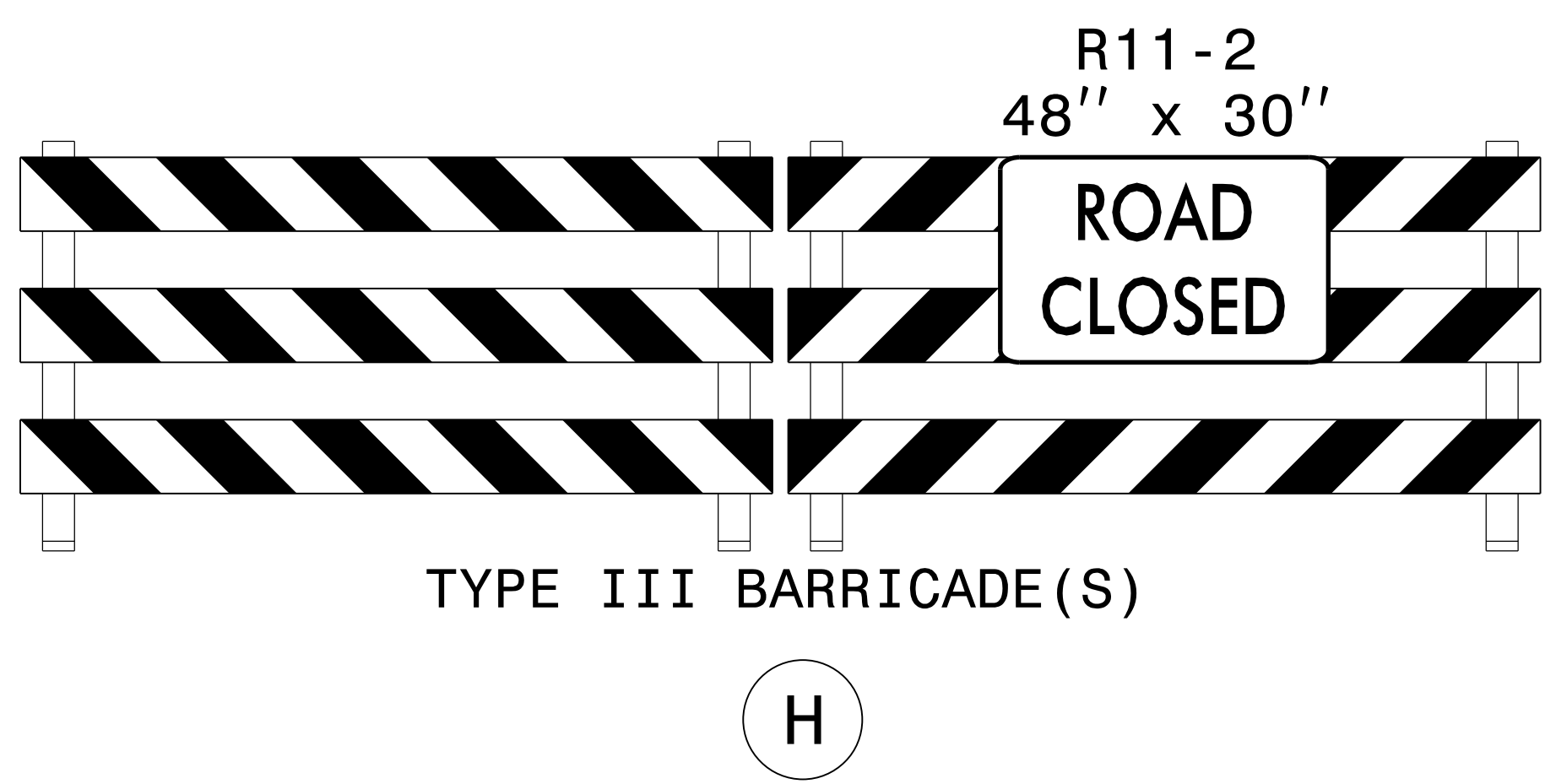
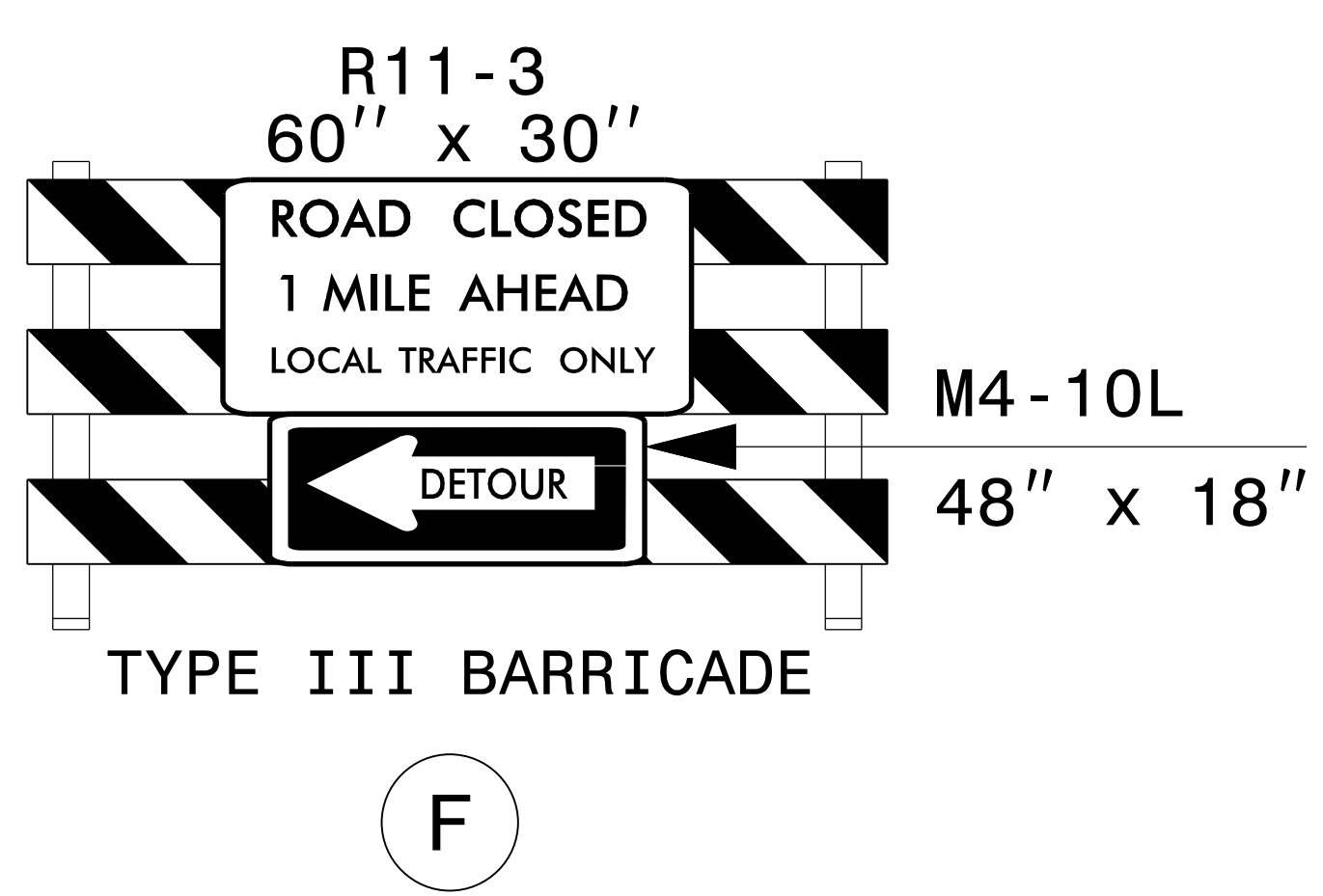
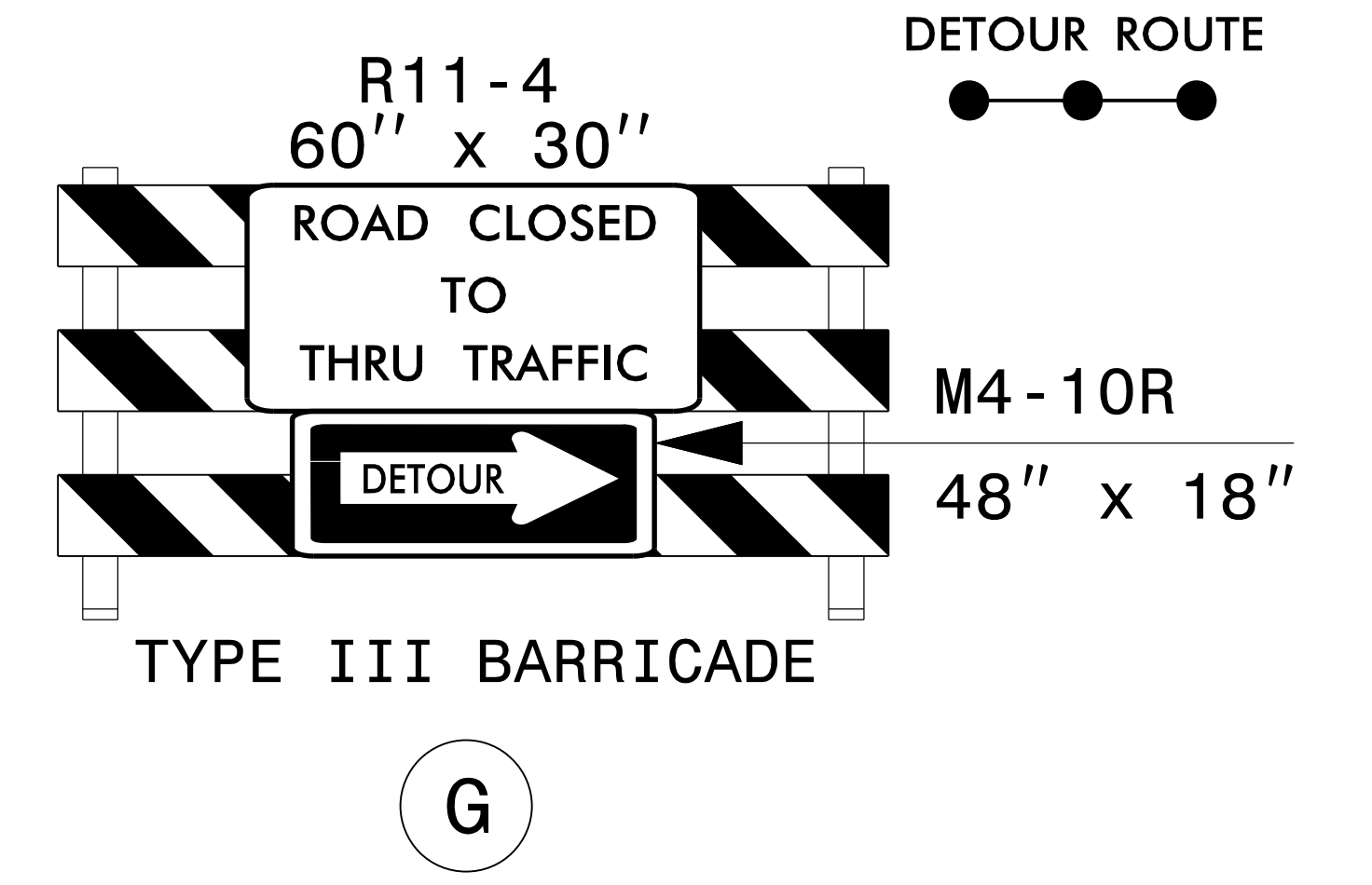
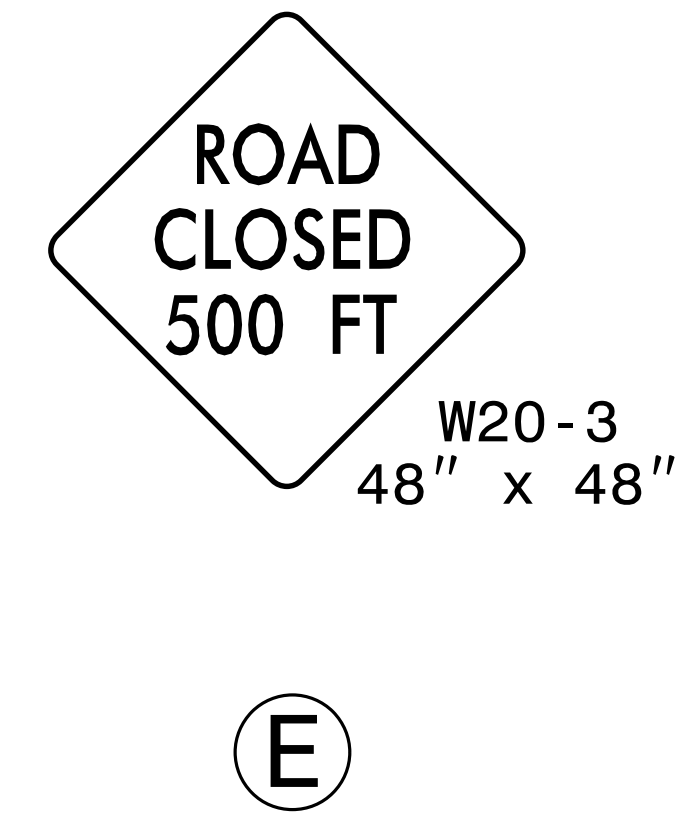
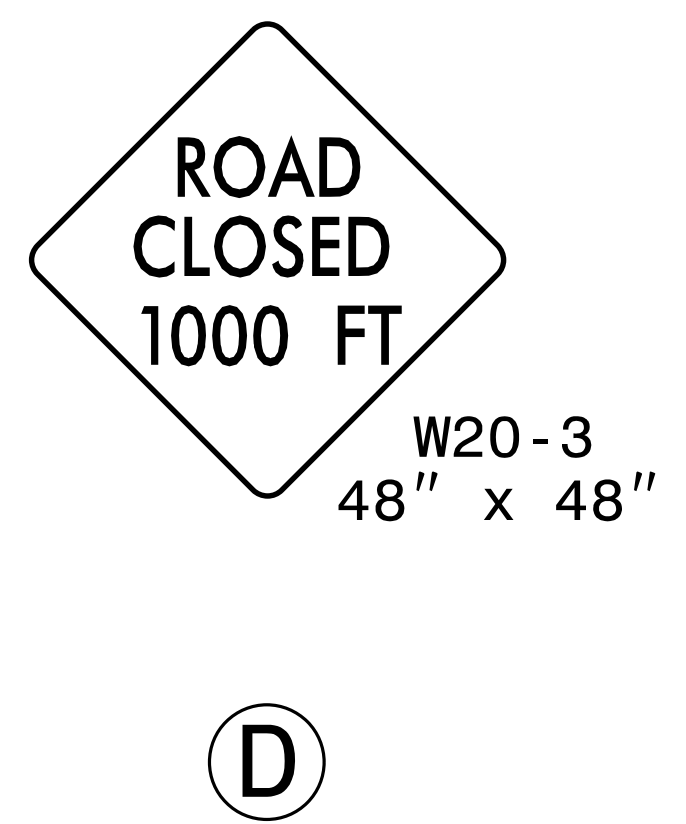
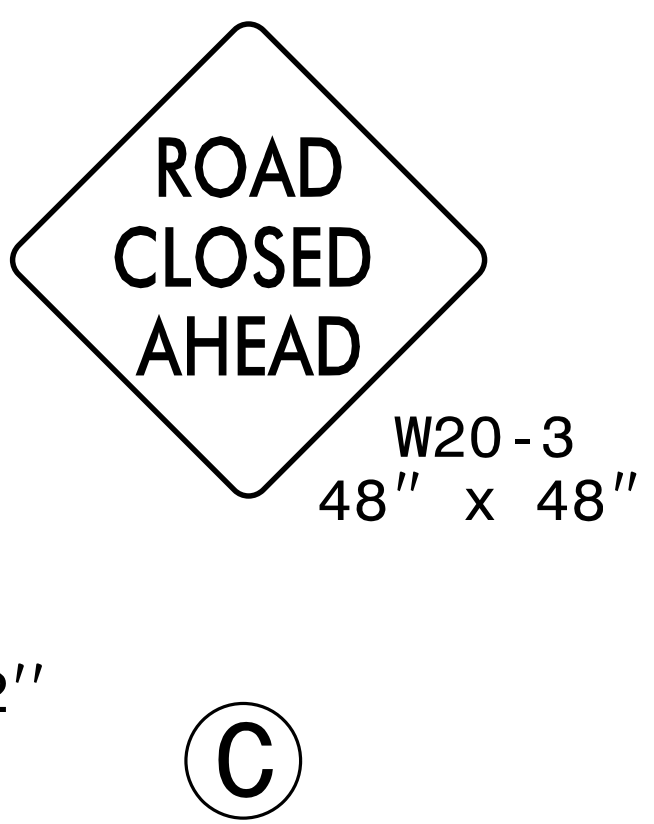
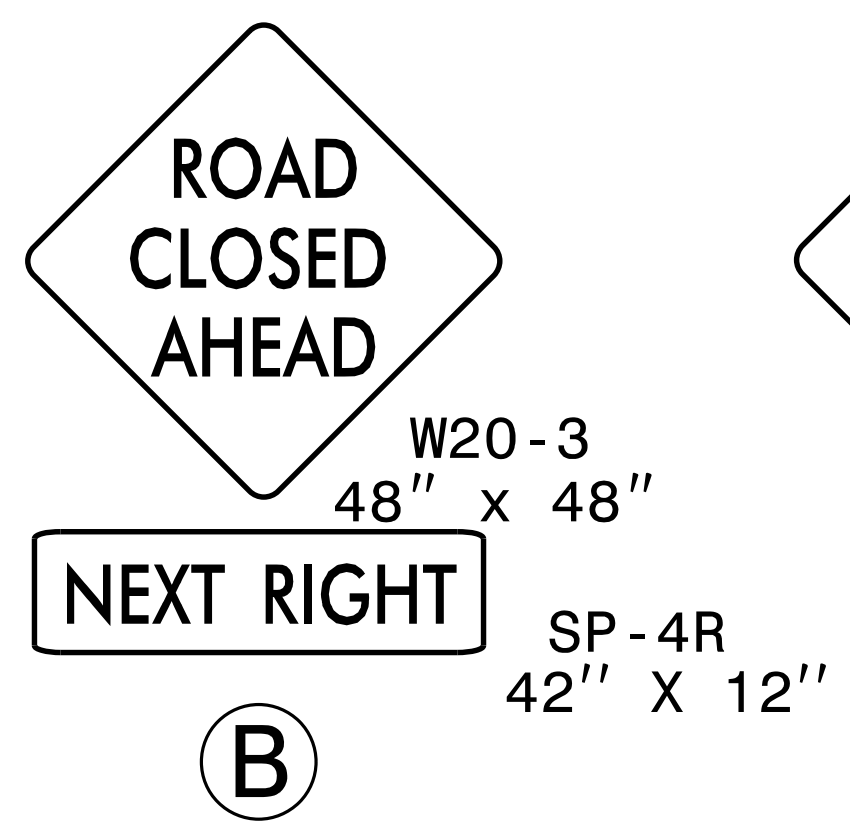
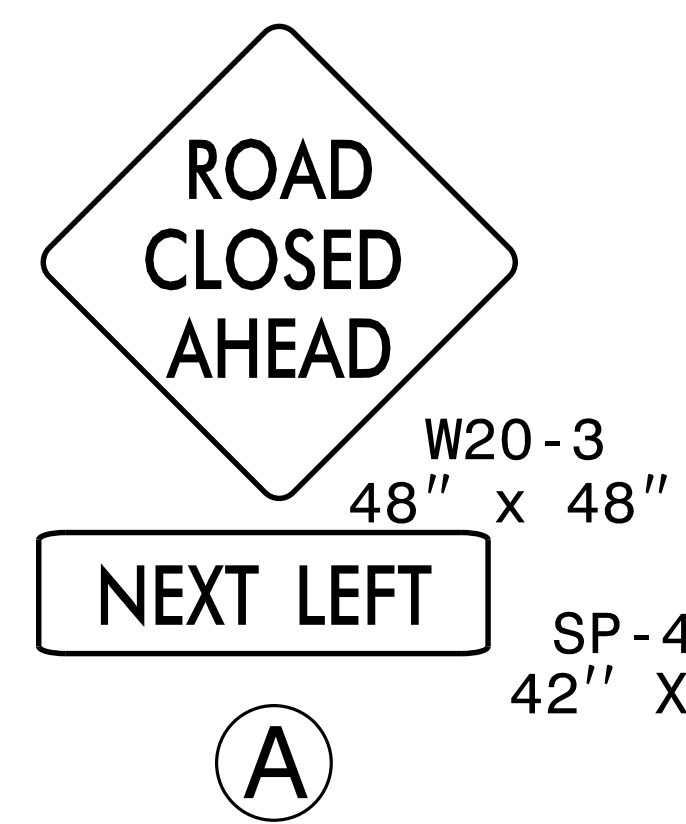
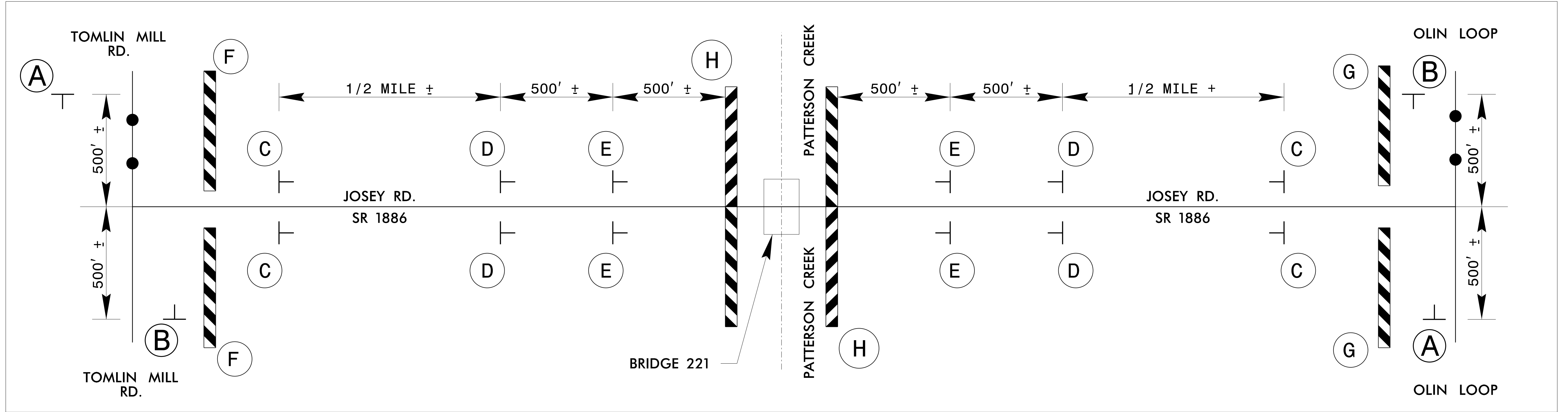
**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**



KCI ASSOCIATES OF N.C., P.A.  
 4505 Falls of Neuse Road, Suite 400  
 Raleigh, NC 27609-6270  
 Phone (919) 783-9214  
 NC Firm License No: C-0764

**OFFSITE DETOUR ROUTE**

# INSET A





- NOTES:**
- REFER TO ROADWAY STANDARD DRAWING 1101.03, SHEET 1 OF 9 FOR APPLICABLE NOTES.
  - ALL SIGN SPACING DIMENSIONS ARE APPROXIMATE. FIELD ADJUST AS NECESSARY OR AS DIRECTED BY THE ENGINEER.
  - SEE SHEET TMP-2 FOR THE SPECIAL SIGN DESIGN
  - ALL DETOUR SIGN LOCATIONS ARE APPROXIMATE.

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 \$\$\$USERNAME\$\$\$

APPROVED: *Barry Smith*  
 DATE: 2/8/2024  
 SEAL

OFFSITE DETOUR ROUTE



PROJ. REFERENCE NO. BP12.R014	SHEET NO. PMP-1
Approved by: <i>Barry Smith</i> 827104108676493 DATE: 2/8/2024	
SEAL 	
 KCI ASSOCIATES OF N.C., P.A. 4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-6270 Phone (919) 783-9214 NC Firm License No. C-0764	

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**PAVEMENT MARKING PLAN**

**IREDELL COUNTY**

**LOCATION: BRIDGE NO. 221 OVER PATTERSON CREEK ON SR 1886 (JOSEY RD.)**

**GENERAL NOTES**

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT, EXCEPT WHEN OTHERWISE NOTED IN THE PLAN, OR DIRECTED BY THE ENGINEER.

A) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS FOLLOWS:

ROAD NAME	MARKING	MARKER
-L- SR 1886	PAINT	NONE
-BRIDGE-	PAINT	NONE

B) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

C) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS.

D) PLACE TWO APPLICATIONS OF PAINT PAVEMENT MARKINGS ON THE FINAL WEARING SURFACE. PLACE THE SECOND APPLICATION OF PAINT UPON SUFFICIENT DRYING TIME OF THE FIRST.

E) PASSING ZONES WILL BE DETERMINED IN THE FIELD AND MUST BE APPROVED BY THE ENGINEER.

**ROADWAY STANDARD DRAWING**

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2024 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

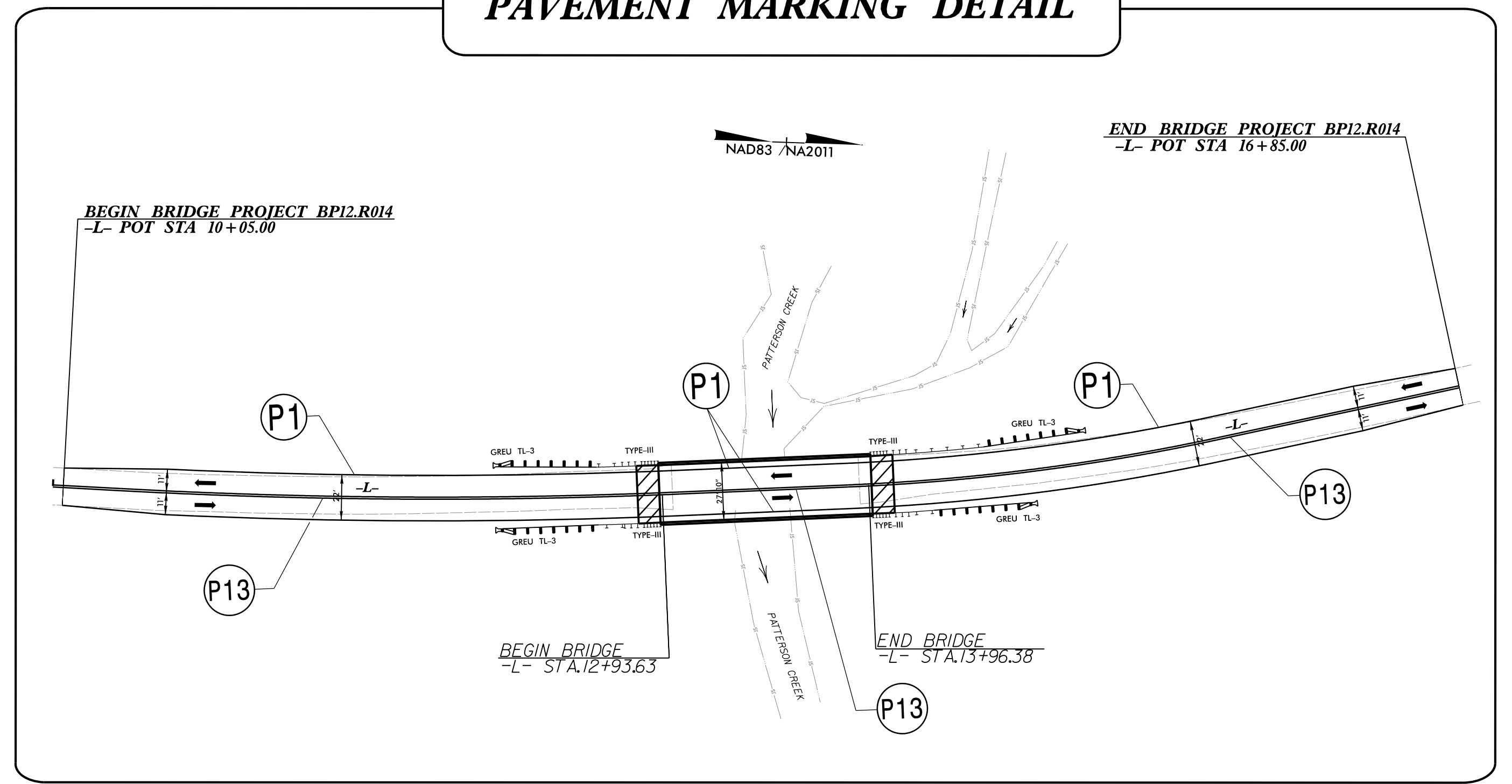
**PAVEMENT MARKING SCHEDULE**

SYMBOL DESCRIPTION	FINAL PAVEMENT MARKINGS
P1 WHITE EDGELINE	PAINT (4")
P13 YELLOW DOUBLE CENTER	PAINT (4")

**SUMMARY OF QUANTITIES**

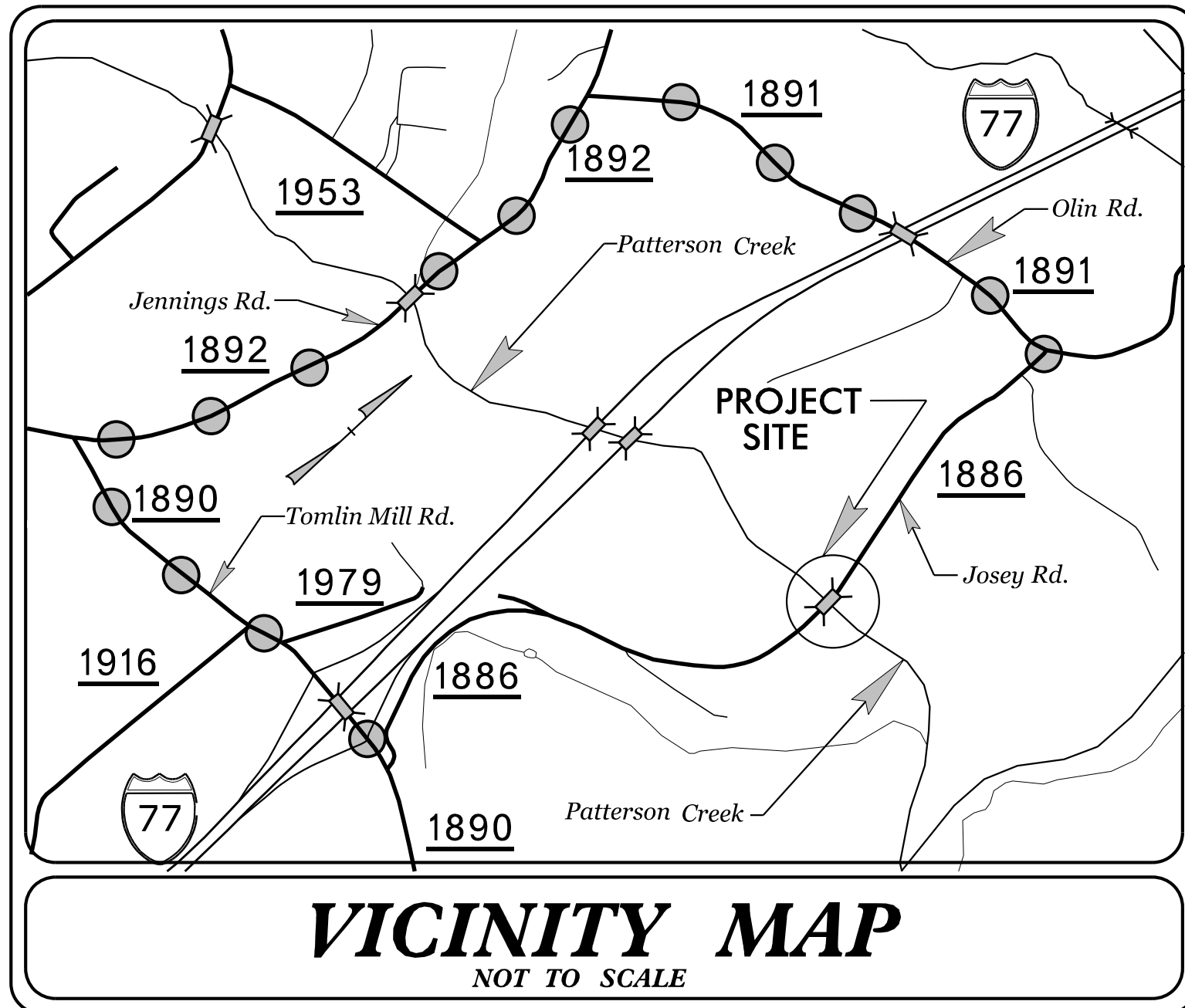
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT
DESC. NO.	SECT. NO.		
4810000000-E	1205	WHITE EDGELINE (4")	2,720 LF
4810000000-E	1205	YELLOW DOUBLE CENTER	2,720 LF

**PAVEMENT MARKING DETAIL**



06-FEB-2024 11:04  
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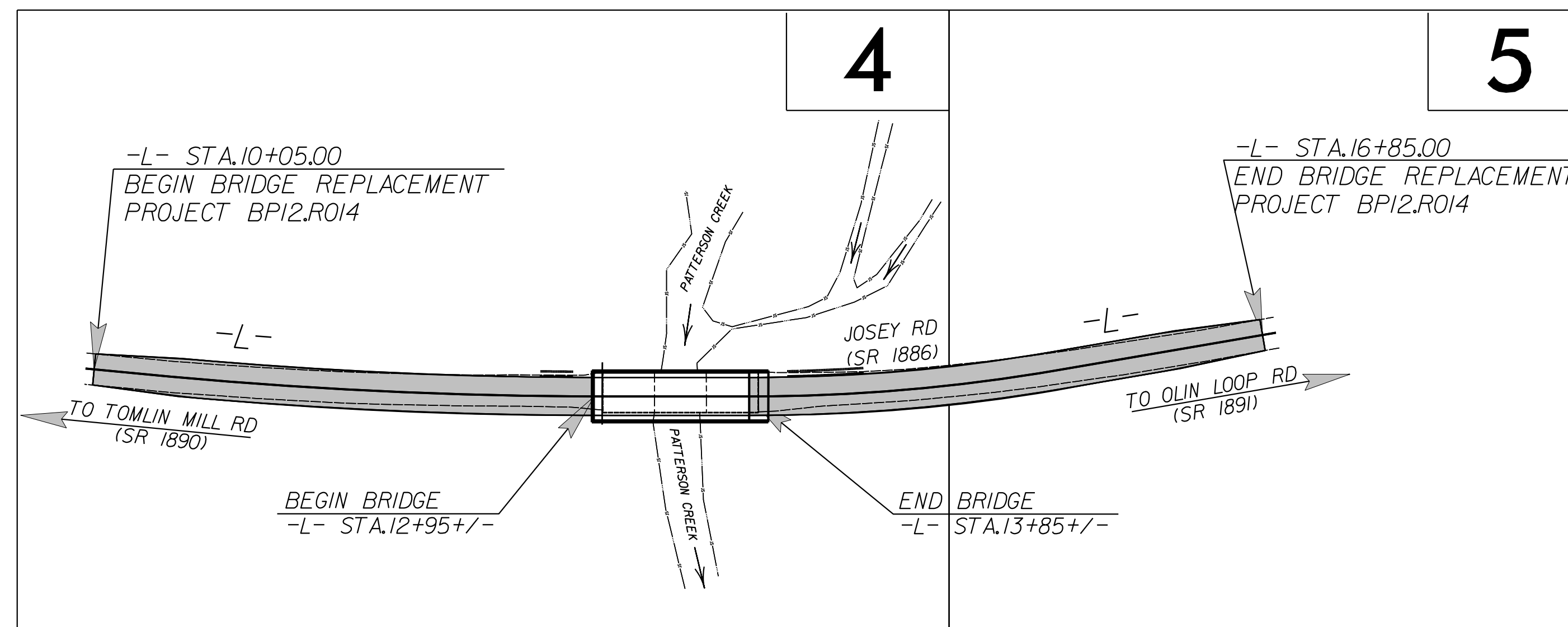
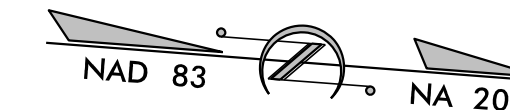
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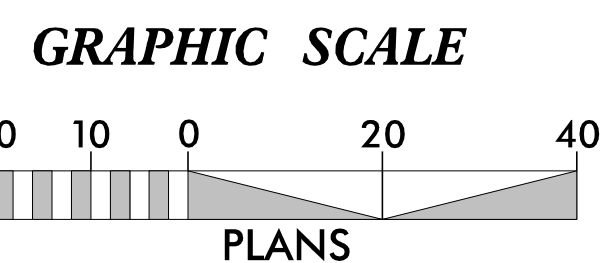
STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS  
 PLAN FOR PROPOSED  
 HIGHWAY EROSION CONTROL  
**IREDELL COUNTY**

**LOCATION: REPLACE BRIDGE NO. 221 OVER PATTERSON CREEK  
 ON SR 1886 (JOSEY ROAD)**

**TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE**



**THIS PROJECT CONTAINS  
 EROSION CONTROL PLANS  
 FOR CLEARING AND  
 GRUBBING PHASE OF  
 CONSTRUCTION.**



THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY  
 WITH THE REGULATIONS SET FORTH BY THE  
 NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2019  
 ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND  
 NATURAL RESOURCES DIVISION OF WATER QUALITY.

Prepared In the Office of:

**SUNGATE DESIGN GROUP, P.A.**

905 JONES FRANKLIN ROAD  
 RALEIGH, NORTH CAROLINA 27606  
 NC COA No. C-0890

**BRIAN N. ELAM, PE** **3195**  
NAME LEVEL III CERTIFICATION NO.

**Roadway Standard Drawings**

The "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 2024 and the latest revision thereto are applicable to this project and by reference hereby are considered a part of these plans.

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP12.R014	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
BP12.R014.1	NA	PE	
BP12.R014.2	NA	RW & UTIL.	
BP12.R014.3	NA	CONSTR.	



# DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

PROJECT REFERENCE NO. <i>BPI2.R014</i>	SHEET NO. <i>EC-02</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

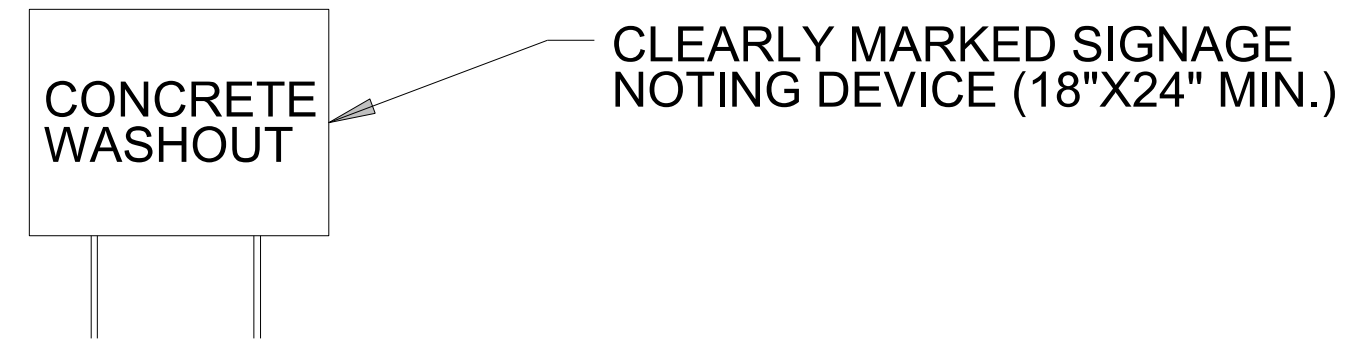
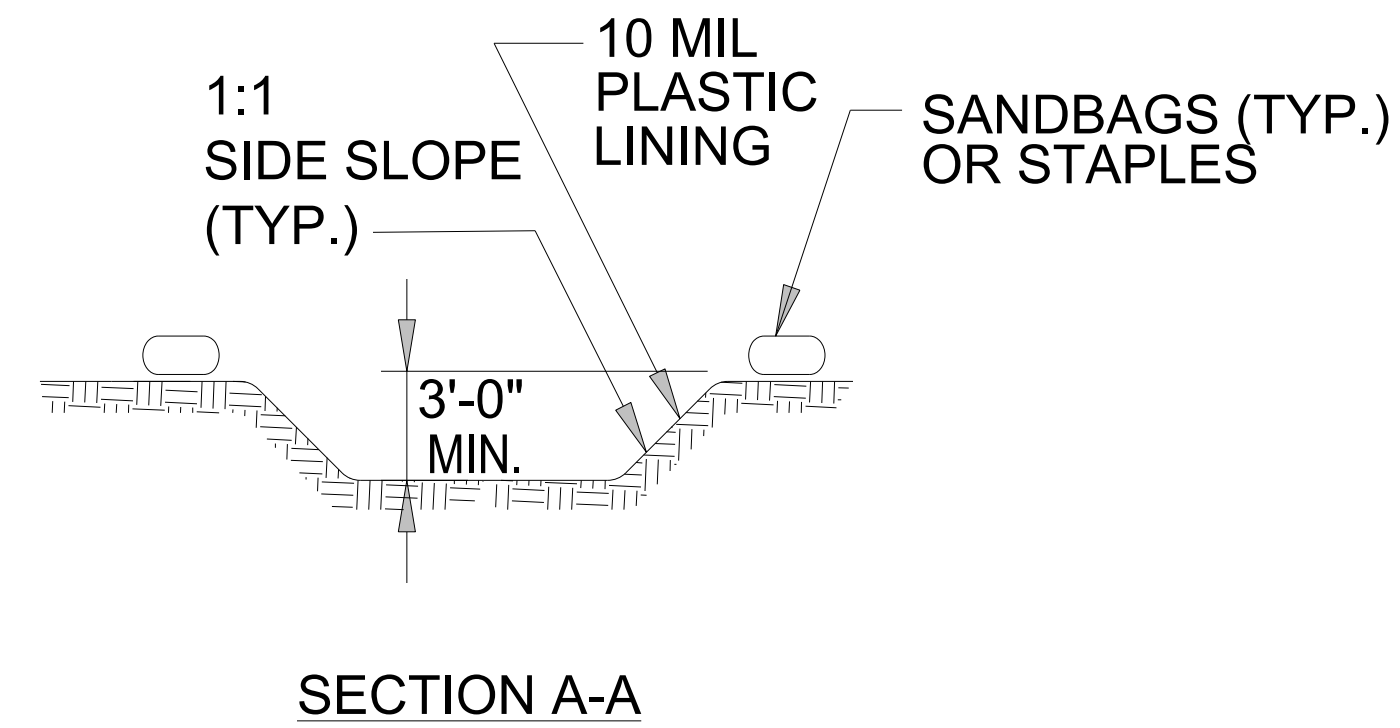
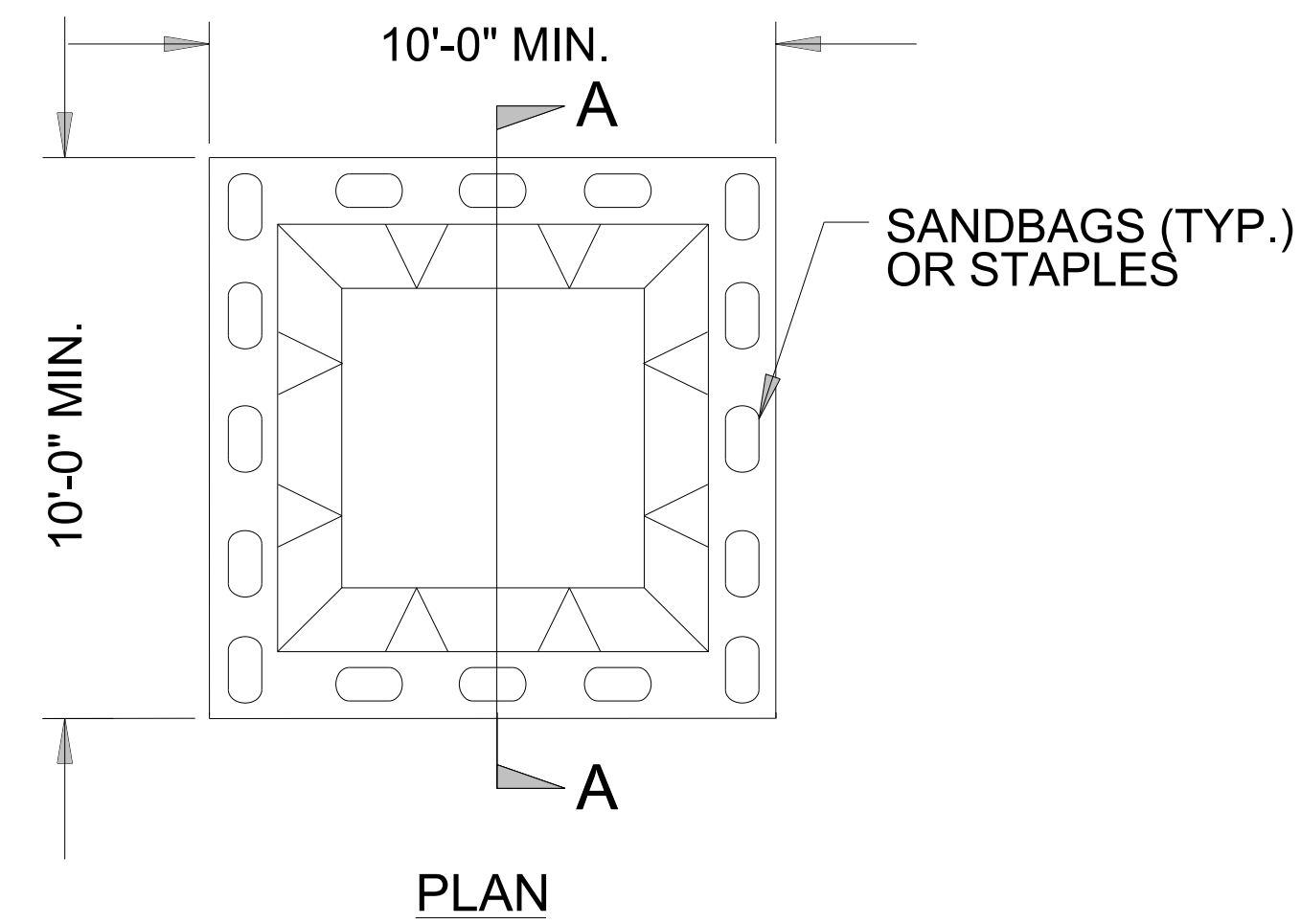
## EROSION & SEDIMENT CONTROL LEGEND

Std. #	Description	Symbol	Std. #	Description	Symbol
1605.01	Temporary Silt Fence		1633.01	Temporary Rock Silt Check Type A	
1606.01	Special Sediment Control Fence		1633.02	Temporary Rock Silt Check Type B	
1622.01	Temporary Berms and Slope Drains		1633.03	Temporary Rock Silt Check Type A with Excelsior Matting and Flocculant	
1630.02	Silt Basin Type B		1634.01	Temporary Rock Sediment Dam Type A	
1630.03	Temporary Silt Ditch		1634.02	Temporary Rock Sediment Dam Type B	
1630.04	Stilling Basin		1635.01	Rock Pipe Inlet Sediment Trap Type A	
1630.05	Temporary Diversion		1635.02	Rock Pipe Inlet Sediment Trap Type B	
1630.06	Special Stilling Basin		1636.01	Excelsior Wattle Check	
1630.07	Skimmer Basin		1636.01	Excelsior Wattle Check with Flocculant	
1630.08	Tiered Skimmer Basin		1636.01	Coir Fiber Wattle Check	
1630.09	Earthen Dam with Skimmer		1636.01	Coir Fiber Wattle Check with Flocculant	
	Infiltration Basin		1636.02	Silt Fence Excelsior Wattle Break	
	Rock Inlet Sediment Trap:			Silt Fence Coir Fiber Wattle Break	
1632.01	Type A		1636.03	Excelsior Wattle Barrier	
1632.02	Type B		1636.03	Coir Fiber Wattle Barrier	
1632.03	Type C				



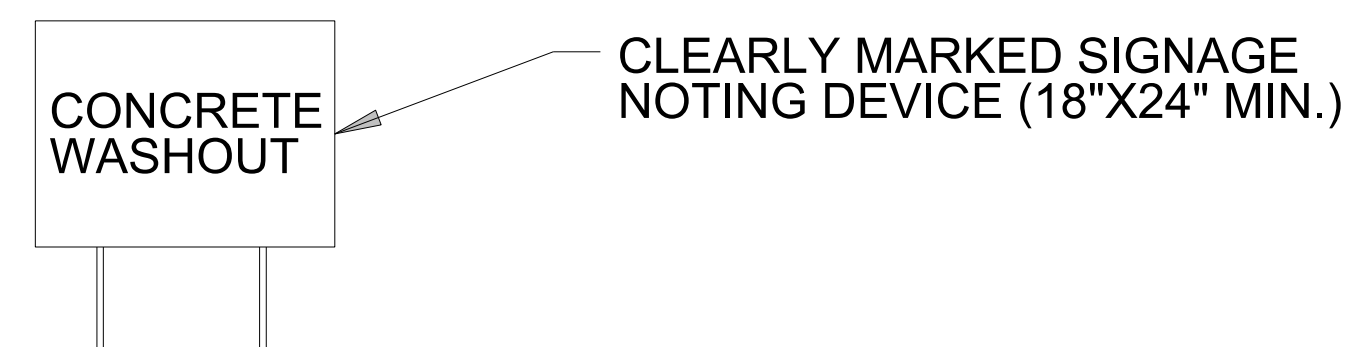
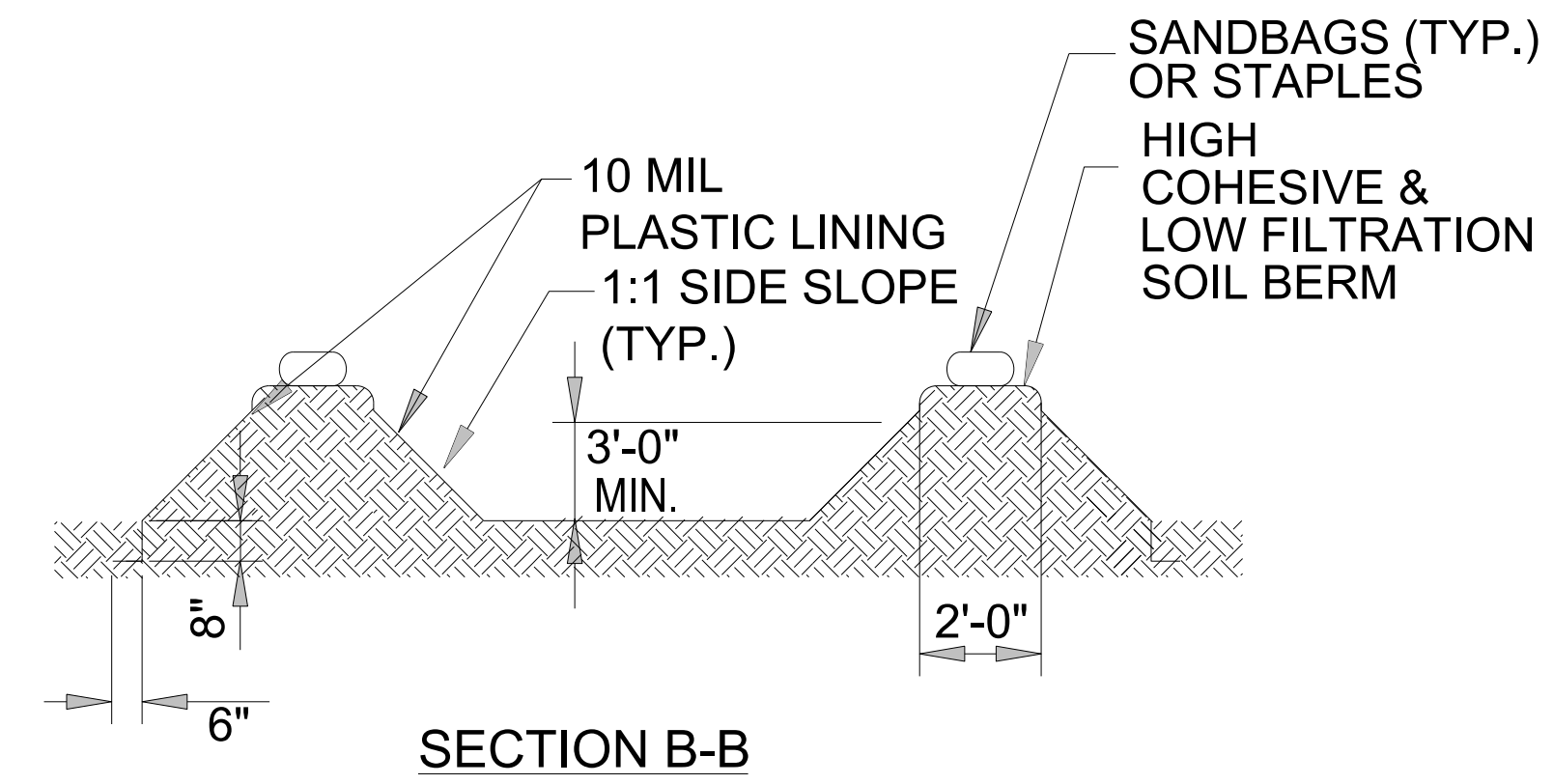
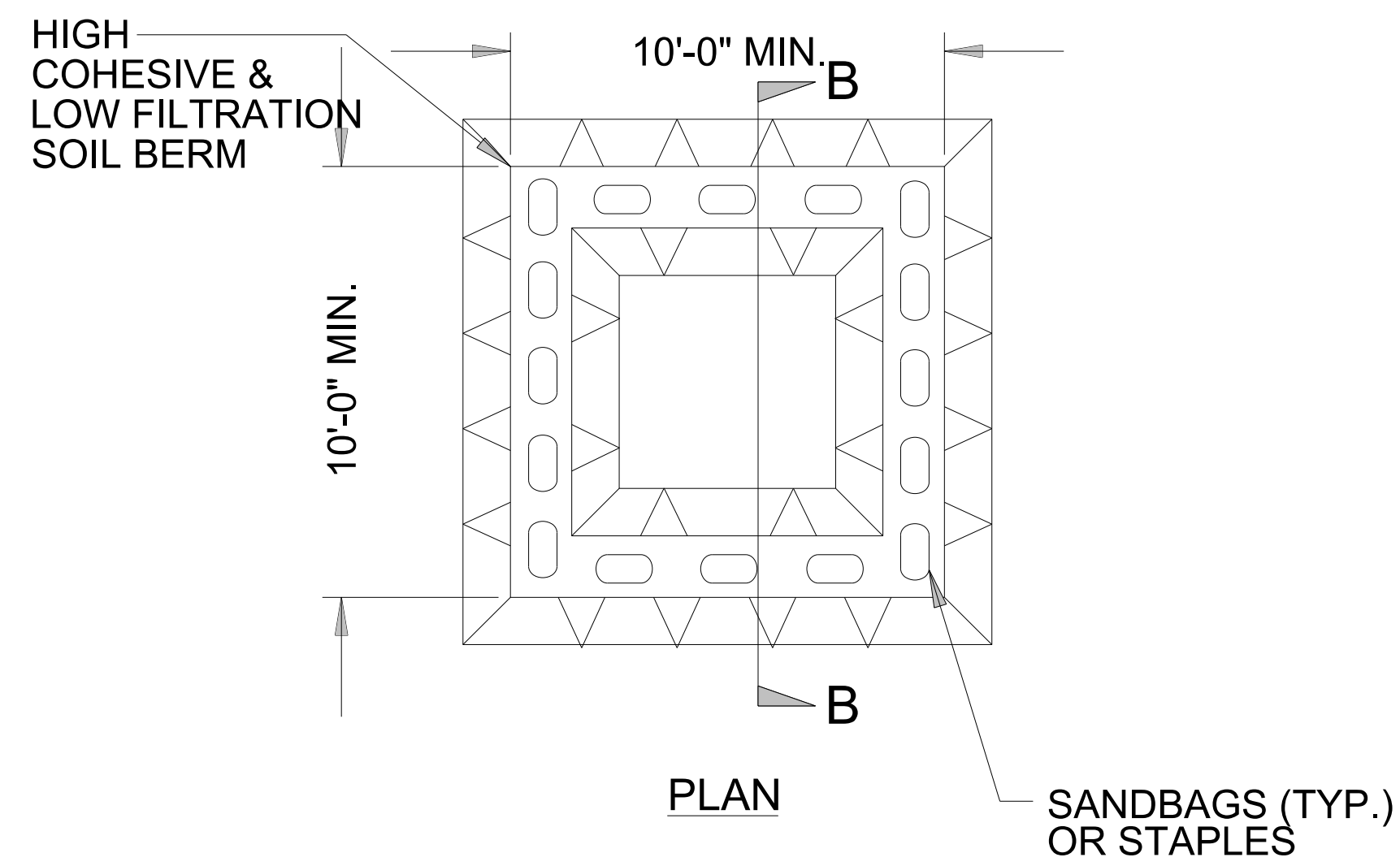
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RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

# ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER



**BELOW GRADE WASHOUT STRUCTURE**  
NOT TO SCALE

- NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD
  2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.
  3. CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARLY MARKED WITH SIGNAGE NOTING DEVICE.



**ABOVE GRADE WASHOUT STRUCTURE**  
NOT TO SCALE

- NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD
  2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.
  3. CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARLY MARKED WITH SIGNAGE NOTING DEVICE.

DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

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PROJECT REFERENCE NO.	SHEET NO.
<i>BPI2.R014</i>	<i>EC-3</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

# ***SOIL STABILIZATION TIMEFRAMES***

<i>SITE DESCRIPTION</i>	<i>STABILIZATION TIME</i>	<i>TIMEFRAME EXCEPTIONS</i>
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 TO 4:1	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH WITH SLOPES STEEPER THAN 4:1. 7 DAYS FOR PERIMETER DIKES, SWALES, DITCHES PERIMETER SLOPES, AND HQW ZONES
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	7 DAYS FOR PERIMETER DIKES, SWALES, DITCHES PERIMETER SLOPES, AND HQW ZONES

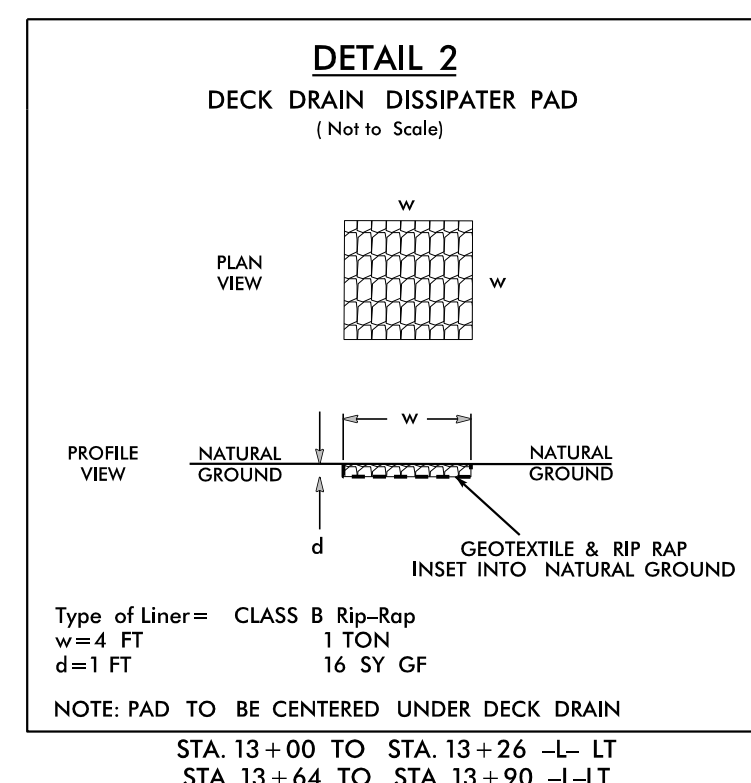
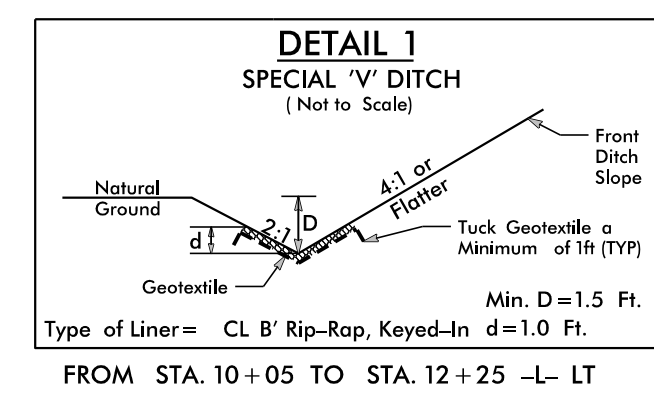
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BPI2.R014	EC-04/CONST.04
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NAD83 / NA2011

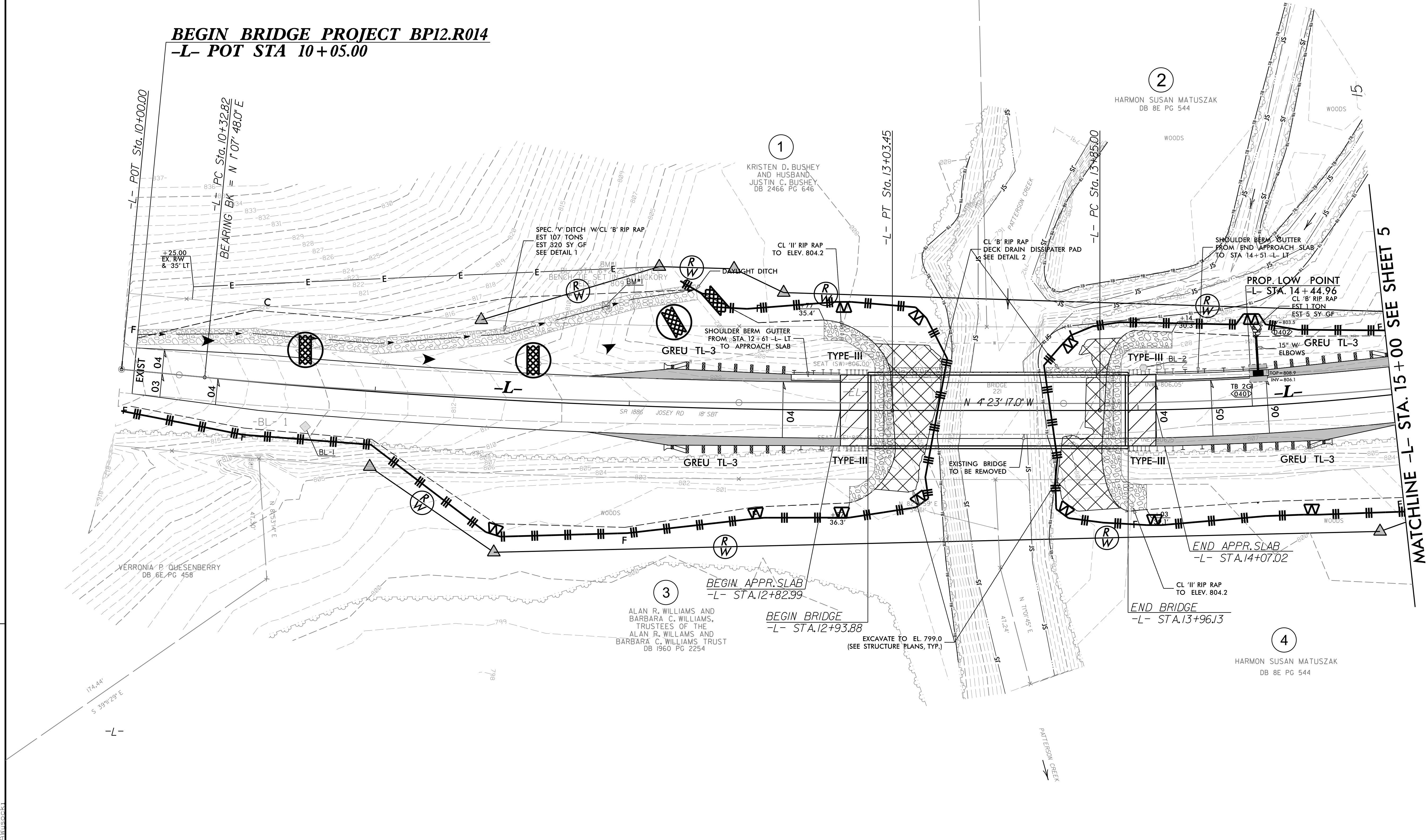
NOTE: UTILIZE SPECIAL STILLING BASIN(S) AS NEEDED THROUGHOUT BRIDGE CONSTRUCTION.

NOTE: PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B AND TEMPORARY ROCK SILT CHECKS TYPE - A AT DRAINAGE OUTLETS.

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 04



**BEGIN BRIDGE PROJECT BPI2.R014**  
**-L- POT STA 10+05.00**



REVISIONS

3/15/2024 EC.dsn\_psh\_04.dgn  
 BPI2.R014  
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MATCHLINE -L- STA. 15+00 SEE SHEET 5

8/17/99

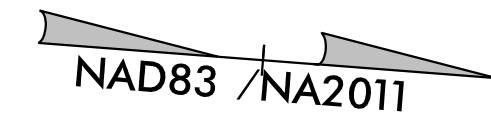


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REVISIONS

9/17/2023  
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C&A

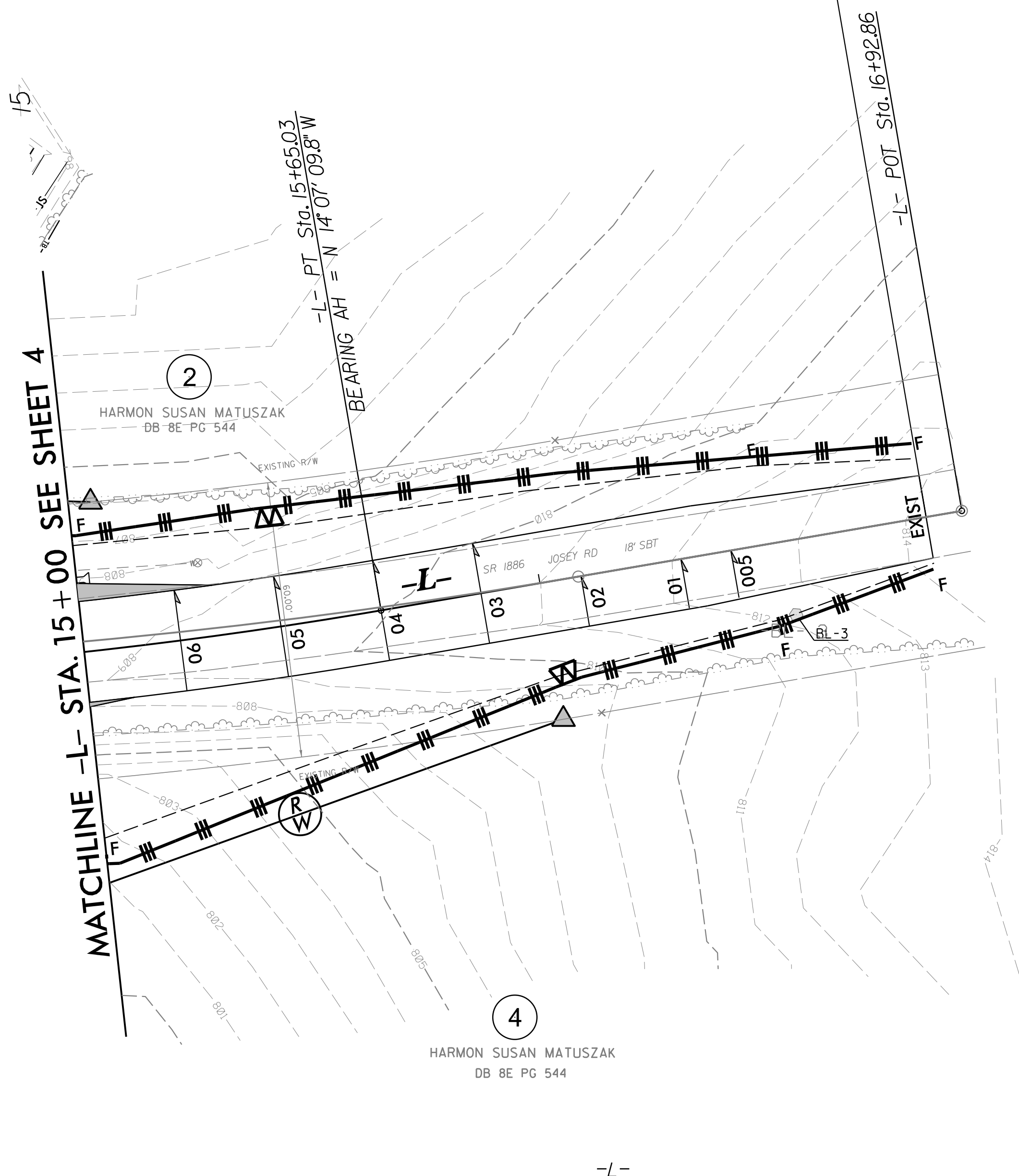
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BP12.R014	EC-05/CONST.05
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



NOTE:  
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B  
AND TEMPORARY ROCK SILT CHECKS TYPE - A AT  
DRAINAGE OUTLETS.

CLEARING AND GRUBBING  
EROSION CONTROL FOR  
CONSTRUCTION SHEET 05

**END BRIDGE PROJECT BP12.R014**  
**-L- POT STA 16+85.00**



FOR -L- PROFILE, SEE SHEET NO. 6

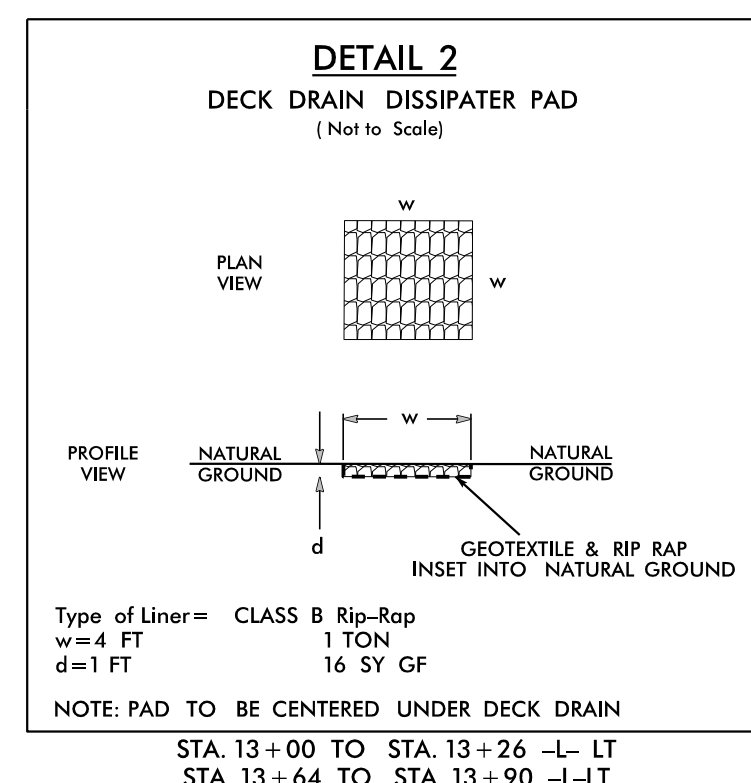
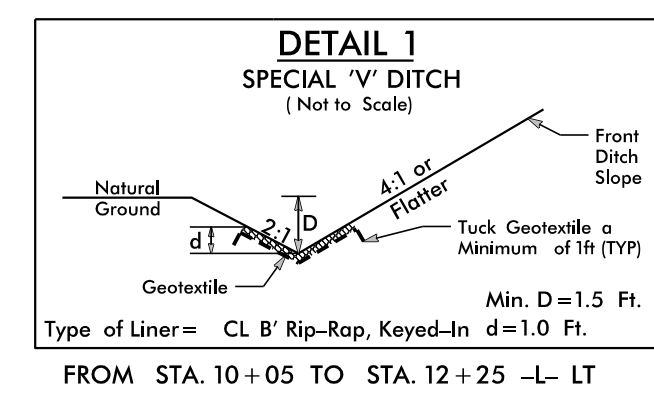
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BP12.R014	EC-06/CONST.04
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



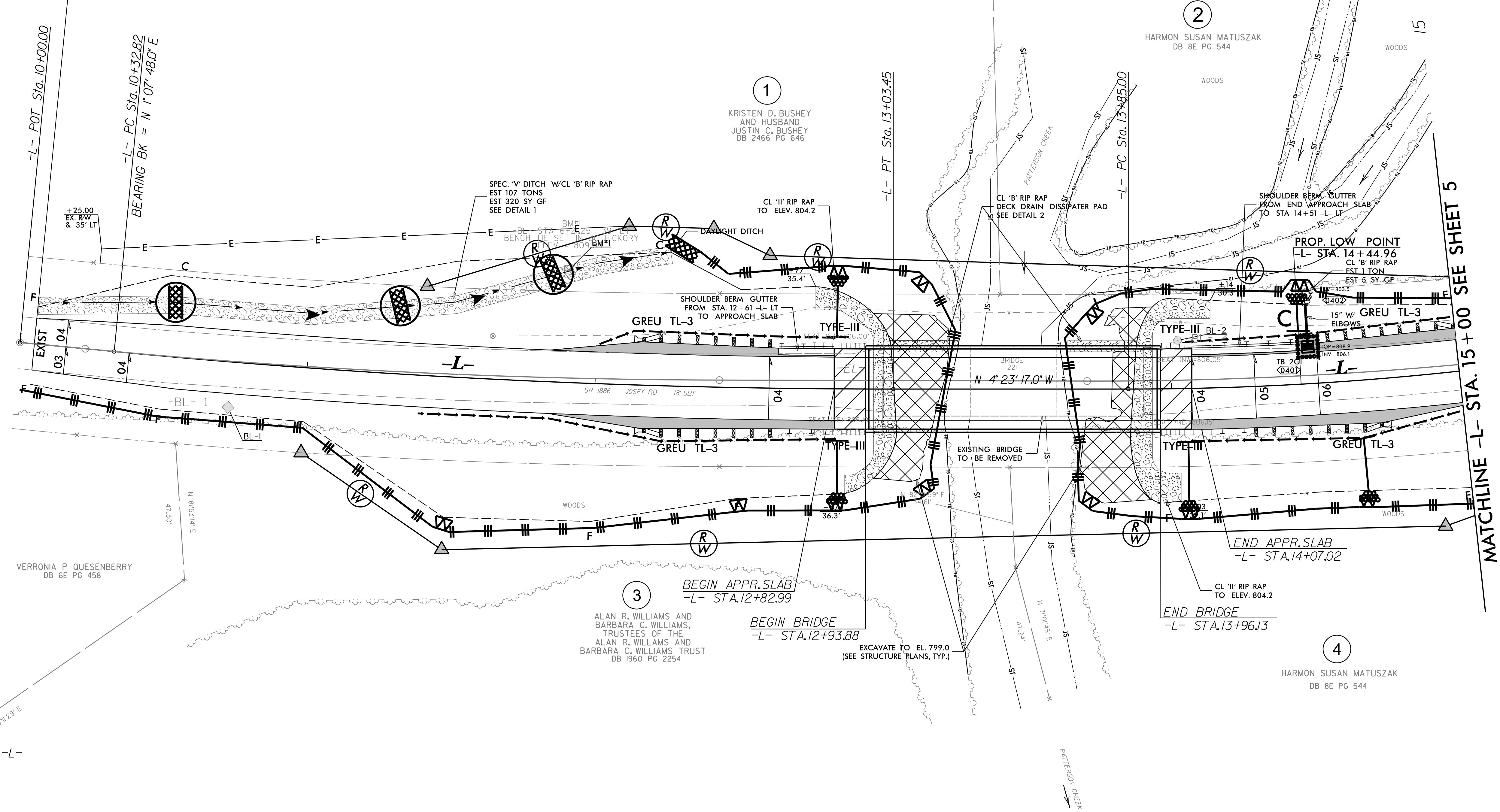
NOTE:  
UTILIZE SPECIAL STILLING BASIN(S) AS NEEDED  
THROUGHOUT BRIDGE CONSTRUCTION.

Place Matting for Erosion Control  
on Slope as Work Allows.  
Sta. 12+50 to Sta. 14+50 -L- LT

FINAL GRADING  
EROSION CONTROL FOR  
CONSTRUCTION SHEET 04



**BEGIN BRIDGE PROJECT BP12.R014**  
**-L- POT STA 10+05.00**



VERRONIA P OUESENBERY  
DB 6E PG 458

3  
ALAN R. WILLIAMS AND  
BARBARA C. WILLIAMS,  
TRUSTEES OF THE  
ALAN R. WILLIAMS AND  
BARBARA C. WILLIAMS TRUST  
DB 1960 PG 2254

1  
KRISTEN D. BUSHEY  
AND HUSBAND  
JUSTIN C. BUSHEY  
DB 2466 PG 646

2  
HARMON SUSAN MATUSZAK  
DB 8E PG 544

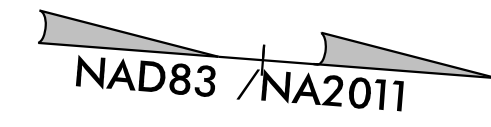
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HARMON SUSAN MATUSZAK  
DB 8E PG 544

MATCHLINE -L- STA. 15+00 SEE SHEET 5

REVISIONS

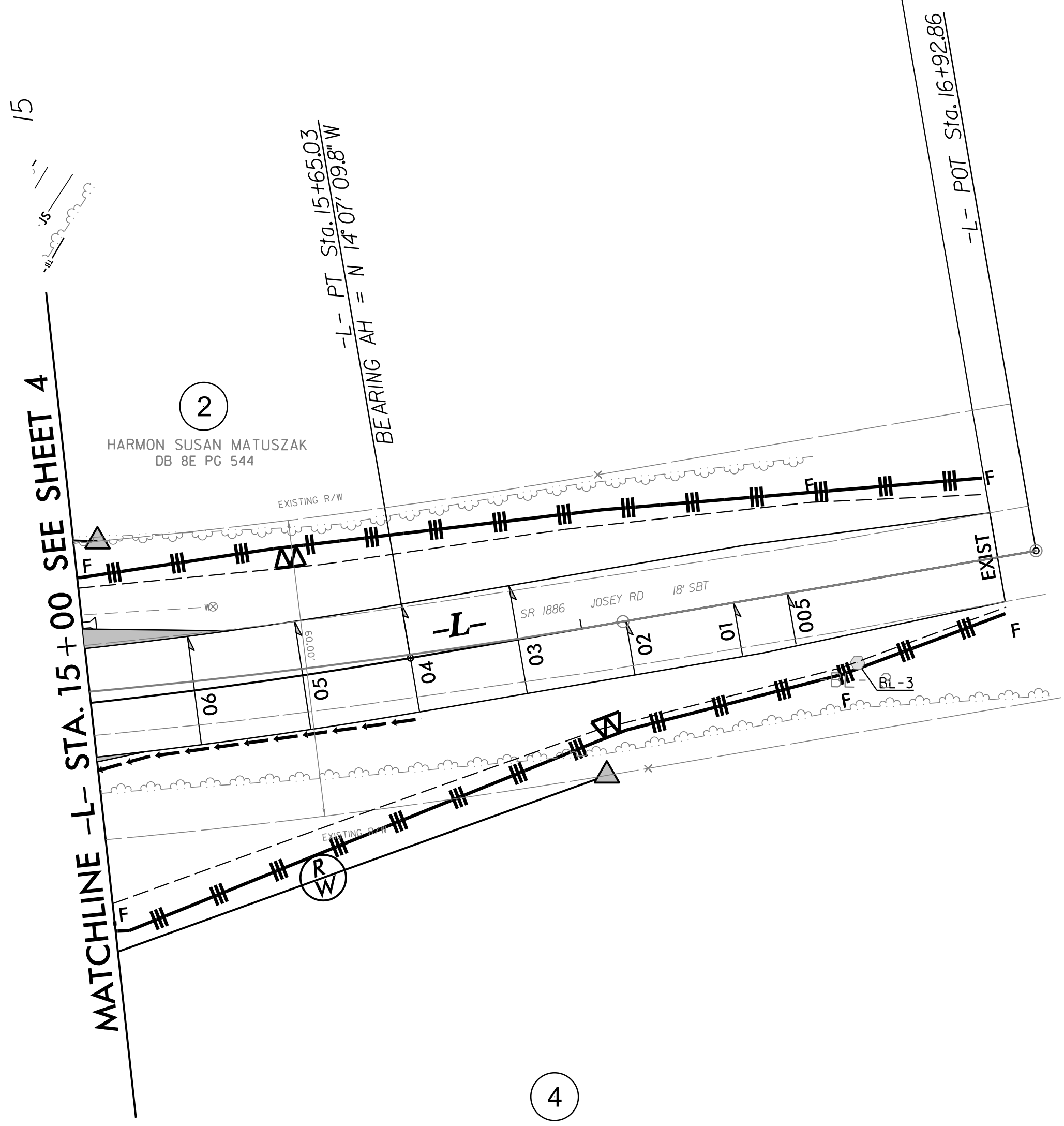
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PROJECT REFERENCE NO.	SHEET NO.
BP12.R014	EC-07/CONST.05
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



FINAL GRADING  
EROSION CONTROL FOR  
CONSTRUCTION SHEET 05

**END BRIDGE PROJECT BP12.R014**  
**-L- POT STA 16+85.00**



2  
HARMON SUSAN MATUSZAK  
DB BE PG 544

4  
HARMON SUSAN MATUSZAK  
DB BE PG 544

-L-

REVISIONS

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FOR -L- PROFILE, SEE SHEET NO. 6



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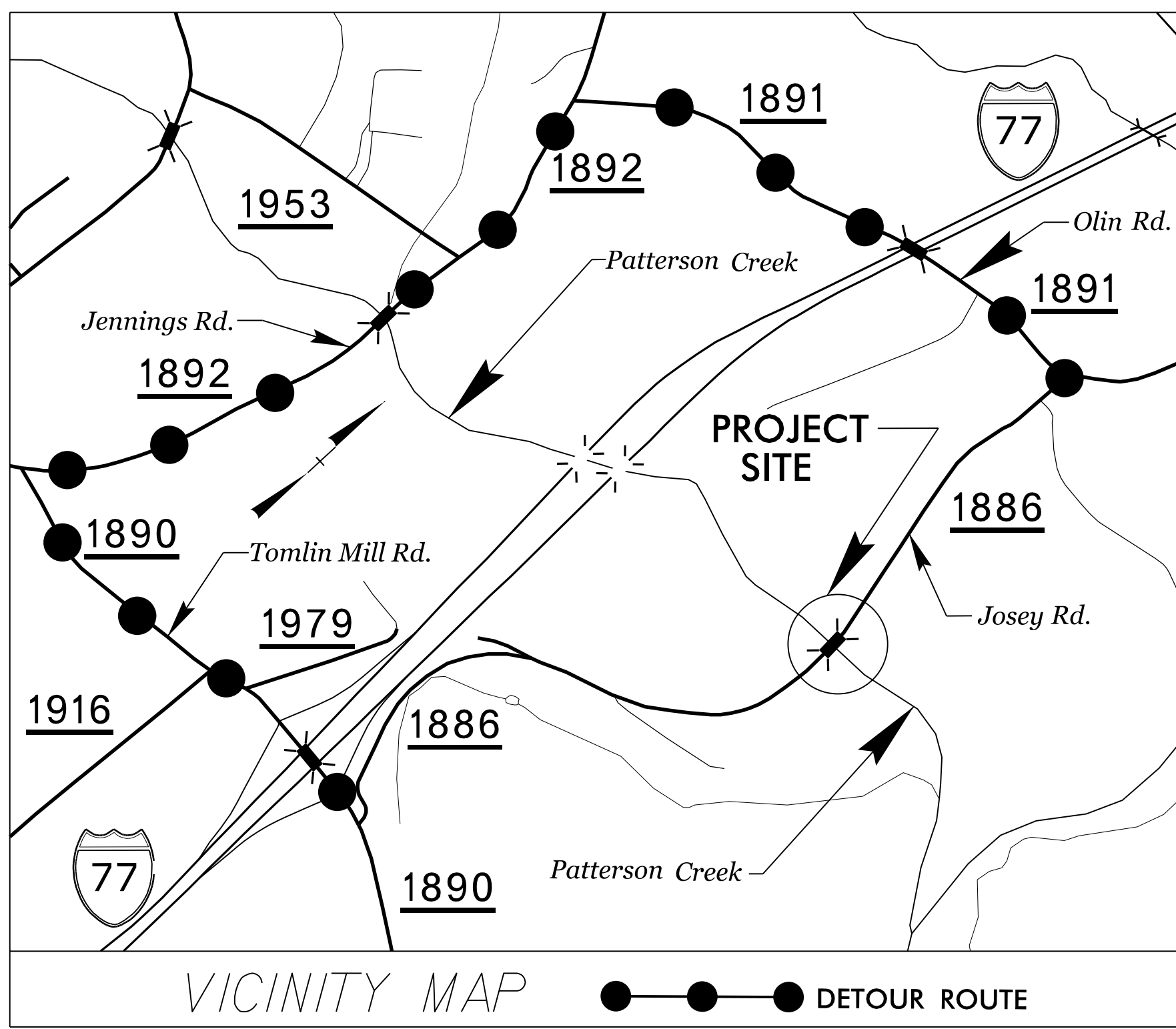
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STATE PROJECT: BP12.R014

CONTRACT: DL00334

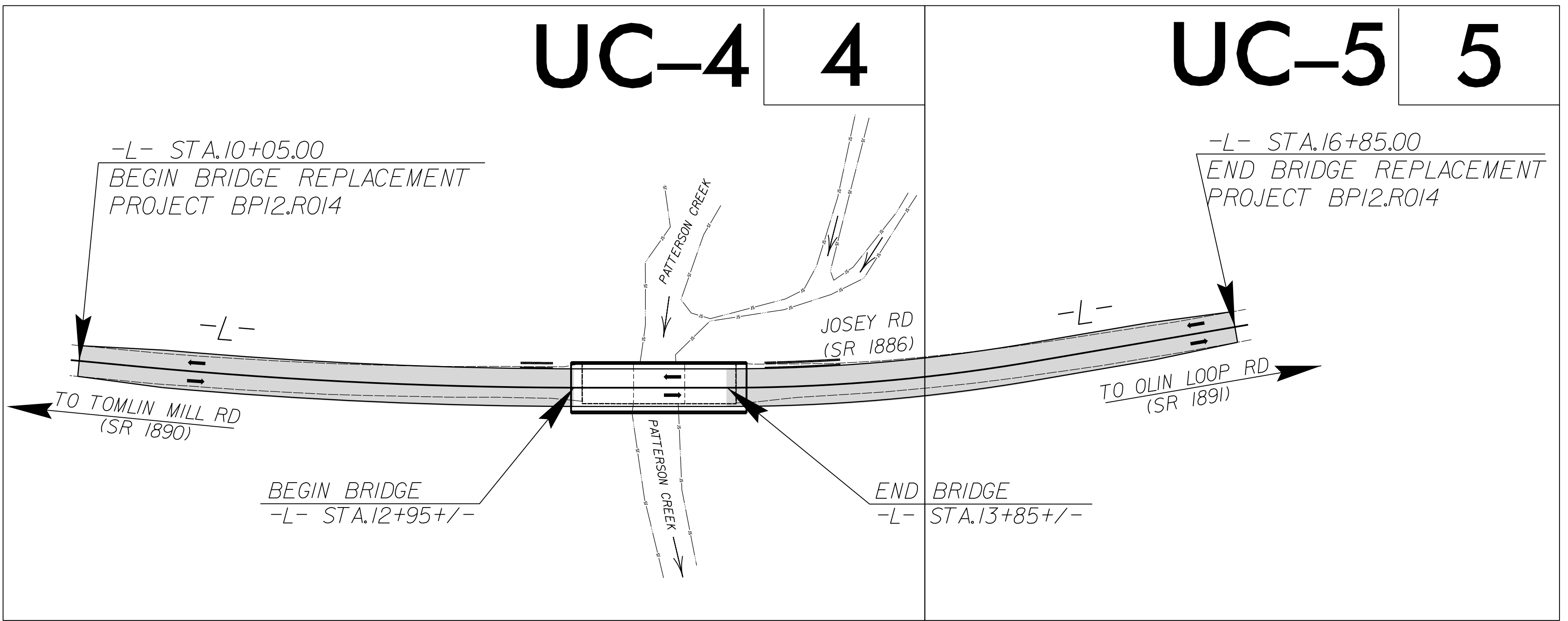
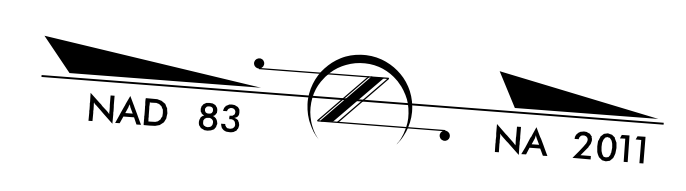
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

STATE PROJ.NO.	SHEET NO.
BP12.R014	UC-1

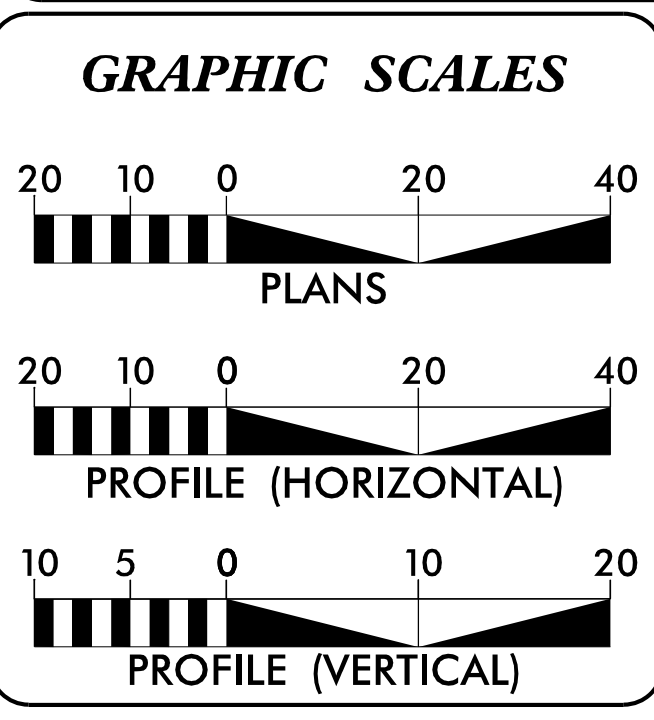


# UTILITY CONSTRUCTION PLANS IREDELL COUNTY

**LOCATION: REPLACE BRIDGE NO. 221 OVER PATTERSON CREEK  
ON SR 1886 (JOSEY ROAD)**  
**TYPE OF WORK: WATER LINE RELOCATION**



DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



**INDEX OF SHEETS**

SHEET NO.:	DESCRIPTION:
UC-1	TITLE SHEET
UC-2	UTILITY SYMBOLOGY
UC-3	NOTES
UC-3A TO UC-3B	DETAILS
UC-4 TO UC-5	PLAN SHEETS
UC-6	PROFILE SHEET

**WATER AND SEWER  
OWNER ON PROJECT**

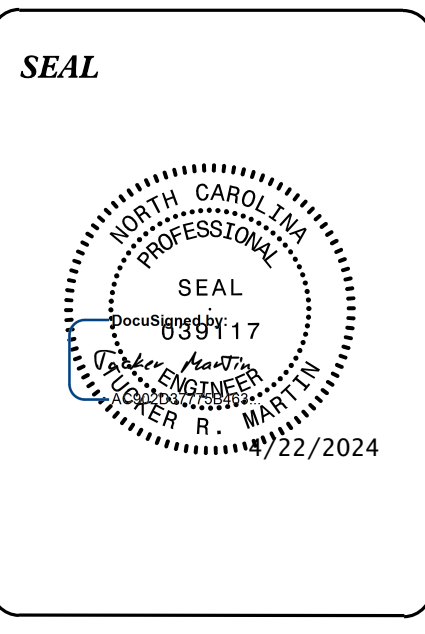
**IREDELL WATER CORPORATION**

571 JENNINGS RD  
STATESVILLE, NC 28625

PREPARED IN THE OFFICE OF

**KCI**  
KCI ASSOCIATES OF N.C., P.A.  
4505 Falls of Neuse Road, Suite 400  
Raleigh, NC 27609  
Phone (919) 783-9214  
NC Firm License No: C-0764

TUCKER MARTIN, PE	PROJECT MANAGER
CHARLES SHEARON, PE	PROJECT ENGINEER
NATHAN POWELL	DRAFTER



**HIGHWAY DIVISION 12**  
1710 E. Marion St. (US 74 Bus)  
Shelby NC, 28151

CHAD DREWERY DIVISION UTILITY ENGINEER  
WARREN ANDERSON DIVISION UTILITY COORDINATOR  
JOSHUA B. WHITE PE, PLS DIVISION BRIDGE PROGRAM MANAGER

# STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

## UTILITIES PLAN SHEET SYMBOLS

### PROPOSED WATER SYMBOLS

Water Line (Sized as Shown)	
11¼ Degree Bend	
22½ Degree Bend	
45 Degree Bend	
90 Degree Bend	
Plug	
Tee	
Cross	
Reducer	
Gate Valve	
Butterfly Valve	
Tapping Valve	
Line Stop	
Line Stop with Bypass	
Blow Off	
Fire Hydrant	
Relocate Fire Hydrant	
Remove Fire Hydrant	REM FH
Water Meter	
Relocate Water Meter	
Remove Water Meter	REM WM
Water Pump Station	
RPZ Backflow Preventer	
DCV Backflow Preventer	
Relocate RPZ Backflow Preventer	
Relocate DCV Backflow Preventer	

### PROPOSED SEWER SYMBOLS

Gravity Sewer Line (Sized as Shown)	
Force Main Sewer Line (Sized as Shown)	
Manhole (Sized per Note)	
Sewer Pump Station	

### PROPOSED MISCELLANEOUS UTILITIES SYMBOLS

Power Pole	
Telephone Pole	
Joint Use Pole	
Telephone Pedestal	
Utility Line by Others (Type as Shown)	
Trenchless Installation	
Encasement by Open Cut	
Encasement	

Thrust Block	
Air Release Valve	
Utility Vault	
Concrete Pier	
Steel Pier	
Plan Note	
Pay Item Note	

### EXISTING UTILITIES SYMBOLS

Power Pole		*Underground Power Line	
Telephone Pole		*Underground Telephone Cable	
Joint Use Pole		*Underground Telephone Conduit	
Utility Pole		*Underground Fiber Optics Telephone Cable	
Utility Pole with Base		*Underground TV Cable	
H-Frame Pole		*Underground Fiber Optics TV Cable	
Power Transmission Line Tower		*Underground Gas Pipeline	
Water Manhole		Aboveground Gas Pipeline	
Power Manhole		*Underground Water Line	
Telephone Manhole		Aboveground Water Line	
Sanitary Sewer Manhole		*Underground Gravity Sanitary Sewer Line	
Hand Hole for Cable		Aboveground Gravity Sanitary Sewer Line	
Power Transformer		*Underground SS Forced Main Line	
Telephone Pedestal		Underground Unknown Utility Line	
CATV Pedestal		SUE Test Hole	
Gas Valve		Water Meter	
Gas Meter		Water Valve	
Located Miscellaneous Utility Object		Fire Hydrant	
Abandoned According to Utility Records	AATUR	Sanitary Sewer Cleanout	
End of Information	E.O.I.		

\*For Existing Utilities  
 Utility Line Drawn from Record (Type as Shown)   
 Designated Utility Line (Type as Shown)

5/14/99

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C:\AN-2024\_09\50  
04-2012-2015-2022-02 NCDOT BP12.R014 Bridge 221\Water-Wastewater\BP12.R014\_ut\_notes\_UC3\_psh.dgn

# UTILITY CONSTRUCTION

## GENERAL NOTES:

1. THE PROPOSED UTILITY CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF THE NC DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2024.
2. THE EXISTING UTILITIES BELONG TO IREDELL WATER CORPORATION.
3. ALL WATER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF WATER RESOURCES, PUBLIC WATER SUPPLY SECTION. ALL SEWER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF WATER RESOURCES, WATER QUALITY SECTION. PERFORM ALL WORK IN ACCORDANCE WITH THE APPLICABLE PLUMBING CODES.
4. THE UTILITY OWNER OWNS THE EXISTING UTILITY FACILITIES AND WILL OWN THE NEW UTILITY FACILITIES AFTER ACCEPTANCE BY THE DEPARTMENT. THE DEPARTMENT OWNS THE CONSTRUCTION CONTRACT AND HAS ADMINISTRATIVE AUTHORITY. COMMUNICATIONS AND DECISIONS BETWEEN THE CONTRACTOR AND UTILITY OWNER ARE NOT BINDING UPON THE DEPARTMENT OR THIS CONTRACT UNLESS AUTHORIZED BY THE ENGINEER. AGREEMENTS BETWEEN THE UTILITY OWNER AND CONTRACTOR FOR THE WORK THAT IS NOT PART OF THIS CONTRACT OR IS SECONDARY TO THIS CONTRACT ARE ALLOWED, BUT ARE NOT BINDING UPON THE DEPARTMENT.
5. PROVIDE ACCESS FOR THE DEPARTMENT PERSONNEL AND THE OWNER'S REPRESENTATIVES TO ALL PHASES OF CONSTRUCTION. NOTIFY DEPARTMENT PERSONNEL AND THE UTILITY OWNER TWO WEEKS PRIOR TO COMMENCEMENT OF ANY WORK AND ONE WEEK PRIOR TO SERVICE INTERRUPTION. KEEP UTILITY OWNERS' REPRESENTATIVES INFORMED OF WORK PROGRESS AND PROVIDE OPPORTUNITY FOR INSPECTION OF CONSTRUCTION AND TESTING.

6. THE PLANS DEPICT THE BEST AVAILABLE INFORMATION FOR THE LOCATION, SIZE, AND TYPE OF MATERIAL FOR ALL EXISTING UTILITIES. MAKE INVESTIGATIONS FOR DETERMINING THE EXACT LOCATION, SIZE, AND TYPE MATERIAL OF THE EXISTING FACILITIES AS NECESSARY FOR THE CONSTRUCTION OF THE PROPOSED UTILITIES AND FOR AVOIDING DAMAGE TO EXISTING FACILITIES. REPAIR ANY DAMAGE INCURRED TO EXISTING FACILITIES TO THE ORIGINAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE DEPARTMENT.
7. MAKE FINAL CONNECTIONS OF THE NEW WORK TO THE EXISTING SYSTEM WHERE INDICATED ON THE PLANS, AS REQUIRED TO FIT THE ACTUAL CONDITIONS, OR AS DIRECTED.
8. MAKE CONNECTIONS BETWEEN EXISTING AND PROPOSED UTILITIES AT TIMES MOST CONVENIENT TO THE PUBLIC, WITHOUT ENDANGERING THE UTILITY SERVICE, AND IN ACCORDANCE WITH THE UTILITY OWNER'S REQUIREMENTS. MAKE CONNECTIONS ON WEEKENDS, AT NIGHT, AND ON HOLIDAYS IF NECESSARY.
9. ALL UTILITY MATERIALS SHALL BE APPROVED PRIOR TO DELIVERY TO THE PROJECT. SEE 1500-7, " SUBMITTALS AND RECORDS" IN SECTION 1500 OF THE STANDARD SPECIFICATIONS.

## PROJECT SPECIFIC NOTES:

1. PROPOSED WATER LINE FROM -W/L- LINE STATION 0+00 TO -W/L- LINE STATION 0+50 AND -W/L- STATION 3+03 TO -W/L- STATION 3+55 SHALL BE 6" CLASS 350 RESTRAINED JOINT DUCTILE IRON PIPE (RJ DIP). -W/L- LINE STATION 0+50 TO -W/L- LINE STATION 3+03 SHALL BE 8" SDR 9 HIGH DENISTY POLYETHYLENE (HDPE).
2. CONTRACTOR'S ATTENTION IS DIRECTED TO SECTIONS 102, 107, AND 1550 OF THE STANDARD SPECIFICATIONS CONCERNING TRENCHLESS INSTALLATION. IT IS CONTRACTOR'S RESPONSIBILITY TO HAVE BORE DESIGNED AND SEALED BY A LICENSED NORTH CAROLINA PROFESSIONAL ENGINEER. NO DAMAGE IS ALLOWED TO RIVER, WETLANDS, OR BUFFER ZONES.
3. CONTRACTOR SHALL NOT MAKE CONNECTION TO EXISTING WATER MAIN UNTIL NEW WATER MAIN HAS BEEN SUCCESSFULLY TESTED AND DISINFECTED.
4. IF HDPE PIPE IS INSTALLED BY DIRECTIONAL DRILL, IT SHALL BE FILLED WITH WATER AND NOT BE CONNECTED TO ANY OTHER PIPE OR FITTINGS FOR ONE WEEK FROM THE TIME OF INSTALLATION.
5. CONTRACTOR SHALL COORDINATE WITH IREDELL WATER CORPORATION TO SCHEDULE SHUT OFF IN ADVANCE. CONTACT DANNY SLOAN BY PHONE AT 704-876-0672 AND BY EMAIL AT DSLOAN@IREDELLWATER.COM.
6. THE CONTRACTOR SHALL MAKE EVERY EFFORT TO PROVIDE A SMOOTH MATERIAL TRANSITION FROM PVC TO DUCTILE IRON AND DICTILE IRON TO HDPE.
7. IREDELL WATER CORP ENCOURAGES THE USE OF MECHANICAL JOINT RESTRAINTS FOR DUCTILE IRON PIPE AND GRIP RING PIPE RESTRAINTS ON PVC PIPE.

PROJECT REFERENCE NO. <i>BP12.R014</i>	SHEET NO. <i>UC-3</i>
DESIGNED BY: CS	
DRAWN BY: NP	
CHECKED BY: TM	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
KCI ASSOCIATES OF N.C., P.A. 4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-6270 Phone: (919) 783-9214 NC Firm License No: C-0764	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	

## UTILITY CONSTRUCTION



B-17/99

### WATER LINE DETAILS

TRACER WIRE SHALL BE #14 COPPER CLAD STEEL WITH 30 MIL HDPE INSULATION. SECURE TO PIPE WITH DUCT TAPE AT 10' INTERVALS. INSTALL ON ALL NON-METALLIC PIPES EXCEPT PIPES INSTALLED IN A STRAIGHT LINE BETWEEN STRUCTURES

4" SAND IN POOR SOIL AS DIRECTED BY ENG. OTHERWISE BED ON UNDISTURBED SOIL

HAUNCHING

MINIMUM SIDE CLEARANCE: 8"

MAXIMUM SIDE CLEARANCE: 12"

PIPE O.D.

BEDDING REQUIRED FOR PVC

NOT TO SCALE

DRAWN BY: JGA  
DATE: 06/13/2022  
REVISION: W-7A

MINIMUM SIDE CLEARANCE: 8"

MAXIMUM SIDE CLEARANCE: 12"

PIPE O.D.

BEDDING REQUIRED FOR DIP

NOT TO SCALE

DRAWN BY: JGA  
DATE: 06/13/2022  
REVISION: W-7B

REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS BASED ON TEST PRESSURE OF 150 PSI									
ALL AREAS GIVEN IN SQUARE FEET									
SIZE AND TYPE OF BEND	CONCRETE THRUST IN	BACKFILL IN TRENCH	BACKFILL IN POOR SOIL	GRASS/GRASS-SEED	GRAVEL	GRAVEL	GRAVEL	GRAVEL	GRAVEL
2"									
11 1/4"	93	0.14	0.09	0.07	0.03	0.03	0.02	0.02	0.01
22 1/2"	184	0.28	0.17	0.14	0.07	0.07	0.03	0.03	0.03
45"	360	0.54	0.34	0.27	0.14	0.14	0.07	0.07	0.05
90"	666	1.00	0.62	0.50	0.25	0.25	0.12	0.12	0.10
PLUG	471	0.71	0.44	0.35	0.18	0.18	0.09	0.09	0.07
4"									
11 1/4"	369	0.55	0.35	0.28	0.14	0.14	0.07	0.07	0.06
22 1/2"	735	1.10	0.69	0.55	0.28	0.28	0.14	0.14	0.11
45"	1,442	2.16	1.35	1.08	0.54	0.54	0.27	0.27	0.22
90"	2,665	4.00	2.50	2.00	1.00	1.00	0.50	0.50	0.40
PLUG	1,884	2.83	1.77	1.41	0.71	0.71	0.35	0.35	0.28
6"									
11 1/4"	831	1.25	0.78	0.62	0.31	0.31	0.16	0.16	0.12
22 1/2"	1,654	2.48	1.55	1.24	0.62	0.62	0.31	0.31	0.25
45"	3,244	4.87	3.04	2.43	1.22	1.22	0.61	0.61	0.49
90"	5,995	9.00	5.62	4.50	2.25	2.25	1.12	1.12	0.90
PLUG	4,239	6.36	3.97	3.18	1.59	1.59	0.79	0.79	0.64
8"									
11 1/4"	1,477	2.22	1.39	1.11	0.55	0.55	0.28	0.28	0.22
22 1/2"	2,940	4.41	2.76	2.21	1.10	1.10	0.55	0.55	0.44
45"	5,788	8.66	5.41	4.33	2.16	2.16	1.08	1.08	0.87
90"	10,658	16.00	9.99	7.99	4.00	4.00	2.00	2.00	1.60
PLUG	7,536	11.31	7.07	5.65	2.83	2.83	1.41	1.41	1.13
10"									
11 1/4"	2,308	3.46	2.16	1.73	0.87	0.87	0.43	0.43	0.35
22 1/2"	4,595	6.90	4.31	3.45	1.72	1.72	0.86	0.86	0.69
45"	9,012	13.53	8.45	6.76	3.38	3.38	1.69	1.69	1.35
90"	16,653	24.99	15.61	12.49	6.25	6.25	3.12	3.12	2.50
PLUG	11,776	17.67	11.04	8.83	4.42	4.42	2.21	2.21	1.77
12"									
11 1/4"	3,016	4.52	2.82	2.63	1.14	1.14	0.56	0.56	0.46
22 1/2"	6,004	9.02	5.63	4.51	2.25	2.25	1.12	1.12	0.90
45"	11,776	17.68	11.04	8.84	4.41	4.41	2.21	2.21	1.76
90"	21,760	32.65	20.40	16.32	8.17	8.17	4.08	4.08	3.27
PLUG	15,386	23.09	14.43	11.54	5.78	5.78	2.89	2.89	2.31

NOTES:  
1. CONCRETE SHALL BE 3,000 PSI.  
2. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT FITTINGS.  
3. ALL BENDS AND INTERSECTIONS SHALL HAVE CONCRETE THRUST BLOCKING.  
4. TRENCH SIDE TO BE AT AN ANGLE OF 90° TO THE THRUST VECTOR.

TEE INTERSECTION

BEND

CONCRETE THRUST BLOCKING

NOT TO SCALE

DRAWN BY: JGA  
DATE: 06/13/2022  
REVISION: W-2

PROJECT REFERENCE NO. **BP12.R014** SHEET NO. **UC-3A**

DESIGNED BY: CS  
DRAWN BY: NP  
CHECKED BY: TM  
APPROVED BY:  
REVISED:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151

UTILITY CONSTRUCTION PLANS ONLY

KCI ASSOCIATES OF N.C., P.A.  
4505 Falls of Neuse Road, Suite 400  
Raleigh, NC 27609-6570  
Phone: (919) 783-9214  
NC Firm License No: C-0764

**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**

### UTILITY CONSTRUCTION

05-MAR-2024 09:07 NCDOT BP12.R014 Bridge 221\Water-Wastewater\BP12.R014.ut..dtl\_UC3A.psh.dgn

NOTES:  
1. A PLAN & PROFILE SHALL BE PROVIDED FROM ENTRY TO EXIT FOR EACH DIRECTIONAL BORE SECTION BY THE BORE CONTRACTOR.  
2. ALL BORE SECTIONS SHALL BE HYDROSTATICALLY TESTED PER SPECIFICATIONS UPON COMPLETION OF INSTALLATION & PRIOR TO PLACING THE PIPELINE INTO SERVICE.  
3. LENGTH OF CROSSING, LOCATION OF INSPECTION PIT, NUMBER OF HDPE PIPE JOINTS, LOCATION OF BORE MACHINE, AUGER ENTRANCE LOCATION, & TIE-IN POINTS ARE TO BE APPROVED BY ENGINEER PRIOR TO START OF WORK.  
4. THE BORE DEVELOPED FOR THE LEAD-IN END OF THE PIPE SHALL BE KEPT TO A MINIMUM DIAMETER FOR THE PIPE INSTALLATION. THE LEAD-IN END SHALL BE PULLED THROUGH WITHOUT THE MJ FLANGE. ATTACHED FOR LARGER THAN 6" PIPE INSTALLATIONS. THE MJ FLANGE FOR SAID LEAD-IN END SHALL BE INSTALLED AFTER THE PIPE INSTALLATION WITH THE USE OF A SPLIT MJ GLAND.  
5. TRACERWIRE SHALL BE #12 AWG COPPER CLAD STEEL WITH A MINIMUM 1,150 LB. BREAK LOAD AND A MINIMUM 45 MIL HDPE INSULATION THICKNESS.

HORIZONTAL DIRECTIONAL DRILL

NOT TO SCALE

DRAWN BY: JGA  
DATE: 06/13/2022  
REVISION: W-6A

HDPE / PVC TRANSITION ASSEMBLY

HDPE / MJ TRANSITION ASSEMBLY

HORIZONTAL DIRECTIONAL DRILL

NOT TO SCALE

DRAWN BY: JGA  
DATE: 06/13/2022  
REVISION: W-6B





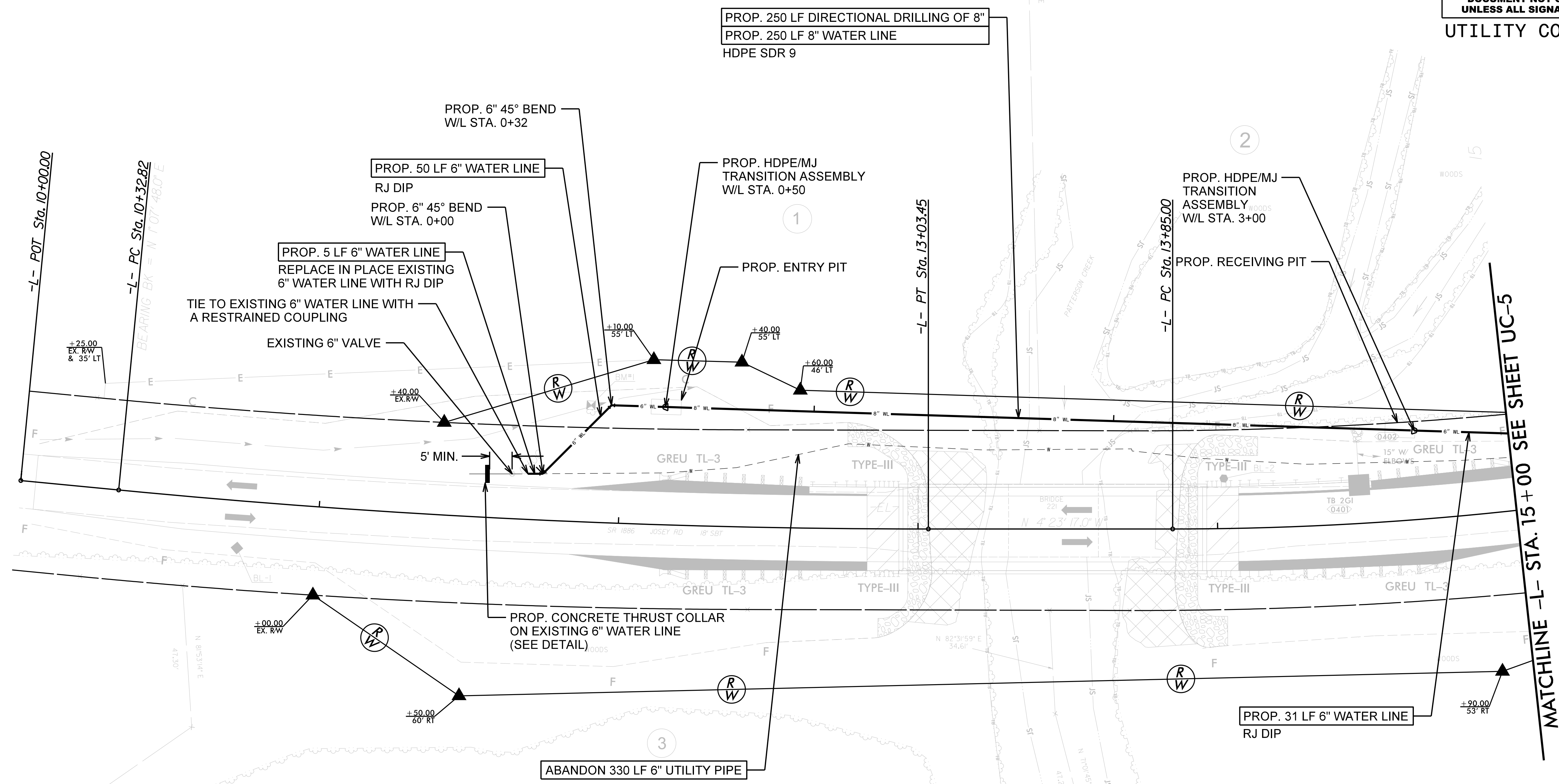


8/17/99

NOTE:  
PRIOR TO COMMENCING ANY WORK ON ANY TRENCHLESS INSTALLATION ON THIS PROJECT, PROVIDE A DESIGN FOR THE TRENCHLESS INSTALLATION CERTIFIED BY AN ENGINEER LICENSED BY THE STATE OF NORTH CAROLINA, AS REQUIRED BY SUB-ARTICLE 1550-3(B) OF THE STANDARD SPECIFICATIONS.

PROJECT REFERENCE NO.	BPI2.R014	SHEET NO.	UC-4
DESIGNED BY:	CS		
DRAWN BY:	NP		
CHECKED BY:	TM		
APPROVED BY:			
REVISED:			
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION		UTILITY CONSTRUCTION PLANS ONLY	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151		KCI ASSOCIATES OF N.C., P.A. 4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-6270 Phone (919) 783-9214 NC Firm License No: C-0764	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>			

### UTILITY CONSTRUCTION



MATCHLINE -L- STA. 15+00 SEE SHEET UC-5

FOR -L- PROFILE, SEE SHEET NO. UC-6

PROP. 150 POUNDS OF DUCTILE IRON WATER PIPE FITTINGS

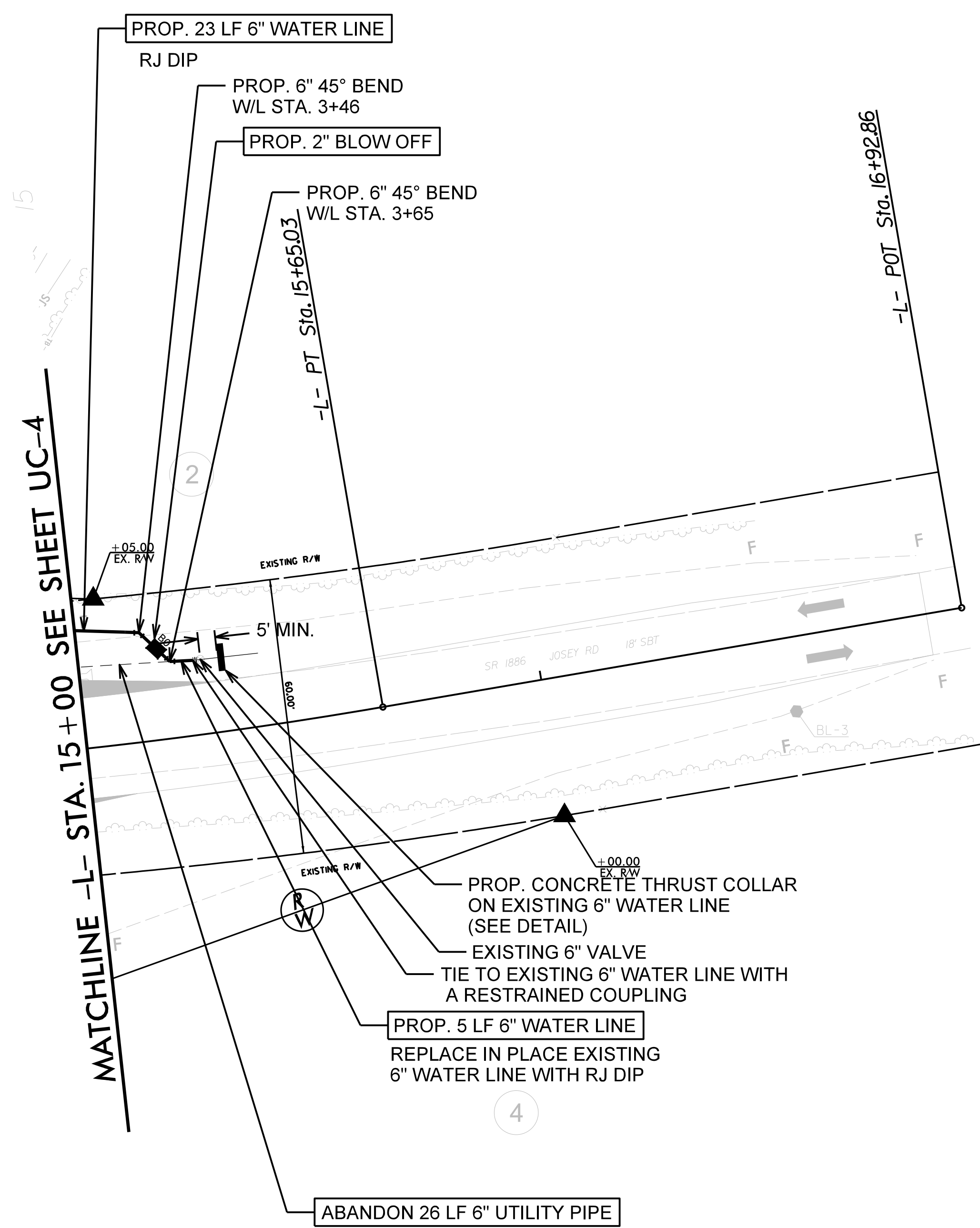


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8/17/99

25-MAR-2024 16:10  
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KCI\USER\NAME

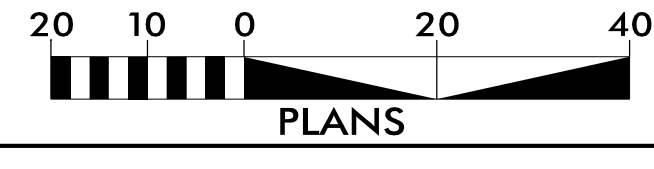


PROJECT REFERENCE NO. <b>BP12.R014</b>	SHEET NO. <b>UC-5</b>
DESIGNED BY: <b>CS</b>	
DRAWN BY: <b>NP</b>	
CHECKED BY: <b>TM</b>	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151 UTILITY CONSTRUCTION PLANS ONLY	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	
<b>UTILITY CONSTRUCTION</b>	

MATCHLINE -L- STA. 15 + 00 SEE SHEET UC-4

FOR -WL- PROFILE, SEE SHEET NO. UC-6

PROP. 150 POUNDS OF DUCTILE IRON WATER PIPE FITTINGS





5/19/2024  
 06-FEB-2024 08:34  
 M:\2024\2024-02-02 NC DOT BP12.R014 Bridge 221\Roadway\Corridor-Modeling\BP12.R014\_Rdy\_xsc\_X-1.dgn

COMPUTED BY: J.BRYANT    DATE: 8/7/2023  
 CHECKED BY: B. SMITH    DATE: 8/7/2023

PROJ. REFERENCE NO.	SHEET NO.
BP12.R014	X-1

## STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

**Approximate quantities only. Unclassified excavation, borrow, fine grading, clearing and grubbing, and removal of existing pavement will be paid for at the lump sum price for "Grading".**

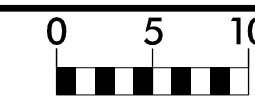
NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT

### CROSS-SECTION SUMMARY

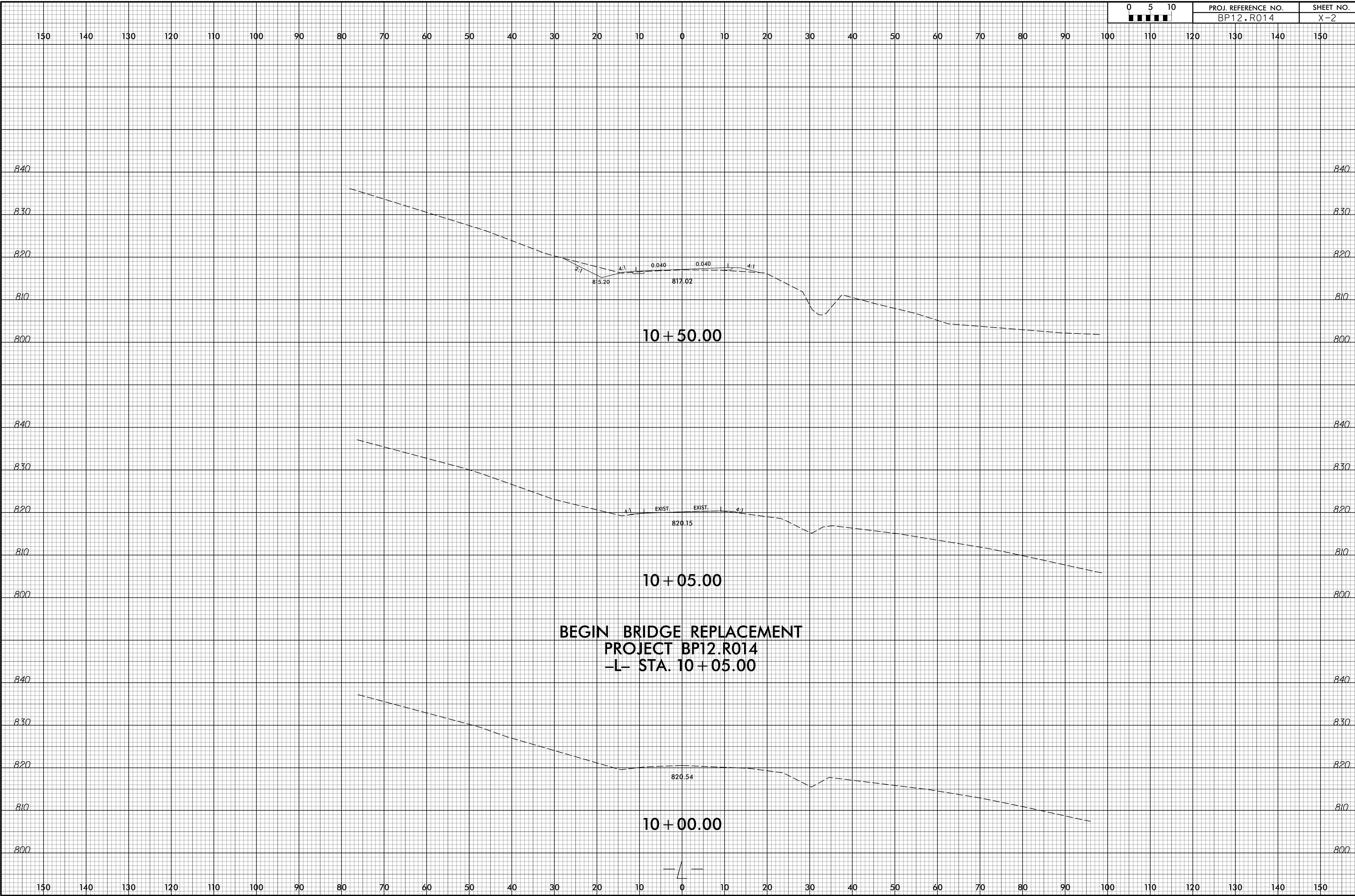
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10+05.00	0	0
10+50.00	13	4
11+00.00	25	17
11+50.00	46	119
12+00.00	41	291
12+50.00	5	330
12+93.63	0	264
Station	Uncl. Exc.	Embt
L	(cu. yd.)	(cu. yd.)
13+96.38	0	0
14+00.00	0	22
14+50.00	0	275
15+00.00	0	206
15+50.00	0	119
16+00.00	0	52
16+50.00	1	19
16+85.00	1	1



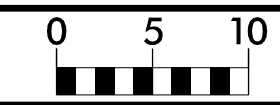
6/23/16



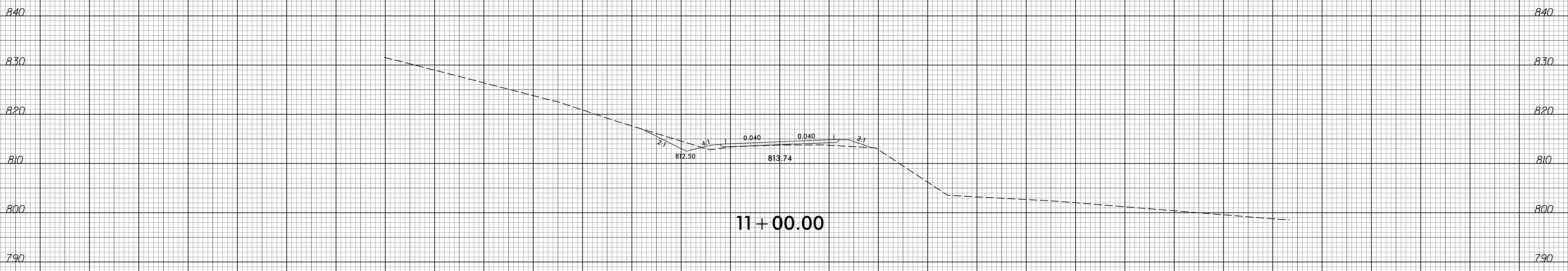
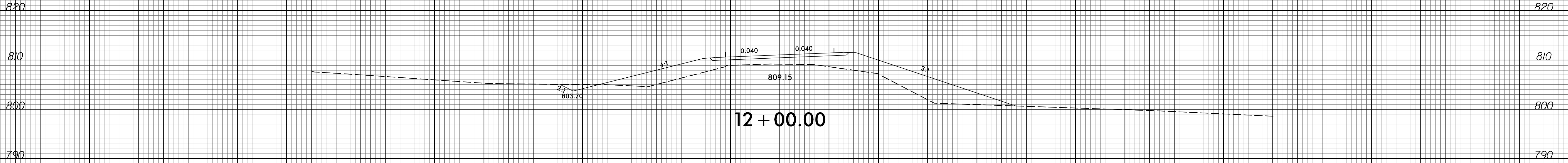
PROJ. REFERENCE NO.	SHEET NO.
BP12.R014	X-2



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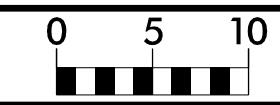


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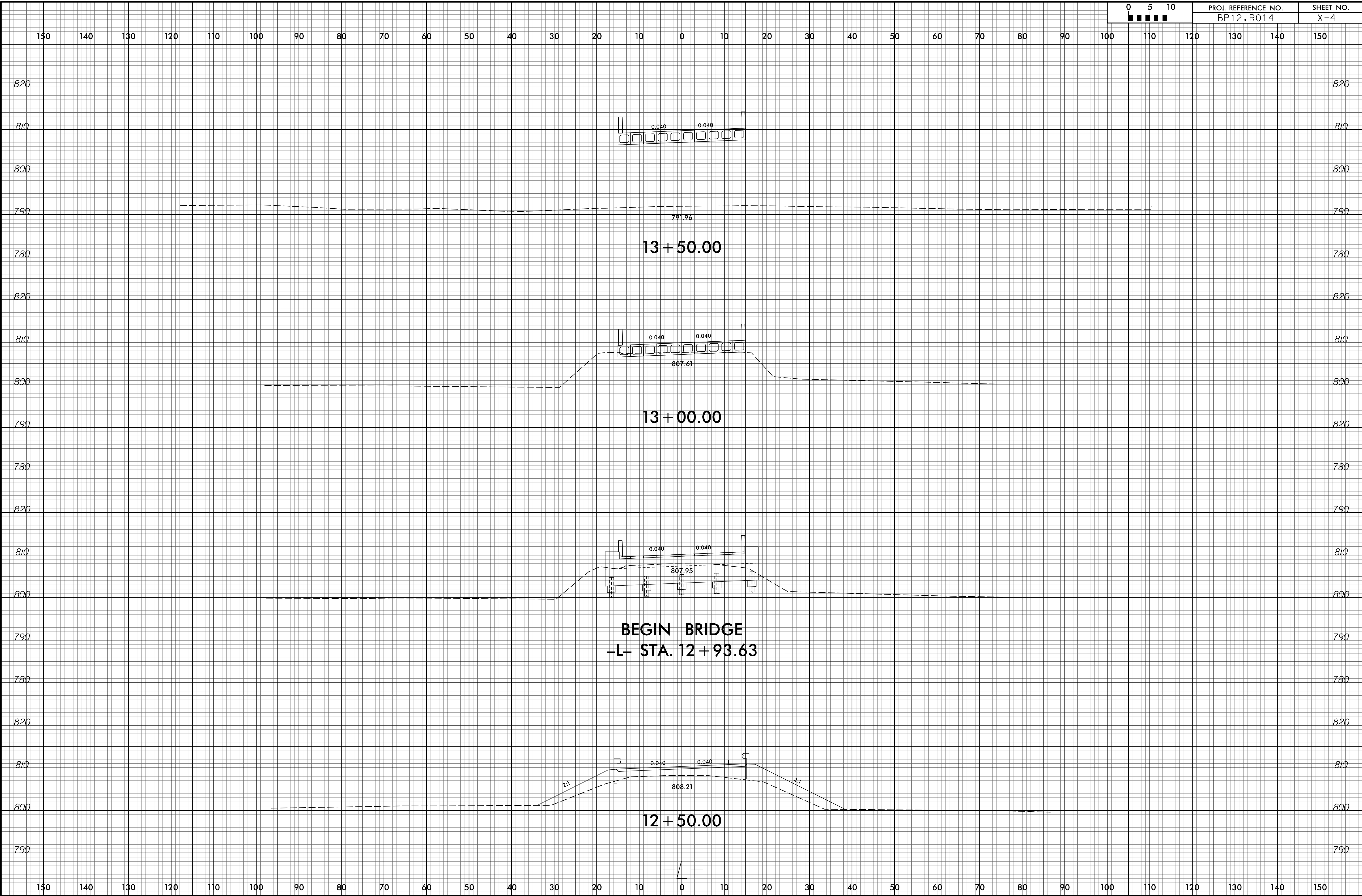
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6/23/16



PROJ. REFERENCE NO.  
BP12.R014

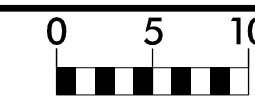
SHEET NO.  
X-4



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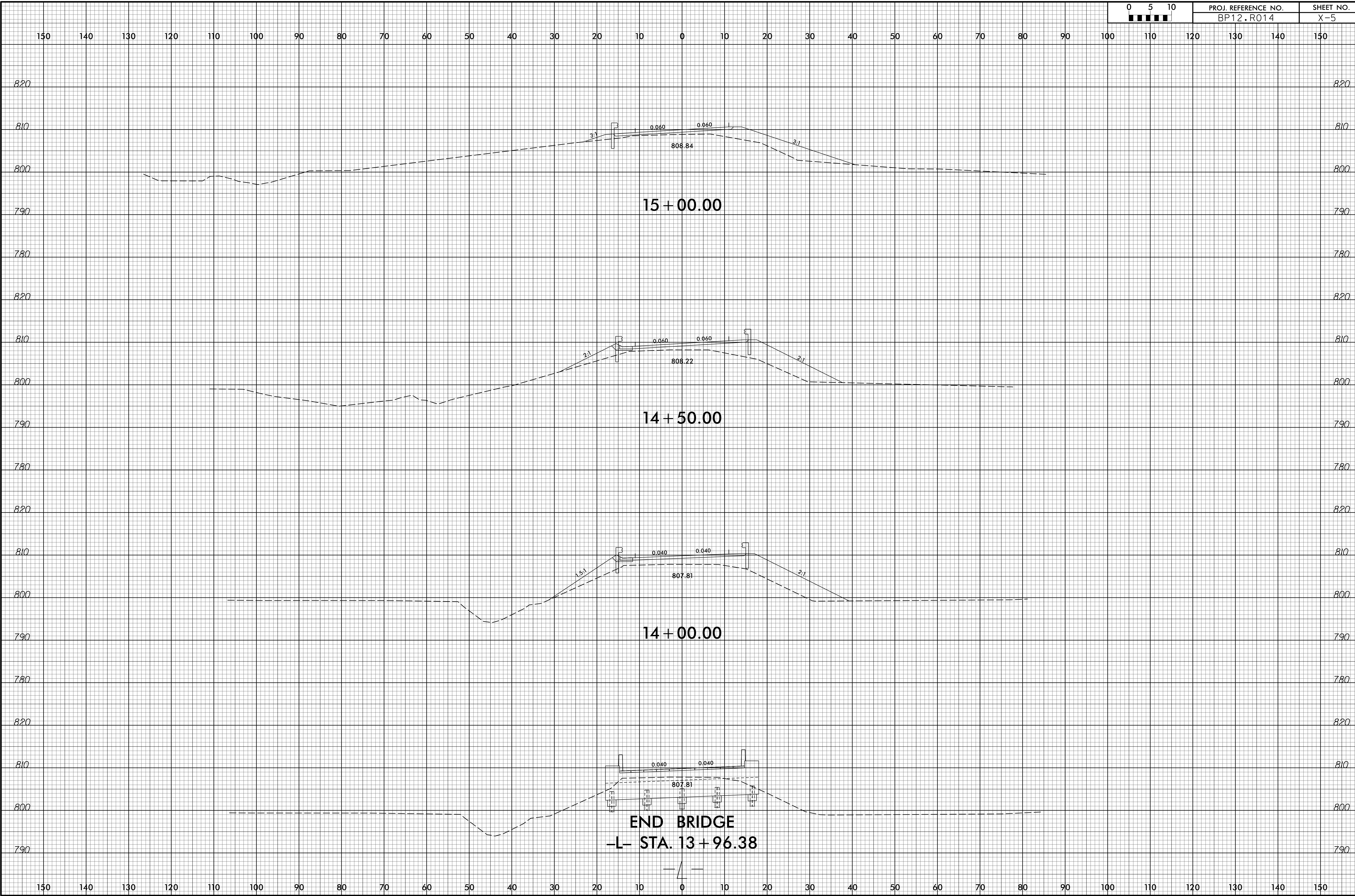


6/23/16



PROJ. REFERENCE NO.  
BP12.R014

SHEET NO.  
X-5



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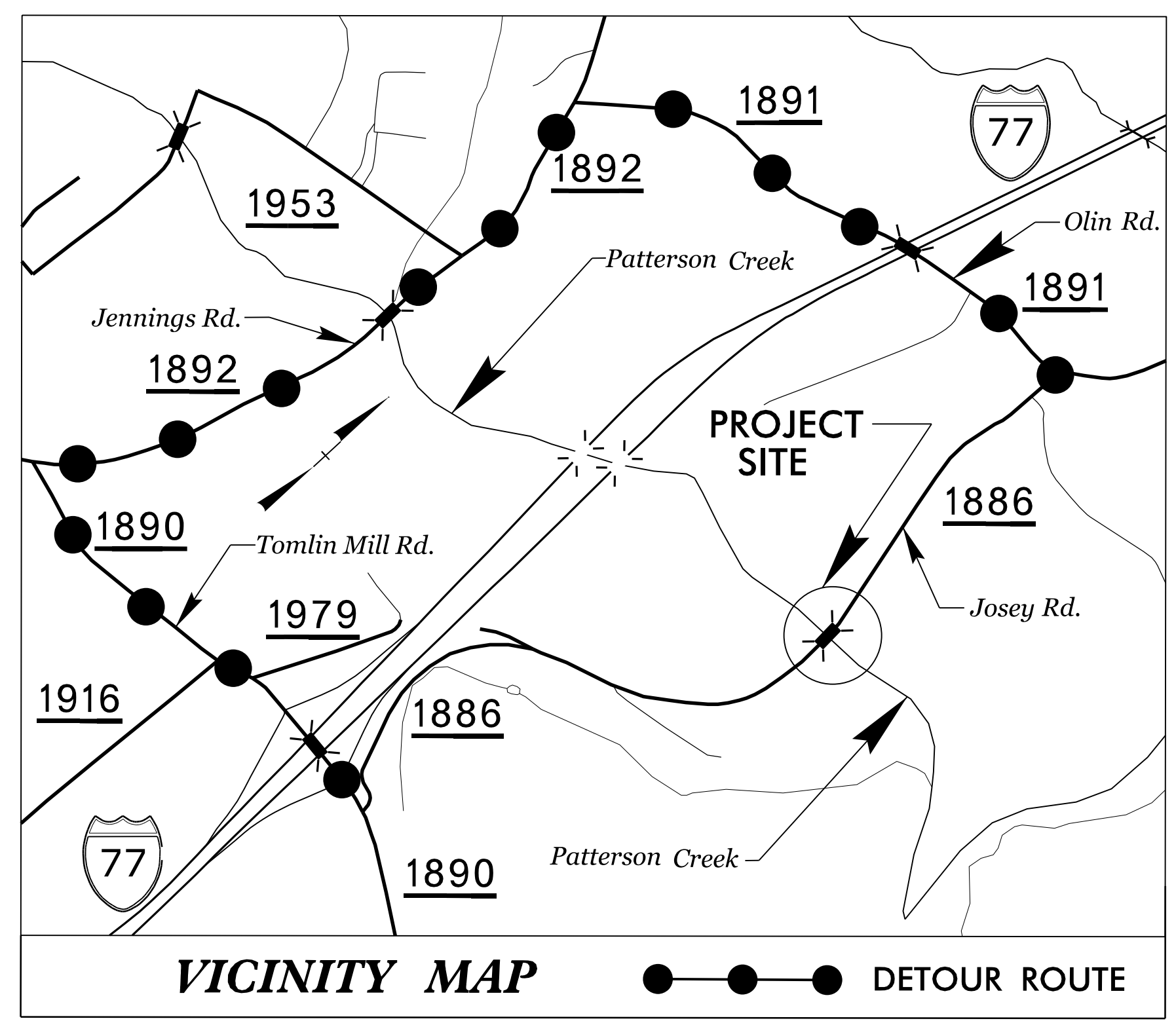


09/08/19

**STATE PROJECT: BP12.R014**

**CONTRACT: DL00334**

See Sheet 1-A For Index of Sheets  
See Sheet 1B for Conventional Symbols

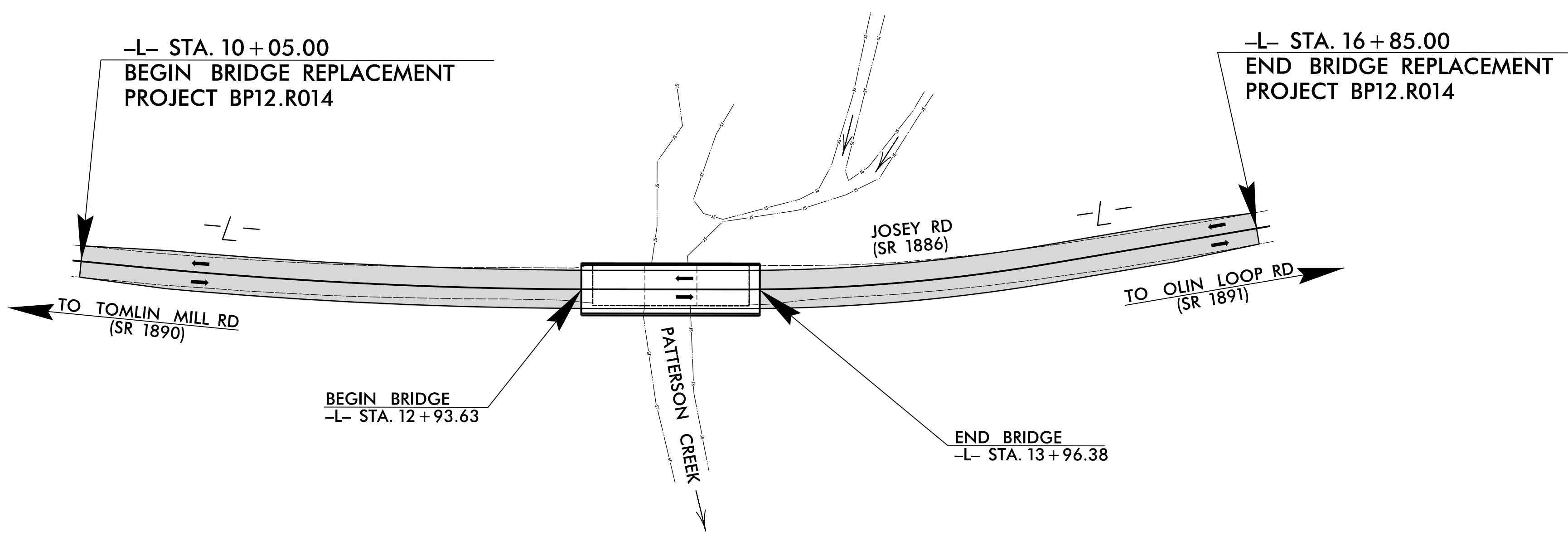
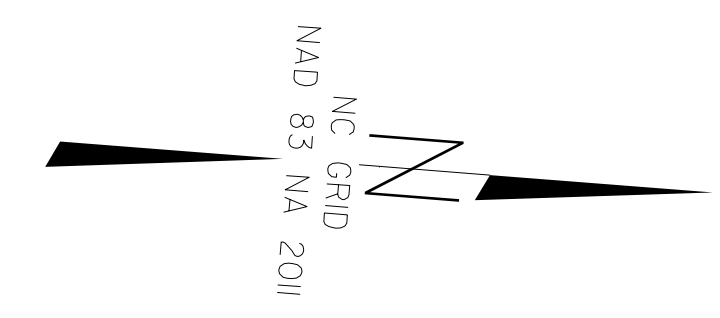


STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
**IREDELL COUNTY**

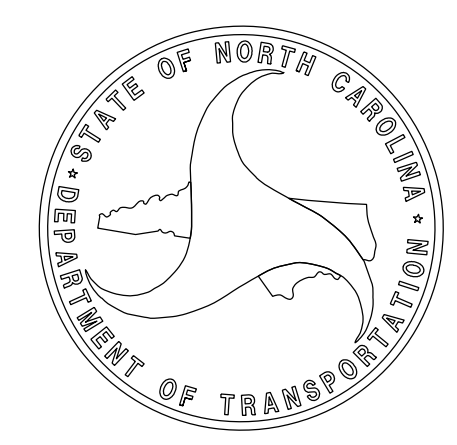
**LOCATION: BRIDGE NO. 221 OVER PATTERSON CREEK  
ON SR 1886 (JOSEY ROAD)**

**TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	<b>BP12.R014</b>		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
BP12.R014.1		PE	
BP12.R014.2		RW, UTIL.	
BP12.R014.3		CONST.	



**INCOMPLETE PLANS**  
DO NOT USE FOR R/W ACQUISITION  
**DOCUMENT NOT CONSIDERED FINAL**  
UNLESS ALL SIGNATURES COMPLETED



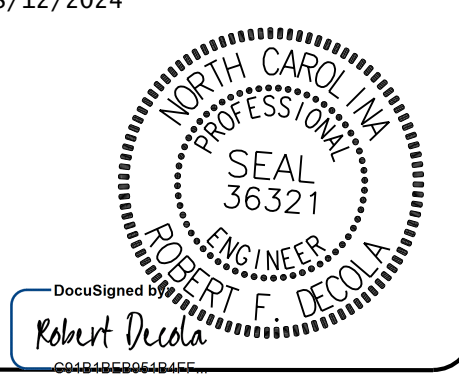
**DESIGN DATA**

ADT 2017 =	420
ADT 2022 =	420
V =	60 MPH
FUNC CLASS =	LOCAL
SUB-REGIONAL TIER	

**PROJECT LENGTH**

LENGTH OF ROADWAY TIP PROJECT BP12.R014	=	0.110 MILES
LENGTH OF STRUCTURE TIP PROJECT BP12.R014	=	0.019 MILES
TOTAL LENGTH OF TIP PROJECT B0271	=	0.129 MILES

8/12/2024



Prepared in the Office of: KCI Associates of N.C., P.A. 4601 Six Forks Road Landmark Center II, Suite 220 Raleigh, NC 27609 Phone (919) 783-9214 Fax (919) 783-9266 <a href="http://www.kci.com">http://www.kci.com</a>	Plans Prepared For: <b>HIGHWAY DIVISION 12</b> 1710 E. Marion St. (US 74 Bus) Shelby NC, 28151
2024 STANDARD SPECIFICATIONS	<b>ROBERT F. DECOLA, P.E.</b> PROJECT ENGINEER
<b>LETTING DATE:</b> OCTOBER 22, 2024	<b>MATTHEW G. ARMSTRONG, PE</b> PROJECT DESIGN ENGINEER
<b>NCDOT CONTACT: JOSH WHITE, P.E.</b> DIVISION 12 - BRIDGE PROGRAM MANAGER	

08-AUG-2024 10:16 M:\2022\252201522\_02 NCDOT BP12.R014 Bridge 22\Structures\Drawings\TITLE SHEET\B0221\_Str\_tsh.dgn \$\$\$USERNAME\$\$\$

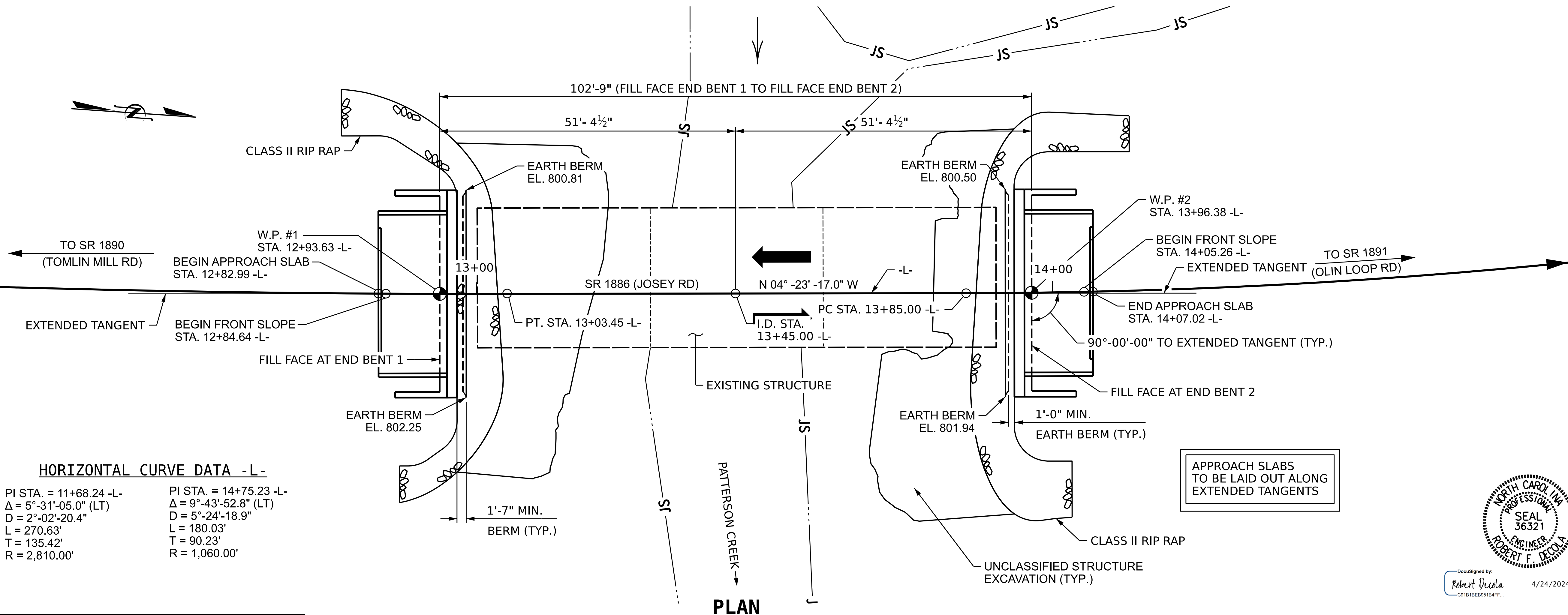
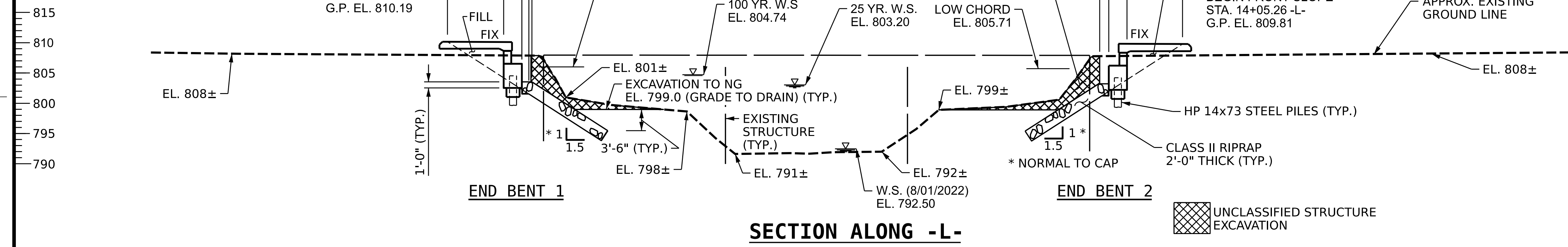


**VERTICAL CURVE DATA -L-**

(-)7.3077% (-)0.3095%  
 PI = 11+35.00 -L-  
 EL. = 810.65  
 VC = 260.00'

**VERTICAL CURVE DATA -L-**

(-)0.3095% (+)3.7231%  
 PI = 15+55.00 -L-  
 EL. = 809.35  
 VC = 260.00'



I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

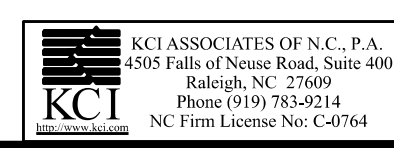
PROJECT NO. **BP12.R014**  
**IREDELL** COUNTY  
 STATION: **13+45.00 -L-**  
 SHEET 1 OF 4 REPLACES BRIDGE 480221

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 FOR BRIDGE ON SR 1886 (JOSEY RD) OVER PATTERSON CREEK BETWEEN SR 1890 (TOMLIN MILL RD) AND SR 1891 (OLIN LOOP RD)



DocuSigned by:  
 Robert DeCola  
 4/24/2024

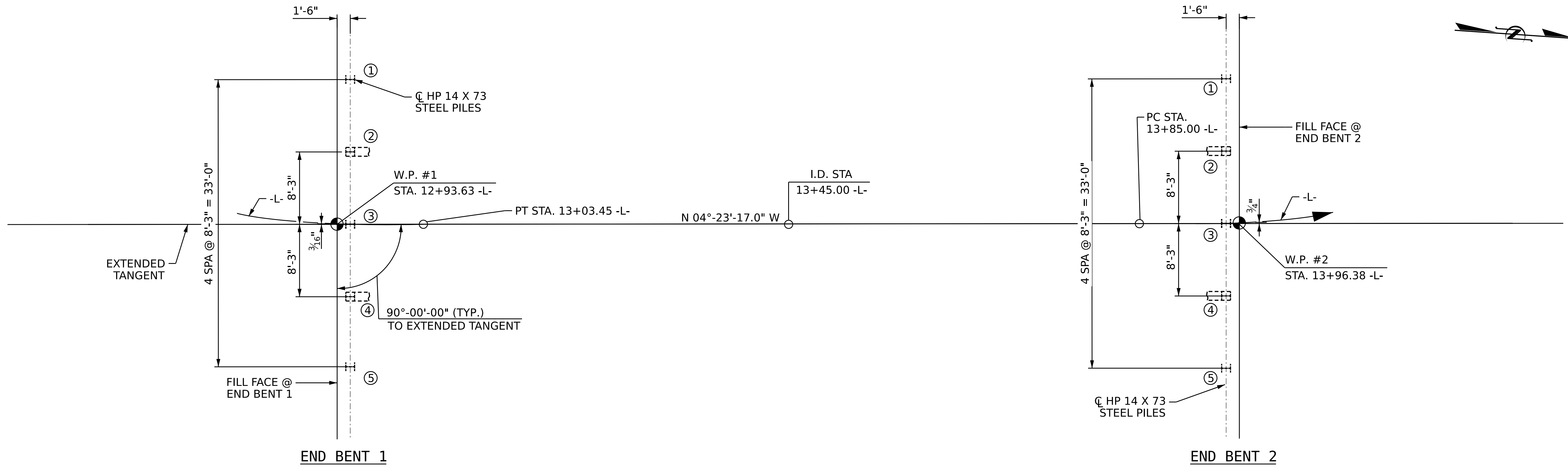
DRAWN BY: M.G. Armstrong DATE: 1/27/23  
 CHECKED BY: R.F. DeCola DATE: 3/7/23  
 DESIGN ENGINEER OF RECORD: R.F. DeCola DATE: 4/24/2024



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S-01  
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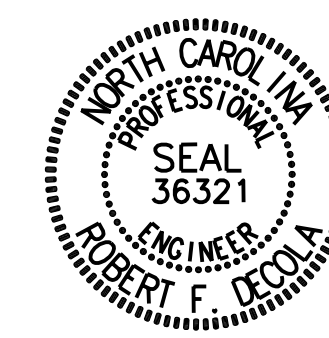


**FOUNDATION LAYOUT**  
 DIMENSIONS LOCATING PILES ARE  
 SHOWN TO CENTERLINE OF PILE

NOTE: BRIDGE TO BE CONSTRUCTED ON EXTENDED TANGENT  
 FOR FOUNDATION NOTES, SEE SHEET S-03

PROJECT NO. **BP12.R014**  
**IREDELL** COUNTY  
 STATION: **13+45.00 -L-**

SHEET 2 OF 4  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 FOR BRIDGE ON SR 1886  
 (JOSEY RD) OVER PATTERSON CREEK  
 BETWEEN SR 1890 (TOMLIN MILL RD)  
 AND SR 1891 (OLIN LOOP RD)



DocuSigned by:  
 Robert DeCola  
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DRAWN BY : **M.G. Armstrong** DATE : **1/27/23**  
 CHECKED BY : **R.F. DeCola** DATE : **3/7/23**  
 DESIGN ENGINEER OF RECORD: **R.F. DeCola** DATE : **4/24/2024**

KCI ASSOCIATES OF N.C., P.A.  
 405 Falls of Neuse Road, Suite 400  
 Raleigh, NC 27609  
 Phone (919) 783-5214  
 NC Firm License No. C-0764

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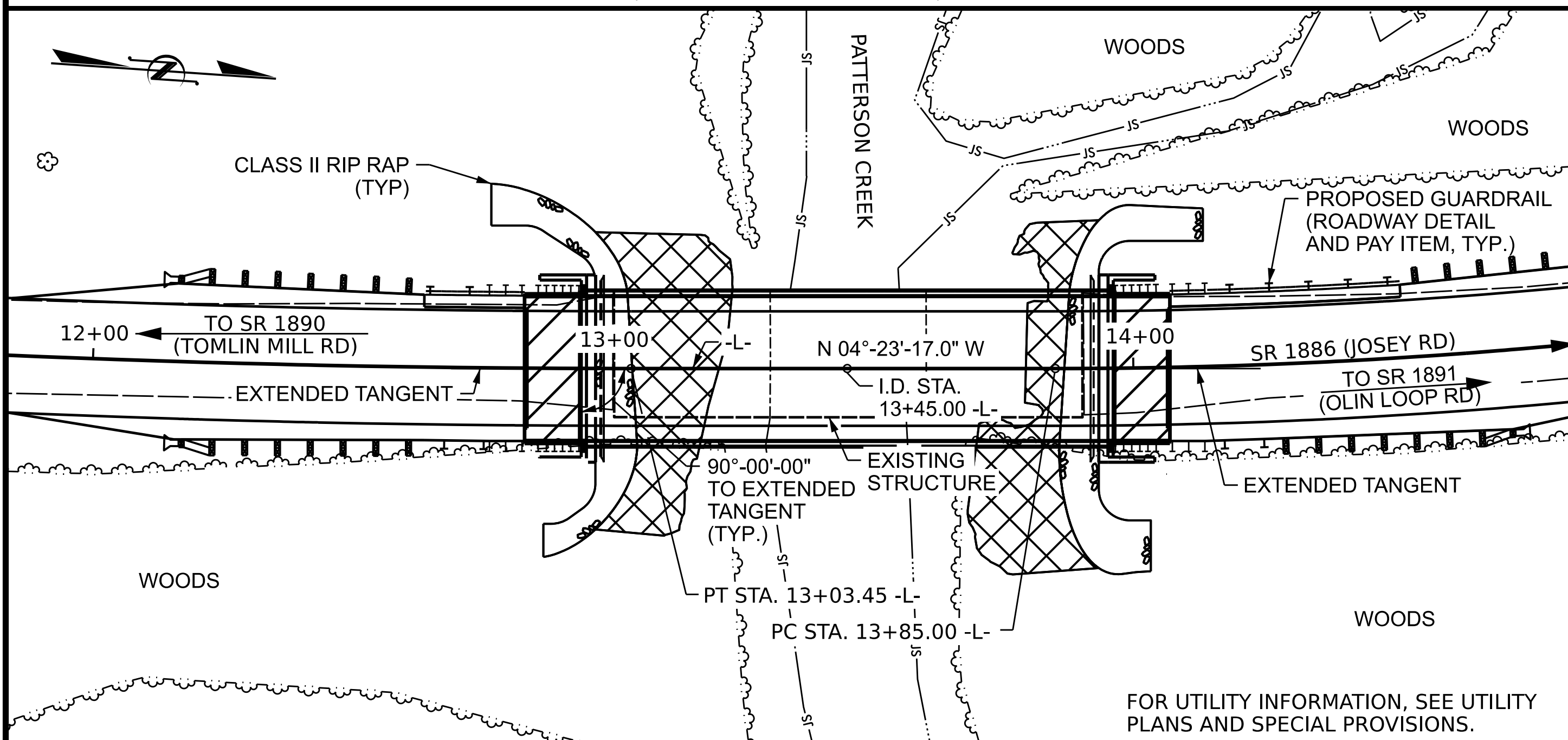
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S-02	TOTAL SHEETS
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BM #1 - BENCH TIE SPIKE SET IN 30" HICKORY STA. 11+89, 39' RT N 1453284 E 789107, EL 809.54 NAVD 88



**LOCATION SKETCH**

**HYDRAULIC DATA**

DESIGN DISCHARGE: = 4100 CFS  
 FREQUENCY OF DESIGN FLOOD: = 25 YRS  
 DESIGN HIGH WATER ELEVATION: = 803.2  
 DRAINAGE AREA: = 20.8 SQ. MI.  
 BASIC DISCHARGE (Q100): = 5,005 CFS  
 BASIC HIGH WATER ELEVATION: = 804.74

**OVERTOPPING FLOOD DATA**

OVERTOPPING DISCHARGE: = 10,200 CFS  
 FREQUENCY OF OVERTOPPING FLOOD = 500+ YRS  
 OVERTOPPING FLOOD ELEVATION = 810.4 \*  
 \* @ LOW POINT STA. 14+00 -L- RT  
 WS EL. TAKEN @ RIVER STATION 10836

**TOTAL BILL OF MATERIAL**

	REMOVAL OF EXISTING STRUCTURE AT STA. 13+45.00 -L-	ASBESTOS ASSESSMENT	UNCLASSIFIED STRUCTURE EXCAVATION AT STA. 13+45.00 -L-	CLASS A CONCRETE	BRIDGE APPROACH SLABS @ STA. 13+45.00 -L-	REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 14X73 STEEL PILES	HP 14X73 STEEL PILES	DYNAMIC PILE TESTING	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 3'-3" PRESTRESSED CONCRETE BOX BEAMS		
	LUMP SUM	LUMP SUM	LUMP SUM	CU.YDS.	LUMP SUM	LBS.	EA.	NO.	LIN.FT.	EA.	LIN.FT.	TONS	SQ.YDS.	LUMP SUM	NO.	LIN.FT.
SUPERSTRUCTURE					LUMP SUM								LUMP SUM	10	1000.0	
END BENT 1				29.4		4,431	5	5	150							
END BENT 2				29.4		4,431	5	5	190							
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	58.8	LUMP SUM	8,862	10	10	340	1	200.0	141	156	LUMP SUM	10	1000.0

**NOTES:**

- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
- THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN. (SHEET SNSM)
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR REMOVAL OF EXISTING STRUCTURE AT STATION 13+45.00 -L-."

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 26' FT LEFT AND 32' FT RIGHT OF CENTERLINE ROADWAY AT END BENT 1 AND A DISTANCE OF 29' FT LEFT AND 40' FT RIGHT OF CENTERLINE ROADWAY AT END BENT 2 AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

THE EXISTING STRUCTURE CONSISTING OF (3) 30'-0" PRESTRESSED CONCRETE CHANNEL SPANS ON CONCRETE CAPS WITH A CLEAR ROADWAY OF 24'-6" ON TIMBER ABUTMENTS AND LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, THE LOAD LIMIT MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH HEC 18 - EVALUATING SCOUR AT BRIDGES."

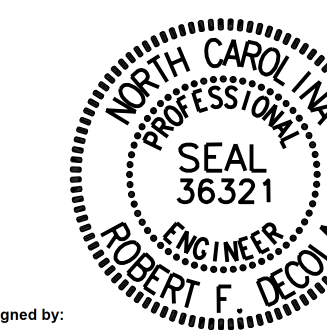
FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.

FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

PROJECT NO. **BP12.R014**  
**IREDELL** COUNTY  
 STATION: **13+45.00 -L-**

SHEET 4 OF 4



Designed by: Robert DeCola  
 4/24/2024

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**GENERAL DRAWING**

FOR BRIDGE ON SR 1886 (JOSEY RD) OVER PATTERSON CREEK BETWEEN SR 1890 (TOMLIN MILL RD) AND SR 1891 (OLIN LOOP RD)

DRAWN BY : M.G. Armstrong DATE : 1/27/23  
 CHECKED BY : R.F. DeCola DATE : 3/7/23  
 DESIGN ENGINEER OF RECORD: R.F. DeCola DATE : 4/24/2024

3/18/2024  
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 Matt.Armstrong



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S-04  
 TOTAL SHEETS  
 17



### LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LOAD TYPE	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVE-LOAD FACTORS (YLL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (YLL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD	HL-93(INVENTORY)	N/A	1	1.035	--	1.75	0.272	1.26	100'	EL	49.25	0.489	1.34	100'	EL	4.925	0.80	0.272	1.04	100'	EL	49.25		
	HL-93(OPERATING)	N/A		1.633	--	1.35	0.272	1.63	100'	EL	49.25	0.489	1.73	100'	EL	4.925	N/A	--	--	--	--	--		
	HS-20(INVENTORY)	36.000	2	1.440	51.840	1.75	0.272	1.75	100'	EL	49.25	0.489	1.81	100'	EL	4.925	0.80	0.272	1.44	100'	EL	49.25		
	HS-20(OPERATING)	36.000		2.271	81.756	1.35	0.272	2.27	100'	EL	49.25	0.489	2.35	100'	EL	4.925	N/A	--	--	--	--	--		
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH	13.500		3.413	46.079	1.4	0.272	5.19	100'	EL	49.25	0.489	5.59	100'	EL	4.925	0.80	0.272	3.41	100'	EL	49.25	
		SNGARBS2	20.000		2.473	49.452	1.4	0.272	3.76	100'	EL	49.25	0.489	3.91	100'	EL	4.925	0.80	0.272	2.47	100'	EL	49.25	
		SNAGRIS2	22.000		2.313	50.885	1.4	0.272	3.52	100'	EL	49.25	0.489	3.60	100'	EL	4.925	0.80	0.272	2.31	100'	EL	49.25	
		SNCOTTS3	27.250		1.696	46.228	1.4	0.272	2.58	100'	EL	49.25	0.489	2.78	100'	EL	4.925	0.80	0.272	1.70	100'	EL	49.25	
		SNAGGRS4	34.925		1.390	48.556	1.4	0.272	2.11	100'	EL	49.25	0.489	2.26	100'	EL	4.925	0.80	0.272	1.39	100'	EL	49.25	
		SNS5A	35.550		1.361	48.398	1.4	0.272	2.07	100'	EL	49.25	0.489	2.27	100'	EL	4.925	0.80	0.272	1.36	100'	EL	49.25	
		SNS6A	39.950		1.238	49.456	1.4	0.272	1.88	100'	EL	49.25	0.489	2.05	100'	EL	4.925	0.80	0.272	1.24	100'	EL	49.25	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	SNS7B	42.000		1.178	49.496	1.4	0.272	1.79	100'	EL	49.25	0.489	2.00	100'	EL	4.925	0.80	0.272	1.18	100'	EL	49.25	
		TNAGRIT3	33.000		1.506	49.709	1.4	0.272	2.29	100'	EL	49.25	0.489	2.46	100'	EL	4.925	0.80	0.272	1.51	100'	EL	49.25	
		TNT4A	33.075		1.510	49.942	1.4	0.272	2.30	100'	EL	49.25	0.489	2.41	100'	EL	4.925	0.80	0.272	1.51	100'	EL	49.25	
		TNT6A	41.600		1.224	50.926	1.4	0.272	1.86	100'	EL	49.25	0.489	2.09	100'	EL	4.925	0.80	0.272	1.22	100'	EL	49.25	
		TNT7A	42.000		1.225	51.442	1.4	0.272	1.86	100'	EL	49.25	0.489	2.05	100'	EL	4.925	0.80	0.272	1.22	100'	EL	49.25	
		TNT7B	42.000		1.254	52.657	1.4	0.272	1.91	100'	EL	49.25	0.489	1.96	100'	EL	4.925	0.80	0.272	1.25	100'	EL	49.25	
		TNAGRIT4	43.000		1.203	51.711	1.4	0.272	1.83	100'	EL	49.25	0.489	1.91	100'	EL	4.925	0.80	0.272	1.20	100'	EL	49.25	
EMERGENCY VEHICLE (EV)	EV2	28.750		2.129	61.213	1.3	0.272	2.87	100'	EL	49.25	0.489	3.06	100'	EL	4.925	0.80	0.272	2.13	100'	EL	49.25		
	EV3	43.000	4	1.403	60.325	1.3	0.272	1.89	100'	EL	49.25	0.489	2.06	100'	EL	4.925	0.80	0.272	1.40	100'	EL	49.25		

#### LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	$\gamma_{rc}$	$\gamma_{im}$
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

#### NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

#### COMMENTS:

- 
- 
- 
- 

# CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING \*\*

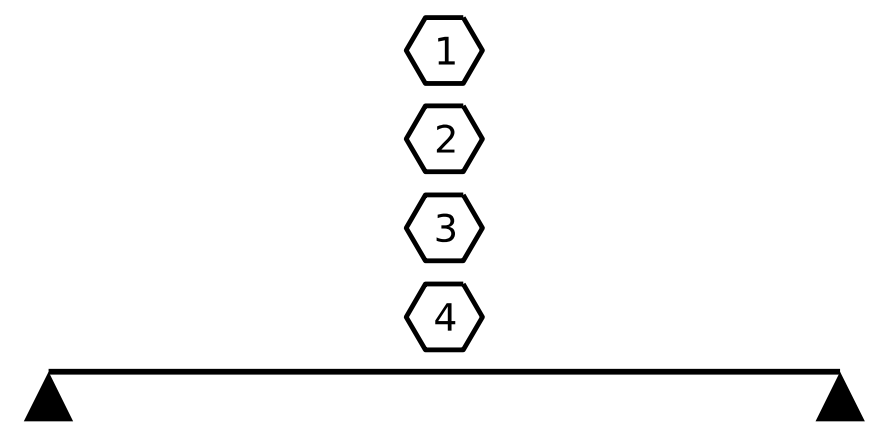
4 EMERGENCY VEHICLE LOAD RATING \*\*

\*\* SEE CHART FOR VEHICLE TYPE

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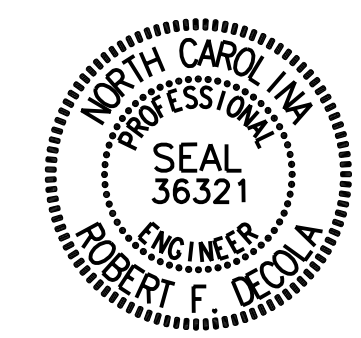
GIRDER LOCATION

I - INTERIOR GIRDER  
EL - EXTERIOR LEFT GIRDER  
ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY FOR SPAN "A"

PROJECT NO. **BP12.R014**  
**IREDELL** COUNTY  
 STATION: **13+45.00 -L-**

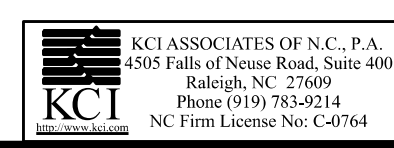


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Robert DeCola  
4/24/2024

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

STANDARD  
**LRFR SUMMARY FOR  
 100' BOX BEAM UNIT  
 90° SKEW**  
 (NON-INTERSTATE TRAFFIC)

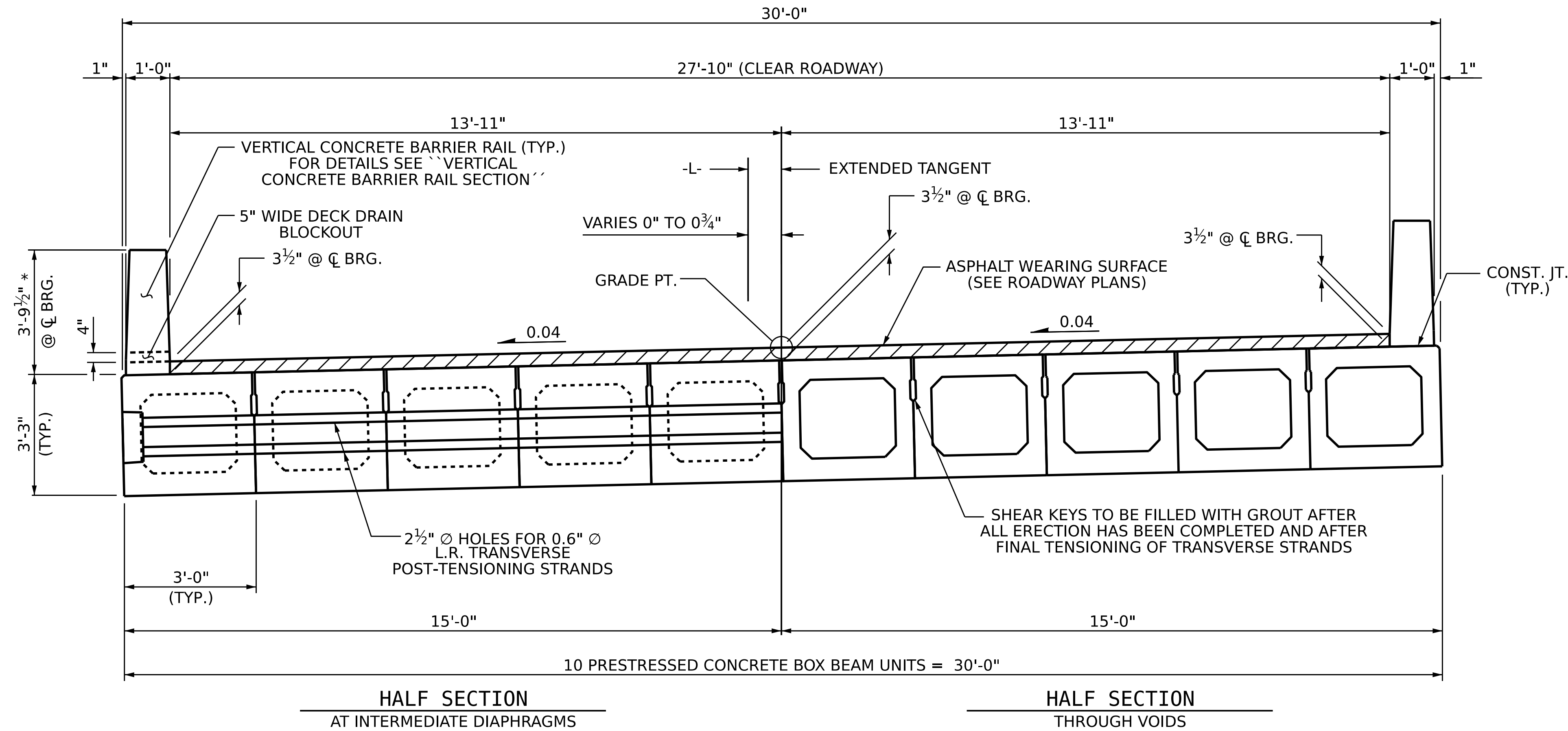
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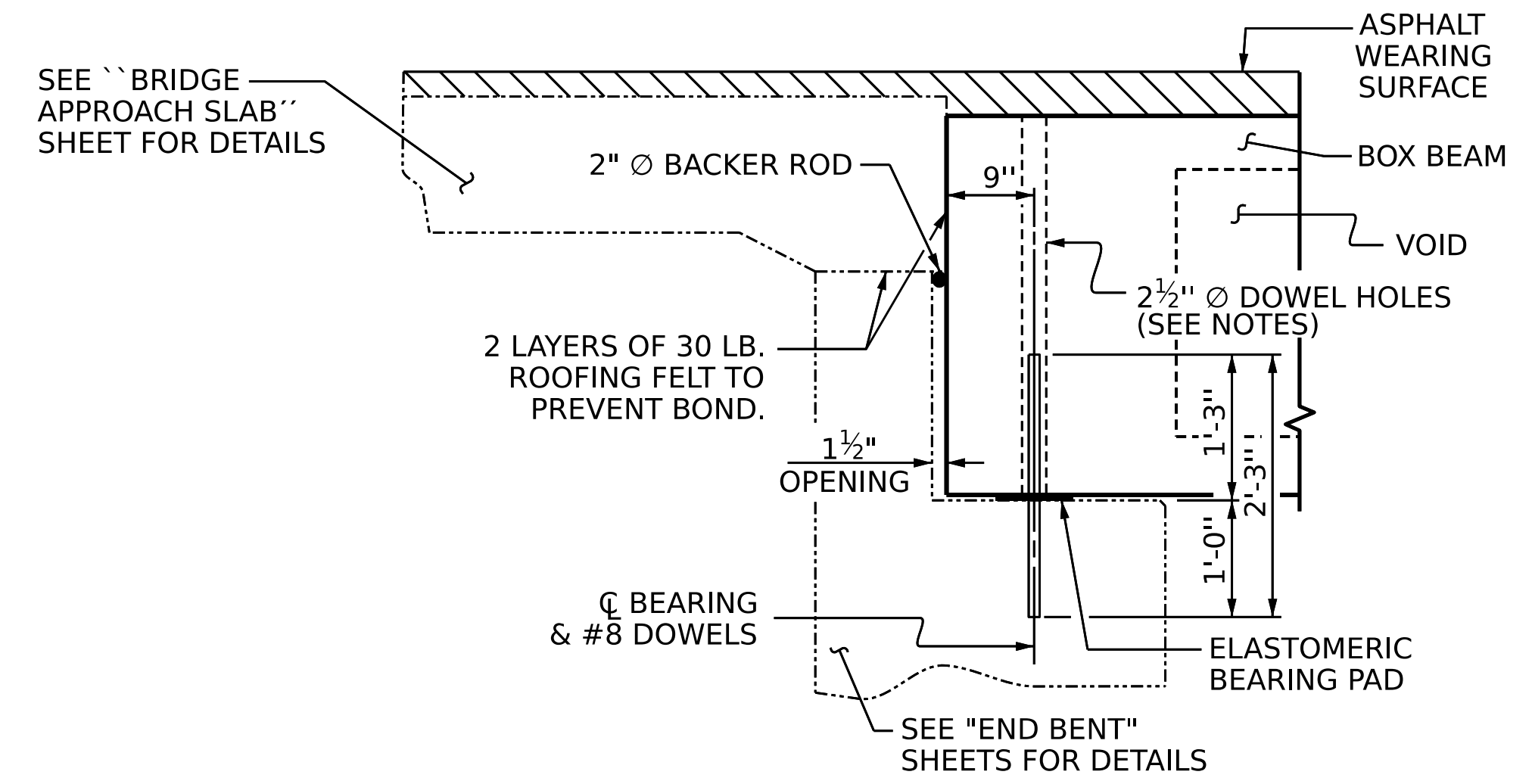
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**TYPICAL SECTION**

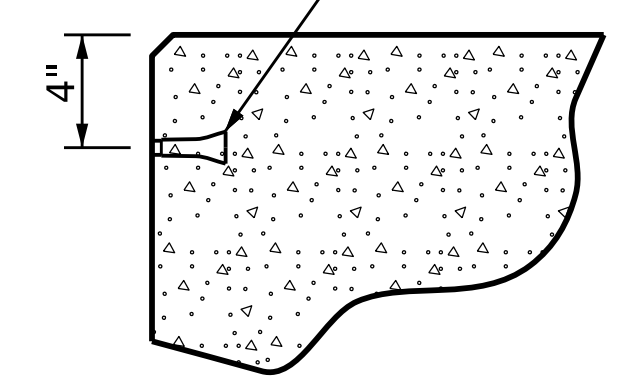
\* THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.

**FIXED END**



**SECTION AT END BENT**

PERMITTED THREADED INSERT CAST IN OUTSIDE FACE OF EXTERIOR UNIT AND RECESSED 3/8". SIZE TO BE DETERMINED BY CONTRACTOR.



**THREADED INSERT DETAIL**

**NOTES**

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL CAST WITH THE BOX BEAM SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE BOX BEAMS.

FLAME CUTTING OF THE TRANSVERSE POST-TENSIONING STRAND IS NOT ALLOWED.

RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.

THE 2 1/2" O DOWEL HOLES AT FIXED ENDS OF BOX BEAM SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE BACKER RODS SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE BOX BEAM UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 5,500 PSI.

ALL REINFORCING STEEL IN VERTICAL CONCRETE BARRIER RAILS SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE BOX BEAM UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS.

VERTICAL GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A VERTICAL CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

THE LOCATION OF THE VOID DRAINS MAY BE SHIFTED SLIGHTLY WHERE NECESSARY TO CLEAR PRESTRESSING STRANDS OR TRANSVERSE REINFORCING STEEL.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE PERMITTED THREADED INSERTS ARE DETAILED AS AN OPTION FOR THE CONTRACTOR TO ATTACH FALSEWORK AND FORMWORK DURING CONSTRUCTION.

THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4'-0" CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.

THE PERMITTED THREADED INSERTS SHALL BE GROUTED BY THE CONTRACTOR IMMEDIATELY FOLLOWING REMOVAL OF THE FALSEWORK.

THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.

THE DRAIN OPENING AT THE GUTTERLINE SHALL BE 4" X 5". THE HEIGHT OF THE BLOCKOUT IN THE VERTICAL CONCRETE BARRIER RAIL SHALL EXTEND FROM THE TOP OF THE BOX BEAM UNIT TO THE TOP OF THE DRAIN OPENING.

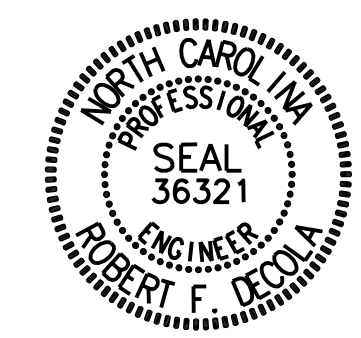
APPLY EPOXY PROTECTIVE COATING TO EXTERIOR FACE OF THE EXTERIOR BOX BEAM UNITS THAT REQUIRE DRAINS IN THE BARRIER RAIL.

PROJECT NO. **BP12.R014**  
**IREDELL** COUNTY  
 STATION: **13+45.00 -L-**

SHEET 1 OF 5

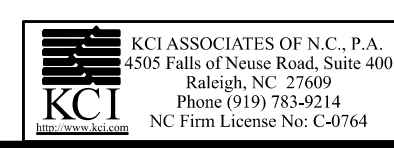
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

STANDARD  
**3'-0" X 3'-3"**  
**PRESTRESSED CONCRETE**  
**BOX BEAM UNIT**



DocuSigned by:  
 Robert DeCola 4/24/2024

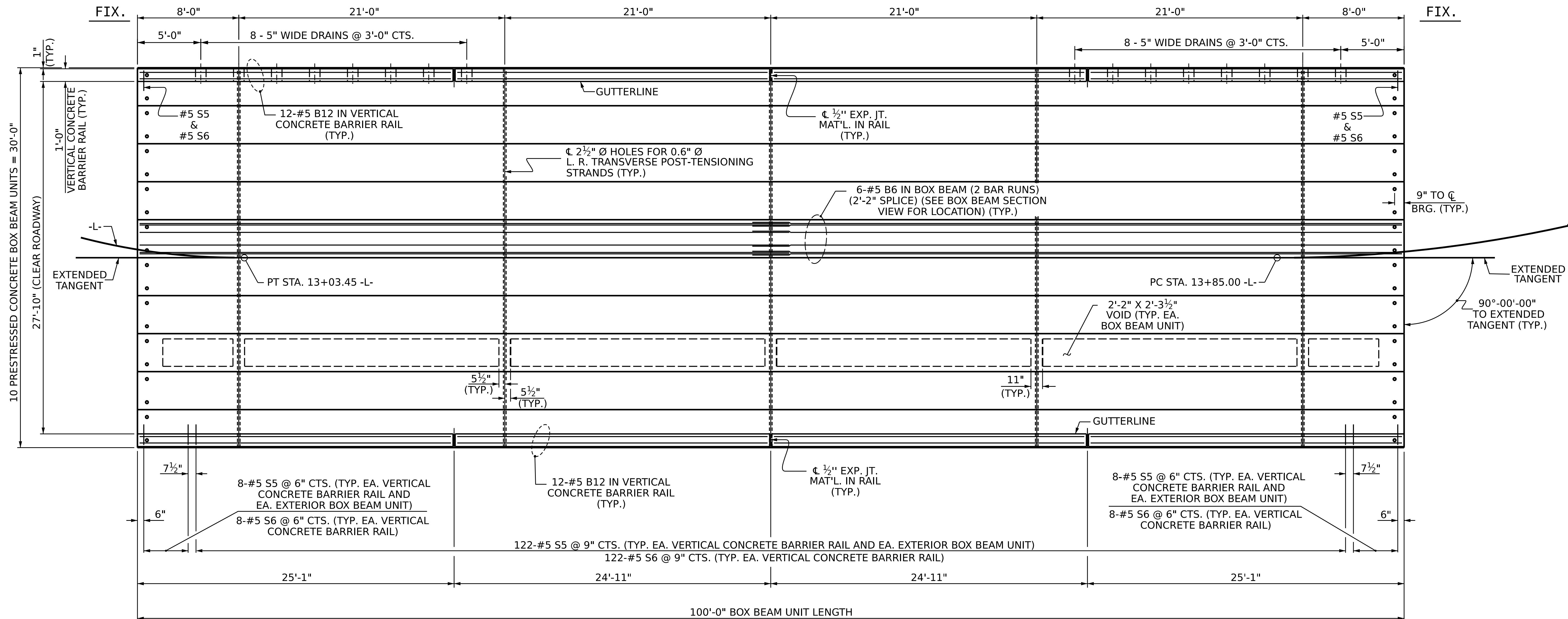
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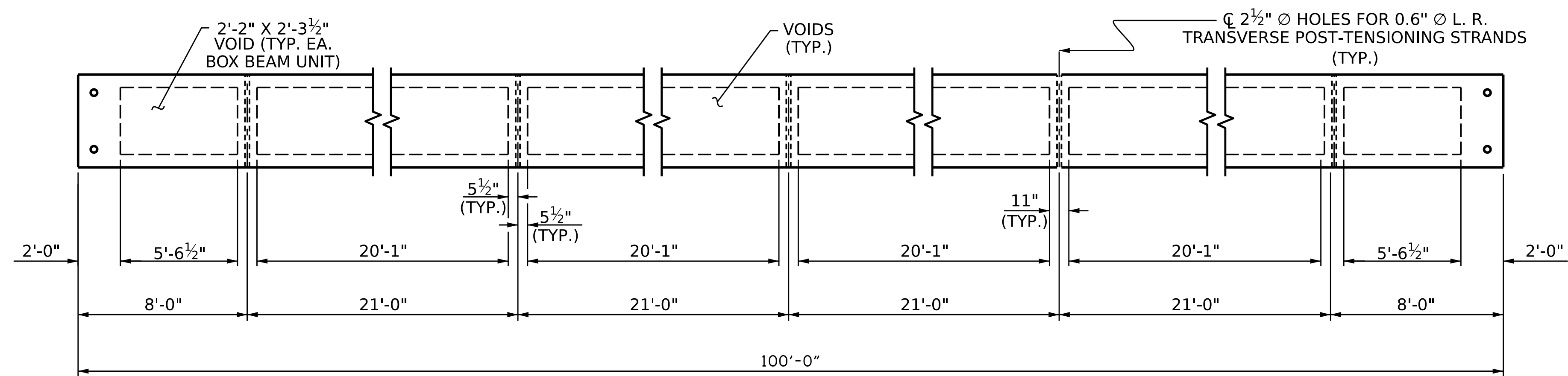
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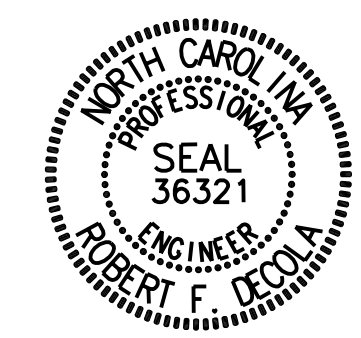


PLAN OF UNIT



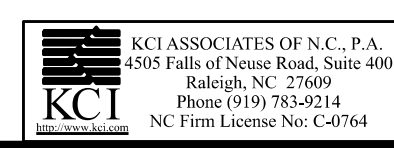
DIAPHRAGM AND VOID LAYOUT

PROJECT NO. **BP12.R014**  
**IREDELL** COUNTY  
 STATION: **13+45.00 -L-**  
 SHEET 2 OF 5



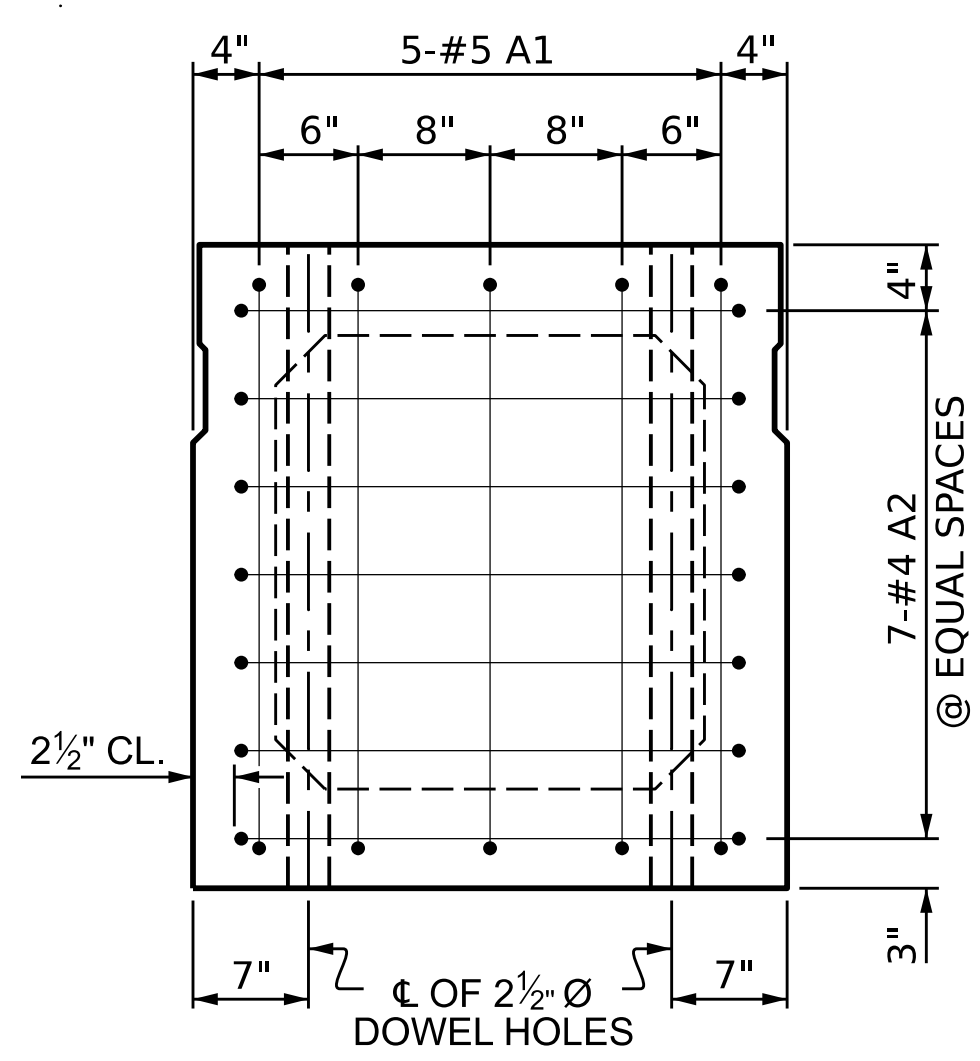
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**PLAN OF 100' UNIT  
 27'-10" CLEAR ROADWAY  
 90° SKEW**

DRAWN BY : M.G. Armstrong DATE : 1/27/23  
 CHECKED BY : R.F. DeCola DATE : 3/7/23  
 DESIGN ENGINEER OF RECORD: R.F. DeCola DATE : 4/24/2024

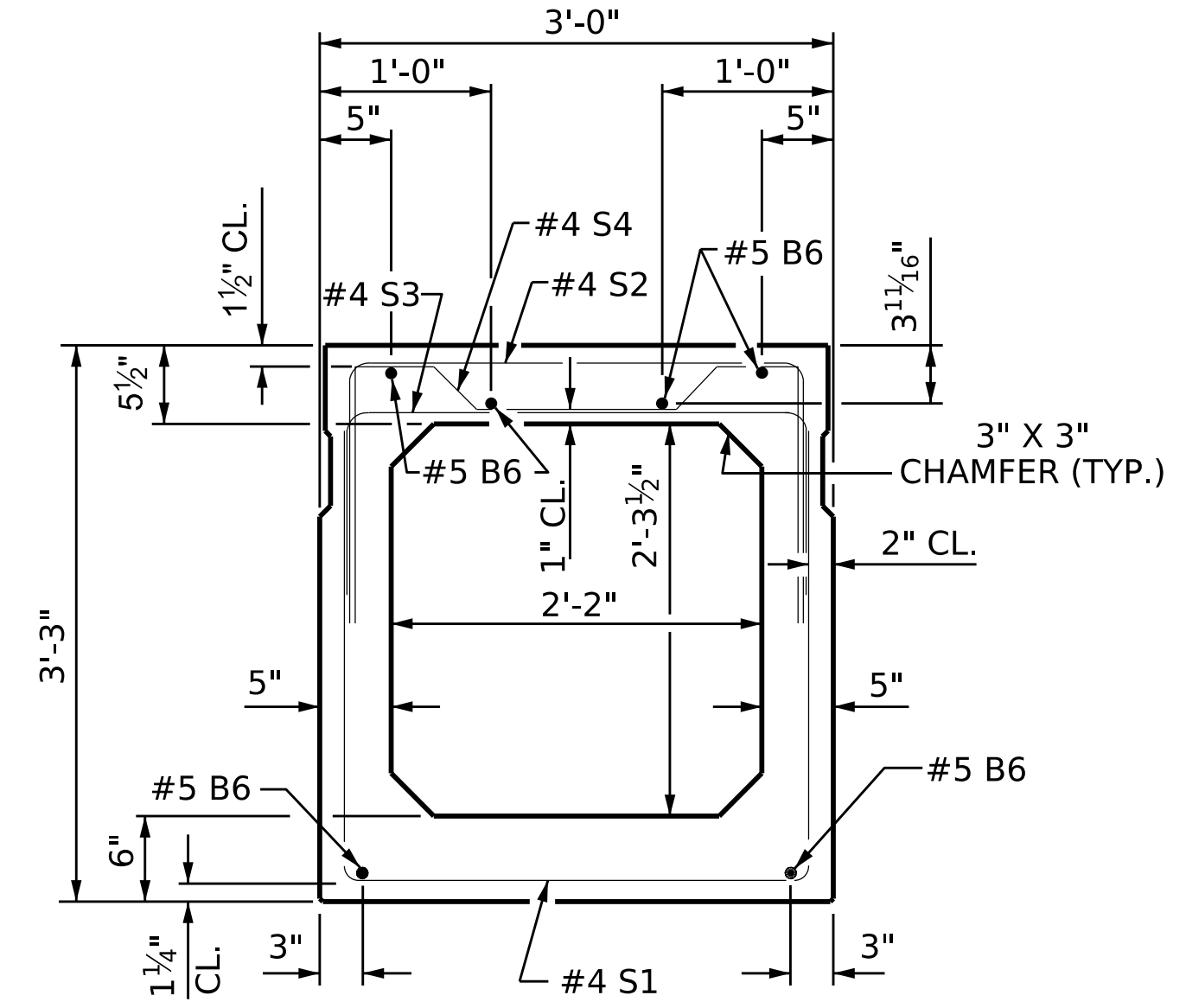


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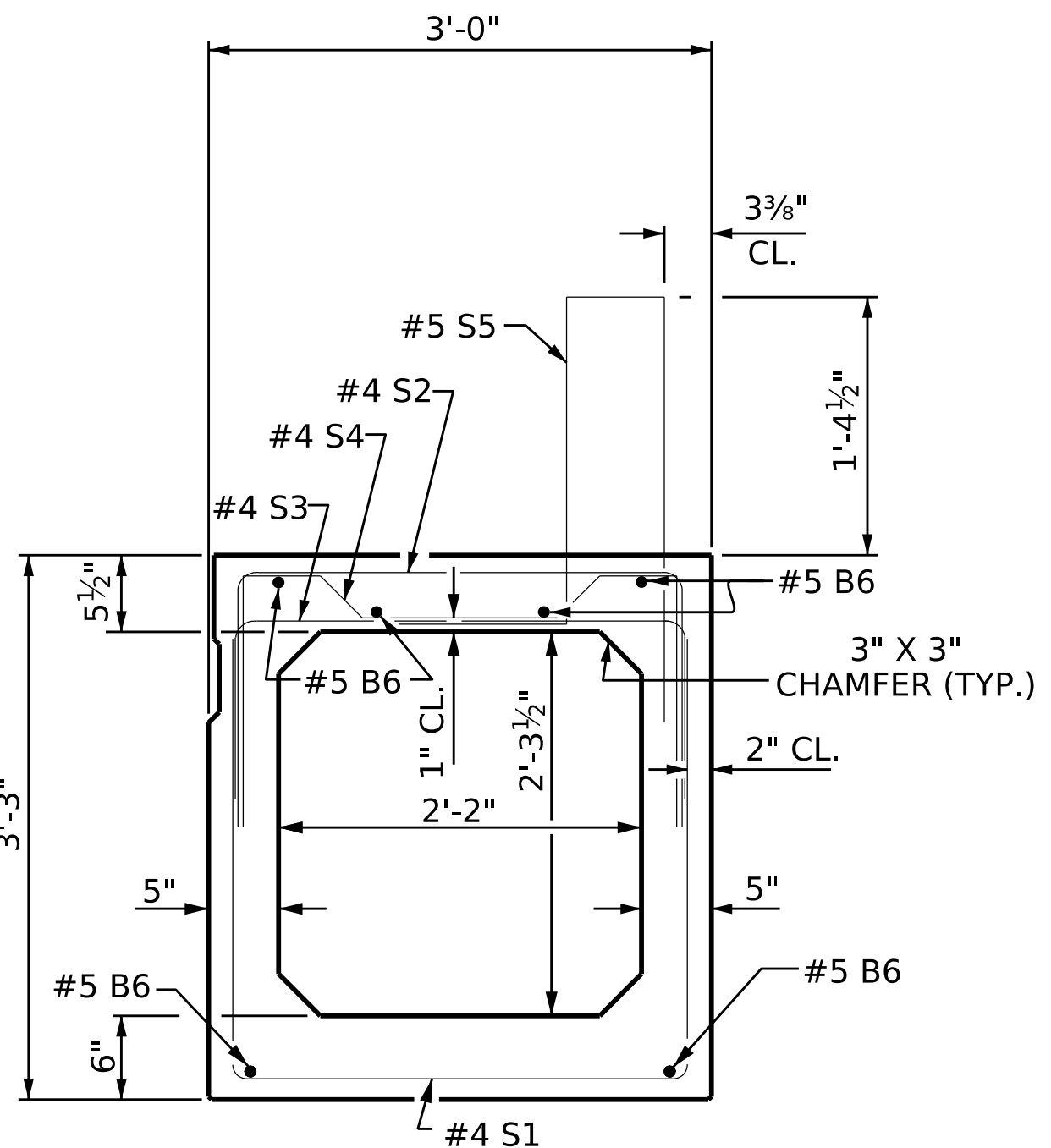
REVISIONS		SHEET NO.
NO.	DATE	
1		S-07
2		TOTAL SHEETS 17



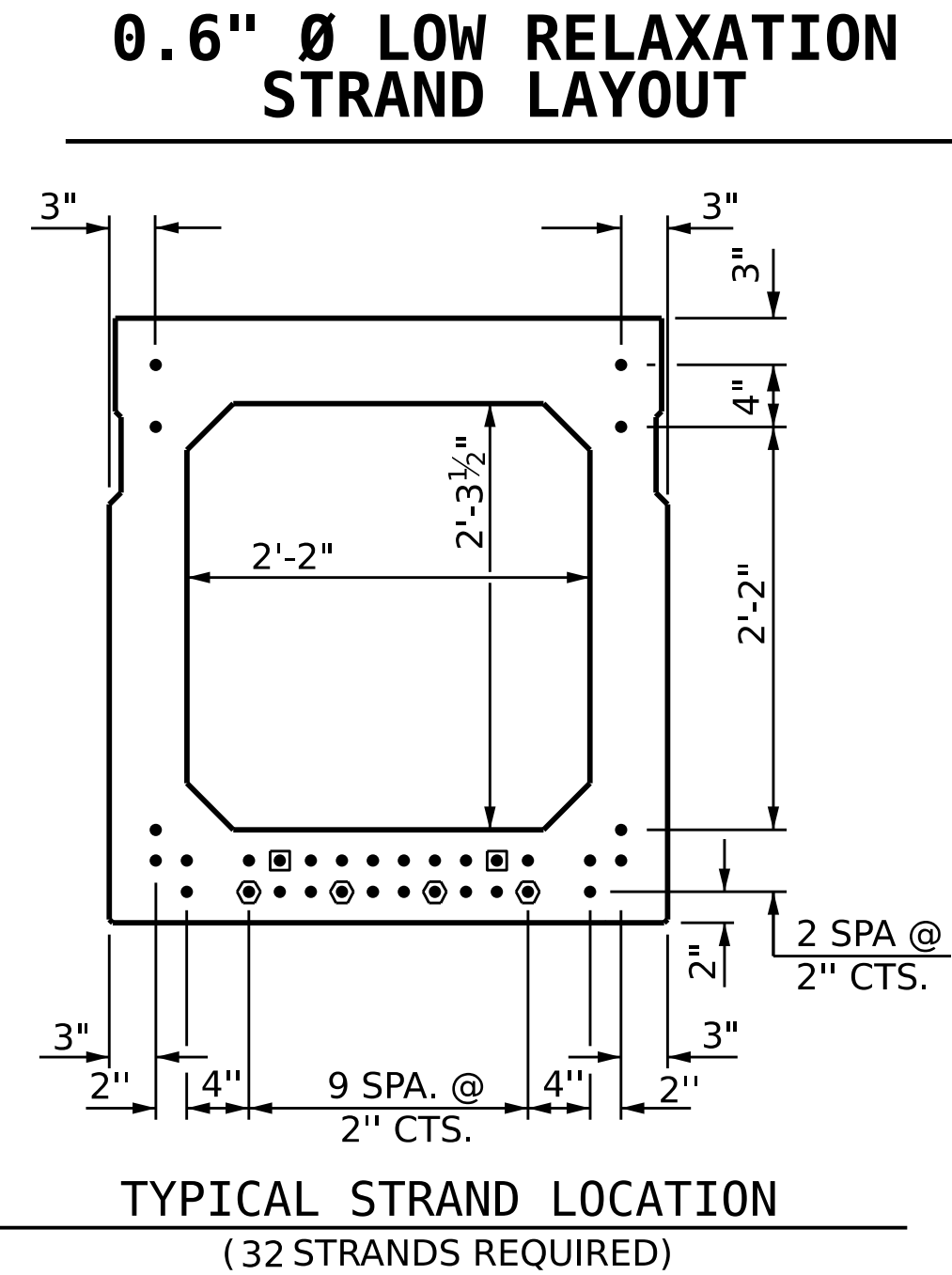
**END ELEVATION**  
 SHOWING PLACEMENT OF #5 & #4 "A" BARS AND LOCATION OF DOWEL HOLES.  
 (INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION. STRAND LAYOUT NOT SHOWN.)



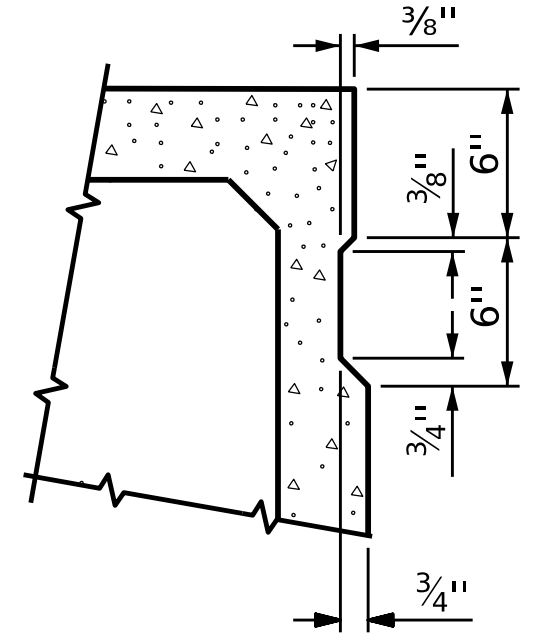
**INTERIOR BOX BEAM SECTION**  
 (STRAND LAYOUT NOT SHOWN)



**EXTERIOR BOX BEAM SECTION**  
 (STRAND LAYOUT NOT SHOWN)



**TYPICAL STRAND LOCATION**  
 (32 STRANDS REQUIRED)



**SHEAR KEY DETAIL**

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR BOX BEAMS.

GRADE 270 STRANDS	
	0.6" Ø L.R.
AREA ( SQUARE INCHES )	0.217
ULTIMATE STRENGTH ( LBS. PER STRAND )	58,600
APPLIED PRESTRESS ( LBS. PER STRAND )	43,950

**DEBONDING LEGEND**

- FULLY BONDED STRANDS
- ◐ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ◑ STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER

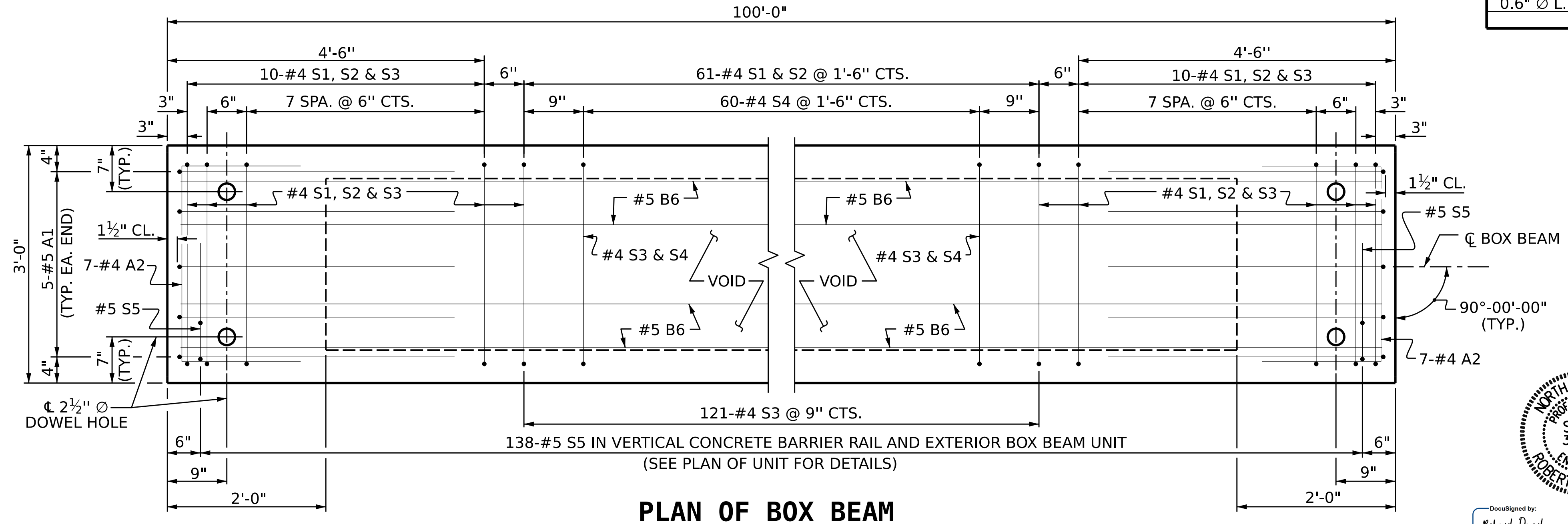
BOND SHALL BE BROKEN ON STRANDS AS SHOWN FOR THE SPECIFIED LENGTH FROM EACH END OF THE BOX BEAM. SEE STANDARD SPECIFICATIONS ARTICLE 1078-7.

**BAR TYPES**

ALL BAR DIMENSIONS ARE OUT TO OUT

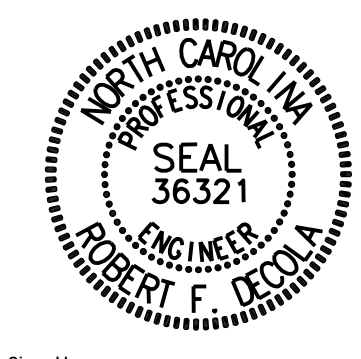
**BILL OF MATERIAL FOR ONE BOX BEAM SECTION**

BAR NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
			LENGTH	WEIGHT	LENGTH	WEIGHT
A1	10	#5	7'-2"	75	7'-2"	75
A2	44	#4	5'-7"	164	5'-7"	164
B6	12	#5	50'-11"	637	50'-11"	637
K1	15	#4	7'-2"	72	7'-2"	72
K2	10	#4	2'-7"	17	2'-7"	17
S1	81	#4	8'-6"	460	8'-6"	460
S2	81	#4	5'-8"	307	5'-8"	307
S3	141	#4	4'-10"	455	4'-10"	455
S4	60	#4	5'-10"	234	5'-10"	234
* S5	138	#5	5'-10"	840	--	--
REINFORCING STEEL			2421	LBS.	2421	LBS.
* EPOXY COATED REINF. STEEL			840	LBS.		
7500 P.S.I. CONCRETE			19.6	CU. YDS.	19.4	CU. YDS.
0.6" Ø L.R. STRANDS			No. 32		No. 32	



**PLAN OF BOX BEAM**

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS.  
 FOR LOCATION OF DIAPHRAGMS, SEE "PLAN OF UNIT".  
 FOR THREADED INSERTS, SEE "THREADED INSERT DETAIL".  
 FOR REINFORCING STEEL IN DIAPHRAGMS, SEE "DOUBLE DIAPHRAGM DETAILS".

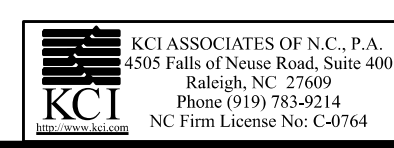


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 Robert DeCola  
 4/24/2024

PROJECT NO. **BP12.R014**  
**IREDELL** COUNTY  
 STATION: **13+45.00 -L-**  
 SHEET 3 OF 5

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
**3'-0" X 3'-3"**  
**PRESTRESSED CONCRETE**  
**BOX BEAM UNIT**

DRAWN BY: M.G. Armstrong DATE: 1/27/23  
 CHECKED BY: R.F. DeCola DATE: 3/7/23  
 DESIGN ENGINEER OF RECORD: R.F. DeCola DATE: 4/24/2024

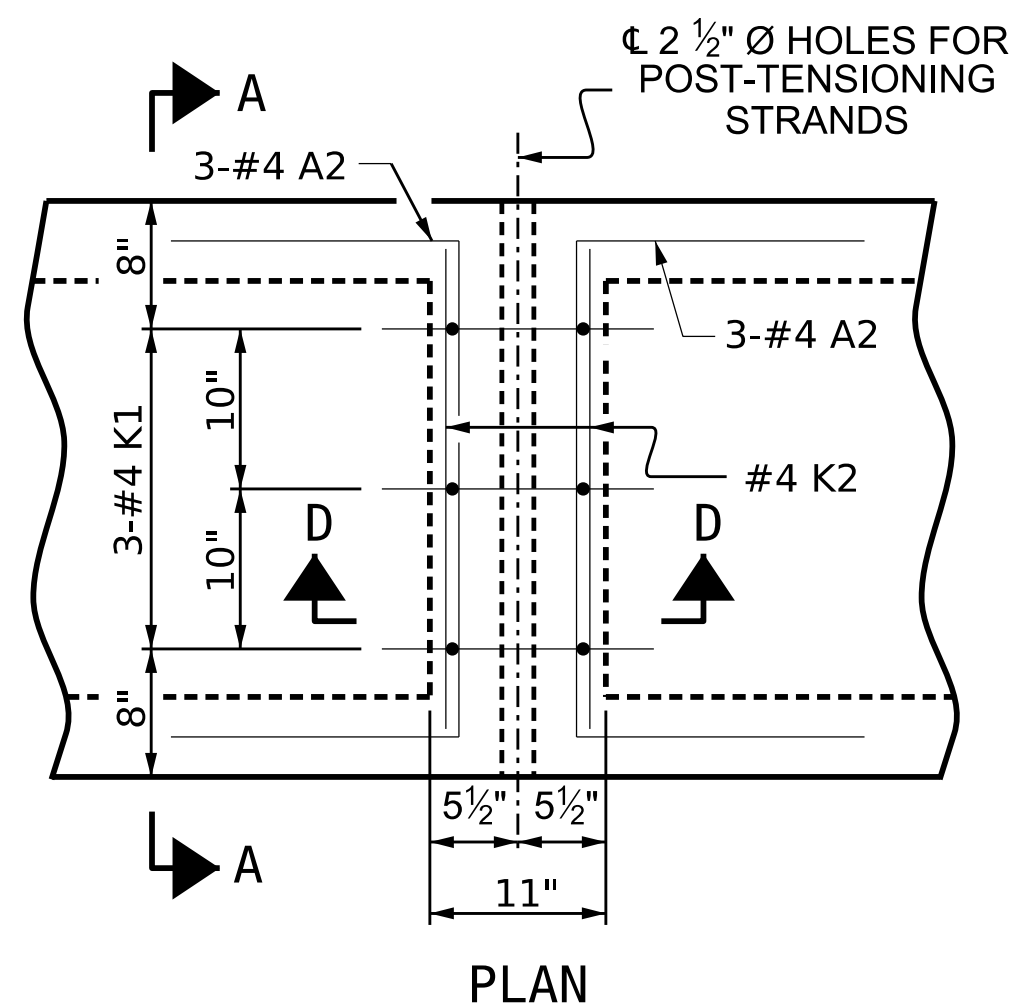


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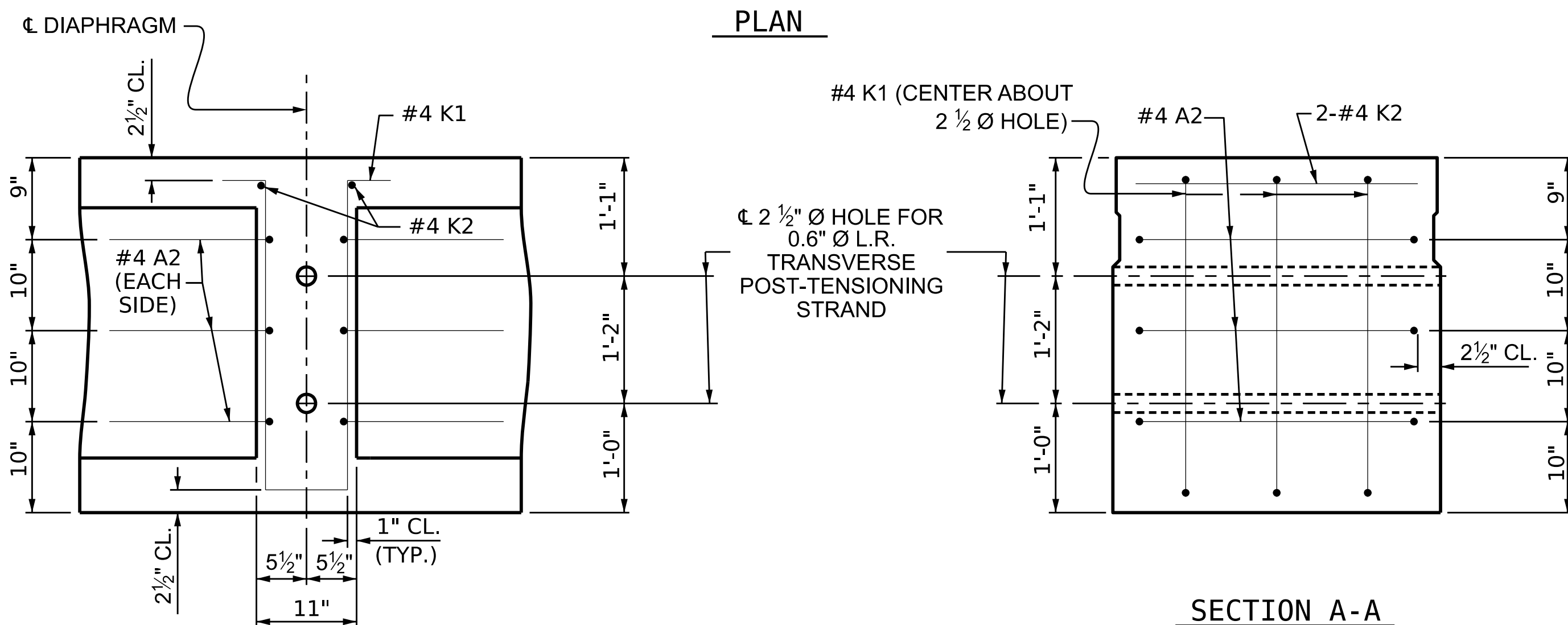
REVISIONS				SHEET NO.
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TOTAL SHEETS: 17





PLAN

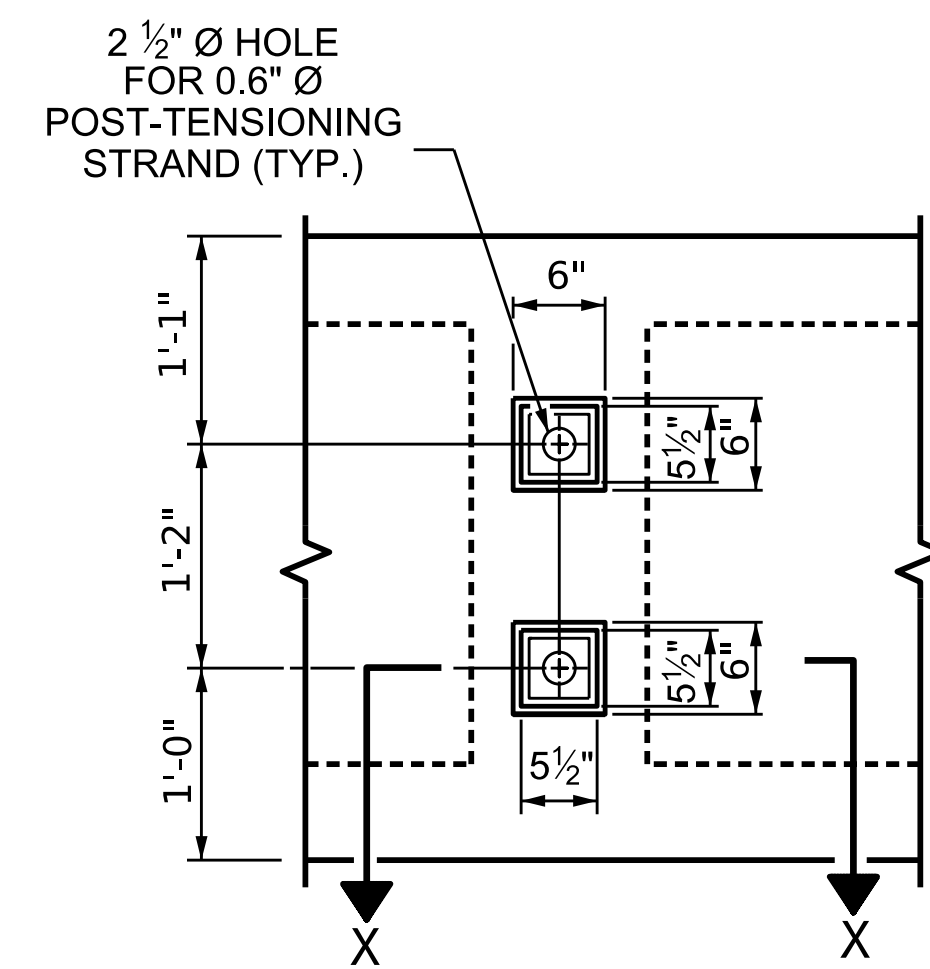


SECTION D-D

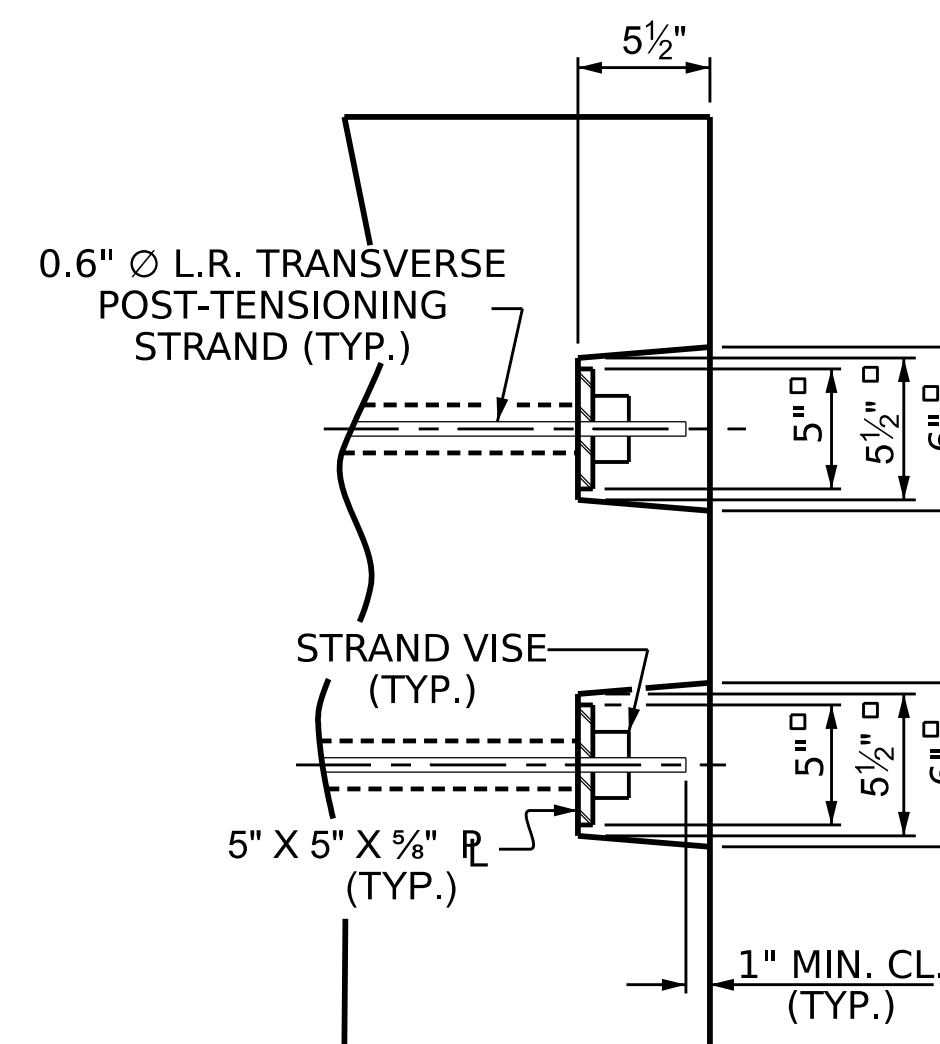
SECTION A-A  
VOIDS NOT SHOWN

**DOUBLE DIAPHRAGM DETAILS**

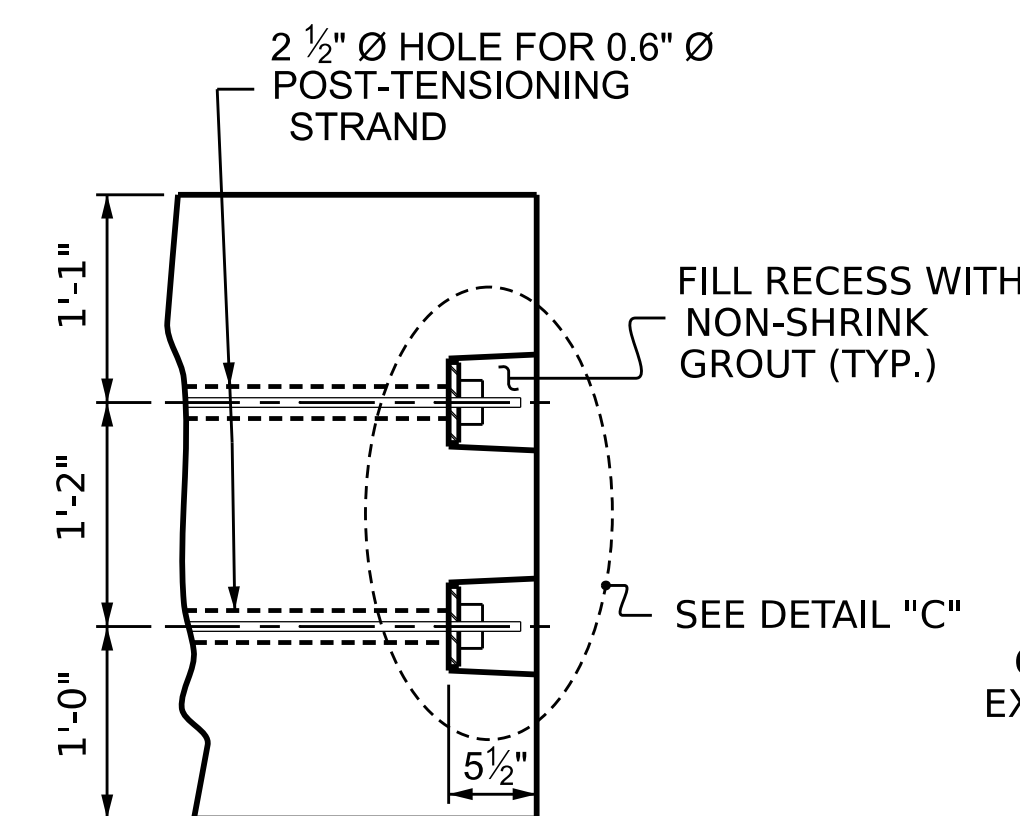
#4 "S" BARS NOT SHOWN. #4 "S" BARS MAY BE SHIFTED SLIGHTLY TO CLEAR 2 1/2" Ø HOLE.



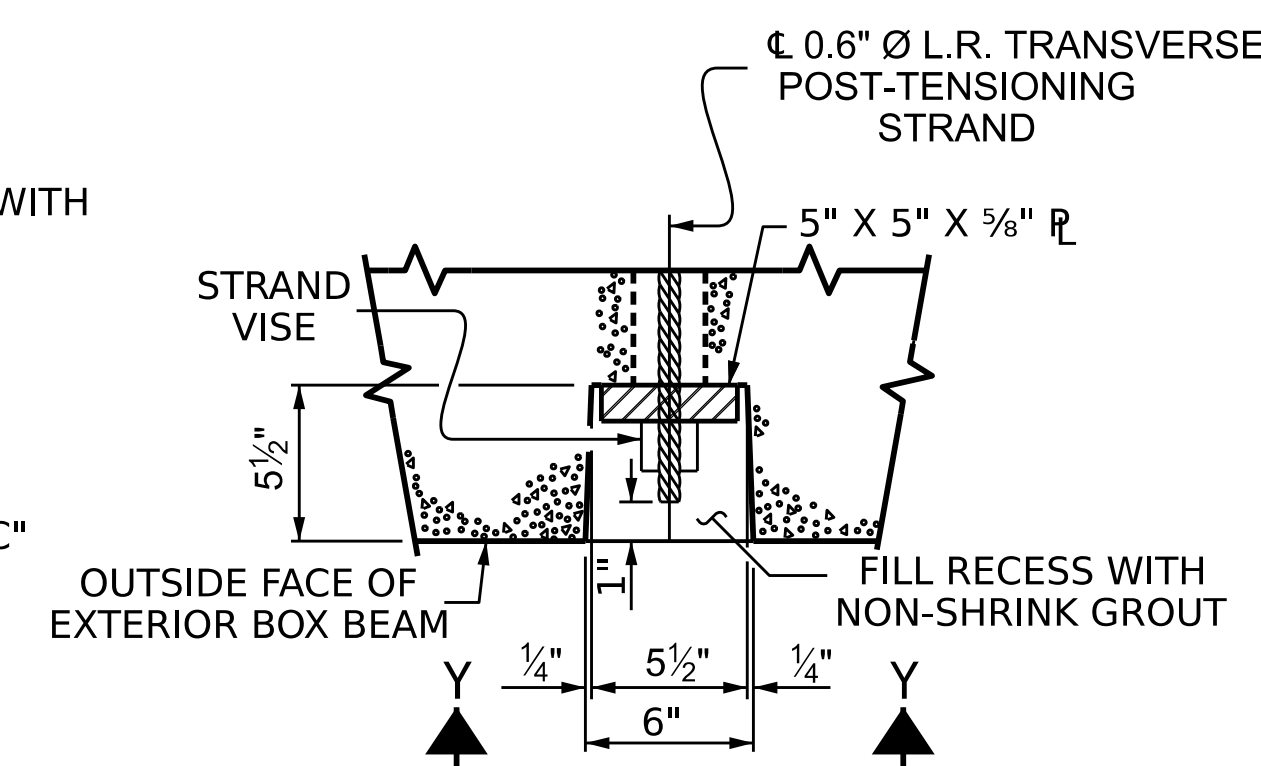
VIEW Y-Y  
SHOWING ELEVATION VIEW OF GROUDED RECESS



DETAIL "C"

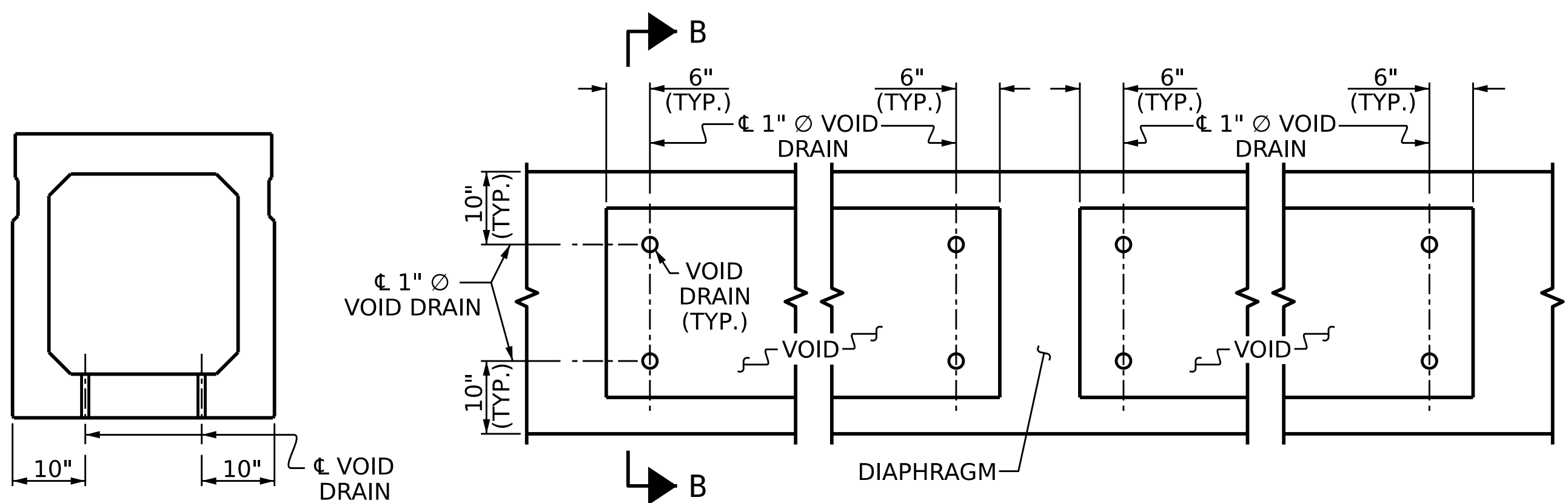


PART SECTION AT RECESS



SECTION X-X  
SHOWING PLAN VIEW OF GROUDED RECESS

**GROUDED RECESS DETAIL AT  
END OF POST-TENSIONED STRANDS  
OF EXTERIOR BOX BEAM**



SECTION B-B

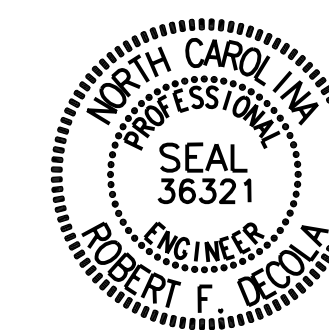
PART PLAN

**VOID DRAIN DETAILS**

(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)

DEAD LOAD DEFLECTION AND CAMBER	
100' BOX BEAM UNIT	3'-0" x 3'-3" 0.6" Ø L.R. STRAND
CAMBER ( SLAB ALONE IN PLACE )	2" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD **	7/8" ↓
FINAL CAMBER	1 1/8" ↑

\*\* INCLUDES FUTURE WEARING SURFACE



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Robert DeCola  
4/24/2024

PROJECT NO. **BP12.R014**  
**IREDELL** COUNTY  
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SHEET 4 OF 5

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
**3'-0" X 3'-3"**  
**PRESTRESSED CONCRETE**  
**BOX BEAM UNIT**

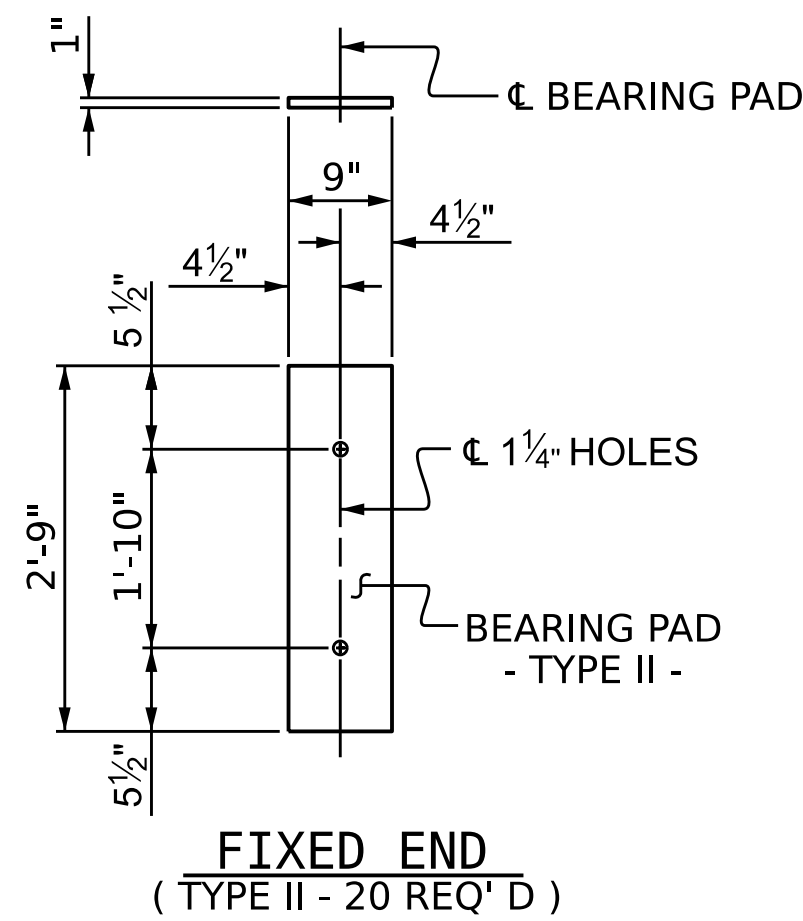
DRAWN BY : M.G. Armstrong DATE : 1/27/23  
CHECKED BY : R.F. DeCola DATE : 3/7/23  
DESIGN ENGINEER OF RECORD : R.F. DeCola DATE : 4/24/2024



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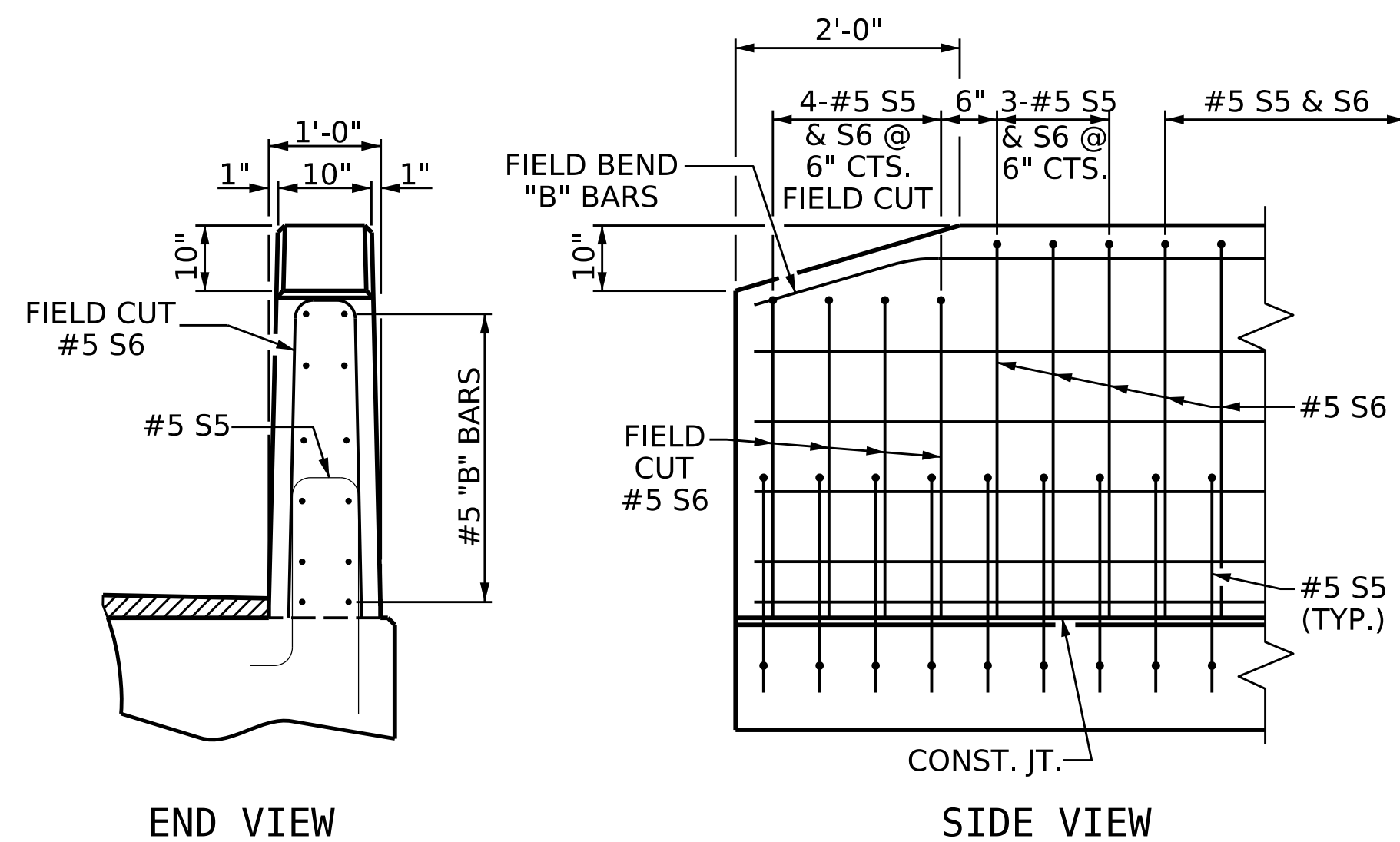
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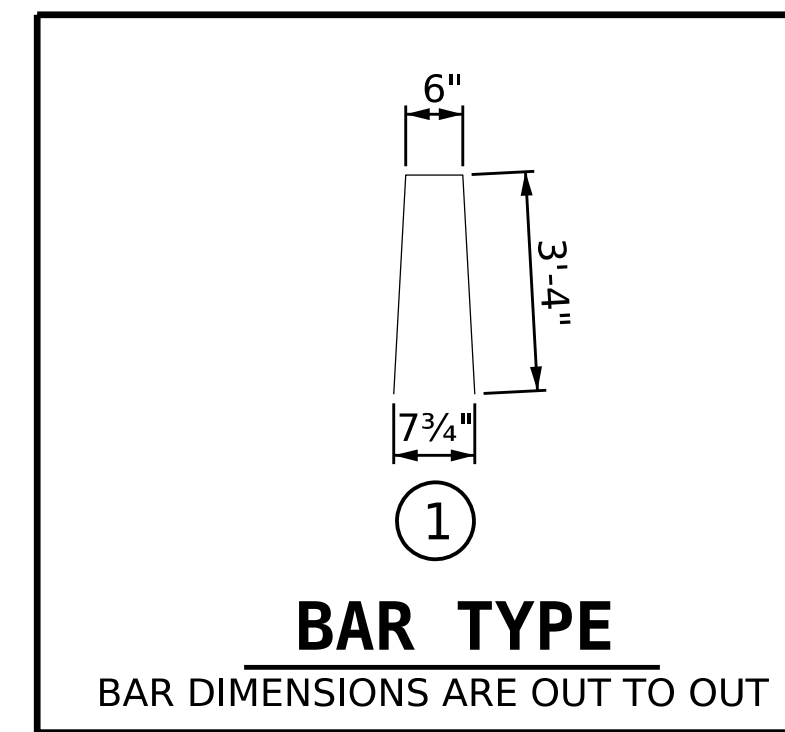


**ELASTOMERIC BEARING DETAILS**

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.



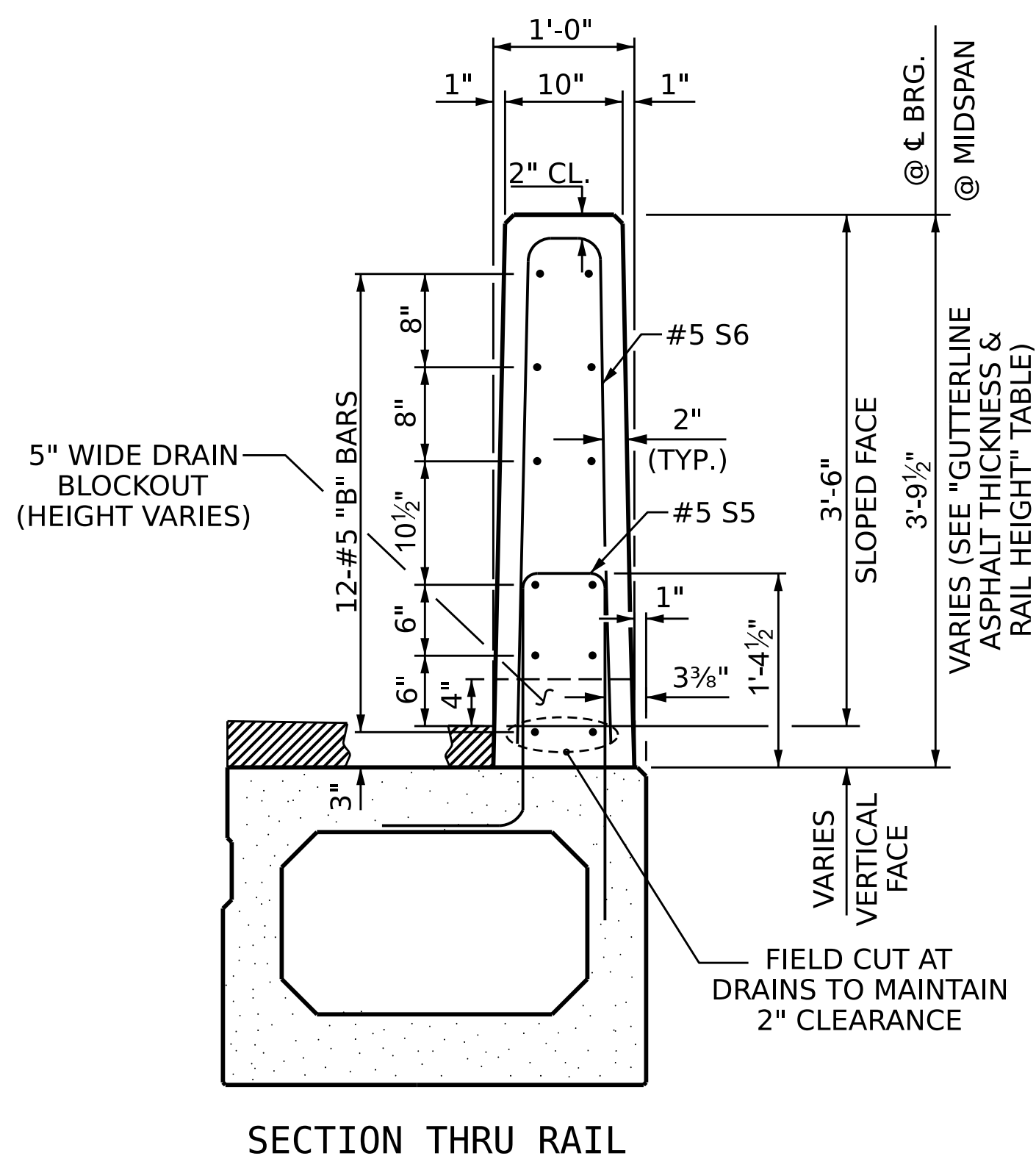
**END OF RAIL DETAILS**



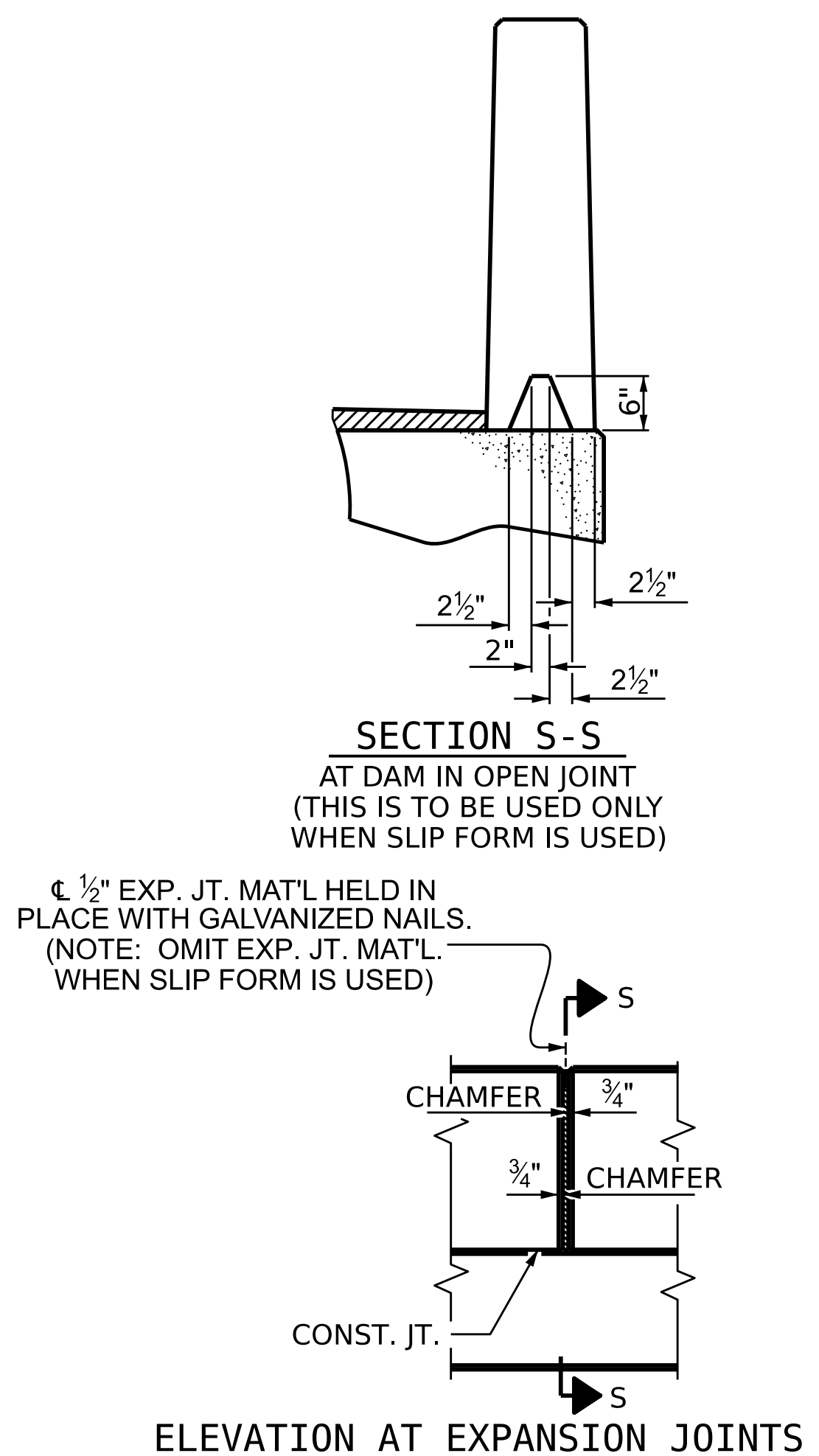
BOX BEAM UNITS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR B.B.	2	100'-0"	200'-0"
INTERIOR B.B.	8	100'-0"	800'-0"
TOTAL	10		1000'-0"

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL					
BAR	BARS PER PAIR OF EXTERIOR UNITS	SIZE	TYPE	LENGTH	WEIGHT
100' UNIT					
* B12	96	#5	STR	24'-7"	2461
* S6	276	#5	1	7'-2"	2063
* EPOXY COATED REINFORCING STEEL				LBS.	4524
CLASS AA CONCRETE				CU.YDS.	25.9
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.	200.0

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
	ASPHALT OVERLAY THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
100' UNITS	2 3/8"	3'-8 3/8"

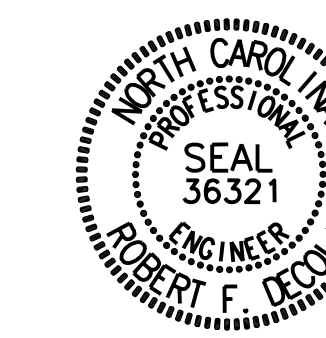


**VERTICAL CONCRETE BARRIER RAIL DETAILS**



**ELEVATION AT EXPANSION JOINTS**

PROJECT NO. **BP12.R014**  
**IREDELL** COUNTY  
 STATION: **13+45.00 -L-**  
 SHEET 5 OF 5



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
**3'-0" X 3'-3"**  
**PRESTRESSED CONCRETE**  
**BOX BEAM UNIT**

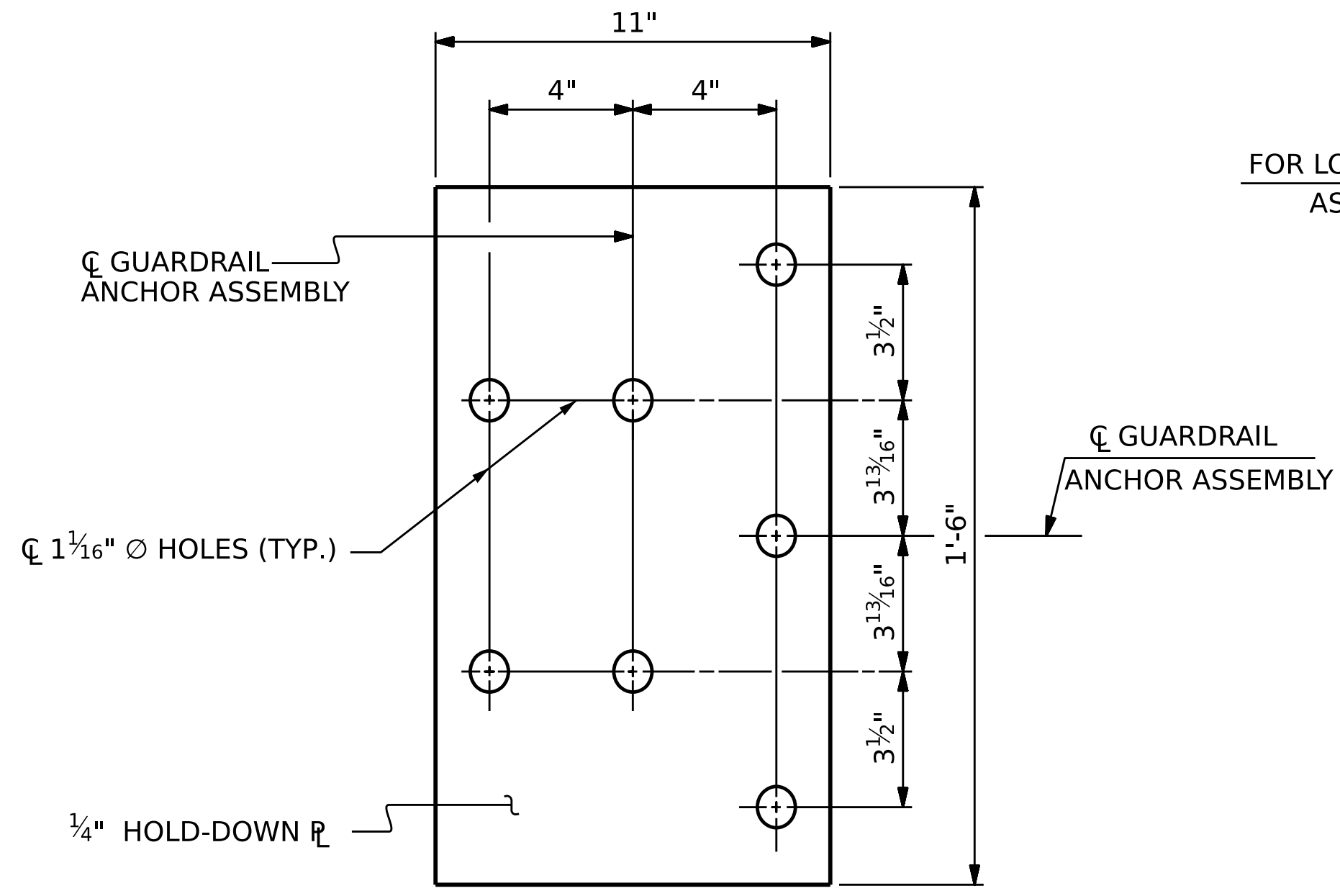
DRAWN BY : M.G. Armstrong DATE : 1/27/23  
 CHECKED BY : R.F. DeCola DATE : 3/7/23  
 DESIGN ENGINEER OF RECORD : R.F. DeCola DATE : 4/24/2024

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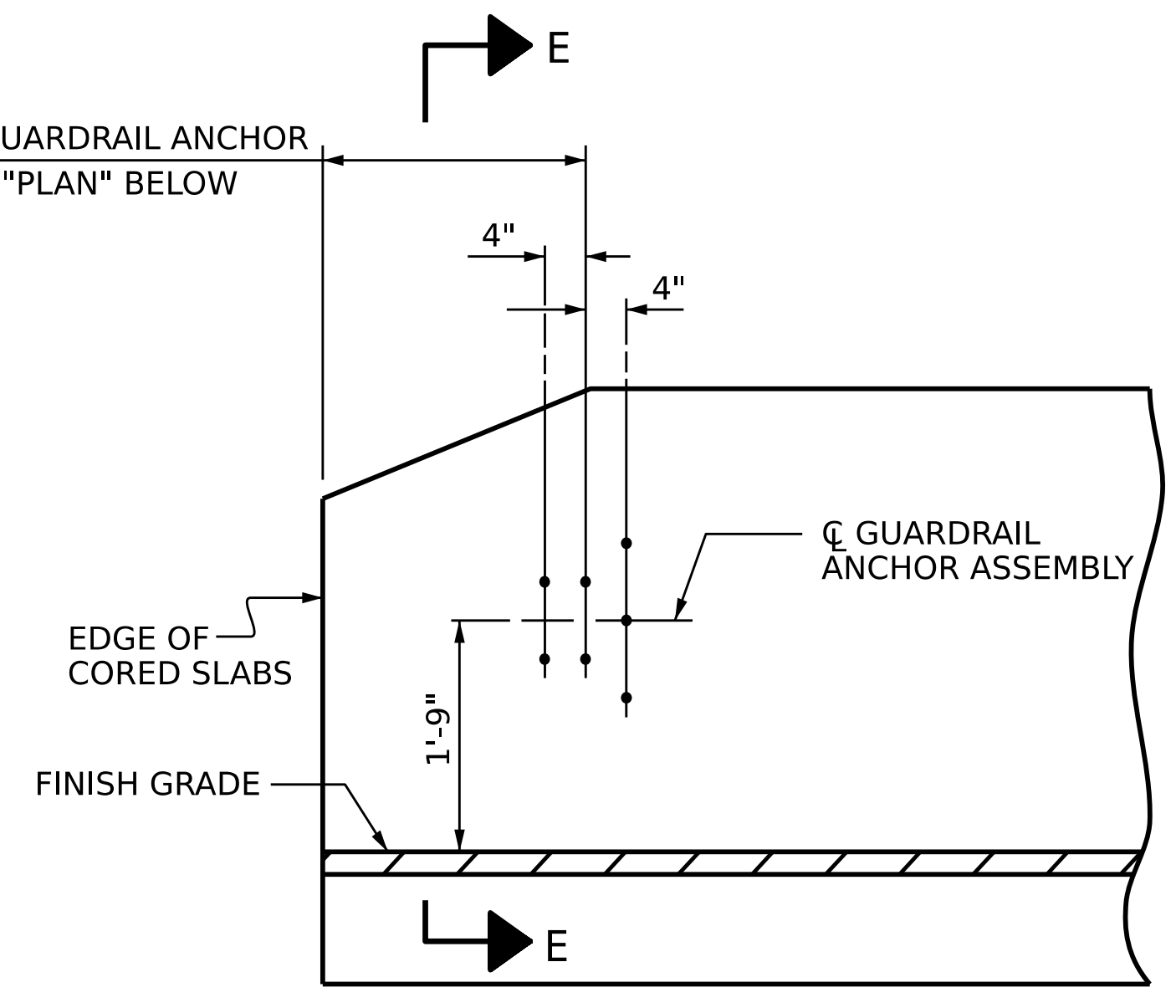
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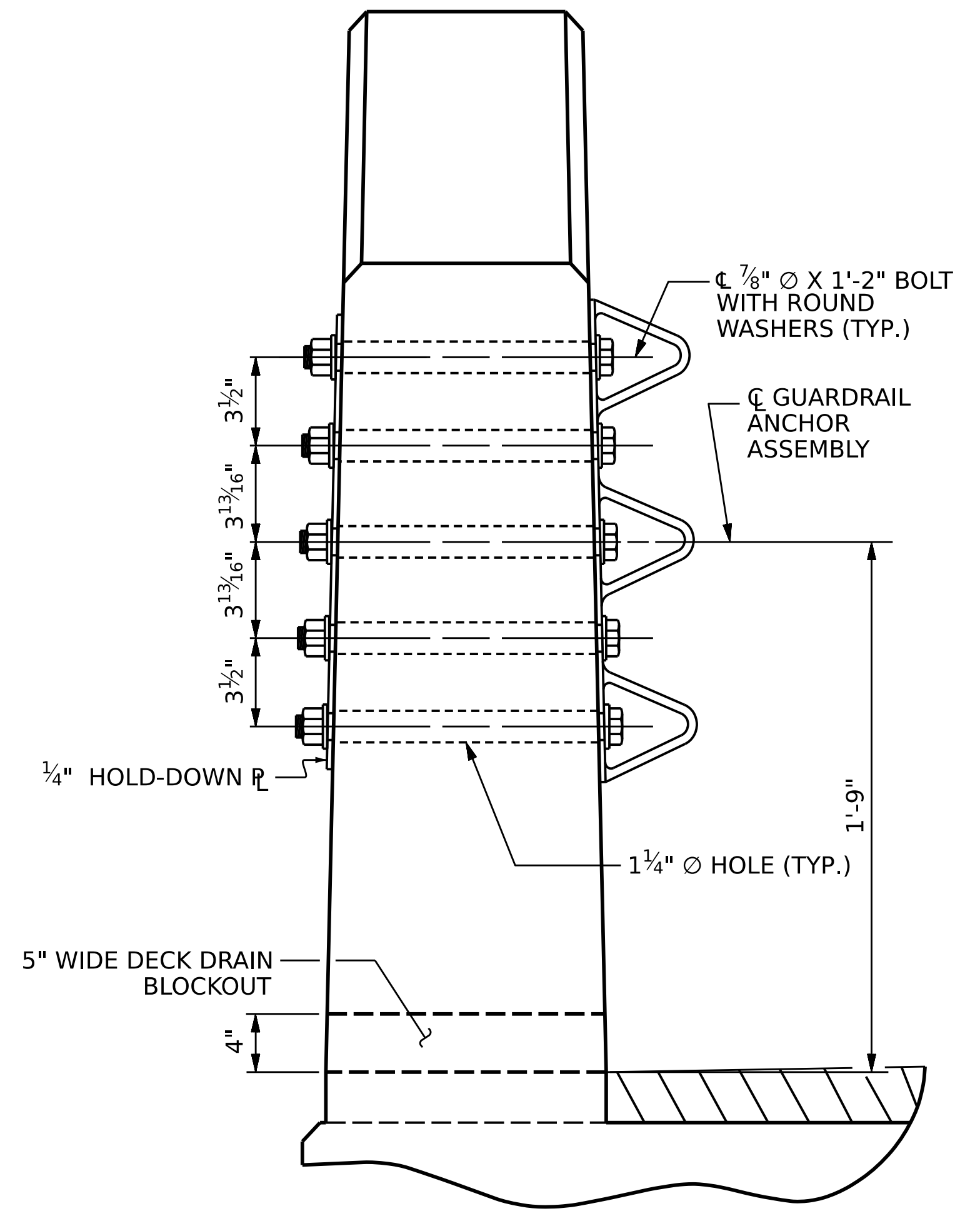
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 TOTAL SHEETS 17



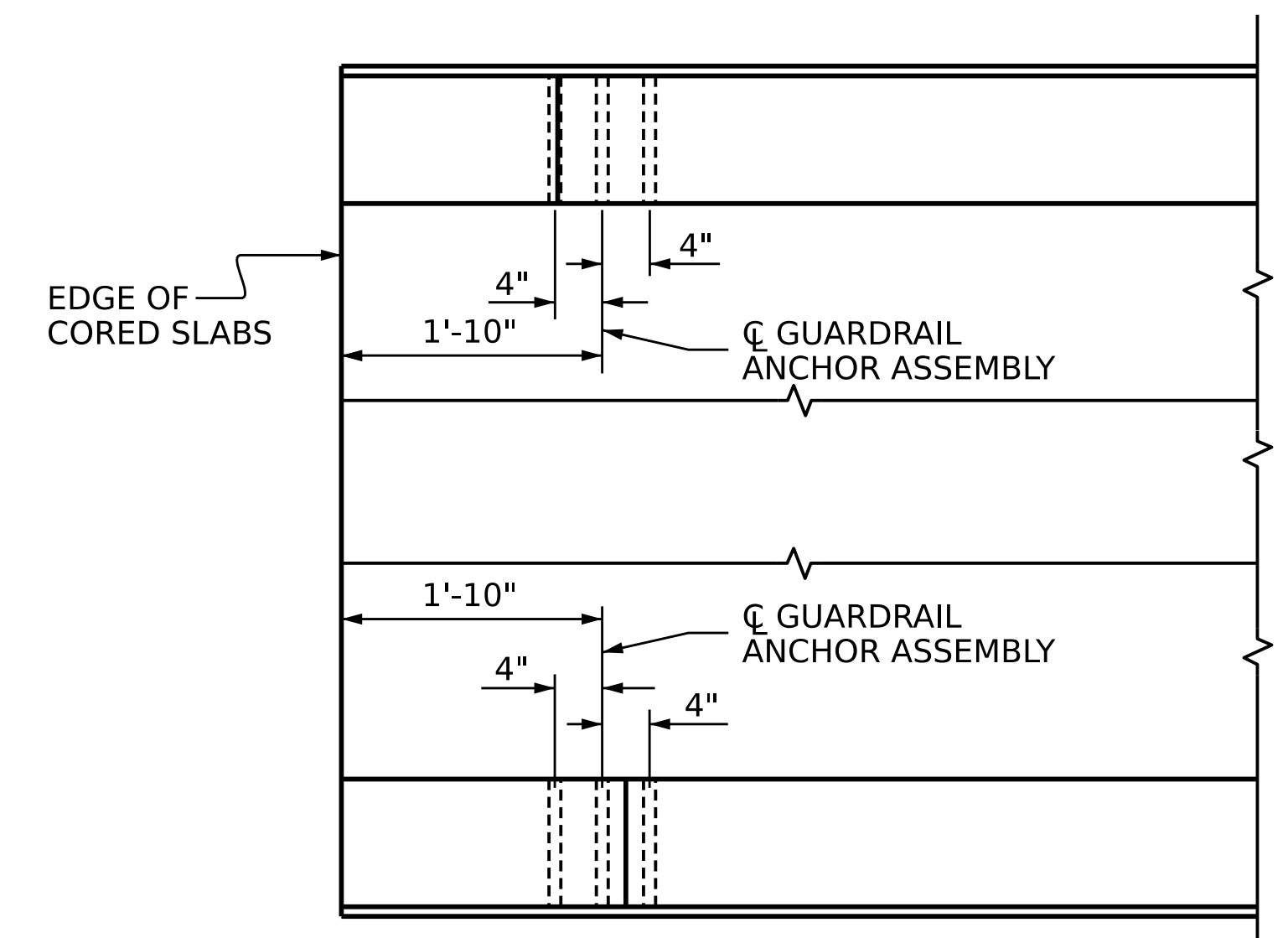
PLAN



ELEVATION

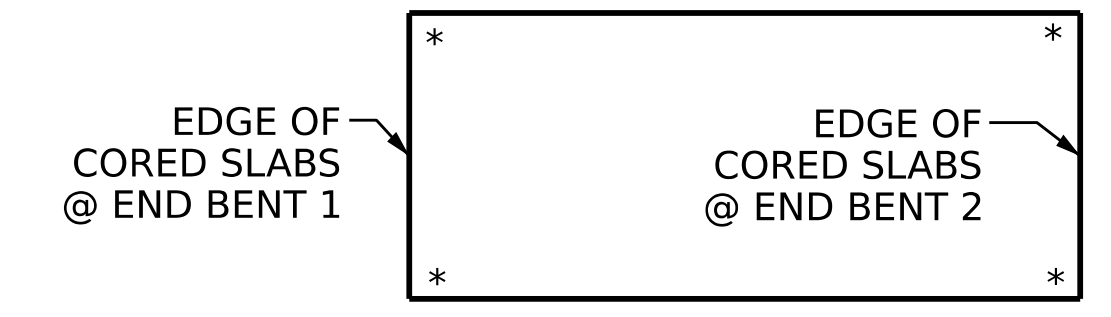


SECTION E-E  
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL  
END BENT #1 SHOWN, END BENT #2 SIMILAR.



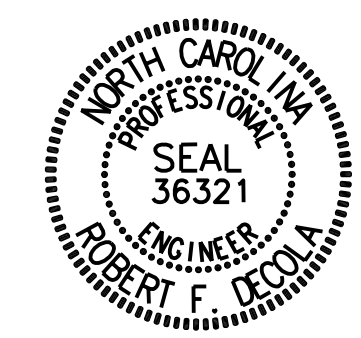
SKETCH SHOWING POINTS OF ATTACHMENT

\* DENOTES GUARDRAIL ANCHOR ASSEMBLY

NOTES

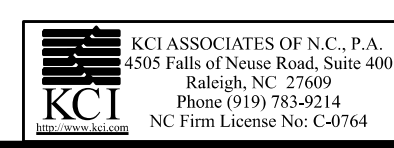
- THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 7/8" O BOLTS WITH NUTS AND WASHERS.
- THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.
- BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" O GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
- THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.
- AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.
- THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.
- THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.
- THE 1 1/4" O HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

PROJECT NO. **BP12.R014**  
**IREDELL** COUNTY  
 STATION: **13+45.00 -L-**



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
**GUARDRAIL ANCHORAGE  
 DETAILS  
 FOR VERTICAL CONCRETE  
 BARRIER RAIL**

DRAWN BY : M.G. Armstrong DATE : 1/27/23  
 CHECKED BY : R.F. DeCola DATE : 3/7/23  
 DESIGN ENGINEER OF RECORD : R.F. DeCola DATE : 4/24/2024



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					17



5/26/20

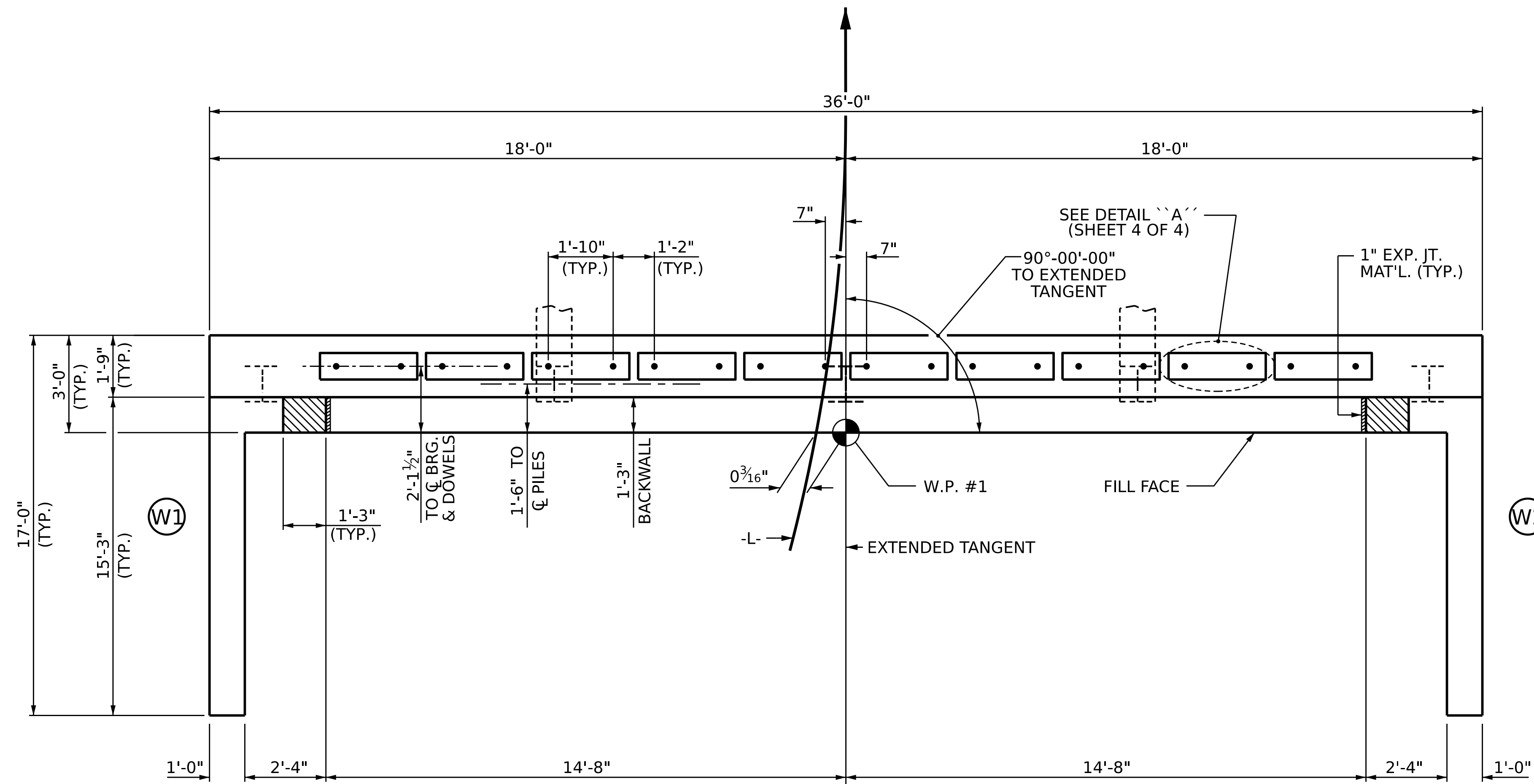
### NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

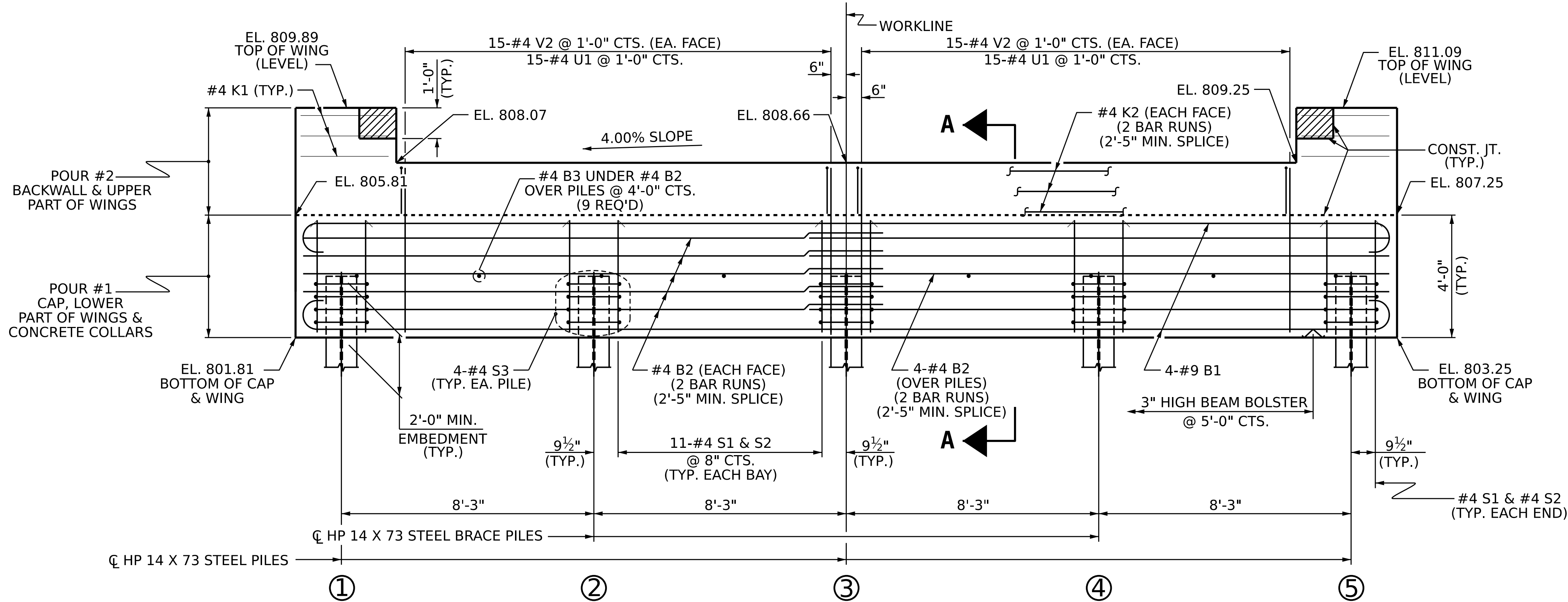
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



### PLAN



### ELEVATION

WINGS NOT SHOWN FOR CLARITY.  
 FOR SECTION A-A, SEE SHEET 4 OF 4.  
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.  
 SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

PROJECT NO. **BP12.R014**  
**IREDELL** COUNTY  
 STATION: **13+45.00 -L-**

SHEET 1 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE

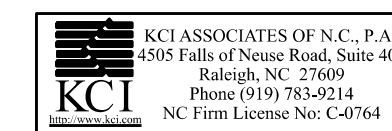
### END BENT No. 1



Designed by: **Robert DeCola**  
 4/24/2024

DRAWN BY: **M.G. Armstrong** DATE: **1/27/23**  
 CHECKED BY: **R.F. DeCola** DATE: **3/7/23**  
 DESIGN ENGINEER OF RECORD: **R.F. DeCola** DATE: **4/24/2024**

3/18/2024  
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 Matt.Armstrong



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5/26/20

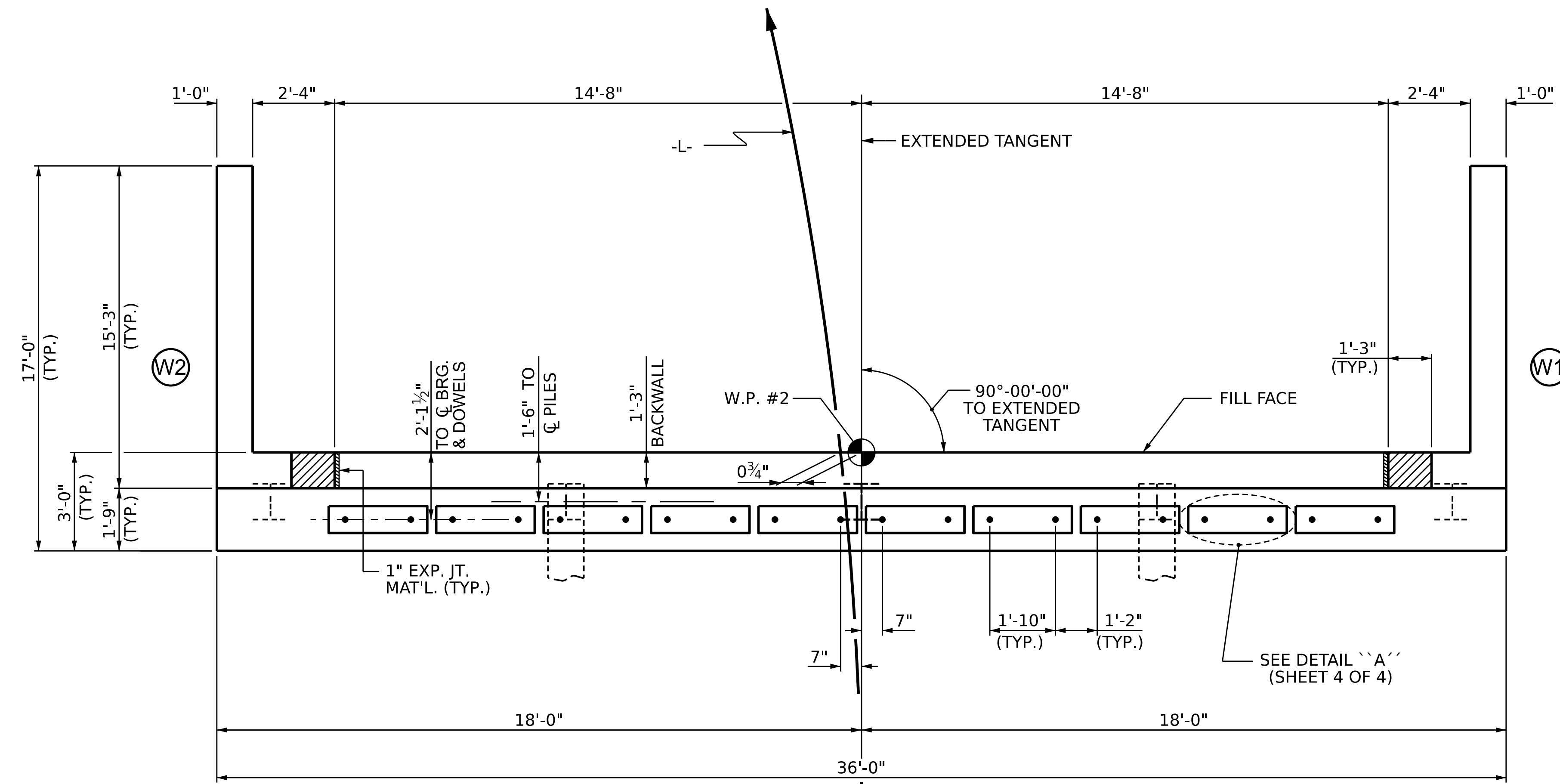
### NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

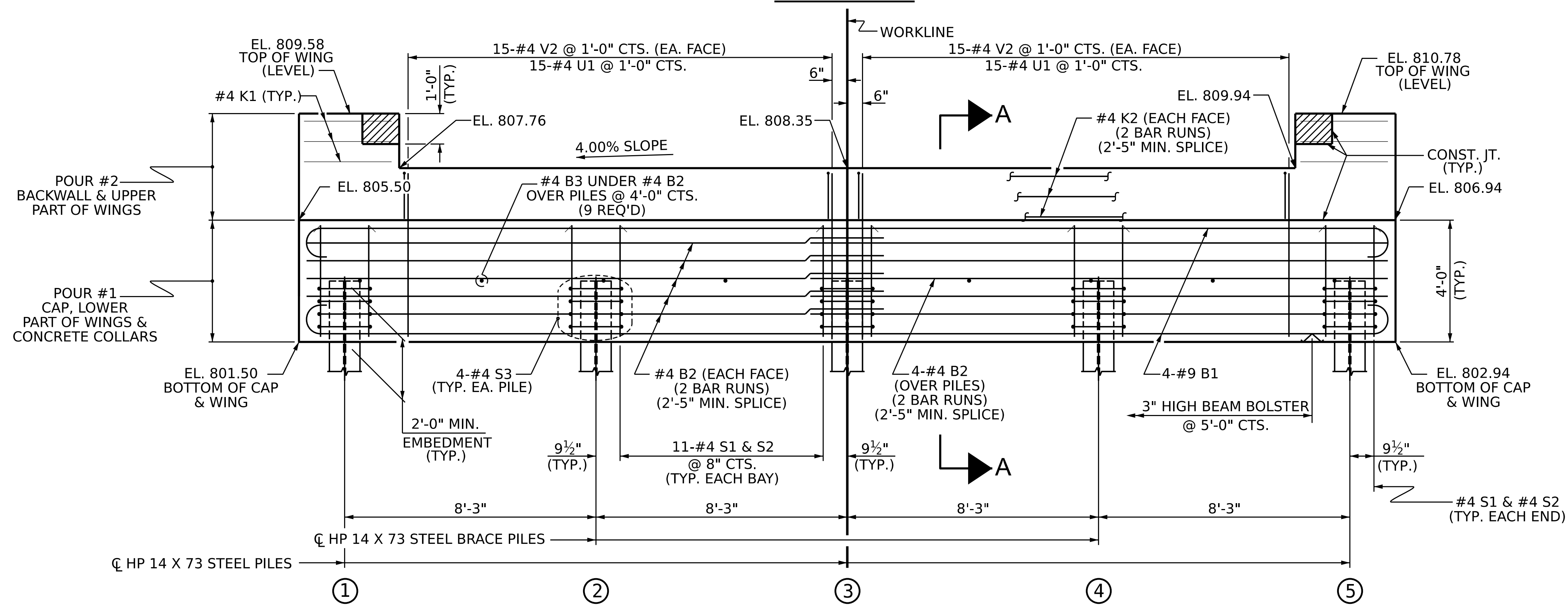
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPlice DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



### PLAN



### ELEVATION

WINGS NOT SHOWN FOR CLARITY.  
 FOR SECTION A-A, SEE SHEET 4 OF 4.  
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.  
 SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

PROJECT NO. **BP12.R014**

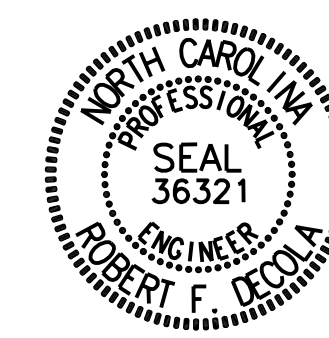
**IREDELL** COUNTY

STATION: **13+45.00 -L-**

SHEET 2 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE

## END BENT No. 2



DocuSigned by:  
 Robert DeCola  
 4/24/2024

DRAWN BY: M.G. Armstrong DATE: 1/27/23  
 CHECKED BY: R.F. DeCola DATE: 3/7/23  
 DESIGN ENGINEER OF RECORD: R.F. DeCola DATE: 4/24/2024

3/18/2024  
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 Matt.Armstrong

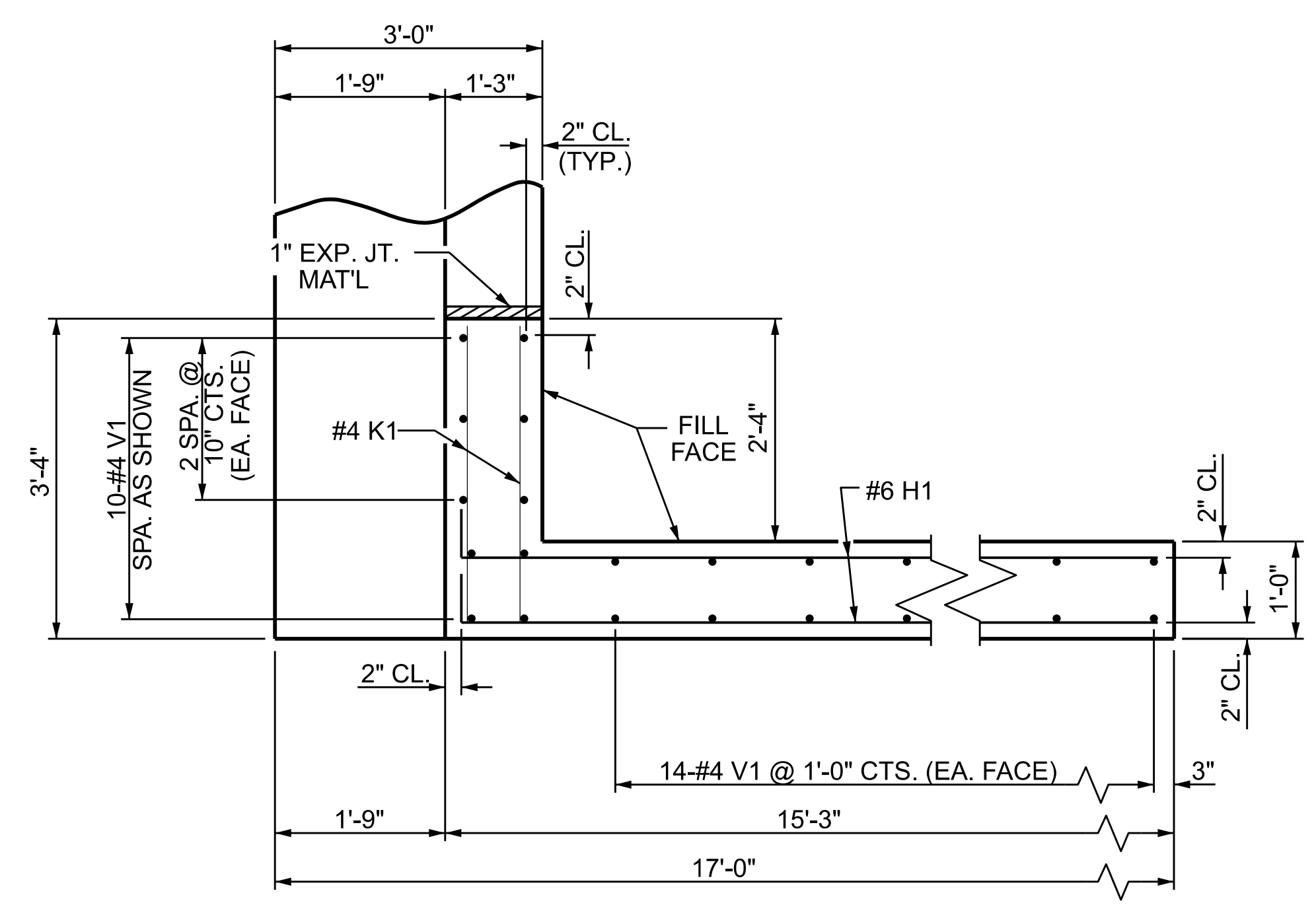


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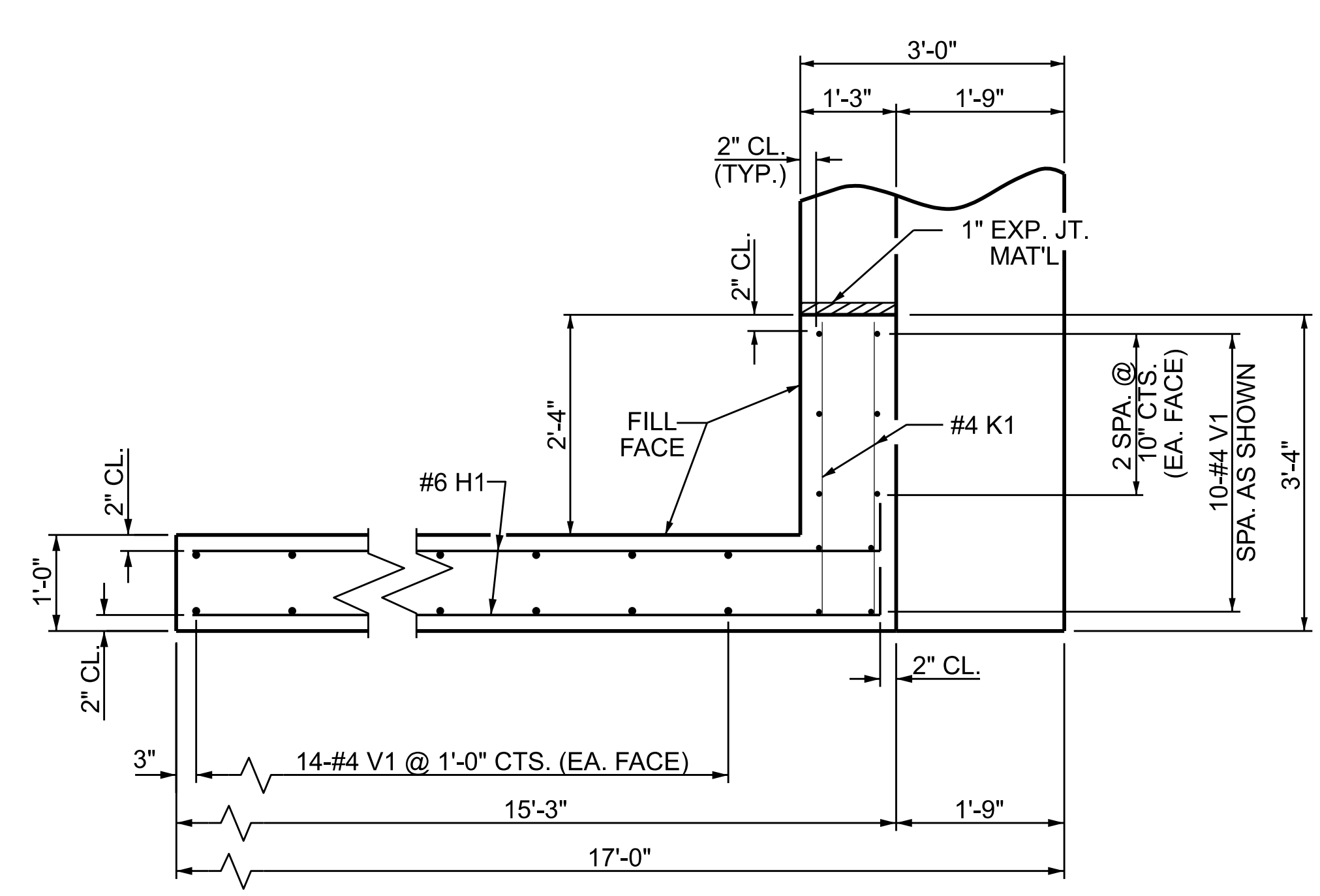
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SHEET NO.	
NO.	TOTAL SHEETS
S-13	17

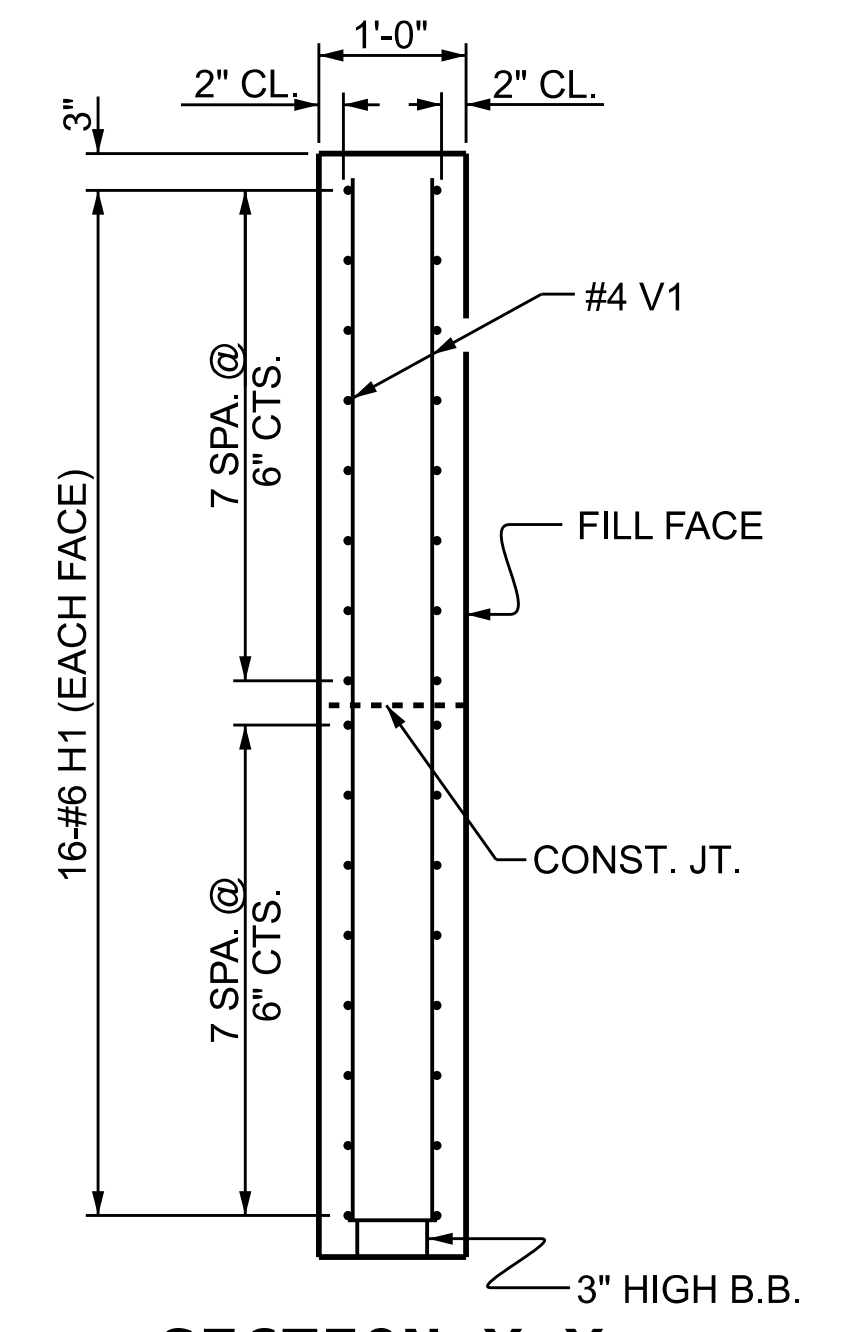
5/26/20



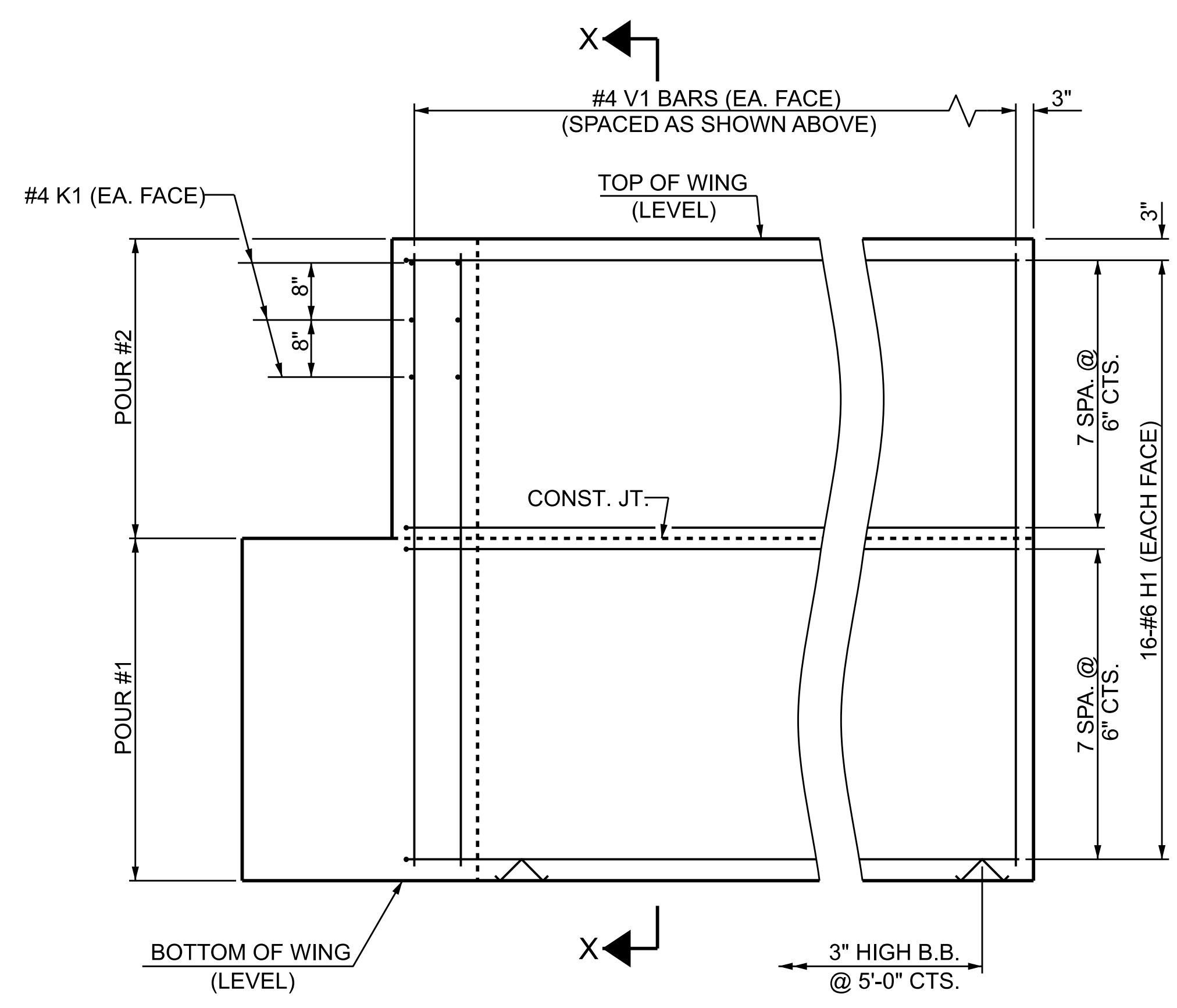
PLAN OF WING (W1)



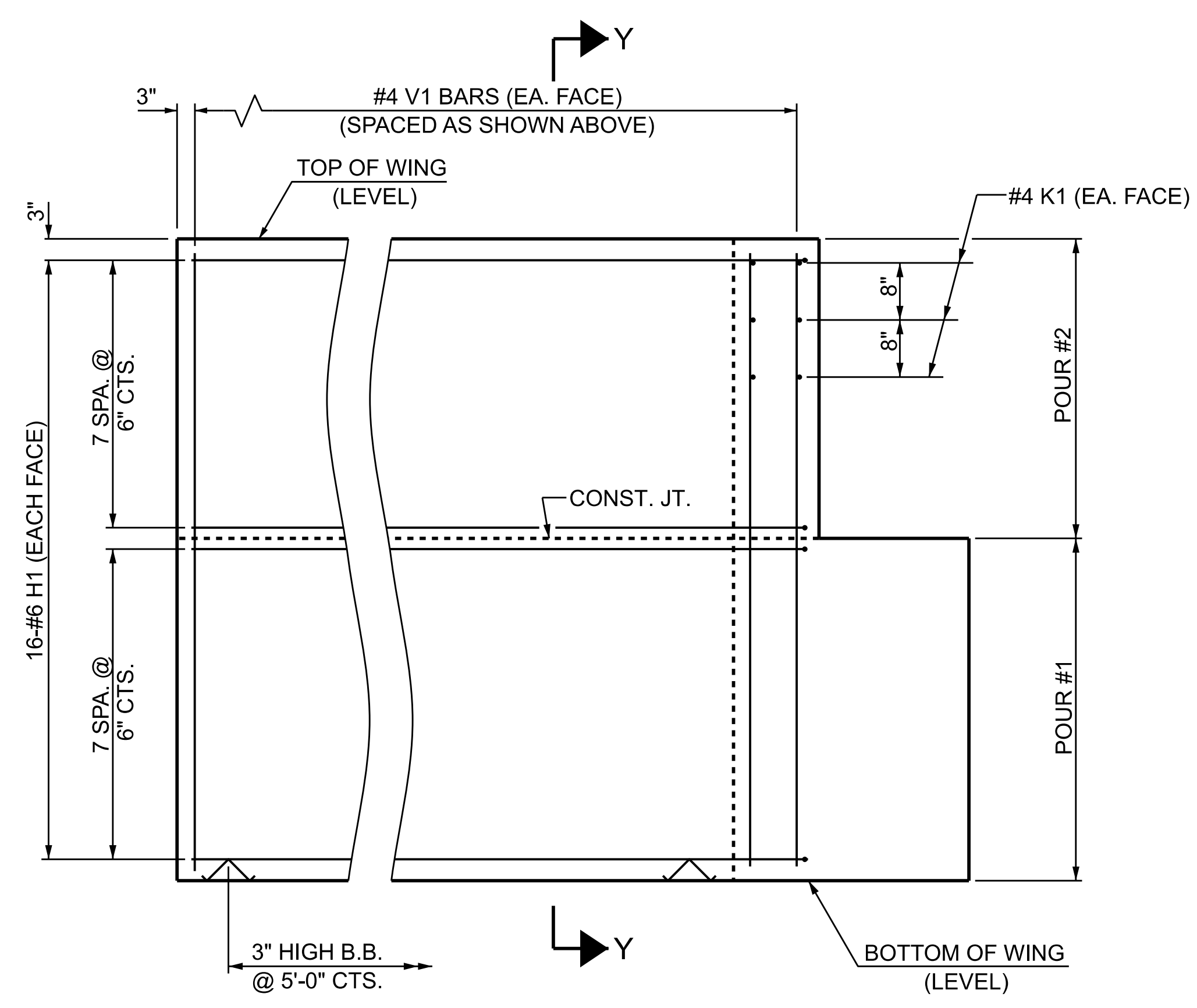
PLAN OF WING (W2)



SECTION X-X

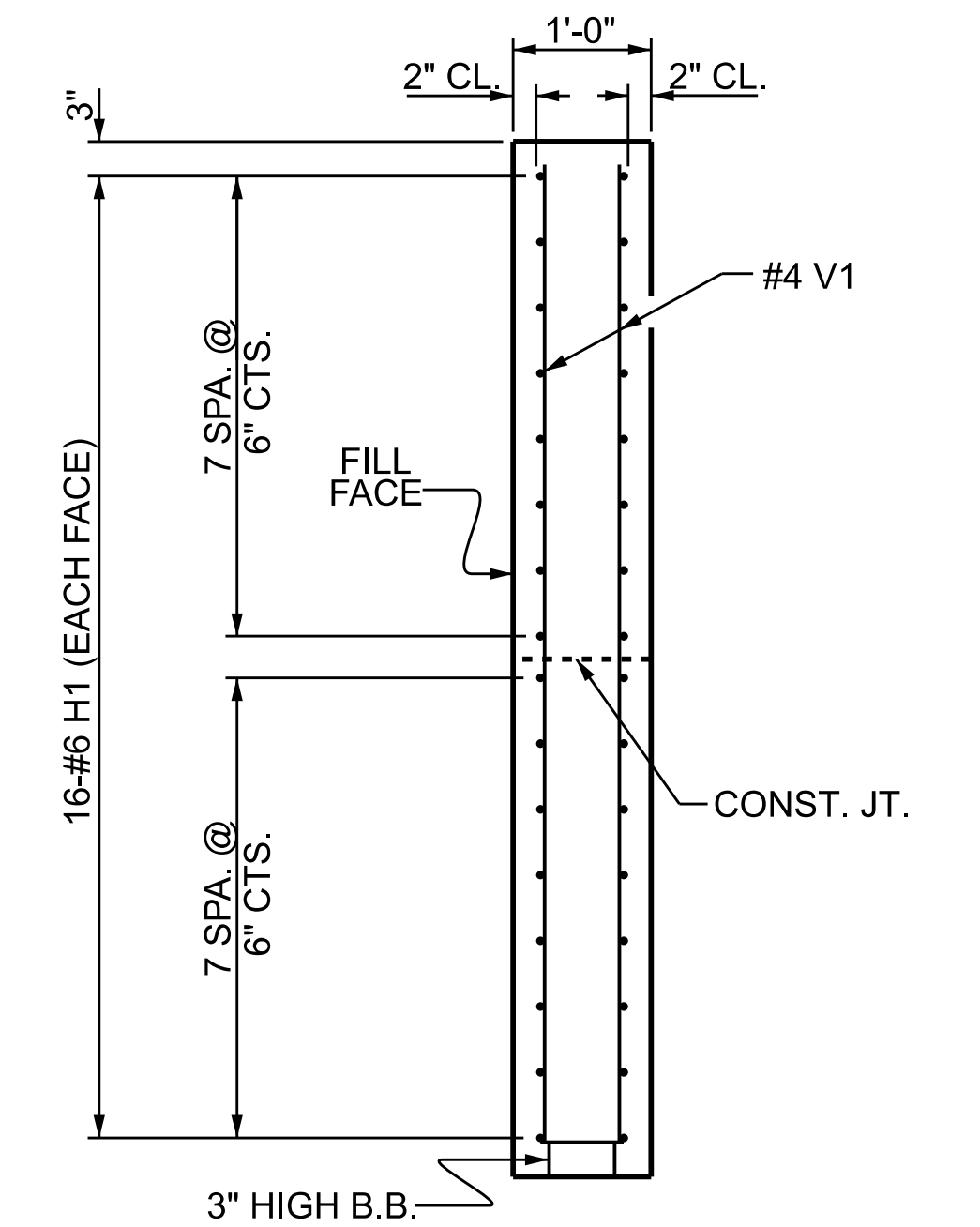


ELEVATION OF WING (W1)



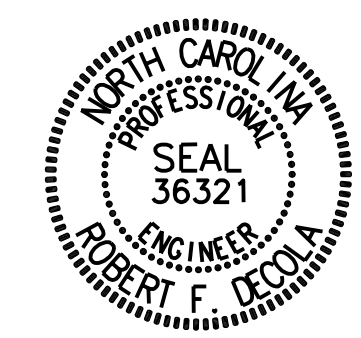
ELEVATION OF WING (W2)

WING DETAILS



SECTION Y-Y

PROJECT NO. **BP12.R014**  
**IREDELL** COUNTY  
 STATION: **13+45.00 -L-**  
 SHEET 3 OF 4



DocuSigned by:  
 Robert DeCola  
 4/24/2024

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
**END BENT  
 WING DETAILS**

DRAWN BY : M.G. Armstrong DATE : 1/27/23  
 CHECKED BY : R.F. DeCola DATE : 3/7/23  
 DESIGN ENGINEER OF RECORD : R.F. DeCola DATE : 4/24/2024

3/18/2024  
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 Matt.Armstrong

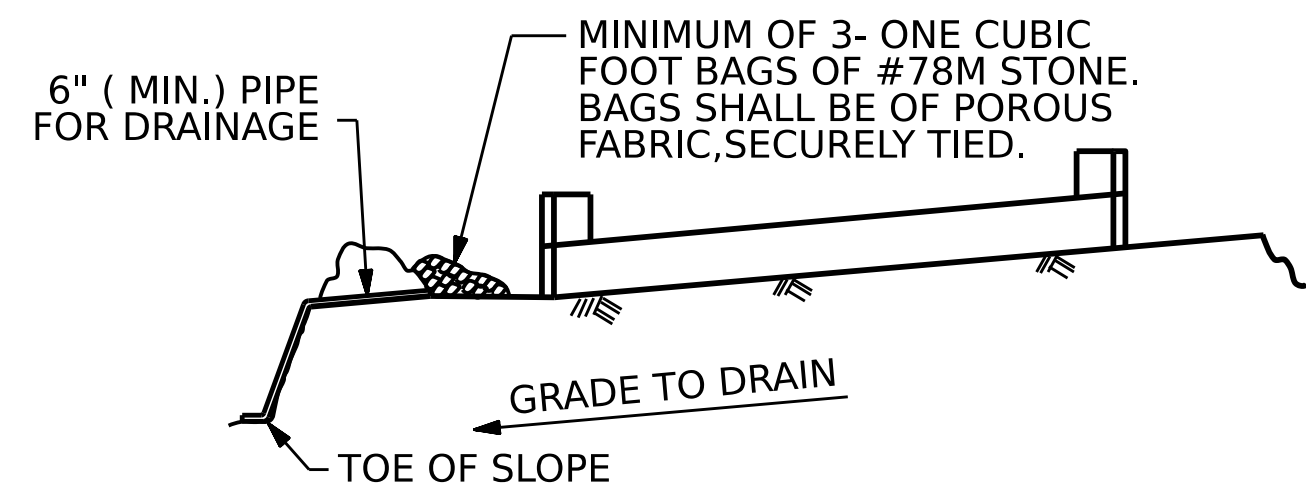


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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			17



5/26/20

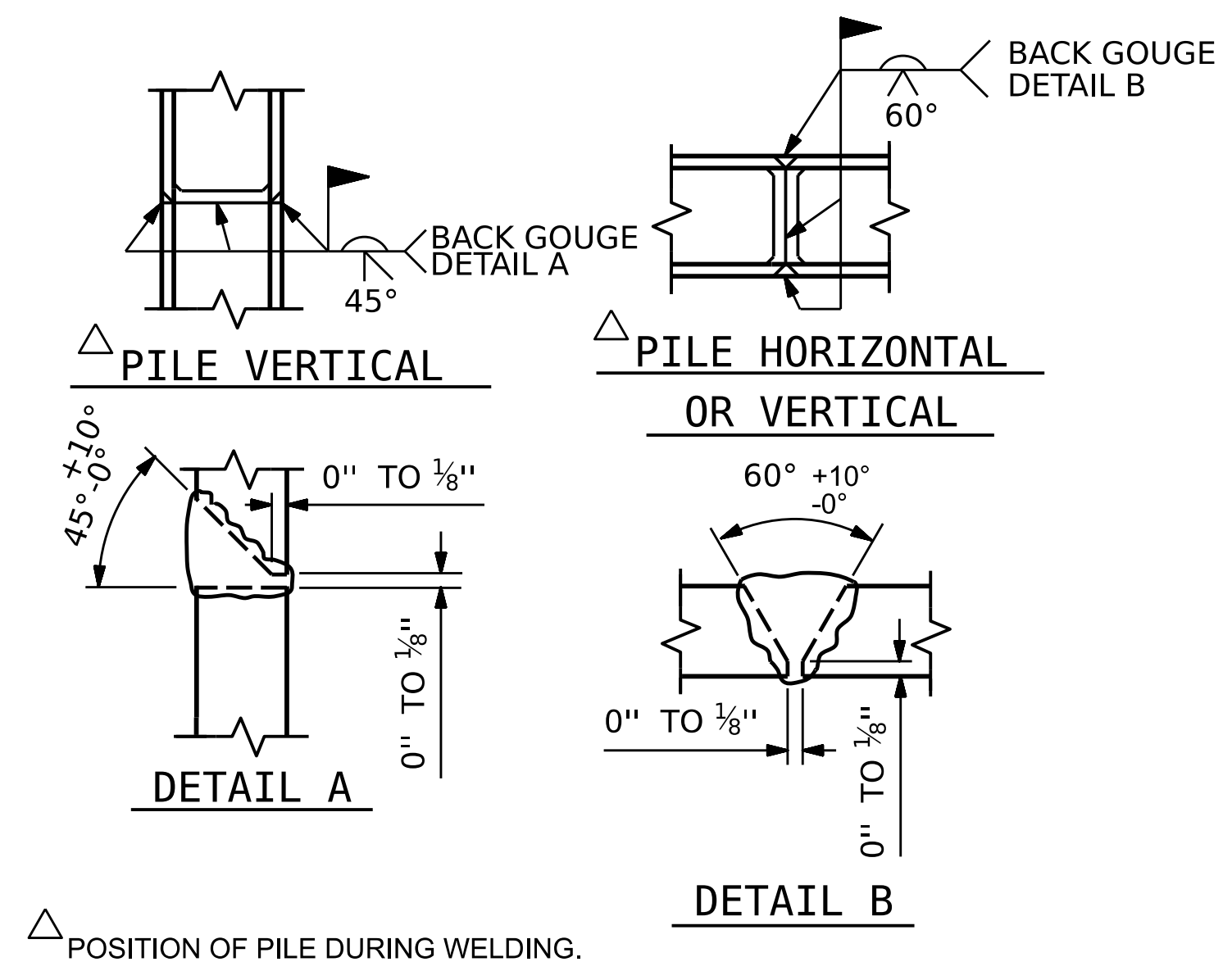


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

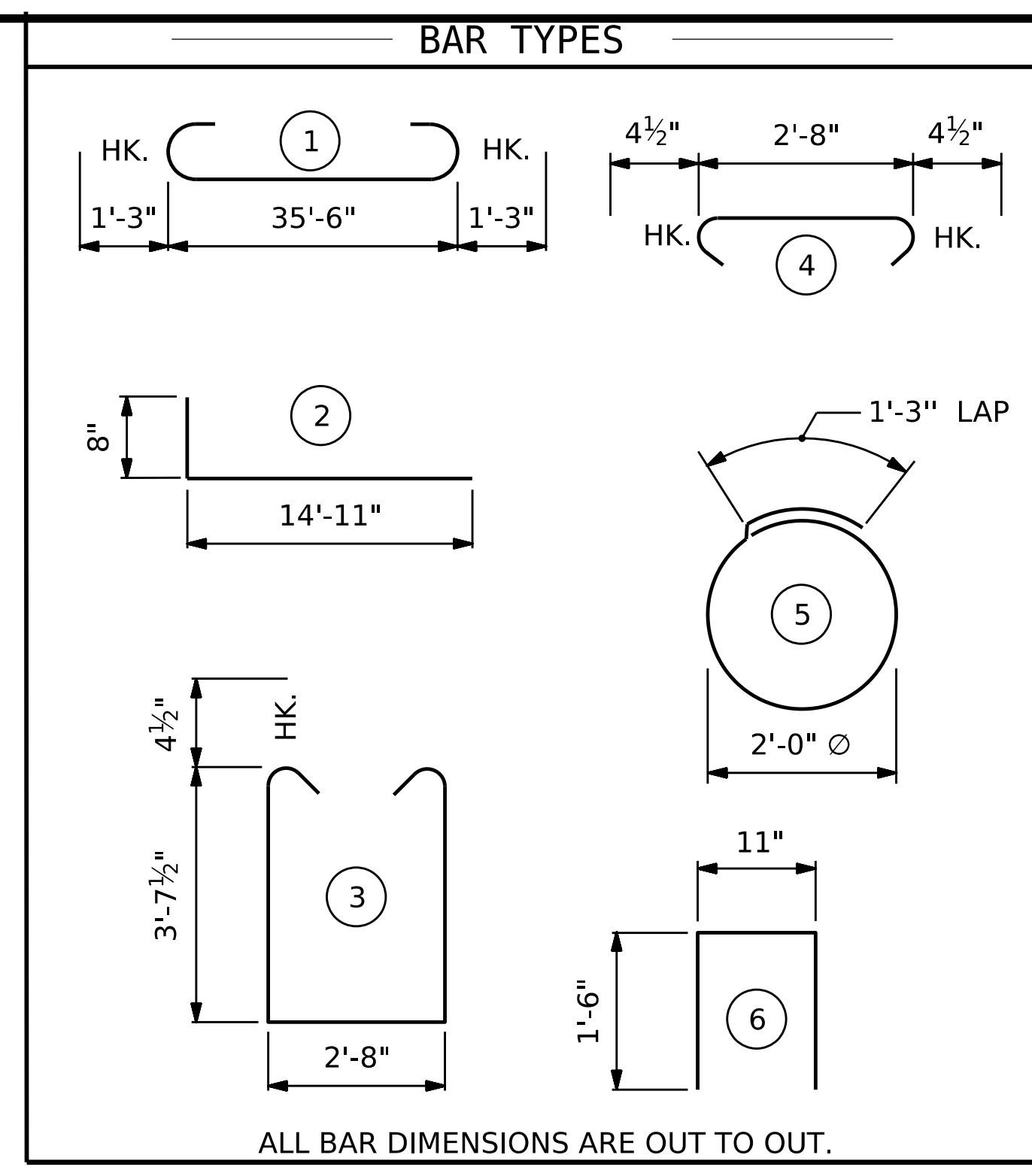
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

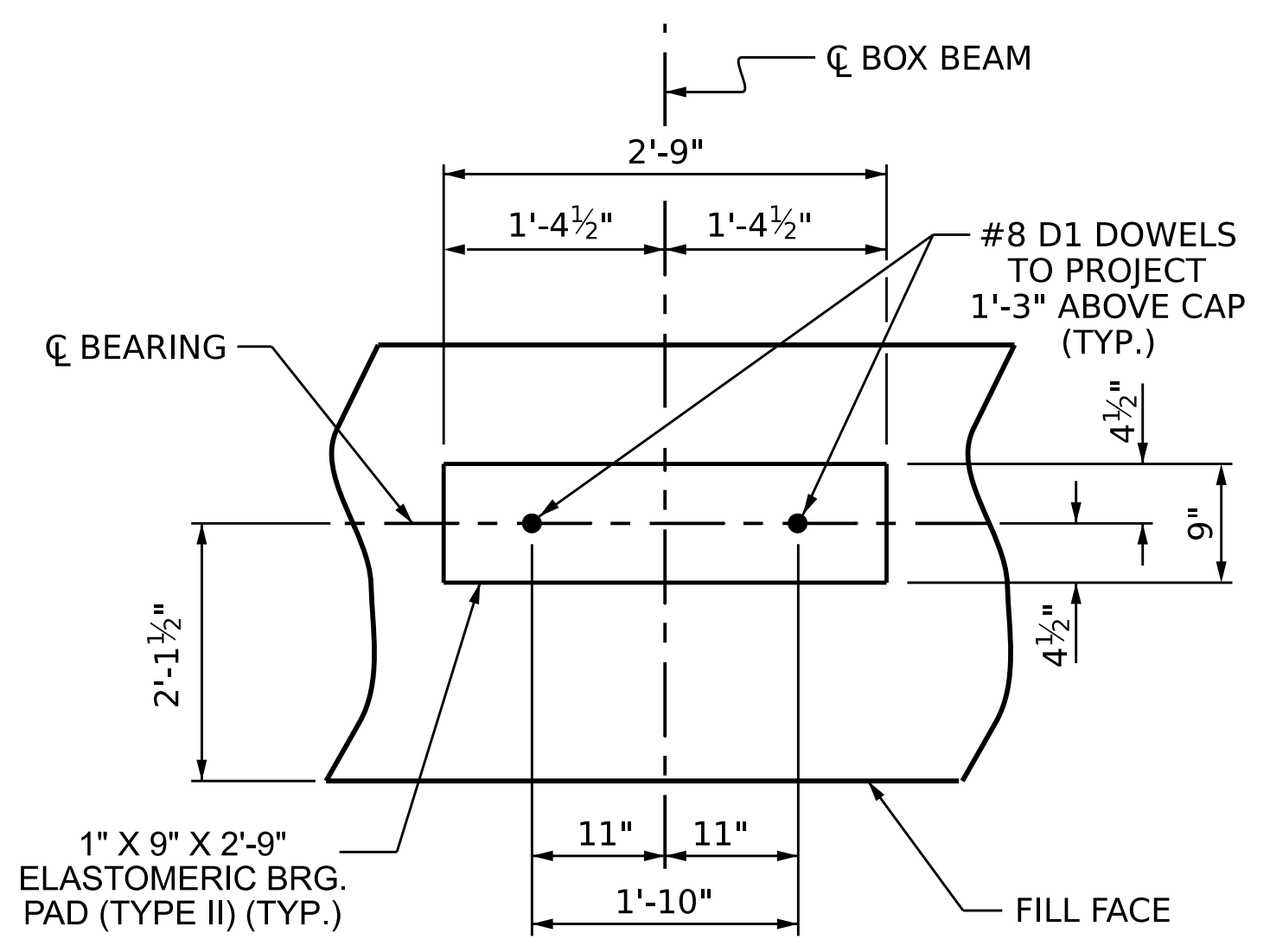
**TEMPORARY DRAINAGE AT END BENT**



**PILE SPLICE DETAILS**

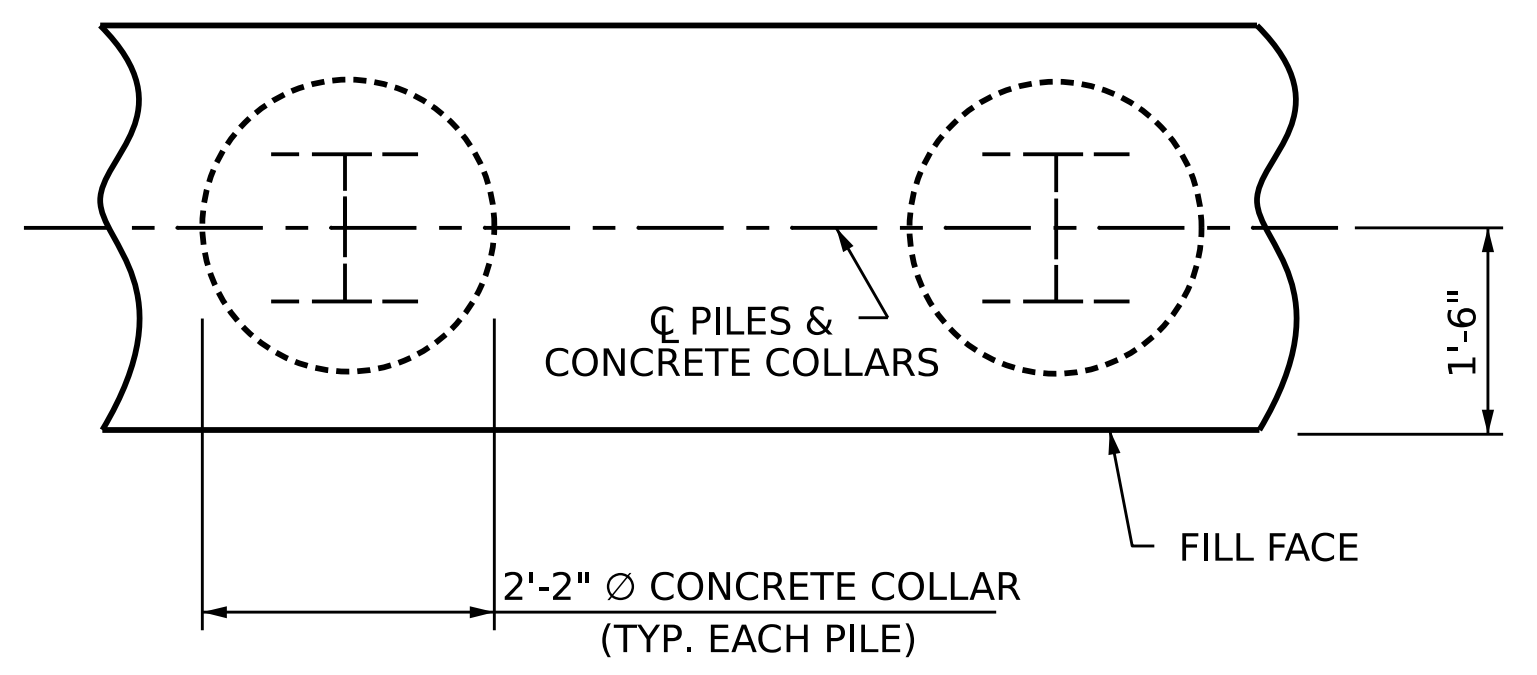


BILL OF MATERIAL FOR ONE END BENT					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	38'-0"	1034
B2	28	#4	STR	19'-1"	357
B3	9	#4	STR	2'-8"	16
D1	20	#8	STR	2'-3"	120
H1	64	#6	2	15'-7"	1498
K1	12	#4	STR	2'-11"	23
K2	12	#4	STR	19'-1"	153
S1	46	#4	3	10'-8"	328
S2	46	#4	4	3'-5"	105
S3	20	#4	5	7'-6"	100
U1	30	#4	6	3'-11"	78
V1	76	#4	STR	7'-8"	389
V2	60	#4	STR	5'-9"	230
REINFORCING STEEL (FOR ONE END BENT)					4431 LBS.
CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)					
POUR #1 CAP, LOWER PART OF WINGS & COLLARS					21.2 C.Y.
POUR #2 BACKWALL & UPPER PART OF WINGS					8.2 C.Y.
TOTAL CLASS A CONCRETE					29.4 C.Y.

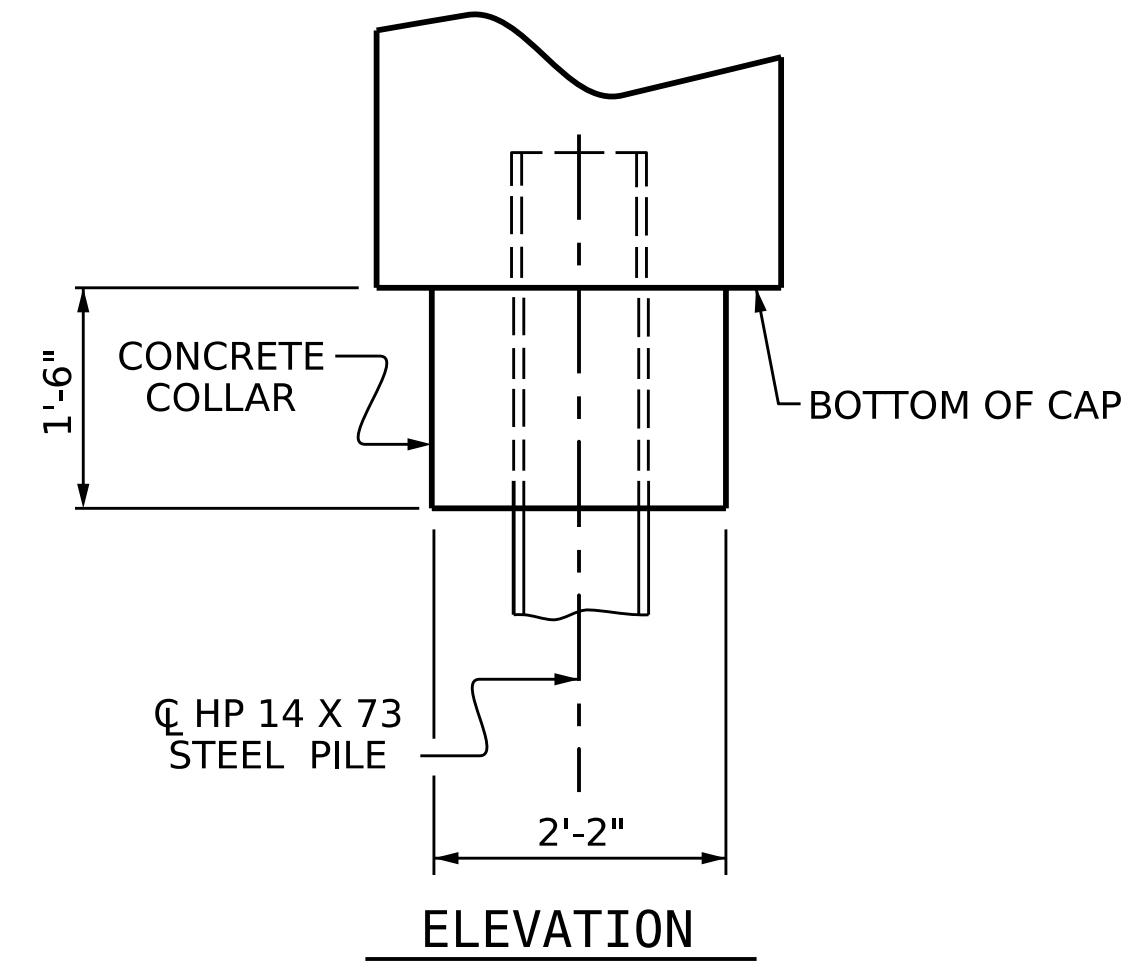


**DETAIL "A"**

(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



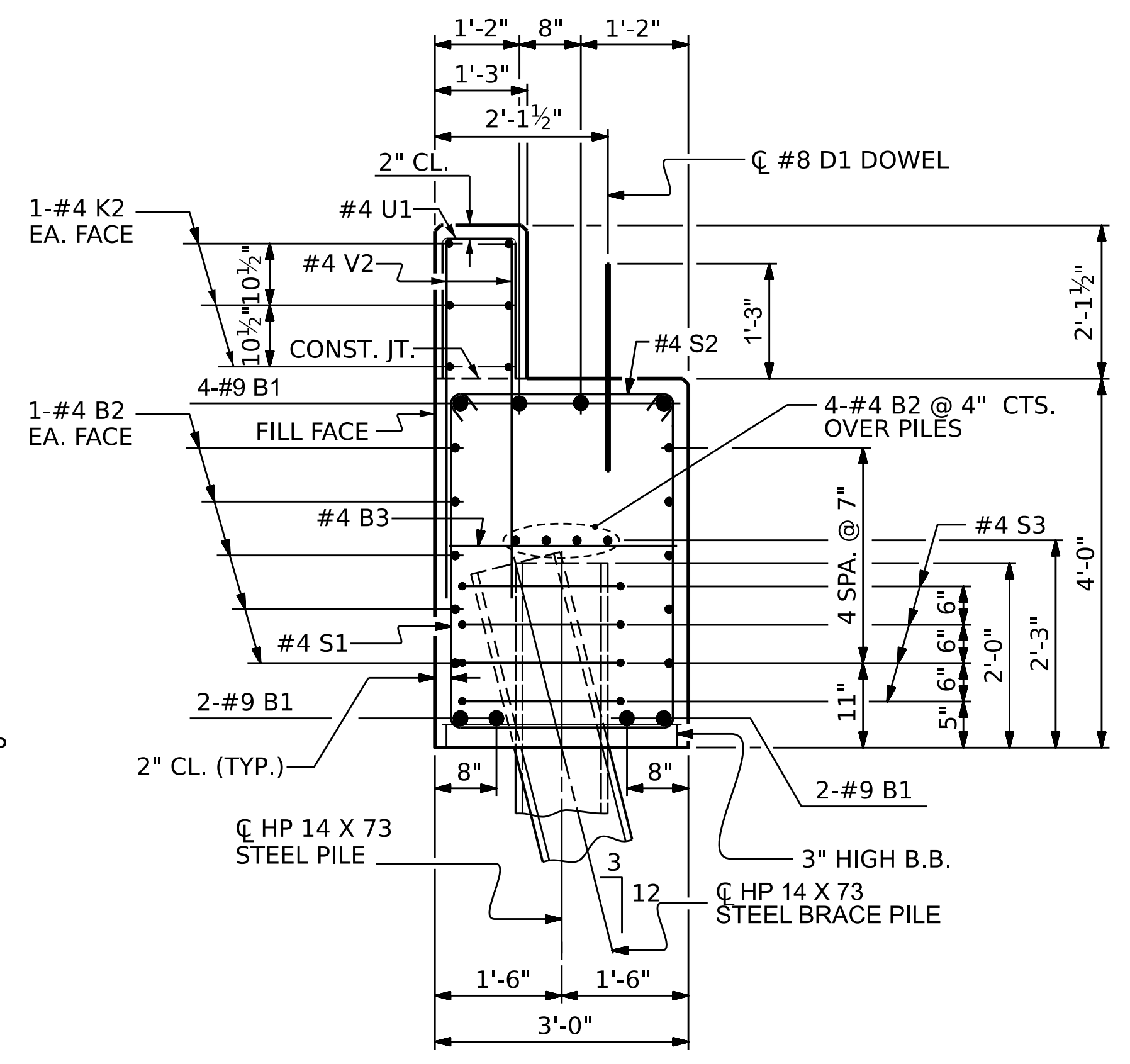
**PLAN**



**ELEVATION**

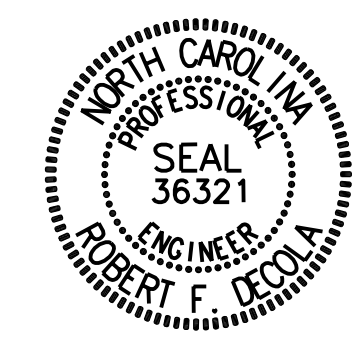
**CORROSION PROTECTION FOR STEEL PILES DETAIL**

(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



**SECTION A-A**

(CONCRETE COLLAR NOT SHOWN FOR CLARITY. SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL.")



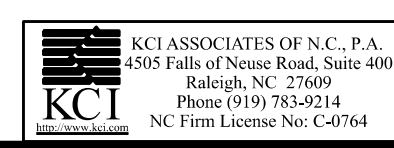
DocuSigned by: Robert DeCola 4/24/2024

PROJECT NO. **BP12.R014**  
**IREDELL** COUNTY  
STATION: **13+45.00 -L-**  
SHEET 4 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SUBSTRUCTURE  
**END BENT No. 1 & 2**  
**DETAILS**

DRAWN BY: M.G. Armstrong DATE: 1/27/23  
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DESIGN ENGINEER OF RECORD: R.F. DeCola DATE: 4/24/2024

3/18/2024  
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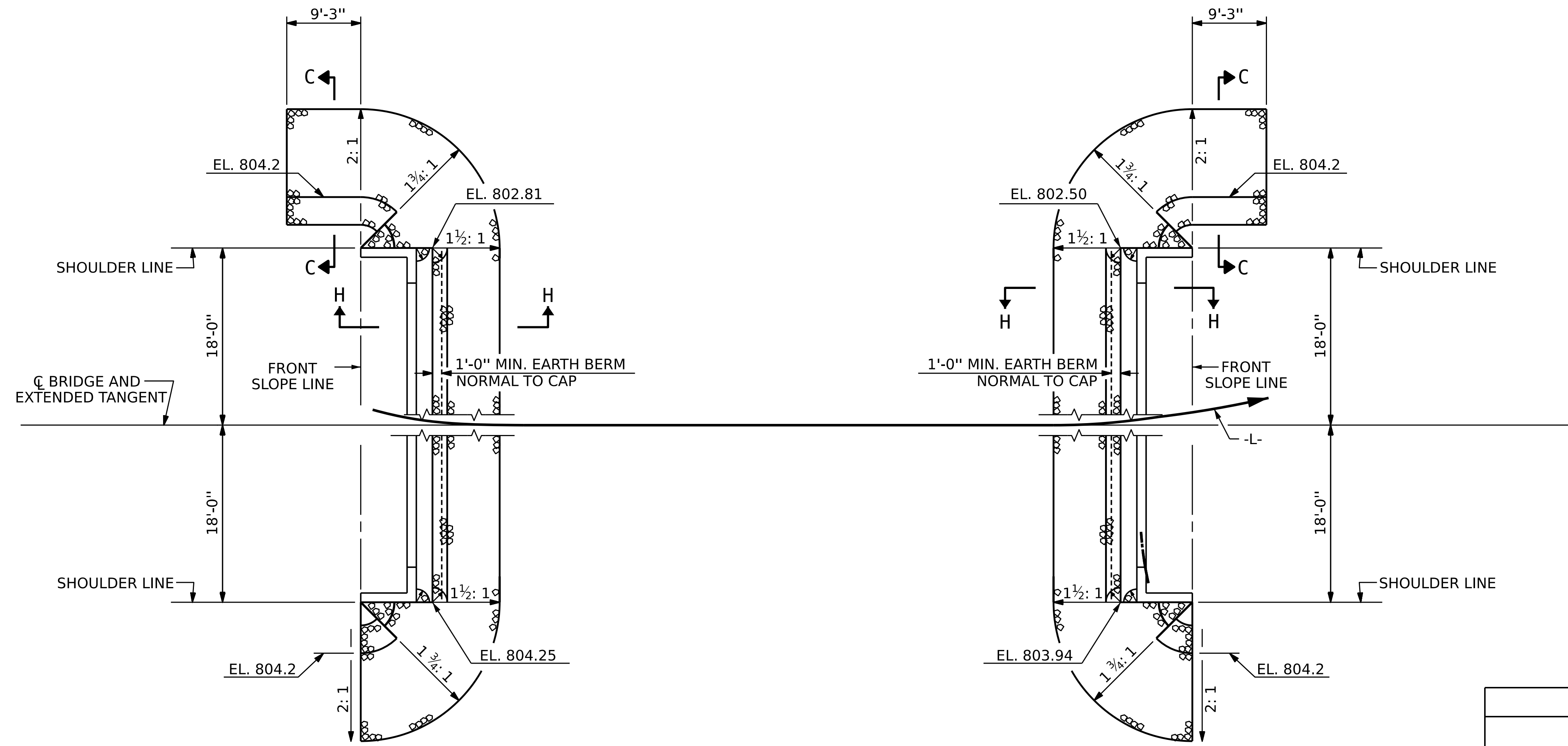
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S-15	TOTAL SHEETS	17
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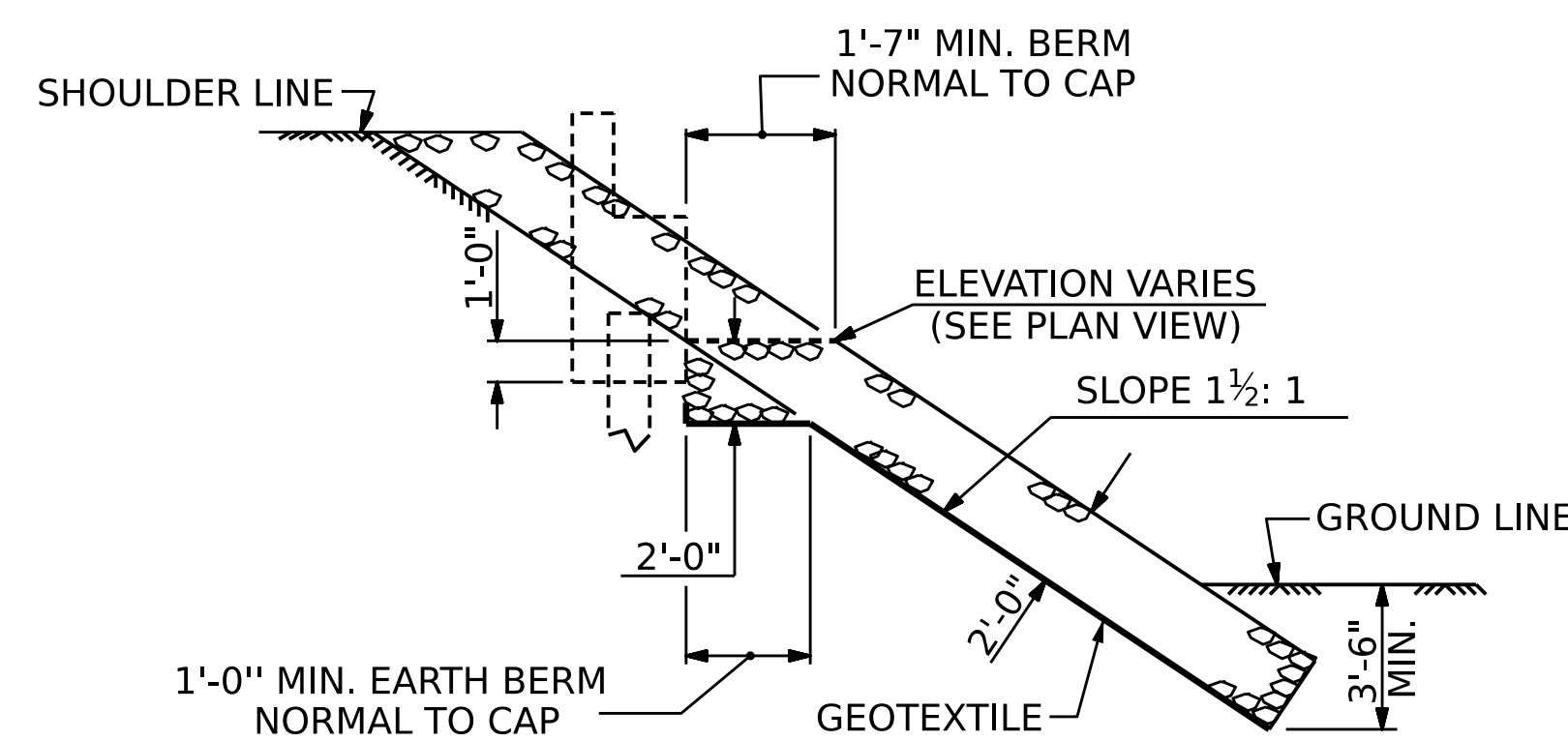


NOTES:  
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

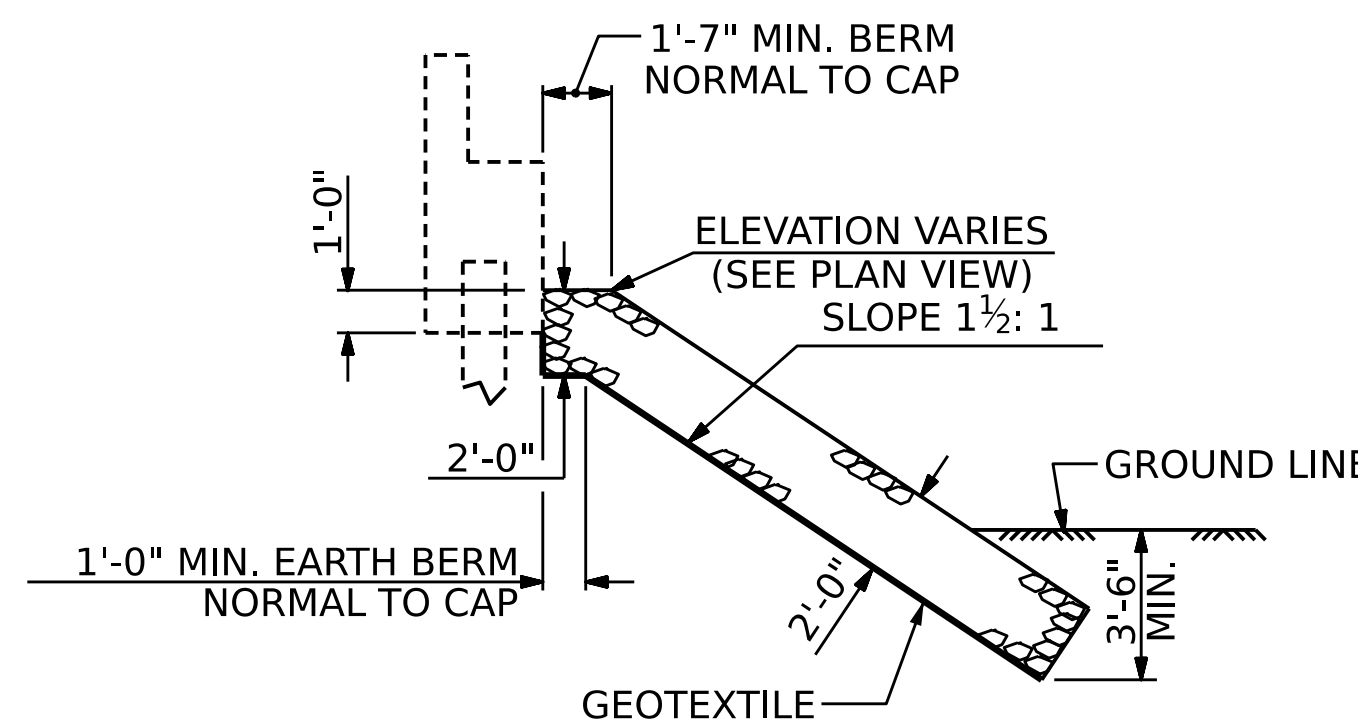


ESTIMATED QUANTITIES		
BRIDGE @ STA. 13+45.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	66	73
END BENT 2	75	83

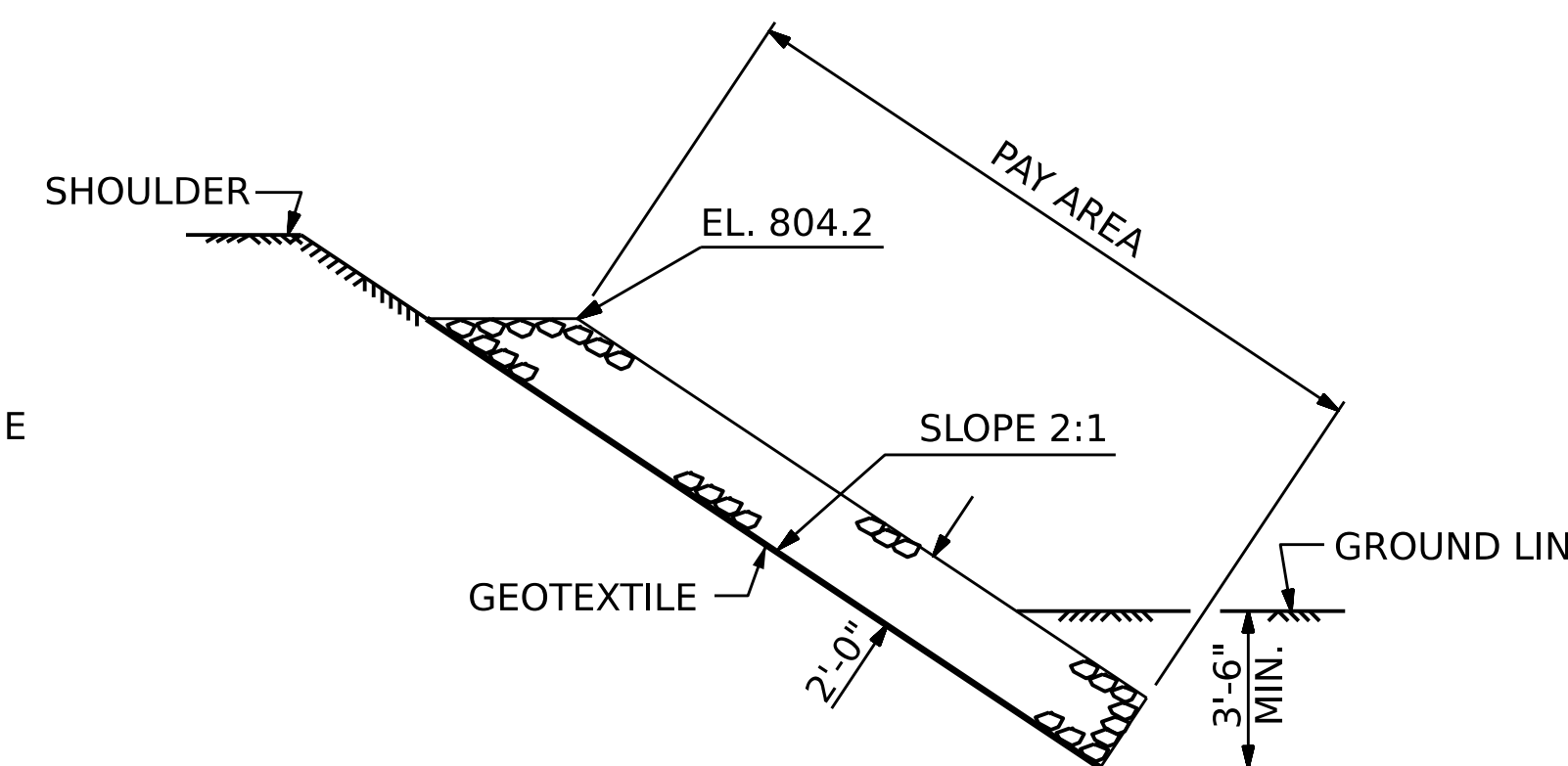
SHOULDER RIP RAP IS HIGHER THAN BERM RIP RAP



SECTION H-H

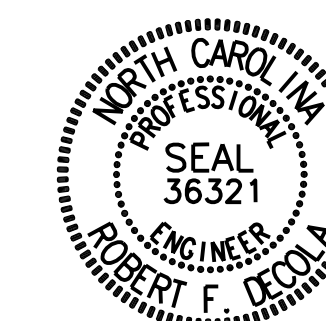


SECTION C-C  
BERM RIP RAPPED



SECTION C-C

PROJECT NO. **BP12.R014**  
**IREDELL** COUNTY  
STATION: **13+45.00 -L-**



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
**STANDARD  
RIP RAP DETAILS**

DocuSigned by:  
Robert DeCola  
4/24/2024

DRAWN BY: M.G. Armstrong DATE: 1/27/23  
CHECKED BY: R.F. DeCola DATE: 3/7/23  
DESIGN ENGINEER OF RECORD: R.F. DeCola DATE: 4/24/2024

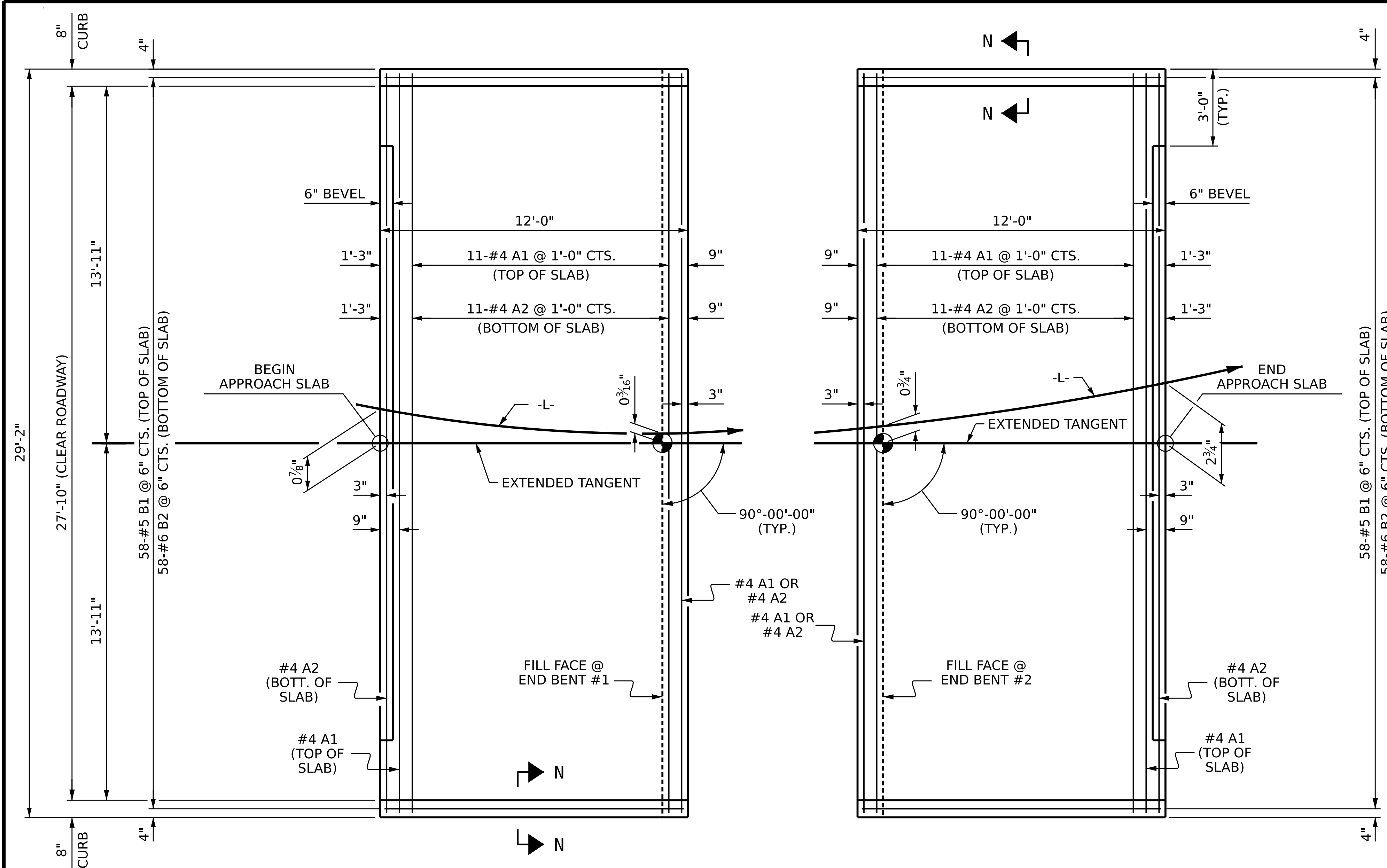


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1			3		
2			4		

TOTAL SHEETS: 17

9/26/20



PLAN @ END BENT #1

PLAN @ END BENT #2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

**NOTES**

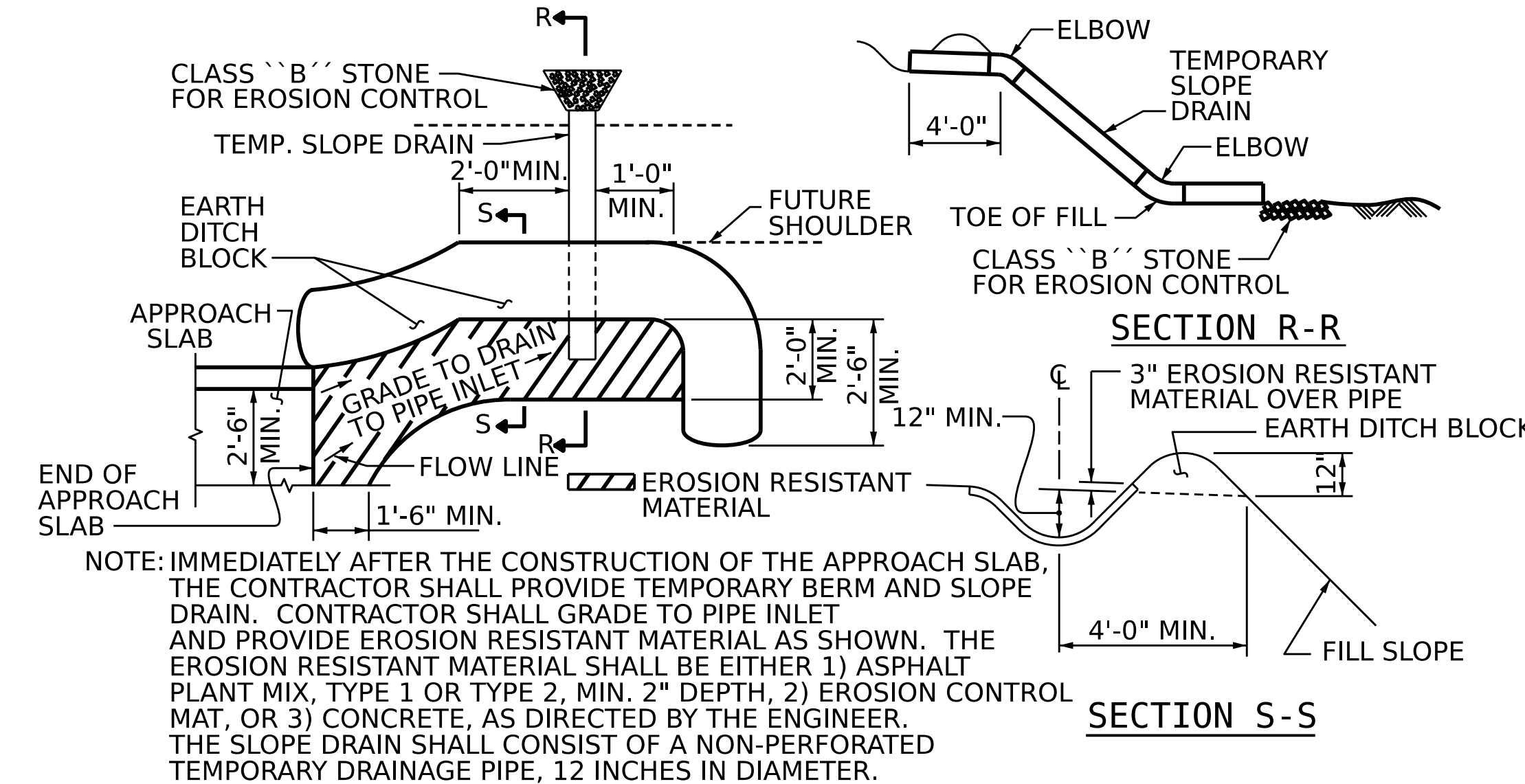
FOR BRIDGE APPROACH FILL, SEE ROADWAY PLANS.

AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.

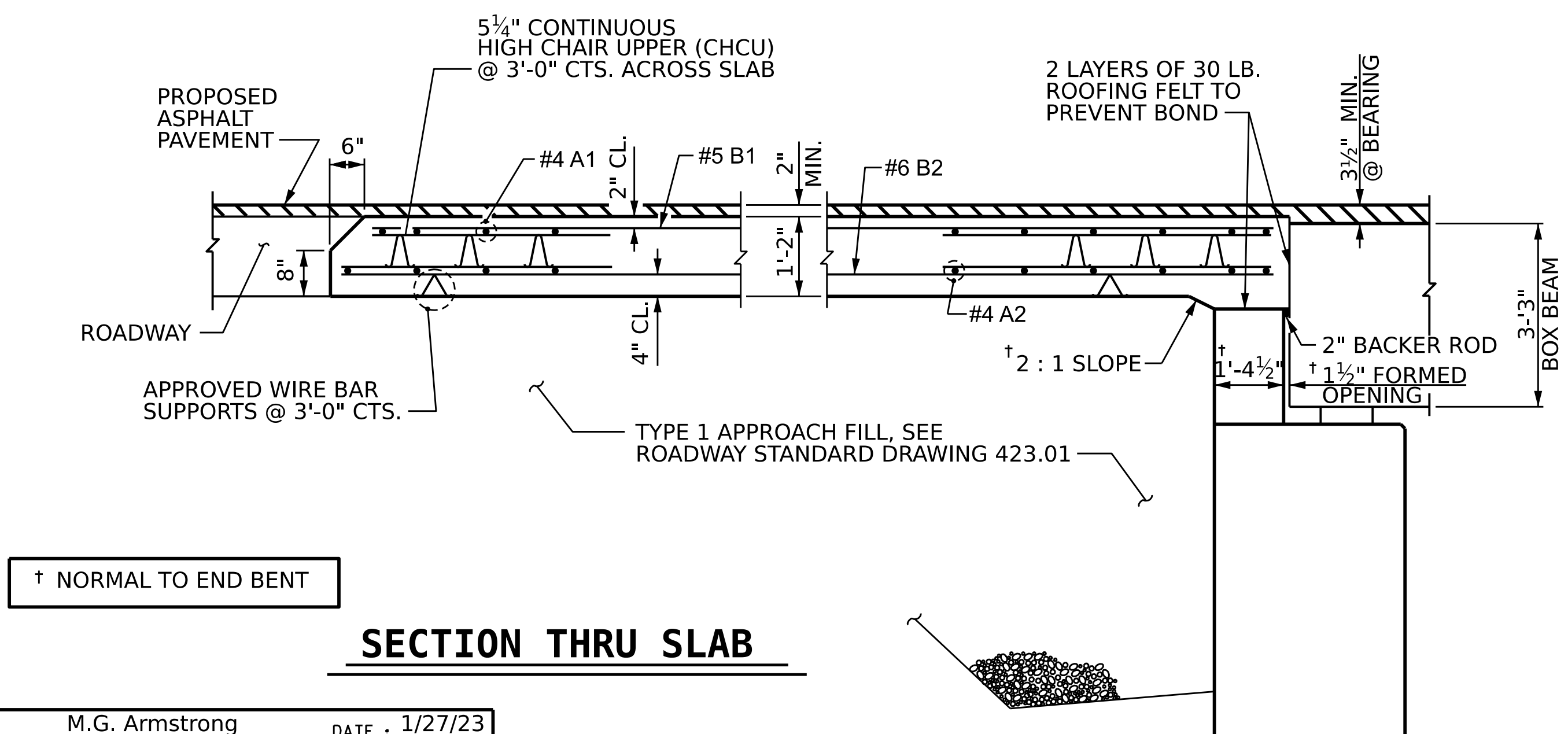
**SPLICE LENGTHS**

BAR SIZE	EPOXY COATED	UNCOATED
#4	1'-11"	1'-7"
#5	2'-5"	2'-0"
#6	3'-7"	2'-5"

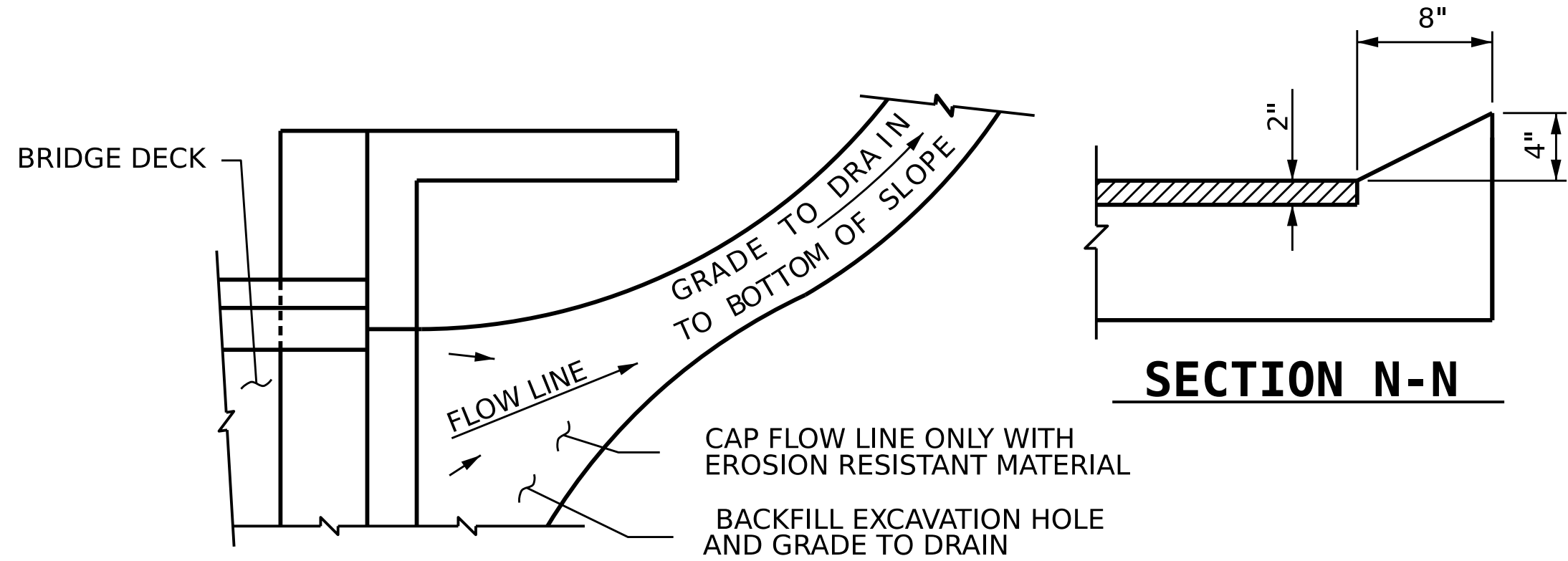


TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



SECTION THRU SLAB



**NOTE:** IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT TO THE STRUCTURE. THE CONTRACTOR WILL BE REQUIRED TO REMOVE THESE MATERIALS PRIOR TO CONSTRUCTION OF THE APPROACH SLAB.

TEMPORARY DRAINAGE DETAIL

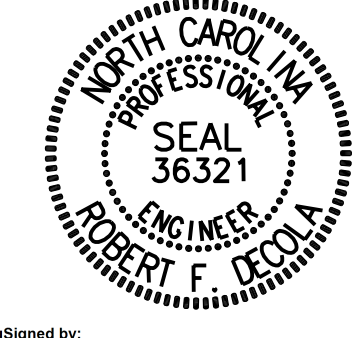
**BILL OF MATERIAL**

APPROACH SLAB AT EB #1						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
* A1	13	#4	STR	28'-10"	250	
A2	13	#4	STR	28'-10"	250	
* B1	58	#5	STR	11'-2"	676	
B2	58	#6	STR	11'-8"	1016	
REINFORCING STEEL					LBS.	1266
* EPOXY COATED REINFORCING STEEL					LBS.	926
CLASS AA CONCRETE					C. Y.	15.8
APPROACH SLAB AT EB #2						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
* A1	13	#4	STR	28'-10"	250	
A2	13	#4	STR	28'-10"	250	
* B1	58	#5	STR	11'-2"	676	
B2	58	#6	STR	11'-8"	1016	
REINFORCING STEEL					LBS.	1266
* EPOXY COATED REINFORCING STEEL					LBS.	926
CLASS AA CONCRETE					C. Y.	15.8

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PROJECT NO. **BP12.R014**  
**IREDELL** COUNTY  
 STATION: **13+45.00 -L-**

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 BRIDGE APPROACH SLAB  
 FOR PRESTRESSED CONCRETE  
 BOX BEAM UNIT  
 (SUB-REGIONAL TIER)  
 90° SKEW

REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	

TOTAL SHEETS: 17



## STANDARD NOTES

### DESIGN DATA:

SPECIFICATIONS	-----	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	-----	SEE PLANS
IMPACT ALLOWANCE	-----	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF STRUCTURAL STEEL - AASHTO M270 GRADE 36	--	20,000 LBS. PER SQ. IN.
	--	27,000 LBS. PER SQ. IN.
	--	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION - GRADE 60	----	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	-----	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	-----	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR UNTREATED EXTREME FIBER STRESS	----	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	-----	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	-----	30 LBS. PER CU. FT. (MINIMUM)

### MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2024 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N.C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

### CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

### CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED  $\frac{3}{4}$ " WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO  $\frac{1}{2}$ " RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A  $\frac{1}{4}$ " FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A  $\frac{1}{4}$ " RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

### DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

### ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

### REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

### STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE  $\frac{7}{8}$ "  $\emptyset$  SHEAR STUDS FOR THE  $\frac{3}{4}$ "  $\emptyset$  STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 -  $\frac{7}{8}$ "  $\emptyset$  STUDS FOR 4 -  $\frac{3}{4}$ "  $\emptyset$  STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF  $\frac{7}{8}$ "  $\emptyset$  STUDS ALONG THE BEAM AS SHOWN FOR  $\frac{3}{4}$ "  $\emptyset$  STUDS BASED ON THE RATIO OF 3 -  $\frac{7}{8}$ "  $\emptyset$  STUDS FOR 4 -  $\frac{3}{4}$ "  $\emptyset$  STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST  $\frac{3}{16}$ " IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY  $\frac{1}{16}$ " INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

### HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

### SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

ENGLISH

JANUARY, 1990

STD. NO. SN