

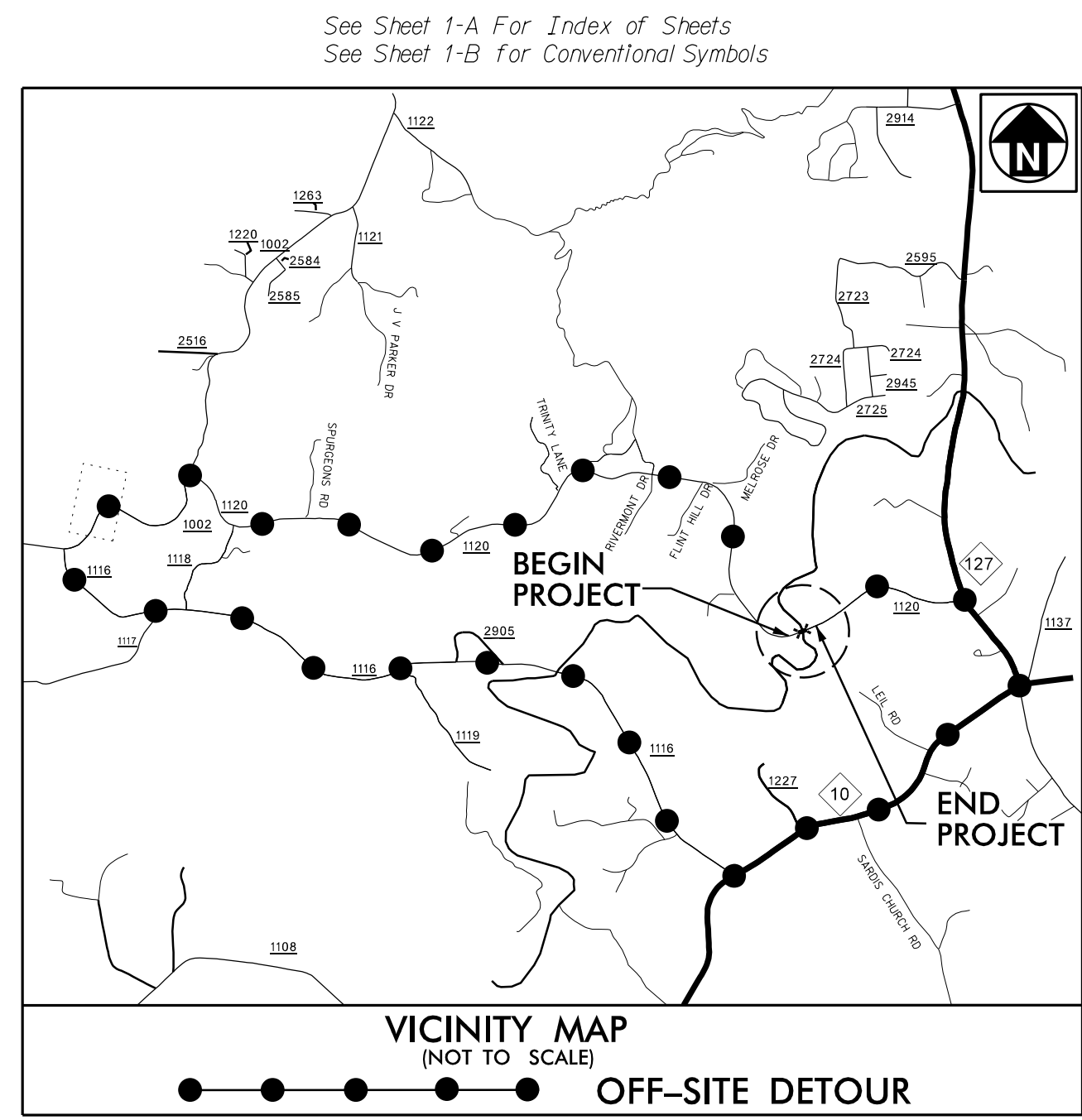
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PROJECT: 17BP.12.R.63

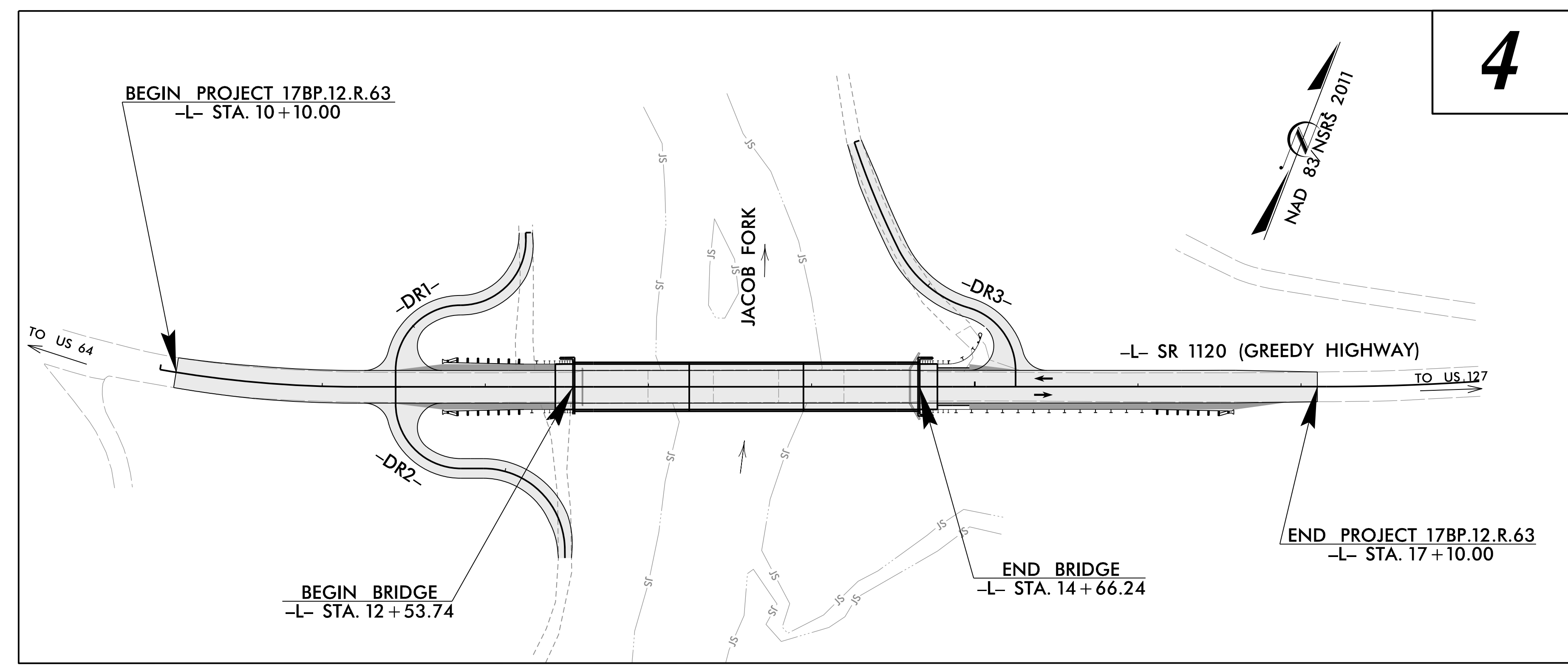
CONTRACT:



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
CATAWBA COUNTY

**LOCATION: BRIDGE NO. 59 OVER JACOB FORK
ON SR 1120 (GREEDY HIGHWAY)**
**TYPE OF WORK: GRADING, DRAINAGE, PAVING
AND STRUCTURE**

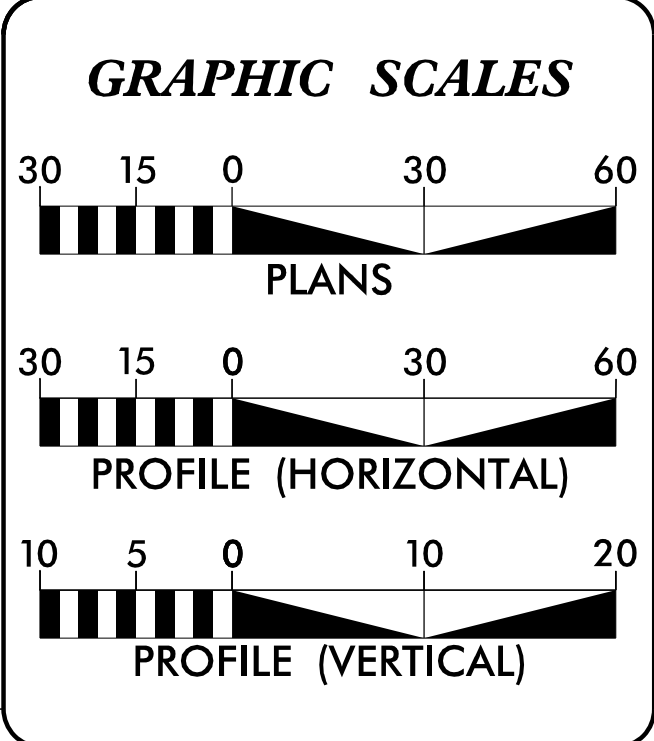
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.12.R.63	1	
STATE PROJECT NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.12.PE.63	N/A	P. E.	
17BP.12.ROW.63	N/A	RW & UTIL	
17BP.12.R.63	N/A	CONST	



PLANS PREPARED BY:
Mattern & Craig
ENGINEERS • SURVEYORS

12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201
FAX (828) 254-4562
NC LIC. NO. C-1154

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UNLESS ALL SIGNATURES COMPLETED**



DESIGN DATA

ADT 2013 = 740

T = 6 %
V = 45 MPH

FUNC CLASS =
RURAL LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT 17BP.12.R.63 = 0.093 MILES
LENGTH STRUCTURE PROJECT 17BP.12.R.63 = 0.040 MILES
TOTAL LENGTH PROJECT 17BP.12.R.63 = 0.133 MILES

Prepared in the Office of:
MATTERN & CRAIG
12 BROAD ST.
ASHEVILLE, NC 28801
FOR NCDOT DIVISION OF HIGHWAYS

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
APRIL 21, 2021

LETTING DATE:
JUNE 27, 2023

AARON CARVER, PE
PROJECT ENGINEER

MENG YANG, PE
PROJECT DESIGN ENGINEER

NCDOT CONTACT:
JOSHUA B. WHITE, PE
DIVISION 12 PROJECT ENGINEER

ROADWAY DESIGN ENGINEER

DocuSigned by:
Aaron Carver
8250842A220F49C

3/27/2023
P.E.

SIGNATURE:

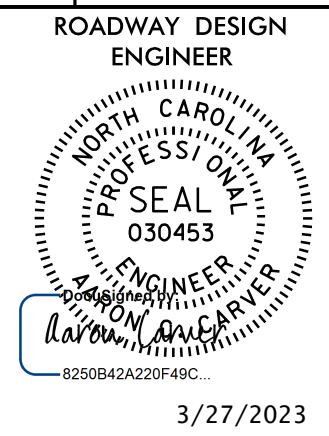
HYDRAULICS ENGINEER

DocuSigned by:
Aaron Carver
8250842A220F49C

3/27/2023
P.E.

SIGNATURE:





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SHEET NUMBER	INDEX OF SHEETS
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
2A-1 THROUGH 2A-2	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
2C-1	GUARDRAIL INSTALLATION IN LIEU OF STD 862.02 SHEET 6 OF 8
2C-2	STRUCTURAL ANCHOR UNITS IN LIEU OF STD 862.03 SHEET 1 OF 7
2C-3	GUARDRAIL INSTALLATION: A.T.-1 SYSTEM
3B-1	SUMMARY OF DRAINAGE QUANTITIES, SUMMARY OF GUARDRAIL, SUMMARY OF PAVEMENT REMOVAL, AND SUMMARY OF EARTHWORK
4	PLAN AND PROFILE SHEET
5	PROFILES
RW01 THRU RW04	SURVEY CONTROL, EXISTING CENTERLINES, RIGHT OF WAY, EASEMENTS, & PROPERTY TIES
TMP-1 THRU TMP-2	TRAFFIC MANAGEMENT PLANS
PM-1	PAVEMENT MARKING PLAN
SD-1	SPECIAL SIGN DESIGN
EC-1 THRU EC-5	EROSION CONTROL PLANS
UO-1	UTILITIES BY OTHERS PLANS
X-0	CROSS-SECTION SUMMARY
X-1 THRU X-13	CROSS-SECTIONS
S-1 THRU S-19	STRUCTURE PLANS

GENERAL NOTES:

2018 SPECIFICATIONS
EFFECTIVE: 01-17-18

2018 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 17, 2018 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 Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
422.02	Bridge Approach Fills - TYPE II MODIFIED APPROACH FILL
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
840.25	Anchorage for Frames
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Unit
876.02	Guide for Rip Rap at Pipe Outlets

GRADE LINE:
GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED 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 II.

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.

SIDE ROADS:

THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED.

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: DUKE ENERGY (POWER).

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT-OF-WAY MARKERS:

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

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

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EP
Computed Property Corner	-----x
Property Monument	□ EGM
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	---S---
Potential Contamination Area: Soil	---S---
Known Contamination Area: Water	---W---
Potential Contamination Area: Water	---W---
Contaminated Site: Known or Potential	☠ ?

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○ S
Well	○ W
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	-----
Proposed Lateral, Tail, Head Ditch	-----
False Sump	-----

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○ MILEPOST 35
Switch	□ SWITCH
RR Abandoned	-----
RR Dismantled	-----

RIGHT OF WAY & PROJECT CONTROL:

Secondary Horiz and Vert Control Point	◆
Primary Horiz Control Point	○
Primary Horiz and Vert Control Point	●
Exist Permanent Easement Pin and Cap	◇
New Permanent Easement Pin and Cap	◆
Vertical Benchmark	⊠
Existing Right of Way Marker	△
Existing Right of Way Line	-----
New Right of Way Line	○ RW
New Right of Way Line with Pin and Cap	○ RW ▲
New Right of Way Line with Concrete or Granite R/W Marker	▲ RW
New Control of Access Line with Concrete C/A Marker	△ CA
Existing Control of Access	△ CA
New Control of Access	△ CA
Existing Easement Line	-----E
New Temporary Construction Easement	-----E
New Temporary Drainage Easement	-----TDE
New Permanent Drainage Easement	-----PDE
New Permanent Drainage / Utility Easement	-----DUE
New Permanent Utility Easement	-----PUE
New Temporary Utility Easement	-----TUE
New Aerial Utility Easement	-----AUE

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	-----C
Proposed Slope Stakes Fill	-----F
Proposed Curb Ramp	-----CR
Existing Metal Guardrail	-----
Proposed Guardrail	-----
Existing Cable Guiderail	-----
Proposed Cable Guiderail	-----
Equality Symbol	⊕
Pavement Removal	-----

VEGETATION:

Single Tree	○
Single Shrub	○

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

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:

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 LOS B (S.U.E.*)	-----P
U/G Power Line LOS C (S.U.E.*)	-----P
U/G Power Line LOS D (S.U.E.*)	-----P

TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	⊕
Telephone Pedestal	⊠
Telephone Cell Tower	⊠
U/G Telephone Cable Hand Hole	-----
U/G Telephone Cable LOS B (S.U.E.*)	-----T
U/G Telephone Cable LOS C (S.U.E.*)	-----T
U/G Telephone Cable LOS D (S.U.E.*)	-----T
U/G Telephone Conduit LOS B (S.U.E.*)	-----TC
U/G Telephone Conduit LOS C (S.U.E.*)	-----TC
U/G Telephone Conduit LOS D (S.U.E.*)	-----TC
U/G Fiber Optics Cable LOS B (S.U.E.*)	-----T FO
U/G Fiber Optics Cable LOS C (S.U.E.*)	-----T FO
U/G Fiber Optics Cable LOS D (S.U.E.*)	-----T FO

WATER:

Water Manhole	⊕
Water Meter	○
Water Valve	⊗
Water Hydrant	⊕
U/G Water Line LOS B (S.U.E.*)	-----
U/G Water Line LOS C (S.U.E.*)	-----
U/G Water Line LOS D (S.U.E.*)	-----
Above Ground Water Line	-----A/G Water

TV:

TV Pedestal	⊠
TV Tower	⊗
U/G TV Cable Hand Hole	-----
U/G TV Cable LOS B (S.U.E.*)	-----TV
U/G TV Cable LOS C (S.U.E.*)	-----TV
U/G TV Cable LOS D (S.U.E.*)	-----TV
U/G Fiber Optic Cable LOS B (S.U.E.*)	-----TV FO
U/G Fiber Optic Cable LOS C (S.U.E.*)	-----TV FO
U/G Fiber Optic Cable LOS D (S.U.E.*)	-----TV FO

GAS:

Gas Valve	◇
Gas Meter	⊕
U/G Gas Line LOS B (S.U.E.*)	-----G
U/G Gas Line LOS C (S.U.E.*)	-----G
U/G Gas Line LOS D (S.U.E.*)	-----G
Above Ground Gas Line	-----A/G Gas

SANITARY SEWER:

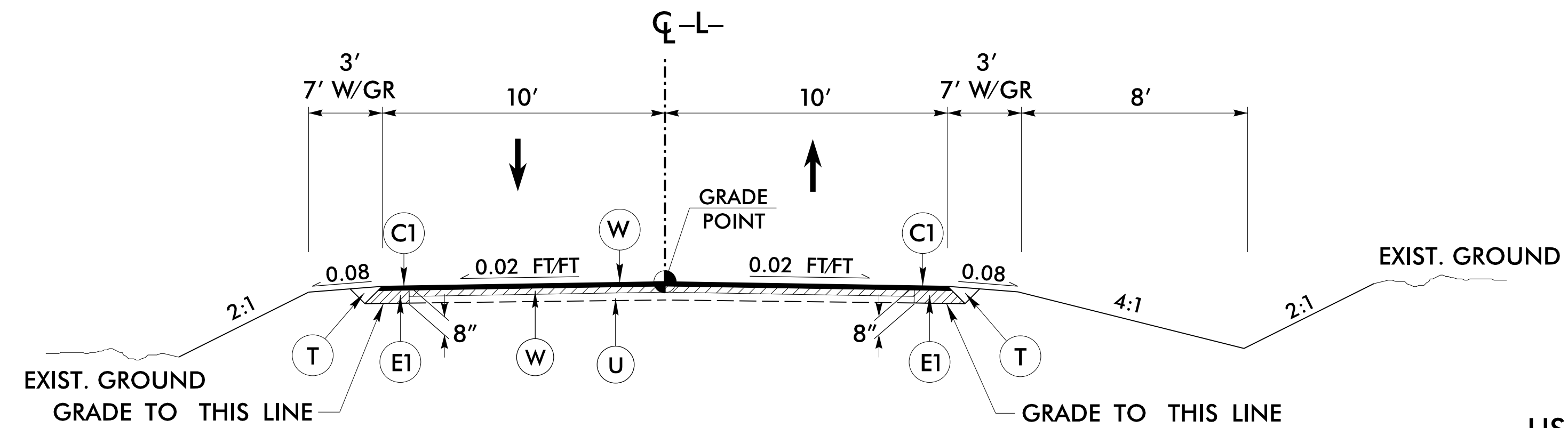
Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	-----SS
Above Ground Sanitary Sewer	-----A/G Sanitary Sewer
SS Forced Main Line LOS B (S.U.E.*)	-----FSS
SS Forced Main Line LOS C (S.U.E.*)	-----FSS
SS Forced Main Line LOS D (S.U.E.*)	-----FSS

MISCELLANEOUS:

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

6/2/2019

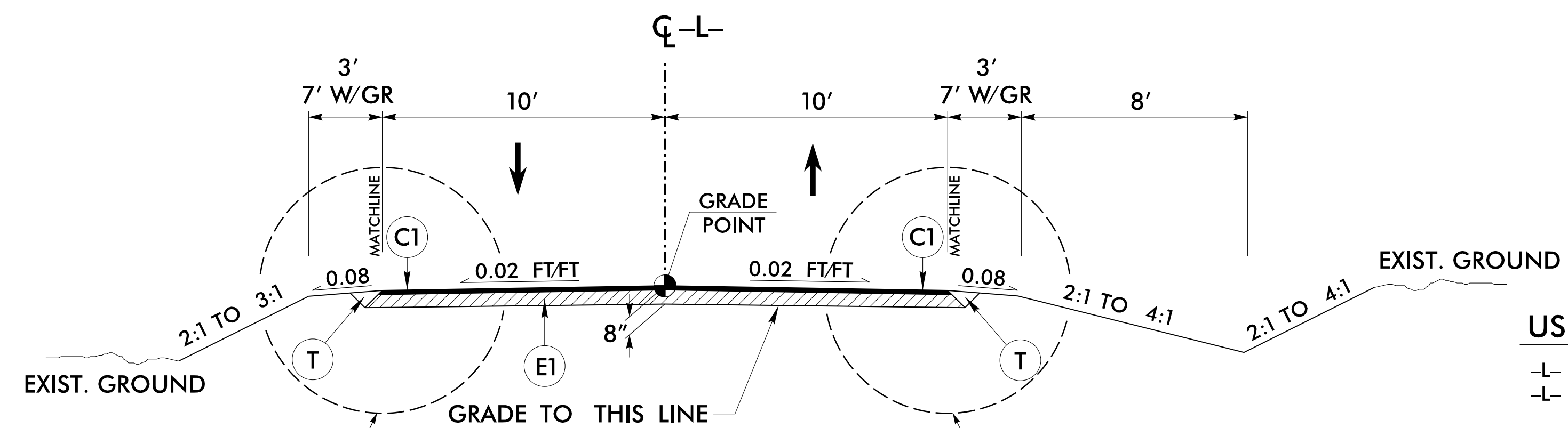
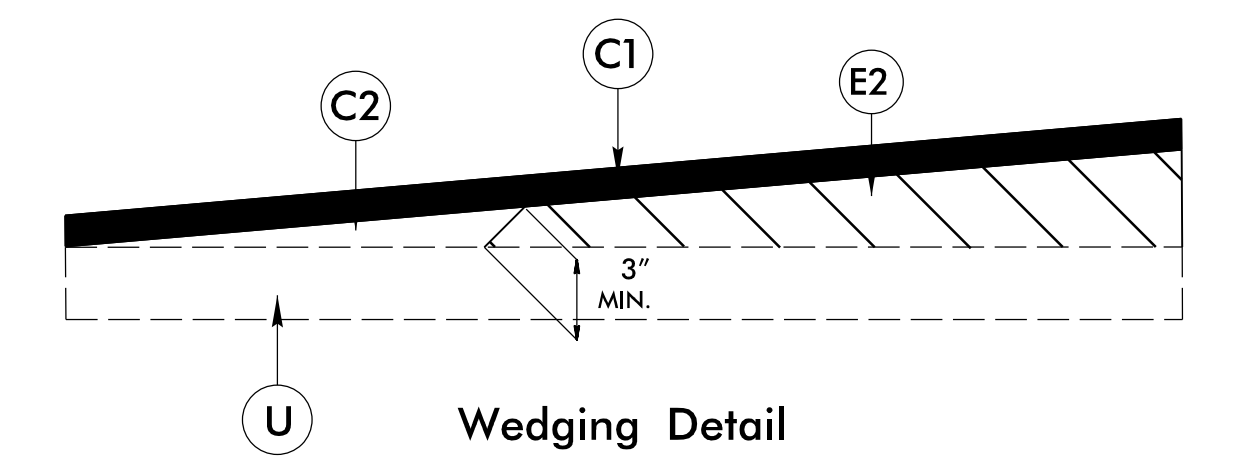
PROJECT REFERENCE NO. 17BP12R63	SHEET NO. 2A-1
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 030453 3/27/2023	PAVEMENT DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 030453 3/27/2023
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1

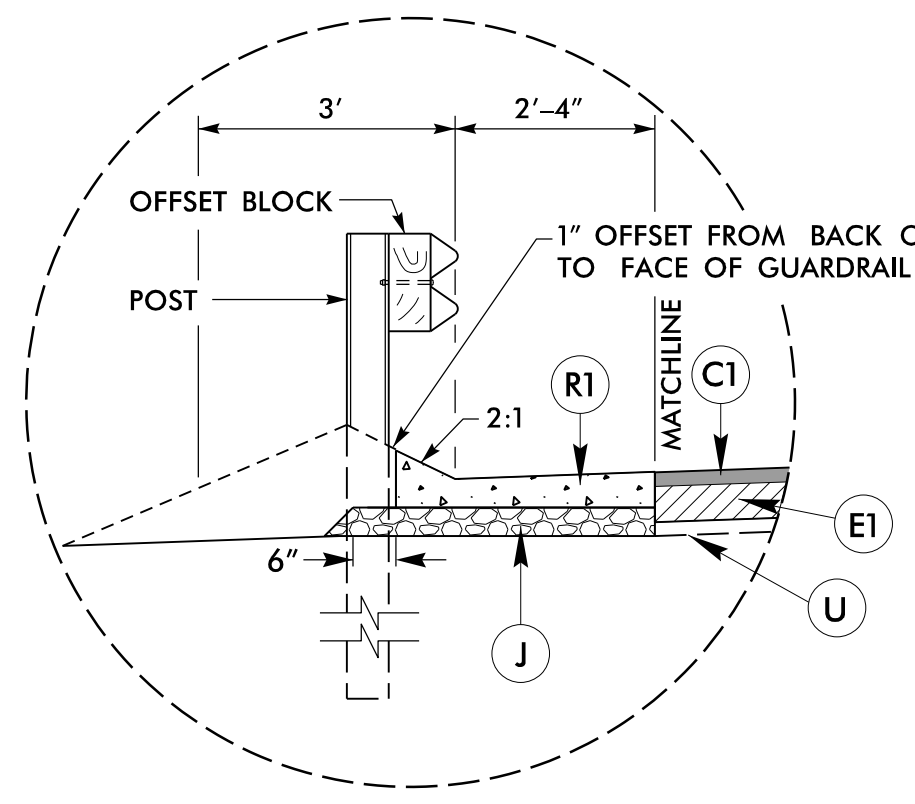
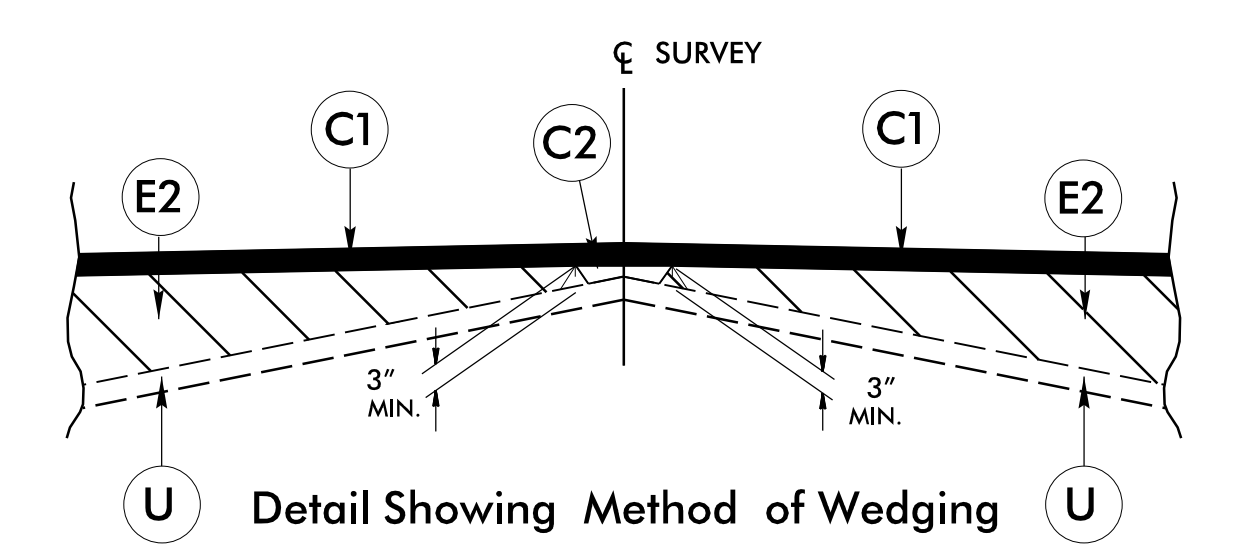
-L- STA. 10+10 TO -L- STA. 10+60
-L- STA. 16+40 TO -L- STA. 17+10



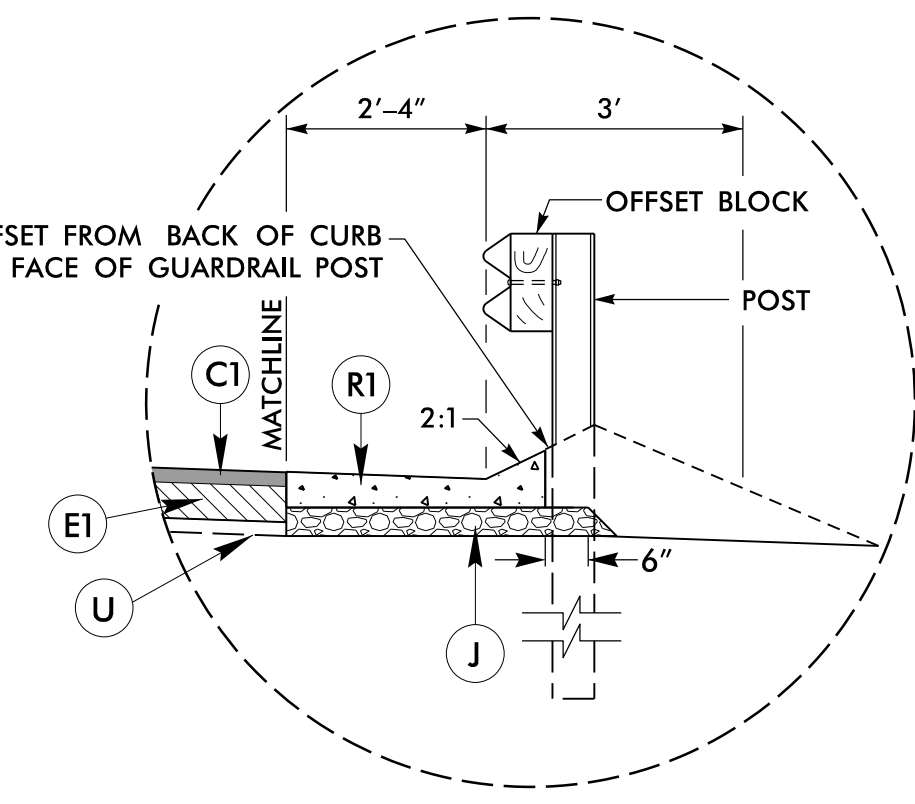
TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2

-L- STA. 10+60 TO -L- STA. 12+53.74 (BEGIN BRIDGE)
-L- STA. 14+66.24 (END BRIDGE) TO -L- STA. 16+40



INSET A
SBG -L- STA 14+78.24 TO -L- STA 14+96.50



INSET B
SBG -L- STA 14+78.24 TO -L- STA 14+96.50

PAVEMENT SCHEDULE	
C1	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.
C2	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 1 1/2" IN DEPTH!
E1	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 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.
J	6" AGGREGATE BASE COURSE
R1	SHOULDER BERM GUTTER (NCDOT STANDARD DRAWING NO. 846.01)
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	INCIDENTAL MILLING
W	PROPOSED WEDGING (SEE APPROPRIATE DETAILS)

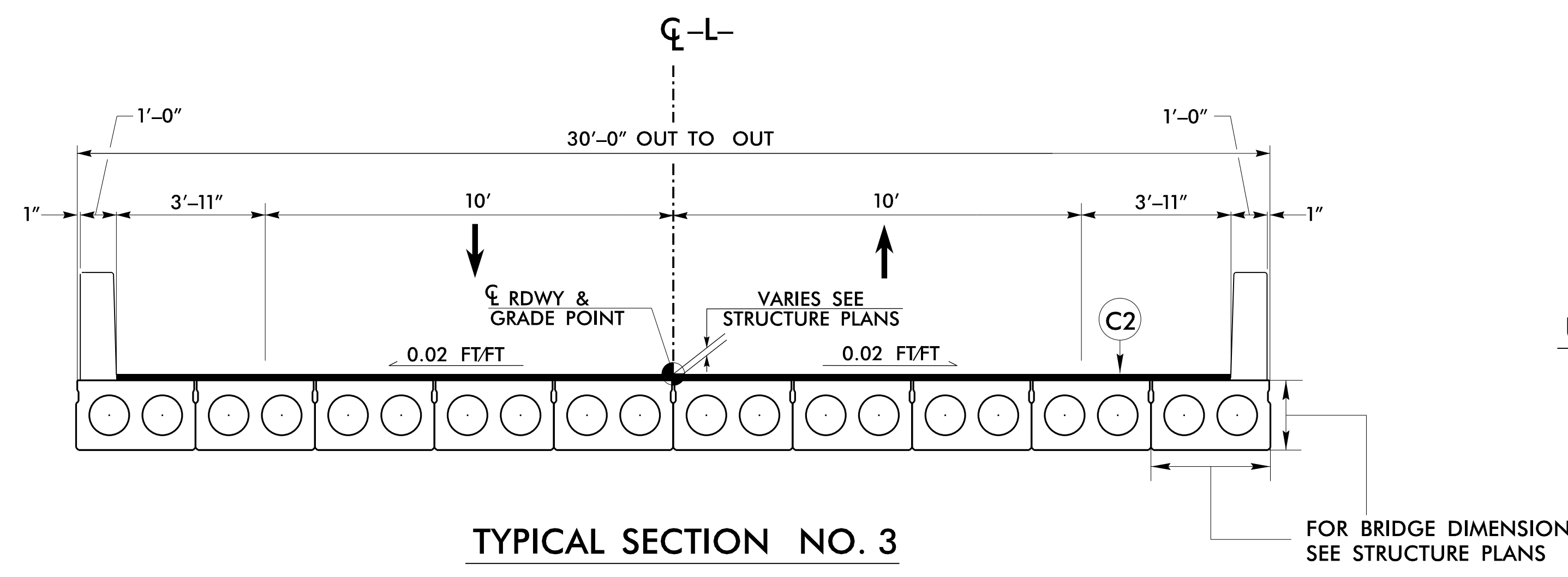
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE

Mattern & Craig
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12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201
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L:\0834_RM\1537510A_Catowba 59\06_17BP12R63\Roadway\Proj\17BP12R63_rdu_tjup_2A-1.dgn
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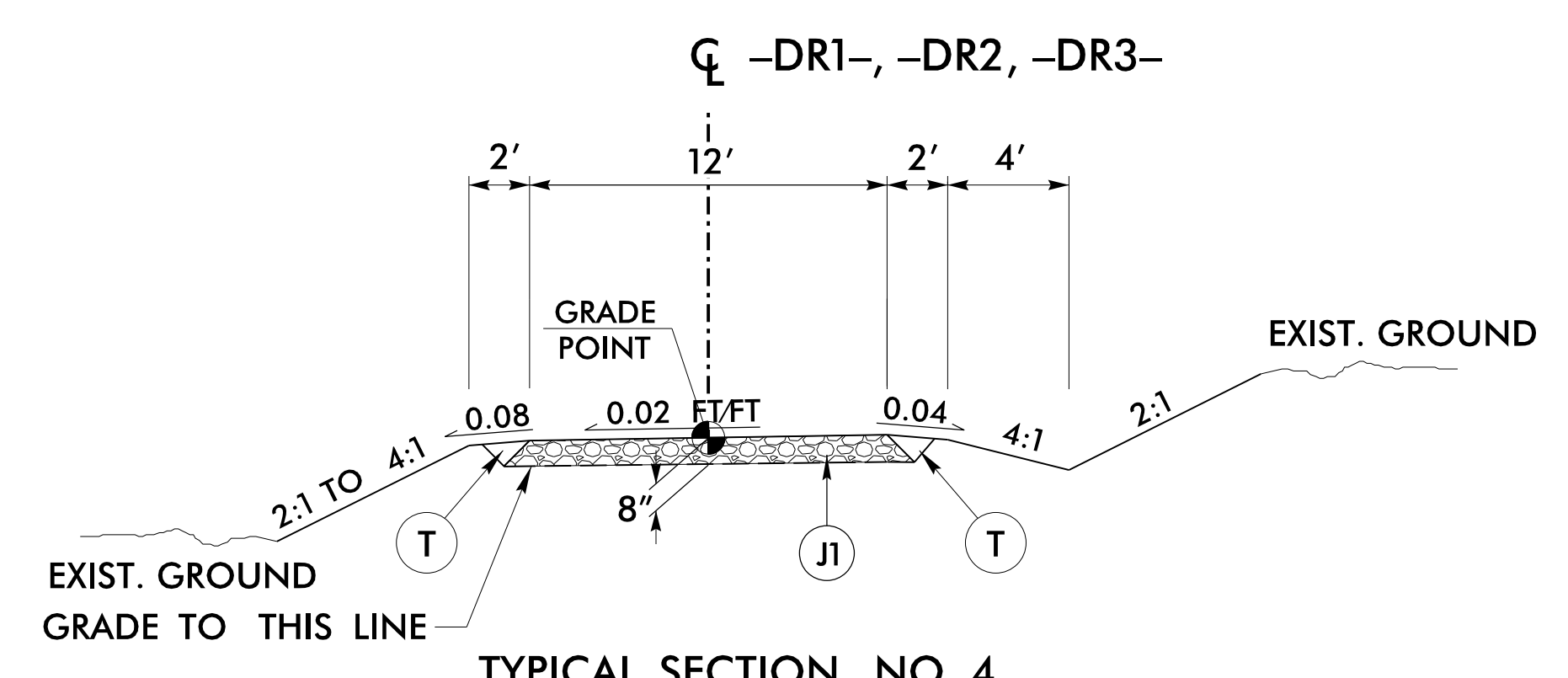
6/2/2019

PROJECT REFERENCE NO. 17BP12R63	SHEET NO. 2A-2
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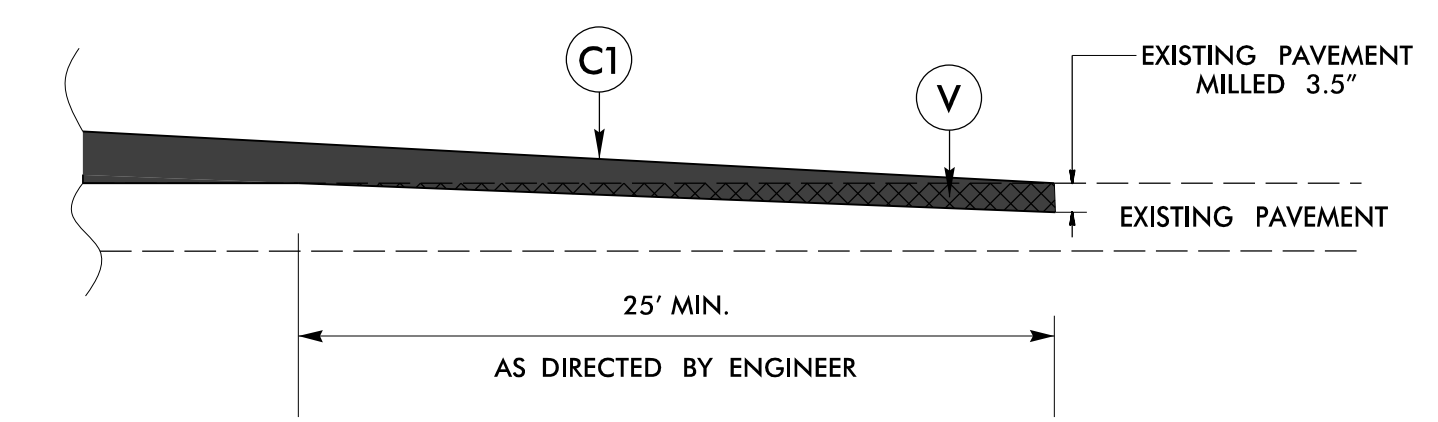


USE TYPICAL SECTION NO. 3

- L- STA. 12 + 53.74 (BEGIN BRIDGE) TO
- L- STA. 14 + 66.24 (END BRIDGE)



- DR1- STA. 10 + 00 TO -DR1- 11 + 30
- DR2- STA. 10 + 10 TO -DR2- 11 + 70
- DR3- STA. 10 + 00 TO -DR3- 11 + 80



- L- STA 10 + 10 TO -L- STA 10 + 30
- L- STA 16 + 90 TO -L- STA 17 + 10

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Mattern & Craig
ENGINEERS • SURVEYORS

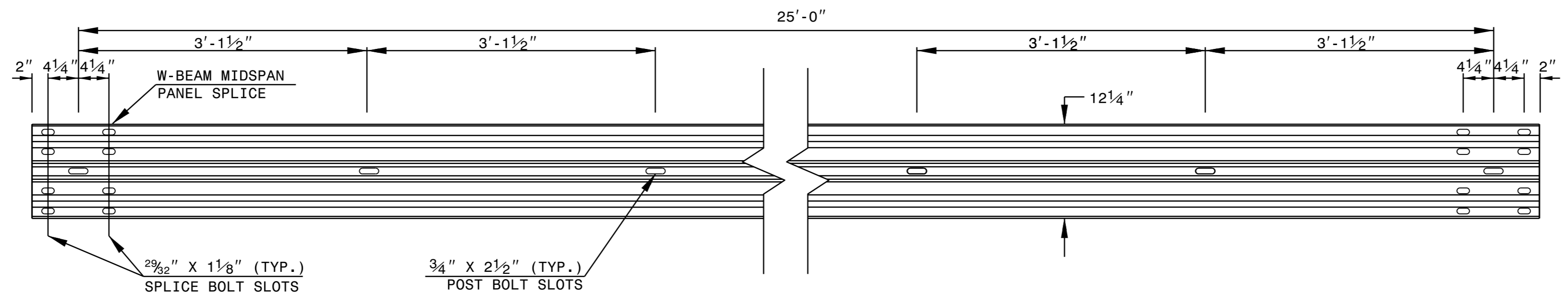
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NC LIC. NO. C-1154

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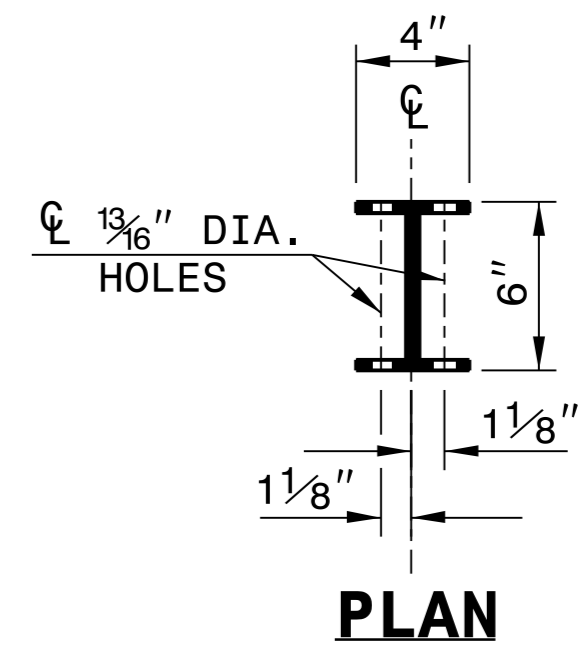
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

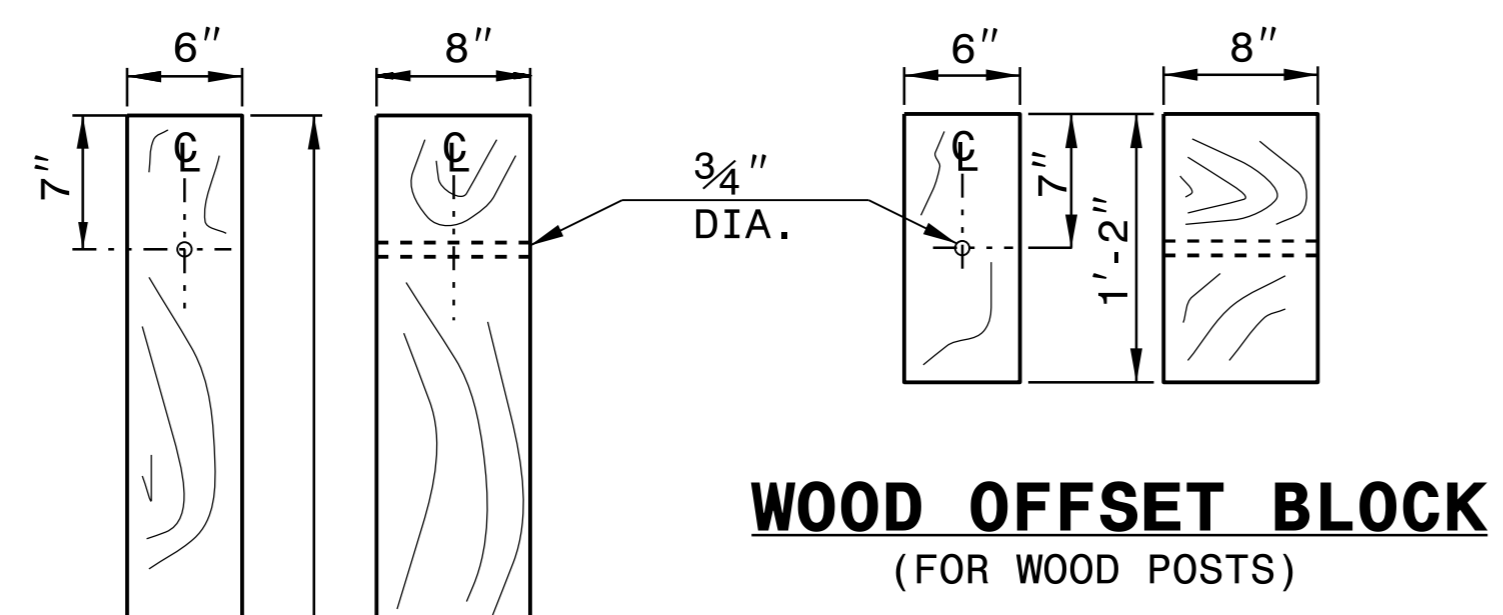
SHEET 6 OF 8
862D02



STANDARD W-BEAM GUARDRAIL



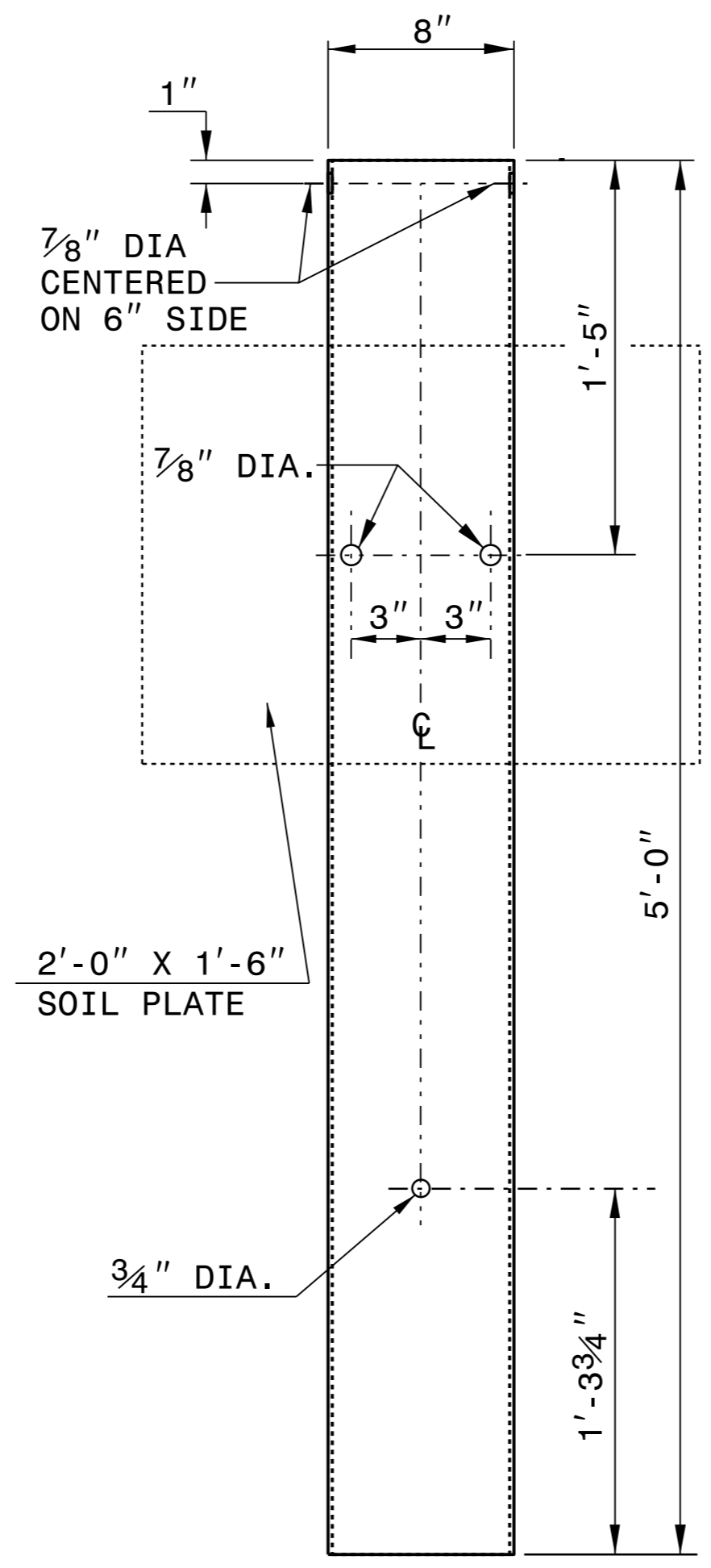
PLAN



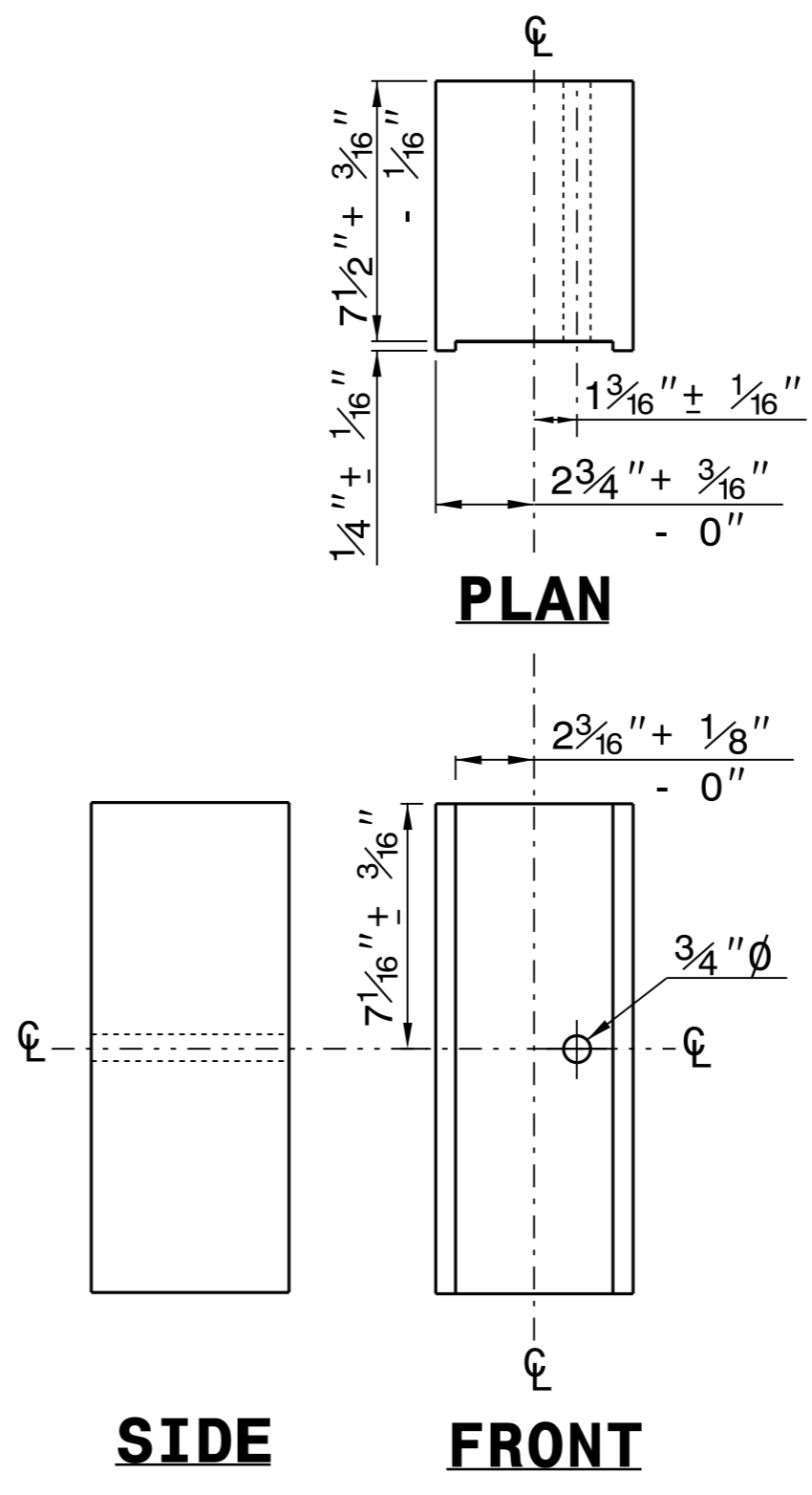
**WOOD OFFSET BLOCK
(FOR WOOD POSTS)**

**STANDARD
LINE POST**

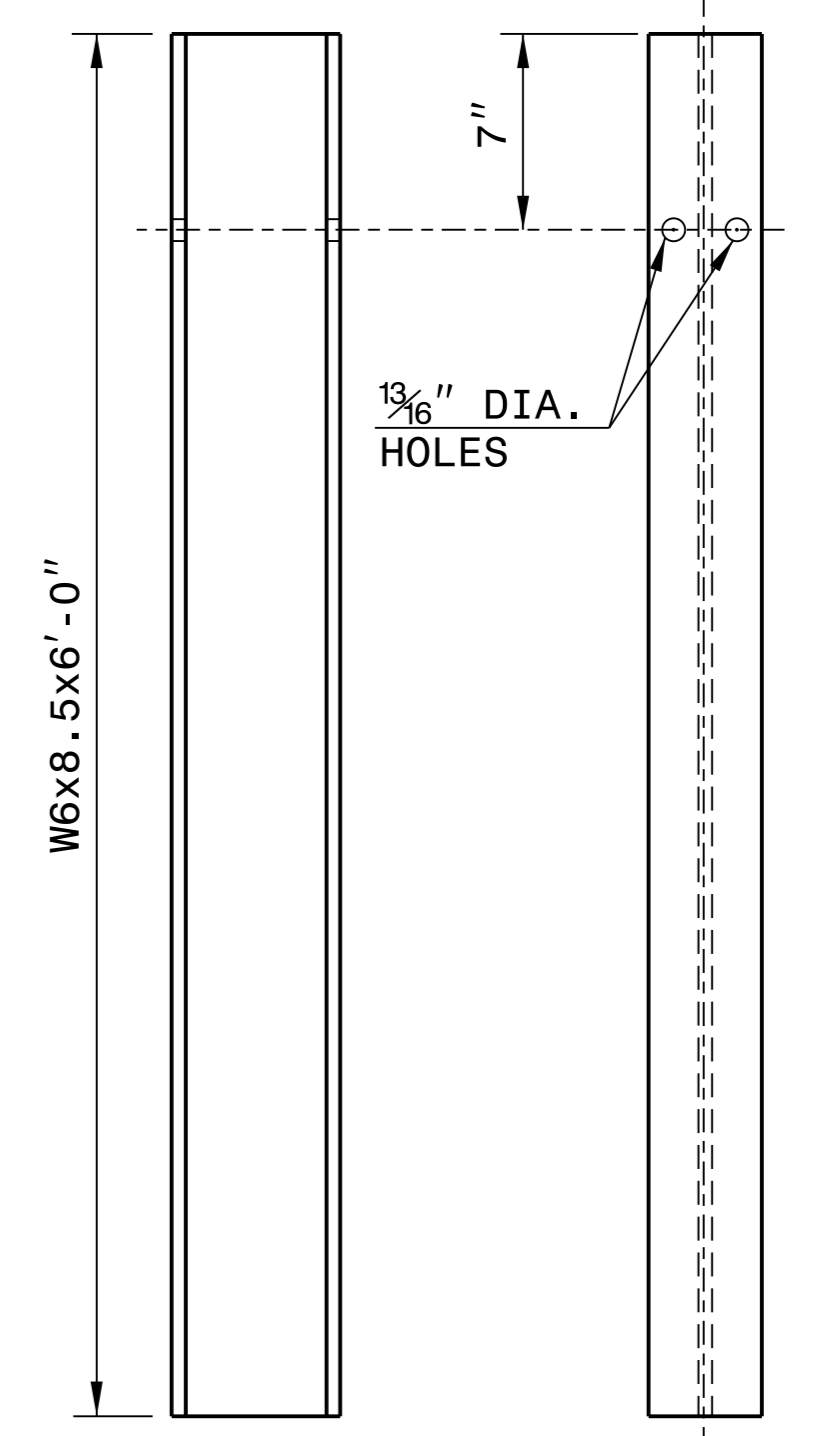
**SHORT WOOD
BREAKAWAY POST**



**STEEL TUBE
TS 6"x8"x0.1875"**



**ROUTED
OFFSET BLOCK**



"W6" STEEL POST

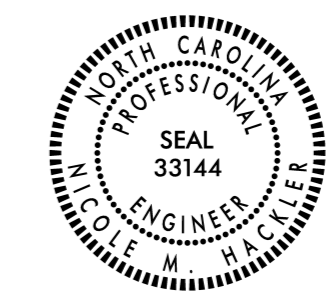
SYSTEM PARTS

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02

DocuSigned by:
Nicole Hecker
588432034164C5



**CONTRACTS STANDARDS
AND DEVELOPMENT UNIT**
Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

ORIGINAL BY: J. HOWERTON DATE: 3-7-2018
MODIFIED BY: DATE: _____
CHECKED BY: DATE: _____
FILE SPEC.: _____

I4-DEC-2017 10:36 S:\Contracts\2018\Standard Drawings\Special Details\Drawings\Division 8\0862d0301.dgn
 Jhowerton AT:CSU-212855

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III
FOR ATTACHMENT TO RAIL ON BRIDGE

SHEET 1 OF 7
862D03

SHEET 1 OF 7
862D03

NOTE:

- **POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- *THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11 1/2" IF CONCRETE BACKWALL IS NOT PRESENT.
- SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" X 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
- MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
- LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
- SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO
RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 1 OF 7
862D03

SHEET 2 OF 7
862D03

NOTE:

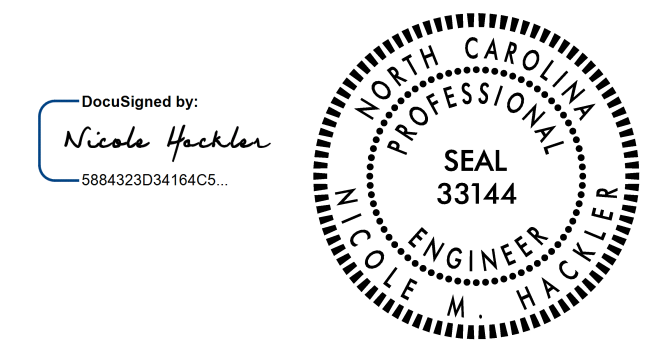
- **POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- *THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11 1/2" IF CONCRETE BACKWALL IS NOT PRESENT.
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- LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
- SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

**CONTRACT STANDARDS
AND DEVELOPMENT UNIT**
Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

ORIGINAL BY: J. HOWERTON	DATE: 06-22-12
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC.:	



3/27/2023

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

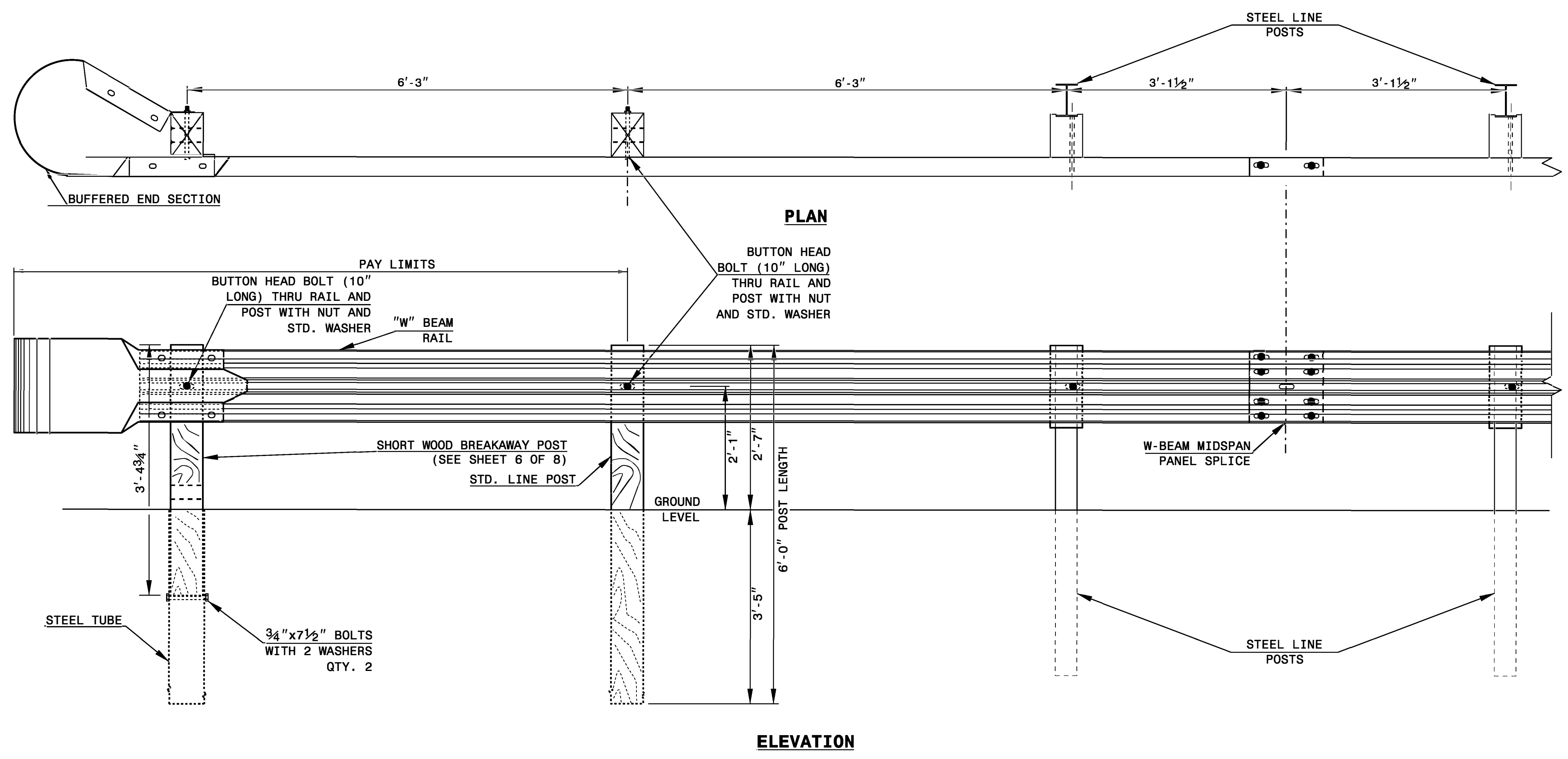
ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET OF

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET OF



TRAILING END UNIT ASSEMBLY
A.T. - 1 SYSTEM

DocuSigned by:
Nicole Hecker
5884823034164C5



3/27/2023

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

**CONTRACTS STANDARDS
AND DEVELOPMENT UNIT**
Office 919-707-6950 FAX 919-250-4119

A.T. - 1 SYSTEM

ORIGINAL BY: _____	DATE: _____
MODIFIED BY: _____	DATE: _____
CHECKED BY: _____	DATE: _____
FILE SPEC.: _____	

6/21/20

COMPUTED BY: YHW DATE: 3-20-18
CHECKED BY: ACC DATE: 3-20-18

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO. 17BPJ2R63
SHEET NO. 3B-1

PAVEMENT REMOVAL SUMMARY

Table with columns: LINE, LOCATION, ASPHALT REMOVAL, ASPHALT BREAK-UP, 3" ASPHALT MILLING. Includes a TOTAL row showing 260, 500, and 80 square yards.

SUMMARY OF EARTHWORK

Table showing earthwork quantities in cubic yards for various locations and summary items. Includes subtotals for Summary No. 1 and No. 2, and a Grand Total of 1966, 2540, and 607.

CONTINGENCY ITEMS:
INCIDENTAL STONE = 50 TONS
UNDERCUT EXCAVATION = 50 CY
SELECT GRANULAR MATERIAL = 50 CY
CLASS IV SUBGRADE STABILIZATION = 50 TONS
GEOTEXTILE FOR SOIL STABILIZATION = 50 SY

NOTE: Invert Elevations are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

SUB-REGIONAL & REGIONAL
LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

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

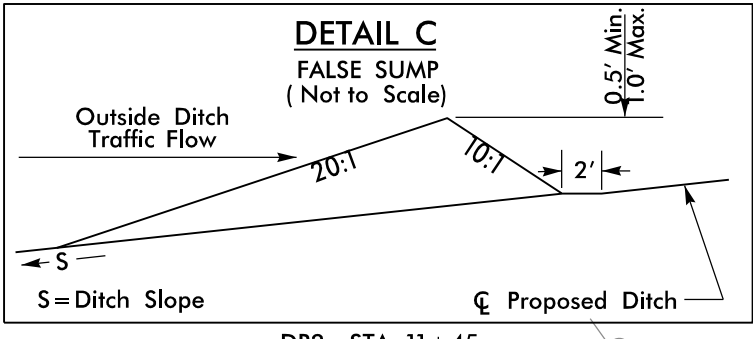
Main table for pipe and endwall details. Columns include Station, Location, Structure No., Invert Elevation, Slope, Drainage Pipe, C.S. Pipe, R.C. Pipe, Endwalls, and various material specifications.

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

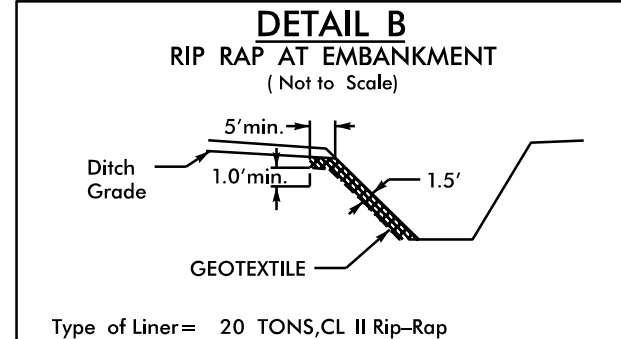
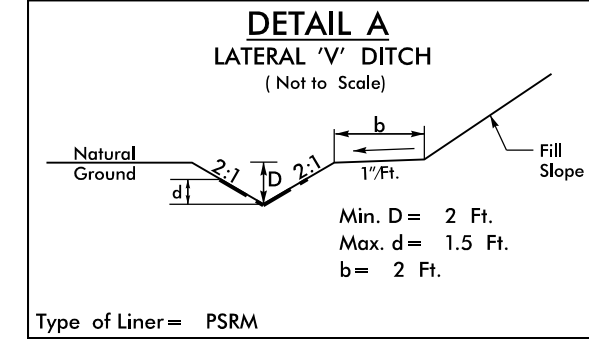
GUARDRAIL SUMMARY

Summary table for guardrail. Columns include Survey Line, Beg. Sta., End Sta., Location, Length, Warrant Point, Flare Length, W, Anchors, Impact Attenuator, and Remarks. Includes a PROJECT TOTALS row.

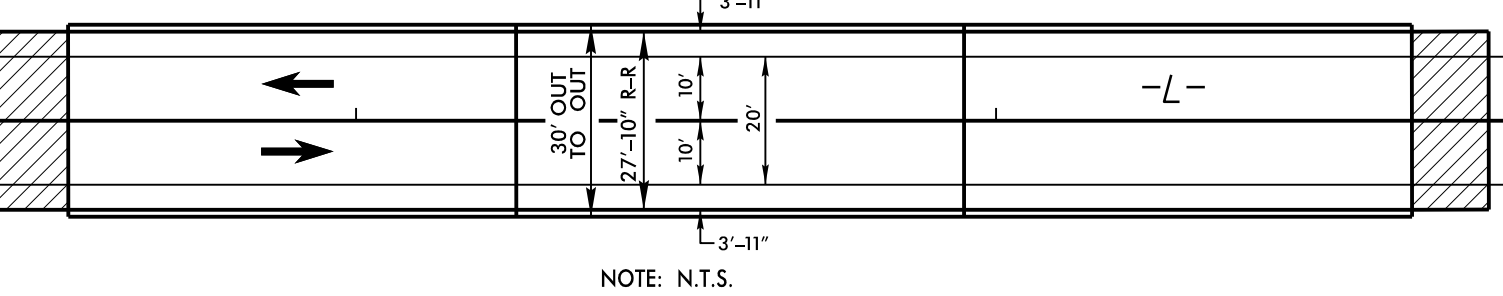
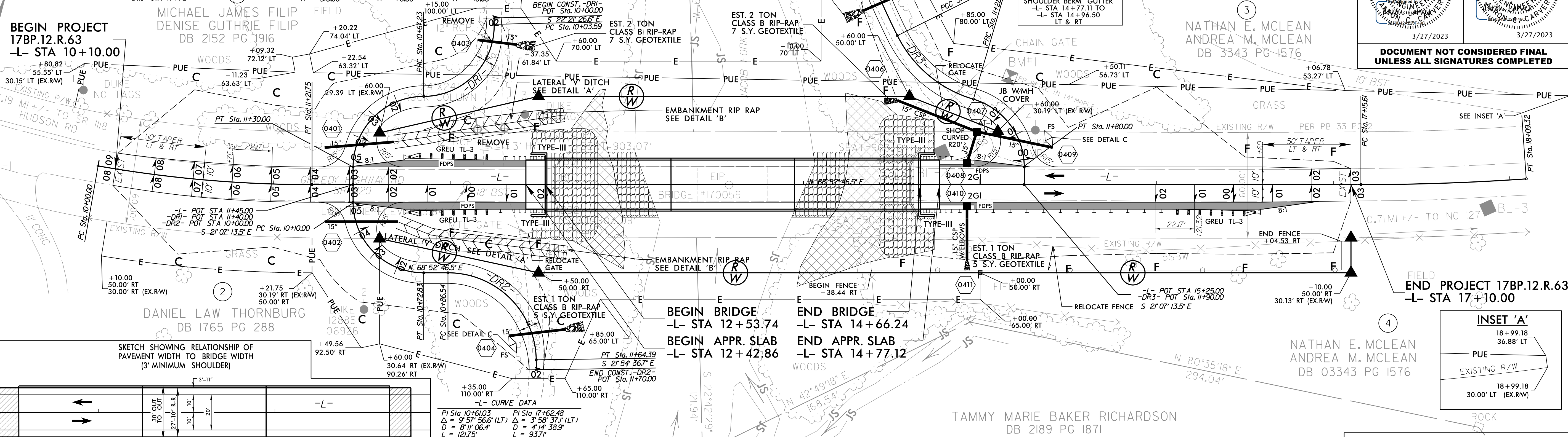
8/17/19



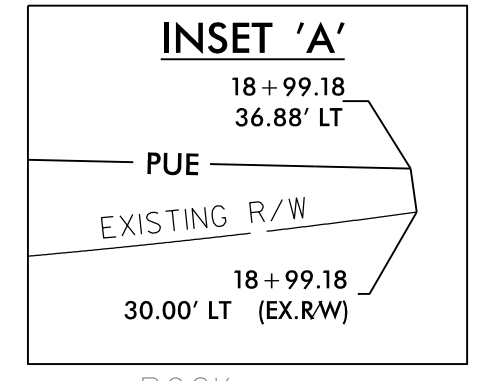
-DR1- CURVE DATA		-DR2- CURVE DATA	
PI Sta 10+44.40 Δ = 9° 09' 19.8" (RT) D = 143' 14" 22.0" L = 63.64' T = 40.00' R = 40.00'	PI Sta 11+07.17 Δ = 89° 55' 06.7" (LT) D = 143' 14" 22.0" L = 62.77' T = 38.94' R = 40.00'	PI Sta 10+50.00 Δ = 90° 00' 00.0" (LT) D = 143' 14" 22.0" L = 62.83' T = 40.00' R = 40.00'	PI Sta 11+35.85 Δ = 89° 12' 36.8" (RT) D = 114' 35" 29.6" L = 77.85' T = 49.32' R = 50.00'



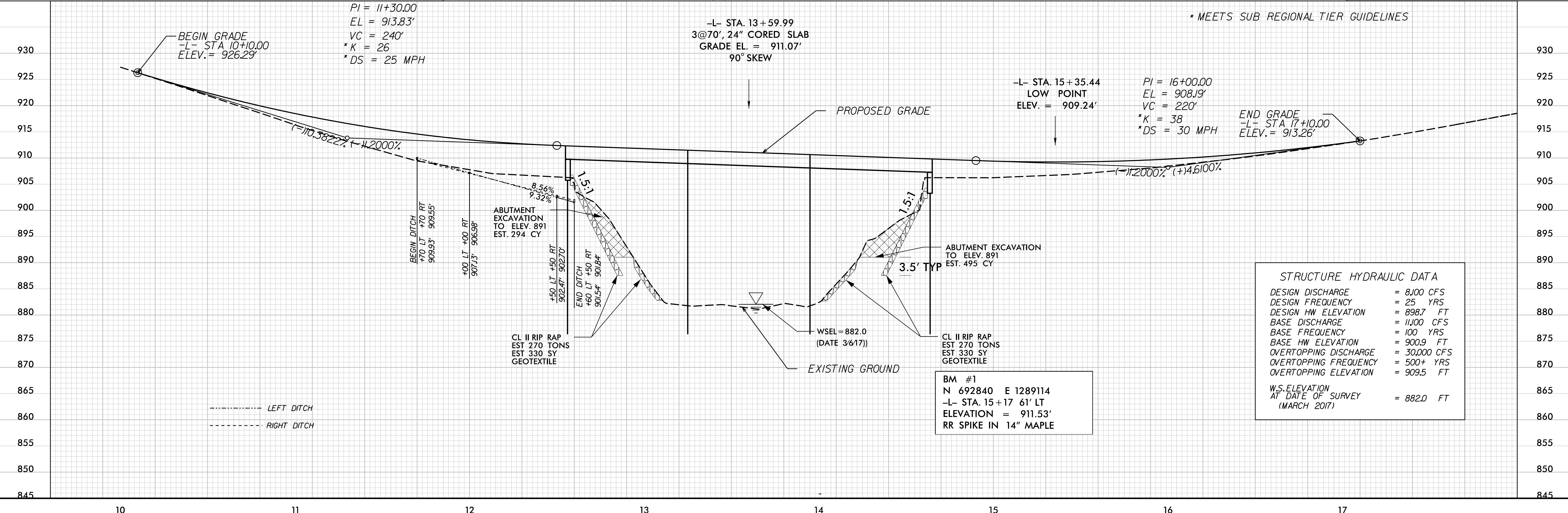
PROJECT REFERENCE NO. 17BP.12.R.63	SHEET NO. 4
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 030453 NATHAN E. MCLEAN ANDREA M. MCLEAN DB 3343 PG 1576 3/27/2023	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 030453 NATHAN E. MCLEAN ANDREA M. MCLEAN DB 3343 PG 1576 3/27/2023



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SEE SHEET 5 FOR -DR1-, -DR2-, & -DR3- PROFILES
SEE SHEETS S-1 THRU S-19 FOR STRUCTURE PLANS



DESIGN DISCHARGE	= 8,100 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 898.7 FT
BASE DISCHARGE	= 11,000 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 900.9 FT
OVERTOPPING DISCHARGE	= 30,000 CFS
OVERTOPPING FREQUENCY	= 500+ YRS
OVERTOPPING ELEVATION	= 909.5 FT
W.S. ELEVATION AT DATE OF SURVEY (MARCH 2017)	= 882.0 FT

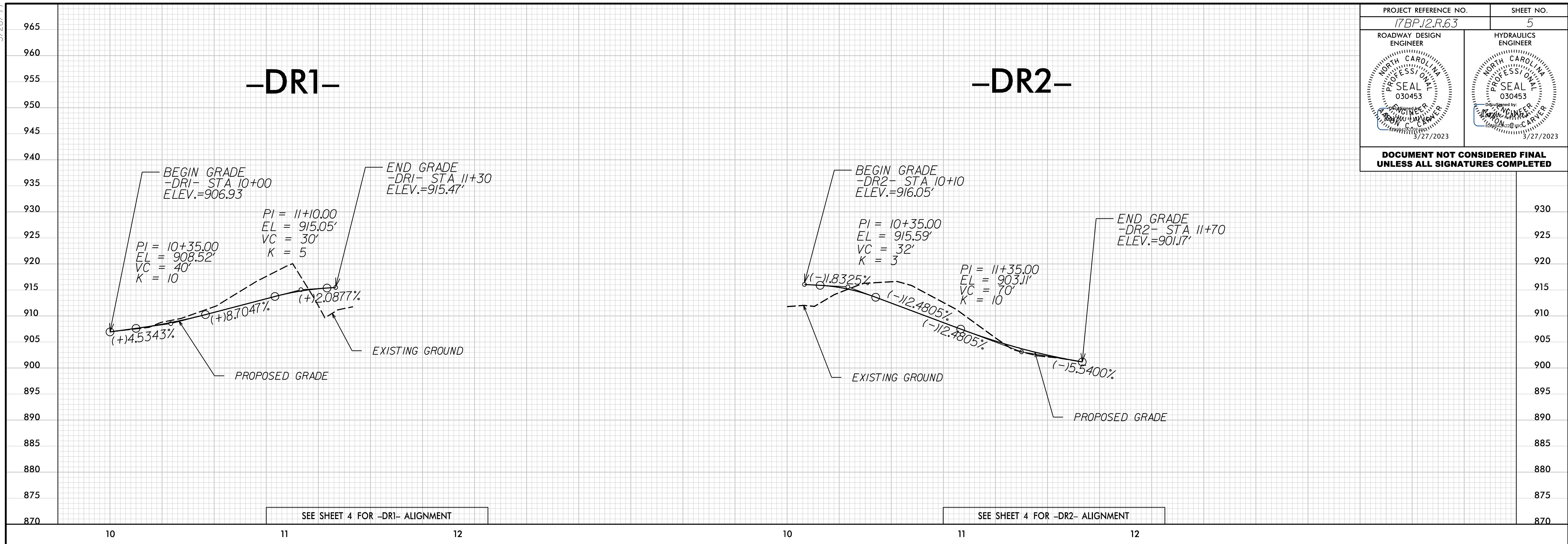
BM #1
N 692840 E 1289114
-L- STA. 15+17 61' LT
ELEVATION = 911.53'
RR SPIKE IN 14" MAPLE

12:54:43 PM 17BP12R63.Roadway.P-17BP12R63.rdy.PSH.dgn

5/28/23

PROJECT REFERENCE NO. 17BP12R63	SHEET NO. 5
ROADWAY DESIGN ENGINEER [Signature]	HYDRAULICS ENGINEER [Signature]
PROFESSIONAL SEAL 030453 3/27/2023	PROFESSIONAL SEAL 030453 3/27/2023

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



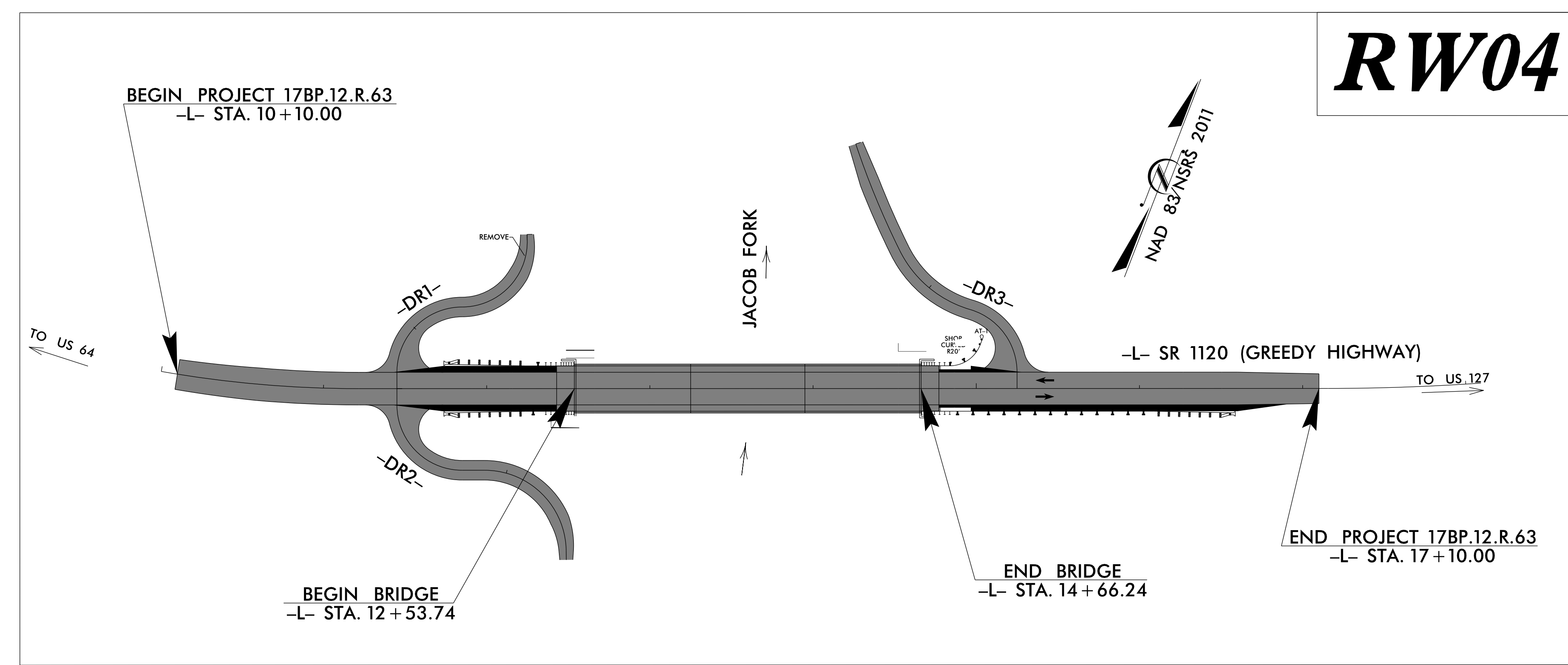
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5/2023

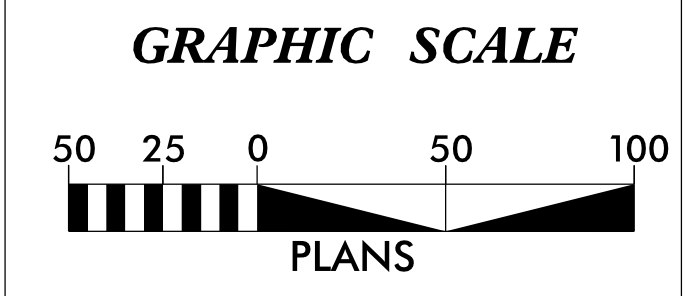
TIP PROJECT: 17BP.12.R.63

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.12.R.63	RW01	5

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS
 SURVEY CONTROL, EXISTING CENTERLINES,
 RIGHT OF WAY, EASEMENTS AND PROPERTY TIES
CATAWBA COUNTY



17-MAY-2023 16:31 S:\Surveyors\projects\LIB\170059\2023 RW Staking\MTC\170059_Is_rw01.dgn mcornewell AT M CORNWELL AP TOP



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "BL-2" WITH NAD 83/NSRS 2011 STATE PLANE GRID COORDINATES OF NORTHING: 692,785.997(ft) EASTING: 1,289,093.808(ft) ELEVATION: 904.75(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99985532

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BL-2" TO -L- STATION 10+00.00 IS S 67°56'58.2" W 477.80(ft)

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

Prepared in the Office of:

TGS ENGINEERS
 TGS ENGINEERS
 201 WEST MARION STREET
 SUITE 200
 SHELBY, NC 28150
 PH (704) 476-0003
 CORP. LICENSE NO.: C-0275

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
4/21/2021

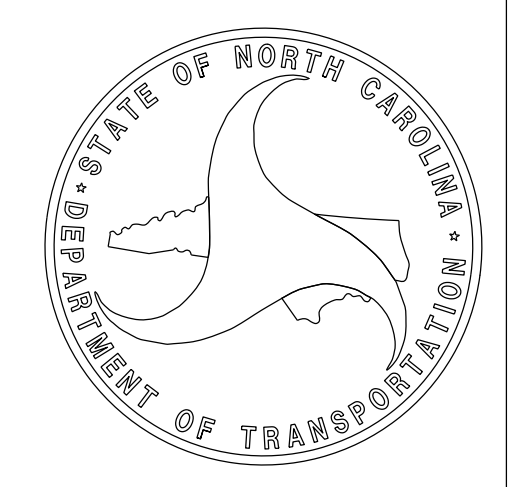
LETTING DATE:
XXXX/XXXX

PROFESSIONAL LAND SURVEYOR

DocuSigned by:
Matthew Cornwell
E0039F11473E475...

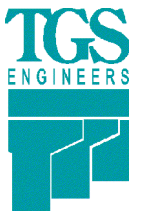


5/18/2023

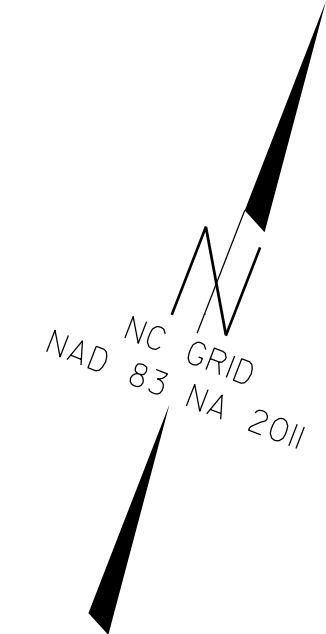
SIGNATURE: Date:



SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO. 17BP.12.R.63	SHEET NO. RW02C-1
Location and Surveys	
 TGS ENGINEERS 201 WEST MARION STREET SUITE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	
PROJECT SURVEYOR	
 Matthew Cornwell EBD036F11473E475...	
5/18/2023	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



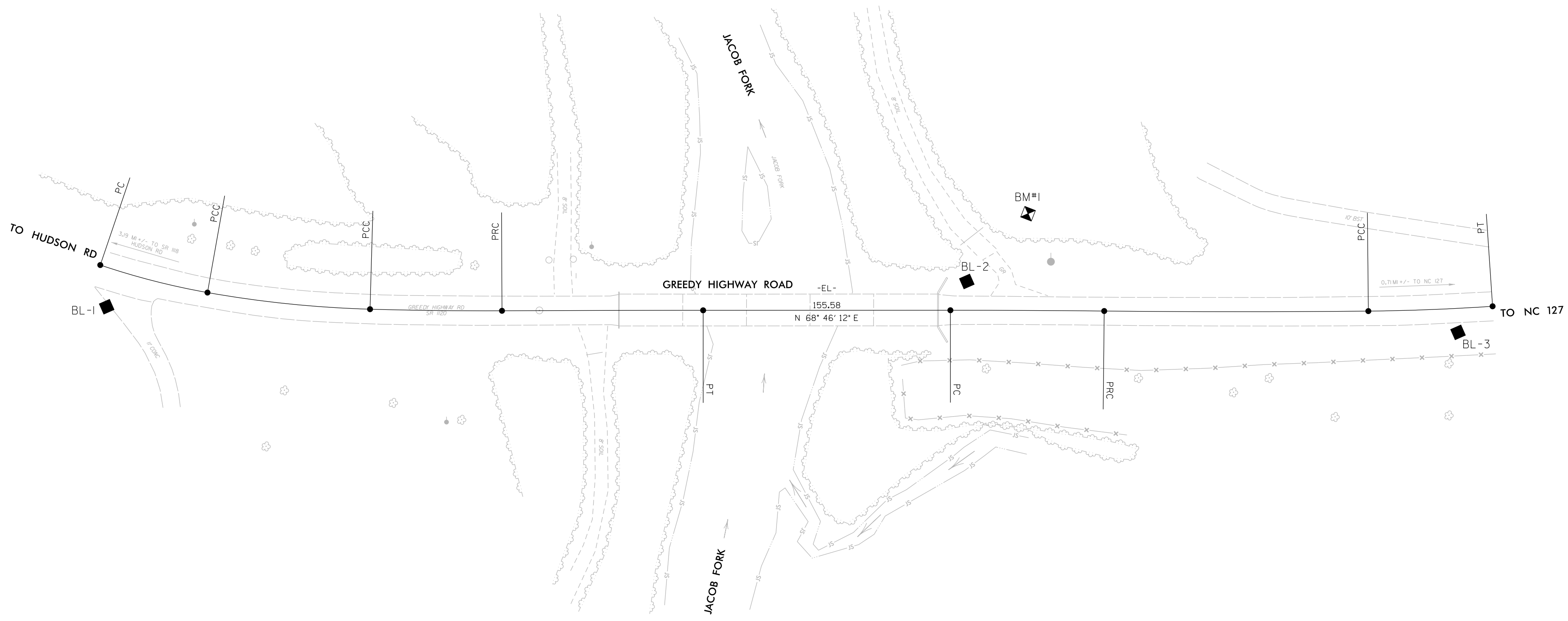
BENCHMARK

.....
 BM1 ELEVATION = 911.52
 N 692840 E 1289114
 BL STATION 10+75.00 46 LEFT
 RR SPIKE IN 14' MAPLE

BASELINE

BL	POINT	DESC.	NORTH	EAST	ELEVATION
1		BL1	692575.3180	1288595.0180	934.69
2		BL2	692785.9970	1289093.8080	904.75
3		BL3	692867.9866	1289393.5364	917.33

REVISIONS



EXISTING CENTERLINE ALIGNMENT


EL POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
PC	692598.357	1288581.806							
CURVE			N 83°11'11.7" E	69.64	08°40'57.3"(L T)	12°27'20.2"	69.71	34.92	460.00
PCC	692606.619	1288650.955							
CURVE			N 74°38'00.8" E	102.82	08°25'24.5"(L T)	08°11'06.4"	102.91	51.55	700.00
PCC	692633.865	1288750.099							
CURVE			N 69°28'40.3" E	83.03	01°53'16.6"(L T)	02°16'25.2"	83.04	41.52	2519.98
PCC	692662.973	1288827.861							
CURVE			N 68°39'07.2" E	126.57	00°14'10.4"(RT)	00°11'11.9"	126.57	63.28	30700.13
PT	692709.049	1288945.747							
LINE	692765.386	1289090.770	N 68°46'12.3" E	155.58					
PC	692765.386	1289090.770							
CURVE			N 69°04'25.6" E	96.78	00°36'26.5"(RT)	00°37'39.2"	96.78	48.39	9130.00
PCC	692799.953	1289181.166							
CURVE			N 68°48'01.0" E	166.21	01°09'15.6"(L T)	00°41'40.2"	166.21	83.11	8250.00
PCC	692860.057	1289336.126							
CURVE			N 66°33'46.3" E	78.23	03°19'13.9"(L T)	04°14'38.9"	78.24	39.13	1350.00
PT	692891.171	1289407.899							

I, Matthew T. Cornwell, PLS, certify that the Project Control was performed under my supervision from an actual GPS survey made under my supervision and the following information was used to perform the survey:

Class of survey: **AA**
 Type of GPS field procedure: RTN
 Dates of survey: March 2017
 Datum/Epoch: NAD83/2011
 Published/Fixed-control use: N/A
 Localized around: BL-2
 Northing: 692785.997
 Easting: 1289093.808
 Combined grid factor: 0.99985532
 Geoid model: GEOID99
 Units: US Survey Feet

I also certify that the Baseline Control for this project 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 1:20,000 (Class AA) and Vertical accuracy to Class A. Field work was performed March 2017, and all coordinates are based on NAD 83/2011 and all elevations are based on NAVD 88; that this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 5/18/2023

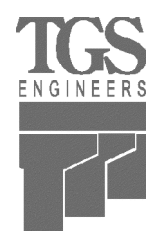

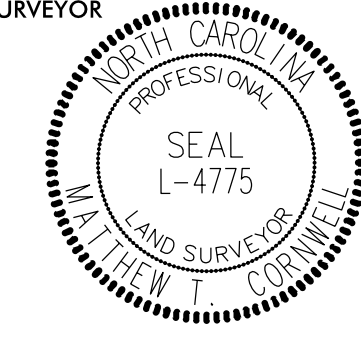
DocuSigned by:

 Matthew Cornwell
 EBD036F11473E475...
 Professional Land Surveyor L-4775

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.

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 mcornwell AT MTCORWELL.LAPTOP

PROPOSED ALIGNMENT CONTROL SHEET

PROJECT REFERENCE NO. 17BP.12.R.63	SHEET NO. RW02D-1
Location and Surveys	
 TGS ENGINEERS 201 WEST MARION STREET SUITE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	
PROJECT SURVEYOR	
DocuSigned by:  EBD09F11473E475...	
5/18/2023	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

I, Matthew T. Cornwell, 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 5/18/2023

DocuSigned by:

 EBD09F11473E475...
 Professional Land Surveyor L-4775

L			
TYPE	STATION	NORTH	EAST
PC	10+00.00	692606.6186	1288650.9552
PT	11+21.75	692640.4169	1288767.7648
PC	17+15.61	692854.4010	1289321.7295
PT	18+09.32	692891.1711	1289407.8985

DR1			
TYPE	STATION	NORTH	EAST
POT	10+00.00	692765.6515	1288829.8551
PC	10+03.59	692762.3346	1288831.2194
PRC	10+67.23	692709.8269	1288808.6924
PT	11+30.00	692658.1212	1288785.8456
POT	11+40.00	692648.7930	1288789.4489

DR2			
TYPE	STATION	NORTH	EAST
POT	10+00.00	692648.7930	1288789.4489
PC	10+10.00	692639.4647	1288793.0522
PT	10+72.83	692616.5649	1288844.7784
PC	10+86.54	692621.5036	1288857.5639
PT	11+64.39	692593.5200	1288921.9689
POT	11+70.00	692588.3141	1288924.0627

DR3			
TYPE	STATION	NORTH	EAST
PC	10+00.00	692889.8659	1288997.7800
PCC	10+70.77	692838.6156	1289046.4970
PRC	11+28.55	692820.4919	1289099.6465
PT	11+80.00	692795.0464	1289140.3191
POT	11+90.00	692785.7181	1289143.9224

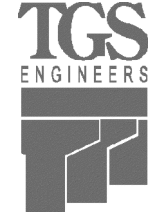


REVISIONS

I:\MAY-2023\1427
 S:\Survey\Projects\17BP170059\2023 RW Steh\mg\MTC\170059_1s_r\w02d-1.dgn
 mcornwell
 MATTHEW T. CORNWELL


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 & PERMANENT EASEMENT CONTROL SHEET

PROJECT REFERENCE NO. 17BP.12.R.63	SHEET NO. RW03E-1
Location and Surveys	
 TGS ENGINEERS 201 WEST MARION STREET SUITE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	
PROJECT SURVEYOR  EBD36F11473E475... 5/18/2023	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

I, Matthew T. Cornwell, 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 May 10, 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 5/18/2023
 DocuSigned by:

 EBD36F11473E475...
 Professional Land Surveyor L-4775

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
L	11+60.00	-29.36	692681.5892	1288792.8606
L	11+60.00	30.64	692625.6192	1288814.4805
L	12+50.00	-50.00	692733.2688	1288869.3790
L	12+50.00	50.00	692639.9863	1288905.4120
L	14+60.00	-50.00	692808.9380	1289065.2723
L	15+10.00	-30.17	692808.4571	1289119.0587
L	17+10.00	50.00	692805.7378	1289334.5115
L	17+10.00	30.13	692824.2757	1289327.3508

ROW MARKER PERMANENT EASEMENT

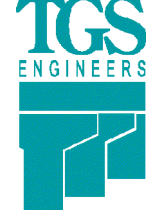

ALIGN	STATION	OFFSET	NORTH	EAST
L	9+80.82	-55.55	692657.9363	1288622.8416
L	9+80.82	-30.15	692632.8238	1288626.6636
L	18+99.18	-30.00	692958.2283	1289473.4469
L	18+99.18	-36.88	692964.2552	1289470.1183
L	11+09.32	-72.12	692703.7658	1288731.3388
L	11+11.23	-63.63	692696.3881	1288735.8893
L	11+20.22	-74.04	692708.9872	1288739.8041
L	11+21.75	30.19	692612.2560	1288778.6427
L	11+21.75	50.00	692593.7756	1288785.7812
L	11+22.54	-63.32	692699.7632	1288745.6803
L	11+49.56	92.50	692564.1482	1288827.0385
L	11+60.00	90.26	692570.0004	1288835.9649
L	12+37.35	-61.84	692739.7533	1288853.3106
L	15+50.11	-56.73	692847.6824	1289146.9070
L	17+06.78	-53.27	692900.9119	1289294.2971

REVISIONS

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 MAY 10, 2023.

I:\MAY-2023\5617
 S:\Survey\Projects\LIB\170059\2023 RW Stakeing\MTC\170059_1s_rw03e-1.dgn
 Matthew T. Cornwell
 Professional Land Surveyor L-4775

PROJECT REFERENCE NO.	SHEET NO.
17BP.12.R.63	RW04
Location and Surveys	
 TGS ENGINEERS 201 WEST MARION STREET SUITE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	
PROJECT SURVEYOR	
 DocuSigned by: Matthew Cornwell EBD36F11473E475... 5/18/2023	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

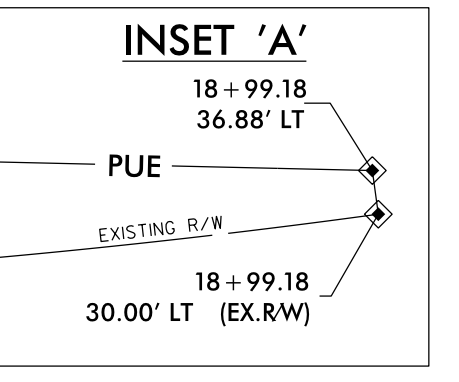
I, Matthew T. Cornwell, certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed May 10, 2024, and all coordinates are based on NAD83/2011. That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 5/18/2023

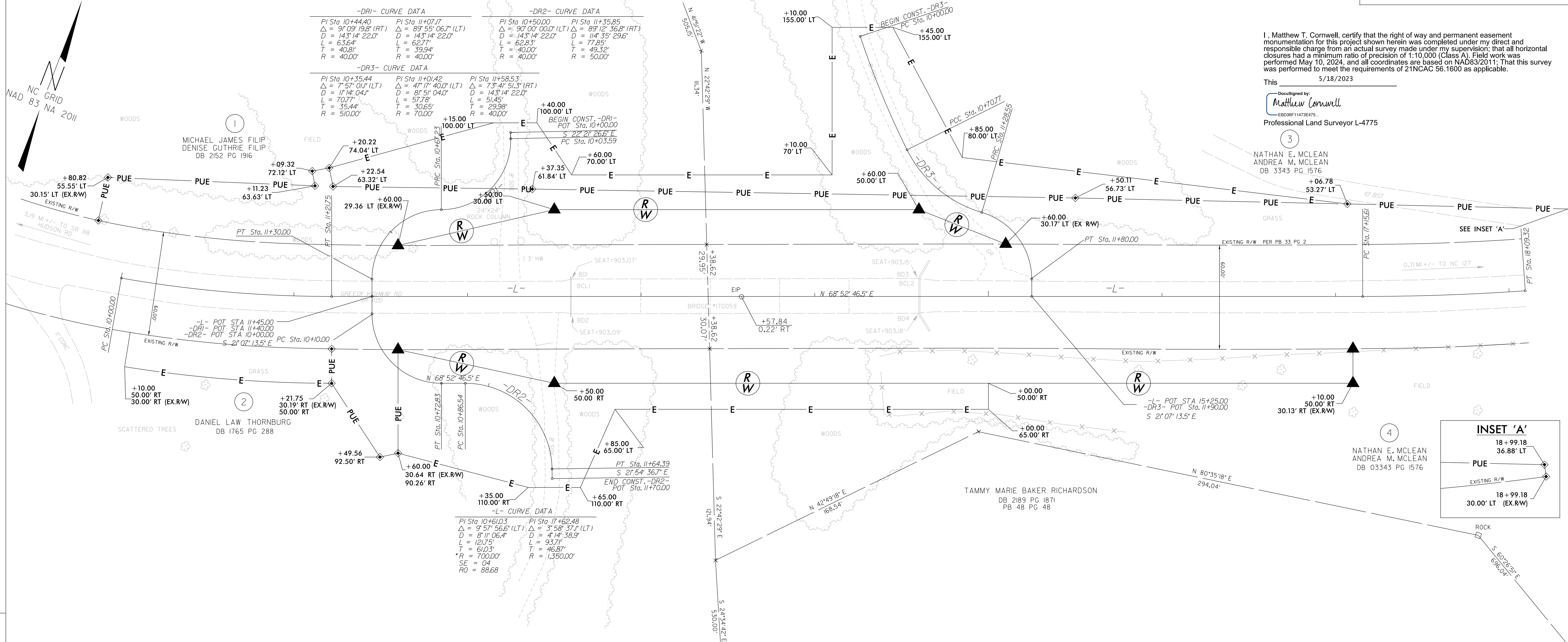
DocuSigned by:
Matthew Cornwell
 EBD36F11473E475...
 Professional Land Surveyor L-4775

(3)
 NATHAN E. MCLEAN
 ANDREA M. MCLEAN
 DB 3343 PG 1576

(4)
 NATHAN E. MCLEAN
 ANDREA M. MCLEAN
 DB 03343 PG 1576



REVISIONS



NOTES:

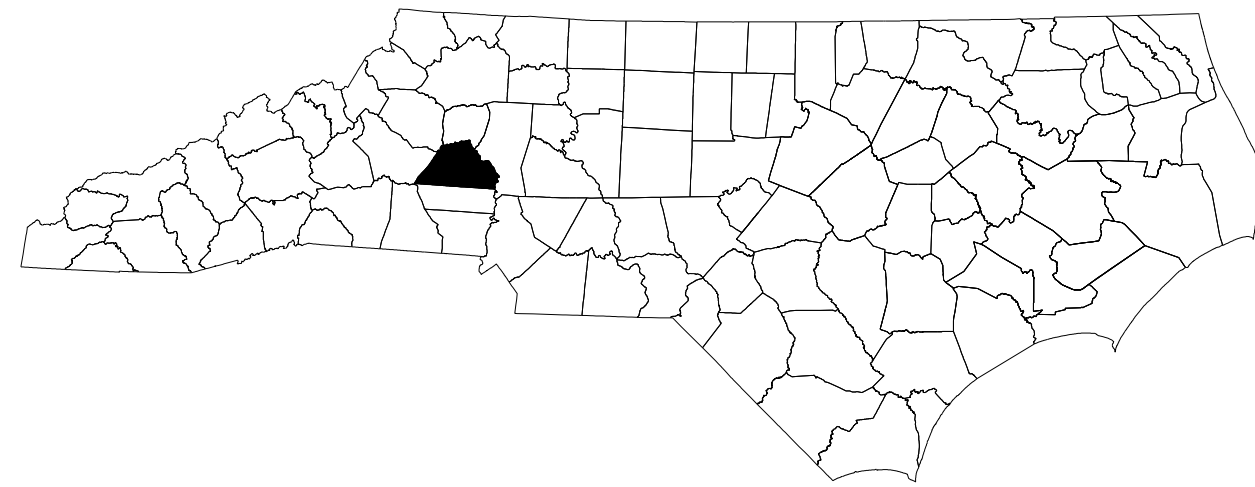
1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED MAY 10, 2023.

17 MAY 2023 15:16
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 Matthew Cornwell
 Matthew Cornwell

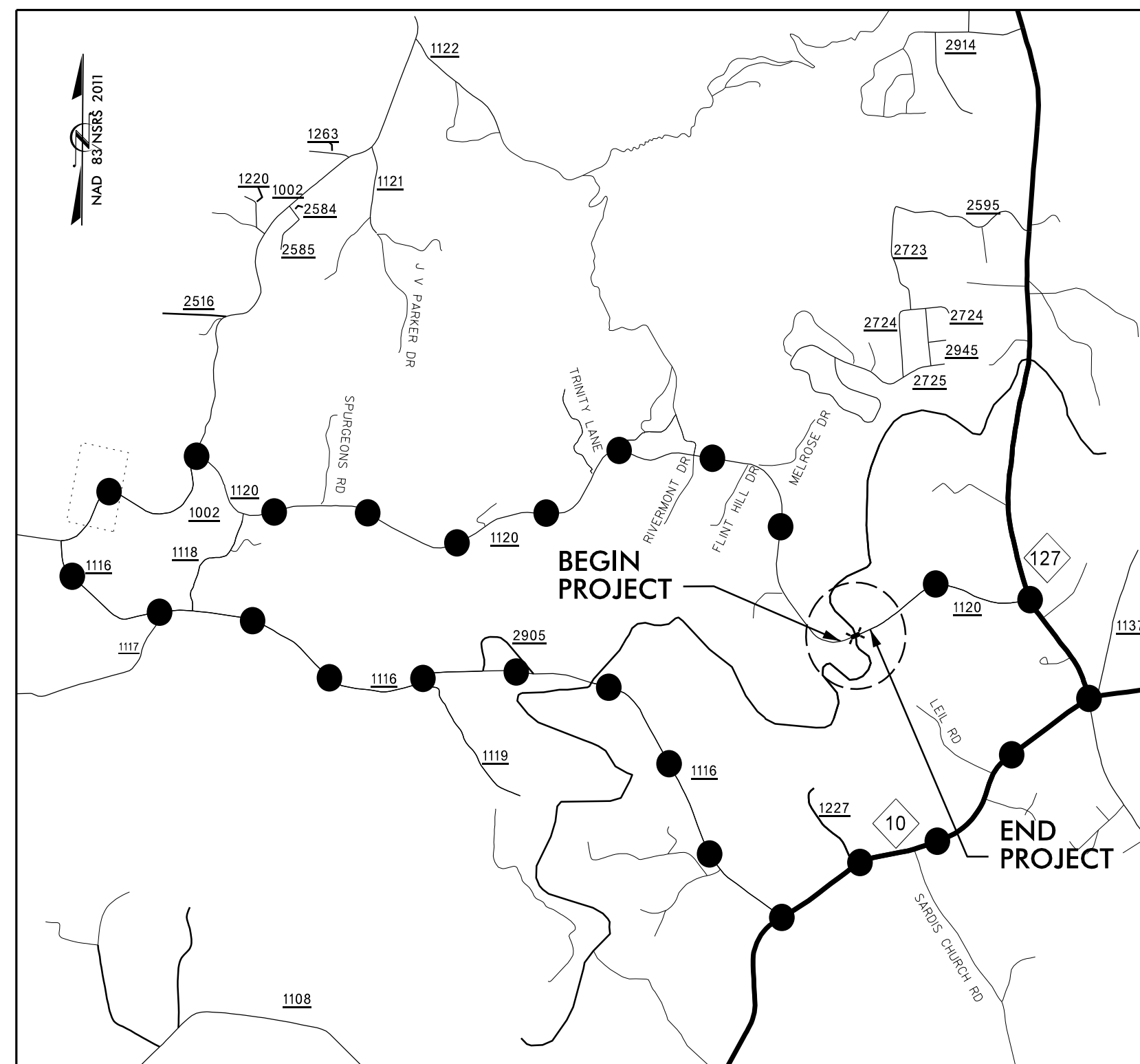
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

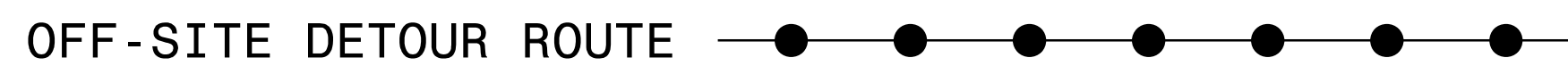
CATAWBA COUNTY



LOCATION: BRIDGE NO. 59 ON SR 1120 (GREEDY HIGHWAY)
OVER JACOB FORK RIVER



VICINITY MAP



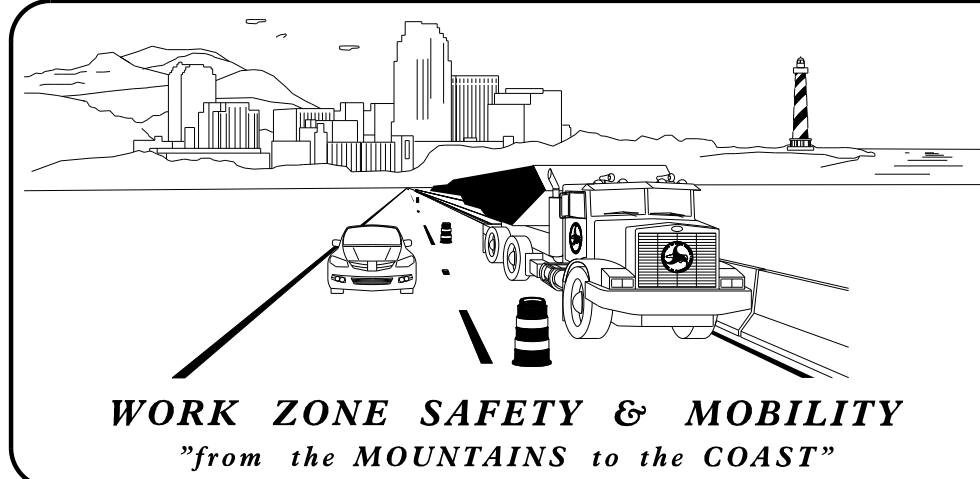
INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, LEGEND, AND TRANSPORTATION OPERATIONS (GENERAL NOTES AND LOCAL NOTES)
TMP-1B	DETAIL 1205.12: PAVEMENT MARKINGS - BRIDGES SHEET 1 OF 1
TMP-2	OFFSITE DETOUR AND ROAD CLOSURE
PM-1	PAVEMENT MARKING PLAN
SD-1	SPECIAL SIGN DESIGN

17BP.12.R.63

TIP PROJECT:

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



PLANS PREPARED BY:

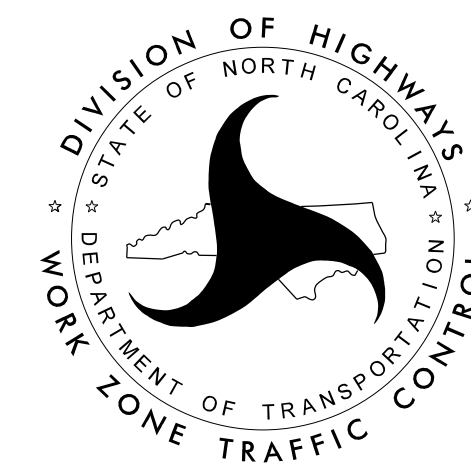
JAMES VOSO, PE

MENG YANG, PE

NCDOT CONTACTS:

JOSHUA B. WHITE, PE
PROJECT ENGINEER

PROJECT DESIGN ENGINEER

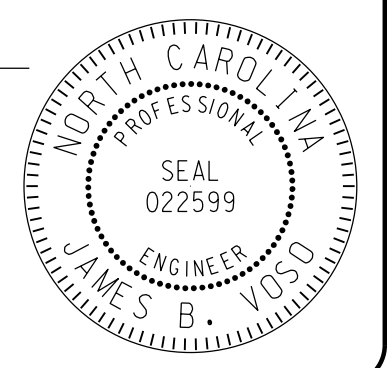


12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201
FAX (828) 254-4562
NC LIC. NO. C-1154

APPROVED: James B. Voso, PE

DATE: 3/27/2023

SEAL



ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2018 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

<u>STD. NO.</u>	<u>TITLE</u>
1101.01	WORK ZONE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1180.01	SKINNY - DRUM
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.08	PAVEMENT MARKINGS - SYMBOLS & WORD MESSAGES
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - (PERMANENT AND TEMPORARY)
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

LEGEND

GENERAL

NORTH ARROW

TRAFFIC CONTROL DEVICES

BARRICADE (TYPE III)

TEMPORARY SIGNING

STATIONARY SIGN

MANAGEMENT STRATEGIES

THE FOLLOWING LISTED WORK ZONE STRATEGIES ARE RECOMMENDED FOR INCLUSION WITHIN THIS TRANSPORTATION MANAGEMENT PLAN (TMP).

RECOMMENDED STRATEGIES

- FULL ROADWAY CLOSURES
- OFF-SITE DETOURS / USE OF ALTERNATIVE ROUTES
- LOCAL DETOUR ROUTES

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 THIRTY (30) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

B) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

C) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.

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

D) 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.

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

LOCAL NOTES

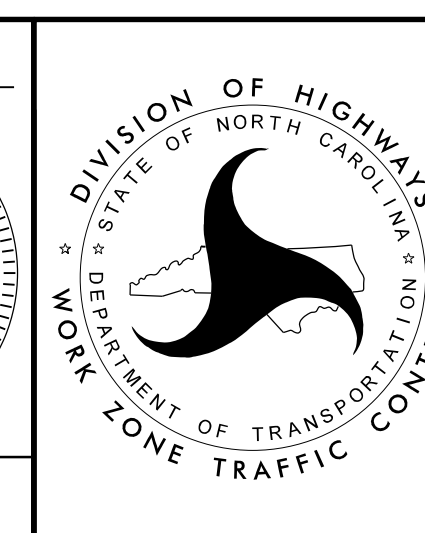
LOCAL NOTES:

- 1) EMERGENCY VEHICLE ACCESS MUST BE MAINTAINED AT ALL TIMES.
- 2) NOTIFY CATAWBA COUNTY EMERGENCY SERVICES AND CATAWBA COUNTY SCHOOL BOARD 30 DAYS PRIOR TO ANY LANE AND/OR ROAD CLOSURES.


9:34:23 AM 12/31/2024 C:\atawba\59\06_17BP12R63\TrafficControl\TCP\17BP12R63_TC_TMP-1A.dgn myang

Mattern & Craig
 ENGINEERS • SURVEYORS
 12 BROAD STREET
 ASHEVILLE, NORTH CAROLINA 28801
 (828) 254-2201
 FAX (828) 254-4562
 NC LIC. NO. C-1154

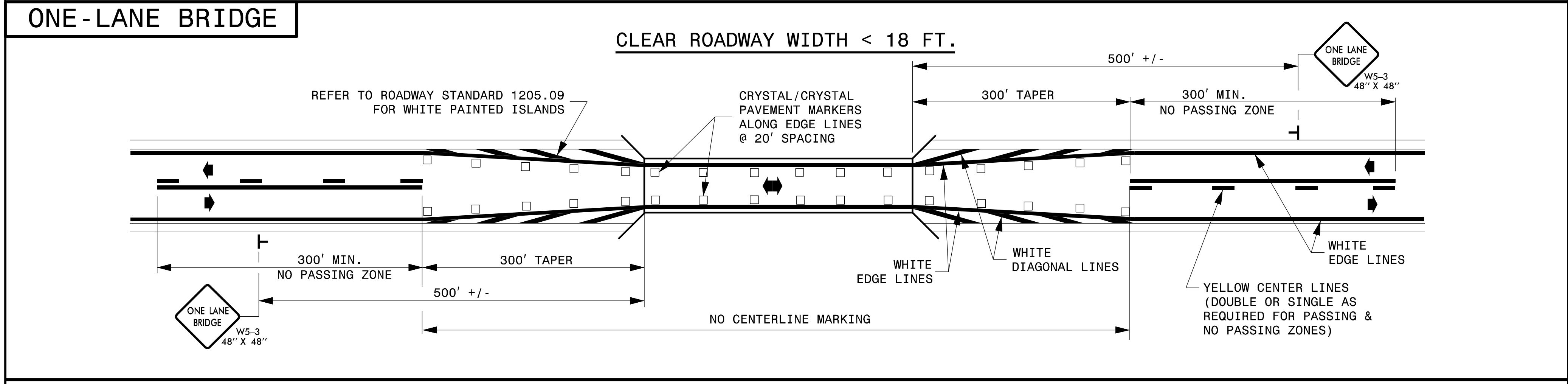
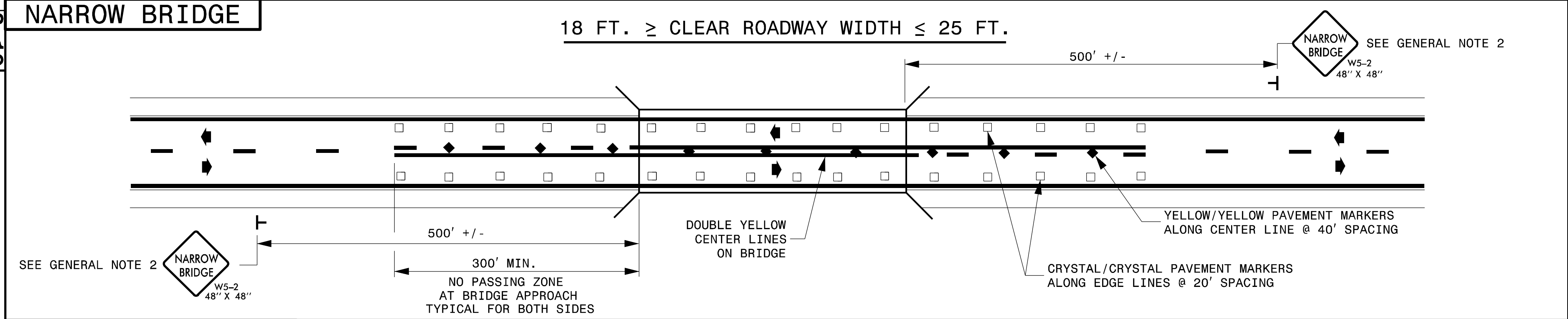
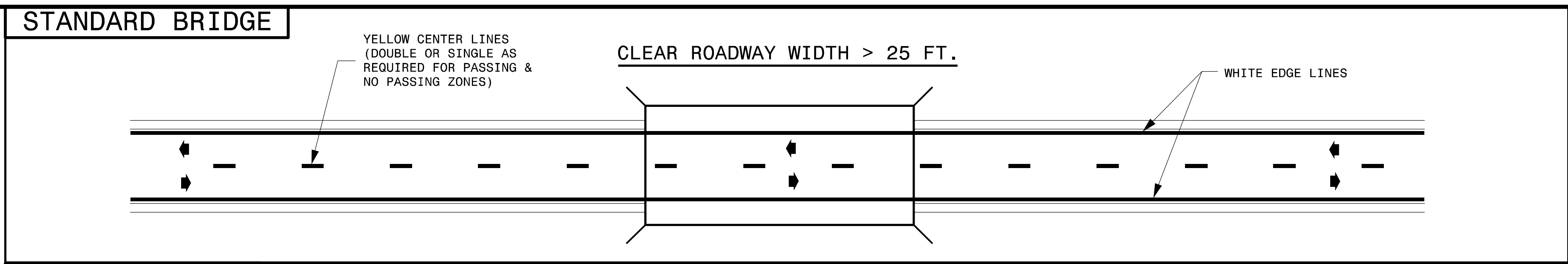
APPROVED:
DATE: 3/27/2023
SEAL
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



ROADWAY STANDARD DRAWINGS
GENERAL NOTES &
TRANSPORTATION OPERATIONS

TIP NO. SHEET NO.
 17BP.12.P.63-1B 17MP-1B
 APPROVED: *Matthew V. Springer*
 DATE: 8/30/2019
 SEAL


STATE OF NORTH CAROLINA
 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.



- GENERAL NOTES:
- NO PASSING ZONES SHOWN ARE MINIMUMS. APPLY MINIMUM PASSING AND STOPPING SIGHT DISTANCES AS DETERMINED BY THE ENGINEER.
 - FOR BRIDGES WITH 18 TO 25 FEET CLEAR ROADWAY WIDTH, SIGNS MUST BE USED WHEN THE APPROACH PAVEMENT WIDTH IS 2 FOOT OR GREATER THAN THE CLEAR ROADWAY WIDTH.

LEGEND	
←	DIRECTION OF TRAFFIC FLOW
◆	YELLOW/YELLOW PAVEMENT MARKER
⊥	STATIONARY SIGN
□	CRYSTAL/CRYSTAL PAVEMENT MARKER

STATE OF NORTH CAROLINA
 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.

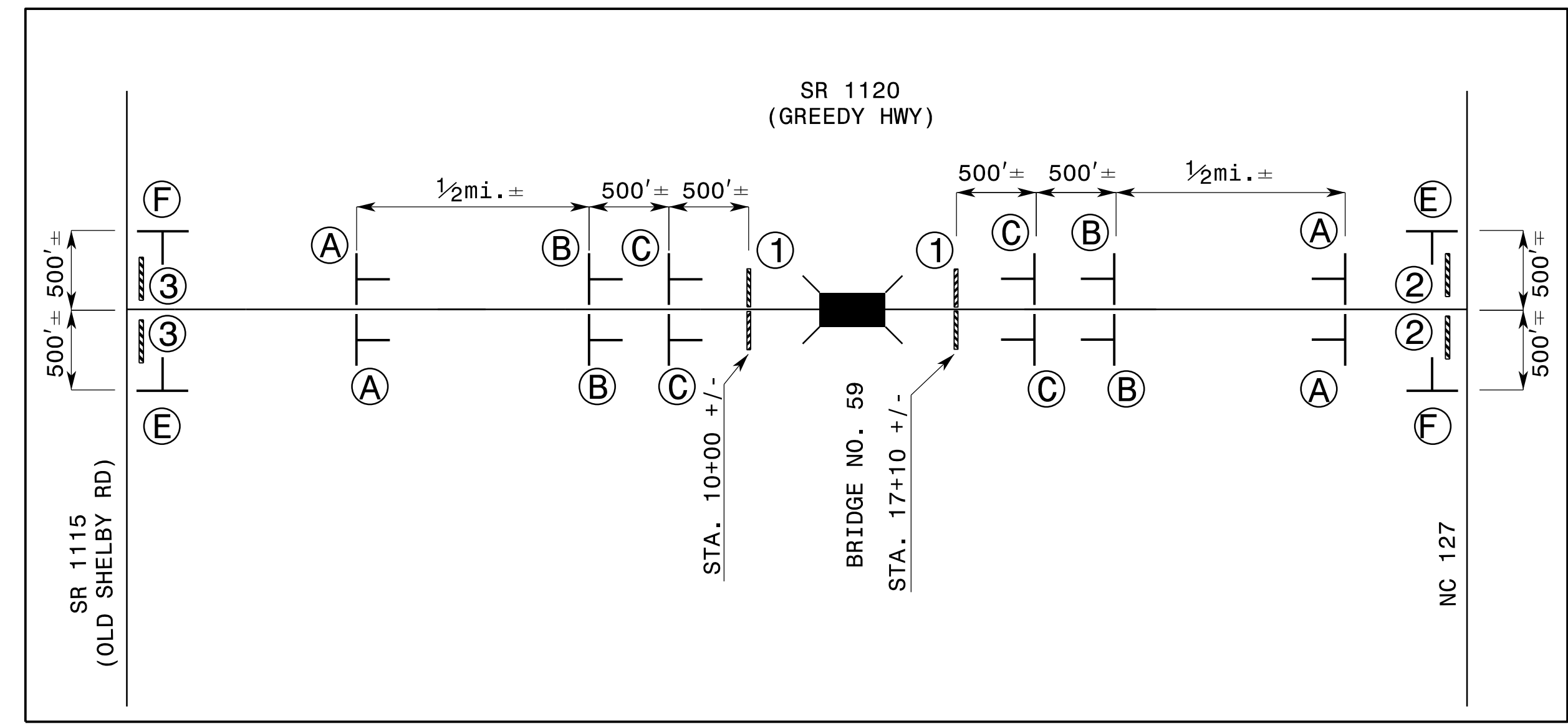
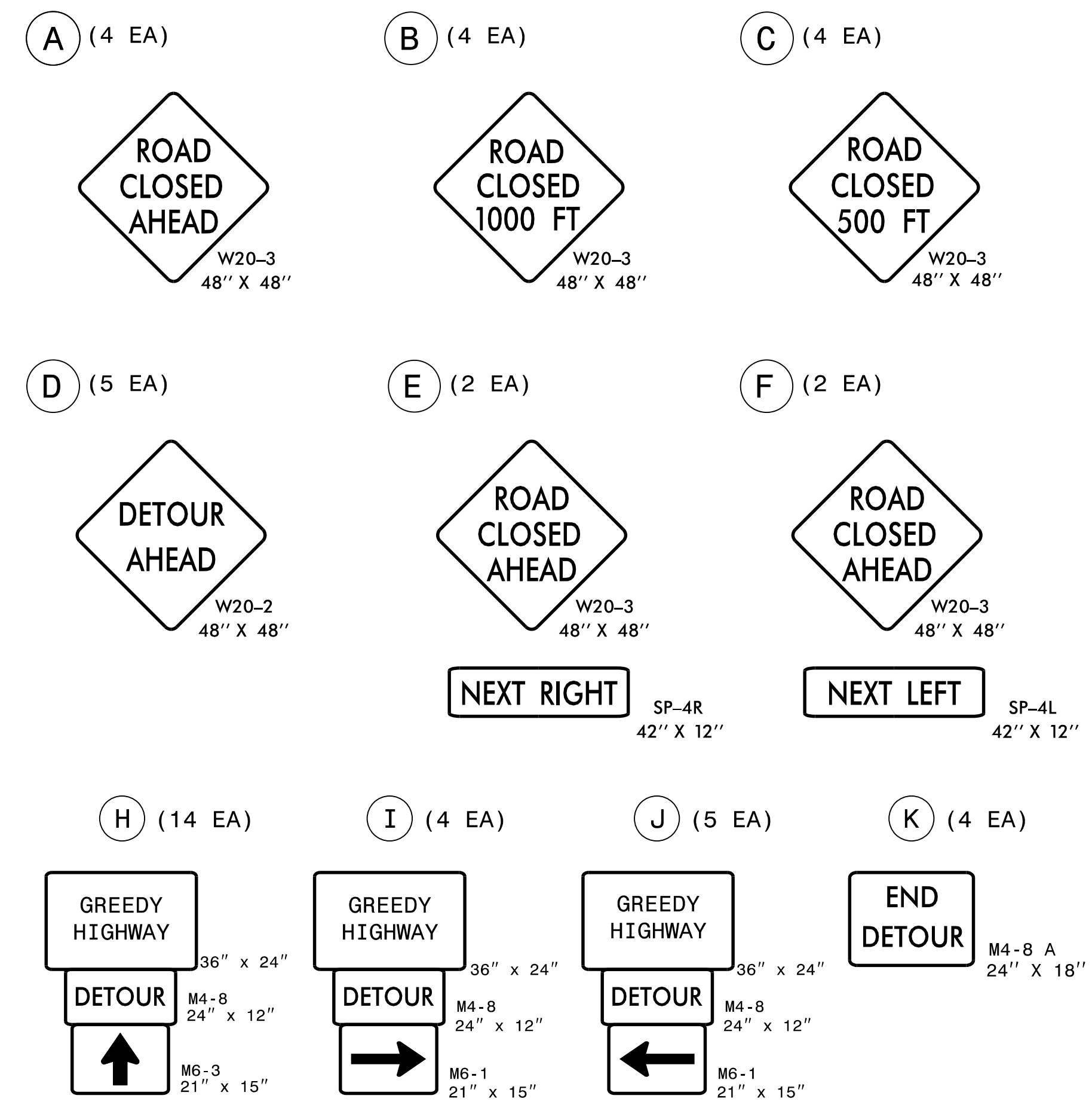
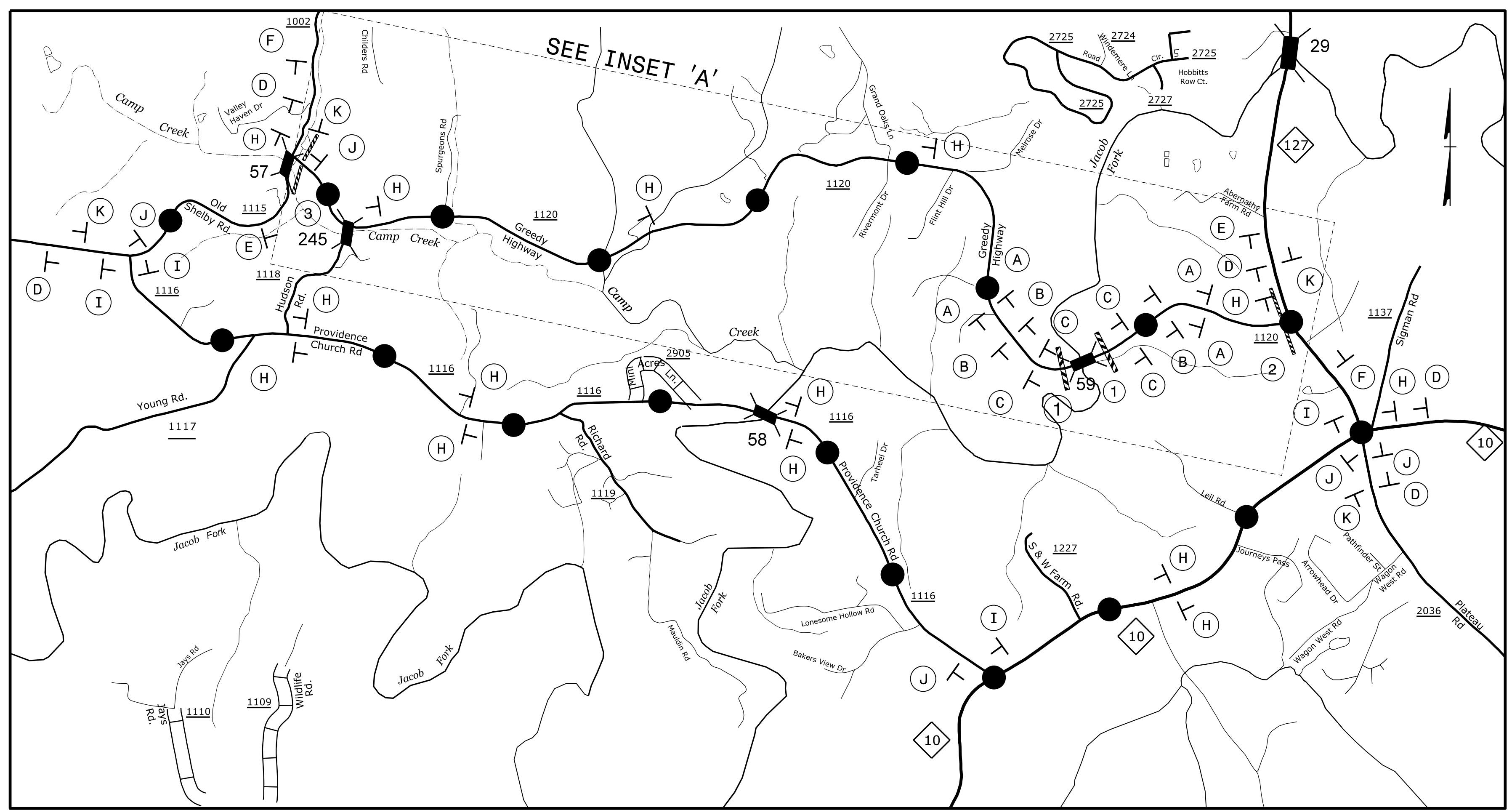
ENGLISH DETAIL DRAWING FOR
PAVEMENT MARKINGS
 BRIDGES

SHEET 1 OF 1
1205D12

SHEET 1 OF 1
1205D12

**REVISED PAVEMENT MARKING
 ROADWAY STANDARD DRAWING**

08/30/19
 S:\S&B\Standards Group\Standards and Drawings\Drawings\Division 12 Final\1205D12.08-29-19.dgn
 User:dstokes



INSET 'A'

- NOTES:
- ALL DETOUR SIGN LOCATIONS ARE APPROXIMATE.
 - ALL DETOUR SIGNS ARE BLACK ON ORANGE UNLESS OTHERWISE NOTED.
 - TRAFFIC CONTROL DEVICES (A) THROUGH (K) SHALL BE INSTALLED ACCORDING TO ROADWAY STANDARD DRAWING 1101.03, SHEET 1 OF 9.
 - TRAFFIC CONTROL DEVICES (1) THROUGH (3) SHALL BE INSTALLED AS PER ENGINEER'S INSTRUCTIONS, AND AS SHOWN HEREON.
 - * SEE ROADWAY STANDARD DRAWING NO. 1101.03, SHEET 1 OF 9 AND 2 OF 9, FOR ADDITIONAL WORK ZONE SIGNS.

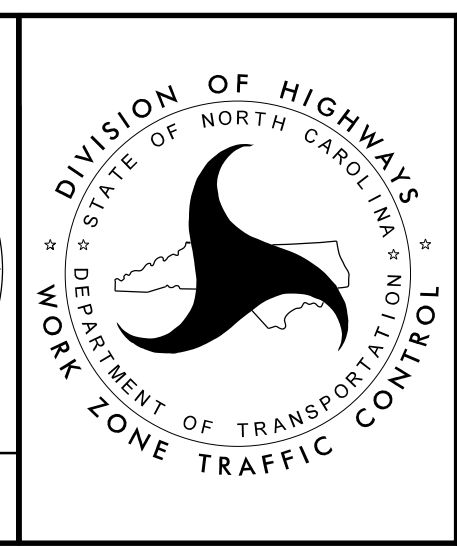


12 BROAD STREET
 ASHEVILLE, NORTH CAROLINA 28801
 (828) 254-2201
 FAX (828) 254-4562
 NC LIC. NO. C-1154

APPROVED: James B. Voss, PE
 DATE: 3/27/2023

SEAL

DOCUMENT NOT CONSIDERED FINAL
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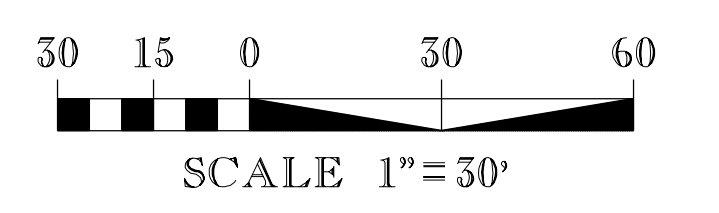
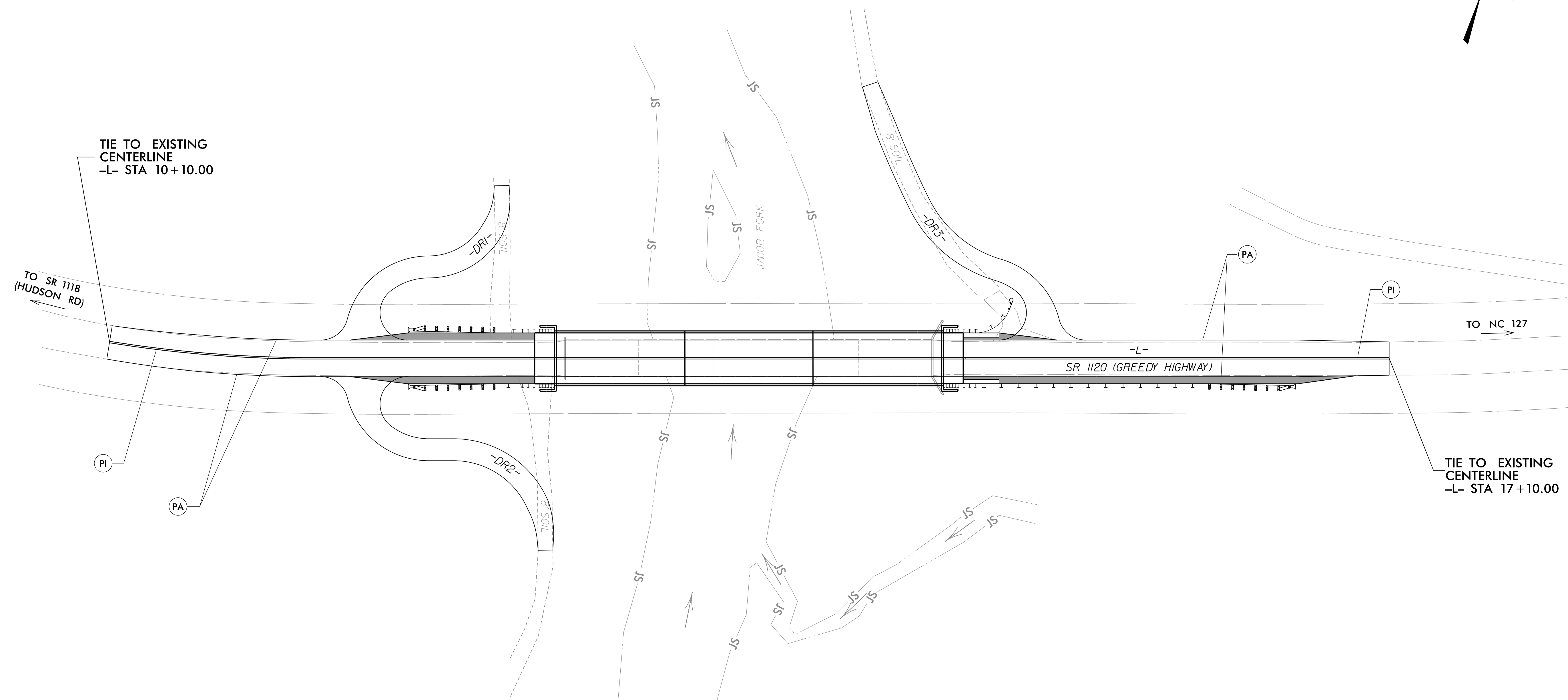
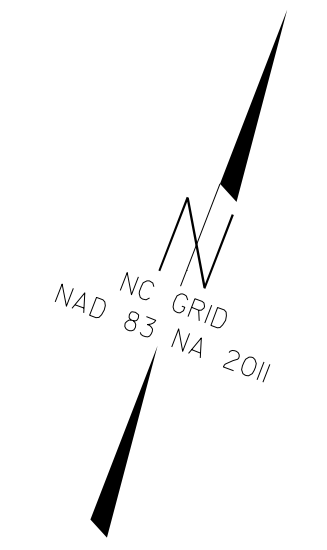
DIVISION OF HIGHWAYS
 NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 WORK ZONE TRAFFIC CONTROL

OFFSITE DETOUR
 AND ROAD CLOSURE

1:37:57 PM
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 myang

FINAL PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION	QUANTITY BREAKDOWN	PAY ITEM	TOTAL QUANTITY
PAVEMENT MARKING LINES				
PA	4" WHITE SOLID EDGE LINE	1,400 FT	PAINT (4")	2,800 FT
PI	4" YELLOW DOUBLE CENTER LINE	1,400 FT	PAINT (4")	2,800 FT



**NOTE: APPLY FINAL PAVEMENT MARKINGS ON -L- SR 1120
FINAL PAVEMENT MARKINGS = 2 COATS OF PAINT**

Mattern & Craig
ENGINEERS • SURVEYORS

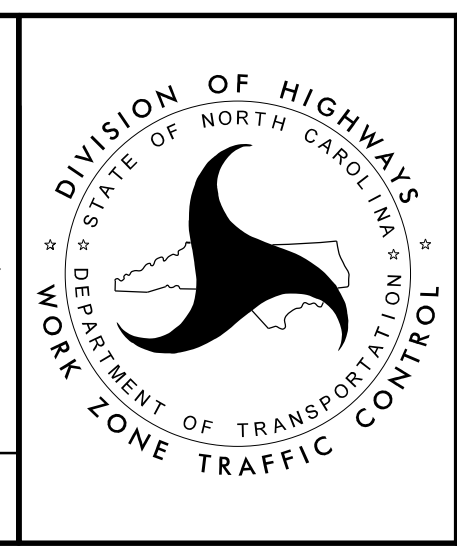
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201
FAX (828) 254-4562
NC LIC. NO. C-1154

APPROVED: James B. Voss, PE
DATE: 3/27/2023

SEAL

James B. Voss, PE
NORTH CAROLINA PROFESSIONAL ENGINEER
SEAL 022599
ENGINEER

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



**PERMANENT PAVEMENT
MARKING PLAN**

SIGN NUMBER: GREEDY HIGHWAY **BACKG COLOR: Fluorescent Orange**
TYPE: D GROUND **COPY COLOR: Black**
QUANTITY: SEE PLANS
SIGN WIDTH: 3'-0"
HEIGHT: 2'-0"
TOTAL AREA: 6 Sq.Ft.
BORDER TYPE: INSET
RECESS: 0.59"
WIDTH: 0.63"
RADII: 1.5"
NO. Z BARS: N/A
LENGTH: N/A

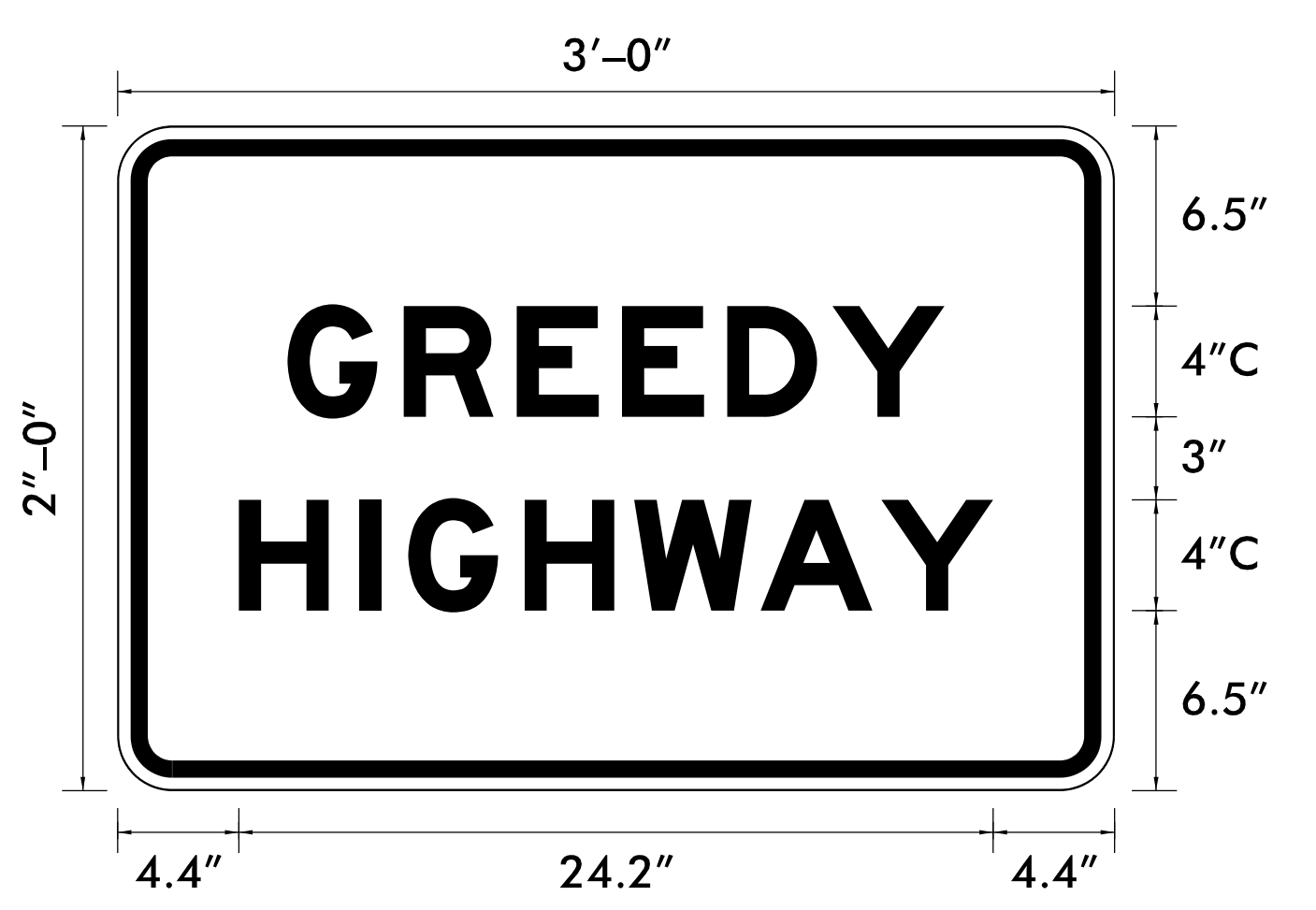
SYMBOL	X	Y	WID	HT

MAT'L: 0.063" (1.6 mm) ALUMINUM

USE NOTES: 1,3,4,6

1. Legend and border shall be direct applied encapsulated lens reflective sheeting.
2. Legend and border shall be direct applied enclosed lens reflective sheeting.
3. Shields shall be encapsulated lens reflective sheeting on 0.8mm aluminum and demountable.
4. Background shall be encapsulated lens reflective sheeting.
5. Background shall be enclosed lens reflective sheeting.
6. Center arrows vertically on sign.

DESIGN BY: MY **CHECKED BY: ACC** **DATE: MAY 18, 2021**
PROJECT ID: 17BP.12.R.63 **DIV: 12**



BORDER
R=1.5TH
TH=0.63TH
IN=0.47TH
Panel Style: construction_guide.ssi
M.U.T.C.D.: 2009 Edition
Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter spacings are to start of next letter

Letter spacings are to start of next letter										Series/Size Text Length	
		G	R	E	E	D	Y				C 2000/4
	6.1	4.2	4.1	3.8	3.8	3.8	4.0	6.1			23.7
		H	I	G	H	W	A	Y			C 2000/4
	4.4	4.4	1.8	4.2	4.0	4.6	4.4	4.0	4.4		27.4

NORTH CAROLINA D.O.T. SIGN DETAIL

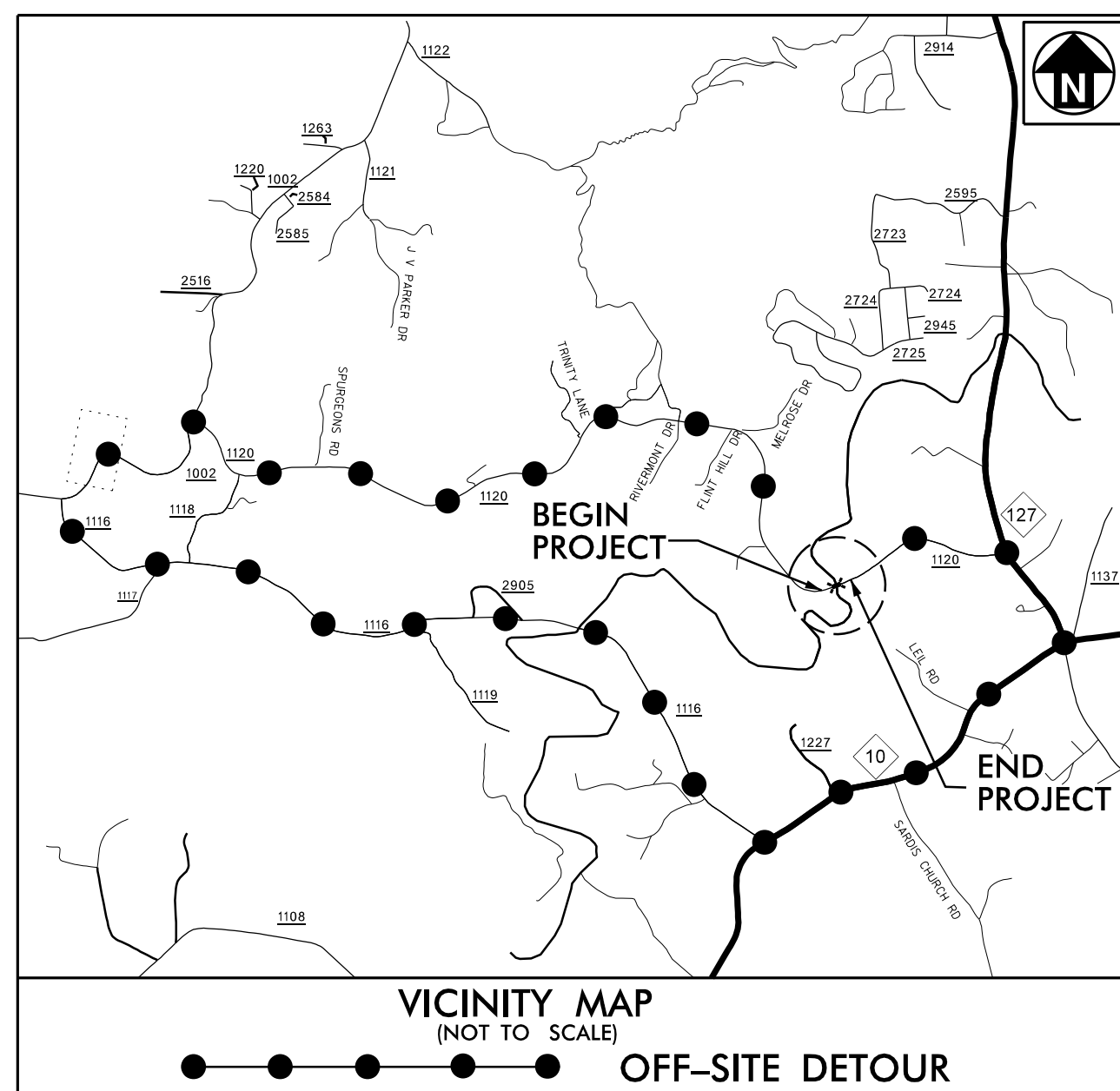
Mattern & Craig
ENGINEERS-SURVEYORS
 12 BROAD STREET
 ASHEVILLE, NORTH CAROLINA 28801
 (828) 254-2201
 FAX (828) 254-4562
 NC LIC. NO. C-1154

APPROVED: James B. Voss, PE
 DATE: 3/27/2023

SEAL

SPECIAL SIGN DESIGN

TIP PROJECT: 17BP.12.R.63



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

CATAWBA COUNTY

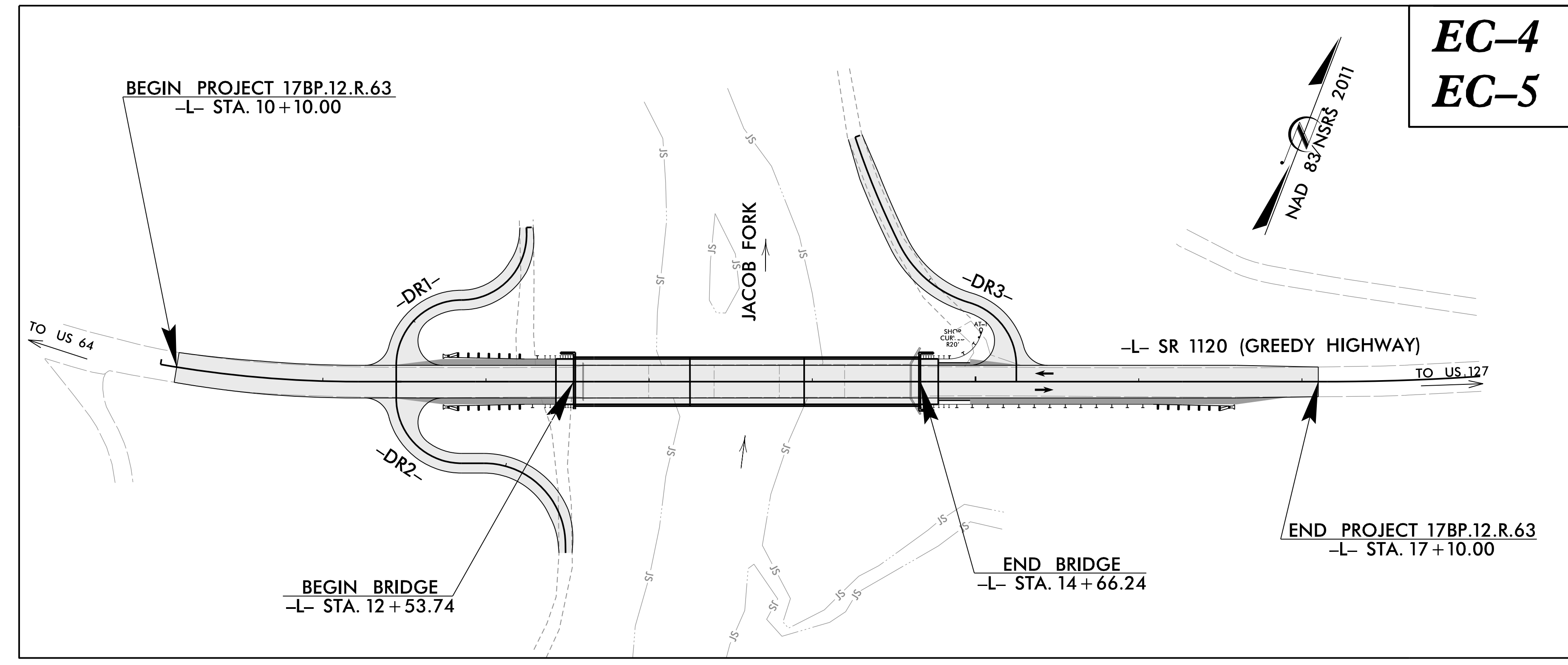
**LOCATION: BRIDGE NO. 59 OVER JACOB FORK
ON SR 1120 (GREEDY HIGHWAY)**

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.12.R.63	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.12.PE.63	N/A	P.E.	
17BP.12.ROW.63	N/A	RW & UTIL	
17BP.12.R.63	N/A	CONST	

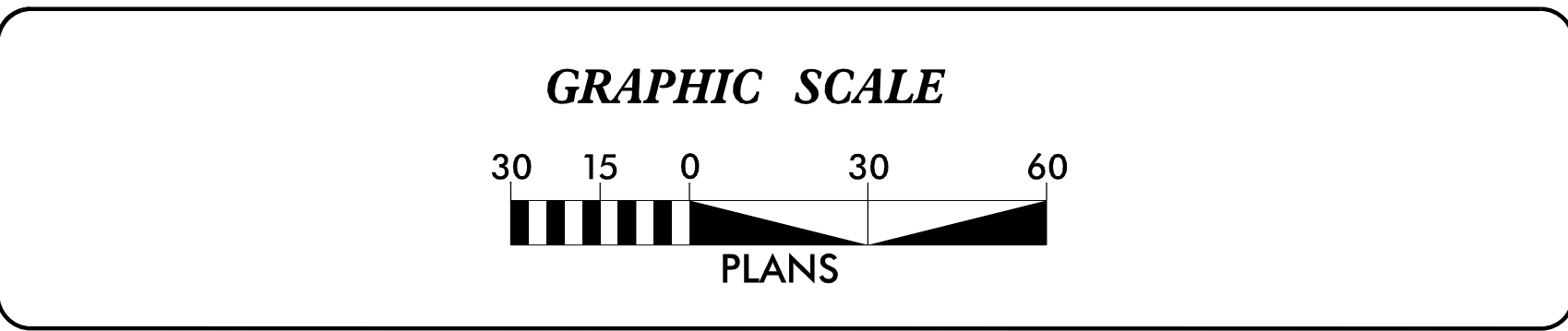
EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	---
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	▲▲▲
1622.01	Temporary Berms and Slope Drains	—
1630.02	Silt Basin Type B	▨
1633.01	Temporary Rock Silt Check Type-A	▩
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	▩
1633.02	Temporary Rock Silt Check Type-B	▩
	Wattle / Coir Fiber Wattle	—
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	—
1634.01	Temporary Rock Sediment Dam Type-A	▩
1634.02	Temporary Rock Sediment Dam Type-B	▩
1635.01	Rock Pipe Inlet Sediment Trap Type-A	⌋
1635.02	Rock Pipe Inlet Sediment Trap Type-B	⌋
1630.04	Stilling Basin	▭
1630.06	Special Stilling Basin	▭
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C
	Skimmer Basin	▭
	Tiered Skimmer Basin	▭
	Infiltration Basin	▭



EC-4
EC-5

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



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

Mattern & Craig
CONSULTING ENGINEERS • SURVEYORS
FIRM LICENSE No. C-1154
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201
FAX (828) 254-4562

Prepared in the Office of:
MATTERN & CRAIG
12 BROAD ST.
ASHEVILLE, NC 28801
FOR NCDOT DIVISION OF HIGHWAYS

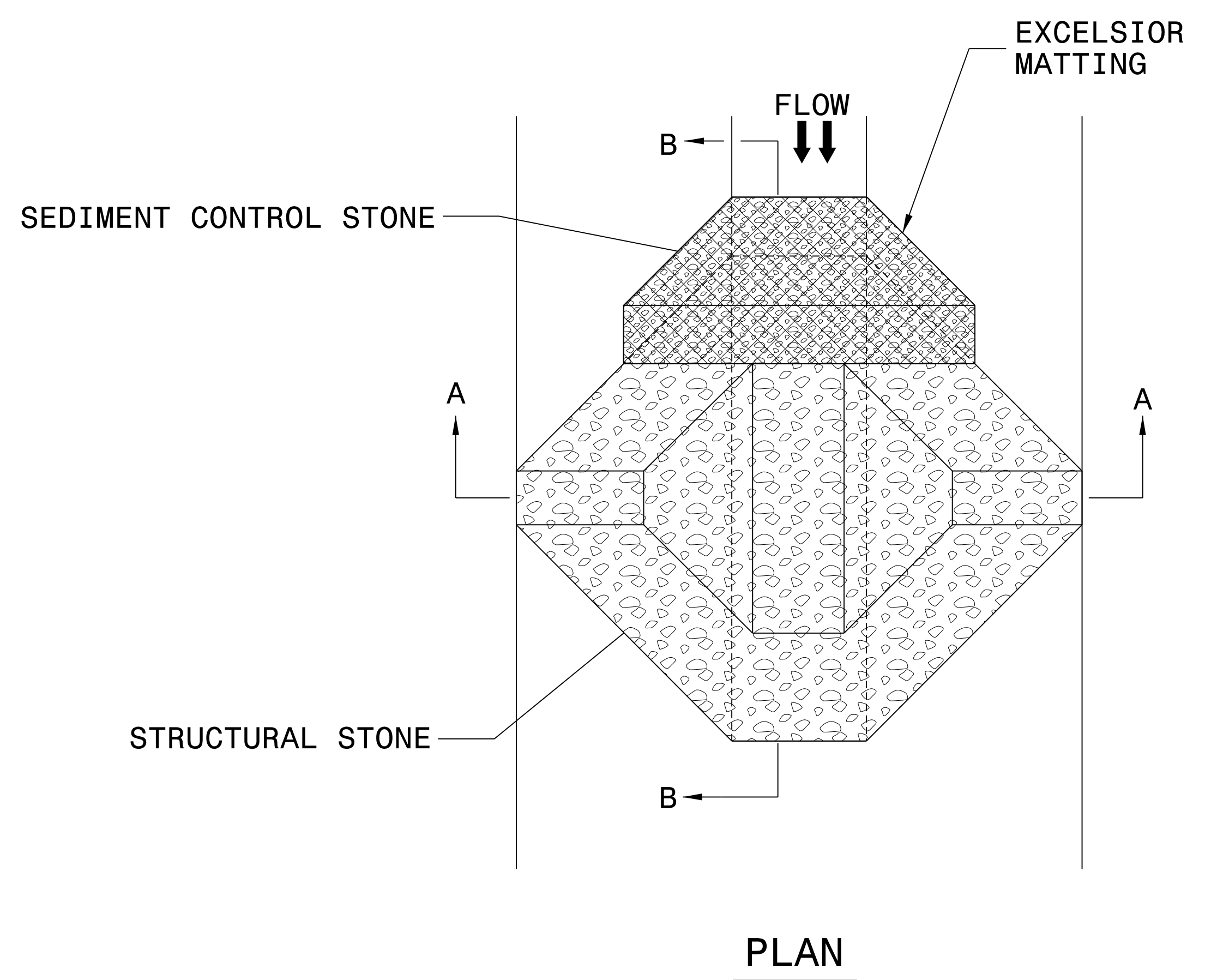
Designed by:
MENG YANG, PE **4149**
NAME LEVEL III CERTIFICATION NO.

Roadway Standard Drawings

The following roadway english standards as appear in "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 2018 and the latest revision thereto are applicable to this project and by reference hereby are considered a part of these plans.

1604.01 Railroad Erosion Control Detail	1632.01 Rock Inlet Sediment Trap Type A
1605.01 Temporary Silt Fence	1632.02 Rock Inlet Sediment Trap Type J
1606.01 Special Sediment Control Fence	1632.03 Rock Inlet Sediment Trap Type C
1607.01 Gravel Construction Entrance	1633.01 Temporary Rock Silt Check Type A
1622.01 Temporary Berms and Slope Drains	1633.02 Temporary Rock Silt Check Type J
1630.01 Riser Basin	1634.01 Temporary Rock Sediment Dam Type A
1630.02 Silt Basin Type J	1634.02 Temporary Rock Sediment Dam Type J
1630.03 Temporary Silt Ditch	1635.01 Rock Pipe Inlet Sediment Trap Type A
1630.04 Stilling Basin	1635.02 Rock Pipe Inlet Sediment Trap Type J
1630.05 Temporary Diversion	1640.01 Coir Fiber Wattle
1630.06 Special Stilling Basin	1645.01 Temporary Stream Crossing
1631.01 Matting Installation	

TEMPORARY ROCK SILT CHECK TYPE 'A' WITH EXCELSIOR MATTING AND POLYACRYLAMIDE (PAM)



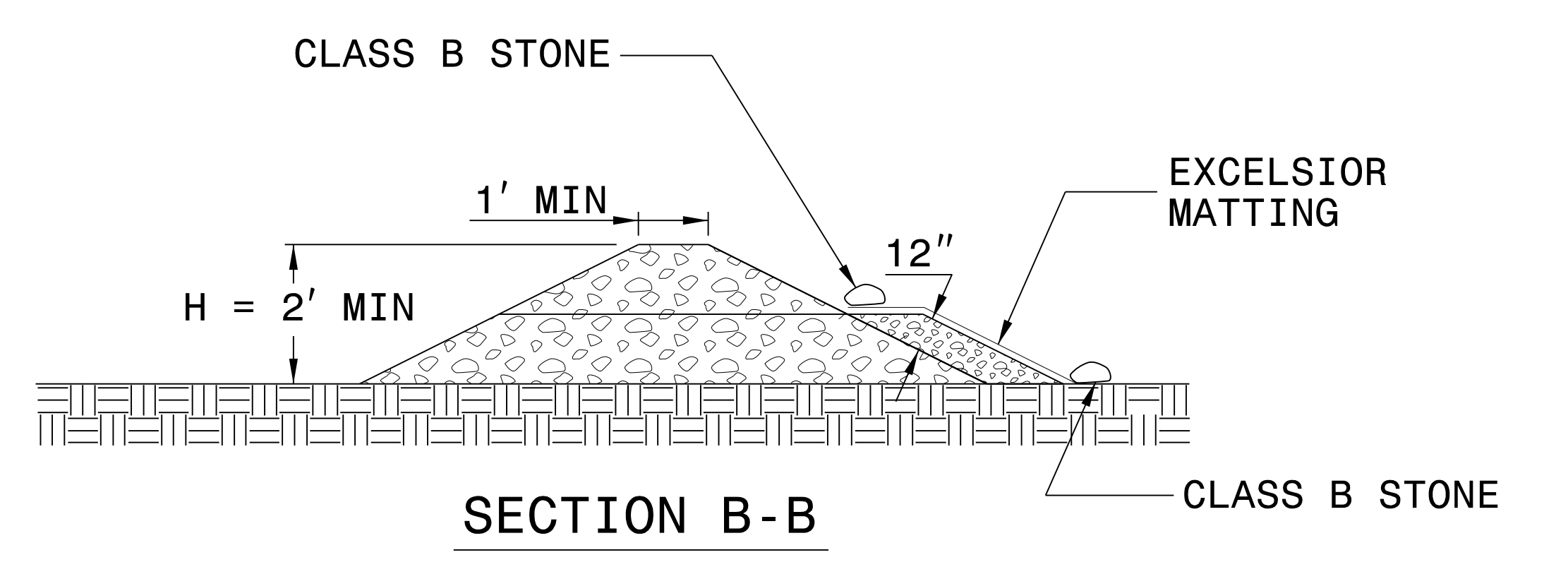
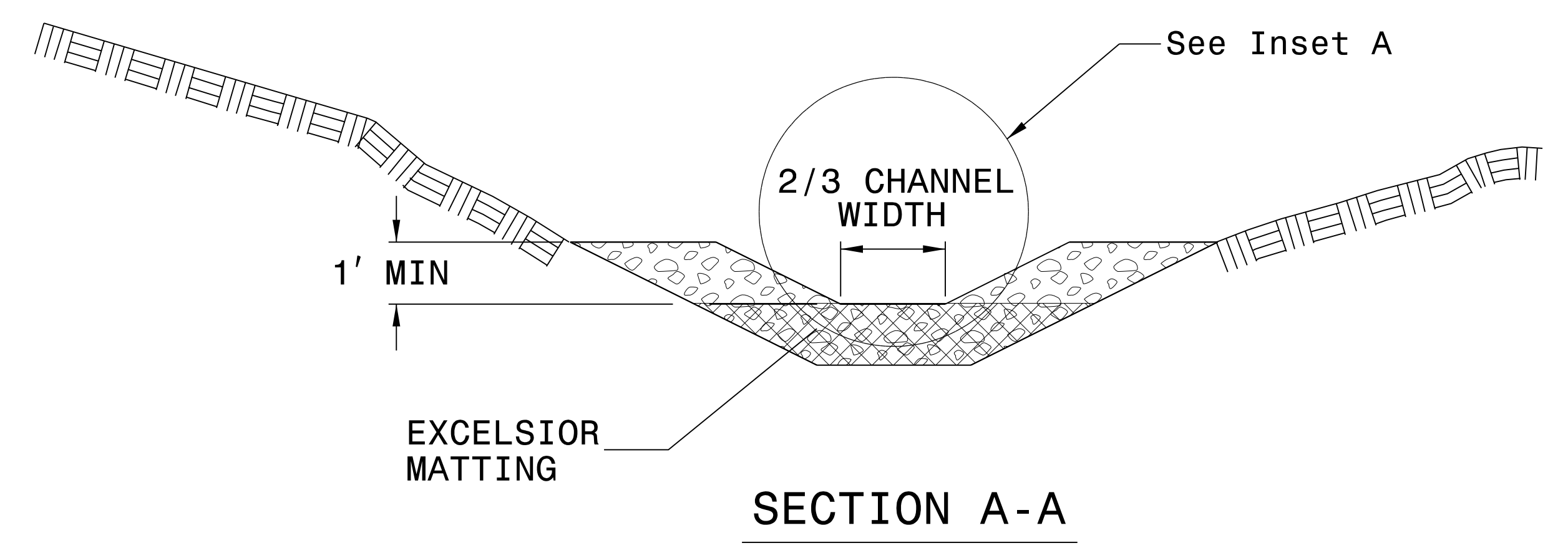
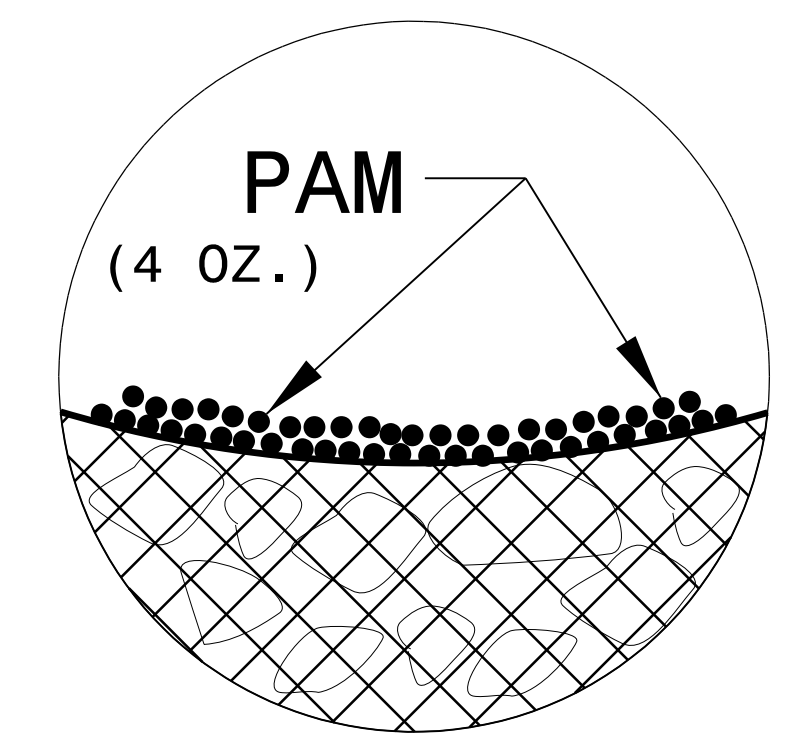
NOTES:

INSTALL TEMPORARY ROCK SILT CHECK TYPE A IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1633.01.

USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH ROCK SILT CHECK.

INITIALLY APPLY 4 OUNCES OF POLYACRYLAMIDE (PAM) TO TOP OF MATTING SECTION AND AFTER EVERY RAINFALL EVENT THAT EQUALS OR EXCEEDS 0.50 INCHES.



NOT TO SCALE

**DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA**

PROJECT REFERENCE NO. <i>17BPJ3.R.62</i>	SHEET NO. <i>EC-3</i>
RW SHEET NO.	
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 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.

REVISIONS

SOIL STABILIZATION SUMMARY SHEET

MATTING FOR EROSION CONTROL ON SLOPES

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
5	-L-	12+00	12+42	LT	75
5	-L-	12+00	12+42	RT	75
5	-L-	14+77	17+00	RT	760
			SUBTOTAL		910

MATTING FOR EROSION CONTROL IN DITCHES

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
	-L- *EXCELSIOR*	10+10	11+30	LT	185
	-L- *STRAW*	10+10	11+30	RT	215
	-L- *EXCELSIOR*	15+40	17+10	RT	300
			SUBTOTAL		700

	MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER				1584
	TOTAL MATTING FOR EROSION CONTROL				3194
				SAY	3200

PERMANENT SOIL REINFORCEMENT MAT

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	11+70	12+60	LT	40
4	-L-	11+70	12+60	RT	40
			SUBTOTAL		80
			ADDITIONAL PERM TO BE INSTALLED		
			TOTAL		80
			SAY		80

**CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4**

NOTE: PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.

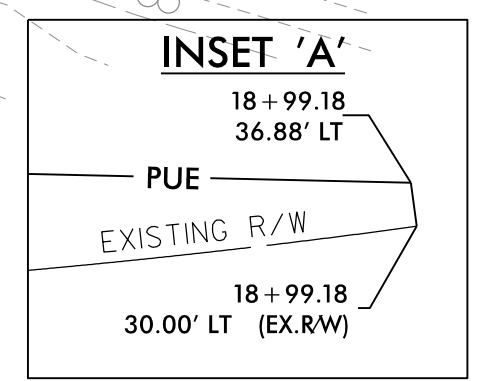
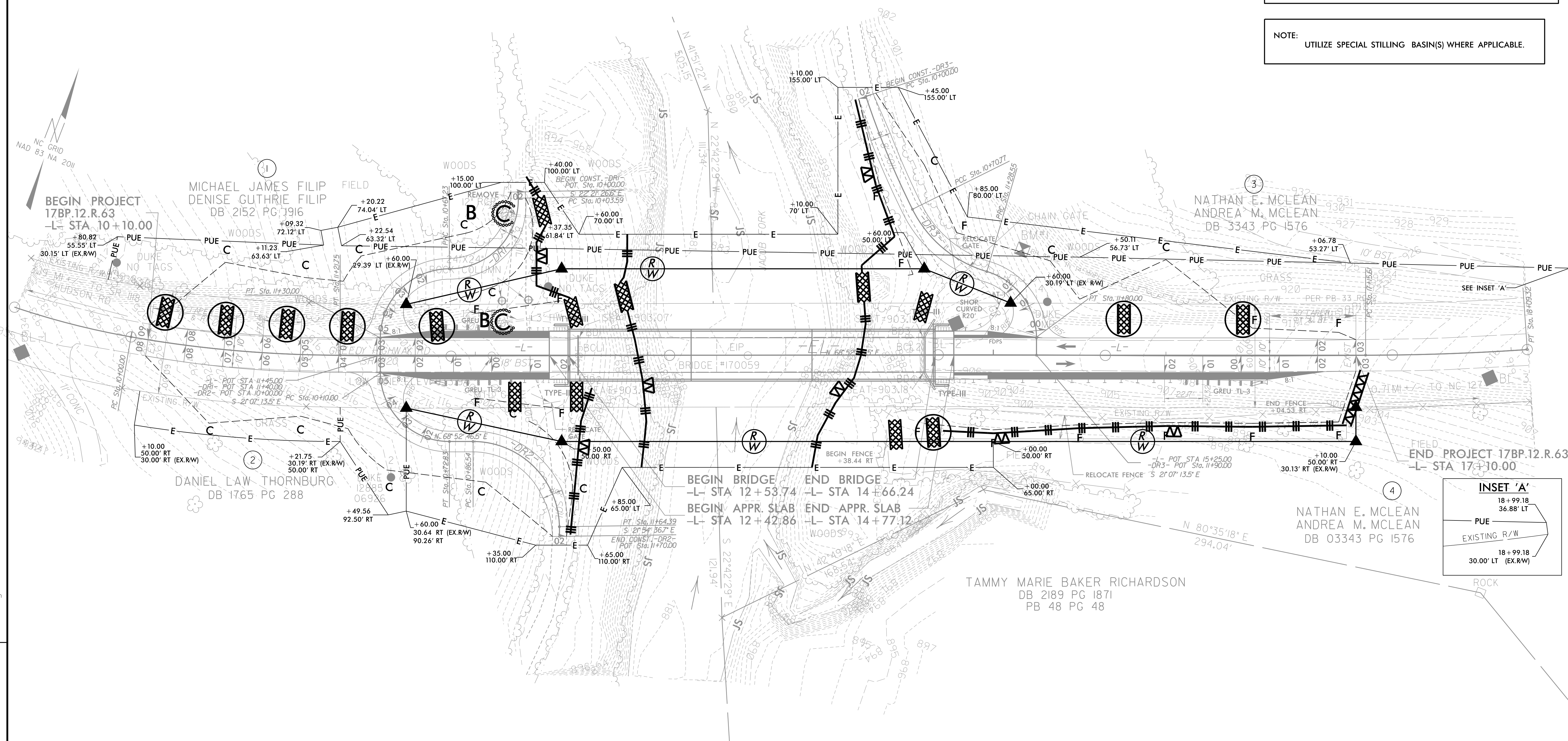
NOTE: UTILIZE ROCK SILT CHECKS TYPE A AT DRAINAGE OUTLETS.

NOTE: UTILIZE SPECIAL STILLING BASIN(S) WHERE APPLICABLE.

REVISIONS

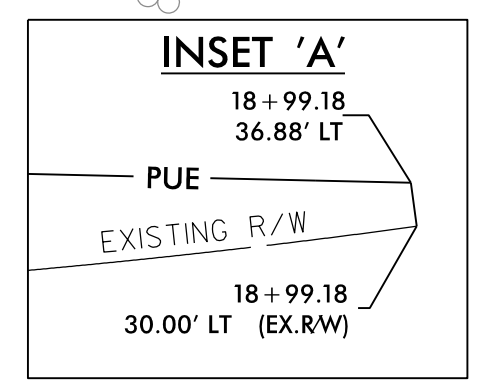
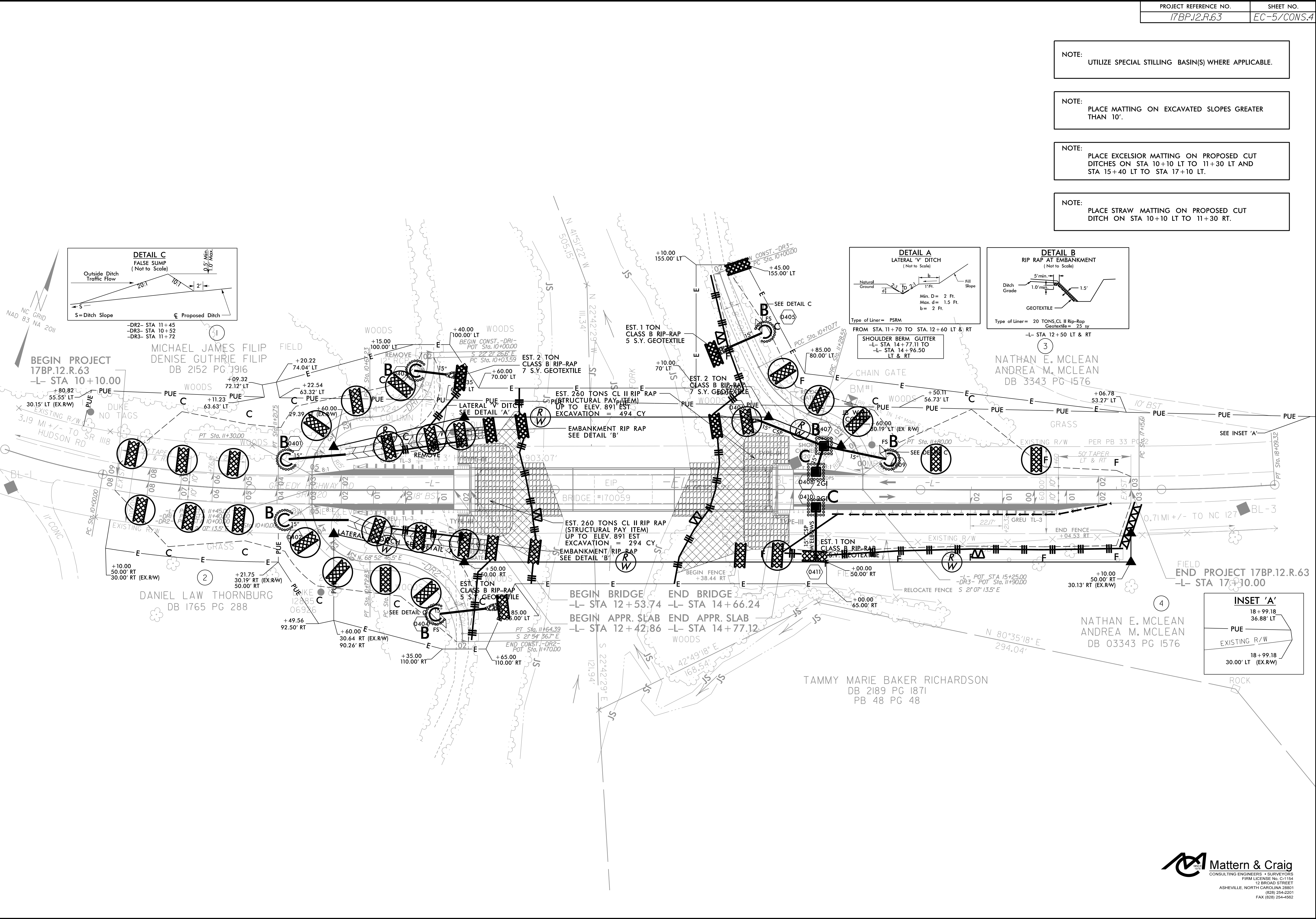
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- NOTE: UTILIZE SPECIAL STILLING BASIN(S) WHERE APPLICABLE.
- NOTE: PLACE MATTING ON EXCAVATED SLOPES GREATER THAN 10'.
- NOTE: PLACE EXCELSIOR MATTING ON PROPOSED CUT DITCHES ON STA 10+10 LT TO 11+30 LT AND STA 15+40 LT TO STA 17+10 LT.
- NOTE: PLACE STRAW MATTING ON PROPOSED CUT DITCH ON STA 10+10 LT TO 11+30 RT.

REVISIONS
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 59\06 17BP12R63\Environmental\EC5.dgn



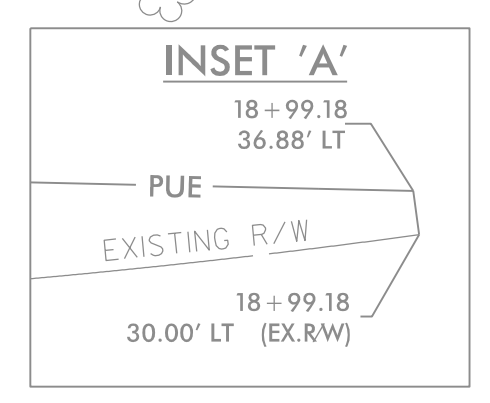
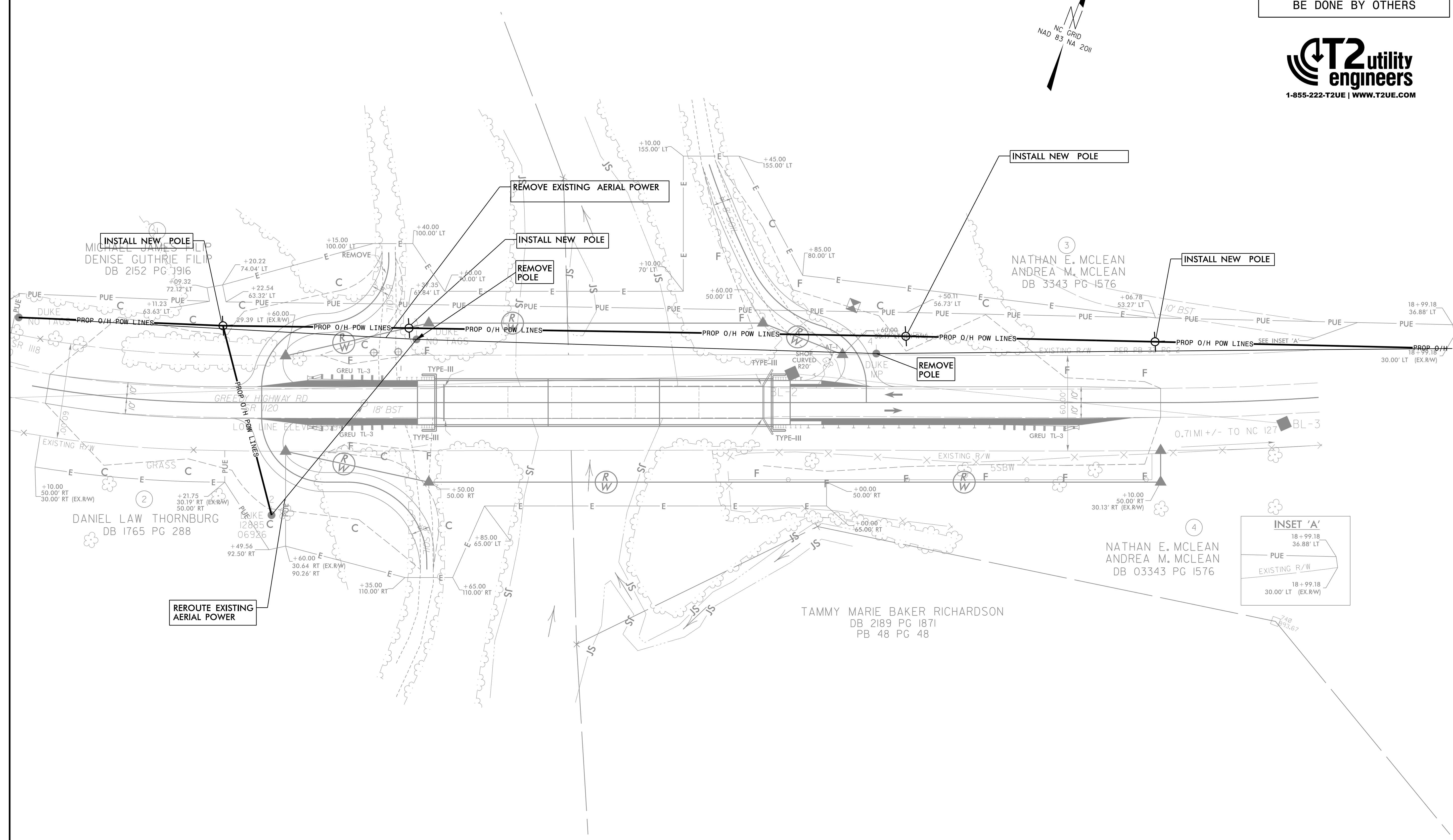
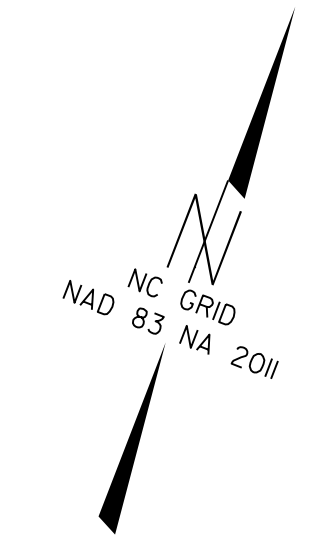
PROJECT: 17BP.12.R.63

CONTRACT:

PROJECT REFERENCE NO. 17BP.12.R.63	SHEET NO. U0-1
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UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK
SHOWN ON THIS SHEET WILL
BE DONE BY OTHERS



COMPUTED BY: VHW DATE: 5/17/18
 CHECKED BY: ACC DATE: 5/17/18

PROJECT REFERENCE NO. SHEET NO.
 17BPJ2.R.63 X-0

DIVISION OF HIGHWAYS
 STATE OF NORTH CAROLINA

CROSS SECTION SUMMARY
 IN CUBIC YARDS

-L- LOCATION	UNCLASSIFIED EXCAVATION	EMBT
10+10	0	0
10+50	134	7
11+00	247	71
11+50	109	277
12+00	109	277
12+50	0	486
12+53.74 (BEGIN BRIDGE)	0	41
14+66.24 (END BRIDGE)	0	0
15+00	0	308
15+50	21	319
16+00	132	126
16+50	111	62
17+00	13	33
17+10	2	1

-DR1- LOCATION	UNCLASSIFIED EXCAVATION	EMBT
10+00	0	0
10+50	34	0
11+00	217	0
11+30	241	0

-DR2- LOCATION	UNCLASSIFIED EXCAVATION	EMBT
10+10	0	0
10+50	91	0
11+00	228	0
11+50	130	0
11+70	12	0

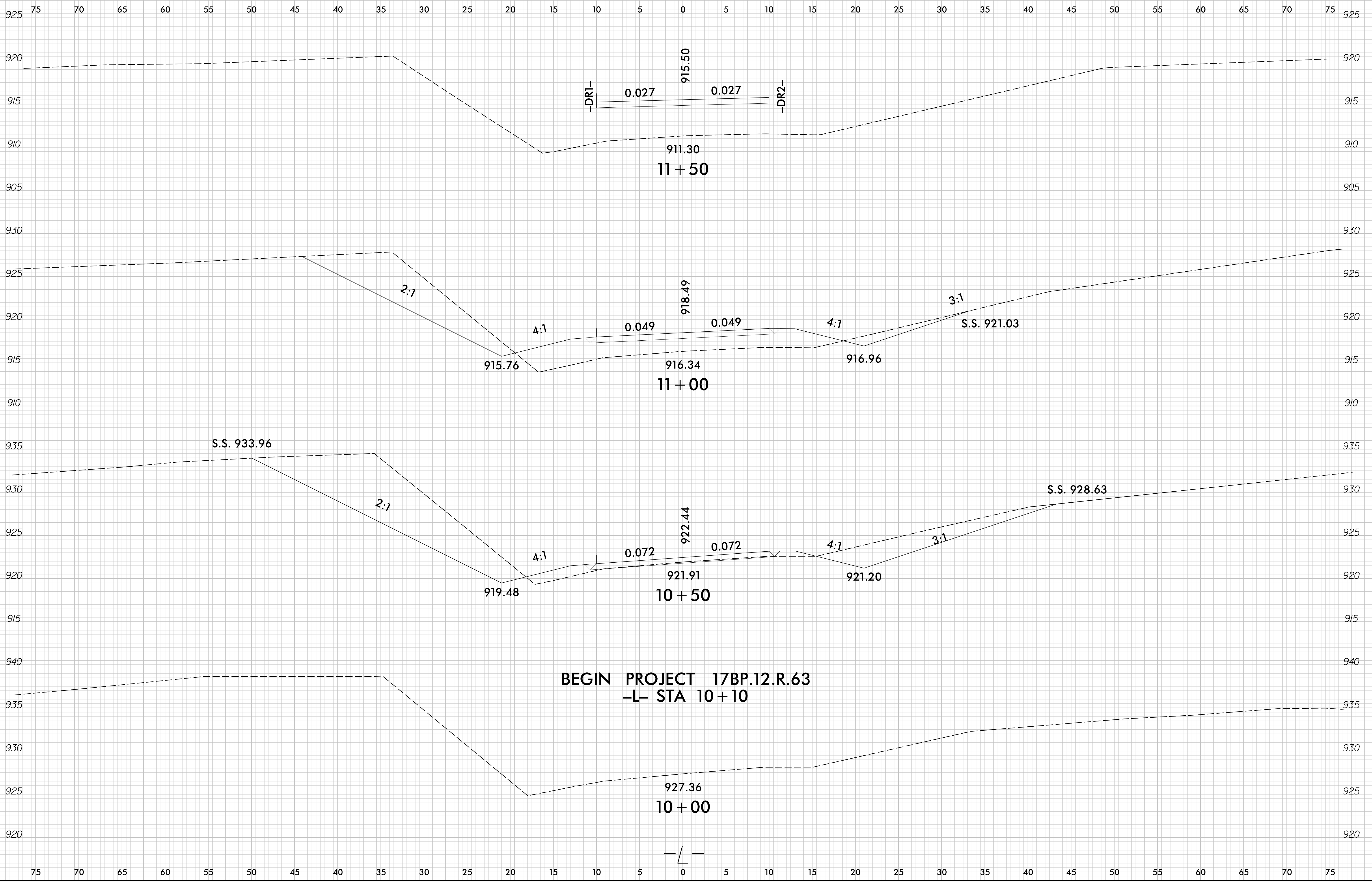
-DR3- LOCATION	UNCLASSIFIED EXCAVATION	EMBT
10+00	0	0
10+50	11	10
11+00	6	69
11+50	30	91
11+80	37	32

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

NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT.

8/23/99

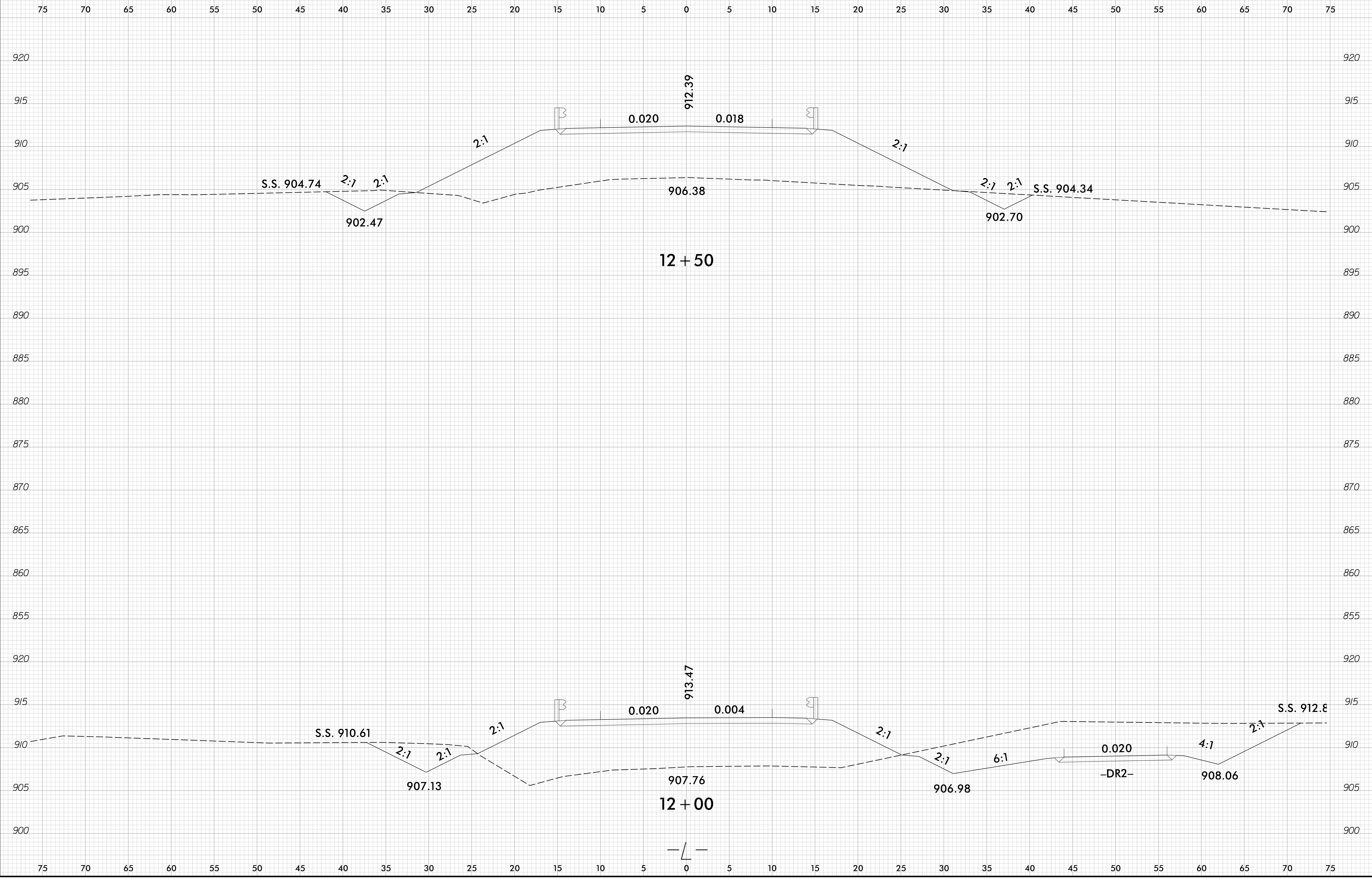
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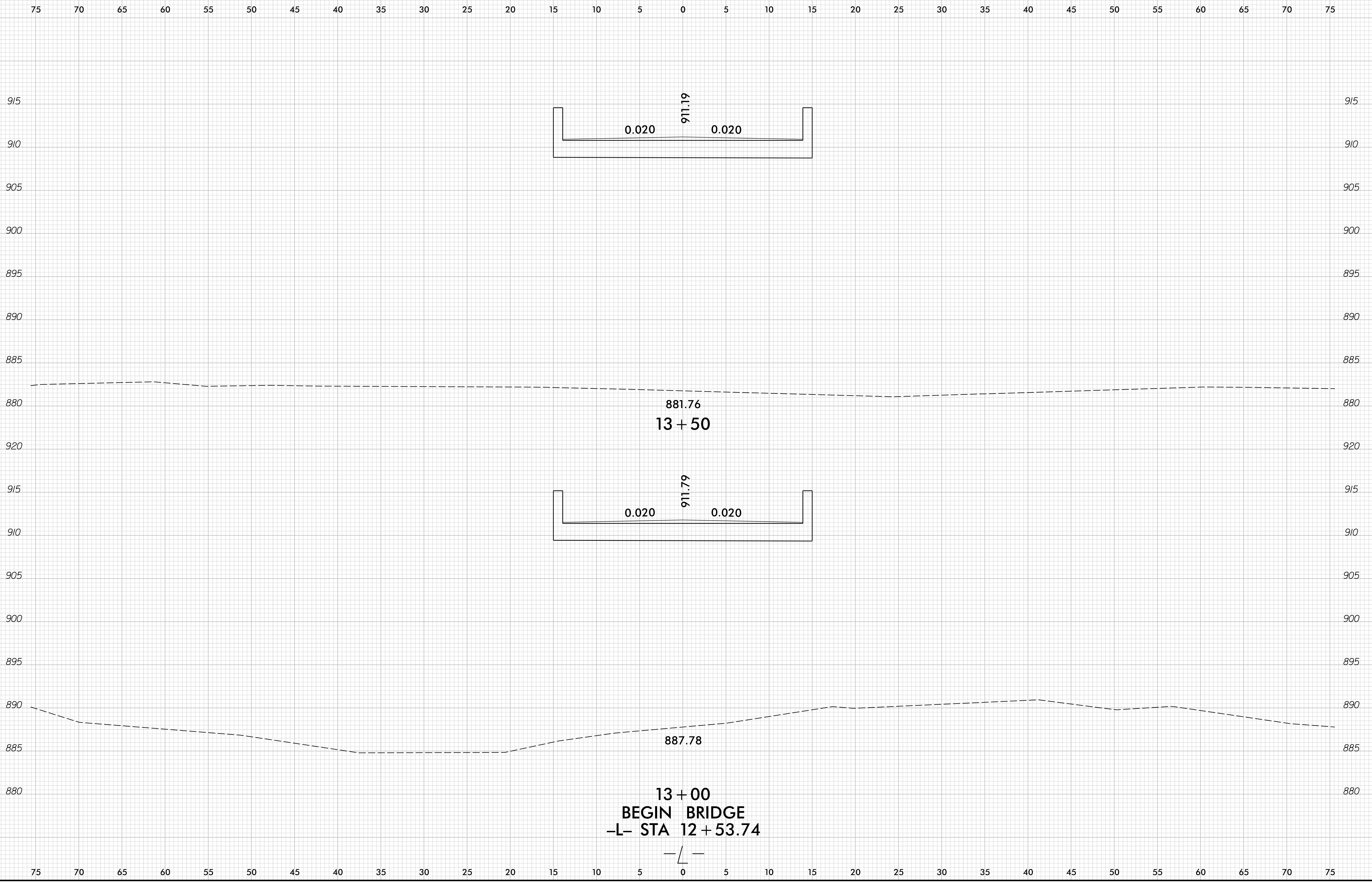
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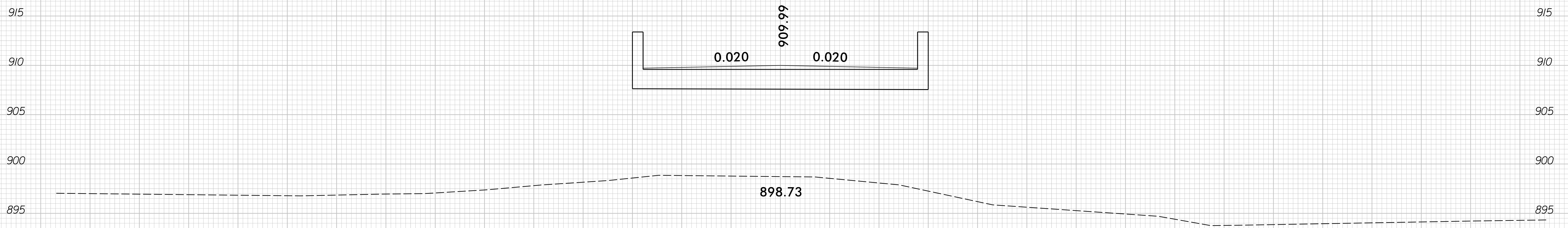
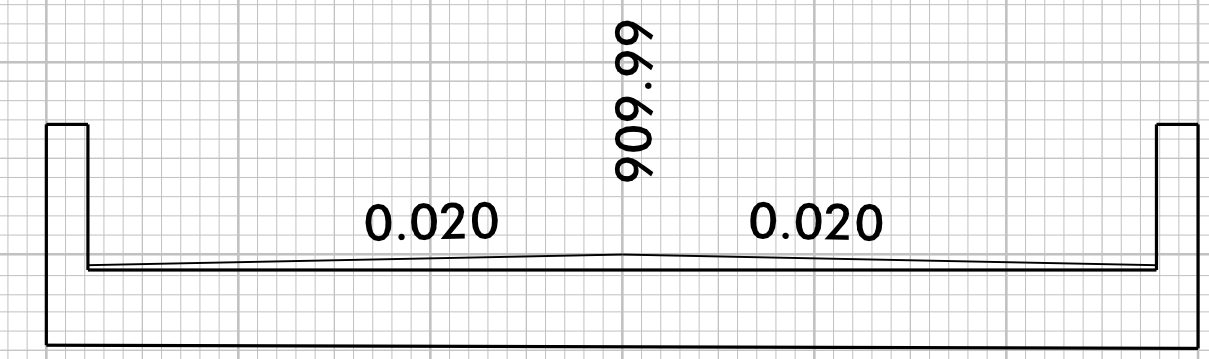


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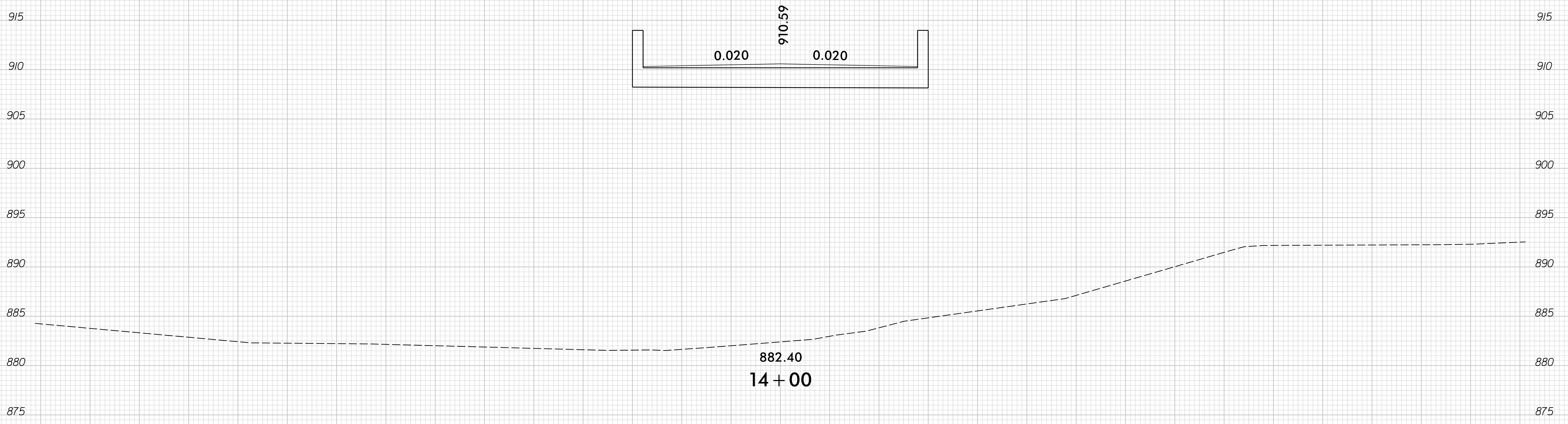
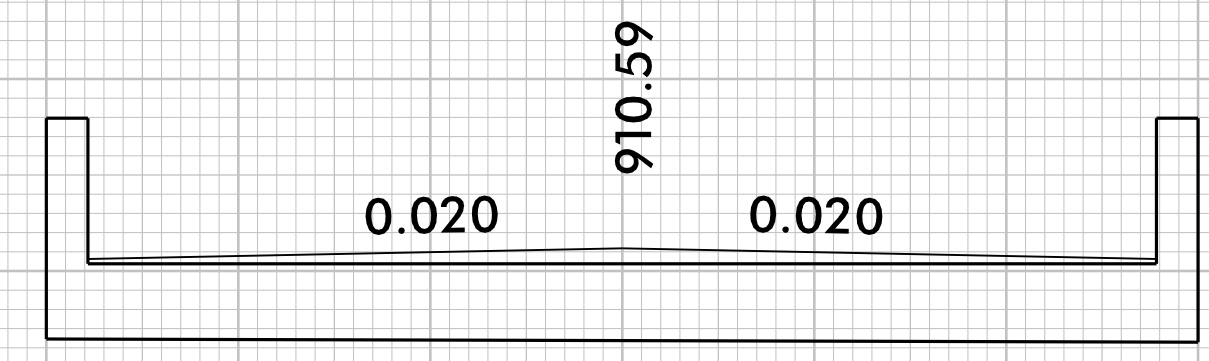
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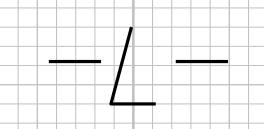
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14+50



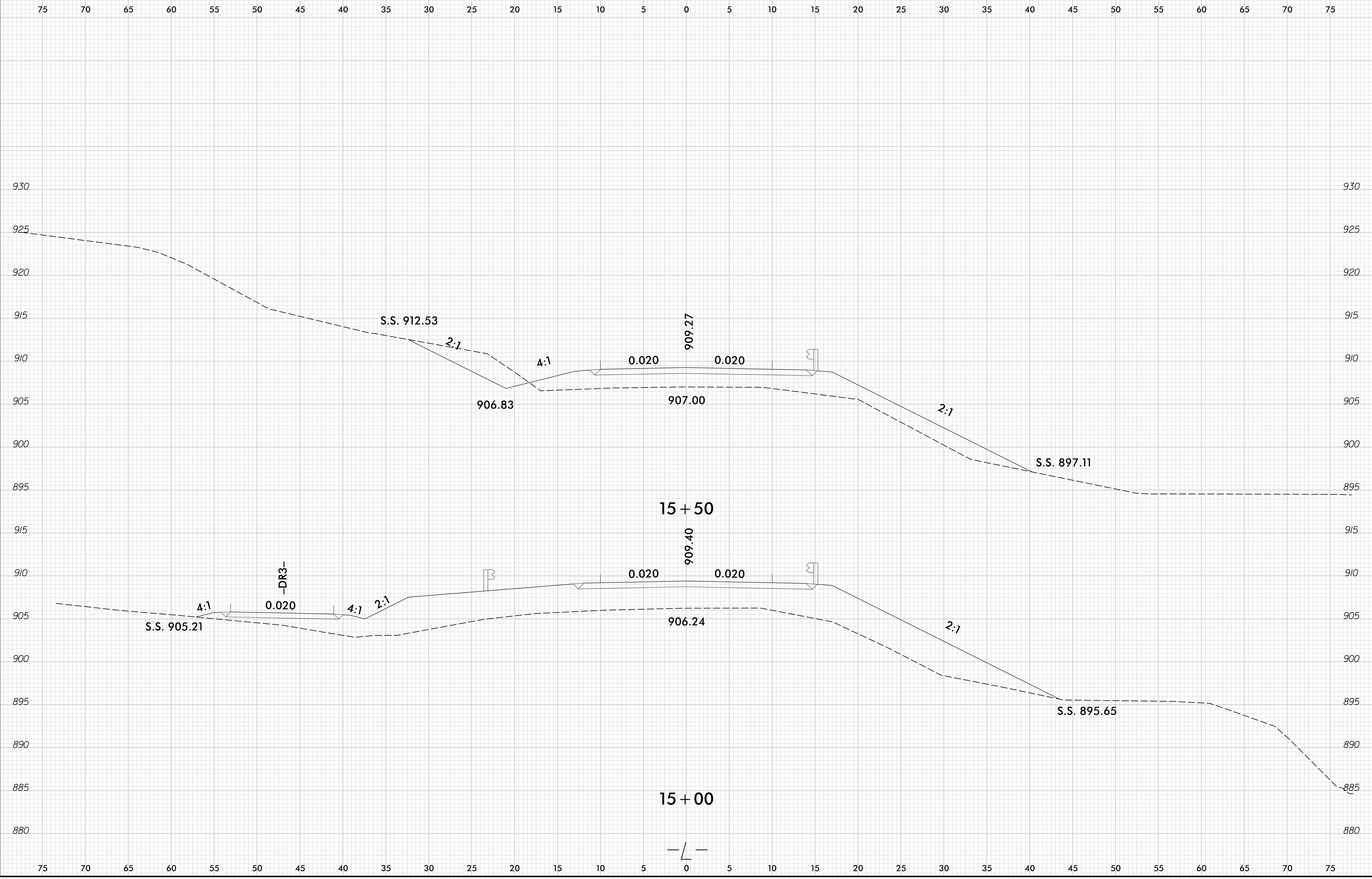
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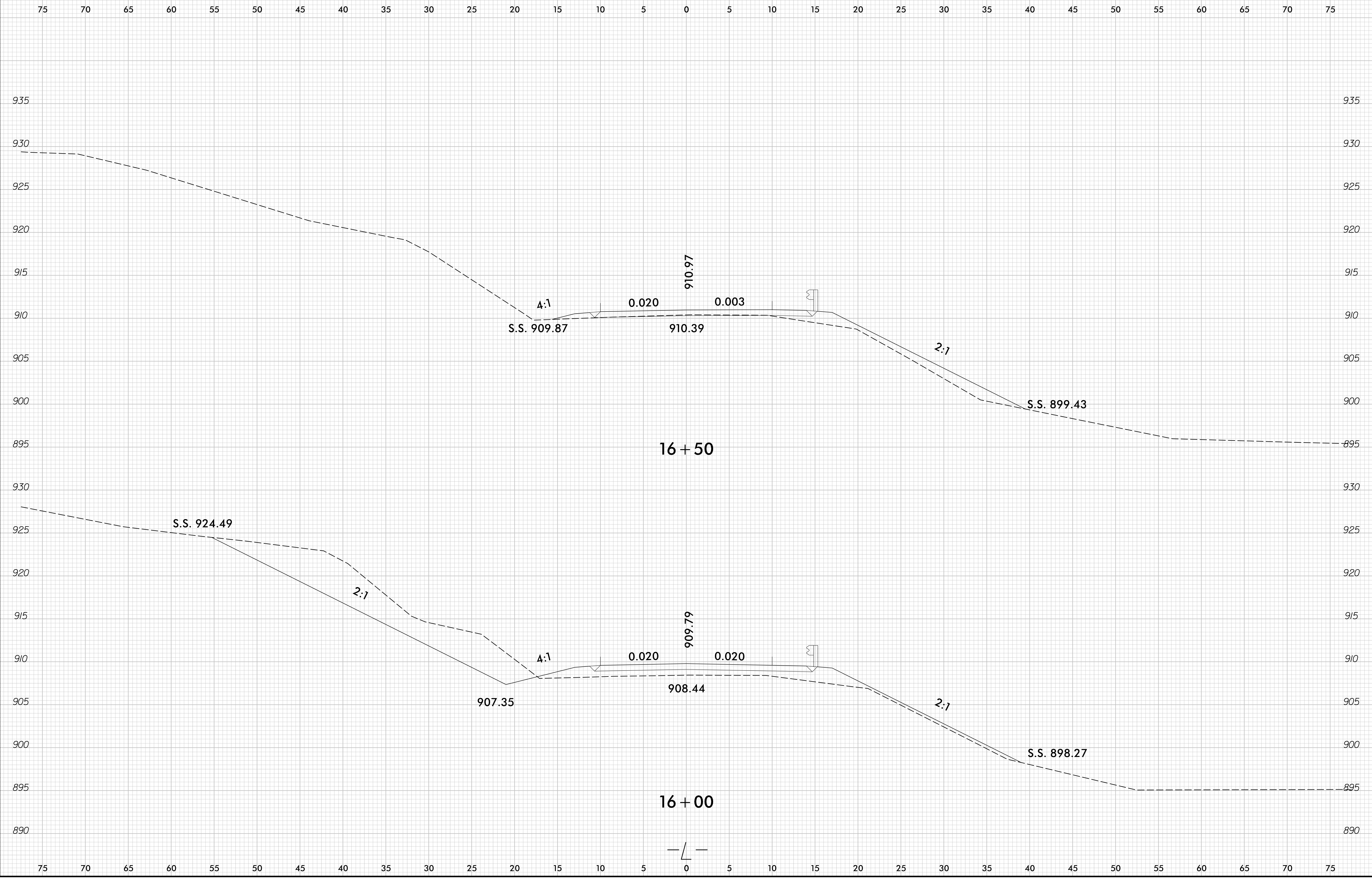
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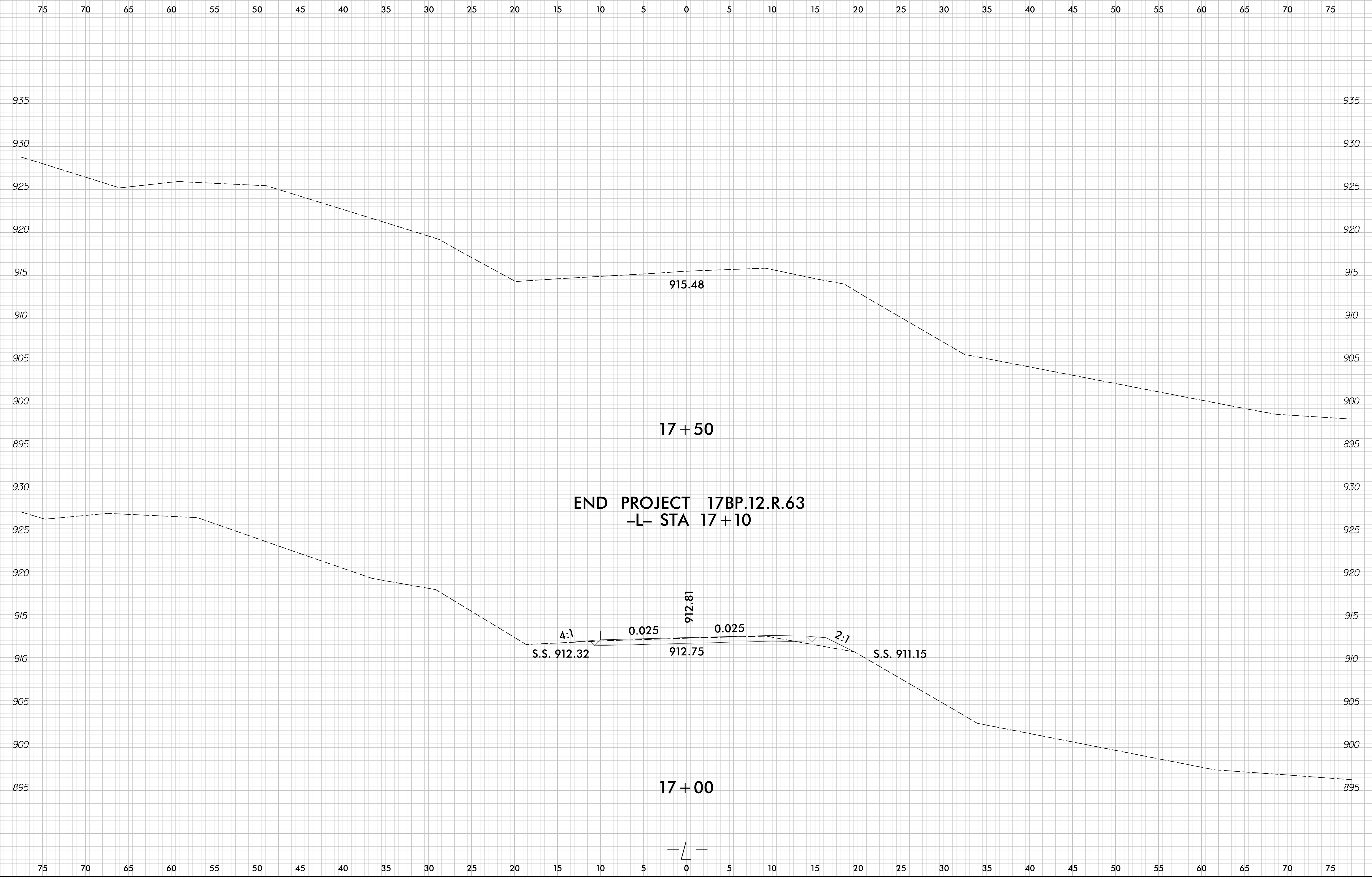
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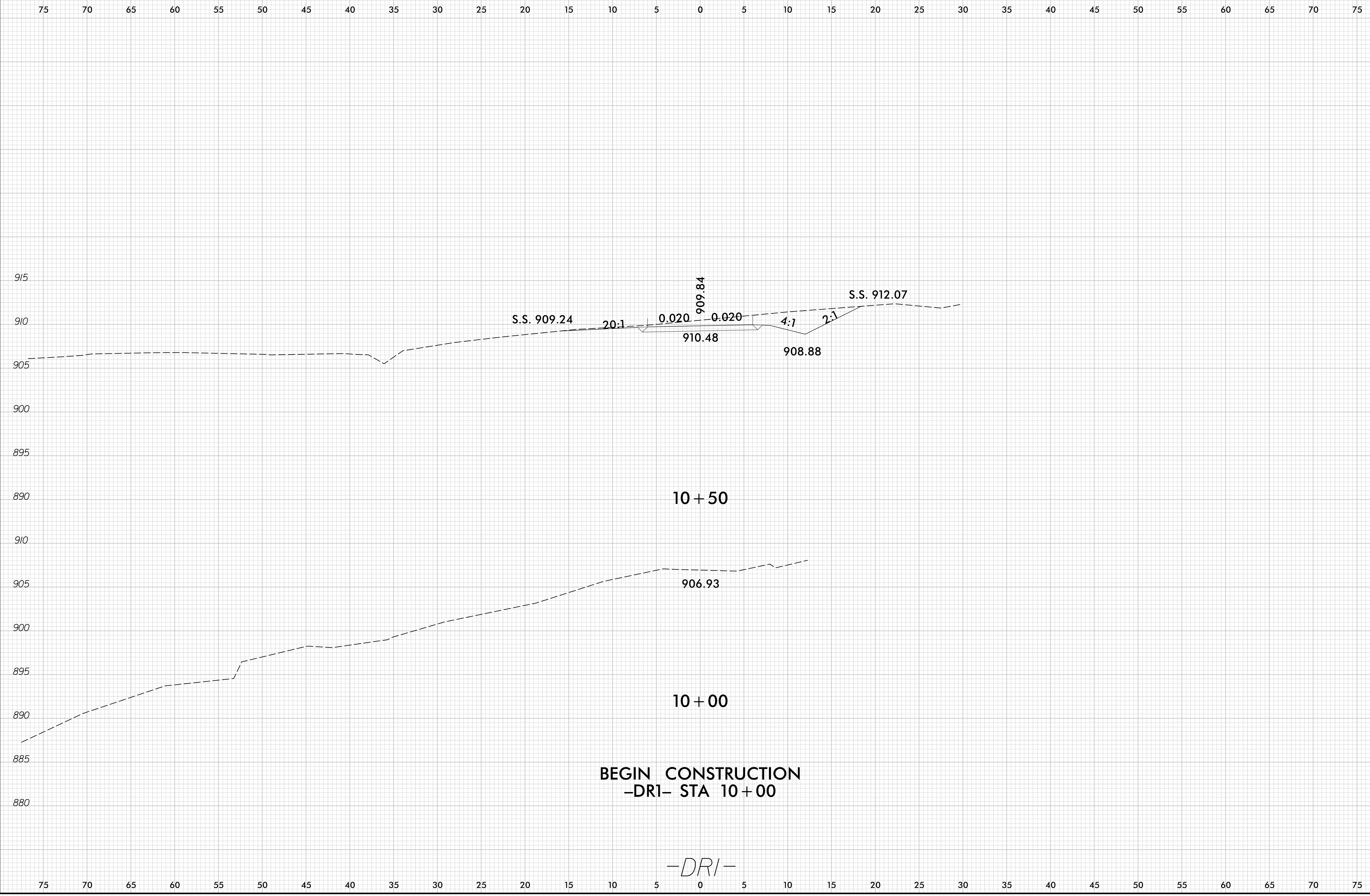
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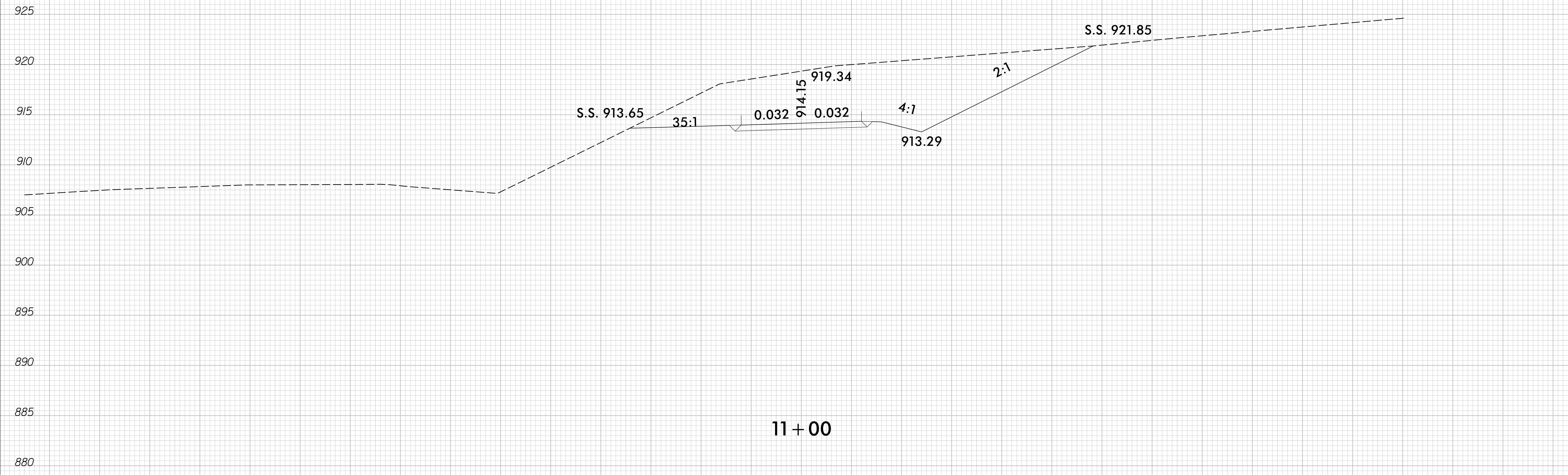
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-DR1-

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11 + 00

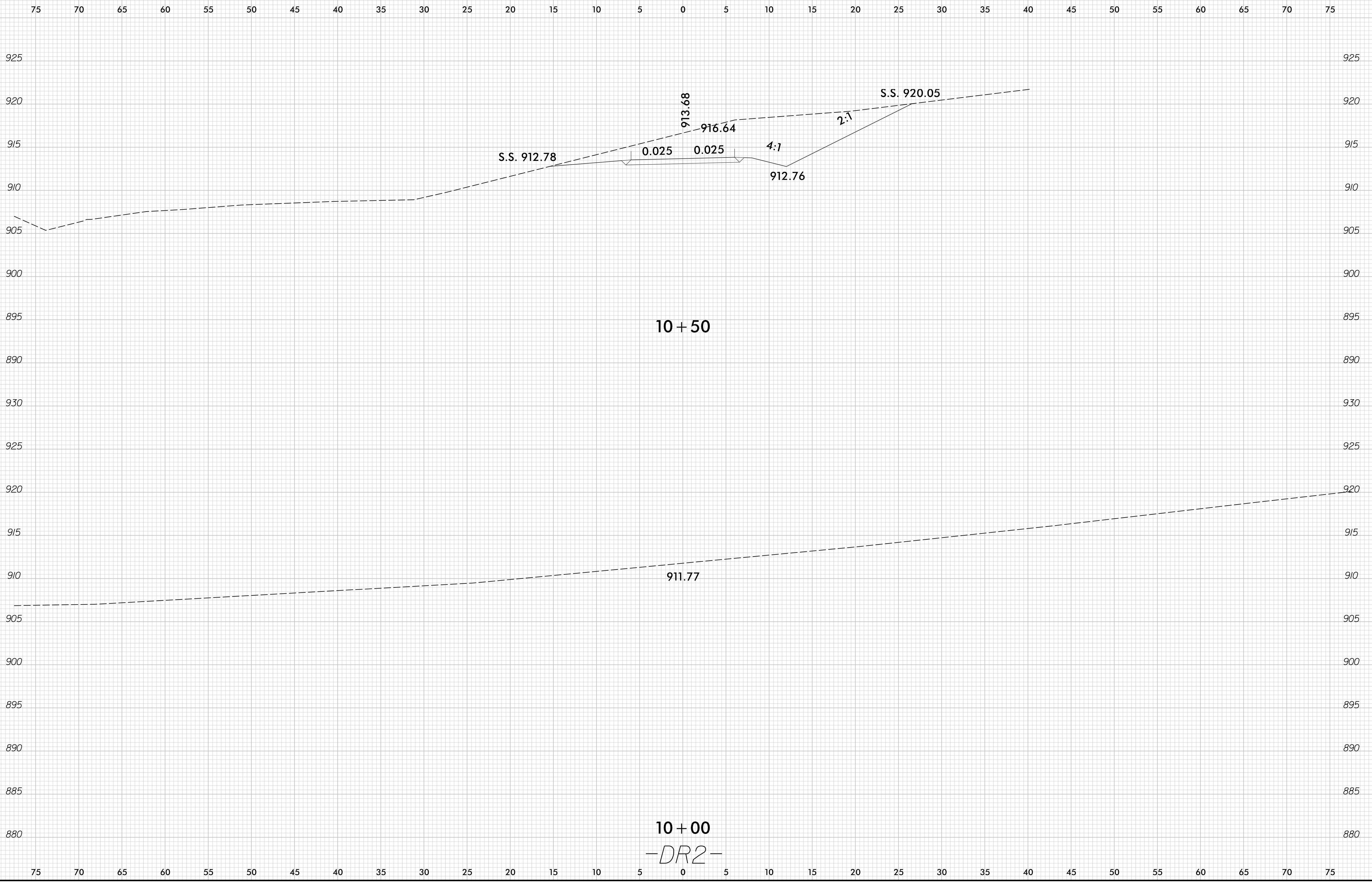
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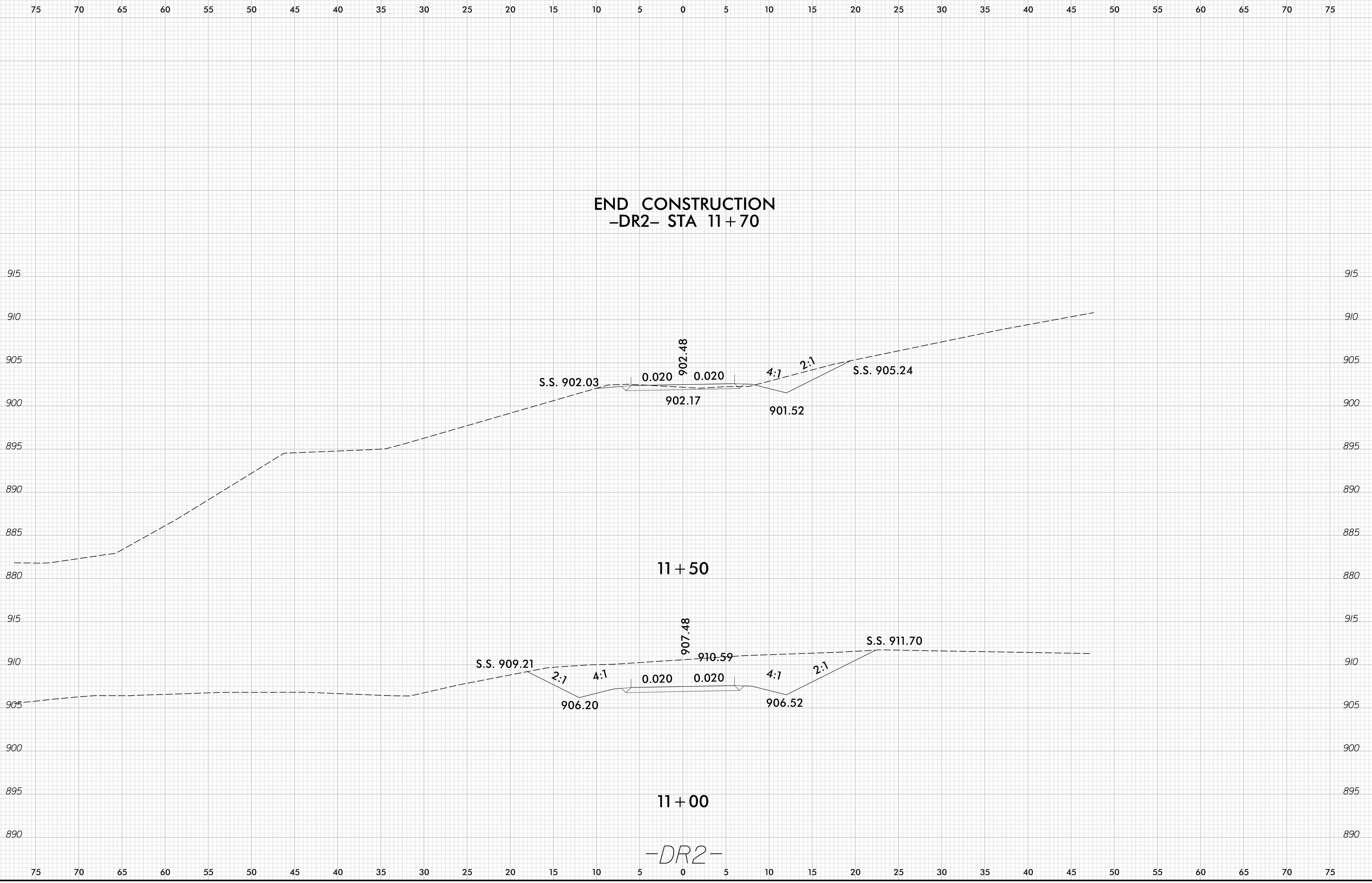
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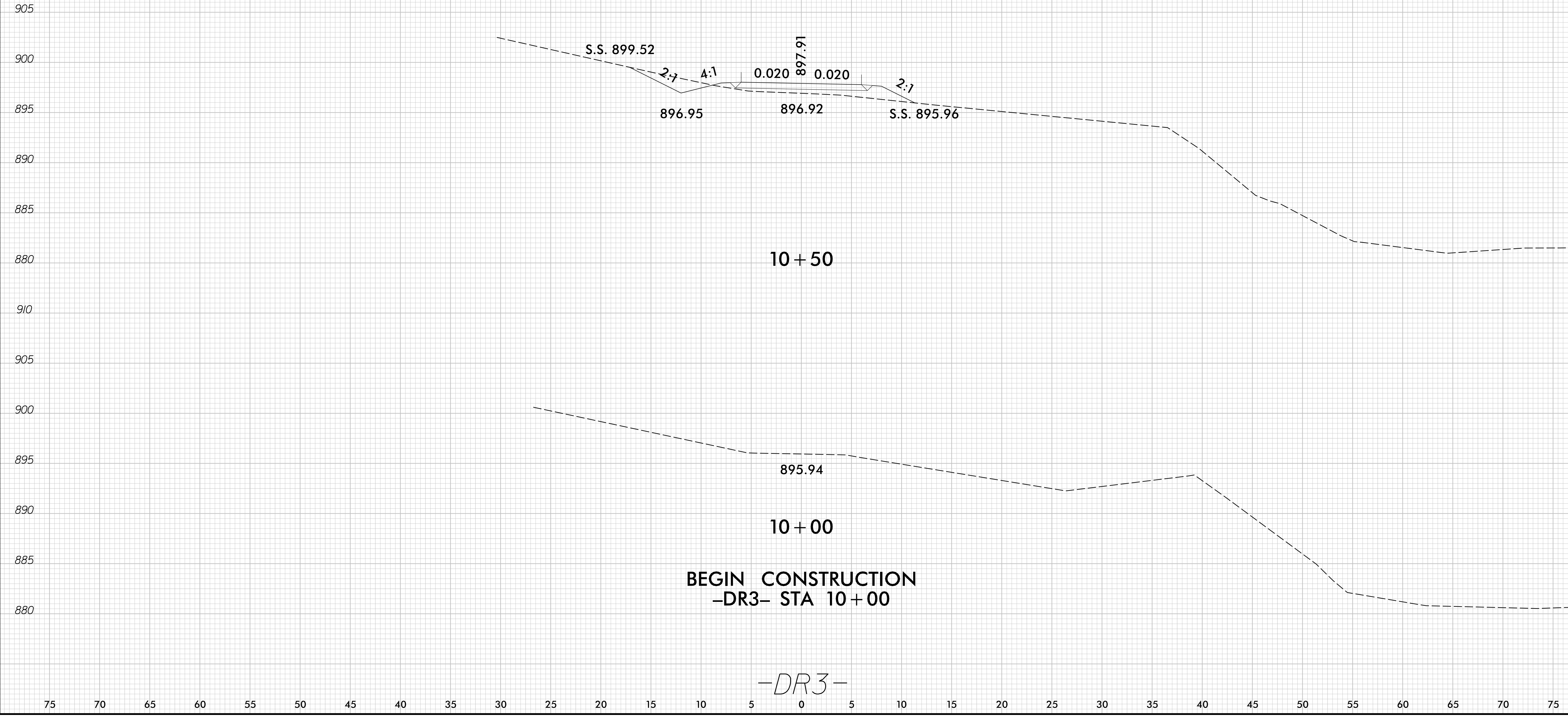
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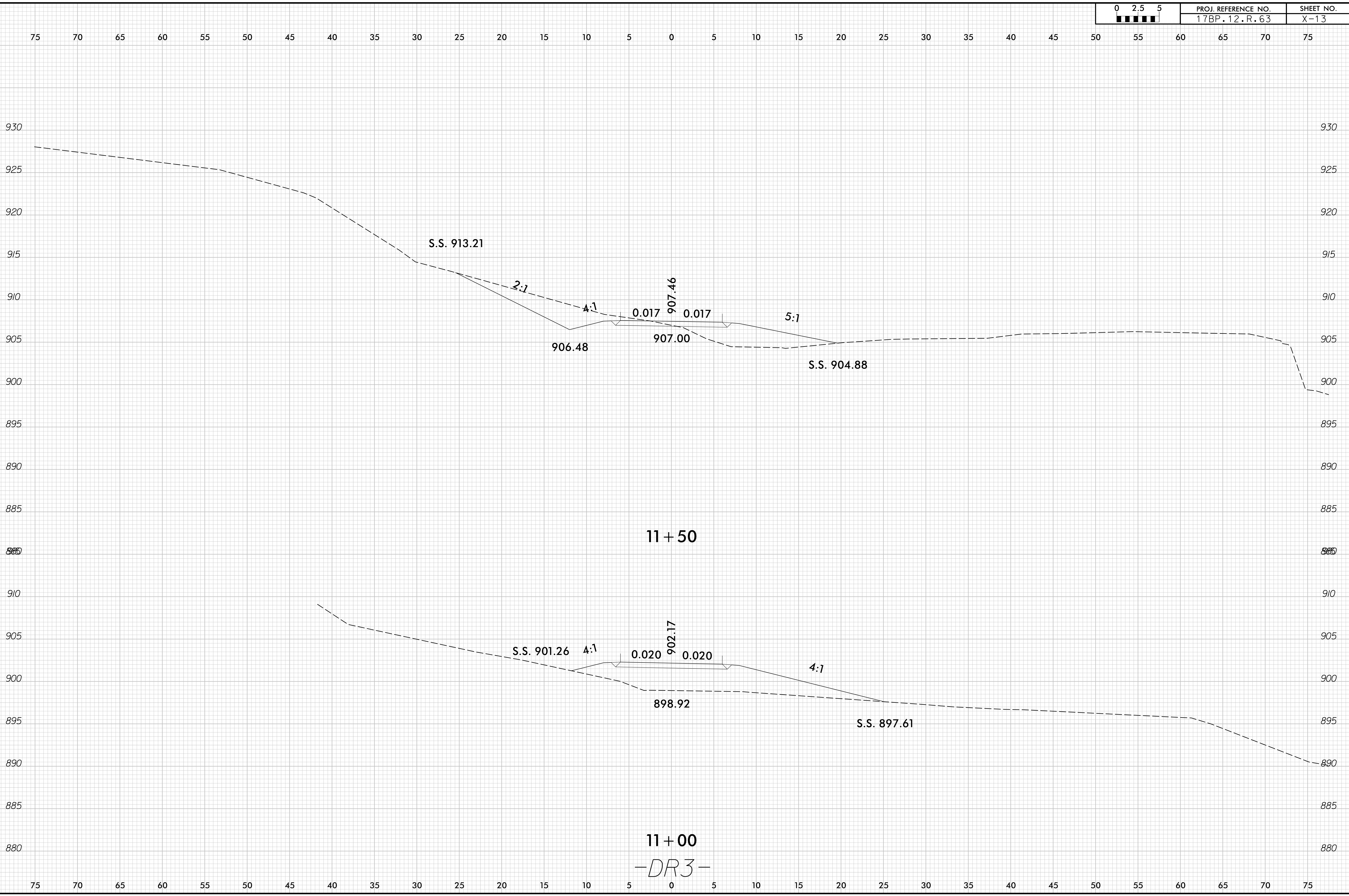


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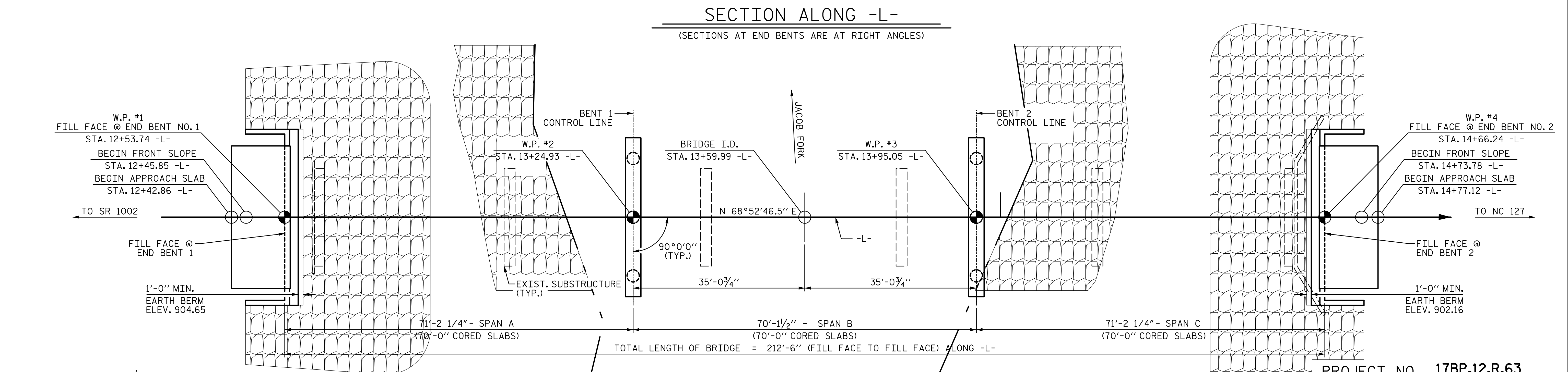
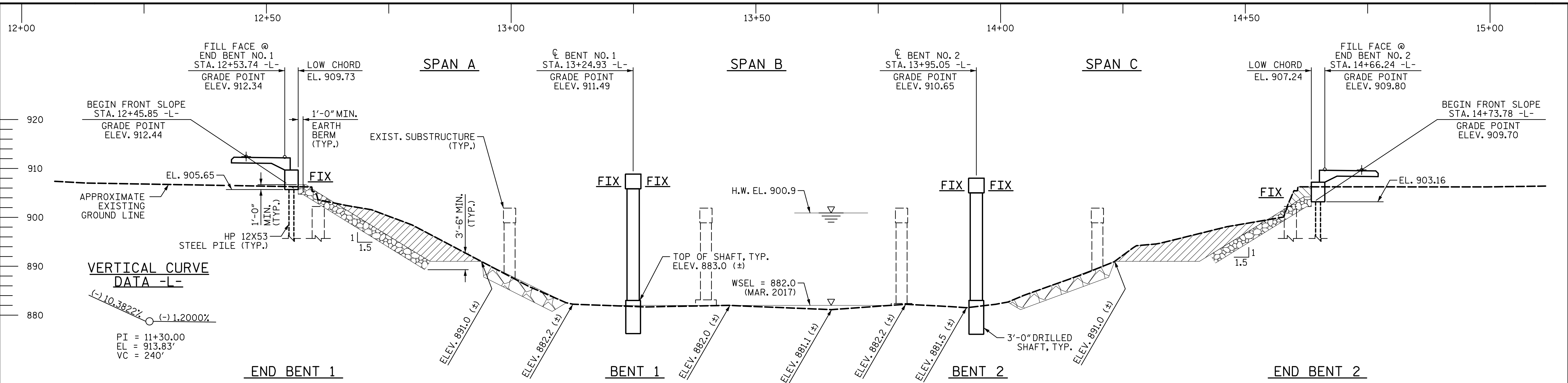
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0 2.5 5	PROJ. REFERENCE NO. 17BP.12.R.63	SHEET NO. X-13
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11+50
11+00
-DR3-



NOTES:

END BENTS AND BENTS ARE PARALLEL.
 PILES NOT SHOWN IN PLAN VIEW FOR CLARITY.
 CORED SLABS ARE PARALLEL TO CL SURVEY -L-

HYDRAULIC DATA

DESIGN DISCHARGE	8100 CFS
FREQUENCY OF DESIGN FLOOD	25 YR.
DESIGN HIGH WATER ELEVATION	898.7
DRAINAGE AREA	80.1 SQ. MI.
BASE DISCHARGE (Q 100)	11100 CFS
BASE HIGH WATER ELEVATION	900.9

OVERTOPPING DATA

OVERTOPPING DISCHARGE	30000 CFS
FREQUENCY OF OVERTOPPING FLOOD	500+ YR.
OVERTOPPING FLOOD ELEVATION	909.5

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

North Carolina Professional Seal
 SEAL 34955
 TOWNSEND, J. TOWNSEND
 3/27/2023

PROJECT NO. **17BP.12.R.63**
CATAWBA COUNTY
 STATION: **13+59.99 -L-**
 REPLACES BRIDGE #170059

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

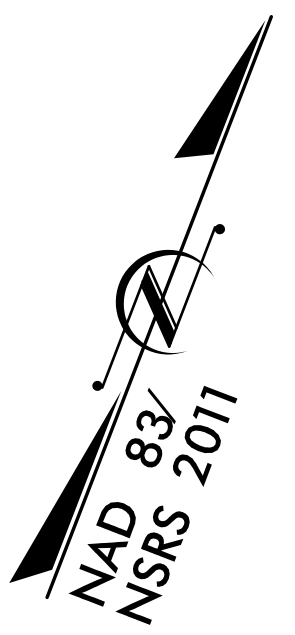
GENERAL DRAWING
 FOR BRIDGE 59
 SR 1120 (GREEDY HWY RD)
 OVER JACOB FORK
 BETWEEN SR 1002 AND NC 127

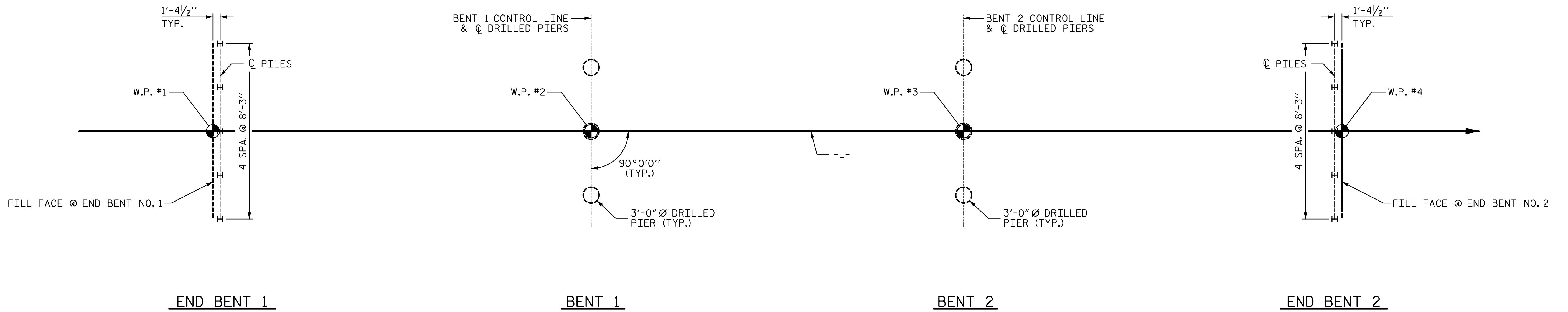
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
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SHEET NO. S-1
 TOTAL SHEETS 18

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DRAWN BY: DKA DATE: 03-23
 CHECKED BY: CMT DATE: 03-23
 DESIGN ENGINEER OF RECORD: T. TOWNSEND DATE: 03-23





FOUNDATION LAYOUT PLAN

ALL PILES ARE HP 12 X 53 STEEL PILES

FOUNDATION NOTES:

- 1) FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
- 2) PILES AT END BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 100 TONS PER PILE.
- 3) DRIVE PILES AT END BENT NO.1 TO A REQUIRED DRIVING RESISTANCE OF 170 TONS PER PILE.
- 4) PILES AT END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 100 TONS PER PILE.
- 5) DRIVE PILES AT END BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 170 TONS PER PILE.
- 6) STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENT NO.1 AND END BENT NO.2. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
- 7) FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
- 8) DRILLED PIERS AT BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 400 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 5 TSF.
- 9) PERMANENT STEEL CASINGS ARE REQUIRED FOR DRILLED PIERS AT BENT NO.1. DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 879.9 FT (LT) WITHOUT PRIOR APPROVAL FROM THE ENGINEER.
- 10) INSTALL PERMANENT STEEL CASINGS AT BENT NO.1 BY VIBRATING, SCREWING OR DRIVING PERMANENT CASINGS BEFORE EXCAVATING OR DISTURBING ANY MATERIAL BELOW ELEVATION 881.5 FT.
- 11) INSTALL DRILLED PIERS AT BENT NO.1 TO A TIP ELEVATION NO HIGHER THAN 871.0 FT WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 8.5 FT INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.
- 12) DRILLED PIERS AT BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 400 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 5 TSF.
- 13) PERMANENT STEEL CASINGS ARE REQUIRED FOR DRILLED PIERS AT BENT NO.2. DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 878.2 FT (LT) AND 880.5 FT (RT) WITHOUT PRIOR APPROVAL FROM THE ENGINEER.
- 14) INSTALL PERMANENT STEEL CASINGS AT BENT NO.2 BY VIBRATING, SCREWING OR DRIVING PERMANENT CASINGS BEFORE EXCAVATING OR DISTURBING ANY MATERIAL BELOW ELEVATION 881.5 FT.
- 15) INSTALL DRILLED PIERS AT BENT NO.2 TO A TIP ELEVATION NO HIGHER THAN 870.0 FT (LT) AND 872 FT (RT) WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 8.5 FT INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.
- 16) SID INSPECTIONS MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS. FOR SID INSPECTIONS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
- 17) CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. FOR CSL TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
- 18) THE SCOUR CRITICAL ELEVATION FOR BENT NO.1 AND BENT NO.2 IS ELEVATION 880.5 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

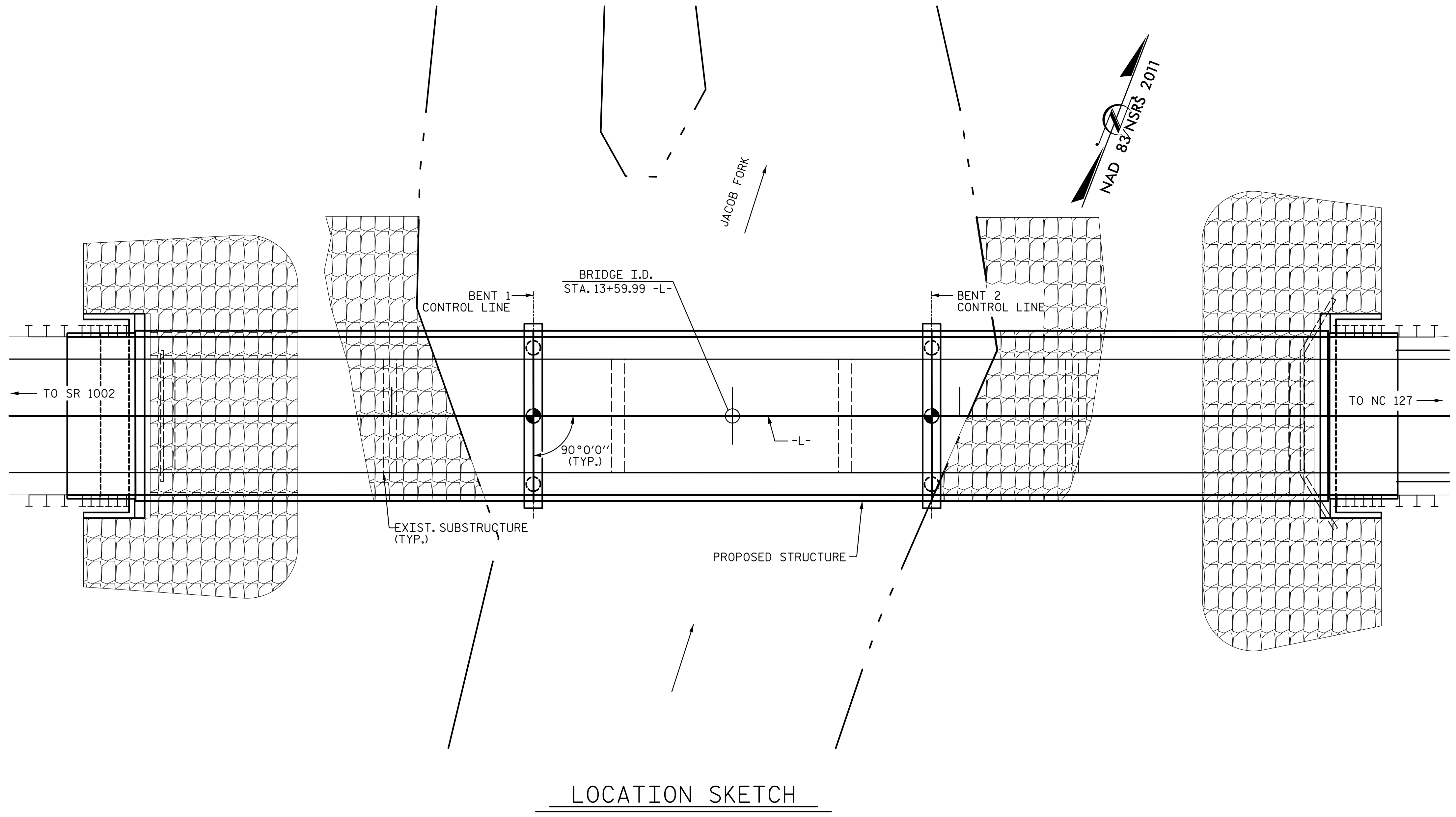
PROJECT NO. 17BP.12.R.63
CATAWBA COUNTY
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DRAWN BY : <u>KES</u> DATE : <u>03-23</u>	DESIGN ENGINEER OF RECORD: <u>T. TOWNSEND</u> DATE : <u>03-23</u>
CHECKED BY : <u>CMT</u> DATE : <u>03-23</u>	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH FOUNDATION LAYOUT																	
	REVISIONS																		
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>NO.</th> <th>BY:</th> <th>DATE:</th> <th>NO.</th> <th>BY:</th> <th>DATE:</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td></td> <td></td> <td style="text-align: center;">3</td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;">2</td> <td></td> <td></td> <td style="text-align: center;">4</td> <td></td> <td></td> </tr> </tbody> </table>	NO.	BY:	DATE:	NO.	BY:	DATE:	1			3			2			4		
NO.	BY:	DATE:	NO.	BY:	DATE:														
1			3																
2			4																

B.M. #1: RR SPIKE IN BASE OF 14" MAPLE -L- STA. 15+17.00 46.00' LT., EL. 911.53'



NOTES:

- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
- THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
- THE EXISTING STRUCTURE CONSISTING OF 5 SPANS AT 40'-0", 20'-2" CLEAR ROADWAY WIDTH, TIMBER DECK ON STEEL BEAMS, ON CONCRETE CAPS, SHALL BE REMOVED. THE EXISTING BRIDGE IS CURRENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THE LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT. FOR REMOVAL OF EXISTING STRUCTURE, SEE PROJECT SPECIAL PROVISIONS.
- REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.
- 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 COSTS INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATING SCOUR AT BRIDGES."
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.
- ASPHALT WEARING SURFACE IS INCLUDED IN THE ROADWAY QUANTITY ON ROADWAY PLANS.
- AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE CAUSEWAY, THE CLASS II RIP RAP USED IN THE CAUSEWAY MAY BE PLACED AS RIP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 13+59.99 -L-.

DATE: 3/3/2023 TIME: 1:06:40 PM FILE: I:\31790A - Div 12 Bridge 59 (Catawba Co)\Dwg\401_005_17BP.12.R.63_SML_002_003_170059.dgn

TOTAL BILL OF MATERIAL													
	CONSTRUCTION, MAINTENANCE & REMOVAL OF TEMP. ACCESS AT STA 13+59.99 -L-	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	3'-0" DIA DRILLED PIERS IN SOIL	3'-0" DIA DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASINGS FOR 3'-0" DIA. DRILLED PIER	SID INSPECTIONS	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL
	LUMP SUM	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	LBS.
SUPERSTRUCTURE							1						
END BENT NO. 1										20.2		2449	
BENT NO. 1				6	33	9		1		33.5		9945	1850
BENT NO. 2				5	34	11		1		33.8		9972	1856
END BENT NO. 2										20.2		2449	
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	11	67	20	1	2	LUMP SUM	107.7	LUMP SUM	24815	3706

TOTAL BILL OF MATERIAL CONT'D										
	PILE DRIVING EQUIPMENT SETUP FOR 12" STEEL PILES	HP 12X53 STEEL PILES	STEEL PILE POINTS	VERTICAL CONCRETE BARRIER RAIL	PLAIN RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLAB UNITS		
		NO.	LIN. FT.	EACH	LIN. FT.	TONS	SQ. YD.	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE								LUMP SUM	30	2100
END BENT NO. 1	5	5	125	5		270	330			
BENT NO. 1										
BENT NO. 2										
END BENT NO. 2	5	5	100	5		270	330			
TOTAL	10	10	225	10	420.75	540	660	LUMP SUM	30	2100

PROJECT NO. 17BP.12.R.63
CATAWBA COUNTY
 STATION: 13+59.99 -L-

DRAWN BY : CTB DATE : 03-23 DESIGN ENGINEER OF RECORD: T. TOWNSEND DATE : 03-23
 CHECKED BY : CMT DATE : 03-23

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE 59
 SR 1120 (GREEDY HWY RD)
 OVER JACOB FORK
 BETWEEN SR 1002 AND NC 127

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3 TOTAL SHEETS 18
1			3			
2			4			

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

LEVEL	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								
						LIVELOAD FACTORS	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)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	1.006	--	1.75	0.273	1.03	70'	EL	34.5	0.507	1.32	70'	EL	6.9	0.80	0.273	1.01	70'	EL	34.5		
	HL-93(0pr)	N/A	--	1.341	--	1.35	0.273	1.34	70'	EL	34.5	0.507	1.72	70'	EL	6.9	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.306	47.02	1.75	0.273	1.34	70'	EL	34.5	0.507	1.65	70'	EL	6.9	0.80	0.273	1.31	70'	EL	34.5		
	HS-20(0pr)	36.000	--	1.74	62.64	1.35	0.273	1.74	70'	EL	34.5	0.507	2.14	70'	EL	6.9	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.917	39.379	1.4	0.273	3.75	70'	EL	34.5	0.507	4.87	70'	EL	6.9	0.80	0.273	2.92	70'	EL	34.5	
		SNGARBS2	20.000	--	2.187	43.741	1.4	0.273	2.81	70'	EL	34.5	0.507	3.47	70'	EL	6.9	0.80	0.273	2.19	70'	EL	34.5	
		SNAGRIS2	22.000	--	2.077	45.69	1.4	0.273	2.67	70'	EL	34.5	0.507	3.23	70'	EL	6.9	0.80	0.273	2.08	70'	EL	34.5	
		SNCOTTS3	27.250	--	1.452	39.565	1.4	0.273	1.87	70'	EL	34.5	0.507	2.43	70'	EL	6.9	0.80	0.273	1.45	70'	EL	34.5	
		SNAGGRS4	34.925	--	1.218	42.554	1.4	0.273	1.57	70'	EL	34.5	0.507	2.03	70'	EL	6.9	0.80	0.273	1.22	70'	EL	34.5	
		SNS5A	35.550	--	1.191	42.346	1.4	0.273	1.53	70'	EL	34.5	0.507	2.06	70'	EL	6.9	0.80	0.273	1.19	70'	EL	34.5	
		SNS6A	39.950	--	1.095	43.747	1.4	0.273	1.41	70'	EL	34.5	0.507	1.88	70'	EL	6.9	0.80	0.273	1.10	70'	EL	34.5	
	SNS7B	42.000	--	1.043	43.801	1.4	0.273	1.34	70'	EL	34.5	0.507	1.85	70'	EL	6.9	0.80	0.273	1.04	70'	EL	34.5		
	TTST	TNAGRIT3	33.000	--	1.336	44.087	1.4	0.273	1.72	70'	EL	34.5	0.507	2.23	70'	EL	6.9	0.80	0.273	1.34	70'	EL	34.5	
		TNT4A	33.075	--	1.342	44.401	1.4	0.273	1.72	70'	EL	34.5	0.507	2.17	70'	EL	6.9	0.80	0.273	1.34	70'	EL	34.5	
		TNT6A	41.600	--	1.1	45.746	1.4	0.273	1.41	70'	EL	34.5	0.507	1.98	70'	EL	6.9	0.80	0.273	1.10	70'	EL	34.5	
		TNT7A	42.000	--	1.106	46.462	1.4	0.273	1.42	70'	EL	34.5	0.507	1.94	70'	EL	6.9	0.80	0.273	1.11	70'	EL	34.5	
		TNT7B	42.000	--	1.147	48.18	1.4	0.273	1.47	70'	EL	34.5	0.507	1.8	70'	EL	6.9	0.80	0.273	1.15	70'	EL	34.5	
		TNAGRIT4	43.000	--	1.089	46.838	1.4	0.273	1.4	70'	EL	34.5	0.507	1.74	70'	EL	6.9	0.80	0.273	1.09	70'	EL	34.5	
TNAGT5A		45.000	--	1.026	46.175	1.4	0.273	1.32	70'	EL	34.5	0.507	1.74	70'	EL	6.9	0.80	0.273	1.03	70'	EL	34.5		
TNAGT5B	45.000	3	1.013	45.579	1.4	0.273	1.3	70'	EL	34.5	0.507	1.66	70'	EL	6.9	0.80	0.273	1.01	70'	EL	34.5			

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{DW}
	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:

- 1.
- 2.
- 3.
- 4.

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

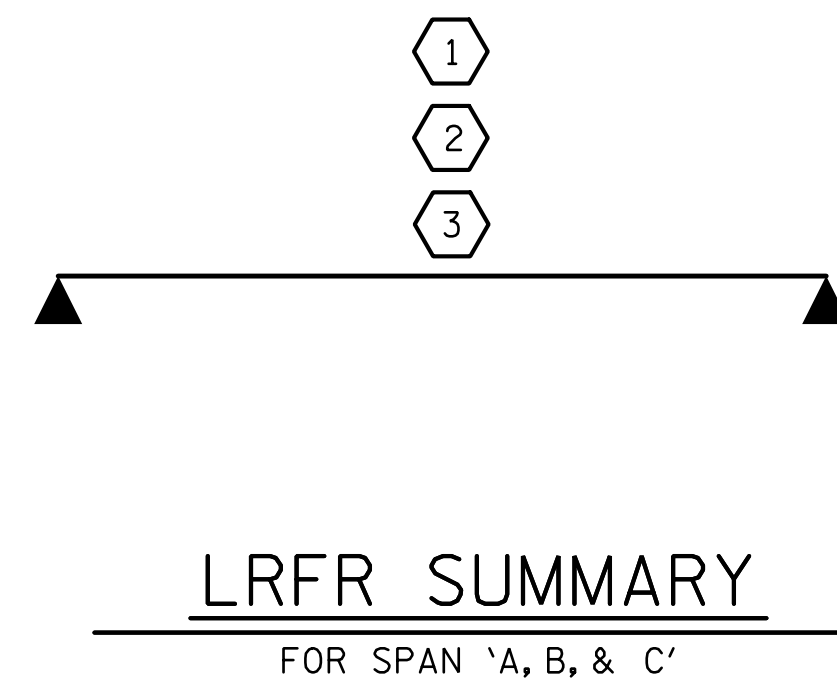
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING ***

*** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



PROJECT NO. 17BP.12.R.63
CATAWBA COUNTY
 STATION: 13+59.99 -L-

DATE: 3/3/2023 TIME: 1:06:41 PM
 FILE: I:\3790A - Div 12 Bridge 59 (Catawba Co)\Dwg\401-007-17BP.12.R.63.SMULLLRFR_004.170059.dgn

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 CHECKED BY : CMT DATE : 03-23
 DESIGN ENGINEER OF RECORD: T. TOWNSEND DATE : 03-23

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 LRFR SUMMARY FOR
 70' CORED SLAB UNIT
 90° SKEW
 (NON-INTERSTATE TRAFFIC)

3/27/2023

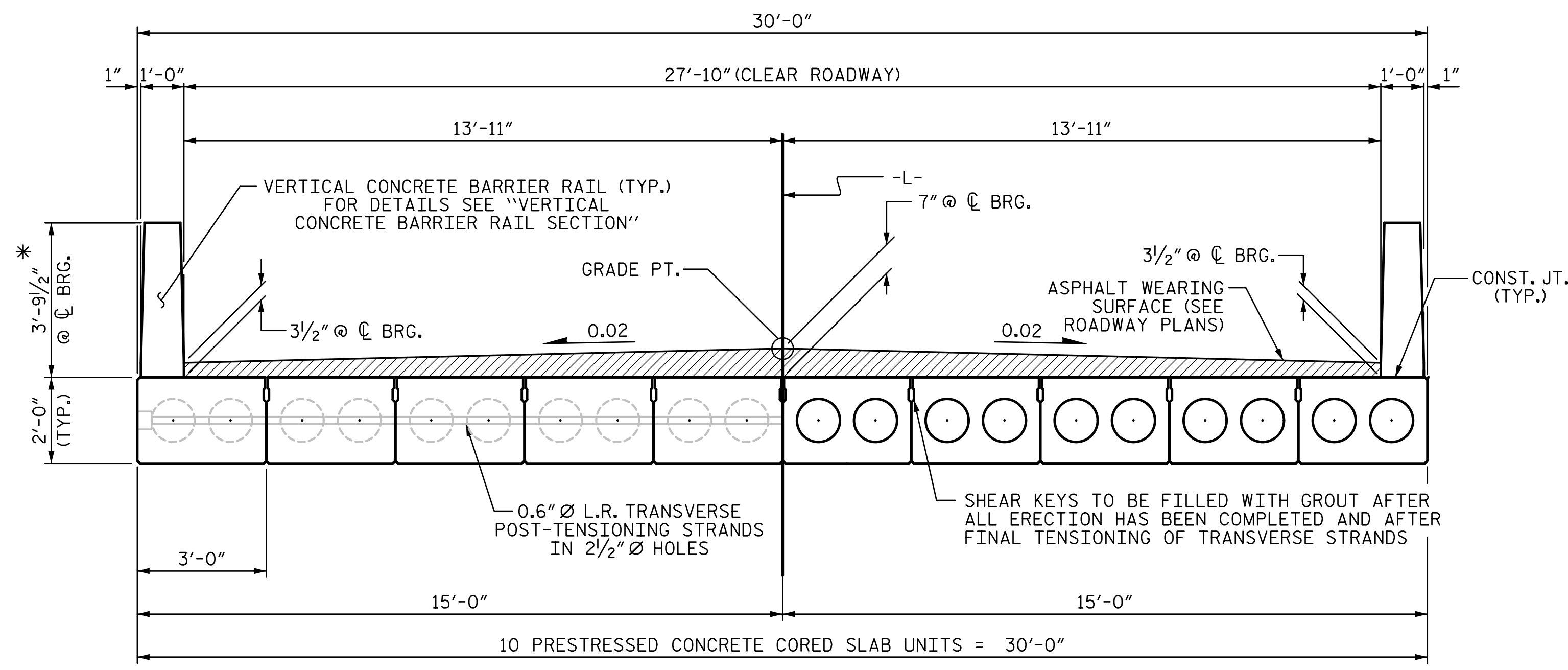
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Mattern & Craig
 ENGINEERS-SURVEYORS
 12 BROAD STREET
 ASHEVILLE, NORTH CAROLINA 28801
 (828) 254-2201
 FAX (828) 254-4650
 NC LIC. NO. C-1154

REVISIONS

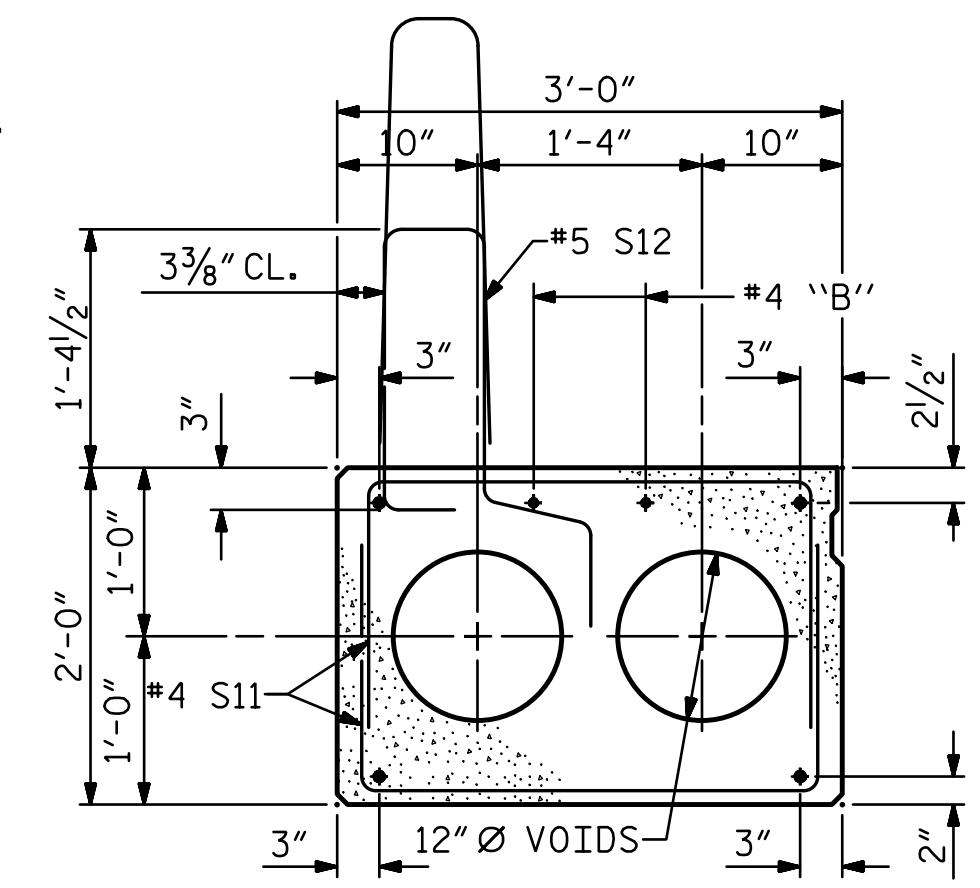
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-4
TOTAL SHEETS 18

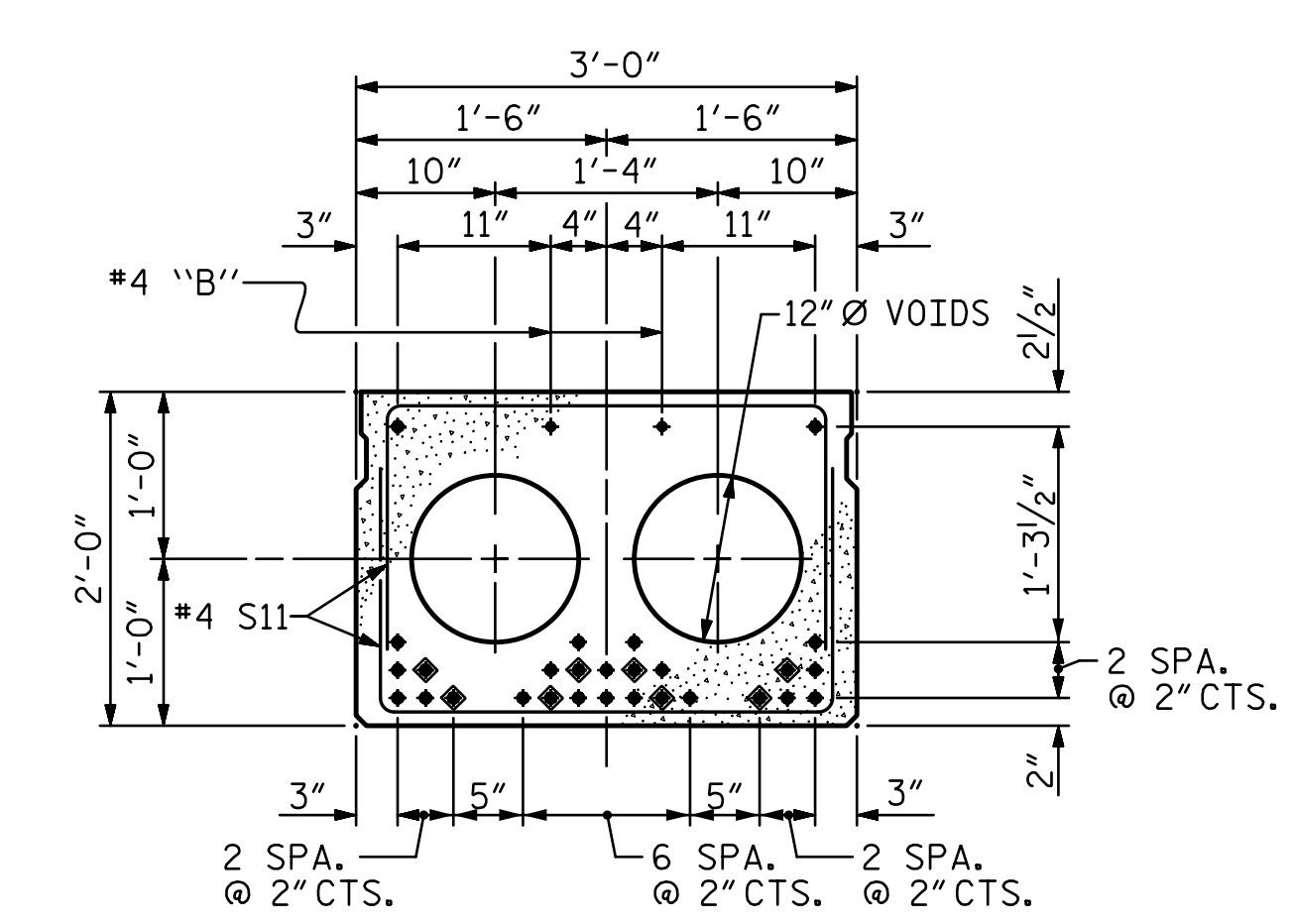


HALF SECTION AT INTERMEDIATE DIAPHRAGMS
TYPICAL SECTION
 HALF SECTION THROUGH VOIDS

* - 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.



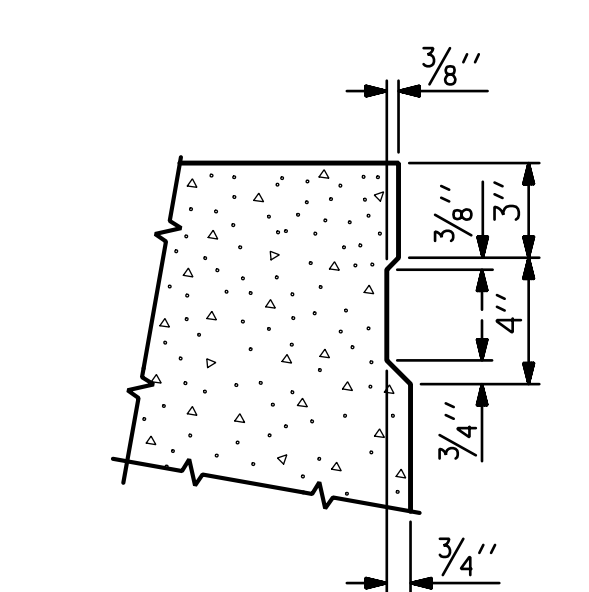
EXTERIOR SLAB SECTION
 (FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)



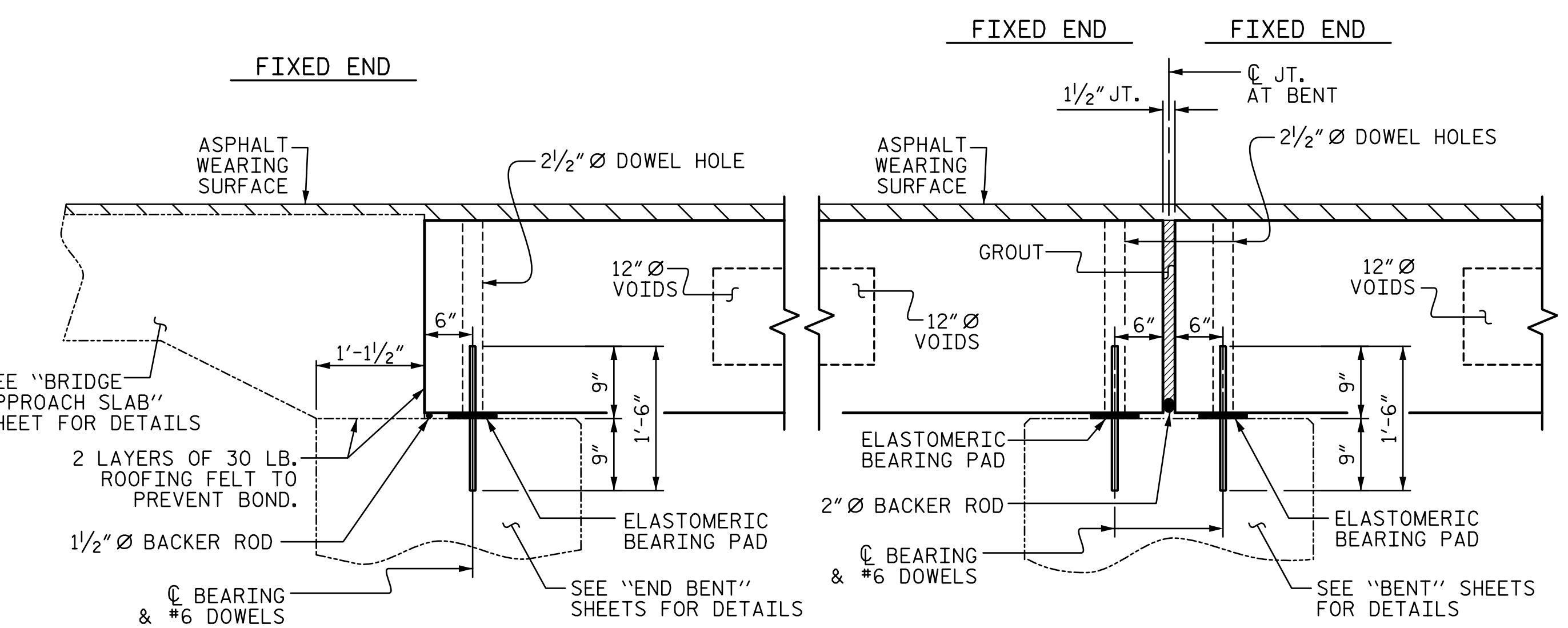
INTERIOR SLAB SECTION (70' UNIT)
 (28 STRANDS REQUIRED)
0.6" Ø LOW RELAXATION STRAND LAYOUT

- ◆ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 12'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.
- OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED. IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE CORED SLAB UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

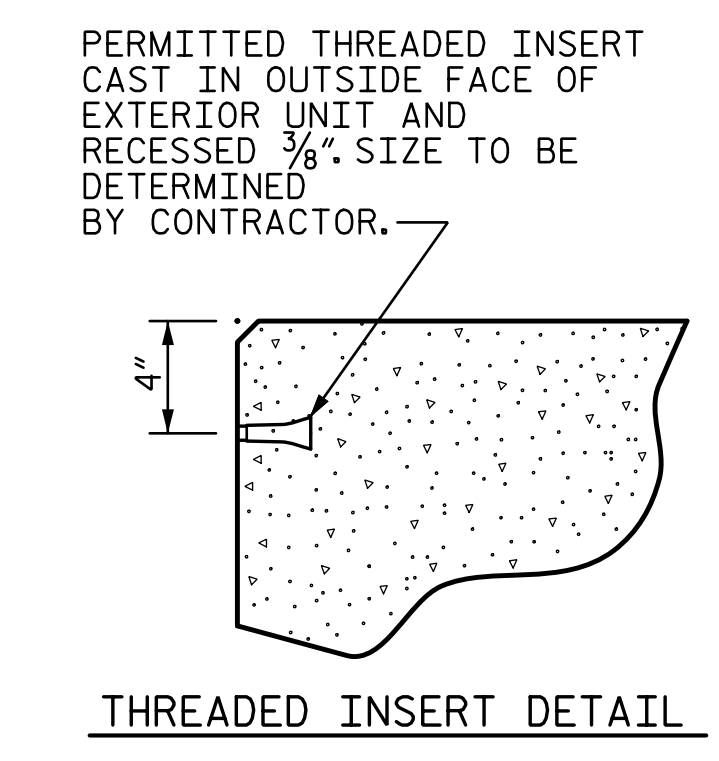
DEBONDING LEGEND



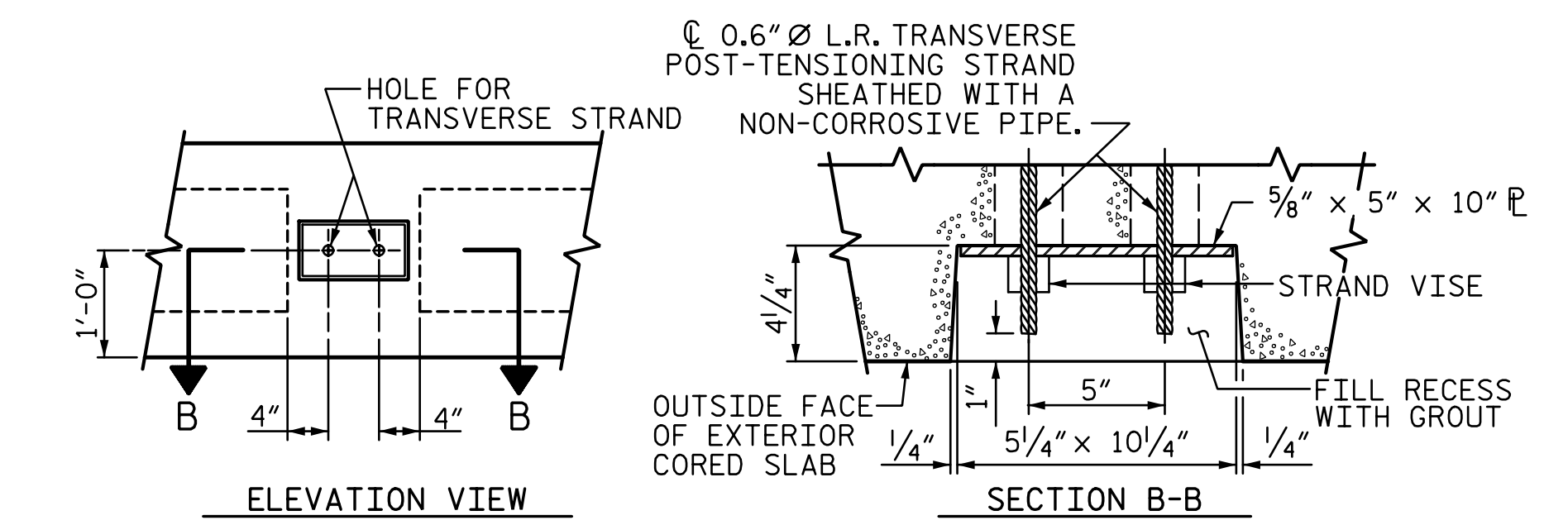
SHEAR KEY DETAIL
 NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.



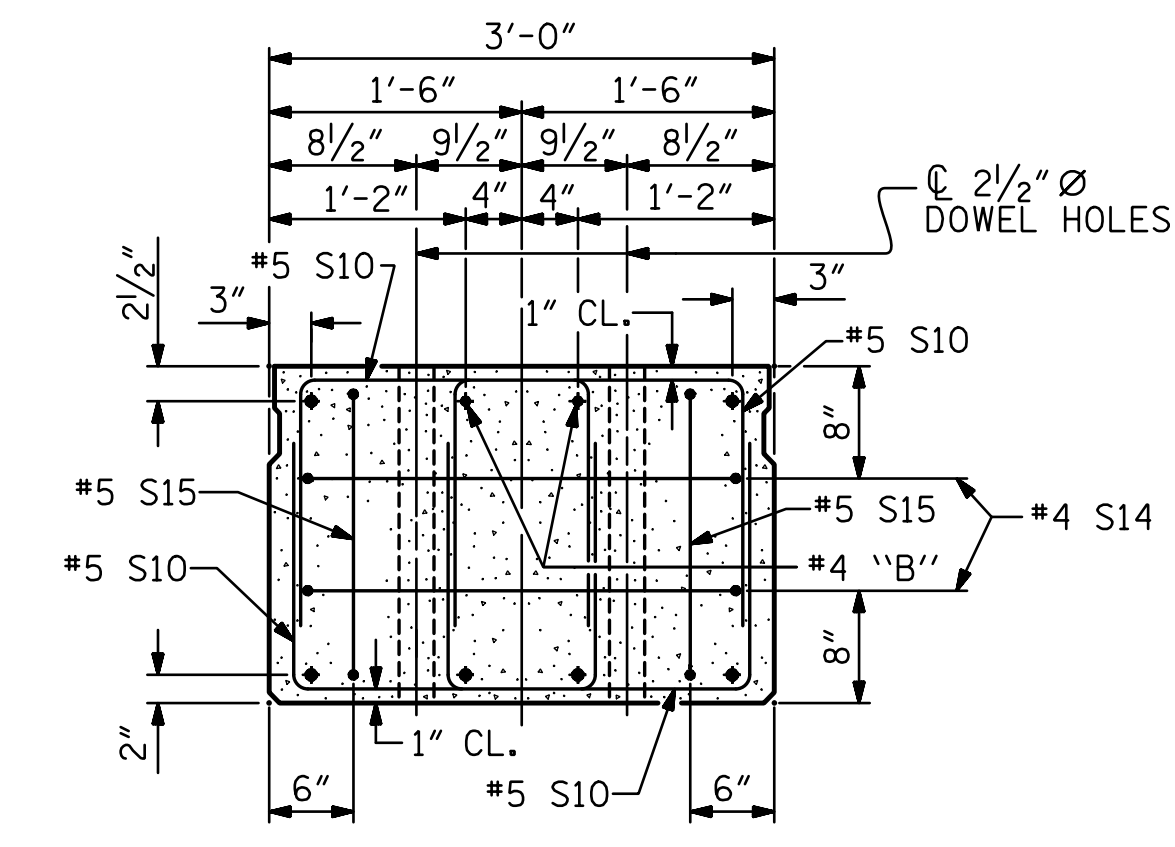
SECTION AT END BENT
SECTION AT BENT



THREADED INSERT DETAIL



ELEVATION VIEW
SECTION B-B
GRAUTED RECESS AT END OF POST-TENSIONED STRAND-CORED SLABS



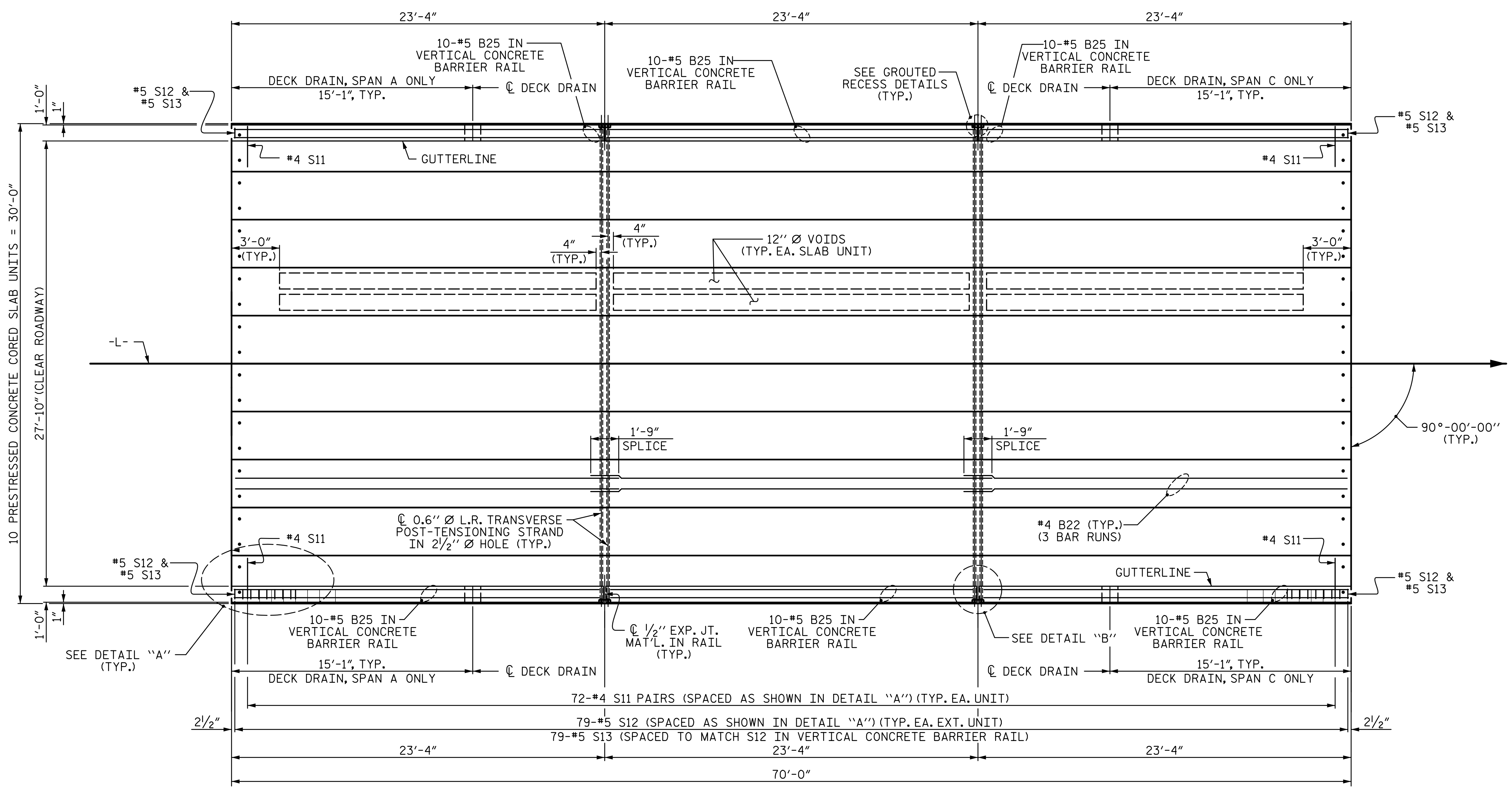
END ELEVATION
 SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.)
 INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.

PROJECT NO. **17BP.12.R.63**
CATAWBA COUNTY
 STATION: **13+59.99 -L-**

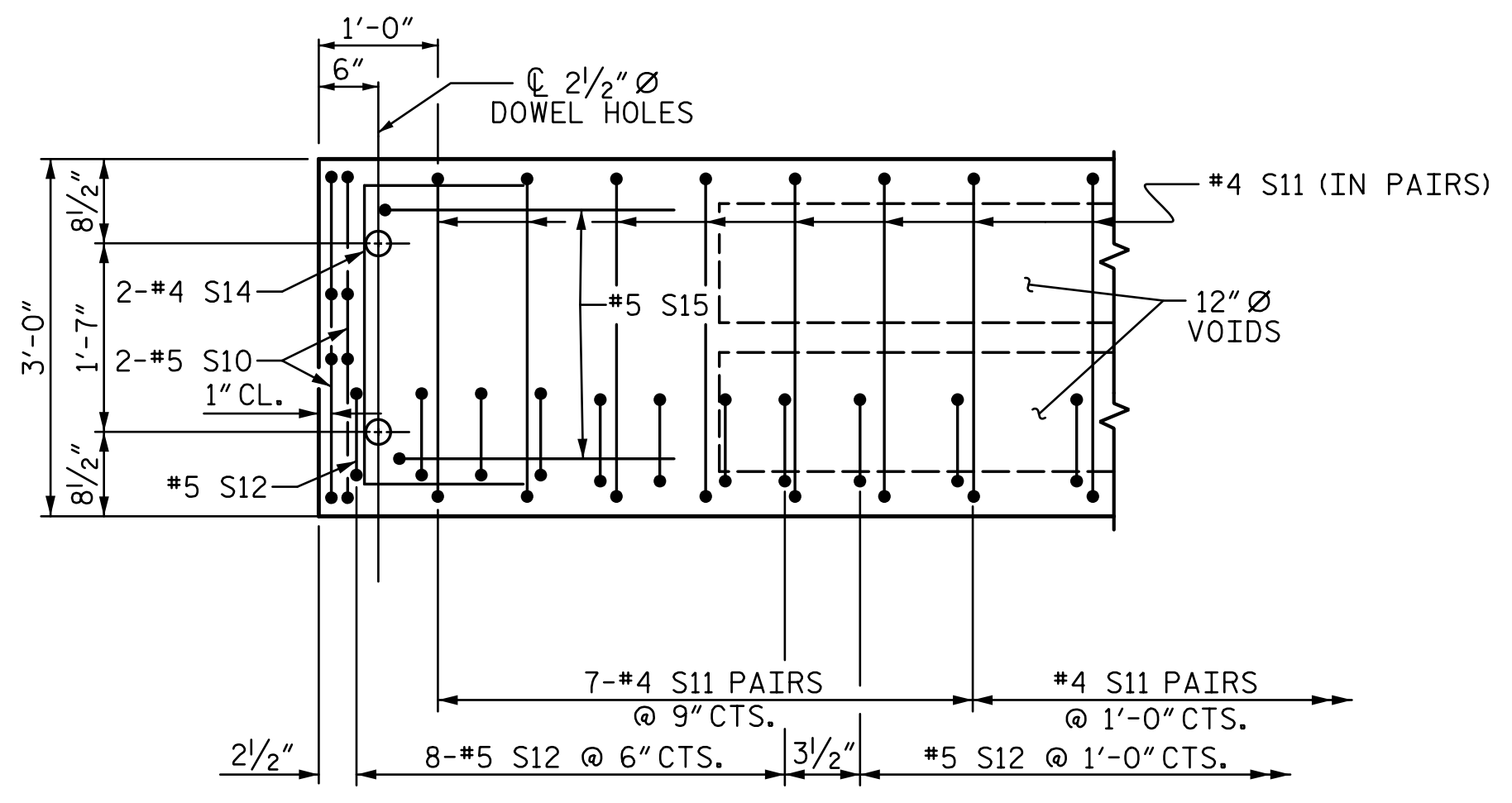
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD 3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLAB UNIT		
	3/27/2023				
	REVISIONS				
	NO.	BY:	DATE:	NO.	BY:
1			3		
2			4		
SHEET NO. S-5					
TOTAL SHEETS 18					

DATE: 3/3/2023 TIME: 1:06:43 PM FILE: I:\31790A - Div 12 Bridge 59 (Catawba Co)\Dwg\401-009-17BP.12.R.63_SML_CS_005_170059.dgn

DRAWN BY: **CTB** DATE: **03-23** DESIGN ENGINEER OF RECORD: **T. TOWNSEND** DATE: **03-23**
 CHECKED BY: **CMT** DATE: **03-23**

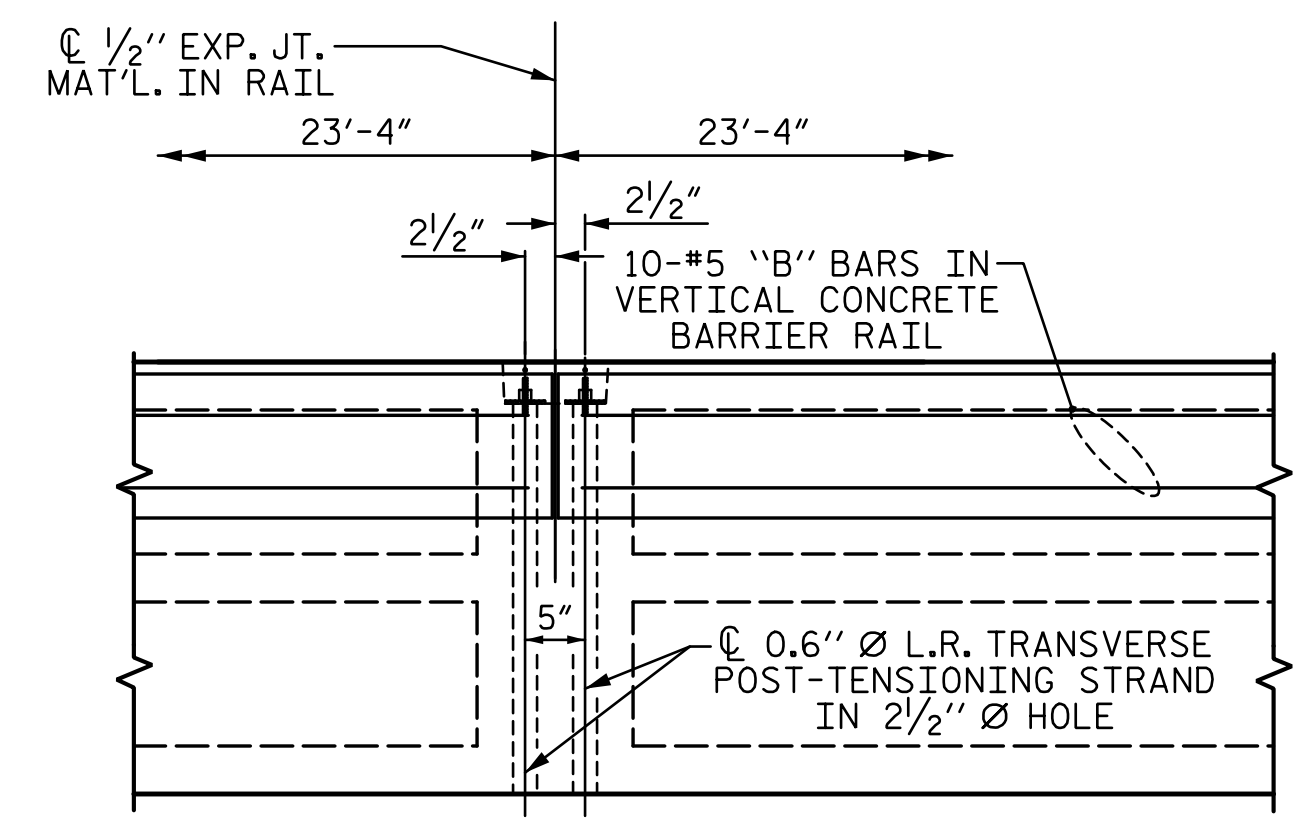


PLAN OF UNIT



DETAIL "A"

(TYPICAL EACH END OF UNIT)
NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S12 BARS.



DETAIL "B"

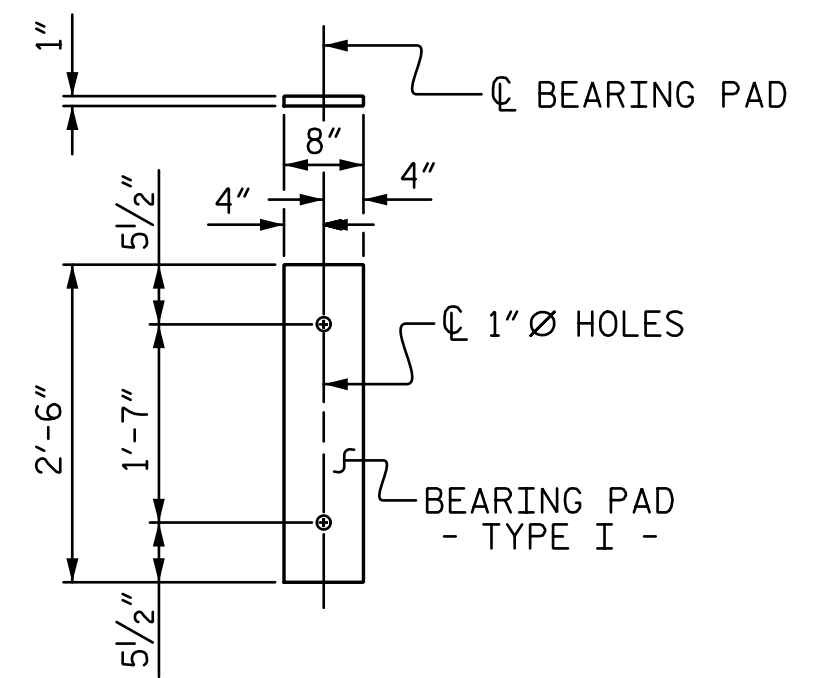
#4 S11 BARS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO GROUDED RECESS AND 2 1/2" Ø TRANSVERSE POST-TENSIONING STRAND HOLES

PROJECT NO. 17BP.12.R.63
CATAWBA COUNTY
 STATION: 13+59.99 -L-

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH	
		PLAN OF 70' UNIT 27'-10" CLEAR ROADWAY 90° SKEW	
		3/27/2023	
REVISIONS			
NO.	BY:	DATE:	SHEET NO.
1			S-6
2			TOTAL SHEETS
			18

DATE: 3/3/2023 TIME: 1:06:46 PM
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 CHECKED BY : CMT DATE : 03-23



FIXED END
(TYPE I - 60 REQ'D)

ELASTOMERIC BEARING DETAILS

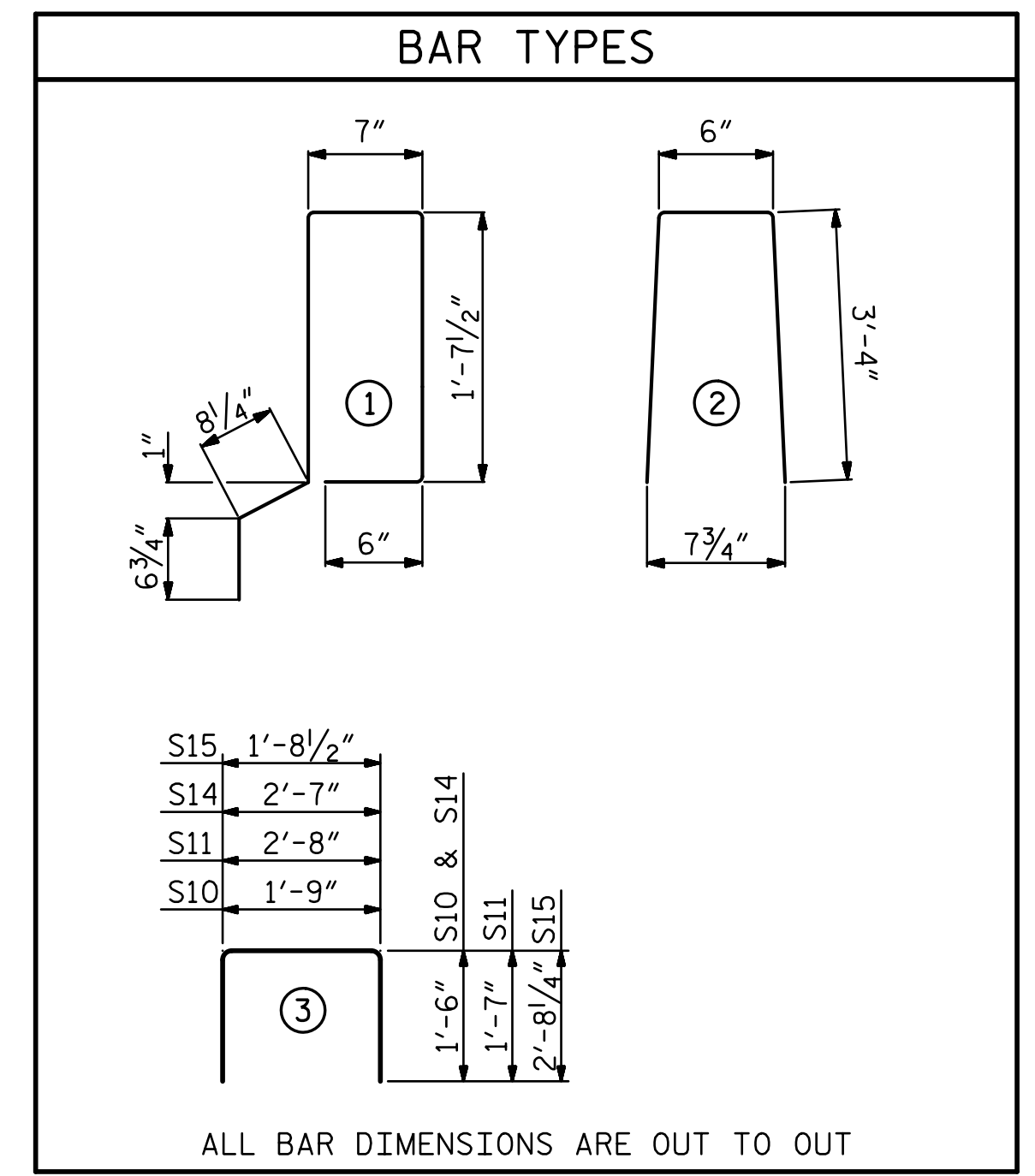
ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

DEAD LOAD DEFLECTION AND CAMBER	
70' CORED SLAB UNIT	3'-0" x 2'-0"
CAMBER (SLAB ALONE IN PLACE)	0.6" Ø L.R. STRAND
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	2 1/4" ↑
FINAL CAMBER	3/4" ↓
	1 1/2" ↑

** INCLUDES FUTURE WEARING SURFACE

CORED SLABS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
70' UNIT			
EXTERIOR C.S.	6	70'-0"	420'-0"
INTERIOR C.S.	24	70'-0"	1680'-0"
TOTAL			2100'-0"

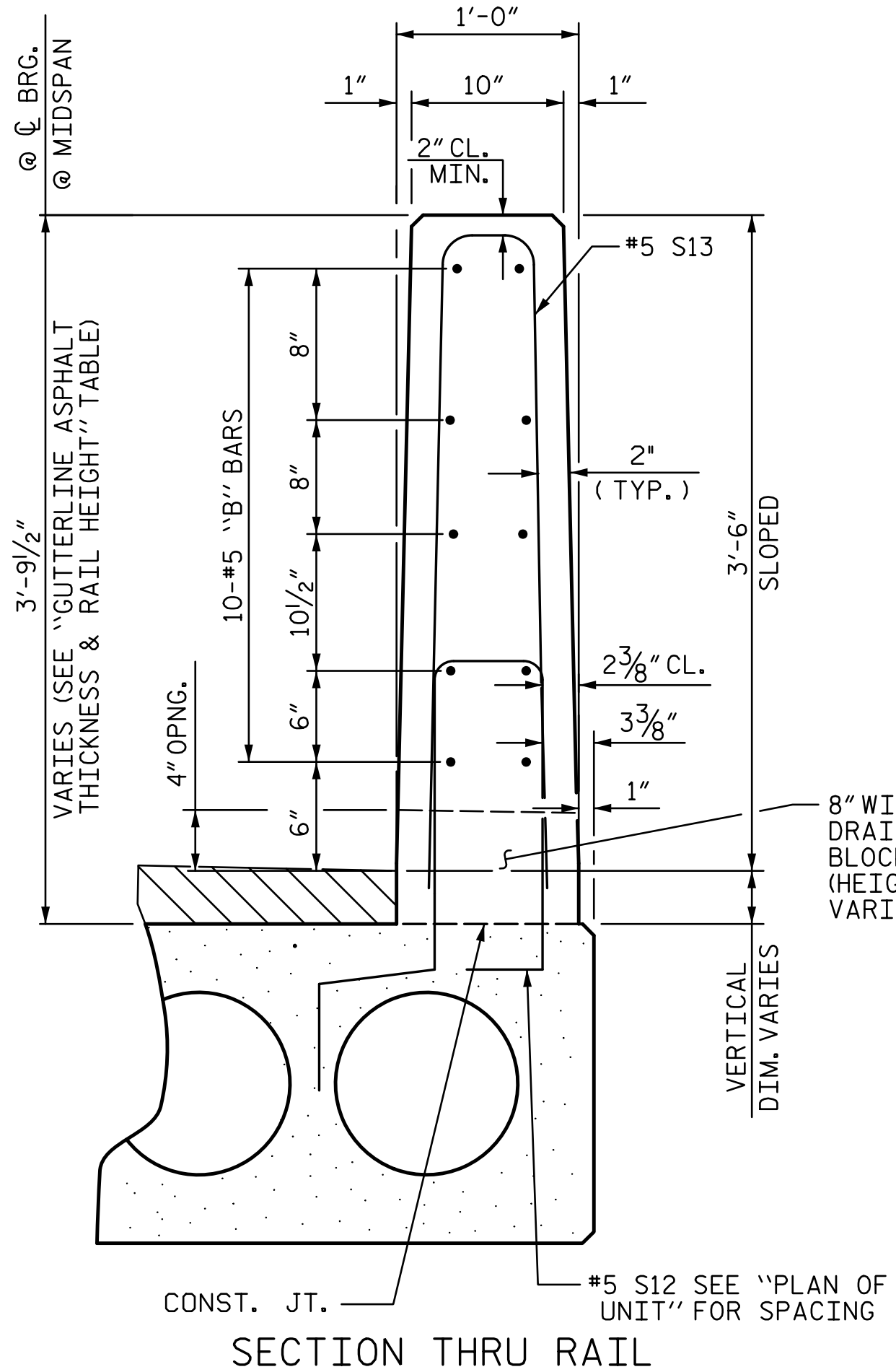
BILL OF MATERIAL FOR ONE 70' CORED SLAB UNIT							
		EXTERIOR UNIT			INTERIOR UNIT		
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B22	6	#4	STR	24'-6"	98	24'-6"	98
S10	8	#5	3	4'-9"	40	4'-9"	40
S11	144	#4	3	5'-10"	561	5'-10"	561
*S12	79	#5	1	5'-7"	460		
S14	4	#4	3	5'-7"	15	5'-7"	15
S15	4	#5	3	7'-1"	30	7'-1"	30
REINFORCING STEEL				LBS.	744	744	
*EPOXY COATED REINFORCING STEEL				LBS.	460		
7000 P.S.I. CONCRETE				CU. YDS.	11.8	11.8	
0.6" Ø L.R. STRANDS				No.	28	28	



ALL BAR DIMENSIONS ARE OUT TO OUT

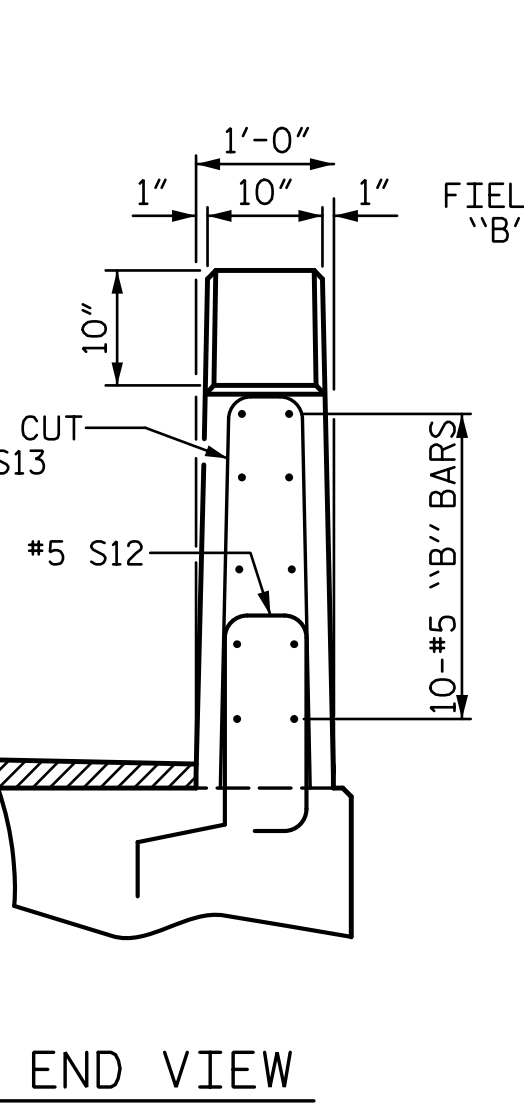
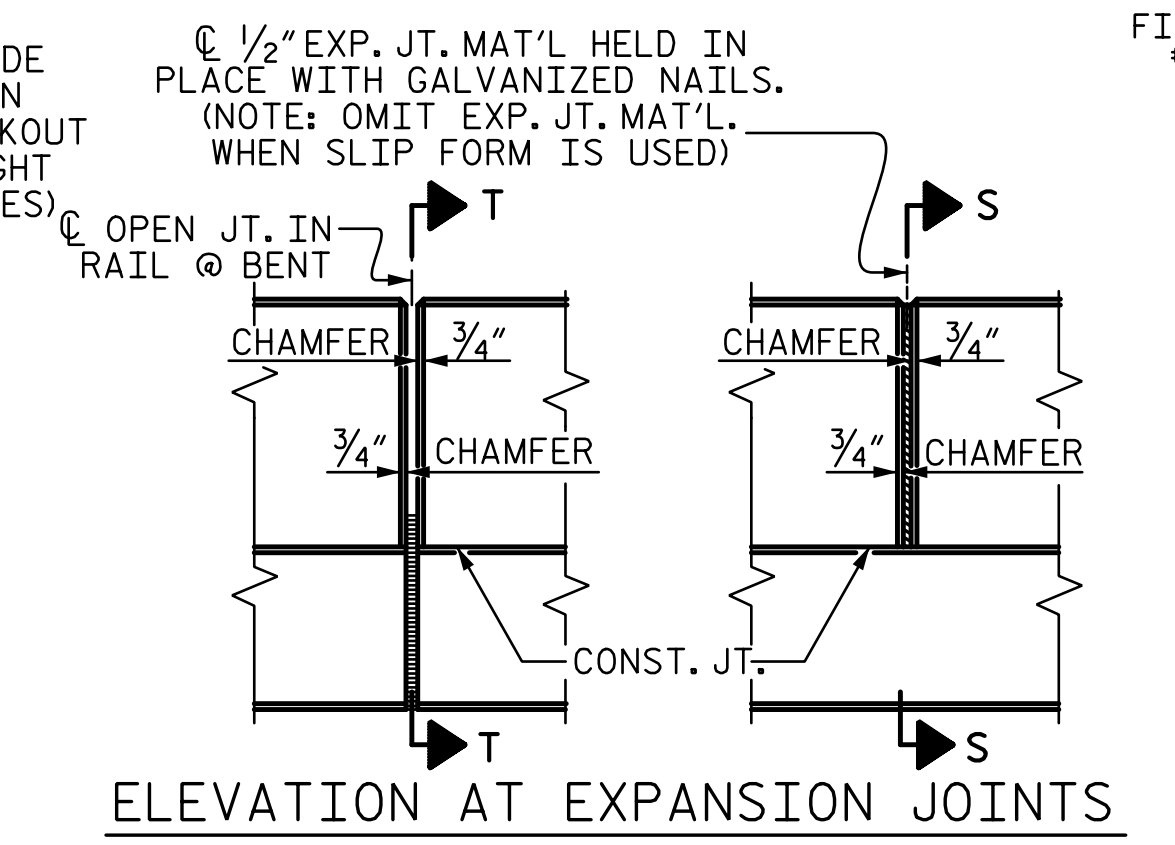
GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
	ASPHALT OVERLAY THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
70' UNITS	2"	3'-8"

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
70' UNIT						
*B25	60	180	#5	STR	22'-11"	4302
*S13	158	474	#5	2	7'-2"	3543
*EPOXY COATED REINFORCING STEEL				LBS.	7845	
CLASS AA CONCRETE				CU. YDS.	54.3	
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.	420.75	

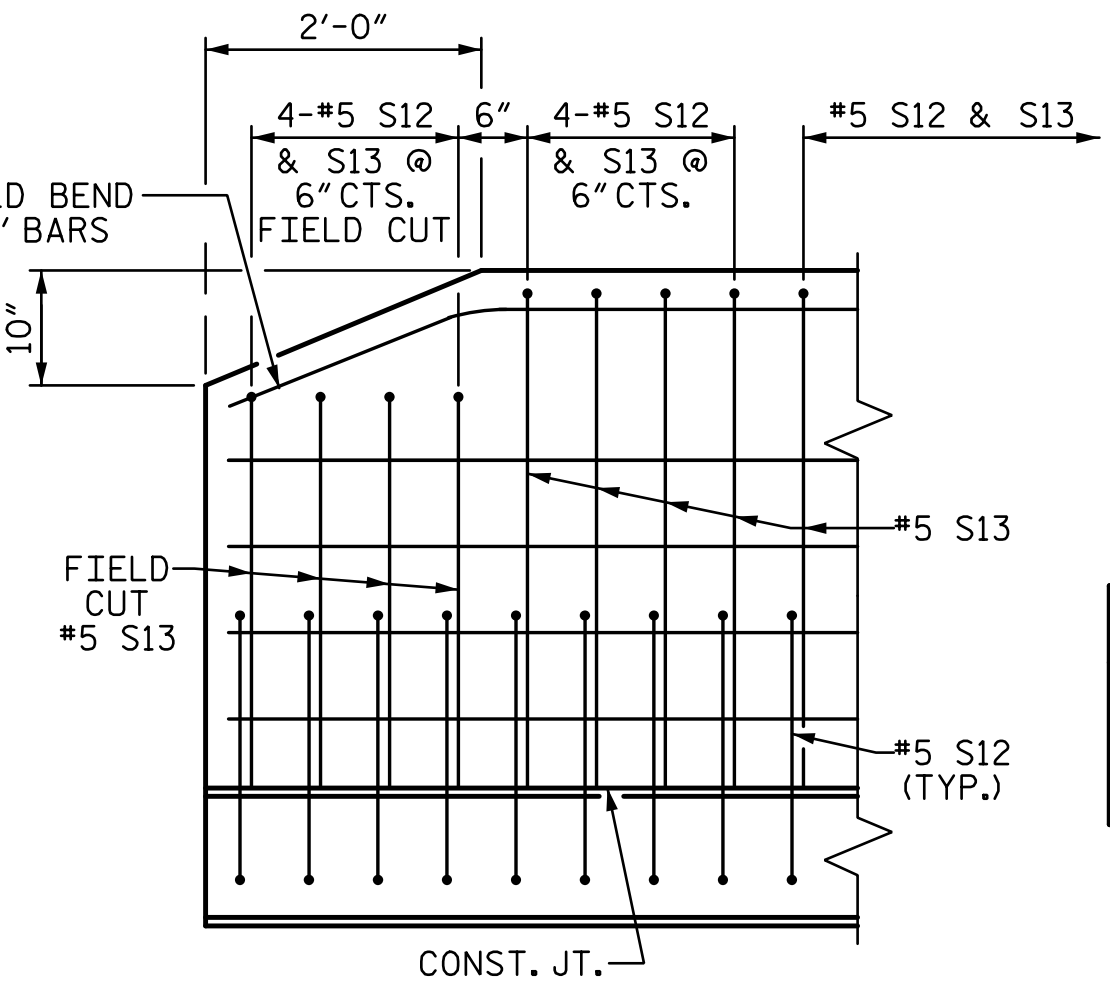


SECTION T-T
AT OPEN JOINT AT BENT
(THIS IS TO BE USED WHERE FOAM JOINT IS NOT USED)

SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)



END VIEW



SIDE VIEW

END OF RAIL DETAILS

CONCRETE RELEASE STRENGTH	
UNIT	PSI
70' UNITS	5500

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

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 CORED SLAB SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

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

THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF SLAB 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.

WHEN CORED SLABS ARE CAST, AN INTERNAL HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. AT LEAST SIX WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN THE REQUIRED STRENGTH SHOWN IN THE "CONCRETE RELEASE STRENGTH" TABLE.

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

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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 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.

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

MAINTAIN A SYMMETRIC TENSION FORCE BETWEEN EACH PAIR OF TRANSVERSE POST TENSIONING STRANDS IN THE DIAPHRAGM.

THE #4 S11 STIRRUPS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO THE GROUTED RECESS.

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 8". THE HEIGHT OF THE BLOCKOUT IN THE VERTICAL CONCRETE BARRIER RAIL SHALL EXTEND FROM THE TOP OF THE CORED SLAB UNIT TO THE TOP OF THE DRAIN OPENING.

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

PROJECT NO. 17BP.12.R.63

CATAWBA COUNTY

STATION: 13+59.99 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
3'-0" X 2'-0"
PRESTRESSED CONCRETE
CORED SLAB UNIT

3/27/2023

REVISIONS

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

SHEET NO. S-7
TOTAL SHEETS 18

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N.C. LIC. NO. C-1154

DATE: 3/3/2023
FILE: I:\31790A - Div 12 Bridge 59 (Catawba Co)\Dwg\401-013-17BP.12.R.63-SMU-CS-007-170059.dgn

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CHECKED BY: CMT DATE: 03-23
DESIGN ENGINEER OF RECORD: T. TOWNSEND DATE: 03-23

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 7/8" Ø 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" Ø 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.)

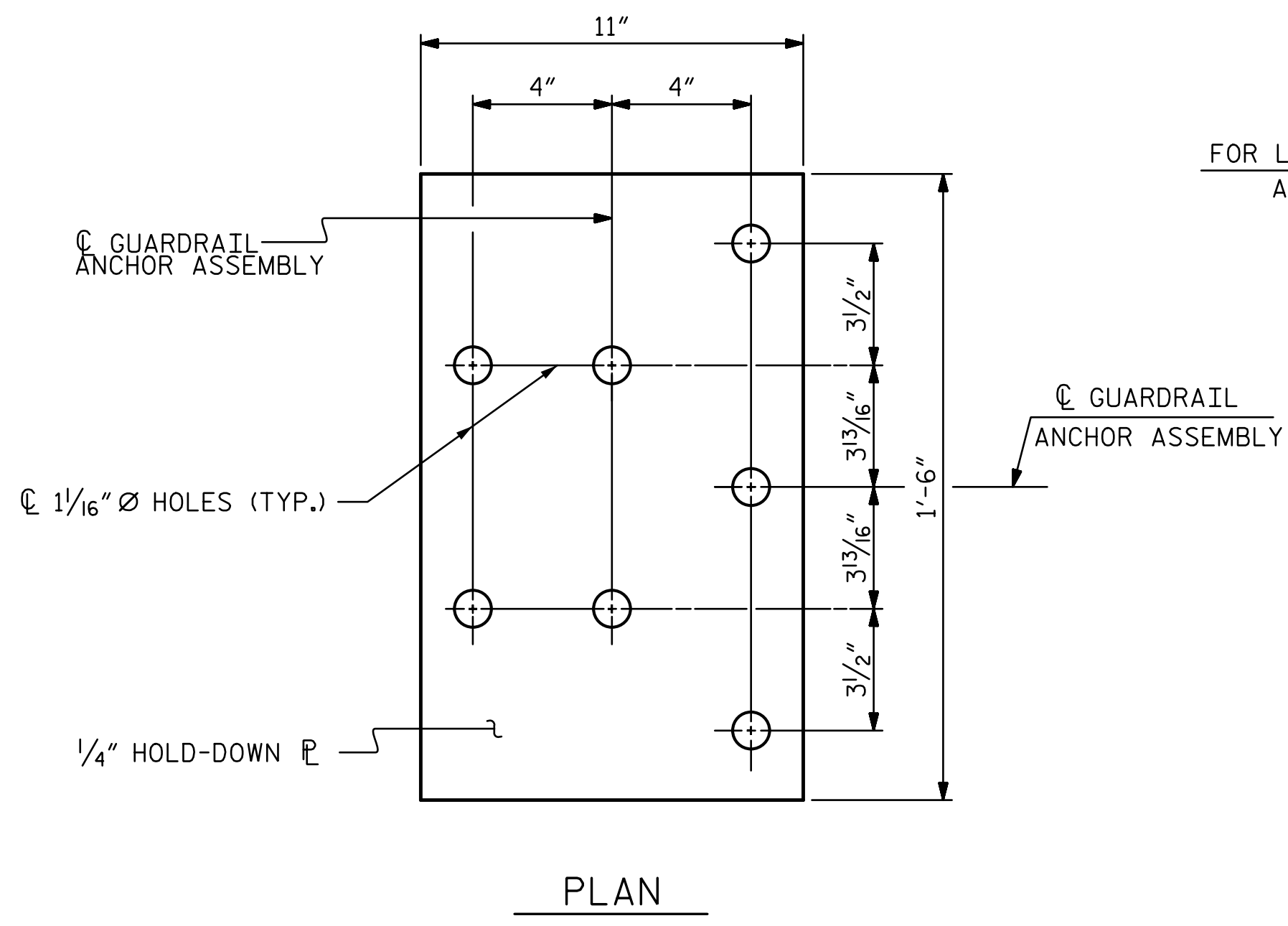
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

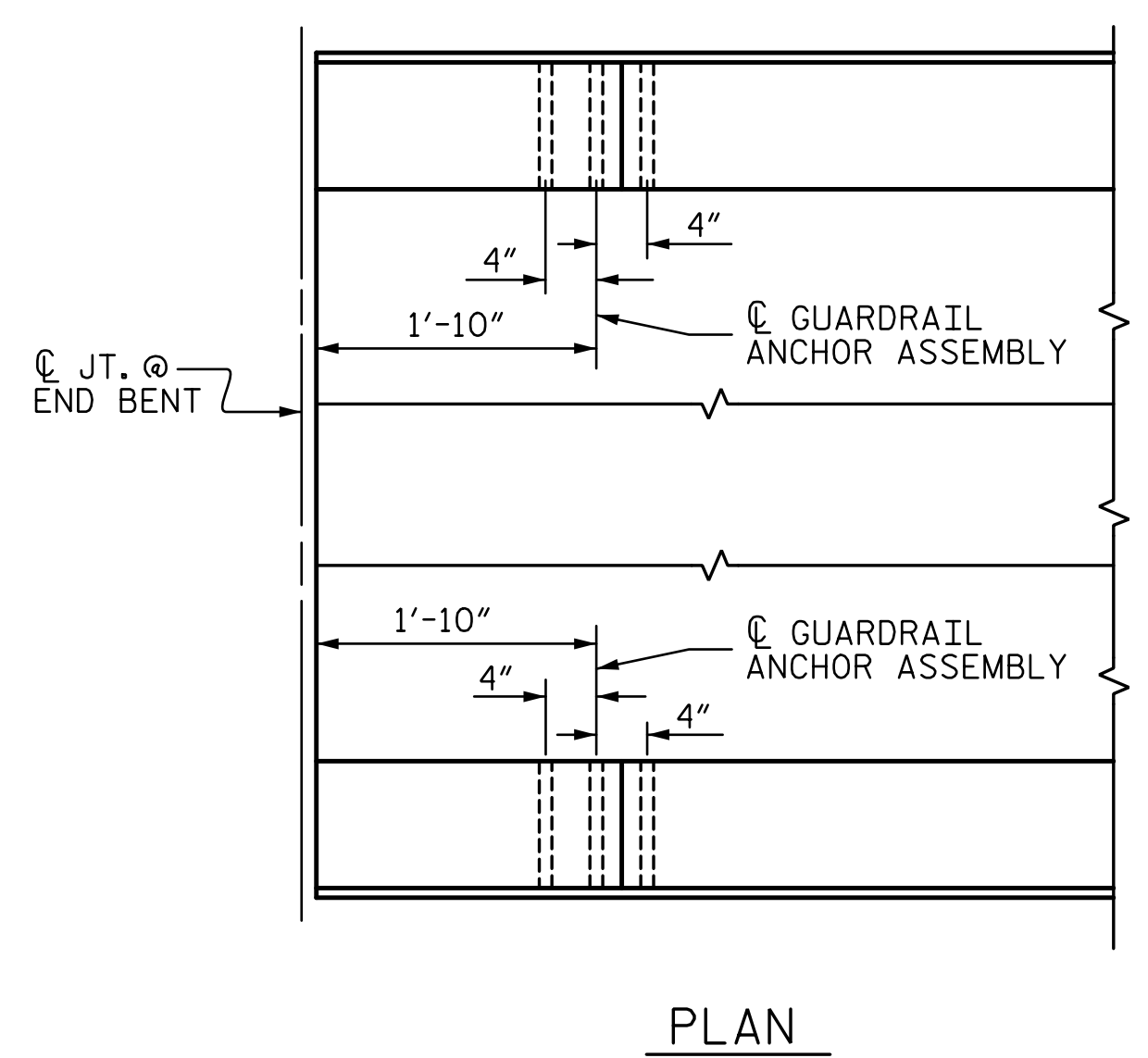
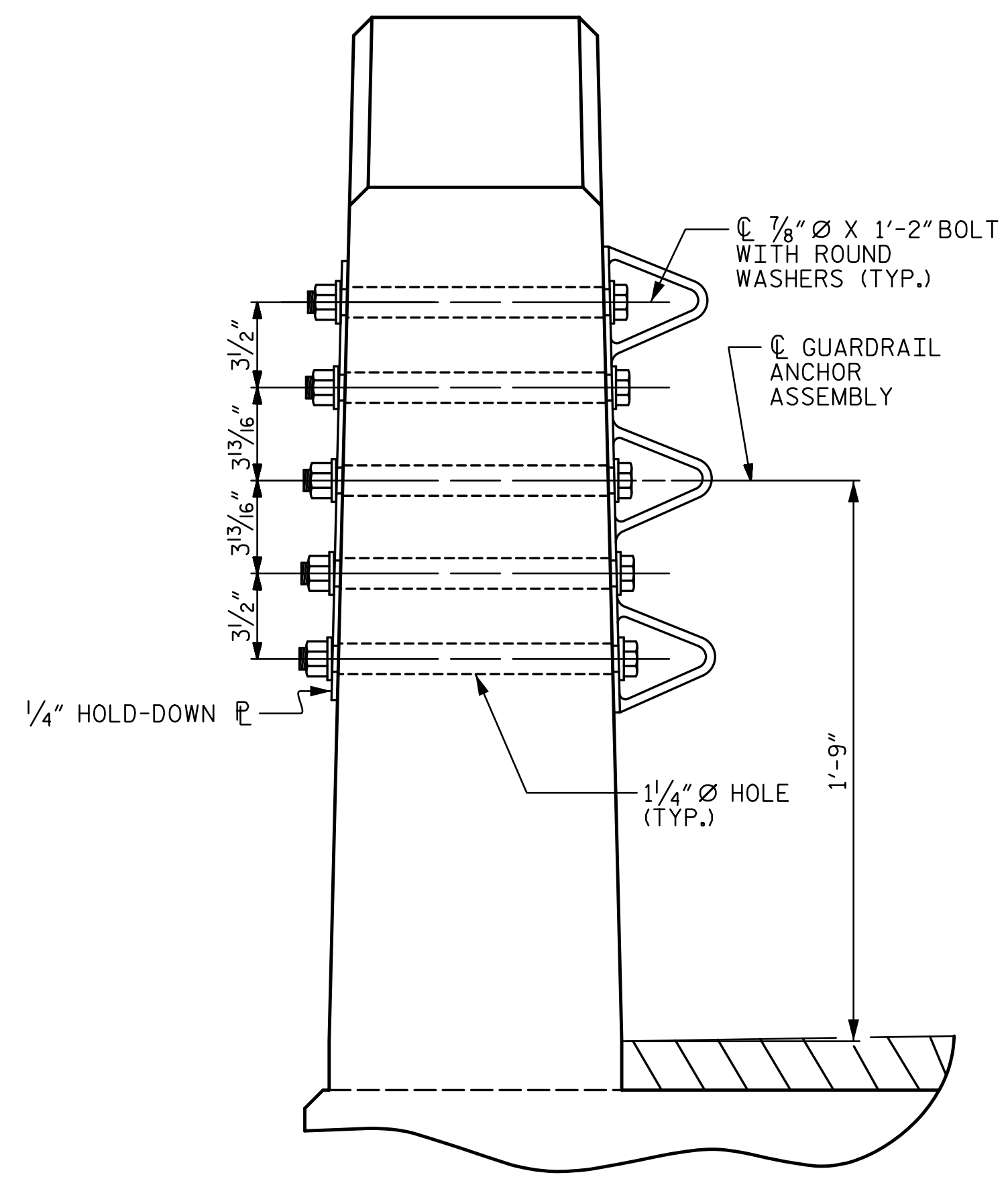
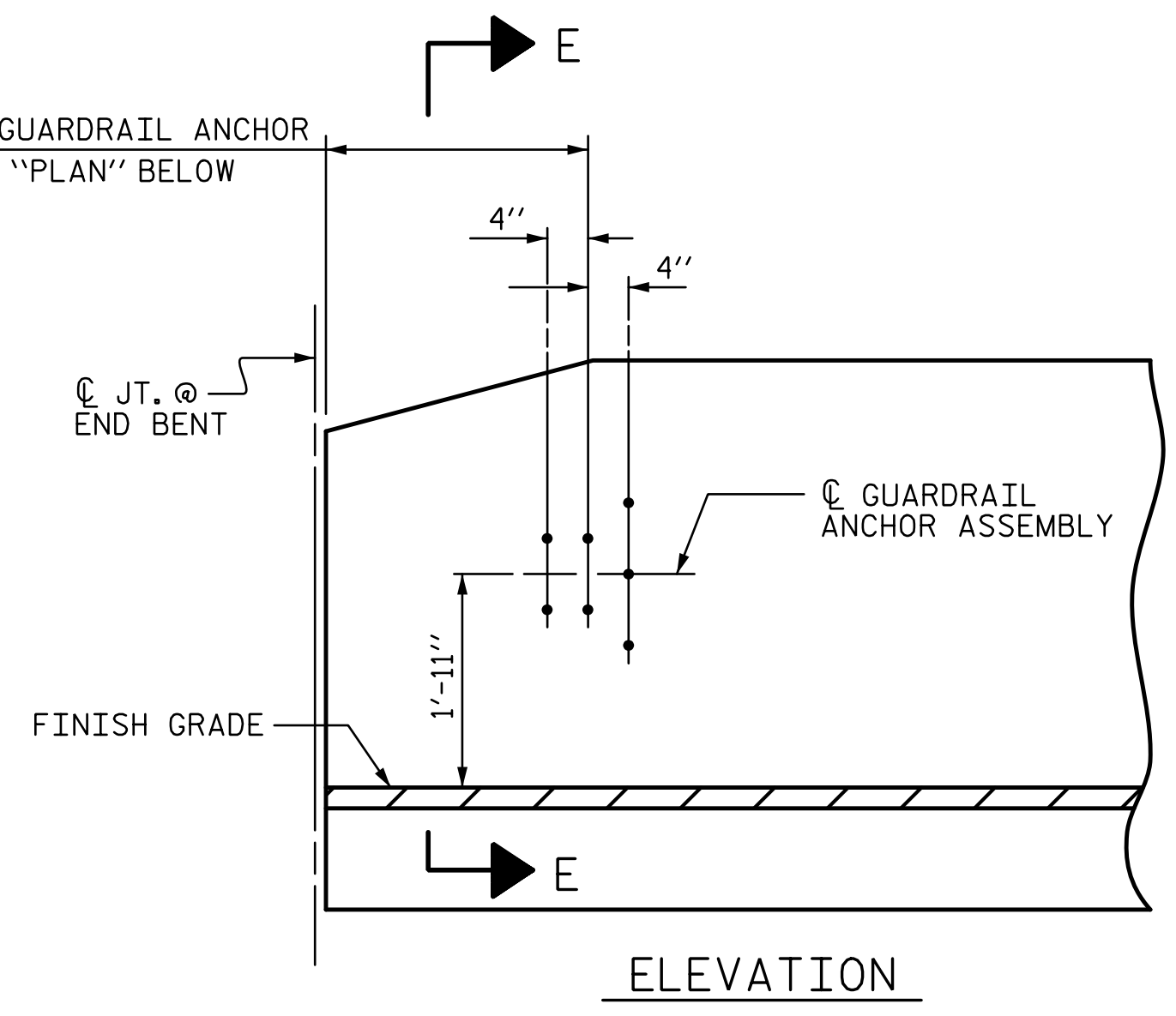
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.

THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

THE 1/4" Ø 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.

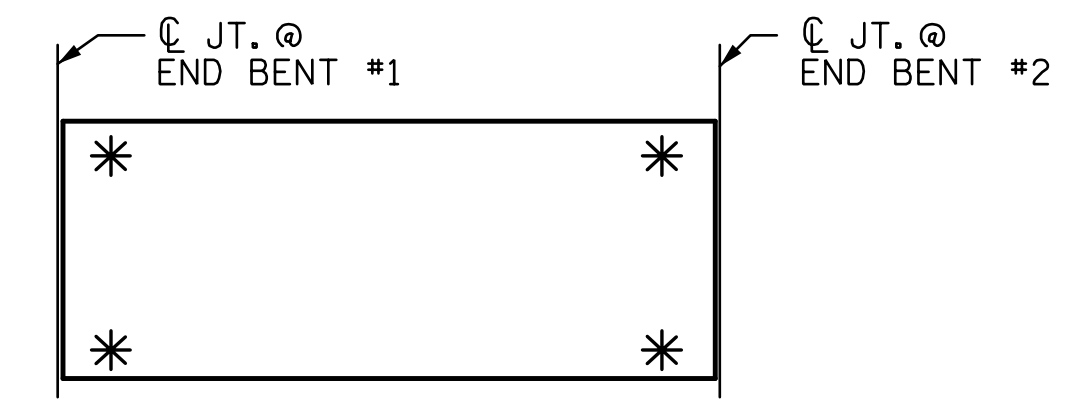


FOR LOCATION OF GUARDRAIL ANCHOR ASSEMBLY, SEE "PLAN" BELOW



LOCATION OF ANCHORS FOR GUARDRAIL

END BENT #1 SHOWN, END BENT #2 SIMILAR.



* DENOTES GUARDRAIL ANCHOR ASSEMBLY

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CATAWBA COUNTY
 STATION: 13+59.99 -L-

DATE: 3/3/2023 TIME: 1:06:50 PM
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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	<p>3/27/2023</p>	STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD GUARDRAIL ANCHORAGE DETAILS FOR VERTICAL CONCRETE BARRIER RAIL				
		REVISIONS		SHEET NO.		
		NO.	BY:	DATE:	NO.	BY:
1			3			18
2			4			

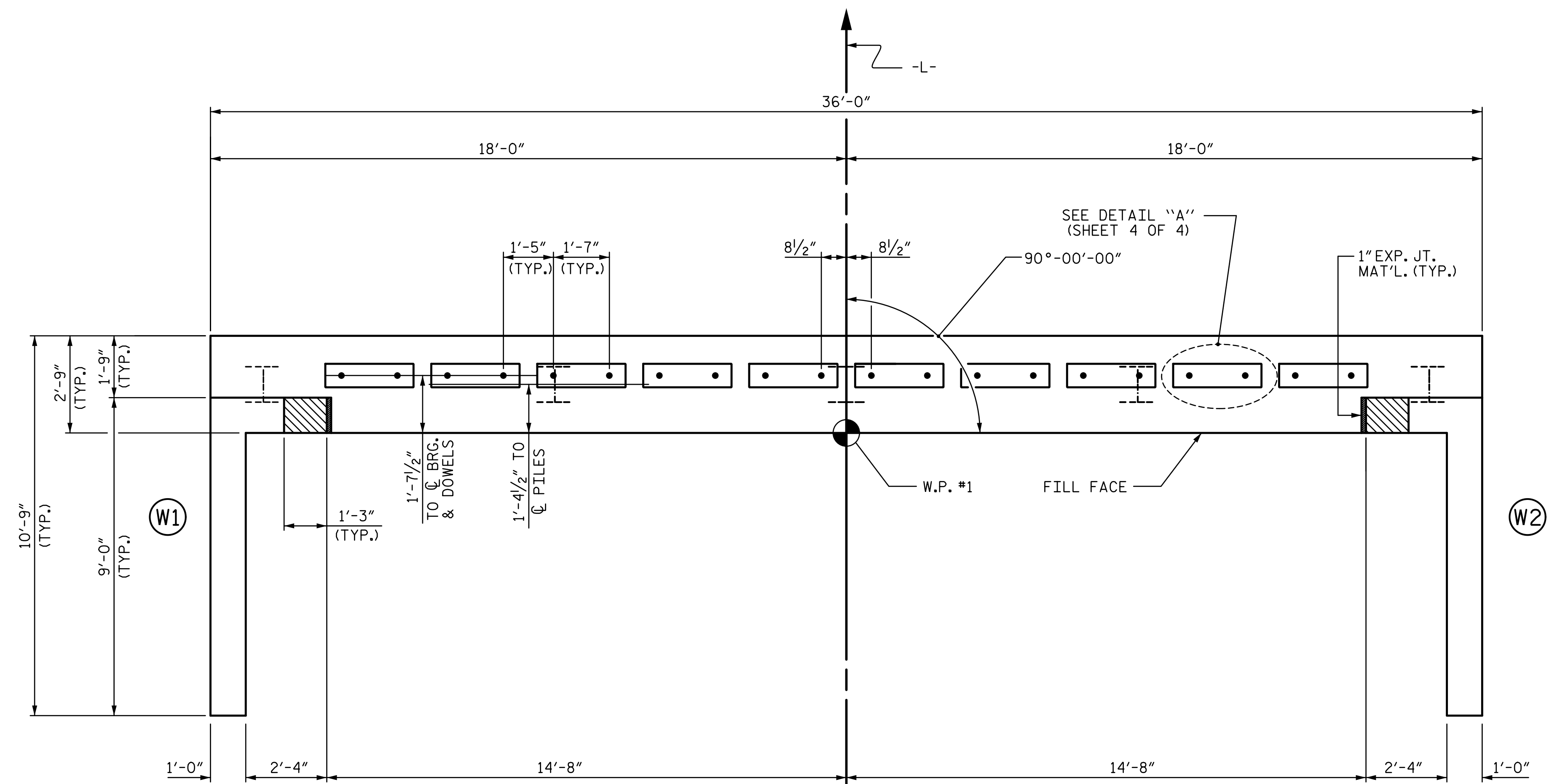
NOTES

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

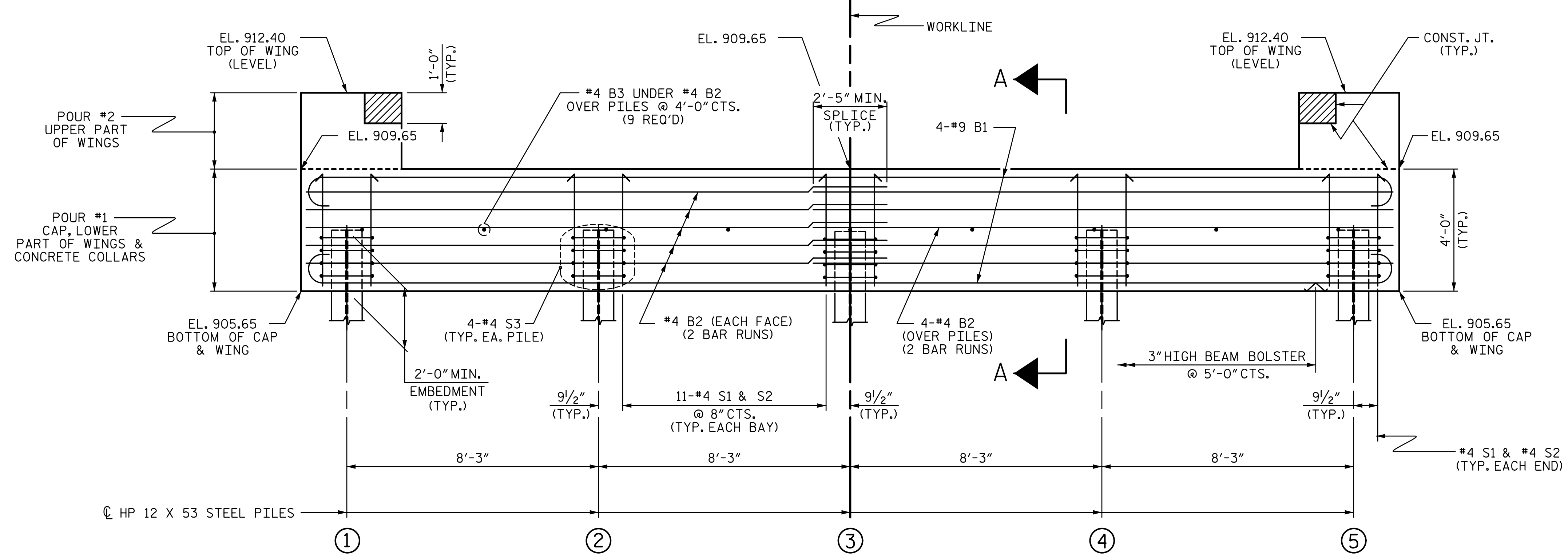
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN



ELEVATION

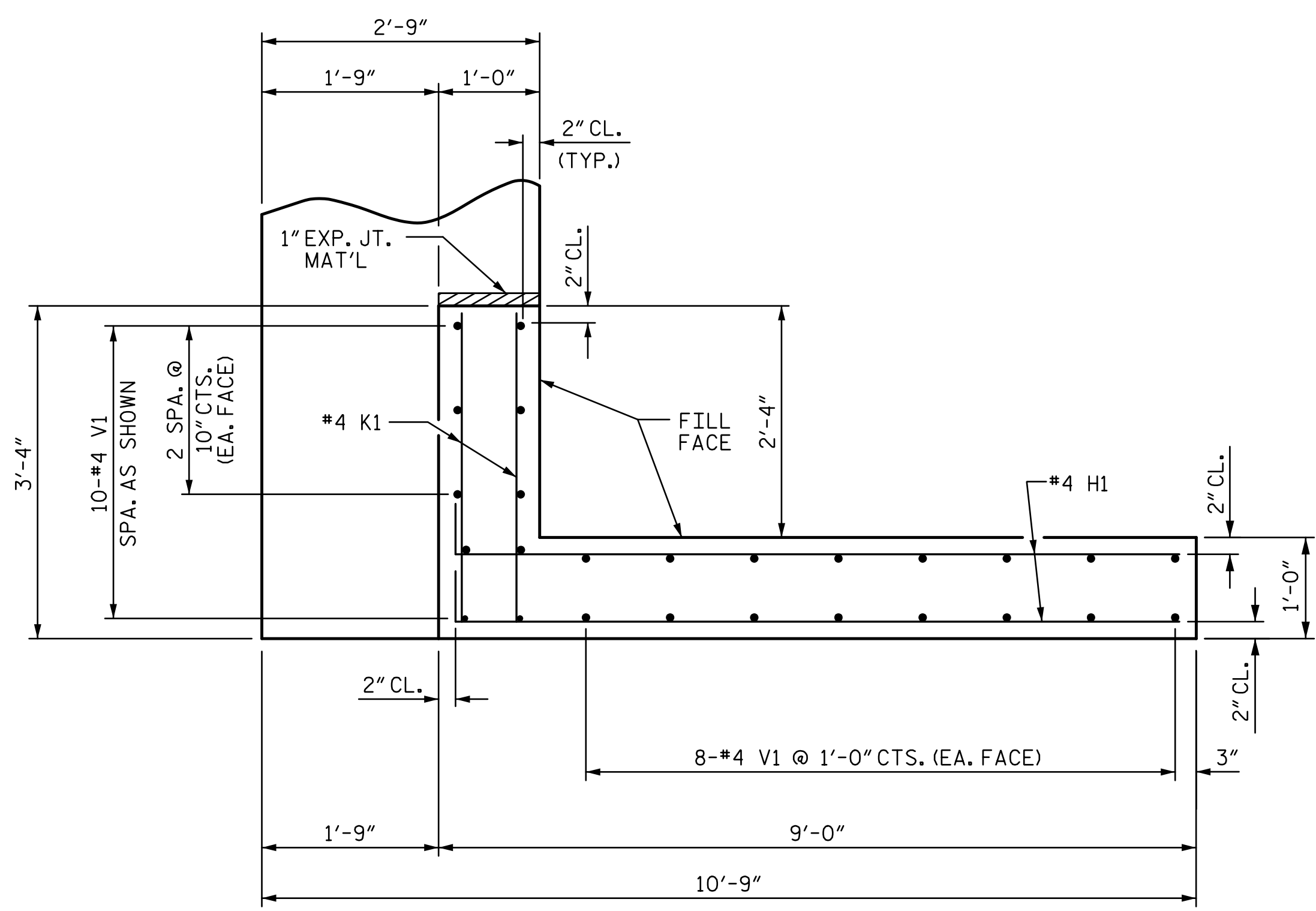
WINGS NOT SHOWN FOR CLARITY. FOR SECTION A-A, SEE SHEET 4 OF 4.

PROJECT NO. 17BP.12.R.63
CATAWBA COUNTY
 STATION: 13+59.99 -L-

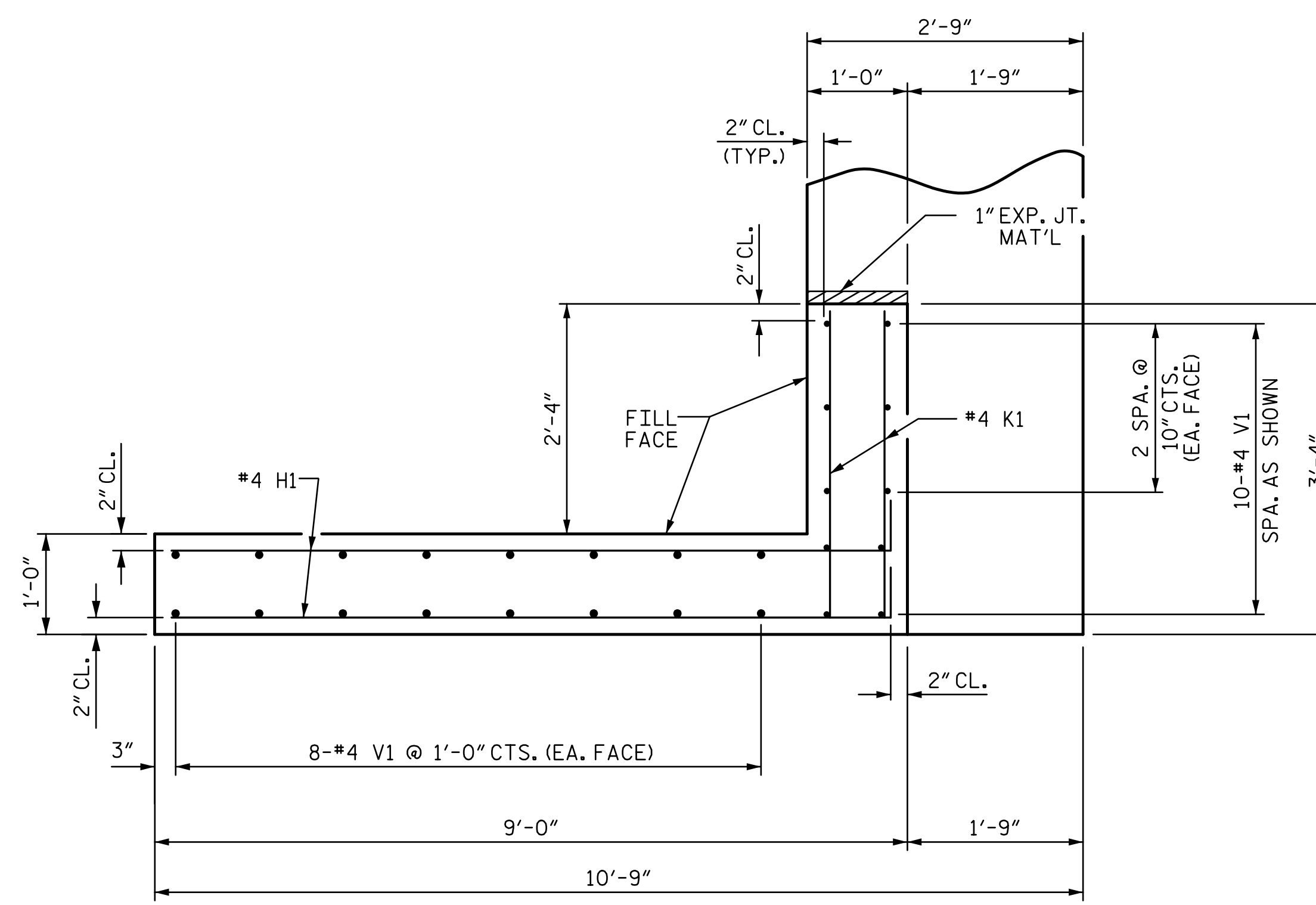
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH		SUBSTRUCTURE END BENT No. 1		
		3/27/2023				SHEET NO. S-9
		REVISIONS NO. BY: DATE: NO. BY: DATE:				TOTAL SHEETS 18

DATE: 3/3/2023 TIME: 1:06:51 PM
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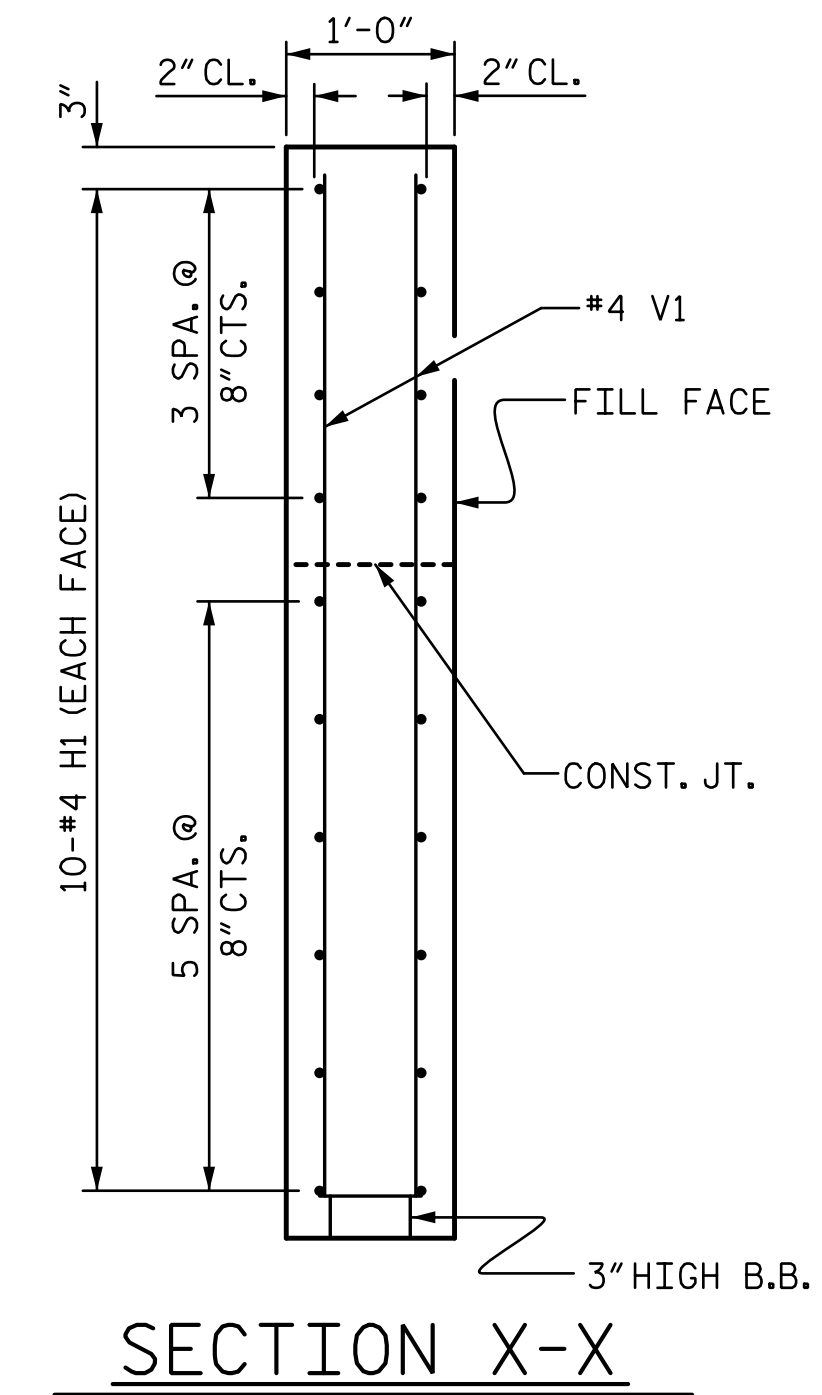
DRAWN BY : <u>CTB</u>	DATE : <u>03-23</u>	DESIGN ENGINEER OF RECORD: <u>T. TOWNSEND</u> DATE : <u>03-23</u>
CHECKED BY : <u>CMT</u>	DATE : <u>03-23</u>	



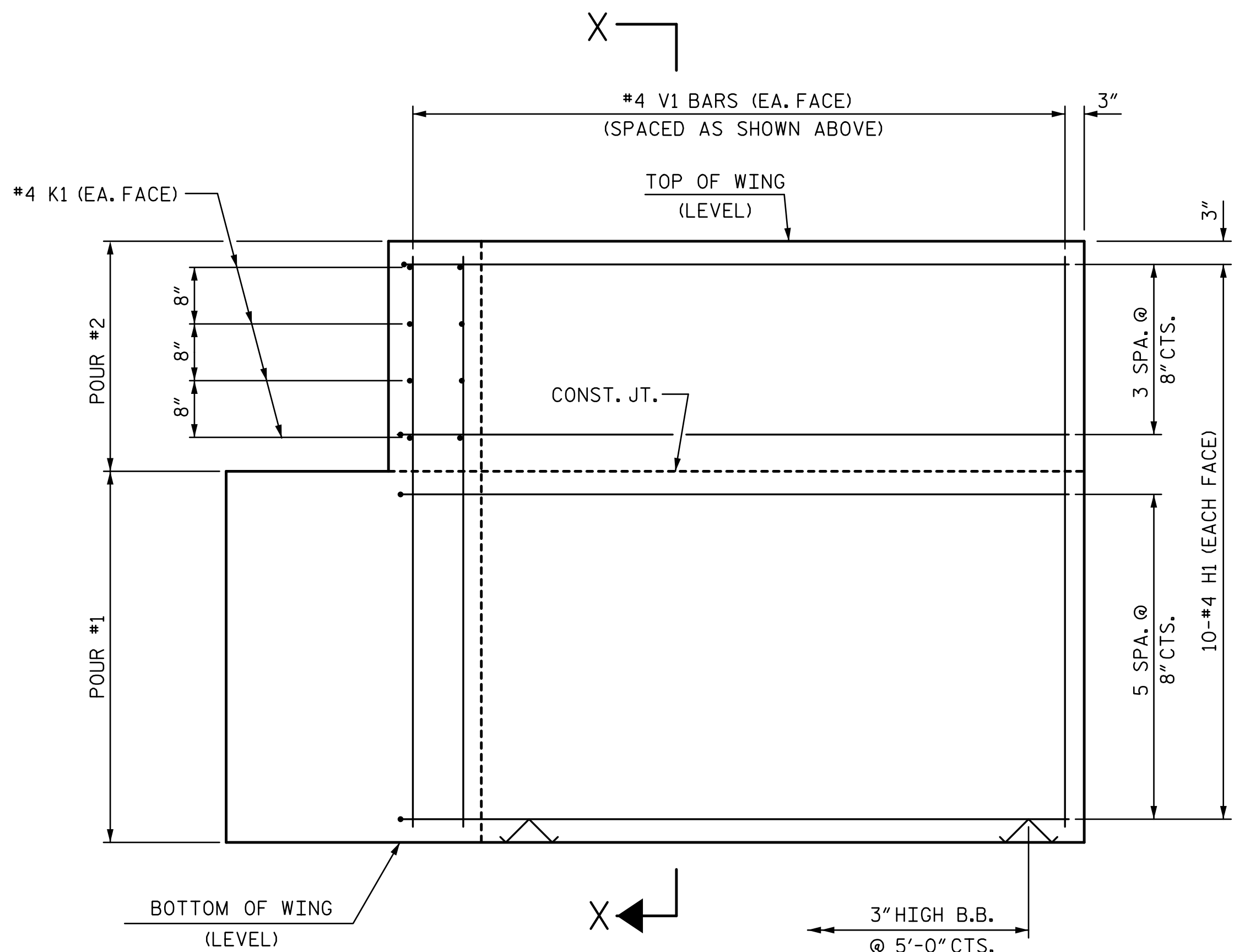
PLAN OF WING (W1)



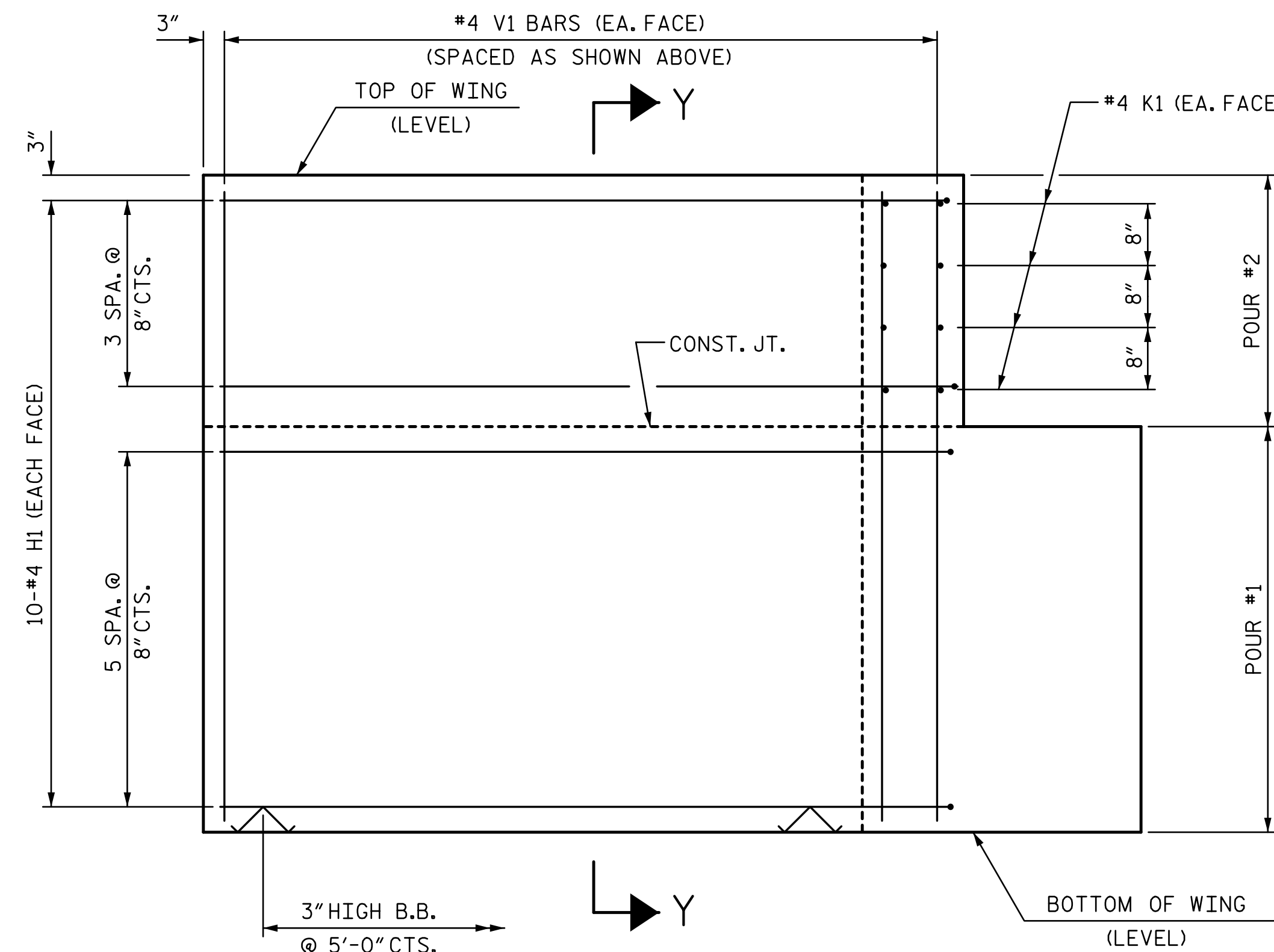
PLAN OF WING (W2)



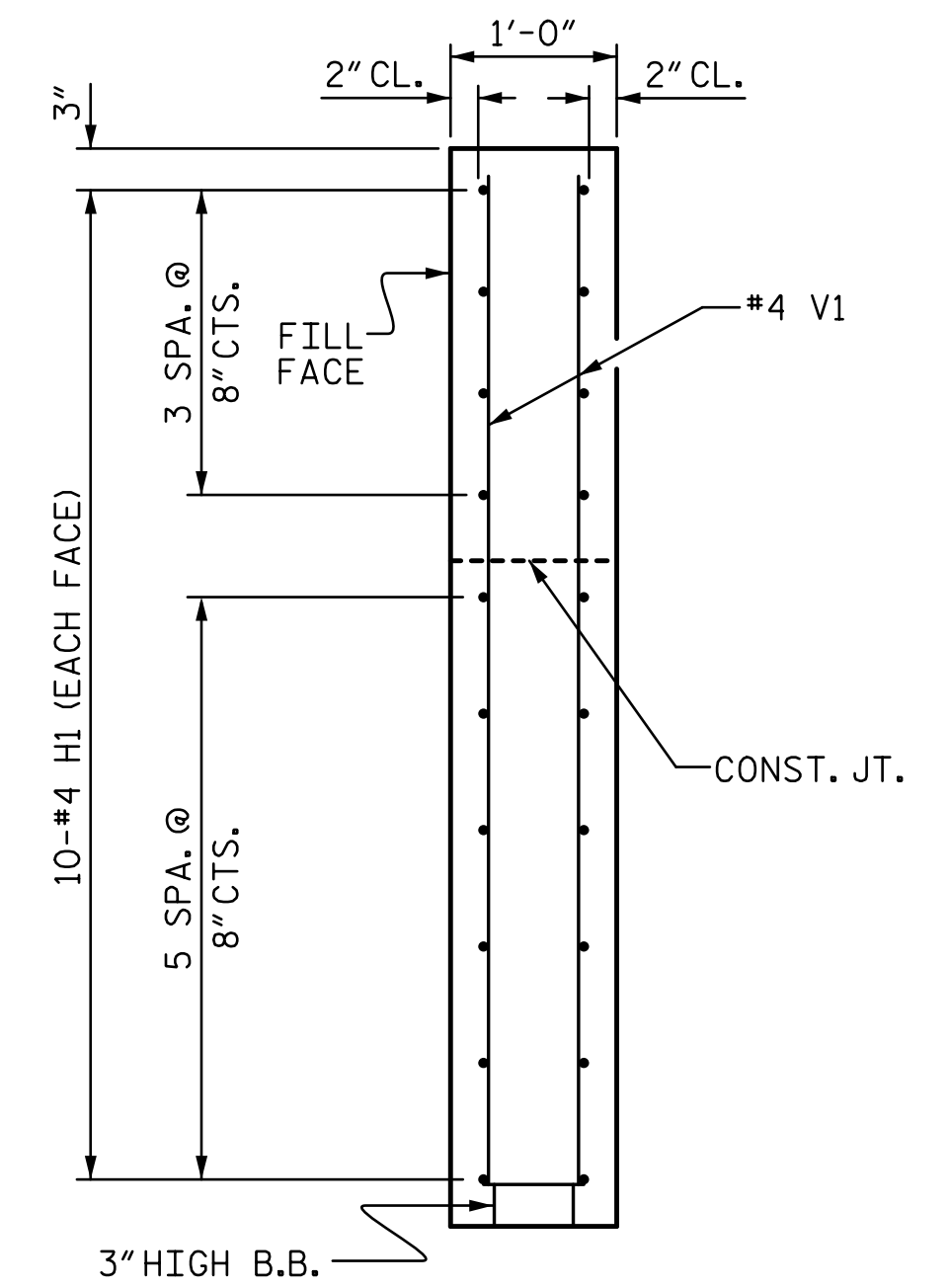
SECTION X-X



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

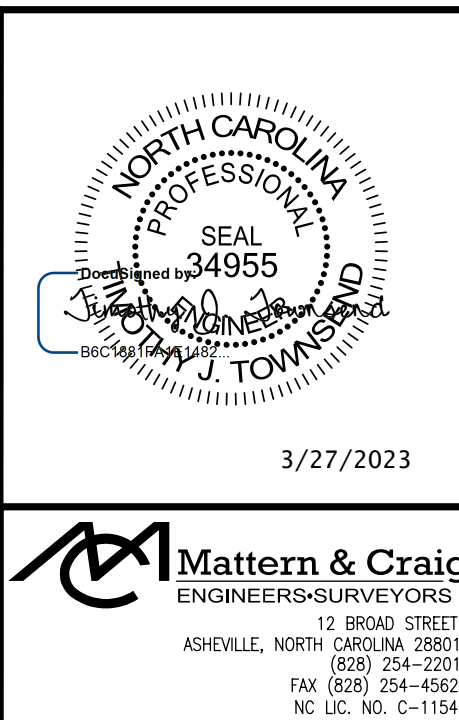


SECTION Y-Y

WING DETAILS

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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT
 WING DETAILS

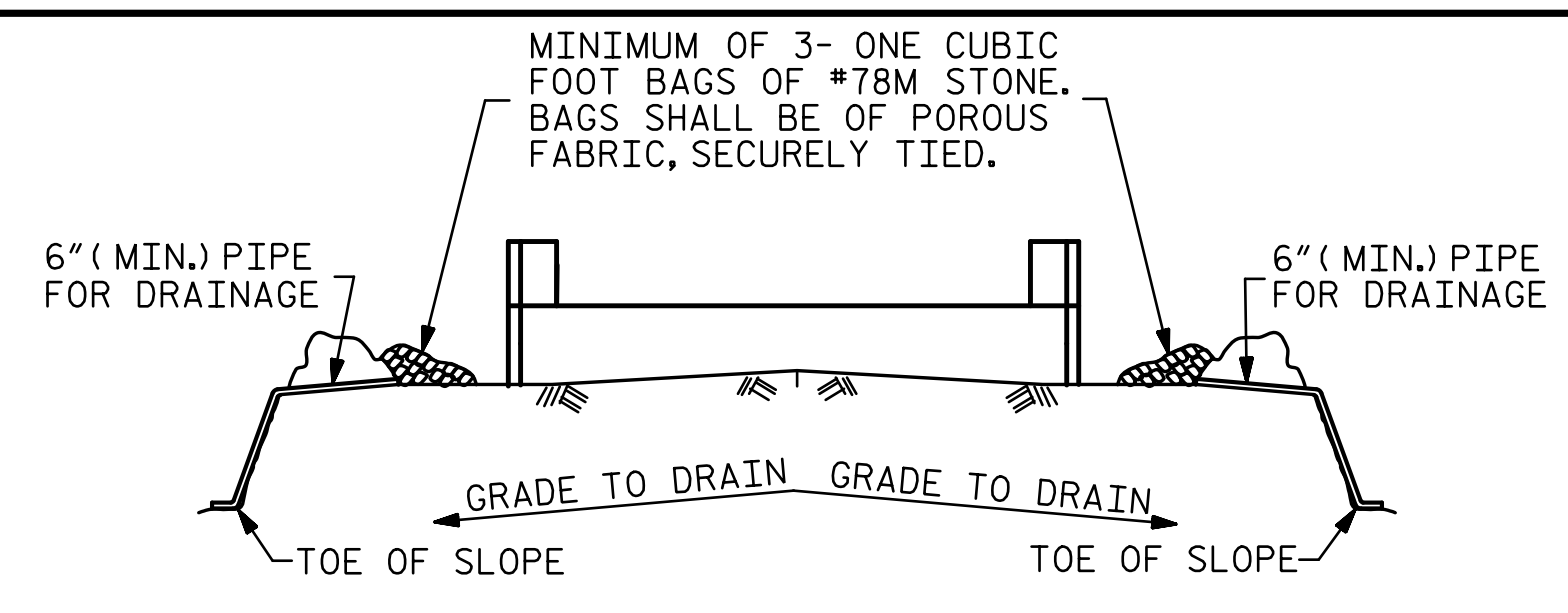
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SHEET NO. S-10
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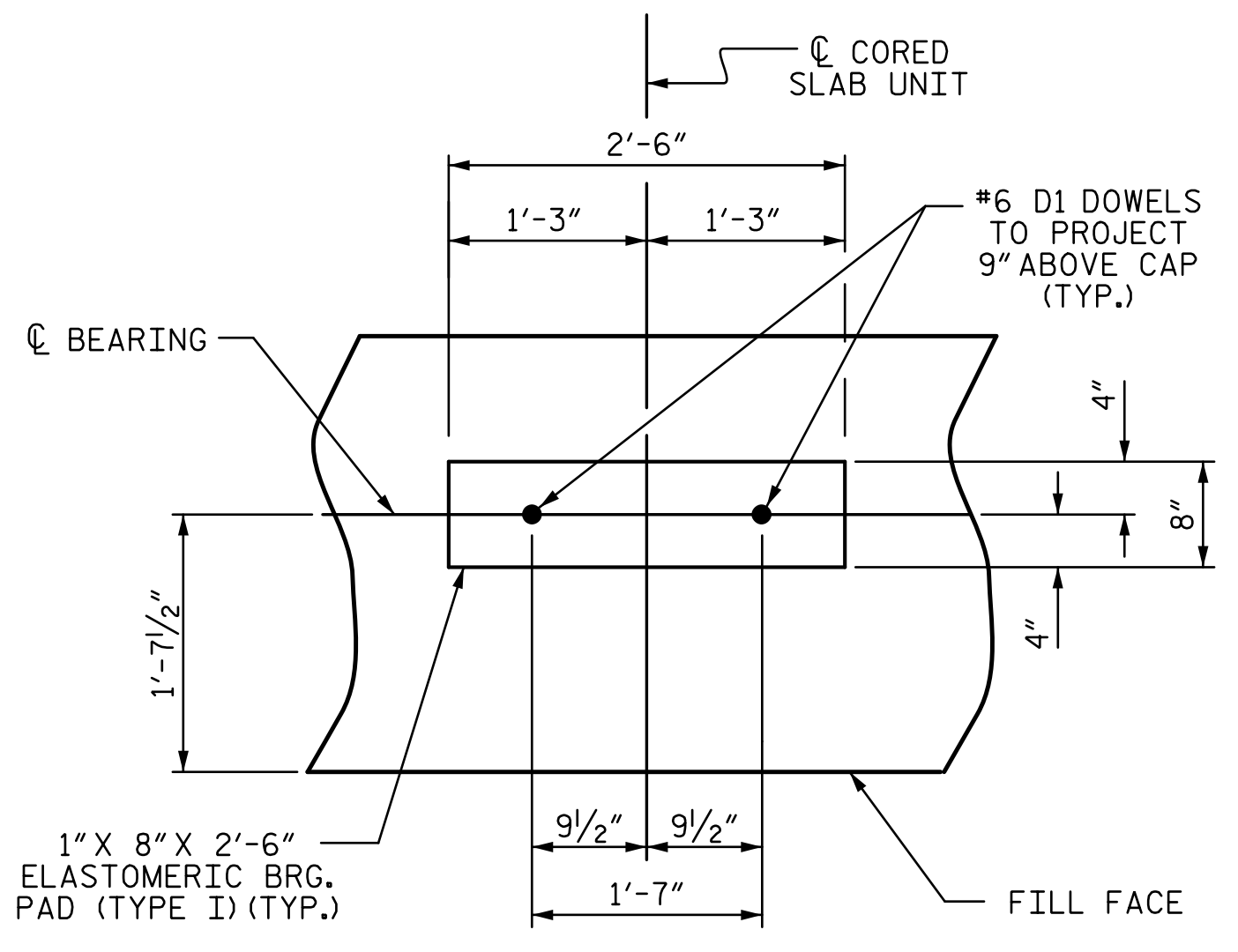


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

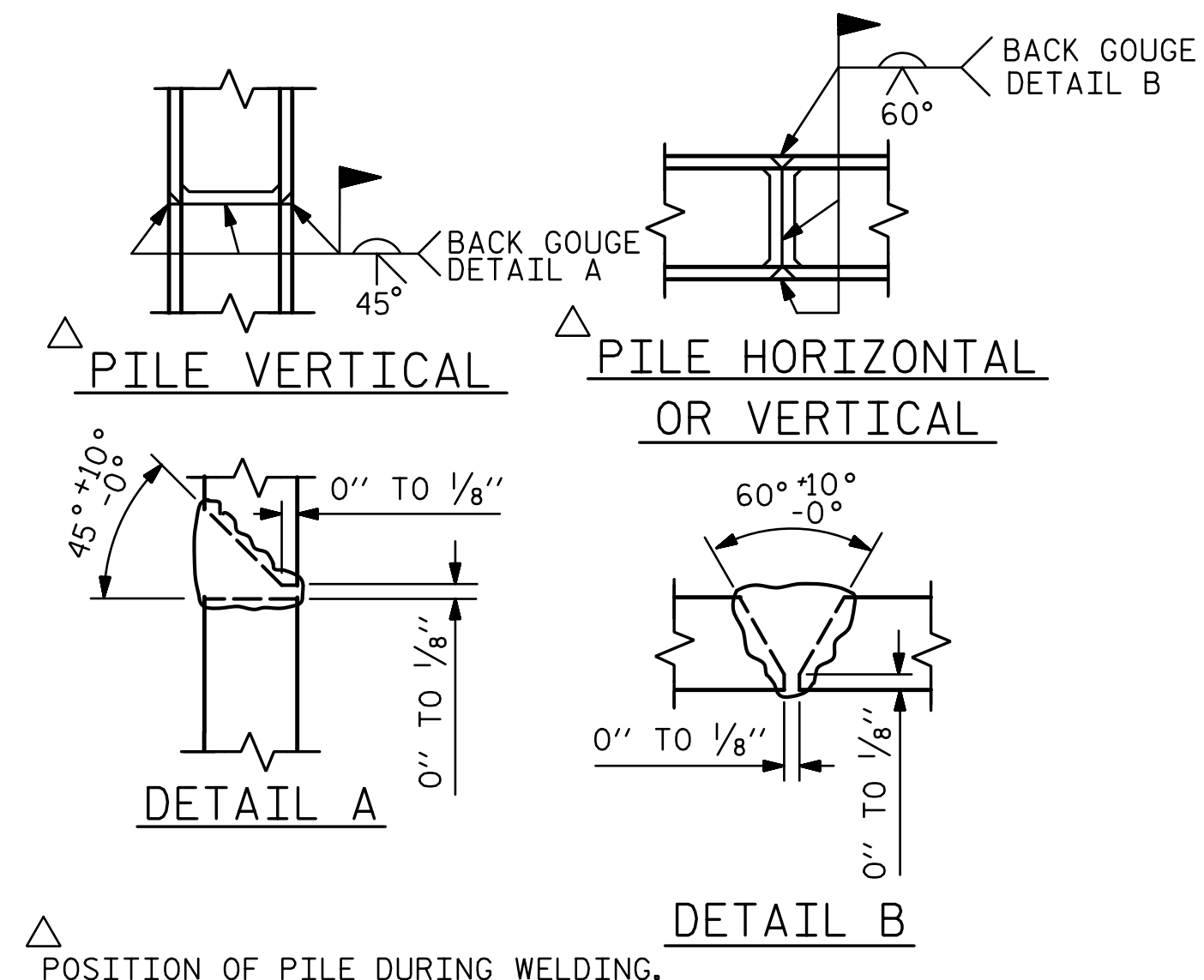
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



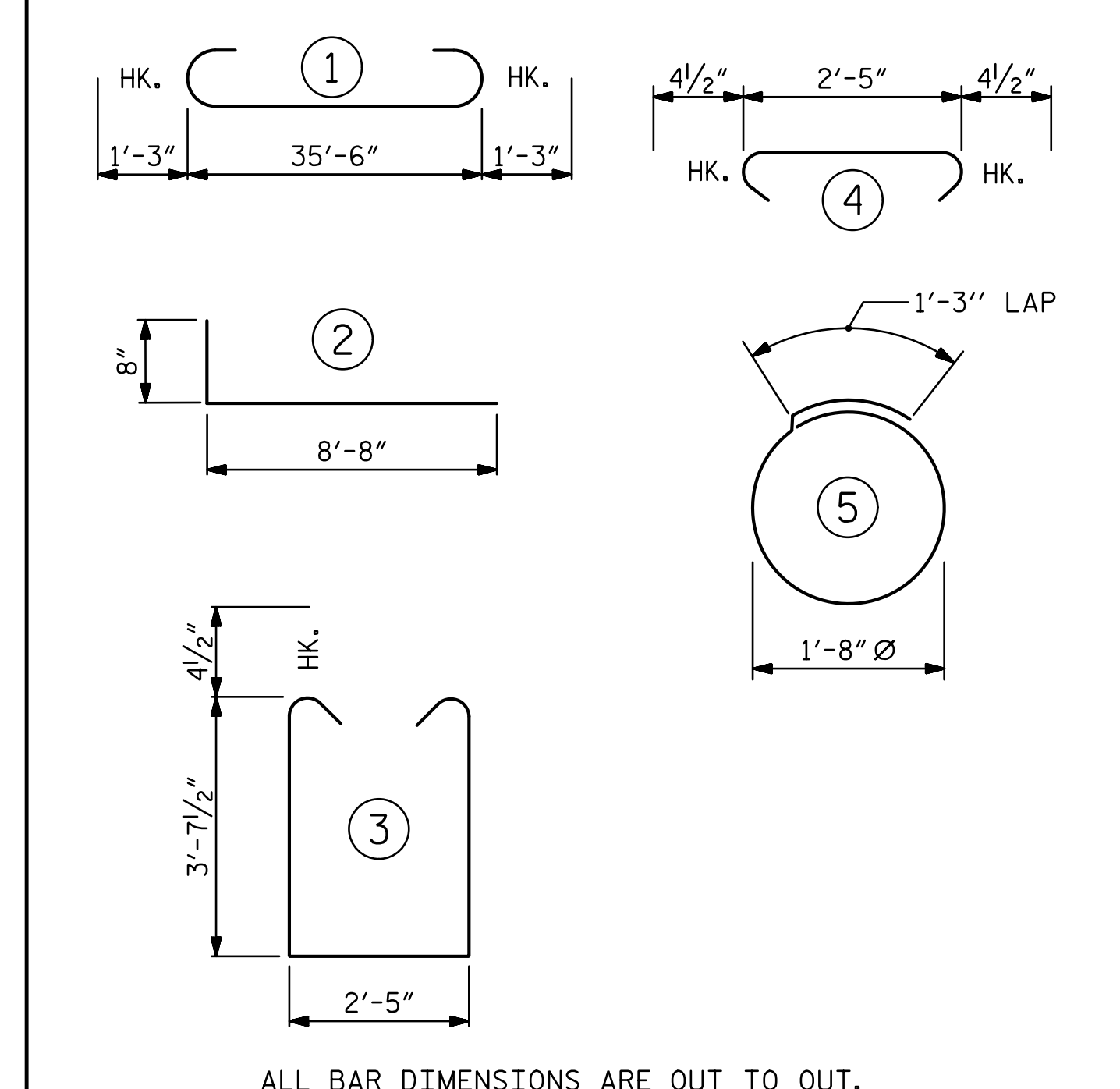
DETAIL "A"

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



PILE SPLICE DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

END BENT No. 1		END BENT No. 2	
HP 12 X 53 STEEL PILES	NO: 5	HP 12 X 53 STEEL PILES	NO: 5
LIN. FT.= 125		LIN. FT.= 100	
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	NO: 5	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	NO: 5
STEEL PILE POINTS	NO: 5	STEEL PILE POINTS	NO: 5

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'-5"	15
D1	20	#6	STR	1'-6"	45
H1	40	#4	2	9'-4"	249
K1	16	#4	STR	2'-11"	31
S1	46	#4	3	10'-5"	320
S2	46	#4	4	3'-2"	97
S3	20	#4	5	6'-6"	87
V1	52	#4	STR	6'-2"	214

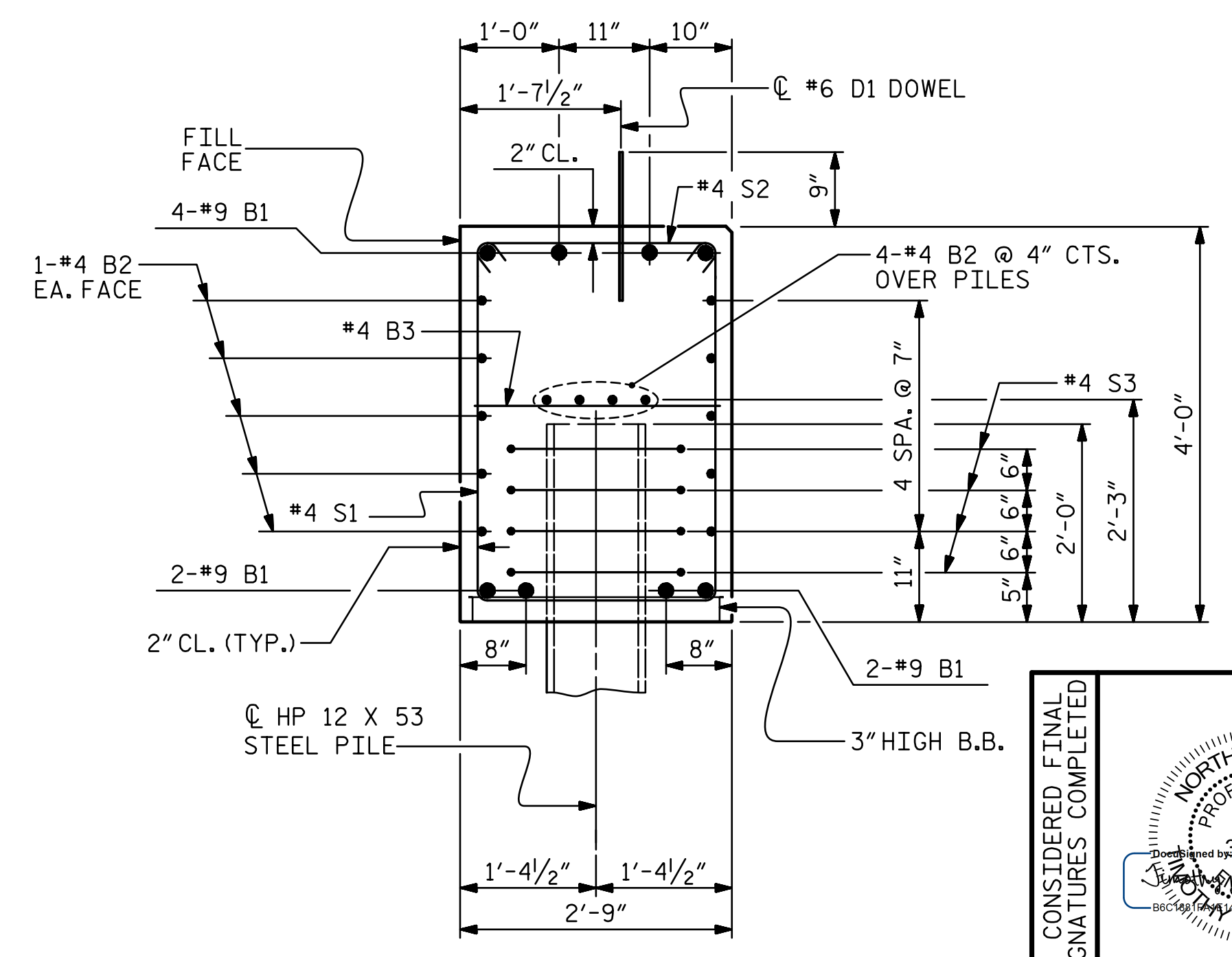
REINFORCING STEEL (FOR ONE END BENT) 2449 LBS.

CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)

POUR #1 CAP, LOWER PART OF WINGS & COLLARS 17.9 C.Y.

POUR #2 UPPER PART OF WINGS 2.3 C.Y.

TOTAL CLASS A CONCRETE 20.2 C.Y.



SECTION A-A

PROJECT NO. 17BP.12.R.63
 CATAWBA COUNTY
 STATION: 13+59.99 -L-

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3/27/2023

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 NC LIC. NO. C-1154

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 1 & 2
 DETAILS

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

SHEET NO. S-11
 TOTAL SHEETS 18

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CHECKED BY : CMT	DATE : 03-23		

NOTES

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

HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

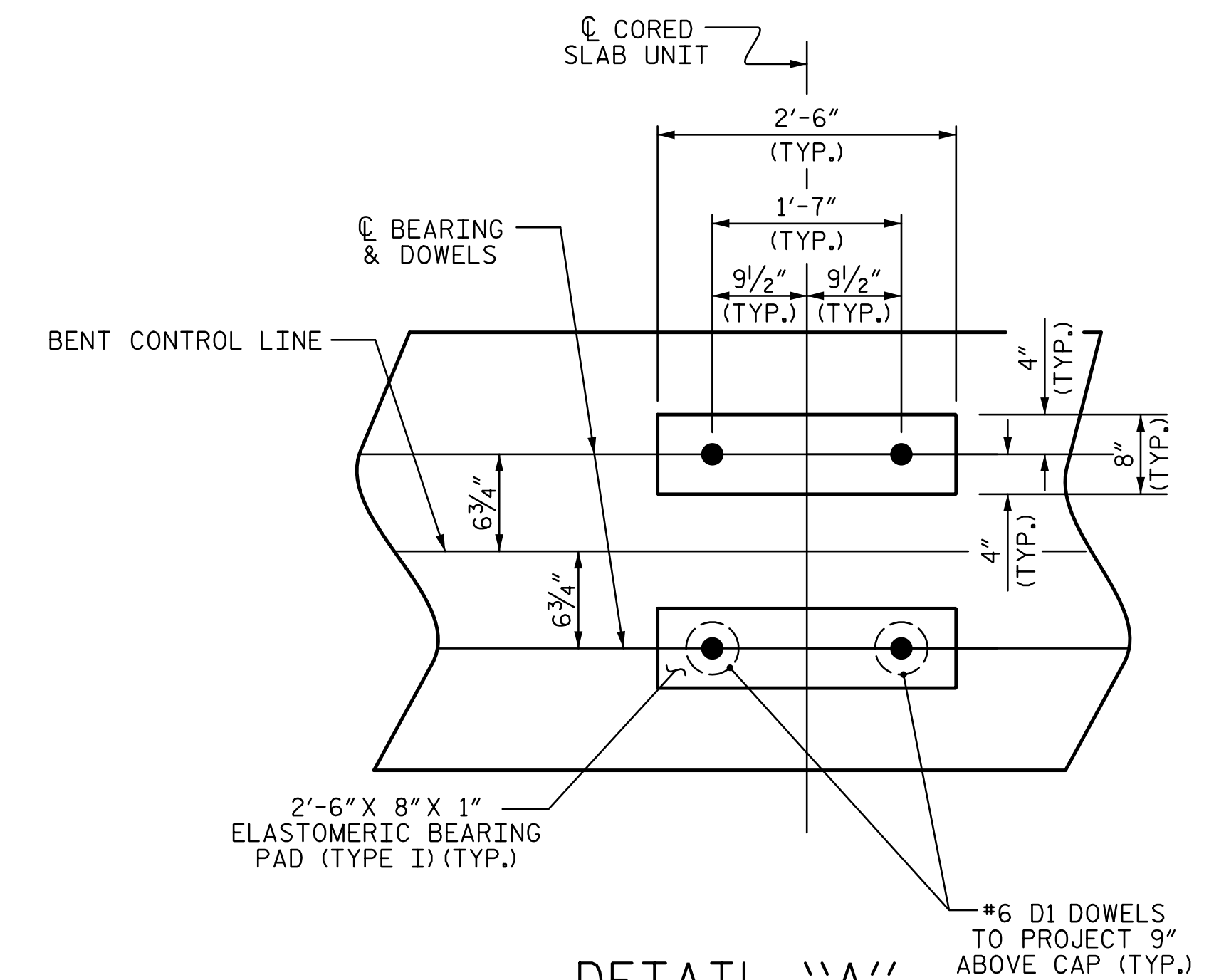
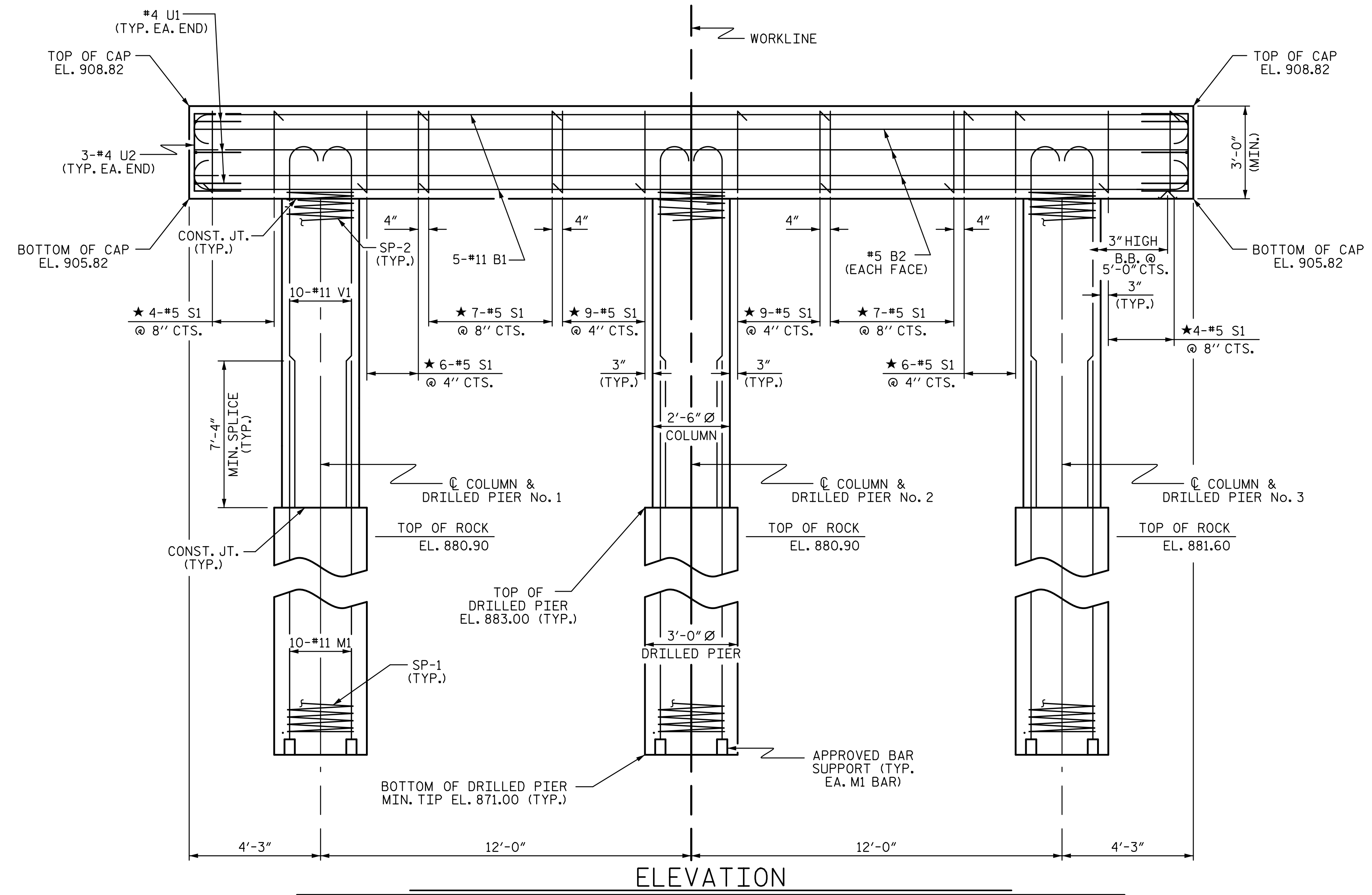
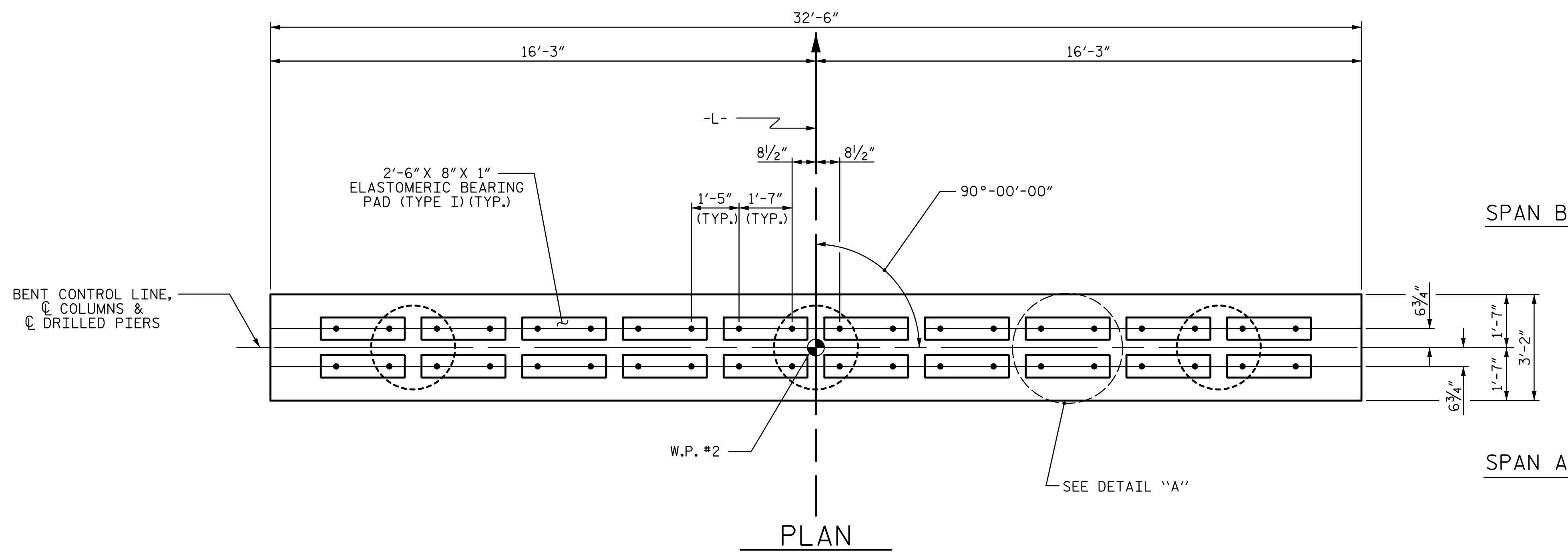
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."

★ INVERT ALTERNATE STIRRUPS.

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT ONE FOOT BELOW THE GROUND LINE.

DRILLED PIERS SHALL BE TERMINATED ONE FOOT ± ABOVE NORMAL WATER SURFACE ELEVATION FOR SHAFTS LOCATED IN WATER.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.



DETAIL "A"

(DIMENSIONS ARE TYPICAL EACH BEARING)

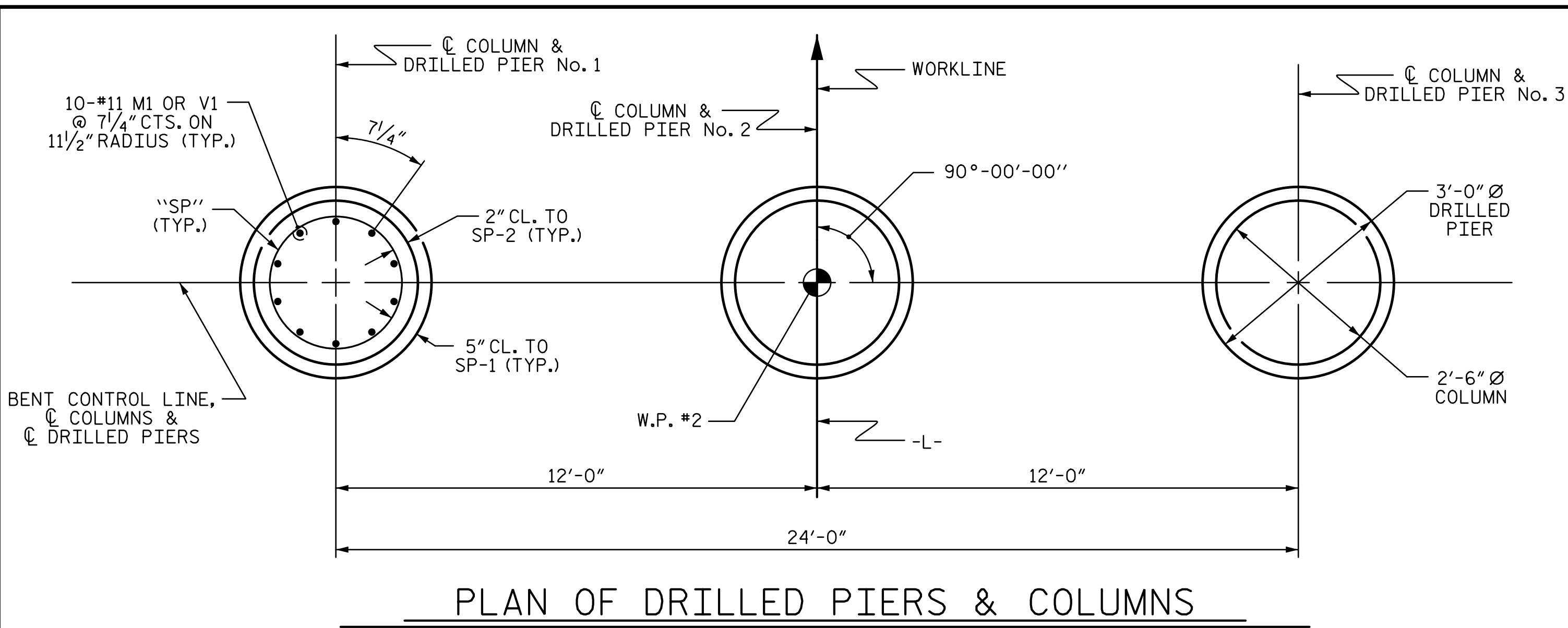
PROJECT NO. **17BP.12.R.63**
CATAWBA COUNTY
 STATION: **13+59.99 -L-**

DIMENSIONS & REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER UNLESS OTHERWISE NOTED.

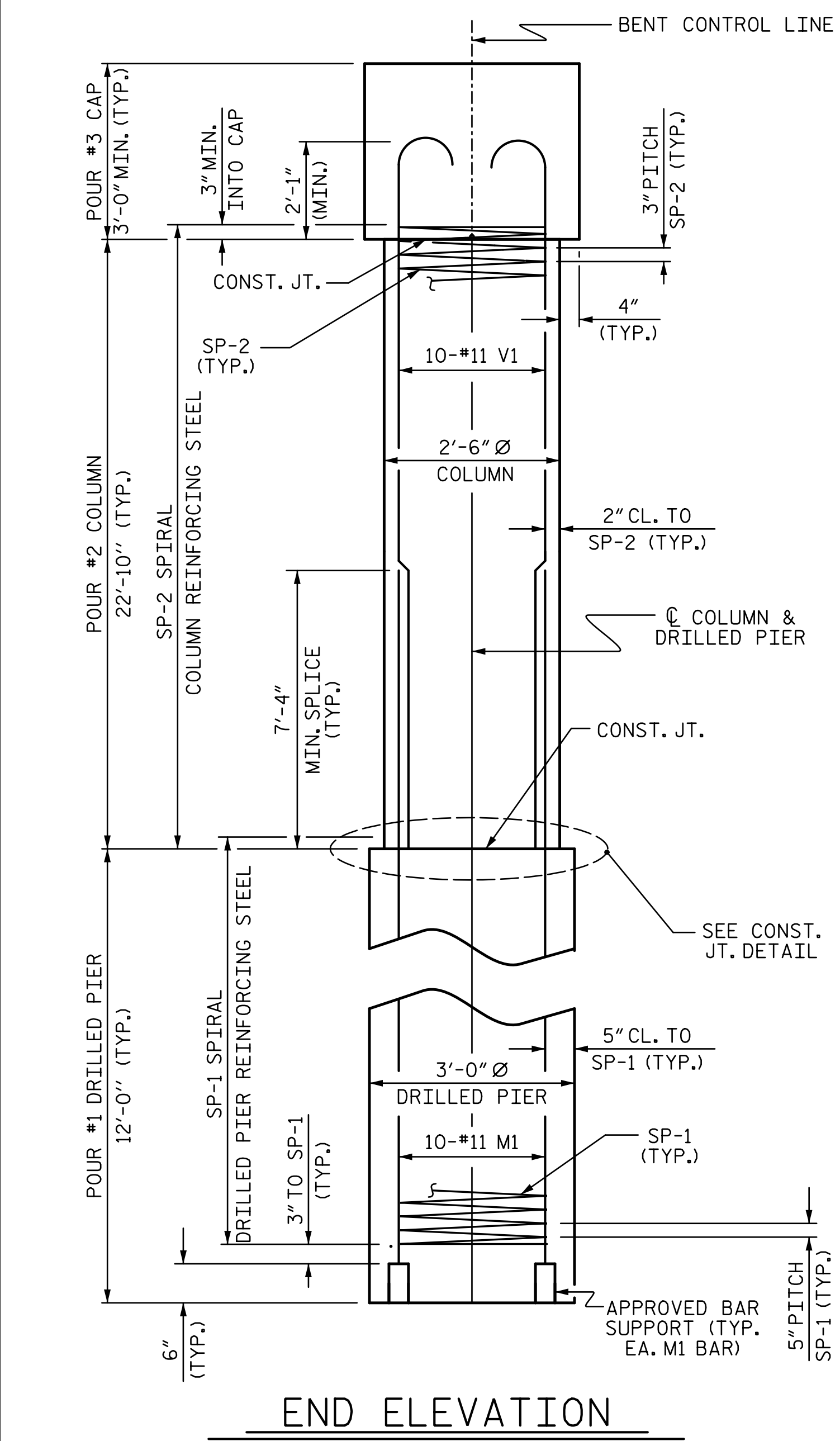
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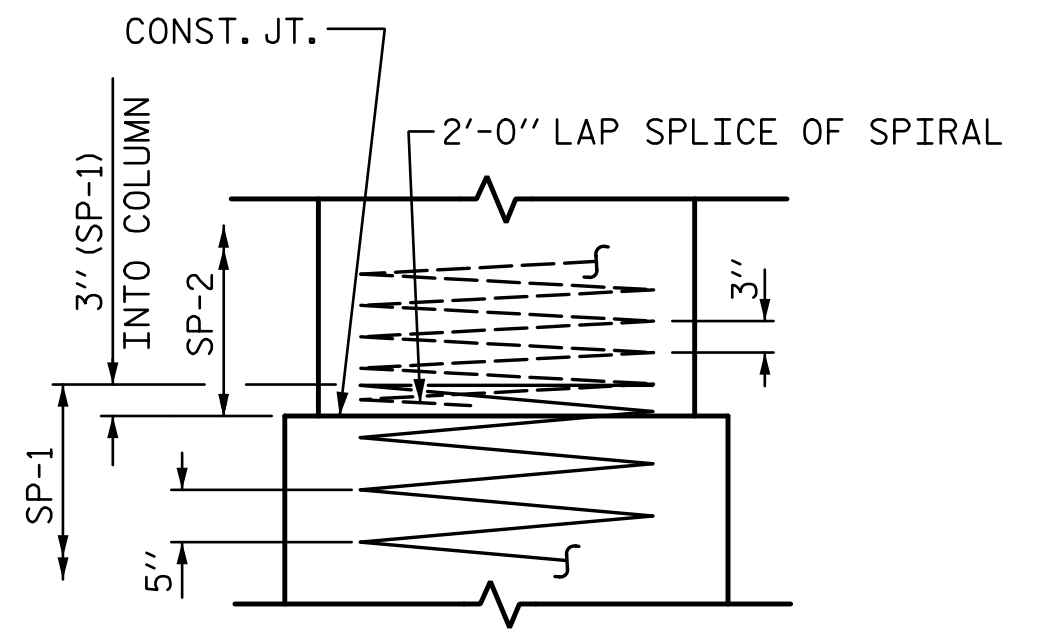
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		SUBSTRUCTURE BENT No. 1	
		3/27/2023	
		REVISIONS	
NO.	BY:	DATE:	SHEET NO.
1			S-12
2			TOTAL SHEETS 18



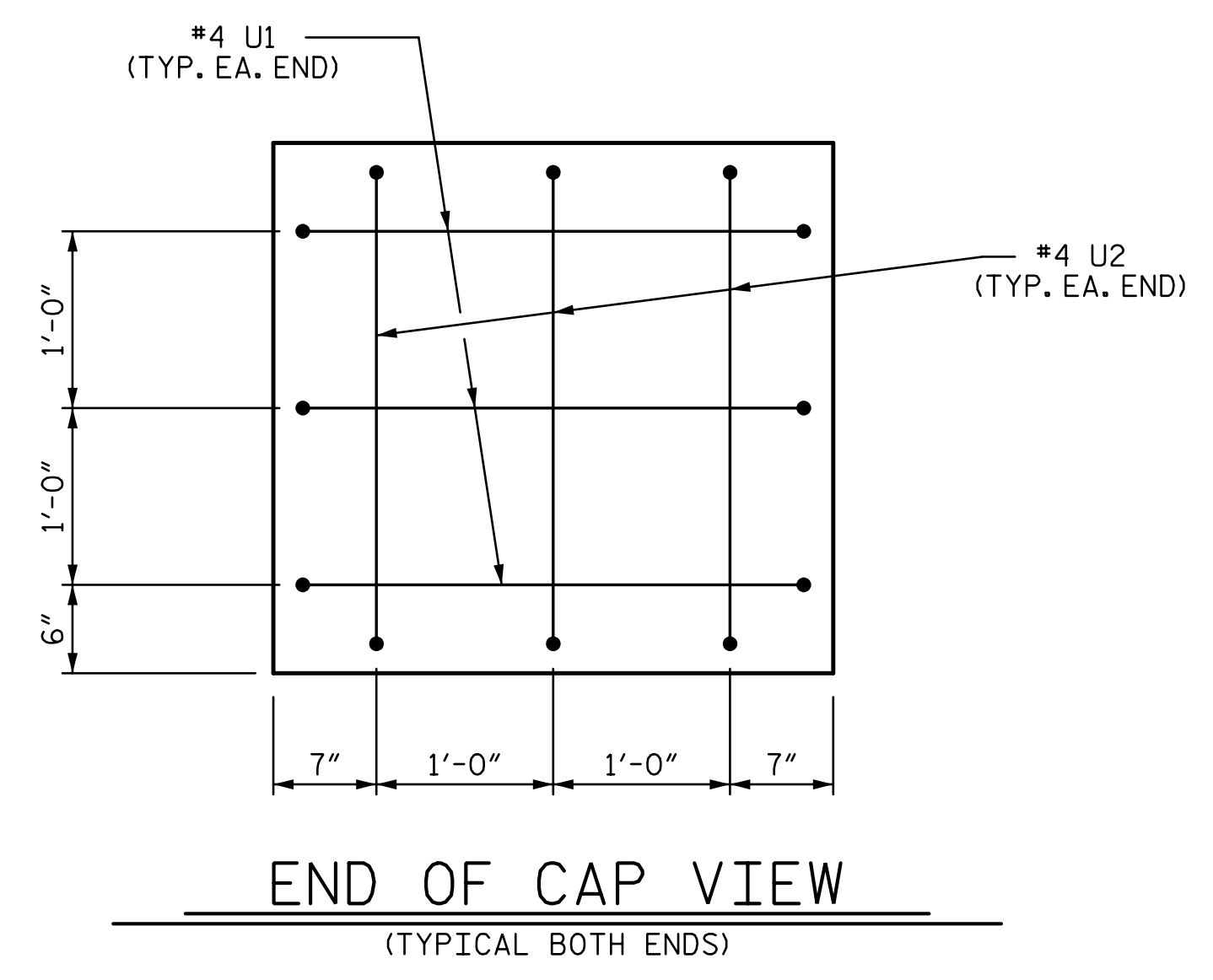
PLAN OF DRILLED PIERS & COLUMNS



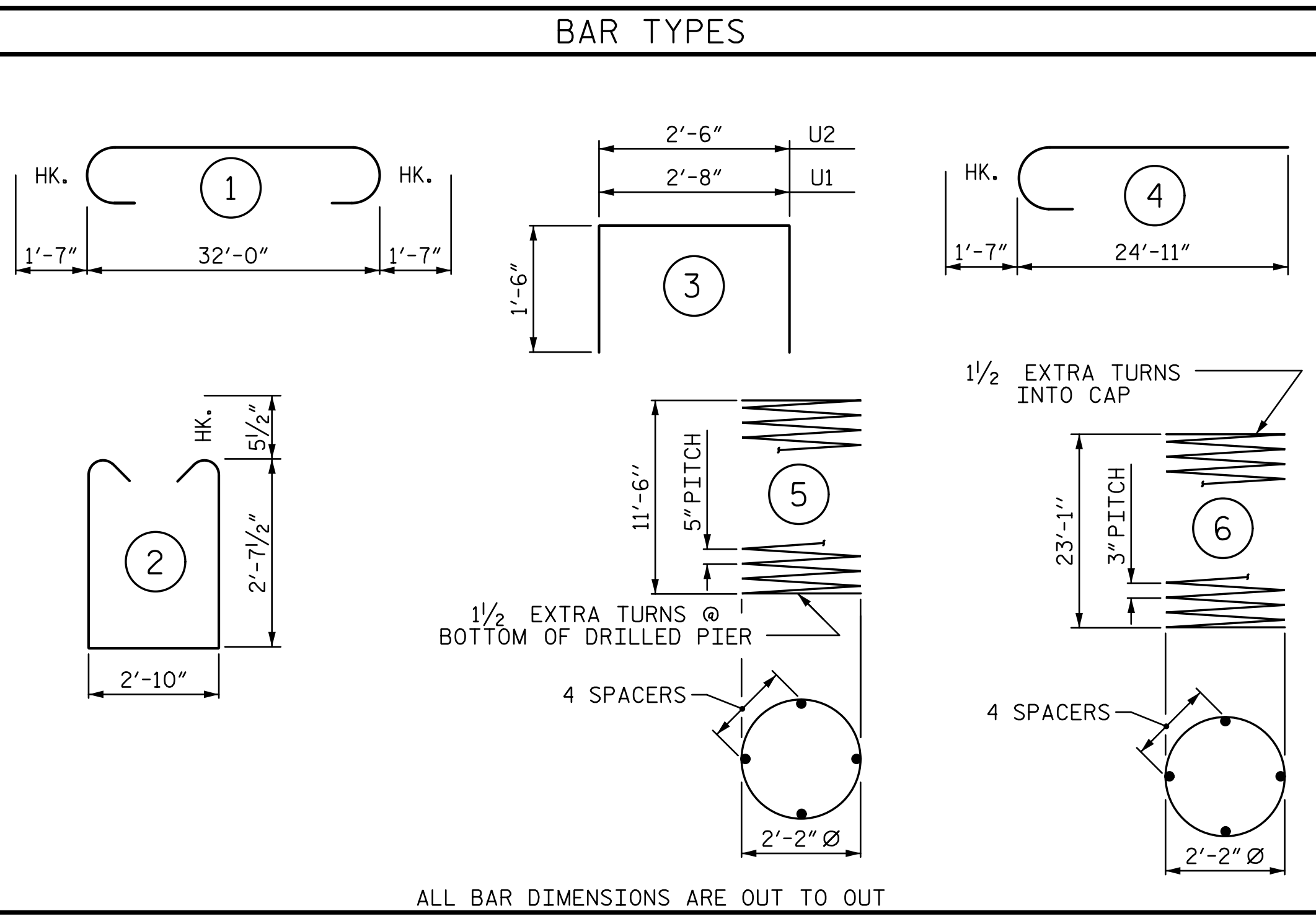
END ELEVATION



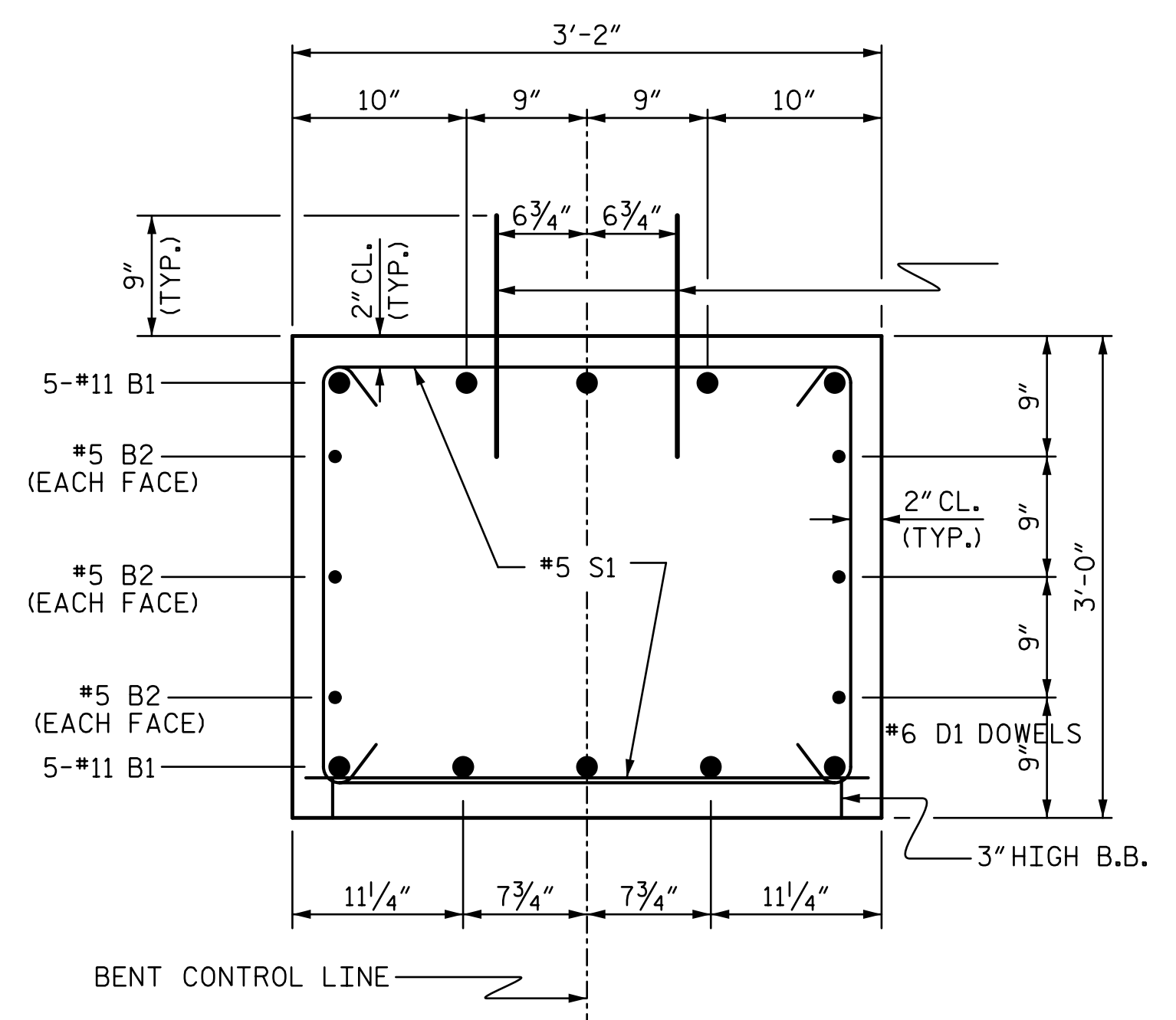
CONSTRUCTION JOINT DETAIL



END OF CAP VIEW
(TYPICAL BOTH ENDS)



ALL BAR DIMENSIONS ARE OUT TO OUT



SECTION THRU CAP

BILL OF MATERIAL FOR ONE BENT					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11	1	35'-2"	1868
B2	6	#5	STR	32'-2"	201
D1	40	#6	STR	1'-6"	90
M1	30	#11	STR	19'-0"	3029
S1	52	#5	2	9'-0"	488
U1	6	#4	3	5'-8"	23
U2	6	#4	3	5'-6"	22
V1	30	#11	4	26'-6"	4224
REINFORCING STEEL (FOR ONE BENT)					9945 LBS.
SP-1	3	*	5	188'-3"	589
SP-2	3	**	6	626'-8"	1256
SPIRAL COLUMN REINFORCING STEEL (FOR ONE BENT)					1845 LBS.
* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR					
** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR					
CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)					
POUR #2 (COLUMNS)					12.5 C.Y.
POUR #3 (CAP)					11.5 C.Y.
TOTAL CLASS A CONCRETE					24.0 C.Y.
DRILLED PIERS: (FOR ONE BENT)					
DRILLED PIER CONCRETE					9.5 C.Y.
POUR #1 (DRILLED PIERS)					9.5 C.Y.
3'-0" Ø DRILLED PIER NOT IN SOIL					33.0 LIN. FT.
3'-0" Ø DRILLED PIER IN SOIL					6.0 LIN. FT.
PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIER					9.0 LIN. FT.
CSL TUBES					162.0 LIN. FT.
SID INSPECTION					1 EA

PROJECT NO. 17BP.12.R.63
CATAWBA COUNTY
 STATION: 13+59.99 -L-

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3/27/2023

Mattern & Craig
 ENGINEERS-SURVEYORS
 12 BROAD STREET
 ASHEVILLE, NORTH CAROLINA 28801
 (828) 254-2201
 FAX (828) 254-4502
 NC LIC. NO. C-1154

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

SHEET NO. S-13	
TOTAL SHEETS 18	

NOTES

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

HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

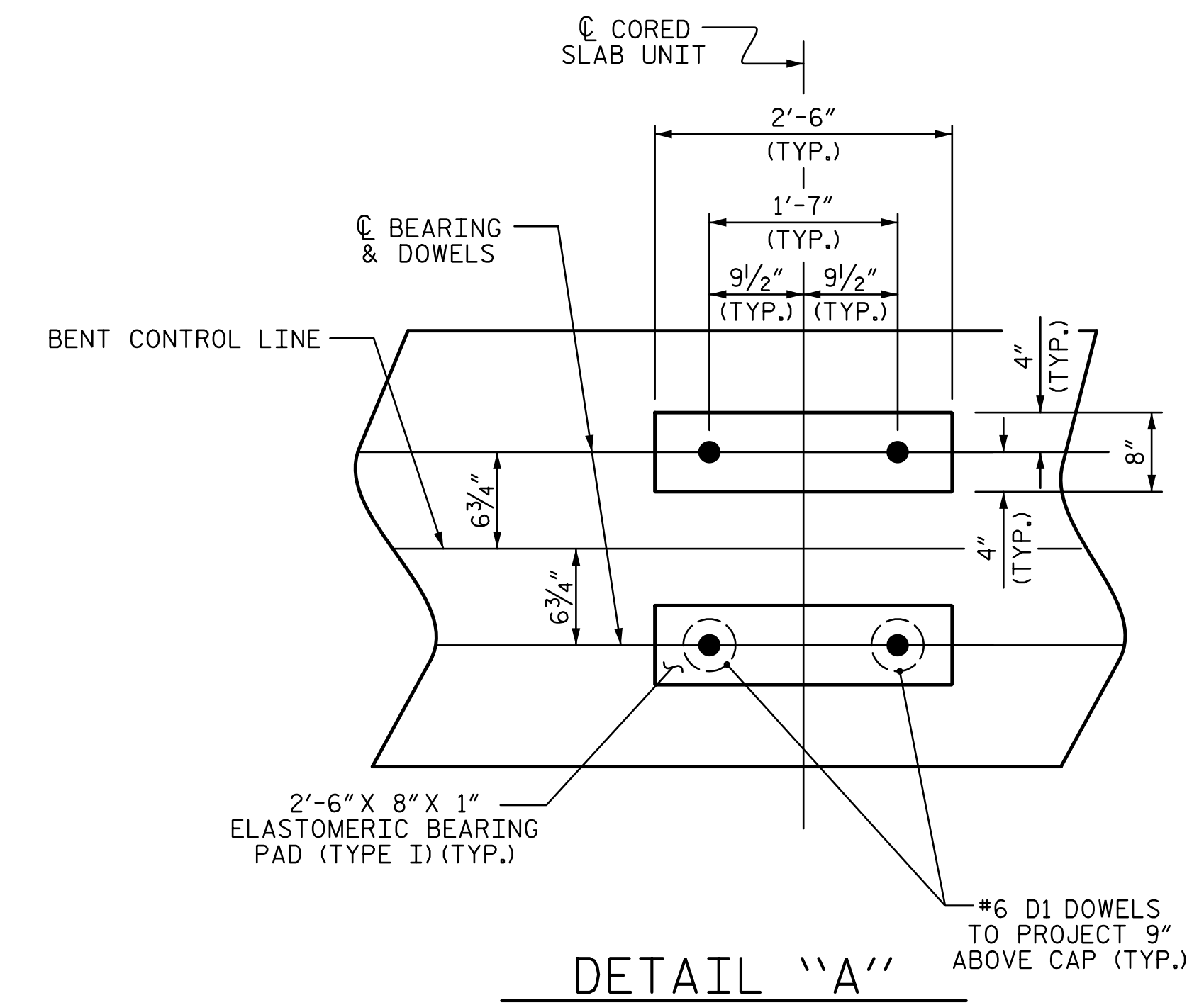
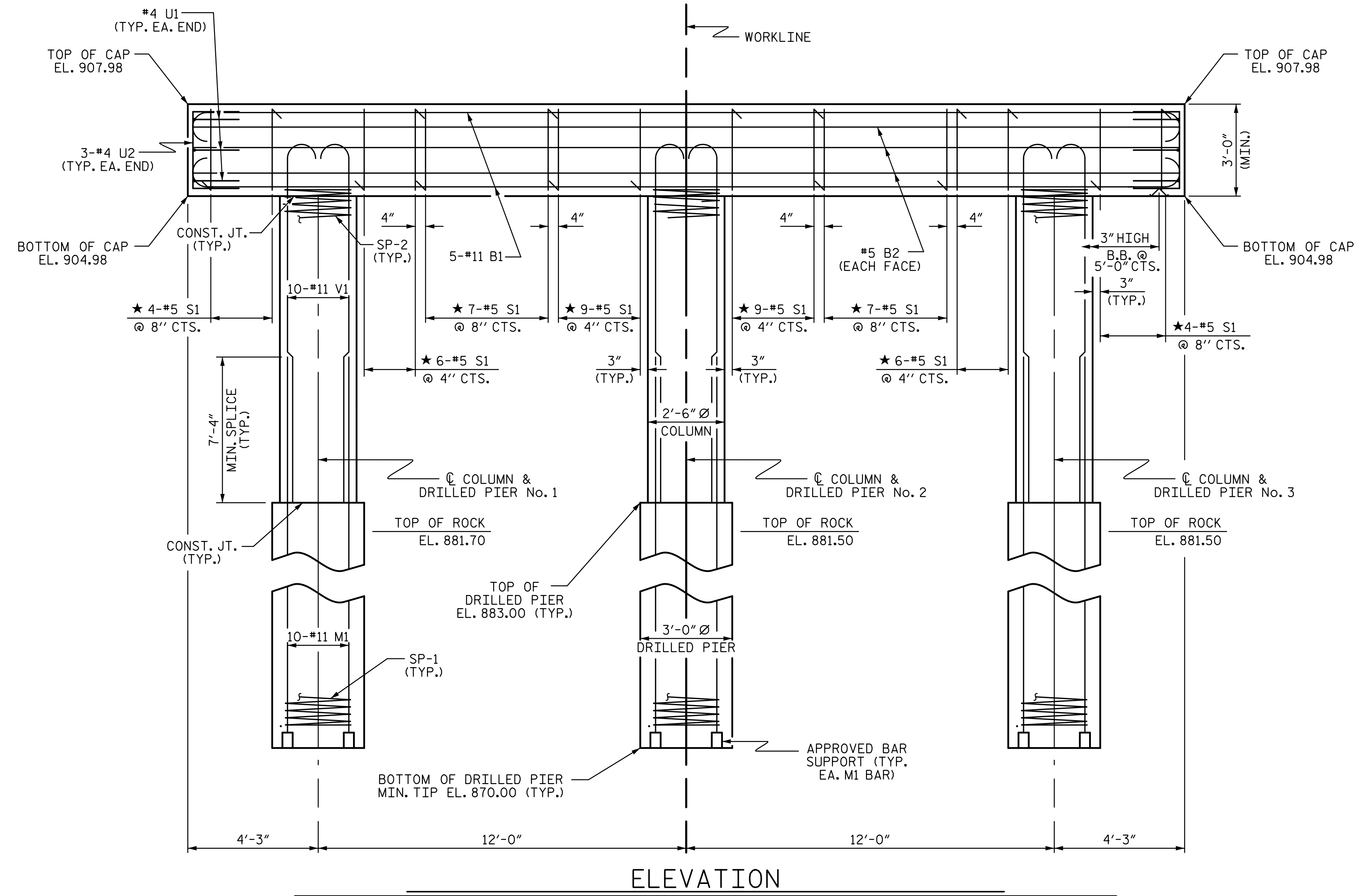
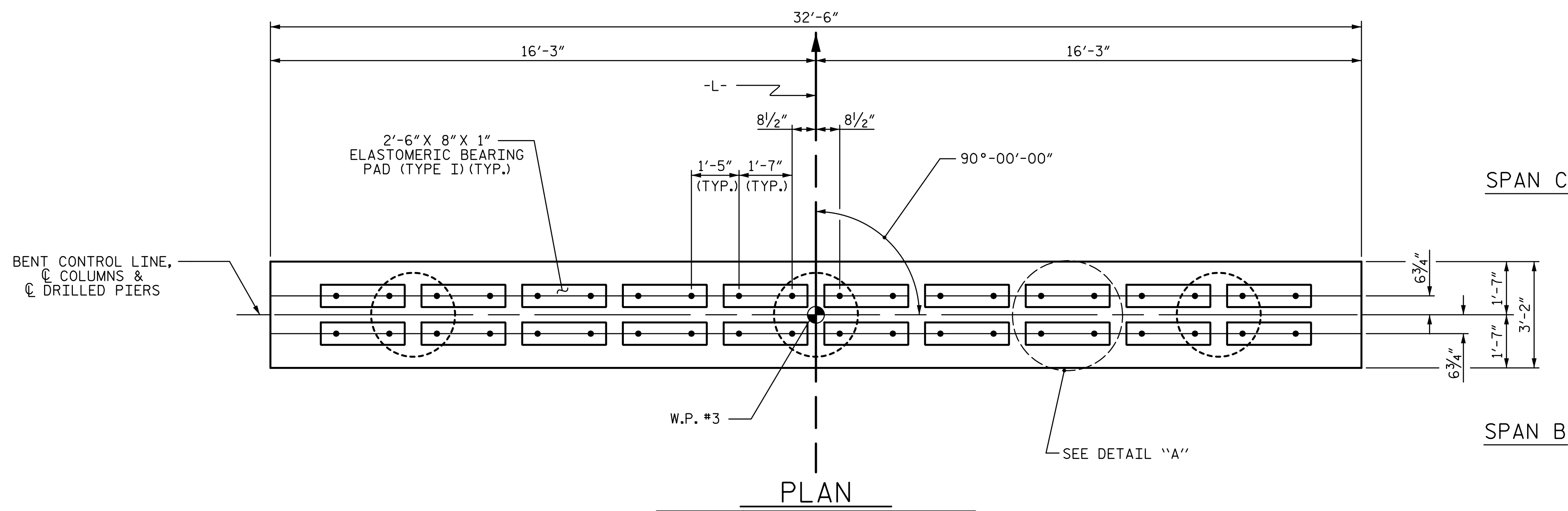
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."

★ INVERT ALTERNATE STIRRUPS.

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT ONE FOOT BELOW THE GROUND LINE.

DRILLED PIERS SHALL BE TERMINATED ONE FOOT ± ABOVE NORMAL WATER SURFACE ELEVATION FOR SHAFTS LOCATED IN WATER.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.



DETAIL "A"
 (DIMENSIONS ARE TYPICAL EACH BEARING)

PROJECT NO. 17BP.12.R.63
 CATAWBA COUNTY
 STATION: 13+59.99 -L-

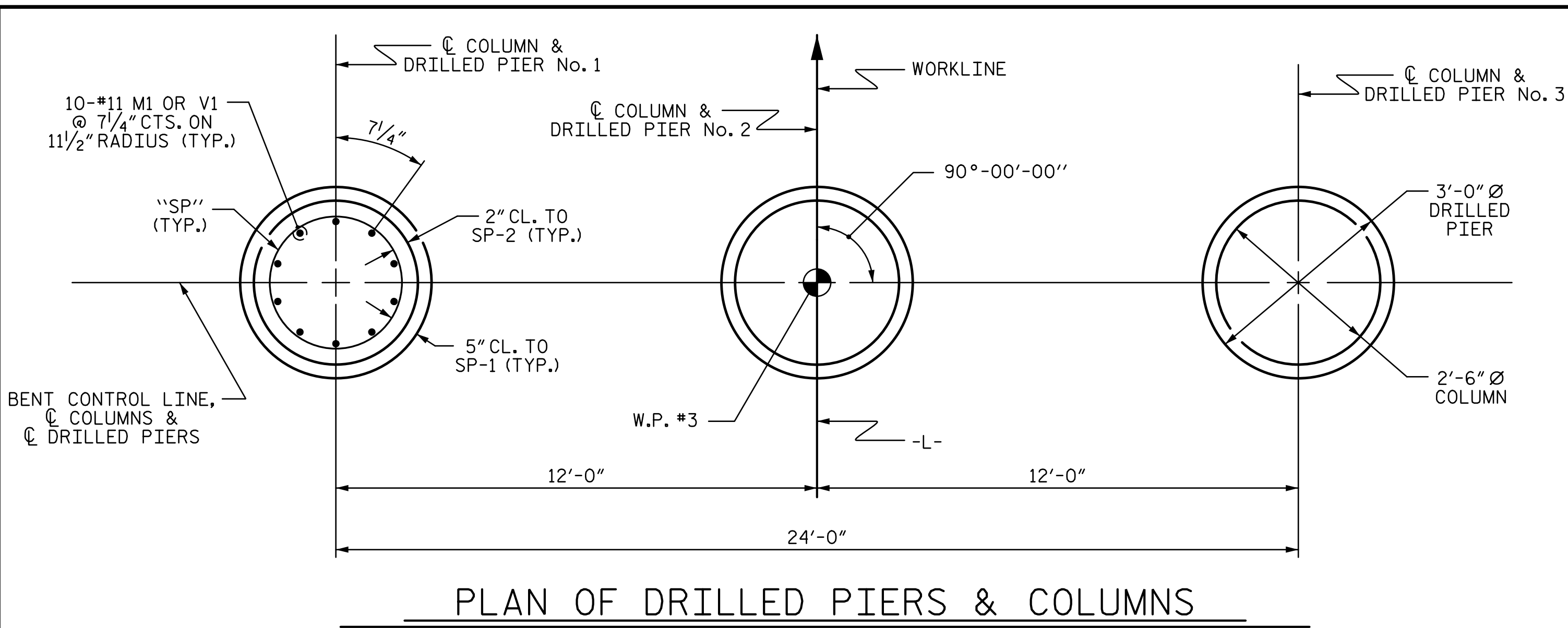
DIMENSIONS & REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER UNLESS OTHERWISE NOTED.

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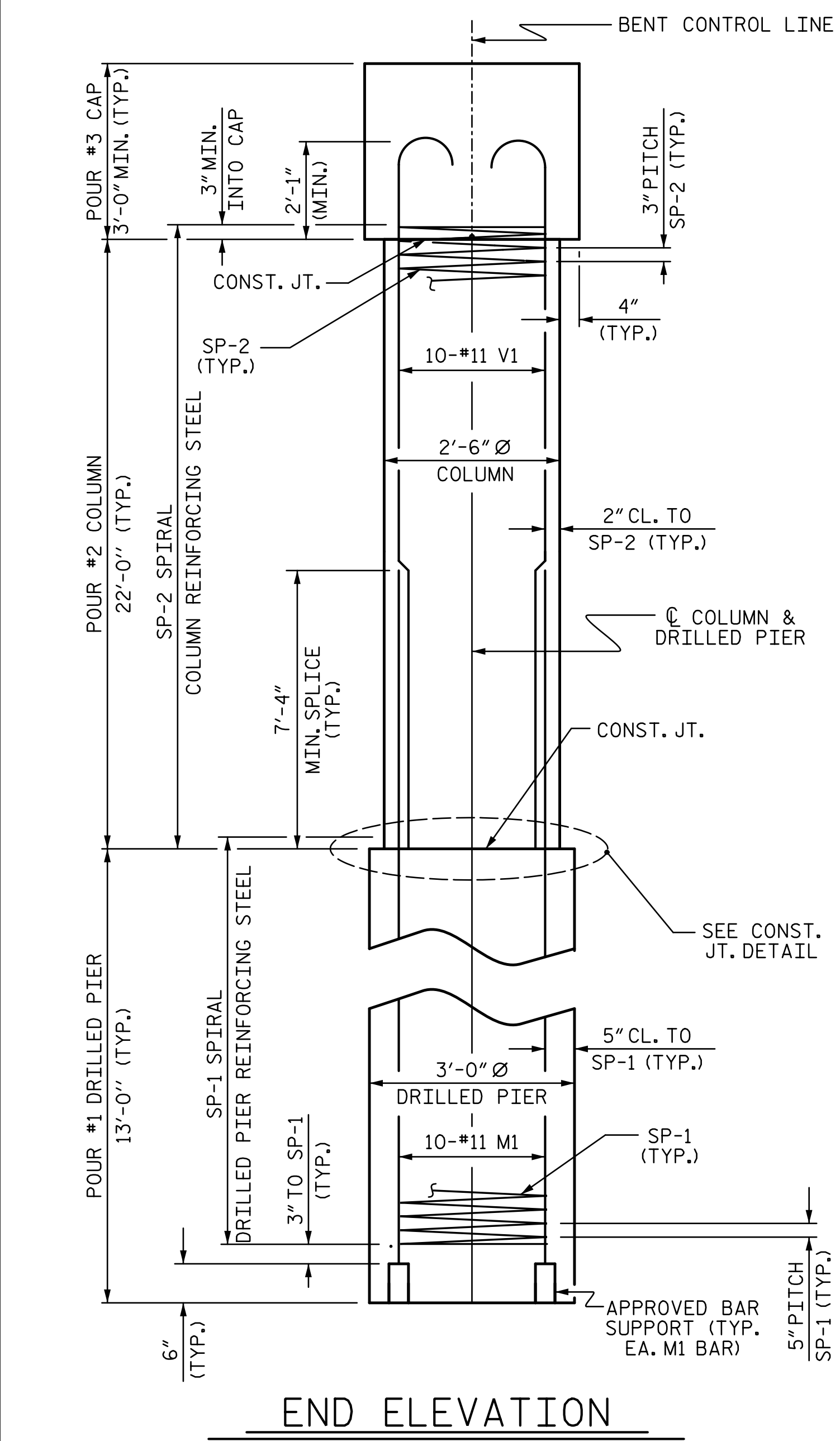
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CHECKED BY : CMT	DATE : 03-23		

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		3/27/2023			
		REVISIONS NO. BY: DATE: NO. BY: DATE:		SHEET NO. S-14	
Mattern & Craig ENGINEERS-SURVEYORS 12 BRADY STREET ASHEVILLE, NORTH CAROLINA 28801 (828) 254-2201 FAX (828) 254-4502 NC LIC. NO. C-1154		TOTAL SHEETS 18			

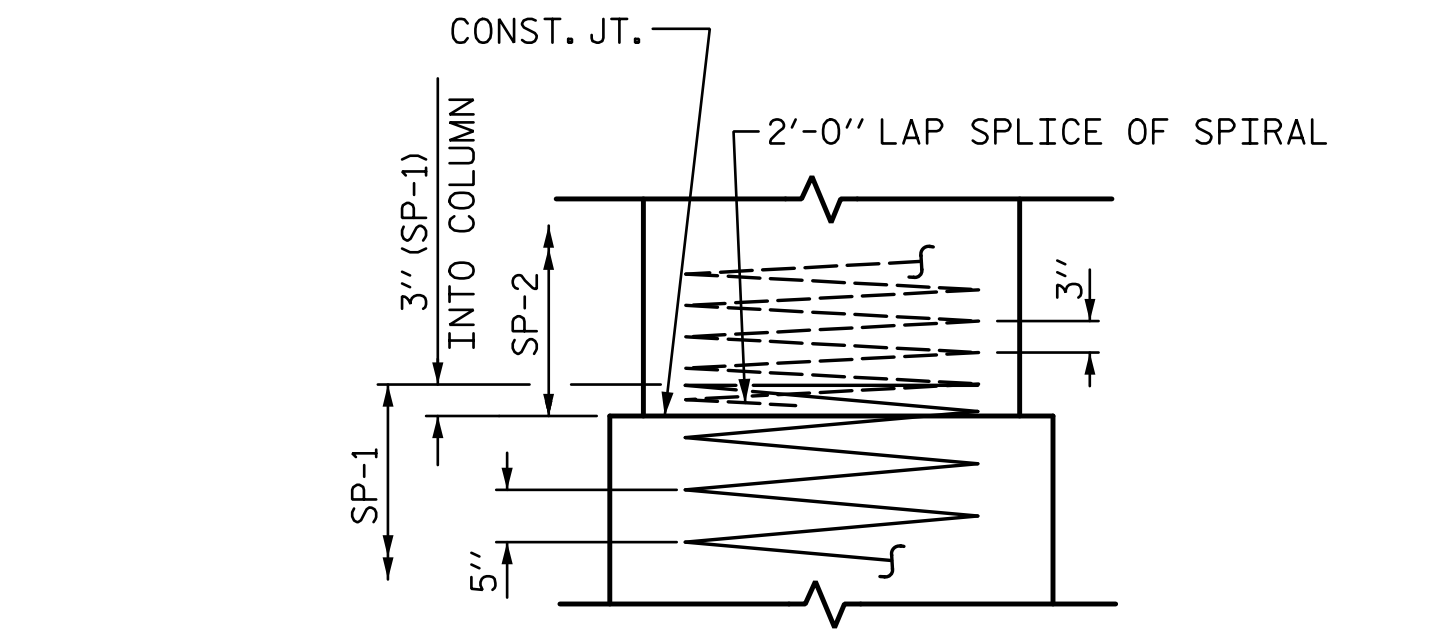
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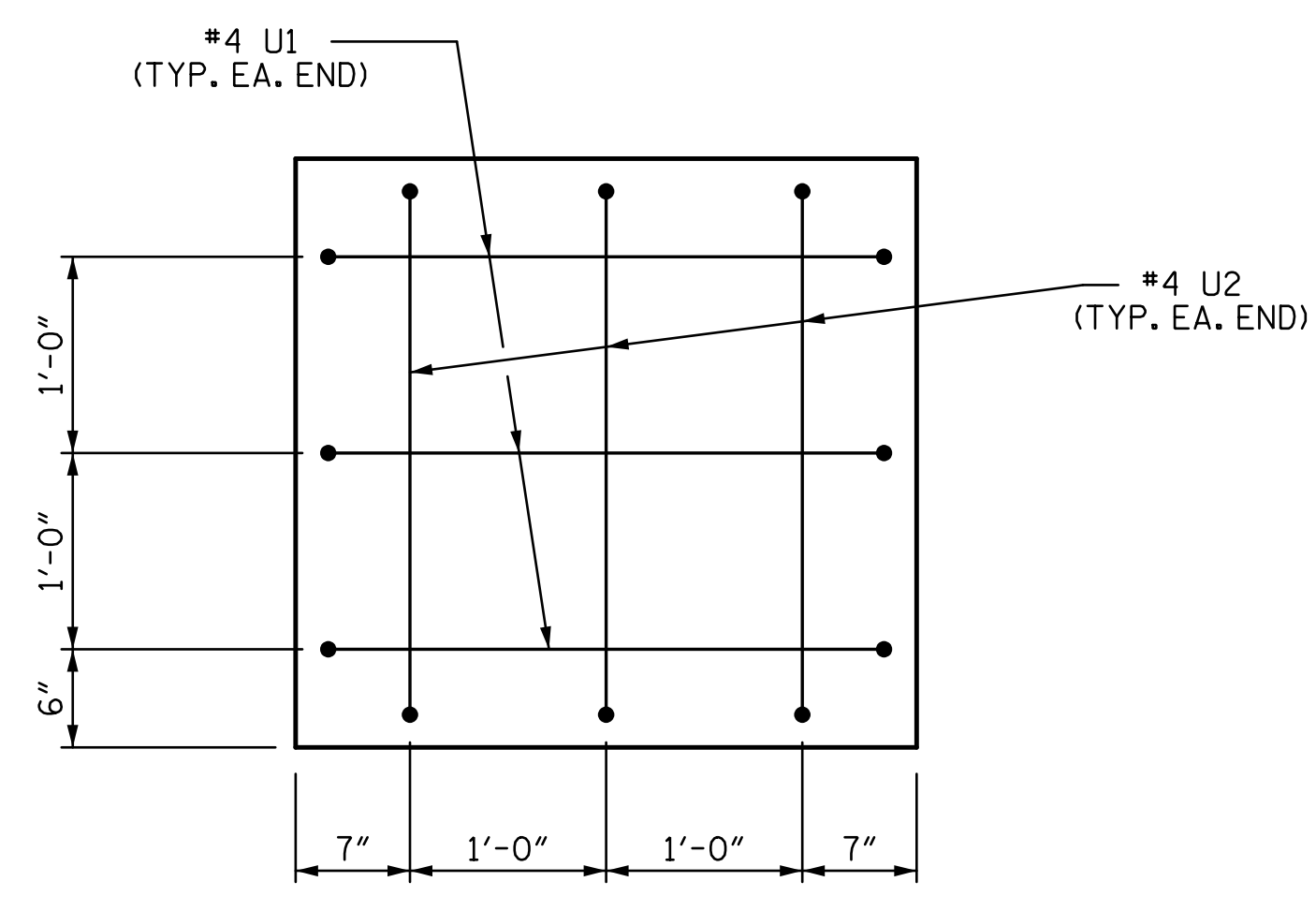
PLAN OF DRILLED PIERS & COLUMNS



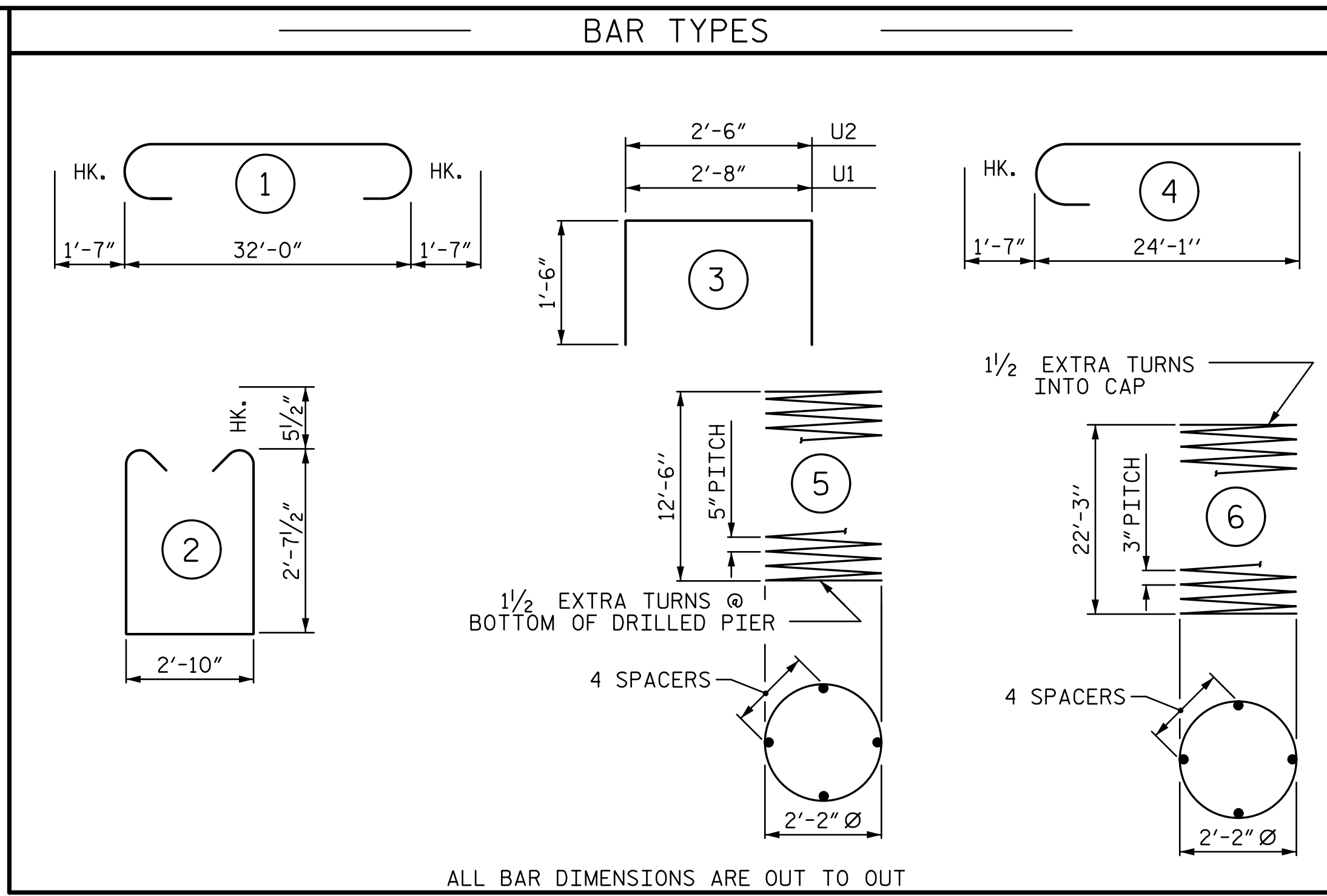
END ELEVATION



CONSTRUCTION JOINT DETAIL

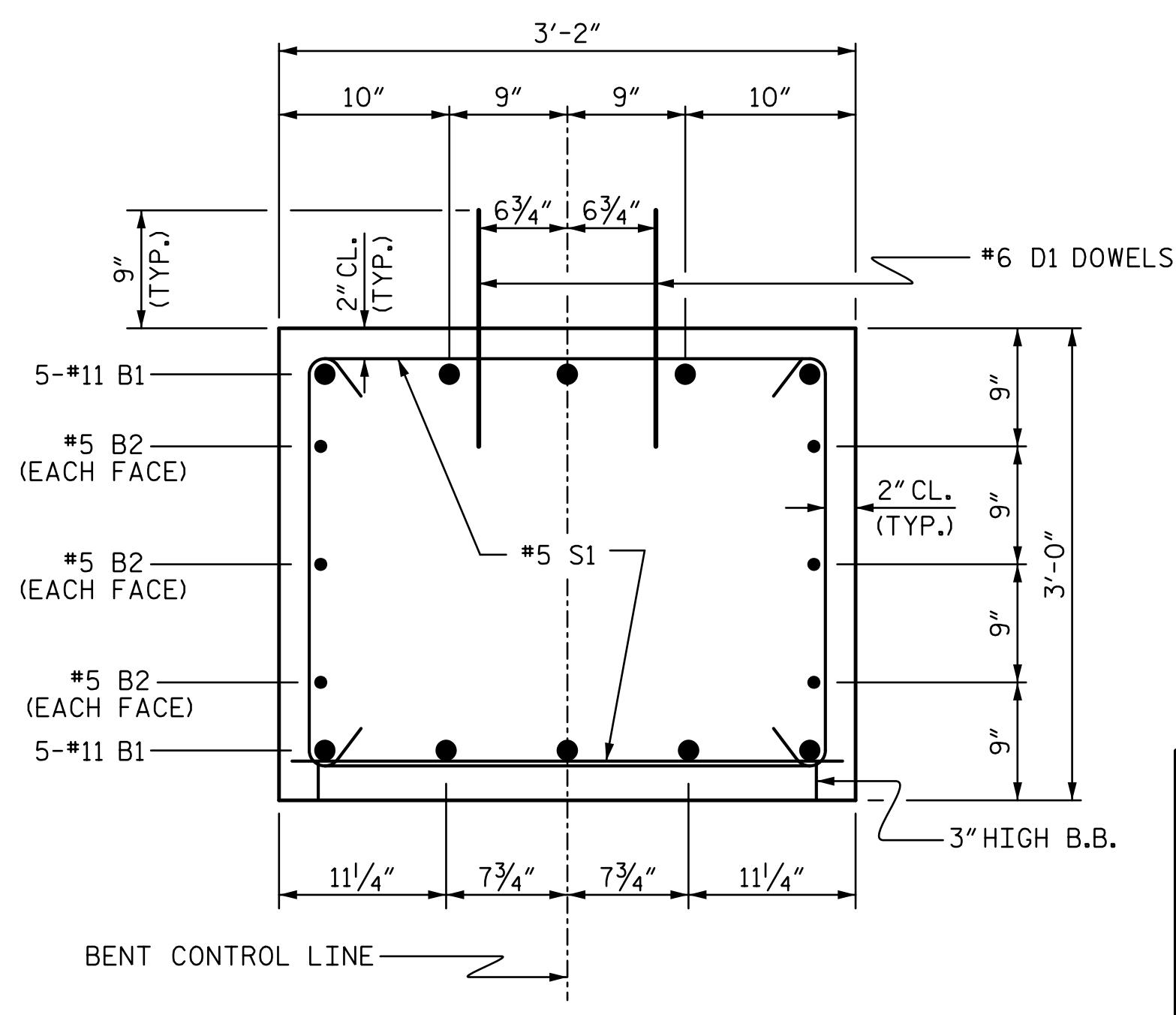


END OF CAP VIEW
(TYPICAL BOTH ENDS)



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE BENT					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11	1	35'-2"	1868
B2	6	#5	STR	32'-2"	201
D1	40	#6	STR	1'-6"	90
M1	30	#11	STR	20'-0"	3188
S1	52	#5	2	9'-0"	488
U1	6	#4	3	5'-8"	23
U2	6	#4	3	5'-6"	22
V1	30	#11	4	25'-8"	4092
REINFORCING STEEL (FOR ONE BENT)					9972 LBS.
SP-1	3	*	5	204'-7"	641
SP-2	3	**	6	603'-11"	1211
SPIRAL COLUMN REINFORCING STEEL (FOR ONE BENT)					1852 LBS.
* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR					
** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR					
CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)					
POUR #2 (COLUMNS)					12.0 C.Y.
POUR #3 (CAP)					11.5 C.Y.
TOTAL CLASS A CONCRETE					23.5 C.Y.
DRILLED PIERS: (FOR ONE BENT)					
DRILLED PIER CONCRETE					10.3 C.Y.
POUR #1 (DRILLED PIERS)					10.3 C.Y.
3'-0" Ø DRILLED PIER NOT IN SOIL					34.0 LIN. FT.
3'-0" Ø DRILLED PIER IN SOIL					5.0 LIN. FT.
PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIER					11.0 LIN. FT.
CSL TUBES					174.0 LIN. FT.



SECTION THRU CAP

PROJECT NO. 17BP.12.R.63
CATAWBA COUNTY
 STATION: 13+59.99 -L-

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3/27/2023

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 NC LIC. NO. C-1154

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT No. 2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
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SHEET NO. S-15	
TOTAL SHEETS 18	

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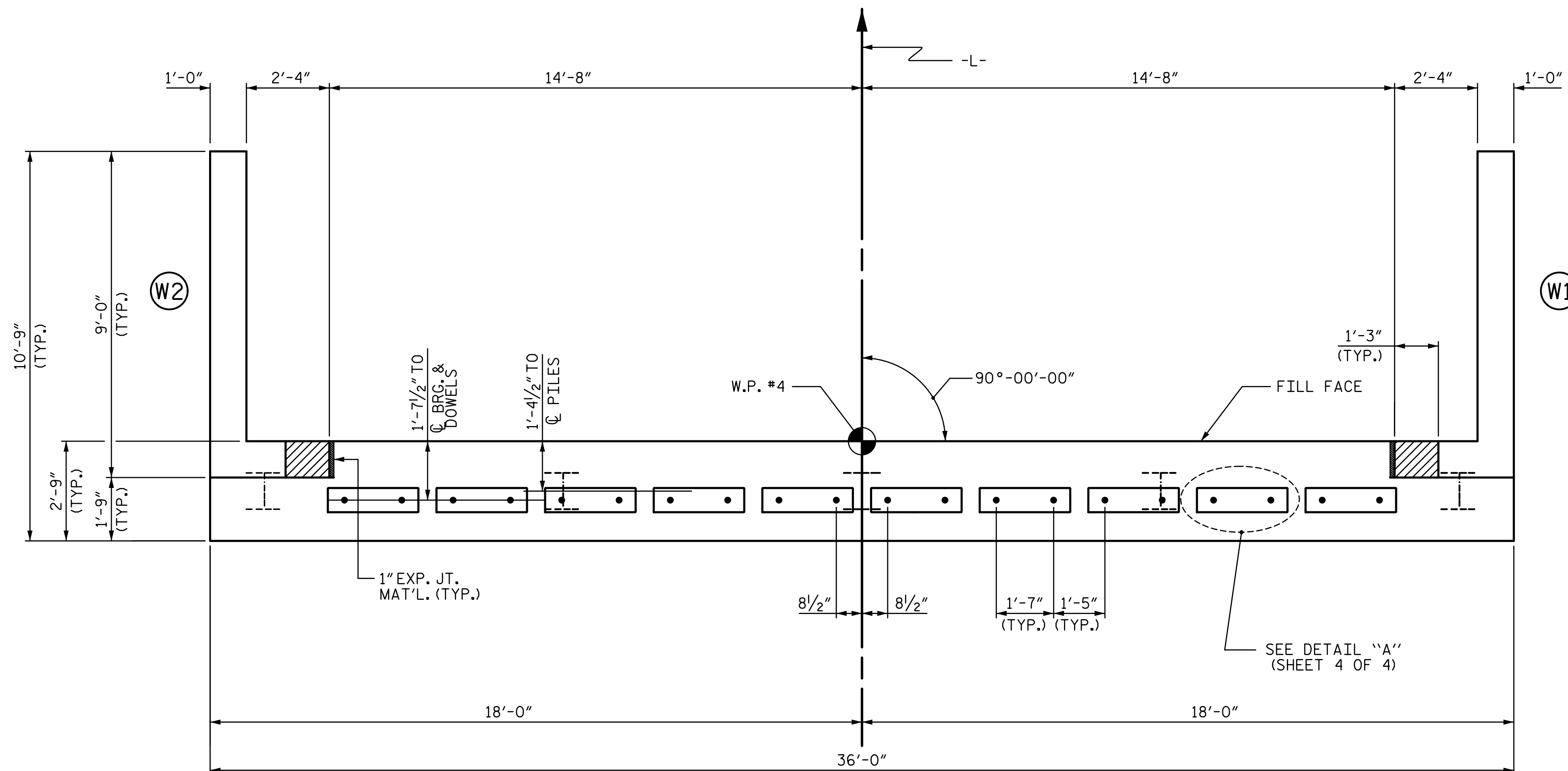
NOTES

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

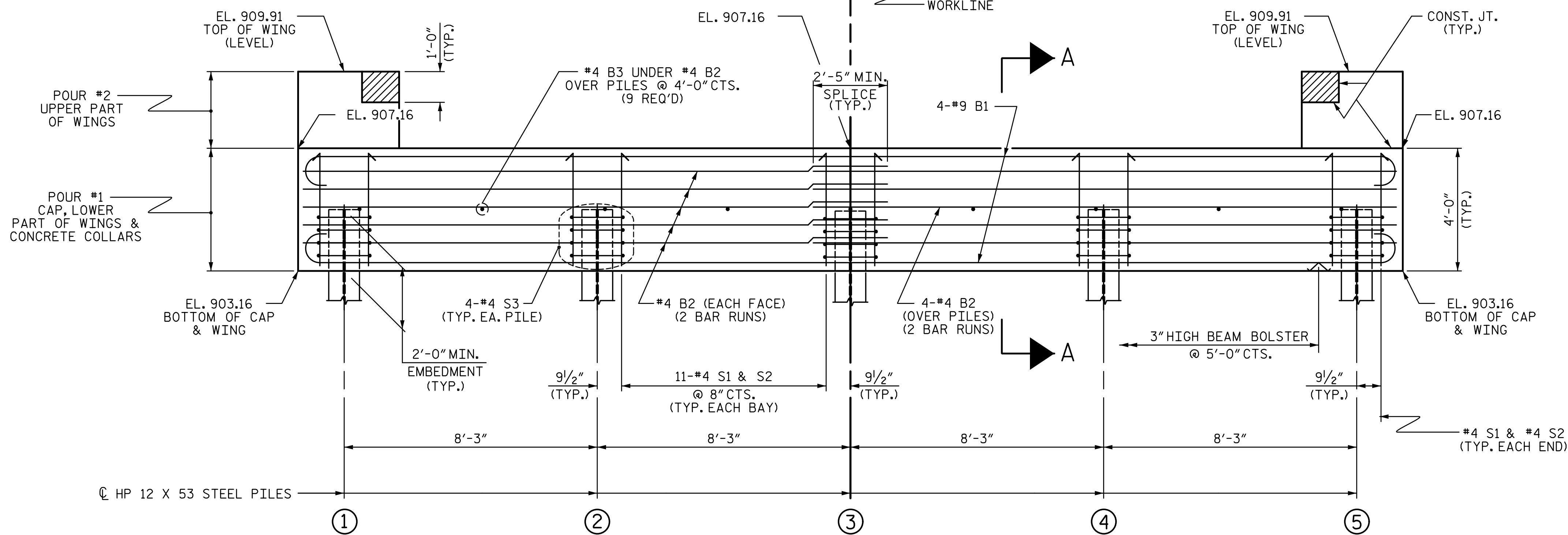
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

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.

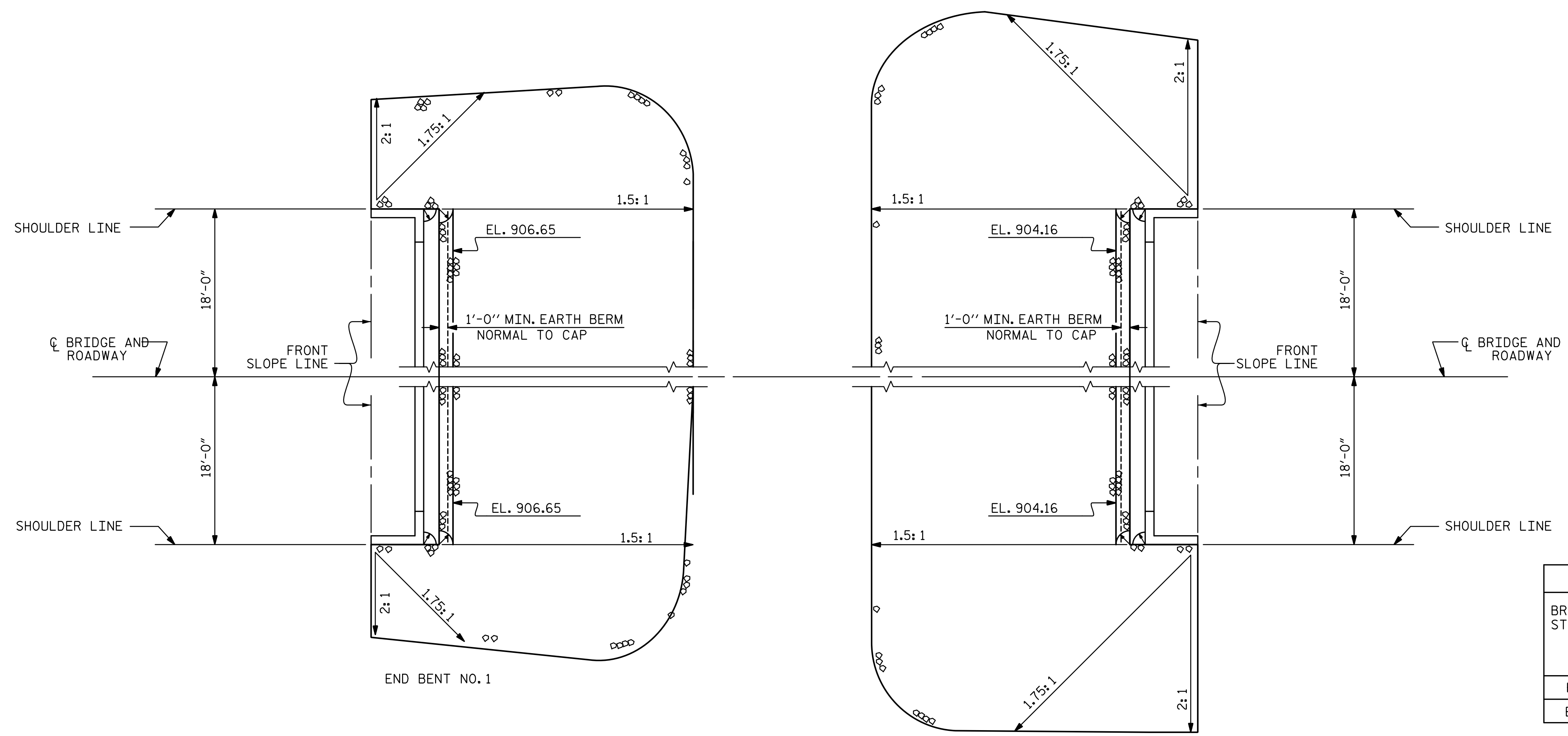
PROJECT NO. 17BP.12.R.63
CATAWBA COUNTY
 STATION: 13+59.99 -L-

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	SUBSTRUCTURE END BENT No. 2				TOTAL SHEETS 18
	REVISIONS				
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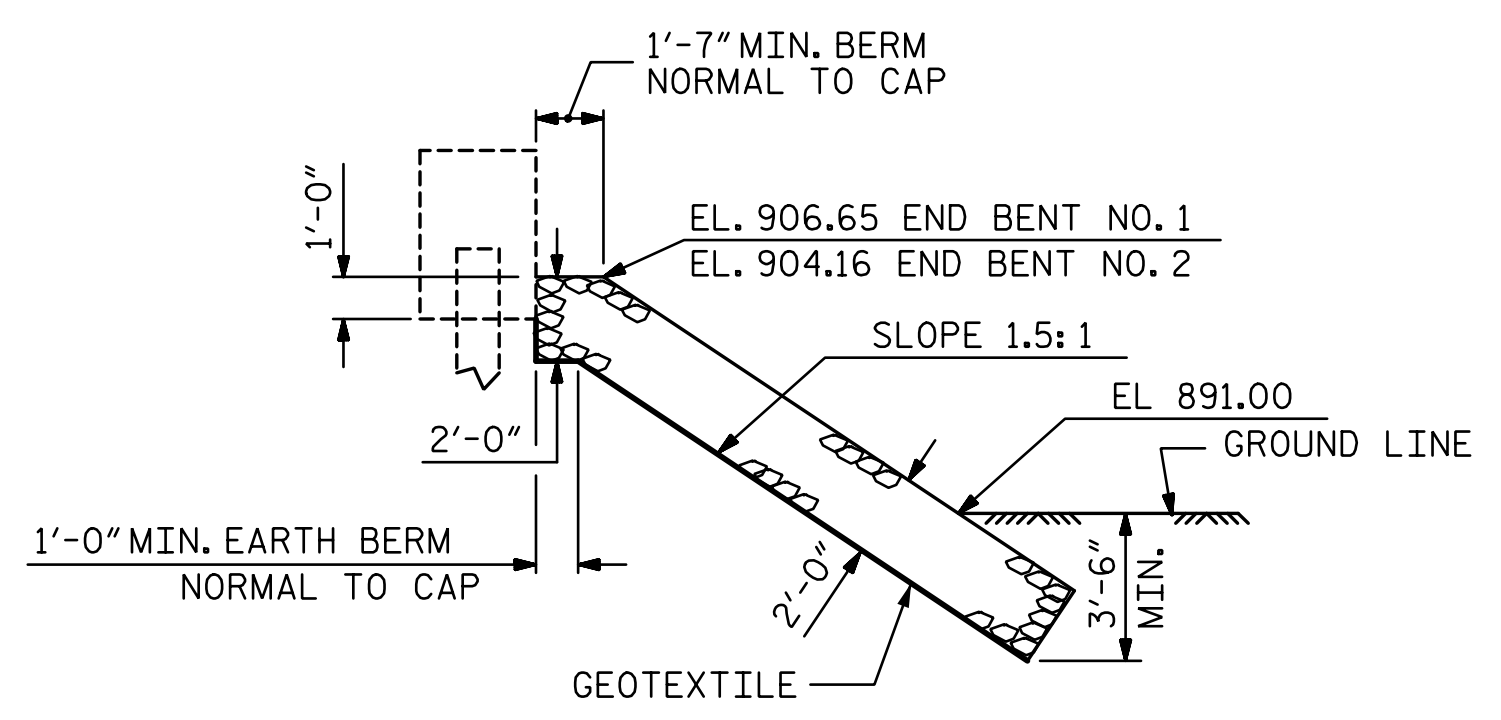
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CHECKED BY : <u>CMT</u>	DATE : <u>03-23</u>		

NOTES :
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.



PLAN

ESTIMATED QUANTITIES		
BRIDGE @ STA. 13+59.99 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	270	330
END BENT 2	270	330



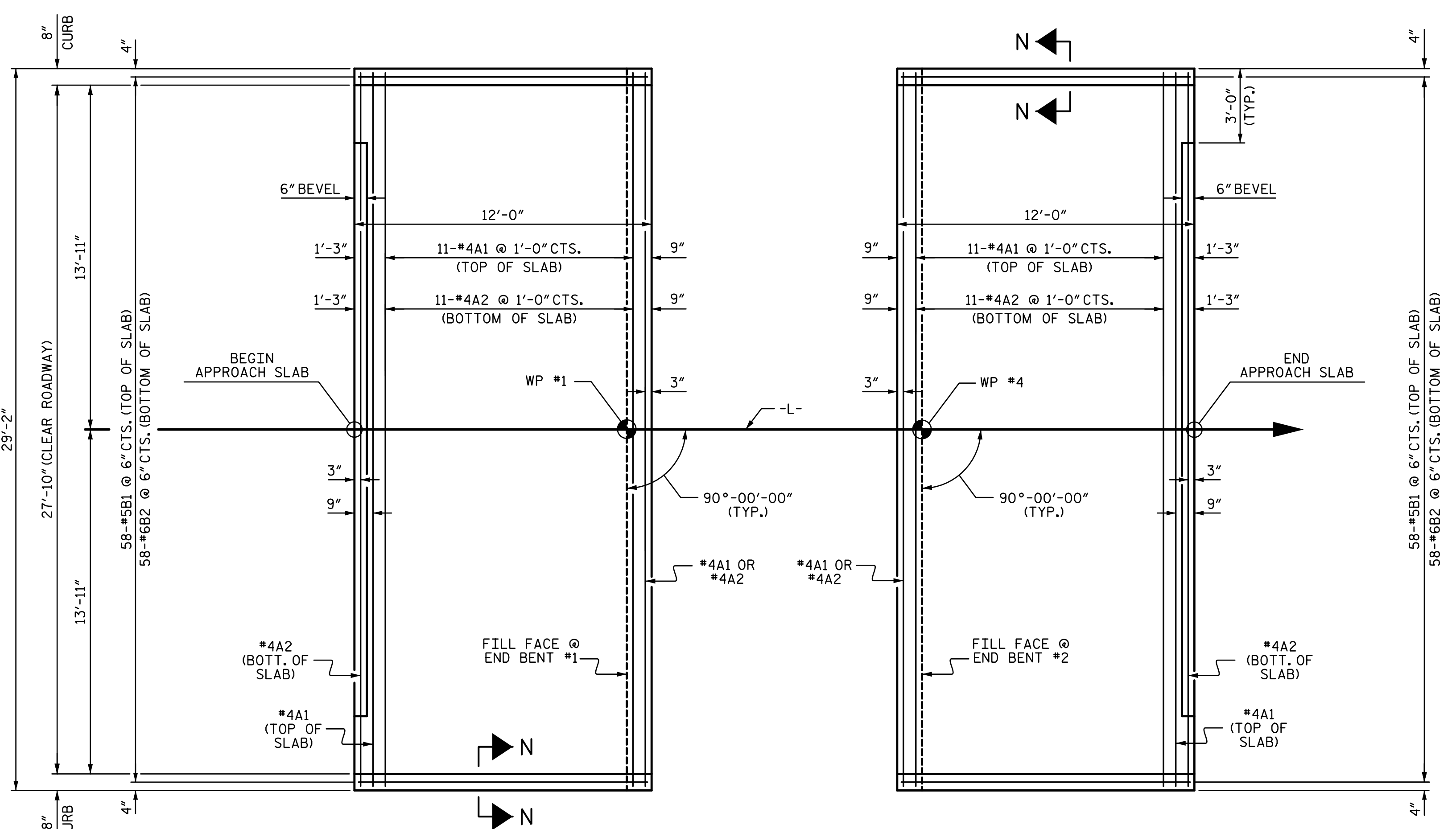
SECTION
BERM RIP RAPPED

PROJECT NO. 17BP.12.R.63
CATAWBA COUNTY
STATION: 13+59.99 -L-

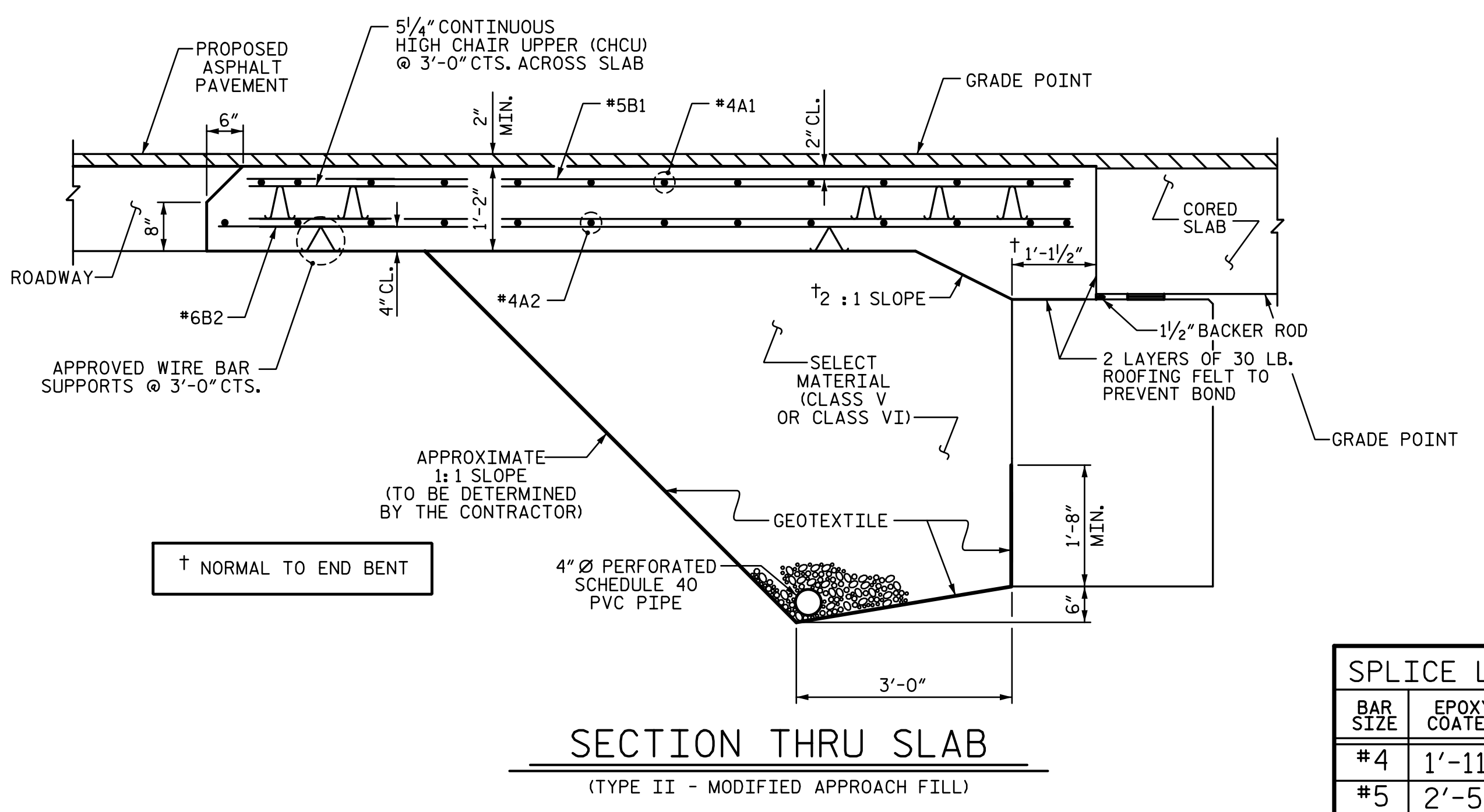
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		REVISIONS					
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1			3				
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					SHEET NO. S-17 TOTAL SHEETS 18		

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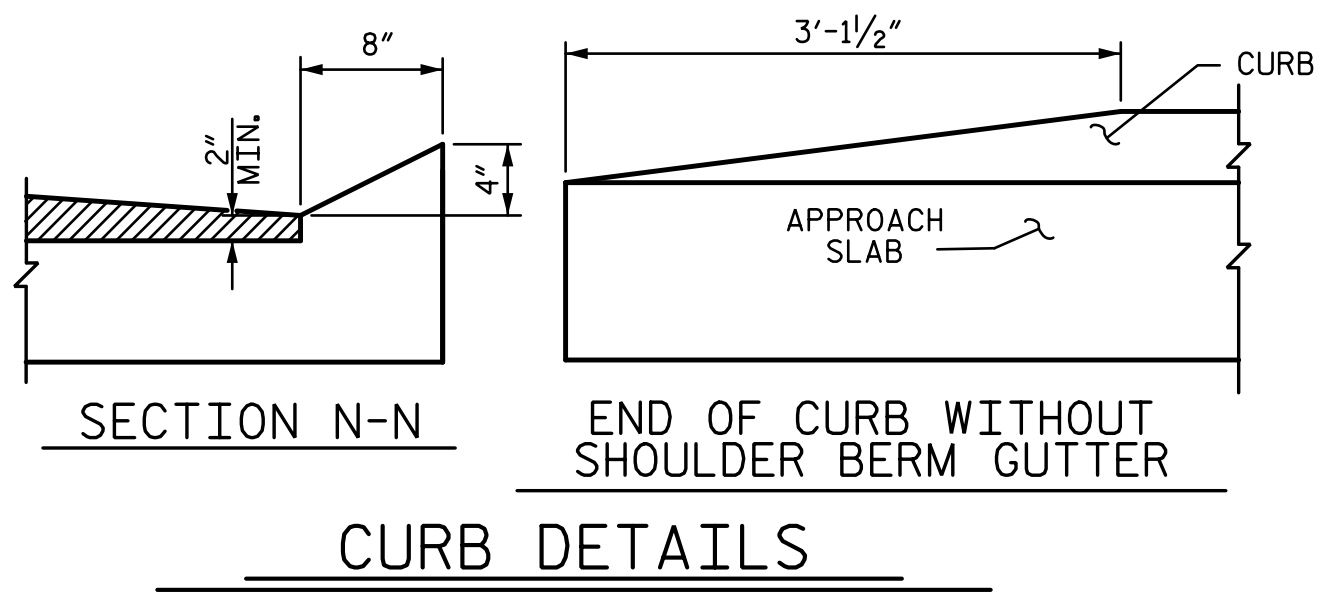
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PLAN @ END BENT #1 PLAN @ END BENT #2
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



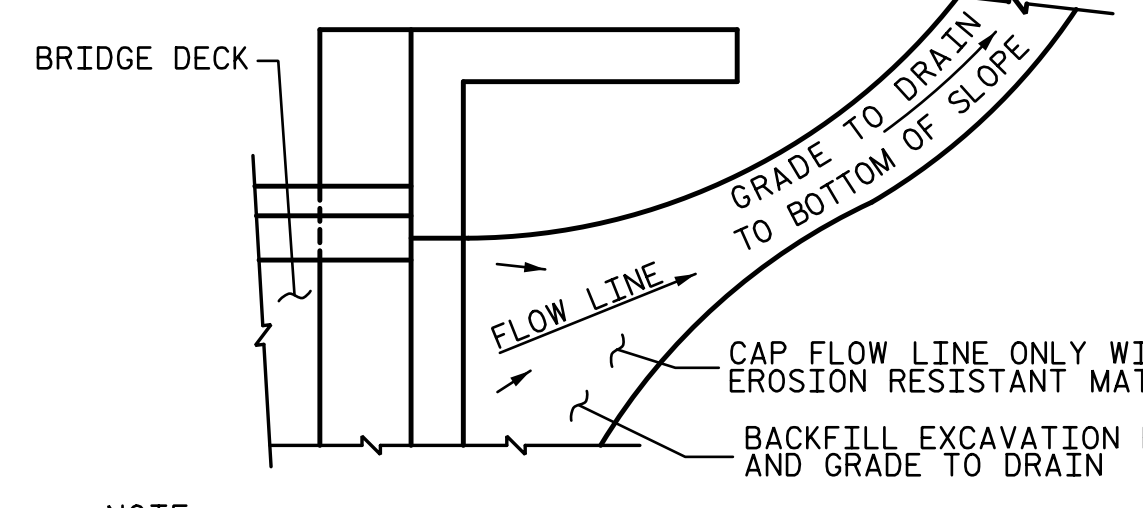
SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	1'-11"	1'-7"
#5	2'-5"	2'-0"
#6	3'-7"	2'-5"



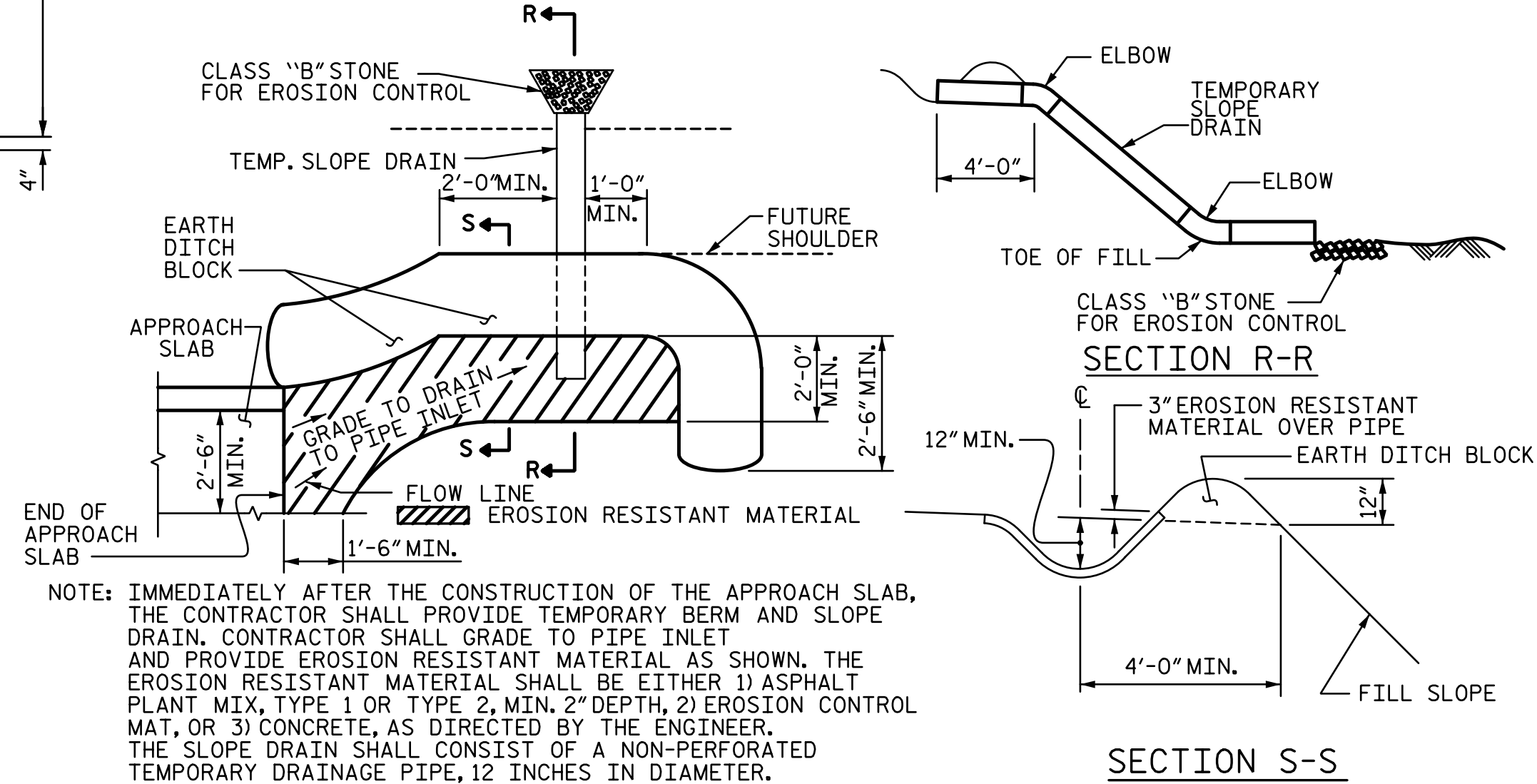
CURB DETAILS

NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4" Ø DRAINAGE PIPE, AND SELECT MATERIAL BACKFILL, SEE ROADWAY PLANS.
 GEOTEXTILE SHALL BE TYPE 1 IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.
 SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.
 SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.
 FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.
 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.



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 BERM AND SLOPE DRAIN DETAILS
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

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.	17.7
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.	17.7

PROJECT NO. 17BP.12.R.63
 CATAWBA COUNTY
 STATION: 13+59.99 -L-

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

3/27/2023

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 (828) 254-2201
 FAX (828) 254-4502
 NC LIC. NO. C-1154

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S-18
 TOTAL SHEETS 18

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DRAWN BY: CTB DATE: 03-23
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 DESIGN ENGINEER OF RECORD: T. TOWNSEND DATE: 03-23

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.
- AASHTO M270 GRADE 50W	--	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	--	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 2018 "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 $1\frac{1}{2}$ " 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 $\frac{5}{16}$ " 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. FINISHES 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.

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