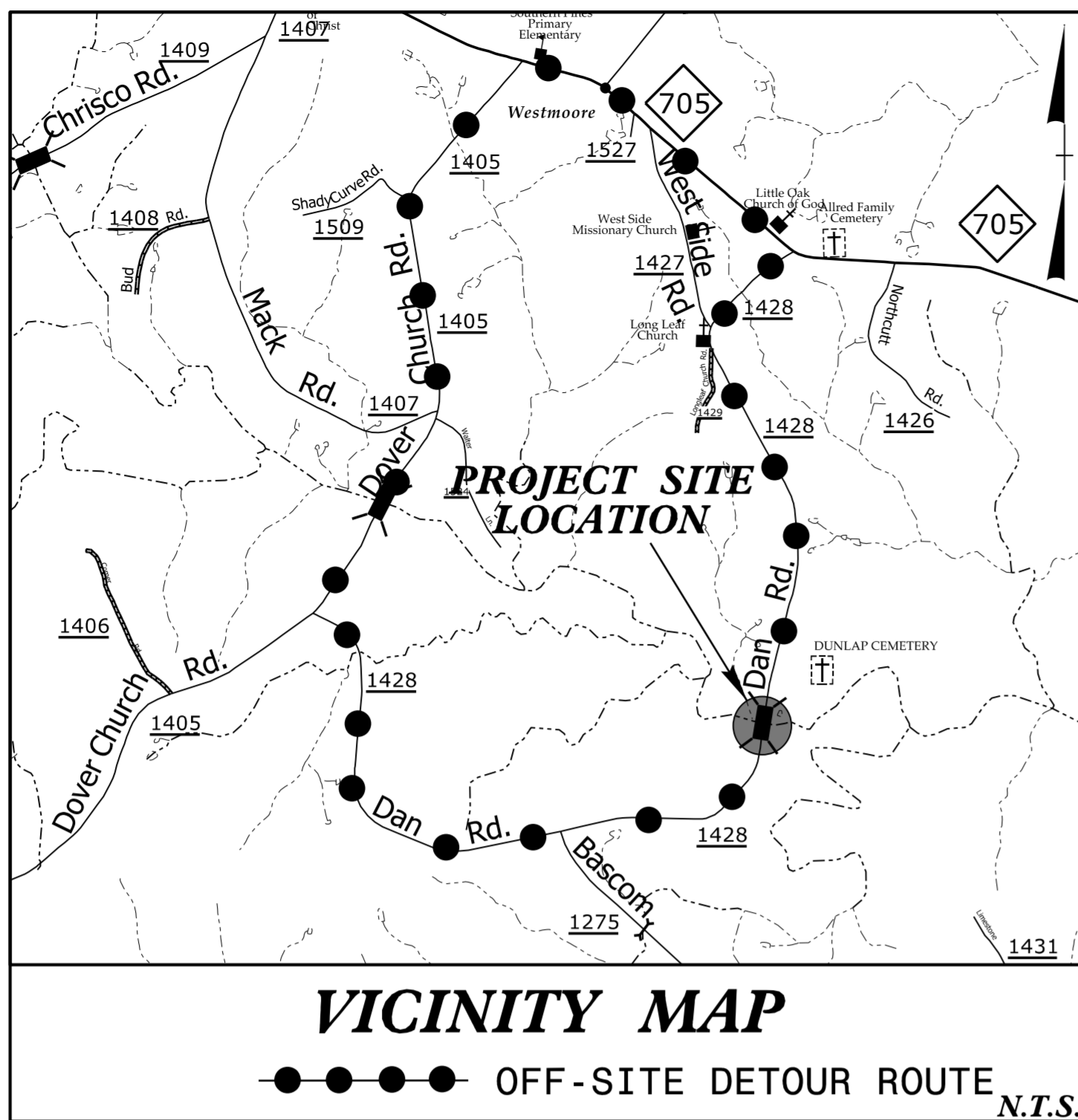


09/08/19

See Sheet 1A For Index of Sheets

**PROJECT: BP8.R010**



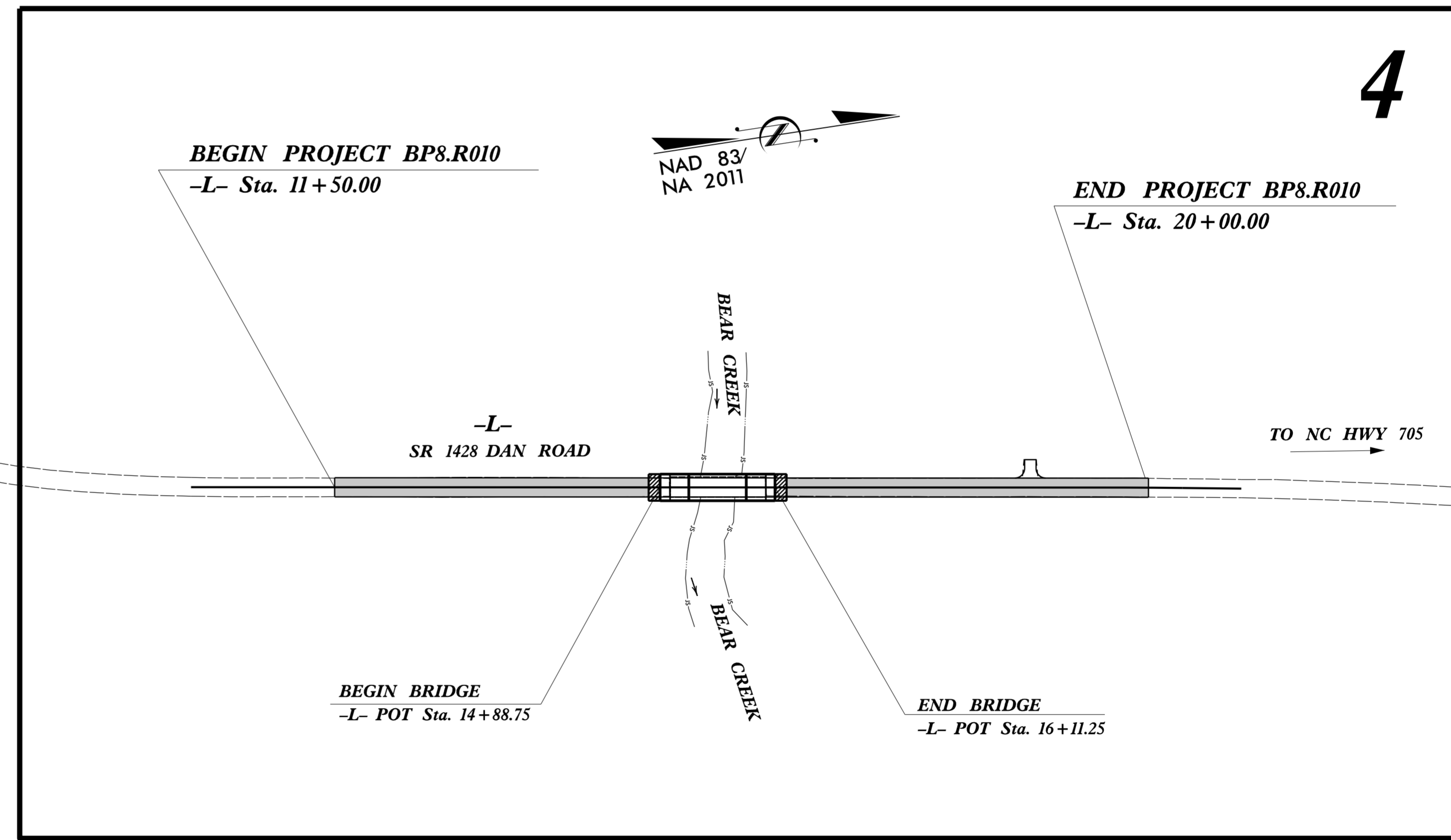
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# MOORE COUNTY

**LOCATION: BRIDGE 620127 OVER BEAR CREEK  
ON SR 1428 (DAN ROAD)**

**TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURES**

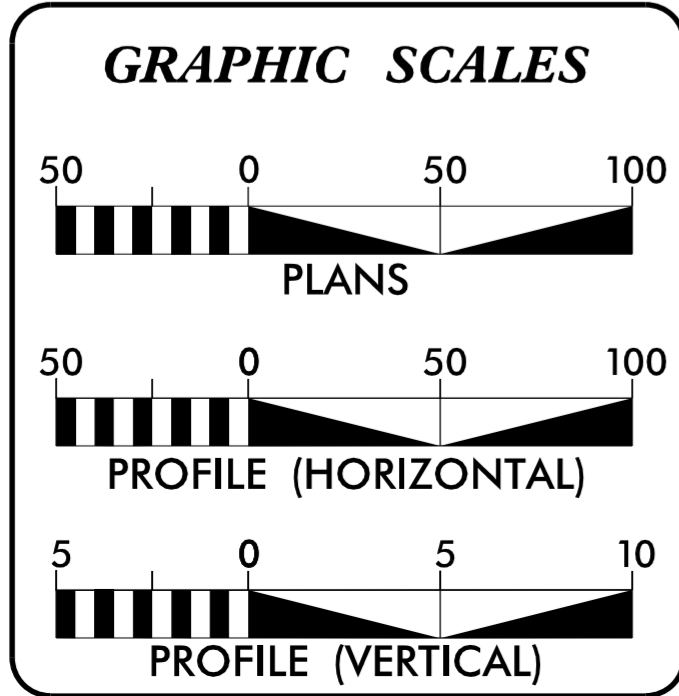
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	<b>BP8.R010</b>	<b>1</b>	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
BP8.R010.1		P.E.	
BP8.R010.2		RW & Utilities	
BP8.R010.3		Construction	



**4**

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

**CONTRACT:**



**DESIGN DATA**

ADT 2015 =	300
ADT 2040 =	600
K =	%
D =	%
T =	6 % *
V =	MPH
* TTST =	DUAL
FUNC CLASS =	LOCAL
SUBREGIONAL TIER	

**PROJECT LENGTH**

LENGTH ROADWAY PROJECT BP8.R010	=	0.138 mi
LENGTH STRUCTURE PROJECT BP8.R010	=	0.023 mi
TOTAL LENGTH OF PROJECT BP8.R010	=	0.161 mi

**PLANS PREPARED BY:**  
**CH ENGINEERING**  
3220 GLEN ROYAL RD, RALEIGH, NC 27617  
TELE 919.788.0224 FAX 919.788.0232  
NC LICENSE #P-0189

**2018 STANDARD SPECIFICATIONS**

**RIGHT OF WAY DATE:**  
July 24, 2021

**LETTING DATE:**  
November 23, 2021

**PLANS PREPARED FOR:**  
**DIVISION OF HIGHWAYS  
DIVISION 8**  
121 DOT Drive  
Carthage, NC 28327

**BRIAN A. WILES, PE**  
PROJECT ENGINEER

**TIM WELCH, PE**  
NCDOT CONTACT  
DIV 8 BRIDGE PROGRAM MANAGER

**HYDRAULICS ENGINEER**

**MI ENGINEERING**  
1011 SCHUBB DRIVE, SUITE 100  
RALEIGH, NC 27605  
919.876.8888  
FIRM PE NUMBER: P-0671

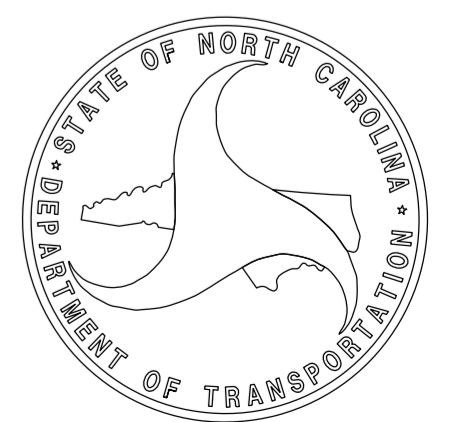
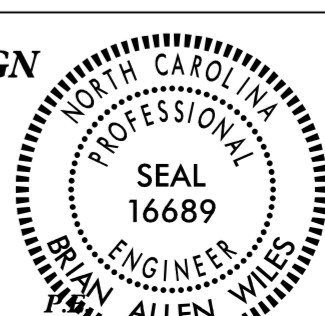
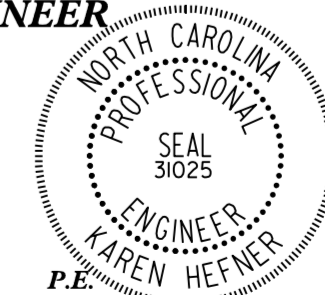
10/4/2021

DocuSigned by:  
*Karen Heffner*  
SIGNATURE:

**ROADWAY DESIGN ENGINEER**

10/4/2021

DocuSigned by:  
*Brian A Wiles*  
SIGNATURE:



10/4/2021  
R:\Roadway\Proj\B620127\_Rdy\_t.sh.dgn  
-USERNAME-

PROJECT REFERENCE NO. <i>BP8.R010</i>	SHEET NO. <i>1A</i>
--	------------------------

3220 GLEN ROYAL RD. RALEIGH, NC 27617  
TELE 919.788.0224 FAX 919.788.0232  
NC LICENSE #P-0189

ROADWAY DESIGN ENGINEER  
10/14/2021  
NORTH CAROLINA PROFESSIONAL SEAL  
16689  
BRIAN ALLEN  
BRIAN ALLEN  
BRIAN ALLEN

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

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1	PAVEMENT SCHEDULE, TYPICAL SECTIONS No. 1 THRU 3, PAVED SHOULDER DETAILS AND WEDGING DETAILS
2C-1	GUARDRAIL INSTALLATION - SHEET 6 OF 8
2C-2	DETAIL OF STRUCTURE ANCHOR UNIT, TYPE III
3B-1	SUMMARIES OF EARTHWORK, GUARDRAIL, ASPHALT PAVEMENT REMOVAL AND SHOULDER BERM GUTTER
3D-1	LIST OF PIPES, ENDWALLS, ETC. (for PIPES 48" & UNDER)
3G-1	SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION
4	PLAN SHEET
5	PROFILE SHEET
RW01 THRU RW04	RIGHT OF WAY SHEETS
TMP-1 THRU TMP-4	TRAFFIC MANAGEMENT PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-1 THRU X-14	CROSS-SECTIONS
S-1 THRU S-21	STRUCTURE PLANS

**GENERAL NOTES:** 2018 SPECIFICATIONS  
EFFECTIVE: 01-16-2018  
REVISED:

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

**CLEARING:**  
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

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

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

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

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

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

**UTILITIES:**  
UTILITY OWNERS ON THIS PROJECT ARE Randolph EMC - Power and Randolph Telephone Membership Corporation - Communications.  
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 CONTRACT.

EFF. 01-16-2018  
REV.

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, 2018 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Super-elevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
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 Super-elevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
840.00	Concrete Base Pad for Drainage Structures
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.46	Traffic Bearing Precast Drainage Structure
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap



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

Note: Not to Scale

### BOUNDARIES AND PROPERTY:

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

### BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	⊙
Well	⊙
Small Mine	×
Foundation	◻
Area Outline	◻
Cemetery	⊕
Building	◻
School	◻
Church	⊕
Dam	▬

### HYDROLOGY:

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

### RAILROADS:

Standard Gauge	-----
RR Signal Milepost	CSX TRANSPORTATION MILEPOST 35
Switch	SWITCH
RR Abandoned	-----
RR Dismantled	-----

### RIGHT OF WAY & PROJECT CONTROL:

Primary Horiz Control Point	○
Primary Horiz and Vert Control Point	●
Secondary Horiz and Vert Control Point	◆
Vertical Benchmark	⊕
Existing Right of Way Monument	△
Proposed Right of Way Monument (Rebar and Cap)	▲
Proposed Right of Way Monument (Concrete)	⊕
Existing Permanent Easement Monument	◇
Proposed Permanent Easement Monument (Rebar and Cap)	◆
Existing C/A Monument	△
Proposed C/A Monument (Rebar and Cap)	▲
Proposed C/A Monument (Concrete)	⊕
Existing Right of Way Line	-----
Proposed Right of Way Line	-----
Existing Control of Access Line	-----
Proposed Control of Access Line	-----
Proposed ROW and CA Line	-----
Existing Easement Line	-----
Proposed Temporary Construction Easement	E
Proposed Temporary Drainage Easement	TDE
Proposed Permanent Drainage Easement	PDE
Proposed Permanent Drainage/Utility Easement	DUE
Proposed Permanent Utility Easement	PUE
Proposed Temporary Utility Easement	TUE
Proposed 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	T T T T
Proposed Guardrail	T T T T
Existing Cable Guiderail	▭ ▭ ▭
Proposed Cable Guiderail	▭ ▭ ▭
Equality Symbol	⊕
Pavement Removal	▨

### VEGETATION:

Single Tree	⊕
Single Shrub	⊕
Hedge	~~~~~

Woods Line	~~~~~
Orchard	⊕ ⊕ ⊕ ⊕
Vineyard	Vineyard

### EXISTING STRUCTURES:

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

### UTILITIES:

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

### POWER:

Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	⊕
Power Line Tower	⊕
Power Transformer	⊕
U/G Power Cable Hand Hole	⊕
H-Frame Pole	●
U/G Power Line Test Hole (SUE - LOS A)*	⊕
U/G Power Line (SUE - LOS B)*	-----
U/G Power Line (SUE - LOS C)*	-----
U/G Power Line (SUE - LOS D)*	-----

### TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	⊕
Telephone Pedestal	⊕
Telephone Cell Tower	⊕
U/G Telephone Cable Hand Hole	⊕
U/G Telephone Test Hole (SUE - LOS A)*	⊕
U/G Telephone Cable (SUE - LOS B)*	-----
U/G Telephone Cable (SUE - LOS C)*	-----
U/G Telephone Cable (SUE - LOS D)*	-----
U/G Telephone Conduit (SUE - LOS B)*	-----
U/G Telephone Conduit (SUE - LOS C)*	-----
U/G Telephone Conduit (SUE - LOS D)*	-----
U/G Fiber Optics Cable (SUE - LOS B)*	-----
U/G Fiber Optics Cable (SUE - LOS C)*	-----
U/G Fiber Optics Cable (SUE - LOS D)*	-----

### WATER:

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

### TV:

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

### GAS:

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

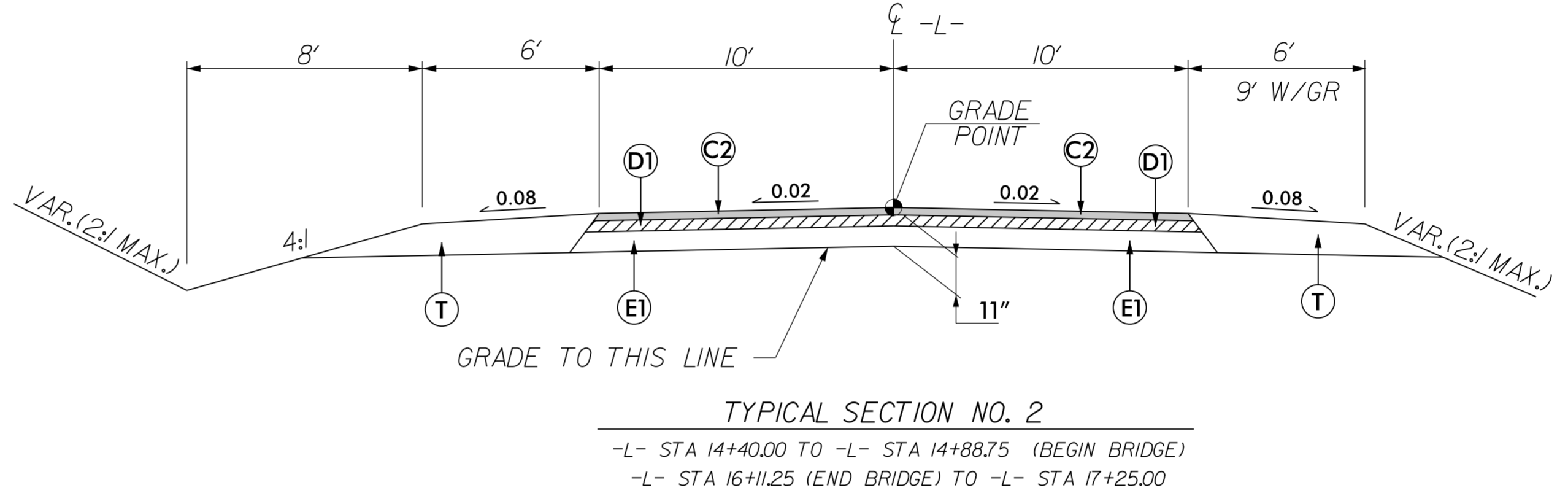
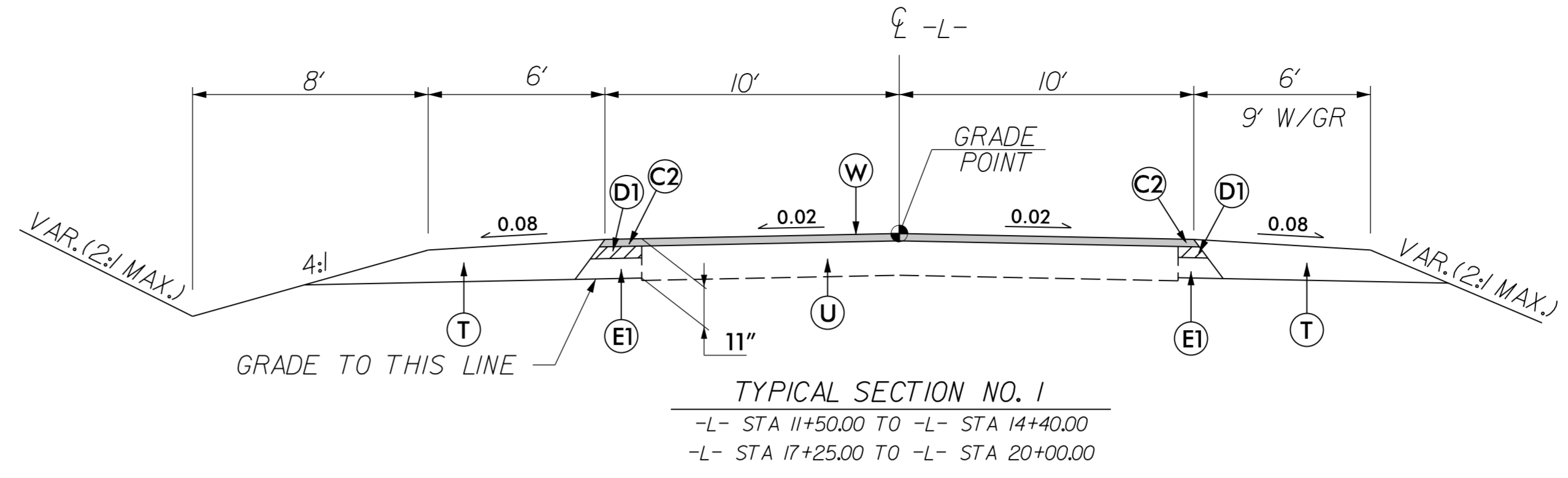
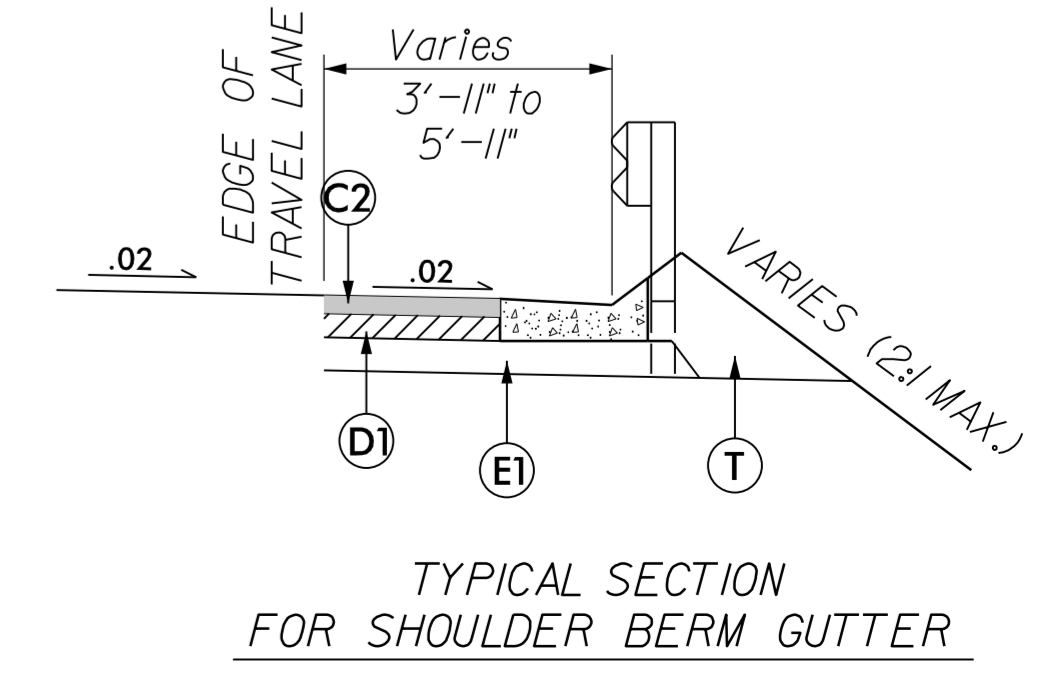
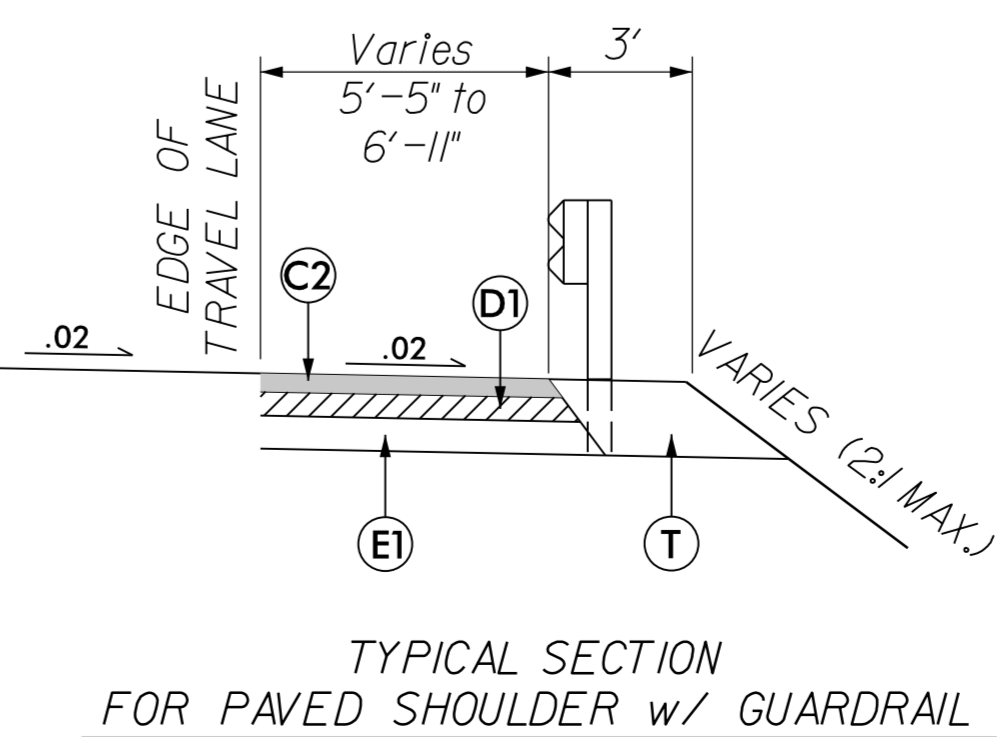
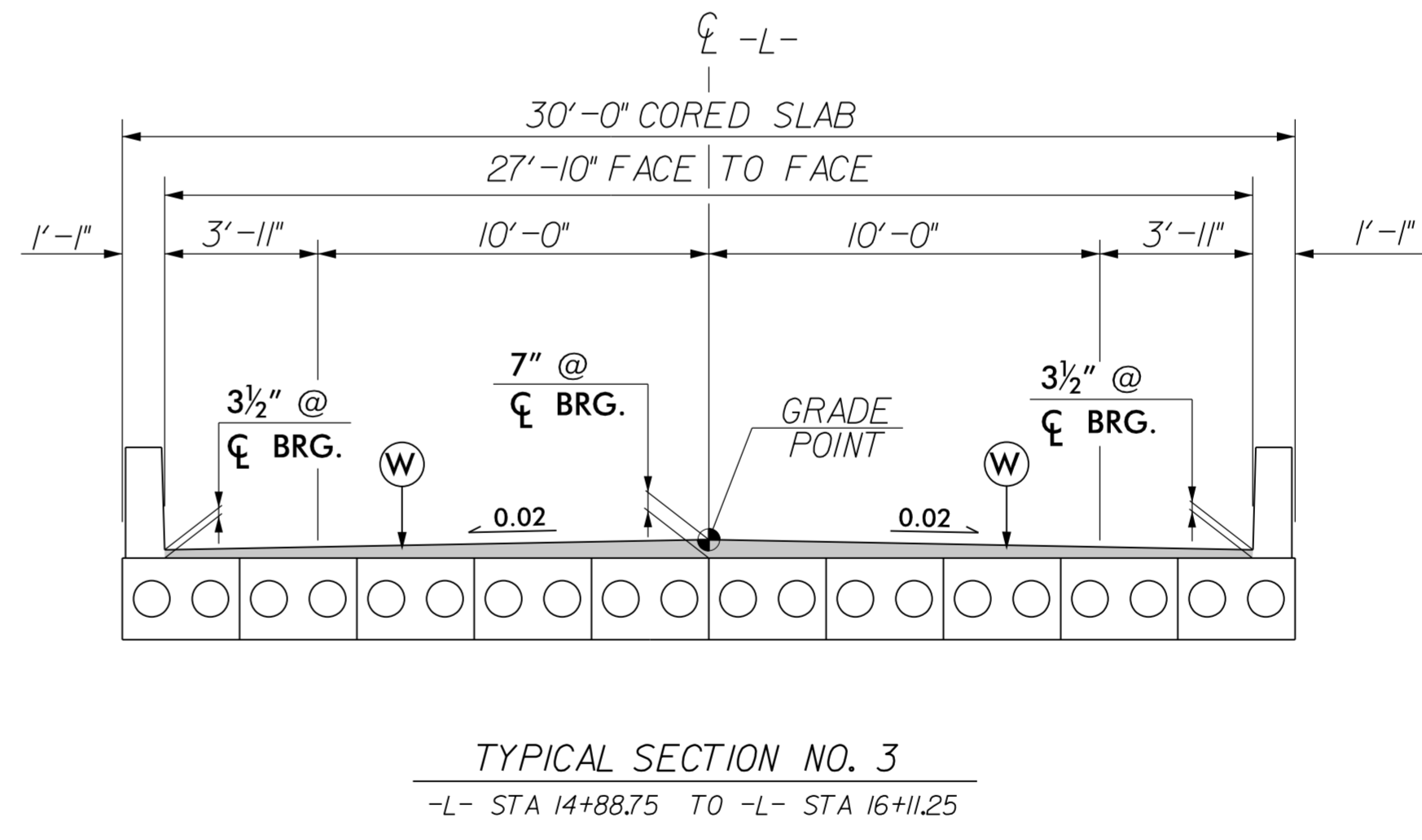
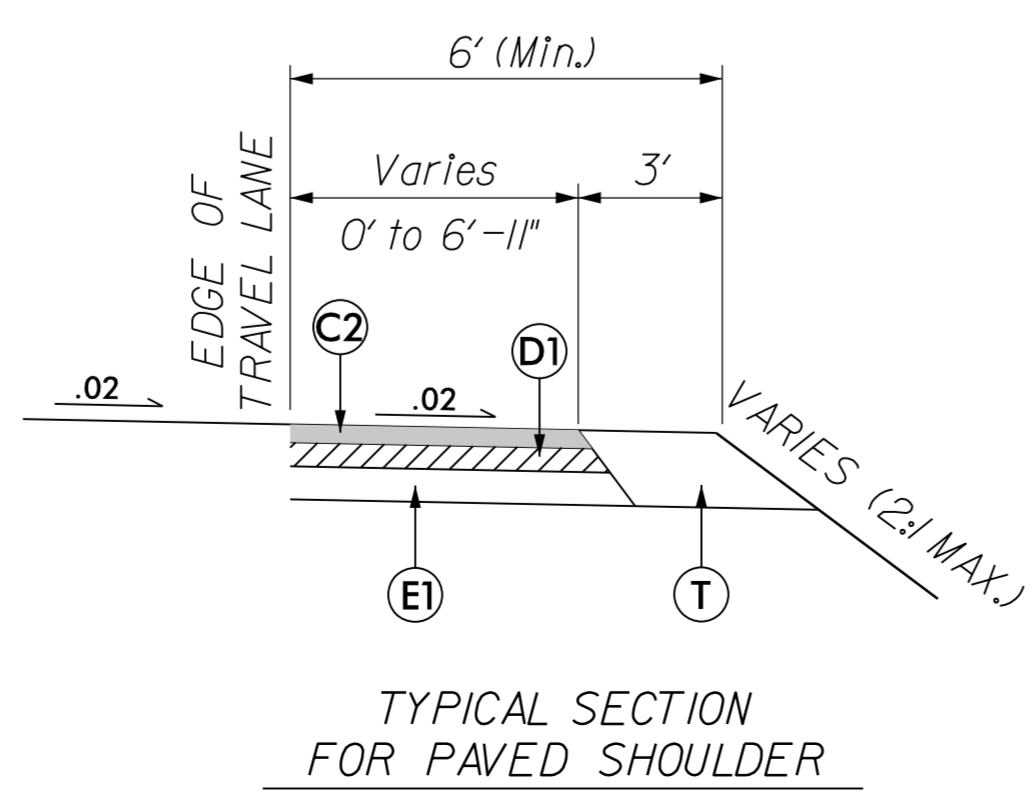
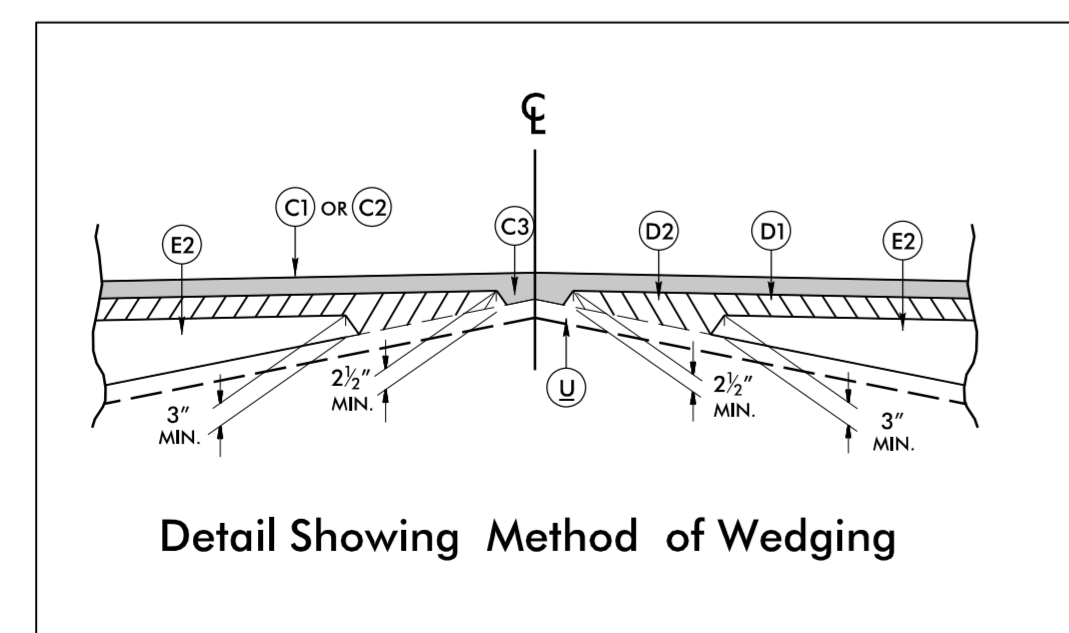
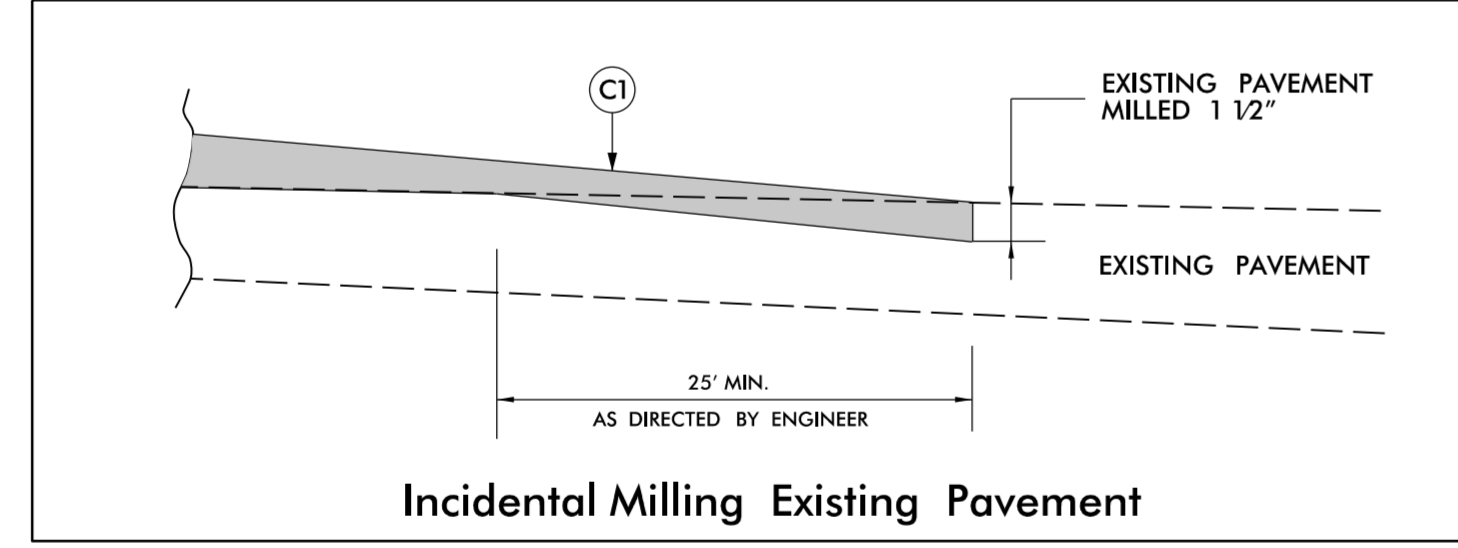
### MISCELLANEOUS:

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

6/2/2019

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
J1	PROP. 6" AGGREGATE BASE COURSE.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL THIS SHEET)

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



PROJECT REFERENCE NO. <i>BP8.R010</i>	SHEET NO. <i>2A-1</i>
ROADWAY DESIGN ENGINEER SEAL 16689 NORTH CAROLINA PROFESSIONAL ENGINEER BRIAN ALLEN WILES	PAVEMENT DESIGN ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
3220 GLEN ROYAL RD. RALEIGH, NC 27617 TELE 919.788.0224 FAX 919.788.0232 NC LICENSE #P-0189	

2/24/2021  
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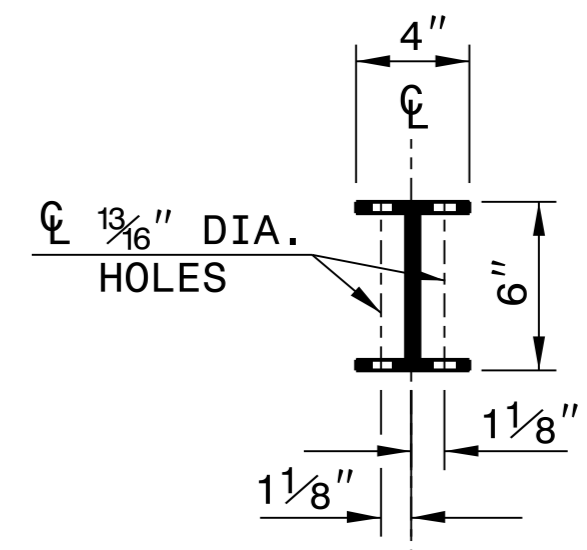
STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

SHEET 6 OF 8  
**862D02**



**STANDARD W-BEAM GUARDRAIL**



**PLAN**



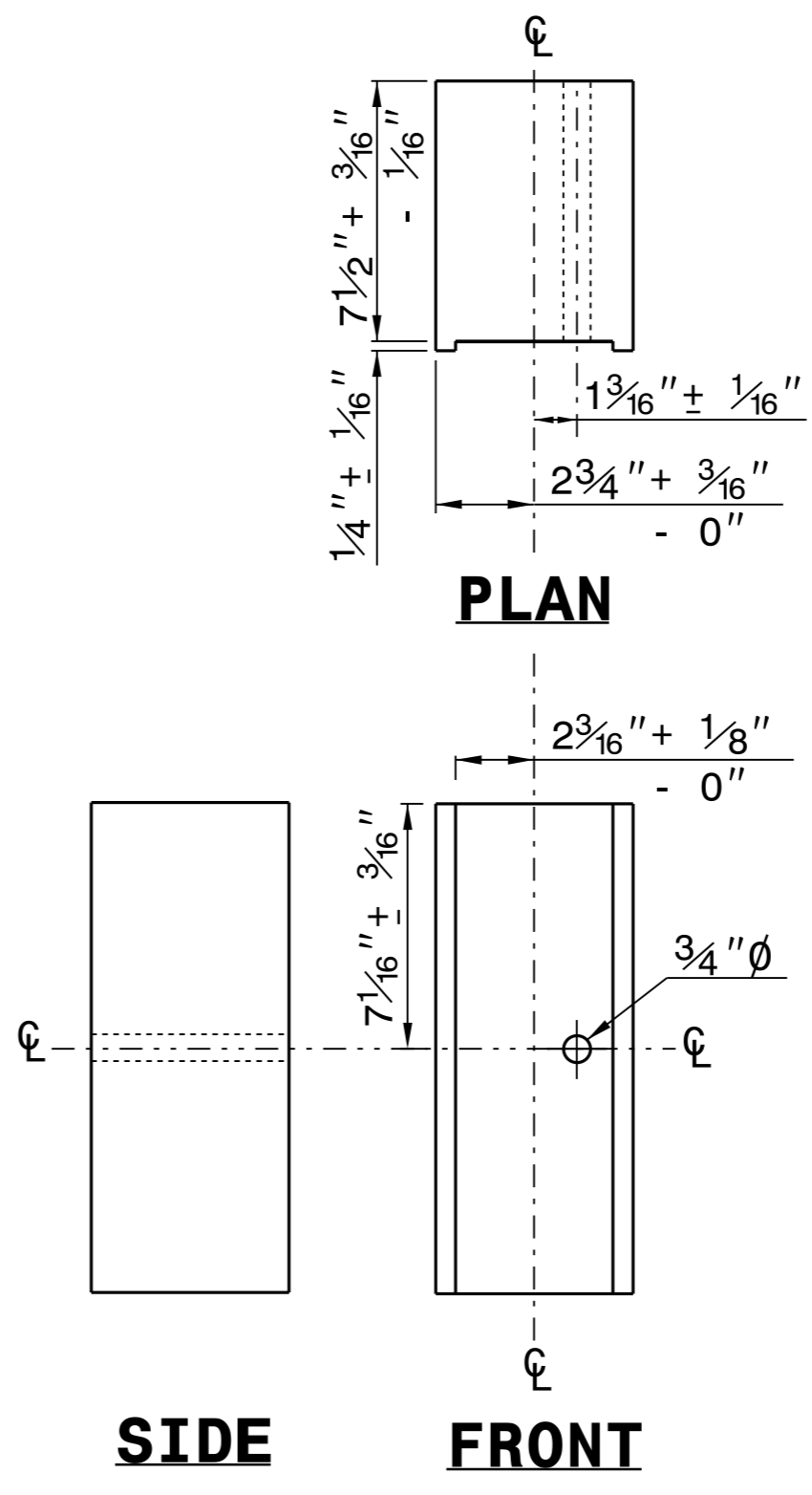
**WOOD OFFSET BLOCK  
(FOR WOOD POSTS)**

**STANDARD  
LINE POST**

**SHORT WOOD  
BREAKAWAY POST**



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

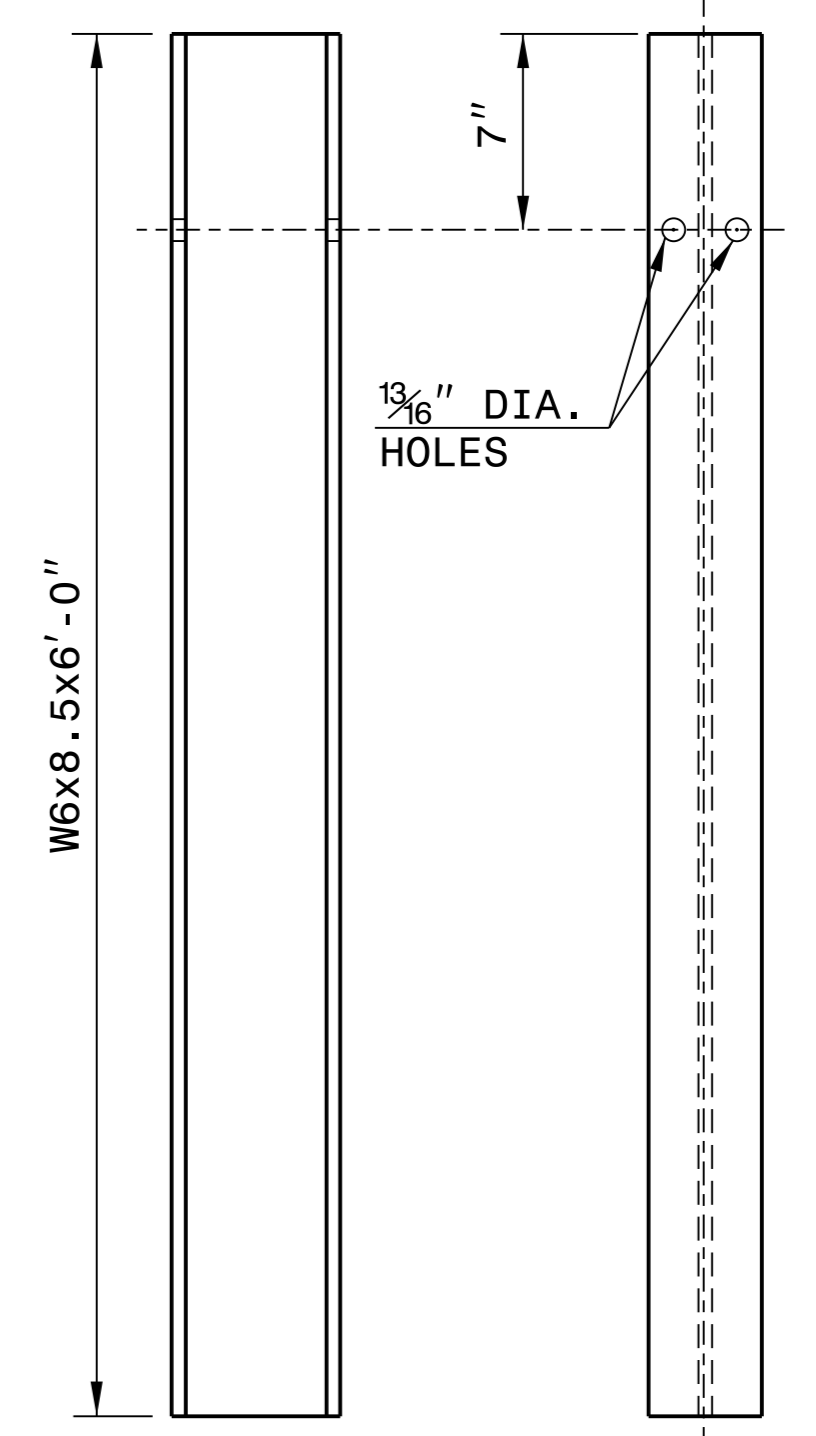


**PLAN**

**SIDE**

**FRONT**

**ROUTED  
OFFSET BLOCK**



**SIDE**

**FRONT**

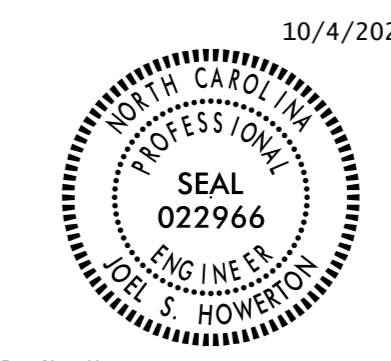
**"W6" STEEL POST**

**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:  
*J. Howerton*  
673F3D17DC045F

10/4/2021

**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  
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 Jhowerton AT: CSU-292595

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ROADWAY DETAIL DRAWING FOR <b>STRUCTURE ANCHOR UNITS</b> GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE	SHEET 1 OF 7 <b>862D03</b>
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p style="text-align: center;"><b>ELEVATION</b></p> <p><b>NOTE:</b>                      **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.</p> </div> <div style="width: 50%;"> <p style="text-align: center;"><b>PLAN VIEW</b></p> <p style="text-align: center;"><b>GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE</b></p> </div> </div>		
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.		

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ROADWAY DETAIL DRAWING FOR <b>STRUCTURE ANCHOR UNITS</b> GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER	SHEET 2 OF 7 <b>862D03</b>
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p style="text-align: center;"><b>ELEVATION</b></p> <p><b>NOTE:</b>                      **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.</p> </div> <div style="width: 50%;"> <p style="text-align: center;"><b>PLAN VIEW</b></p> <p style="text-align: center;"><b>GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER</b></p> </div> </div>		
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.		

10/4/2021

DocuSigned by:  
*Daniel S. Howerton*  
 67832017000040F...

**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.:	



STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**SUMMARY OF EARTHWORK**  
*IN CUBIC YARDS*

STATION	STATION	UNCL. EXCAV.	EMBANK. +/-	BORROW	WASTE
-L- 11+50	14+88.75	66	374	308	
	SUBTOTAL	66	374	308	
-L- 16+11.25	20+00	102	179	77	
	SUBTOTAL	102	179	77	
<b>TOTAL</b>		168	553	385	
MATERIAL FOR SHOULDER CONSTRUCTION			232	232	
LOSS DUE TO CLEARING & GRUBBING		-0		0	
WASTE IN LIEU OF BORROW					
PROJECT TOTAL		168	785	617	
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT				31	
GRAND TOTALS:		168		648	
SAY:		200		700	

SHALLOW UNDERCUT EXCAVATION CONTINGENCY PER GEOTECH REPORT = 100 CY  
 UNDERCUT EXCAVATION CONTINGENCY PER GEOTECH REPORT = 100 CY  
 SELECT GRANULAR MATERIAL, CLASS III PER GEOTECH REPORT = 100 CY  
 CLASS IV SUBGRADE STABILIZATION PER GEOTECH REPORT = 200 TONS  
 GEOTEXTILE FOR SOIL STABILIZATION CONTINGENCY PER GEOTECH REPORT = 400 SY

Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

Note: Approximate quantities only. Unclassified Excavation, Borrow Excavation, Fine Grading, Clearing and Grubbing and Removal of Asphalt Pavement will be paid for at the contract lump sum price for grading.

**SUMMARY OF EXISTING ASPHALT PAVEMENT REMOVAL**

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD <sup>3</sup>
L	14+40	15+00	CL	133
L	16+00	17+25	CL	264
TOTAL:				397
SAY:				400

**SHOULDER BERM GUTTER SUMMARY**

SURVEY LINE	STATION	STATION	LENGTH
L (LT SIDE)	13+70	14+77.87	107.87
L (LT SIDE)	13+95	14+77.87	82.87
L (LT SIDE)	16+22.13	17+05	82.87
L (LT SIDE)	16+22.13	17+05	82.87
TOTAL:			356.48
SAY:			360

**GUARDRAIL SUMMARY**

"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

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS								IMPACT ATTENUATOR TYPE 350			SINGLE FACED CONCRETE BARRIER	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS												
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	XI MOD	GREU TL-2	GREU TL-3	M-350	TYPE III	CAT-1	VI MOD	BIC	AT-1	EA	G	NG																	
L	13+20	14+88.75	LT	168.75				14+25	6	9	50		1				1	1																							
L	13+45	14+88.75	RT	143.75				14+50	6	9	50		1				1	1																							
L	16+11.25	17+55	LT	143.75				16+50	6	9	50		1				1	1																							
L	16+11.25	17+55	RT	143.75				16+50	6	9	50		1				1	1																							
SUBTOTAL				600.00														4	4																						
LESS ANCHOR DEDUCTIONS																																									
GREU TL-3 4 @ 50'				-200.00																																					
TYPE III 4 @ 18.75'				-75.00																																					
TOTAL				325.00														4	4																						
SAY				325.00				5 ADDITIONAL GUARDRAIL POSTS										4	4																						





COMPUTED BY: AGHAZADEH,Z. DATE: 9/20/2021  
 CHECKED BY: NASH, A.A. DATE: 9/20/2021

(12-17-19)

PROJECT NO.  
BP8.R010

SHEET NO.  
3G-1

**STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS**

**SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION**

LINE	Station	Station	Aggregate Type* ASU(1/2)/ AST	Aggregate Thickness INCHES [8" for ASU(2)]	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
			CONTINGENCY	Type 1	12	100	200	400	
			<b>TOTAL CY/TONS/SY:</b>			100	200**	400**	0

\*ASU(1/2) = Aggregate Subgrade (Type 1 or 2)

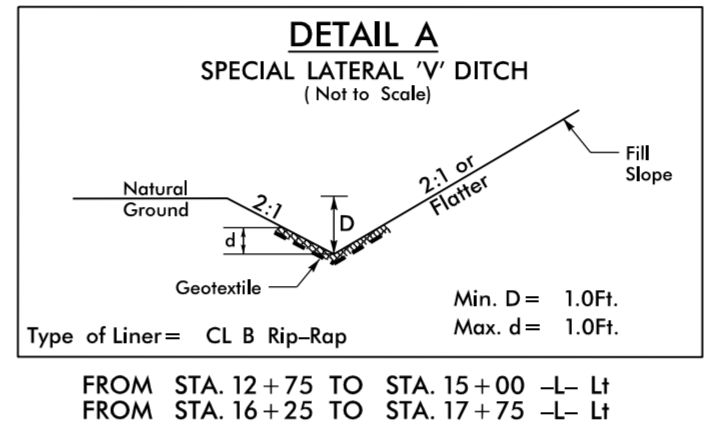
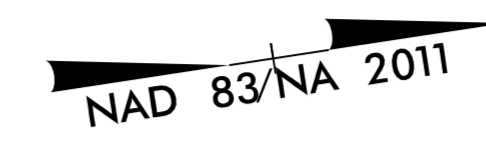
\*AST = Aggregate Stabilization

\*\*Total tons of "Class IV Subgrade Stabilization" and total square yards of "Geotextile for Soil Stabilization" are only the estimated quantities for ASU(1/2)/AST and may only represent a portion of the subgrade stabilization and geotextile quantities shown in the Item Sheets of the Proposal.

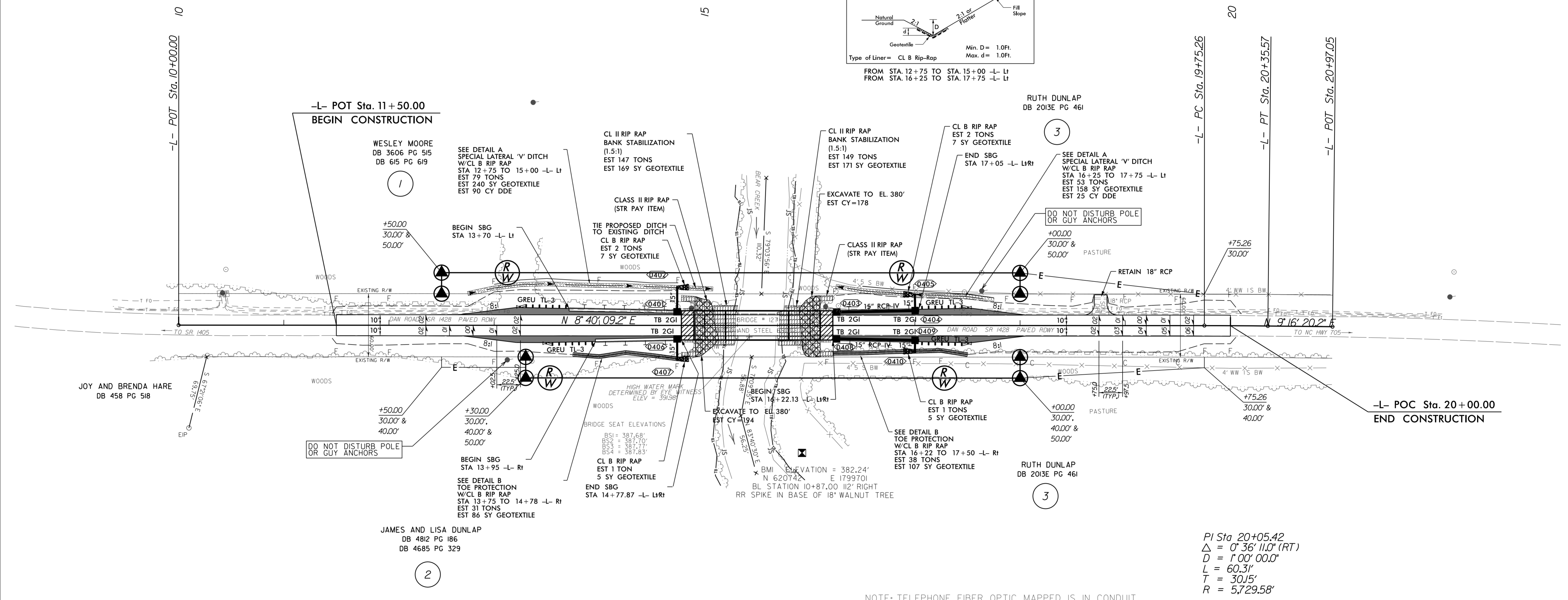
**CH ENGINEERING**  
 3220 GLEN ROYAL RD. RALEIGH, NC 27617  
 TELE 919.788.0224 FAX 919.788.0232  
 NC LICENSE #P-0189

**MI ENGINEERING**  
 1011 SCHAUB DRIVE, SUITE 100  
 RALEIGH, NC 27606  
 (919) 851-6606  
 FIRM PE NUMBER : P-0671

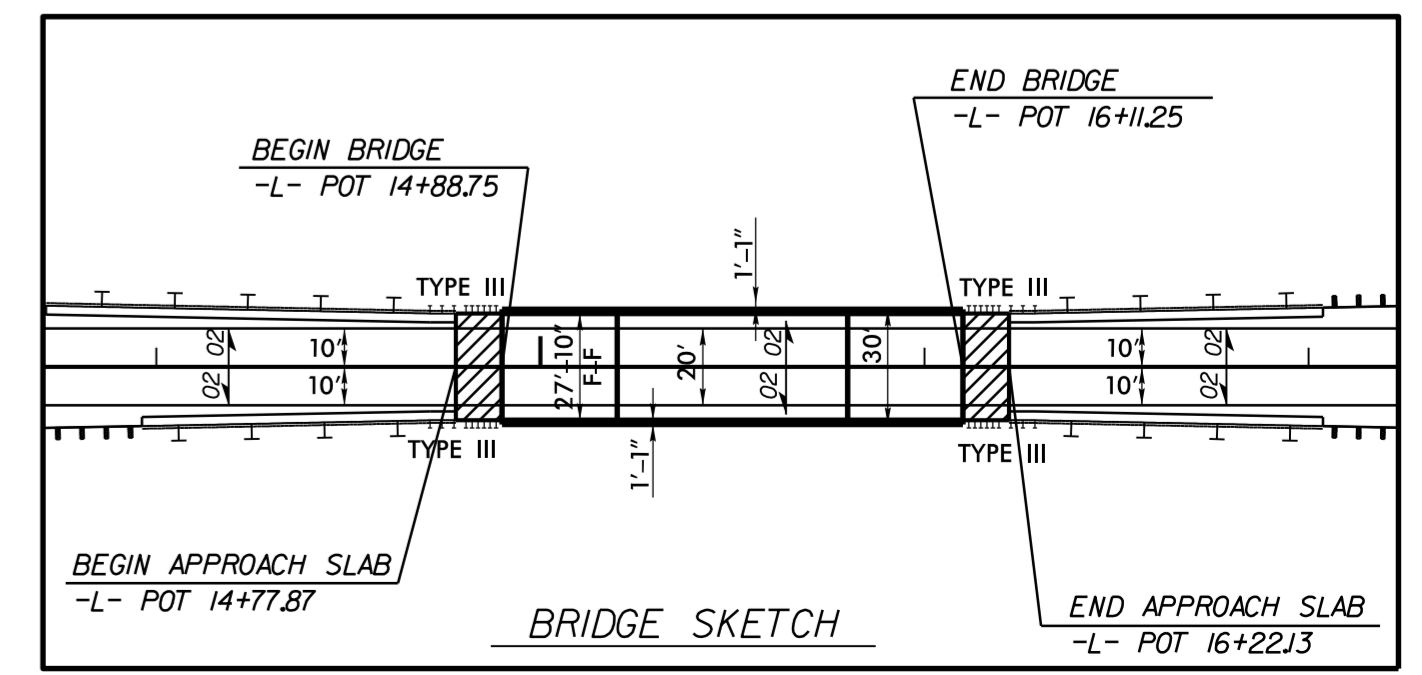
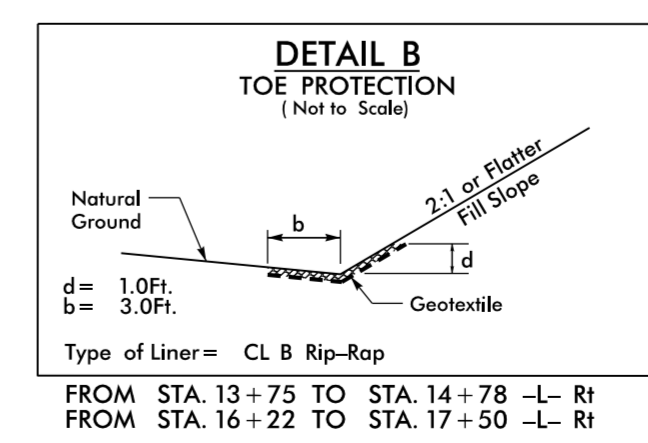
PROJECT REFERENCE NO. BP8.R010	SHEET NO. 4
MOORE COUNTY BRIDGE #127	
ROADWAY DESIGN ENGINEER BRIAN ALLEN 2021 NORTH CAROLINA PROFESSIONAL SEAL 16689	HYDRAULICS ENGINEER KAREN HEFNER 2021 NORTH CAROLINA PROFESSIONAL SEAL 3025
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



REVISIONS



NOTE: TELEPHONE FIBER OPTIC MAPPED IS IN CONDUIT.



FOR PROFILE, SEE SHEET 5



5/14/19

**CH ENGINEERING**  
 3220 GLEN ROYAL RD. RALEIGH, NC 27617  
 TELE 919.788.0224 FAX 919.788.0232  
 NC LICENSE #P-0189

**MI ENGINEERING**  
 1011 SCHAUB DRIVE, SUITE 100  
 RALEIGH, NC 27606  
 (919) 851-6606  
 FIRM PE NUMBER : P-0671

PROJECT REFERENCE NO. <i>BP8.R010</i>	SHEET NO. 5
ROADWAY DESIGN ENGINEER 10/4/2021 <i>Brian A. Willes</i>	HYDRAULICS ENGINEER 10/4/2021 <i>Karen Heffner</i>

SEAL 16689  
SEAL 31025

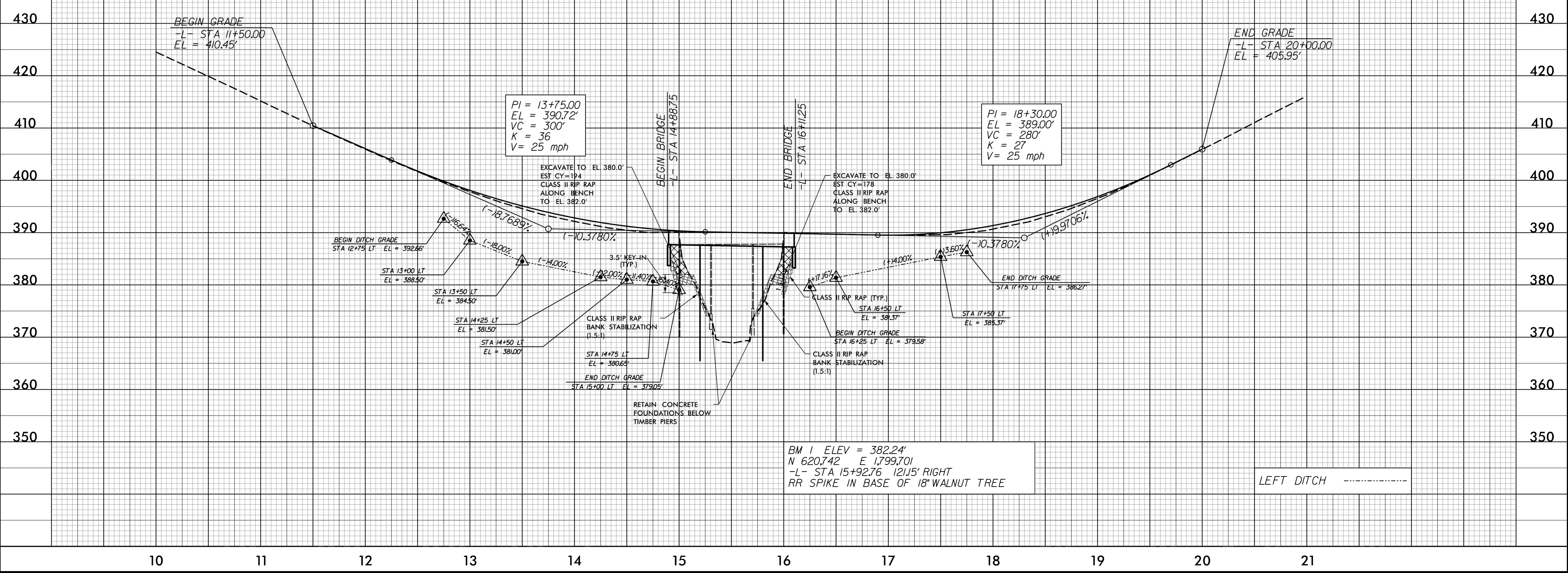
**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**

**BRIDGE HYDRAULIC DATA**

DESIGN DISCHARGE	= 3200	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 385.7	FT
BASE DISCHARGE	= 5700	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 387.5	FT
OVERTOPPING DISCHARGE	= 8000	CFS
OVERTOPPING FREQUENCY	= +500	YRS
OVERTOPPING ELEVATION	= 389.6	FT

DATE OF SURVEY	= 02-09-2021
W.S.ELEVATION AT DATE OF SURVEY	= 371.5 FT



10/4/2021  
P:\Projects\B620127\_Rdy.p1\_05.dgn

LEFT DITCH -----

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP8.R10.1	RW01	7

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

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

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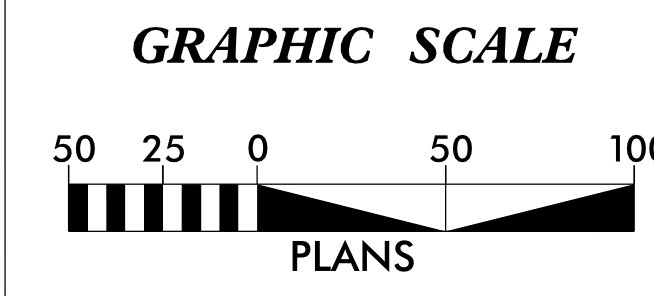
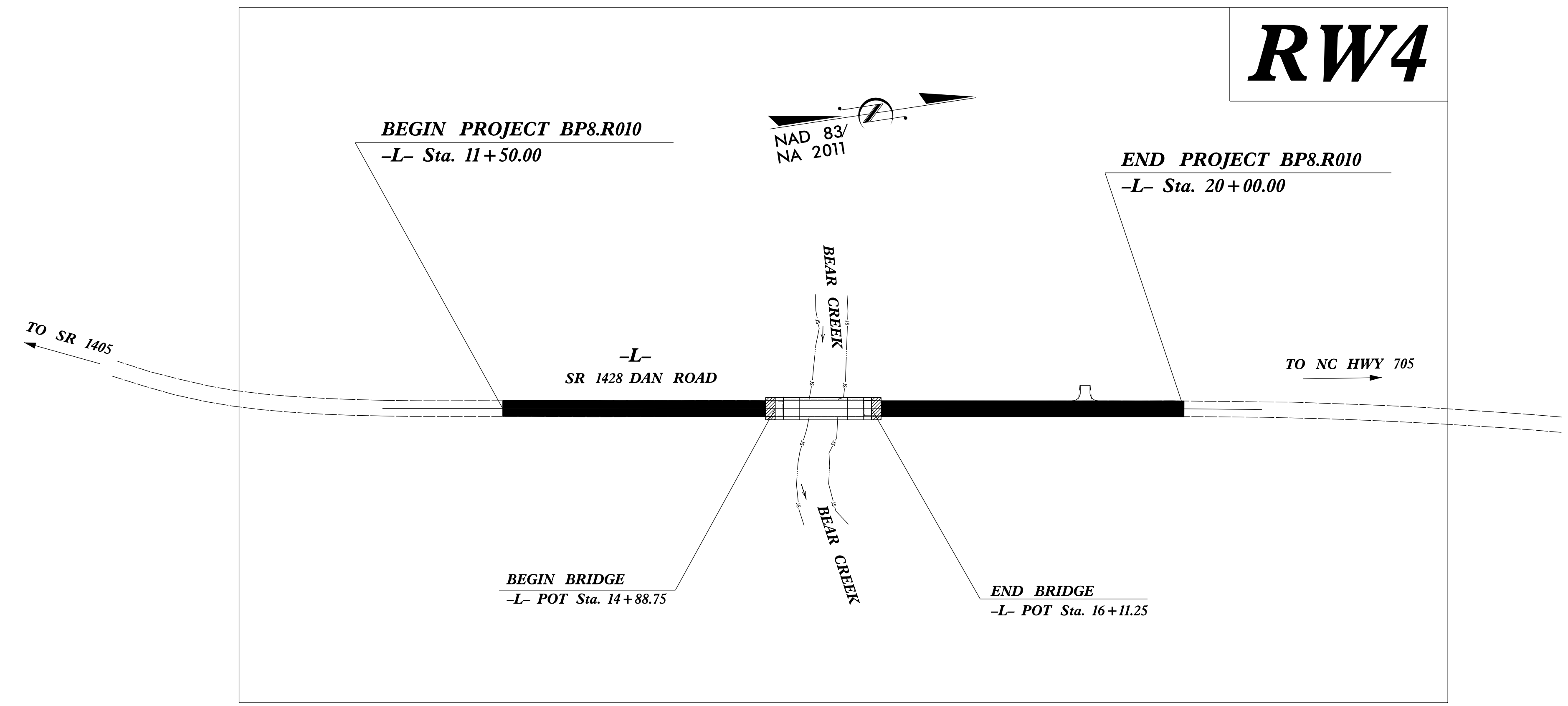
## MOORE COUNTY

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**LOCATION: BRIDGE 620127 OVER BEAR CREEK  
ON SR 1428 (DAN ROAD)**

**TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURES**

**TIP PROJECT: BP8.R10.1**



**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "620127-2" WITH NAD 83/NSRS 2011 STATE PLANE GRID COORDINATES OF NORTHING: 621,390.0174(ft) EASTING: 1,799,660.3735(ft) ELEVATION: 426.849(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99986329089

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "620127-2" TO -L- STATION 10+00 IS S 07°54'07" W 1,227.82(ft)

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

Prepared in the Office of:



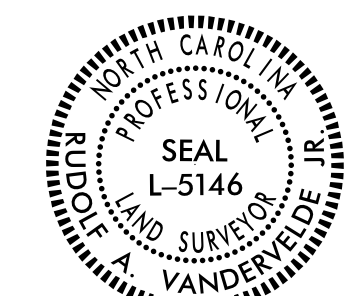
**WithersRavenel**  
Engineers | Planners | Surveyors

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2018 STANDARD SPECIFICATIONS

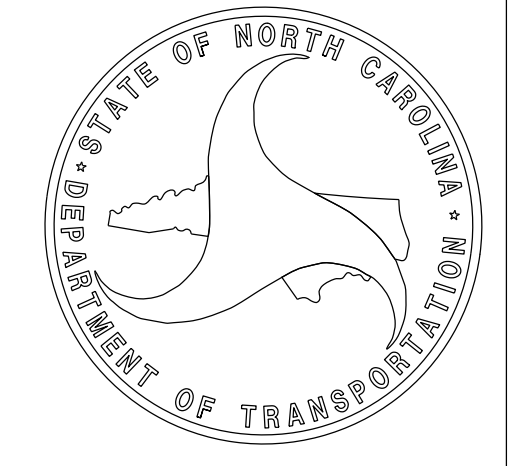
<b>RIGHT OF WAY DATE:</b> <u>July 24, 2021</u>	<b>LETTING DATE:</b> <u>November 23, 2021</u>
---	--

**PROFESSIONAL LAND SURVEYOR**



DocuSigned by:  
**Rudolf A. Vanderveelde Jr.**  
SIGNATURE

Date: 9/30/2021



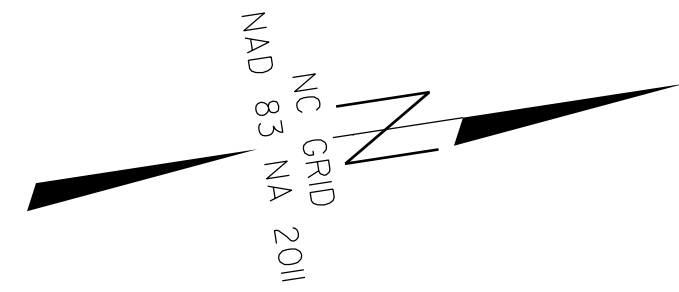
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# SURVEY CONTROL SHEET

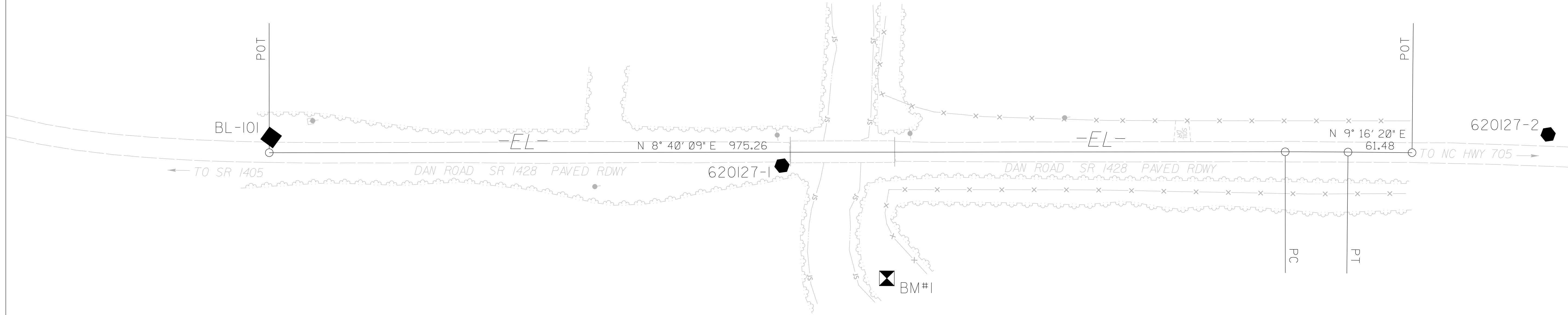
## W/EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
BP8.R10.1	RW02C-1
<b>Location and Surveys</b>	
WITHERSRAVENEL	
(CONTROL ESTABLISHED BY NCDOT)	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



REVISIONS

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 AT WRT/01



**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "620127-2"  
 WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF  
 NORTHING: 621390.0174(ft) EASTING: 1799660.3735(ft)  
 ELEVATION: 426.849(ft)  
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99986329089  
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "620127-2" TO -L- STATION IS  
 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES  
 VERTICAL DATUM USED IS NAVD 88

SEE SHEET RW02C-3  
FOR FURTHER  
ALIGNMENT DETAILS

**NOTES:**

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED BY DIVISION 8. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.



6/2/99

REVISIONS

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r.vander.valde AT WRI701

# SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
BP8.R10.1	RW02C-2
<b>Location and Surveys</b>	
WITHERSRAVENEL	
(CONTROL ESTABLISHED BY NCDOT)	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

BL	POINT	DESC.	NORTH	EAST	ELEVATION
101		BL-101	620177.8480	1799477.3730	423.20
1		620127-1	620658.5234	1799578.5142	389.25
2		620127-2	621390.0174	1799660.3735	426.85

\*\*\*\*\*  
 BM1            ELEVATION = 382.24  
 N 620742        E 1799701  
 RR SPIKE IN BASE OF 18" WALNUT TREE  
 \*\*\*\*\*

**NOTES:**

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED BY DIVISION 8. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

REVISIONS

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 r.vander.valde AT WRI701

# SURVEY CONTROL SHEET

*W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION*

PROJECT REFERENCE NO. BP8.R10.1	SHEET NO. RW02C-3
Location and Surveys	
WITHERSRAVENEL	
(CONTROL ESTABLISHED BY NCDOT)	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

EL POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	620173.860	1799491.576							
LINE			N 08°40'09.2" E	975.26					
PC	621137.980	1799638.577							
CURVE			N 08°58'14.7" E	60.31	00°36'11.0"(RT)	01°00'00.0"	60.31	30.15	5729.58
PT	621197.548	1799647.981							
LINE			N 09°16'20.2" E	61.48					
POT	621258.223	1799657.887							

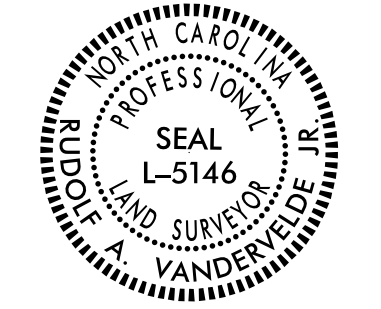
**NOTES:**

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED BY DIVISION 8. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

# PROPOSED ALIGNMENT CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
BP8.R10.1	RW02D-1

## Location and Surveys



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I, Rudolf A. VanderVelde Jr., 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 17 day of September, 2021.

DocuSigned by:  
*Rudolf A. VanderVelde Jr.* 9/17/2021  
 Professional Land Surveyor L-5146

REVISIONS

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 R. VanderVelde

L



TYPE	STATION	NORTH	EAST
POT	10+00.00	620173.8596	1799491.5763
PC	19+75.26	621137.9796	1799638.5773
PT	20+35.57	621197.5483	1799647.9809
POT	20+97.05	621258.2229	1799657.8866

### NOTES:


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



# RIGHT OF WAY CONTROL SHEET

PROJECT REFERENCE NO. BP8.R10.1	SHEET NO. RW03E-1
<b>Location and Surveys</b>	
 WithersRavenel Engineers   Planners   Surveyors	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

I, Rudolf A. VanderVelde Jr., PLS., certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed from 9-9-21 to 9-10-21, and all coordinates are based on NAD83/2011. That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 17 day of September, 2021.  
 Documented by:  
 9/17/2021  
 Professional Land Surveyor L-5146

REVISIONS

## ROW MARKER IRON PIN AND CAP - E

ALIGN	STATION	OFFSET	NORTH	EAST
L	12+50.00	-50.00	620428.5398	1799479.8300
L	12+50.00	-30.00	620425.5253	1799499.6015
L	13+30.00	50.00	620492.5529	1799590.7459
L	13+30.00	30.00	620495.5675	1799570.9744
L	18+00.00	50.00	620957.1831	1799661.5888
L	18+00.00	30.00	620960.1977	1799641.8173
L	18+00.00	-30.00	620969.2415	1799582.5028
L	18+00.00	-50.00	620972.2561	1799562.7313

### 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 9-9-21 TO 9-10-21 .

Location and Surveys

**WithersRavenel**  
Engineers | Planners | Surveyors



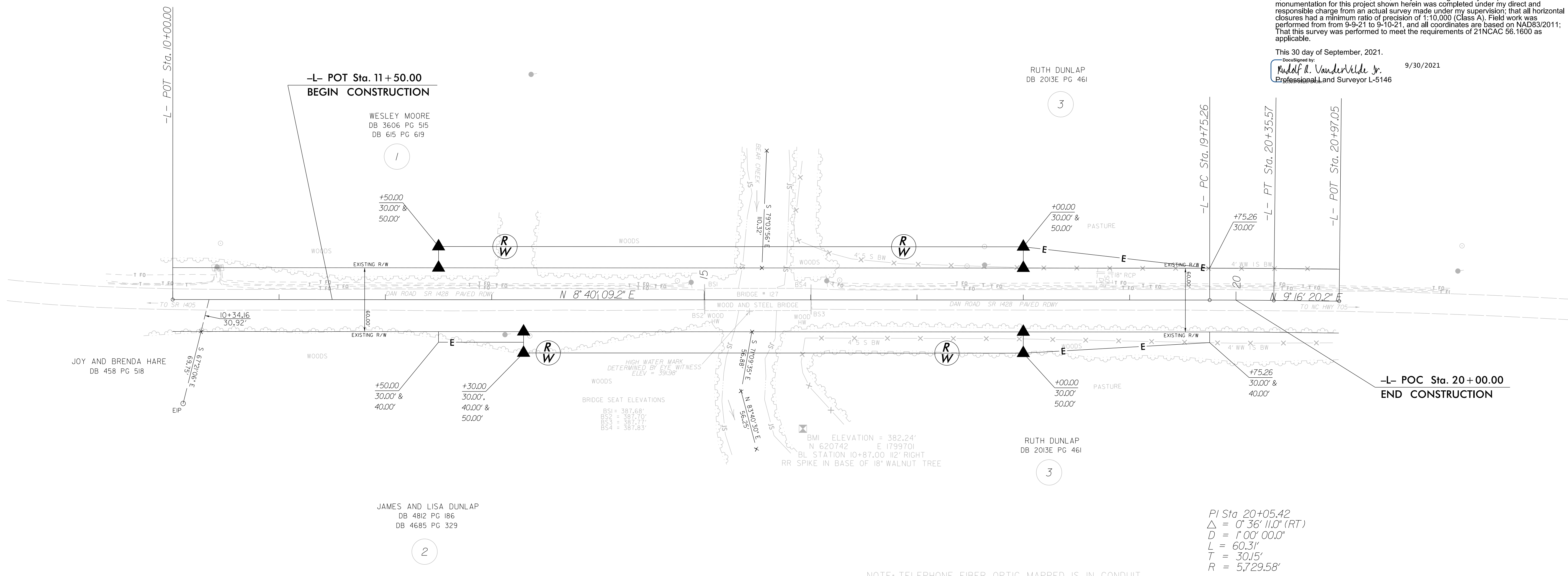
DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

I, Rudolf A. VanderVelde Jr., PLS, certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed from 9-9-21 to 9-10-21, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 30 day of September, 2021.  
 Designed by: Rudolf A. VanderVelde Jr. 9/30/2021  
 Professional Land Surveyor L-5146

REVISIONS

30\_SFR\_00210334  
 KY\_20200626\_13-62-019  
 62-0127 RW Stakeout\Geometrics\NC00T\62-0127\Resubmit\_210930\620127\_Is\_rw04\_210930.dgn  
 62-0127 RW Stakeout\Geometrics\NC00T\62-0127\Submittal\62-0127\_Resubmit\_210930\620127\_Is\_rw04\_210930.dgn  
 AT: RAV:rv  
 RAV:rv



NOTE: TELEPHONE FIBER OPTIC MAPPED IS IN CONDUIT.

PI Sta 20+05.42  
 $\Delta = 0' 36'' 11.0'' (RT)$   
 $D = 1' 00'' 00.0''$   
 $L = 60.31'$   
 $T = 30.15'$   
 $R = 5,729.58'$

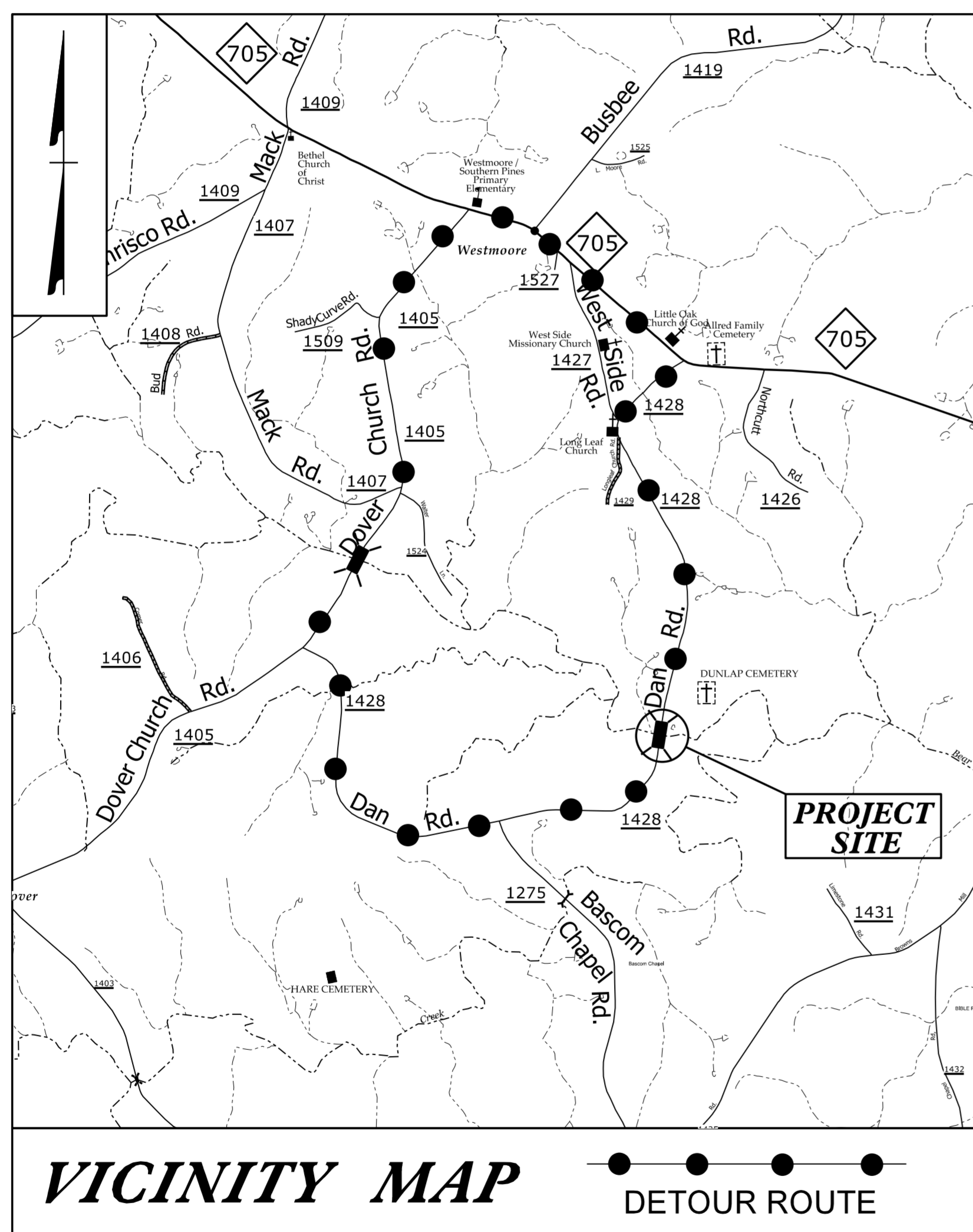
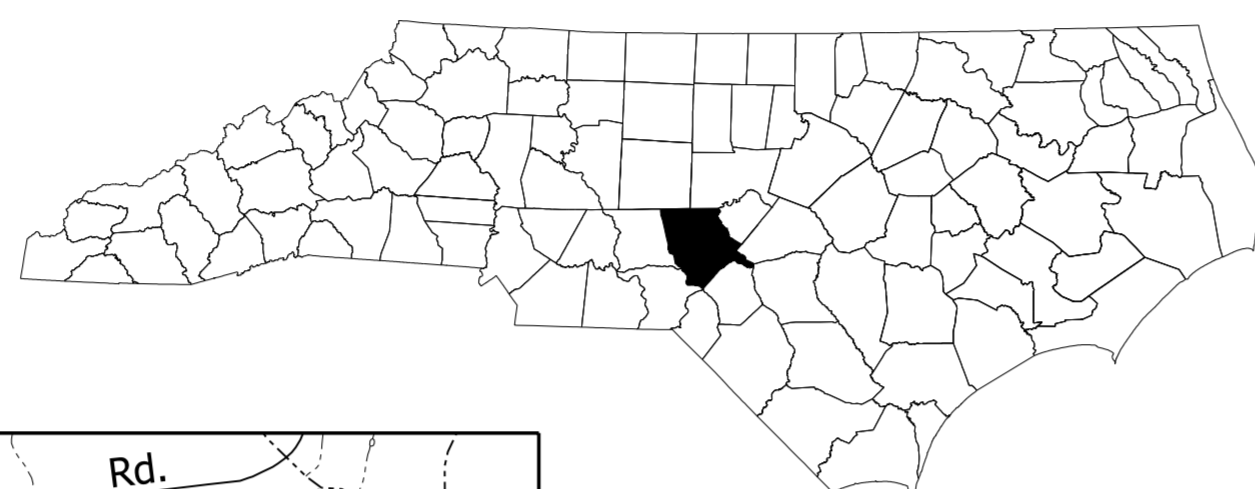
NOTES:

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 ON 8-26-2021 .

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**TRANSPORTATION MANAGEMENT PLAN**

**MOORE COUNTY**

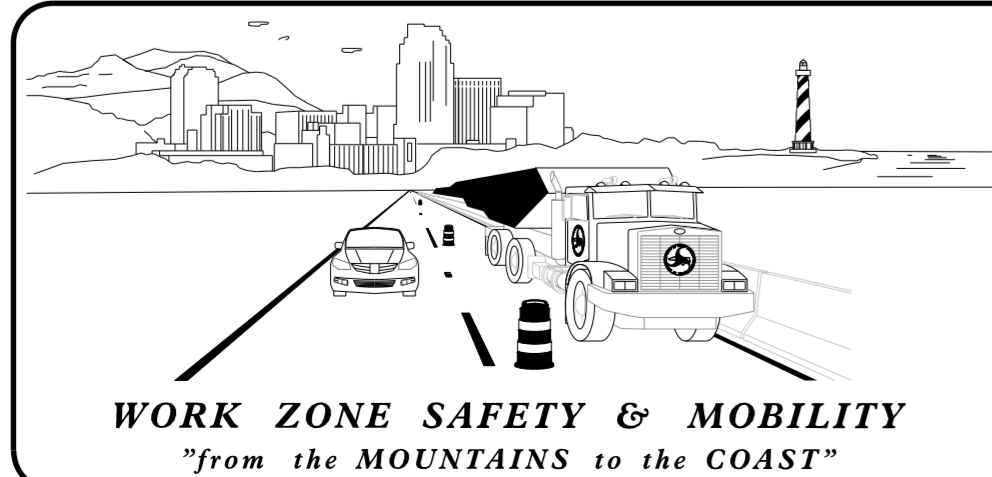


**LOCATION: BRIDGE NO. 54 OVER BEAR CREEK  
ON SR 1428 (DAN ROAD)**

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

**VICINITY MAP**

● ● ● ●  
DETOUR ROUTE



**WORK ZONE SAFETY & MOBILITY**  
"from the MOUNTAINS to the COAST"

**PLANS PREPARED BY:**

BRIAN A. WILES, PE  
PROJECT MANAGER

**NC DOT CONTACTS:**

TIM WELCH, PE  
DIV. 8 BRIDGE PROGRAM MANAGER



9/29/2021  
R:\TrafficControl\TCP\Moore\127\_TC\_TMP\_Ldgn  
USER: bawiles

**INDEX OF SHEETS**

SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, AND LEGEND
TMP-1B	TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES, GENERAL NOTES, AND LOCAL NOTES)
TMP-2	SPECIAL SIGN DESIGN
TMP-3	OFF-SITE DETOUR
TMP-4	ROAD CLOSURE DETAIL AND DETOUR SIGNS

SHEET NO.  
TMP-1

**PROJECT: BP8.R010**

**PROJECT:**

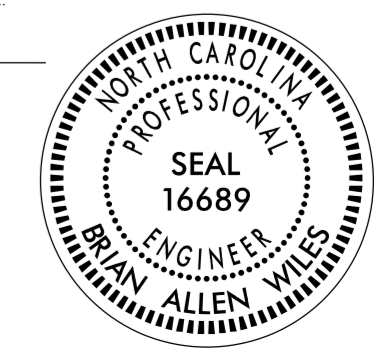
**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**

PLANS PREPARED FOR:  
DIVISION OF HIGHWAYS  
DIVISION 8  
121 DOT Drive  
Carthage, NC 28327

PLANS PREPARED BY:  
**CH ENGINEERING**  
3220 GLEN ROYAL RD. RALEIGH, NC 27617  
TELE 919.788.0224 FAX 919.788.0232  
NC LICENSE #P-0189

APPROVED:   
DATE: 10/4/2021

SEAL





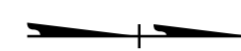
# ROADWAY STANDARD DRAWINGS

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>
1101.03	TEMPORARY ROAD CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1145.01	BARRICADES
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

# LEGEND

## GENERAL

- EXIST. PVMT.
-  NORTH ARROW
- \_\_\_\_\_ PROPOSED PVMT.

## TRAFFIC CONTROL DEVICES

-  BARRICADE (TYPE III)

## TEMPORARY SIGNING

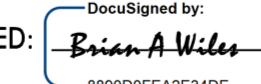
-  STATIONARY SIGN

## FINAL PAVEMENT MARKING

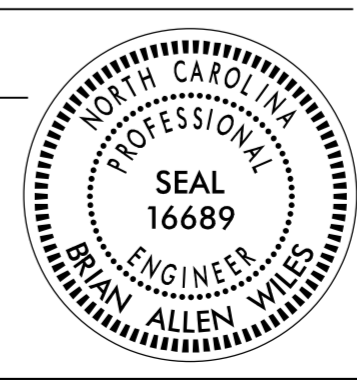

- PAINT PAVEMENT MARKING LINES (4") 6,800 LF
- PERMANENT RAISED PAVEMENT MARKERS 20 EACH

9/29/2021  
 R:\TrafficControl\TCP\Moore\127.TC.TMP\_IA.dgn  
 USERNAME:

**CH ENGINEERING**  
 3220 GLEN ROYAL RD. RALEIGH, NC 27617  
 TELE 919.788.0224 FAX 919.788.0232  
 NC LICENSE #P-0189

APPROVED:   
 DATE: 10/4/2021

SEAL

ROADWAY STANDARD  
DRAWINGS & LEGEND

## MANAGEMENT STRATEGIES

- CLOSE SR 1428 (DAN ROAD) AND DETOUR TRAFFIC OFF-SITE
- MAINTAIN LOCAL ACCESS TO ALL RESIDENCES AND BUSINESSES BETWEEN CLOSURE POINTS AT ALL TIMES DURING CONSTRUCTION

## GENERAL NOTES

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

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

### SIGNING

- A) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRANSPORTATION MANAGEMENT PLANS.  
  
PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRANSPORTATION MANAGEMENT PLANS.
- B) 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.
- C) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.


## LOCAL NOTES

- 1) NOTIFY THE ENGINEER AT LEAST 30 DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.
- 2) NOTIFY THE MOORE COUNTY SCHOOLS TRANSPORTATION OFFICE AT (910) 947-5481 OF THE BRIDGE REMOVAL 30 DAYS PRIOR TO ROAD CLOSURE.
- 3) NOTIFY THE MOORE COUNTY EMERGENCY MANAGEMENT AT (910) 947-6317 OF THE BRIDGE REMOVAL 30 DAYS PRIOR TO ROAD CLOSURE.

## PHASING

- STEP 1) USING RSD 1101.03, SHEET 1 OF 9 AND TMP-4, CLOSE SR 1428 (DAN RODD) AND DETOUR TRAFFIC OFF-SITE AS SHOWN ON TMP-3. MAINTAIN ACCESS TO ALL RESIDENCES AND BUSINESSES BETWEEN CLOSURE POINTS.
- STEP 2) REMOVE THE EXISTING STRUCTURE.
- STEP 3) CONSTRUCT THE PROPOSED STRUCTURE AND ROADWAY.
- STEP 4) PLACE FINAL PAVEMENT MARKINGS.
- STEP 5) OPEN SR 1428 (DAN ROAD) TO TRAFFIC AND REMOVE ALL WORK ZONE TRAFFIC CONTROL DEVICES.

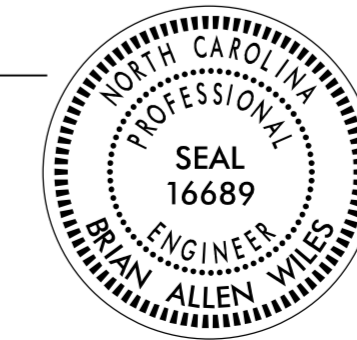
9/29/2021 8:47:00 AM R:\TrafficControl\TCP\Moore\127.TC.TMP\_IB.dgn USERNAME



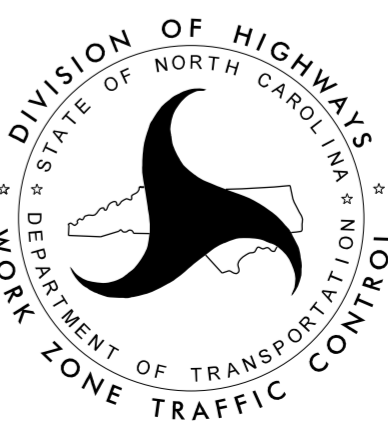
3220 GLEN ROYAL RD. RALEIGH, NC 27617  
 TELE 919.788.0224 FAX 919.788.0232  
 NC LICENSE #P-0189

DocuSigned by:  
**APPROVED:** Brian A Wiles  
58000FEA2E34DE  
**DATE:** 10/4/2021

SEAL



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



DIVISION OF HIGHWAYS  
 DEPARTMENT OF TRANSPORTATION  
 WORK ZONE TRAFFIC CONTROL

## TRANSPORTATION OPERATIONS PLAN

<b>SIGN NUMBER:</b> SP-1 <b>TYPE:</b> STATIONARY <b>QUANTITY:</b> SEE PLANS <b>SIGN WIDTH:</b> 5'-0" <b>HEIGHT:</b> 1'-6" <b>TOTAL AREA:</b> 7.5 Sq.Ft. <b>BORDER TYPE:</b> INSET <b>RECESS:</b> 0.47" <b>WIDTH:</b> 0.63" <b>RADII:</b> 1.5" <b>NO. Z BARS:</b> <b>LENGTH:</b>	<b>BACKG COLOR:</b> Fluorescent Orange <b>COPY COLOR:</b> Black	<b>DESIGN BY:</b> TAG <b>PROJECT ID:</b> ID	<b>CHECKED BY:</b> <b>LOCATION:</b>	<b>Sep 29, 2021</b> <b>DIV: DIV</b>																																																							
	<table border="1"> <thead> <tr> <th>SYMBOL</th> <th>X</th> <th>Y</th> <th>WID</th> <th>HT</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>	SYMBOL	X	Y	WID	HT																																																					
SYMBOL	X	Y	WID	HT																																																							
<b>USE NOTES: 1,2</b> 1. Legend and border shall be direct applied black non-reflective sheeting. 2. Background shall be NC GRADE B fluorescent orange retroreflective sheeting.		<b>BORDER</b> <b>R=1.5"</b> <b>TH=0.63"</b> <b>IN=0.47"</b>			Spacing Factor is 1 unless specified otherwise																																																						

**LETTER POSITIONS**

**Letter locations are panel edge to lower left corner**

										Series/Size
D	a	n	R	o	a	d				Text Length
4.8	8.3	11.5	14.1	19.1	22.5	25.5	28.6			C 2000
										26.4

FILENAME: SIGN DESIGNS - Work Zone\_2 NORTH CAROLINA D.O.T. SIGN DETAIL

9/29/2021  
 R:\TrafficControl\TCP\Moore\127.TC.TMP\_2.dgn  
 USERNAME:

3220 GLEN ROYAL RD. RALEIGH, NC 27617  
 TELE 919.788.0224 FAX 919.788.0232  
 NC LICENSE #P-0189

DocuSigned by:  
**APPROVED:** Brian A Wiles  
899000FAE2E34DE...  
**DATE:** 10/4/2021

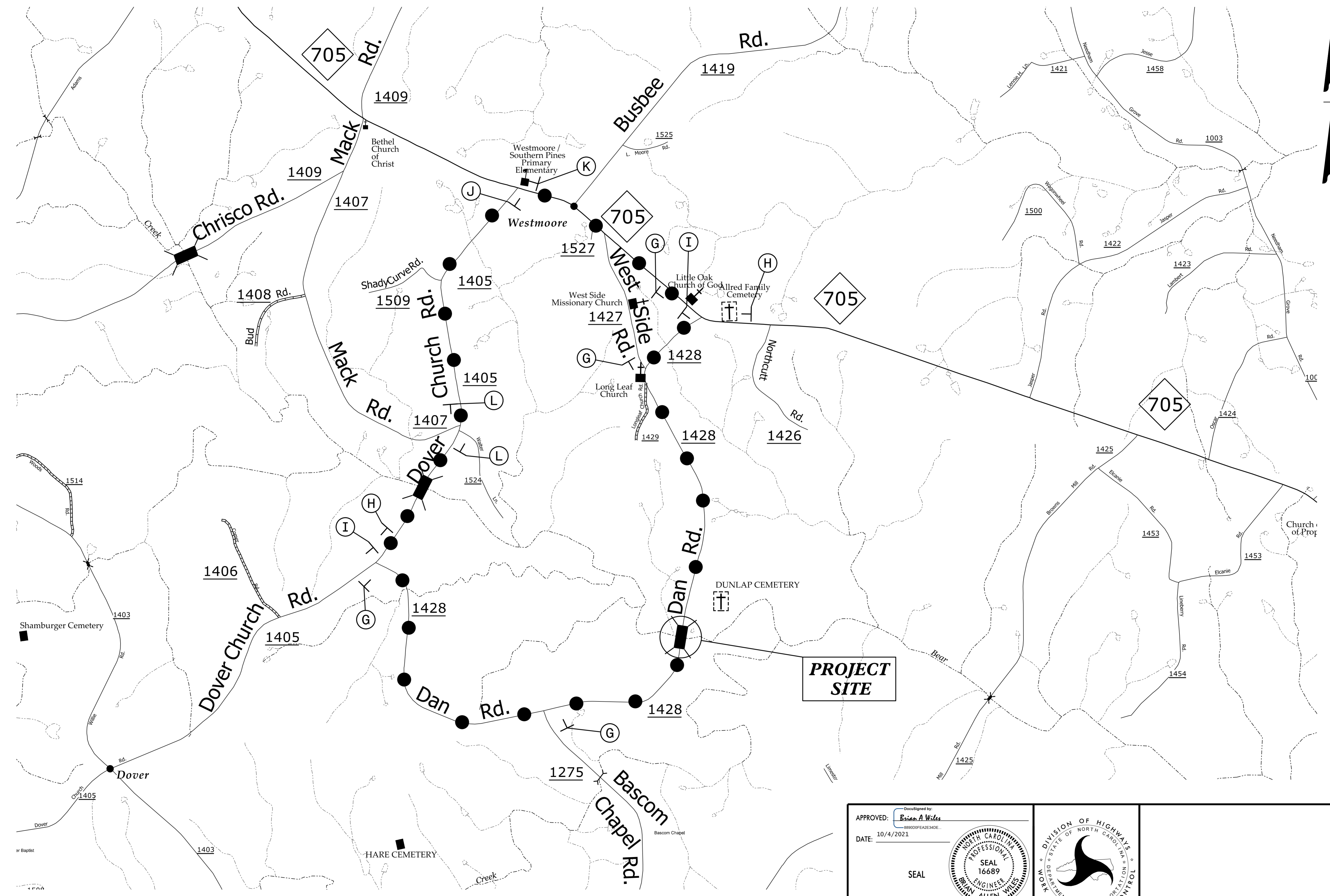
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UNLESS ALL SIGNATURES COMPLETED**

DIVISION OF HIGHWAYS  
 DEPARTMENT OF TRANSPORTATION  
 WORK ZONE TRAFFIC CONTROL

SPECIAL SIGN DESIGN

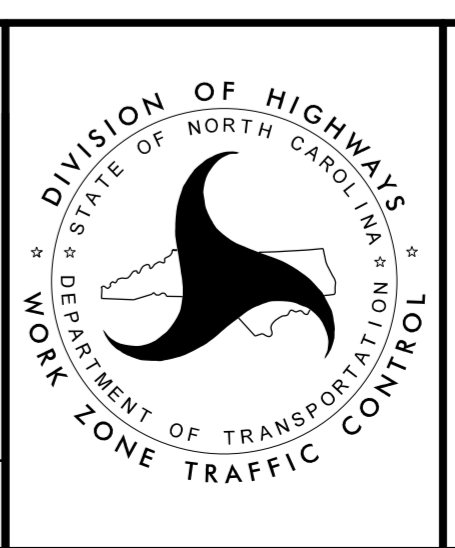




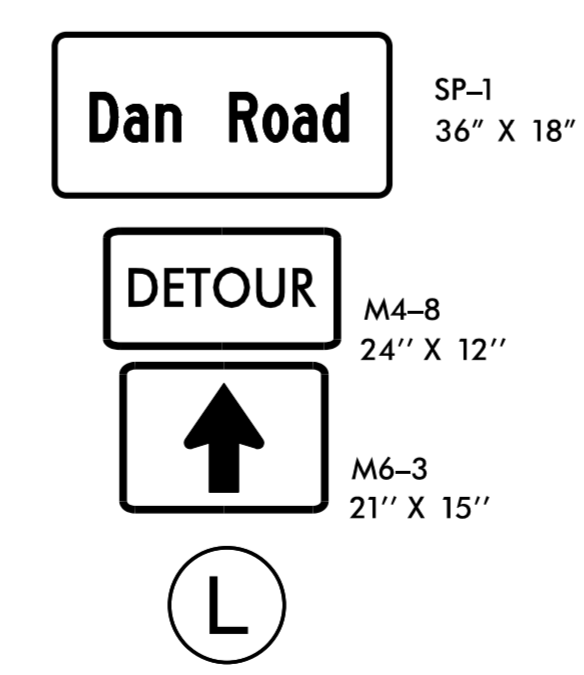
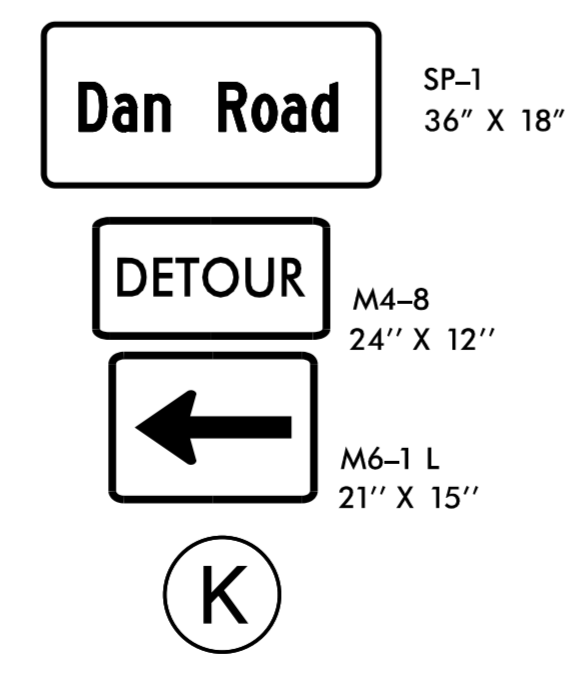
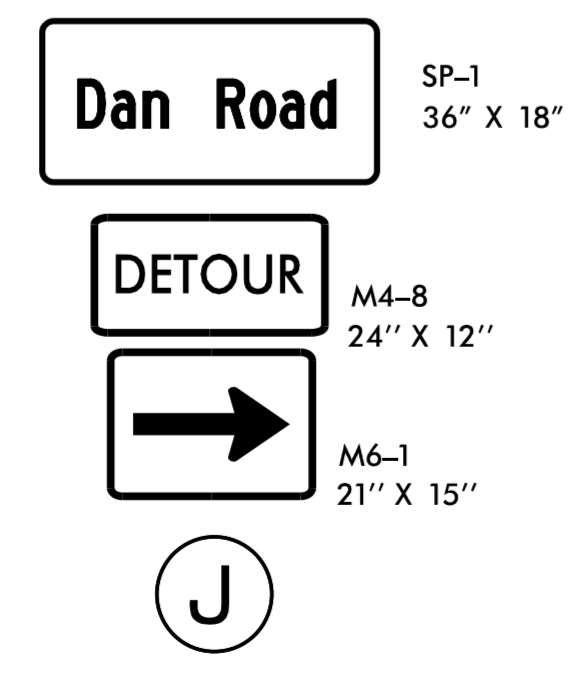
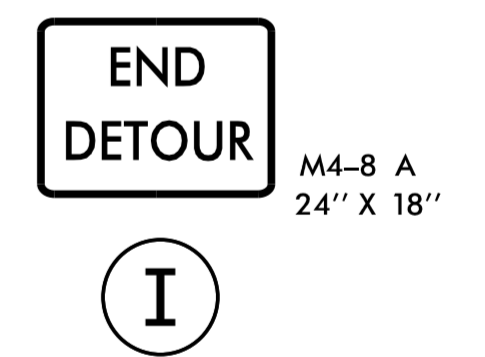
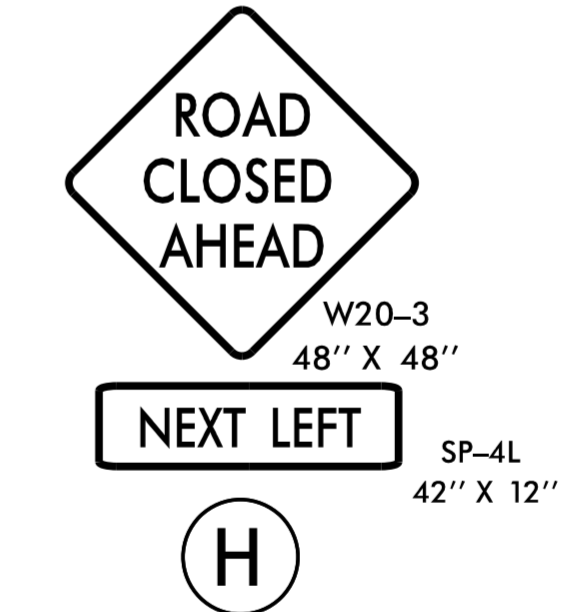
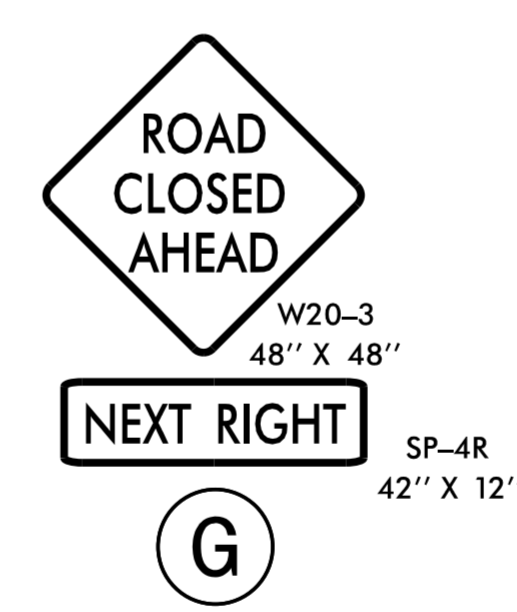
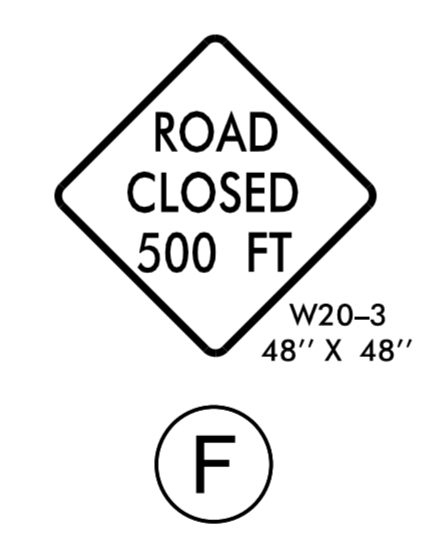
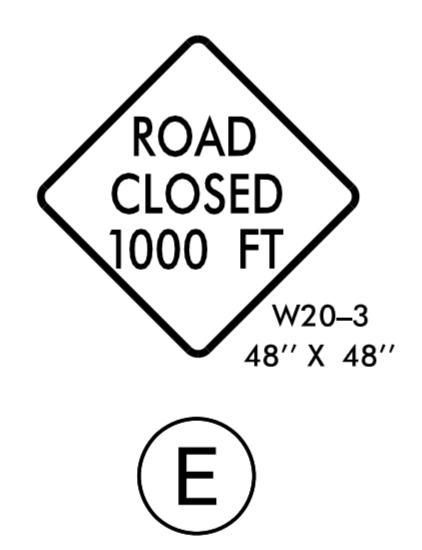
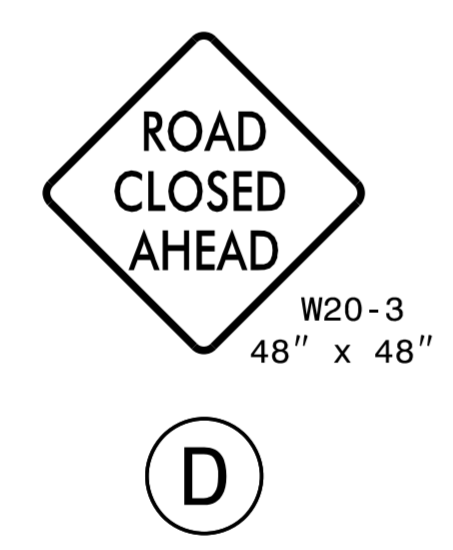
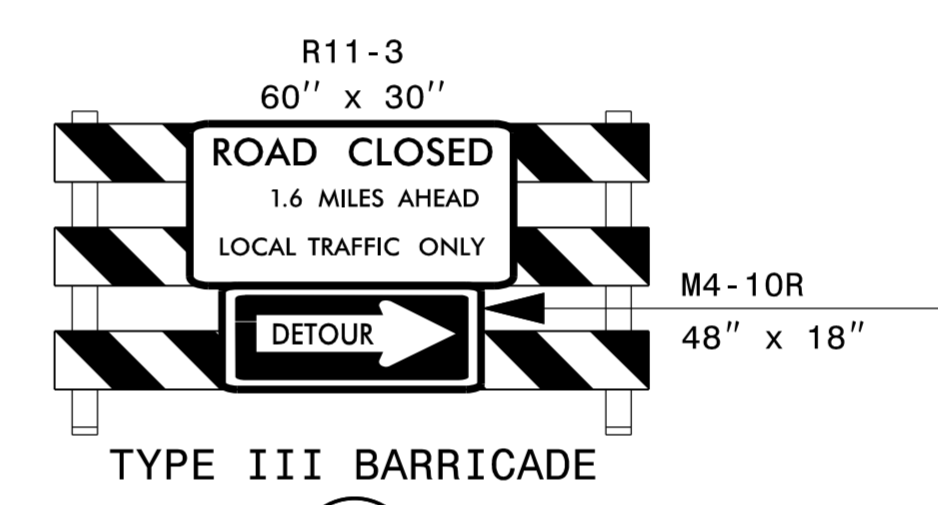
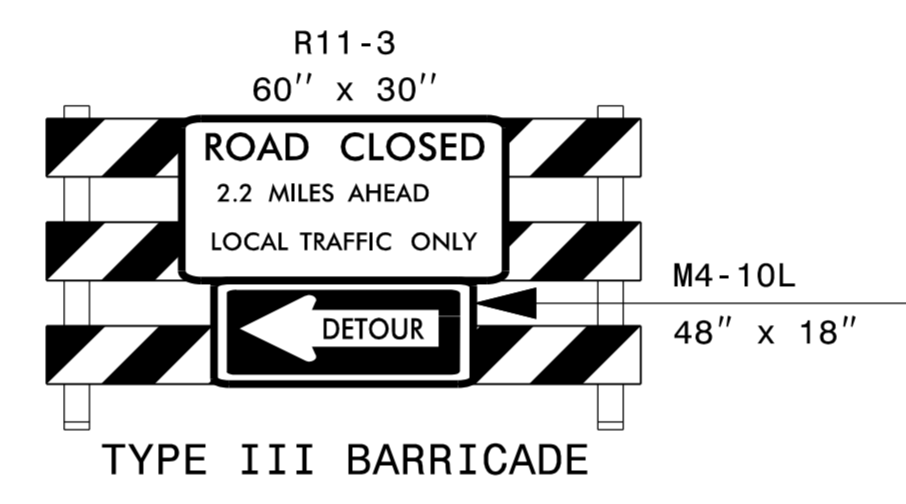
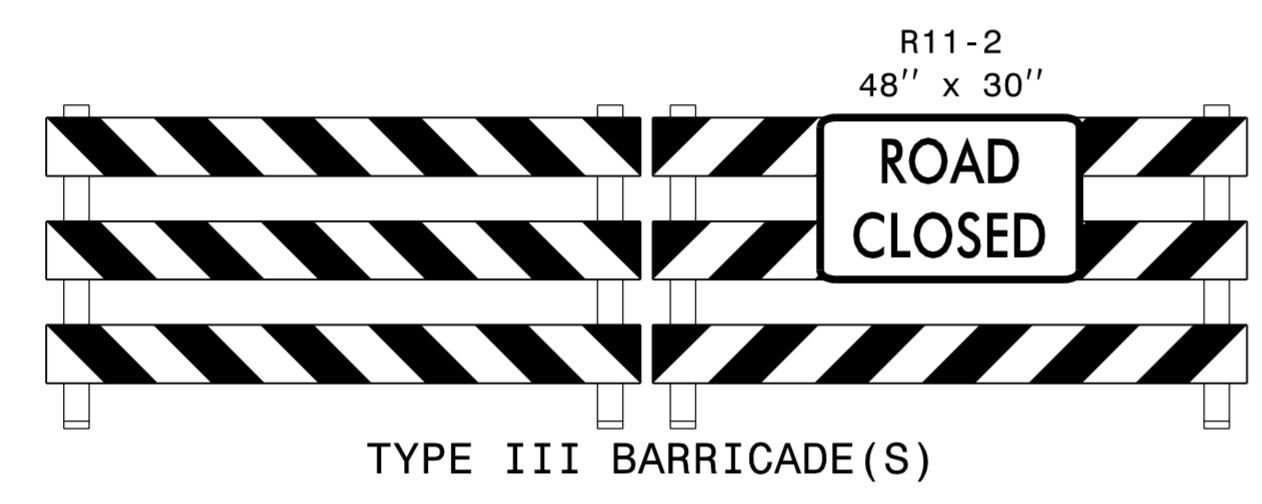
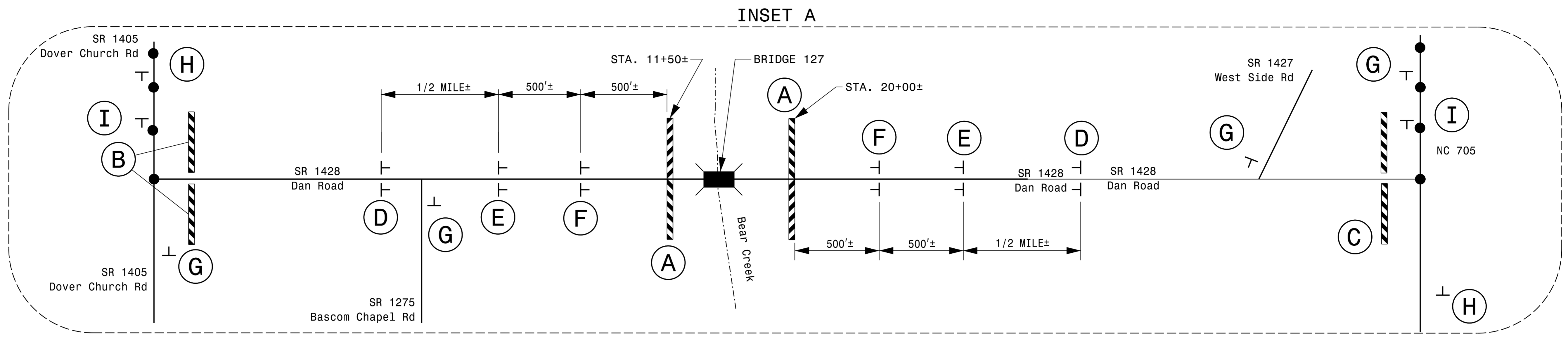
9/29/2021  
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 USERNAME

APPROVED: Brian A. Wilder  
889100643E34DE  
 DATE: 10/4/2021

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UNLESS ALL SIGNATURES COMPLETED**



**CH ENGINEERING**

3220 GLEN ROYAL RD. RALEIGH, NC 27617  
TELE 919.788.0224 FAX 919.788.0232  
NC LICENSE #P-0189

APPROVED: *Brian A Wiles*  
DATE: 10/4/2021

SEAL

16689

PROFESSIONAL ENGINEER  
BRIAN ALLEN WILES

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UNLESS ALL SIGNATURES COMPLETED

DIVISION OF HIGHWAYS  
DEPARTMENT OF TRANSPORTATION  
NORTH CAROLINA

WORK ZONE TRAFFIC CONTROL

ROAD CLOSURE DETAIL  
and  
DETOUR SIGNS

9/29/2021 R:\TrafficControl\TCP\Moore\127.TC.TMP\_4.dgn USERNAME



**PROJECT: BP8.R010**

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**MOORE COUNTY**

PLAN FOR PROPOSED  
HIGHWAY EROSION CONTROL

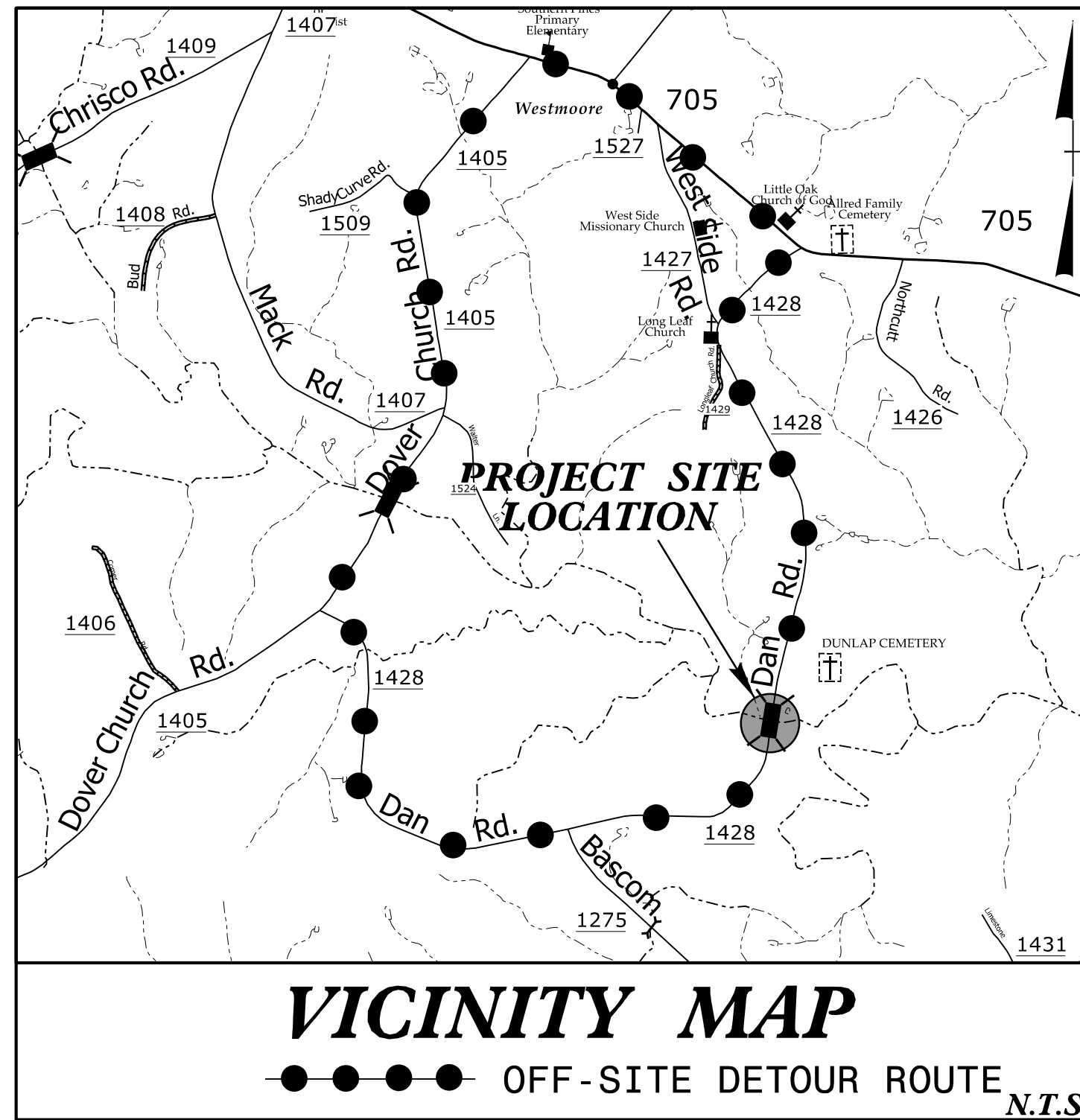
**LOCATION: BRIDGE 620127 OVER BEAR CREEK  
ON SR 1428 (DAN ROAD)**

**TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURES**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP8.R010	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	

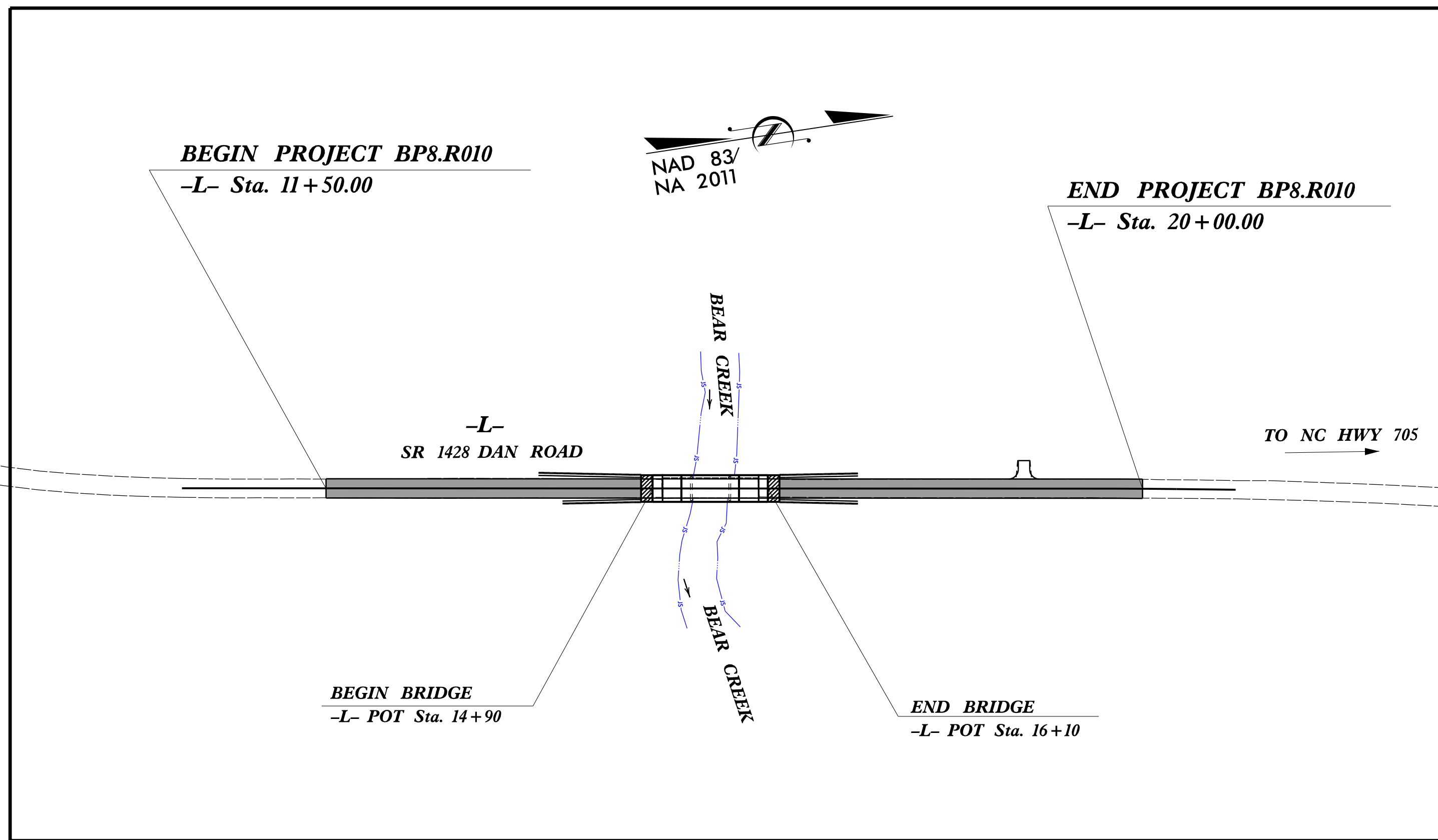
**EROSION AND SEDIMENT CONTROL MEASURES**

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	▩

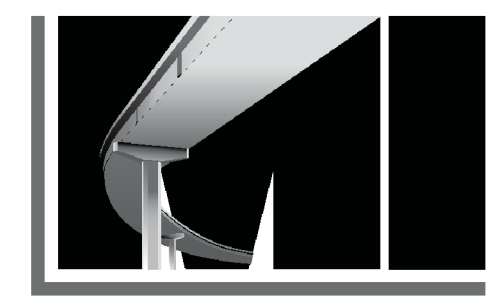


- 1634.02 Temporary Rock Sediment Dam Type-B
- 1635.01 Rock Pipe Inlet Sediment Trap Type-A
- 1635.02 Rock Pipe Inlet Sediment Trap Type-B
- 1630.04 Stilling Basin
- 1630.06 Special Stilling Basin
- Rock Inlet Sediment Trap:
  - 1632.01 Type A
  - 1632.02 Type B
  - 1632.03 Type C
- Skimmer Basin
- Tiered Skimmer Basin
- Infiltration Basin

**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.**



**MI ENGINEERING, LLC**  
1011 SCHAUB DR, SUITE 100  
RALEIGH, NC 27606  
(919) 851-6606

Prepared In the Office of:  
**MI ENGINEERING, LLC**  
1011 SCHAUB DR, SUITE 100  
RALEIGH, NC 27606

Designed by:  
**KAREN HEFNER, PE** 3428  
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.

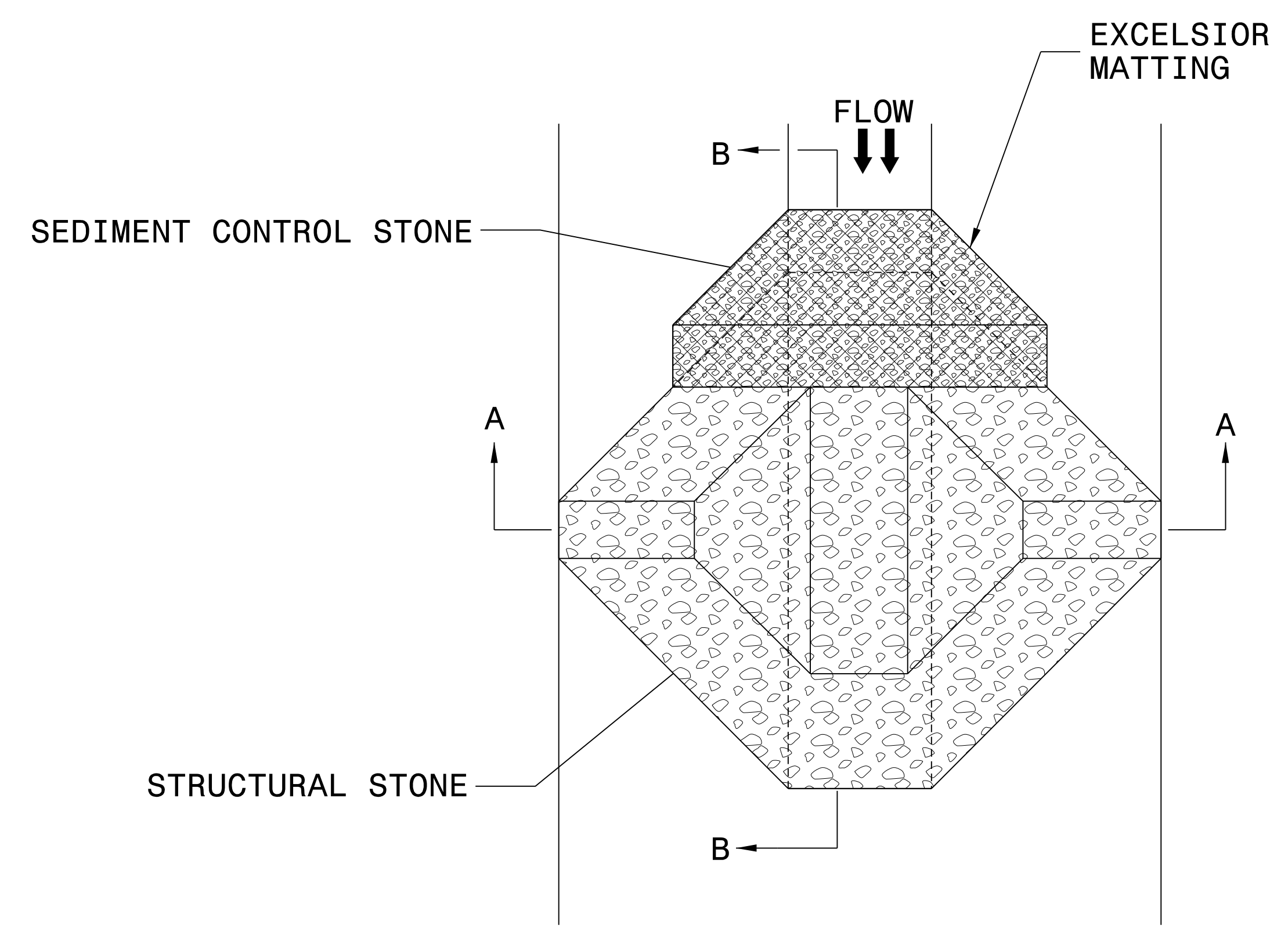
1604.01 Railroad Erosion Control Detail	1632.01 Rock Inlet Sediment Trap Type A
1605.01 Temporary Silt Fence	1632.02 Rock Inlet Sediment Trap Type B
1606.01 Special Sediment Control Fence	1632.03 Rock Inlet Sediment Trap Type C
1607.01 Gravel Construction Entrance	1633.01 Temporary Rock Silt Check Type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

D:\27655\27655-000\27655-000-02 Moore 1277 Erosion Control\CA000\B620127\_EC.tsh.dgn



PROJECT REFERENCE NO. BP8.R010	SHEET NO. EC-02
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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



PLAN

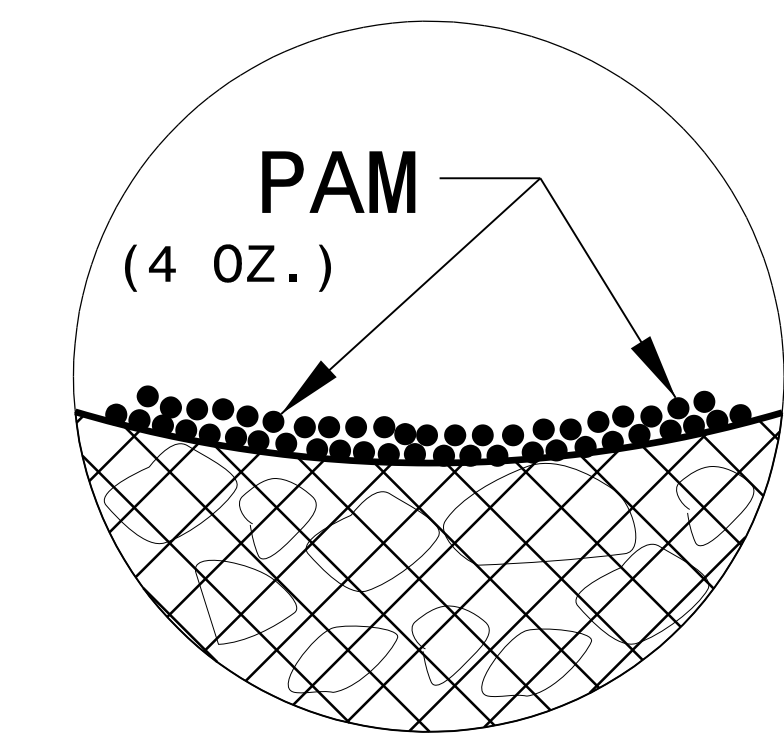
**NOTES:**

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

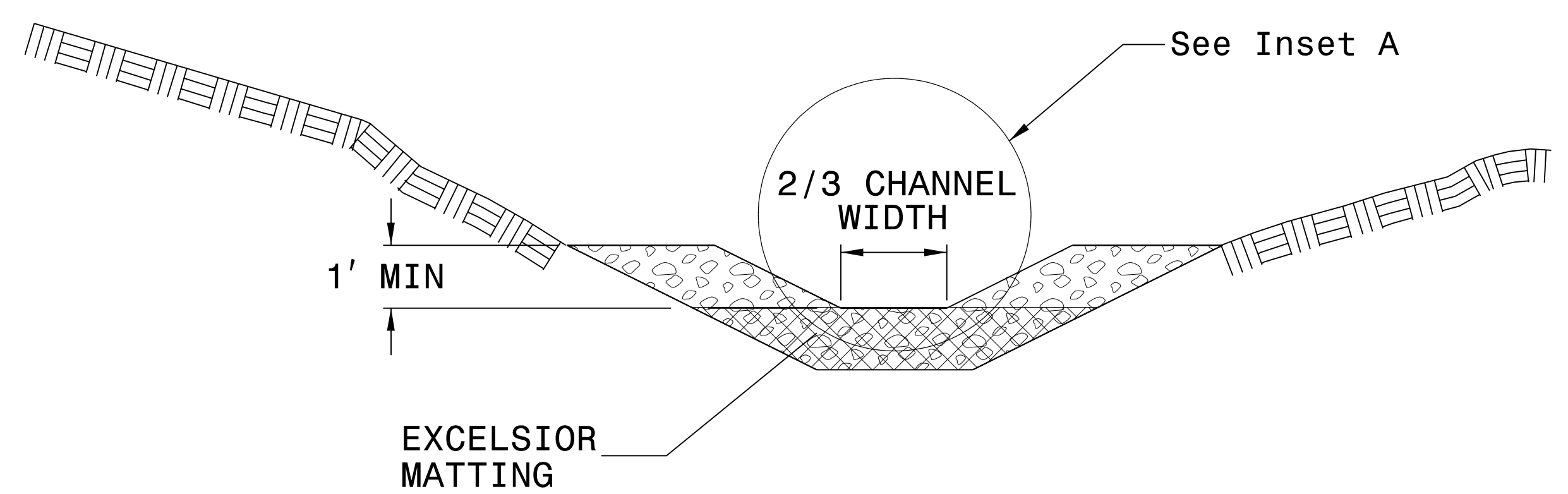
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

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.

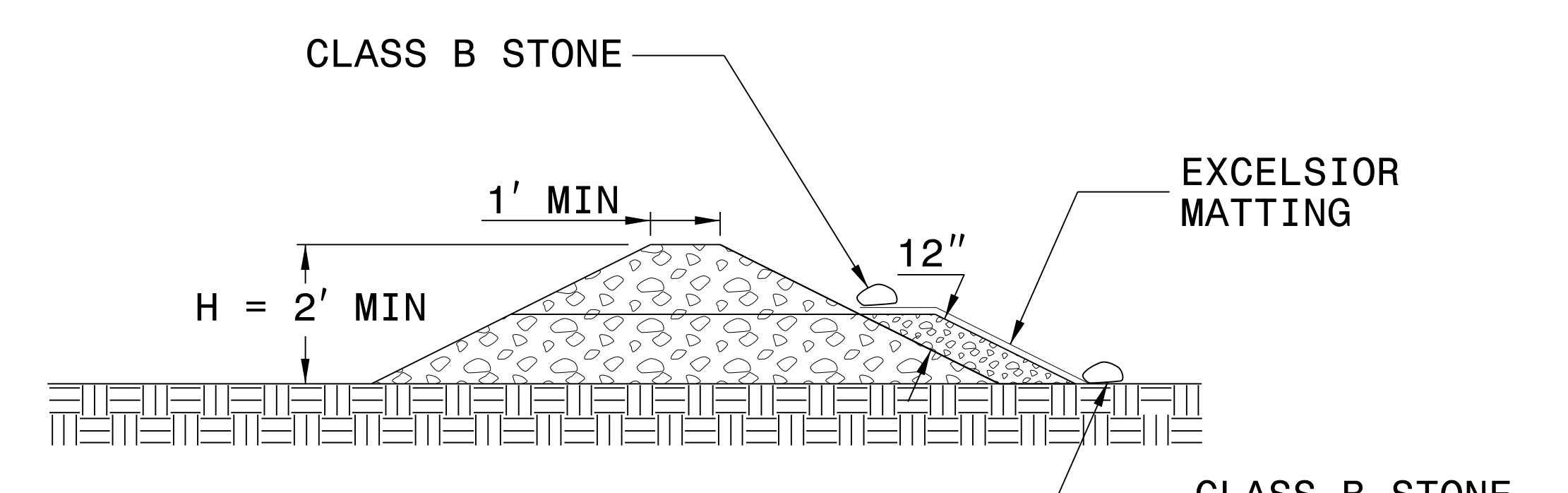
INITIALLY APPLY 4 OUNCES OF POLYACRYLAMIDE (PAM) TO TOP OF MATTING SECTION AND AFTER EVERY RAINFALL EVENT THAT EQUALS OR EXCEEDS 0.50 INCHES.



INSET A



SECTION A-A



SECTION B-B

NOT TO SCALE



DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

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PROJECT REFERENCE NO. <i>BP8.R010</i>	SHEET NO. <i>EC-03B</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

# ***SOIL STABILIZATION TIMEFRAMES***

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



PROJECT REFERENCE NO.	SHEET NO.
BP8.R010	EC-04/CONST.04
MOORE COUNTY BRIDGE #127	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

**CH ENGINEERING**  
 3220 GLEN ROYAL RD. RALEIGH, NC 27617  
 TELE 919.788.0224 FAX 919.788.0232  
 NC LICENSE #P0189

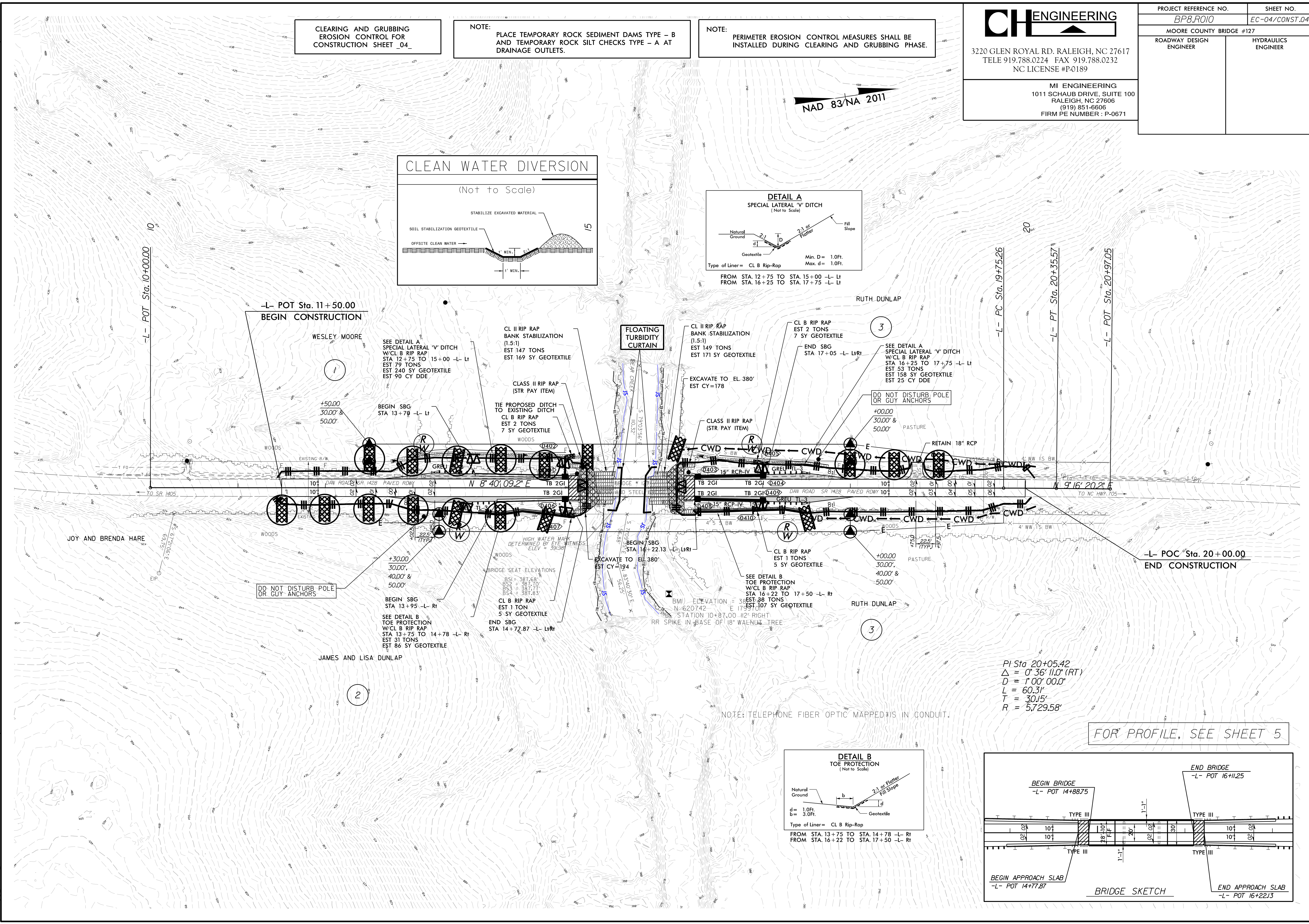
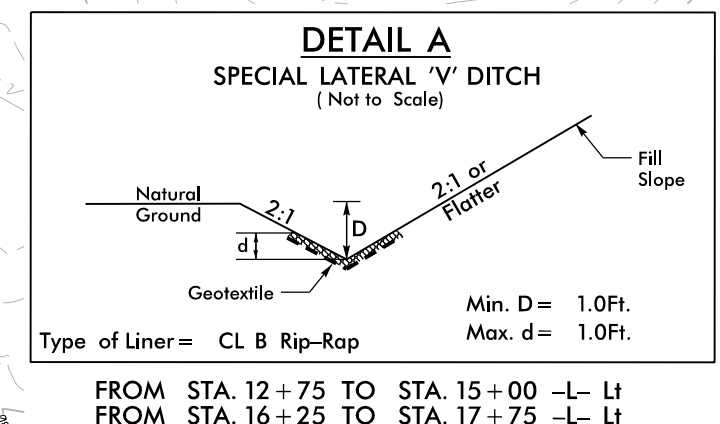
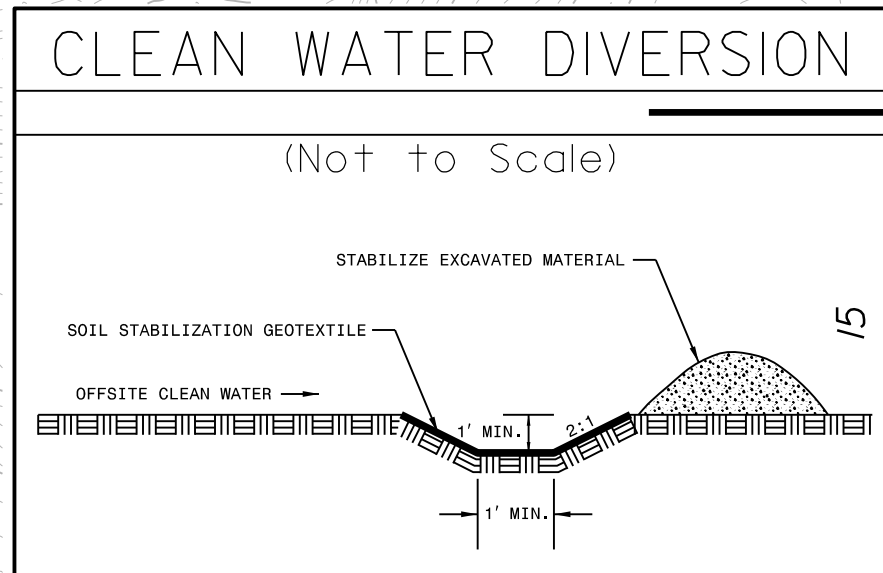
MI ENGINEERING  
 1011 SCHAUB DRIVE, SUITE 100  
 RALEIGH, NC 27606  
 (919) 851-6606  
 FIRM PE NUMBER : P-0671

CLEARING AND GRUBBING  
 EROSION CONTROL FOR  
 CONSTRUCTION SHEET \_04\_

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

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

NAD 83/NA 2011

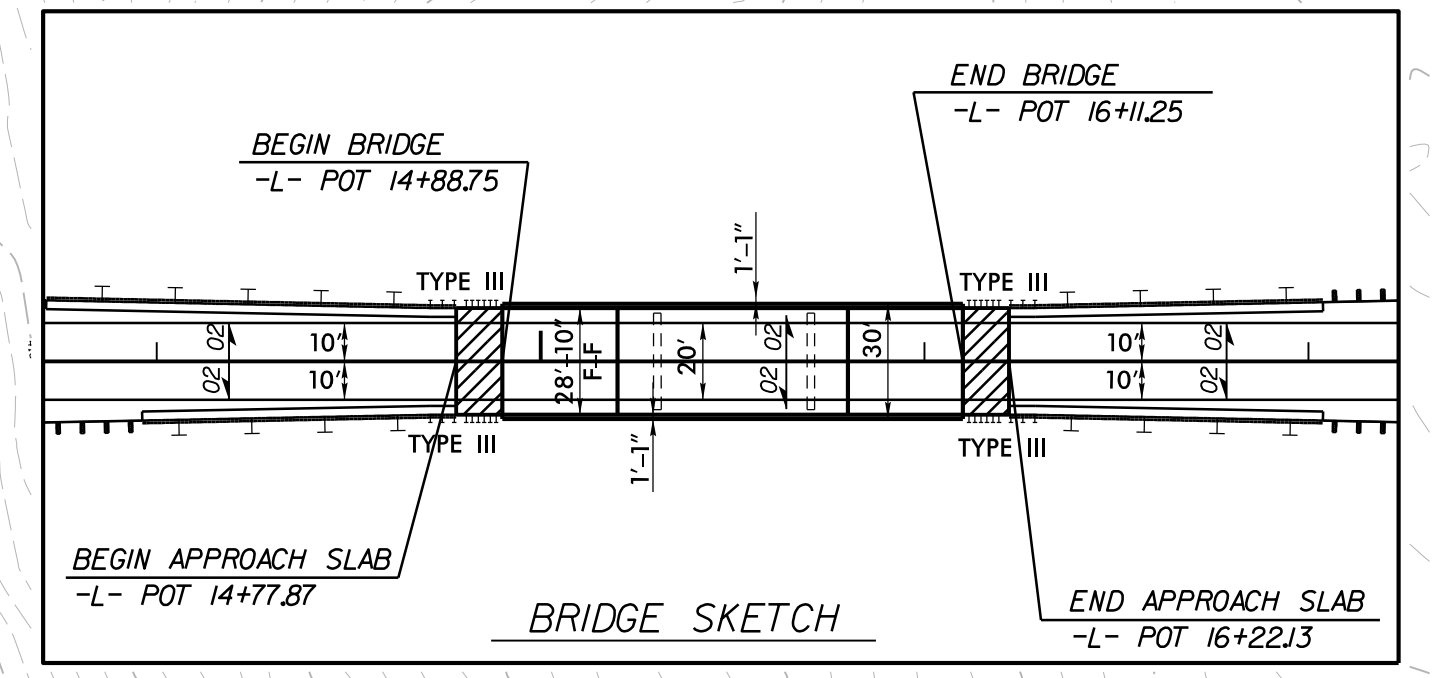
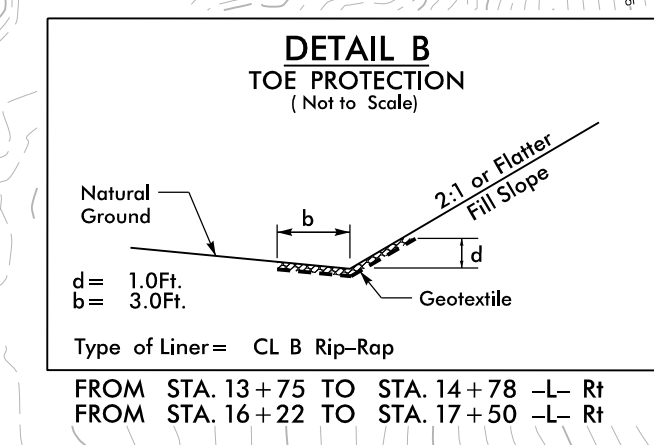


-L- PC Sta. 19+75.26  
 -L- PT Sta. 20+35.57  
 -L- POT Sta. 20+97.05

-L- POC Sta. 20+00.00  
 END CONSTRUCTION

PI Sta 20+05.42  
 $\Delta = 0' 36' 11.0'' (RT)$   
 $D = 1' 00' 00.0''$   
 $L = 60.31'$   
 $T = 30.15'$   
 $R = 5,729.58'$

FOR PROFILE, SEE SHEET 5



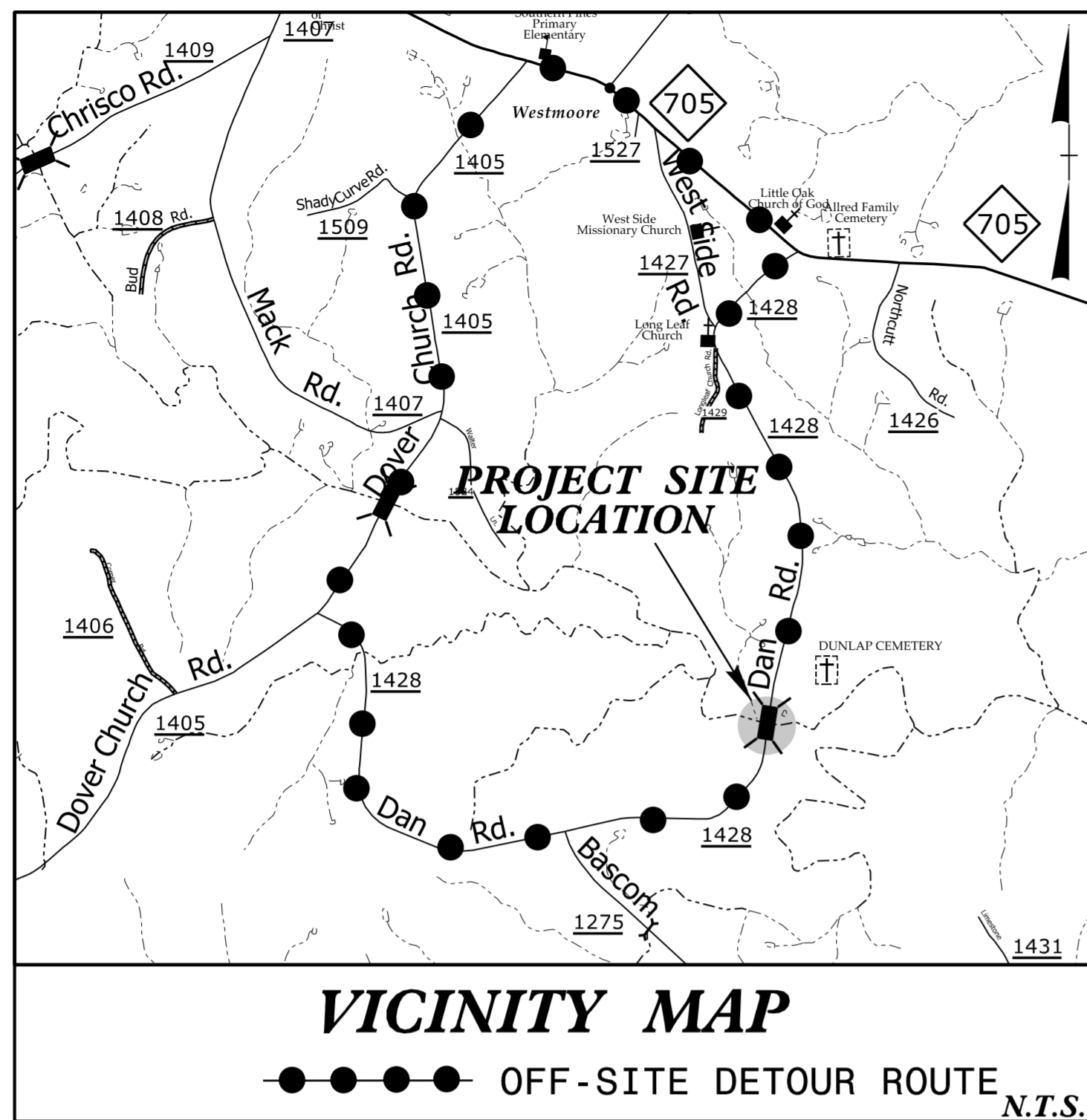
REVISIONS

24-SEP-2021 08:04  
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**TIP PROJECT: BP8.R010**



STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS

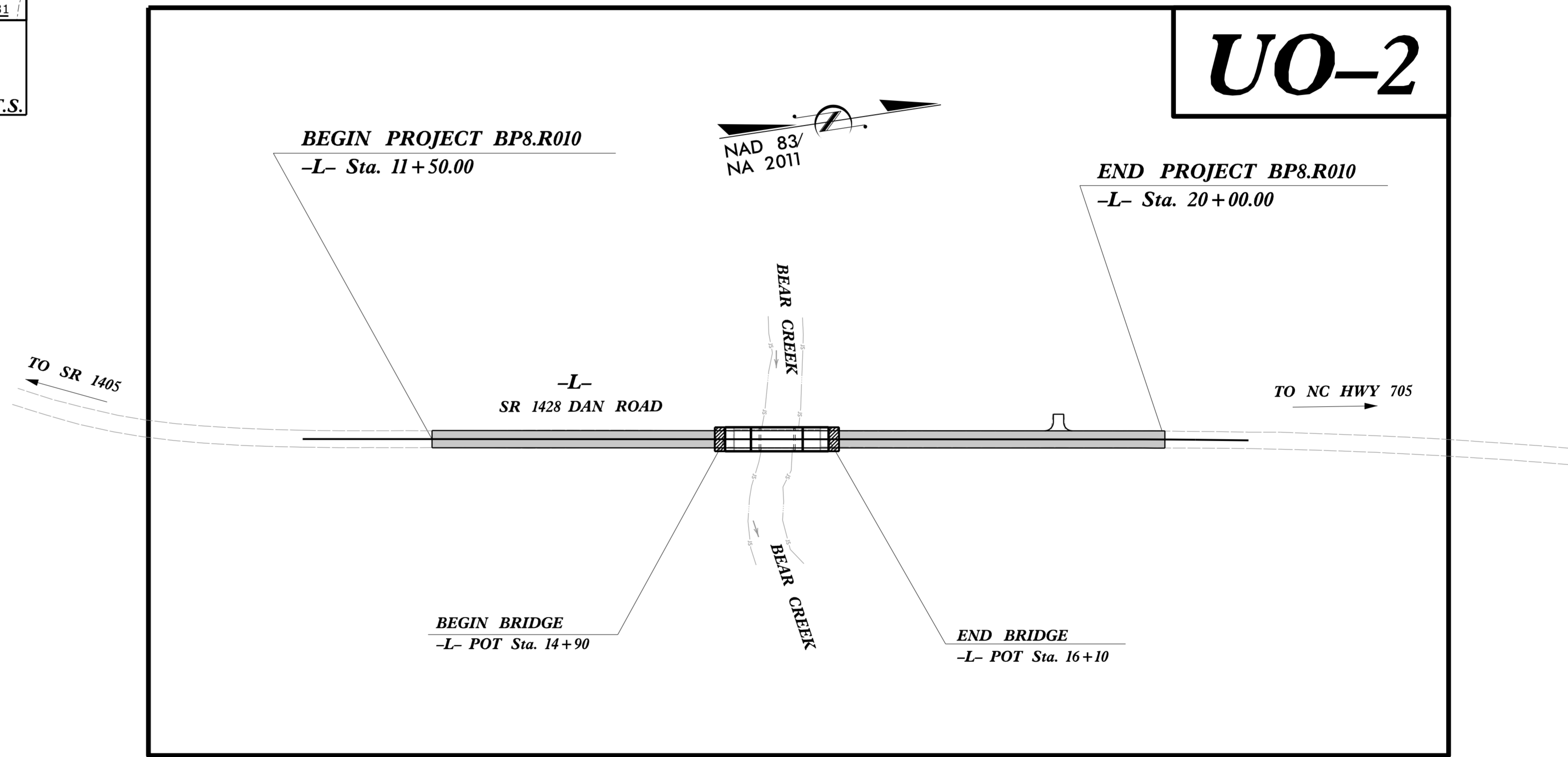
**UTILITIES BY OTHERS PLANS  
 MOORE COUNTY**

**LOCATION: BRIDGE 620127 OVER BEAR CREEK  
 ON SR 1428 (DAN ROAD)**

**TYPE OF WORK: UTILITY RELOCATION**

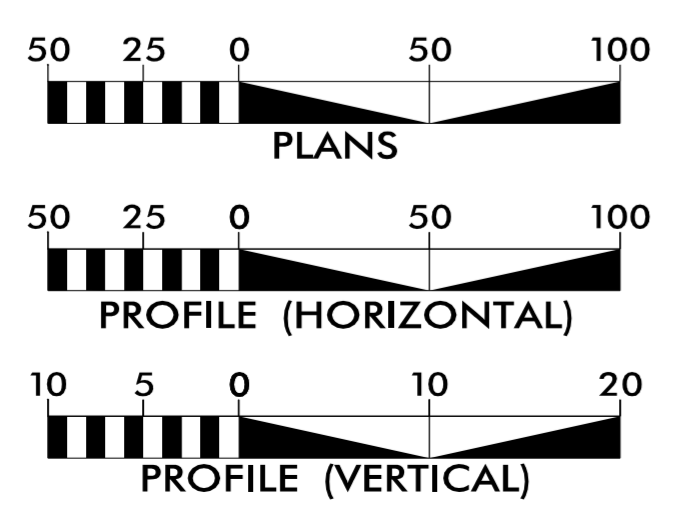
T.I.P. NO.	SHEET NO.
BP8.R010	UO-1

**NOTE:**  
 ALL UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR UTILITY WORK SHOWN ON THIS SHEET.



PRELIMINARY PLANS  
 DO NOT USE FOR CONSTRUCTION

**GRAPHIC SCALES**



**INDEX OF SHEETS**

SHEET NO.:	DESCRIPTION:
UO-1	TITLE SHEET
UO-2	UBO PLAN SHEET

**UTILITY OWNERS WITH CONFLICTS**

(A) COMMUNICATIONS - RANDOLPH TELEPHONE MEMBERSHIP CORPORATION

PREPARED IN THE OFFICE OF:  
**CH ENGINEERING**  
 3220 GLEN ROYAL RD. RALEIGH, NC 27617  
 TELE 919.788.0224 FAX 919.788.0232  
 NC LICENSE #P-0189

**UTILITIES PROJECT ENGINEER**  
 Mary Jo Lee, P.E.

**DIVISION OF HIGHWAYS  
 DIVISION 8**  
 121 DOT DRIVE  
 CARTHAGE, NC 28327

**JAMIE YOW** DIVISION UTILITY COORDINATOR  
**TRAVIS MORGAN** DIVISION UTILITY ENGINEER  
**TIM WELCH** DIVISION BRIDGE PROG MANAGER  
**XXXX** DIVISION CONTACT #4

9/24/2021 R:\Utilities\Engineering\UBO\Proj\B620127\_ut\_tsh\_u001\_psh.dgn -USERNAME-

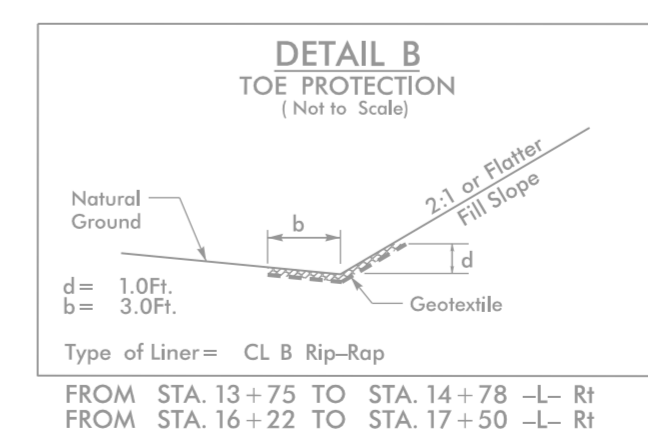
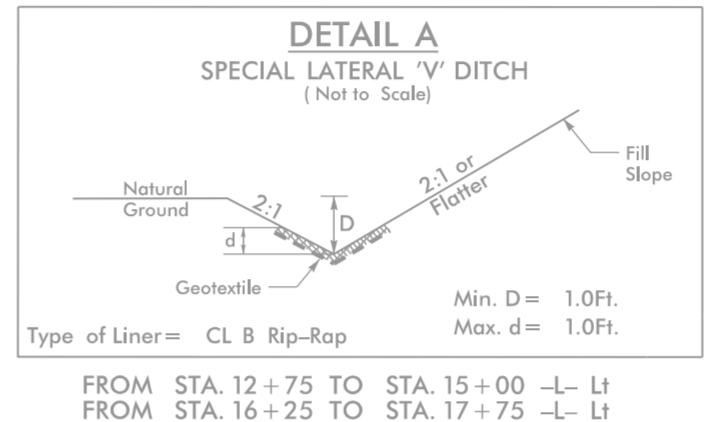
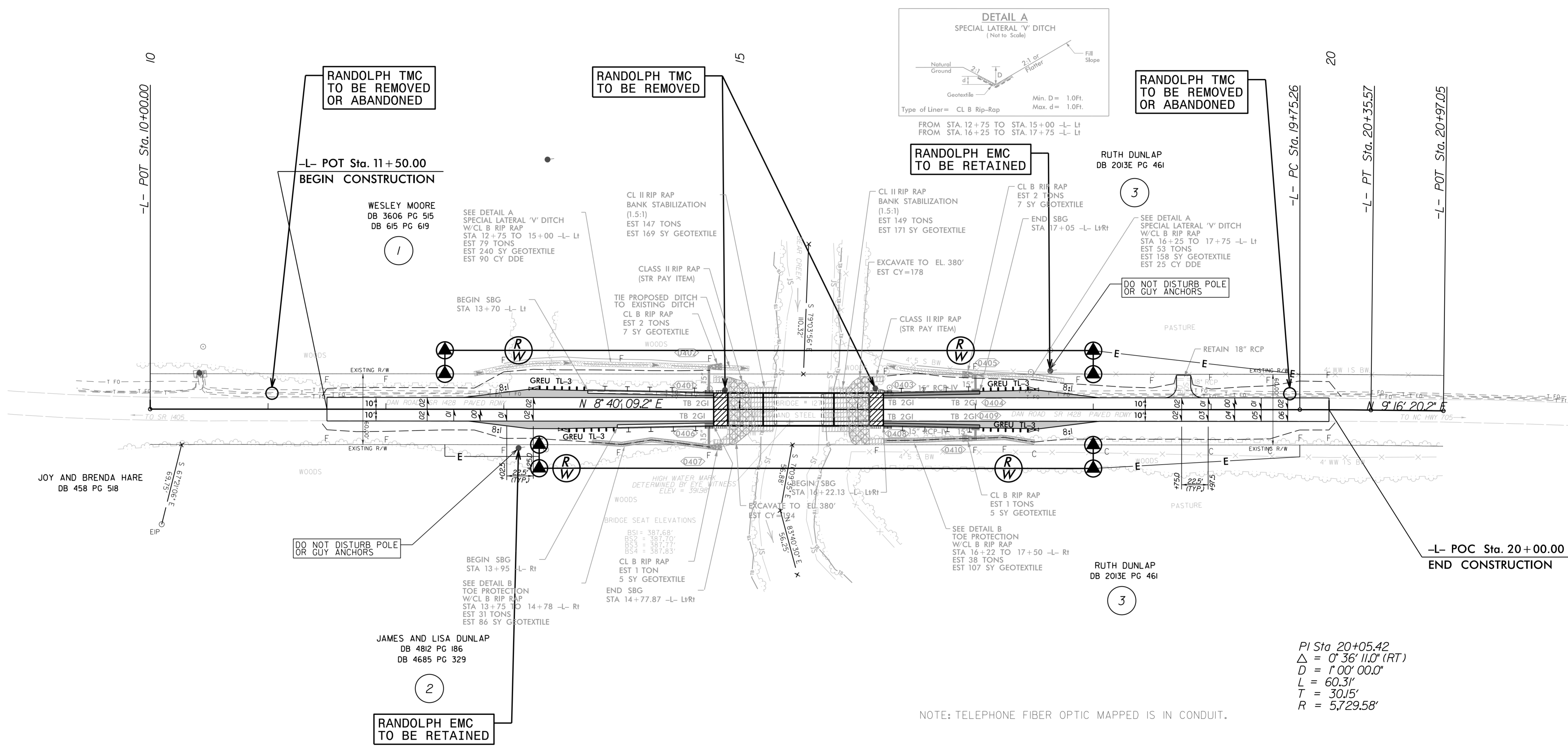


### UTILITIES BY OTHERS

**NOTE:**  
 ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR PROPOSED UTILITY WORK SHOWN ON THIS SHEET.

RANDOLPH TELEPHONE MEMBERSHIP CORPORATION WILL RELOCATE THEIR FACILITIES OUTSIDE OF THE PROJECT LIMITS

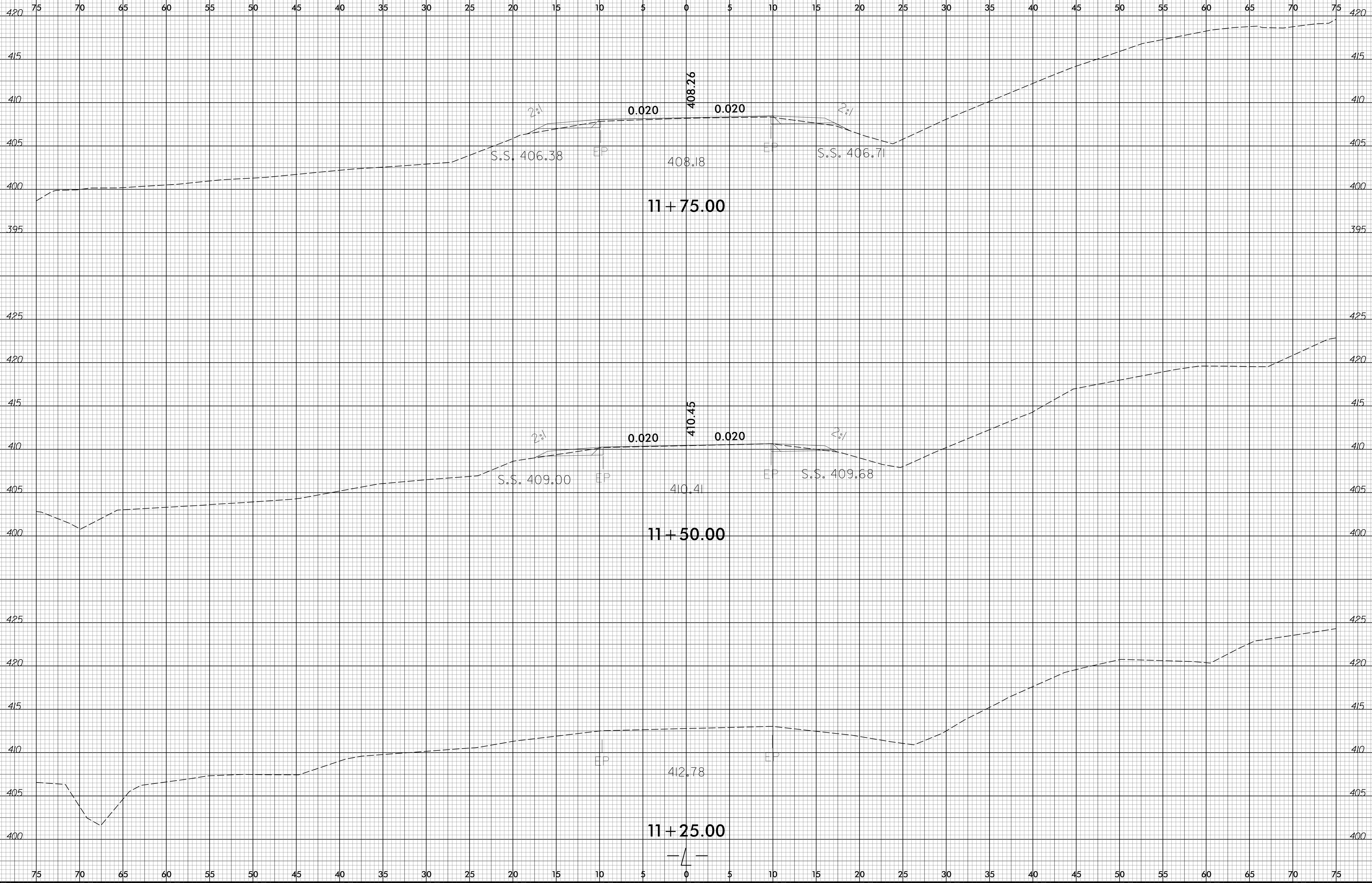
NAD 83/NA 2011



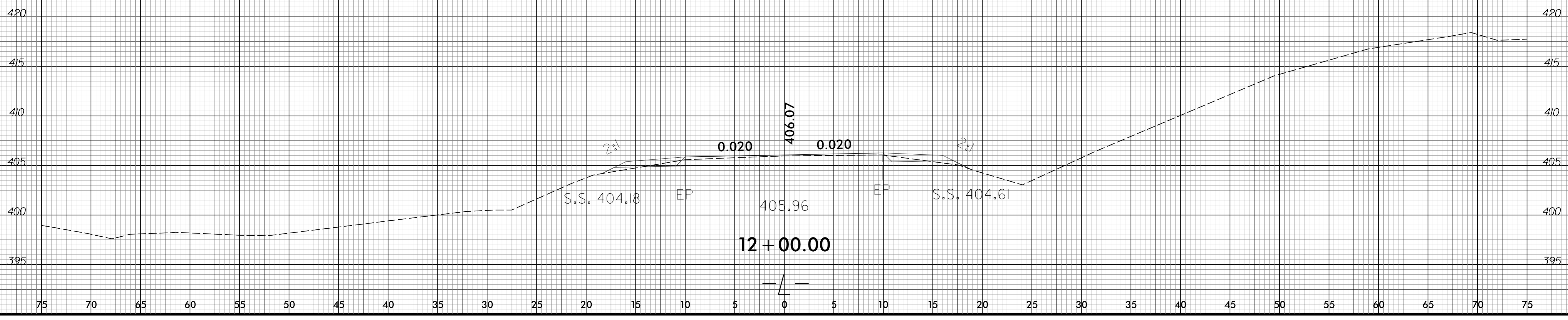
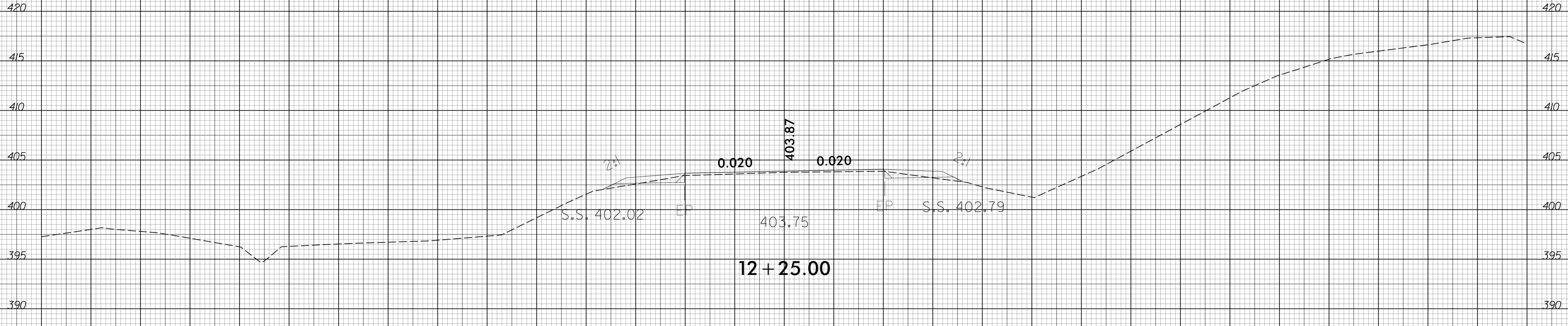
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 $\Delta = 0' 36'' 11.0'' (RT)$   
 $D = 1' 00'' 00.0''$   
 $L = 60.3'$   
 $T = 30.15'$   
 $R = 5,729.58'$

NOTE: TELEPHONE FIBER OPTIC MAPPED IS IN CONDUIT.

9/15/21  
 2/24/2021  
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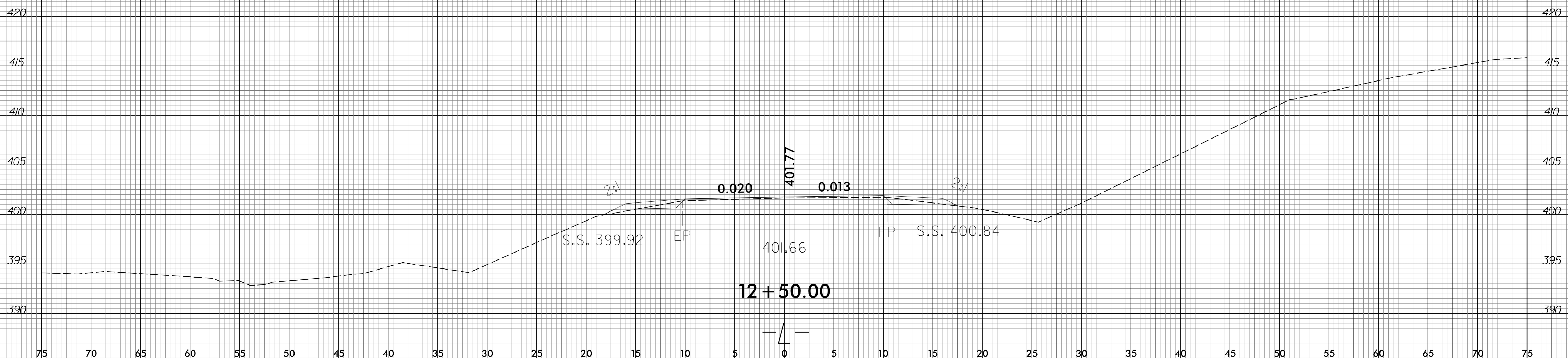
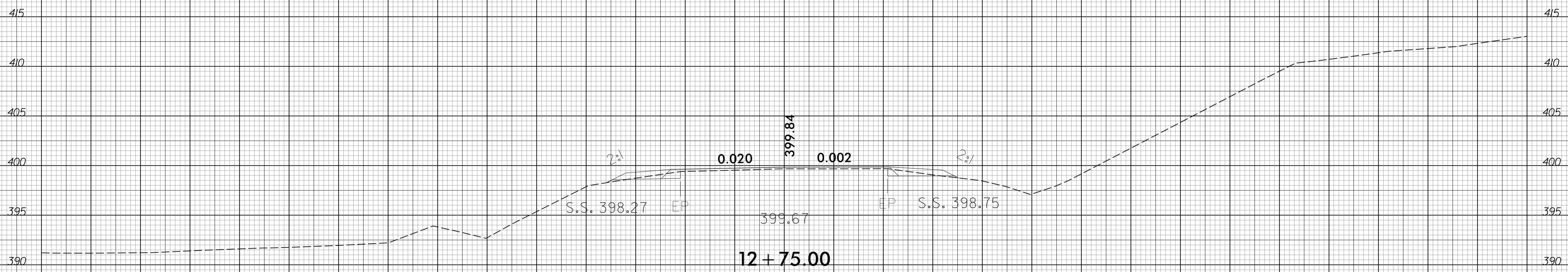


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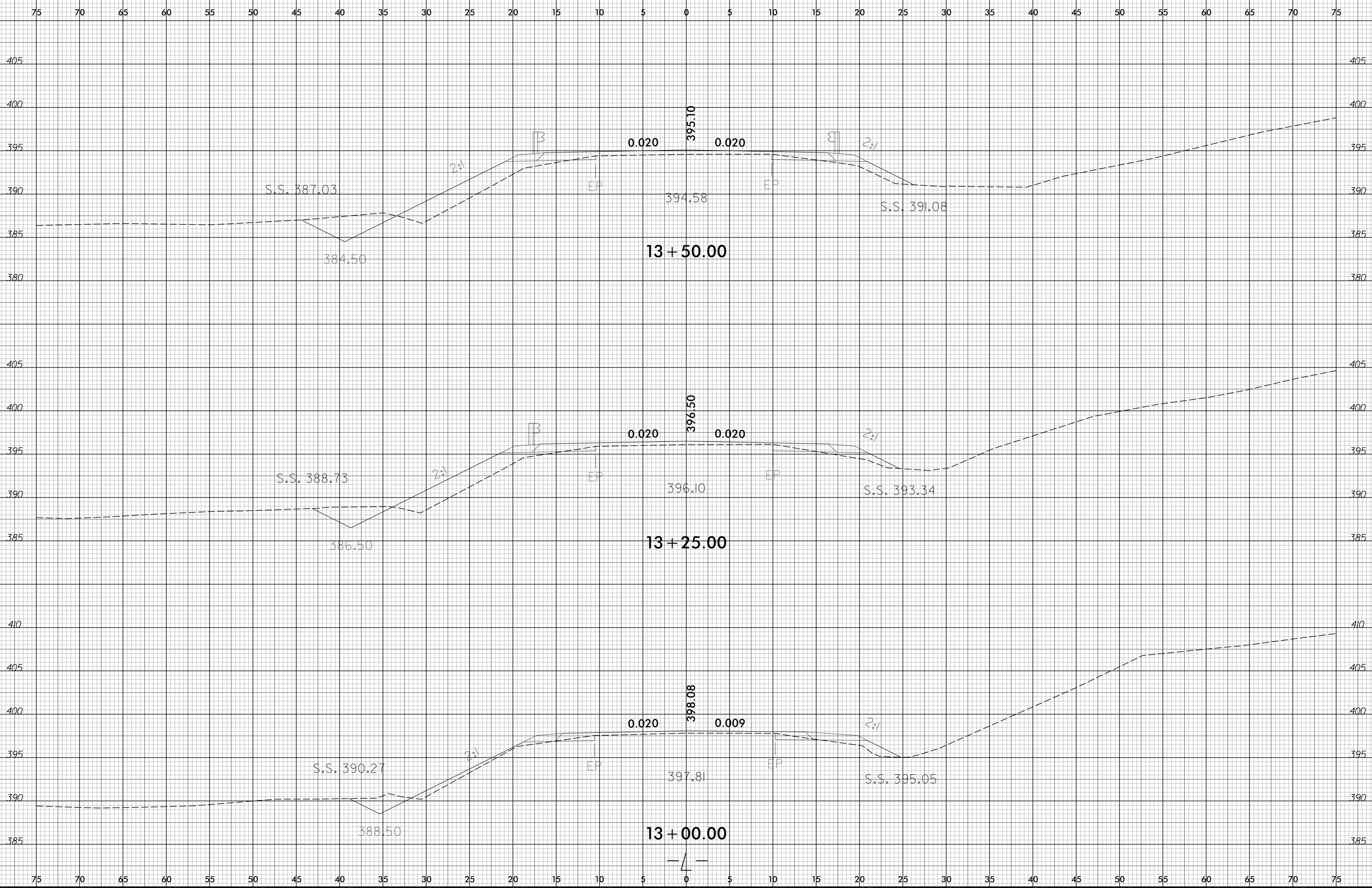




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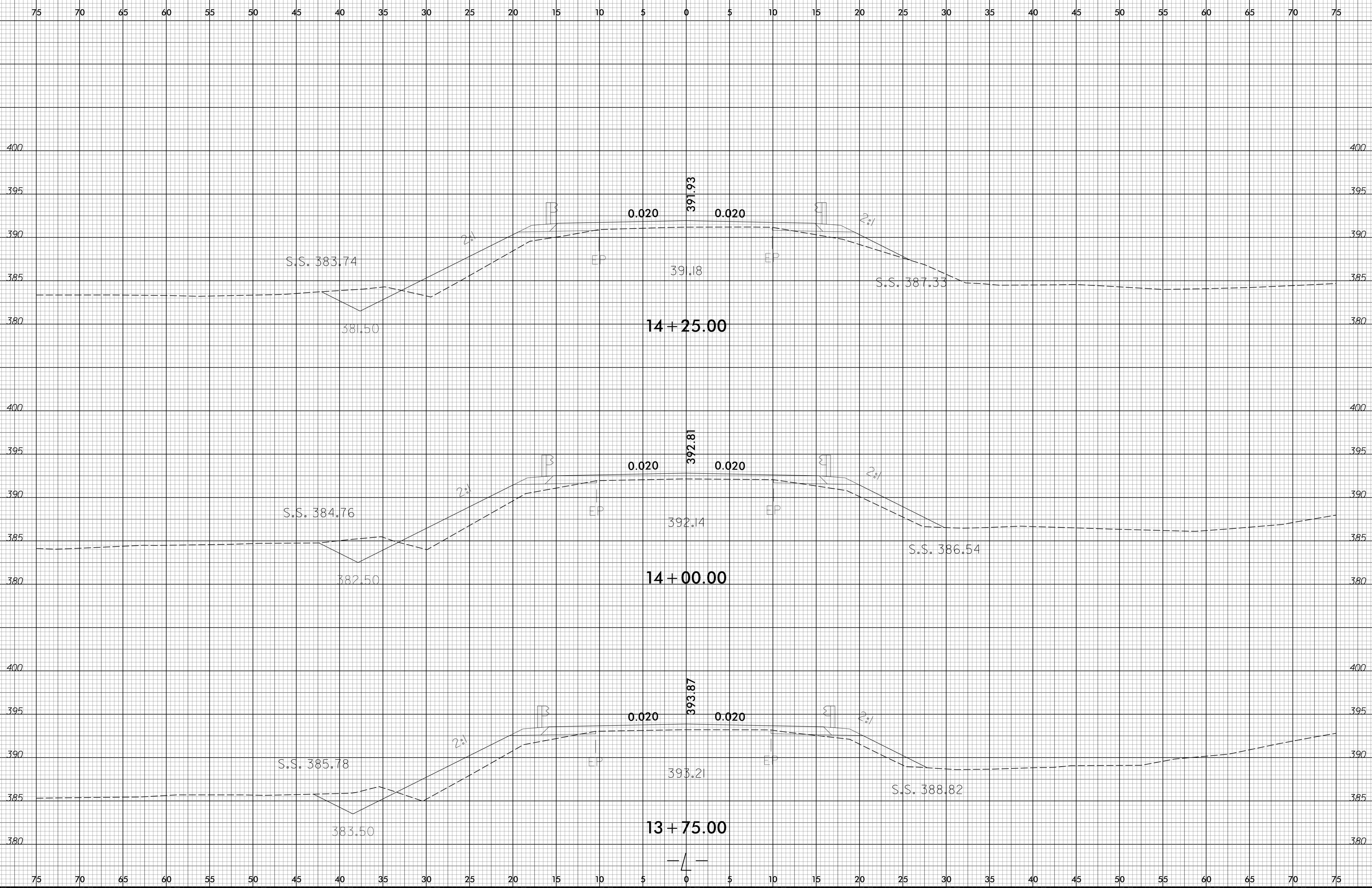


6/23/16



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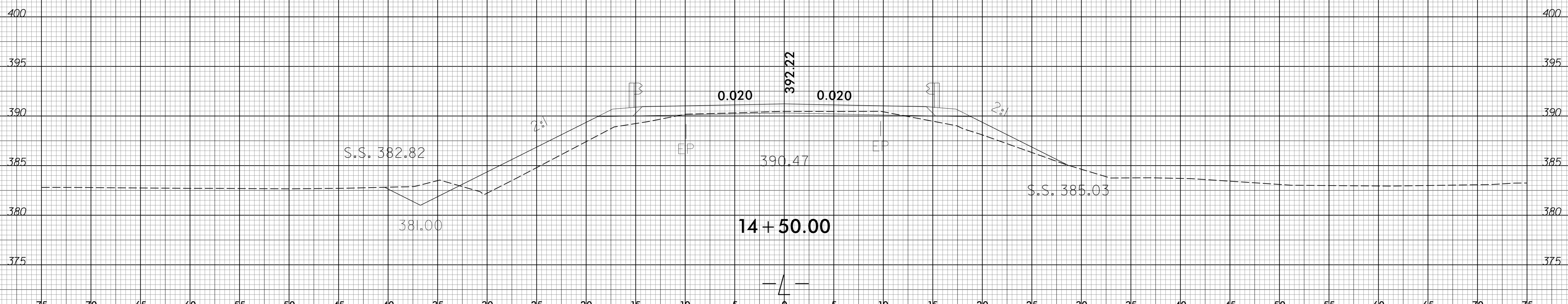
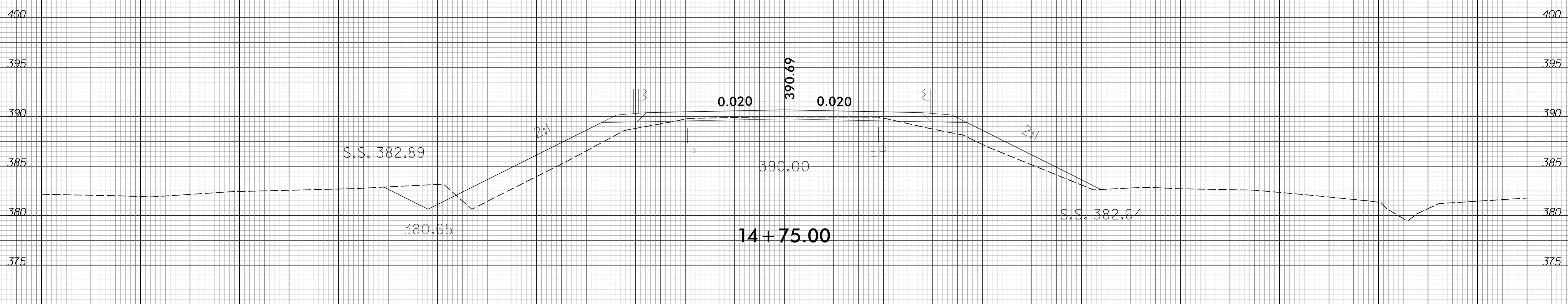
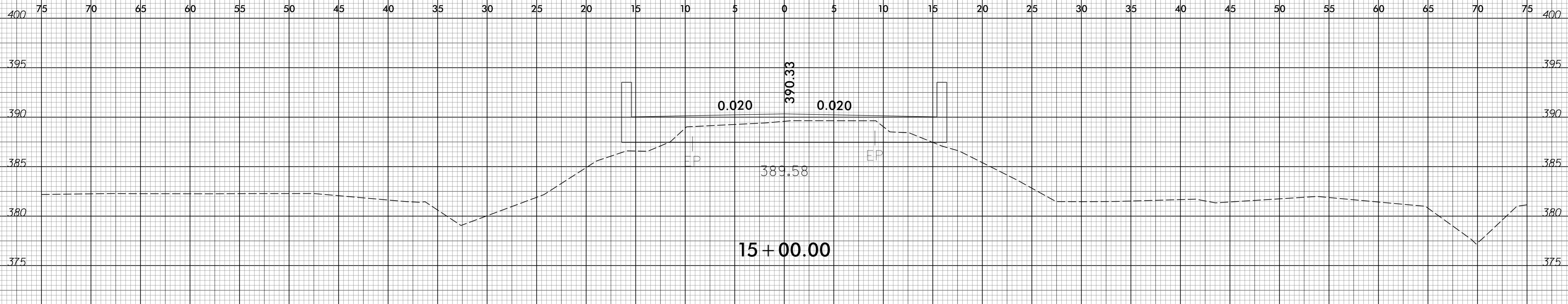
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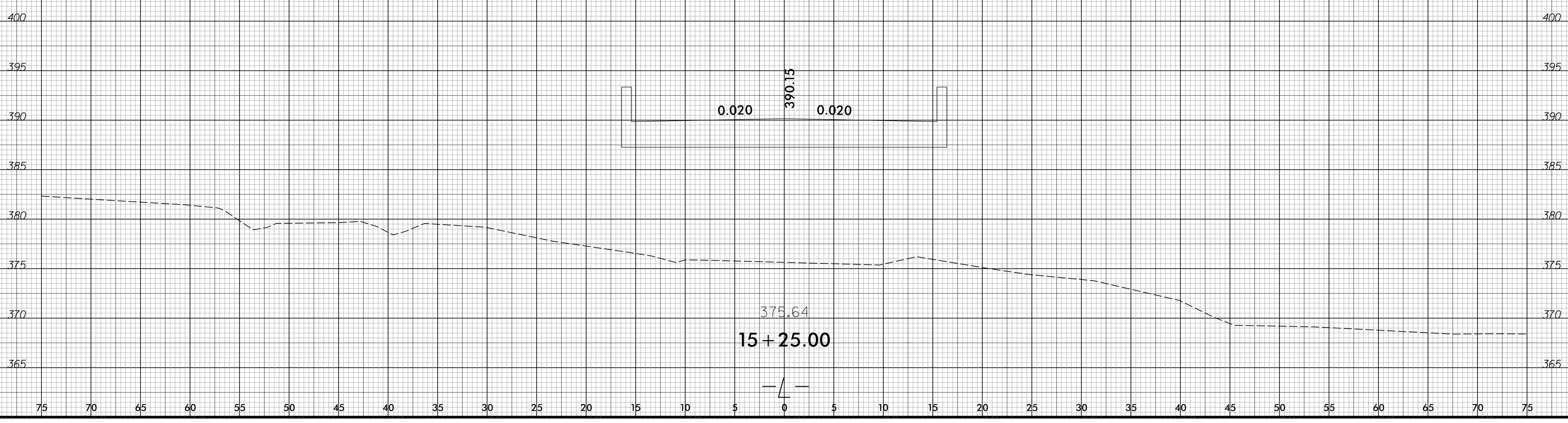
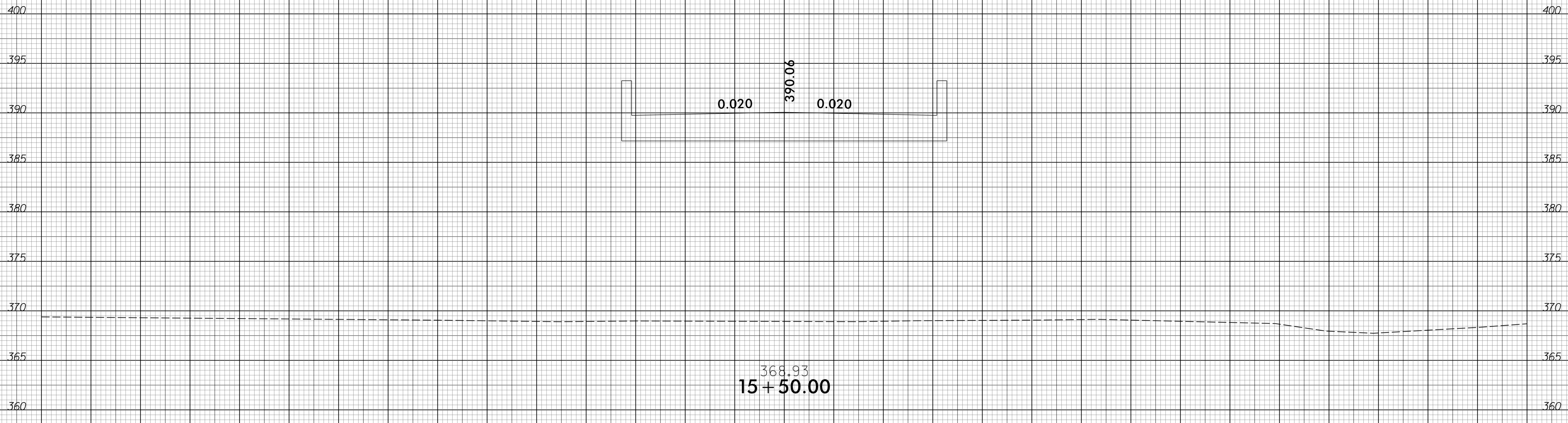


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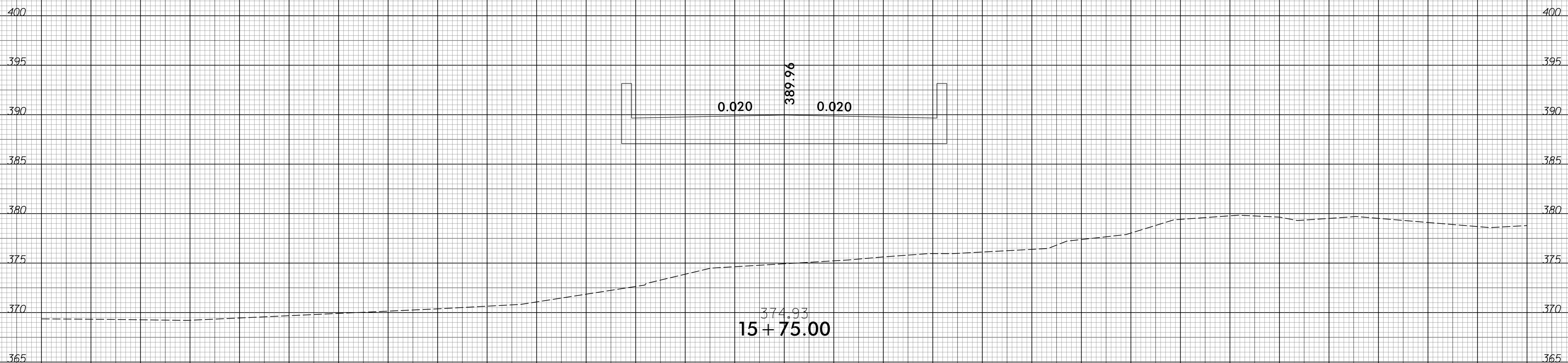
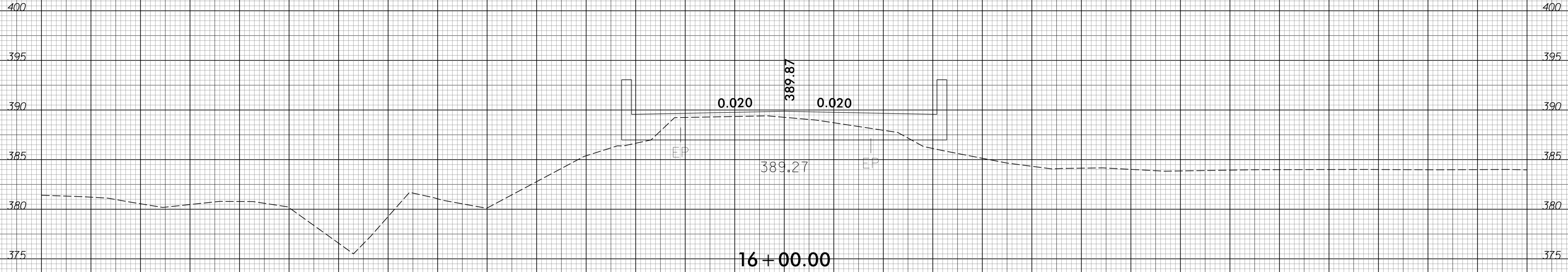


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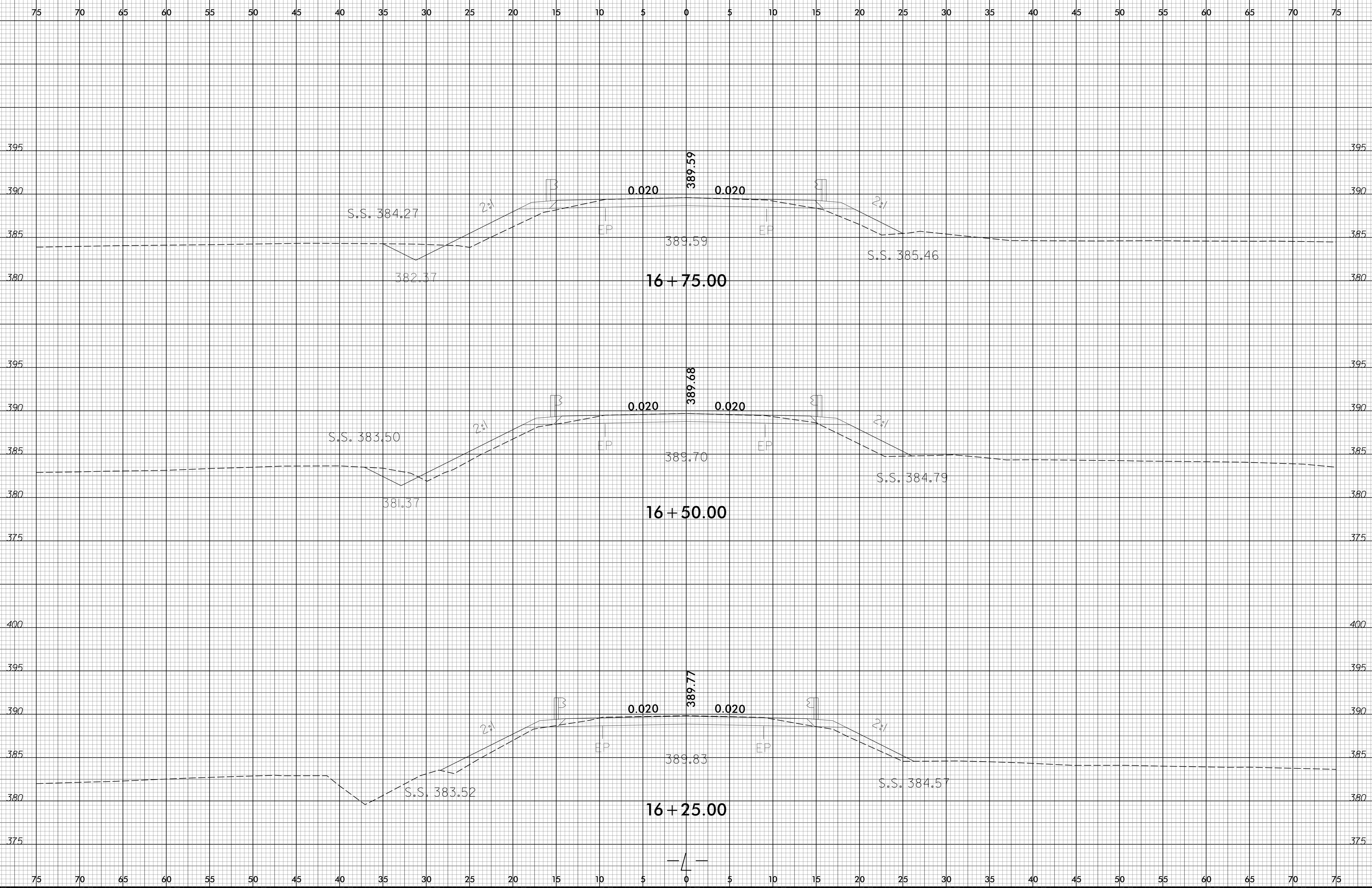
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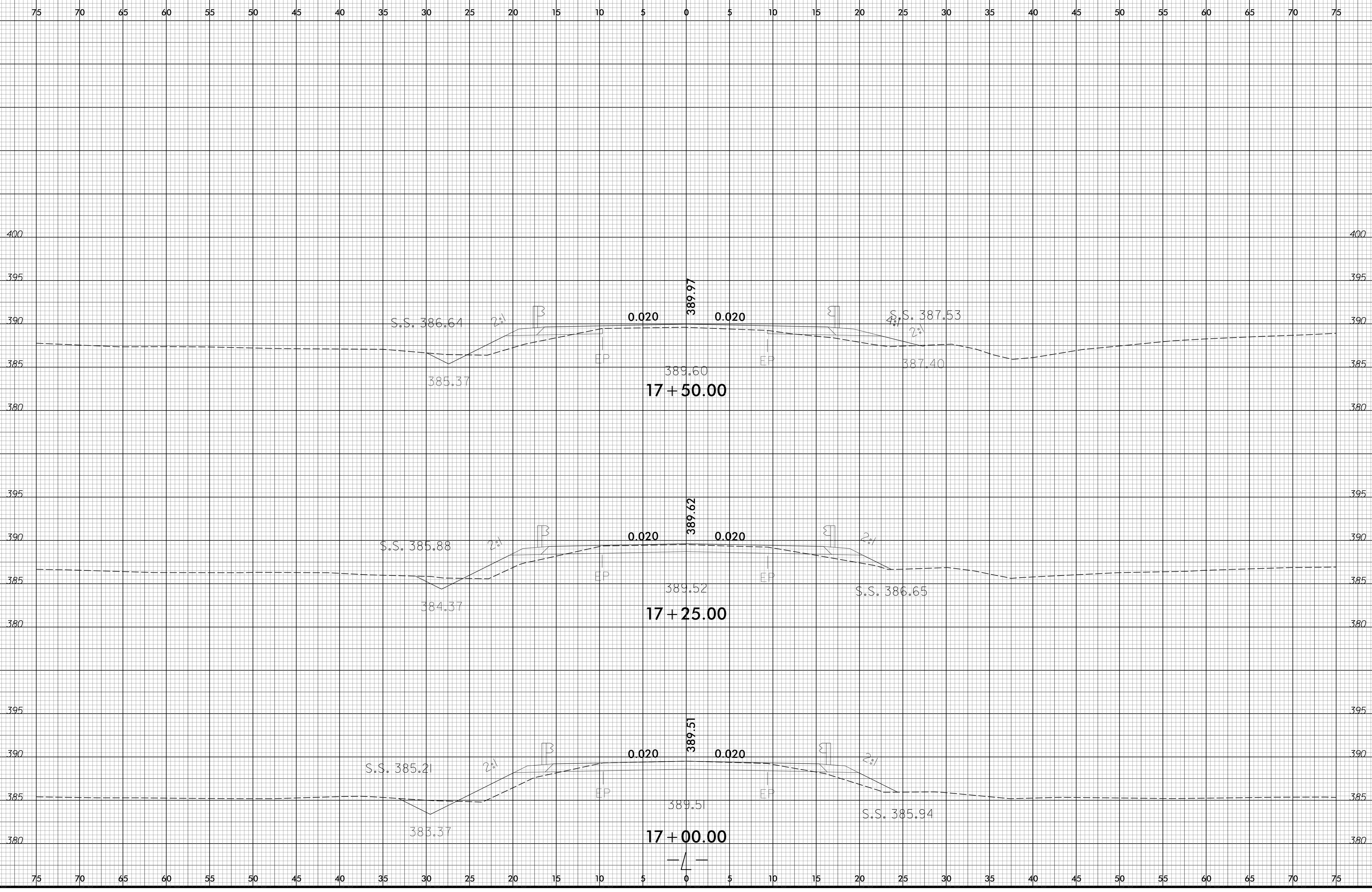
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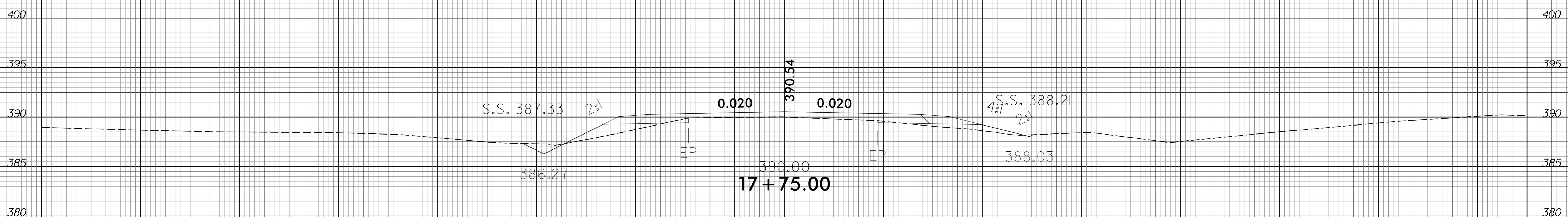
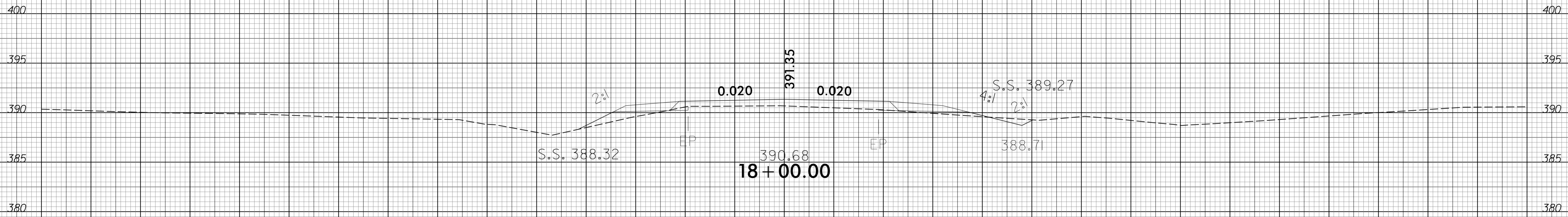
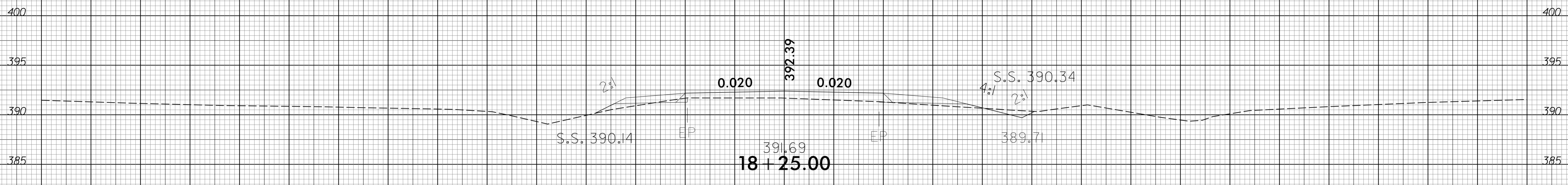


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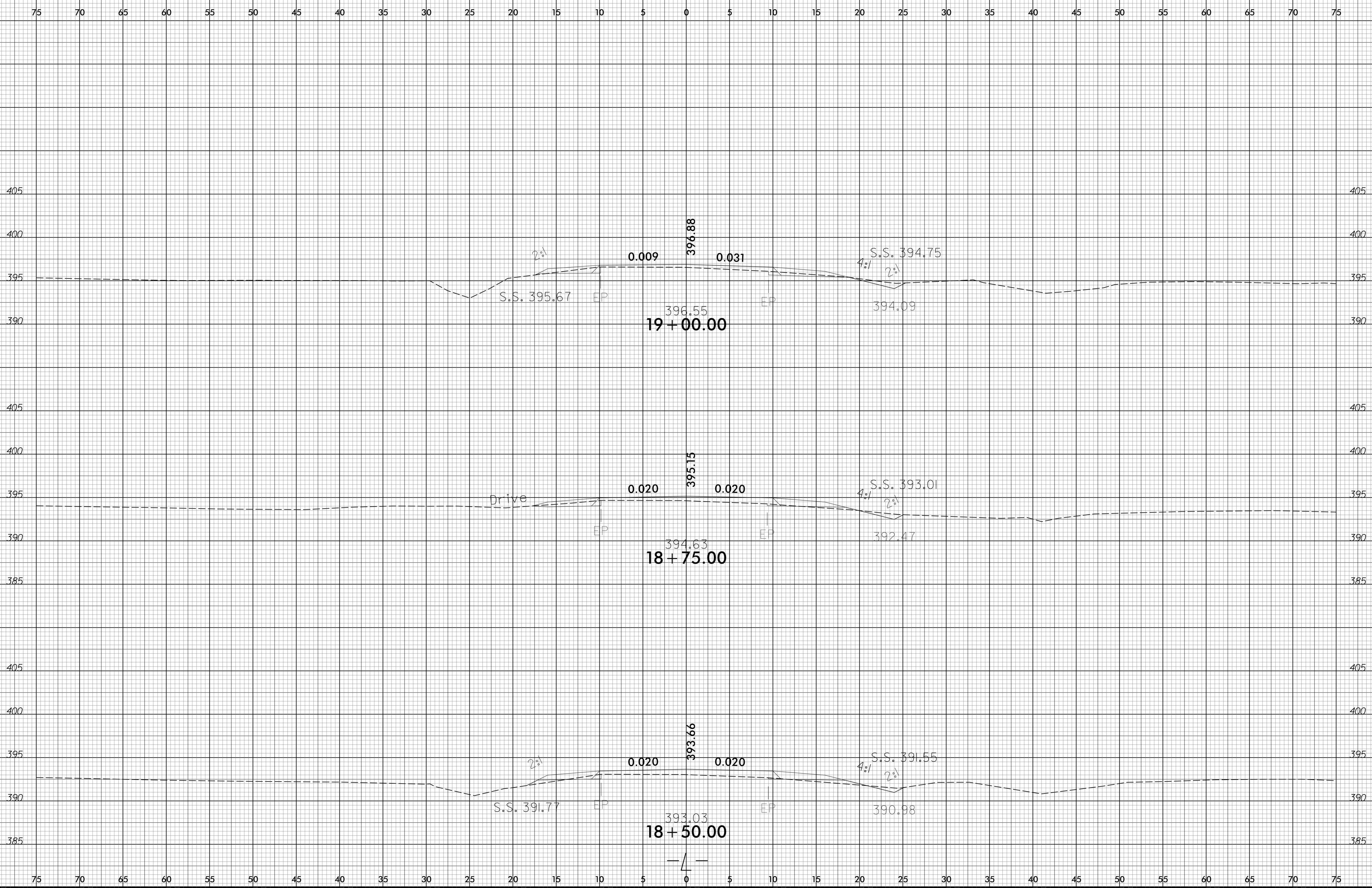


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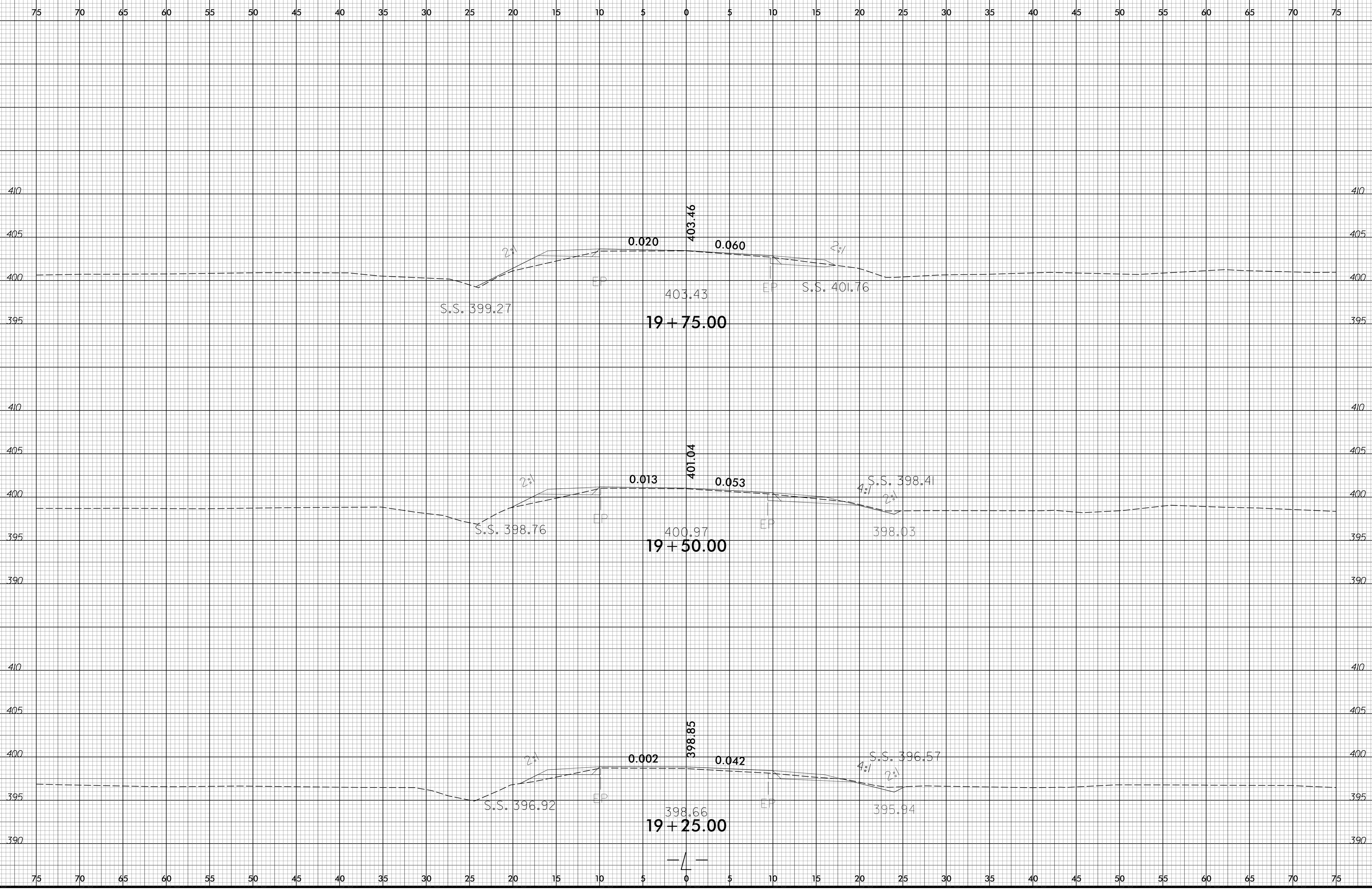


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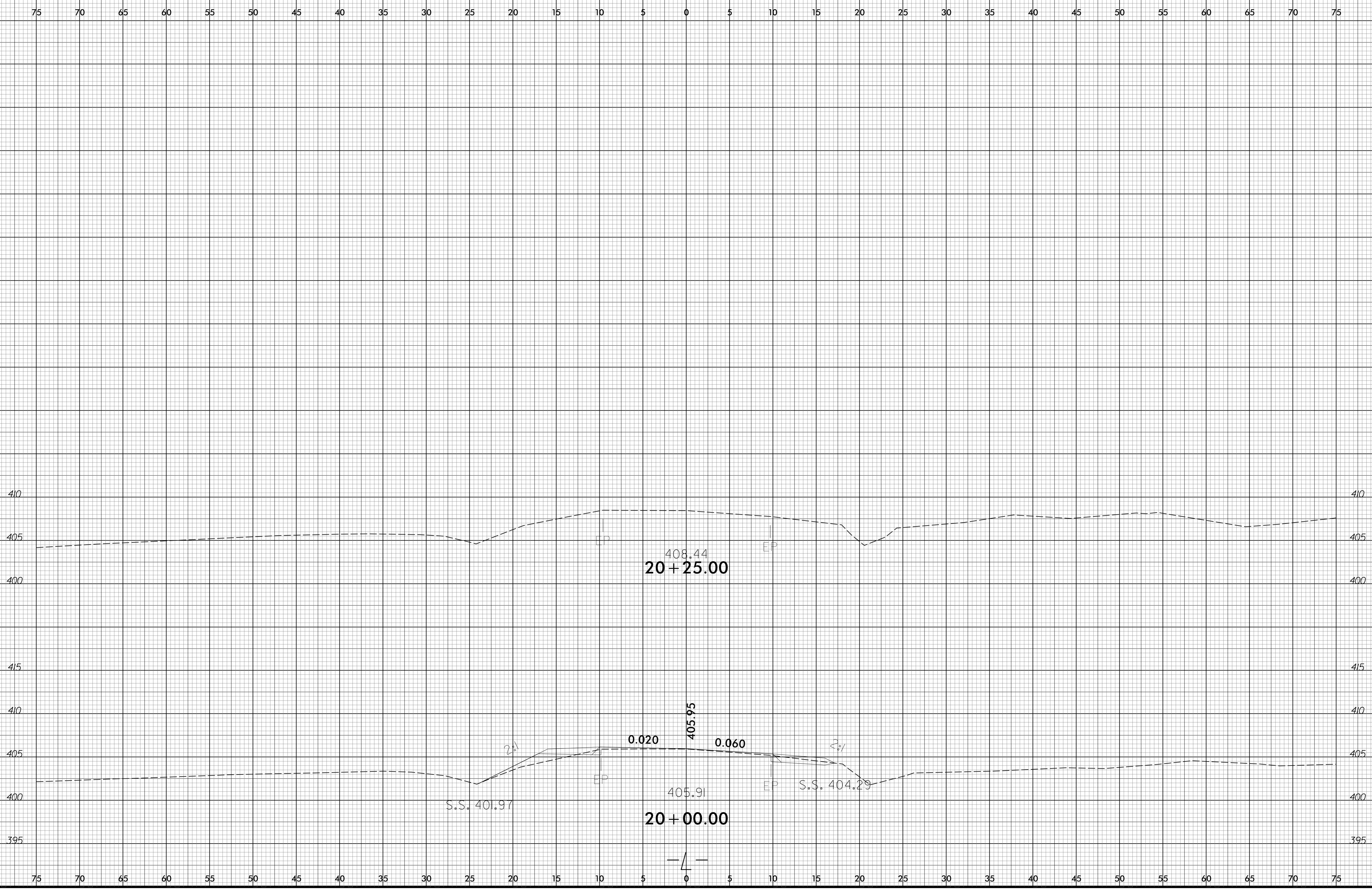
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6/23/16



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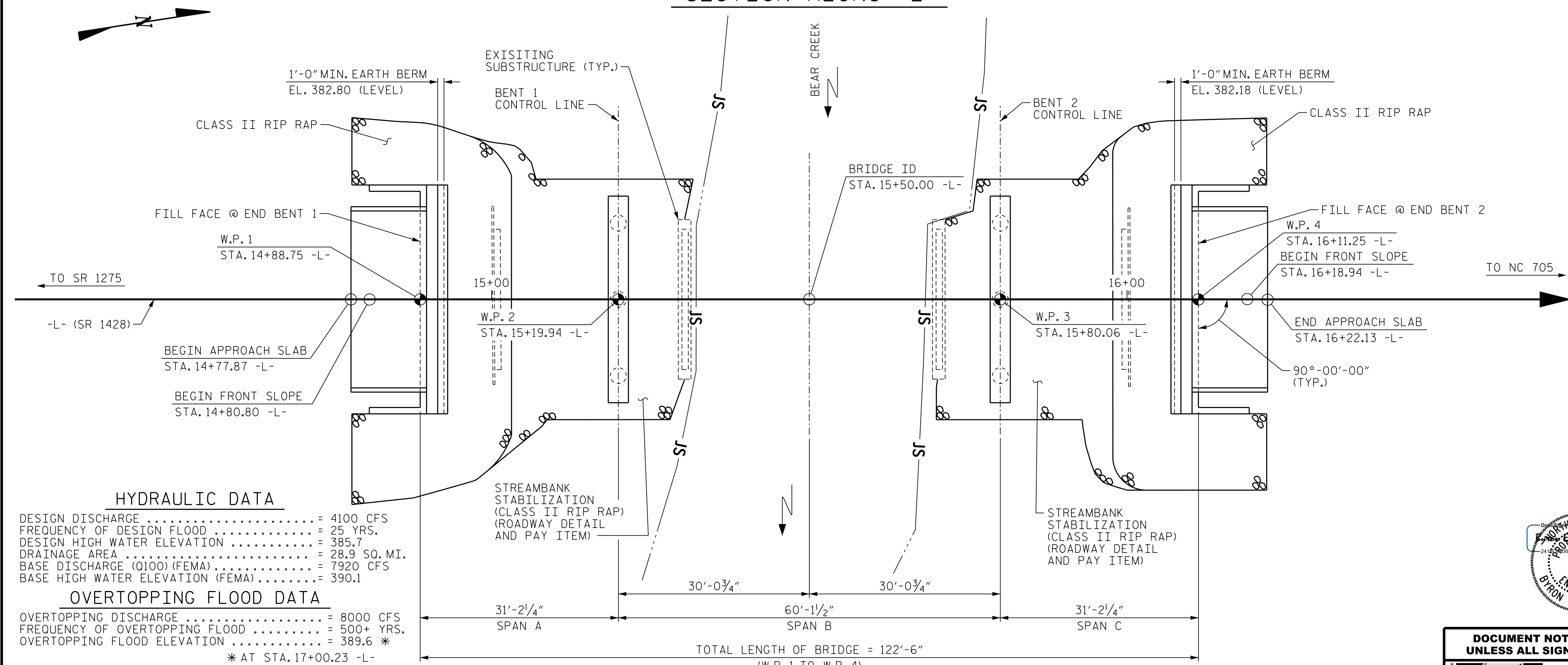
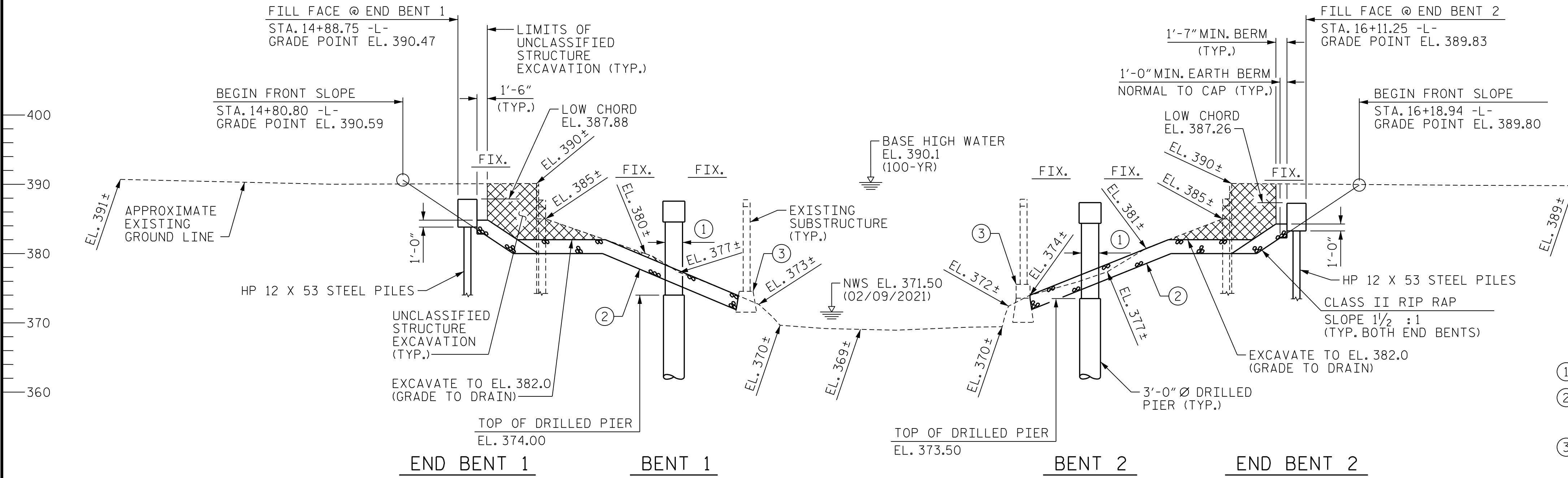


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-8.7689%  $\Delta$  -0.3780%  
 PVI = 13+75.00 -L-  
 EL. = 390.72  
 V.C. = 300.00'  
 GRADE DATA -L-

-0.3780%  $\Delta$  +9.9706%  
 PVI = 18+30.00 -L-  
 EL. = 389.00  
 V.C. = 280.00'  
 GRADE DATA -L-



**HYDRAULIC DATA**

DESIGN DISCHARGE ..... = 4100 CFS  
 FREQUENCY OF DESIGN FLOOD ..... = 25 YRS.  
 DESIGN HIGH WATER ELEVATION ..... = 385.7  
 DRAINAGE AREA ..... = 28.9 SQ. MI.  
 BASE DISCHARGE (0100) (FEMA) ..... = 7920 CFS  
 BASE HIGH WATER ELEVATION (FEMA) ..... = 390.1

**OVERTOPPING FLOOD DATA**

OVERTOPPING DISCHARGE ..... = 8000 CFS  
 FREQUENCY OF OVERTOPPING FLOOD ..... = 500+ YRS.  
 OVERTOPPING FLOOD ELEVATION ..... = 389.6 \*  
 \* AT STA. 17+00.23 -L-

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. BP8.R010  
MOORE COUNTY  
 STATION: 15+50.00 -L-  
 SHEET 1 OF 2 REPLACES BRIDGE NO. 620127

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 FOR BRIDGE ON SR 1428  
 OVER BEAR CREEK  
 BETWEEN NC 705 & SR 1275

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

MI ENGINEERING  
 1011 SCHAUB DRIVE, SUITE 100  
 RALEIGH, NC 27606  
 (919) 851-6606  
 FIRM PE NUMBER : P-0671

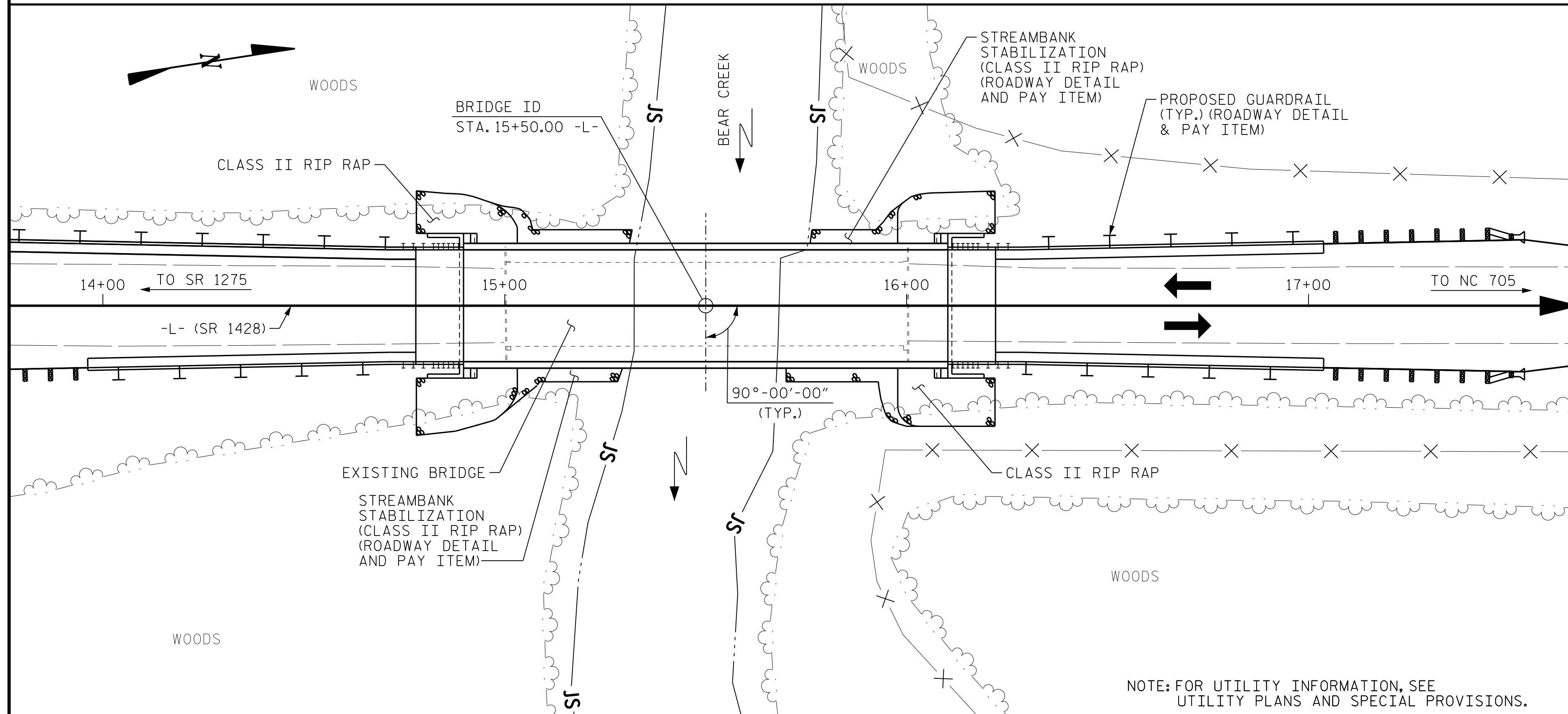
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			21

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DRAWN BY : B.E. LANNING DATE : 09/2021  
 CHECKED BY : B.E. ATKINSON DATE : 09/2021  
 DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 09/2021



B.M. #1: RR SPIKE IN BASE OF 18" WALNUT TREE, 121.15' RT. OF STA. 15+92.76 -L-, EL. 382.24



LOCATION SKETCH

NOTE: FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

NOTES

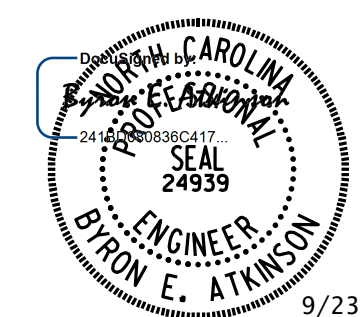
ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.  
 THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.  
 THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.  
 FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.  
 FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.  
 INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STA. 15+50.00 -L-".  
 THE EXISTING STRUCTURE CONSISTING OF THREE SPANS (1 @ 30'-4", 1 @ 40'-0" AND 1 @ 30'-4", WITH TIMBER DECK ON I-BEAMS AND A CLEAR ROADWAY WIDTH OF 21'-0" ON SUBSTRUCTURE CONSISTING OF TIMBER CAPS WITH TIMBER POST AND LOCATED AT THE SITE OF THE PROPOSED STRUCTURE SHALL BE REMOVED IN IT'S ENTIRETY, EXCEPT METAL RAILS AND POSTS AND ITEMS NOTED ON GENERAL DRAWING SHEET 1 OF 2. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. FOR REMOVAL OF EXISTING STRUCTURE, SEE SPECIAL PROVISIONS.  
 THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR. THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.  
 REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.  
 THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET S-1 SHALL BE EXCAVATED FOR A DISTANCE OF 35 FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.  
 ASPHALT WEARING SURFACE IS INCLUDED IN THE ROADWAY QUANTITY. SEE ROADWAY QUANTITIES.  
 THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18- EVALUATING SCOUR AT BRIDGES".  
 FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.  
 FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.  
 FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.  
 FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.  
 FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.  
 AT THE CONTRACTOR'S OPTION, PRESTRESSED CONCRETE END BENT CAPS MAY BE SUBSTITUTED IN PLACE OF THE CAST-IN-PLACE CAPS. THE CONTRACTOR SHALL COORDINATE WITH THE RESIDENT ENGINEER TO RECEIVE REVISED PLANS AND DETAILS FROM THE STRUCTURES MANAGEMENT UNIT. THE REDESIGN AND ANY ADDITIONAL MATERIALS NEEDED WILL BE AT NO ADDITIONAL COST TO THE CONTRACTOR.  
 FOR FOUNDATION NOTES, SEE "PILE AND DRILLED PIER FOUNDATION TABLES" SHEET.

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	3'-0" Ø DRILLED PIER IN SOIL	3'-0" Ø DRILLED PIER NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIER	PDA TESTING	SPT TESTING	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	HP 12 X 53 STEEL PILES		STEEL PILE POINTS	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLABS		
	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	EACH	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	LBS.	EACH	NO.	LIN. FT.	EACH	LIN. FT.	TON	SQ. YDS.	LUMP SUM	NO.	LIN. FT.	
SUPERSTRUCTURE											LUMP SUM							240.75				LUMP SUM	30	1200.00
END BENT 1									LUMP SUM	20.2		2,449		5	5	100	5			120	133			
BENT 1			27.3	30.0	24.0					17.2		9,585	1,564											
BENT 2			14.7	20.7	16.5					17.3		8,470	1,215											
END BENT 2									LUMP SUM	20.2		2,449		5	5	100	5			108	120			
TOTAL	LUMP SUM	LUMP SUM	42.0	50.7	40.5	1	6	2	LUMP SUM	74.9	LUMP SUM	22,953	2,779	10	10	200	10	240.75	228	253	LUMP SUM	30	1200.00	

PROJECT NO. BP8.R010  
MOORE COUNTY  
 STATION: 15+50.00 -L-

SHEET 2 OF 2



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

MI ENGINEERING  
 1011 SCHAUB DRIVE, SUITE 100  
 RALEIGH, NC 27606  
 (919) 851-6606  
 FIRM PE NUMBER: P-0671

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

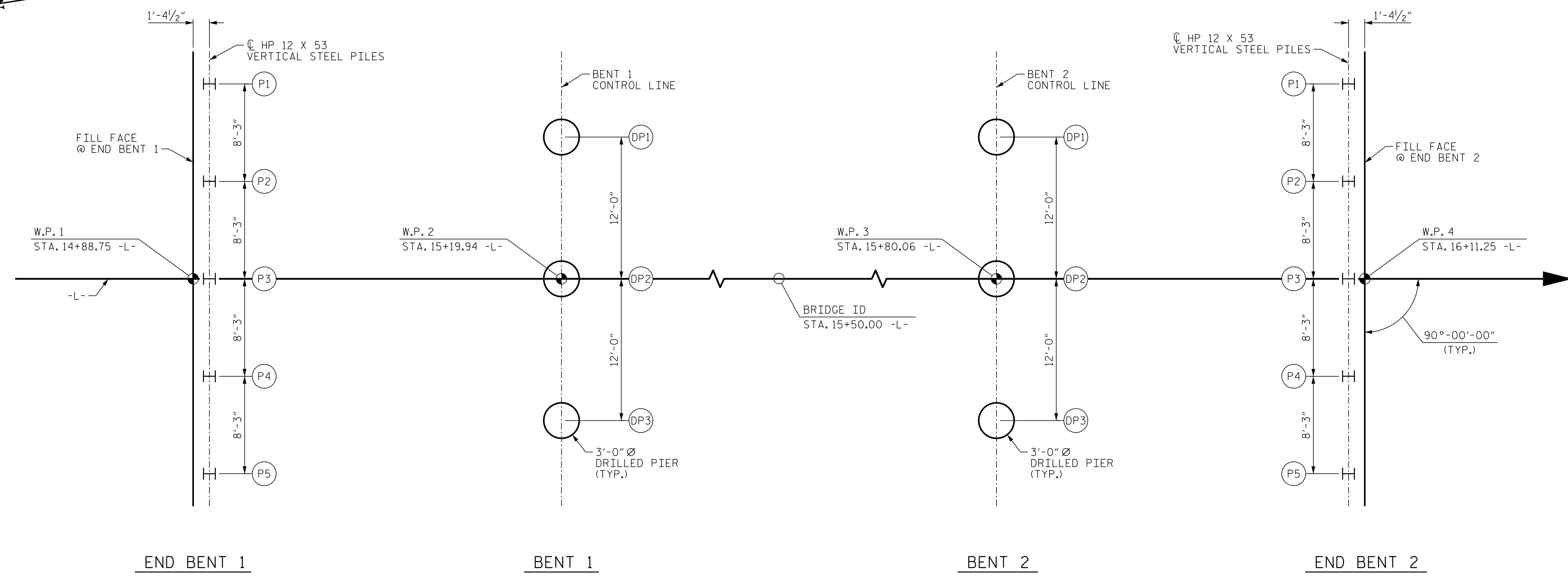
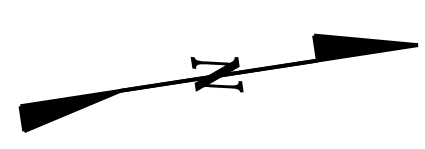
**GENERAL DRAWING**

FOR BRIDGE ON SR 1428  
 OVER BEAR CREEK  
 BETWEEN NC 705 & SR 1275

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2 TOTAL SHEETS 21
1			3			
2			4			

DRAWN BY : B.E. LANNING DATE : 09/2021  
 CHECKED BY : B.E. ATKINSON DATE : 09/2021  
 DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 09/2021

9/23/2021 11:15:15 AM User: blanning  
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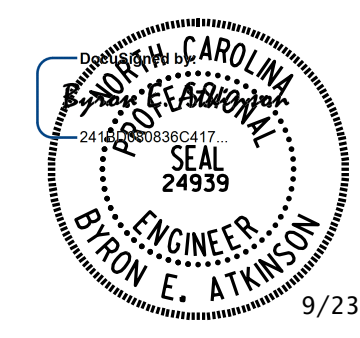


### FOUNDATION LAYOUT

DIMENSIONS LOCATING END BENT PILES AND BENT DRILLED PIERS ARE SHOWN TO CENTERLINE OF PILES AND DRILLED PIERS.

FOR FOUNDATION NOTES, SEE "PILE AND DRILLED PIER FOUNDATION TABLES" SHEET.

PROJECT NO. BP8.R010  
MOORE COUNTY  
 STATION: 15+50.00 -L-



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

### FOUNDATION LAYOUT

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

MI ENGINEERING  
 1011 SCHAUB DRIVE, SUITE 100  
 RALEIGH, NC 27606  
 (919) 851-6606  
 FIRM PE NUMBER: P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			21

DRAWN BY : B.E. LANNING	DATE : 09/2021
CHECKED BY : B.E. ATKINSON	DATE : 09/2021
DESIGN ENGINEER OF RECORD : B.E. ATKINSON	DATE : 09/2021

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 Filename: N:\NC Bridges\W20004.01.CH.Eng.Moore 127 Br. Rep\BP8R010\Structures\401.005.BP8R010.SMU.FL1.620127.dgn



**SUMMARY OF PILE INFORMATION/ INSTALLATION**

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) # (e.g., "Bent 1, Piles 1-5")	Factored Resistance per Pile TONS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Length per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling for Piles*			Drilled-In Piles		
					Min Pile Tip (Tip No Higher Than) Elev FT	Required Driving Resistance (RDR)** per Pile TONS	Total Pile Redrives Quantity EACH	Predrilling Length per Pile Lin FT	Predrilling Elevation (Elev Not To Predrill Below) FT	Maximum Predrilling Dia INCHES	Pile Excavation (Bottom of Hole) Elev FT	Pile Exc Not In Soil per Pile Lin FT	Pile Exc In Soil per Pile Lin FT
END BENT 1, Piles 1-5	61	385.80	20	NA		105	0						
END BENT 2, Piles 1-5	61	385.18	20	NA		105							

\*Predrilling for Piles is required for end bents/bents with a predrilling length and at the Contractor's option for end bents/bents with predrilling information but no predrilling length.

\*\* RDR =  $\frac{\text{Factored Resistance} + \text{Factored Downdrag Load} + \text{Factored Dead Load}}{\text{Dynamic Resistance Factor}} + \frac{\text{Nominal Downdrag Resistance} + \text{Nominal Scour Resistance}}{\text{Scour Resistance Factor}}$

**PILE DESIGN INFORMATION**

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) # (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile TONS	Factored Downdrag Load per Pile TONS	Factored Dead Load* per Pile TONS	Dynamic Resistance Factor	Nominal Downdrag Resistance per Pile TONS	Nominal Scour Resistance per Pile TONS	Scour Resistance Factor (Default = 1.00)
END BENT 1, Piles 1-5	61			0.60			1.00
END BENT 2, Piles 1-5	61			0.60			1.00

\*Factored Dead Load is factored weight of pile above the ground line.

**SUMMARY OF DRILLED PIER INFORMATION/ INSTALLATION**

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pier(s) # (e.g., "Bent 1, Piers 1-3")	Factored Resistance per Pier TONS	Minimum Pier Tip (Tip No Higher Than) Elevation FT	Required Pier Resistance per Pier TSF	Scour Critical Elevation FT	Minimum Drilled Pier Penetration into Rock per Pier Lin FT	Drilled Pier Length per Pier Lin FT	Drilled Pier Length Not In Soil per Pier Lin FT	Drilled Pier Length In Soil per Pier Lin FT	Permanent Steel Casing Required? YES or MAYBE	Permanent Steel Casing Tip Elevation (Elev Not To Extend Casing Below) FT	Permanent Steel Casing Length* per Pier Lin FT
Bent 1, Piers 1-3	340	354.9	105	365	5.8	19.1	10.0	9.1	MAYBE	366.0	8.0
Bent 2, Piers 1-3	340	361.7	110	367	5.6	11.8	6.9	4.9	MAYBE	368.0	5.5

\*Permanent Steel Casing Length equals the difference between the ground line or top of drilled pier elevation, whichever is higher, and the permanent casing tip elevation.

**SUMMARY OF PDA/ PILE ORDER LENGTHS**

(Blank entries indicate item is not applicable to structure)

Pile Driving Analyzer (PDA)				Pile Order Lengths	
End Bent/ Bent No	PDA Testing Required? YES or MAYBE	PDA Test Pile Length FT	Total PDA Testing Quantity EACH	End Bent/ Bent No(s)	Pile Order Length Basis* EST or PDA
END BENT 1, Piles 1-5	MAYBE		1		
END BENT 2, Piles 1-5	MAYBE				

\*EST = Pile order lengths from estimated pile lengths; PDA = Pile order lengths based on PDA testing. For groups of end bents/bents with pile order lengths based on PDA testing, the first end bent/bent no. listed for each group is the representative end bent/bent with the PDA.

**SUMMARY OF PILE ACCESSORIES**

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) # (e.g., "Bent 1, Piles 1-5")	Pipe Pile Plates Required? YES or MAYBE	Steel Pile Points			Steel Pile Tips Required? YES
		Pipe Pile Cutting Shoes Required? YES	Pipe Pile Conical Points Required? YES	H-Pile Points Required? YES	
END BENT 1, Piles 1-5				YES	
END BENT 2, Piles 1-5				YES	
TOTAL QTY:				10	

**SUMMARY OF DRILLED PIER TESTING**

(Blank entries indicate item is not applicable to structure)

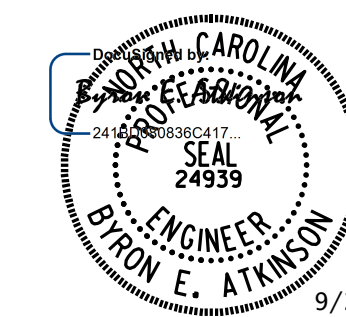
End Bent/ Bent No, Pier(s) # (e.g., "Bent 1, Piers 1-3")	Standard Penetration Test (SPT) Required? YES or MAYBE	Crosshole Sonic Logging (CSL) Required?*	Total CSL Tube Length (For All Tubes) per Pier Lin FT	Shaft Inspection Device (SID) Required? YES or MAYBE	Pile Integrity Test (PIT) Required? MAYBE
Bent 1, Piers 1-3	MAYBE	MAYBE	82	NO	MAYBE
Bent 2, Piers 1-3	MAYBE	MAYBE	53	NO	MAYBE
TOTAL QTY:	6	2	407		2

\*CSL Tubes are required if CSL Testing is or may be required. The number of CSL Tubes per drilled pier is equal to one tube per foot of design pier diameter with at least 4 tubes per pier. The length of each CSL Tube is equal to the drilled pier length plus 1.5 ft.

**NOTES:**

1. THE PILE AND DRILLED PIER FOUNDATION TABLES ARE BASED ON THE BRIDGE SUBSTRUCTURE DESIGN AND FOUNDATION RECOMMENDATIONS SEALED BY A NORTH CAROLINA PROFESSIONAL ENGINEER (ZAHRA AGHAZADEH ARDEBILI, 046591) ON 09-08-2021.
2. TOTAL PILE DRIVING EQUIPMENT SETUP QUANTITY (NOT SHOWN IN PILE FOUNDATION TABLES) EQUALS THE NUMBER OF DRIVEN PILES, I.E., THE NUMBER OF PILES WITH A REQUIRED DRIVING RESISTANCE.
3. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING, PIPE PILE PLATES, PERMANENT STEEL CASING, SPTs, CSL TESTING, SID INSPECTIONS AND PITs WHEN THESE ITEMS MAY BE REQUIRED.
4. FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
5. FOR PILES, SEE PILES PROVISION AND SECTION 450 OF THE STANDARD SPECIFICATIONS.
6. INSTALL PERMANENT STEEL CASINGS AT BENTS 1 AND 2 BY VIBRATING SCREWING OR DRIVING PERMANENT CASINGS BEFORE EXCAVATING OR DISTURBING ANY MATERIAL BELOW ELEVATIONS 366.0 AND 368.0, RESPECTIVELY.

PROJECT NO. BP8.R010  
MOORE COUNTY  
 STATION: 15+50.00 -L-



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

MI ENGINEERING  
 1011 SCHAUB DRIVE, SUITE 100  
 RALEIGH, NC 27606  
 (919) 851-6606  
 FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**PILE AND DRILLED PIER  
FOUNDATION  
TABLES**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4 TOTAL SHEETS 21
1			3			
2			4			

DRAWN BY : <u>B.E. LANNING</u>	DATE : <u>09/2021</u>
CHECKED BY : <u>B.E. ATKINSON</u>	DATE : <u>09/2021</u>
DESIGN ENGINEER OF RECORD : <u>B.E. ATKINSON</u>	DATE : <u>09/2021</u>

9/23/2021 11:15:18 AM User: blanning  
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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	1.25	--	1.75	0.343	1.64	30'	E	14.5	0.377	4.38	30'	E	1.8	0.80	0.343	<b>1.25</b>	30'	E	14.5		
	HL-93(0pr)	N/A		2.13	--	1.35	0.343	2.13	30'	E	14.5	0.377	7.23	30'	E	1.8	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	②	1.77	63.72	1.75	0.343	2.29	30'	E	11.6	0.377	5.66	30'	E	1.8	0.80	0.343	<b>1.77</b>	30'	E	11.6		
	HS-20(0pr)	36.000		2.96	106.56	1.35	0.343	2.96	30'	E	11.6	0.377	8.25	30'	E	1.8	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13,500		2.83	38.21	1.40	0.343	4.64	30'	E	14.5	0.377	15.59	30'	E	1.8	0.80	0.343	2.83	30'	E	14.5	
		SNGARBS2	20,000		2.53	50.60	1.40	0.343	4.09	30'	E	11.6	0.377	12.08	30'	E	1.8	0.80	0.343	2.53	30'	E	11.6	
		SNAGRIS2	22,000		2.57	56.54	1.40	0.343	4.16	30'	E	11.6	0.377	11.65	30'	E	1.8	0.80	0.343	2.57	30'	E	11.6	
		SNCOTTS3	27,250		1.42	38.70	1.40	0.343	2.33	30'	E	14.5	0.377	7.66	30'	E	1.8	0.80	0.343	1.42	30'	E	14.5	
		SNAGGRS4	34,925		1.37	47.85	1.40	0.343	2.24	30'	E	14.5	0.377	7.22	30'	E	1.8	0.80	0.343	1.37	30'	E	14.5	
		SNS5A	35,550		1.32	46.93	1.40	0.343	2.17	30'	E	14.5	0.377	7.65	30'	E	1.8	0.80	0.343	1.32	30'	E	14.5	
		SNS6A	39,950		1.25	49.94	1.40	0.343	2.05	30'	E	14.5	0.377	7.09	30'	E	1.8	0.80	0.343	1.25	30'	E	14.5	
	TTST	SNS7B	42,000	③	1.21	50.82	1.40	0.343	1.99	30'	E	14.5	0.377	7.24	30'	E	1.8	0.80	0.343	<b>1.21</b>	30'	E	14.5	
		TNAGRIT3	33,000		1.62	53.46	1.40	0.343	2.66	30'	E	14.5	0.377	8.50	30'	E	1.8	0.80	0.343	1.62	30'	E	14.5	
		TNT4A	33,075		1.54	50.94	1.40	0.343	2.52	30'	E	14.5	0.377	7.97	30'	E	1.8	0.80	0.343	1.54	30'	E	14.5	
		TNT6A	41,600		1.40	58.24	1.40	0.343	2.29	30'	E	14.5	0.377	7.68	30'	E	1.8	0.80	0.343	1.40	30'	E	14.5	
		TNT7A	42,000		1.44	60.48	1.40	0.343	2.37	30'	E	14.5	0.377	7.34	30'	E	1.8	0.80	0.343	1.44	30'	E	14.5	
		TNT7B	42,000		1.36	57.12	1.40	0.343	2.23	30'	E	14.5	0.377	7.05	30'	E	1.8	0.80	0.343	1.36	30'	E	14.5	
		TNAGRIT4	43,000		1.41	60.63	1.40	0.343	2.31	30'	E	14.5	0.377	6.84	30'	E	1.8	0.80	0.343	1.41	30'	E	14.5	
TNAGT5A	45,000		1.37	61.65	1.40	0.343	2.24	30'	E	14.5	0.377	7.44	30'	E	1.8	0.80	0.343	1.37	30'	E	14.5			
TNAGT5B	45,000		1.33	59.85	1.40	0.343	2.17	30'	E	11.6	0.377	6.01	30'	E	1.8	0.80	0.343	1.33	30'	E	14.5			

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	$\gamma_{DC}$	$\gamma_{DW}$
	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:

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- 
- 

⊕ CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

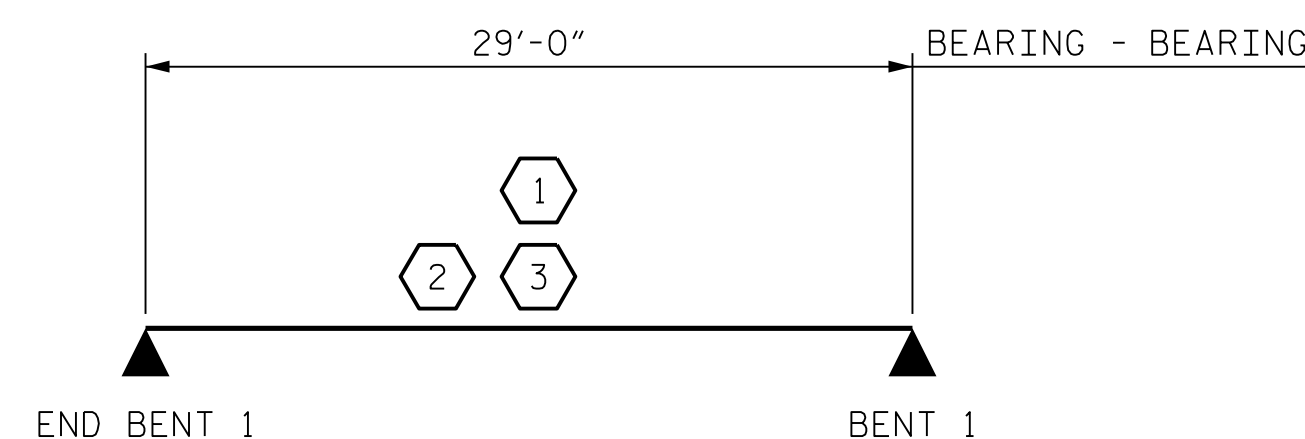
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING \*\*

\*\* SEE CHART FOR VEHICLE TYPE

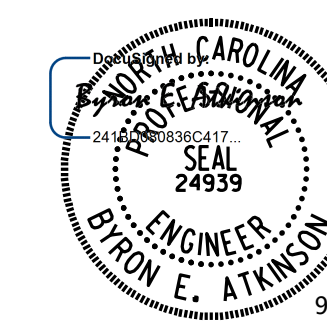
GIRDER LOCATION

I - INTERIOR GIRDER  
E - EXTERIOR GIRDER



LRFR SUMMARY  
(SPAN A SHOWN, SPAN C SIMILAR)

PROJECT NO. BP8.R010  
MOORE COUNTY  
STATION: 15+50.00 -L-



9/23/2021

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



MI ENGINEERING  
1011 SCHAUB DRIVE, SUITE 100  
RALEIGH, NC 27606  
(919) 851-6606  
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

LRFR SUMMARY FOR  
30' CORED SLAB UNIT  
90° SKEW  
SPAN A AND SPAN C  
(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO. S-5
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 21
2			4			

DRAWN BY : B.E. LANNING DATE : 08/2021  
CHECKED BY : B.E. ATKINSON DATE : 08/2021  
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 09/2021

9/23/2021 11:15:24 AM User: blanning File: N:\NC BrIdges\M20004\01.Ch.Eng\_Moore\_127.Br.Rep\BP8R010\Structures\401\_009\_BP8R010\_SML\_LRFR\_620127.dgn



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	1.67	--	1.75	0.244	<b>1.67</b>	60'	E	29.5	0.264	4.66	60'	E	5.9	0.80	0.244	2.45	60'	E	29.5		
	HL-93(0pr)	N/A		2.17	--	1.35	0.244	2.17	60'	E	29.5	0.264	6.12	60'	E	5.9	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	②	2.12	76.32	1.75	0.244	<b>2.12</b>	60'	E	29.5	0.264	5.72	60'	E	5.9	0.80	0.244	3.10	60'	E	29.5		
	HS-20(0pr)	36.000		2.75	99.00	1.35	0.244	2.75	60'	E	29.5	0.264	7.50	60'	E	5.9	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13,500		5.71	77.09	1.40	0.244	5.71	60'	E	29.5	0.264	17.03	60'	E	5.9	0.80	0.244	6.68	60'	E	29.5	
		SNGARBS2	20,000		4.37	87.40	1.40	0.244	4.37	60'	E	29.5	0.264	12.20	60'	E	5.9	0.80	0.244	5.12	60'	E	29.5	
		SNAGRIS2	22,000		4.19	92.18	1.40	0.244	4.19	60'	E	29.5	0.264	11.36	60'	E	5.9	0.80	0.244	4.90	60'	E	29.5	
		SNCOTTS3	27,250		2.84	77.39	1.40	0.244	2.84	60'	E	29.5	0.264	8.39	60'	E	5.9	0.80	0.244	3.33	60'	E	29.5	
		SNAGGRS4	34,925		2.42	84.52	1.40	0.244	2.42	60'	E	29.5	0.264	7.03	60'	E	5.9	0.80	0.244	2.83	60'	E	29.5	
		SNS5A	35,550		2.36	83.90	1.40	0.244	2.36	60'	E	29.5	0.264	7.15	60'	E	5.9	0.80	0.244	2.77	60'	E	29.5	
		SNS6A	39,950		2.19	87.49	1.40	0.244	2.19	60'	E	29.5	0.264	6.55	60'	E	5.9	0.80	0.244	2.56	60'	E	29.5	
	TTST	SNS7B	42,000		2.08	87.36	1.40	0.244	2.08	60'	E	29.5	0.264	6.49	60'	E	5.9	0.80	0.244	2.44	60'	E	29.5	
		TNAGRIT3	33,000		2.67	88.11	1.40	0.244	2.67	60'	E	29.5	0.264	7.79	60'	E	5.9	0.80	0.244	3.13	60'	E	29.5	
		TNT4A	33,075		2.69	88.97	1.40	0.244	2.69	60'	E	29.5	0.264	7.58	60'	E	5.9	0.80	0.244	3.15	60'	E	29.5	
		TNT6A	41,600		2.22	92.35	1.40	0.244	2.22	60'	E	29.5	0.264	7.08	60'	E	5.9	0.80	0.244	2.60	60'	E	29.5	
		TNT7A	42,000		2.24	94.08	1.40	0.244	2.24	60'	E	29.5	0.264	6.74	60'	E	5.9	0.80	0.244	2.62	60'	E	29.5	
		TNT7B	42,000		2.34	98.28	1.40	0.244	2.34	60'	E	29.5	0.264	6.29	60'	E	5.9	0.80	0.244	2.74	60'	E	29.5	
		TNAGRIT4	43,000		2.21	95.03	1.40	0.244	2.21	60'	E	29.5	0.264	6.09	60'	E	5.9	0.80	0.244	2.59	60'	E	29.5	
TNAGT5A	45,000		2.07	93.15	1.40	0.244	2.07	60'	E	29.5	0.264	6.13	60'	E	5.9	0.80	0.244	2.43	60'	E	29.5			
TNAGT5B	45,000	③	2.04	91.80	1.40	0.244	<b>2.04</b>	60'	E	29.5	0.264	5.77	60'	E	5.9	0.80	0.244	2.39	60'	E	29.5			

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	$\gamma_{DC}$	$\gamma_{DW}$
	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:

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Ⓝ CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

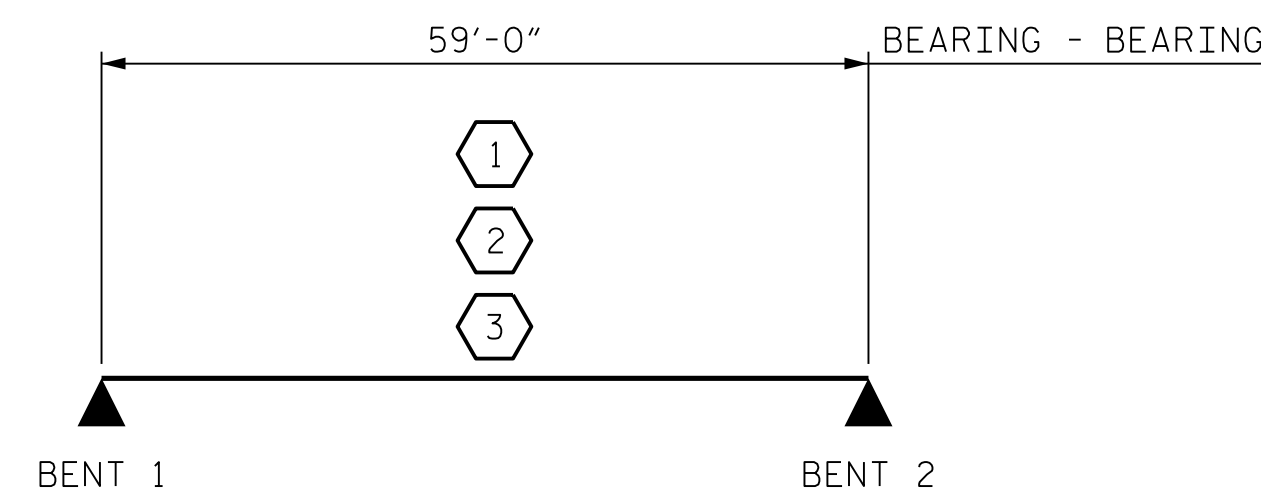
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING \*\*

\*\* SEE CHART FOR VEHICLE TYPE

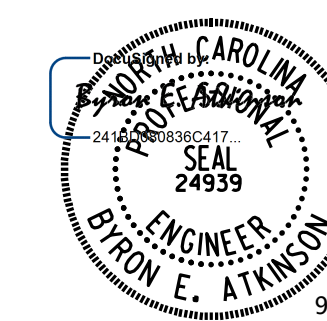
GIRDER LOCATION

I - INTERIOR GIRDER  
E - EXTERIOR GIRDER



LRFR SUMMARY  
SPAN B

PROJECT NO. BP8.R010  
MOORE COUNTY  
STATION: 15+50.00 -L-



9/23/2021

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UNLESS ALL SIGNATURES COMPLETED

MI ENGINEERING  
1011 SCHAUB DRIVE, SUITE 100  
RALEIGH, NC 27606  
(919) 851-6606  
FIRM PE NUMBER: P-0671

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

LRFR SUMMARY FOR  
60' CORED SLAB UNIT  
90° SKEW  
SPAN B  
(NON-INTERSTATE TRAFFIC)

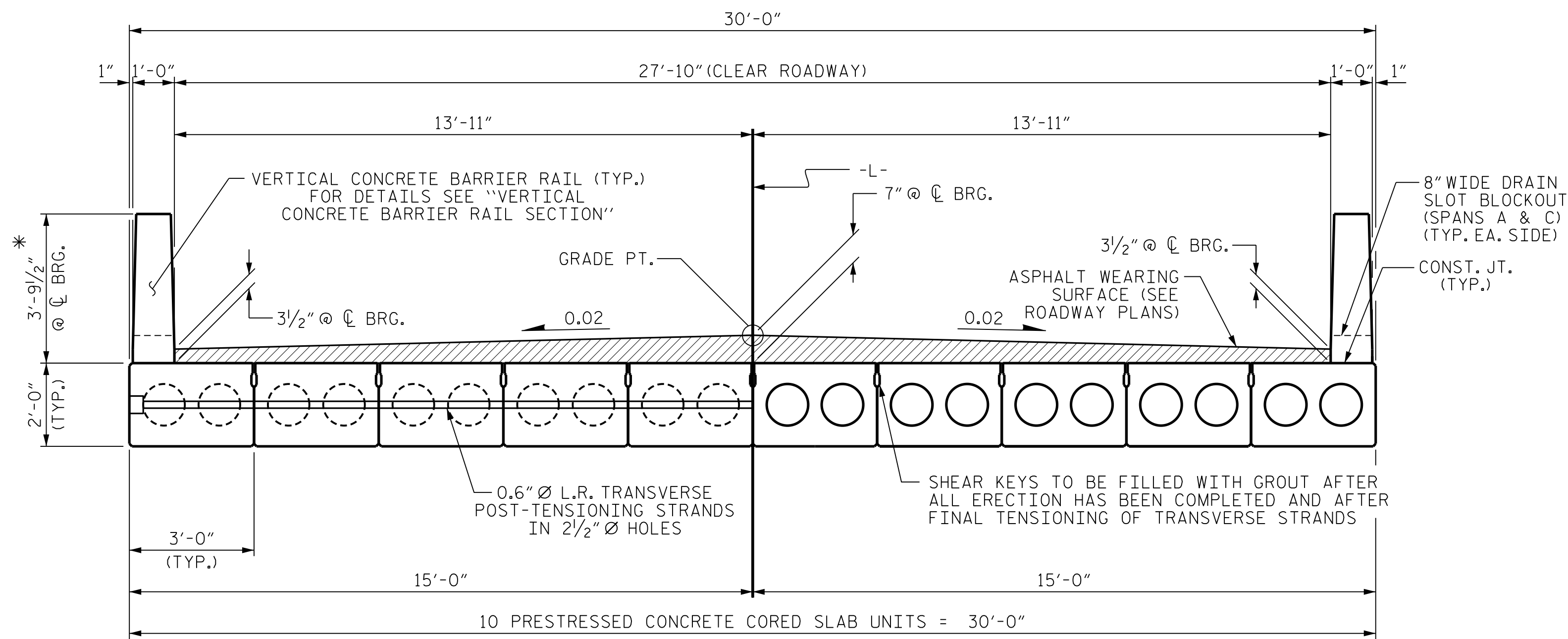
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.  
**S-6**  
TOTAL SHEETS  
**21**

DRAWN BY : B.E. LANNING DATE : 08/2021  
CHECKED BY : B.E. ATKINSON DATE : 08/2021  
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 09/2021

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HALF SECTION  
AT INTERMEDIATE DIAPHRAGMS

TYPICAL SECTION

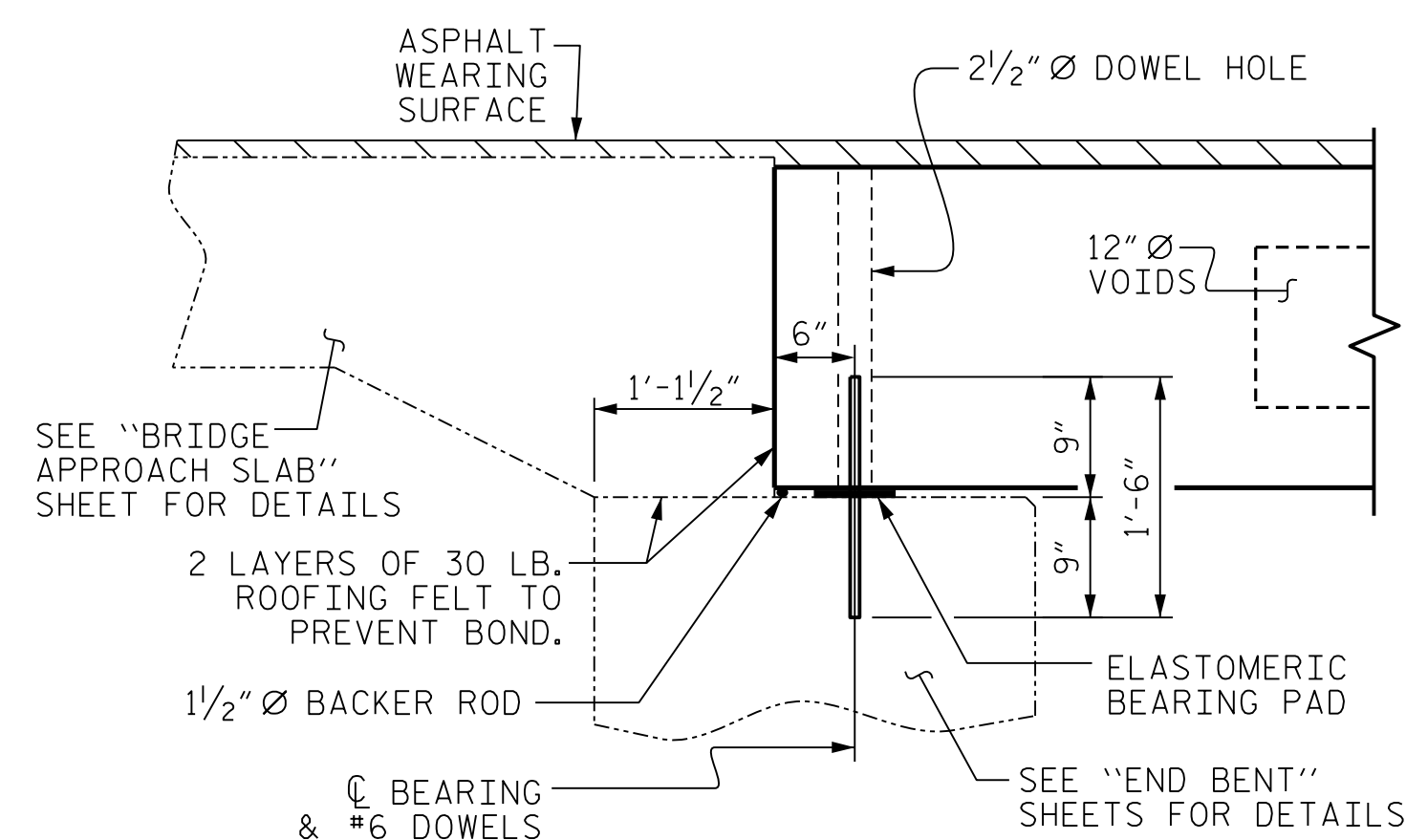
HALF SECTION  
THROUGH VOIDS

\* - 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.

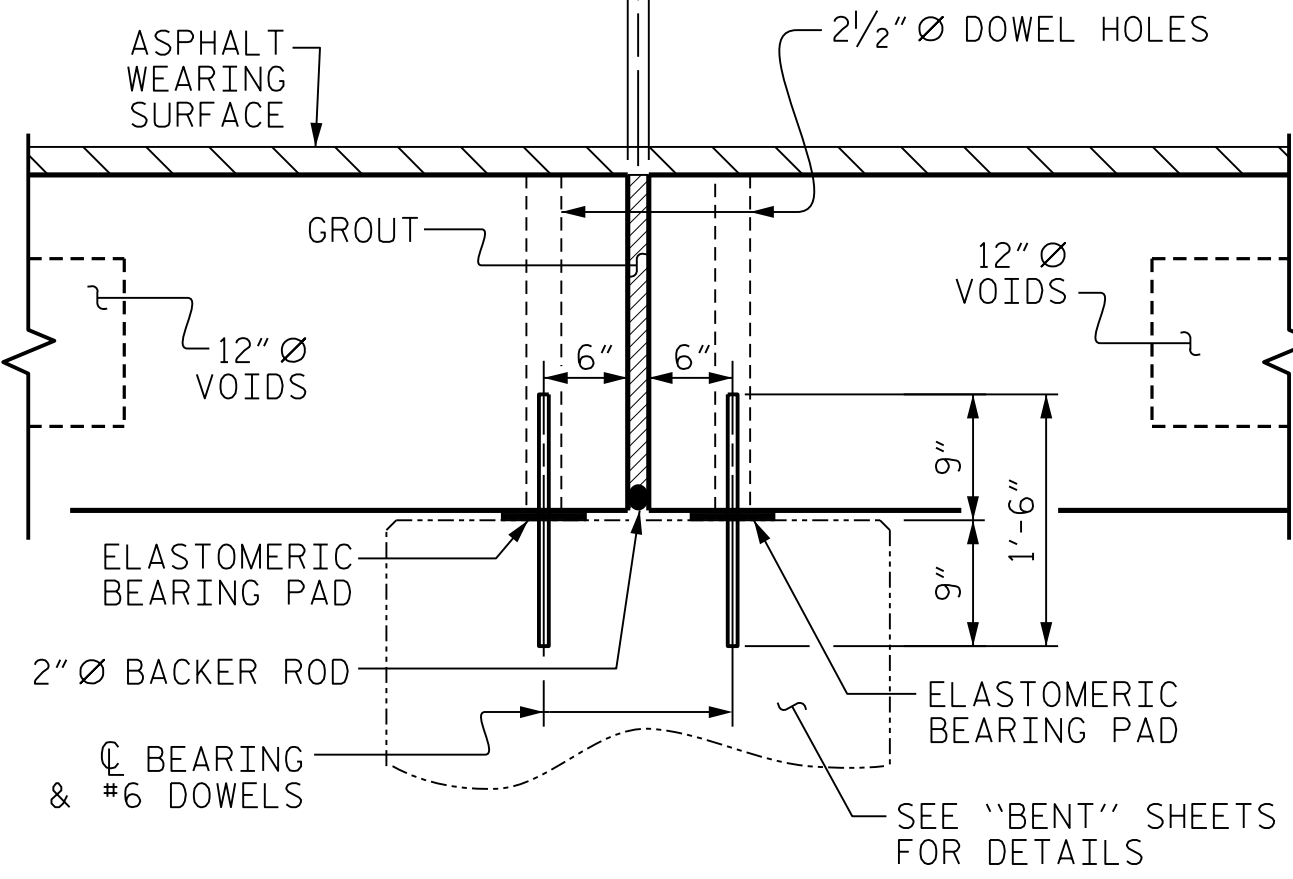
FIXED END

FIXED END

FIXED END

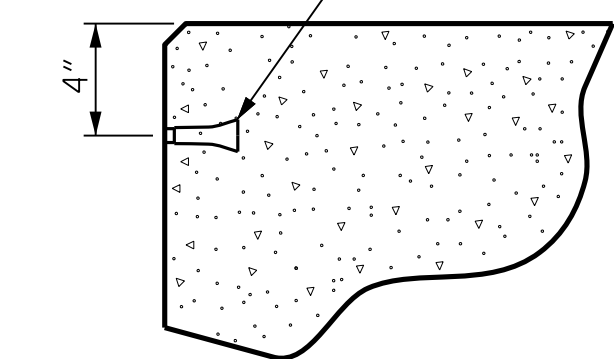


SECTION AT END BENT

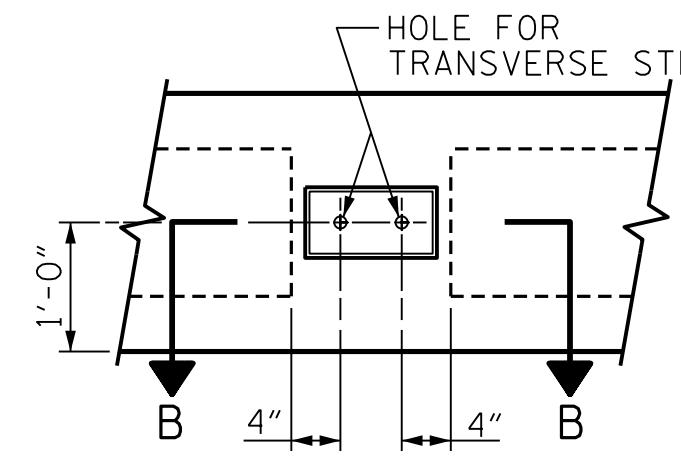


SECTION AT BENT

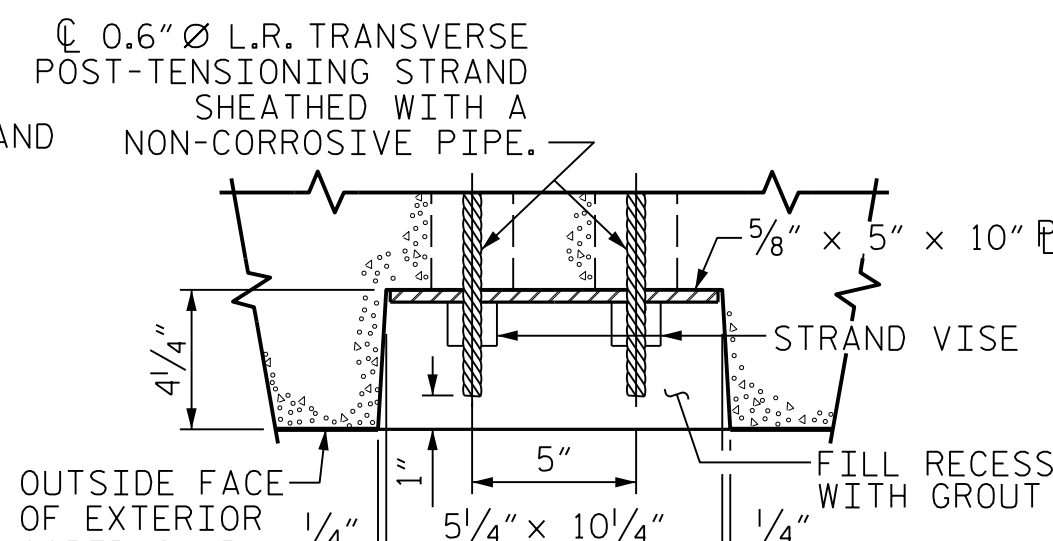
PERMITTED THREADED INSERT CAST IN OUTSIDE FACE OF EXTERIOR UNIT AND RECESSED 3/8" SIZE TO BE DETERMINED BY CONTRACTOR.



THREADED INSERT DETAIL

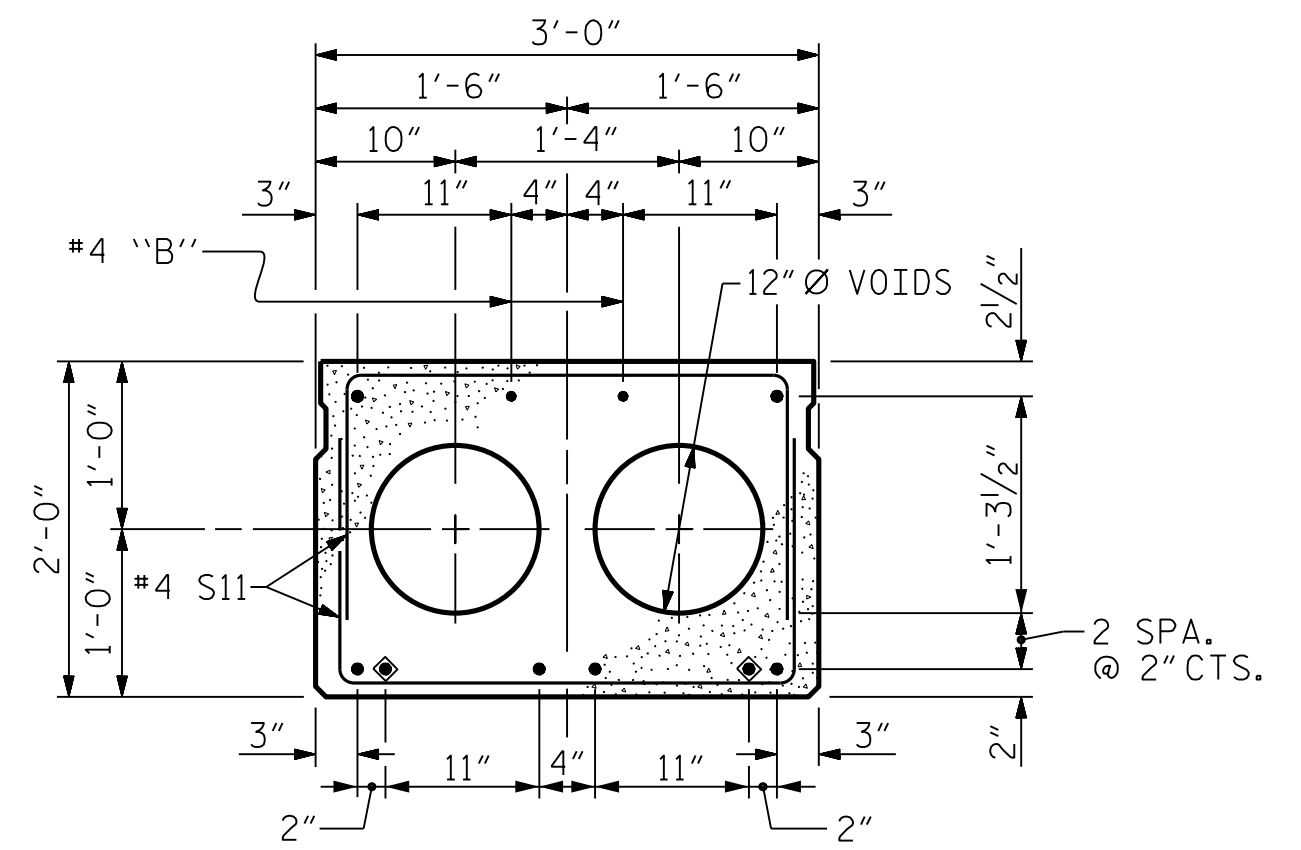


ELEVATION VIEW

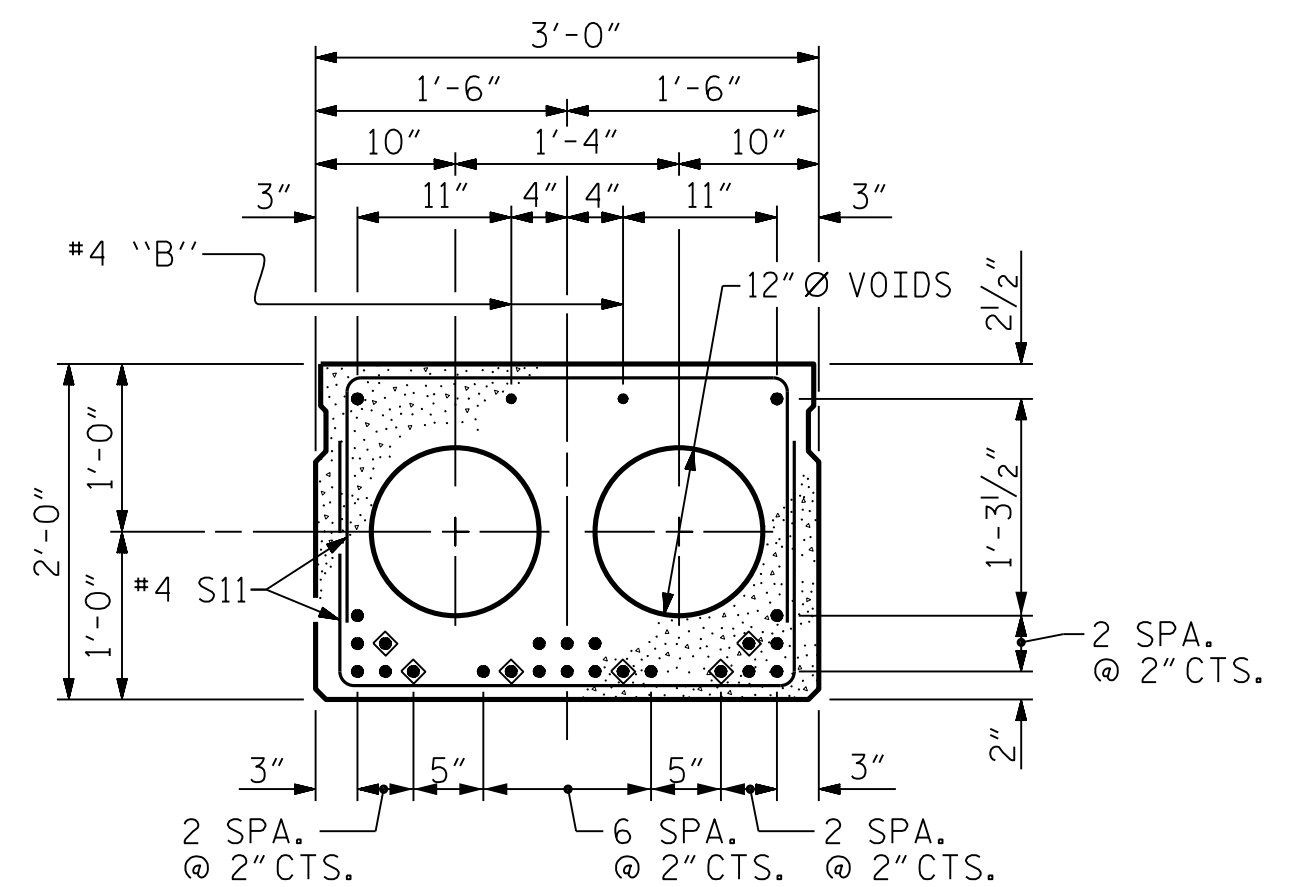


SECTION B-B

GRAUTED RECESS AT END OF  
POST-TENSIONED STRAND-CORED SLABS



INTERIOR SLAB SECTION (30' UNIT)  
(8 STRANDS REQUIRED)

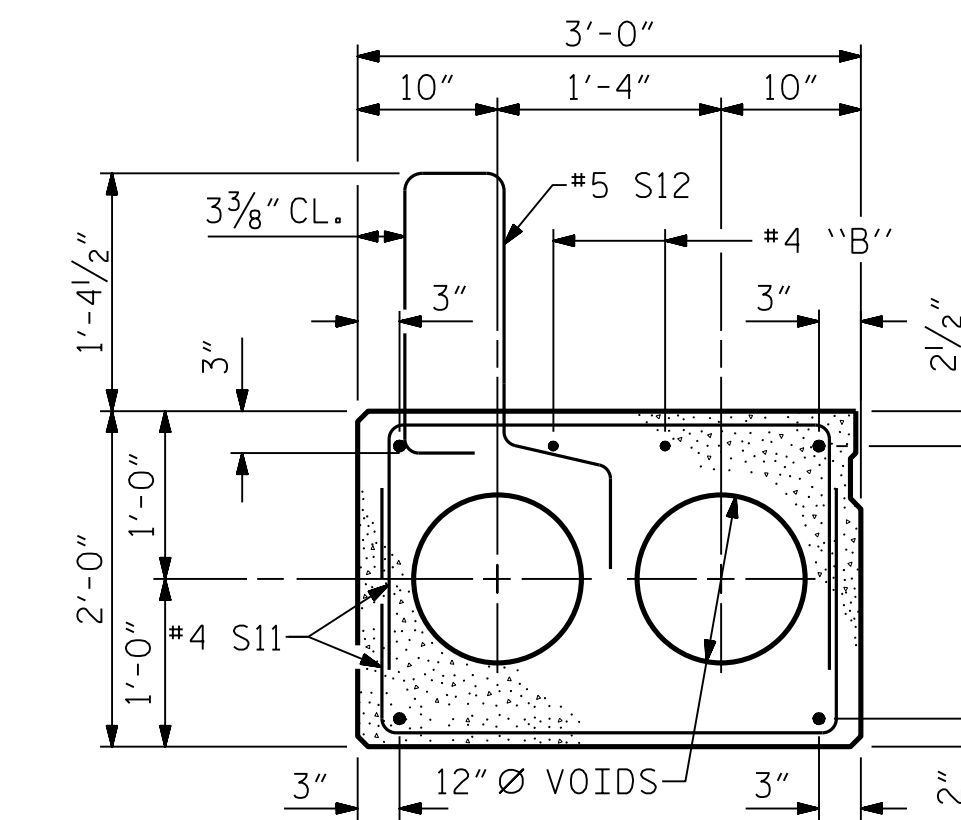


INTERIOR SLAB SECTION (60' UNIT)  
(24 STRANDS REQUIRED)

0.6" Ø LOW  
RELAXATION STRAND LAYOUT

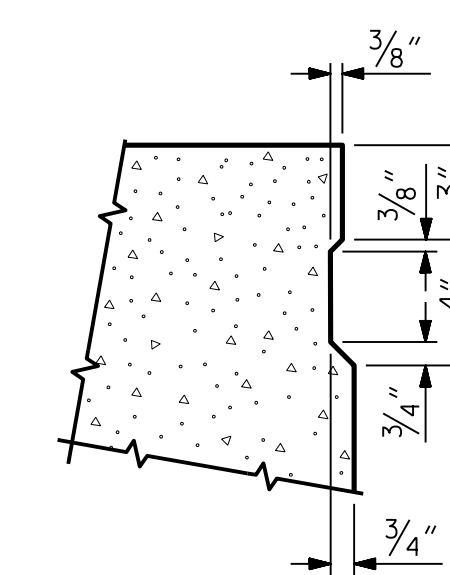
◆ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 12'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND



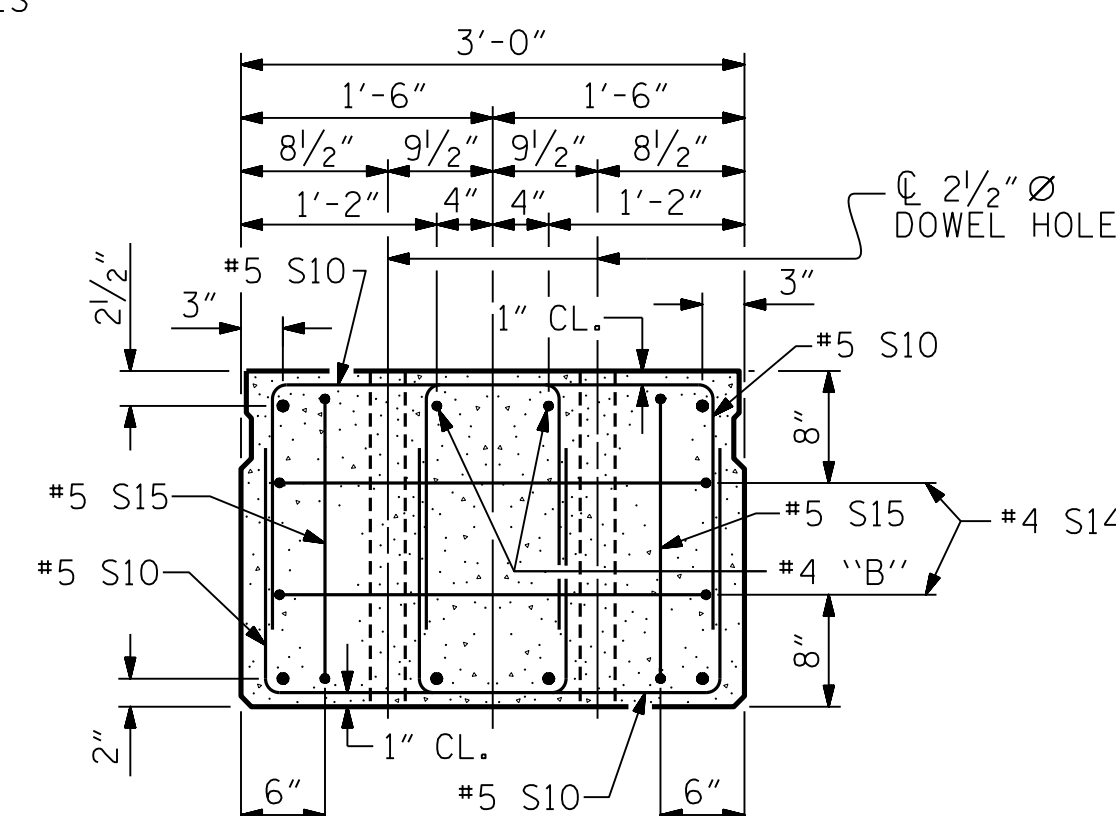
EXTERIOR SLAB SECTION

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



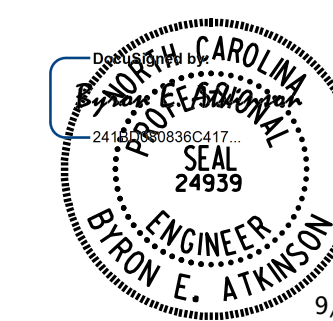
SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR 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.



9/23/2021

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



MI ENGINEERING  
1011 SCHAUB DRIVE, SUITE 100  
RALEIGH, NC 27606  
(919) 851-6606  
FIRM PE NUMBER: P-0671

PROJECT NO. BP8.R010  
MOORE COUNTY  
STATION: 15+50.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

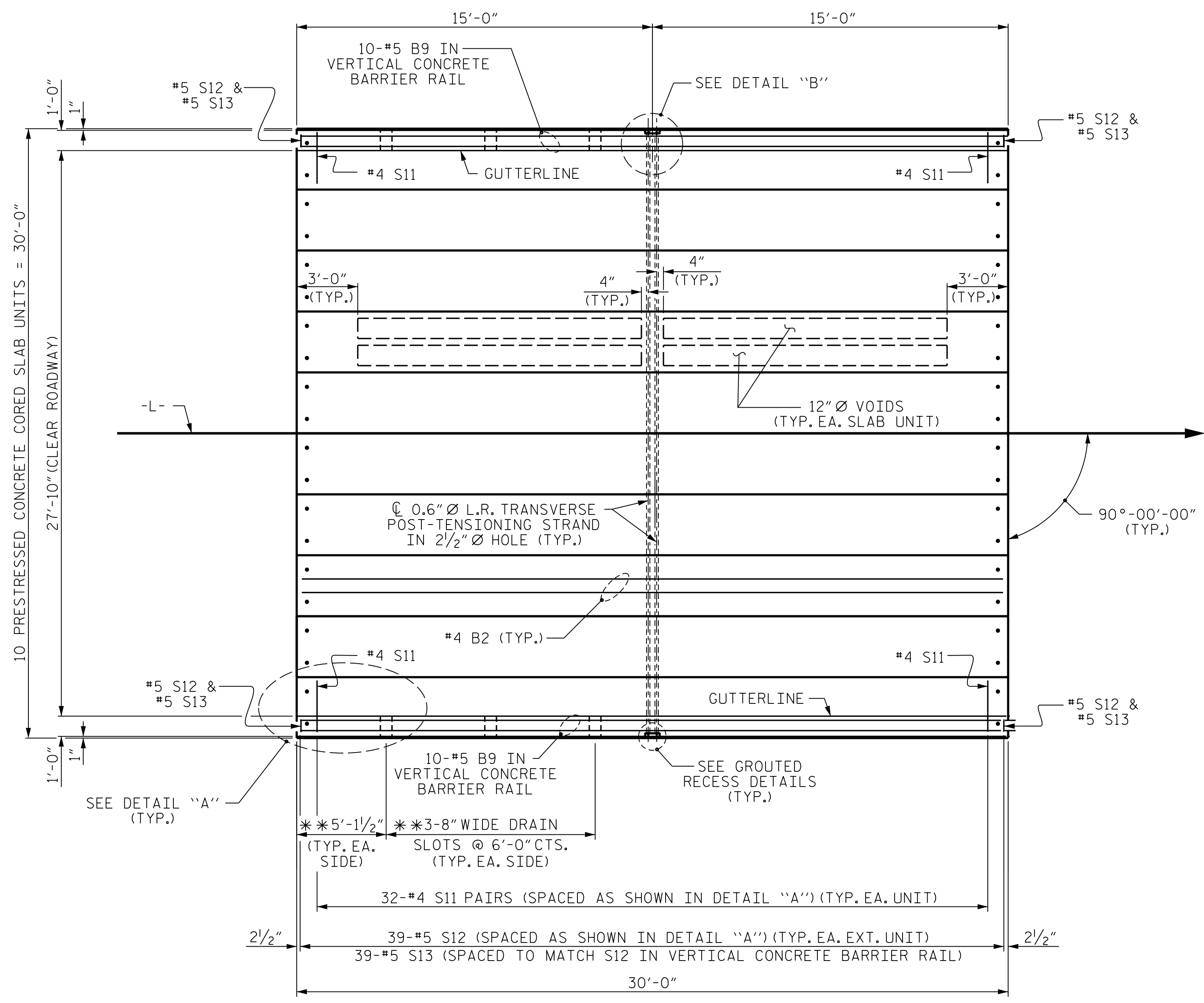
3'-0" X 2'-0"  
PRESTRESSED CONCRETE  
CORED SLAB UNIT

REVISIONS						SHEET NO. S-7
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 21
2			4			

DRAWN BY: <u>B.E. LANNING</u>	DATE: <u>08/2021</u>
CHECKED BY: <u>B.E. ATKINSON</u>	DATE: <u>08/2021</u>
DESIGN ENGINEER OF RECORD: <u>B.E. ATKINSON</u>	DATE: <u>09/2021</u>

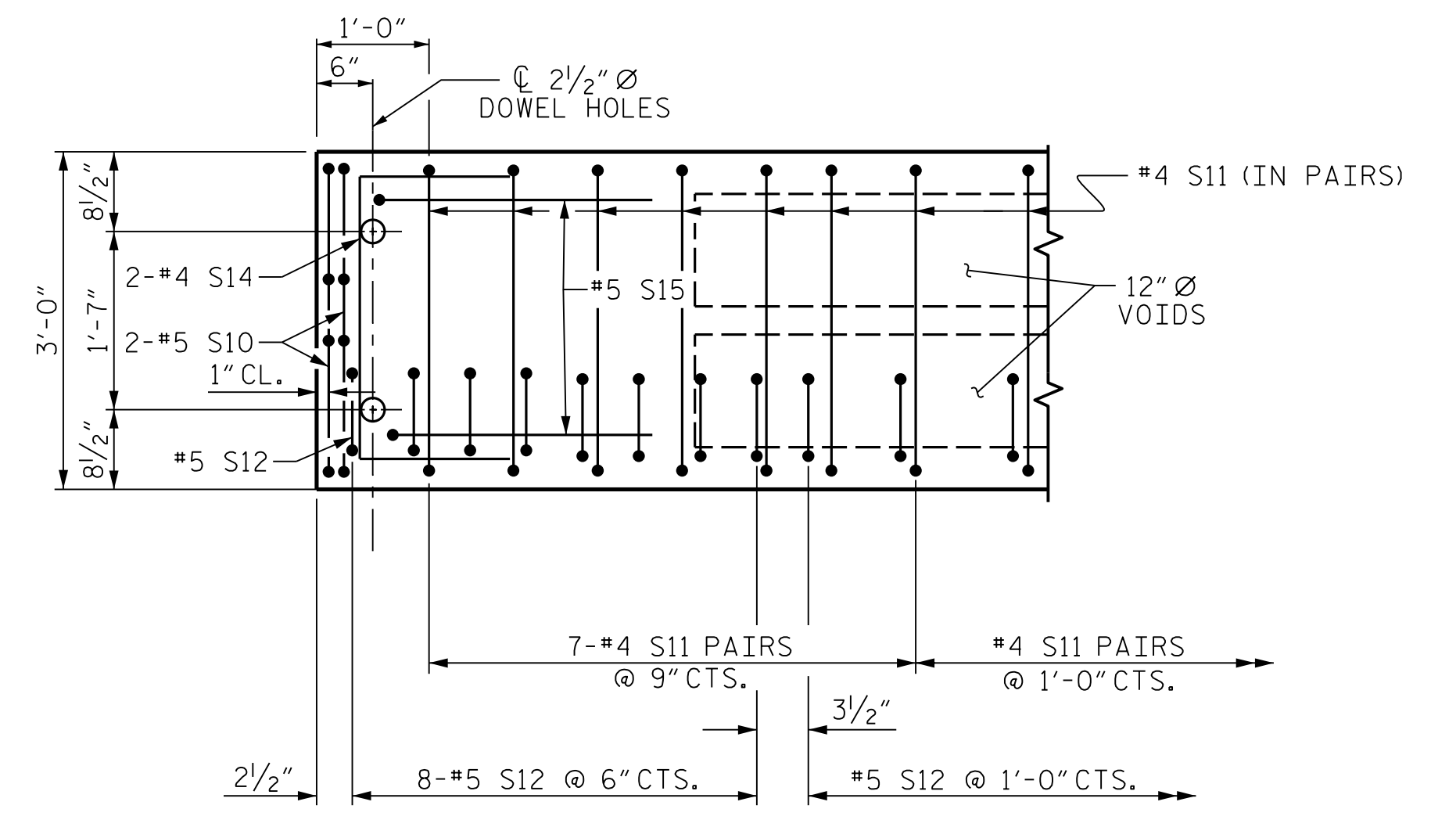
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11:15:27 AM  
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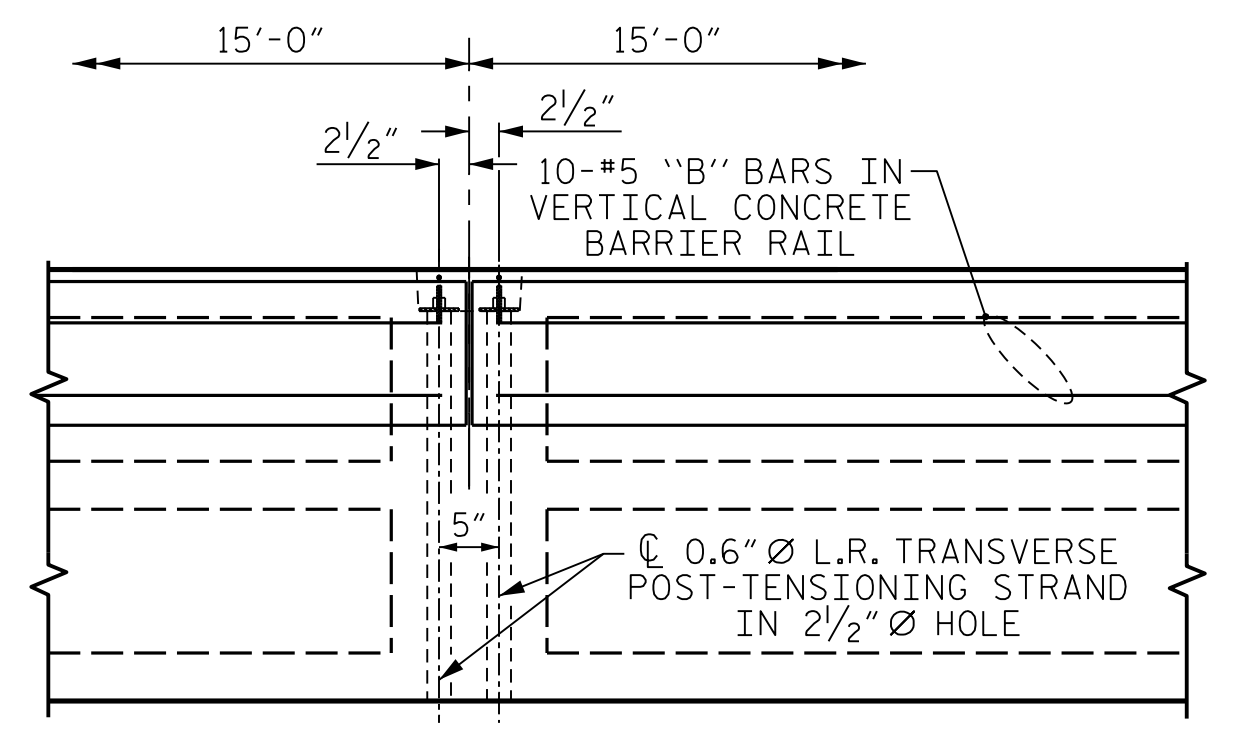
**PLAN OF UNIT**

SPAN A SHOWN, SPAN C SIMILAR  
\*\* SPAN C DRAIN SLOTS ARE DIMENSIONED FROM END OF UNIT AT END BENT 2



**DETAIL "A"**

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

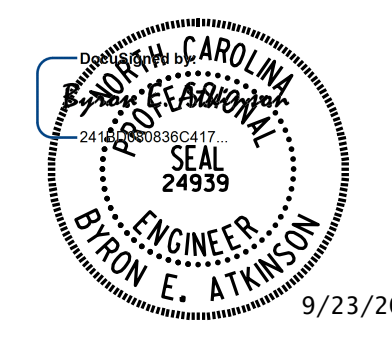


**DETAIL "B"**

#4 S11 BARS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO GROUDED RECESS AND 2.5" Ø TRANSVERSE POST-TENSIONING STRAND HOLES

PROJECT NO. BP8.R010  
MOORE COUNTY  
STATION: 15+50.00 -L-

SHEET 2 OF 4



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
**PLAN OF 30' UNIT**  
**27'-10" CLEAR ROADWAY**  
**90° SKEW**  
**SPAN A OR SPAN C**

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

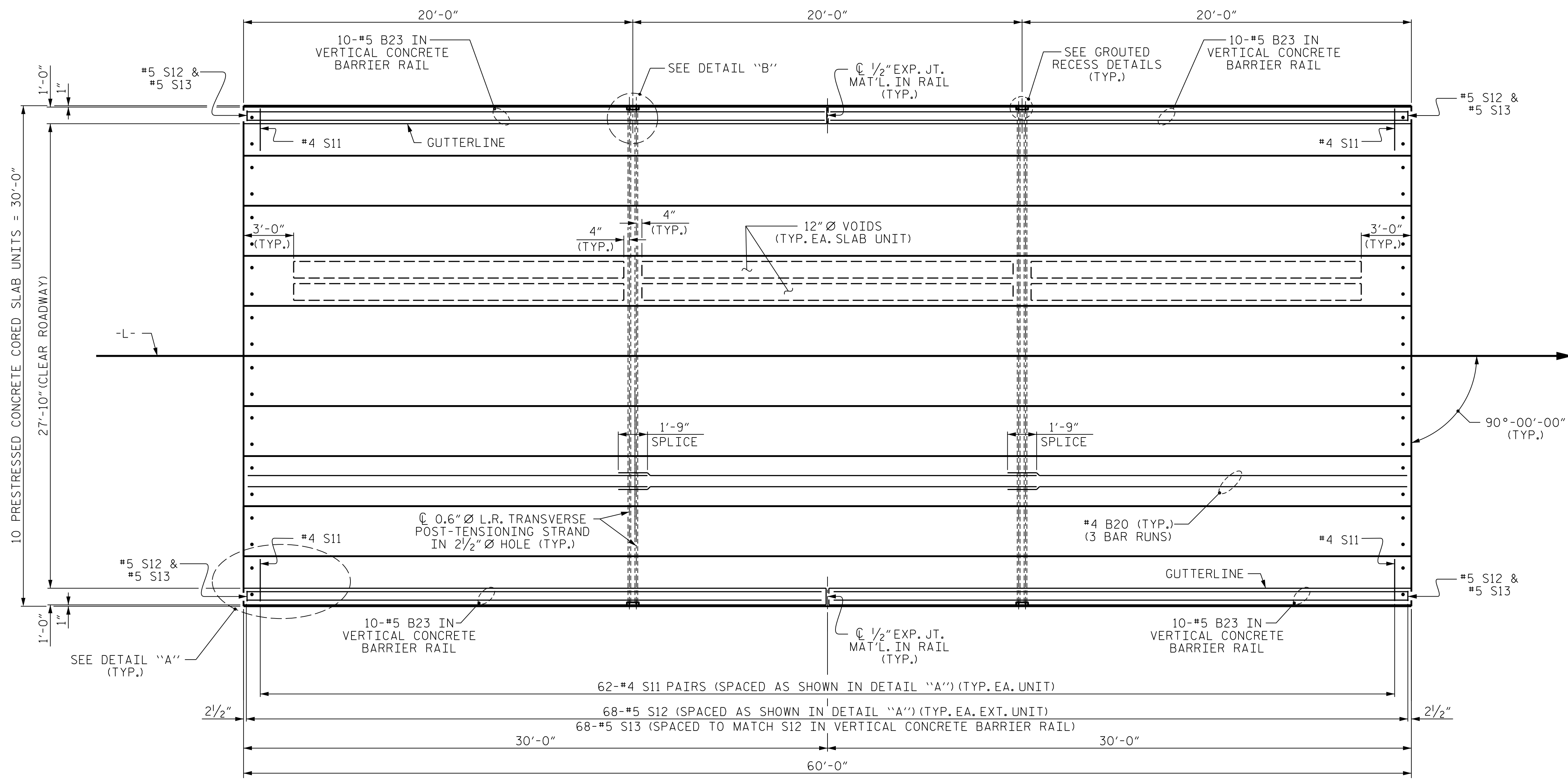
**MI ENGINEERING**  
1011 SCHAUB DRIVE, SUITE 100  
RALEIGH, NC 27606  
(919) 851-6606  
FIRM PE NUMBER: P-0671

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8	
1			3			TOTAL SHEETS	
2			4			21	

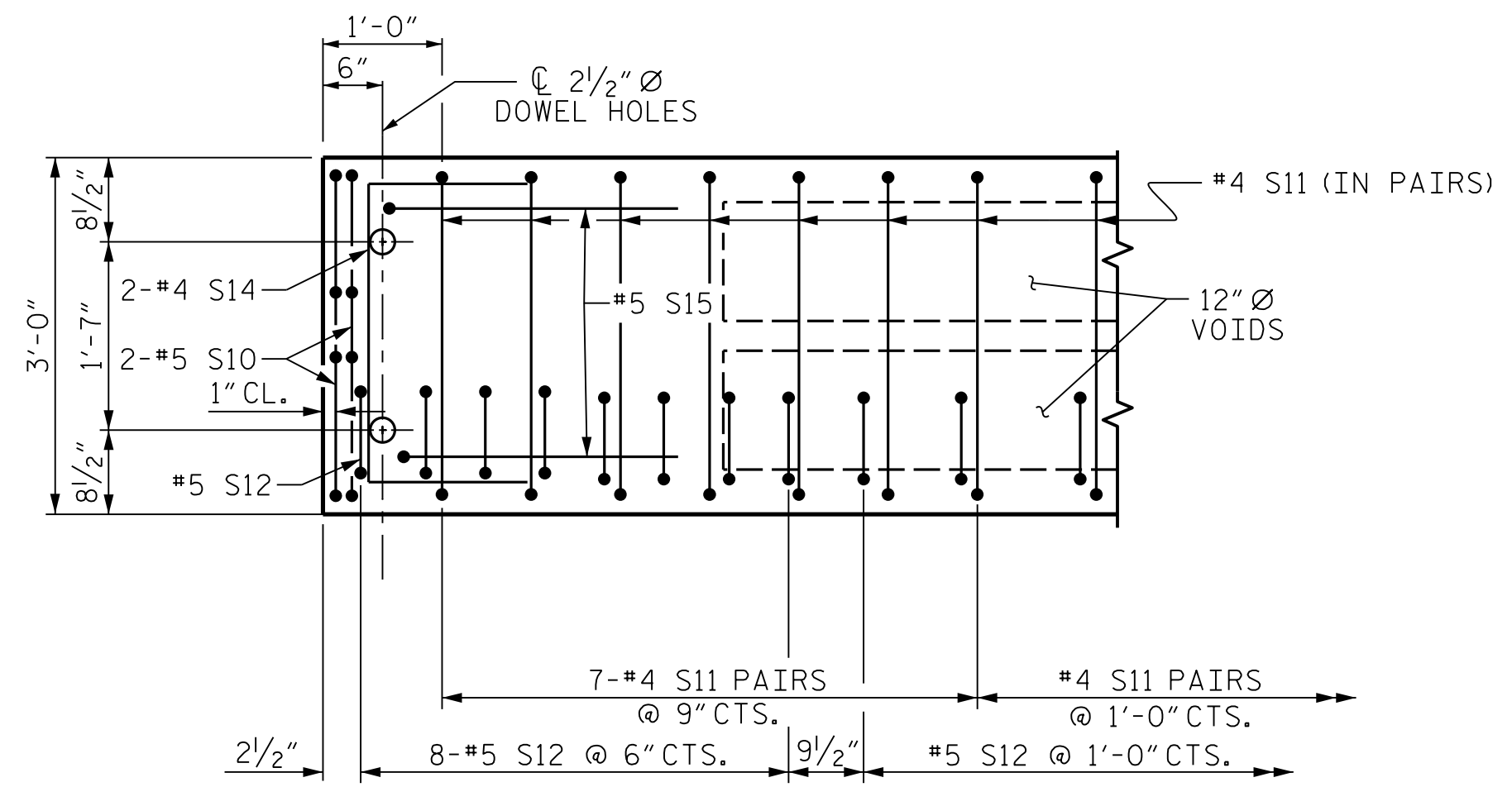
DRAWN BY : <u>B.E. LANNING</u>	DATE : <u>08/2021</u>
CHECKED BY : <u>B.E. ATKINSON</u>	DATE : <u>08/2021</u>
DESIGN ENGINEER OF RECORD : <u>B.E. ATKINSON</u>	DATE : <u>09/2021</u>



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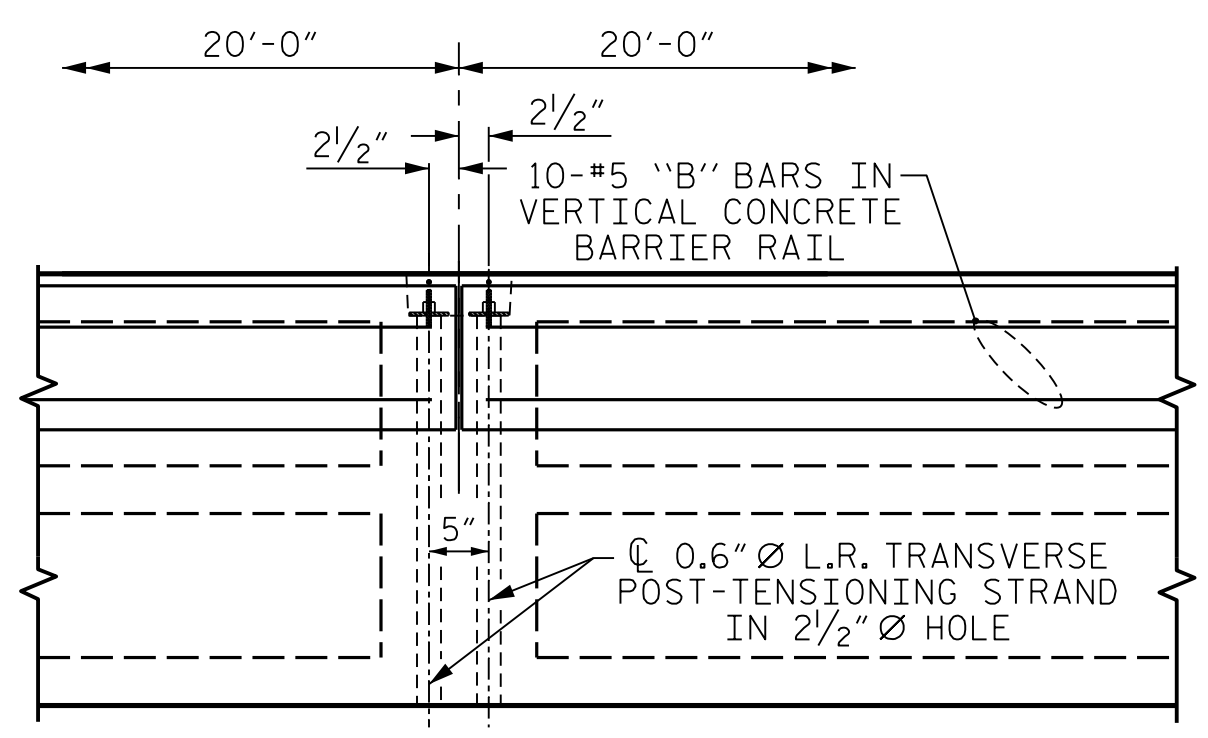


**PLAN OF UNIT**



**DETAIL "A"**

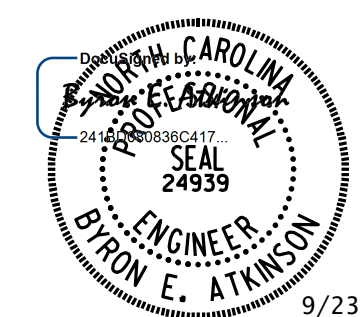
(TYPICAL EACH END OF UNIT)  
 NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S12 BARS.



**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. BP8.R010  
MOORE COUNTY  
 STATION: 15+50.00 -L-  
 SHEET 3 OF 4



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**PLAN OF 60' UNIT  
 27'-10" CLEAR ROADWAY  
 90° SKEW  
 SPAN B**

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

ASSEMBLED BY: B.E. LANNING	DATE: 08/2021
CHECKED BY: B.E. ATKINSON	DATE: 08/2021
DESIGN ENGINEER OF RECORD: B.E. ATKINSON	DATE: 09/2021
DRAWN BY: MAA 6/10	REV. 12/5/11 MAA/AAC
CHECKED BY: MKT 7/10	REV. 8/14 MAA/TMG

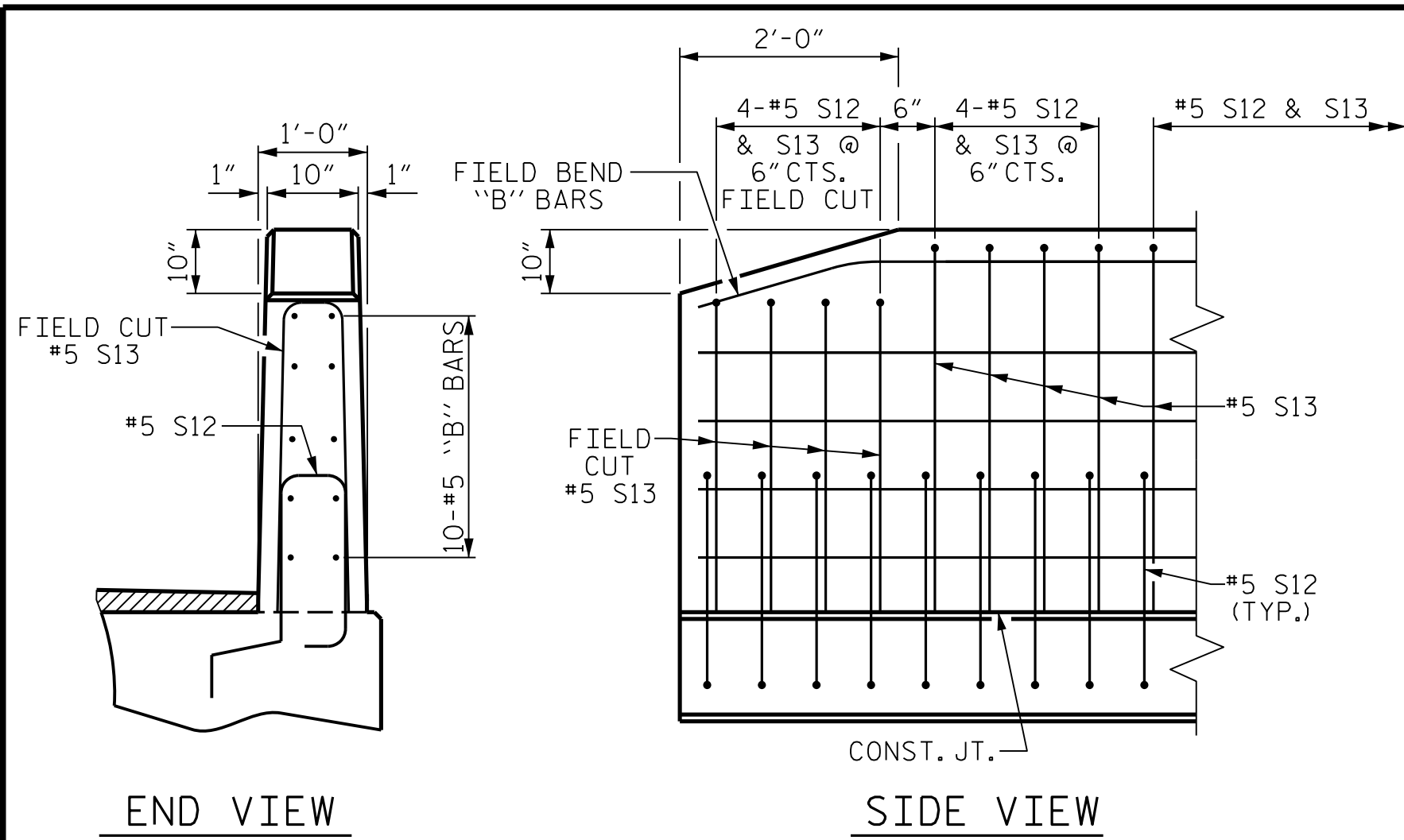
**MI ENGINEERING**  
 1011 SCHAUB DRIVE, SUITE 100  
 RALEIGH, NC 27606  
 (919) 851-6606  
 FIRM PE NUMBER: P-0671

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9	
1			3			TOTAL SHEETS	
2			4			21	

STD. NO. 24PCS\_30\_90S\_60L



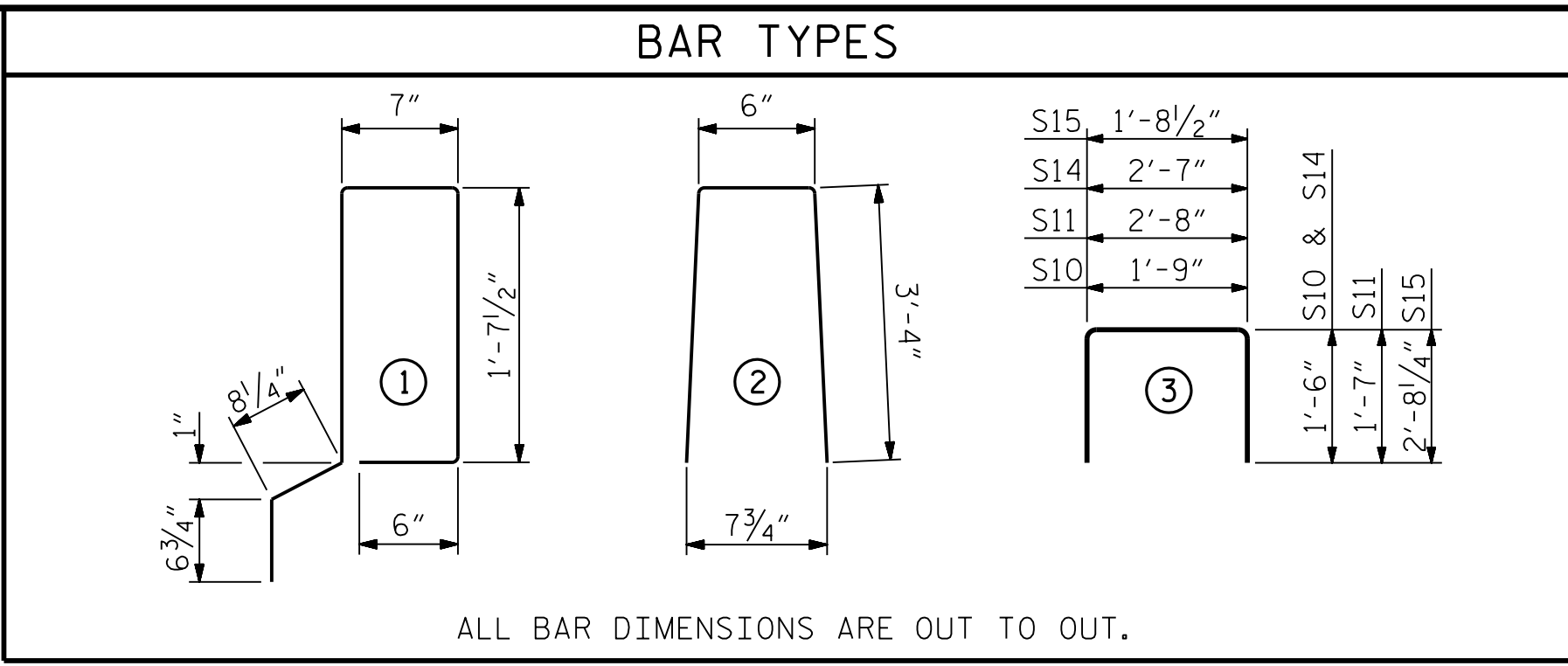
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CORED SLABS REQUIRED			
UNIT	NUMBER	LENGTH	TOTAL LENGTH
30' UNIT			
EXTERIOR C.S.	4	30'-0"	120'-0"
INTERIOR C.S.	16	30'-0"	480'-0"
TOTAL	20		600'-0"

CORED SLABS REQUIRED			
UNIT	NUMBER	LENGTH	TOTAL LENGTH
60' UNIT			
EXTERIOR C.S.	2	60'-0"	120'-0"
INTERIOR C.S.	8	60'-0"	480'-0"
TOTAL	10		600'-0"

CONCRETE RELEASE STRENGTH	
UNIT	PSI
30' UNIT	4000
60' UNIT	4800

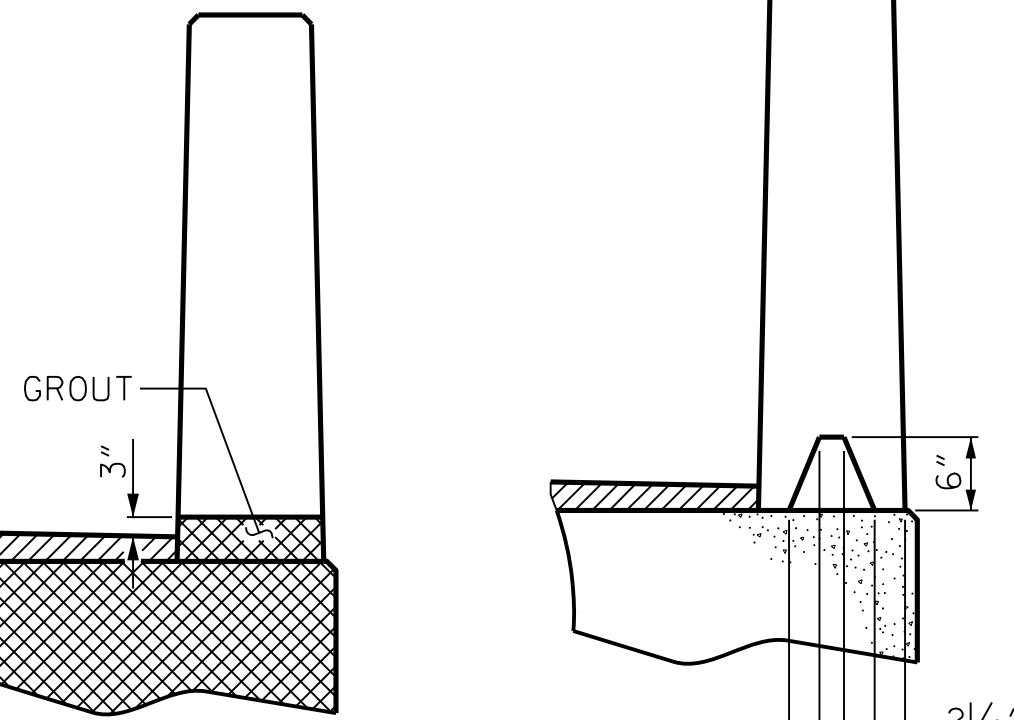
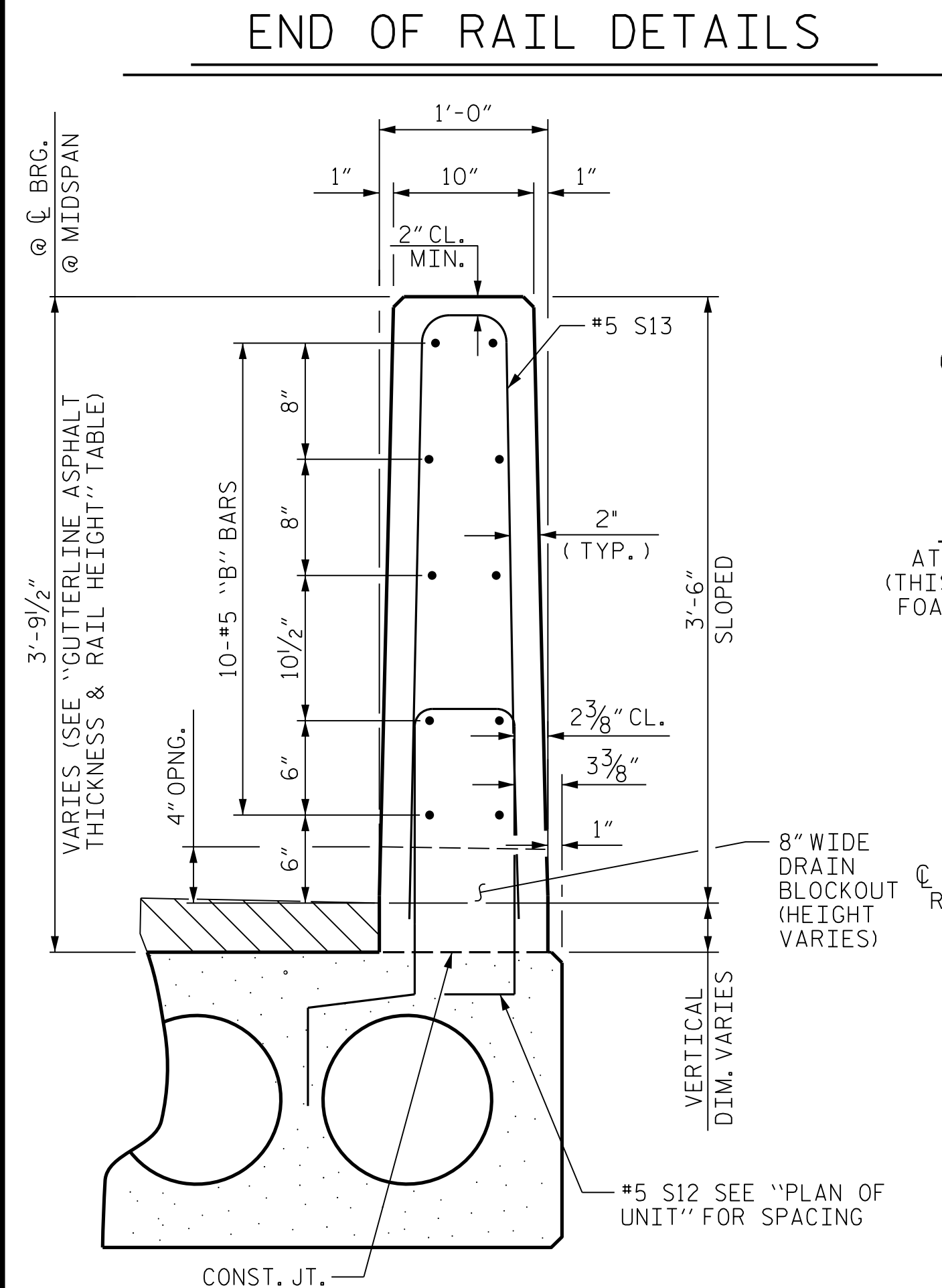


DEAD LOAD DEFLECTION AND CAMBER	
UNIT	PSI
30' CORED SLAB UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	3/16" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD **	1/16" ↓
FINAL CAMBER	1/8" ↑

DEAD LOAD DEFLECTION AND CAMBER	
UNIT	PSI
60' CORED SLAB UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1/8" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD **	1/2" ↓
FINAL CAMBER	1 3/8" ↑

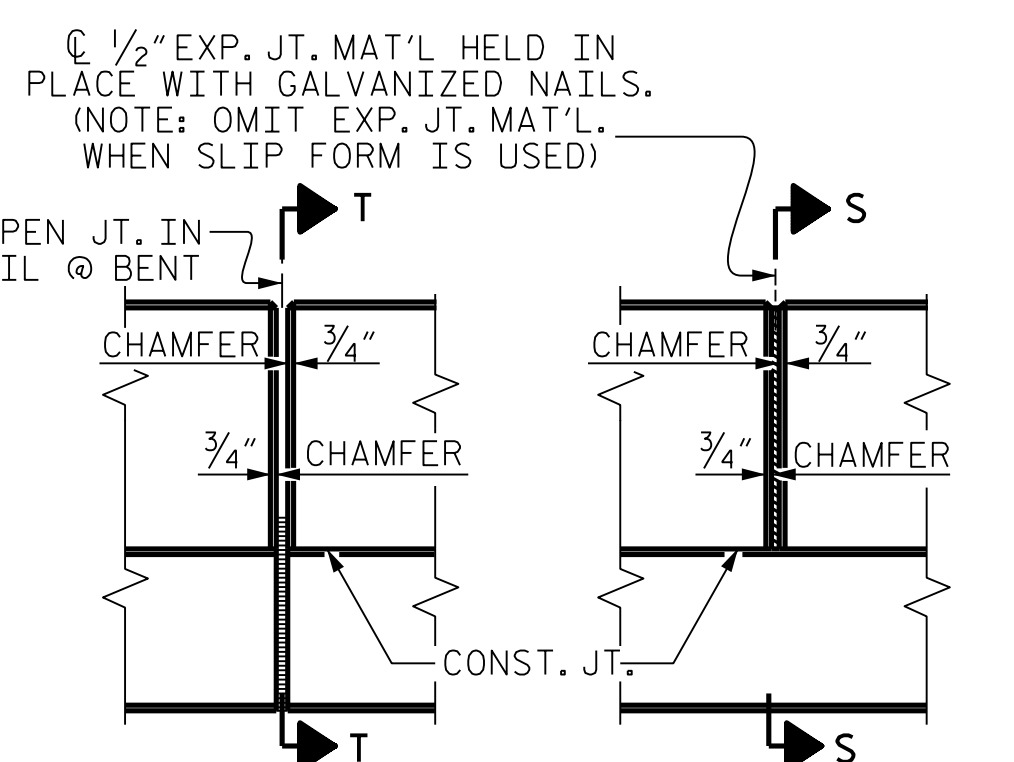
\*\* INCLUDES FUTURE WEARING SURFACE

\*\* INCLUDES FUTURE WEARING SURFACE



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)

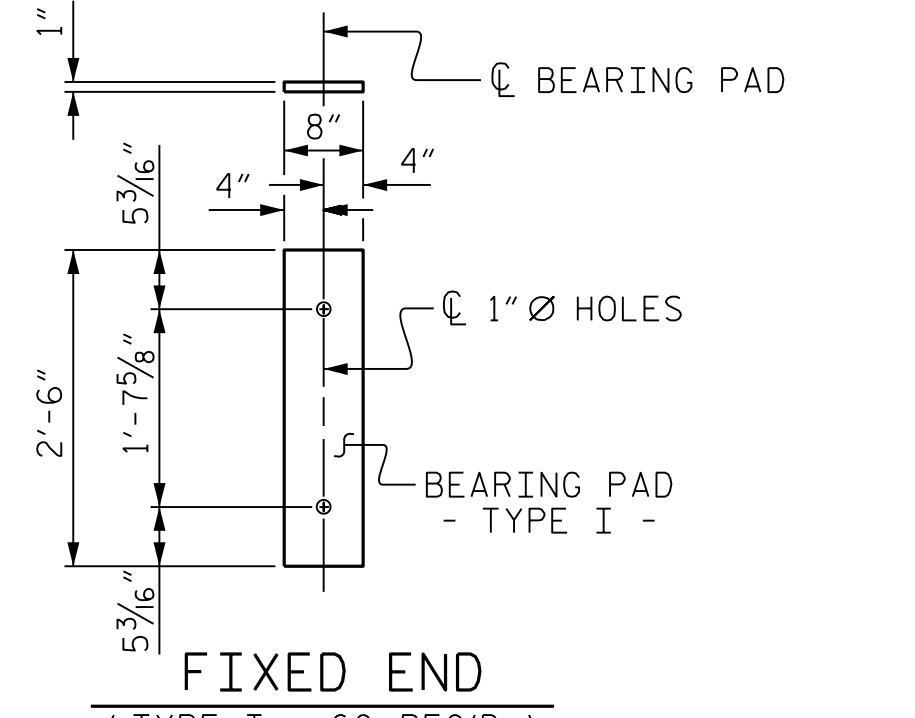


ELEVATION AT EXPANSION JOINTS

VERTICAL CONCRETE BARRIER RAIL SECTION

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
	ASPHALT OVERLAY THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
30' UNITS - SPAN A	** 3"	** 3'-9"
60' UNITS	2 7/8"	3'-8 1/8"
30' UNITS - SPAN C	3 3/8"	3'-9 3/8"

\*\* INCLUDES IMPACT OF SAG VERTICAL CURVE.



FIXED END (TYPE I - 60 REQ'D.)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

DRAWN BY: B.E. LANNING DATE: 08/2021  
CHECKED BY: B.E. ATKINSON DATE: 08/2021  
DESIGN ENGINEER OF RECORD: B.E. ATKINSON DATE: 09/2021

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
30' UNIT						
* B9	20	40	#5	STR	29'-7"	1234
* S13	78	156	#5	2	7'-2"	1166
* EPOXY COATED REINFORCING STEEL					LBS.	2400
CLASS AA CONCRETE					CU.YDS.	15.5
TOTAL VERTICAL CONCRETE BARRIER RAIL					LN.FT.	120.50

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
60' UNIT						
* B23	40	40	#5	STR	29'-7"	1234
* S13	136	136	#5	2	7'-2"	1017
* EPOXY COATED REINFORCING STEEL					LBS.	2251
CLASS AA CONCRETE					CU.YDS.	15.5
TOTAL VERTICAL CONCRETE BARRIER RAIL					LN.FT.	120.25

BILL OF MATERIAL FOR ONE 30' CORED SLAB UNIT							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B2	2	#4	STR	29'-8"	40	29'-8"	40
S10	8	#5	3	4'-9"	40	4'-9"	40
S11	64	#4	3	5'-10"	249	5'-10"	249
* S12	39	#5	1	5'-7"	227		
S14	4	#4	3	5'-7"	15	5'-7"	15
S15	4	#5	3	7'-1"	30	7'-1"	30
REINFORCING STEEL				LBS.	374		374
* EPOXY COATED REINFORCING STEEL				LBS.	227		
5000 P.S.I. CONCRETE				CU. YDS.	5.4		5.4
0.6" Ø L.R. STRANDS				No.	8		8

BILL OF MATERIAL FOR ONE 60' CORED SLAB UNIT							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B20	6	#4	STR	21'-2"	85	21'-2"	85
S10	8	#5	3	4'-9"	40	4'-9"	40
S11	124	#4	3	5'-10"	483	5'-10"	483
* S12	68	#5	1	5'-7"	396		
S14	4	#4	3	5'-7"	15	5'-7"	15
S15	4	#5	3	7'-1"	30	7'-1"	30
REINFORCING STEEL				LBS.	653		653
* EPOXY COATED REINFORCING STEEL				LBS.	396		
6000 P.S.I. CONCRETE				CU. YDS.	10.2		10.2
0.6" Ø L.R. STRANDS				No.	24		24

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.

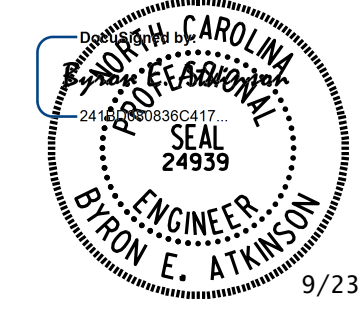
GRADE 270 STRANDS	
AREA ( SQUARE INCHES )	0.6" Ø L.R.
0.217	
ULTIMATE STRENGTH ( LBS. PER STRAND )	58,600
APPLIED PRESTRESS ( LBS. PER STRAND )	43,950

PROJECT NO. BP8.R010

MOORE COUNTY

STATION: 15+50.00 -L-

SHEET 4 OF 4



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MI ENGINEERING  
1011 SCHAUH DRIVE, SUITE 100  
RALEIGH, NC 27606  
(919) 851-6606  
FIRM PE NUMBER: P-0671

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLAB UNIT 90° SKEW					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-10  
TOTAL SHEETS 21



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.)

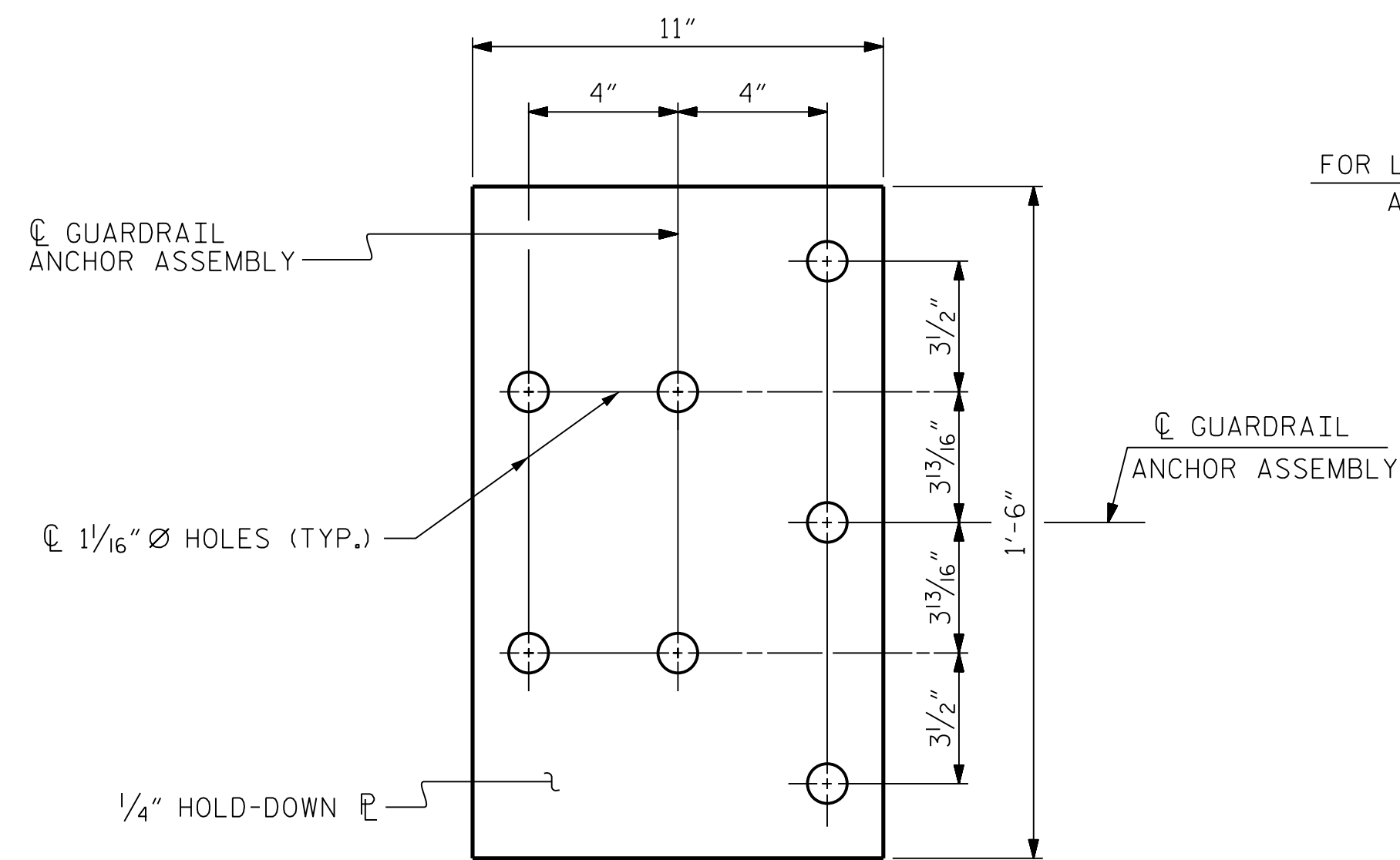
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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.

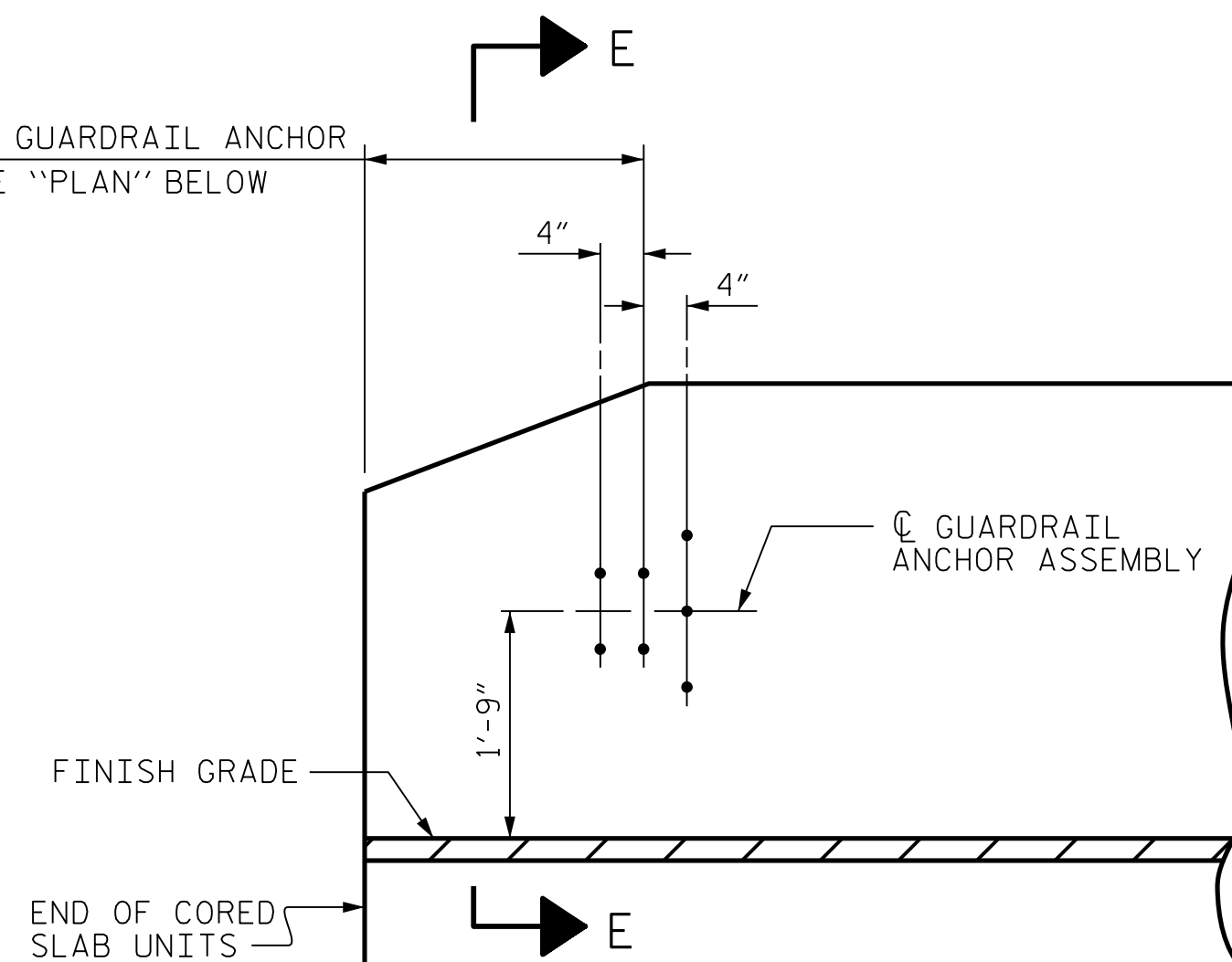
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

THE 1 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.

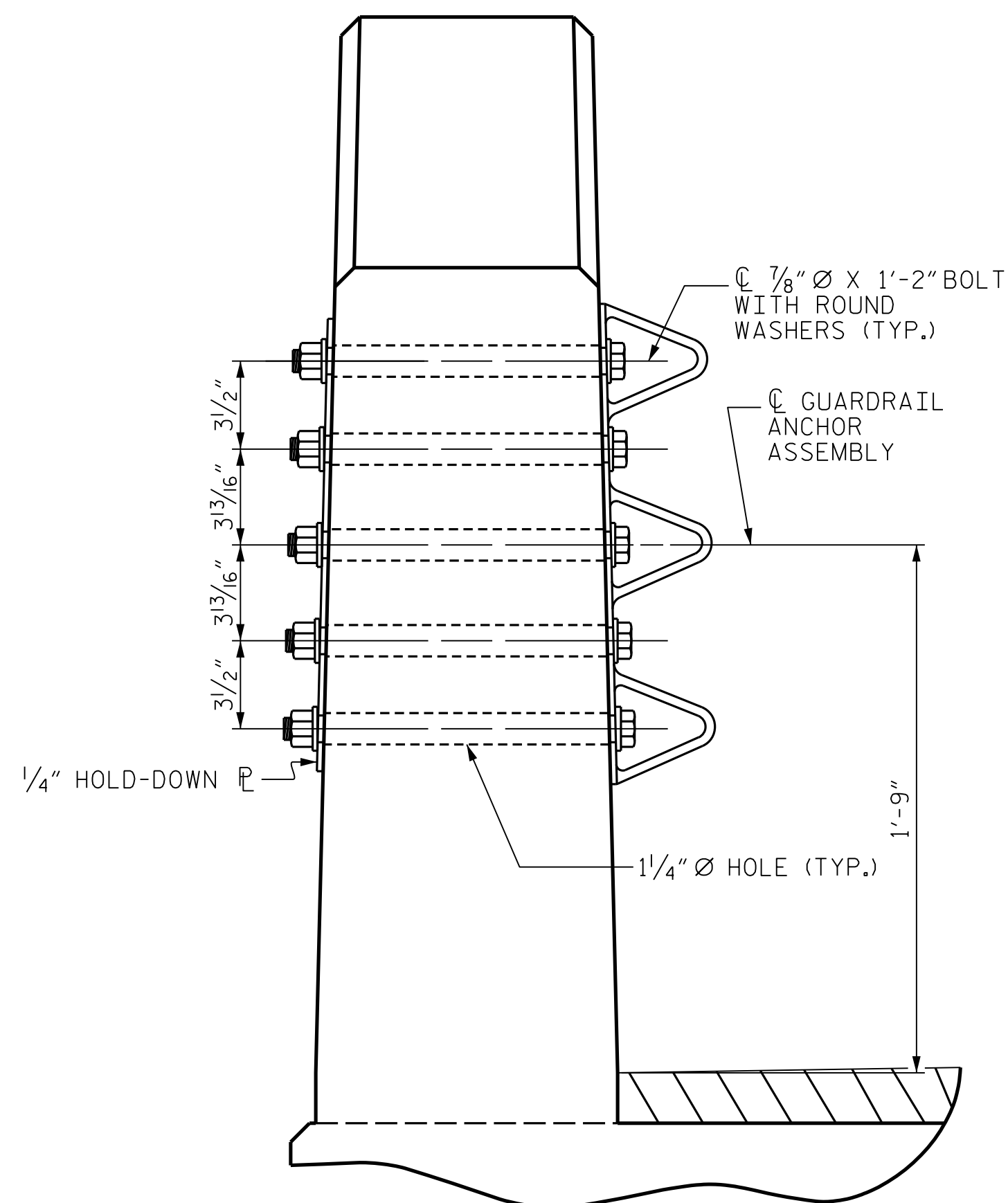


PLAN

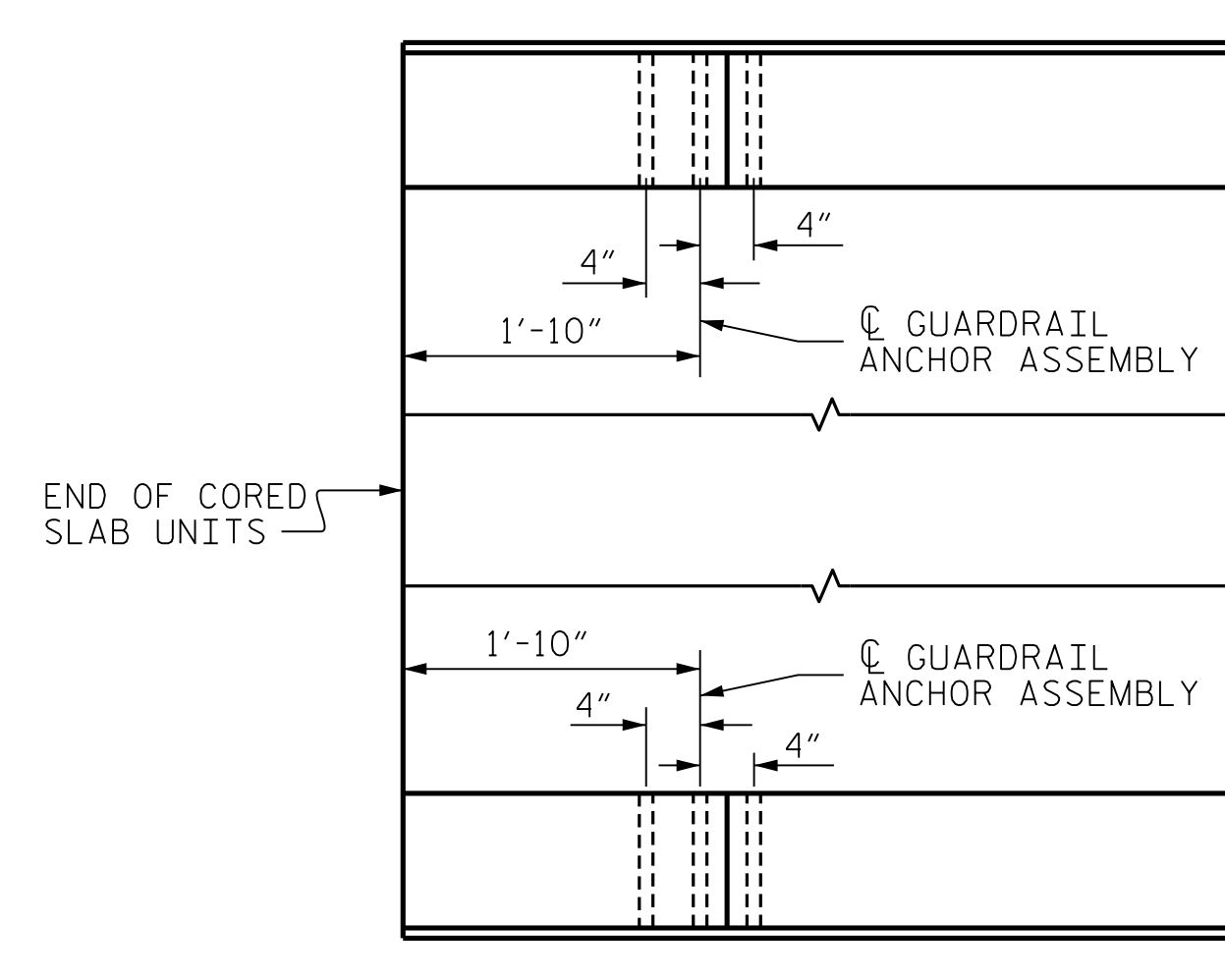
FOR LOCATION OF GUARDRAIL ANCHOR ASSEMBLY, SEE "PLAN" BELOW



ELEVATION



SECTION E-E  
GUARDRAIL ANCHOR ASSEMBLY DETAILS



LOCATION OF ANCHORS FOR GUARDRAIL

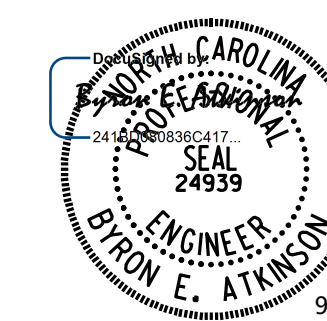
END BENT 1 SHOWN, END BENT 2 SIMILAR.



SKETCH SHOWING POINTS OF ATTACHMENT

\* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. BP8.R010  
MOORE COUNTY  
 STATION: 15+50.00 -L-



9/23/2021

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MI ENGINEERING  
1011 SCHAUB DRIVE, SUITE 100  
RALEIGH, NC 27606  
(919) 851-6606  
FIRM PE NUMBER : P-0671

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:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			21

(SHT 1) STD. NO. GRA3

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ASSEMBLED BY: B.E. LANNING	DATE: 08/2021
CHECKED BY: B.E. ATKINSON	DATE: 08/2021
DESIGN ENGINEER OF RECORD: B.E. ATKINSON	DATE: 09/2021
DRAWN BY: MAA 5/10	REV. 1/15 MAA/TMG
CHECKED BY: GM 5/10	REV. 12/17 MAA/THC
	REV. 5/18 MAA/THC

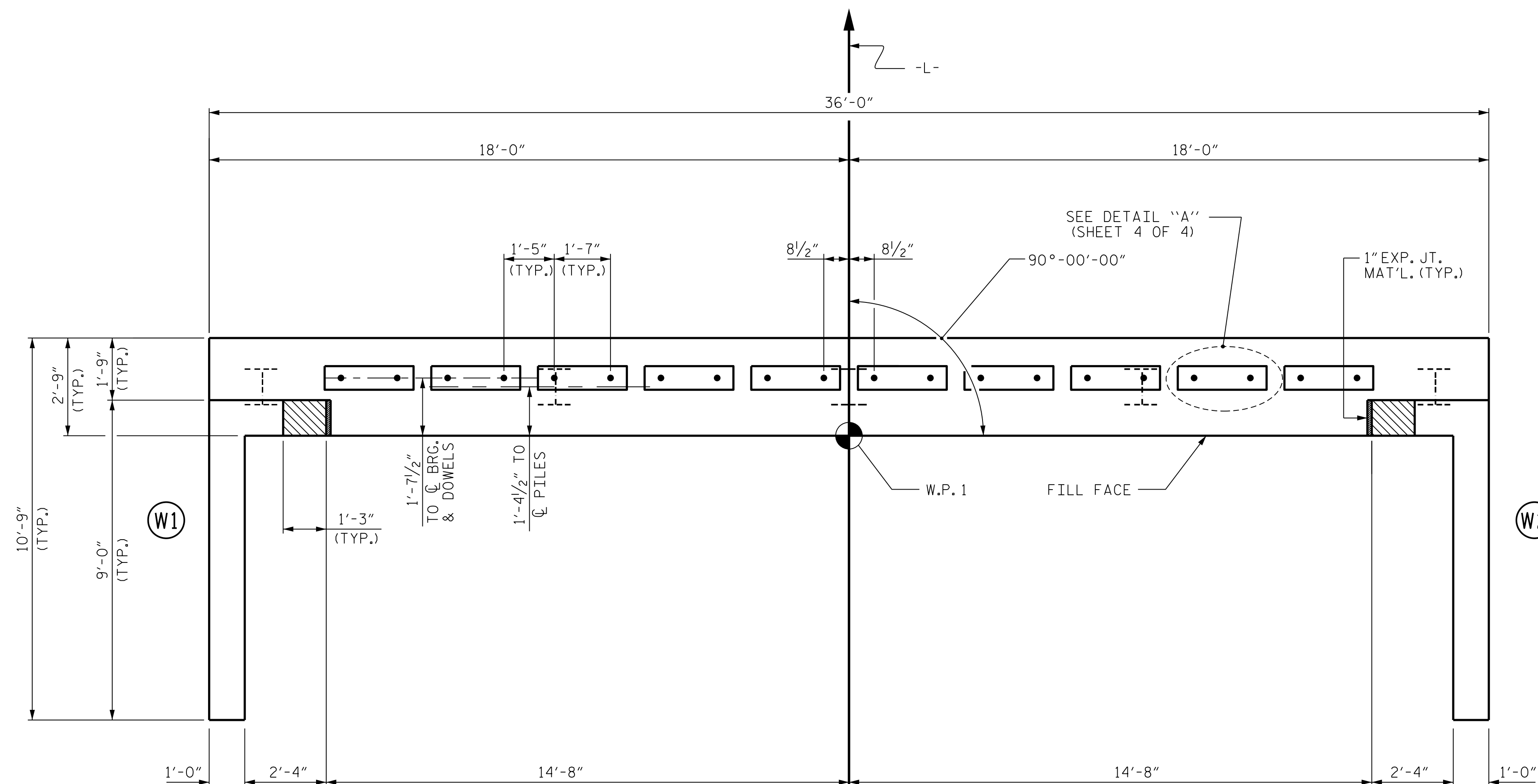
**NOTES**

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

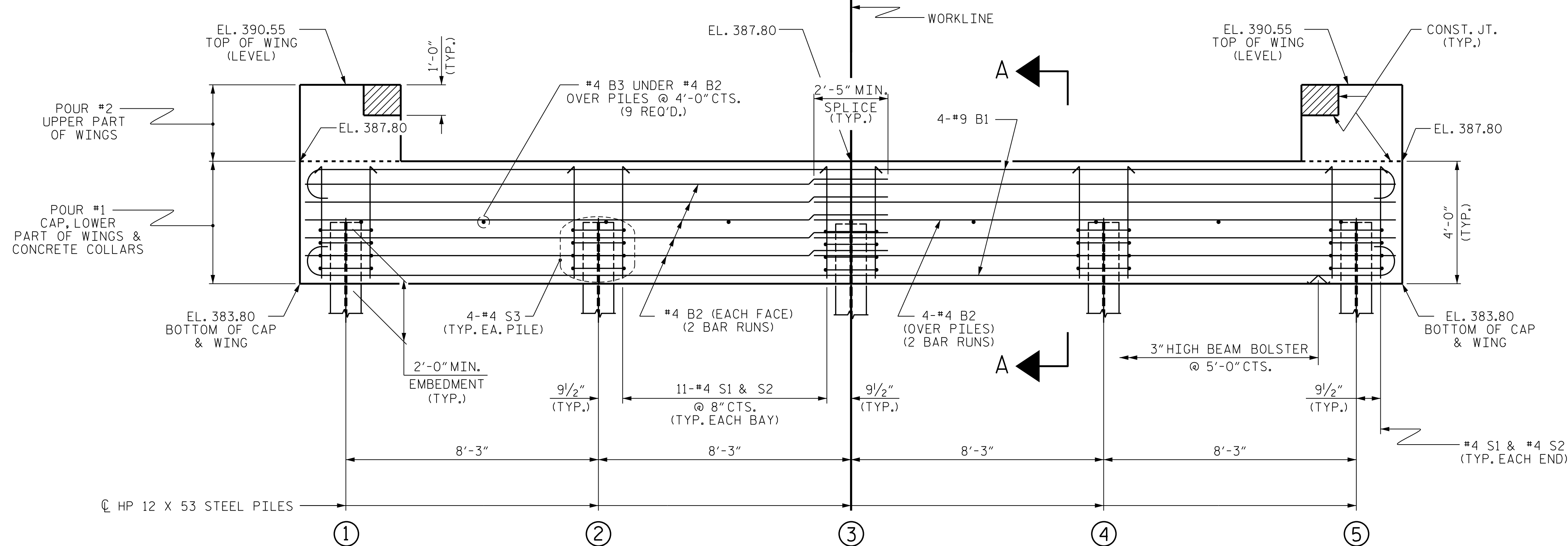
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



**PLAN**



**ELEVATION**

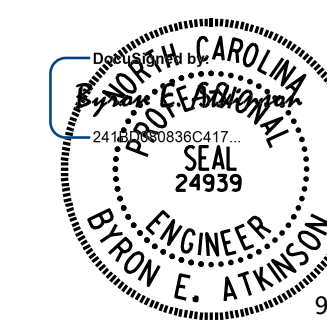
WINGS NOT SHOWN FOR CLARITY.  
FOR SECTION A-A, SEE SHEET 4 OF 4.  
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.  
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

PROJECT NO. BP8.R010  
MOORE COUNTY  
STATION: 15+50.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
END BENT No. 1



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MI ENGINEERING  
1011 SCHAUB DRIVE, SUITE 100  
RALEIGH, NC 27606  
(919) 851-6606  
FIRM PE NUMBER: P-0671

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12	
1			3			TOTAL SHEETS	
2			4			21	

STD. NO. EB\_30\_90S4

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ASSEMBLED BY: B.E. LANNING	DATE: 08/2021
CHECKED BY: B.E. ATKINSON	DATE: 08/2021
DESIGN ENGINEER OF RECORD: B.E. ATKINSON	DATE: 09/2021
DRAWN BY: WJH 12/11	REV. 4/15 MAA/TMG
CHECKED BY: AAC 12/11	



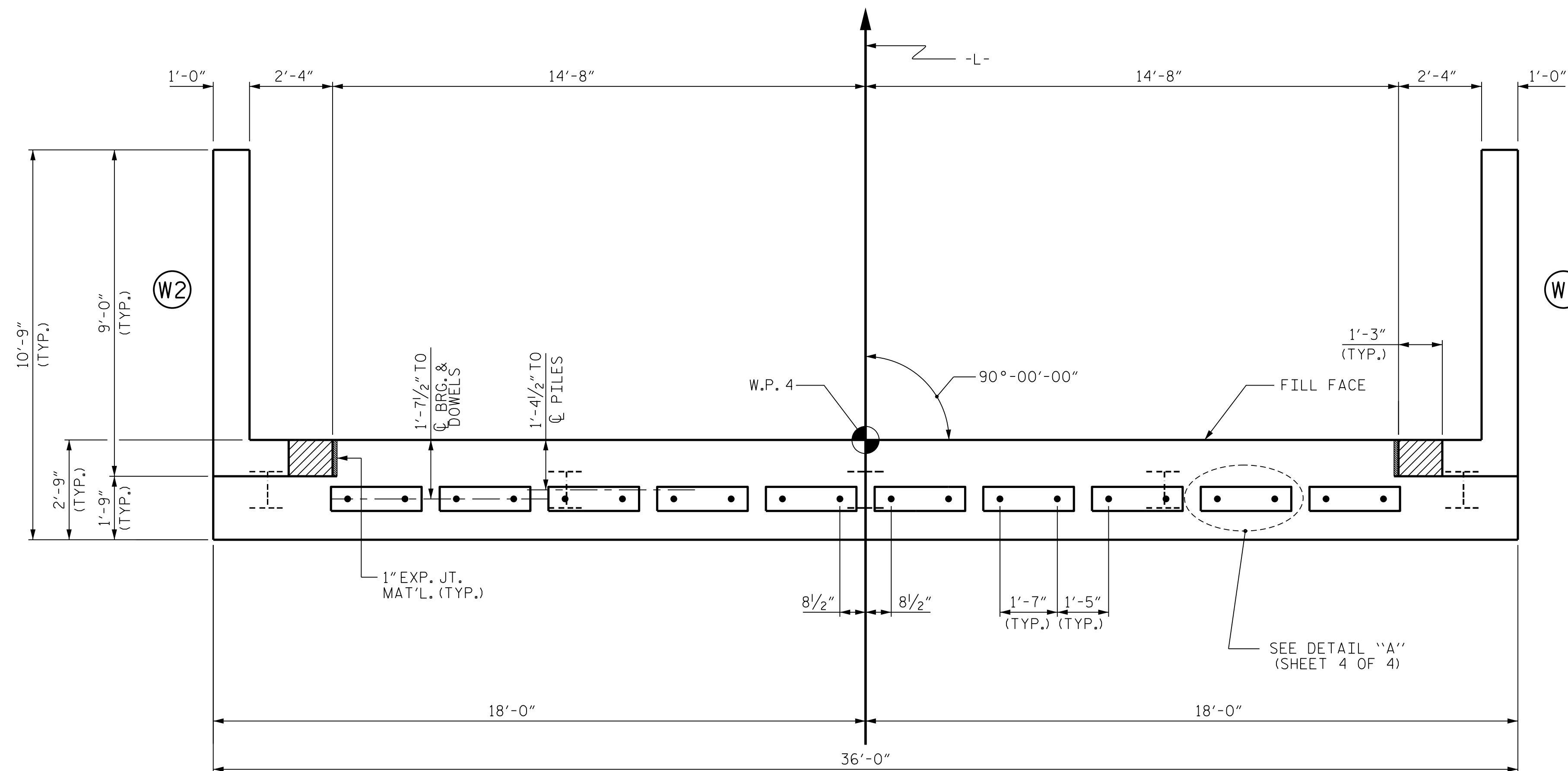
NOTES

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

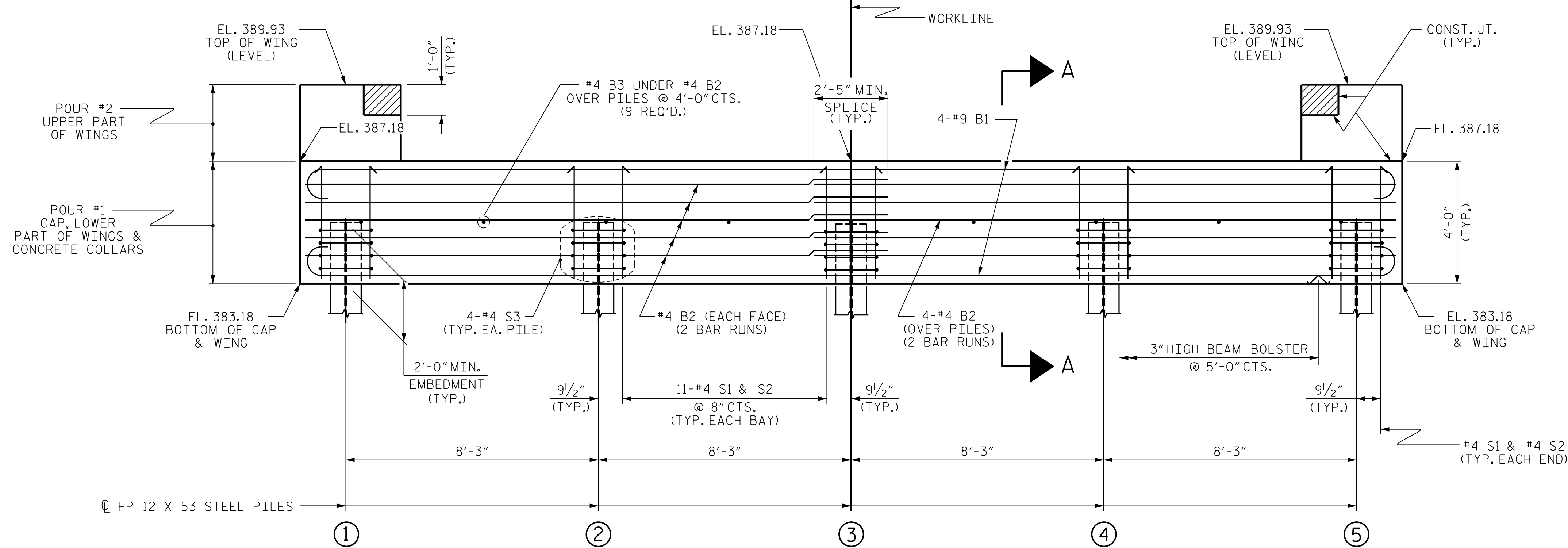
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN



ELEVATION

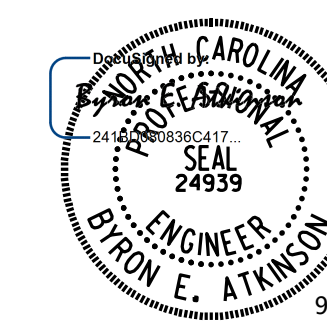
WINGS NOT SHOWN FOR CLARITY.  
FOR SECTION A-A, SEE SHEET 4 OF 4.  
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.  
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

PROJECT NO. BP8.R010  
MOORE COUNTY  
STATION: 15+50.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
END BENT No. 2



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MI ENGINEERING  
1011 SCHAUB DRIVE, SUITE 100  
RALEIGH, NC 27606  
(919) 851-6606  
FIRM PE NUMBER: P-0671

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13	
1			3			TOTAL SHEETS	
2			4			21	

STD. NO. EB\_30\_90S4

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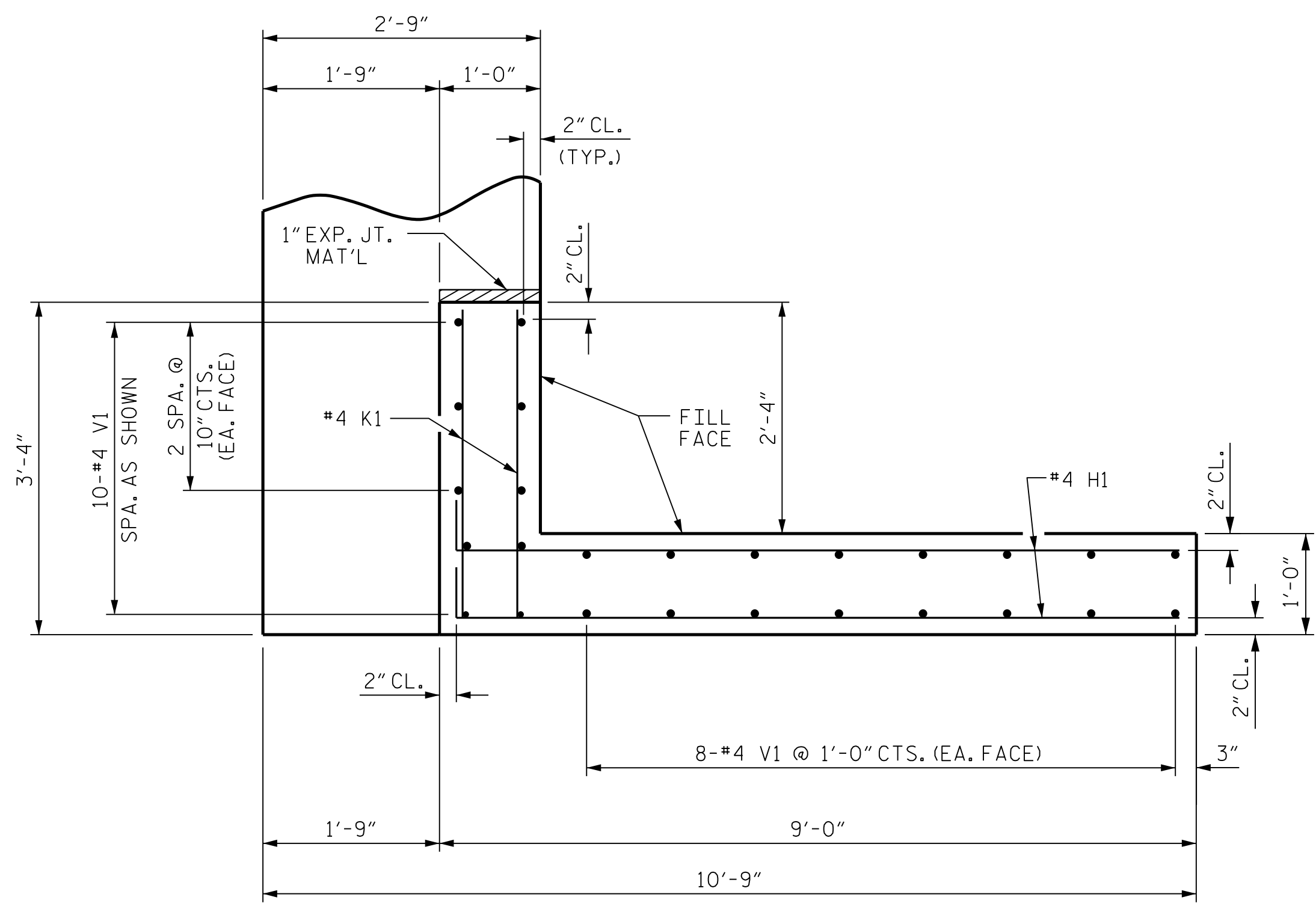
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CHECKED BY: B.E. ATKINSON	DATE: 08/2021
DESIGN ENGINEER OF RECORD: B.E. ATKINSON	DATE: 09/2021
DRAWN BY: WJH 12/11	REV. 4/15 MAA/TMG
CHECKED BY: AAC 12/11	

9/23/2021  
11:15:34 AM

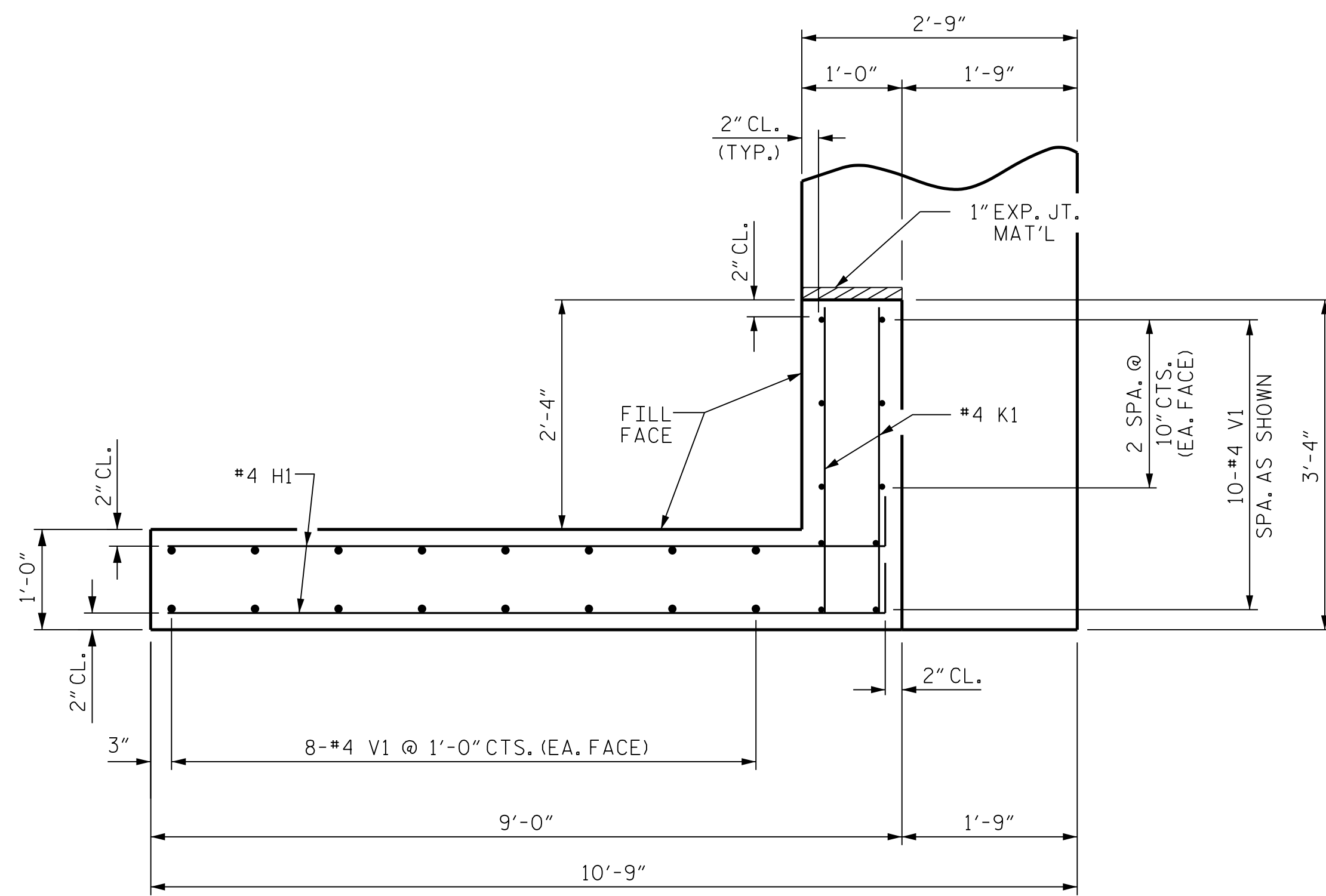
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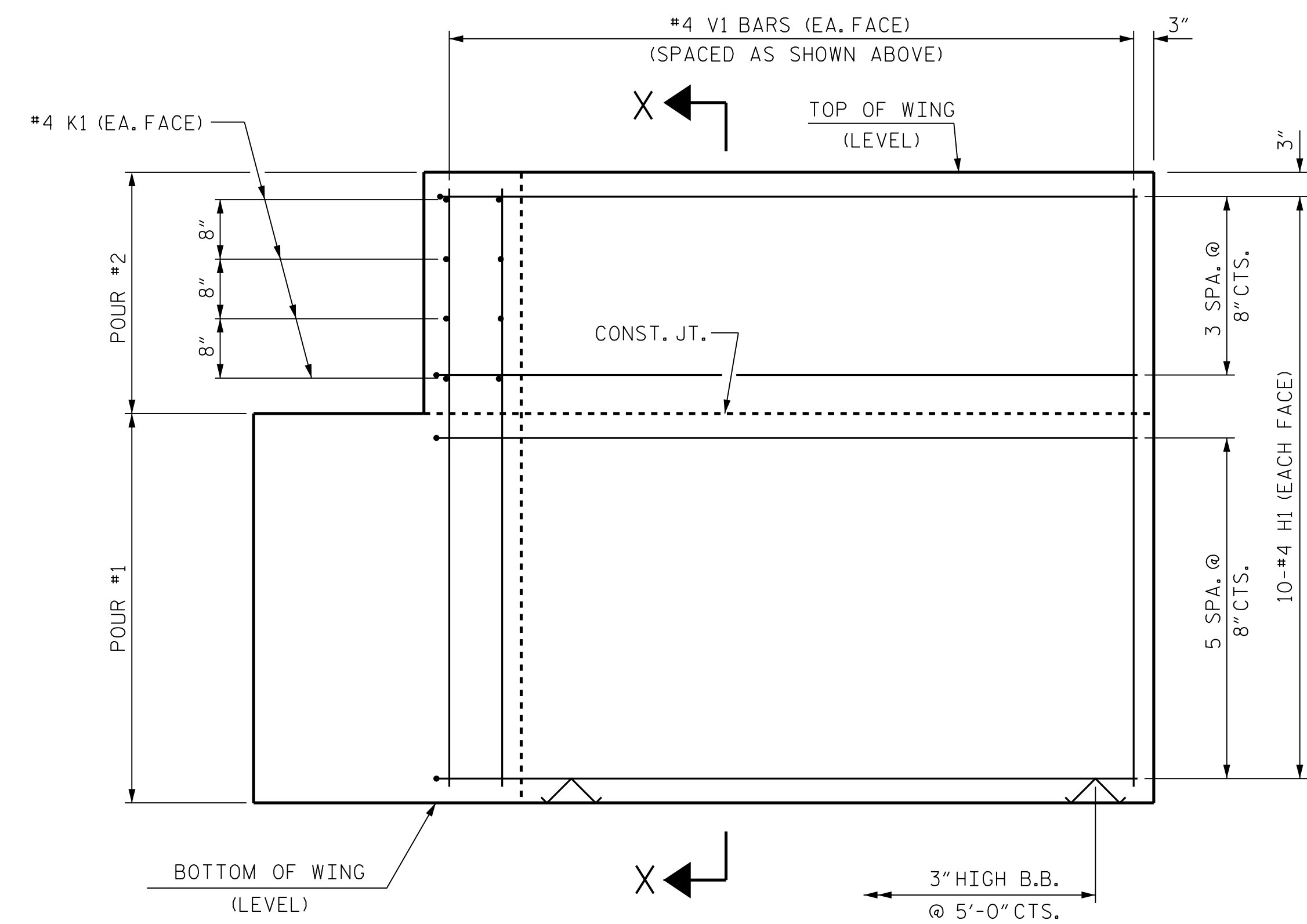
ASSEMBLED BY: B.E. LANNING	DATE: 08/2021
CHECKED BY: B.E. ATKINSON	DATE: 08/2021
DESIGN ENGINEER OF RECORD: B.E. ATKINSON	DATE: 09/2021
DRAWN BY: WJH 12/11	REV. 4/15 MAA/TMG
CHECKED BY: AAC 12/11	



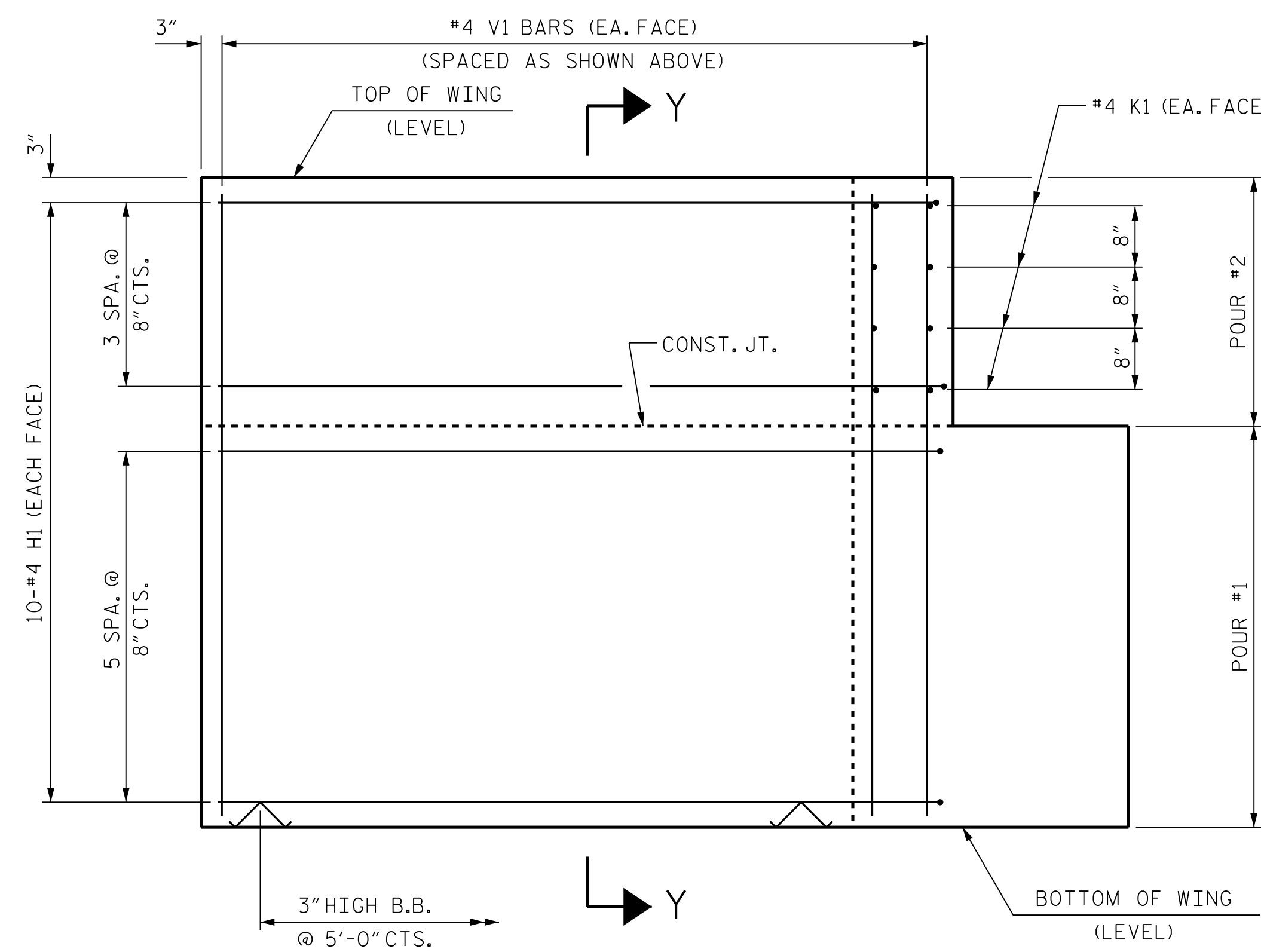
PLAN OF WING (W1)



PLAN OF WING (W2)

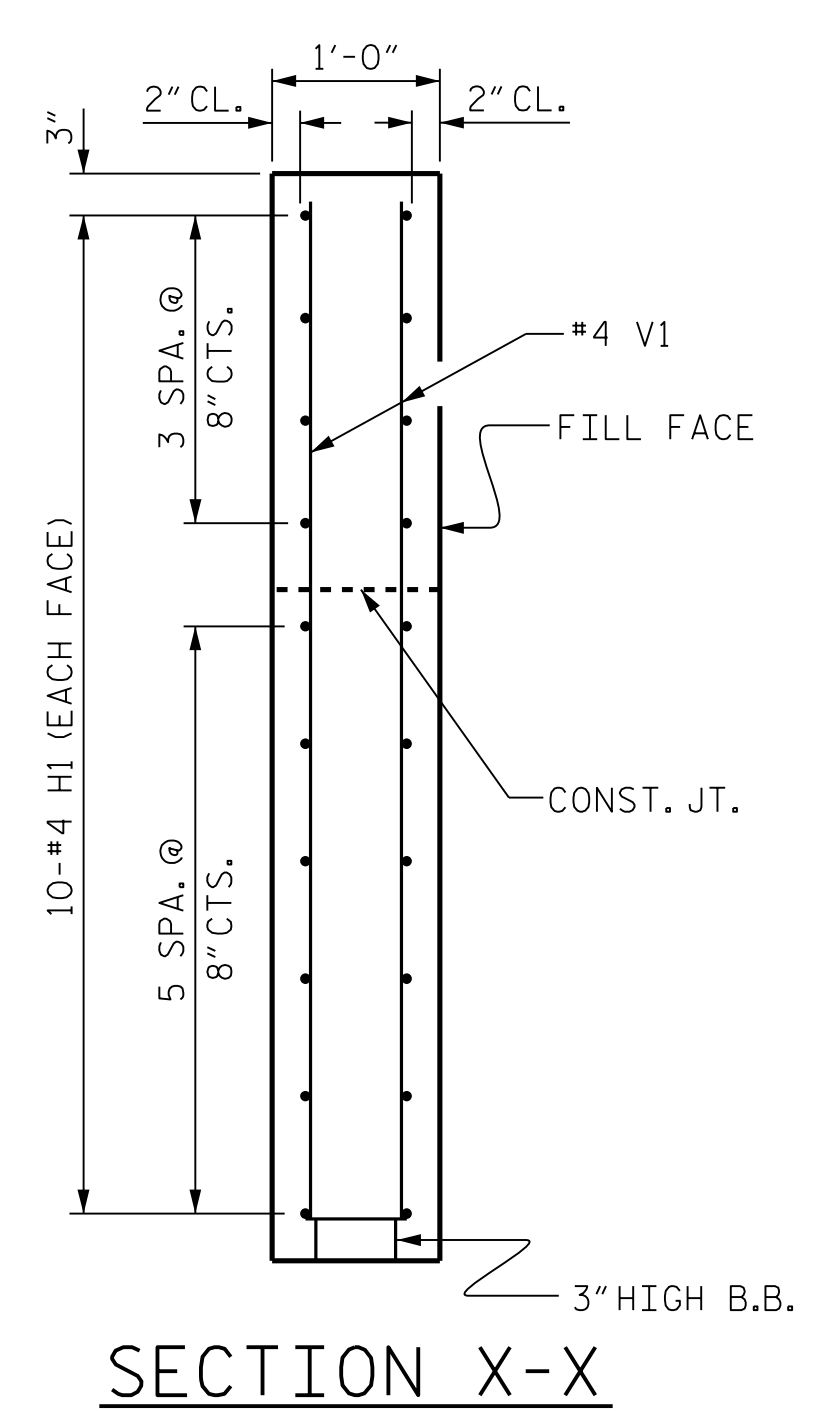


ELEVATION OF WING (W1)

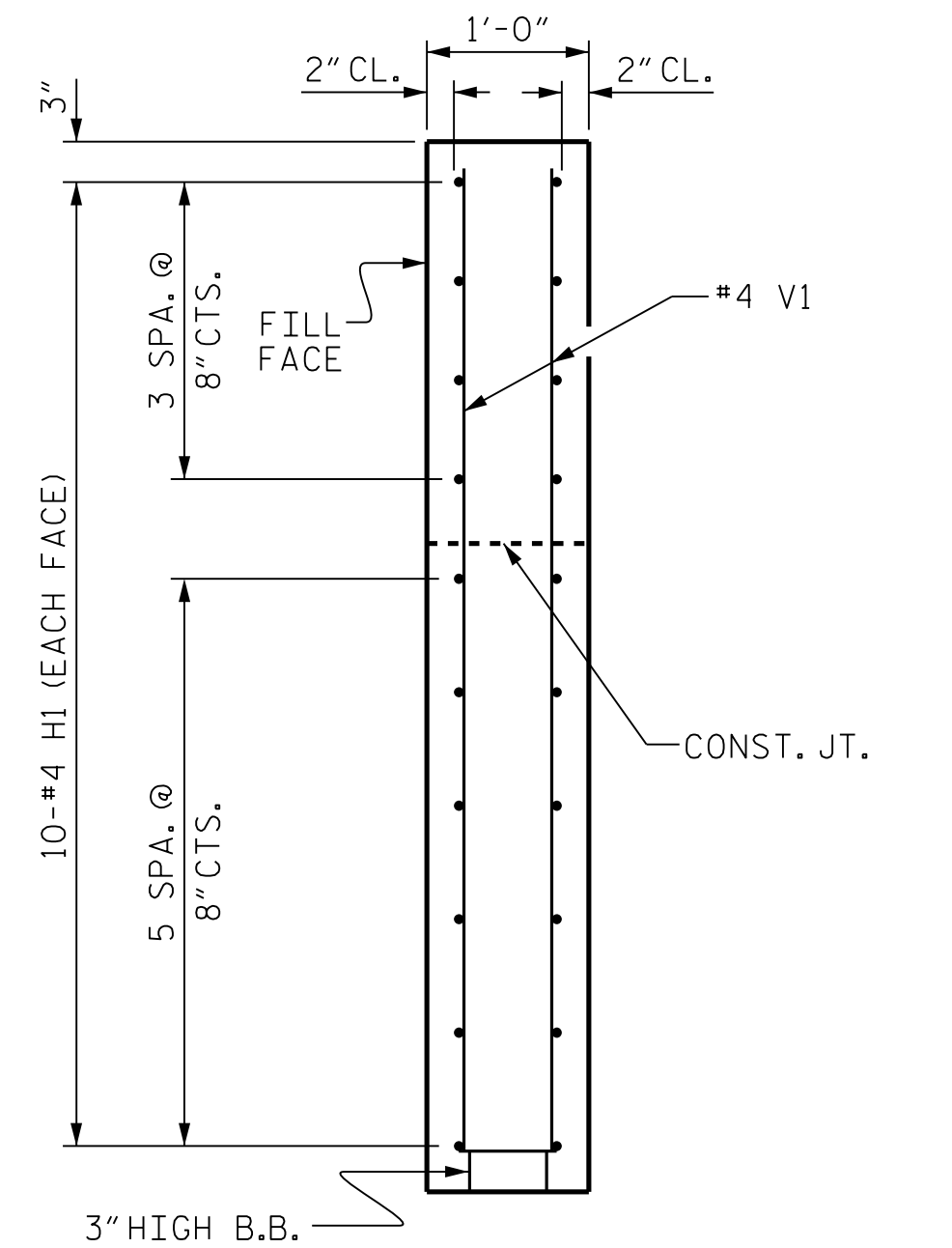


ELEVATION OF WING (W2)

WING DETAILS



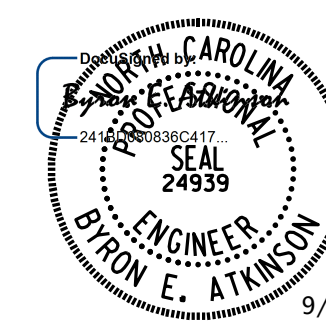
SECTION X-X



SECTION Y-Y

PROJECT NO. BP8.R010  
MOORE COUNTY  
 STATION: 15+50.00 -L-

SHEET 3 OF 4



9/23/2021

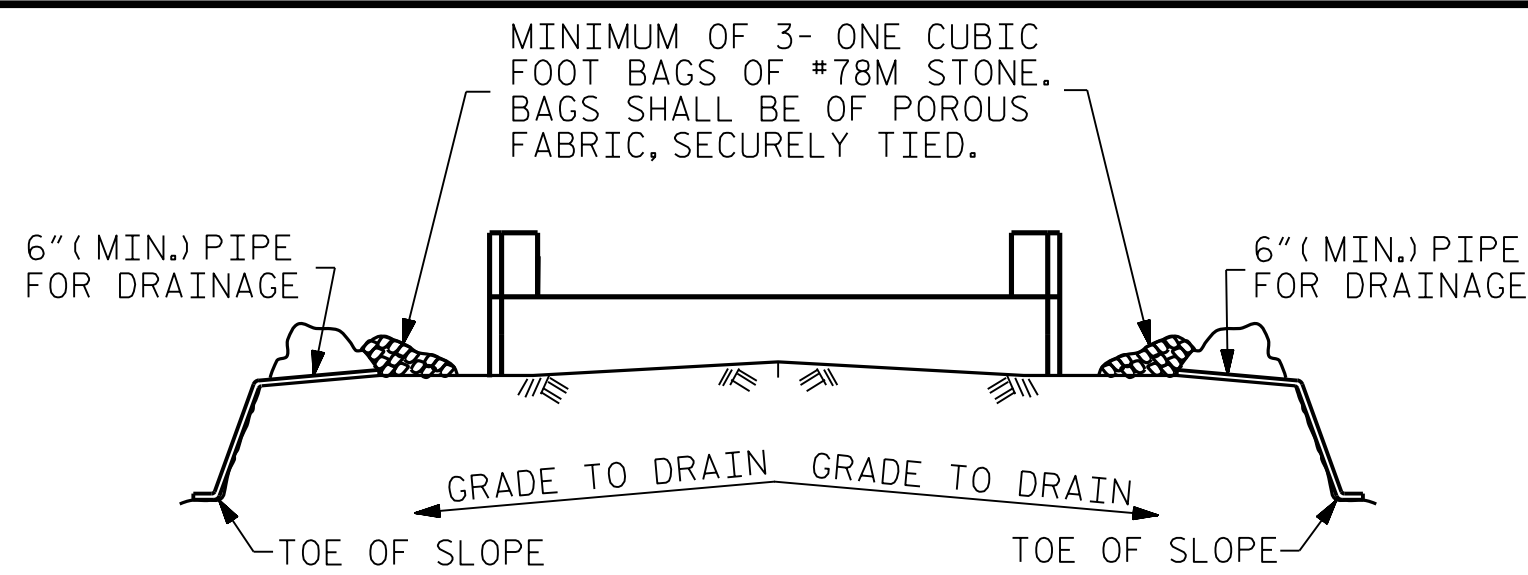
**DOCUMENT NOT CONSIDERED FINAL  
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MI ENGINEERING  
 1011 SCHAUB DRIVE, SUITE 100  
 RALEIGH, NC 27606  
 (919) 851-6606  
 FIRM PE NUMBER: P-0671

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT WING DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-14					TOTAL SHEETS 21

STD. NO. EB\_30\_90S4

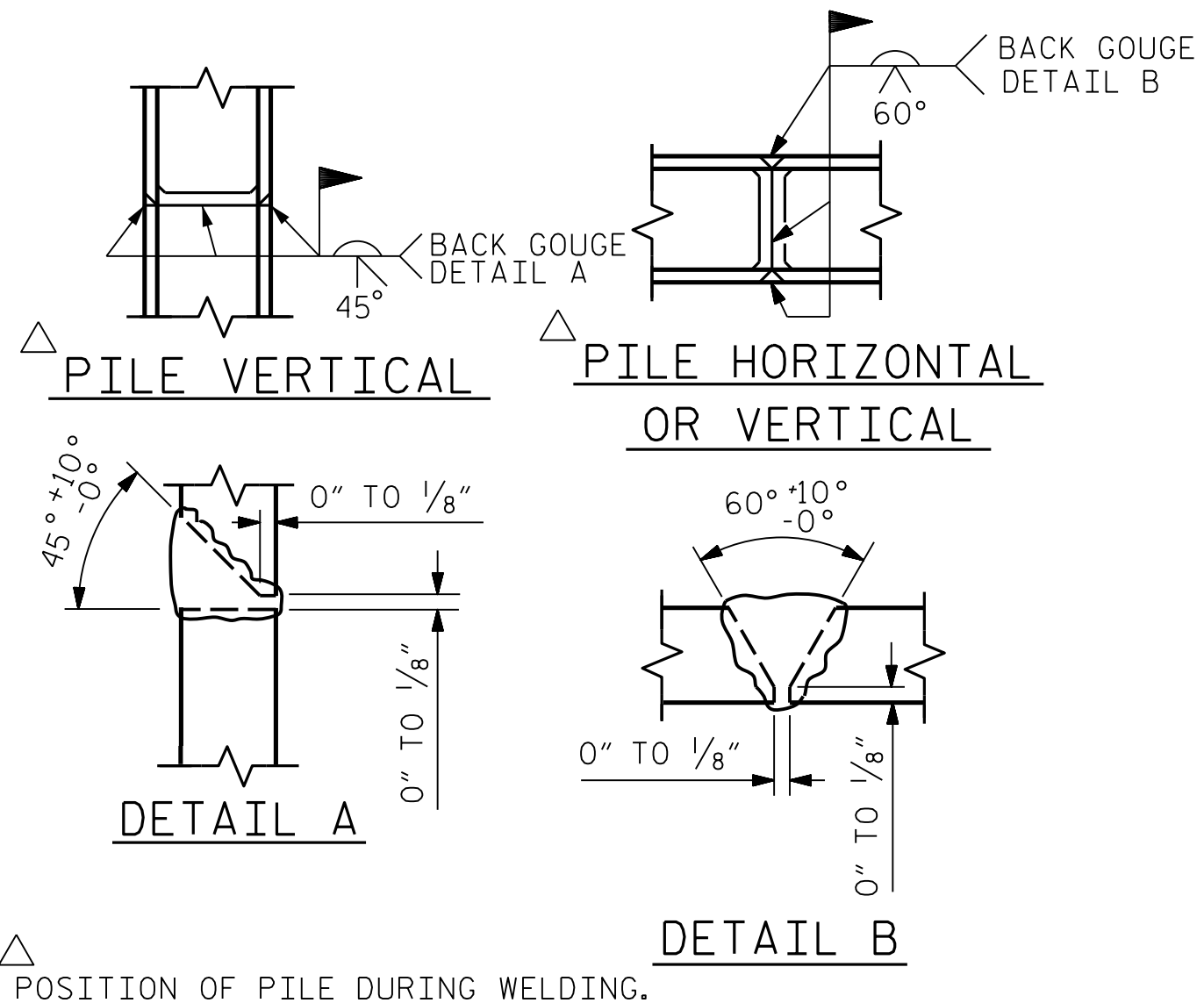


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

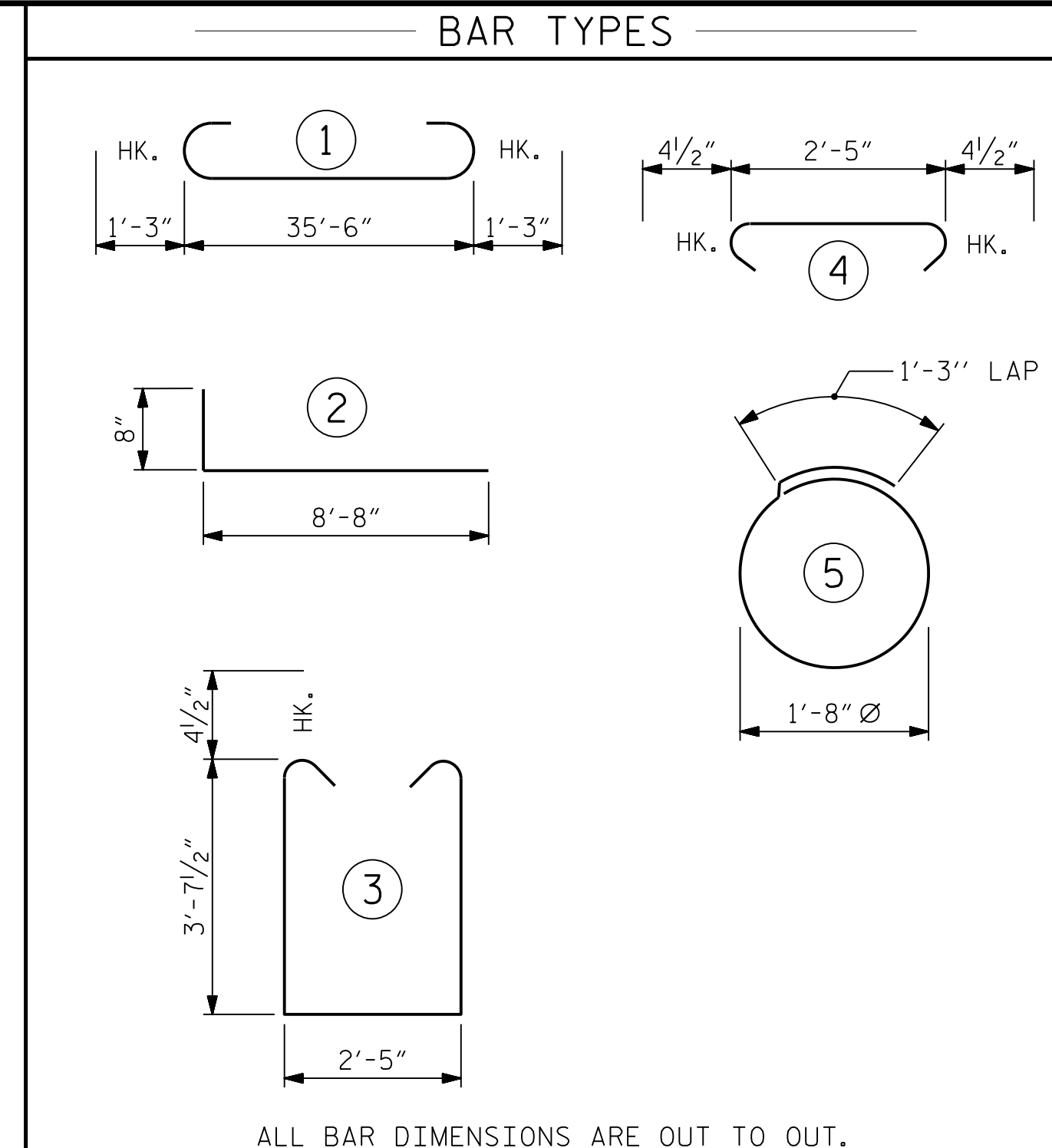
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

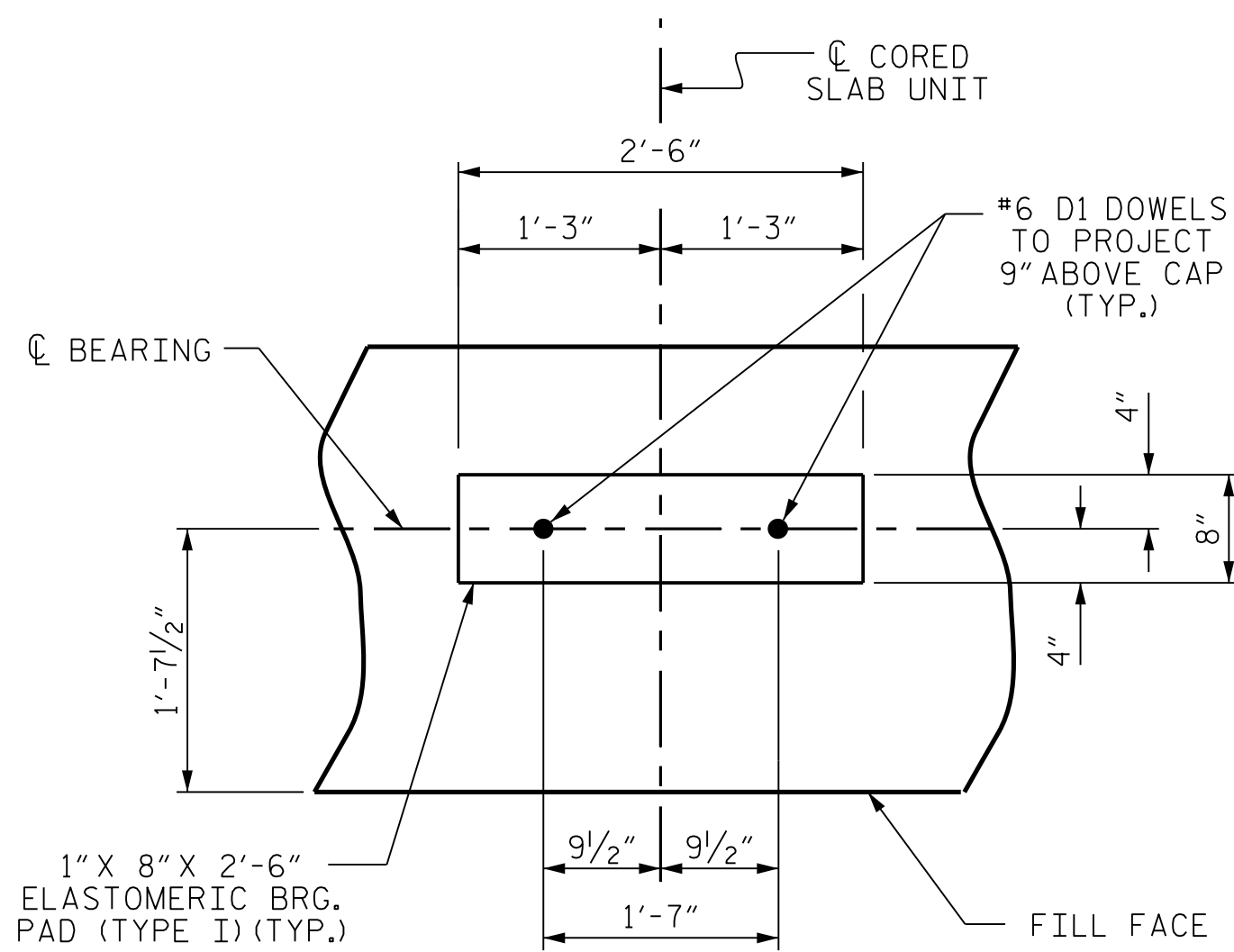
### TEMPORARY DRAINAGE AT END BENT



### PILE SPLICE DETAILS

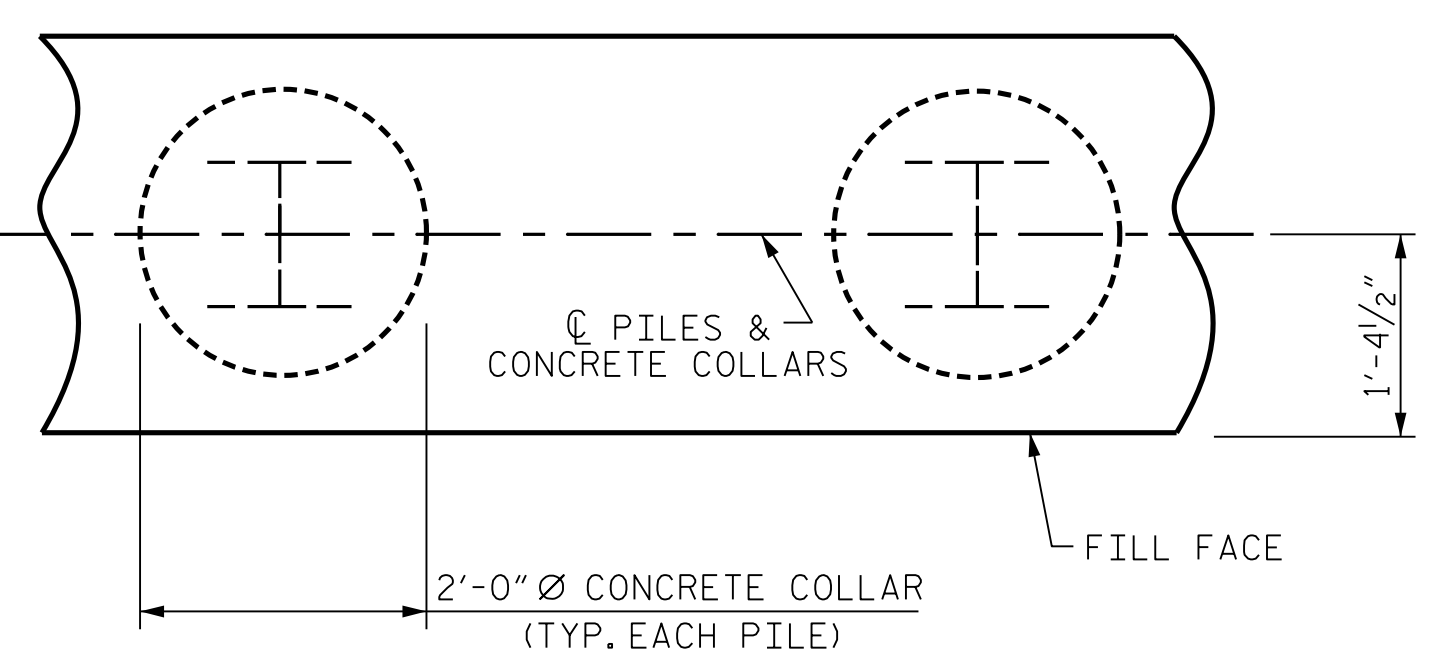


BILL OF MATERIAL FOR ONE END BENT					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	38'-0"	1034
B2	28	#4	STR	19'-1"	357
B3	9	#4	STR	2'-5"	15
D1	20	#6	STR	1'-6"	45
H1	40	#4	2	9'-4"	249
K1	16	#4	STR	2'-11"	31
S1	46	#4	3	10'-5"	320
S2	46	#4	4	3'-2"	97
S3	20	#4	5	6'-6"	87
V1	52	#4	STR	6'-2"	214
REINFORCING STEEL (FOR ONE END BENT)					2449 LBS.
CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)					
POUR #1	CAP, LOWER PART OF WINGS & COLLARS				18.1 C.Y.
POUR #2	UPPER PART OF WINGS				2.1 C.Y.
TOTAL CLASS A CONCRETE					20.2 C.Y.

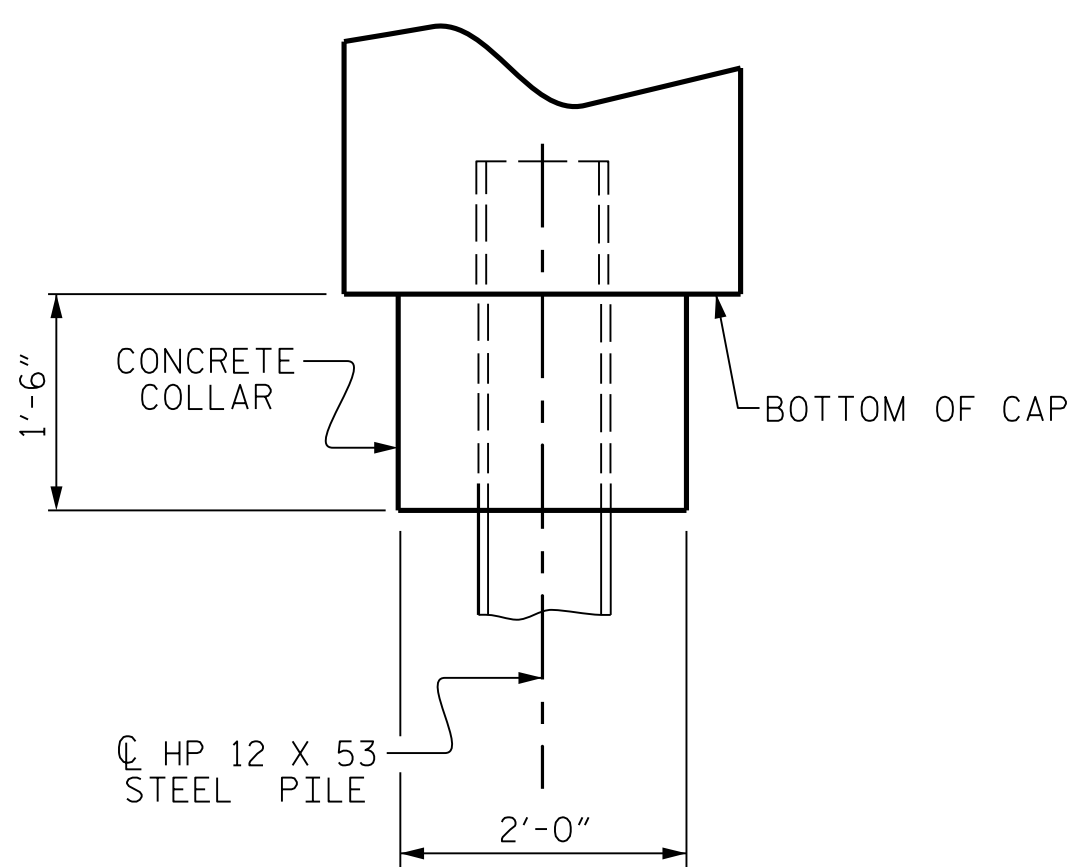


### DETAIL "A"

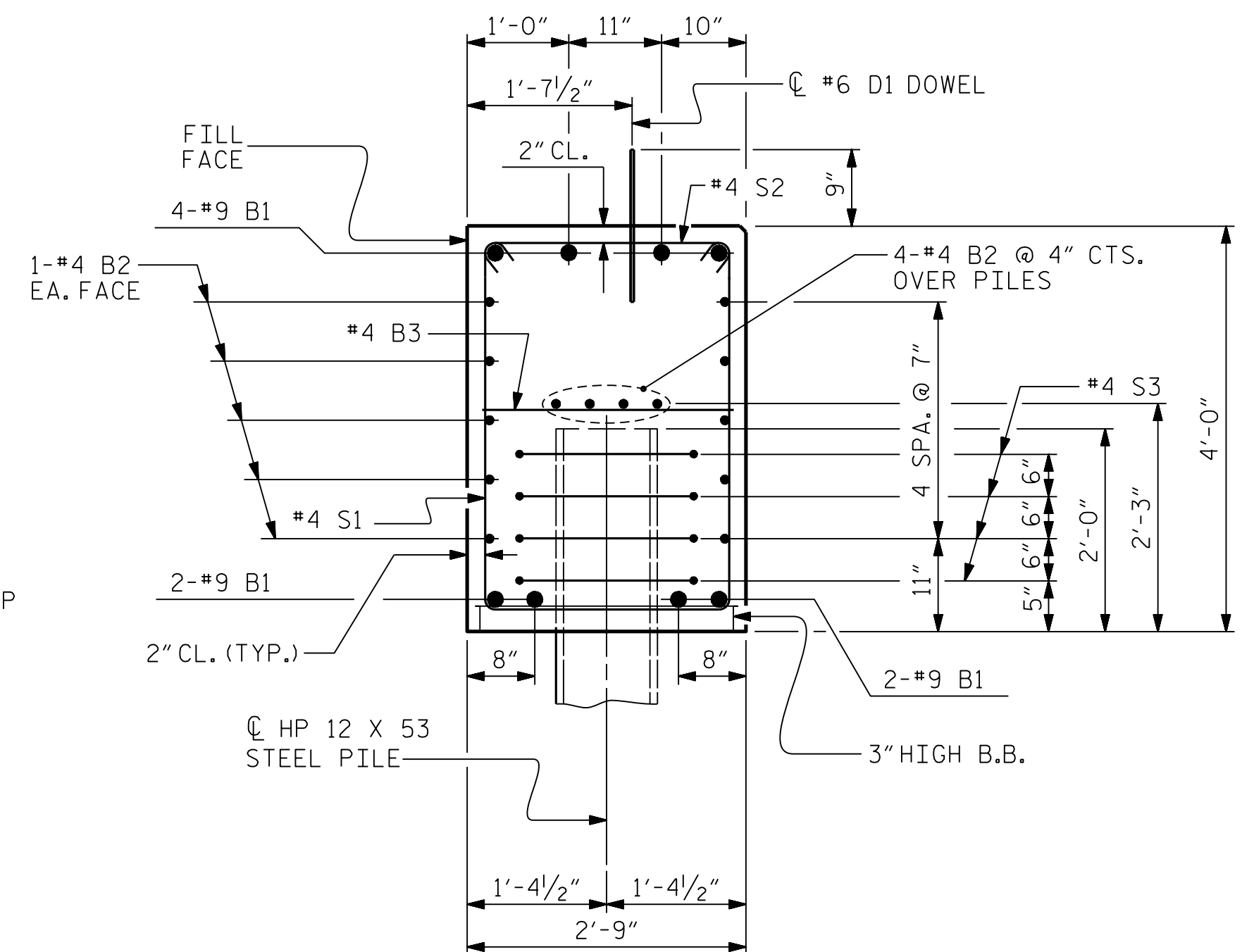
(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



### PLAN



### ELEVATION



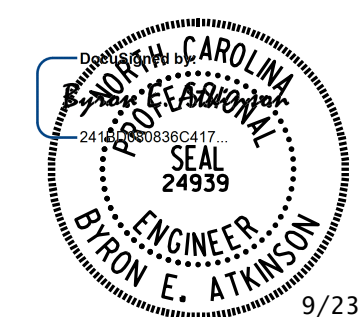
### SECTION A-A

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

PROJECT NO. BP8.R010  
MOORE COUNTY  
 STATION: 15+50.00 -L-

SHEET 4 OF 4

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



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

MI ENGINEERING  
 1011 SCHAUB DRIVE, SUITE 100  
 RALEIGH, NC 27606  
 (919) 851-6606  
 FIRM PE NUMBER: P-0671

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

SHEET NO. S-15  
 TOTAL SHEETS 21

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ASSEMBLED BY: B.E. LANNING	DATE: 08/2021
CHECKED BY: B.E. ATKINSON	DATE: 08/2021
DESIGN ENGINEER OF RECORD: B.E. ATKINSON	DATE: 09/2021
DRAWN BY: WJH 12/11	REV. 4/17 MAA/THC
CHECKED BY: AAC 12/11	



**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.

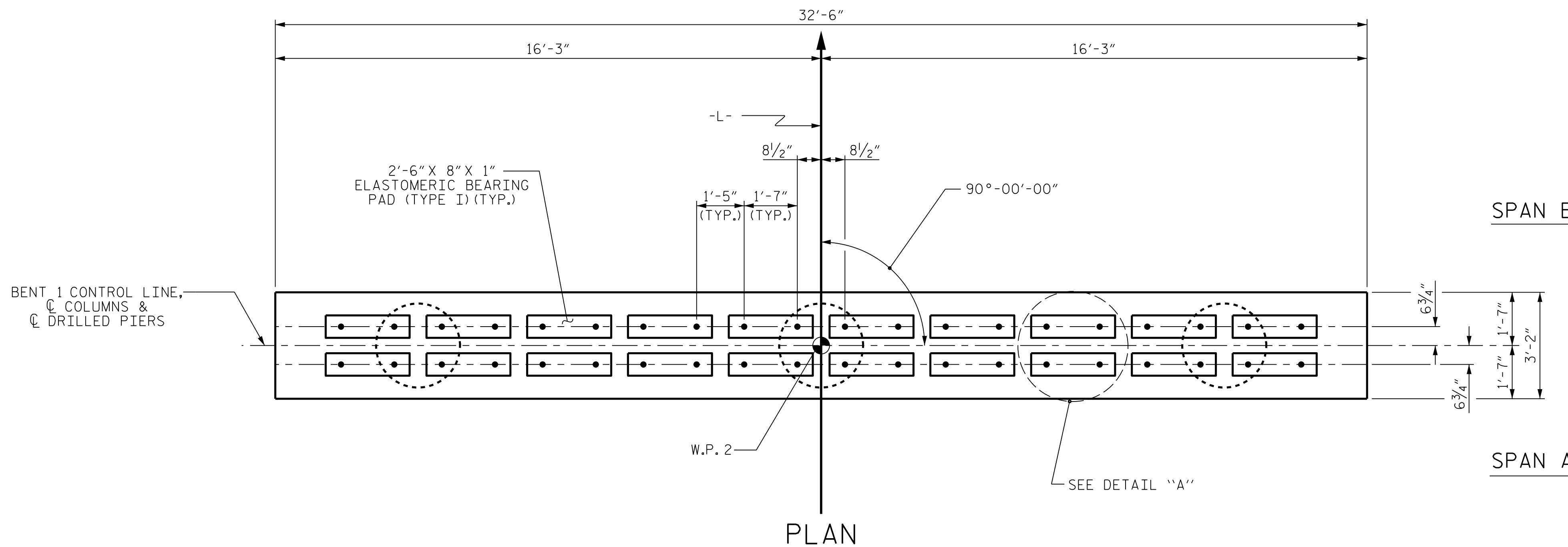
FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

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

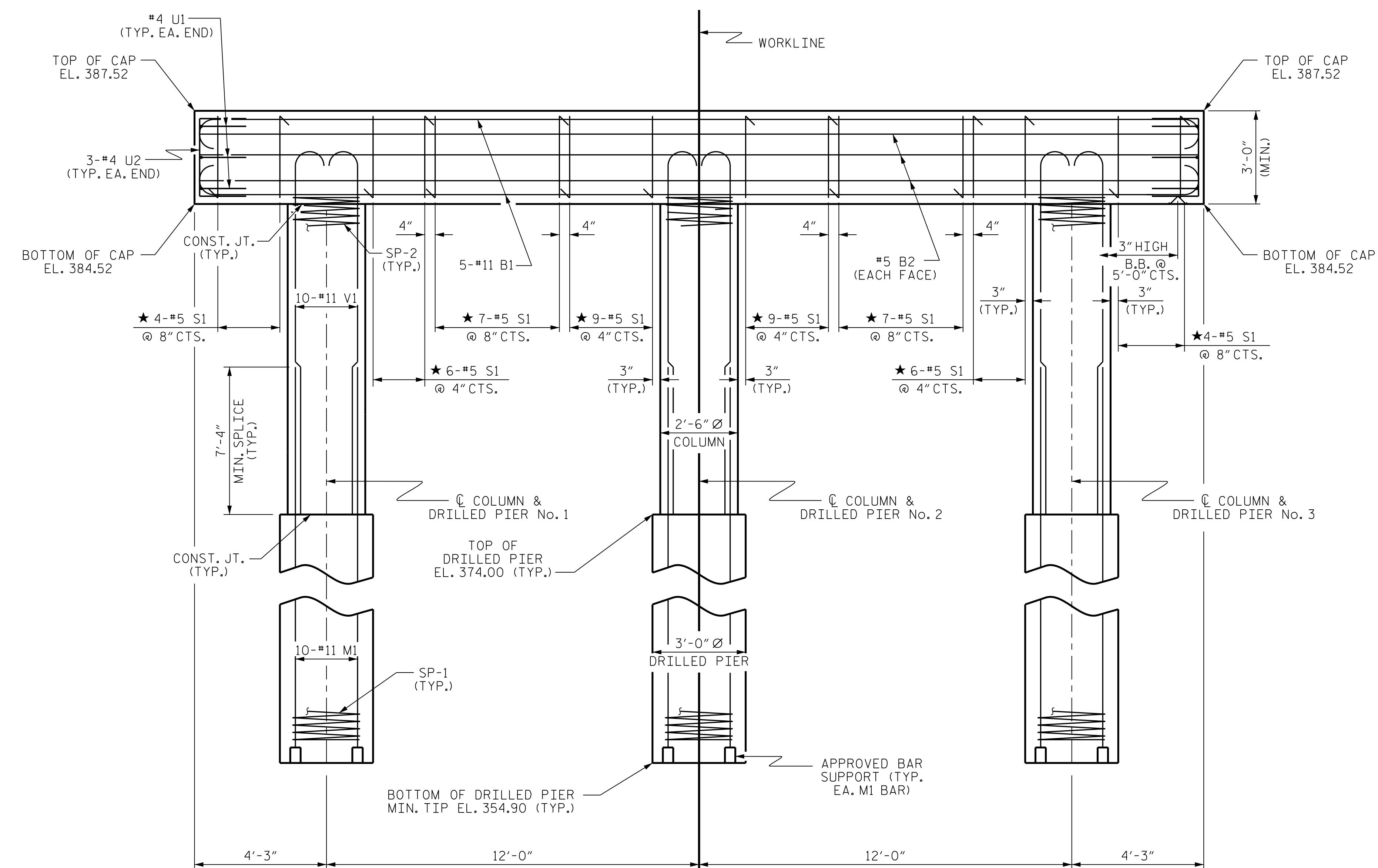
★ INVERT ALTERNATE STIRRUPS.

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.

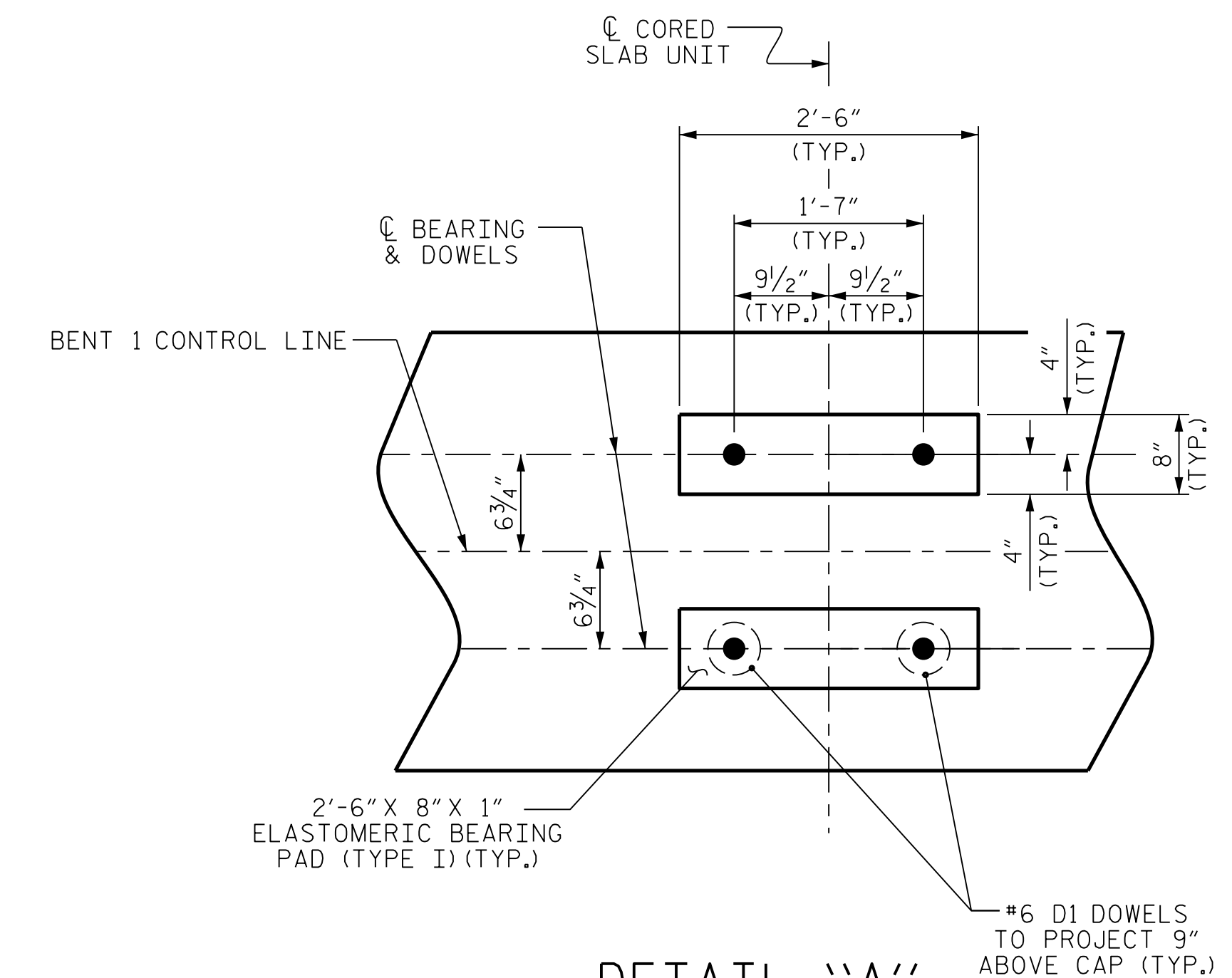
THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.



**PLAN**



**ELEVATION**

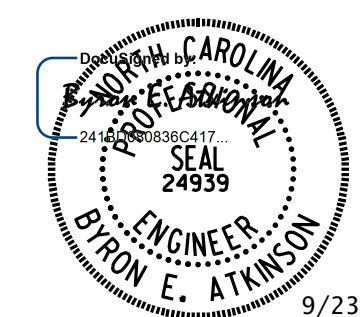


**DETAIL "A"**

(DIMENSIONS ARE TYPICAL EACH BEARING)

PROJECT NO. BP8.R010  
MOORE COUNTY  
 STATION: 15+50.00 -L-

SHEET 1 OF 2



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE  
 BENT No. 1**

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MI ENGINEERING  
 1011 SCHAUB DRIVE, SUITE 100  
 RALEIGH, NC 27606  
 (919) 851-6606  
 FIRM PE NUMBER: P-0671

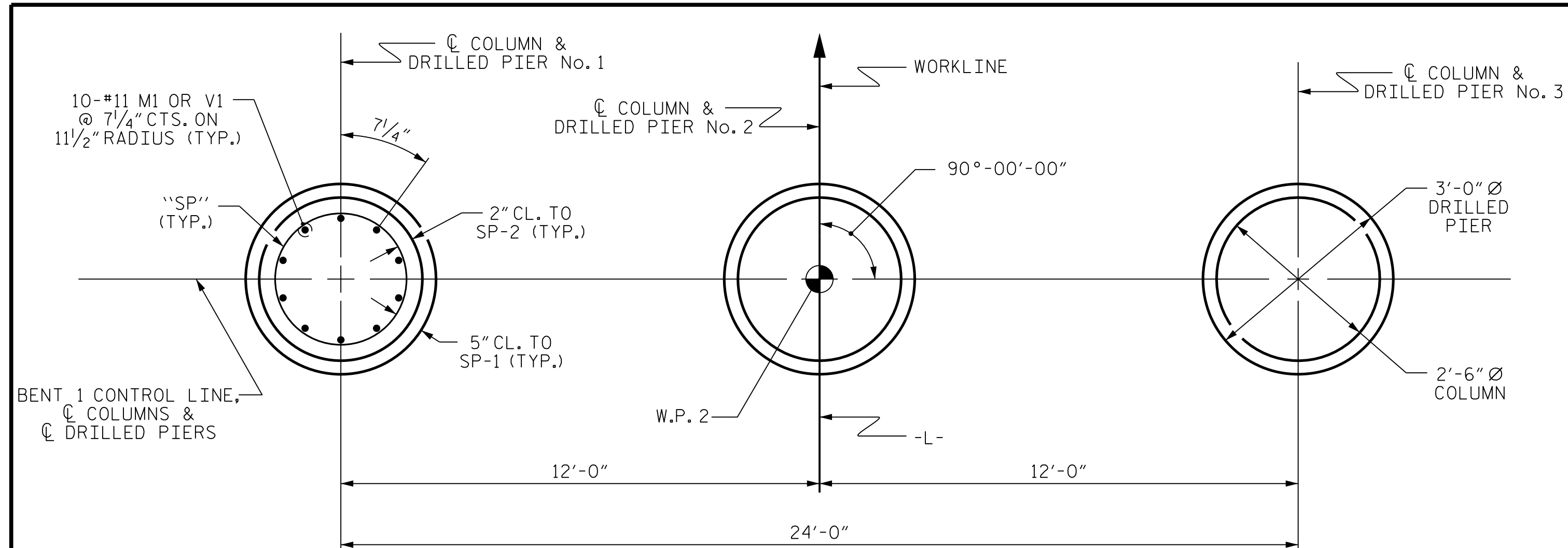
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			21

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

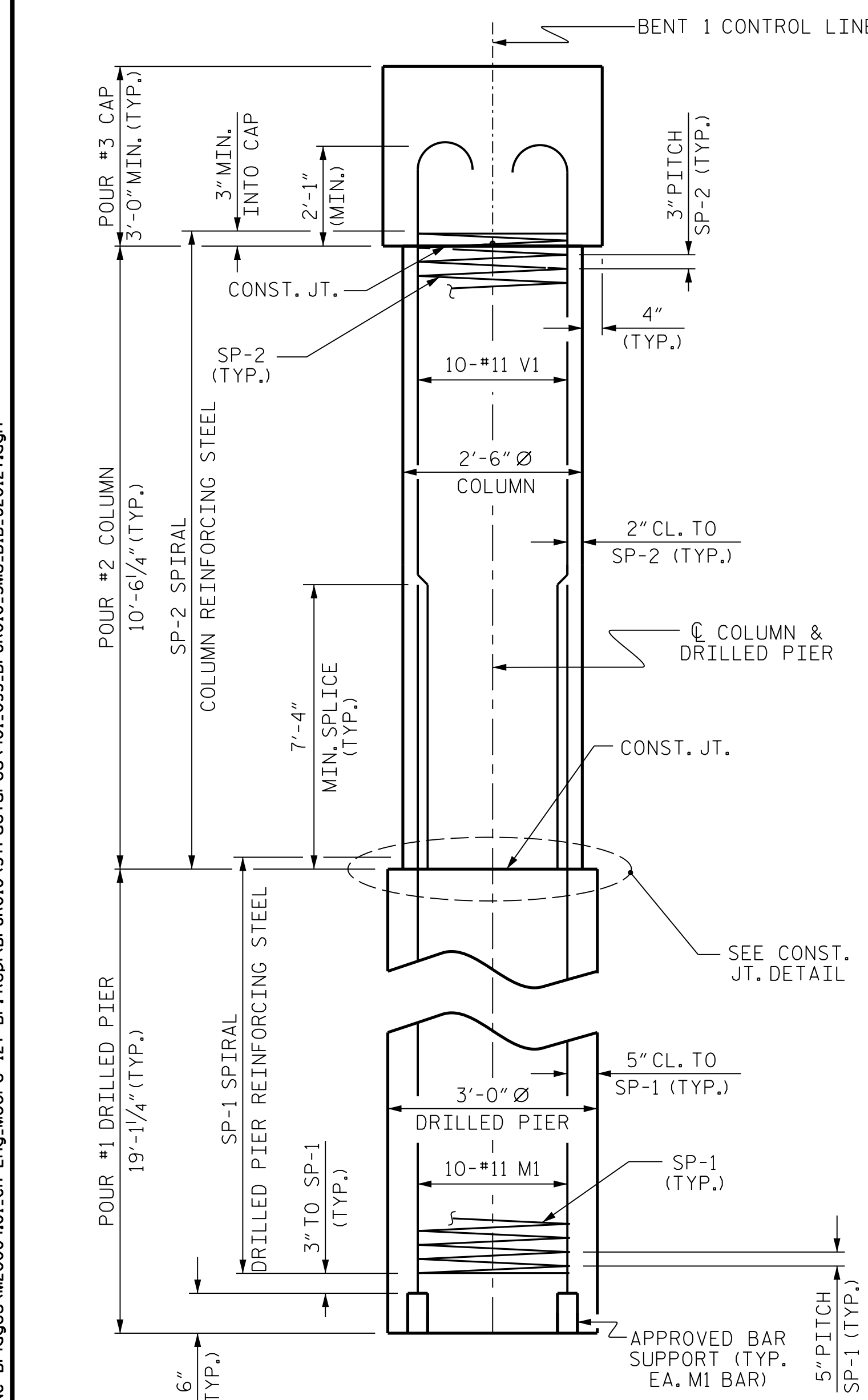
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ASSEMBLED BY : B.E. LANNING	DATE: 09/2021
CHECKED BY : B.E. ATKINSON	DATE: 09/2021
DESIGN ENGINEER OF RECORD: B.E. ATKINSON	DATE: 09/2021
DRAWN BY : DGE 4/10	REV. 11/14 MAA/TMG
CHECKED BY : MKT 4/10	

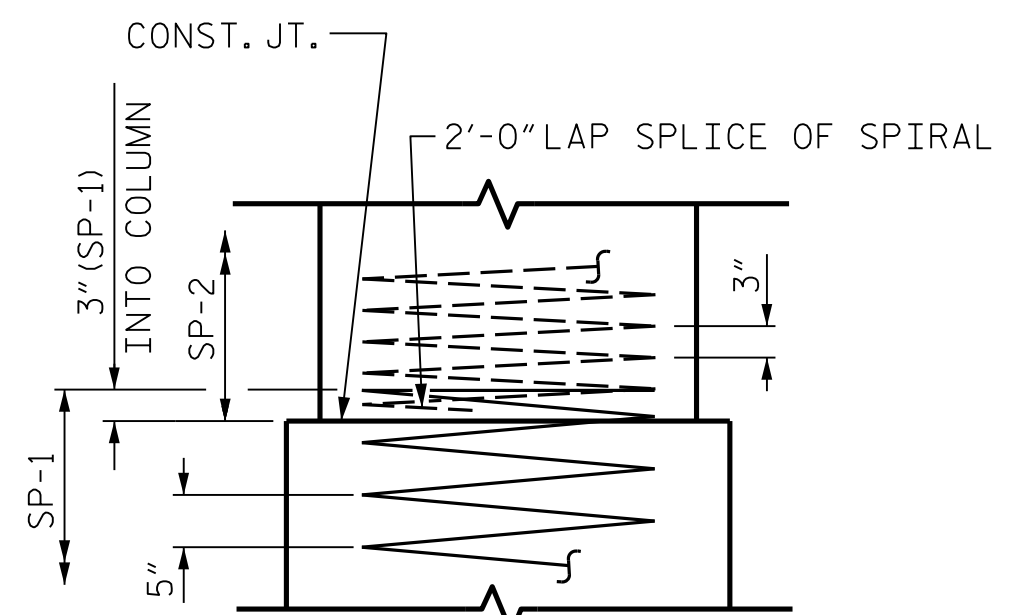
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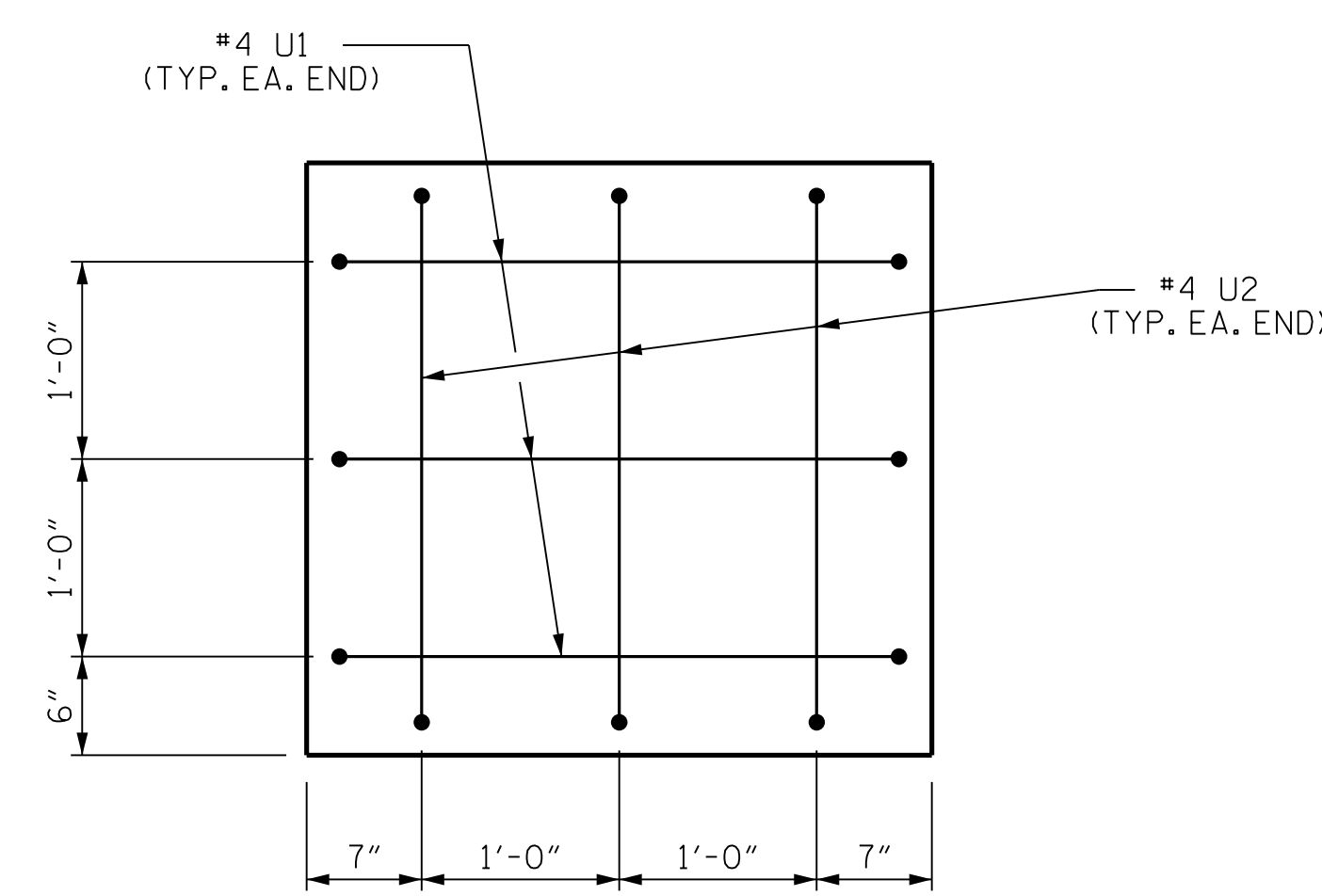
PLAN OF DRILLED PIERS & COLUMNS



END ELEVATION

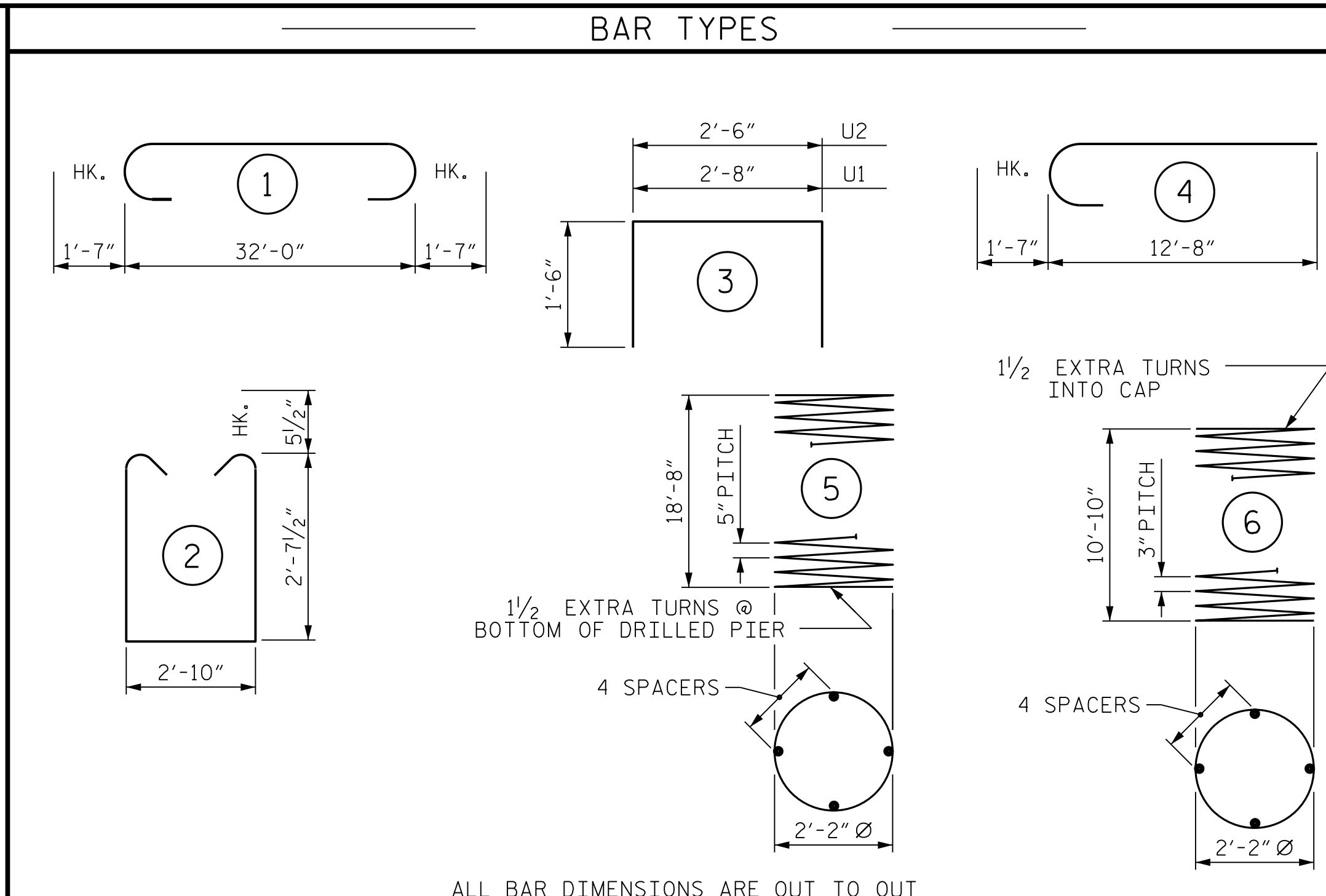


CONSTRUCTION JOINT DETAIL

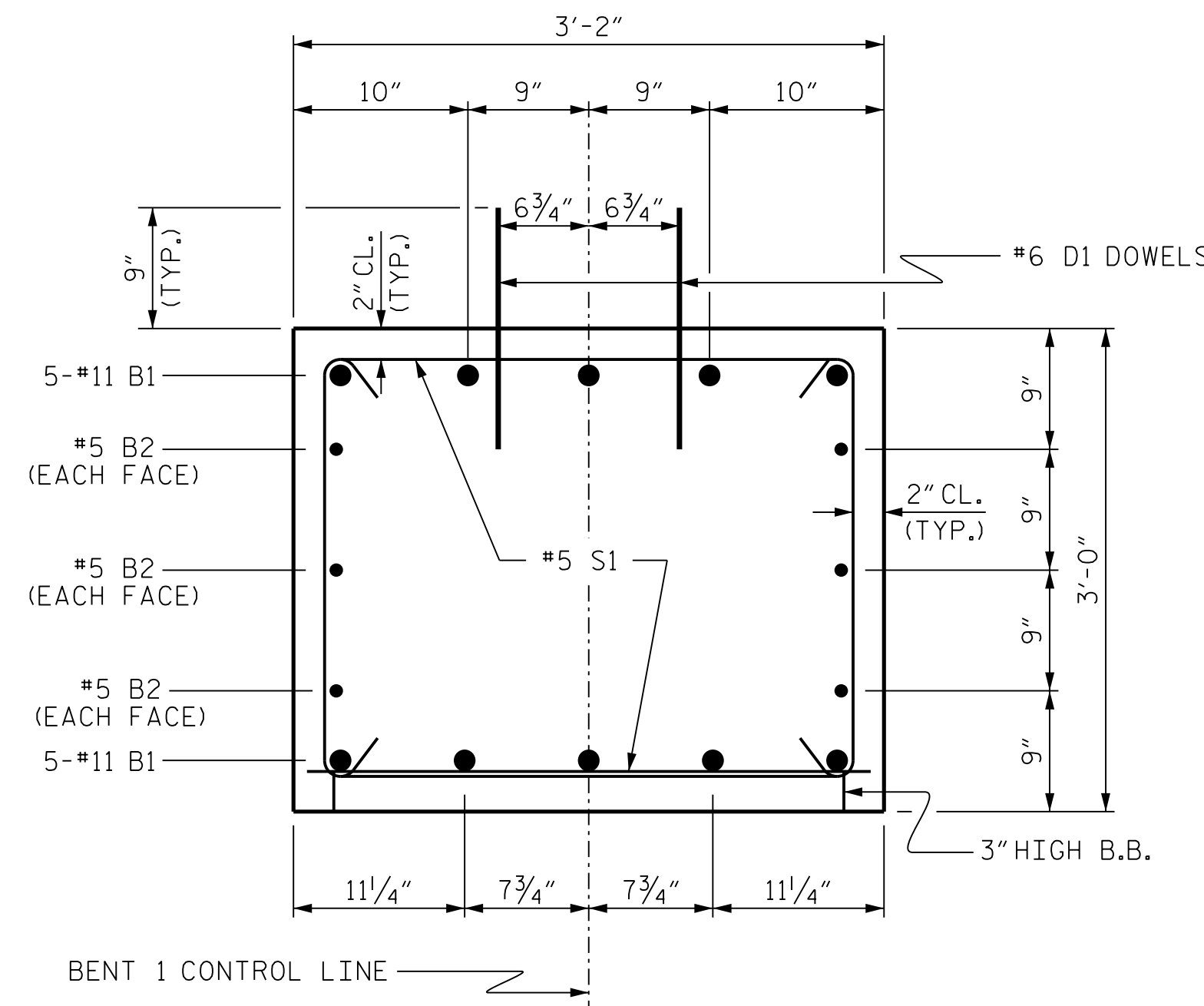


END OF CAP VIEW

(TYPICAL BOTH ENDS)



ALL BAR DIMENSIONS ARE OUT TO OUT



SECTION THRU CAP

BILL OF MATERIAL

BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11	1	35'-2"	1,868
B2	6	#5	STR	32'-2"	201
D1	40	#6	STR	1'-6"	90
M1	30	#11	STR	29'-0"	4,622
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	14'-3"	2,271

REINFORCING STEEL (FOR ONE BENT) 9,585 LBS.

SP-1 3 \* 5 308'-2" 964  
SP-2 3 \*\* 6 299'-4" 600

SPIRAL COLUMN REINFORCING STEEL (FOR ONE BENT) 1,564 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)	5.8 C.Y.
POUR #3 (CAP)	11.4 C.Y.
<b>TOTAL CLASS A CONCRETE</b>	<b>17.2 C.Y.</b>

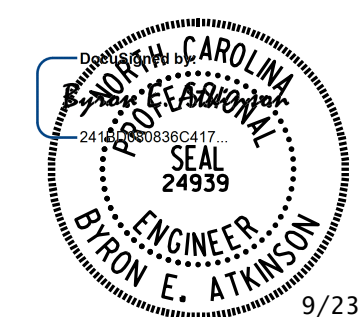
DRILLED PIERS: (FOR ONE BENT)  
DRILLED PIER CONCRETE  
POUR #1 (DRILLED PIERS) 15.0 C.Y.

PROJECT NO. BP8.R010  
MOORE COUNTY  
STATION: 15+50.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
BENT No. 1



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

MI ENGINEERING  
1011 SCHAUB DRIVE, SUITE 100  
RALEIGH, NC 27606  
(919) 851-6606  
FIRM PE NUMBER: P-0671

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17	
1			3			TOTAL SHEETS 21	
2			4				

STD. NO. DP\_BT\_30\_90S\_<50'

ASSEMBLED BY: B.E. LANNING	DATE: 09/2021
CHECKED BY: B.E. ATKINSON	DATE: 09/2021
DESIGN ENGINEER OF RECORD: B.E. ATKINSON	DATE: 09/2021
DRAWN BY: DGE 3/10	REV. 11/14
CHECKED BY: MKT 3/10	MAA/TMG



**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.

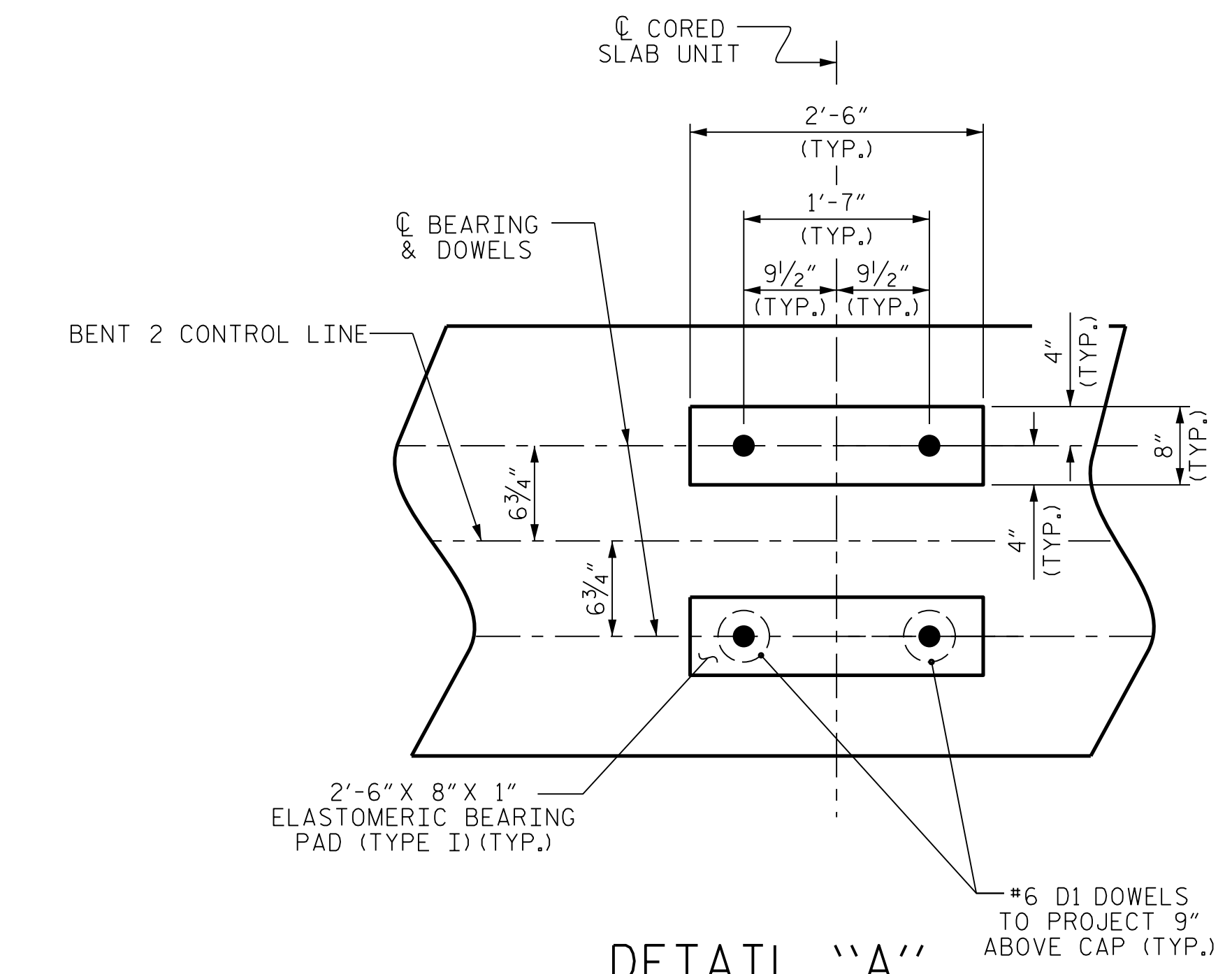
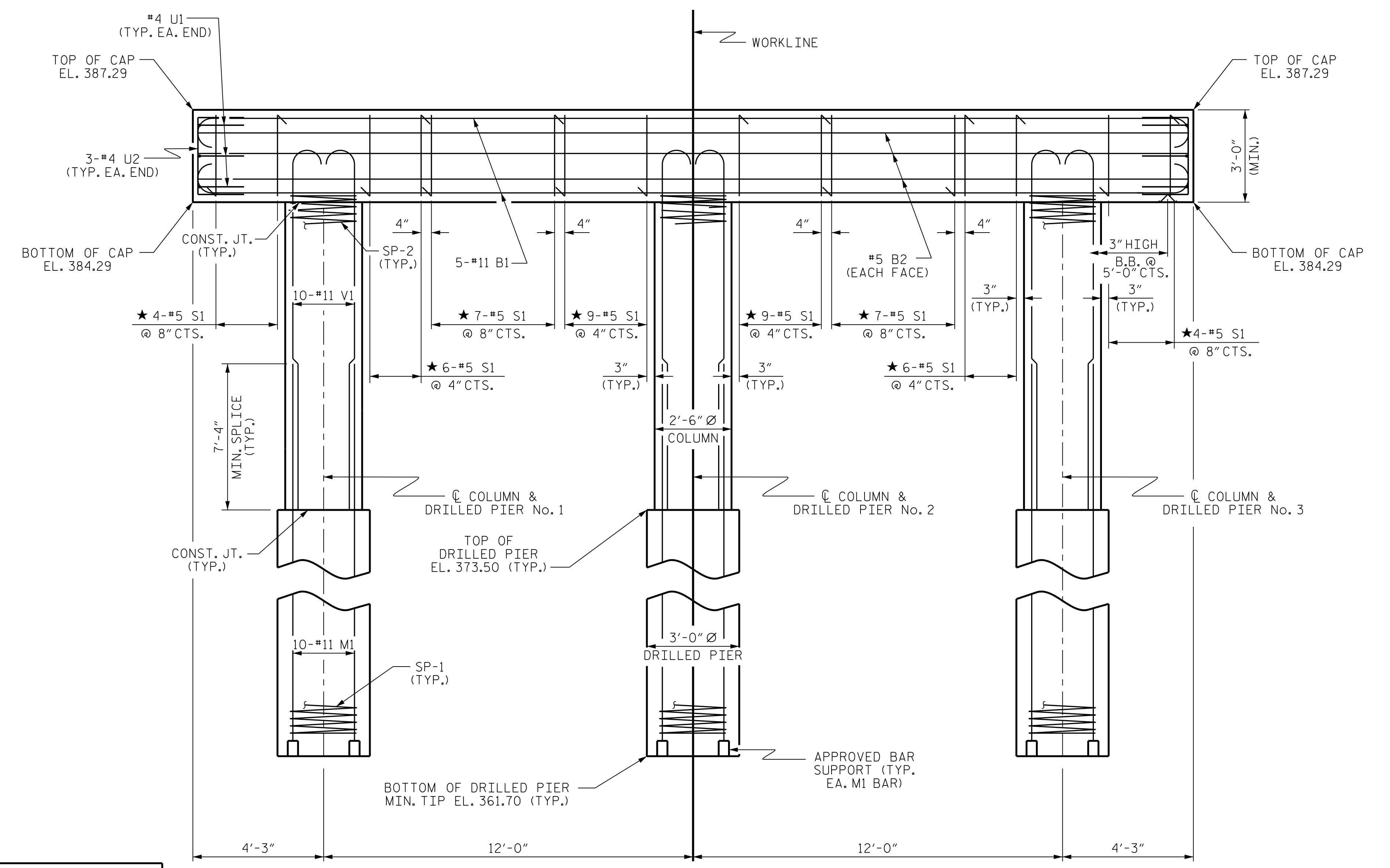
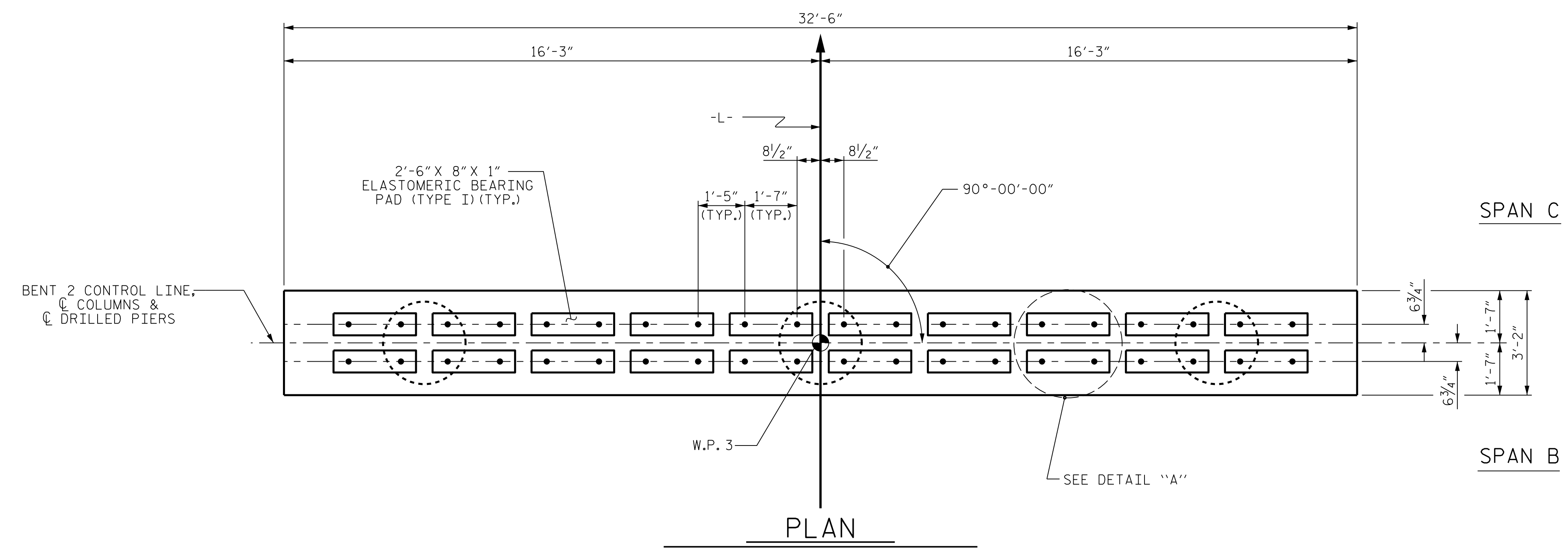
FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

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

★ INVERT ALTERNATE STIRRUPS.

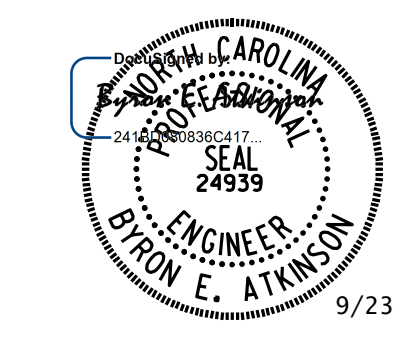
THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT ONE FOOT BELOW THE GROUND LINE.

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



PROJECT NO. BP8.R010  
MOORE COUNTY  
 STATION: 15+50.00 -L-

SHEET 1 OF 2



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 BENT No. 2

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MI ENGINEERING  
 1011 SCHAUB DRIVE, SUITE 100  
 RALEIGH, NC 27606  
 (919) 851-6606  
 FIRM PE NUMBER: P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			21

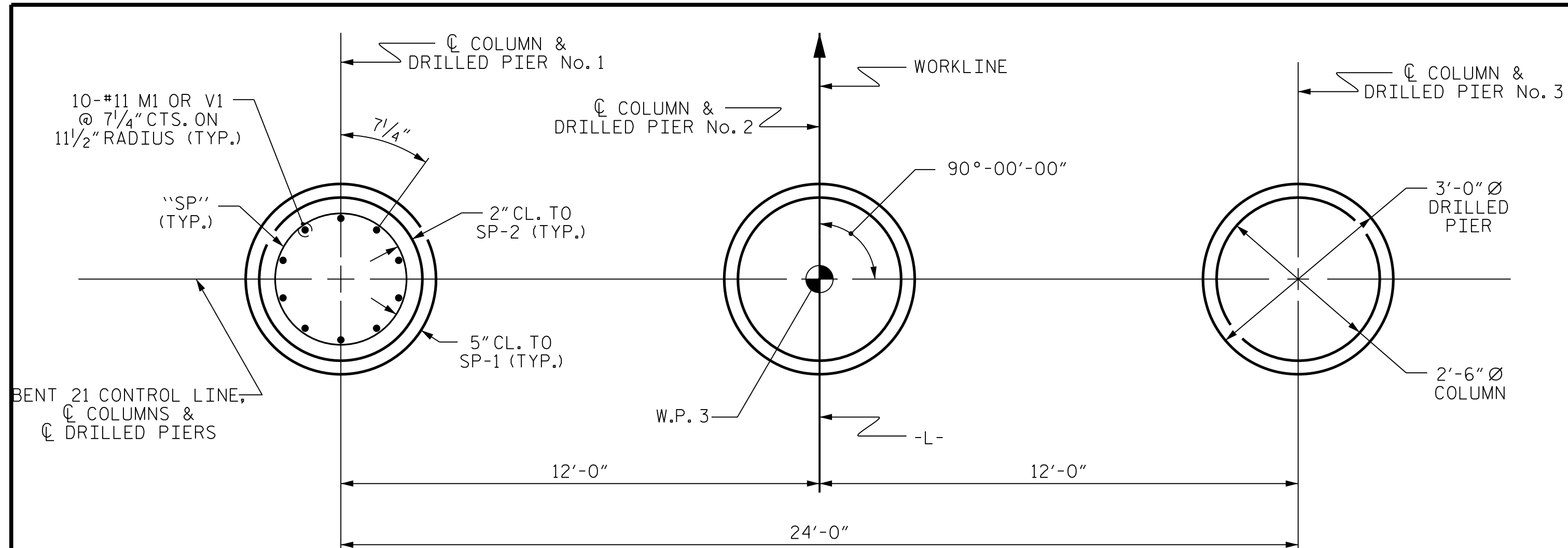
9/23/2021 11:15:39 AM User: blanning  
 Filename: N:\NC Bridges\W20004.01.CH.Eng\_Moore 127 Br. Rep\BP8R010\Structures\401.035.BP8R010.SMU.B2A.620127.dgn

ASSEMBLED BY: B.E. LANNING	DATE: 09/2021
CHECKED BY: B.E. ATKINSON	DATE: 09/2021
DESIGN ENGINEER OF RECORD: B.E. ATKINSON	DATE: 09/2021
DRAWN BY: DGE 4/10	REV. 11/14 MAA/TMG
CHECKED BY: MKT 4/10	

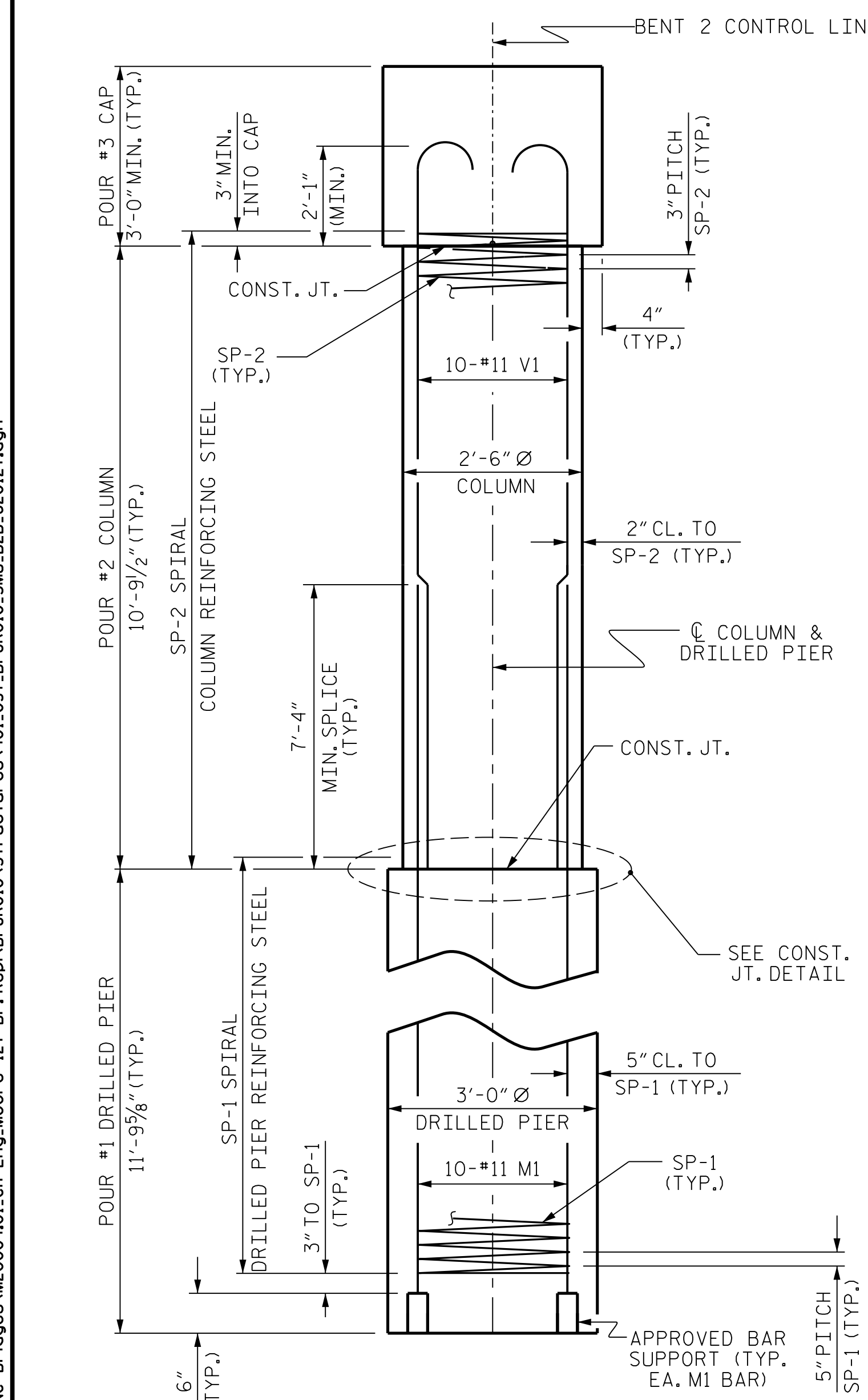
DIMENSIONS & REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER UNLESS OTHERWISE NOTED.



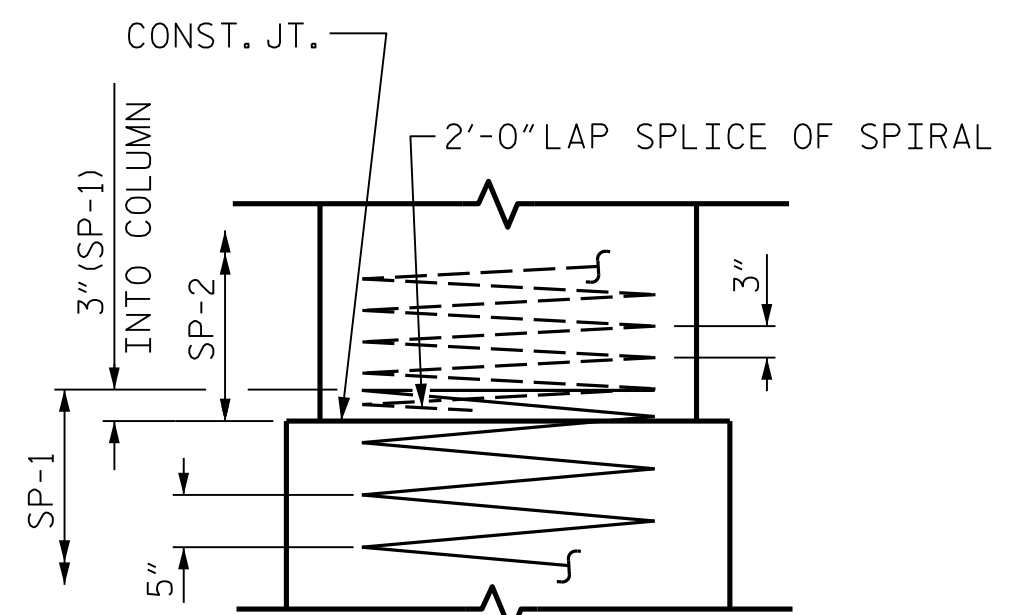
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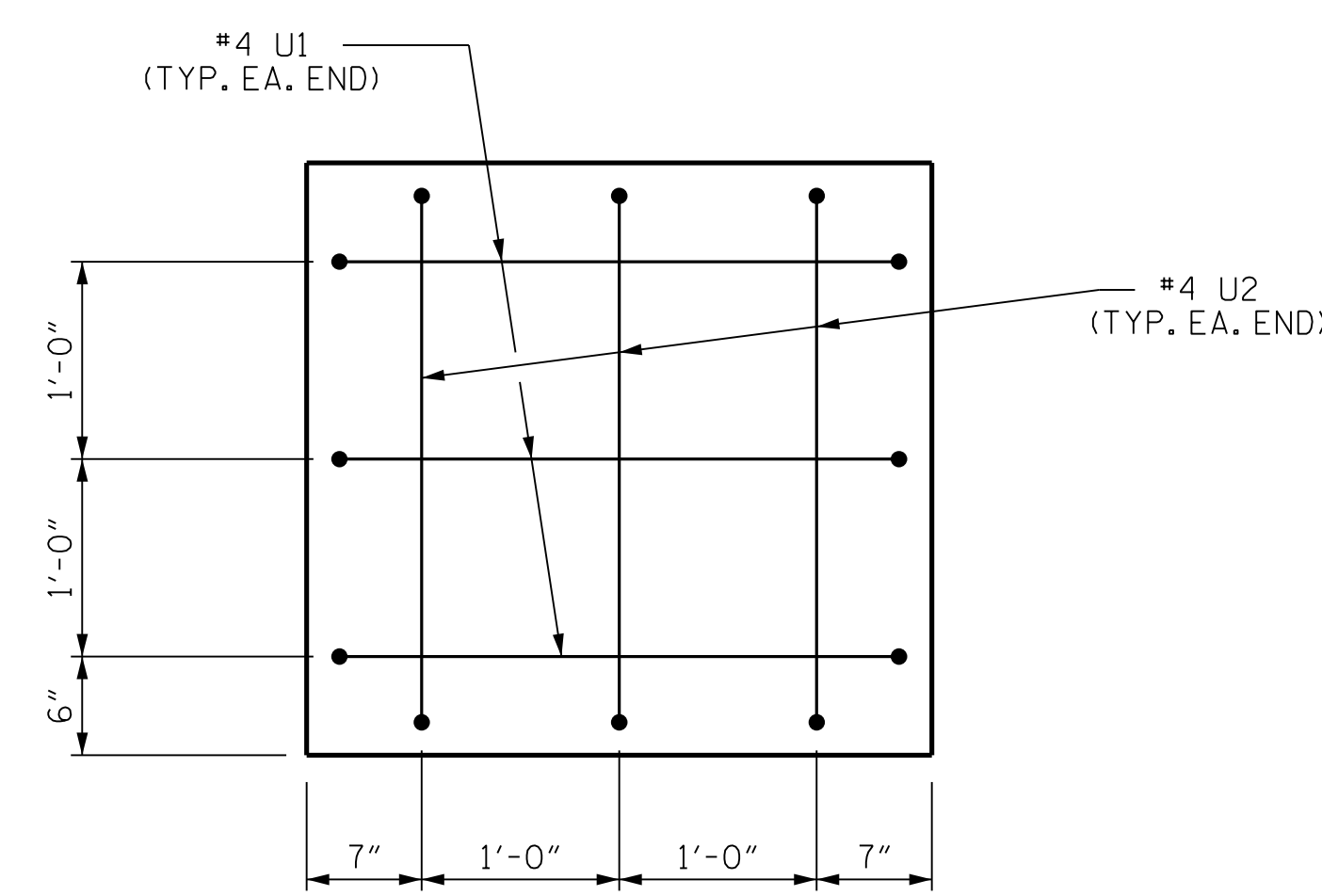
PLAN OF DRILLED PIERS & COLUMNS



END ELEVATION

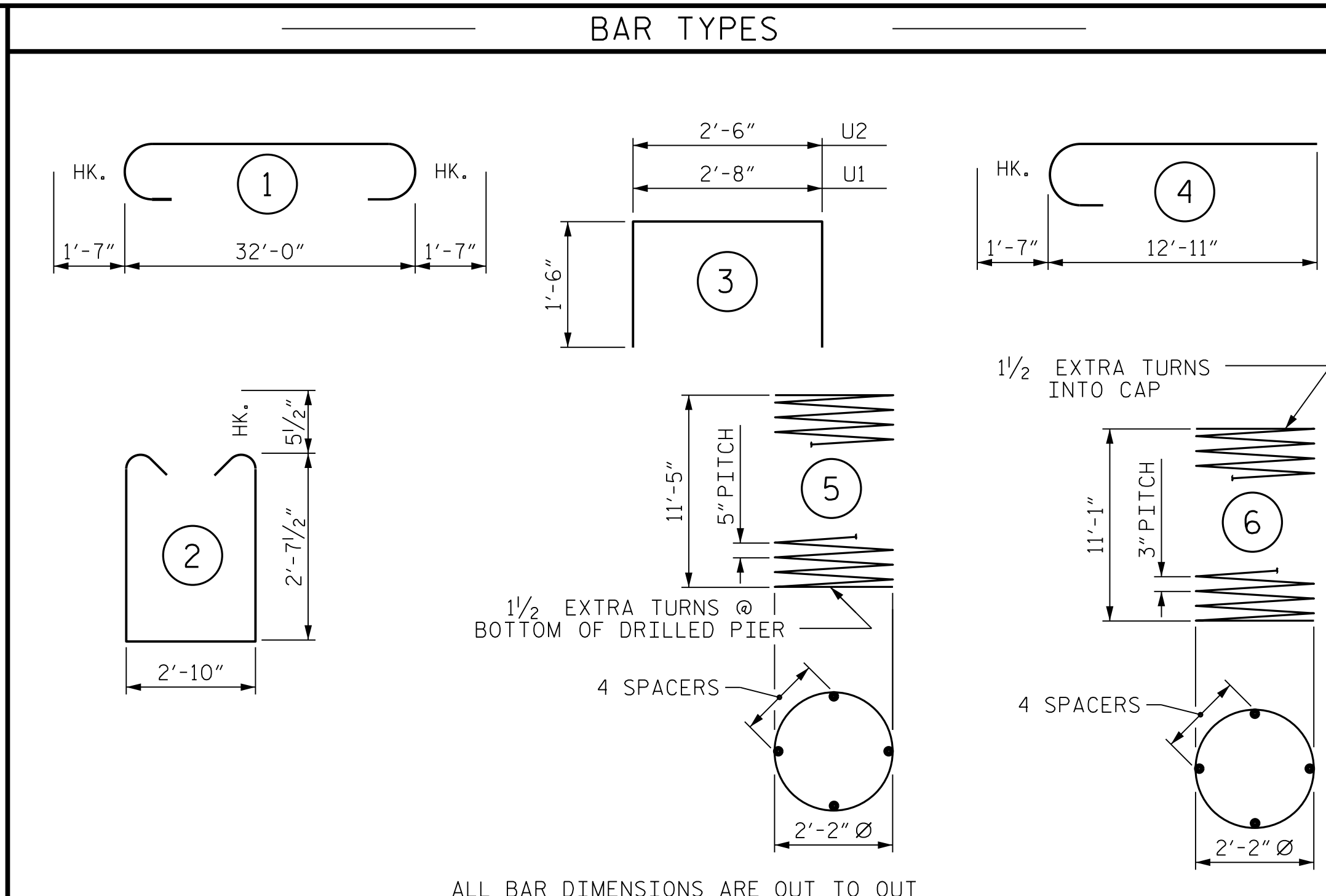


CONSTRUCTION JOINT DETAIL

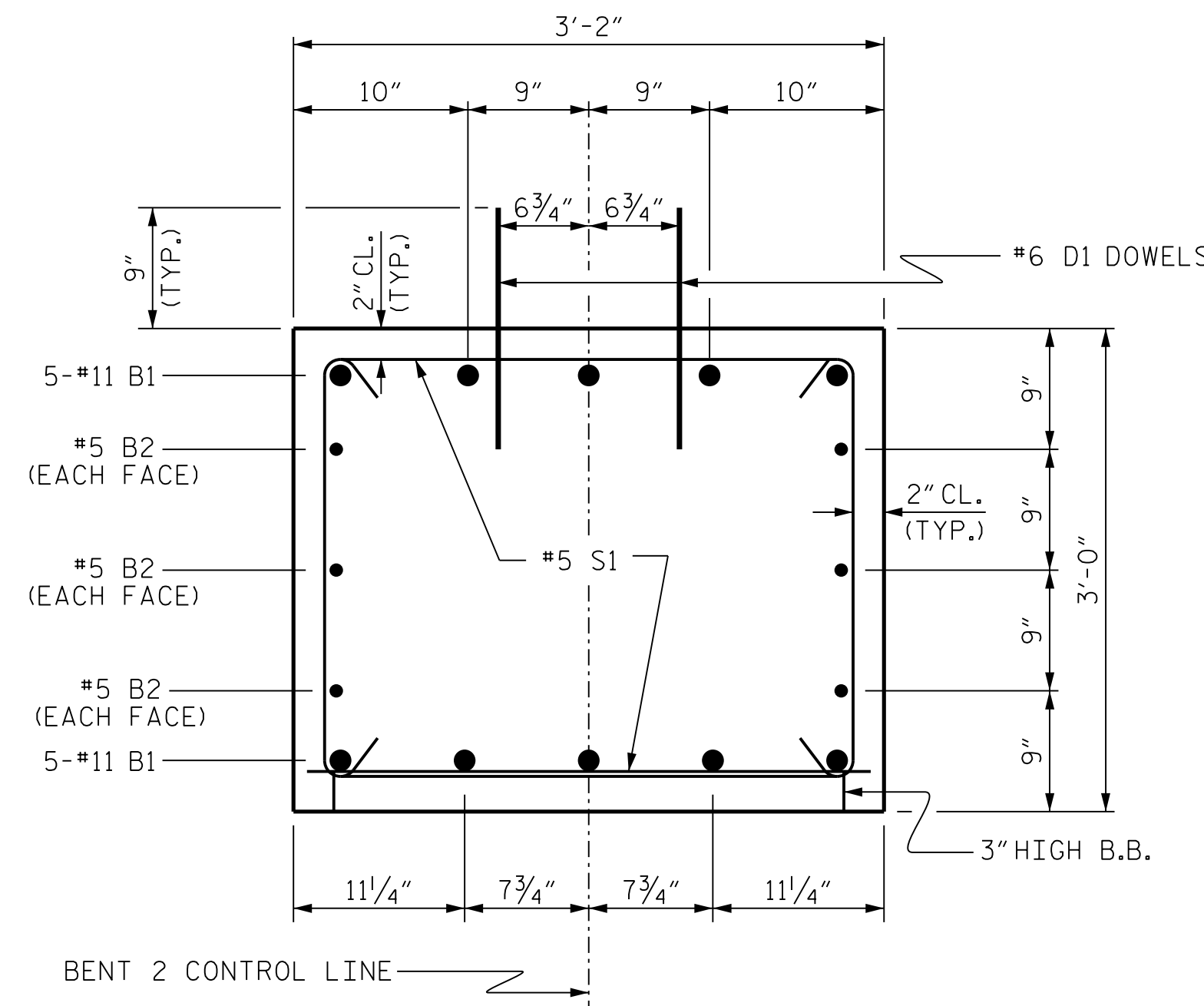


END OF CAP VIEW

(TYPICAL BOTH ENDS)



ALL BAR DIMENSIONS ARE OUT TO OUT



SECTION THRU CAP

BILL OF MATERIAL

BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11	1	35'-2"	1,868
B2	6	#5	STR	32'-2"	201
D1	40	#6	STR	1'-6"	90
M1	30	#11	STR	21'-9"	3,467
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	14'-6"	2,311

REINFORCING STEEL (FOR ONE BENT) 8,470 LBS.

SP-1	3	*	5	192'-4"	602
SP-2	3	**	6	306'-0"	613

SPIRAL COLUMN REINFORCING STEEL (FOR ONE BENT) 1,215 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)	5.9 C.Y.
POUR #3 (CAP)	11.4 C.Y.
<b>TOTAL CLASS A CONCRETE</b>	<b>17.3 C.Y.</b>

DRILLED PIERS: (FOR ONE BENT)

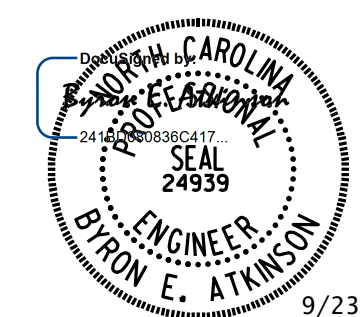
DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)	9.3 C.Y.
---	----------

PROJECT NO. BP8.R010  
MOORE COUNTY  
 STATION: 15+50.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 BENT No. 2



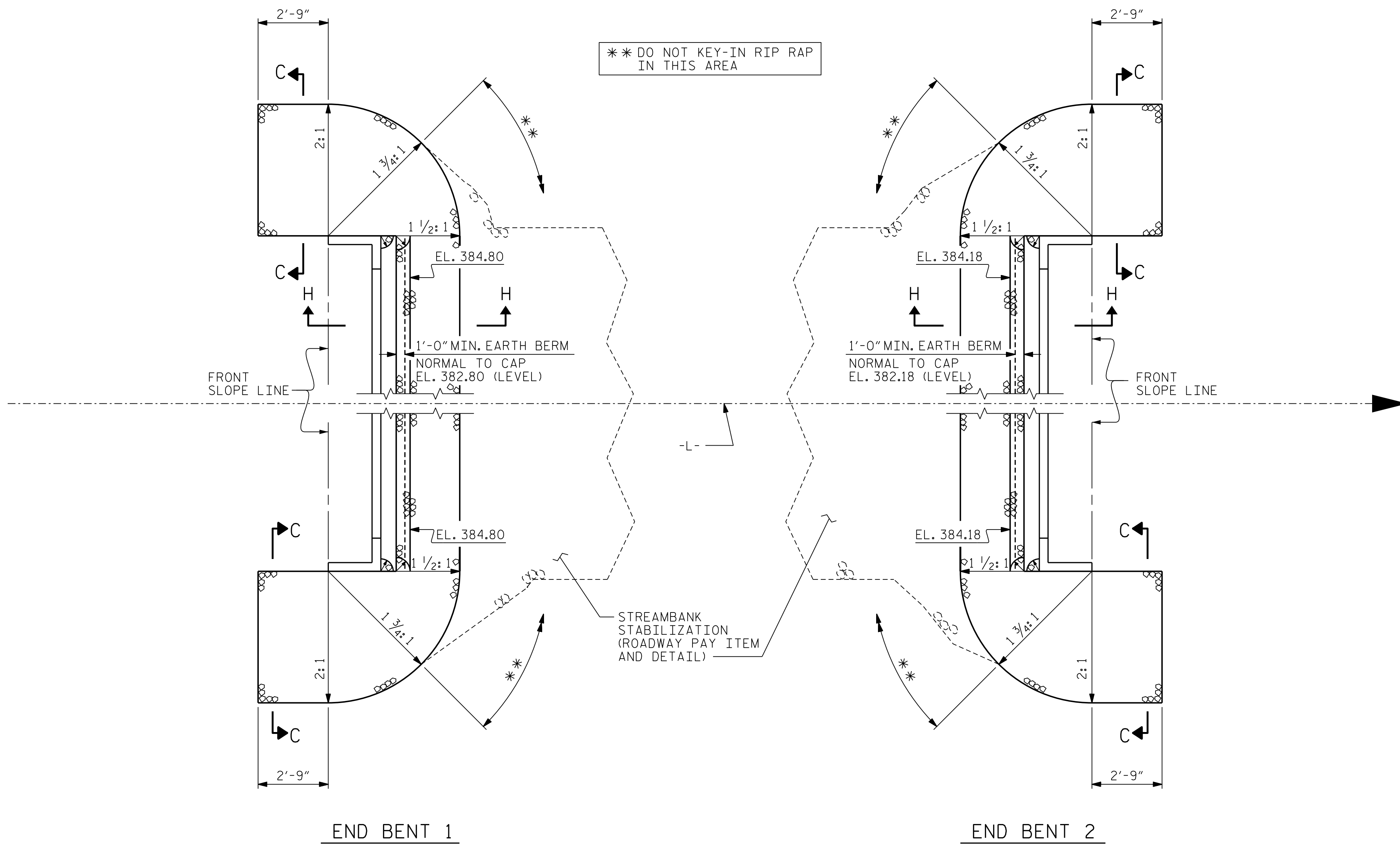
9/23/2021

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

MI ENGINEERING  
 1011 SCHAUB DRIVE, SUITE 100  
 RALEIGH, NC 27606  
 (919) 851-6606  
 FIRM PE NUMBER: P-0671

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19	
1			3			TOTAL SHEETS 21	
2			4				

ASSEMBLED BY: B.E. LANNING	DATE: 09/2021
CHECKED BY: B.E. ATKINSON	DATE: 09/2021
DESIGN ENGINEER OF RECORD: B.E. ATKINSON	DATE: 09/2021
DRAWN BY: DGE 3/10	REV. 11/14
CHECKED BY: MKT 3/10	MAA/TMG



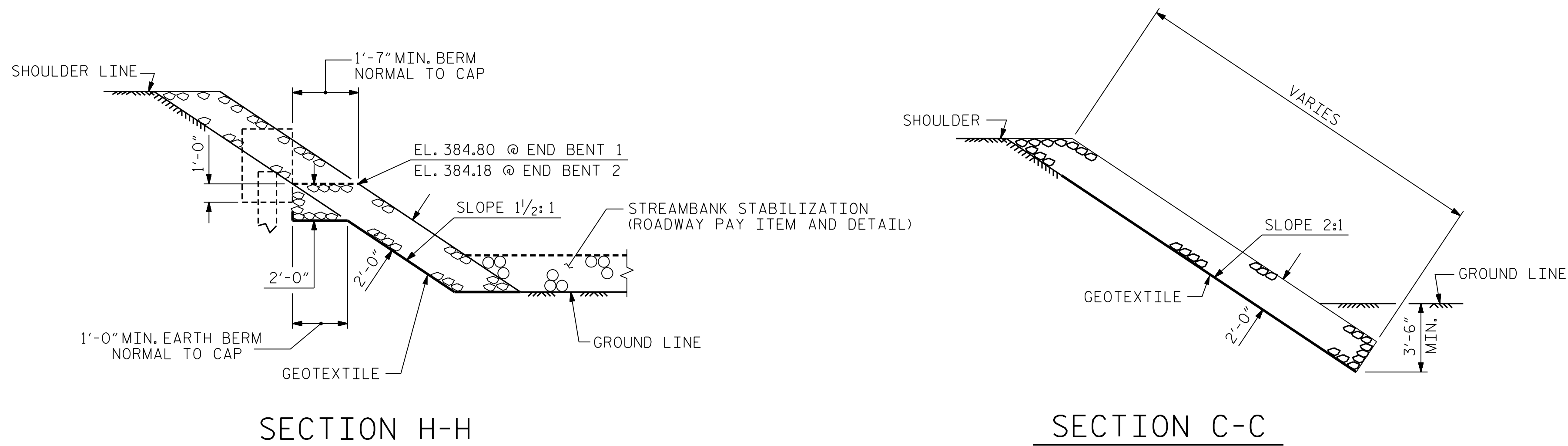
\*\* DO NOT KEY-IN RIP RAP IN THIS AREA

END BENT 1

END BENT 2

PLAN

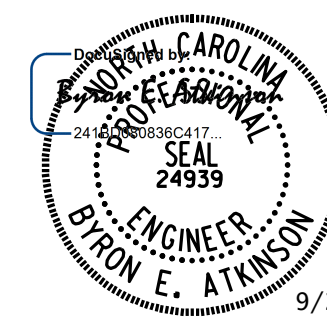
ESTIMATED QUANTITIES		
BRIDGE @ STA. 15+50.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	120	133
END BENT 2	108	120



SECTION H-H

SECTION C-C

PROJECT NO. BP8.R010  
MOORE COUNTY  
 STATION: 15+50.00 -L-



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

== RIP RAP DETAILS ==

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MI ENGINEERING  
 1011 SCHAUB DRIVE, SUITE 100  
 RALEIGH, NC 27606  
 (919) 851-6606  
 FIRM PE NUMBER : P-0671

REVISIONS					
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1			3		
2			4		

SHEET NO.  
**S-20**  
 TOTAL SHEETS  
 21

DRAWN BY : B.E. LANNING DATE : 08/2021  
 CHECKED BY : B.E. ATKINSON DATE : 08/2021  
 DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 09/2021

9/23/2021 11:15:41 AM User: blanning  
 Filename: N:\NC Bridges\20004.01.Ch.Eng.Moore 127 Br. Rep\BP8R010\Structures\401.039.BP8R010.SMU.RRI.620127.dgn



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

**NOTES**

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4" Ø DRAINAGE PIPE, AND SELECT MATERIAL BACKFILL, SEE ROADWAY PLANS.

GEOTEXTILE SHALL BE TYPE I IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

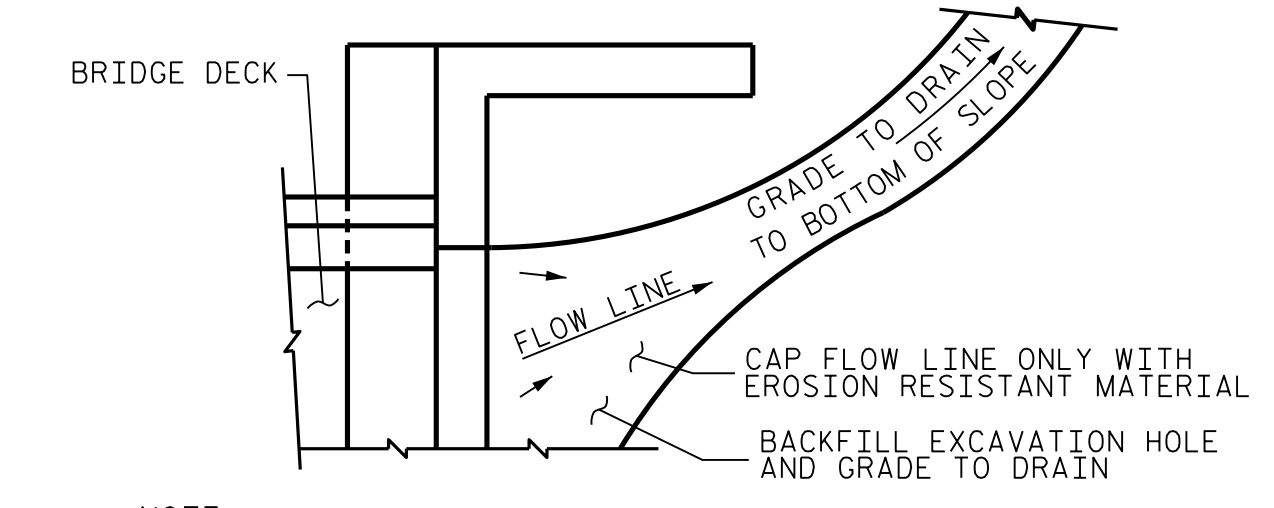
SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

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.

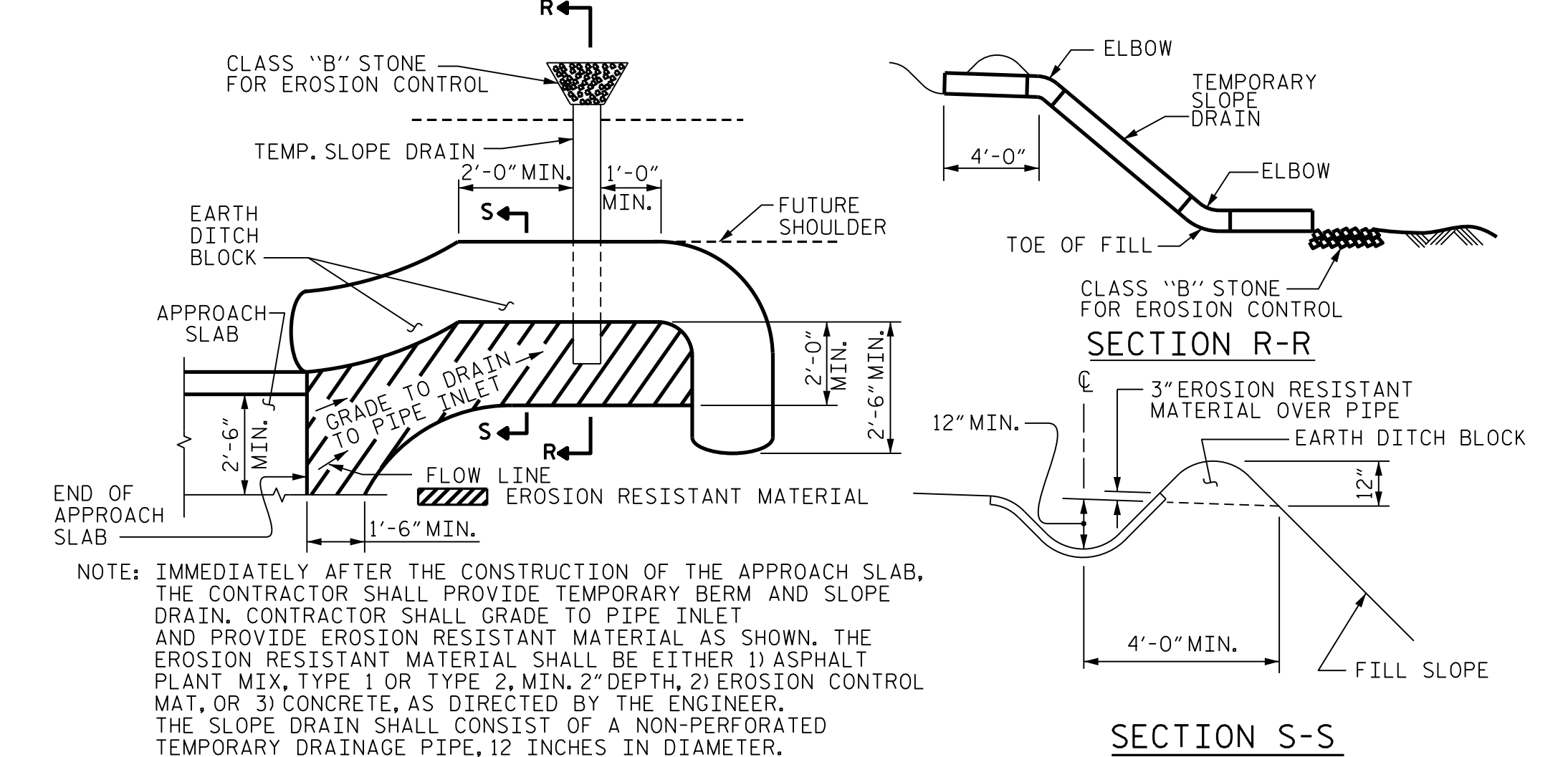
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED, SEE ROADWAY PLANS.

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.

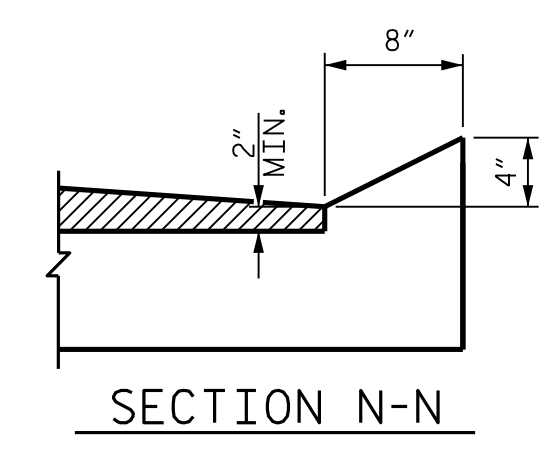
**TEMPORARY DRAINAGE DETAIL**



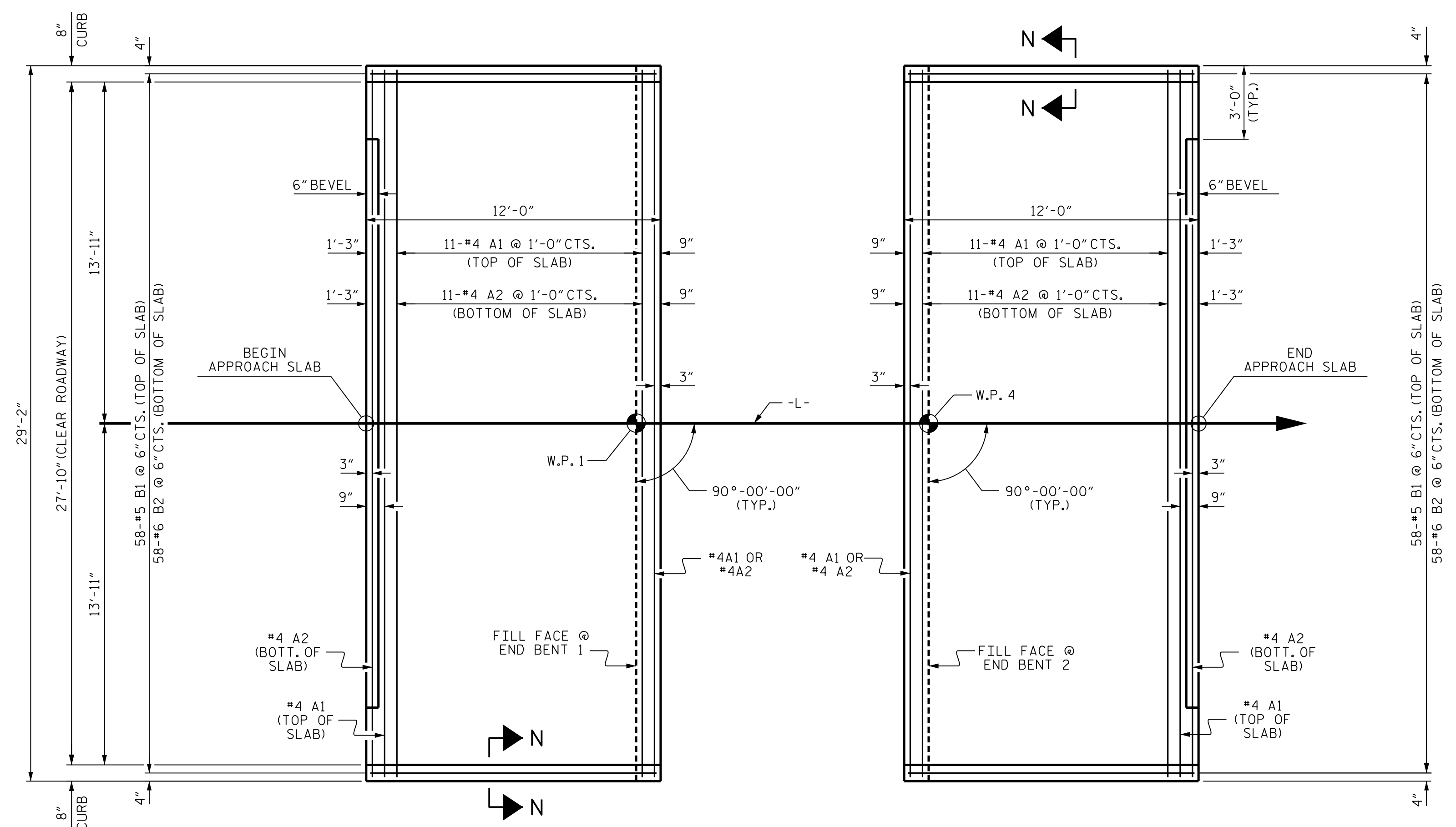
NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 2" DEPTH, 2) EROSION CONTROL MAT, OR 3) CONCRETE, AS DIRECTED BY THE ENGINEER. THE SLOPE DRAIN SHALL CONSIST OF A NON-PERFORATED TEMPORARY DRAINAGE PIPE, 12 INCHES IN DIAMETER.

**TEMPORARY BERM AND SLOPE DRAIN DETAILS**

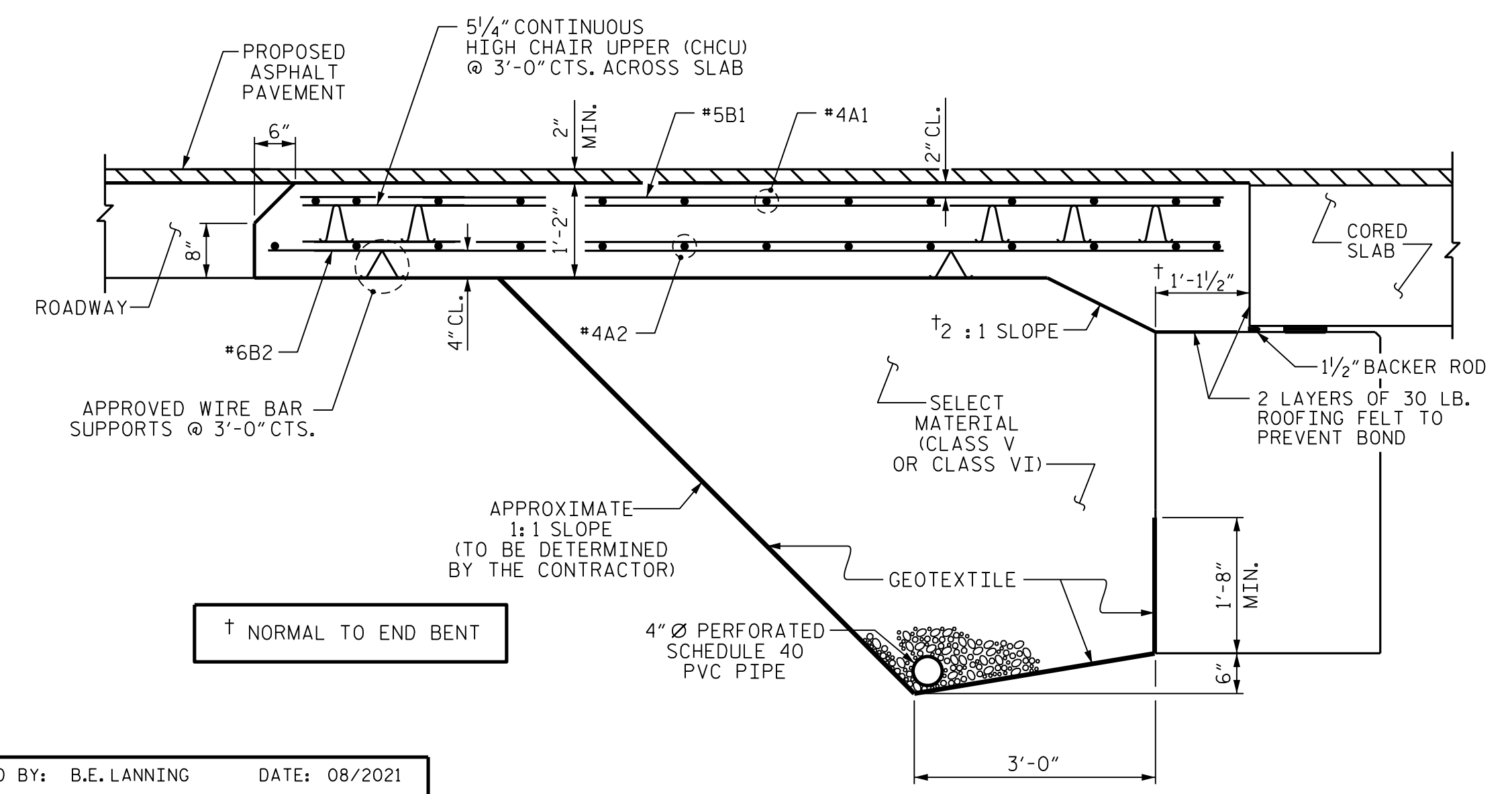
(TO BE USED WHEN SHOULDER BERM CUTTER IS REQUIRED)



**CURB DETAILS**



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



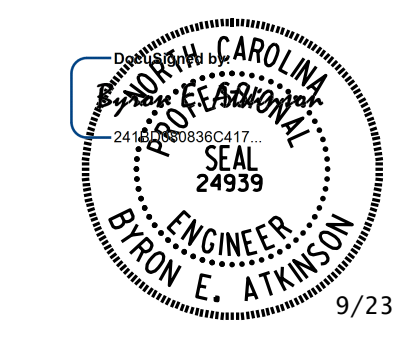
**SECTION THRU SLAB**  
(TYPE II - MODIFIED APPROACH FILL)

PROJECT NO. **BP8.R010**  
**MOORE** COUNTY  
STATION: **15+50.00 -L-**

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

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

MI ENGINEERING  
1011 SCHAUB DRIVE, SUITE 100  
RALEIGH, NC 27606  
(919) 851-6606  
FIRM PE NUMBER: P-0671



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

SHEET NO.  
**S-21**  
TOTAL SHEETS  
**21**

9/23/2021 11:15:43 AM User: blanning  
 Filename: N:\NC Bridges\W20004.01.CH.Eng.Moore 127 Br. Rep\BP8R010\Structures\401\_041\_BP8R010.dgn

ASSEMBLED BY: B.E. LANNING	DATE: 08/2021
CHECKED BY: B.E. ATKINSON	DATE: 08/2021
DESIGN ENGINEER OF RECORD: B.E. ATKINSON	DATE: 09/2021
DRAWN BY: SHS/MAA 5-09	REV. 12-17 MAA/THC
CHECKED BY: BCH 5-09	REV. 08-19 BNB/THC



## 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  $\frac{1}{2}$ " 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  $\frac{7}{8}$ " Ø SHEAR STUDS FOR THE  $\frac{3}{4}$ " Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 -  $\frac{7}{8}$ " Ø STUDS FOR 4 -  $\frac{3}{4}$ " Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF  $\frac{7}{8}$ " Ø STUDS ALONG THE BEAM AS SHOWN FOR  $\frac{3}{4}$ " Ø STUDS BASED ON THE RATIO OF 3 -  $\frac{7}{8}$ " Ø STUDS FOR 4 -  $\frac{3}{4}$ " Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

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

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

### HANDRAILS AND POSTS:

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

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. 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.

ENGLISH

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