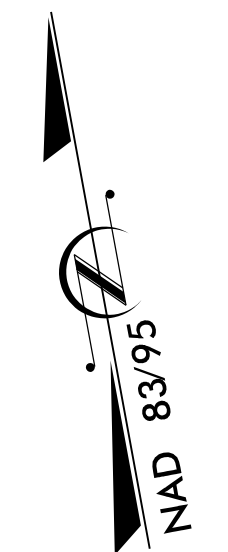


STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.2.PE.94	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.2.PE.94	N/A	PE	
17BP.2.PE.94	N/A	RW & UTILITIES	
17BP.2.R.94	N/A	CONST.	



STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

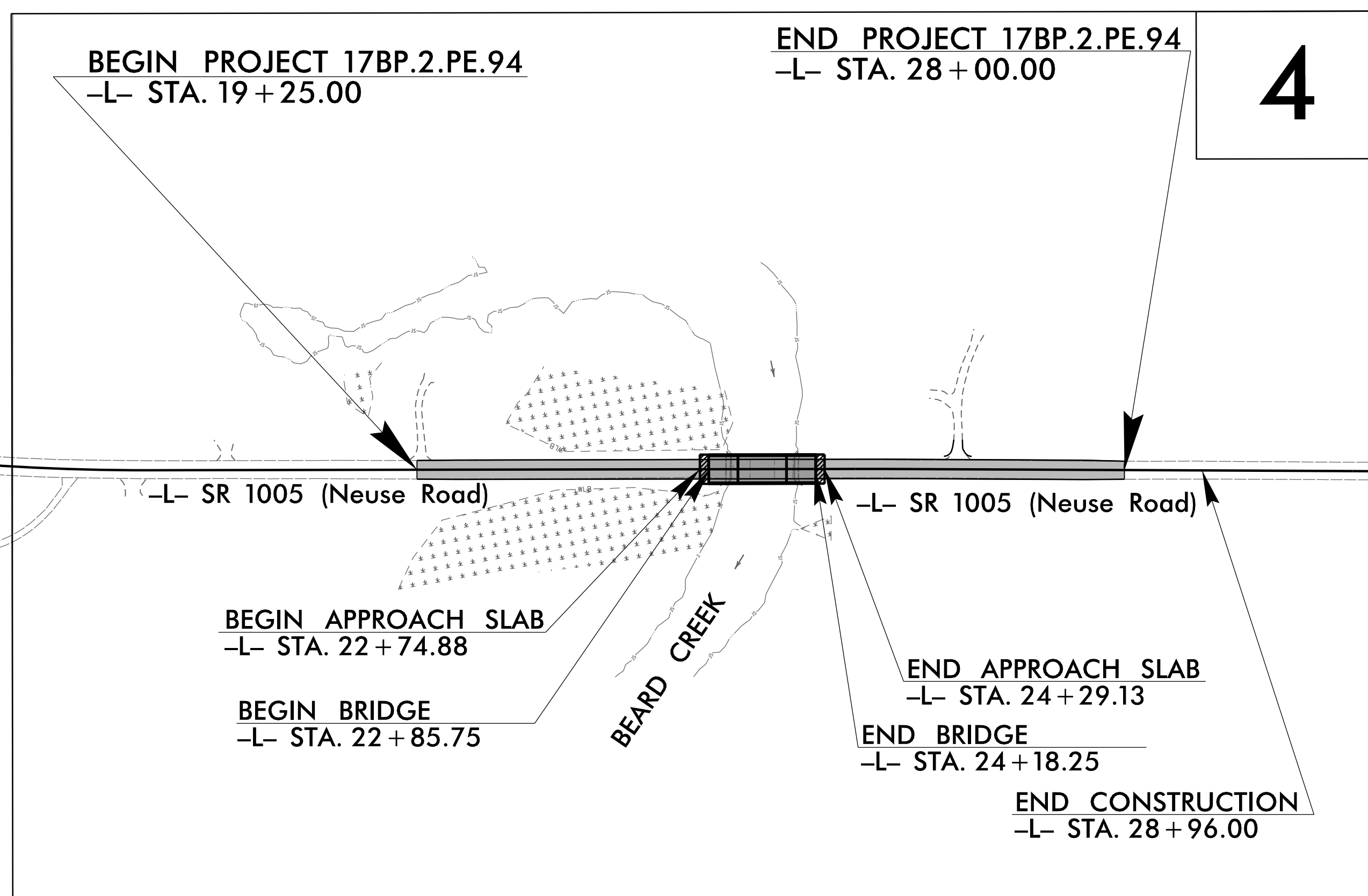
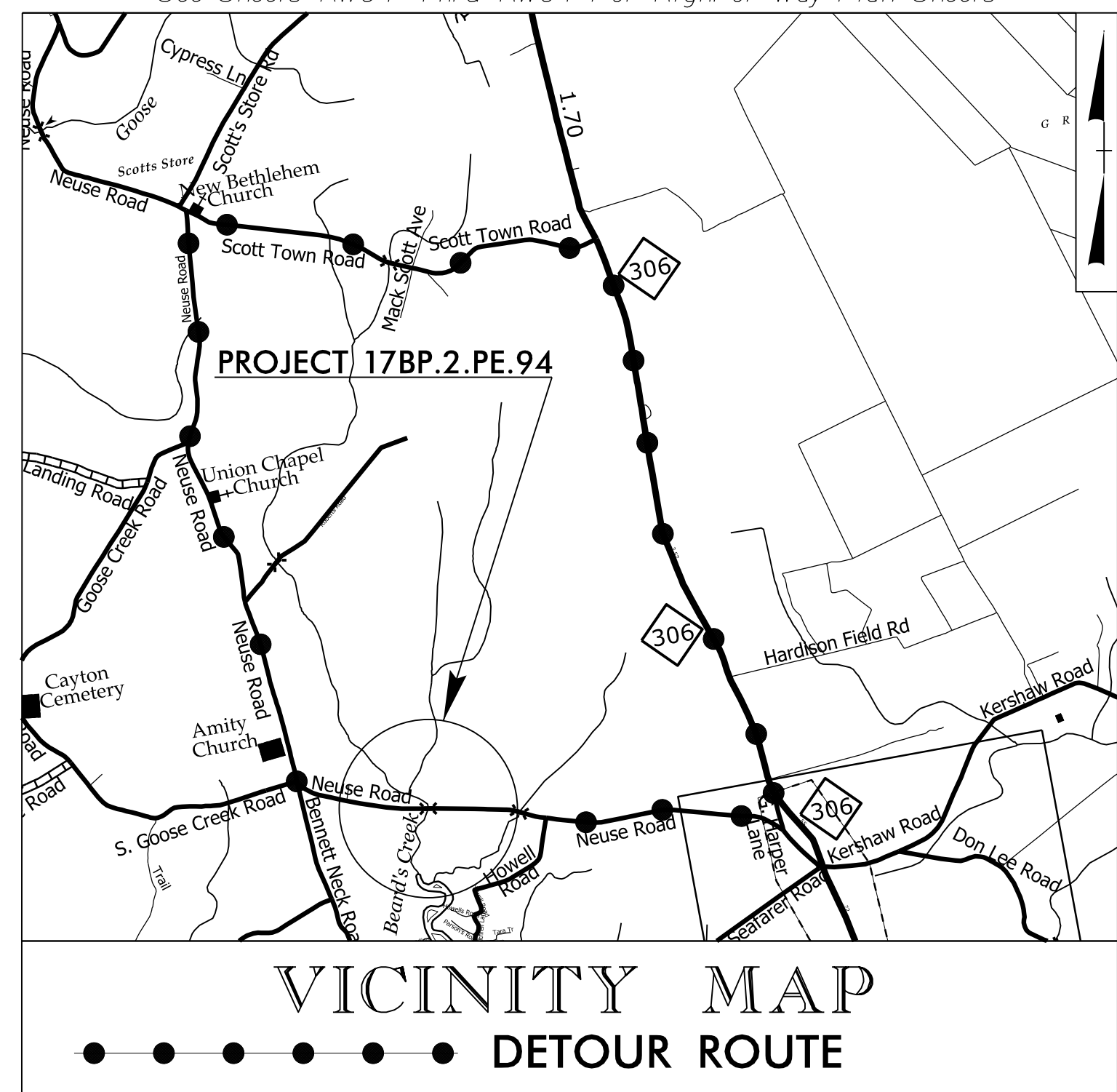
**PAMLICO COUNTY**

**LOCATION: BRIDGE NO. 14 ON SR 1005 (NEUSE ROAD) OVER BEARD CREEK**  
**TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE**

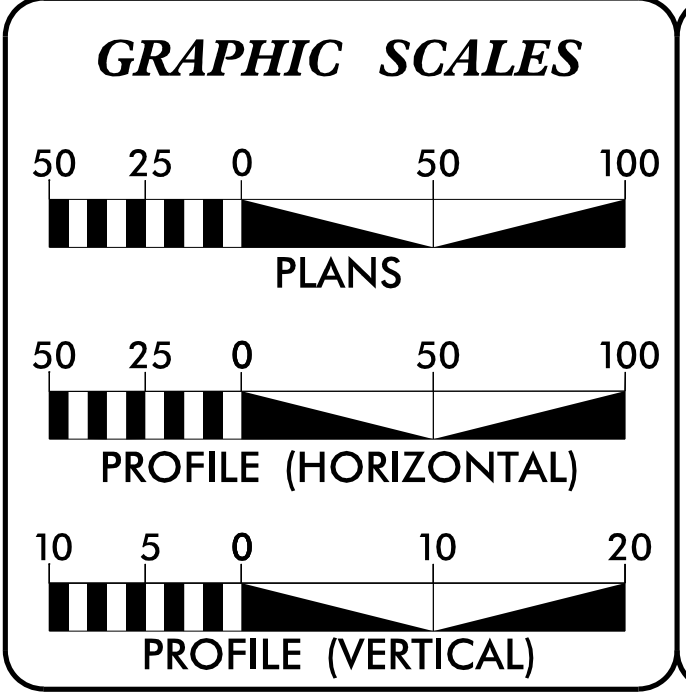
**PROJECT: 17BP.2.PE.94**

**CONTRACT: CN DB00559**

See Sheet 1A For Index of Sheets  
See Sheet 1B For Conventional Plan Sheet Symbols  
See Sheets RW01 Thru RW04 For Right of Way Plan Sheets



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**DESIGN DATA**

ADT 2023 =	953
ADT 2040 =	1,600
K =	%
D =	%
T =	6 % *
V =	60 MPH
* TTST =	DUAL =
FUNC CLASS =	MINOR COLLECTOR
	"SUB-REGIONAL TIER"

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT 17BP.2.PE.94 =	0.141 MILES
LENGTH STRUCTURE TIP PROJECT 17BP.2.PE.94 =	0.025 MILES
TOTAL LENGTH TIP PROJECT 17BP.2.PE.94 =	0.166 MILES

Prepared in the Office of:

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1 Glenwood Avenue  
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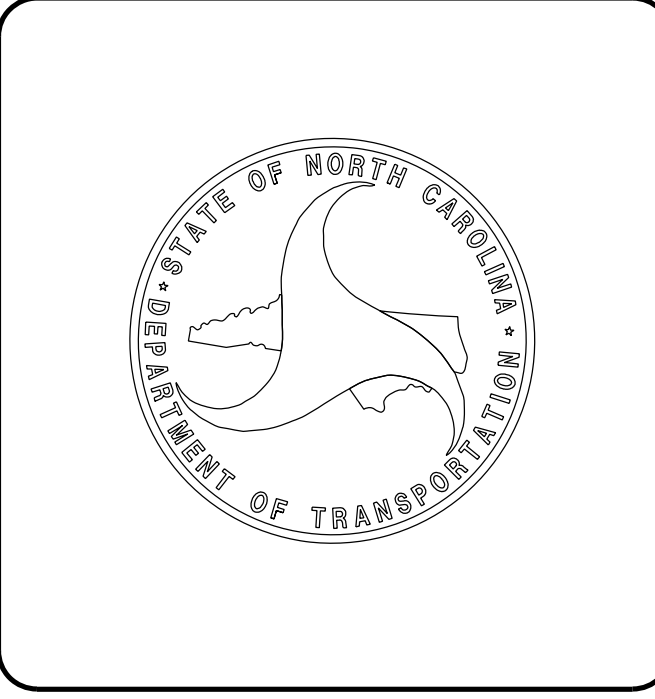
2024 STANDARD SPECIFICATIONS	RAJIT RAMKUMAR, PE, LEED AP PROJECT ENGINEER
RIGHT OF WAY DATE: JUNE 21, 2022	DANIEL W. GARDNER, JR., PE PROJECT DESIGN ENGINEER
LETTING DATE: JUNE 26, 2024	MICHAEL AMAN, PE NCDOT CONTACT

**HYDRAULICS ENGINEER**

Discussed by: *Tyler Ormsby*  
SIGNATURE: \_\_\_\_\_ P.E.

**ROADWAY DESIGN ENGINEER**

Discussed by: *Daniel W. Gardner, Jr.*  
SIGNATURE: \_\_\_\_\_ P.E.



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PROJECT REFERENCE NO.

17BP.2.PE.94

SHEET NO.

1A

ROADWAY DESIGN  
ENGINEER



Daniel W. Gardner, Jr.  
REGISTERED PROFESSIONAL ENGINEER

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EFF. 01-16-2024  
REV.

SHEET NUMBER	INDEX OF SHEETS SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1B	CONVENTIONAL PLAN SHEET SYMBOLS
2A-1 THRU 2A-2	PAVEMENT SCHEDULE, WEDGING DETAIL, AND TYPICAL SECTIONS
2C-1	STANDARD TEMPORARY SHORING DETAIL
2G-1	GEOTEXTILE FOR EMBANKMENT STABILIZATION DETAIL
3B-1	SUMMARY OF EARTHWORK, GUARDRAIL SUMMARY, ASPHALT PAVEMENT REMOVAL SUMMARY, AND SHOULDER BERM GUTTER SUMMARY
3D-1	DRAINAGE SUMMARY
3G-1	GEOTECHNICAL SUMMARIES
4	PLAN SHEET
5	PROFILE SHEET
RW01 THRU RW04	RIGHT OF WAY PLAN SHEETS
TMP-1 THRU TMP-3	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
RF-1	REFORESTATION PLANS
UC-1 THRU UC-5	UTILITIES CONSTRUCTION PLANS
UD-1 THRU UD-2	UTILITIES BY OTHERS PLANS
X-1	CROSS-SECTION INDEX SHEET
X-1A	CROSS-SECTION SUMMARY SHEET
X-2 THRU X-6	CROSS-SECTIONS
S-1 THRU S-26	STRUCTURE PLANS

GENERAL NOTES: 2024 SPECIFICATIONS  
EFFECTIVE: 01-16-2024  
REVISED:

**GRADING AND SURFACING OR RESURFACING AND WIDENING:**

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

**CLEARING:**

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

**SUPERELEVATION:**

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

**SHOULDER CONSTRUCTION:**

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

**SIDE ROADS:**

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

**SUBSURFACE DRAINS:**

SUBSURFACE DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.02 AT LOCATIONS DIRECTED BY THE ENGINEER.

**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 NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING".

**SUBSURFACE PLANS:**

NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

**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 Power - Tideland EMC, Telecom - Centurylink, and Pamlico County Water.

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

**2024 ROADWAY ENGLISH STANDARD DRAWINGS**

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2018 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method 11
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Super-elevation - Two Lane Pavement
275.01	Rock Plating
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
422.02	Bridge Approach Fills - Type II Modified Approach Fill
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Super-elevated Curve - Method 1
DIVISION 8 - INCIDENTALS	
815.02	Subsurface Drain
840.00	Concrete Base Pad for Drainage Structures
840.25	Anchorage for Frames - Brick, Concrete or Precast
840.29	Frame and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Double Frame and Grates
840.46	Traffic Bearing Precast Drainage Structure
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.02	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	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	WLB
Proposed Wetland Boundary	WLB
Existing Endangered Animal Boundary	EAB
Existing Endangered Plant Boundary	EPB
Existing Historic Property Boundary	HPB
Known Contamination Area: Soil	☒
Potential Contamination Area: Soil	☒
Known Contamination Area: Water	☒
Potential Contamination Area: Water	☒
Contaminated Site: Known or Potential	☠

## BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○
Well	○
Small Mine	×
Foundation	□
Area Outline	□
Cemetery	+
Building	□
School	□
Church	+
Dam	—

## HYDROLOGY:

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

## RAILROADS:

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

## RIGHT OF WAY & PROJECT CONTROL:

Primary Horiz Control Point	○
Primary Horiz and Vert Control Point	●
Secondary Horiz and Vert Control Point	◆
Vertical Benchmark	⊕
Existing Right of Way Monument	△
Proposed Right of Way Monument (Rebar and Cap)	▲
Proposed Right of Way Monument (Concrete)	⊕
Existing Permanent Easement Monument	◇
Proposed Permanent Easement Monument (Rebar and Cap)	◆
Existing C/A Monument	△
Proposed C/A Monument (Rebar and Cap)	▲
Proposed C/A Monument (Concrete)	⊕
Existing Right of Way Line	-----
Proposed Right of Way Line	-----
Existing Control of Access Line	-----
Proposed Control of Access Line	-----
Proposed ROW and CA Line	-----
Existing Easement Line	-----
Proposed Temporary Construction Easement	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
Proposed Guardrail	T
Existing Cable Guiderail	□
Proposed Cable Guiderail	□
Equality Symbol	⊕
Pavement Removal	⊗
VEGETATION:	
Single Tree	○
Single Shrub	○
Hedge	-----

Woods Line	-----
Orchard	○
Vineyard	□

## EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	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	PH
H-Frame Pole	●
U/G Power Line Test Hole (SUE - LOS A)*	⊕
U/G Power Line (SUE - LOS B)*	P
U/G Power Line (SUE - LOS C)*	P
U/G Power Line (SUE - LOS D)*	P

## TELEPHONE:

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

## 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)*	W
U/G Water Line (SUE - LOS C)*	W
U/G Water Line (SUE - LOS D)*	W
Above Ground Water Line	A/G Water
TV:	
TV Pedestal	⊕
TV Tower	⊗
U/G TV Cable Hand Hole	PH
U/G TV Test Hole (SUE - LOS A)*	⊕
U/G TV Cable (SUE - LOS B)*	TV
U/G TV Cable (SUE - LOS C)*	TV
U/G TV Cable (SUE - LOS D)*	TV
U/G Fiber Optic Cable (SUE - LOS B)*	TV FO
U/G Fiber Optic Cable (SUE - LOS C)*	TV FO
U/G Fiber Optic Cable (SUE - LOS D)*	TV FO

## GAS:

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

## SANITARY SEWER:

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

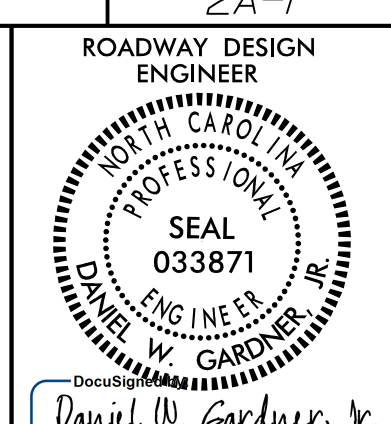

## MISCELLANEOUS:

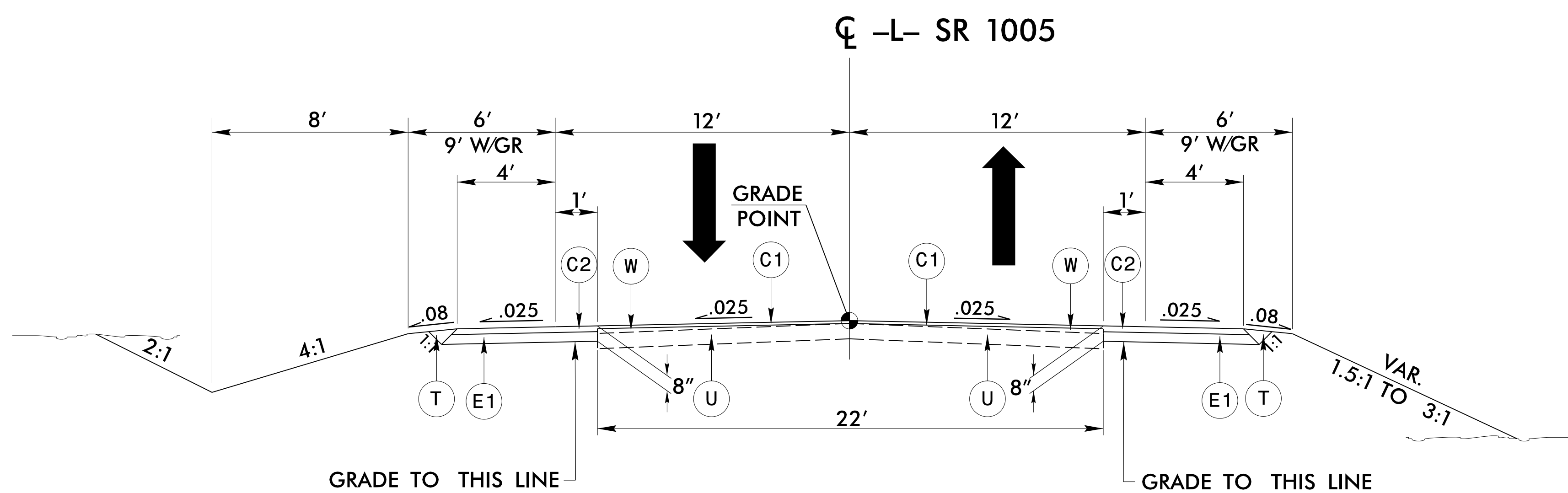
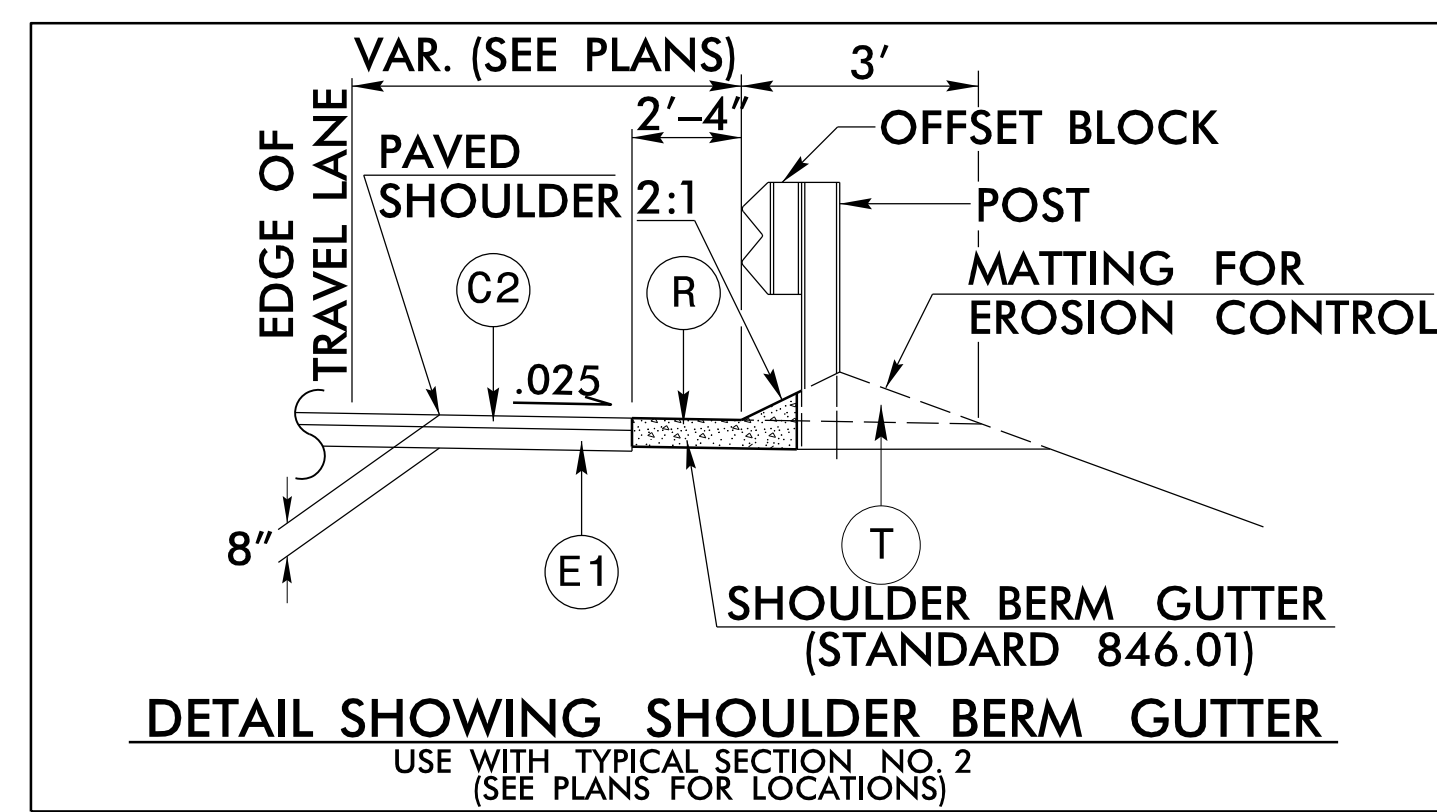
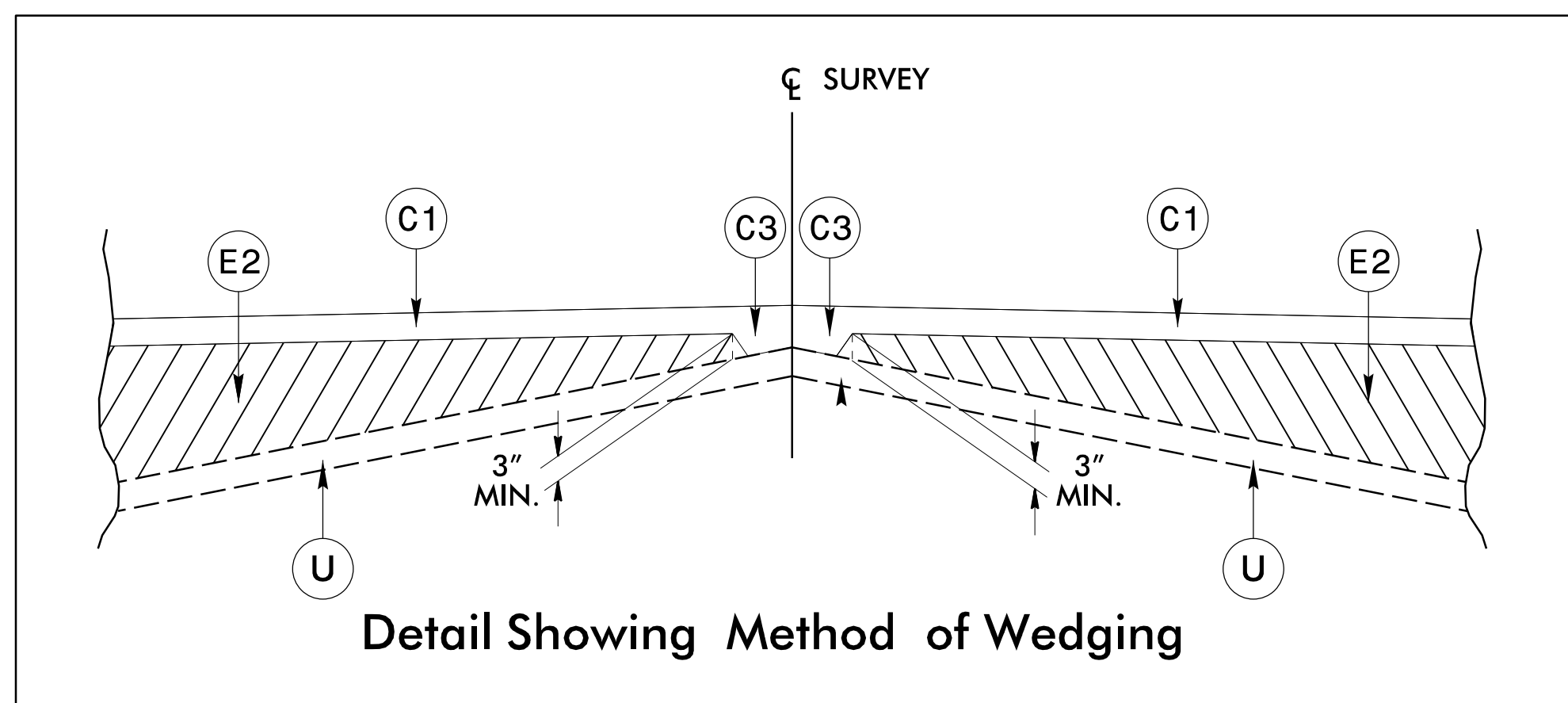
Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	⊕
Utility Unknown U/G Line (SUE - LOS B)*	UTL
U/G Tank; Water, Gas, Oil	□
Underground Storage Tank, Approx. Loc.	UST
A/G Tank; Water, Gas, Oil	□
Geoenvironmental Boring	⊕
Abandoned According to Utility Records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

6/2/99

FINAL PAVEMENT SCHEDULE			
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.	R	PROP. CONCRETE SHOULDER BERM GUTTER.
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.	T	EARTH MATERIAL.
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 1½" IN DEPTH.	U	EXISTING PAVEMENT.
E1	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.	V	VARIABLE DEPTH MILLING (0" TO 1.5").
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.	W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL).

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

PROJECT REFERENCE NO. 17BP.2.PE.94	SHEET NO. 2A-1
ROADWAY DESIGN ENGINEER  Daniel W. Gardner, Jr.	
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USE TYPICAL SECTION NO. 1 AS FOLLOWS  
 -L- STA 19+75.00 TO STA 22+37.00  
 -L- STA. 24+67.00 TO STA. 27+50.00  
 NOTE: TRANSITION FROM EXISTING TO TYPICAL SECTION NO. 1 -L- STA. 19+25.00 TO STA. 19+75.00  
 TRANSITION FROM TYPICAL SECTION NO. 1 TO EXISTING -L- STA. 27+50.00 TO STA. 28+00.00

NOTE: SR 1005 (NEUSE ROAD) IS DESIGNATED AS STATE BICYCLE ROUTE NC-7 (OCRACOCKE RUN).

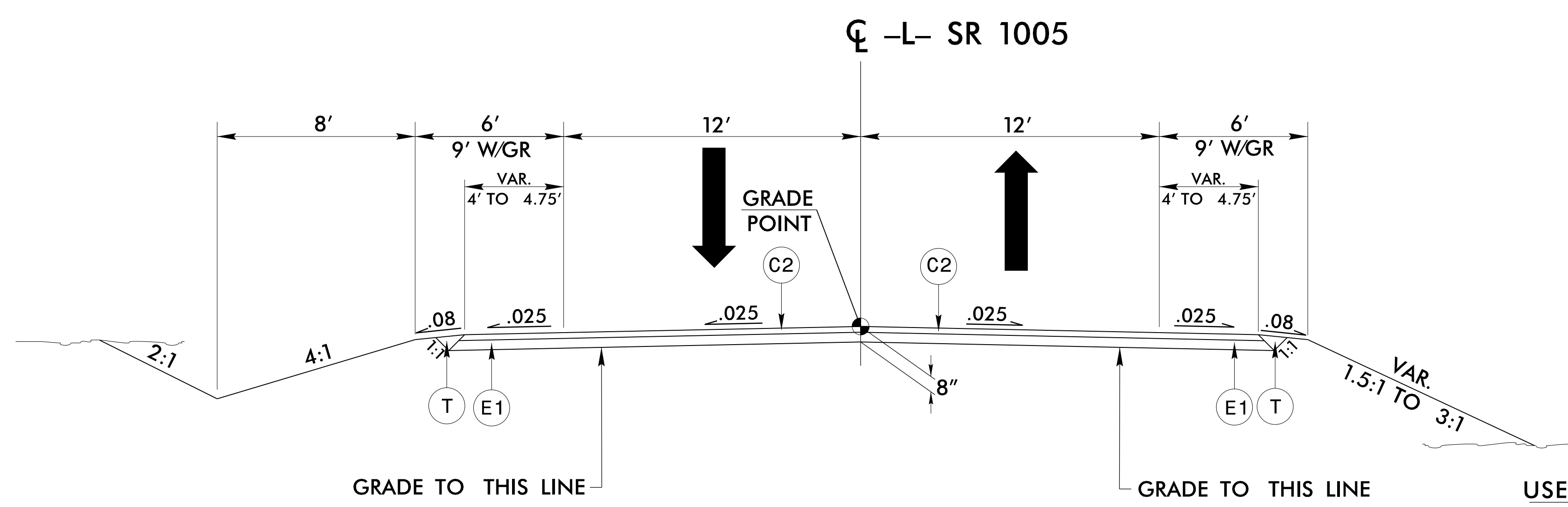
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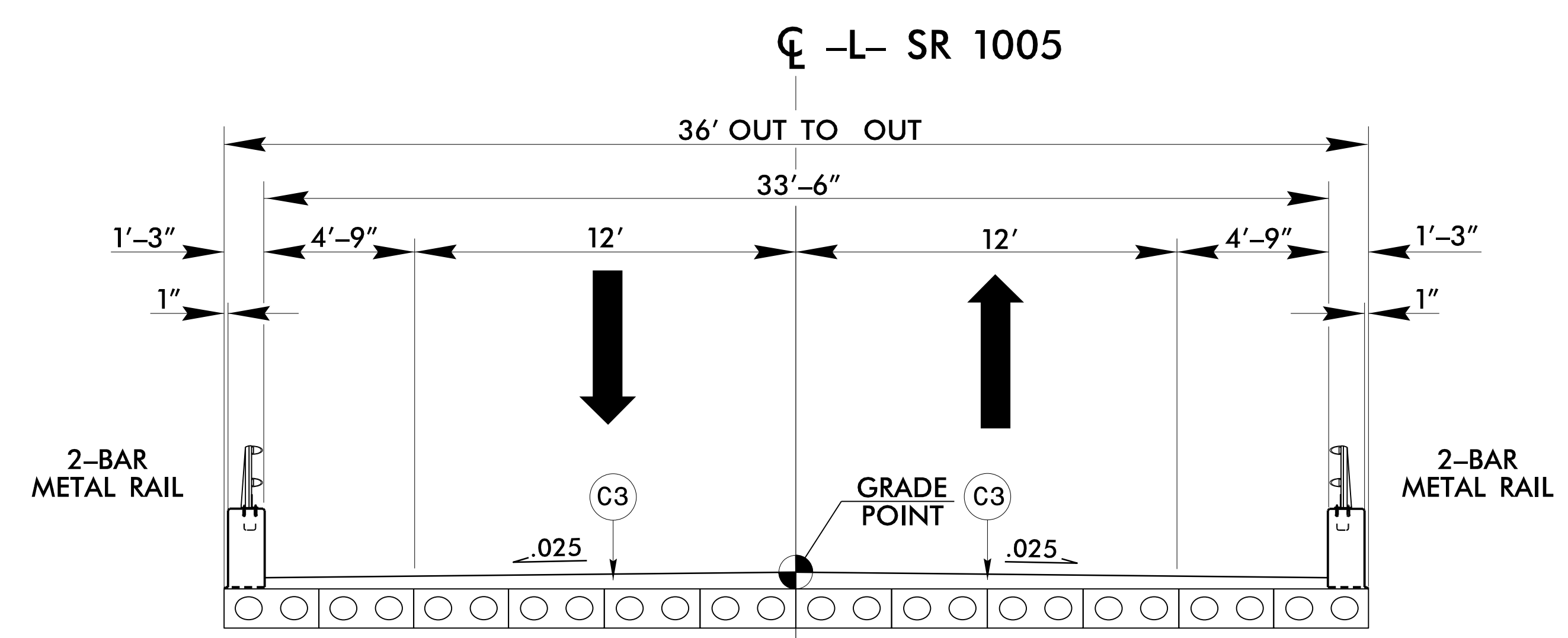
**PAVEMENT SCHEDULE**

C1	1½" TYPE S9.5B
C2	3" TYPE S9.5B
C3	VAR. TYPE S9.5B
E1	5" TYPE B25.0C
E2	VAR. TYPE B25.0C
R	SHOULDER BERM GUTTER.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT
V	VAR. DEPTH MILLING
W	VAR. DEPTH WEDGING



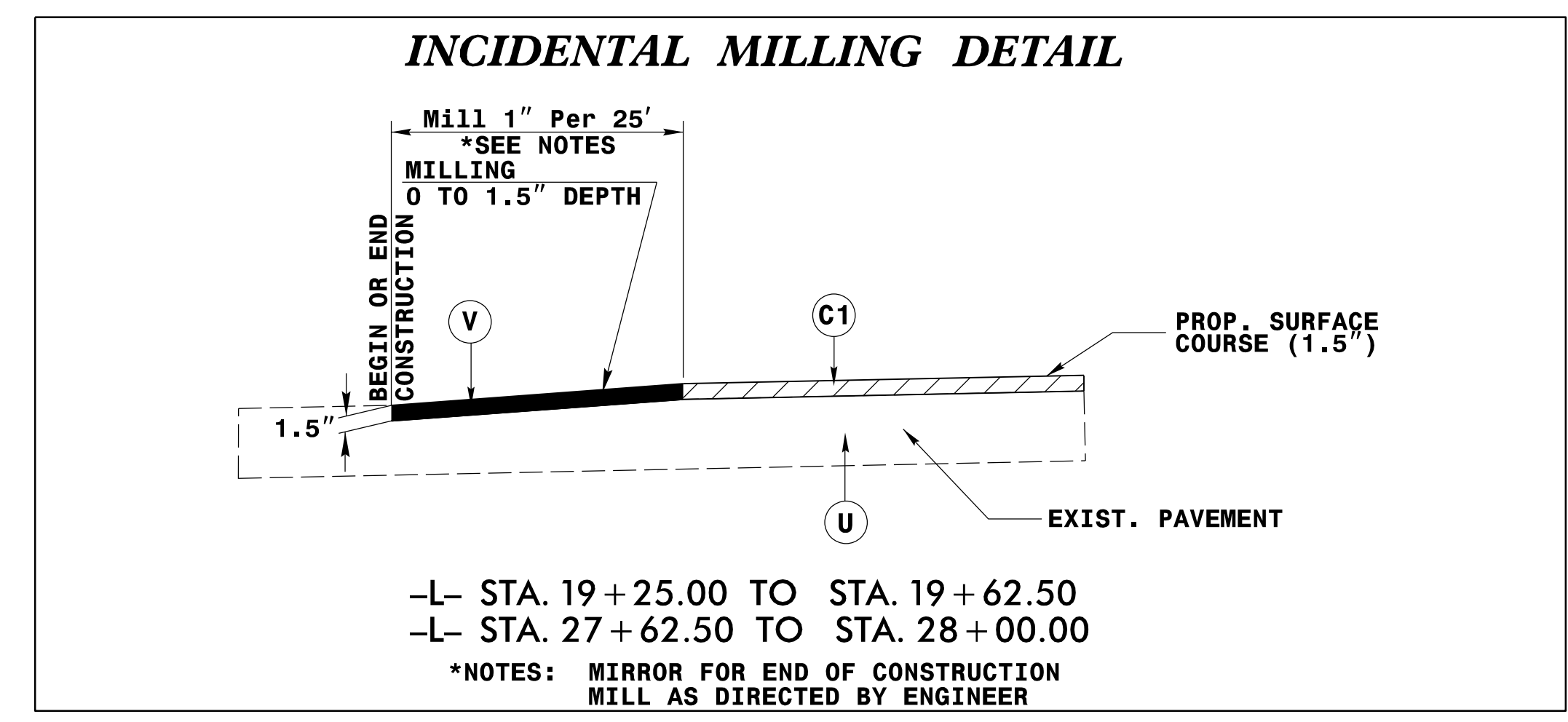
**TYPICAL SECTION NO. 2**

**USE TYPICAL SECTION NO. 2 AS FOLLOWS**  
 -L- STA 22+37.00 TO STA 22+85.75 (BEGIN BRIDGE)  
 -L- STA. 24+18.25 (END BRIDGE) TO STA. 24+67.00



**TYPICAL SECTION NO. 3**

**USE TYPICAL SECTION NO. 3 AS FOLLOWS**  
 -L- STA 22+85.75 (BEGIN BRIDGE) TO STA 24+18.25 (END BRIDGE)

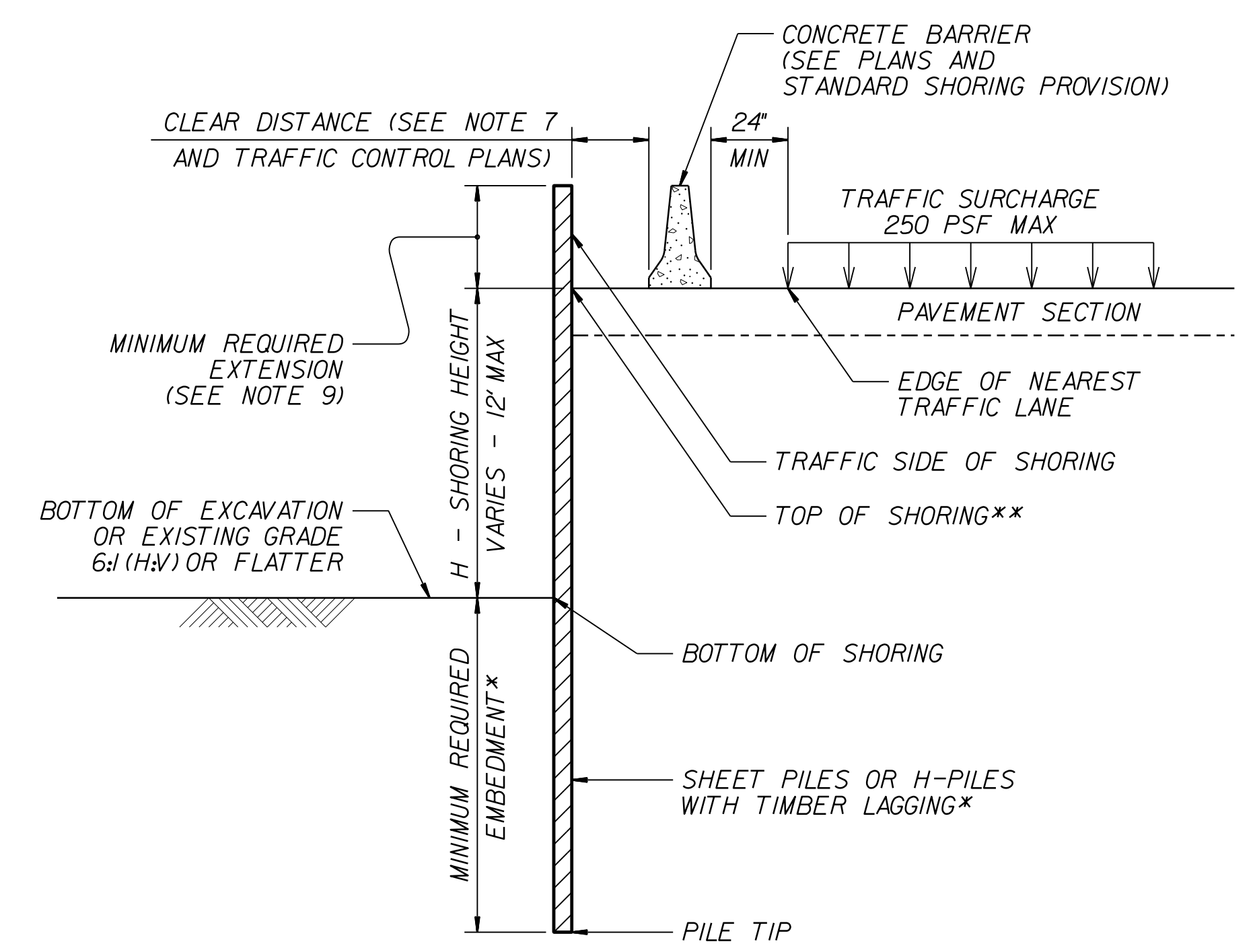


**NOTE: SR 1005 (NEUSE ROAD) IS DESIGNATED AS STATE BICYCLE ROUTE NC-7 (OCRACOCKE RUN).**

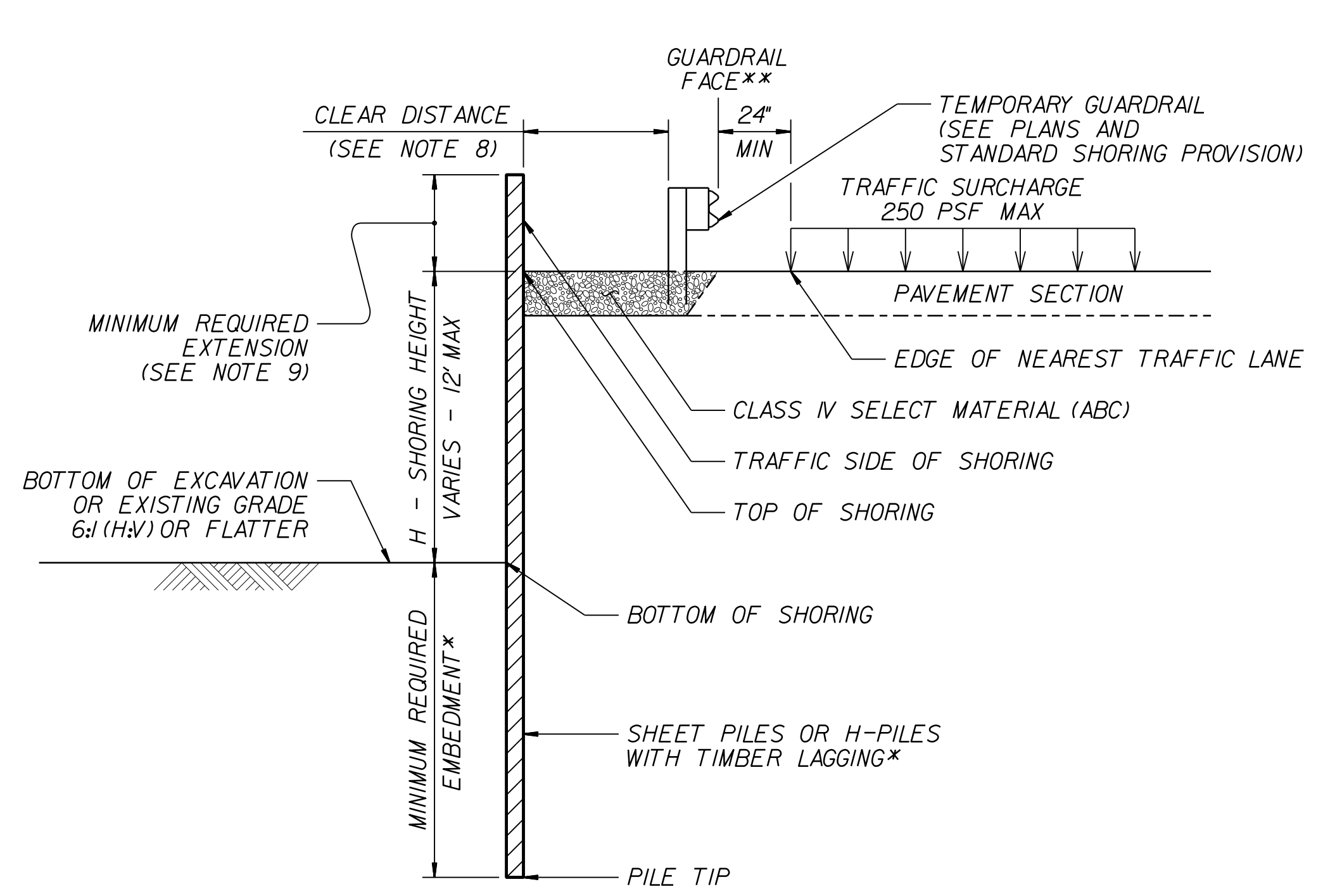
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN <sup>3</sup> /FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)			MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN <sup>3</sup> /FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)		
			HP 10x42	HP 12x53	HP 14x73			HP 10x42	HP 12x53	HP 14x73	
GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND PILE TIP	< 6	11.5	4.5	11.5	11.5	11.5	16.0	12.0	13.0	13.0	13.0
	7	13.0	7.0	13.0	13.0	13.0	17.0	14.5	14.5	14.5	14.5
	8	15.0	10.0	--	15.0	15.0	18.0	17.0	--	15.5	15.5
	9	17.0	14.0	--	17.0	17.0	19.0	20.0	--	17.0	17.0
	10	18.5	19.5	--	--	18.5	20.0	23.5	--	--	18.5
	11	20.5	26.0	--	--	--	21.0	28.0	--	--	20.0
GROUNDWATER ELEVATION BELOW PILE TIP	< 6	7.5	3.0	8.0	8.0	8.0	11.0	10.0	9.5	9.5	9.5
	7	8.5	4.5	9.5	9.5	9.5	12.0	12.0	10.5	10.5	10.5
	8	10.0	6.5	10.5	10.5	10.5	12.5	14.0	11.5	11.5	11.5
	9	11.0	9.5	--	12.0	12.0	13.5	16.5	--	12.5	12.5
	10	12.5	13.0	--	--	13.5	14.0	19.5	--	13.5	13.5
	11	13.5	17.0	--	--	14.5	15.0	22.5	--	--	14.5
12	15.0	21.5	--	--	16.0	16.0	25.5	--	--	15.5	

- NOTES:**
- AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING AS NOTED IN THE PLANS.
  - FOR STANDARD TEMPORARY SHORING, SEE STANDARD SHORING PROVISION.
  - STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:  
UNIT WEIGHT,  $\gamma = 120$  PCF  
FRICTION ANGLE,  $\phi = 30$  DEGREES  
COHESION,  $c = 0$  PSF
  - DO NOT USE STANDARD TEMPORARY SHORING IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
  - DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS WITHIN THE EMBEDMENT DEPTH.
  - USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, USE "GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND PILE TIP" FOR GROUNDWATER CONDITION. DO NOT USE STANDARD TEMPORARY SHORING IF GROUNDWATER IS ABOVE BOTTOM OF SHORING.
  - AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN THE MINIMUM REQUIRED FOR CONCRETE BARRIER, SET BARRIER NEXT TO AND UP AGAINST TRAFFIC SIDE OF PILES AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
  - AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN 4' FOR TEMPORARY GUARDRAIL, ATTACH GUARDRAIL TO TRAFFIC SIDE OF PILES AS SHOWN IN THE PLANS AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
  - MINIMUM REQUIRED EXTENSION IS 6" FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32" FOR "SURCHARGE CASE WITH TRAFFIC IMPACT".
  - MINIMUM REQUIRED EMBEDMENT FOR H-PILES WITH TIMBER LAGGING IS BASED ON DRIVEN H-PILES AT MAXIMUM 6' SPACING. AT THE CONTRACTOR'S OPTION, EMBEDMENT DEPTHS MAY BE REDUCED BY 25% FOR DRILLED-IN H-PILES.
  - SUBMIT A "STANDARD TEMPORARY SHORING SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY SHORING CONSTRUCTION. UP TO 3 SHORING LOCATIONS MAY BE INCLUDED ON EACH FORM. STANDARD SHORING SELECTION FORMS ARE AVAILABLE FROM:  
[connect.ncdot.gov/resources/Geological/Pages/Geotech\\_Forms\\_Details.aspx](http://connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx)
  - CONTACT THE ENGINEER IF PILES DO NOT ATTAIN THE MINIMUM REQUIRED EMBEDMENT.

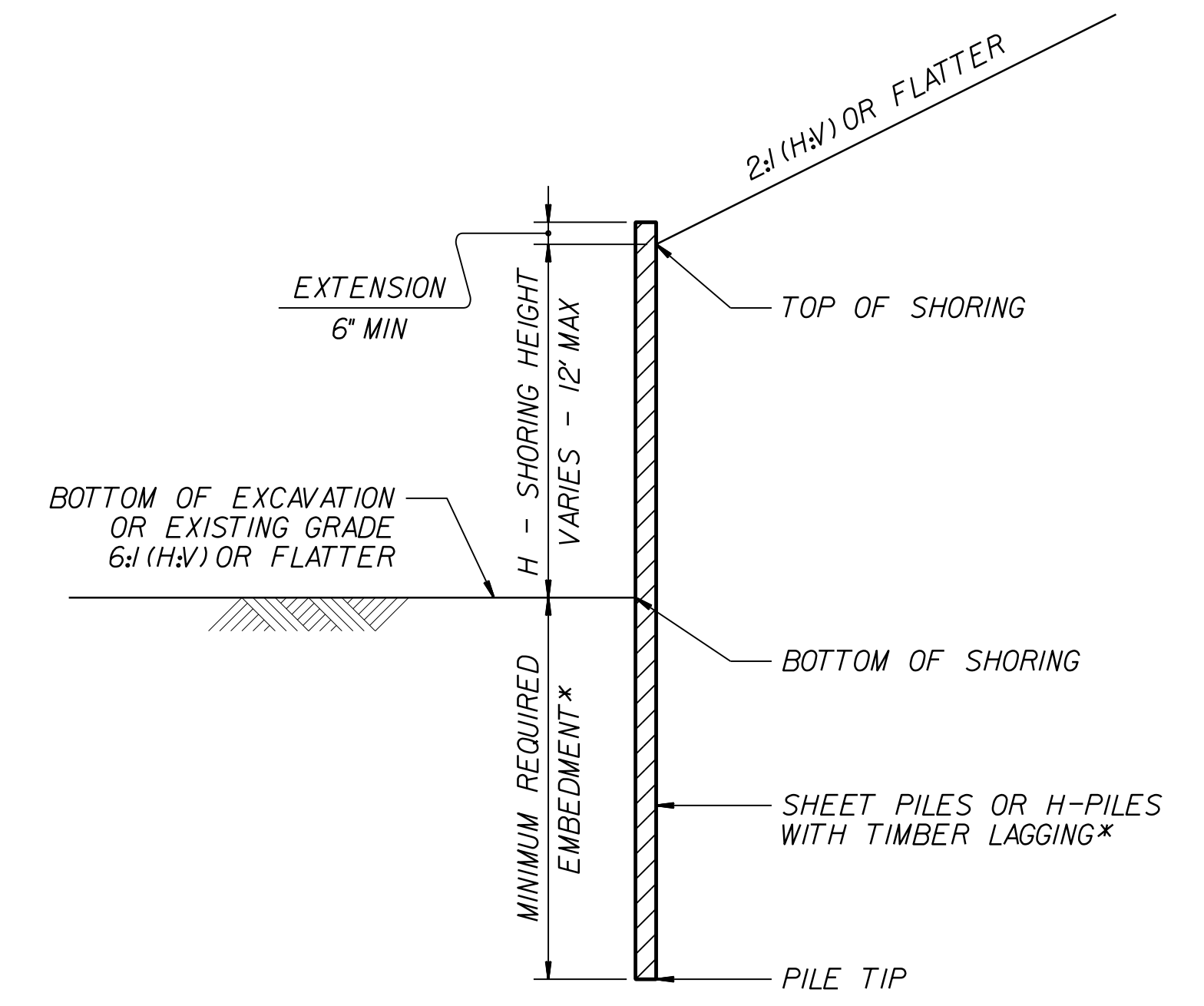
**MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS**  
**\*DO NOT USE H-PILES WITH TIMBER LAGGING FOR GROUNDWATER CONDITION, SHORING HEIGHT AND H-PILE SIZE SHOWN IF MINIMUM REQUIRED EMBEDMENT IS "--".**



**CONCRETE BARRIER**  
**\*\*TOP OF SHORING = EDGE OF PAVEMENT**

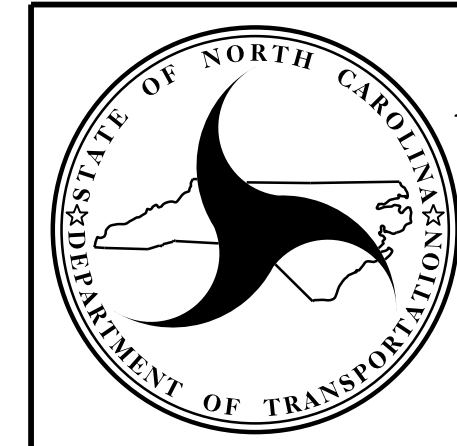


**TEMPORARY GUARDRAIL**  
**\*\*GUARDRAIL FACE = EDGE OF PAVEMENT**



**STANDARD TEMPORARY SHORING (SLOPE CASE)**  
**\*SEE TABLE ABOVE.**


**STANDARD TEMPORARY SHORING (SURCHARGE CASE)**  
**\*SEE TABLE ABOVE.**

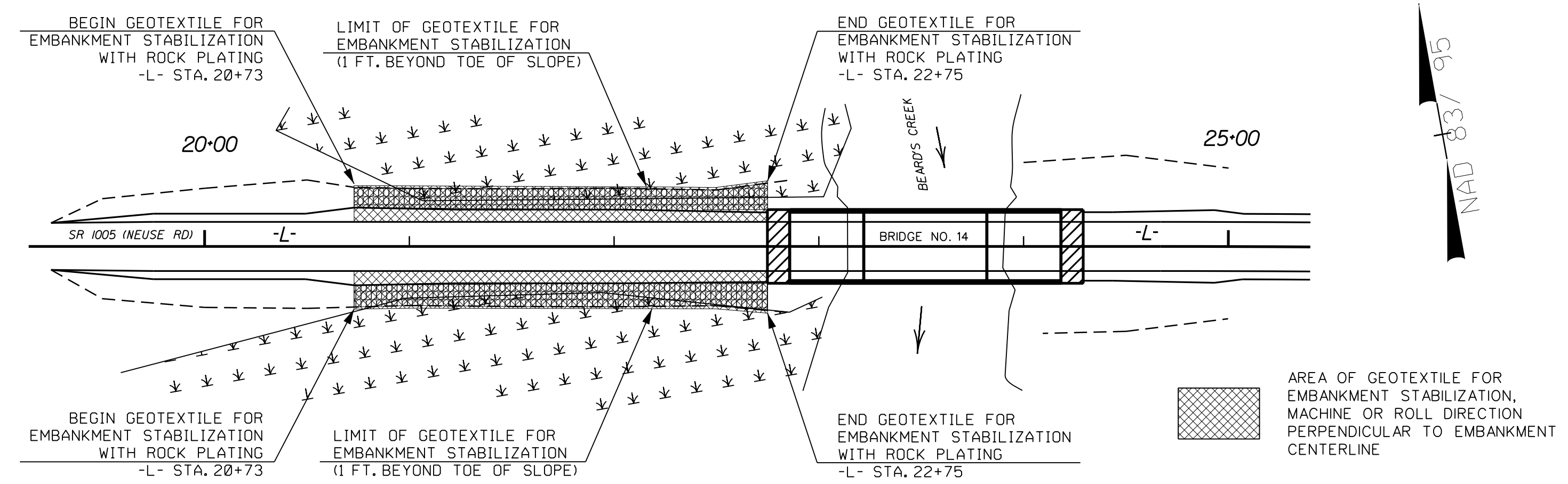


NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
**GEOTECHNICAL ENGINEERING UNIT**

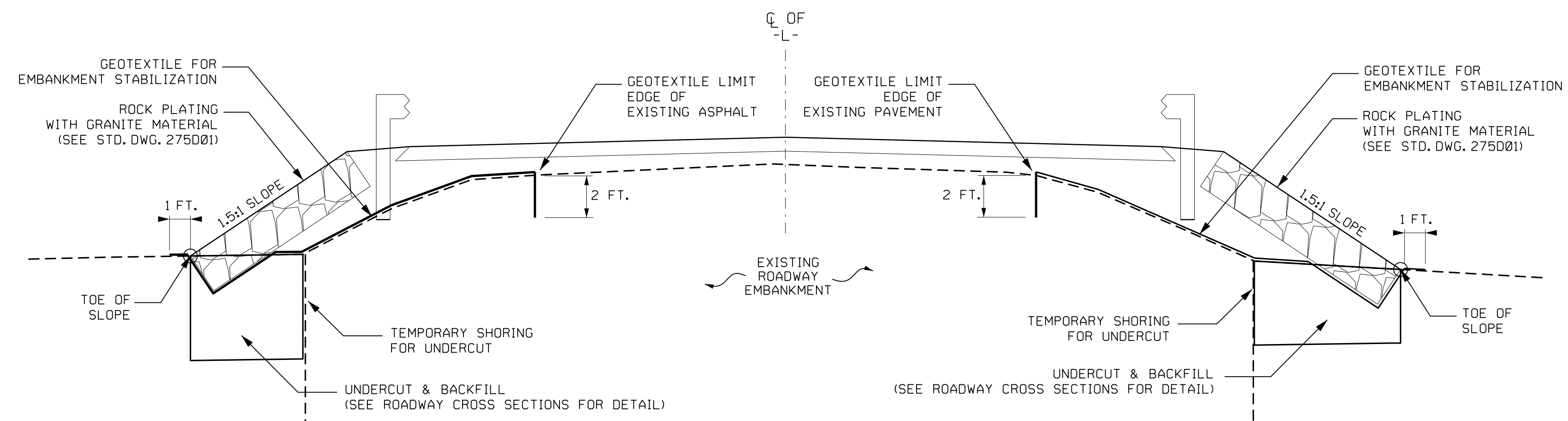
STANDARD DETAIL NO. 1801.01

STANDARD TEMPORARY SHORING

PROJECT REFERENCE NO.		SHEET NO.	
17BP.2.PE.94		2G-1	
GEOTECHNICAL ENGINEER 		ENGINEER	
DocuSigned by: Thein Tan Zan 12/20/2022 <small>A4M88BC8C81B7Z</small>		SIGNATURE DATE SIGNATURE DATE	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>			



**LOCATION PLAN  
GEOTEXTILE FOR EMBANKMENT STABILIZATION**  
N.T.S.



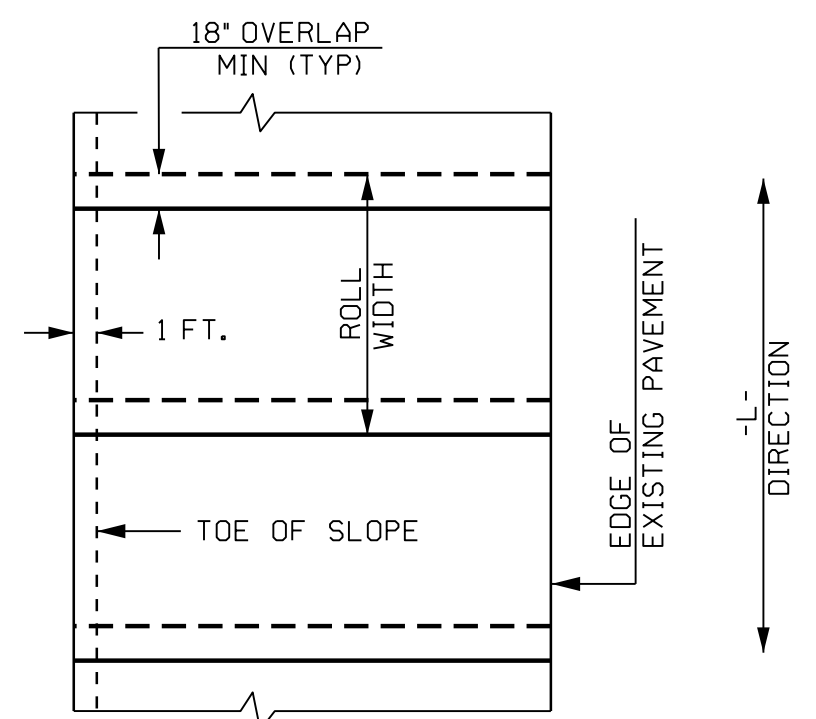
**TYPICAL CROSS SECTION  
GEOTEXTILE FOR EMBANKMENT STABILIZATION**  
N.T.S.

**NOTES**

1. PERFORM UNDERCUT EXCAVATION IN ACCORDANCE WITH ROADWAY CROSS SECTIONS AT THE TOE OF SLOPES BEFORE PLACEMENT OF GEOTEXTILE.
2. DO NOT GRUB, ONLY CLEAR THE AREA WITHIN THE LIMITS OF THE GEOTEXTILE FOR EMBANKMENT STABILIZATION.
3. PLACE GEOTEXTILE FOR EMBANKMENT STABILIZATION PERPENDICULAR TO EMBANKMENT CENTERLINE ON THE EXISTING GROUND AS SHOWN IN THE PLAN OR AS DIRECTED BY THE ENGINEER.
4. ANCHOR GEOTEXTILE AT LEAST 2 FT. AT THE EDGE OF EXISTING PAVEMENT AS SHOWN IN THE PLAN.
5. PLACE THE GEOTEXTILE WITHOUT ANY WRINKLES OR CREASES.
6. NO SEAMS OR JOINTS ARE ALLOWED IN THE MACHINE DIRECTION OF GEOTEXTILE.
7. THE TERMS ROLL AND MACHINE DIRECTION ARE USED INTERCHANGEABLY.
8. ALL JOINTS IN THE CROSS MACHINE DIRECTION MUST BE OVERLAPPED A MINIMUM OF 18 INCHES.
9. FOR GEOTEXTILE FOR EMBANKMENT STABILIZATION, SEE GEOTEXTILE FOR EMBANKMENT STABILIZATION SPECIAL PROVISION.

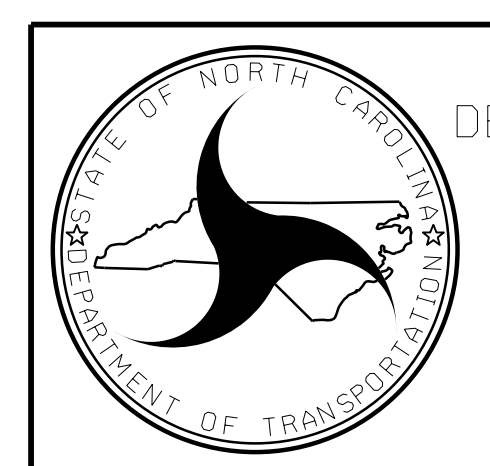
QUANTITIES	
GEOTEXTILE FOR EMBANKMENT STABILIZATION	1,000 SY*

\* GEOTEXTILE FOR EMBANKMENT STABILIZATION ESTIMATED QUANTITY DOES NOT INCLUDE OVERLAPS OR WASTE.



**GEOTEXTILE OVERLAP DETAIL**  
(PLAN VIEW, N.T.S.)

PREPARED BY: J. T. ZAN	DATE: 12/20/2022
REVIEWED BY: J. BATTS	DATE: 12/20/2022



NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
  
GEOTECHNICAL  
ENGINEERING UNIT

**GEOTEXTILE FOR  
EMBANKMENT STABILIZATION  
DETAIL**

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

STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS  
**SUMMARY OF EARTHWORK**  
 IN CUBIC YARDS

PROJECT REFERENCE NO. 17BP.2.PE.94	SHEET NO. 3B-1
<b>TRANSYSTEMS</b>	
1 Glenwood Avenue Raleigh, NC 27603 Tel: 919.789.9977 Fax: 919.789.9591 License: F-0453	

STATION	STATION	UNCL. EXCAV.	UNDERCUT	EMBANK. + %	BORROW	WASTE
SUMMARY NO. 1						
-L- STA. 19+25.00	-L- STA. 22+85.75 (BB)	36	550	454	418	550
TOTAL SUMMARY NO. 1		36	550	454	418	550
SUMMARY NO. 2						
-L- STA. 24+18.25 (EB)	-L- STA. 28+00.00	194		563	369	0
TOTAL SUMMARY NO. 2		194		563	369	0
SUMMARY TOTALS		230	550	1,017	787	550
WASTE IN LIEU OF BORROW						
UNDERCUT CONTINGENCY			300			300
PROJECT TOTALS		230	850	1,017	787	850
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT					39	
GRAND TOTALS		230	850	1,017	826	850
SAY		250			850	

SELECT GRANULAR MATERIAL, CLASS III = 850 CY  
 GEOTEXTILE FOR SOIL STABILIZATION = 400 SY  
 GEOTEXTILE FOR EMBANKMENT STABILIZATION = 1,000 SY

Earthwork quantities are calculated by TRANSYSTEMS. These earthwork quantities are based in part on subsurface data provided by the NCDOT engineering group.

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

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

**GUARDRAIL SUMMARY**

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 GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS	
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GREU TL-3	TYPE-III	EA	G	NG							
-L-	20+73.25	22+85.75	LT	212.50'				22+00.00	6'	9'	62.50'		1.25'													
-L-	24+18.25	24+93.25	LT	75.00'			24+17.00		6'	9'	56.25'		1.125'													
-L-	20+73.25	22+85.75	RT	212.50'			22+00.00		6'	9'	62.50'		1.25'													
-L-	24+18.25	24+93.25	RT	75.00'			24+17.00		6'	9'	56.25'		1.125'													
			SUBTOTAL	575.00'													4	4								
			LESS ANCHOR DEDUCTION																							
			GREU TL-3, 4 @ 50' =	200.00'																						
			TYPE-III, 4 @ 18.75' =	75.00'																						
			TOTAL	300.00'													4	4								
			ADDITIONAL GUARDRAIL POSTS = 5 EACH														4	4								
			SAY	325.00'													4	4								

**ASPHALT PAVEMENT REMOVAL SUMMARY**

SURVEY LINE	STATION	STATION	LOCATION LV/RT/CL	SQUARE YARDS
-L-	22+37.00	23+07.26	LT.RT.	177.19
-L-	23+96.73	24+67.00	LT.RT.	174.85
			TOTALS	352.04
			SAY	360

**SHOULDER BERM GUTTER SUMMARY**

SURVEY LINE	STATION	STATION	LENGTH
-L- LT.	22+44.00	22+74.88	30.88
-L- RT.	22+44.00	22+74.88	30.88
		TOTALS	61.76
		SAY	70.00

8/17/99  
2/19/2004  
I:\S\B\4595-Rel\sum-3B-1.dgn





STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS  
**SUMMARY OF QUANTITIES**

**SUMMARY OF SUBSURFACE DRAINAGE**

LINE	STATION	STATION	LOCATION L/RT/C/L	DRAIN TYPE* UD/BD/SD	LF
CONTINGENCY				SD	200
				TOTAL LF:	200

\*UD = UNDERDRAIN  
 \*BD = BLIND DRAIN  
 \*SD = SUBSURFACE DRAIN

**SUMMARY OF ROCK PLATING**

LINE	Beginning Slope (H:V)	Approx. Station	Ending Slope (H:V)	Approx. Station	Location L/RT	Rock Plating Detail No. 1/2/3/4	Riprap Class* 1/2/B	Rock Plating SY
-L-	2.5:1	20 + 73 +/-	1.5:1	22 + 77 +/-	LT	1	*	220
-L-	2.5:1	20 + 73 +/-	1.5:1	22 + 77 +/-	RT	1	*	240
							TOTAL SY:	460

\*Use Class 1, 2, or B riprap if riprap class is not shown for rock plating location.  
 \*Class 1, 2, or B riprap should be granite type rock.

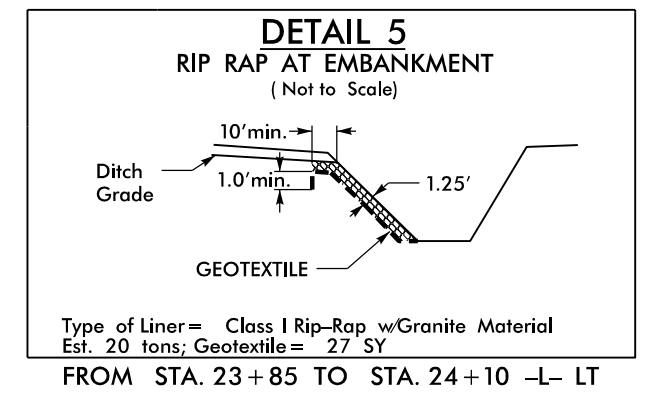
6/2/99

-L-  
 PI Sta 25+03.52  
 $\Delta = 0^{\circ} 22' 37.6''$  (RT)  
 $D = 0^{\circ} 30' 58.2''$   
 $L = 73.06'$   
 $T = 36.53'$   
 $R = 11,000.00'$   
 $SE = NC$

**TRANSYSTEMS**

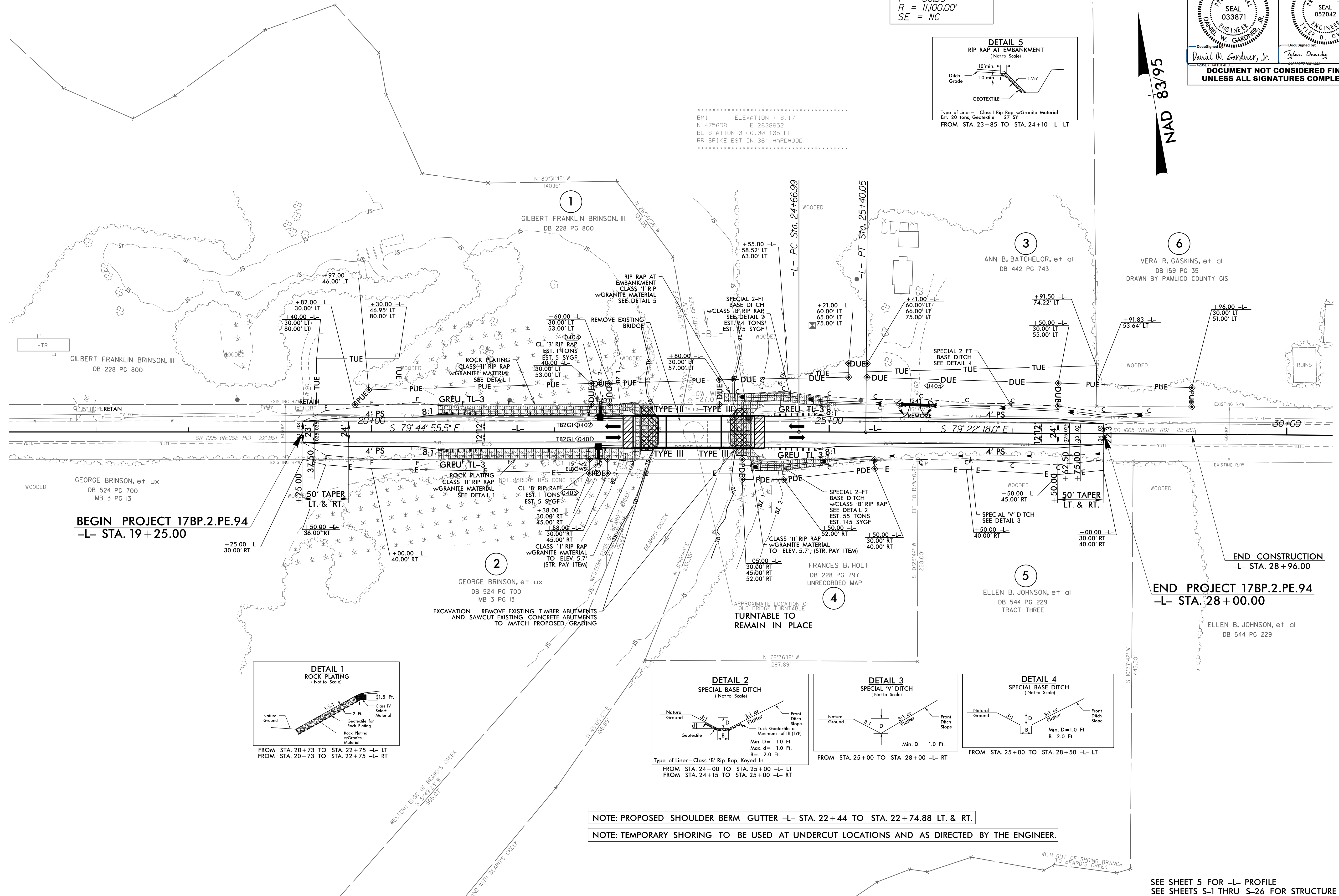
1 Glenwood Avenue  
 Raleigh, NC 27603  
 Tel: 919.789.9977  
 Fax: 919.789.9561  
 License: F-0453

PROJECT REFERENCE NO. <b>17BP.2.PE.94</b>	SHEET NO. <b>4</b>
ROADWAY DESIGN ENGINEER <b>DAVID W. GARDNER, JR.</b> SEAL 033871	HYDRAULICS ENGINEER <b>TYLER ANSBY</b> SEAL 052042
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



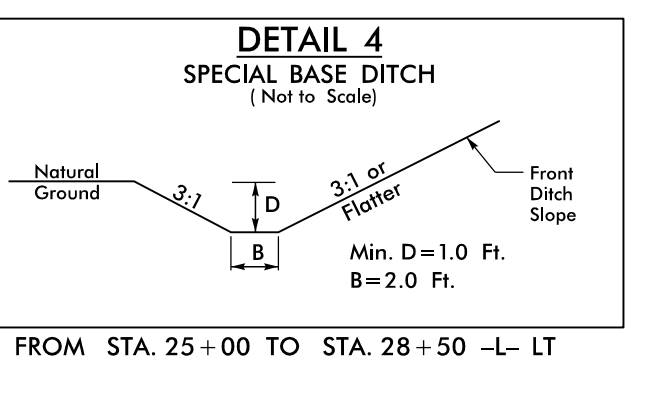
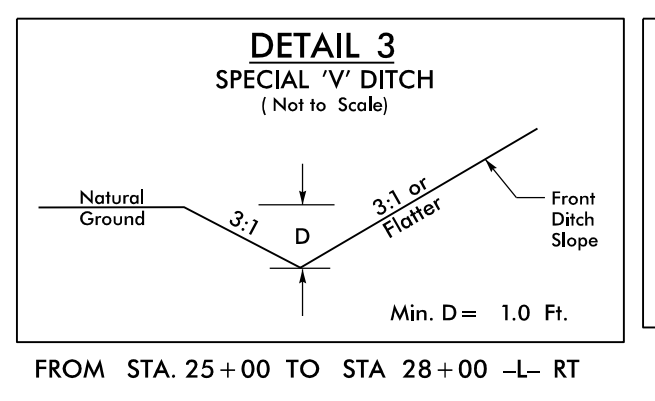
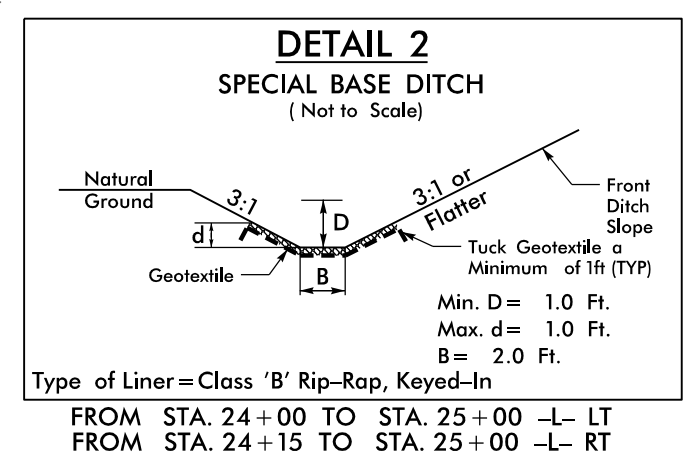
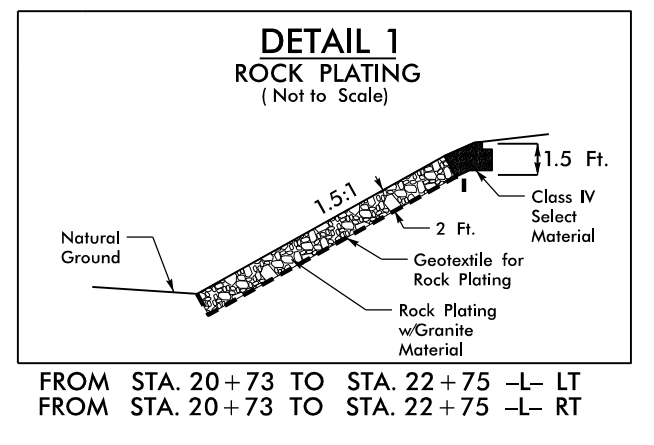
BM1 ELEVATION = 8.17  
 N 475698 E 2638852  
 BL STATION 0+66.00 105 LEFT  
 RR SPIKE EST IN 36' HARDWOOD

**NAD 83/95**



**BEGIN PROJECT 17BP.2.PE.94**  
 -L- STA. 19+25.00

**END PROJECT 17BP.2.PE.94**  
 -L- STA. 28+00.00

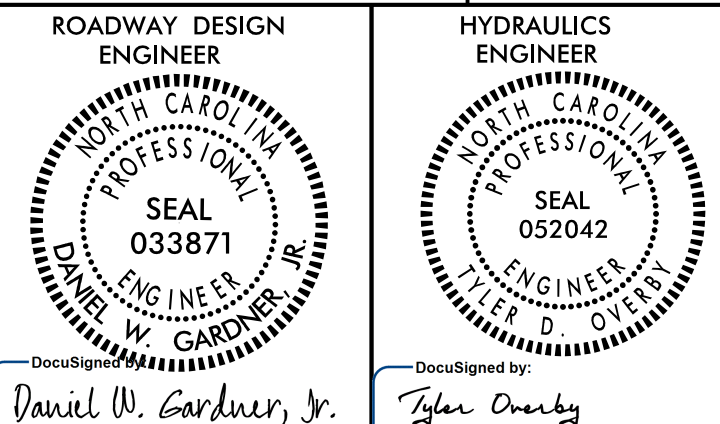


NOTE: PROPOSED SHOULDER BERM GUTTER -L- STA. 22+44 TO STA. 22+74.88 LT. & RT.

NOTE: TEMPORARY SHORING TO BE USED AT UNDERCUT LOCATIONS AND AS DIRECTED BY THE ENGINEER.

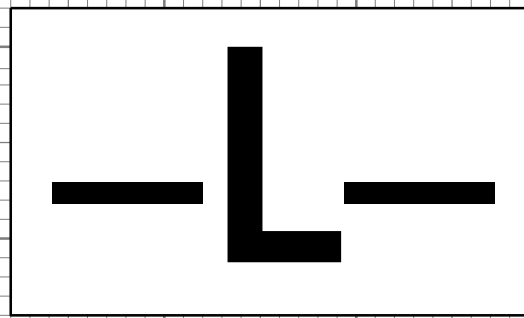
SEE SHEET 5 FOR -L- PROFILE  
 SEE SHEETS S-1 THRU S-26 FOR STRUCTURE PLANS

2/19/2004 4:59:55 PM Rel: psh\_4.dgn  
 USER: dwer



DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

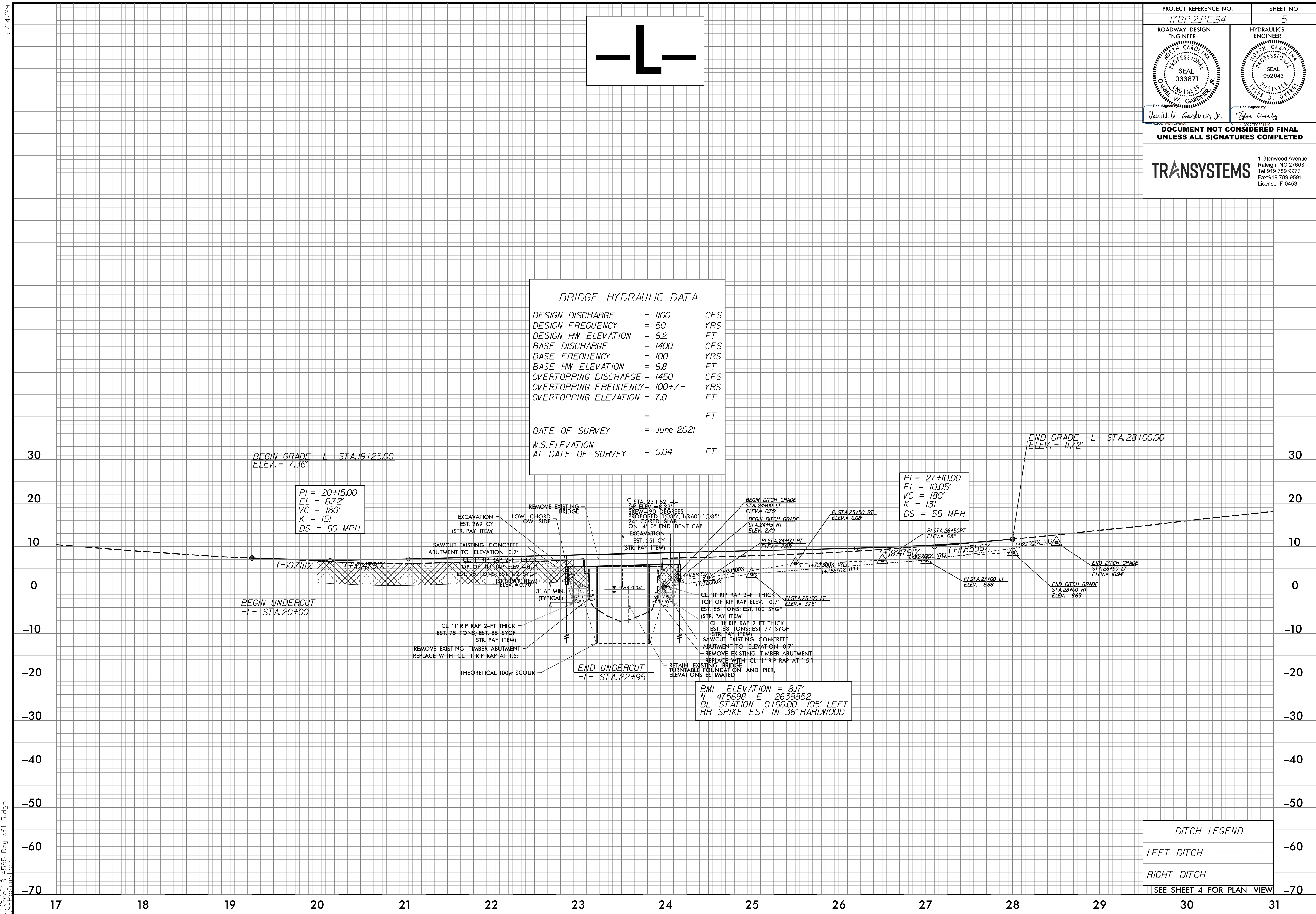
**TRANSYSTEMS**  
1 Glenwood Avenue  
Raleigh, NC 27603  
Tel: 919.789.9977  
Fax: 919.789.9591  
License: F-0453



**BRIDGE HYDRAULIC DATA**

DESIGN DISCHARGE = 1100 CFS  
 DESIGN FREQUENCY = 50 YRS  
 DESIGN HW ELEVATION = 6.2 FT  
 BASE DISCHARGE = 1400 CFS  
 BASE FREQUENCY = 100 YRS  
 BASE HW ELEVATION = 6.8 FT  
 OVERTOPPING DISCHARGE = 1450 CFS  
 OVERTOPPING FREQUENCY = 100 +/- YRS  
 OVERTOPPING ELEVATION = 7.0 FT

DATE OF SURVEY = June 2021  
 W.S. ELEVATION AT DATE OF SURVEY = 0.04 FT



5/14/99

2/18/2024 4:59:55 PM Rdy.pfl\_5.dgn

# SURVEY CONTROL SHEET

## W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
B-4595	RW02C-1
Location and Surveys	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



**DATUM DESCRIPTION**

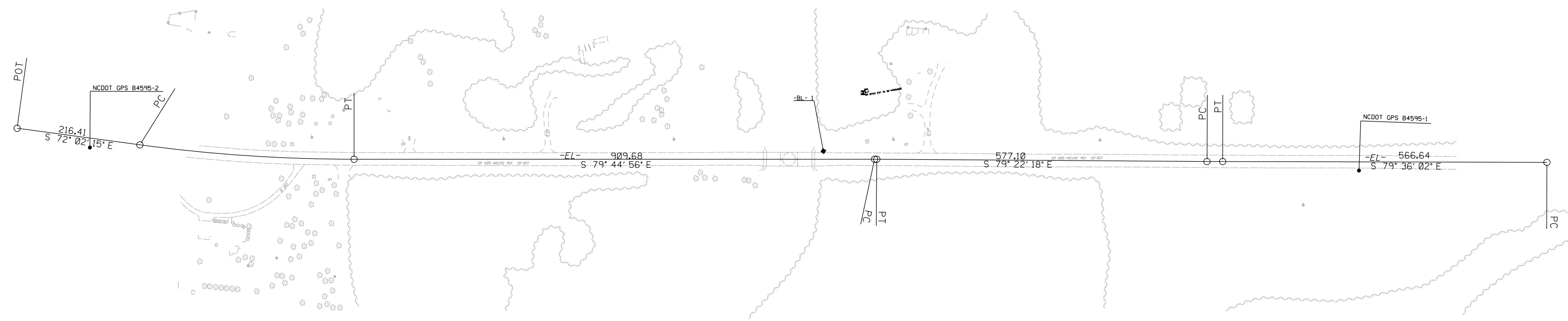
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4595-1"

WITH NAD 83/95 STATE PLANE GRID COORDINATES OF  
NORTHING: 475410.027(±) EASTING: 2639680.039(±)  
ELEVATION: 20.035(±)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999884460

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4595-1" TO -L- STATION IS

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



I, Michael L. Tackett, PLS, certify that the Project Control was verified under my supervision from an actual GPS survey made under my supervision and the following information was used to perform the survey:

Class of survey: **AA**  
 Type of GPS field procedure: OPUS  
 Dates of survey: AUGUST, 2017  
 Datum/Epoch: NAD83/95  
 Published/Fixed-control use: N/A  
 Localized around: B4595-1  
 Northing: 475410.027  
 Easting: 2639680.039  
 Combined grid factor: 0.999884460  
 Geoid model: GEOID03  
 Units: US SURVEY FEET

I also certify that the Baseline Control for this project was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:20,000 (Class AA) and Vertical accuracy to Class A. Field work was performed in August 2017 and all coordinates are based on NAD 83/95 and all elevations are based on NAVD 88; that this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 3 day of MARCH, 2023.

Professional Land Surveyor L-4556


**NOTES:**

---

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

# SURVEY CONTROL SHEET

*W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION*

PROJECT REFERENCE NO. B-4595	SHEET NO. RW02C-2
Location and Surveys	
TRANSYSTEMS	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

## BASELINE DATA

BL	POINT	DESC.	NORTH	EAST	ELEVATION
GPS2	NCDOT	GPS B4595	475844.4250	2637504.7680	20.47
1		BL - 1	475610.1590	2638765.1120	6.70
GPS1	NCDOT	GPS B4595	475410.0270	2639680.0390	20.04

## BENCHMARK DATA

\*\*\*\*\*  
 BMI            ELEVATION - 8.17  
 N 475698       E 2638852  
 RR SPIKE IN 36" HARDWOOD  
 \*\*\*\*\*

## ALIGNMENT DATA

EL POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	475900.208	2637385.642							
LINE			S 72°02'14.7" E	216.41					
PC	475833.469	2637591.501							
CURVE			S 75°53'35.1" E	375.26	07°42'40.9"(LT)	02°03'12.2"	375.54	188.06	2790.32
PT	475742.005	2637955.446							
LINE			S 79°44'55.5" E	909.68					
PC	475580.114	2638850.605							
CURVE			S 79°33'36.7" E	3.78	00°22'37.6"(RT)	10°00'00.0"	3.77	1.89	573.69
PT	475579.430	2638854.319							
LINE			S 79°22'18.0" E	577.10					
PC	475472.991	2639421.520							
CURVE			S 79°29'09.8" E	27.46	00°13'43.8"(LT)	00°50'00.0"	27.46	13.73	6875.55
PT	475467.980	2639448.519							
LINE			S 79°36'01.7" E	566.64					
PC	475365.696	2640005.847							
CURVE			S 79°16'22.7" E	262.02	00°39'18.1"(RT)	00°15'00.0"	262.02	131.01	22918.33
PT	475316.927	2640263.284							
LINE			S 78°56'43.6" E	461.74					
PC	475228.391	2640716.455							
CURVE			S 78°11'11.9" E	158.92	01°31'03.4"(RT)	00°57'17.7"	158.92	79.47	6000.00
PT	475195.857	2640872.008							
LINE			S 77°25'40.2" E	187.00					
PC	475155.153	2641054.521							
CURVE			S 74°57'20.4" E	237.24	04°56'39.7"(RT)	02°05'00.5"	237.31	118.73	2750.00
PCC	475093.574	2641283.628							
CURVE			S 68°10'33.7" E	173.43	08°36'53.7"(RT)	04°57'45.9"	173.59	86.96	1154.52
PT	475029.101	2641444.627							
LINE			S 63°52'06.8" E	438.82					
PC	474835.831	2641838.592							
CURVE			S 64°52'37.9" E	142.58	02°01'02.1"(LT)	01°24'53.0"	142.59	71.30	4050.00
PCC	474775.296	2641967.687							
CURVE			S 68°42'01.3" E	197.37	05°37'44.9"(LT)	02°51'03.5"	197.45	98.80	2009.69
PT	474703.604	2642151.572							
LINE			S 71°30'53.8" E	55.46					
POT	474686.020	2642204.170							

I, Michael L. Tackett, PLS, certify that the Project Control was verified under my supervision from an actual GPS survey made under my supervision and the following information was used to perform the survey:

Class of survey: **AA**  
 Type of GPS field procedure: OPUS  
 Dates of survey: AUGUST, 2017  
 Datum/Epoch: NAD83/95  
 Published/Fixed-control use: N/A  
 Localized around: B4595-1  
 Northing: 475410.027  
 Easting: 2639680.039  
 Combined grid factor: 0.999884460  
 Geoid model: GEOID03  
 Units: US SURVEY FEET

I also certify that the Baseline Control for this project was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:20,000 (Class AA) and Vertical accuracy to Class A. Field work was performed in August 2017 and all coordinates are based on NAD 83/95 and all elevations are based on NAVD 88; that this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 3 day of MARCH, 2023.




Professional Land Surveyor L-4556

**NOTES:**

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

# PROPOSED ALIGNMENT CONTROL SHEET

PROJECT REFERENCE NO. B-4595	SHEET NO. RW02D-1
Location and Surveys	
<b>TRANSYSTEMS</b>	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

I, Michael L. Tackett, 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 3 day of MARCH, 2023.



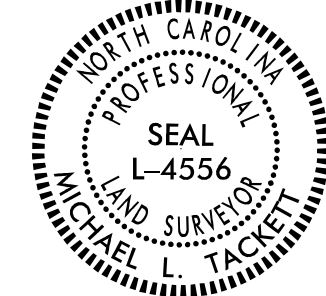
Professional Land Surveyor L-4556

TYPE	STATION	NORTH	EAST
POT	10+00.00	475900.2080	2637385.6420
PC	12+16.41	475833.4688	2637591.5013
PT	15+91.95	475742.0055	2637955.4459
PC	24+66.99	475586.2789	2638816.5181
PT	25+40.05	475573.0411	2638888.3645
PC	30+82.51	475472.9906	2639421.5204
PT	31+09.97	475467.9800	2639448.5186
PC	36+76.61	475365.6959	2640005.8471
PT	39+38.62	475316.9269	2640263.2837
PC	44+00.36	475228.3914	2640716.4551
PT	45+59.29	475195.8568	2640872.0081
PC	47+46.28	475155.1535	2641054.5207
PCC	49+83.59	475093.5744	2641283.6276
PT	51+57.19	475029.1012	2641444.6266
PC	55+96.01	474835.8312	2641838.5923
PCC	57+38.60	474775.2961	2641967.6871
PT	59+36.04	474703.6039	2642151.5717
POT	59+91.50	474686.0200	2642204.1700

**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. B-4595	SHEET NO. RW03e-1
Location and Surveys	
TRANSYSTEMS	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

REVISIONS

ROW MARKER PERMANENT EASEMENT - E

ALIGN	STATION	OFFSET	NORTH	EAST
L	19+82.00	-30.00	475702.1118	2638344.6061
L	19+97.00	-46.00	475715.1869	2638362.2141
L	22+38.00	45.00	475582.7500	2638583.1722
L	22+38.00	30.00	475597.5105	2638585.8417
L	22+40.00	-53.00	475678.8297	2638602.5808
L	22+40.00	-30.00	475656.1968	2638598.4876
L	22+58.00	45.00	475579.1907	2638602.8529
L	22+58.00	30.00	475593.9512	2638605.5224
L	22+60.00	-53.00	475675.2704	2638622.2616
L	22+60.00	-30.00	475652.6375	2638618.1684
L	23+80.00	-30.00	475631.2817	2638736.2528
L	23+80.00	-57.00	475657.8507	2638741.0578
L	24+05.00	30.00	475567.7904	2638750.1758
L	24+05.00	52.00	475546.1416	2638746.2606
L	24+50.00	52.00	475538.1332	2638790.5422
L	25+21.00	-75.00	475650.2753	2638883.3457
L	25+21.00	-60.00	475635.5279	2638880.6045
L	25+41.00	-60.00	475631.8363	2638900.3656
L	25+41.00	-75.00	475646.5789	2638903.1321
L	25+50.00	30.00	475541.7204	2638892.6118
L	25+50.00	40.00	475531.8919	2638890.7674
L	27+50.00	-55.00	475588.3746	2639104.8578
L	27+50.00	-30.00	475563.8035	2639100.2469
L	28+96.00	-30.00	475536.8756	2639243.7422
L	28+96.00	-51.00	475557.5153	2639247.6153

I, Michael L. Tackett, 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 on 02/13/2023, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 3 day of MARCH, 2023.

Professional Land Surveyor L-4556

I, Michael L. Tackett, a Professional Land Surveyor in the state of North Carolina hereby certify to the best of my knowledge and belief that the following work item(s) (Base map Compilation, R/W Staking) performed under my responsible charge meet NCDOT Survey Standards as directed in the NCDOT Location & Surveys guidelines and procedures.

I further 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.

I further certify that the right of way and permanent easement points shown herein and outlined in the tables shown hereon (localized coordinates, station/offset) have been checked and are accurate representations of the right of way and permanent easement points depicted on the corresponding highway plans. I also certify that the right of way and permanent easement points shown herein have been field monumented under my supervision from existing survey control provided by others; that the depicted property data shown herein were surveyed by others; and these monuments denote the right of way and easement boundaries at the time of staking which may be subject to change due to right of way revisions (See deeds for final determination).

Witness my original signature, registration number and seal this 3rd day of March, 2023.



Professional Land Surveyor PLS #

L-4556

Seal

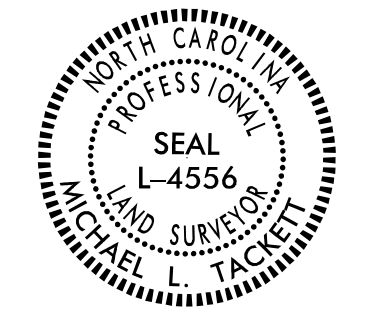


**NOTES:**

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 02/13/2023



Location and Surveys



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I, Michael L. Tackett, a Professional Land Surveyor in the state of North Carolina hereby certify to the best of my knowledge and belief that the following work item(s) (Base map Compilation, R/W Staking) performed under my responsible charge meet NCDOT Survey Standards as directed in the NCDOT Location & Surveys guidelines and procedures.

I further 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.

I further certify that the right of way and permanent easement points shown herein and outlined in the tables shown hereon (localized coordinates, station/offset) have been checked and are accurate representations of the right of way and permanent easement points depicted on the corresponding highway plans. I also certify that the right of way and permanent easement points shown herein have been field monumented under my supervision from existing survey control provided by others; that the depicted property data shown herein were surveyed by others; and these monuments denote the right of way and easement boundaries at the time of staking which may be subject to change due to right of way revisions (See deeds for final determination).

Witness my original signature, registration number and seal this 3rd day of March, 2023.

Professional Land Surveyor PLS # L-4556 Seal



I, Michael L. Tackett, 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 02/13/2023, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

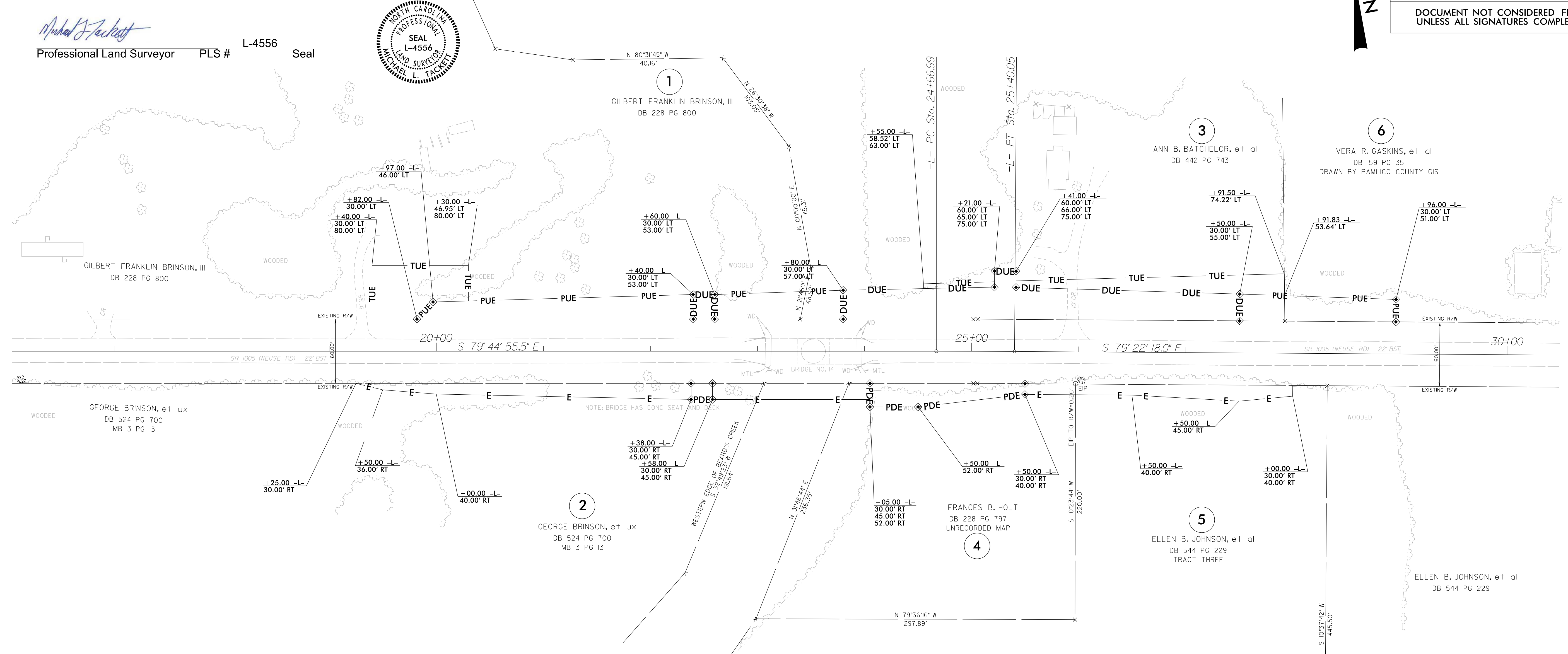
This 3 day of MARCH, 2023.

Professional Land Surveyor L-4556

-L-  
PI Sta 25+03.52  
Δ = 0° 22' 37.6" (RT)  
D = 0° 30' 58.2"  
L = 73.06'  
T = 36.53'  
R = 11,000.00'  
SE = NC

NAD 83/95

REVISIONS



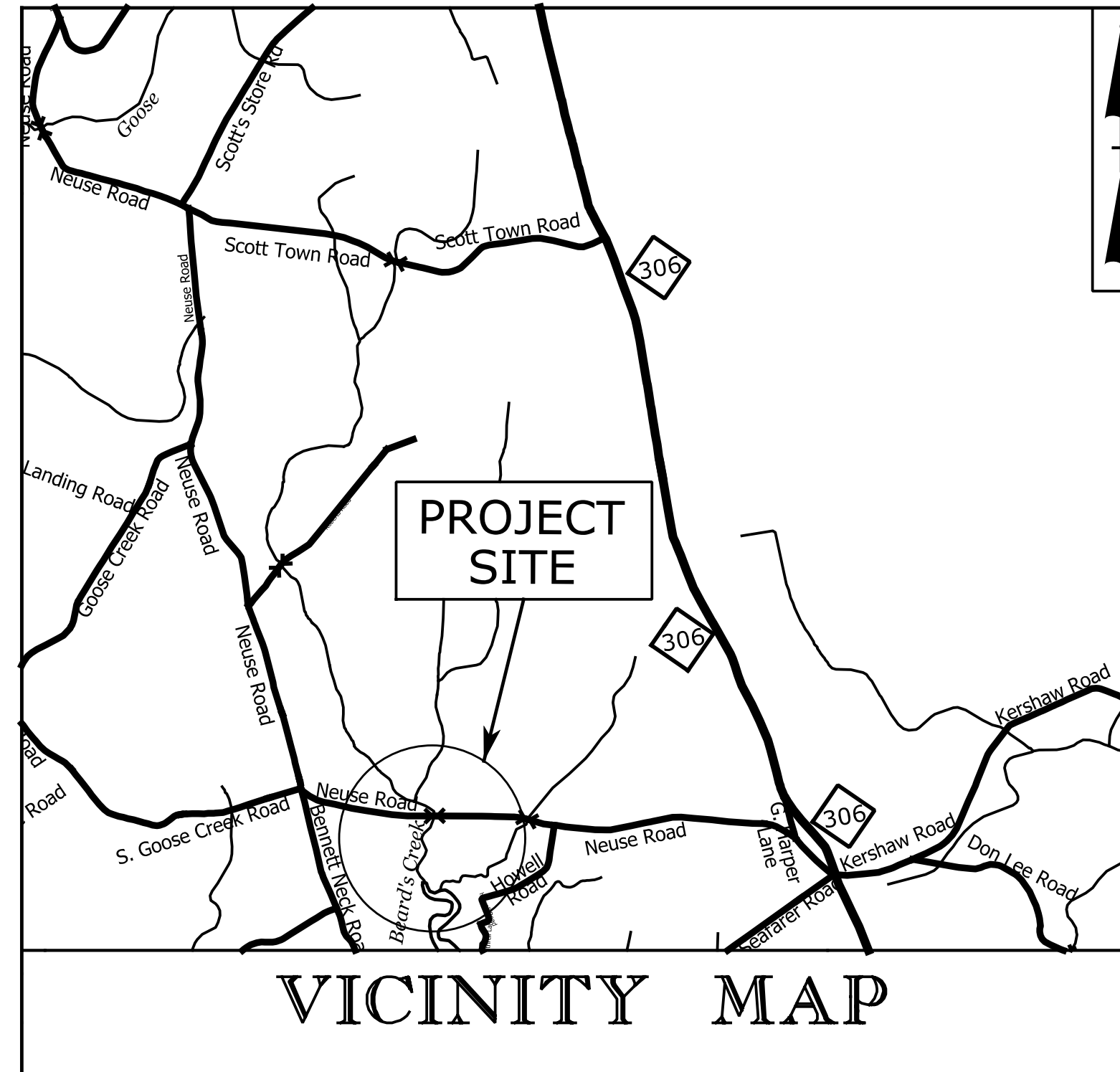
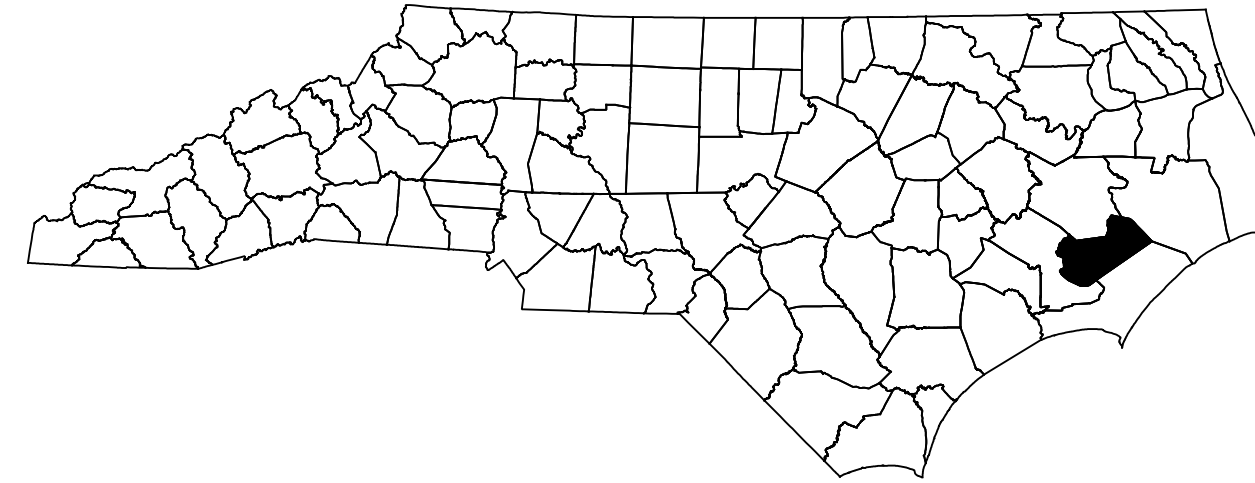
NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED ON 02/13/2023

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**TRANSPORTATION MANAGEMENT PLAN**

**PAMLICO COUNTY**



**LOCATION: BRIDGE NO. 14 ON SR 1005 (NEUSE ROAD) OVER BEARD CREEK**

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

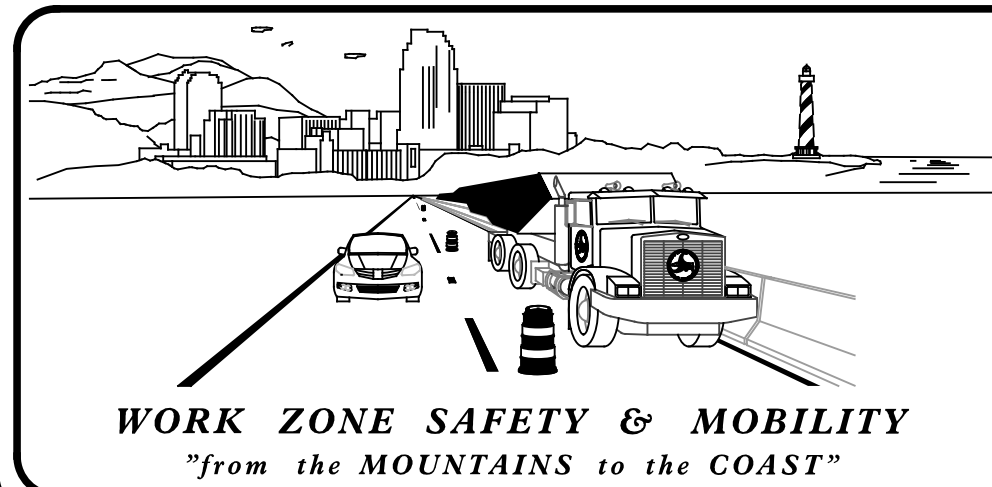
**INDEX OF SHEETS**

<u>SHEET NO.</u>	<u>TITLE</u>
TMP-1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS AND LEGEND
TMP-1B	TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES, GENERAL NOTES, AND PHASING)
TMP-2	OFF-SITE DETOUR
TMP-3	ROAD CLOSURE

SHEET NO.  
TMP-1

**CONTRACT: CN DB00559 PROJECT: 17BP.2.PE.94**

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



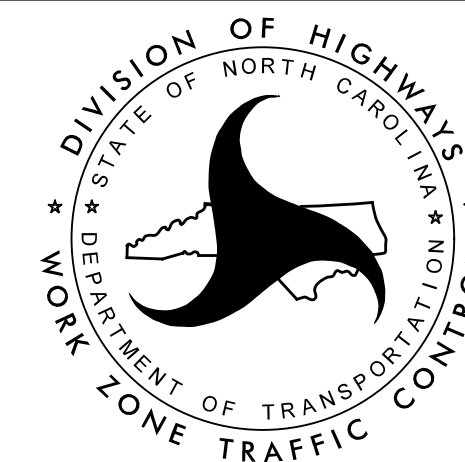
PLANS PREPARED BY:

JOHN BAUMAN, P.E.

STEVE MILLER, P.E.

NCDOT CONTACTS:

MICHAEL AMAN, P.E.



**TRANSYSTEMS**

1 Glenwood Avenue  
Raleigh, NC 27603  
Tel: 919.789.9977  
Fax: 919.789.9591  
License: F-0453

APPROVED: Steve Miller

DATE: \_\_\_\_\_

SEAL



# ROADWAY STANDARD DRAWINGS

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

<u>STD. NO.</u>	<u>TITLE</u>
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.03	TEMPORARY ROAD CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1145.01	BARRICADES - TYPE III

# LEGEND

### GENERAL

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

WORK AREA

REMOVAL

### SIGNALS

- EXISTING
- PROPOSED
- TEMPORARY

### PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

### TRAFFIC CONTROL DEVICES

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

### TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

### PAVEMENT MARKERS

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

### PAVEMENT MARKING SYMBOLS

- PAVEMENT MARKING SYMBOLS

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jbauman

**TRANSYSTEMS**

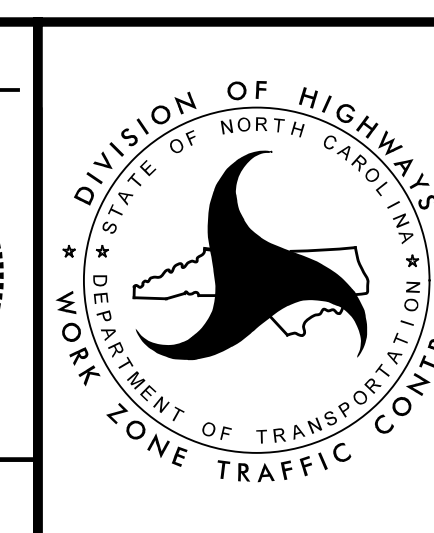
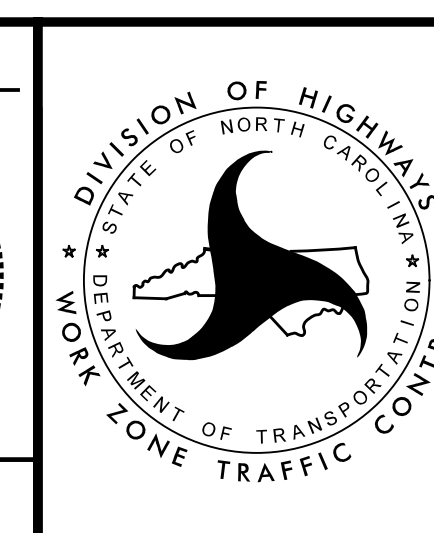
1 Glenwood Avenue  
Raleigh, NC 27603  
Tel: 919.789.9977  
Fax: 919.789.9591  
License: F-0453

APPROVED:

DATE: \_\_\_\_\_

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UNLESS ALL SIGNATURES COMPLETED**



**ROADWAY STANDARD  
DRAWINGS & LEGEND**

## MANAGEMENT STRATEGIES

- CLOSE SR 1005 (NEUSE ROAD) AND DETOUR TRAFFIC OFF-SITE VIA SR 1005 (NEUSE RD.), NC 306, SR 1100 (SCOTT TOWN RD.), AND BACK TO SR 1005 (NEUSE ROAD).
- LOCAL ACCESS TO ALL RESIDENCES AND BUSINESSES WILL BE MAINTAINED BETWEEN CLOSURE POINTS AT ALL TIMES DURING CONSTRUCTION.
- PROVIDE ONE MONTH NOTICE TO THE ENGINEER, PAMLICO COUNTY EMERGENCY SERVICES, AND PAMLICO COUNTY SCHOOL OFFICIALS PRIOR TO ROAD CLOSURE.

## GENERAL NOTES

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

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

### TRAFFIC PATTERN ALTERATIONS

- A) NOTIFY THE ENGINEER THIRTY (30) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

### SIGNING

- B) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.
- C) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.

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

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

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

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

### TRAFFIC CONTROL DEVICES

- F) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.
- G) STATE FORCES WILL INSTALL AND MAINTAIN THE PROJECT DETOUR AND TYPE III BARRICADES AT THE PROJECT LIMITS. STATE FORCES WILL INSTALL MARKING AND MARKERS ON THE FINISHED PROJECT. CONTACT JIM EVANS AT (252)439-2829 TWO WEEKS PRIOR TO CLOSING THE ROAD FOR DETOUR INSTALLATION.


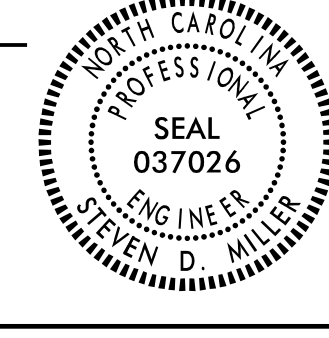
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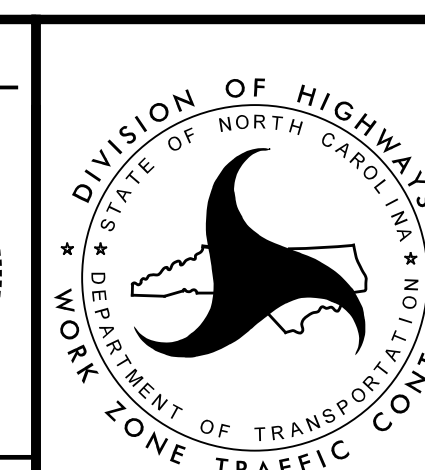
- STEP 1: USING RSD 1101.01 SHEET 3 OF 3, INSTALL ADVANCE WORK ZONE WARNING SIGNS ON NEUSE RD. SR 1005.
- STEP 2: USING RSD 1101.03 SHEET 1 OF 9, CLOSE SR 1005 (NEUSE ROAD) AND DETOUR TRAFFIC OFF-SITE AS SHOWN ON TMP-2.
- STEP 3: REMOVE THE EXISTING STRUCTURE AND CONSTRUCT THE PROPOSED STRUCTURE AND ROADWAY.
- STEP 4: PLACE FINAL PAVEMENT MARKINGS ACCORDING TO THE PAVEMENT MARKING PLANS.
- STEP 5: OPEN SR 1005 (NEUSE ROAD) TO TRAFFIC AND REMOVE ALL WORK ZONE TRAFFIC CONTROL DEVICES.

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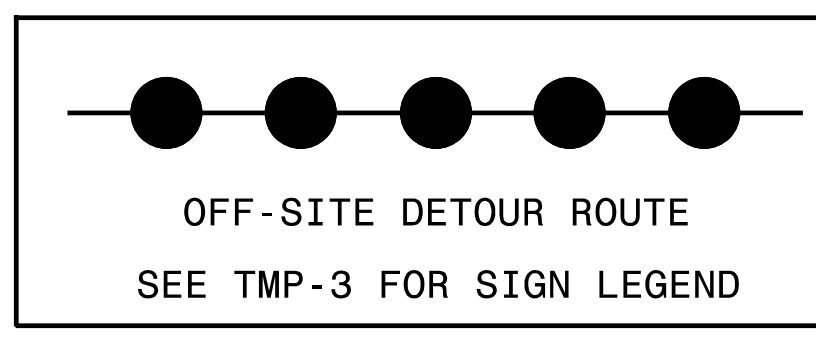
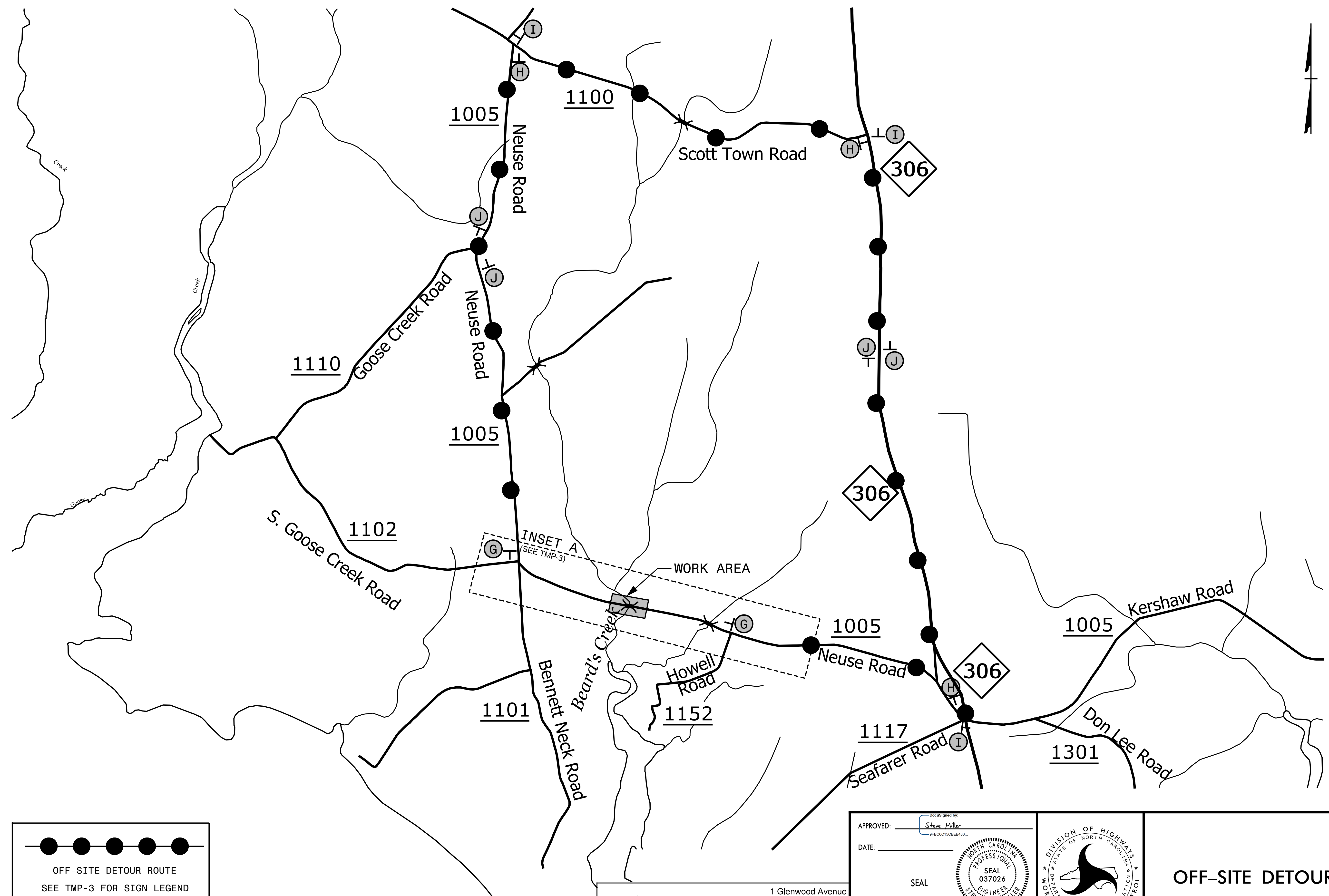
**TRANSYSTEMS**

1 Glenwood Avenue  
Raleigh, NC 27603  
Tel: 919.789.9977  
Fax: 919.789.9591  
License: F-0453

APPROVED: 
DATE: _____
SEAL

<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>

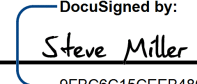



**TRANSPORTATION  
OPERATION  
PLAN**



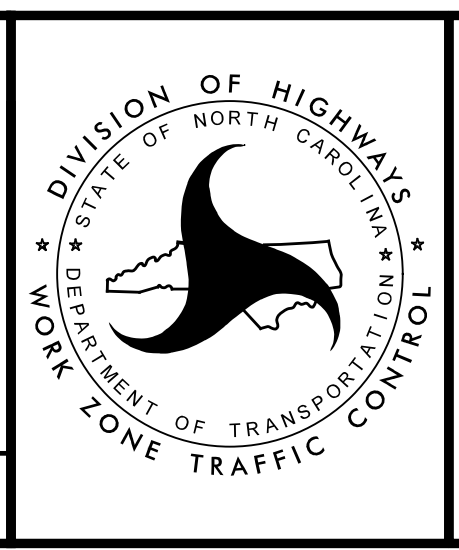
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 jbauman

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 1 Glenwood Avenue  
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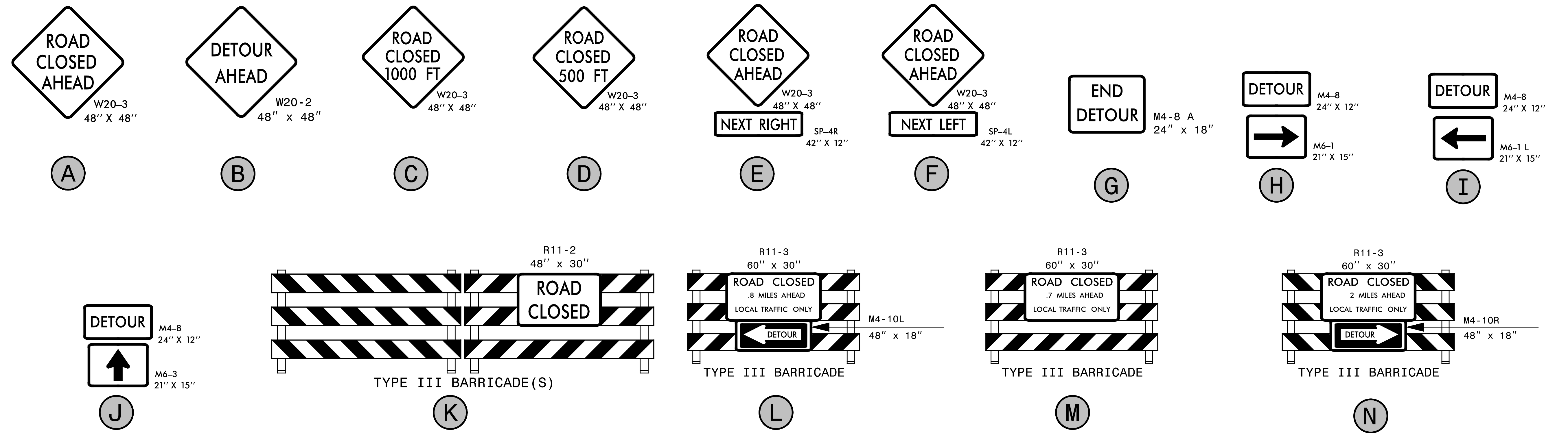
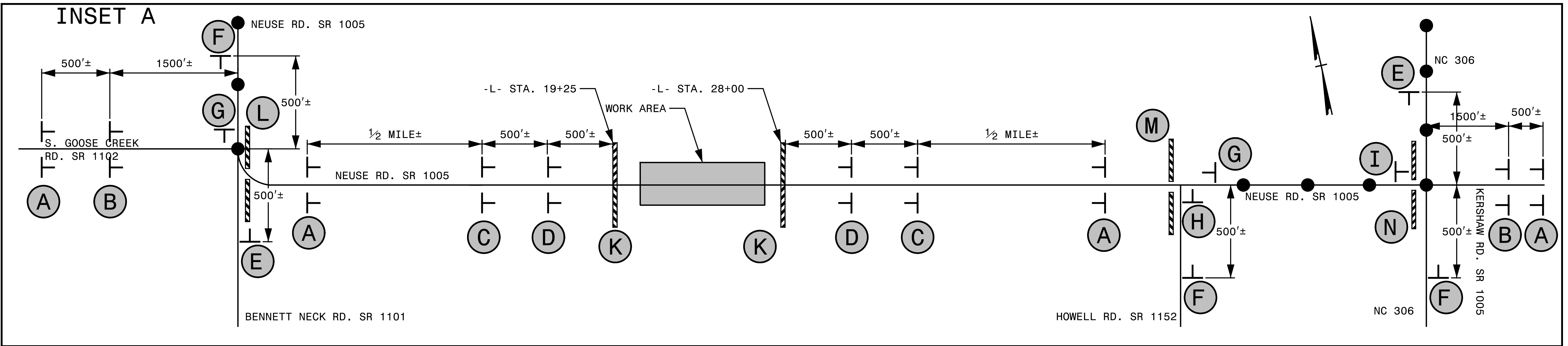
APPROVED:   
 DATE: \_\_\_\_\_  
 SEAL



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



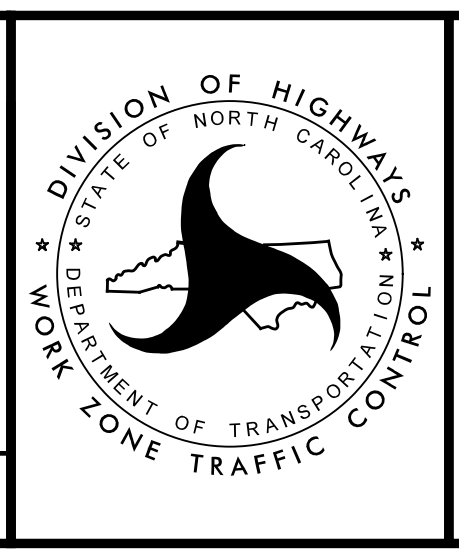
OFF-SITE DETOUR



1/23/2024 X:\2019\SEI9\10.02 Replace Pamlico 14\TP\Traffic\TMP\17BP.2.R.94 TMP-3.dgn jbauman

**TRANSYSTEMS**  
1 Glenwood Avenue  
Raleigh, NC 27603  
Tel: 919.789.9977  
Fax: 919.789.9591  
License: F-0453

APPROVED: *Steve Miller*  
DATE: \_\_\_\_\_  
SEAL  
NORTH CAROLINA PROFESSIONAL ENGINEER  
STEVEN D. MILLER  
037026



**ROAD CLOSURE**

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED


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 1/22/2024 10:51:10 AM J.Bauman

**CONTRACT: CN DB00559 PROJECT: 17BP.2.PE.94**

**STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION**

**PAVEMENT MARKING PLAN  
 PAMLICO COUNTY**

**LOCATION: BRIDGE NO.14 ON SR 1005 (NEUSE ROAD) OVER BEARD CREEK**

<small>PROJECT NO.</small> 17BP.2.PE.94	<small>SHEET NO.</small> PMP - 1
<small>APPROVED:</small> <i>Steve Miller</i>	
<small>DATE:</small> _____	
	
<small>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</small>	

**INDEX**

<u>SHEET NO.</u>	<u>DESCRIPTION</u>
PMP-1	PAVEMENT MARKING PLAN TITLE, GENERAL NOTES, STANDARD DRAWINGS, MARKING SCHEDULE, AND QUANTITIES
PMP-2	PAVEMENT MARKING DETAIL

**ROADWAY STANDARD DRAWING**

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

<u>STD. NO.</u>	<u>TITLE</u>
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING

**PAVEMENT MARKING SCHEDULE**

<u>SYMBOL</u>	<u>DESCRIPTION</u>
	<u>THERMOPLASTIC (4", 90 MILS)</u>
T1	WHITE EDGELINE
T13	YELLOW DOUBLE CENTER
	<u>POLYUREA (4", 20 MILS)</u>
V1	WHITE EDGELINE
V13	YELLOW DOUBLE CENTER
	<u>PERMANENT RAISED PAVEMENT MARKERS</u>
MA	YELLOW & YELLOW
	<u>NON CAST IRON SNOWPLOWABLE PAVEMENT MARKERS</u>
ME	YELLOW & YELLOW

**GENERAL NOTES**

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

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

<small>ROAD NAME</small>	<small>MARKING</small>	<small>MARKER</small>
NEUSE RD. SR 1005	THERMOPLASTIC	SNOWPLOWABLE
BRIDGE 14	POLYUREA	PERMANENT
- B) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- C) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS.
- D) REMOVE ALL RESIDUE AND SURFACE LAITANCE BY ACCEPTABLE METHODS ON CONCRETE BRIDGE DECKS PRIOR TO PLACING POLYUREA PAVEMENT MARKING MATERIAL.

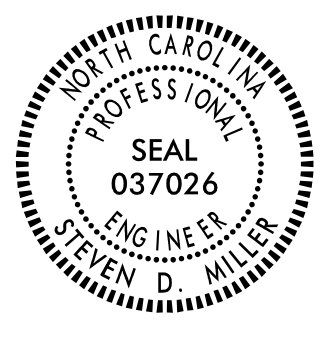
**SUMMARY OF QUANTITIES**

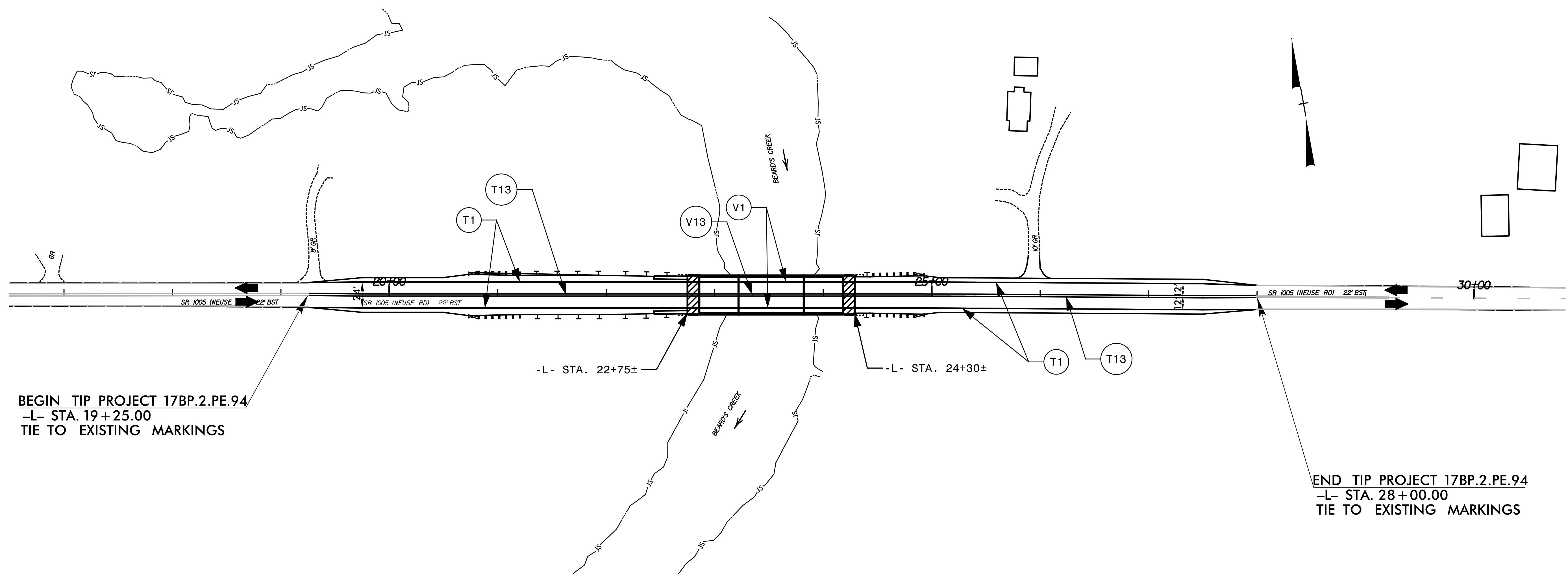
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4847010000-E	1205	525	LF
4900000000-N	1251	4	EA
4905100000-N	1253	20	EA

**PLAN PREPARED BY: SEPI INC.**

*John Bauman, P.E.* TRAFFIC DESIGNER  
*Steve Miller, P.E.* TRAFFIC PROJECT MANAGER

**TRANSYSTEMS**  
 1 Glenwood Avenue  
 Raleigh, NC 27603  
 Tel: 919.789.9977  
 Fax: 919.789.9591  
 License: F-0453

TIP NO.	SHEET NO.
17BP.2.PE.94	PMP-2
APPROVED: <u>Steve Miller</u> <small>DocuSigned by: Steve Miller 9f8c8c15cee8488</small>	
DATE:	
SEAL	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



BEGIN TIP PROJECT 17BP.2.PE.94  
-L- STA. 19+25.00  
TIE TO EXISTING MARKINGS

END TIP PROJECT 17BP.2.PE.94  
-L- STA. 28+00.00  
TIE TO EXISTING MARKINGS

3/1/2003 3:51:19 PM C:\Users\pml\OneDrive\Documents\17BP.2.PE.94\_PMP-2.dgn

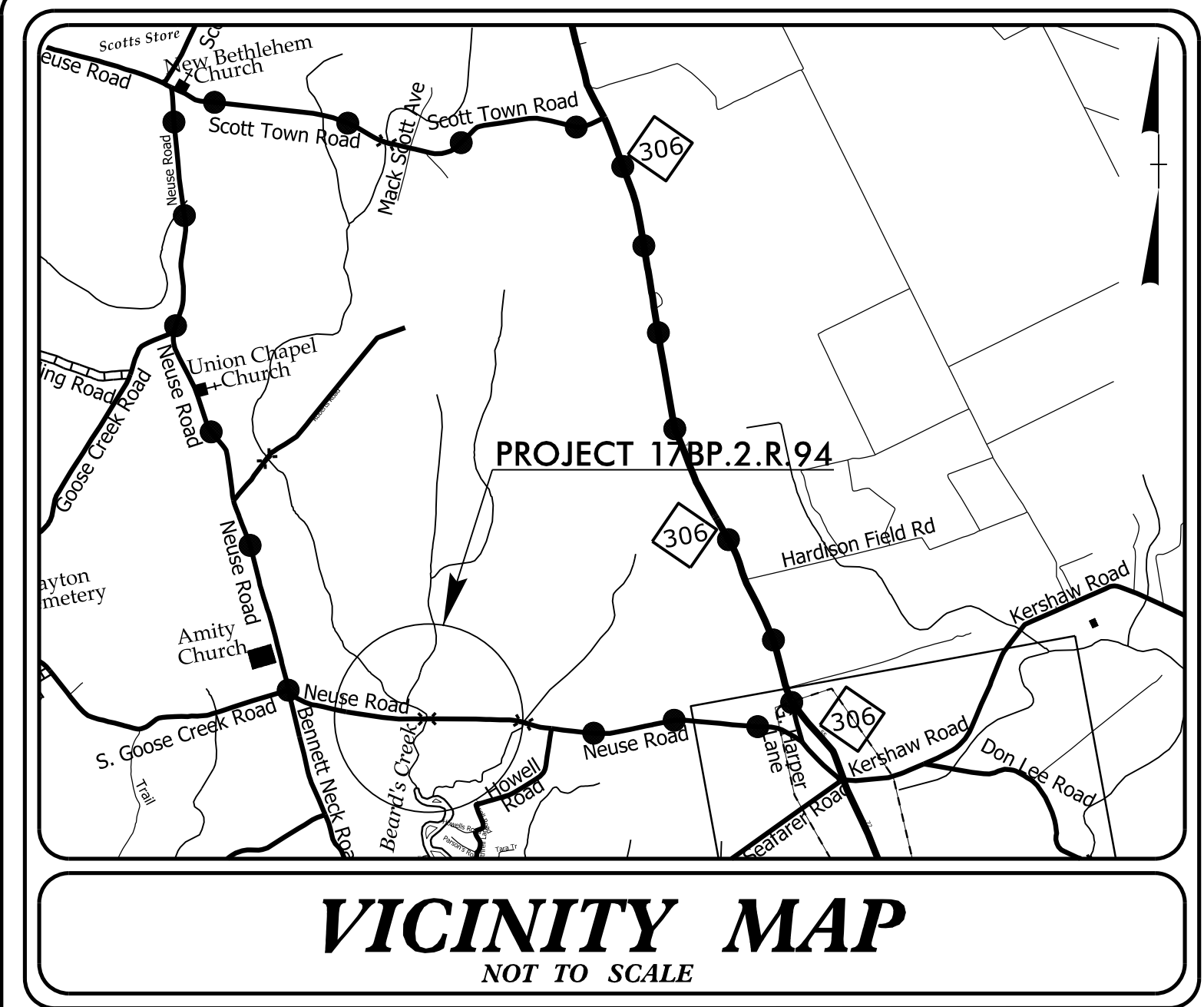
**TRANSYSTEMS**  
1 Glenwood Avenue  
Raleigh, NC 27603  
Tel: 919.789.9977  
Fax: 919.789.9591  
License: F-0453

PAVEMENT MARKING DETAIL



STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.2.PE.94	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.2.PE.94	N/A	PE	
17BP.2.PE.94	N/A	RW & UTILITIES	
17BP.2.R.94	N/A	CONST.	

**TIP PROJECT: 17BP.2.PE.94**



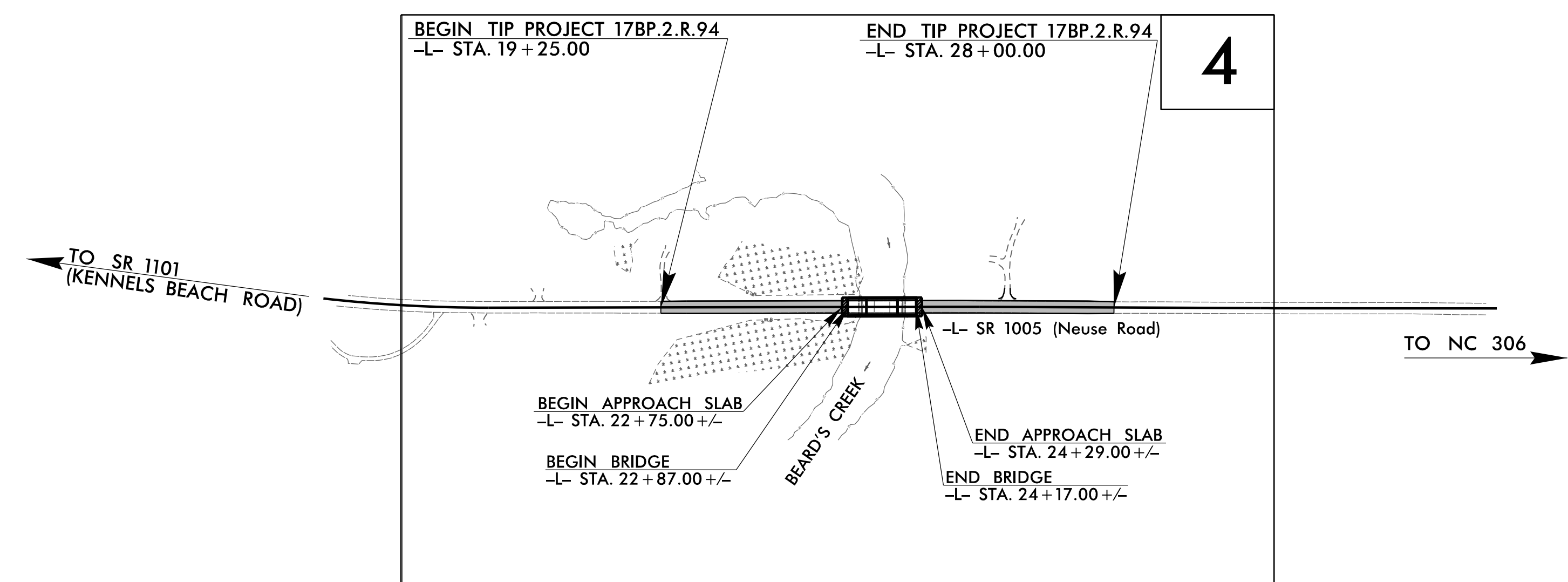
**ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT**

Refer To E. C. Special Provisions for Special Considerations.

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
PLAN FOR PROPOSED  
HIGHWAY EROSION CONTROL

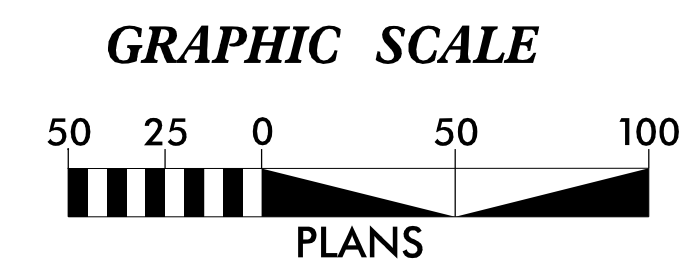
**PAMLICO COUNTY**

LOCATION: BRIDGE NO.14 ON SR 1005 (NEUSE ROAD) OVER BEARD CREEK  
TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE



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

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.



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.

**TRANSYSTEMS**

Prepared in the Office of:  
**TranSystems**  
1 Glenwood Avenue  
Suite 600  
Raleigh, NC 27603

Designed by:  
**Tyler D. Overby** **4140**  
NAME LEVEL III CERTIFICATION NO.

Roadway Standard Drawings

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

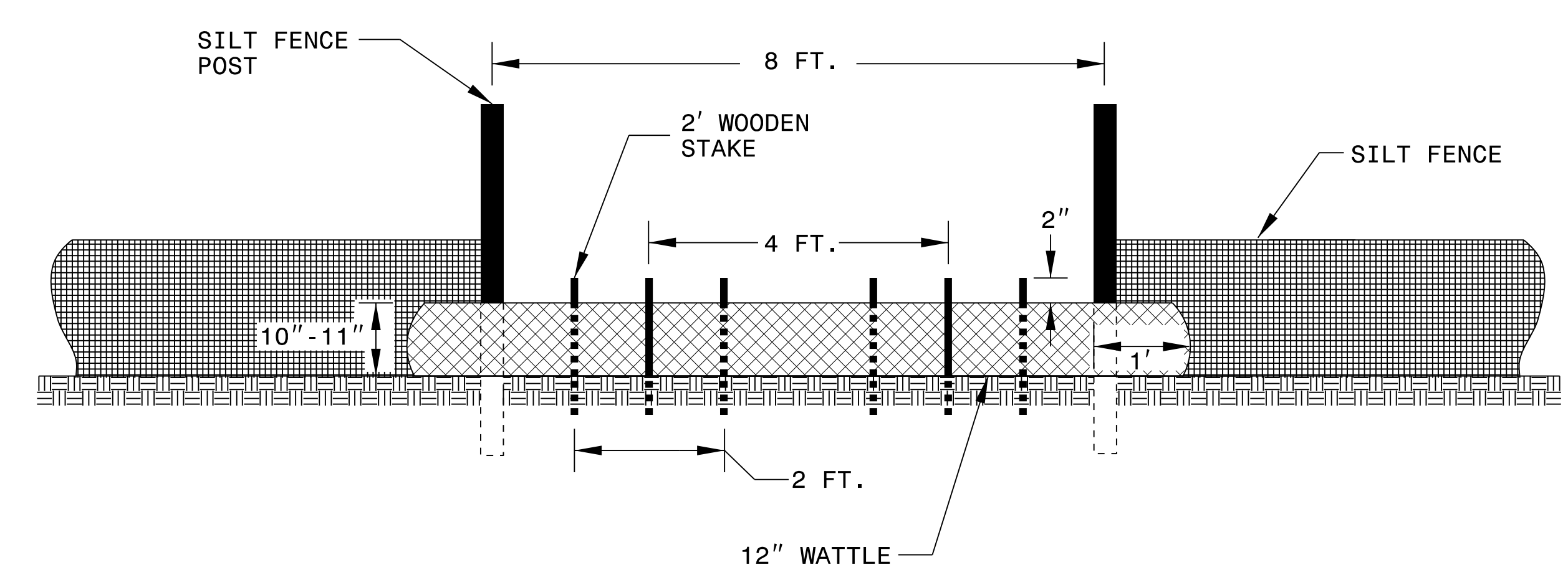
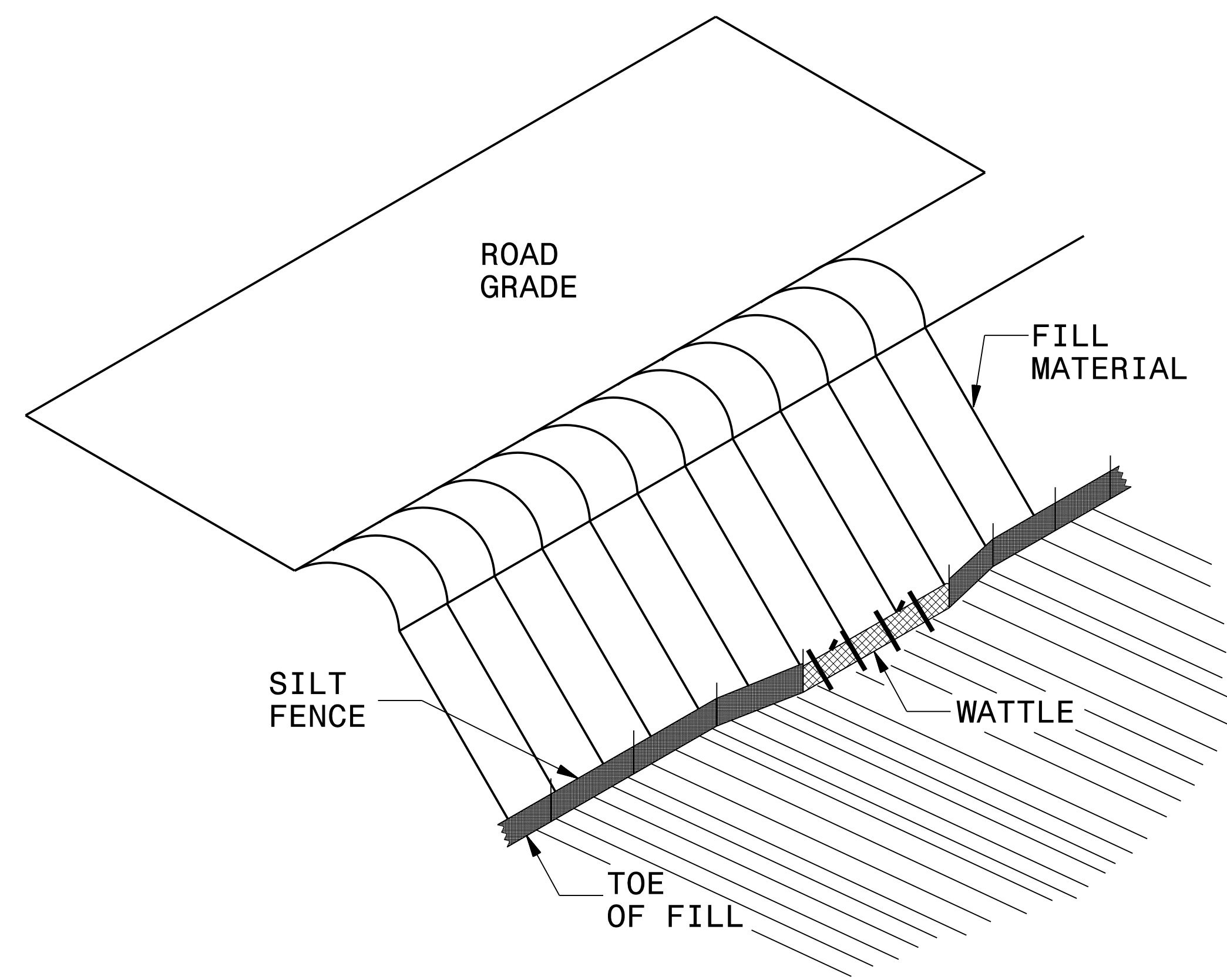
2/15/2024  
USER: t.d.Overby  
FILE: 17BP.2.PE.94\_EC-1.dgn

# DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

## EROSION & SEDIMENT CONTROL LEGEND

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

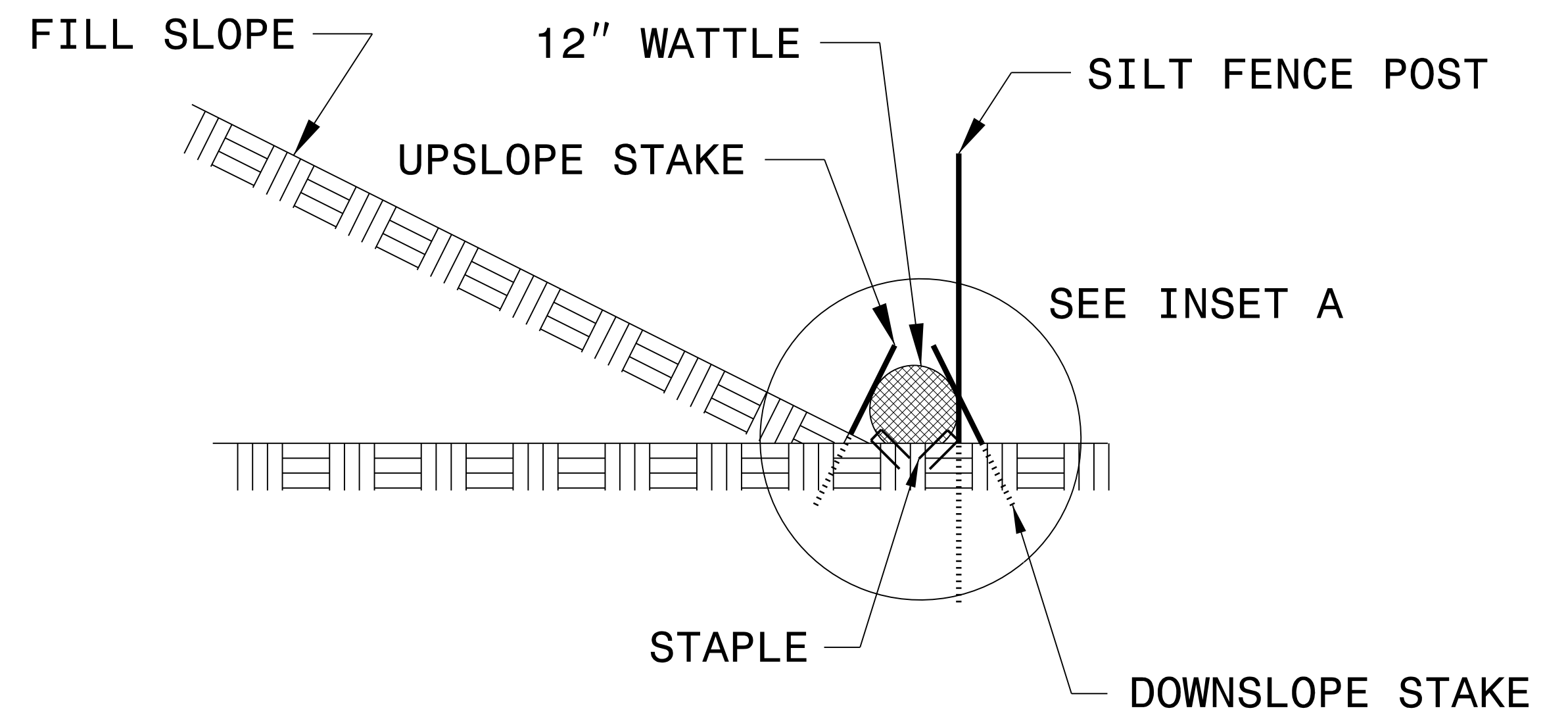
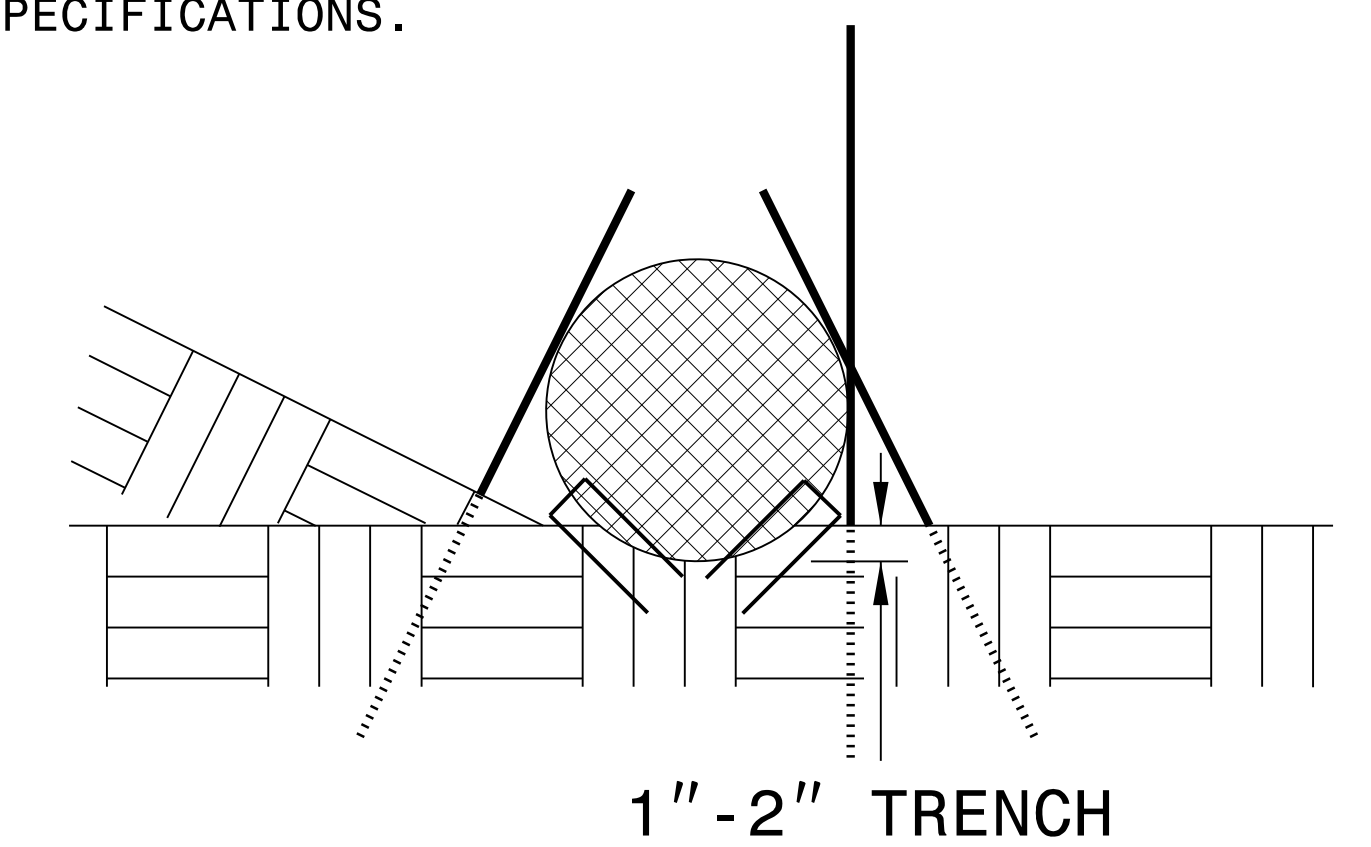
# SILT FENCE COIR FIBER WATTLE BREAK DETAIL



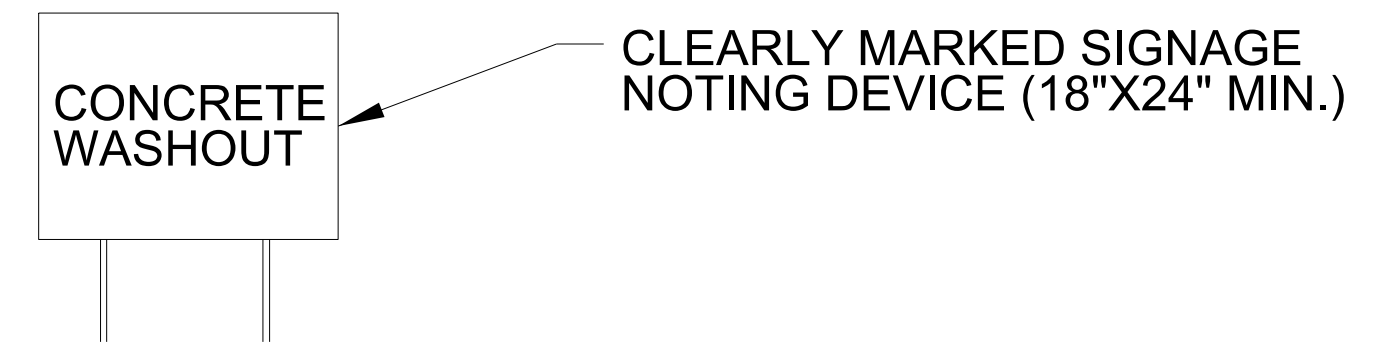
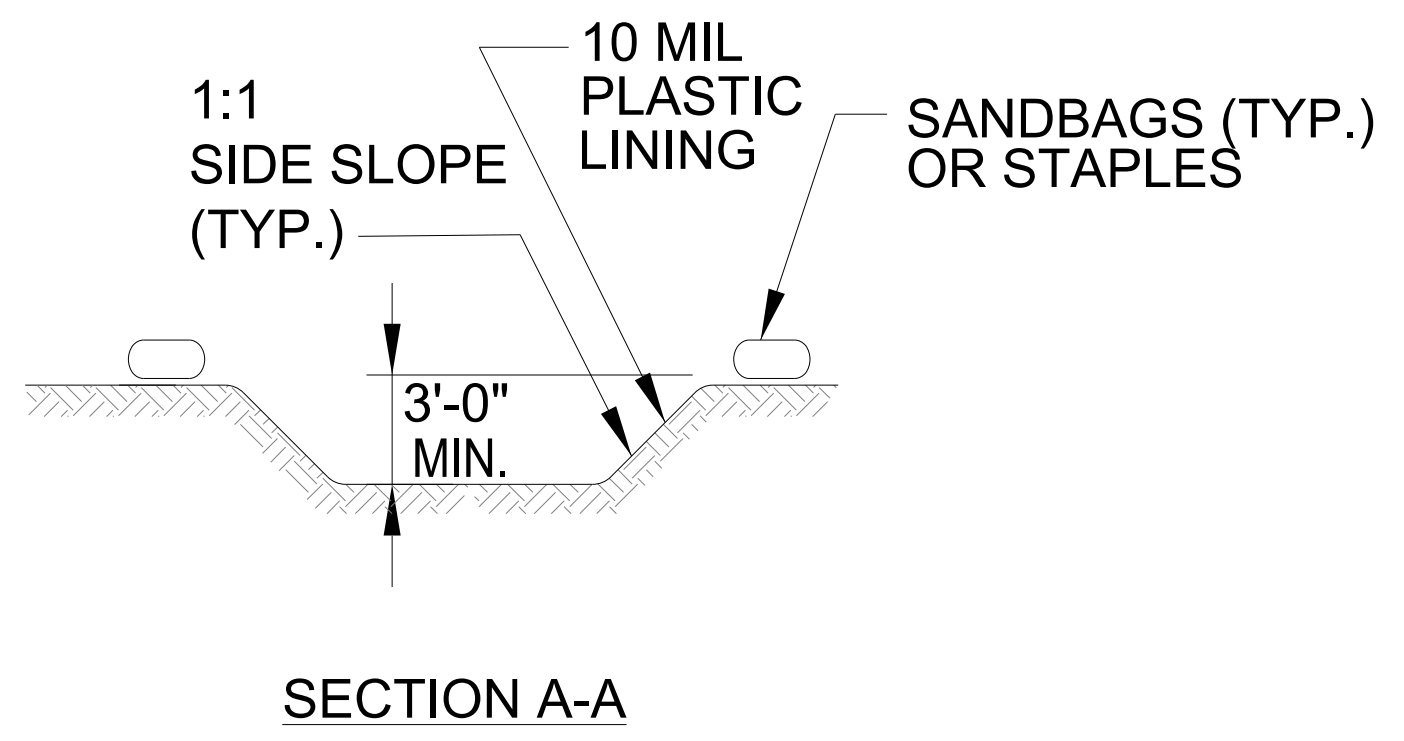
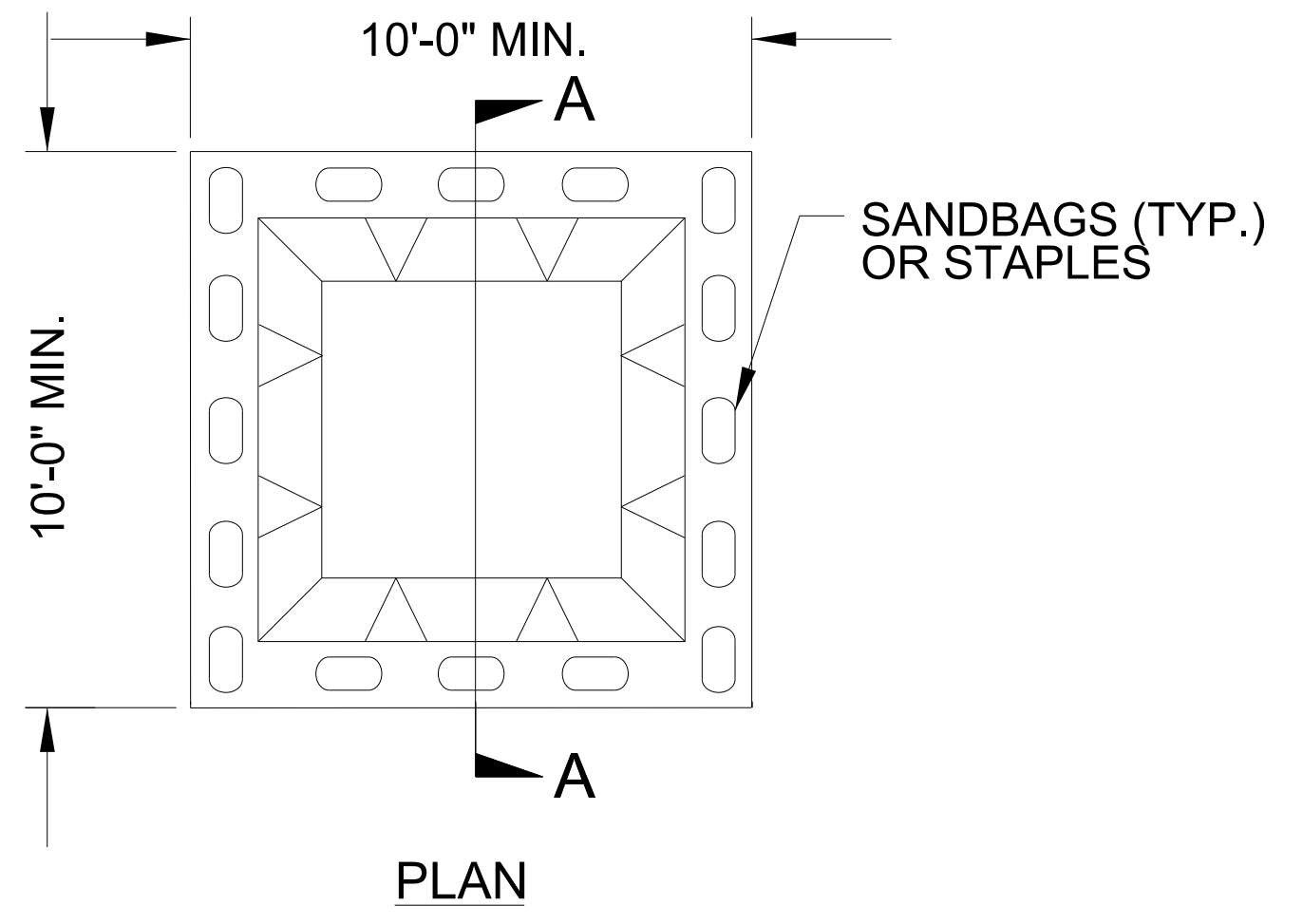
**NOTES:**

- USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE AND LENGTH OF 10 FT.
- EXCAVATE A 1 TO 2 INCH TRENCH FOR WATTLE TO BE PLACED.
- DO NOT PLACE WATTLE ON TOE OF SLOPE.
- USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.
- INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO GROUND.
- PROVIDE STAPLES MADE OF 11 GAUGE STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 6" IN LENGTH.
- INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.
- WATTLE INSTALLATION CAN BE ON OUTSIDE OF THE SILT FENCE AS DIRECTED.
- INSTALL TEMPORARY SILT FENCE IN ACCORDANCE WITH SECTION 1605 OF THE STANDARD SPECIFICATIONS.

**INSET A**

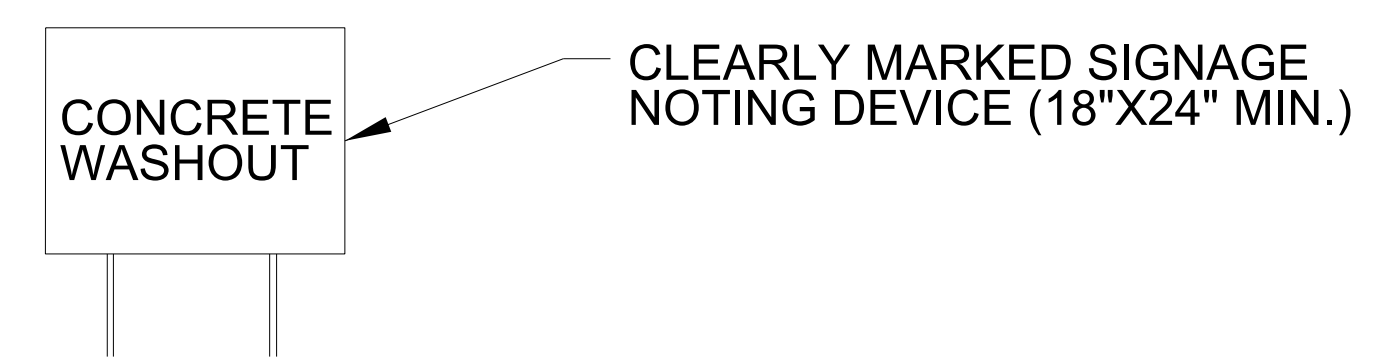
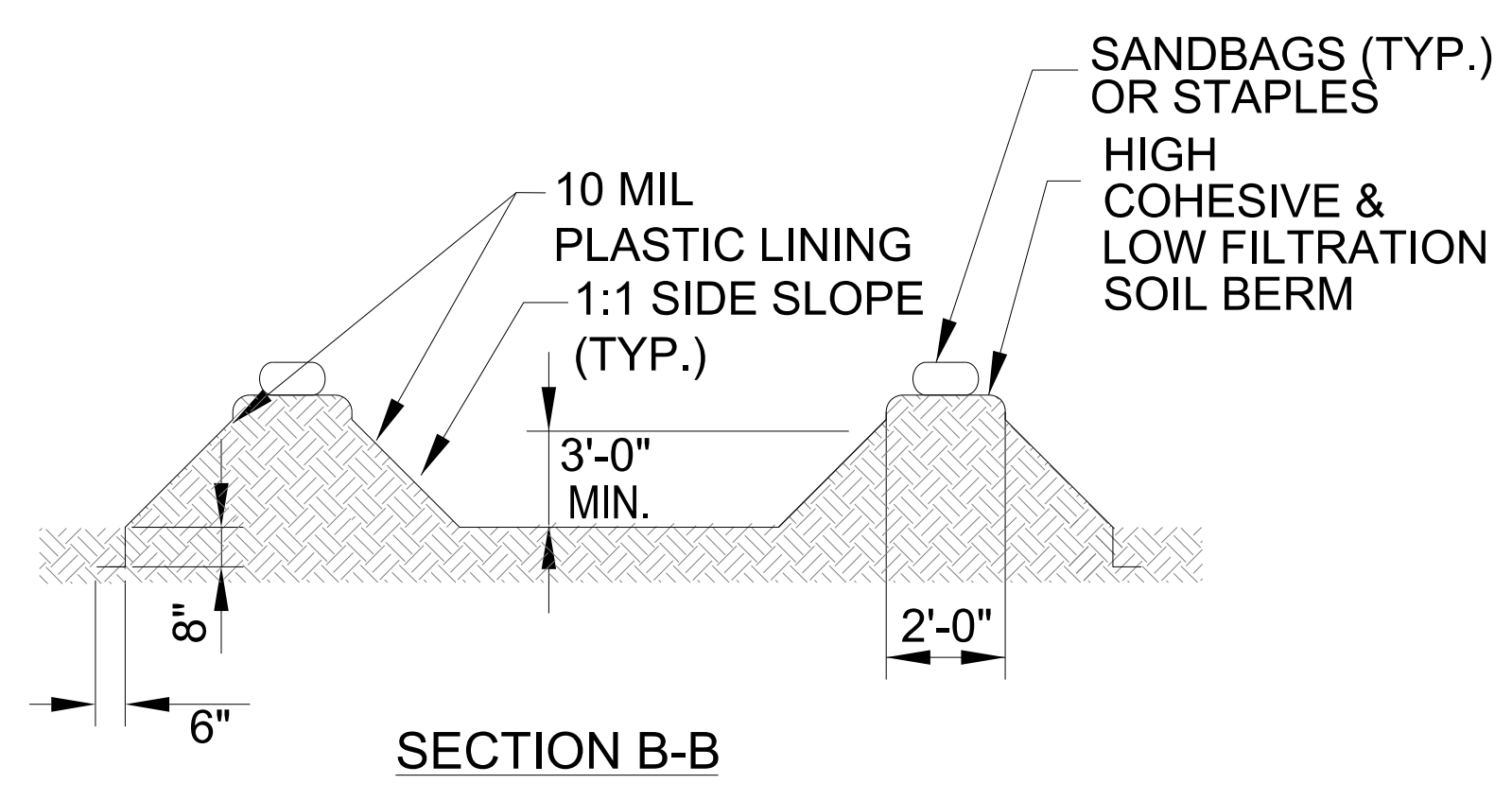
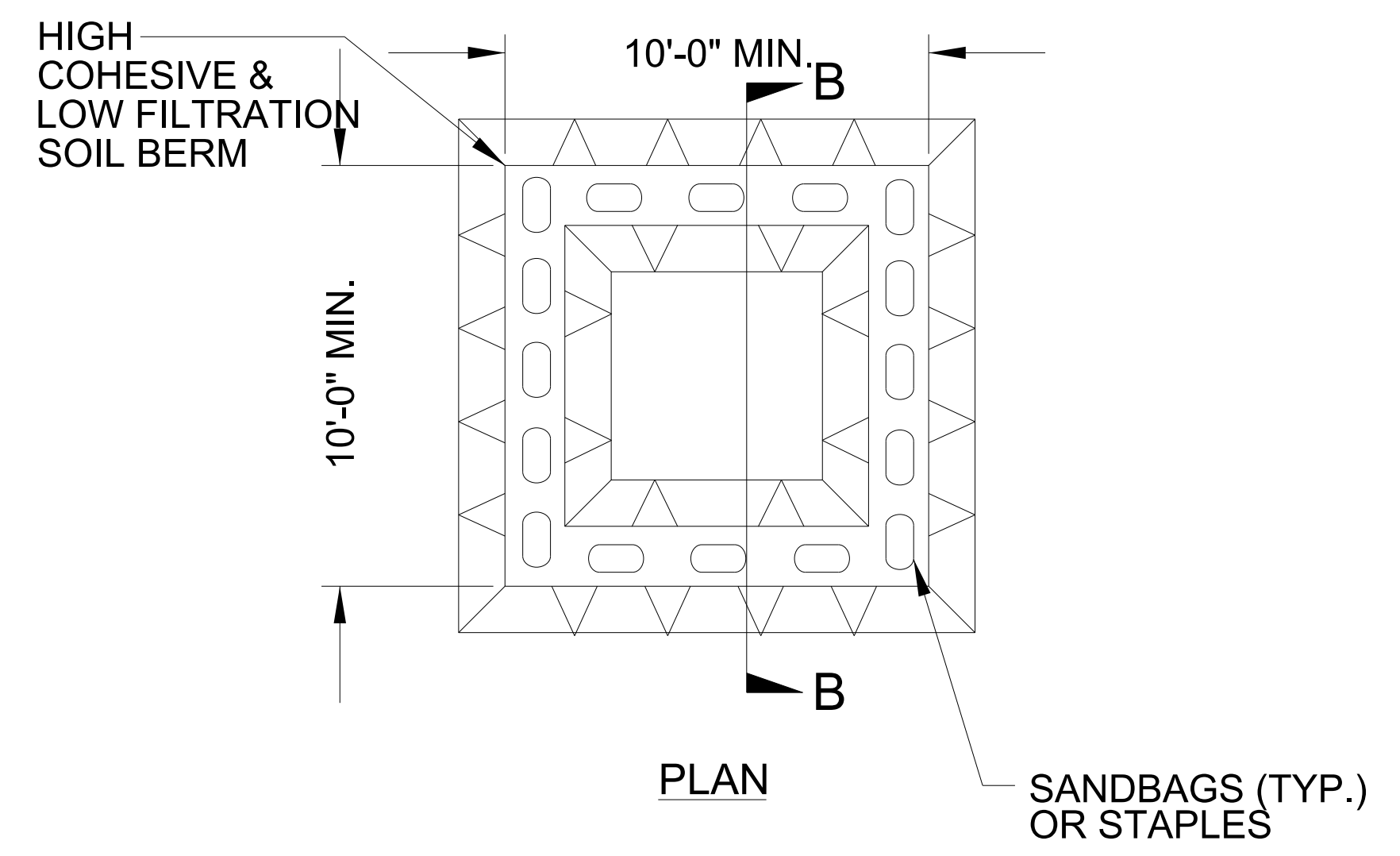


# ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER



**BELOW GRADE WASHOUT STRUCTURE**  
 NOT TO SCALE

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



**ABOVE GRADE WASHOUT STRUCTURE**  
 NOT TO SCALE

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



DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

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# ***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.

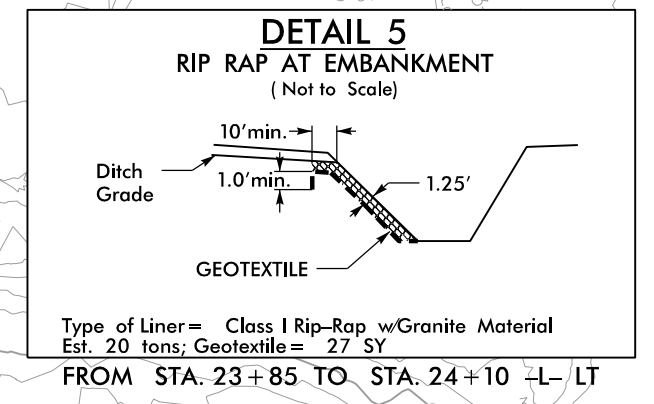
CLEARING AND GRUBBING  
 EROSION CONTROL FOR  
 CONSTRUCTION SHEET 4

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

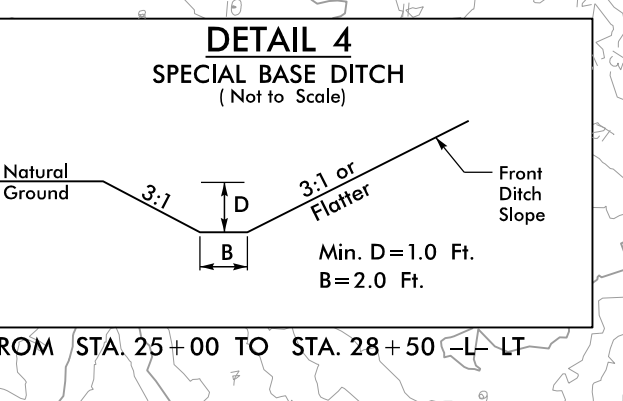
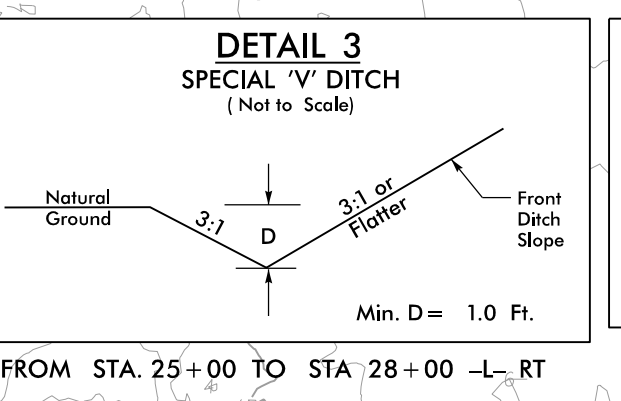
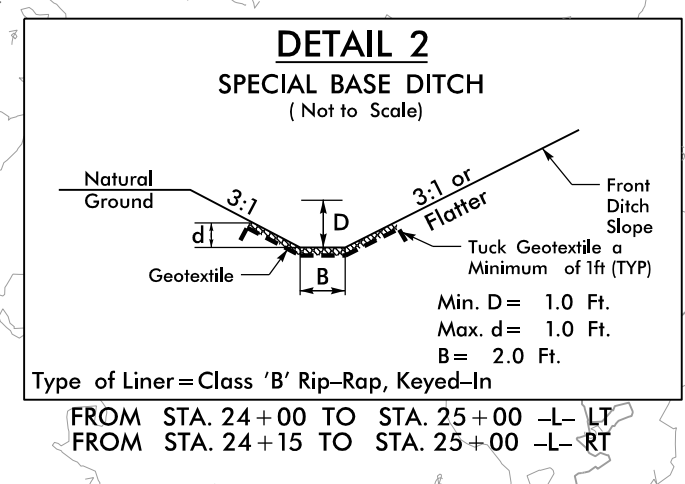
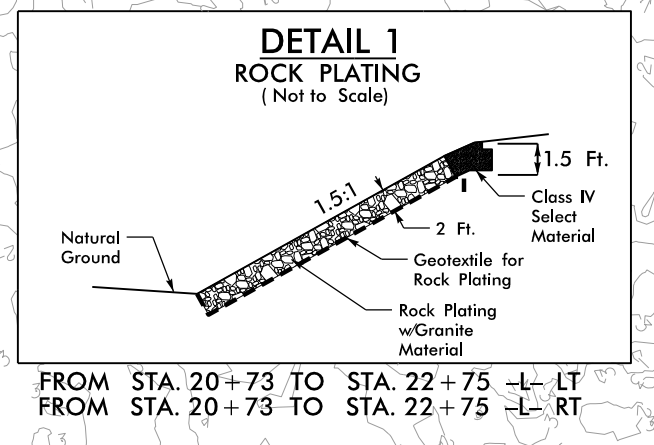
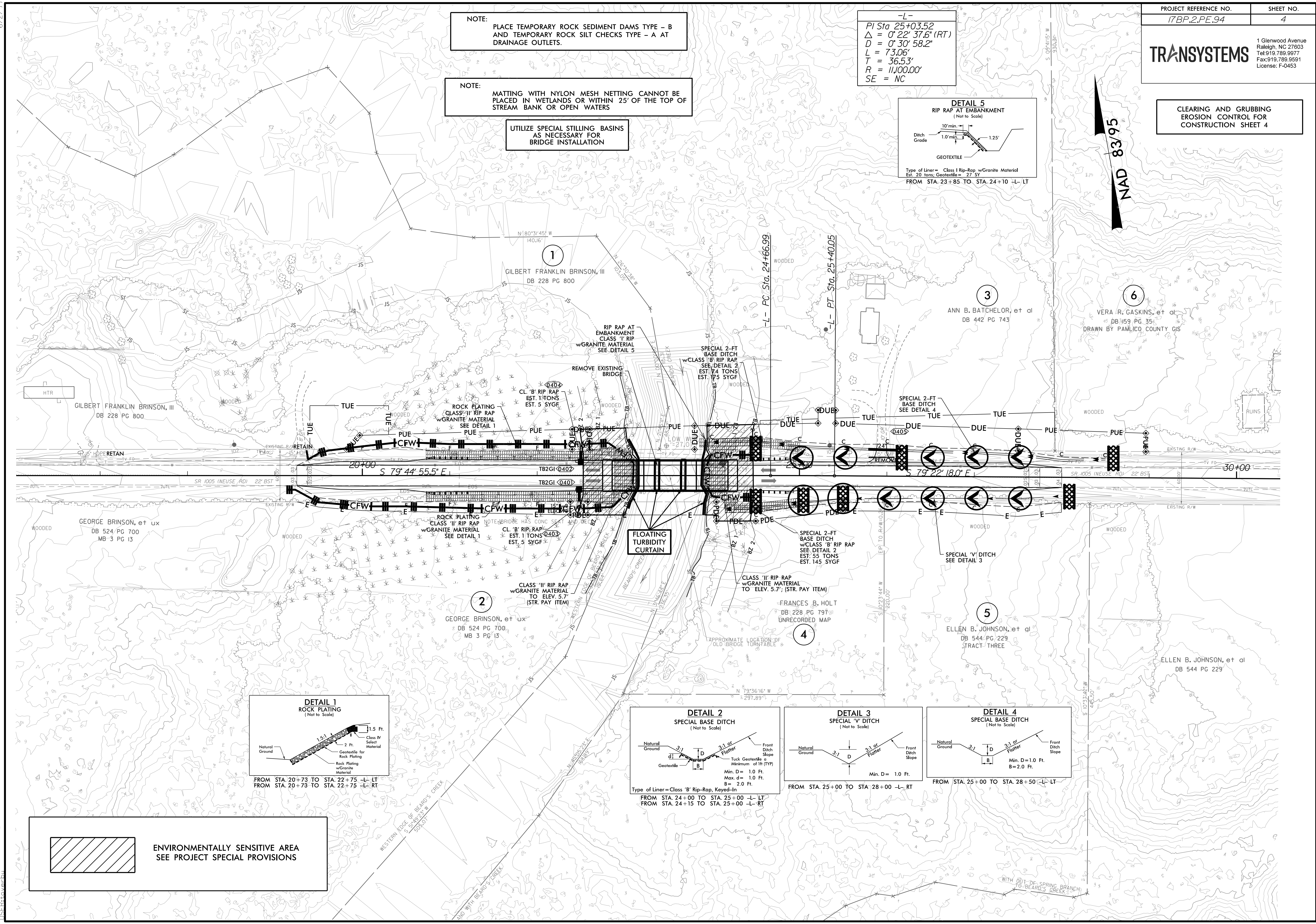
NOTE: MATTING WITH NYLON MESH NETTING CANNOT BE PLACED IN WETLANDS OR WITHIN 25' OF THE TOP OF STREAM BANK OR OPEN WATERS

UTILIZE SPECIAL STILLING BASINS AS NECESSARY FOR BRIDGE INSTALLATION

-L-  
 PI Sta 25+03.52  
 $\Delta = 0^{\circ} 22' 37.6" (RT)$   
 $D = 0^{\circ} 30' 58.2"$   
 $L = 73.06'$   
 $T = 36.53'$   
 $R = 11,000.00'$   
 $SE = NC$



NAD 83/95



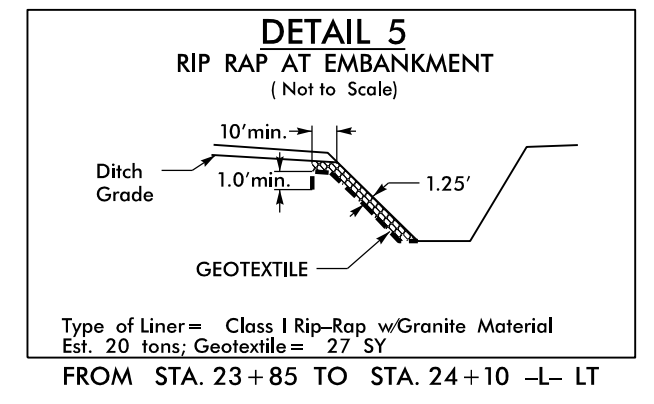
 ENVIRONMENTALLY SENSITIVE AREA  
 SEE PROJECT SPECIAL PROVISIONS

6/2/99  
 2/15/2024  
 11:58:10 AM  
 reu\_EC4\_CG.dgn  
 User: joverbu

6/2/2009

FINAL GRADE  
EROSION CONTROL FOR  
CONSTRUCTION SHEET 4

-L-  
PI Sta 25+03.52  
 $\Delta = 0^{\circ} 22' 37.6" (RT)$   
 $D = 0^{\circ} 30' 58.2"$   
 $L = 73.06'$   
 $T = 36.53'$   
 $R = 11,000.00'$   
 $SE = NC$



NOTE:  
MATting WITH NYLON MESH NETTING CANNOT BE PLACED IN WETLANDS OR WITHIN 25' OF THE TOP OF STREAM BANK OR OPEN WATERS

UTILIZE SPECIAL STILLING BASINS AS NECESSARY FOR BRIDGE INSTALLATION

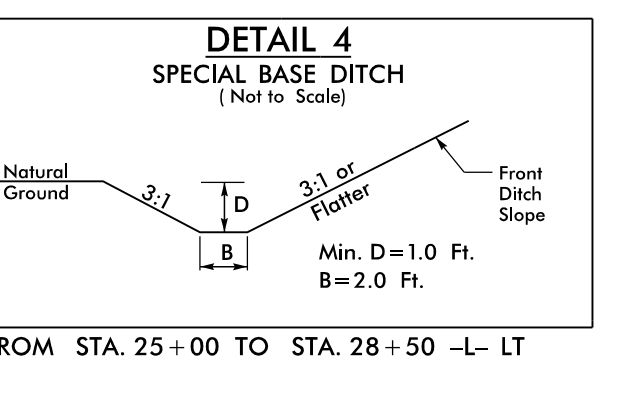
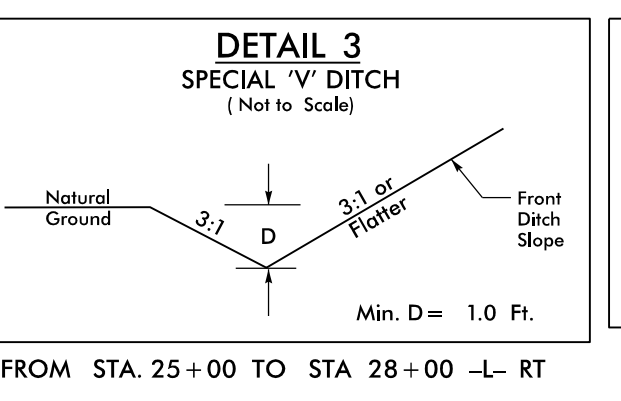
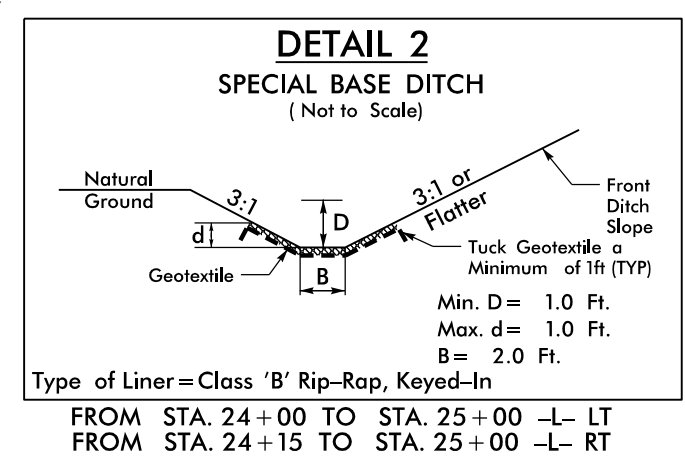
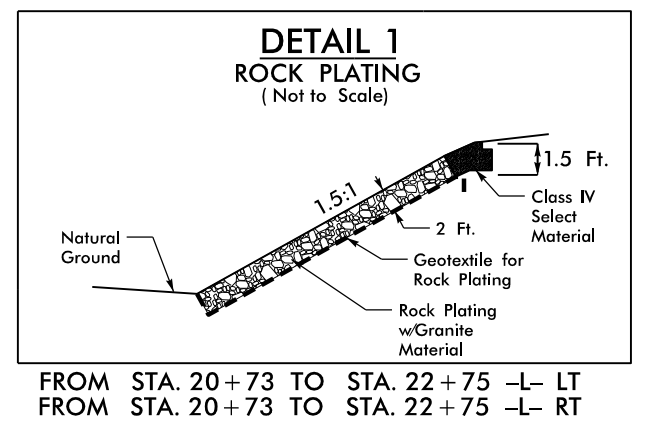
Place Matting for Erosion Control on Slopes Adjacent to Permitted Wetlands as Work Allows. 20+50 to 22+75 -L- LT EST. 210 SY

Place Matting for Erosion Control on Slopes Adjacent to Permitted Wetlands as Work Allows. 20+50 to 22+75 -L- RT EST. 235 SY

BEGIN PROJECT 17BP.2.PE.94 -L- STA. 19+25.00

END PROJECT 17BP.2.PE.94 -L- STA. 28+00.00

END CONSTRUCTION -L- STA. 28+96.00



NOTE: PROPOSED SHOULDER BERM GUTTER -L- STA. 22+44 TO STA. 22+74.88 LT. & RT.

NOTE: TEMPORARY SHORING TO BE USED AT UNDERCUT LOCATIONS AND AS DIRECTED BY THE ENGINEER.

2/15/2009 10:51:00 AM 17BP.2.PE.94\_EC5\_F.mxd

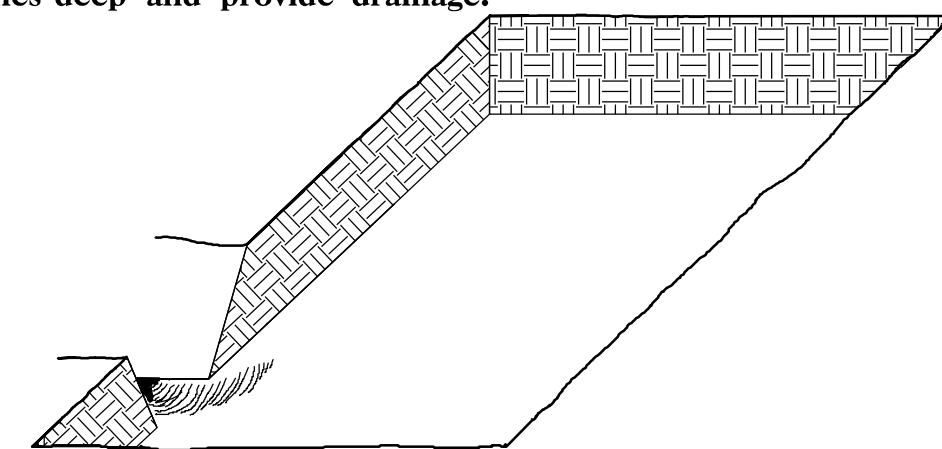


## PLANTING DETAILS

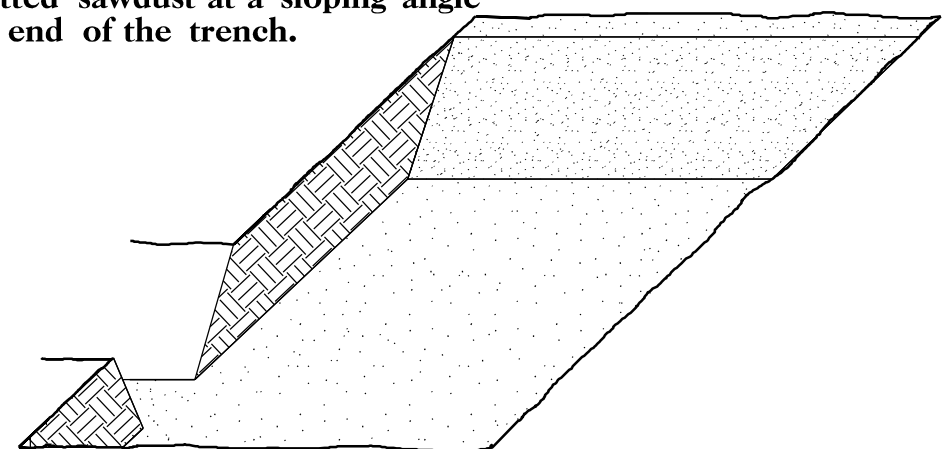
### SEEDLING / LINER BAREROOT PLANTING DETAIL

#### HEALING IN

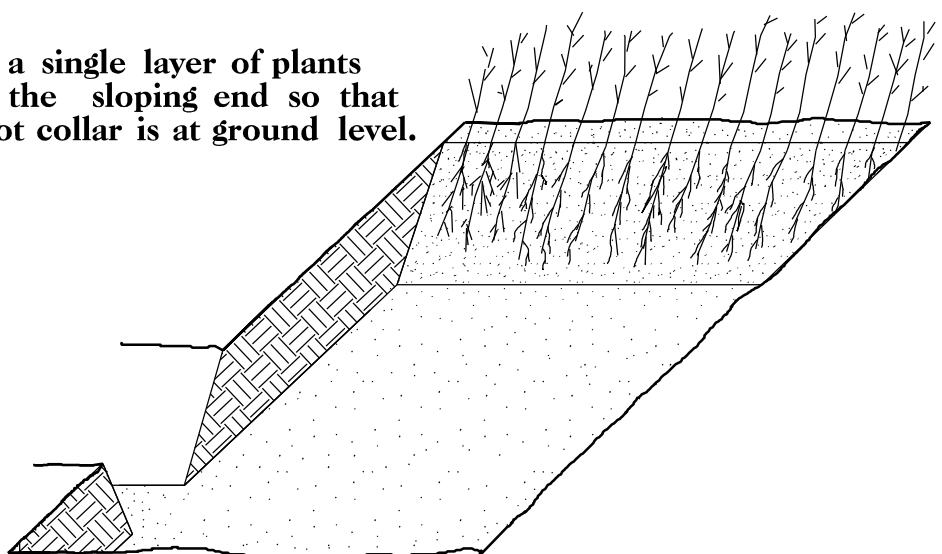
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



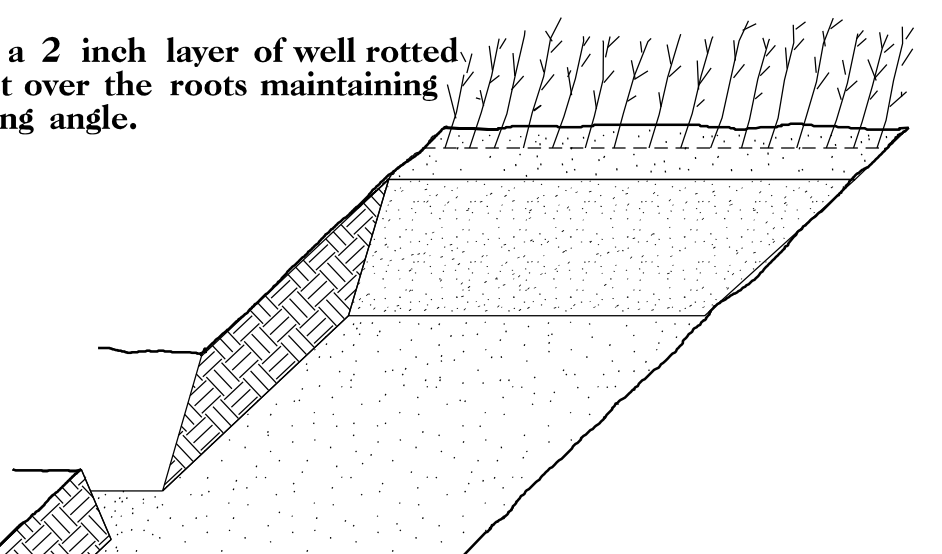
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



4. Place a single layer of plants against the sloping end so that the root collar is at ground level.

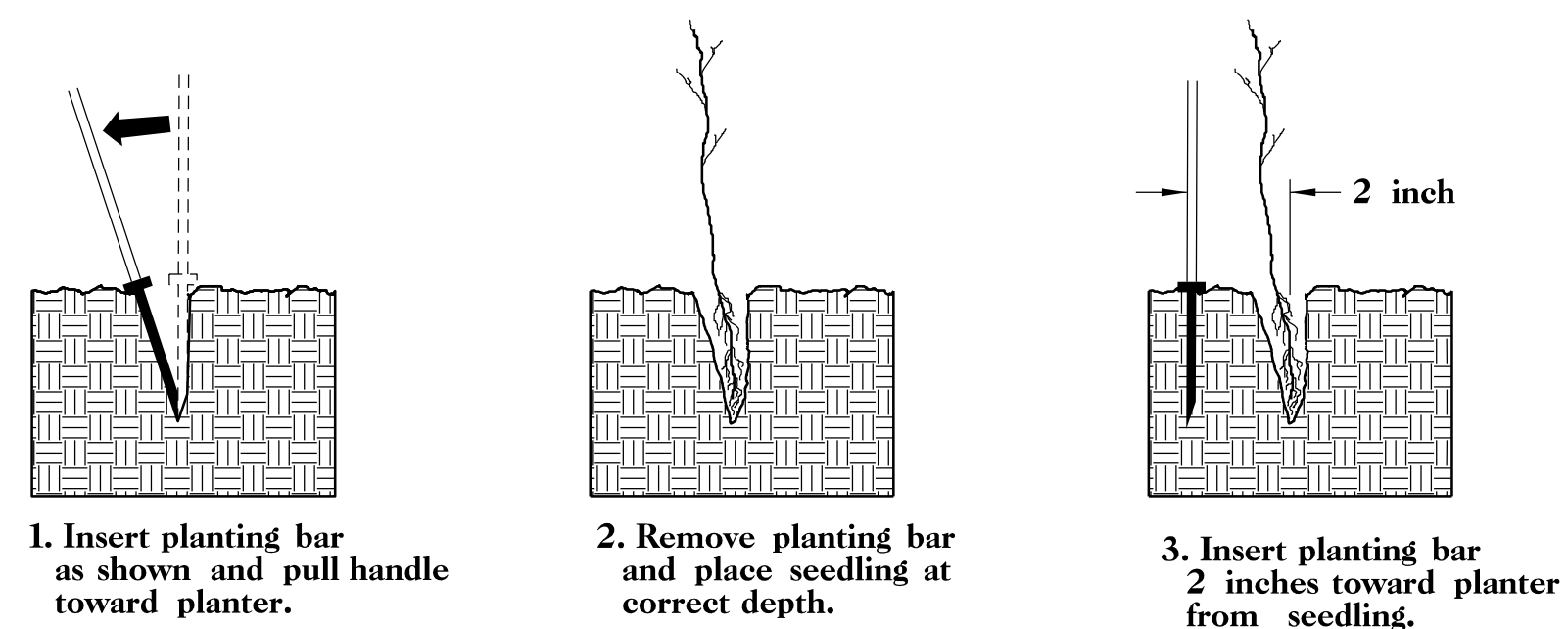


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

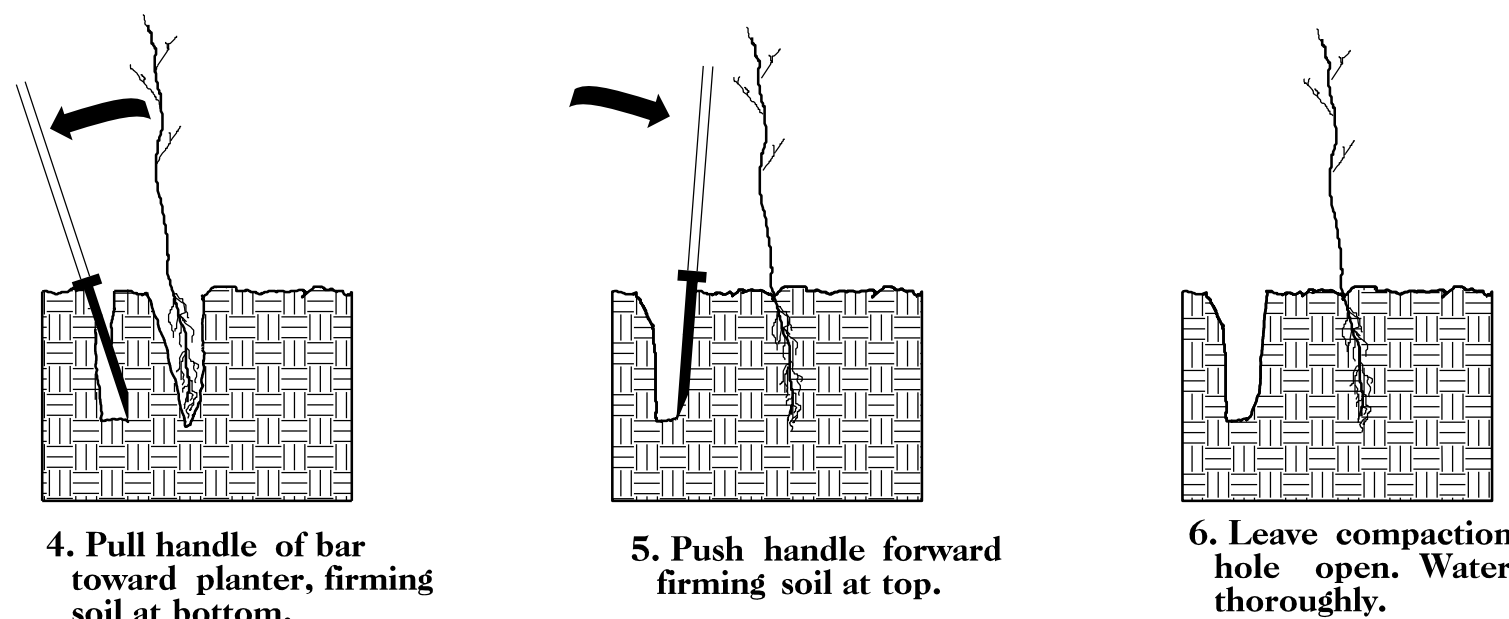


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

#### DIBBLE PLANTING METHOD USING THE KBC PLANTING BAR



1. Insert planting bar as shown and pull handle toward planter.
2. Remove planting bar and place seedling at correct depth.
3. Insert planting bar 2 inches toward planter from seedling.



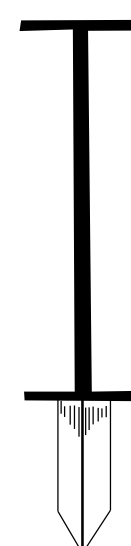
4. Pull handle of bar toward planter, firming soil at bottom.
5. Push handle forward firming soil at top.
6. Leave compaction hole open. Water thoroughly.

#### PLANTING NOTES:

**PLANTING BAG**  
During planting, seedlings shall be kept in a moist canvas bag or similar container to prevent the root systems from drying.



**KBC PLANTING BAR**  
Planting bar shall have a blade with a triangular cross section, and shall be 12 inches long, 4 inches wide and 1 inch thick at center.



**ROOT PRUNING**  
All seedlings shall be root pruned, if necessary, so that no roots extend more than 10 inches below the root collar.

## REFORESTATION

- TREE REFORESTATION SHALL BE PLANTED 6 FT. TO 10 FT. ON CENTER, RANDOM SPACING, AVERAGING 8 FT. ON CENTER, APPROXIMATELY 680 PLANTS PER ACRE.

#### REFORESTATION

MIXTURE, TYPE, SIZE, AND FURNISH SHALL CONFORM TO THE FOLLOWING:

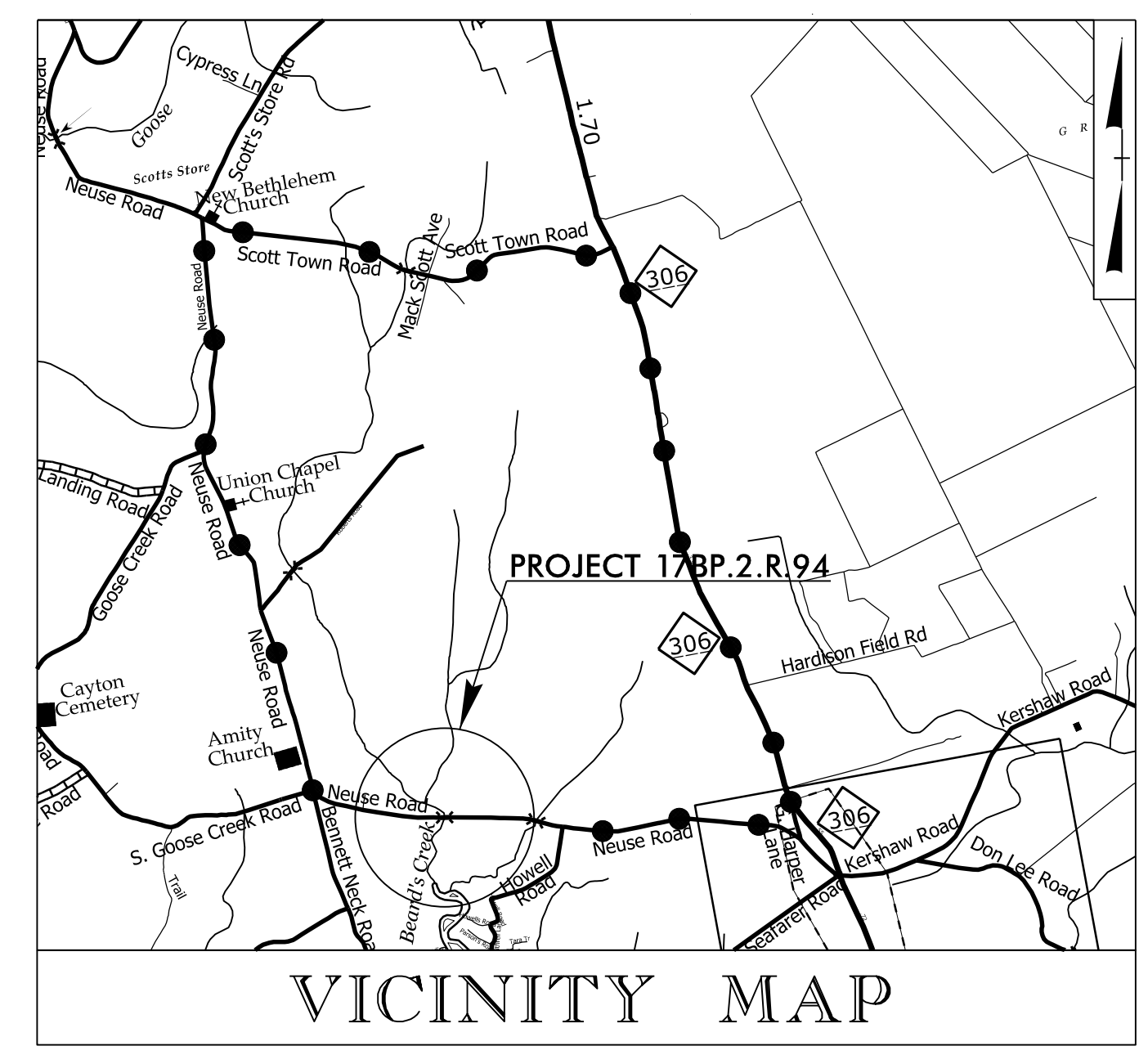
33% LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in - 18 in BR
33% PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	12 in - 18 in BR
34% BETULA NIGRA	RIVER BIRCH	12 in - 18 in BR

## REFORESTATION DETAIL SHEET

N.C.D.O.T. - ROADSIDE ENVIRONMENTAL UNIT

06-FEB-2024 09:40  
SA:\Server\_Files\PROJECTS\2021\A202102.00\_SEPL17BP.2.PE.94 (B-4595)\Design\Utilities\Engineering\UC\Proj\17BP.2.PE.94\_Ut\_tsh\_UC1.psh.dgn  
\$\$\$\$\$USERNAME\$\$\$\$\$

**TIP PROJECT: 17BP.2.PE.94**



.....  
DETOUR ROUTE

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

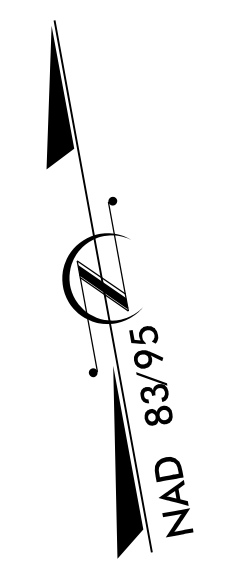
**UTILITY CONSTRUCTION PLANS  
PAMLICO COUNTY**

**LOCATION: BRIDGE NO. 14 ON SR 1005 (NEUSE ROAD)  
OVER BEARD CREEK**

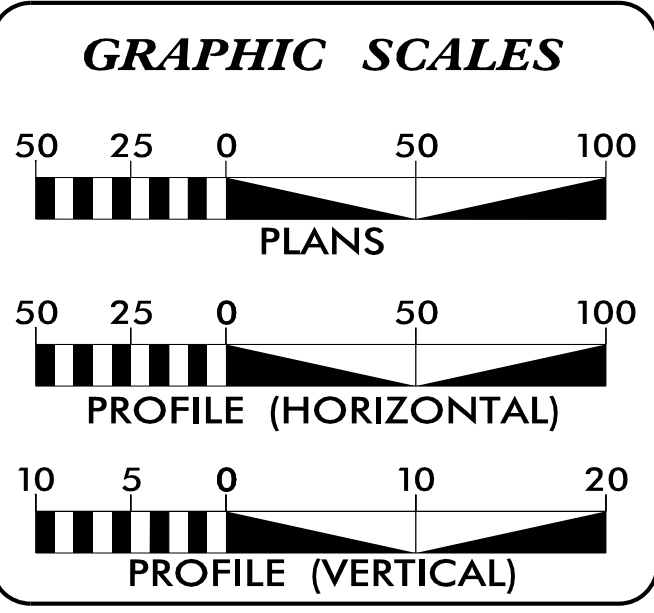
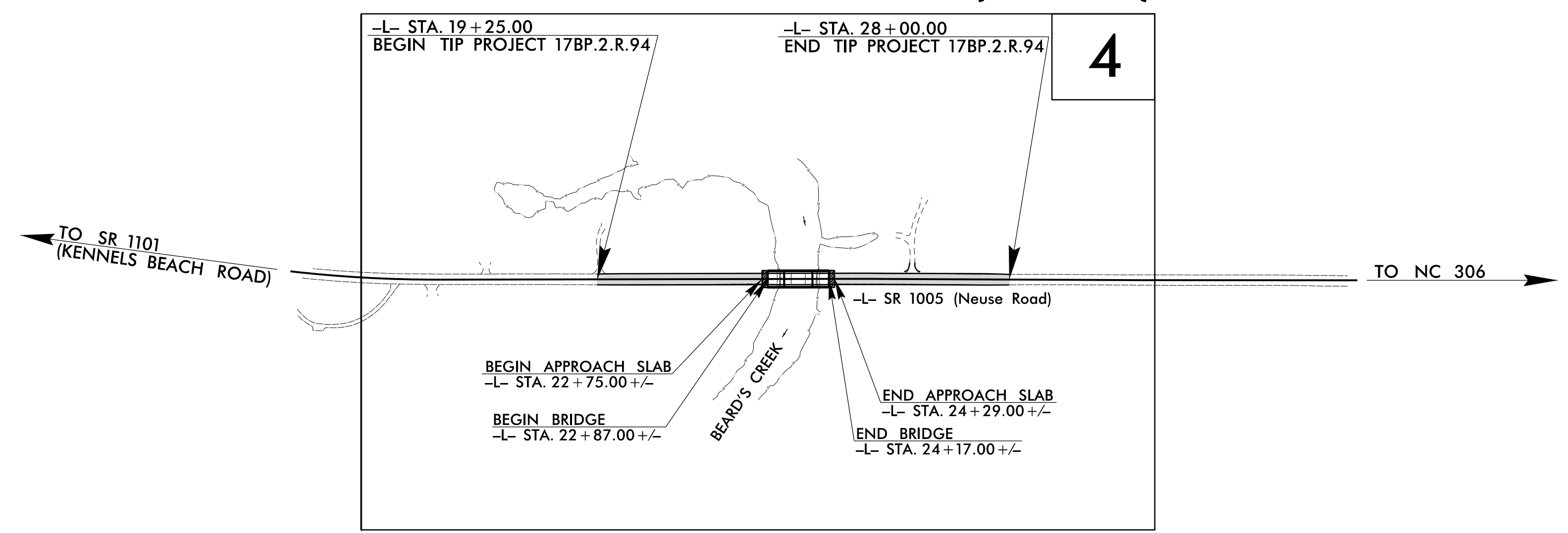
**TYPE OF WORK: WATER LINE RELOCATION**

T.I.P. NO.	SHEET NO.
17BP.2.PE.94	UC-1

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



(UC-4)



**INDEX OF SHEETS**

SHEET NO.	DESCRIPTION
UC-1	TITLE SHEET
UC-2	UTILITY SYMBOLOGY
UC-3	NOTES
UC-3A	DETAILS
UC-4	UTILITY CONSTRUCTION SHEET
UC-5	PROFILE SHEET

**WATER OWNER ON PROJECT**

(A) PAMLICO COUNTY WATER

PREPARED IN THE OFFICE OF:

**HINDE ENGINEERING**  
License No. C-2639  
401 Harrison Oaks Blvd., Suite 220 Cary, NC 27513  
Ph. (919) 653-0001

CLINT L. STEVENS, P.E. UTILITIES PROJECT MANAGER  
JORDAN K. CHAPMAN UTILITIES PROJECT ENGINEER  
JAMES N. ARNOLD UTILITIES PROJECT DESIGNER

SEAL

DocuSign Envelope ID: 06F32D77EB42B  
CLINT L. STEVENS  
040370  
ENGINEER  
2/13/2024

**DIVISION OF HIGHWAYS  
DIVISION 2**  
2815 ROUSE ROAD EXTENSION  
KINSTON NC 28504  
PHONE (252) 775-6100  
FAX (252) 208-7862

Jeff Cabaniss, P.E. DIVISION ENGINEER  
Cadmus Capehart, P.E. DIVISION CONSTRUCTION ENGR  
David Kramer DIVISION UTILITY ENGINEER

# UTILITIES PLAN SHEET SYMBOLS

## PROPOSED WATER SYMBOLS

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

## PROPOSED SEWER SYMBOLS

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

## PROPOSED MISCELLANEOUS UTILITIES SYMBOLS

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


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

## EXISTING UTILITIES SYMBOLS

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

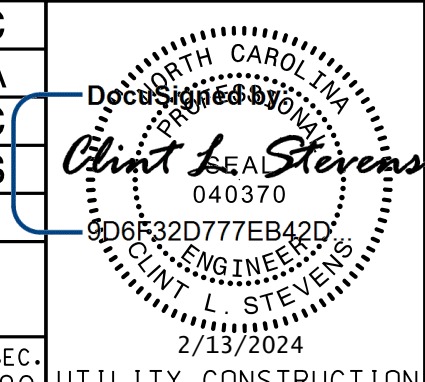
\*For Existing Utilities  
Utility Line Drawn from Record (Type as Shown)   
Designated Utility Line (Type as Shown)

06 FEB 2024 09:40 SEP11 2012 11:05:56  
 C:\Users\B01561\OneDrive\Documents\Engineering\UC2\17BP.2.PE.94\_Ut\_symb\_UC2\_psh.dgn  
 REV: 2/1/2012



**HINDE ENGINEERING**  
 License No. C-2639  
 401 Harrison Oaks Blvd., Suite 220 Cary, NC 27513

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

PROJECT REFERENCE NO.	SHEET NO.
17BP.2.PE.94	UC-3
DESIGNED BY: JKC	
DRAWN BY: JNA	
CHECKED BY: JKC	
APPROVED BY: CLS	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151
UTILITIES ENGINEERING PLANS ONLY	

# UTILITY CONSTRUCTION

## GENERAL NOTES:

1. THE PROPOSED UTILITY CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF THE NC DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2024.

2. THE EXISTING UTILITIES BELONG TO PAMLICO COUNTY. THE CONTACT PERSON IS:

JEFFREY SANDERS  
 FIELD OPERATIONS MANAGER  
 252-745-5453

IN THE EVENT OF A CONFLICT BETWEEN THE UTILITY OWNER'S TECHNICAL SPECIFICATIONS AND NCDOT STANDARD SPECIFICATIONS/PROJECT SPECIAL PROVISIONS, THE MOST STRINGENT SHALL GOVERN.

3. ALL WATER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF WATER RESOURCES, PUBLIC WATER SUPPLY SECTION. ALL SEWER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT QUALITY, DIVISION OF WATER RESOURCES, WATER QUALITY SECTION. PERFORM ALL WORK IN ACCORDANCE WITH THE APPLICABLE PLUMBING CODES.

4. THE UTILITY OWNER OWNS THE EXISTING UTILITY FACILITIES AND WILL OWN THE NEW UTILITY FACILITIES AFTER ACCEPTANCE BY THE DEPARTMENT. THE DEPARTMENT OWNS THE CONSTRUCTION CONTRACT AND HAS ADMINISTRATIVE AUTHORITY. COMMUNICATIONS AND DECISIONS BETWEEN THE CONTRACTOR AND UTILITY OWNER ARE NOT BINDING UPON THE DEPARTMENT OR THIS CONTRACT UNLESS AUTHORIZED BY THE ENGINEER. AGREEMENTS BETWEEN THE UTILITY OWNER AND CONTRACTOR FOR THE WORK THAT IS NOT PART OF THIS CONTRACT OR IS SECONDARY TO THIS CONTRACT ARE ALLOWED, BUT ARE NOT BINDING UPON THE DEPARTMENT.

5. PROVIDE ACCESS FOR THE DEPARTMENT PERSONNEL AND THE OWNER'S REPRESENTATIVES TO ALL PHASES OF CONSTRUCTION. NOTIFY DEPARTMENT PERSONNEL AND THE UTILITY OWNER TWO WEEKS PRIOR TO COMMENCEMENT OF ANY WORK AND ONE WEEK PRIOR TO SERVICE INTERRUPTION. KEEP UTILITY OWNERS' REPRESENTATIVES INFORMED OF WORK PROGRESS AND PROVIDE OPPORTUNITY FOR INSPECTION OF CONSTRUCTION AND TESTING.

6. THE PLANS DEPICT THE BEST AVAILABLE INFORMATION FOR THE LOCATION, SIZE, AND TYPE OF MATERIAL FOR ALL EXISTING UTILITIES. MAKE INVESTIGATIONS FOR DETERMINING THE EXACT LOCATION, SIZE, AND TYPE MATERIAL OF THE EXISTING FACILITIES AS NECESSARY FOR THE CONSTRUCTION OF THE PROPOSED UTILITIES AND FOR AVOIDING DAMAGE TO EXISTING FACILITIES. REPAIR ANY DAMAGE INCURRED TO EXISTING FACILITIES TO THE ORIGINAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE DEPARTMENT.

7. MAKE FINAL CONNECTIONS OF THE NEW WORK TO THE EXISTING SYSTEM WHERE INDICATED ON THE PLANS, AS REQUIRED TO FIT THE ACTUAL CONDITIONS, OR AS DIRECTED.

8. MAKE CONNECTIONS BETWEEN EXISTING AND PROPOSED UTILITIES AT TIMES MOST CONVENIENT TO THE PUBLIC, WITHOUT ENDANGERING THE UTILITY SERVICE, AND IN ACCORDANCE WITH THE UTILITY OWNER'S REQUIREMENTS. MAKE CONNECTIONS ON WEEKENDS, AT NIGHT, AND ON HOLIDAYS IF NECESSARY.

9. ALL UTILITY MATERIALS SHALL BE APPROVED PRIOR TO DELIVERY TO THE PROJECT. SEE 1500-7, " SUBMITTALS AND RECORDS" IN SECTION 1500 OF THE STANDARD SPECIFICATIONS.

10. ALL WATER LINE INSTALLED ON THIS PROJECT SHALL MEET THE REQUIREMENTS OF THE RULES GOVERNING PUBLIC WATER SYSTEMS. VERTICAL SEPARATION BETWEEN PROPOSED WATER MAINS AND STORM DRAINAGE SHALL BE A MINIMUM OF 18-INCHES PER RECOMMENDED STANDARDS OF WATER WORKS. ALL PROPOSED WATER LINE SHALL HAVE A MINIMUM COVER OF 36-INCHES. PROPOSED WATER MAINS SHALL HAVE A MINIMUM HORIZONTAL SEPARATION OF 10- FEET FROM SEWER MAINS (REF. RULE .0904, RULE.0906). UTILITIES BEING RELOCATED OR INSTALLED AS SHOWN ON THE UTILITY CONSTRUCTION PLANS MUST BE ADJUSTED ACCORDINGLY TO MEET THESE CRITERIA.

## PROJECT SPECIFIC NOTES:

1. CONTRACTOR'S ATTENTION IS DIRECTED TO SECTIONS 102, 107, AND 1550 OF THE STANDARD SPECIFICATIONS CONCERNING TRENCHLESS INSTALLATION. IT IS CONTRACTOR'S RESPONSIBILITY TO HAVE BORE DESIGNED AND SEALED BY A LICENSED NORTH CAROLINA PROFESSIONAL ENGINEER. NO DAMAGE IS ALLOWED TO RIVER, WETLANDS, OR BUFFER ZONES.

2. HDPE PIPE INSTALLED BY DIRECTIONAL DRILL SHALL BE FILLED WITH WATER AND NOT BE CONNECTED TO ANY OTHER PIPE OR FITTINGS FOR ONE WEEK FROM THE TIME OF INSTALLATION.

## UTILITY CONSTRUCTION

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 33861517

# PROJECT DETAILS

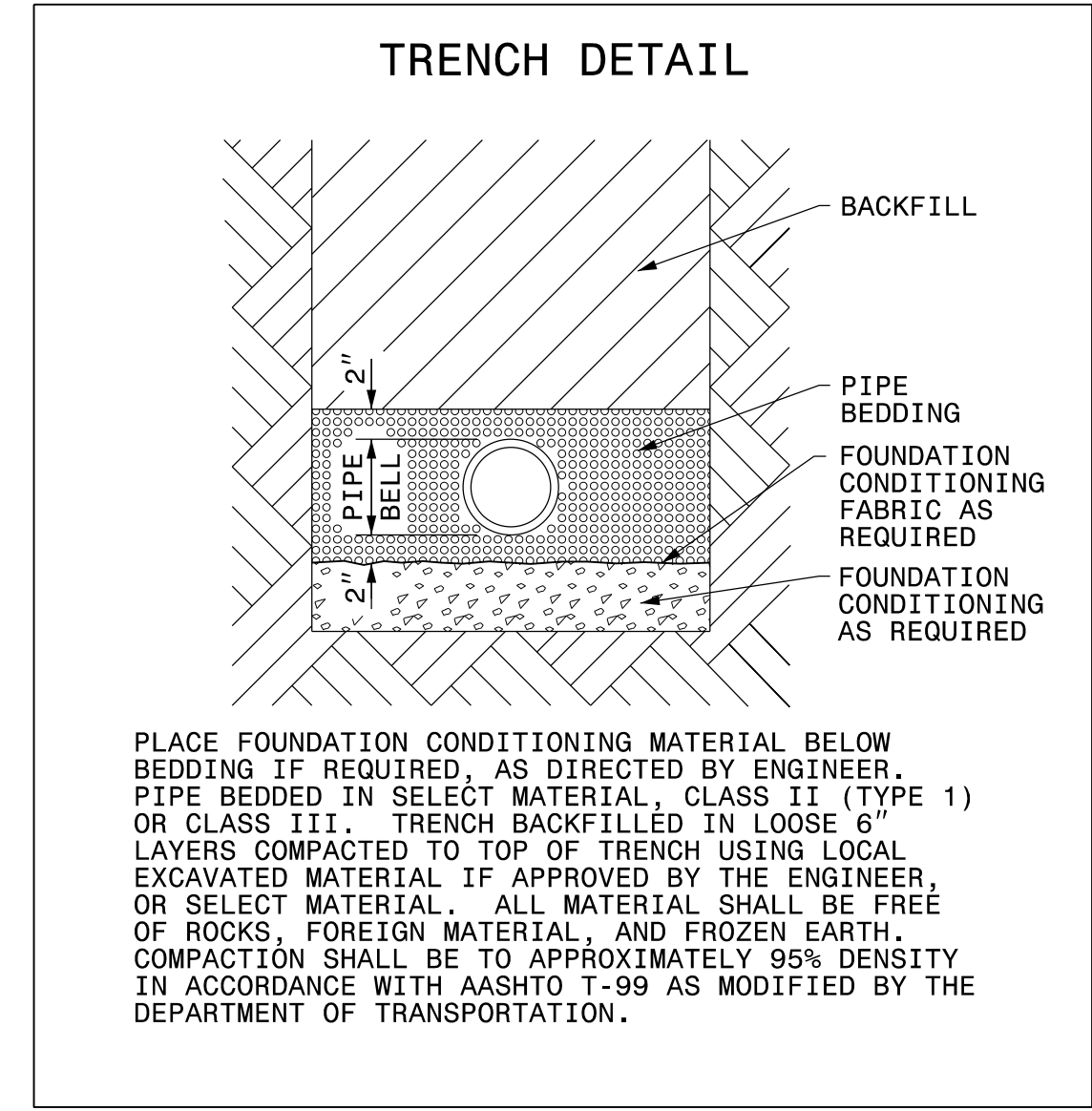
NOT TO SCALE



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

PROJECT REFERENCE NO. <b>17BP.2.PE.94</b>	SHEET NO. <b>UC-3A</b>
DESIGNED BY: <b>JKC</b>	
DRAWN BY: <b>JNA</b>	
CHECKED BY: <b>JKC</b>	
APPROVED BY: <b>CLS</b>	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	

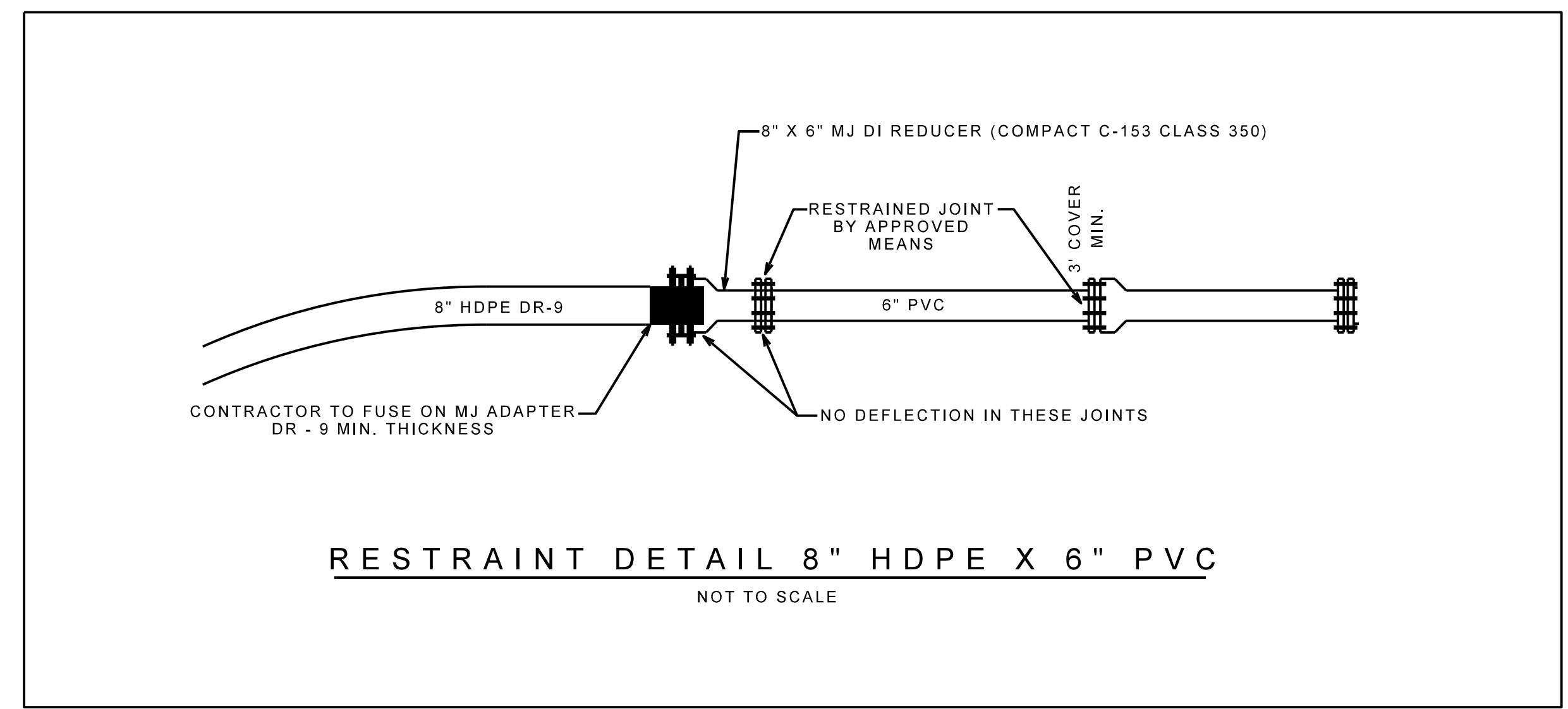
## UTILITY CONSTRUCTION



**MAXIMUM TRENCH WIDTH  
AT TOP OF PIPE**

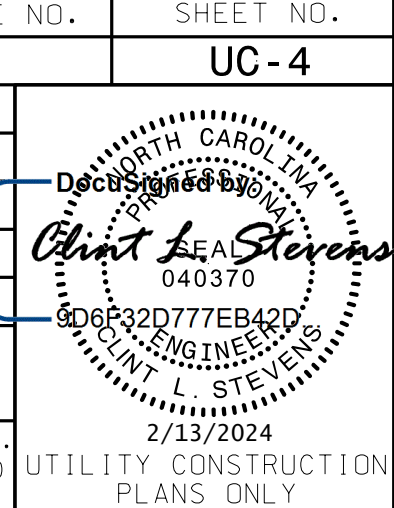
NOMINAL PIPE SIZE (INCHES)	TRENCH WIDTH (INCHES)	NOMINAL PIPE SIZE (INCHES)	TRENCH WIDTH (INCHES)
4	28	20	44
6	30	24	48
8	32	30	54
10	34	36	60
12	36	42	66
14	38	48	72
16	40	54	78
18	42		

### LIST OF STANDARD DRAWINGS 1515.01 - WATER METER



26-FEB-2024 09:40  
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**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**

PROJECT REFERENCE NO.	SHEET NO.
17BP.2.PE.94	UC-4
DESIGNED BY: JKC	 NORTH CAROLINA PROFESSIONAL ENGINEER 040370 Christ L. Stevens 2/13/2024
DRAWN BY: JNA	
CHECKED BY: JKC	
APPROVED BY: CLS	
REVISER:	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151
	UTILITY CONSTRUCTION PLANS ONLY

**UTILITY CONSTRUCTION**

NAD 83/95

486 LF OF 8" WATER LINE  
486 LF OF DIRECTIONAL DRILL OF 8"  
(HDPE DR 9)

8" X 6" HDPE TO PVC PIPE  
TRANSITION FITTING

6" 45° BEND

50 LF OF 6" WATER LINE  
(PVC RJ, SDR 21)

6" VALVE

6" 22.5° BEND

6" 45° BEND

6" SLEEVE

CONCRETE  
THRUST  
BLOCKING

6" PLUG

ABANDON 575 LF OF  
6" UTILITY PIPE

8" X 6" HDPE TO PVC PIPE  
TRANSITION FITTING

6" 45° BEND

83 LF OF 6" WATER LINE  
(PVC RJ, SDR 21)

6" VALVE

RELOCATE WATER METER  
47 LF OF WATER SERVICE LINE

6" PLUG

CONCRETE  
THRUST  
BLOCKING

6" SLEEVE

6" 45° BEND

6" 22.5° BEND

**NOTE:  
THE ESTIMATED QUANTITY OF DUCTILE IRON  
WATER PIPE FITTINGS ON THIS PLAN SHEET  
IS 630 POUNDS. THE ACTUAL QUANTITY AND  
TYPE OF FITTINGS WILL VARY BASED ON  
FIELD CONDITIONS.**

NOTE: PROPOSED SHOULDER BERM GUTTER -L- STA. 22+44 TO STA. 22+75 LT. & RT.

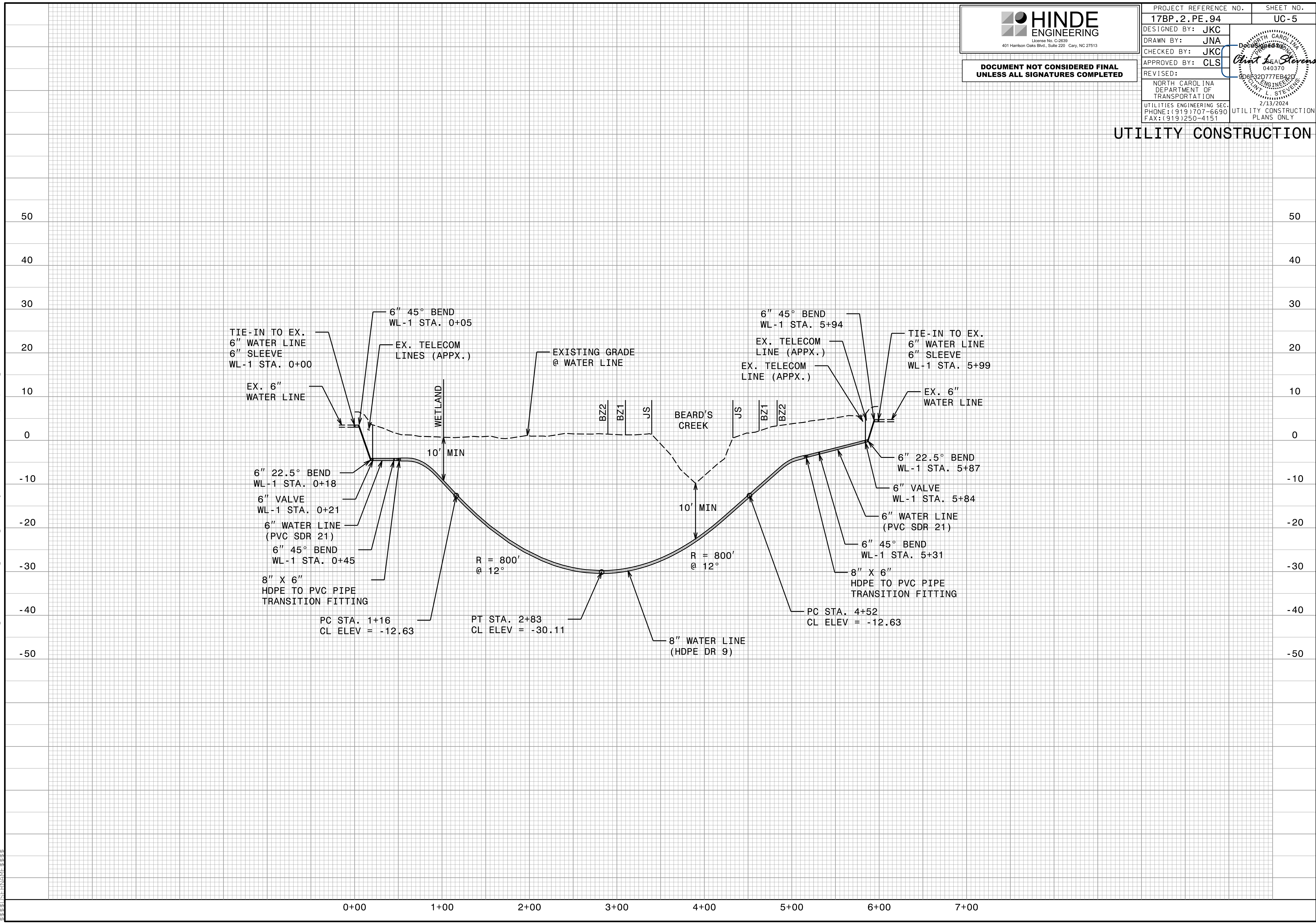
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 1:50

**HINDE ENGINEERING**  
 License No. C-2639  
 401 Harrison Oaks Blvd., Suite 220 Cary, NC 27513

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

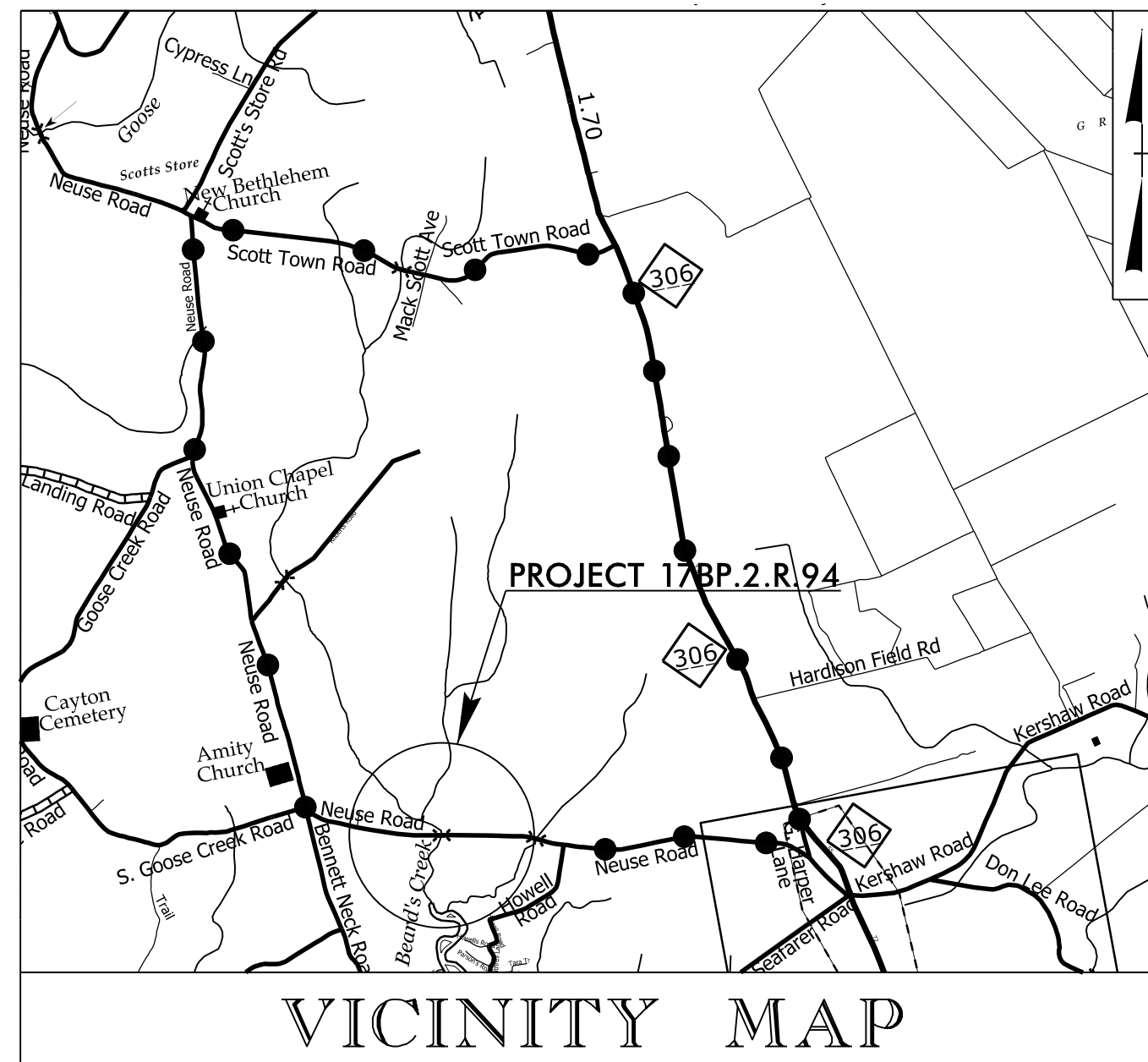
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DESIGNED BY: JKC	
DRAWN BY: JNA	
CHECKED BY: JKC	
APPROVED BY: CLS	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	

**UTILITY CONSTRUCTION**



2024 FEB 20 09:41  
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**TIP PROJECT: 17BP.2.PE.94**



●●●●●●●●  
DETOUR ROUTE

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**UTILITIES BY OTHERS PLANS  
PAMLICO COUNTY**

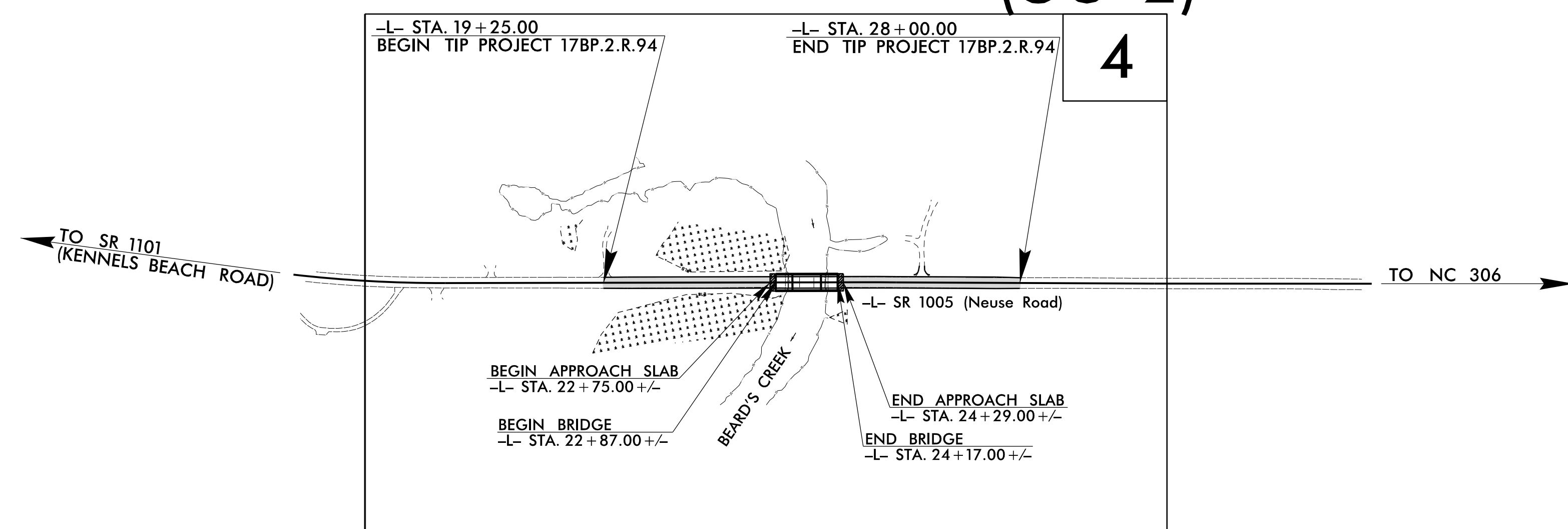
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**TYPE OF WORK: UTILITIES BY OTHERS RELOCATIONS**

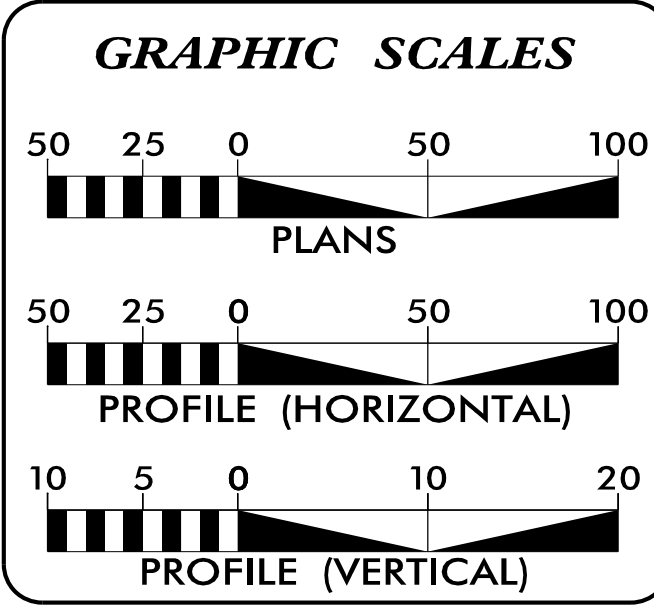
T.I.P. NO.	SHEET NO.
17BP.2.PE.94	UO-1

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

**(UO-2)**



I:\OCT-2022\_15405\_S\Server\_Files\PROJECTS\2021\A20210202.00\_SEPL\17BP.2.PE.94 (B-4595)\Design\Utilities\Engineering\UBO\Proj\17BP.2.PE.94\_Ut\_tsh\_UO1.psh.dgn



**INDEX OF SHEETS**

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

**UTILITY OWNERS WITH CONFLICTS**

(A) POWER - TIDELAND EMC  
(B) TELECOM - CENTURYLINK

PREPARED IN THE OFFICE OF:

License No. C-2639  
401 Harrison Oaks Blvd., Suite 220 Cary, NC 27513  
(919)-653-0001

Clint L. Stevens, P.E. UTILITY COORDINATION PROJECT MANAGER  
Harris Winters PROJECT UTILITY COORDINATOR  
Jordan K. Chapman PROJECT UTILITY DESIGNER

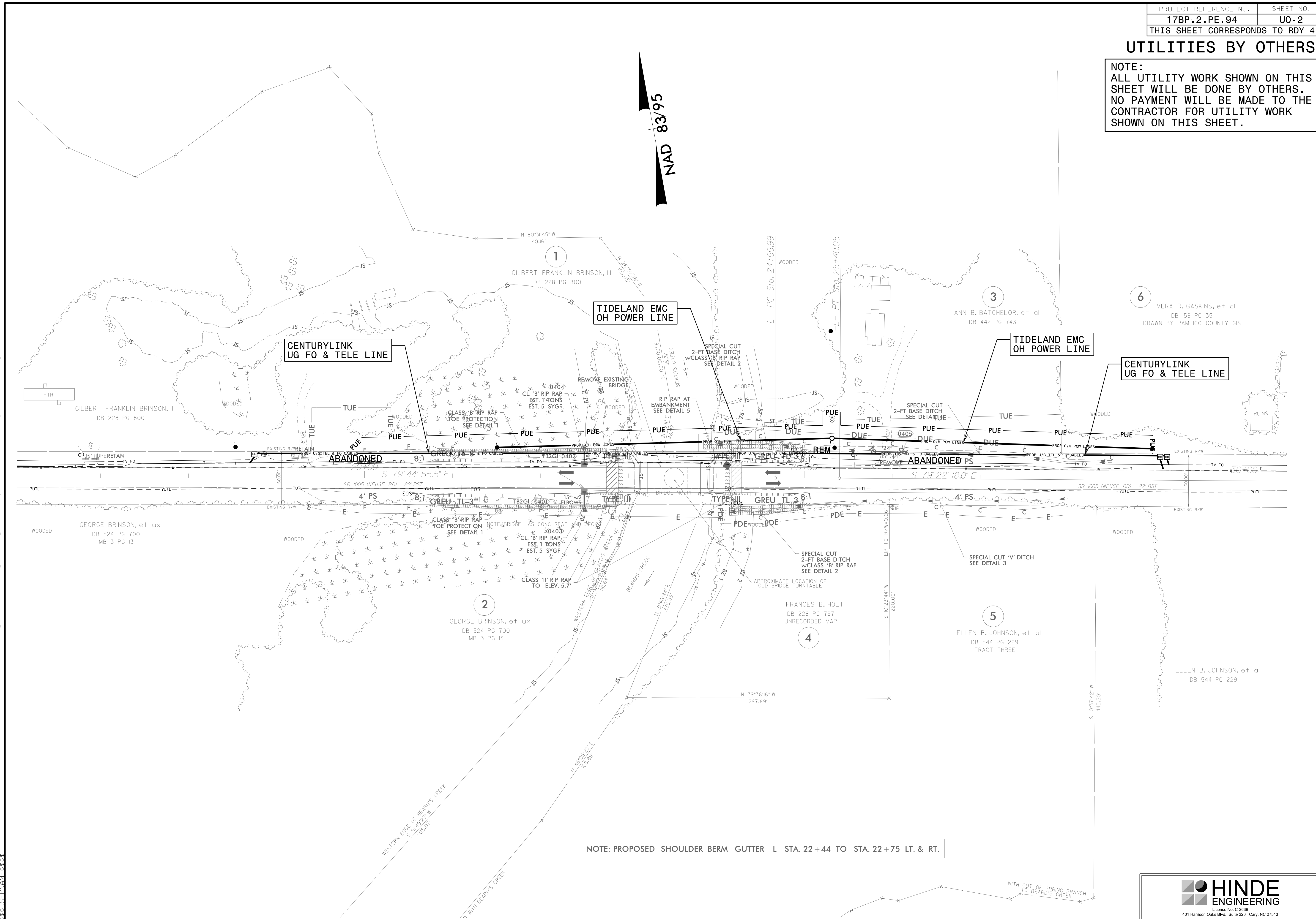
**DIVISION OF HIGHWAYS  
DIVISION 2**  
2815 ROUSE ROAD EXTENSION  
KINSTON, NC 28504  
PHONE (252) 715-6100  
FAX (252) 208-7862

Jeff Cabaniss, P.E. DIVISION ENGINEER  
Cadmus Capehart, P.E. DIVISION CONSTRUCTION ENGR



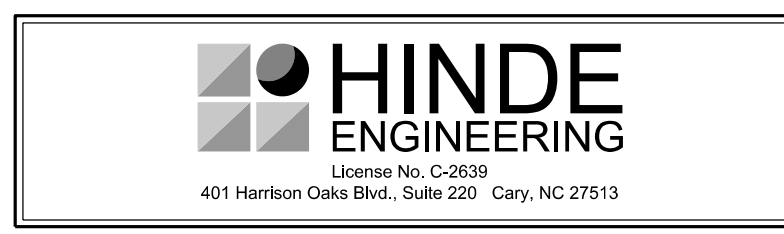
### UTILITIES BY OTHERS

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.



NOTE: PROPOSED SHOULDER BERM GUTTER -L- STA. 22+44 TO STA. 22+75 LT. & RT.

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 10/11/2022 10:50:05 AM  
 17BP.2.PE.94\_U0-2



STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**17BP.2.PE.94**  
**CROSS SECTION INDEX OF SHEETS**

**ALIGNMENT AND STATIONING**

-L- STA. 18+00.00 TO STA. 30+00.00

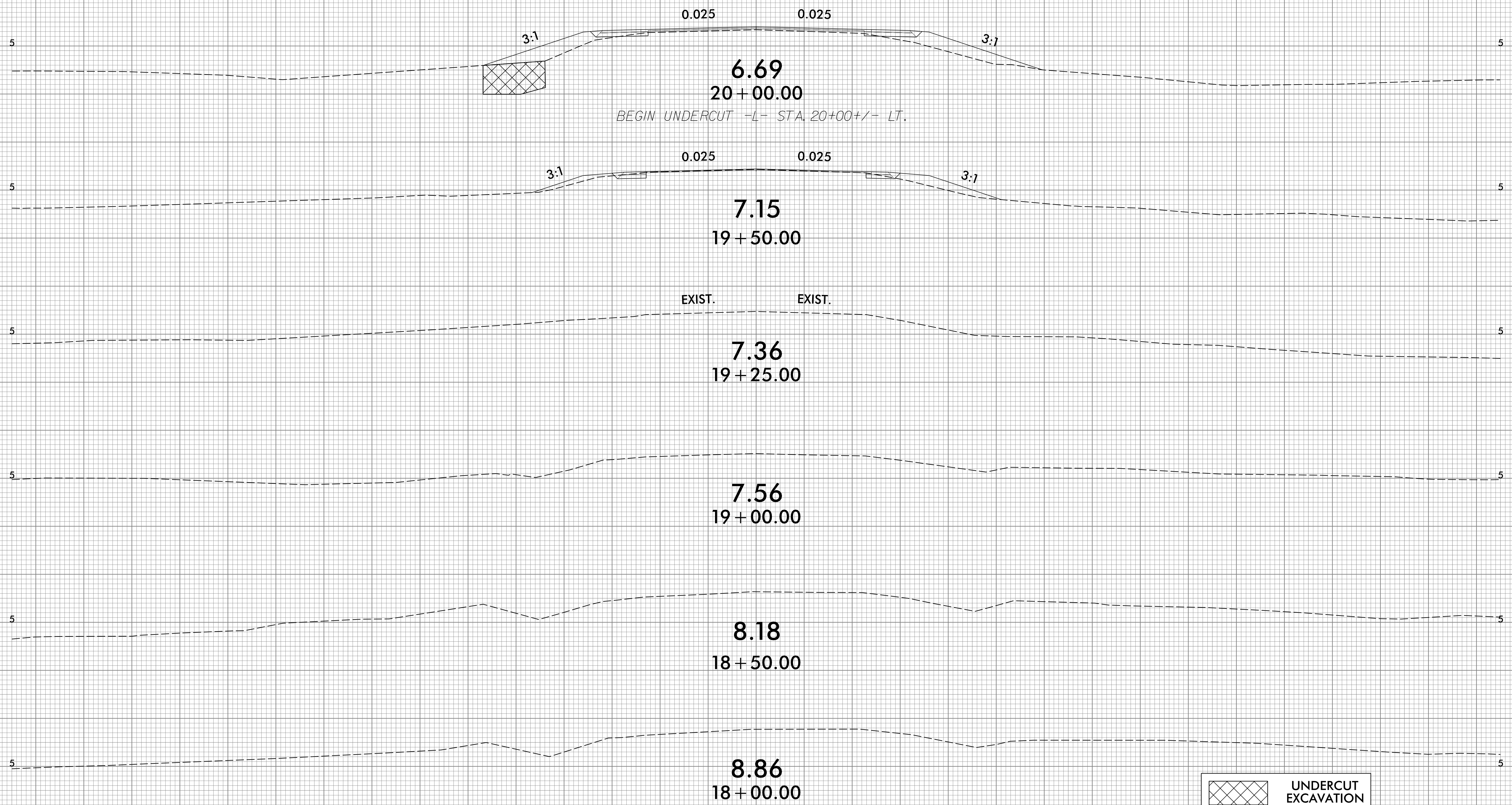
**SHEET NUMBERS**

X-2 TO X-6



6/23/16

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75



UNDERCUT EXCAVATION

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

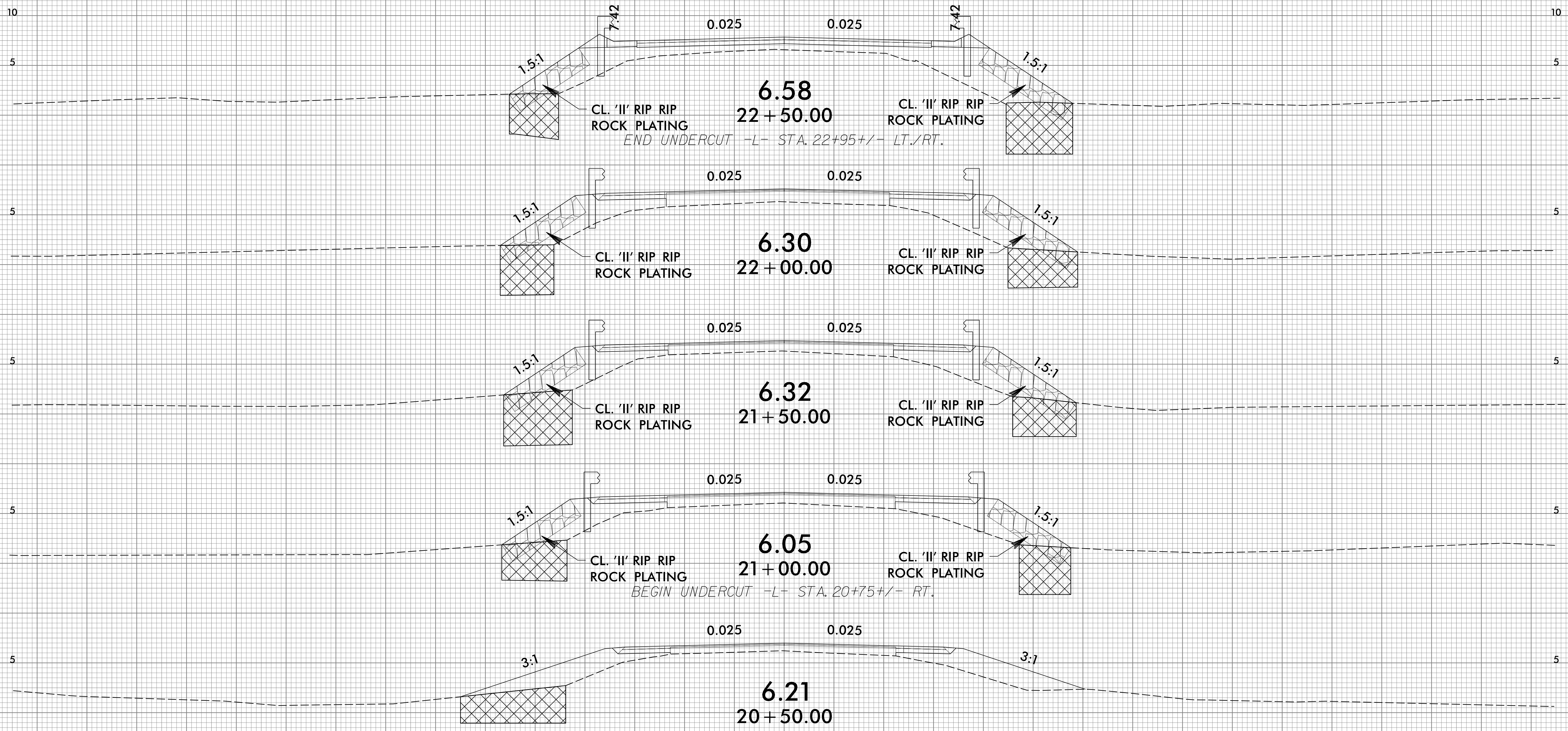
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6/23/16

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-L-

UNDERCUT EXCAVATION

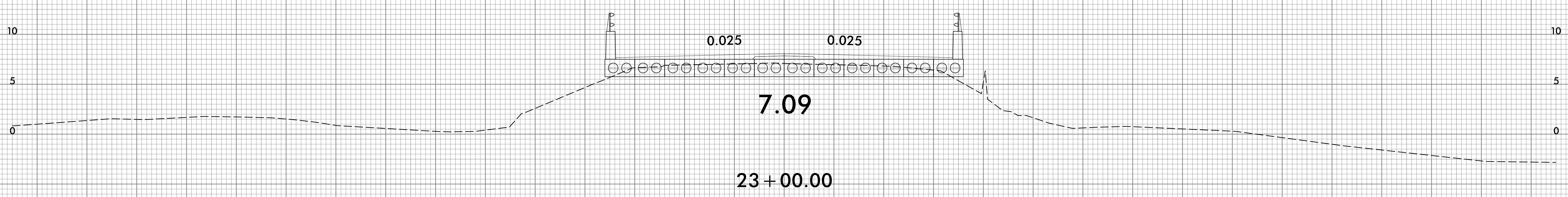
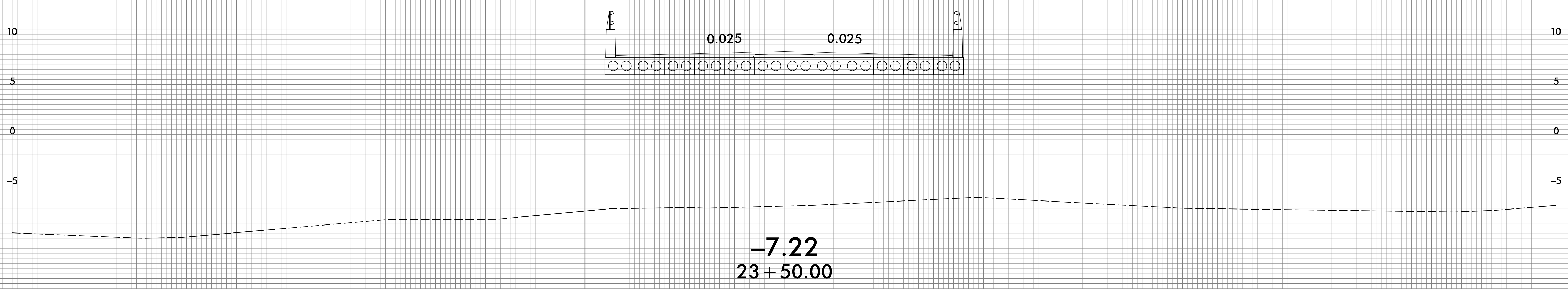
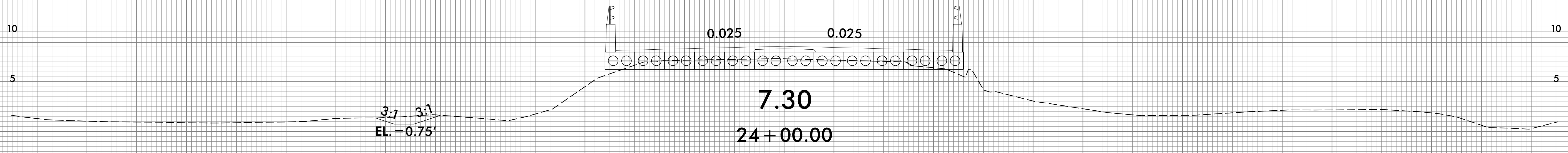
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6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.2.PE.94	X-4

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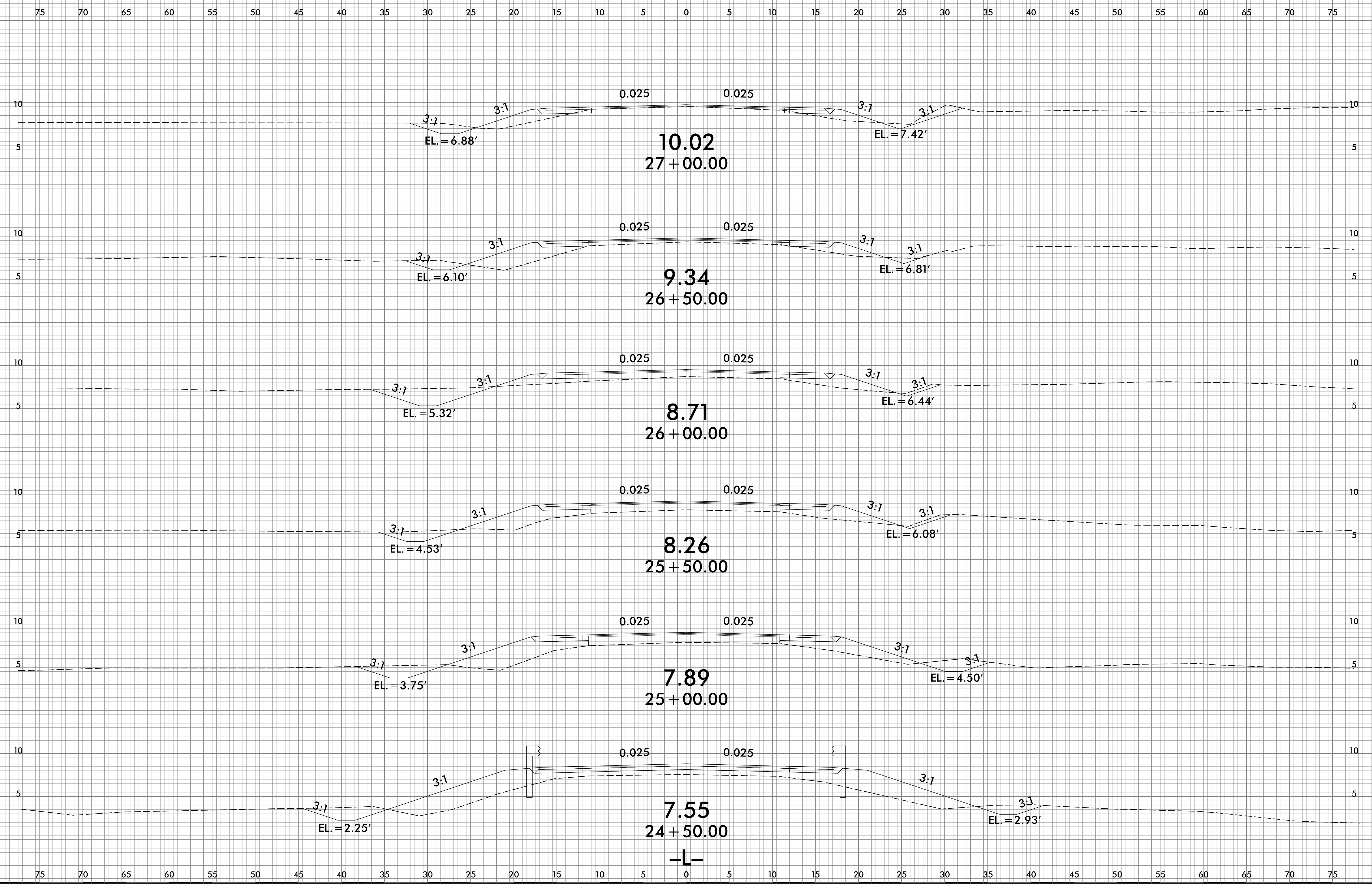


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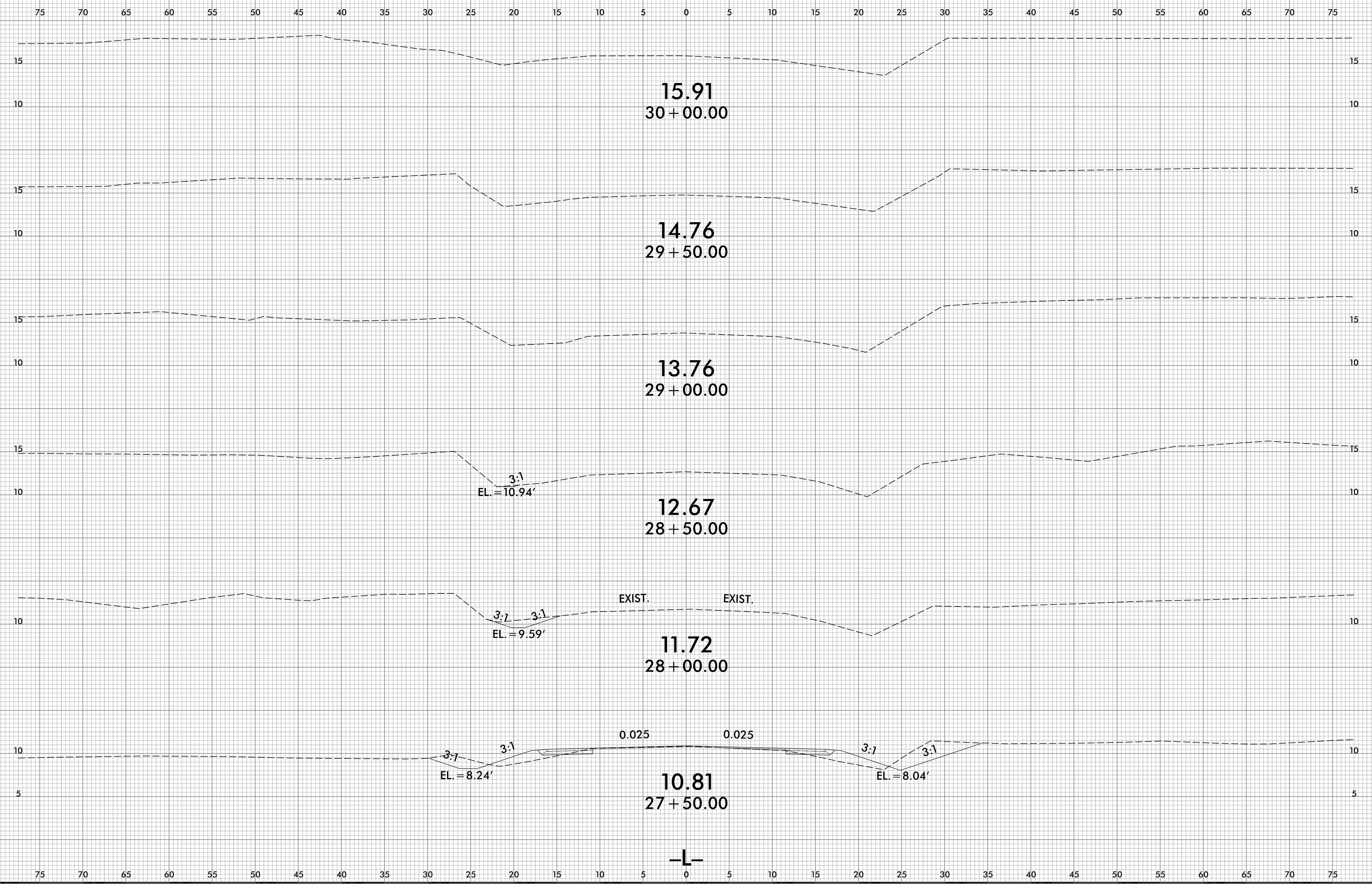
6/23/16



2/19/2024  
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6/23/16

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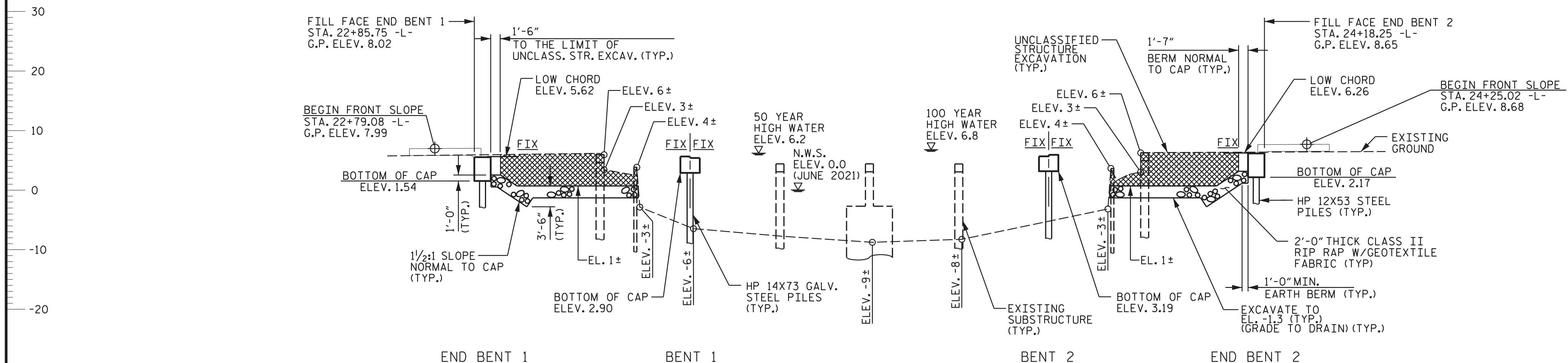


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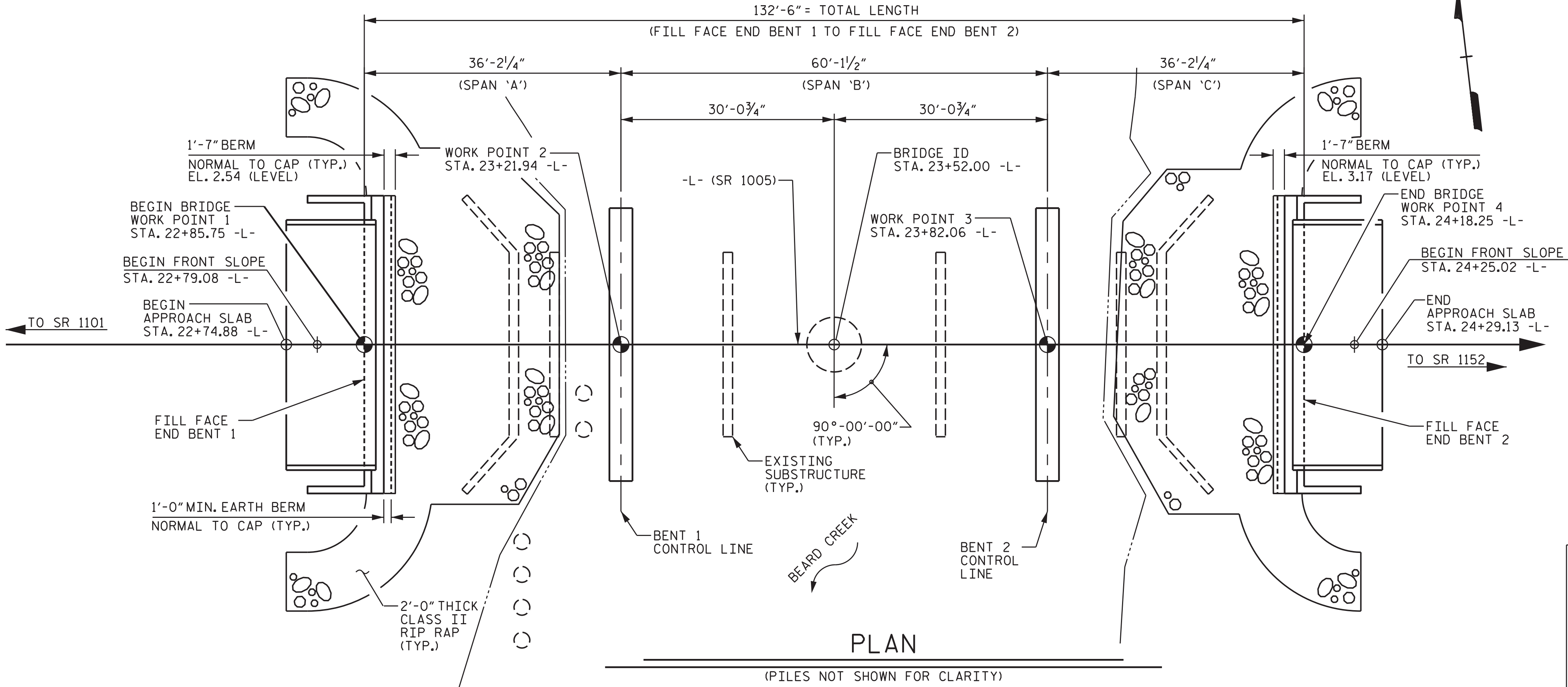


22+50 23+00 23+50 24+00 24+50 25+00



PVC = 26+20.00 -L-  
EL = 9.62  
PVT = 21+05.00 -L-  
EL = 7.15  
(+)-0.4791%  
GRADE DATA  
-L- (SR 1005)

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS.



PLAN PREPARED BY:



**ALPHA & OMEGA GROUP**  
 CIVIL | STRUCTURAL | WATER RESOURCES  
ALPHA AND OMEGA GROUP, PC  
 4601 LAKE BOONE TRAIL, SUITE 3C, RALEIGH, NC 27607  
 Firm License No. C-1684 www.aogroup.com  
 PROJECT NO.: 2021.053

PROJECT NO. 17BP.2.R.94  
PAMLICO COUNTY  
 STATION: 23+52.00 -L-

SHEET 1 OF 4 REPLACES BRIDGE NO. 14

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

GENERAL DRAWING

BRIDGE ON SR 1005  
 OVER BEARD CREEK  
 BETWEEN SR 1101 & SR 1152  
 33'-6" CLEAR ROADWAY - 90°SKEW

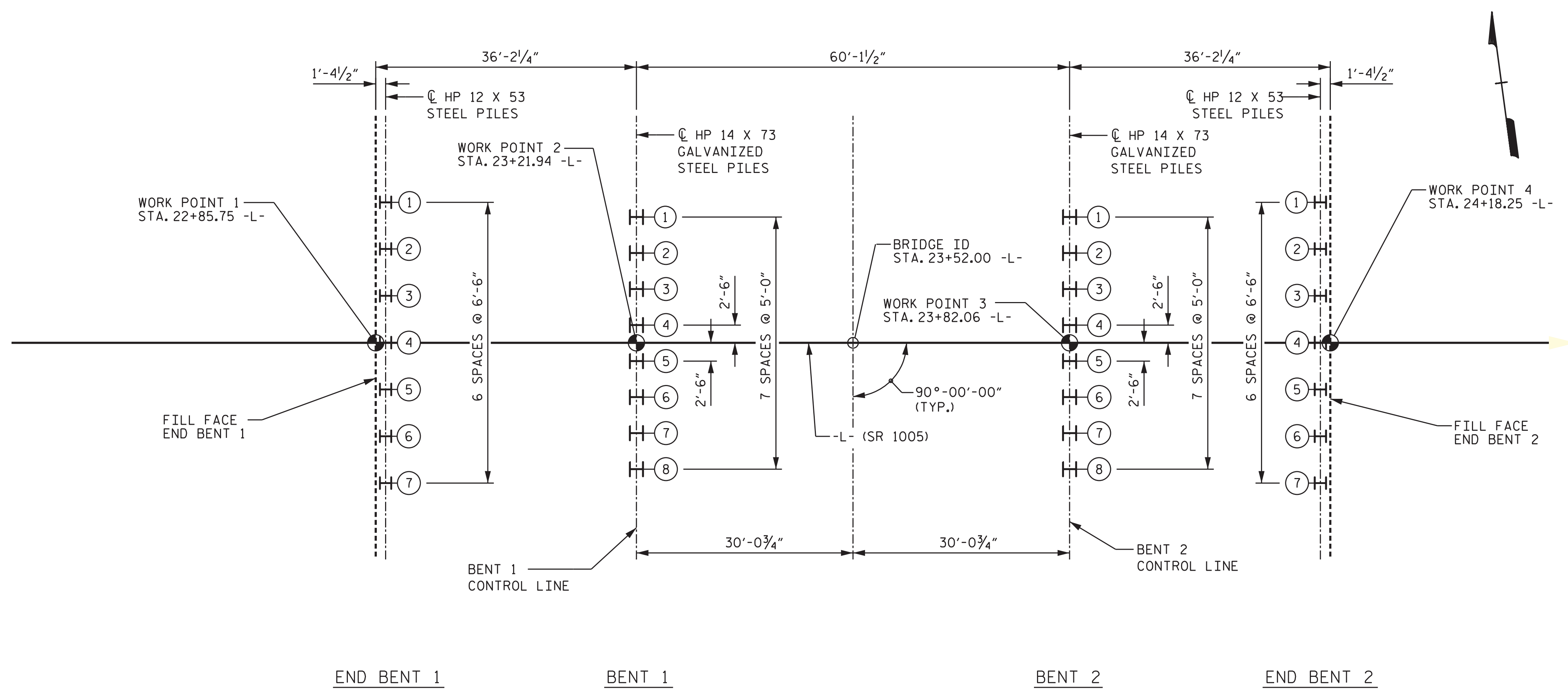
DocuSigned by:  
  
 ABC764871F8049C...  
 JAMES J. BARCOMB  
 5/11/2022

DRAWN BY : D. M. SHAUT 4/22/22  
 CHECKED BY : T. G. ZEBLO 4/25/22  
 ENGINEER OF RECORD : JAMES J. BARCOMB

DOCUMENT NOT CONSIDERED  
 FINAL UNLESS ALL  
 SIGNATURES COMPLETED

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

S-1  
 TOTAL SHEETS 26



**FOUNDATION LAYOUT PLAN**

(NOTE: ALL PILES ARE VERTICAL)

PLAN PREPARED BY:



**ALPHA & OMEGA GROUP**  
 CIVIL | STRUCTURAL | WATER RESOURCES  
ALPHA AND OMEGA GROUP, PC  
 4601 LAKE BOONE TRAIL, SUITE 3C, RALEIGH, NC 27607  
 Firm License No. C-1684 www.aogroup.com  
 PROJECT NO.: 2021.053

PROJECT NO. 17BP.2.R.94  
PAMLICO COUNTY  
 STATION: 23+52.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**GENERAL DRAWING**

BRIDGE ON SR 1005  
 OVER BEARD CREEK  
 BETWEEN SR 1101 & SR 1152  
 33'-6" CLEAR ROADWAY - 90° SKEW

DocuSigned by:  
  
 ABC764871F8049C...  
 JAMES J. BARCOMB  
 5/11/2022

DOCUMENT NOT CONSIDERED  
 FINAL UNLESS ALL  
 SIGNATURES COMPLETED

DRAWN BY : D. M. SHAUT 4/22/22  
 CHECKED BY : T. G. ZEBLO 4/25/22  
 ENGINEER OF RECORD : JAMES J. BARCOMB

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

TOTAL SHEETS: 26

**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 Lenth 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 1-7)	60	3.54	65			100							
Bent 1 (Piles 1-8)	120	3.90	85	-15	-50.0	165	16						
Bent 2 (Piles 1-8)	120	4.19	80	-15	-50.0	175							
End Bent 2 (Piles 1-7)	60	4.17	60			100							

\*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.

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

**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 1-7)			2		
Bent 1 (Piles 1-8)	YES	90			
Bent 2 (Piles 1-8)	YES	85			
End Bent 2 (Piles 1-7)					

\*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.

**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 1-7)	58			0.60			1.00
Bent 1 (Piles 1-8)	118			0.75		3	1.00
Bent 2 (Piles 1-8)	118			0.75		13	1.00
End Bent 2 (Piles 1-7)	58			0.60			1.00

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

PROJECT NO. 17BP.2.PE.94 (SF-680014)


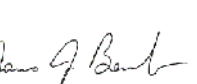
PAMLICO COUNTY

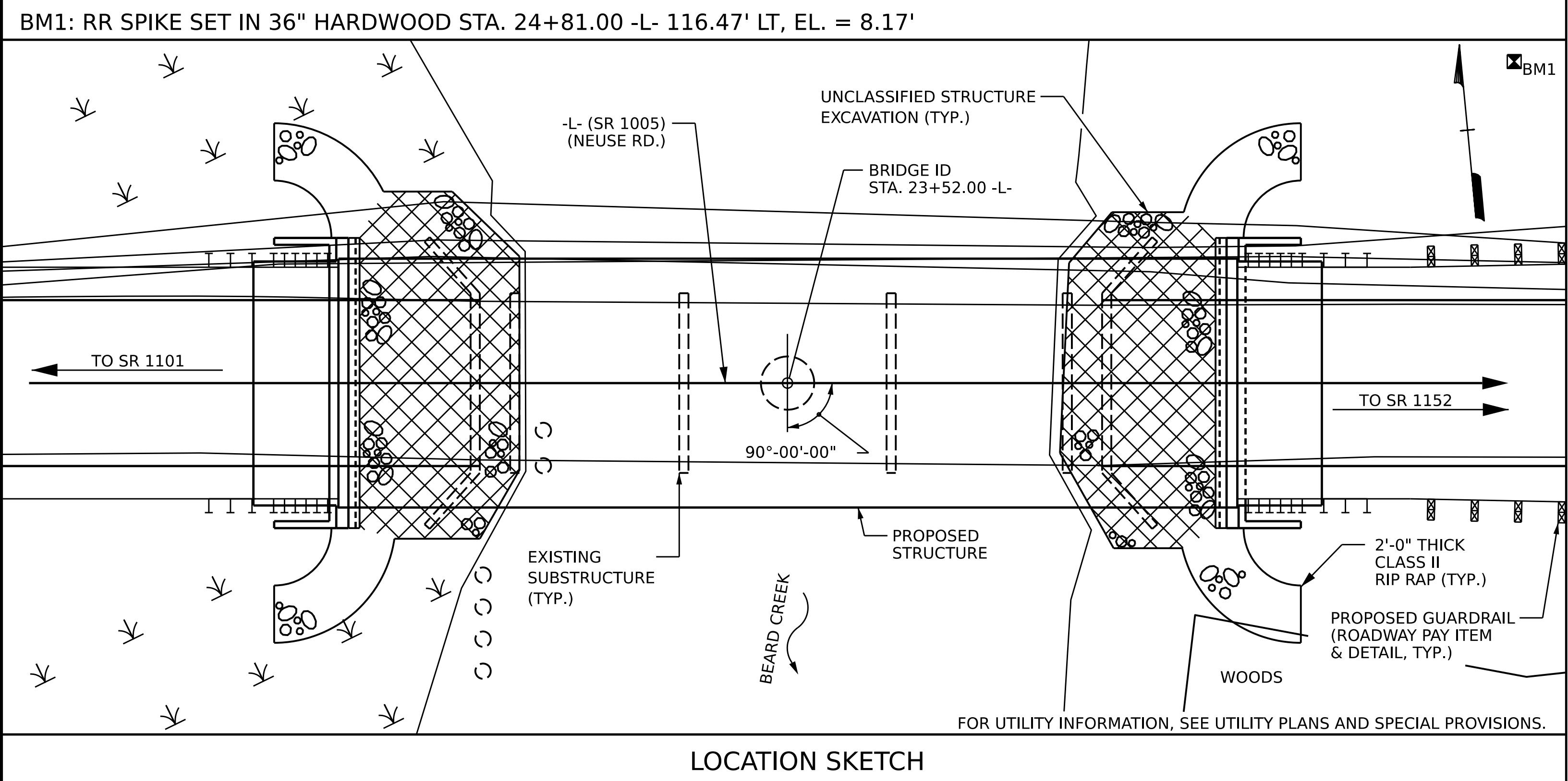
STATION: 23+52 -L-

SHEET 3 OF 4

**NOTES:**

1. The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Thein Tun Zan PE # 030943) on 04-14-2022.
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. FOR PILES, SEE PILES PROVISION AND SECTION 450 OF THE STANDARD SPECIFICATIONS.
4. TESTING THE FIRST PRODUCTION PILES WITH THE PDS DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED AT BENT NO. 1 AND BENT NO. 2. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
5. USE VERTICAL PILES AT BOTH END BENTS.
6. USE TYPE II - MODIFIED APPROACH FILL (NCDOT 2018 STD. DWG 422.02) AT END BENT NO. 1 AND END BENT NO. 2.
7. NO WAITING PERIOD IS REQUIRED FOR THE END BENT CONSTRUCTION AFTER COMPLETION OF EMBANKMENT.
8. THE DESIGN SCOUR ELEVATION FOR END BENT NO. 1 AND END BENT NO. 2 IS ELEVATION -12.1 FT.
9. THE DESIGN SCOUR ELEVATION FOR BENT NO. 1 AND BENT NO. 2 IS ELEVATION -12.1 FT.

 DocuSigned by:  ABC764871F8049C SIGNATURE DATE 5/11/2022	STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH  <b>PILE FOUNDATION TABLES</b>						SHEET NO. S-3  TOTAL SHEETS 26
	REVISIONS						
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	NO.	BY:	DATE:	NO.	BY:	DATE:	
	1			3			
	2			4			



LOCATION SKETCH

**NOTES**

- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF 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 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 FOUNDATION NOTES, SEE SHEET 3 OF 4.
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
- DECK DRAINS ARE NOT REQUIRED.
- ASHPALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.
- ALL PAVEMENT MARKING WILL BE IN ACCORDANCE WITH THE PAVEMENT MARKING PLANS AND SHALL PROVIDE FOR BICYCLES.
- ALL METALLIZED SURFACES SHALL RECEIVE A SEAL COATING AS SPECIFIED IN THE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS (METALLIZATION).
- CLASS AA CONCRETE SHALL BE USED IN ALL CAST-IN-PLACE COLUMNS, BENT CAPS, PILE CAPS, AND FOOTINGS, AND SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR. FOR CALCIUM NITRITE CORROSION INHIBITOR, SEE SECTION 1000-4(K) OF THE STANDARD SPECIFICATIONS.
- ALL BAR SUPPORTS USED IN THE PARAPET AND BENT CAPS AND ALL INCIDENTAL REINFORCING STEEL SHALL BE EPOXY COATED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
- THE CONCRETE IN THE BENT CAPS OF END BENT NO. 1, END BENT NO. 2, BENT NO. 1, AND BENT NO. 2 SHALL CONTAIN SILICA FUME. SILICA FUME SHALL BE SUBSTITUTED FOR 5% OF THE PORTLAND CEMENT BY WEIGHT. IF THE OPTION OF ARTICLE 1024-1 OF THE STANDARD SPECIFICATIONS TO PARTIALLY SUBSTITUTE CLASS F FLY ASH FOR PORTLAND CEMENT IS EXERCISED, THEN THE RATE OF FLY ASH SUBSTITUTION SHALL BE REDUCED TO 1.0 LB OF FLY ASH PER 1.0 LB. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE VARIOUS PAY ITEMS.
- THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 46 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.

TOTAL BILL OF MATERIAL									
	REMOVAL OF EXISTING STRUCTURE @ STA. 23+52.00 -L-	ASBESTOS ASSESSMENT	DYNAMIC PILE TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS AA CONCRETE	BRIDGE APPROACH SLABS	EPOXY COATED REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP12X53 STEEL PILES	PILE DRIVING EQUIPMENT SETUP FOR HP14X73 STEEL PILES
	LUMP SUM	LUMP SUM	EA.	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	EA.	EA.
SUPERSTRUCTURE						LUMP SUM			
END BENT NO. 1				LUMP SUM	22.8		2773	7	
BENT NO. 1			1		11.6		2491		8
BENT NO. 2			1		11.6		2491		8
END BENT NO. 2				LUMP SUM	22.8		2773	7	
TOTAL	LUMP SUM	LUMP SUM	2	LUMP SUM	68.8	LUMP SUM	10528	14	16

TOTAL BILL OF MATERIAL															
	HP 12 X 53 STEEL PILES		HP 14 X 73 GALVANIZED STEEL PILES		PILE REDRIVES	TWO BAR METAL RAIL	1'-2" X 2'-8 3/4" CONCRETE PARAPET	1'-2" X 2'-8 3/4" CONCRETE PARAPET	PLAIN RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE (2'-0" THICK)	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS	3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLABS		
	NO.	LIN.FT.	NO.	LIN.FT.	EA.	LIN.FT.	LIN.FT.	LIN.FT.	TON	SQ.YDS.	LUMP SUM	NO.	LIN.FT.	NO.	LIN.FT.
SUPERSTRUCTURE						245	140.00	120.00			LUMP SUM	24	840	12	720
END BENT NO. 1	7	420			4				170	197					
BENT NO. 1			8	680	4										
BENT NO. 2			8	640	4										
END BENT NO. 2	7	420			4				153	177					
TOTAL	14	840	16	1320	16	245	140.00	120.00	323	374	LUMP SUM	24	840	12	720

**HYDRAULIC DATA:**

DESIGN DISCHARGE -	1100 CFS
DESIGN FREQUENCY -	50 YRS
DESIGN HW ELEVATION -	6.2 FT
DRAINAGE AREA -	8.61 SQ. MI.
BASE DISCHARGE (Q100) -	1400 CFS
BASE HW ELEVATION -	6.8 FT

**OVERTOPPING DATA:**

OVERTOPPING DISCHARGE -	1450 CFS
OVERTOPPING FREQUENCY -	100 YRS
OVERTOPPING HW ELEVATION -	7.0 FT

LOW POINT OF ROADWAY OVERTOPPING PROFILE OCCURS AT -L- STA. 20+32.00

PROJECT NO. 17BP.2.R.94  
PAMLICO COUNTY  
 STATION: 23+52.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

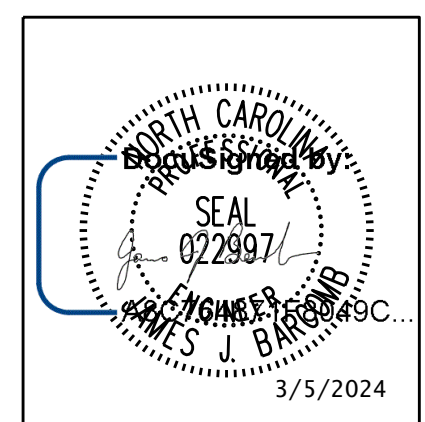
**GENERAL DRAWING**

BRIDGE ON SR 1005  
 OVER BEARD CREEK  
 BETWEEN SR 1101 & SR 1152  
 33'-6" CLEAR ROADWAY - 90°SKEW

PLAN PREPARED BY:



**ALPHA & OMEGA GROUP**  
 CIVIL | STRUCTURAL | WATER RESOURCES  
 4601 LAKE BOONE TRAIL, SUITE 3C, RALEIGH, NC 27607  
 Firm License No. C-1684 www.aogroup.com  
 PROJECT NO. : 2021.053



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DRAWN BY : D. M. SHAUT 4/22/22  
 CHECKED BY : T. G. ZEBLO 4/25/22  
 ENGINEER OF RECORD : JAMES J. BARCOMB

\*\*\*\*\*SYSTEM\*\*\*\*\*  
 \*\*\*\*\*DG\*\*\*\*\*  
 \*\*\*\*\*USER\*\*\*\*\*

REVISIONS						SHEET NO.
NO	BY:	DATE:	NO	BY:	DATE:	TOTAL SHEETS
1			3			26
2			4			

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

LOAD TYPE	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVE-LOAD FACTORS ( LL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS ( LL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD	HL-93 (INVENTORY)	N/A	1	1.395	-	1.75	0.288	2.19	35'	EL	17	0.565	1.39	35'	EL	1.7	0.80	0.288	2.02	35'	EL	17		
	HL-93 (OPERATING)	N/A		1.808	-	1.35	0.288	2.84	35'	EL	17	0.565	1.81	35'	EL	1.7	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	2	1.621	58.344	1.75	0.288	2.86	35'	EL	20.4	0.565	1.62	35'	EL	1.7	0.80	0.288	2.66	35'	EL	20.4		
	HS-20 (OPERATING)	36.000		2.101	75.631	1.35	0.288	3.71	35'	EL	20.4	0.565	2.10	35'	EL	1.7	N/A	--	--	--	--	--		
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH		4.176	56.381	1.4	0.288	6.25	35'	EL	17	0.565	4.17	35'	EL	1.7	0.80	0.288	4.60	35'	EL	17		
		SNGARBS2	20.000		3.157	63.146	1.4	0.288	5.24	35'	EL	20.4	0.565	3.16	35'	EL	1.7	0.80	0.288	3.90	35'	EL	20.4	
		SNAGRIS2	22.000		3.009	66.203	1.4	0.288	5.20	35'	EL	20.4	0.565	3.01	35'	EL	1.7	0.80	0.288	3.87	35'	EL	20.4	
		SNCOTTS3	27.250		2.103	57.309	1.4	0.288	3.13	35'	EL	17	0.565	2.10	35'	EL	1.7	0.80	0.288	2.30	35'	EL	17	
		SNAGGRS4	34.925		1.881	65.678	1.4	0.288	2.89	35'	EL	17	0.565	1.88	35'	EL	1.7	0.80	0.288	2.13	35'	EL	17	
		SNS5A	35.550		1.984	70.532	1.4	0.288	2.81	35'	EL	17	0.565	1.98	35'	EL	1.7	0.80	0.288	2.07	35'	EL	17	
		SNS6A	39.950		1.868	74.644	1.4	0.288	2.71	35'	EL	17	0.565	1.87	35'	EL	1.7	0.80	0.288	1.99	35'	EL	17	
	SNS7B	42.000		1.906	80.065	1.4	0.288	2.58	35'	EL	17	0.565	1.91	35'	EL	1.7	0.80	0.288	1.91	35'	EL	17		
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		2.178	71.886	1.4	0.288	3.35	35'	EL	17	0.565	2.18	35'	EL	1.7	0.80	0.288	2.47	35'	EL	17	
		TNT4A	33.075		2.055	67.983	1.4	0.288	3.34	35'	EL	17	0.565	2.05	35'	EL	1.7	0.80	0.288	2.47	35'	EL	17	
		TNT6A	41.600		2.022	84.102	1.4	0.288	2.93	35'	EL	17	0.565	2.02	35'	EL	1.7	0.80	0.288	2.16	35'	EL	17	
		TNT7A	42.000		1.870	78.545	1.4	0.288	3.02	35'	EL	20.4	0.565	1.87	35'	EL	1.7	0.80	0.288	2.23	35'	EL	20.4	
		TNT7B	42.000		1.816	76.267	1.4	0.288	2.98	35'	EL	17	0.565	1.82	35'	EL	1.7	0.80	0.288	2.19	35'	EL	17	
		TNAGRIT4	43.000		1.741	74.876	1.4	0.288	2.97	35'	EL	20.4	0.565	1.74	35'	EL	1.7	0.80	0.288	2.20	35'	EL	20.4	
TNAGT5A		45.000		1.840	82.782	1.4	0.288	2.78	35'	EL	17	0.565	1.84	35'	EL	1.7	0.80	0.288	2.05	35'	EL	17		
TNAGT5B	45.000	3	1.645	74.004	1.4	0.288	2.68	35'	EL	17	0.565	1.64	35'	EL	1.7	0.80	0.288	1.98	35'	EL	17			
EMERGENCY VEHICLE (EV)	EV2	28.750		2.409	69.272	1.3	0.288	4.06	35'	EL	20.4	0.565	2.41	35'	EL	1.7	0.80	0.288	2.80	35'	EL	20.4		
	EV3	43.000	4	1.641	70.582	1.3	0.288	2.67	35'	EL	17	0.565	1.64	35'	EL	1.7	0.80	0.288	1.83	35'	EL	17		

**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:**

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

# CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING \*\*

4 EMERGENCY VEHICLE LOAD RATING \*\*

\*\* SEE CHART FOR VEHICLE TYPE

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GIRDER LOCATION

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



**LRFR SUMMARY**

FOR SPANS 'A' & 'C'

PROJECT NO. 17BP.2.R.94  
PAMLICO COUNTY  
 STATION: 23+52.00 -L-

ASSEMBLED BY: DM SHAUT	DATE: 4/22/22
CHECKED BY: TG ZEBLO	DATE: 4/22/22
DRAWN BY: CVC 6/10	REV. 11/12/08RR MAA/GM
CHECKED BY: DNS 6/10	REV. 10/1/11 MAA/GM
	REV. 04/23 BNB/AAI

PLAN PREPARED BY:

**ALPHA & OMEGA GROUP**  
CIVIL | STRUCTURAL | WATER RESOURCES

ALPHA AND OMEGA GROUP, P.C.  
 4001 LAKE BOONE TRAIL, SUITE 3C, RALEIGH, NC 27607  
 Firm License No. C-1684 www.aogroup.com  
 A&O PROJECT NO.: 2021.053

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			29

\*\*\*\*\*SYSTEM\*\*\*\*\*  
 \*\*\*\*\*DGN\*\*\*\*\*  
 \*\*\*\*\*USERNAME\*\*\*\*\*

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

LOAD TYPE	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVE-LOAD FACTORS (γ <sub>LL</sub> )	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (f <sub>c</sub> )	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (f <sub>c</sub> )	LIVE-LOAD FACTORS (γ <sub>LL</sub> )	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (f <sub>c</sub> )	
DESIGN LOAD	HL-93 (INVENTORY)	N/A	①	1.018	--	1.75	0.274	1.05	65'	EL	32	0.513	1.20	65'	EL	6.4	0.80	0.274	1.02	65'	EL	32		
	HL-93 (OPERATING)	N/A		1.358	--	1.35	0.274	1.36	65'	EL	32	0.513	1.56	65'	EL	6.4	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	②	1.306	47.014	1.75	0.274	1.34	65'	EL	32	0.513	1.48	65'	EL	6.4	0.80	0.274	1.31	65'	EL	32		
	HS-20 (OPERATING)	36.000		1.742	62.706	1.35	0.274	1.74	65'	EL	32	0.513	1.92	65'	EL	6.4	N/A	--	--	--	--	--		
LEGAL LOAD	SINGLE VEHICLE (SV)	SN5H	13.500		2.868	38.725	1.4	0.274	3.69	65'	EL	32	0.513	4.33	65'	EL	6.4	0.80	0.274	2.87	65'	EL	32	
		SNGARBS2	20.000		2.171	43.424	1.4	0.274	2.79	65'	EL	32	0.513	3.11	65'	EL	6.4	0.80	0.274	2.17	65'	EL	32	
		SNAGRIS2	22.000		2.071	45.552	1.4	0.274	2.66	65'	EL	32	0.513	2.89	65'	EL	6.4	0.80	0.274	2.07	65'	EL	32	
		SNCOTTS3	27.250		1.428	38.924	1.4	0.274	1.84	65'	EL	32	0.513	2.17	65'	EL	6.4	0.80	0.274	1.43	65'	EL	32	
		SNAGGRS4	34.925		1.206	42.136	1.4	0.274	1.55	65'	EL	32	0.513	1.81	65'	EL	6.4	0.80	0.274	1.21	65'	EL	32	
		SNS5A	35.550		1.179	41.911	1.4	0.274	1.52	65'	EL	32	0.513	1.85	65'	EL	6.4	0.80	0.274	1.18	65'	EL	32	
		SNS6A	39.950		1.087	43.43	1.4	0.274	1.40	65'	EL	32	0.513	1.69	65'	EL	6.4	0.80	0.274	1.09	65'	EL	32	
		SNS7B	42.000		1.035	43.489	1.4	0.274	1.33	65'	EL	32	0.513	1.67	65'	EL	6.4	0.80	0.274	1.04	65'	EL	32	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.327	43.80	1.4	0.274	1.71	65'	EL	32	0.513	2.01	65'	EL	6.4	0.80	0.274	1.33	65'	EL	32	
		TNT4A	33.075		1.335	44.142	1.4	0.274	1.72	65'	EL	32	0.513	1.95	65'	EL	6.4	0.80	0.274	1.33	65'	EL	32	
		TNT6A	41.600		1.096	45.613	1.4	0.274	1.41	65'	EL	32	0.513	1.80	65'	EL	6.4	0.80	0.274	1.10	65'	EL	32	
		TNT7A	42.000		1.105	46.40	1.4	0.274	1.42	65'	EL	32	0.513	1.74	65'	EL	6.4	0.80	0.274	1.10	65'	EL	32	
		TNT7B	42.000		1.150	48.298	1.4	0.274	1.48	65'	EL	32	0.513	1.62	65'	EL	6.4	0.80	0.274	1.15	65'	EL	32	
		TNAGRIT4	43.000		1.089	46.815	1.4	0.274	1.40	65'	EL	32	0.513	1.57	65'	EL	6.4	0.80	0.274	1.09	65'	EL	32	
		TNACT5A	45.000		1.024	46.084	1.4	0.274	1.32	65'	EL	32	0.513	1.57	65'	EL	6.4	0.80	0.274	1.02	65'	EL	32	
		TNACT5B	45.000	③	1.010	45.431	1.4	0.274	1.30	65'	EL	32	0.513	1.49	65'	EL	6.4	0.80	0.274	1.01	65'	EL	32	
EMERGENCY VEHICLE (EV)	EV2	28.750		1.700	48.880	1.3	0.274	2.12	65'	EL	32	0.513	2.33	65'	EL	6.4	0.80	0.274	1.70	65'	EL	32		
	EV3	43.000	④	1.109	47.706	1.3	0.274	1.38	65'	EL	32	0.513	1.57	65'	EL	6.4	0.80	0.274	1.11	65'	EL	32		

**LOAD FACTORS:**

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ <sub>DC</sub>	γ <sub>DW</sub>
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

**NOTES:**

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

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

**COMMENTS:**

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

⊠ CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING ••

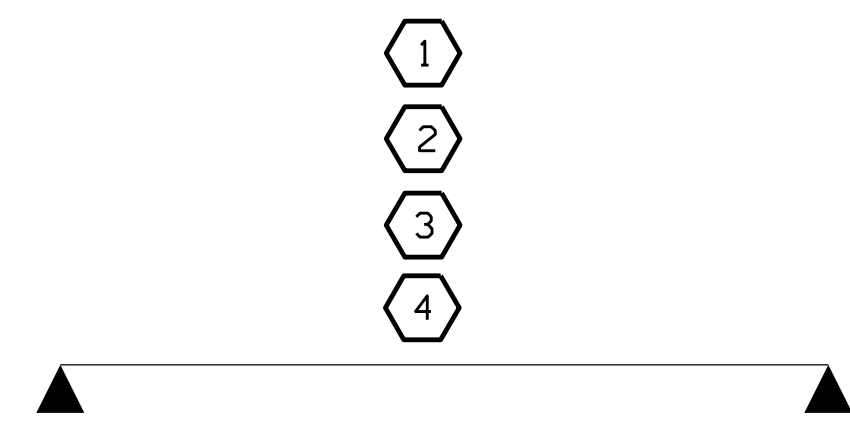
④ EMERGENCY VEHICLE LOAD RATING ••

•• SEE CHART FOR VEHICLE TYPE

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GIRDER LOCATION

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



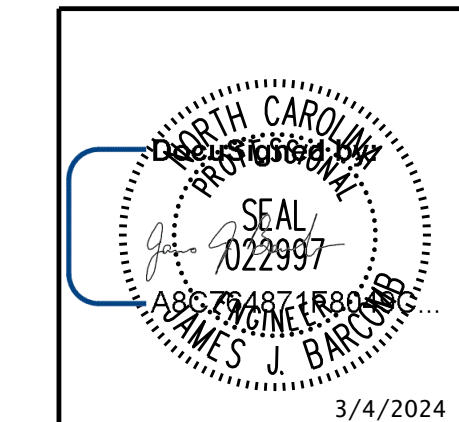
**LRFR SUMMARY**  
FOR SPAN 'B'

PROJECT NO. 17BP.2.R.94  
PAMLICO COUNTY  
 STATION: 23+52.00 -L-

ASSEMBLED BY : DM SHAUT DATE : 4/22/22  
 CHECKED BY : TG ZEBLO DATE : 4/25/22  
 DRAWN BY : CVC 6/10 REV. BY : BNB/AKP 06/23  
 CHECKED BY : DNS 6/10

PLAN PREPARED BY:

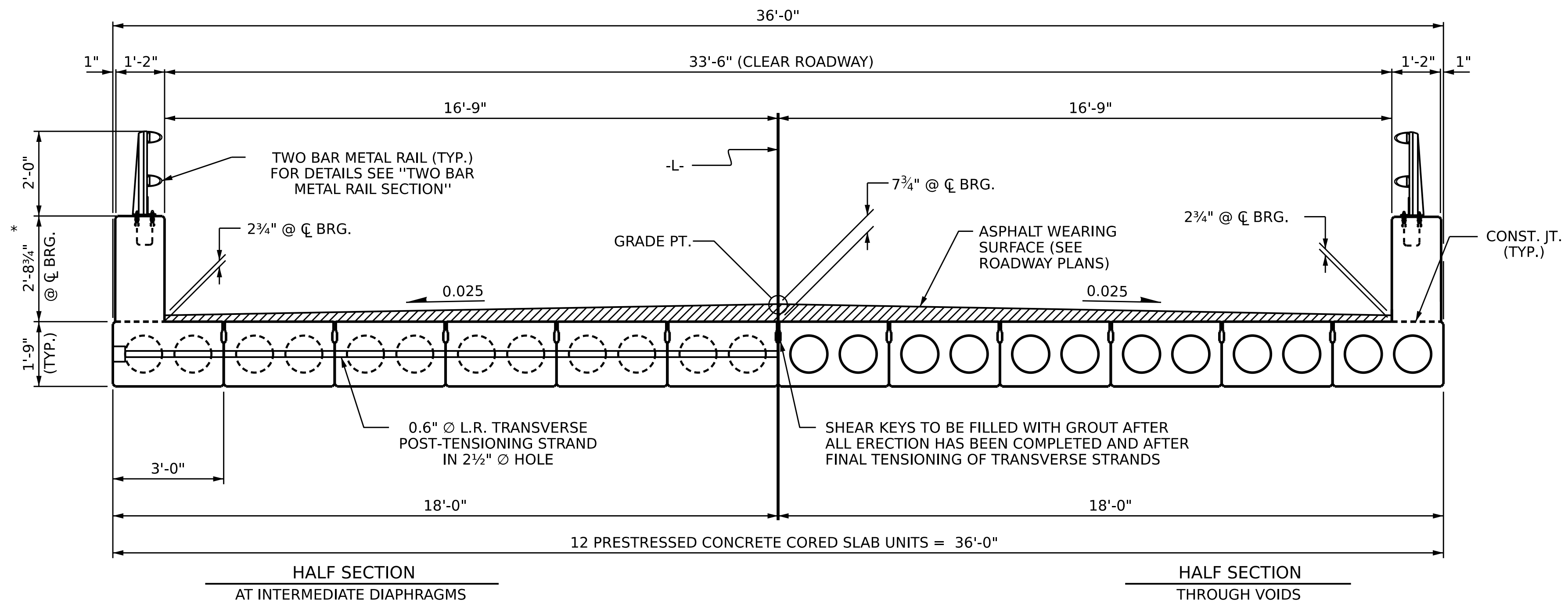
**ALPHA & OMEGA GROUP**  
CIVIL | STRUCTURAL | WATER RESOURCES  
 ALPHA AND OMEGA GROUP, PC  
 4601 LAKE BOONE TRAIL, SUITE 3C, RALEIGH, NC 27607  
 Firm License No. C-1684 www.aogroup.com  
 A&O PROJECT NO. : 2021-053



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**STANDARD LRFR SUMMARY FOR 60' CORED SLAB UNIT 90° SKEW (NON-INTERSTATE TRAFFIC)**

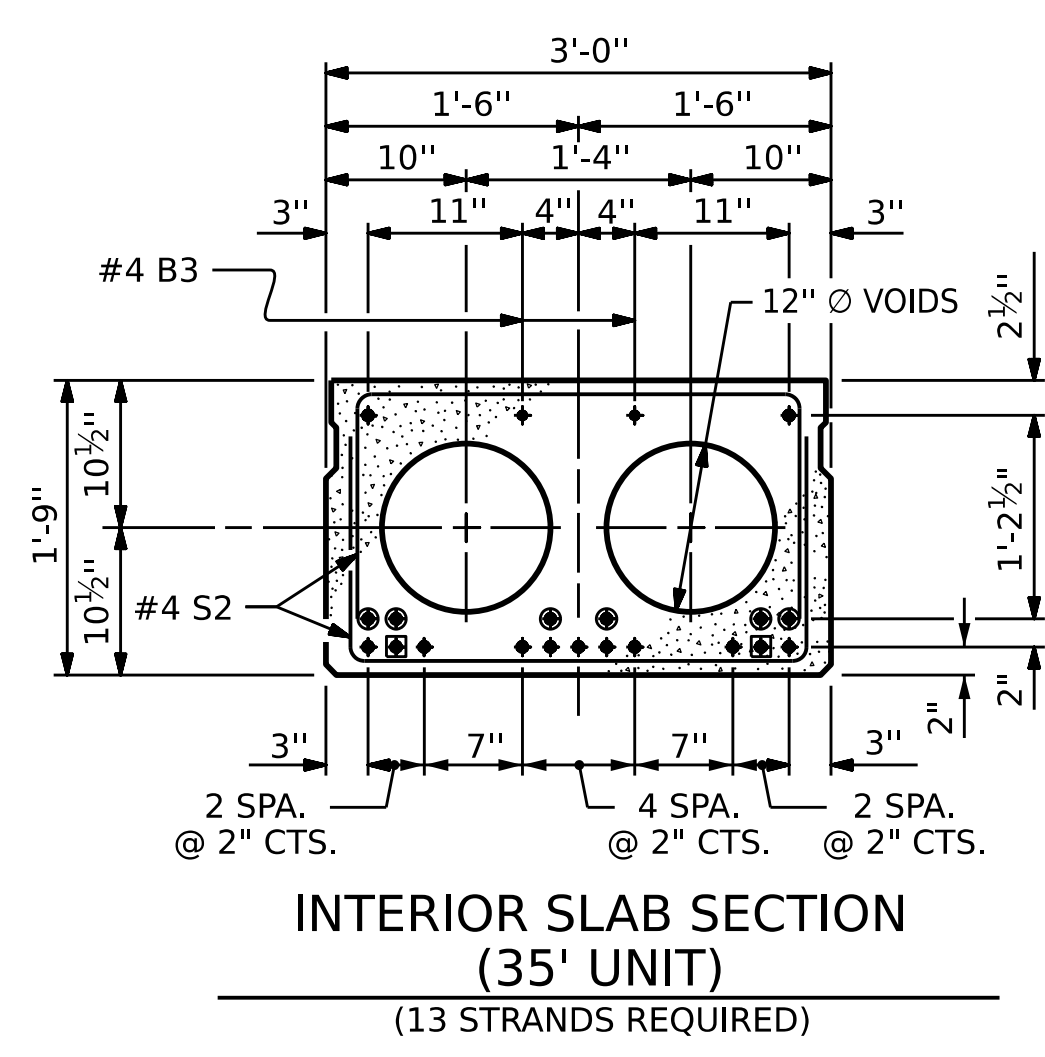
NO.	REVISIONS			NO.	REVISIONS			SHEET NO.
	BY:	DATE:			BY:	DATE:		
1				3			S-6	
2				4			TOTAL SHEETS 29	

\*\*\*\*\*SYSTEM\*\*\*\*\*  
 \*\*\*\*\*DG\*\*\*\*\*  
 \*\*\*\*\*USER\*\*\*\*\*

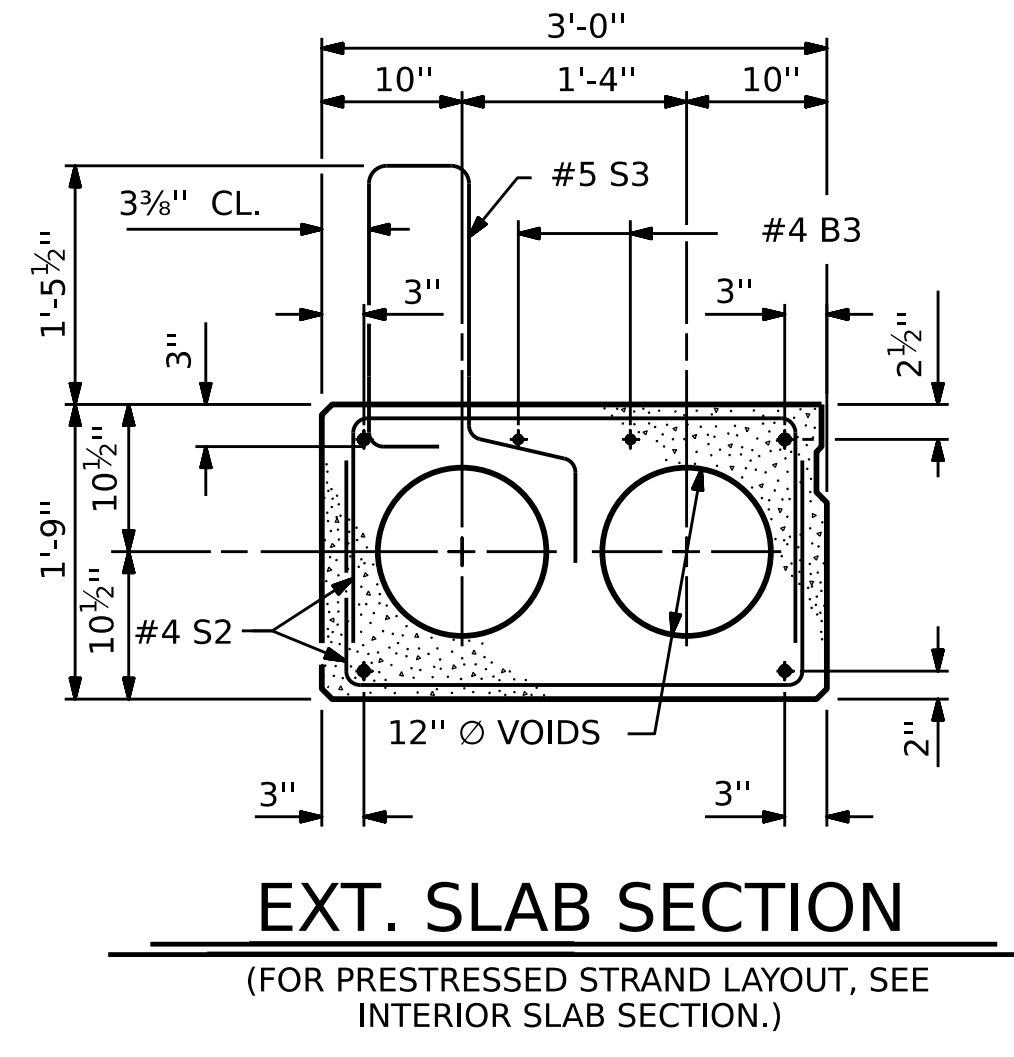


**TYPICAL SECTION**

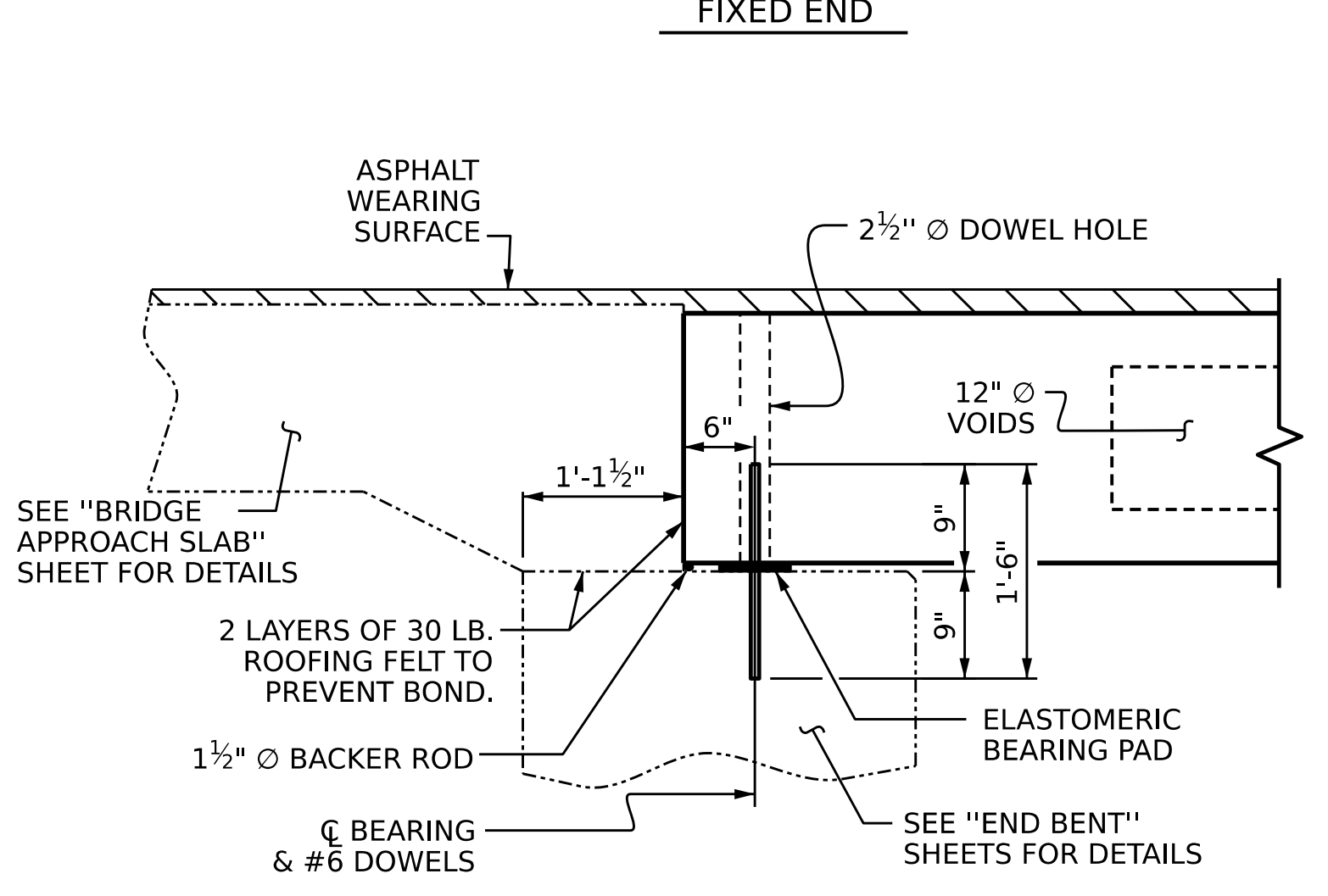
\* - THE MAXIMUM RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS SEE THE "TWO BAR METAL RAIL SECTION" DETAIL.



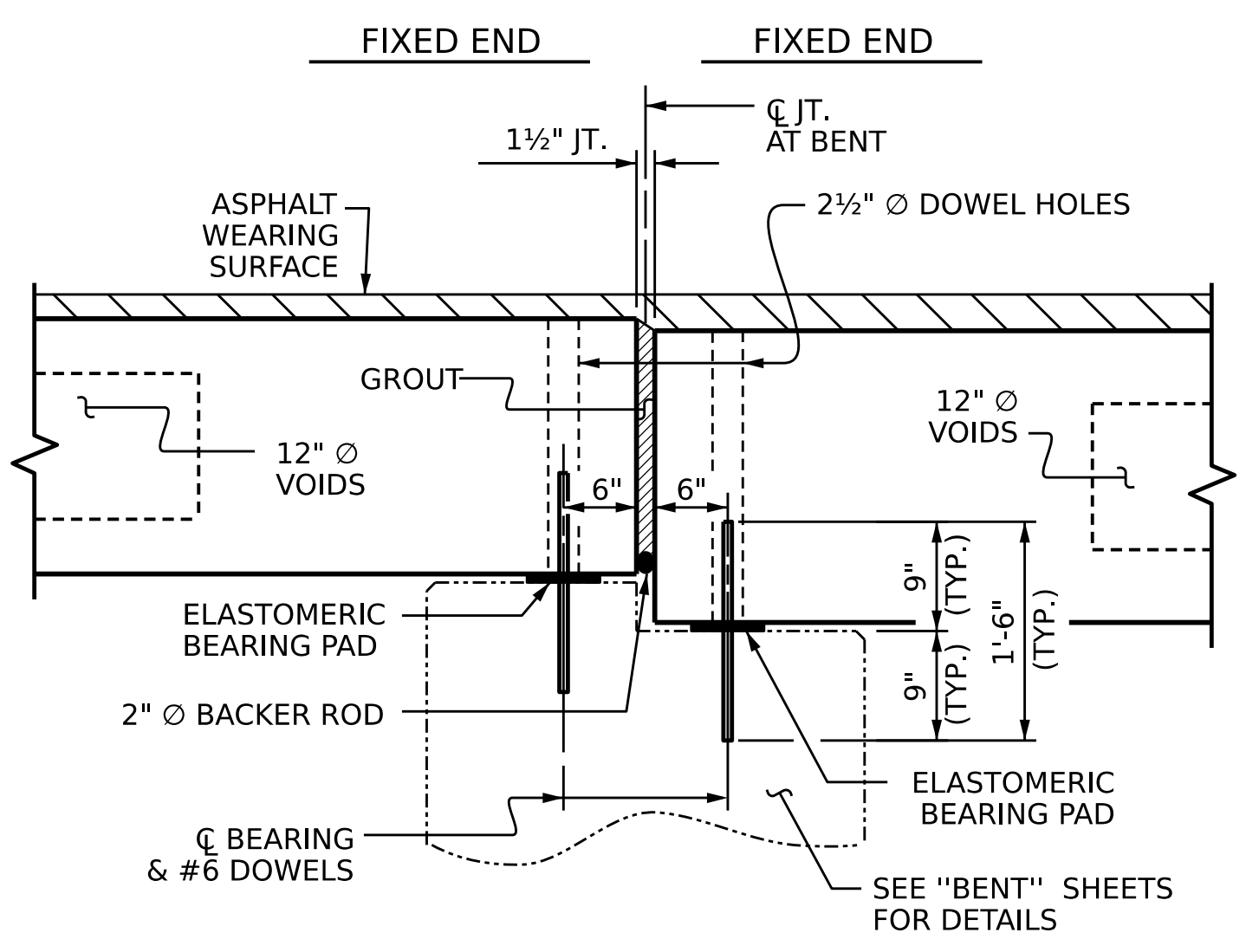
**INTERIOR SLAB SECTION (35' UNIT)**  
(13 STRANDS REQUIRED)  
**0.6" Ø LOW RELAXATION STRAND LAYOUT**



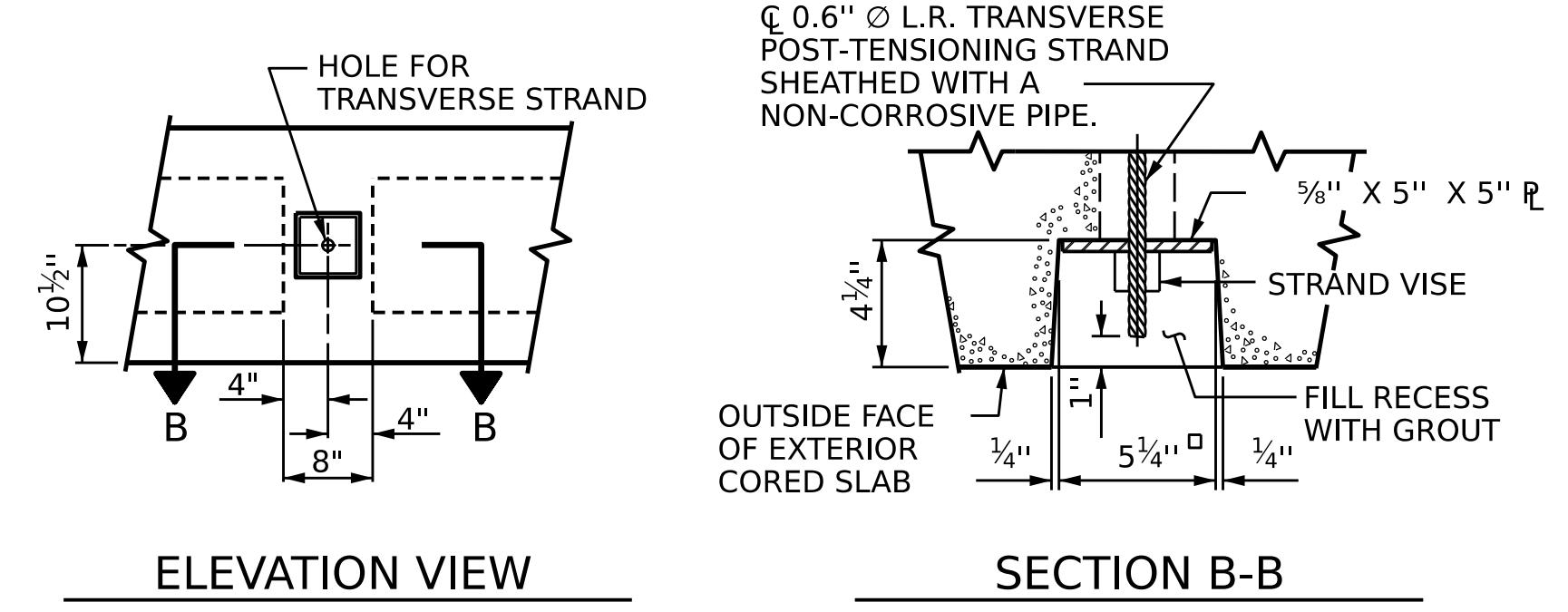
**EXT. SLAB SECTION**  
(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)



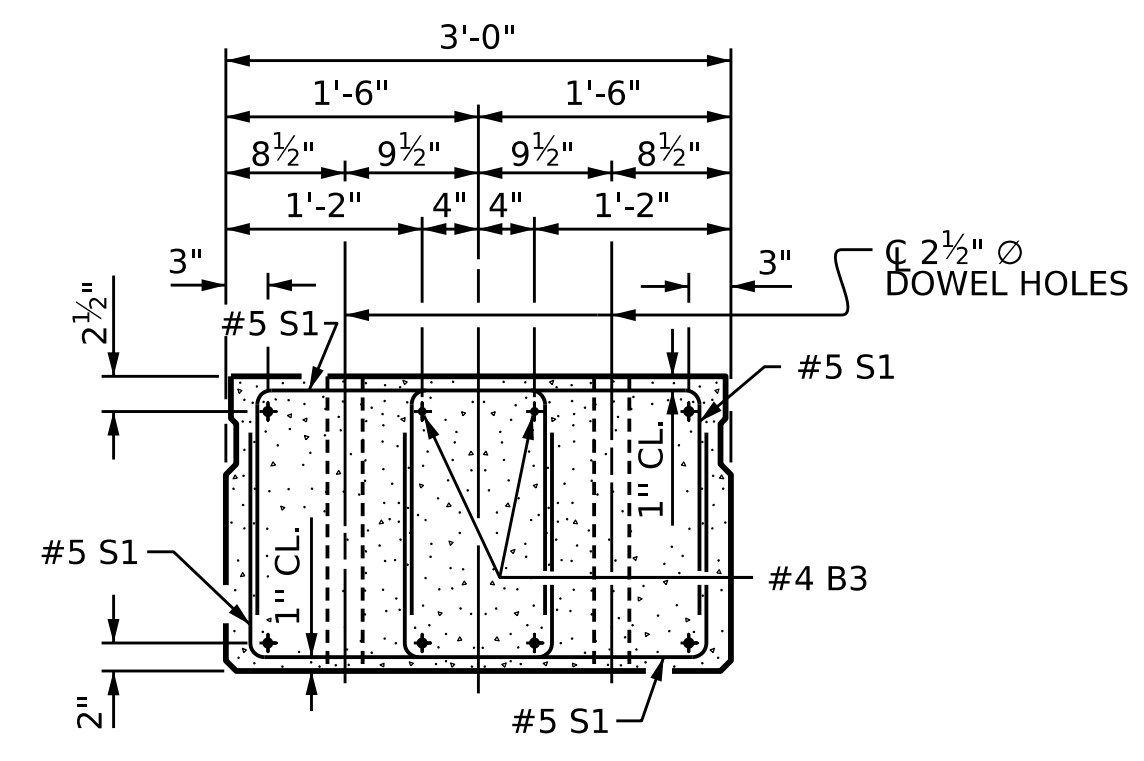
**SECTION AT END BENT**



**SECTION AT BENT No. 1**

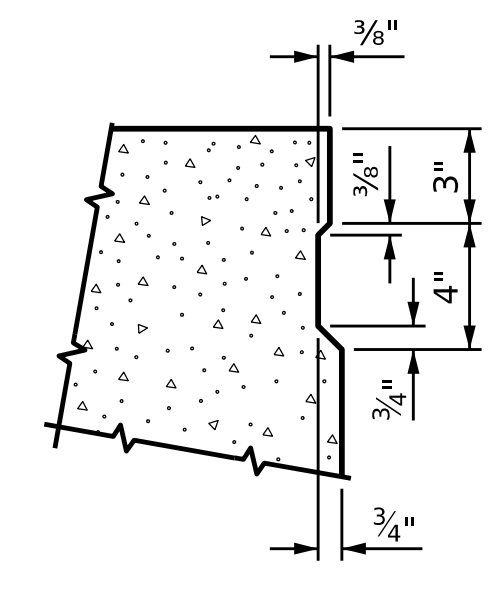


**GROUTED RECESS AT END OF POST-TENSIONED STRAND OF CORED SLABS**



**END ELEVATION**

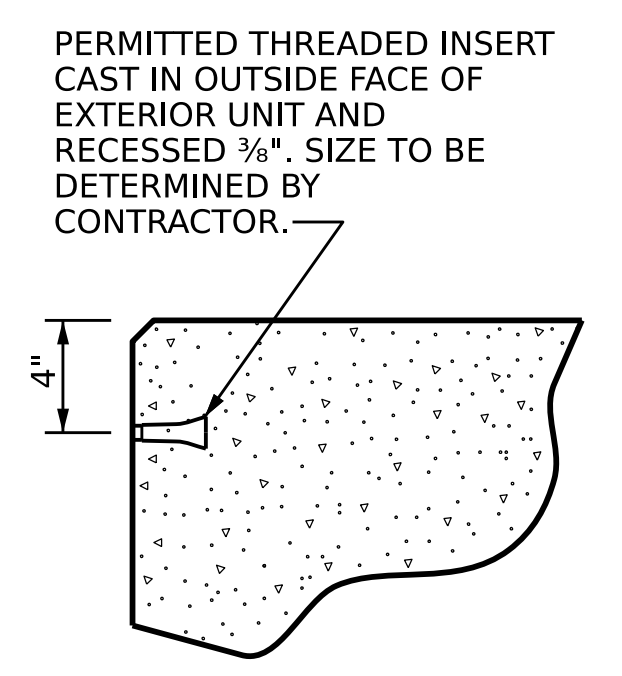
SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.) INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.



**SHEAR KEY DETAIL**

- BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 2'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.
- OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED. IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE CORED SLAB UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

**DEBONDING LEGEND**

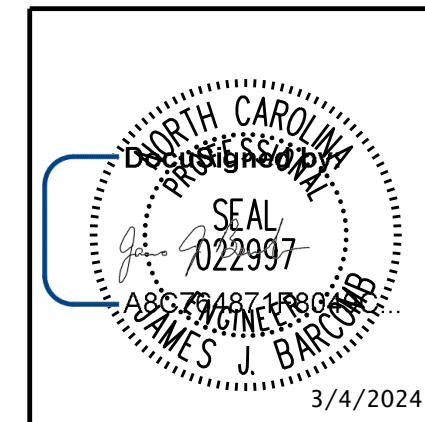


**THREADED INSERT DETAIL**

PROJECT NO. **17BP.2.R.94**  
PAMLICO COUNTY  
STATION: **23+52.00 -L-**

SHEET 1 OF 3

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
**STANDARD**  
**3'-0" X 1'-9"**  
**PRESTRESSED CONCRETE**  
**CORED SLAB UNIT**  
**90° SKEW**  
**SPANS 'A' & 'C'**



PLAN PREPARED BY:  
**ALPHA & OMEGA GROUP**  
CIVIL | STRUCTURAL | WATER RESOURCES  
4601 LAKE BOONE TRAIL, SUITE 3C, RALEIGH, NC 27607  
Firm License No. C-1684 www.aogroup.com  
A&O PROJECT NO.: 2021.053

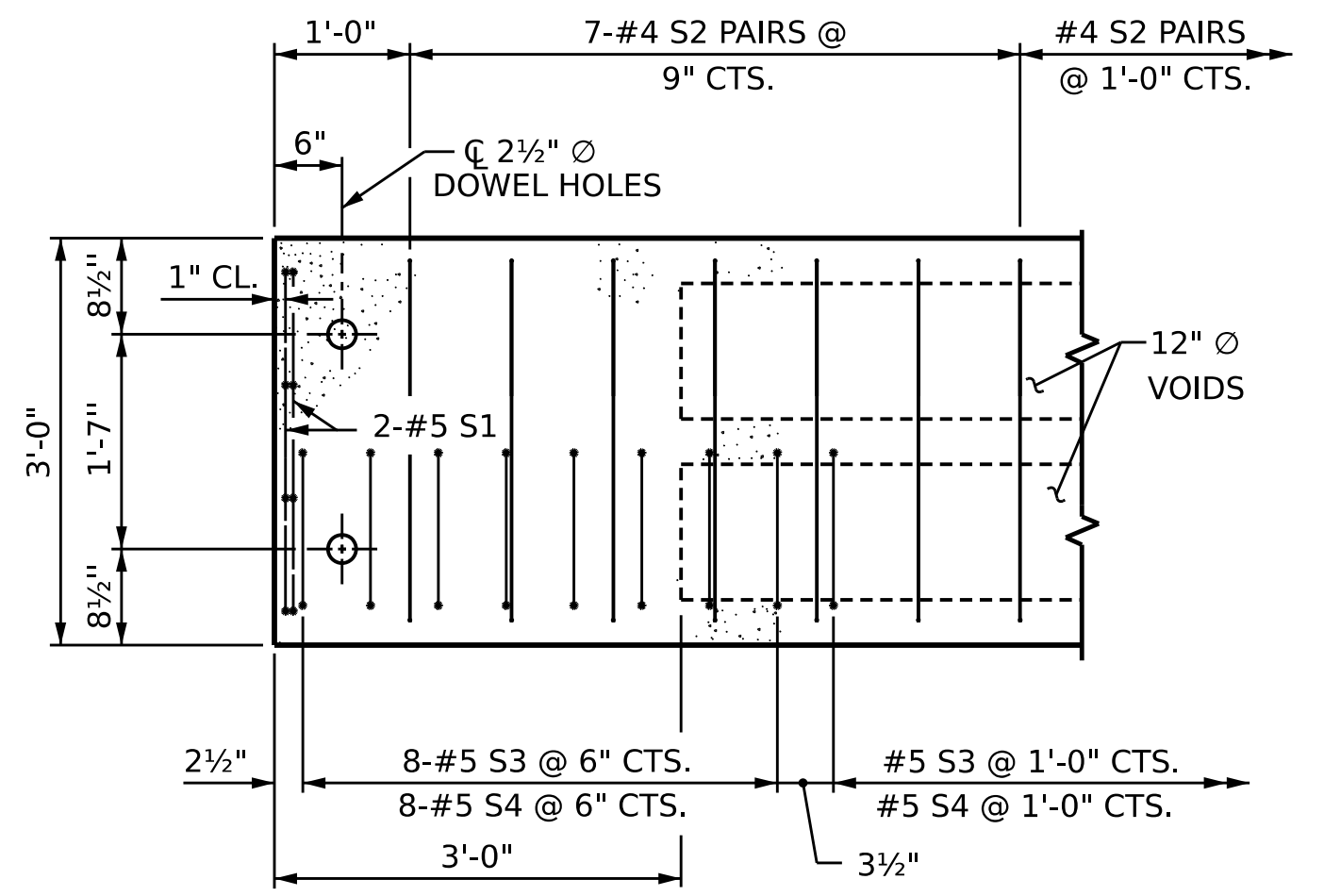
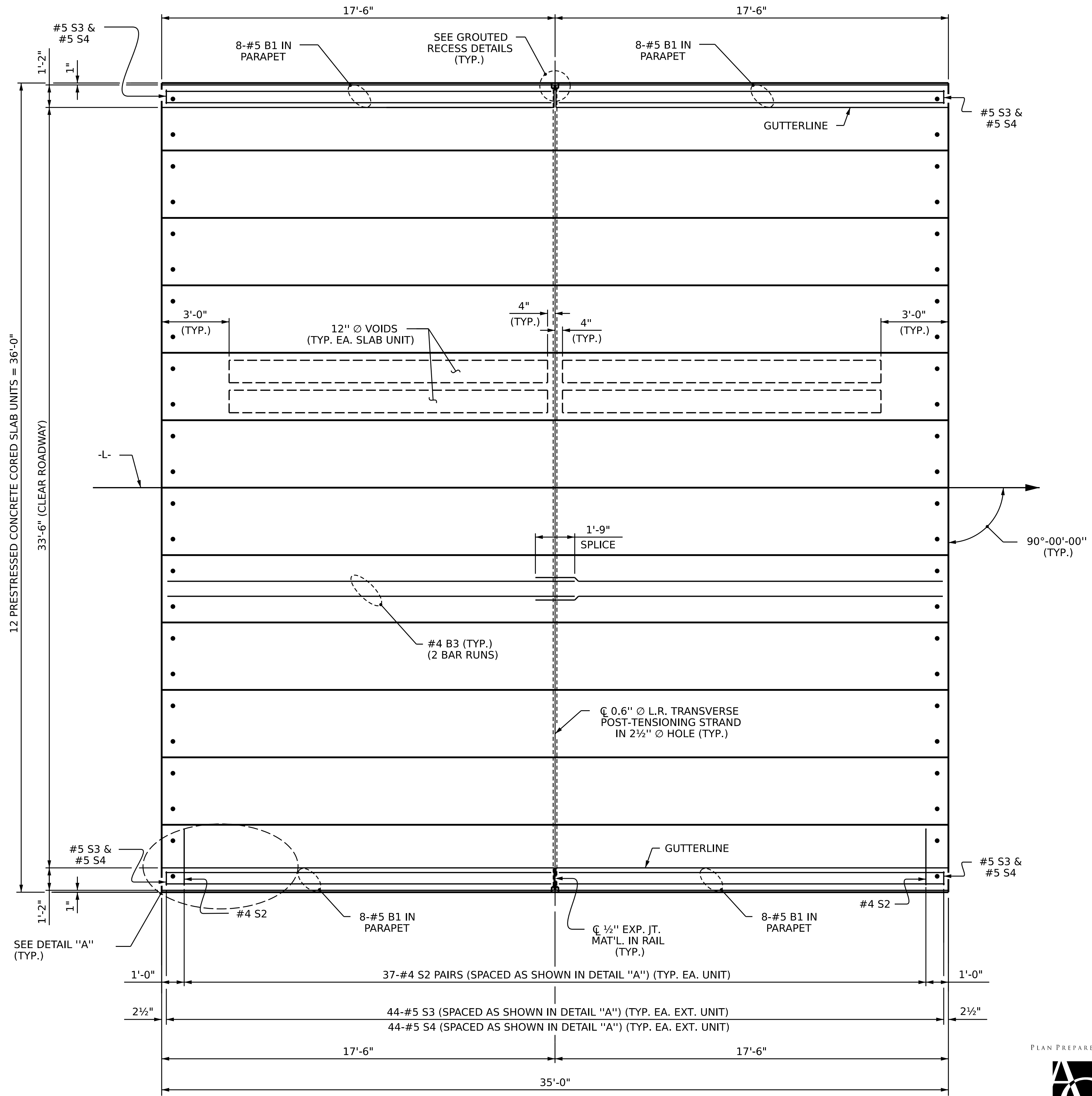
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO	BY	DATE	NO	BY	DATE	S-7
1			3			TOTAL SHEETS
2			4			26

ASSEMBLED BY: DM SHAUT	DATE: 4/22/22
CHECKED BY: TG ZEBLO	DATE: 4/25/22
DRAWN BY: DGE 5/09	REV. 8/14 MAA/TMG
CHECKED BY: BCH 6/09	REV. 5/23 BNB/AAI

\$\$\$\$\$SYTIME\$\$\$\$\$  
\$\$\$\$\$SDGN\$\$\$\$\$  
\$\$\$\$\$USER\$\$\$\$\$

STD. NO. 21" PCS2\_36\_90S



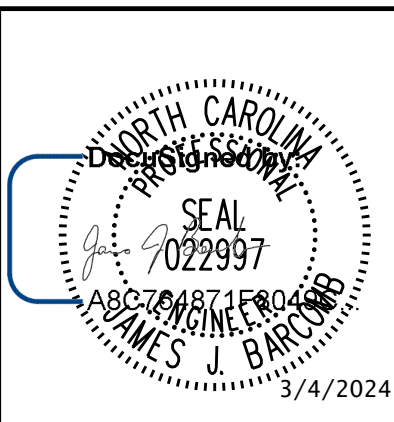
**DETAIL "A"**  
 (TYPICAL EACH END OF UNIT)  
 NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

PROJECT NO. 17BP.2.R.94  
PAMLICO COUNTY  
 STATION: 23+52.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**PLAN OF 35' UNIT  
 33'-6" CLEAR ROADWAY  
 90° SKEW  
 SPANS 'A' & 'C'**



PLAN PREPARED BY:  
  
**ALPHA & OMEGA GROUP**  
 CIVIL | STRUCTURAL | WATER RESOURCES  
ALPHA AND OMEGA GROUP, PC  
 4601 LAKE BOONE TRAIL, SUITE 3C, RALEIGH, NC 27607  
 Firm License No. C-1684 www.aogroup.com  
 A&O PROJECT NO.: 2021.053

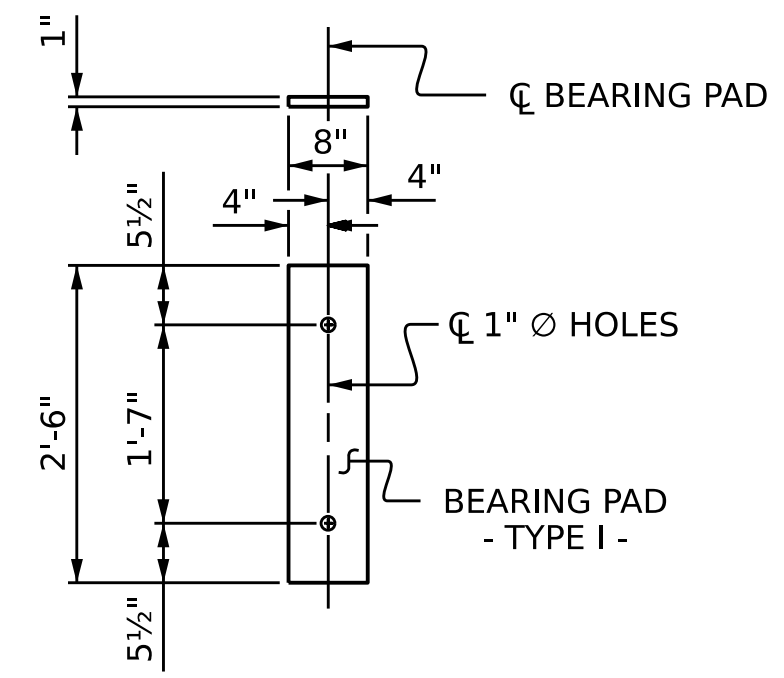
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			26

ASSEMBLED BY : DM SHAUT	DATE : 4/22/22
CHECKED BY : TG ZEBLO	DATE : 4/25/22
DRAWN BY : DGE	5/09 REV. 12/5/11 MAA/AAC
CHECKED BY: BCH	6/09 REV. 8/14 MAA/TMG

\*\*\*\*\*SYSTEM\*\*\*\*\*  
 \*\*\*\*\*DG\*\*\*\*\*  
 \*\*\*\*\*USER\*\*\*\*\*

STD. NO. 21" PCS\_36\_90S\_35L

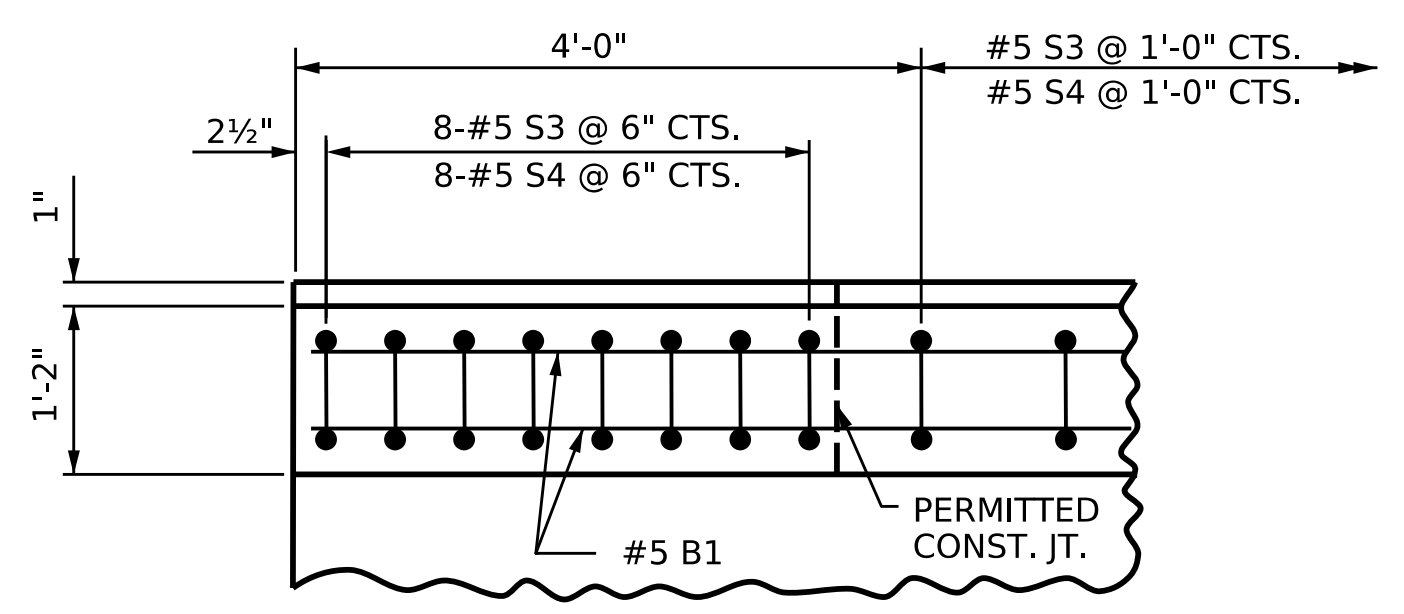




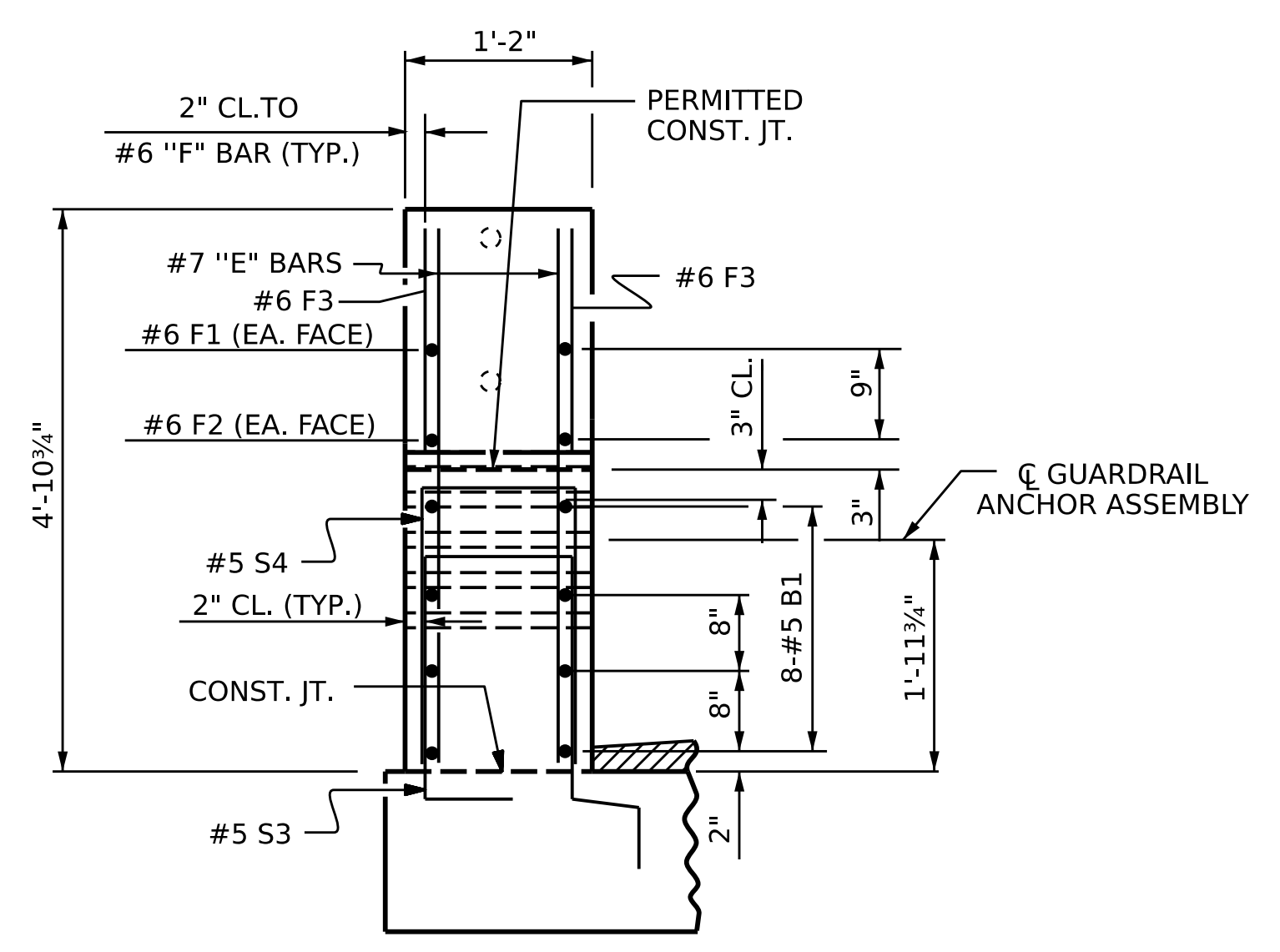
**FIXED END**  
(TYPE I - 24 REQ'D)

**ELASTOMERIC BEARING DETAILS**

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.



**PLAN OF PARAPET**



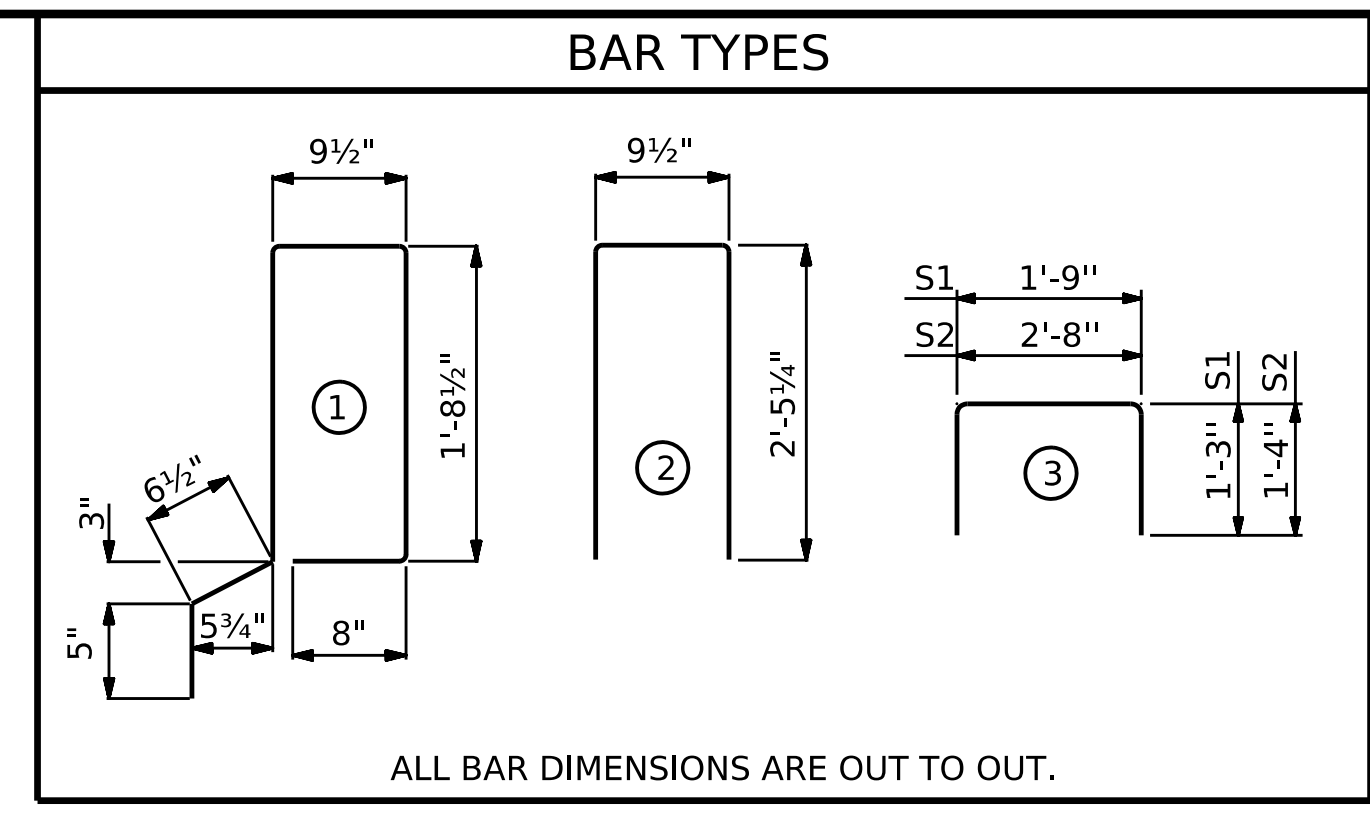
**END VIEW**

**BILL OF MATERIAL FOR ONE 35' CORED SLAB UNIT**

BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B3	4	#4	STR	18'-3"	49	18'-3"	49
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	74	#4	3	5'-4"	264	5'-4"	264
* S3	44	#5	1	5'-7"	256		
REINFORCING STEEL				LBS.	348		348
* EPOXY COATED REINFORCING STEEL				LBS.	256		
5000 P.S.I. CONCRETE				CU. YDS.	5.1		5.1
0.6" Ø L.R. STRANDS				No.	13		13

**GUTTERLINE ASPHALT THICKNESS & PARAPET HEIGHT**

	ASPHALT OVERLAY THICKNESS	PARAPET HEIGHT
	@ MID-SPAN	@ MID-SPAN
35' UNITS	2"	2'-8"



**DEAD LOAD DEFLECTION AND CAMBER**

	3'-0" x 1'-9"
35' CORED SLAB UNIT	0.6" Ø L.R. STRAND
CAMBER ( SLAB ALONE IN PLACE )	3/4" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD **	1/8" ↓
FINAL CAMBER	5/8" ↑

\*\* INCLUDES FUTURE WEARING SURFACE

**CONCRETE RELEASE STRENGTH**

UNIT	PSI
35' UNITS	4000

**CORED SLABS REQUIRED**

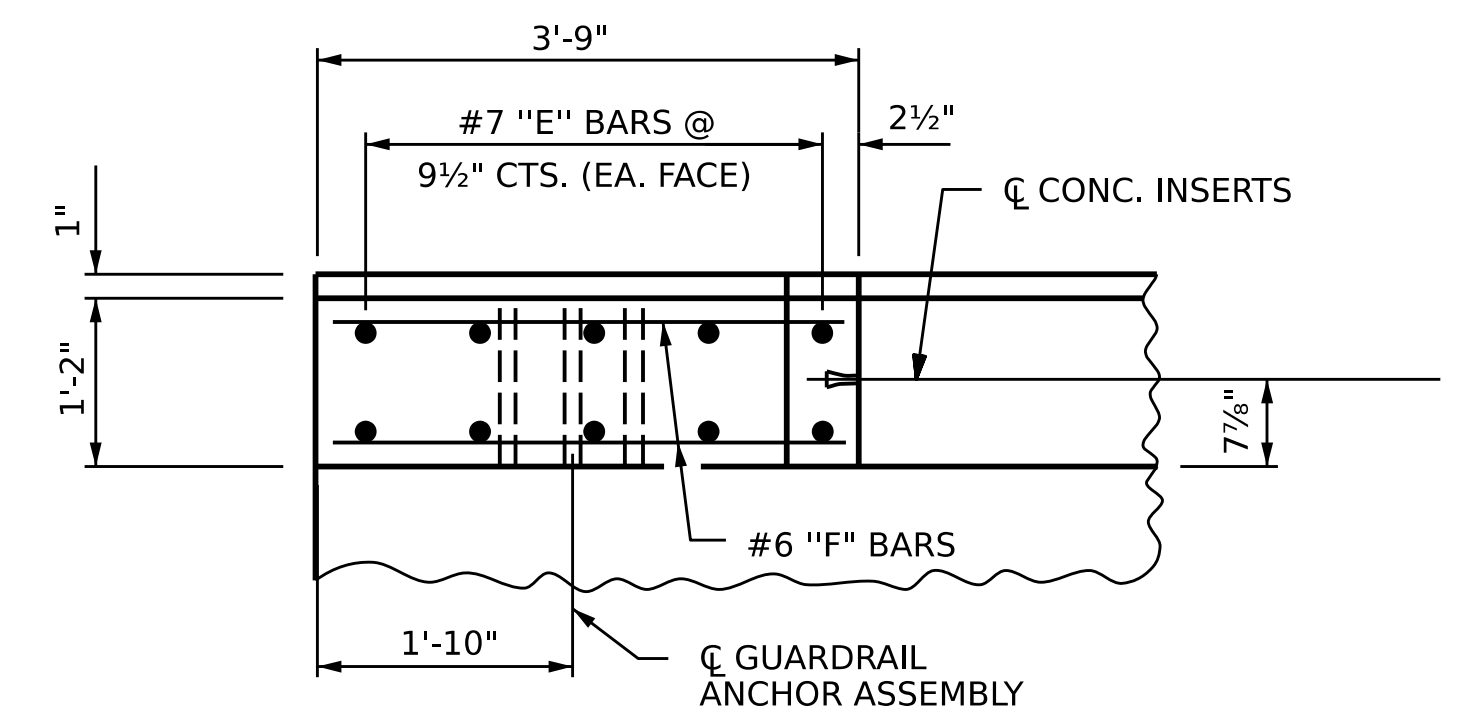
35' UNIT	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	35'-0"	70'-0"
INTERIOR C.S.	10	35'-0"	350'-0"
TOTAL	12		420'-0"

**GRADE 270 STRANDS**

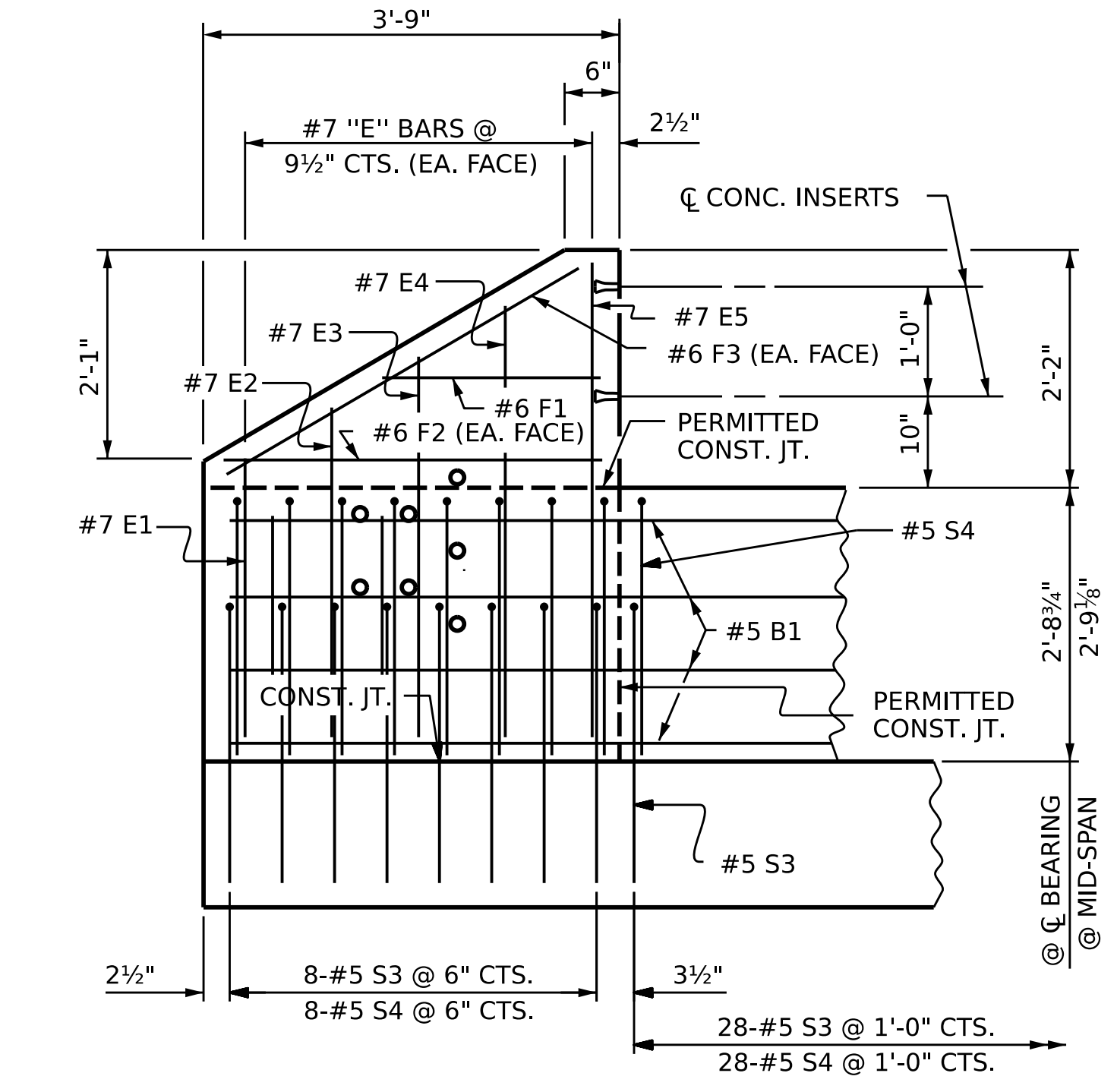
	0.6" Ø L.R.
AREA ( SQUARE INCHES )	0.217
ULTIMATE STRENGTH ( LBS. PER STRAND )	58,600
APPLIED PRESTRESS ( LBS. PER STRAND )	43,950

**BILL OF MATERIAL FOR PARAPET AND ONE END POST**

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
* B1	16	#5	STR	17'-1"	285
* E1	2	#7	STR	2'-6"	10
* E2	2	#7	STR	3'-0"	12
* E3	2	#7	STR	3'-6"	14
* E4	2	#7	STR	4'-0"	16
* E5	2	#7	STR	4'-4"	18
* F1	2	#6	STR	2'-0"	6
* F2	2	#6	STR	3'-5"	10
* F3	2	#6	STR	3'-9"	11
* S4	44	#5	2	3/4" @ 6"	260
* EPOXY COATED REINFORCING STEEL				LBS.	642
CLASS "AA" CONCRETE				C.Y.	5.5
CONCRETE PARAPET				L.F.	35.00



**PLAN OF END POST**

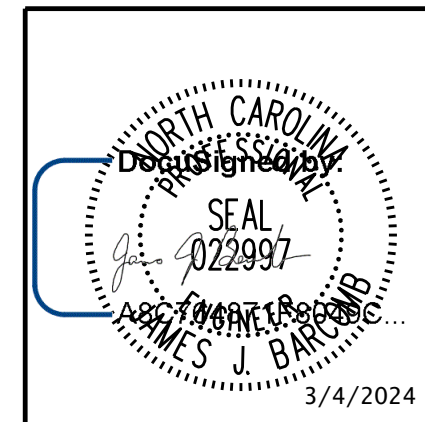


**ELEVATION**

**PARAPET AND END POST FOR TWO BAR RAIL**

ASSEMBLED BY : DM SHAUT DATE : 4/22/22  
 CHECKED BY : TG ZEBLO DATE : 4/25/22  
 DRAWN BY : DGE 5/09 REV. 5/18 MAA/THC  
 CHECKED BY : BCH 6/09 REV. 5/23 BNB/AA1

PLAN PREPARED BY:  
  
**ALPHA & OMEGA GROUP**  
 CIVIL | STRUCTURAL | WATER RESOURCES  
 4601 LAKE BOONE TRAIL, SUITE 3C, RALEIGH, NC 27607  
 Firm License No. C-1684 www.aogroup.com  
 A&O PROJECT NO.: 2021.053



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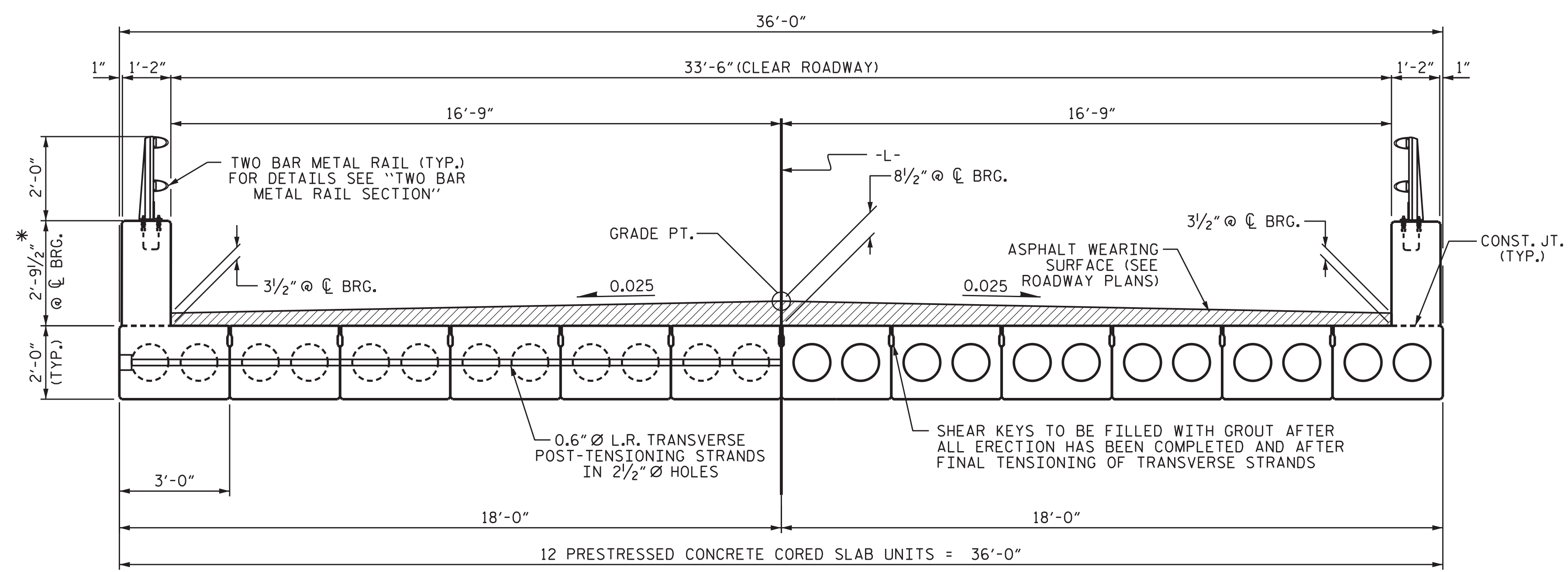
PROJECT NO. 17BP.2.R.94  
PAMLICO COUNTY  
 STATION: 23+52.00 -L-

SHEET 3 OF 3

REVISIONS						SHEET NO.
NO	BY:	DATE:	NO	BY:	DATE:	TOTAL SHEETS
1			3			5-9
2			4			26

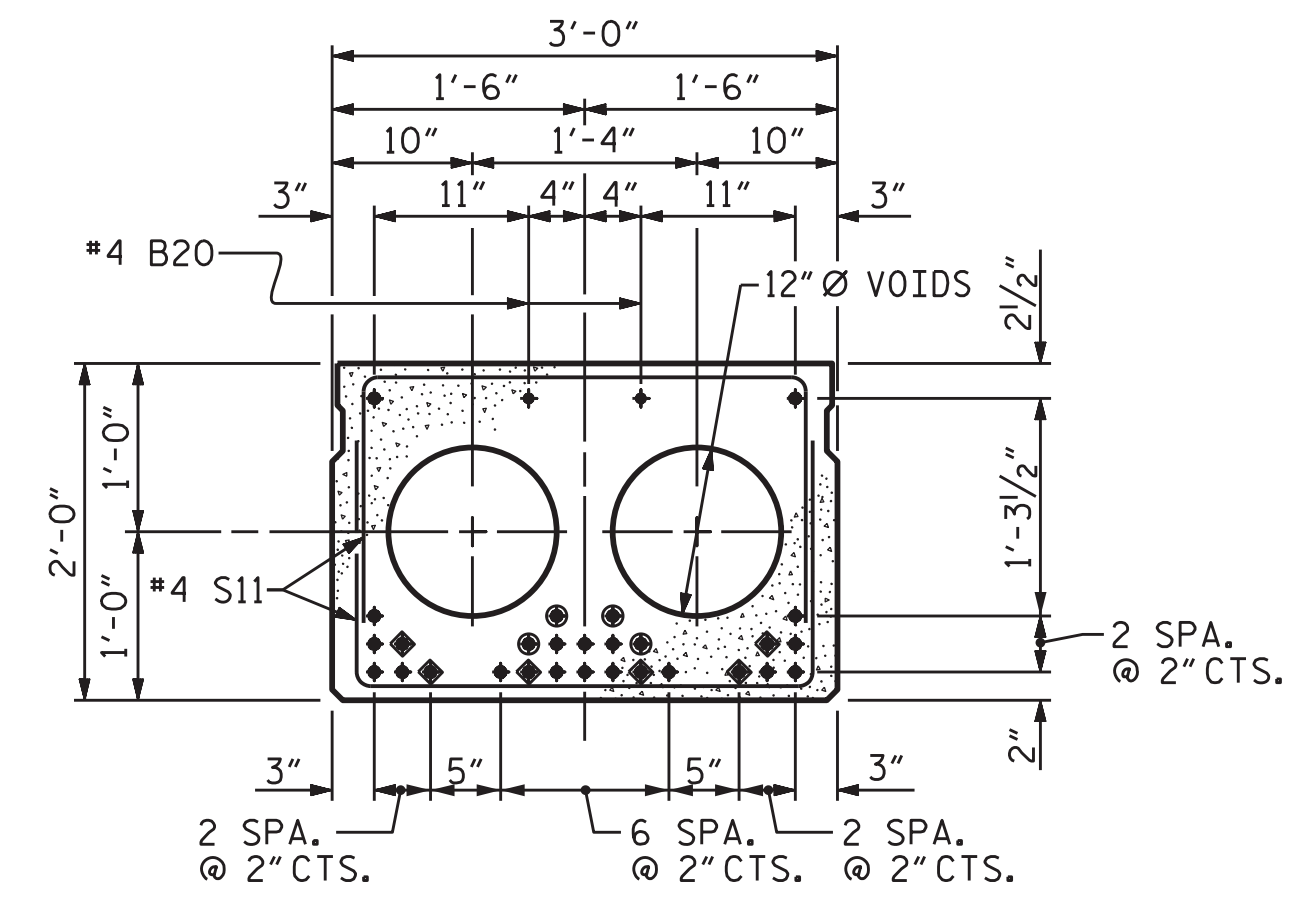
STD. NO. 21' PCS3-36-90S

\*\*\*\*\*SYTIME\*\*\*\*\*  
 \*\*\*\*\*DCN\*\*\*\*\*  
 \*\*\*\*\*USERNAME\*\*\*\*\*



HALF SECTION AT INTERMEDIATE DIAPHRAGMS      **TYPICAL SECTION**      HALF SECTION THROUGH VOIDS

\* - THE MAXIMUM RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE "TWO BAR METAL RAIL SECTION" DETAIL.

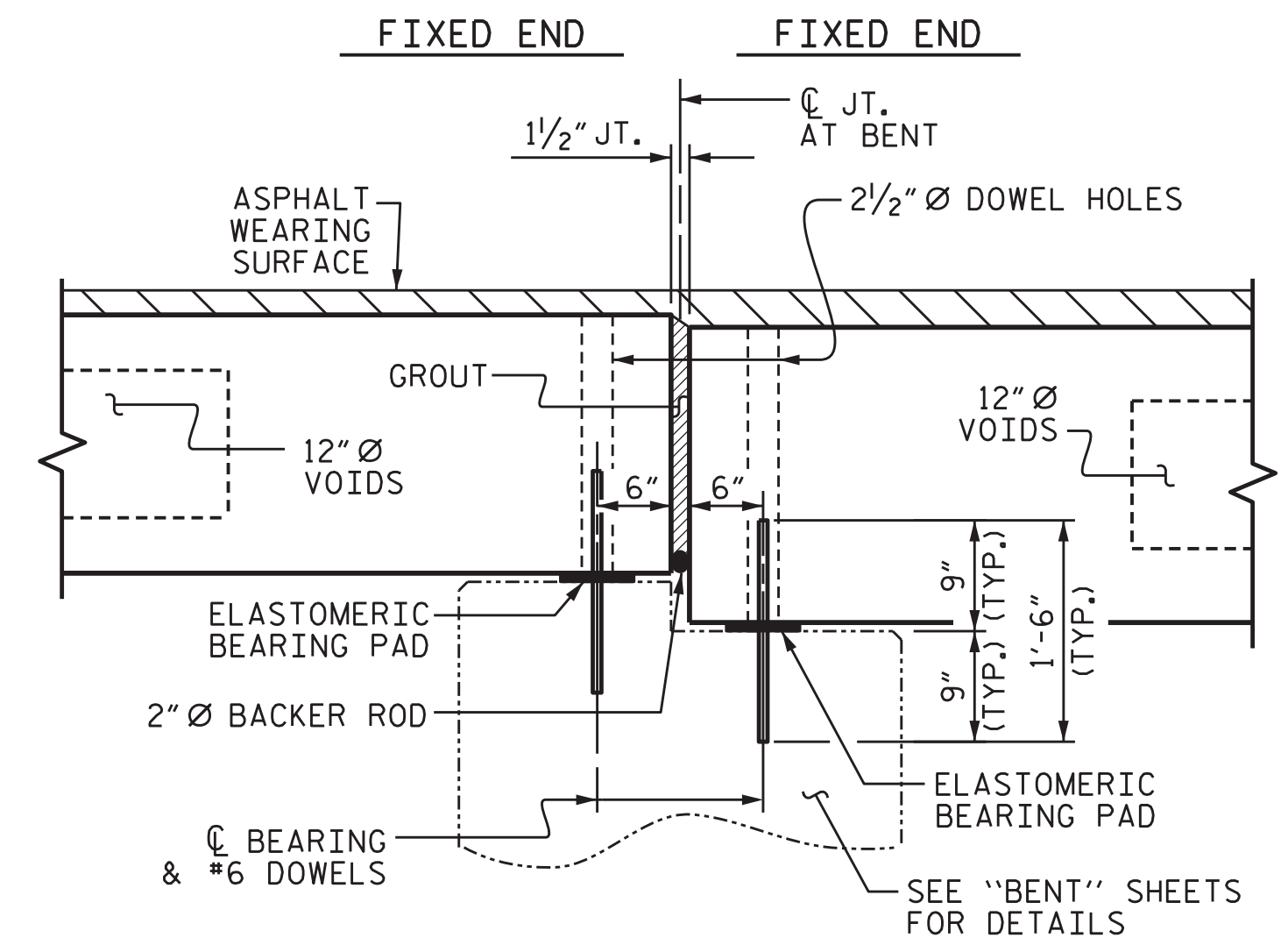


INTERIOR SLAB SECTION (60' UNIT)  
(24 STRANDS REQUIRED)

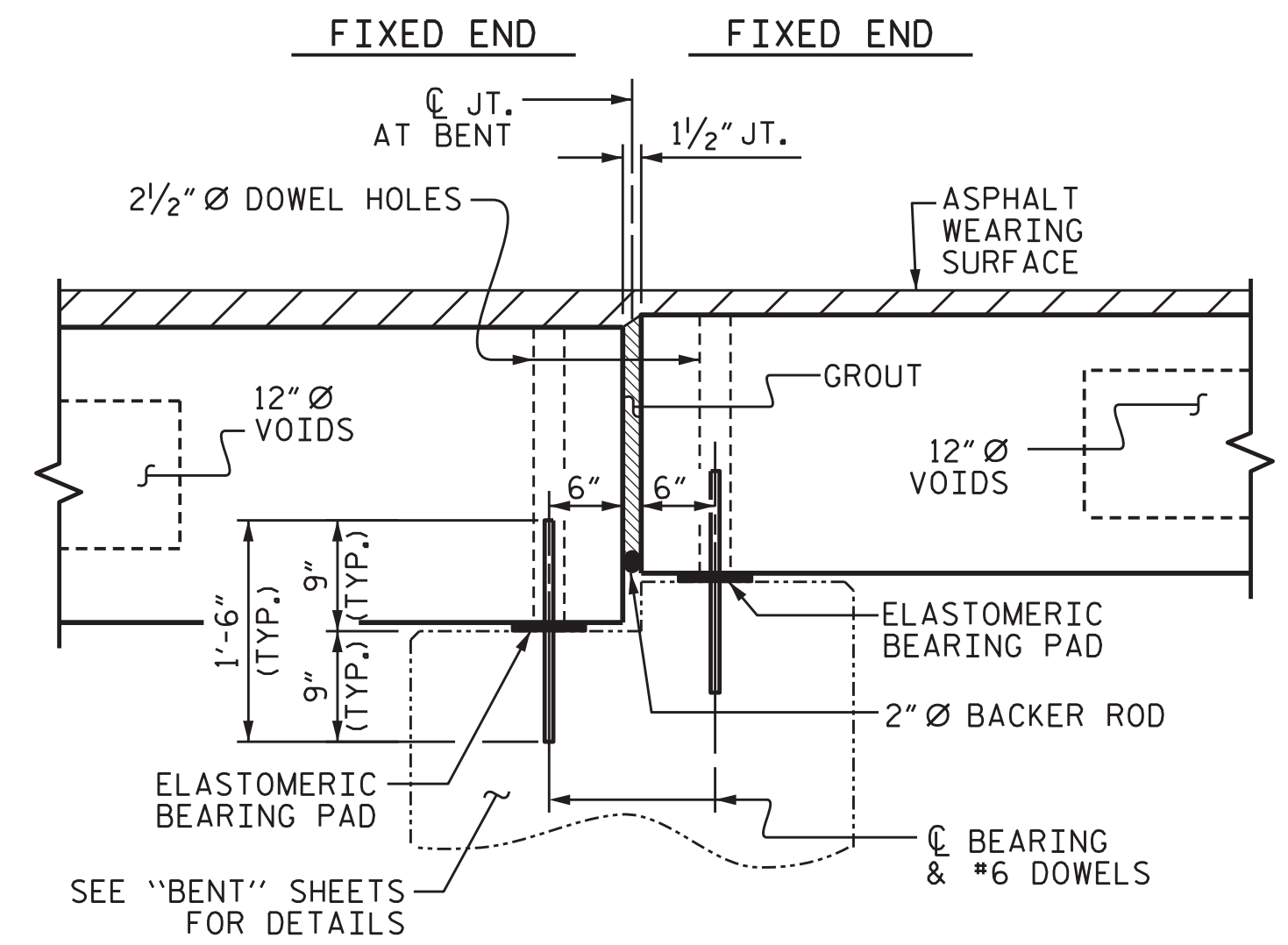
**0.6" Ø LOW RELAXATION STRAND LAYOUT**

- ◆ 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.
- OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED. IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE CORED SLAB UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

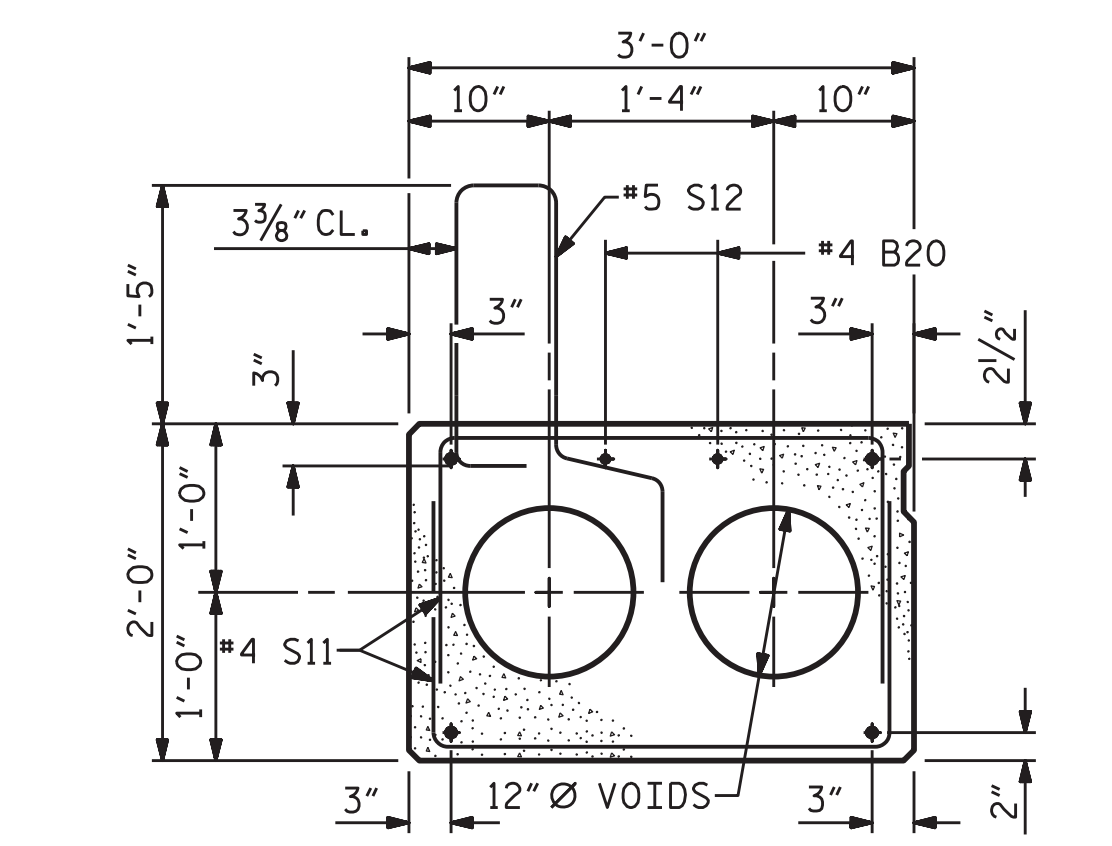
**DEBONDING LEGEND**



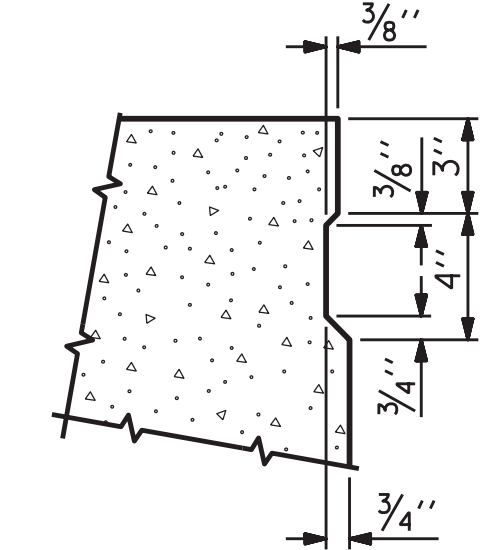
**SECTION AT BENT No. 1**



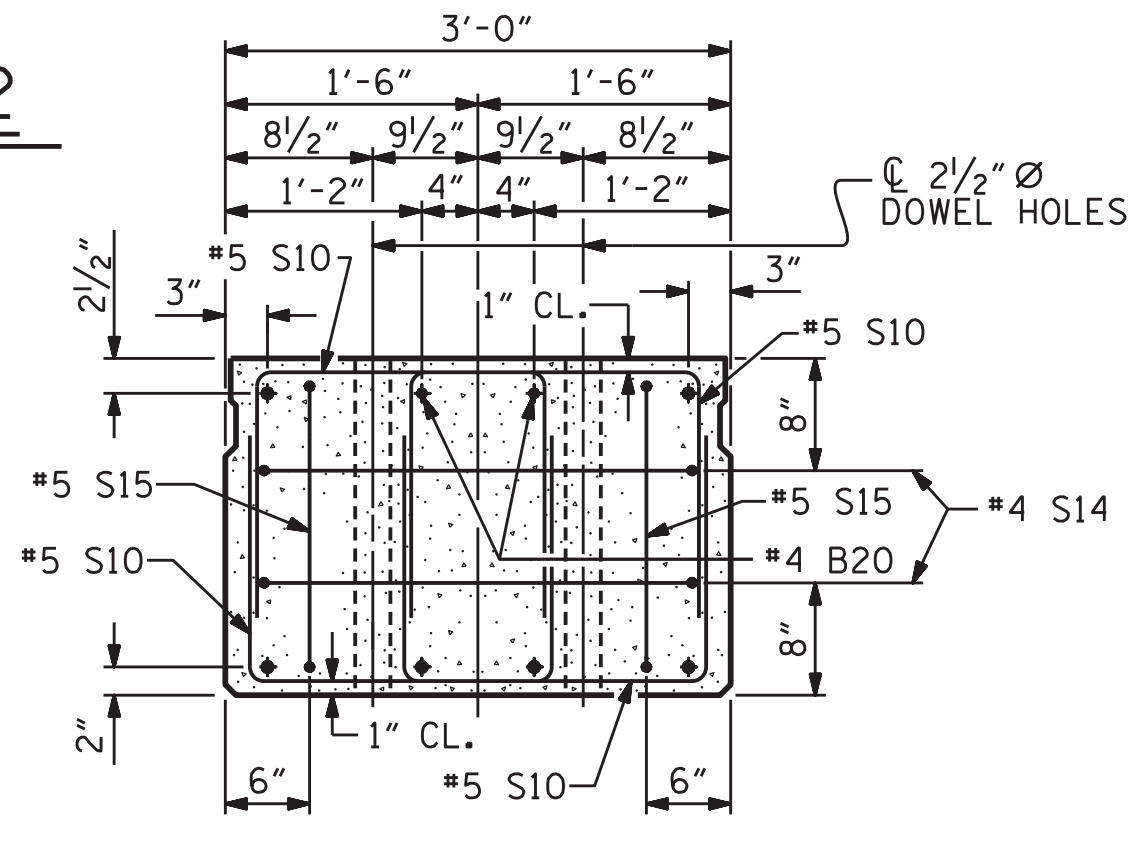
**SECTION AT BENT No. 2**



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

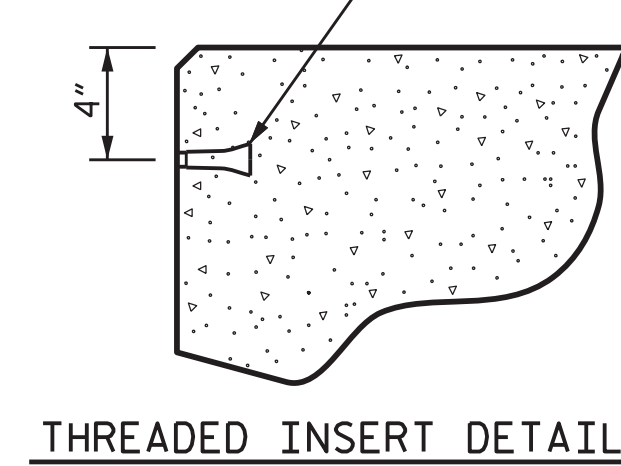


**SHEAR KEY DETAIL**  
NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.

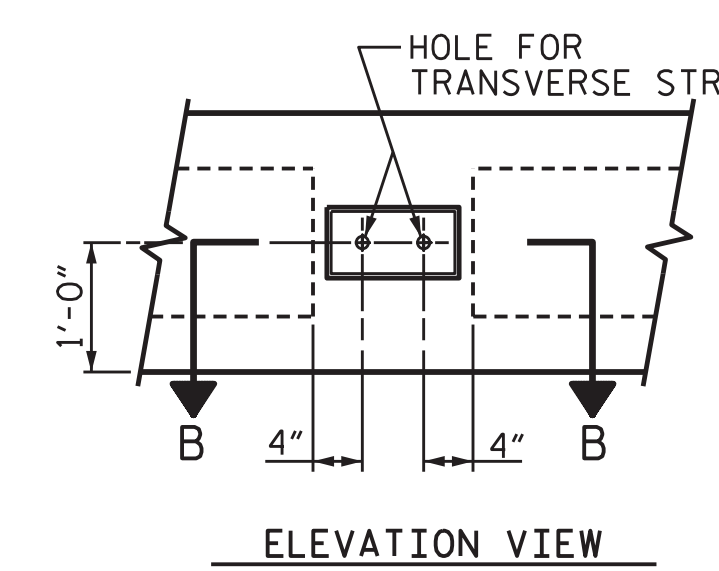


**END ELEVATION**  
SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.)  
INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.

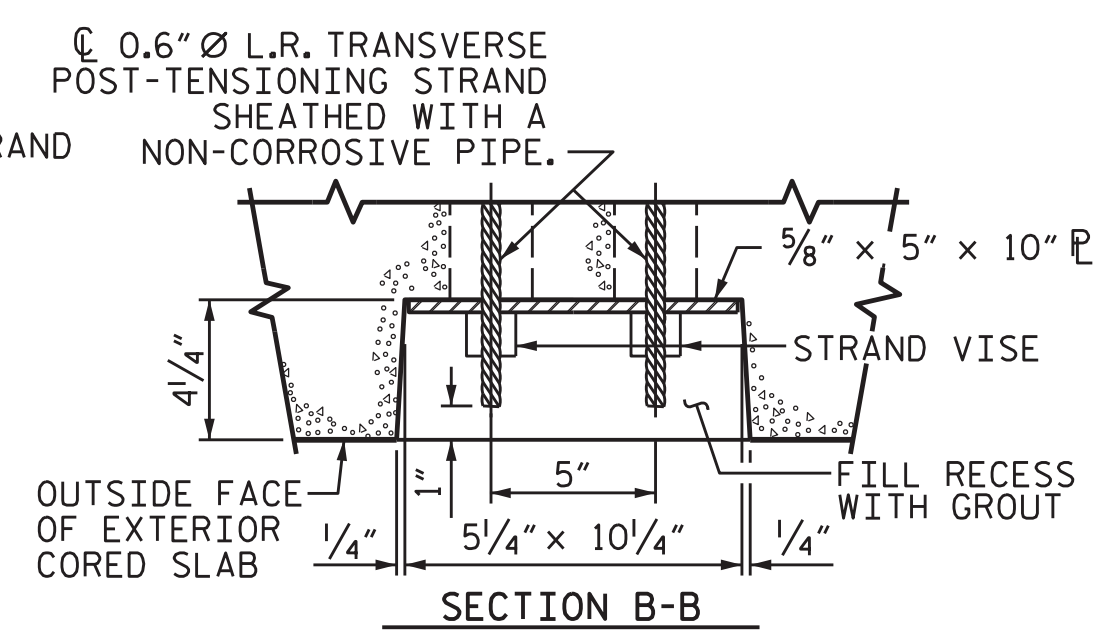
PERMITTED THREADED INSERT CAST IN OUTSIDE FACE OF EXTERIOR UNIT AND RECESSED 3/8" SIZE TO BE DETERMINED BY CONTRACTOR.



**THREADED INSERT DETAIL**



**ELEVATION VIEW**



**SECTION B-B**

**GROUTED RECESS AT END OF POST-TENSIONED STRAND-CORED SLABS**

ASSEMBLED BY : DM SHAUT	DATE : 4/22/22
CHECKED BY : TG ZEBLO	DATE : 4/25/22
DRAWN BY : MAA 6/10	REV. 9/14 MAA/TMG
CHECKED BY : MKT 7/10	

\*\*\*\*\*SYSTEM\*\*\*\*\*  
\*\*\*\*\*SDGN\*\*\*\*\*  
\*\*\*\*\*USER\*\*\*\*\*

PROJECT NO. 17BP.2.R.94  
PAMLICO COUNTY  
STATION: 23+52.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
3'-0" X 2'-0"  
PRESTRESSED CONCRETE  
CORED SLAB UNIT  
SPAN 'B'

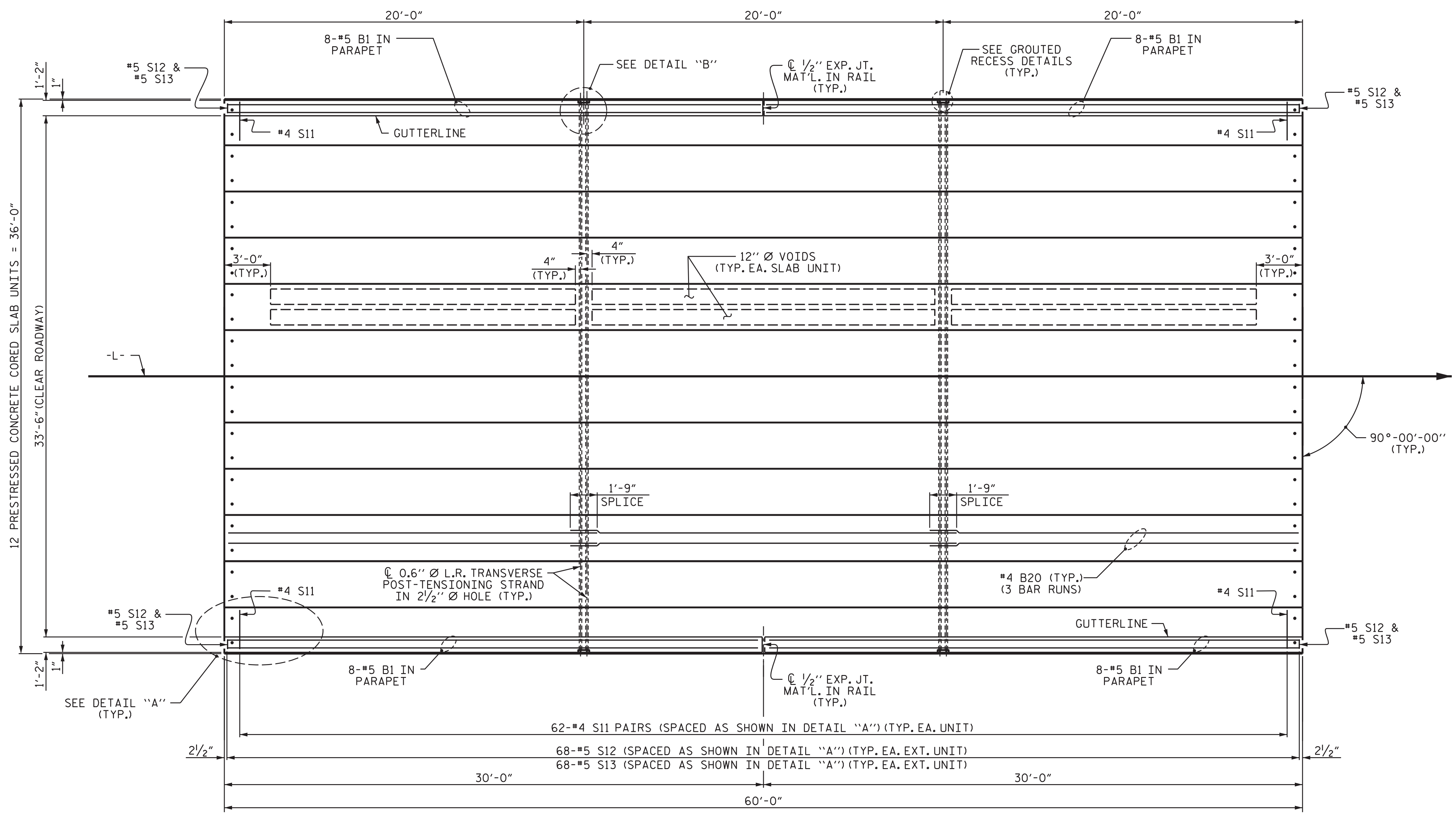
PLAN PREPARED BY:  
**ALPHA & OMEGA GROUP**  
CIVIL STRUCTURAL WATER RESOURCES  
4601 LAKE BOONE TRAIL, SUITE 3C, RALEIGH, NC 27607  
Firm License No. C-1684 www.aogroup.com  
A&O PROJECT NO.: 2021.053

DocuSigned by:  
James J. Barco  
A&O ENGINEER  
5/11/2022

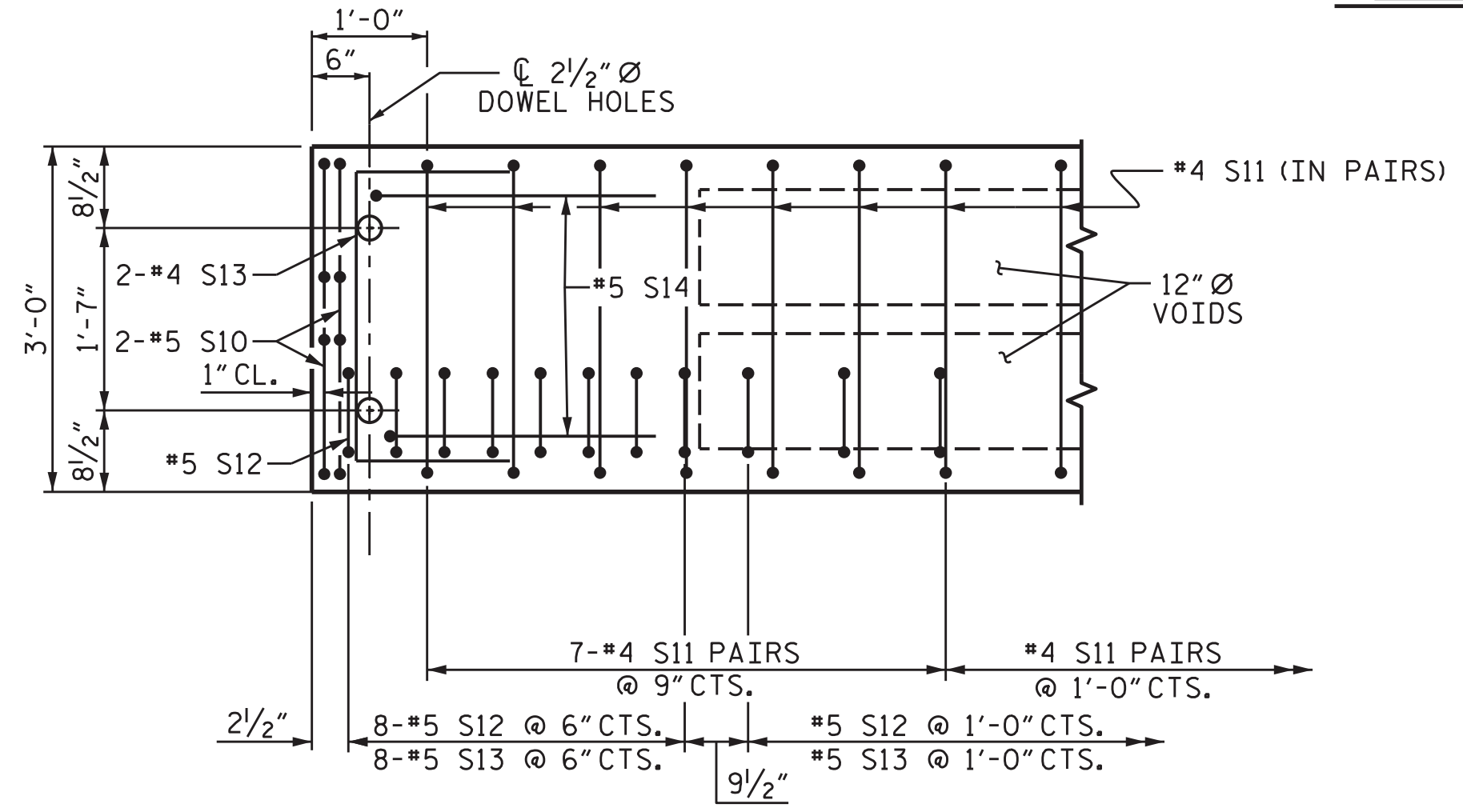
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			26

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STD. NO. 24PCS4.36.90S

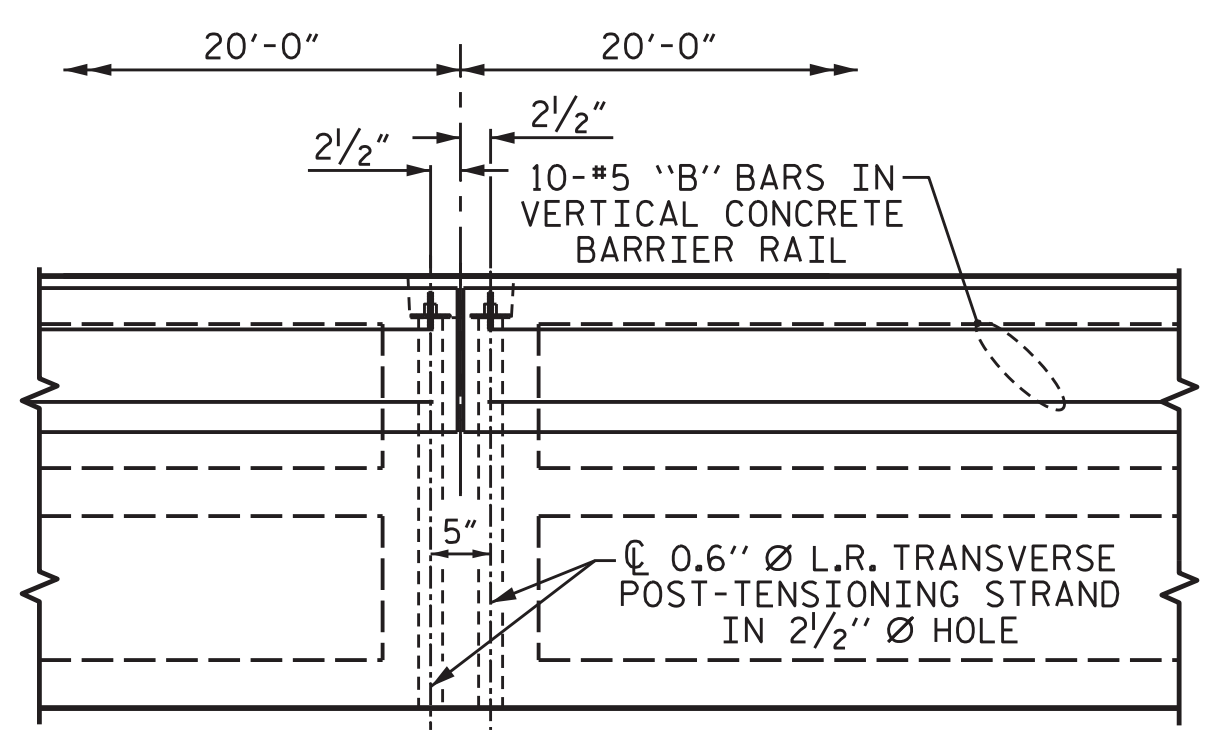


**PLAN OF UNIT**



**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

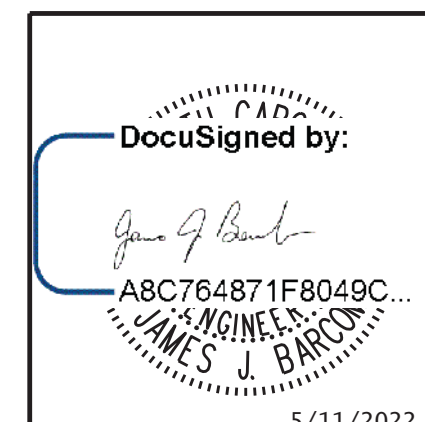
ASSEMBLED BY :	DM SHAUT	DATE :	4/22/22
CHECKED BY :	TG ZEBLO	DATE :	4/25/22
DRAWN BY :	MAA	6/10	REV. 12/5/11
CHECKED BY :	MKT	7/10	REV. 8/14

MAA/AAC  
MAA/TMG

\*\*\*\*\*SYSTEM\*\*\*\*\*  
\*\*\*\*\*DCN\*\*\*\*\*  
\*\*\*\*\*USERNAME\*\*\*\*\*



ALPHA & OMEGA GROUP  
CIVIL | STRUCTURAL | WATER RESOURCES  
4601 LAKE BOONE TRAIL, SUITE 3C, RALEIGH, NC 27607  
Firm License No. C-1684 www.aogroup.com  
A&O PROJECT NO.: 2021.053



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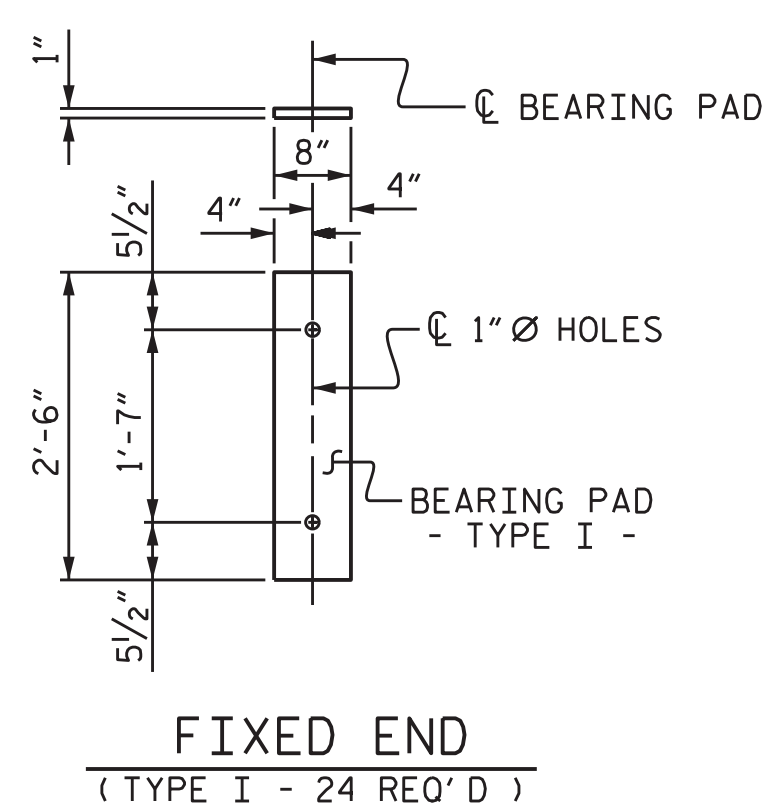
PROJECT NO. 17BP.2.R.94  
PAMLICO COUNTY  
STATION: 23+52.00 -L-

SHEET 2 OF 3

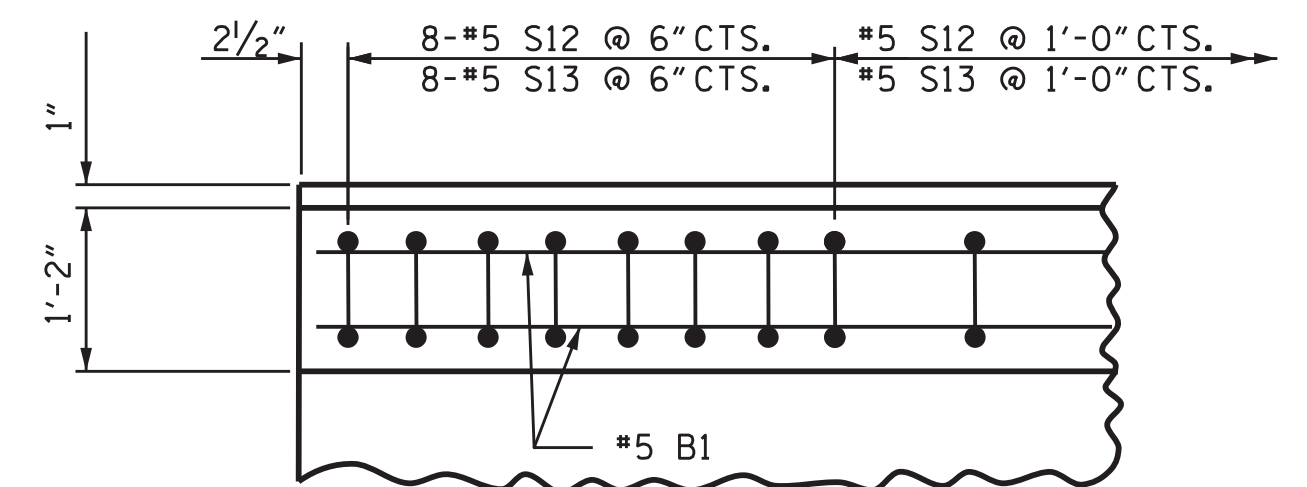
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
**PLAN OF 60' UNIT  
33'-6" CLEAR ROADWAY  
90° SKEW  
SPAN 'B'**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			26

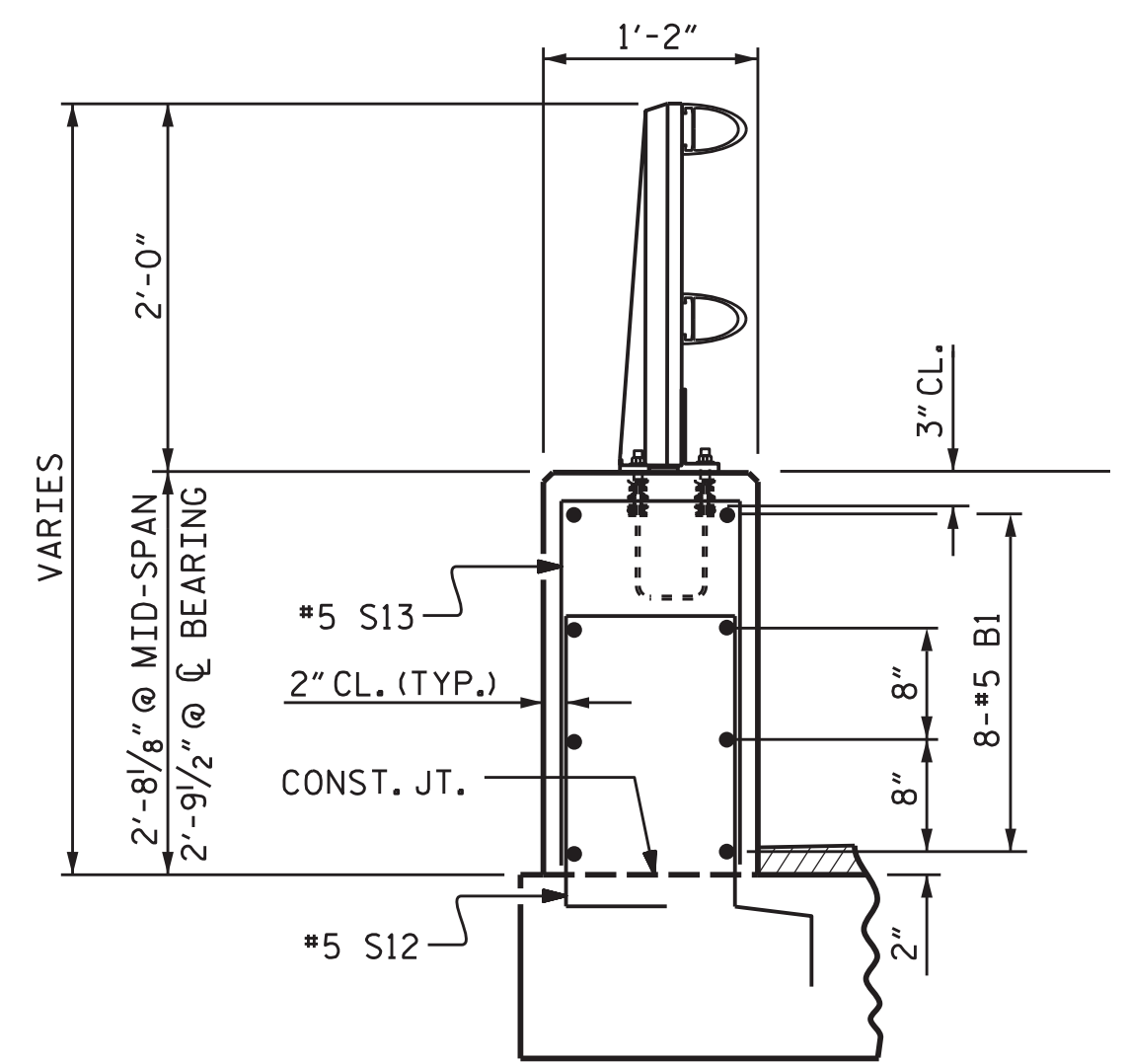
STD. NO. 24PCS\_36\_90S\_60L



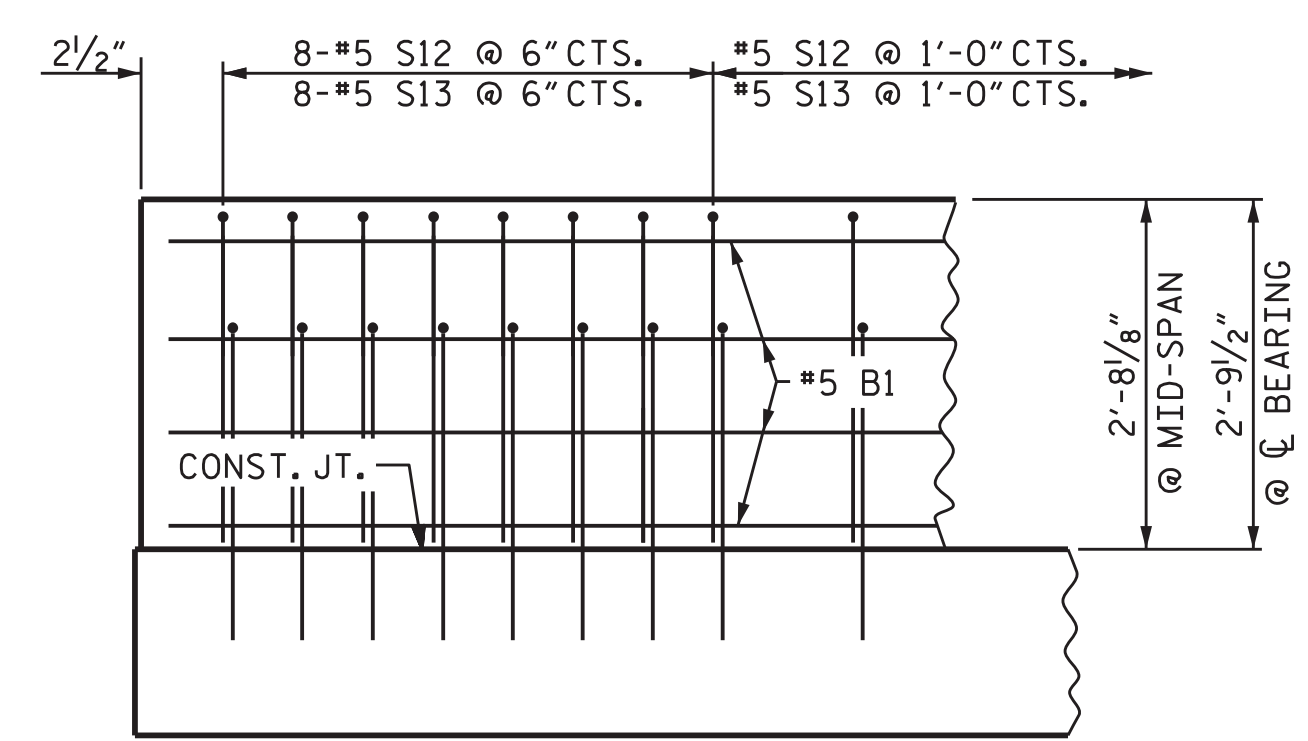
**ELASTOMERIC BEARING DETAILS**  
ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.



PLAN OF PARAPET



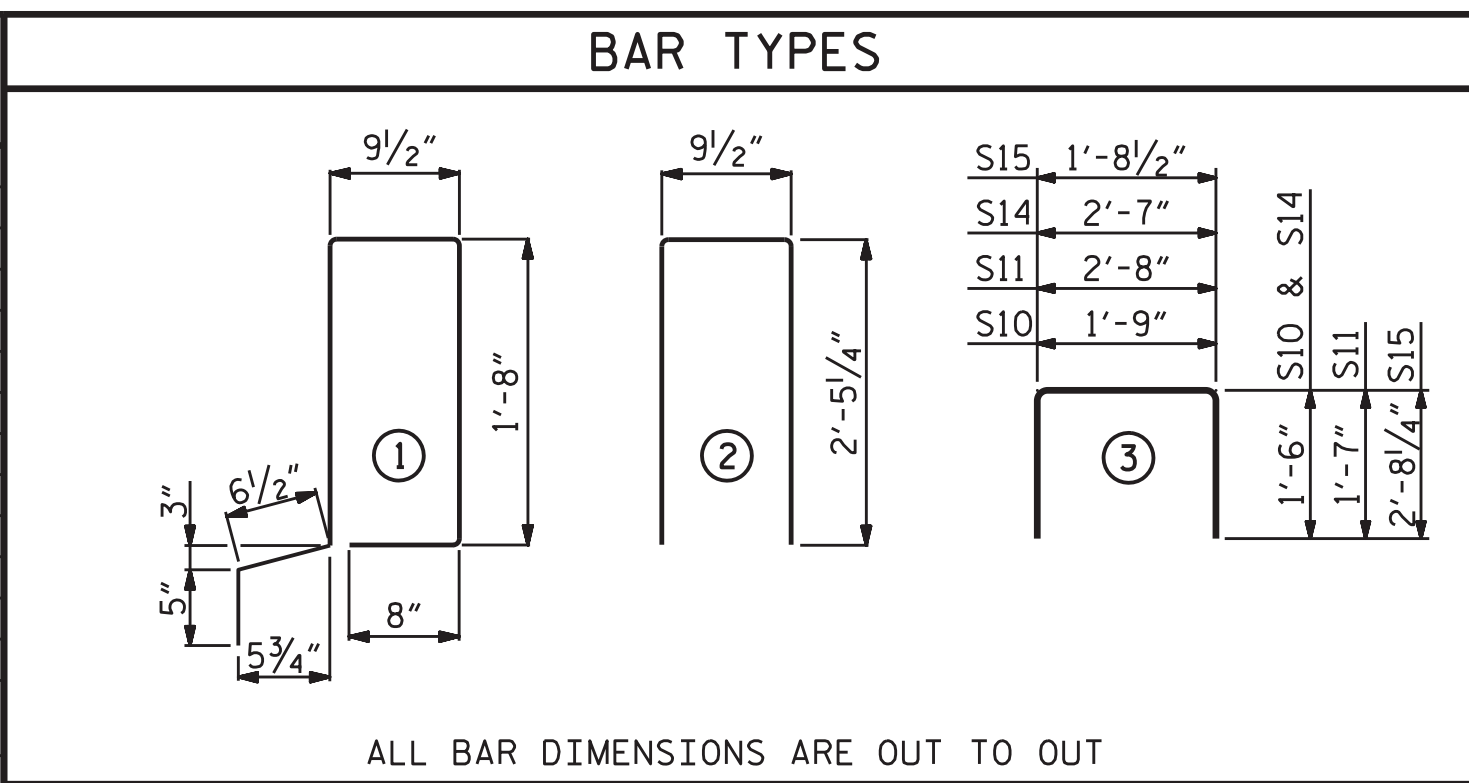
SECTION VIEW



ELEVATION

**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'-9"	408		
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.	408		
6000 P.S.I. CONCRETE				CY. YDS.	10.2		10.2
0.6" Ø L.R. STRANDS				No.	24		24



**DEAD LOAD DEFLECTION AND CAMBER**

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

\*\* INCLUDES FUTURE WEARING SURFACE

**CONCRETE RELEASE STRENGTH**

UNIT	PSI
60' UNITS	4800

**CORED SLABS REQUIRED**

60' UNIT	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	60'-0"	120'-0"
INTERIOR C.S.	10	60'-0"	600'-0"
TOTAL	12		720'-0"

**GRADE 270 STRANDS**

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

**BILL OF MATERIAL FOR PARAPET**

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
* B1	16	#5	STR	29'-7"	494
*S13	68	#5	2	5'-8"	402
* EPOXY COATED REINFORCING STEEL				LBS.	896
CLASS "AA" CONCRETE				C.Y.	6.5
CONCRETE PARAPET				L.F.	60.00

**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 GROUDED 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 PARAPETS 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 PARAPET IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF PARAPET 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 GROUDED 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 GROUDED 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.

PRESTRESSED CONCRETE CORED SLAB UNITS ARE DESIGNED FOR 0 PSI (0 MPA) TENSION IN THE PRECOMPRESSED TENSILE ZONE UNDER ALL LOADING CONDITIONS.

PRESTRESSED CONCRETE CORED SLAB UNITS SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR. SEE SPECIAL PROVISIONS FOR CALCIUM NITRITE CORROSION INHIBITOR.

PROJECT NO. 17BP.2.R.94  
PAMLICO COUNTY  
 STATION: 23+52.00 -L-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 3'-0" X 2'-0"  
 PRESTRESSED CONCRETE  
 CORED SLAB UNIT  
 SPAN 'B'

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS 26
2			4			

DocuSigned by:  
  
 A8C764871F8049C...  
 JAMES J. BARCO  
 5/11/2022

Plan Prepared By:  
  
**ALPHA & OMEGA GROUP**  
 CIVIL | STRUCTURAL | WATER RESOURCES  
ALPHA AND OMEGA GROUP, PC  
 4601 LAKE BOONE TRAIL, SUITE 3C, RALEIGH, NC 27607  
 Firm License No. C-1684 www.aogroup.com  
 A&O PROJECT NO.: 2021.053

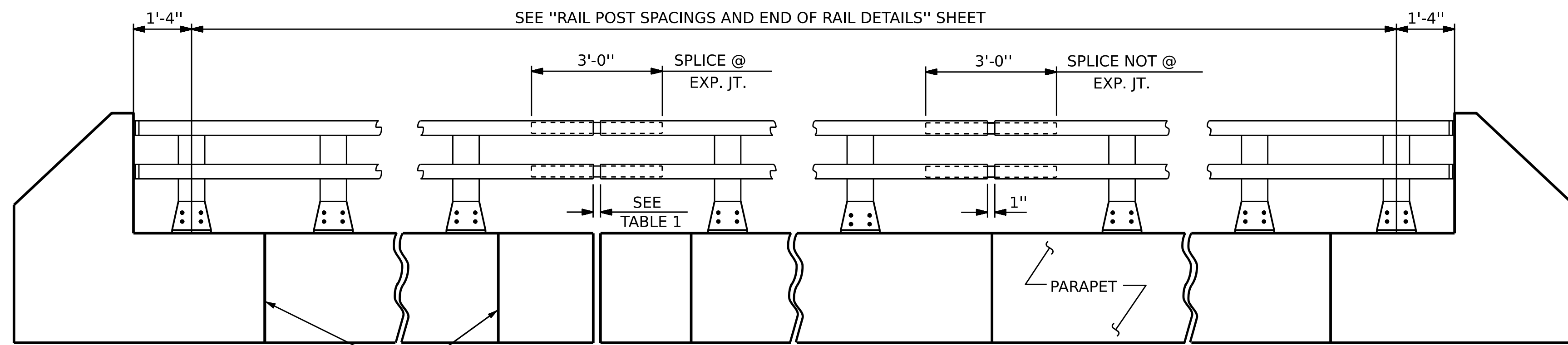
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ASSEMBLED BY : DM SHAUT	DATE : 4/22/22
CHECKED BY : TG ZEBLO	DATE : 4/25/22
DRAWN BY : MAA 6/10	REV. 5/18 MAA/THC
CHECKED BY : MKT 7/10	

**PARAPET FOR TWO BAR RAIL**

\*\*\*\*\*SYTIME\*\*\*\*\*  
 \*\*\*\*\*DGNS\*\*\*\*\*  
 \*\*\*\*\*USER\*\*\*\*\*

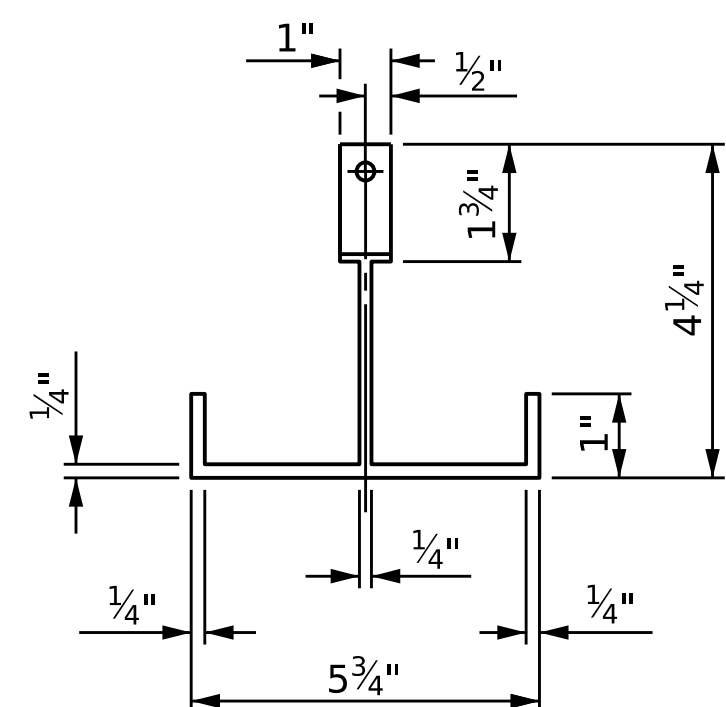
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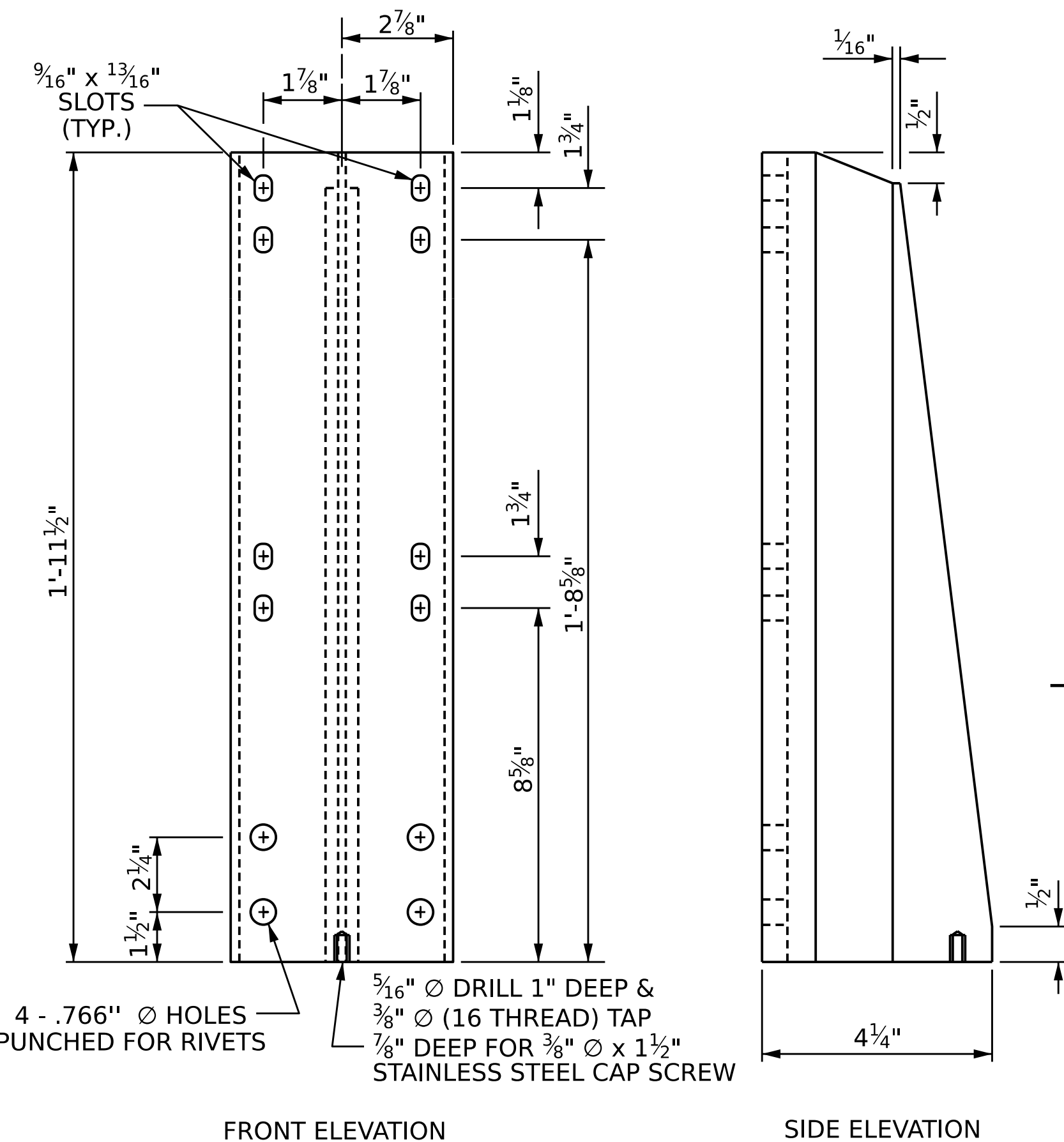
**ELEVATION**

TOOLED CONTRACTION JT.  
(SEE NOTES)

NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE STANDARD NO. BMR2.



**PLAN**

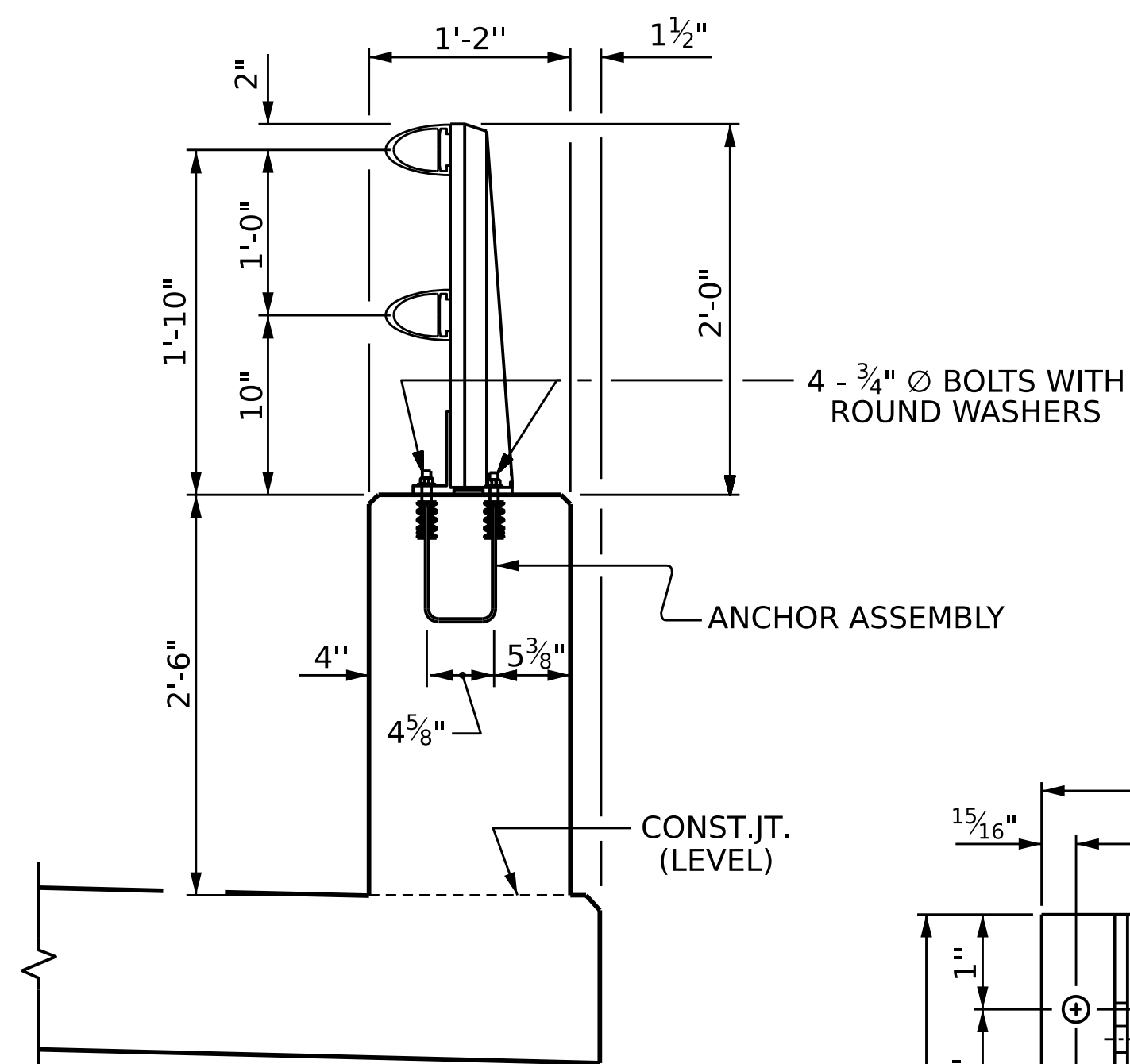


**FRONT ELEVATION**

**SIDE ELEVATION**

**DETAILS OF POST**

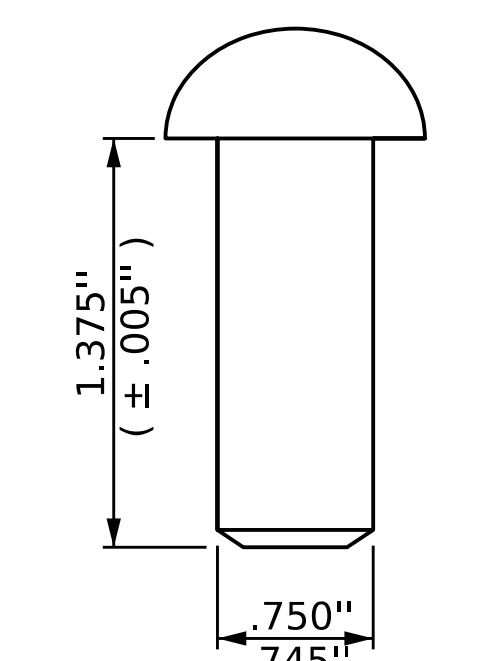
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 REV. 10/23 BNB/SNM



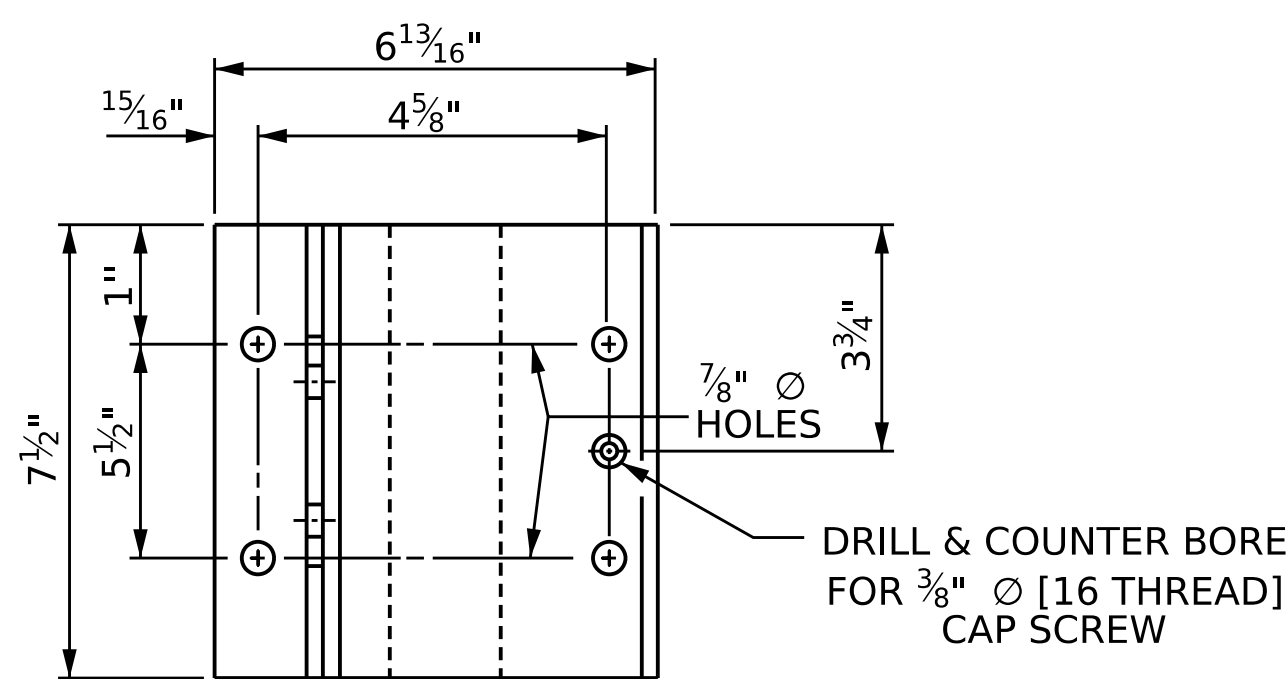
**SECTION THRU PARAPET AND RAIL**

**TABLE 1**

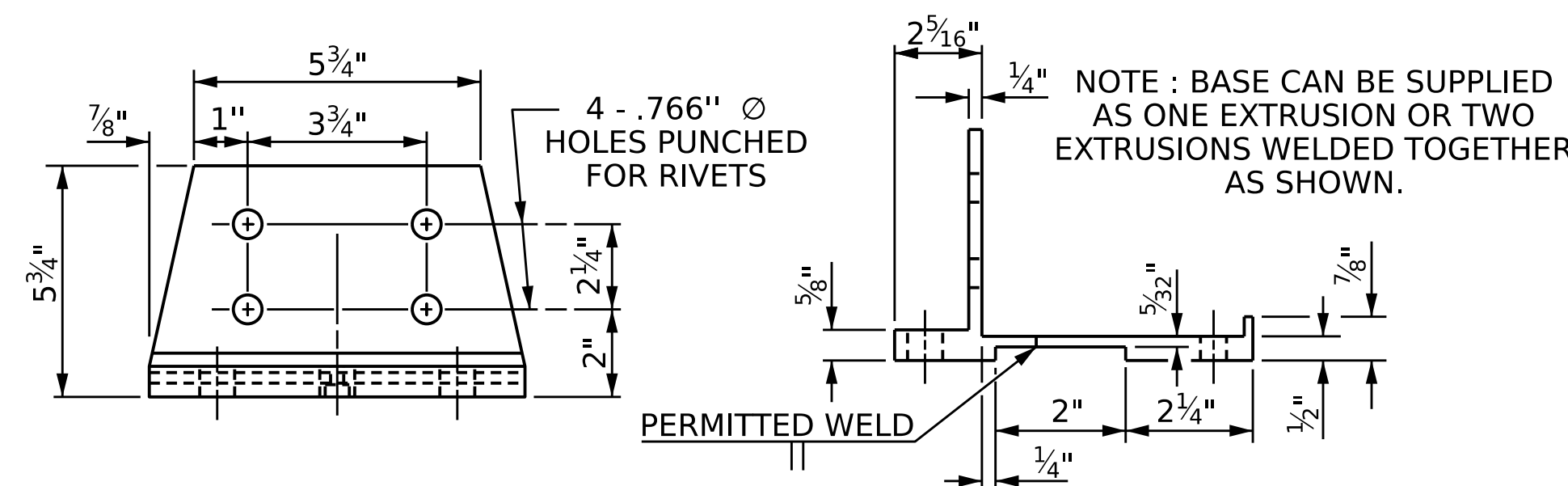
EXP. JT. @	RAIL OPENING
BENT 1	1 1/2"
BENT 2	1 1/2"



**RIVET DETAIL**



**PLAN**



**FRONT ELEVATION**

**SIDE ELEVATION**

**POST BASE DETAILS**

**NOTES**

AT THE CONTRACTOR'S OPTION, METAL RAIL MAY BE EITHER ALUMINUM OR GALVANIZED STEEL IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS FOR THE ALTERNATE MATERIALS; HOWEVER, THE CONTRACTOR WILL BE REQUIRED TO USE THE SAME RAIL MATERIAL ON ALL STRUCTURES ON THE PROJECT FOR WHICH METAL RAIL IS DESIGNATED.

UNLESS OTHERWISE REQUIRED IN THE CONTRACT DOCUMENTS, THE CONTRACTOR HAS THE OPTION TO USE AN ALTERNATE TO THE 2 BAR METAL RAIL. THE ALTERNATE RAIL SHALL MEET THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AND MUST BE LISTED ON THE DEPARTMENT'S APPROVED PRODUCTS LIST (APL) UNDER "2 BAR METAL RAIL ALTERNATE". ADJUSTMENTS TO THE CONCRETE PARAPET WILL NOT BE ALLOWED.

**ALUMINUM RAILS**

MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B-221 ALLOY 6061-T6. MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND CONE POINT COLD DRIVEN AS PER DRAWING.

THE BASE OF RAIL POSTS, OR ANY OTHER ALUMINUM SURFACE IN CONTACT WITH CONCRETE SHALL BE THOROUGHLY COATED WITH AN ALUMINUM IMPREGNATED CAULKING COMPOUND OF APPROVED QUALITY.

MATERIAL FOR SHIMS TO BE ASTM B209 ALLOY 6061-T6.

**GENERAL NOTES**

RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR2.

CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL. WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED.

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

METHOD OF MEASUREMENT FOR METAL RAILS: FOR LENGTH OF METAL RAILS TO BE PAID FOR, SEE THE STANDARD SPECIFICATIONS.

CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.

TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAINS VISIBLE AFTER RAIL PLACEMENT.

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL.

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

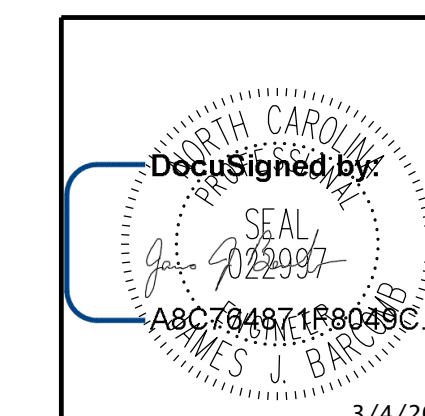
PAY LENGTH = 245 LIN. FT.

PROJECT NO. 17BP.2.R.94  
 PAMLICO COUNTY  
 STATION: 23+52.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD

**2 BAR METAL RAIL**



ALPHA & OMEGA GROUP  
 CIVIL, STRUCTURAL, WATER RESOURCES

ALPHA AND OMEGA GROUP, PC  
 4601 LAKE BOONE TRAIL, SUITE 3C, RALEIGH, NC 27607  
 Firm License No. C-1684 www.aogroup.com  
 A&O PROJECT NO. 2021.053

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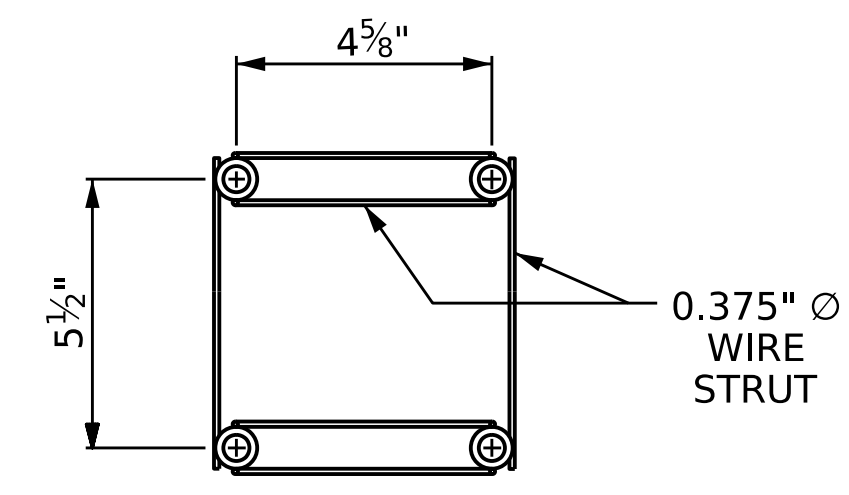
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SHEET NO. S-13  
 TOTAL SHEETS 26

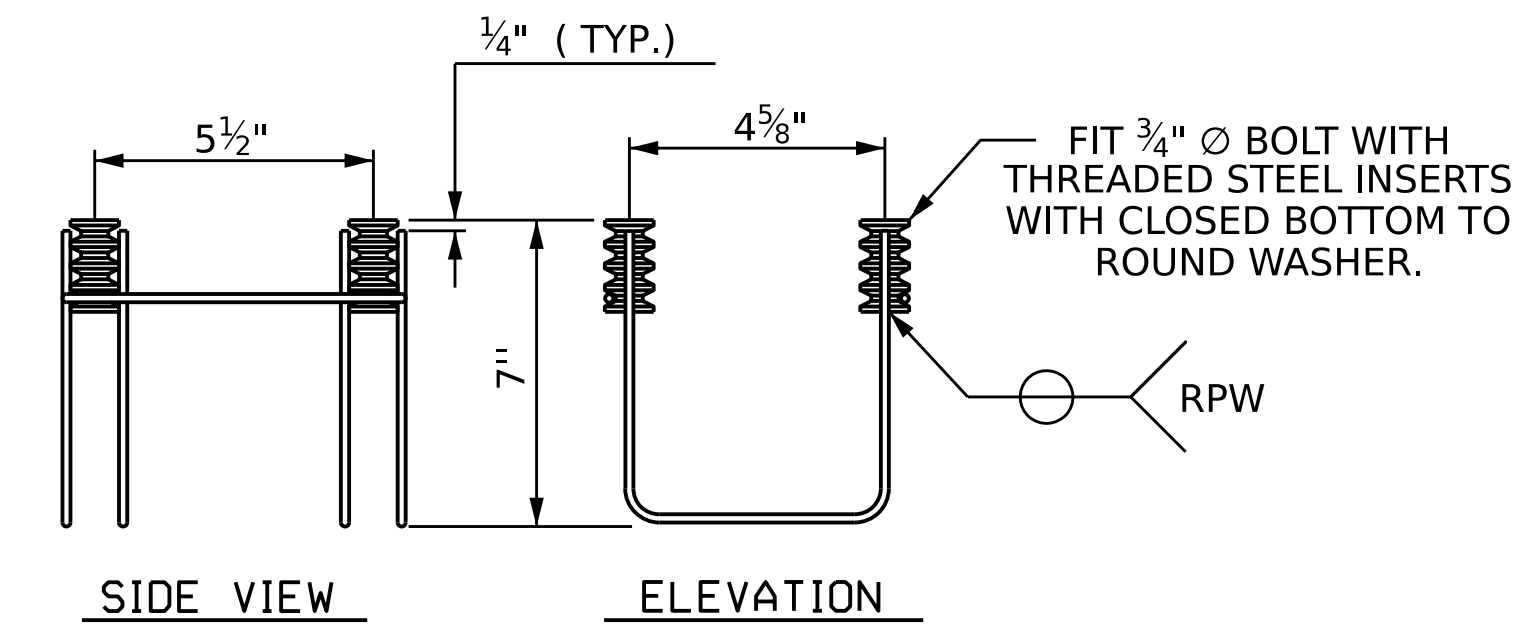
STD. NO. BMR3

\*\*\*\*\*SYSTEM\*\*\*\*\*  
 \*\*\*\*\*DCN\*\*\*\*\*  
 \*\*\*\*\*USERNAME\*\*\*\*\*

\*\*\*\*\*SYSTEM\*\*\*\*\*



PLAN



SIDE VIEW ELEVATION

**4-BOLT METAL RAIL ANCHOR ASSEMBLY**  
( 34 ASSEMBLIES REQUIRED )

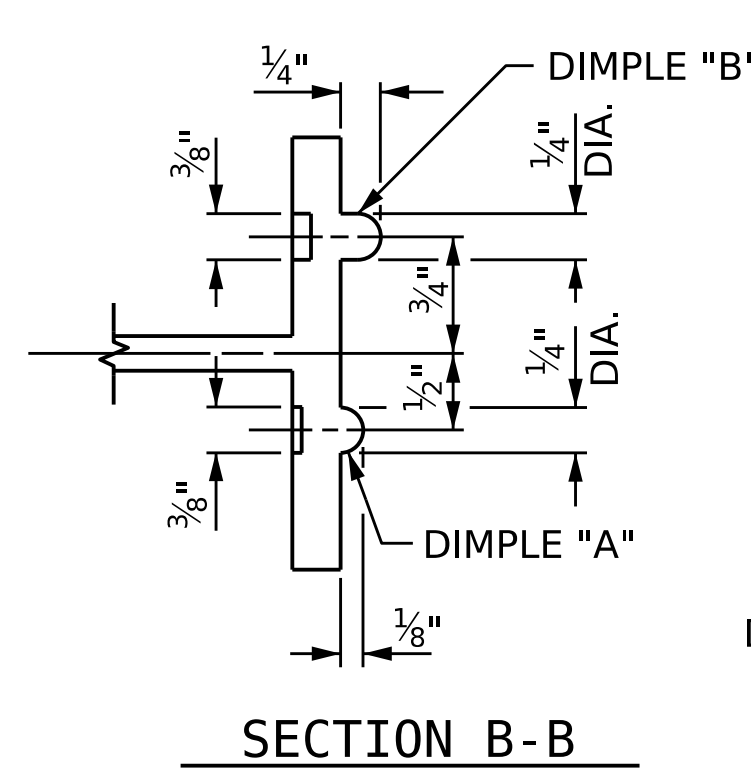
**NOTES**  
**STRUCTURAL CONCRETE ANCHOR ASSEMBLY**

THE STRUCTURAL CONCRETE ANCHOR ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS :

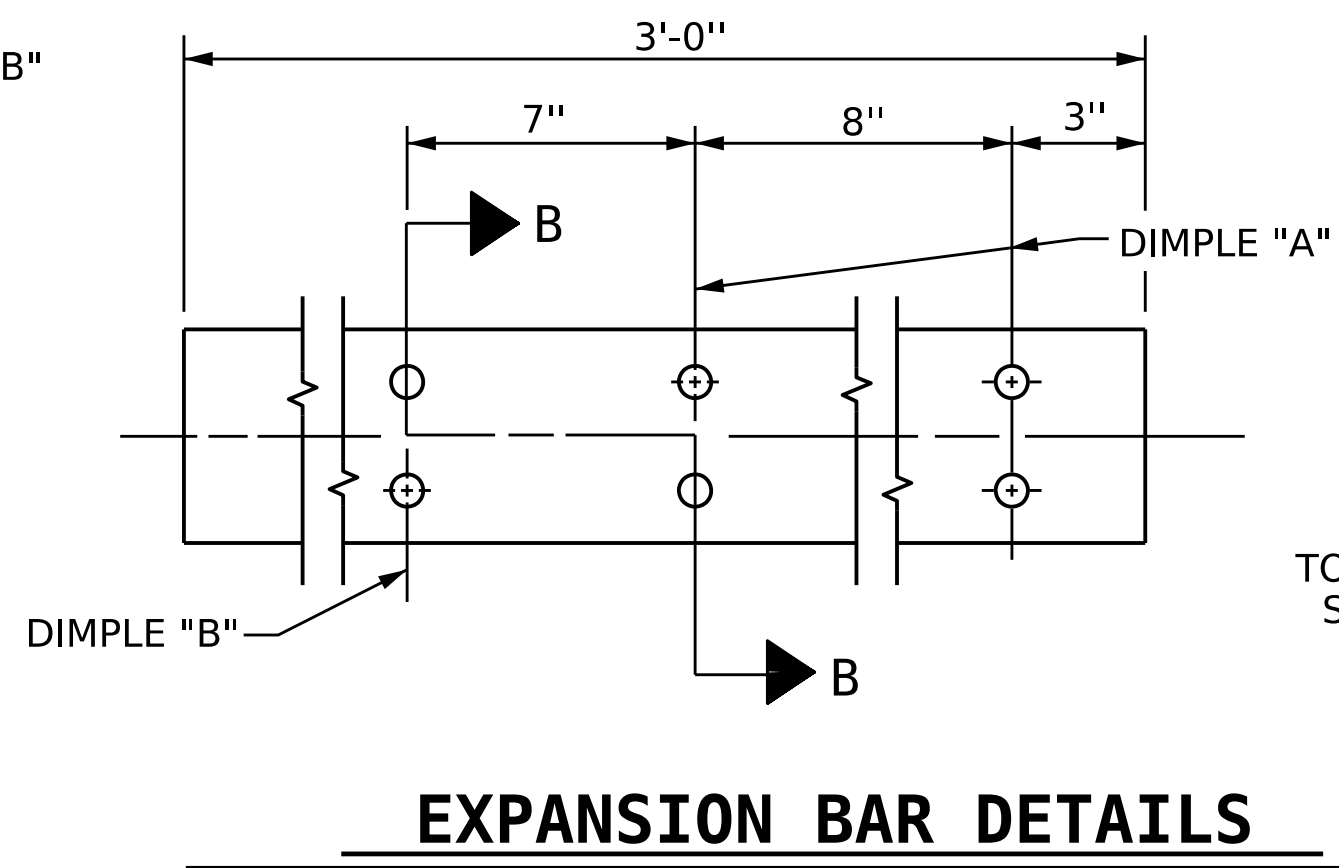
- FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES.
- 4 - 3/4"  $\times$  2 1/2" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 3/4"  $\times$  2 1/2" GALVANIZED BOLTS 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.
- WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16"  $\phi$  WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.
- THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF ASTM A123.
- THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF METAL RAIL.
- BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE METAL RAIL ANCHOR ASSEMBLY. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4"  $\phi$  BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE THE STANDARD SPECIFICATIONS.

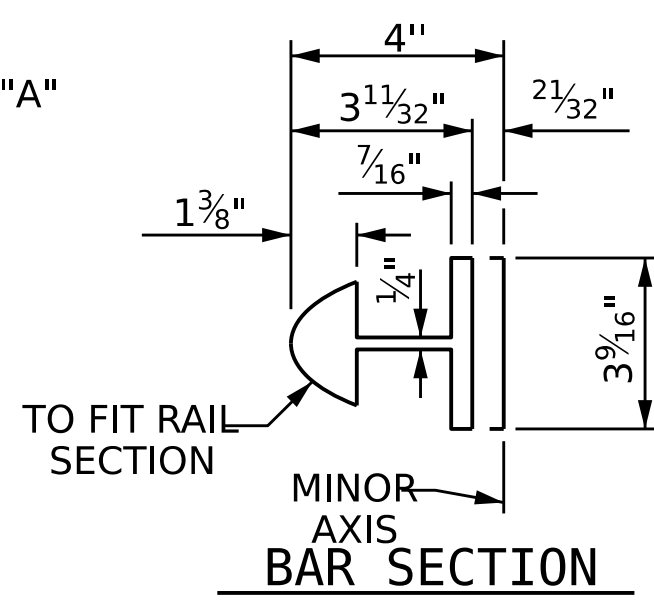
WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS SHALL MEET THE REQUIREMENTS OF ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI ULTIMATE STRENGTH. NUTS SHALL MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.



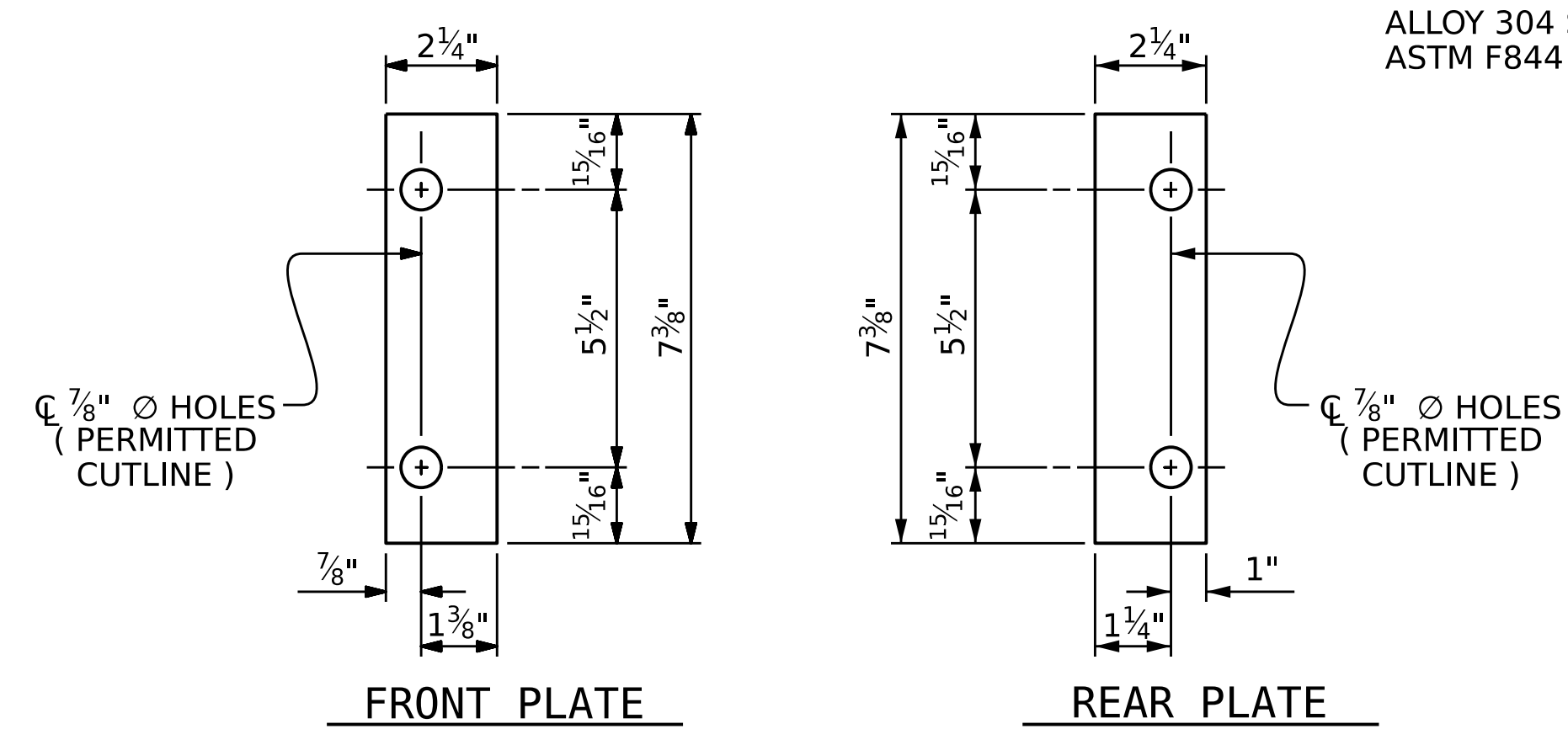
SECTION B-B



EXPANSION BAR DETAILS



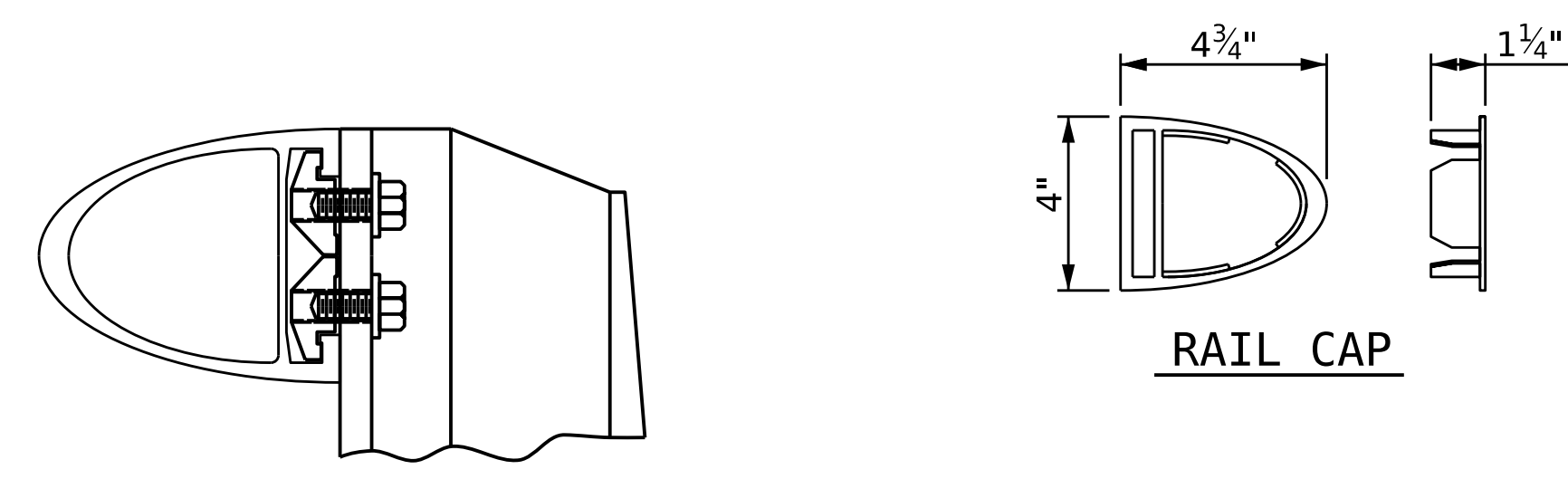
MINOR AXIS BAR SECTION



FRONT PLATE REAR PLATE

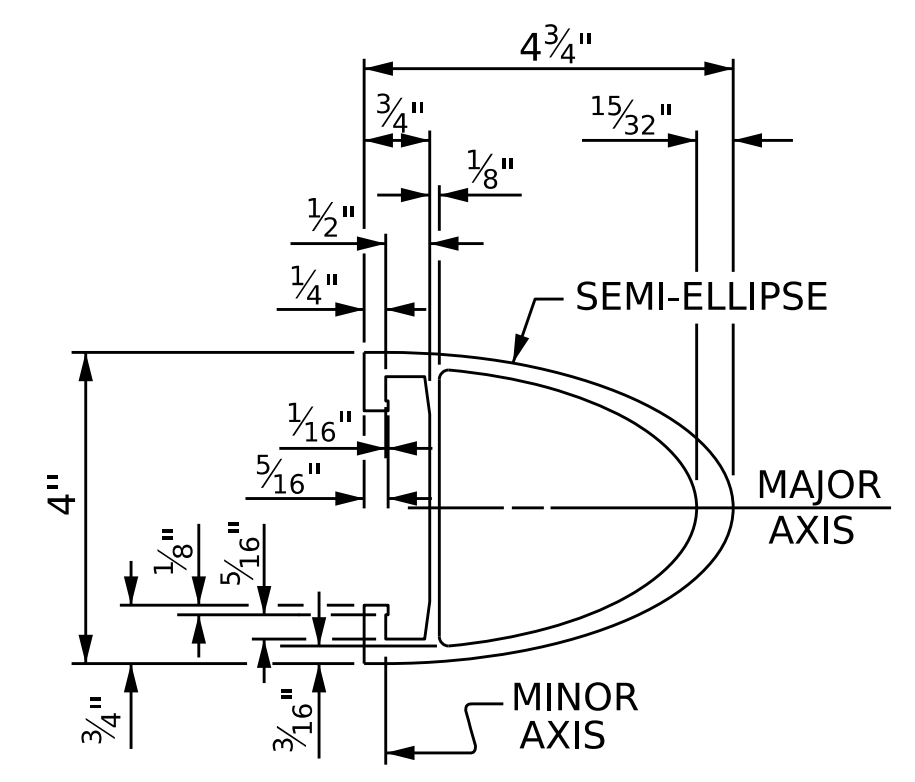
**SHIM DETAILS**

NOTE : SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.

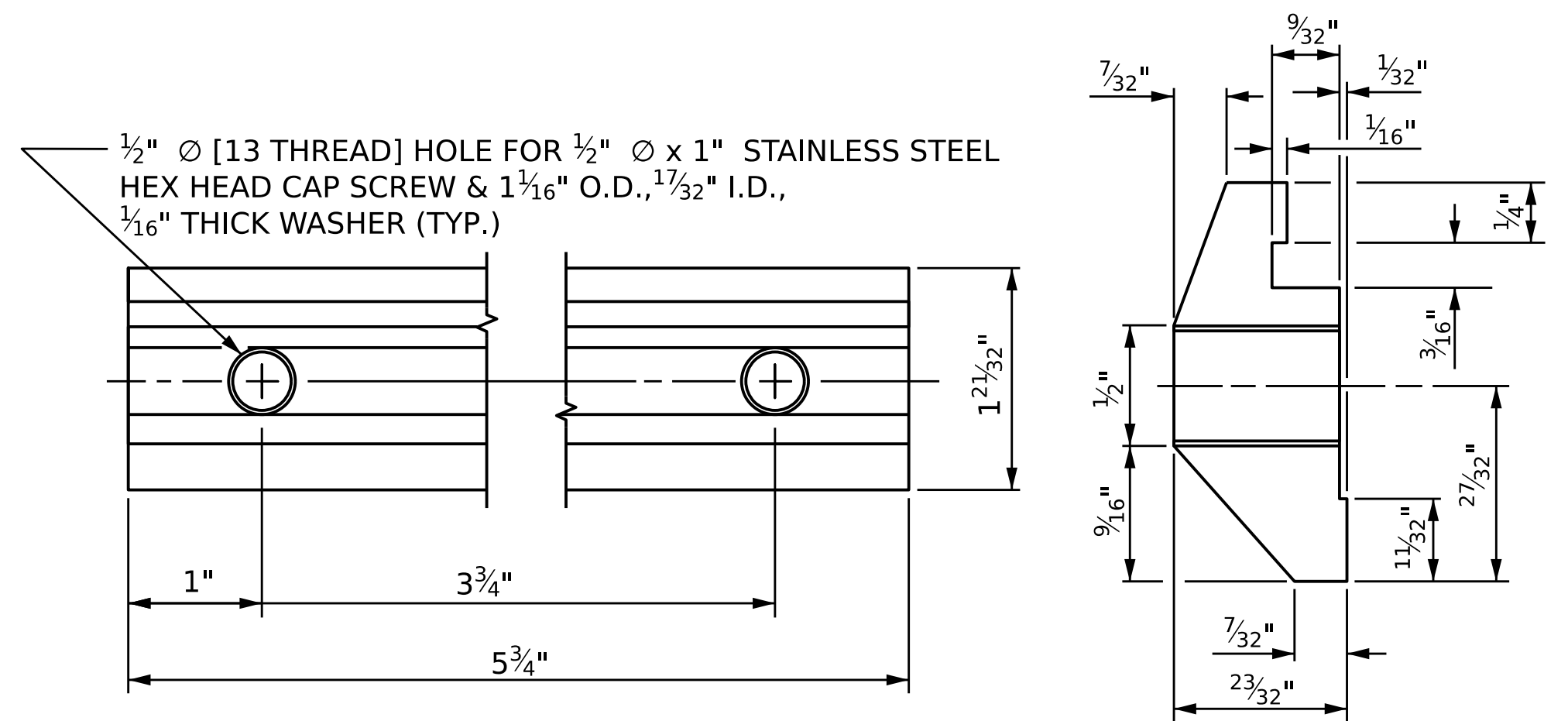


CLAMP ASSEMBLY

RAIL CAP



RAIL SECTION



CLAMP BAR DETAIL  
( 4 REQUIRED PER POST )

PROJECT NO. 17BP.2.R.94  
PAMLICO COUNTY  
STATION: 23+52.00 -L-

SHEET 2 OF 2  
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD

**2 BAR METAL RAIL**

ASSEMBLED BY : DM SHAUT DATE : 4/22/22  
CHECKED BY : TG ZEBLO DATE : 4/25/22  
DRAWN BY : EEM 6/94  
CHECKED BY : RCW 6/94

REV. 10/11 MAA/GM  
REV. 12/17 MAA/THC  
REV. 10/23 BNB/SNM

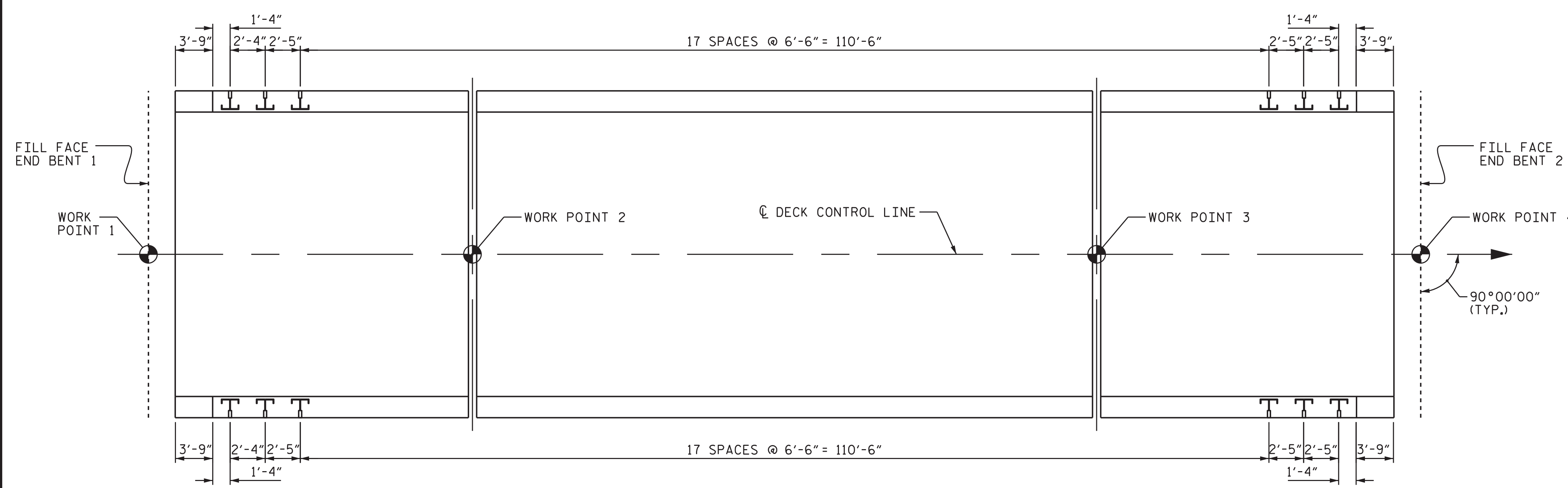
PLAN PREPARED BY:  
  
ALPHA & OMEGA GROUP  
CIVIL | STRUCTURAL | WATER RESOURCES  
ALPHA AND OMEGA GROUP, PC  
4603 LAKE ROONE TRAIL, SUITE 3C, RALEIGH, NC 27607  
Firm License No. C-1684 www.aogroup.com  
A&O PROJECT NO. : 2021.053

DocuSigned by:  
SEAL  
JAMES J. BARKER  
3/4/2024

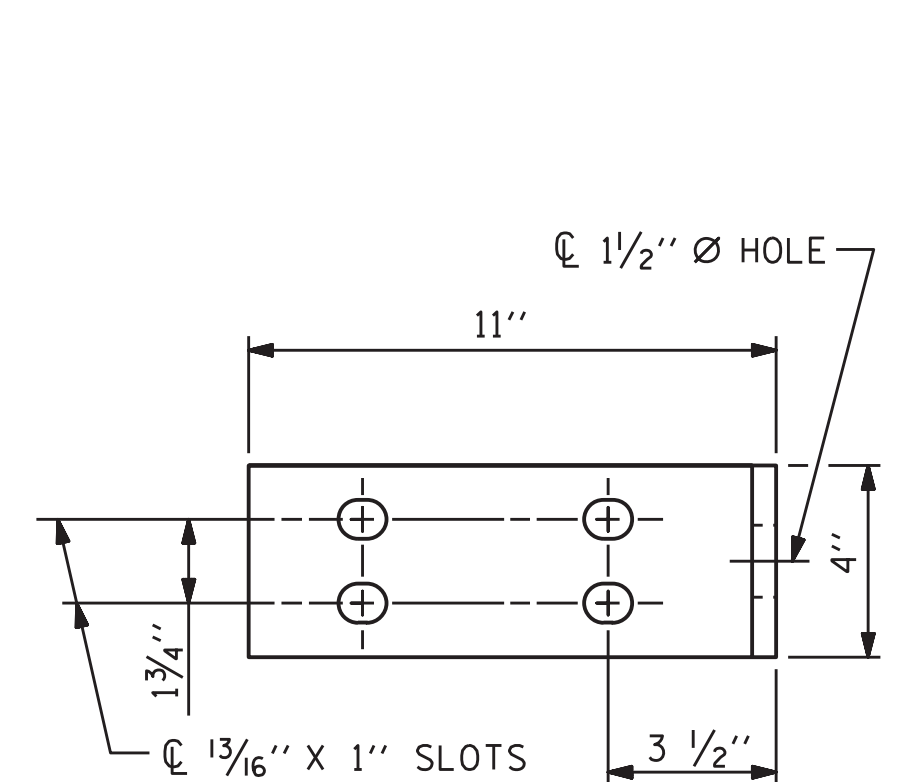
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REVISIONS				SHEET NO.
NO	BY:	DATE:	NO	DATE:
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2			4	

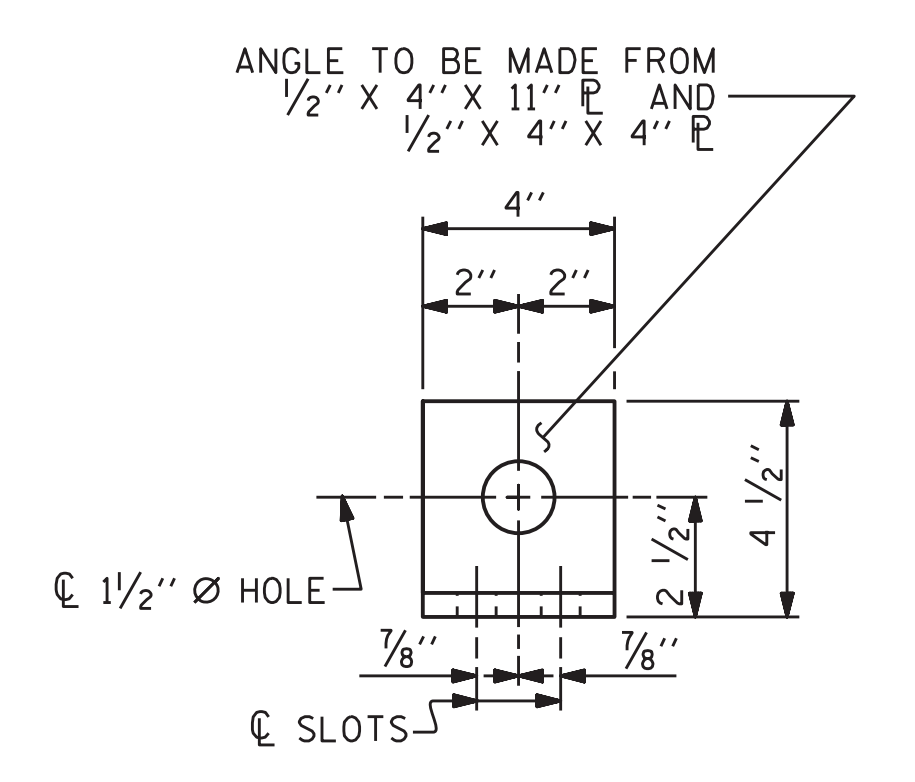
TOTAL SHEETS	26
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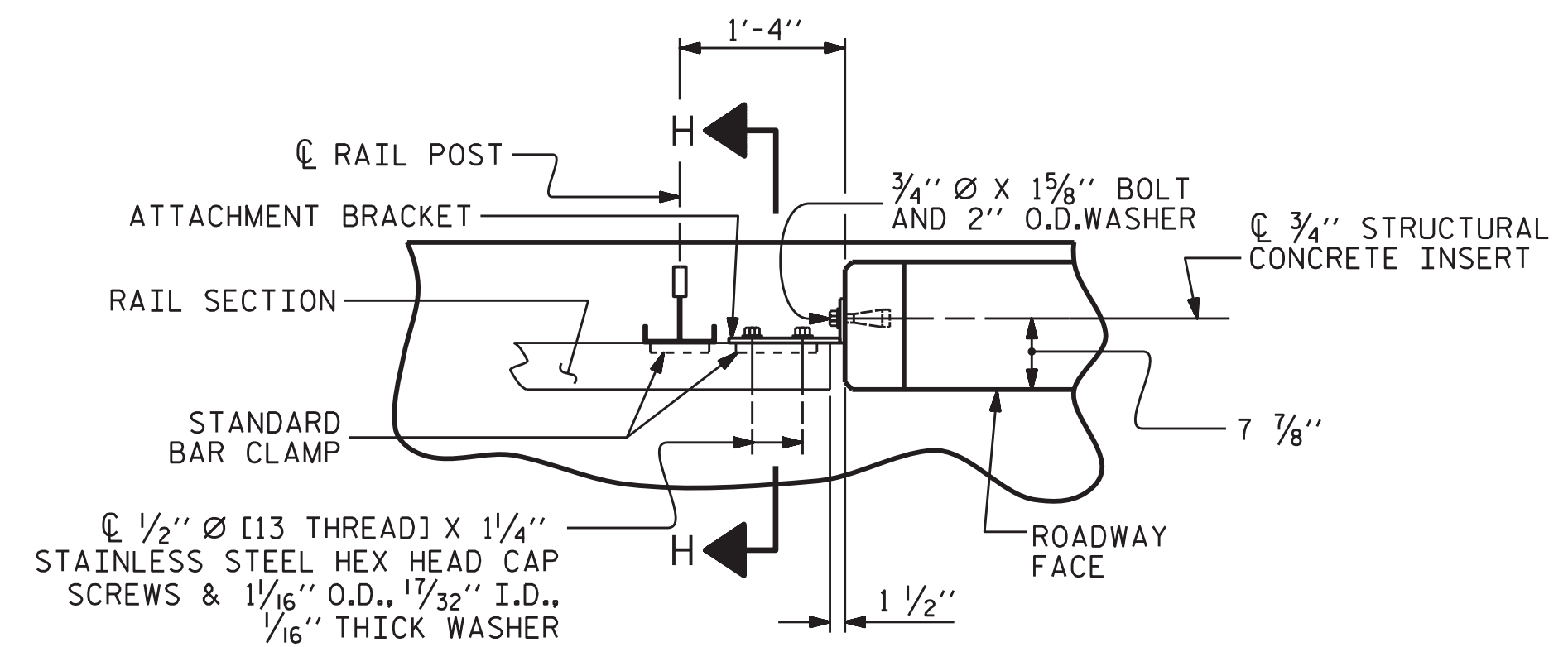
**PLAN OF RAIL POST SPACINGS**



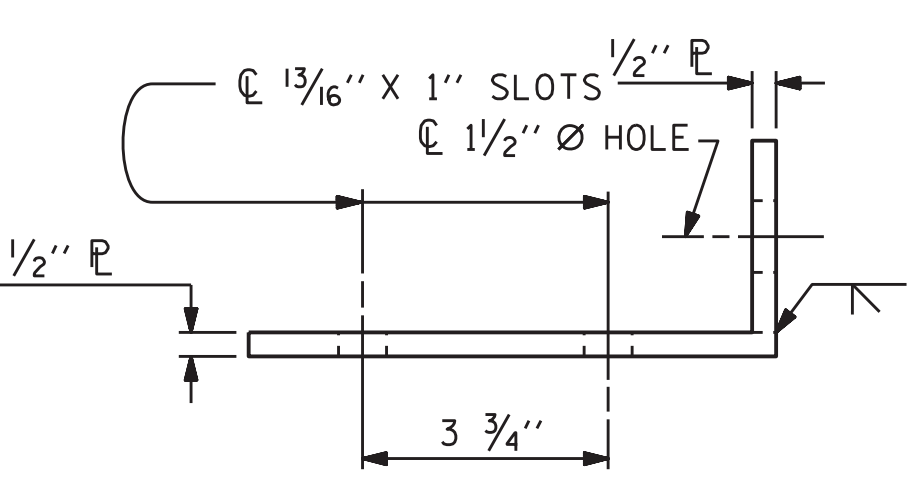
**ELEVATION**



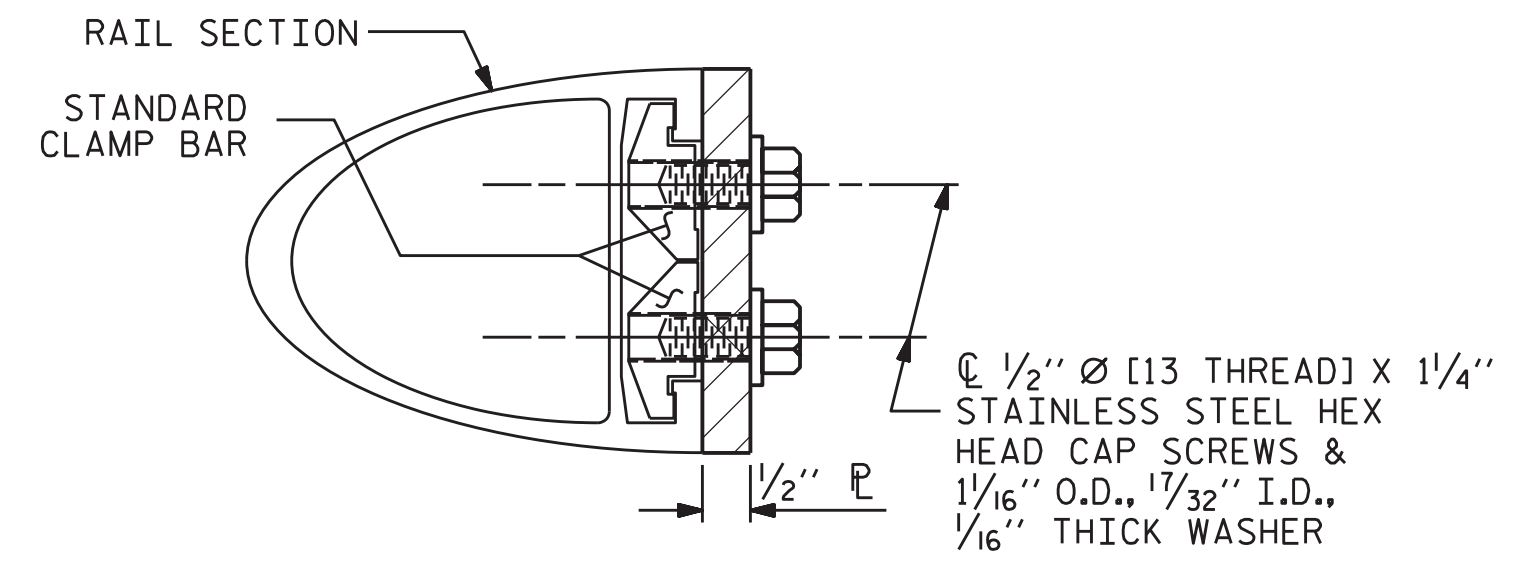
**END VIEW (FIX AND EXP.)**



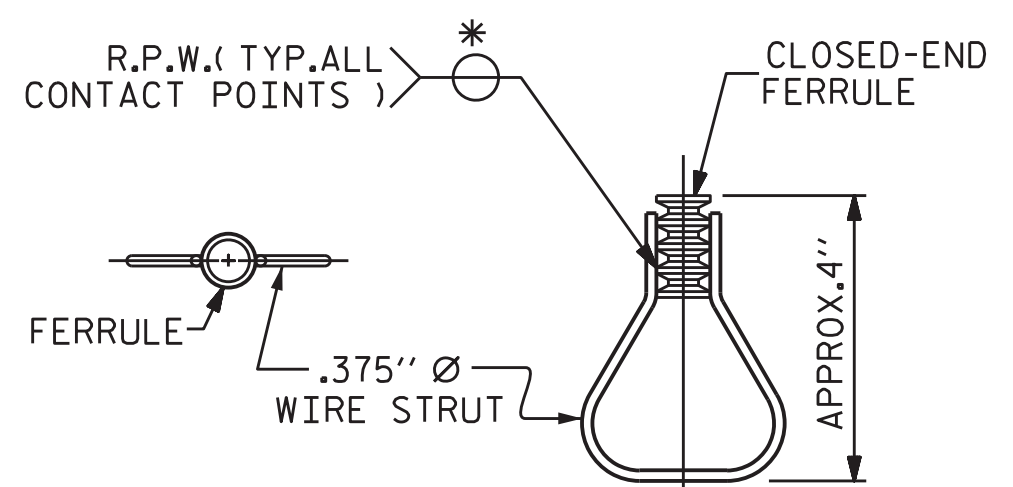
**PLAN - RAIL AND END POST**



**TOP VIEW**



**SECTION H-H (FIX)**



**STRUCTURAL CONCRETE INSERT**

\* EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.

PLAN PREPARED BY:  
  
**ALPHA & OMEGA GROUP**  
 CIVIL | STRUCTURAL | WATER RESOURCES  
ALPHA AND OMEGA GROUP, P.C.  
 4601 LAKE BOONE TRAIL, SUITE 3C, RALEIGH, NC 27607  
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 A&O PROJECT NO.: 2021.053

DocuSigned by:  
  
 5/11/2022  
 A8C764871F8049C...

PROJECT NO. 17BP.2.R.94  
PAMLICO COUNTY  
 STATION: 23+52.00 -L-

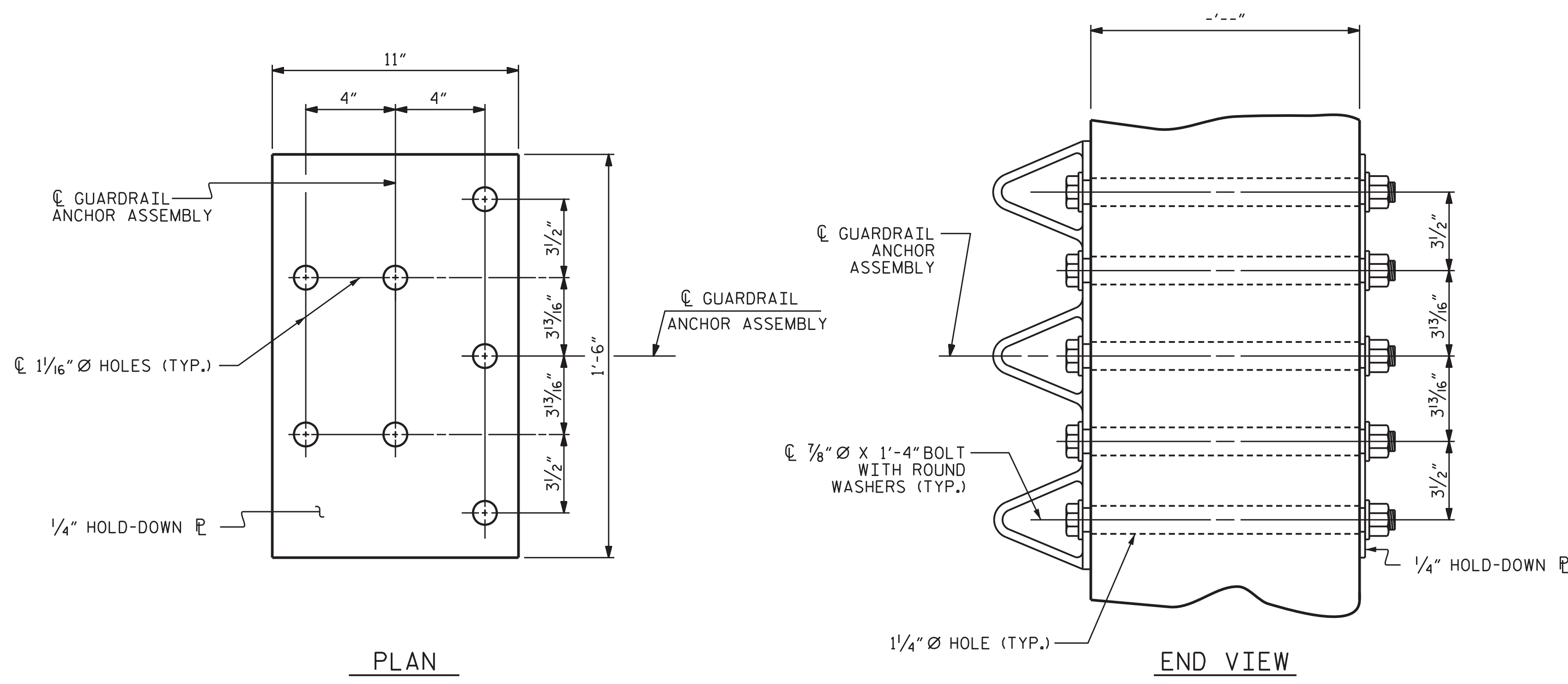
SHEET 1 OF 1  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
**RAIL POST SPACINGS  
 AND  
 END OF RAIL DETAILS**  
 TWO BAR METAL RAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			26

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ASSEMBLED BY :	DM SHAUT	DATE :	4/22/22
CHECKED BY :	TG ZEBLO	DATE :	4/25/22
DRAWN BY :	FCJ 1/88	REV. 5/1/06	TLA/GM
CHECKED BY :	CRK 3/89	REV. 10/1/11	MAA/GM
		REV. 12/17	MAA/THC

\*\*\*\*\*SYSTEM\*\*\*\*\*  
 \*\*\*\*\*DCN\*\*\*\*\*  
 \*\*\*\*\*USER\*\*\*\*\*



**GUARDRAIL ANCHOR ASSEMBLY DETAILS**

**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 THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

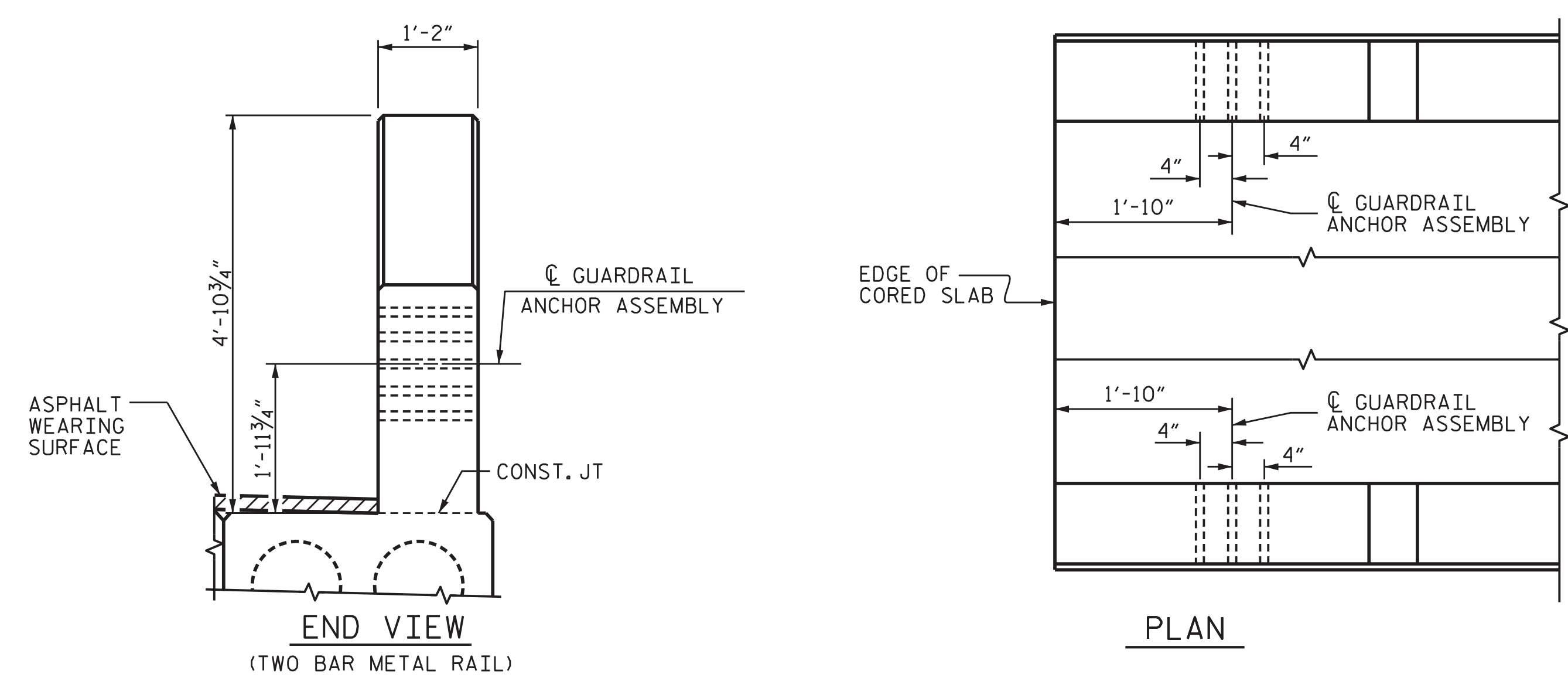
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

THE 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



**SKETCH SHOWING POINTS OF ATTACHMENT**  
\*LOCATION OF GUARDRAIL ATTACHMENT



**LOCATION OF GUARDRAIL ANCHOR AT END POST**

PROJECT NO. 17BP.2.R.94  
PAMLICO COUNTY  
 STATION: 23+52.00 -L-  
 SHEET 1 OF 1

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
**GUARDRAIL ANCHORAGE  
 DETAILS  
 FOR METAL RAILS**

ASSEMBLED BY :	DM SHAUT	DATE :	4/22/22
CHECKED BY :	TG ZEBLO	DATE :	4/25/22
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

PLAN PREPARED BY:

**ALPHA & OMEGA GROUP**  
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ALPHA AND OMEGA GROUP, PC  
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 JAMES J. BARCO  
 5/11/2022

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2			4			26

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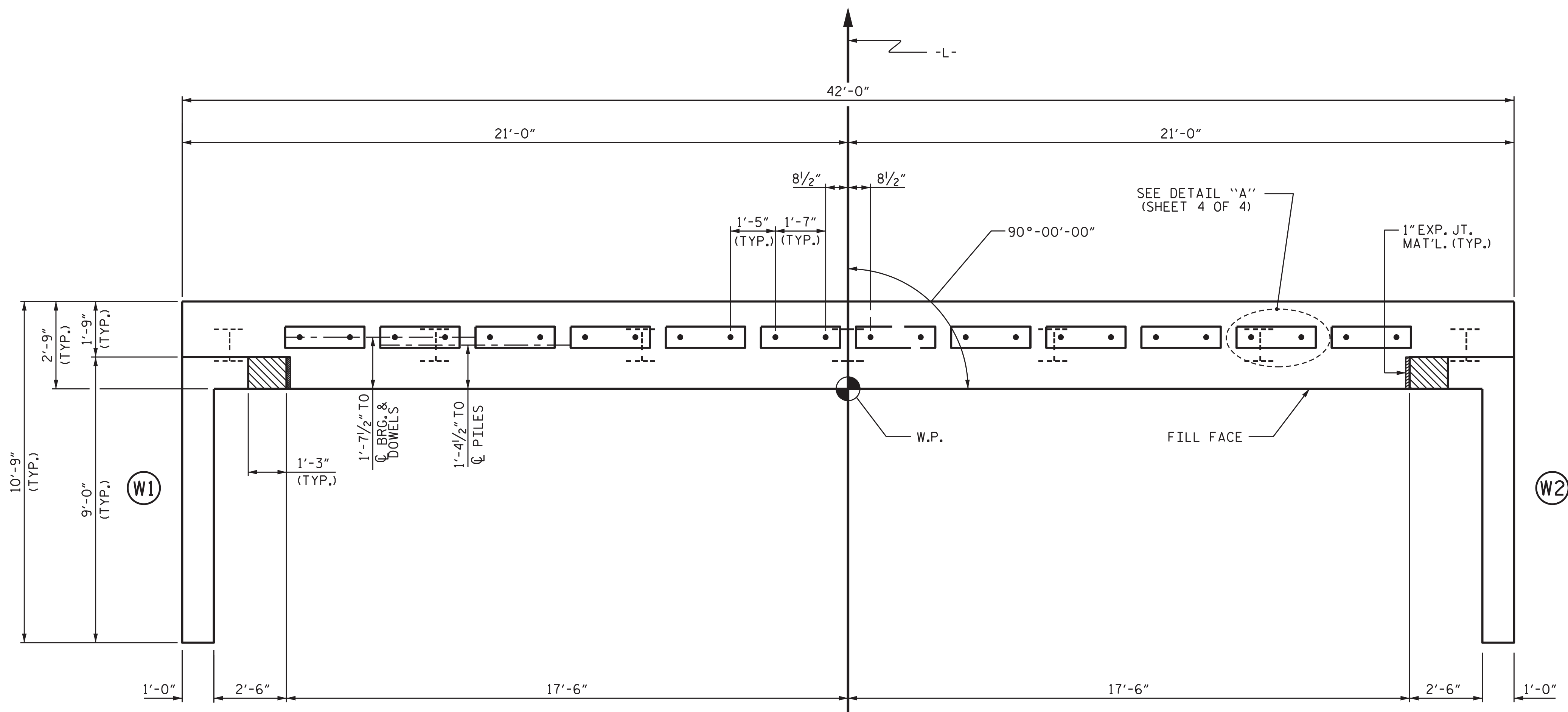
### NOTES

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

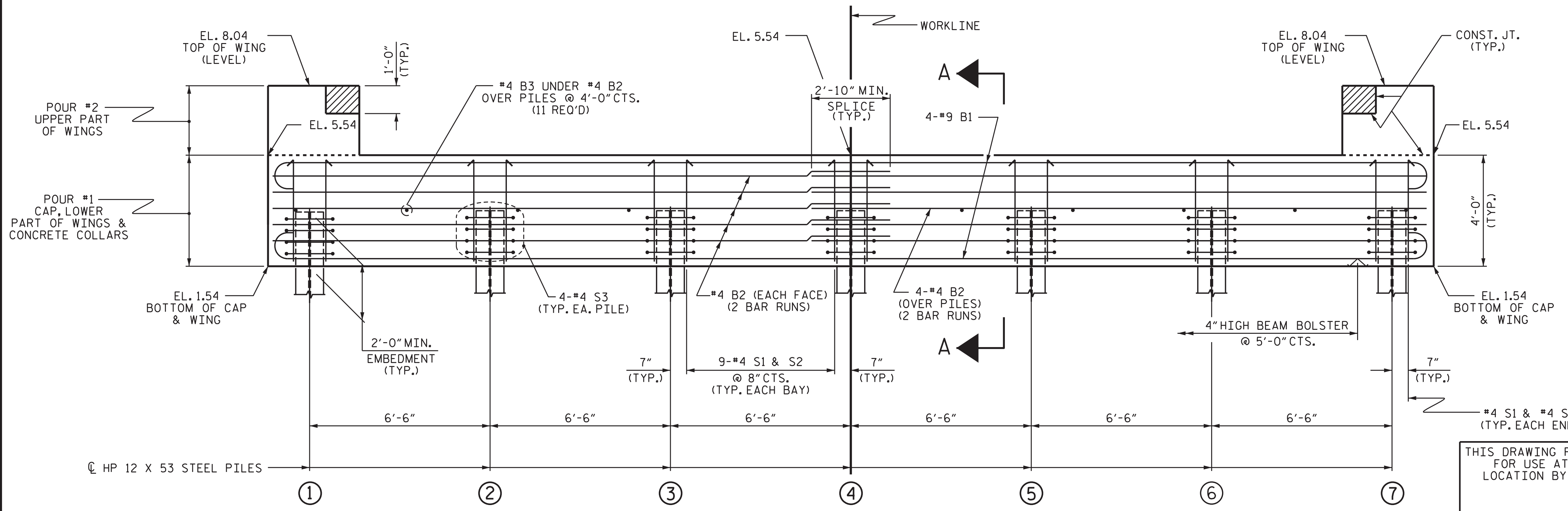
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



### PLAN



### ELEVATION

PROJECT NO. 17BP.2.R.94  
 PAMLICO COUNTY  
 STATION: 23+52.00 -L-  
 SHEET 1 OF 4

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CHECKED BY :	AAC	12/11	MAA/TMG

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.

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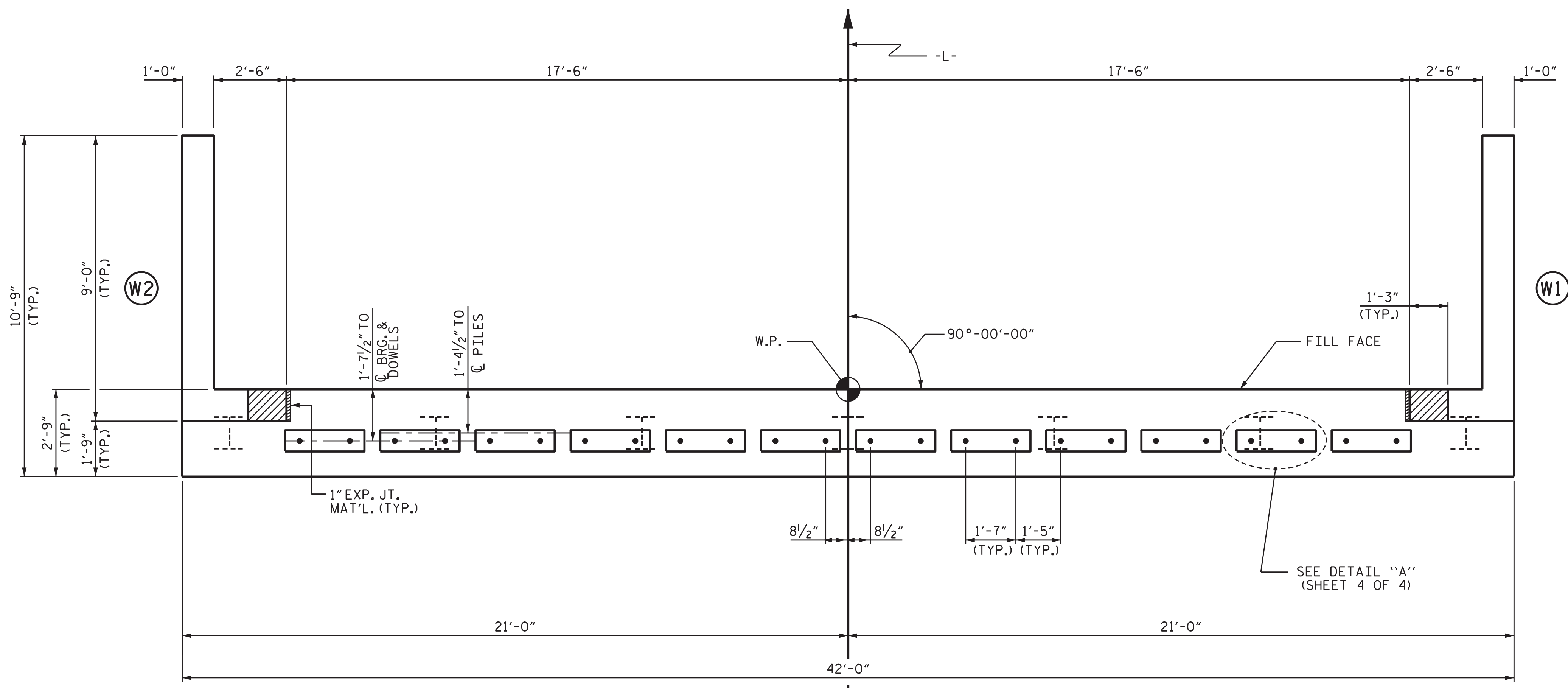
### NOTES

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

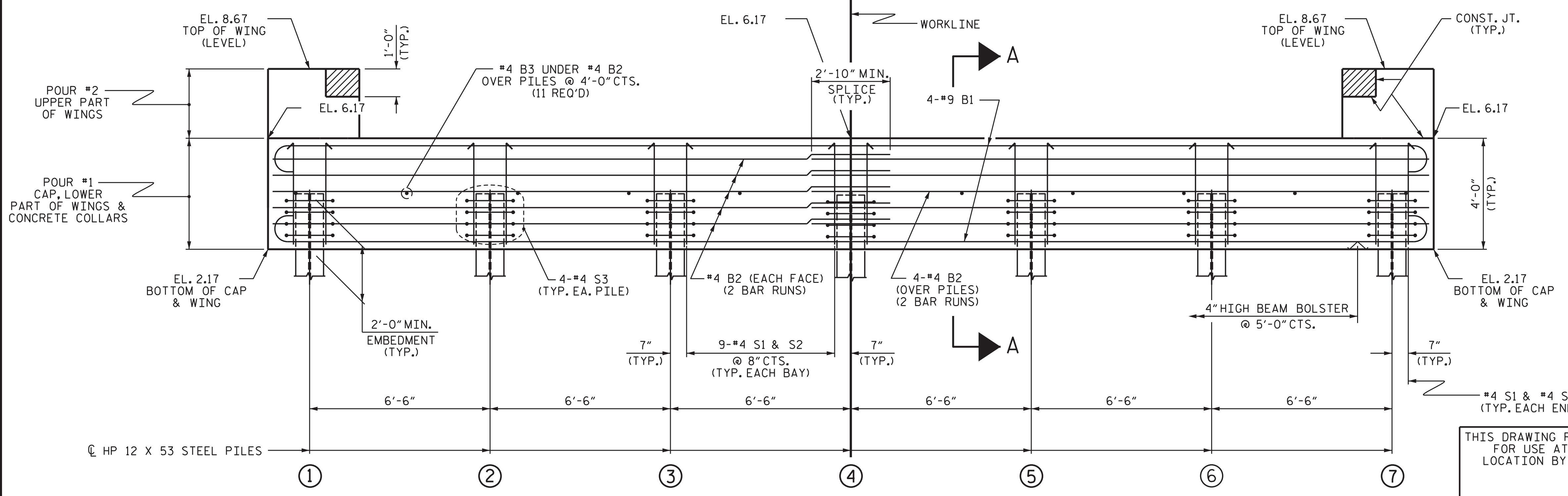
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



### PLAN



### ELEVATION

PROJECT NO. 17BP.2.R.94  
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TOTAL SHEETS 26					
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2			4		

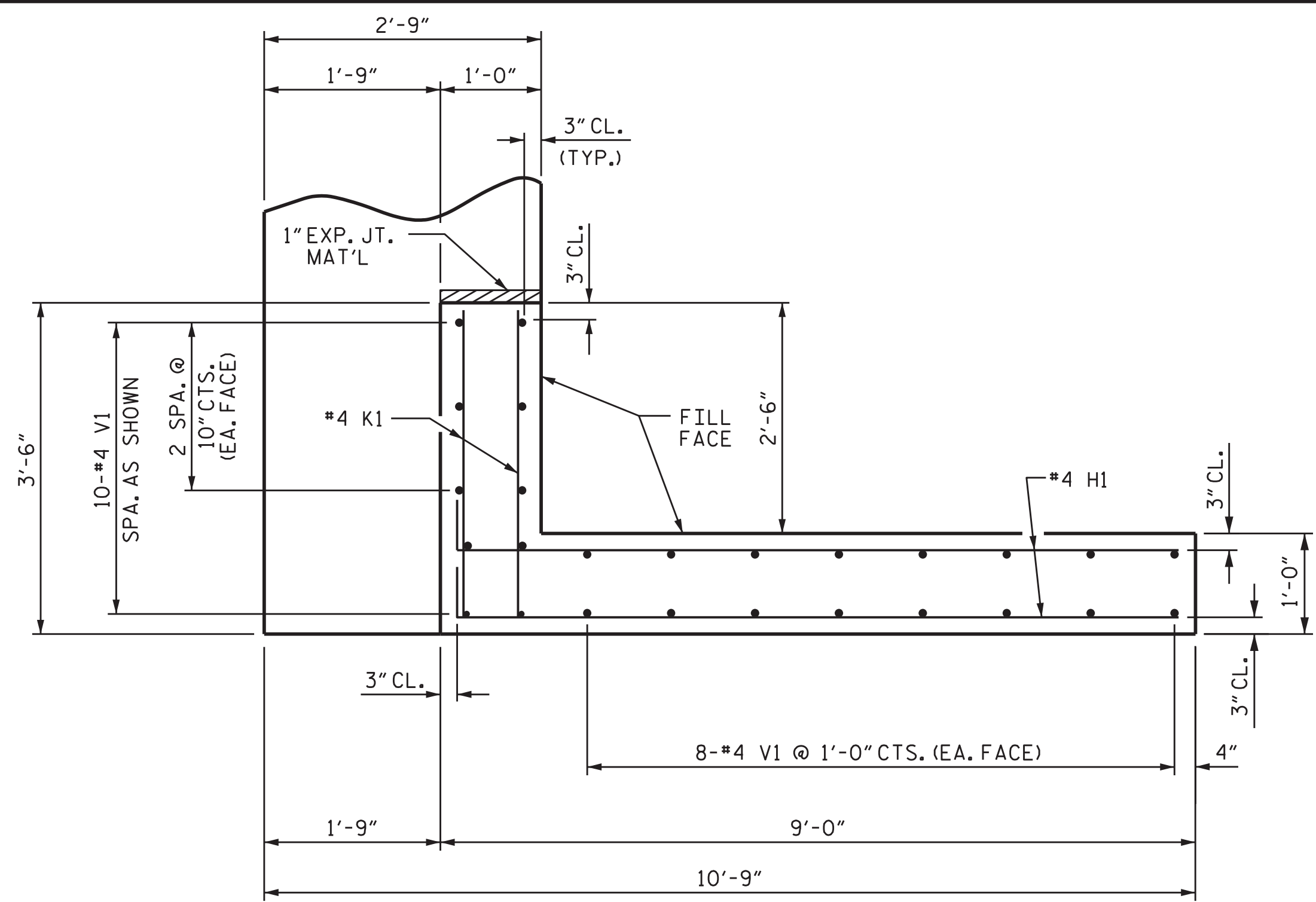
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CHECKED BY :	TG ZEBLO	DATE :	4/25/22
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WINGS NOT SHOWN FOR CLARITY.  
 FOR SECTION A-A, SEE SHEET 4 OF 4.  
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.  
 SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

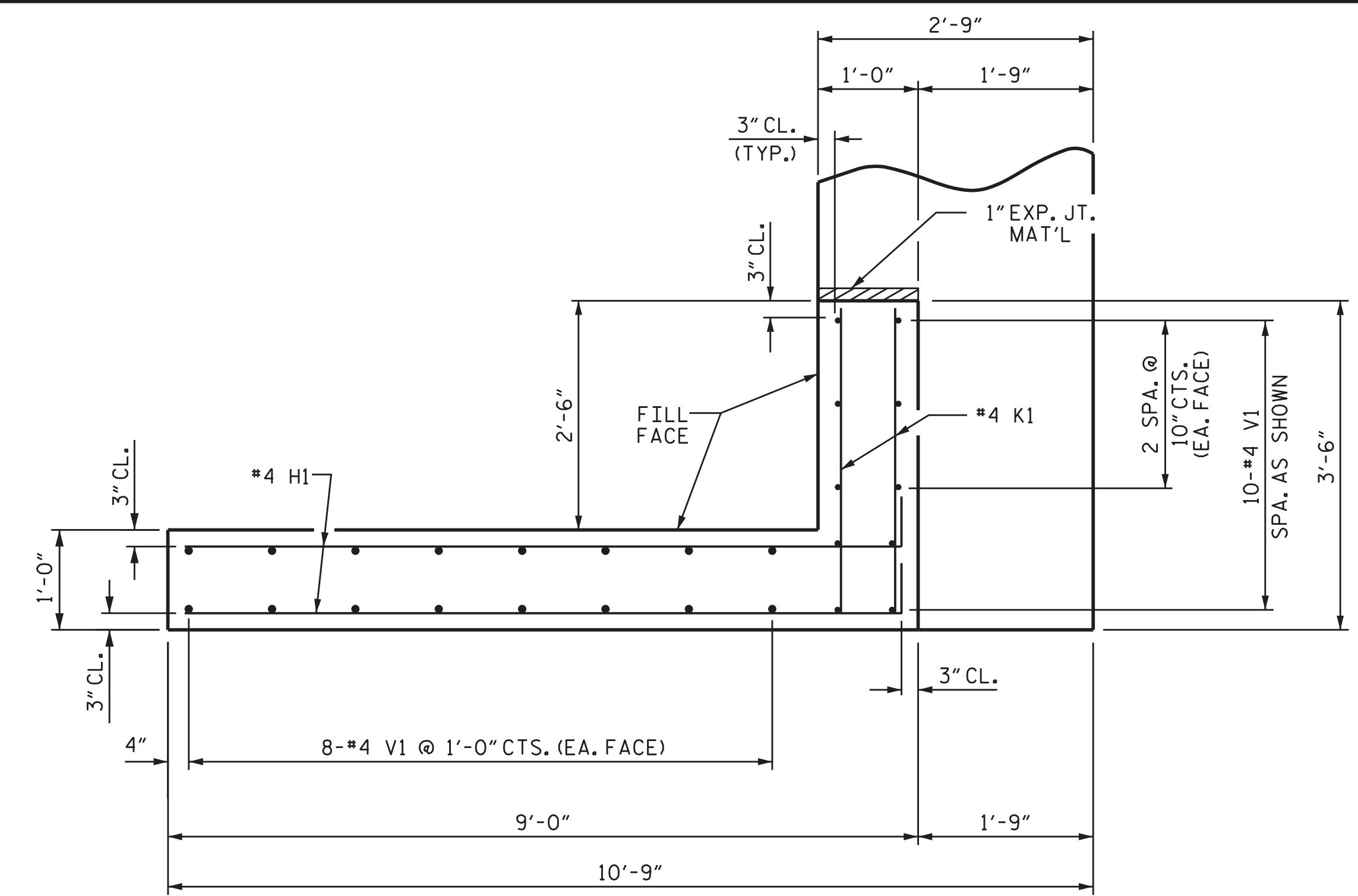
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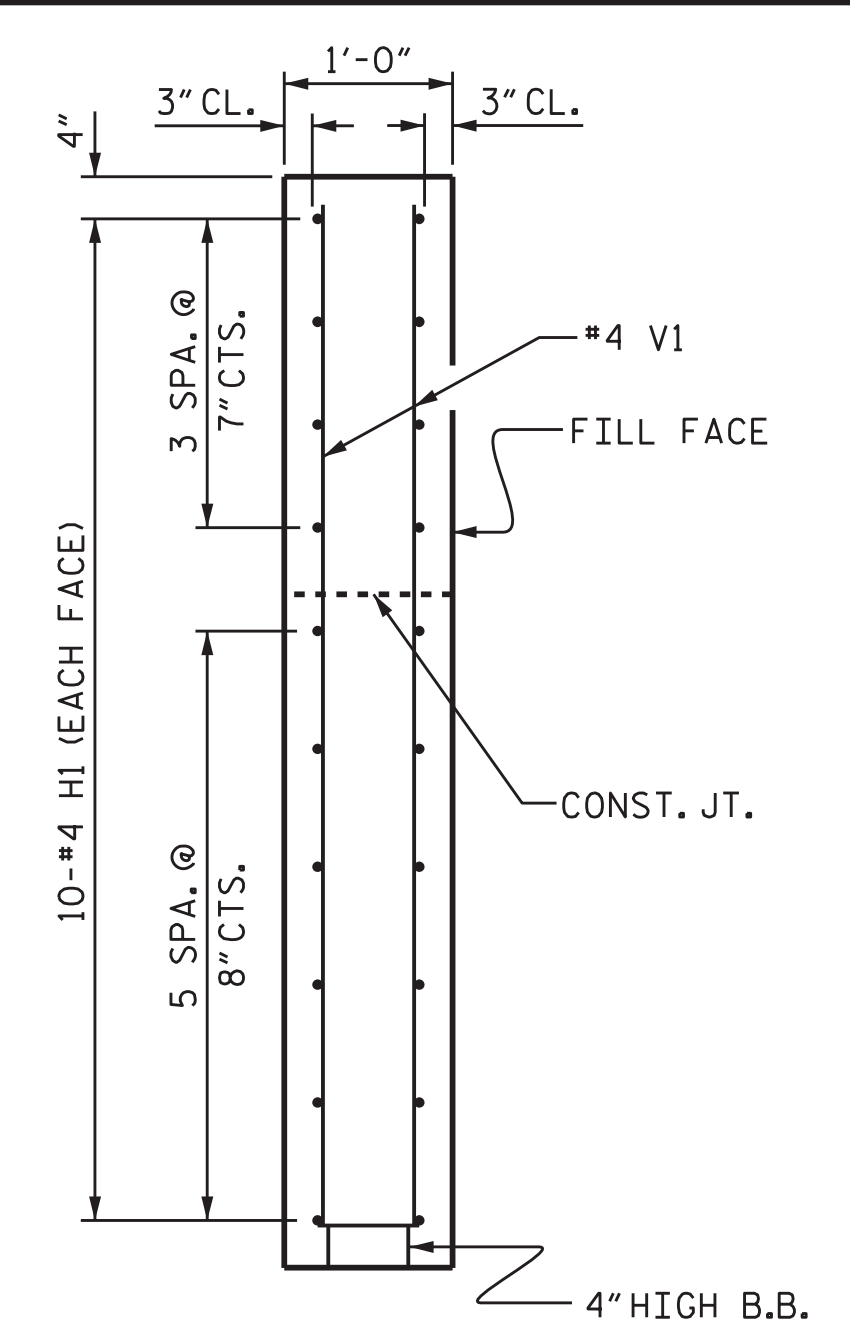
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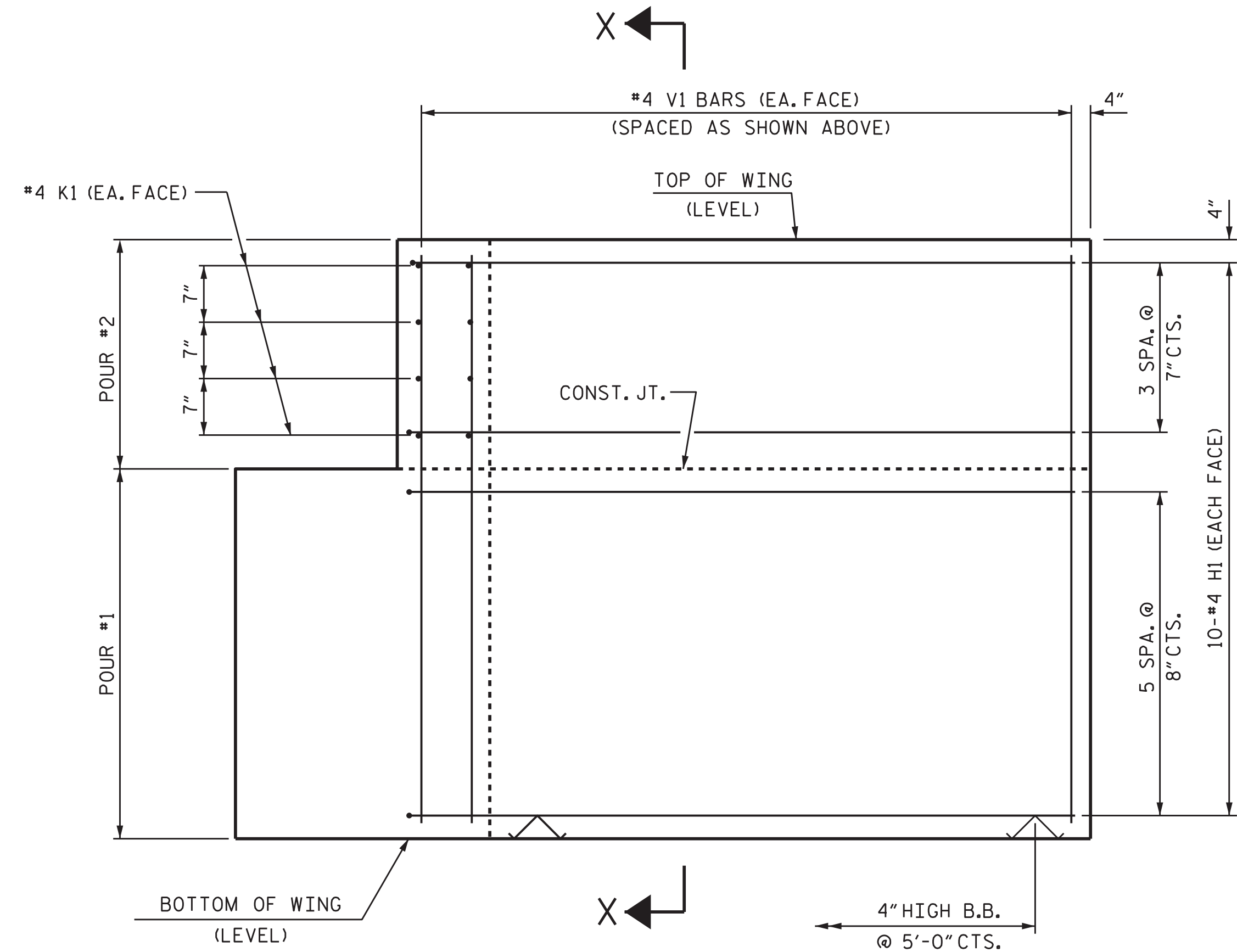
PLAN OF WING (W1)



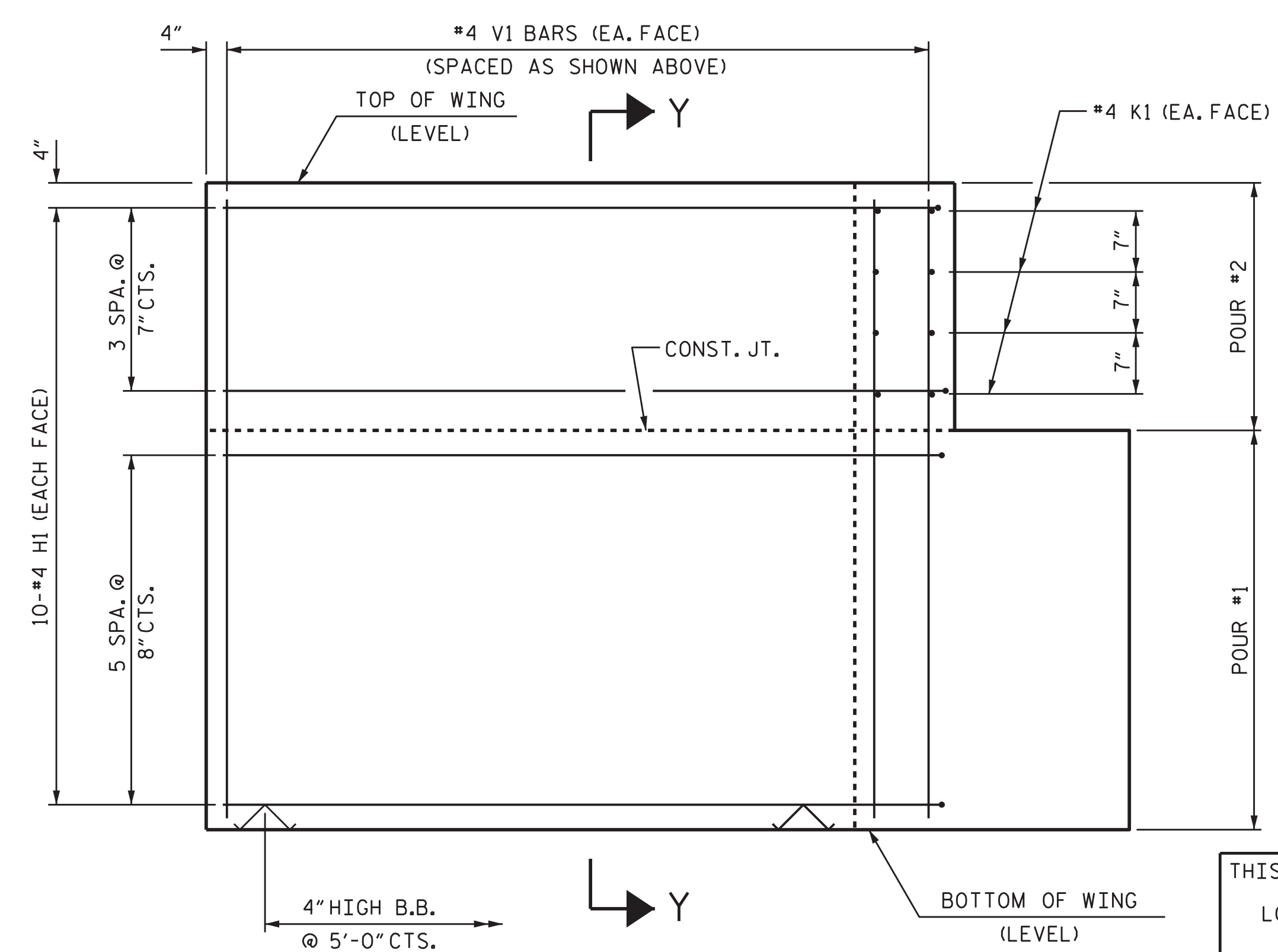
PLAN OF WING (W2)



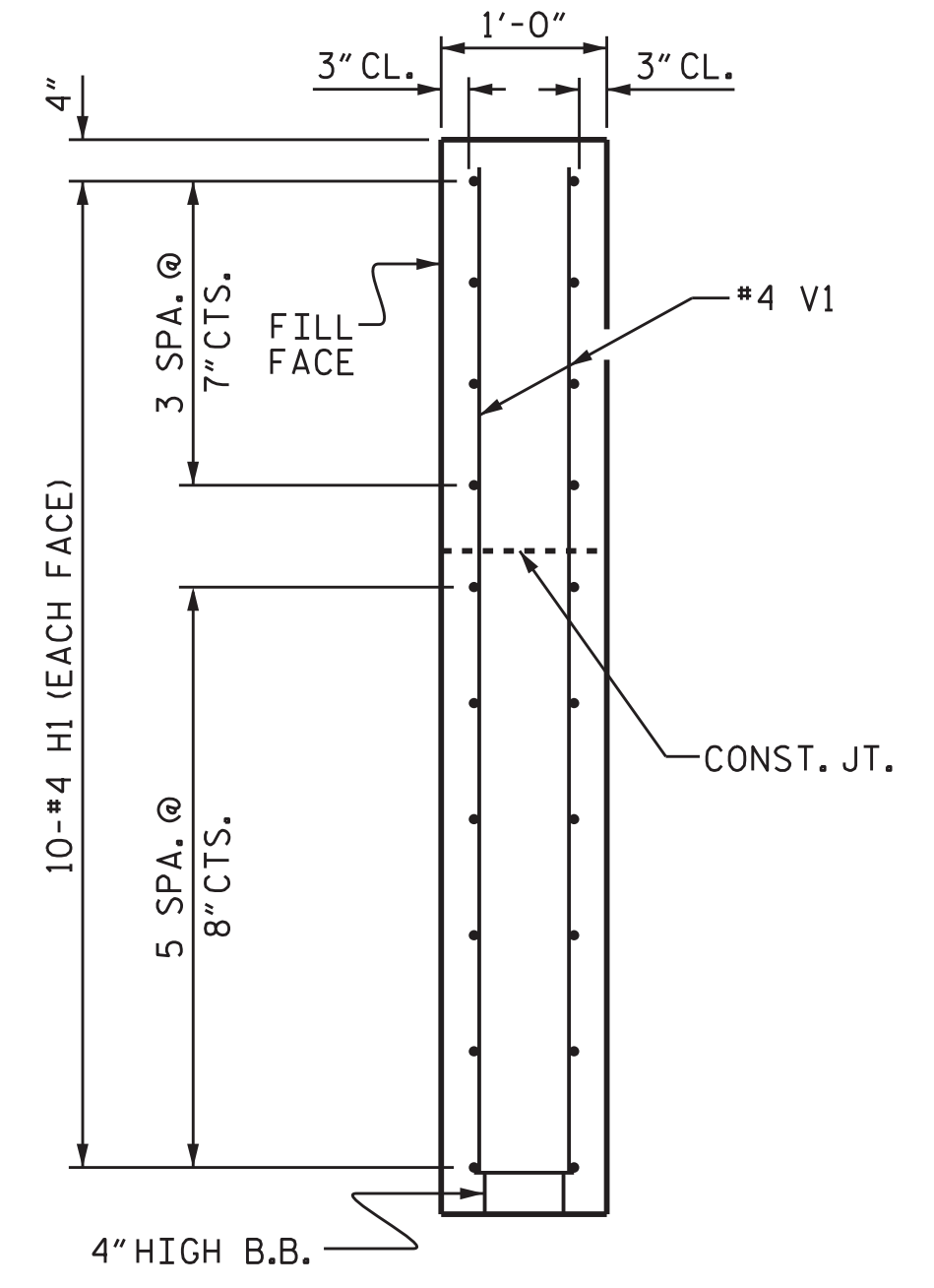
SECTION X-X



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION Y-Y

PROJECT NO. 17BP.2.R.94  
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STATE OF NORTH CAROLINA  
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SUBSTRUCTURE  
 END BENT  
 WING DETAILS

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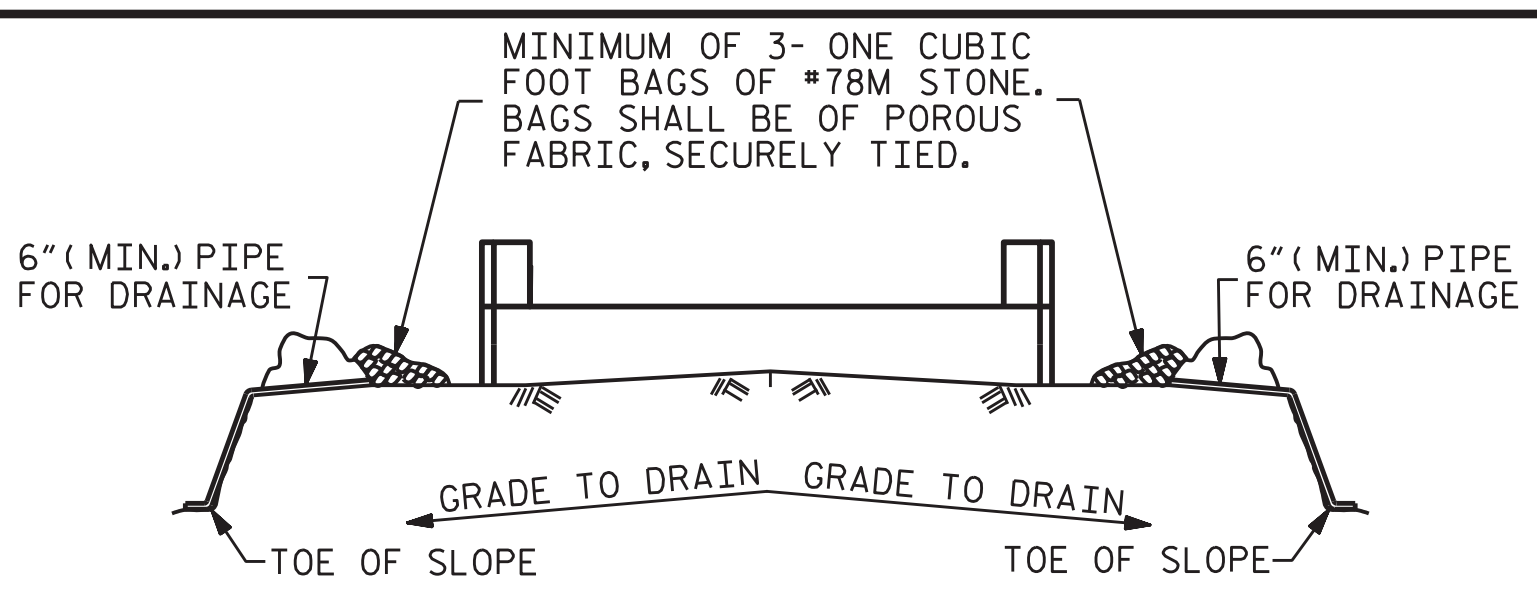
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WING DETAILS

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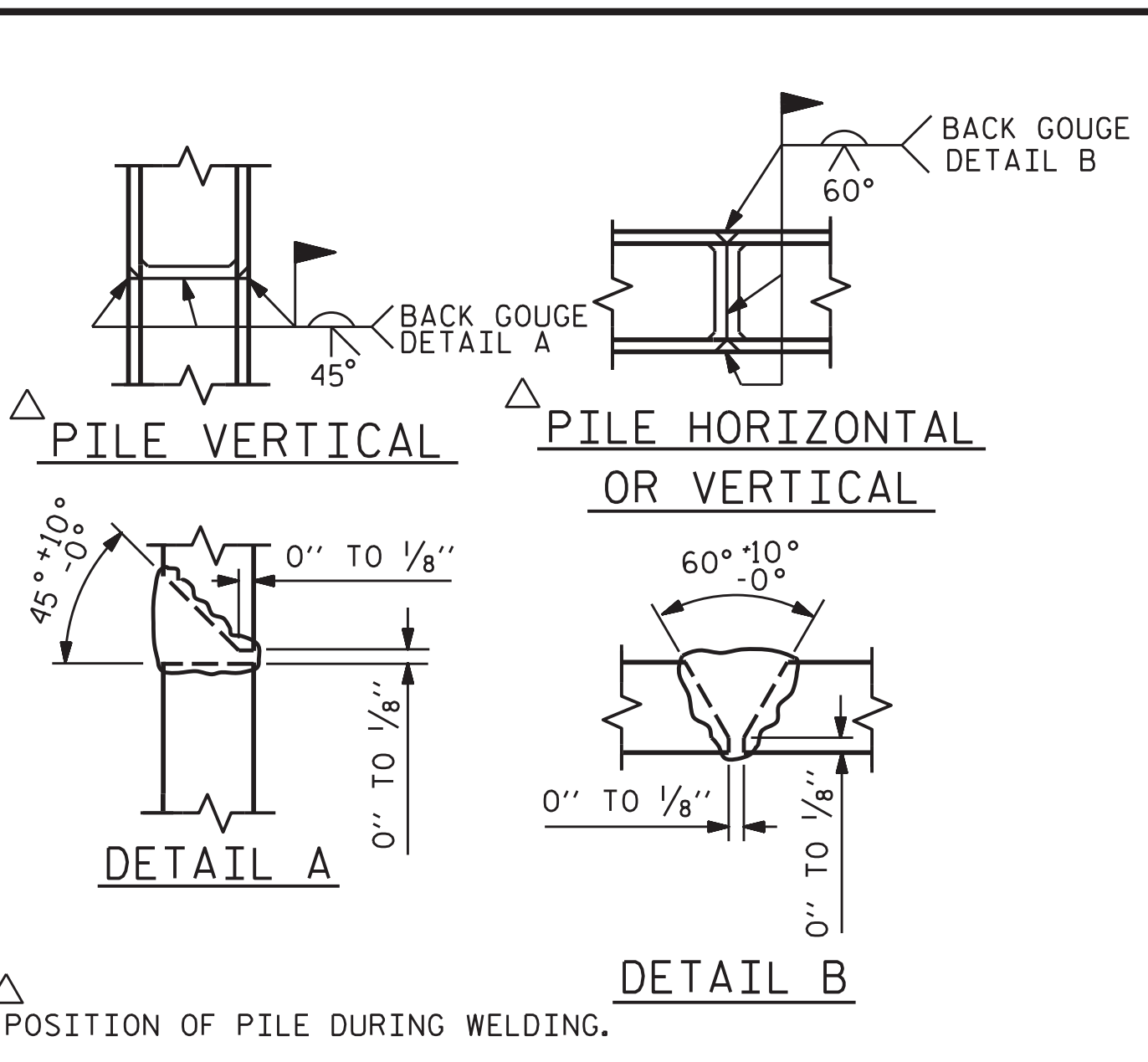
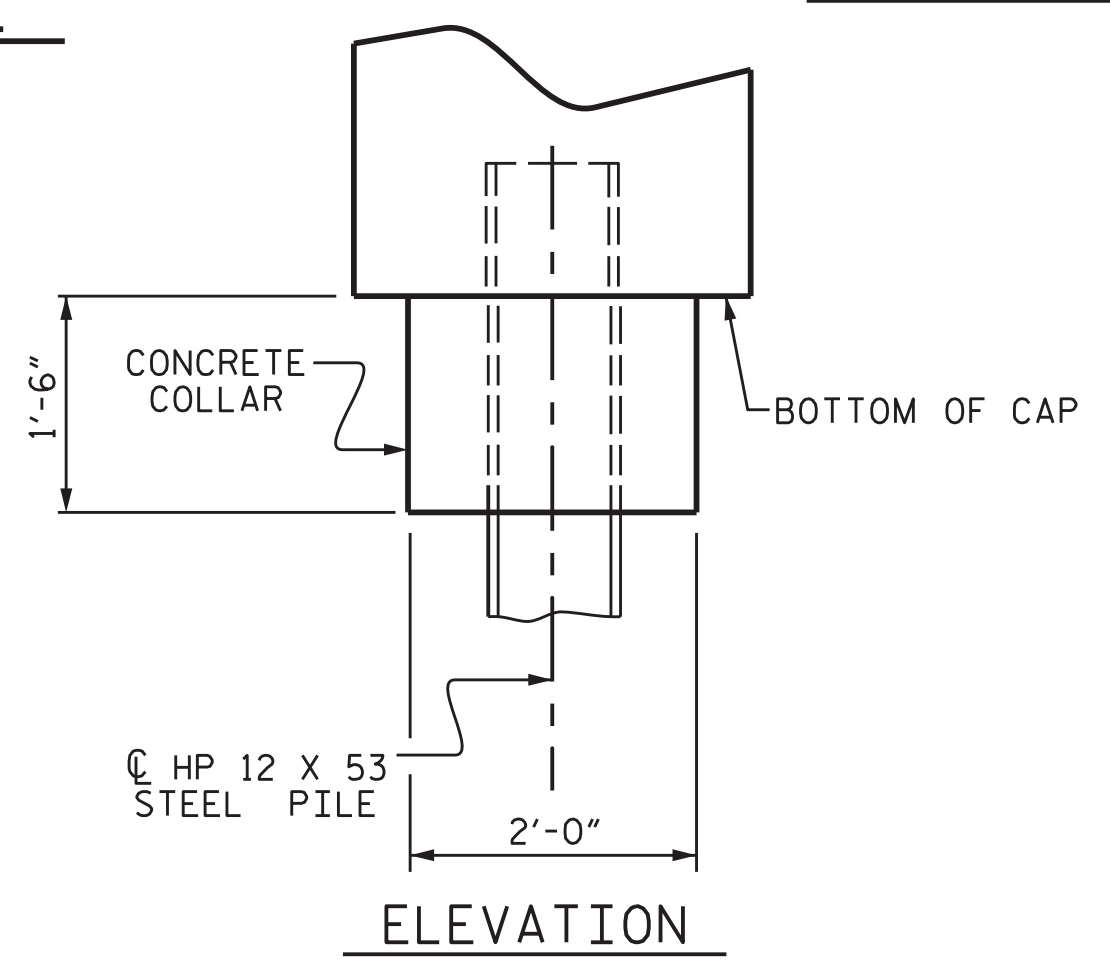
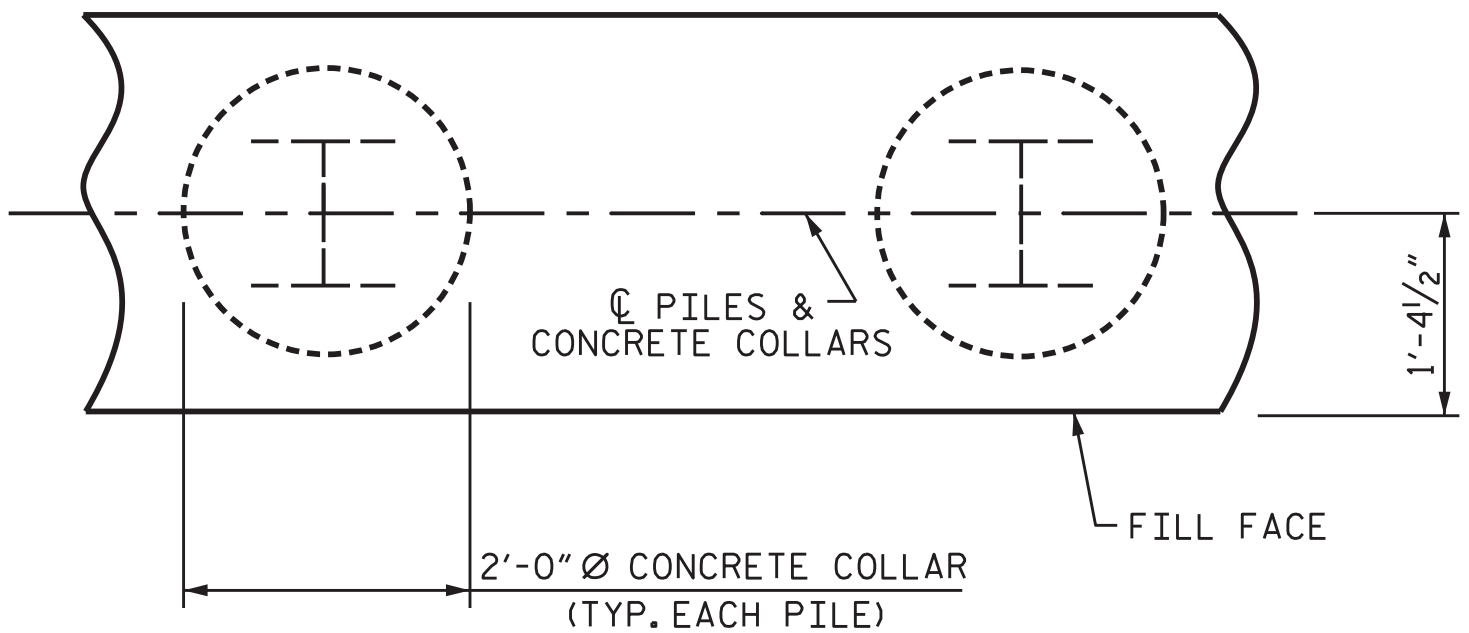


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

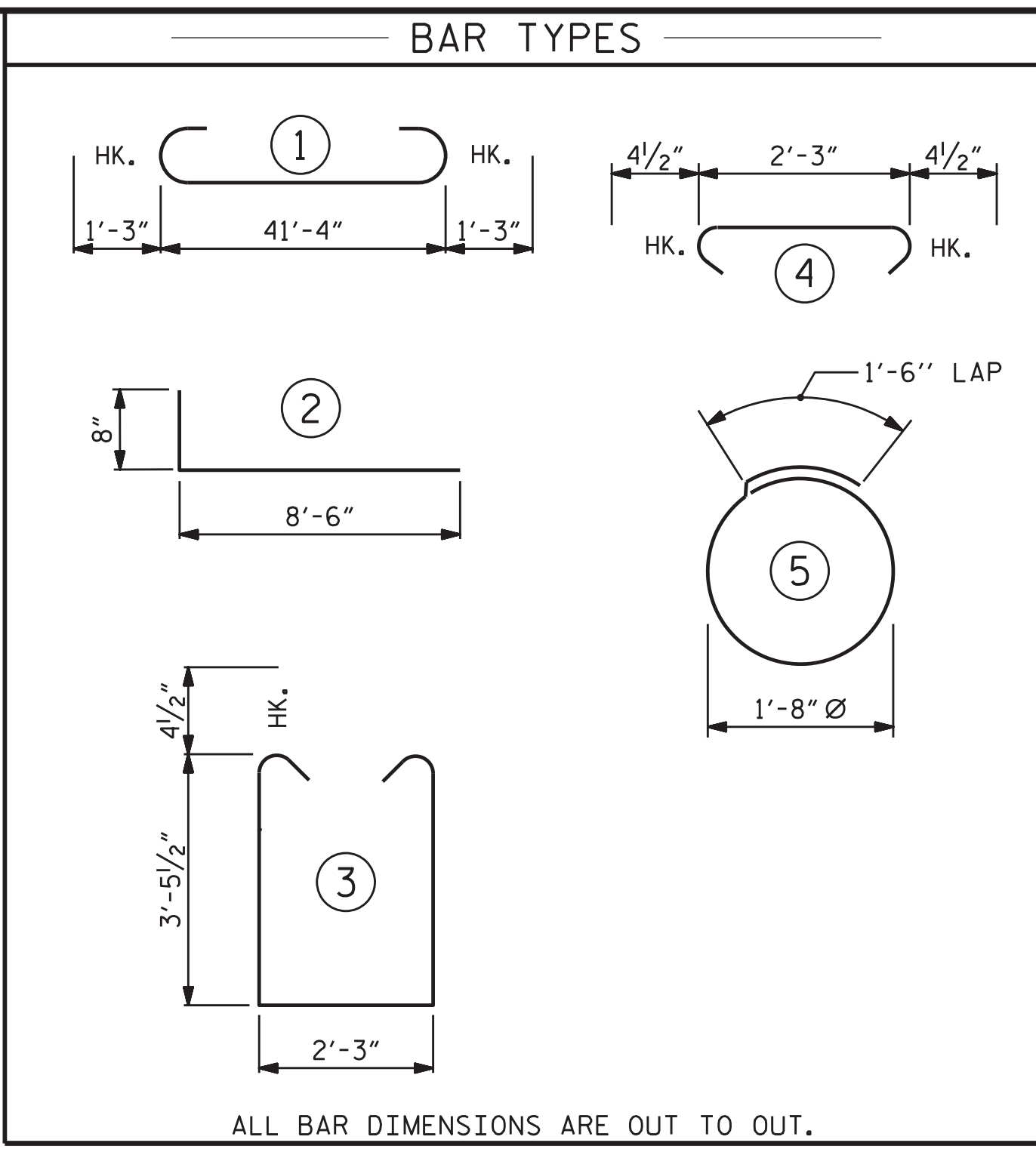
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

### TEMPORARY DRAINAGE AT END BENT



### PILE SPLICE DETAILS

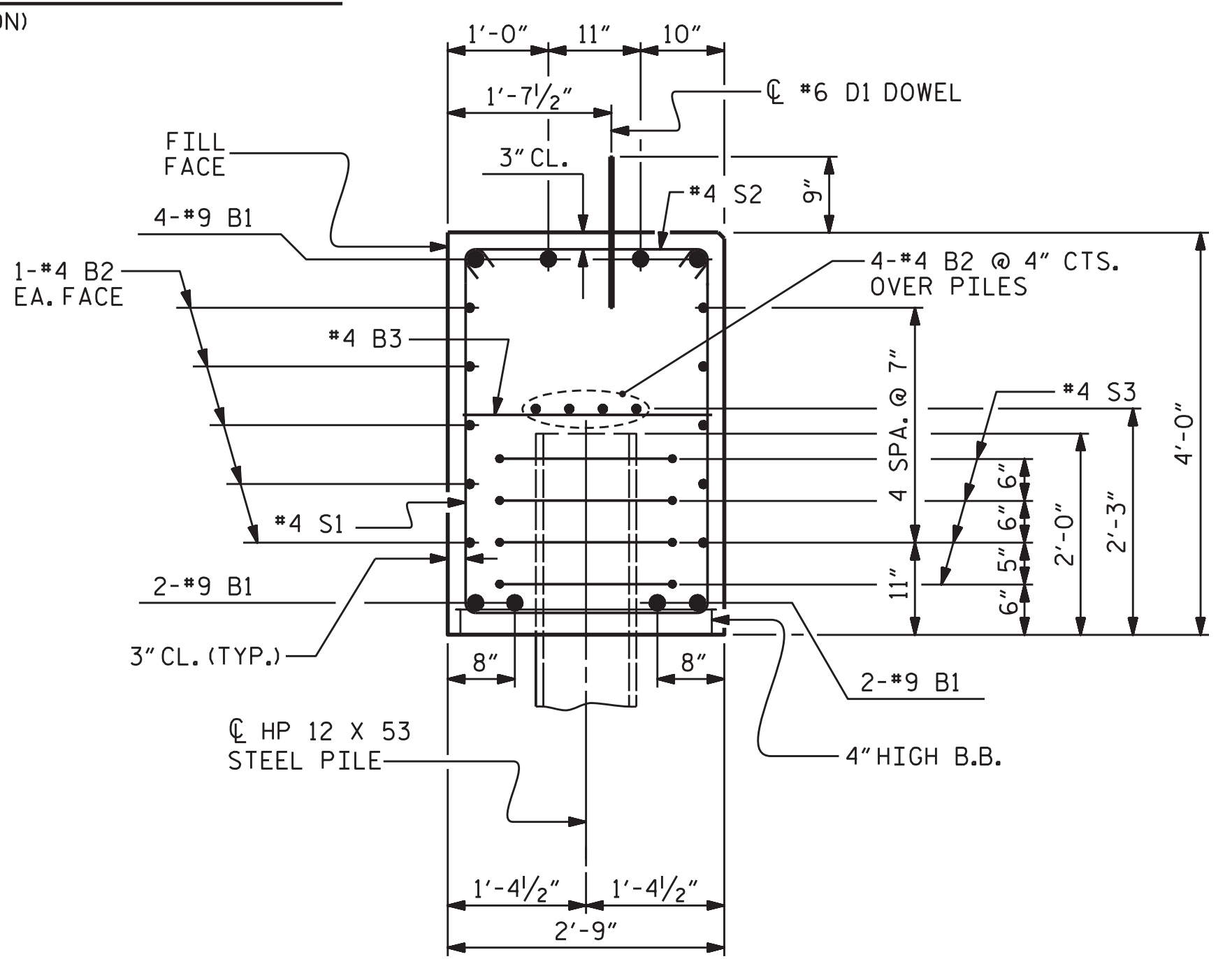
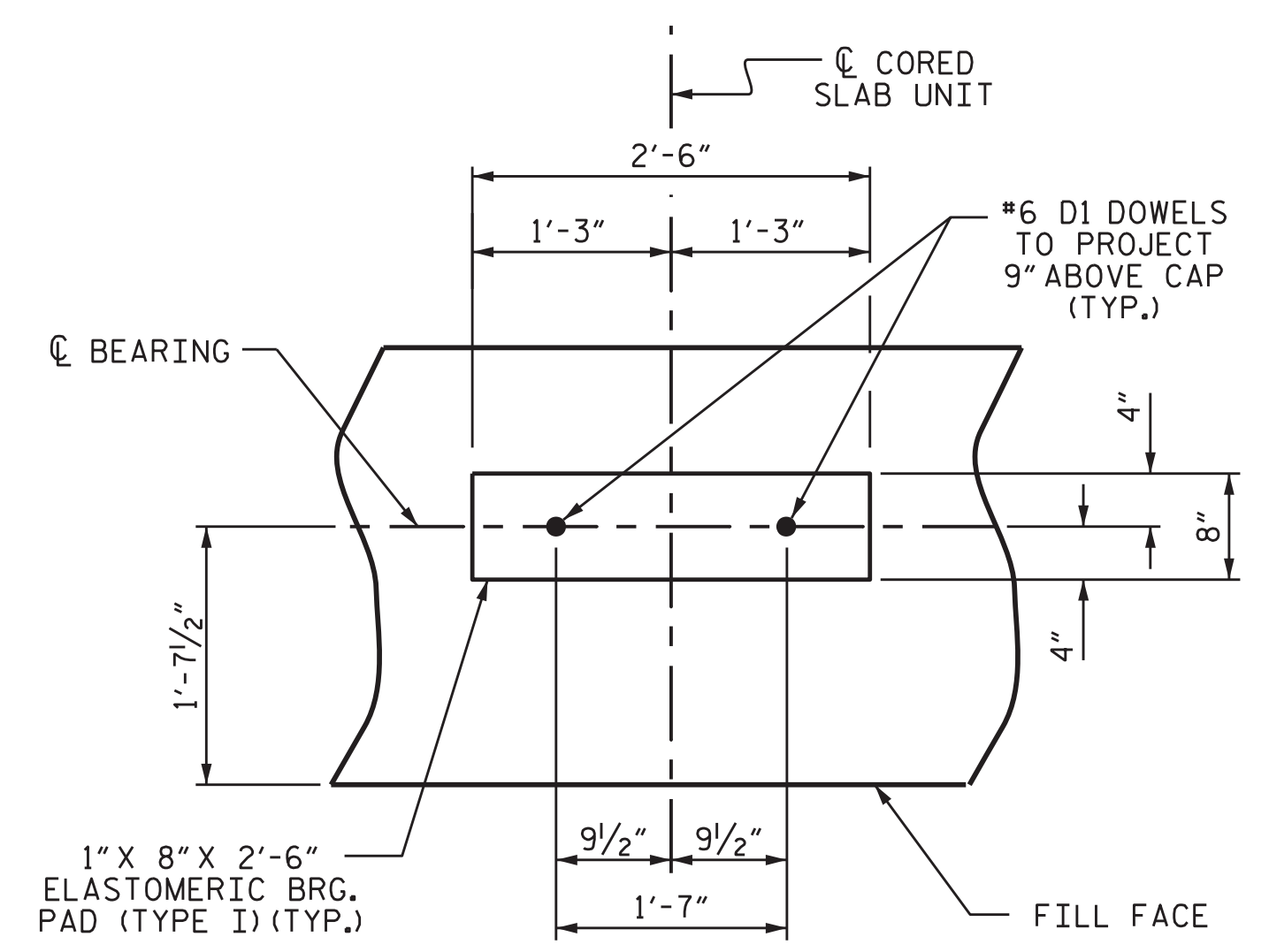


ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL FOR ONE END BENT						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*B1	8	#9		43'-10"	1193	
*B2	28	#4	STR	22'-2"	415	
*B3	11	#4	STR	2'-3"	17	
*D1	24	#6	STR	1'-6"	54	
*H1	40	#4	2	9'-2"	245	
*K1	16	#4	STR	3'-0"	32	
*S1	56	#4	3	9'-11"	371	
*S2	56	#4	4	3'-0"	112	
*S3	28	#4	5	6'-9"	126	
*V1	52	#4	STR	6'-0"	208	
* EPOXY COATED REINFORCING STEEL (FOR ONE END BENT)					2773	
CLASS AA CONCRETE BREAKDOWN (FOR ONE END BENT)						
POUR #1			CAP, LOWER PART OF WINGS & COLLARS		20.7	C.Y.
POUR #2			UPPER PART OF WINGS		2.1	C.Y.
TOTAL CLASS AA CONCRETE					22.8	C.Y.

### CORROSION PROTECTION FOR STEEL PILES DETAIL

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



### SECTION A-A

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



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 JAMES J. BARCO, ENGINEER  
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PROJECT NO. 17BP.2.R.94  
 PAMLICO COUNTY  
 STATION: 23+52.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT No. 1 & 2  
 DETAILS

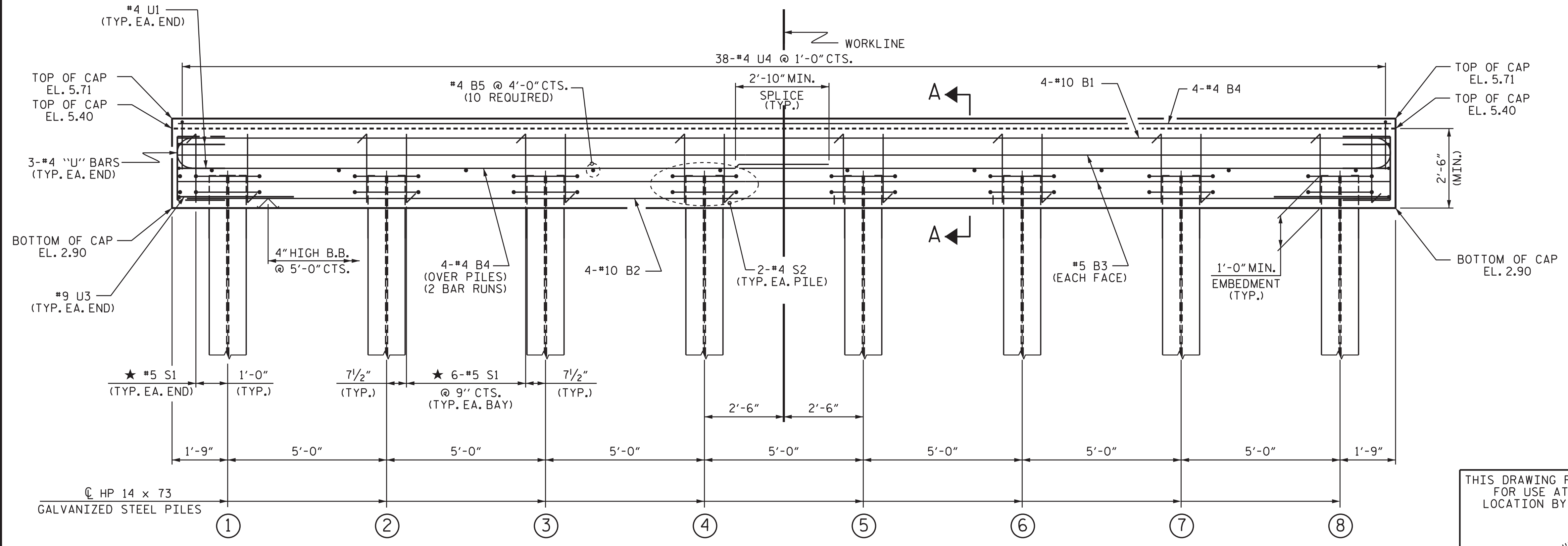
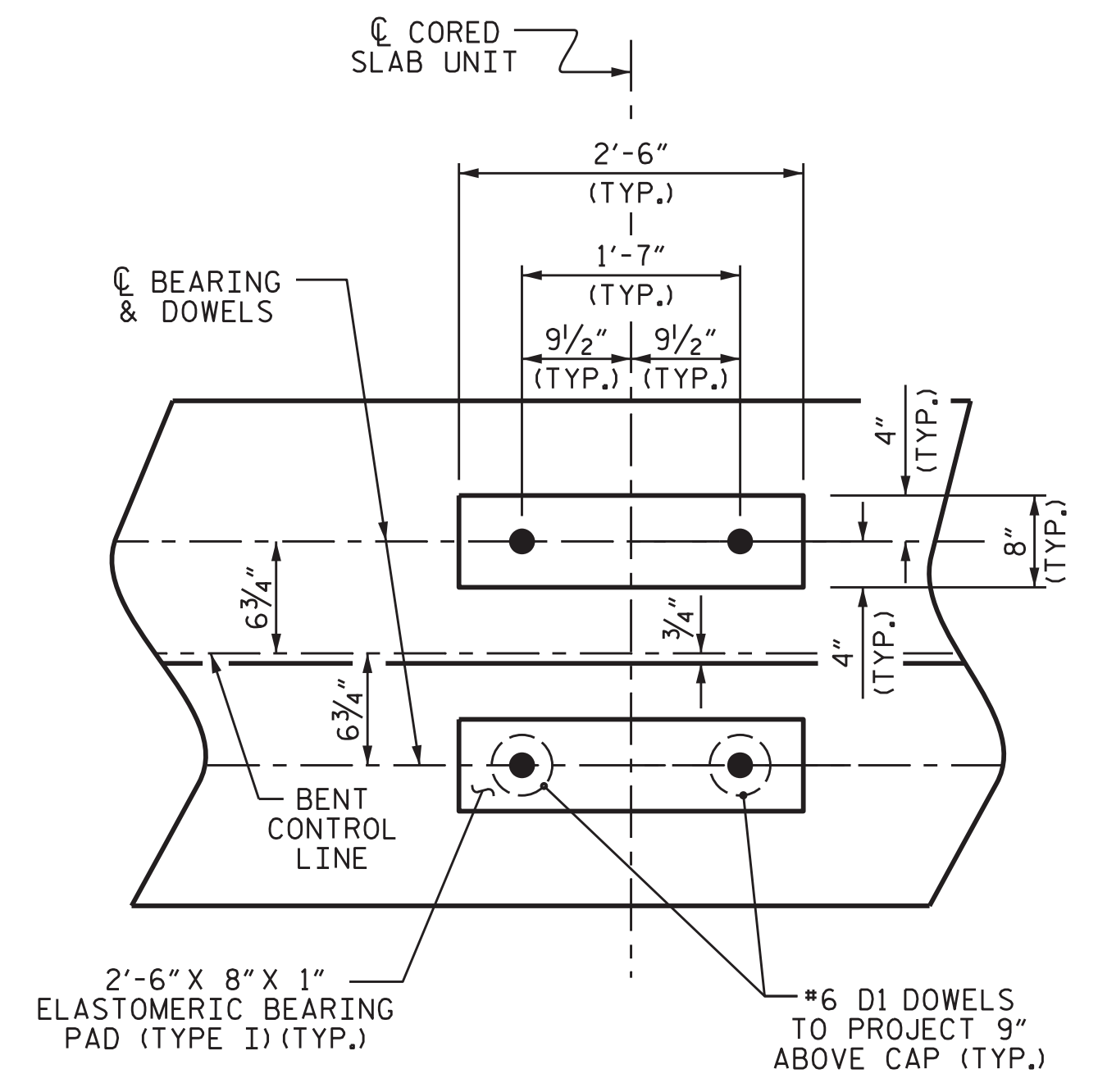
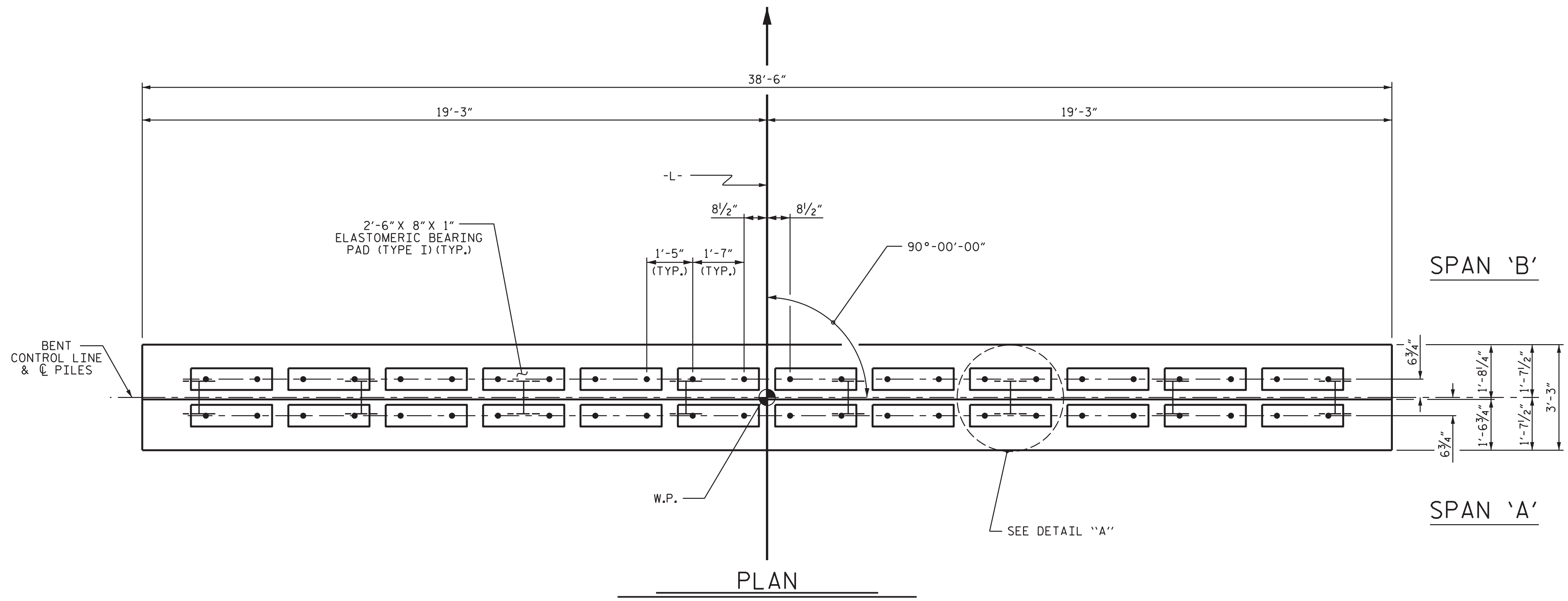
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DRAWN BY: WJH 12/11	REV. 4/17
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**NOTES**

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
- ★ INVERT ALTERNATE STIRRUPS.
- GALVANIZE THE TOP OF EACH INTERIOR BENT PILE A MINIMUM OF 30 FEET. GALVANIZE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.



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 STATION: 23+52.00 -L-

SHEET 1 OF 3

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SUBSTRUCTURE BENT No. 1					
REVISIONS					
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1			3		
2			4		
					SHEET NO. S-21 TOTAL SHEETS 26

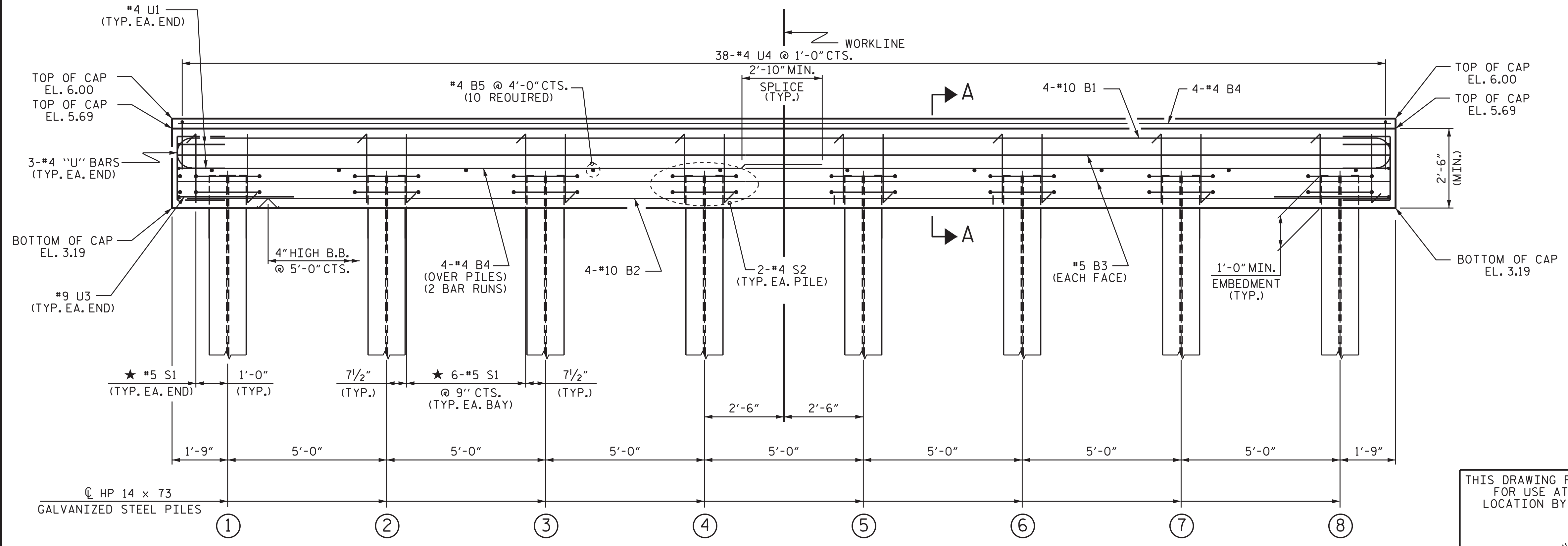
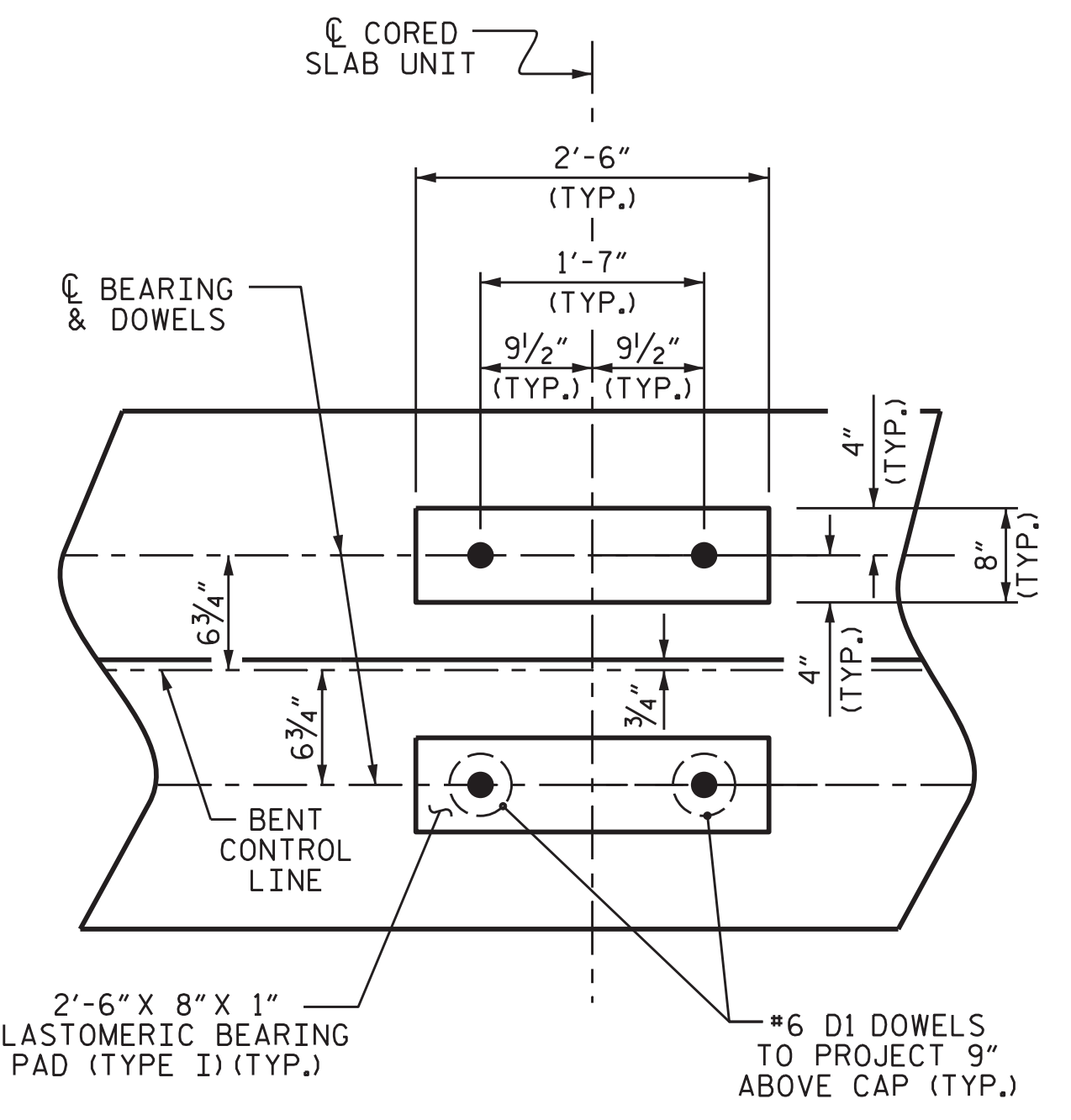
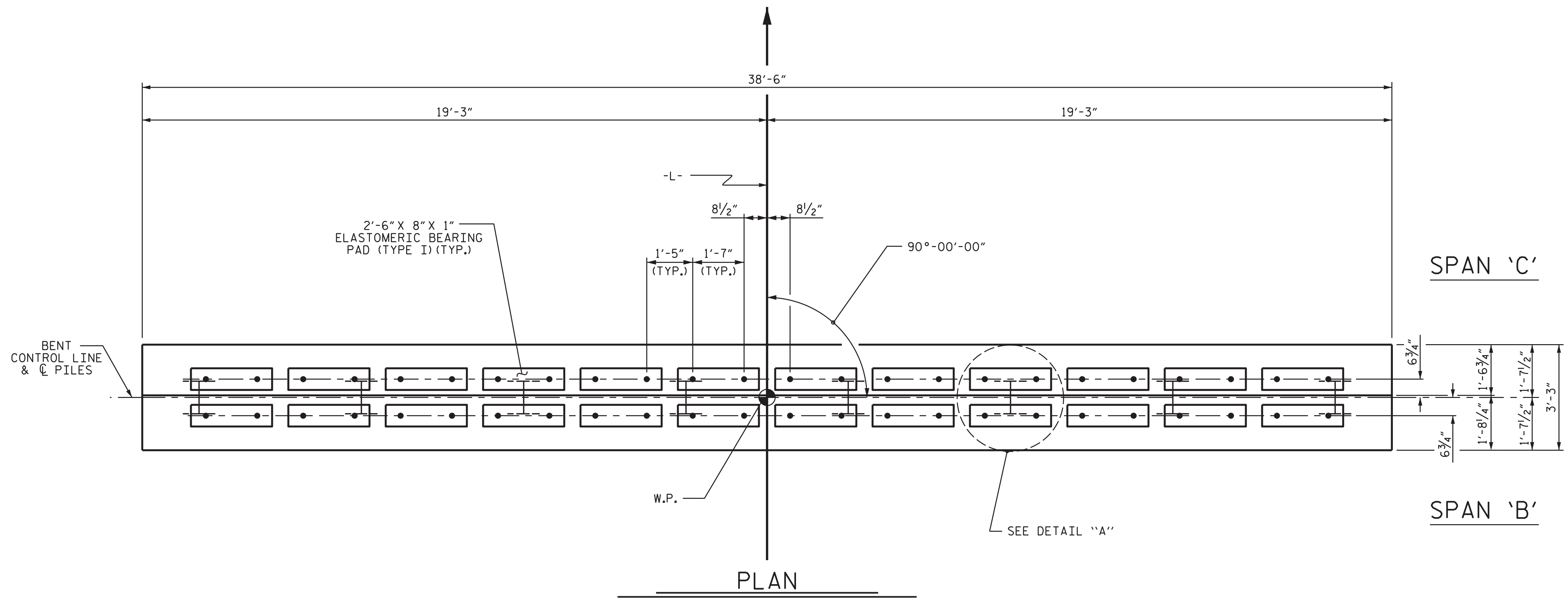
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### NOTES

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
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- GALVANIZE THE TOP OF EACH INTERIOR BENT PILE A MINIMUM OF 30 FEET. GALVANIZE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.



DETAIL "A"  
(DIMENSIONS ARE TYPICAL EACH BEARING)

### ELEVATION

FOR SECTION A-A, SEE SHEET 3 OF 3

PROJECT NO. 17BP.2.R.94  
 PAMLICO COUNTY  
 STATION: 23+52.00 -L-  
 SHEET 2 OF 3

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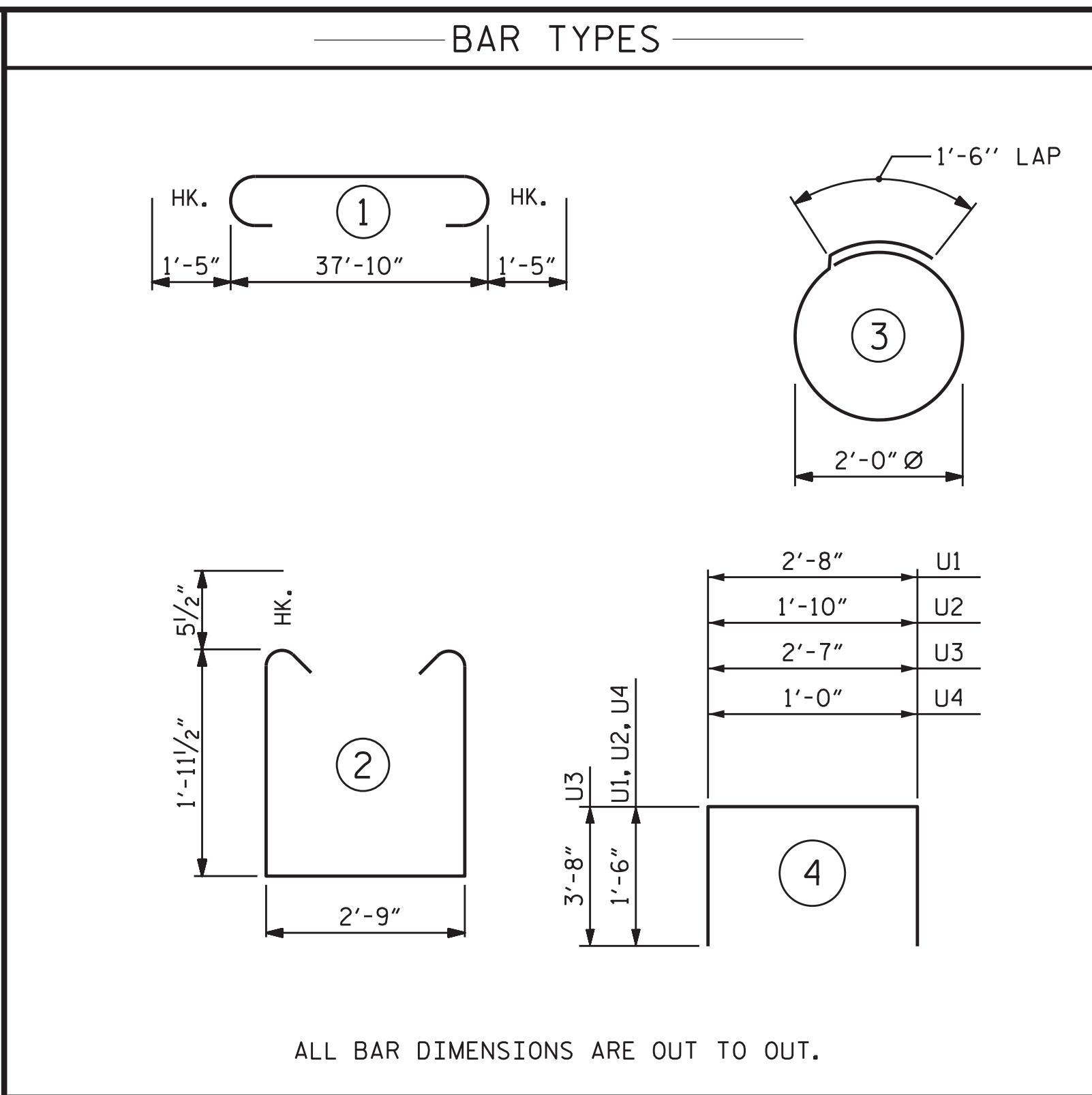
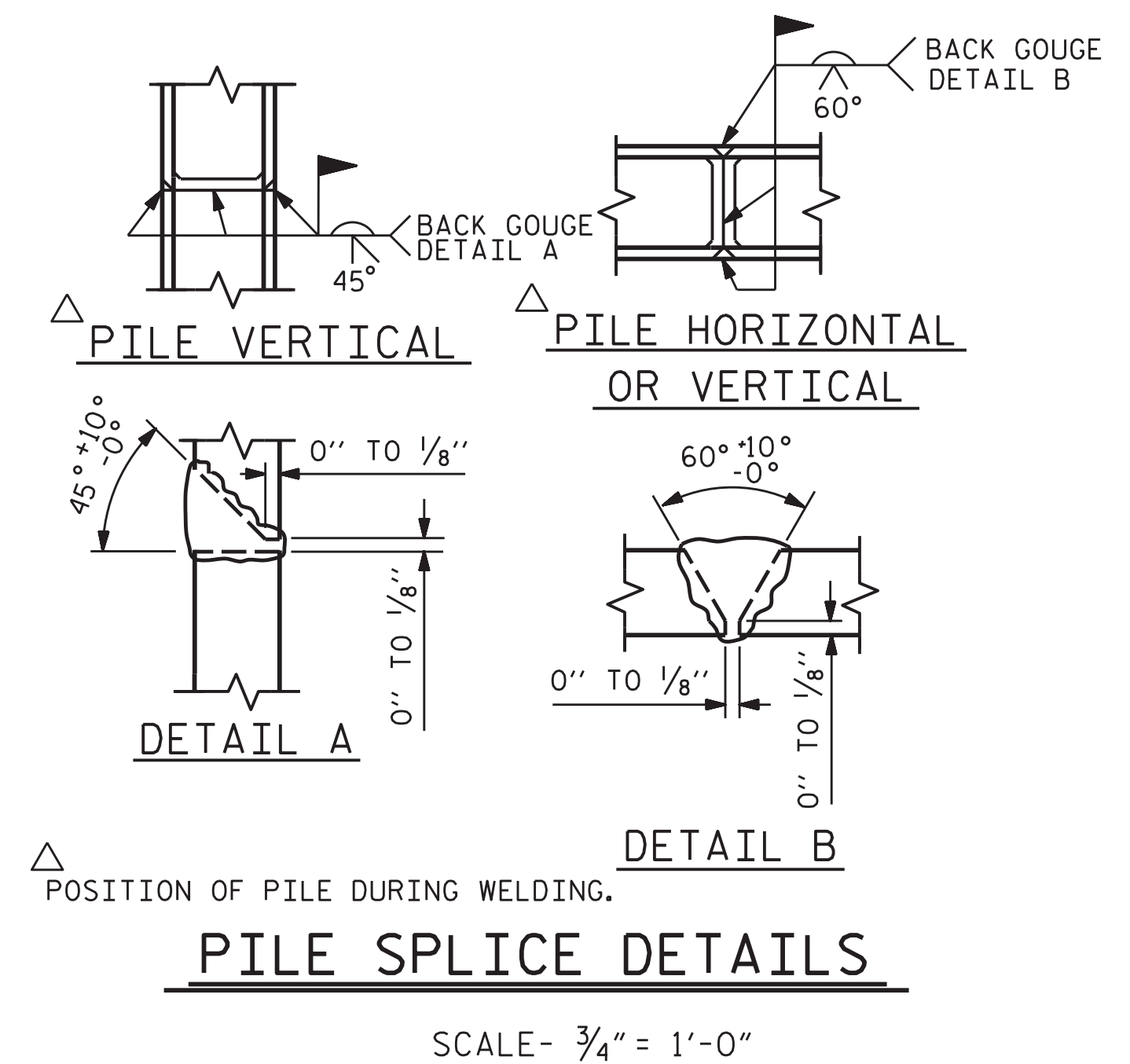
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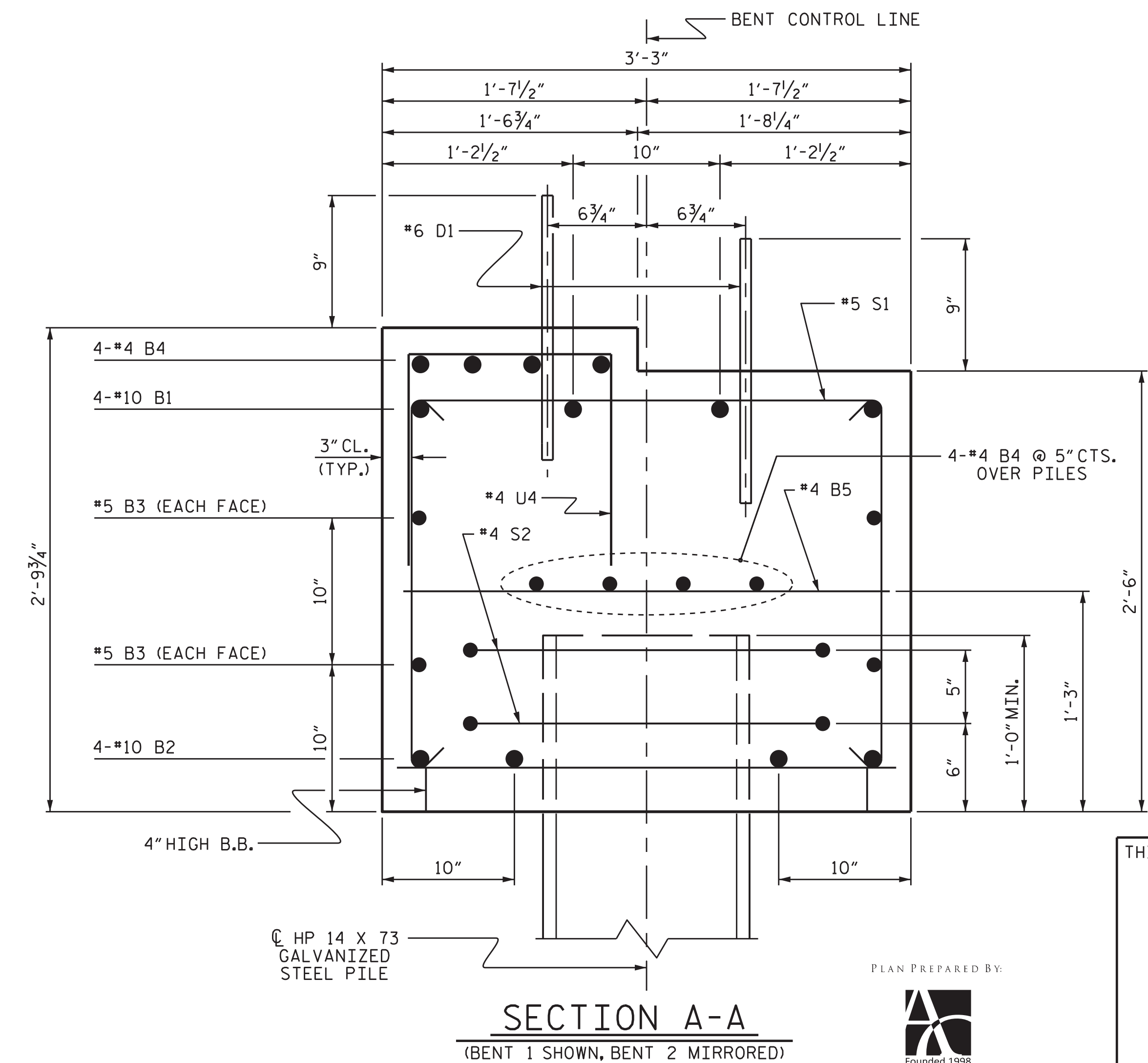
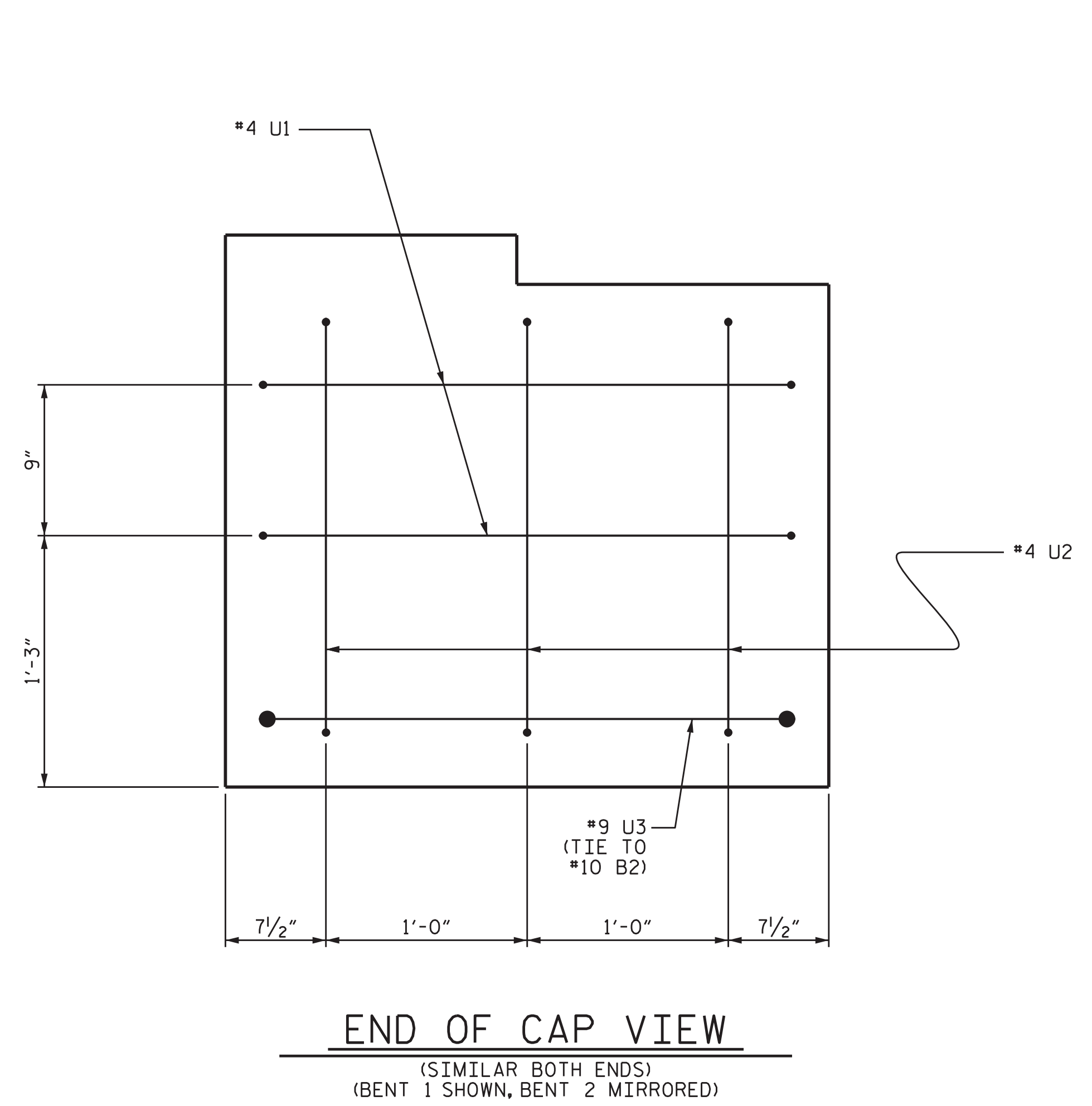
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BILL OF MATERIAL FOR ONE BENT					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B1	4	#10	1	40'-8"	700
*B2	4	#10	STR	38'-0"	654
*B3	4	#5	STR	38'-0"	159
*B4	16	#4	STR	20'-7"	220
*B5	10	#4	STR	2'-9"	18
*D1	48	#6	STR	1'-6"	108
*S1	44	#5	2	7'-7"	348
*S2	16	#4	3	7'-10"	84
*U1	4	#4	4	5'-8"	15
*U2	6	#4	4	4'-10"	19
*U3	2	#9	4	9'-11"	67
*U4	38	#4	4	4'-0"	102
* EPOXY COATED REINFORCING STEEL (FOR ONE BENT)					2494
CLASS AA CONCRETE BREAKDOWN (FOR ONE BENT)					
TOTAL CLASS AA CONCRETE					11.6 C.Y.



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PAMLICO COUNTY  
STATION: 23+52.00 -L-  
SHEET 3 OF 3

STATE OF NORTH CAROLINA  
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SUBSTRUCTURE  
BENT No. 1 & 2

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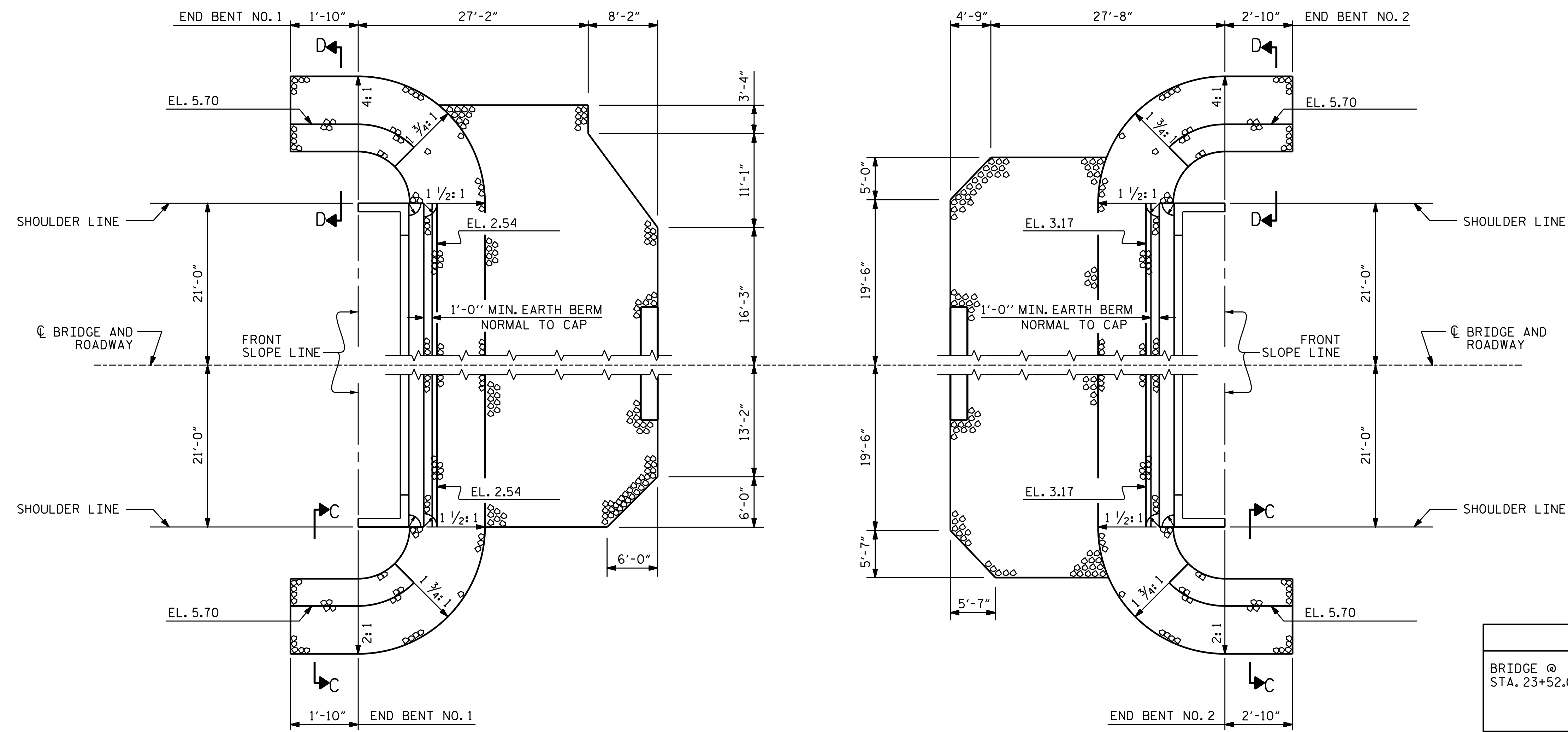
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\*\*\*\*\*DCN\*\*\*\*\*  
\*\*\*\*\*USERNAME\*\*\*\*\*

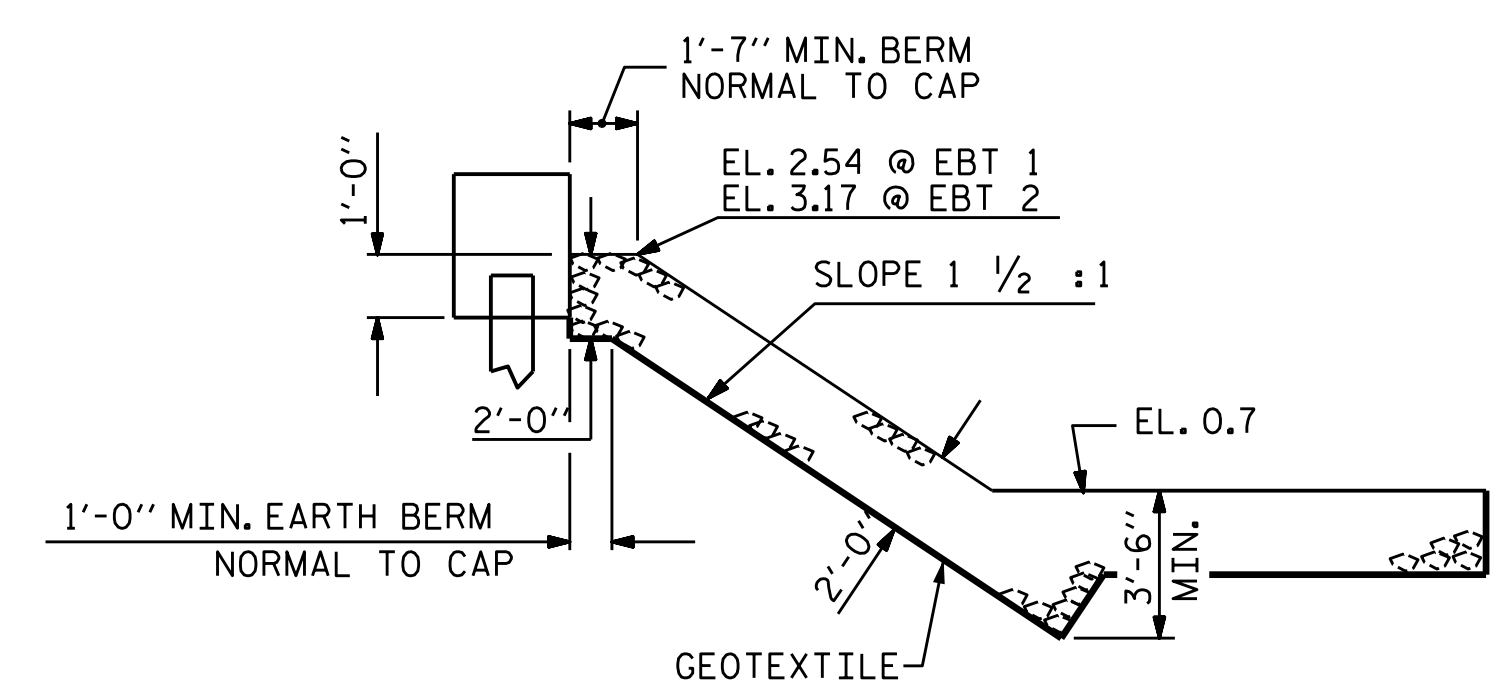
NOTES :  
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.



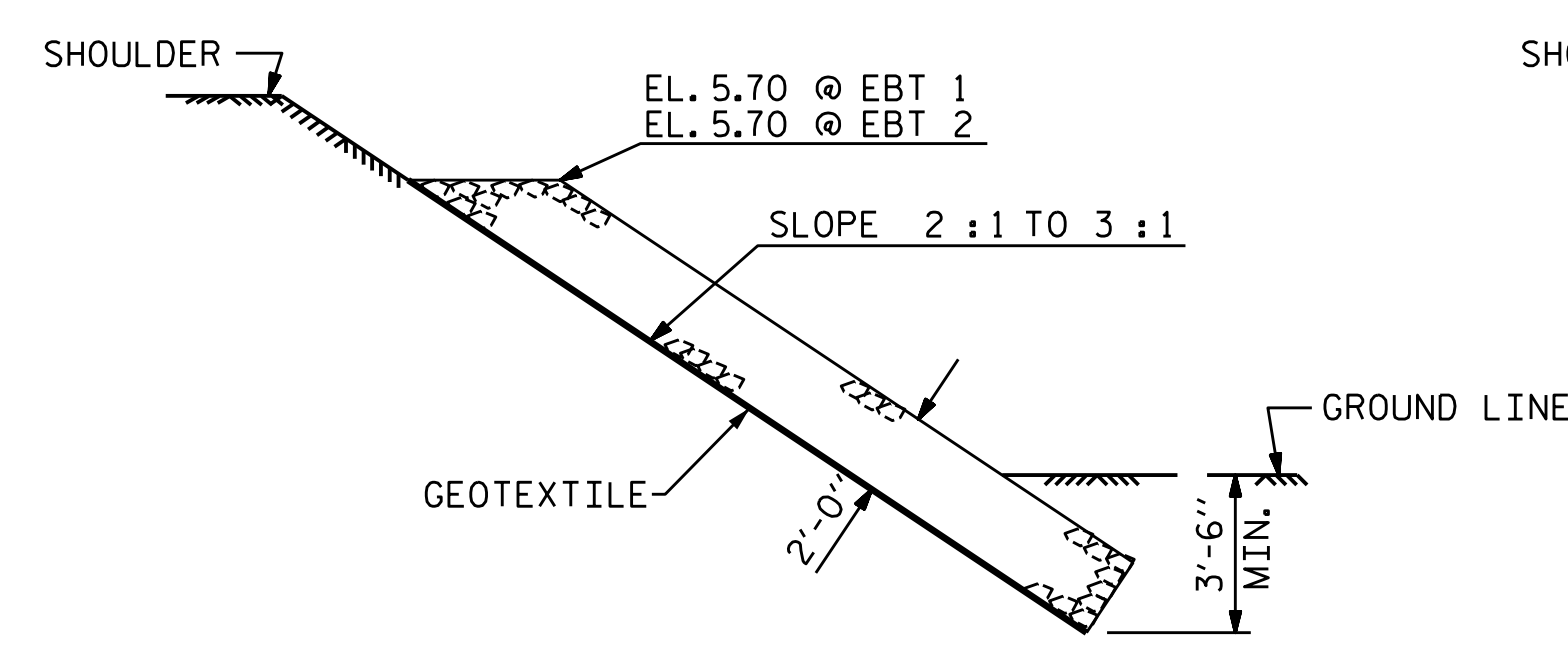
**BERM RIP RAPPED**

**BERM RIP RAPPED**

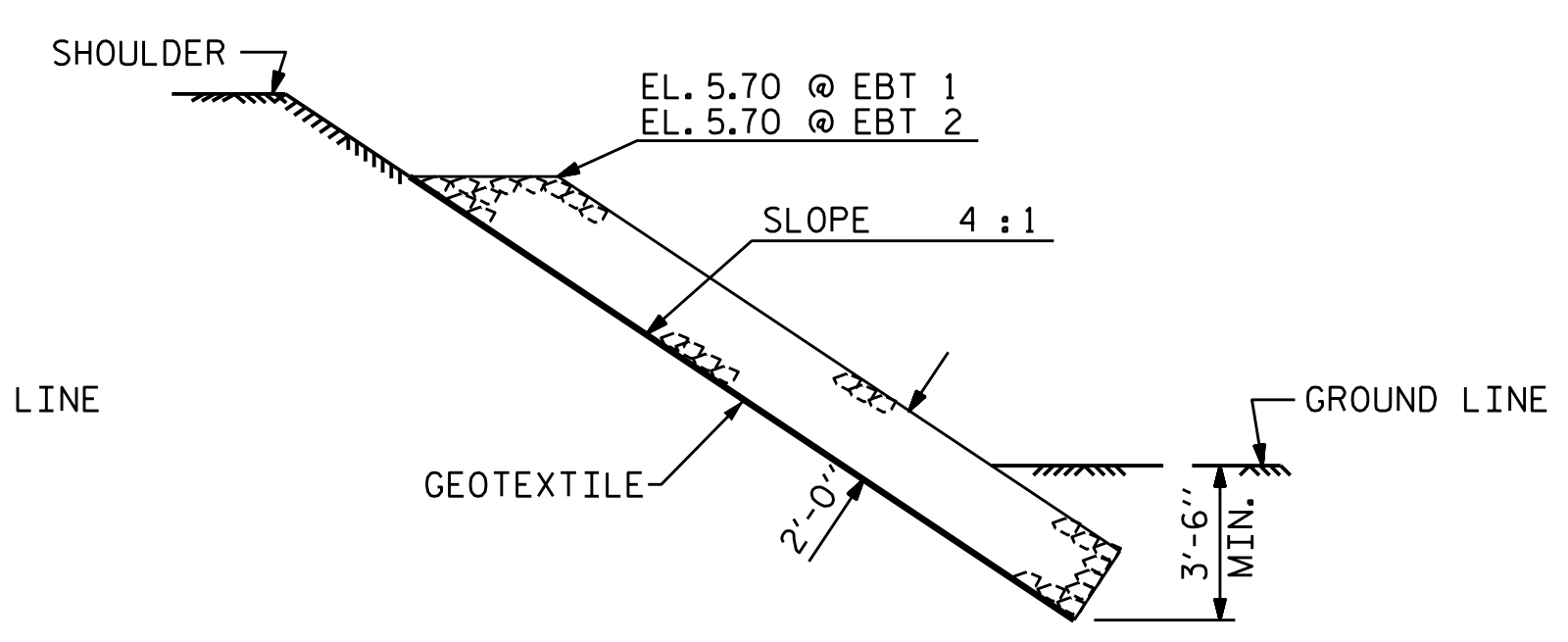
ESTIMATED QUANTITIES		
BRIDGE @ STA. 23+52.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	170	197
END BENT 2	153	177



**SECTION C-C  
BERM RIP RAPPED**



**SECTION C-C**



**SECTION D-D**

PROJECT NO. 17BP.2.R.94  
PAMLICO COUNTY  
STATION: 23+52.00 -L-

SHEET 1 OF 1

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

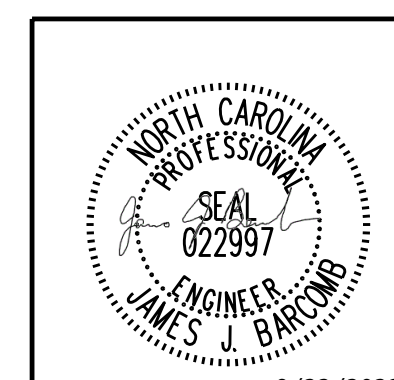
**RIP RAP DETAILS**

ASSEMBLED BY : DM SHAUT DATE : 4/22/22  
CHECKED BY : TG ZEBLO DATE : 4/25/22  
DRAWN BY : FCJ 2/88 REV. 8/16/99 RWW/LES  
CHECKED BY : ARB 8/88 REV. 10/17/00 RWW/LES  
REV. 5/1/06R TLA/GM

\*\*\*\*\*SYSTEM\*\*\*\*\*  
\*\*\*\*\*DCN\*\*\*\*\*  
\*\*\*\*\*USERNAME\*\*\*\*\*



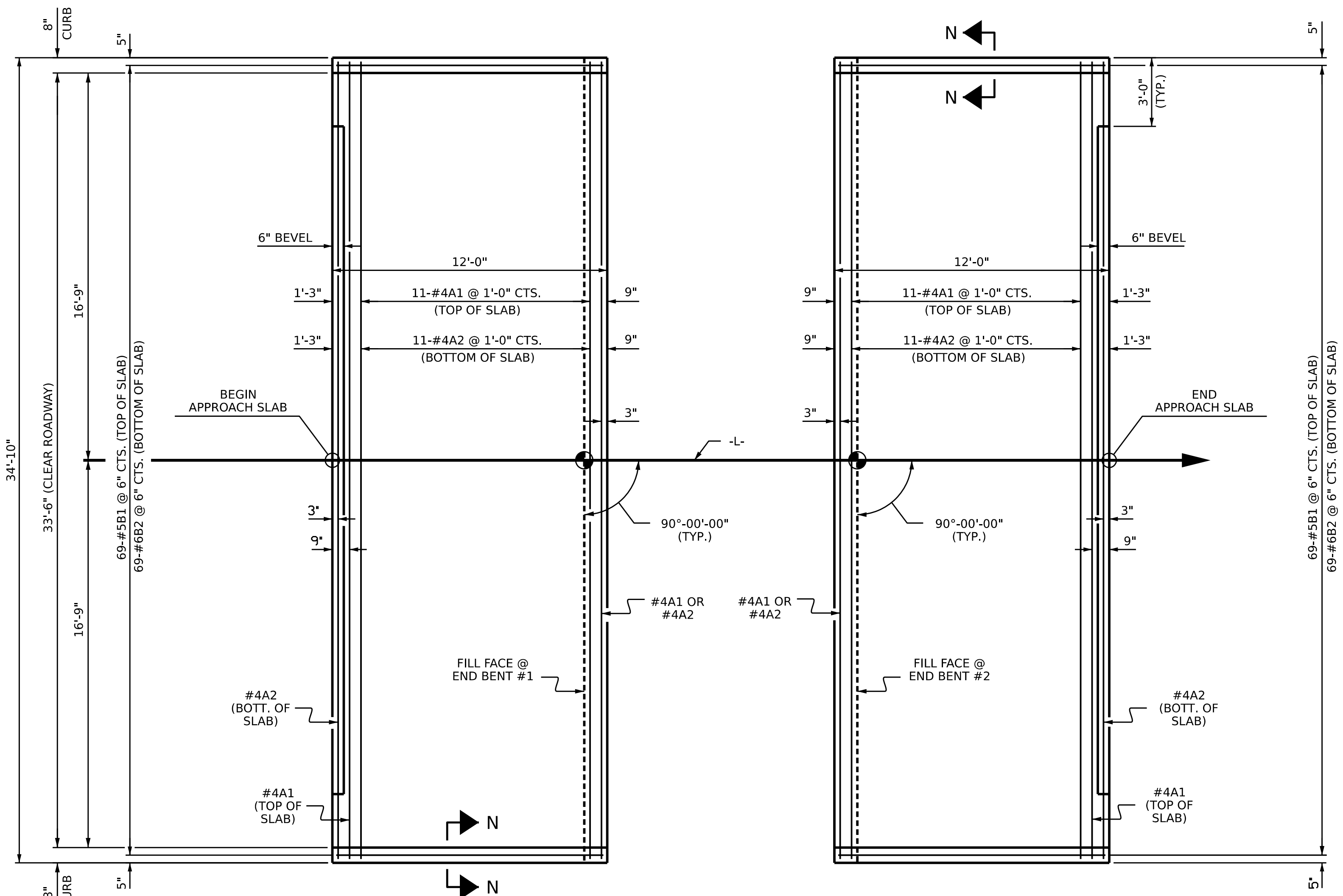
ALPHA & OMEGA GROUP  
CIVIL | STRUCTURAL | WATER RESOURCES  
ALPHA AND OMEGA GROUP, P.C.  
4601 LAKE BOONE TRAIL, SUITE 3C, RALEIGH, NC 27607  
Firm License No. C-1684 www.aogroup.com  
A&O PROJECT NO. 2021.053



DOCUMENT NOT CONSIDERED  
FINAL UNLESS ALL  
SIGNATURES COMPLETED

REVISIONS						SHEET NO. S-24
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			26



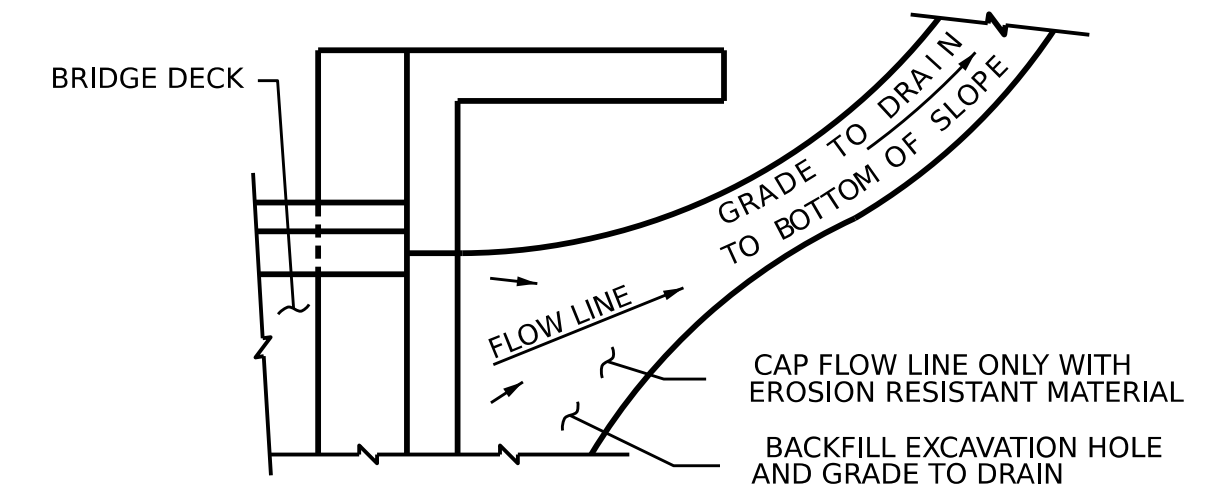


**PLAN @ END BENT #1**      **PLAN @ END BENT #2**

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS.

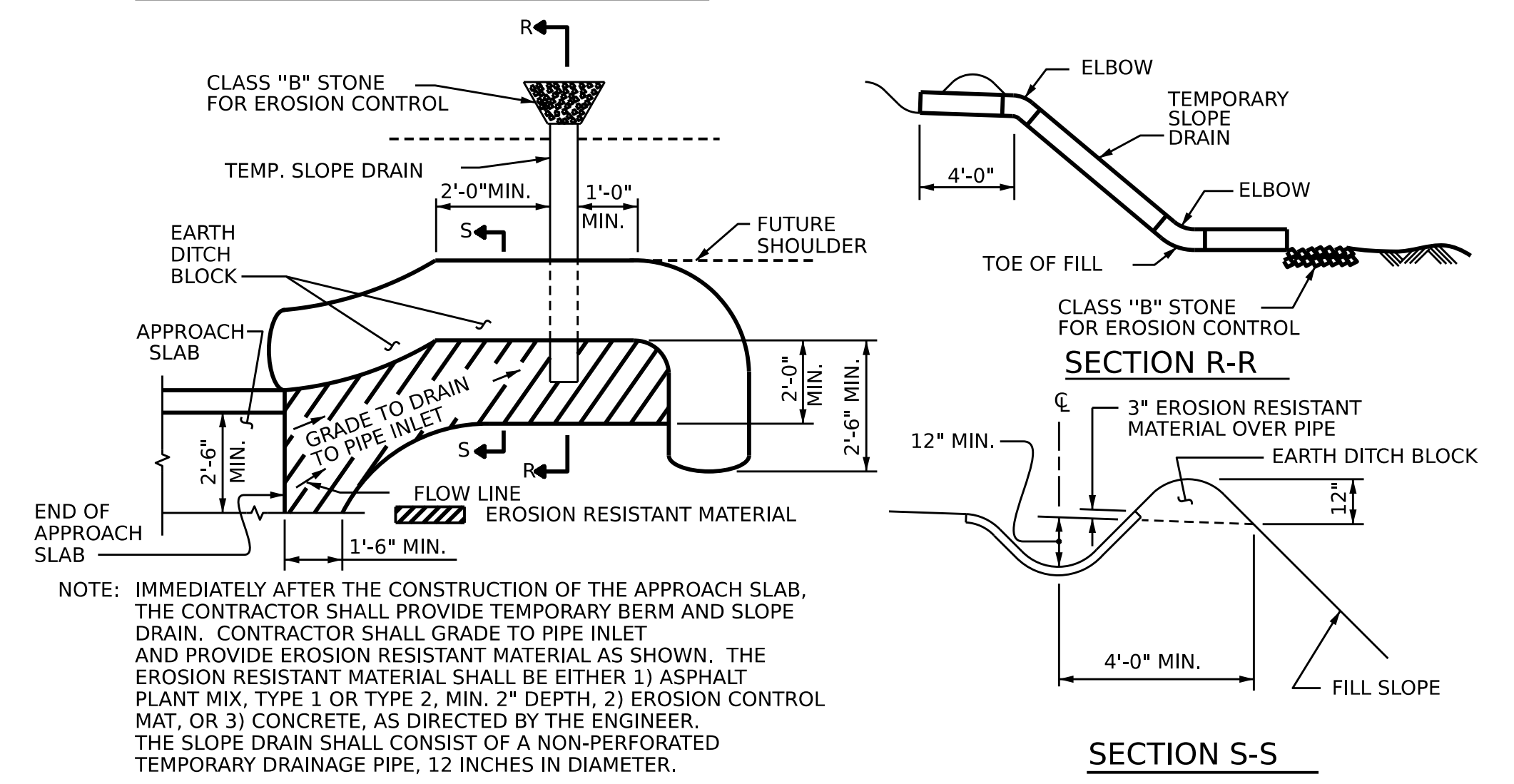
**NOTES**  
 FOR BRIDGE APPROACH FILL, SEE ROADWAY PLANS.  
 AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.  
 APPROACH SLAB GROOVING IS NOT REQUIRED.

BILL OF MATERIAL					
APPROACH SLAB AT EB #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	13	#4	STR	34'-10"	302
* A2	13	#4	STR	34'-10"	302
* B1	69	#5	STR	11'-2"	804
* B2	69	#6	STR	11'-8"	1209
* EPOXY COATED REINFORCING STEEL				LBS.	2617
CLASS AA CONCRETE				C. Y.	20.1
APPROACH SLAB AT EB #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	13	#4	STR	34'-10"	302
* A2	13	#4	STR	34'-10"	302
* B1	69	#5	STR	11'-2"	804
* B2	69	#6	STR	11'-8"	1209
* EPOXY COATED REINFORCING STEEL				LBS.	2617
CLASS AA CONCRETE				C. Y.	20.1



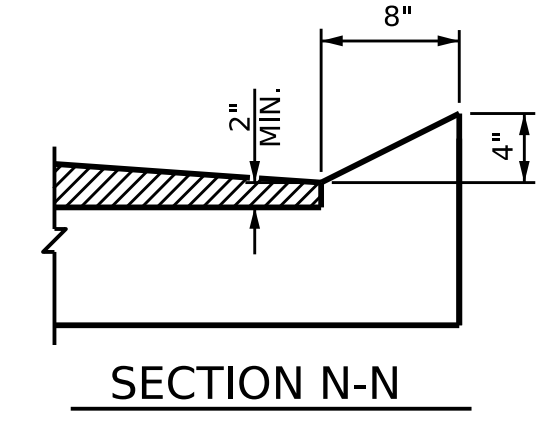
**NOTE:** IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

**TEMPORARY DRAINAGE DETAIL**



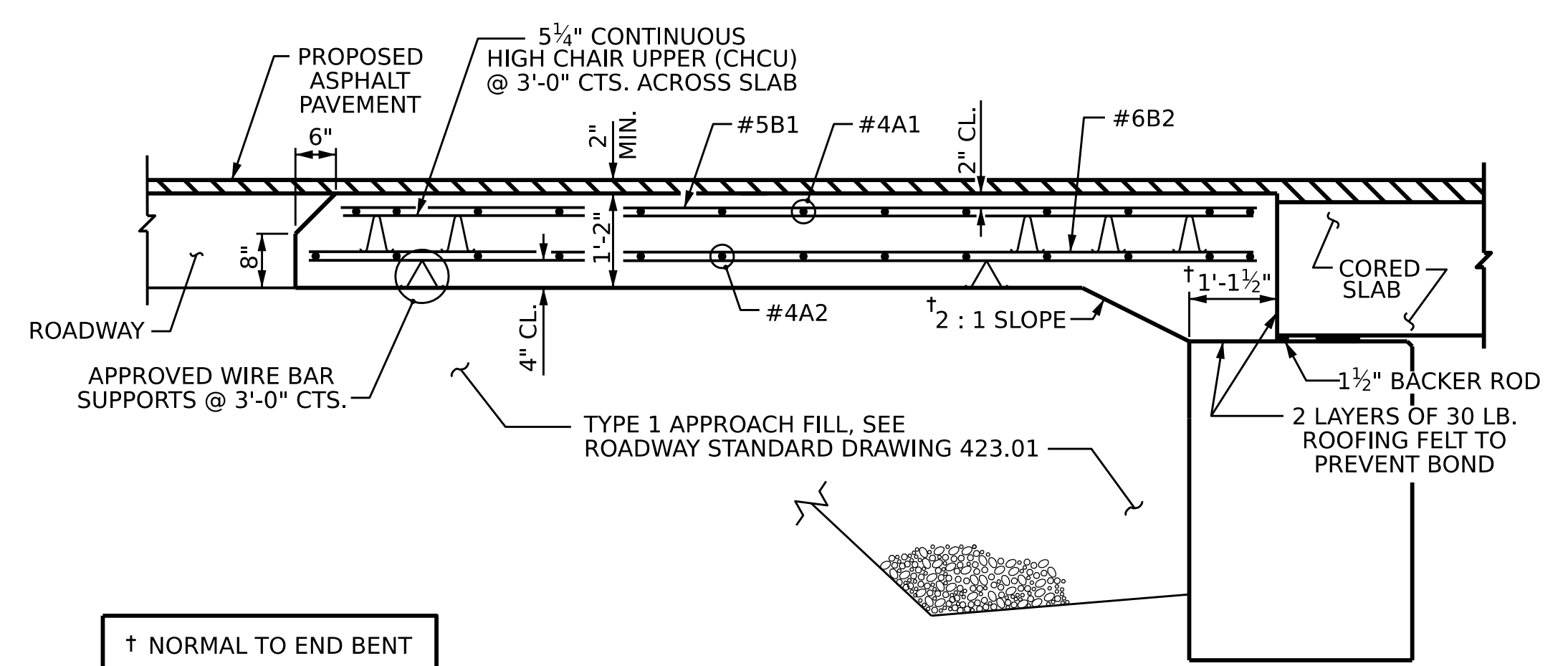
**NOTE:** IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, 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.

**PLAN VIEW**  
**TEMPORARY BERM AND SLOPE DRAIN DETAILS**  
 (TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



**CURB DETAILS**

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



**SECTION THRU SLAB**

ASSEMBLED BY: DM SHAUT	DATE: 4/22/22
CHECKED BY: TG ZEBLO	DATE: 4/25/22
DRAWN BY: KMM 3-08	REV. 06/19 MAA/THC
CHECKED BY: GM 3-08	REV. 08/19 BNB/THC
	REV. 07/23 BNB/SNM

\*\*\*\*\*SYSTEM\*\*\*\*\*  
 \*\*\*\*\*DGN\*\*\*\*\*  
 \*\*\*\*\*USER\*\*\*\*\*

PLAN PREPARED BY:  
  
**ALPHA & OMEGA GROUP**  
 CIVIL | STRUCTURAL | WATER RESOURCES  
 ALPHA AND OMEGA GROUP, PC  
 4601 LAKE BOONE TRAIL, SUITE 3C, RALEIGH, NC 27607  
 Firm License No. C-3684 www.aogroup.com  
 A&O PROJECT NO.: 2021.053

THIS DRAWING REVIEWED AND ADOPTED FOR USE AT THE REFERENCED LOCATION BY THE UNDERSIGNED:  
  
 3/4/2024  
 DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. 17BP.2.R.94  
PAMLICO COUNTY  
 STATION: 23+52.00 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
<b>STANDARD BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB UNIT (SUB-REGIONAL TIER) 90° SKEW</b>					
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					26

## STANDARD NOTES

### DESIGN DATA:

SPECIFICATIONS	- - - - -	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	- - - - -	SEE PLANS
IMPACT ALLOWANCE	- - - - -	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF STRUCTURAL STEEL - AASHTO M270 GRADE 36	- -	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	- -	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	- -	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION - GRADE 60	- - -	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	- - - - -	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	- - - - -	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR UNTREATED EXTREME FIBER STRESS	- - -	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	- - - - -	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	- - - - -	30 LBS. PER CU. FT. (MINIMUM)

### MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2018 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N.C. DEPARTMENT OF TRANSPORTATION.

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

### CONCRETE:

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

### CONCRETE CHAMFERS:

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

### DOWELS:

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

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

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

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

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

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

### REINFORCING STEEL:

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

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

### STRUCTURAL STEEL:

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

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

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

### HANDRAILS AND POSTS:

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

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

### SPECIAL NOTES:

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

# ENGLISH

JANUARY, 1990