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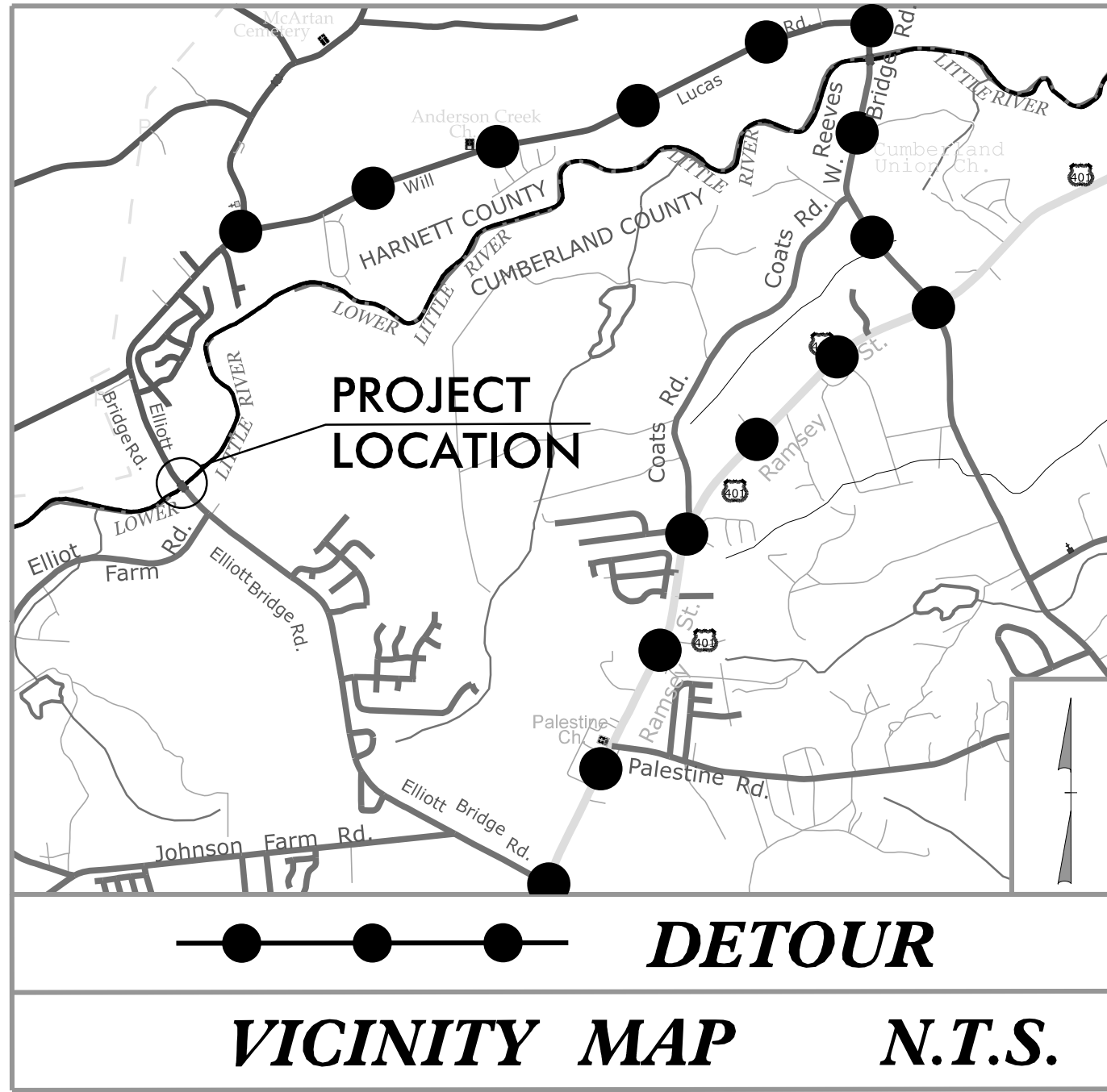
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09/08/99

TIP PROJECT: BP6.R019

CONTRACT: DF00565

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



100% PLANS

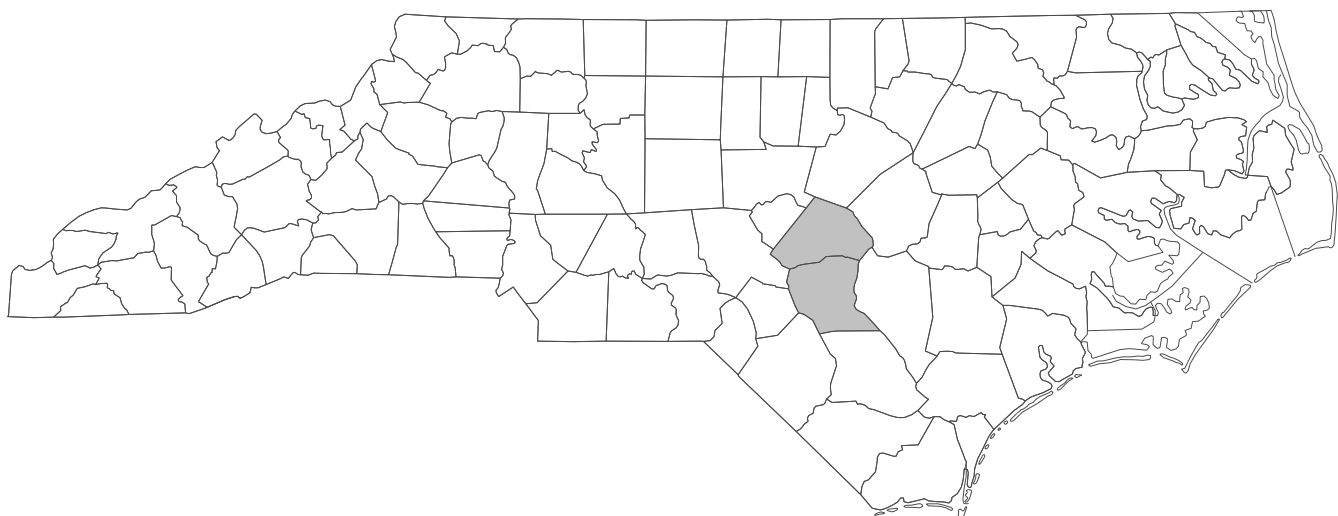
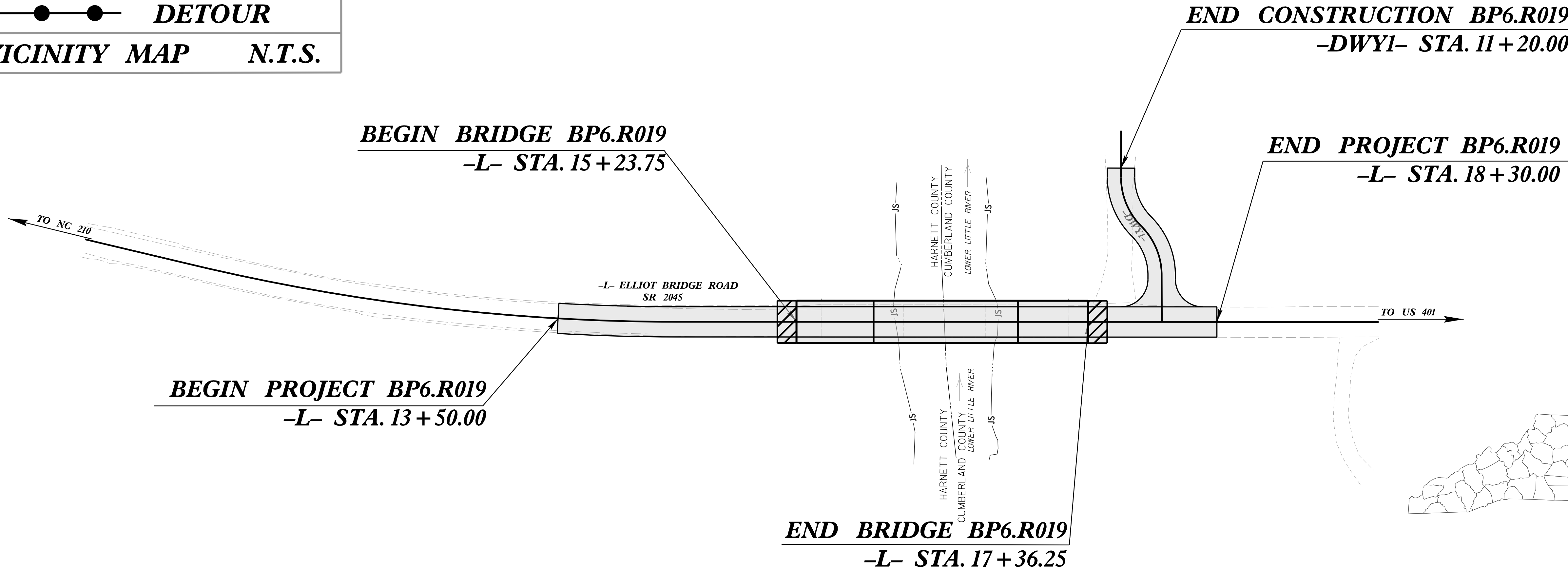
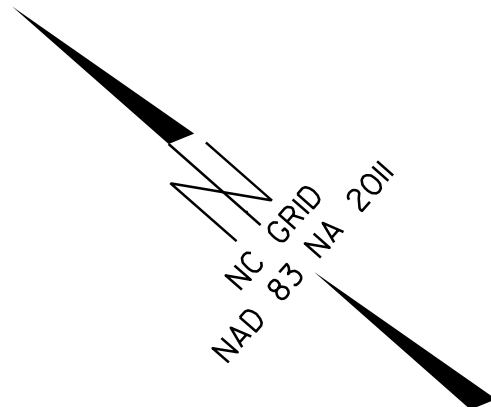
STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

HARNETT AND CUMBERLAND COUNTIES

LOCATION: *BRIDGE 420074 OVER LOWER LITTLE RIVER
ON SR 2045 (ELLIOT BRIDGE ROAD)*

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

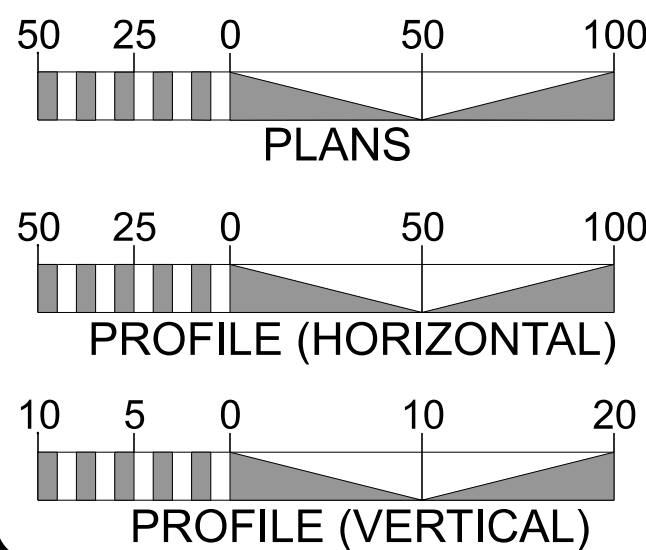
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP6.R019	11	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
BP6.R019.1		PE	
BP6.R019.2		ROW	
BP6.R019.3		CONST	



THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



DESIGN DATA

ADT 2024 = 3,100
ADT 2044 = 3,100

T = 6 %
V = 60 MPH

FUNC CLASS =
MINOR COLLECTOR
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT BP6.R019 = 0.051 MILES

LENGTH STRUCTURE TIP PROJECT BP6.R019 = 0.040 MILES

TOTAL LENGTH TIP PROJECT BP6.R019 = 0.091 MILES

PREPARED IN THE OFFICE OF:

RS&H

8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NC 27615
NC FIRM LICENSE No: F-0493

FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
OCTOBER 25, 2025

LETTING DATE:
OCTOBER 21, 2026

DANA PACZEK, PE
PROJECT ENGINEER

JENNY YANG, EI
PROJECT DESIGN ENGINEER

ADAM BRITT
NCDOT CONTACT

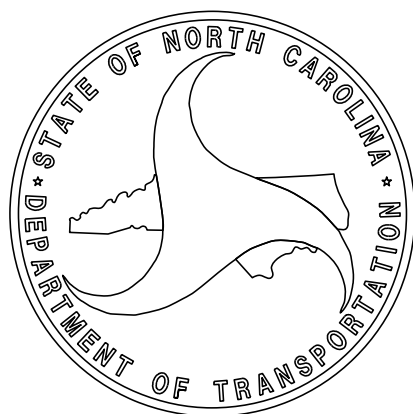
HYDRAULICS ENGINEER



SIGNATURE: _____
ROADWAY DESIGN ENGINEER



SIGNATURE: _____
P.E.



INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2C-1 THRU 2C-4	ROADWAY DETAILS
3B-1	EARTHWORK, GUARDRAIL, SHOULDER BERM GUTTER, AND PAVEMENT REMOVAL SUMMARIES
3D-1	DRAINAGE SUMMARY
4	PLAN SHEET
5	PROFILE SHEET
RW-1 THRU RW-04	RIGHT OF WAY SHEET
TMP-1 THRU TMP-3	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-2	SIGNING PLANS
X-1A	CROSS-SECTION SUMMARY SHEET
X-1 THRU X-10	CROSS-SECTION SHEETS
S-1 THRU S-28	STRUCTURE PLANS
SN	STRUCTURE STANDARD NOTES SHEET

GENERAL NOTES

GENERAL NOTES:	2024 SPECIFICATIONS EFFECTIVE: 01-16-2024 REVISED:
GRADE LINE: GRADING AND SURFACING:	THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.
CLEARING:	CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.
SUPERELEVATION:	ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.
SHOULDER CONSTRUCTION:	ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01
GUARDRAIL:	THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.
TEMPORARY SHORING:	SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.
END BENTS:	THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.
UTILITIES:	UTILITY OWNERS ON THIS PROJECT ARE BRIGHTSPEED AND HARNETT REGIONAL WATER ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.
RIGHT-OF-WAY MARKERS:	ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY CONTRACT.

STANDARD DRAWINGS

2024 ROADWAY ENGLISH STANDARD DRAWINGS	EFF. 01-16-2024 REV.
The following Roadway Standards as appear in "Roadway Standard Drawings" Contracts Standards and Development Unit - N. C. Department of Transportation - Raleigh, N. C., Dated January 16, 2024 are applicable to this project and by reference hereby are considered a part of these plans:	
STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation (Use Details in Lieu of Standards for Sheet 1 and 2 of 2)
DIVISION 4 - MAJOR STRUCTURES	
423.01	Bridge Approach Fills - Type 1 Approach Fill for Bridge Abutment
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement (Use Details in Lieu of Standards for Sheet 4 and 6 of 15)
862.02	Guardrail Installation
862.03	Structure Anchor Units (Use Detail in Lieu of Standard for Sheet 8 of 9)

BPG.R019

IA

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HARNETT AND CUMBERLAND
COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN
ENGINEER

HYDRAULICS
ENGINEER

DOCUMENT NOT CONSIDERED FINAL
UNTIL ALL SIGNATURES COMPLETED

PREPARED BY

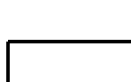
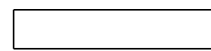
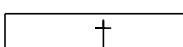
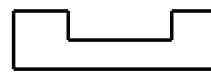
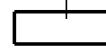
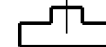
8501 SUN FOREST ROAD, SUITE 400
RALEIGH, NC 27615
NC PERM LICENSE NO. F-0492

Note: Not to Scale

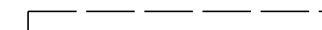
BOUNDARIES AND PROPERTY:

State Line	_____	_____
County Line	_____	_____
Township Line	_____	_____
City Line	_____	_____
Reservation Line	_____	_____
Property Line	_____	_____
Existing Iron Pin (EIP)	_____	 EIP
Computed Property Corner	_____	
Existing Concrete Monument (ECM)	_____	 ECM
Parcel / Sequence Number	_____	 123
Existing Fence Line	_____	  
Proposed Woven Wire Fence	_____	
Proposed Chain Link Fence	_____	
Proposed Barbed Wire Fence	_____	
Existing Wetland Boundary	_____	 WL.B
Proposed Wetland Boundary	_____	 WL.B
Existing Endangered Animal Boundary	_____	 EAB
Existing Endangered Plant Boundary	_____	 EPB
Existing Historic Property Boundary	_____	 HPB
Known Contamination Area: Soil	_____	 S  S
Potential Contamination Area: Soil	_____	 S  S
Known Contamination Area: Water	_____	 W  W
Potential Contamination Area: Water	_____	 W  W
Contaminated Site: Known or Potential	_____	 

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

Stream or Body of Water	
Hydro, Pool or Reservoir	
Jurisdictional Stream	
Buffer Zone 1	
Buffer Zone 2	
Flow Arrow	
Disappearing Stream	
Spring	
Wetland	
Proposed Lateral, Tail, Head Ditch	
False Sump	

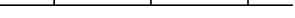
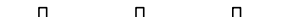
RAILROADS:

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	
Permanent Construction Easement	
Proposed Temporary Drainage Easement	
Proposed Permanent Drainage Easement	
Proposed Permanent Drainage/Utility Easement	
Proposed Permanent Utility Easement	
Proposed Temporary Utility Easement	
Proposed Aerial Utility Easement	

ROADS AND RELATED FEATURES:

Existing Edge of Pavement		
Existing Curb		
Proposed Slope Stakes Cut		
Proposed Slope Stakes Fill		
Proposed Curb Ramp		
Existing Metal Guardrail		
Proposed Guardrail		
Existing Cable Guiderail		
Proposed Cable Guiderail		
Equality Symbol		
Pavement Removal		

VEGETATION:

Single Tree _____

Single Shrub _____

CONVENTIONAL PLAN SHEET SYMBOLS

Hedge _____ 

Woods Line _____ 

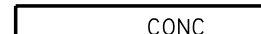
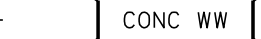
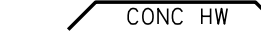
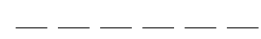
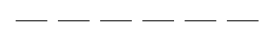
Orchard _____ 

Vineyard _____

Vineyard

EXISTING STRUCTURES:

MAJOR:

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

UTILITIES:

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

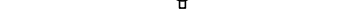
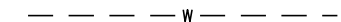
POWER:

Existing Power Pole	_____	
Proposed Power Pole	_____	
Existing Joint Use Pole	_____	
Proposed Joint Use Pole	_____	
Power Manhole	_____	
Power Line Tower	_____	
Power Transformer	_____	
U/G Power Cable Hand Hole	_____	
H-Frame Pole	_____	
U/G Power Line Test Hole (SUE - LOS A)*	—	
U/G Power Line (SUE - LOS B)*	_____	-----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	
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)*	-----TFO-----
U/G Fiber Optics Cable (SUE - LOS C)*	-----TFO-----
U/G Fiber Optics Cable (SUE - LOS D)*	-----TFO-----

WATER:

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

A/G Water

TV:

TV Pedestal _____	
TV Tower _____	
U/G TV Cable Hand Hole _____	
U/G TV Test Hole (SUE - LOS A)* _____	
U/G TV Cable (SUE - LOS B)* _____	----- 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 -----

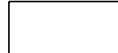
GAS:

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:

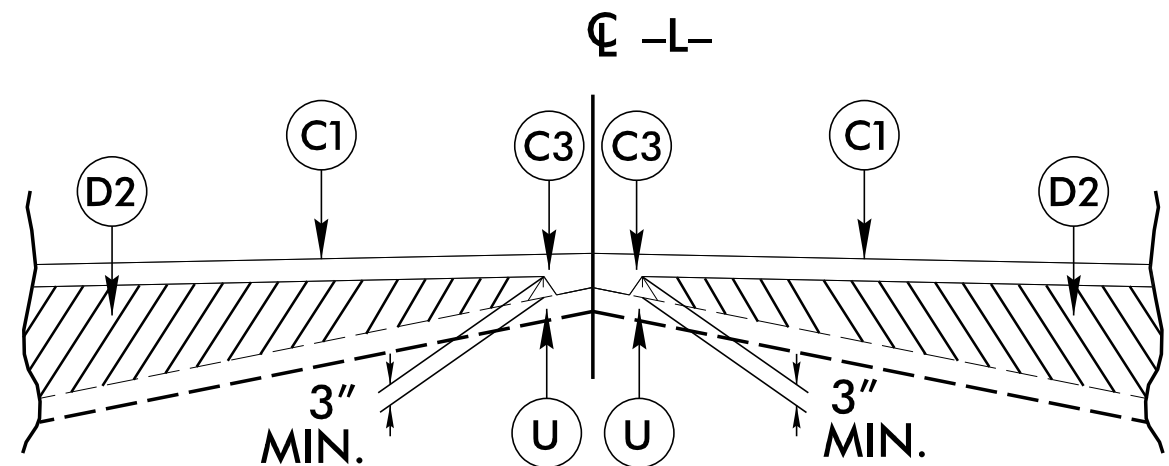
Sanitary Sewer Manhole	_____	
Sanitary Sewer Cleanout	_____	
U/G Sanitary Sewer Line	_____	SS _____
Above Ground Sanitary Sewer	_____	<u>A/G Sanitary Sewer</u>
SS Force Main Line Test Hole (SUE - LOS A)*		
SS Force Main Line (SUE - LOS B)*	_____	-----FSS-----
SS Force Main Line (SUE - LOS C)*	_____	-----FSS-----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

MISCELLANEOUS:

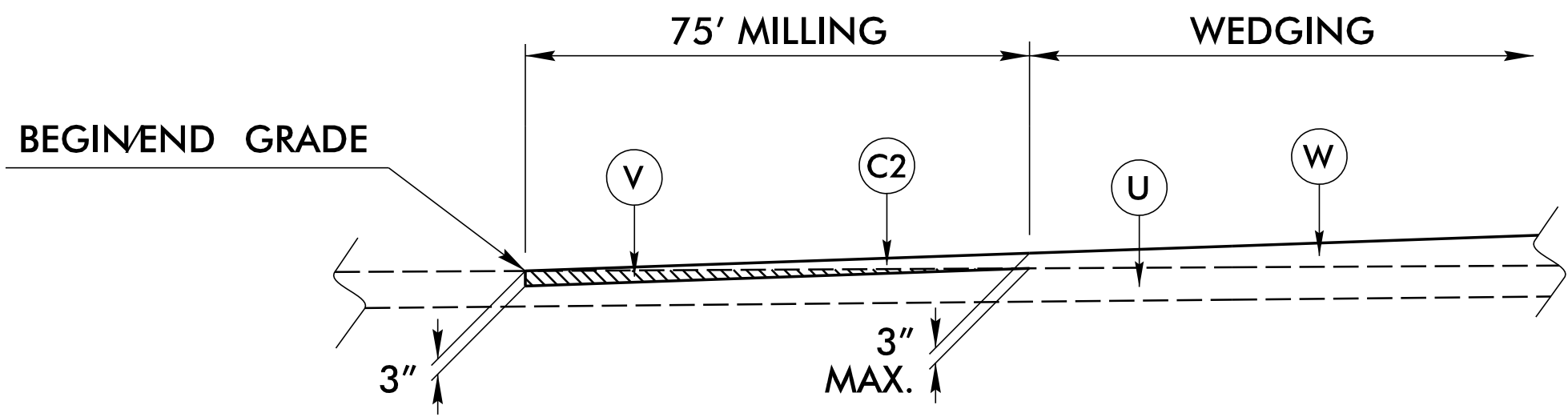
Utility Pole _____	
Utility Pole with Base _____	
Utility Located Object _____	
Utility Traffic Signal Box _____	
Utility Unknown U/G Line (SUE - LOS B)* _____	
U/G Tank; Water, Gas, Oil _____	
Underground Storage Tank, Approx. Loc. _____	
A/G Tank; Water, Gas, Oil _____	
Geoenvironmental Boring _____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

PAVEMENT SCHEDULE	
(FINAL PAVEMENT DESIGN RECEIVED DECEMBER 12, 2025)	
A1	PROP. PORTLAND CEMENT CONCRETE PAVEMENT
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1.0" IN DEPTH OR GREATER THAN 1.5" IN DEPTH.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED
E1	PROP. APPROX. 4.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAT 5.5" IN DEPTH.
J1	8" AGGREGATED BASE COURSE
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	3" MILLING
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

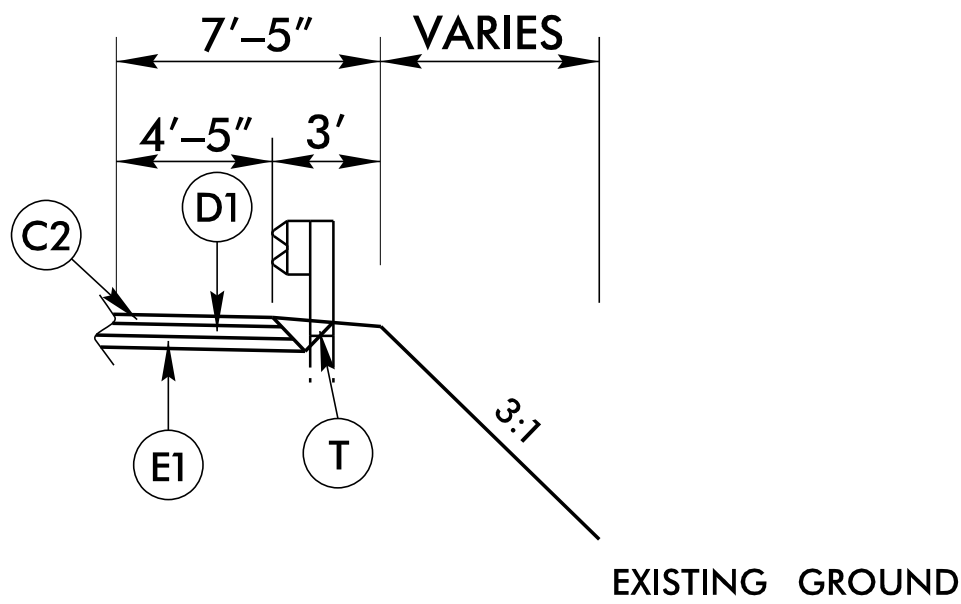
NOTE: ALL PAVEMENT SLOPES 1:1 UNLESS NOTED OTHERWISE



STANDARD WEDGING DETAIL

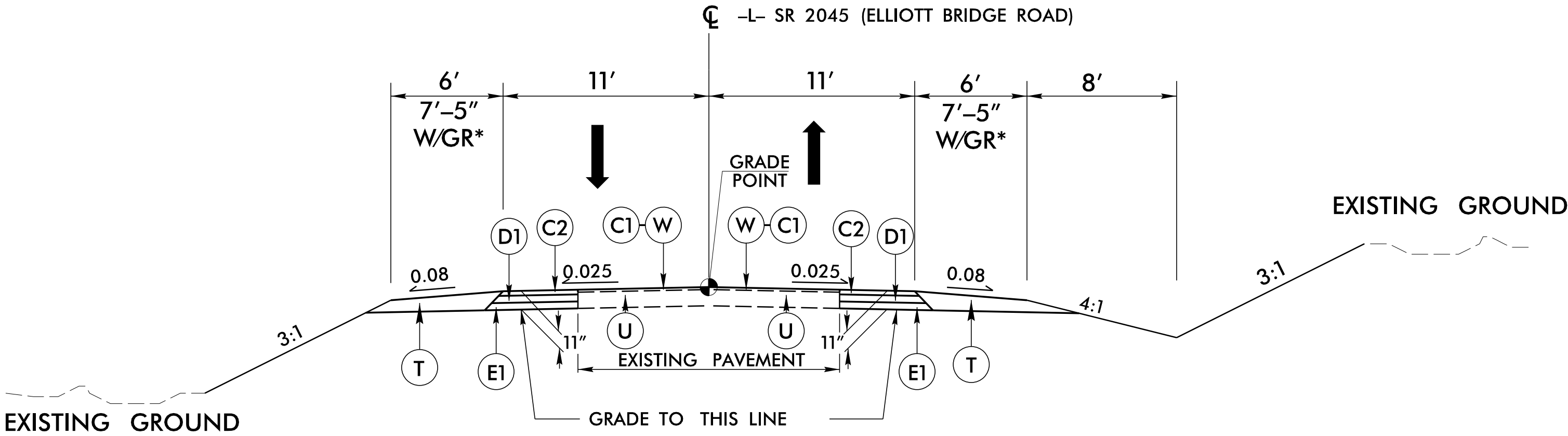


DETAIL OF 3.0" MILLING AT PAVEMENT TIE-INS



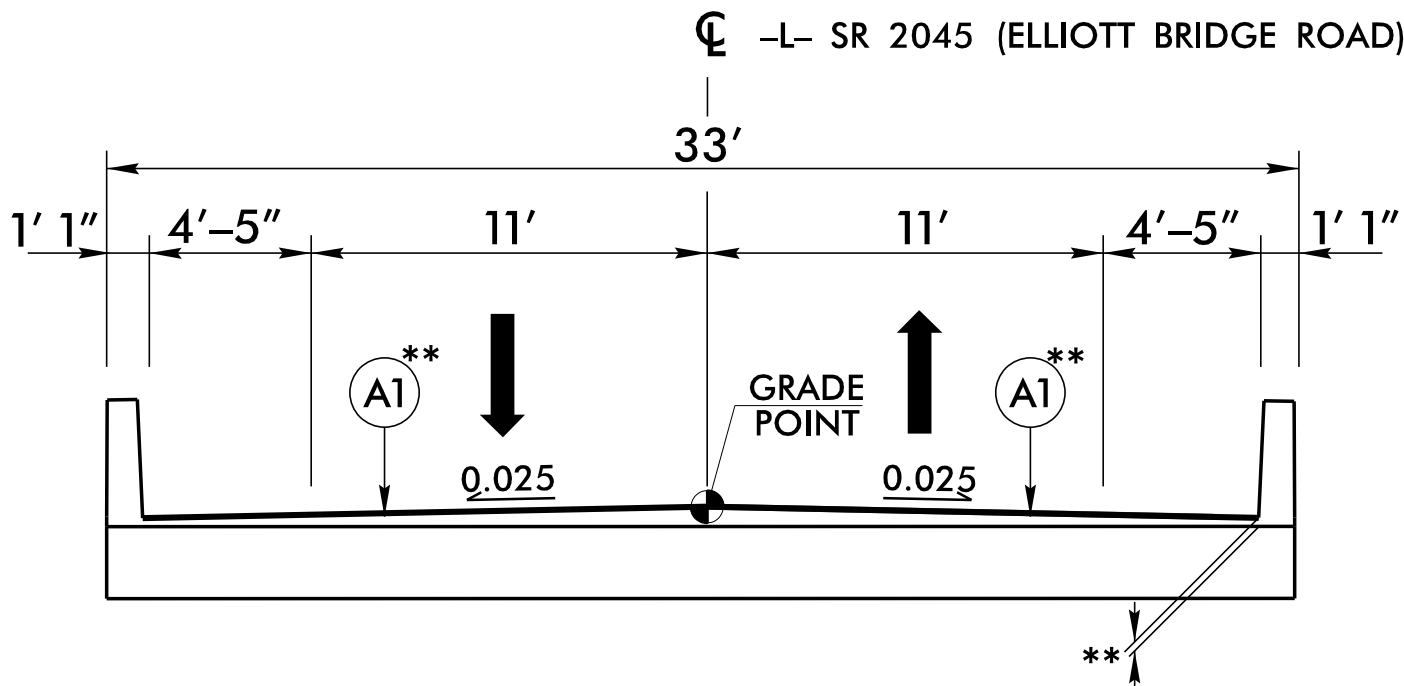
*SHOULDER DETAIL

USE IN CONJUNCTION WITH GUARDRAIL ON -L-
SEE CROSS SECTIONS



TYPICAL SECTION NO. 1

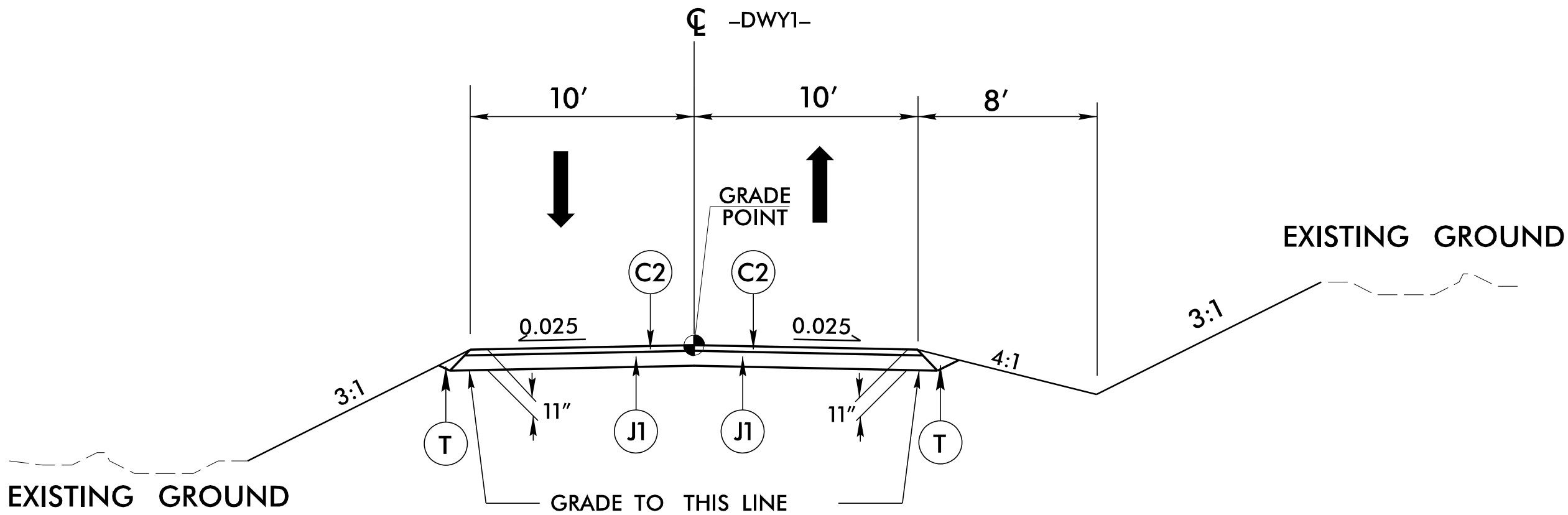
-L- STA. 13+50 TO -L- STA. 15+23.75 (BEGIN BRIDGE)
-L- STA. 17+36.25 (END BRIDGE) TO -L- STA. 18+30.00



TYPICAL SECTION NO. 2

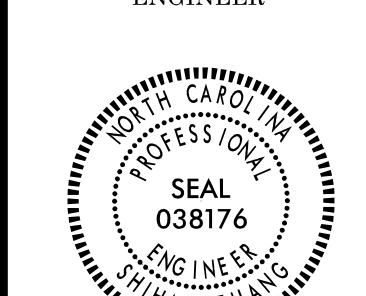
-L- STA. 15+23.75 TO -L- STA. 17+36.25

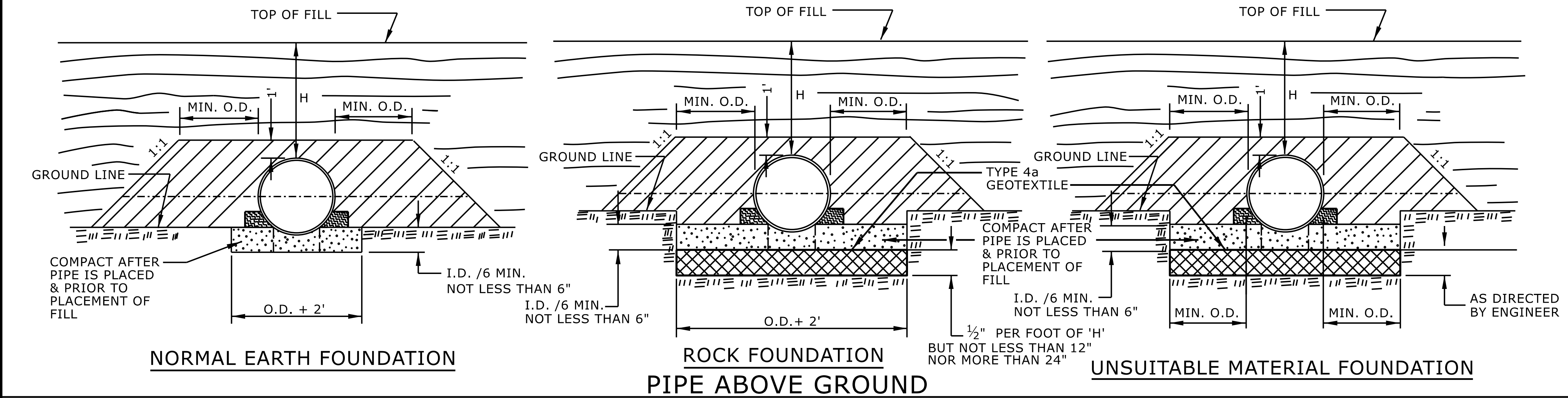
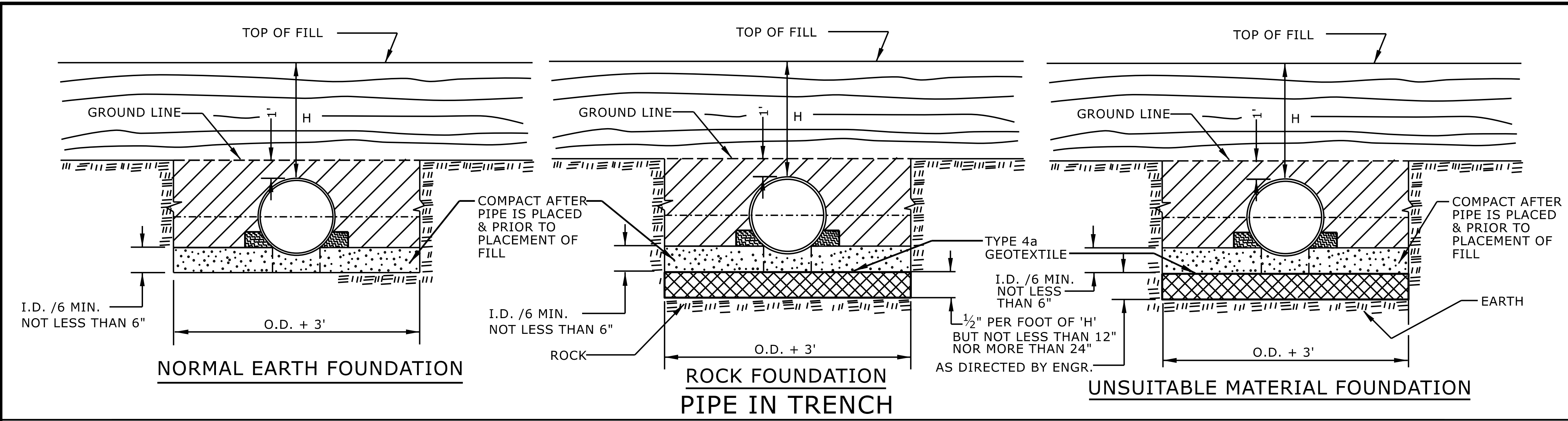
** SEE STRUCTURES PLANS
FOR PAVEMENT DEPTH



TYPICAL SECTION NO. 3

-DWY1- 10+11.00 TO 11+20.00





GENERAL NOTES:

I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.

O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.

H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

APPROVED SUITABLE LOCAL MATERIAL.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

REFER TO NCDOT PIPE MATERIAL SELECTION GUIDE AND STANDARD SPECIFICATIONS FOR ALLOWABLE PIPE FILL HEIGHTS AND PIPE SPECIFICATIONS.

SPRINGLINE OF PIPE

SELECT BACKFILL MATERIAL CLASS III OR CLASS II, TYPE 1 ABOVE AND BELOW SPRINGLINE.

UNDISTURBED EARTH MATERIAL

SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH TYPE IV GEOTEXTILE AS DIRECTED BY THE ENGINEER.

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

ROADWAY DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
FLEXIBLE PIPE

SHEET 1 OF 2
300.01



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

ROADWAY DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
RIGID PIPE

SHEET 2 OF 2
300.01

TOP OF FILL

GROUND LINE

H

I.D. /6 MIN.
NOT LESS THAN 6"

O.D. + 3'

NORMAL EARTH FOUNDATION

TOP OF FILL

GROUND LINE

H

I.D. /6 MIN.
NOT LESS THAN 6"

ROCK

O.D. + 3'

PIPE IN TRENCH

TOP OF FILL

GROUND LINE

H

TYPE 4a
GEOTEXTILE

I.D. /6 MIN.
NOT LESS
THAN 6"

1 1/2" PER FOOT OF 'H'
BUT NOT LESS THAN 12"
NOR MORE THAN 24"
AS DIRECTED BY ENGR.

O.D. + 3'

UNSUITABLE MATERIAL FOUNDATION

TOP OF FILL

GROUND LINE

H

MIN. O.D.

MIN. O.D.

I.D. /6 MIN.
NOT LESS THAN 6"

O.D. + 2'

NORMAL EARTH FOUNDATION

TOP OF FILL

GROUND LINE

H

MIN. O.D.

MIN. O.D.

I.D. /6 MIN.
NOT LESS THAN 6"

O.D. + 2'

PIPE ABOVE GROUND

TOP OF FILL

GROUND LINE

H

MIN. O.D.

MIN. O.D.

TYPE 4a
GEOTEXTILE

COMPACT AFTER
PIPE IS PLACED
& PRIOR TO
PLACEMENT OF
FILL

I.D. /6 MIN.
NOT LESS THAN 6"

1 1/2" PER FOOT OF 'H'
BUT NOT LESS THAN 12"
NOR MORE THAN 24"
AS DIRECTED BY ENGINEER

MIN. O.D.

MIN. O.D.

UNSUITABLE MATERIAL FOUNDATION

GENERAL NOTES:

I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.

O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.

H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT
ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP
OF THE EMBANKMENT AT THAT POINT.

APPROVED SUITABLE LOCAL MATERIAL.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1
FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE
UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL
ACCOMPLISH COMPACTION.

DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS
BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

REFER TO NCDOT PIPE MATERIAL SELECTION GUIDE AND STANDARD SPECIFICATIONS
FOR ALLOWABLE PIPE FILL HEIGHTS AND PIPE SPECIFICATIONS.

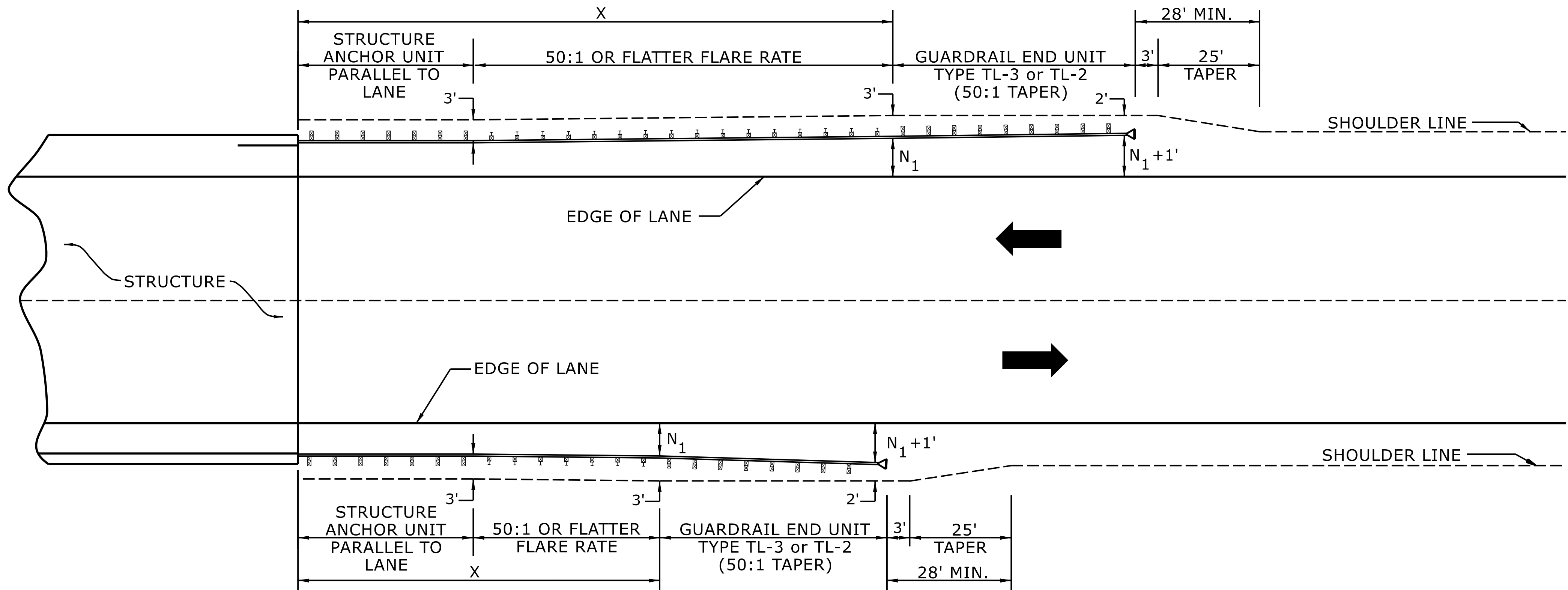
SPRINGLINE OF PIPE

SELECT BACKFILL MATERIAL CLASS III OR CLASS II,
BELOW SPRINGLINE.

UNDISTURBED EARTH MATERIAL

SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE
WITH TYPE IV GEOTEXTILE AS DIRECTED BY THE ENGINEER.





USE FLARE RATE AS THE CONTROL IF THE " N_1 " DISTANCE IS NOT OBTAINED.
(" N_1 " IS BASED ON SHOULDER WIDTHS IN THE ROADWAY DESIGN MANUAL)

SEE STD. 862.03 FOR STRUCTURE ANCHOR UNITS

FOR POSTED SPEEDS $\geq$ 45MPH USE GREU TYPE TL-3
FOR POSTED SPEEDS $<$ 45MPH USE GREU TYPE TL-2

GUARDRAIL LENGTH OF NEED (X) IS CALCULATED BASED ON THE AASHTO ROADSIDE DESIGN GUIDE.

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT



LENGTHS AND OFFSETS FOR PROPOSED GUARDRAIL AT TWO LANE - TWO WAY LOCATIONS

SHEET 4 OF 15

862D01

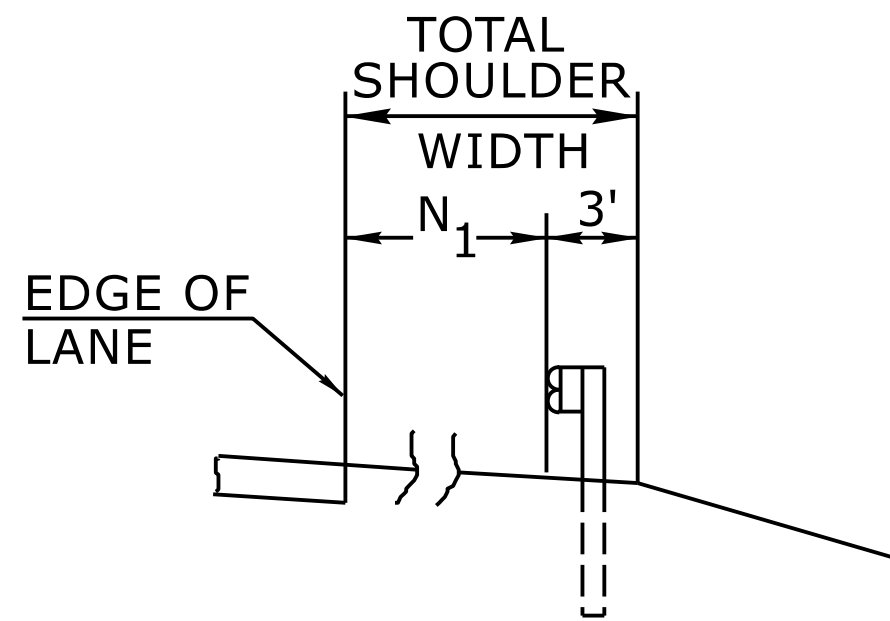
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

**CONTRACTS STANDARDS
AND DEVELOPMENT UNIT**

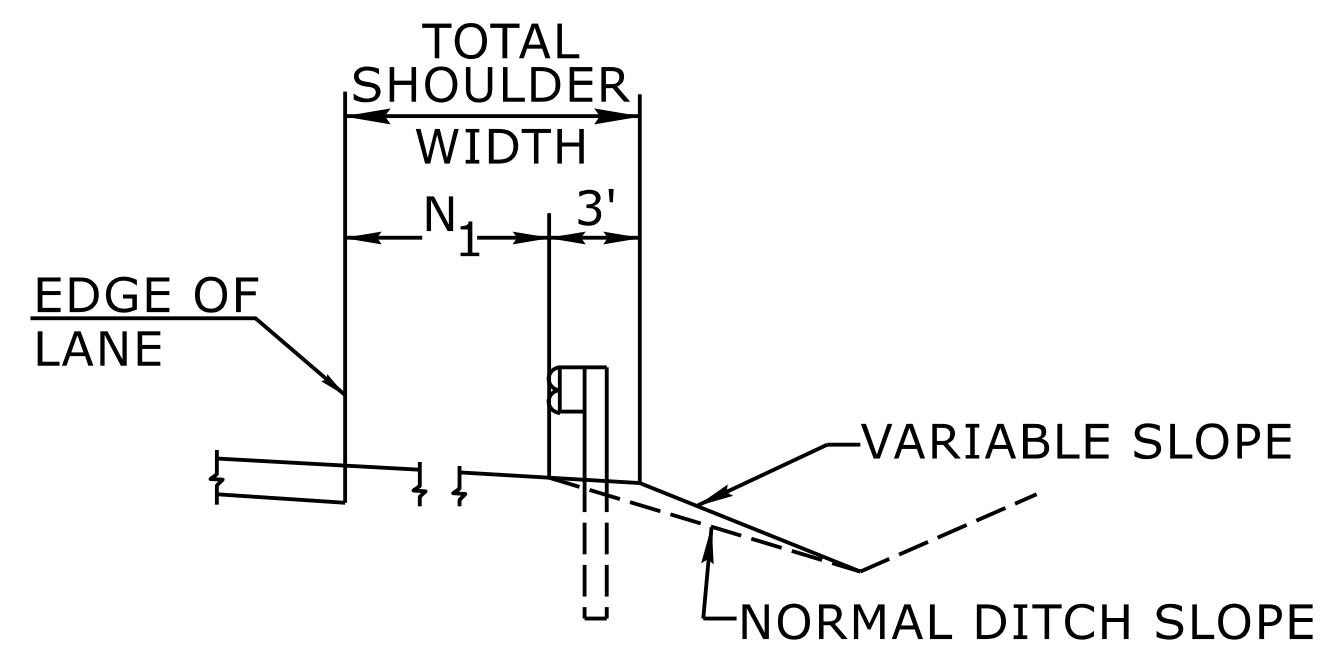
Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

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

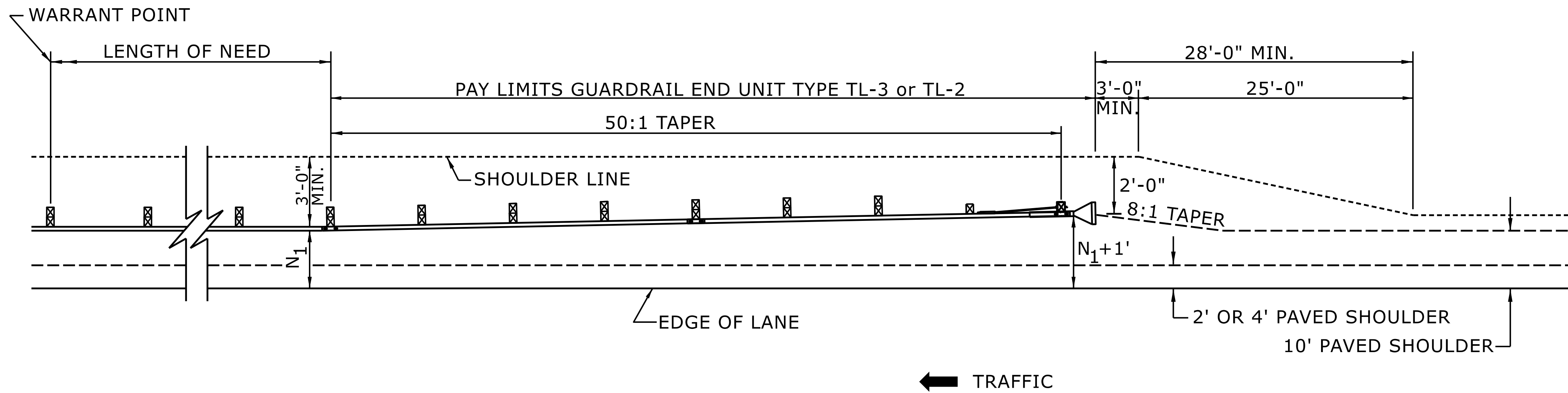


FILL SECTION



CUT SECTION

"N₁"= DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL WHERE GUARDRAIL IS PARALLEL TO LANE.



FOR POSTED SPEEDS $\geq$ 45mph USE GREU TYPE TL-3
FOR POSTED SPEEDS $<$ 45mph USE GREU TYPE TL-2

DETAIL OF BEGINNING OF GUARDRAIL IN CUT OR FILL SECTION

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT



SHEET 6 OF 15
862D01

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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

SEE TITLE BLOCK

ORIGINAL BY: S.CALHOUN DATE: 7-25-2024
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: DATE:

COMPUTED BY: JY DATE: 1/14/2026
CHECKED BY: DMP DATE: 1/14/2026

BPG. 1919	
3B-1	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION HARNETT AND CUMBERLAND COUNTY	
ROADWAY DESIGN UNIT	
PREPARED BY	
RS&H 8527 SIX FORKS ROAD, SUITE 404 RALEIGH, NC 27615 NC FIRM LICENSE No. P-0493	

SHOULDER BERM GUTTER SUMMARY

[illegible]

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	LF
-L-	14 + 99.88	15 + 23.75	LT	23.87
-L-	14 + 99.88	15 + 23.75	RT	23.87
-L-	17 + 36.25	17 + 60.13	LT	23.87
-L-	17 + 36.25	17 + 60.13	RT	23.87
			TOTAL:	95.5
			SAY:	96

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

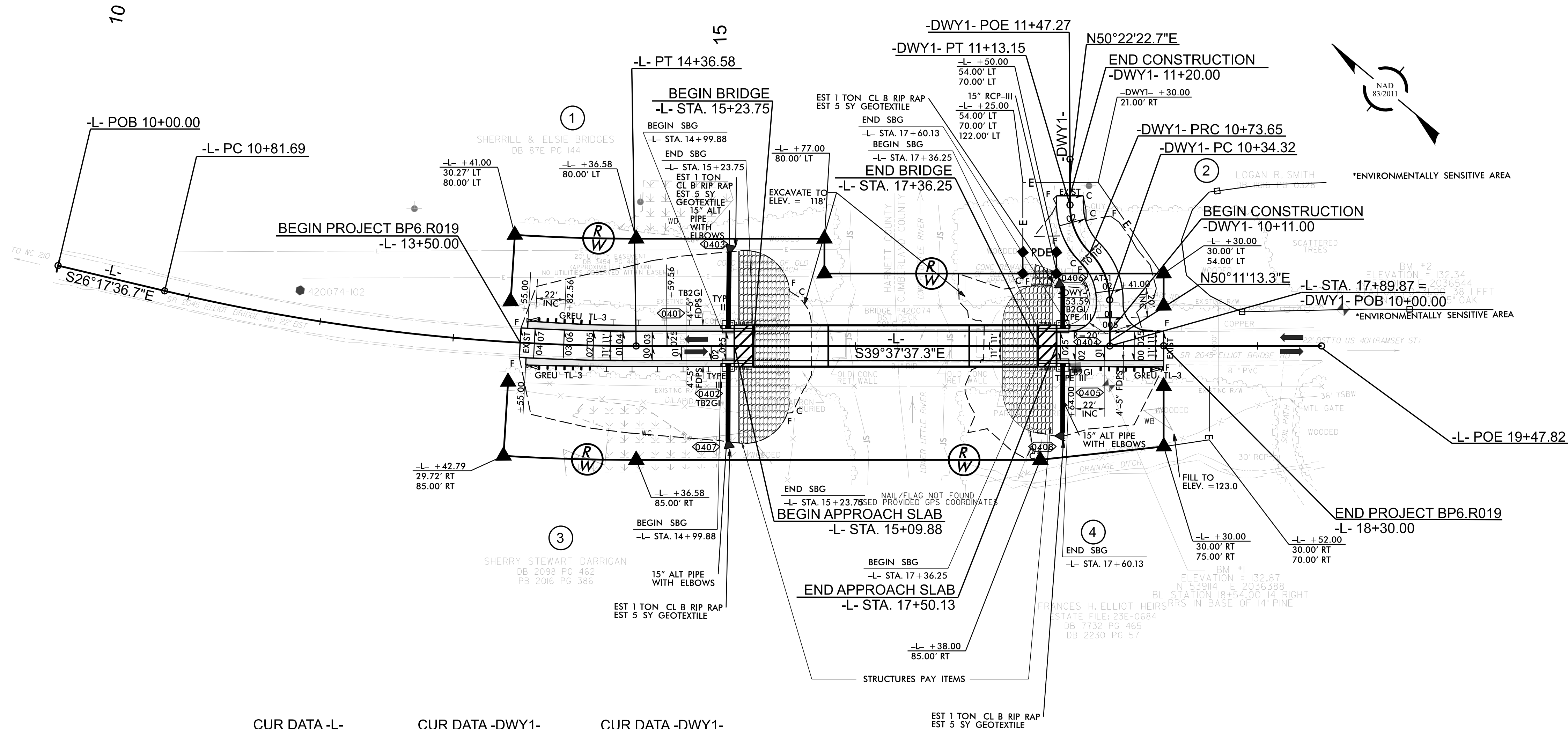
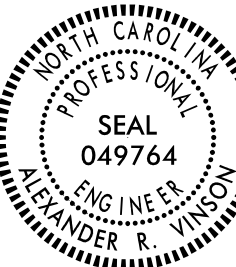
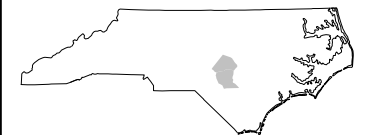
GUARDRAIL SUMMARY

[illegible]

COMPUTED BY: <u> BJG </u> DATE: <u> 9/11/2025 </u> CHECKED BY: <u> ARV </u> DATE: <u> 9/11/2025 </u>	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;">PROJECT NO.</td> <td style="width: 50%; text-align: center;">SHEET NO.</td> </tr> <tr> <td style="text-align: center;">BP6-R019</td> <td style="text-align: center;">3D-1</td> </tr> </table>	PROJECT NO.	SHEET NO.	BP6-R019	3D-1
PROJECT NO.	SHEET NO.					
BP6-R019	3D-1					
Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".						

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

[illegible]



CUR DATA -L-
P/c 12+59.94
 $\Delta c = 13^\circ 20' 00.6''$ (LT)
D = $03^\circ 45' 25.6''$
Lc = 354.89
Tc = 178.25
R = 1,525
SE = 06
RO = 132'

CUR DATA -DWY1-
P/c 10+55.06
 $\Delta c = 45^\circ 04' 27.4''$ (LT)
D = $114^\circ 35' 29.6''$
Lc = 39.33
Tc = 20.75
R = 50
SE = N/A

CUR DATA -DWY1-
P/c 10+94.49
 $\Delta c = 45^\circ 15' 35.9''$ (RT)
D = $114^\circ 35' 29.6''$
Lc = 39.50
Tc = 20.84
R = 50
SE = N/A

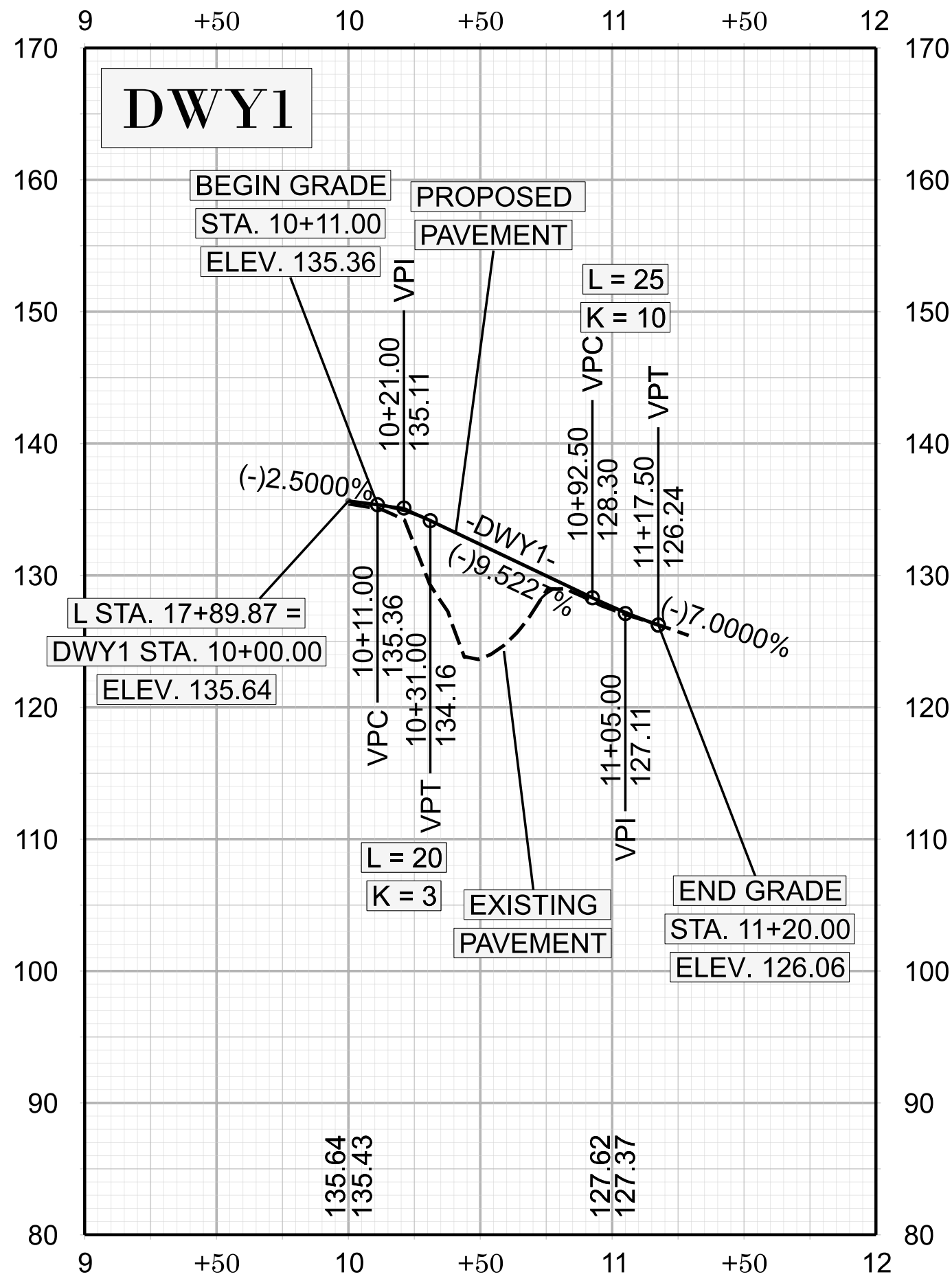
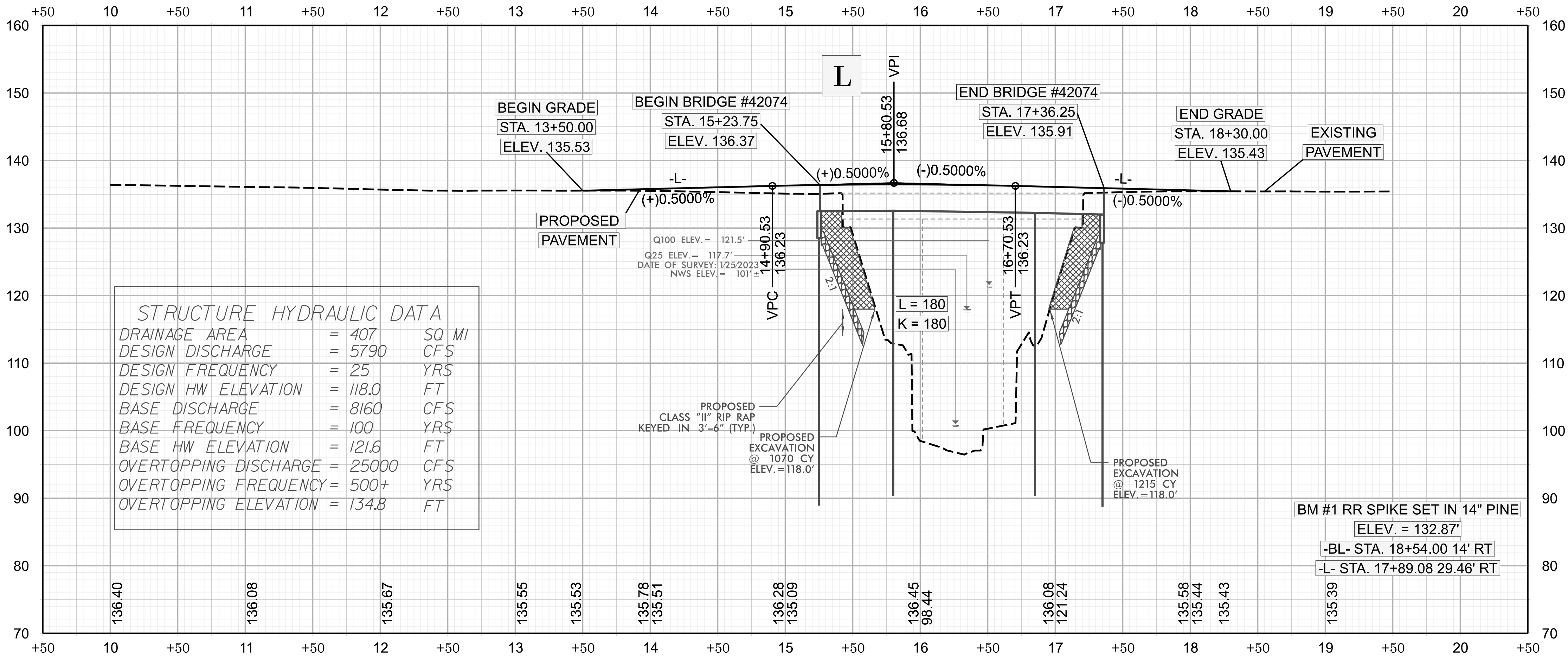
*NOTE: ENVIRONMENTALLY SENSITIVE AREA

//// BRIDGE APPROACH SLAB

FOR -L- PROFILE, SEE SHEET NO. 05

FOR -DWY1- PROFILE, SEE SHEET NO. 05

SEE STRUCTURES PLANS (S-1 THRU S-28) FOR STRUCTURES DESIGN



BP6.R019

05

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HARNETT AND CUMBERLAND
COUNTY

ROADWAY DESIGN UNIT
ROADWAY DESIGN
ENGINEER

HYDRAULICS
ENGINEER

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PREPARED BY

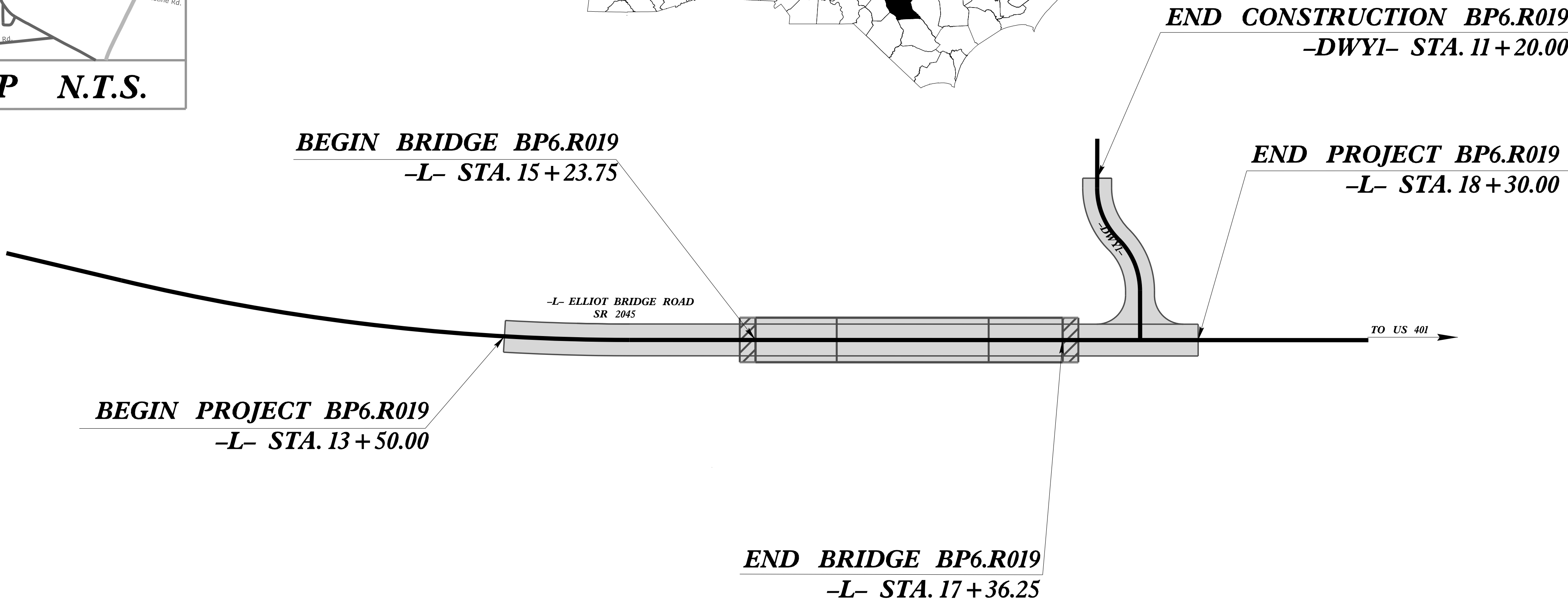
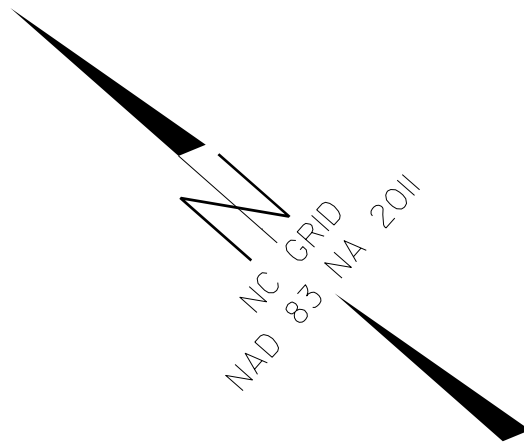
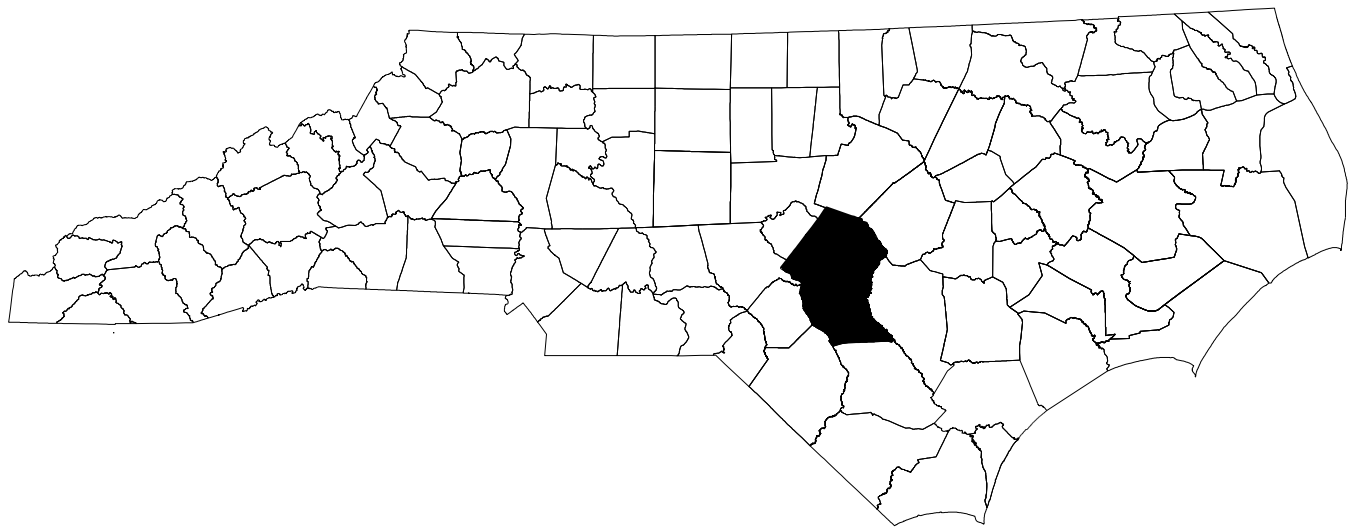
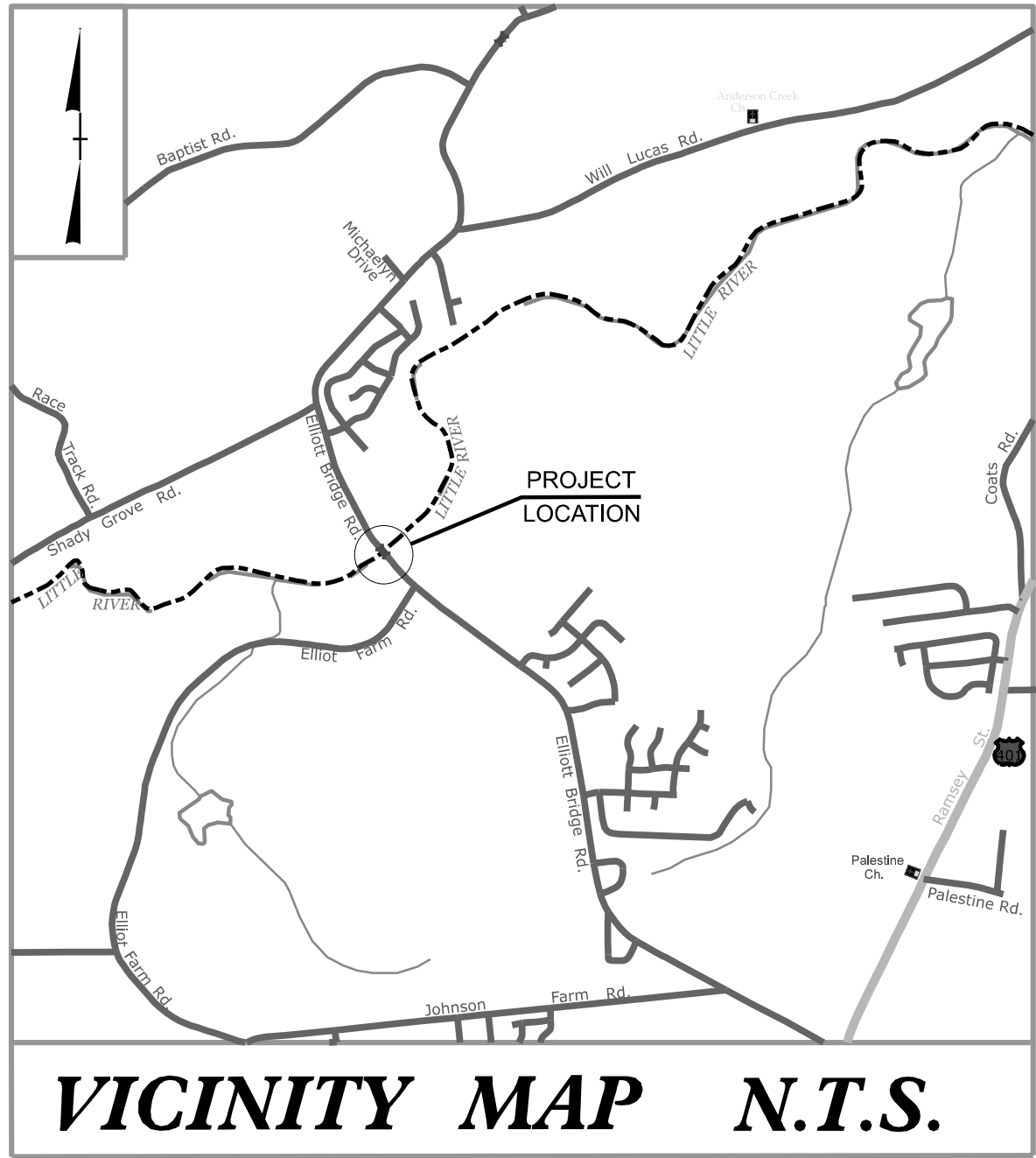
8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NC 27615
NC FIRM LICENSE NO. F-6493

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATE NO.	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP6.R019	RW01	6

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

HARNETT AND CUMBERLAND COUNTIES



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT 420074-102 WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 539,623.8931' EASTING: 2,036,058.3627' ELEVATION: 134.14'

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999871452

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES

VERTICAL DATUM USED IS NAVD 88

Prepared in the Office of:
WITHERSRAVENEL, INC
115 MACKENAN DR
CARY NC 27511
OFFICE #: 919-469-3340
LICENSE #: F-1479

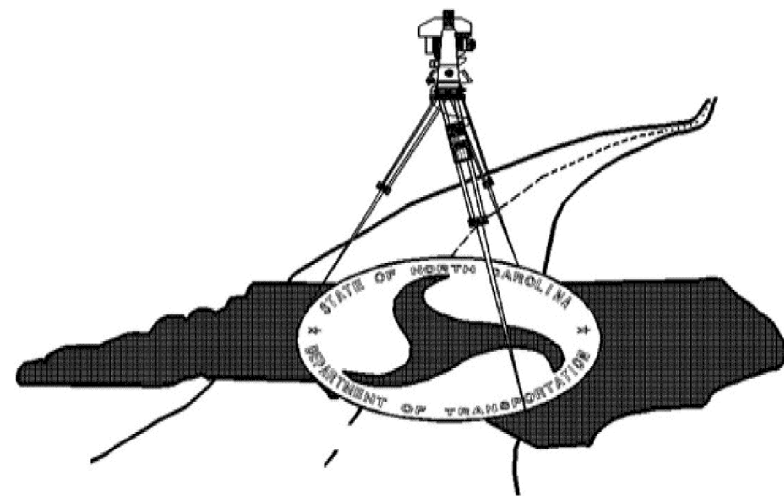
2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: NOVEMBER 4, 2025
LETTING DATE: OCTOBER 21, 2026

PROFESSIONAL LAND
SURVEYOR

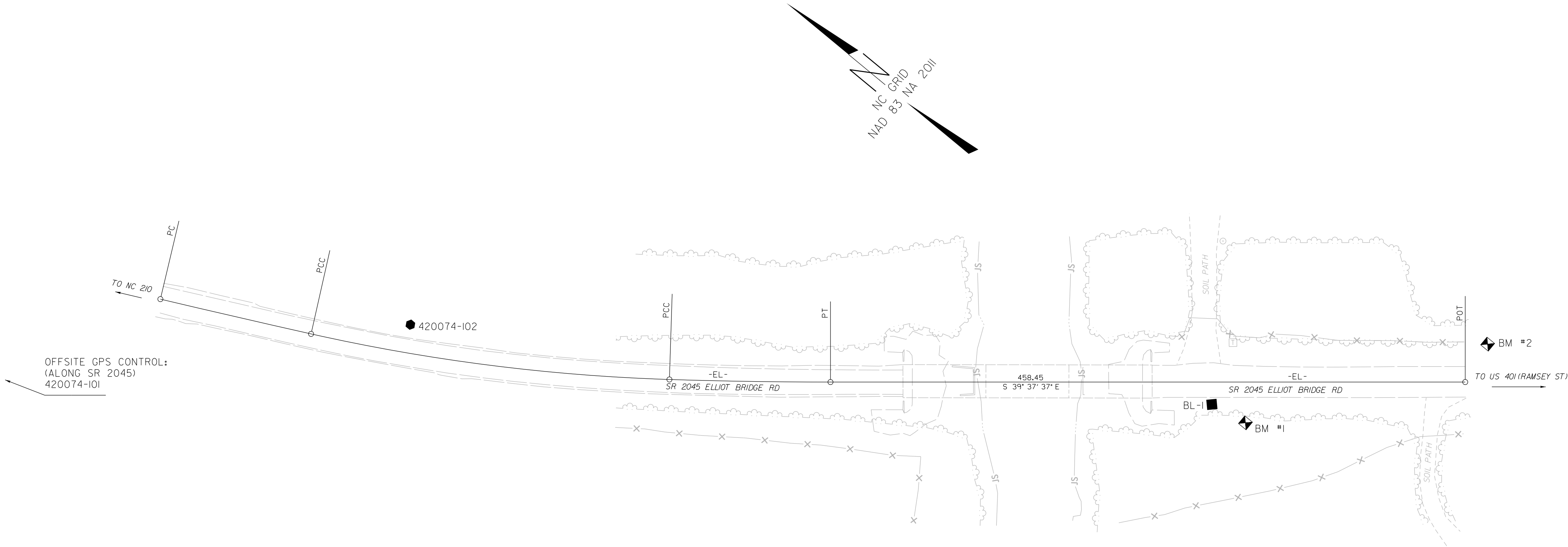


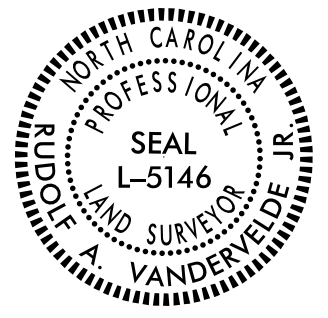
DocuSigned by:
Rudolf A. Vandervelde Jr. 5/29/2026
2C303795BFD438
SIGNATURE: DATE:



REVISIONS

SURVEY CONTROL SHEET
W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION



PROJECT REFERENCE NO.	SHEET NO.
BP6.R019.1	RW02C-1
Location and Surveys	
WITHERSRAVENEL 115 MACKENAN DR CARY, NC 27511	
PROJECT SURVEYOR 	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

I, RUDOLF A. VANDERVELDE JR., PLS, certify that the Project Control was PERFORMED under my supervision from an actual GPS survey made under my supervision and the following information was used to perform the survey:

Class of survey: **AA**
Type of GPS field procedure: RTN
Dates of survey: 2/14/2022 - 2/28/2022
Datum/Epoch: NAD 83 (2011)
Published/Fixed-control use: N/A
Localized around: 420074-102
Northing: 539,623.8931
Easting: 2,036,058.3627
Combined grid factor: 0.999871452 (GROUND TO GRID)
Geoid model: GEOID18
Units: 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 from 2/14/2022 to 2/28/2022, and all coordinates are based on NAD 83/2011 and all elevations are based on NAVD 88; that this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 6 day of APRIL, 2022.
DocuSigned by:

2022071609291049
Professional Land Surveyor L-5146
4/6/2022

BL-2 ■

NOTES:

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

REVISIONS

6/2/99

06-APR-2022 15:50
K:\20\20-0620\200626.34-bp6r CON SUE Bridge
r.vandervelde AT WRI701
Surveys\Geomatics\NCDOT\42-0074\Submittal\4-2-22 resubmittal\420074_1s.rw02c-2.dgn

SURVEY CONTROL SHEET
W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

BL	POINT	DESC.	NORTH	EAST	ELEVATION
101		420074-101	540292.5852	2035721.2097	136.60
102		420074-102	539623.8931	2036058.3627	134.14
1		BL-1	539141.2860	2036383.1240	134.70
2		BL-2	538766.4550	2036710.5700	135.51

BM1 ELEVATION = 132.87
N 539114 E 2036388
BL STATION 18+54.00 14 RIGHT
RRS IN BASE OF 14' PINE

BM2 ELEVATION = 132.34
N 539016 E 2036544
BL STATION 20+31.00 38 LEFT
RRS IN BASE OF 15' OAK

EL POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
PC	539774.766	2035957.413							
CURVE			S 26°37'26.0" E	111.70	00°39'38.6"(LT)	00°35'29.4"	111.71	55.85	9686.70
PCC	539674.906	2036007.471							
CURVE			S 32°22'19.3" E	260.90	10°50'08.0"(LT)	04°08'49.0"	261.29	131.04	1381.64
PCC	539454.552	2036147.161							
CURVE			S 38°42'30.3" E	116.34	01°50'14.0"(LT)	01°34'44.9"	116.34	58.18	3628.28
PT	539363.770	2036219.914							
LINE			S 39°37'37.3" E	458.45					
POT	539010.667	2036512.306							

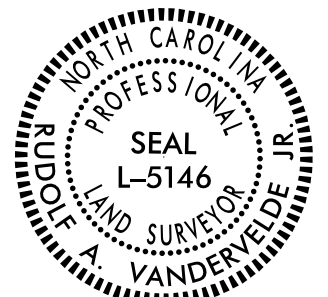
PROJECT REFERENCE NO.
BP6.R019.1

SHEET NO.
RW02C-2

Location and Surveys

WITHERSRAVENEL
115 MACKENAN DR
CARY, NC 27511

PROJECT SURVEYOR



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

I, RUDOLF A. VANDERVELDE JR., PLS, certify that the Project Control was PERFORMED under my supervision from an actual GPS survey made under my supervision and the following information was used to perform the survey:

Class of survey: **AA**
Type of GPS field procedure: RTN
Dates of survey: 2/14/2022 - 2/28/2022
Datum/Epoch: NAD 83 (2011)
Published/Fixed-control use: N/A
Localized around: 420074-102
Northing: 539,623.8931
Easting: 2,036,058.3627
Combined grid factor: 0.999871452 (GROUND TO GRID)
Geoid model: GEOID18
Units: 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 from 2/14/2022 to 2/28/2022 , and all coordinates are based on NAD 83/2011 and all elevations are based on NAVD 88; that this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 6 day of APRIL, 2022.

DocuSigned by:



42007450071436

Professional Land Surveyor L-5146
4/6/2022

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

I, RUDOLF A. VANDERVELDE JR., PLS, CERTIFY THAT THE DATA COMPILED CAME FROM AVAILABLE SURVEYS/MAPPING PERFORMED BY OTHERS AND PROVIDED TO ME BY NCDOT AND DO NOT CERTIFY TO THE ACCURACY OR QUALITY OF THE INDIVIDUAL DATA SOURCES.

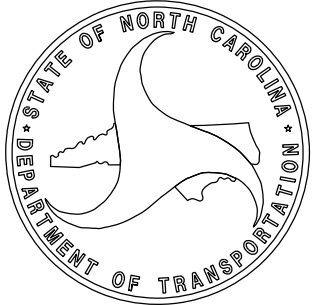
THIS 29 DAY OF MAY, 2026.

DocuSigned by:
Rudolf A. Vandervelde Jr.
5/29/2026
PROFESSIONAL LAND SURVEYOR L-5146

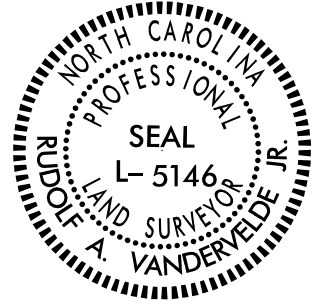
BP6.R019

R/W02D-I

NORTH CAROLINA
DEPARTMENT
OF TRANSPORTATION



PROFESSIONAL LAND
SURVEYOR



DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL SIGNATURES
ARE COMPLETED

2024 STANDARD
SPECIFICATIONS

PROPOSED ALIGNMENT: L												
POINT	STATION	NORTHING	EASTING	BEARING	DIST	DELTA	D	L	T	R	LT	ST
START	10+00.00	539774.7663	2035957.4130	S26°17'36.7"E	81.69							
PC	10+81.69	539701.5273	2035993.5997	S32°57'37.0"E	354.09	13°20'00.6"	03°45'25.6"	354.89	178.25	1525.00		
PT	14+36.58	539404.4308	2036186.2436	S39°37'37.3"E	511.24							
END	19+47.82	539010.6673	2036512.3059									

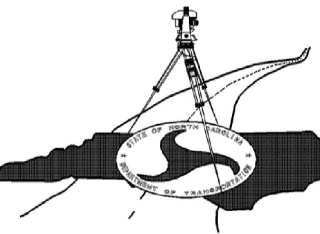
PROPOSED ALIGNMENT: DWY1												
POINT	STATION	NORTHING	EASTING	BEARING	DIST	DELTA	D	L	T	R	LT	ST
START	10+00.00	539132.3226	2036411.5673	N50°11'13.3"E	34.32							
PC	10+34.32	539154.2941	2036437.9261	N27°38'59.6"E	38.33	45°04'27.4"	114°35'29.6"	39.33	20.75	50.00		
PRC	10+73.65	539188.2452	2036455.7130	N27°44'34.8"E	38.48	45°15'35.9"	114°35'29.6"	39.50	20.84	50.00		
PT	11+13.15	539222.2998	2036473.6247	N50°22'22.7"E	34.13							
END	11+47.27	539244.0649	2036499.9089									

NOTES:

1. 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.

TIP PROJECT: BP6.R019
County: Harnett/Cumberland

PREPARED FOR



LOCATION AND
SURVEYS UNIT

PREPARED BY

WITHERSRAVENEL, INC
115 MACKENAN DR
CARY NC 27511
OFFICE #: 919-469-3340
LICENSE #: P-1479

RIGHT OF WAY CONTROL SHEET

I, RUDOLF A. VANDERVELDE JR., PLS, CERTIFY THAT THE RIGHT OF WAY AND PERMANENT EASEMENT MONUMENTATION FOR THIS PROJECT SHOWN HEREIN WAS COMPLETED UNDER MY DIRECT AND RESPONSIBLE CHARGE FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION; THAT ALL HORIZONTAL CLOSURES HAD A MINIMUM RATIO OF PRECISION OF 1:10,000 (CLASS A). FIELD WORK WAS PERFORMED FROM 5/14/2026 TO 5/18/2026, AND ALL COORDINATES ARE BASED ON NAD83/NA 2011; THAT THIS SURVEY WAS PERFORMED TO MEET THE REQUIREMENTS OF 21NCAC 56.1600 AS APPLICABLE.

THIS 29TH DAY OF MAY, 2026.

DocuSigned by:
Rudolf A. Vandervelde Jr.
5/29/2026
PROFESSIONAL LAND SURVEYOR L-5146

PERMANENT ROW MARKER IRON PIN AND CAP: L			
STATION	OFFSET	NORTH	EAST
13+41.00	-30.27	539497.7155	2036152.1070
13+41.00	-80.00	539526.9722	2036192.3222
13+42.79	85.00	539428.3783	2036060.0066
13+42.79	29.72	539460.9517	2036104.6706
14+36.58	85.00	539350.2189	2036120.7755
14+36.58	-80.00	539455.4538	2036247.8606
15+77.00	-80.00	539347.2997	2036337.4194
15+77.00	-54.00	539330.7172	2036317.3939
17+38.00	85.00	539118.0606	2036313.0181
18+30.00	-30.00	539120.5465	2036460.2689
18+30.00	-54.00	539135.8534	2036478.7540
18+30.00	30.00	539082.2793	2036414.0562
18+30.15	75.00	539053.4646	2036379.4938

PERMANENT EASEMENT MARKER IRON PIN AND CAP: L			
STATION	OFFSET	NORTH	EAST
17+25.00	-54.00	539216.7257	2036411.7864
17+25.00	-70.00	539226.9303	2036424.1098
17+50.00	-54.00	539197.4704	2036427.7311
17+50.00	-70.00	539207.6750	2036440.0545

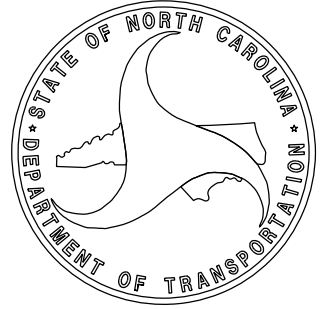
NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

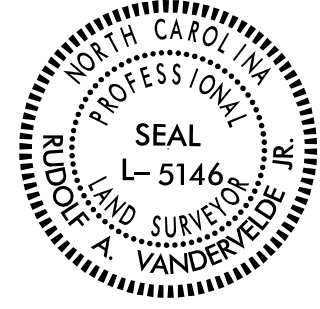
BP6.R019

R/W03E-I

NORTH CAROLINA
DEPARTMENT
OF TRANSPORTATION



PROFESSIONAL LAND
SURVEYOR

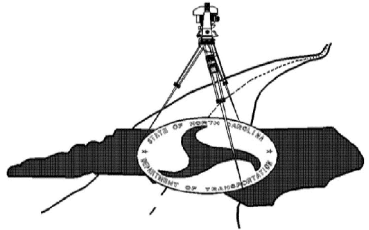


DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL SIGNATURES
ARE COMPLETED

2024 STANDARD
SPECIFICATIONS

TIP PROJECT: BP6.R019
County: Harnett/Cumberland

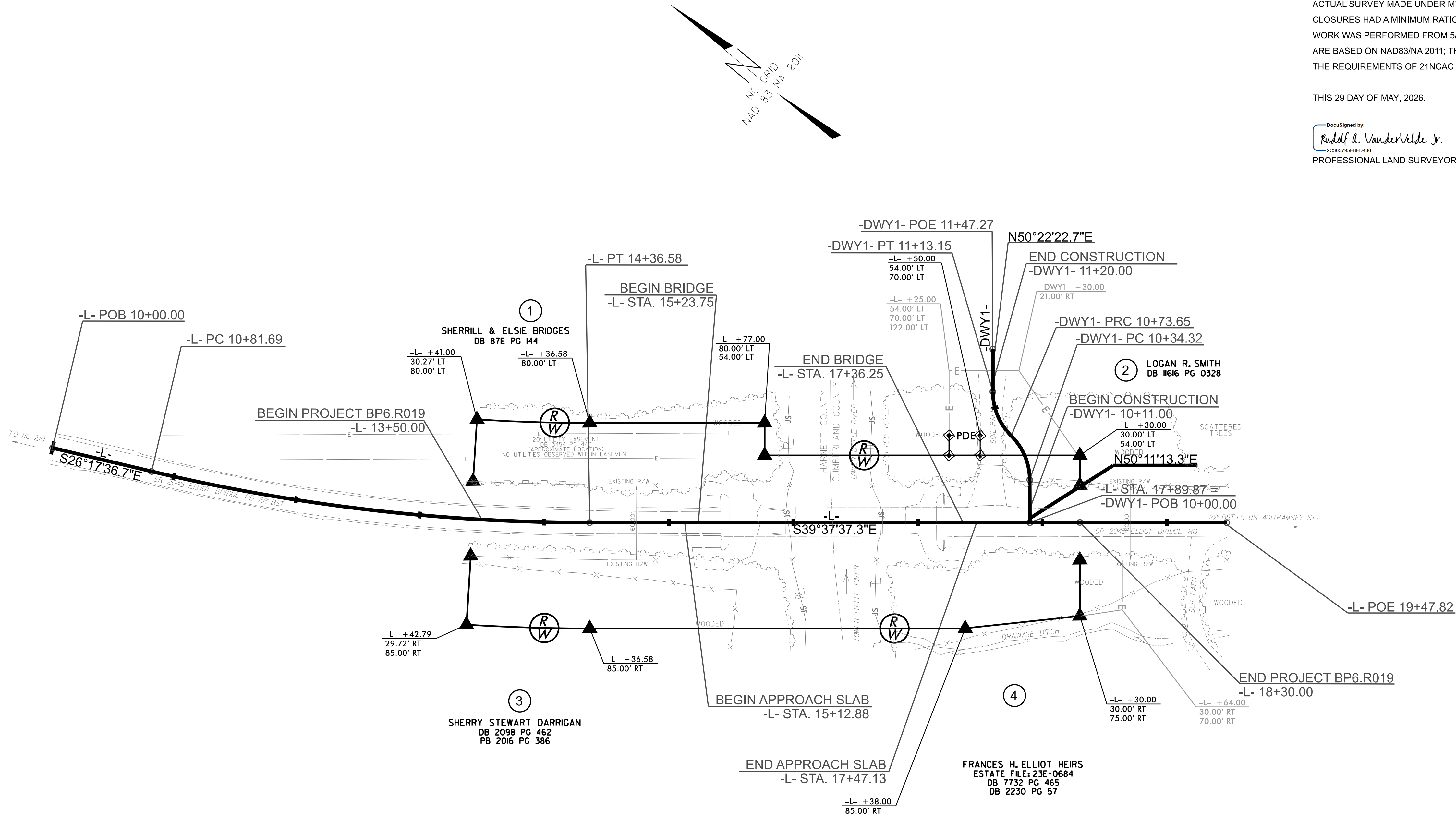
PREPARED FOR



LOCATION AND
SURVEYS UNIT

PREPARED BY

WITHERSRAVENEL, INC
115 MACKENAN DR
CARY NC 27511
OFFICE #: 919-469-3340
LICENSE #: P-1479



CUR DATA -L-
Plc 12+59.94
 $\Delta c = 13^{\circ}20'00.6''$ (LT)
 $D = 03^{\circ}45'25.6''$
Lc = 354.89
Tc = 178.25
R = 1,525
SE = 06
RO = 132'

CUR DATA -DWY1-
Plc 10+55.06
 $\Delta c = 45^{\circ}04'27.4''$ (LT)
 $D = 114^{\circ}35'29.6''$
Lc = 39.33
Tc = 20.75
R = 50
SE = N/A

CUR DATA -DWY1-
Plc 10+94.49
 $\Delta c = 45^{\circ}15'35.9''$ (RT)
 $D = 114^{\circ}35'29.6''$
Lc = 39.50
Tc = 20.84
R = 50
SE = N/A



I, RUDOLF A. VANDERVELDE JR., PLS, CERTIFY THAT THE RIGHT OF WAY AND PERMANENT EASEMENT MONUMENTATION FOR THIS PROJECT SHOWN HEREIN WAS COMPLETED UNDER MY DIRECT AND RESPONSIBLE CHARGE FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION; THAT ALL HORIZONTAL CLOSURES HAD A MINIMUM RATIO OF PRECISION OF 1:10,000 (CLASS A). FIELD WORK WAS PERFORMED FROM 5/14/2026 TO 5/18/2026, AND ALL COORDINATES ARE BASED ON NAD83/NA 2011; THAT THIS SURVEY WAS PERFORMED TO MEET THE REQUIREMENTS OF 21NCAC 56.1600 AS APPLICABLE.

THIS 29 DAY OF MAY, 2026.

DocuSigned by:
Rudolf A. Vandervelde Jr. 5/29/2026
26203780E8F0436...
PROFESSIONAL LAND SURVEYOR L-5146

BP6.R019

R/W 04

NORTH CAROLINA
DEPARTMENT
OF TRANSPORTATION

PROFESSIONAL LAND
SURVEYOR

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL SIGNATURES
ARE COMPLETED

2024 STANDARD
SPECIFICATIONS

TIP PROJECT: BP6.R019

County: Harnett/Cumberland

PREPARED FOR

LOCATION AND
SURVEYS UNIT

PREPARED BY

WITHERSRAVENEL, INC
115 MACKENAN DR
CARY NC 27511
OFFICE #: 919-469-3340
LICENSE #: P-1479

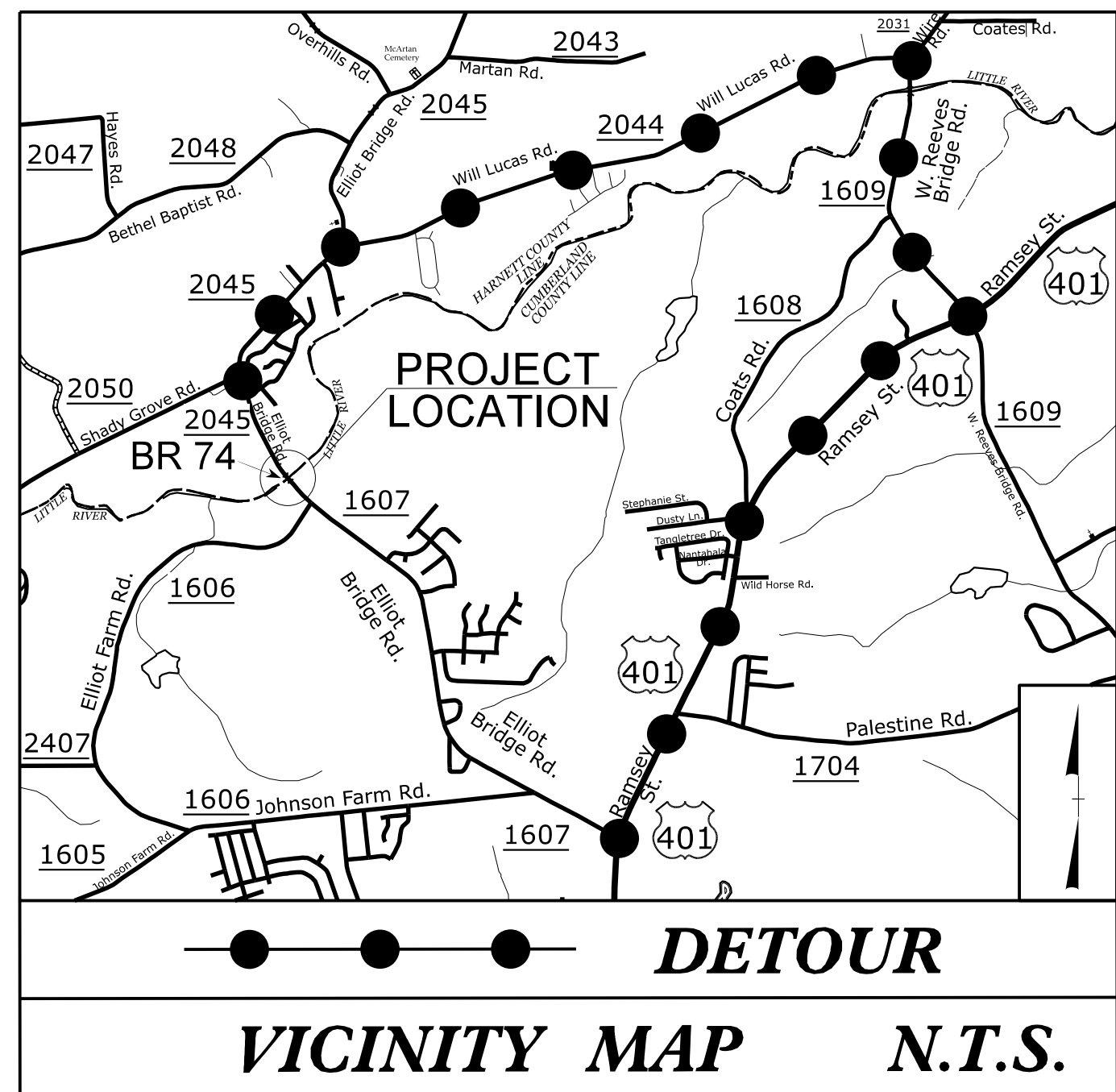
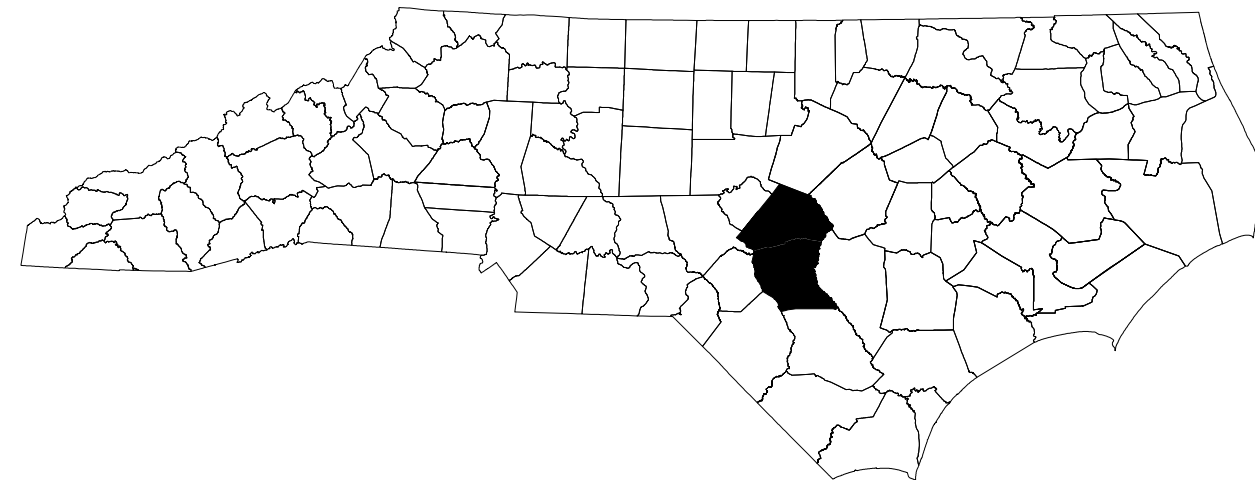
NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN
HARNETT AND CUMBERLAND COUNTIES

LOCATION: BRIDGE 42074 OVER LOWER LITTLE RIVER
ON SR 2045 (ELLIOT BRIDGE ROAD)



100% PLAN SET

INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, AND LEGEND
TMP-1B	TRANSPORTATION OPERATIONS PLAN: MANAGEMENT STRATEGY, GENERAL NOTES, AND PHASING NOTES
TMP-2	ELLIOT BRIDGE ROAD SIGN DESIGN
TMP-3	ELLIOT BRIDGE ROAD DETOUR

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

APPROVED: _____

DATE: _____

SEAL



BP6.R019

TIP PROJECT:

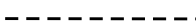
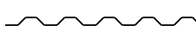
ROADWAY STANDARD DRAWINGS

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

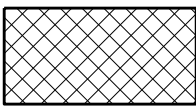
STD. NO.	TITLE
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.03	TEMPORARY ROAD CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1145.01	BARRICADES

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

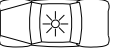
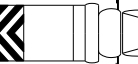
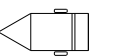
SIGNALS

-  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

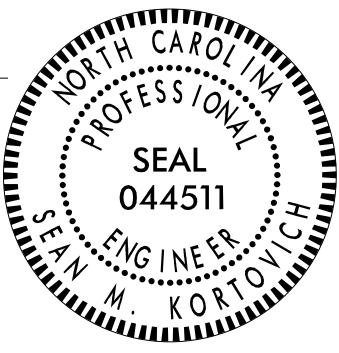
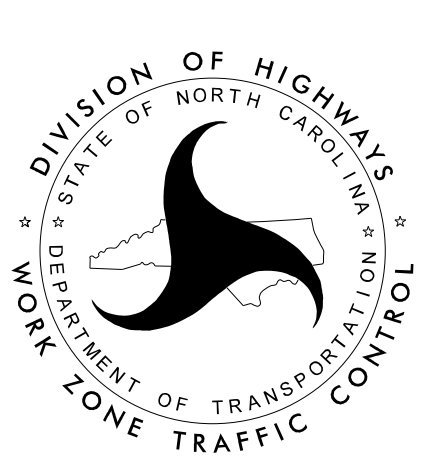
-  PORTABLE SIGN
-  STATIONARY SIGN
-  STATIONARY OR PORTABLE SIGN

PAVEMENT MARKERS

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

PAVEMENT MARKING SYMBOLS

-  PAVEMENT MARKING SYMBOLS

APPROVED: _____ DATE: _____ SEAL			ROADWAY STANDARD DRAWINGS & LEGEND
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

MANAGEMENT STRATEGIES

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

RECOMMENDED STRATEGIES:

TRAFFIC MANAGEMENT STRATEGIES:
FULL ROADWAY CLOSURES
OFF-SITE DETOURS / USE OF ALTERNATIVE ROUTES

PHASING NOTES

NOTES:

'RSD' REFERS TO NCDOT ROADWAY STANDARD DRAWINGS.

PHASE I STEP 1

USING RSD 1101.03 (SHEET 1 OF 9), INSTALL DETOUR ROUTE SIGNING (SEE TMP-3) TO CLOSE -L- ELLIOT BRIDGE RD. (SR 2045).

PHASE I STEP 2

AWAY FROM TRAFFIC, REMOVE EXISTING STRUCTURE NO. 42074 AND COMPLETE PROPOSED BRIDGE AND ROADWAY CONSTRUCTION ALONG -L- ELLIOT BRIDGE RD. (SR 2045) INCLUDING DRAINAGE, GUARDRAIL, AND FINAL PAVEMENT MARKINGS AND MARKERS, WHILE MAINTAINING ACCESS TO DRIVEWAYS.

PHASE I STEP 3

REMOVE TEMPORARY TRAFFIC CONTROL DEVICES AND OPEN -L- ELLIOT BRIDGE RD. (SR 2045) TO PROPOSED TRAFFIC PATTERN.

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 UNDESIREED OVERLAPPING OF DEVICES. MODIFICATIONS 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 ALTERATIONS.

SIGNING

B) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAT 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 THE ROAD CLOSURE IS NOT IN OPERATION.

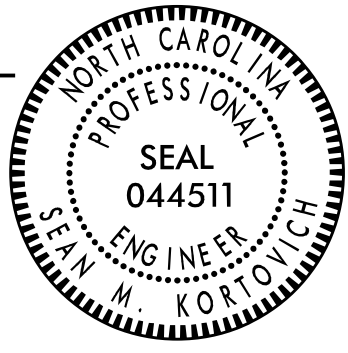
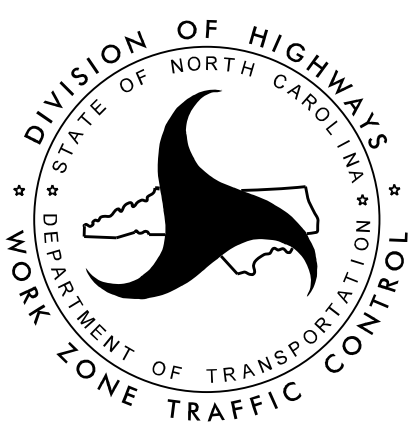
COVER OR REMOVE ALL SIGNS REQUIRED FOR THE OFF-SITE DETOUR WHEN THE DETOUR IS NOT IN OPERATION.

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

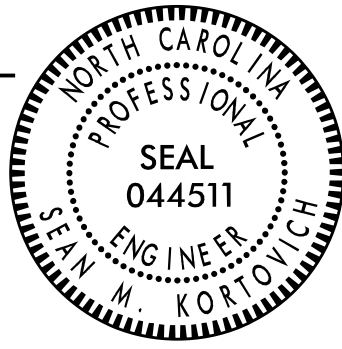
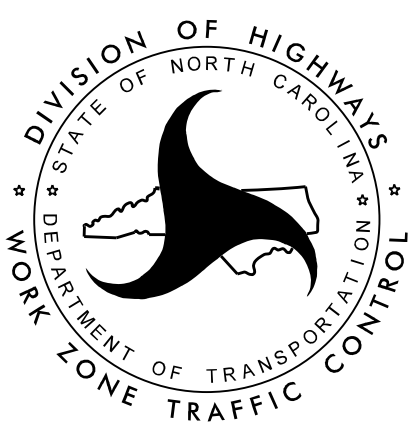
RS&H 8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NC 27615
NC FIRM LICENSE No: F-0493

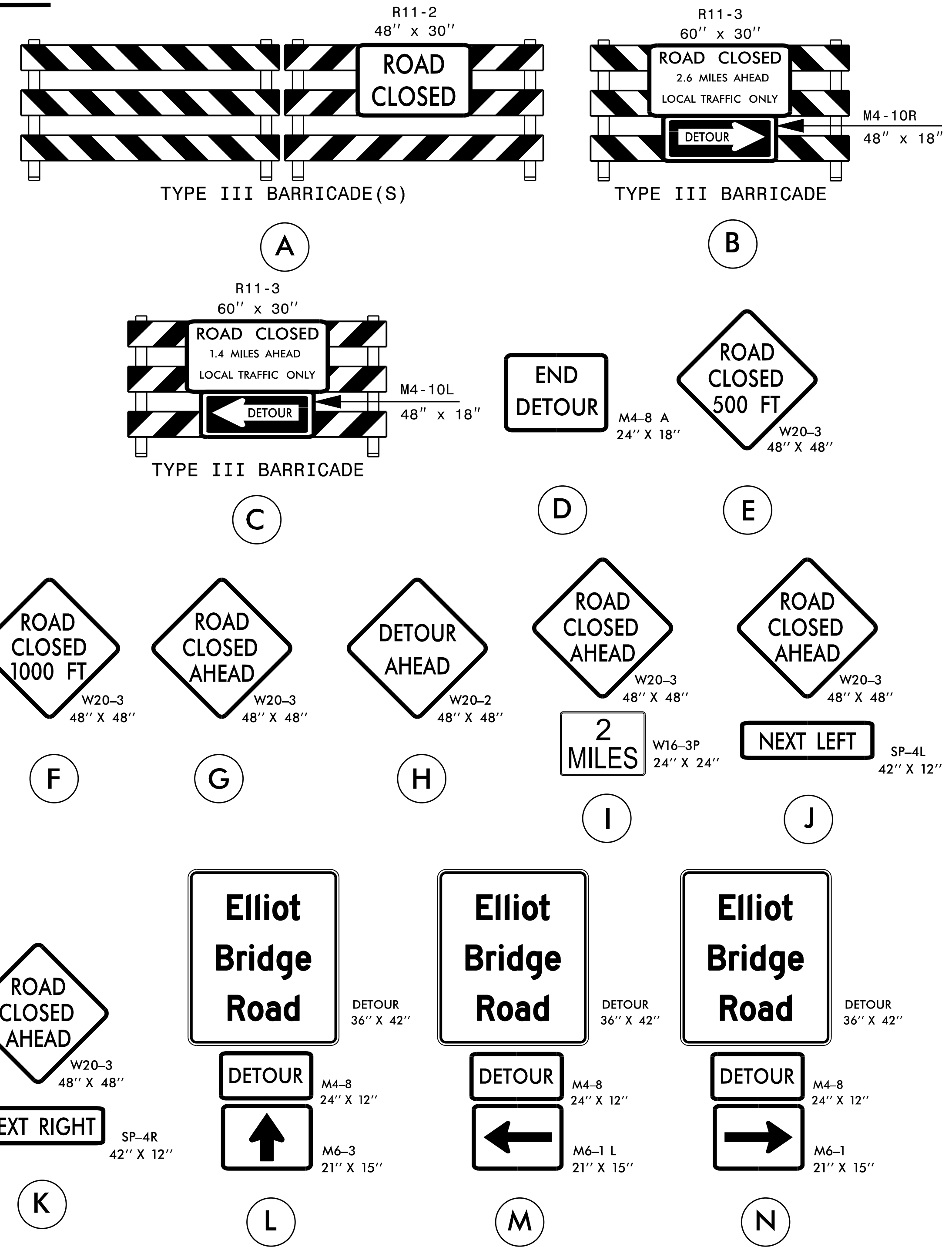
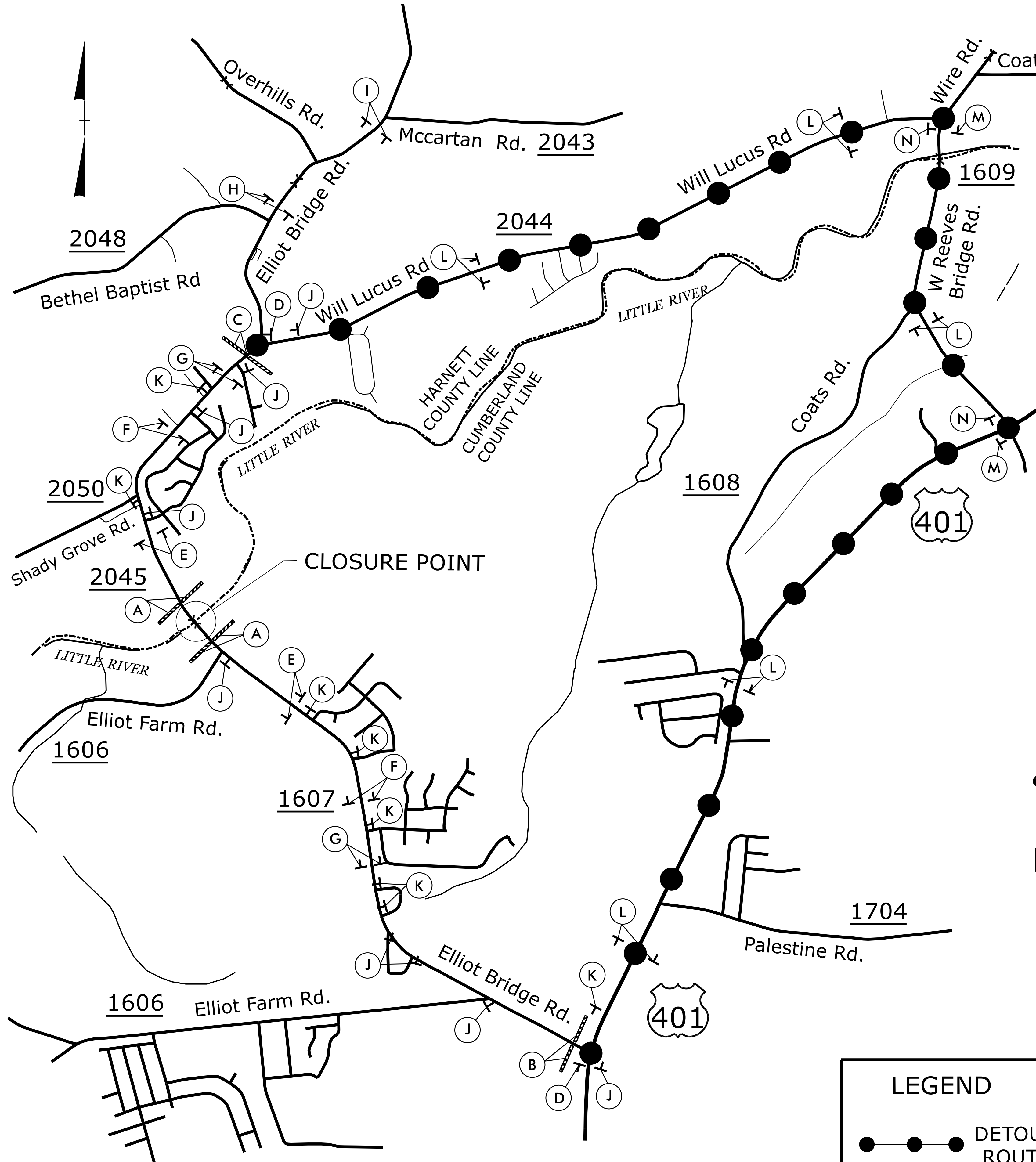
APPROVED: _____ DATE: _____ SEAL 		MANAGEMENT STRATEGY, PHASING NOTES, AND GENERAL NOTES
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		

SIGN NUMBER: DETOUR TYPE: D QUANTITY: 14 SIGN WIDTH: 3'-0" HEIGHT: 3'-6" TOTAL AREA: 10.5 Sq.Ft. BORDER TYPE: FLUSH RECESS: 0.47" WIDTH: 0.63" RADII: 1.5" NO. Z BARS: LENGTH: BACKG COLOR: Orange COPY COLOR: Black <table><tr><th>SYMBOL</th><th>X</th><th>Y</th><th>WID</th><th>HT</th></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table>MAT'L: 0.063" (1.6 mm) ALUMINUM	SYMBOL	X	Y	WID	HT																																				DESIGN BY: REM PROJECT ID: BP6.R019 CHECKED BY: IWB LOCATION: HARNETT Jul 18, 2023 DIV: 6																																																																																																																																																																																																																				
SYMBOL	X	Y	WID	HT																																																																																																																																																																																																																																																									
USE NOTES: 1. Legend and border(except those that are colored black) shall be direct applied Grade C sheeting. 2. Background shall be Grade A, B, or C reflective sheeting.	3'-0" 3'-6" Elliot Bridge Road 6.7"22.6"6.7" 6.7"6.7"6.7"6.7"6.7"6.7"6.7"6.7" BORDER R=1.5" TH=0.63" IN=0.47" Spacing Factor is 1 unless specified otherwise																																																																																																																																																																																																																																																												
LETTER POSITIONS <table><tr><th colspan="20">Letter locations are panel edge to lower left corner</th><th>Series/Size Text Length</th></tr><tr><td>E</td><td>I</td><td>L</td><td>i</td><td>o</td><td>t</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>D 2000 17.3</td></tr><tr><td>9.3</td><td>14</td><td>16.1</td><td>18.3</td><td>20.2</td><td>24.3</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>B</td><td>r</td><td>i</td><td>d</td><td>g</td><td>e</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>D 2000 22.6</td></tr><tr><td>6.7</td><td>11.7</td><td>14.7</td><td>16.6</td><td>21.2</td><td>25.8</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>R</td><td>o</td><td>a</td><td>d</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>D 2000 17</td></tr><tr><td>9.5</td><td>14.3</td><td>18.6</td><td>22.9</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> FILENAME: BP6.R019_tmp_sign design NORTH CAROLINA D.O.T. SIGN DETAIL		Letter locations are panel edge to lower left corner																				Series/Size Text Length	E	I	L	i	o	t															D 2000 17.3	9.3	14	16.1	18.3	20.2	24.3																B	r	i	d	g	e															D 2000 22.6	6.7	11.7	14.7	16.6	21.2	25.8																R	o	a	d																	D 2000 17	9.5	14.3	18.6	22.9																																																																																																																										
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RS&H 8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NC 27615
NC FIRM LICENSE No: F-0493

APPROVED: _____ DATE: _____ SEAL  DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		ELLIOT BRIDGE ROAD SIGN DESIGN
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RS&H 8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NC 27615
NC FIRM LICENSE No: F-0493

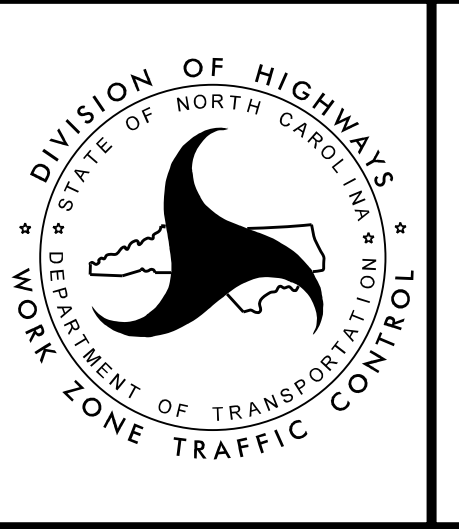
LEGEND

● — ● — ● DETOUR ROUTE

APPROVED: _____
DATE: _____

SEAL

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



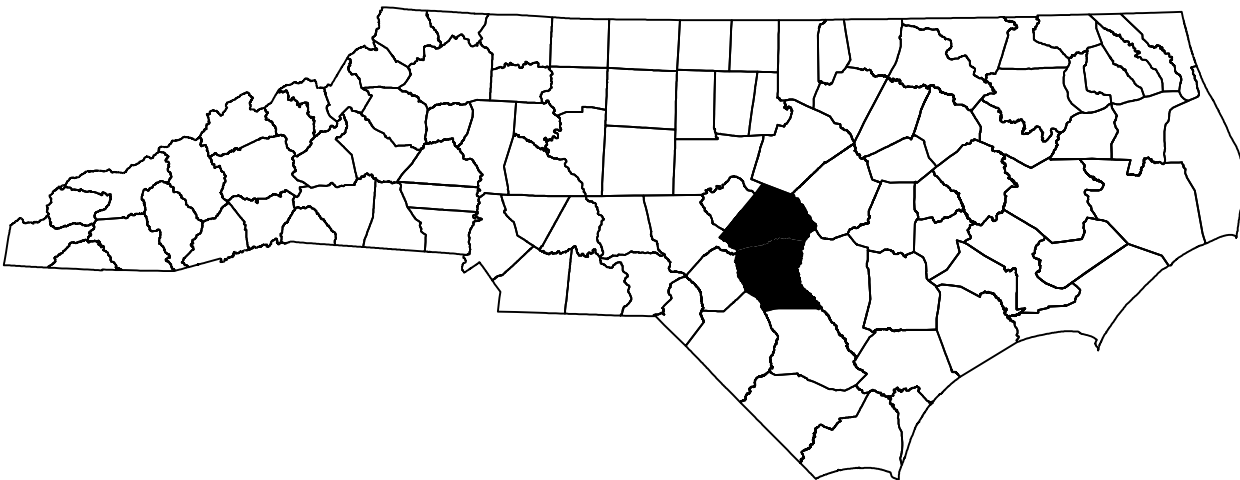
**ELLIOT BRIDGE ROAD
DETOUR**

T.I.P. PROJECT: BP6.R019

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLAN
HARNETT AND CUMBERLAND COUNTIES

LOCATION: BRIDGE 42074 OVER LOWER LITTLE RIVER
ON SR 2045 (ELLIOT BRIDGE ROAD)



INDEX

SHEET NO.	DESCRIPTION
PMP-1	PAVEMENT MARKING PLAN TITLE AND SCHEDULE SHEET
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:

STD. NO.	TITLE
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

GENERAL NOTES

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

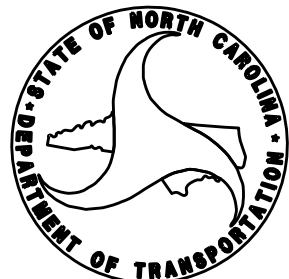
- A) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS FOLLOWS:
- | | | |
|-------------------|---------------|--------|
| ROAD NAME | MARKING | MARKER |
| ELLIOT BRIDGE RD. | THERMOPLASTIC | RAISED |
- B) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- C) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS.
- D) PASSING ZONES WILL BE DETERMINED IN THE FIELD AND MUST BE APPROVED BY THE ENGINEER.
- E) REMOVE ALL RESIDUE AND SURFACE LAITANCE BY ACCEPTABLE METHODS ON CONCRETE BRIDGE DECKS PRIOR TO PLACING THERMOPLASTIC PAVEMENT MARKING MATERIAL.

PAVEMENT MARKING SCHEDULE

T1	WHITE EDGELINE	THERMOPLASTIC (4", 90 MIL)
T13	YELLOW DOUBLE CENTER	THERMOPLASTIC (4", 90 MIL)

PLAN SUBMITTED TO: NCDOT DIVISION 6

ADAM BRITT DIVISION 6 BRIDGE PROGRAM ENGINEER



PLAN PREPARED BY: firms name here

SEAN KORTOVICH, P.E. PROJECT ENGINEER

NIKI AVGERINOS, P.E. PROJECT DESIGNER

RS&H

NC FIRM LICENSE No: F-0493
8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NC 27615

TIP NO.

BP6.R019

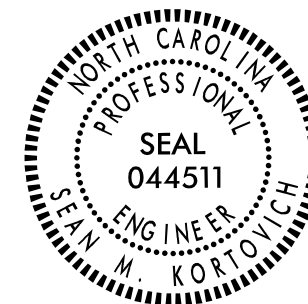
SHEET NO.

PMP - 1

APPROVED: _____

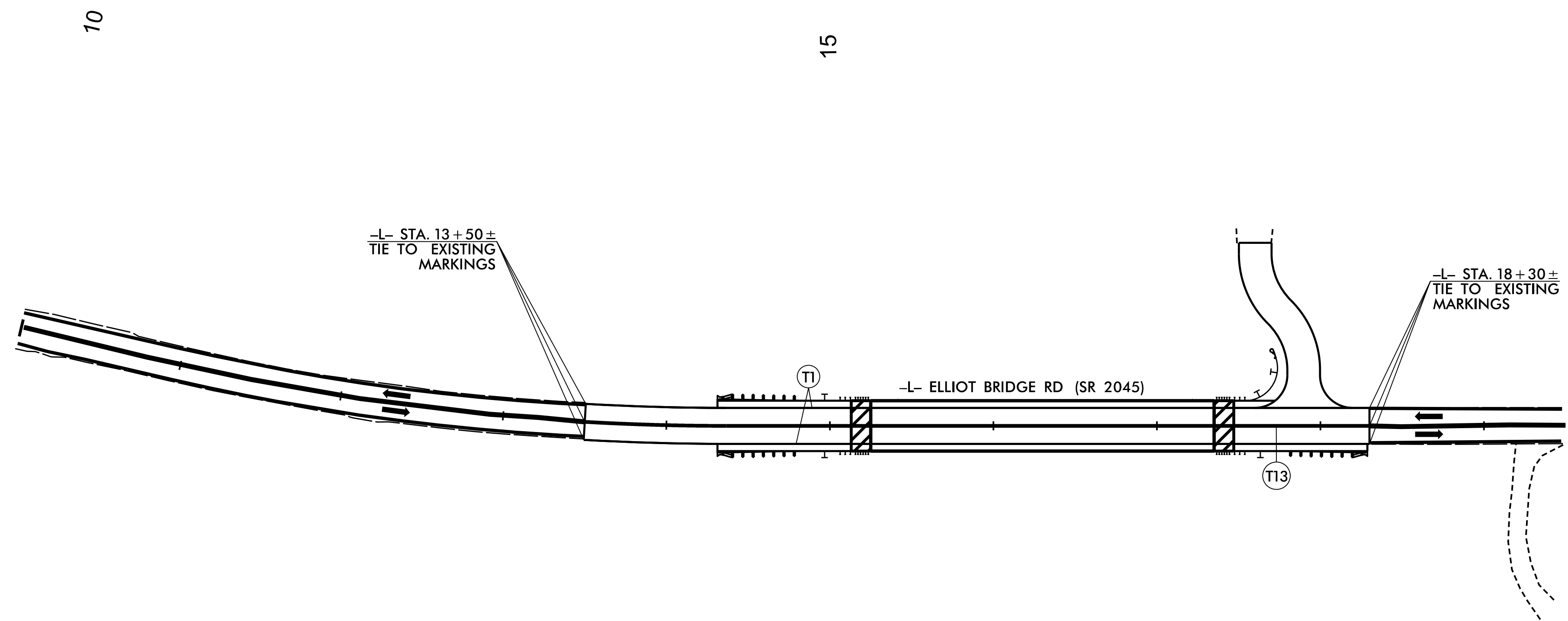
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SEAL



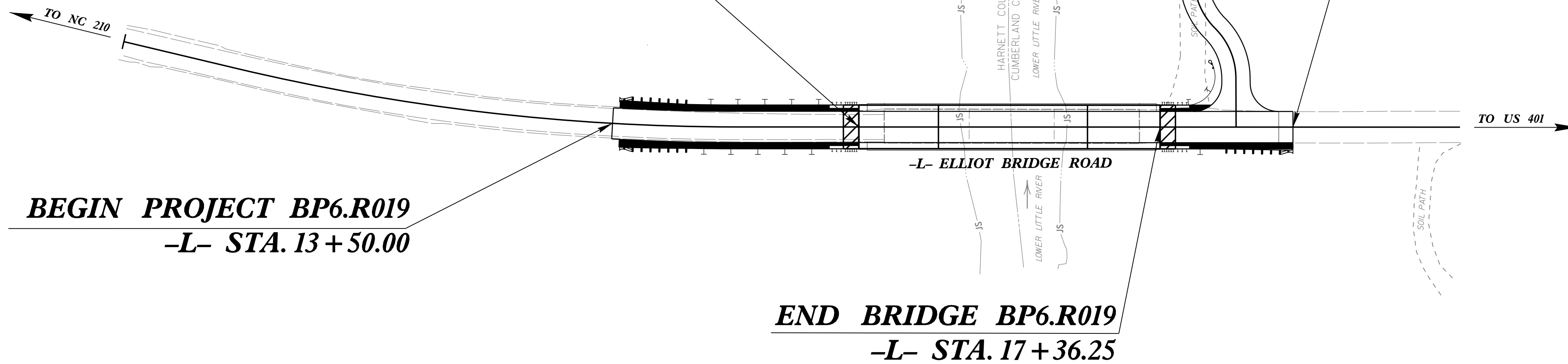
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UNLESS ALL SIGNATURES COMPLETED

\$\$\$\$\$SYTIME\$\$\$\$\$
\$\$\$\$\$SUBSERIAL\$\$\$\$\$



TIP NO.	SHEET NO.
BP6.R019	PMP-2
APPROVED: _____	
DATE: _____	
SEAL	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

26-SEP-2025 16:13
documents/Division-06/BP6.R019/Roadside Environmental/Erosion Control/Design/BP6.R019_EC.tsh

A map of North Carolina showing its county boundaries. Wayne County, located in the central-eastern part of the state, is highlighted in solid black. The surrounding counties are shown in white with black outlines.

GRAPHIC SCALE

50 25 0 50 100

PLANS

RS&H

Designed by:

LILY MCKINNEY **4559**

NAME LEVEL III CERTIFICATION NO.

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.

PROJECT REFERENCE NO.
BP11.R013

SHEET NO.
EC-2

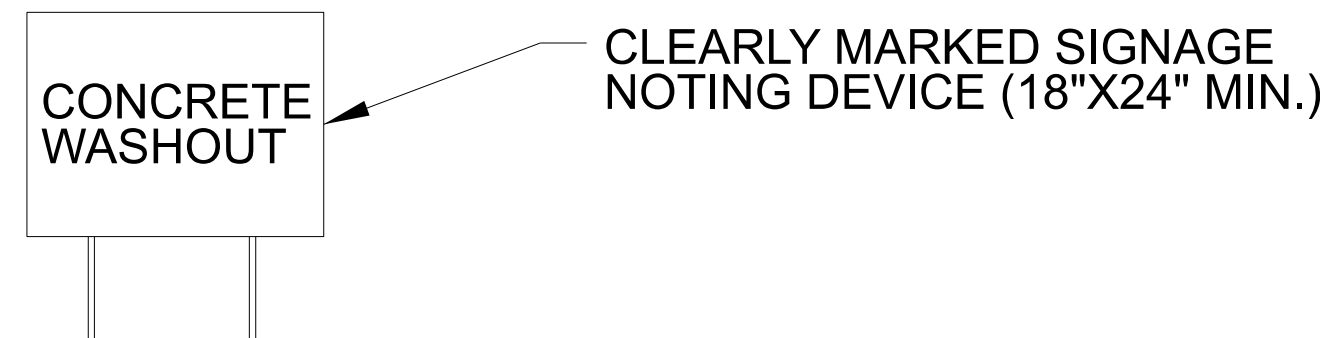
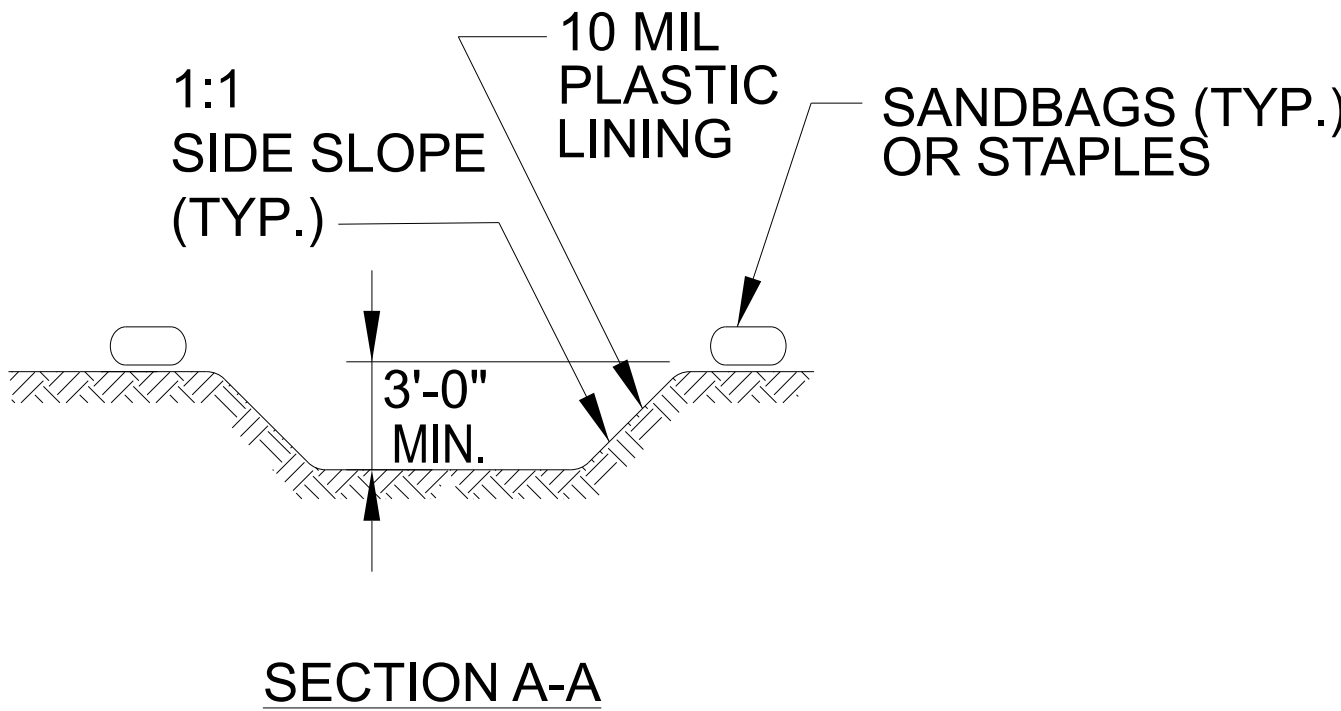
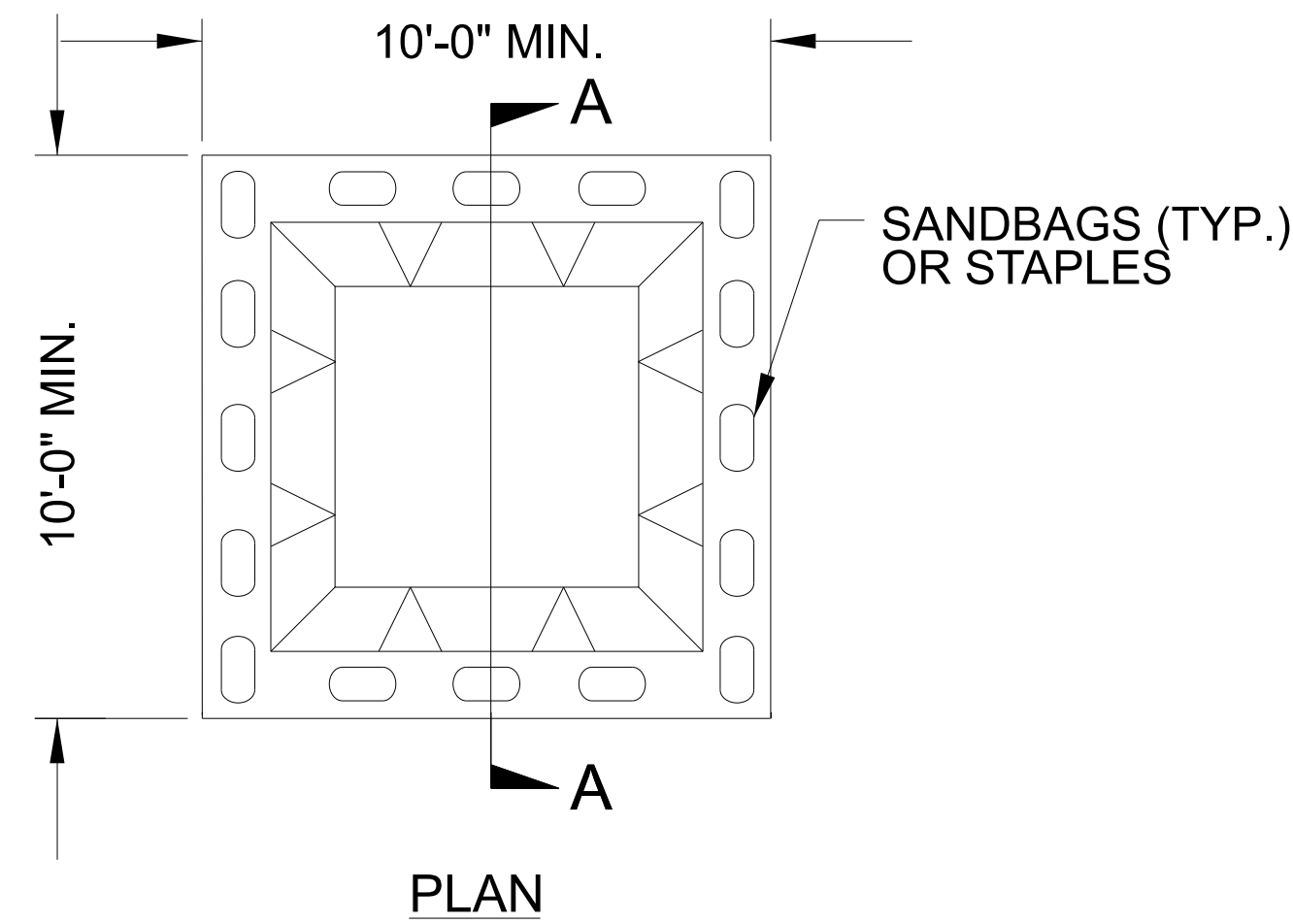
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

EROSION & SEDIMENT CONTROL LEGEND

Std. #	Description	Symbol
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	
1630.02	Silt Basin Type B	
1630.03	Temporary Silt Ditch	
1630.04	Stilling Basin	
1630.05	Temporary Diversion	
1630.06	Special Stilling Basin	
1630.07	Skimmer Basin	
1630.08	Tiered Skimmer Basin	
1630.09	Earthen Dam with Skimmer	
	Infiltration Basin	
	Rock Inlet Sediment Trap:	
1632.01	Type A	
1632.02	Type B	
1632.03	Type C	

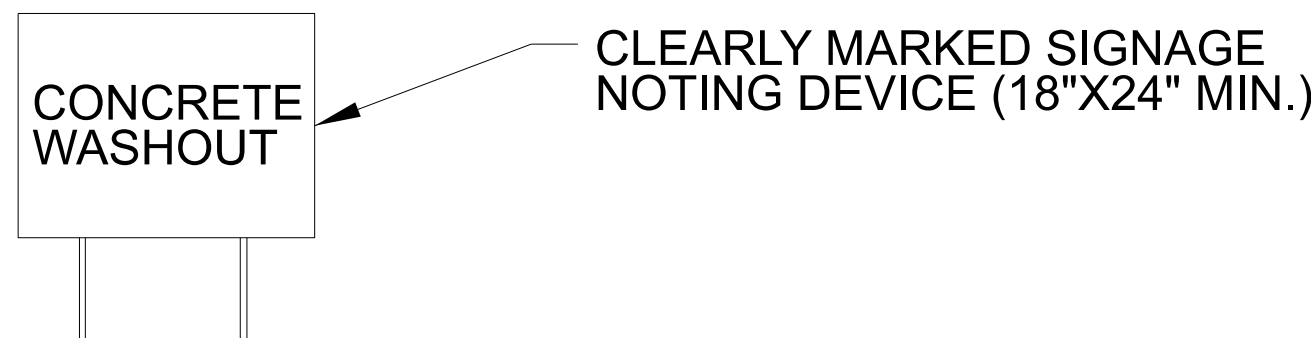
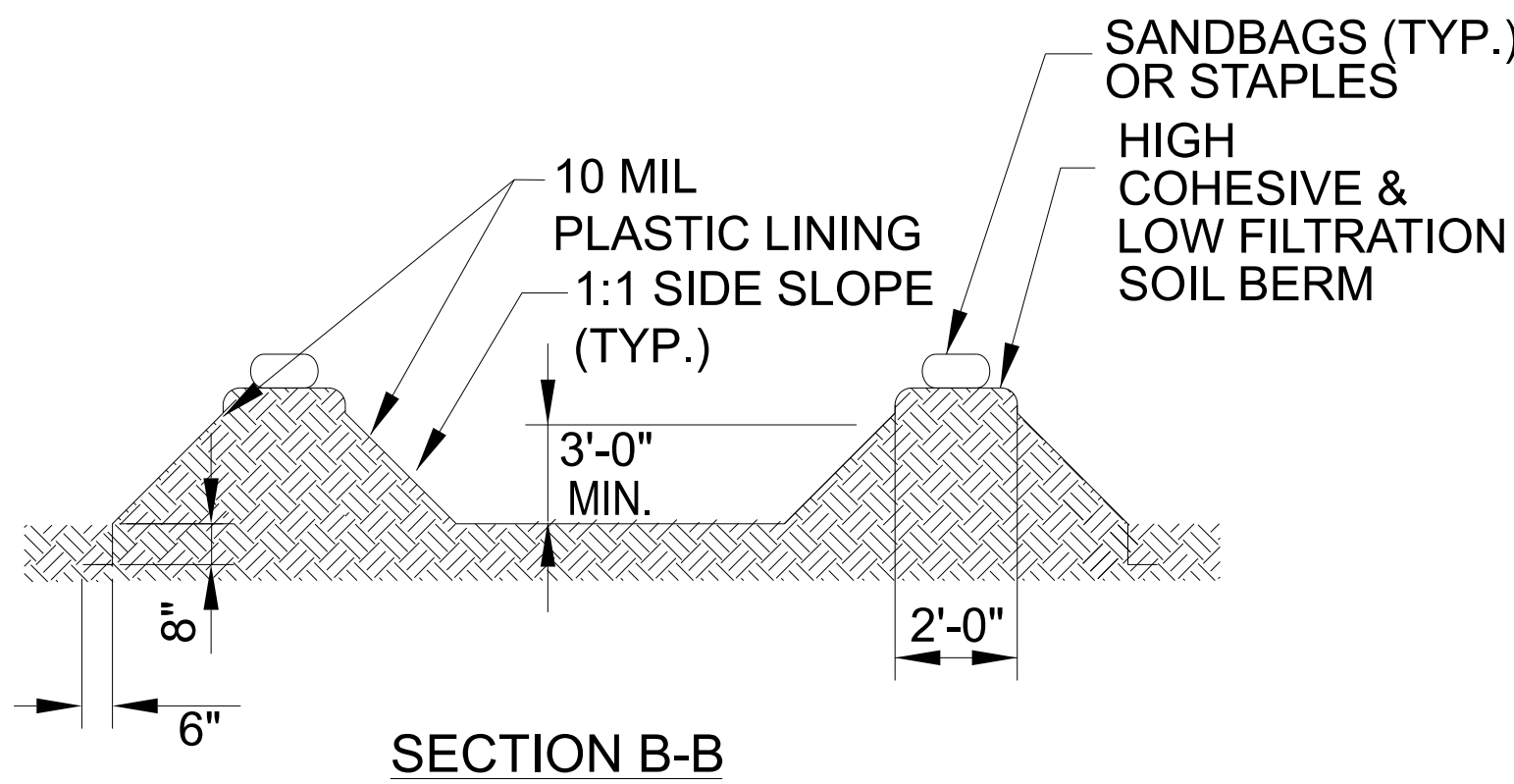
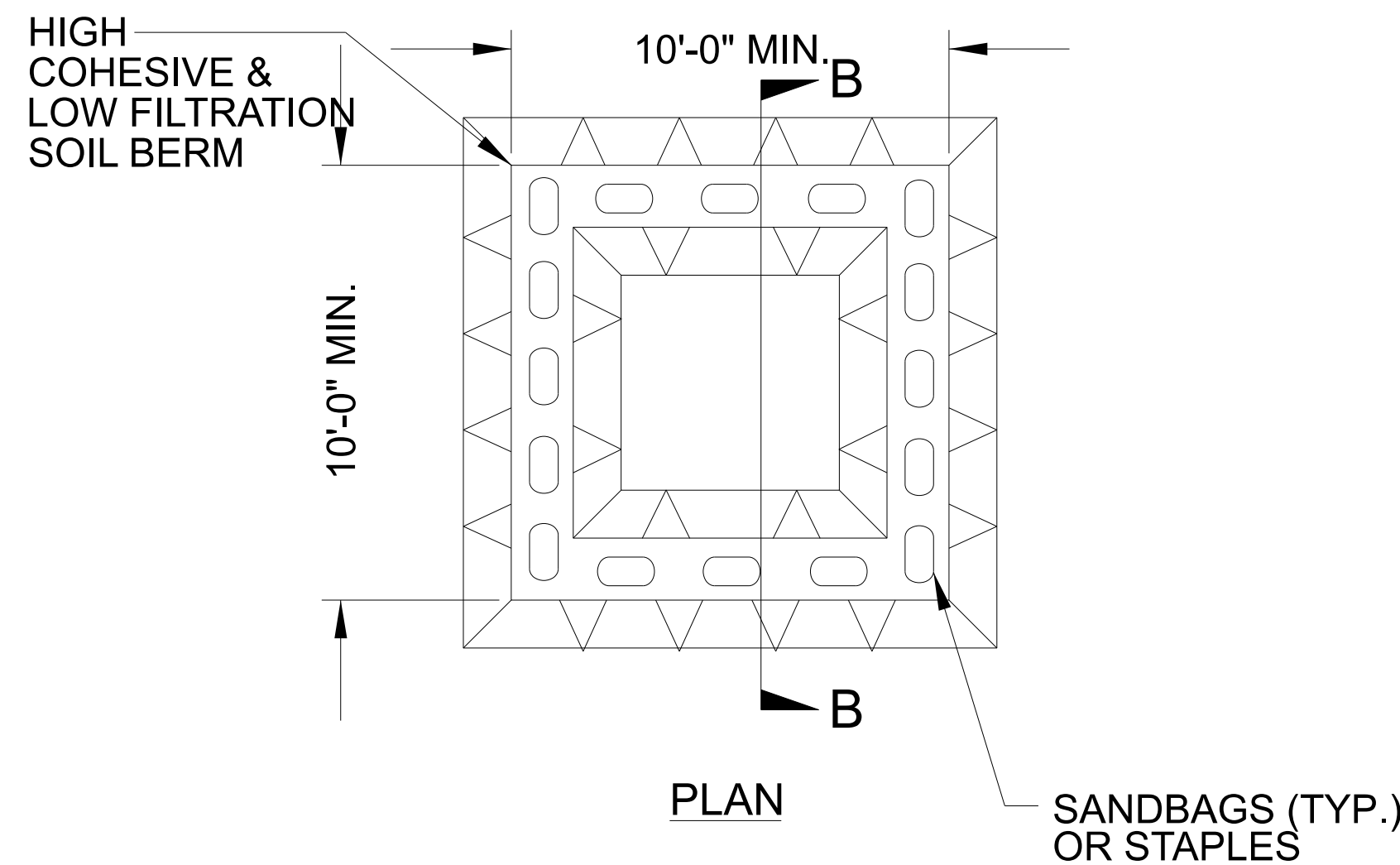
Std. #	Description	Symbol
1633.01	Temporary Rock Silt Check Type A	
1633.02	Temporary Rock Silt Check Type B	
1633.03	Temporary Rock Silt Check Type A with Excelsior Matting and Flocculant	
1634.01	Temporary Rock Sediment Dam Type A	
1634.02	Temporary Rock Sediment Dam Type B	
1635.01	Rock Pipe Inlet Sediment Trap Type A	
1635.02	Rock Pipe Inlet Sediment Trap Type B	
1636.01	Excelsior Wattle Check	
1636.01	Excelsior Wattle Check with Flocculant	
1636.01	Coir Fiber Wattle Check	
1636.01	Coir Fiber Wattle Check with Flocculant	
1636.02	Silt Fence Excelsior Wattle Break	
	Silt Fence Coir Fiber Wattle Break	
1636.03	Excelsior Wattle Barrier	
1636.03	Coir Fiber Wattle Barrier	

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

SOIL STABILIZATION TIMEFRAMES

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

BP6.R019

Const. 4/EC-4

NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

HARNETT AND CUMBERLAND COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

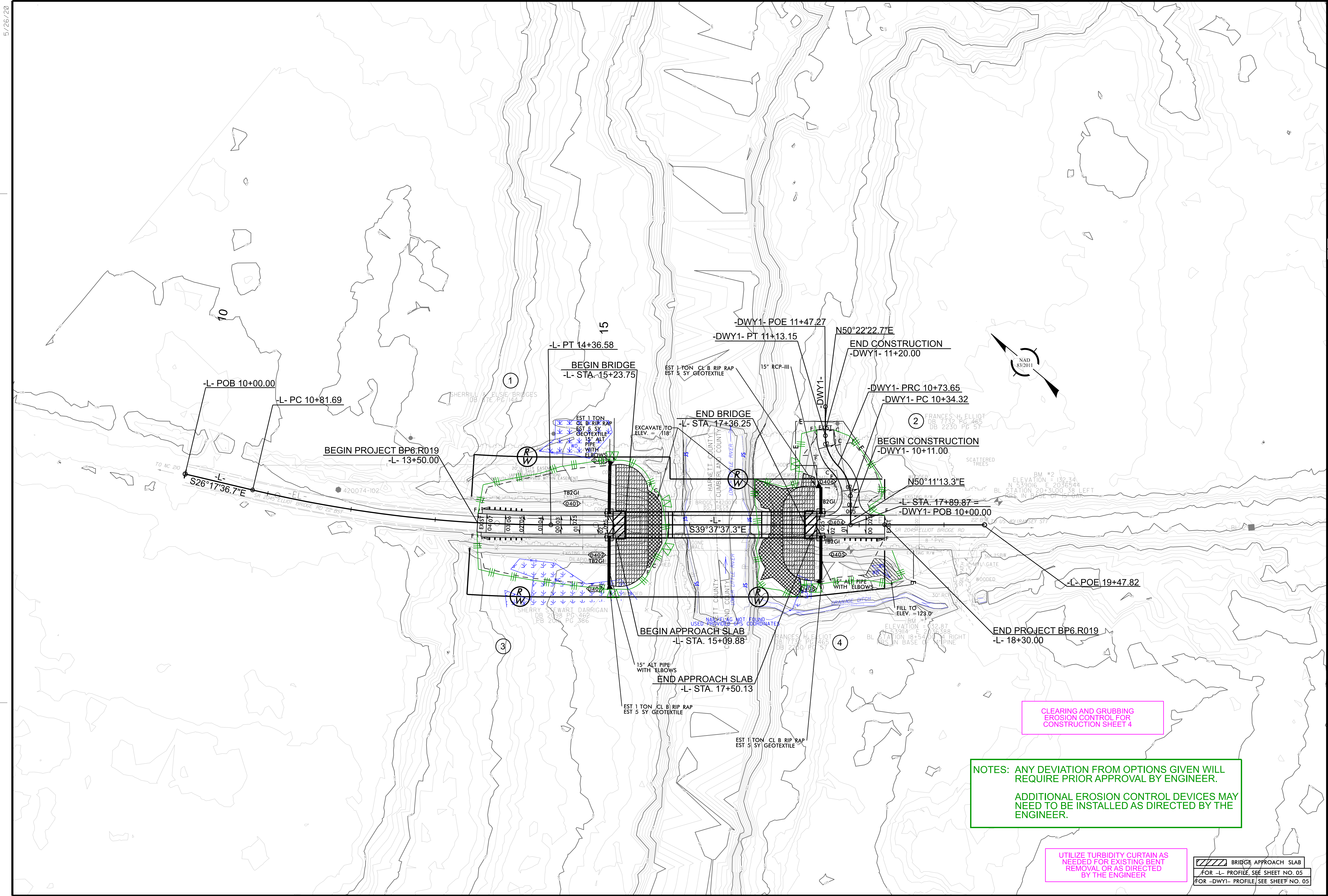
PREPARED BY

RS&H

B521 SIX FORKS ROAD, SUITE 400

RALEIGH, NC 27615

NC FIRM LICENSE NO. F-6493



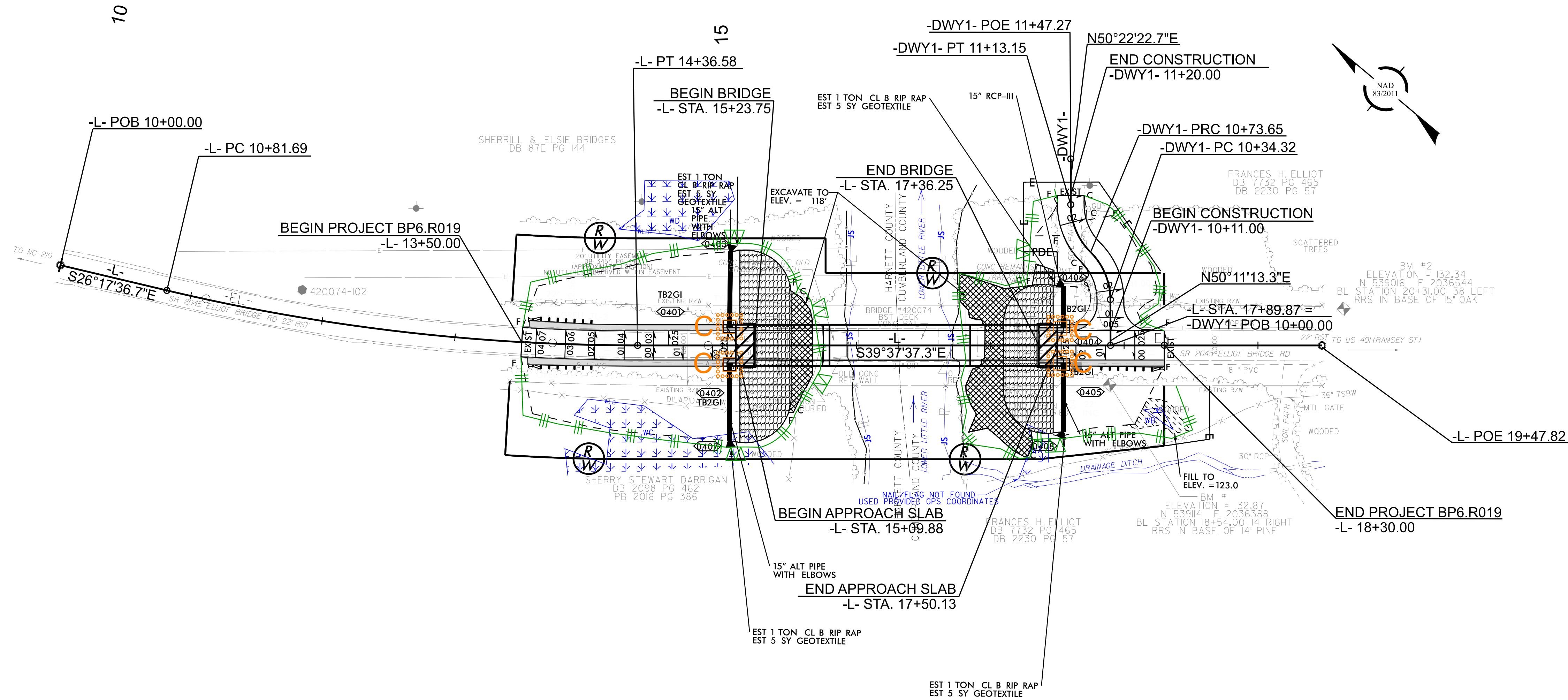
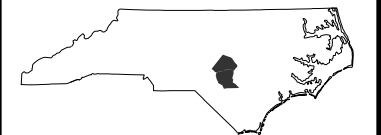
CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4

NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL
REQUIRE PRIOR APPROVAL BY ENGINEER.

ADDITIONAL EROSION CONTROL DEVICES MAY
NEED TO BE INSTALLED AS DIRECTED BY THE
ENGINEER.

UTILIZE TURBIDITY CURTAIN AS
NEEDED FOR EXISTING BENT
REMOVAL OR AS DIRECTED
BY THE ENGINEER

BRIDGE APPROACH SLAB
FOR -L- PROFILE, SEE SHEET NO. 05
FOR -DWY1- PROFILE, SEE SHEET NO. 05



NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL
REQUIRE PRIOR APPROVAL BY ENGINEER.

ADDITIONAL EROSION CONTROL DEVICES MAY
NEED TO BE INSTALLED AS DIRECTED BY THE
ENGINEER.

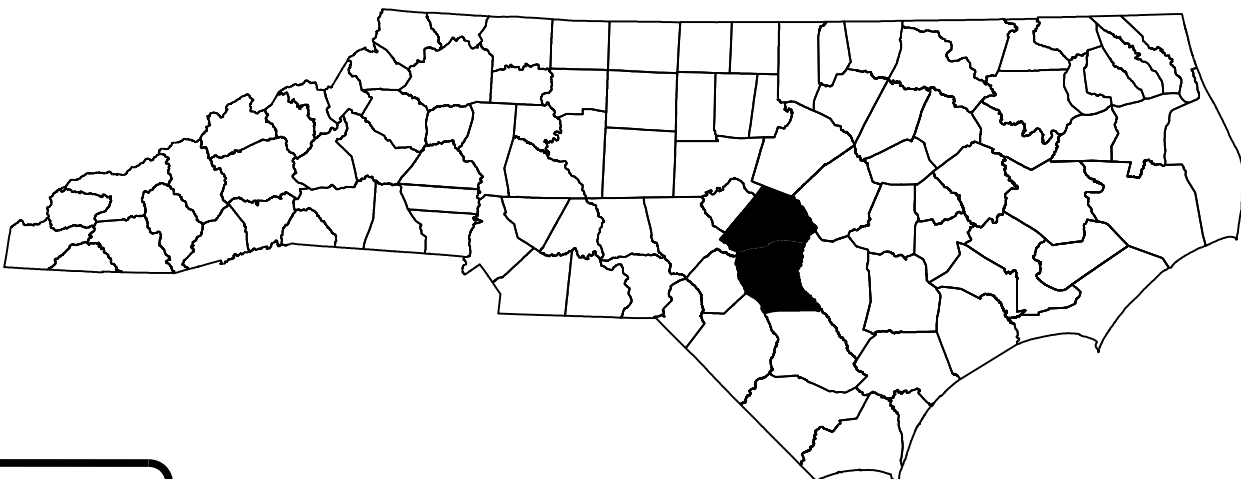
BRIDGE APPROACH SLAB
FOR -L- PROFILE, SEE SHEET NO. 05
FOR -DWY1- PROFILE, SEE SHEET NO. 05

T.I.P. PROJECT: BP6.R019

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

SIGNING PLAN
HARNETT AND CUMBERLAND COUNTIES

LOCATION: BRIDGE 42074 OVER LOWER LITTLE RIVER
ON SR 2045 (ELLIOT BRIDGE ROAD)



ROADWAY STANDARD DRAWING

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

STD. NO.	TITLE
903.10	GROUND MOUNTED SIGN SUPPORTS
904.10	ORIENTATION OF GROUND MOUNTED SIGNS
904.50	MOUNTING OF TYPE 'D', 'E' AND 'F' SIGNS ON 'U' CHANNEL POSTS

GENERAL NOTES

- IF REMOVAL OR RELOCATION OF SIGNS ON PRIVATE STREET (NON-STATE MAINTAINED) IS REQUIRED DUE TO CONSTRUCTION, THE CONTRACTOR SHALL INFORM THE ENGINEER. THE WORK WILL BE COMPLETED BY OTHERS.
- WHEN NOT STATIONED OR DIMENSIONED ON PLANS, ALL 'E' AND 'F' SIGNS SHALL BE FIELD LOCATED BY THE ENGINEER
- ALL EXISTING SIGNS ON "U" CHANNEL POST WITHIN THE PROJECT LIMITS SHALL BE REMOVED AND DISPOSED OF UNLESS OTHERWISE NOTED ON PLANS.
- WHEN EXISTING SIGNS ARE REMOVED AND INSTALLED ON NEW SUPPORTS, THE RE-ERECTION SHALL IMMEDIATELY FOLLOW THE REMOVAL.
- THE BACKGROUND FOR TYPE E & F SIGNS SHALL BE TYPE C REFLECTIVE SHEETING.
- SEE ROADWAY PLANS FOR GUARD/GUIDE RAIL DETAILS.

SUMMARY OF QUANTITIES

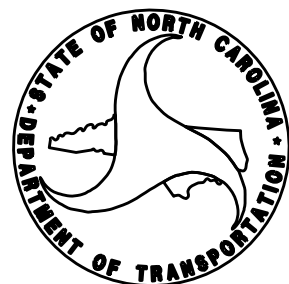
ITEM NO.		ITEM DESCRIPTION	QUANTITY	UNIT
DESC. NO.	SECT. NO.			
4072000000	903	SUPPORTS, 3 LB STEEL U-CHANNEL	50	L.F.
4116100000	904	SIGN ERECTION, RELOCATE SIGN TYPE D	2	EA.
4116100000	904	SIGN ERECTION, RELOCATE SIGN TYPE E	3	EA.
4155000000	907	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	4	EA.
4192000000	907	DISPOSAL OF SUPPORT, U-CHANNEL	5	EA.

INDEX

SHEET NO.	DESCRIPTION
SIGN-1	TITLE SHEET
SIGN-2	SIGN DETAIL SHEET

PLAN SUBMITTED TO: NCDOT DIVISION 6

ADAM BRITT NCDOT DIVISION 6 BRIDGE PROGRAM MANAGER



PLAN PREPARED BY: RS&H

SEAN KORTOVICH, P.E. PROJECT ENGINEER

NIKI AVGERINOS, P.E. PROJECT DESIGN ENGINEER



TIP NO.	SHEET NO.
BP6.R019	SIGN - 1
APPROVED: _____	
DATE: _____	
SEAL 	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

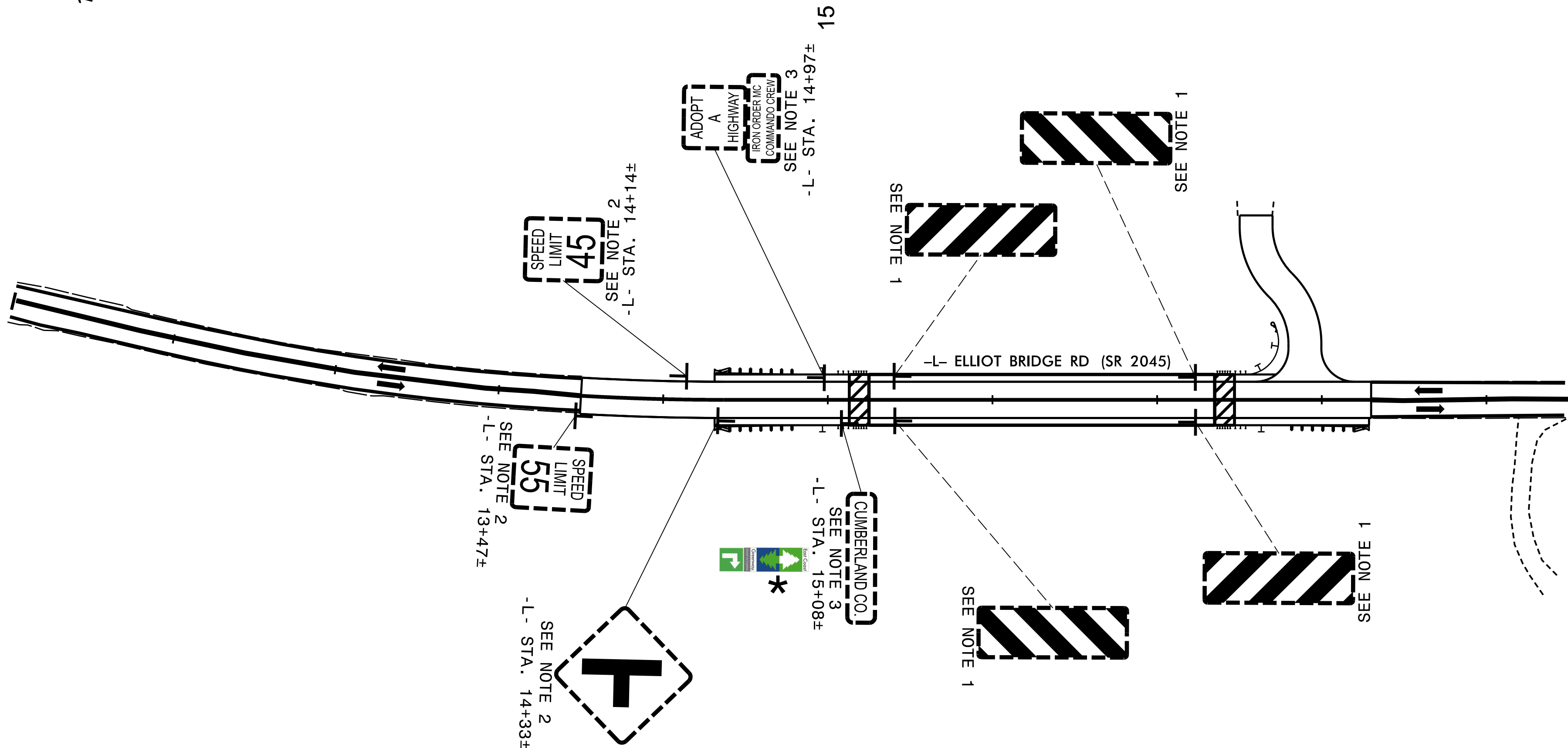
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\$\$\$\$\$CDGN\$\$\$\$\$
\$\$\$\$\$SUPERVIEW\$\$\$\$\$

10

PROJECT NOTES

- 1 DISPOSAL OF SIGN SYSTEM, U-CHANNEL
- 2 SIGN ERECTION, RELOCATE SIGN TYPE E
- 3 SIGN ERECTION, RELOCATE SIGN TYPE D

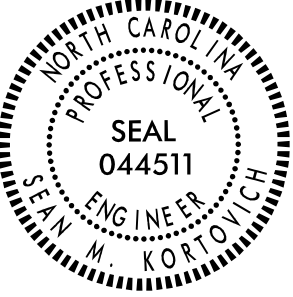
* NOTE: INCLUDE EXISTING EAST COAST GREENWAY
ALLIANCE ROUTE SIGN AND DIRECTIONAL
ARROW PLAQUE IN SIGN RELOCATION



RS&H

8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NC 27615
NC FIRM LICENSE No: F-0493

PROPOSED AND
EXISTING SIGNS

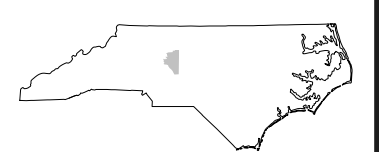
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APPROVED: _____	
DATE: _____	
SEAL 	
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STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS		
NOTE: APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, FINE GRADING, CLEARING AND GRUBBING, AND REMOVAL OF EXISTING PAVEMENT WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR GRADING. EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT		
Station	Uncl. Exc.	Embt
L	(cu. yd.)	(cu. yd.)
13+50	0	0
14+00	9	225
14+50	8	528
15+00	18	463
15+50	15	160
16+00	0	0
16+50	0	0
17+00	0	0
17+50	4	12
18+00	12	291
18+30	5	168
18+50	0	0
Station	Uncl. Exc.	Embt
DWY1	(cu. yd.)	(cu. yd.)
10+11	0	0
10+15	3	0
10+25	3	13
10+50	2	142
10+75	3	163
11+00	14	52
11+20	15	0

BPG.R019

X-1A

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DAVIDSON COUNTY



ROADWAY DESIGN UNIT
ROADWAY DESIGN
ENGINEER

HYDRAULICS
ENGINEER

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

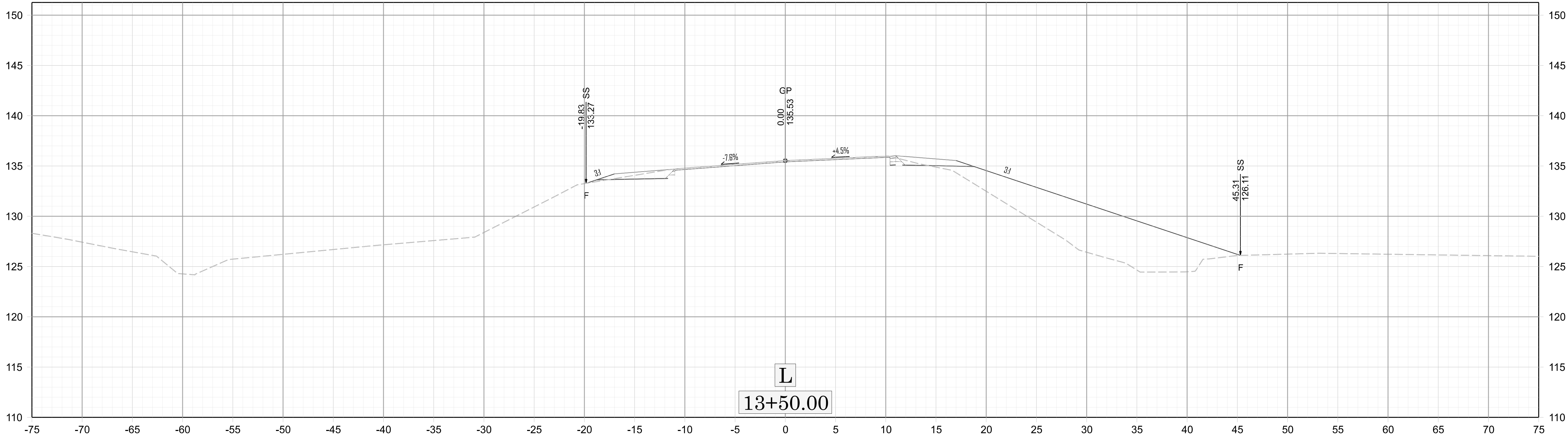
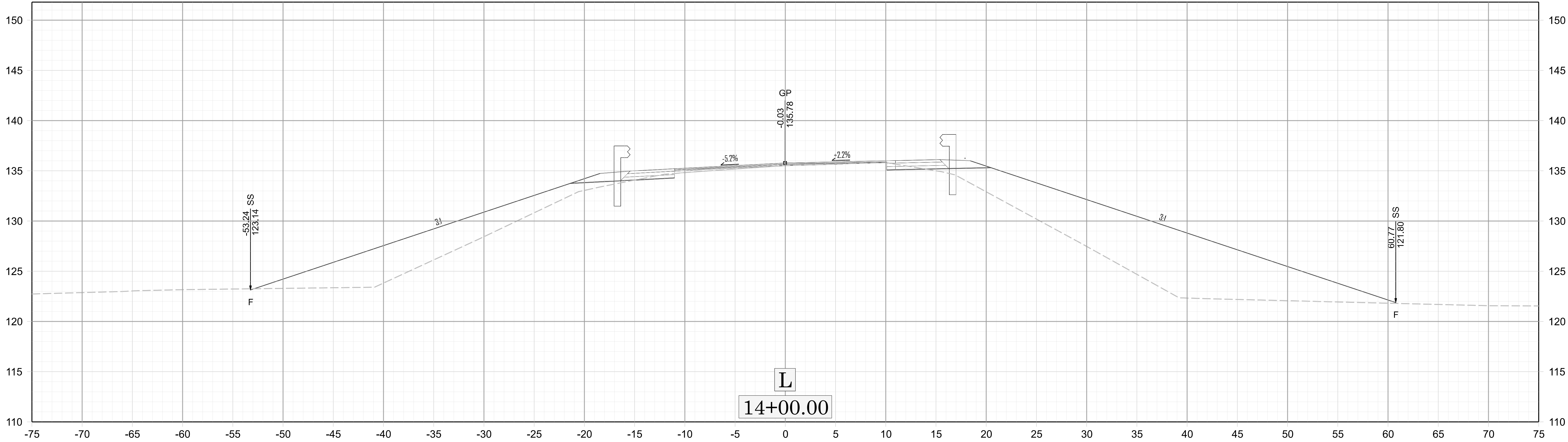
INCOMPLETE PLANS
DO NOT USE FOR R.P. ACQUISITION

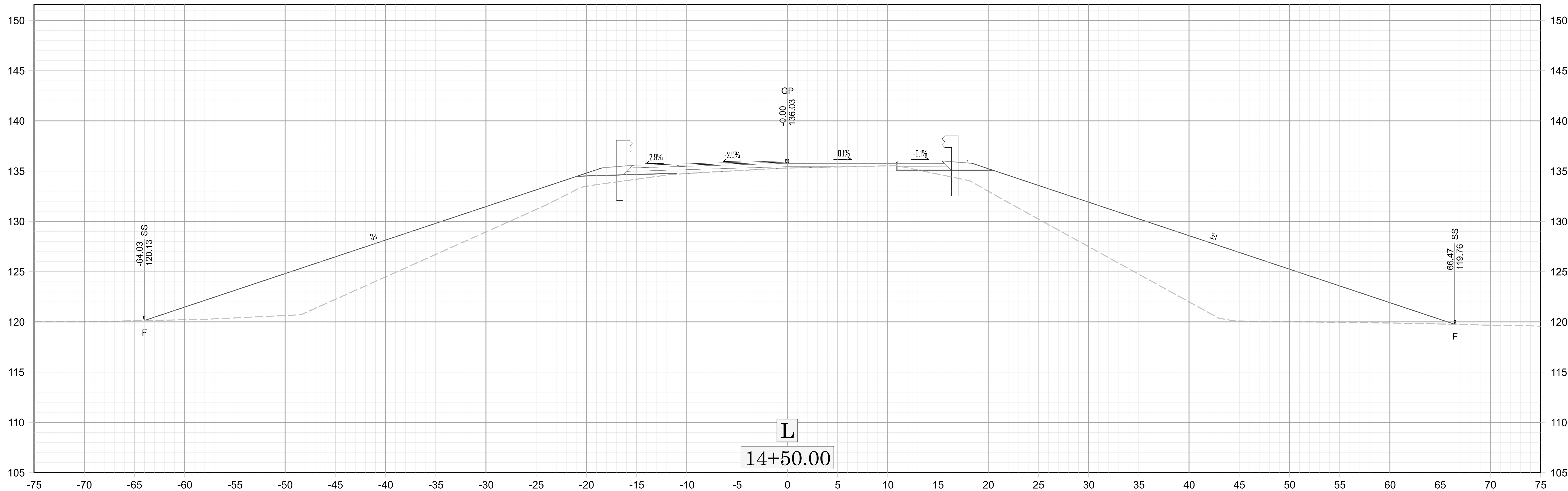
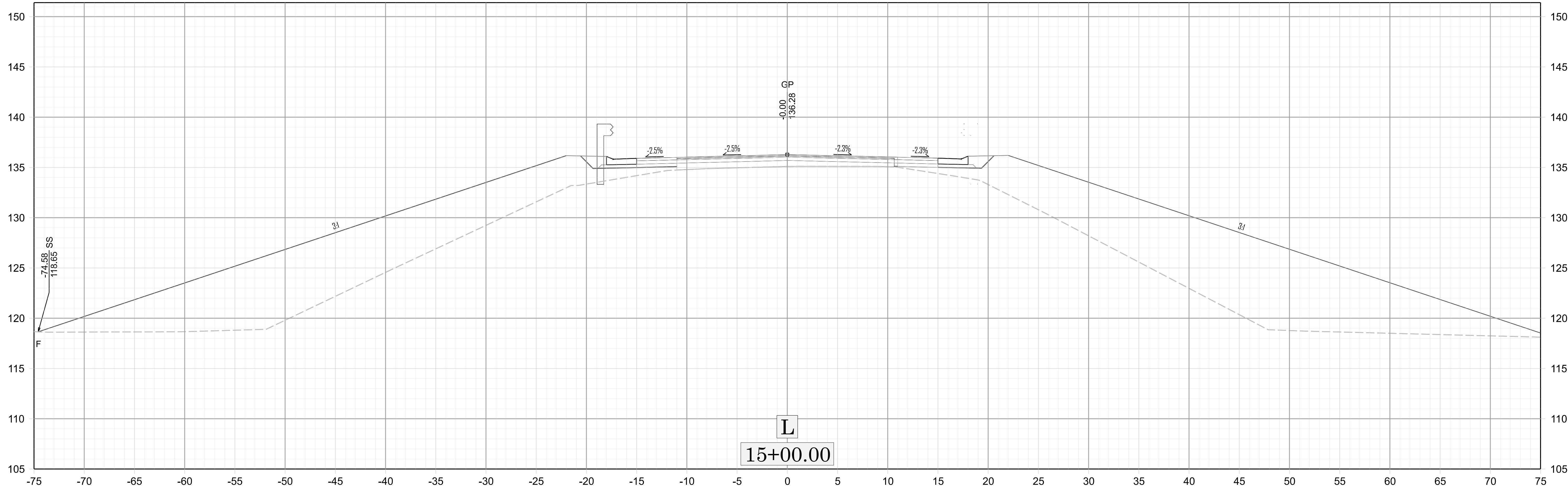
PREPARED BY

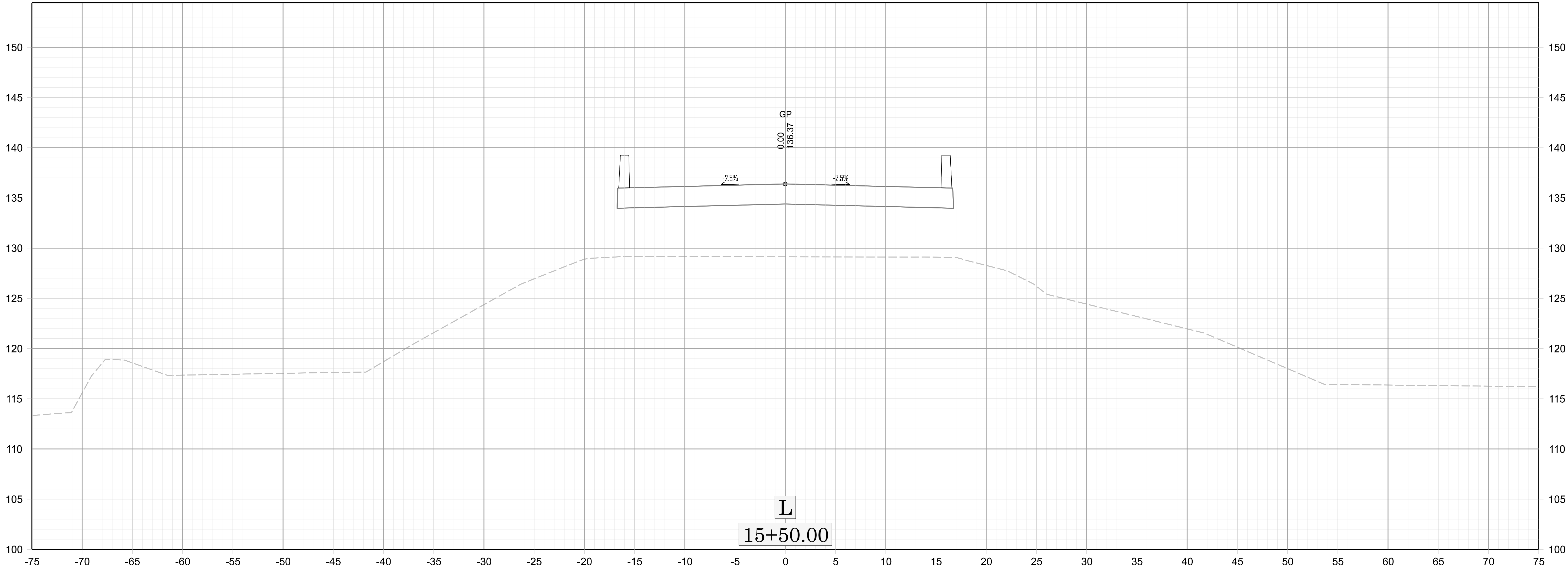
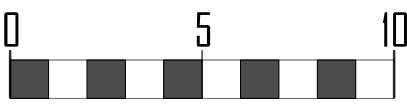
RS&H

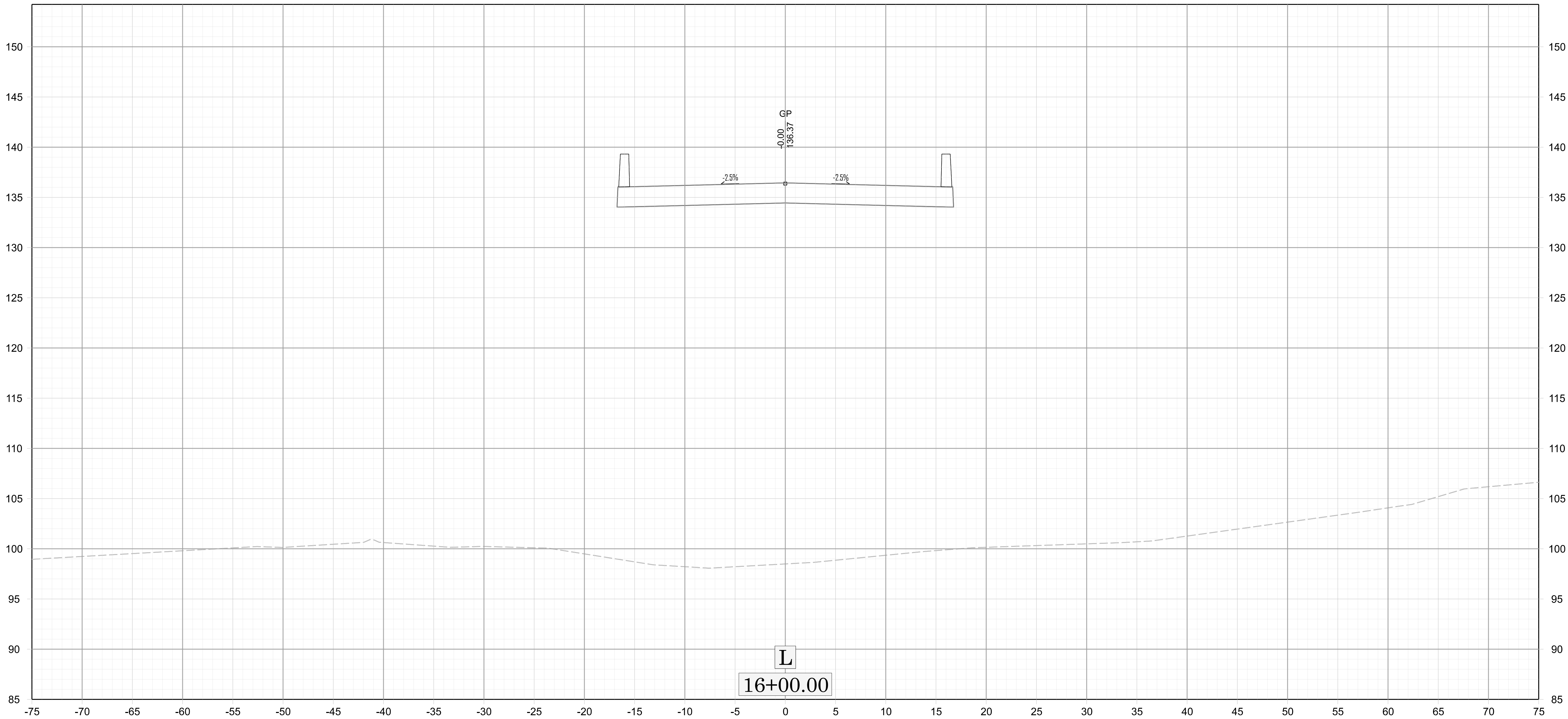
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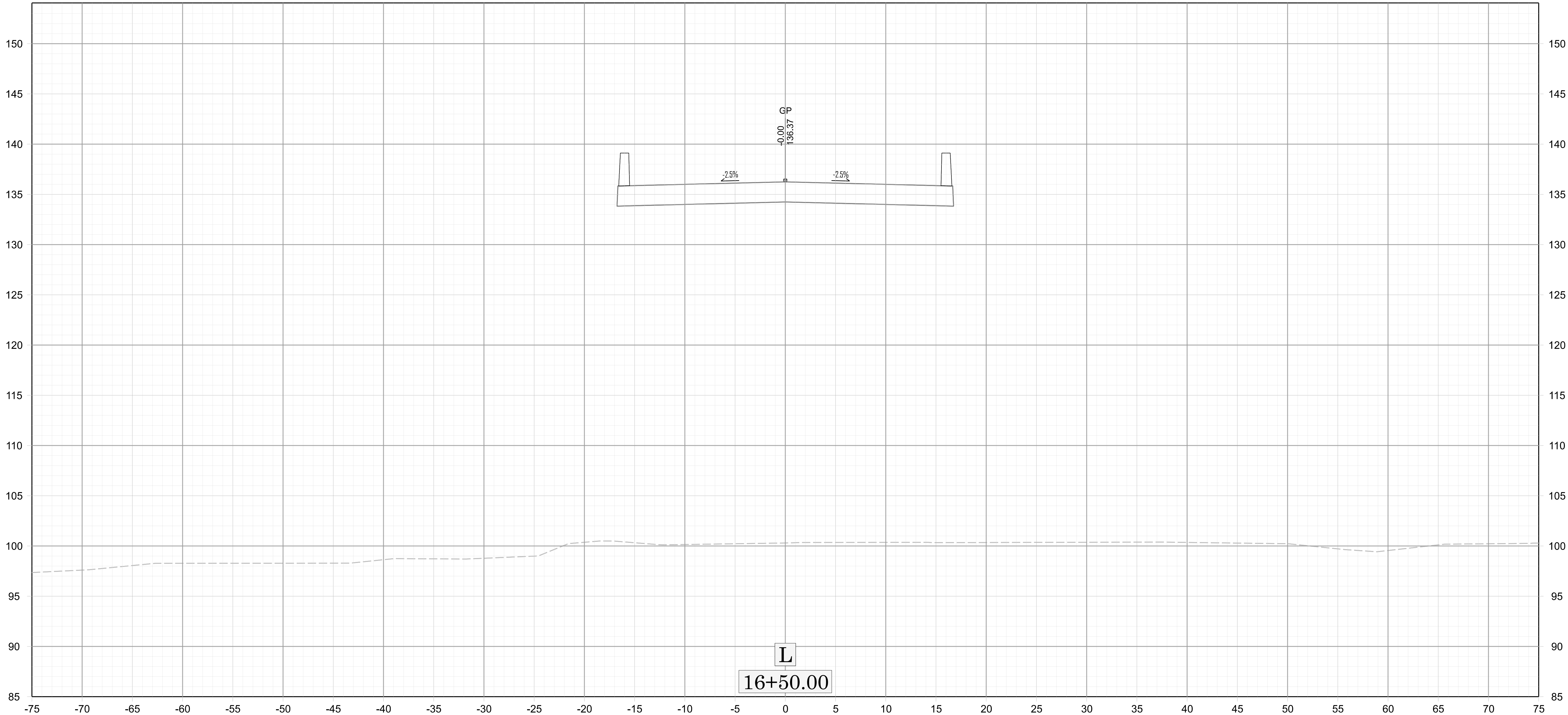
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UNLESS ALL SIGNATURES COMPLETED

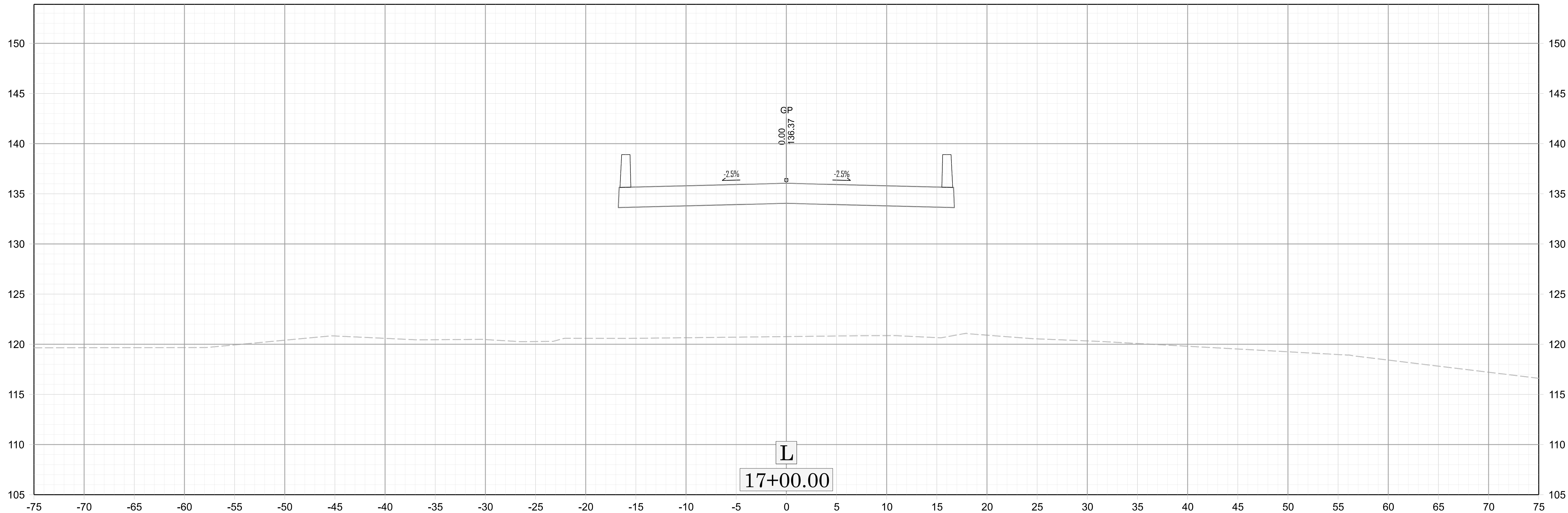
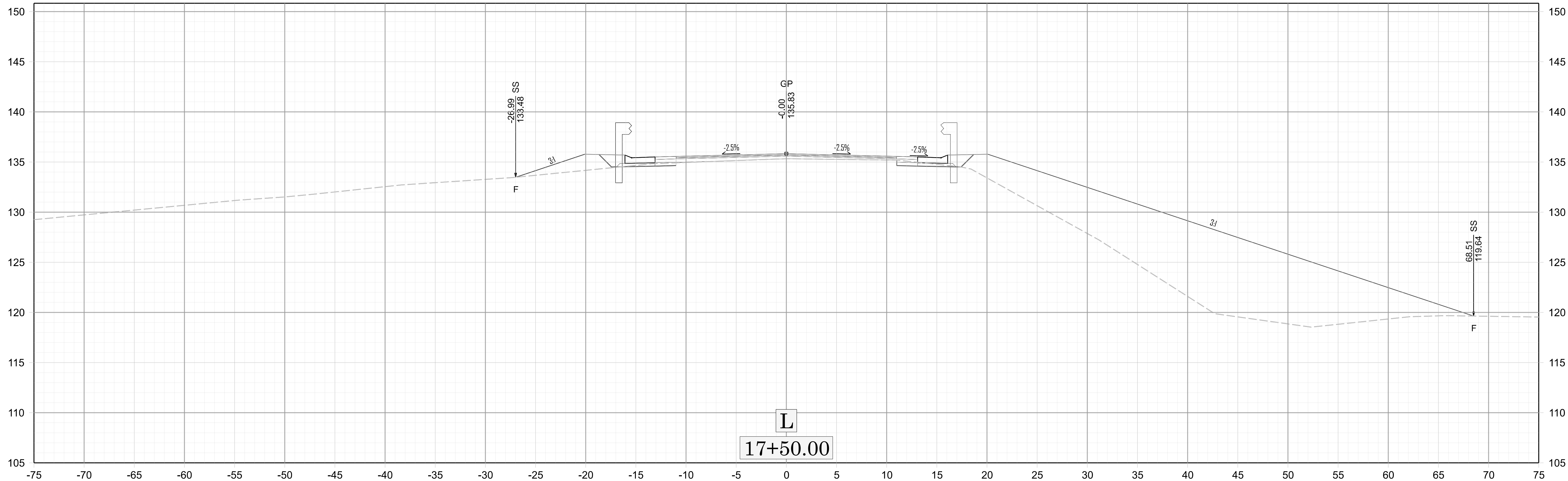


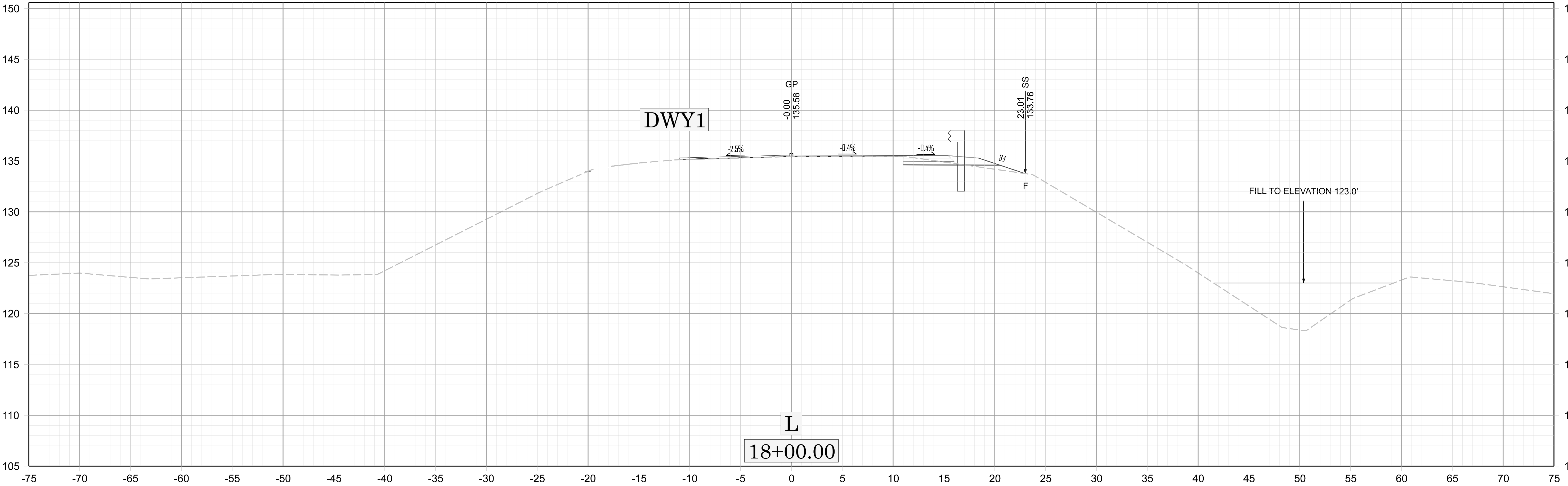
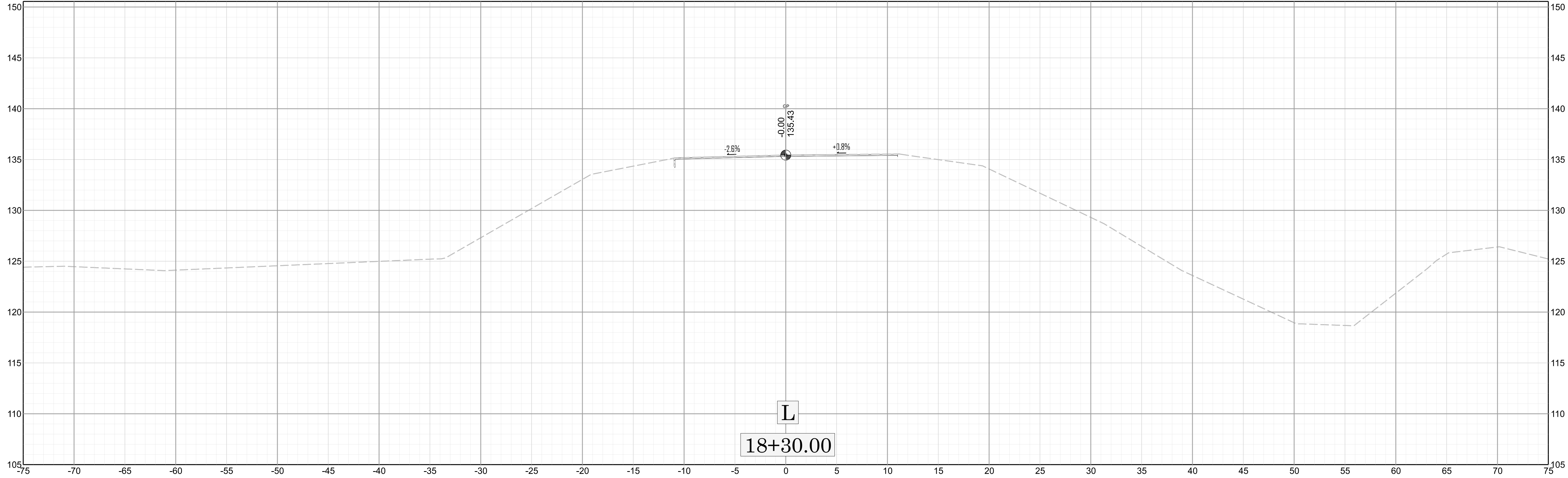


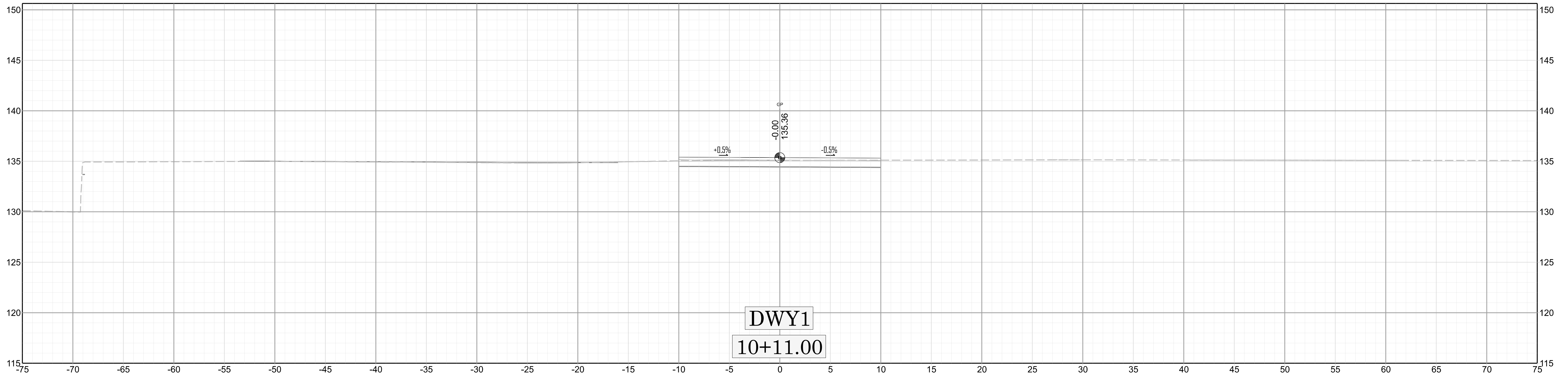
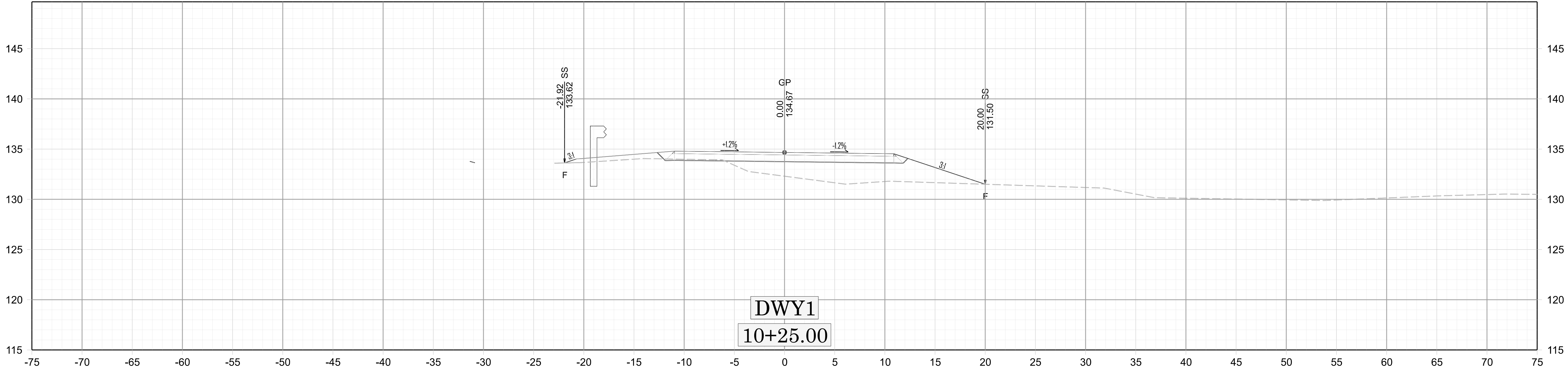


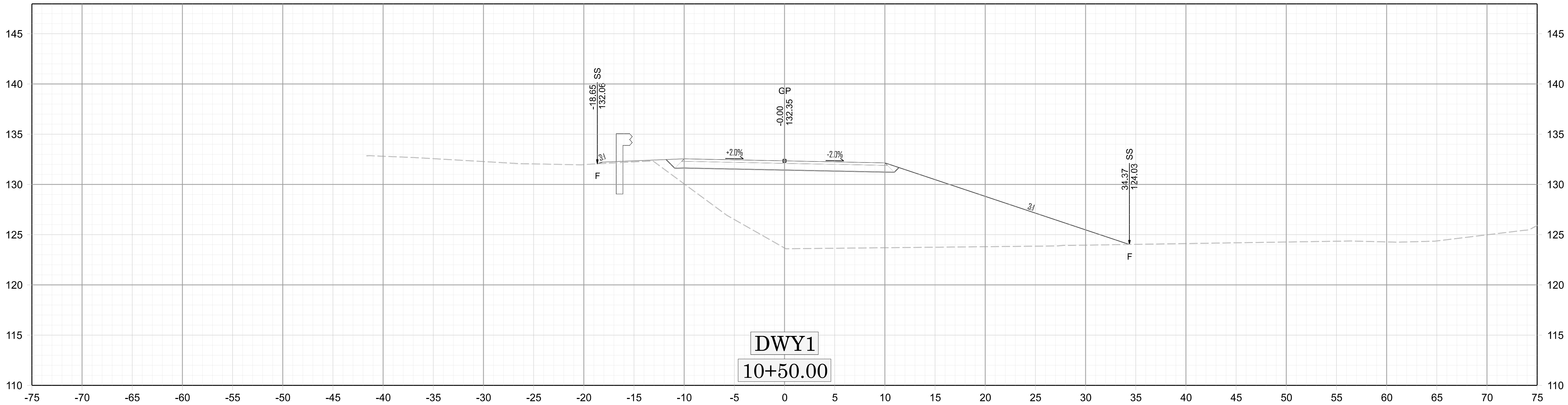
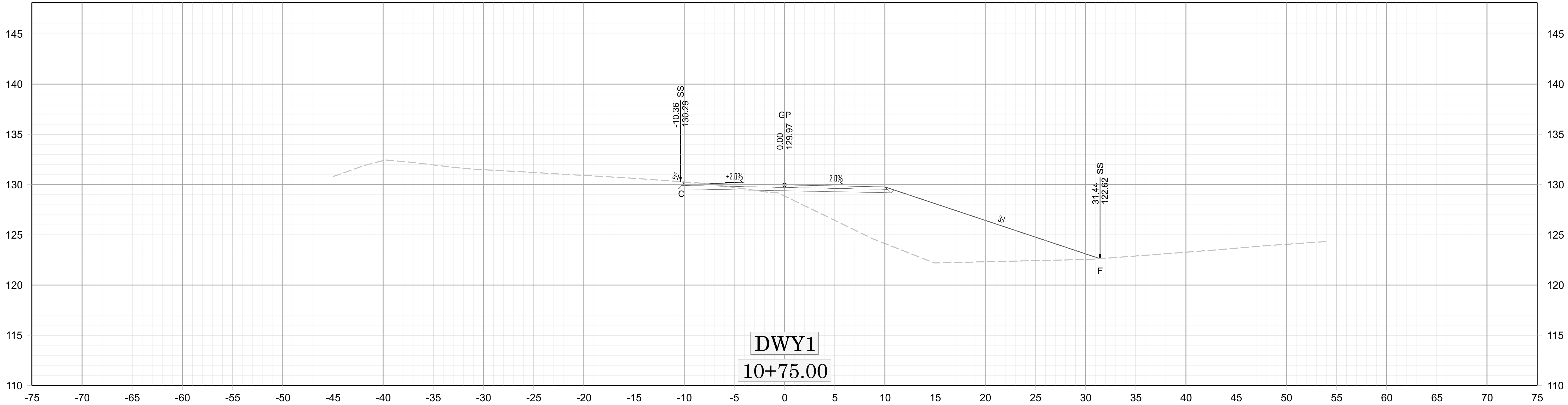


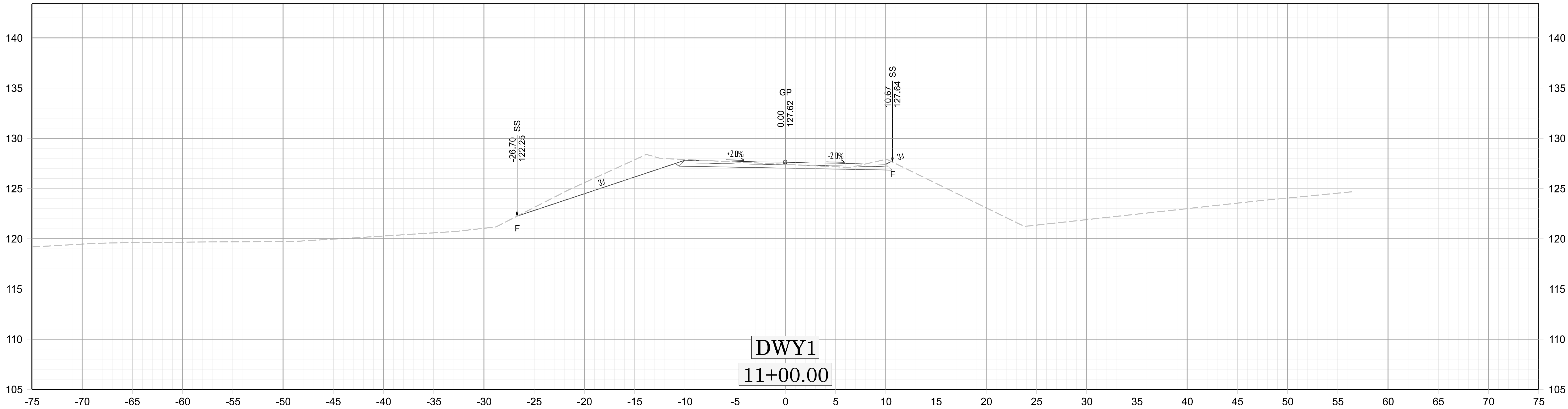
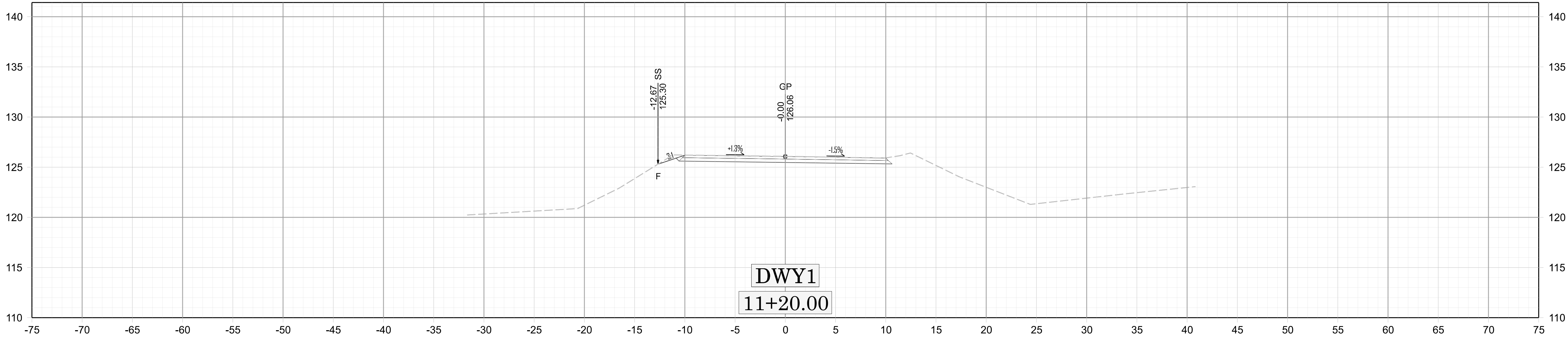








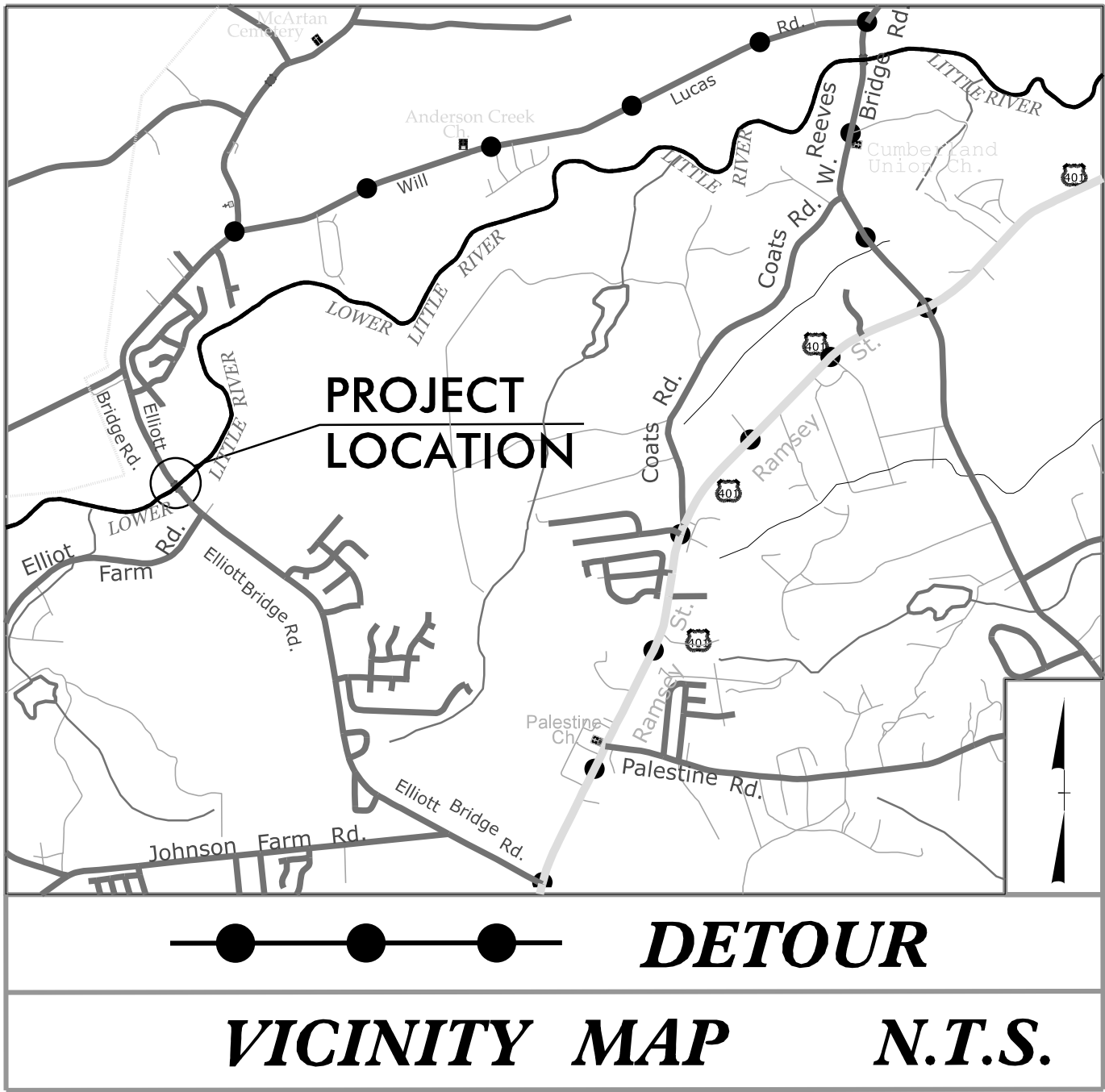




09/08/09

TIP PROJECT: BP6.R019

CONTRACT: DF00565



100% STRUCTURES PLANS

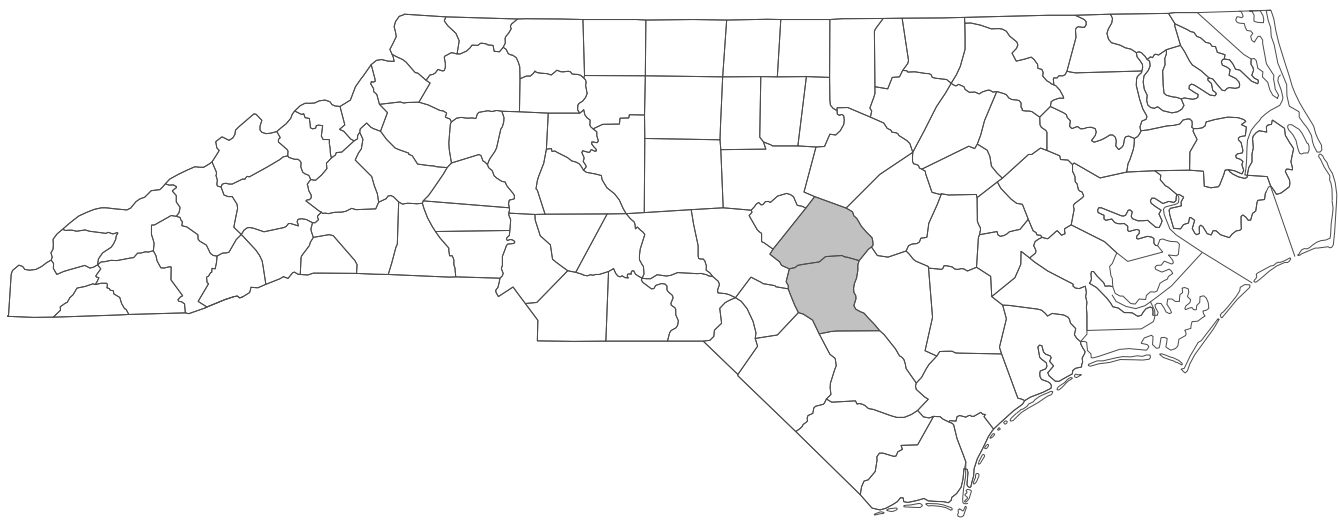
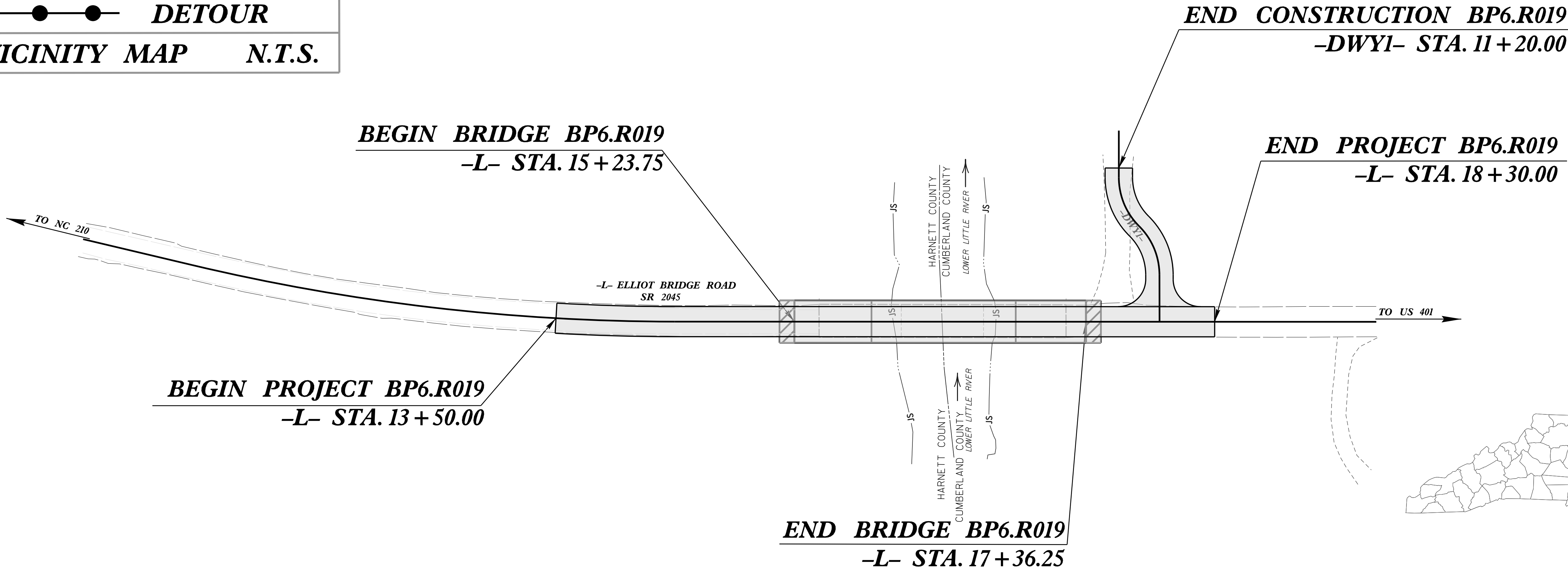
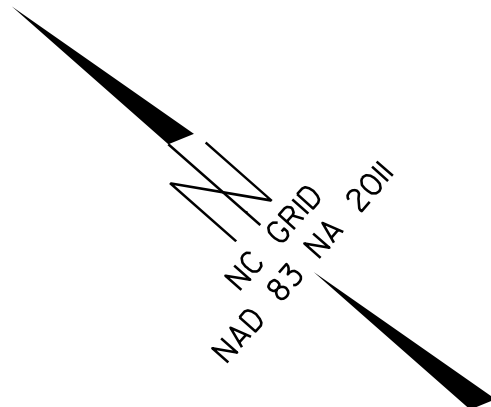
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HARNETT AND CUMBERLAND COUNTIES

LOCATION: *BRIDGE 420074 OVER LOWER LITTLE RIVER
ON SR 2045 (ELLIOT BRIDGE ROAD)*

TYPE OF WORK: *GRADING, DRAINAGE, PAVING, AND STRUCTURE (BRIDGE)*

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP6.R019	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
BP6.R019.1		PE	
BP6.R019.2		ROW	
BP6.R019.3		CONST	



STRUCTURE

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

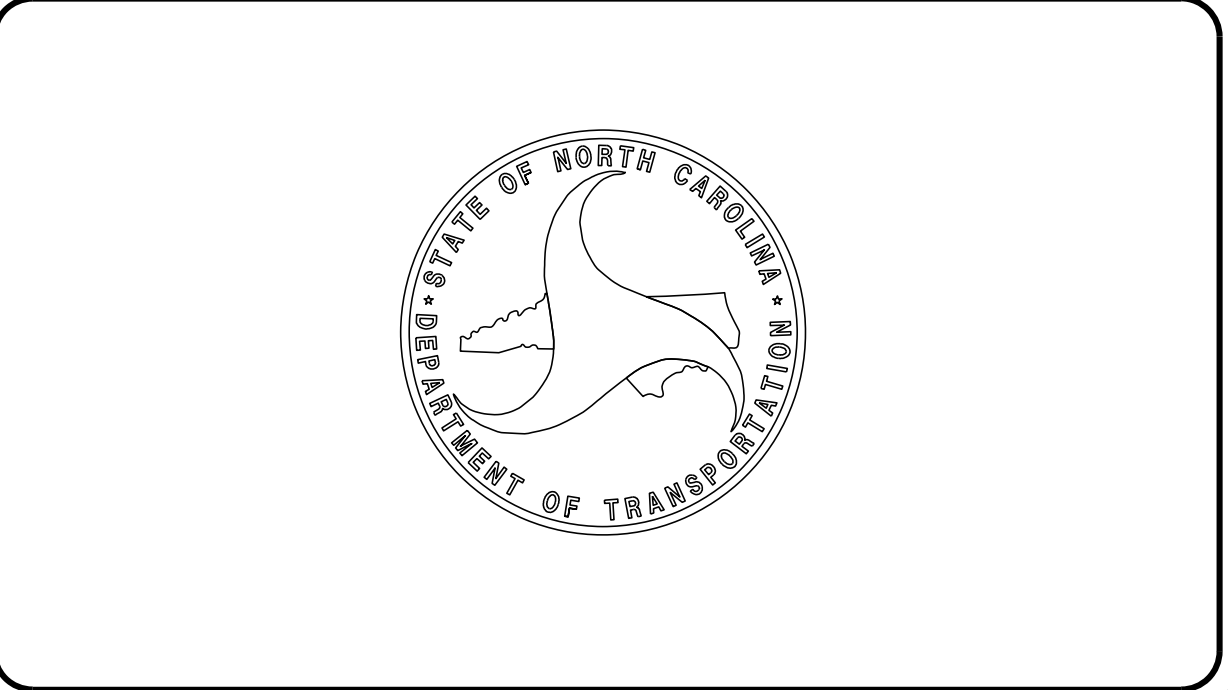
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ADT 2044 =	3,100
T =	6 %
V =	60 MPH
FUNC CLASS =	
MINOR COLLECTOR	
SUBREGIONAL TIER	

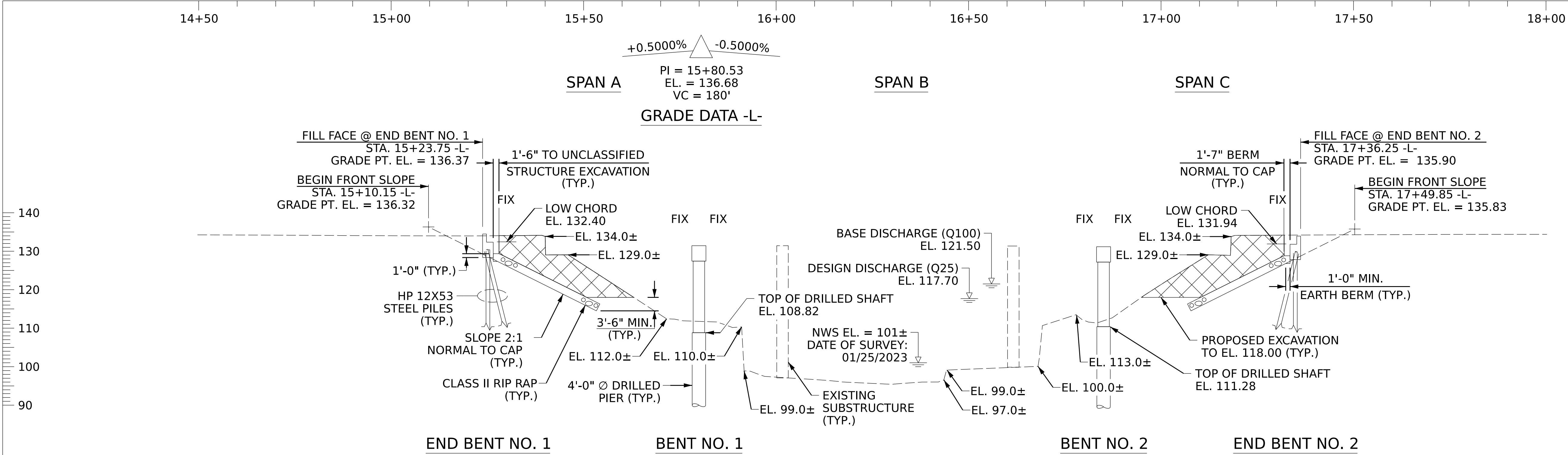
PROJECT LENGTH	
LENGTH ROADWAY TIP PROJECT BP6.R019 =	0.051 MILES
LENGTH STRUCTURE TIP PROJECT BP6.R019 =	0.040 MILES
TOTAL LENGTH TIP PROJECT BP6.R019 =	0.091 MILES

PREPARED IN THE OFFICE OF: RS&H FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION 2024 STANDARD SPECIFICATIONS	
8521 SIX FORKS ROAD, SUITE 400 RALEIGH, NC 27615 NC FIRM LICENSE No: F-0493	
RIGHT OF WAY DATE: OCTOBER 25, 2025	TONY LAWS, PE PROJECT ENGINEER
LETTING DATE: OCTOBER 21, 2026	MATTHEW ACOSTA, PE PROJECT DESIGN ENGINEER
	ADAM BRITT NCDOT CONTACT

STRUCTURES DESIGN ENGINEER

SIGNATURE: _____ P.E.



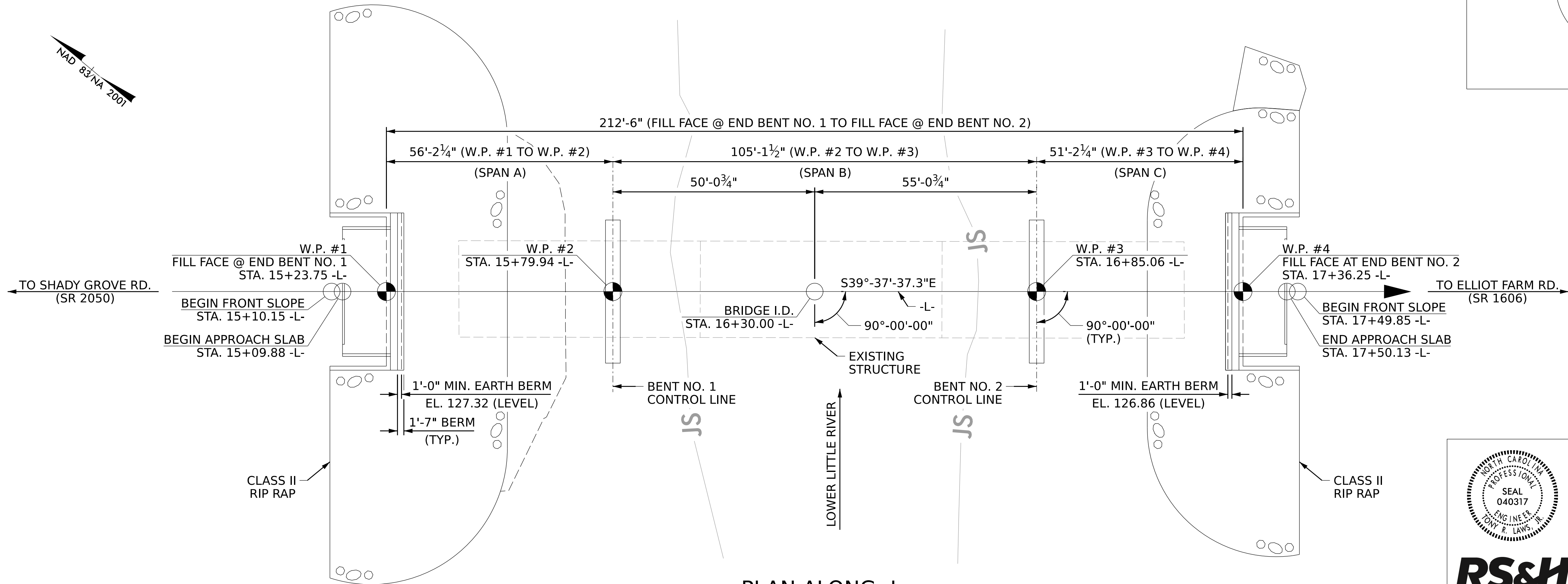
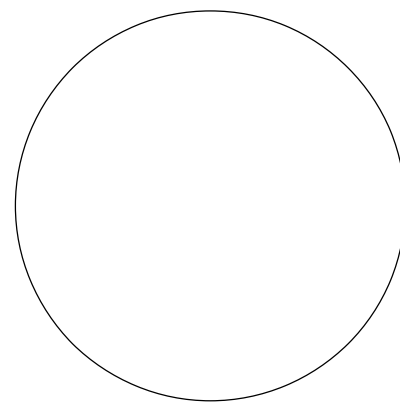


SECTION ALONG -L-

UNCLASSIFIED STRUCTURE EXCAVATION

SECTIONS AT END BENTS AND BENTS ARE AT RIGHT ANGLES

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS



PROJECT NO. **BP6.R019**

HARNETT COUNTY

STATION: **16+30.00 -L-**

SHEET 1 OF 4 REPLACES BRIDGE 420074



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

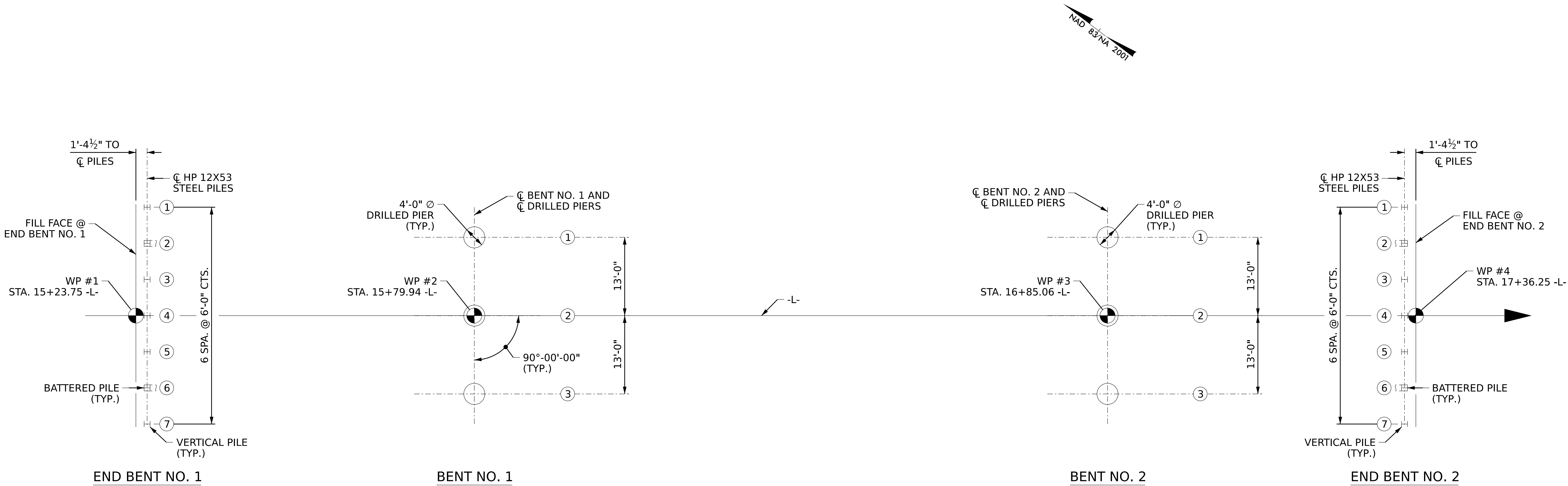
GENERAL DRAWING
FOR BRIDGE ON SR 2045
OVER LOWER LITTLE RIVER
BETWEEN SR 2050 AND
SR 1606

DRAWN BY : J. SCACCA DATE : 08/2025
CHECKED BY : V. SELLERS DATE : 08/2025
DESIGN ENGINEER OF RECORD : T. LAWS DATE : 07/2026

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FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-1 TOTAL SHEETS 28
2			4			



FOUNDATION LAYOUT

ALL BATTERED PILES ARE BATTERED AT 3H:12V

NOTES

- FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
- FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
- IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 31,000 TO 66,000 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENTS NO. 1 AND NO. 2. THE ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

PROJECT NO. BP6.R019
HARNETT COUNTY
STATION: 16+30.00 -L-

SHEET 2 OF 4

RS&H Architects-Engineers-Planners, Inc.
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
GENERAL DRAWING
FOR BRIDGE ON SR 2045
OVER LOWER LITTLE RIVER
BETWEEN SR 2050 AND
SR 1606

REVISIONS						SHEET NO. S-2 TOTAL SHEETS 28
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

DRAWN BY : J. SCACCA DATE : 08/2025
CHECKED BY : V. SELLERS DATE : 08/2025
DESIGN ENGINEER OF RECORD: T. LAWS DATE : 07/2026

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")	Number of Piles per Line	Factored Resistance per Pile KIPS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Length per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling for Piles **			Drilled-In Piles		
						Minimum Pile Tip (Tip No Higher Than) Elevation FT	Required Driving Resistance (RDR)* per pile KIPS	Pile Redrives Quantity EACH	Predrilling Length per Pile LIN FT	Predrilling Elevation (Elevation Not To Predrill Below) FT	Maximum Predrilling Diameter INCHES	Pile Excavation (Bottom of Hole) Elevation FT	Pile Excavation Not In Soil per Pile LIN FT	Pile Excavation In Soil per Pile LIN FT
END BENT NO. 1 Piles (1-7)	7	187	130.36	60			315							
END BENT NO. 2 Piles (1-7)	7	187	129.90	60			315							
TOTAL QUANTITY:														

* $RDR = \frac{\text{Factored Resistance} + \text{Factored Drag Load} + \text{Factored Dead Load}}{\text{Dynamic Resistance Factor}} + \text{Nominal Drag Load Resistance} + \text{Nominal Resistance from Scourable Material}$

** 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.

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 KIPS	Factored Drag Load per Pile KIPS	Factored Dead Load * per Pile KIPS	Dynamic Resistance Factor	Nominal Drag Resistance per Pile KIPS	Nominal Scour Resistance per Pile KIPS
END BENT NO. 1 Piles (1-7)	187			0.6		
END BENT NO. 2 Piles (1-7)	187			0.6		

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

SUMMARY OF DRILLED PIER INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pier(s) #(-#) (e.g., "Bent 1, Piers 1-3")	Number of Piers per Line	Factored Resistance per Pier KIPS	Required Drilled Pier Tip Elevation FT	Required Tip Resistance per Pier KSF	Scour Critical Elevation FT	Minimum Drilled Pier Penetration Into Rock per Pier LIN FT	Drilled Pier Length* per Pier LIN FT	Drilled Pier Length Not In Soil* per Pier LIN FT	Drilled Pier Length In Soil* per Pier LIN FT	Permanent Steel Casing Required? NO	Permanent Steel Casing Tip Elevation (Elevation Not To Extend Casing Below) FT	Permanent Steel Casing Length** per Pier LIN FT
BENT NO. 1 Pier (1-3)	3	980	57.00	20	106.50		52					
BENT NO. 2 Pier (1-3)	3	980	59.00	20	106.50		53					
TOTAL QUANTITY:							315					

* Drilled Pier Length, Drilled Pier Length Not in Soil and Drilled Pier Length in Soil represent estimated drilled pier quantities and are measured and paid for as either " ____ Dia. Drilled Piers" or " ____ Dia. Drilled Piers Not in Soil" and " ____ Dia. Drilled Piers in Soil" in accordance with Article 411-7 of the NCDOT Standard Specifications. For bents with a not in soil pay item, drilled piers through air or water will be paid at the contract unit price for " ____ Dia. Drilled Piers in Soil."

** Permanent Steel Casing Length equals the difference between the ground line or top of drilled pier elevation, whichever is higher, and the permanent casing tip elevation and is measured and paid for as "Permanent Steel Casing for ____ Dia. Drilled Pier" in accordance with Article 411-7 of the NCDOT Standard Specifications.

SUMMARY OF DRILLED PIER TESTING

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pier(s) #(-#) (e.g., "Bent 1, Piers 1-3")	Standard Penetration Test (SPT) EACH	Crosshole Sonic Logging (CSL) EACH	Thermal Integrity Profiler (TIP) EACH	Shaft Inspection Device (SID) EACH	Pile Integrity Test (PIT) EACH
BENT NO. 1 Pier (1-3)	1	1			
BENT NO. 2 Pier (1-3)	1	1			
TOTAL QUANTITY:	2	2			

PROJECT NO. BP6.R019
HARNETT COUNTY
STATION: 16+30.00 -L-

NOTES:

- The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (ABNER F. RIGGS, JR. , #014155) on 03-25-2026.
- 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.
- The Engineer may adjust the quantity for DPT Testing, Pipe Pile Plates, Permanent Steel Casing, SPTs, TIPs, CSL Testing, SID Inspections and PITs when necessary.

DRAWN BY : M. ACOSTA DATE : 12/2025
CHECKED BY : T. LAWS DATE : 12/2025
DESIGN ENGINEER OF RECORD: T. LAWS DATE : 07/2026

10/8/2026
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PILE AND DRILLED PIER
FOUNDATION
TABLES

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-3 TOTAL SHEETS 28
2			4			

BM #1 - SPIKE SET IN BASE OF 14" PINE, 30' RT. OF STA. 17+89.00 -L-, EL. 132.87

NAD 83/NA 2001

WOODS

HARNETT COUNTY CUMBERLAND COUNTY

EXISTING ROADWAY (TYP.)

WOODS

WOODS

-DWY1-

TO SHADY GROVE RD. (SR 2050)

EXISTING STRUCTURE

PROPOSED STRUCTURE

16+00

BRIDGE I.D. STA. 16+30.00 -L-

90°-00'-00"

17+00

TO ELLIOT FARM RD. (SR 1606)

-L-

PROPOSED GUARDRAIL (ROADWAY DETAIL AND PAY ITEM) (TYP.)

PROPOSED CLASS II RIP RAP

EXISTING FENCE (TYP.)

WOODS

WOODS

WOODS

WOODS

JS

JS

JS

JS

LOWER LITTLE RIVER

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

LOCATION SKETCH

TOTAL BILL OF MATERIALS											
	REMOVAL OF EXISTING STRUCTURE @ STA. 16+30.00 -L-	ASBESTOS ASSESSMENT	4'-0" DIA. DRILLED PIERS	SPT TESTING	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION @ STA. 16+30.00 -L-	CONCRETE WEARING SURFACE	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS @ STA. 16+30.00 -L-	
	LUMP SUM	LUMP SUM	LIN. FT.	EACH	EACH	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	
SUPERSTRUCTURE							6,475	6680			
END BENT 1									29.5		
BENT 1			157.0	1	1				41.9		
BENT 2			157.0	1	1				38.9		
END BENT 2									29.5		
TOTAL	LUMP SUM	LUMP SUM	314.0	2	2	LUMP SUM	6,475	6,680	139.8	LUMP SUM	
	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12X53 STEEL PILES	HP 12 X 53 STEEL PILES		VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0") THICK	GEOTEXTILE FOR DRAINAGE	ELASTOMETRIC BEARINGS	3'-0" X 3'-3" PRESTRESSED CONCRETE BOX BEAMS	
	LBS.	LBS.	EACH	NO.	LIN. FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE						420.0				33	2,310
END BENT 1	4,665		7	7	420		488	513			
BENT 1	19,686	5,475									
BENT 2	19,160	5,258									
END BENT 2	4,665		7	7	420		392	393			
TOTAL	48,176	10,733	14	14	840	420.0	880	906	LUMP SUM	33	2,310

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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.

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET 1 OF 4 SHALL BE EXCAVATED FOR A DISTANCE OF 37 FT FOR END BENT NO. 1 AND 36 FT FOR END BENT NO. 2 OF THE 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.

THE EXISTING STRUCTURE CONSISTS OF 3 SPANS AT 60'-8", 60'-0", 60'-8". THE SUPERSTRUCTURE HAS A CLEAR ROADWAY WIDTH OF 24'-0" AND CONSISTS OF REINFORCED CONCRETE DECK ON STEEL PLATE GIRDLERS. THE SUBSTRUCTURE CONSISTS OF REINFORCED CONCRETE CAP ON PILES AT THE END BENTS AND REINFORCED CONCRETE CAP ON COLUMNS AT THE BENTS. THE EXISTING STRUCTURE LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT.

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

THE SCOUR CRITICAL ELEVATION FOR BENTS NO. 1 AND NO. 2 IS ELEVATION 106.50. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR ASBESTOS ASSESSMENT, SEE SPECIAL PROVISIONS.

HYDRAULIC DATA

OVERTOPPING FLOOD DATA

*OT OCCURS APPROX. 300' SOUTHEAST
OF THE SOUTHEASTERN END BENT

OVERTOPPING DISCHARGE	= 25000 CFS
OVERTOPPING FLOOD FREQUENCY	= 500+ YRS
OVERTOPPING FLOOD ELEVATION	= 134.8'±*

PROJECT NO. BP6.R019
HARNETT COUNTY
 STATION: 16+30.00 -L-

	STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH GENERAL DRAWING FOR BRIDGE ON SR 2045 OVER LOWER LITTLE RIVER BETWEEN SR 2050 AND SR 1606																										
RS&H	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="6" style="text-align: center;">REVISIONS</th> <th style="text-align: center;">SHEET NO.</th> </tr> <tr> <th style="width: 10%;">NO.</th> <th style="width: 10%;">BY:</th> <th style="width: 10%;">DATE:</th> <th style="width: 10%;">NO.</th> <th style="width: 10%;">BY:</th> <th style="width: 10%;">DATE:</th> <th rowspan="3" style="width: 10%; text-align: center; vertical-align: middle;"> Total SHEETS 28 </th> </tr> <tr> <td style="text-align: center;">1</td> <td></td> <td></td> <td style="text-align: center;">3</td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;">2</td> <td></td> <td></td> <td style="text-align: center;">4</td> <td></td> <td></td> </tr> </table>	REVISIONS						SHEET NO.	NO.	BY:	DATE:	NO.	BY:	DATE:	Total SHEETS 28	1			3			2			4		
REVISIONS						SHEET NO.																					
NO.	BY:	DATE:	NO.	BY:	DATE:	Total SHEETS 28																					
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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	
							LIVE-LOAD FACTORS (γ LL)	MOMENT				SHEAR				LIVE-LOAD FACTORS (γ LL)	MOMENT							
								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)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION		DISTANCE FROM LEFT END OF SPAN (ft)
DESIGN LOAD		HL-93 (INVENTORY)	N/A	Ⓢ1	2.92	--	1.75	0.240	3.08	A	EL	26.75	0.540	2.92	A	EL	10.25	0.80	0.240	4.08	A	EL	26.75	
		HL-93 (OPERATING)	N/A		3.83	--	1.35	0.240	3.99	A	EL	26.75	0.540	3.83	A	EL	10.25	0.80	0.240	4.08	A	EL	26.75	
		HS-20 (INVENTORY)	36.000	Ⓢ2	3.48	125.280	1.75	0.240	3.86	A	EL	26.75	0.540	3.48	A	EL	10.25	0.80	0.240	5.10	A	EL	26.75	
		HS-20 (OPERATING)	36.000		4.57	164.520	1.35	0.240	5.00	A	EL	26.75	0.540	4.57	A	EL	10.25	0.80	0.240	5.10	A	EL	26.75	
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH	13.500		9.99	134.865	1.4	0.240	10.09	A	EL	26.75	0.540	9.99	A	EL	10.25	0.80	0.240	10.69	A	EL	26.75	
		SNGARBS2	20.000		7.27	145.400	1.4	0.240	7.85	A	EL	26.75	0.540	7.27	A	EL	43.25	0.80	0.240	8.31	A	EL	26.75	
		SNAGRIS2	22.000		6.83	150.260	1.4	0.240	7.57	A	EL	26.75	0.540	6.83	A	EL	10.25	0.80	0.240	8.02	A	EL	26.75	
		SNCOTTS3	27.250		4.92	134.070	1.4	0.240	5.03	A	EL	26.75	0.540	4.92	A	EL	10.25	0.80	0.240	5.33	A	EL	26.75	
		SNAGGRS4	34.925		4.21	147.034	1.4	0.240	4.33	A	EL	26.75	0.540	4.21	A	EL	10.25	0.80	0.240	4.58	A	EL	26.75	
		SNS5A	35.550		4.22	150.021	1.4	0.240	4.22	A	EL	26.75	0.540	4.35	A	EL	10.25	0.80	0.240	4.47	A	EL	26.75	
		SNS6A	39.950		3.93	157.004	1.4	0.240	3.93	A	EL	26.75	0.540	4.02	A	EL	10.25	0.80	0.240	4.16	A	EL	26.75	
		SNS7B	42.000		3.74	157.080	1.4	0.240	3.74	A	EL	26.75	0.540	4.05	A	EL	10.25	0.80	0.240	3.96	A	EL	26.75	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		4.77	157.410	1.4	0.240	4.81	A	EL	26.75	0.540	4.77	A	EL	10.25	0.80	0.240	5.09	A	EL	26.75	
		TNT4A	33.075		4.57	151.153	1.4	0.240	4.84	A	EL	26.75	0.540	4.57	A	EL	10.25	0.80	0.240	5.13	A	EL	26.75	
		TNT6A	41.600		4.01	166.816	1.4	0.240	4.01	A	EL	26.75	0.540	4.43	A	EL	10.25	0.80	0.240	4.25	A	EL	26.75	
		TNT7A	42.000		4.06	170.520	1.4	0.240	4.06	A	EL	26.75	0.540	4.08	A	EL	10.25	0.80	0.240	4.30	A	EL	26.75	
		TNT7B	42.000		3.88	162.960	1.4	0.240	4.24	A	EL	26.75	0.540	3.88	A	EL	10.25	0.80	0.240	4.49	A	EL	26.75	
		TNAGRIT4	43.000		3.72	159.960	1.4	0.240	4.01	A	EL	26.75	0.540	3.72	A	EL	10.25	0.80	0.240	4.25	A	EL	26.75	
		TNAGT5A	45.000		3.76	169.200	1.4	0.240	3.76	A	EL	26.75	0.540	3.81	A	EL	10.25	0.80	0.240	3.98	A	EL	26.75	
		TNAGT5B	45.000	Ⓢ3	3.52	158.400	1.4	0.240	3.69	A	EL	26.75	0.540	3.52	A	EL	10.25	0.80	0.240	3.91	A	EL	26.75	
EMERGENCY VEHICLE (EV)	EV2	28.750		5.48	157.550	1.3	0.240	6.02	A	EL	26.75	0.540	5.48	A	EL	10.25	0.80	0.240	5.92	A	EL	26.75		
	EV3	43.000	Ⓢ4	3.65	156.950	1.3	0.240	3.90	A	EL	26.75	0.540	3.65	A	EL	10.25	0.80	0.240	3.84	A	EL	26.75		

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

1.
2.
3.
4.

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING * *

④ EMERGENCY VEHICLE LOAD RATING **

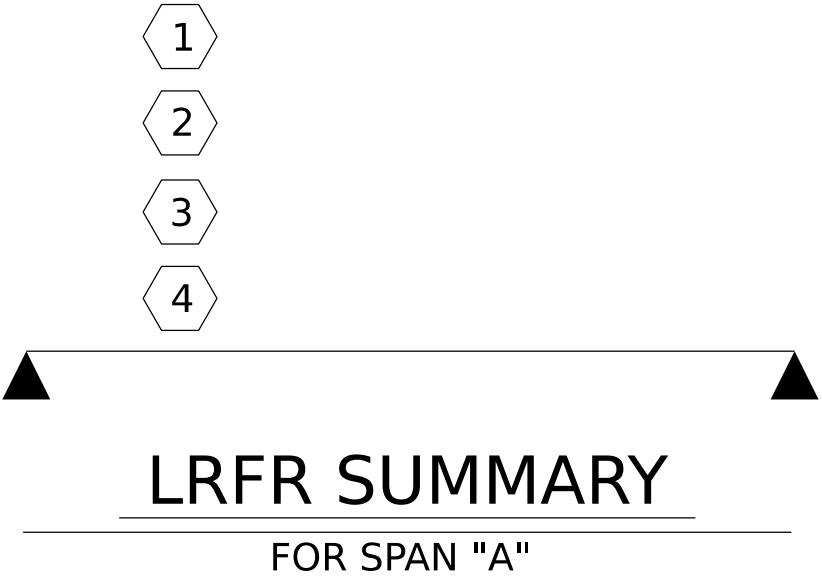
* * SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER

EL - EXTERIOR LEFT GIRDER

ER - EXTERIOR RIGHT GIRDER



PROJECT NO. **BP6.R019**

HARNETT COUNTY

STATION: **16+30.00 -L-**

SHEET 1 OF 3

DRAWN BY : J. SCACCA

CHECKED BY : V. SELLERS

DESIGN ENGINEER OF RECORD: T. LAWS

DATE : 08/2025

DATE : 08/2025

DATE : 07/2026

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STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

SEAL

040317

ENGINEER

JOY R. LAWS, JR.

RS&H

RS&H Architects-Engineers-Planners, Inc.

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North Carolina License Nos. 90073 / F-0400 / C-38

LRFR SUMMARY FOR

55' BOX BEAM UNIT

90° SKEW

(NON-INTERSTATE TRAFFIC)

NO.

BY:

DATE:

NO.

BY:

DATE:

①

③

②

④

SHEET NO.

5-5

TOTAL SHEETS

28

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
							LIVE-LOAD FACTORS (γ LL)	MOMENT				SHEAR				LIVE-LOAD FACTORS (γ LL)	MOMENT							
								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)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD		HL-93 (INVENTORY)	N/A	Ⓔ1	1.05	--	1.75	0.210	1.60	B	EL	51.75	0.490	1.71	B	EL	9.75	0.80	0.210	1.05	B	EL	51.75	
		HL-93 (OPERATING)	N/A		1.05	--	1.35	0.210	2.07	B	EL	51.75	0.490	2.27	B	EL	9.75	0.80	0.210	1.05	B	EL	51.75	
		HS-20 (INVENTORY)	36.000	Ⓔ2	1.47	52.920	1.75	0.210	2.25	B	EL	51.75	0.490	2.37	B	EL	9.75	0.80	0.210	1.47	B	EL	51.75	
		HS-20 (OPERATING)	36.000		1.47	52.920	1.35	0.210	2.91	B	EL	51.75	0.490	3.13	B	EL	9.75	0.80	0.210	1.47	B	EL	51.75	
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH	13.500		3.51	47.385	1.4	0.210	6.70	B	EL	51.75	0.490	7.73	B	EL	9.75	0.80	0.210	3.51	B	EL	51.75	
		SNGARBS2	20.000		2.53	50.600	1.4	0.210	4.84	B	EL	51.75	0.490	5.34	B	EL	9.75	0.80	0.210	2.53	B	EL	51.75	
		SNAGRIS2	22.000		2.36	51.920	1.4	0.210	4.52	B	EL	51.75	0.490	4.91	B	EL	9.75	0.80	0.210	2.36	B	EL	51.75	
		SNCOTTS3	27.250		1.74	47.415	1.4	0.210	3.33	B	EL	51.75	0.490	3.74	B	EL	9.75	0.80	0.210	1.74	B	EL	51.75	
		SNAGGRS4	34.925		1.43	49.943	1.4	0.210	2.72	B	EL	51.75	0.490	3.01	B	EL	9.75	0.80	0.210	1.43	B	EL	51.75	
		SNS5A	35.550		1.40	49.770	1.4	0.210	2.67	B	EL	51.75	0.490	3.02	B	EL	9.75	0.80	0.210	1.40	B	EL	51.75	
		SNS6A	39.950		1.27	50.737	1.4	0.210	2.42	B	EL	51.75	0.490	2.71	B	EL	9.75	0.80	0.210	1.27	B	EL	51.75	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	SNS7B	42.000		1.21	50.820	1.4	0.210	2.31	B	EL	51.75	0.490	2.63	B	EL	9.75	0.80	0.210	1.21	B	EL	51.75	
		TNAGRIT3	33.000		1.54	50.820	1.4	0.210	2.95	B	EL	51.75	0.490	3.29	B	EL	9.75	0.80	0.210	1.54	B	EL	51.75	
		TNT4A	33.075		1.55	51.266	1.4	0.210	2.95	B	EL	51.75	0.490	3.22	B	EL	9.75	0.80	0.210	1.55	B	EL	51.75	
		TNT6A	41.600		1.25	52.000	1.4	0.210	2.39	B	EL	51.75	0.490	2.76	B	EL	9.75	0.80	0.210	1.25	B	EL	51.75	
		TNT7A	42.000		1.25	52.500	1.4	0.210	2.39	B	EL	51.75	0.490	2.71	B	EL	9.75	0.80	0.210	1.25	B	EL	51.75	
		TNT7B	42.000		1.28	53.760	1.4	0.210	2.44	B	EL	51.75	0.490	2.58	B	EL	9.75	0.80	0.210	1.28	B	EL	51.75	
		TNAGRIT4	43.000		1.23	52.890	1.4	0.210	2.35	B	EL	51.75	0.490	2.50	B	EL	9.75	0.80	0.210	1.23	B	EL	51.75	
		TNAGT5A	45.000		1.16	52.200	1.4	0.210	2.22	B	EL	51.75	0.490	2.45	B	EL	93.75	0.80	0.210	1.16	B	EL	51.75	
		TNAGT5B	45.000	Ⓔ3	1.15	51.750	1.4	0.210	2.21	B	EL	51.75	0.490	2.38	B	EL	9.75	0.80	0.210	1.15	B	EL	51.75	
EMERGENCY VEHICLE (EV)	EV2	28.750		1.78	51.175	1.3	0.210	3.40	B	EL	51.75	0.490	3.68	B	EL	9.75	0.80	0.210	1.78	B	EL	51.75		
	EV3	43.000	Ⓔ4	1.17	50.310	1.3	0.210	2.24	B	EL	51.75	0.490	2.40	B	EL	93.75	0.80	0.210	1.17	B	EL	51.75		

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

1.
2.
3.
4.

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING * *

④ EMERGENCY VEHICLE LOAD RATING **

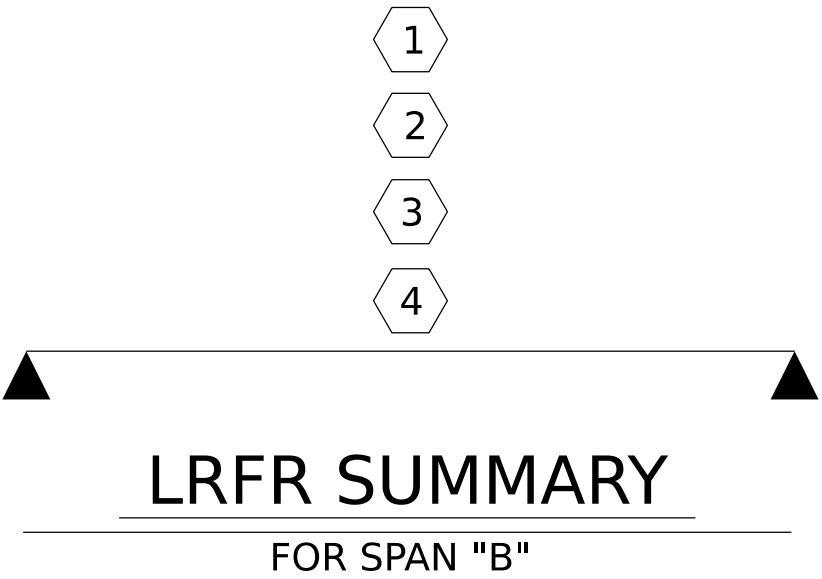
* * SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER

EL - EXTERIOR LEFT GIRDER

ER - EXTERIOR RIGHT GIRDER



PROJECT NO. **BP6.R019**

HARNETT COUNTY

STATION: **16+30.00 -L-**

SHEET 2 OF 3



RS&H
RS&H Architects-Engineers-Planners, Inc.
8521 Six Forks Road, Suite 400
Raleigh, NC 27615
919-926-4100 FAX 919-946-9080
www.rsandh.com
North Carolina License Nos. 9073 / F-0403 / C-38

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	
①			③	5-6 TOTAL SHEETS 28
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		
						LIVE-LOAD FACTORS (γ LL)	MOMENT				SHEAR				LIVE-LOAD FACTORS (γ LL)	MOMENT								
							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)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION		DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD	HL-93 (INVENTORY)	N/A	Ⓔ1	3.05	--	1.75	0.240	3.74	C	EL	24.50	0.550	3.05	C	EL	9.25	0.80	0.240	5.04	C	EL	24.25		
	HL-93 (OPERATING)	N/A		4.00	--	1.35	0.240	4.85	C	EL	24.50	0.550	4.00	C	EL	9.25	0.80	0.240	5.04	C	EL	24.25		
	HS-20 (INVENTORY)	36.000	Ⓔ2	3.60	129.600	1.75	0.240	4.63	C	EL	24.50	0.550	3.60	C	EL	9.25	0.80	0.240	6.24	C	EL	24.25		
	HS-20 (OPERATING)	36.000		4.71	169.560	1.35	0.240	6.01	C	EL	24.50	0.550	4.71	C	EL	39.25	0.80	0.240	6.24	C	EL	24.25		
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH	13.500		10.06	135.810	1.4	0.240	11.75	C	EL	24.50	0.550	10.06	C	EL	9.25	0.80	0.240	10.12	C	EL	24.25	
		SNGARBS2	20.000		7.40	148.000	1.4	0.240	9.30	C	EL	24.50	0.550	7.40	C	EL	9.25	0.80	0.240	8.01	C	EL	24.25	
		SNAGRIS2	22.000		6.97	153.340	1.4	0.240	8.94	C	EL	29.25	0.550	6.97	C	EL	9.25	0.80	0.240	7.72	C	EL	29.25	
		SNCOTTS3	27.250		4.96	135.160	1.4	0.240	5.86	C	EL	24.25	0.550	4.96	C	EL	9.25	0.80	0.240	5.05	C	EL	24.25	
		SNAGGRS4	34.925		4.30	150.178	1.4	0.240	5.10	C	EL	24.25	0.550	4.30	C	EL	9.25	0.80	0.240	4.39	C	EL	24.25	
		SNS5A	35.550		4.29	152.510	1.4	0.240	4.98	C	EL	24.25	0.550	4.47	C	EL	9.25	0.80	0.240	4.29	C	EL	24.25	
		SNS6A	39.950		4.01	160.200	1.4	0.240	4.66	C	EL	24.25	0.550	4.16	C	EL	9.25	0.80	0.240	4.01	C	EL	24.25	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	SNS7B	42.000		3.82	160.440	1.4	0.240	4.44	C	EL	24.25	0.550	4.22	C	EL	9.25	0.80	0.240	3.82	C	EL	24.25	
		TNAGRIT3	33.000		4.91	162.030	1.4	0.240	5.70	C	EL	24.25	0.550	4.91	C	EL	9.25	0.80	0.240	4.91	C	EL	24.25	
		TNT4A	33.075		4.68	154.791	1.4	0.240	5.76	C	EL	24.25	0.550	4.68	C	EL	9.25	0.80	0.240	4.96	C	EL	24.25	
		TNT6A	41.600		4.13	171.808	1.4	0.240	4.80	C	EL	24.25	0.550	4.57	C	EL	39.25	0.80	0.240	4.13	C	EL	24.25	
		TNT7A	42.000		4.19	175.980	1.4	0.240	4.87	C	EL	24.25	0.550	4.20	C	EL	9.25	0.80	0.240	4.19	C	EL	24.25	
		TNT7B	42.000		4.02	168.840	1.4	0.240	5.08	C	EL	24.25	0.550	4.02	C	EL	9.25	0.80	0.240	4.37	C	EL	24.25	
		TNAGRIT4	43.000		3.85	165.550	1.4	0.240	4.82	C	EL	24.25	0.550	3.85	C	EL	9.25	0.80	0.240	4.15	C	EL	24.25	
		TNAGT5A	45.000		3.88	174.600	1.4	0.240	4.50	C	EL	24.25	0.550	3.98	C	EL	9.25	0.80	0.240	3.88	C	EL	24.25	
		TNAGT5B	45.000	Ⓔ3	3.64	163.800	1.4	0.240	4.41	C	EL	24.25	0.550	3.64	C	EL	9.25	0.80	0.240	3.80	C	EL	24.25	
EMERGENCY VEHICLE (EV)	EV2	28.750		5.58	160.425	1.3	0.240	7.13	C	EL	29.25	0.550	5.58	C	EL	9.25	0.80	0.240	5.72	C	EL	19.25		
	EV3	43.000	Ⓔ4	3.69	158.670	1.3	0.240	4.62	C	EL	24.25	0.550	3.73	C	EL	9.25	0.80	0.240	3.69	C	EL	24.25		

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

1.
2.
3.
4.

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING * *

④ EMERGENCY VEHICLE LOAD RATING **

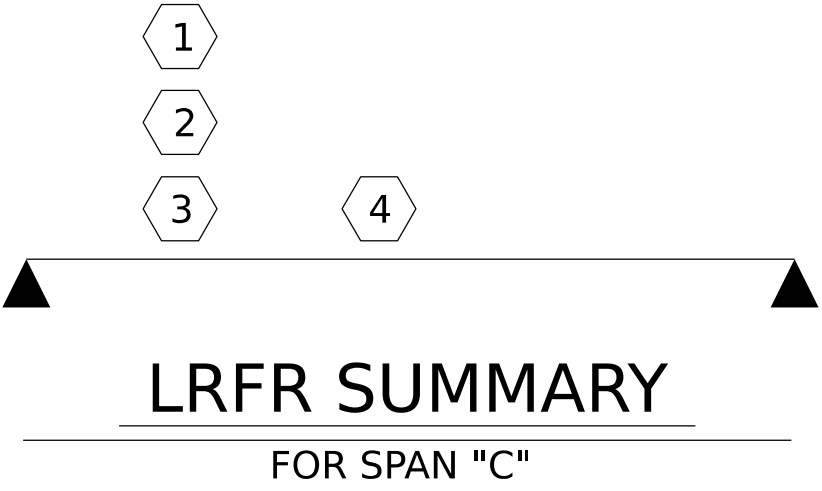
* * SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER

EL - EXTERIOR LEFT GIRDER

ER - EXTERIOR RIGHT GIRDER



PROJECT NO. BP6.R019

HARNETT COUNTY

STATION: 16+30.00 -L-

SHEET 3 OF 3

DRAWN BY : J. SCACCA

CHECKED BY : V. SELLERS

DESIGN ENGINEER OF RECORD: T. LAWS

DATE : 08/2025

DATE : 08/2025

DATE : 07/2026

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10/8/2026
Seller sv

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FINAL UNLESS ALL
SIGNATURES COMPLETED

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

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

NO. 1

BY:

DATE:

NO. 2

BY:

DATE:

NO. 3

BY:

DATE:

NO. 4

BY:

DATE:

SEAL 040317 ENGINEER TONY R. LAWS, JR.

RS&H

RS&H Architects-Engineers-Planners, Inc.

8521 Six Forks Road, Suite 400
Raleigh, NC 27615
919-926-4100 FAX 919-946-9080
www.rsandh.com
North Carolina License Nos. 90073 / F-0400 / C-38

SHEET NO. 5-7

TOTAL SHEETS 28

NOTES

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

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

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

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

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

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

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE BOX BEAM UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 5500 PSI.

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

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

APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS.

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

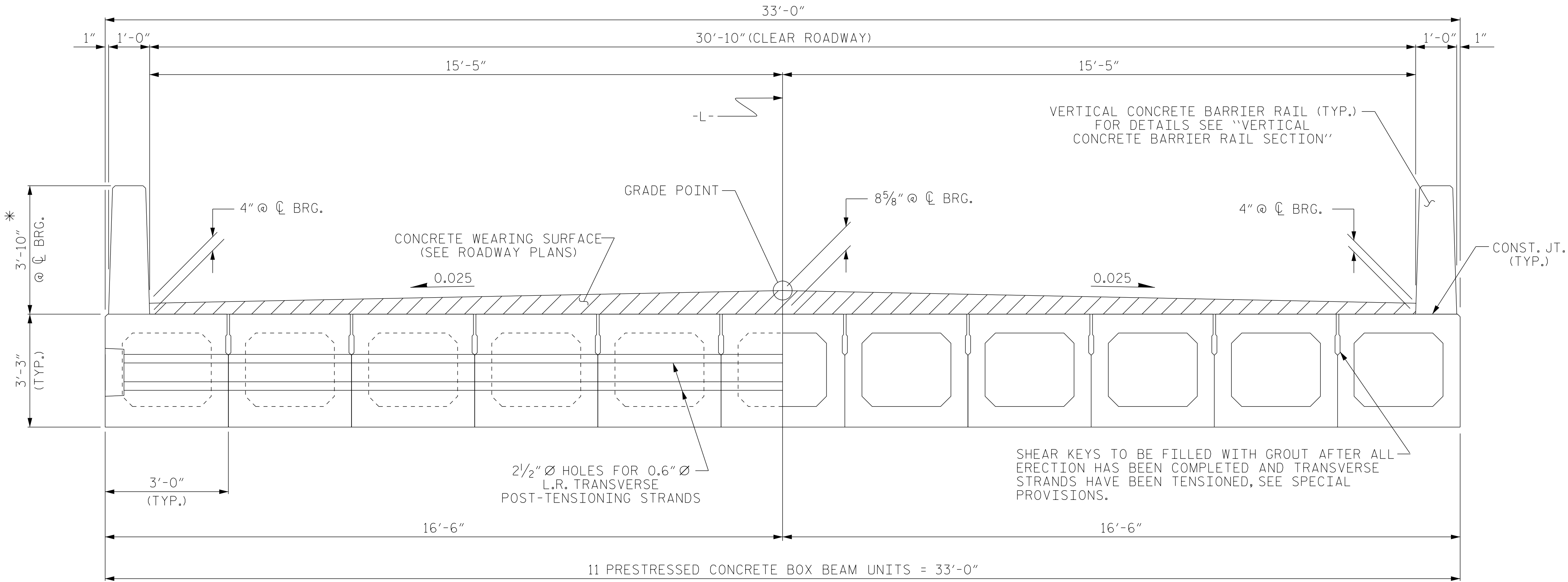
THE LOCATION OF THE VOID DRAINS MAY BE SHIFTED SLIGHTLY WHERE NECESSARY TO CLEAR PRESTRESSING STRANDS OR TRANSVERSE REINFORCING STEEL.

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

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

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

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

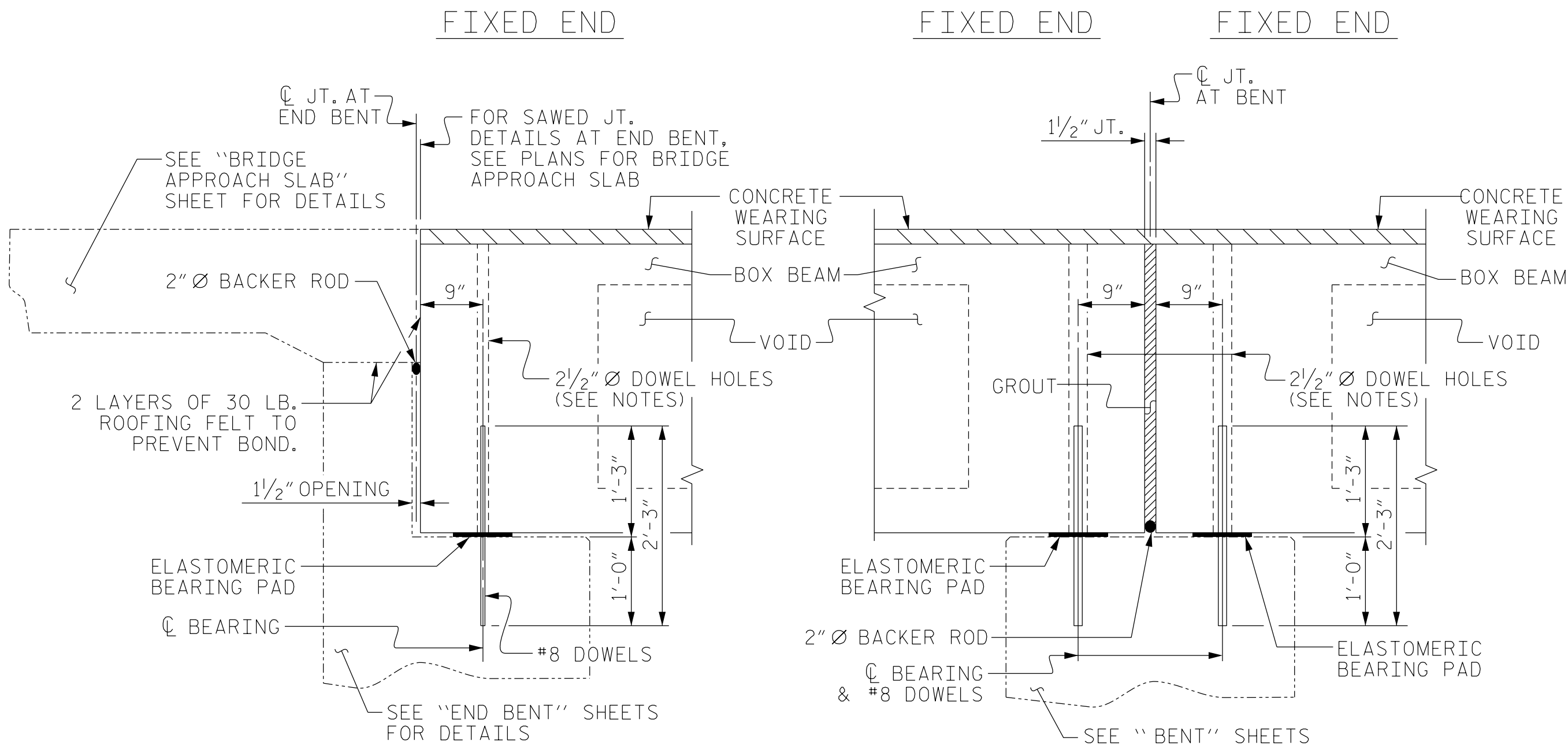


HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

HALF SECTION
THROUGH VOIDS

TYPICAL SECTION

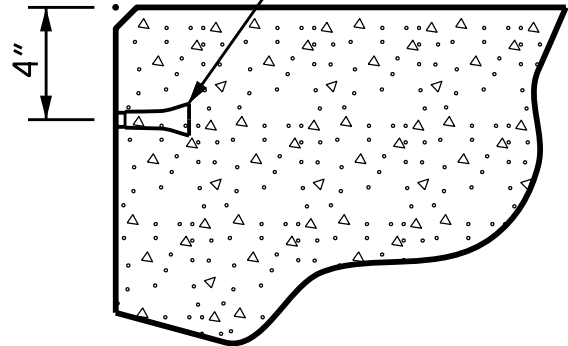
* THE MAXIMUM BARRIER RAIL HEIGHT AND CONCRETE THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND CONCRETE THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND CONCRETE THICKNESS, SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.



SECTION AT END BENT

SECTION AT BENT

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



THREADED INSERT DETAIL

PROJECT NO. **BP6.R019**
HARNETT COUNTY
STATION: **16+30.00 -L-**

SHEET 1 OF 10



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

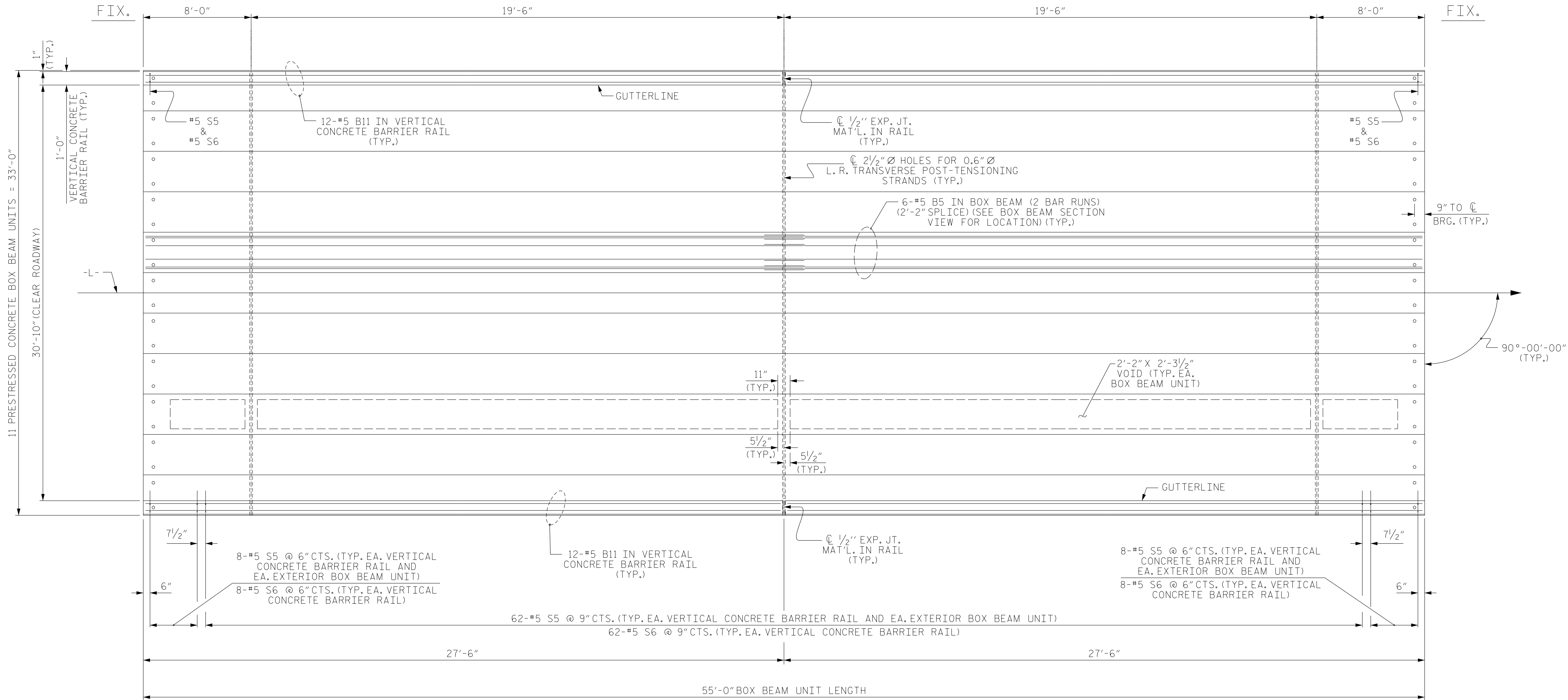
3'-0" X 3'-3"
PRESTRESSED CONCRETE
BOX BEAM UNIT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-8 TOTAL SHEETS 28
2			4			

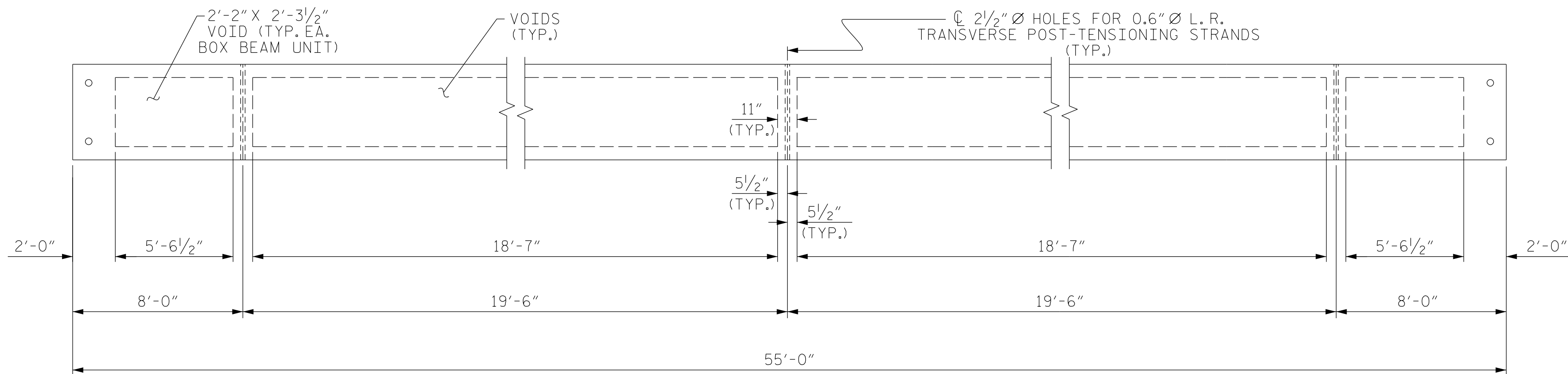
DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

DRAWN BY : **J. SCACCA** DATE : **08/2025**
CHECKED BY : **V. SELLERS** DATE : **08/2025**
DESIGN ENGINEER OF RECORD: **T. LAWS** DATE : **07/2026**

10/8/2026
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PLAN OF SPAN A



DIAPHRAGM AND VOID LAYOUT

PROJECT NO. **BP6.R019**
HARNETT COUNTY
STATION: **16+30.00 -L-**

SHEET 2 OF 10

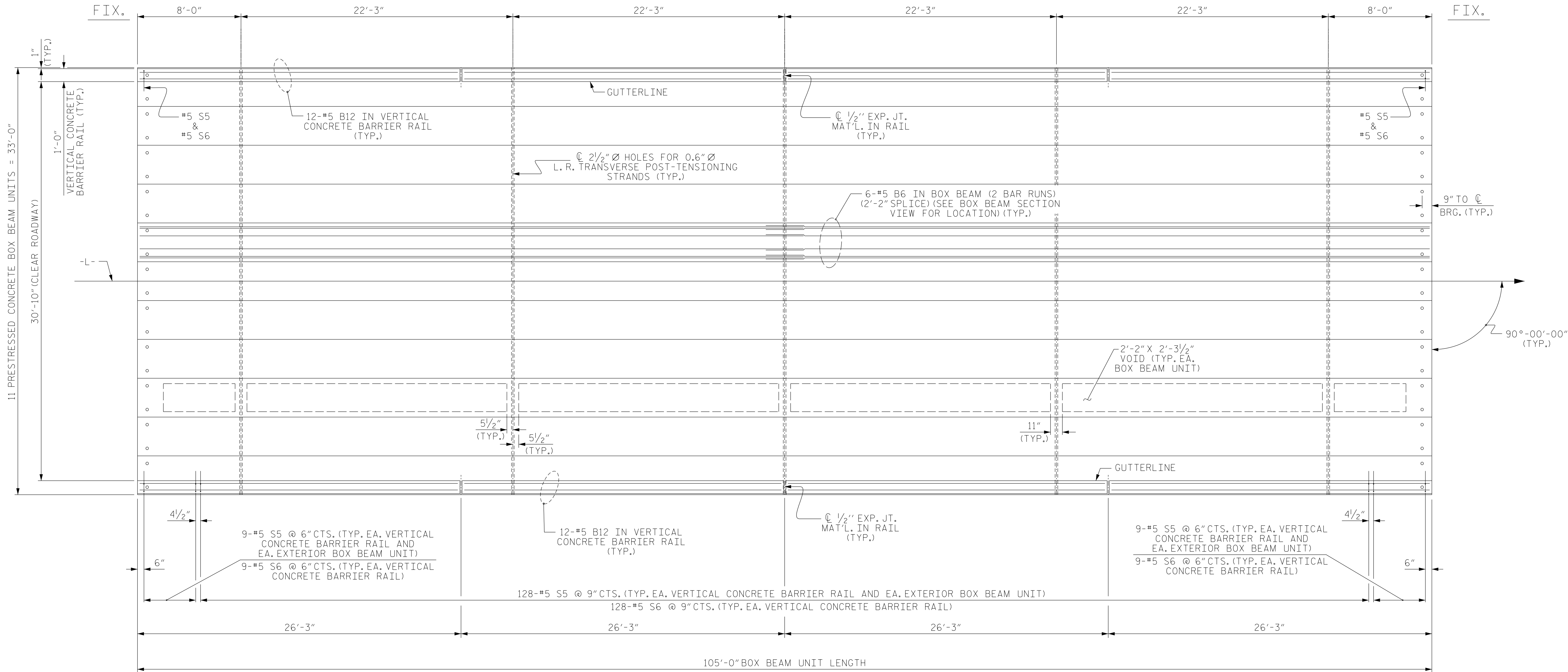


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			5-9
2			4			TOTAL SHEETS 28

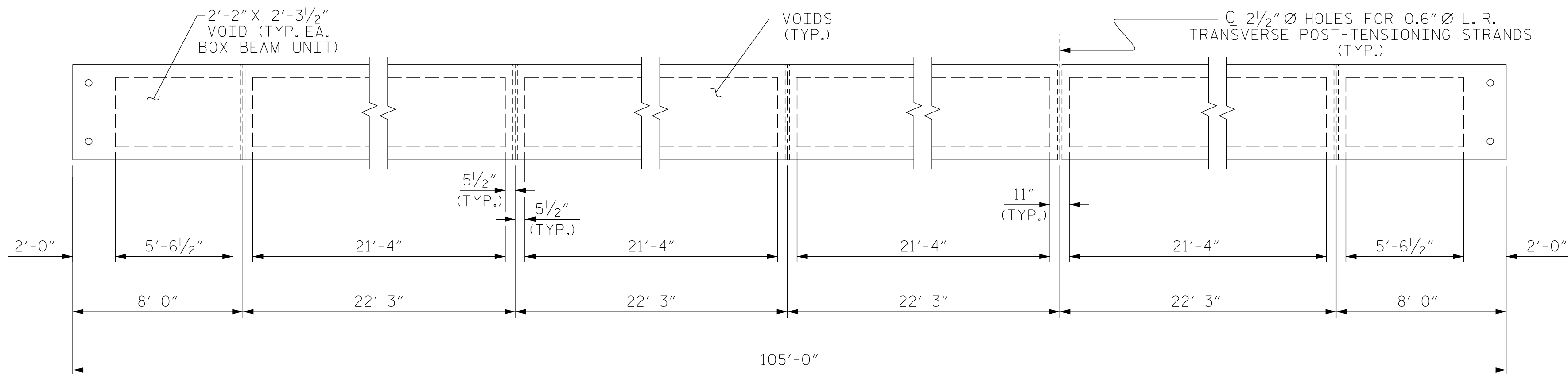
DRAWN BY : J. SCACCA DATE : 08/2025
CHECKED BY : V. SELLERS DATE : 08/2025
DESIGN ENGINEER OF RECORD : T. LAWS DATE : 07/2026

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SIGNATURES COMPLETED

10/8/2026
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SellersV



PLAN OF SPAN B



DIAPHRAGM AND VOID LAYOUT

PROJECT NO. **BP6.R019**
HARNETT COUNTY
STATION: **16+30.00 -L-**

SHEET 3 OF 10



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

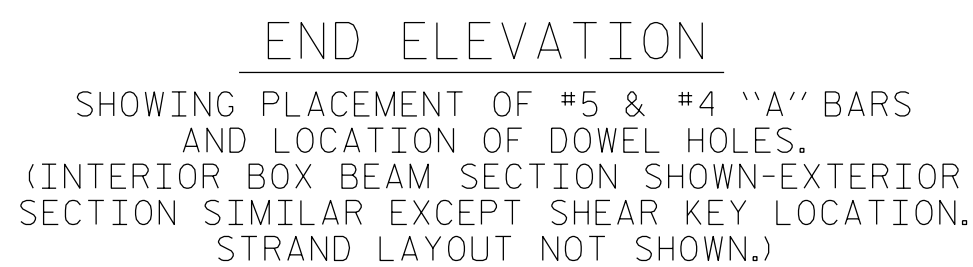
**PLAN OF 105' UNIT
30'-10" CLEAR ROADWAY
90° SKEW**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-10
2			4			TOTAL SHEETS 28

DRAWN BY : **J. SCACCA** DATE : **08/2025**
CHECKED BY : **V. SELLERS** DATE : **08/2025**
DESIGN ENGINEER OF RECORD: **T. LAWS** DATE : **07/2026**

10/8/2026
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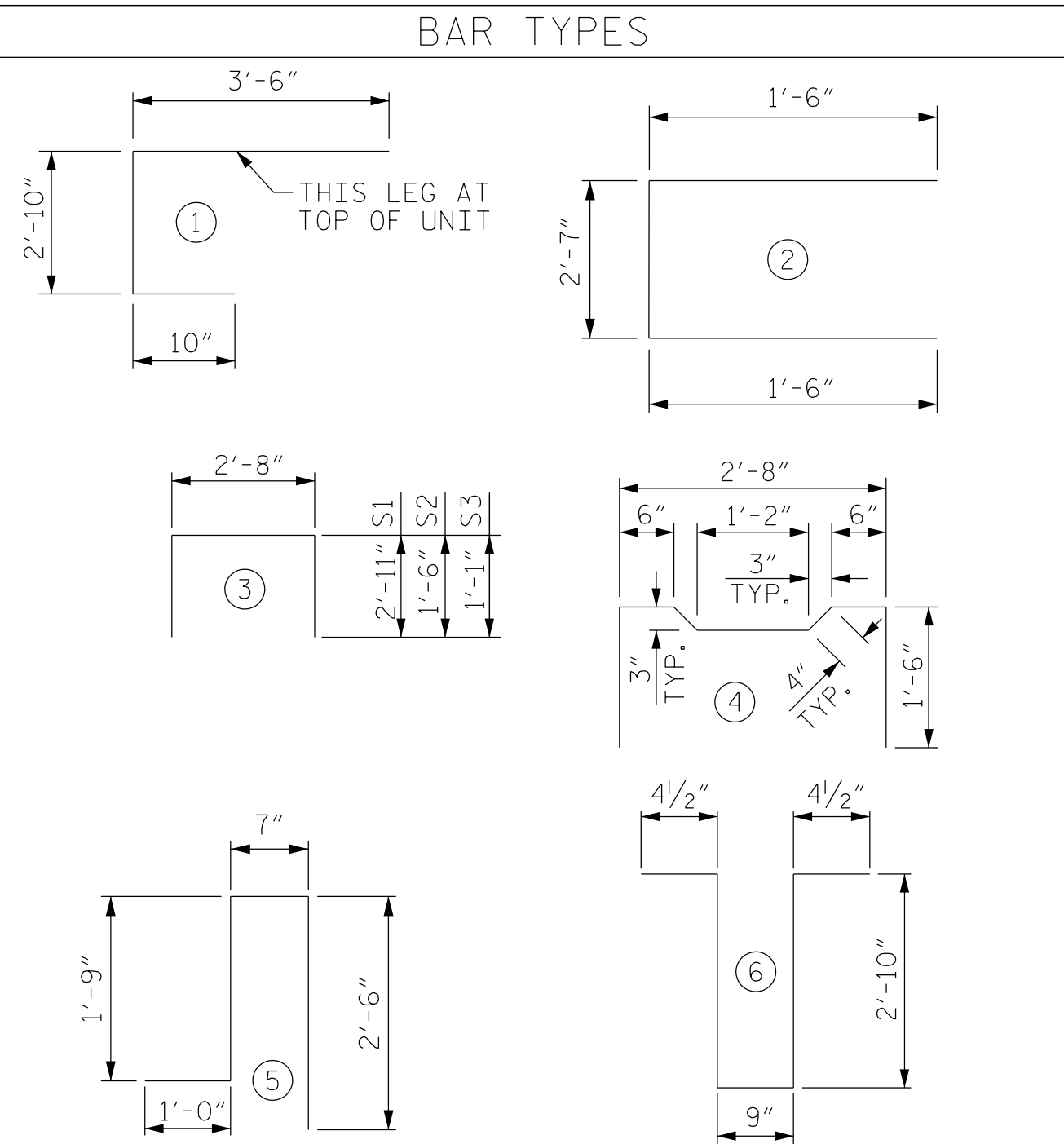
DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED



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

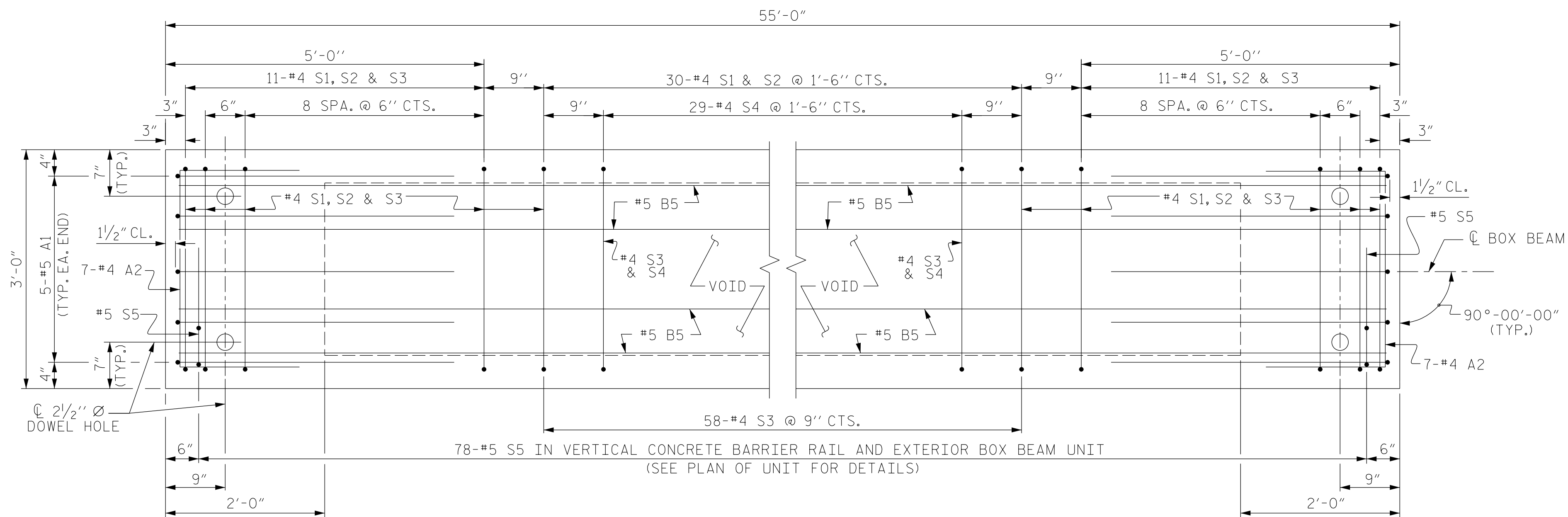
GRADE 270 STRANDS	
	0.6" Ø L.R.
AREA (SQUARE INCHES)	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950

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



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE BOX BEAM SECTION							
				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
A1	10	#5	1	7'-2"	75	7'-2"	75
A2	44	#4	2	5'-7"	164	5'-7"	164
B5	12	#5	STR	28'-5"	356	28'-5"	356
K1	15	#4	6	7'-2"	72	7'-2"	72
K2	10	#4	STR	2'-7"	17	2'-7"	17
S1	52	#4	3	8'-6"	295	8'-6"	295
S2	52	#4	3	5'-8"	197	5'-8"	197
S3	80	#4	3	4'-10"	258	4'-10"	258
S4	29	#4	4	5'-10"	113	5'-10"	113
* S5	78	#5	5	5'-10"	475	--	--
REINFORCING STEEL				1547	LBS.	1547	LBS.
* EPOXY COATED REINF. STEEL				475	LBS.		
7500 P.S.I. CONCRETE				10.8	CU. YDS.	10.7	CU. YDS.
0.6" Ø L.R. STRANDS						No. 14	No. 14



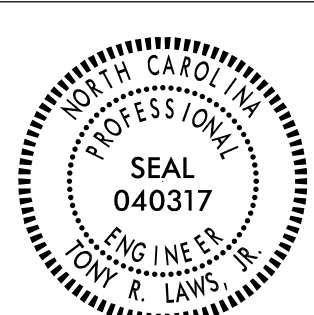
SPAN A PLAN OF BOX BEAM

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS.
FOR LOCATION OF DIAPHRAGMS, SEE SHEET S-9.
FOR THREADED INSERTS, SEE "THREADED INSERT DETAIL".
FOR REINFORCING STEEL IN DIAPHRAGMS, SEE "DOUBLE DIAPHRAGM DETAILS".

DRAWN BY : J. SCACCA DATE : 08/2025
 CHECKED BY : V. SELLERS DATE : 08/2025
 DESIGN ENGINEER OF RECORD: T. LAWS DATE : 07/2026

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DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
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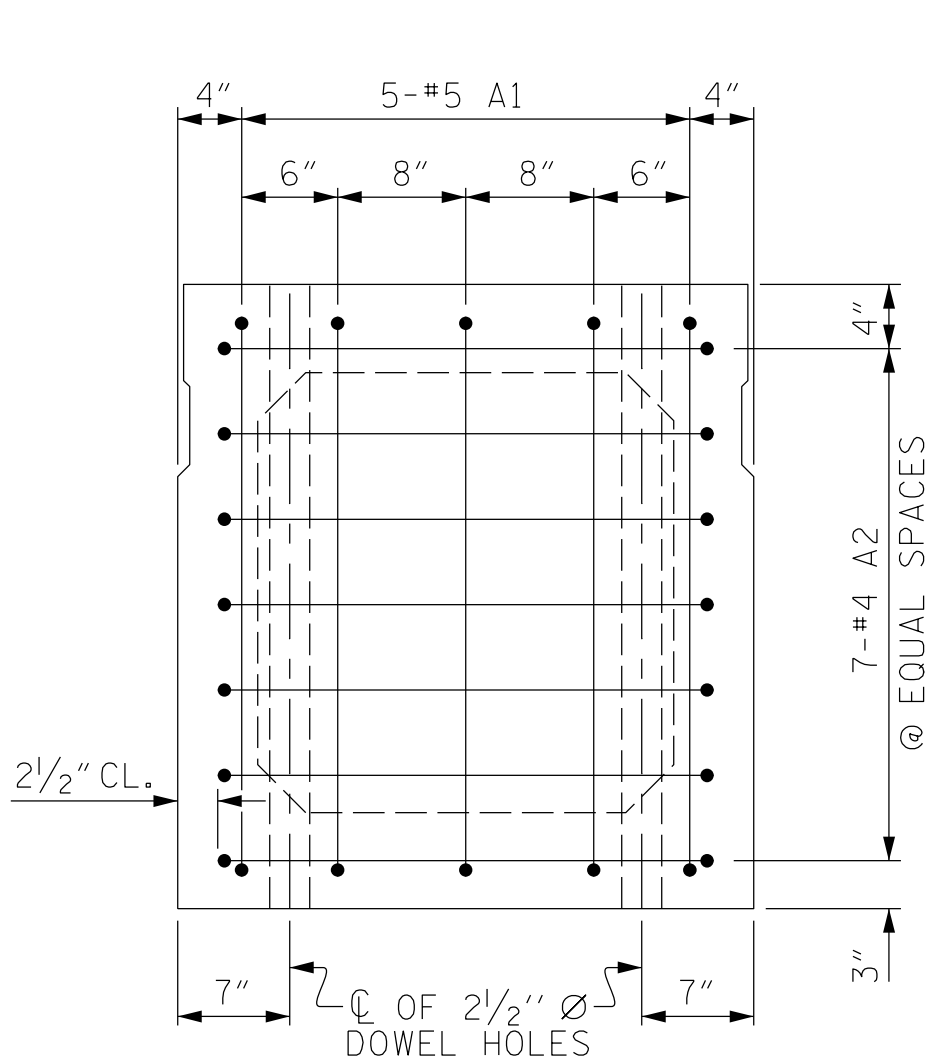
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Raleigh, NC 27615
919-926-4100 FAX 919-846-9080
www.rsandh.com
North Carolina License Nos. 50173 * F-0493 * C-28

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

55' BOX BEA

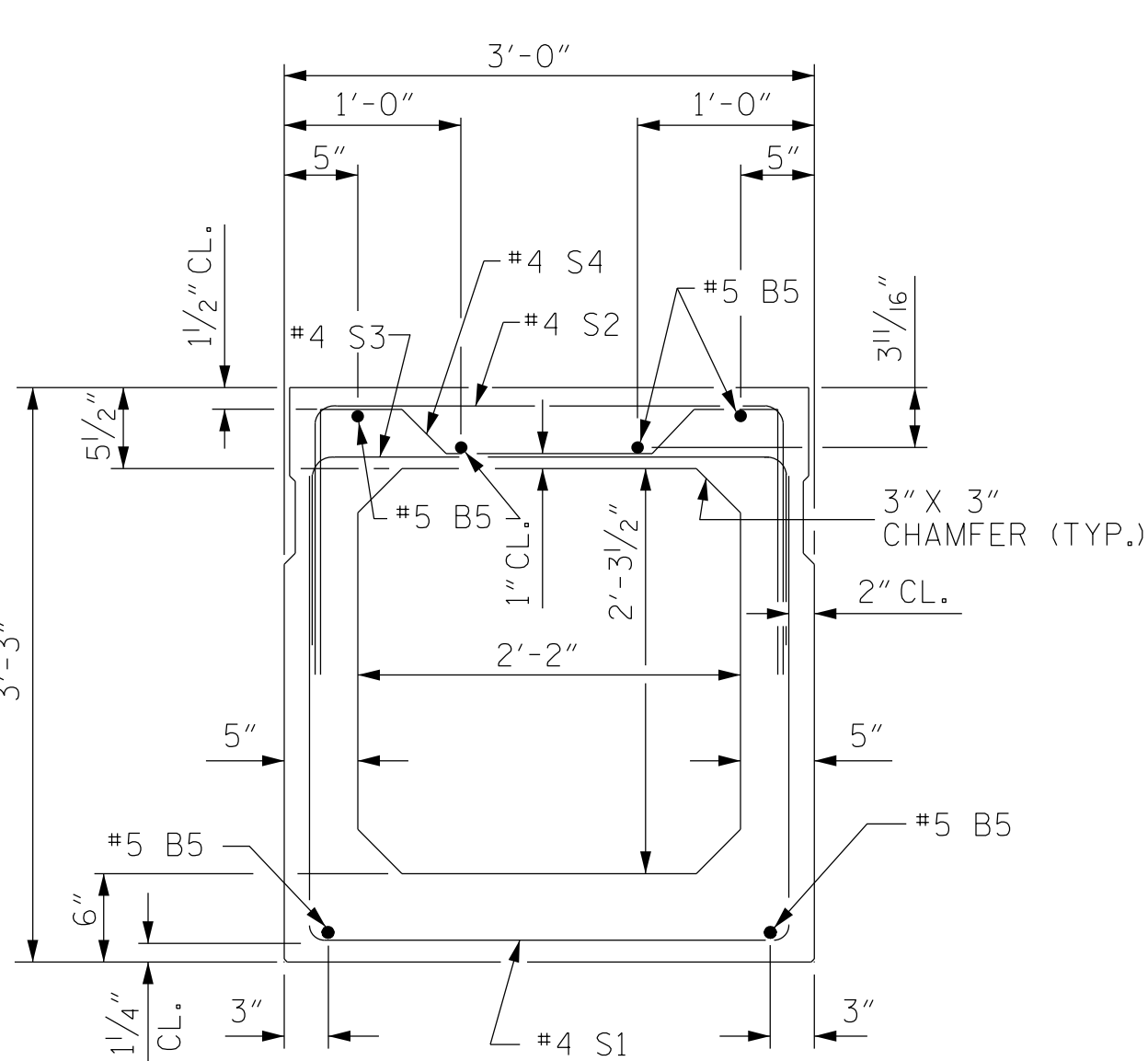
3'-0" X 3'-3"
PRESTRESSED CONCRETE
BOX BEAM UNIT

REVISIONS						SHEET NO. S-12
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 28
2			4			



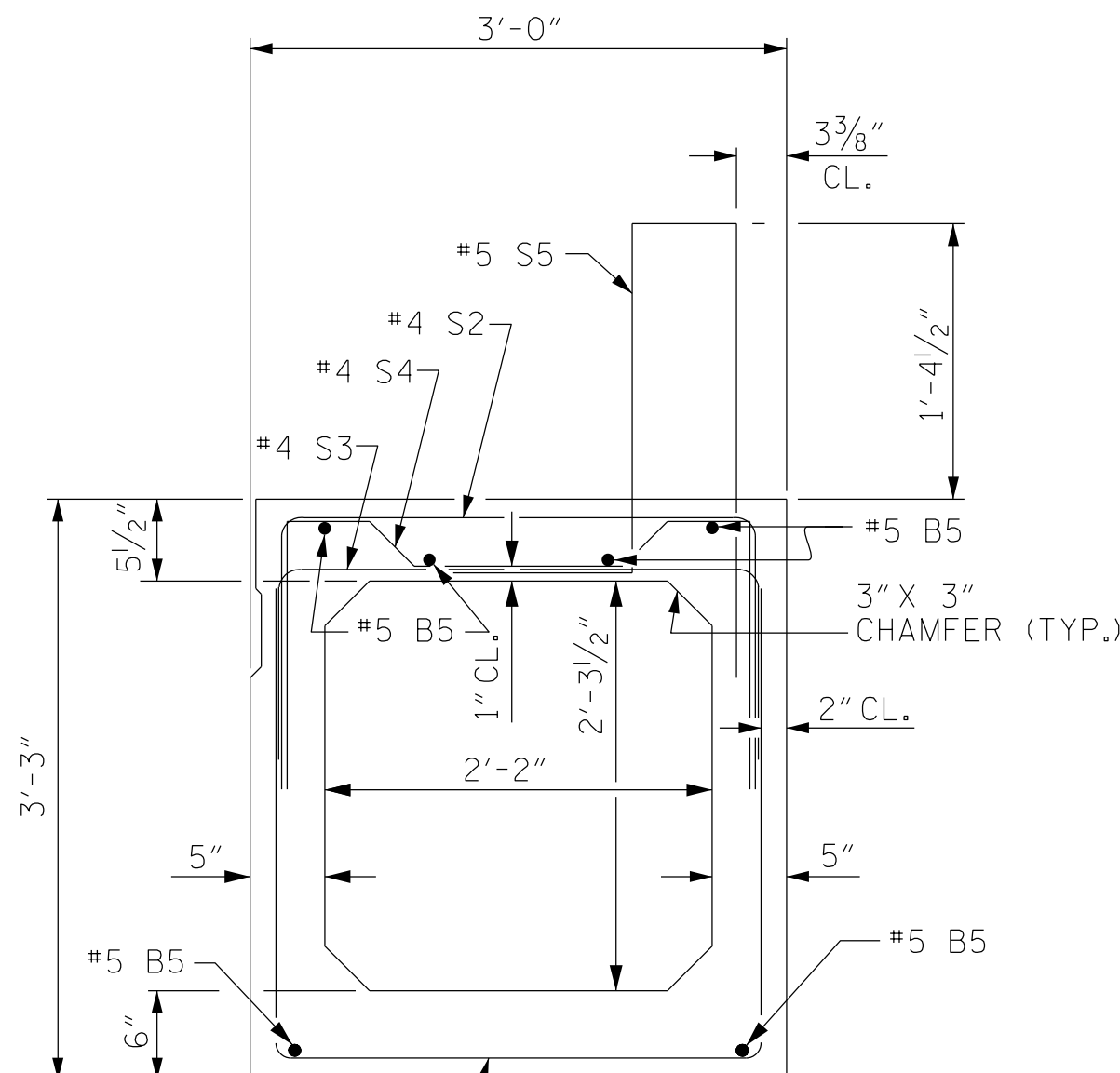
END ELEVATION

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



INTERIOR BOX BEAM SECTION

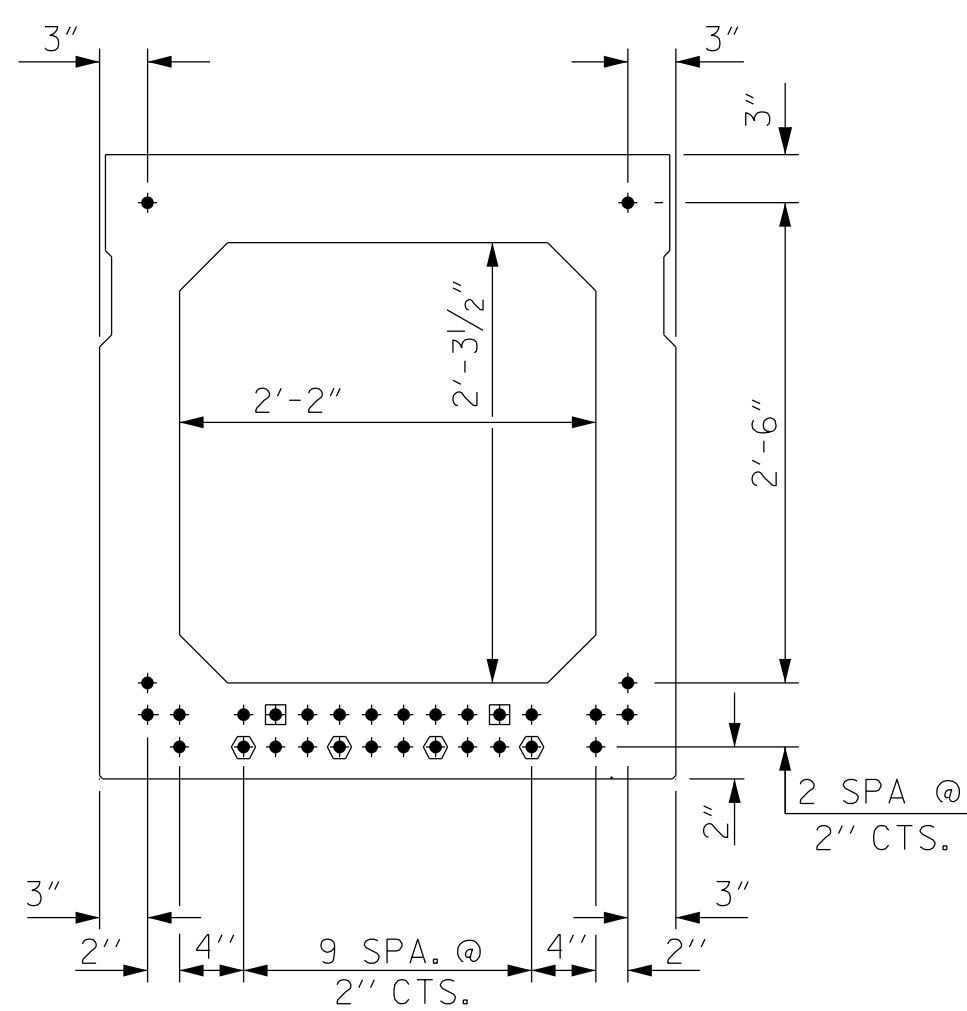
(STRAND LAYOUT NOT SHOWN)



EXTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)

0.6" Ø LOW RELAXATION STRAND LAYOUT



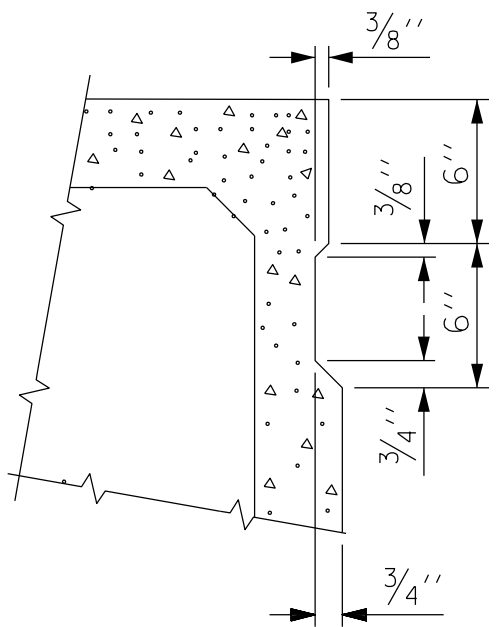
TYPICAL STRAND LOCATION

(30 STRANDS REQUIRED)

DEBONDING LEGEND

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

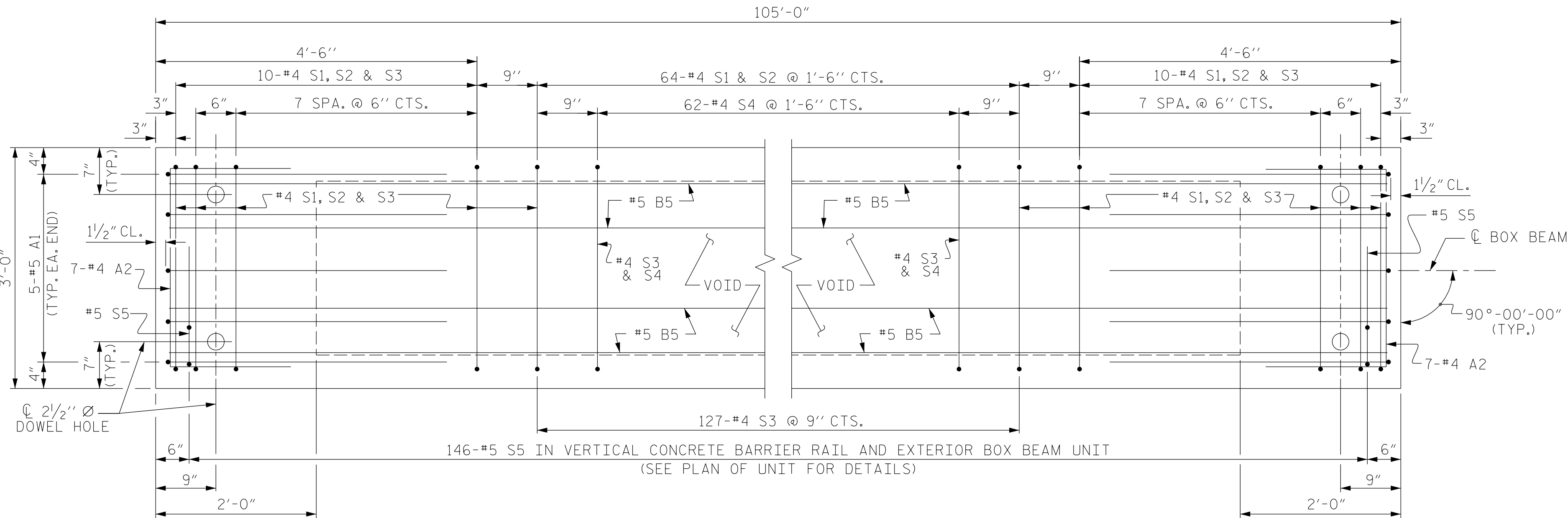
BOND SHALL BE BROKEN ON STRANDS AS SHOWN FOR THE SPECIFIED LENGTH FROM EACH END OF THE BOX BEAM. SEE STANDARD SPECIFICATIONS ARTICLE 1078-7.



SHEAR KEY DETAIL

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

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



SPAN B PLAN OF BOX BEAM

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS. FOR LOCATION OF DIAPHRAGMS, SEE SHEET S-9. FOR THREADED INSERTS, SEE "THREADED INSERT DETAIL". FOR REINFORCING STEEL IN DIAPHRAGMS, SEE "DOUBLE DIAPHRAGM DETAILS".

BAR TYPES							
ALL BAR DIMENSIONS ARE OUT TO OUT							
BILL OF MATERIAL FOR ONE BOX BEAM SECTION							
				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
A1	10	#5	1	7'-2"	75	7'-2"	75
A2	44	#4	2	5'-7"	164	5'-7"	164
B5	12	#5	STR	53'-5"	669	53'-5"	669
K1	15	#4	6	7'-2"	72	7'-2"	72
K2	10	#4	STR	2'-7"	17	2'-7"	17
S1	84	#4	3	8'-6"	477	8'-6"	477
S2	84	#4	3	5'-8"	318	5'-8"	318
S3	147	#4	3	4'-10"	475	4'-10"	475
S4	62	#4	4	5'-10"	242	5'-10"	242
* S5	146	#5	5	5'-10"	888	--	--
REINFORCING STEEL				2509	LBS.	2509	LBS.
* EPOXY COATED REINF. STEEL				888	LBS.		
7500 P.S.I. CONCRETE				20.6	CU. YDS.	20.4	CU. YDS.
0.6" Ø L.R. STRANDS				No.	30	No.	30

PROJECT NO. **BP6.R019**
HARNETT COUNTY
STATION: **16+30.00 -L-**

SHEET 6 OF 10



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

105' BOX BEAM UNIT

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

REVISIONS

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

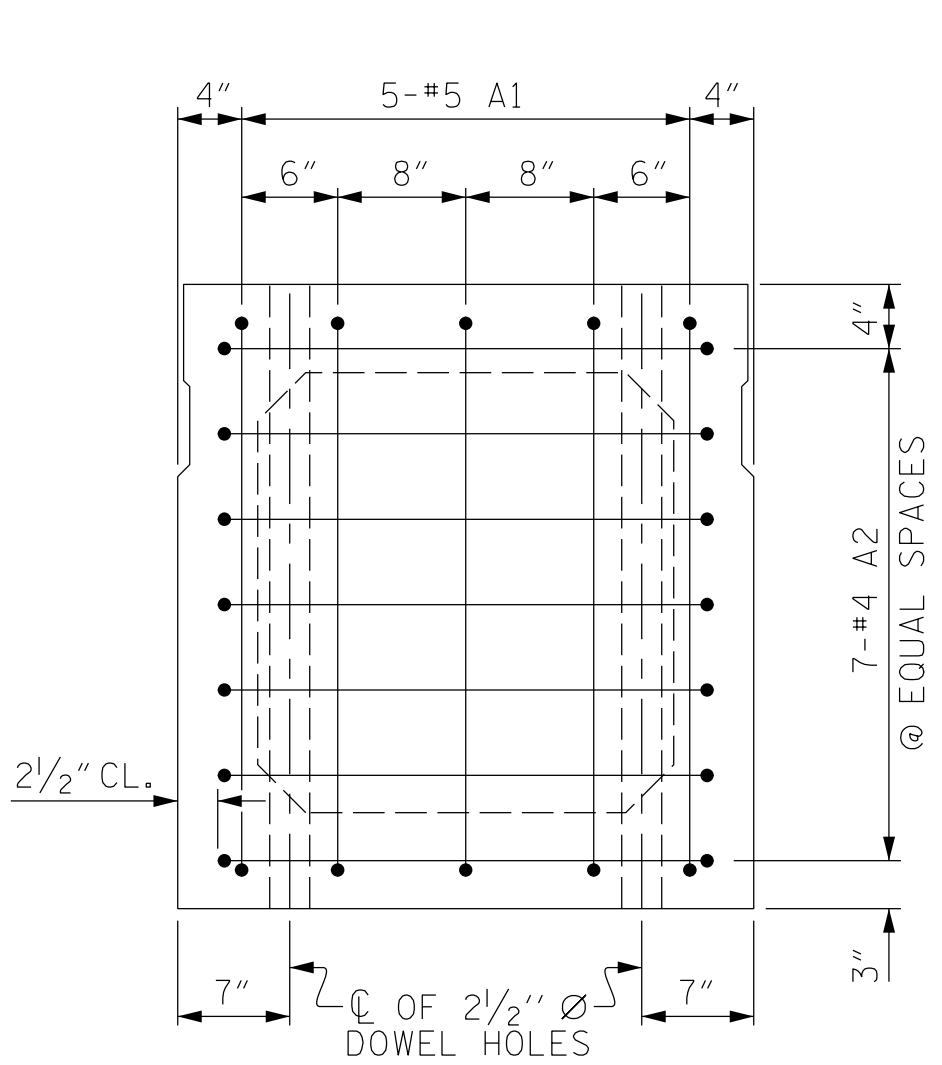
SHEET NO.

S-13
TOTAL SHEETS
28

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FINAL UNLESS ALL
SIGNATURES COMPLETED

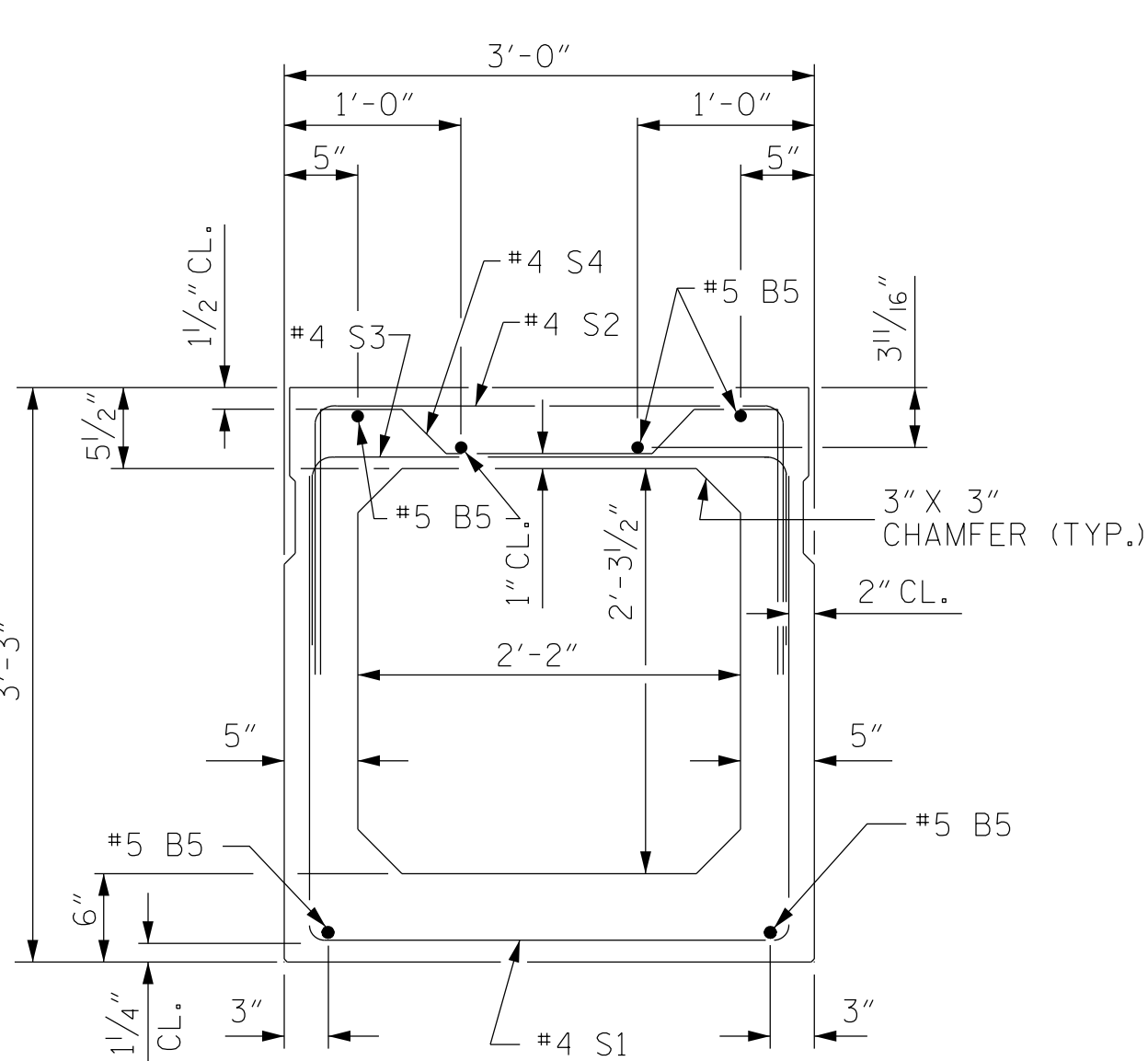
DRAWN BY : J. SCACCA
CHECKED BY : V. SELLERS
DESIGN ENGINEER OF RECORD: T. LAWS
DATE : 08/2025
DATE : 08/2025
DATE : 07/2026

10/8/2026
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Seller sv



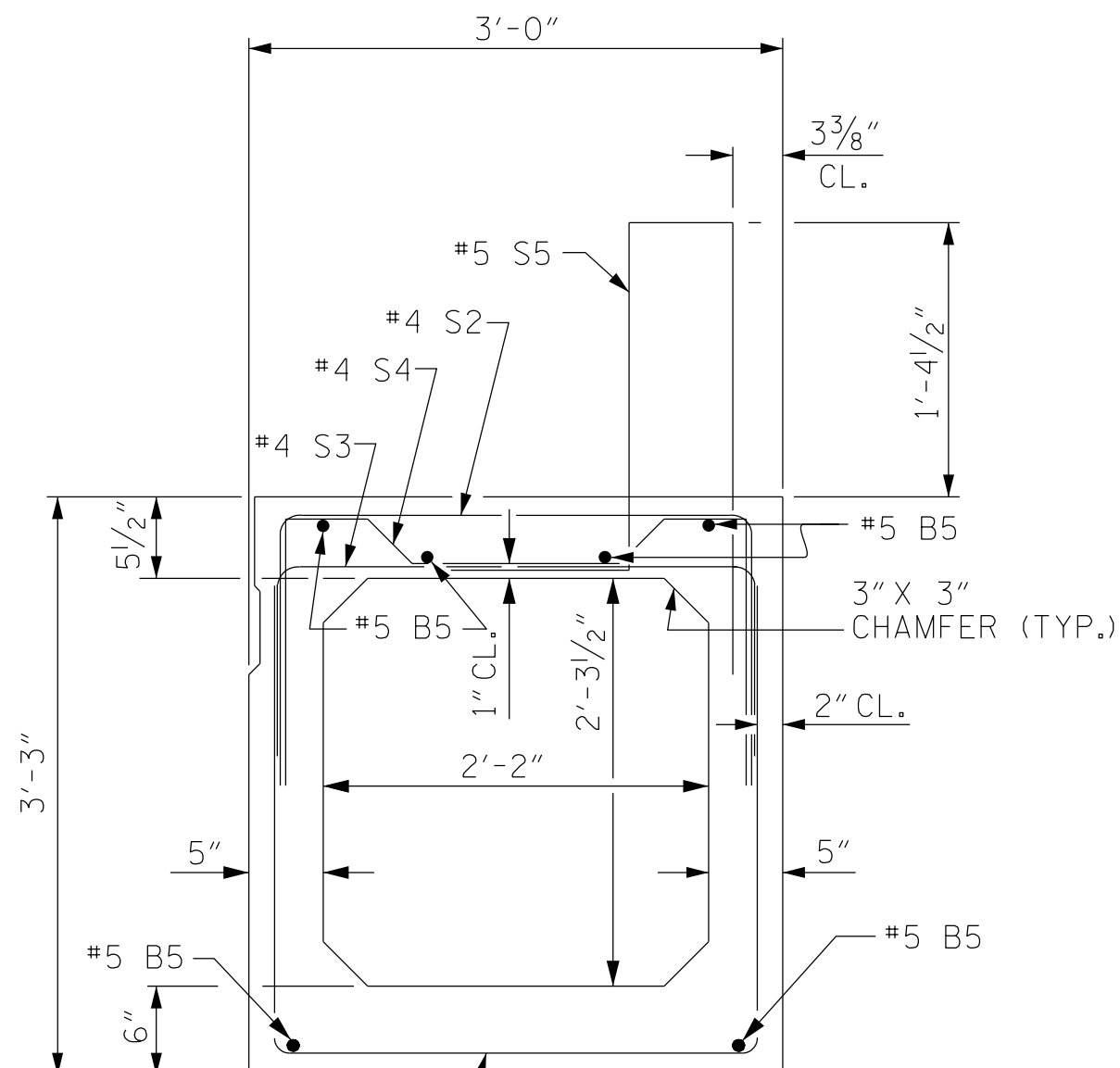
END ELEVATION

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



INTERIOR BOX BEAM SECTION

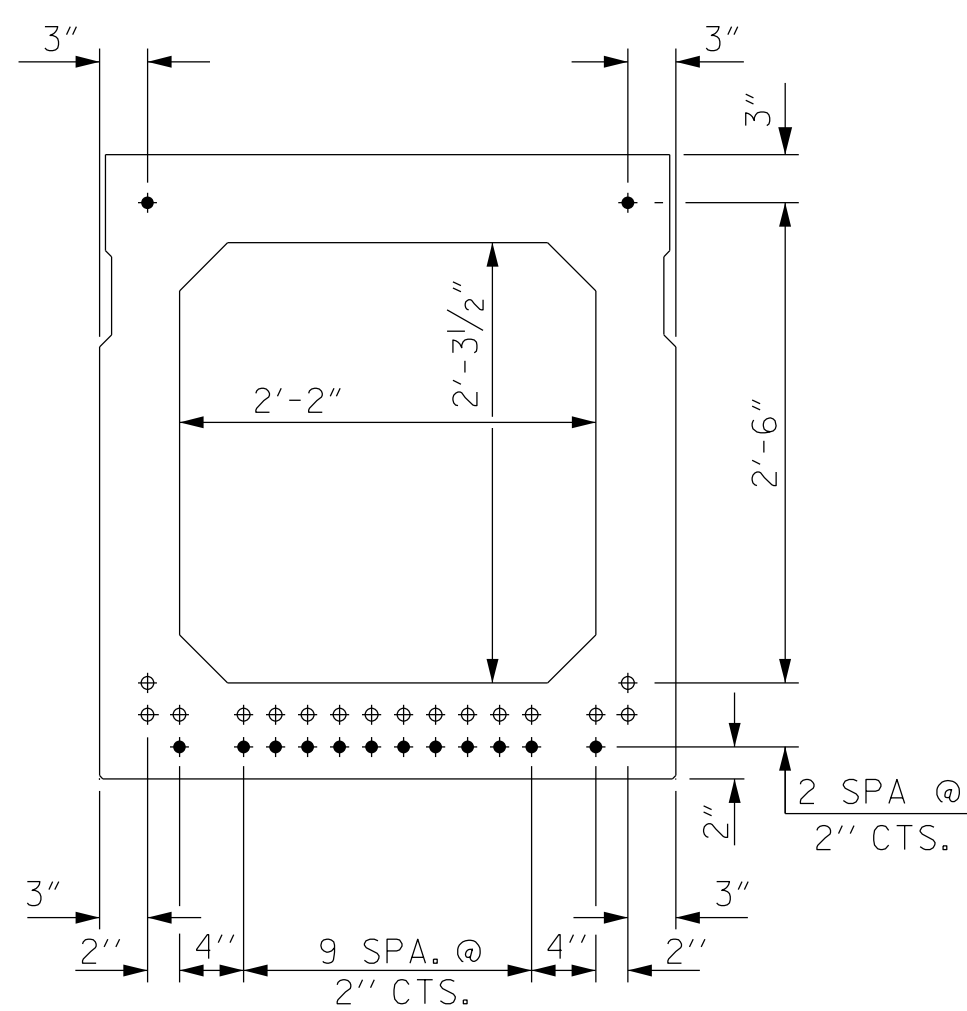
(STRAND LAYOUT NOT SHOWN)



EXTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)

0.6" Ø LOW RELAXATION STRAND LAYOUT

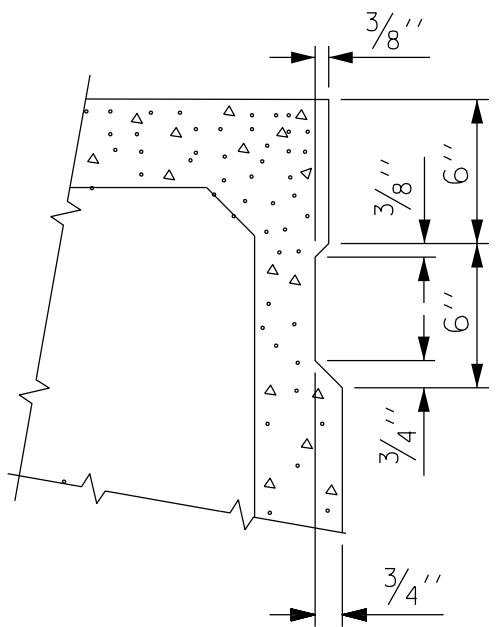


TYPICAL STRAND LOCATION

(14 STRANDS REQUIRED)

DEBONDING LEGEND

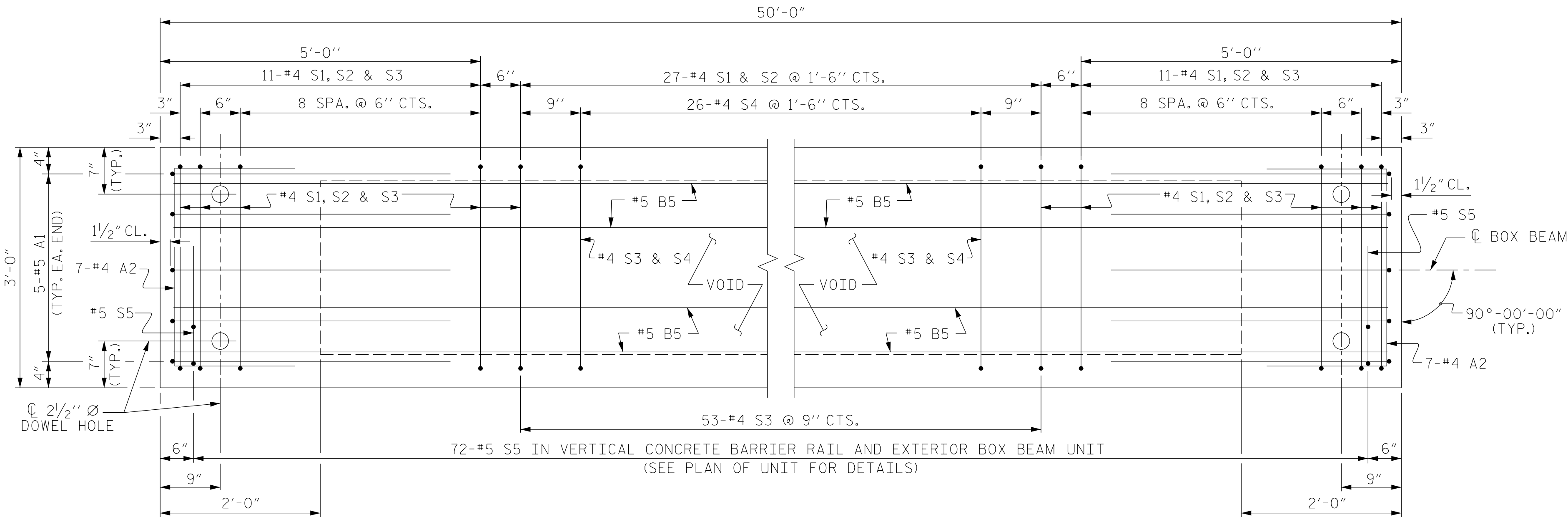
- FULLY BONDED STRANDS
- OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED. IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE BOX BEAM UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.



SHEAR KEY DETAIL

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

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



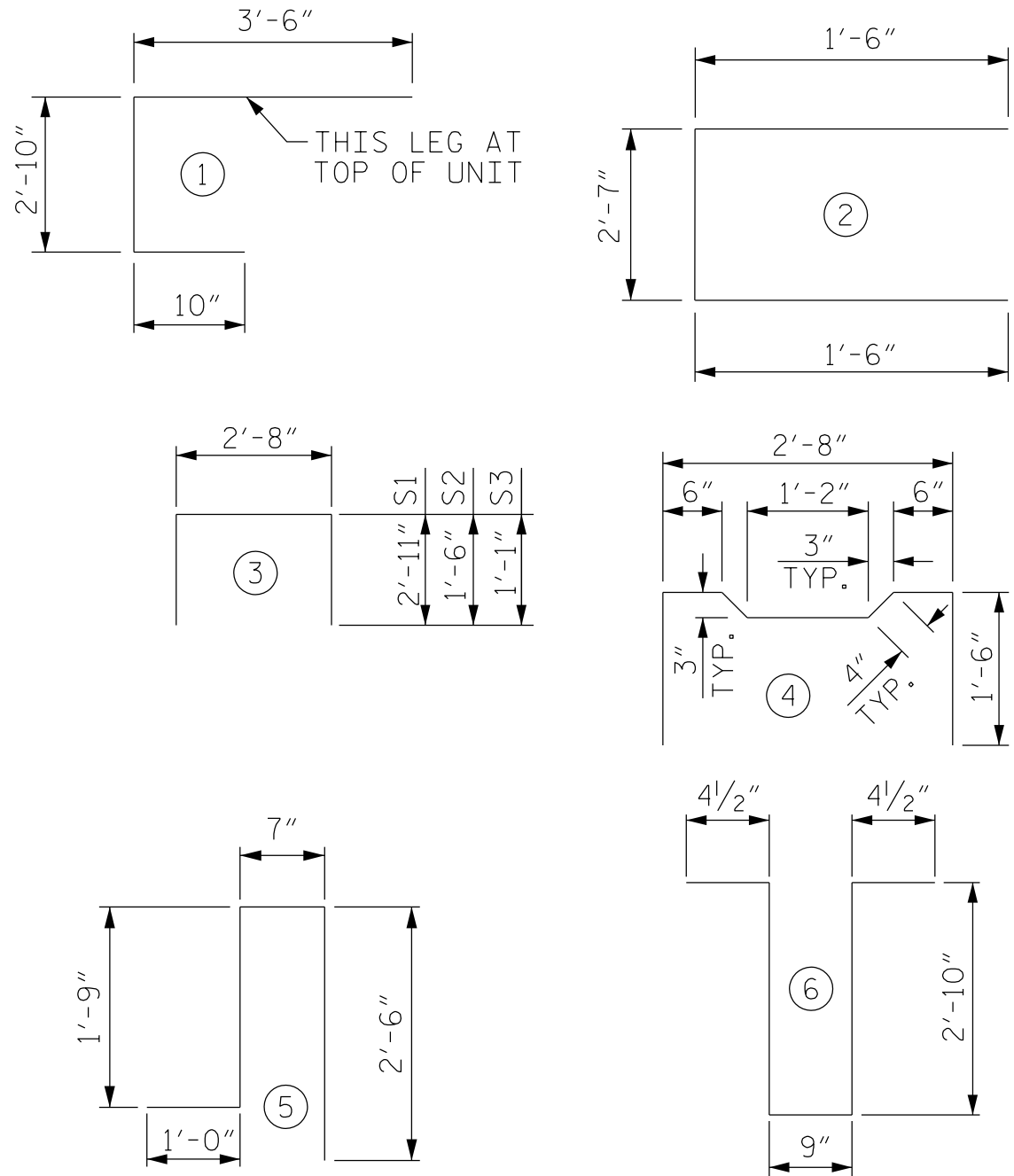
SPAN C PLAN OF BOX BEAM

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS. FOR LOCATION OF DIAPHRAGMS, SEE SHEET S-9. FOR THREADED INSERTS, SEE "THREADED INSERT DETAIL". FOR REINFORCING STEEL IN DIAPHRAGMS, SEE "DOUBLE DIAPHRAGM DETAILS".

DRAWN BY :	J. SCACCA	DATE :	08/2025
CHECKED BY :	V. SELLERS	DATE :	08/2025
DESIGN ENGINEER OF RECORD:	T. LAWS	DATE :	07/2026

10/8/2026
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Seller sv

BAR TYPES



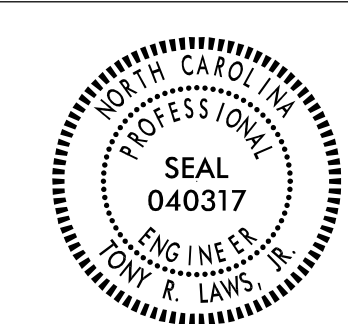
ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE BOX BEAM SECTION

BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
A1	10	#5	1	7'-2"	75	7'-2"	75
A2	44	#4	2	5'-7"	164	5'-7"	164
B5	12	#5	STR	26'-0"	325	26'-0"	325
K1	15	#4	6	7'-2"	72	7'-2"	72
K2	10	#4	STR	2'-7"	17	2'-7"	17
S1	49	#4	3	8'-6"	278	8'-6"	278
S2	49	#4	3	5'-8"	186	5'-8"	186
S3	75	#4	3	4'-10"	242	4'-10"	242
S4	25	#4	4	5'-10"	97	5'-10"	97
* S5	72	#5	5	5'-10"	438	--	--
REINFORCING STEEL				1456	LBS.	1456	LBS.
* EPOXY COATED REINF. STEEL				438	LBS.		
7500 P.S.I. CONCRETE				9.8	CU. YDS.	9.7	CU. YDS.
0.6" Ø L.R. STRANDS				No.	14	No.	14

PROJECT NO. **BP6.R019**
HARNETT COUNTY
STATION: **16+30.00 -L-**

SHEET 7 OF 10



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919-926-4100 FAX 919-946-9080
www.rsandh.com
North Carolina License Nos. 90073 / 54803 / C-38

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

50' BOX BEAM UNIT

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

REVISIONS

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

SHEET NO.

S-14
TOTAL
SHEETS
28

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FINAL UNLESS ALL
SIGNATURES COMPLETED



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



(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)



SHOWING PLAN VIEW OF GROUTED RECESS

DEAD LOAD DEFLECTION AND CAMBER	
	3'-0" x 3'-3"
55' BOX BEAM UNIT	0.6" Ø L.R. STRAND
CAMBER (BEAM ALONE IN PLACE)	9/16" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD	1/8" ↓
FINAL CAMBER	7/16" ↑

DEAD LOAD DEFLECTION AND CAMBER	
	3'-0" x 3'-3"
105' BOX BEAM UNIT	0.6" L.R. STRAND
CAMBER (BEAM ALONE IN PLACE)	2 3/16" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD	1 5/16" ↓
FINAL CAMBER	7/8" ↑

DEAD LOAD DEFLECTION AND CAMBER	
	3'-0" x 3'-3"
50' BOX BEAM UNIT	0.6" Ø L.R. STRAND
CAMBER (BEAM ALONE IN PLACE)	1/2" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD	1/16" ↓
FINAL CAMBER	7/16" ↑

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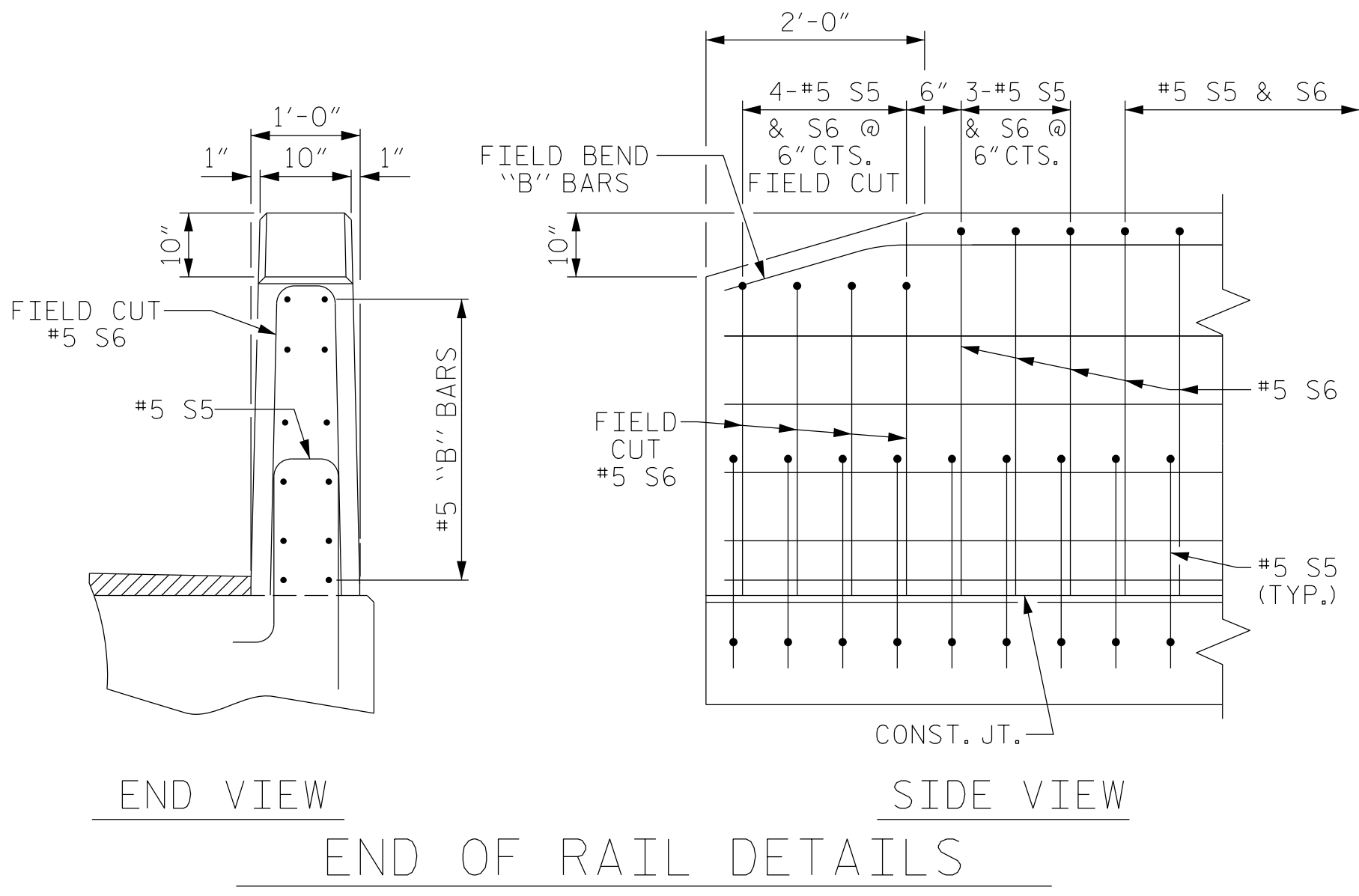
PROJECT NO. BP6.R019
HARNETT COUNTY
 STATION: 16+30.00 -L-

SHEET 8 OF 10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

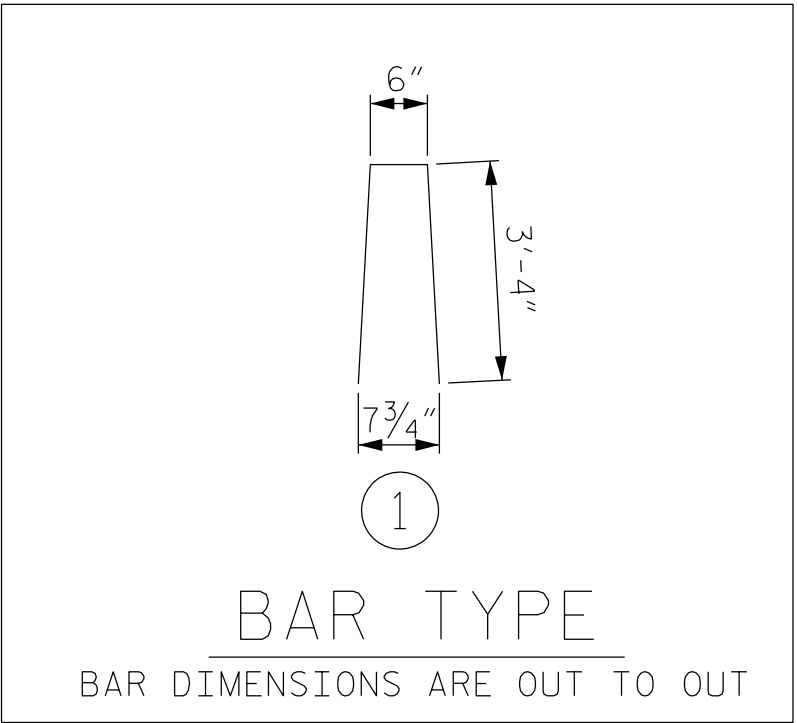
3'-0" X 3'-3"
PRESTRESSED CONCRETE
BOX BEAM UNIT

REVISIONS						SHEET NO. S-15 TOTAL SHEETS 28
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			



GUTTERLINE CONCRETE THICKNESS & RAIL HEIGHT		
33' NC	CONCRETE OVERLAY THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
55' UNITS	3 7/16"	3'-9 9/16"
105' UNITS	3 7/16"	3'-9 7/16"
50' UNITS	3 9/16"	3'-9 9/16"

GROOVING BRIDGE FLOORS		
APPROACH SLABS	835	SQ.FT.
BRIDGE DECK	5,845	SQ.FT.
TOTAL	6,680	SQ.FT.



SPAN A BOX BEAM UNITS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR B.B.	2	55'-0"	110'-0"
INTERIOR B.B.	9	55'-0"	495'-0"
TOTAL	11		605'-0"

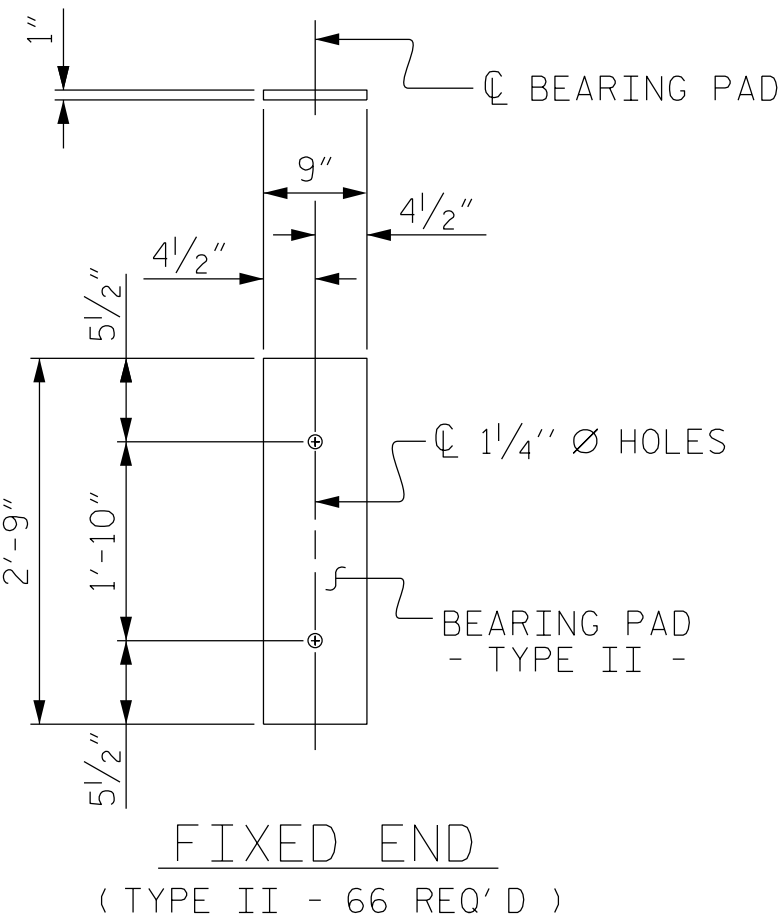
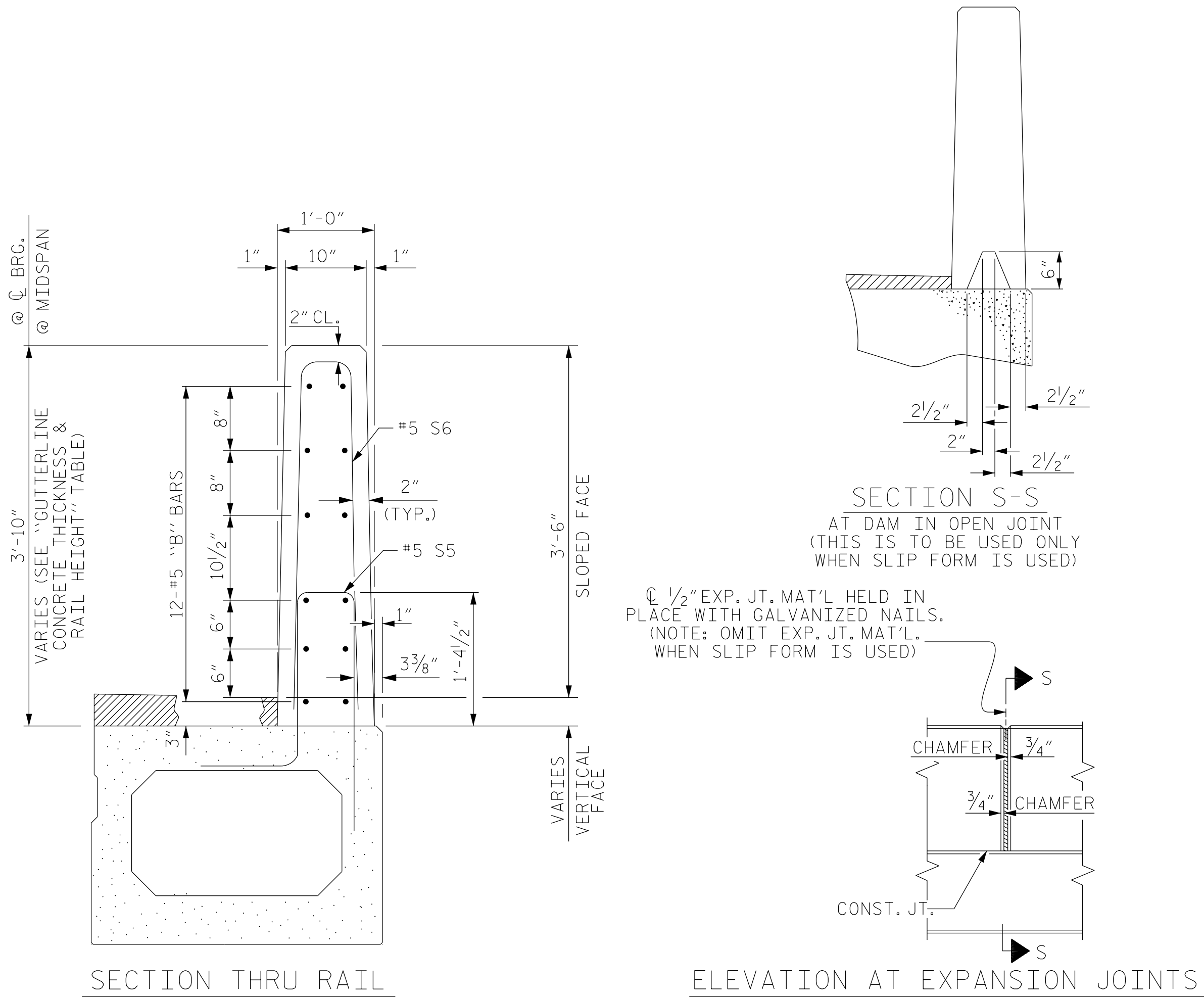
BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL					
BAR	BARS PER PAIR OF EXTERIOR UNITS	SIZE	TYPE	LENGTH	WEIGHT
	55' UNIT				
* B11	48	#5	STR	27'-2"	1360
* S6	156	#5	1	7'-2"	1166
* EPOXY COATED REINFORCING STEEL				LBS.	2526
CLASS AA CONCRETE				CU.YDS.	14.3
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.	110.0

SPAN B BOX BEAM UNITS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR B.B.	2	105'-0"	210'-0"
INTERIOR B.B.	9	105'-0"	945'-0"
TOTAL	11		1155'-0"

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL					
BAR	BARS PER PAIR OF EXTERIOR UNITS	SIZE	TYPE	LENGTH	WEIGHT
	105' UNIT				
* B11	96	#5	STR	25'-11"	2595
* S6	292	#5	1	7'-2"	2183
* EPOXY COATED REINFORCING STEEL				LBS.	4778
CLASS AA CONCRETE				CU.YDS.	27.3
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.	210.0

SPAN C BOX BEAM UNITS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR B.B.	2	50'-0"	100'-0"
INTERIOR B.B.	9	50'-0"	450'-0"
TOTAL	11		550'-0"

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL					
BAR	BARS PER PAIR OF EXTERIOR UNITS	SIZE	TYPE	LENGTH	WEIGHT
	50' UNIT				
* B11	48	#5	STR	24'-8"	1235
* S6	144	#5	1	7'-2"	1076
* EPOXY COATED REINFORCING STEEL				LBS.	2311
CLASS AA CONCRETE				CU.YDS.	13.0
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.	100.0



ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

PROJECT NO. **BP6.R019**

HARNETT COUNTY

STATION: **16+30.00 -L-**

SHEET 9 OF 10



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE					
3'-0" X 3'-3" PRESTRESSED CONCRETE BOX BEAM UNIT					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					28

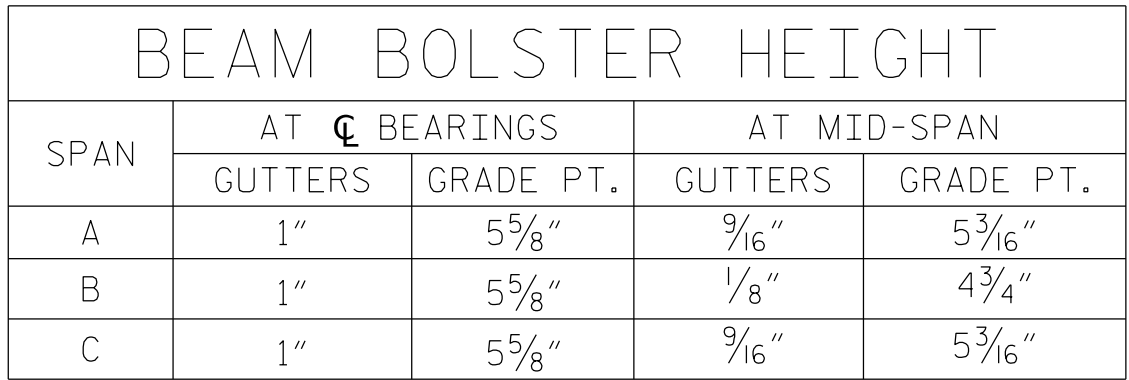
DRAWN BY : **J. SCACCA** DATE : **08/2025**

CHECKED BY : **V. SELLERS** DATE : **08/2025**

DESIGN ENGINEER OF RECORD: **T. LAWS** DATE : **07/2026**

10/8/2026
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SIGNATURES COMPLETED



BILL OF MATERIAL					
CONCRETE WEARING SURFACE					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* R1	842	#3	STR	15'-11"	5040
* R2	372	#3	STR	36'-1"	5047
* R3	122	#4	STR	20'-0"	1630
* EPOXY COATED REINF. STEEL = 11,717 LBS					
CONCRETE WEARING SURFACE = 6,475 SQ.FT.					
FOR GROOVING BRIDGE FLOOR QUANTITY, SEE SHEET S-16					

BEAM AND SLAB BOLSTER HEIGHTS ARE BASED UPON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS AND VARY BETWEEN $\frac{1}{4}$ BEARING AND MID-SPAN.

PLACEMENT OF THE CONCRETE WEARING SURFACE SHALL OCCUR AFTER CASTING THE CONCRETE RAIL.

THE COST OF THE REINFORCING STEEL CAST WITH THE CONCRETE WEARING SURFACE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONCRETE WEARING SURFACE.

FOR CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.

ALL REINFORCING STEEL FOR THE CONCRETE WEARING SURFACE SHALL BE EXPOXY COATED.



PROJECT NO. BP6.R019
HARNETT COUNTY
 STATION: 16+30.00 -L-

SHEET 10 OF 10



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS 28
2			4			

DRAWN BY : J. SCACCA DATE : 08/2025
 CHECKED BY : V. SELLERS DATE : 08/2025
 DESIGN ENGINEER OF RECORD: T. LAWS DATE : 07/2026

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SIGNATURES COMPLETED

10/8/2026
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NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A ¼" HOLD DOWN PLATE AND 7 - ⅞" 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 ⅞" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

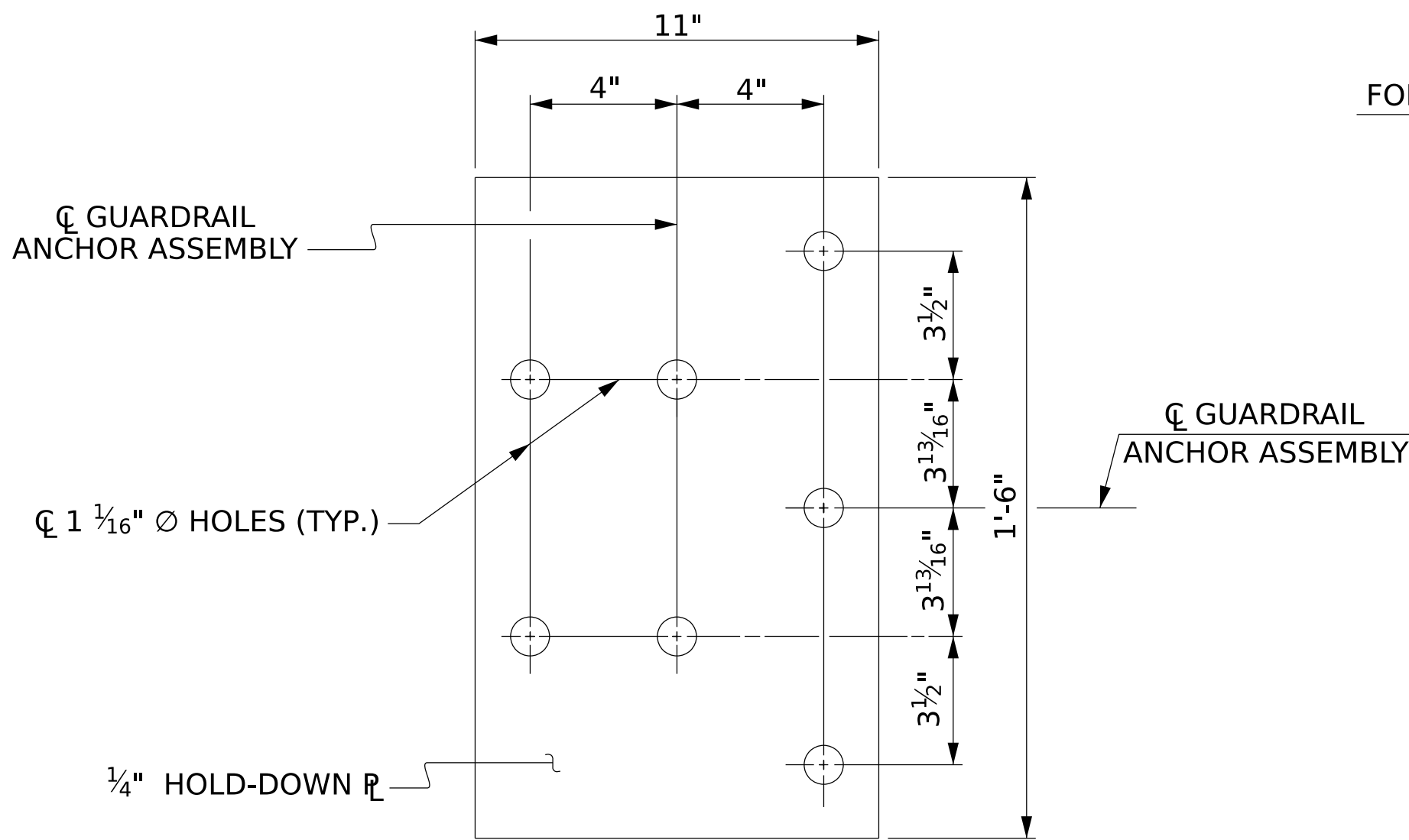
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

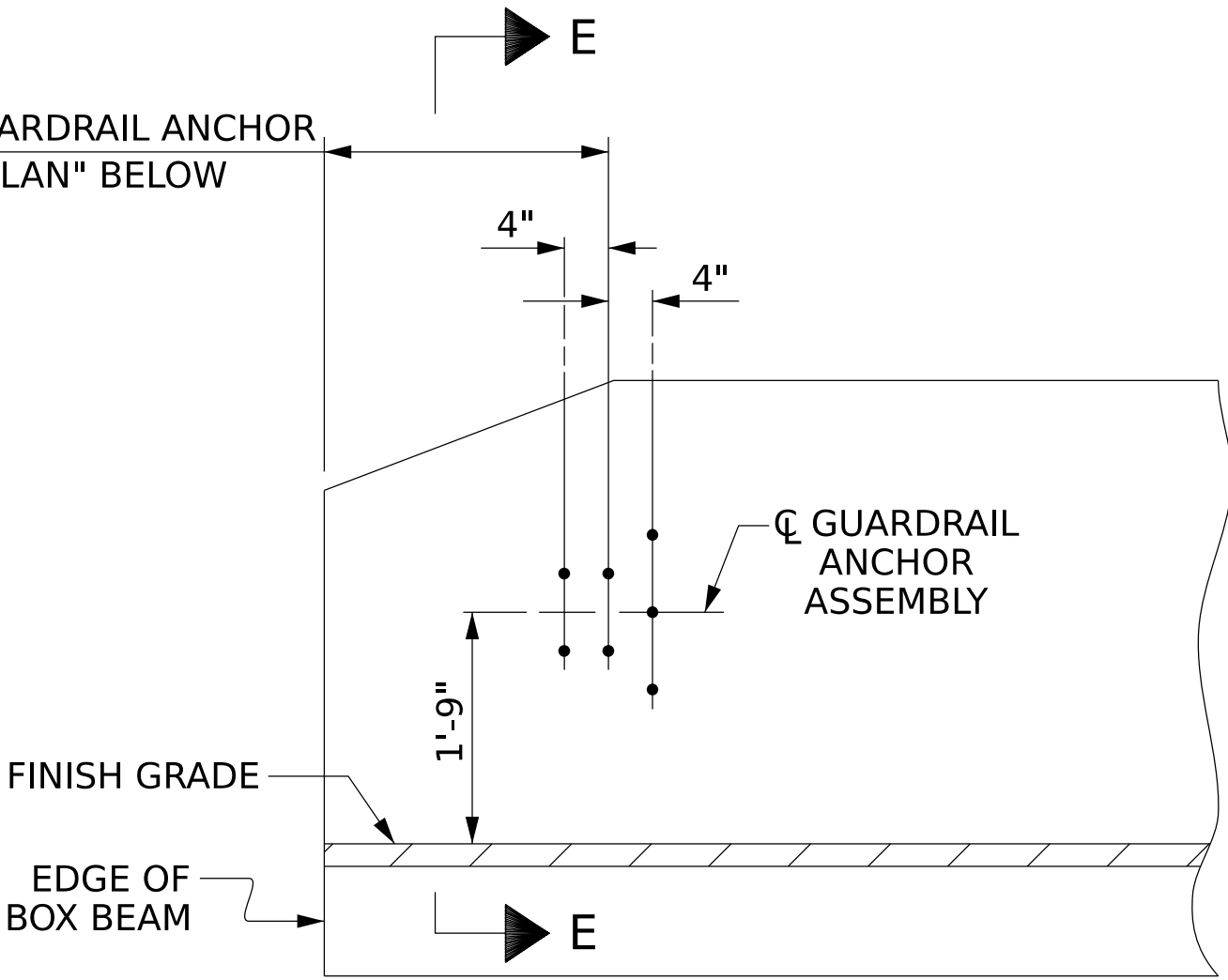
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

THE 1 ¼" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

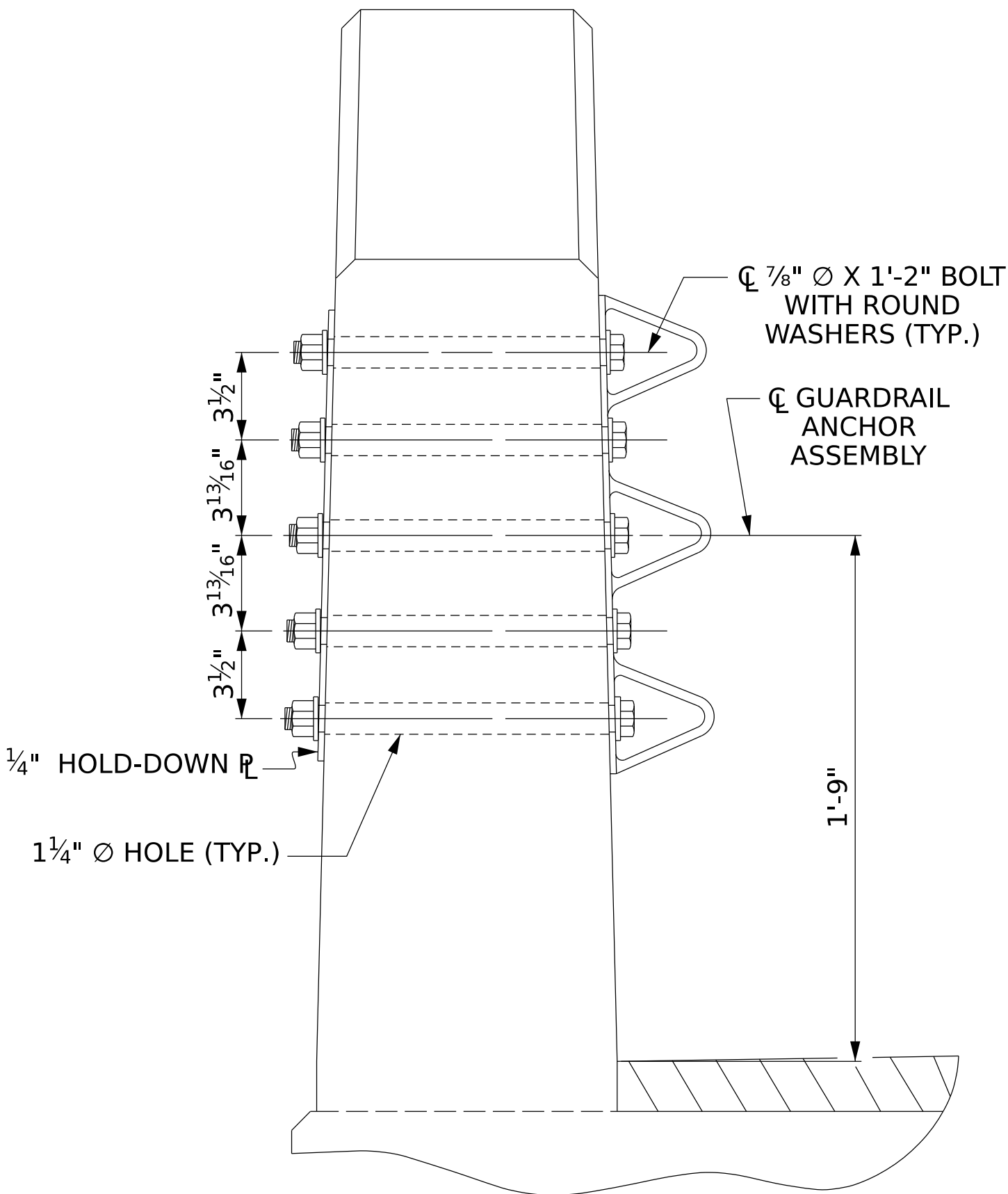


PLAN

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

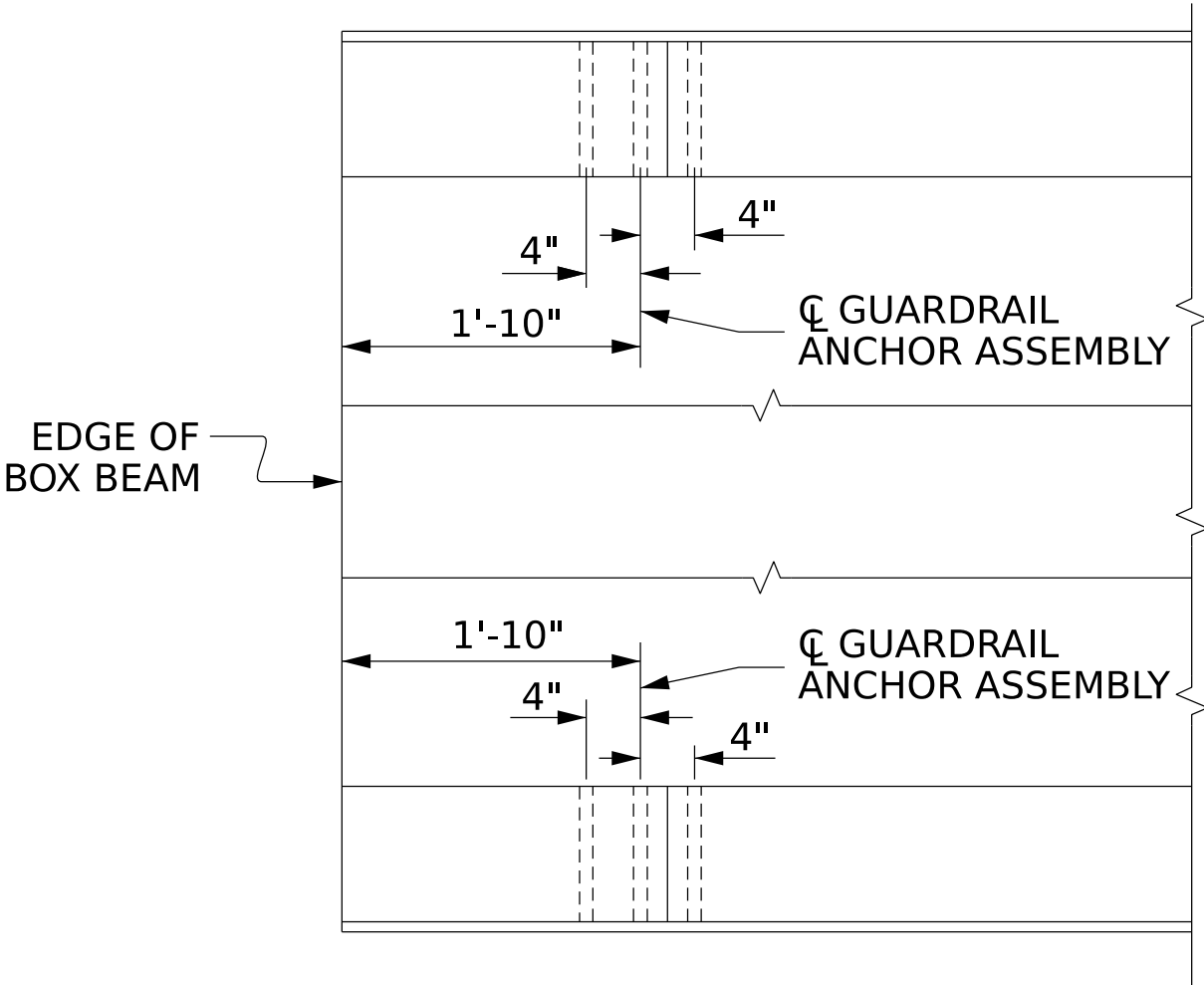


ELEVATION



SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL



SKETCH SHOWING POINTS OF ATTACHMENT

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. BP6.R019
HARNETT COUNTY
STATION: 16+30.00 -L-

DRAWN BY : J. SCACCA DATE : 08/2025
CHECKED BY : V. SELLERS DATE : 08/2025
DESIGN ENGINEER OF RECORD: T. LAWS DATE : 07/2026

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STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

STANDARD

GUARDRAIL ANCHORAGE
DETAILS

FOR VERTICAL CONCRETE
BARRIER RAIL

SEAL

040317

ENGINEER

TOM R. LAWS, JR.

RS&H

REVISIONS

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

SHEET NO.

S-18

TOTAL SHEETS

28

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8521 Six Forks Road, Suite 400

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919-928-4100 FAX: 919-946-0080

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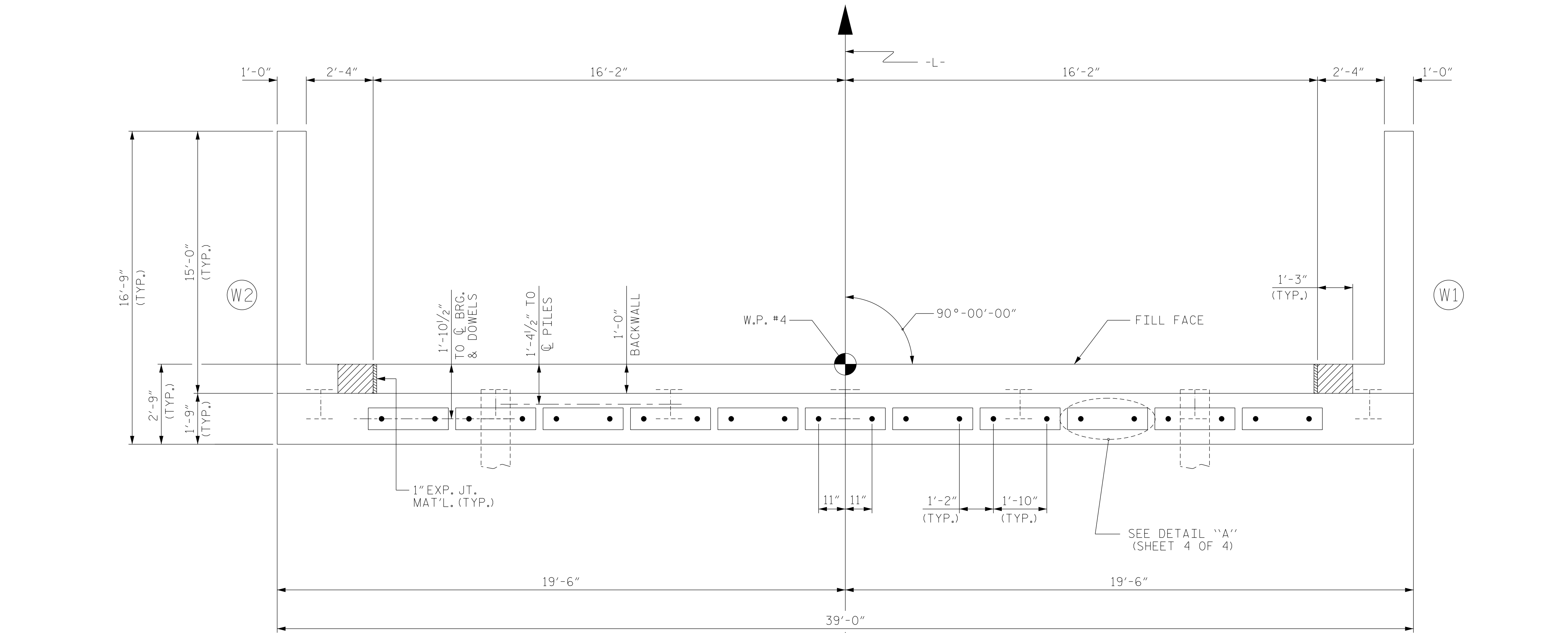
NOTES

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

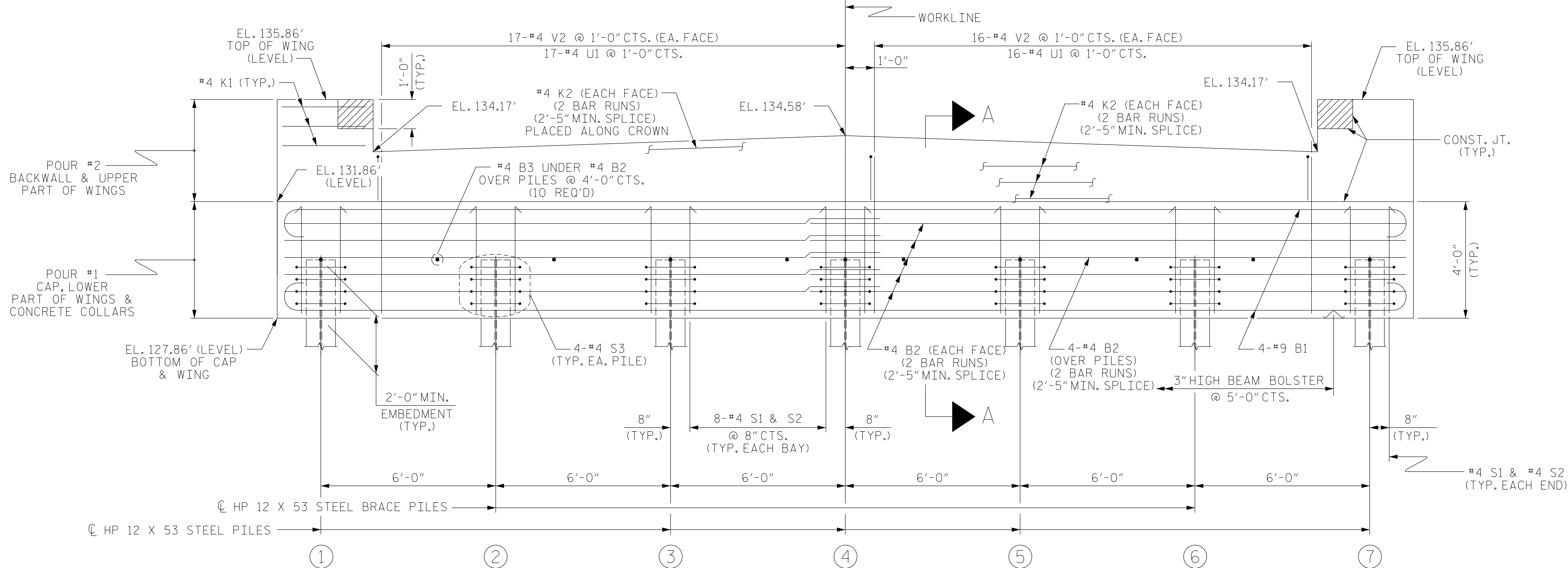
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPlice DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN



ELEVATION

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

DRAWN BY : J. SCACCA DATE : 04/2025
CHECKED BY : M. ACOSTA DATE : 12/2025
DESIGN ENGINEER OF RECORD : T. LAWS DATE : 07/2026

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PROJECT NO. **BP6.R019**
HARNETT COUNTY
STATION: **16+30.00 -L-**

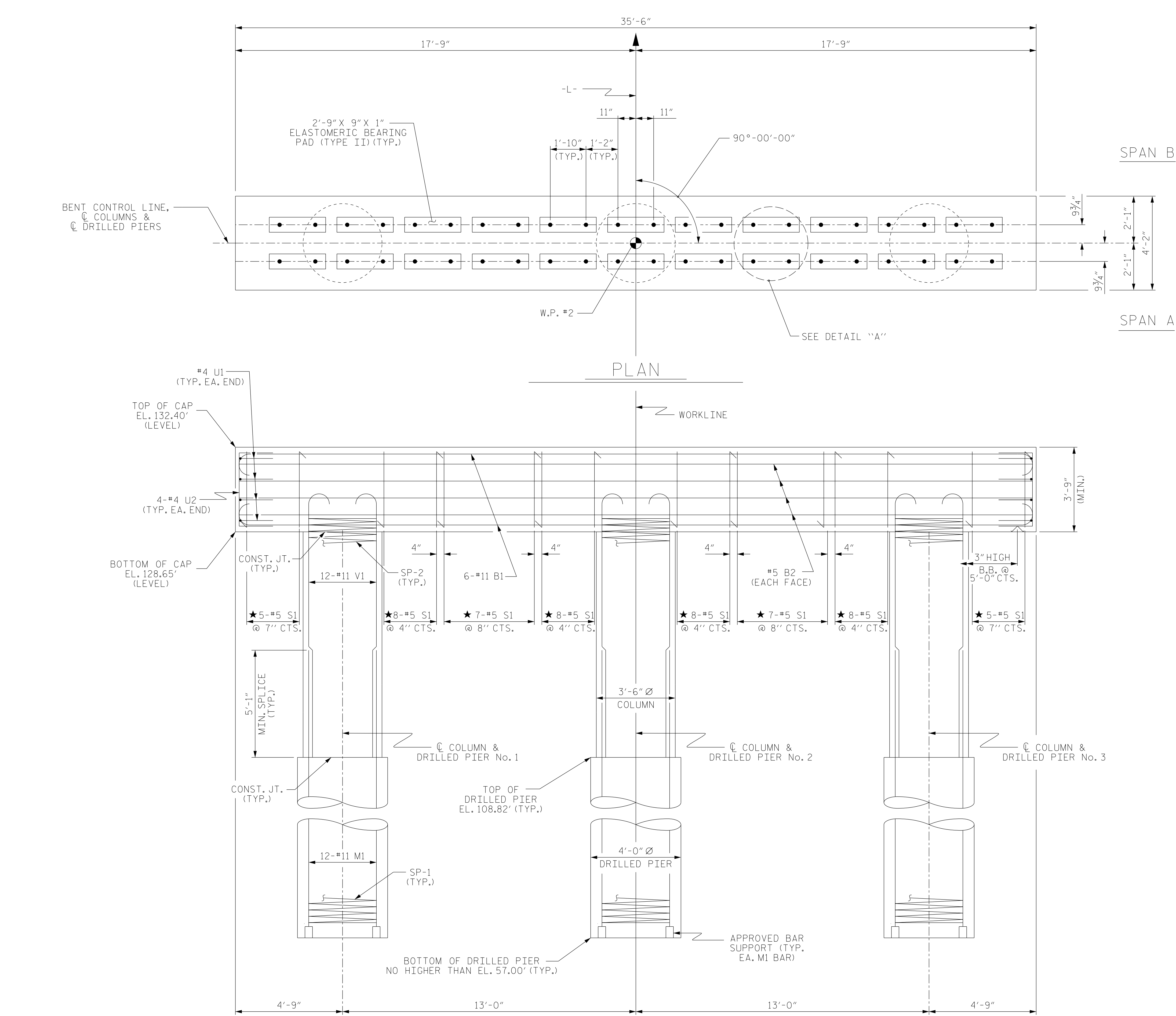
SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

END BENT NO. 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-20 TOTAL SHEETS 28
2			4			

STD. NO. EB_33_90S4_39BB



NOTES

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

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

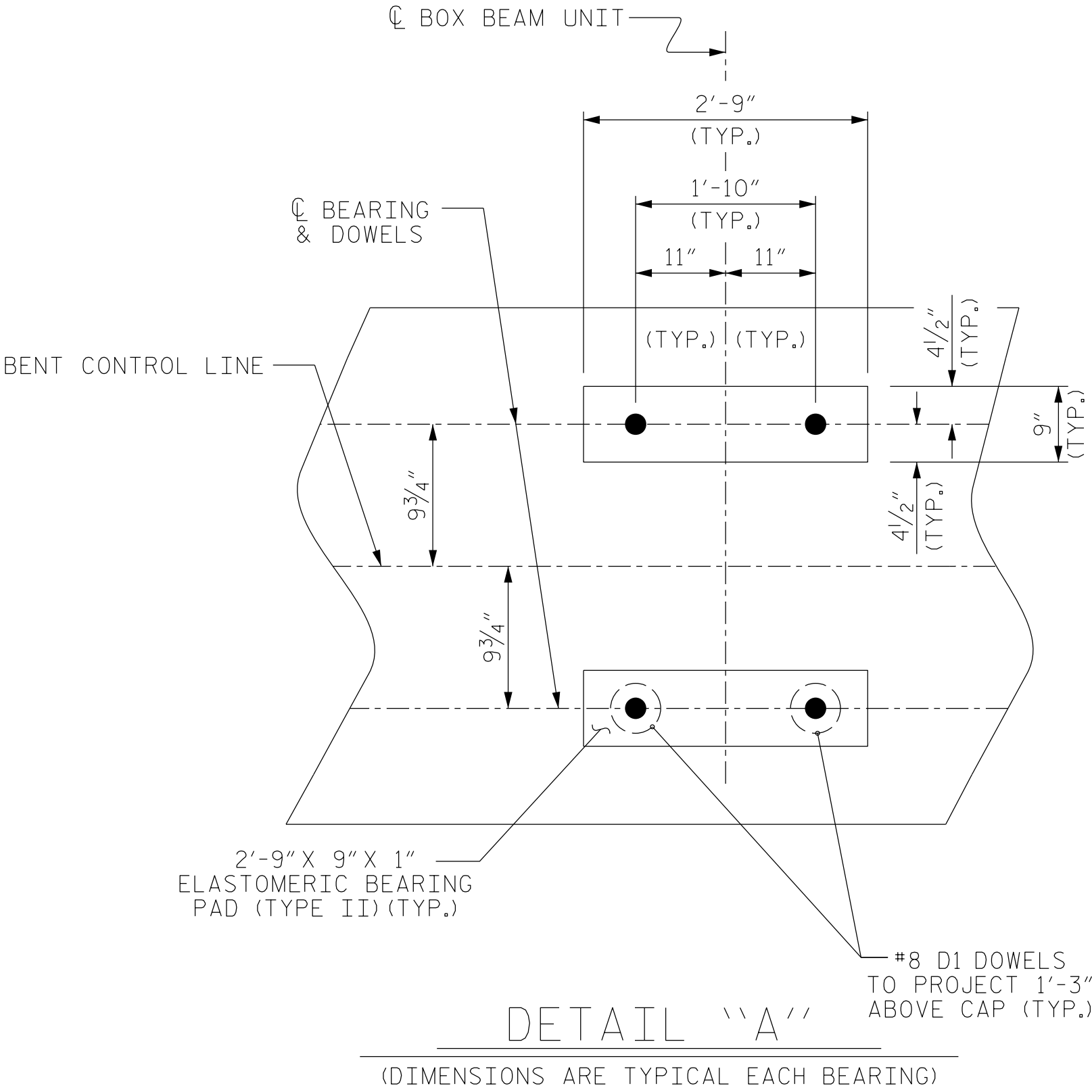
FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

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

★ INVERT ALTERNATE STIRRUPS.

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

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



PROJECT NO. **BP6.R019**

HARNETT COUNTY

STATION: **16+30.00 -L-**

SHEET 1 OF 2

DRAWN BY : **J. SCACCA** DATE : **12/2025**

CHECKED BY : **M. ACOSTA** DATE : **12/2025**

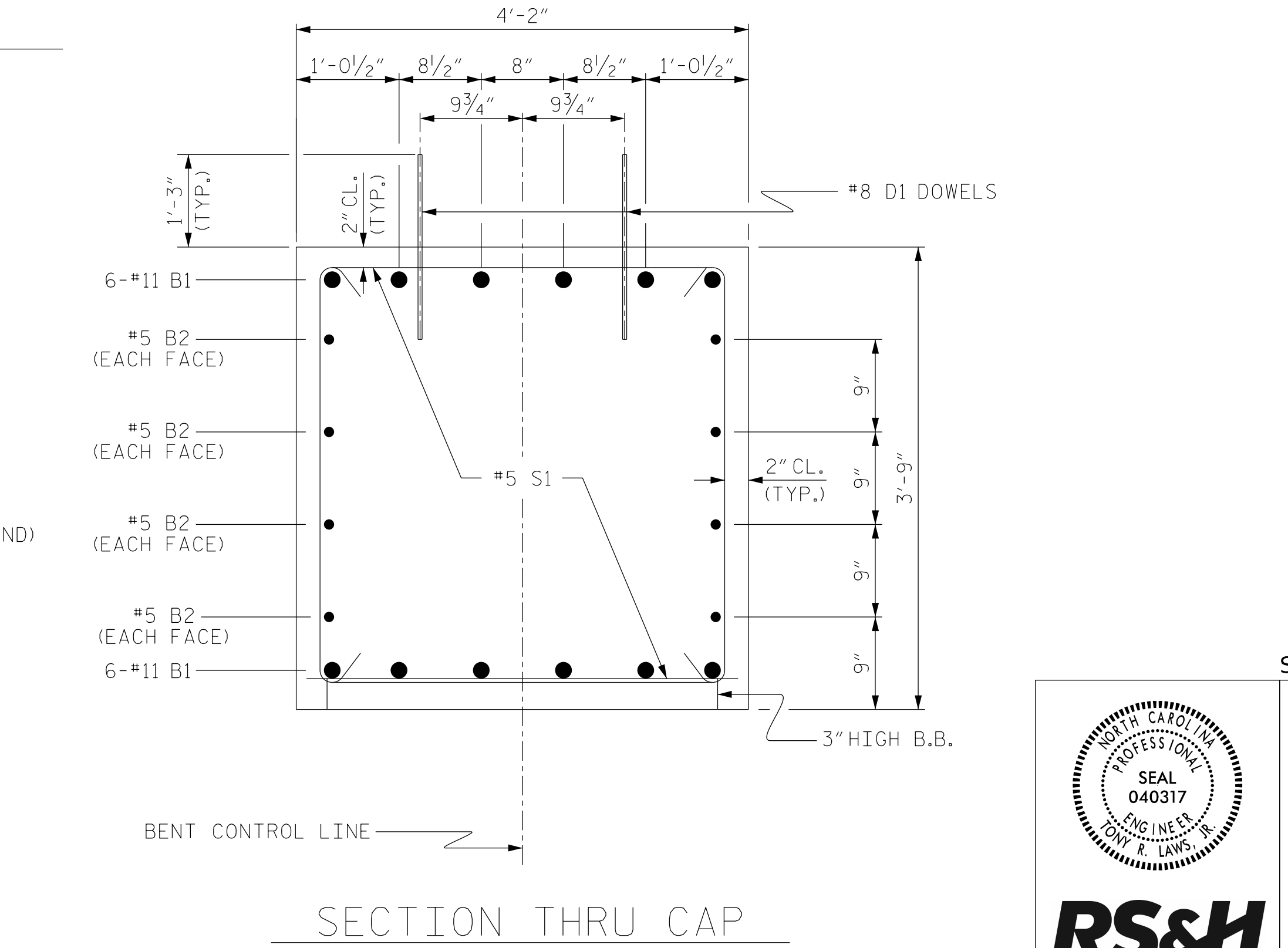
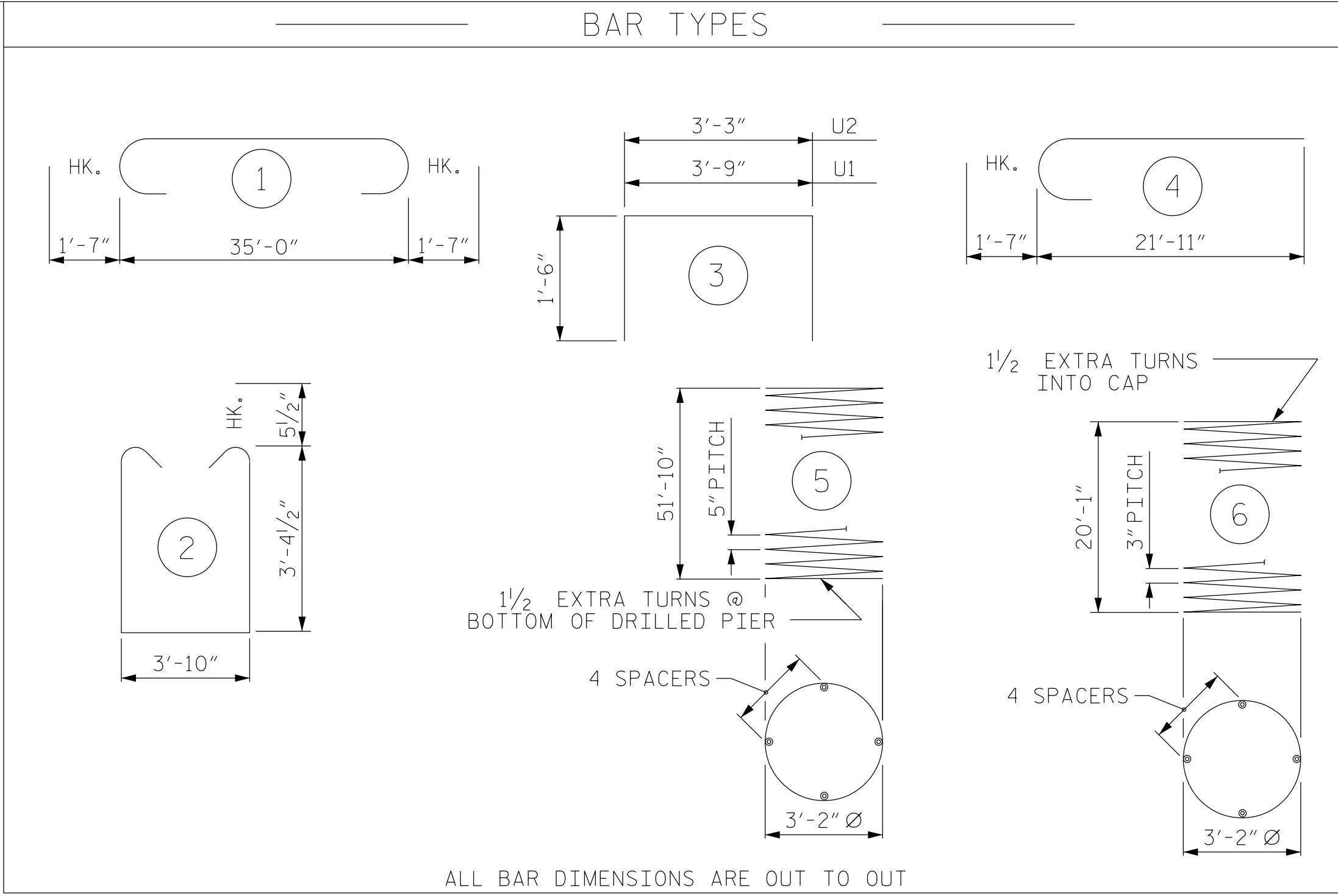
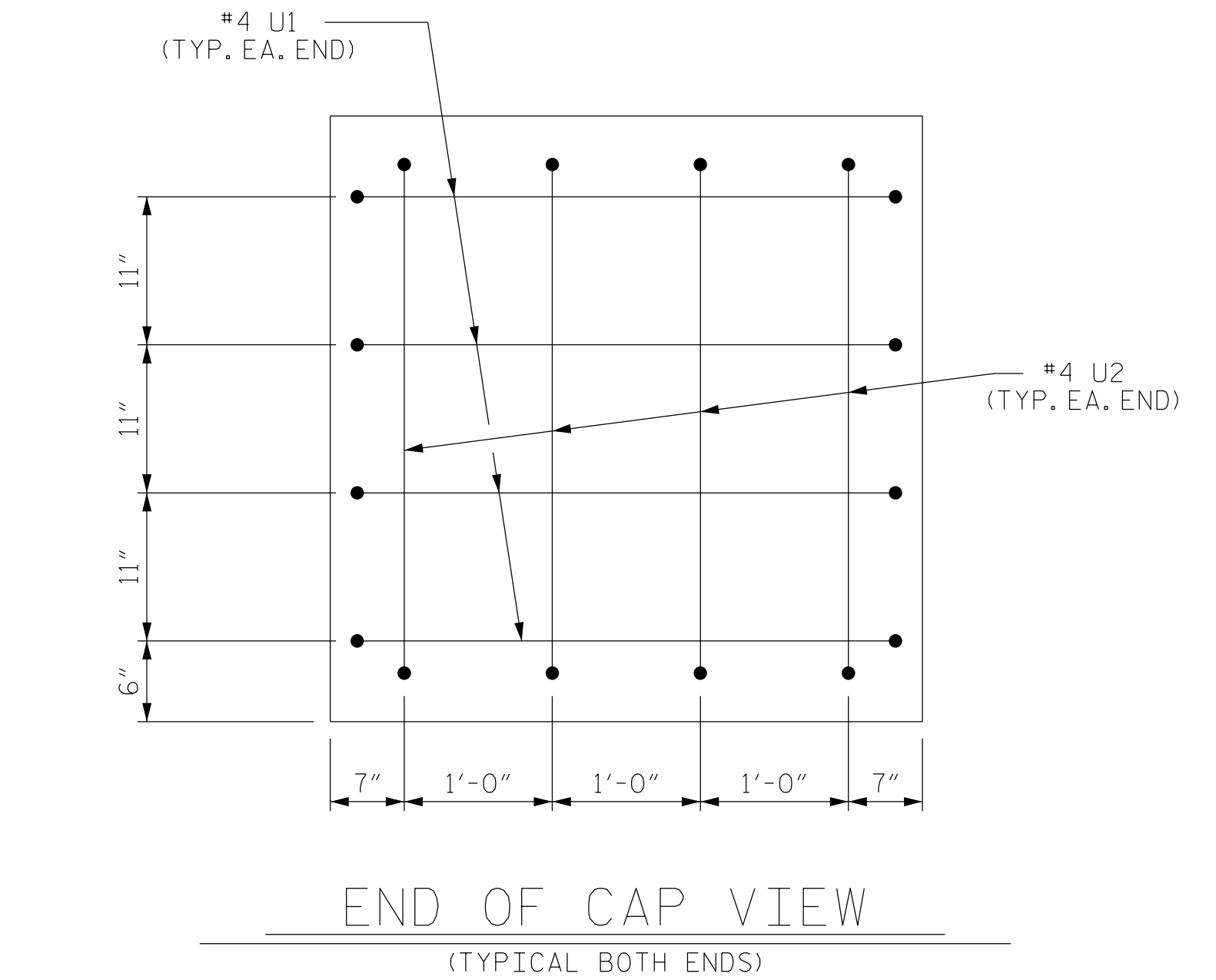
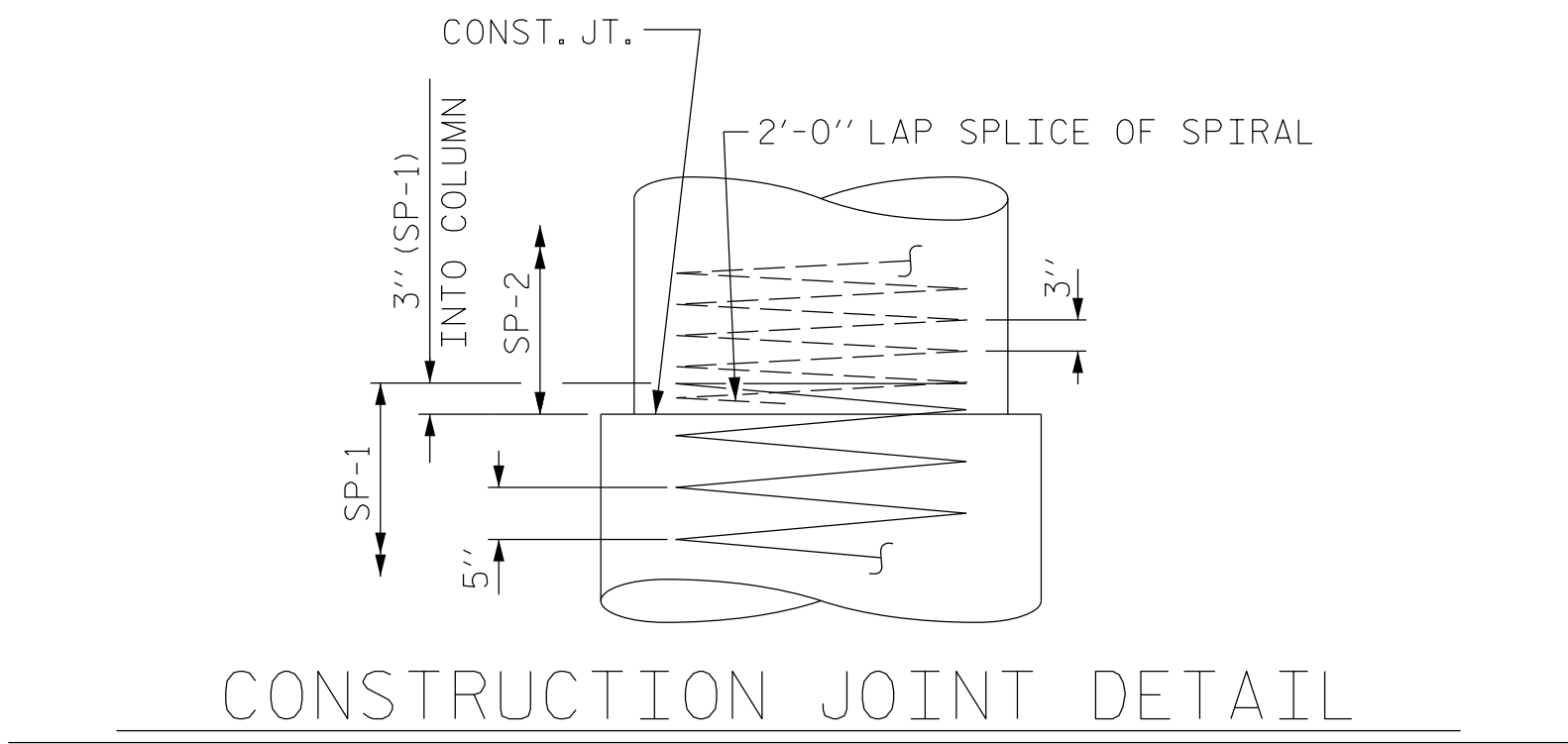
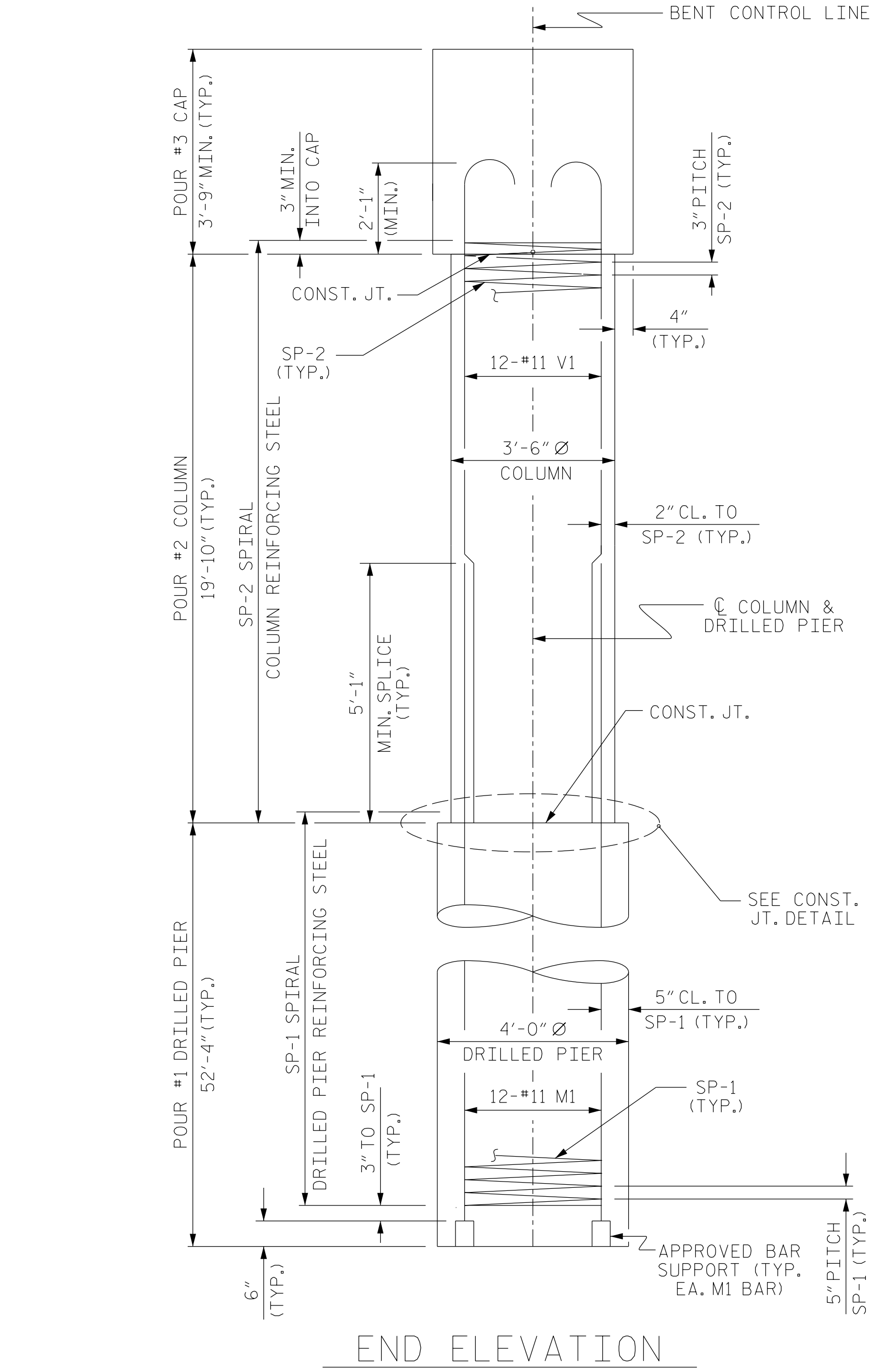
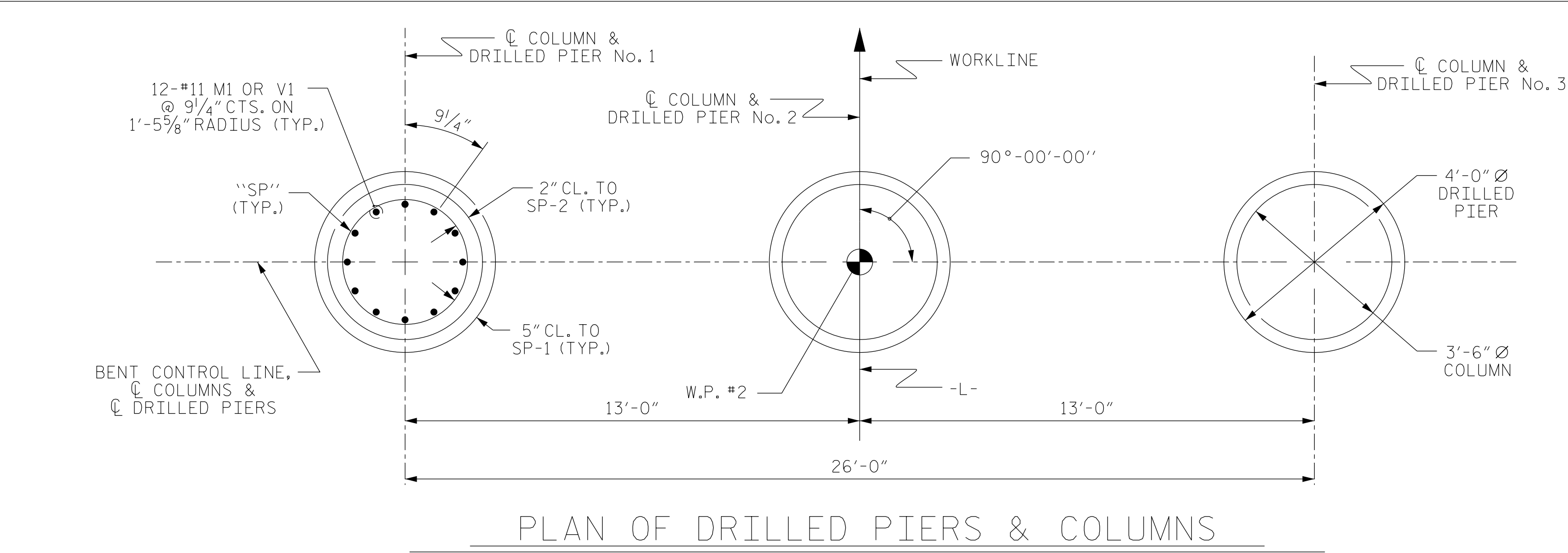
DESIGN ENGINEER OF RECORD: **T. LAWS** DATE : **07/2026**

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

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STATE OF NORTH CAROLINA						SHEET NO. S-23 TOTAL SHEETS 28
DEPARTMENT OF TRANSPORTATION						
RALEIGH						
SUBSTRUCTURE						
BENT NO. 1						
REVISIONS						
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			



BILL OF MATERIAL FOR ONE BENT						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	12	#11	1	38'-2"	2433	
B2	8	#5	STR	35'-2"	293	
D1	44	#8	STR	2'-3"	264	
M1	36	#11	STR	59'-11"	11460	
S1	56	#5	2	11'-6"	672	
U1	8	#4	3	6'-9"	36	
U2	8	#4	3	6'-3"	33	
V1	36	#11	4	23'-6"	4495	
REINFORCING STEEL (FOR ONE BENT)					19,686 LBS.	
SP-1	3	*	5	1234'-0"	3861	
SP-2	3	**	6	805'-3"	1614	
SPIRAL COLUMN REINFORCING STEEL (FOR ONE BENT)					5,475 LBS.	
* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR						
** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR						
CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)						
POUR #2 (COLUMNS)					21.3 C.Y.	
POUR #3 (CAP)					20.6 C.Y.	
TOTAL CLASS A CONCRETE					41.9 C.Y.	
DRILLED PIERS: (FOR ONE BENT)						
DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)					73.1 C.Y.	

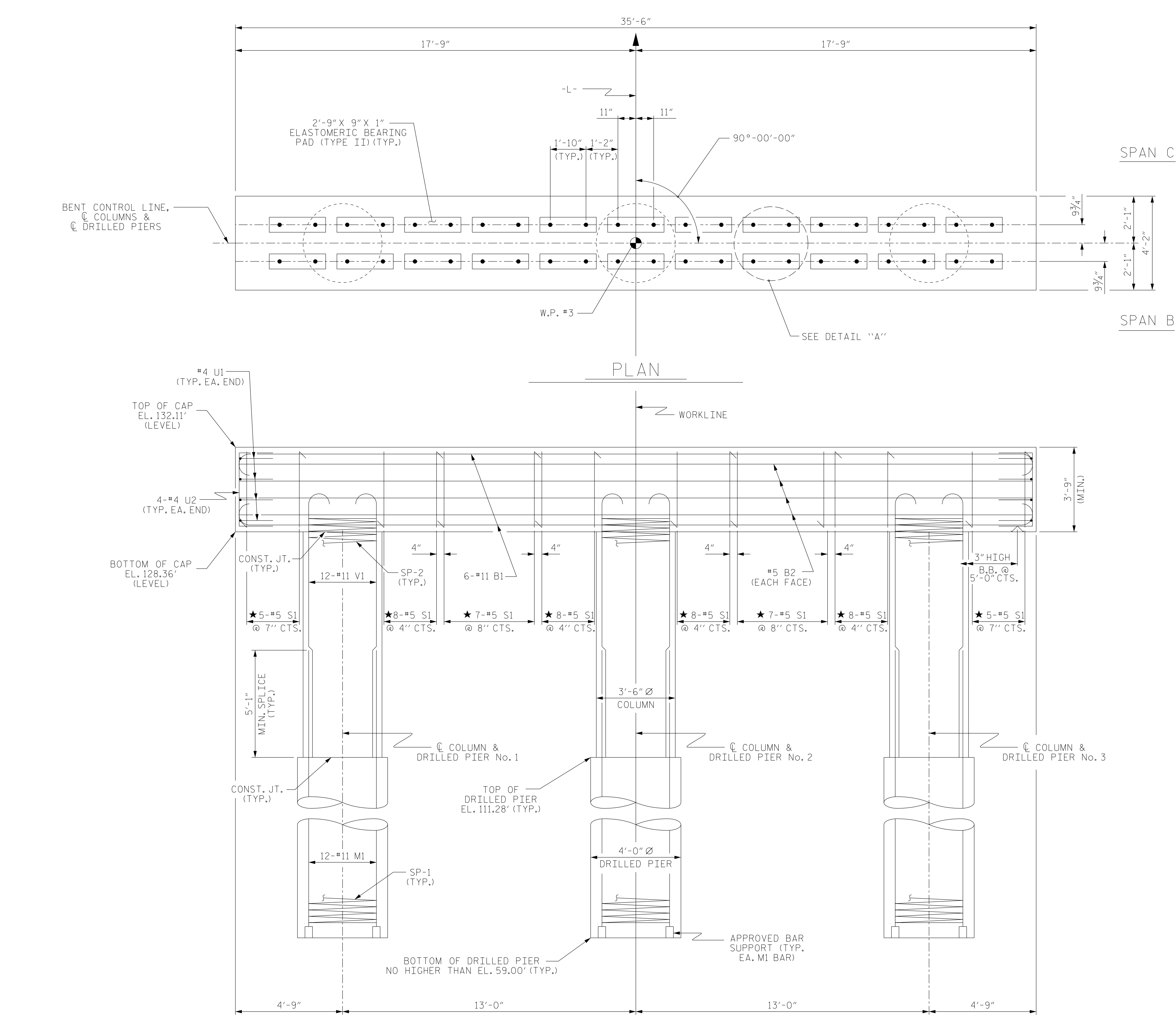
PROJECT NO. **BP6.R019**
HARNETT COUNTY
STATION: **16+30.00 -L-**

SHEET 2 OF 2						
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUBSTRUCTURE						
BENT NO. 1 DETAILS						
REVISIONS					SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24
1			3			TOTAL SHEETS
2			4			28

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DRAWN BY : J. SCACCA DATE : 12/2025
CHECKED BY : M. ACOSTA DATE : 12/2025
DESIGN ENGINEER OF RECORD: T. LAWS DATE : 07/2026



NOTES

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

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

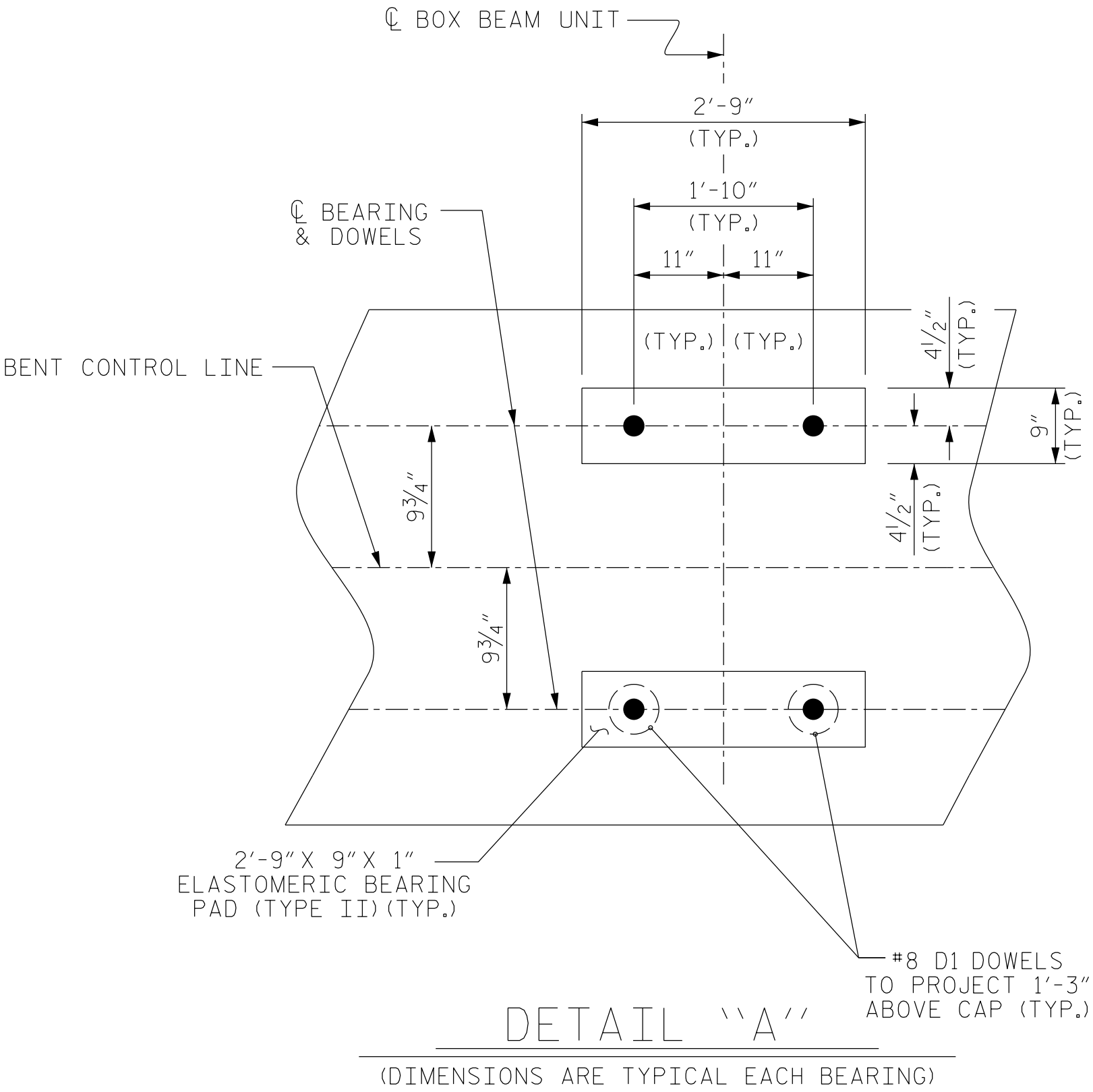
FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

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

★ INVERT ALTERNATE STIRRUPS.

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

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



PROJECT NO. **BP6.R019**

HARNETT COUNTY

STATION: **16+30.00 -L-**

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT NO. 2

DRAWN BY : **J. SCACCA** DATE : **12/2025**

CHECKED BY : **M. ACOSTA** DATE : **12/2025**

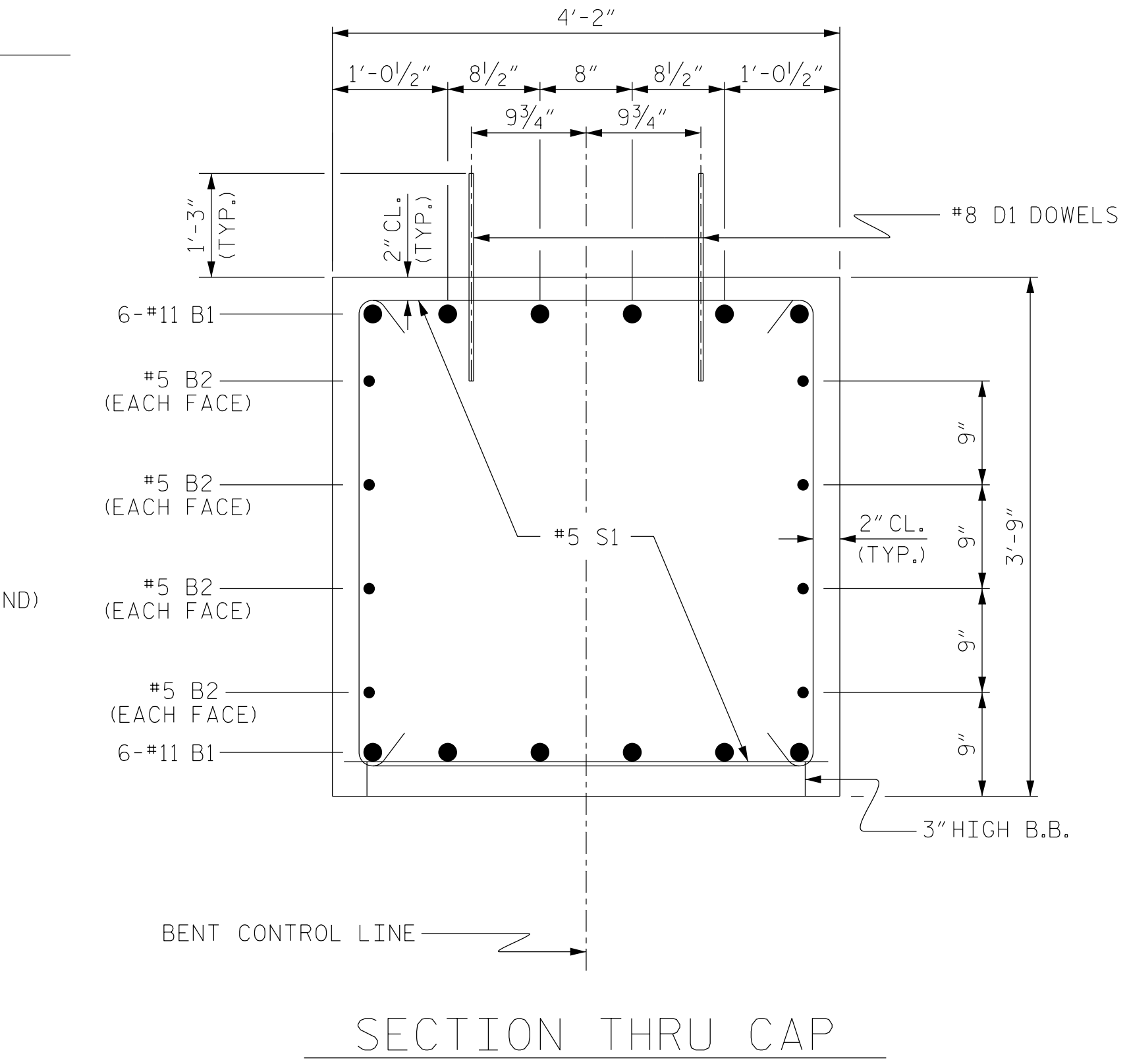
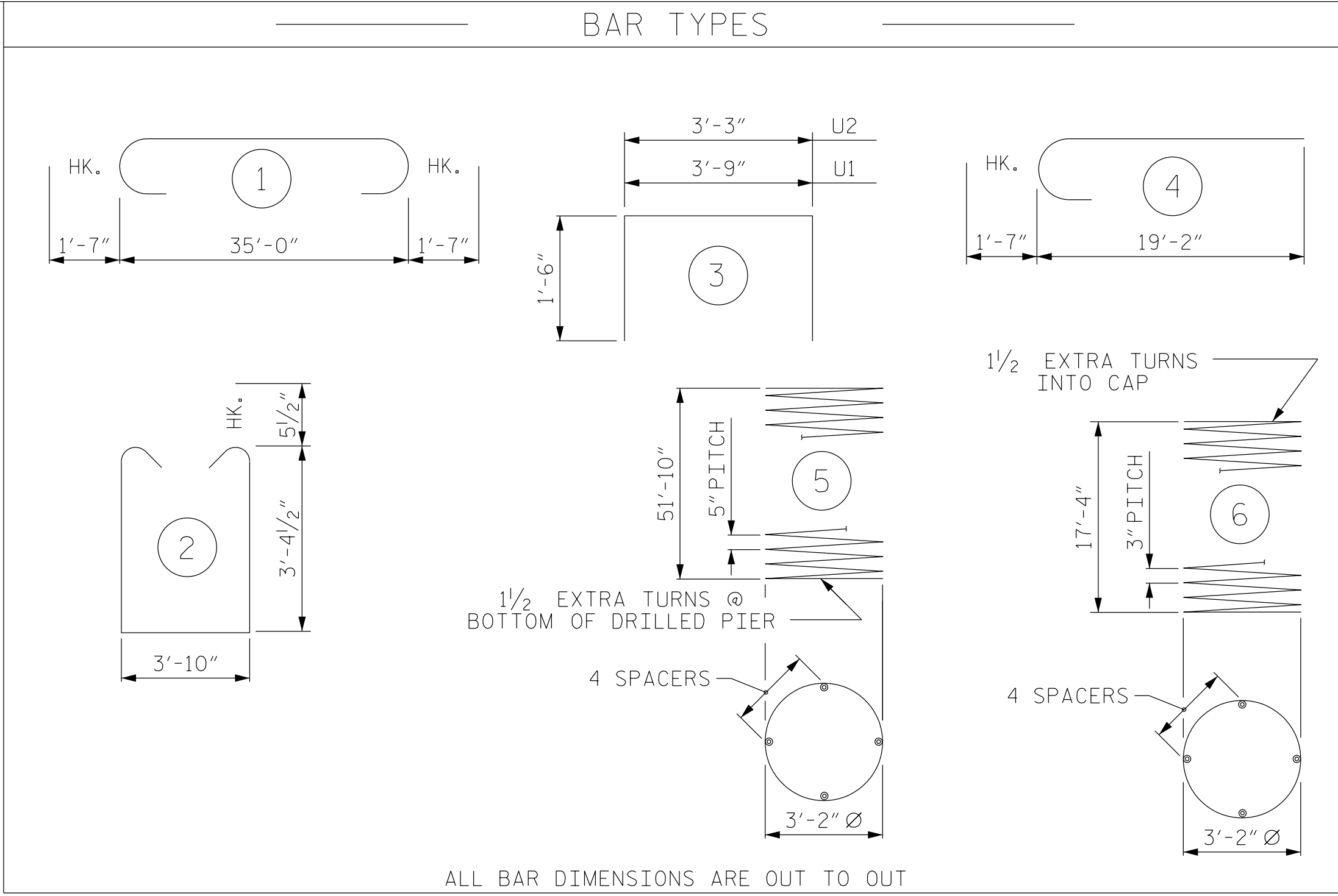
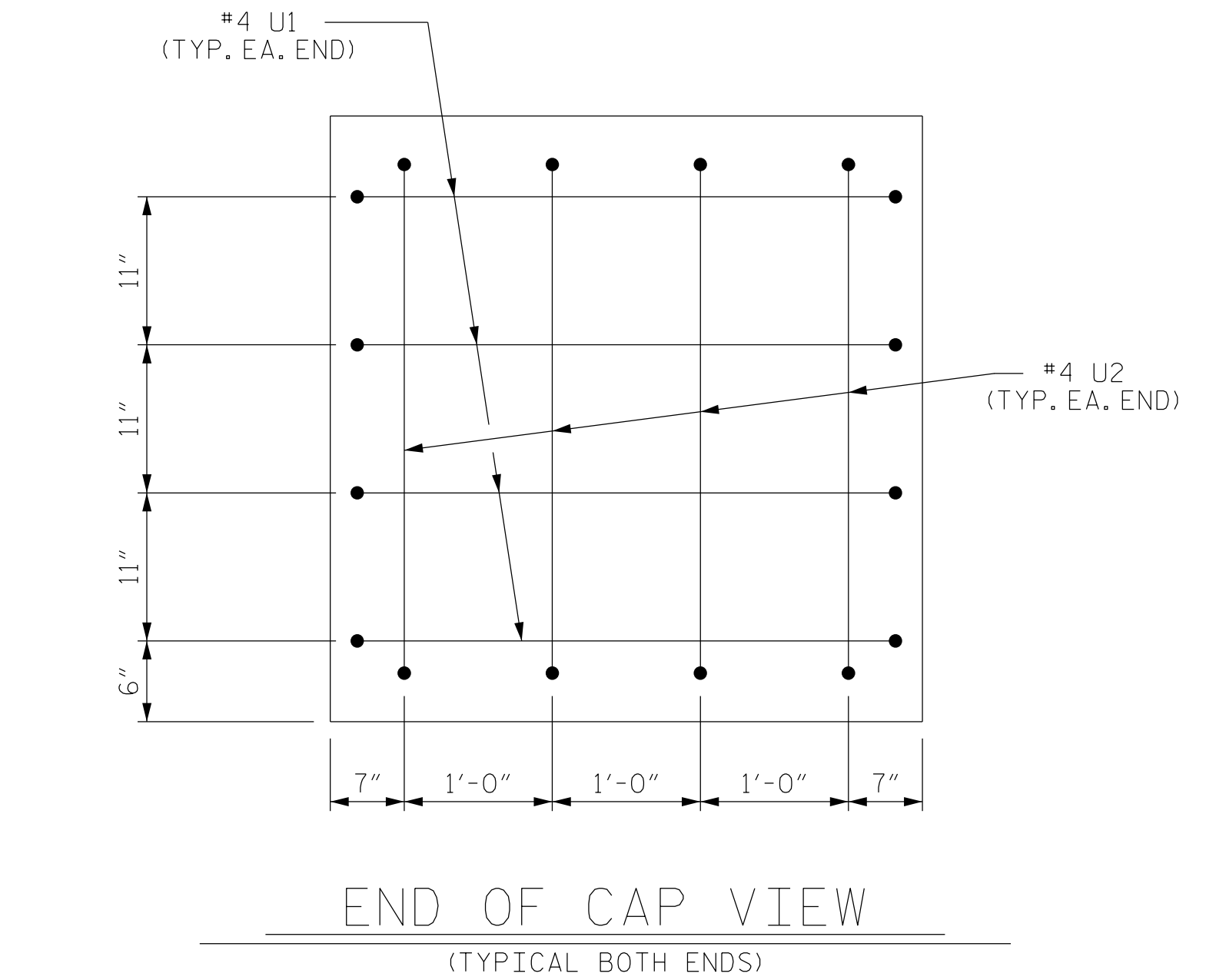
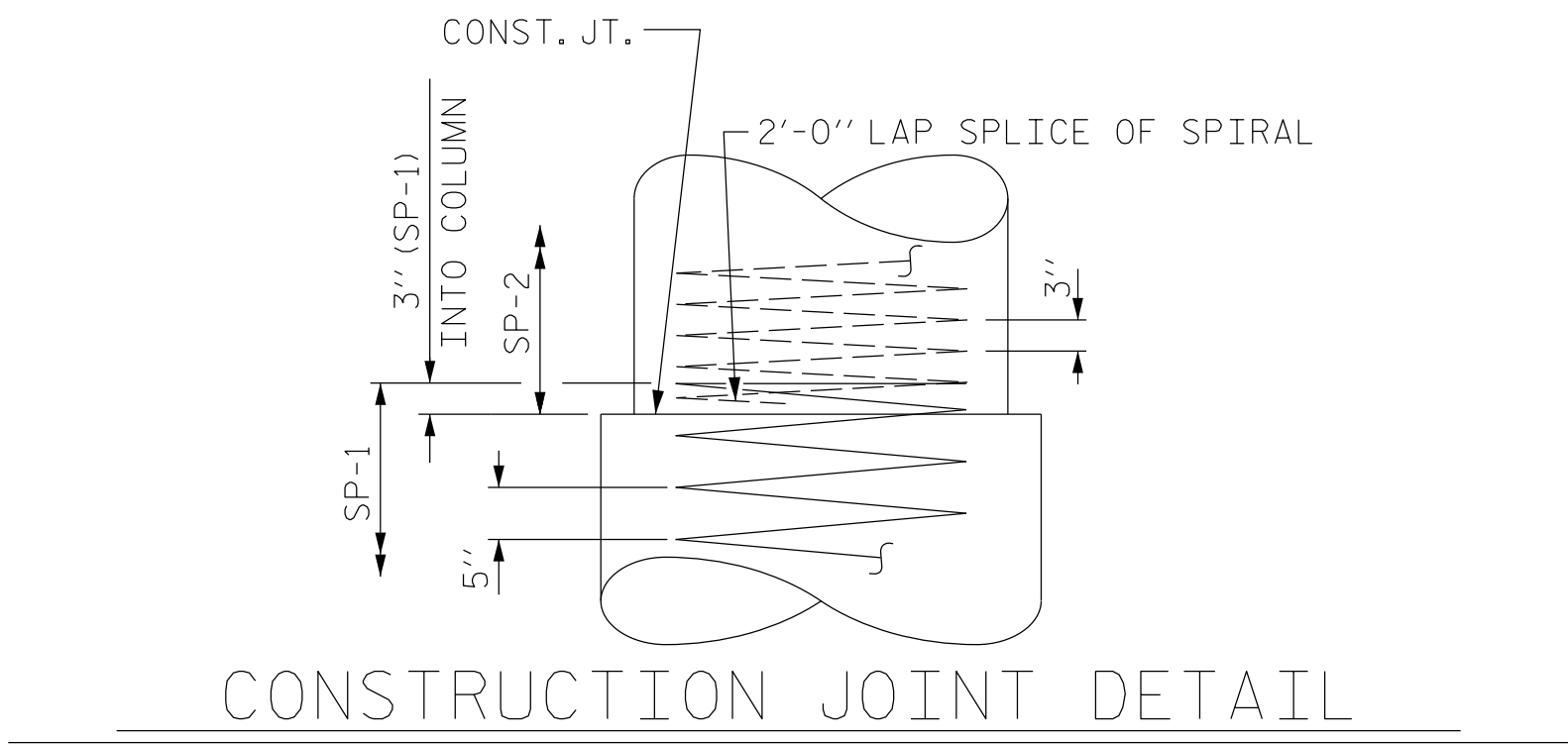
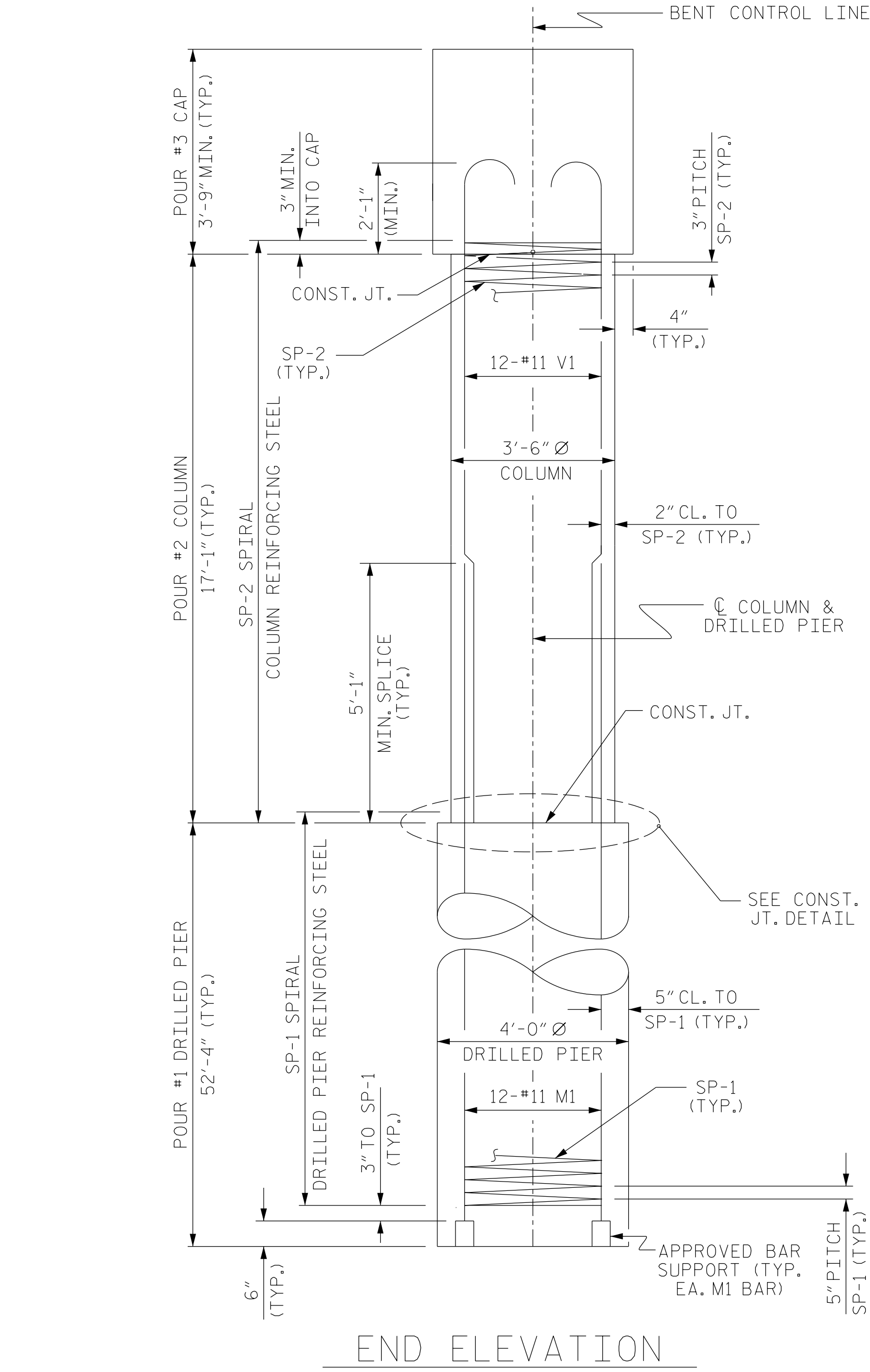
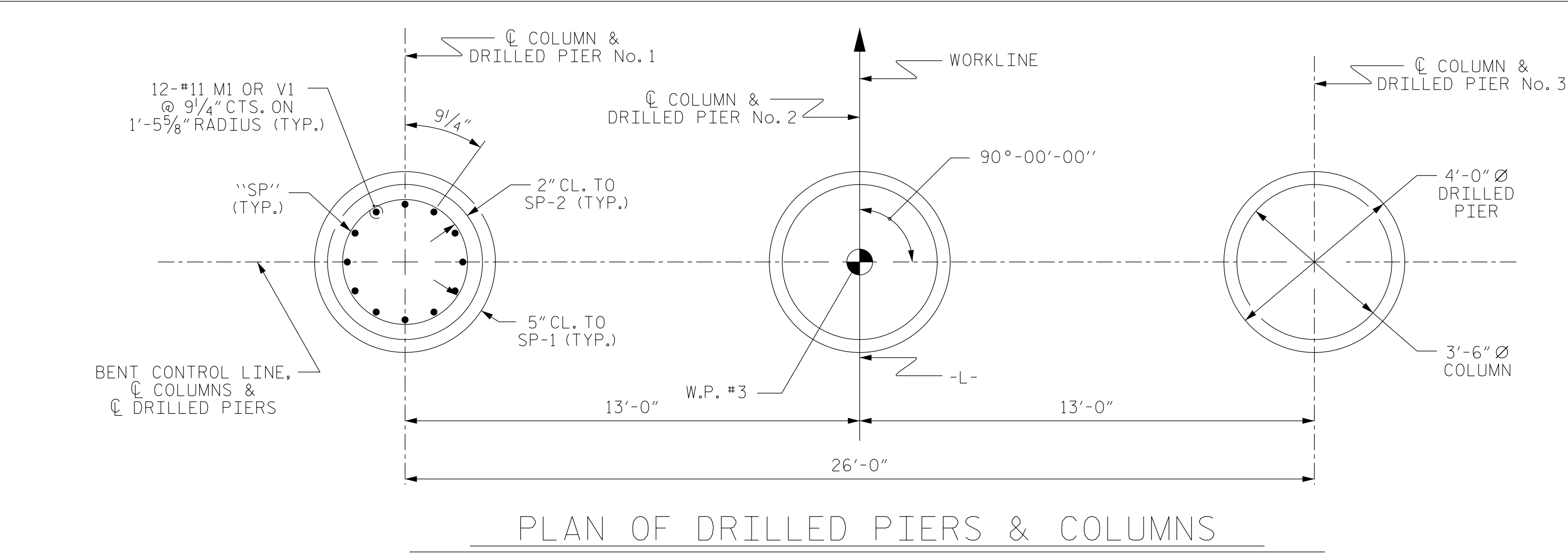
DESIGN ENGINEER OF RECORD: **T. LAWS** DATE : **07/2026**

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

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SIGNATURES COMPLETED



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-25 TOTAL SHEETS 28
2			4			



BILL OF MATERIAL FOR ONE BENT						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	12	#11	1	38'-2"	2433	
B2	8	#5	STR	35'-2"	293	
D1	44	#8	STR	2'-3"	264	
M1	36	#11	STR	59'-11"	11460	
S1	56	#5	2	11'-6"	672	
U1	8	#4	3	6'-9"	36	
U2	8	#4	3	6'-3"	33	
V1	36	#11	4	20'-9"	3969	
REINFORCING STEEL (FOR ONE BENT)					19,160 LBS.	
	3	*	5	1234'-0"	3861	
SP-2	3	**	6	697'-4"	1397	
SPIRAL COLUMN REINFORCING STEEL (FOR ONE BENT)					5,258 LBS.	
* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR						
** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR						
CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)						
POUR #2 (COLUMNS)					18.3 C.Y.	
POUR #3 (CAP)					20.6 C.Y.	
TOTAL CLASS A CONCRETE					38.9 C.Y.	
DRILLED PIERS: (FOR ONE BENT)						
DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)					73.1 C.Y.	

PROJECT NO. **BP6.R019**
HARNETT COUNTY
STATION: **16+30.00 -L-**

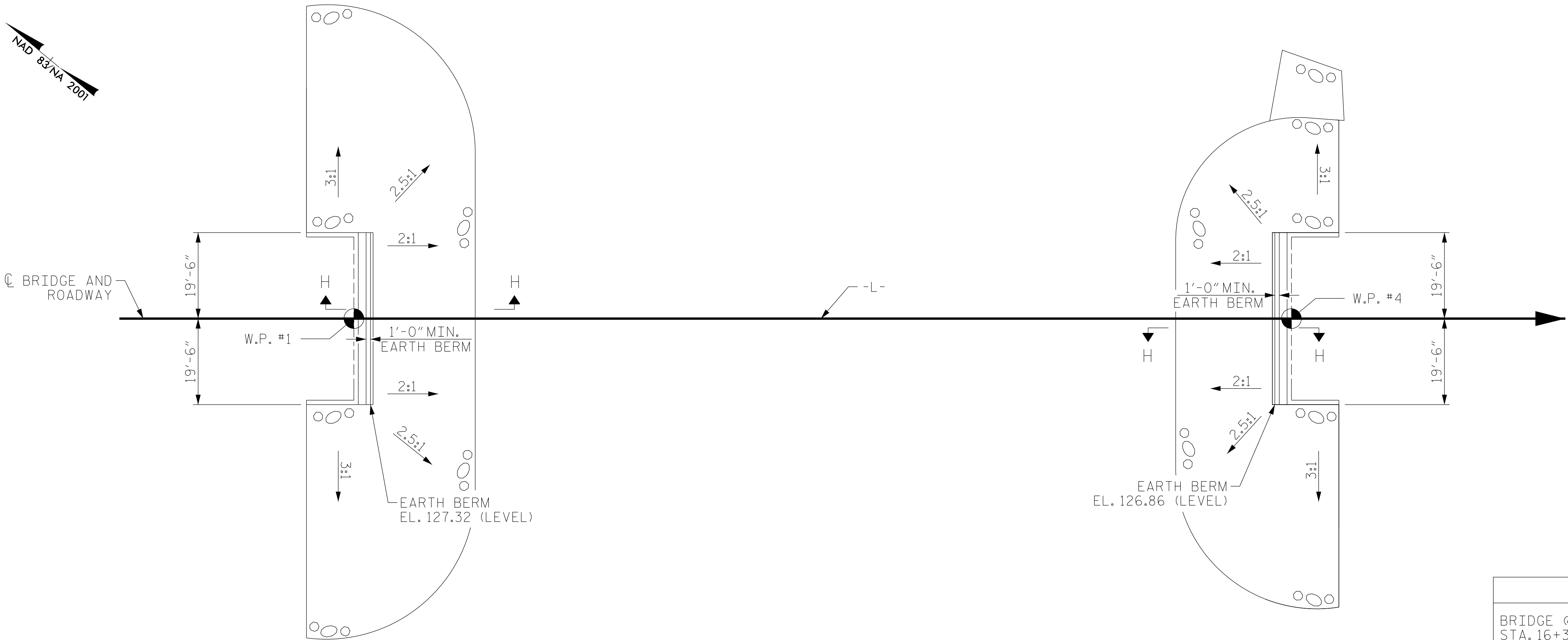
SHEET 2 OF 2						
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUBSTRUCTURE BENT NO. 2 DETAILS						
REVISIONS					SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26 TOTAL SHEETS 28
1			3			
2			4			

DRAWN BY : J. SCACCA DATE : 12/2025
CHECKED BY : M. ACOSTA DATE : 12/2025
DESIGN ENGINEER OF RECORD : T. LAWS DATE : 07/2026

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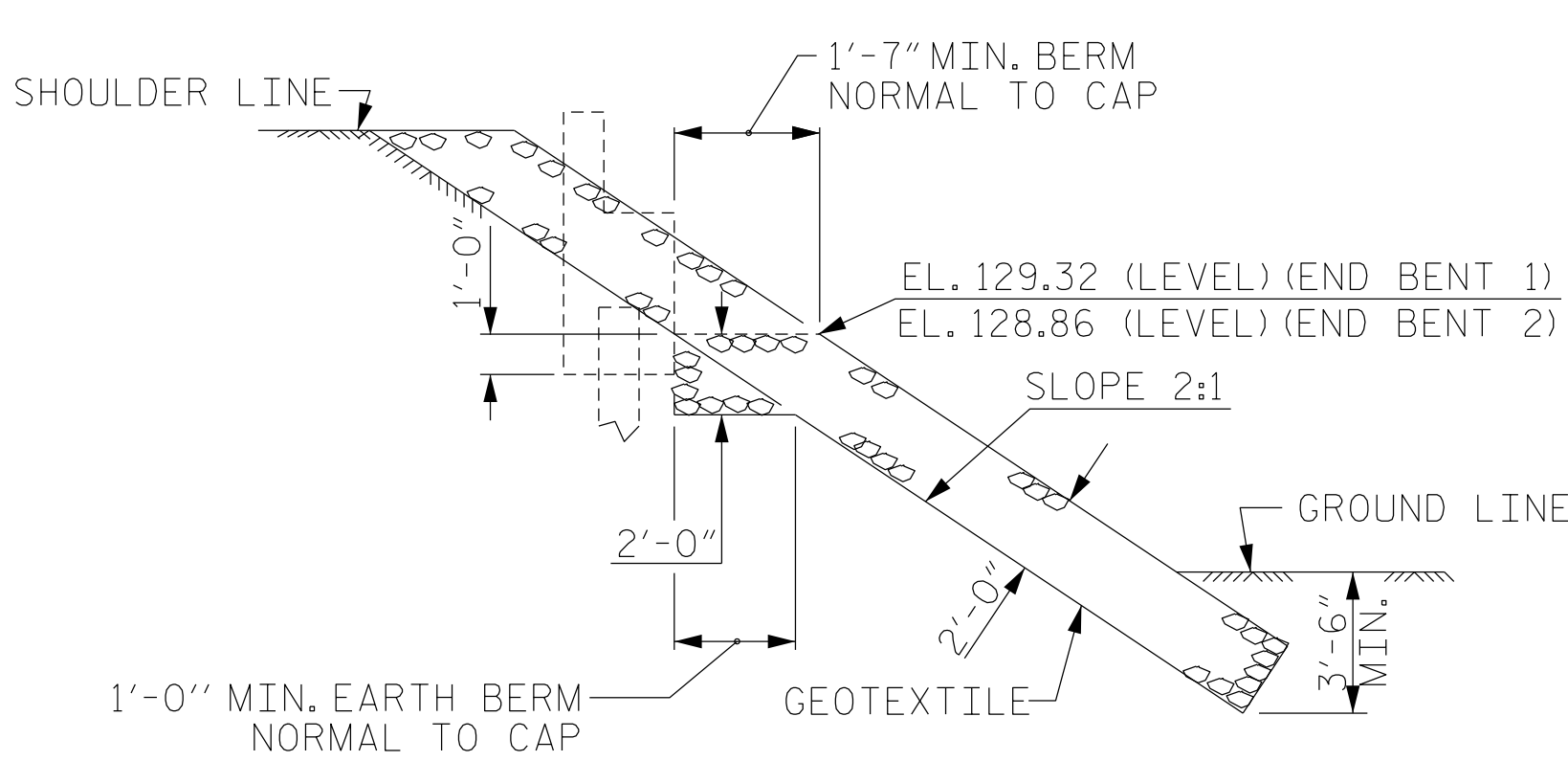




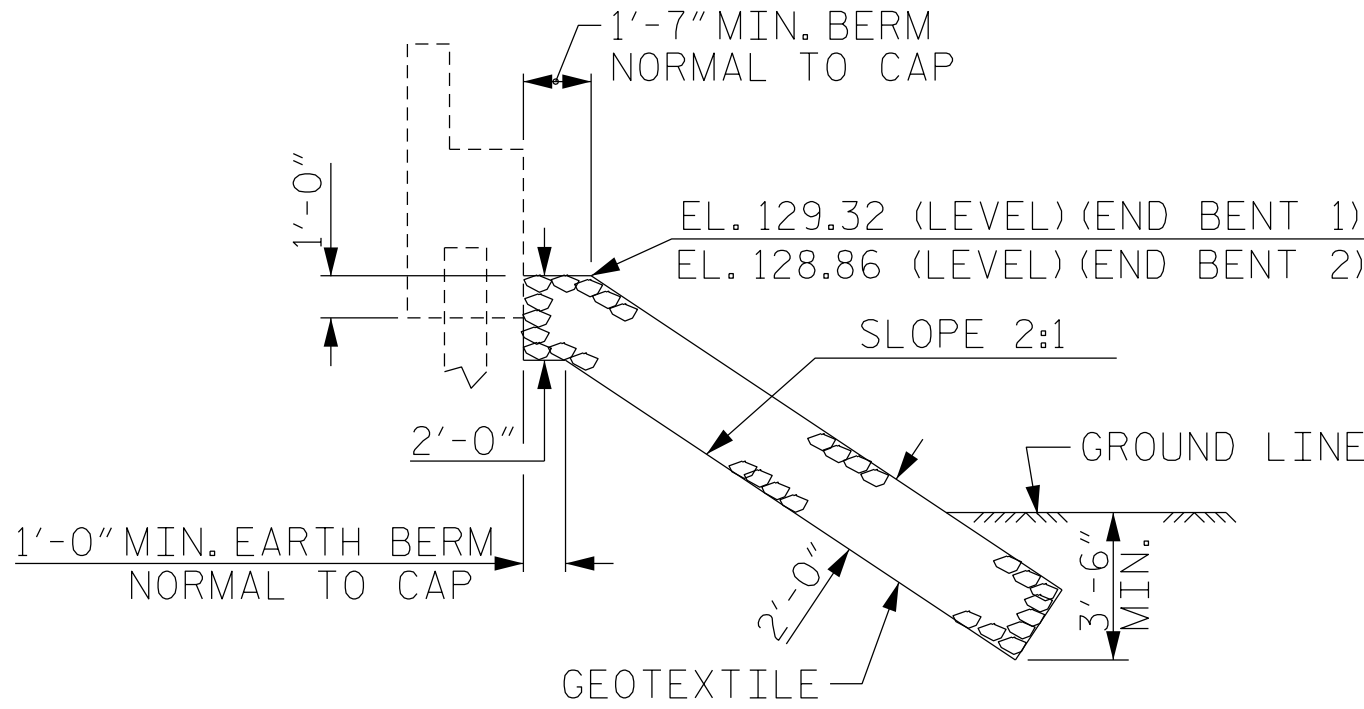
NOTE:
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

PLAN

ESTIMATED QUANTITIES		
BRIDGE @ STA. 16+30.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	488	513
END BENT 2	392	393



SECTION H-H



SECTION L-L

PROJECT NO. **BP6.R019**
HARNETT COUNTY
STATION: **16+30.00 -L-**

SEAL
040317
ENGINEER
JOY R. LAWS, JR.

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RS&H Architects-Engineers-Planners, Inc.
8521 Six Forks Road, Suite 400
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STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

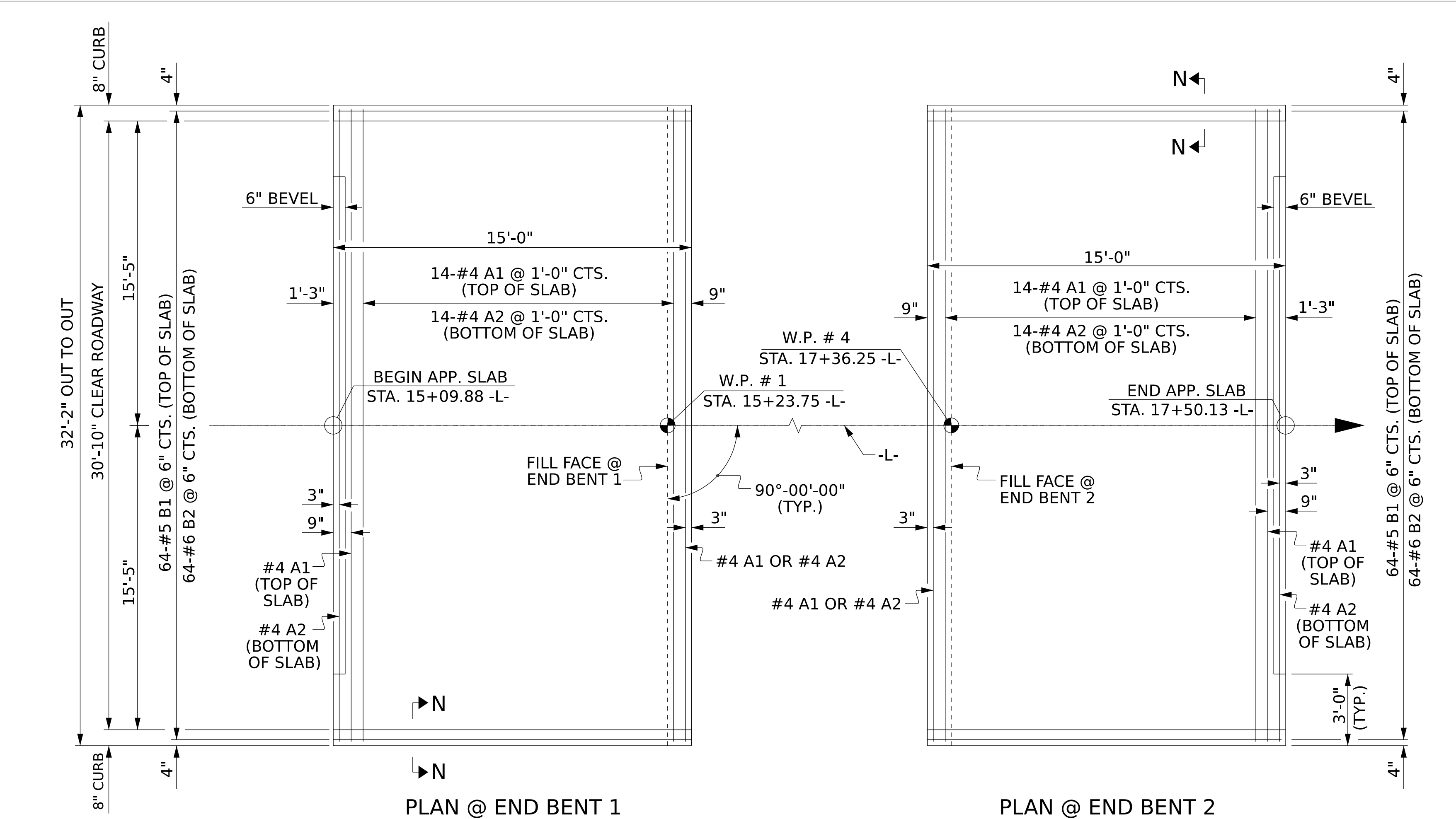
RALEIGH

RIP RAP DETAILS

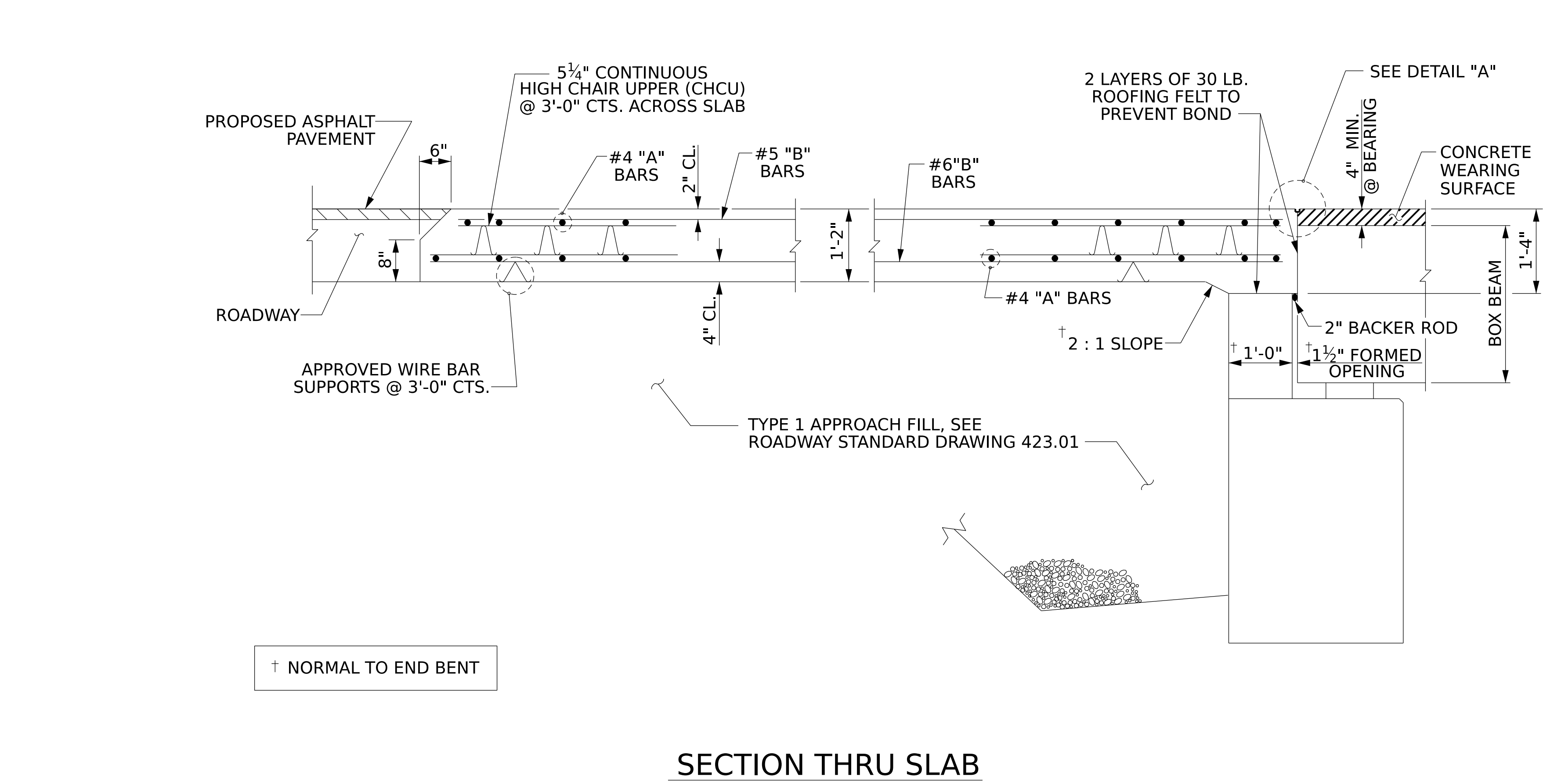
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27
1			3			TOTAL SHEETS
2			4			28

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DRAWN BY : J. SCACCA DATE : 08/2025
CHECKED BY : V. SELLERS DATE : 08/2025
DESIGN ENGINEER OF RECORD: T. LAWS DATE : 07/2026



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



SECTION THRU SLAB

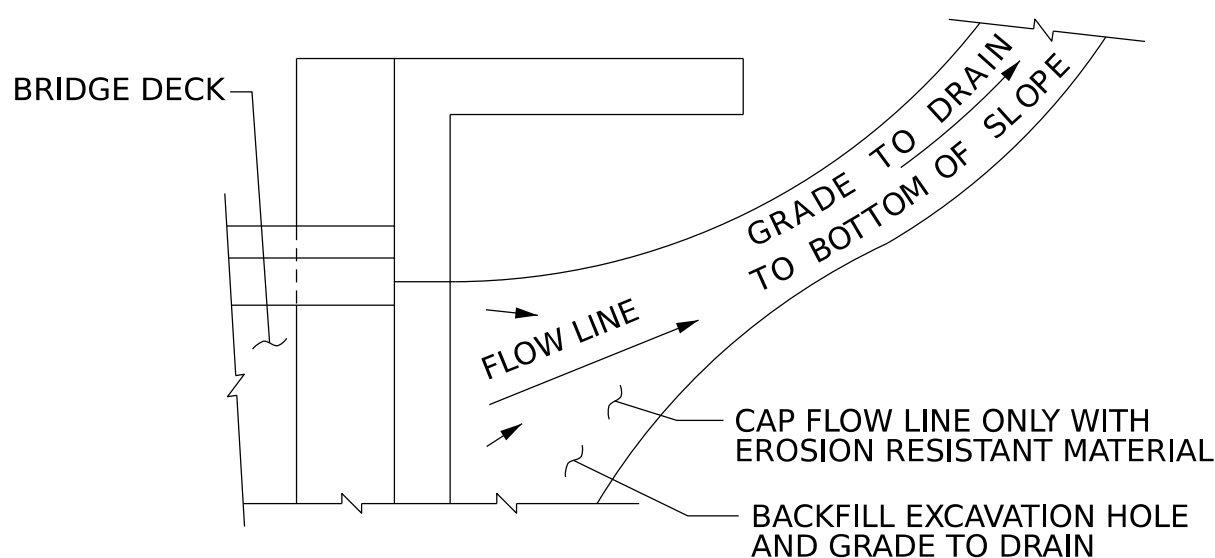
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CHECKED BY :	V. SELLERS	DATE :	08/2025
DESIGN ENGINEER OF RECORD:	T. LAWS	DATE :	07/2026

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NOTES

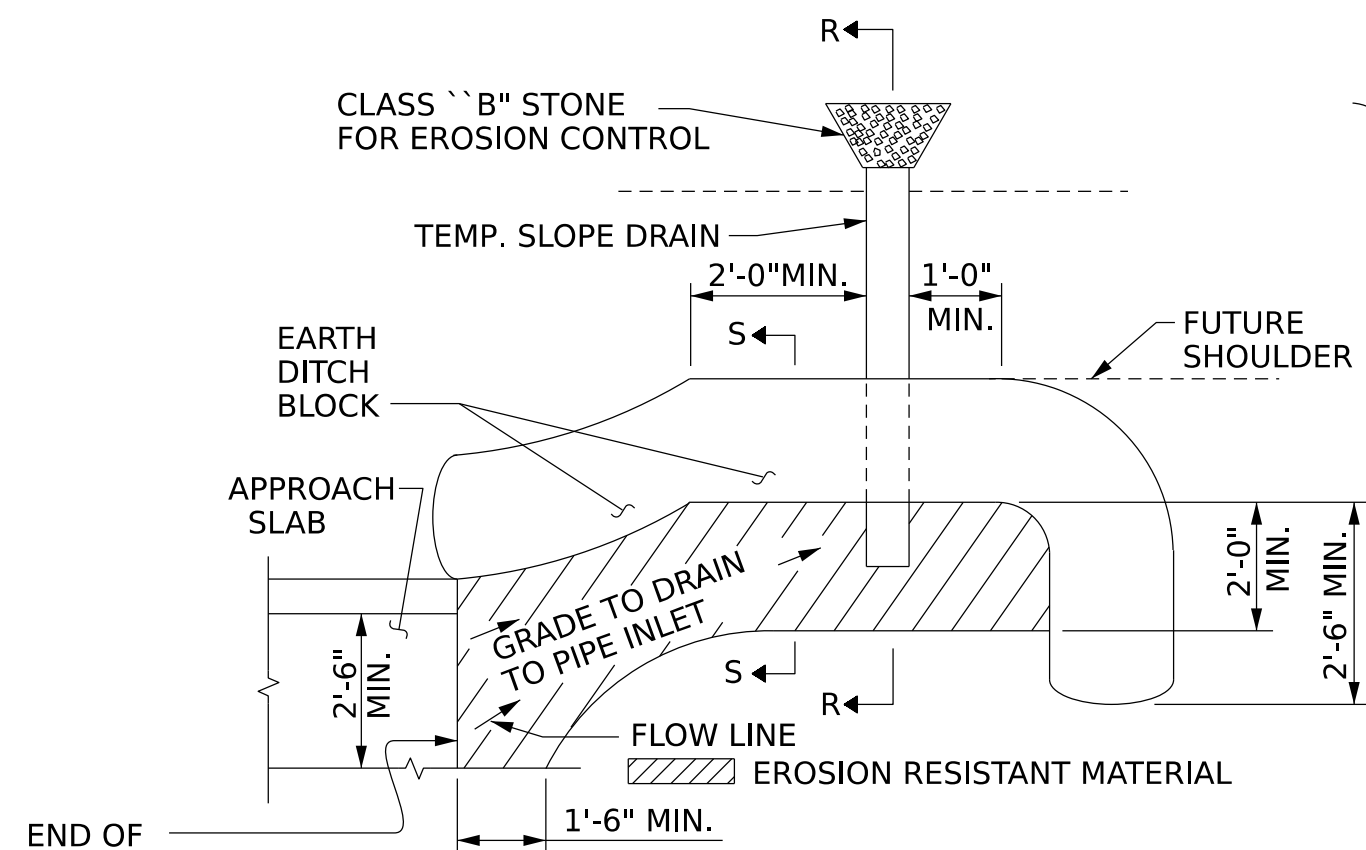
FOR BRIDGE APPROACH FILL, SEE ROADWAY PLANS.

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.



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

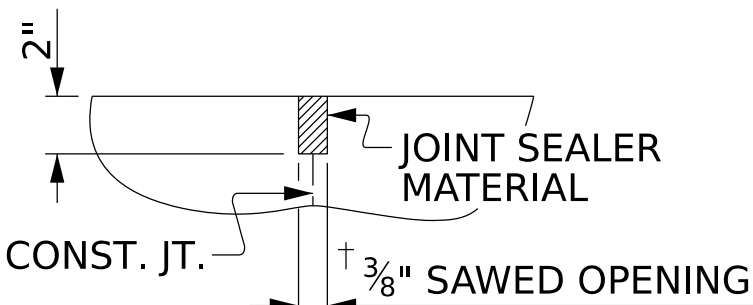


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

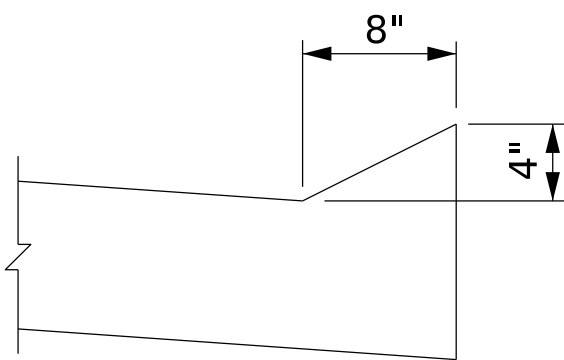
PLAN VIEW

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



DETAIL "A"

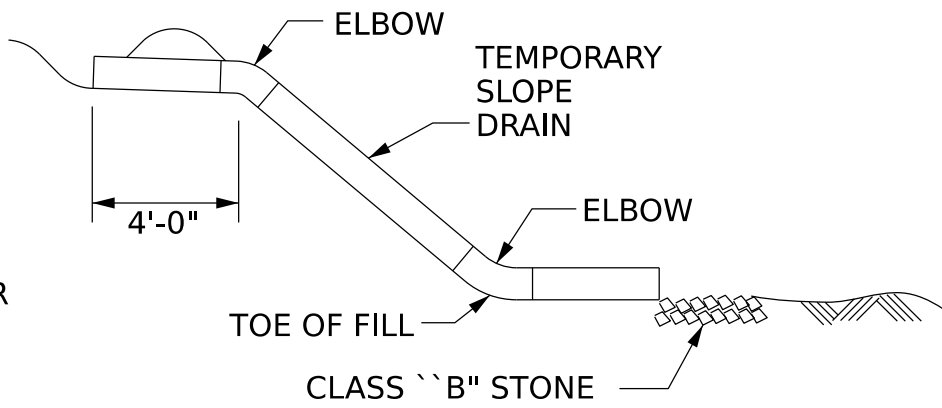


SECTION N-N

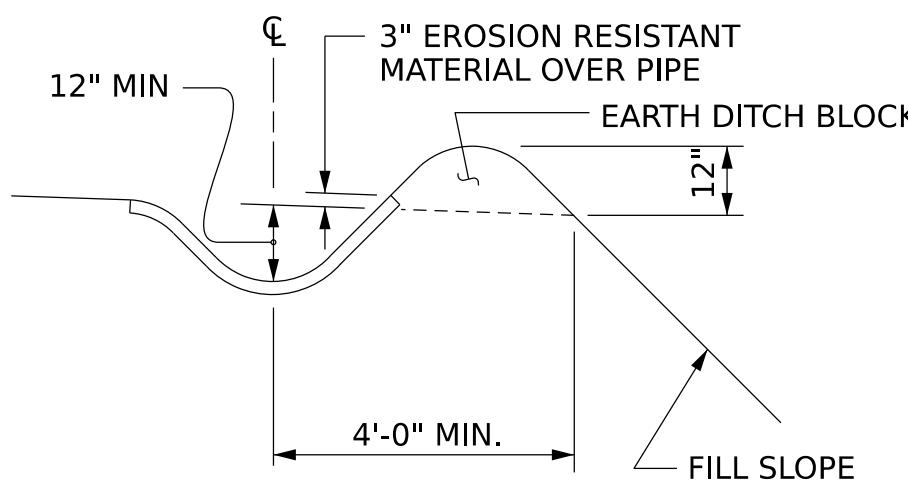
SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	1'-11"	1'-7"
#5	2'-5"	2'-0"
#6	3'-7"	2'-5"

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

BILL OF MATERIAL					
APPROACH SLAB AT EB 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	16	#4	STR	31'-10"	340
A2	16	#4	STR	31'-10"	340
*B1	64	#5	STR	14'-8"	979
B2	64	#6	STR	14'-8"	1410
REINFORCING STEEL				LBS.	1,750
* EPOXY COATED REINFORCING STEEL				LBS.	1,319
CLASS AA CONCRETE				C. Y.	21.0
APPROACH SLAB AT EB 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	16	#4	STR	31'-10"	340
A2	16	#4	STR	31'-10"	340
*B1	64	#5	STR	14'-8"	979
B2	64	#6	STR	14'-8"	1410
REINFORCING STEEL				LBS.	1,750
* EPOXY COATED REINFORCING STEEL				LBS.	1,319
CLASS AA CONCRETE				C. Y.	21.0



SECTION R-R



SECTION S-S

PROJECT NO. **BP6.R019**
HARNETT COUNTY
STATION: **16+30.00 -L-**



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

REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	
				S-28
				TOTAL SHEETS
				28

STD. NO. BAS_BB_33_90S

STANDARD NOTES

DESIGN DATA:	
SPECIFICATIONS	AASHTO (CURRENT)
LIVE LOAD	SEE PLANS
IMPACT ALLOWANCE	SEE AASHTO
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 AASHTO
STRUCTURAL TIMBER - TREATED OR UNTREATED EXTREME FIBER STRESS	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	30 LBS. PER CU. FT. (MINIMUM)

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED ¾" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1½" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A ¼" 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 ¼" 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 ⅞" Ø SHEAR STUDS FOR THE ¾" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - ⅞" Ø STUDS FOR 4 - ¾" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF ⅞" Ø STUDS ALONG THE BEAM AS SHOWN FOR ¾" Ø STUDS BASED ON THE RATIO OF 3 - ⅞"Ø STUDS FOR 4 - ¾" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST ⅝" 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 ⅛" 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. FINIS 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.