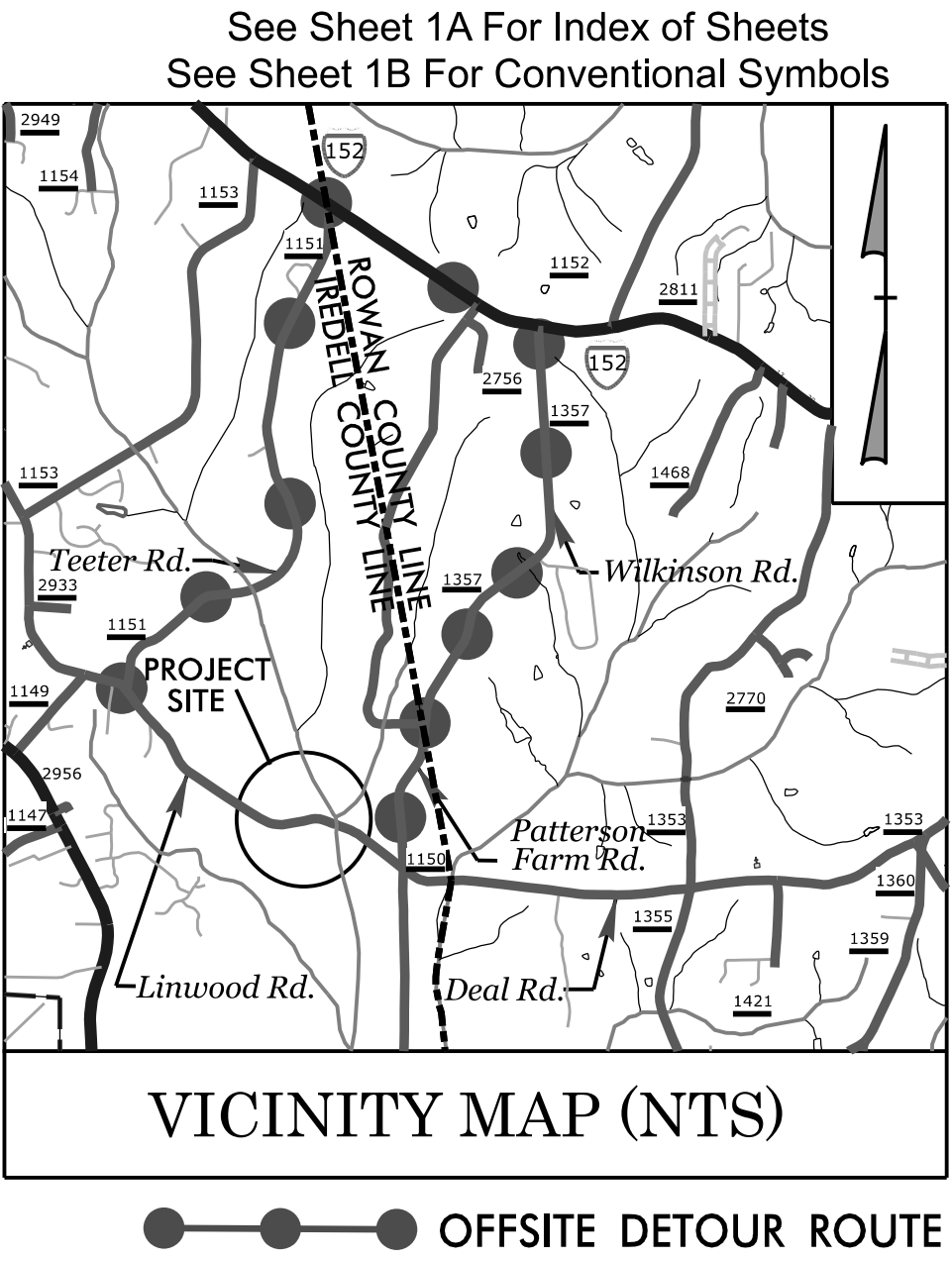


09/08/2025
TIP PROJECT: BP12-R029
CONTRACT: DL00355



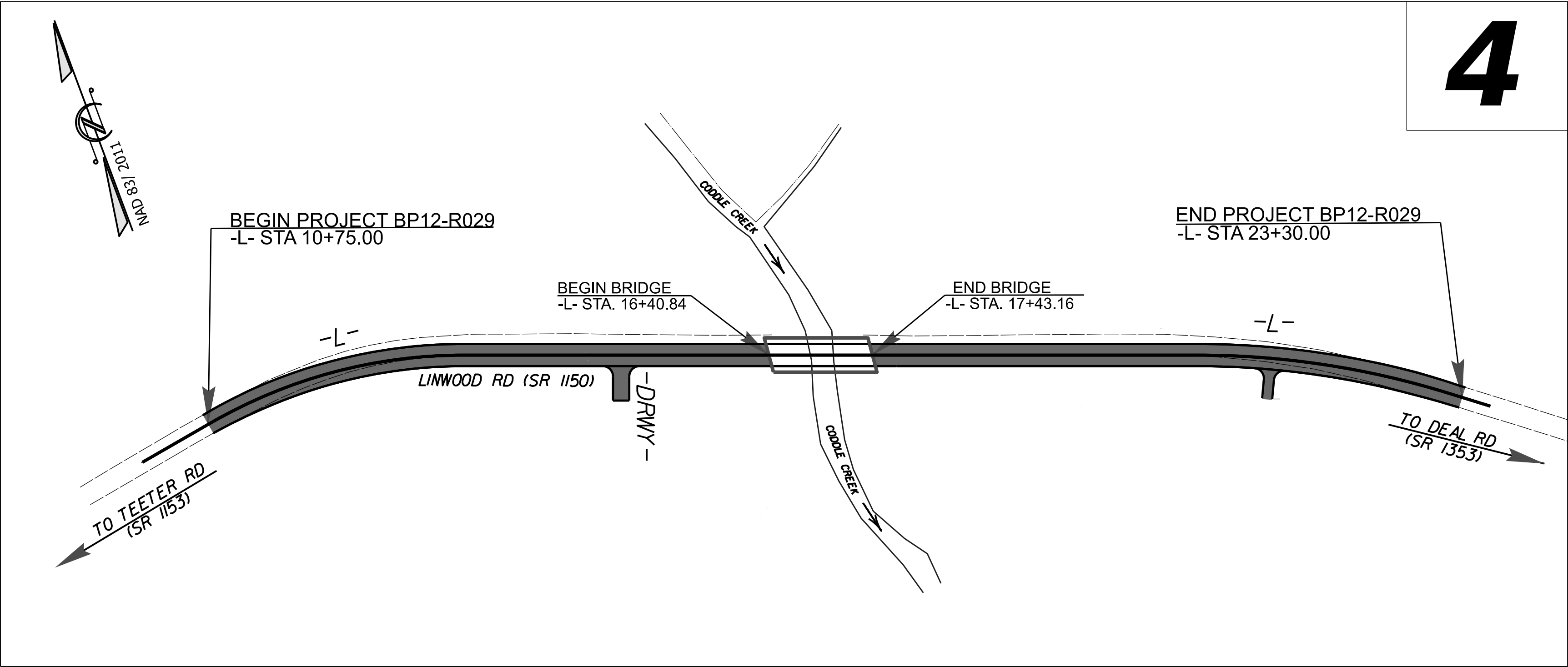
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

IREDELL COUNTY

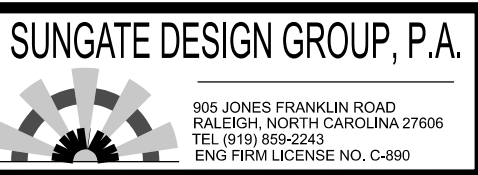
LOCATION: *REPLACE BRIDGE NO. 32 ON SR 1150
(LINWOOD ROAD) OVER CODDLE CREEK*

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP12-R029	11	
STATE PROJ. NO.		F. A. PROJ. NO.	DESCRIPTION
BP12.R029.1		NA	PE
BP12.R029.2		NA	ROW/UTIL.
BP12.R029.3		NA	CONST.
FINAL PLAN SET			



THIS PROJECT IS NOT WITHIN MUNICIPAL BOUNDARIES.



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2022 = 2,500

T = 6 %
V = 50 MPH

FUNC CLASS =
MINOR COLLECTOR
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT BP12-R029 = 0.219 MILES
LENGTH OF STRUCTURE PROJECT BP12-R029 = 0.019 MILES
TOTAL LENGTH OF PROJECT BP12-R029 = 0.238 MILES

Prepared in the Office of:
KCI ASSOCIATES OF N.C., P.A.
4800 Falls of Neuse Road, Suite 200
Raleigh, NC 27609
Phone (919) 783-9214
NC Firm License No: C-0764

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
OCTOBER 16, 2024

LETTING DATE:
SEPTEMBER 23, 2025

NCDOT CONTACT:

Plans Prepared For:
HIGHWAY DIVISION 12
1710 E. Marion St. (US 74 BUS)
Shelby NC, 28151

BARRY C. SMITH, P.E.
PROJECT ENGINEER

TYLER L. CAREY, P.E.
PROJECT DESIGN ENGINEER

JOSH WHITE, P.E.
DIVISION 12 BRIDGE PROGRAM MANAGER

HYDRAULICS ENGINEER

Signed by: 7/8/2025
Jeslisa Dalton
SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

DocuSigned by: 7/8/2025
Barry Smith
SIGNATURE: P.E.

5/26/20

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		
3B-1	ROADWAY SUMMARIES		
3D-1	DRAINAGE SUMMARIES		
3G-1	GEOTECHNICAL SUMMARIES		
4 THRU 5	PLAN AND PROFILE SHEETS		
RW-1 THRU RW-4	SURVEY CONTROL, EXISTING CENTERLINES, RIGHT OF WAY, EASEMENT AND PROPERTY TIES		
TMP-1 THRU TMP-4	TRAFFIC MANAGEMENT PLANS		
PMP-1	PAVEMENT MARKING PLANS		
EC-1 THRU EC-5	EROSION CONTROL PLANS		
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS		
X-1	CROSS-SECTION INDEX SHEET		
X-1A	CROSS-SECTION SUMMARY SHEET		
X-2 THRU X-20	CROSS-SECTIONS		
S-01 THRU SN	STRUCTURE PLANS		

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

SIDE ROADS:

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

SUBSURFACE DRAINS:

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

GUARDRAIL:

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

TEMPORARY SHORING:

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC 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 Energy United (Power),

City of Monroe (Gas), City of Monroe (Communications), Windstream (Communications)

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT-OF-WAY MARKERS:

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

EFF. 01-16-2024
REV.
2024 ROADWAY ENGLISH STANDARD DRAWINGS

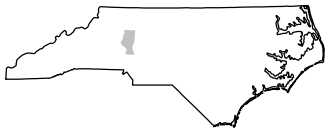
The following Roadway Standards as appear in "Roadway Standard Drawings" Contracts Standards and Development Unit - N. C. Department of Transportation - Raleigh, N. C., Dated January 16, 2024 are applicable to this project and by reference hereby are considered a part of these plans:

- | 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 Sheets 1 and 2 of 2) |
| 310.10 | Driveway Pipe Construction |
| 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 | |
| 815.02 | Suburface Drain |
| 840.25 | Anchorage for Frames - Brick or Concrete or Precast |
| 840.29 | Frames and Narrow Slot Flat Grates |
| 840.35 | Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates |
| 840.46 | Traffic Bearing Precast Drainage Structure |
| 846.01 | Concrete Curb, Gutter and Curb & Gutter |
| 846.04 | Drop Inlet Installation in Shoulder Berm Gutter |
| 862.01 | Guardrail Placement (Use Details in Lieu of Standards for Sheets 4, 6, 12, and 14 of 15) |
| 862.02 | Guardrail Installation |
| 862.03 | Structure Anchor Units (Use Detail in Lieu of Standard for Sheet 8 of 9) |
| 866.04 | Barbed Wire Fence - with Wood Posts |
| 876.01 | Rip Rap in Channels and Ditches |
| 876.02 | Guide for Rip Rap at Pipe Outlets |
| 876.04 | Drainage Ditches with Class 'B' Rip Rap |

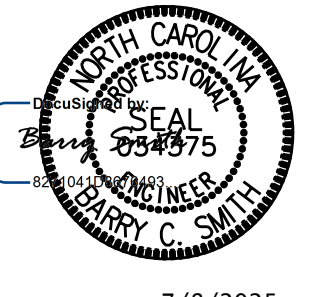
BP12-R029

IA

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
REDELL COUNTY

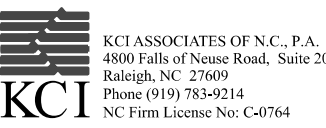


ROADWAY DESIGN UNIT
ENGINEER



7/8/2025

PREPARED BY



KCI ASSOCIATES OF N.C., P.A.
4800 Falls of Neuse Road, Suite 200
Raleigh, NC 27609
Phone (919) 781-9214
NC Firm License No. C-0764

SUNGATE DESIGN GROUP, P.A.



ONE GOWER FARMWAY, SUITE 100
DURHAM, NORTH CAROLINA 27608
(919) 486-2555 ext. 400
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

REVISIONS

Note: Not to Scale

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

Stream or Body of Water	
Hydro, Pool or Reservoir	
Jurisdictional Stream	
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:

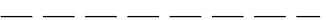
Primary Horiz Control Point	
Primary Horiz and Vert Control Point	
Secondary Horiz and Vert Control Point	
Vertical Benchmark	
Existing Right of Way Monument	
Proposed Right of Way Monument (Rebar and Cap)	
Proposed Right of Way Monument (Concrete)	
Existing Permanent Easement Monument	
Proposed Permanent 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	
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	
Hedge	

Woods Line	
Orchard	
Vineyard	

EXISTING STRUCTURES:

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

UTILITIES:

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

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

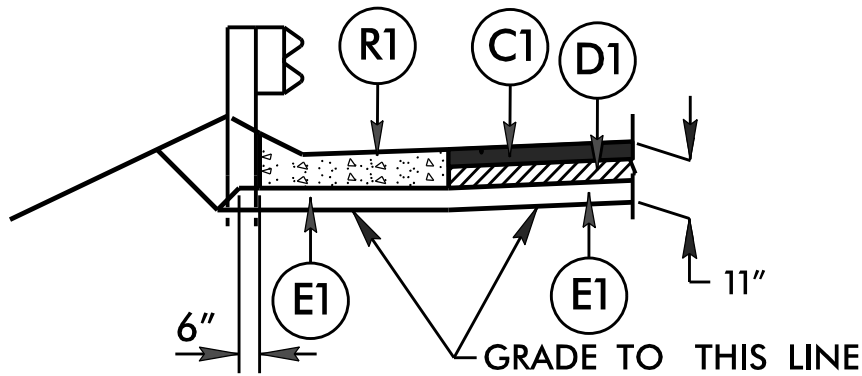
Utility Pole	
Utility Pole with Base	
Utility Located Object	
Utility Traffic Signal Box	
Utility Unknown U/G Line (SUE - LOS B)*	
U/G Tank; Water, Gas, Oil	
Underground Storage Tank, Approx. Loc.	
A/G Tank; Water, Gas, Oil	
Geoenvironmental Boring	
Abandoned According to Utility Records	
End of Information	

PAVEMENT SCHEDULE FINAL DESIGN	
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
R1	SHOULDER BERM GUTTER.
T	EARTH MATERIAL.

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

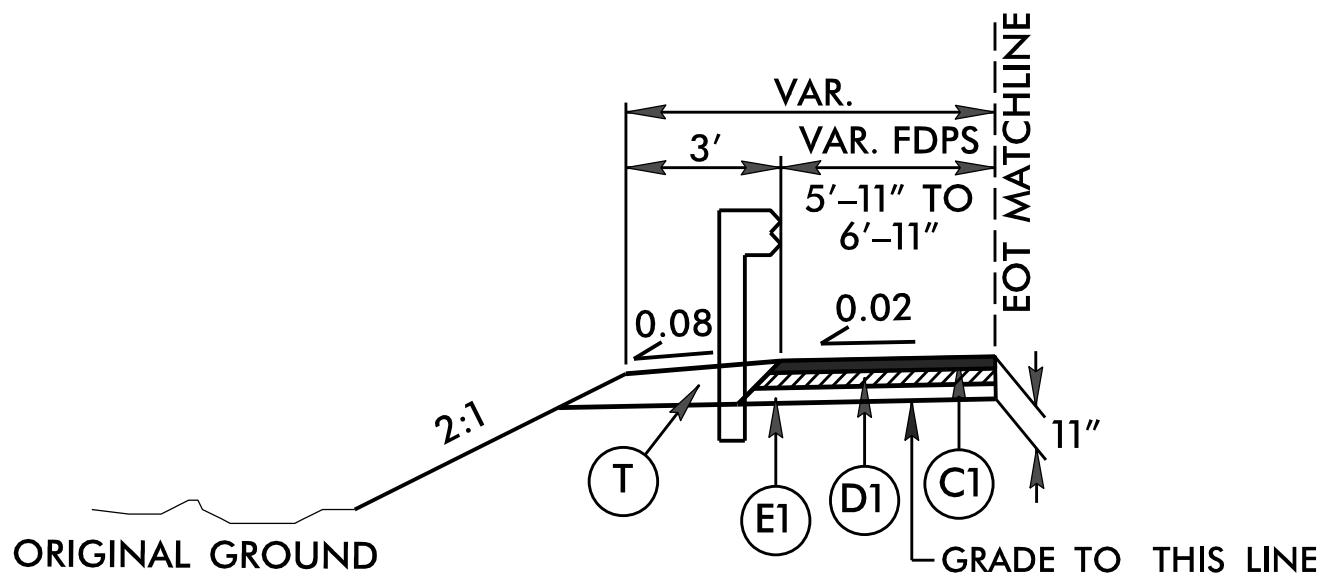
NOTES:

1. DRIVEWAYS TO BE COMPOSED OF 6" ABC UNLESS OTHERWISE NOTED.
2. SEE STRUCTURE PLANS FOR STRUCTURE CONSTRUCTION DETAILS.
3. PAVEMENT DESIGN ENGINEER'S SEAL DOES NOT APPLY TO THE TYPICAL SECTION ON THE STRUCTURE.

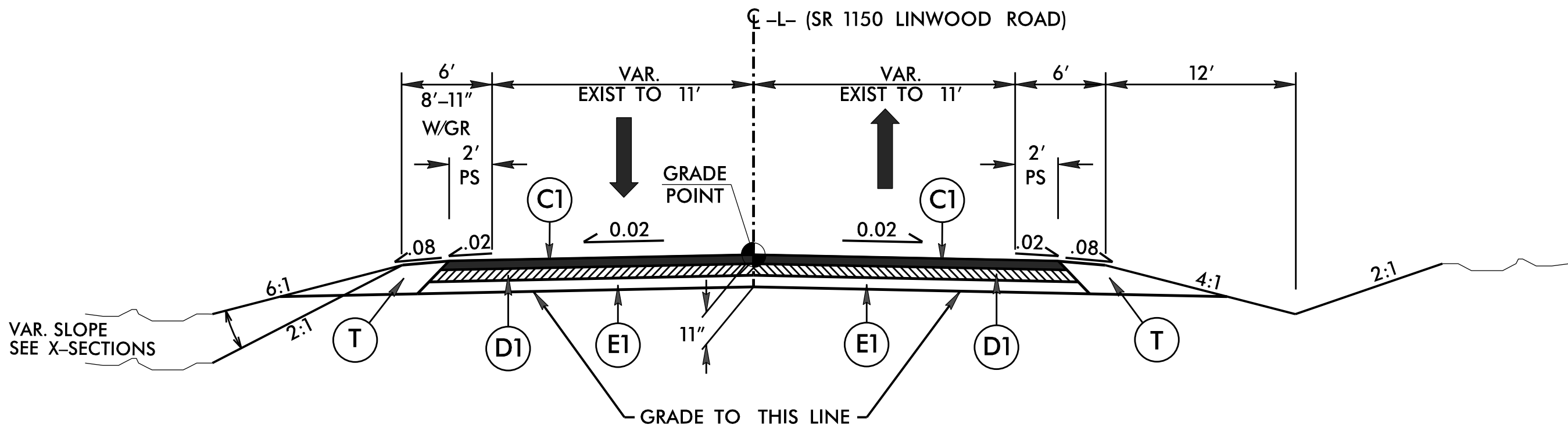


SHOULDER BERM GUTTER (SBG) DETAIL

- L- STA 17+49.47 (END APPR. SLAB) TO 17+67.00 LT
- L- STA 17+58.53 (END APPR. SLAB) TO 17+67.00 RT

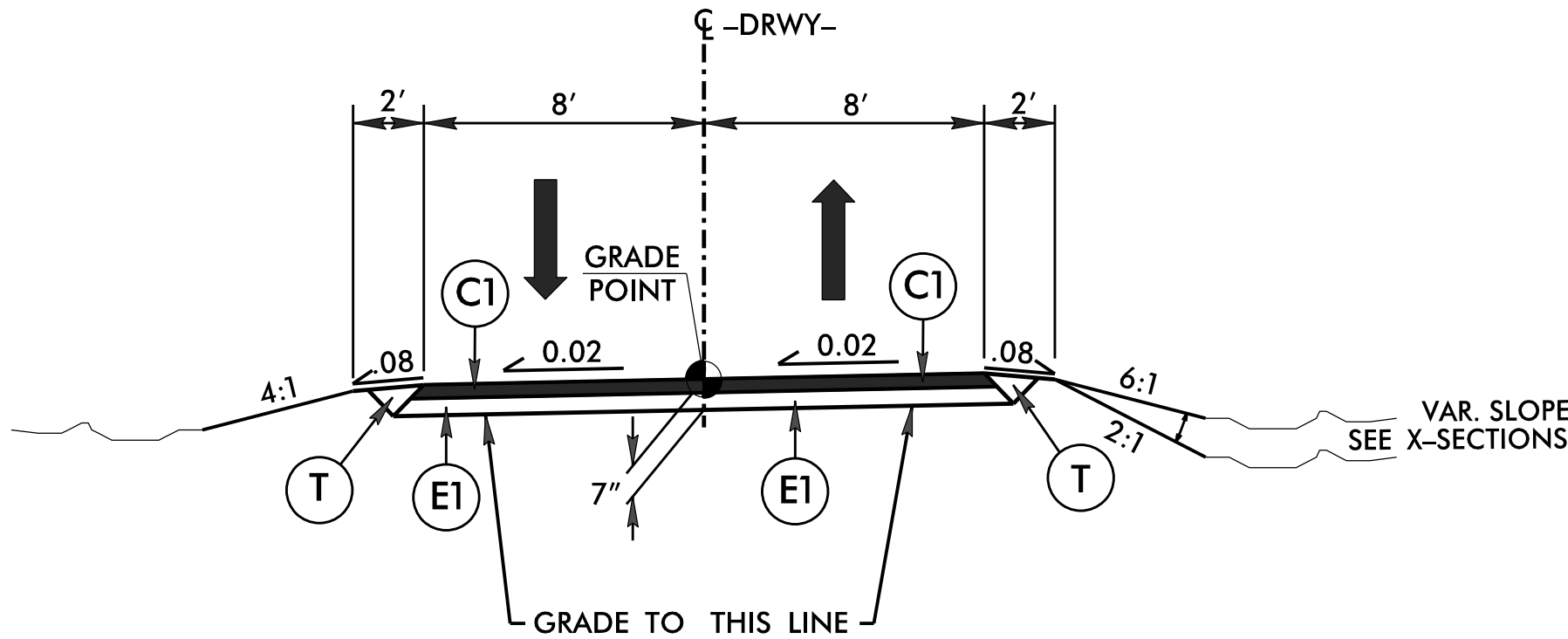


GUARDRAIL DETAIL



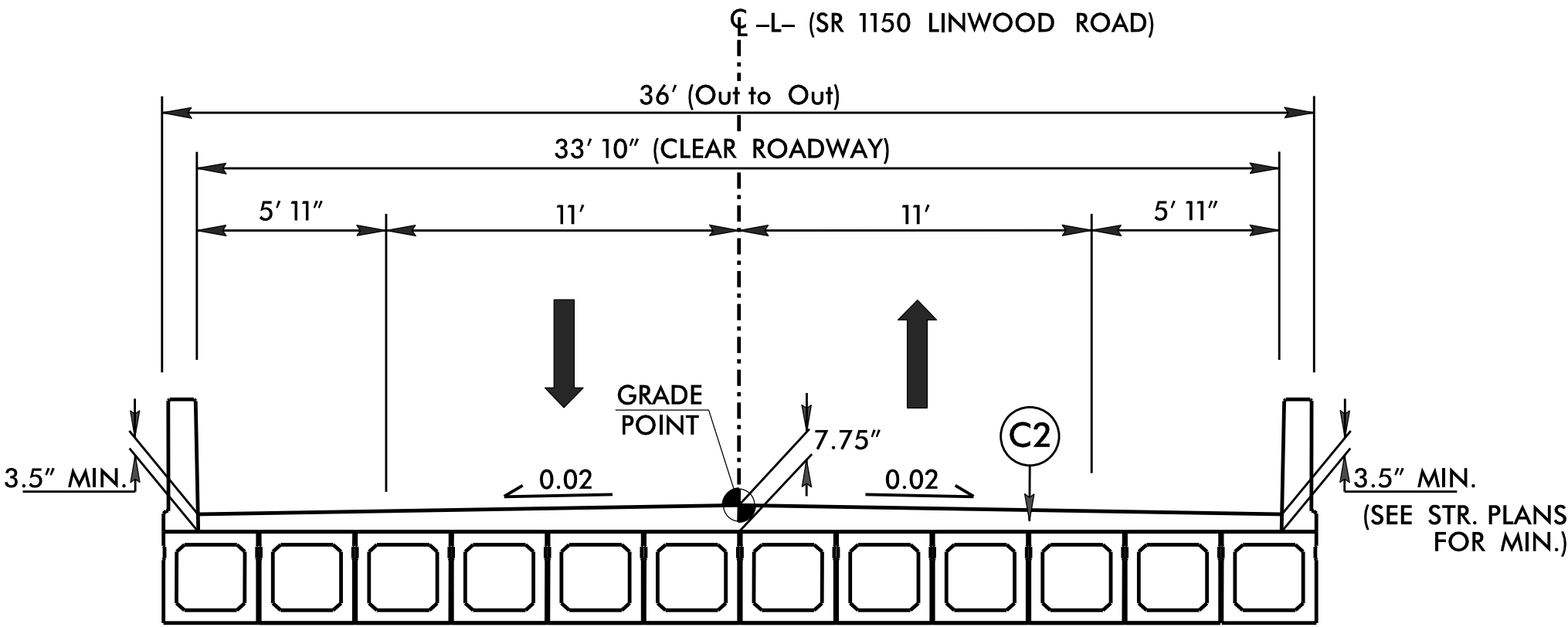
ROADWAY TYPICAL SECTION 1

- L- STA 10+75.00 TO 16+40.84 (BEG. BR.)
- L- STA 17+43.16 (END BR.) TO 23+30.00



ROADWAY TYPICAL SECTION 2

- DRWY- STA 10+11.00 TO 10+45.00



TYPICAL SECTION ON STRUCTURE

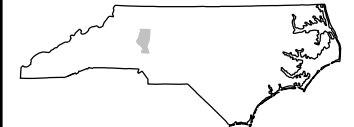
39" BOX BEAM

- L- STA 16+40.84 (BEG. BR.) TO 17+43.16 (END BR.)

BP12-R029

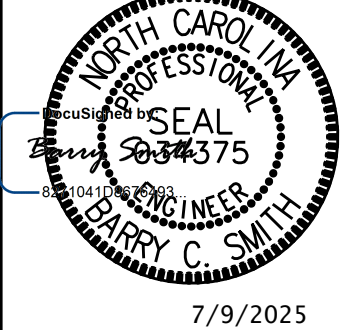
2A-1

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
REDELL COUNTY



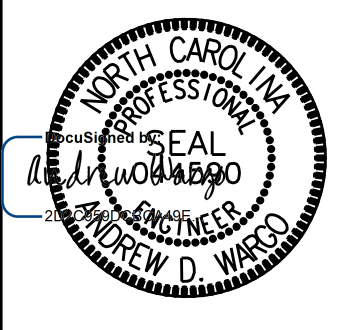
ROADWAY DESIGN UNIT

ROADWAY DESIGN
ENGINEER



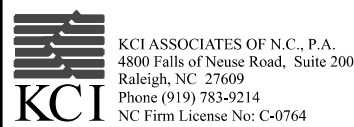
7/9/2025

PAVEMENT DESIGN
ENGINEER



7/9/2025

PREPARED BY



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

SUMMARY OF EARTHWORK IN CUBIC YARDS

PER GEOTECH RECOMMENDATION 9/26/24: ESTIMATED 450CY OF UNDERCUT TO BE USED IN THE DISCRETION OF THE RESIDENT ENGINEER.

APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, FINE GRADING, CLEARING AND GRUBBING, AND REMOVAL OF EXISTING PAVEMENT WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR "GRADING".

EXISTING PAVEMENT REMOVAL SUMMARY

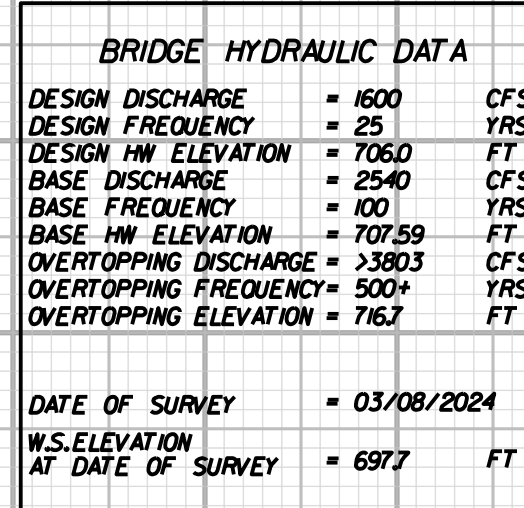
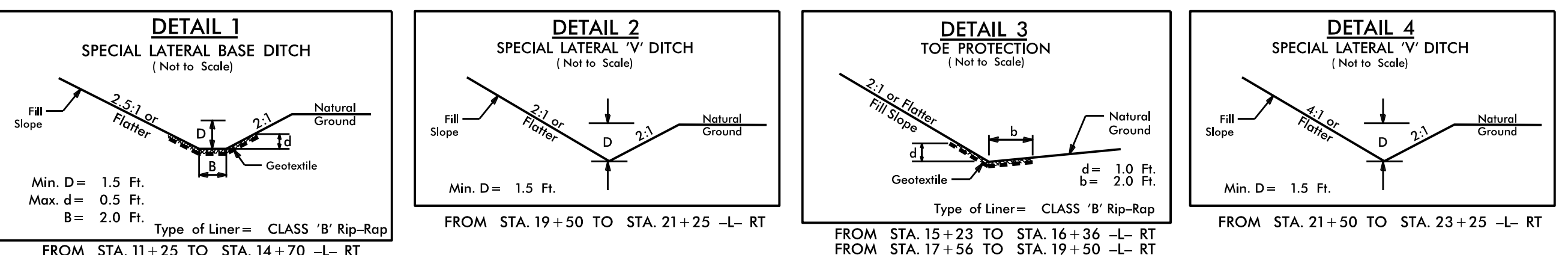
GUARDRAIL SUMMARY

[illegible]

REVISIONS

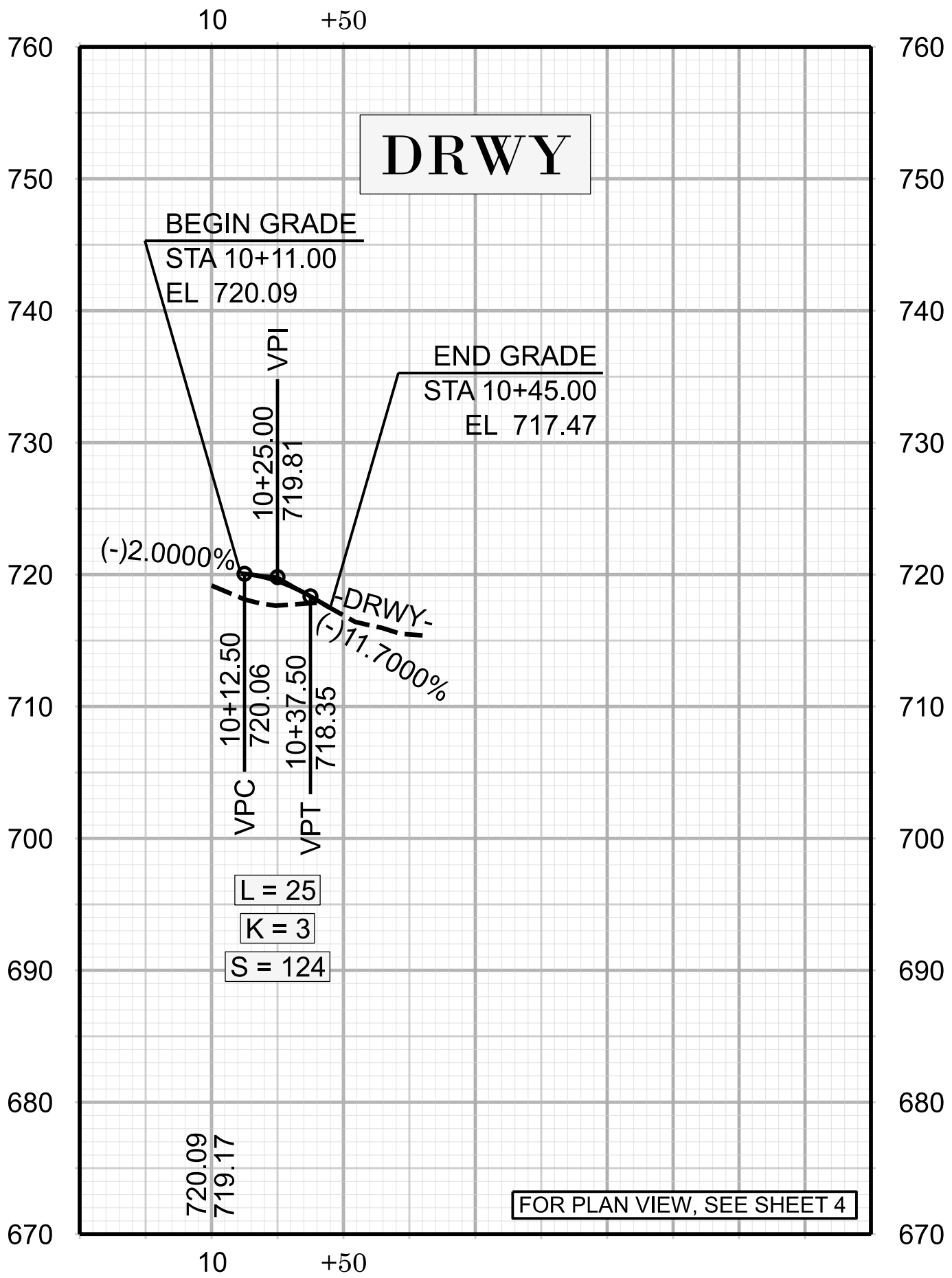
COMPUTED BY: JEB DATE: 10/1/24 CHECKED BY: MHS DATE: 10/1/24		(2-3-23)				PROJECT NO. BP12-R029		SHEET NO. 3G-1	
STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS									
SUMMARY OF SUBSURFACE DRAINAGE									
LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF				
CONTINGENCY				SD	200				
				TOTAL LF:	200				
*UD = Underdrain *BD = Blind Drain *SD = Subsurface Drain									

(1



FOR -DRWY- PROFILE, SEE SHEET 5
FOR STRUCTURE PLANS, SEE SHEETS S-1 THRU S-6

REVISIONS



BP12-R029

005

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
IREDELL COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN
ENGINEER

7/8/2025

HYDRAULICS
ENGINEER

7/8/2025

PREPARED BY

KCI ASSOCIATES OF N.C., P.A.
4000 Falls of Neuse Road, Suite 200
Raleigh, NC 27609
Phone (919) 783-9214
NC Firm License No. C40764

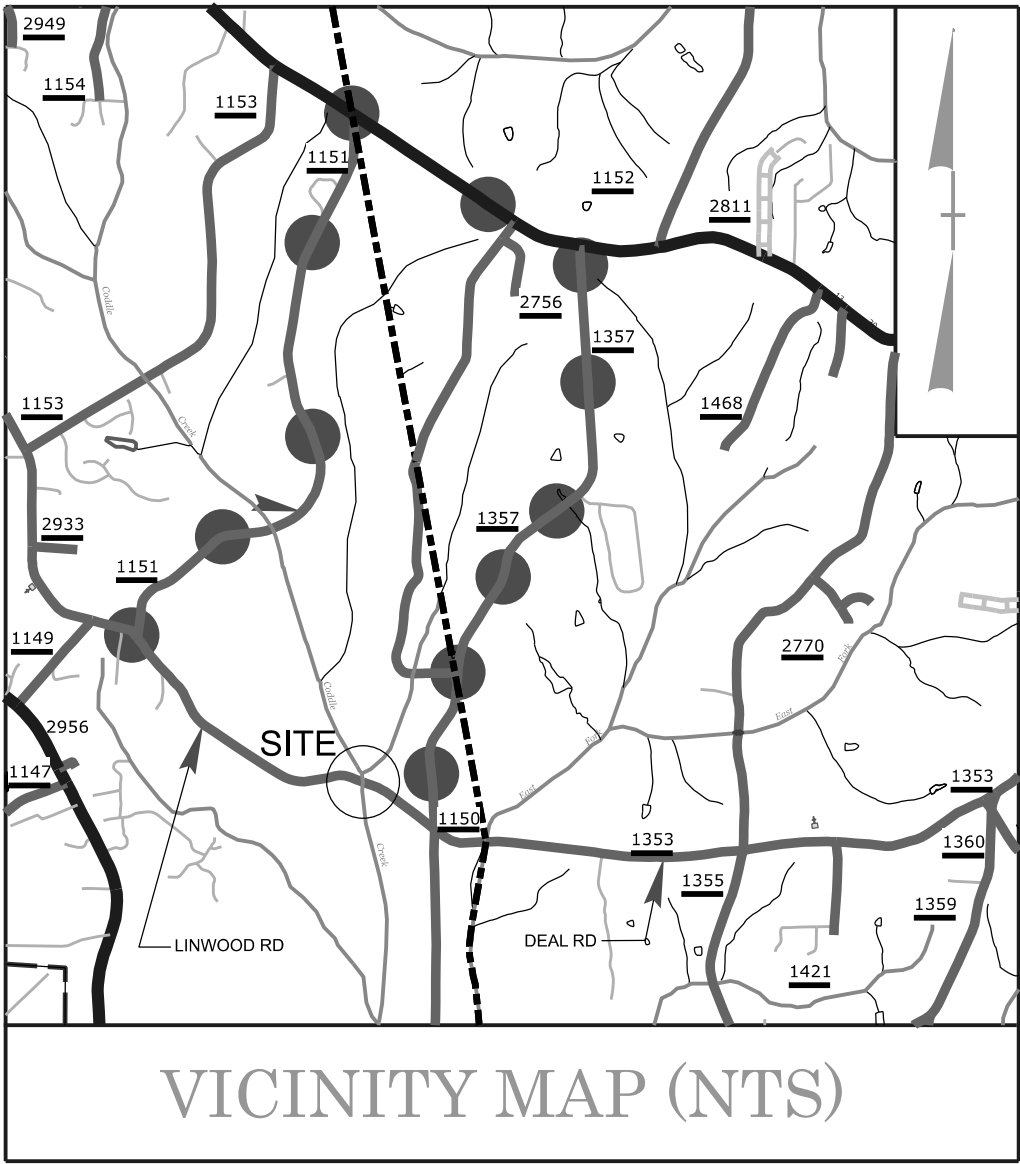
SUNGATE DESIGN GROUP, P.A.

805 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL: (919) 870-2244
WWW.SUNGATE-NC.COM

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UNLESS ALL SIGNATURES COMPLETED

REVISIONS

TIP PROJECT: BP12-R029



VICINITY MAP (NTS)

● — ● — ● OFFSITE DETOUR ROUTE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

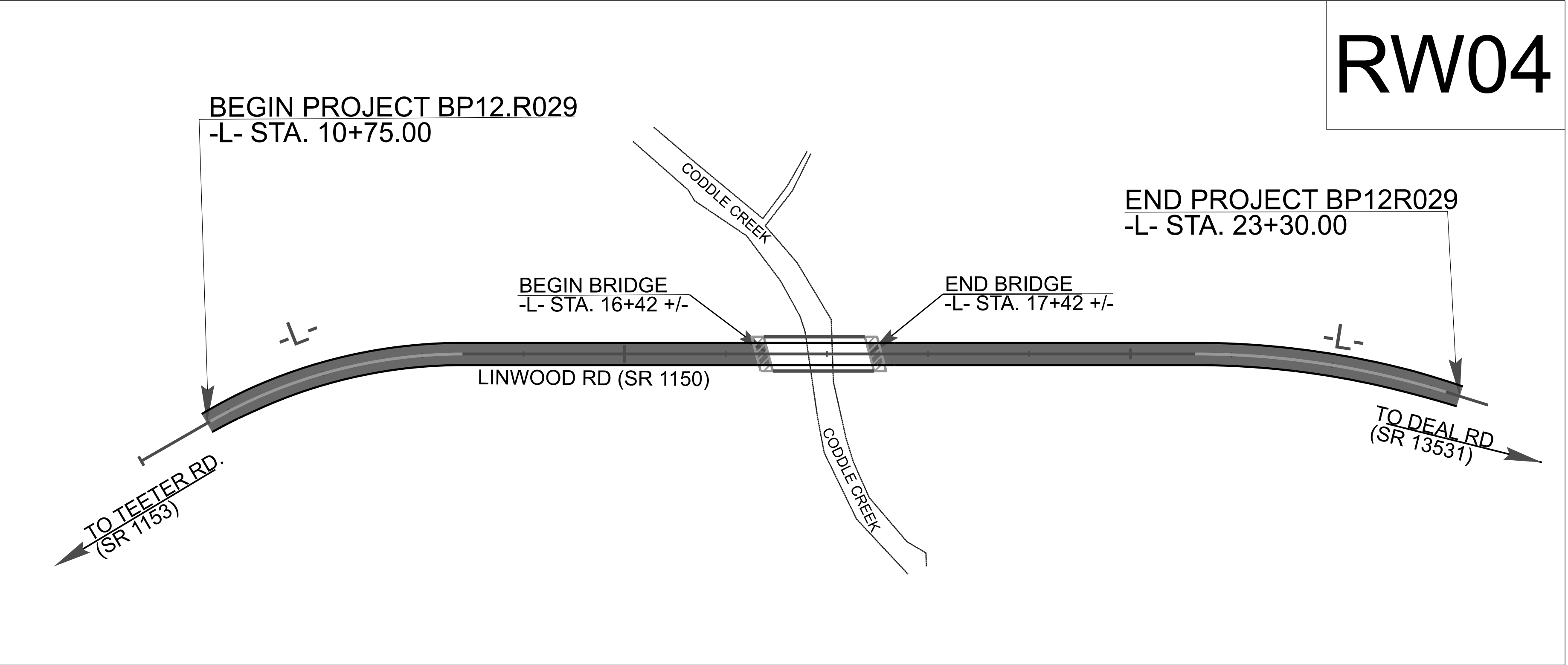
SURVEY CONTROL, EXISTING CENTERLINES,
RIGHT OF WAY, EASEMENTS AND PROPERTY TIES

IREDELL COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP12-R029	RW01	04



RW04



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

TITLE SHEET
SCALE



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT
IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY
NCDOT FOR MONUMENT BP12R029-1
WITH NAD 83/ NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 658,569.796 EASTING: 1,480,320.942
ELEVATION: 721.900
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT
(GROUND TO GRID) IS: 0.999856187
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

Prepared in the Office of:



DRMP, INC.
NC License No: F-1524
8210 University Executive Park Drive, Suite 220
Charlotte, NC 28262
PHONE: (919) 650 1038

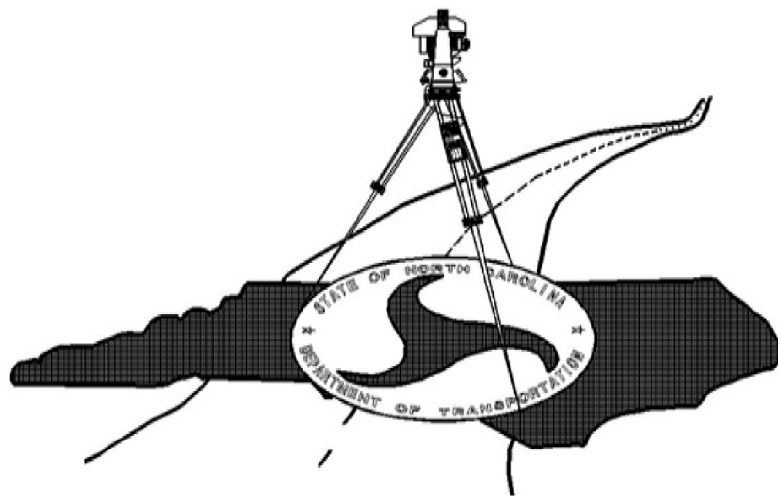
2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: OCTOBER 16, 2024
LETTING DATE: SEPTEMBER 23, 2025

PROFESSIONAL LAND
SURVEYOR



DocuSigned by:
91FF97CDED8946E...
SIGNATURE: DATE: 11/15/24

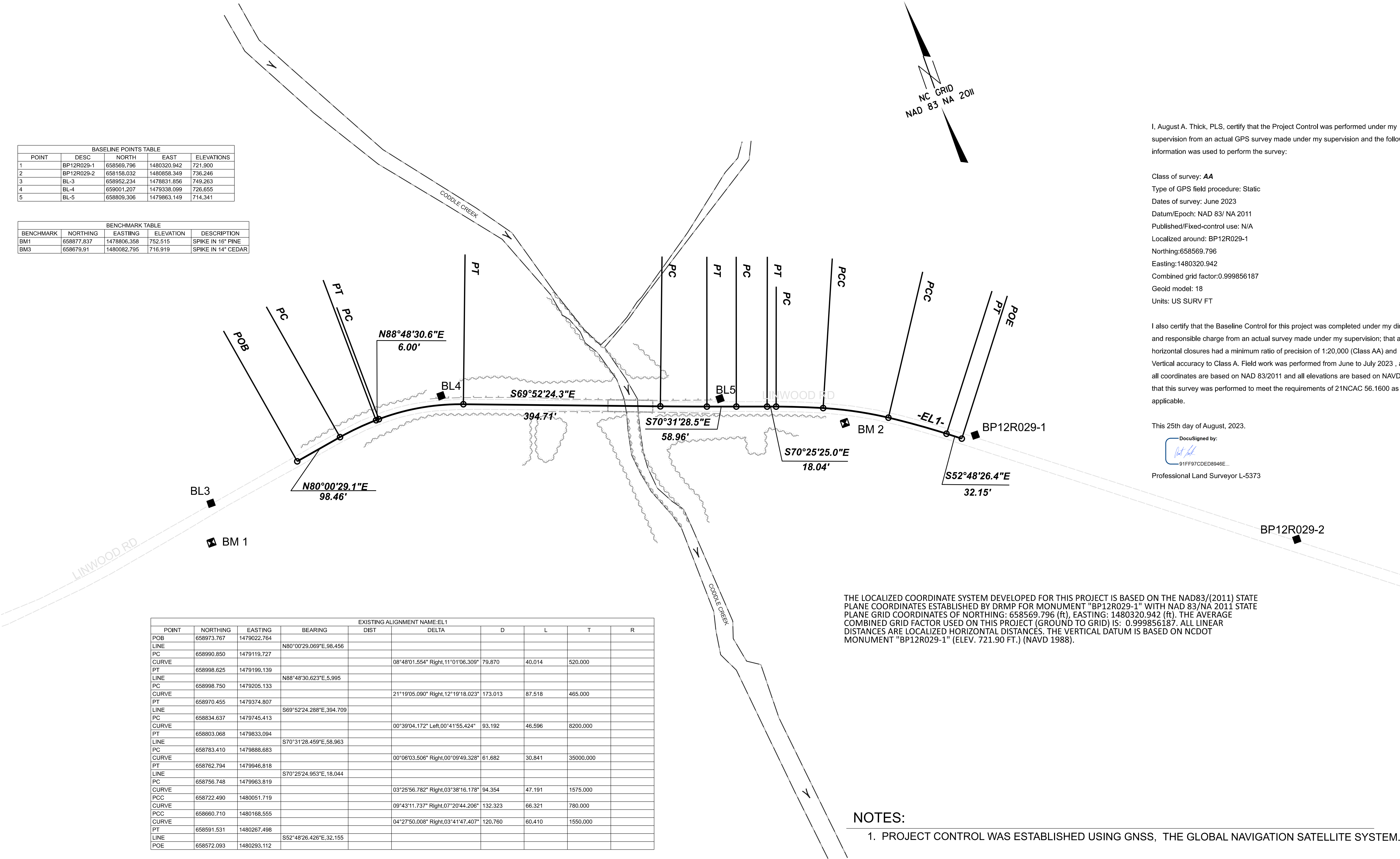


SURVEY CONTROL SHEET

W/EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

BASELINE POINTS TABLE				
POINT	DESC	NORTH	EAST	ELEVATIONS
1	BP12R029-1	658569.796	1480320.942	721.900
2	BP12R029-2	658156.032	1480858.349	736.246
3	BL-3	658952.234	1478831.856	749.263
4	BL-4	659001.207	1479338.099	726.655
5	BL-5	658809.306	1479863.149	714.341

BENCHMARK TABLE				
BENCHMARK	NORTHING	EASTING	ELEVATION	DESCRIPTION
BM1	658877.837	1478806.388	752.515	SPIKE IN 16" PINE
BM3	658679.91	1480082.795	716.919	SPIKE IN 14" CEDAR



I, August A. Thick, 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: Static
Dates of survey: June 2023
Datum/Epoch: NAD 83/ NA 2011
Published/Fixed-control use: N/A
Localized around: BP12R029-1
Northing:658569.796
Easting:1480320.942
Combined grid factor:0.999856187
Geoid model: 18
Units: US SURV FT

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 June to July 2023 , 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 25th day of August, 2023.
DocuSigned by:

91FF97CDED8946E...
Professional Land Surveyor L-5373

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE NAD83/(2011) STATE PLANE COORDINATES ESTABLISHED BY DRMP FOR MONUMENT "BP12R029-1" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 658569.796 (ft), EASTING: 1480320.942 (ft). THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999856187. ALL LINEAR DISTANCES ARE LOCALIZED HORIZONTAL DISTANCES. THE VERTICAL DATUM IS BASED ON NCDOT MONUMENT "BP12R029-1" (ELEV. 721.90 FT.) (NAVD 1988).

- 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.

BP12-R029

R/W02C-1

NORTH CAROLINA
DEPARTMENT
OF TRANSPORTATION

PROFESSIONAL LAND
SURVEYOR

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL SIGNATURES
ARE COMPLETED

2018 STANDARD
SPECIFICATIONS

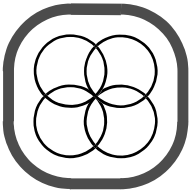
TIP PROJECT: BP12-R029

County: IREDELL

PREPARED FOR

LOCATION AND
SURVEYS UNIT

PREPARED BY



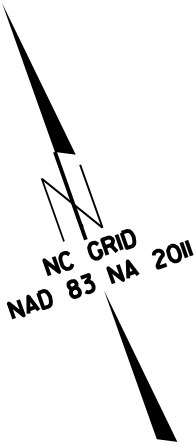
DRMP

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

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I, AUGUST A. THICK, 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: JUNE 2023, FEBRUARY 2024
DATUM/EPOCH: NAD 83/ NA 2011
PUBLISHED/FIXED-CONTROL USE: N/A
LOCALIZED AROUND: BP12R029-1
NORTHING: 658569.796
EASTING: 1480320.942
COMBINED GRID FACTOR: 0.999856187
GEOID MODEL: 18 (CONUS)
UNITS: US SURVEY FEET

I ALSO CERTIFY THAT THE BASELINE CONTROL FOR THIS PROJECT WAS COMPLETED UNDER MY DIRECT AND RESPONSIBLE CHARGE FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION; THAT ALL HORIZONTAL CLOSURES HAD A MINIMUM RATIO OF PRECISION OF 1:20,000 (CLASS AA) AND VERTICAL ACCURACY TO CLASS A. FIELD WORK WAS PERFORMED FROM JUNE TO JULY 2023 AND UPDATED FEBRAURY 2024 . 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 16th DAY OF FEBRUARY, 2024.

DocuSigned by:

91FF97CDED8946E...

PROFESSIONAL LAND SURVEYOR L-5373

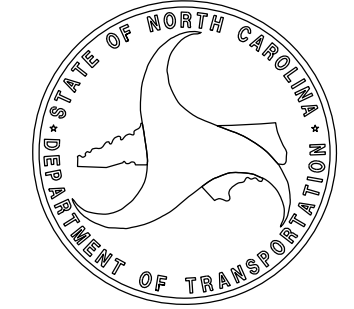
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EXISTING ALIGNMENT NAME:EL									
POINT	NORTHING	EASTING	BEARING	DIST	DELTA	D	L	T	R
START	658961.71	1478958.34							
LINE			N79°23'49.85"E	59.15					
PC	658972.59	1479016.48							
CURVE					00°36'39.22" Right	04°46'28.73"	12.79	6.40	1200.00
PT	658974.88	1479029.06							
LINE			N80°00'29.07"E	92.06					
PC	658990.85	1479119.73							
CURVE					08°48'01.55" Right	11°01'06.31"	79.87	40.01	520.00
PT	658998.62	1479199.14							
LINE			N88°48'30.62"E	6.00					
PC	658998.75	1479205.13							
CURVE					21°19'05.09" Right	12°19'18.02"	173.01	87.52	465.00
PT	658970.45	1479374.81							
LINE			S69°52'24.29"E	394.71					
PC	658834.64	1479745.41							
CURVE					00°39'04.17" Left	00°41'55.42"	93.19	46.60	8200.00
PT	658803.07	1479833.09							
LINE			S70°31'28.46"E	58.96					
PC	658783.41	1479888.68							
CURVE					00°06'03.51" Right	00°09'49.33"	61.68	30.84	35000.00
PT	658762.79	1479946.82							
LINE			S70°25'24.95"E	18.04					
PC	658756.75	1479963.82							
CURVE					03°25'56.78" Right	03°38'16.18"	94.35	47.19	1575.00
PCC	658722.49	1480051.72							
CURVE					09°43'11.74" Right	07°20'44.21"	132.32	66.32	780.00
PCC	658660.71	1480168.55							
CURVE					04°27'50.01" Right	03°41'47.41"	120.76	60.41	1550.00
PT	658591.53	1480267.50							
LINE			S52°48'26.43"E	28.52					
PC	658574.29	1480290.22							
CURVE					00°08'19.96" Right	01°54'35.49"	7.27	3.64	3000.00
PT	658569.89	1480296.00							
LINE			S52°40'06.47"E	127.54					
END	658492.54	1480397.42							

BP12-R029

R/W 02C-1

NORTH CAROLINA
DEPARTMENT
OF TRANSPORTATION



PROFESSIONAL LAND
SURVEYOR

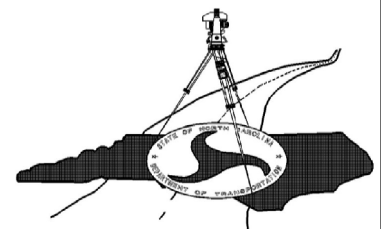


DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL SIGNATURES
ARE COMPLETED

2018 STANDARD
SPECIFICATIONS

TIP PROJECT: BP12-R029
County: IREDELL

PREPARED FOR



LOCATION AND
SURVEYS UNIT

PREPARED BY



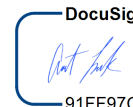
NOTES:

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- 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, AUGUST A. THICK, 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 NOVEMBER 2024, 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 15TH DAY OF NOVEMBER, 2024.

DocuSigned by:

91FF97C0EDB846E
PROFESSIONAL LAND SURVEYOR L-5373

PROPOSED ALIGNMENT: L												
POINT	STATION	NORTHING	EASTING	BEARING	DIST	DELTA	D	L	T	R	LT	ST
START	10+00.00	658973.7670	1479022.7645	N80°00'29.07"E	78.67							
PC	10+78.67	658987.4173	1479100.2430	S85°01'52.61"E	258.16	29°55'16.63"	11°27'32.96"	261.11	133.61	500		
PT	13+39.78	658965.0580	1479357.4283	S70°04'14.30"E	724.36							
PC	20+64.15	658718.1513	1480038.4100	S61°26'20.36"E	250.64	17°15'47.87"	06°51'42.37"	251.59	126.75	835		
PT	23+15.73	658598.3236	1480258.5458	S52°48'26.43"E	43.39							
END	23+59.12	658572.0930	1480293.1125									

PROPOSED ALIGNMENT: DRWY												
POINT	STATION	NORTHING	EASTING	BEARING	DIST	DELTA	D	L	T	R	LT	ST
START	10+00.00	658912.1509	1479503.3488	S19°55'45.70"W, 80.00								
END	10+80.00	658836.9418	1479476.0799									

NOTES:

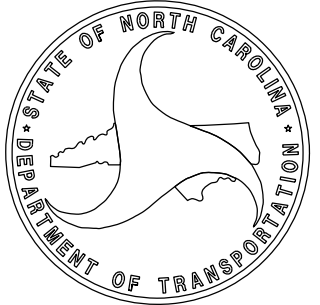
1. THE PROPOSED ALIGNMENT CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

BP12R029

R/W

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NORTH CAROLINA
DEPARTMENT
OF TRANSPORTATION



PROFESSIONAL LAND
SURVEYOR

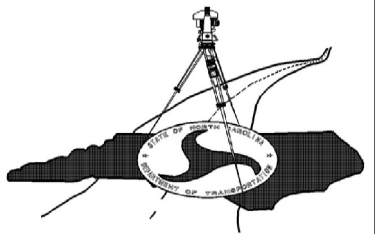


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2024 STANDARD
SPECIFICATIONS

TIP PROJECT: BP12-R029
County: Iredell

PREPARED FOR



LOCATION AND
SURVEYS UNIT

PREPARED BY



RIGHT OF WAY CONTROL SHEET

I, AUGUST A. THICK, 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 NOVEMBER 2024, 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 15TH DAY OF NOVEMBER, 2024.

DocuSigned by:

91FF97CDED8946E...
PROFESSIONAL LAND SURVEYOR L-5373

PERMANENT ROW MARKER IRON PIN AND CAP: L			
STATION	OFFSET	NORTH	EAST
10+70.00	30.00	658956.3677	1479096.9080
12+25.00	50.00	658941.8579	1479240.0927
13+39.78	50.00	658918.0523	1479340.3853
16+05.00	-56.00	658927.3025	1479625.8495
16+05.00	-40.10	658912.3547	1479620.4298
** 16+49.00	-56.00	658912.3046	1479667.2145
** 16+64.00	-39.93	658892.0853	1479675.8390
19+75.00	50.00	658701.5318	1479937.5602
20+64.15	40.00	658680.5467	1480024.7755
23+15.73	40.00	658566.4593	1480234.3659
23+25.00	40.00	658560.8568	1480241.7489
23+25.00	30.00	658568.8218	1480247.7931

** COULD NOT SET, STAKE PLACED AT 5' OFFSET
** SCRIBE AND PAINT ON BOULDER

NOTES:

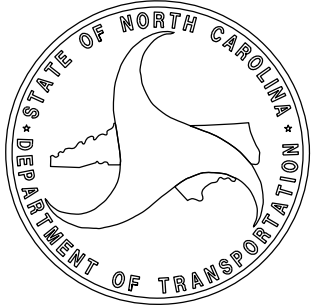
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BP12R029

R/W

03E-I

NORTH CAROLINA
DEPARTMENT
OF TRANSPORTATION



PROFESSIONAL LAND
SURVEYOR

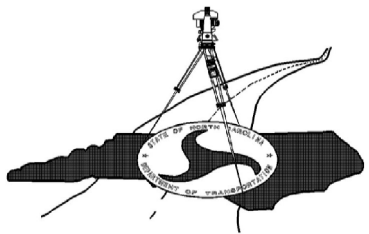


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2024 STANDARD
SPECIFICATIONS

TIP PROJECT: BP12-R029
County: Iredell

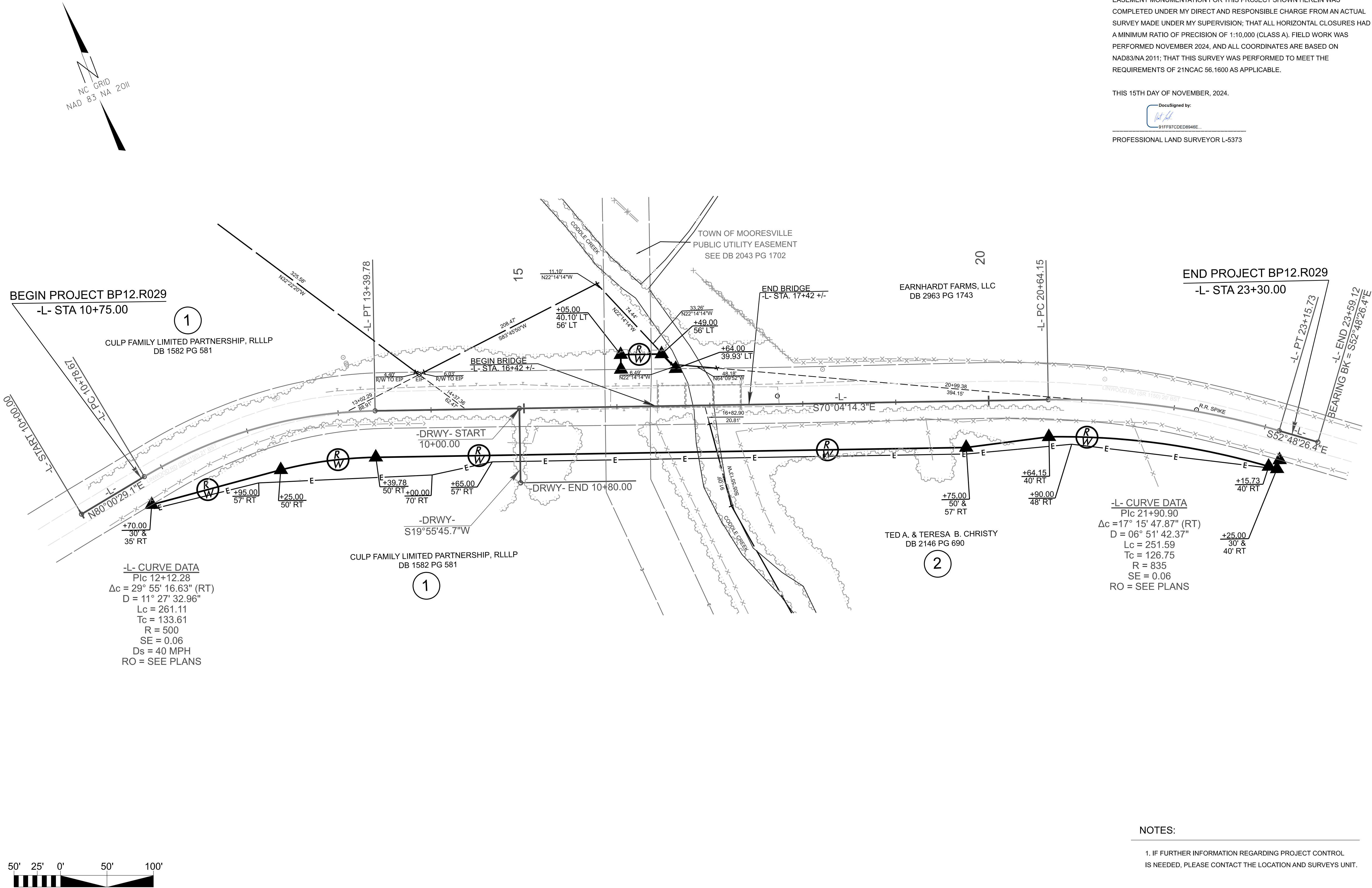
PREPARED FOR



LOCATION AND
SURVEYS UNIT

PREPARED BY





I, AUGUST A. THICK, 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 NOVEMBER 2024, 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 15TH DAY OF NOVEMBER, 2024.

DocuSigned by:
91FF97CDED846E...
PROFESSIONAL LAND SURVEYOR L-5373

BP12R029

R/W04

NORTH CAROLINA
DEPARTMENT
OF TRANSPORTATION

PROFESSIONAL LAND
SURVEYOR

SEAL
L-5373
AUGUST A. THICK

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2024 STANDARD
SPECIFICATIONS

TIP PROJECT: BP12-R029
County: Iredell

PREPARED FOR

LOCATION AND
SURVEYS UNIT

PREPARED BY

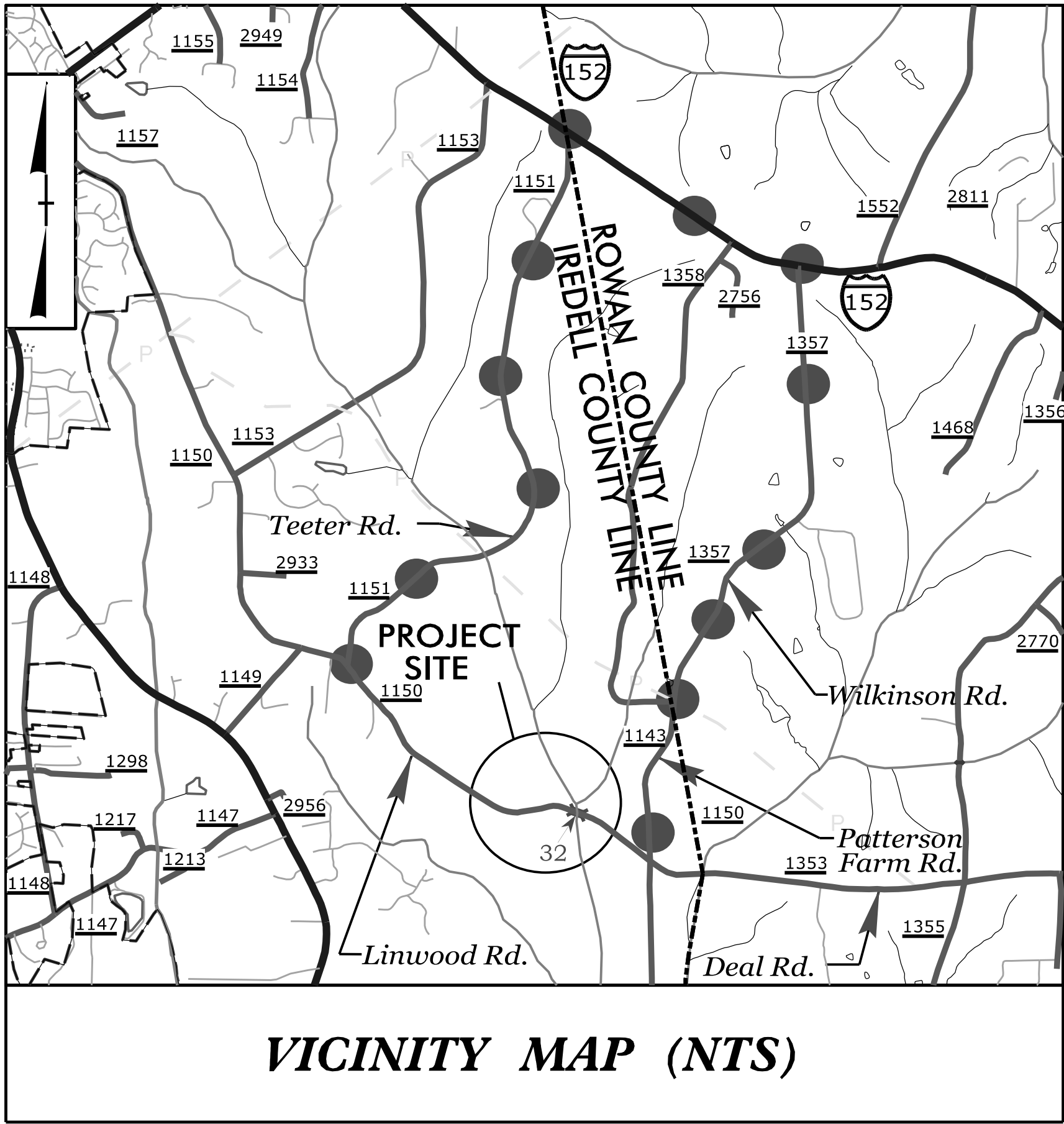
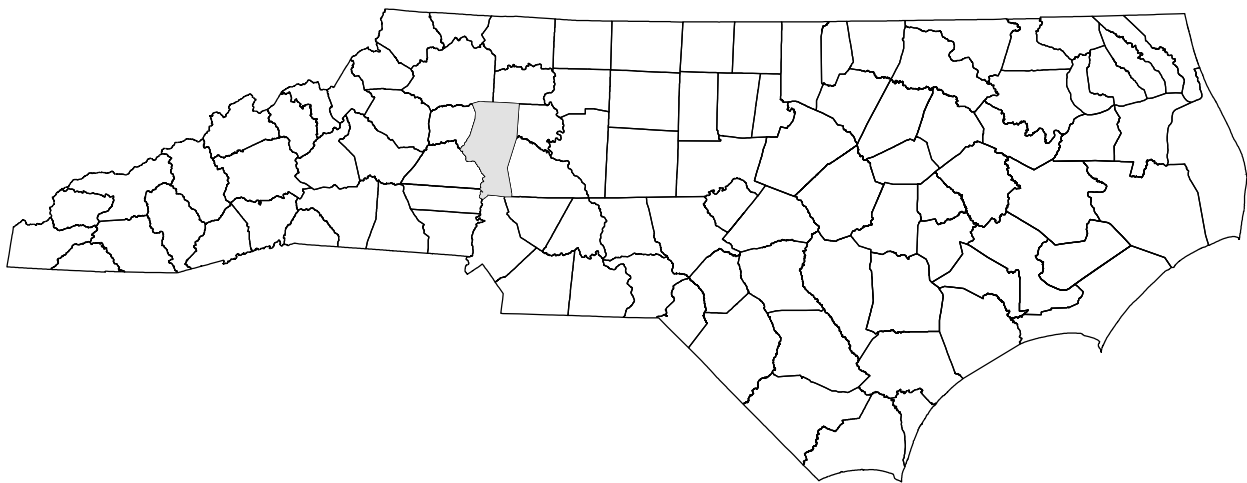
DRMP

NOTES:
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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

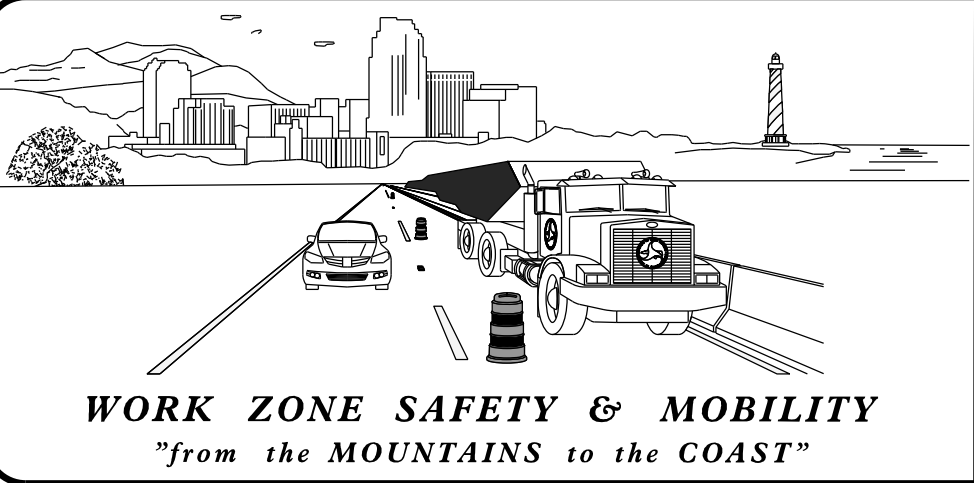
TRANSPORTATION MANAGEMENT PLAN

IREDELL COUNTY



● — ● — ● OFFSITE DETOUR ROUTE

LOCATION: REPLACE BRIDGE NO. 032
OVER CODDLE CREEK
ON SR 1150 (LINWOOD RD.)



PLANS PREPARED BY:

BARRY C. SMITH, P.E.
PROJECT ENGINEER

TYLER L. CAREY, PE
PROJECT DESIGN ENGINEER

NCDOT CONTACTS:

ZACHARY CLARK, PE
WZTC PROJECT ENGINEER

WZTC PROJECT DESIGN ENGINEER



KCI ASSOCIATES OF N.C., P.A.
4800 Falls of Neuse Road, Suite 200
Raleigh, NC 27609
Phone (919) 783-9214
NC Firm License No: C-0764

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

APPROVED: Barry Smith
DATE: 7/8/2015

SEAL

NORTH CAROLINA
PROFESSIONAL
SEAL
034375
ENGINEER
BARRY C. SMITH

SHEET NO. TMP-1

CONTRACT: DL00355

PROJECT: BP12-R029

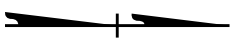
ROADWAY STANDARD DRAWINGS

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

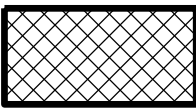
STD. NO.	TITLE
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUM
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1180.01	SKINNY-DRUM
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION
1264.01	OBJECT MARKERS - TYPES
1264.02	OBJECT MARKERS - INSTALLATION

LEGEND

GENERAL

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

 WORK AREA

 REMOVAL

 USER DEFINED (IF NEEDED)

 USER DEFINED (IF NEEDED)

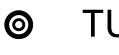
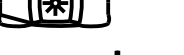
SIGNALS

-  EXISTING
-  PROPOSED
-  TEMPORARY

PAVEMENT MARKINGS

-  EXISTING LINES
-  TEMPORARY LINES

TRAFFIC CONTROL DEVICES

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

TEMPORARY SIGNING

-  PORTABLE SIGN
-  STATIONARY SIGN
-  STATIONARY OR PORTABLE SIGN

PAVEMENT MARKERS

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

PAVEMENT MARKING SYMBOLS

-    PAVEMENT MARKING SYMBOLS

\$\$\$\$\$SYTIME\$\$\$\$\$
\$\$\$\$\$\$\$\$\$\$DGN\$\$\$\$\$
\$\$\$\$\$USERNAME\$\$\$\$\$

PROJ. REFERENCE NO.	SHEET NO.
BP12-R029	TMP-1B

GENERAL NOTES

PHASING

1. CLOSE SR 1150 (LINWOOD ROAD) AND DETOUR TRAFFIC OFF-SITE VIA SR 1143 (PATTERSON FARM ROAD), SR 1357 (WILKINSON ROAD), AND NC HWY 152 TO SR 1151 (TEETER ROAD).
2. LOCAL ACCESS TO ALL RESIDENCES AND BUSINESSES WILL BE MAINTAINED BETWEEN CLOSURE POINTS AT ALL TIMES DURING CONSTRUCTION.

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

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

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

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

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

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

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

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

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

TRAFFIC CONTROL DEVICES

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

PAVEMENT MARKINGS AND MARKERS

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

DocuSigned by:
Barry Smith
827104108679493...

APPROVED: _____

DATE: 7/8/2025 _____

SEAL



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



TRANSPORTATION OPERATIONS PLAN



KCI
<http://www.kci.com>
 KCI ASSOCIATES OF N.C., P.A.
 4800 Falls of Neuse Road, Suite 200
 Raleigh, NC 27609-6270
 Phone (919) 783-9214
 NC Firm License No: C-0764

PROJ. REFERENCE NO.	SHEET NO.
BP12-R029	TMP - 2

SP - 1

SIGN NUMBER: SP-1 TYPE: D QUANTITY: 1 SIGN WIDTH: 3'-0" HEIGHT: 2'-0" TOTAL AREA: 6.0 Sq.Ft. BORDER TYPE: RECESSED RECESS: 0.38" WIDTH: 0.63" RADII: 1.50" NO. Z BARS: N/A LENGTH: N/A BACKG COLOR: Fluorescent 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></table> MAT'L: 0.080" ALUMINUM	SYMBOL	X	Y	WID	HT																															DESIGN BY: JIB PROJECT ID: BP12.R029 CHECKED BY: BCS DIV: 12 DATE: MAY 20, 2024 36" 24" LINWOOD RD 5.13" 5" C 3.75" 5" C 5.13" 6.15" 23.70" 6.15" Spacing Factor is 1 unless specified otherwise LETTER POSITIONS <table><tr><th colspan="23">Letter spacings are to start of next letter</th><th>Series/Size Text Length</th></tr><tr><td></td><td></td><td>L</td><td>I</td><td>N</td><td>W</td><td>O</td><td>O</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>C 2000 23.68</td></tr><tr><td></td><td>6.15</td><td>3.34</td><td>1.76</td><td>3.58</td><td>4.59</td><td>3.73</td><td>3.94</td><td>2.74</td><td>6.15</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>C 2000 6.53</td></tr><tr><td></td><td></td><td>R</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></td><td></td><td></td><td></td></tr><tr><td></td><td>14.74</td><td>3.79</td><td>2.74</td><td>14.74</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><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><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><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><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><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><td></td><td></td><td></td></tr></table> FILENAME: BP12.R029 DETOUR SIGN FACE LAYOUT NORTH CAROLINA D.O.T. SIGN DETAIL	Letter spacings are to start of next letter																							Series/Size Text Length			L	I	N	W	O	O	D															C 2000 23.68		6.15	3.34	1.76	3.58	4.59	3.73	3.94	2.74	6.15														C 2000 6.53			R	D																						14.74	3.79	2.74	14.74																																																																																																																																																																			
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\$\$\$SYTIME\$\$\$\$\$
\$\$\$DGN\$\$\$\$\$
\$\$\$USERNAM\$\$\$\$\$

APPROVED:

DocuSigned by:
Barry Smith
8271041D9876493...

DATE: 7/8/2025

SEAL

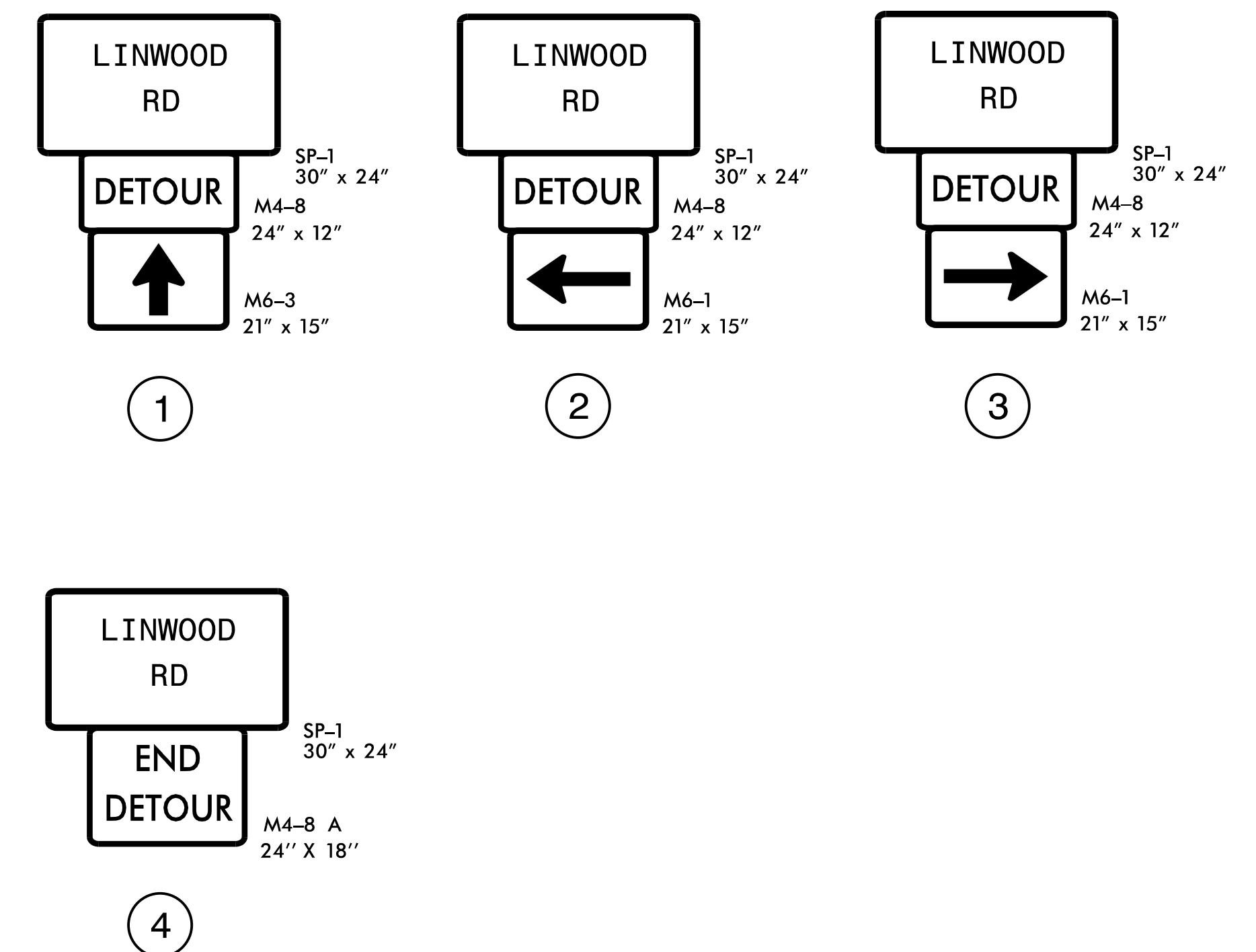
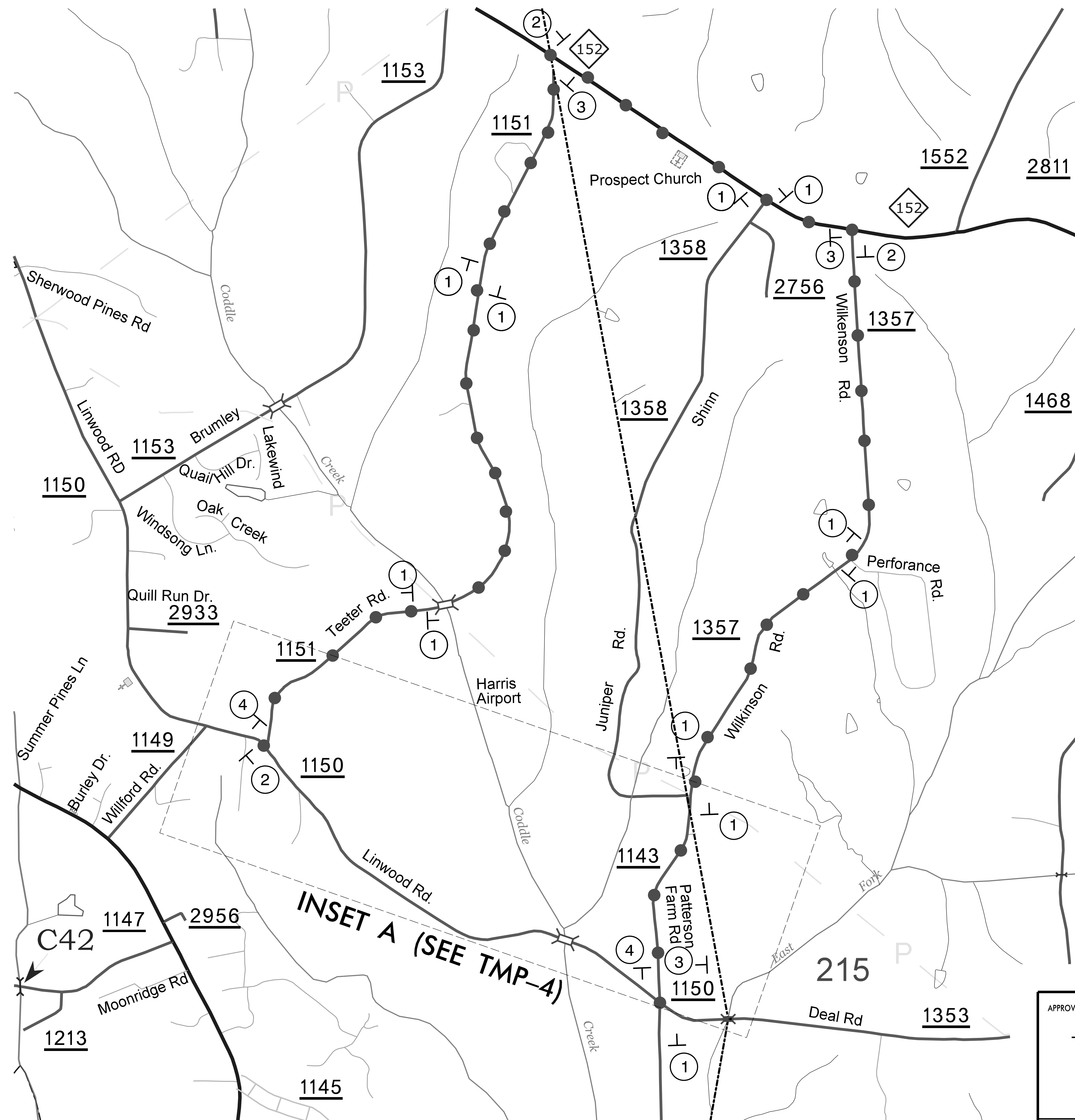
NORTH CAROLINA
PROFESSIONAL
SEAL
034375
ENGINEER
BARRY C. SMITH

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WORK ZONE TRAFFIC CONTROL

SPECIAL SIGN
DESIGN

PROJ. REFERENCE NO.	SHEET NO.
BP12-R029	TMP-3



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

DETOUR ROUTE



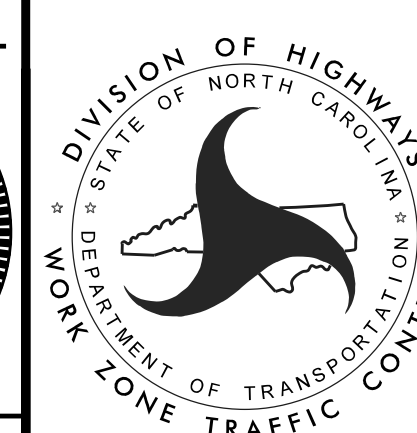
OFFSITE DETOUR ROUTE

Use signature by: Barry Smith
APPROVED: 827104102670493
7/8/2025

SEAL

SEAL

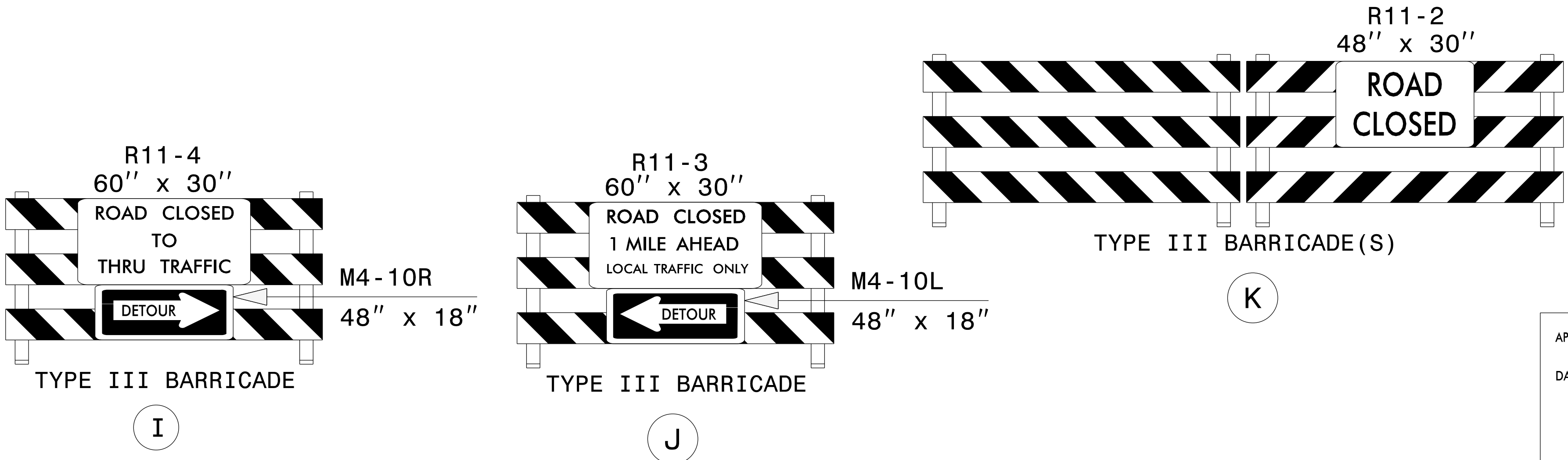
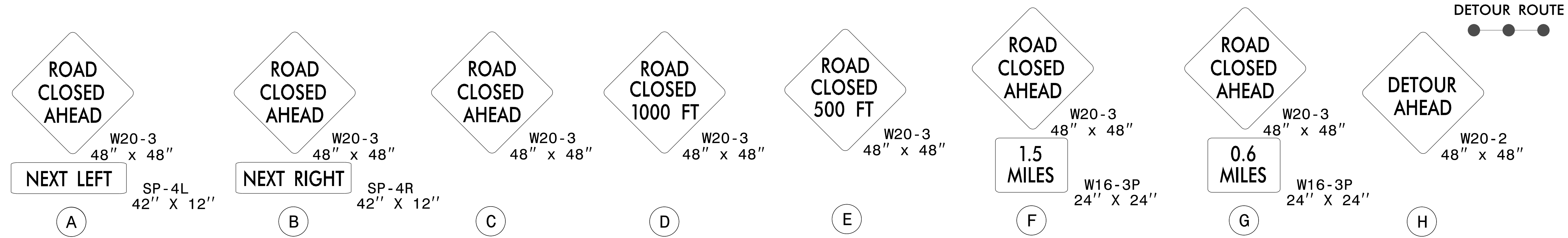
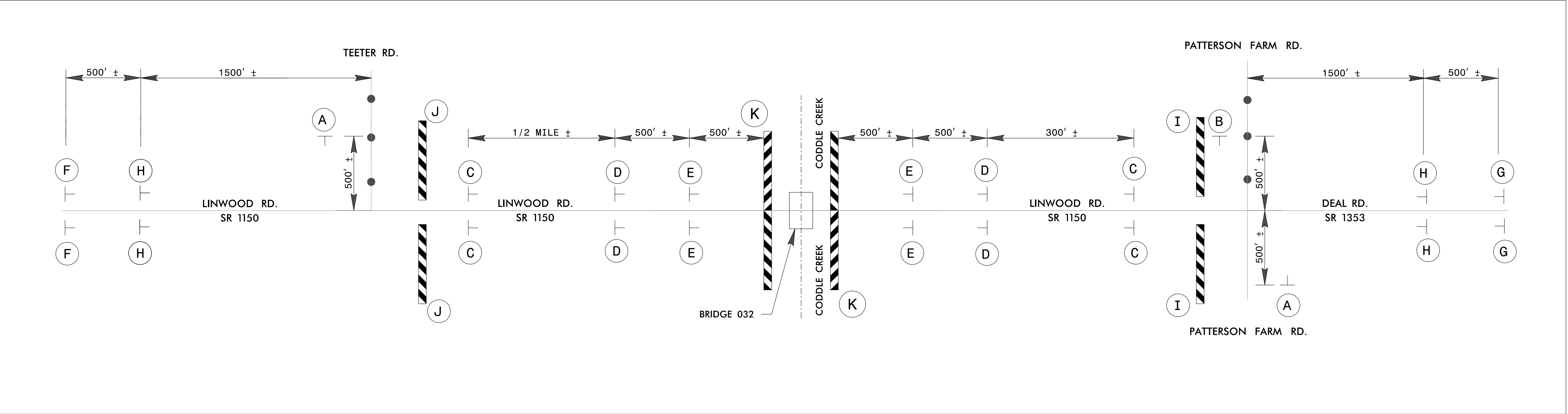
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**



SYTIME\$\$\$\$\$
DGN\$\$\$\$\$

PROJ. REFERENCE NO.	SHEET NO.
BP12-R029	TMP - 4

INSET A

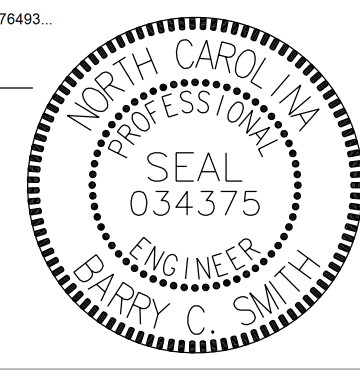


- NOTES:
1. REFER TO ROADWAY STANDARD DRAWING 1101.03, SHEET 1 OF 9 FOR APPLICABLE NOTES.
 2. ALL SIGN SPACING DIMENSIONS ARE APPROXIMATE. FIELD ADJUST AS NECESSARY OR AS DIRECTED BY THE ENGINEER.
 3. SEE SHEET TMP-2 FOR THE SPECIAL SIGN DESIGN
 4. ALL DETOUR SIGN LOCATIONS ARE APPROXIMATE.

APPROVED: 
DATE: 7/8/2025

SEAL

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



OFFSITE DETOUR ROUTE



KCI ASSOCIATES OF N.C., P.A.
4800 Falls of Neuse Road, Suite 200
Raleigh, NC 27609-4270
Phone (919) 783-9214
NC Firm License No: C-0764

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PAVEMENT MARKING PLAN

IREDELL COUNTY

LOCATION: BRIDGE NO. 032 OVER CODDLE CREEK ON SR 1150 (LINWOOD RD.)

GENERAL NOTES

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

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

ROAD NAME	MARKING	MARKER
-L- SR 1150	PAINT	POLYCARBONATE H-SHAPED SNOWPLOWABLE
-BRIDGE-	PAINT	NONE

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

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

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

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

ROADWAY STANDARD DRAWING

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

STD. NO.	TITLE
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
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

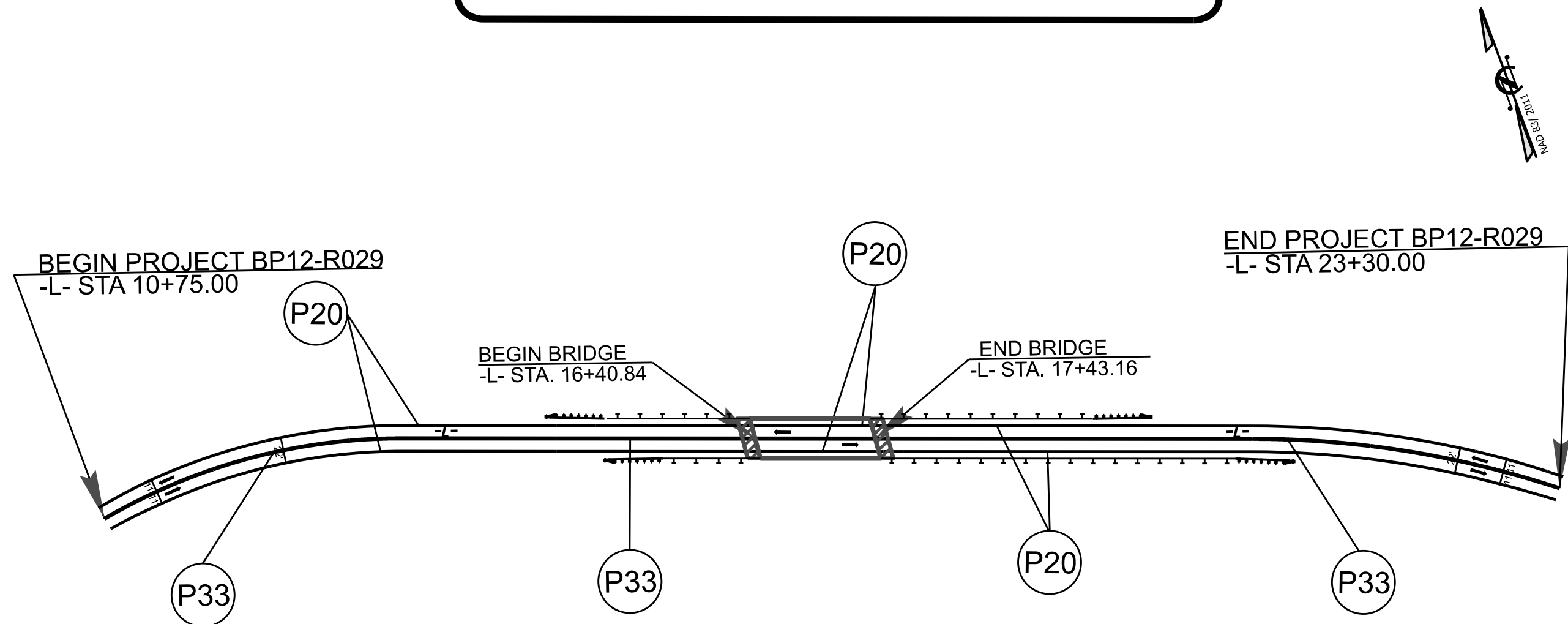
PAVEMENT MARKING SCHEDULE

<u>SYMBOL</u>	<u>DESCRIPTION</u>	<u>FINAL PAVEMENT MARKINGS</u>
P20	WHITE EDGETINE	PAINT (6")
P33	YELLOW DOUBLE CENTER	PAINT (6")

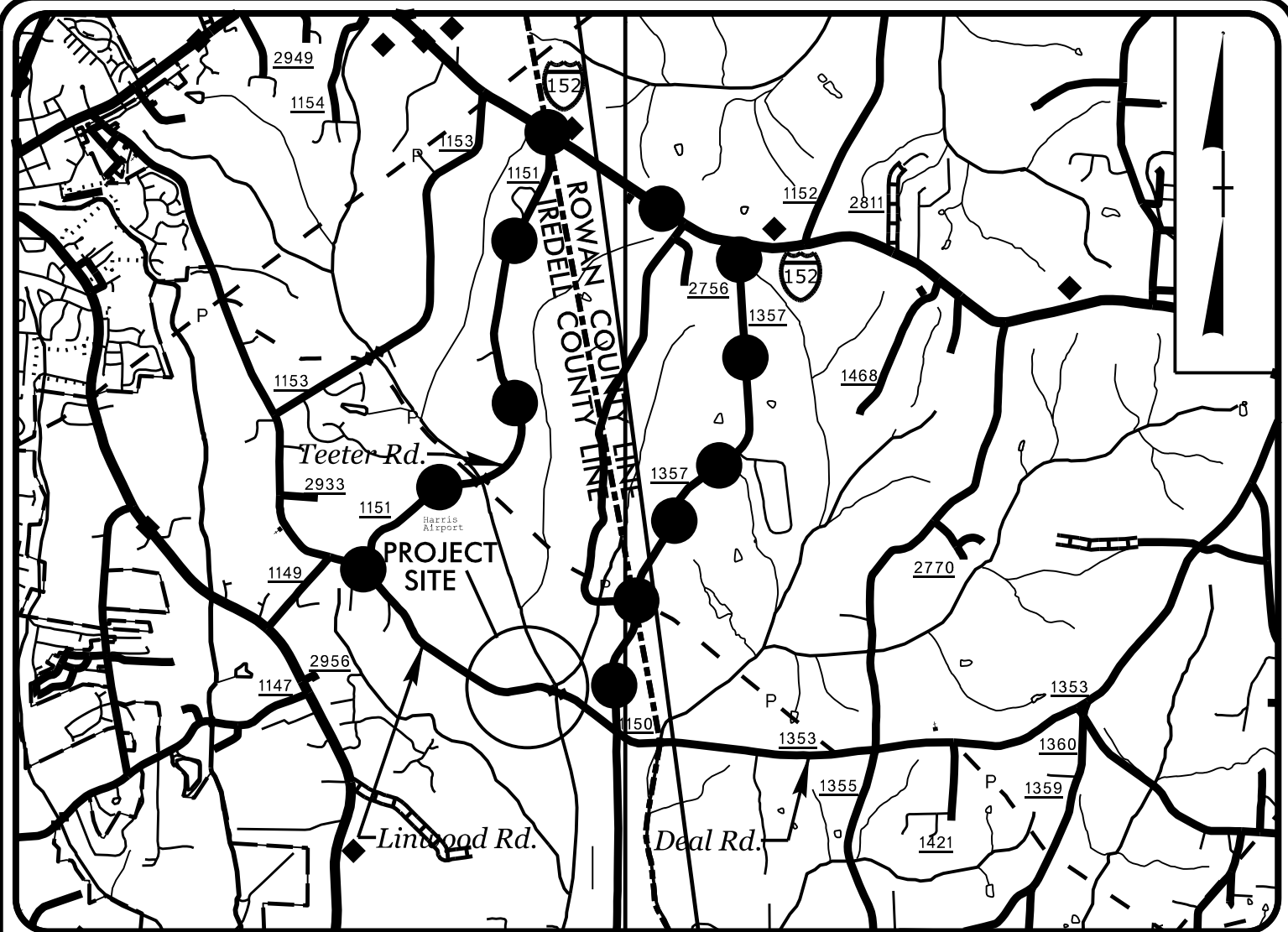
SUMMARY OF QUANTITIES

ITEM NO.		ITEM DESCRIPTION	QUANTITY	UNIT
DESC. NO.	SECT. NO.			
4815000000-E	1205	WHITE EDGETINE (6")	5,020	LF
4810000000-E	1205	YELLOW DOUBLE CENTER	5,020	LF
4895000000-N	SP	POLYCARBONATE H-SHAPED MARKERS	15	EA

PAVEMENT MARKING DETAIL



TIP PROJECT: BP12-R029



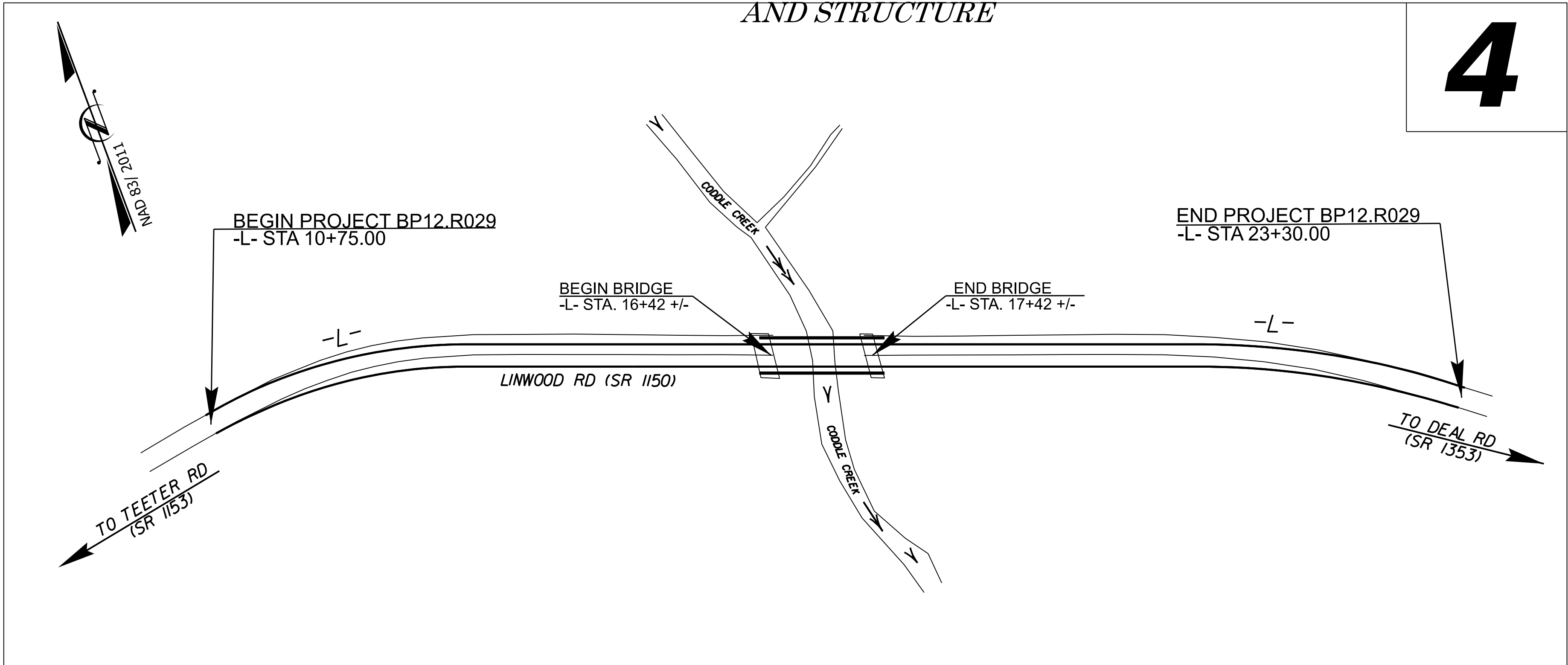
VICINITY MAP
NOT TO SCALE

●—●—● OFFSITE DETOUR ROUTE

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

LOCATION: *REPLACE BRIDGE NO. 32 ON SR 1150
(LINWOOD ROAD) OVER CODDLE CREEK*

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



ENVIRONMENTALLY
SENSITIVE AREA(S) EXIST
ON THIS PROJECT

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

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

HIGH QUALITY WATER(S) EXIST
ON THIS PROJECT

High Quality Water Zone(s) Exist
From Sta. _____ **BEGIN**
to Sta. _____ **END**
*Refer To E. C. Special Provisions
for Special Considerations.*

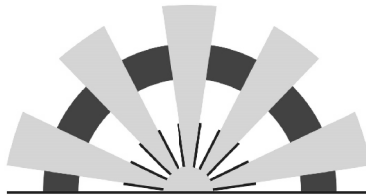
THIS PROJECT HAS
BEEN DESIGNED TO
SENSITIVE WATERSHED
STANDARDS.

GRAPHIC SCALE



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

Prepared in the Office of:
SUNGATE DESIGN GROUP, P.A.



905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
ENG FIRM LICENSE NO. C-890

2024 STANDARD SPECIFICATIONS

Designed by:

BRIAN ELAM, PE
NAME

3195
LEVEL III CERTIFICATION NO.

Roadway Standard Drawings

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

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

EROSION & SEDIMENT CONTROL LEGEND

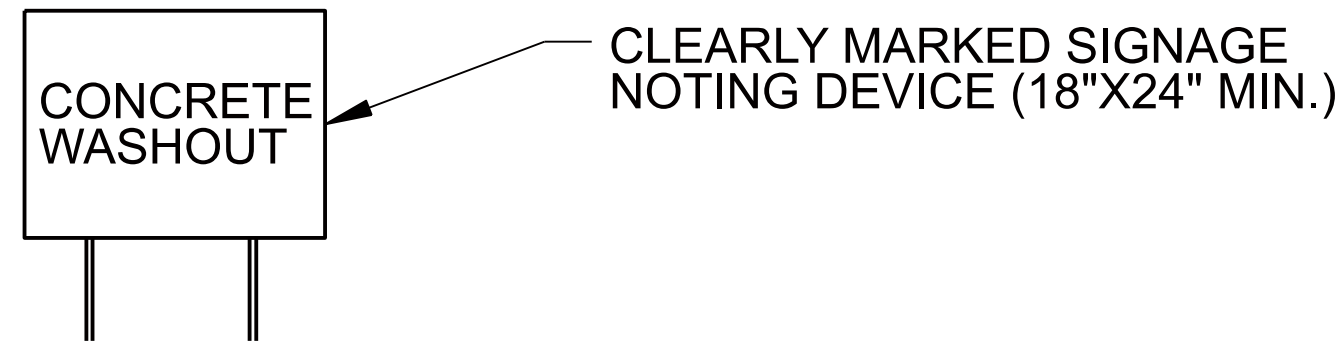
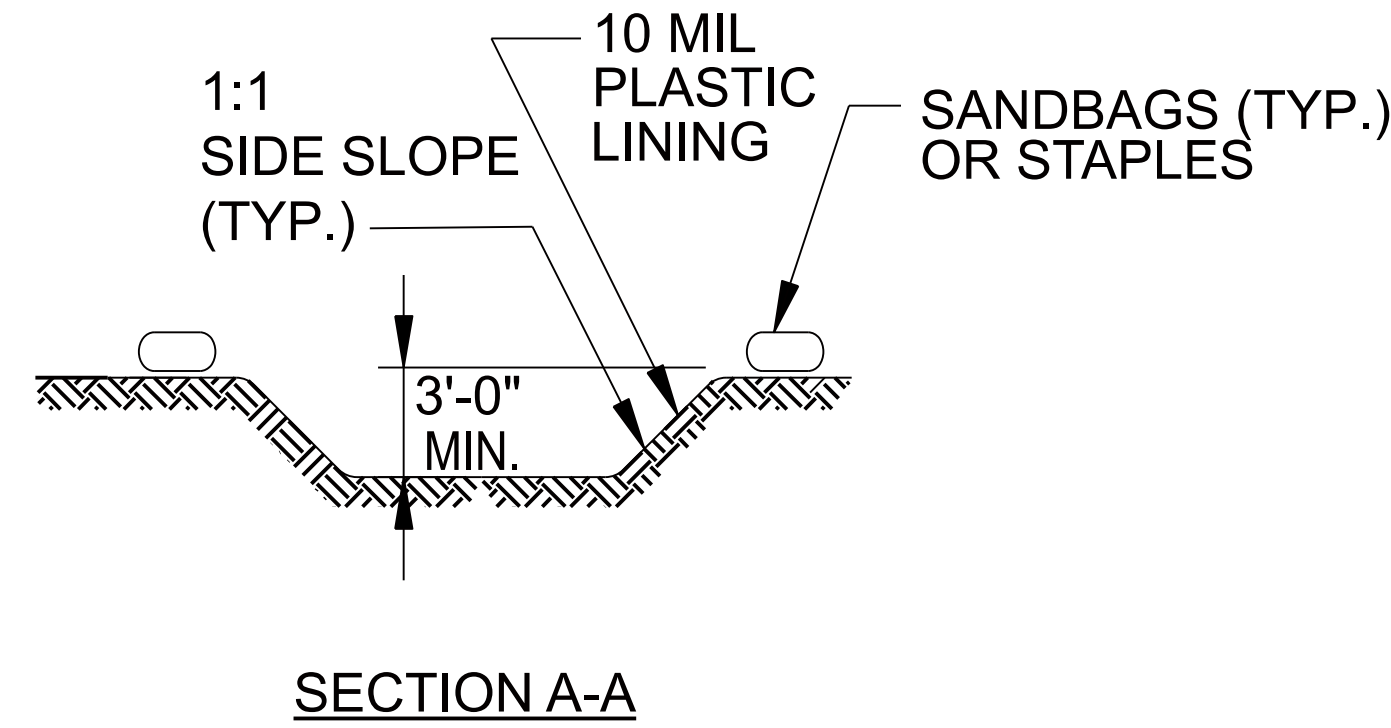
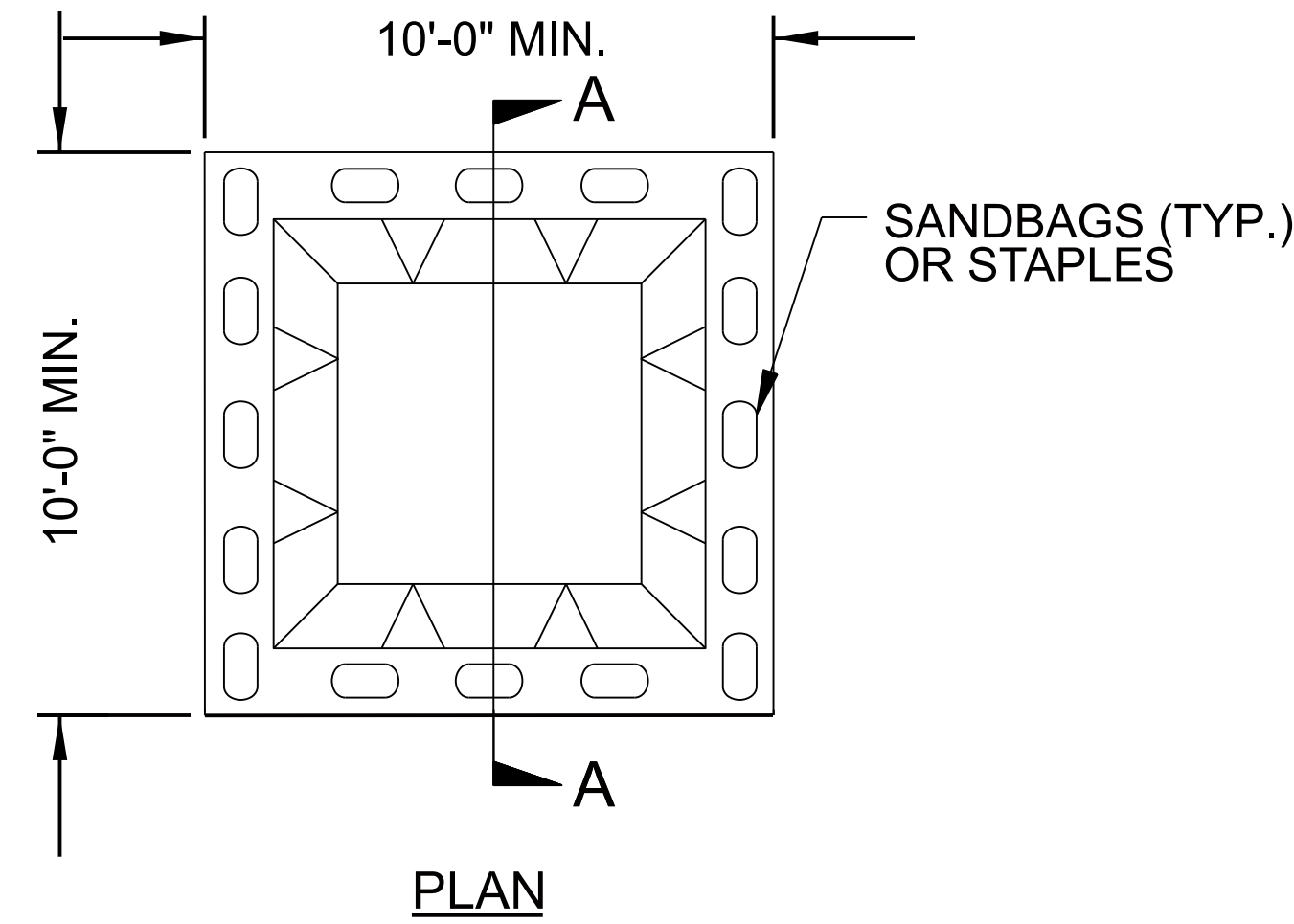
PROJECT REFERENCE NO.	SHEET NO.
BP12-R029	EC-02
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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	

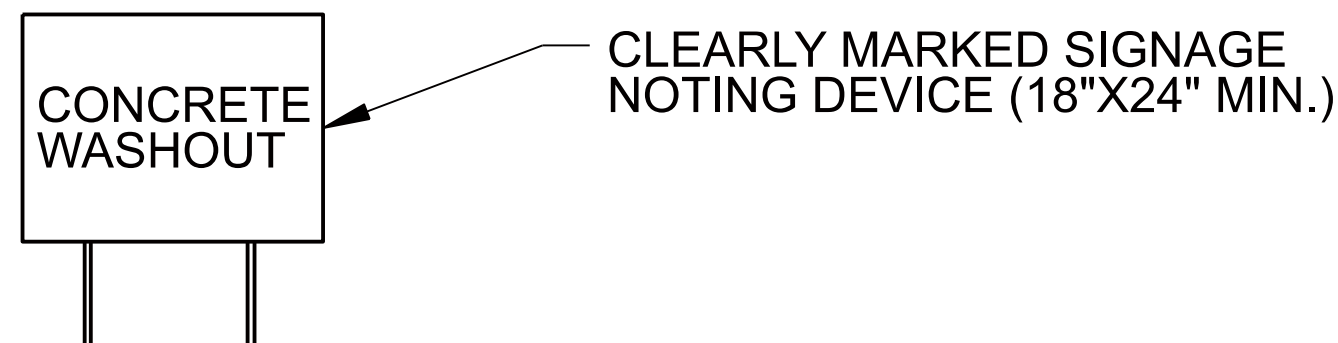
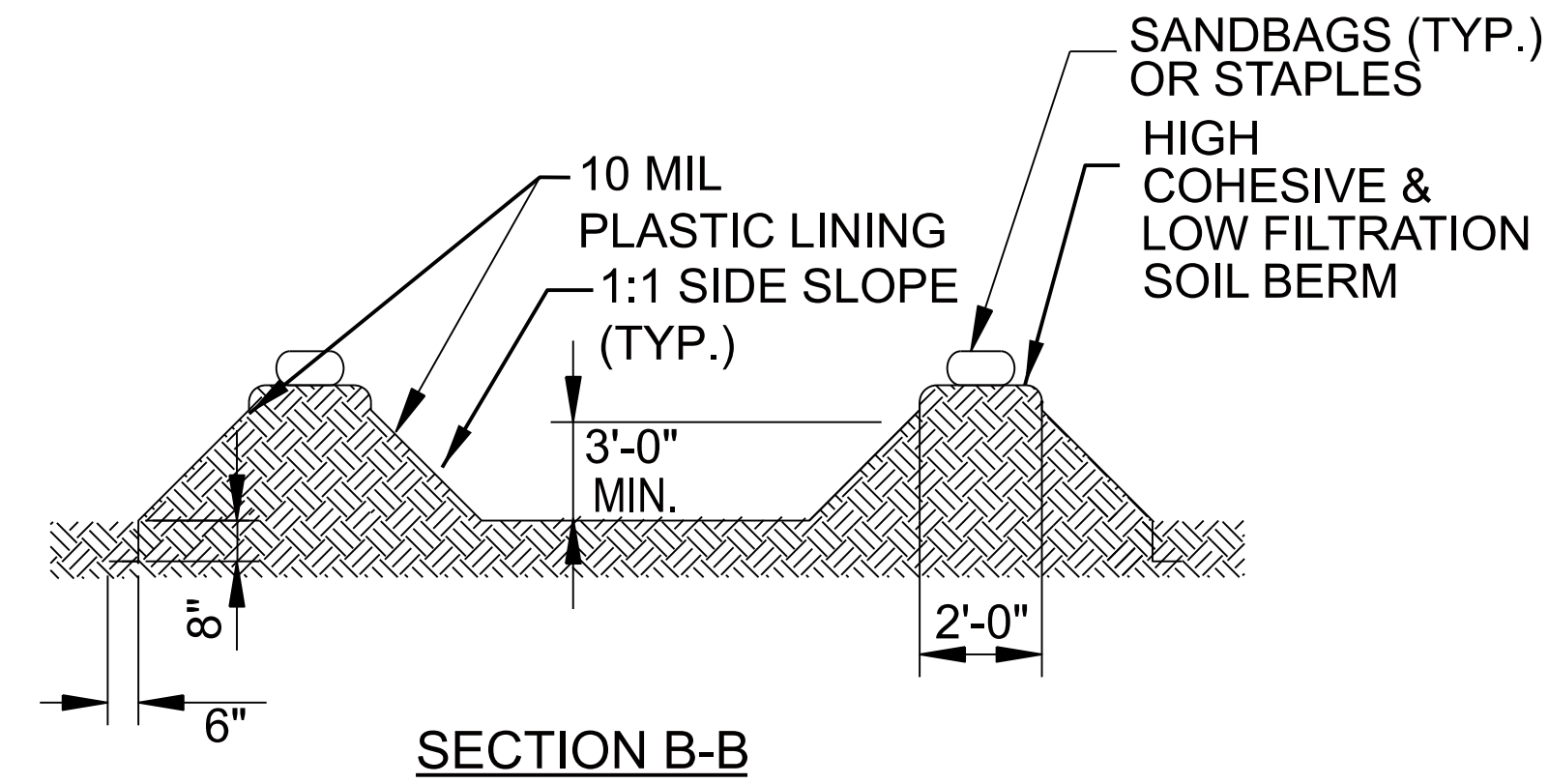
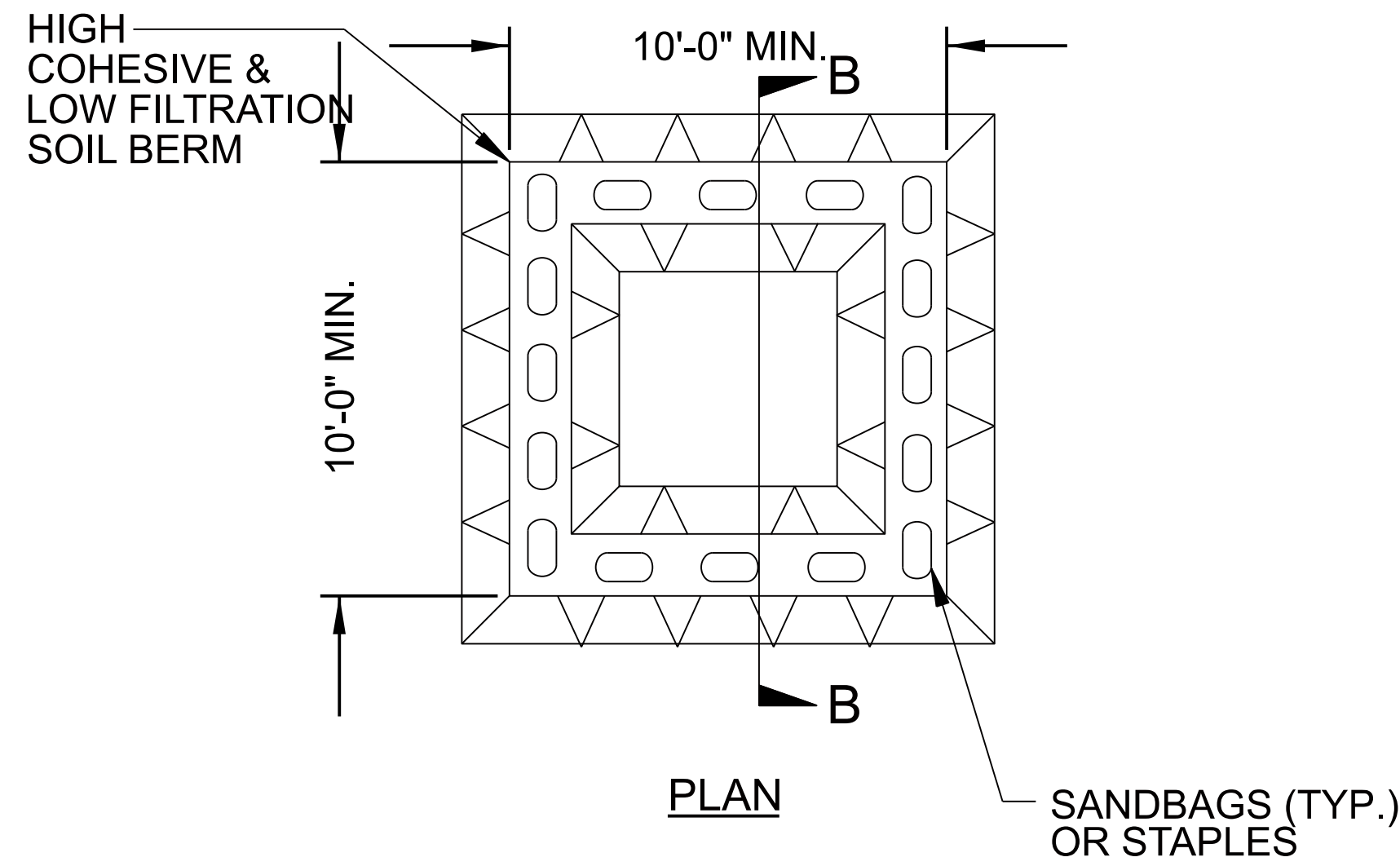
ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER

PROJECT REFERENCE NO.	SHEET NO.
<i>BP12-R029</i>	<i>EC-2A</i>
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



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.

SOIL STABILIZATION SUMMARY SHEET

DITCH MATTING (STRAW) FOR EROSION CONTROL

SLOPE MATTING (STRAW) FOR EROSION CONTROL

[illegible]

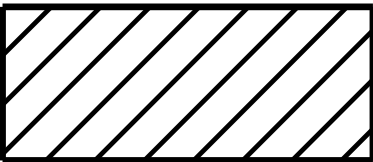
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

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 OR FLATTER	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

PROJECT REFERENCE NO.	SHEET NO.
BPI2-R029	EC-04/CONST.04
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

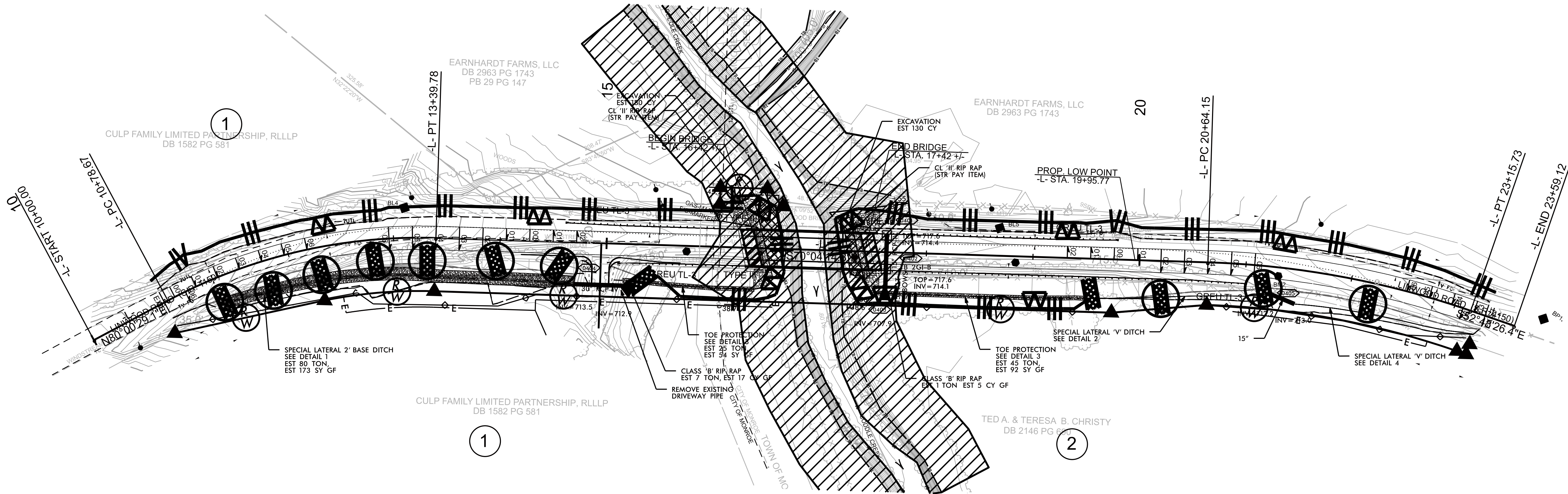
NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B
AND TEMPORARY ROCK SILT CHECKS TYPE - A AT
DRAINAGE OUTLETS.



ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

NAD 83/
NSRS 2007

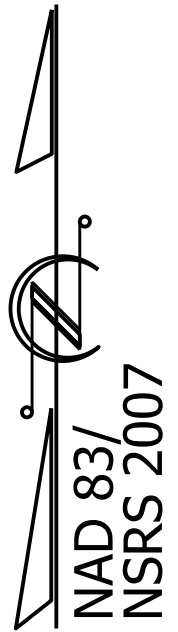
CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 04



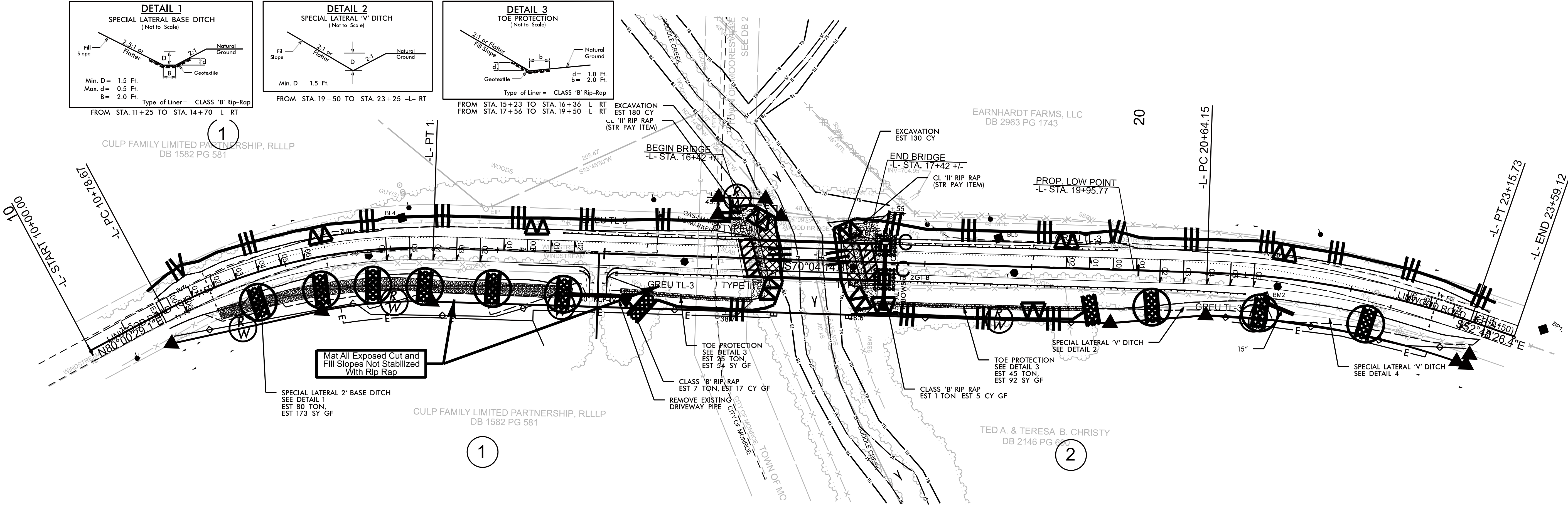
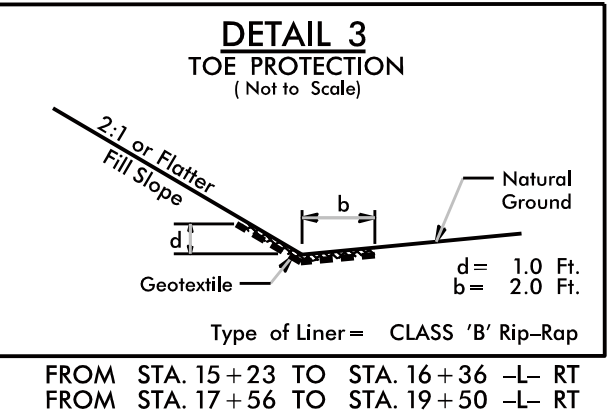
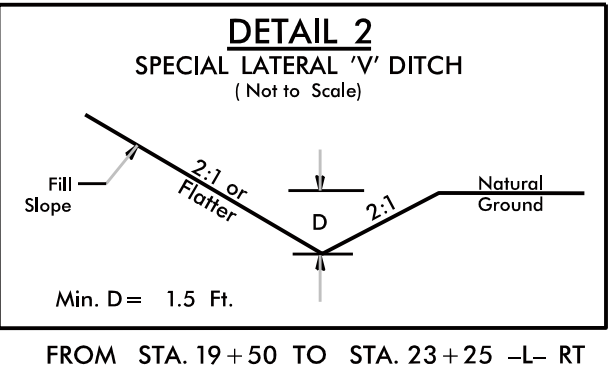
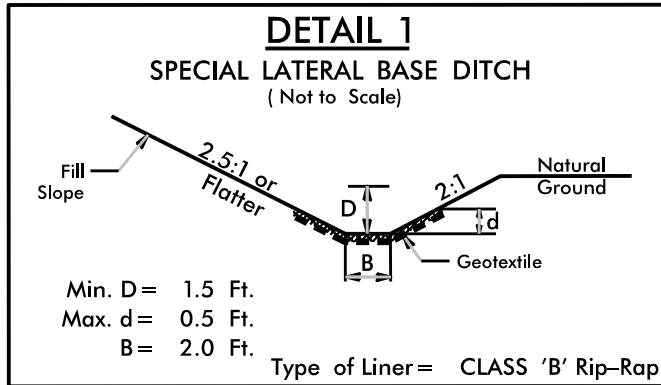
PROJECT REFERENCE NO.	SHEET NO.
BPI2-R029	EC-05/CONST.04
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Place Matting for Erosion Control
on Slope as Work Allows.
Sta. 11+25 to Sta. 14+70
Sta. 15+23 to Sta. 16+36
Sta. 17+56 to Sta. 19+50

Use Coir Fiber Matting on
Excavated Floodplain
as Work Allows.



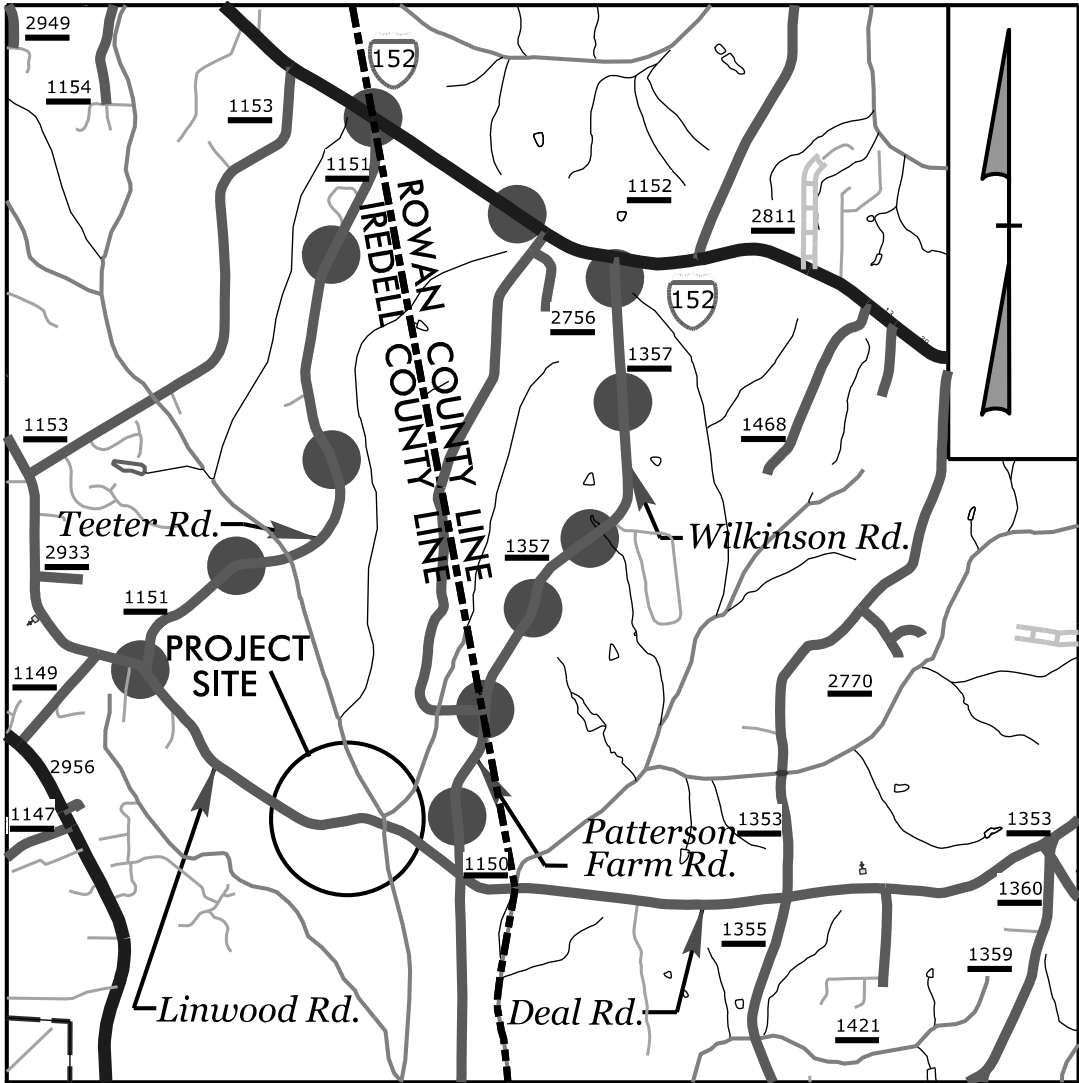
FINAL GRADING
EROSION CONTROL FOR
CONSTRUCTION SHEET 04



09/08/99

TIP PROJECT: BP12.R029

CONTRACT: _____



VICINITY MAP (NTS)

●—●—● OFFSITE DETOUR ROUTE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

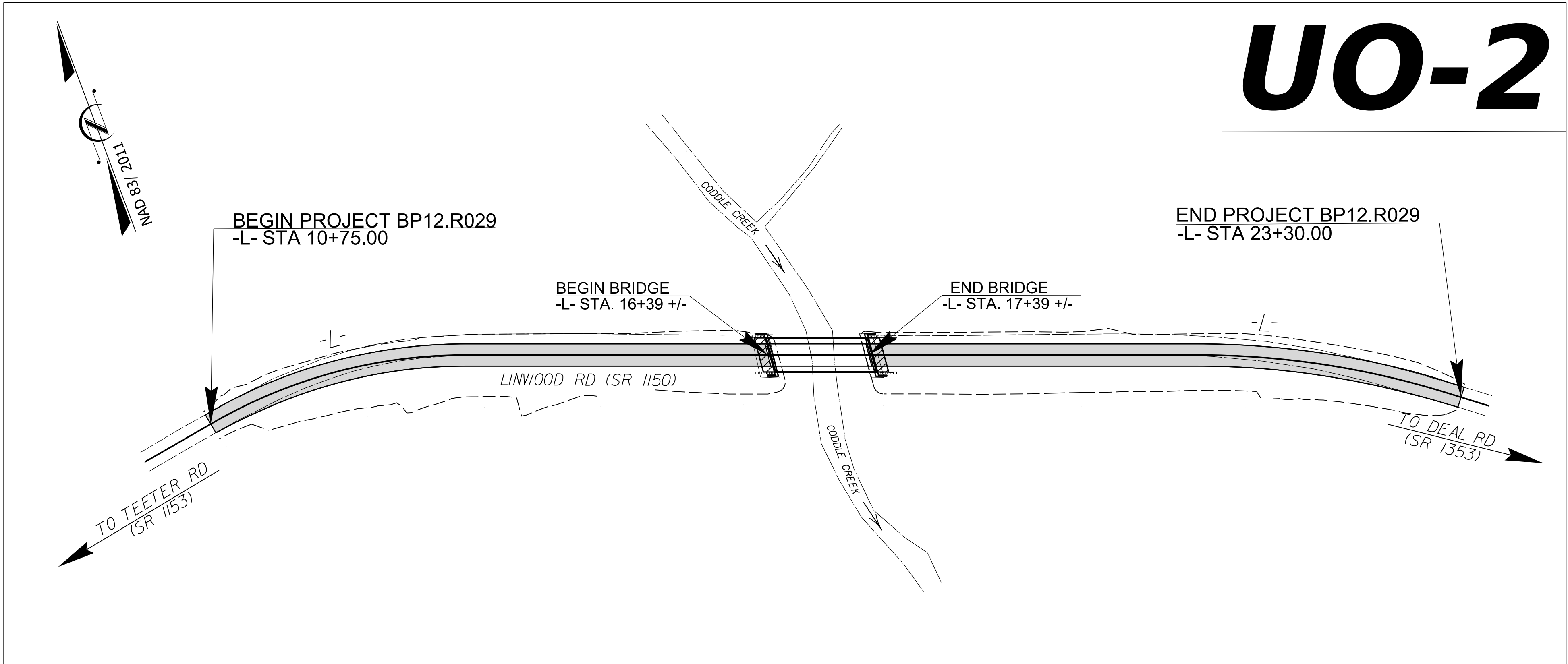
UTILITIES BY OTHERS PLANS
IREDELL COUNTY

LOCATION: *REPLACE BRIDGE NO. 32 ON SR 1150
(LINWOOD ROAD) OVER CODDLE CREEK*

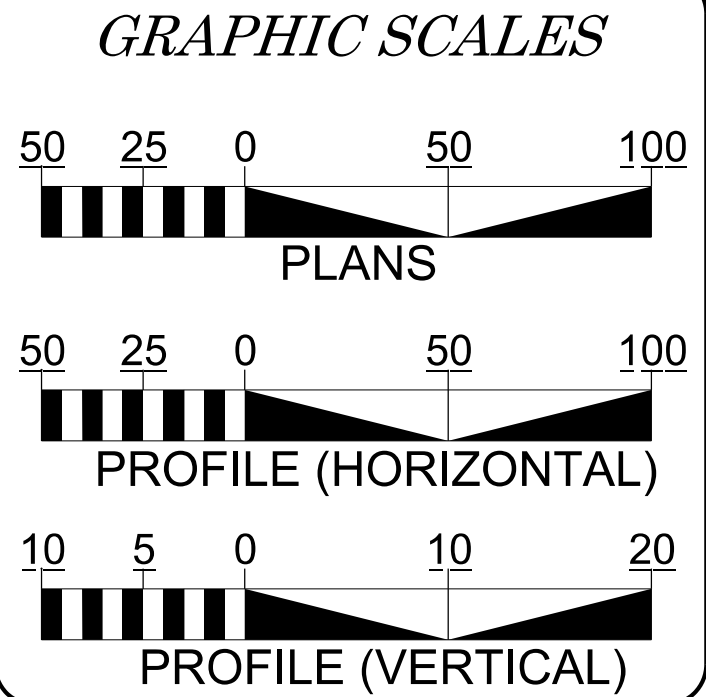
TYPE OF WORK: *RELOCATION OF AERIAL POWER, AERIAL/BURIED
COMMUNICATION, & GAS*

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.
N.C.	BP12.R029	UO-01
NOTE: ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR PROPOSED UTILITY WORK SHOWN ON THIS SHEET.		

UO-2



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



INDEX OF SHEETS

<u>SHEET NO.:</u>	<u>DESCRIPTION:</u>
UO-1	TITLE SHEET
UO-2	UBO PLAN SHEET

UTILITY OWNERS WITHIN LIMITS

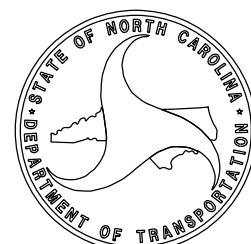
- (A) POWER (DISTRIBUTION) - ENERGYUNITED
- (B) GAS - CITY OF MONROE
- (C) COMMUNICATION - WINDSTREAM
- (D) COMMUNICATION - CITY OF MONROE FIBER



KCI Associates of N.C., P.A.
4800 Falls of Neuse Road, Suite 200
Raleigh, NC 27609
Phone (919) 783-9214
Fax (919) 783-9266

JOHN M. FAISON
PROJECT UTILITY COORDINATOR

DANIEL C. ALLEN
PROJECT UTILITY DESIGNER

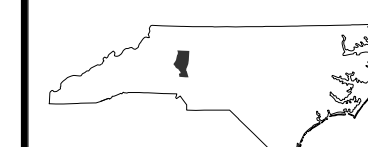


DIVISION OF HIGHWAYS
1000 Birch Ridge Dr.
Raleigh NC, 27610

DANNY POWELL
DIVISION UTILITY COORDINATOR

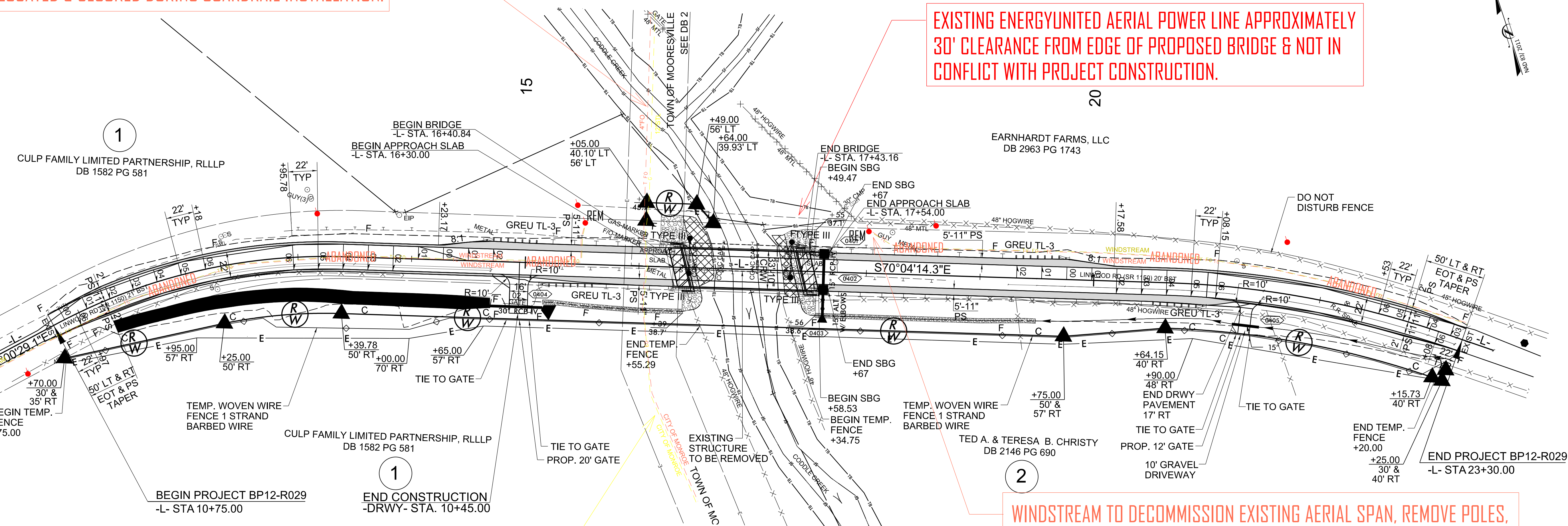
WARREN ANDERSON
DIVISION UTILITY ENGINEER

JOSHUA B. WHITE, PE
DIVISION BRIDGE PROJECT ENGINEER



EXISTING CITY OF MONROE BURIED FIBER CABLE IN
4" CONDUIT AT APPROXIMATELY 10-12' DEPTH TO BE
LOCATED & SECURED DURING GUARDRAIL INSTALLATION.

EXISTING ENERGYUNITED AERIAL POWER LINE APPROXIMATELY
30' CLEARANCE FROM EDGE OF PROPOSED BRIDGE & NOT IN
CONFLICT WITH PROJECT CONSTRUCTION.



EXISTING CITY OF MONROE 12" STEEL GAS TRANSMISSION MAIN
AT APPROXIMATE DEPTH OF 22' BASED ON CITY RECORDS
CONFIRMED NO CONFLICT WITH PROJECT EQUIPMENT STAGING.

WINDSTREAM TO DECOMMISSION EXISTING AERIAL SPAN, REMOVE POLES,
& ABANDON BURIED CABLE NOT CURRENTLY IN SERVICE.

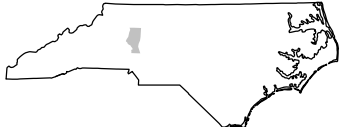
INDEX OF CROSS SECTIONS

<u>ALIGNMENT</u>	<u>STATION TO STATION</u>	<u>SHEET NO.</u>
-L-	STA. 10+50.00 TO STA. 23+50.00	X-2 TO X-18
-DRWY-	STA. 10+00.00 TO STA. 10+75.00	X-19 TO X-20

BP12-R029

X-1

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
IREDELL COUNTY



ROADWAY DESIGN UNIT

PREPARED BY

KCI

KCI ASSOCIATES OF N.C., P.A.
4800 Falls of Neuse Road, Suite 200
Raleigh, NC 27609
Phone (919) 783-9214
NC Firm License No. C-6764

SUNGATE DESIGN GROUP, P.A.

600 JONES FARM ROAD
SUITE 100
RALEIGH, NC 27609
TEL: (919) 850-2100
FAX: (919) 850-2101
WWW.SUNGATEDESIGN.COM

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

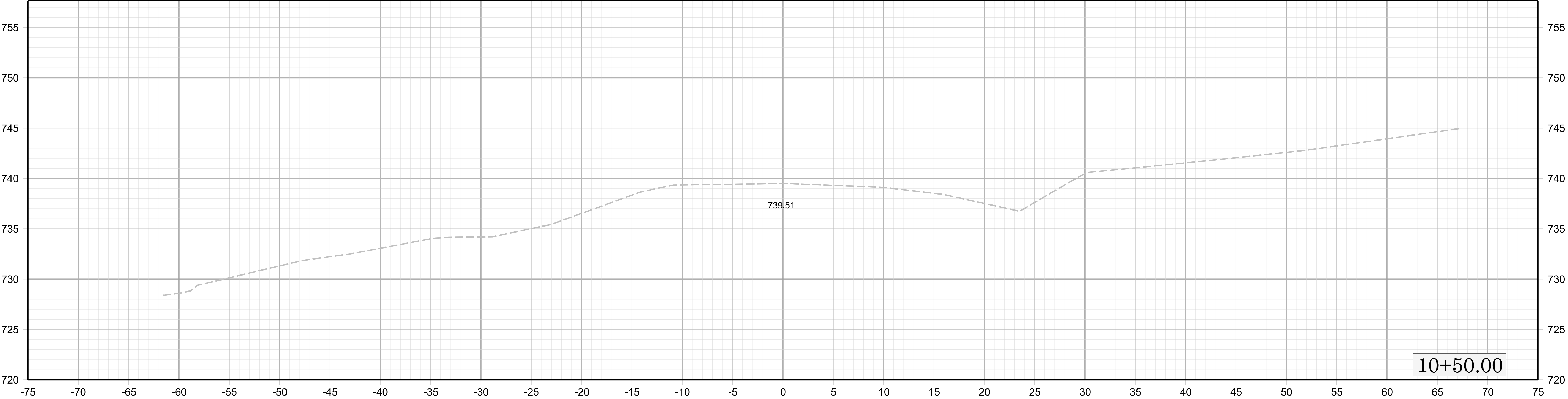
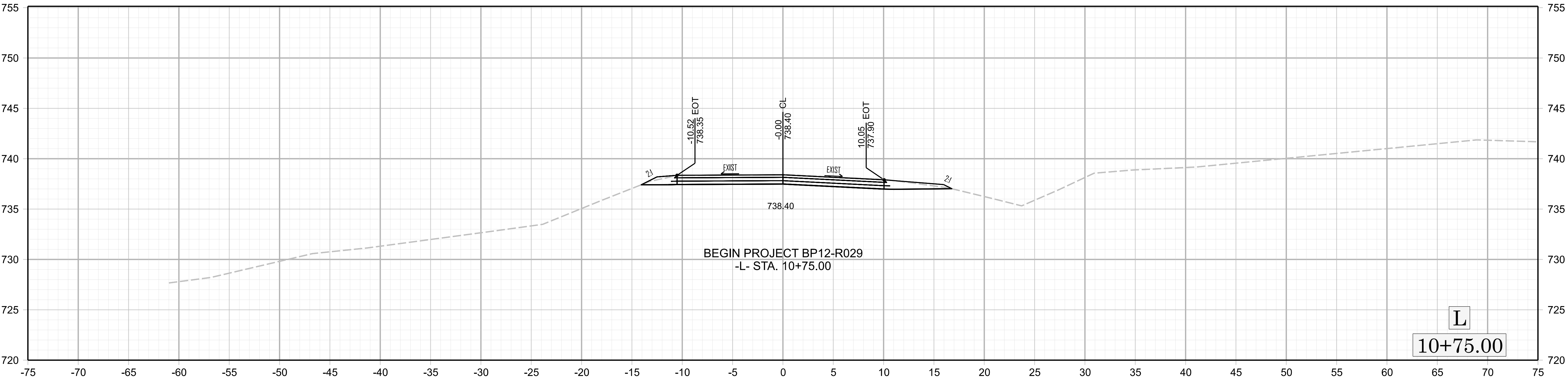
KCI ASSOCIATES OF N.C., P.A.
4800 Falls of Neuse Road, Suite 200
Raleigh, NC 27609
Phone (919) 783-9214
NC Firm License No: C-0764

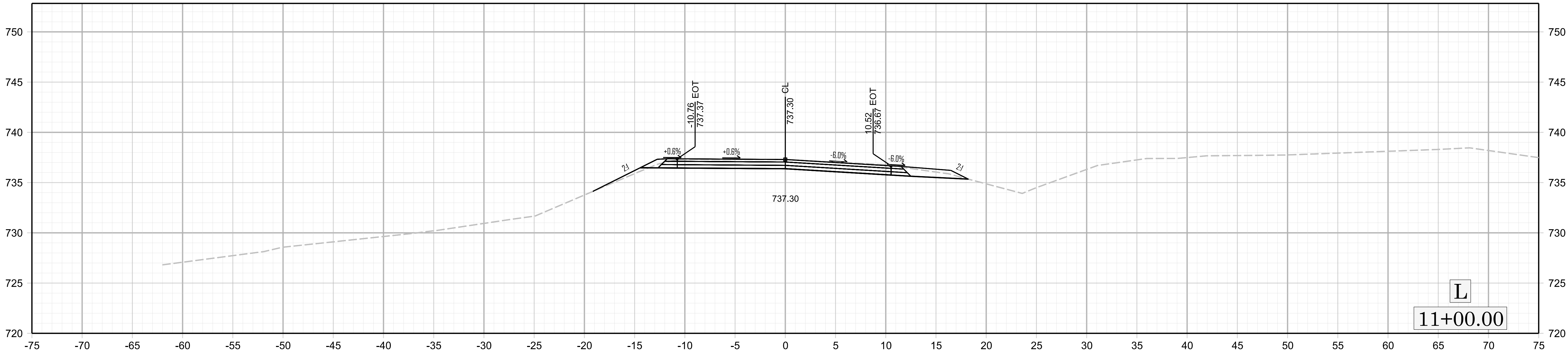
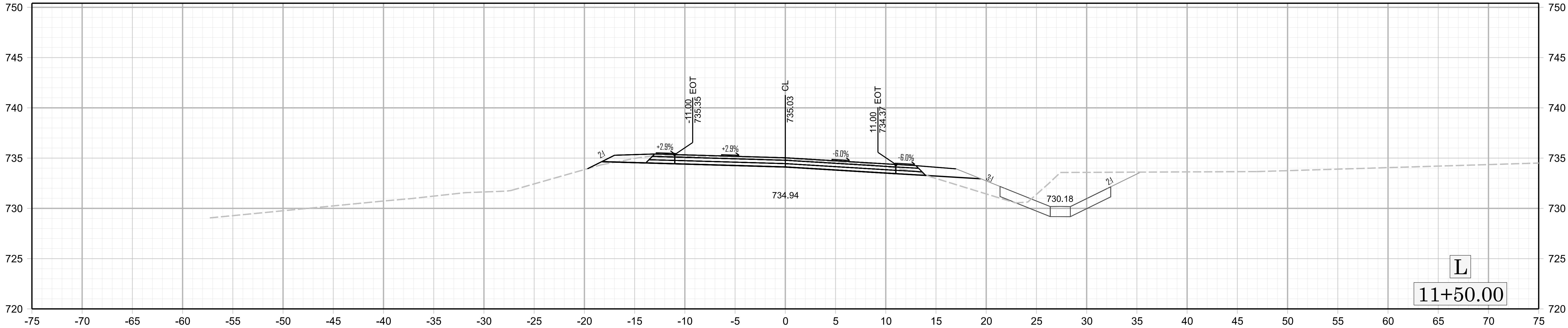


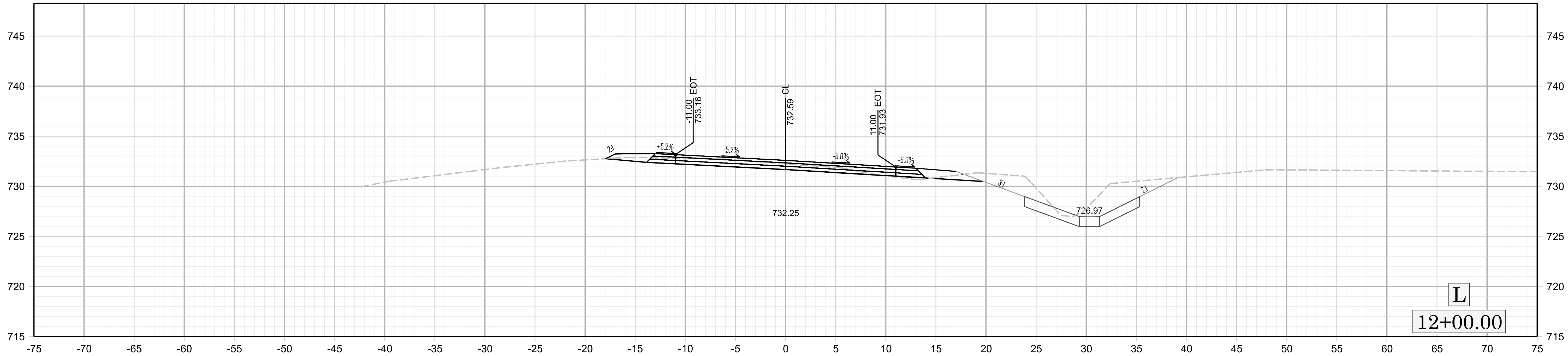
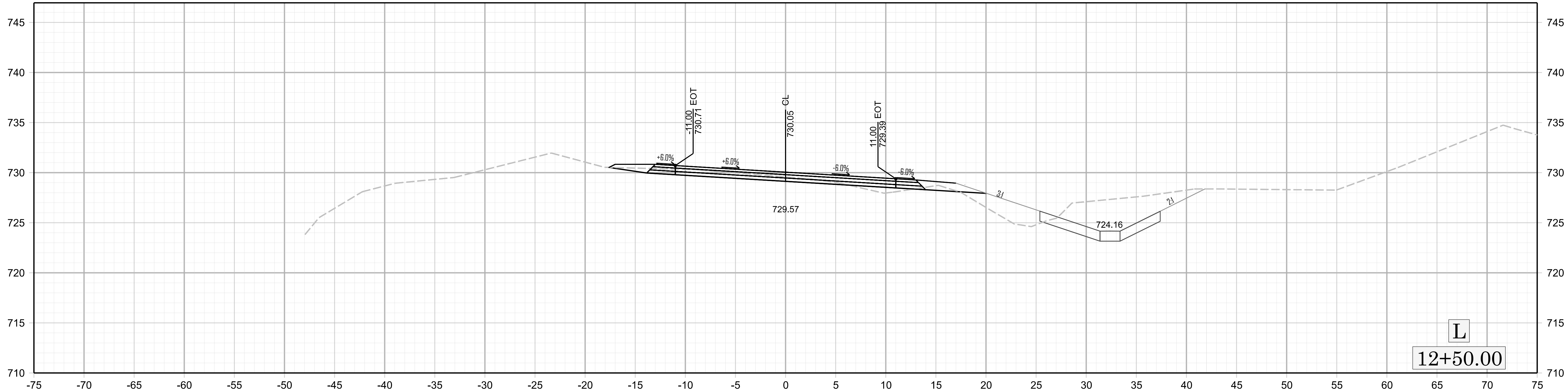
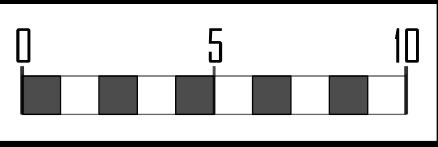
Approximate quantities only. Unclassified excavation, borrow excavation, fine grading, clearing and grubbing, and removal of existing pavement will be paid for at the contract lump sum price for "Grading".

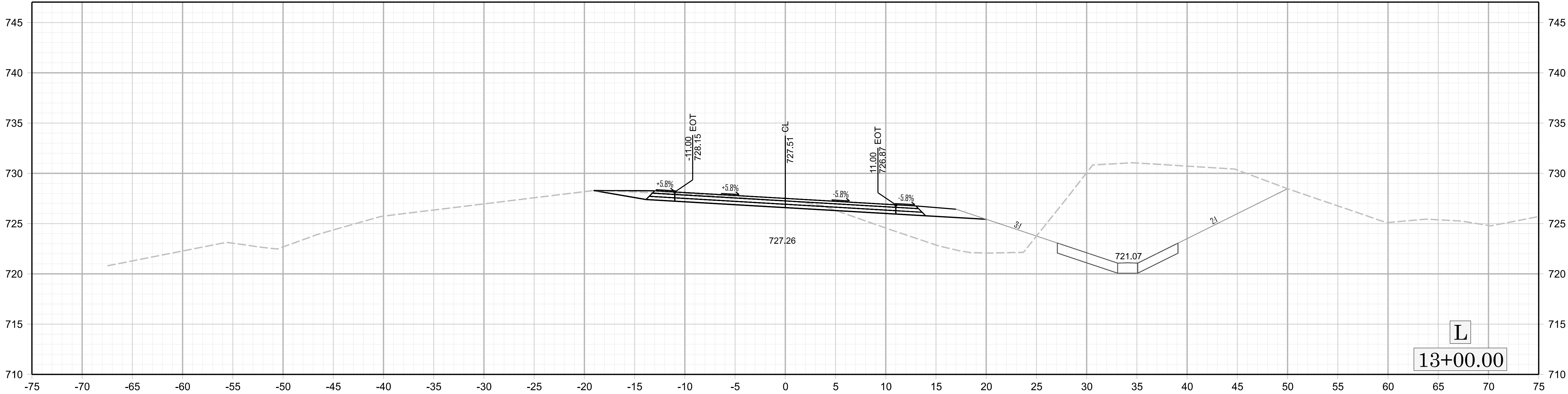
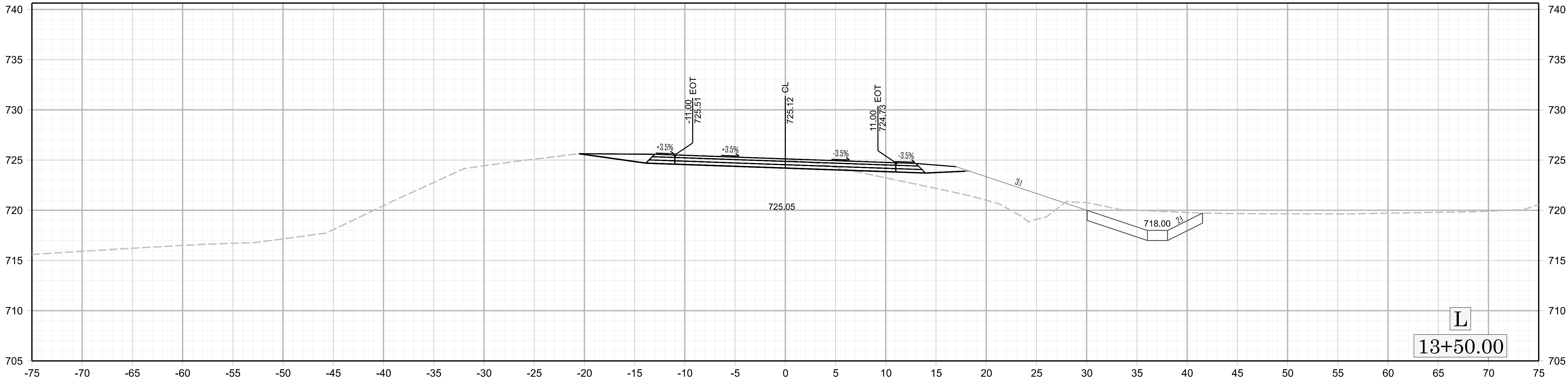
NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT

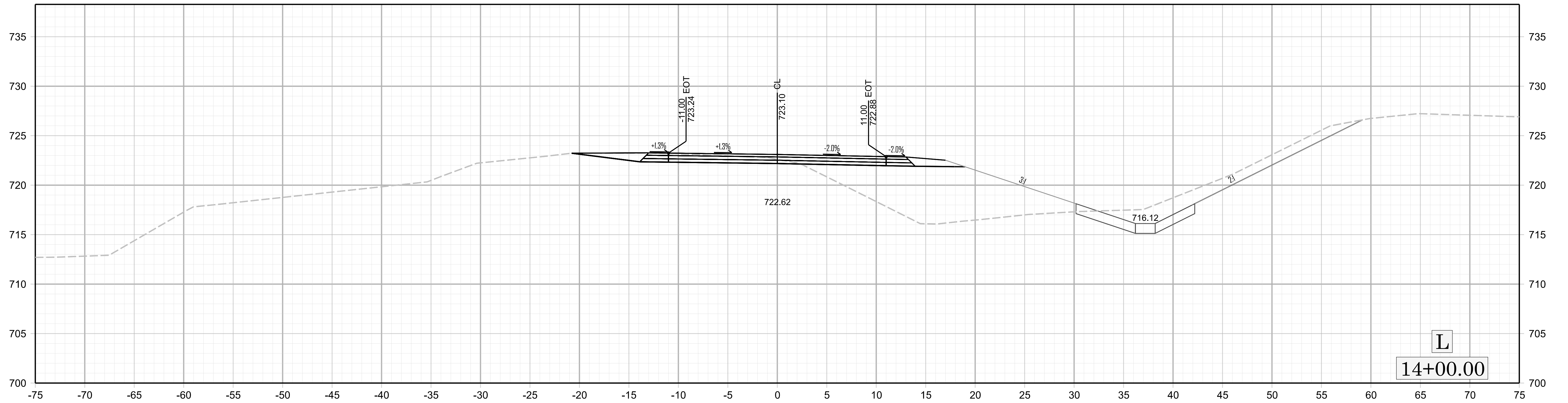
Station	Uncl. Exc.	Embt
L	(cu. yd.)	(cu. yd.)
10+75.00	0	0
11+00.00	23	0
11+50.00	71	9
12+00.00	92	8
12+50.00	91	14
13+00.00	210	55
13+50.00	206	72
14+00.00	93	120
14+50.00	70	177
15+00.00	24	101
15+50.00	5	144
16+00.00	0	294
16+40.84	0	264
Station	Uncl. Exc.	Embt
L	(cu. yd.)	(cu. yd.)
17+43.16	0	0
17+50.00	0	19
18+00.00	0	248
18+50.00	0	285
19+00.00	0	297
19+50.00	0	294
20+00.00	0	257
20+50.00	5	162
21+00.00	16	67
21+50.00	40	20
22+00.00	53	7
22+50.00	49	4
23+00.00	50	4
23+30.00	27	1
Station	Uncl. Exc.	Embt
DRWY	(cu. yd.)	(cu. yd.)
10+11.00	0	0
10+25.00	0	8
10+45.00	3	1

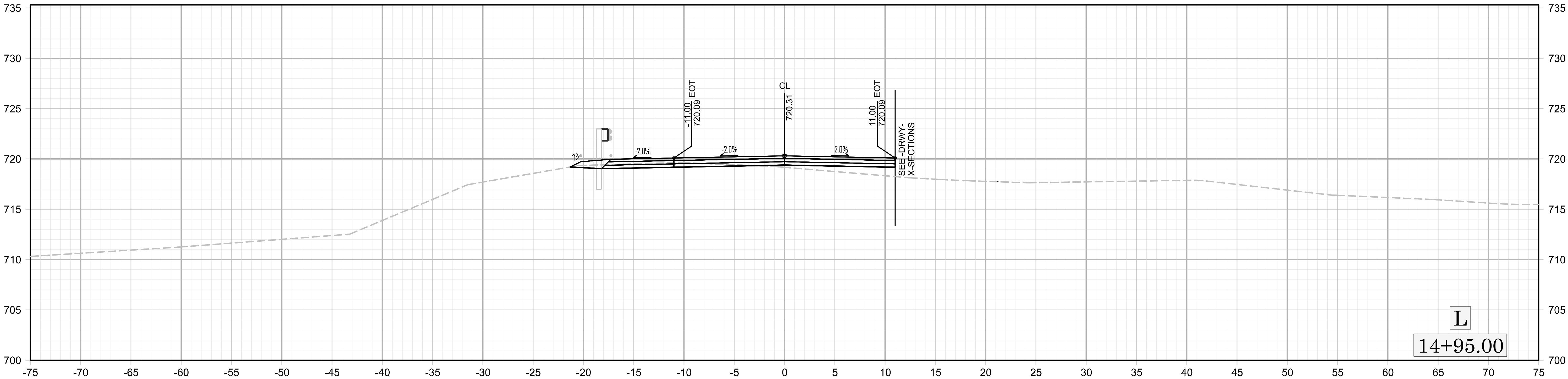
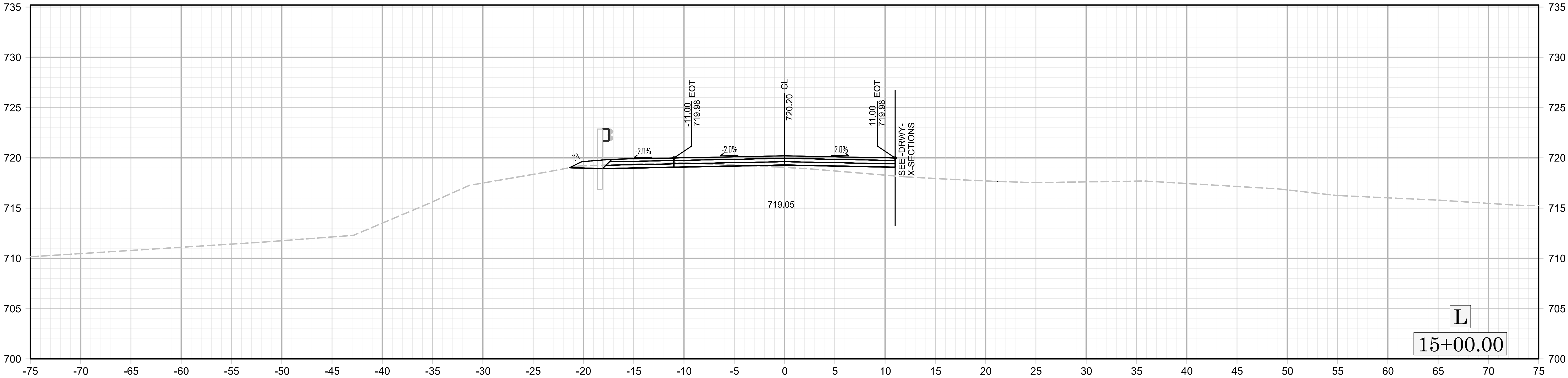


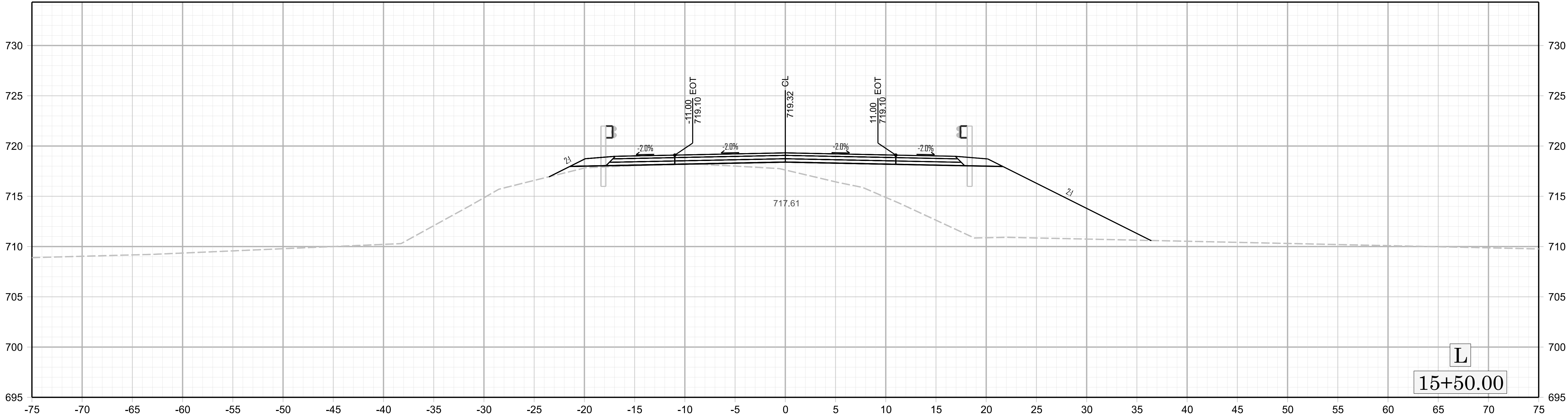
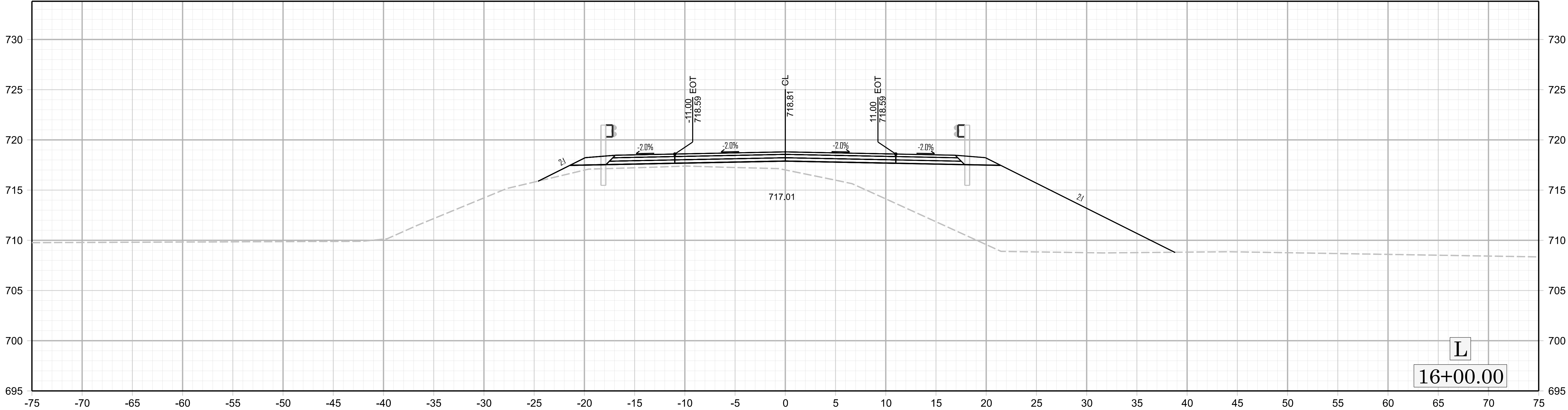


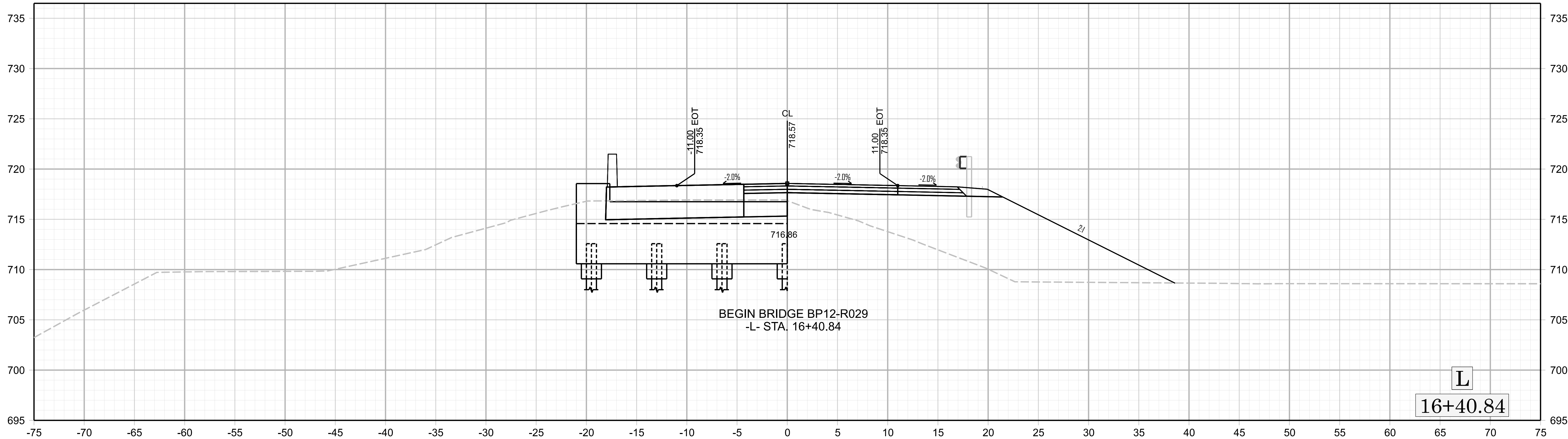
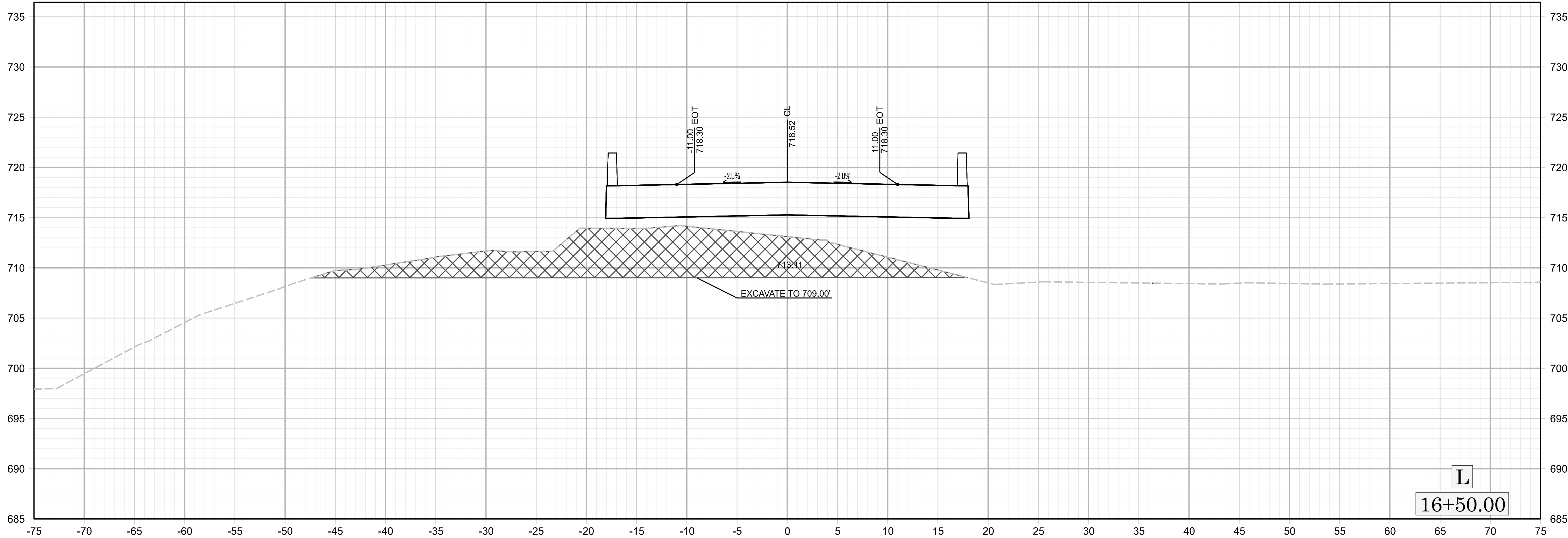


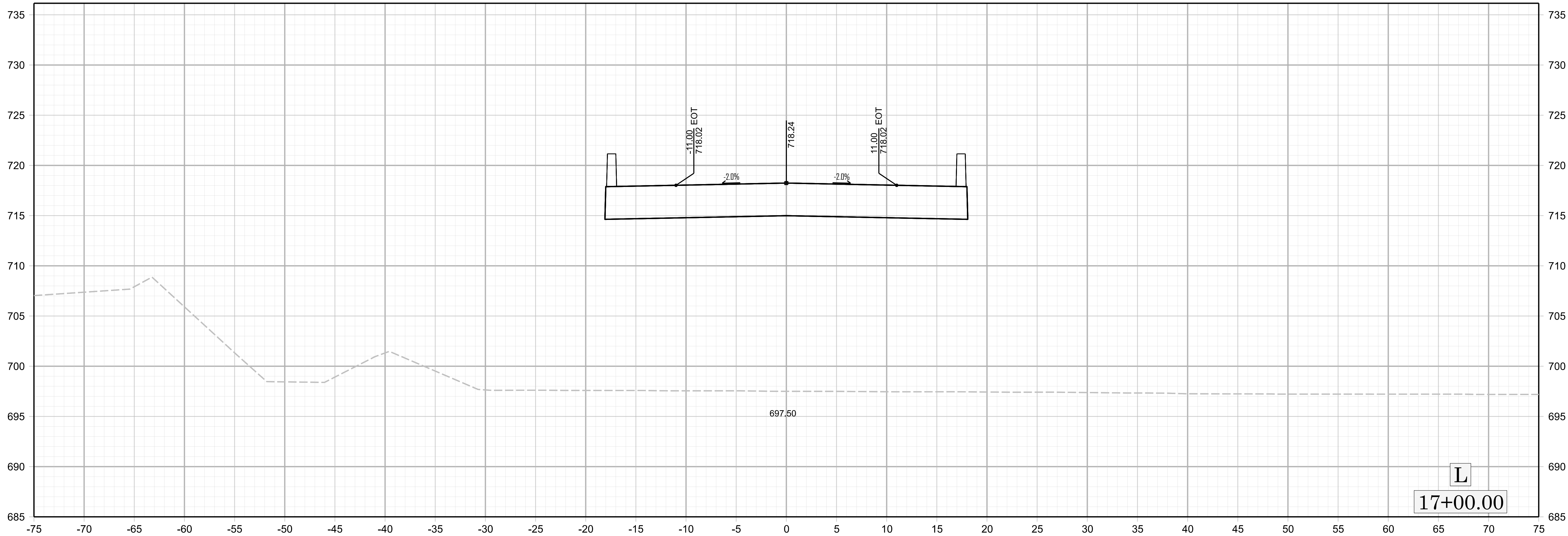
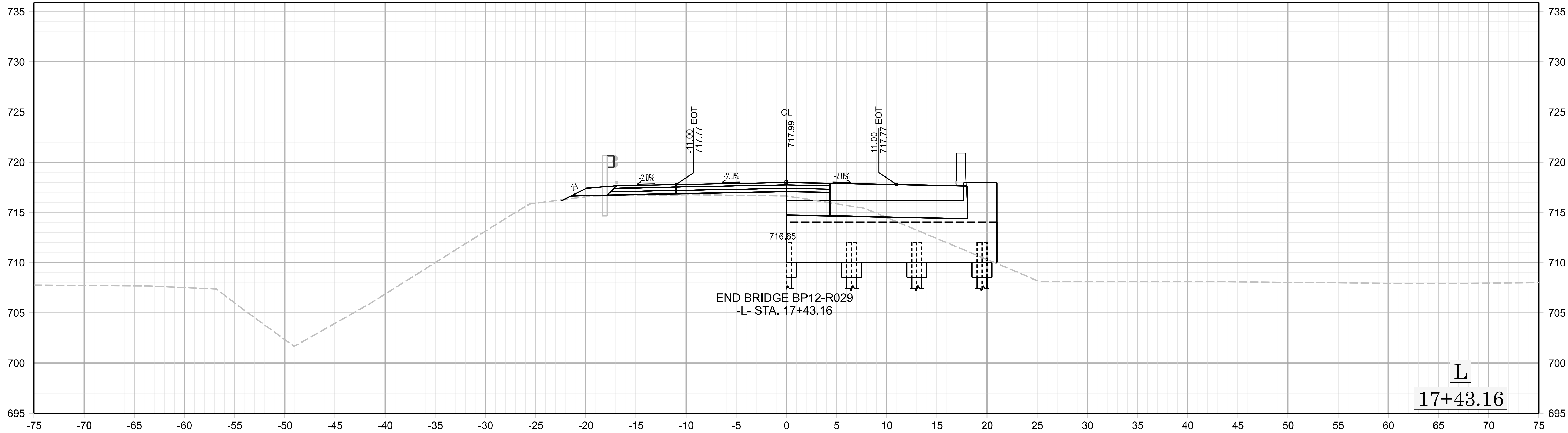
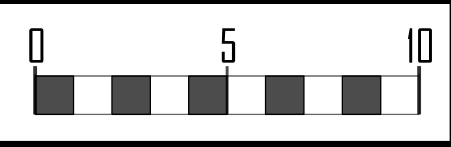


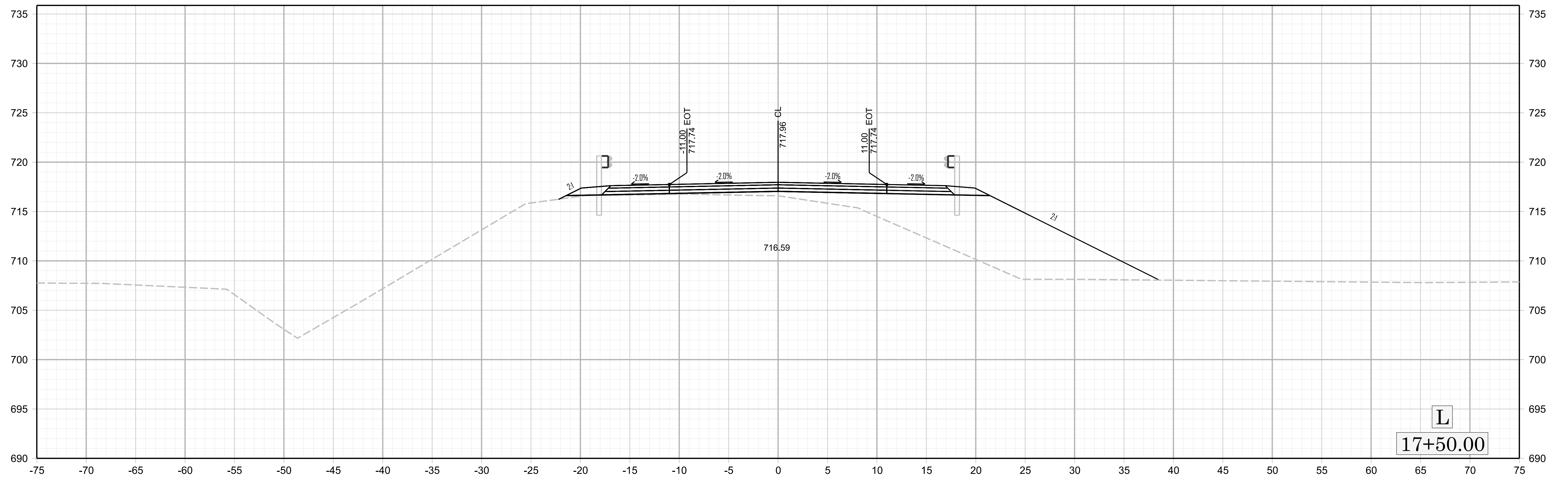


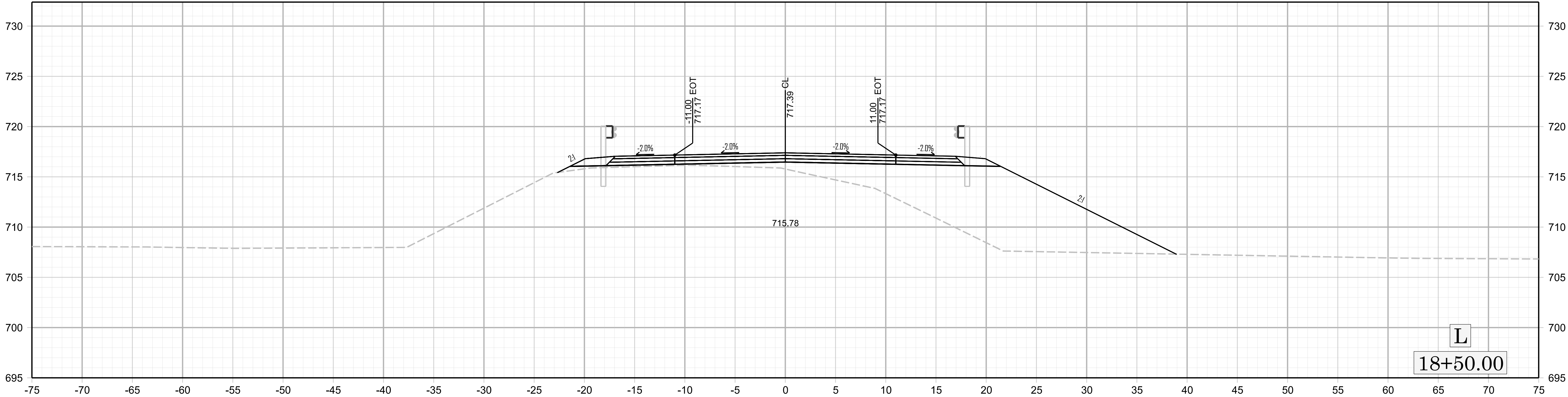
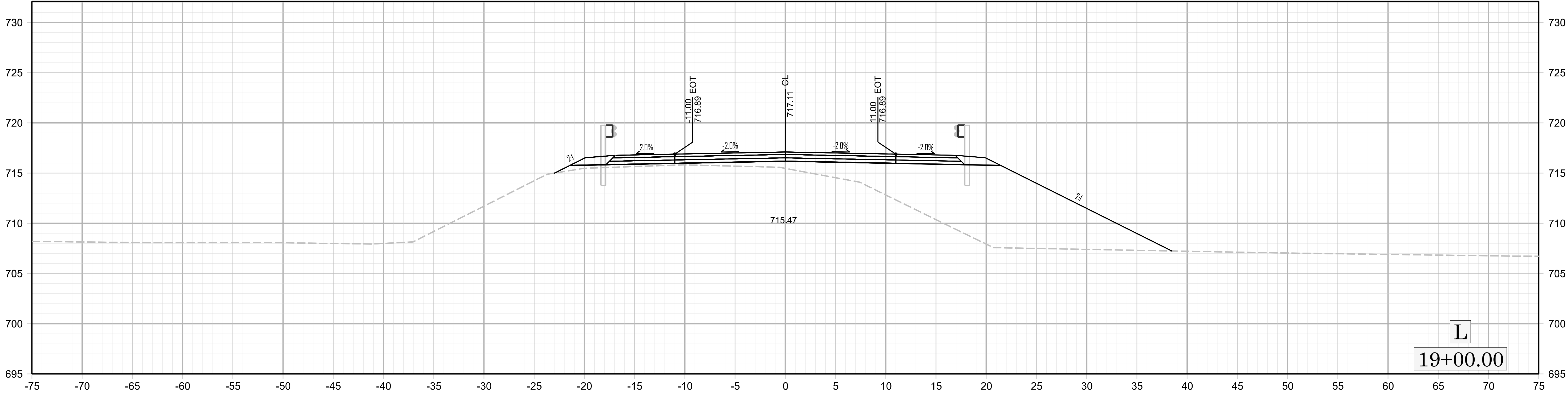


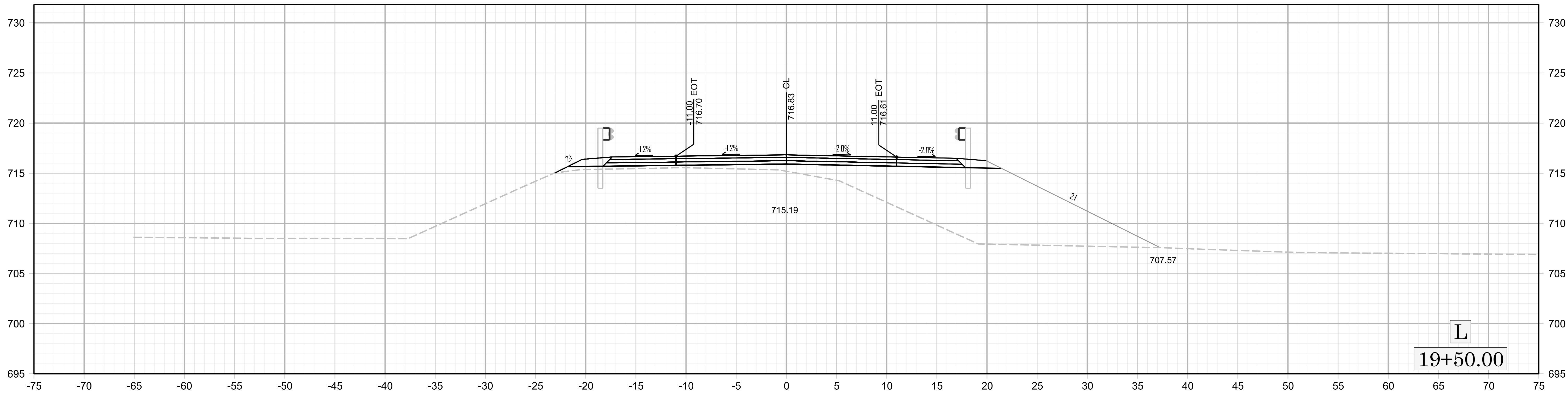
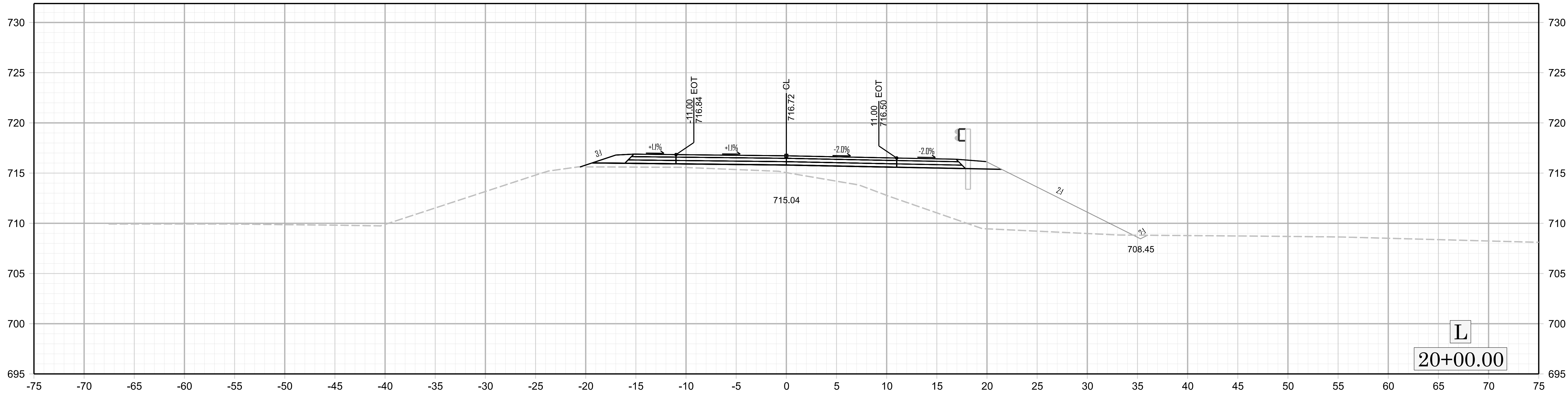


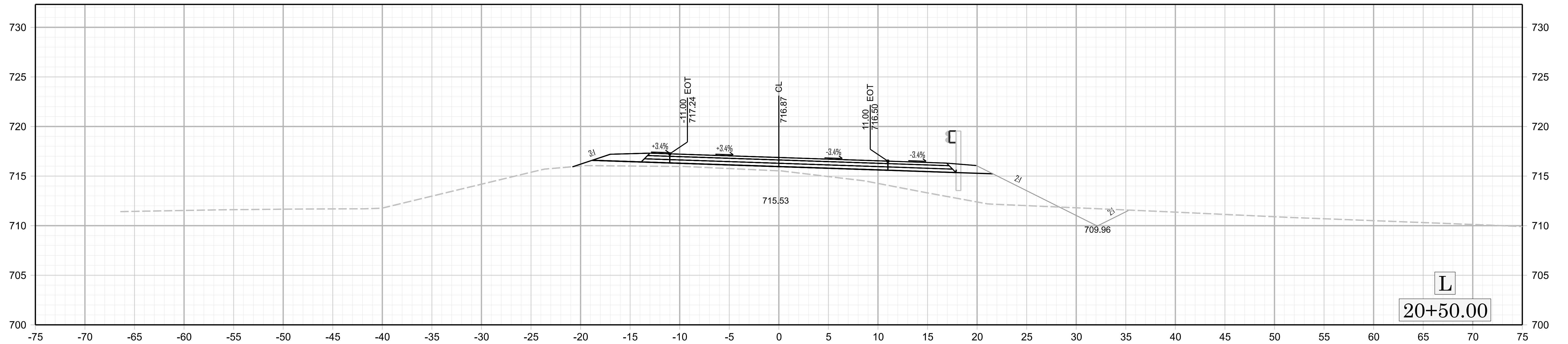


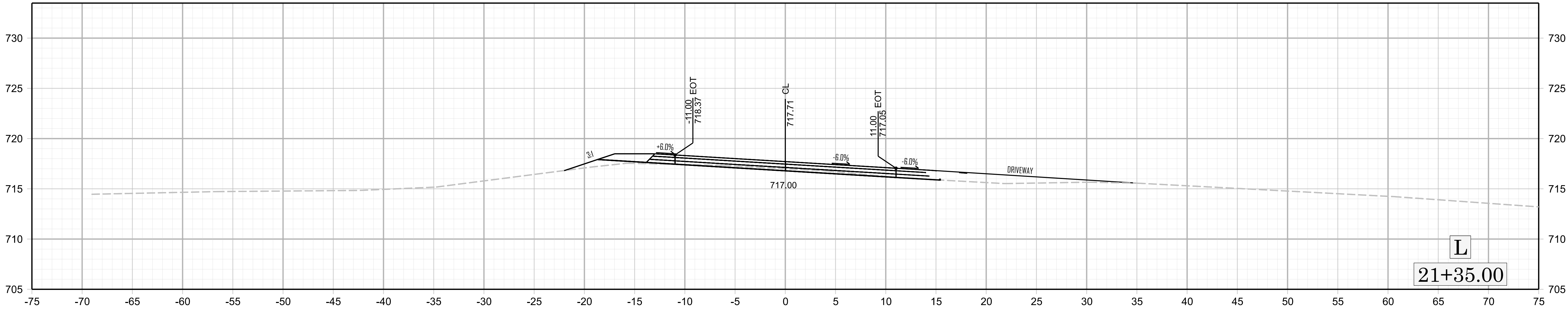
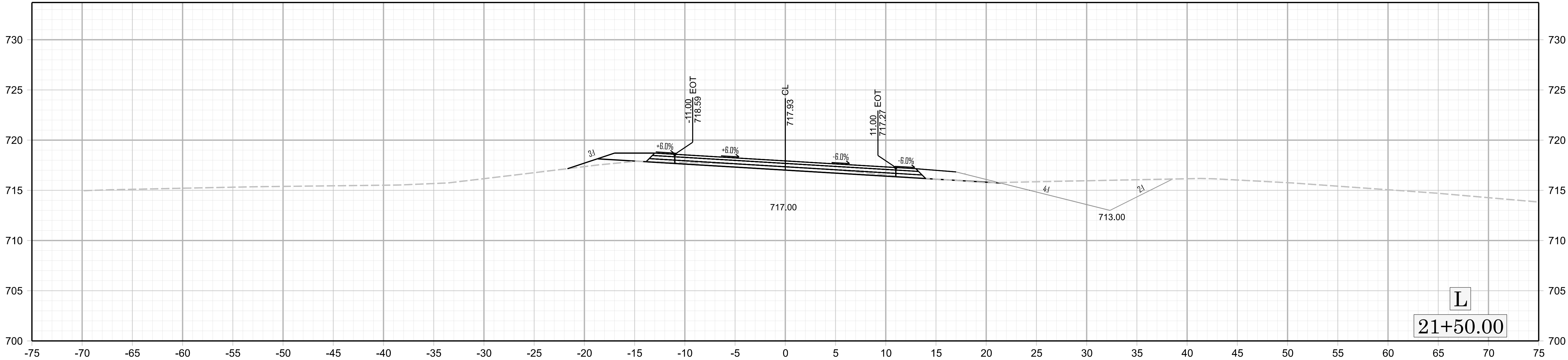


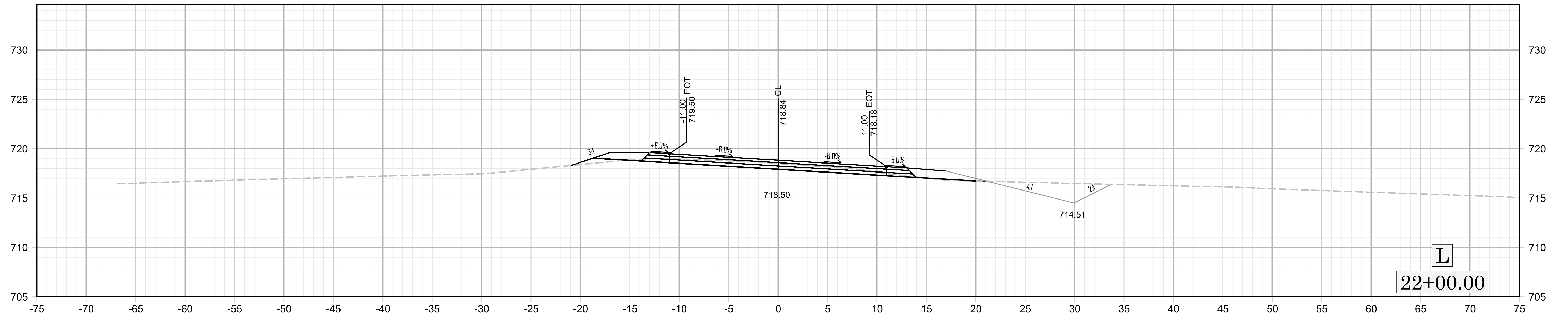


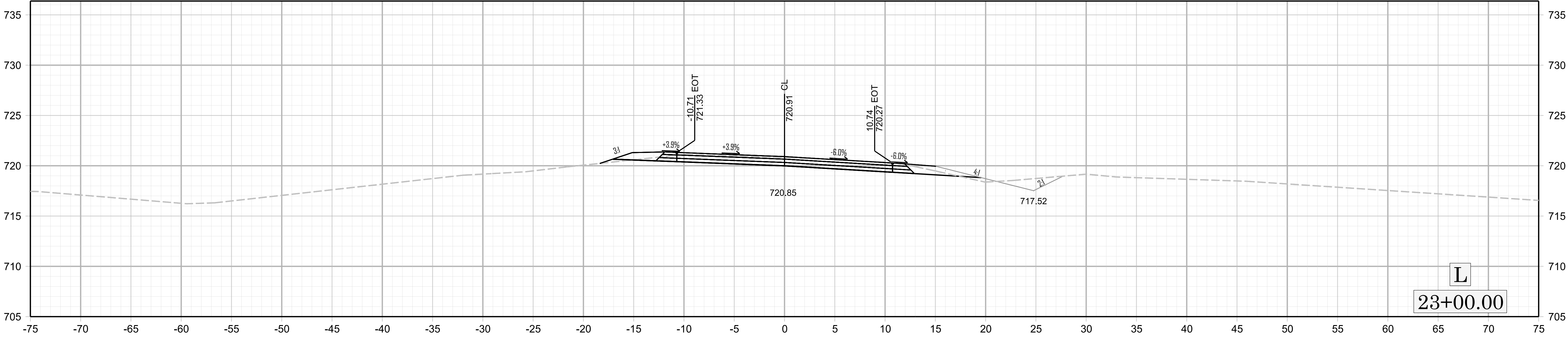
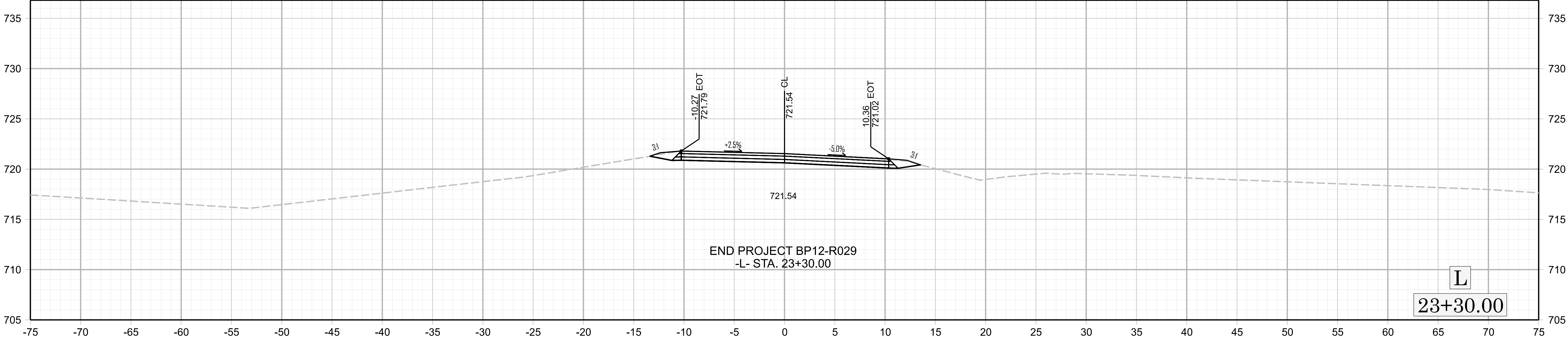


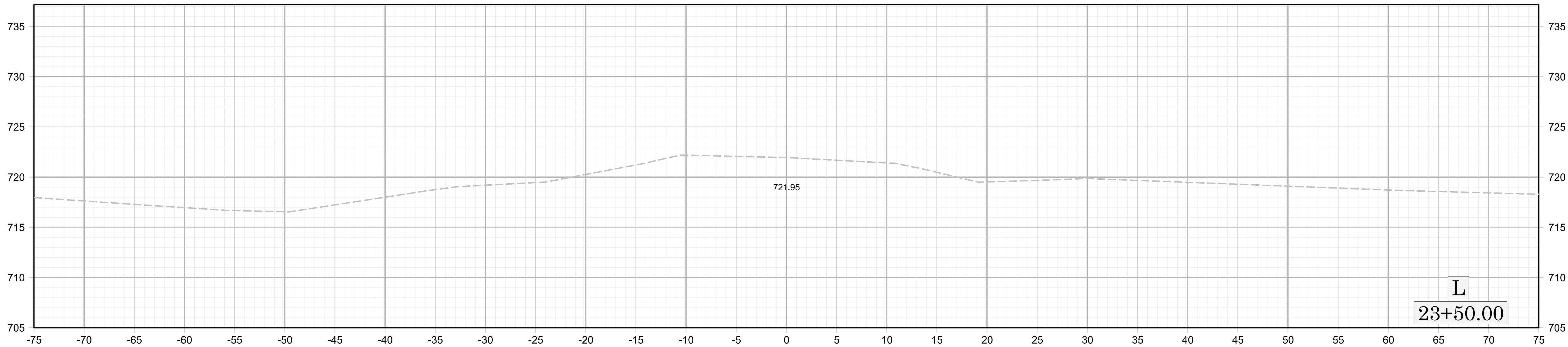


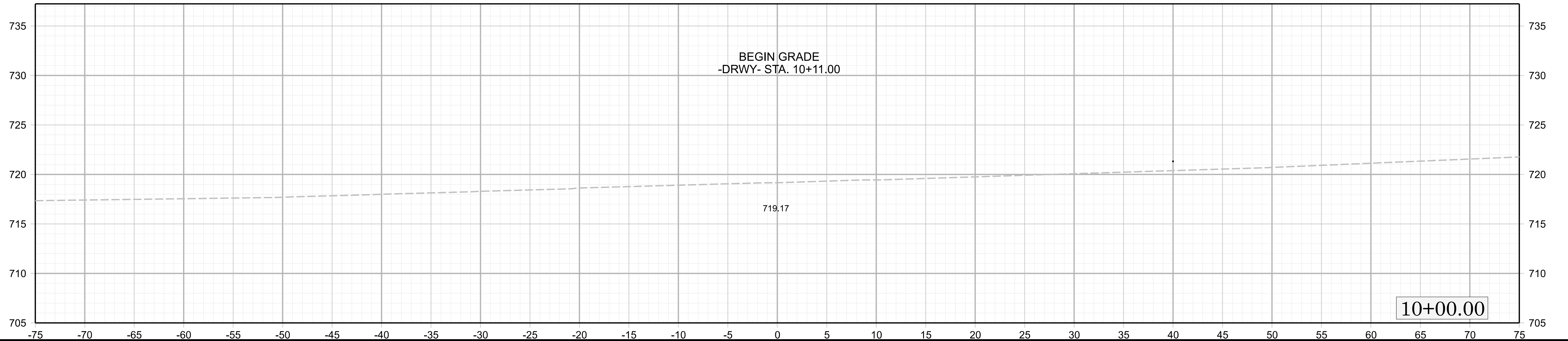


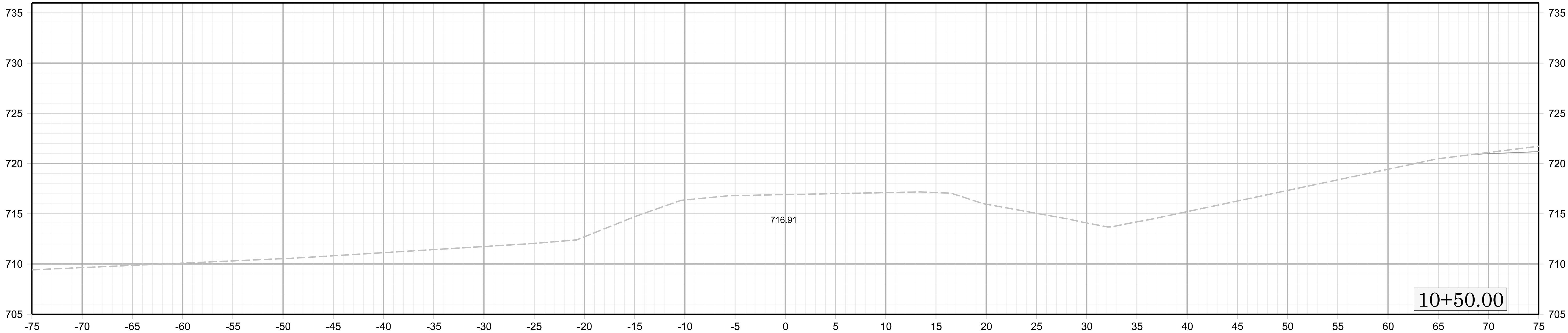
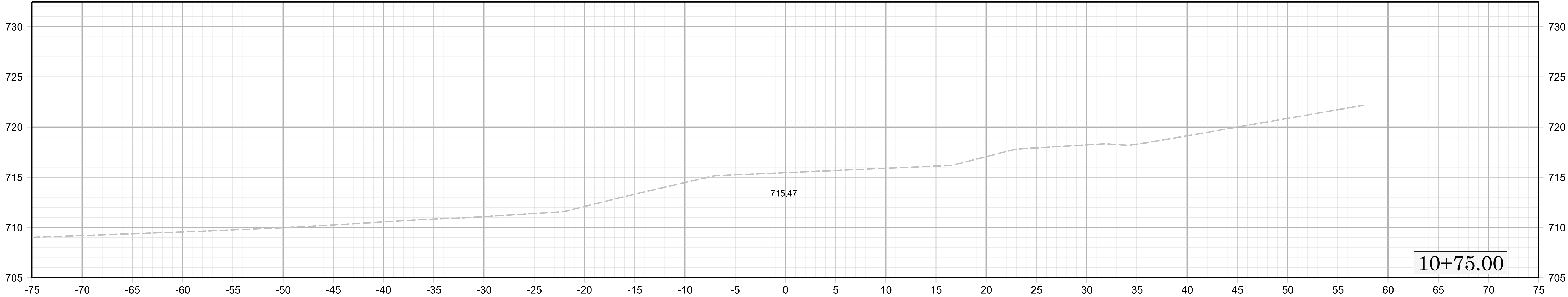










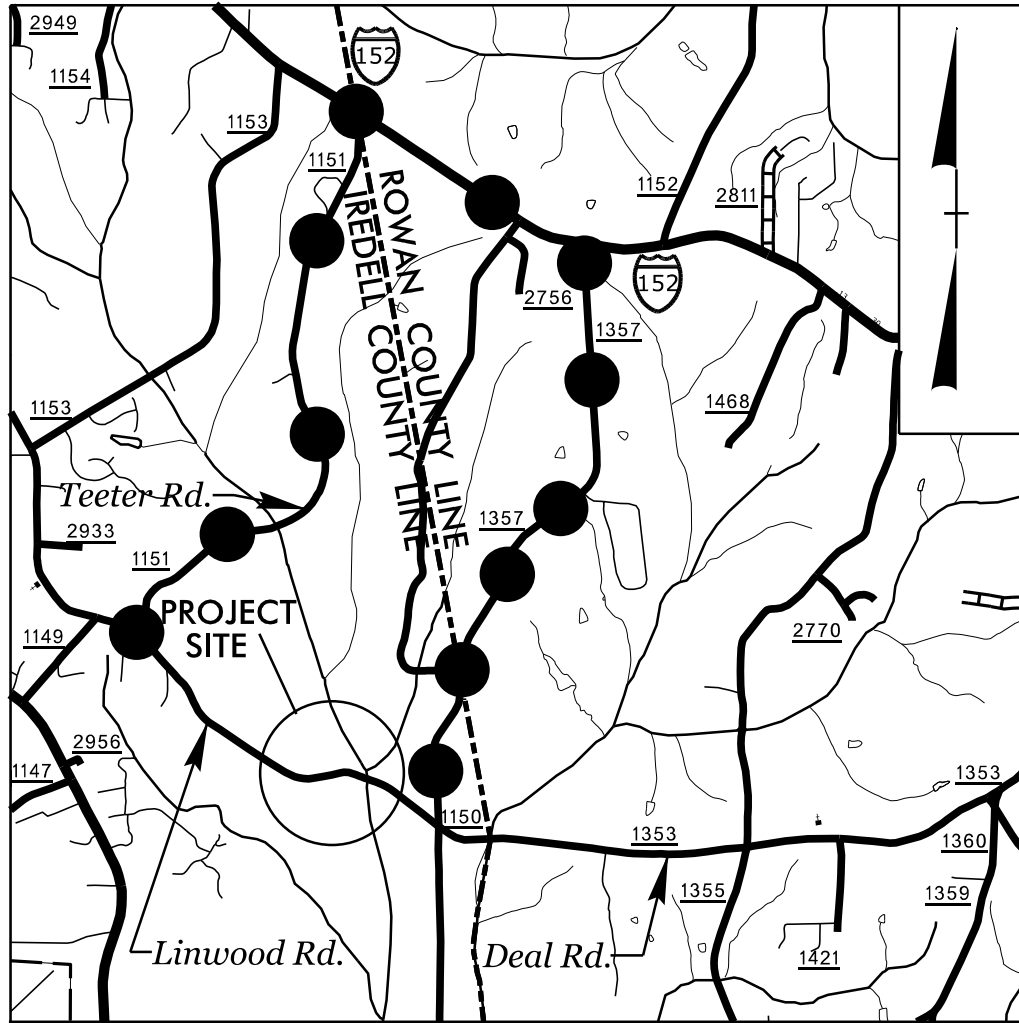


09/08/99

TIP PROJECT: BP12-R029

CONTRACT: DL00355

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



VICINITY MAP (NTS)

● — ● — ● OFFSITE DETOUR ROUTE

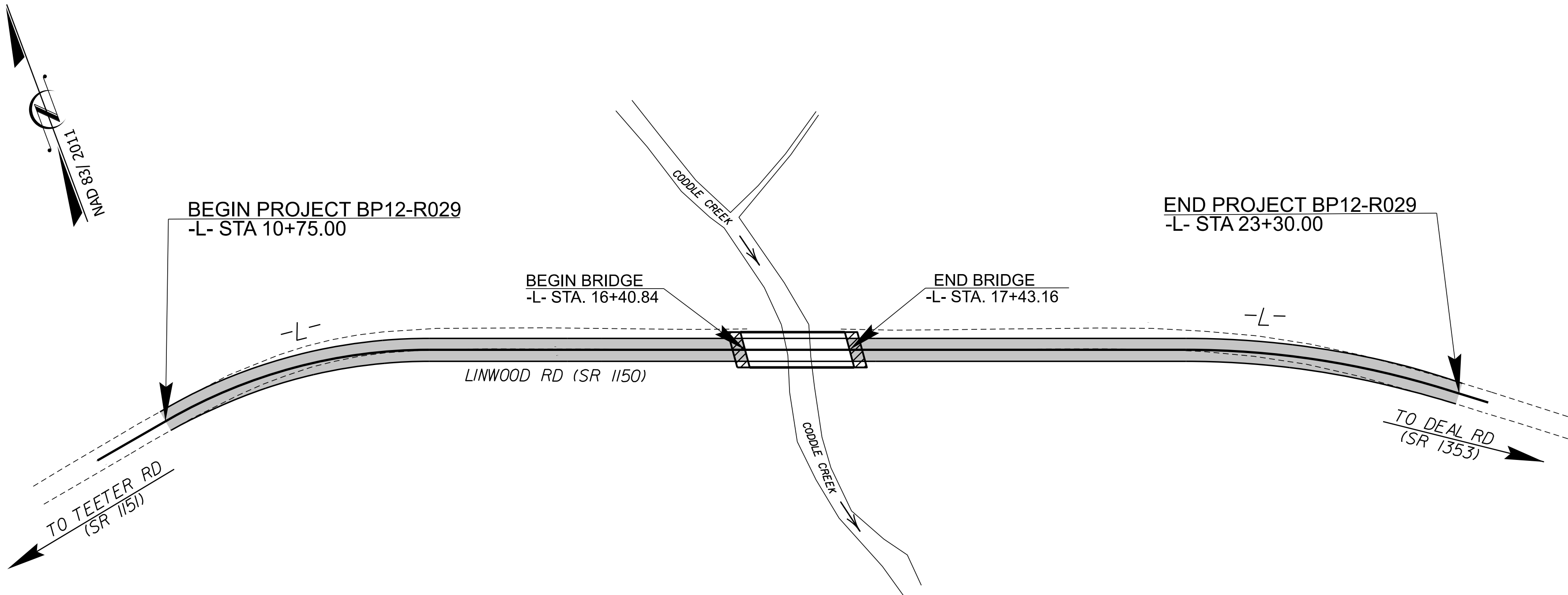
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

IREDELL COUNTY

LOCATION: *REPLACE BRIDGE NO. 32 ON SR 1150
(LINWOOD ROAD) OVER CODDLE CREEK*

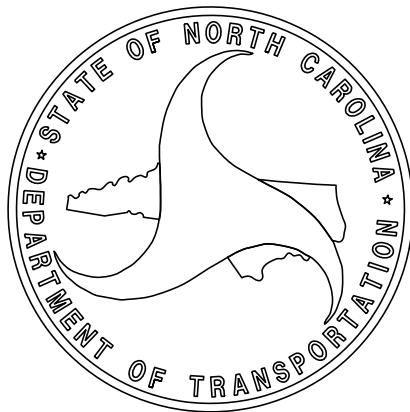
TYPE OF WORK: *GRADING, PAVING, DRAINAGE
AND STRUCTURE*

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP12-R029	11	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
BP12.R029.1	NA	PE	
BP12.R029.2	NA	ROW/UTIL.	
BP12.R029.3	NA	CONST.	
100% PLANS			



STRUCTURE

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



DESIGN DATA
ADT 2022 = 2,500
ADT 2026 = 2,500
T = 6 %
V = 50 MPH
FUNC CLASS =
MINOR COLLECTOR
SUBREGIONAL TIER

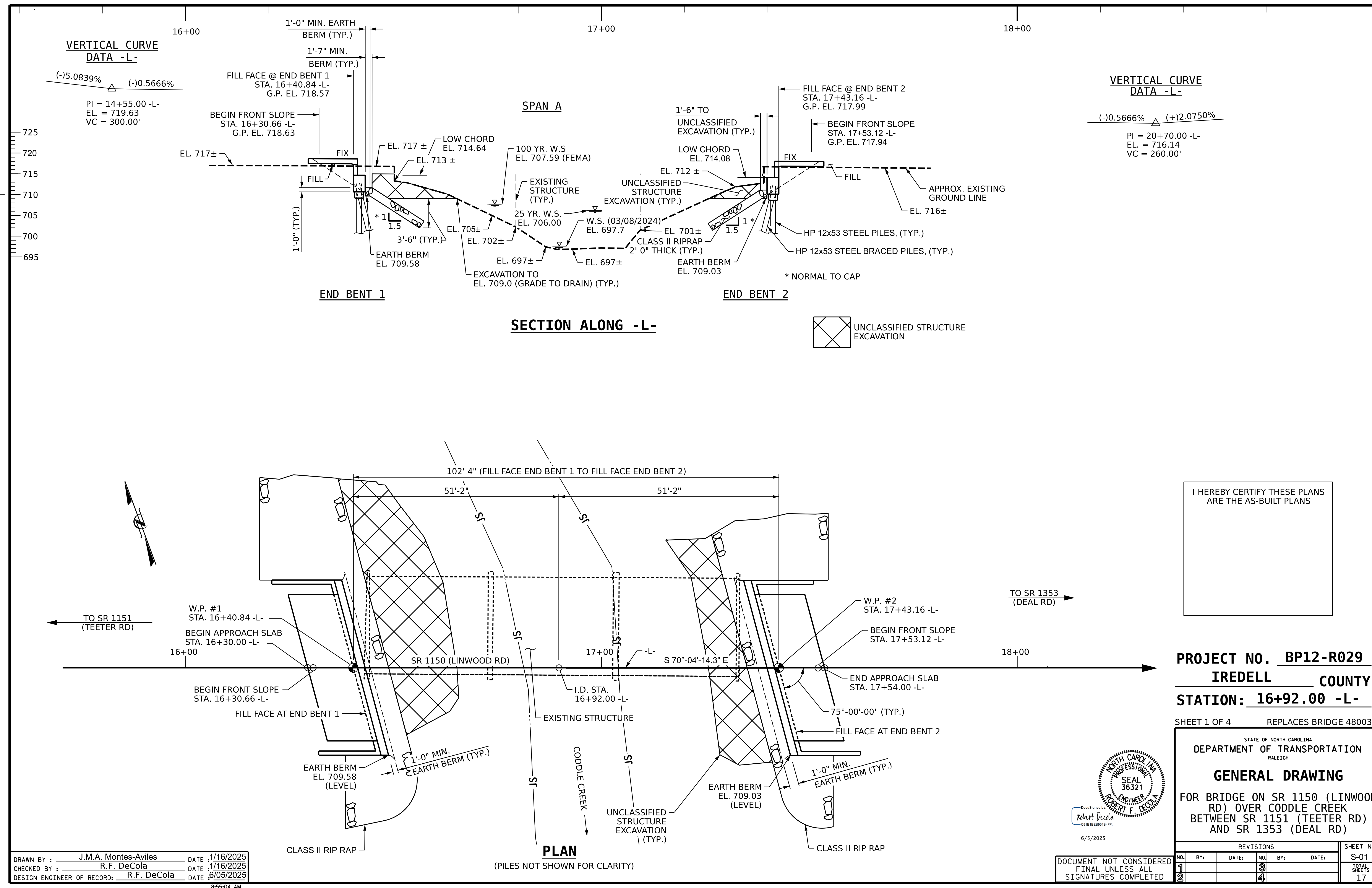
PROJECT LENGTH

LENGTH OF ROADWAY PROJECT BP12-R029 = 0.219 MILES
LENGTH OF STRUCTURE PROJECT BP12-R029 = 0.019 MILES
TOTAL LENGTH OF PROJECT BP12-R029 = 0.238 MILES



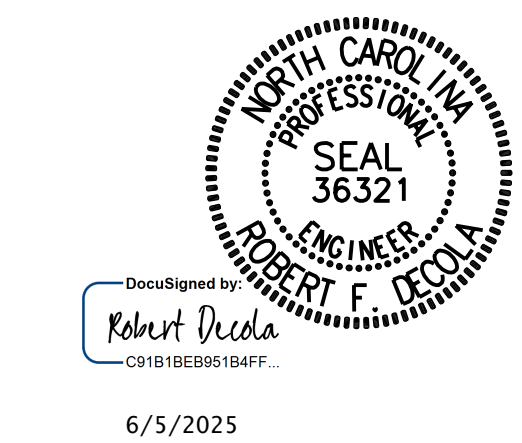
6/7/2025

Prepared In the Office of: KCI ASSOCIATES OF N.C., P.A. 4800 Falls of Neuse Road, Suite 200 Raleigh, NC 27609 Phone (919) 783-9214 NC Firm License No: C-0764	Plans Prepared For: HIGHWAY DIVISION 12 1710 E. Marion St. (US 74 Bus) Shelby NC, 28151
2024 STANDARD SPECIFICATIONS	ROBERT F. DECOLA, P.E. PROJECT ENGINEER
LETTING DATE: SEPTEMBER 23, 2025	MATTHEW G. ARMSTRONG, PE PROJECT DESIGN ENGINEER
NCDOT CONTACT:	JOSH WHITE, P.E. DIVISION 12 - BRIDGE PROGRAM MANAGER



DRAWN BY : J.M.A. Montes-Aviles DATE : 1/16/2025
CHECKED BY : R.F. DeCola DATE : 1/16/2025
DESIGN ENGINEER OF RECORD : R.F. DeCola DATE : 6/05/2025

8:55:04 AM
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6/5/2025

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

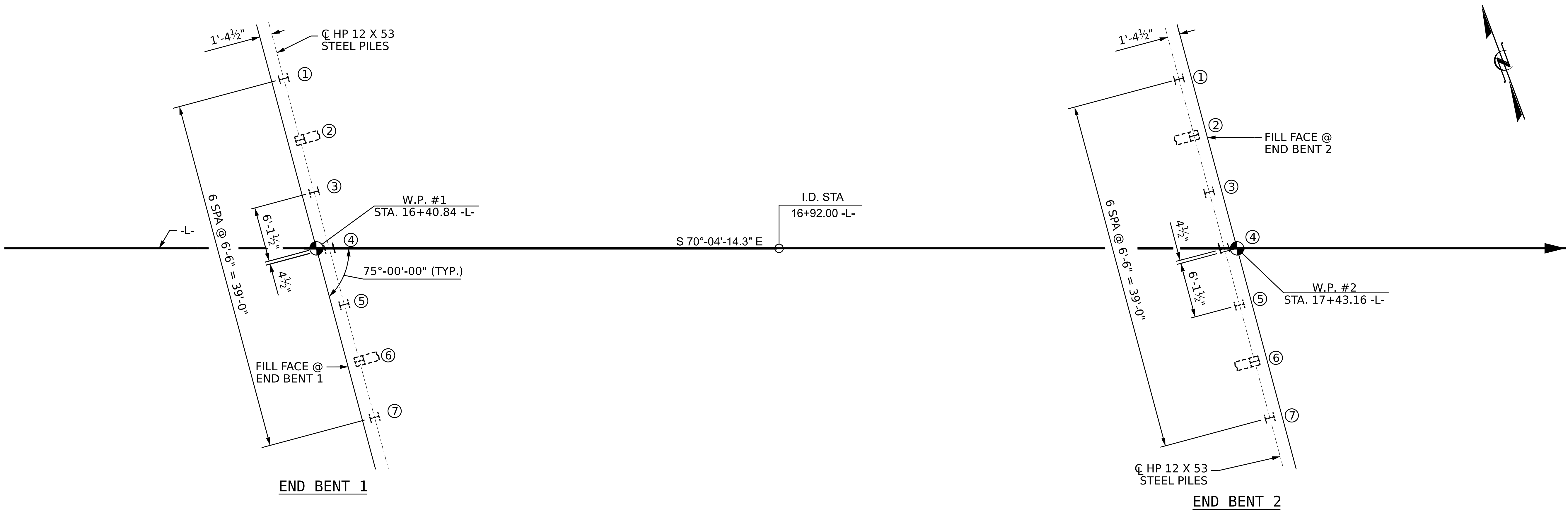
I HEREBY CERTIFY THESE PLANS
ARE THE AS-BUILT PLANS

PROJECT NO. **BP12-R029**
IREDELL COUNTY
STATION: **16+92.00 -L-**

SHEET 1 OF 4 REPLACES BRIDGE 480032

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
GENERAL DRAWING					
FOR BRIDGE ON SR 1150 (LINWOOD RD) OVER CODDLE CREEK BETWEEN SR 1151 (TEETER RD) AND SR 1353 (DEAL RD)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
S-01					TOTAL SHEETS
					17

8/26/21

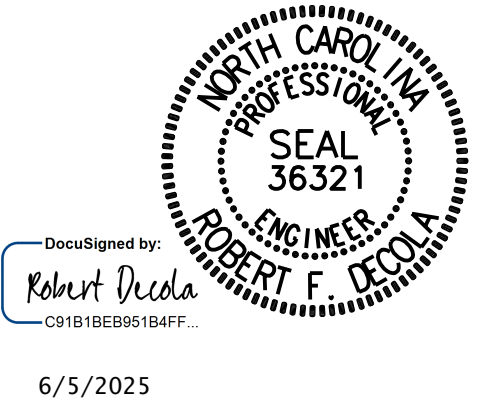


FOUNDATION LAYOUT
DIMENSIONS LOCATING PILES ARE
SHOWN TO CENTERLINE OF PILE

FOR FOUNDATION NOTES, SEE SHEET S-03

PROJECT NO. **BP12-R029**
IREDELL COUNTY
STATION: **16+92.00 -L-**

SHEET 2 OF 4



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
GENERAL DRAWING
FOR BRIDGE ON SR 1150 (LINWOOD RD) OVER CODDLE CREEK
BETWEEN SR 1151 (TEETER RD) AND SR 1353 (DEAL RD)

DRAWN BY : J.M.A. Montes-Aviles DATE : 1/16/2025
CHECKED BY : R.F. DeCola DATE : 1/16/2025
DESIGN ENGINEER OF RECORD: R.F. DeCola DATE : 6/05/2025

8:55:05 AM
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*****USERNAME*****

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-02
1			3			TOTAL SHEETS
2			4			17

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		
						Min Pile Tip (Tip No Higher Than) Elev FT	Required Driving Resistance (RDR)* per Pile KIPS	Pile Redrives Quantity EACH	Predrilling Length per Pile Lin FT	Predrilling Elevation (Elev Not To Predrill Below) FT	Maximum Predrilling Dia INCHES	Pile Excavation (Bottom of Hole) Elev FT	Pile Exc Not In Soil per Pile Lin FT	Pile Exc In Soil per Pile Lin FT
End Bent No 1, Piles 1-7	7	240		30			400							
End Bent No 2, Piles 1-7	7	240		30			400							
TOTAL QUANTITY:														

*RDR = $\frac{\text{Factored Resistance} + \text{Factored Drag Load} + \text{Factored Dead Load}}{\text{Dynamic Resistance Factor}}$ + Nominal Drag Load Resistance + 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	240			0.60		
End Bent No 2, Piles 1-7	240			0.60		

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

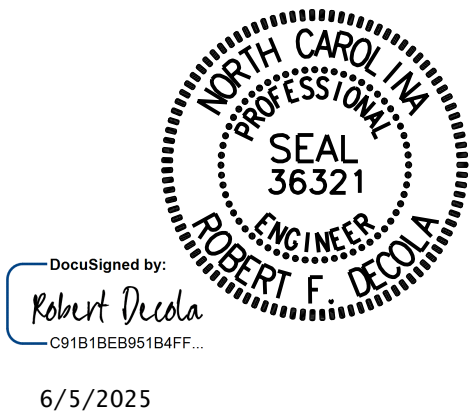
Notes:

1. The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Michael H Stephens, #028893) on 11-7-2024.
2. Total Pile Driving Equipment Setup quantity (not shown in Pile Foundation Tables) equals the number of driven piles, i.e., the number of piles with a Required Driving Resistance.
3. The Engineer may adjust the quantity for DPT Testing and Pipe Pile Plates when necessary.
4. For piles, see section 450 of the standard specifications.

DRAWN BY : J.M.A. Montes-Aviles DATE : 1/16/2025
CHECKED BY : R.F. DeCola DATE : 1/16/2025
DESIGN ENGINEER OF RECORD: R.F. DeCola DATE : 6/05/2025

PROJECT NO. BP12-R029
IREDELL COUNTY
STATION: 16+92.00 -L-

SHEET 3 OF 4



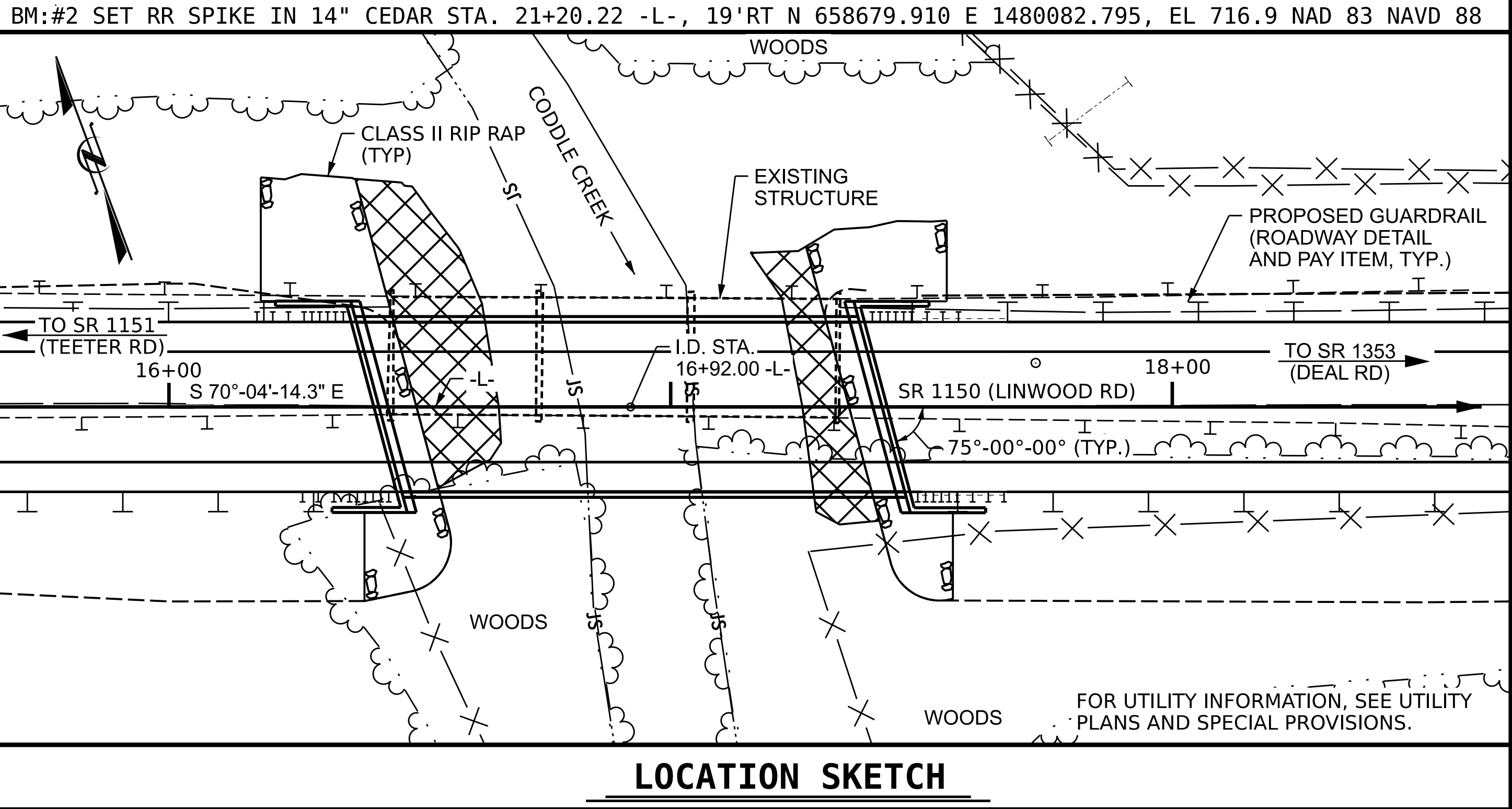
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PILE FOUNDATION TABLES

FOR BRIDGE ON SR 1150 (LINWOOD RD) OVER CODDLE CREEK
BETWEEN SR 1151 (TEETER RD)
AND SR 1353 (DEAL RD)

REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	
1			3		S-03
2			4		TOTAL SHEETS 17

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED



HYDRAULIC DATA		
DESIGN DISCHARGE:	= 1600	CFS
FREQUENCY OF DESIGN FLOOD:	= 25	YRS
DESIGN HIGH WATER ELEVATION:	= 706.0	
DRAINAGE AREA:	= 7.14	SQ. MI.
BASIC DISCHARGE (Q100):	= 2,540	CFS
BASIC HIGH WATER ELEVATION:	= 707.59	
OVERTOPPING FLOOD DATA		
OVERTOPPING DISCHARGE:	= >3,803	CFS
FREQUENCY OF OVERTOPPING FLOOD	= 500+	YRS
OVERTOPPING FLOOD ELEVATION	= 716.7*	
* @ STA. 19+76 -L- LT EDGE OF PAVEMENT WS EL. TAKEN @ RIVER STATION 125859		

TOTAL BILL OF MATERIAL															
	REMOVAL OF EXISTING STRUCTURE AT STA. 16+92.00 -L-	ASBESTOS ASSESSMENT	UNCLASSIFIED STRUCTURE EXCAVATION AT STA. 16+92.00 -L-	CLASS A CONCRETE	BRIDGE APPROACH SLABS @ STA. 16+92.00 -L-	REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12X53 STEEL PILES	HP 12X53 STEEL PILES		VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 3'-3" PRESTRESSED CONCRETE BOX BEAMS	
	LUMP SUM	LUMP SUM	LUMP SUM	CU.YDS.	LUMP SUM	LBS.	EA.	NO.	LIN.FT.	LIN.FT.	TONS	SQ.YDS.	LUMP SUM	NO.	LIN.FT.
SUPERSTRUCTURE					LUMP SUM					200.0			LUMP SUM	12	1200.0
END BENT 1				31.3		4,923	7	7	210		84	93			
END BENT 2				31.3		4,923	7	7	210		83	92			
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	62.6	LUMP SUM	9,846	14	14	420	200.0	167	185	LUMP SUM	12	1200.0

NOTES:

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

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR ``REMOVAL OF EXISTING STRUCTURE AT STATION 16+92.00 -L-."

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 45' FT LEFT AND 16' FT RIGHT OF CENTERLINE ROADWAY AT END BENT 1 AND A DISTANCE OF 32' FT LEFT AND 23' FT RIGHT OF CENTERLINE ROADWAY AT END BENT 2 AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

THE EXISTING STRUCTURE CONSISTING OF (3) 30'-0" PRESTRESSED CONCRETE CHANNEL SPANS ON CONCRETE CAPS WITH A CLEAR ROADWAY OF 23'-8" ON TIMBER ABUTMENTS AND LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, THE LOAD LIMIT MAY BE REDUCED AS FOUNN NECESSARY DURING THE LIFE OF THE PROJECT.

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

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

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

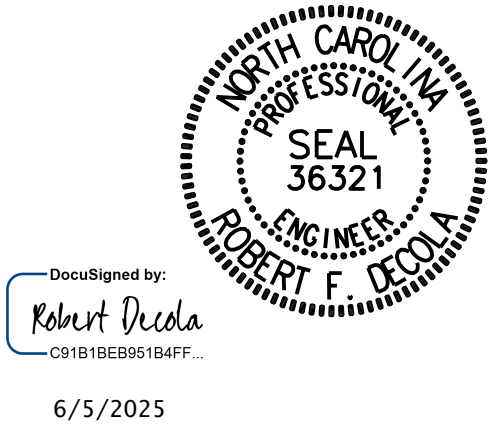
FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

PROJECT NO. **BP12-R029**

IREDELL COUNTY

STATION: **16+92.00 -L-**

SHEET 4 OF 4



6/5/2025

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
GENERAL DRAWING					
FOR BRIDGE ON SR 1150 (LINWOOD RD) OVER CODDLE CREEK BETWEEN SR 1151 (TEETER RD) AND SR 1353 (DEAL RD)					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED					S-04
					TOTAL SHEETS 17

DRAWN BY :	J.M.A. Montes-Aviles	DATE :	1/16/2025
CHECKED BY :	R.F. DeCola	DATE :	1/16/2025
DESIGN ENGINEER OF RECORD:	R.F. DeCola	DATE :	6/05/2025

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	1.058	--	1.75	0.267	1.29	100'	EL	49.224	0.574	1.25	100'	EL	9.845	0.80	0.267	1.06	100'	EL	49.224		
	HL-93 (OPERATING)	N/A		1.621	--	1.35	0.267	1.67	100'	EL	49.224	0.574	1.62	100'	EL	9.845	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	Ⓢ2	1.472	52.983	1.75	0.267	1.79	100'	EL	49.224	0.574	1.67	100'	EL	9.845	0.80	0.267	1.47	100'	EL	49.224		
	HS-20 (OPERATING)	36.000		2.168	78.052	1.35	0.267	2.32	100'	EL	49.224	0.574	2.17	100'	EL	9.845	N/A	--	--	--	--	--		
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH	13.500		3.488	47.092	1.4	0.267	5.3	100'	EL	49.224	0.574	5.14	100'	EL	9.845	0.80	0.267	3.49	100'	EL	49.224	
		SNGARBS2	20.000		2.527	50.541	1.4	0.267	3.84	100'	EL	49.224	0.574	3.60	100'	EL	9.845	0.80	0.267	2.53	100'	EL	49.224	
		SNAGRIS2	22.000		2.364	52.007	1.4	0.267	3.59	100'	EL	49.224	0.574	3.32	100'	EL	9.845	0.80	0.267	2.36	100'	EL	49.224	
		SNCOTTS3	27.250		1.734	47.244	1.4	0.267	2.63	100'	EL	49.224	0.574	2.56	100'	EL	9.845	0.80	0.267	1.73	100'	EL	49.224	
		SNAGGRS4	34.925		1.421	49.625	1.4	0.267	2.16	100'	EL	49.224	0.574	2.09	100'	EL	9.845	0.80	0.267	1.42	100'	EL	49.224	
		SNS5A	35.550		1.391	49.463	1.4	0.267	2.11	100'	EL	49.224	0.574	2.10	100'	EL	9.845	0.80	0.267	1.39	100'	EL	49.224	
		SNS6A	39.950		1.265	50.545	1.4	0.267	1.92	100'	EL	49.224	0.574	1.90	100'	EL	9.845	0.80	0.267	1.27	100'	EL	49.224	
		SNS7B	42.000		1.204	50.587	1.4	0.267	1.83	100'	EL	49.224	0.574	1.85	100'	EL	9.845	0.80	0.267	1.20	100'	EL	49.224	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.540	50.804	1.4	0.267	2.34	100'	EL	49.224	0.574	2.27	100'	EL	9.845	0.80	0.267	1.54	100'	EL	49.224	
		TNT4A	33.075		1.543	51.042	1.4	0.267	2.34	100'	EL	49.224	0.574	2.23	100'	EL	9.845	0.80	0.267	1.54	100'	EL	49.224	
		TNT6A	41.600		1.251	52.049	1.4	0.267	1.90	100'	EL	49.224	0.574	1.94	100'	EL	9.845	0.80	0.267	1.25	100'	EL	49.224	
		TNT7A	42.000		1.252	52.576	1.4	0.267	1.90	100'	EL	49.224	0.574	1.90	100'	EL	9.845	0.80	0.267	1.25	100'	EL	49.224	
		TNT7B	42.000		1.281	53.819	1.4	0.267	1.95	100'	EL	49.224	0.574	1.82	100'	EL	9.845	0.80	0.267	1.28	100'	EL	49.224	
		TNAGRIT4	43.000		1.229	52.851	1.4	0.267	1.87	100'	EL	49.224	0.574	1.76	100'	EL	9.845	0.80	0.267	1.23	100'	EL	49.224	
EMERGENCY VEHICLE (EV)	EV2	28.750		2.175	62.536	1.3	0.267	2.93	100'	EL	49.224	0.574	2.38	100'	EL	9.845	0.80	0.267	2.18	100'	EL	49.224		
	EV3	43.000	Ⓢ4	1.433	61.628	1.3	0.267	1.93	100'	EL	49.224	0.574	1.60	100'	EL	9.845	0.80	0.267	1.43	100'	EL	49.224		

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ _{DC}	γ _{IM}
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

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

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

COMMENTS:

1.
2.
3.
4.

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

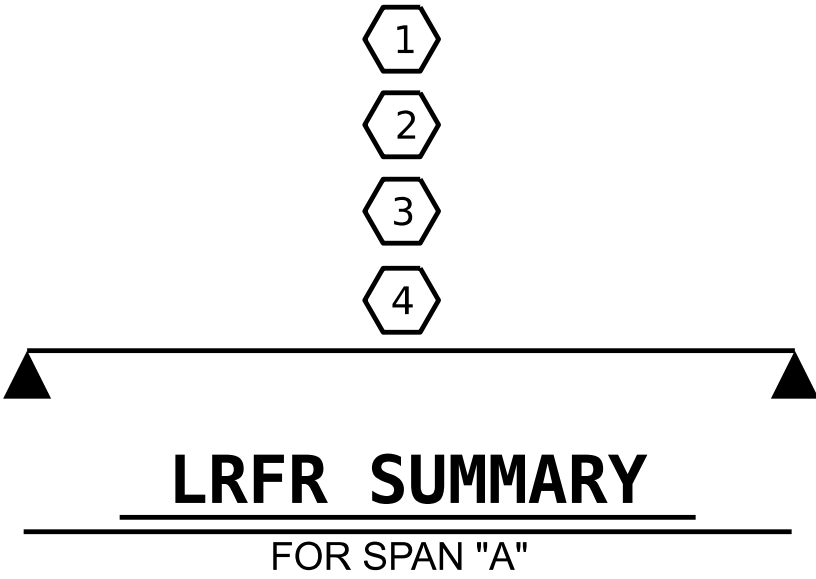
4 EMERGENCY VEHICLE LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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

PROJECT NO. **BP12-R029**
IREDELL COUNTY
STATION: **16+92.00 -L-**



STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

STANDARD

LRFR SUMMARY FOR

100' BOX BEAM UNIT

75° SKEW

(NON-INTERSTATE TRAFFIC)

REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	
1			3		S-05
2			4		TOTAL SHEETS 17

DocuSigned by:
Robert DeCola
CS1B18E895184FF...

6/5/2025

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SIGNATURES COMPLETED

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 2½" 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 TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

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

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

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

APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS.

VERTICAL GROOVED CONTRACTION JOINTS, ½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A VERTICAL CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

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

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

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

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

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

PROJECT NO. **BP12-R029**
IREDELL COUNTY
STATION: **16+92.00 -L-**

SHEET 1 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

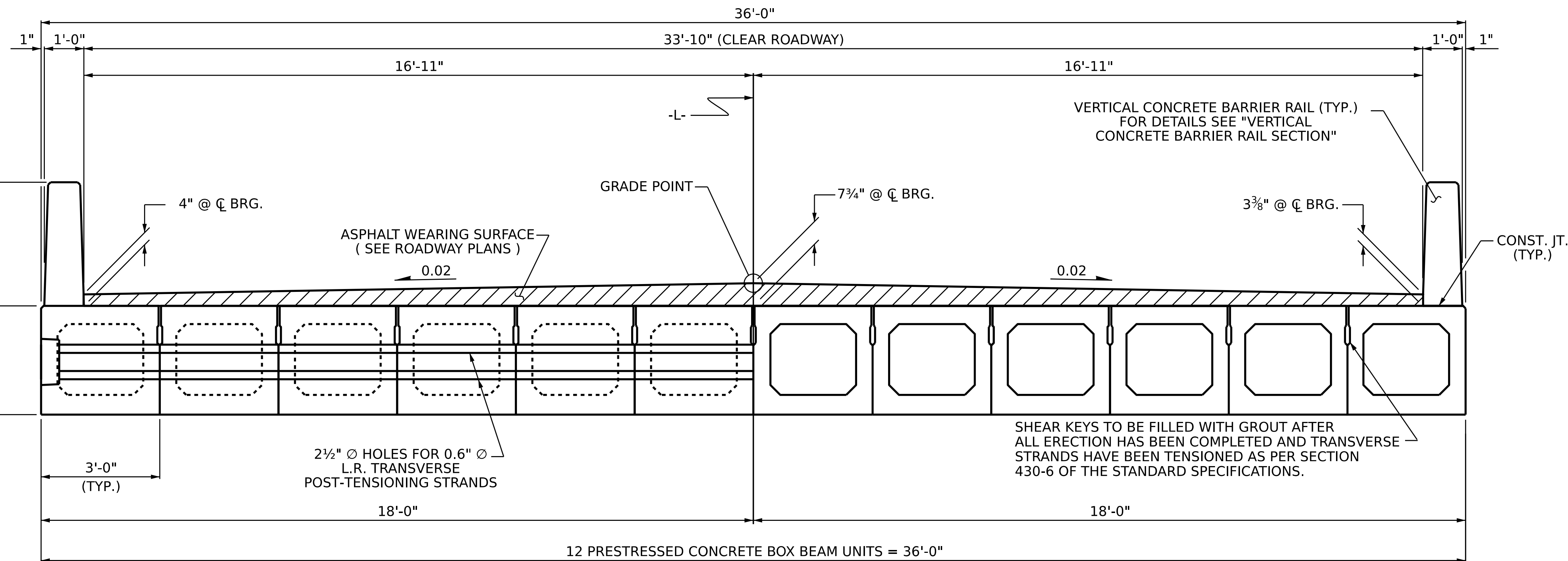
STANDARD
3'-0" X 3'-3"
PRESTRESSED CONCRETE
BOX BEAM UNIT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-06 TOTAL SHEETS 17
2			4			

DocuSigned by:
Robert DeCola
C91818E8B98184FF..

6/5/2025

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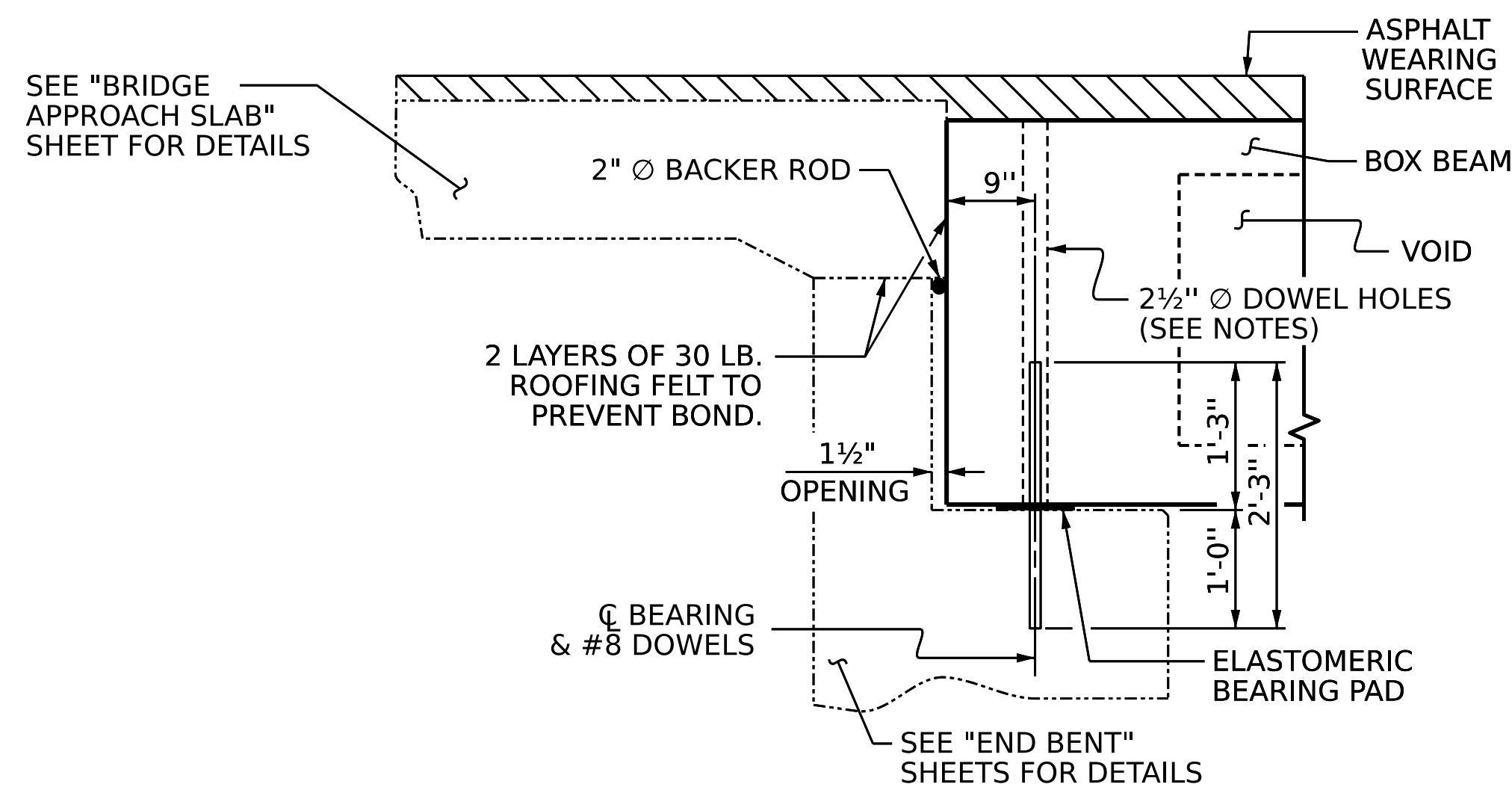
HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

HALF SECTION
THROUGH VOIDS

TYPICAL SECTION

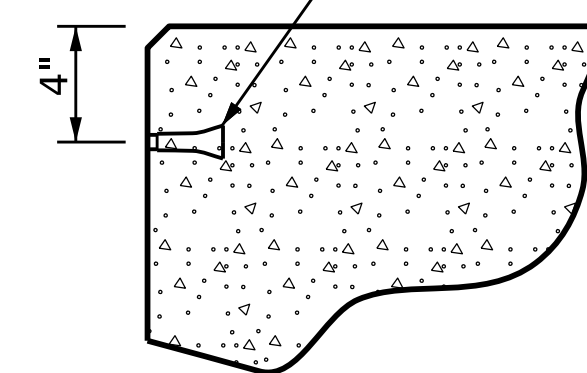
* THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.

FIXED END



SECTION AT END BENT

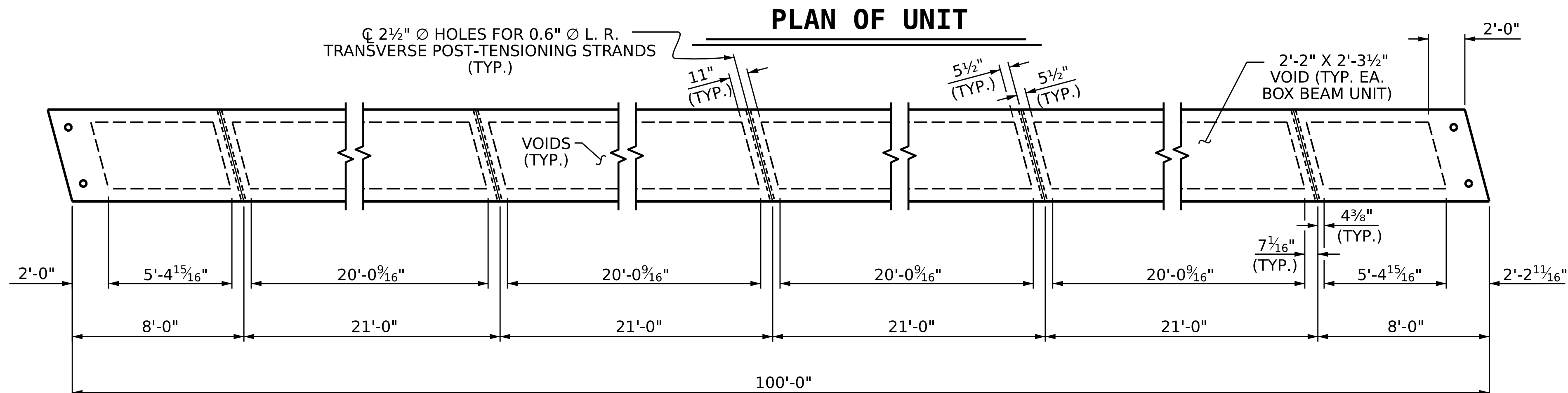
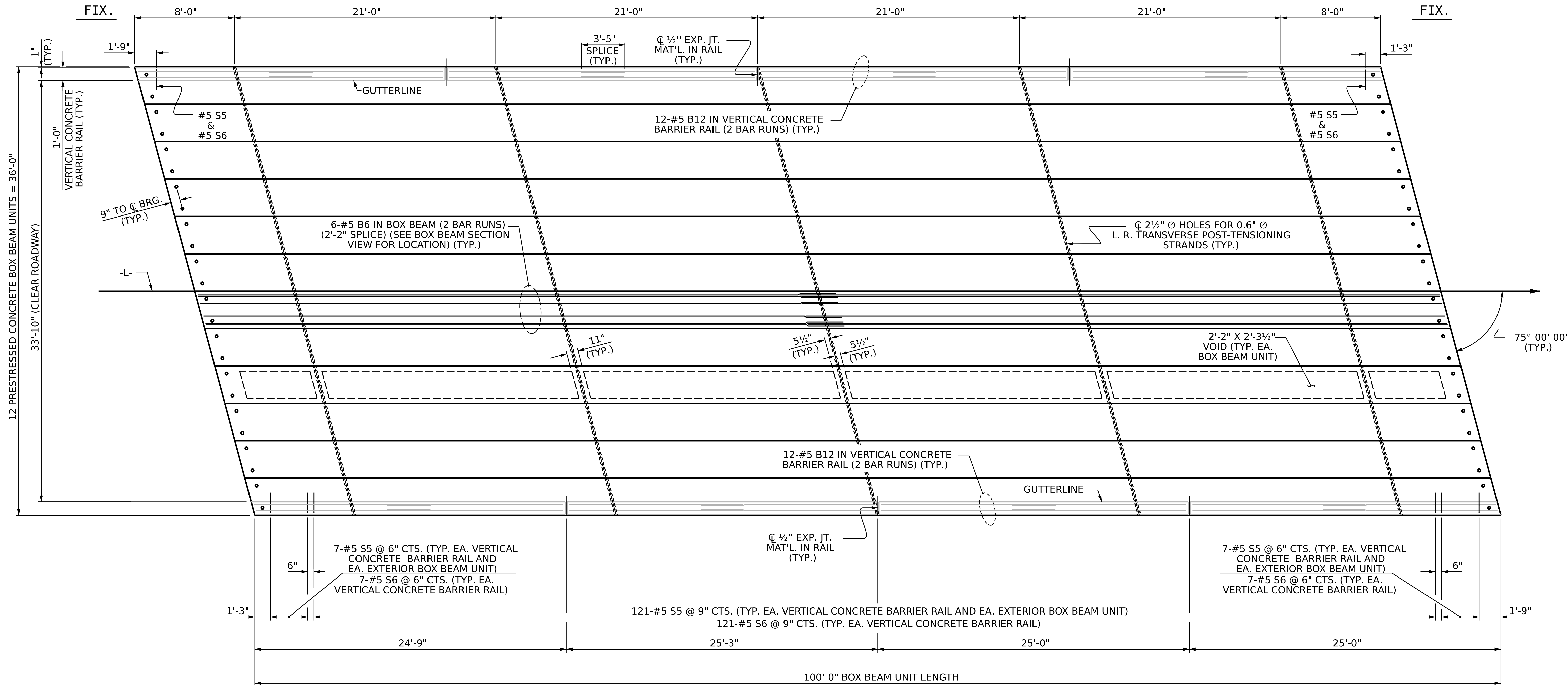
PERMITTED THREADED INSERT
CAST IN OUTSIDE FACE OF
EXTERIOR UNIT AND
RECESSED ¾". SIZE TO BE
DETERMINED
BY CONTRACTOR.



THREADED INSERT DETAIL

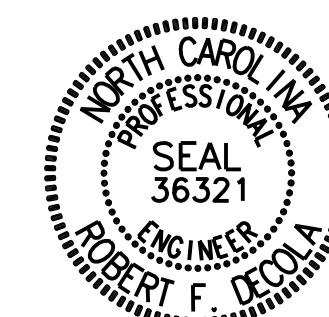
DRAWN BY: **J.M.A. Montes-Aviles** DATE: **1/16/2025**
CHECKED BY: **R.F. DeCola** DATE: **1/16/2025**
DESIGN ENGINEER OF RECORD: **R.F. DeCola** DATE: **6/05/2025**

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*****USERNAME*****



PROJECT NO. **BP12-R029**
IREDELL COUNTY
STATION: **16+92.00 -L-**

SHEET 2 OF 5
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
PLAN OF 100' UNIT
33'-10" CLEAR ROADWAY
75° SKEW

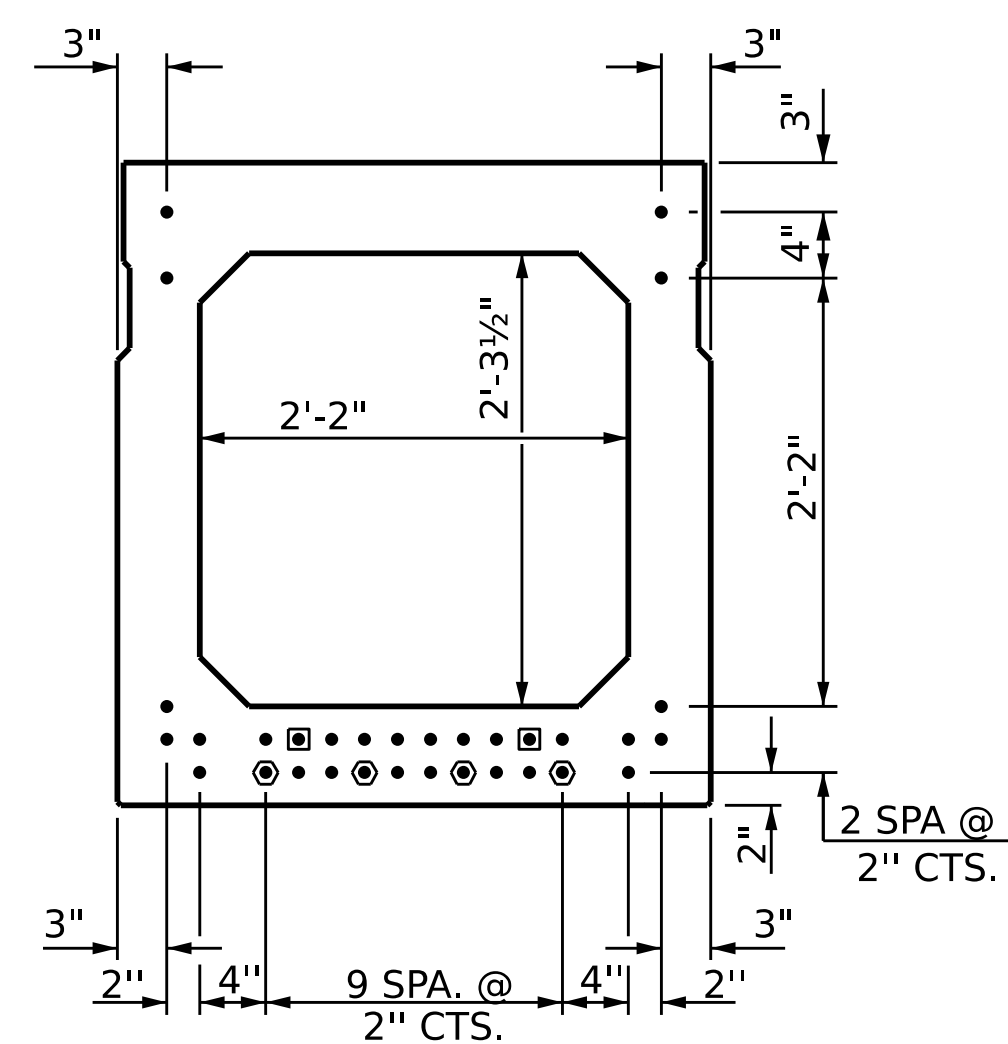
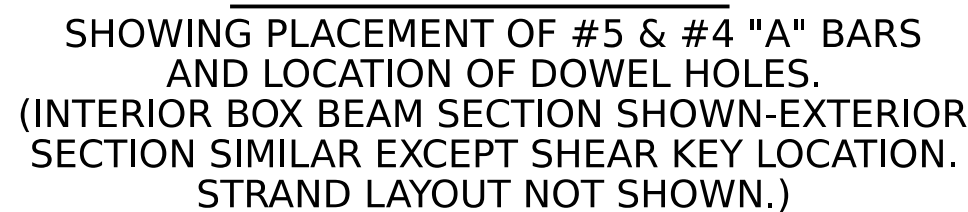


DocuSigned by:
Robert DeCola
C91B1BE8951B4FF...

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

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

DRAWN BY : **J.M.A. Montes-Aviles** DATE: **1/16/2025**
CHECKED BY : **R.F. DeCola** DATE: **1/16/2025**
DESIGN ENGINEER OF RECORD: **R.F. DeCola** DATE: **6/05/2025**



TYPICAL STRAND LOCATION
(32 STRANDS REQUIRED)

EXTERIOR UNIT SHOWN, INTERIOR UNIT
SIMILAR EXCEPT OMIT #5 S5 BARS.
"B" BARS AND "A" BARS NOT SHOWN.

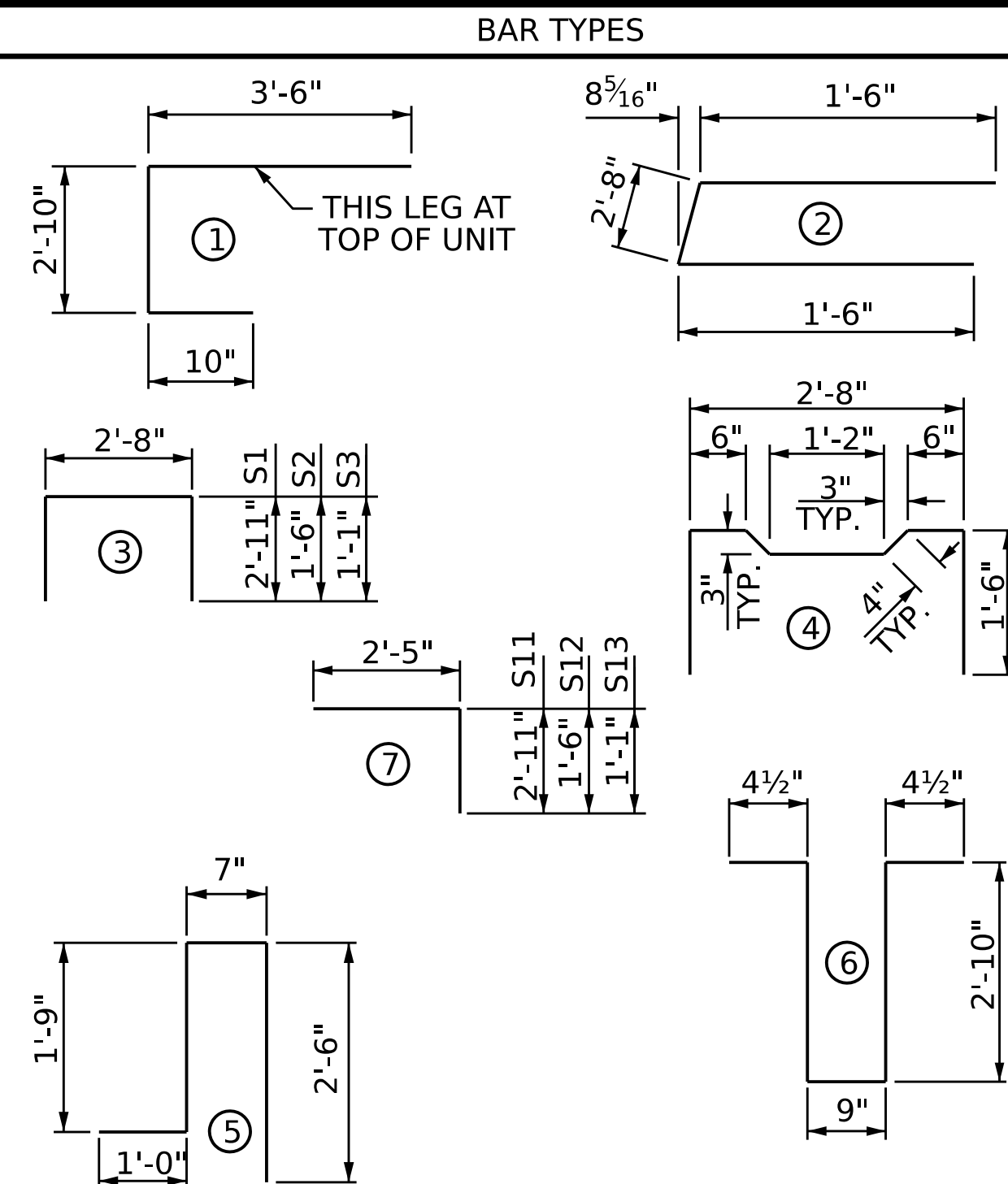


- FULLY BONDED STRANDS
- ◻● STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ◻● STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER

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.



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



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'-8"	167	5'-8"	167
B6	12	#5	STR	50'-11"	637	50'-11"	637
K1	15	#4	6	7'-2"	72	7'-2"	72
K2	10	#4	STR	2'-7"	17	2'-7"	17
S1	82	#4	3	8'-6"	466	8'-6"	466
S2	82	#4	3	5'-8"	310	5'-8"	310
S3	141	#4	3	4'-10"	455	4'-10"	455
S4	59	#4	4	5'-10"	230	5'-10"	230
S11	12	#4	7	5'-4"	43	5'-4"	43
S12	12	#4	7	3'-11"	31	3'-11"	31
S13	12	#4	7	3'-6"	28	3'-6"	28
* S5	135	#5	5	5'-10"	821	--	--
REINFORCING STEEL				2531	LBS.	2531	LBS.
*EPOXY COATED REINF. STEEL				821	LBS.		
7500 P.S.I. CONCRETE				19.6	CU. YDS.	19.4	CU. YDS.
0.6" Ø L.R. STRANDS				No.	32	No.	32

PROJECT NO. BP12-R029
IREDELL COUNTY
 STATION: 16+92.00 -L-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

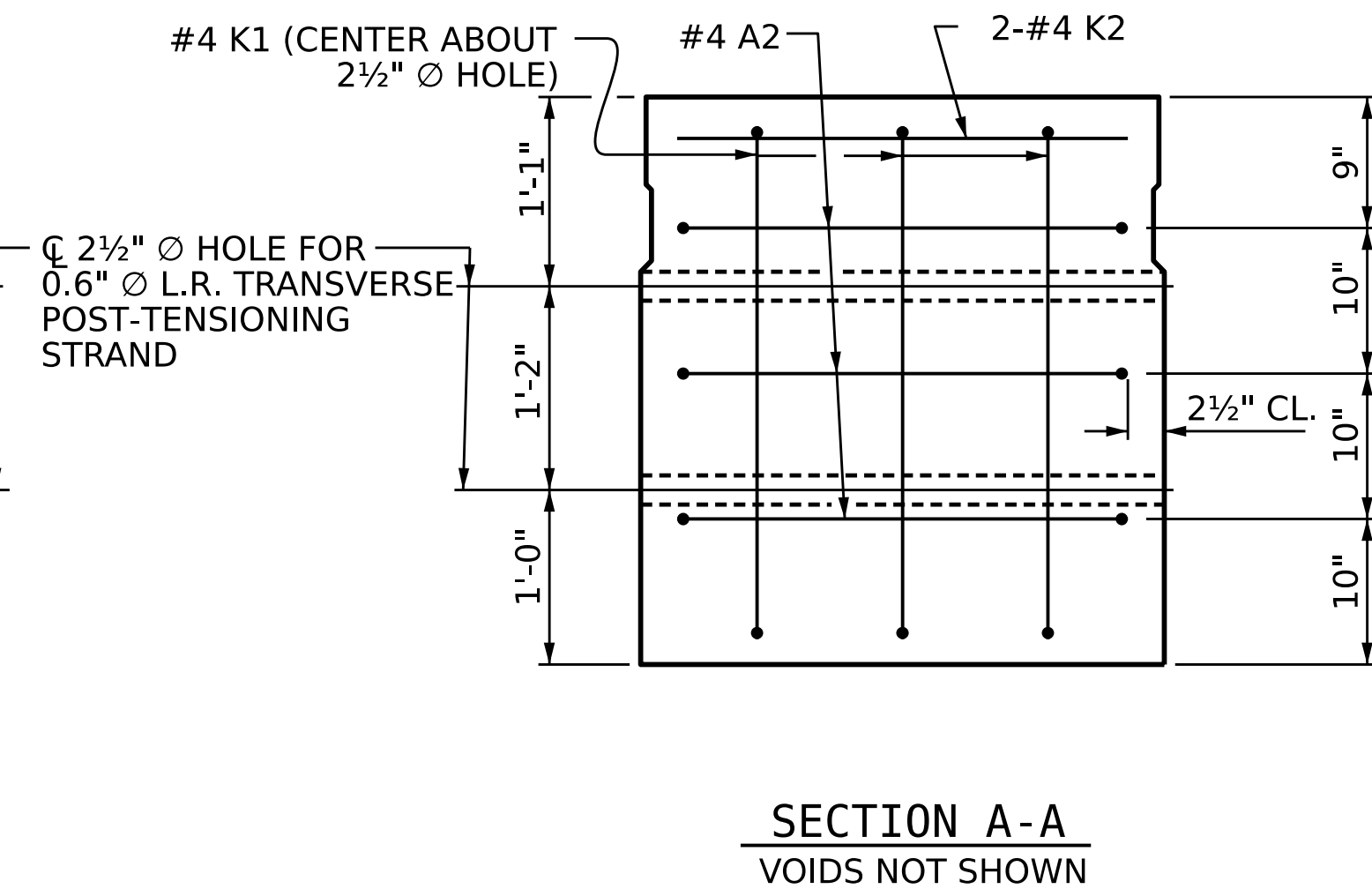
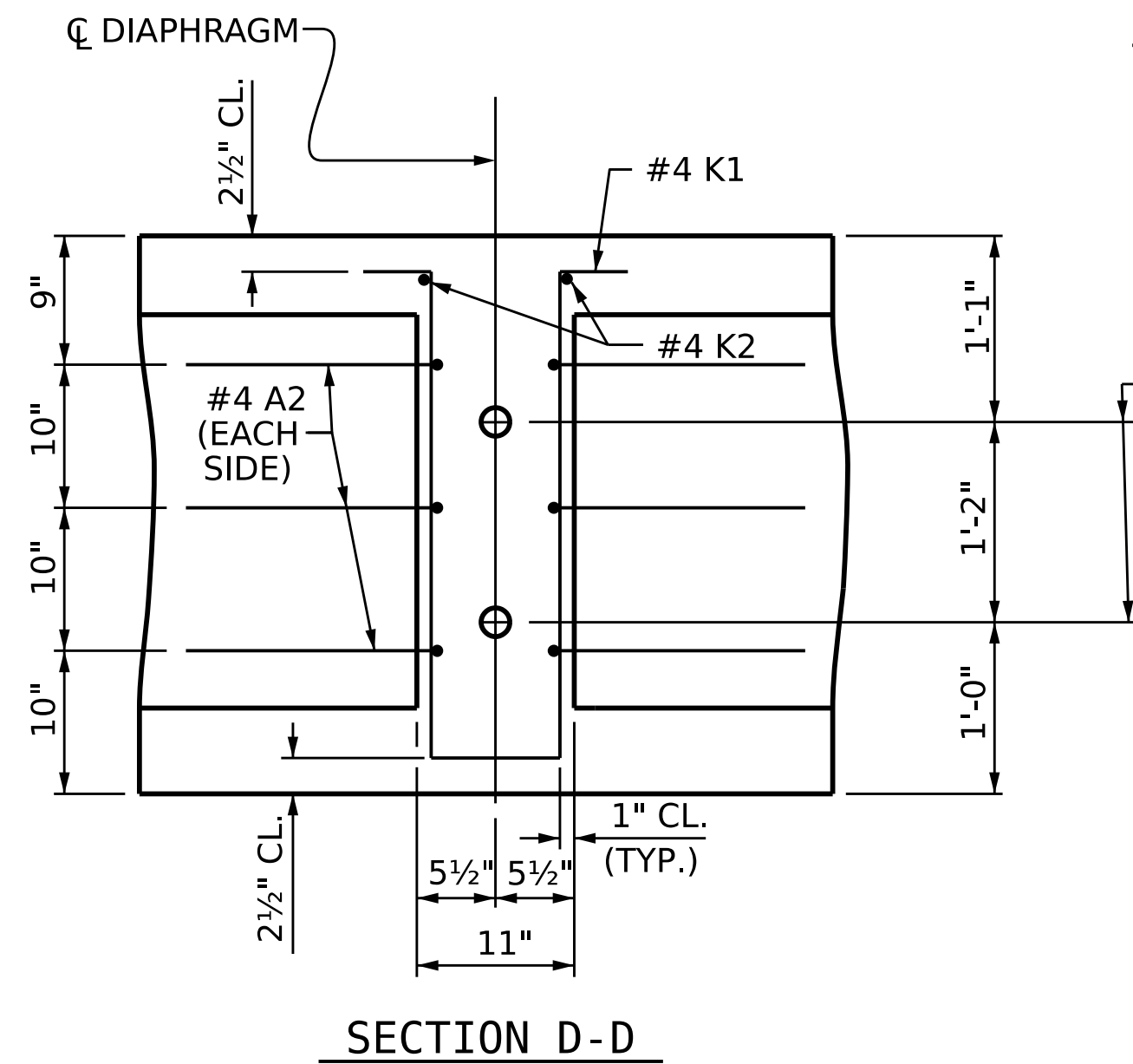
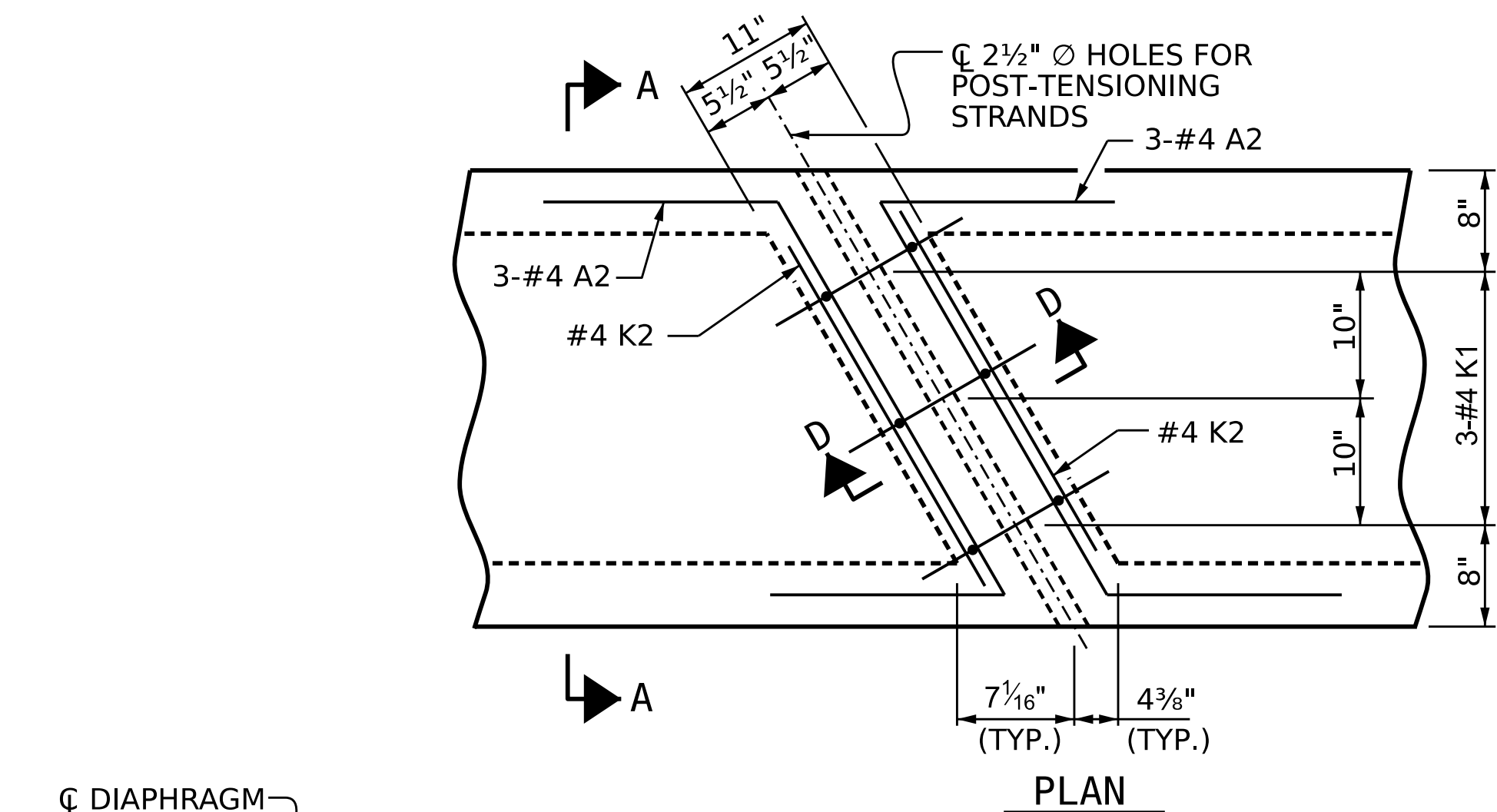
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NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 17
2			4			

DRAWN BY : J.M.A. Montes-Aviles DATE : 1/16/2025
 CHECKED BY : R.F. DeCola DATE : 1/16/2025
 DESIGN ENGINEER OF RECORD: R.F. DeCola DATE : 6/05/2025

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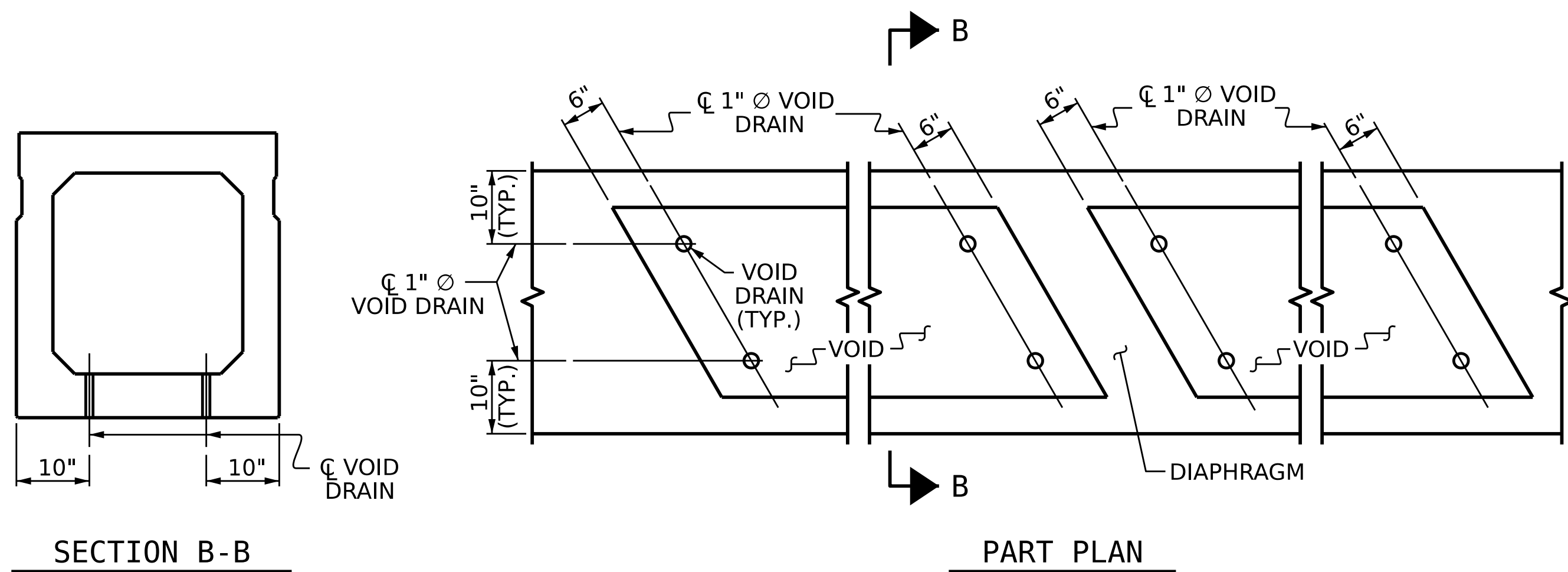
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Robert Deola
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6/5/2025



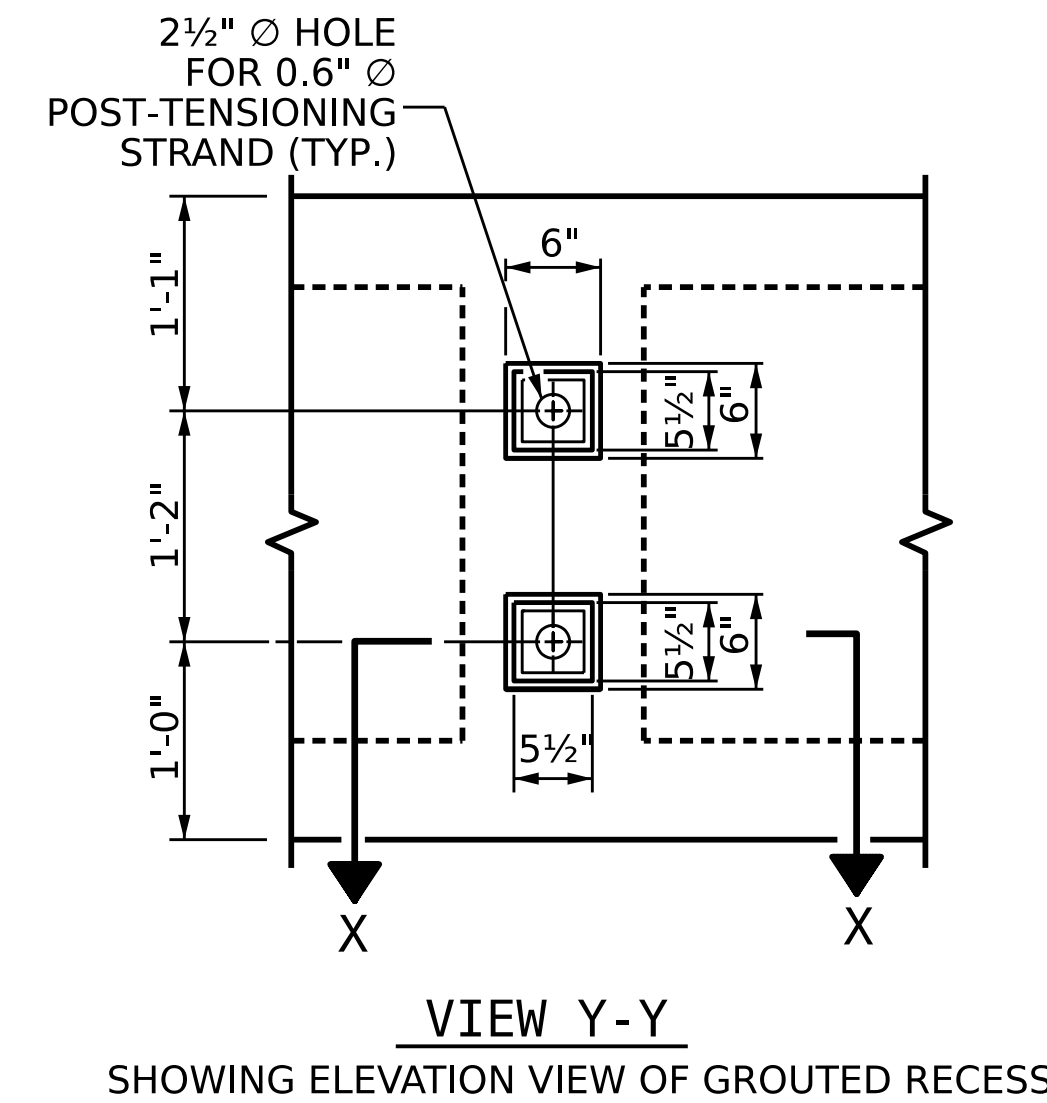
DOUBLE DIAPHRAGM DETAILS

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

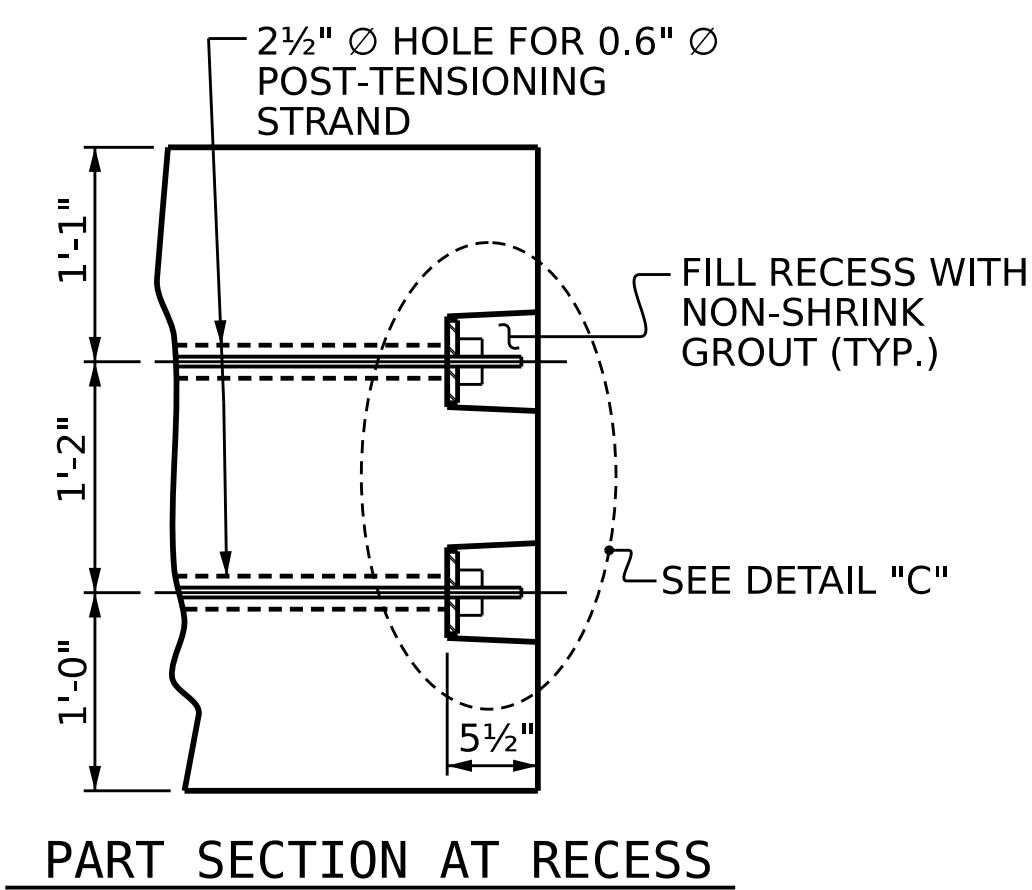


VOID DRAIN DETAILS

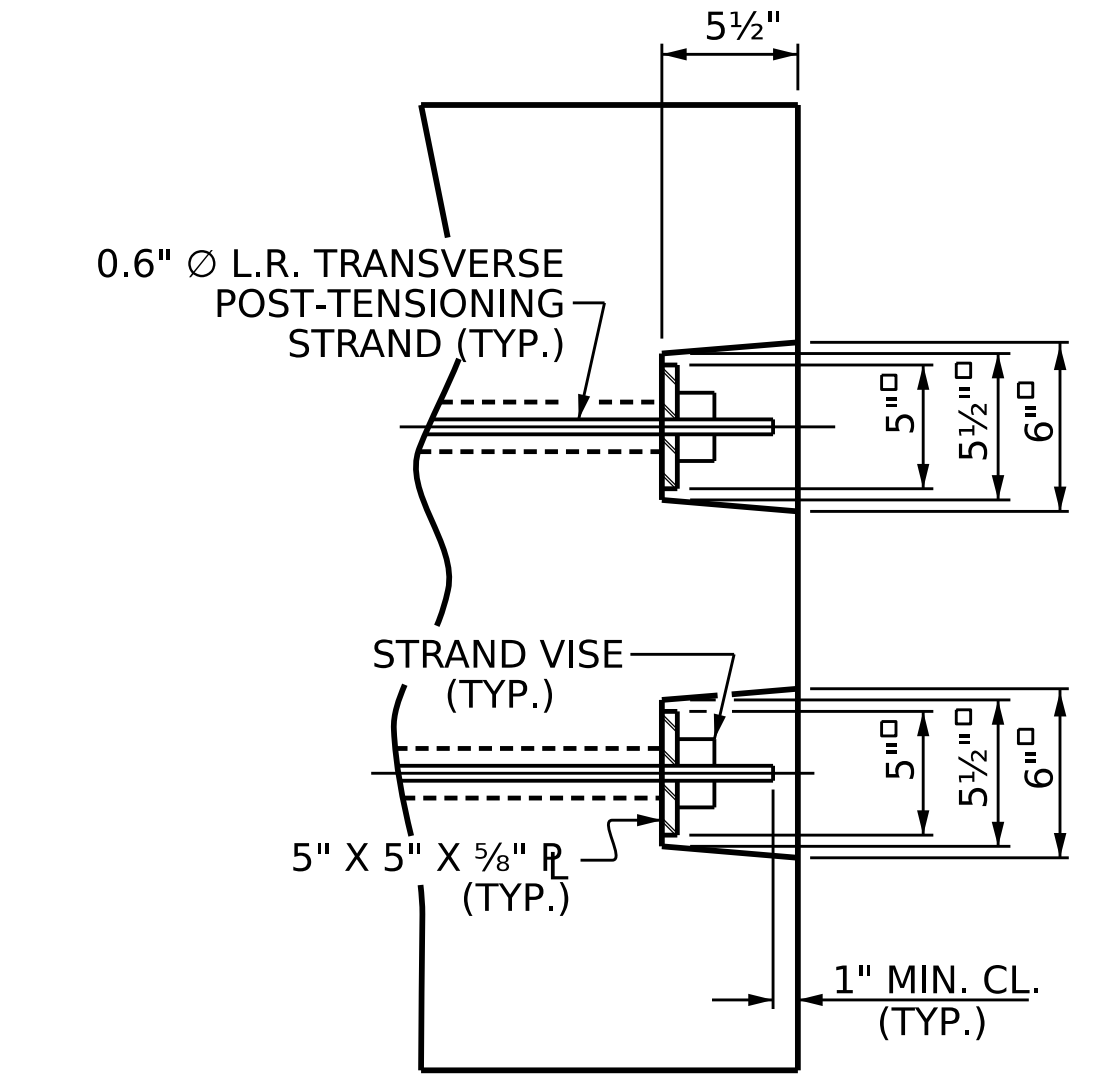
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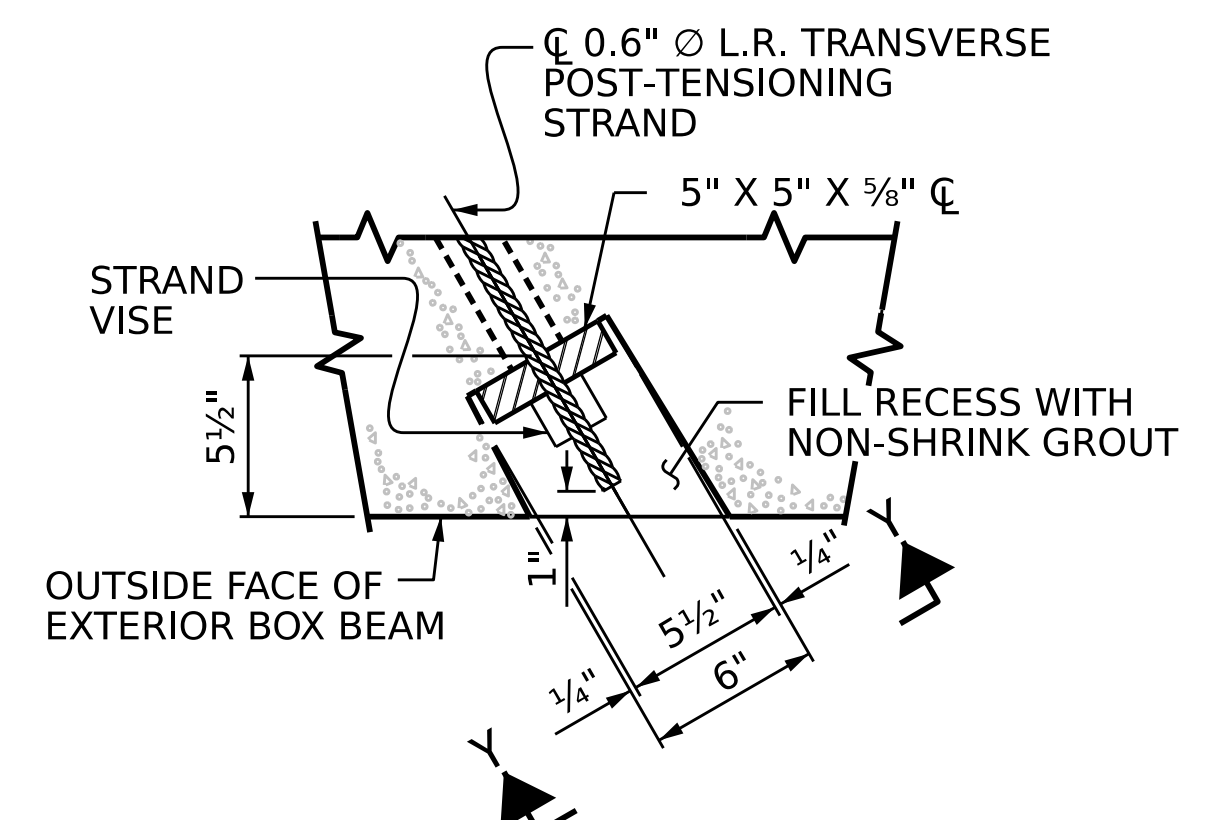
SHOWING ELEVATION VIEW OF GROUED RECESS



PART SECTION AT RECESS



DETAIL "C"



SECTION X-X

SHOWING PLAN VIEW OF GROUED RECESS

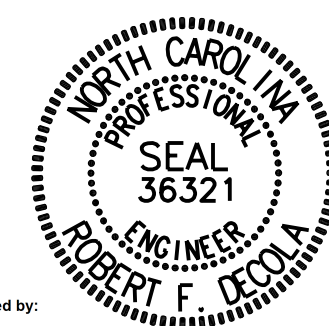
GROUED RECESS DETAIL AT END OF POST-TENSIONED STRANDS OF EXTERIOR BOX BEAM

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

** INCLUDES FUTURE WEARING SURFACE

PROJECT NO. **BP12-R029**
IREDELL COUNTY
 STATION: **16+92.00 -L-**

SHEET 4 OF 5



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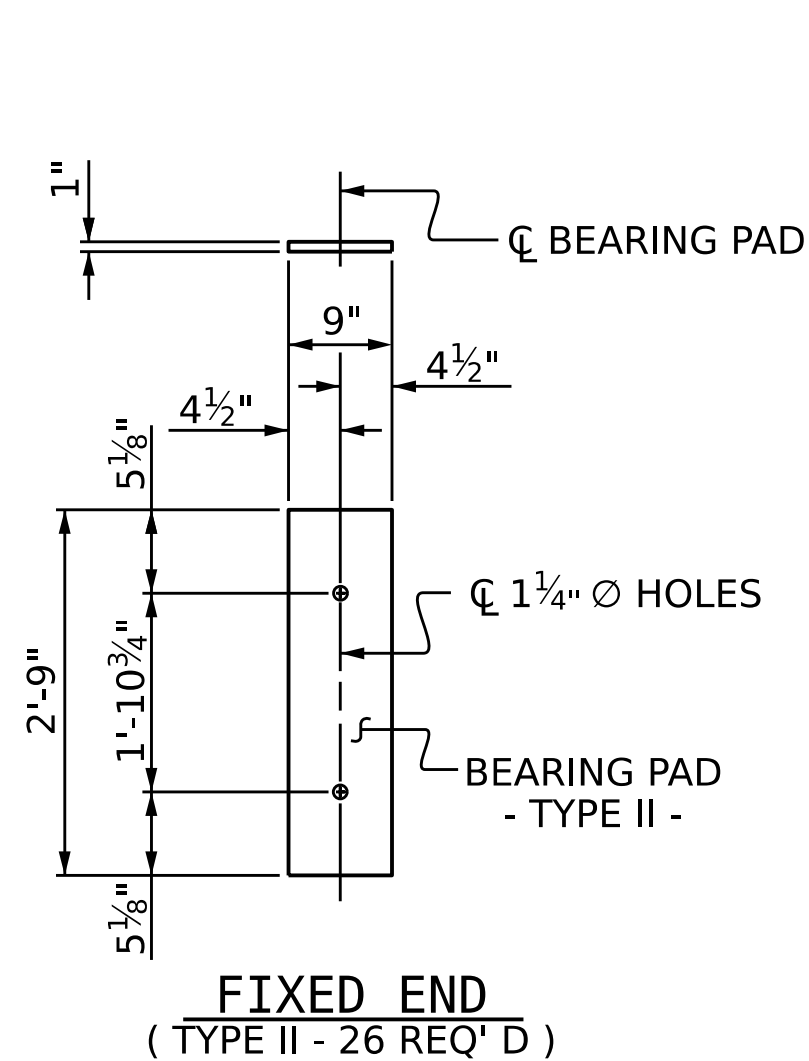
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FINAL UNLESS ALL
SIGNATURES COMPLETED

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD 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					17

DRAWN BY : J.M.A. Montes-Aviles DATE: 1/16/2025
 CHECKED BY : R.F. DeCola DATE: 1/16/2025
 DESIGN ENGINEER OF RECORD: R.F. DeCola DATE: 6/05/2025

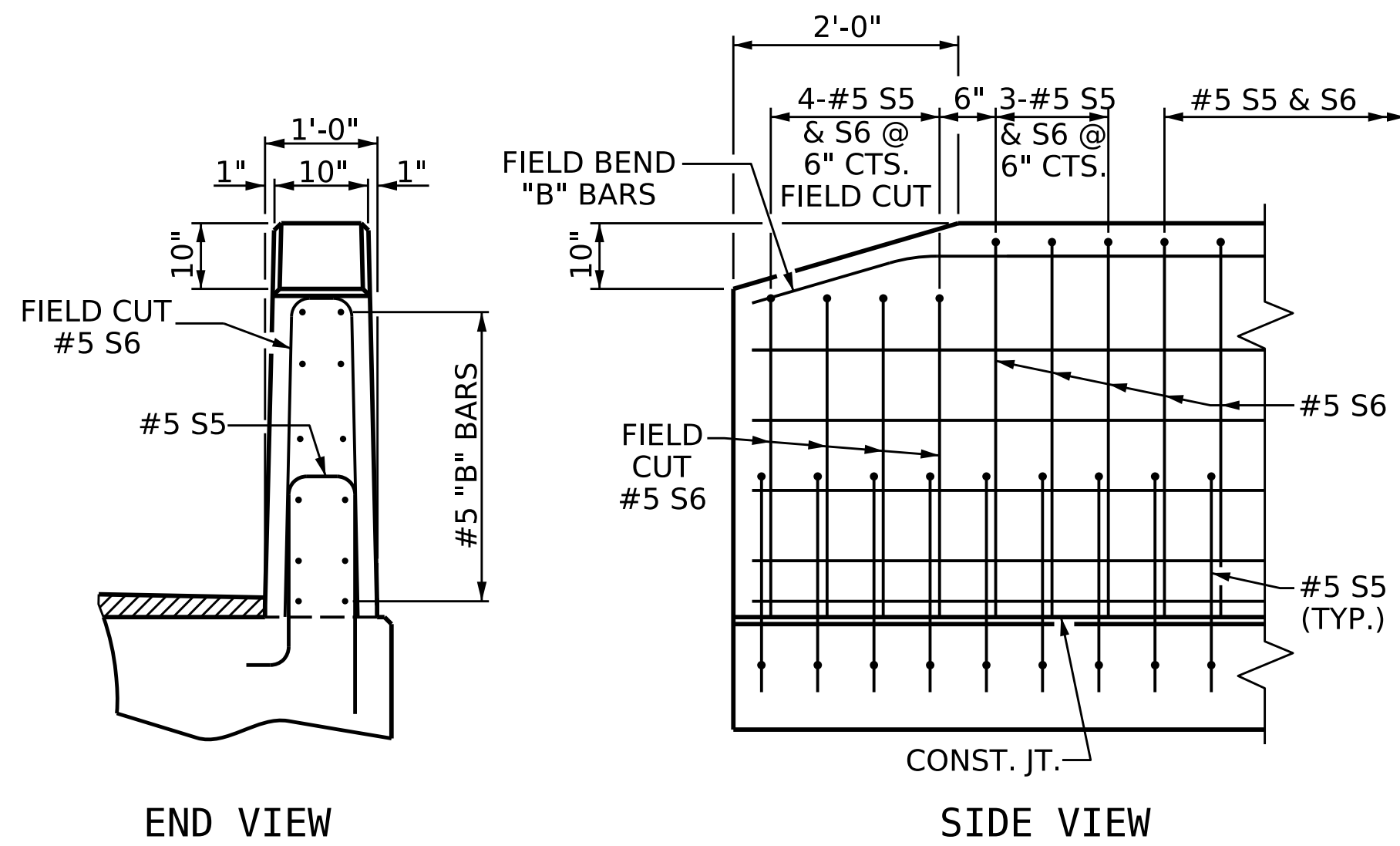
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STD.NO.39PCBB7_75S

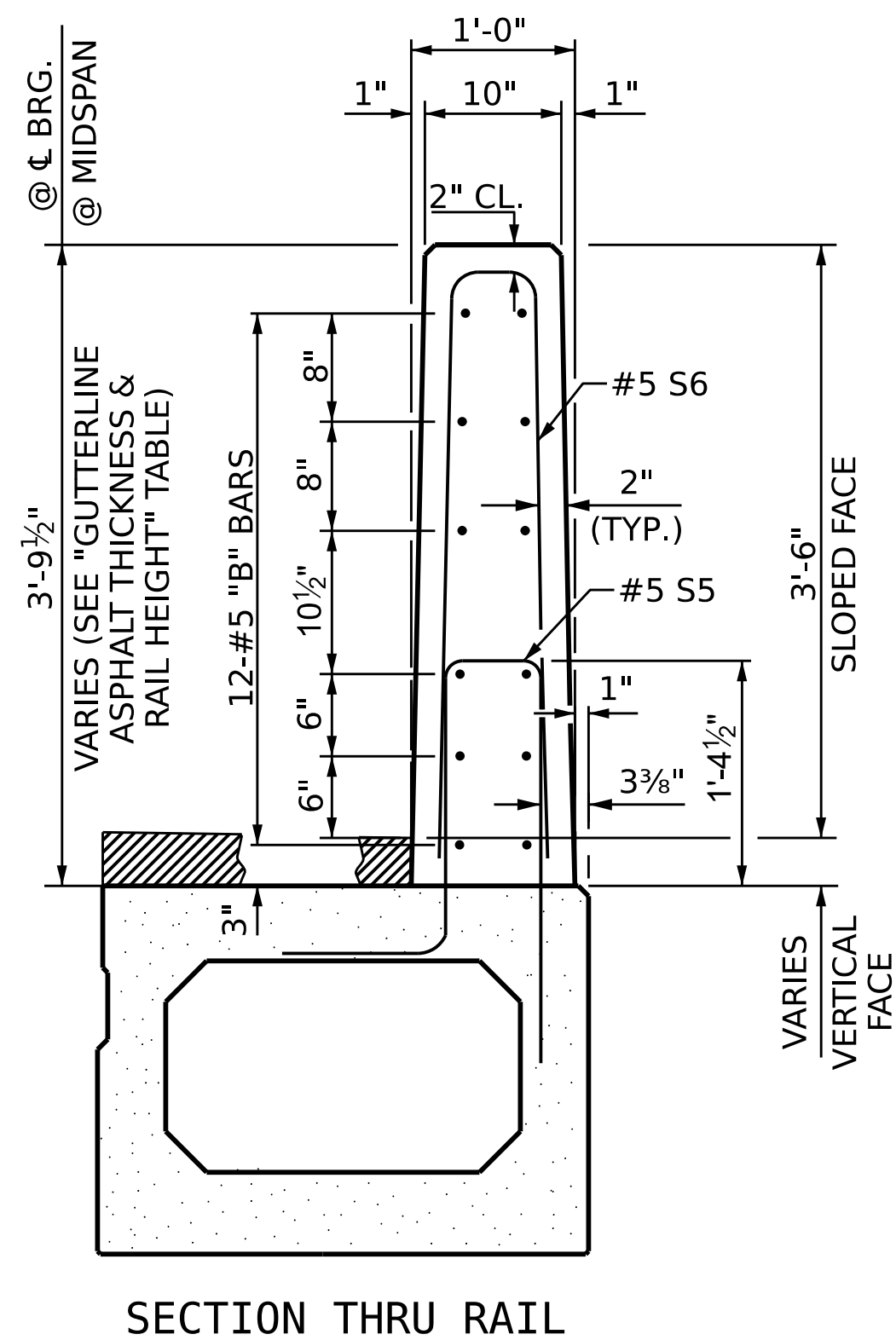


ELASTOMERIC BEARING DETAILS

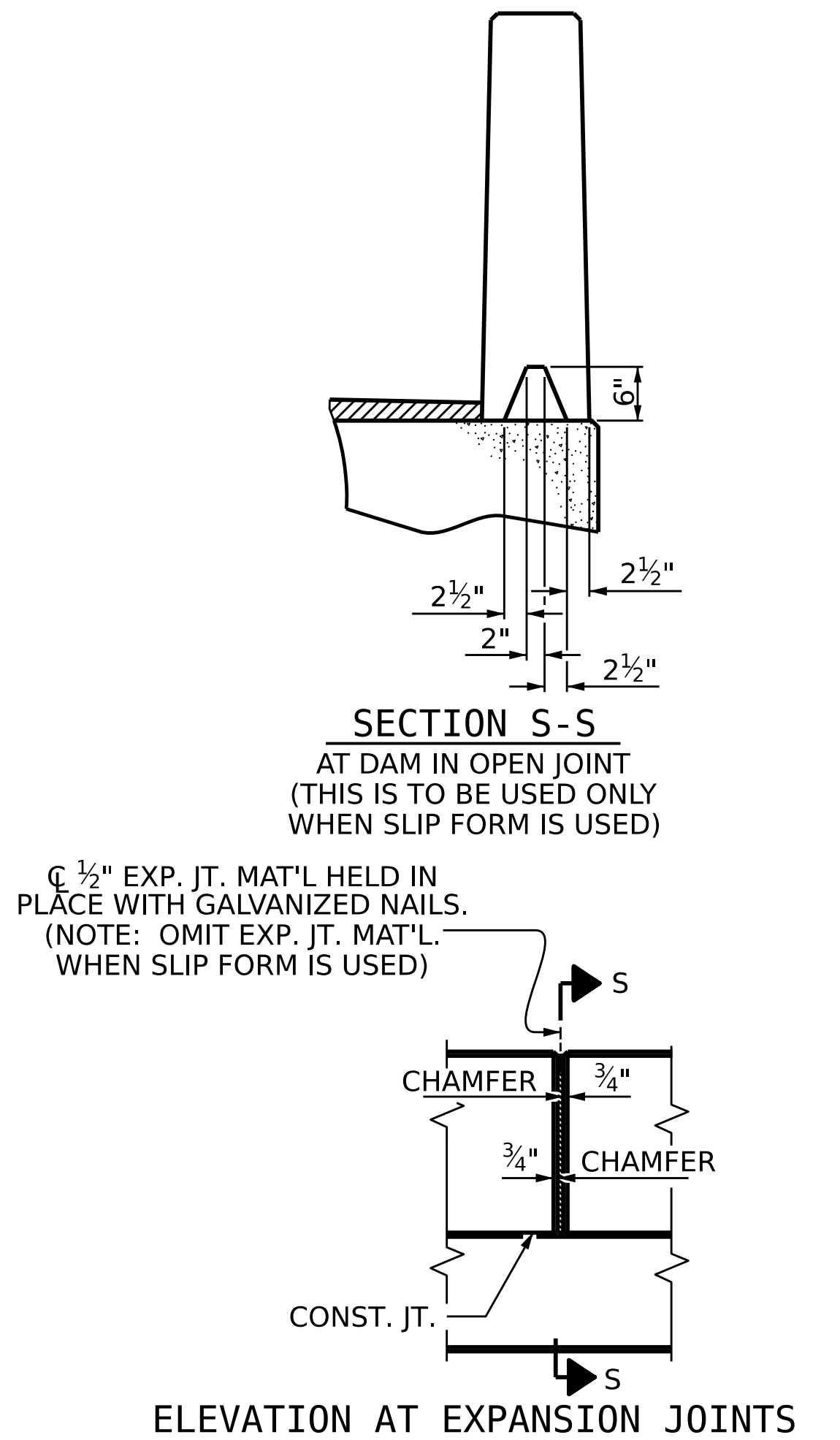
ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.



END OF RAIL DETAILS

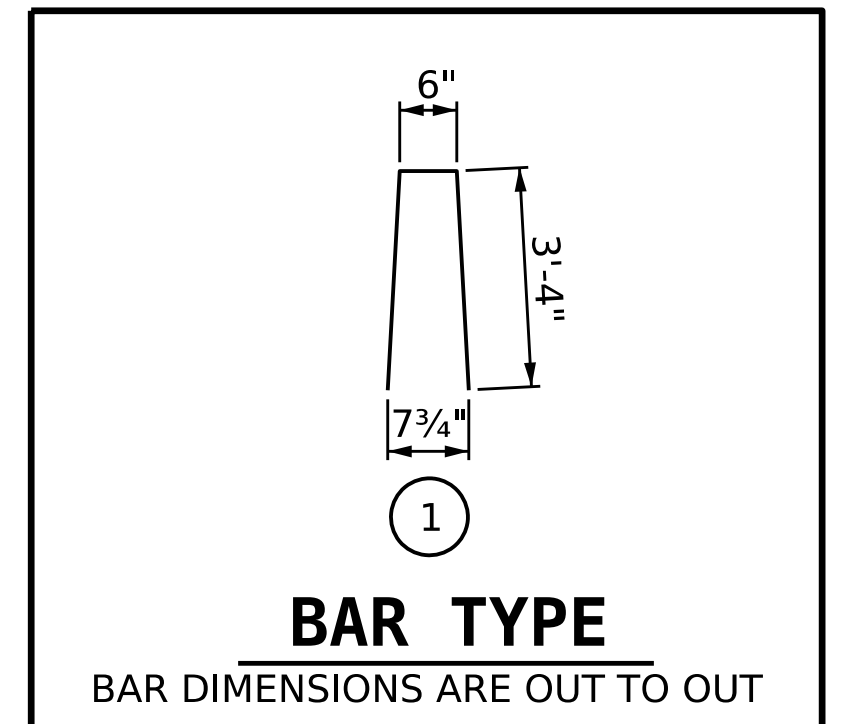


VERTICAL CONCRETE BARRIER RAIL DETAILS



ELEVATION AT EXPANSION JOINTS

BOX BEAM UNITS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR B.B.	2	100'-0"	200'-0"
INTERIOR B.B.	10	100'-0"	1000'-0"
TOTAL	12	————	1200'-0"



BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL					
BAR	BARS PER PAIR OF EXTERIOR UNITS 100' UNIT	SIZE	TYPE	LENGTH	WEIGHT
* B12	192	#5	STR	14'-1"	2820
* S6	270	#5	1	7'-2"	2018
* EPOXY COATED REINFORCING STEEL				LBS.	4838
CLASS AA CONCRETE				CU.YDS.	25.9
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.	200.0

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT			
		ASPHALT OVERLAY THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
100' UNITS	LEFT	2 7/8"	3'-8 7/8"
	RIGHT	2 3/4"	3'-8 1/4"

PROJECT NO. BP12-R029
IREDELL COUNTY
 STATION: 16+92.00 -L-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
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2			4			17

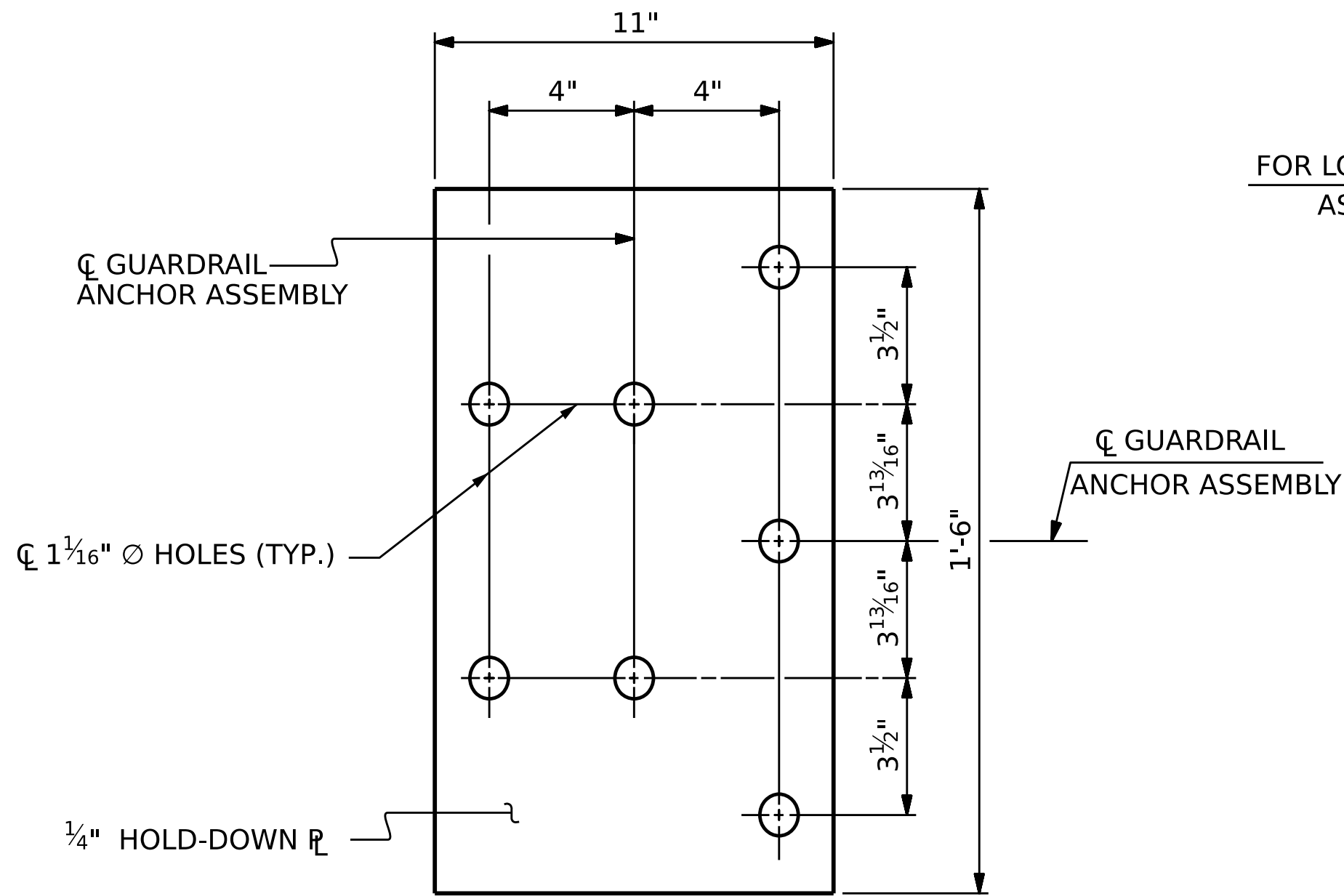
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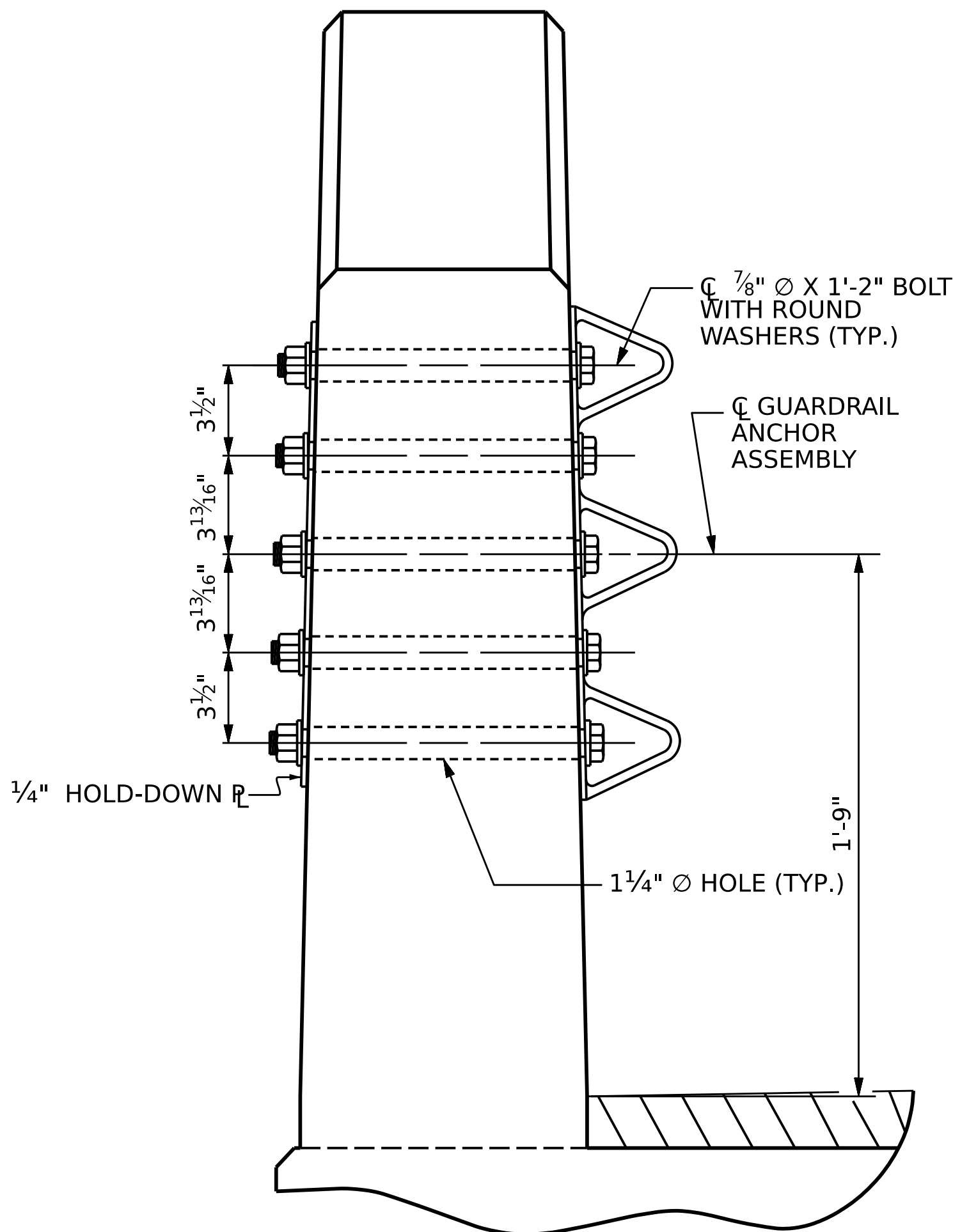
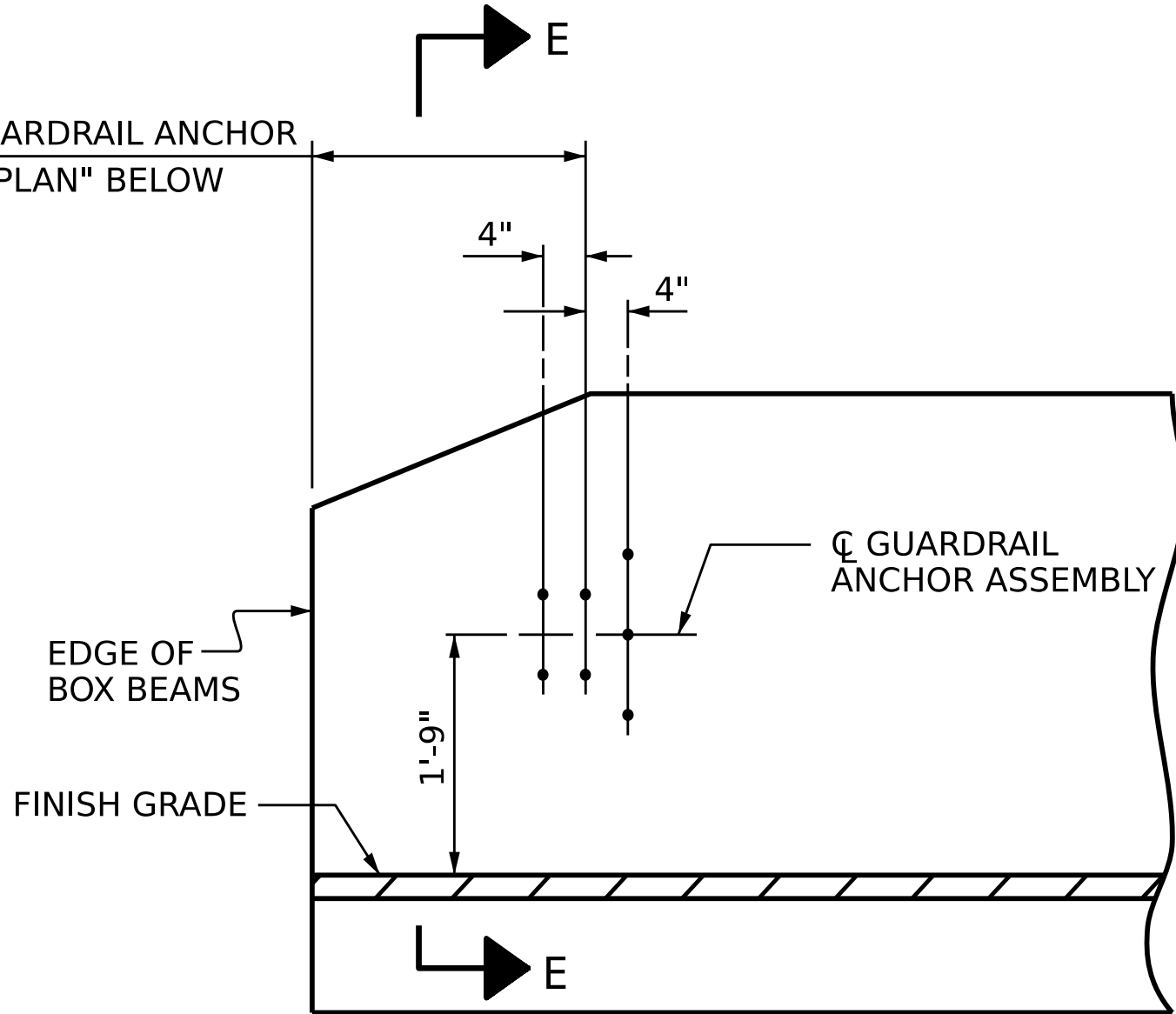
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6/5/2025

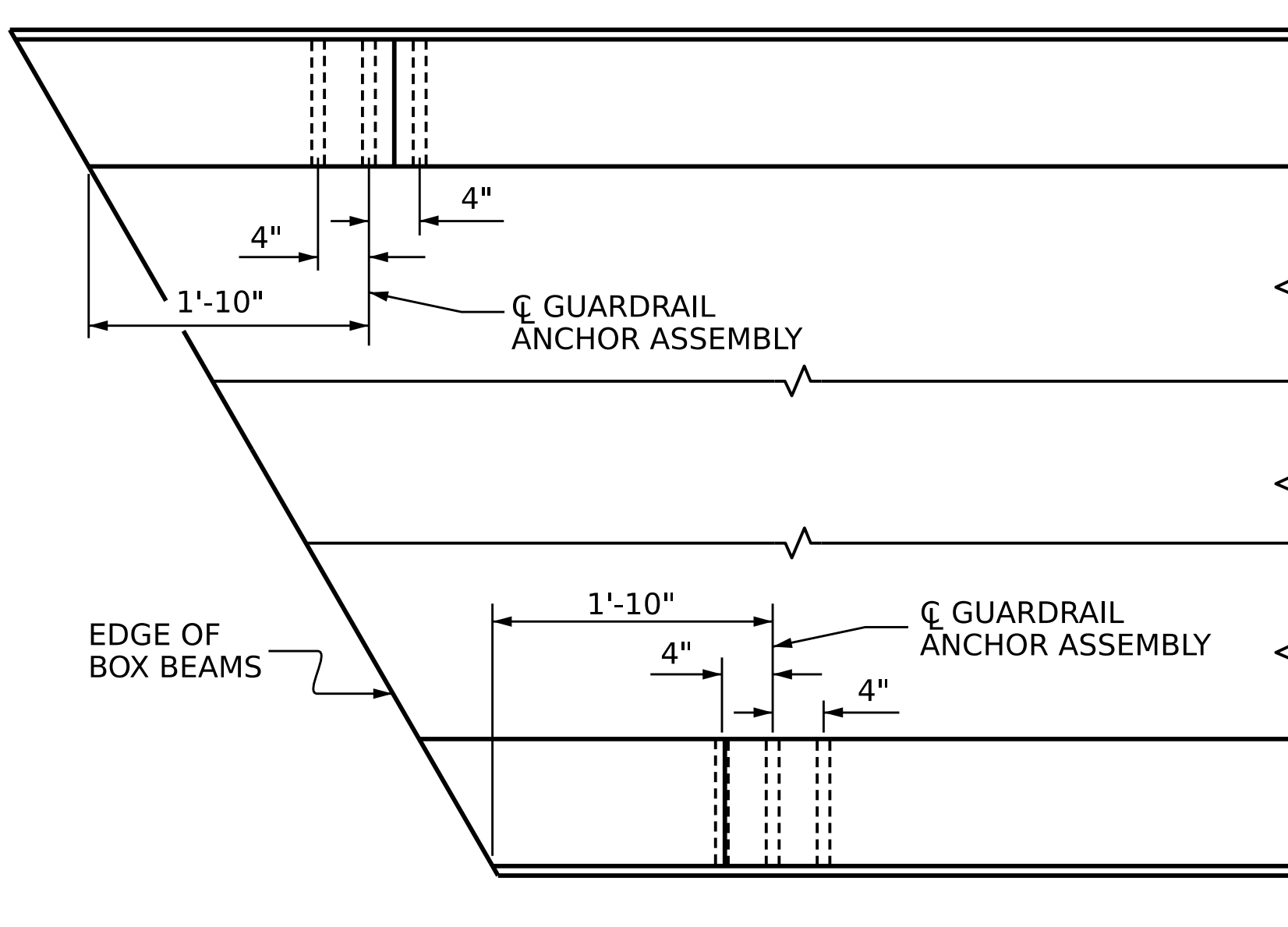
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SIGNATURES COMPLETED



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



GUARDRAIL ANCHOR ASSEMBLY DETAILS



LOCATION OF ANCHORS FOR GUARDRAIL

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

NOTES

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

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

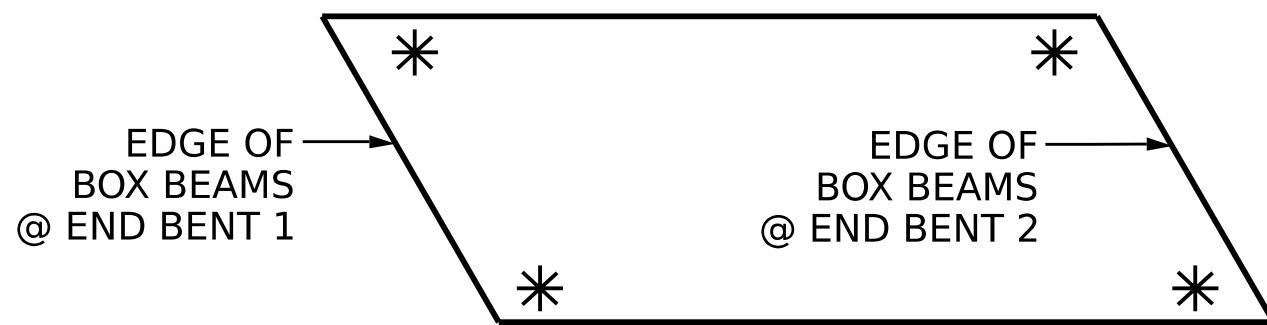
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

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

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



SKETCH SHOWING POINTS OF ATTACHMENT

*DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. **BP12-R029**
IREDELL COUNTY
STATION: **16+92.00 -L-**



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

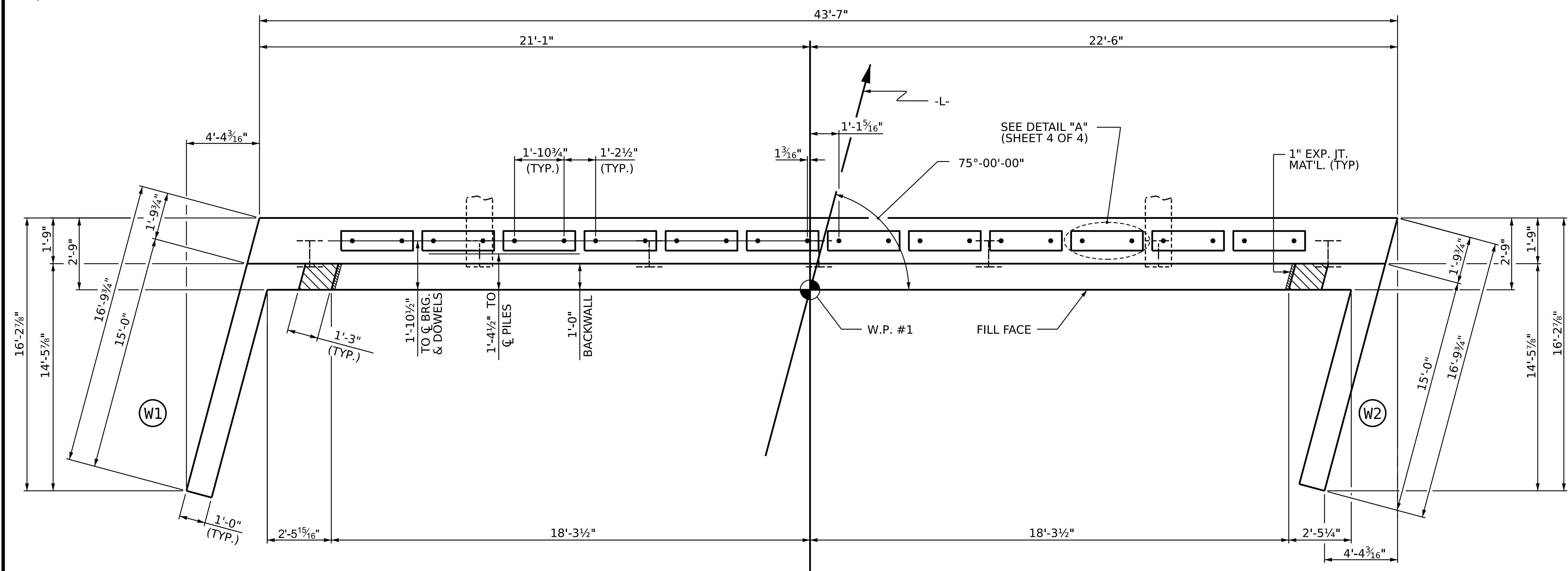
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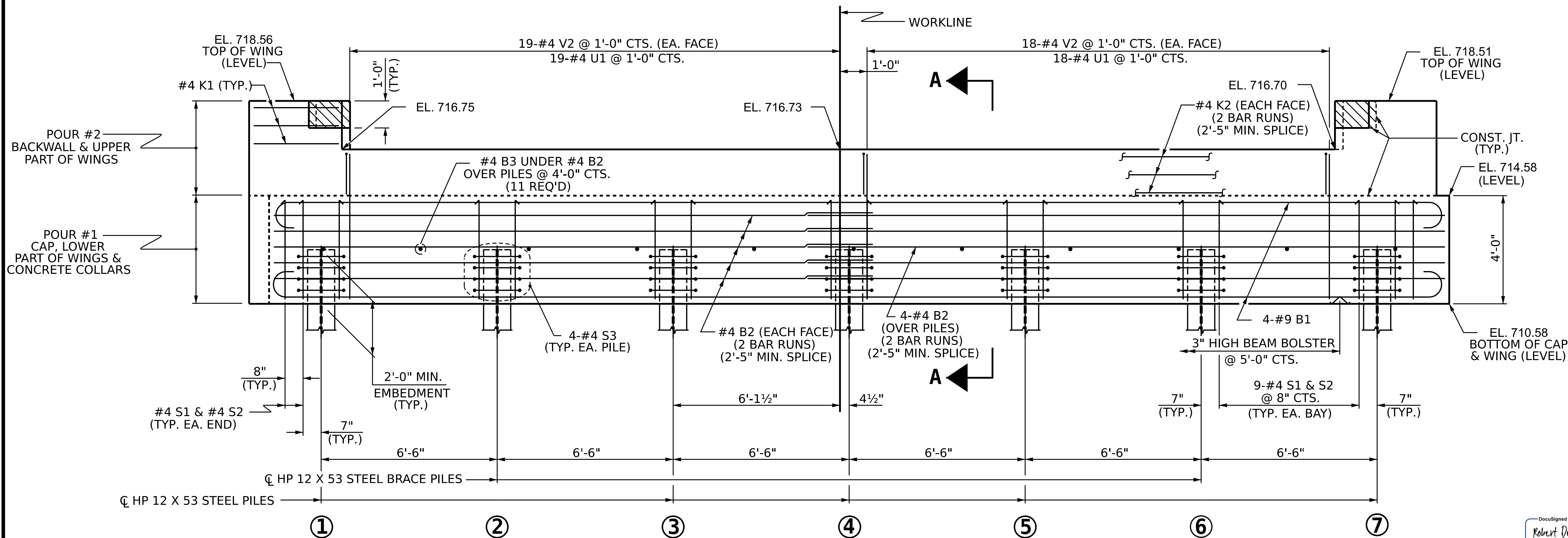
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NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-11
2			4			TOTAL SHEETS 17

8/26/20



PLAN



ELEVATION

DRAWN BY : J.M.A. Montes-Aviles DATE : 1/16/2025
CHECKED BY : R.F. DeCola DATE : 1/16/2025
DESIGN ENGINEER OF RECORD : R.F. DeCola DATE : 6/05/2025

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.

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.

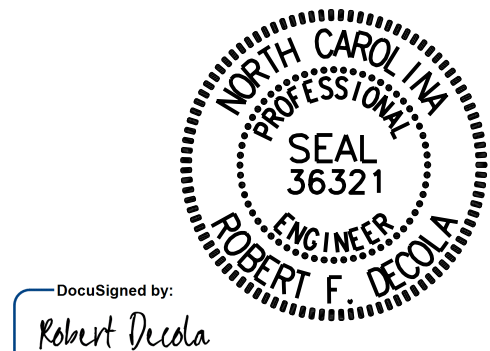
PROJECT NO. BP12-R029
IREDELL COUNTY
STATION: 16+92.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 1



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Robert DeCola
C91B18EB95184FF...

6/5/2025

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-12
2			4			TOTAL SHEETS 17

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.



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.M.A. Montes-Aviles DATE : 1/16/2025
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PROJECT NO. BP12-R029
IREDELL COUNTY
 STATION: 16+92.00 -L-

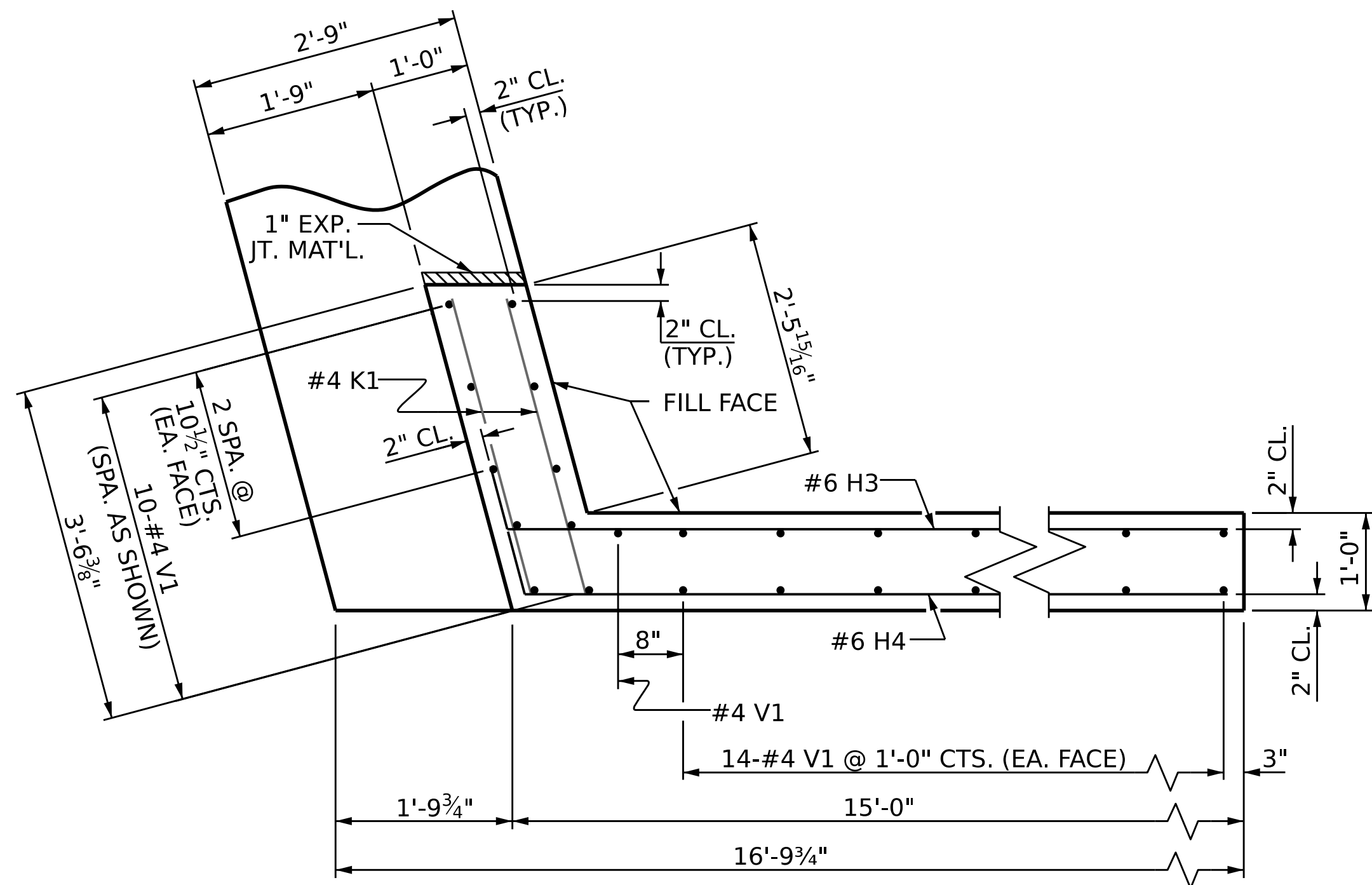
SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

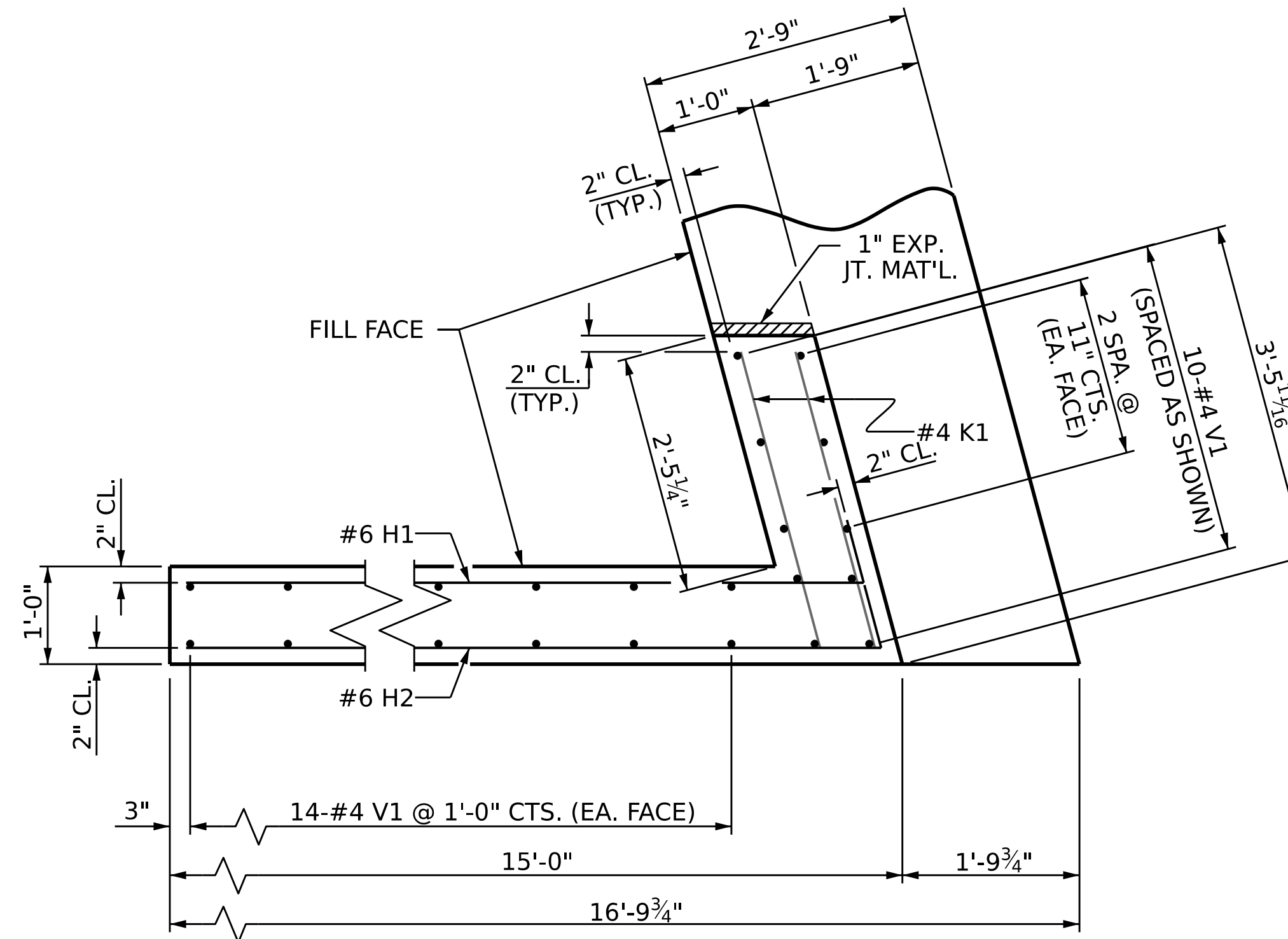
SUBSTRUCTURE

END BENT No. 2

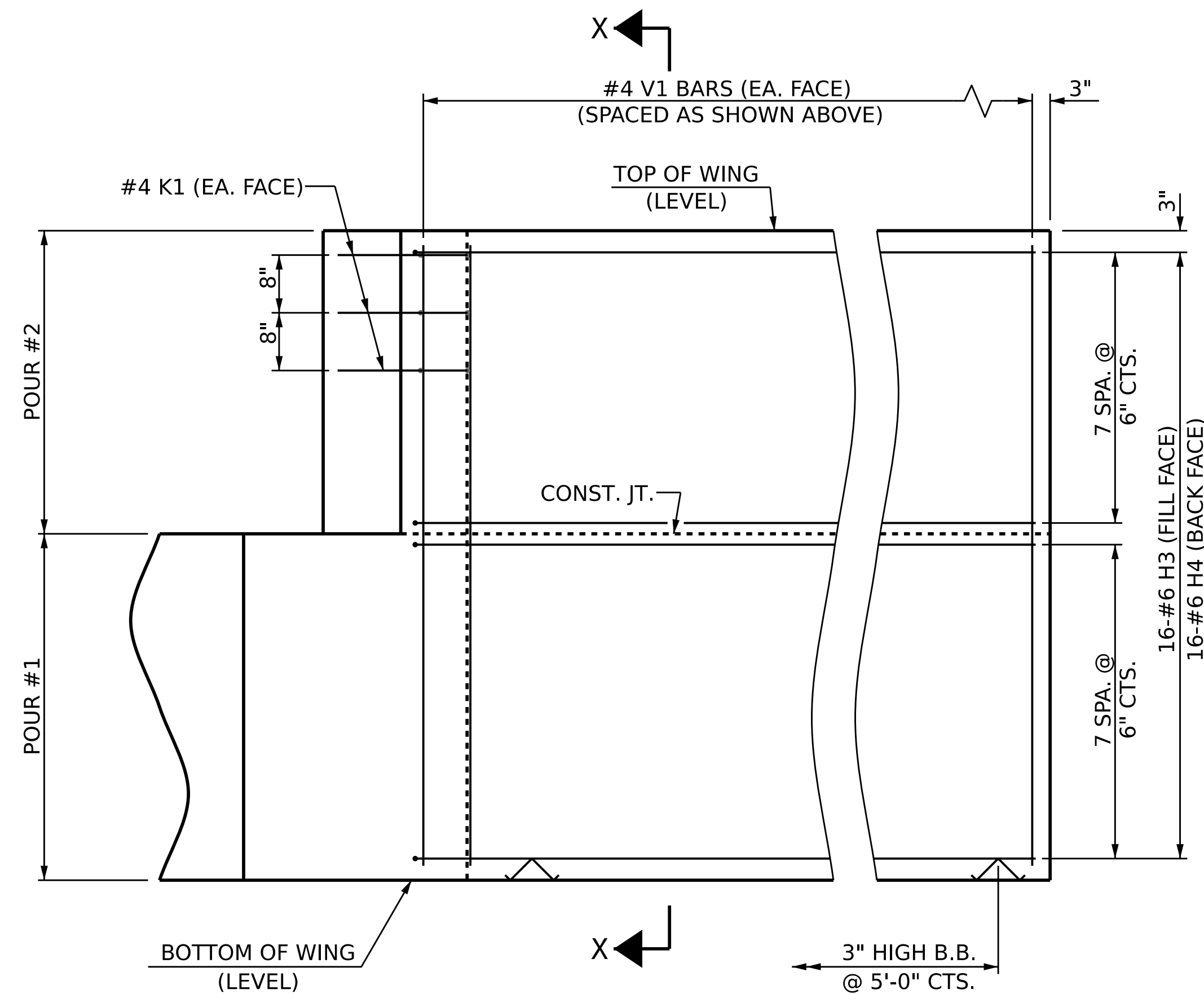
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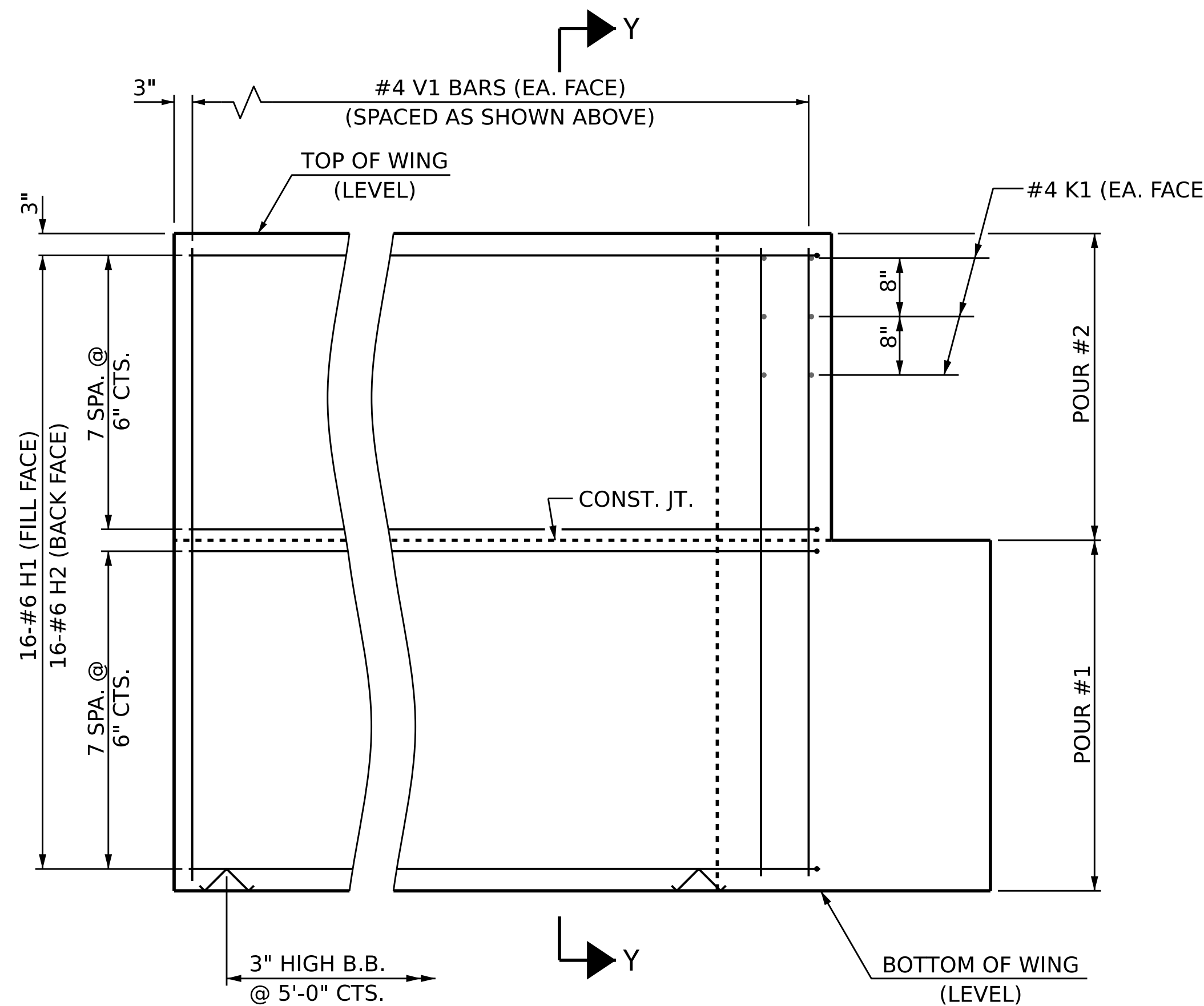
PLAN OF WING W1



PLAN OF WING W2

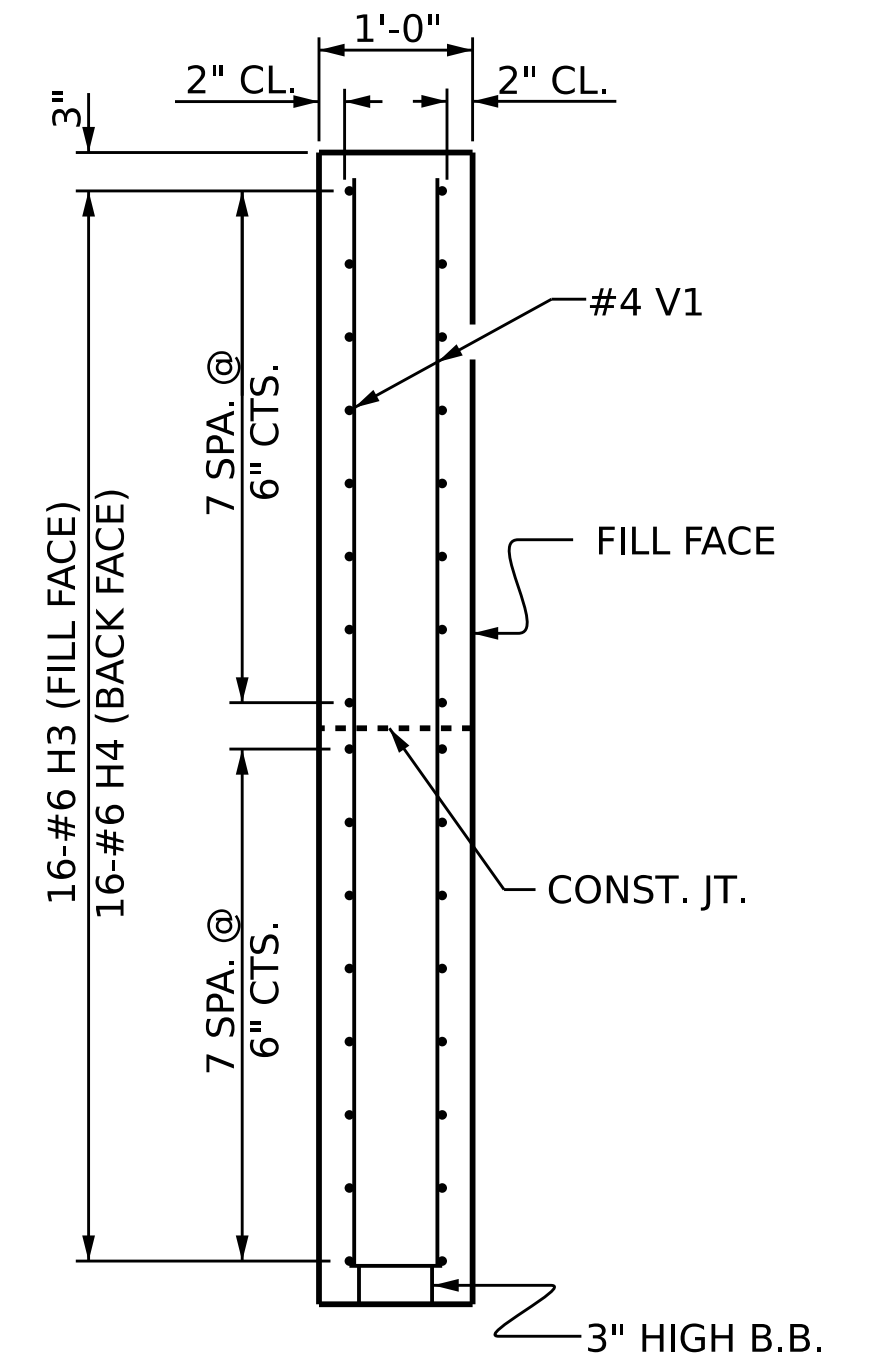


ELEVATION OF WING W1

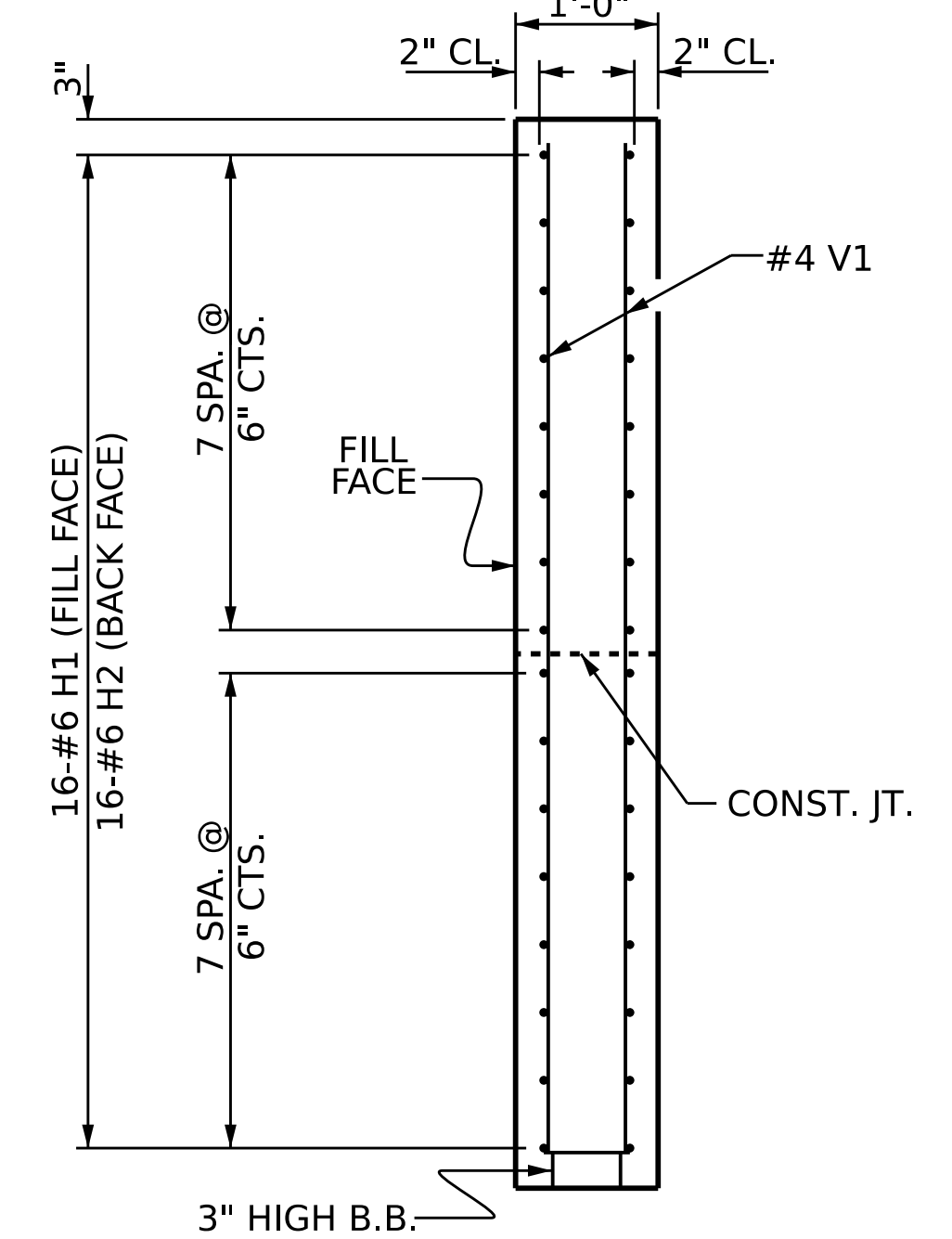


ELEVATION OF WING W2

WING DETAILS



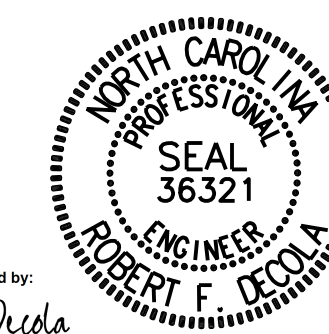
SECTION X-X



SECTION Y-Y

PROJECT NO. **BP12-R029**
IREDELL COUNTY
 STATION: **16+92.00 -L-**

SHEET 3 OF 4



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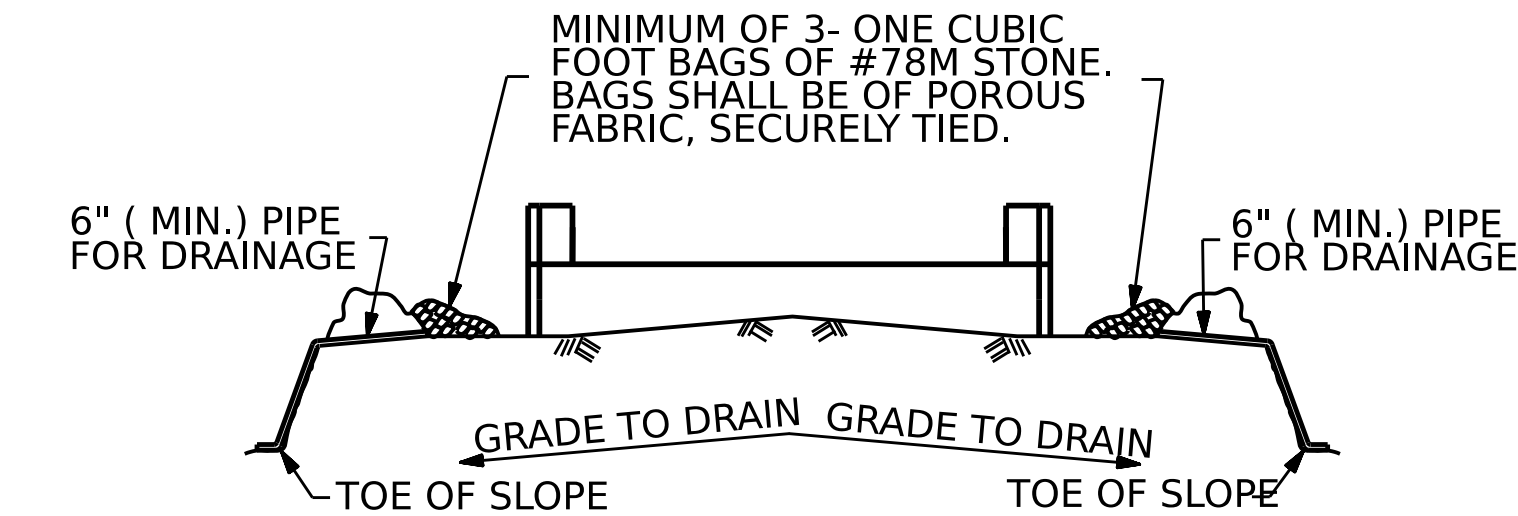
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
**END BENT
 WING DETAILS**

DRAWN BY : **J.M.A. Montes-Aviles** DATE : **1/16/2025**
 CHECKED BY : **R.F. DeCola** DATE : **1/16/2025**
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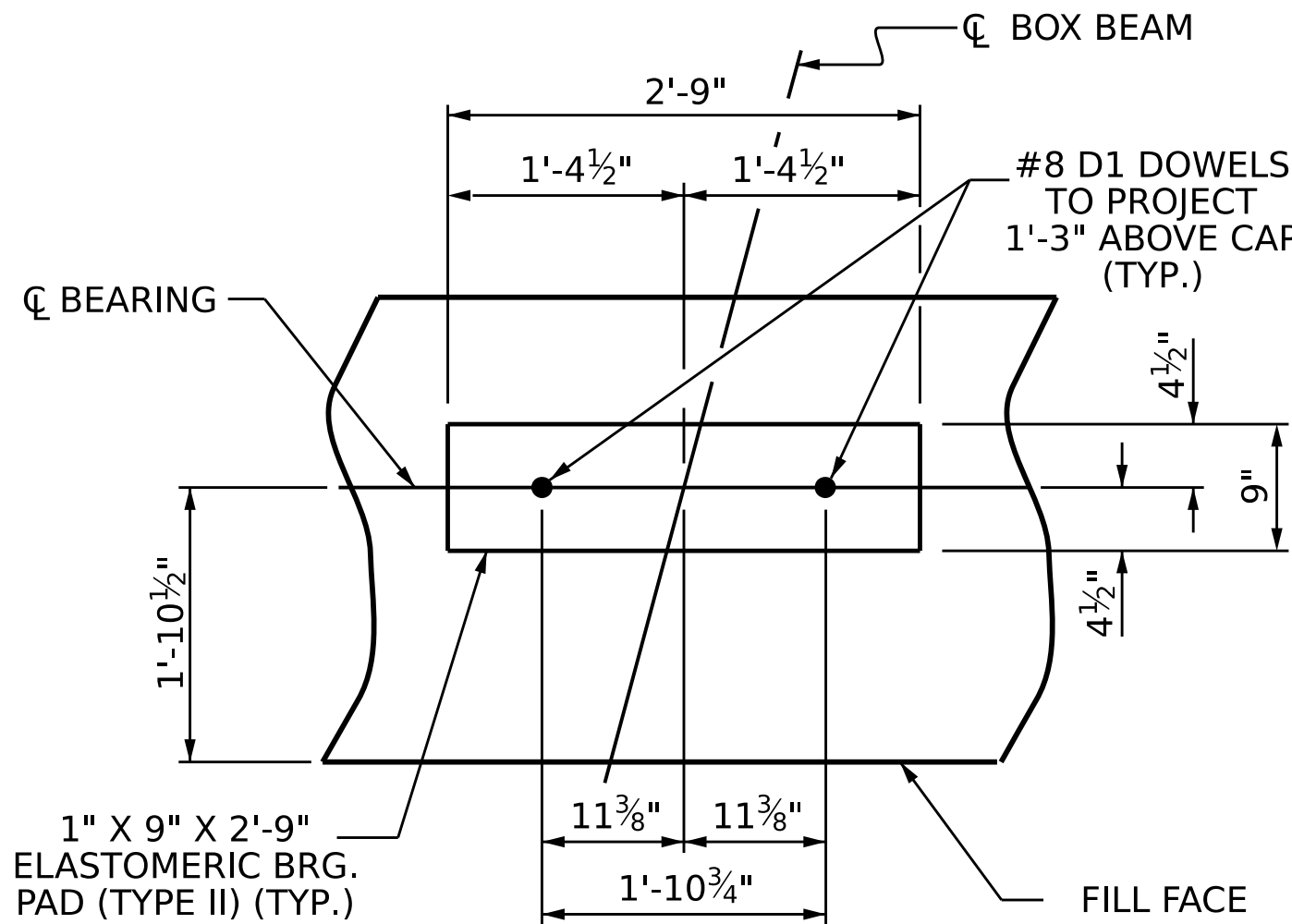


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

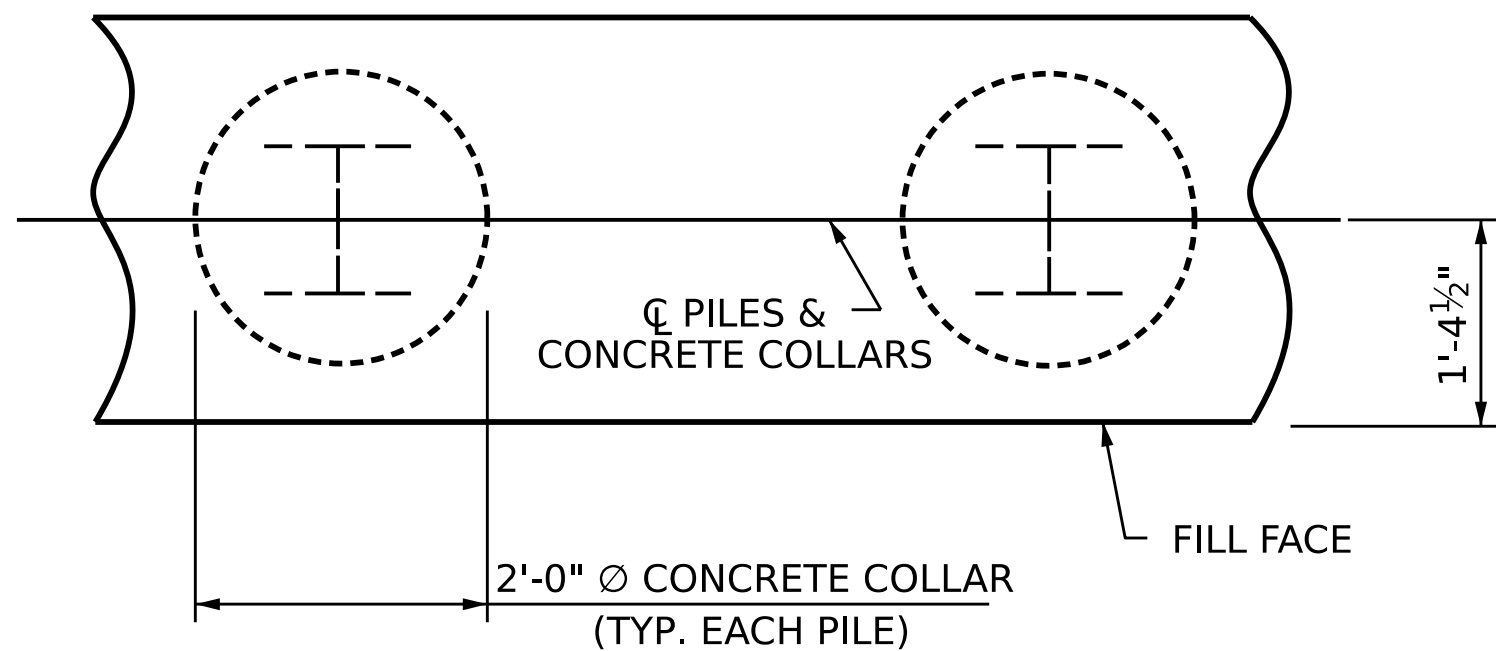
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

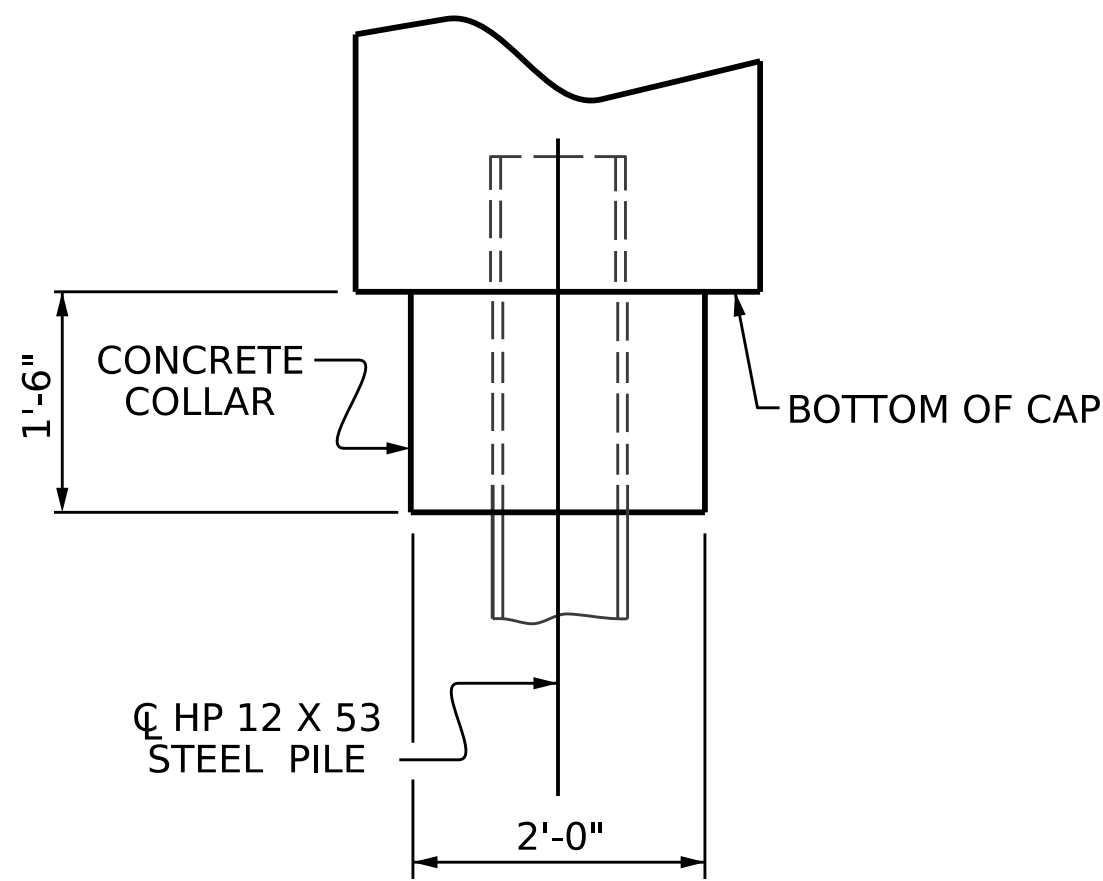


DETAIL "A"

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



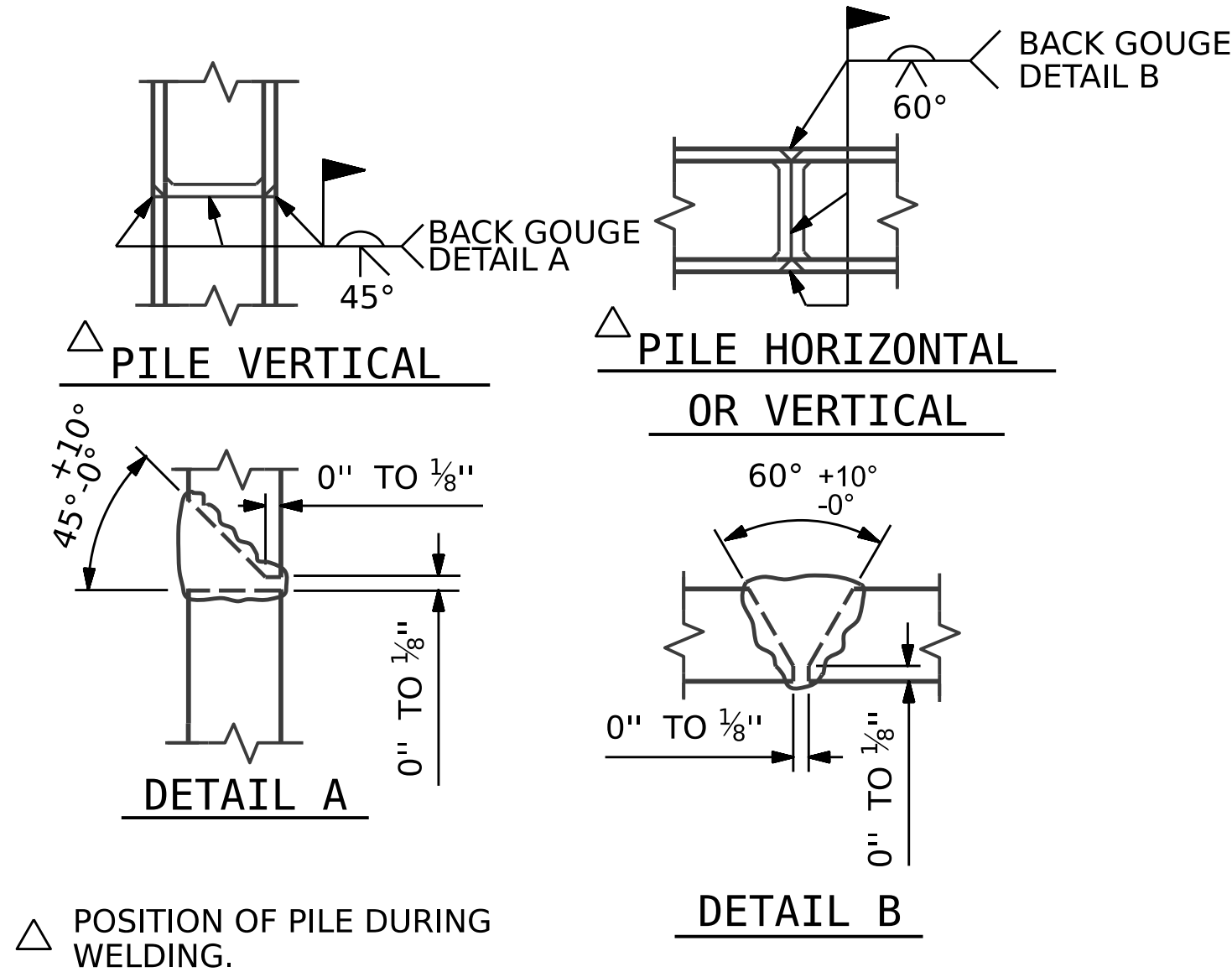
PLAN



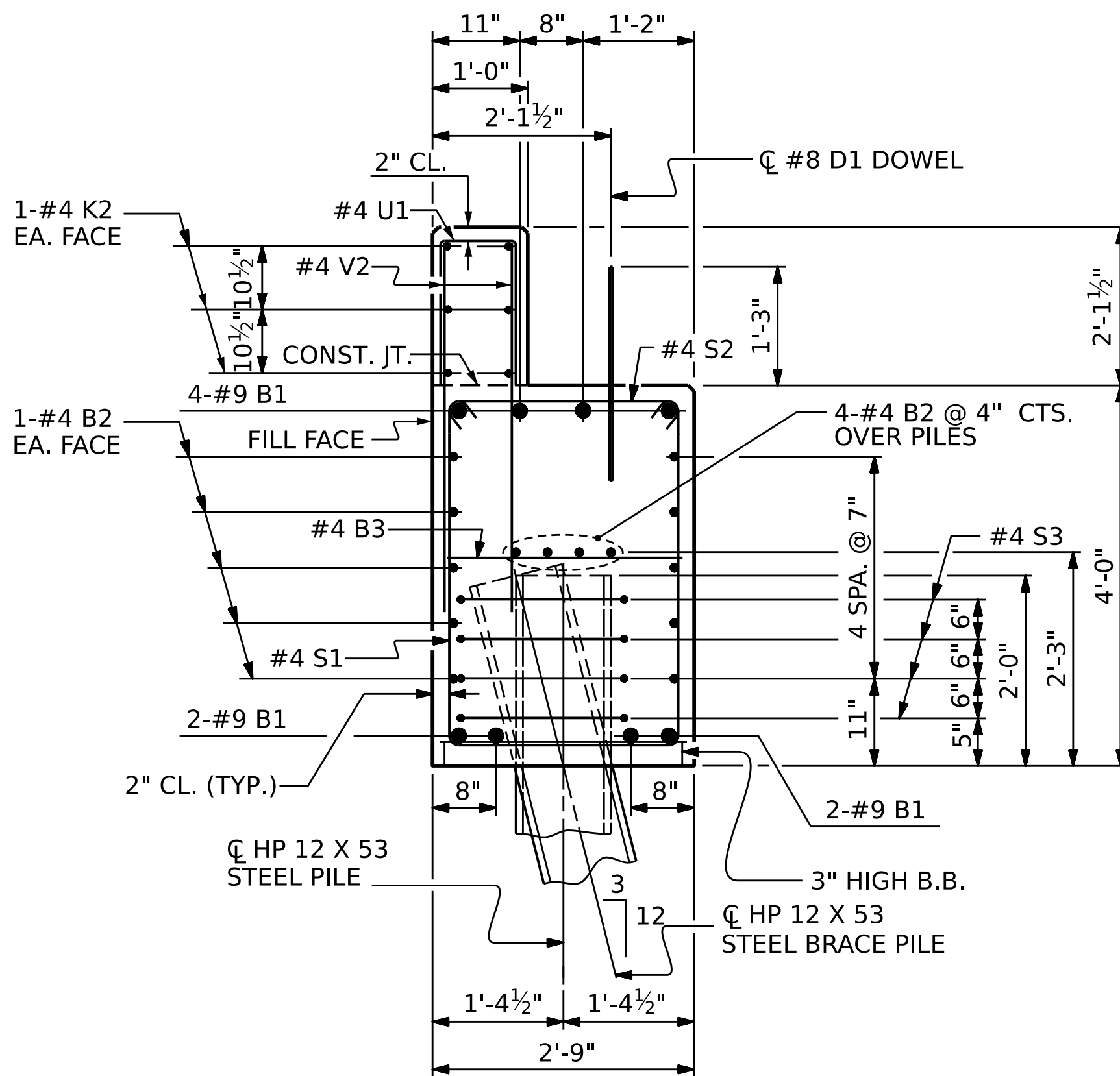
ELEVATION

CORROSION PROTECTION FOR STEEL PILES DETAIL

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

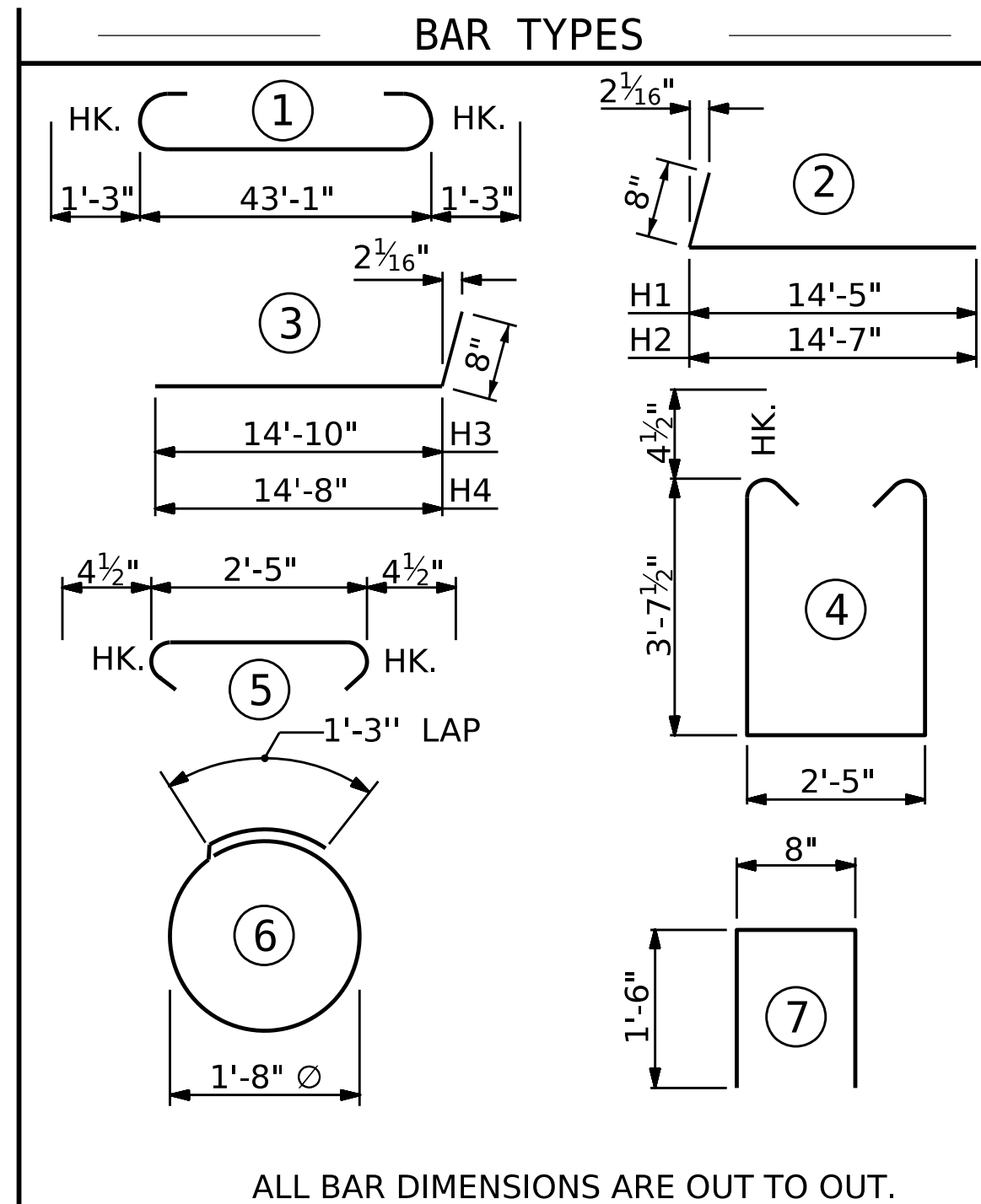


PILE SPLICE DETAILS



SECTION A-A

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



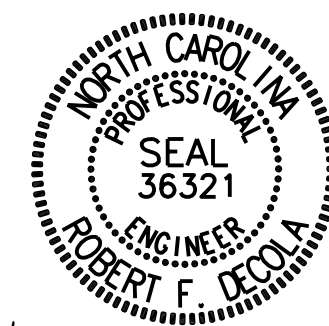
BILL OF MATERIAL					
FOR ONE END BENT					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9		45'-7"	1240
B2	28	#4	STR	22'-10"	427
B3	11	#4	STR	2'-5"	18
D1	24	#8	STR	2'-3"	144
H1	16	#6	2	15'-1"	362
H2	16	#6	2	15'-3"	366
H3	16	#6	3	15'-6"	372
H4	16	#6	3	15'-4"	368
K1	12	#4	STR	3'-1"	25
K2	12	#4	STR	22'-10"	183
S1	58	#4	4	10'-5"	404
S2	58	#4	5	3'-2"	123
S3	28	#4	6	6'-6"	122
U1	37	#4	7	3'-8"	91
V1	77	#4	STR	7'-8"	394
V2	74	#4	STR	5'-9"	284
REINFORCING STEEL (FOR ONE END BENT)				4923 LBS.	
CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)					
POUR #1 CAP, LOWER PART OF WINGS & COLLARS				23.2 C.Y.	
POUR #2 BACKWALL & UPPER PART OF WINGS				8.1 C.Y.	
TOTAL CLASS A CONCRETE				31.3 C.Y.	

PROJECT NO. **BP12-R029**

IREDELL COUNTY

STATION: **16+92.00 -L-**

SHEET 4 OF 4



DocuSigned by:
Robert DeCola
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6/5/2025

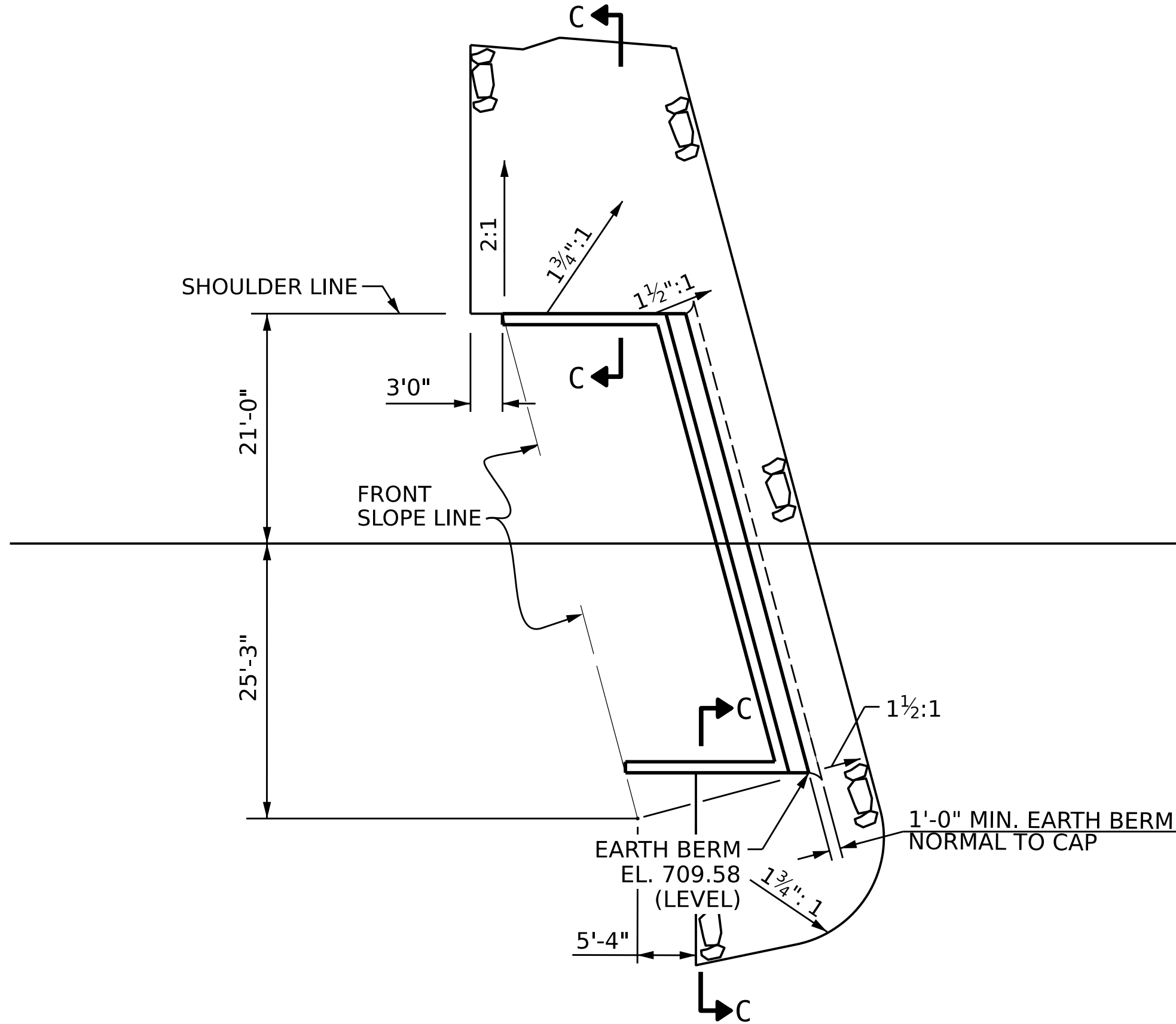
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SIGNATURES COMPLETED

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NO.	BY:	DATE:	NO.	BY:	
1			3		S-15
2			4		TOTAL SHEETS 17

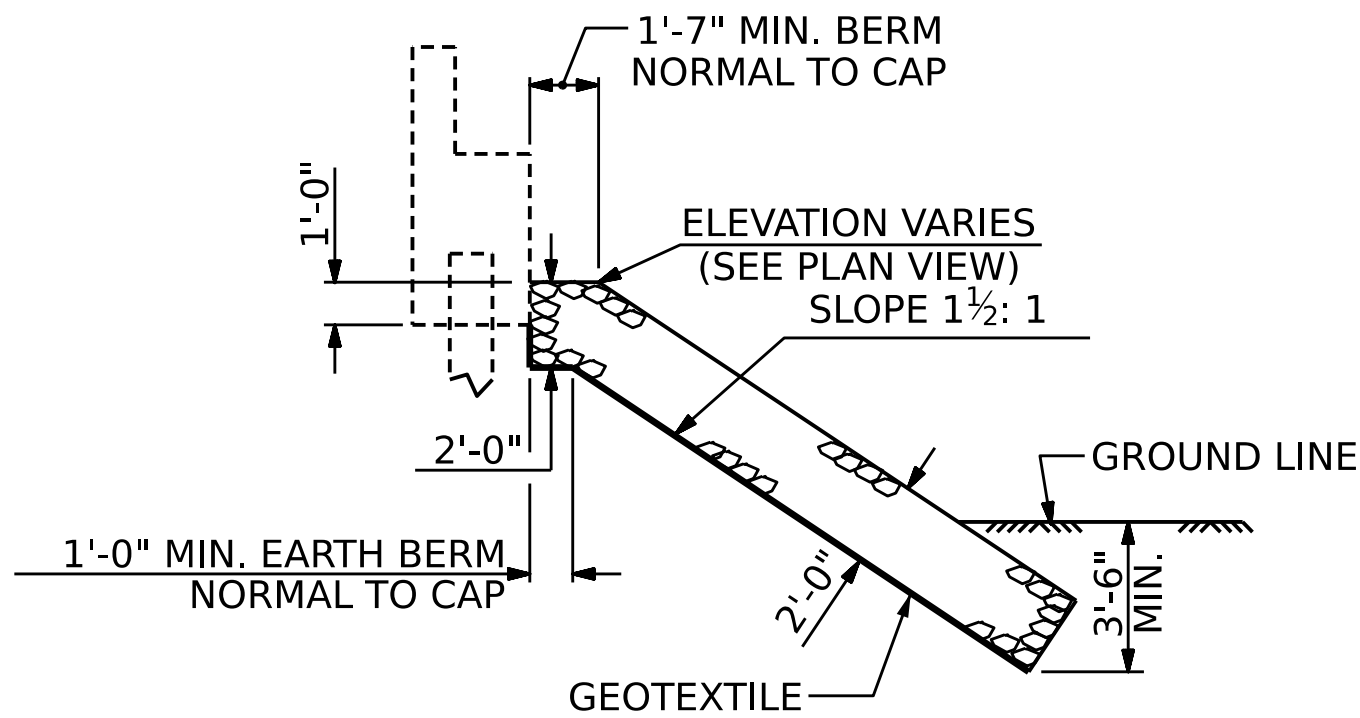
DRAWN BY : J.M.A. Montes-Aviles DATE : 1/16/2025
CHECKED BY : R.F. DeCola DATE : 1/16/2025
DESIGN ENGINEER OF RECORD: R.F. DeCola DATE : 6/05/2025

DRAWN BY : J.M.A. Montes-Aviles DATE : 1/16/2025
CHECKED BY : R.F. DeCola DATE : 1/16/2025
DESIGN ENGINEER OF RECORD: R.F. DeCola DATE : 6/05/2025

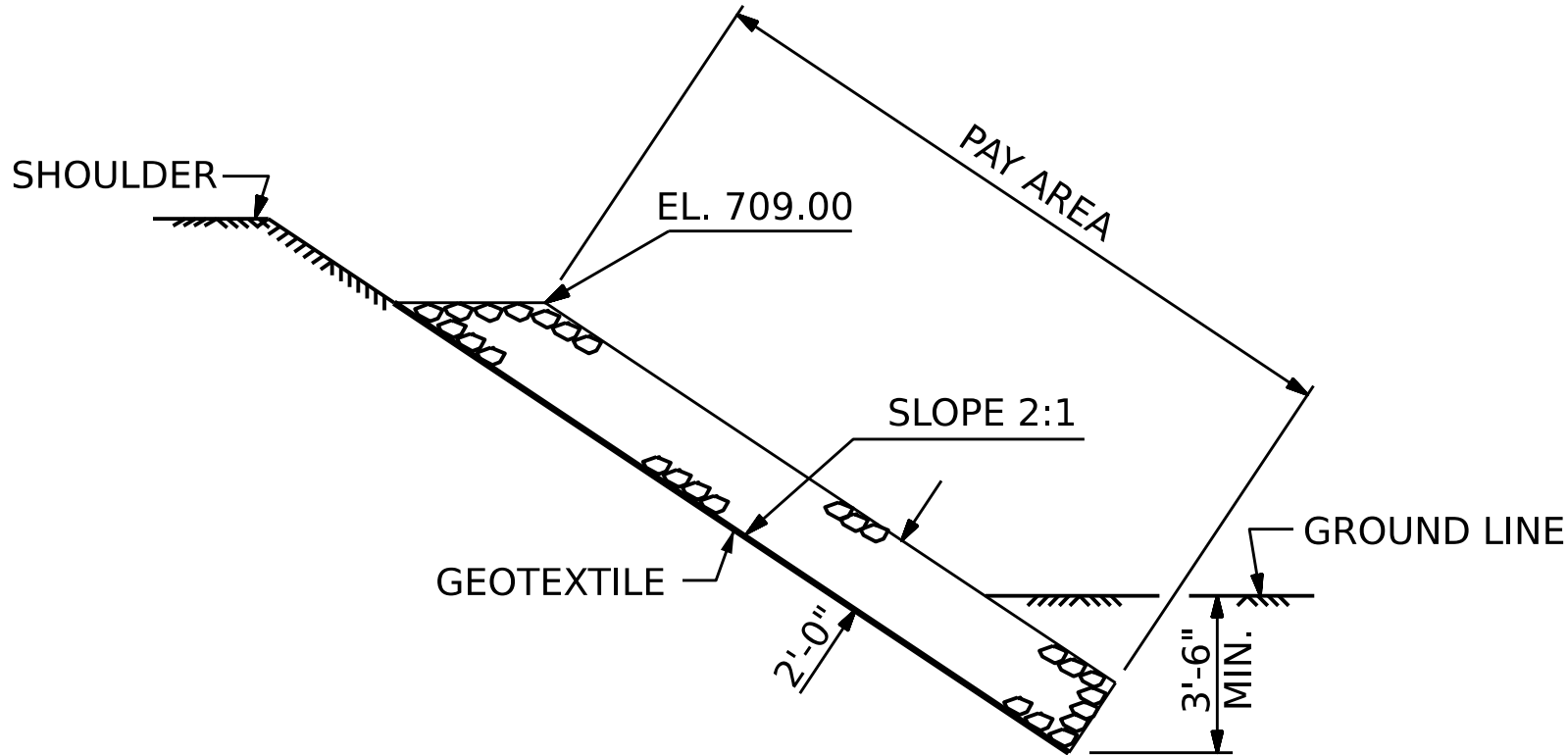
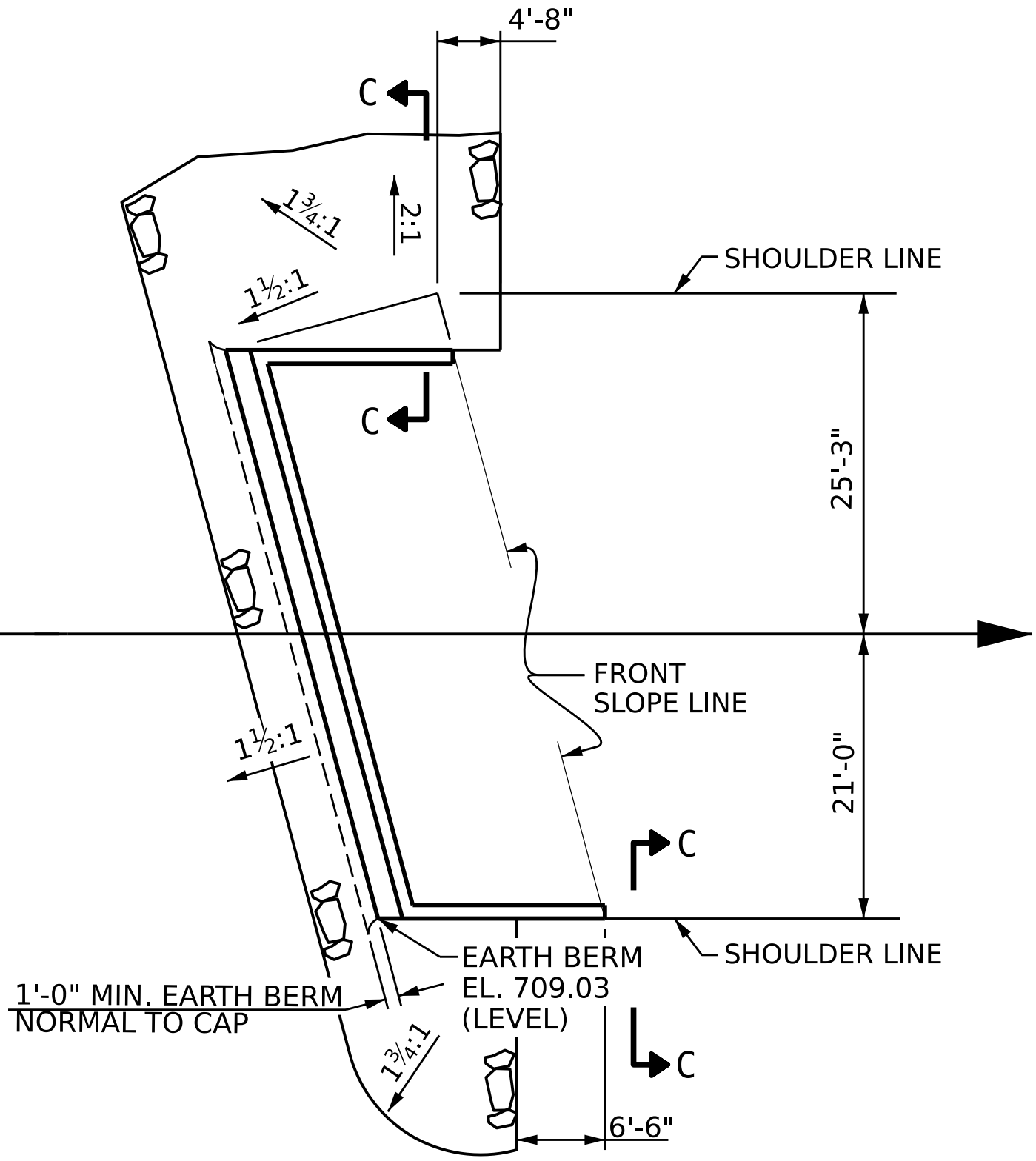
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*****USERNAME*****



BERM RIP RAPPED



SECTION C-C
BERM RIP RAPPED



SECTION C-C

NOTES:
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

ESTIMATED QUANTITIES		
BRIDGE @ STA. 16+92.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	84	93
END BENT 2	83	92
TOTAL	167	185

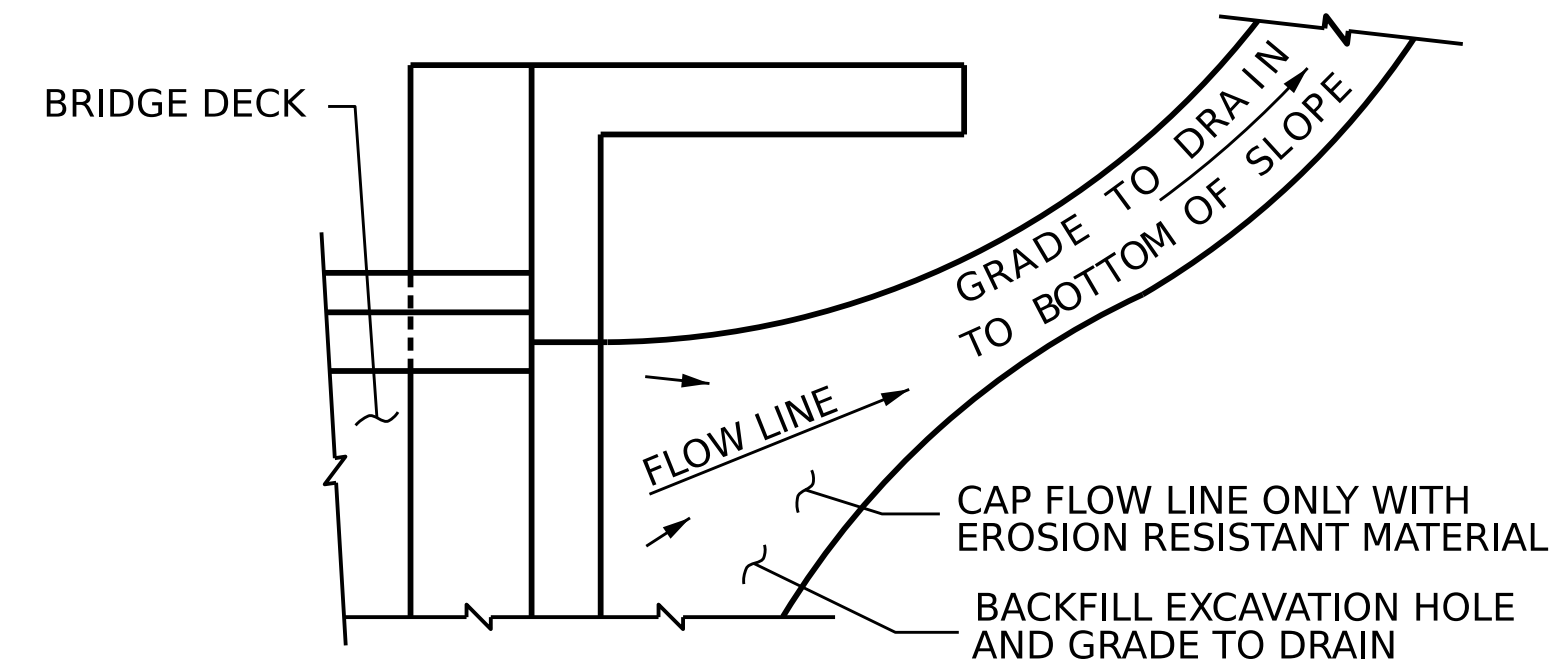
PROJECT NO. **BP12-R029**
IREDELL COUNTY
STATION: **16+92.00 -L-**



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6/5/2025

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STATE OF NORTH CAROLINA						SHEET NO. S-16
DEPARTMENT OF TRANSPORTATION						
RALEIGH						
STANDARD						TOTAL SHEETS 17
RIP RAP DETAILS						
REVISIONS						TOTAL SHEETS 17
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			



A cross-sectional diagram of a temporary slope drain. The drain is a pipe with a 4'-0" horizontal section at the top, followed by a downward slope, and then a horizontal section at the bottom. The top horizontal section is labeled "ELBOW" at its right end. The bottom horizontal section is labeled "ELBOW" at its right end. The bottom horizontal section is labeled "TOE OF FILL" at its left end. The bottom horizontal section is labeled "CLASS 'B' STONE FOR EROSION CONTROL" at its right end. The top horizontal section is labeled "TEMPORARY SLOPE DRAIN" at its right end.

12" MIN.

3" EROSION RESISTANT MATERIAL OVER PIPE

EARTH DITCH BLOCK

12"

4'-0" MIN.

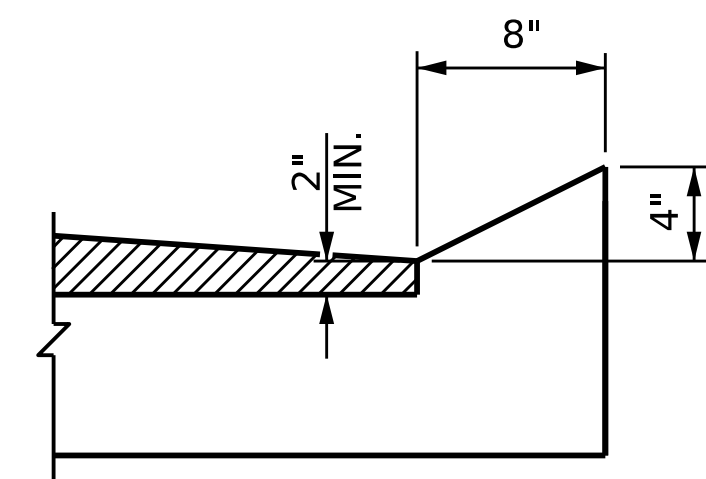
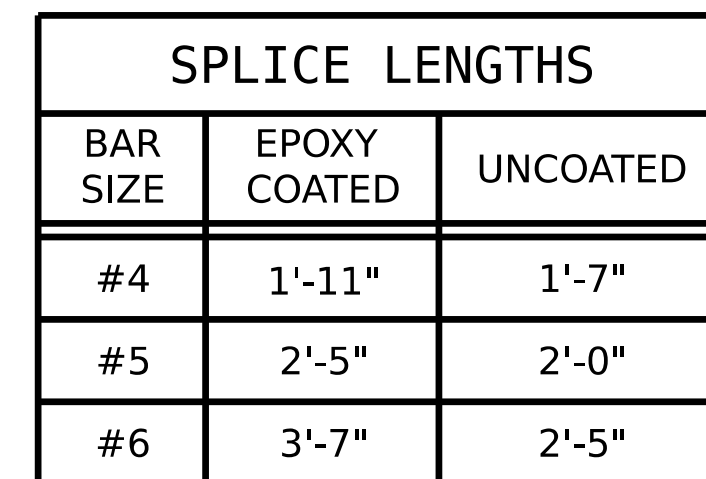
FILL SLOPE

AB,
PE

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.

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

STATION: 16+92.00 -L-



6/5/2025

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
**BRIDGE APPROACH SLAB
FOR PRESTRESSED CONCRETE
BOX BEAM UNIT**
(SUB-REGIONAL TIER)

75° SKEW

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

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 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 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1 1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

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

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

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

HANDRAILS AND POSTS:

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

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

ENGLISH

JANUARY, 1990

STD. NO. SN