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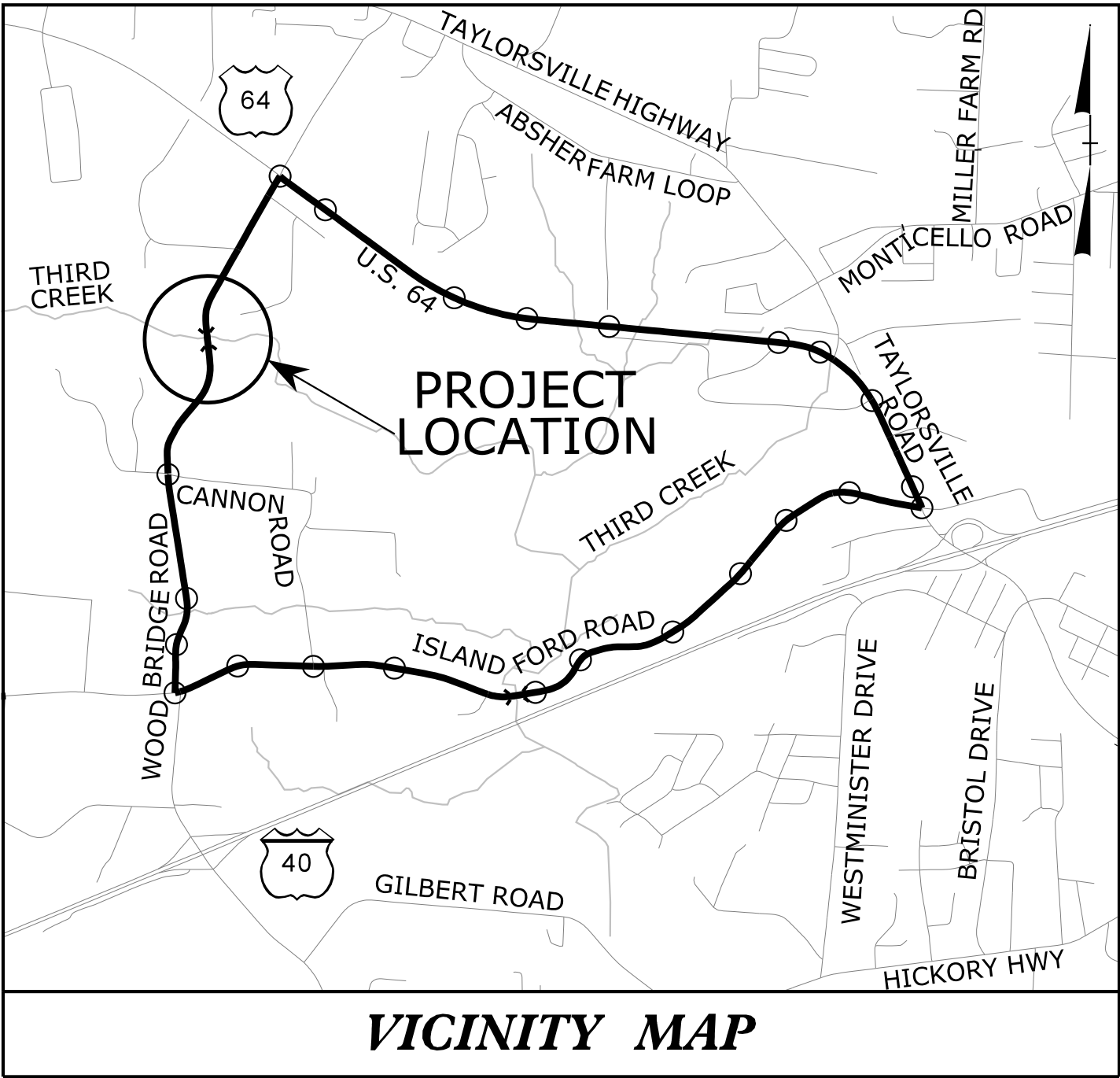
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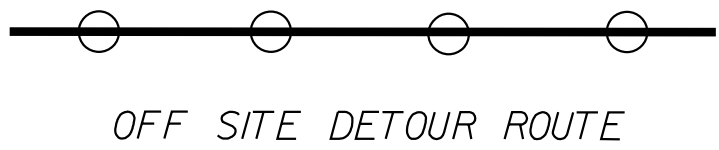
PROJECT: 17BP.12.R.78

CONTRACT: DL00353

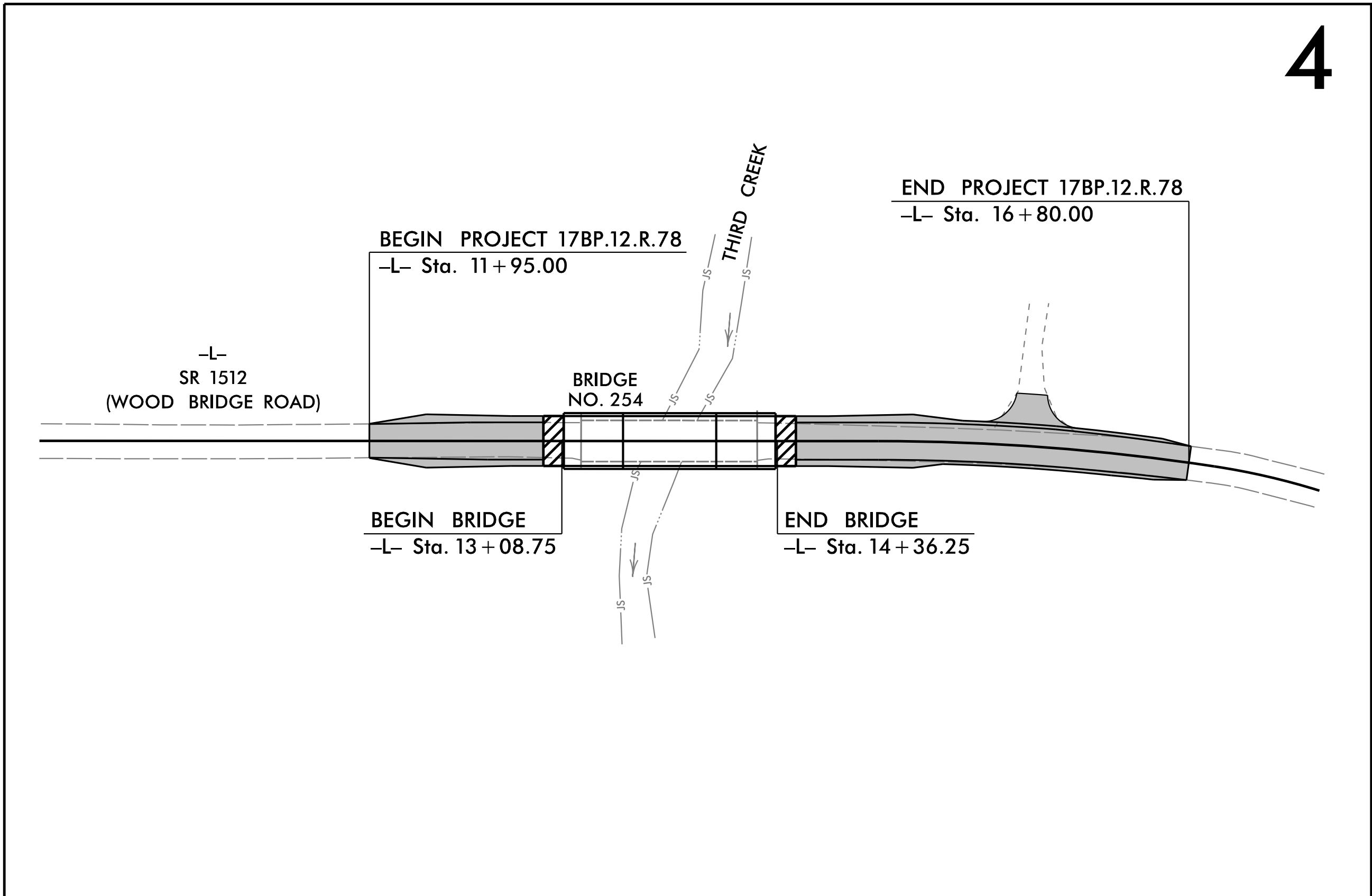
See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols
See Sheet 1C-1 For Survey Control Sheet



VICINITY MAP



TO CANNON RD



*DESIGN EXCEPTION REQUIRED FOR MAXIMUM VERTICAL GRADE,
SAG CURVE K VALUE AND VERTICAL STOPPING SIGHT DISTANCE

GRAPHIC SCALES



PLANS



PROFILE (HORIZONTAL)



PROFILE (VERTICAL)

DESIGN DATA

ADT 2019 = 1000 VPD
ADT 2040 = 1500 VPD

T = 6%
V = 60 MPH

FUNC CLASS =
RURAL LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT 17BP.12.R.78 = 0.068 MILES

LENGTH STRUCTURE PROJECT 17BP.12.R.78 = 0.024 MILES

TOTAL LENGTH PROJECT 17BP.12.R.78 = 0.092 MILES

PLANS PREPARED FOR
THE NCDOT BY:

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JULY 12, 2024

LETTING DATE:
JULY 22, 2025

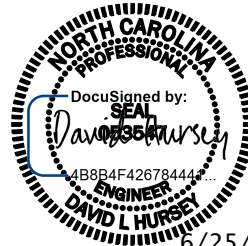
Kimley »Horn

TYLER G. SPRING, P.E.
PROJECT ENGINEER

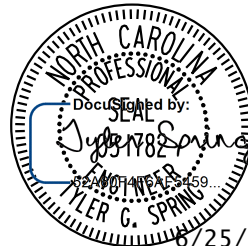
DAVID HURSEY, P.E.
PROJECT DESIGN ENGINEER

JOSH WHITE, P.E., P.L.S.
NCDOT CONTACT

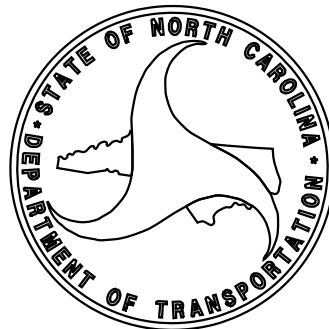
HYDRAULICS ENGINEER



SIGNATURE:
ROADWAY DESIGN ENGINEER

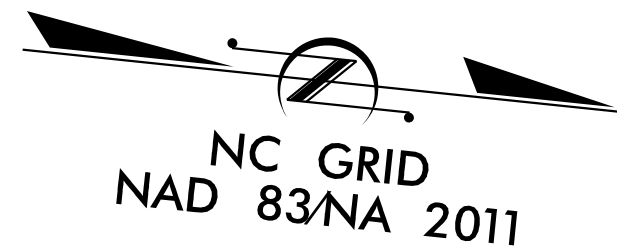
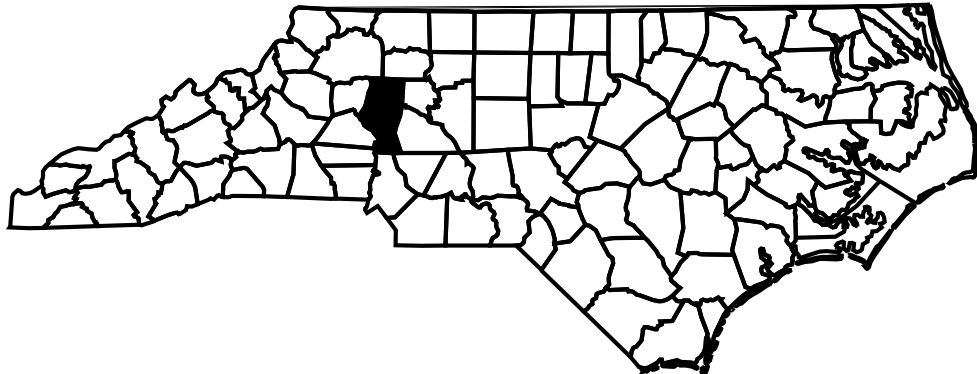


SIGNATURE:



STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.12.R.78	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.12.PE.78		P.E.	
17BP.12.ROW.78		R/W	
17BP.12.R.78		CONST.	

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



Kimley » Horn ©2025 KIMLEY HORN AND ASSOCIATES, INC. 400 DODGE #400 FAYETTEVILLE STREET, SUITE 600 RALEIGH, NORTH CAROLINA 27601 PHONE: (919) 731-2000	PROJECT REFERENCE NO.		SHEET NO.
	17BPJ2.R78		1A
	RW SHEET NO.		
	ROADWAY ENGINEER	HYDRAULICS ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

SHEET NUMBER	SHEET
I	TITLE SHEET
IA	INDEX OF SHEETS, GENERAL NOTES, LISTS
IB	CONVENTIONAL SYMBOLS SHEET
RWOI THRU RWO4	SURVEY CONTROL, EXISTING CENTERLINE
	EASEMENTS AND PROPERTY TIES
2A-I	PAVEMENT SCHEDULE, TYPICAL SECTION
2C-I THRU 2C-4	ROADWAY DETAILS
2D-I	DRAINAGE DETAILS
3B-I THRU 3B-3	SUMMARY SHEETS
3D-I	SUMMARY OF DRAINAGE QUANTITIES
4	PLAN SHEET
5	PROFILE SHEET
TMP-I THRU TMP-2	TRANSPORTATION MANAGEMENT PLANS
PMP-I	PAVEMENT MARKING AND SIGNING PLANS
EC-I THRU EC-5	EROSION CONTROL PLANS
UC-I THRU UC-5	UTILITY CONSTRUCTION PLANS
UO-I THRU UO-2	UTILITY BY OTHERS PLANS
X-I THRU X-5	CROSS-SECTIONS
S-I THRU S-25	STRUCTURE PLANS
SN	STRUCTURES STANDARD NOTES

EFFECTIVE: 01-16-24

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

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.

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

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02
USING 3 FOOT RADIUS OR RADIUS SHOWN ON THE PLANS. LOCATIONS OF DRIVES
WILL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

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.

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.

UTILITY OWNERS ON THIS PROJECT ARE :

ENERGY UNITED: JIM SHAGINAW - JIM.SHAGINAW@ENERGYUNITED.COM
SPECTRUM: DERRICK WAITERS - DERRICK.WAITERS@CHARTER.COM
PSNC: NOT IN CONFLICT
WEST IREDELL WATER COMPANY: SARA MOORE - IREDELOI@BELLSOUTH.NET

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

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

EFFECTIVE: 01-16-2024

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	
200.03	METHOD OF CLEARING - METHOD III
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 I 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	
806.01	CONCRETE RIGHT-OF-WAY MARKER
840.00	CONCRETE BASE PAD FOR DRAINAGE STRUCTURES
840.24	FRAMES AND NARROW SLOT SAG GRATES
840.25	ANCHORAGE FOR FRAMES - BRICK OR CONCRETE OR PRECAST
840.35	TRAFFIC BEARING GRATED DROP INLET - FOR CAST IRON DOUBLE FRAME AND GRATES
840.46	TRAFFIC BEARING PRECAST DRAINAGE STRUCTURE
840.66	DRAINAGE STRUCTURE STEPS
846.01	CONCRETE CURB, GUTTER AND CURB & GUTTER
846.04	DROP INLET INSTALLATION IN SHOULDER BERM GUTTER
848.02	DRIVEWAY TURNOUT - RADIUS TYPE
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)
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

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	

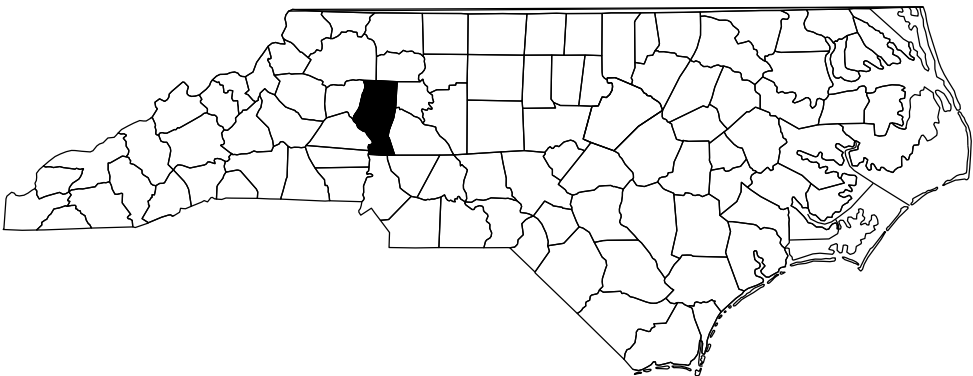
SANITARY SEWER:

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	

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.12.R.78	RW01	5

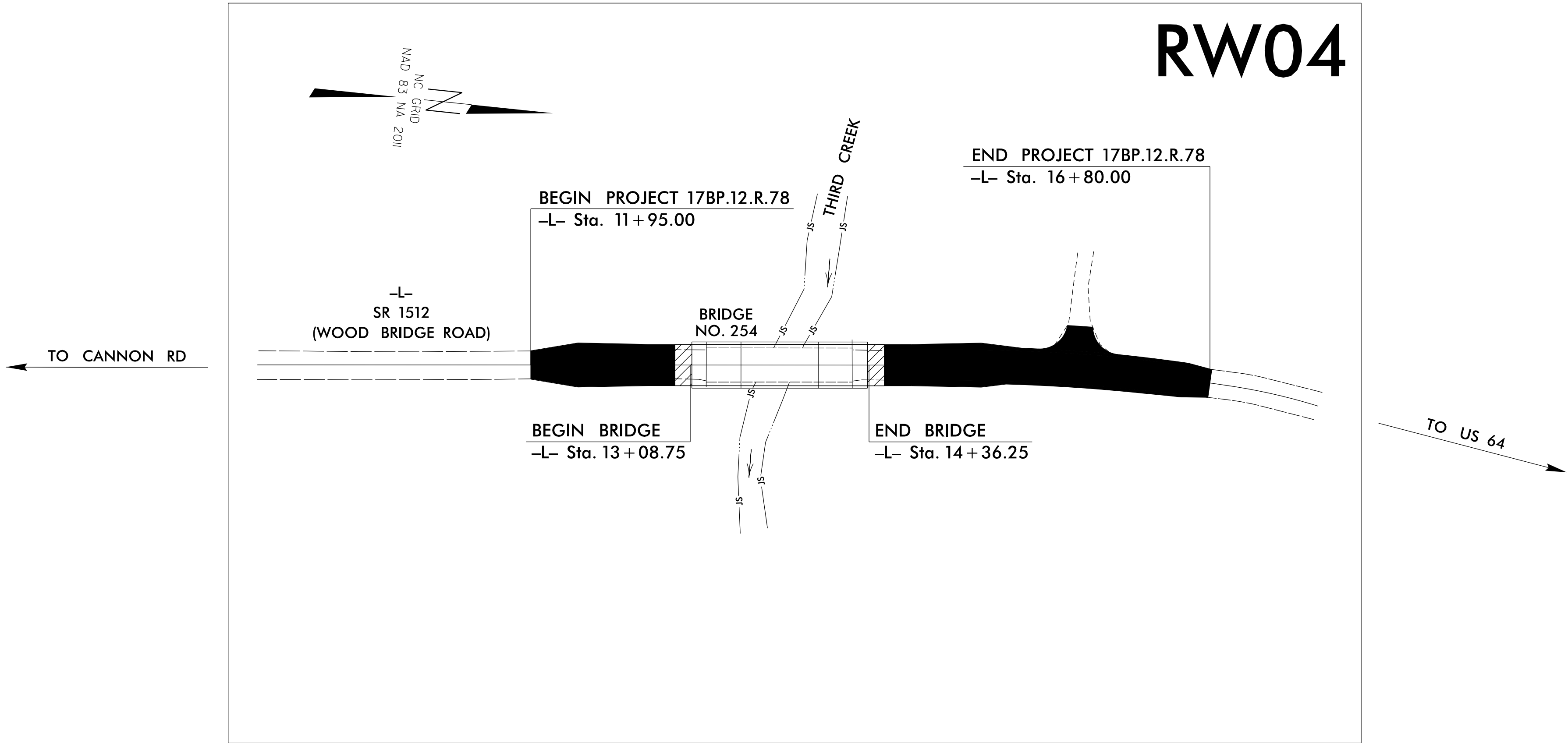


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

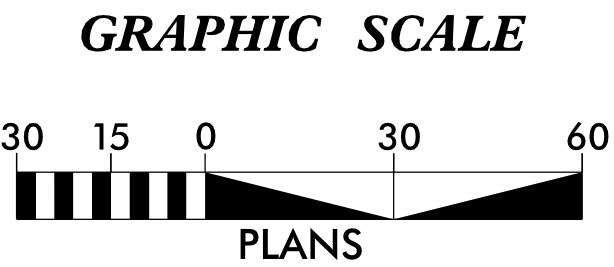
SURVEY CONTROL, EXISTING CENTERLINES,
RIGHT OF WAY, EASEMENTS AND PROPERTY TIES

IREDELL COUNTY

TIP PROJECT: 17BP.12.R.78



NOT TO SCALE



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "BL-3" WITH NAD 83/2011 STATE PLANE GRID COORDINATES OF NORTHING: 753206.948(ft) EASTING: 141425.424(ft) ELEVATION: 886.52(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99988196 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BL-3" TO -L- STATION 10+00 IS S 04°-06'37" E 802.51(ft) ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

Prepared in the Office of:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION 12 LOCATION AND SURVEYS
2312 KINGS ROAD EXTENSION
SHELBY, NC 28152

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
05/23/2024

LETTING DATE:
04/22/2025

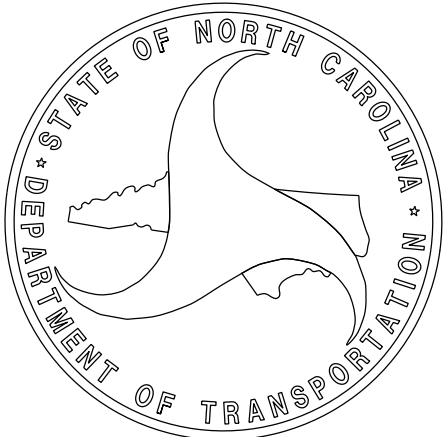
**PROFESSIONAL LAND
SURVEYOR**



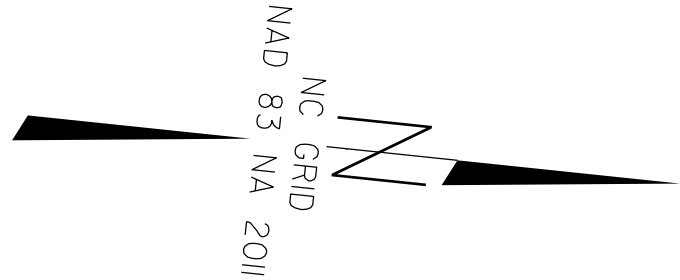
DocuSigned by:
Gavin D. Proffitt
282D412268164E7

SIGNATURE:

09/04/2024
Date:



REVISIONS



SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

Not To Scale



BL	POINT	DESC.	NORTH	EAST	ELEVATION
1		BL - 1	752421.2907	1414496.8748	892.09
2		BL - 2	752841.4770	1414456.0780	863.75
3		BL - 3	753206.9480	1414425.4240	886.52

BL	POINT	N	E	BEARING	DIST
POT		752421.291	1414496.875		
LINE				N 05°32'44.1" W	422.16
POT		752841.477	1414456.078		
LINE				N 04°47'40.1" W	366.75
POT		753206.948	1414425.424		

BM1 ELEVATION = 890.69
N 752417 E 1414529
EL STATION 10+06.00 47 RIGHT
COTTON SPINDLE IN ROOT 36" BEECH

EL	POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
PC		752406.500	1414482.945							
CURVE				N 05°56'13.5" W	169.24	01°17'34.4"(LT)	00°45'50.2"	169.24	84.62	7500.00
PCC		752574.829	1414465.439							
CURVE				N 06°11'48.5" W	94.49	00°46'24.3"(RT)	00°49'06.6"	94.49	47.25	7000.00
PT		752668.765	1414455.240							
LINE				N 05°48'36.4" W	162.15					
PC		752830.087	1414438.825							
CURVE				N 04°20'56.0" W	163.20	02°55'20.9"(RT)	01°47'25.8"	163.22	81.63	3200.00
PCC		752992.820	1414426.449							
CURVE				N 00°29'02.6" W	100.65	04°48'25.9"(RT)	04°46'28.7"	100.68	50.37	1200.00
PCC		753093.469	1414425.599							
CURVE				N 06°38'13.0" E	69.08	09°26'05.3"(RT)	13°38'30.7"	69.16	34.66	420.00
PT		753162.088	1414433.583							

PROJECT REFERENCE NO.
17BP.12.R.78

SHEET NO.
RW02C-1

Location and Surveys

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION 12 LOCATION AND SURVEYS
2312 KINGS ROAD EXTENSION
SHELBY, NC 28152

PROJECT SURVEYOR

NORTH CAROLINA
PROFESSIONAL
SEAL
L-5298
LAND SURVEYOR
GAVIN D. PROFFIT

DocuSigned by:
Gavin D. Proffit
293D412268164E7...

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UNLESS ALL SIGNATURES COMPLETED

I, Gavin D. Proffit, PLS, certify that the Project Control was verified under my supervision from an actual GPS survey made under my supervision and the following information was used to verify the survey:

Class of survey: **AA**
Type of GPS field procedure: RTN
Dates of survey: July 15th, 2024
Datum/Epoch: NAD 83/NA 2011
Published/Fixed-control use: Published
Localized around: BL-3
Northing: 753206.948
Easting: 1414425.424
Combined grid factor: 0.99988196
Geoid model: Geoid 12b
Units: US Survey Feet

I also certify that the Baseline Control for this project was verified 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 July 15th, 2024 to August 29th, 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 3rd day of September, 2024.

DocuSigned by:
Gavin D. Proffit
2820412268164E7...
Professional Land Surveyor L-5298

NOTES:

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

REVISIONS

04 SEP 2024 09:18
S:\Projects\Bridges\1-ede11_48-0254\17BP.12.R.78\12-24-029_ROW_STAKING\New RW sheets\17bp.12.r.78.LS.r-w02d-1.dgn
gdp:offit AT LS-329852L

7/16/24

PROPOSED ALIGNMENT CONTROL SHEET

L			
TYPE	STATION	NORTH	EAST
POT	10+00.00	752406.5003	1414482.9446
PC	14+96.00	752899.8359	1414431.5598
PCC	16+95.12	753098.6833	1414425.8060
PT	17+59.06	753162.0882	1414433.5832

NOTES:

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

PROJECT REFERENCE NO.	SHEET NO.
17BP.12.R.78	RW02D-1
Location and Surveys	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION 12 LOCATION AND SURVEYS 2312 KINGS ROAD EXTENSION SHELBY, NC 28152	
PROJECT SURVEYOR SEAL L-5298 LAND SURVEYOR GAVIN D. PROFFIT DocuSigned by: <i>Gavin D. Proffitt</i> 282D412268164E7...	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

I, Gavin D. Proffitt, PLS, certify that the data compiled came from available surveys/mapping performed by others and provided to me by NCDOT and do not certify to the accuracy or quality of the individual data sources.

This 3rd day of July, 2024.

DocuSigned by:
Gavin D. Proffitt
282D412268164E7...

Professional Land Surveyor L-5298

REVISIONS

RIGHT OF WAY CONTROL SHEET

PROJECT REFERENCE NO.

17BP.12.R.78

SHEET NO.

RW03E-1

Location and Surveys

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION 12 LOCATION AND SURVEYS
2312 KINGS ROAD EXTENSION
SHELBY, NC 28152

PROJECT SURVEYOR

NORTH CAROLINA
PROFESSIONAL
LAND SURVEYOR
SEAL
L-5298
GAVIN D. PROFFIT

DocuSigned by:
Gavin D. Proffit
2820412208164E7...

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

I, Gavin D. Proffit, 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 and/or verified from July 15th to August 29th 2024, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 3rd day of September, 2024.

DocuSigned by:
Gavin D. Proffit
2820412208164E7...

Professional Land Surveyor L-5298

ROW MARKER IRON PIN AND CAP				
ALIGN	STATION	OFFSET	NORTH	EAST
L	12+85.00	50.00	752695.1467	1414503.1503
L	12+85.00	29.67	752693.0401	1414482.9248
L	12+85.00	-50.00	752684.7870	1414403.6884
L	12+85.00	-30.34	752686.8242	1414423.2475
L	14+60.00	50.00	752869.2051	1414485.0207
L	14+60.00	30.27	752867.1607	1414465.3926
L	14+60.00	-50.00	752858.8454	1414385.5588
L	14+60.00	-29.74	752860.9443	1414405.7104

ROW MARKER PERMANENT EASEMENT				
ALIGN	STATION	OFFSET	NORTH	EAST
L	10+00.00	30.00	752409.6118	1414512.7848
L	10+29.00	46.00	752440.1098	1414525.6927
L	12+22.00	-30.36	752624.1605	1414429.7487
L	12+30.00	61.00	752641.5822	1414519.7890
L	12+54.00	-62.00	752652.7106	1414394.9644
L	13+88.94	-50.00	752788.1667	1414392.9206
L	13+92.66	-62.00	752790.6198	1414380.6001
L	15+01.00	-58.00	752899.0137	1414373.3415
L	15+12.00	61.00	752921.3443	1414490.7418
L	15+63.00	-35.00	752964.7491	1414391.3500
L	15+63.00	-28.42	752965.1001	1414397.9160
L	15+63.00	-45.00	752964.2153	1414381.3643
L	16+10.00	-35.00	753012.9526	1414389.6264
L	16+10.00	-29.04	753013.0603	1414395.5829
L	16+63.00	30.28	753065.9222	1414454.9938

NOTES:

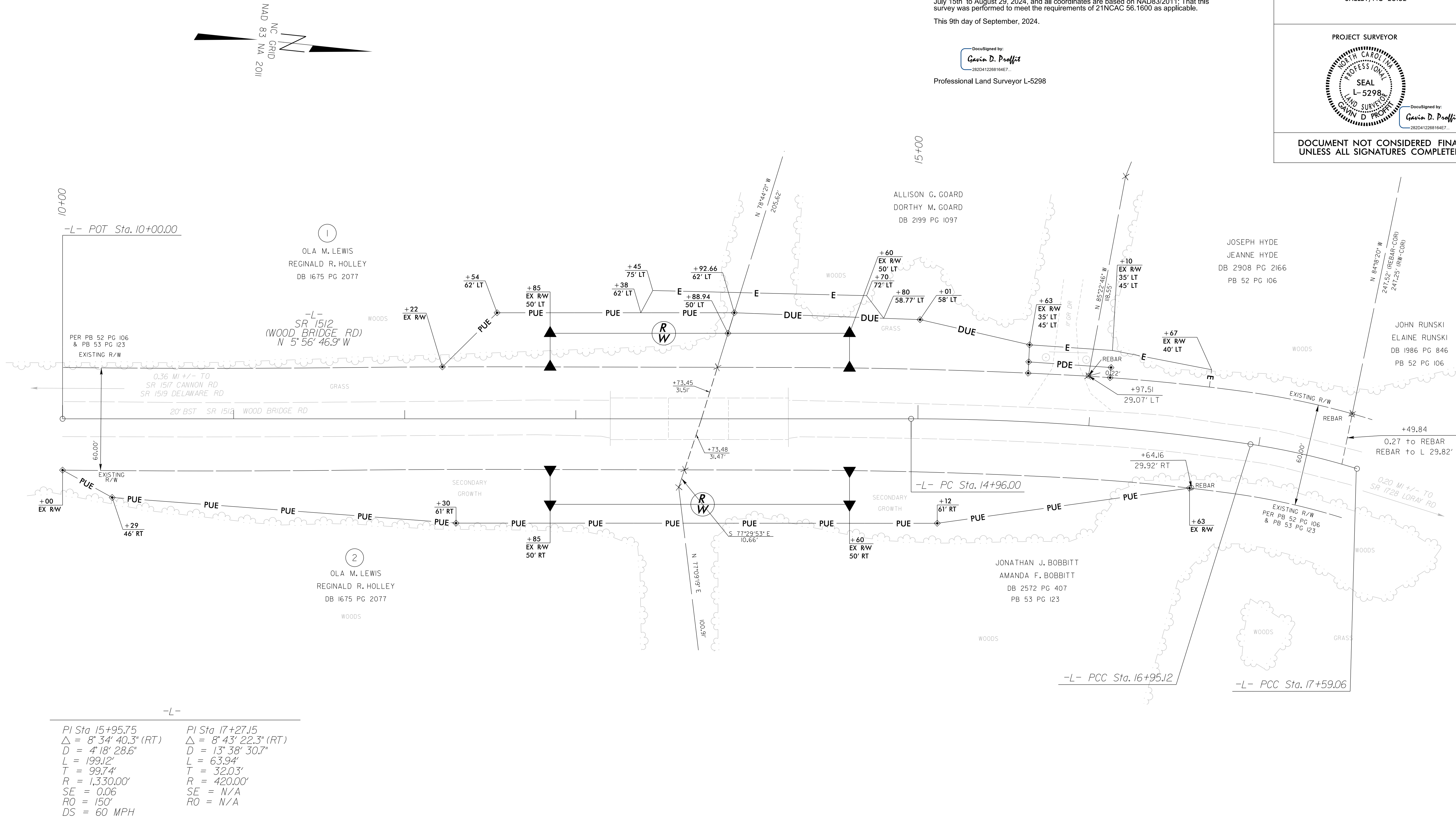
1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED JULY OF 2024.

I, Gavin D. Proffit, 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 and/or verified from July 15th to August 29, 2024, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 9th day of September, 2024.

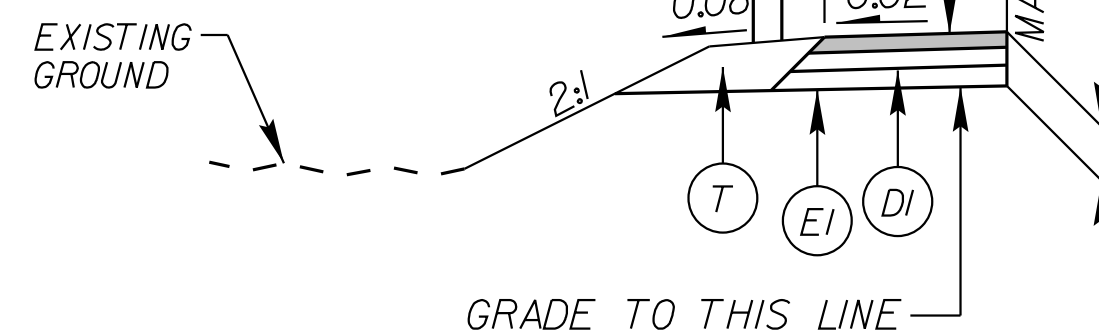
DocuSigned by:
Gavin D. Proffitt
282D412268164E7...

Professional Land Surveyor L-5298



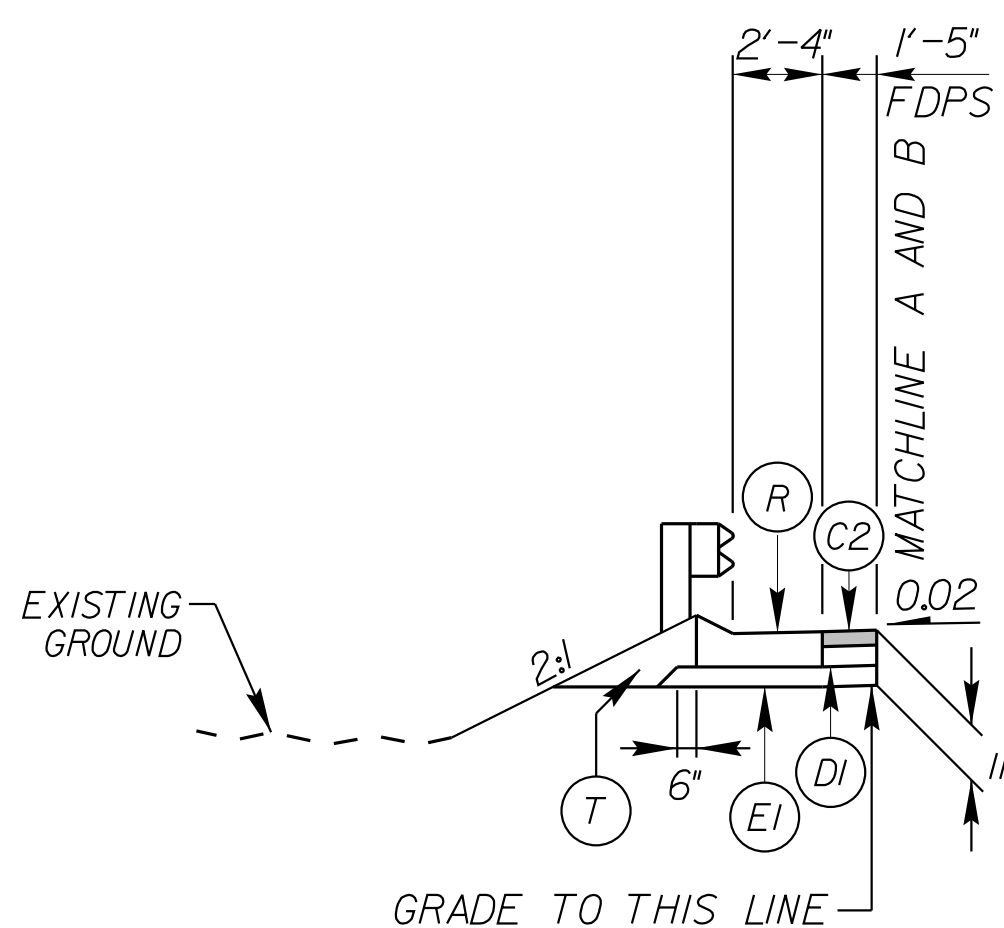
NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED JULY 2024.



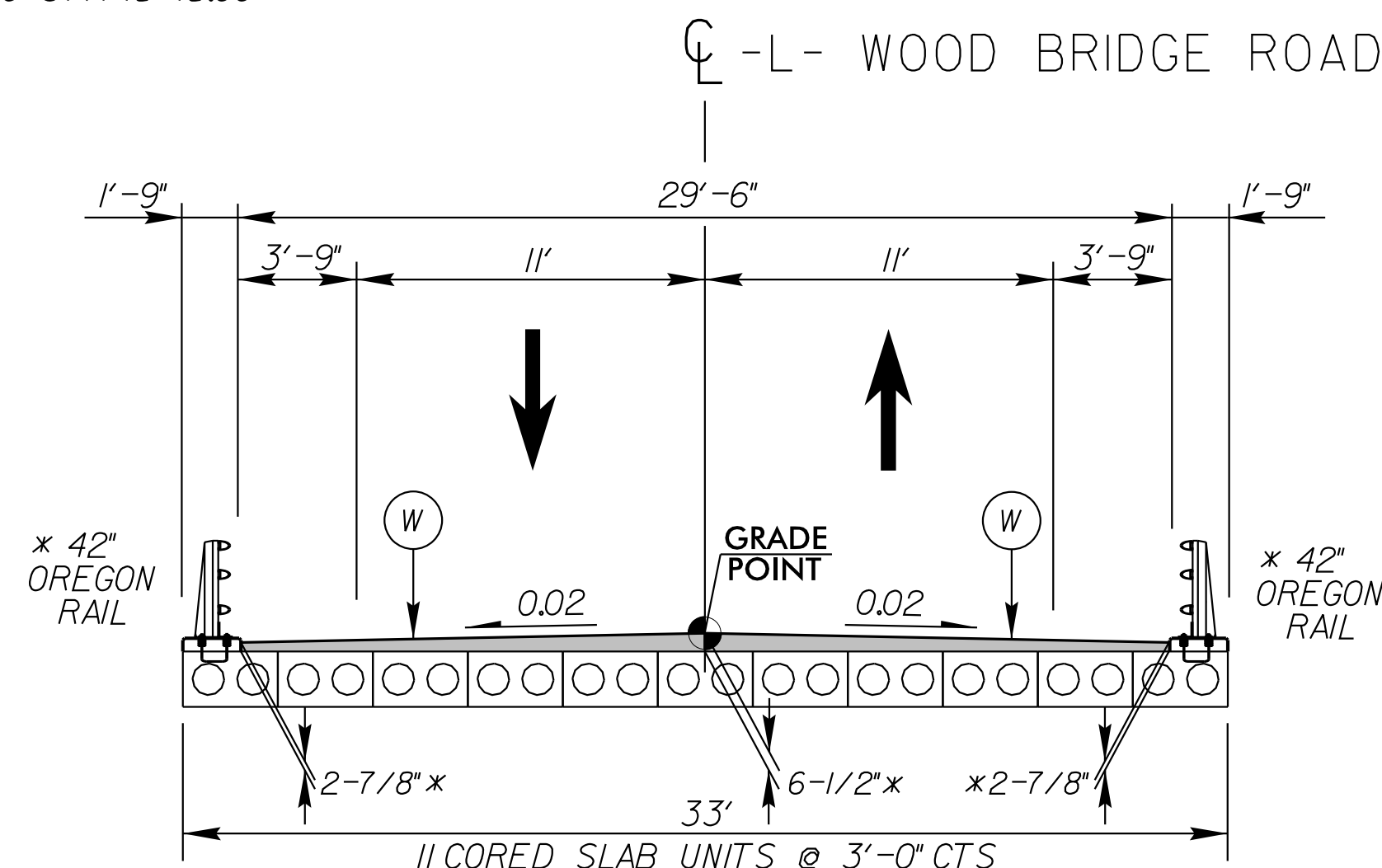
TYPICAL SECTION NO. 1A, 2A

USE IN CONJUNCTION WITH GUARDRAIL LOCATIONS AS FOLLOWS:
 -L- STA 12+27.50 TO STA 13+08.75 (BEGIN BRIDGE)
 -L- STA 14+36.25 (END BRIDGE) TO STA 15+17.50



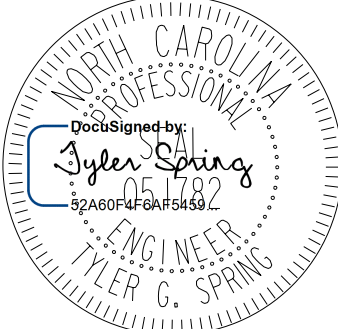
TYPICAL SECTION NO. 2B

- L - STA 14+47.00 TO STA 14+57.00 (LT/RT)

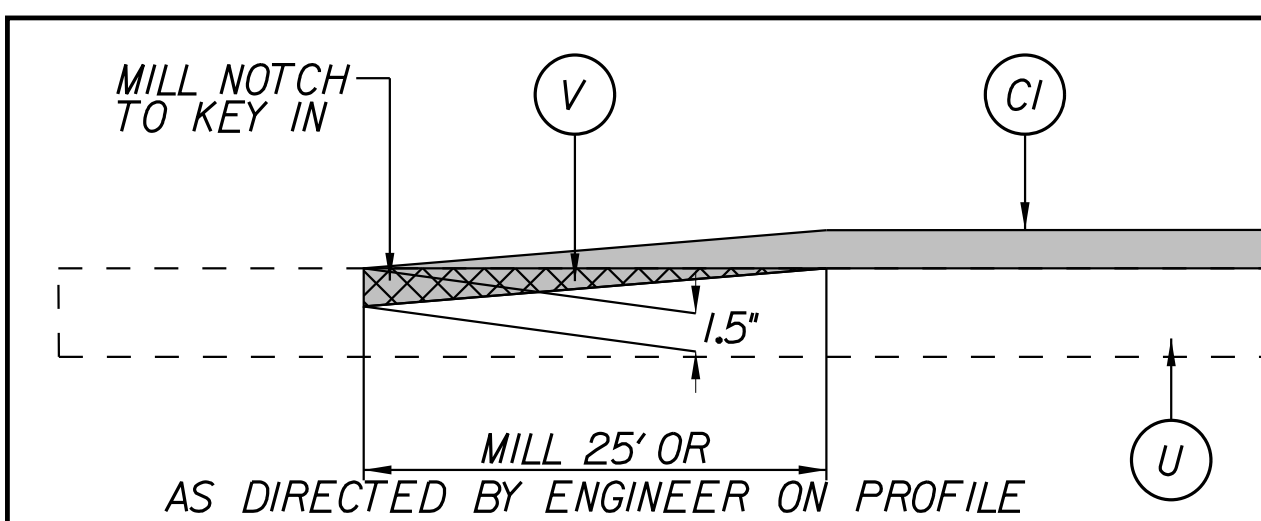


BRIDGE TYPICAL SECTION NO. 1

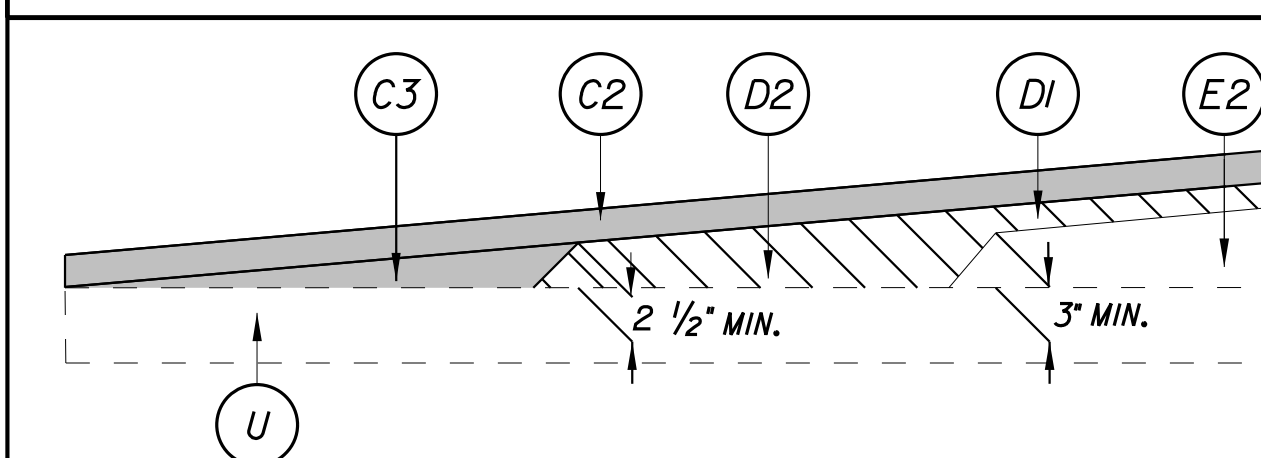
-L- STA 13+08.75 TO 14+36.25
*SEE STRUCTURE PLANS

Kimley » Horn © 2020 KIMLEY-HORN AND ASSOCIATES, INC. 141 LEXINGTON DRIVE FAYETTEVILLE, NORTH CAROLINA 27003 PHONE: (717) 674-2000	PROJECT REFERENCE NO. <i>17BPJ2.R78</i>	SHEET NO. <i>2A-1</i>
	ROADWAY DESIGN ENGINEER 	
RIGHT-OF-WAY REV.		
CONST. REV.		
	DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

PAVEMENT DESIGN (FINAL PAVEMENT DESIGN)	
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS./PER SQ.YD.
C2	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.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS./PER SQ.YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 1.5" IN DEPTH
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS./PER SQ.YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS./PER SQ.YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2.5" IN DEPTH OR GREATER THAN 4" IN DEPTH
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS./PER SQ.YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS./PER SQ.YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5.5" IN DEPTH
R	SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING EXISTING PAVEMENT 0" TO 1.5" (SEE DETAIL, THIS SHEET)
W	WEDGING DETAIL FOR RESURFACING (SEE DETAIL, THIS SHEET)



PROFILE KEY-IN DETAIL



WEDGING DETAIL (W) FOR RESURFACING

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

ROADWAY DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
FLEXIBLE PIPE

SHEET 1 OF 2
300.01

TOP OF FILL

GROUND LINE

H

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

O.D. + 3'

NORMAL EARTH FOUNDATION

TOP OF FILL

GROUND LINE

H

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

ROCK

O.D. + 3'

**ROCK FOUNDATION
PIPE IN TRENCH**

TOP OF FILL

GROUND LINE

H

TYPE 4a
GEOTEXTILE

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

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

O.D. + 3'

UNSUITABLE MATERIAL FOUNDATION

TOP OF FILL

GROUND LINE

H

MIN. O.D.

1:1

COMPACT AFTER
PIPE IS PLACED
& PRIOR TO
PLACEMENT OF
FILL

O.D. + 2'

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

NORMAL EARTH FOUNDATION

TOP OF FILL

GROUND LINE

H

MIN. O.D.

1:1

TYPE 4a
GEOTEXTILE

COMPACT AFTER
PIPE IS PLACED
& PRIOR TO
PLACEMENT OF
FILL

O.D. + 2'

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

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

**ROCK FOUNDATION
PIPE ABOVE GROUND**

TOP OF FILL

GROUND LINE

H

MIN. O.D.

1:1

TYPE 4a
GEOTEXTILE

COMPACT AFTER
PIPE IS PLACED
& PRIOR TO
PLACEMENT OF
FILL

O.D. + 2'

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

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

UNSUITABLE MATERIAL FOUNDATION

GENERAL NOTES:

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

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

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

APPROVED SUITABLE LOCAL MATERIAL.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

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

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

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

SPRINGLINE OF PIPE

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

UNDISTURBED EARTH MATERIAL

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

6/26/2025

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

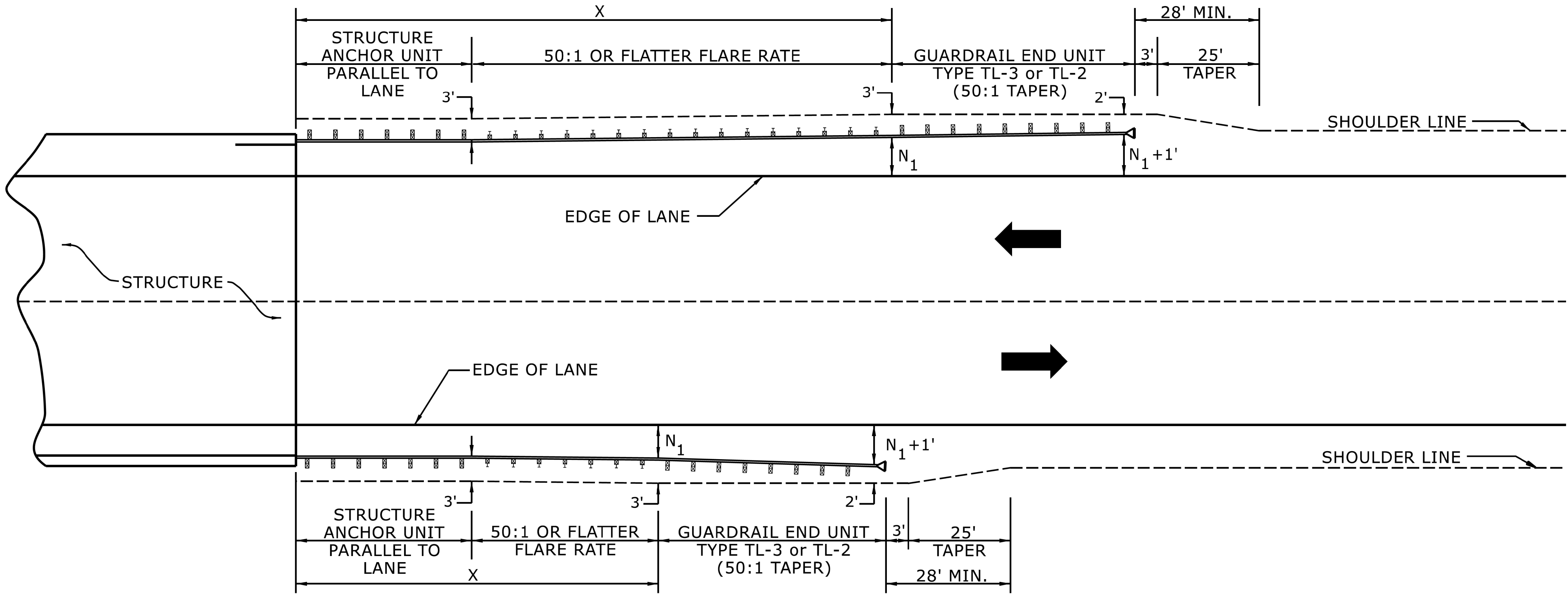
CONTRACTS STANDARDS
AND DEVELOPMENT UNIT

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

SEE TITLE BLOCK

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

PROJECT REFERENCE NO.	SHEET NO.
17BPJ2.R.78	2C-3



USE FLARE RATE AS THE CONTROL IF THE "N₁" DISTANCE IS NOT OBTAINED.
("N₁" IS BASED ON SHOULDER WIDTHS IN THE ROADWAY DESIGN MANUAL)

SEE STD. 862.03 FOR STRUCTURE ANCHOR UNITS

FOR POSTED SPEEDS ≥ 45MPH USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45MPH USE GREU TYPE TL-2

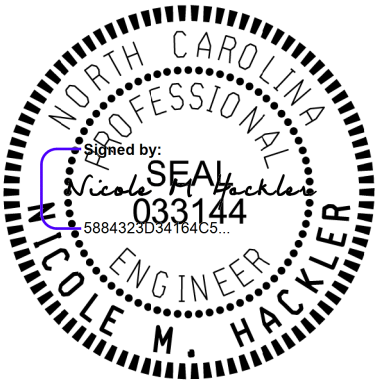
GUARDRAIL LENGTH OF NEED (X) IS CALCULATED BASED ON THE AASHTO ROADSIDE DESIGN GUIDE.

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

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 4 OF 15
862D01



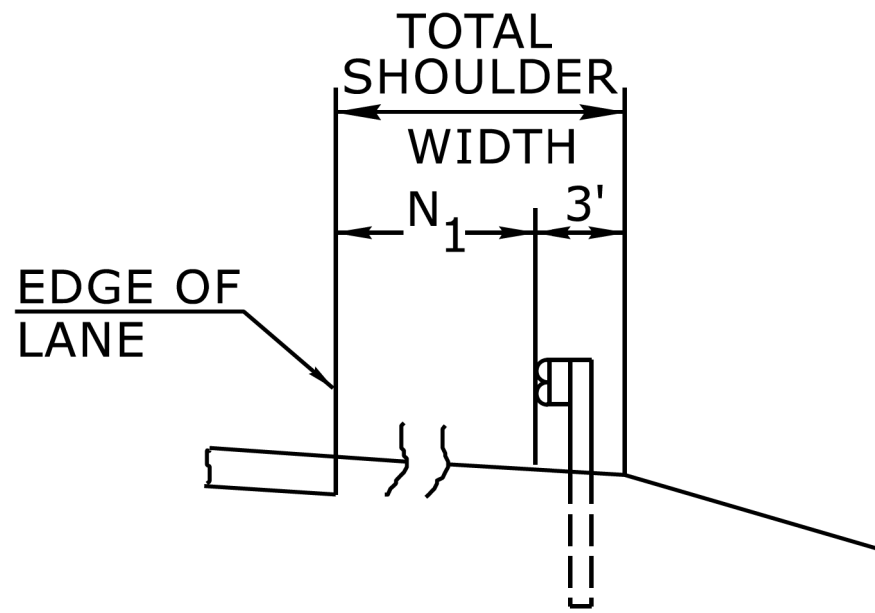
6/26/2025

DOCUMENT NOT CONSIDERED FINAL
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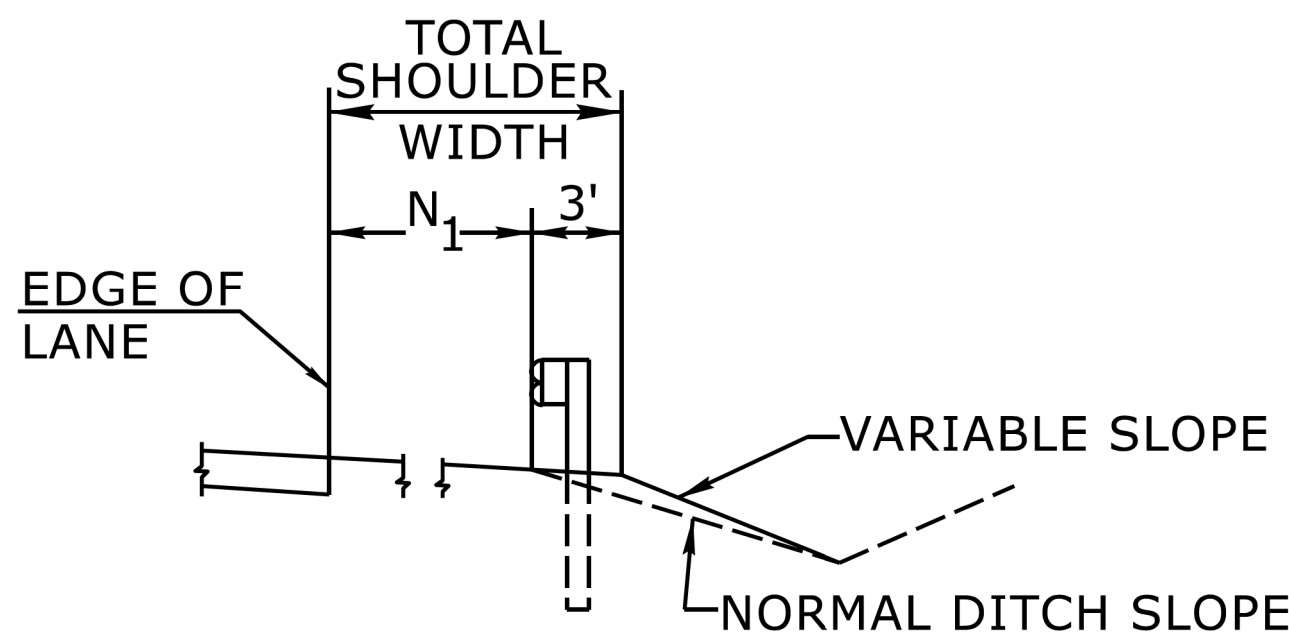
**CONTRACTS STANDARDS
AND DEVELOPMENT UNIT**
Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

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

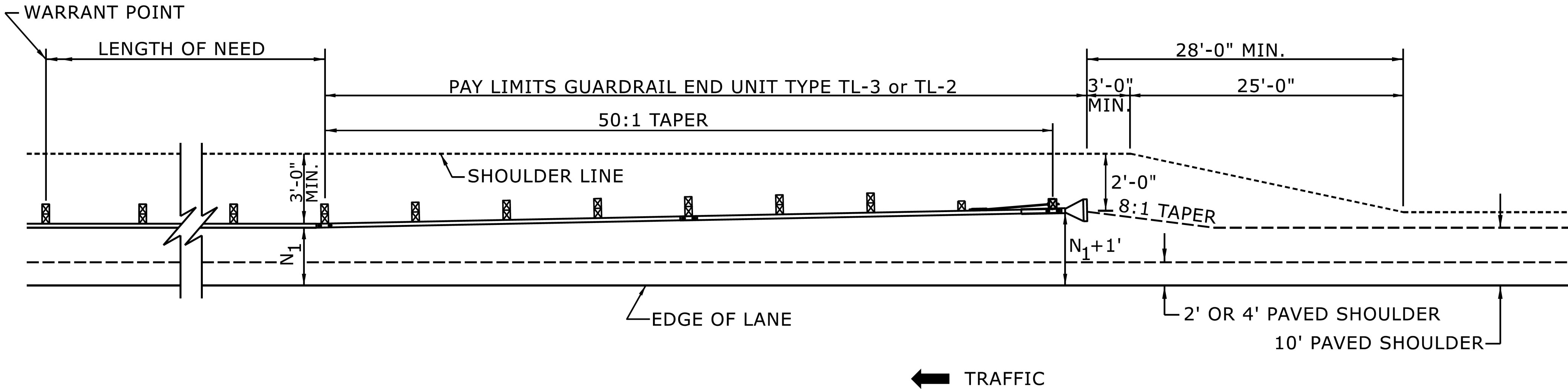


FILL SECTION



CUT SECTION

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



FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

DETAIL OF BEGINNING OF GUARDRAIL IN CUT OR FILL SECTION

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT



6/26/2025

SHEET 6 OF 15

862D01

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

**CONTRACTS STANDARDS
AND DEVELOPMENT UNIT**

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

SEE TITLE BLOCK

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

REVISIONS

K:\RAL_Roadway\01036418 - Bridge25A\Hydraulics\CADD\PS\A\Bridge254_hyd_2D-1.dgn

2/27/2025

Kimley »Horn

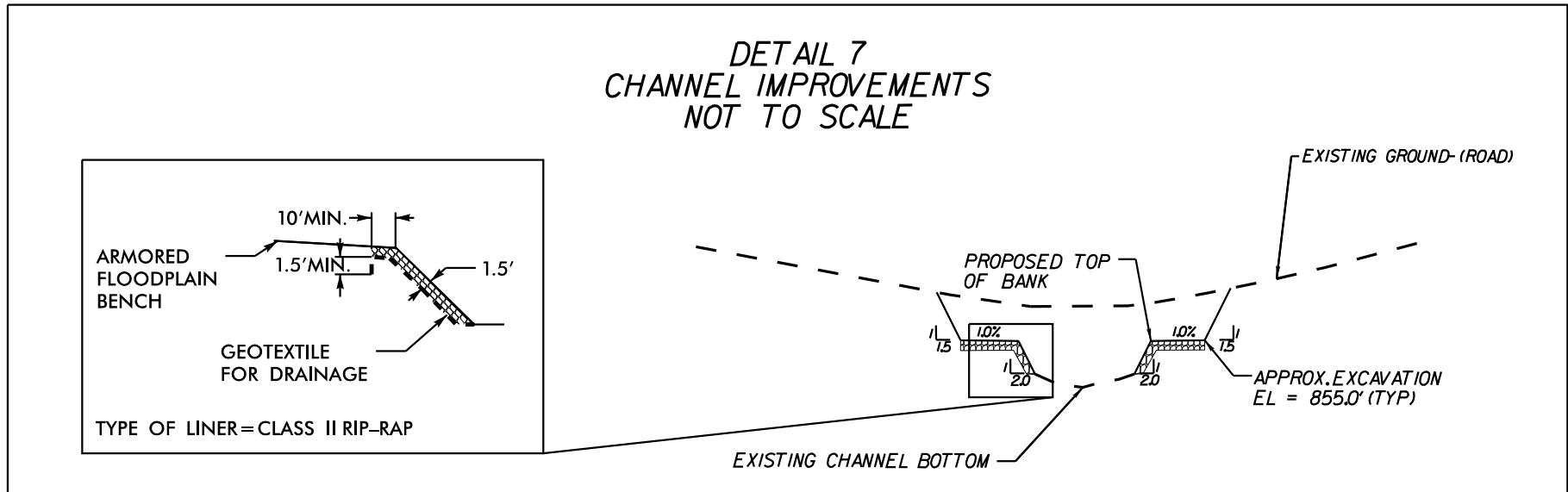
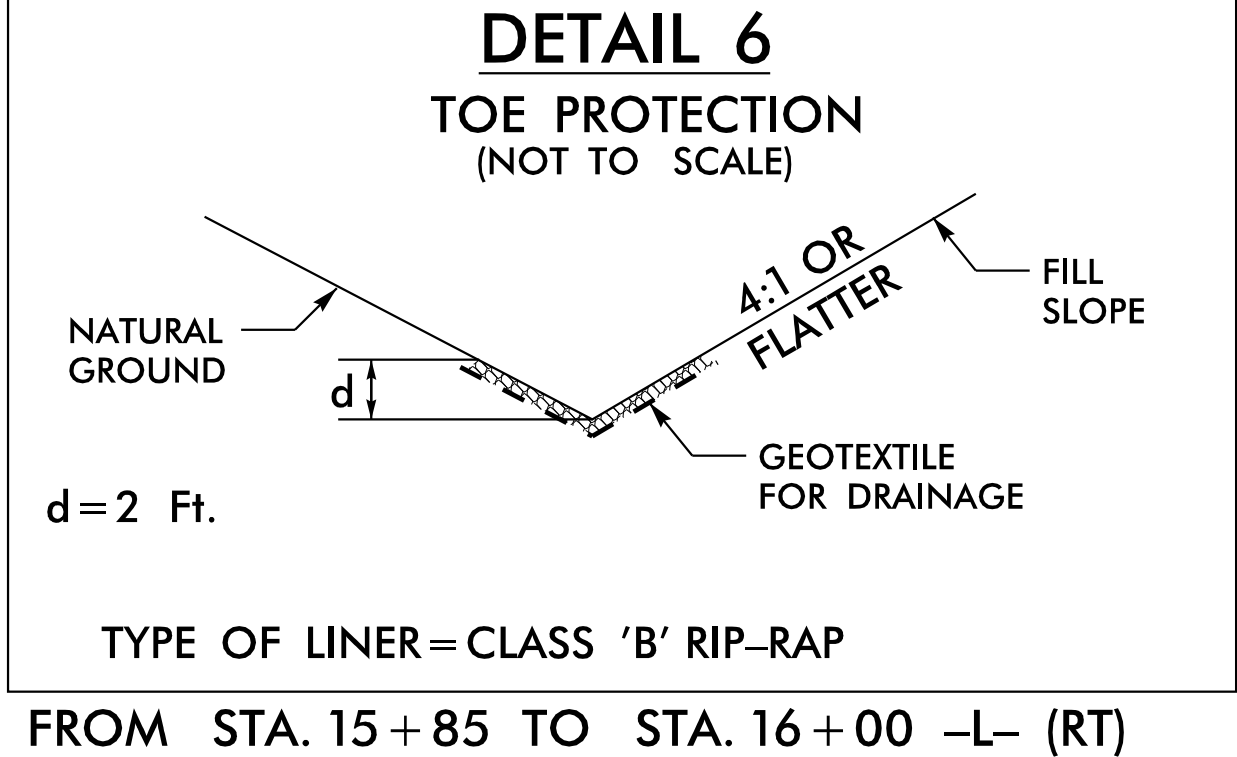
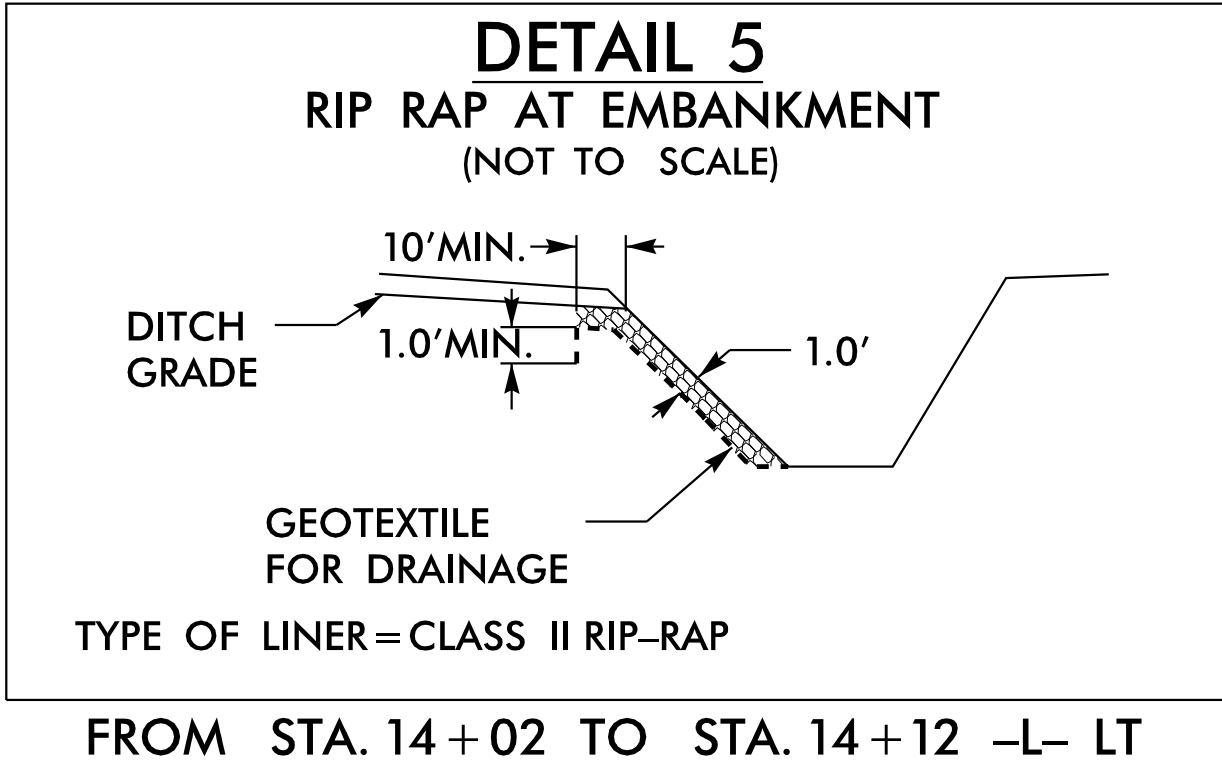
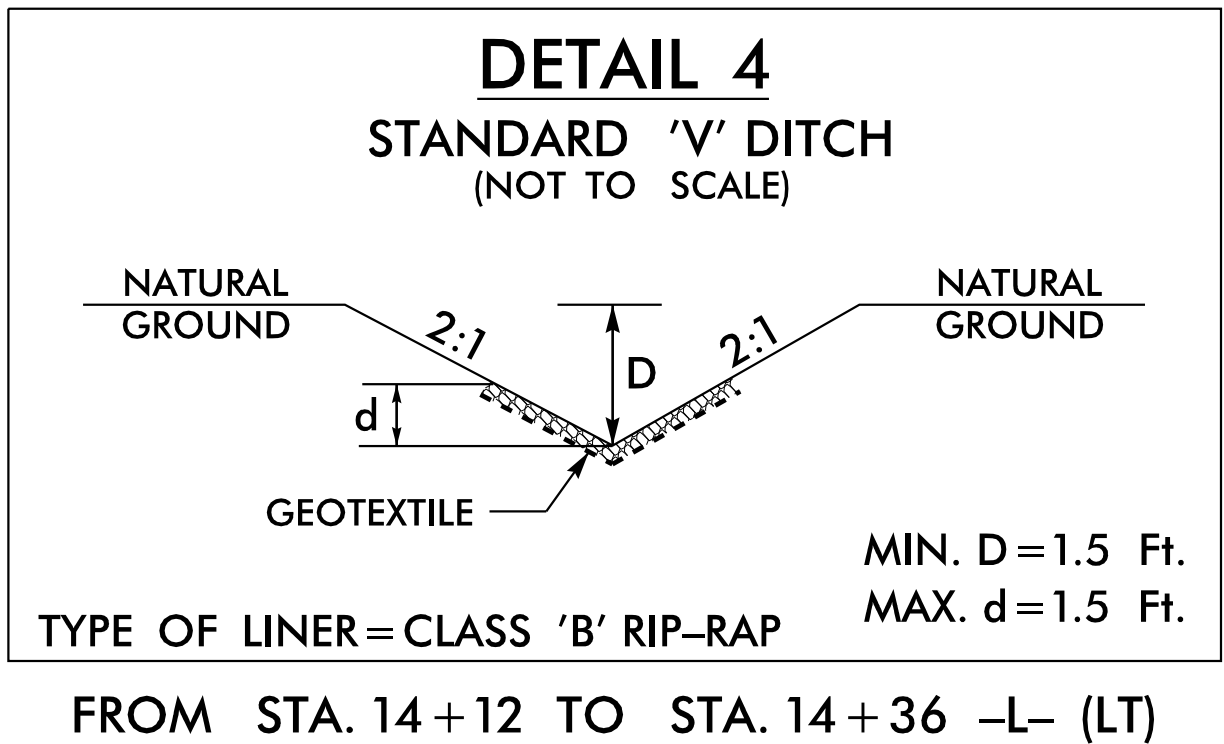
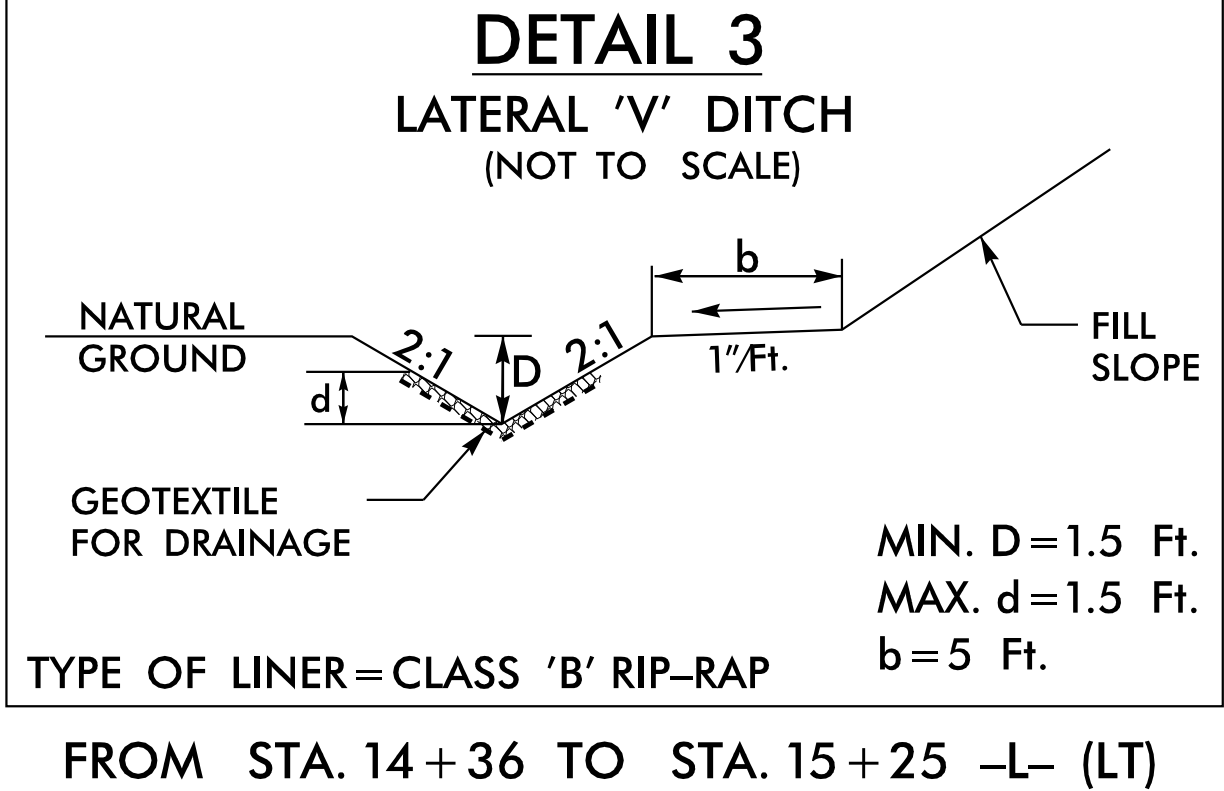
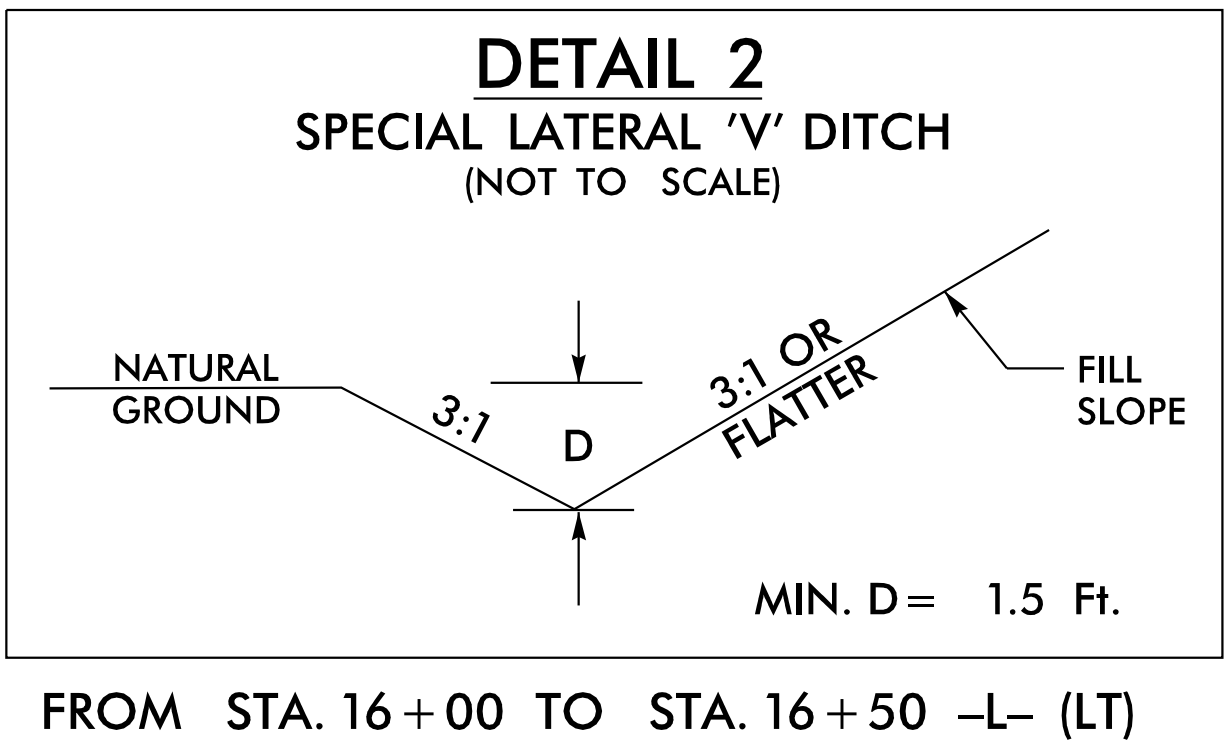
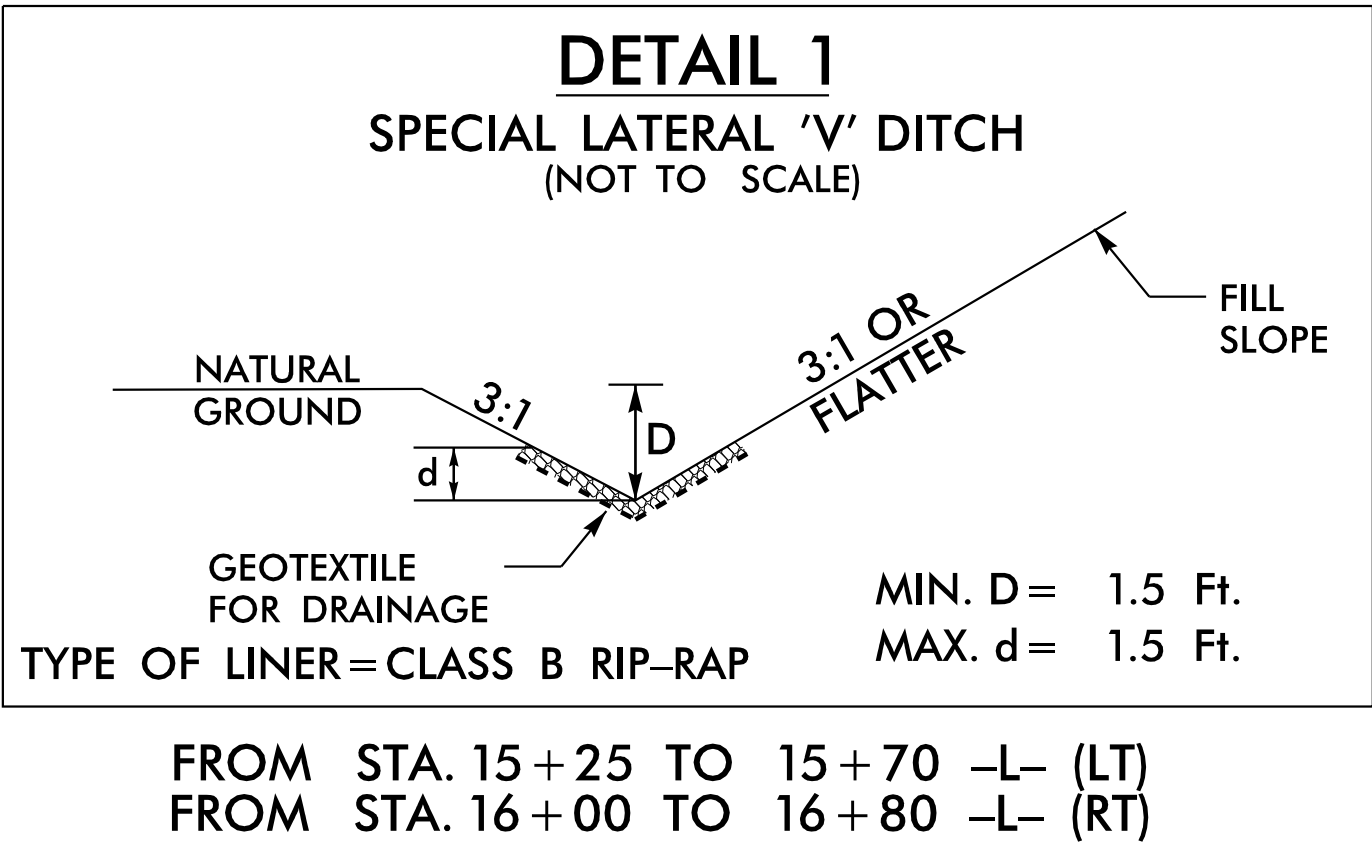
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KIMLEY-HORN AND ASSOCIATES, INC.
INC. LICENSE #0102
FAVSTERVILLE STREET, SUITE 800
RALEIGH, NORTH CAROLINA 27601
PHONE (919) 971-2000

RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO. <i>17BPJ2.R.78</i>	SHEET NO. <i>2D-1</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
North Carolina Professional Engineer David L. Humes 063844 48884F420784441 6/25/2025	North Carolina Professional Engineer David L. Humes 063844 48884F420784441 6/25/2025
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



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K:\RAL_Roadway\0\0364\8 - Bridge254\Roadway\Proj\7BP\2.R.78_rdy_sum.dgn

3/3/2025

COMPUTED BY:	CJ	DATE:	2/20/25
CHECKED BY:	TGS	DATE:	2/27/25

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK
IN CUBIC YARDS

STATION	STATION	EXCAVATION		EMBANKMENT	BORROW	WASTE
		TOTAL UNCLASSIFIED	UNDERCUT	EMBANKMENT + 25%		TOTAL
-L- 11 + 95.00	-L- 13 + 08.75	27		36	9	
-L- 14 + 36.25	-L- 16 + 80.00	223		83		140
SUMMARY TOTAL		250		119	9	140
SHOULDER MATERIAL				88	88	
EARTH WASTE TO REPLACE BORROW					-97	-97
PROJECT TOTALS		250		207	0	43
GRAND TOTAL		250			0	
SAY		250			0	

PROJECT REFERENCE NO.
17BP12.R.78

SHEET NO.
3B-1

Kimley»Horn

421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

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

COMPUTED BY: TGS DATE: 1/30/19
CHECKED BY: RSH DATE: 2/4/19

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
17BPJ2.R.78	3B-2

Kimley » Horn

421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
 TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
 FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
 W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
 G = GATING GUARDRAIL END UNIT, TYPE TL-3
 NG = NON-GATING GUARDRAIL END UNIT, TYPE TL-3

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS				IMPACT ATTENUATOR TYPE TL-3			TERMINAL SECTIONS	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GREU TL-3	TEMP GREU TL-3	TYPE III	TEMP TYPE III	EA G NG						
																			EA	G	NG				
-L-	12 + 28.63	13 + 09.88	LT	81.25				13 + 09.88	3'-9"	7'		50		1		1		1							
-L-	12 + 28.63	13 + 09.88	RT	81.25				13 + 09.88	3'-9"	7'		50		1		1		1							
-L-	14 + 35.12	15 + 16.37	LT	81.25				14 + 35.12	3'-9"	7'		50		1		1		1							
-L-	14 + 35.12	15 + 16.37	RT	81.25					3'-9"	7'			50			1		1							
			SUBTOTAL	325.00																					
	LESS ANCHOR DEDUCTIONS																								
	GREU TL-3	4 @ 50'	=	200.00																					
	TYPE III	4 @ 18.75'	=	75.00																					
			TOTAL	50.00												4		4							
			SAY	50																					
	ADDITIONAL GUARDRAIL POSTS = 5 EA																								

SHOULDER BERM GUTTER SUMMARY

LINE	STATION TO STATION	LOCATION	LENGTH (LF)
-L-	14 + 47.00 TO 14 + 57.00	LT	10.00
-L-	14 + 47.00 TO 14 + 57.00	RT	10.00
TOTAL			20
SAY			20

PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	SY
-L-	12 + 35	13 + 20	LT/RT	194
-L-	14 + 24	15 + 15	LT/RT	210
			TOTAL:	404
			SAY:	410

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
17BPJ2R.78	3B-3



421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

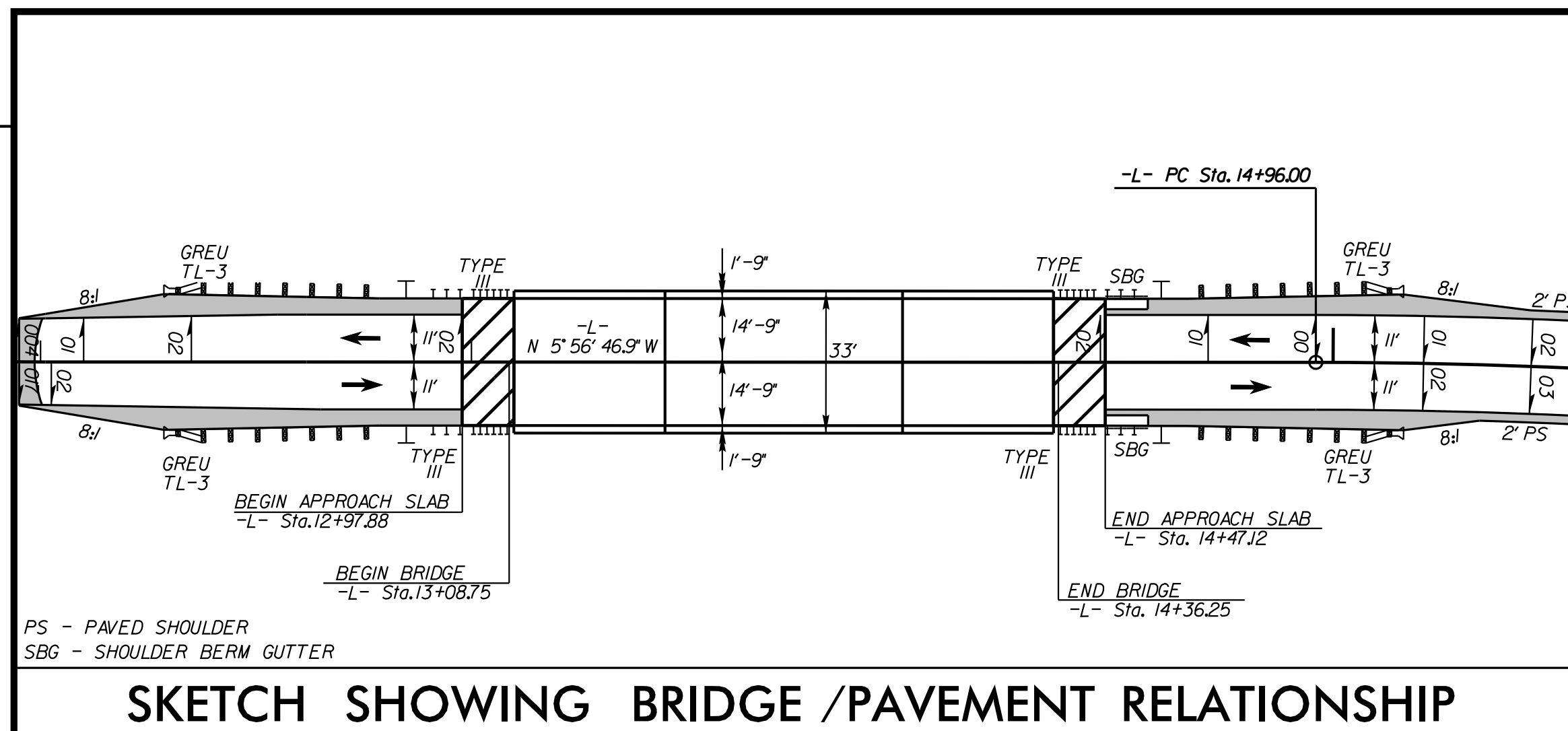
RIGHT OF WAY AREA DATA

PARCEL NO.	PROPERTY OWNER	TOTAL ROW/EASEMENTS (AC)	ROW (AC)	PERM. DRAIN. EASEMENT (AC)	PERM. UTIL. EASEMENT (AC)	PERM. DRAIN. /UTIL. EASEMENT (AC)	TEMP. CONST. EASEMENT (AC)
1	OLA M. LEWIS, REGINALD R. HOLLEY	0.1242	0.0458		0.0633		0.0151
2	OLA M. LEWIS, REGINALD R. HOLLEY	0.2074	0.0355		0.1719		
3	ALLISON G. GOARD, DOROTHY M. GOARD	0.1487	0.0341	0.0051		0.0782	0.0313
4	JONATHAN BOBBITT, AMANDA BOBBITT	0.1599	0.0454		0.1145		
5	JOSEPH HYDE, JEANNE HYDE	0.0217		0.0017			0.0200

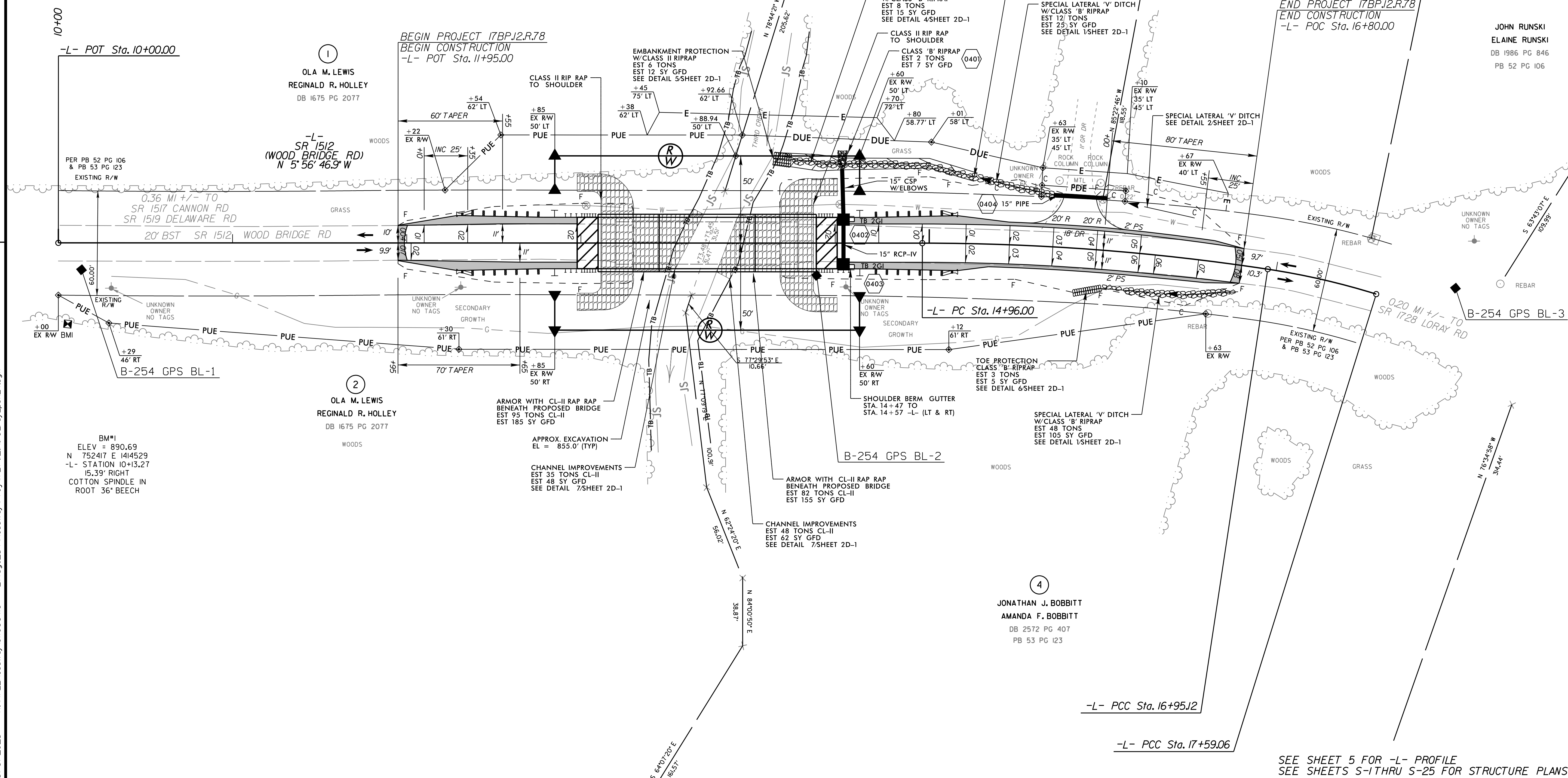
PARCEL OWNER INDEX

PARCEL NO.	SHEET NO.	PROPERTY OWNER
1	4	OLA M. LEWIS, REGINALD R. HOLLEY
2	4	OLA M. LEWIS, REGINALD R. HOLLEY
3	4	ALLISON G. GOARD, DOROTHY M. GOARD
4	4	JONATHAN BOBBITT, AMANDA BOBBITT
5	4	JOSEPH HYDE, JEANNE HYDE

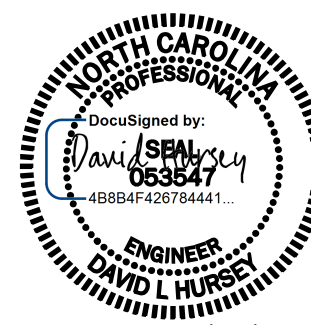
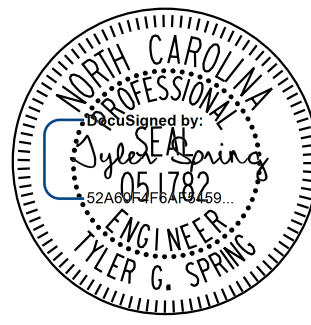
K:\RAL_Roadway\01036418 - Bridge254\Roadway\Proj\7BPJ2R.78_rdy_sum.dgn



SKETCH SHOWING BRIDGE /PAVEMENT RELATIONSHIP

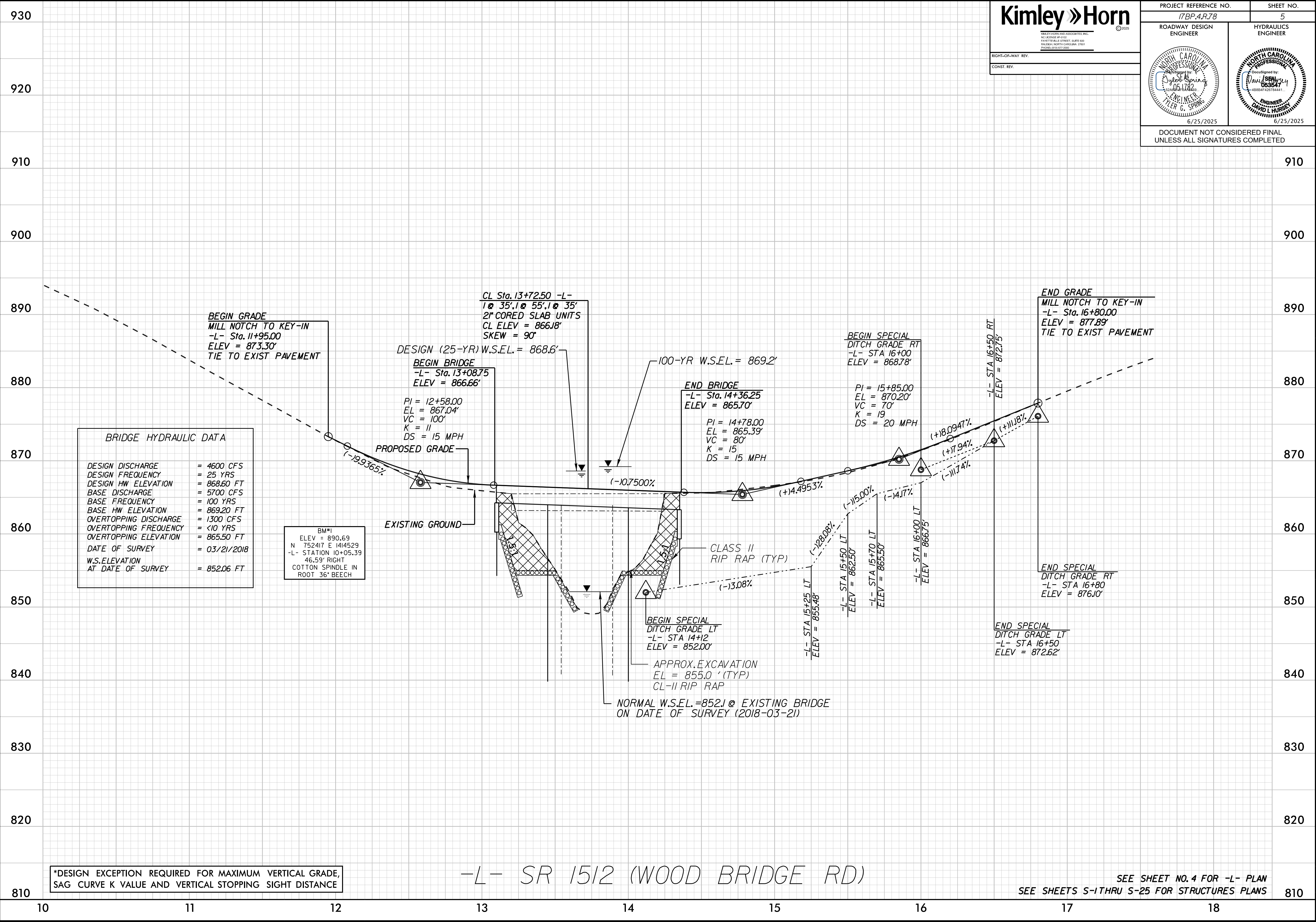


SEE SHEET 5 FOR -L- PROFILE
SEE SHEETS S-1 THRU S-25 FOR STRUCTURE PLANS



BRIDGE HYDRAULIC DATA	
DESIGN DISCHARGE	= 4600 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 868.60 FT
BASE DISCHARGE	= 5700 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 869.20 FT
OVERTOPPING DISCHARGE	= 1300 CFS
OVERTOPPING FREQUENCY	= <10 YRS
OVERTOPPING ELEVATION	= 865.50 FT
DATE OF SURVEY	= 03/21/2018
W.S.ELEVATION AT DATE OF SURVEY	= 852.06 FT

BM#1	
ELEV	= 890.69
N	752417 E 1414529
-L-	STATION 10+05.39
	46.59' RIGHT
	COTTON SPINDLE IN
	ROOT 36' BEECH



*DESIGN EXCEPTION REQUIRED FOR MAXIMUM VERTICAL GRADE,
SAG CURVE K VALUE AND VERTICAL STOPPING SIGHT DISTANCE

-L- SR 1512 (WOOD BRIDGE RD)

SEE SHEET NO. 4 FOR -L- PLAN
SEE SHEETS S-1 THRU S-25 FOR STRUCTURES PLANS

REVISIONS

K:\RAL_Roadway\010136418 - Bridge25A.Roadway\Proj\17BP.12.R.78_rdy.plt.dgn

3/3/2025

PROJ. REFERENCE NO.	SHEET NO.
17BP.12.R.78	TMP-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN
IREDELL COUNTY

INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET, INDEX OF SHEETS, LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, MANAGEMENT STRATEGIES, GENERAL NOTES, PHASING NOTES
TMP-2	OFFSITE DETOUR SHEET

ROADWAY STANDARD DRAWINGS

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

STD. NO.	TITLE
1101.03	TEMPORARY ROAD CLOSURES
1110.01	STATIONARY WORK ZONE SIGNS
1145.01	BARRICADES

MANAGEMENT STRATEGIES

CONSTRUCTION SUMMARY:
PROPOSED BRIDGE REPLACEMENT WILL BE CONSTRUCTED AWAY FROM TRAFFIC USING A ROAD CLOSURE AND DETOUR ROUTE.

GENERAL NOTES

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

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

TRAFFIC PATTERN ALTERATIONS

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

GENERAL NOTES CONTINUED...

SIGNING

- B) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.
- C) PROVIDE PERMANENT SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.
- D) PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTES AS SHOWN IN THE TRAFFIC CONTROL PLANS.
- E) COVER OR REMOVE ALL SIGNS REQUIRED FOR THE OFF-SITE DETOUR WHEN THE DETOUR IS NOT IN OPERATION.
- F) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

TRAFFIC CONTROL DEVICES

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

PAVEMENT MARKINGS AND MARKERS

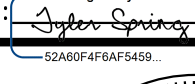
- H) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

PHASING

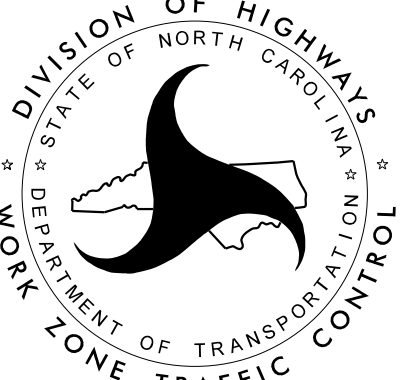
- STEP 1: USING ROADWAY STANDARD DRAWING NUMBER 1101.03, SHEET 1 OF 9, AND SHEET TMP-2, PERFORM THE FOLLOWING:
- INSTALL ALL ROAD CLOSURE AND DETOUR SIGNING, INCLUDING BARRICADES
- IMPLEMENT A TEMPORARY CLOSURE OF SR 1512 (WOOD BRIDGE RD) USING A DETOUR ALONG US HIGHWAY 64 AND SR 1006 (ISLAND FORD RD). ALLOW LOCAL TRAFFIC ACCESS ALONG SR 1512 (WOOD BRIDGE RD) TO APPROXIMATELY 0.03 MILES NORTH AND 0.08 MILES SOUTH OF BRIDGE #254 (JUST AFTER THE FINAL DRIVEWAYS PRIOR TO THE BRIDGE.)
- STEP 2: REMOVE EXISTING BRIDGE #254 AND CONSTRUCT THE PROPOSED BRIDGE AND APPROACHES AS SHOWN IN THE CONSTRUCTION PLANS.
- STEP 3: INSTALL ALL FINAL PAVEMENT MARKINGS.
- STEP 4: REMOVE ALL TRAFFIC CONTROL SIGNING AND DEVICES AND OPEN SR 1512 (WOOD BRIDGE RD) TO THE FINAL TRAFFIC PATTERN.

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Raleigh, North Carolina 27601
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APPROVED:  DATE 6/25/2025

SEAL

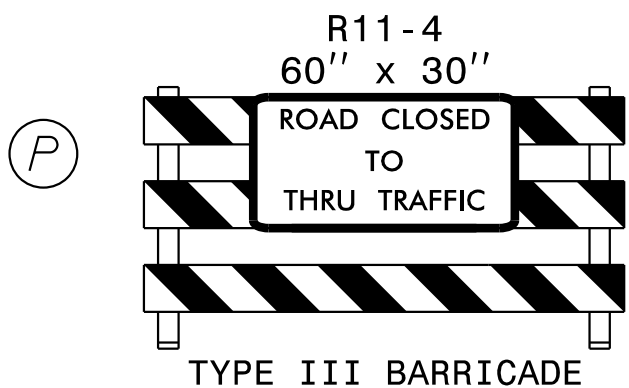
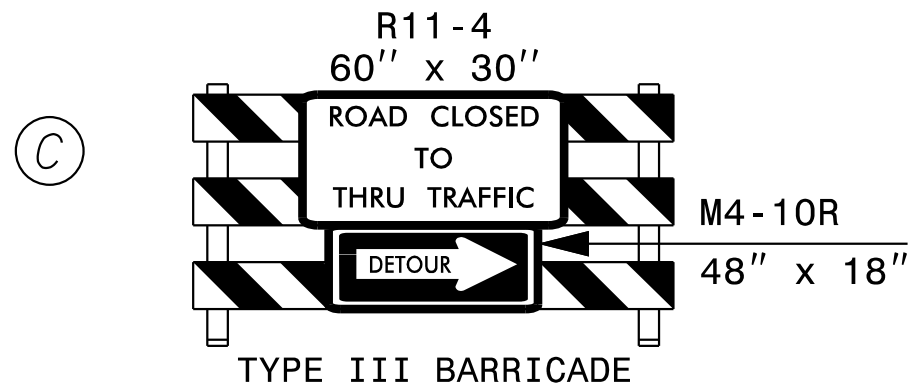
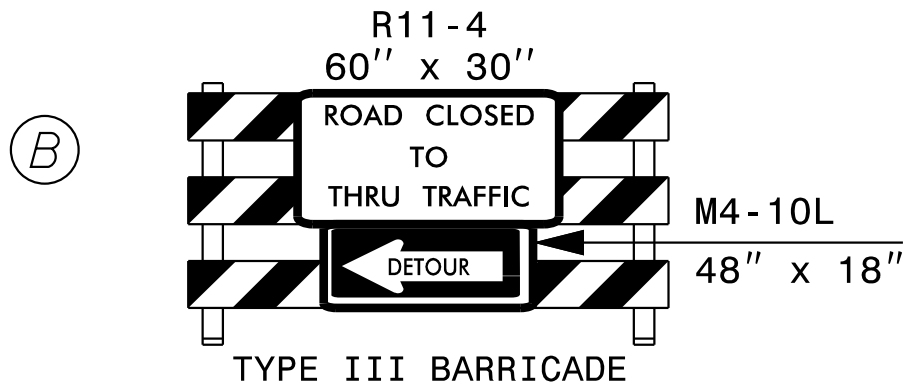
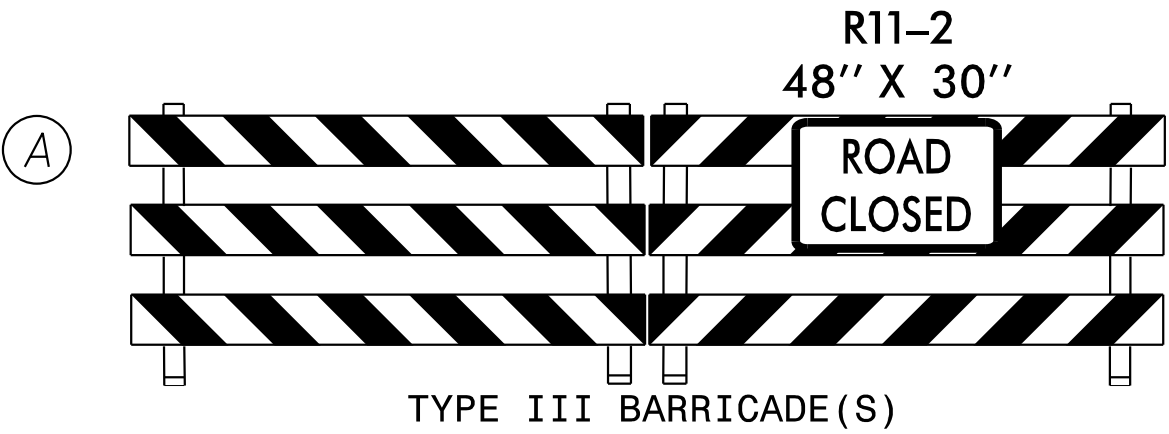
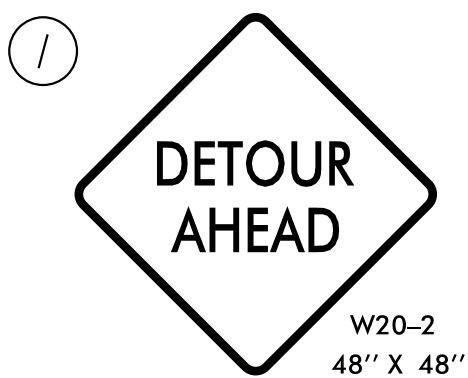
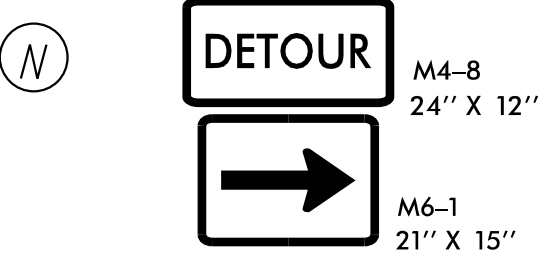
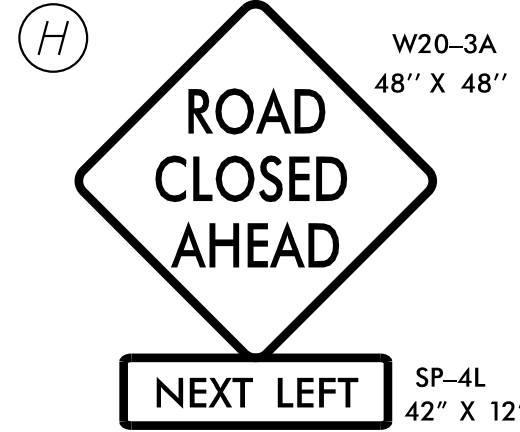
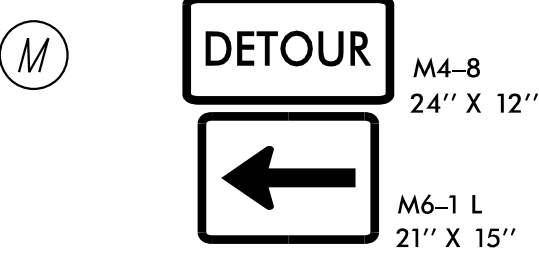
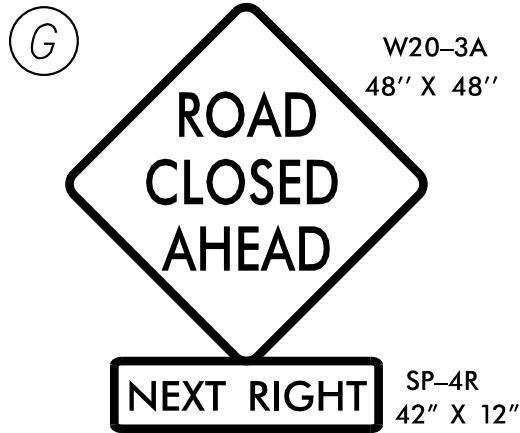
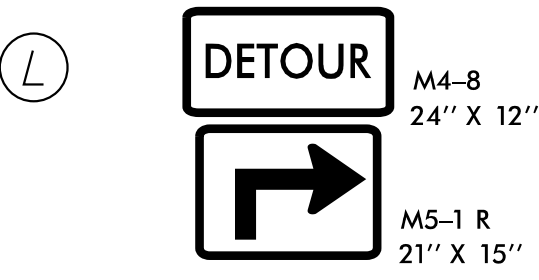
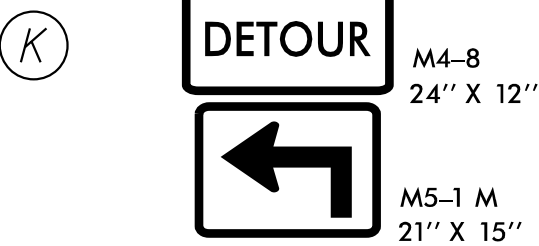
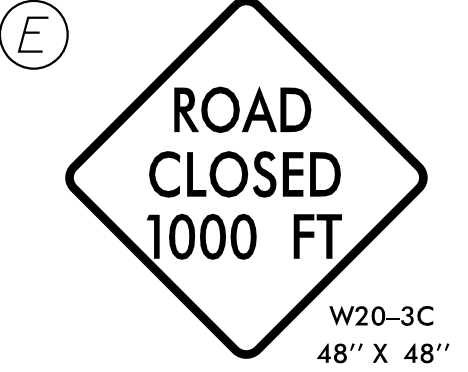
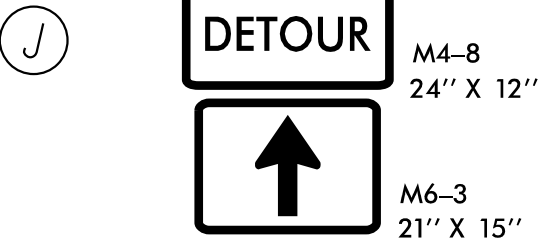
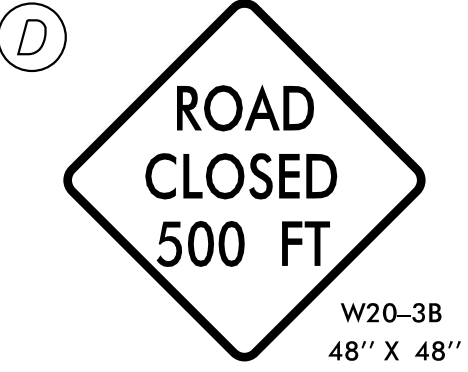
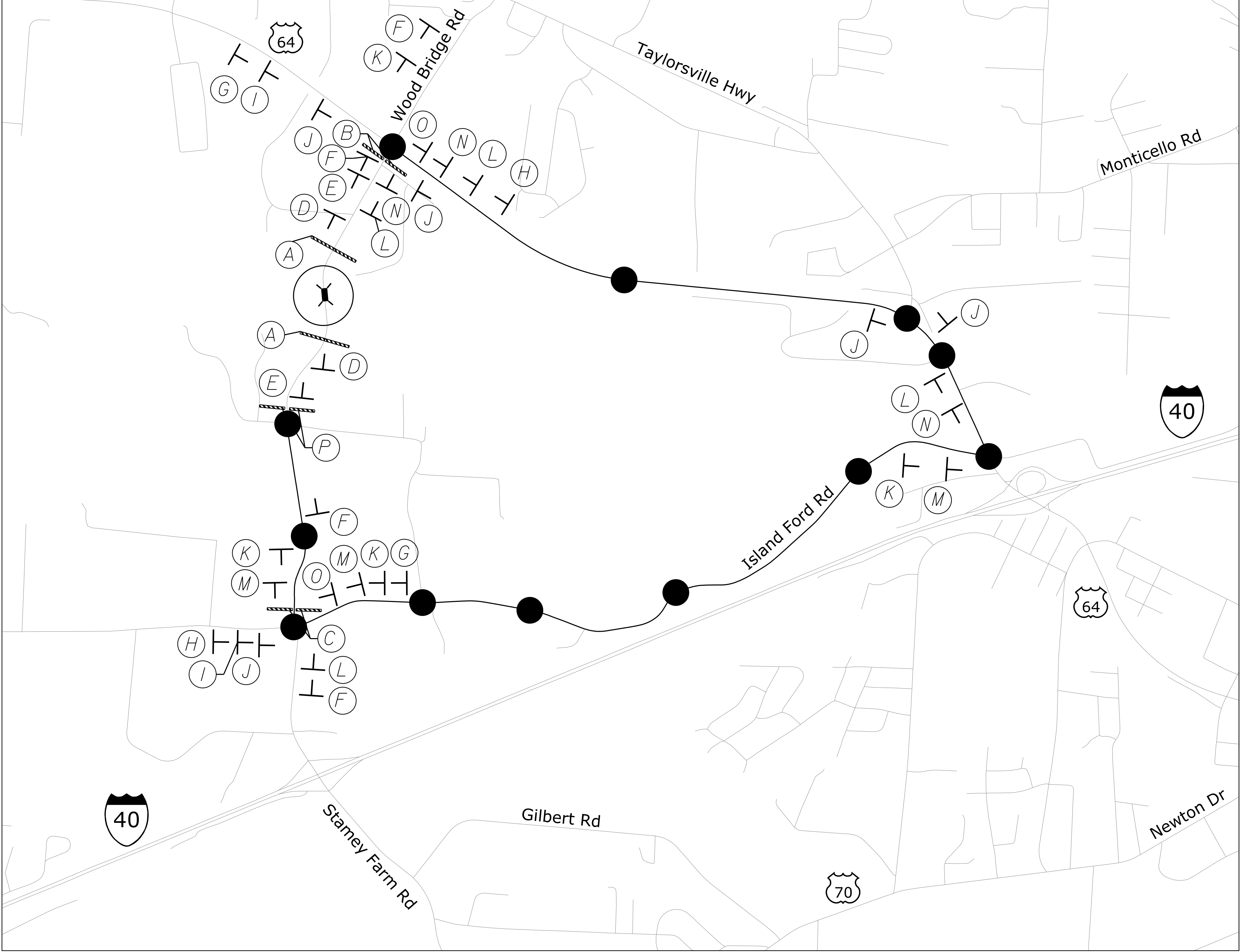



TRANSPORTATION
OPERATIONS
PLAN

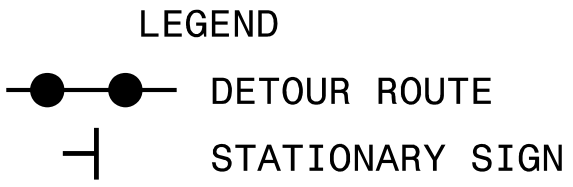
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3/3/2025

PROJ. REFERENCE NO.	SHEET NO.
17BP.12.R.78	TMP-2

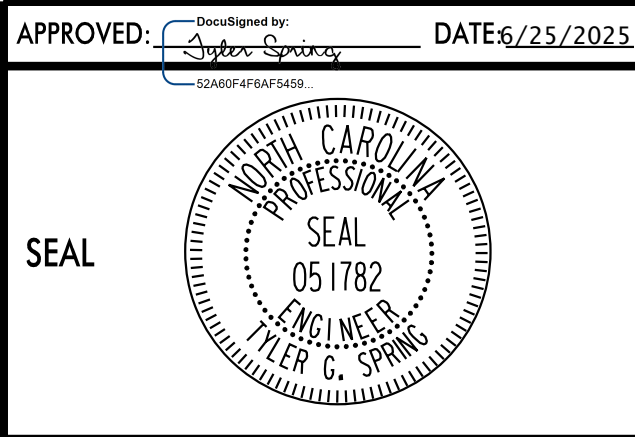


NOTE:
REFER TO RSD 1101.03 SHEET 1 OF 9
FOR ADVANCE WARNING SIGNAGE
AND BARRICADE PLACEMENT



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TRANSPORTATION
OPERATIONS
PLAN

REVISIONS

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3/3/2025

SIGNING AND PAVEMENT MARKING NOTES:
1. ALL PAVEMENT MARKINGS SHALL BE PAINT.
2. CONTRACTOR SHALL TIE PROPOSED MARKINGS TO EXISTING MARKINGS.
3. RETAIN ALL OTHER EXISTING SIGNS NOT SHOWN ON SIGNING PLAN UNLESS OTHERWISE DIRECTED BY TOWN, COUNTY, OR STATE.

PAY ITEM NOTES (SIGNING):
1. DISPOSAL OF SIGN SYSTEM, U-CHANNEL (8 EA)
2. SIGN ERECTION, TYPE E (2 EA, 30 LF 3 LB STEEL U-CHANNEL)
3. CONTRACTOR FURNISHED, TYPE E SIGN (17 SF)

THE FOLLOWING 2024 NCDOT ROADWAY STANDARD DRAWINGS ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

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

Kimley »Horn

KIMLEY-HORN AND ASSOCIATES, INC.
NC LICENSE #P-0102
FAVETTERVILLE STREET, SUITE 400
FAIRFAX, NORTH CAROLINA 27801
PHONE: (919) 877-2000

RIGHT-OF-WAY REV.

CONST. REV.

NC GRID
NAD 83/NA 2011

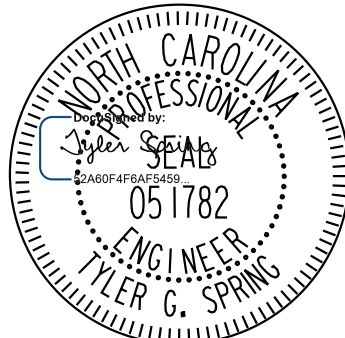
PROJECT REFERENCE NO.

17BPJ2.R78

SHEET NO.

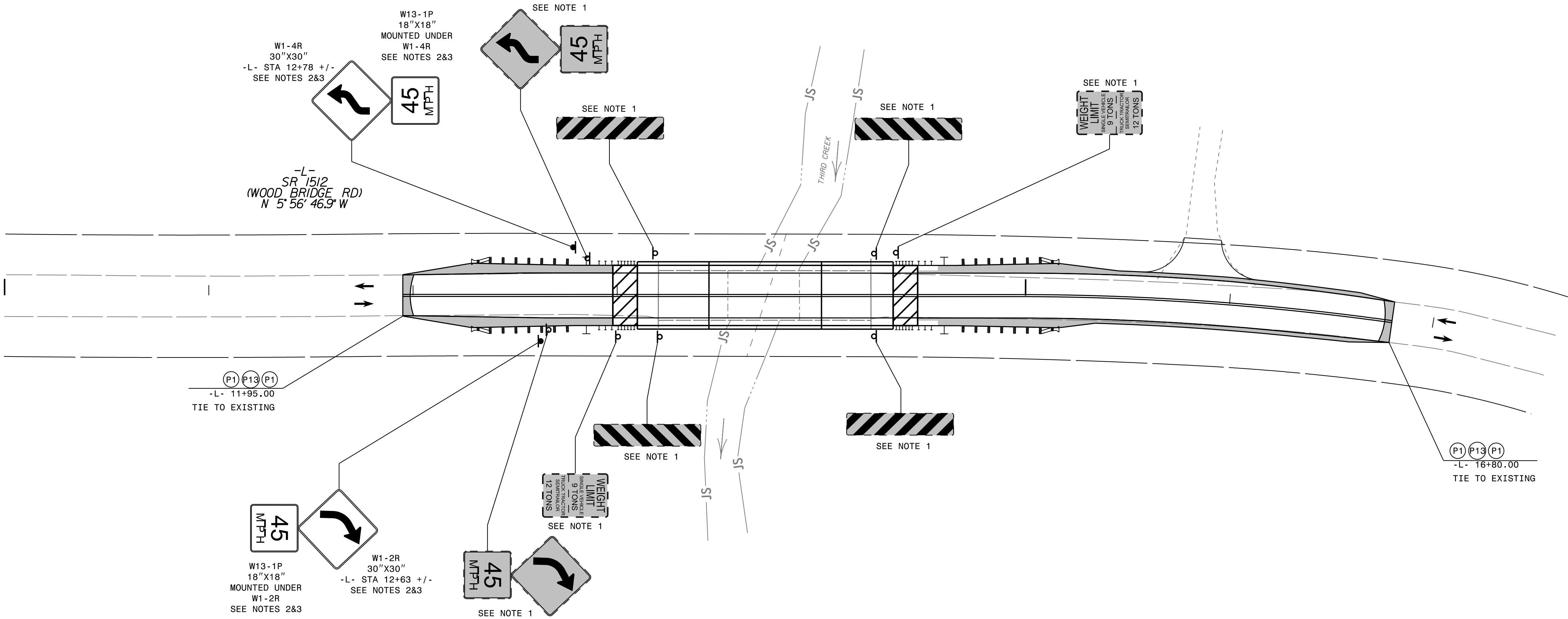
PMP-1

ROADWAY DESIGN
ENGINEER



6/25/2025

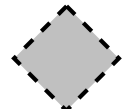
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



LEGEND

(P1)	WHITE EDGE LINE (4")	970 LF
(P13)	YELLOW DOUBLE CENTER (4")	970 LF
TOTAL (4") PAINT: 1940 LF		
TWO APPLICATIONS = 3,880 LF - SAY 3,900 LF		

SIGNING LEGEND



DENOTES EXISTING SIGN

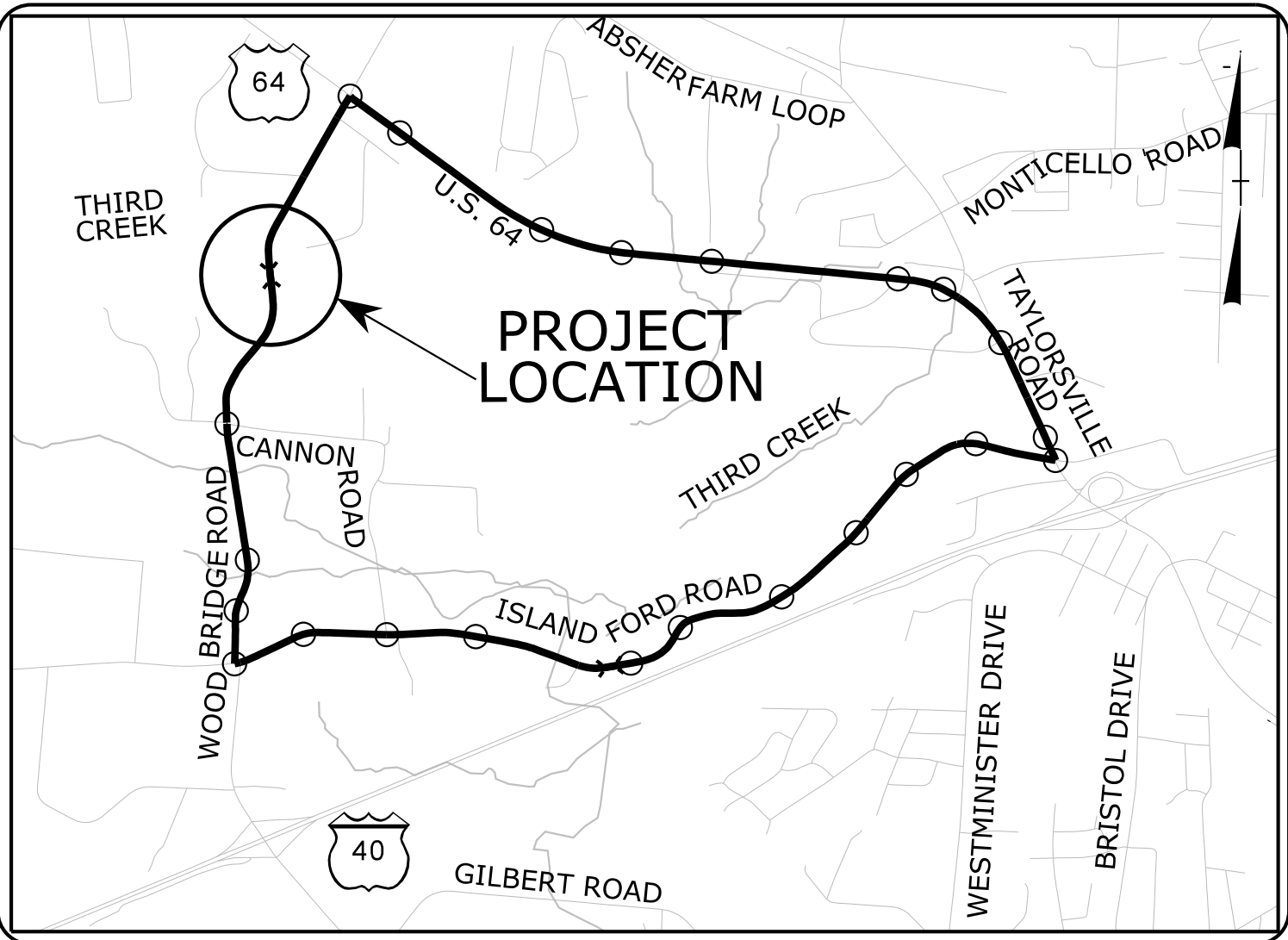


DENOTES NEW U-CHANNEL POST/PROPOSED SIGN LOCATION

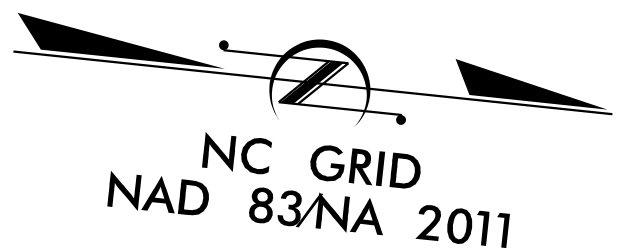
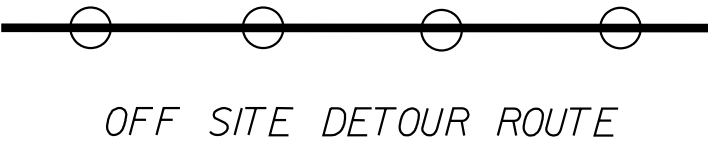


DENOTES EXISTING U-CHANNEL POST/EXISTING SIGN LOCATION

TIP PROJECT: 17BP.12.R.78



VICINITY MAP
NOT TO SCALE



TO CANNON RD

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols
See Sheet 1C-1 for Survey Control Sheet

*DESIGN EXCEPTION REQUIRED FOR MAXIMUM VERTICAL GRADE,
SAG CURVE K VALUE AND VERTICAL STOPPING SIGHT DISTANCE

GRAPHIC SCALE



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

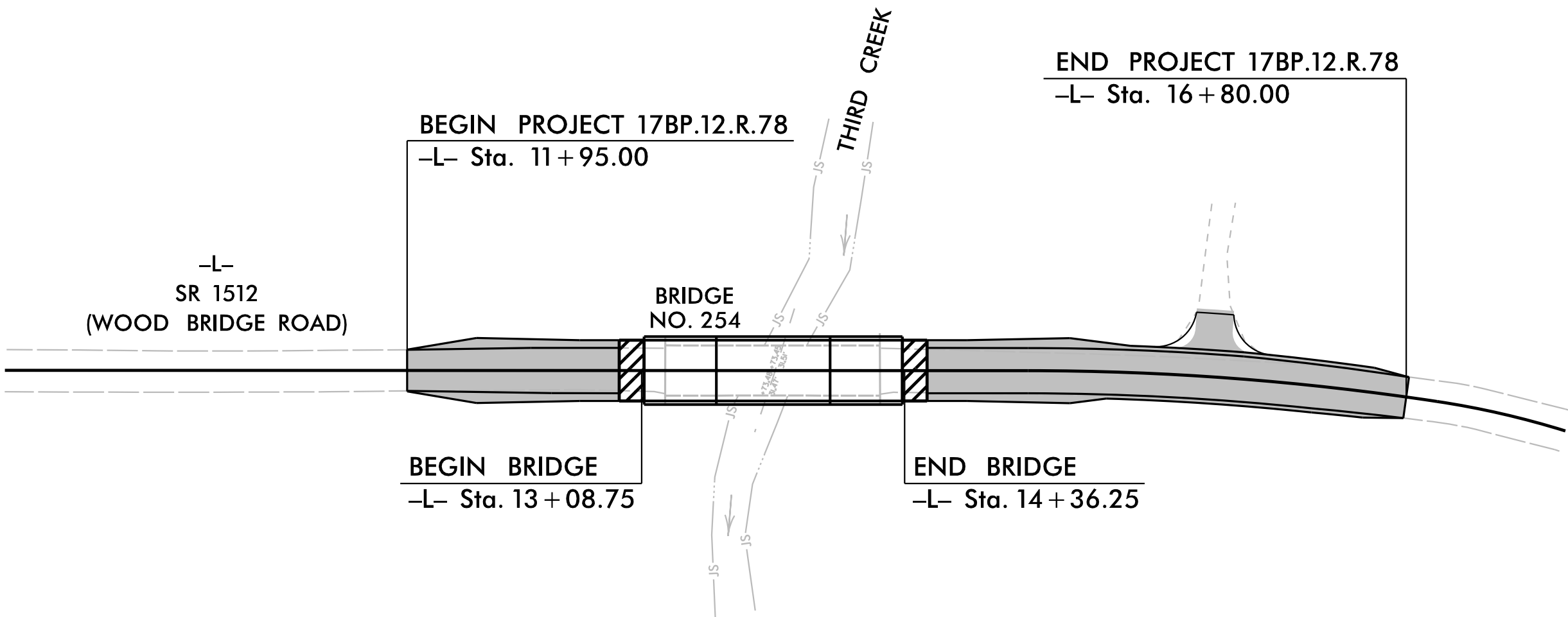
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

IREDELL COUNTY

LOCATION: BRIDGE NO. 254 OVER THIRD CREEK ON SR 1512
(WOOD BRIDGE ROAD)

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



TO US 64

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

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES

Kimley»Horn

Prepared in the Office of:
KIMLEY-HORN
421 FAYETTEVILLE STREET, SUITE 601
RALEIGH, NC 27601

Designed by:
VANCE BLANTON 3708
NAME LEVEL III CERTIFICATION NO.

Roadway Standard Drawings

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

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
17BP.12.R.78	EC-02
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

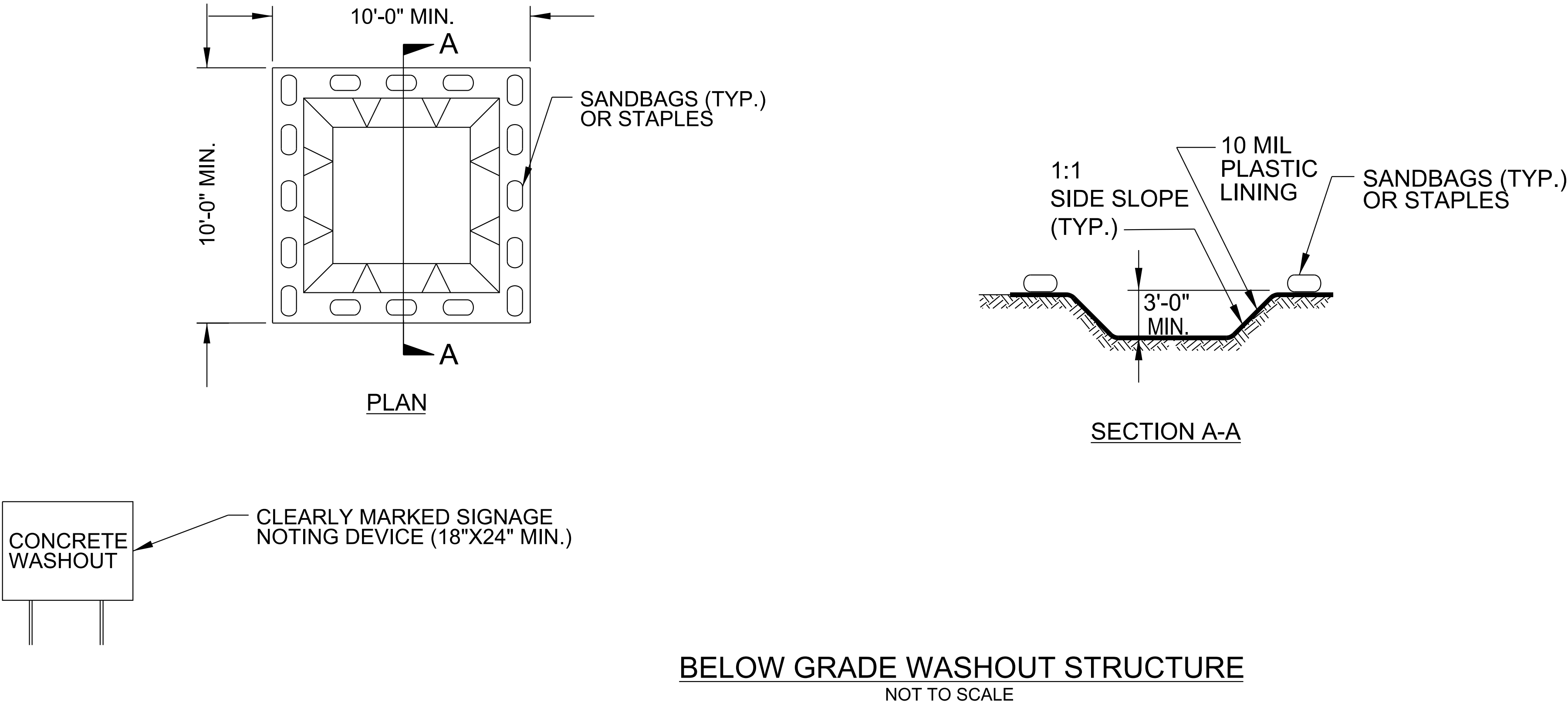
EROSION & SEDIMENT CONTROL LEGEND

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

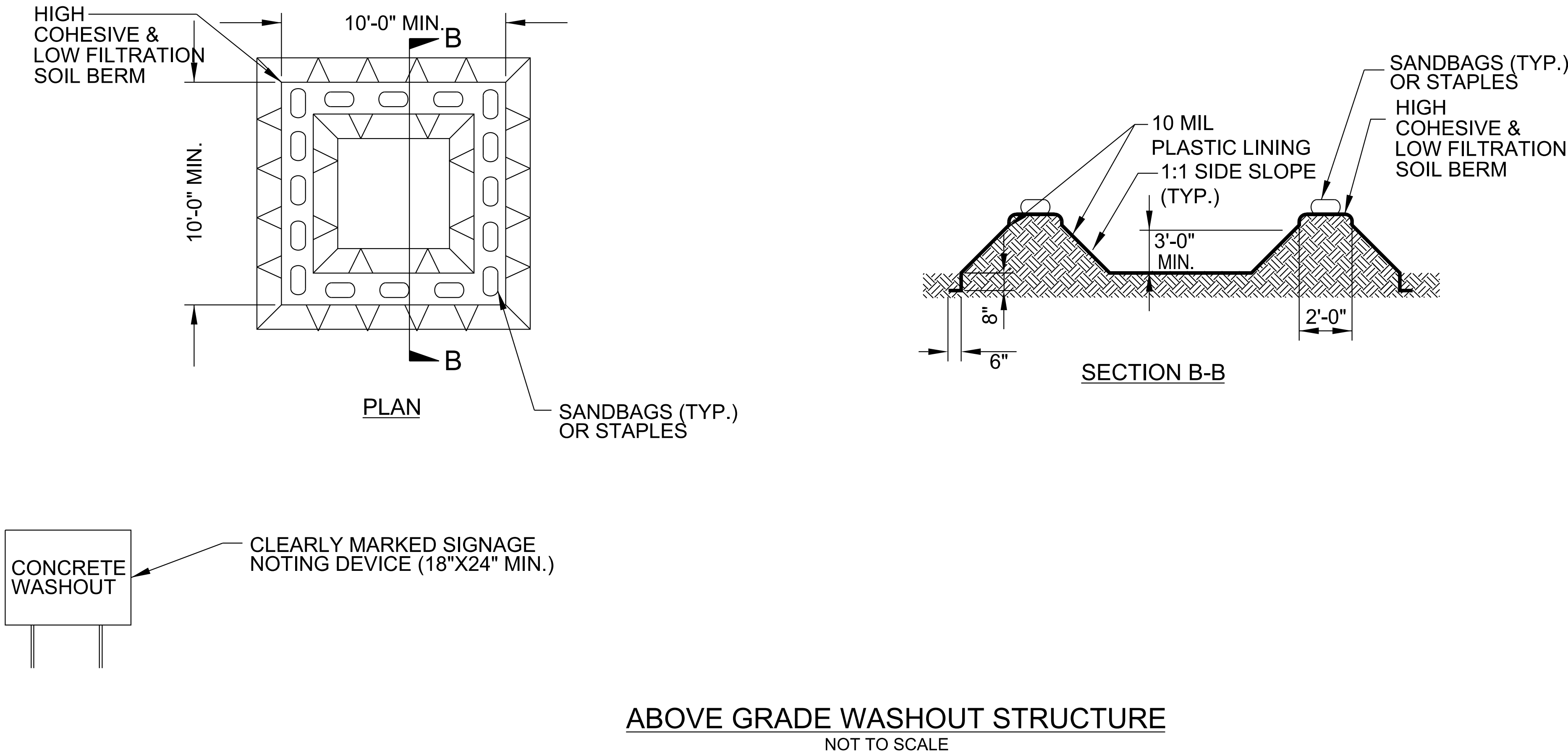
Std. #	Description	Symbol
1633.01	Temporary Rock Silt Check Type A	
1633.02	Temporary Rock Silt Check Type B	
1633.03	Temporary Rock Silt Check Type A with Excelsior Matting and Flocculant	
1634.01	Temporary Rock Sediment Dam Type A	
1634.02	Temporary Rock Sediment Dam Type B	
1635.01	Rock Pipe Inlet Sediment Trap Type A	A
1635.02	Rock Pipe Inlet Sediment Trap Type B	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.
17BPJ2.R.78	EC-02A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



- 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.



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

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
17BPJ2.R.78	EC-3A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SOIL STABILIZATION TIMEFRAMES

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

REVISIONS

Kimley»Horn

421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

RIGHT-OF-WAY REV.
CONST. REV.

PROJECT REFERENCE NO. 17BPJ2.R.78
SHEET NO. EC-4/CONST.4

R/W SHEET NO.

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4

NC GRID
NAD 83/NA 2011

5

JOSEPH HYDE
JEANNE HYDE
DB 2908 PG 2166
PB 52 PG 106

3

ALLISON G. GOARD
DORTHY M. GOARD
DB 2199 PG 1097

END PROJECT 17BPJ2.R.78
END CONSTRUCTION
-L- POC Sta. 16+80.00

JOHN RUNSKI
ELAINE RUNSKI
DB 1986 PG 846
PB 52 PG 106

CONTRACTOR TO INSTALL
15" PIPE DURING C&G PHASE

-L-
PI Sta 15+95.75
 $\Delta = 8' 34' 40.3''$ (RT)
 $D = 4' 18' 28.6''$
 $L = 199.12'$
 $T = 99.74'$
 $R = 1,330.00'$
 $SE = 0.06$
 $RO = 150'$
 $DS = 60$ MPH

PI Sta 17+27.15
 $\Delta = 8' 43' 22.3''$ (RT)
 $D = 13' 38' 30.7''$
 $L = 63.94'$
 $T = 32.03'$
 $R = 420.00'$
 $SE = N/A$
 $RO = N/A$

BEGIN PROJECT 17BPJ2.R.78
BEGIN CONSTRUCTION
-L- POT Sta. 11+95.00

1
OLA M. LEWIS
REGINALD R. HOLLEY
DB 1675 PG 2077

-L-
SR 1512
(WOOD BRIDGE RD)
N 5° 56' 46.9" W

2
OLA M. LEWIS
REGINALD R. HOLLEY
DB 1675 PG 2077

ARMOR WITH CL-II RAP RAP
BENEATH PROPOSED BRIDGE
EST 95 TONS CL-II
EST 185 SY GFD

APPROX. EXCAVATION
EL = 855.0' (TYP)

CHANNEL IMPROVEMENTS
EST 35 TONS CL-II
EST 48 SY GFD
SEE DETAIL 7/SHEET 2D-1

ARMOR WITH CL-II RAP RAP
BENEATH PROPOSED BRIDGE
EST 82 TONS CL-II
EST 155 SY GFD

CHANNEL IMPROVEMENTS
EST 48 TONS CL-II
EST 62 SY GFD
SEE DETAIL 7/SHEET 2D-1

4

JONATHAN J. BOBBITT
AMANDA F. BOBBITT
DB 2572 PG 407
PB 53 PG 123

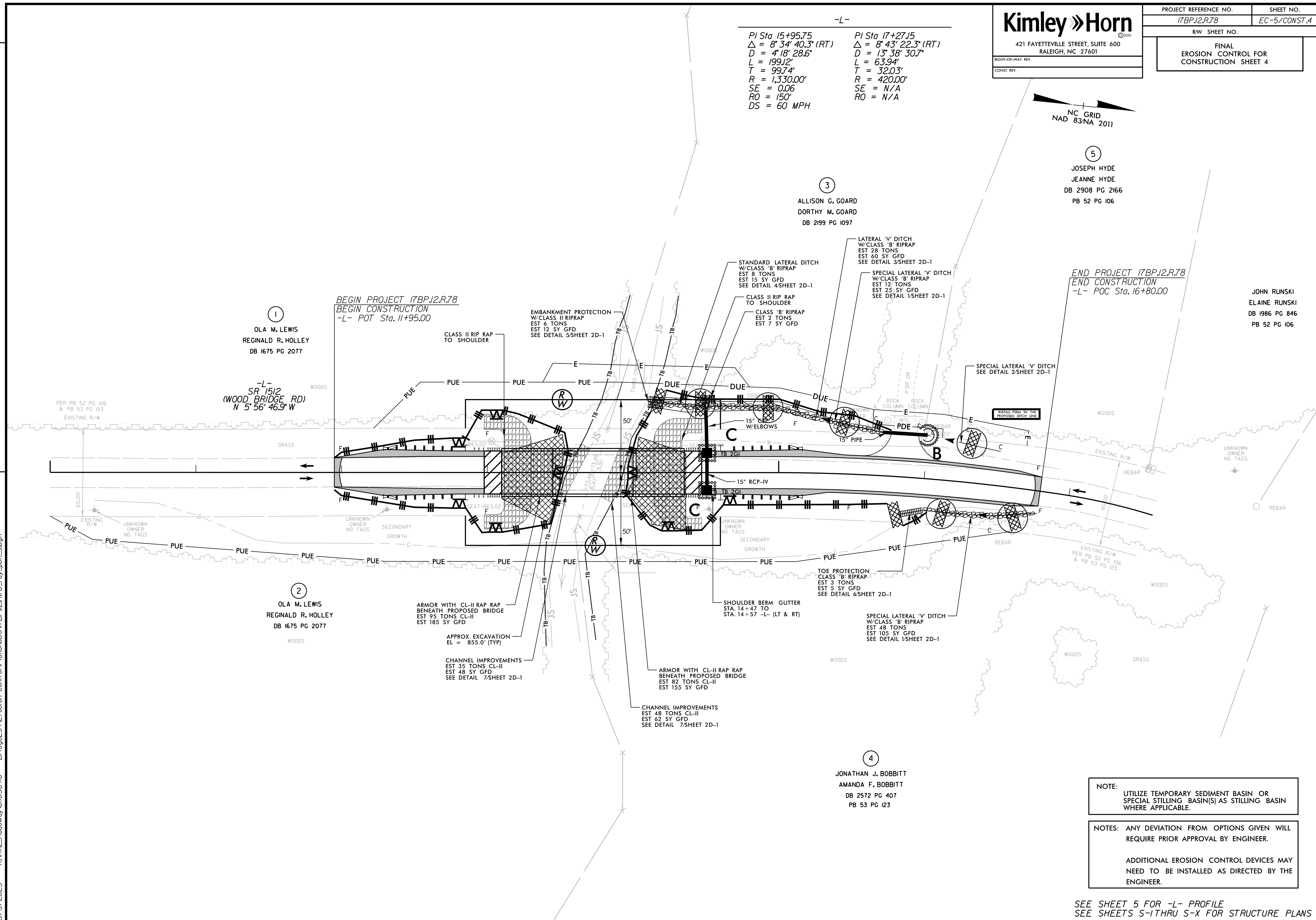
NOTE:
UTILIZE TEMPORARY SEDIMENT BASIN OR
SPECIAL STILLING BASIN(S) AS STILLING BASIN
WHERE APPLICABLE.

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

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

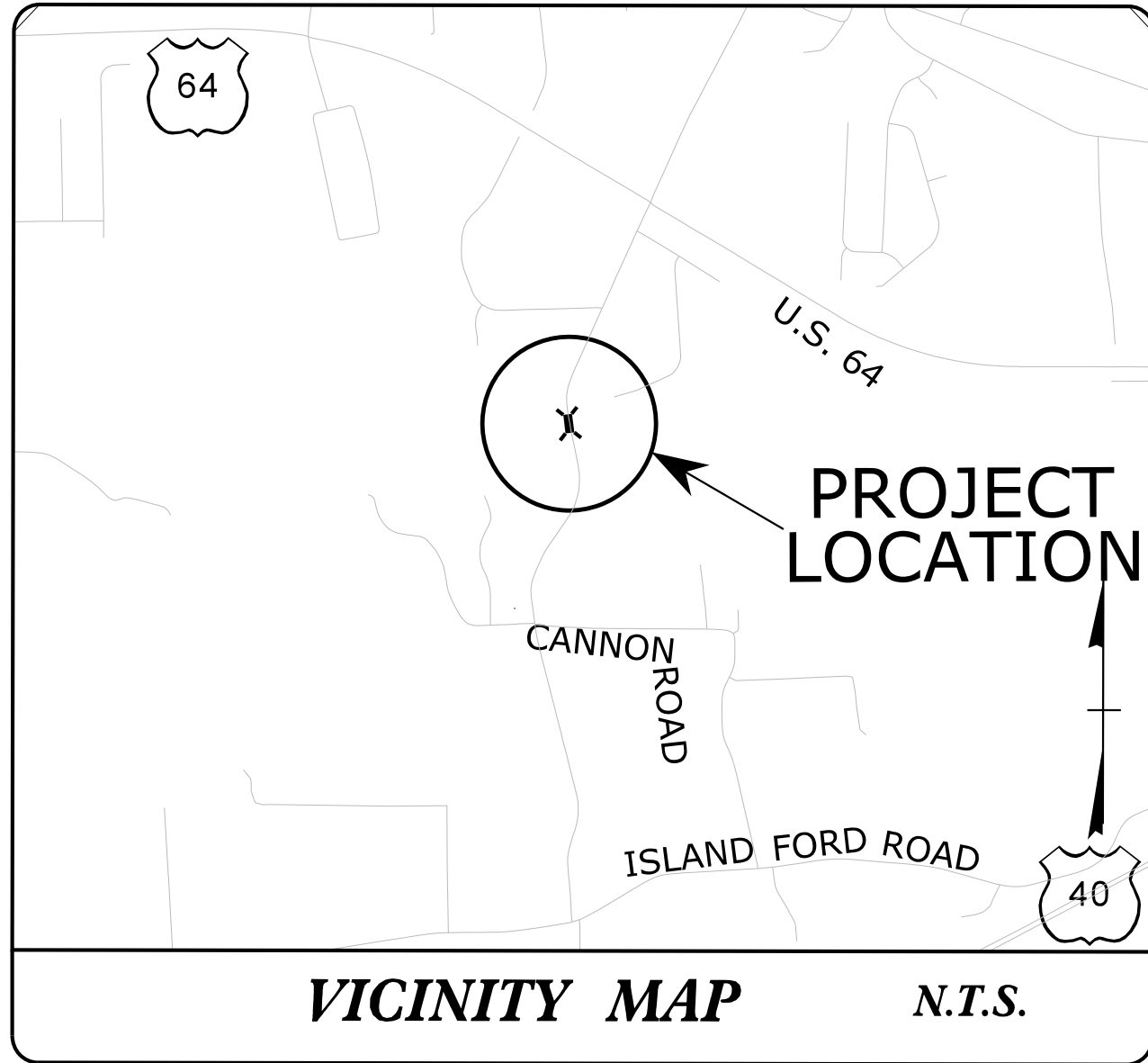
ADDITIONAL EROSION CONTROL DEVICES MAY
NEED TO BE INSTALLED AS DIRECTED BY THE
ENGINEER.

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



09/08/09

PROJECT: 17BP.12.R.78



UC PLANS

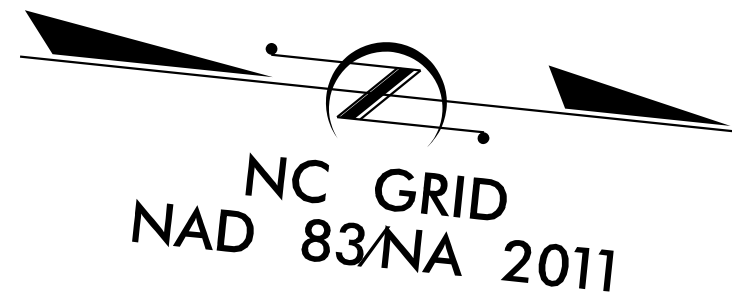
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITY CONSTRUCTION PLANS
IREDELL COUNTY

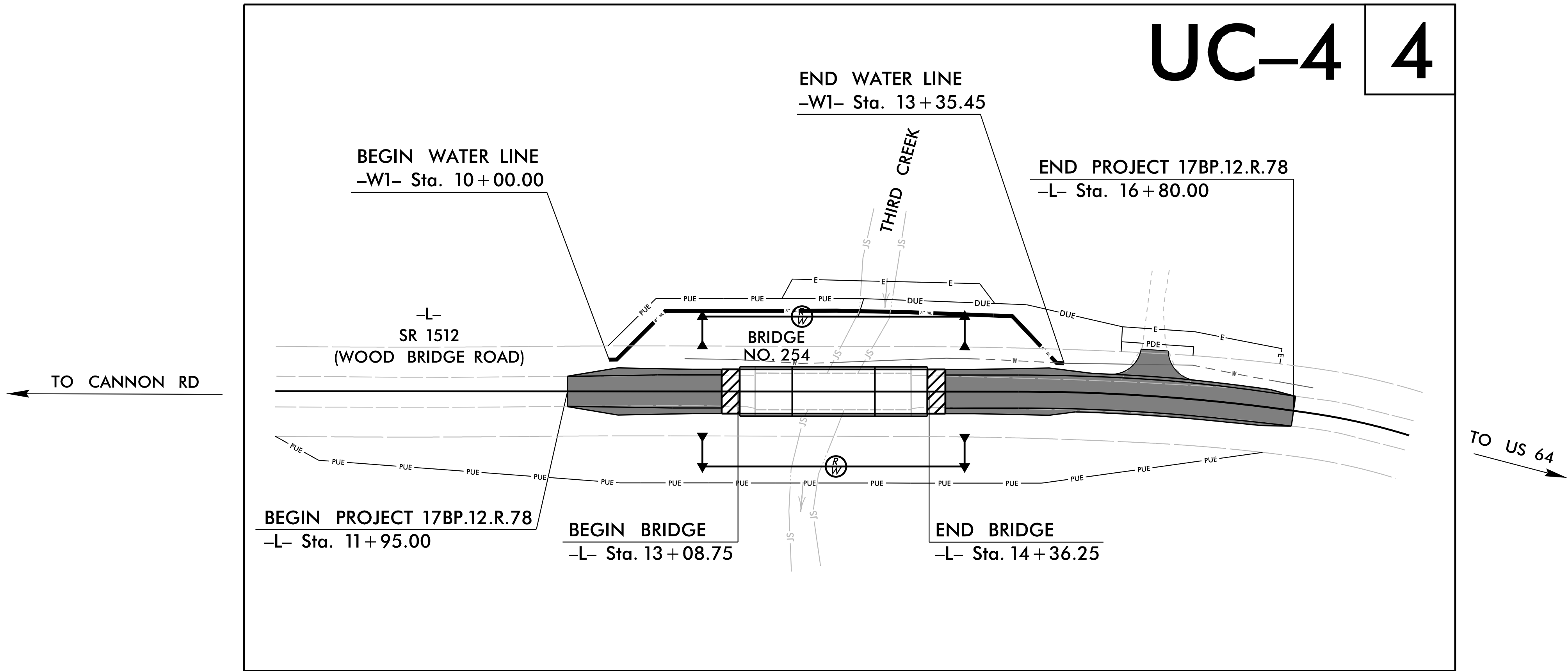
LOCATION: BRIDGE 254 OVER WOOD BRIDGE ROAD

TYPE OF WORK: RELOCATION OF WATER LINE

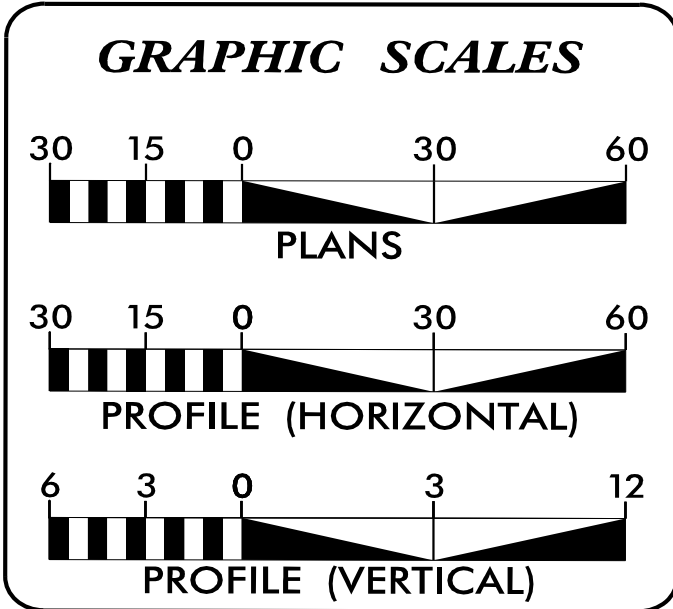
T.I.P. NO.	SHEET NO.
17BP.12.R.78	UC-1



UC-4 4



DOCUMENT NOT CONSIDERED FINAL
UNTIL ALL SIGNATURES ARE COMPLETED



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

WATER AND SEWER OWNERS ON PROJECT
(1) WATER - WEST IREDELL WATER COMPANY

PREPARED IN THE OFFICE OF
Kimley»Horn
NC LICENSE #F-0102 421 FAYETTEVILLE STREET, SUITE 600 RALEIGH, NORTH CAROLINA 27601 PHONE: (919) 677-2000
Nate Harvey, P.E. CONSULTANT CONTACT #1
Georgia Stamper, E.I. CONSULTANT CONTACT #2

SEAL
6/27/2025

DIVISION OF HIGHWAYS UTILITIES UNIT
1555 MAIL SERVICES CENTER RALEIGH NC 27699-1555 PHONE (919) 707-6690 FAX (919) 250-4151
Amy D. York CENTRAL UTILITIES MANAGER
Ali Kouchehi, P.E. REGIONAL UTILITIES ENGINEER
Jon Loughry SENIOR UTILITIES ENGINEER
C. Dayton Martin, III REGIONAL UTILITIES COORDINATOR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
17BP.12.R.78	UC-2

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

Water Line (Sized as Shown)	12" WL
11¼ Degree Bend	
22½ Degree Bend	
45 Degree Bend	
90 Degree Bend	
Plug	
Tee	
Cross	
Reducer	
Gate Valve	GV
Butterfly Valve	BV
Tapping Valve	TGV
Line Stop	LS
Line Stop with Bypass	LS/BP
Blow Off	BO
Fire Hydrant	PFH
Relocate Fire Hydrant	REH FH
Remove Fire Hydrant	REM FH
Water Meter	PWM
Relocate Water Meter	RWM
Remove Water Meter	REM WM
Water Pump Station	PST(W)
RPZ Backflow Preventer	RPZ
DCV Backflow Preventer	PBFP
Relocate RPZ Backflow Preventer	RRPZ
Relocate DCV Backflow Preventer	RBFP

PROPOSED SEWER SYMBOLS

Gravity Sewer Line (Sized as Shown)	12" SS
Force Main Sewer Line (Sized as Shown)	12" FSS
Manhole (Sized per Note)	
Sewer Pump Station	PST(SS)

PROPOSED MISCELLANEOUS UTILITIES SYMBOLS

Power Pole	
Telephone Pole	
Joint Use Pole	
Telephone Pedestal	TEL PED
Utility Line by Others (Type as Shown)	PROP O/H POW LINES
Trenchless Installation	12" TL INSTALL
Encasement by Open Cut	24" ENCAS BY OC
Encasement	24" ENCASEMENT

Thrust Block	
Air Release Valve	AR
Utility Vault	UV
Concrete Pier	CP
Steel Pier	SP
Plan Note	NOTE
Pay Item Note	PAY ITEM

EXISTING UTILITIES SYMBOLS

Power Pole	
Telephone Pole	
Joint Use Pole	
Utility Pole	
Utility Pole with Base	
H-Frame Pole	
Power Transmission Line Tower	
Water Manhole	
Power Manhole	
Telephone Manhole	
Sanitary Sewer Manhole	
Hand Hole for Cable	
Power Transformer	
Telephone Pedestal	
CATV Pedestal	
Gas Valve	
Gas Meter	
Located Miscellaneous Utility Object	
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

*Underground Power Line	P
*Underground Telephone Cable	T
*Underground Telephone Conduit	TC
*Underground Fiber Optics Telephone Cable	T FO
*Underground TV Cable	TV
*Underground Fiber Optics TV Cable	TV FO
*Underground Gas Pipeline	G
Aboveground Gas Pipeline	A/G Gas
*Underground Water Line	W
Aboveground Water Line	A/G Water
*Underground Gravity Sanitary Sewer Line	SS
Aboveground Gravity Sanitary Sewer Line	A/G Sanitary Sewer
*Underground SS Forced Main Line	FSS
Underground Unknown Utility Line	UUTL
SUE Test Hole	
Water Meter	
Water Valve	
Fire Hydrant	
Sanitary Sewer Cleanout	

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

NCDOT GENERAL UTILITY NOTES:

1. THE PROPOSED UTILITY CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF THE NC DEPARTMENT OF TRANSPORTATION’S "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2024.
2. THE EXISTING UTILITIES BELONG TO WEST IREDELL WATER COMPANY.
3. ALL WATER LINE TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL AND NATURAL RESOURCES, DIVISION OF WATER RESOURCES, PUBLIC WATER SUPPLY SECTION. ALL SEWER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL AND NATURAL RESOURCES, WATER QUALITY SECTION. PERFORM ALL WORK IN ACCORDANCE WITH THE APPLICABLE PLUMBING CODES.
4. THE UTILITY OWNER OWNS THE EXISTING UTILITY FACILITIES AND WILL OWN THE NEW UTILITY FACILITIES AFTER ACCEPTANCE BY THE DEPARTMENT AND THE UTILITY OWNER. THE DEPARTMENT OWNS THE CONSTRUCTION CONTRACT AND HAS ADMINISTRATIVE AUTHORITY. COMMUNICATIONS AND DECISIONS BETWEEN THE CONTRACTOR AND UTILITY OWNER ARE NOT BINDING UPON THE DEPARTMENT OR THIS CONTRACT UNLESS AUTHORIZED BY THE ENGINEER. AGREEMENTS BETWEEN THE UTILITY OWNER AND CONTRACTOR FOR THE WORK THAT IS NOT PART OF THIS CONTRACT OR IS SECONDARY TO THIS CONTRACT ARE ALLOWED, BUT ARE NOT BINDING UPON THE DEPARTMENT.
5. PROVIDE ACCESS FOR THE DEPARTMENT PERSONNEL AND THE OWNER’S REPRESENTATIVES TO ALL PHASES OF CONSTRUCTION. NOTIFY DEPARTMENT PERSONNEL AND THE UTILITY OWNER TWO WEEKS PRIOR TO COMMENCEMENT OF ANY WORK AND A MINIMUM OF ONE WEEK PRIOR TO SERVICE INTERRUPTIONS AND TESTING. KEEP UTILITY OWNERS’ REPRESENTATIVES INFORMED OF WORK PROGRESS AND PROVIDE OPPORTUNITY FOR INSPECTION OF CONSTRUCTION AND TESTING.
6. THE PLANS DEPICT THE BEST AVAILABLE INFORMATION FOR THE LOCATION, SIZE, AND TYPE OF MATERIAL FOR ALL EXISTING UTILITIES. MAKE INVESTIGATIONS FOR DETERMINING THE EXACT LOCATION, SIZE AND TYPE MATERIAL OF THE EXISTING FACILITIES AS NECESSARY FOR THE CONSTRUCTION OF THE PROPOSED UTILITIES AND FOR AVOIDING DAMAGE TO EXISTING FACILITIES. REPAIR ANY DAMAGE INCURRED TO EXISTING FACILITIES TO THE ORIGINAL OR BETTER CONDITION AT NO ADDITONAL COST TO THE DEPARTMENT.
7. MAKE FINAL CONNECTIONS OF THE NEW WORK TO THE EXISTING SYSTEM WHERE INDICATED ON THE PLANS, AS REQUIRED TO FIT THE ACTUAL CONDITIONS, OR AS DIRECTED.
8. MAKE CONNECTIONS BETWEEN EXISTING AND PROPOSED UTILITIES AT TIMES MOST CONVENIENT TO THE PUBLIC, WITHOUT ENDANGERING THE UTILITY SERVICE, AND IN ACCORDANCE WITH THE UTILITY OWNER’S REQUIREMENTS. MAKE CONNECTIONS ON WEEKENDS, AT NIGHT, AND ON HOLIDAYS IF NECESSARY.
9. ALL UTILITY MATERIALS SHALL BE APPROVED PRIOR TO DELIVERY TO THE PROJECT. SEE 1500-7, "SUBMITTALS AND RECORDS" IN SECTION 1500 OF THE STANDARD SPECIFICATIONS.

PROJECT SPECIFIC UTILITY NOTES:

1. CONTRACTOR SHALL COORDINATE ALL WORK WITH UTILITY OWNER AT LEAST 48 HOURS PRIOR TO THE START OF CONSTRUCTION, OR AS OTHERWISE SPECIFIED HEREIN.
2. UNLESS OTHERWISE INDICATED, ALL PROFILE ELEVATIONS ARE ALONG THE PIPE CENTERLINE.
3. CONTRACTOR SHALL NOTIFY AFFECTED PROPERTY OWNERS AND TENNANTS AT LEAST 7 DAYS PRIOR TO CONSTRUCTION THAT CONSTRUCTION ACTIVITY WILL TAKE PLACE IN THEIR AREA.
4. CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS FOR ALL UTILITY CONSTRUCTION PRIOR TO PLACING THE PIPELINE(S) IN SERVICE
5. PIPE ALIGNMENT SHOWN IS BASED ON STANDARD DUCTILE IRON MECHANICAL JOINT FITTINGS. JOINT DEFLECTIONS SHALL NOT EXCEED 75 PERCENT OF MANUFACTURER’S RECOMMENDED DEFLECTION. CONTRACTOR SHALL ADJUST PIPELINE ALIGNMENT AND DEFLECT JOINTS AS NECESSARY TO ACCOMMODATE THE STANDARD BENDS SHOWN.
6. MINIMUM PIPE COVER FOR DISTRIBUTION WATER MAINS SHALL BE 3 FEET.
7. ALL PRESSURIZED FITTINGS SHALL BE DUCTILE IRON RESTRAINED MECHANICAL JOINT WITH PRESSURE RATING EQUAL TO OR HIGHER THAN HOST PIPE, UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
8. ALL MECHANICAL JOINTS SHALL BE FITTED WITH WEDGE-TYPE MECHANICAL RESTRAINT ACCESSORY KITS DESIGNED FOR THE INTENDED USE AND MATERIAL, AS APPROVED BY UTILITY OWNER.

PREPARED BY:
Kimley»Horn
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

PROJECT REFERENCE NO.
17BP.12.R.78

SHEET NO.
UC-3

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

6/27/2025
045249
SEAL
NORTH CAROLINA
PROFESSIONAL
ENGINEER
H. MICHAEL L. HARPLE

UTILITY CONSTRUCTION
PLANS ONLY

UTILITY CONSTRUCTION

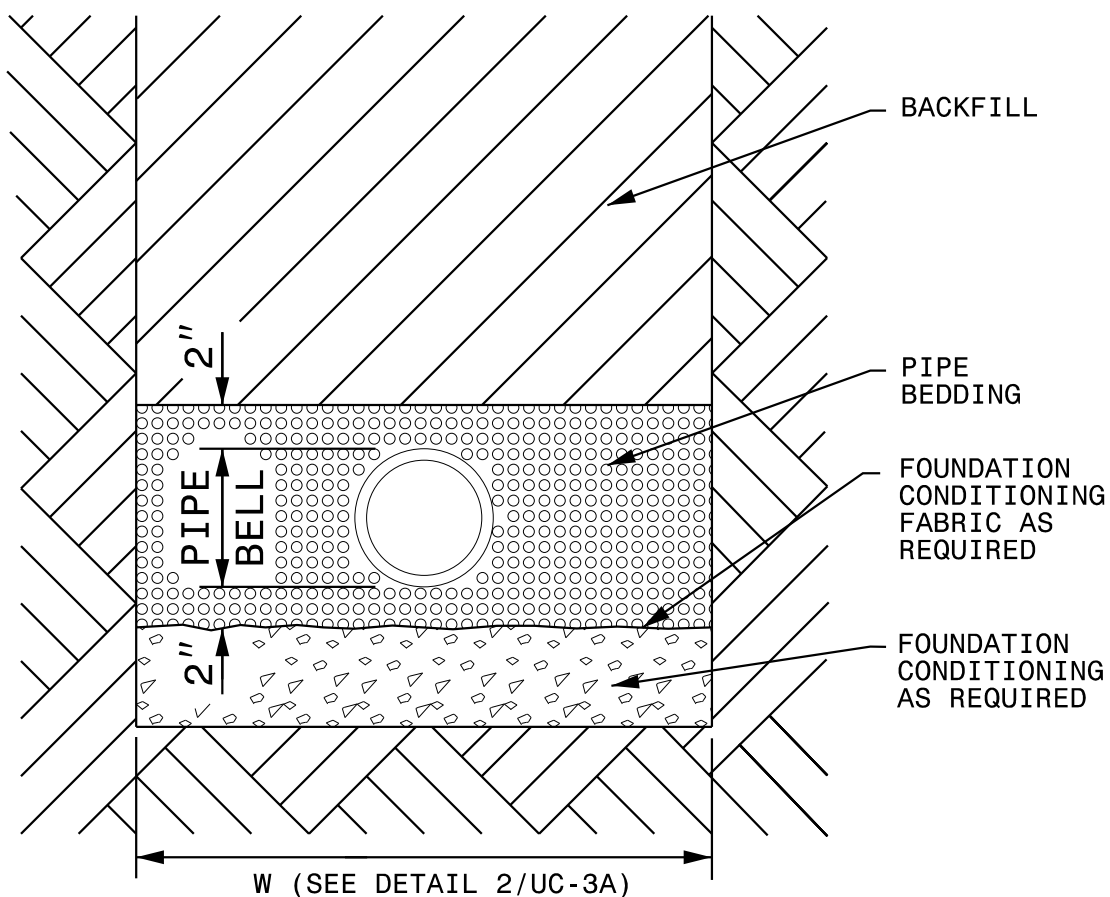
CONSTRUCTION SEQUENCE:

1. THE CONTRACTOR SHALL PROVIDE THE OWNER WITH A DETAILED INSTALLATION, CONNECTION, AND SERVICE INTERRUPTION PLAN FOR APPROVAL AT LEAST SEVEN (7) DAYS PRIOR TO THE RELOCATION. AT A MINIMUM, EACH PLAN SHALL ADDRESS THE FOLLOWING:

A. SEQUENCE OF CONSTRUCTION OPERATIONS.

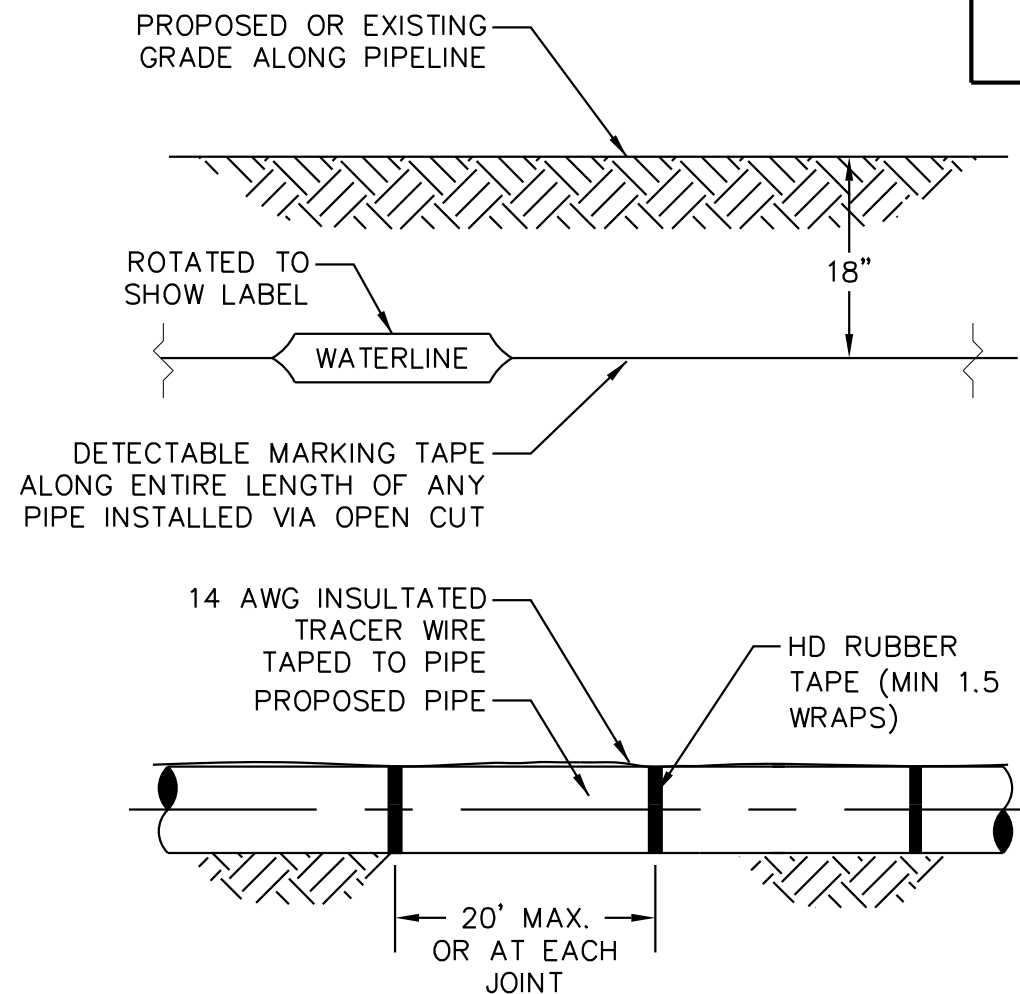
B. PROCEDURE FOR FLUSHING, TESTING, AND DISINFECTION OF ALL AFFECTED PIPING AND VALVES, AS REQUIRED BY THE OWNER.

C. PHASING AND SCHEDULE FOR ALL CONNECTIONS, INCLUDING PLANNED SERVICE OUTAGES, DURATION, AND CONTINGENCY PLAN.
2. NO INTERRUPTION OF SERVICE WILL BE PERMITTED UNTIL THE FOREGOING PLAN HAS BEEN APPROVED BY THE OWNER. THE OWNER’S PERSONNEL SHALL OPERATE THE OWNER’S EXISTING FACILTITIES INVOLVED IN THE INTERRUPTIONS OF SERVICE.
3. WRITTEN WATER SERVICE INTERRUPTION NOTICES SHALL BE PROVIDED TO ALL AFFECTED CUSTOMERS AT LEAST 72 HOURS PRIOR TO EACH PLANNED INTERRUPTION.



TRENCH EXCAVATION LIMITS		
INTERNAL DIAMETER OF PIPE	W	
	WIDTH OF TRENCH	
	MAX	W=MIN
4"-6"	3'-9"	2'-0"
8"-10"	3'-9"	2'-2"
12"	3'-9"	O.D.+2'
14"-16"	4'-2"	O.D.+2'
18"	4'-4"	O.D.+2'
20",21"	4'-8"	O.D.+2'
24"	4'-11"	O.D.+2'
27"	5'-9"	O.D.+2'
30"	6'-7"	O.D.+2'
36"	7'-4"	O.D.+2'

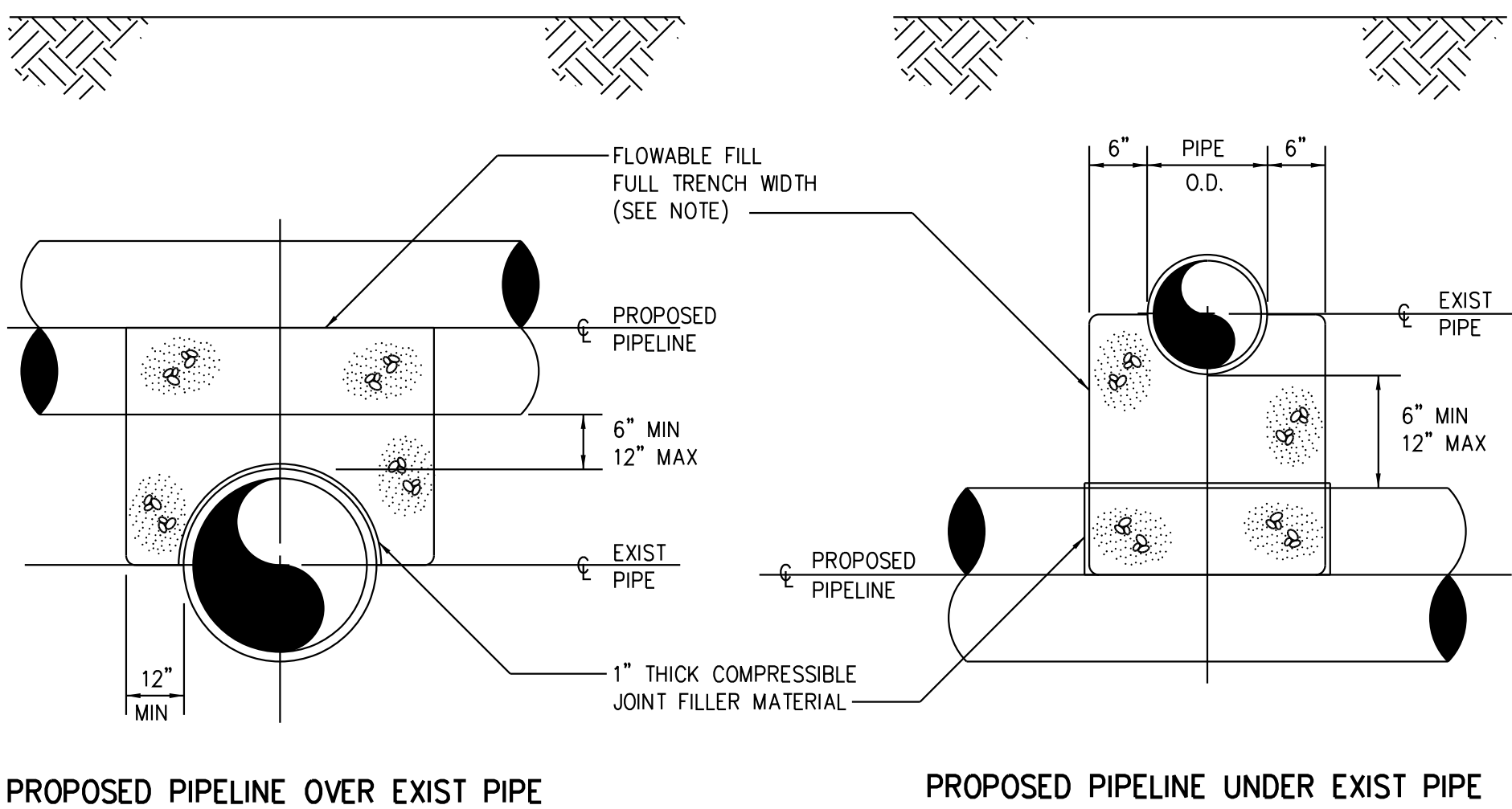
W = TRENCH WIDTH AT BOTTOM OF PIPE. TRENCH SIDE SLOPES SHALL BE IN ACCORDANCE WITH OSHA REQUIREMENTS.



3	DETECTABLE MARKING TAPE AND WIRE
UC-3A	SCALE: N.T.S.

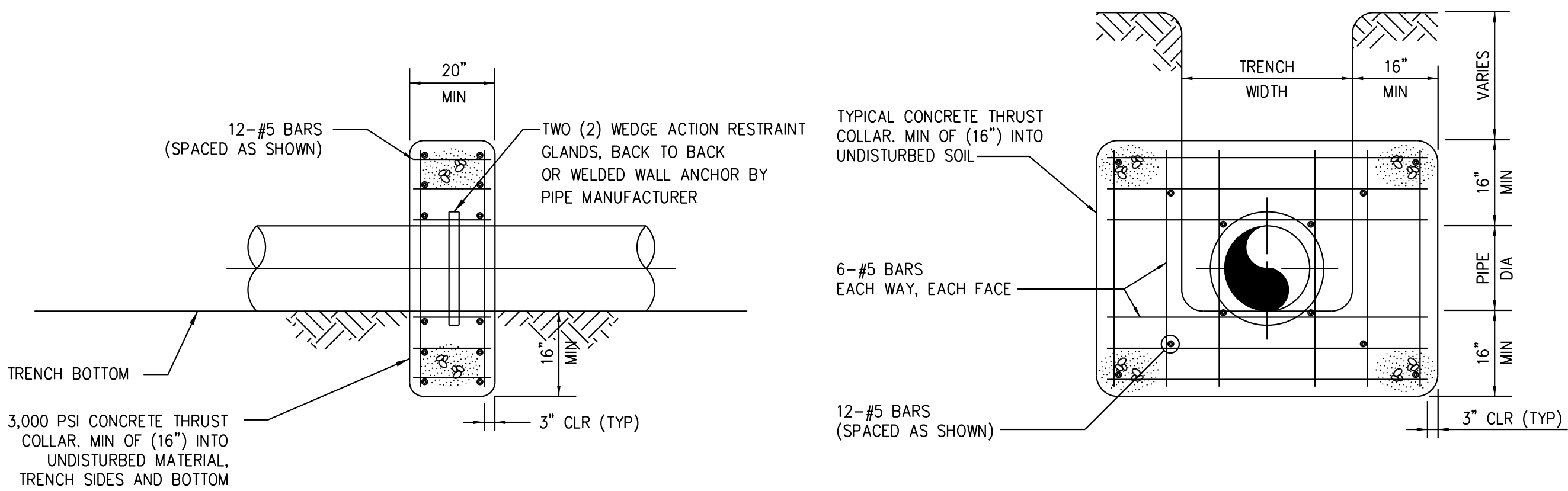
1	TRENCH DETAIL
UC-3A	SCALE: N.T.S.

2	TRENCH EXCAVATION LIMITS
UC-3A	SCALE: N.T.S.



NOTE: NO ENCASEMENT REQUIRED FOR VERTICAL SEPARATION GREATER THAN 12"

4	PIPE CROSSING DETAIL
UC-3A	SCALE: N.T.S.



ELEVATION 1

ELEVATION 2

6	THRUST COLLAR
UC-3A	SCALE: N.T.S.

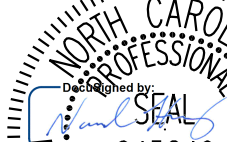
NOTES:

1. STABILIZE BASE IF REQUIRED, AS DIRECTED BY ENGINEER, TO SUPPORT THRUST COLLAR.
2. SOIL BEARING CAPACITY ASSUMED TO BE 2,000 PSF.

PREPARED BY:

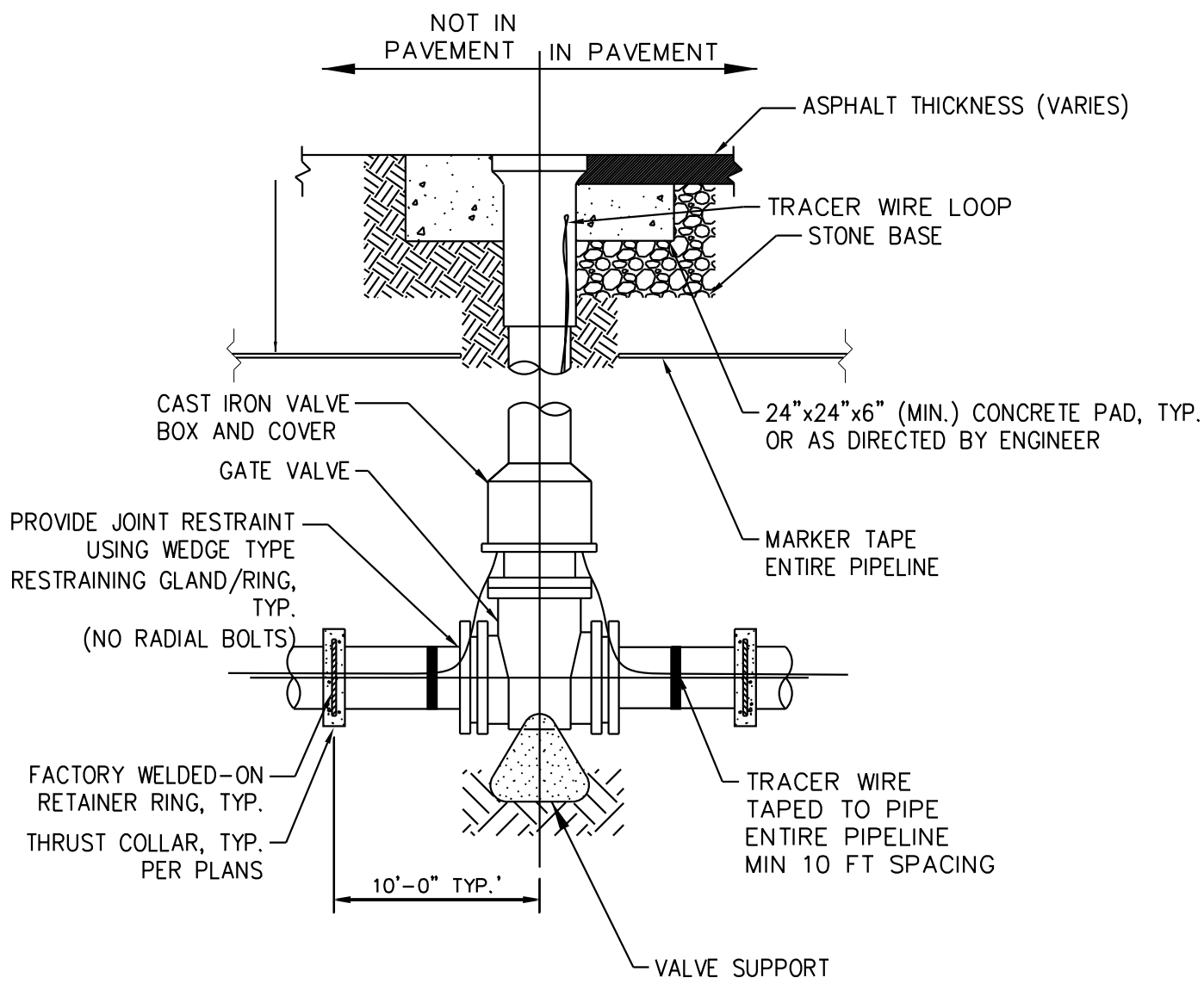
Kimley»Horn © 2025

421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

PROJECT REFERENCE NO.		SHEET NO.	
17BP.12.R.78		UC-3A	
DESIGNED BY:	NLH		
DRAWN BY:	GCS		
CHECKED BY:	CPM		
APPROVED BY:	NLH		
REVISED:			
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION		6/27/2025 UTILITY CONSTRUCTION PLANS ONLY	
UTILITIES ENGINEERING SEC. PHONE: (919)707-6690 FAX: (919)120-4151			

UTILITY CONSTRUCTION

5/14/99



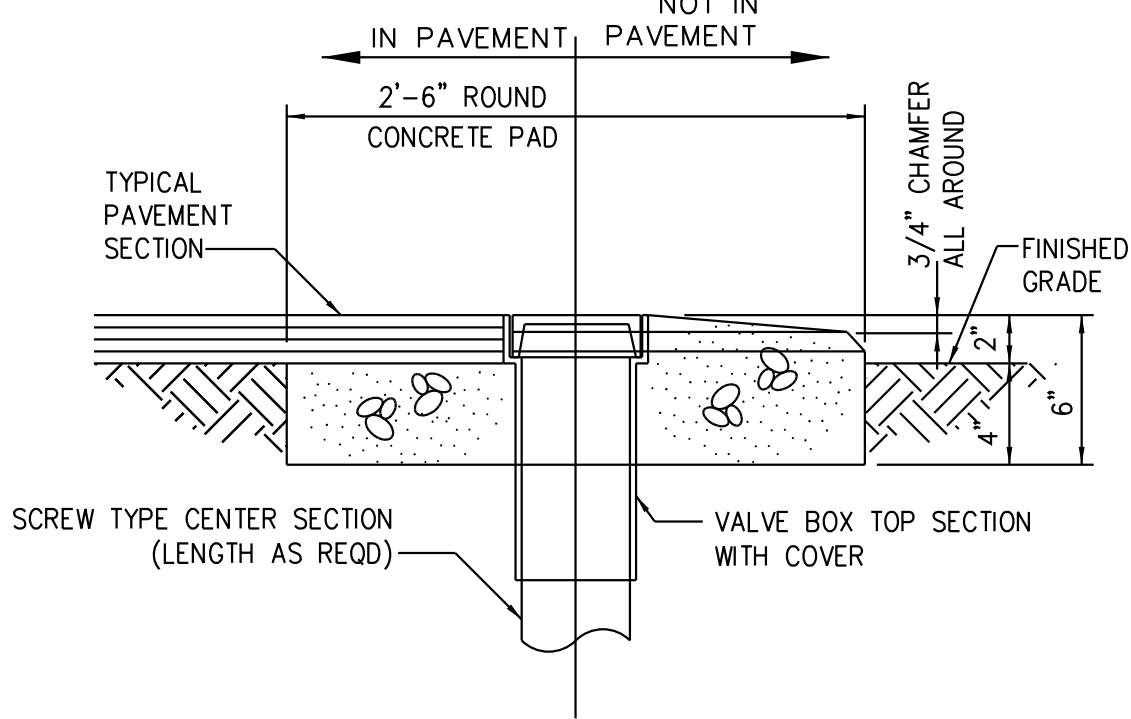
- NOTES:
1. PROVIDE HDPE INSERTS IN ALL VALVE BOXES.

1	GATE VALVE ASSEMBLY (FOR 4" THRU 12" VALVES)
UC-3B	SCALE: N.T.S.

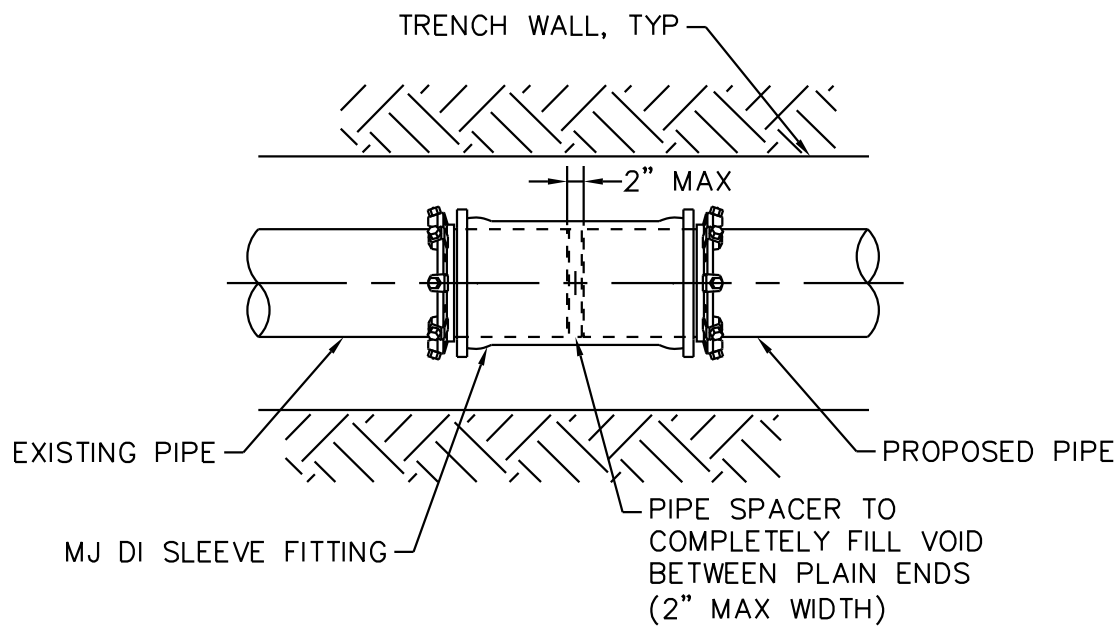
PIPE SIZE	DESIGN PRESSURE	
	ROD DIA	NUMBER REQ'D
4" TO 8"	3/4"	2
10" TO 20"	3/4"	4
24"	3/4"	6
30"	1"	6
36"	1"	8

1. THREADED RODS FOR PIPE DIAMETERS LARGER THAN 12" SHALL BE ASTM A193 (GRADE B7). ALL OTHER THREADED RODS SHALL BE ASTM A36.
2. RODS SHALL BE EQUALLY SPACED AROUND PIPE.

4	THREADED ROD SCHEDULE
UC-3B	SCALE: N.T.S.

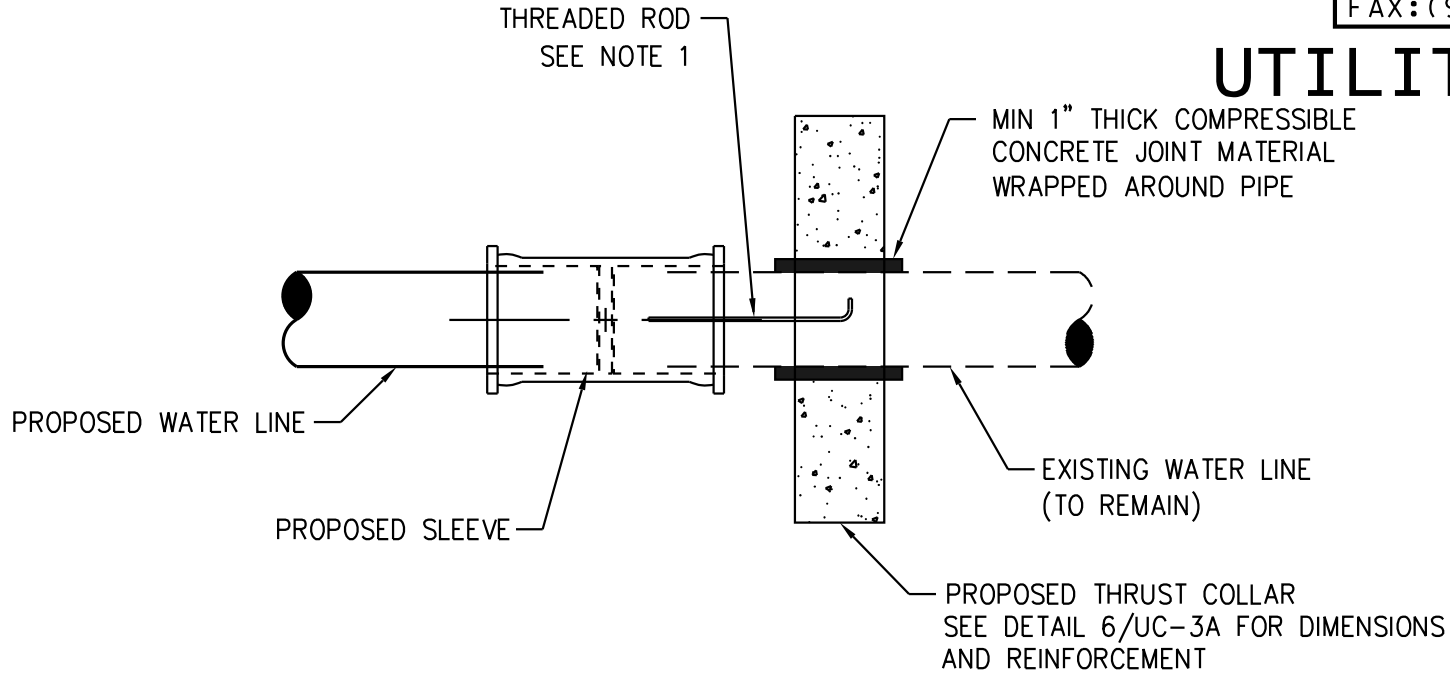


2	VALVE BOX PAD
UC-3B	SCALE: N.T.S.



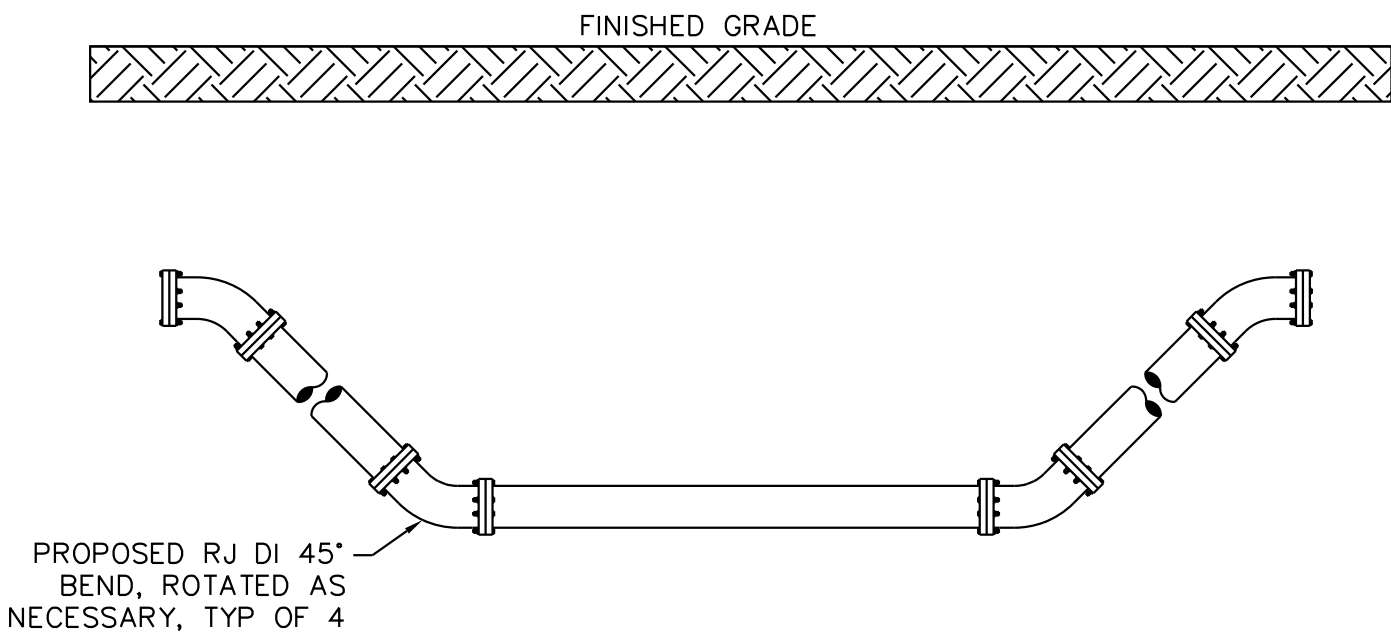
- NOTES:
1. SLEEVES SHALL BE DUCTILE IRON MECHANICAL JOINT (DI MJ) OF THE SAME OR HIGHER PRESSURE RATING AS THE HOST PIPE.
 2. RESTRAINT GLANDS SHALL BE DESIGNED FOR THE INTENDED USE AND SHALL CONSIST OF MULTIPLE GRIPPING WEDGES INCORPORATED INTO A FOLLOWER GLAND AND BOLT-ACTUATED BY TORQUE-LIMITING TWIST OFF NUTS.
 2. RESTRAINT GLANDS SHALL NOT BE USED ON CAST IRON PIPE.

5	RESTRAINED MJ SOLID SLEEVE
UC-3B	SCALE: N.T.S.



- NOTES:
1. MECHANICALLY FASTEN TWO (2) 3/4" THREADED RODS TO REBAR WITHIN THRUST COLLAR AND TO EXISTING/PROPOSED SLEEVE.
 2. THE THRUST COLLAR SHALL BE ALLOWED TO CURE A MINIMUM OF 3 DAYS BEFORE MAKING FINAL CONNECTIONS.

3	THRUST COLLAR ON EXISTING PIPE
UC-3B	SCALE: N.T.S.



- NOTES:
1. WEDGE ACTION RESTRAINT GLANDS TO BE USED FOR ALL FITTINGS AND VALVES BETWEEN THRUST COLLARS.
 2. ALL WATERLINE SHALL BE PC350 DI RESTRAINED JOINT.

6	STANDARD MJ VERTICAL BEND
UC-3B	SCALE: N.T.S.

PREPARED BY:
Kimley»Horn
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RALEIGH, NC 27601

PROJECT REFERENCE NO.		SHEET NO.
17BP.12.R.78		UC-3B
DESIGNED BY:	NLH	
DRAWN BY:	GCS	
CHECKED BY:	CPM	
APPROVED BY:	NLH	
REVISED:		
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION		
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5/14/99

5/14/99

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PROJECT REFERENCE NO.
17BP.12.R.78

SHEET NO.
UC-3C

DESIGNED BY: **NLH**
DRAWN BY: **GCS**
CHECKED BY: **CPM**
APPROVED BY: **NLH**
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NORTH CAROLINA
DEPARTMENT OF
TRANSPORTATION
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FAX: (919) 250-4151

6/27/2025

SEAL

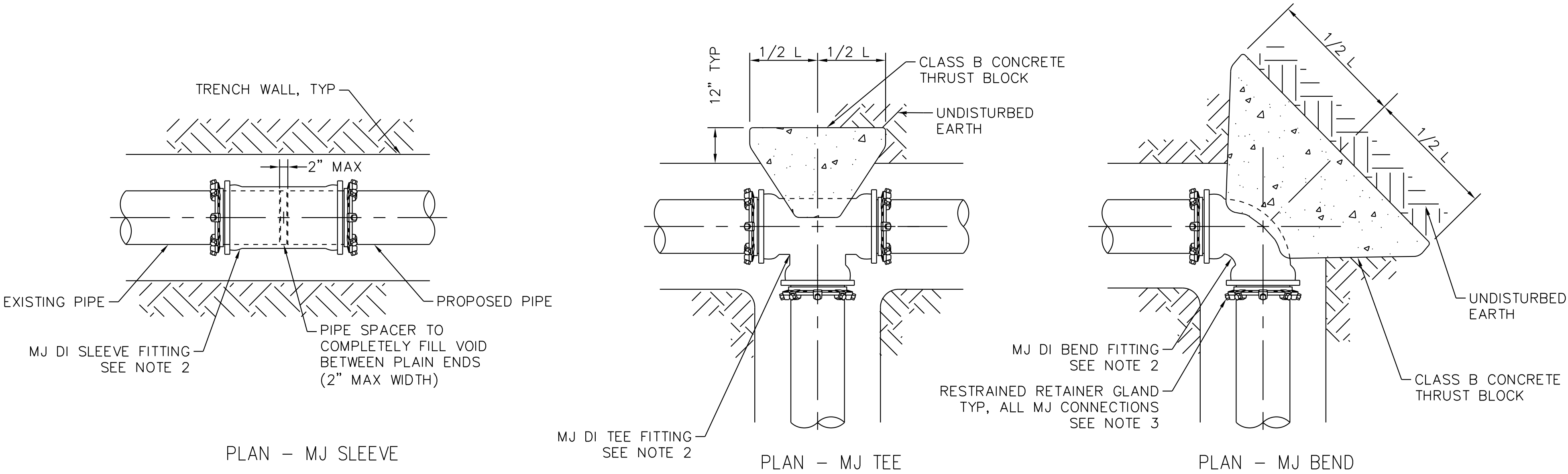
045249

REGISTERED PROFESSIONAL ENGINEER

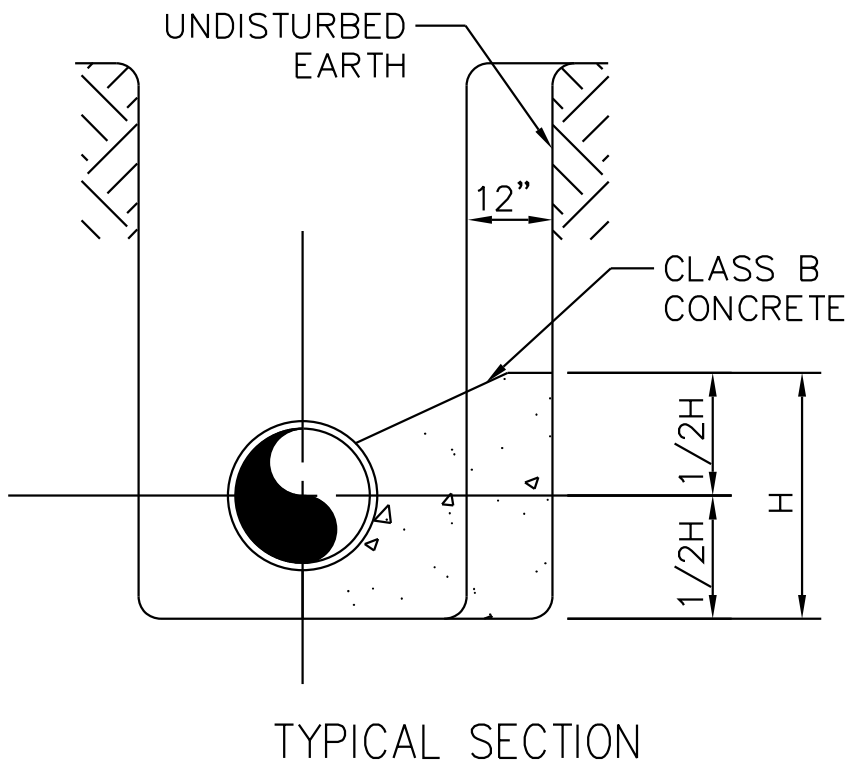
HANIEL L. HARPLE

UTILITY CONSTRUCTION
PLANS ONLY

UTILITY CONSTRUCTION



CONCRETE THRUST BLOCK SCHEDULE (DIMENSIONS IN FT)								
PIPE SIZE (IN)	FITTING							
	90° / TEE		45°		22.5°		11.25°	
	H	W	H	W	H	W	H	W
4	2.0	4.0	1.5	2.9	1.0	2.1	0.7	1.5
6	2.0	4.0	1.5	2.9	1.0	2.1	0.7	1.5
8	2.6	5.2	1.9	3.8	1.4	2.7	1.0	1.9
12	3.8	7.6	2.8	5.6	2.0	4.0	1.4	2.8
16	5.0	10.0	3.7	7.4	2.6	5.3	1.9	3.7
24	7.4	14.9	5.5	11.0	3.9	7.8	2.8	5.5
30	9.2	18.5	6.8	13.6	4.9	9.7	3.4	6.9
36	11.1	22.1	8.1	16.3	5.8	11.6	4.1	8.2



- NOTES:
- THRUST BLOCK DIMENSIONS BASED ON AVERAGE SOIL PASSIVE BEARING STRENGTH OF 2000 PSF USING SF OF 1.5 AND DESIGN TEST PRESSURE OF 200 PSI. FOR PIPE SIZES NOT LISTED, USE DIMENSIONS FOR NEXT LARGER PIPE SIZE.
 - ALL FITTINGS SHALL BE DUCTILE IRON MECHANICAL JOINT (DI MJ) OF THE SAME OR HIGHER PRESSURE RATING AS THE HOST PIPE AND SHALL BE RESTRAINED AGAINST THRUST VIA RESTRAINT GLANDS AND CONCRETE THRUST BLOCKING.
 - RESTRAINT GLANDS DESIGNED FOR THE INTENDED USE. RESTRAINT GLANDS SHALL CONSIST OF MULTIPLE GRIPPING WEDGES INCORPORATED INTO A FOLLOWER GLAND AND BOLT-ACTUATED BY TORQUE-LIMITING TWIST OFF NUTS.
 - DIRECT CONTACT BETWEEN CONCRETE AND FITTINGS, PIPE, OR HARDWARE SHALL NOT BE PERMITTED. THRUST BLOCK SHALL NOT OBSTRUCT ACCESS TO RESTRAINT GLAND BOLTS.

5/14/99

5/14/99

PREPARED BY:
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421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

PROJECT REFERENCE NO.
17BP.12.R.78

SHEET NO.
UC-4

DESIGNED BY: NLH

DRAWN BY: GCS

CHECKED BY: CPM

APPROVED BY: NLH

REVISED:

NORTH CAROLINA
DEPARTMENT OF
TRANSPORTATION

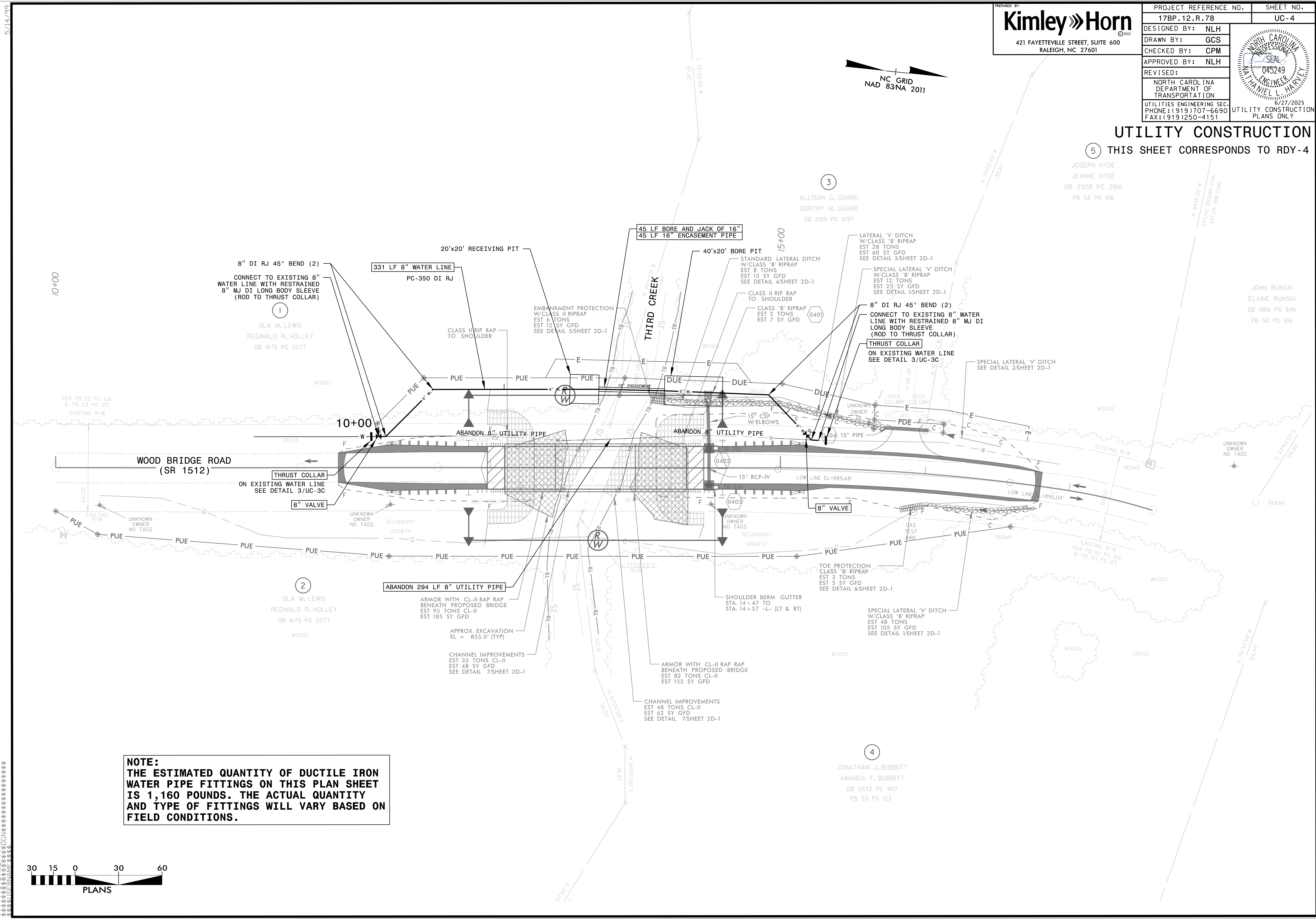
UTILITIES ENGINEERING SEC.
PHONE: (919) 707-6690
FAX: (919) 250-4151

6/27/2025

UTILITY CONSTRUCTION
PLANS ONLY

UTILITY CONSTRUCTION

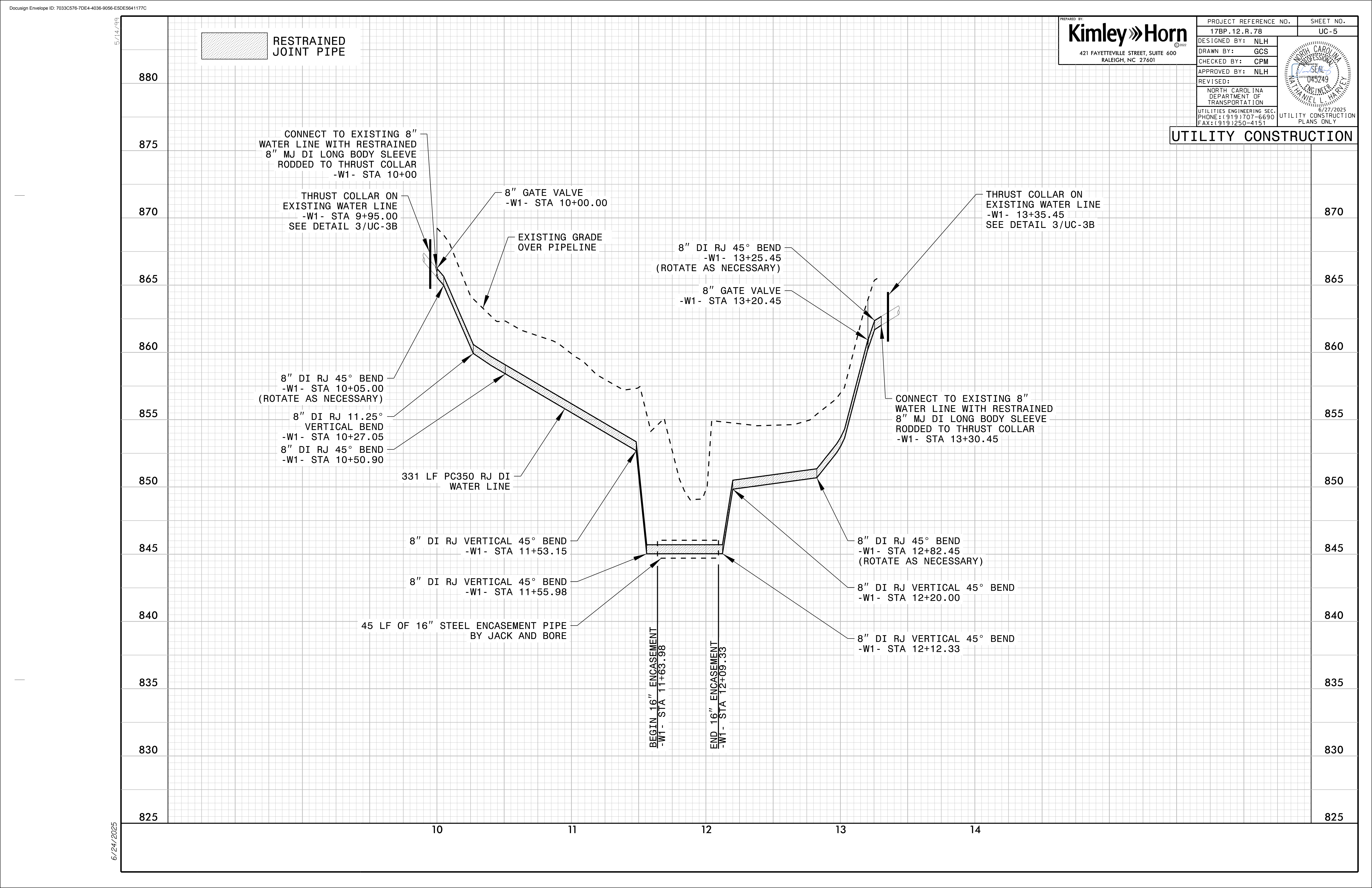
5 THIS SHEET CORRESPONDS TO RDY-4



JOSEPH HYDE
JEANNE HYDE
DB 2908 PG 2166
PB 52 PG 106

JOHN RUNSKI
ELAINE RUNSKI
DB 1986 PG 846
PB 52 PG 106

JONATHAN J. BOBBITT
AMANDA F. BOBBITT
DB 2572 PG 407
PB 53 PG 123

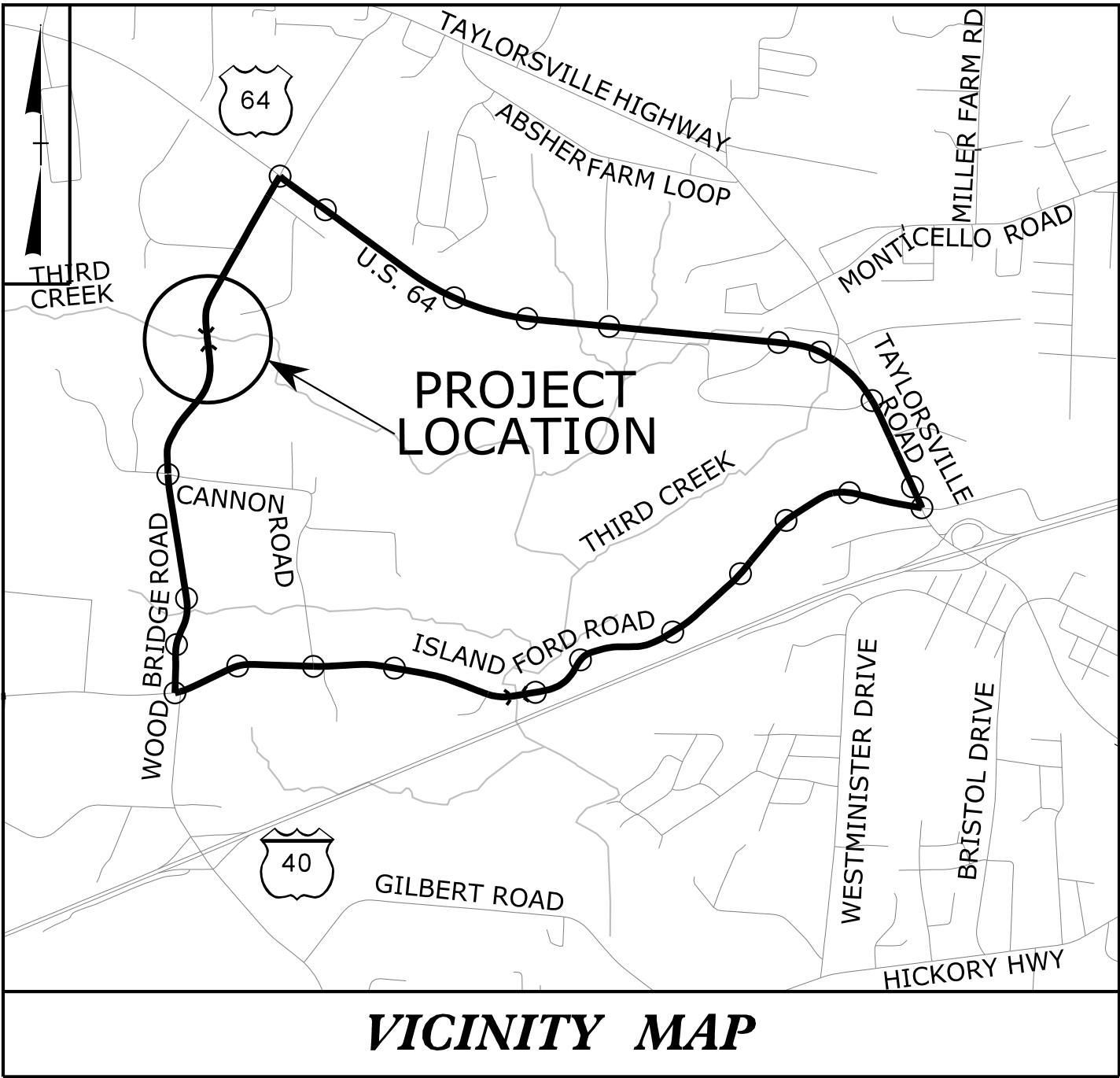


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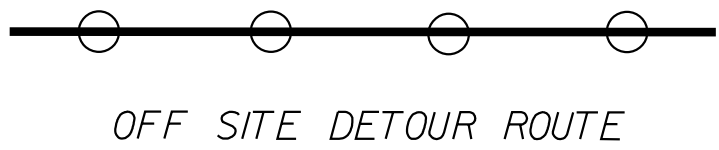
3/3/2025

PROJECT: 17BP.12.R.78

CONTRACT:



VICINITY MAP



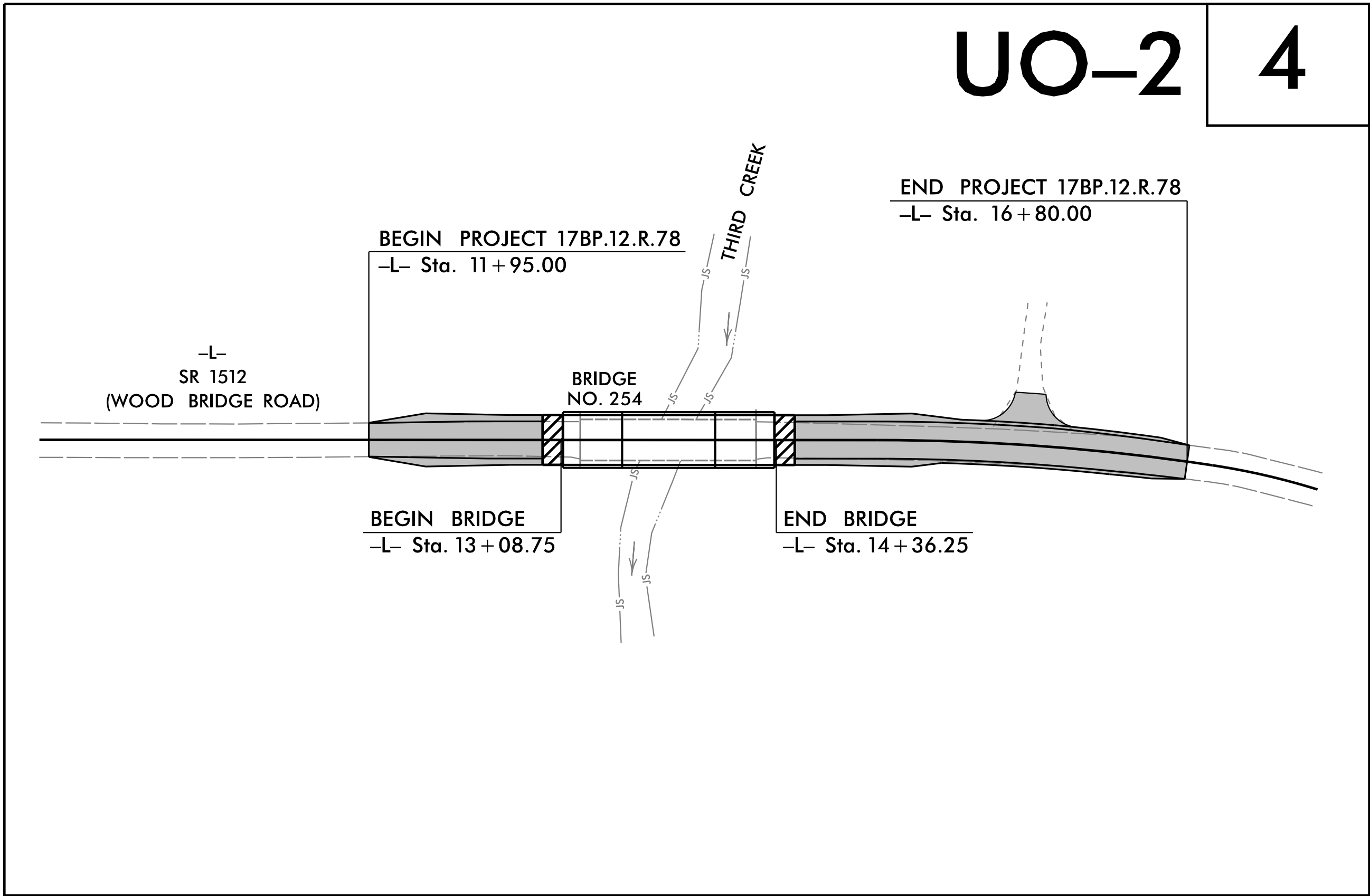
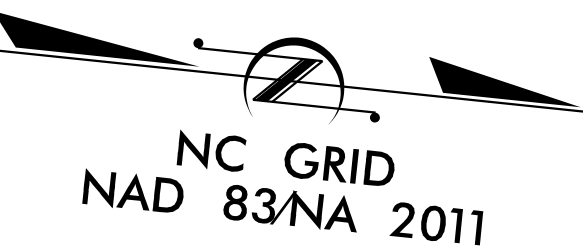
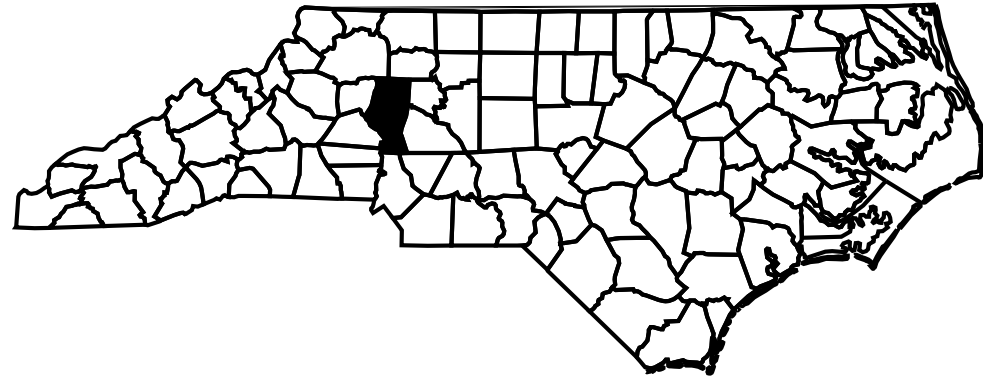
TO CANNON RD

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

IREDELL COUNTY

LOCATION: BRIDGE NO. 254 OVER THIRD CREEK ON SR 1512
(WOOD BRIDGE ROAD)

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



UO-2 4

GRAPHIC SCALES



PLANS



PROFILE (HORIZONTAL)



PROFILE (VERTICAL)

INDEX OF SHEETS

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

UTILITY OWNERS ON PROJECT

- (1) ENERGY UNITED: — POWER
(2) SPECTRUM: — COMMUNICATION
(3) PSNC: — GAS
(4) WEST IREDELL WATER COMPANY: — WATER

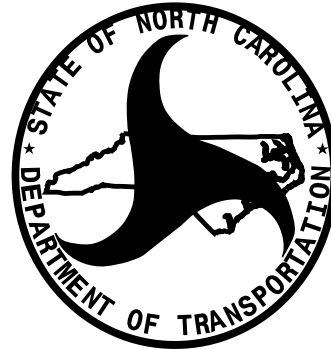
PLANS PREPARED IN
THE OFFICE BY:

Kimley »Horn

KIMLEY-HORN AND ASSOCIATES, INC.
1555 MAIL SERVICES CENTER
RALEIGH, NC 27699-1555
PHONE (919) 707-6690
FAX (919) 250-4151

TYLER G. SPRING, P.E.
UTILITY PROJECT MANAGER

TYLER G. SPRING, P.E.
PROJECT UTILITY COORDINATOR



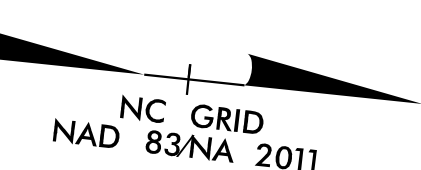
DIVISION OF HIGHWAYS
UTILITIES UNIT

1555 MAIL SERVICES CENTER
RALEIGH, NC 27699-1555
PHONE (919) 707-6690
FAX (919) 250-4151

DONALD E. HAMPTON UTILITIES REGIONAL ENGINEER
DEAUNTRE RILEY UTILITIES ENGINEER
JON E. GAILLARD UTILITIES REGIONAL COORDINATOR
WARREN ANDERSON UTILITIES COORDINATOR

REVISIONS

Kimley»Horn 421 FAYETTEVILLE STREET, SUITE 600 RALEIGH, NC 27601 RIGHT-OF-WAY REV. CONST. REV.	PROJECT REFERENCE NO.	SHEET NO.
	17BPJ2.R.78	U0-2
	R/W SHEET NO.	



5
JOSEPH HYDE
JEANNE HYDE
DB 2908 PG 2166
PB 52 PG 106

3
ALLISON G. GOARD
DORTHY M. GOARD
DB 2199 PG 1097

JOHN RUNSKI
ELAINE RUNSKI
DB 1986 PG 846
PB 52 PG 106

4
JONATHAN J. BOBBITT
AMANDA F. BOBBITT
DB 2572 PG 407
PB 53 PG 123

1
OLA M. LEWIS
REGINALD R. HOLLEY
DB 1675 PG 2077

2
OLA M. LEWIS
REGINALD R. HOLLEY
DB 1675 PG 2077

BEGIN PROJECT 17BPJ2.R.78
BEGIN CONSTRUCTION
-L- POT Sta. 11+95.00

END PROJECT 17BPJ2.R.78
END CONSTRUCTION
-L- POC Sta. 16+80.00

OVERHEAD ENERGY UNITED POWER
AND SPECTRUM TELECOMMUNICATION
LINES ON ENERGY UNITED POLES

10+00

15+00

PER PB 52 PG 106
& PB 53 PG 123
EXISTING R/W

-L-
SR 1512
(WOOD BRIDGE RD)
N 5°56'46.9" W

BM#1
ELEV = 890.69
N 752417 E 1414529
-L- STATION 10+13.27
15.39' RIGHT
COTTON SPINDLE IN
ROOT 36" BEECH

EXISTING R/W
PER PB 52 PG 106
& PB 53 PG 123

B-254 GPS BL-1

B-254 GPS BL-2

B-254 GPS BL-3

SEE SHEET 5 FOR -L- PROFILE
SEE SHEETS S-1THRU S-25 FOR STRUCTURE PLANS

3/3/2025 K:\PAL_Roadway\01036418 - Bridge254Roadway\Pro\17BPJ2.R.78_rdy_ubo_2.dgn

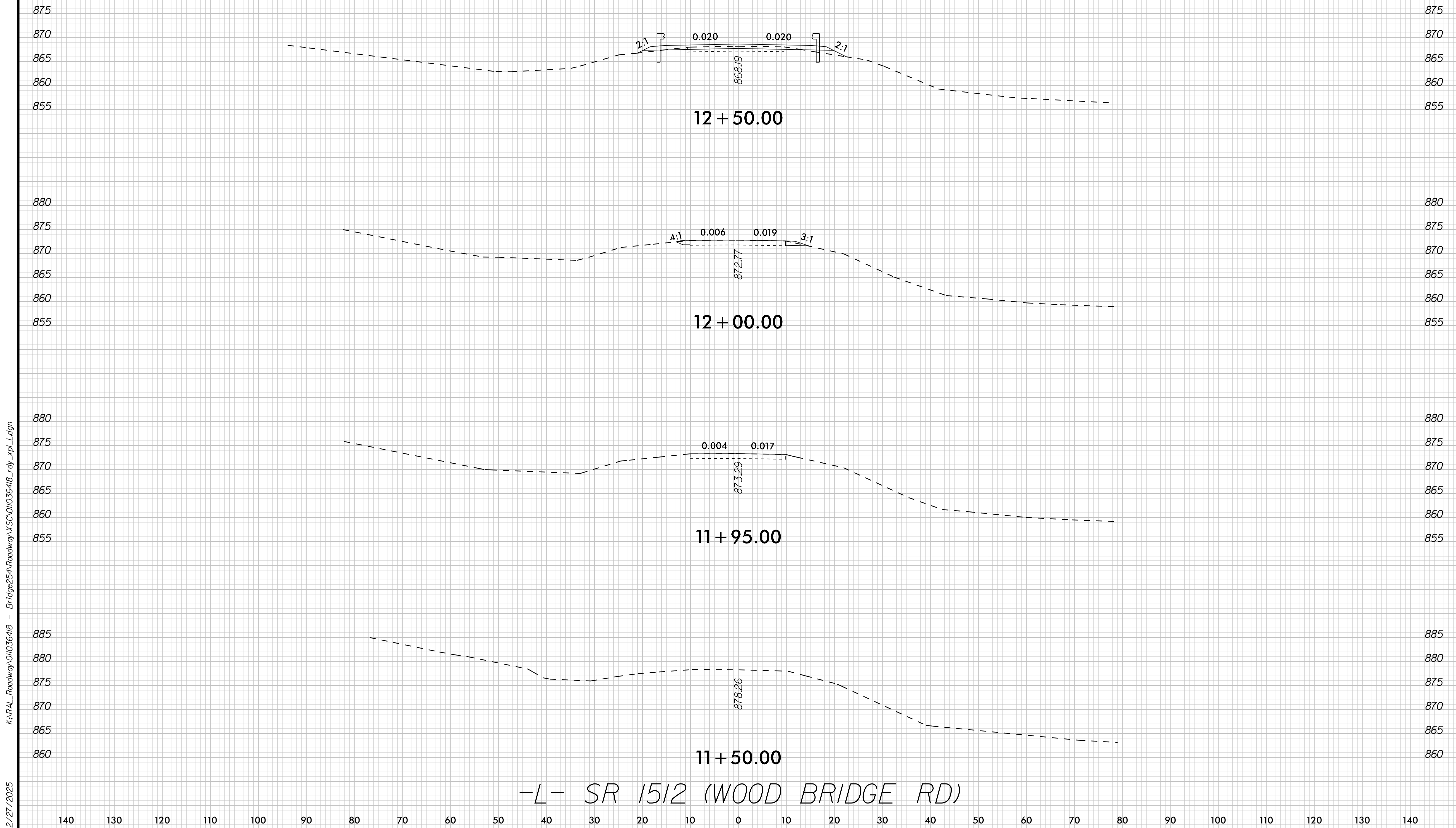
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17BP12.R.78	X-1

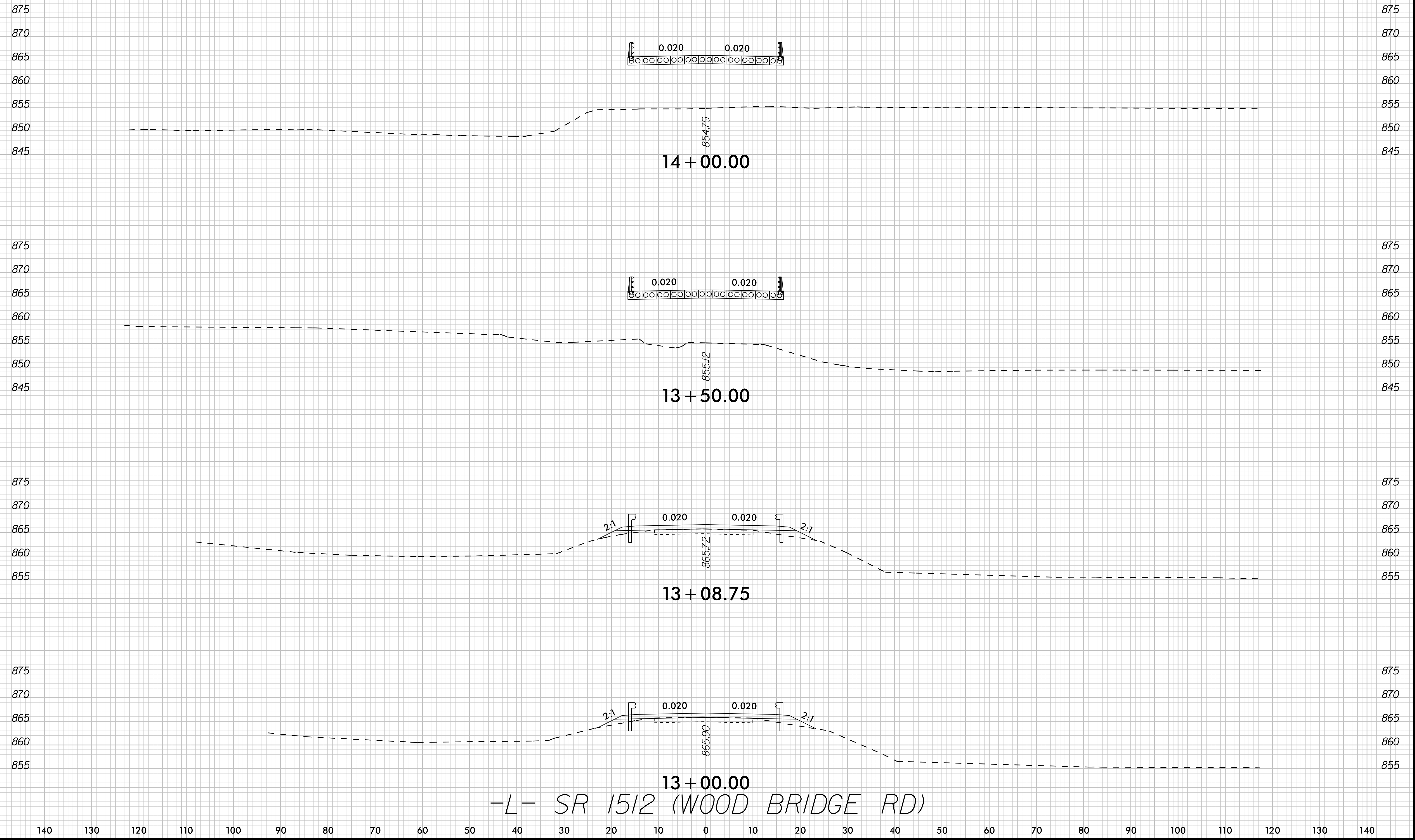
17BP.12.R.78 (BRIDGE 254)
CROSS SECTION INDEX

-L- SR 1512 (WOOD BRIDGE ROAD) X-2 THRU X-5

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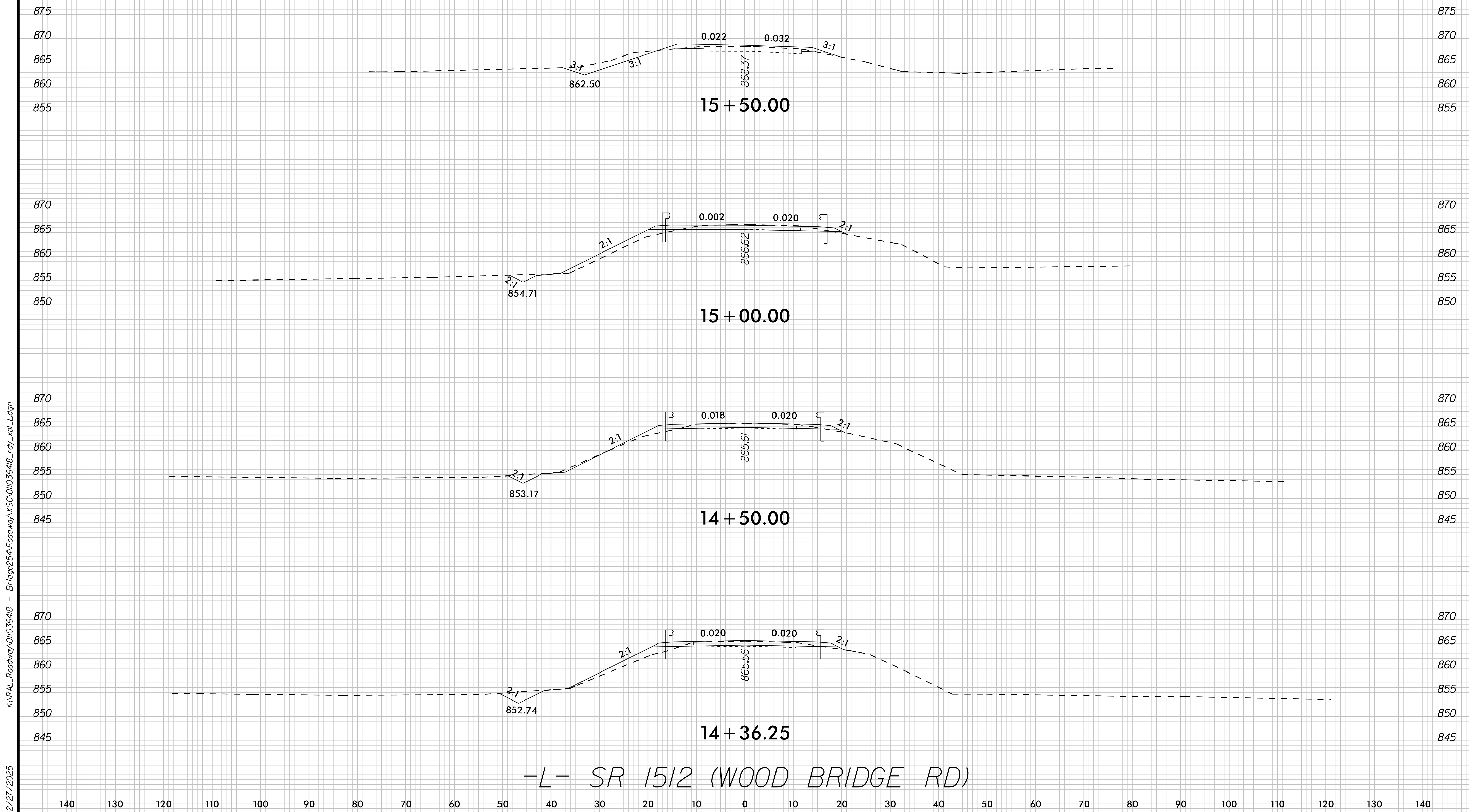
2/27/2025





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2/27/2025





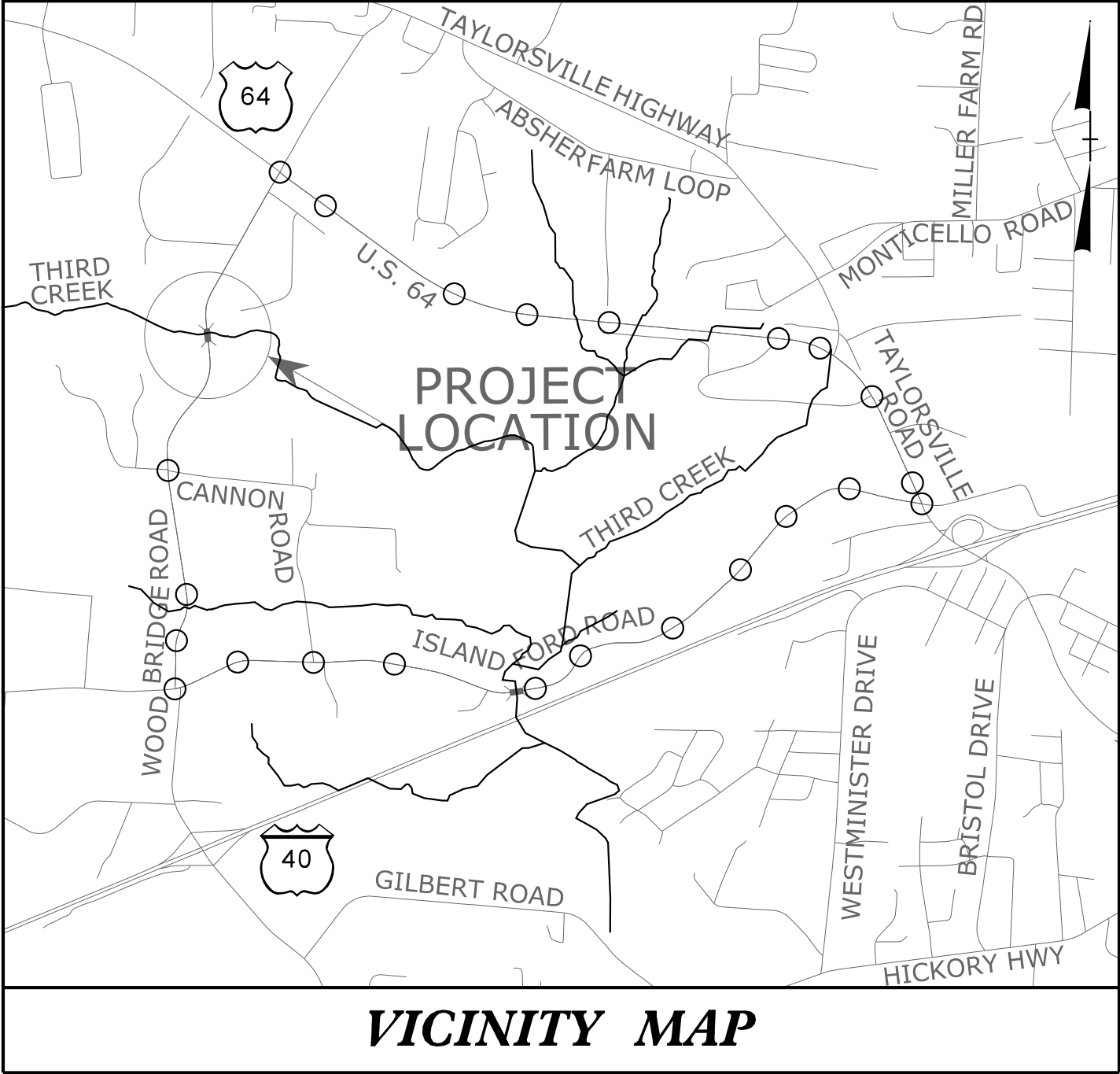
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6/4/2025

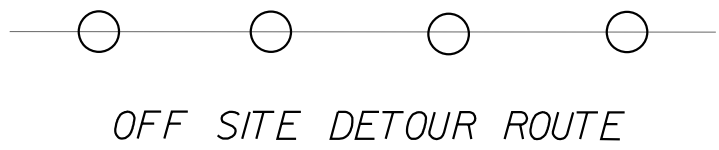
CONTRACT:

PROJECT: 17BP.12.R.78

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols
See Sheet 1C-1 For Survey Control Sheet



VICINITY MAP



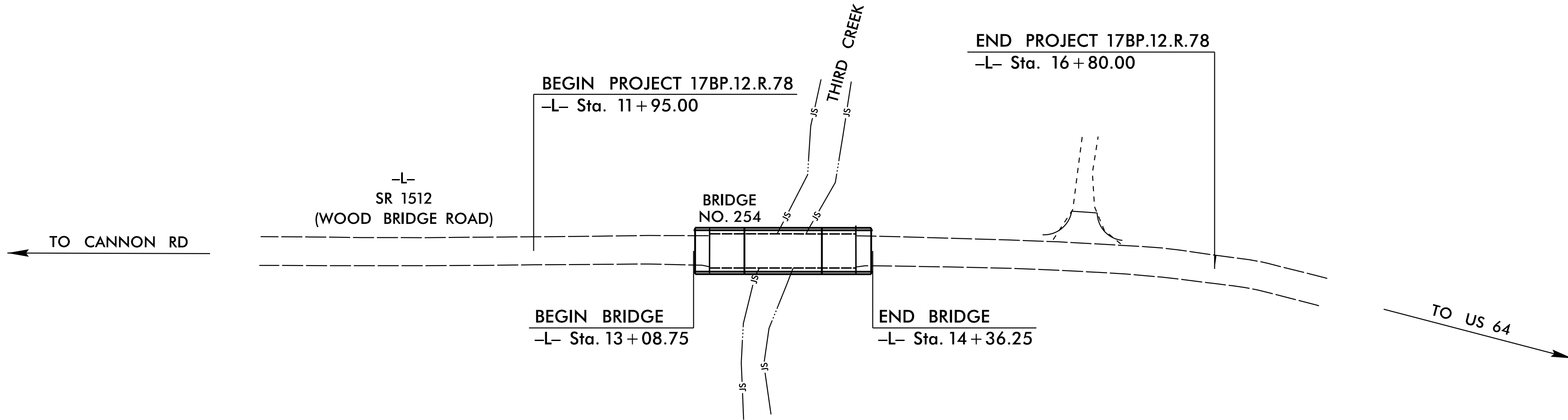
90% PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

IREDELL COUNTY

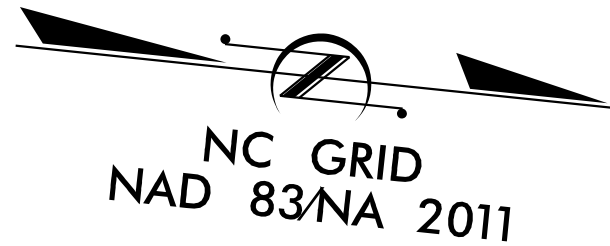
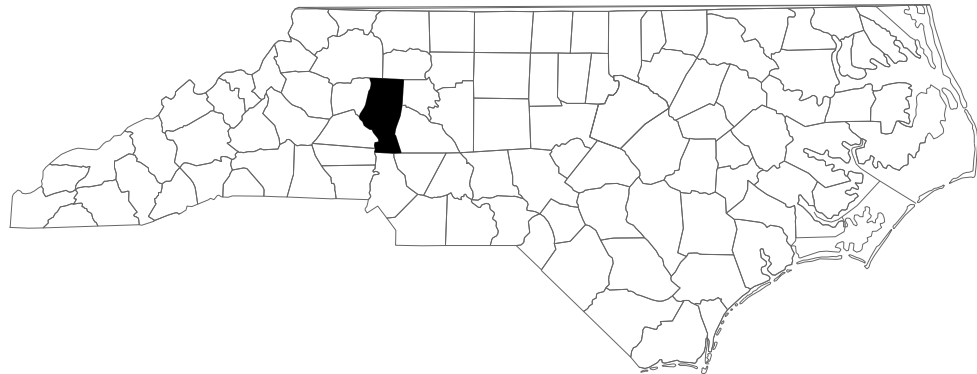
LOCATION: BRIDGE NO. 254 OVER THIRD CREEK ON SR 1512
(WOOD BRIDGE ROAD)

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



STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.12.R.78	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.12.PE.78		P.E.	
17BP.12.ROW.78		R/W	
17BP.12.R.78		CONST.	

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DESIGN DATA

ADT 2019 = 1000 VPD
ADT 2040 = 1500 VPD

T = 6%
V = 60 MPH

FUNC CLASS=
RURAL LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT 17BP.12.R.78 = 0.068 MILES
LENGTH STRUCTURE PROJECT 17BP.12.R.78 = 0.024 MILES
TOTAL LENGTH PROJECT 17BP.12.R.78 = 0.092 MILES

PLANS PREPARED FOR
THE NCDOT BY:

Kimley»Horn

161 LOCUST STREET, SUITE 500
FAYETTEVILLE, NORTH CAROLINA 28401
PHONE: (717) 875-2200

2024 STANDARD SPECIFICATIONS

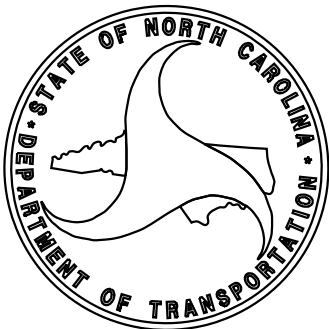
RIGHT OF WAY DATE:
JULY 12, 2024

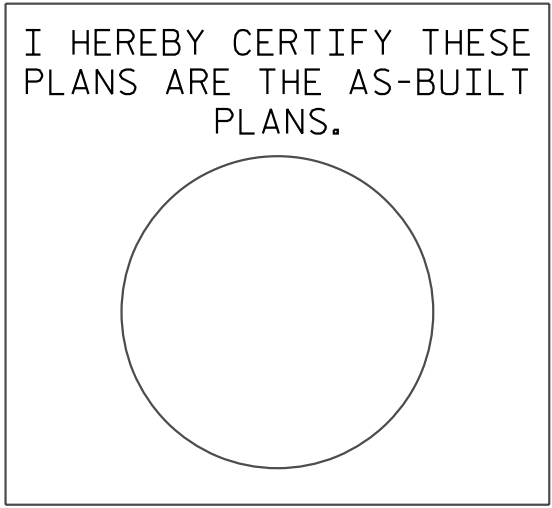
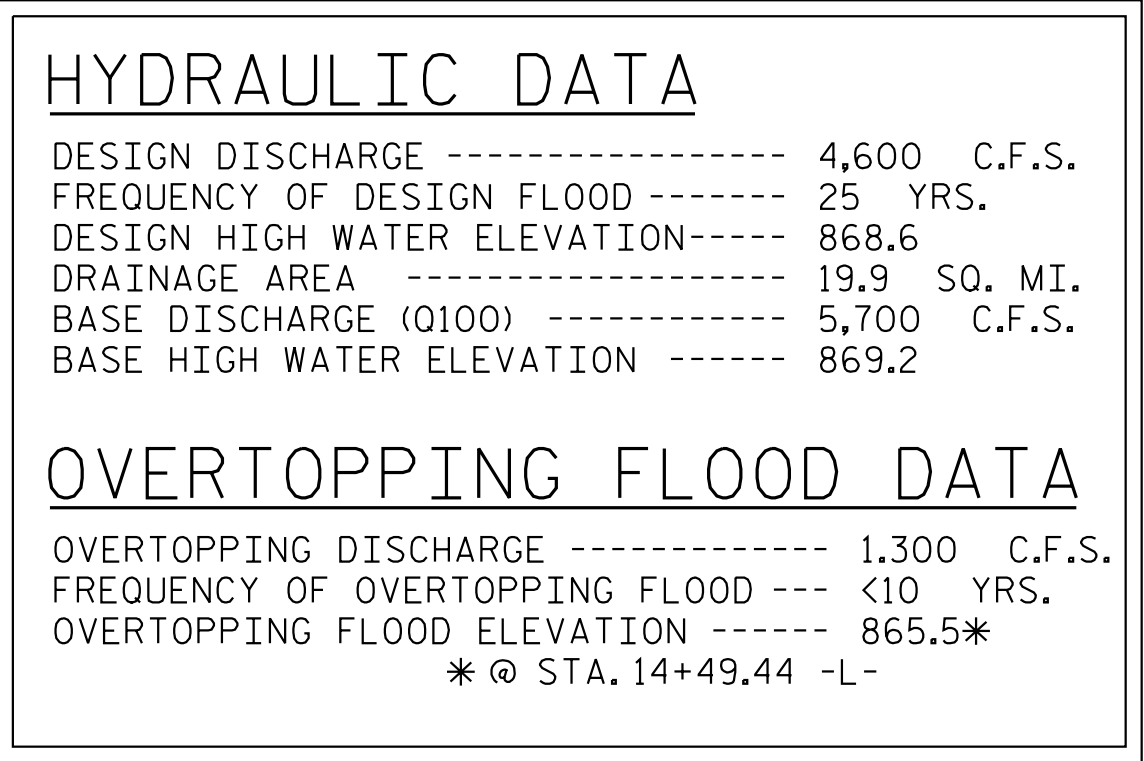
LETTING DATE:
JULY 22, 2025

ANDREW L. PHILLIPS, P.E.
PROJECT ENGINEER

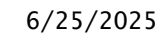
JACK R. LOGAN, E.I.
PROJECT DESIGN ENGINEER

JOSH WHITE, P.E., P.L.S.
NCDOT CONTACT





PILES AND DRILLED PIERS NOT SHOWN IN PLAN VIEW FOR CLARITY.

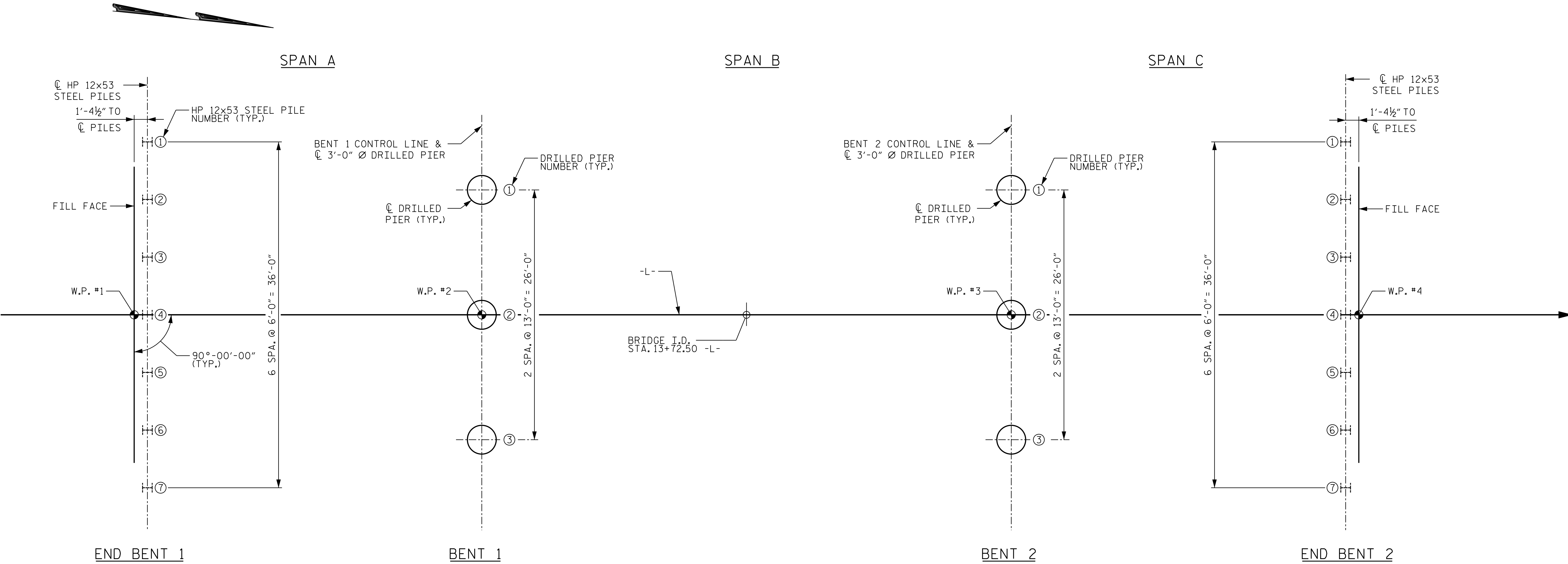


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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

DRAWN BY: T. K. BOYD	DATE: 01/2025
CHECKED BY: J. R. LOGAN	DATE: 01/2025
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS	DATE: 01/2025

6/4/2025 K:\RD1_Structures\Bridges\NC\01036418 - Div 12-17BP.12.R.78 (254)\Cadd\Drawings\17BP.12.R.78_SML\FLL_400254.dgn



FOUNDATION NOTES

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

FOR PILES, SEE PILES PROVISION AND SECTION 450 OF THE STANDARD SPECIFICATIONS.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 30,000-50,000 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT NO.1 AND 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

A WAITING PERIOD IS NOT REQUIRED PRIOR TO THE CONSTRUCTION OF END BENTS NO.1 AND 2.

FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINES

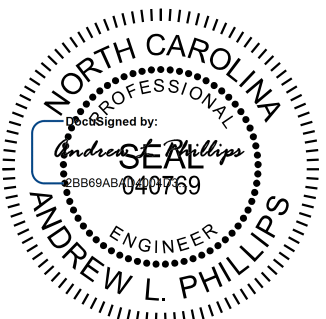
DIMENSIONS LOCATING DRILLED PIERS ARE SHOWN TO DRILLED PIER CENTERLINES

PROJECT NO. 17BP.12.R.78

IREDELL COUNTY

STATION: 13+72.50 -L-

SHEET 2 OF 6



6/25/2025

Kimley»Horn

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Raleigh, NC 27601-1772
Phone (919) 677-2000 NC LICENSE # F-0102

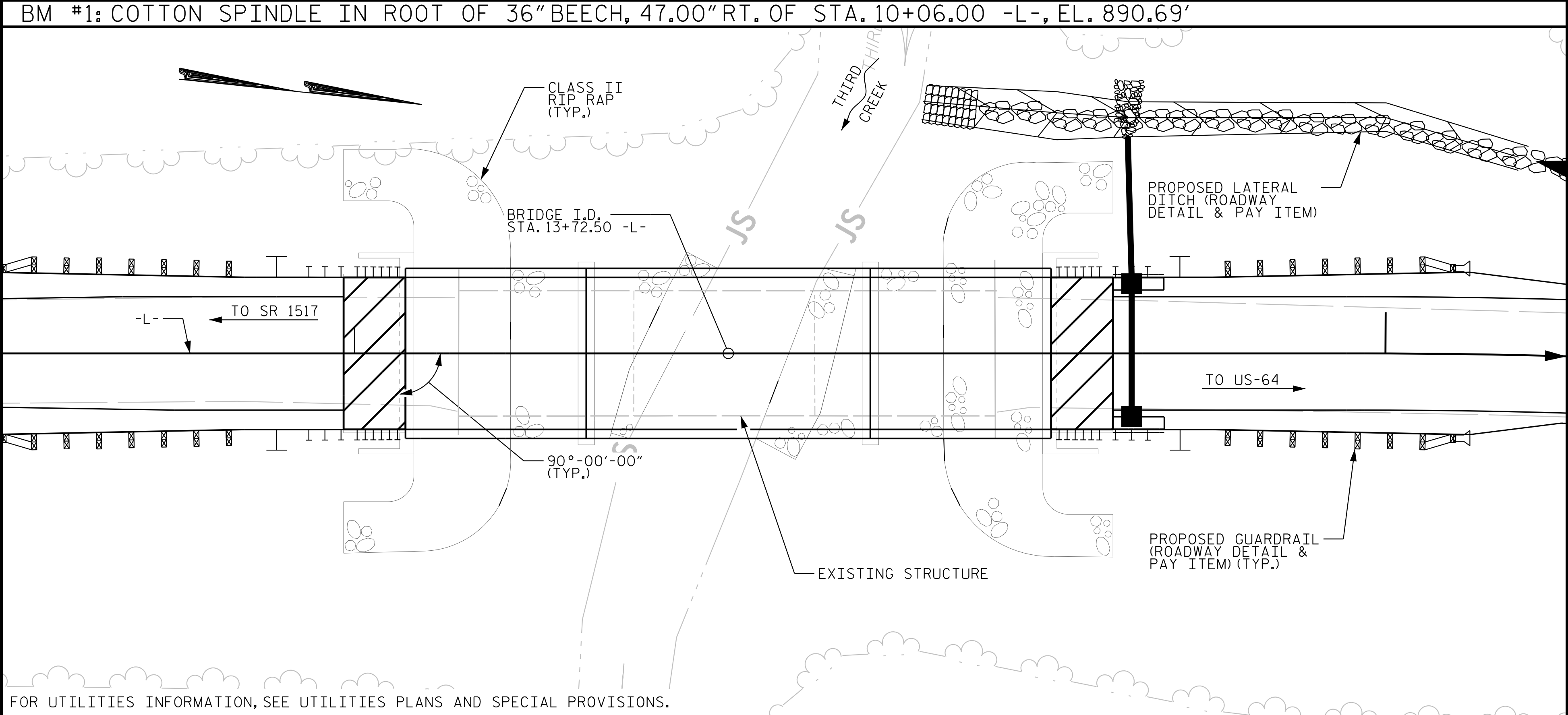
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UNLESS ALL SIGNATURES COMPLETED**

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOUNDATION LAYOUT

DRAWN BY: T. K. BOYD DATE: 01/2025
CHECKED BY: J. R. LOGAN DATE: 01/2025
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 01/2025

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



LOCATION SKETCH

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.
- FOR THE 42" OREGON RAIL, SEE STANDARD SPECIFICATIONS.

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 13+72.50 -L-."

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 30 FT EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

THE EXISTING STRUCTURE CONSISTING OF 3 SPANS (1 @ 34'-3", 1 @ 35'-0", 1 @ 35'-3") OF ASPHALT OVERLAY ON TIMBER DECK ON I-BEAMS AND LOCATED AT THE SITE OF 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, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND 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".

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 1 IS ELEVATION 830 AND BENT NO. 2 IS ELEVATION 832. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

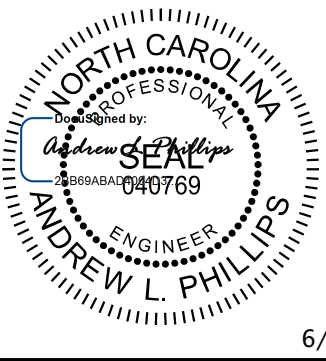
FOR ASBESTOS ASSESSMENT, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	3'-0" Ø DRILLED PIERS	PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIER	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	HP 12x53 STEEL PILES		42" OREGON RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONC. CORED SLABS	
	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	EA.	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	LBS.	EA.	NO.	LIN. FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE								LUMP SUM						250.5			LUMP SUM	33	1,375
END BENT 1						LUMP SUM	21.6		2,586		7	7	315		300	334			
BENT 1			126	27	3		17.4		13,150	2,647									
BENT 2			90	42	3		17.2		11,171	2,029									
END BENT 2						LUMP SUM	21.6		2,586		7	7	175		290	323			
TOTAL	LUMP SUM	LUMP SUM	216	69	6	LUMP SUM	77.8	LUMP SUM	29,493	4,676	14	14	490	250.5	590	657	LUMP SUM	33	1,375

PROJECT NO. 17BP.12.R.78
IREDELL COUNTY
STATION: 13+72.50 -L-

SHEET 4 OF 6



Kimley»Horn

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Raleigh, NC 27601-1772
Phone (919) 677-2000

NC LICENSE # F-0102

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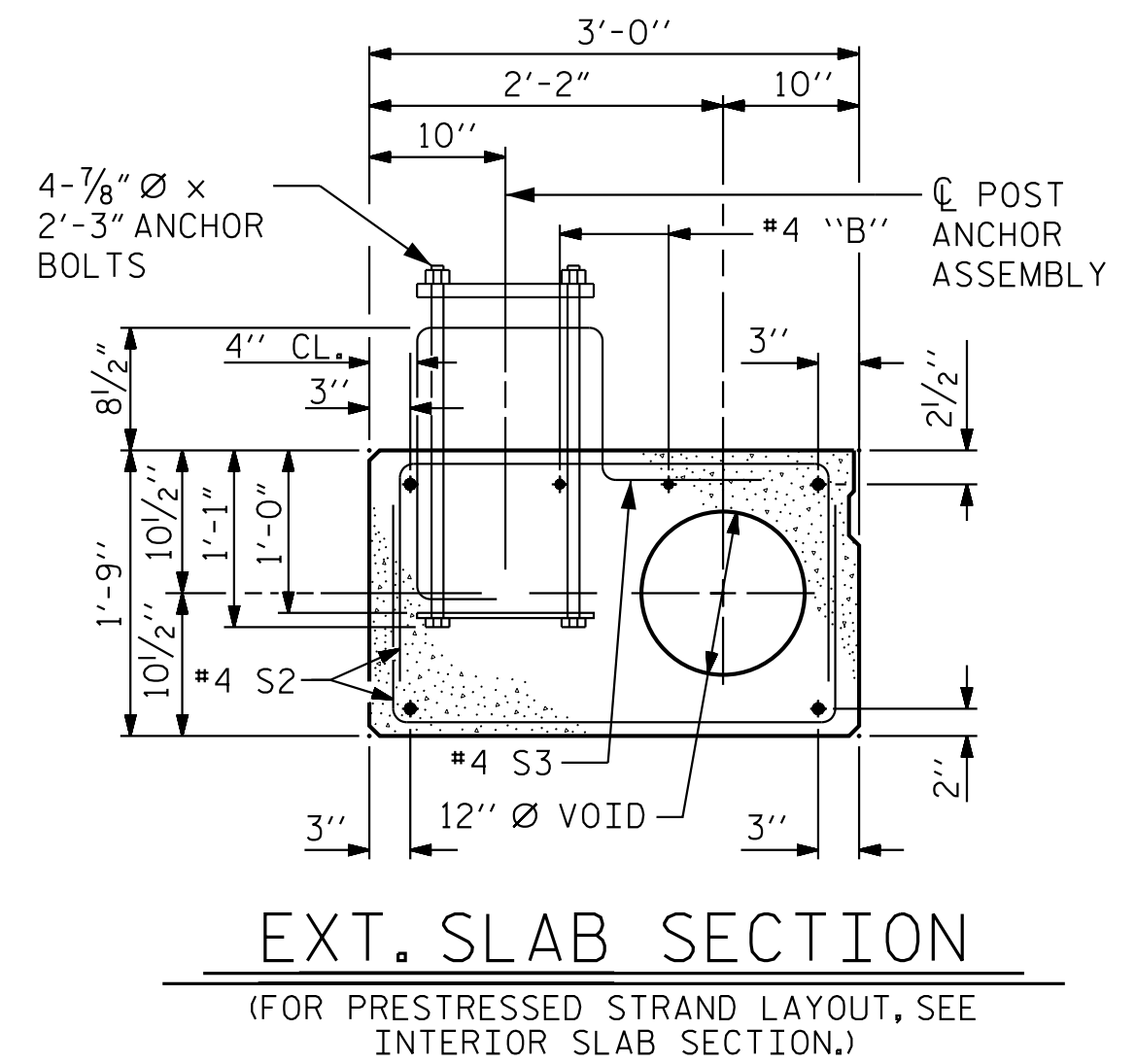
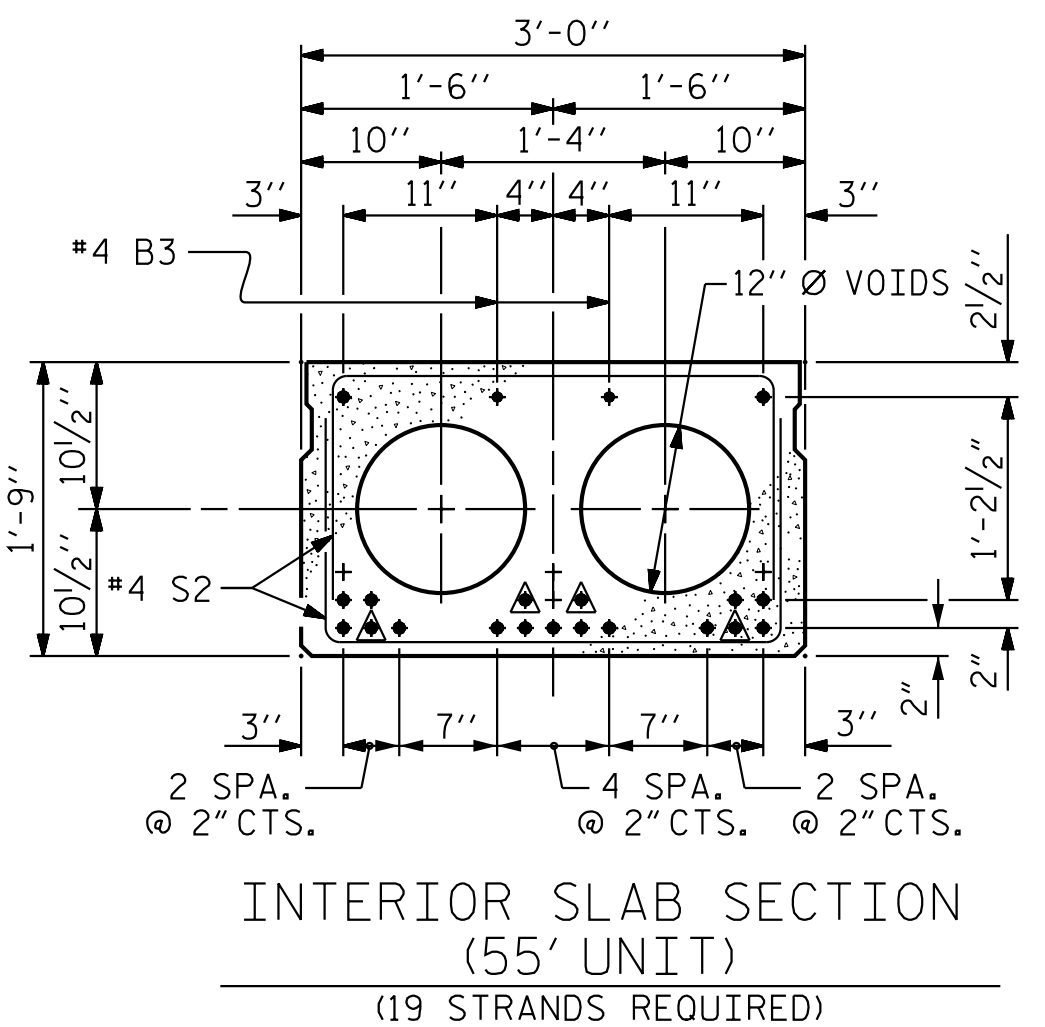
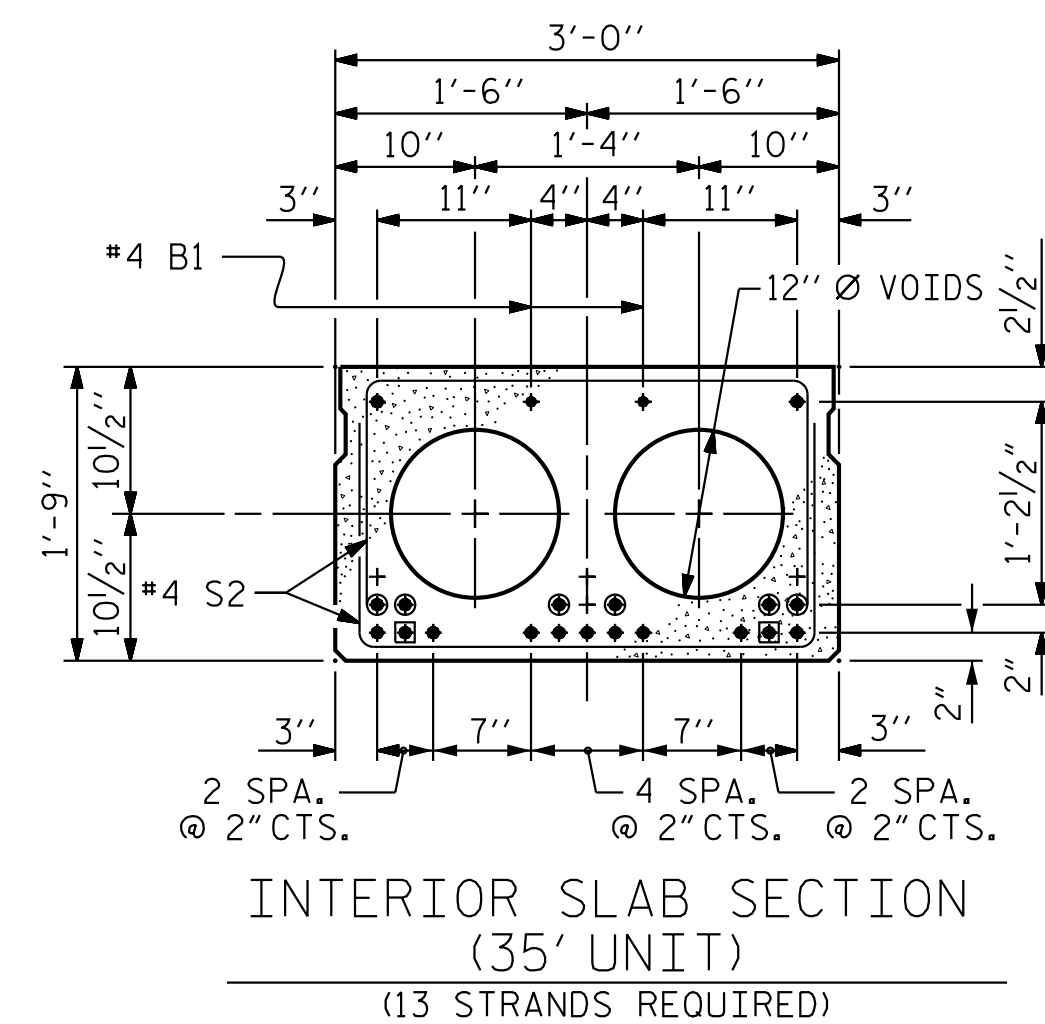
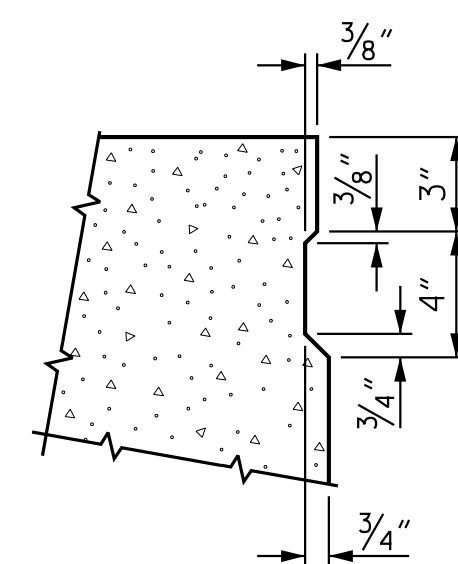
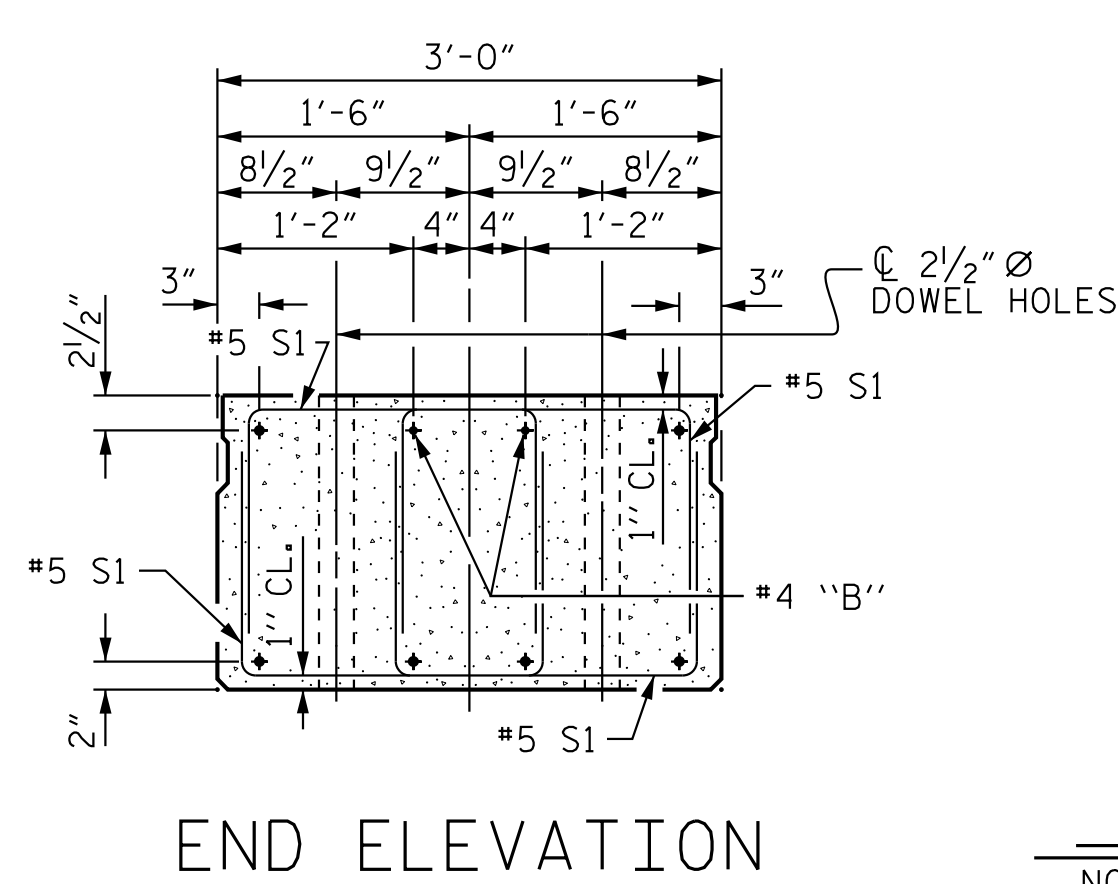
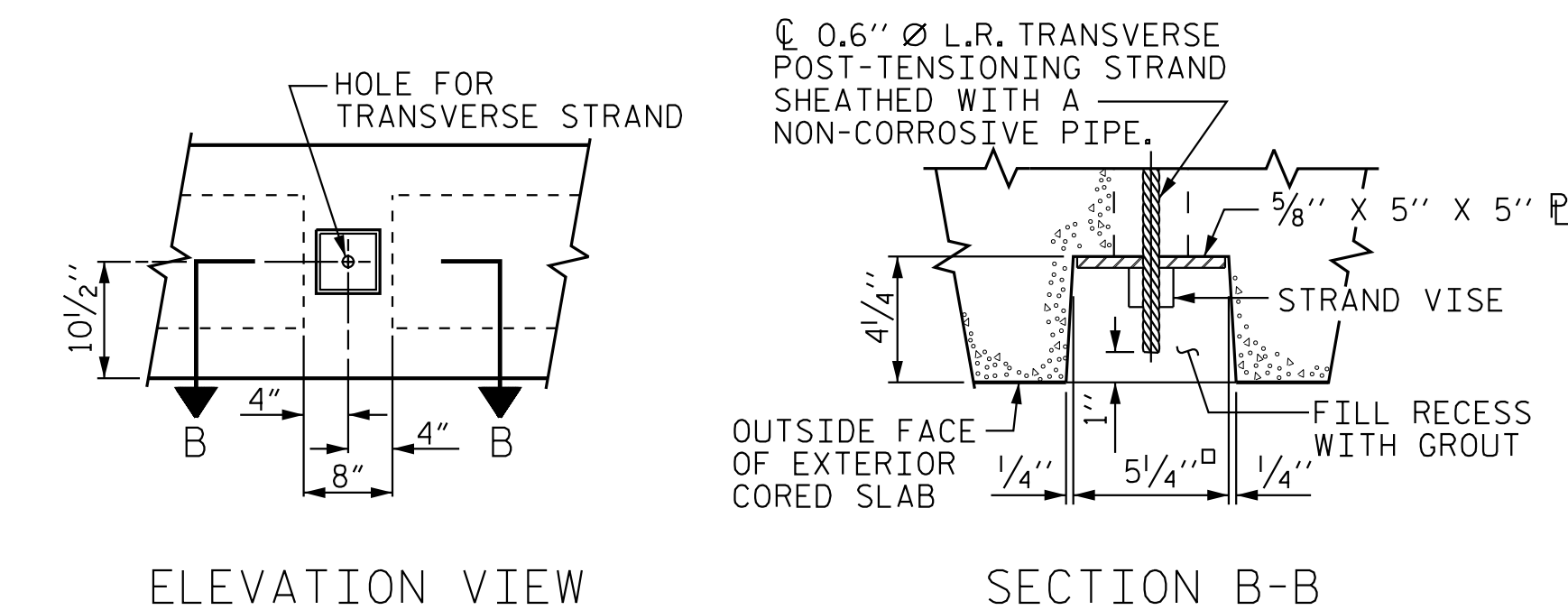
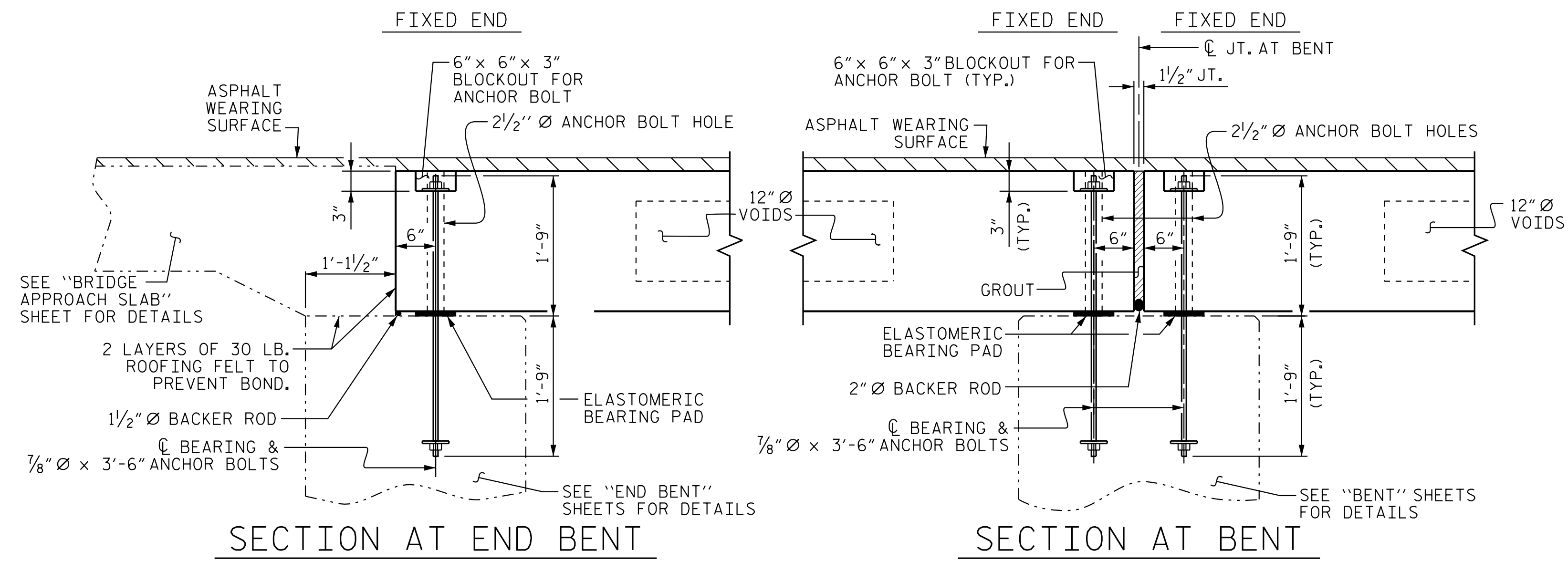
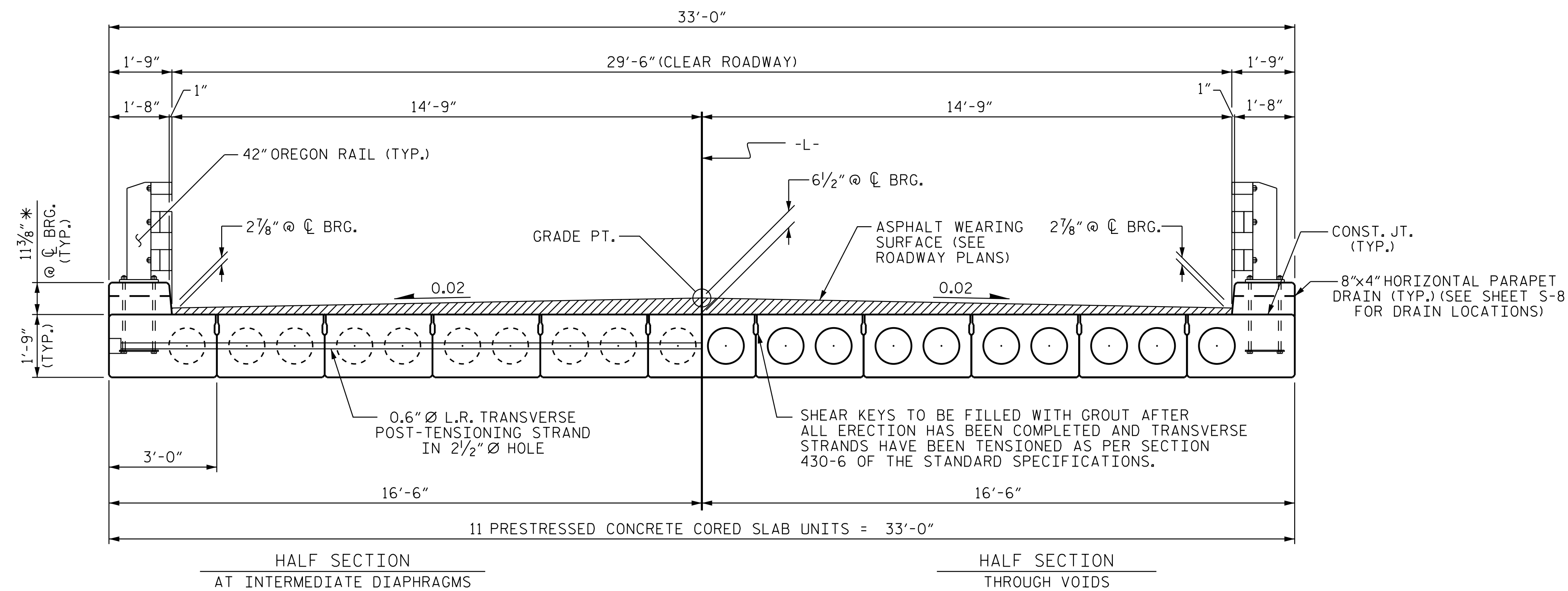
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
LOCATION SKETCH AND
TOTAL BILL OF MATERIAL

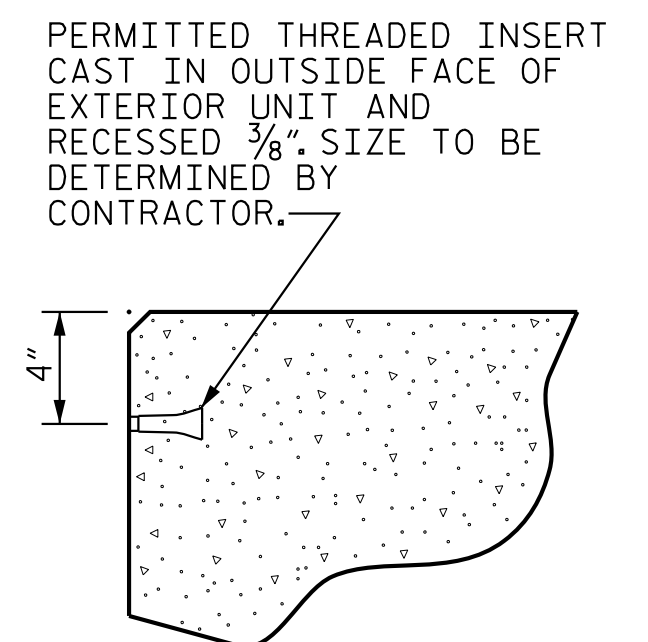
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2			4			

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- ▲ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.
- BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 2'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.
- ◎ OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED. IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE CORED SLAB UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND



THREADED INSERT DETAIL

PROJECT NO. 17BP.12.R.78
IREDELL COUNTY
 STATION: 13+72.50 -L-

IREDELL COUNTY

STATION: 13+72.50 -L-

SHEET 1 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DEPARTMENT OF TRANSPORTATION
RALEIGH

RALEIGH

STANDARD

3'-0" X 1'-9"
PRESTRESSED CONCRETE
CORED SLAB UNIT
90° SKEW

REVISIONS	SHEET NO.
-----------	-----------

BY:	DATE:	NO.	BY:	DATE:	S-7
		2			TOTAL

		\$			SHEETS 25
		4			

REVISIONS						SHEET NO. S-7
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 25
2			4			

SHEET NO.
S-7

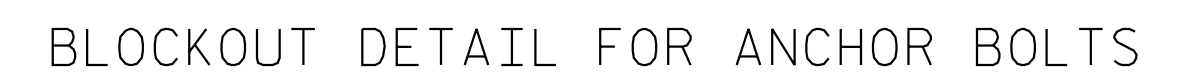
51	
TOTAL	

TOTAL
SHEETS
25

OS

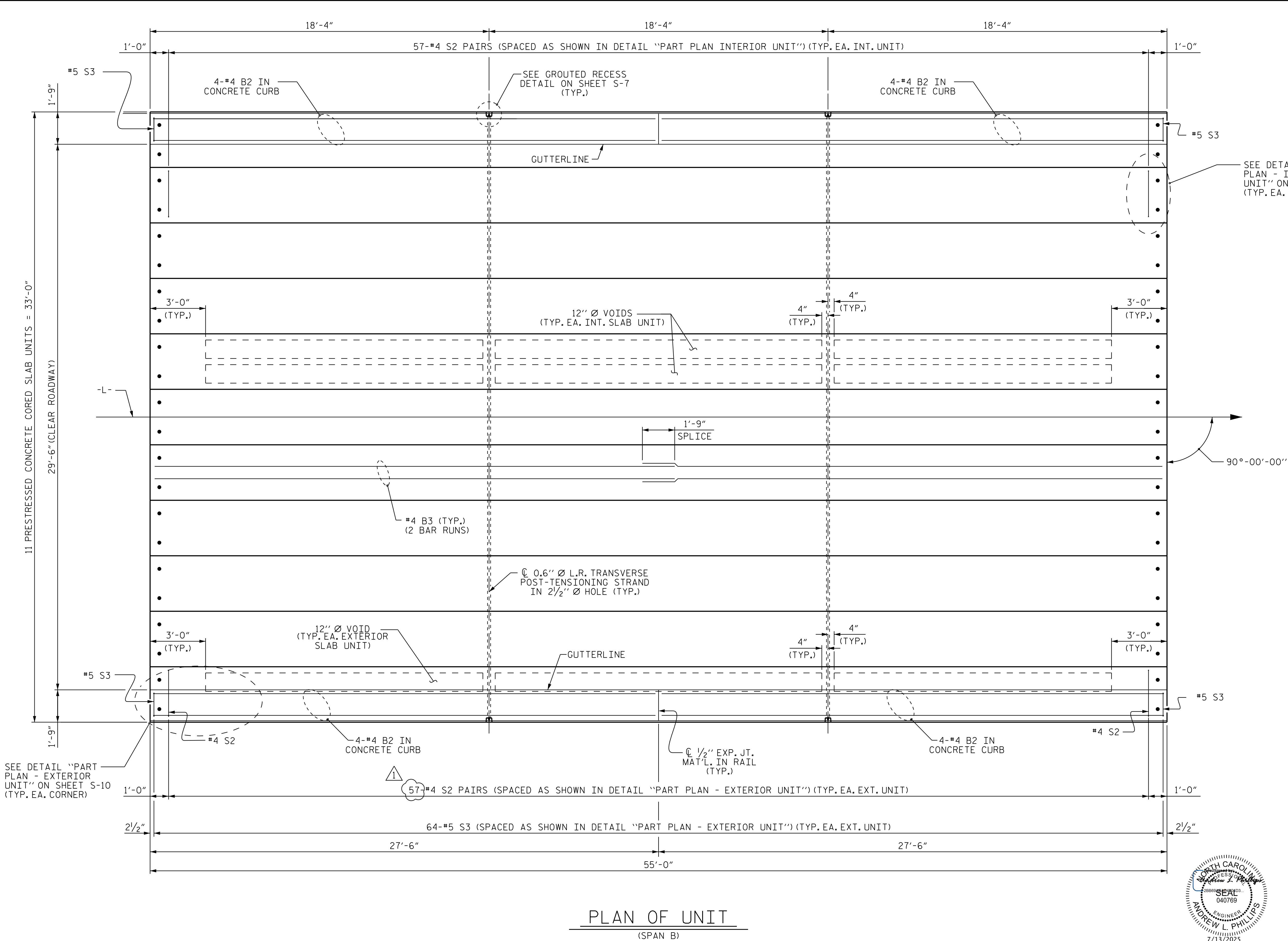
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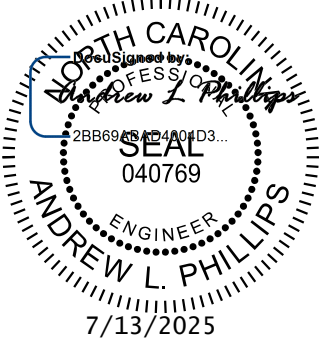
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7/10/2025 K:\RD1-Structures\Bridges\NC\01036418 - Div 12-17BP.12.R.78 (254)\Cadd\Drawings\17BP.12.R.78_SML\CS3_480254.dgn



PLAN OF UNIT
(SPAN B)

⚠ REVISED S2 BARS IN EXTERIOR
CORED SLAB UNITS



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Raleigh, NC 27601-1772
Phone (919) 677-2000 NC LICENSE # F-0102

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PROJECT NO. 17BP.12.R.78
IREDELL COUNTY
STATION: 13+72.50 -L-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
PLAN OF 55' UNIT
29'-6" CLEAR ROADWAY
90° SKEW

REVISIONS						SHEET NO. S-9
NO.	BY:	DATE:	NO.	BY:	DATE:	
1	ALP	07/10/2025	3			TOTAL SHEETS 25
2			4			

STD. NO. 21" PCS-33.90S-55L

DRAWN BY: T. K. BOYD DATE: 01/2025
CHECKED BY: J. R. LOGAN DATE: 01/2025
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 01/2025

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UNLESS ALL SIGNATURES COMPLETED**

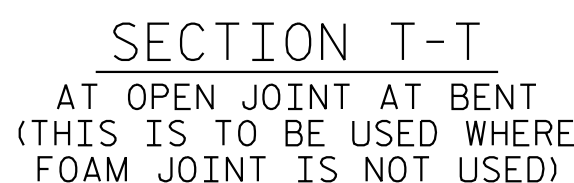


ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

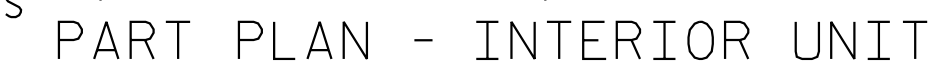


8"x4" HORIZONTAL PARAPET DRAINS MAY BE SHIFTED
SLIGHTLY TO AVOID ANCHOR BOLTS.

CONCRETE RELEASE STRENGTH	
UNIT	PSI
35' UNIT	4000
55' UNIT	4900



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

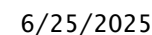


(TYPICAL EACH END OF 35' AND 55' SPAN UNIT)



(TYPICAL EACH END OF 35' AND 55' SPAN UNIT)

*4 ADDITIONAL #4 S2 (TOP ONLY)
REQUIRED FOR A TOTAL OF
7-#4 S2 @ EQUAL SPACES
AT POST ASSEMBLY LOCATION.
(FOR LOCATION OF RAIL POST
SEE SHEET S-13)



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PROJECT NO. 17BP.12.R.78
IREDELL COUNTY
 STATION: 13+72.50 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

PRESTRESSED CONCRETE CORED SLAB DETAILS

REVISIONS						SHEET NO. S-10
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 25
2			4			

CORED SLABS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
35' UNIT			
EXTERIOR C.S.	4	35'-0"	140'-0"
INTERIOR C.S.	18	35'-0"	630'-0"
TOTAL	22		770'-0"

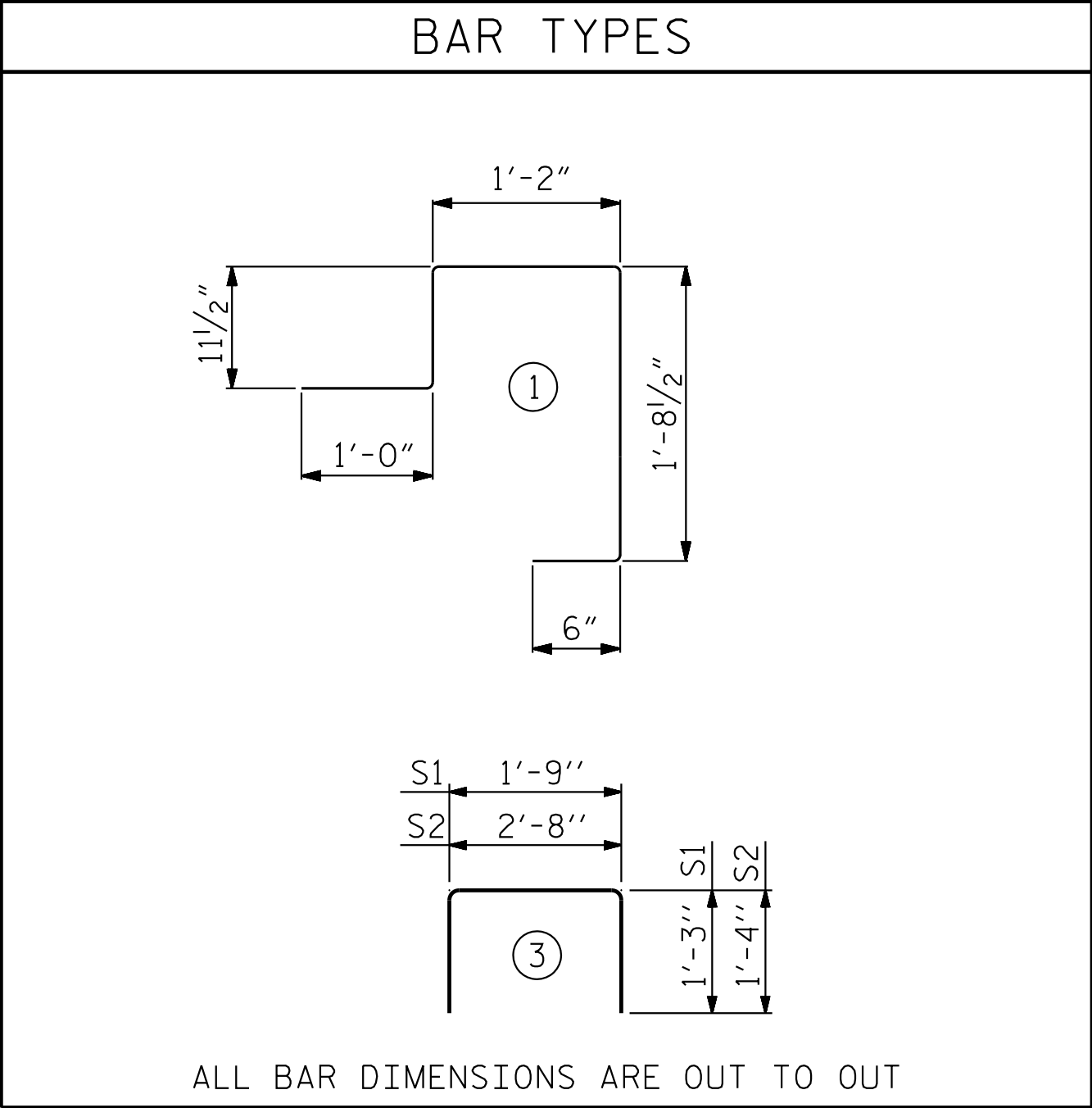
CORED SLABS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
55' UNIT			
EXTERIOR C.S.	2	55'-0"	110'-0"
INTERIOR C.S.	9	55'-0"	495'-0"
TOTAL	11		605'-0"

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

** INCLUDES FUTURE WEARING SURFACE

DEAD LOAD DEFLECTION AND CAMBER	
	3'-0" x 1'-9"
55' CORED SLAB UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1 1/2" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	3/8" ↓
FINAL CAMBER	1 1/8" ↑

** INCLUDES FUTURE WEARING SURFACE



NOTES

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

ALL REINFORCING STEEL CAST WITH THE CORED SLAB SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

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

THE 2 1/2" Ø ANCHOR BOLT HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

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

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

ALL REINFORCING STEEL IN THE CONCRETE CURBS SHALL BE EPOXY COATED.

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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

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

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

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

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

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

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

THE DRAIN OPENING AT THE GUTTERLINE SHALL BE 4" X 8". THE HEIGHT OF THE BLOCKOUT IN THE CONCRETE CURB SHALL EXTEND FROM THE TOP OF THE CORED SLAB UNIT TO THE TOP OF THE DRAIN OPENING.

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

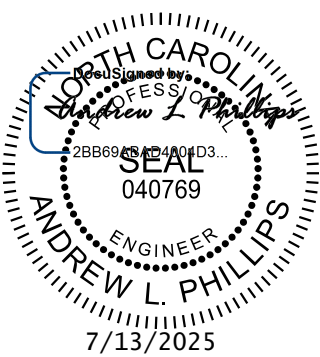
BILL OF MATERIAL FOR ONE 35' CORED SLAB UNIT							
				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B1	4	#4	STR	18'-3"	49	18'-3"	49
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	94	#4	3	5'-4"	335		
S2	74	#4	3			5'-4"	264
* S3	43	#5	1	5'-4"	239		
REINFORCING STEEL				LBS.			
* EPOXY COATED							
REINFORCING STEEL				LBS.			
5000 P.S.I. CONCRETE				CU. YDS.			
0.6" Ø L.R. STRANDS				No.			

BILL OF MATERIAL FOR ONE 55' CORED SLAB UNIT							
				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B3	4	#4	STR	28'-3"	75	28'-3"	75
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	134	#4	3	5'-4"	477		
S2	114	#4	3			5'-4"	406
* S3	64	#5	1	5'-4"	356		
REINFORCING STEEL				LBS.			
* EPOXY COATED							
REINFORCING STEEL				LBS.			
6500 P.S.I. CONCRETE				CU. YDS.			
0.6" Ø L.R. STRANDS				No.			

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
	ASPHALT OVERLAY THICKNESS	CURB HEIGHT
	@ MID-SPAN	@ MID-SPAN
35' UNITS	2 1/2"	11"
55' UNIT	2"	10 1/2"

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SHEET 5 OF 5



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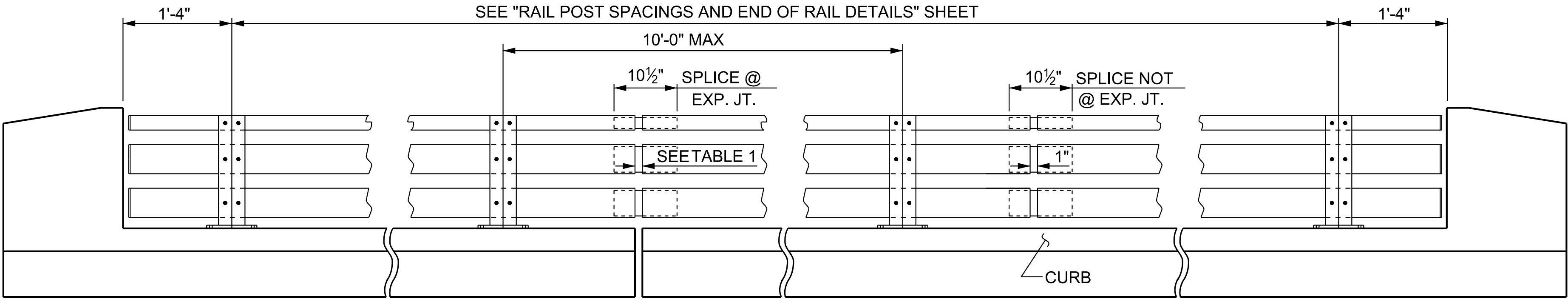
△ REVISED S2 BARS AND CONCRETE IN EXTERIOR CORED SLAB UNITS

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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUPERSTRUCTURE					
PRESTRESSED CONCRETE CORED SLAB DETAILS					
REVISIONS					SHEET NO. S-11
NO.	BY:	DATE:	NO.	BY:	DATE:
1	ALP	07/10/2025	3		
2			4		
TOTAL SHEETS					25

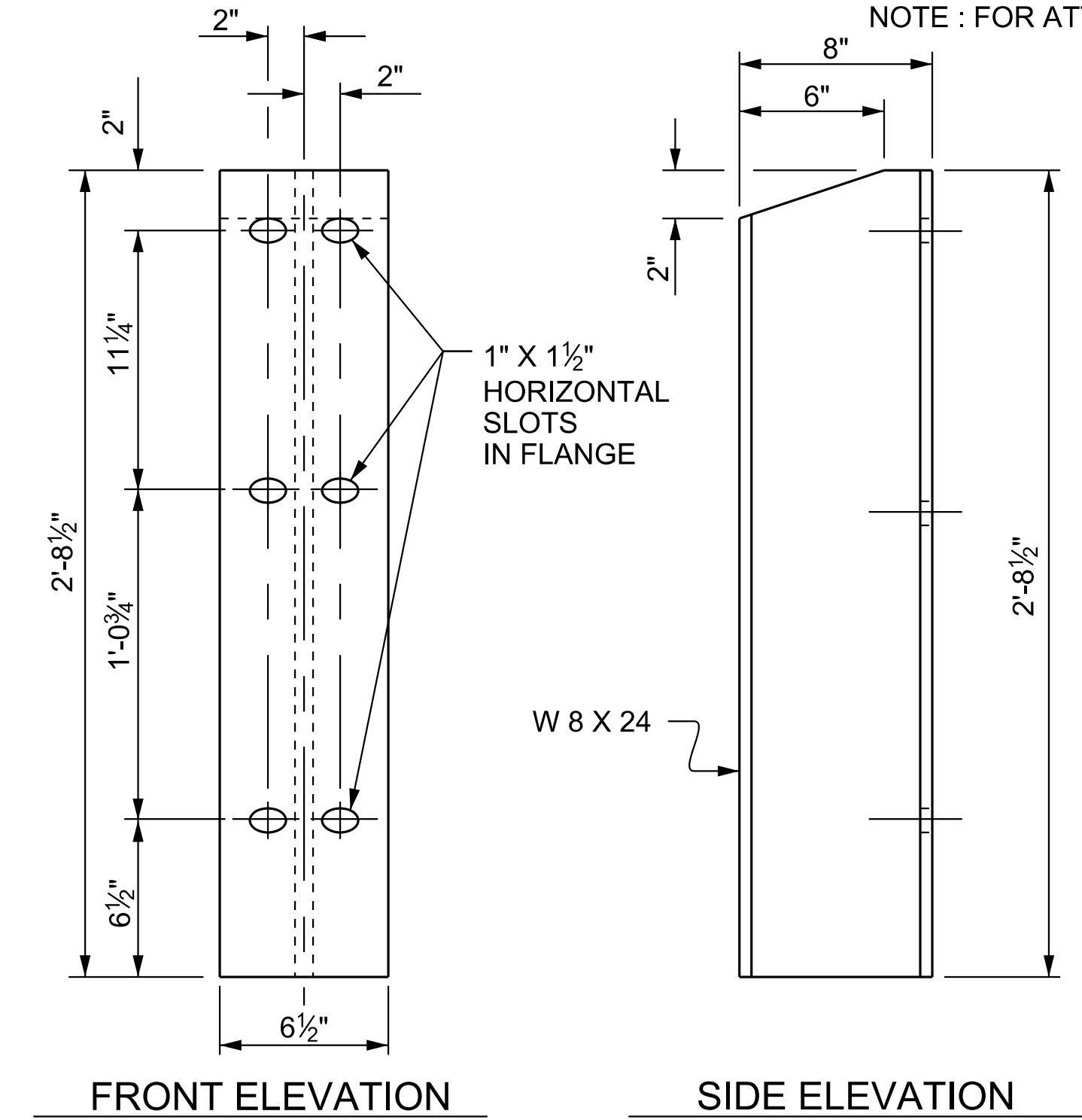
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CHECKED BY: J. R. LOGAN DATE: 01/2025
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 01/2025

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ELEVATION

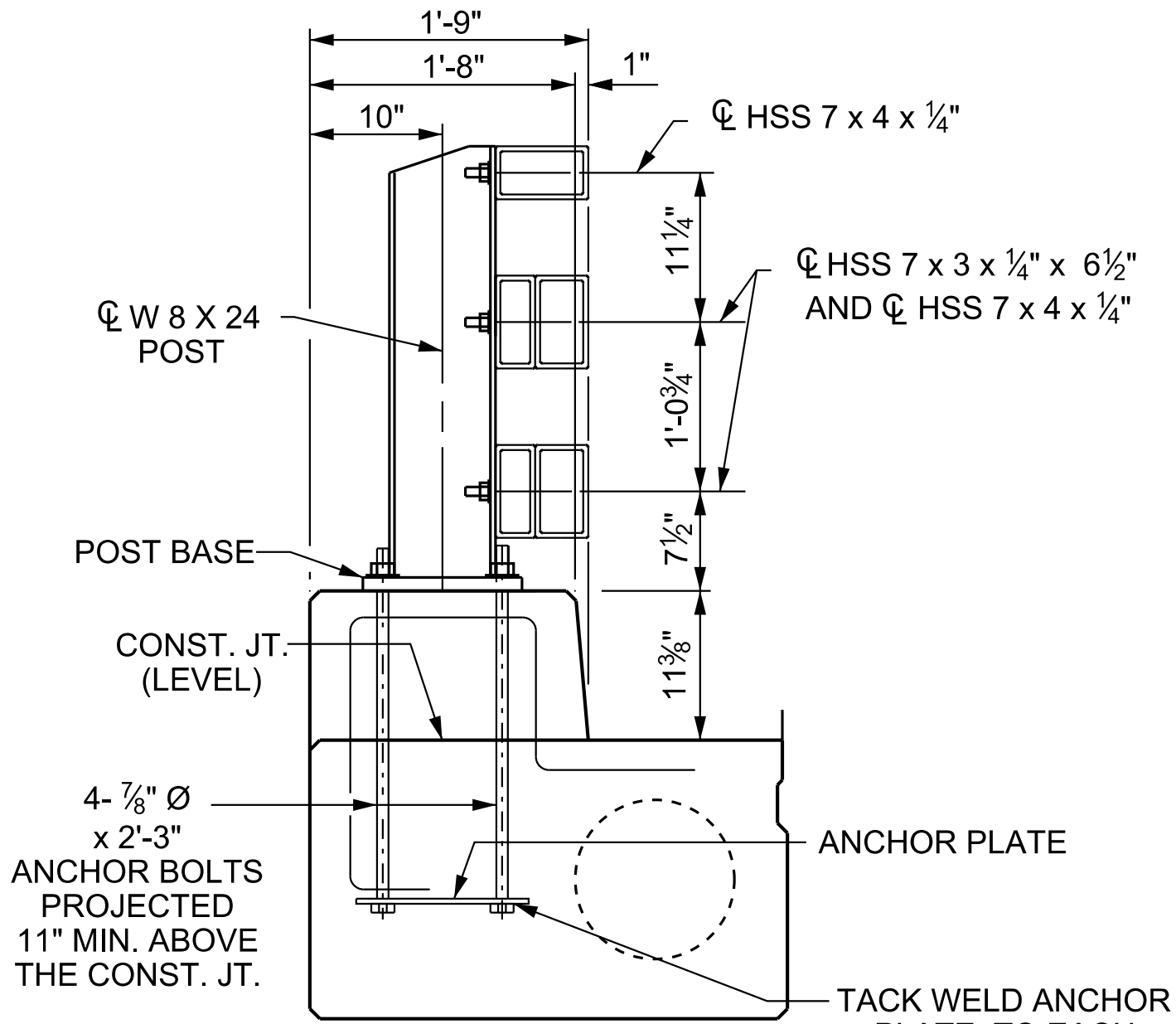
NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE SHEET S-13.



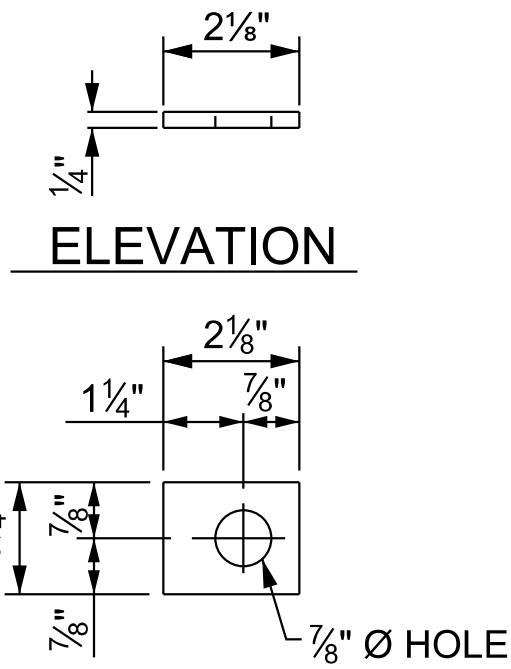
FRONT ELEVATION

SIDE ELEVATION

DETAILS OF POST



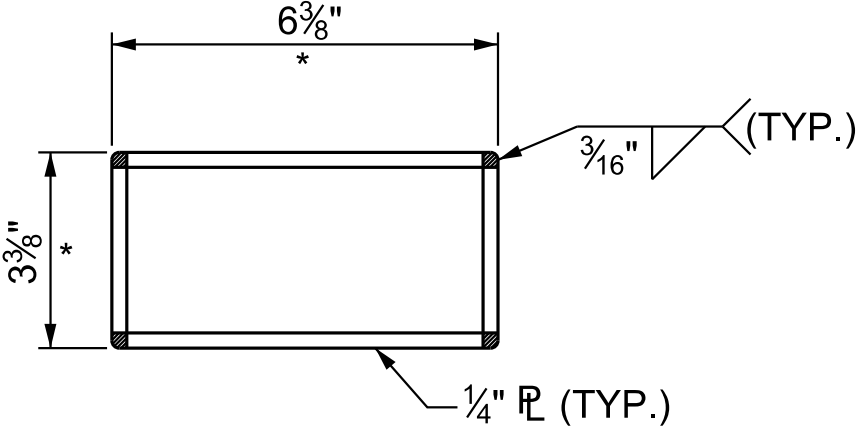
SECTION THRU RAIL



ELEVATION

PLAN

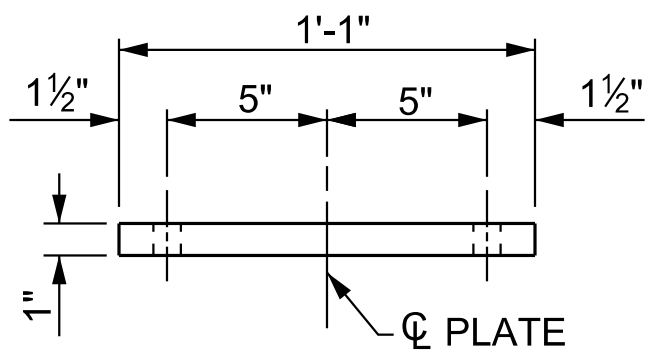
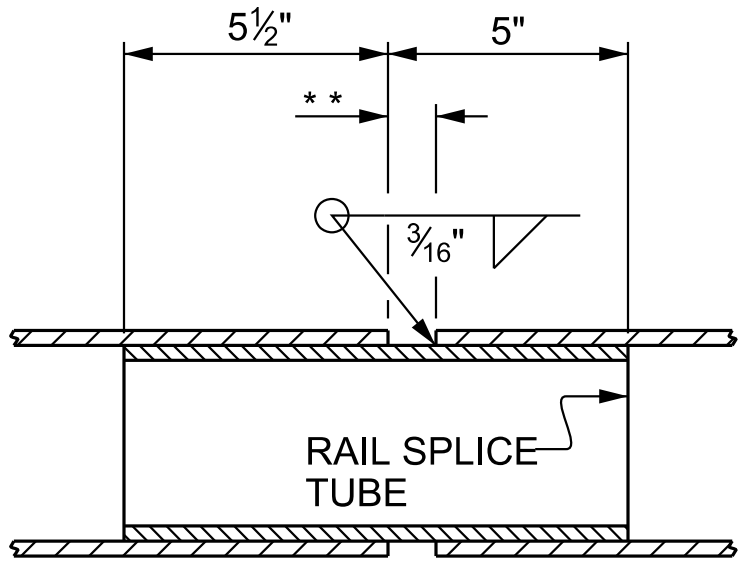
PLATE WASHER



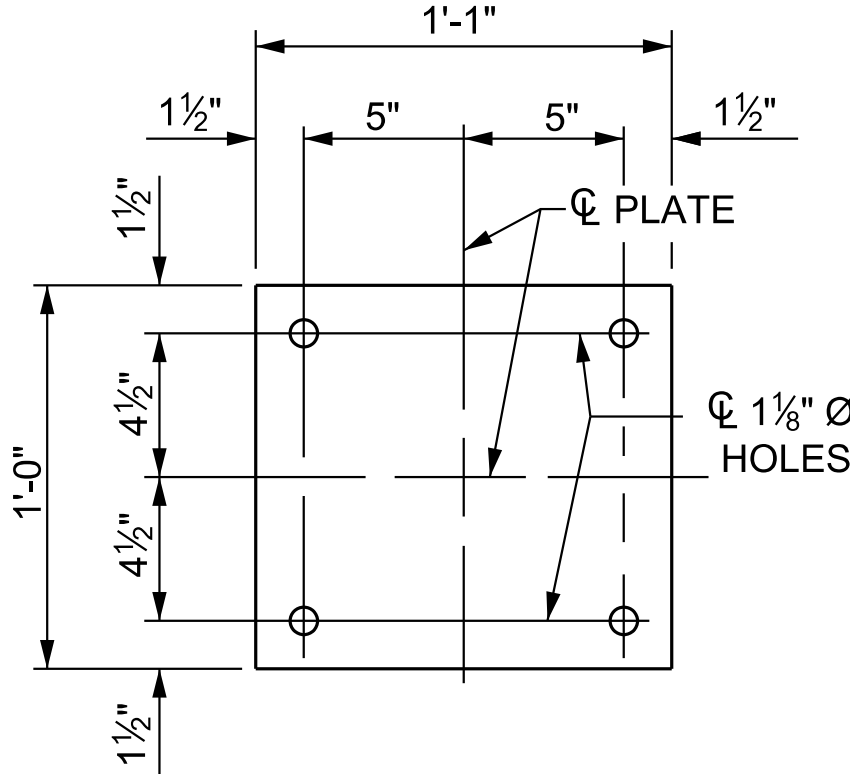
RAIL SPLICE DETAILS

* - DIMENSION AFTER GRINDING RADIUS ON CORNERS TO MATCH INSIDE OF METAL RAIL. GRIND ALL EDGES PRIOR TO GALVANIZING TO ASSURE FIT.

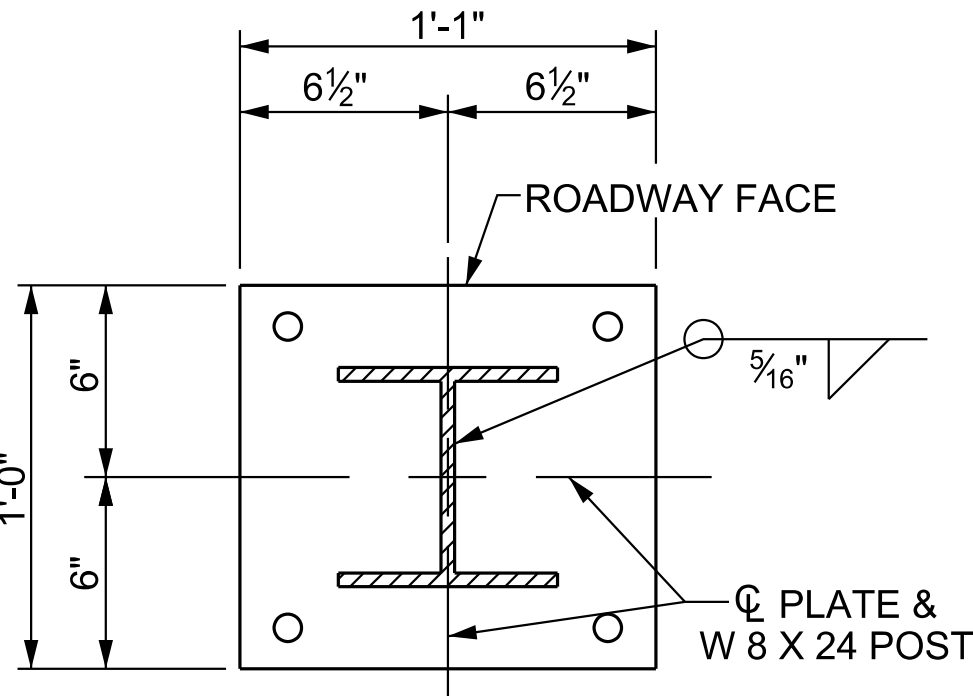
** -1" FOR SPLICE NOT AT EXPANSION JOINT; SEE TABLE 1 FOR OPENING FOR SPLICES AT EXPANSION JOINTS.



FRONT ELEVATION

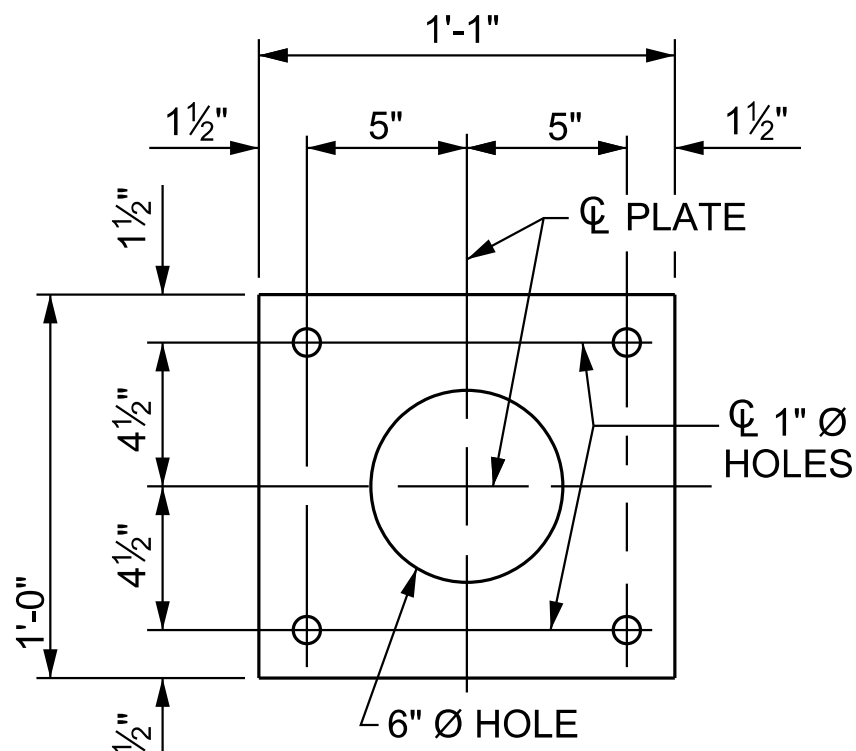


PLAN



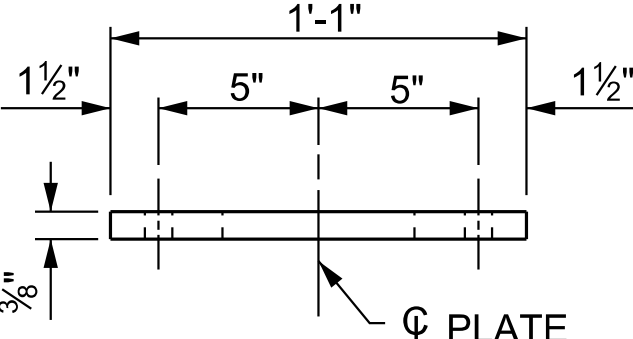
POST ATTACHMENT DETAIL

POST BASE DETAILS



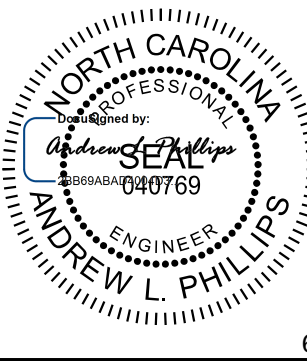
PLAN

TABLE 1	
EXP. JT. @	RAIL OPENING
BENT 1	11 1/2"
BENT 2	11 1/2"



ELEVATION

ANCHOR PLATE DETAILS



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NOTES

METAL RAIL SHALL BE GALVANIZED STEEL IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS. ALUMINUM RAIL WILL NOT BE AN OPTION.

GALVANIZED STEEL RAILS

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

POST, POST BASES, ANCHOR PLATES AND RAIL SPLICE TUBES: ASTM A36 GRADE 36 STRUCTURAL STEEL-GALVANIZED TO ASTM A123.

THE CUT ENDS OF GALVANIZED STEEL RAILING, AFTER GRINDING SMOOTH SHALL BE GIVEN TWO COATS OF ZINC RICH PAINT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION MIL-P-26915 USAF TYPE 1, OR OF FEDERAL SPECIFICATIONS TT-P-641.

RAILS: ASTM A500 GRADE B - GALVANIZED TO ASTM A123.

WELDED RAIL STUDS: ASTM A108-GALVANIZED TO ASTM A123.

HIGH STRENGTH ANCHOR BOLTS SHALL CONFORM TO ASTM F1554 GRADE 105. HEAVY HEX NUTS SHALL CONFORM TO ASTM A563 DH, AND WASHERS TO ASTM F436,TYPE 1. ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED TO ASTM A123.

GENERAL NOTES

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

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR11.

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

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

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

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

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

THE RAIL SECTIONS SHALL BE ATTACHED TO THE POSTS BY TWO THREADED 3/4" Ø WELDED STUDS, PLATE WASHERS, LOCKWASHERS, AND NUTS.

FOR 42" OREGON RAIL, SEE THE STANDARD SPECIFICATIONS.

METAL RAIL LENGTH 250.5 LIN. FT.

CURB HEIGHT TABLE

	SPANS A & C	SPAN B
@ Ø BRG.	11 1/2"	11 1/2"
@ MIDSPAN	10 7/8"	10 3/8"

PROJECT NO. 17BP.12.R.78

IREDELL COUNTY

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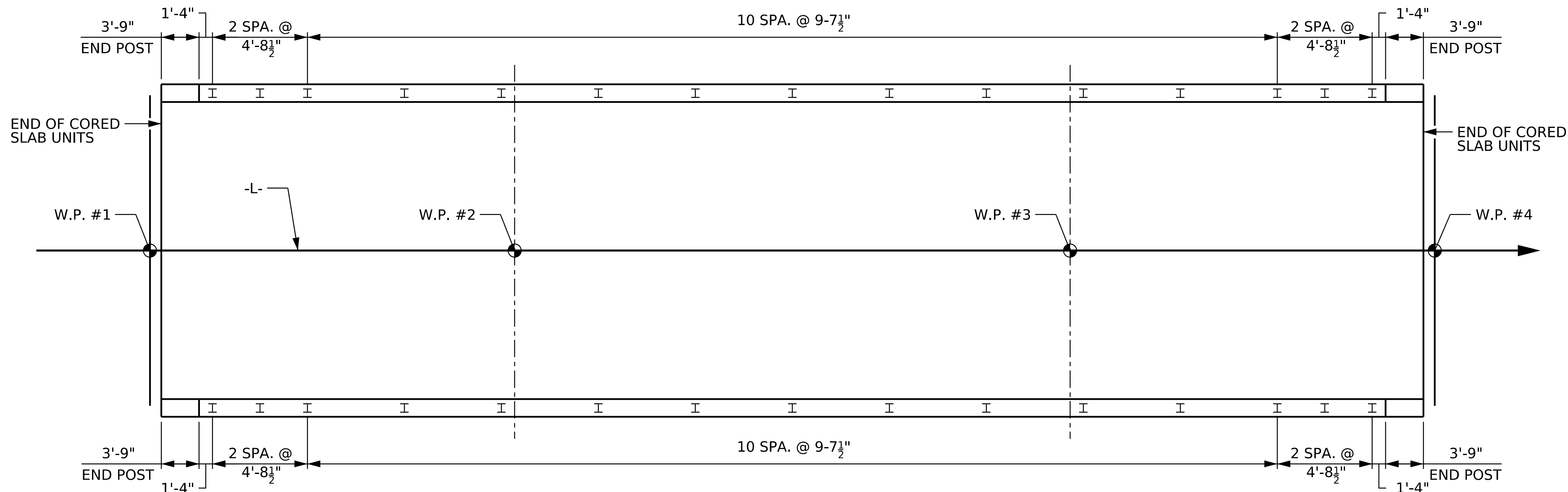
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

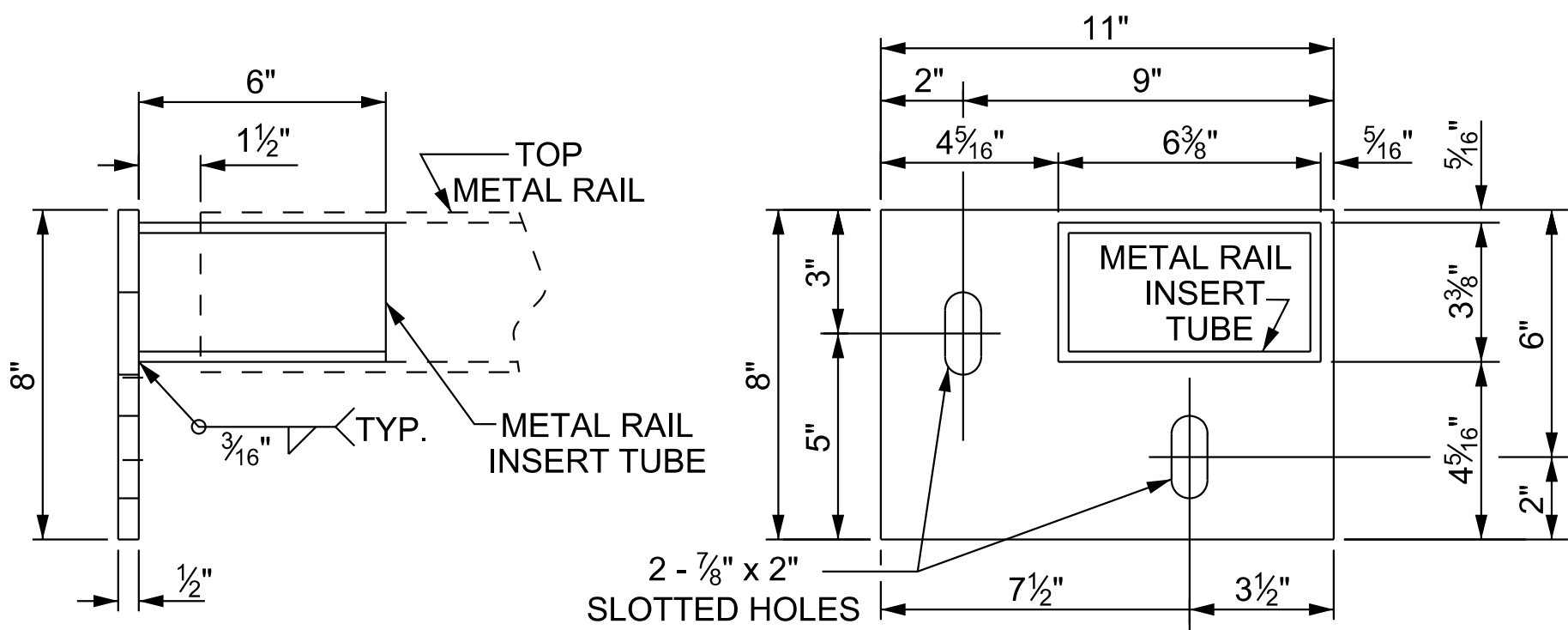
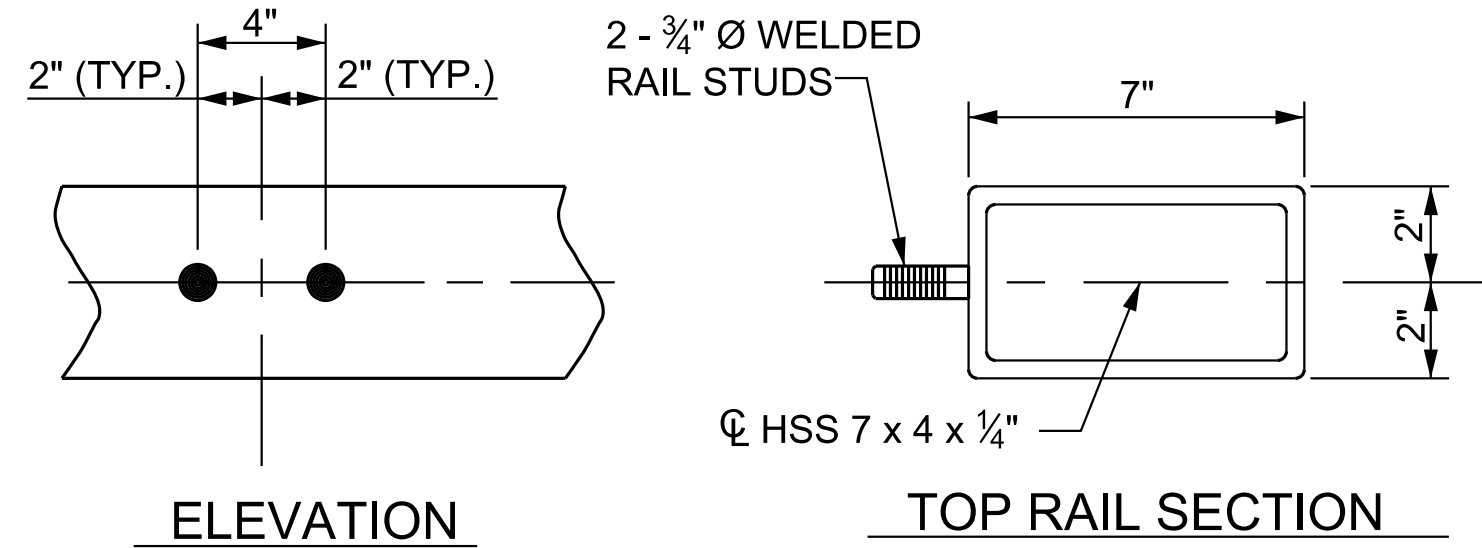
42" OREGON RAIL

REVISIONS						SHEET NO. S-12
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 25
2			4			

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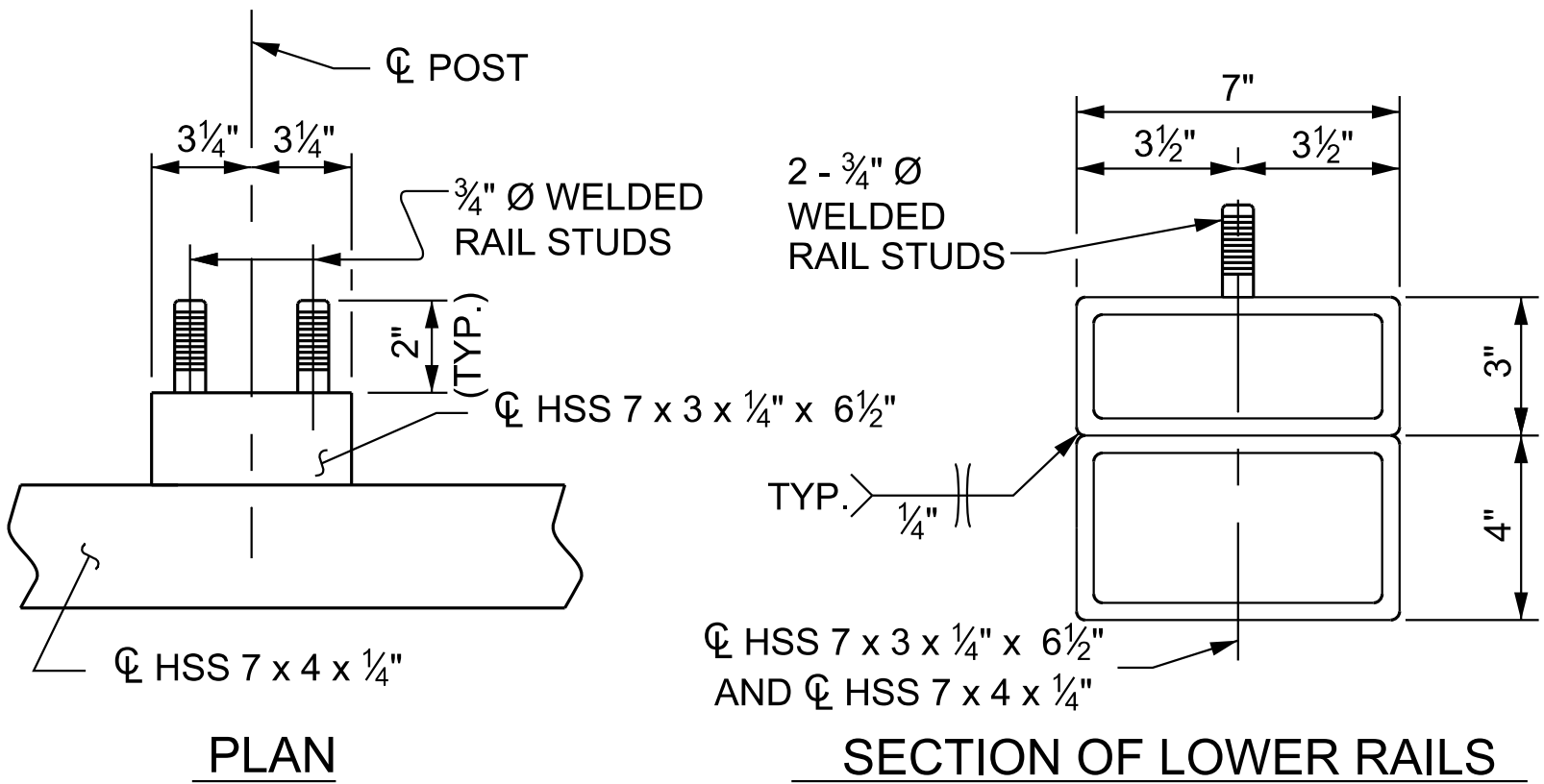


PLAN OF RAIL POST SPACINGS

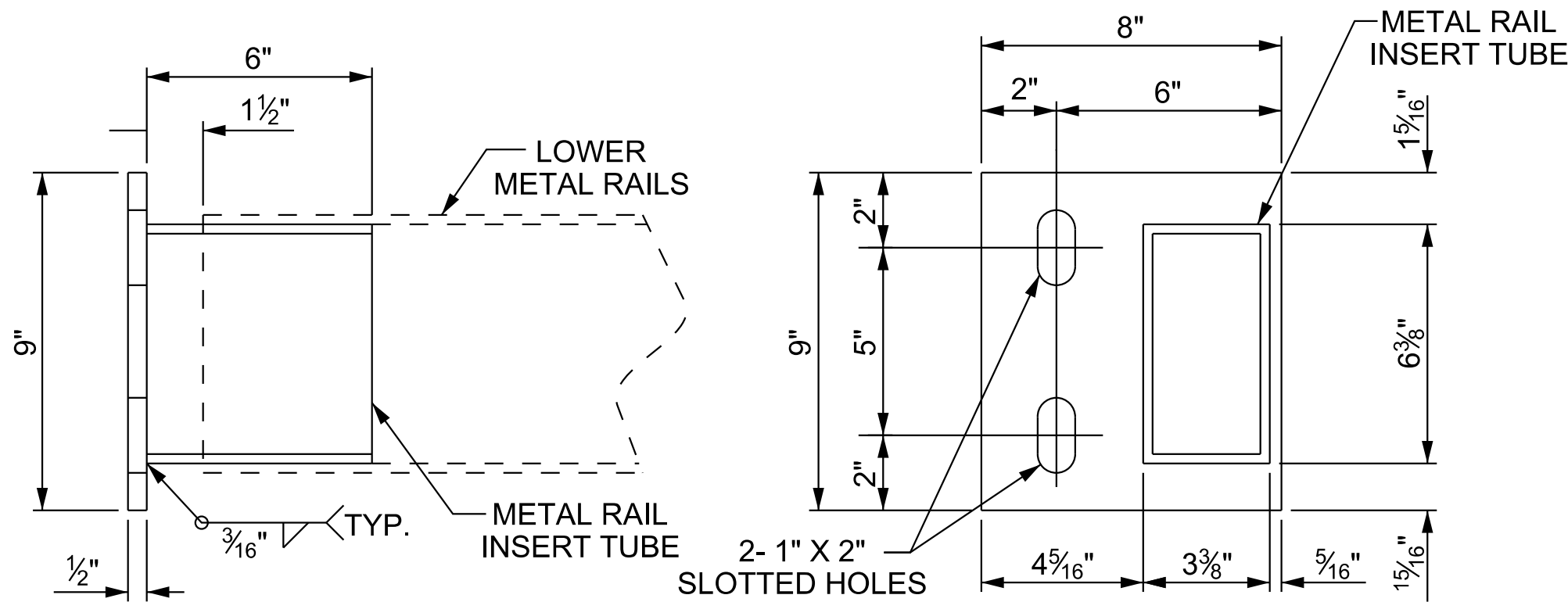


TOP METAL RAIL ATTACHMENT BRACKET

THE METAL RAIL INSERT TUBE SHALL BE FABRICATED FROM 1/4" PLATES.



SECTION OF LOWER RAILS
RAIL STUD DETAILS



LOWER METAL RAILS ATTACHMENT BRACKET

THE METAL RAIL INSERT TUBE SHALL BE FABRICATED FROM 1/4" PLATES.

NOTES STRUCTURAL CONCRETE INSERT

EACH STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

- FERRULE SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1 1/2".
- 1 - 3/4" Ø x 1 5/8" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø x 1 5/8" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
- WIRE STRUT SHOWN IN THE STRUCTURAL CONCRETE INSERT DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

NOTES METAL RAIL TO END POST CONNECTION

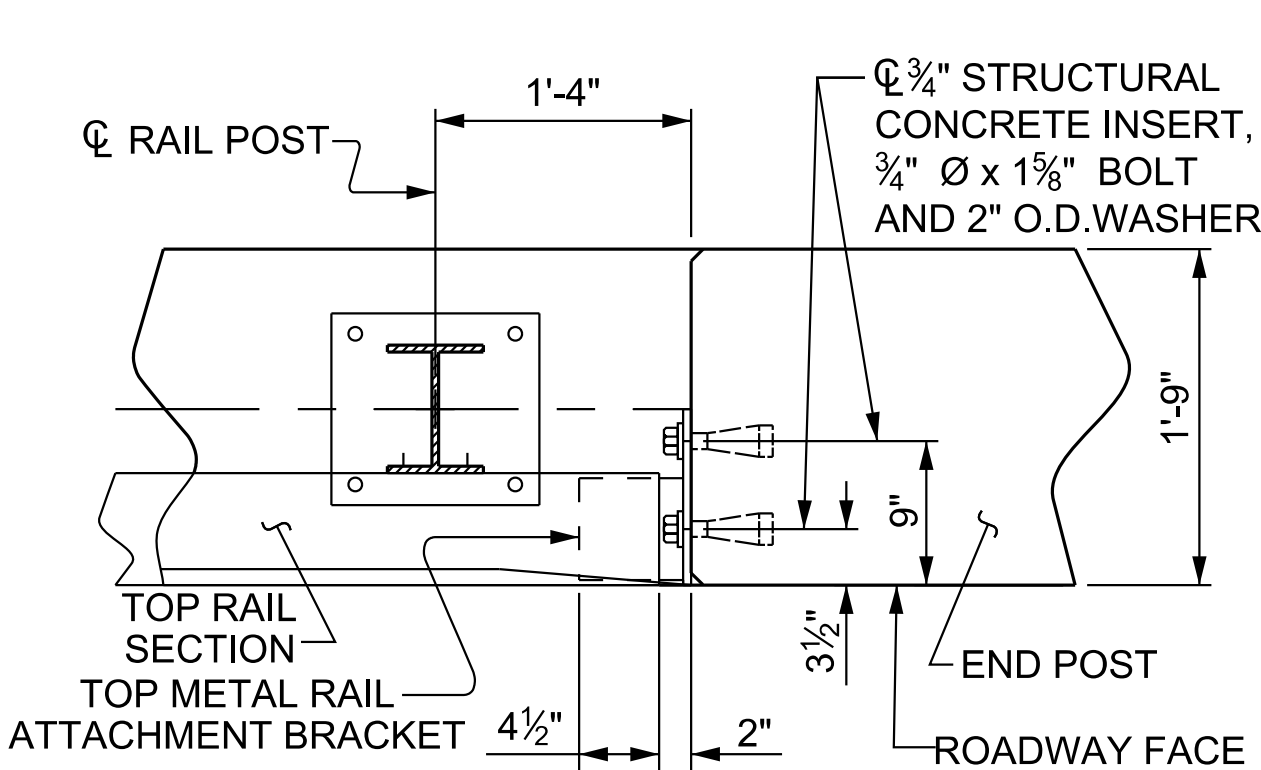
EACH METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:

- 1/2" METAL BRACKET PLATE AND 1/4" METAL RAIL INSERT TUBE SHALL CONFORM TO ASTM A36 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION TO ASTM A123.
- 3/4" STRUCTURAL CONCRETE INSERTS SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" Ø x 1 5/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø x 1 5/8" BOLT SHALL HAVE N. C. THREADS.

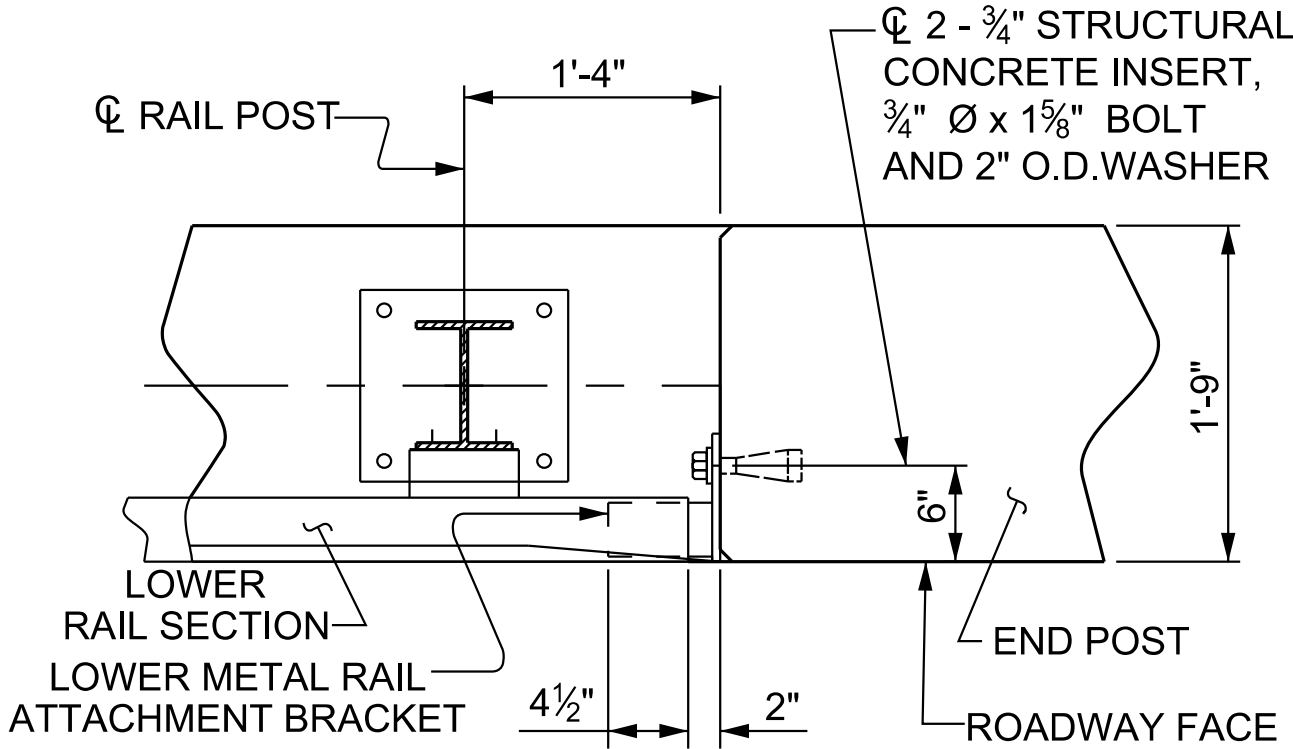
THE 3/4" STRUCTURAL CONCRETE INSERTS WITH BOLTS SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE 3/4" STRUCTURAL CONCRETE INSERT, THE 1/2" BRACKET PLATES, AND THE RAIL INSERT TUBES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

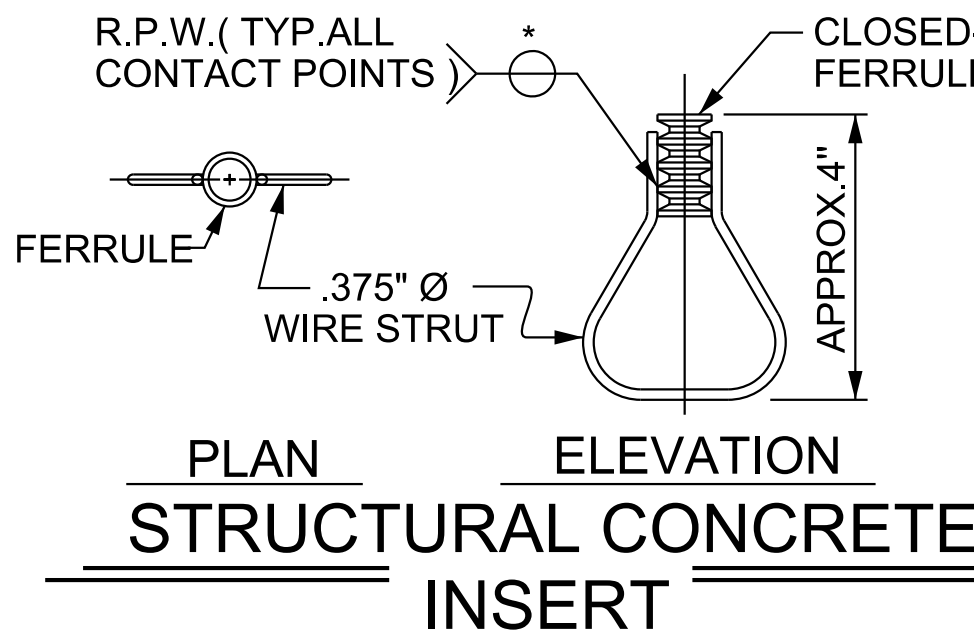
THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3/4" Ø x 1 5/8" BOLTS WITH WASHERS SHALL BE REPLACED WITH 3/4" Ø x 6 1/2" BOLTS AND 2" O.D. WASHERS. ALL SPECIFICATIONS THAT APPLY TO THE 3/4" Ø x 1 5/8" BOLTS SHALL APPLY TO THE 3/4" Ø x 6 1/2" BOLTS. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.



PLAN - TOP RAIL AND END POST



PLAN - LOWER RAILS AND END POST



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



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PROJECT NO. 17BP.12.R.78
IREDELL COUNTY
STATION: 13+72.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
RAIL POST SPACINGS
AND
END OF RAIL DETAILS
FOR 42" OREGON RAIL

REVISIONS						SHEET NO. S-13
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 25
2			4			

STD. NO. BMR11

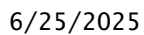
DRAWN BY: T. K. BOYD DATE: 01/2025
CHECKED BY: J. R. LOGAN DATE: 01/2025
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 01/2025

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SPLICE LENGTH CHART

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1			3			TOTAL SHEETS 25
2			4			

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A ¼" HOLD DOWN PLATE AND 7 - ⅞" Ø BOLTS WITH NUTS AND WASHERS.

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

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE ⅞" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.

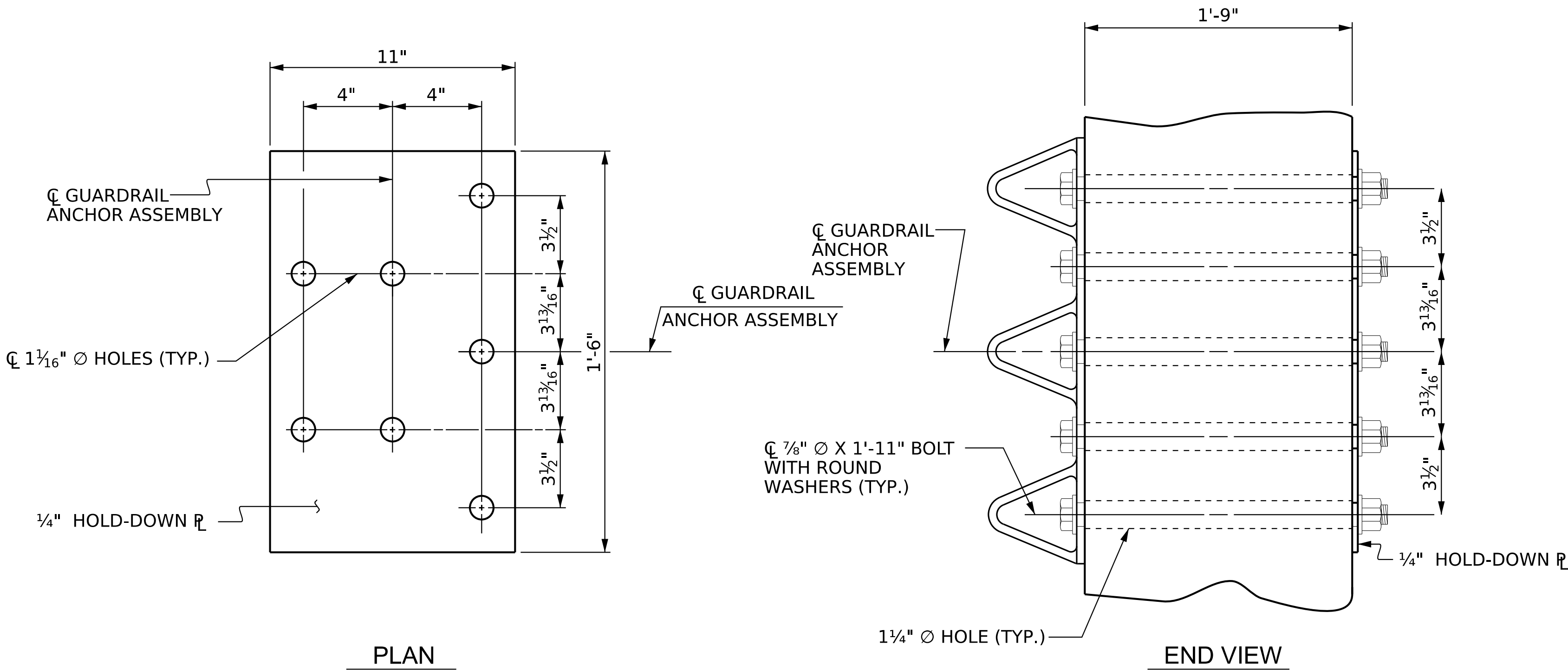
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

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

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

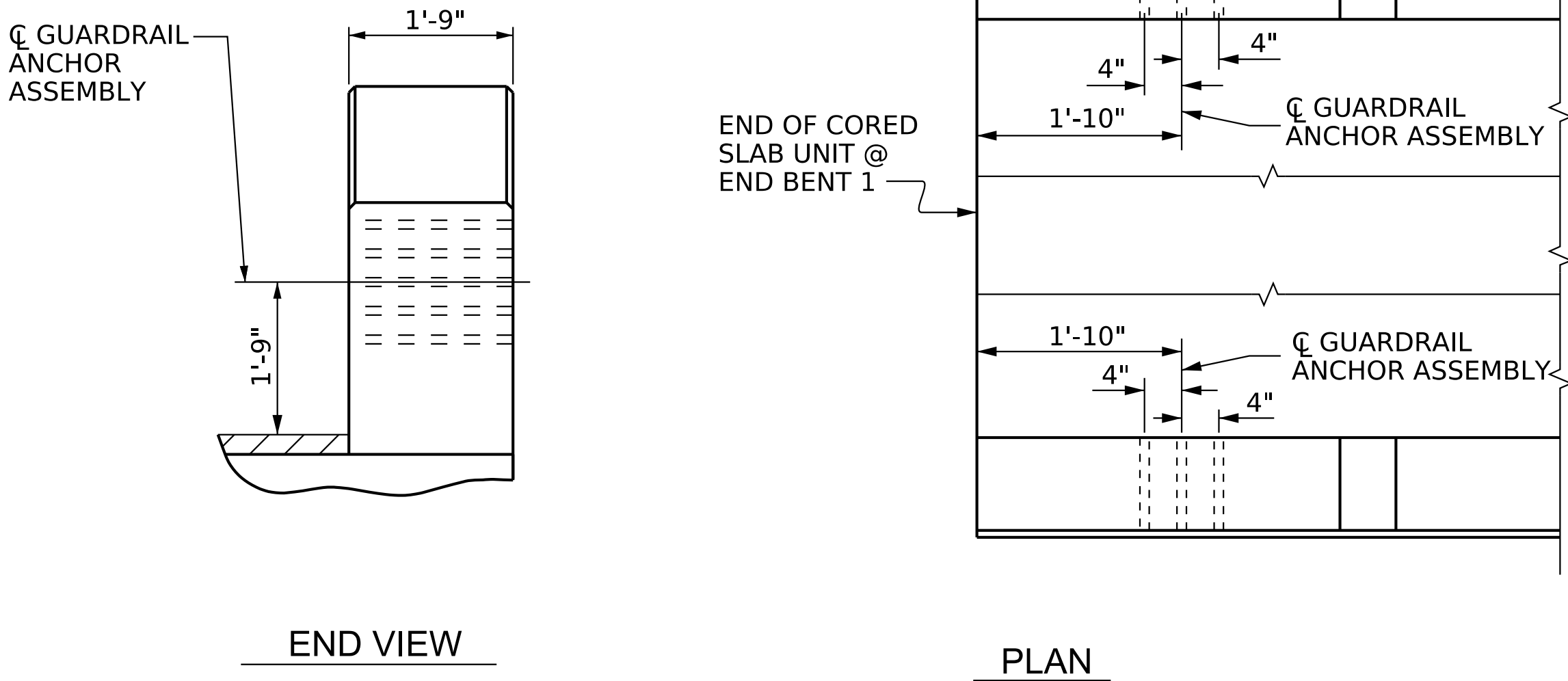


GUARDRAIL ANCHOR ASSEMBLY DETAILS



SKETCH SHOWING POINTS OF ATTACHMENT

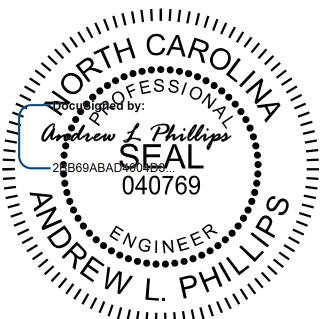
* LOCATION OF GUARDRAIL ATTACHMENT



LOCATION OF GUARDRAIL ANCHOR AT END POST

END BENT 1 SHOWN, END BENT 2 SIMILAR

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STATION: 13+72.50 -L-



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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
GUARDRAIL ANCHORAGE
DETAILS
FOR METAL RAILS

REVISIONS						SHEET NO. S-15
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 25
2			4			

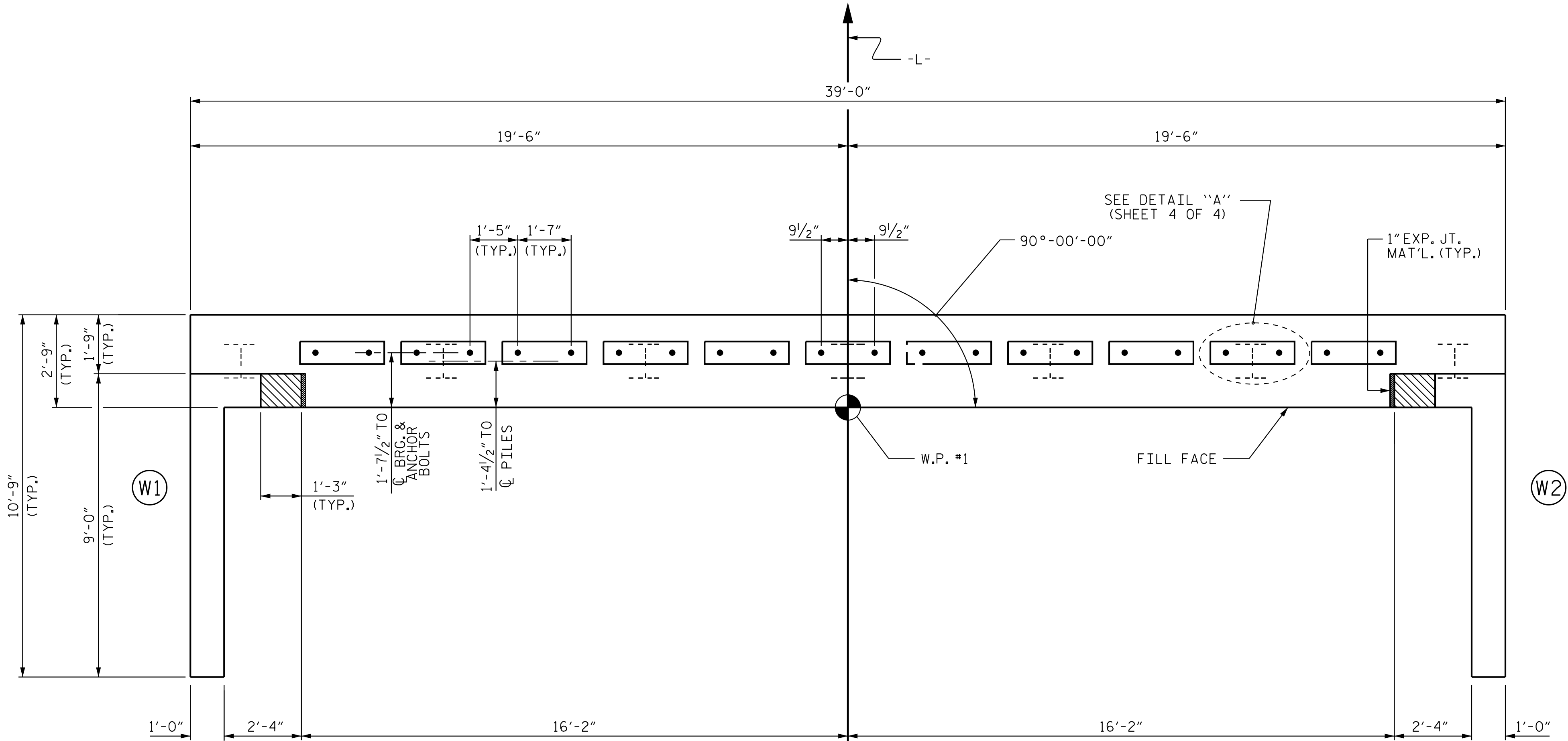
NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

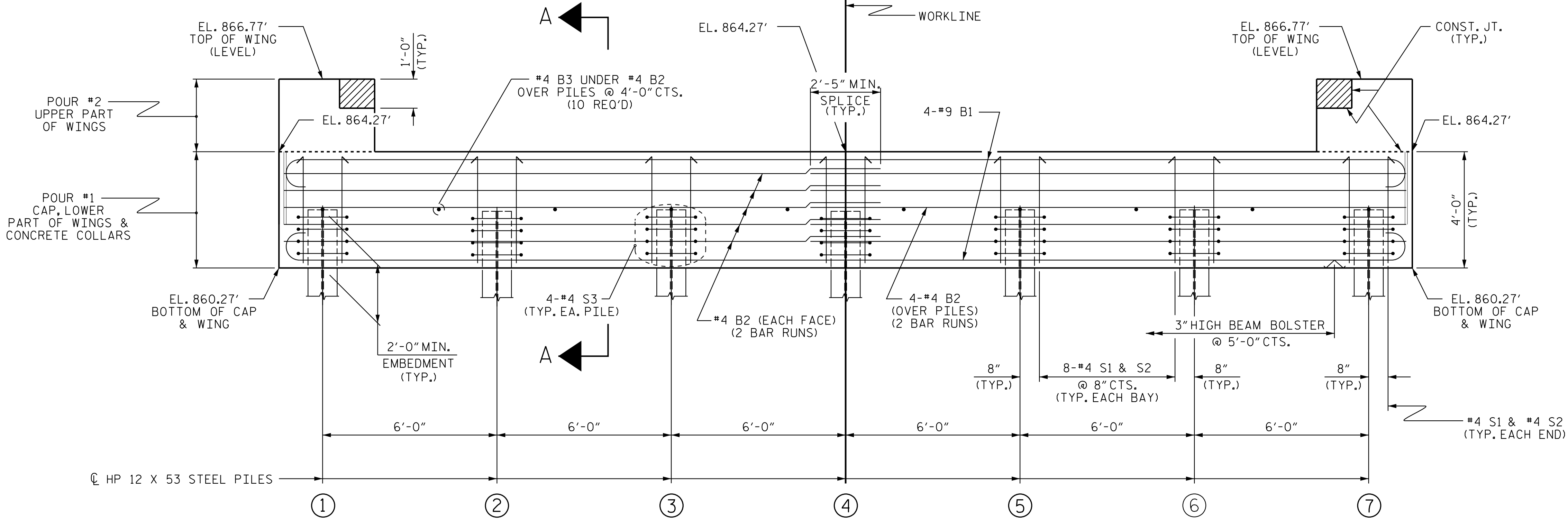
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE CURB AND END POST FOR 42" OREGON RAIL ARE CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN



ELEVATION

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



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SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
END BENT 1

REVISIONS						SHEET NO. S-16
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 25
2			4			

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DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 01/2025



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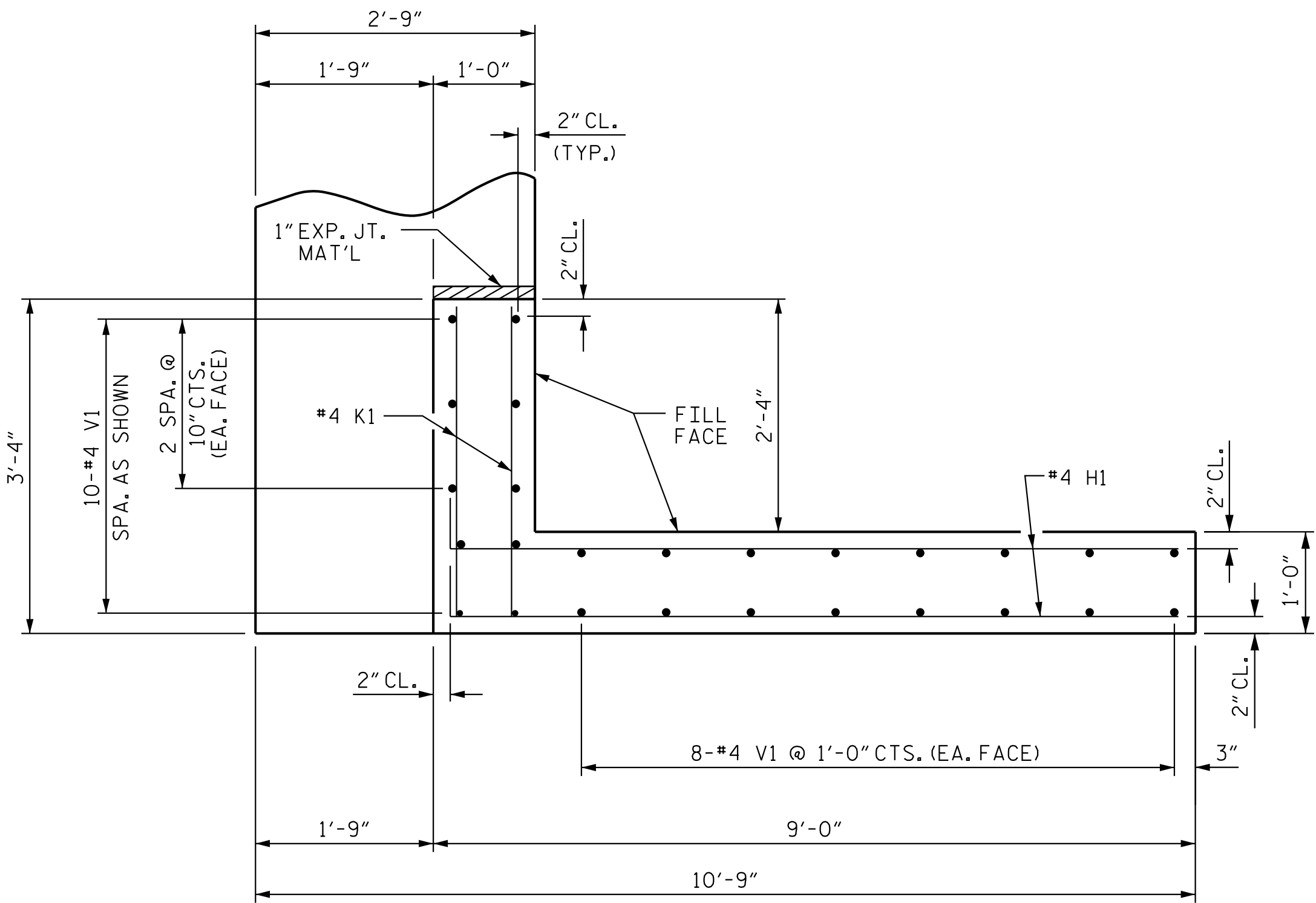
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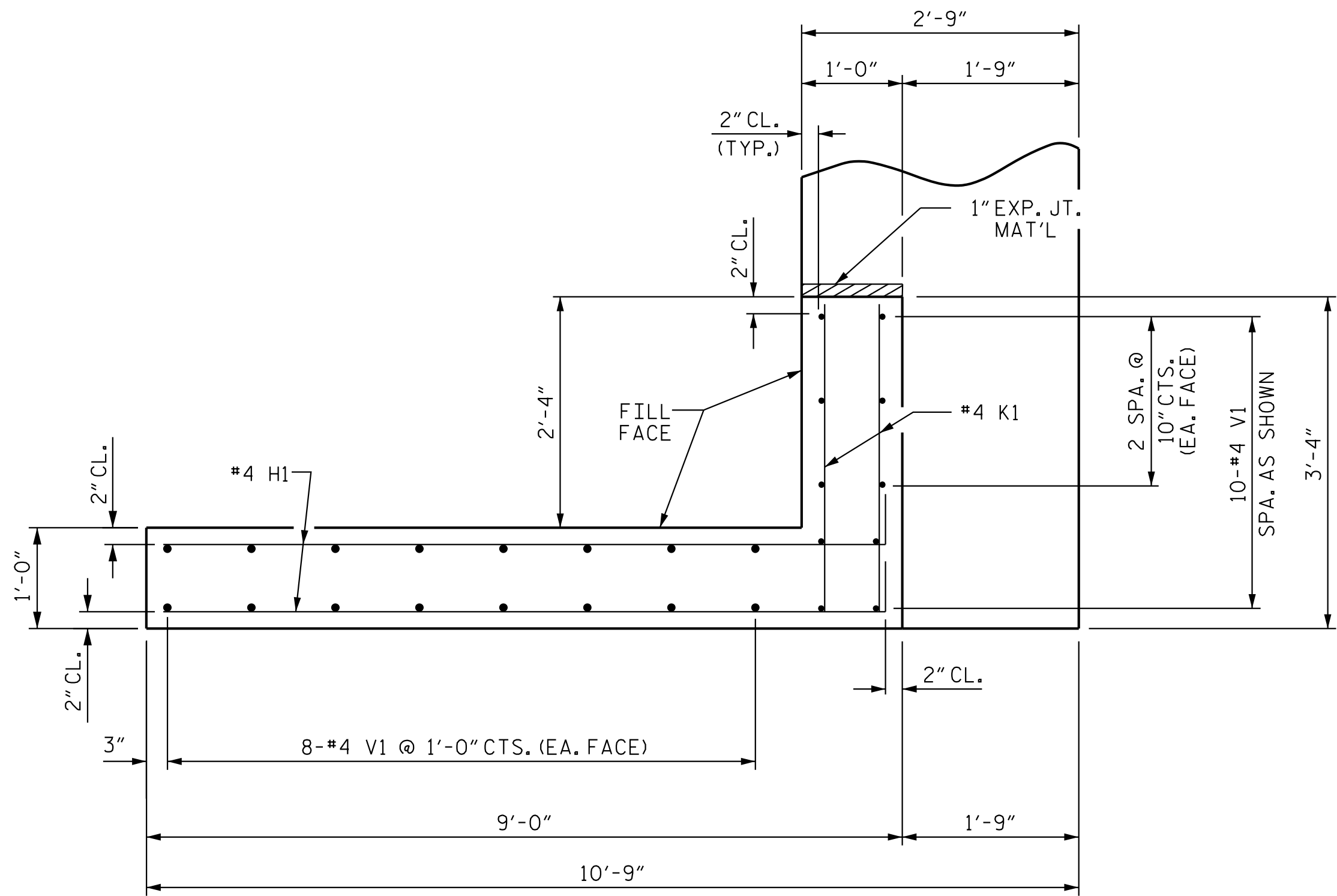
FOR WING DETAILS, SEE SHEET 3 OF 4.

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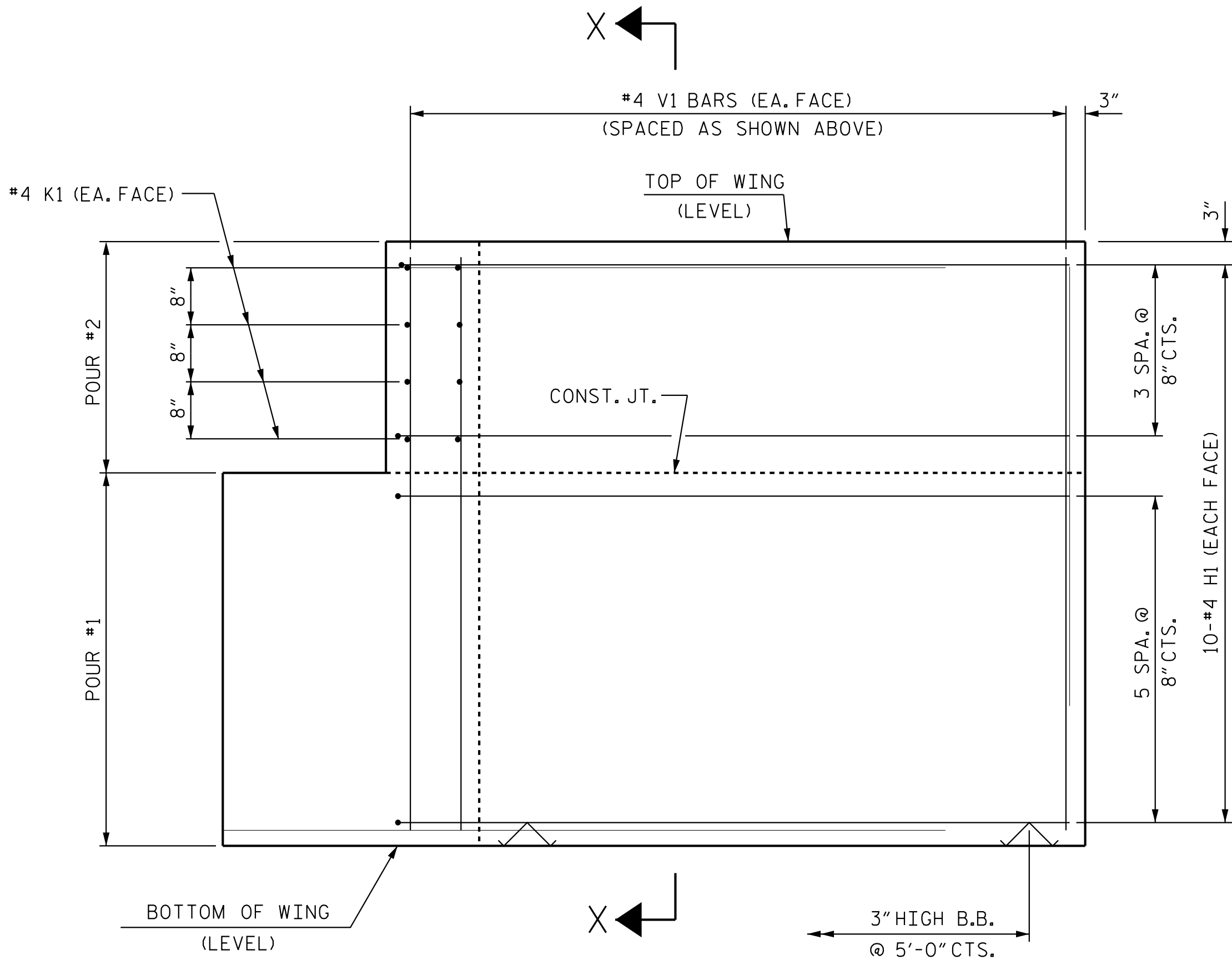
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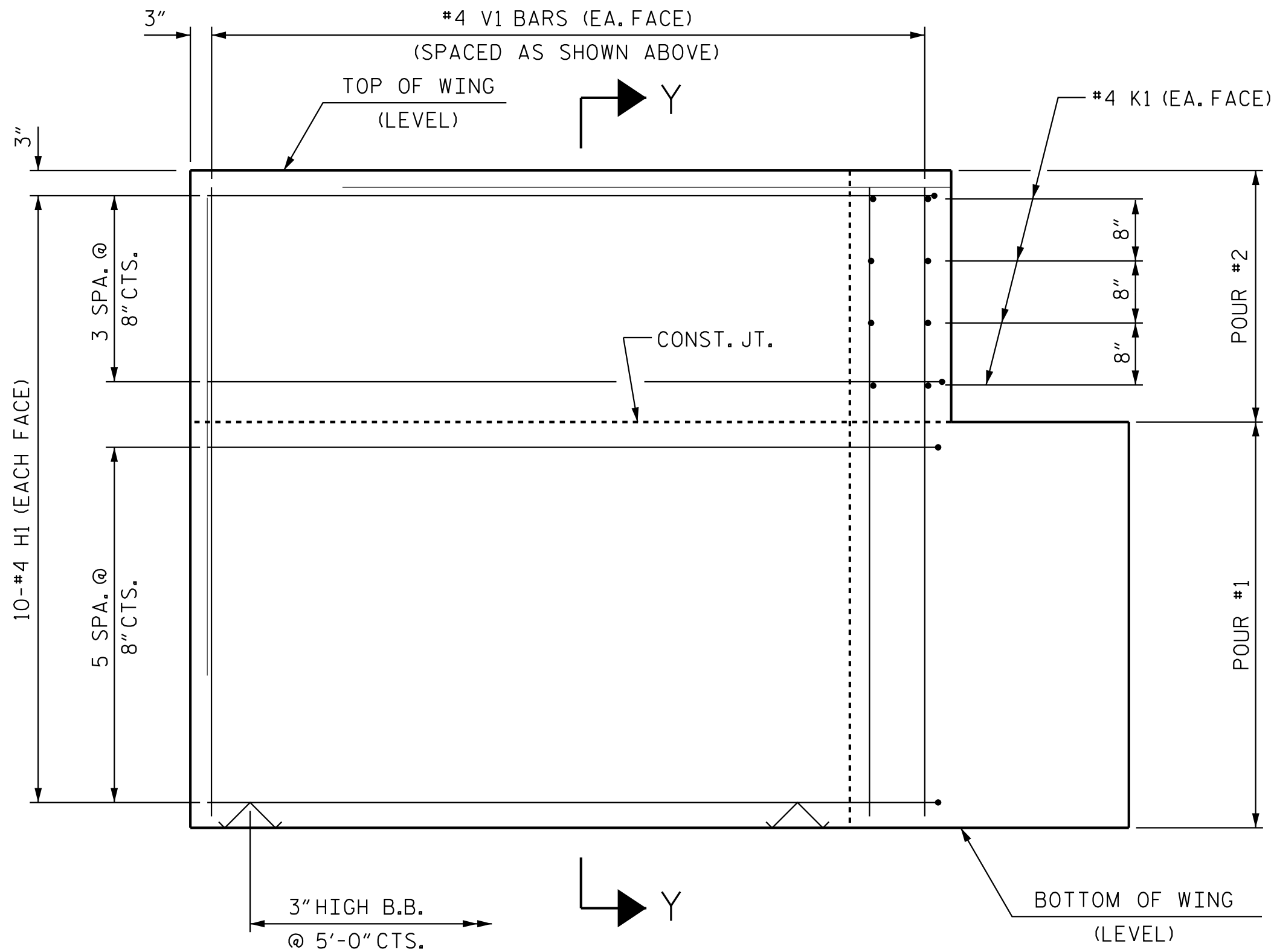
PLAN OF WING (W1)



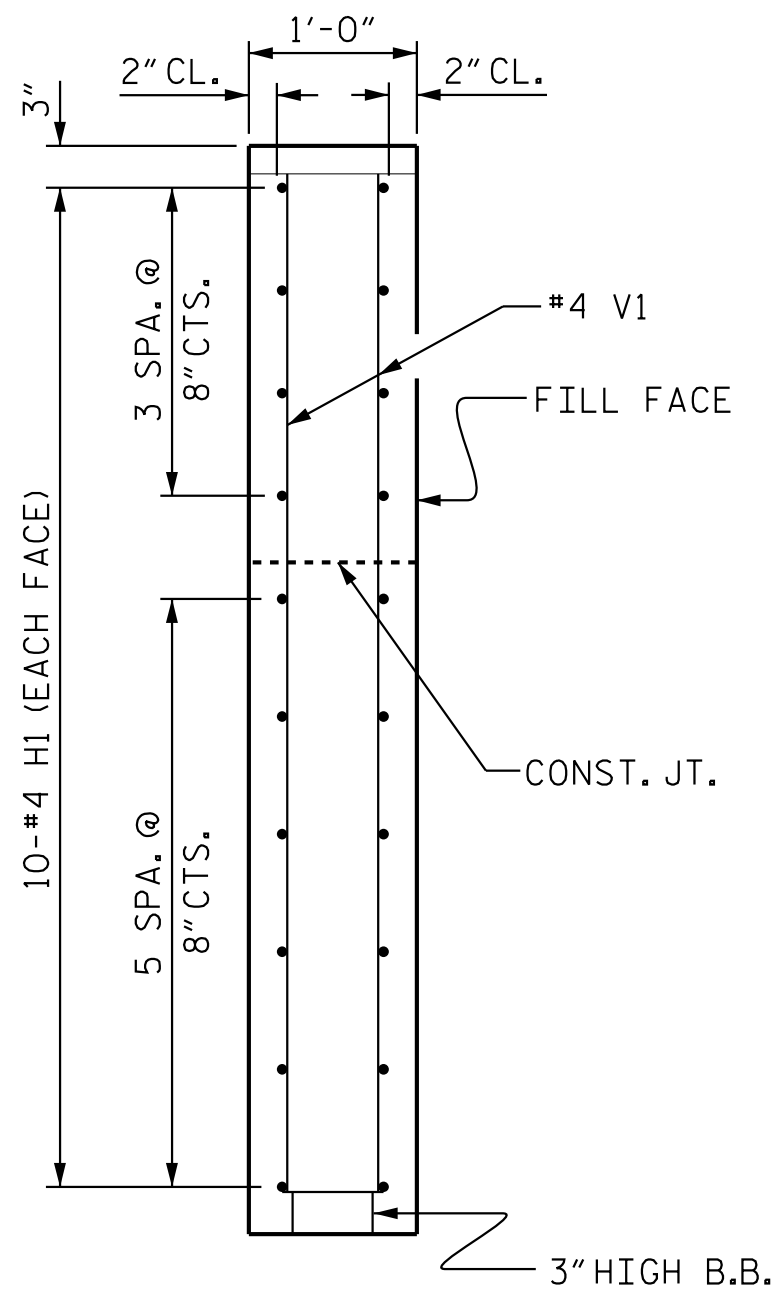
PLAN OF WING (W2)



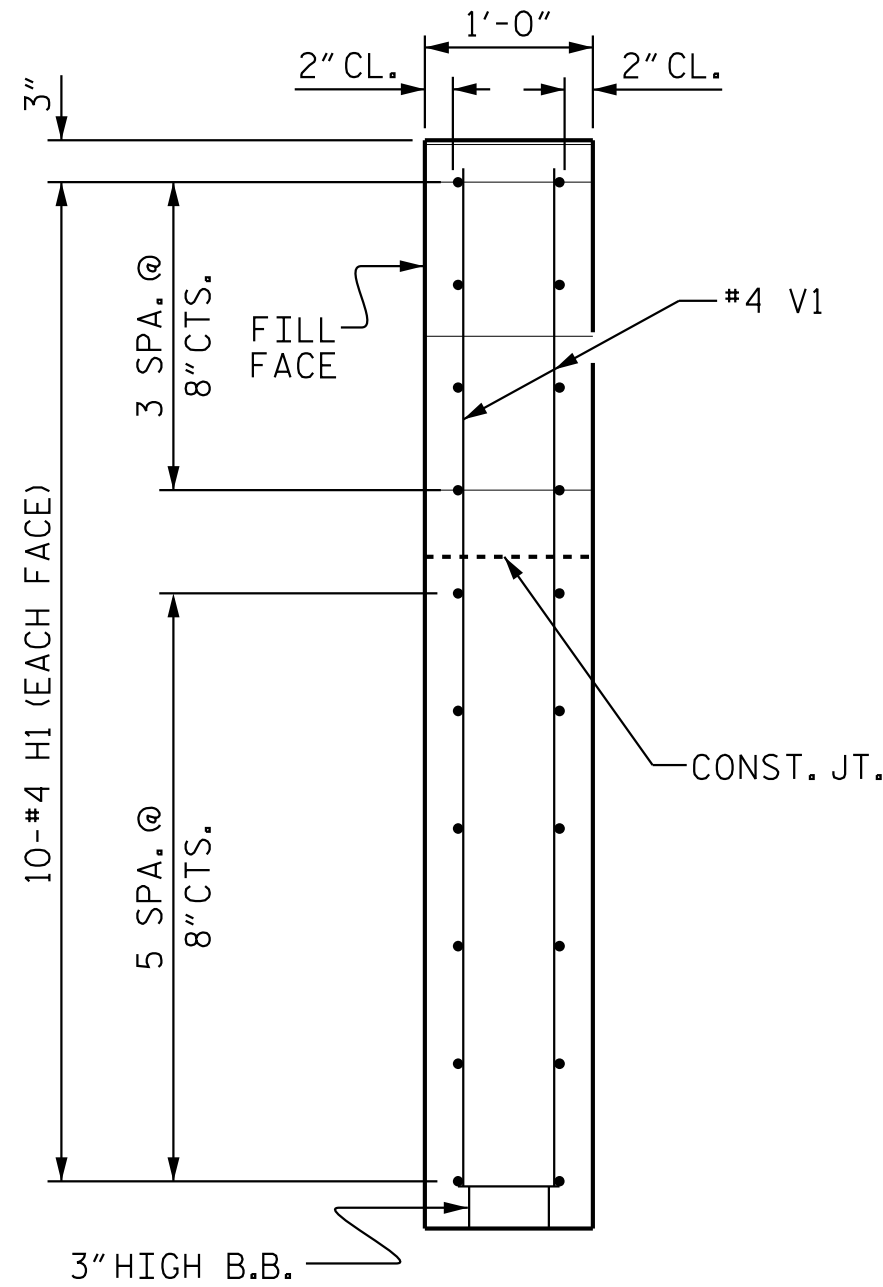
ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



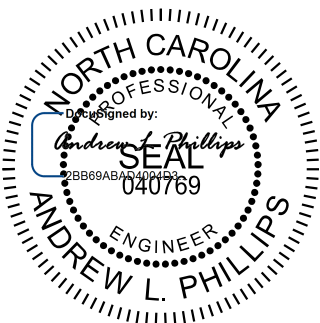
SECTION X-X



SECTION Y-Y

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SHEET 3 OF 4



6/25/2025

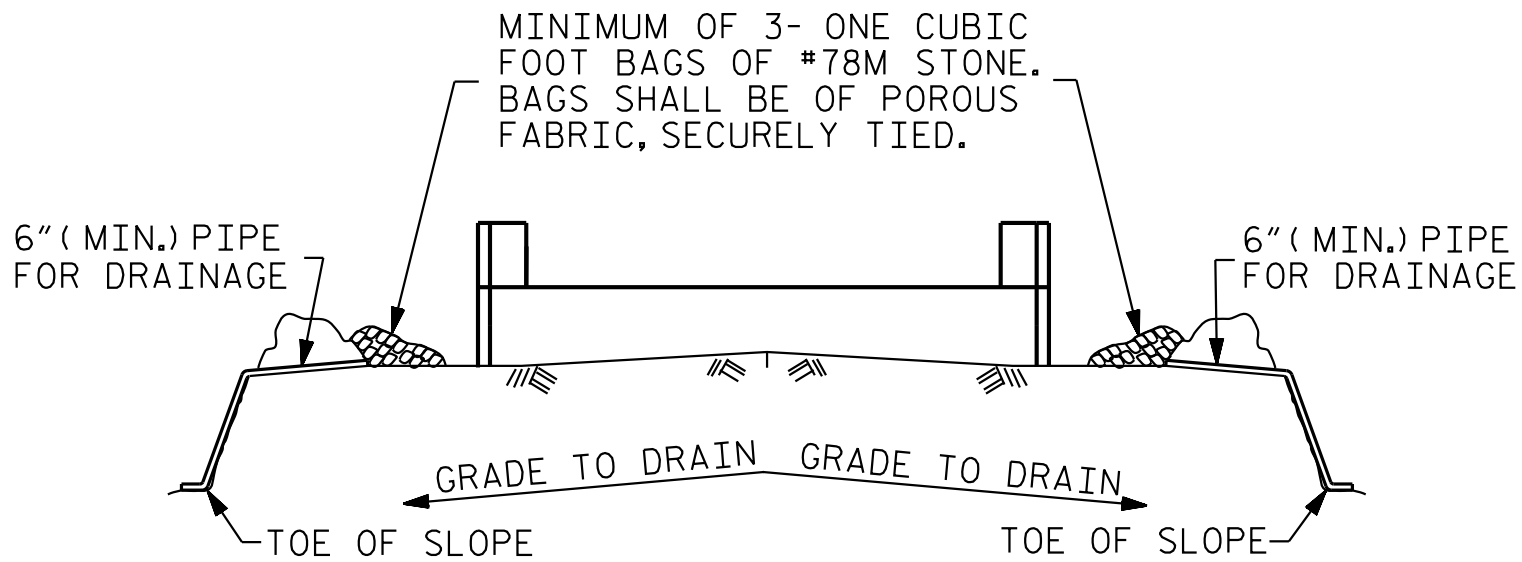
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STATE OF NORTH CAROLINA
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RALEIGH
SUBSTRUCTURE
END BENT
WING DETAILS

REVISIONS						SHEET NO. S-18
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2			4			

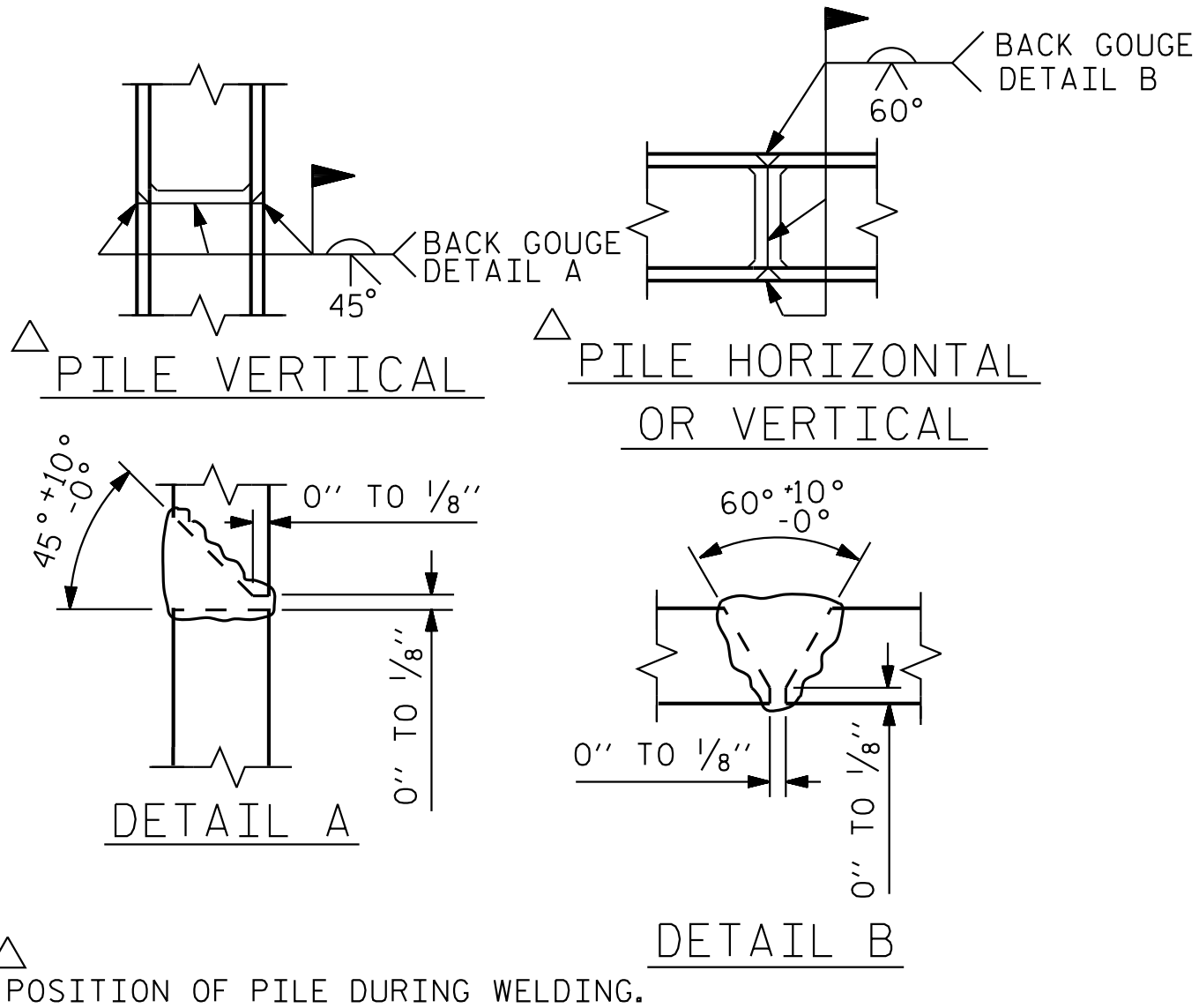


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

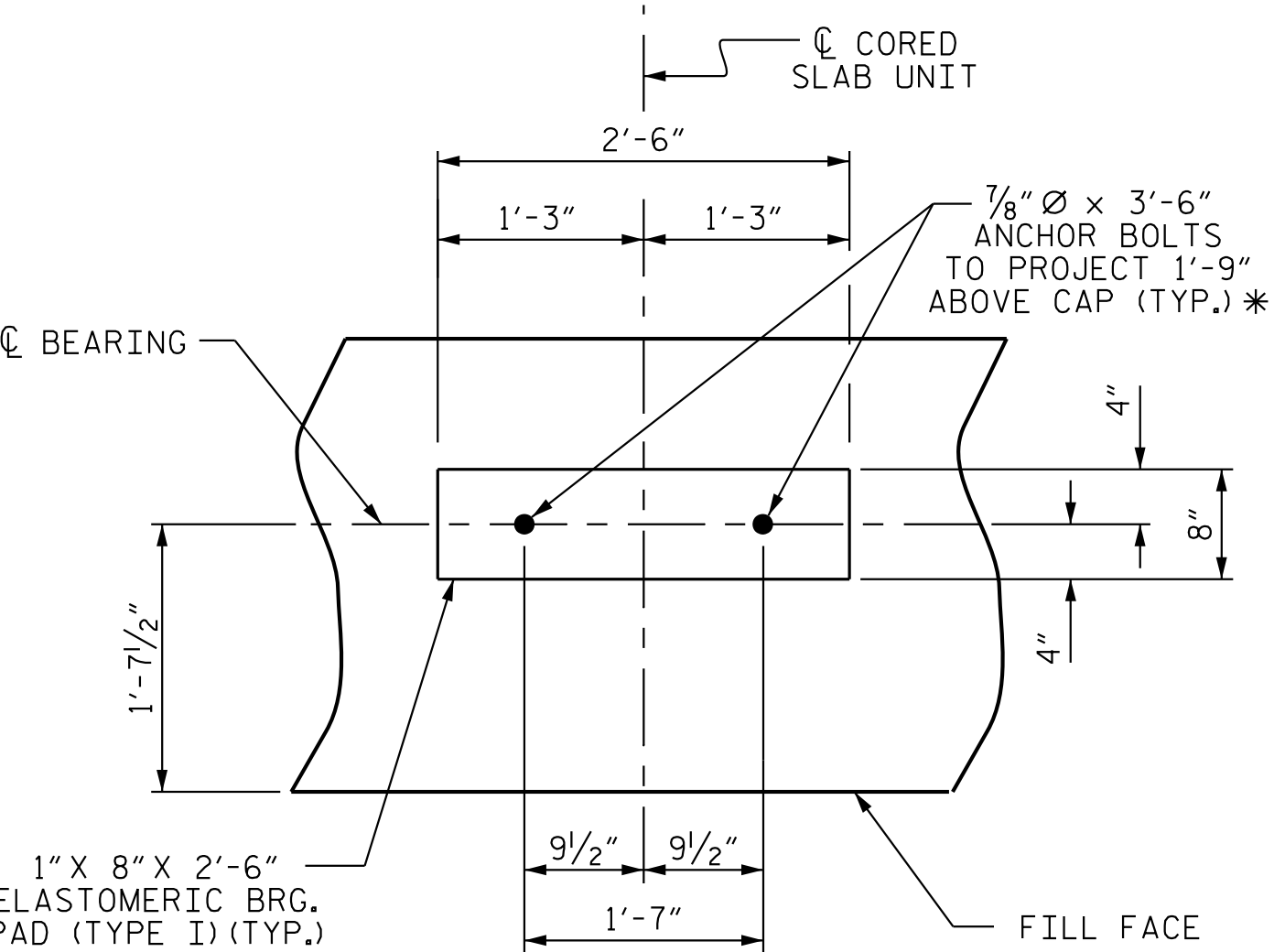
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



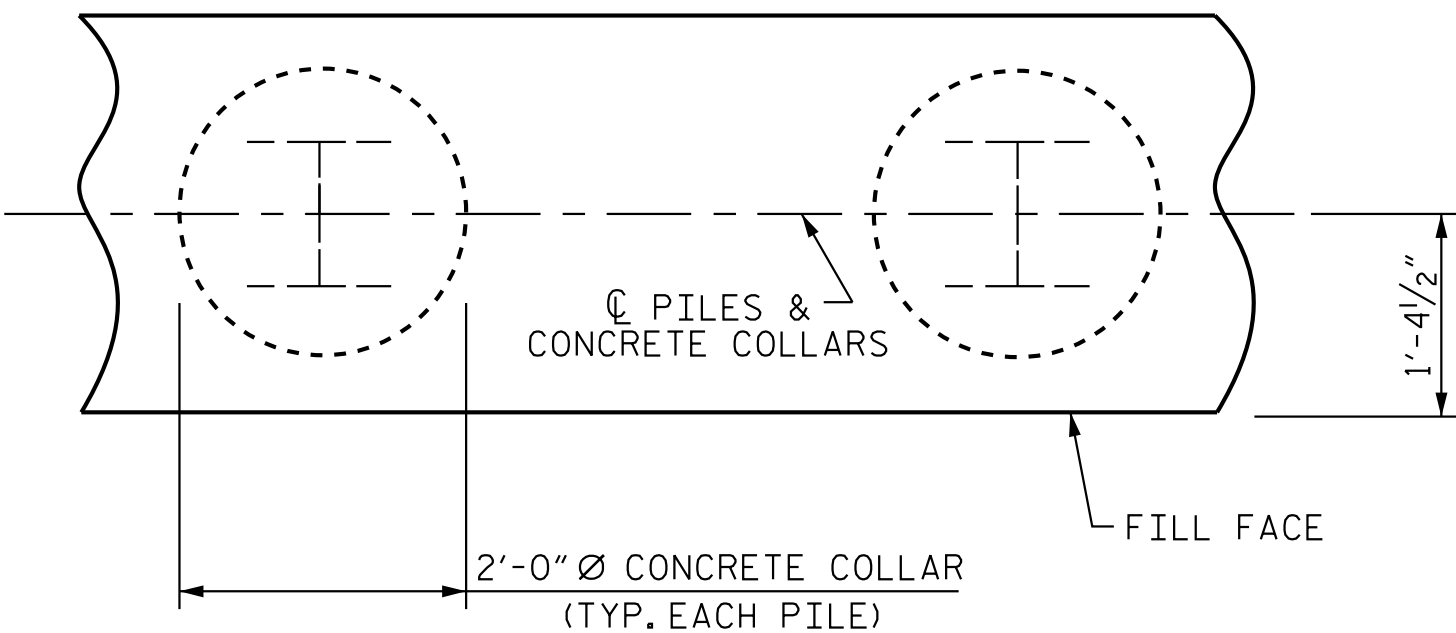
PILE SPLICE DETAILS

BAR TYPES						BILL OF MATERIAL					
						FOR ONE END BENT					
BAR	NO.	SIZE	TYPR	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPR	LENGTH	WEIGHT
B1	8	#9	1	41'-0"	1115	B1	8	#9	1	41'-0"	1115
B2	28	#4	STR	20'-7"	385	B2	28	#4	STR	20'-7"	385
B3	10	#4	STR	2'-5"	16	B3	10	#4	STR	2'-5"	16
H1	40	#4	2	9'-4"	249	H1	40	#4	2	9'-4"	249
K1	16	#4	STR	2'-11"	31	K1	16	#4	STR	2'-11"	31
S1	50	#4	3	10'-5"	348	S1	50	#4	3	10'-5"	348
S2	50	#4	4	3'-2"	106	S2	50	#4	4	3'-2"	106
S3	28	#4	5	6'-6"	122	S3	28	#4	5	6'-6"	122
V1	52	#4	STR	6'-2"	214	V1	52	#4	STR	6'-2"	214
						REINFORCING STEEL (FOR ONE END BENT)					
						2,586 LBS.					
						CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)					
						POUR #1 CAP, LOWER PART OF WINGS & COLLARS					
						19.5 C.Y.					
						POUR #2 UPPER PART OF WINGS					
						2.1 C.Y.					
						TOTAL CLASS A CONCRETE					
						21.6 C.Y.					

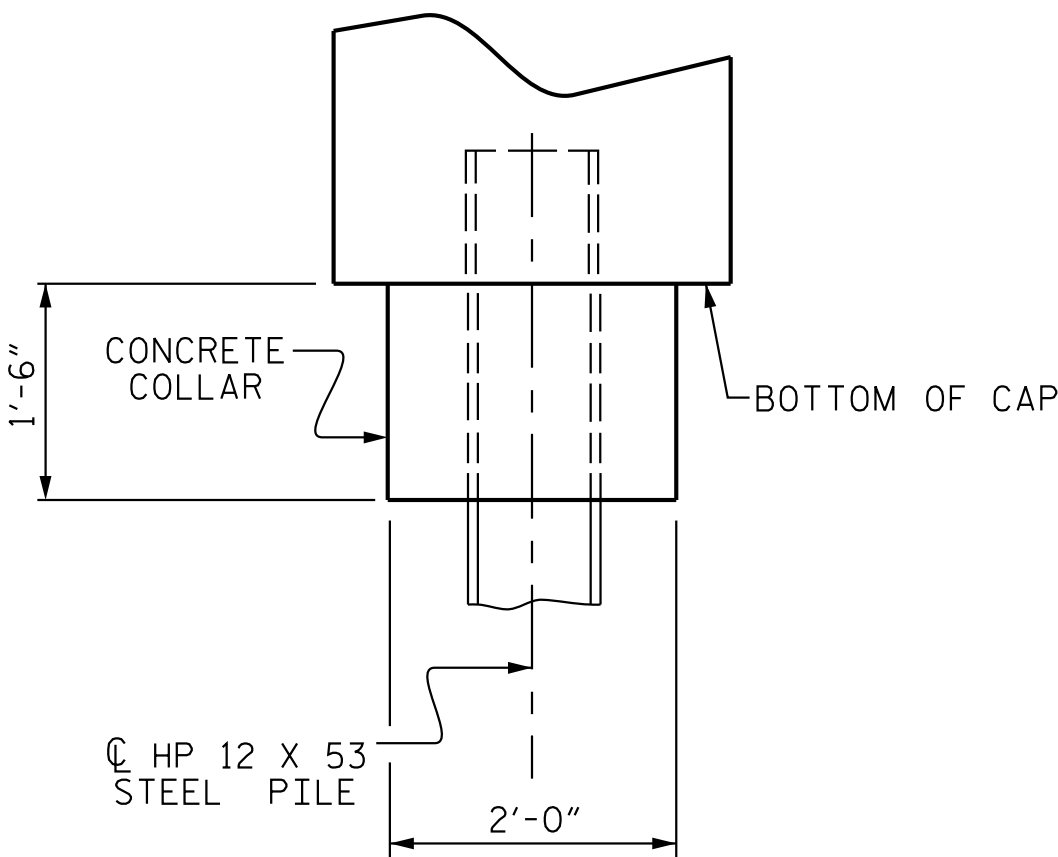


DETAIL "A"

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



PLAN

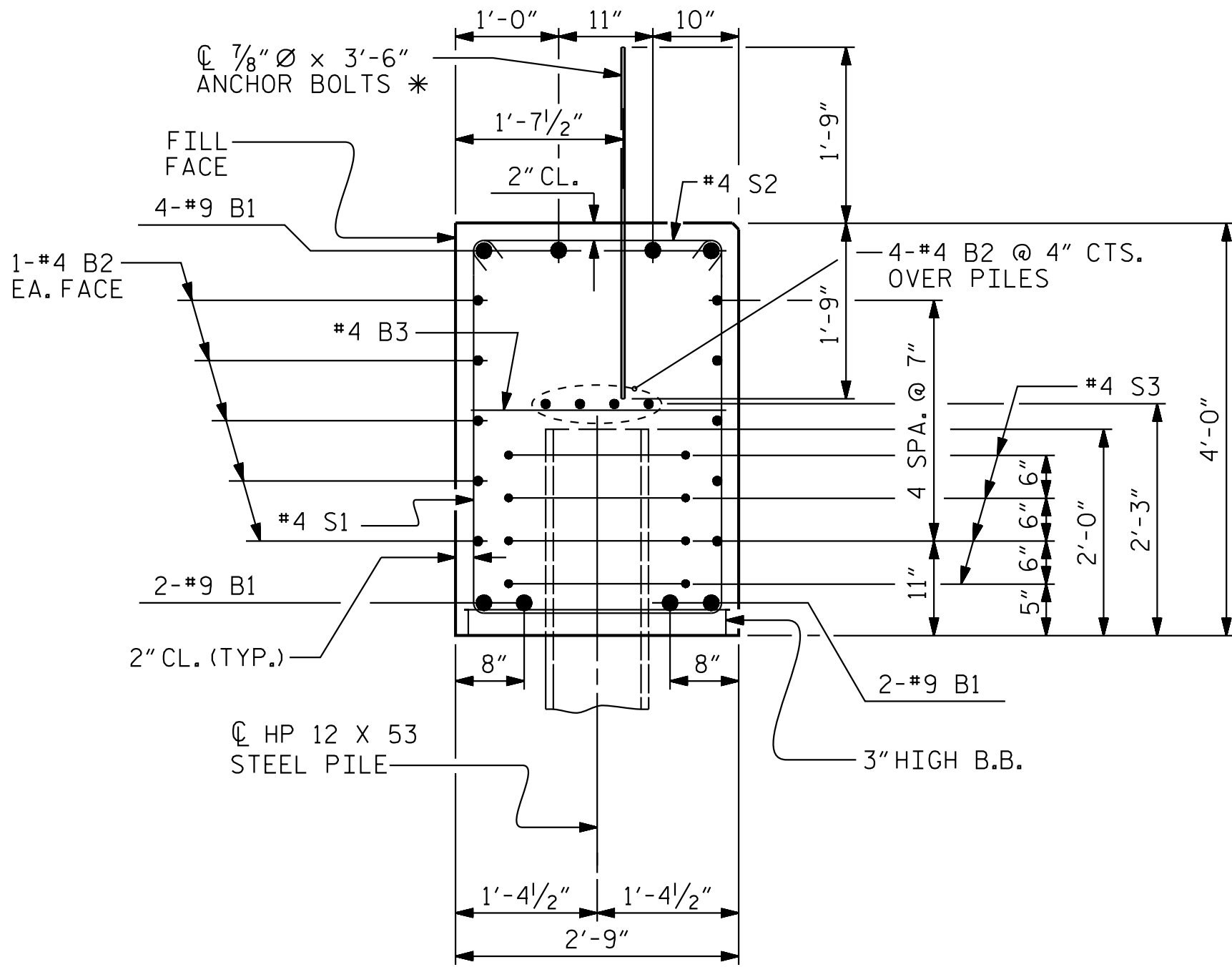


ELEVATION

CORROSION PROTECTION FOR STEEL PILES DETAIL

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

* FOR ANCHOR BOLT DETAILS, SEE SHEETS S-7 & S-8



SECTION A-A

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



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IREDELL COUNTY
STATION: 13+72.50 -L-

SHEET 4 OF 4

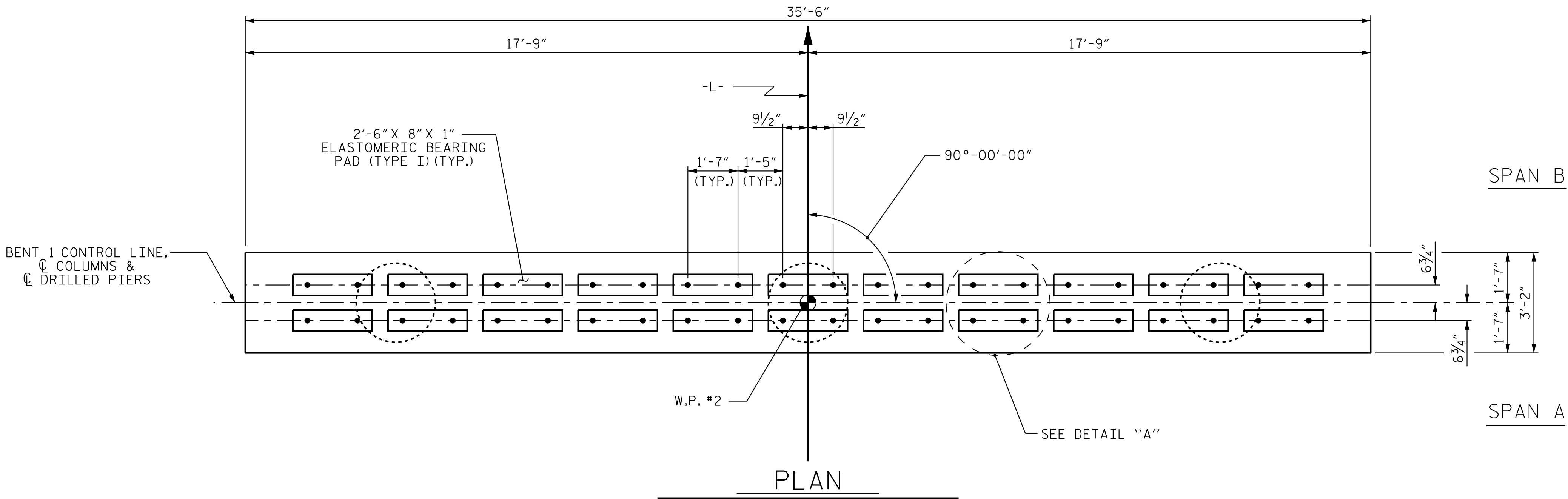
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

END BENT
DETAILS

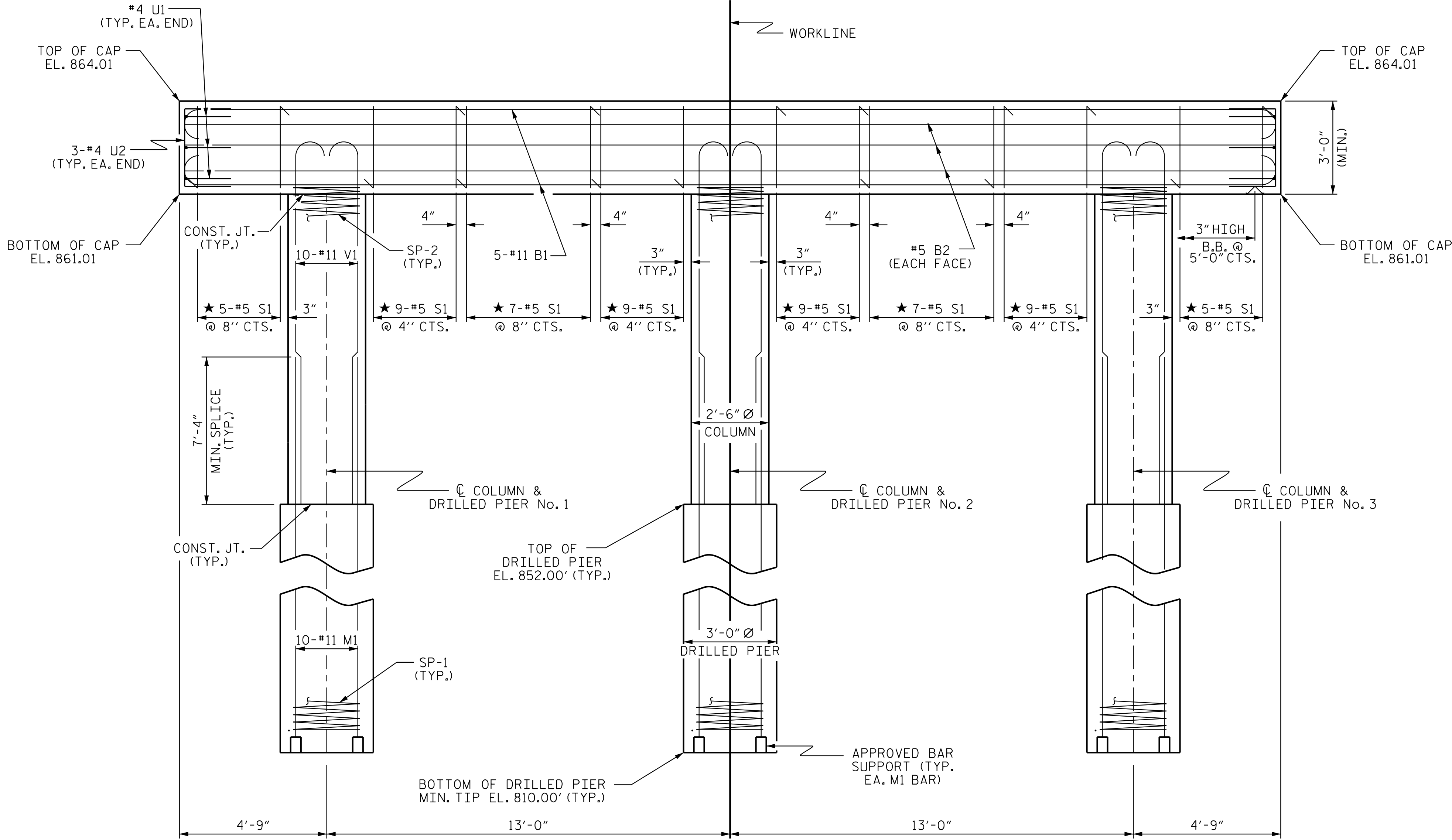
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DESIGN ENGINEER OF RECORD: A.L. PHILLIPS DATE: 01/2025

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PLAN



ELEVATION

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

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

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

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

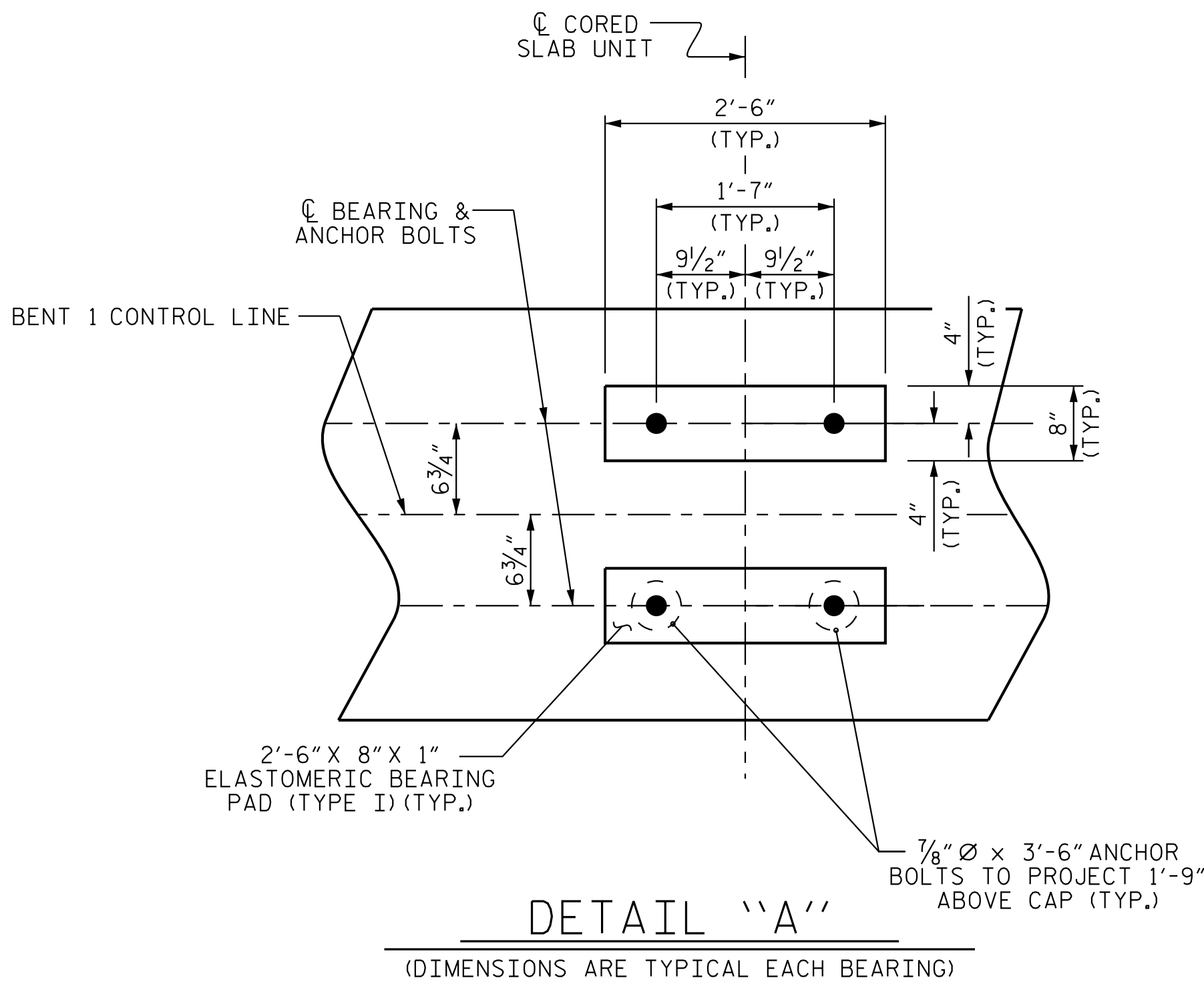
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."

★ INVERT ALTERNATE STIRRUPS.

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

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

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



DETAIL "A"

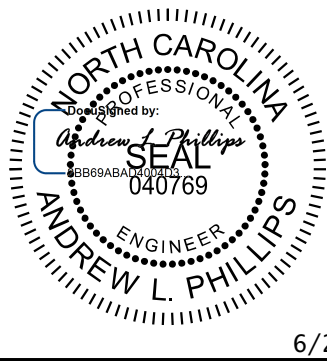
(DIMENSIONS ARE TYPICAL EACH BEARING)

PROJECT NO. 17BP.12.R.78

IREDELL COUNTY

STATION: 13+72.50 -L-

SHEET 1 OF 2



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DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

BENT 1

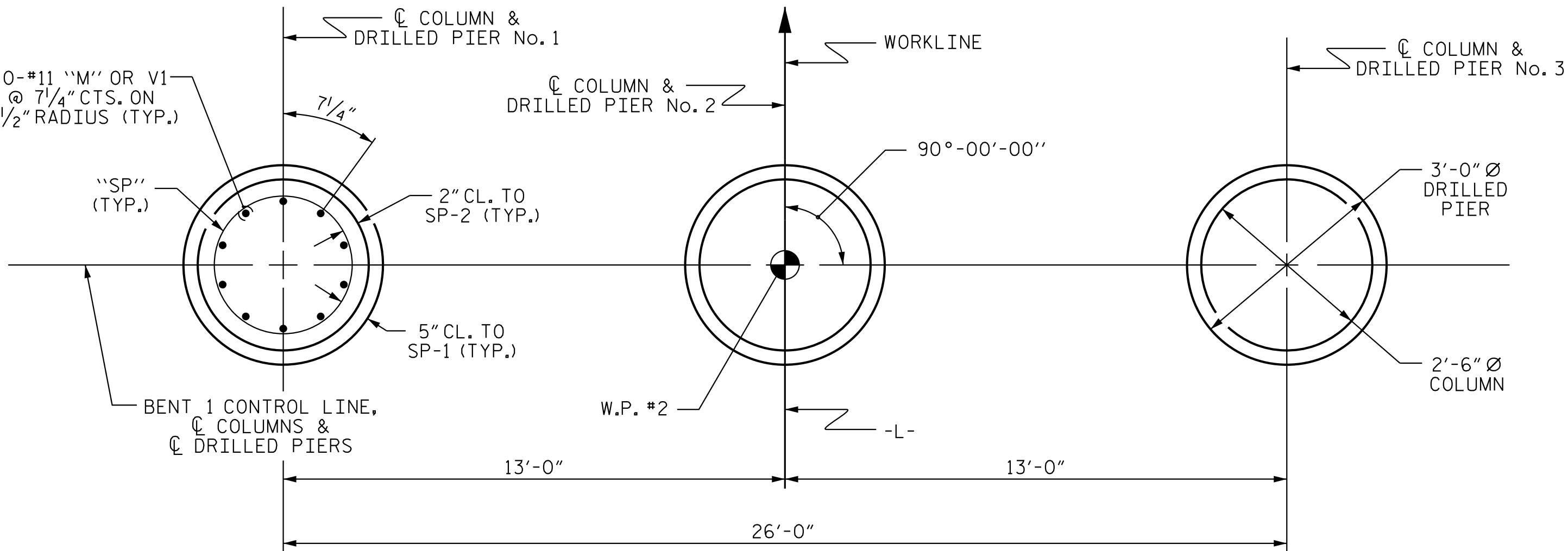
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NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 25
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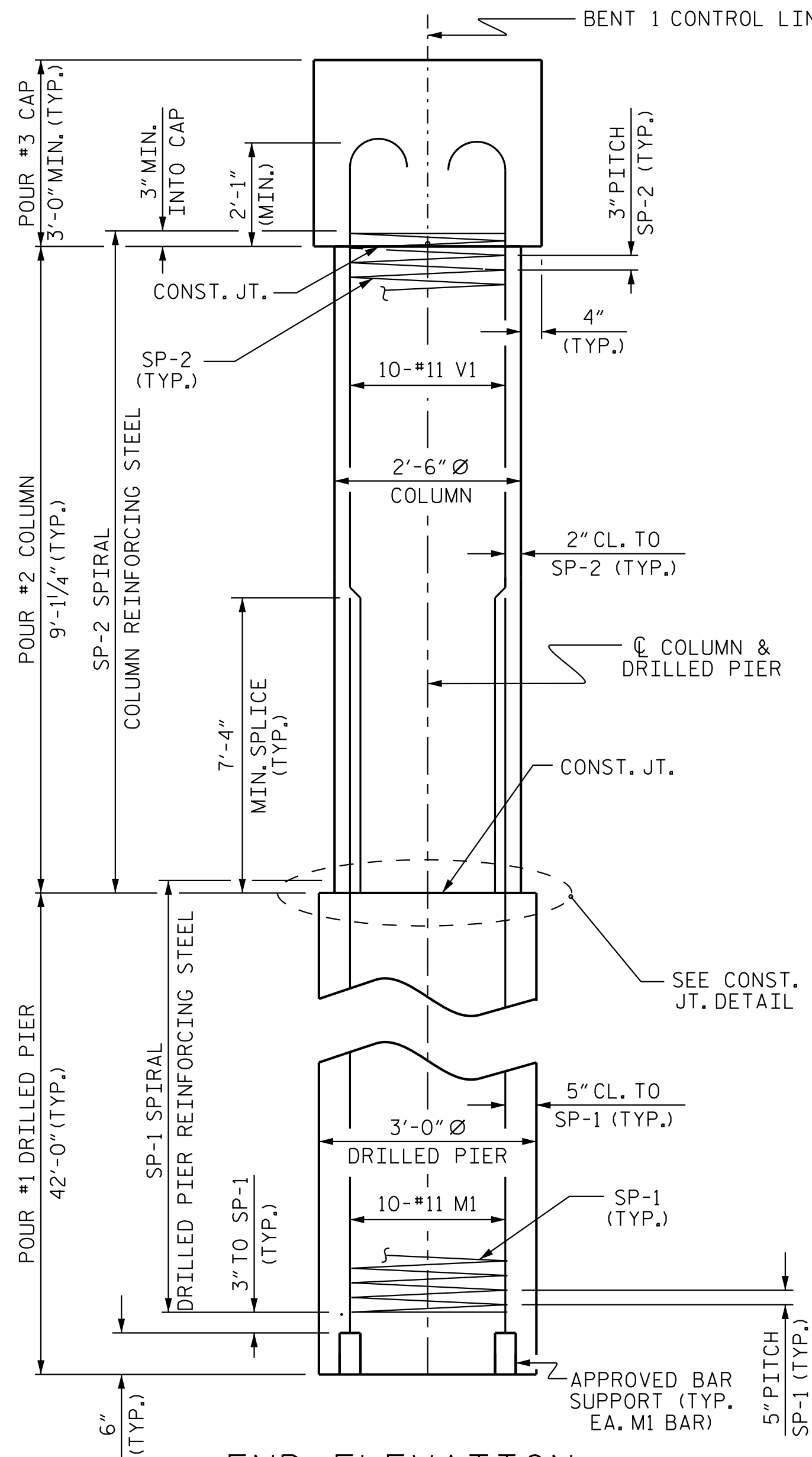
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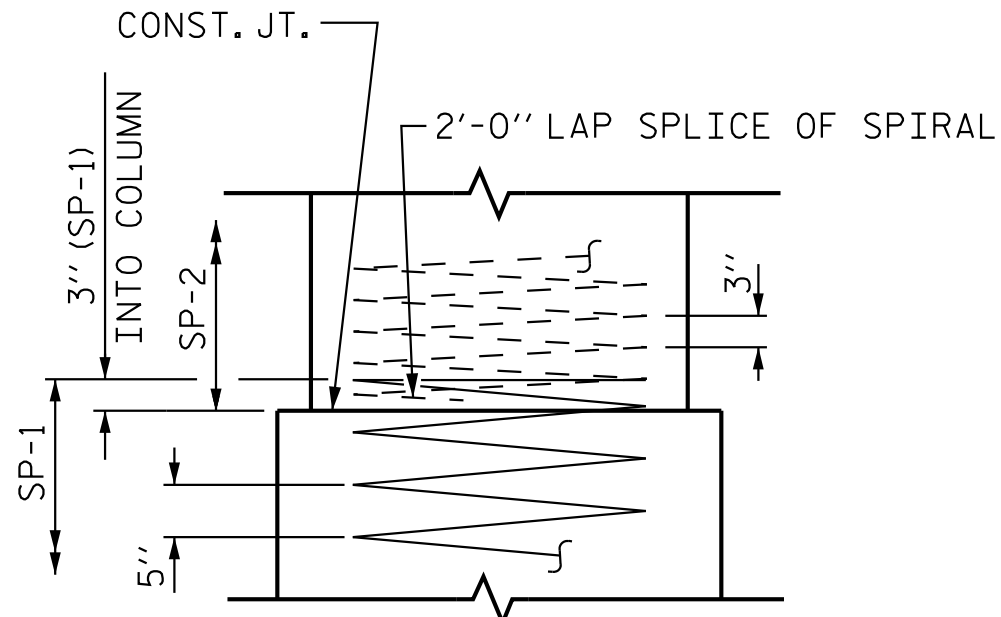
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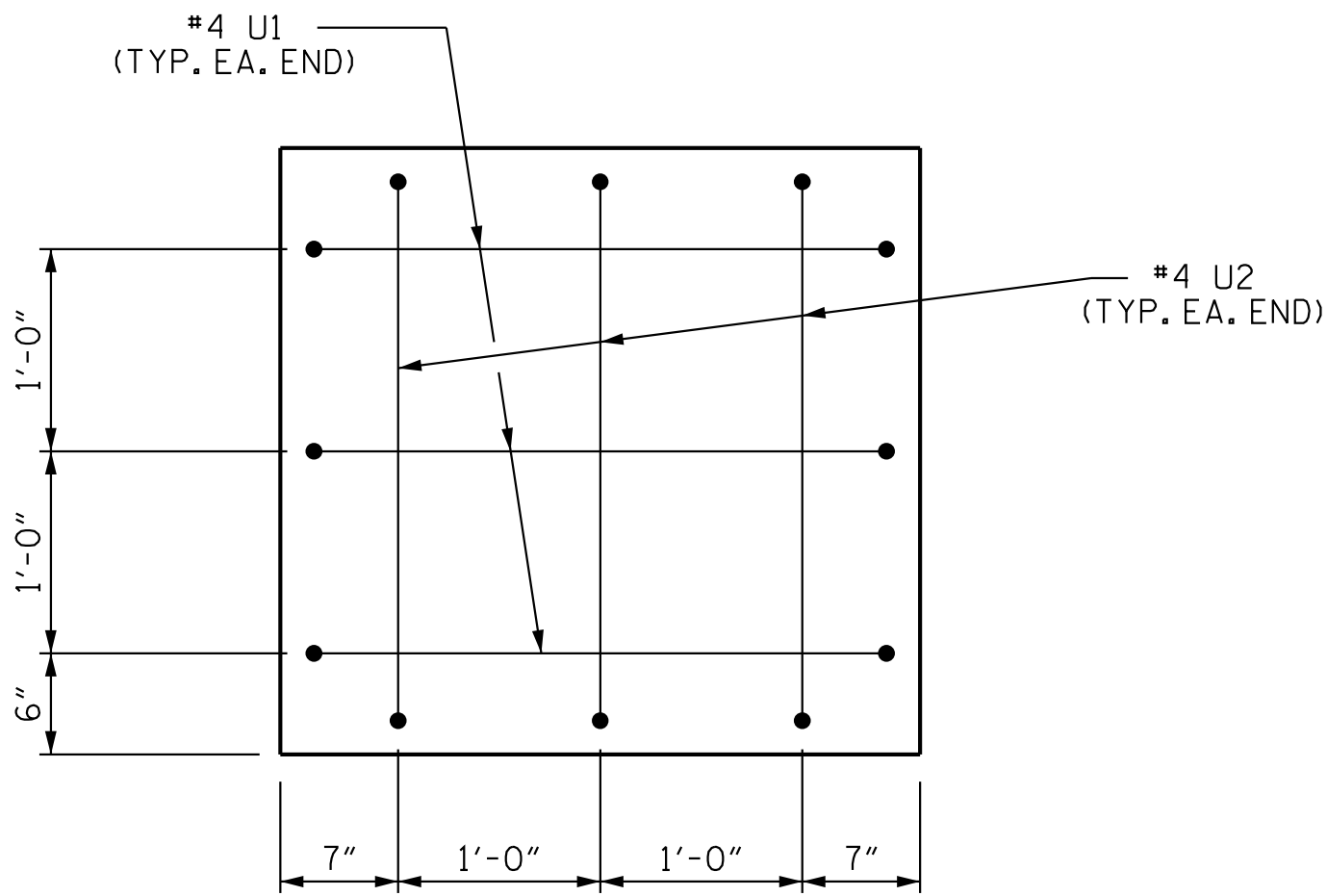
PLAN OF DRILLED PIERS & COLUMNS



END ELEVATION

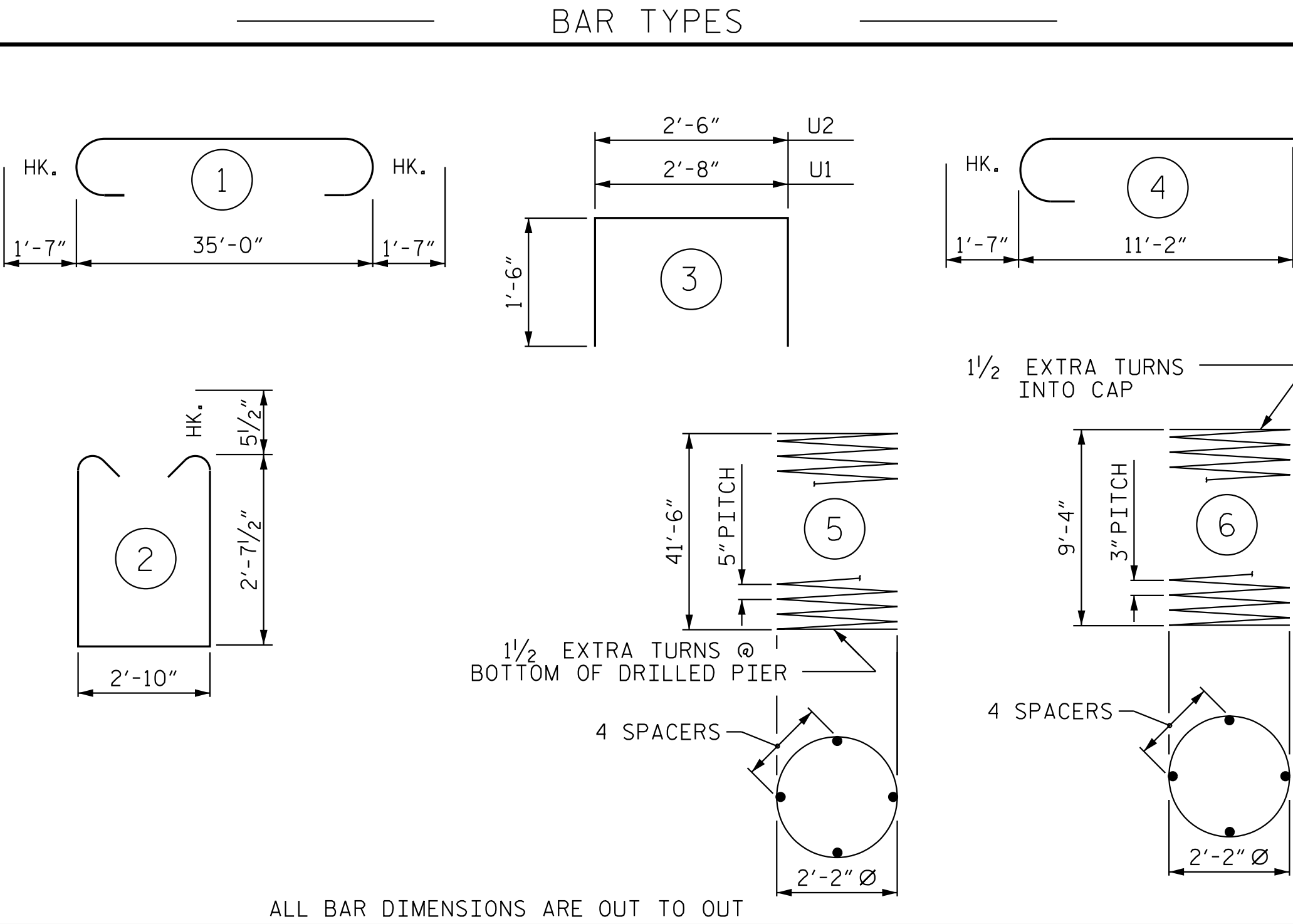


CONSTRUCTION JOINT DETAIL

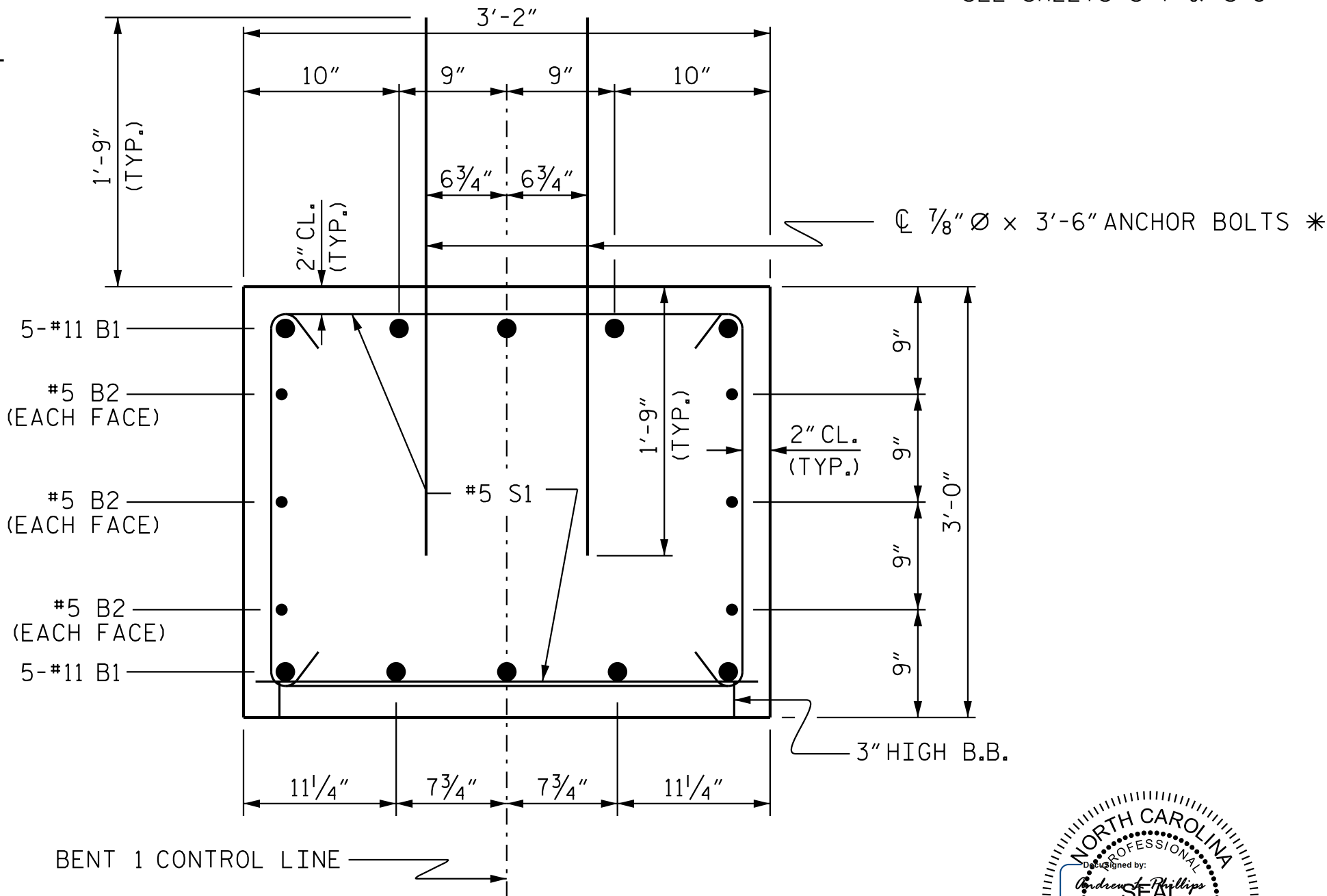


END OF CAP VIEW

(TYPICAL BOTH ENDS)

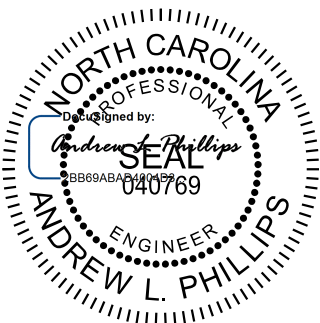


ALL BAR DIMENSIONS ARE OUT TO OUT



SECTION THRU CAP

*FOR ANCHOR BOLT DETAILS, SEE SHEETS S-7 & S-8



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BILL OF MATERIAL

FOR ONE BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11	1	38'-2"	2,028
B2	6	#5	STR.	35'-2"	220
M1	30	#11	STR.	51'-10"	8,262
S1	60	#5	2	9'-0"	563
U1	6	#4	3	5'-8"	23
U2	6	#4	3	5'-6"	22
V1	30	#11	4	12'-9"	2,032

REINFORCING STEEL (FOR ONE BENT) 13,150 LBS.

SP-1	3	*	5	679'-0"	2,125
SP-2	3	**	6	260'-7"	522

SPIRAL COLUMN REINFORCING STEEL (FOR ONE BENT) 2,647 LBS.

*THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR

**THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR

CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)

POUR #2 (COLUMNS)	4.9 C.Y.
POUR #3 (CAP)	12.5 C.Y.
TOTAL CLASS A CONCRETE	17.4 C.Y.

DRILLED PIERS: (FOR ONE BENT)

DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)	33.0 C.Y.
3'-0" Ø DRILLED PIER LENGTH	126.0 LIN. FT.
PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIER	27.0 LIN. FT.
CSL TUBES	522.0 LIN. FT.

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SHEET 2 OF 2

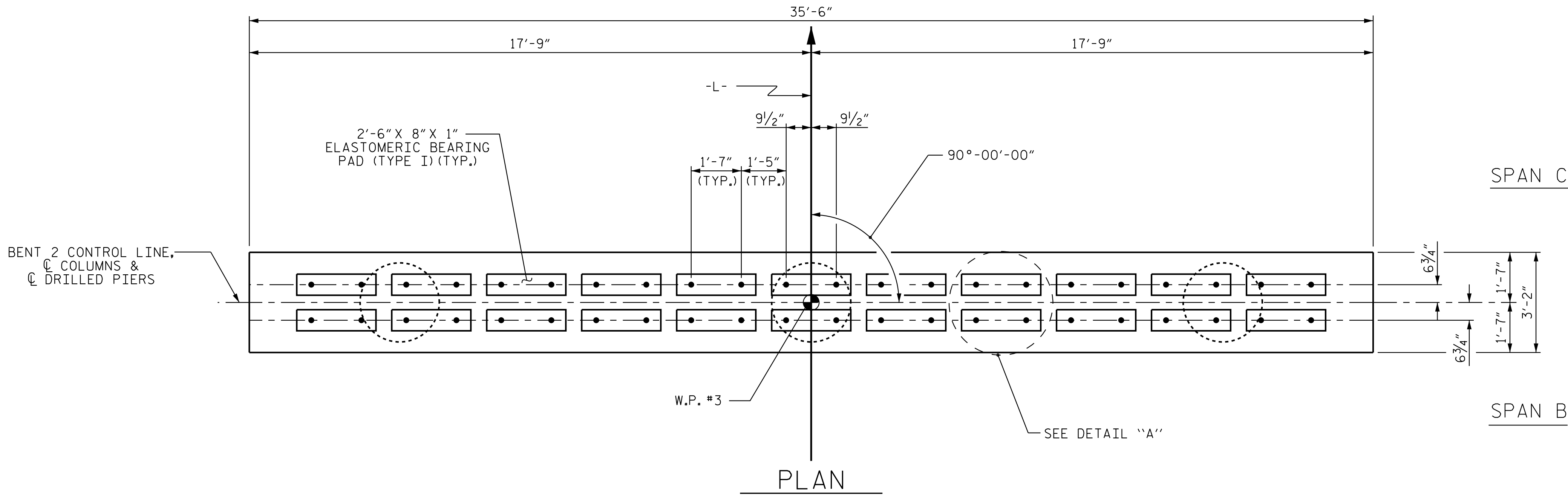
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

BENT 1
DETAILS

REVISIONS						SHEET NO. S-21
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			25

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DESIGN ENGINEER OF RECORD: A.L. PHILLIPS DATE: 01/2025

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NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

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

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

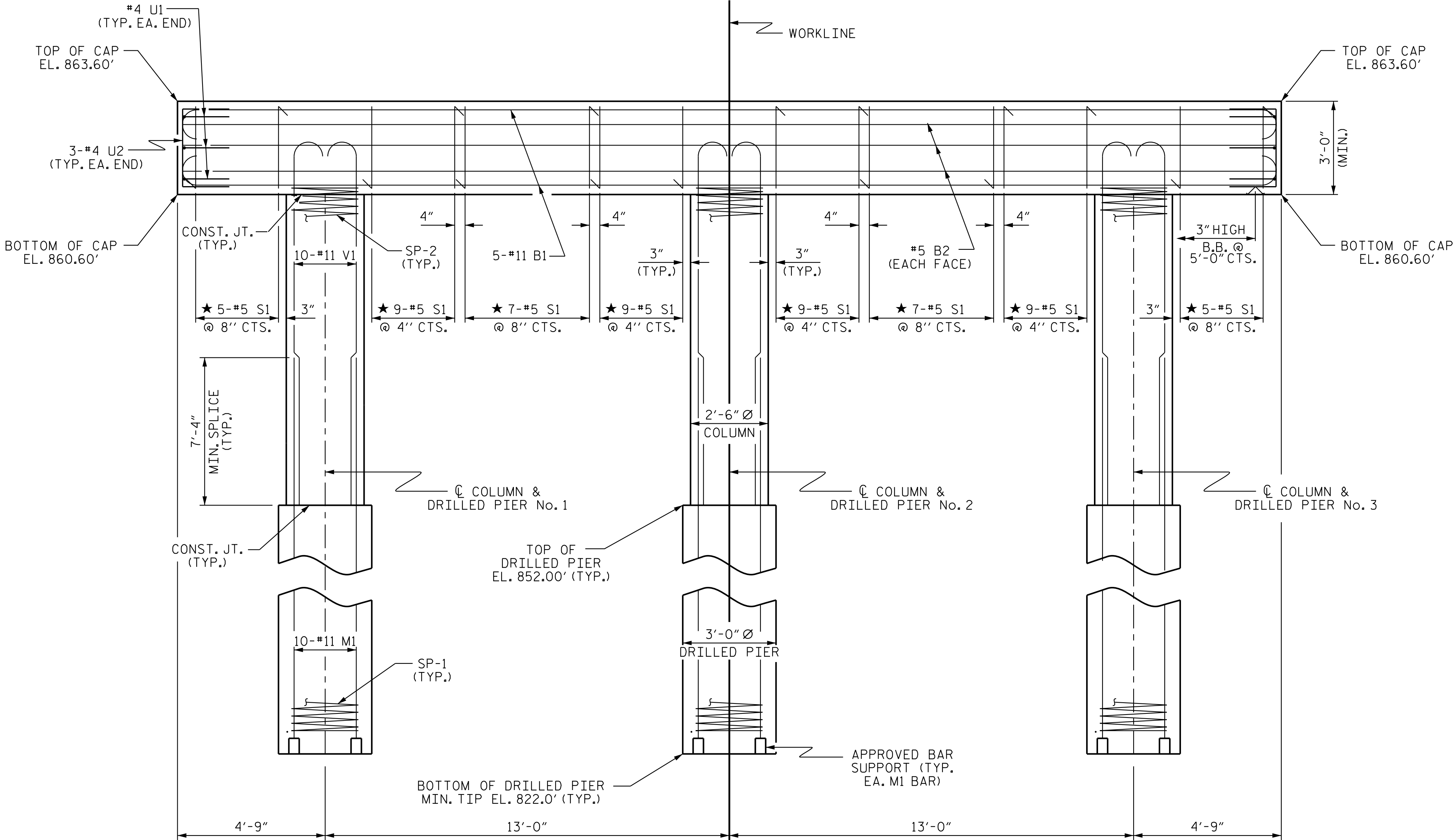
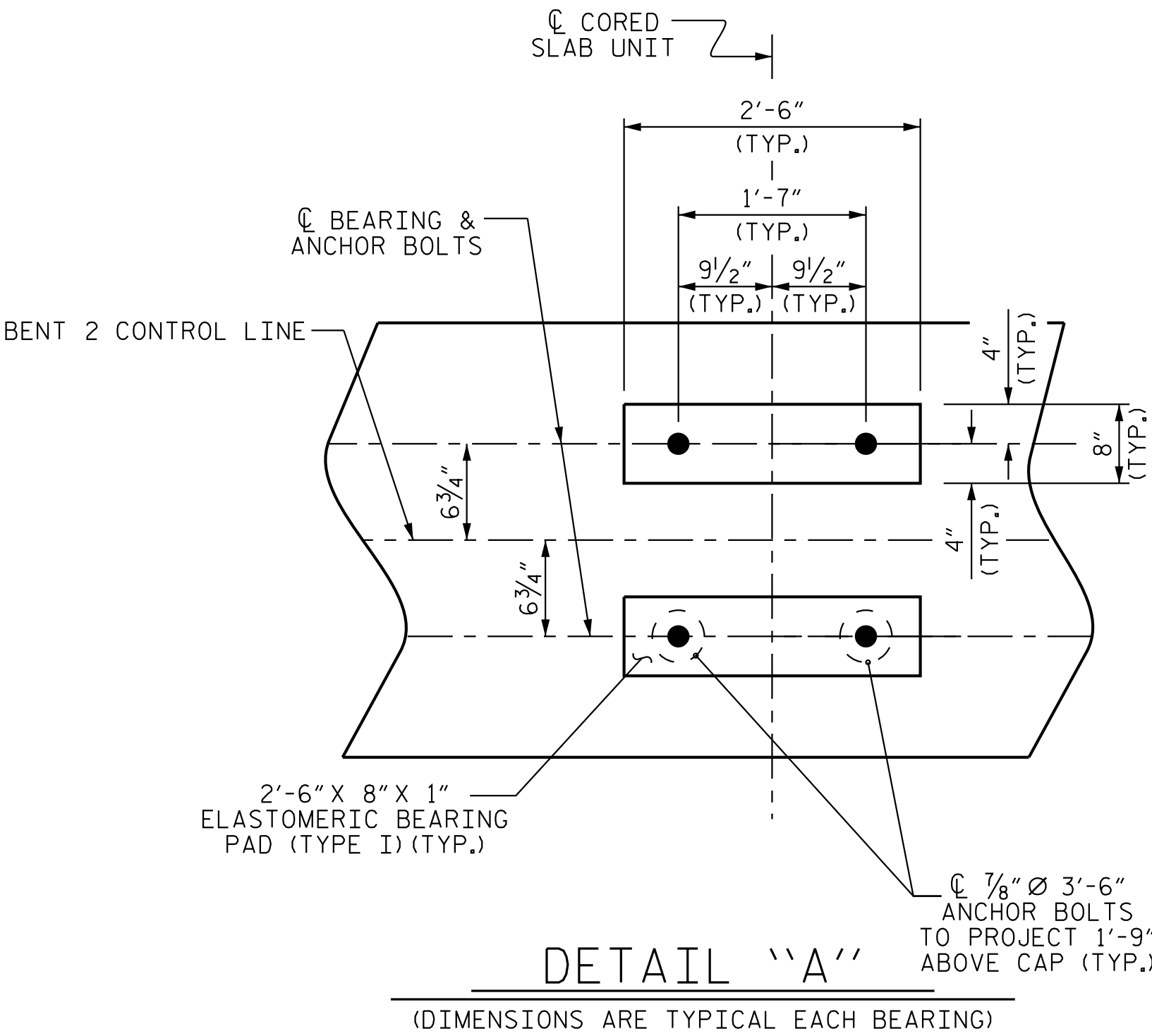
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."

★ INVERT ALTERNATE STIRRUPS.

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

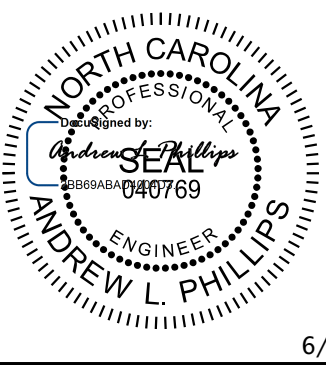
DRILLED PIERS SHALL BE TERMINATED ONE FOOT ± ABOVE NORMAL WATER SURFACE ELEVATION FOR SHAFTS LOCATED IN WATER.

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



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IREDELL COUNTY
STATION: 13+72.50 -L-

SHEET 1 OF 2



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Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

BENT 2

REVISIONS						SHEET NO. S-22
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 25
2			4			

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DRAWN BY: T. K. BOYD DATE: 01/2025
CHECKED BY: J. R. LOGAN DATE: 01/2025
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 01/2025

STD. NO. DP_BT_33_90S_<50'



(TYPICAL BOTH ENDS)



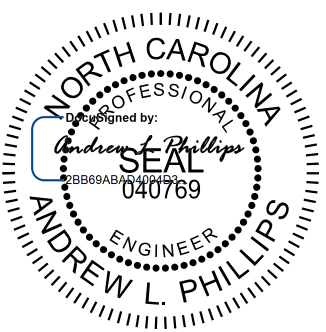
PROJECT NO. 17BP.12.R.78
IREDELL COUNTY
 STATION: 13+72.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

BENT 2
DETAILS

REVISIONS						SHEET NO. S-23
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1			3			TOTAL SHEETS 25
2			4			

* FOR ANCHOR BOLT DETAILS,
SEE SHEETS S-7 & S-8



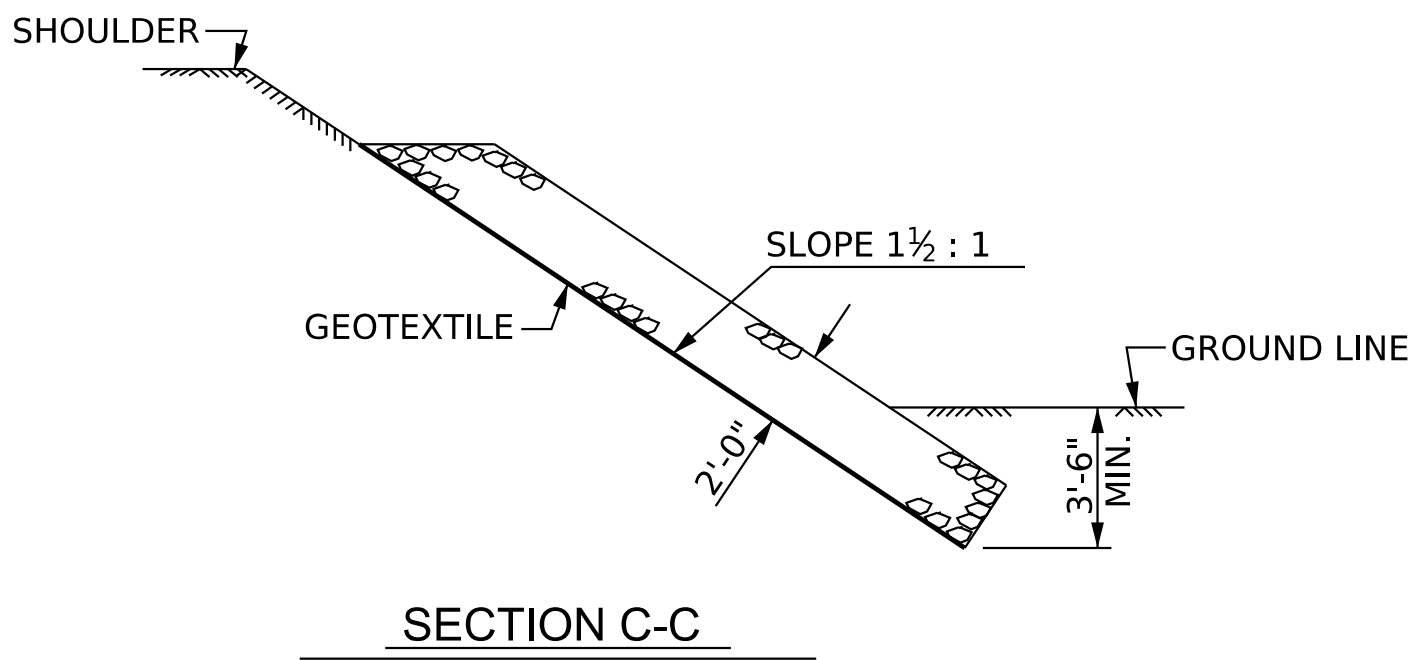
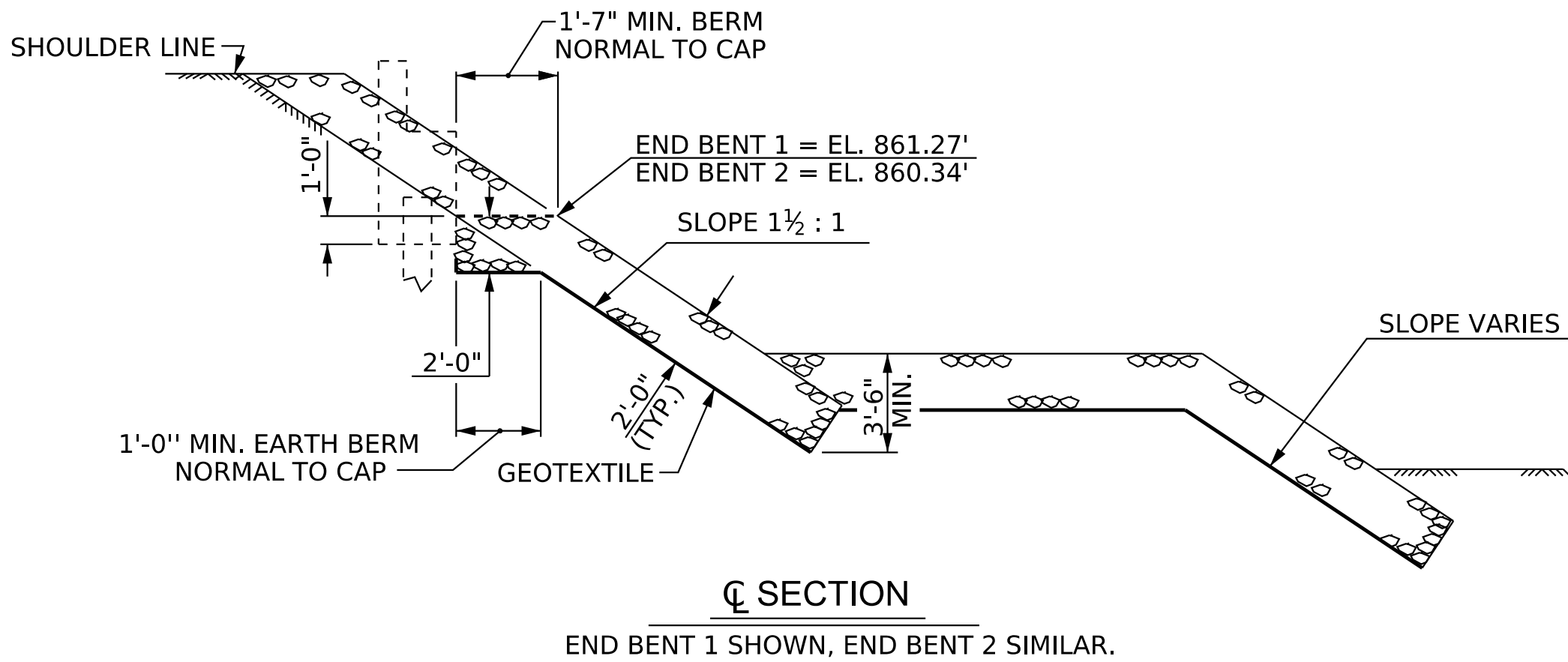
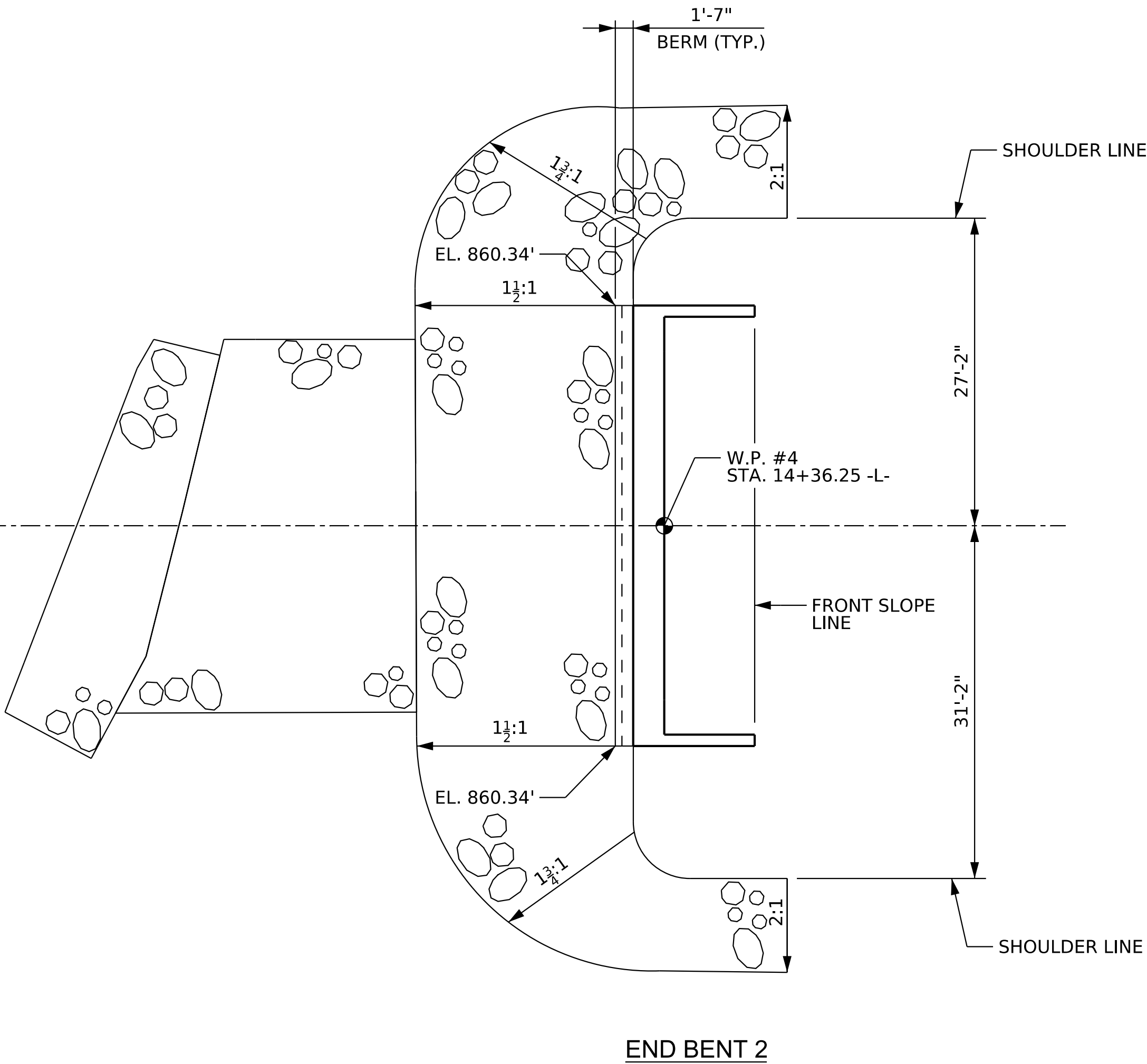
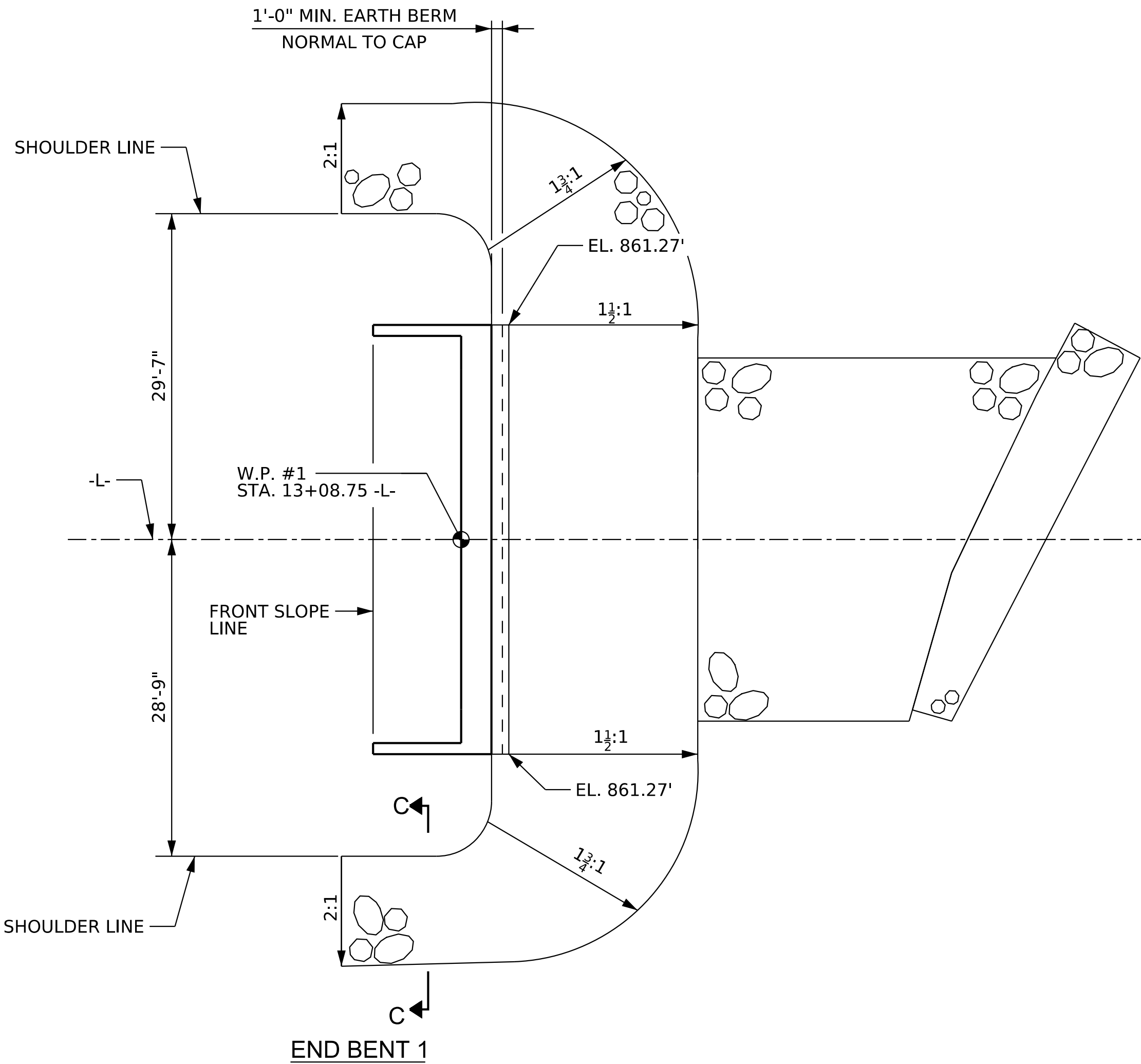
6/25/2025

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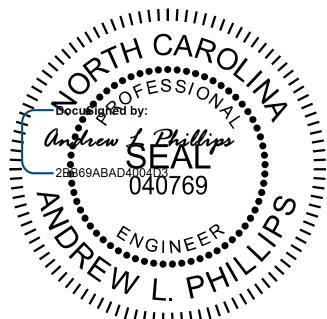
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ESTIMATED QUANTITIES		
BRIDGE @ STA. 13+72.50 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	300.0	334.0
END BENT 2	290.0	323.0

PROJECT NO. 17BP.12.R.78
IREDELL COUNTY
STATION: 13+72.50 -L-



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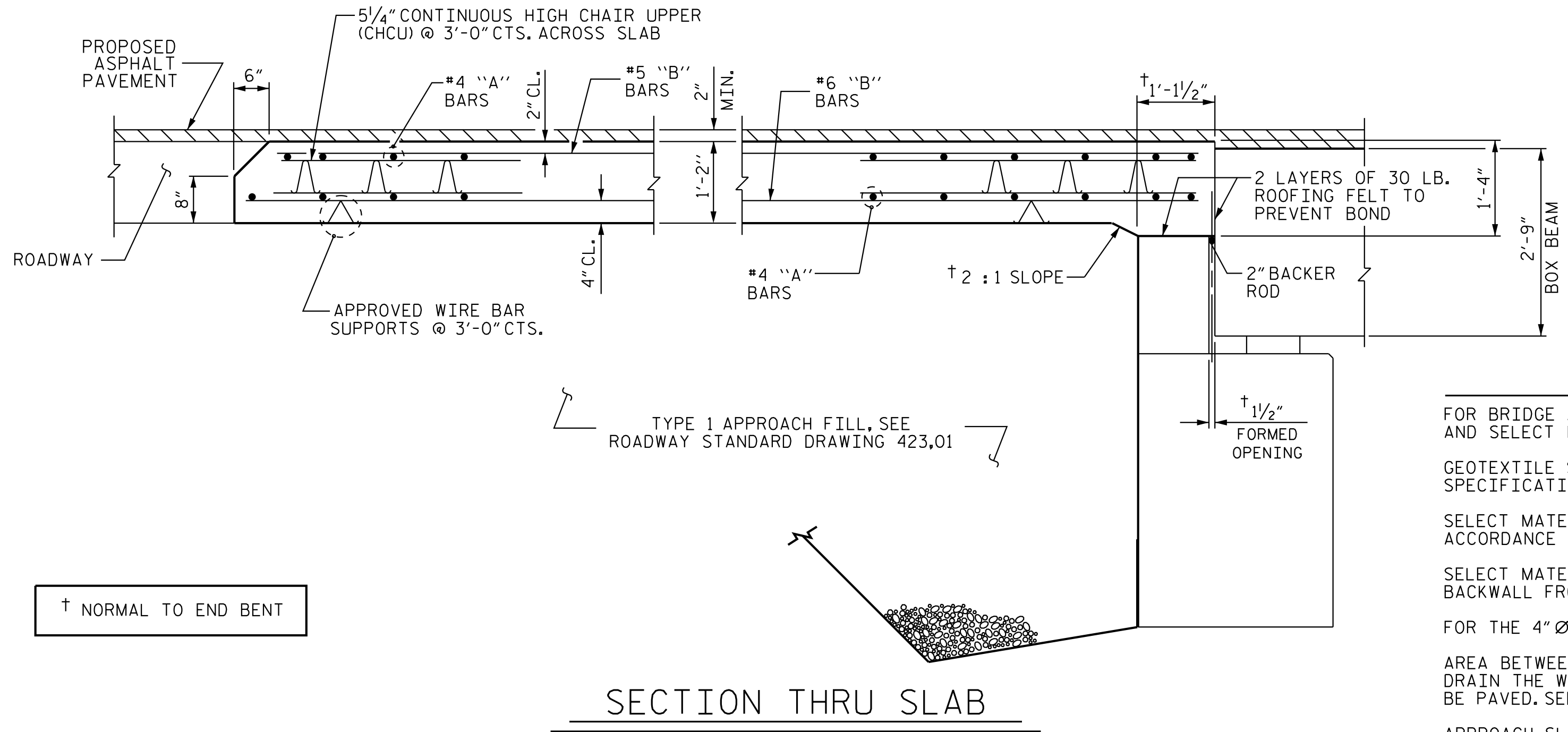
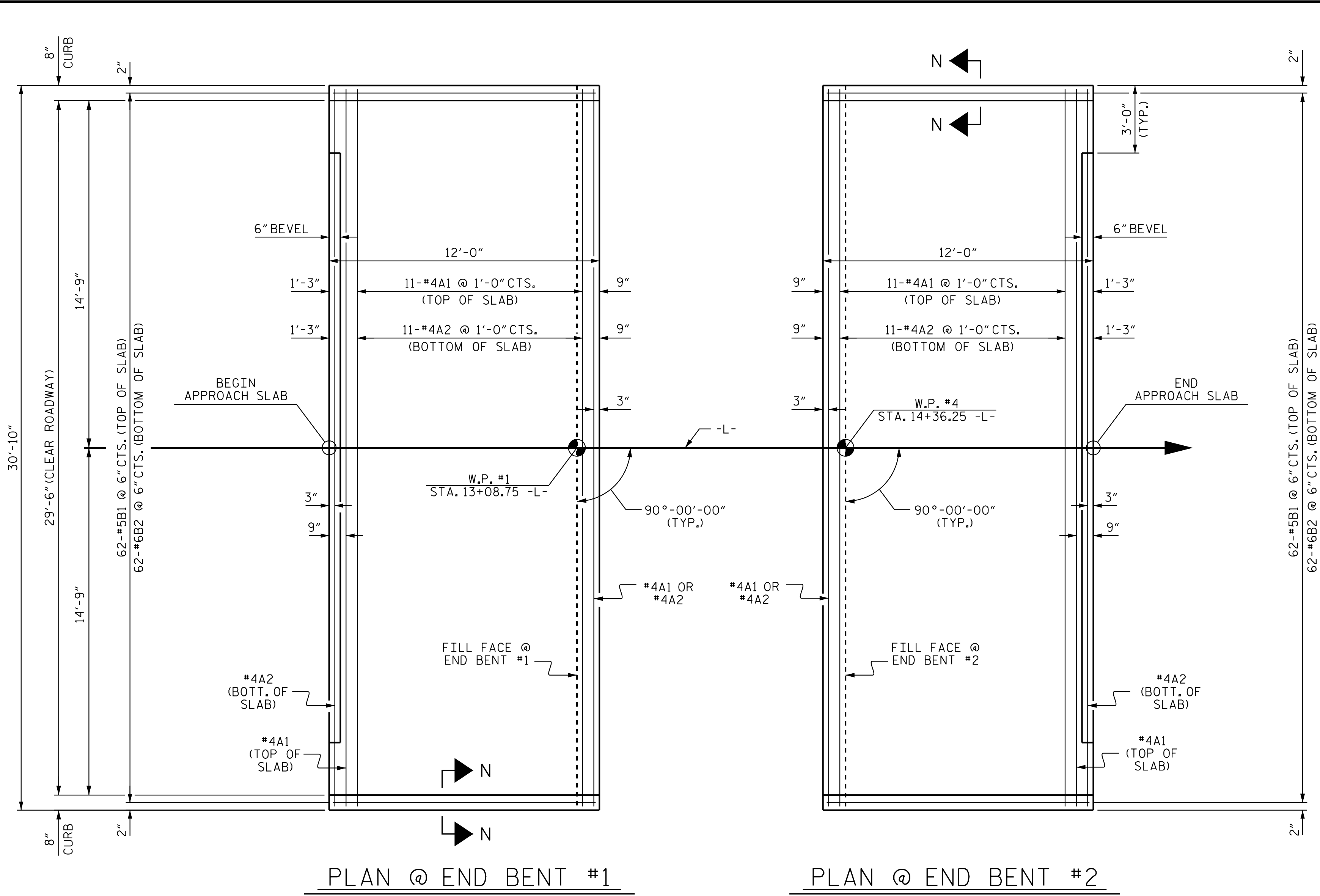
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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD RIP RAP DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-24					TOTAL SHEETS 25

DRAWN BY: T. K. BOYD DATE: 01/2025
CHECKED BY: J. R. LOGAN DATE: 01/2025
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 01/2025

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

NOTES

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

GEOTEXTILE SHALL BE TYPE 1 IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

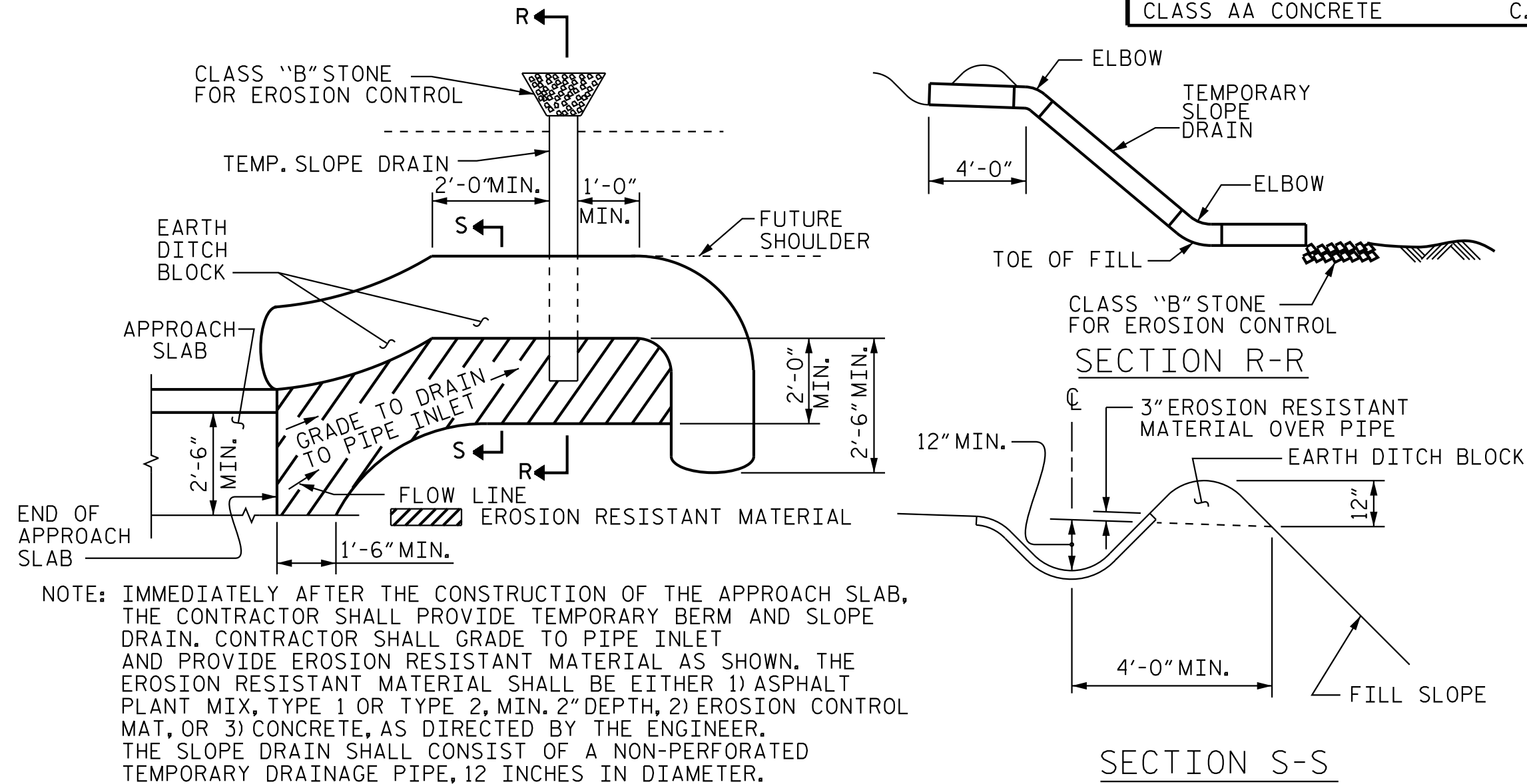
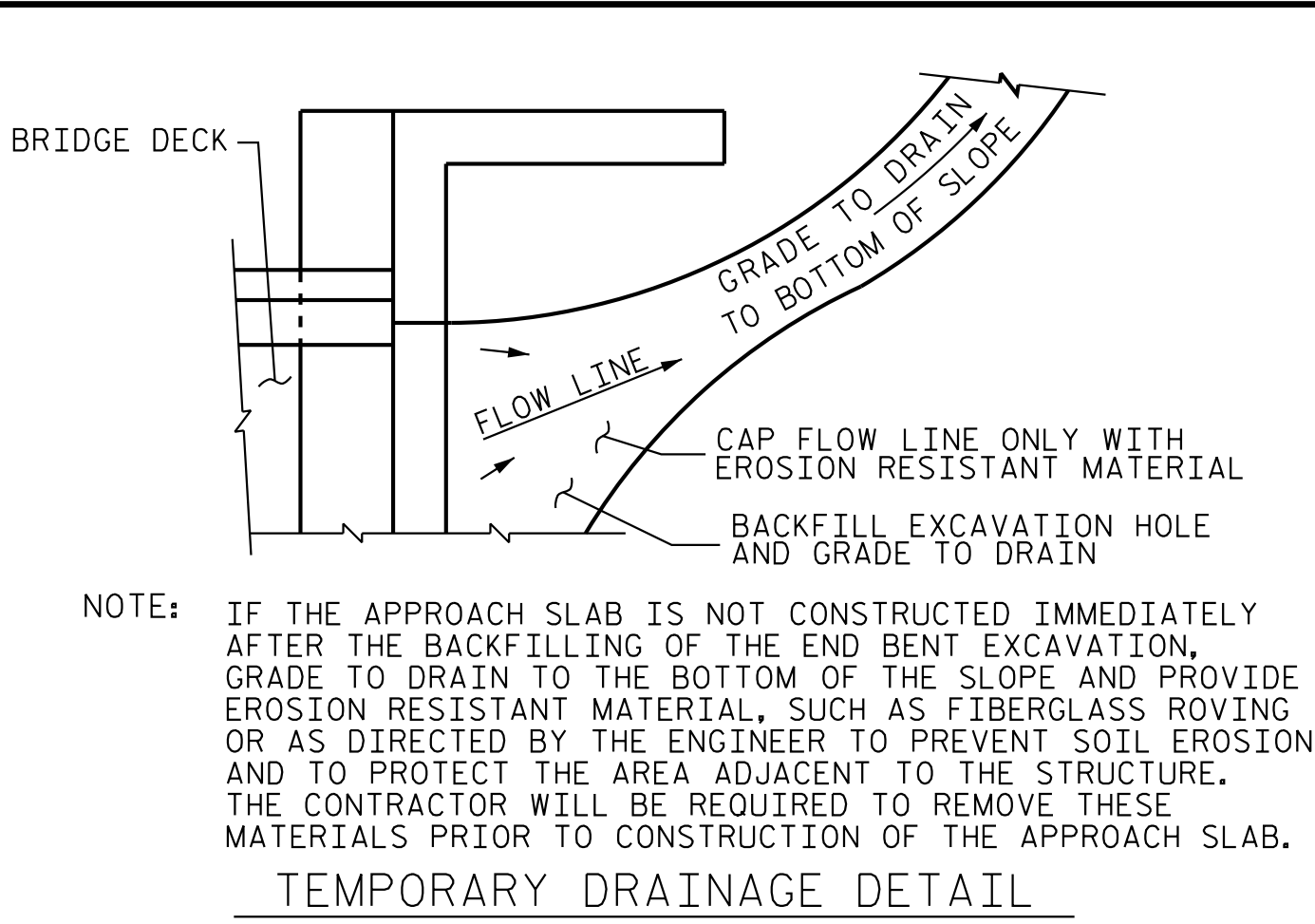
SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

FOR THE 4"Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

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

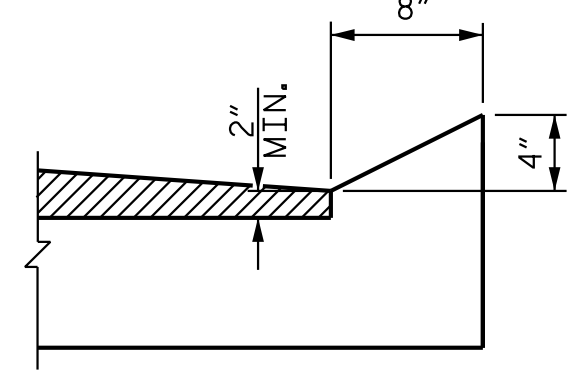
APPROACH SLAB GROOVING IS NOT REQUIRED.



PLAN VIEW

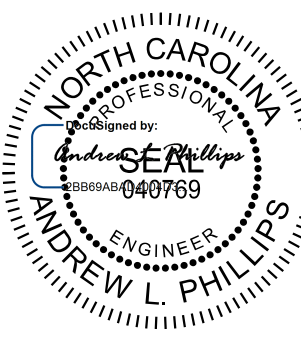
TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



SECTION N-N

CURB DETAILS



6/25/2025

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BILL OF MATERIAL					
APPROACH SLAB AT EB #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	13	*4	STR	30'-6"	265
A2	13	*4	STR	30'-6"	265
* B1	62	*5	STR	11'-2"	722
B2	62	*6	STR	11'-8"	1086
REINFORCING STEEL				LBS.	1351
* EPOXY COATED REINFORCING STEEL				LBS.	987
CLASS AA CONCRETE				C. Y.	17.7
APPROACH SLAB AT EB #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	13	*4	STR	30'-6"	265
A2	13	*4	STR	30'-6"	265
* B1	62	*5	STR	11'-2"	722
B2	62	*6	STR	11'-8"	1086
REINFORCING STEEL				LBS.	1351
* EPOXY COATED REINFORCING STEEL				LBS.	987
CLASS AA CONCRETE				C. Y.	17.7

PROJECT NO. 17BP.12.R.78
IREDELL COUNTY
STATION: 13+72.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
BRIDGE APPROACH SLAB
FOR PRESTRESSED CONCRETE
CORED SLAB UNIT
(SUB-REGIONAL TIER)

REVISIONS						SHEET NO. S-25
NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			

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STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED ¾" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1½" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A ¼" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A ¼" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE ⅞" Ø SHEAR STUDS FOR THE ¾" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - ⅞" Ø STUDS FOR 4 - ¾" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF ⅞" Ø STUDS ALONG THE BEAM AS SHOWN FOR ¾" Ø STUDS BASED ON THE RATIO OF 3 - ⅞"Ø STUDS FOR 4 - ¾" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST ⅝" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY ⅛" OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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

ENGLISH

OCTOBER, 2023

STD. NO. SN