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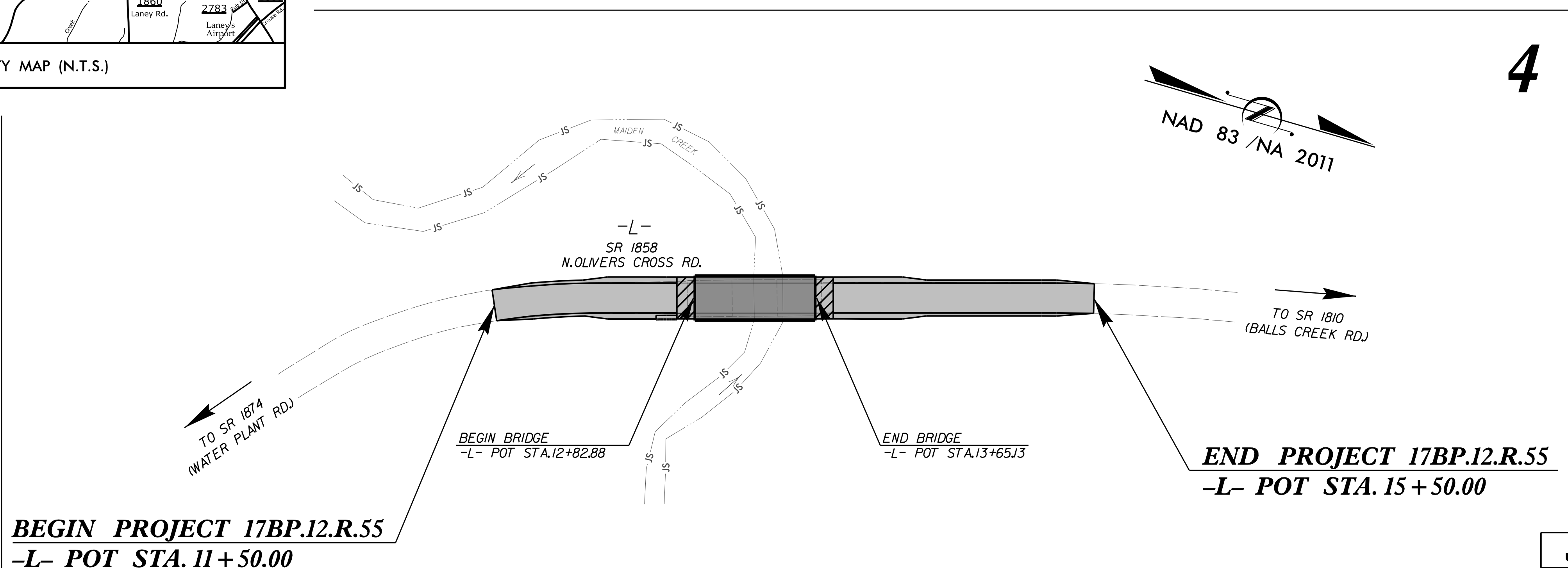
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CATAWBA COUNTY

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE

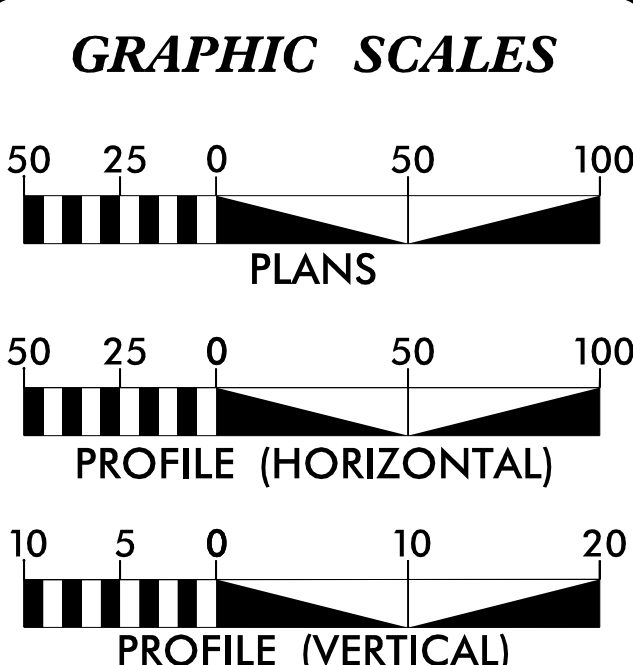
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.12.R.55	1	
STATE PROJ.NO.	F.A.PROJ.NO.	DESCRIPTION	
17BP.12.PE.55		P.E.	
17BP.12.ROW.55		RW & UTILITIES	
17BP.12.R.55		CONST.	



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

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

JOSHUA WHITE, PE, PLS
DIVISION BRIDGE PROGRAM MANAGER
(980) 552-4218



DESIGN DATA

ADT 2011 = 1,400
T = 6 %
V = 45 MPH

FUNCT. CLASS =
LOCAL

SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT 17BP.12.R.55 = 0.060 mile

LENGTH STRUCTURES PROJECT 17BP.12.R.55 = 0.016 mile

TOTAL LENGTH PROJECT 17BP.12.R.55 = 0.076 mile

Prepared For:
DIVISION OF HIGHWAYS
 1000 Birch Ridge Dr., Raleigh NC, 27610
 By:
Weston & Sampson^{INC}
 WSE of North Carolina, PC
 2052 Energy Drive
 Apex, NC 27502
 Phone: 919.287.0220
 NC License: C-4847

2018 STANDARD SPECIFICATIONS
RIGHT OF WAY DATE:
FEBRUARY 23, 2018

LETTING DATE:
OCTOBER 25, 2022

KEVIN S. HUTCHENS, PE
PROJECT ENGINEER

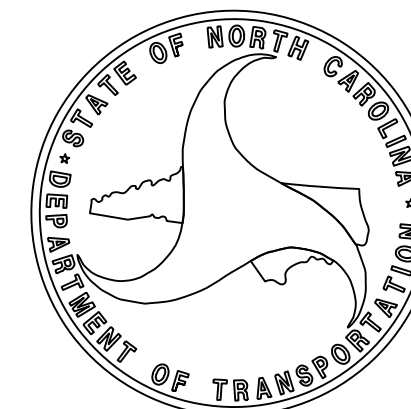
ROBERT W. PORTER, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

DocuSigned by:
Paul Cameron
9/19/2017 1:10 PM

**ROADWAY DESIGN
ENGINEER**

DocuSigned by:
Kevin S Hutchens
2023.07.26 15:00
P.E.



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

GRADING AND SURFACING OR RESURFACING AND WIDENING:

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

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

SIDE ROADS:

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

GUARDRAIL:

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

TEMPORARY SHORING:

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

END BENTS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE:
POWER - Duke Energy
PHONE - AT&T
WATER - City of Hickory

RIGHT-OF-WAY MARKERS:

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

2018 ROADWAY ENGLISH STANDARD DRAWINGS EFF. 01-16-2018
REV.

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

STD.NO. TITLE

DIVISION 2 - EARTHWORK
200.03 Method of Clearing - Method III
225.02 Guide for Grading Subgrade - Secondary and Local
225.04 Method of Obtaining Superelevation - Two Lane Pavement

DIVISION 3 - PIPE CULVERTS
300.01 Method of Pipe Installation
310.10 Driveway Pipe Construction

DIVISION 4 - MAJOR STRUCTURES
422.02 Bridge Approach Fills - Type II Modified Approach Fill

DIVISION 5 - SUBGRADE, BASES AND SHOULDERS
560.01 Method of Shoulder Construction - High Side of Superelevated Curve - Method I

DIVISION 8 - INCIDENTALS
840.00 Concrete Base Pad for Drainage Structures
840.25 Anchorage for Frames - Brick or Concrete or Precast
840.29 Frames and Narrow Slot Flat Grates
840.35 Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.46 Traffic Bearing Precast Drainage Structure
840.66 Drainage Structure Steps
846.01 Concrete Curb, Gutter and Curb & Gutter
846.04 Drop Inlet Installation in Shoulder Berm Gutter
862.01 Guardrail Placement
862.02 Guardrail Installation
862.03 Structure Anchor Units
876.02 Guide for Rip Rap at Pipe Outlets
876.04 Drainage Ditches with Class 'B' Rip Rap

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2C-1	GUARDRAIL INSTALLATION (USE IN LIEU OF STD. 862.02 SHEET 6 OF 8)
2C-2	STRUCTURE ANCHOR UNITS, GUARDRAIL ANCHOR UNIT, TYPE III (USE IN LIEU OF STD. 862.03 SHEETS 1-2 OF 7)
3B-1	SUMMARIES OF EARTHWORK, PAVEMENT REMOVAL, DRAINAGE, AND GUARDRAIL
4	PLAN AND PROFILE SHEET
RW01 THRU RW04	SURVEY CONTROL, EXISTING CENTERLINES, RIGHT OF WAY, EASEMENTS, & PROPERTY TIES
TMP-1 THRU TMP-4	TRANSPORTATION MANAGEMENT PLANS
PMP-1	PAVEMENT MARKING PLANS
EC-1 THRU EC-4	EROSION CONTROL PLANS
X-1A	CROSS-SECTION SUMMARY
X-1 THRU X-4	CROSS-SECTIONS
S-1 THRU S-	STRUCTURE PLANS

PROJECT REFERENCE NO.
17BPJ2R.55

SHEET NO.
1A

ROADWAY DESIGN ENGINEER

9/9/2022

NORTH CAROLINA PROFESSIONAL SEAL 39283

ENGINEER KEVIN S. HUTCHENS

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

Weston & Sampson
WSE of North Carolina, PC
2062 Energy Drive
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NC License: C-4847
Apex, NC 27502
westonandsampson.com

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

BOUNDARIES AND PROPERTY:

State Line	
County Line	
Township Line	
City Line	
Reservation Line	
Property Line	
Existing Iron Pin	
Computed Property Corner	
Property Monument	
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:

Secondary Horiz and Vert Control Point	
Primary Horiz Control Point	
Primary Horiz and Vert Control Point	
Exist Permanent Easment Pin and Cap	
New Permanent Easement Pin and Cap	
Vertical Benchmark	
Existing Right of Way Marker	
Existing Right of Way Line	
New Right of Way Line	
New Right of Way Line with Pin and Cap	
New Right of Way Line with Concrete or Granite R/W Marker	
New Control of Access Line with Concrete C/A Marker	
Existing Control of Access	
New Control of Access	
Existing Easement Line	
New Temporary Construction Easement	
New Temporary Drainage Easement	
New Permanent Drainage Easement	
New Permanent Drainage / Utility Easement	
New Permanent Utility Easement	
New Temporary Utility Easement	
New 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	

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

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:

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 LOS B (S.U.E.*)	
U/G Power Line LOS C (S.U.E.*)	
U/G Power Line LOS D (S.U.E.*)	

TELEPHONE:

Existing Telephone Pole	
Proposed Telephone Pole	
Telephone Manhole	
Telephone Pedestal	
Telephone Cell Tower	
U/G Telephone Cable Hand Hole	
U/G Telephone Cable LOS B (S.U.E.*)	
U/G Telephone Cable LOS C (S.U.E.*)	
U/G Telephone Cable LOS D (S.U.E.*)	
U/G Telephone Conduit LOS B (S.U.E.*)	
U/G Telephone Conduit LOS C (S.U.E.*)	
U/G Telephone Conduit LOS D (S.U.E.*)	
U/G Fiber Optics Cable LOS B (S.U.E.*)	
U/G Fiber Optics Cable LOS C (S.U.E.*)	
U/G Fiber Optics Cable LOS D (S.U.E.*)	

WATER:

Water Manhole	
Water Meter	
Water Valve	
Water Hydrant	
U/G Water Line LOS B (S.U.E.*)	
U/G Water Line LOS C (S.U.E.*)	
U/G Water Line LOS D (S.U.E.*)	
Above Ground Water Line	

TV:

TV Pedestal	
TV Tower	
U/G TV Cable Hand Hole	
U/G TV Cable LOS B (S.U.E.*)	
U/G TV Cable LOS C (S.U.E.*)	
U/G TV Cable LOS D (S.U.E.*)	
U/G Fiber Optic Cable LOS B (S.U.E.*)	
U/G Fiber Optic Cable LOS C (S.U.E.*)	
U/G Fiber Optic Cable LOS D (S.U.E.*)	

GAS:

Gas Valve	
Gas Meter	
U/G Gas Line LOS B (S.U.E.*)	
U/G Gas Line LOS C (S.U.E.*)	
U/G Gas Line LOS D (S.U.E.*)	
Above Ground Gas Line	

SANITARY SEWER:

Sanitary Sewer Manhole	
Sanitary Sewer Cleanout	
U/G Sanitary Sewer Line	
Above Ground Sanitary Sewer	
SS Forced Main Line LOS B (S.U.E.*)	
SS Forced Main Line LOS C (S.U.E.*)	
SS Forced Main Line LOS D (S.U.E.*)	

MISCELLANEOUS:

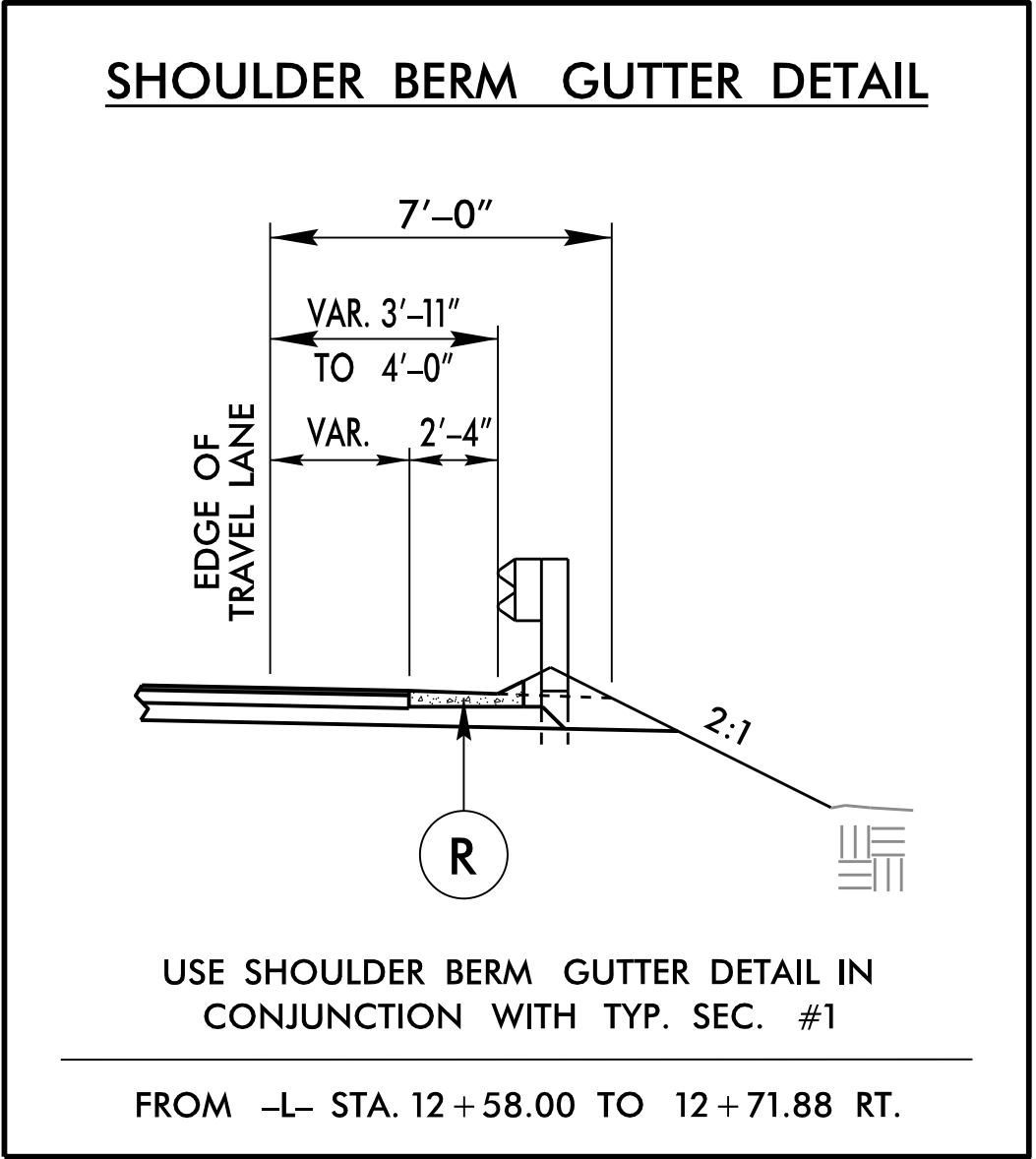
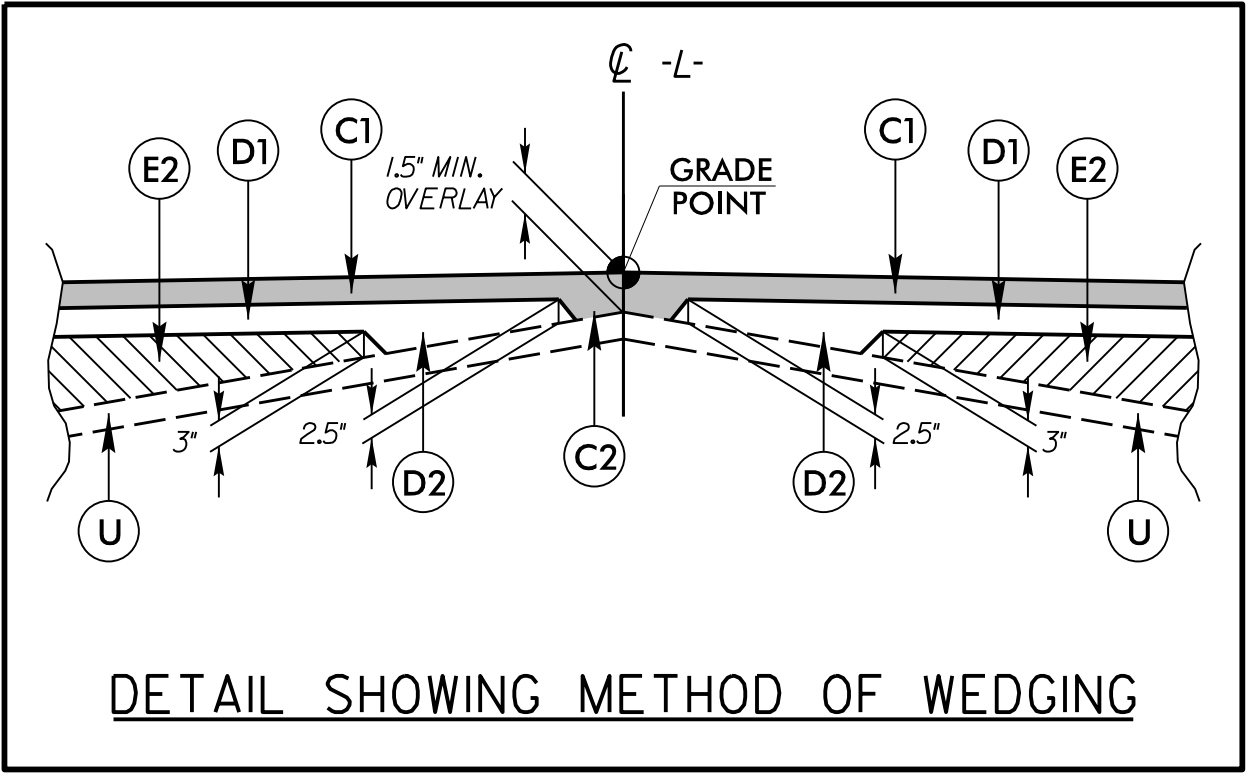
Utility Pole	
Utility Pole with Base	
Utility Located Object	
Utility Traffic Signal Box	
Utility Unknown U/G Line LOS B (S.U.E.*)	
U/G Tank; Water, Gas, Oil	
Underground Storage Tank, Approx. Loc.	
A/G Tank; Water, Gas, Oil	
Geoenvironmental Boring	
U/G Test Hole LOS A (S.U.E.*)	
Abandoned According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

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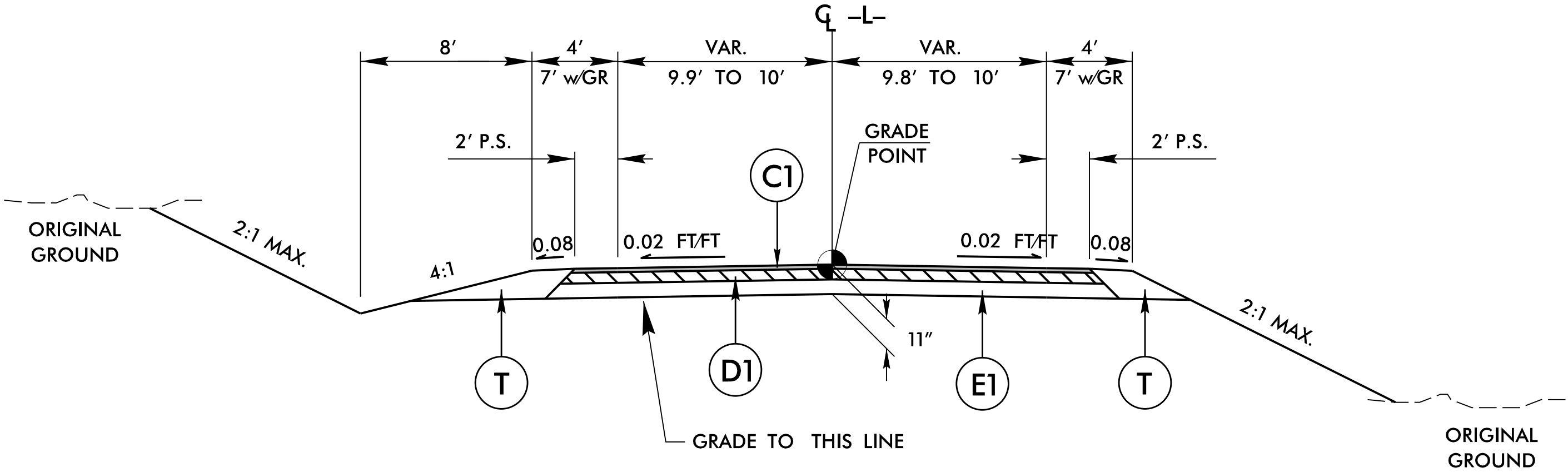
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PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 Lbs PER SQUARE YARD.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YARD PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 1.5" OR GREATER THAN 2.0" IN DEPTH.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 Lbs PER SQUARE YARD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YARD PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 2.5" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 5.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 Lbs PER SQUARE YARD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YARD 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
W	ASPHALT WEDGING (SEE DETAIL, THIS SHEET)

PAVEMENT EDGE SLOPES AND TRENCH SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

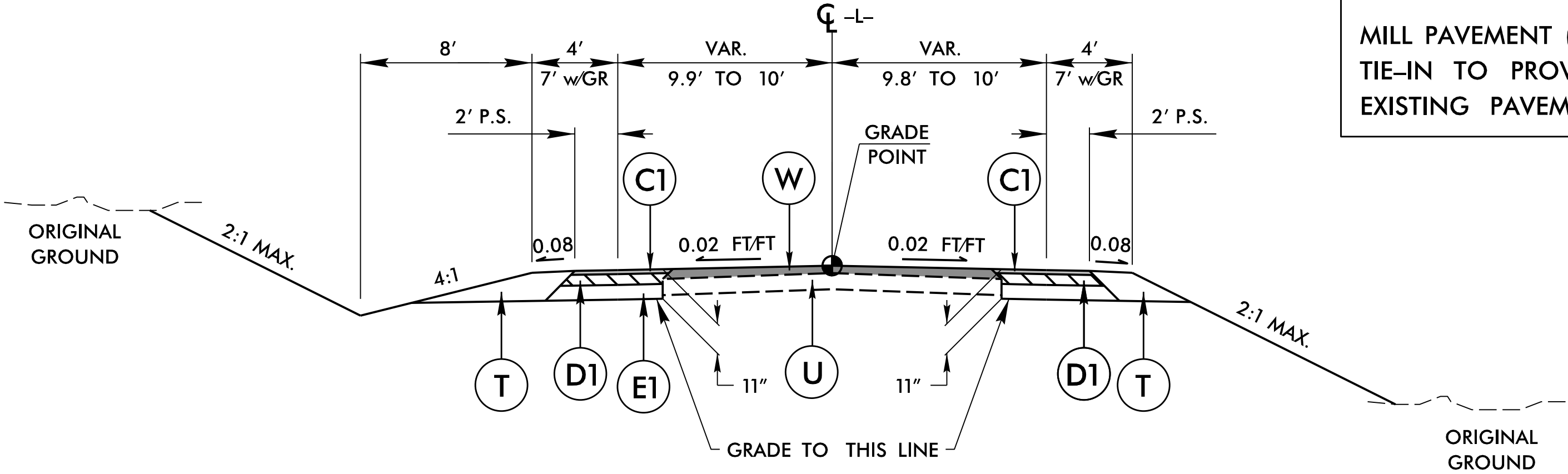


FROM -L- STA. 12+58.00 TO 12+71.88 RT.



TYPICAL SECTION NO. 1

FROM -L- STA. 11+50.00 TO STA. 12+82.88 (BEGIN BRIDGE)
FROM -L- STA. 13+65.13 (END BRIDGE) TO STA. 14+75.00

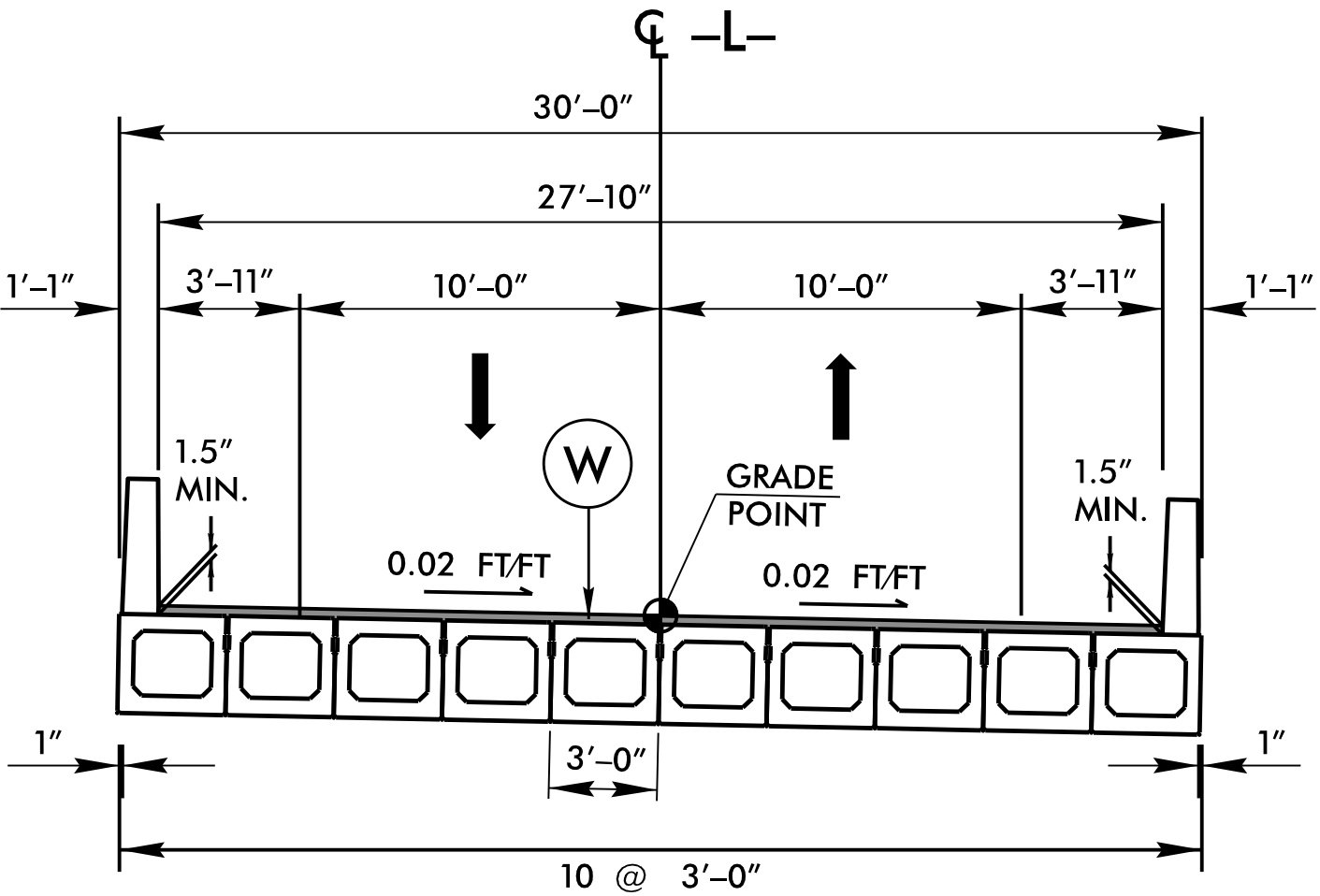


TYPICAL SECTION NO. 2

FROM -L- STA. 14+75.00 TO 15+50.00

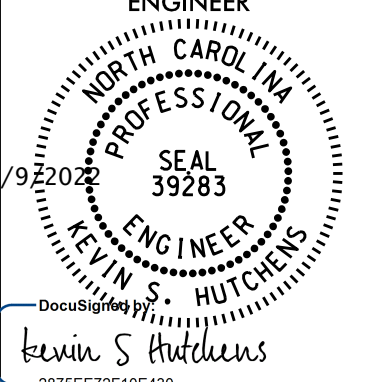
NOTES

MILL PAVEMENT (MAX. 1.5" DEPTH) AS NECESSARY AT EACH TIE-IN TO PROVIDE A SMOOTH TRANSITION TO THE EXISTING PAVEMENT AS DIRECTED BY THE ENGINEER.



TYPICAL SECTION ON STRUCTURE

FROM -L- STA. 12+82.88 TO STA. 13+65.13

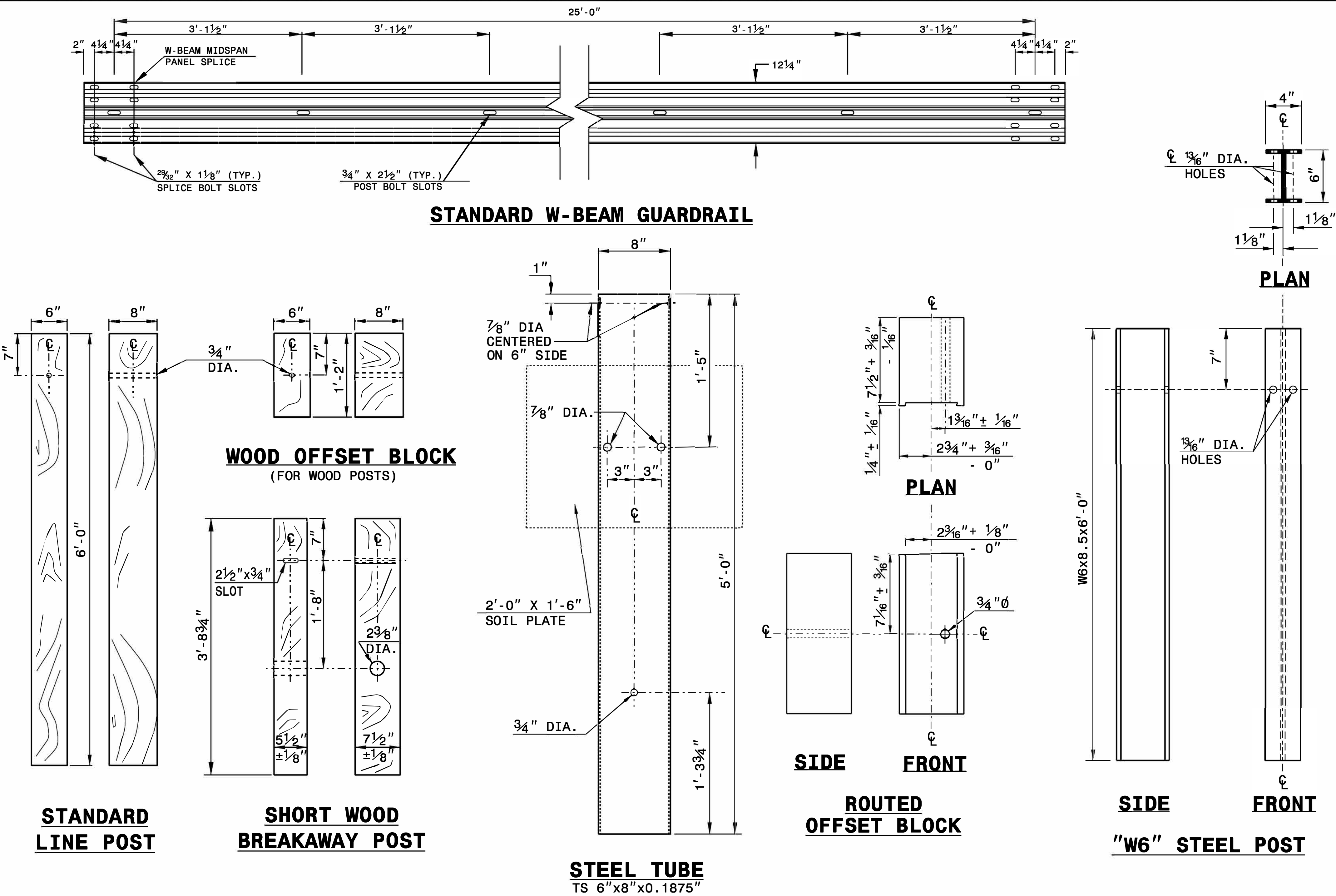
PROJECT REFERENCE NO. 17BP12R55		SHEET NO. 2A-1	
ROADWAY DESIGN ENGINEER 		PAVEMENT DESIGN ENGINEER PAVEMENT DESIGN PROVIDED BY NCDOT	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
 WSE of North Carolina, PC 2052 Energy Drive Phone: 919.287.0220		NC License: C-4847 Apex, NC 27502 westonandsampson.com	

PROJECT REFERENCE NO.	SHEET NO.
17BP.12.R.55	2C-1
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STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02

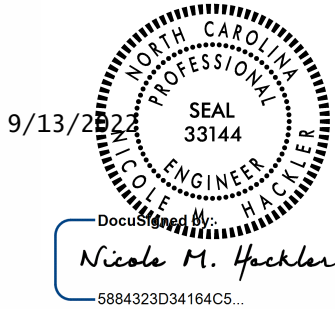


SYSTEM PARTS

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02



CONTRACTS STANDARDS AND DEVELOPMENT UNIT Office 919-707-6950 FAX 919-250-4119	
SEE TITLE BLOCK	
ORIGINAL BY: J. HOWERTON	DATE: 3-7-2018
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC.:	

COMPUTED BY: RWP DATE: 3-27-2017
CHECKED BY: KSH DATE: 11-15-2017

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
17BP.12.R.55	3B-1
	
WSE of North Carolina, PC 2052 Energy Drive Phone: 919.297.0220	NC License: C-4847 Apex, NC 27502 westonandsampson.com

SUMMARY OF EARTHWORK

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
-L- 11+50.00 TO 12+82.88 (BEGIN BRIDGE)	107		8		99
-L- 13+65.13 (END BRIDGE) TO 15+50.00	11		263	252	
TOTAL	118		271	252	99
WASTE TO REPLACE BORROW				-99	-99
ESTIMATED LOSS DUE TO CLEARING AND GRUBBING	-10			10	
ESTIMATED SHOULDER MATERIAL			69	69	
PROJECT TOTAL	108		340	232	0
ESTIMATED 5% TO REPLACE TOPSOIL ON BORROW PIT				12	
GRAND TOTAL	108		340	244	
SAY	200			300	
ESTIMATED DRAINAGE DITCH EXCAVATION = 95 CY					
THE FOLLOWING CONTINGENCY ITEMS ARE TO BE USED AT THE DISCRETION OF THE ENGINEER:					
UNDERCUT = 50 CY					
SELECT GRANULAR MATERIAL = 50 CY					
GEOTEXTILE FOR SOIL STABILIZATION = 50 SY					

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

SUMMARY OF PAVEMENT REMOVAL IN SQUARE YARDS

LOCATION	ASPHALT REMOVAL	ASPHALT BREAK-UP	CONCRETE REMOVAL	CONCRETE BREAK-UP
-L- STA. 11 + 50.00 TO 12 + 78.23 CL	298			
-L- STA. 13 + 68.80 TO 14 + 75.00 CL	236			
TOTAL	534			
SAY	540			

SUB-REGIONAL & REGIONAL

NOTE: Invert Elevations are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

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

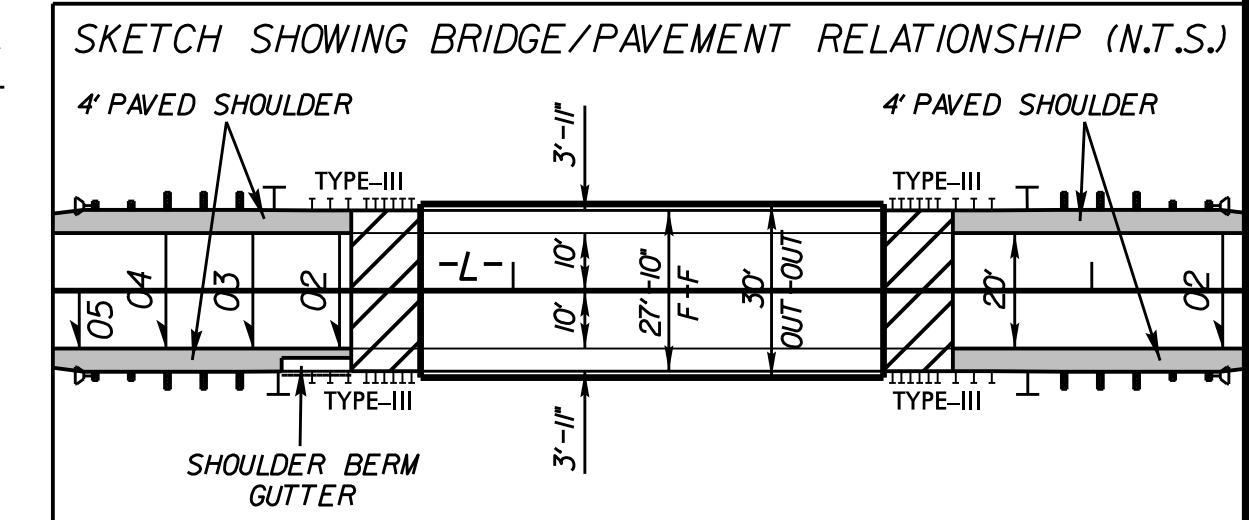
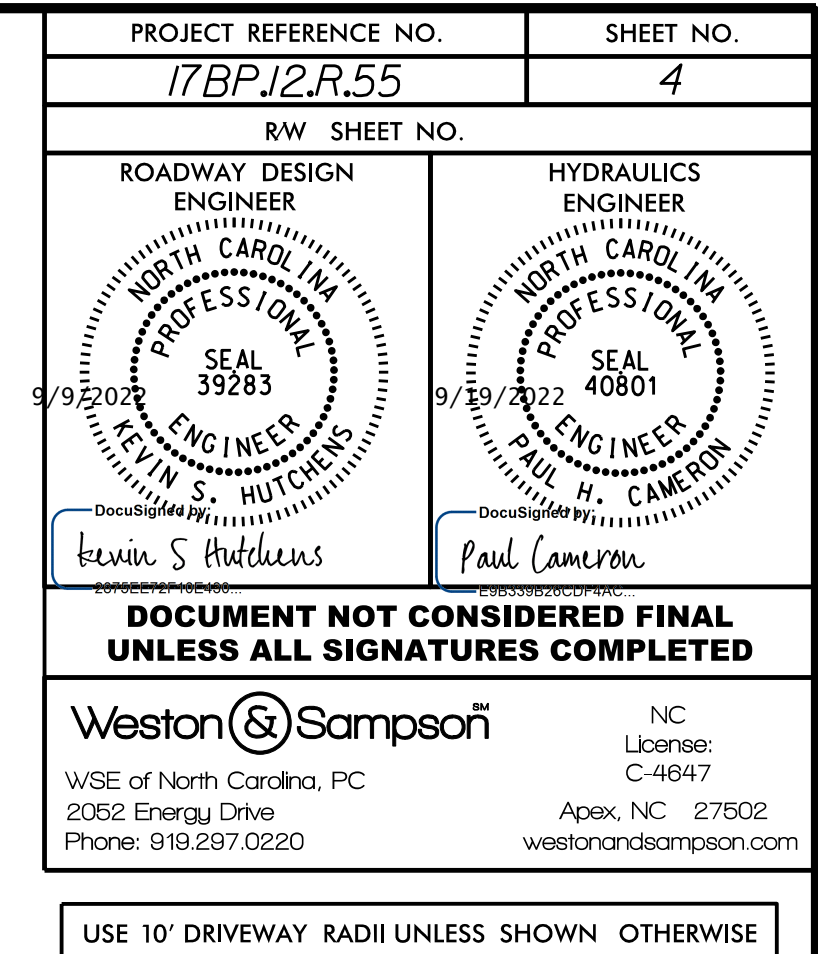
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GUARDRAIL SUMMARY

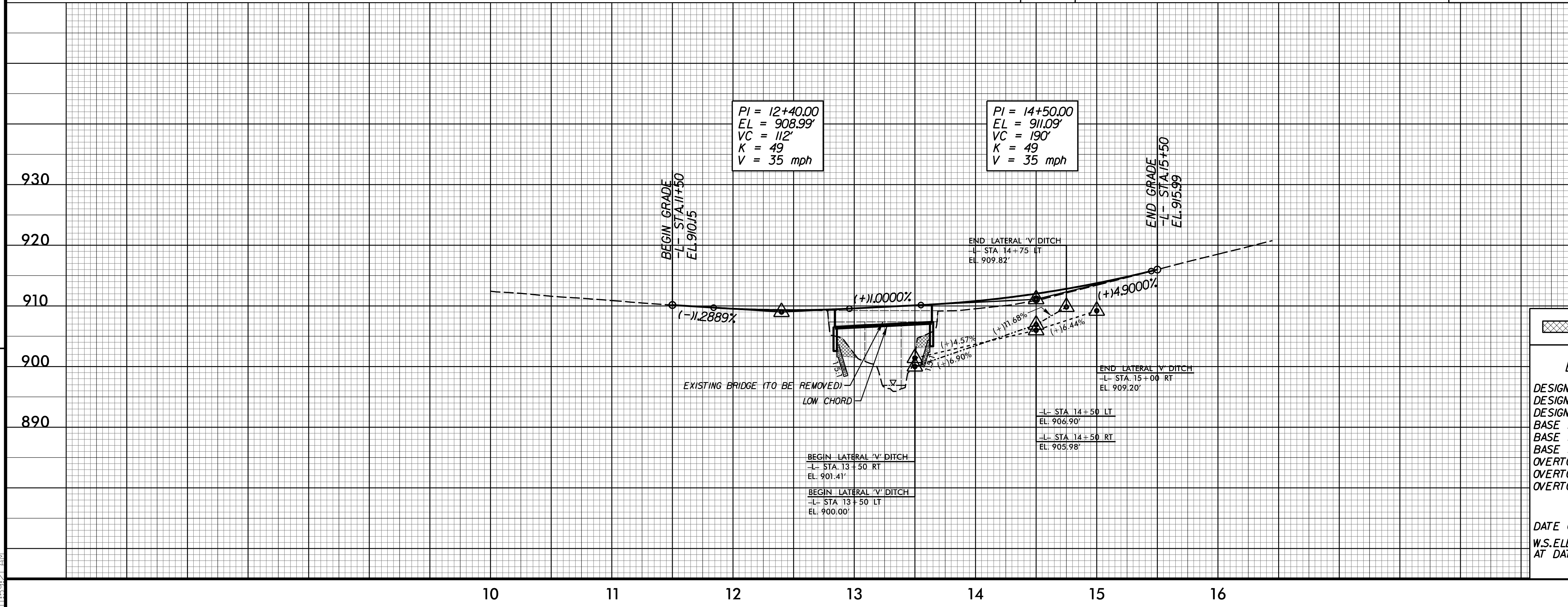
"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL

W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS								IMPACT ATTENUATOR TYPE 350			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS		
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END			GREU TL-2		TYPE III						EA					G	NG
-L-	12 + 26	12 + 83	LT	56.25				12 + 83	4'	7'		25'		1'					1		1										
-L-	12 + 26	12 + 83	RT	56.25			12 + 83		4'	7'	25'		1'						1		1										
-L-	13 + 64	14 + 21	LT	56.25				13 + 64	4'	7'	25'		1'						1		1										
-L-	13 + 64	14 + 21	RT	56.25				13 + 64	4'	7'		25'		1'					1		1										
TOTAL (LF):				225.00									TOTAL (EA)					4		4											
TOTAL DEDUCTION FOR ANCHOR UNITS (LF):				175.00									DEDUCTION PER TYPE (LF)					25.00		18.75											
TOTAL GUARDRAIL LENGTH (LF):				50.00									TOTAL DEDUCTION PER TYPE (LF)					100.00		75.00											
SAY (LF):				62.50			ADDITIONAL GUARDRAIL POSTS: SAY 3 EA						TOTAL DEDUCTION (LF)					175.00													



DITCH LEGEND										
LEFT DITCH -----										
RIGHT DITCH -----										
										930
										920
										910
☒ - EXCAVATION (SEE STRUCTURE PLANS)										
BRIDGE HYDRAULIC DATA										900
DISCHARGE = 1200 CFS FREQUENCY = 25 YRS HW ELEVATION = 903.2 FT DISCHARGE = 1700 CFS FREQUENCY = 100 YRS HW ELEVATION = 904.30 FT OPPING DISCHARGE = 5650 CFS OPPING FREQUENCY = 500+ YRS OPPING ELEVATION = 909.6 FT										890
DATE OF SURVEY = NOV 2013										
DATE OF SURVEY = 896.9 FT										



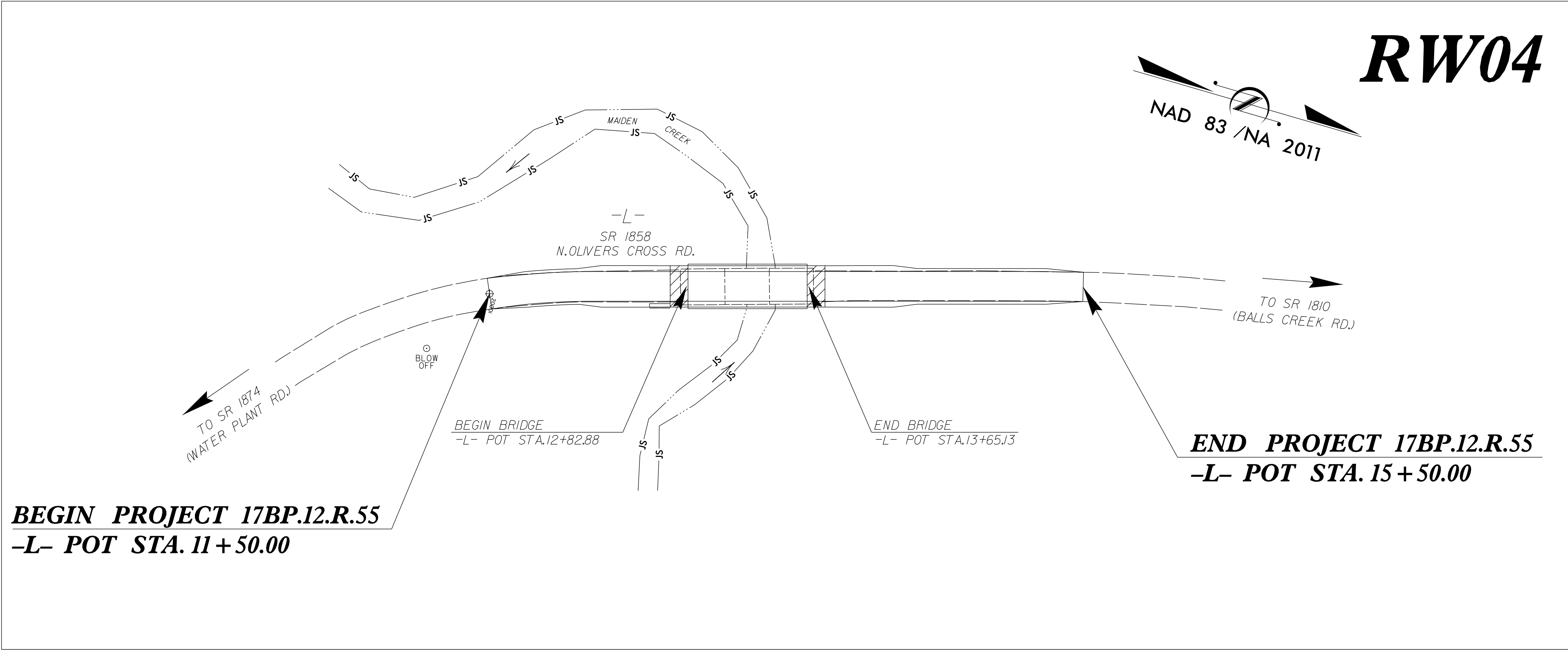
TIP PROJECT: 17-0240

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

CATAWBA COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.12.R.55	RW01	



GRAPHIC SCALE

50 25 0 50 100

PLANS

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "GPS 240-1" WITH NAD 83/NSRS 2011 STATE PLANE GRID COORDINATES OF NORTHING: 683,040.594(ft) EASTING: 1,360,665.228(ft) ELEVATION: 918.90(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99985212 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS 240-1" TO -L- STATION 11+50.00 IS S 18°05'40.6" E 464.72(ft) ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

Prepared In the Office of:

DIVISION OF HIGHWAYS

1000 Birch Ridge Dr., Raleigh NC, 27610

2017 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
FEBRUARY 23, 2018

LETTING DATE:

PROFESSIONAL LAND SURVEYOR

DocuSigned by:
Matthew Cornwell
EBD39F11473E475...

9/19/2022

SIGNATURE:

SEAL
L-4775
NORTH CAROLINA
PROFESSIONAL
LAND SURVEYOR
MATTHEW T. CORNWELL

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

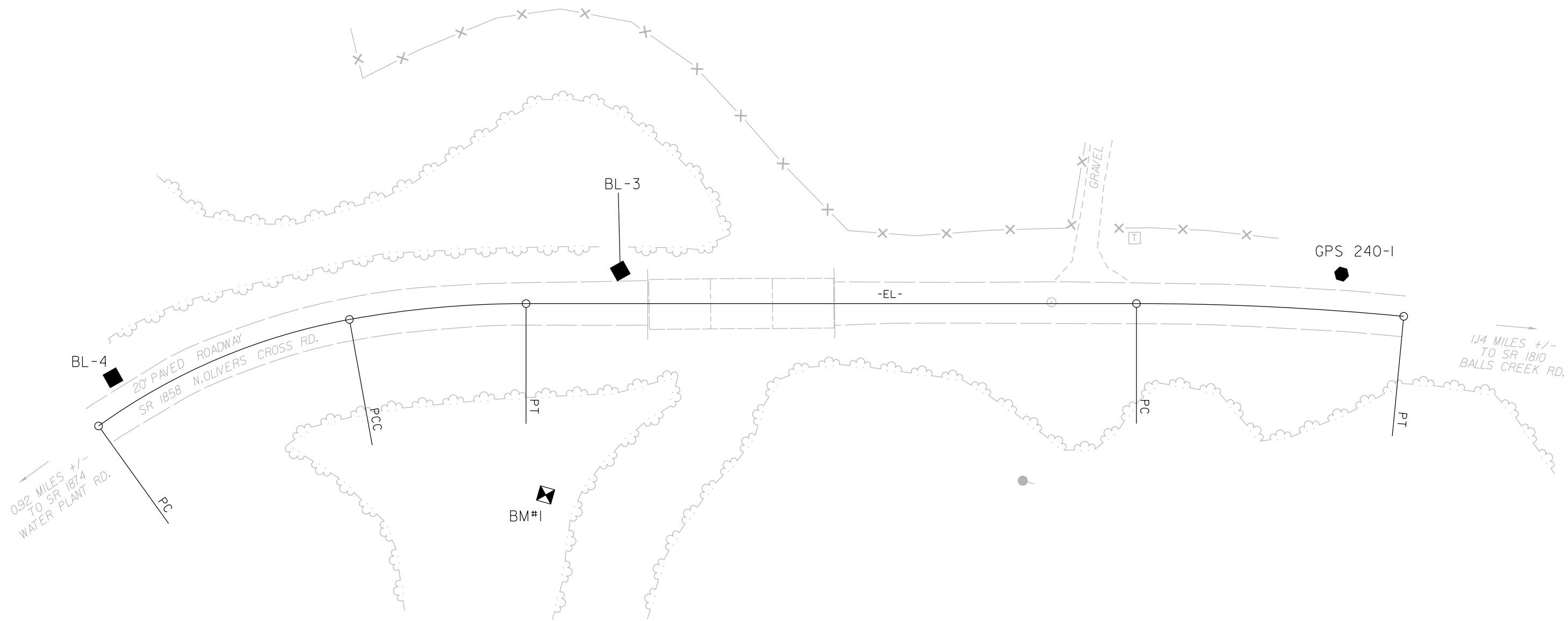
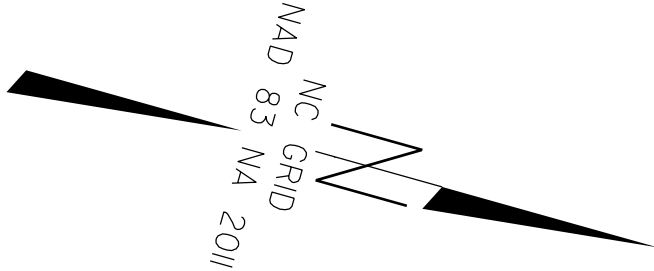
PROJECT REFERENCE NO.	SHEET NO.
17BP.12.R.55	RW02C
Location and Surveys	

SURVEY CONTROL SHEET

W/EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

EXISTING CENTERLINE ALIGNMENT

EL POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
PC	682480.339	1360898.784							
CURVE			N 38°39'30.3" W	132.10	25°26'16.2"(RT)	19°05'54.9"	133.19	67.71	300.00
PCC	682583.494	1360816.263							
CURVE			N 20°48'12.7" W	85.94	10°16'19.0"(RT)	11°56'11.8"	86.05	43.14	480.00
PT	682663.830	1360785.741							
LINE			N 15°40'03.2" W	295.87					
PC	682948.703	1360705.841							
CURVE			N 12°56'02.9" W	129.71	05°28'00.7"(RT)	04°12'46.5"	129.76	64.93	1360.00
PT	683075.127	1360676.807							



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "GPS 240-1"

WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 683040.594(±) EASTING: 1360665.228(±) ELEVATION: 918.90(±)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99985212

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS 240-1" TO -EL- STATION 10+00.00 IS S 22° 37' 47.91" E 606.988(±)

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

GPS 240-2

BASELINE CONTROL & BENCHMARK

BL POINT	DESC.	NORTH	EAST	ELEVATION	EL STATION	OFFSET
4	BL-4	682480.7608	1360874.3618	912.63	10+18.40	15.51 LT
3	BL-3	682703.5119	1360758.1533	908.55	12+64.90	15.85 LT
1	GPS 240-1	683040.5940	1360665.2280	918.90	16+13.35	17.88 LT
2	GPS 240-2	683680.7660	1360664.9770	953.84	OUTSIDE PROJECT LIMITS	

.....
BM#1 ELEVATION = 910.35'
N 682698 E 1360872
BL STATION 6+93.51 98.78' RIGHT
RR SPIKE IN 38" RED OAK
.....

- 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

PROPOSED ALIGNMENT CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
17BP.12.R.55	RW02D
Location and Surveys	

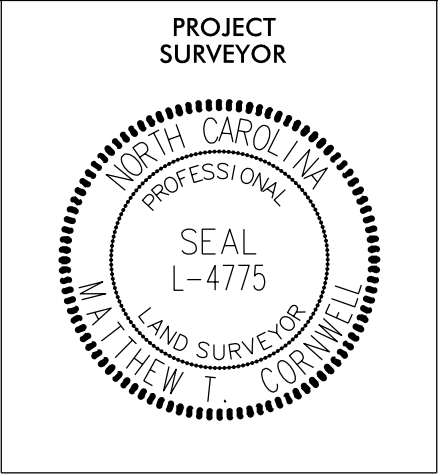
TYPE	STATION	L	
		NORTH	EAST
PC	10+00.00	682480.3389	1360898.7837
PT	11+33.19	682583.4945	1360816.2633
PC	11+33.19	682583.4945	1360816.2633
PT	12+19.25	682663.8304	1360785.7409
PC	15+15.11	682948.7031	1360705.8408
PT	16+44.88	683075.1266	1360676.8066

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

REVISIONS

RIGHT OF WAY & PERMANENT EASEMENT CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
17BP.12.R.53	RW03E
Location and Surveys	



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

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

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

Witness my original signature, registration number and seal this 23rd day of May, 2018.

DocuSigned by:
Matthew Cornwell

Professional Land Surveyor

9/19/2022

L-4775
PLS #

Seal

ROW MARKER IRON PIN AND CAP

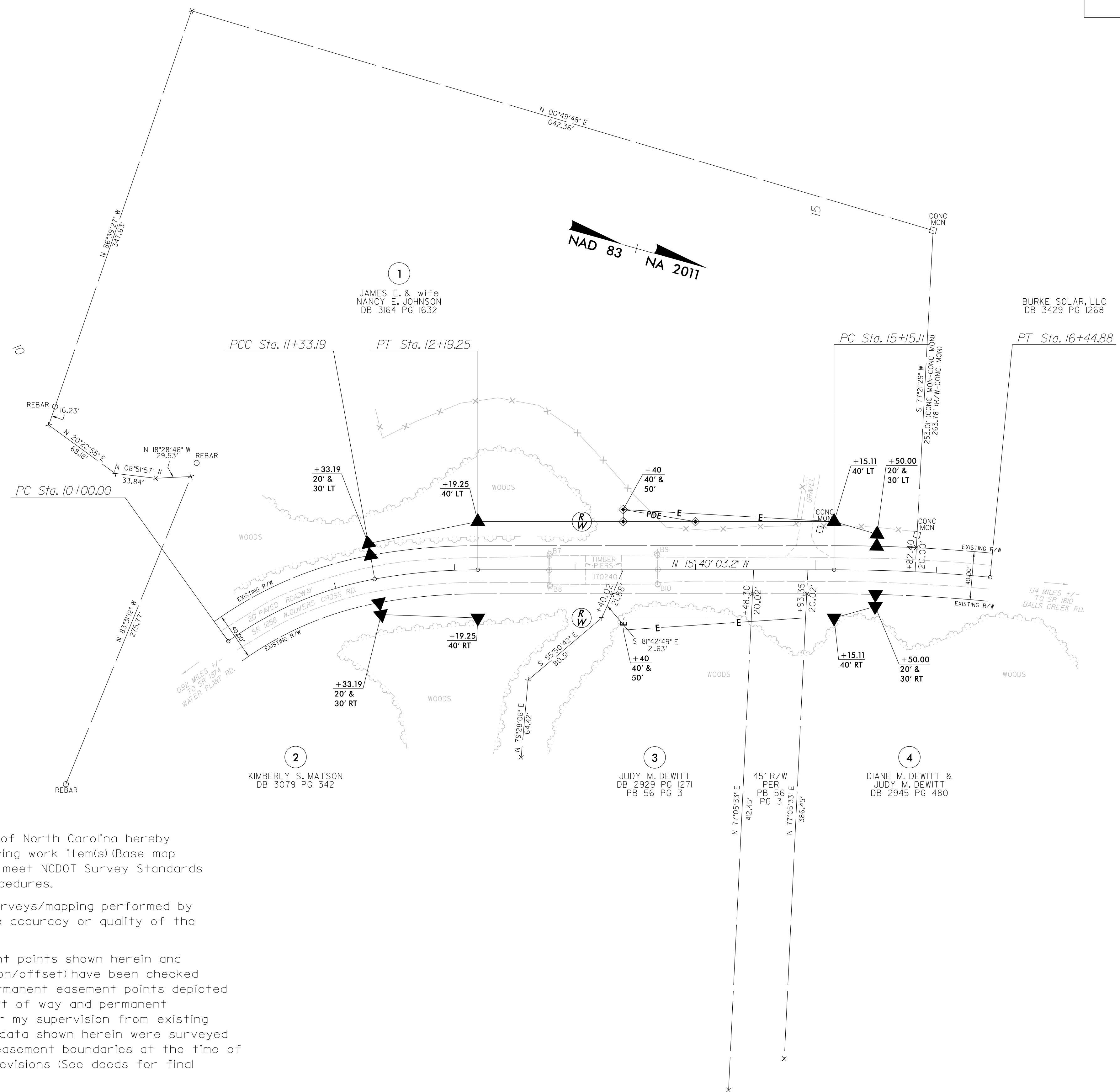
ALIGN	STATION	OFFSET	NORTH	EAST
L	11+33.19	-30.00	682570.3718	1360789.2856
L	11+33.19	-20.00	682574.7460	1360798.2782
L	11+33.19	20.00	682592.2429	1360834.2484
L	11+33.19	30.00	682596.6171	1360843.2410
L	12+19.25	40.00	682674.6326	1360824.2547
L	12+19.25	-40.00	682653.0282	1360747.2271
L	15+15.11	40.00	682959.5053	1360744.3546
L	15+15.11	-40.00	682937.9009	1360667.3270
L	15+50.00	30.00	682989.7702	1360725.9346
L	15+50.00	20.00	682987.3175	1360716.2400
L	15+50.00	-30.00	682975.0540	1360667.7673
L	15+50.00	-20.00	682977.5067	1360677.4618

ROW MARKER PERMANENT EASEMENT

ALIGN	STATION	OFFSET	NORTH	EAST
L	13+40.00	-40.00	682769.2953	1360714.6169
L	13+40.00	-50.00	682766.5947	1360704.9884
L	14+00.00	-40.00	682827.0660	1360698.4136

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.



Witness my original signature, registration number and seal this 23rd day of May, 2018.

2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

L-4775
PLS #

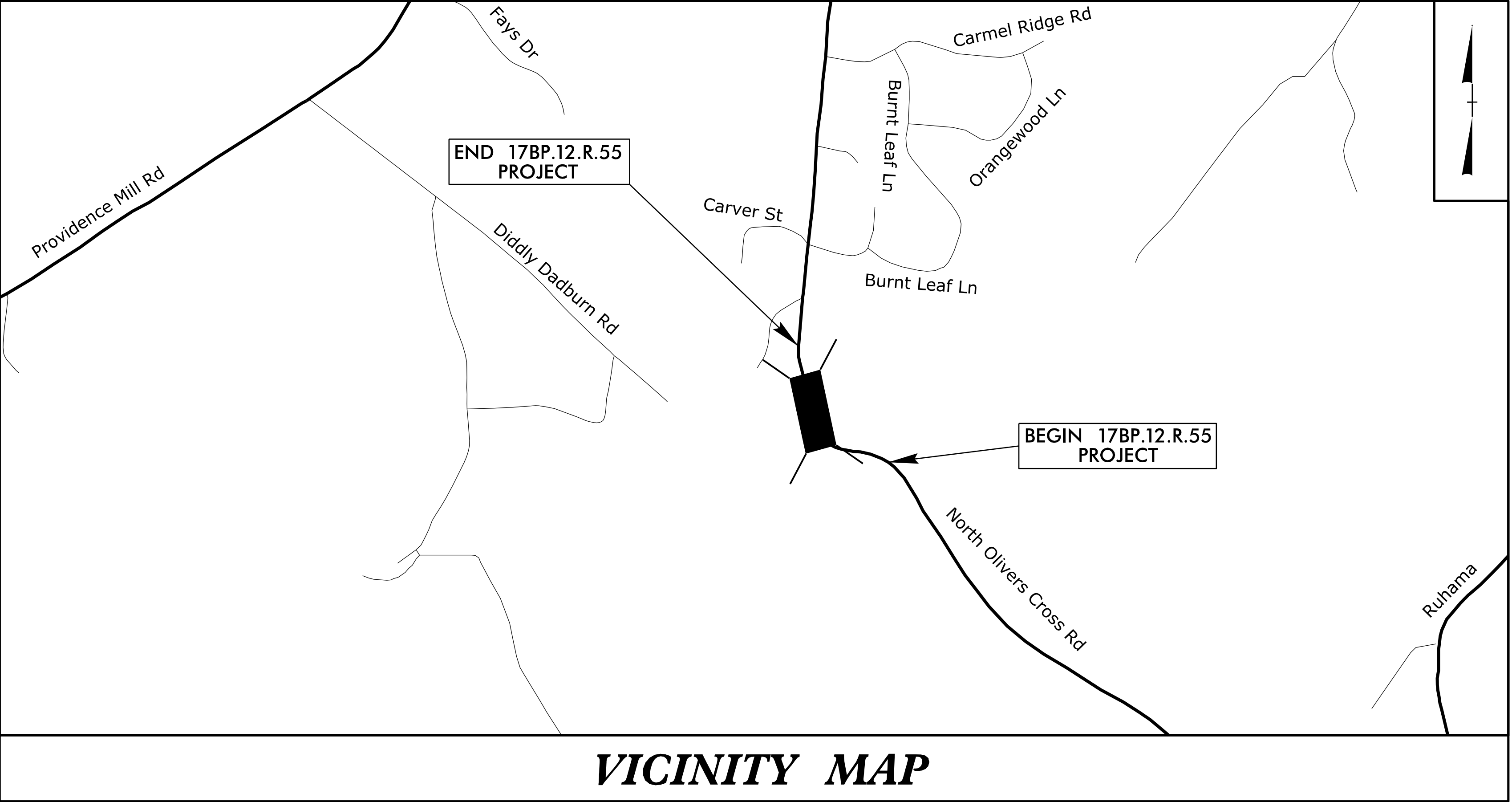
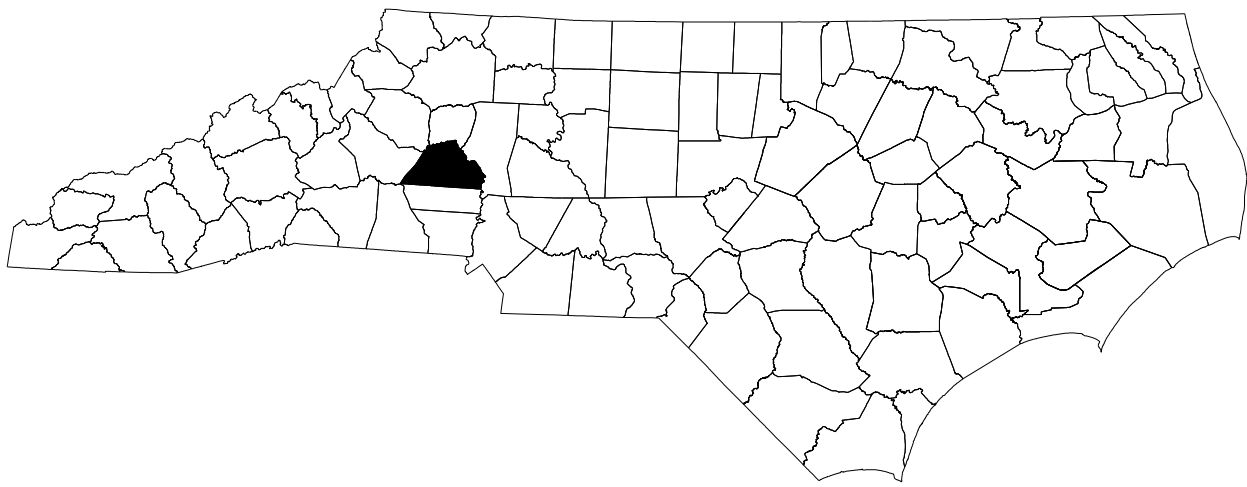
Seal

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

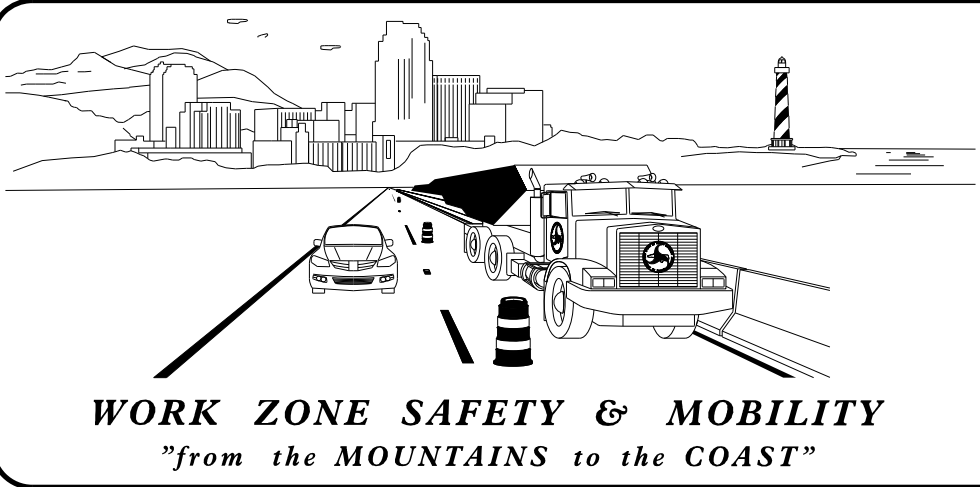
TRANSPORTATION MANAGEMENT PLAN

CATAWBA COUNTY

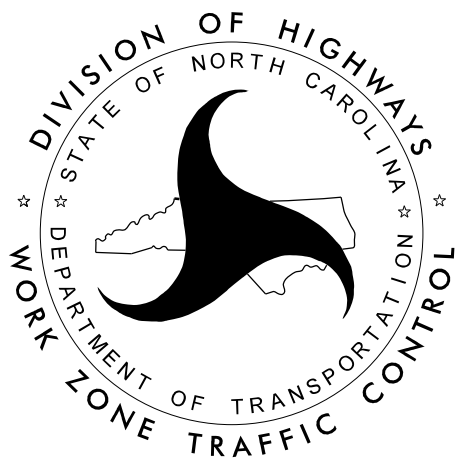
BRIDGE NO. 240 ON SR 1858 (N. OLIVERS CROSS ROAD)



VICINITY MAP

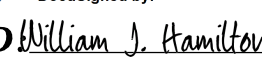


PLANS PREPARED BY:
W. JASON HAMILTON, PE, PTOE
PROJECT ENGINEER
ZACHARY M. ESPOSITO, PE, TCDS
PROJECT DESIGN ENGINEER



Infrastructure Consulting Services, Inc.
dba
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APPROVED 
DATE: 9/23/2022
SEAL


SHEET NO.
TMP-1
PROJECT: 17BP.12.R.55
CONTRACT: DL00175

INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET AND INDEX OF SHEETS
TMP-2	ROADWAY STANDARD DRAWINGS AND LEGEND
TMP-3A-3B	GENERAL NOTES
TMP-3C	DETOUR SIGN DESIGN
TMP-4	PHASING NOTES AND PLAN
TMP-5	DETOUR SIGNING

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2018 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.03	TEMPORARY ROAD CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1115.01	FLASHING ARROW BOARDS
1130.01	DRUMS
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1180.01	SKINNY - DRUMS
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

LEGEND

GENERAL

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

WORK AREA

REMOVAL



SIGNALS

- EXISTING
- PROPOSED
- TEMPORARY
- PORTABLE

PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

TRAFFIC CONTROL DEVICES

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

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

PAVEMENT MARKERS

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

PAVEMENT MARKING SYMBOLS

- PAVEMENT MARKING SYMBOLS

PROJ. REFERENCE NO.

17BP.12.R.55

SHEET NO.

TMP-2

Infrastructure Consulting Services, Inc.

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APPROVED

DocuSigned by:

William J. Hamilton

A056ED704648484

DATE: 9/23/2022

SEAL

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UNLESS ALL SIGNATURES COMPLETED

DIVISION OF HIGHWAYS

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

WORK ZONE TRAFFIC CONTROL

ROADWAY STANDARD
DRAWINGS & LEGEND

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 UNDESIRE

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.

TIME RESTRICTIONS

A) DO NOT CLOSE OR NARROW TRAVEL LANES AS FOLLOWS:

ROAD NAME	DAY AND TIME RESTRICTIONS
NORTH OLIVERS CROSS ROAD	MONDAY-FRIDAY 6AM-9AM 4PM-6PM

B) DO NOT CLOSE OR NARROW TRAVEL LANES DURING HOLIDAYS AND SPECIAL EVENTS AS FOLLOWS:

ROAD NAME

NORTH OLIVERS CROSS ROAD

HOLIDAY

- FOR ANY UNEXPECTED OCCURRENCE THAT CREATES UNUSUALLY HIGH TRAFFIC VOLUMES, AS DIRECTED BY THE ENGINEER.
- FOR NEW YEAR'S, BETWEEN THE HOURS OF 6:00 A.M. DECEMBER 31st TO 6:00 P.M. JANUARY 2ND. IF NEW YEAR'S DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN UNTIL 6:00 P.M. THE FOLLOWING TUESDAY.

- FOR EASTER, BETWEEN THE HOURS OF 6:00 A.M. THURSDAY AND 6:00 P.M. MONDAY.

- FOR MEMORIAL DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY TO 6:00 P.M. TUESDAY.

- FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 6:00 A.M. THE DAY BEFORE INDEPENDENCE DAY AND 6:00 P.M. THE DAY AFTER INDEPENDENCE DAY.

IF INDEPENDENCE DAY IS ON A FRIDAY, SATURDAY, SUNDAY OR MONDAY THEN BETWEEN THE HOURS OF 6:00 A.M. THE THURSDAY BEFORE INDEPENDENCE DAY AND 6:00 P.M. THE TUESDAY AFTER INDEPENDENCE DAY.

- FOR LABOR DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY AND 6:00 P.M. TUESDAY.

- FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 6:00 A.M. TUESDAY TO 6:00 P.M. MONDAY.

- FOR CHRISTMAS, BETWEEN THE HOURS OF 6:00 A.M. THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 6:00 P.M. THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS.

- C) DO NOT CONDUCT ANY HAULING OPERATIONS AGAINST THE FLOW OF TRAFFIC OF AN OPEN TRAVELWAY UNLESS THE HAULING OPERATION IS PROTECTED BY BARRIER OR GUARDRAIL OR AS DIRECTED BY THE ENGINEER.

LANE AND SHOULDER CLOSURE REQUIREMENTS

- D) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.

- E) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.

- D) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

- E) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.

- F) DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.

- G) DO NOT INSTALL MORE THAN ONE LANE CLOSURE IN ANY ONE DIRECTION ON NORTH OLIVERS CROSS ROAD.

PAVEMENT EDGE DROP OFF REQUIREMENTS

- H) BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPENED TRAVEL LANE THAT HAS AN EDGE OF PAVEMENT DROP-OFF AS FOLLOWS:

BACKFILL DROP-OFFS THAT EXCEED 2 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS OF 45 MPH OR GREATER.

BACKFILL DROP-OFFS THAT EXCEED 3 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS LESS THAN 45 MPH.

BACKFILL WITH SUITABLE COMPACTED MATERIAL, AS APPROVED BY THE ENGINEER, AT NO EXPENSE TO THE DEPARTMENT.

- I) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) 250FT IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

PROJ. REFERENCE NO.
17BP.12.R.55

SHEET NO.
TMP-3A

Infrastructure Consulting Services, Inc.

RKA

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DocuSigned by:
APPROVED *William J. Hamilton*
A059D0704848484...

DATE: 9/23/2022

SEAL

SEAL

NORTH CAROLINA
PROFESSIONAL
ENGINEER
WILLIAM J. HAMILTON
SEAL 32396

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

GENERAL NOTES

PROJ. REFERENCE NO.	SHEET NO.
17BP.12.R.55	TMP-3B

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GENERAL NOTES

TRAFFIC PATTERN ALTERATIONS

J) NOTIFY THE ENGINEER 30 DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

K) 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.

L) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.

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

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

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

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

O) INSTALL BLACK ON ORANGE "DIP" SIGNS (W8-2) AND/OR "BUMP" SIGNS (W8-1) 250FT IN ADVANCE OF THE UNEVEN AREA, OR AS DIRECTED BY THE ENGINEER.

TRAFFIC CONTROL DEVICES

P) WHEN LANE CLOSURES ARE NOT IN EFFECT SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (MPH) EXCEPT, 10 FT ON-CENTER IN RADII, AND 3 FT OFF THE EDGE OF AN OPEN TRAVELWAY. REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTIONS 1130 (DRUMS), 1135 (CONES) AND 1180 (SKINNY DRUMS) FOR ADDITIONAL REQUIREMENTS.

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

PAVEMENT MARKINGS AND MARKERS

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

S) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

DocuSigned by: APPROVED <i>William J. Hamilton</i> A0560D704648484... DATE: 9/23/2022 SEAL  DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		GENERAL NOTES
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PROJ. REFERENCE NO.

17BP.12.R.55

SHEET NO.

TMP-3C

Infrastructure Consulting Services, Inc.

RKA

RAMEY KEMP ASSOCIATES

8210 University Executive
Park Drive, Suite 220
Charlotte, NC 28262

NC License No. F-1489
www.rameykemp.com

SIGN NUMBER: SD-1

TYPE: D

QUANTITY: 1

SIGN WIDTH: 3'-6"

HEIGHT: 2'-6"

TOTAL AREA: 8.8 Sq.Ft.

BORDER TYPE:

RECESS:

WIDTH:

RADII: 1.5"

NO. Z BARS:

LENGTH:

BACKG COLOR: Fluorescent Orange

COPY COLOR: Black

SYMBOL	X	Y	WID	HT

MAT'L: 0.125" (3.2 mm) ALUMINUM

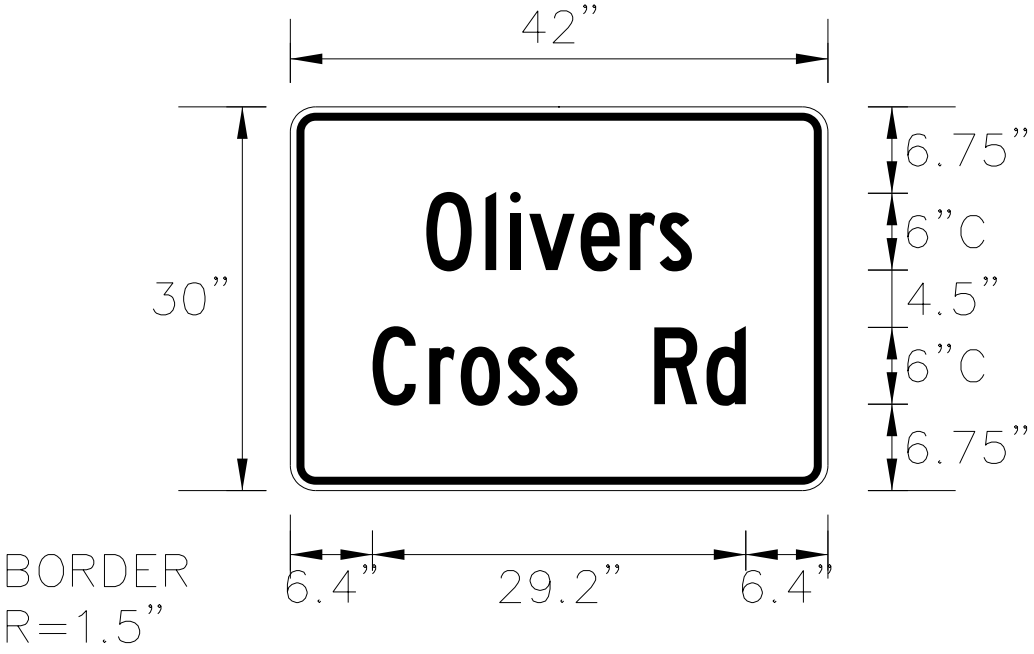
DESIGN BY: ZME

CHECKED BY: WJH

Apr 04, 2022

RKA PROJECT ID: 16115.02

DIV: 12



Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter locations are panel edge to lower left corner																								Series/Size Text Length
O	I	i	v	e	r	s																		C 2000
10.6	15.2	17.2	18.7	22.7	26.5	28.9																		20.8
C	r	o	s	s		R	d																	C 2000
6.4	10.9	13.3	17	19.9	22.4	28.4	32.5																	29.2

FILENAME: 170240_TC_SD

NORTH CAROLINA D.O.T. SIGN DETAIL

APPROVED

DESIGNED BY:

William J. Hamilton

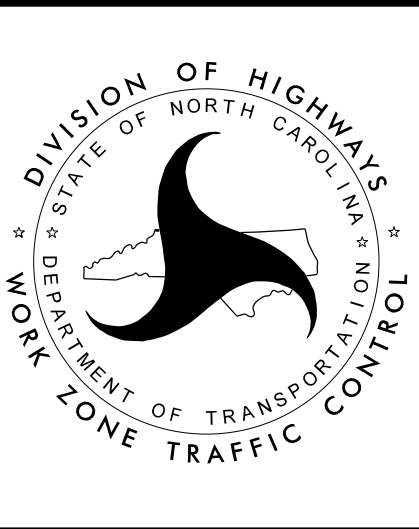
A05600704648484

DATE: 9/23/2022

SEAL

NORTH CAROLINA
PROFESSIONAL
SEAL
32396
ENGINEER
WILLIAM J. HAMILTON

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



DETOUR SIGN
DESIGN

PROJ. REFERENCE NO.	SHEET NO.
17BP.12.R.55	TMP-4
Infrastructure Consulting Services, Inc.	
	
RAMEY KEMP ASSOCIATES	
8210 University Executive Park Drive, Suite 220 Charlotte, NC 28262	
NC License No. F-1489 www.rameykemp.com	

PHASING NOTES

BEFORE BEGINNING ANY CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL INSTALL ALL ADVANCE WARNING SIGNS AND TRAFFIC CONTROL DEVICES (RSD 1101.01). FIELD VERIFY LOCATIONS WITH THE ENGINEER PRIOR TO INSTALLATION.

MAINTAIN VEHICULAR ACCESS TO ALL RESIDENCES, SCHOOLS, BUS STOPS, EMERGENCY SERVICES, AND BUSINESSES DURING THE LIFE OF THE CONTRACT, PRIOR TO INCORPORATION, OBTAIN WRITTEN APPROVAL FROM THE ENGINEER ON METHOD TO MAINTAIN ACCESS.

WHEN USING LANE CLOSURES (RSD 1101.02), RETURN TRAFFIC TO EXISTING AND/OR TEMPORARY TRAFFIC PATTERN UPON ACTIVITIES COMPLETION, UNLESS OTHERWISE NOTED IN THE PHASING PLANS.

WHEN PHASING STATES TO USE LANE CLOSURES, REFER TO THE FOLLOWING FOR ROADS:

-ALL TWO-LANE/TWO-WAY FACILITIES SEE RSD 1101.02 SHEET 1 OF 14

COMPLETE PAVING UP TO, BUT NOT INCLUDING, THE FINAL LAYER OF SURFACE COURSE UNTIL STATED TO PLACE FINAL LAYER IN THE PHASING PLANS.

WHEN WEDGING OVER EXISTING PAVEMENT, WEDGE TO PROPOSED ELEVATION (LESS THE FINAL LAYER OF SURFACE COURSE), OR WEDGE AS NEEDED TO MAINTAIN TRAFFIC. MAINTAIN POSITIVE DRAINAGE AND MAINTAIN A MAXIMUM 0.04 ROLLOVER IN BOTH EXISTING AND/OR TEMPORARY TRAVEL LANES.

REPLACE MARKINGS AND RETURN TRAFFIC TO THE CURRENT TRAFFIC PATTERN AT THE END OF EACH WORK PERIOD UNLESS OTHERWISE NOTED IN THE PHASING PLAN OR DIRECTED BY THE ENGINEER.

TRAFFIC CONTROL NOTE 1:

FOR THE DURATION OF CONSTRUCTION, ENSURE ALL DRIVEWAY ACCESS IS MAINTAINED.

PHASING PLAN

PHASE I

STEP 1:

INSTALL ALL NECESSARY ADVANCE WARNING SIGNS. (RSD 1101.01)

INSTALL DETOUR SIGNING FOR NORTH OLIVERS CROSS ROAD (SEE TMP-5).

AWAY FROM TRAFFIC, USING FLAGGERS AND LANE CLOSURES AS NEEDED, SHIFT TRAFFIC TO THE PHASE I TRAFFIC PATTERN. PHASE I TRAFFIC PATTERN ENTAILS CLOSING NORTH OLIVERS CROSS ROAD FROM PROVIDENCE MILL ROAD TO WATER PLANT ROAD.

TRAFFIC WILL BE DETOURED AWAY FROM NORTH OLIVERS CROSS ROAD FOR THE DURATION OF THIS PHASE (SEE TMP-5 FOR DETOUR ROUTE).

ONCE SHIFTED, BEHIND BARRIERS AND AWAY FROM TRAFFIC, COMPLETE CONSTRUCTION OF BRIDGE 240 ALONG NORTH OLIVERS CROSS ROAD.

PHASE II

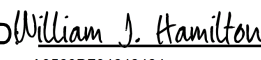
STEP 1:

MAINTAIN ALL NECESSARY ADVANCE WARNING SIGNS. (RSD 1101.01)

REMOVE DETOUR SIGNING FOR NORTH OLIVERS CROSS ROAD.

AWAY FROM TRAFFIC, USING LANE CLOSURES AS NEEDED, FINISH ANY REMAINING CONSTRUCTION AND PLACE FINAL SURFACE COURSE AND PAVEMENT MARKINGS.

REMOVE ALL REMAINING TRAFFIC CONTROL DEVICES AND ALLOW NORMAL TRAFFIC OPERATION.

DocuSigned by:

APPROVED
A0566C070464B484

DATE: 9/23/2022

SEAL



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UNLESS ALL SIGNATURES COMPLETED

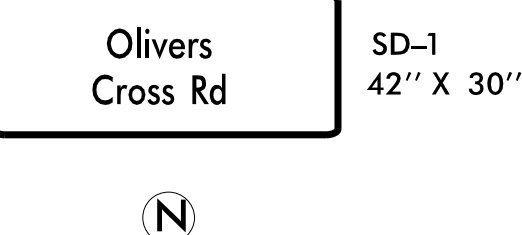
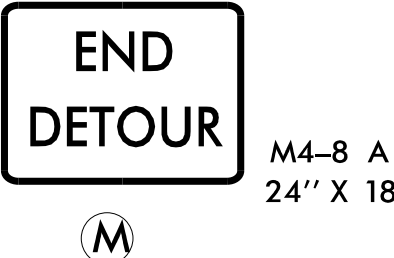
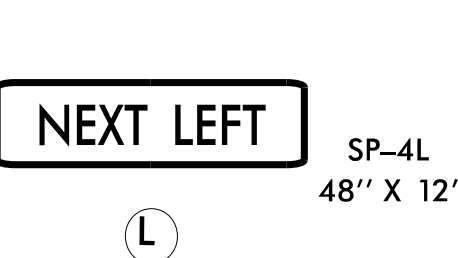
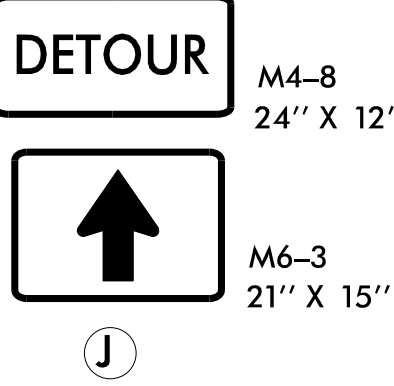
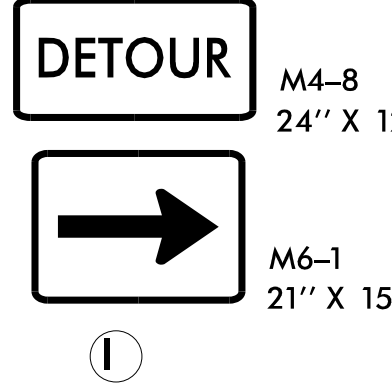
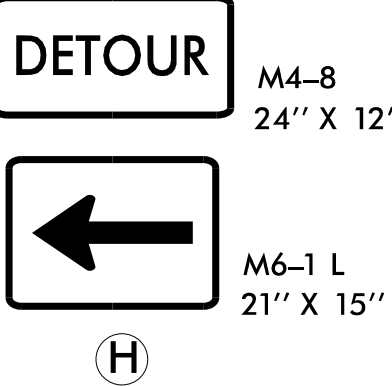
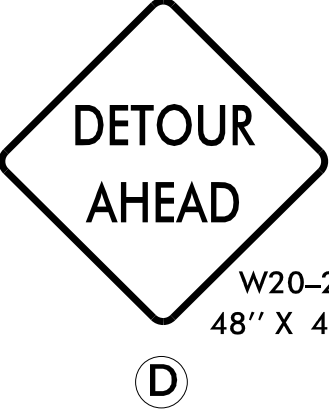
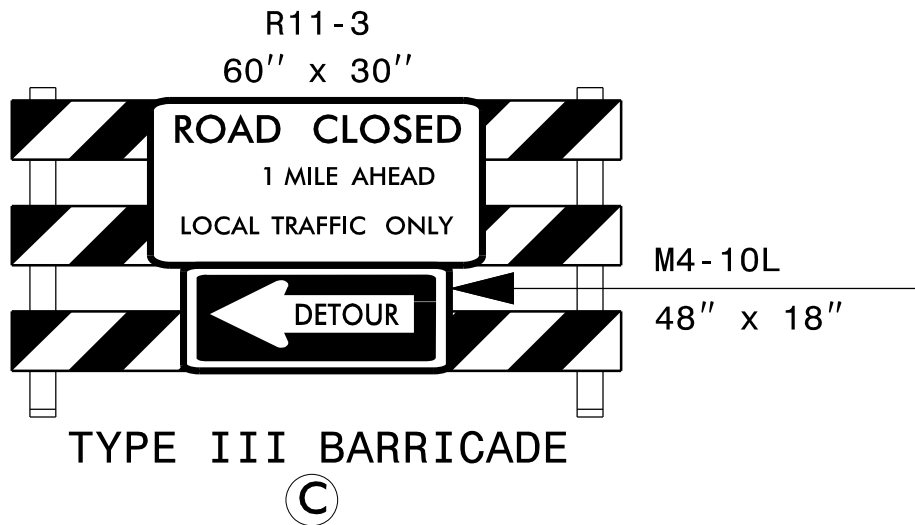
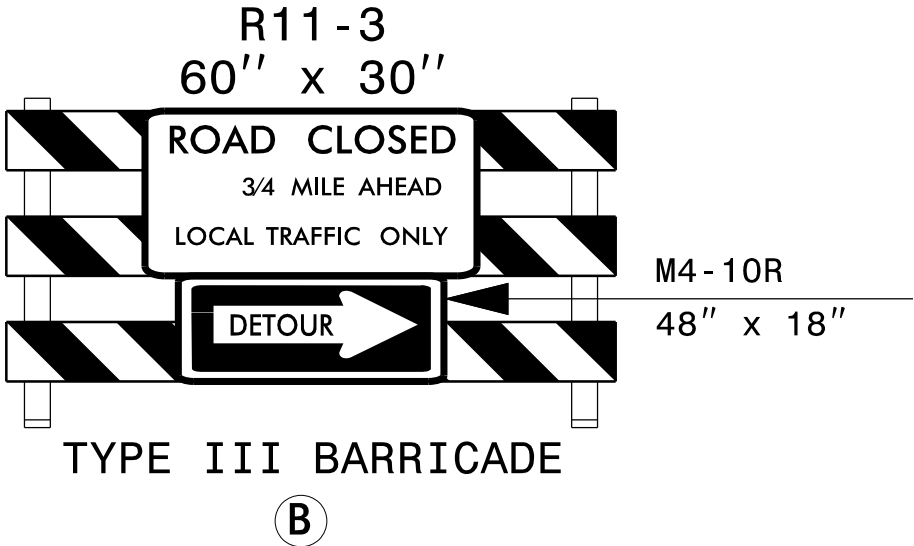
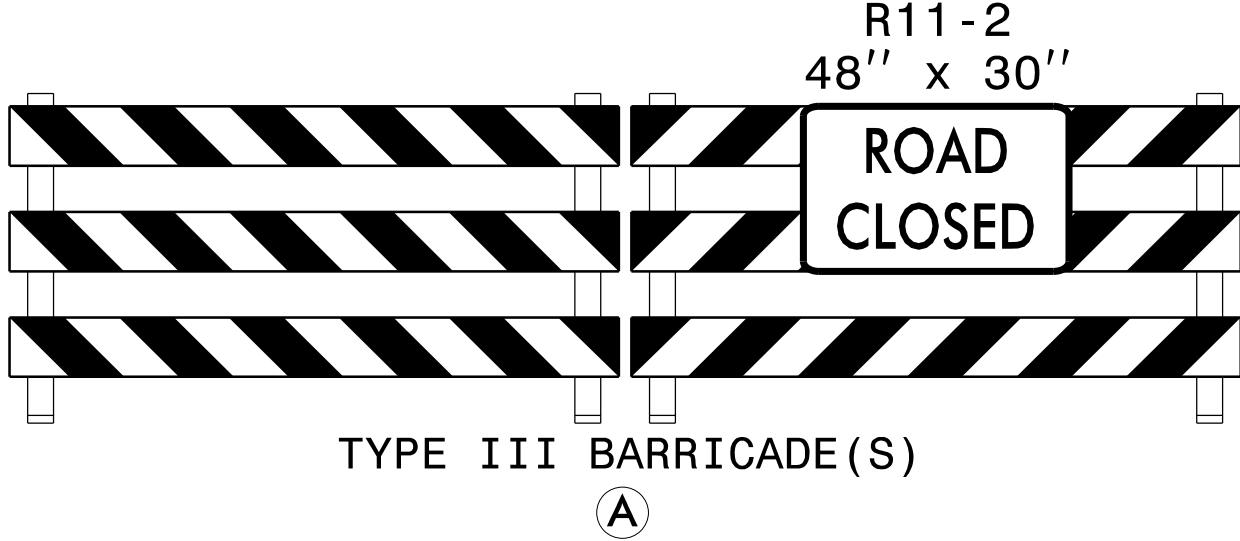
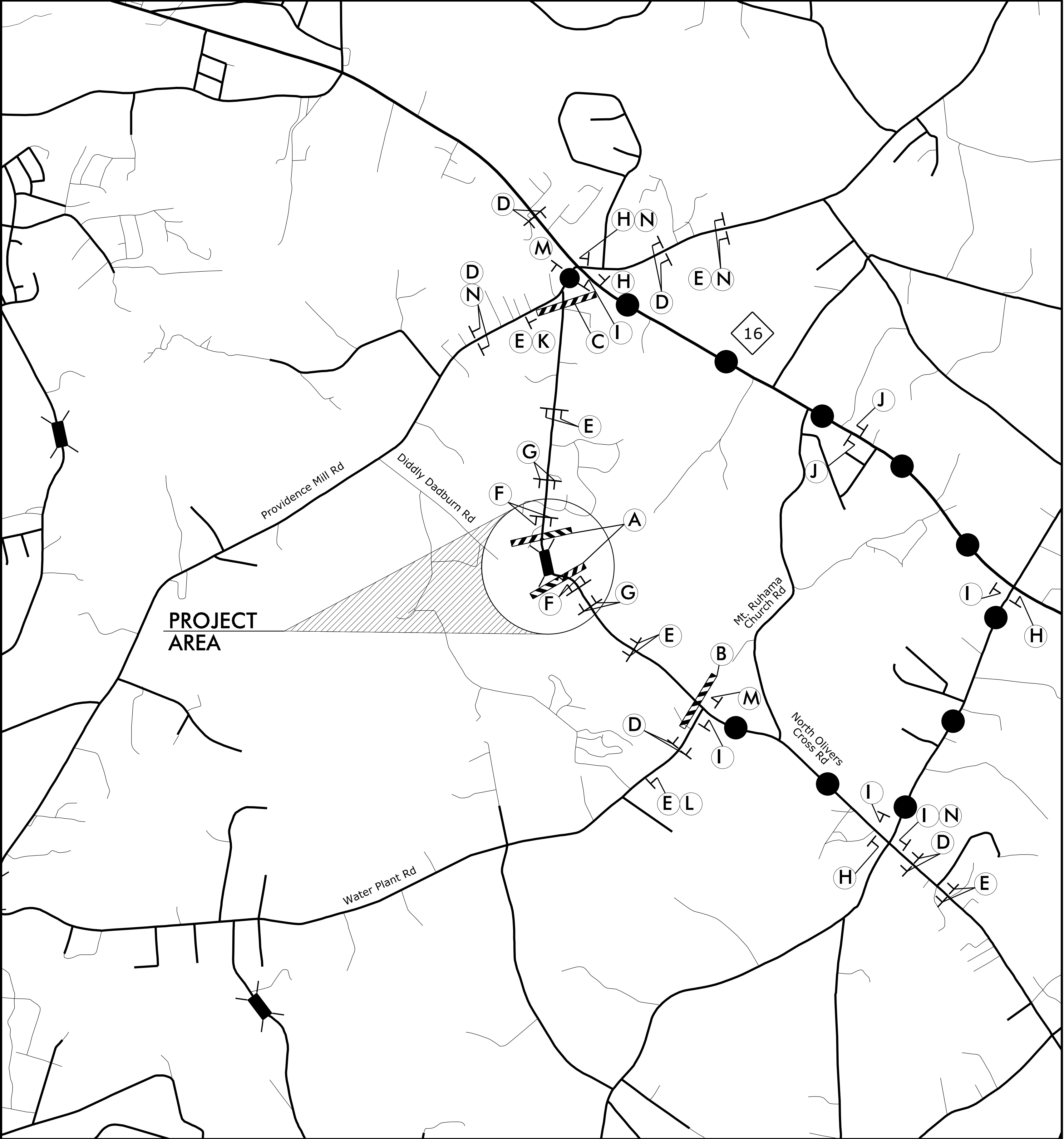


PHASING NOTES
AND PLAN

PROJ. REFERENCE NO.
17BP.12.R.55

SHEET NO.
TMP-5

Infrastructure Consulting Services, Inc.
d.b.a.
RKA
RAMEY KEMP ASSOCIATES
8210 University Executive
Park Drive, Suite 220
Charlotte, NC 28262
NC License No. F-1489
www.rameykemp.com



PROPOSED DETOUR

DETOUR ROUTE ●—●—●—●—●

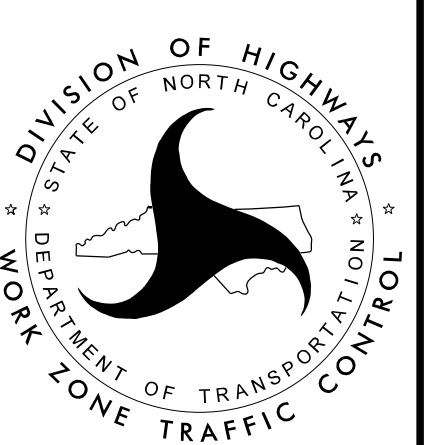
DETOUR LENGTH 5 MILES

DocuSigned by:
APPROVED *William J. Hamilton*
A0560D704848484...

DATE: 9/23/2022

SEAL

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



**DETOUR
SIGNING**

PROJECT: 17BP.12.R.55

CONTRACT: DL00175

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLAN
CATAWBA COUNTY

LOCATION: REPLACE EXISTING BRIDGE NO. 240 OVER MAIDEN CREEK
ON SR 1858 (N. OLIVERS CROSS ROAD)

TIP NO.
17BP.12.R.55

SHEET NO.
PMP - 1

APPROVED:

DocuSigned by:
William J. Hamilton
A0560D704848484.

DATE: 8/23/2022

SEAL

NORTH CAROLINA
PROFESSIONAL
ENGINEER
WILLIAM J. HAMILTON
SEAL
32396

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UNLESS ALL SIGNATURES COMPLETED

ROADWAY STANDARD DRAWING

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2018 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION
1264.01	OBJECT MARKERS - TYPES
1264.02	OBJECT MARKERS - INSTALLATION

GENERAL NOTES

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

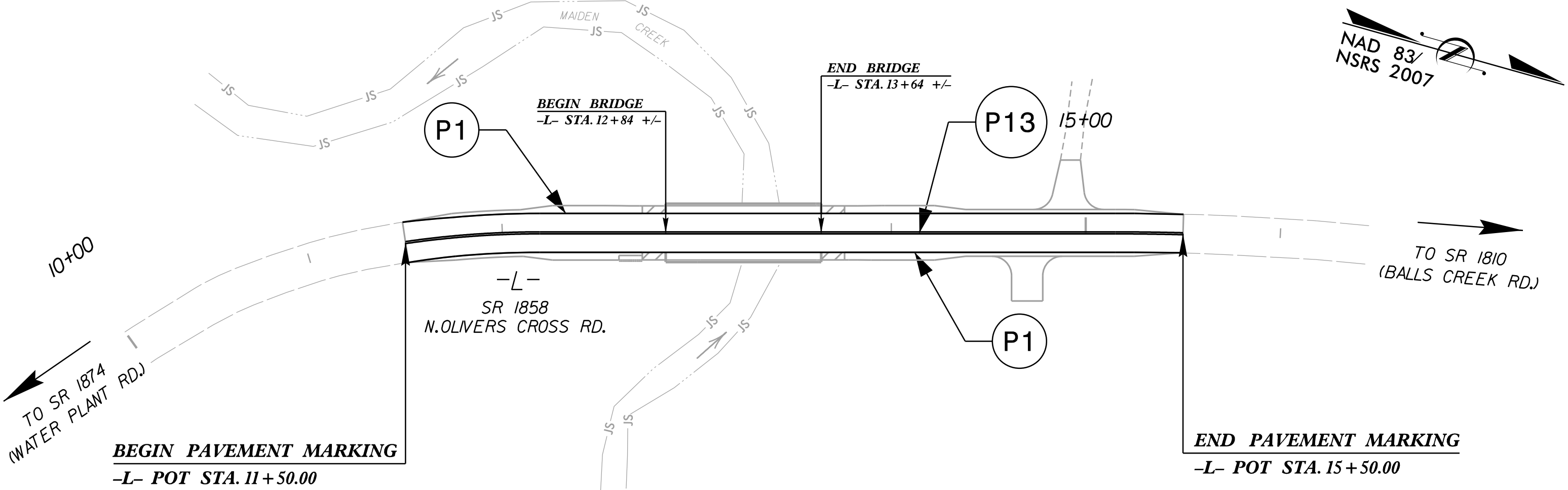
A) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS FOLLOWS:

ROAD NAME	MARKING	MARKER
N. OLIVERS CROSS ROAD	PAINT	NONE

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

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

PAVEMENT MARKING DETAIL



PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION
PAINT (4")	
P1	WHITE EDGELINE
P13	YELLOW DOUBLE CENTER

SUMMARY OF QUANTITIES

ITEM NO.		ITEM DESCRIPTION	QUANTITY	UNIT
DESC. NO.	SECT. NO.			
4810000000	1205	PAINT PAVEMENT MARKING LINES (4")	1750	L.F.

PLAN PREPARED BY: Ramey Kemp Associates

W.JASON HAMILTON, PE, PTOE PROJECT MANAGER
ZACHARY M. ESPOSITO, PE, TCDS PROJECT ENGINEER

Infrastructure Consulting Services, Inc.
RKA
RAMEY KEMP ASSOCIATES
6210 University Executive Park Drive, Suite 229
Charlotte, NC 28262
Phone: 704-549-4266 | www.rameykemp.com | NC License No. F-1489

09/08/19

PROJECT: 17BP.12.R.55

CONTRACT: DL00175

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EROSION AND SEDIMENT CONTROL MEASURES

Sta. #	Description	Symbol
1630.03	Temporary Silt Ditch	
1630.05	Temporary Diversion	
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	
1630.02	Silt Basin Type B	
1633.01	Temporary Rock Silt Check Type-A	
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	
1633.02	Temporary Rock Silt Check Type-B	
	Wattle / Coir Fiber Wattle	
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	
1634.01	Temporary Rock Sediment Dam Type-A	
1634.02	Temporary Rock Sediment Dam Type-B	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1630.04	Stilling Basin	
1630.06	Special Stilling Basin	
	Rock Inlet Sediment Trap:	
1632.01	Type A	
1632.02	Type B	
1632.03	Type C	
	Skimmer Basin	
	Tiered Skimmer Basin	
	Infiltration Basin	

STATE OF NORTH CAROLINA

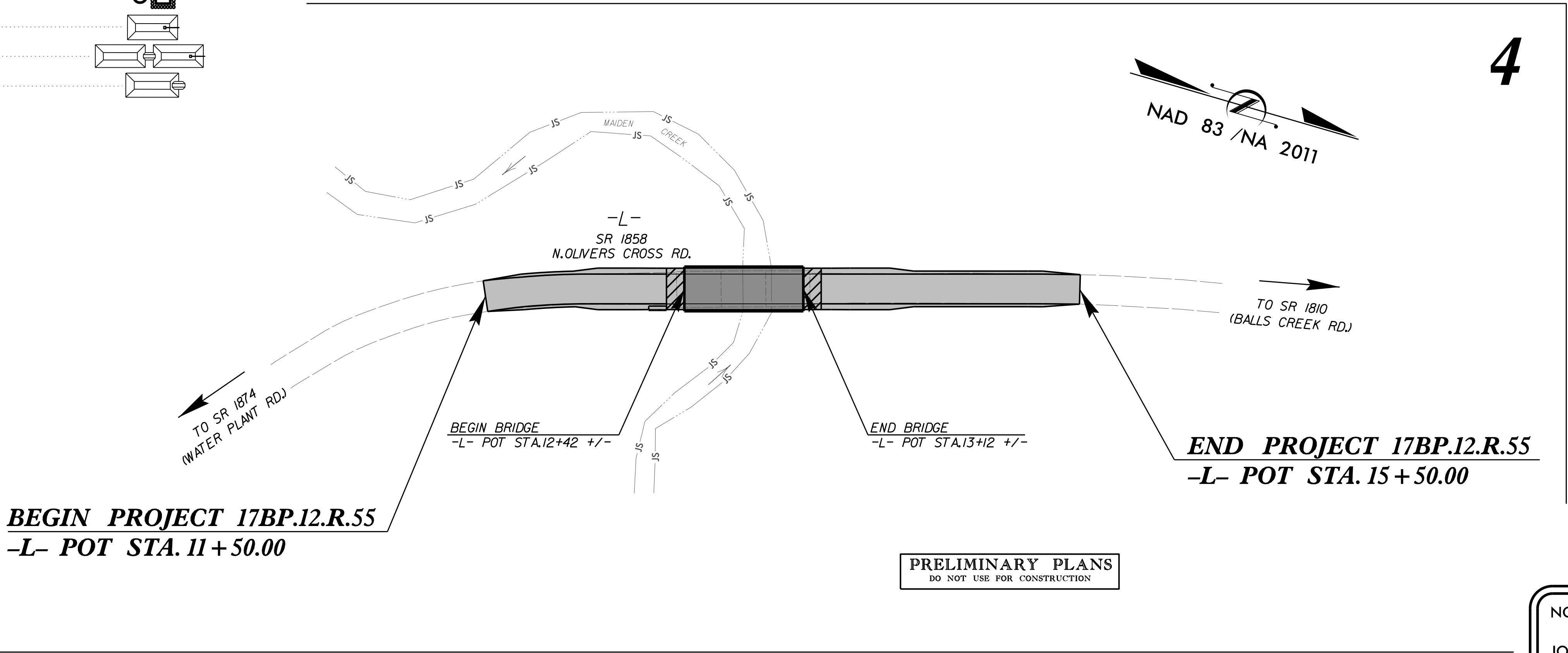
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

CATAWBA COUNTY

LOCATION: BRIDGE NO. 240 OVER MAIDEN CREEK
ON SR 1858 (N. OLIVERS CROSS RD.)

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE



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

GRAPHIC SCALES



ROADSIDE ENVIRONMENTAL UNIT
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

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

2018 STANDARD SPECIFICATIONS

Prepared In the Office of:

Weston & Sampson
WSE of North Carolina, PC

2052 Energy Drive
Apex, NC 27502
Phone: 919.237.0220
NC License: C-4647

for:

NCDOT DIVISION 12
NCDOT CONTACT: JOSHUA WHITE, PE, PLS
DIVISION 12 BRIDGE MANAGER

Designed by:

KEVIN S. HUTCHENS, PE

3635

NAME

LEVEL IIIA CERTIFICATION NO.

Roadway Standard Drawings

The following roadway english standards as appear in "Roadway Standard Drawings"- Roadway Design Unit - N.C. Department of Transportation - Raleigh, N.C., dated January 2018 and the latest revision thereto are applicable to this project and by reference hereby are considered a part of these plans.

1604.01	Railroad Erosion Control Detail	1632.01	Rock Inlet Sediment Trap Type A
1605.01	Temporary Silt Fence	1632.02	Rock Inlet Sediment Trap Type B
1606.01	Special Sediment Control Fence	1632.03	Rock Inlet Sediment Trap Type C
1607.01	Gravel Construction Entrance	1633.01	Temporary Rock Silt Check Type A
1622.01	Temporary Berms and Slope Drains	1633.02	Temporary Rock Silt Check Type B
1630.01	Riser Basin	1634.01	Temporary Rock Sediment Dam Type A
1630.02	Silt Basin Type B	1634.02	Temporary Rock Sediment Dam Type B
1630.03	Temporary Silt Ditch	1635.01	Rock Pipe Inlet Sediment Trap Type A
1630.04	Stilling Basin	1635.02	Rock Pipe Inlet Sediment Trap Type B
1630.05	Temporary Diversion	1640.01	Coir Fiber Baffle
1630.06	Special Stilling Basin	1645.01	Temporary Stream Crossing
1631.01	Matting Installation		

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.12.R.55	1	
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
17BP.12.PE.55	BRZ-1858(2)	P.E.	
17BP.12.ROW.55		R/W & UTILITIES	
17BP.12.R.55		CONST.	

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

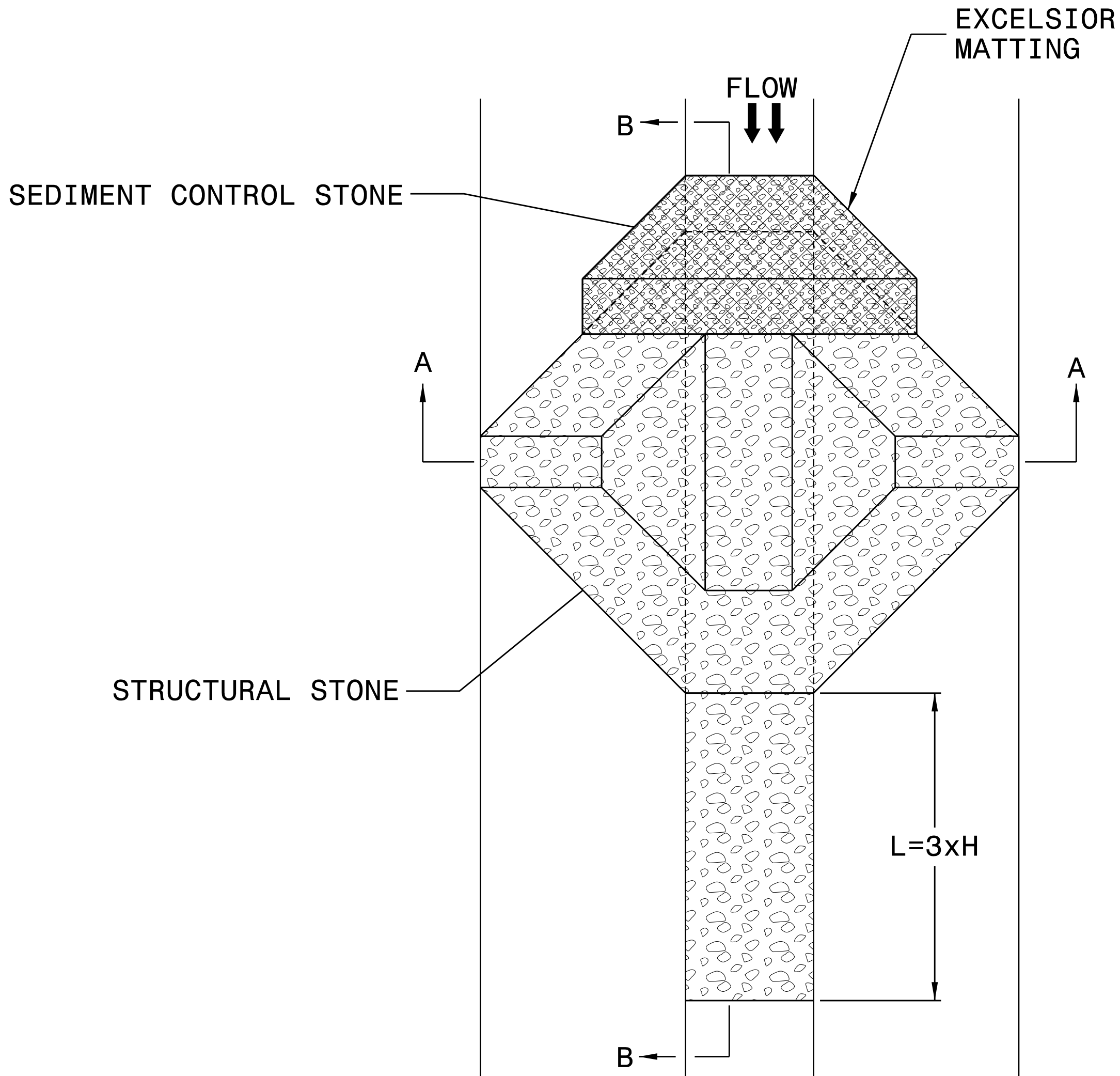
NCDOT CONTACT:

JOSHUA WHITE, PE, PLS
DIVISION BRIDGE PROGRAM MANAGER
(980) 552-4218

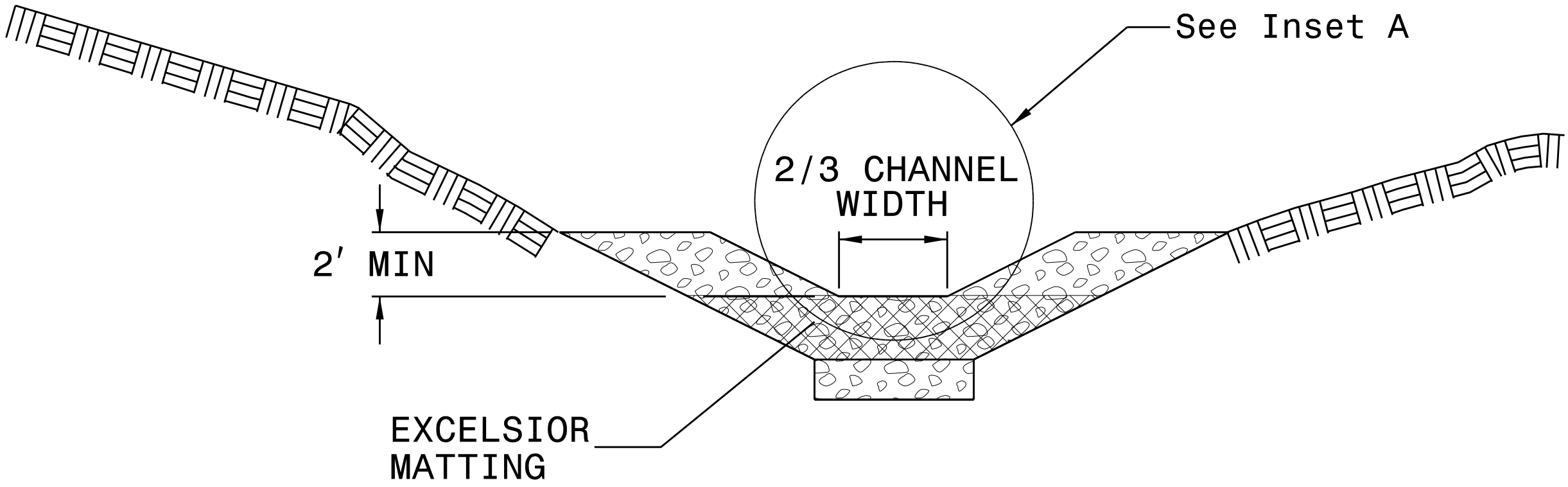
TEMPORARY ROCK SILT CHECK TYPE 'A' WITH EXCELSIOR MATTING AND POLYACRYLAMIDE (PAM)

PROJECT REFERENCE NO.	SHEET NO.
17BPJ2.R.56	EC-2
Weston & Sampson WSE of North Carolina, PC 2052 Energy Drive Phone: 919.297.0220	
NC License: C-4847 Apex, NC 27502 westonandsampson.com	

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



PLAN



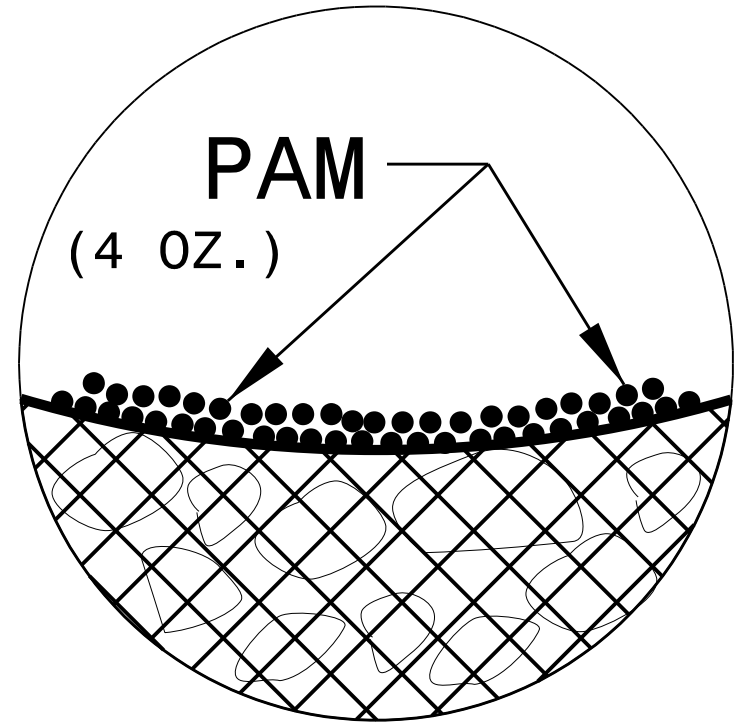
SECTION A-A

NOTES

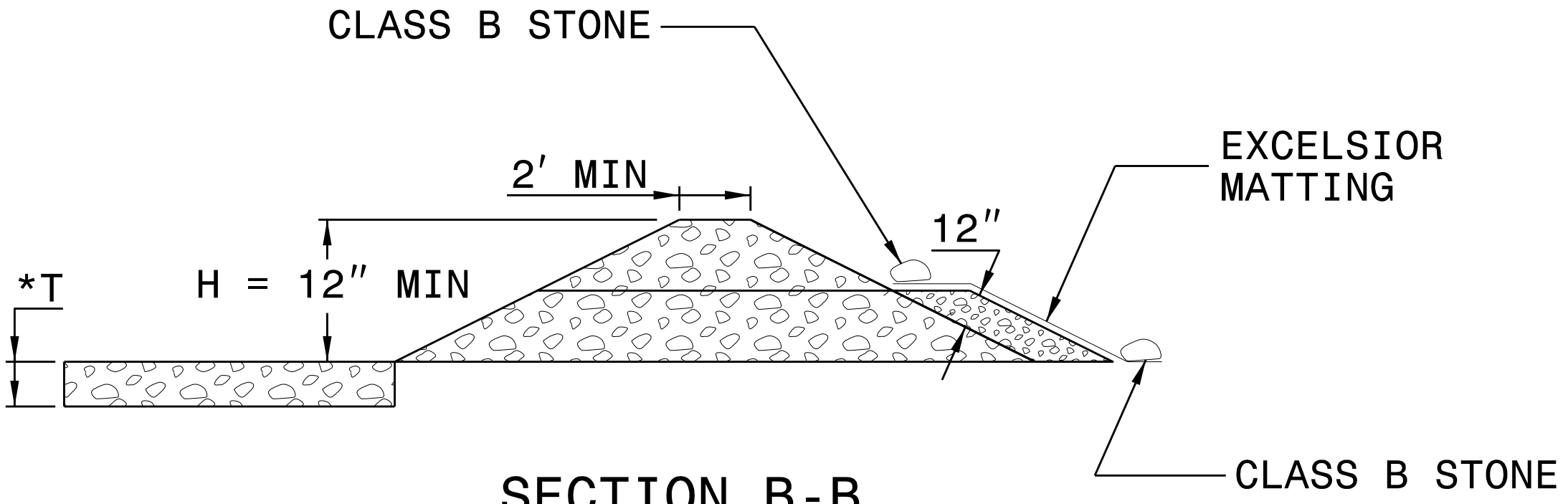
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH ROCK SILT CHECK.

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



INSET A



SECTION B-B

*T = 12" MIN., 18" MAX.

NOT TO SCALE

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO.
17.BPR.55

SHEET NO.
EC-3

Weston & Sampson

WSE of North Carolina, PC
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NC
License:
C-4847
Apex, NC 27502
westonandsampson.com

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SOIL STABILIZATION SUMMARY SHEET

MATTING FOR EROSION CONTROL

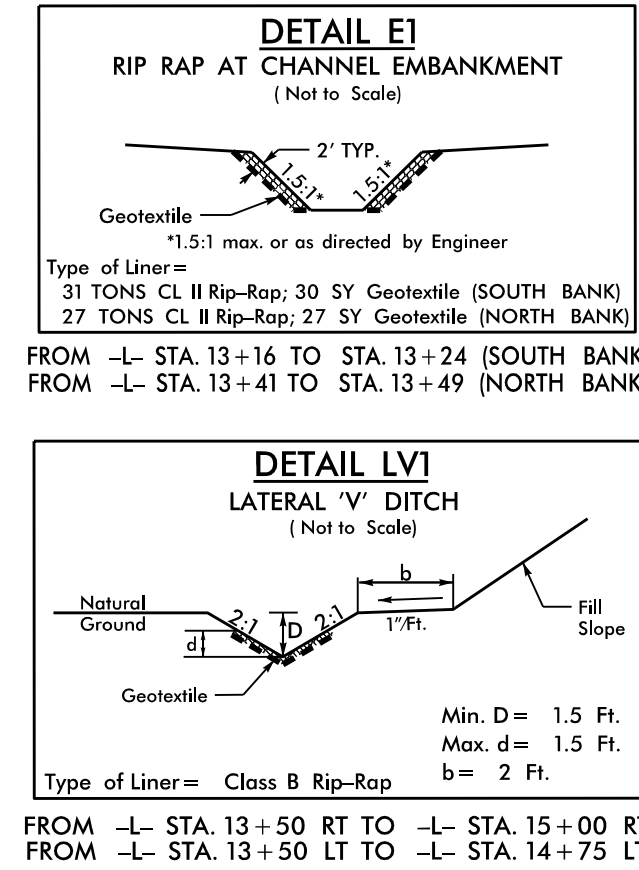
CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	L	11+25	12+50	R1	125
			SUBTOTAL		125
	MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER				1000
				TOTAL	1125
				SAY	1200

PERMANENT SOIL REINFORCEMENT MAT

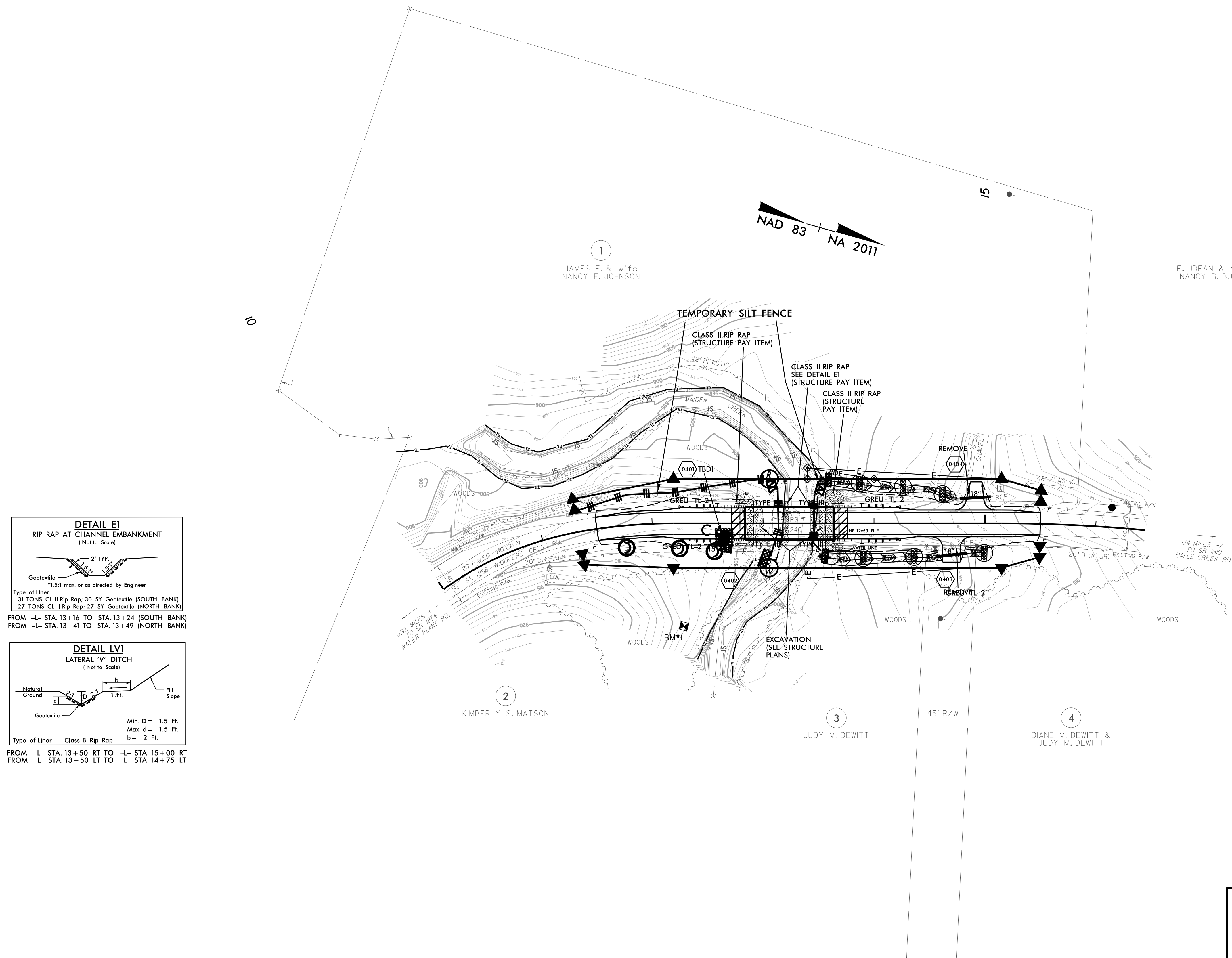
CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
			SUBTOTAL		0
	ADDITIONAL COIR FIBER MAT TO BE INSTALLED				0
				TOTAL	0
				SAY	0

SOIL STABILIZATION TIME FRAMES

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



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



INSTALL MATTING FOR
EROSION CONTROL IN THE
PROPOSED DITCH LINE.

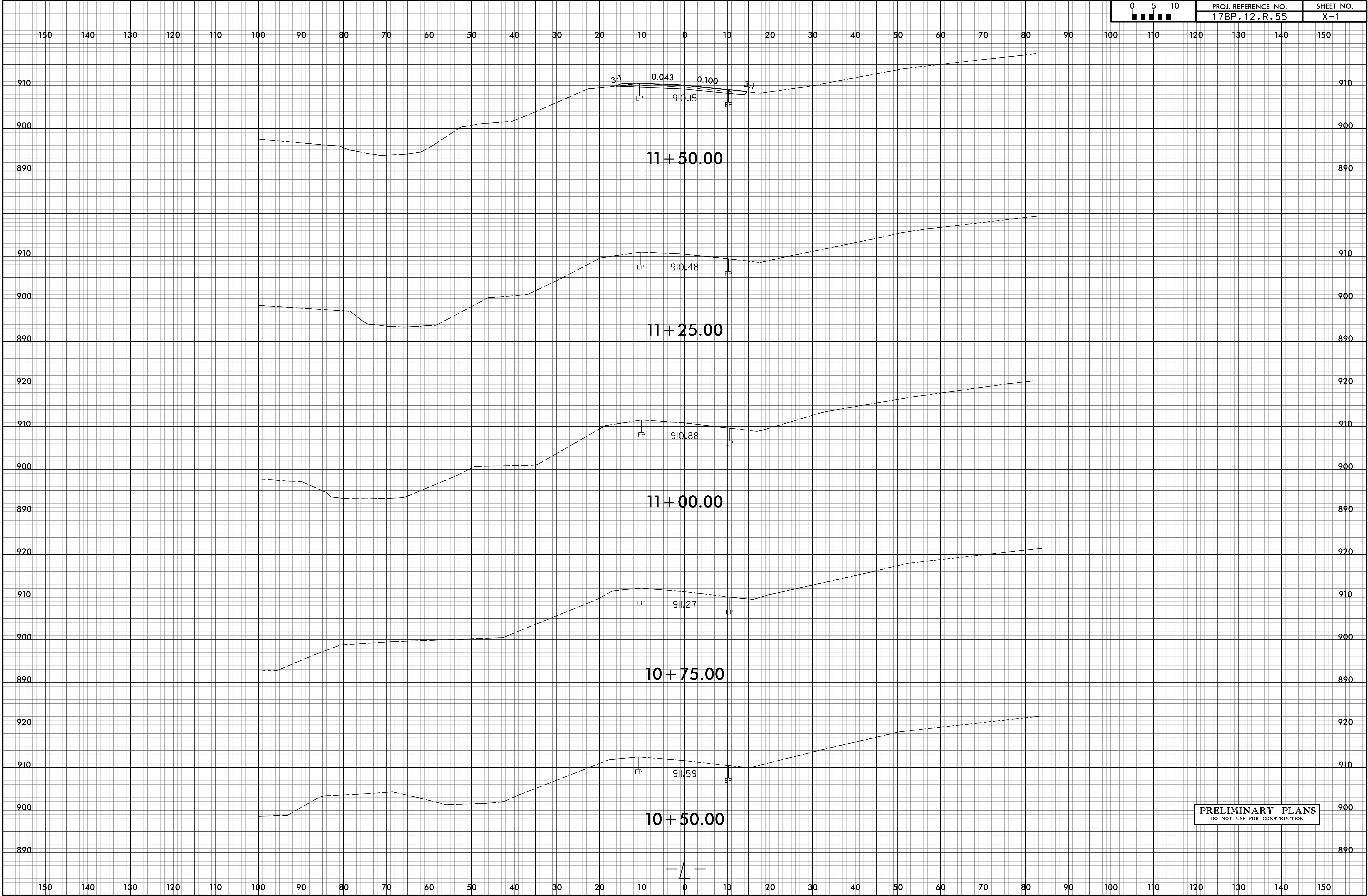
NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL
REQUIRE PRIOR APPROVAL BY ENGINEER.

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

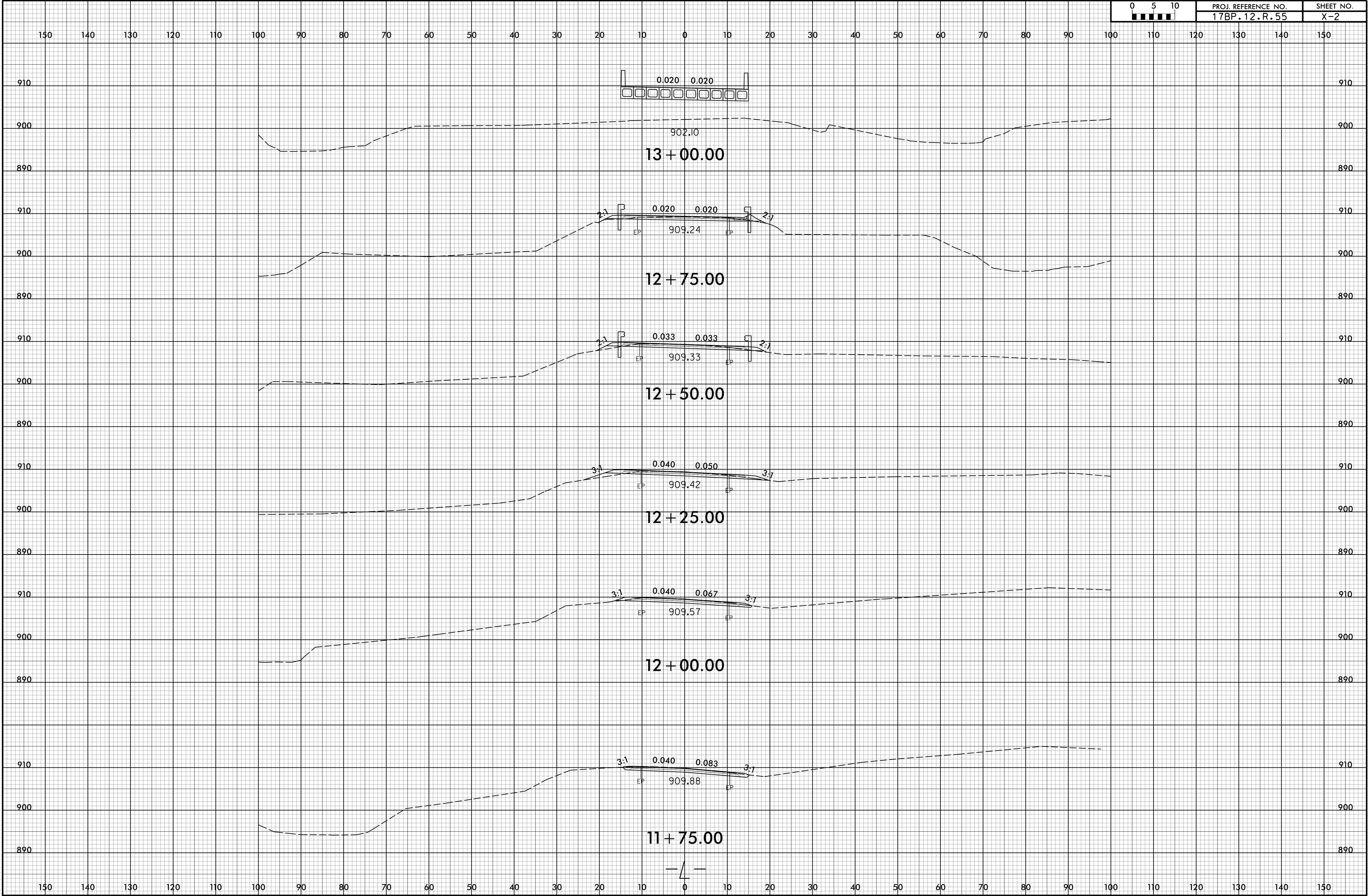
REVISIONS

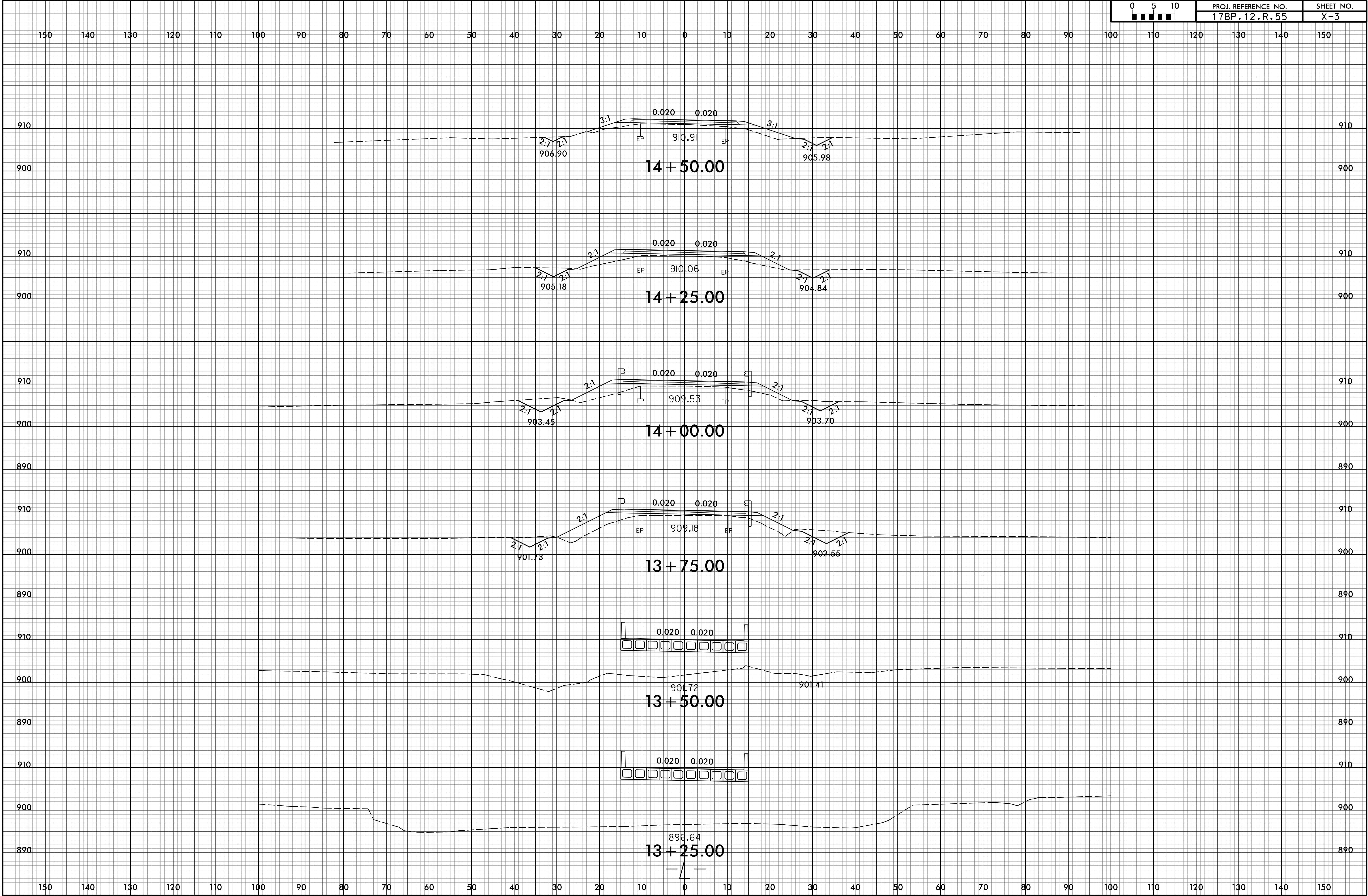
8/17/99

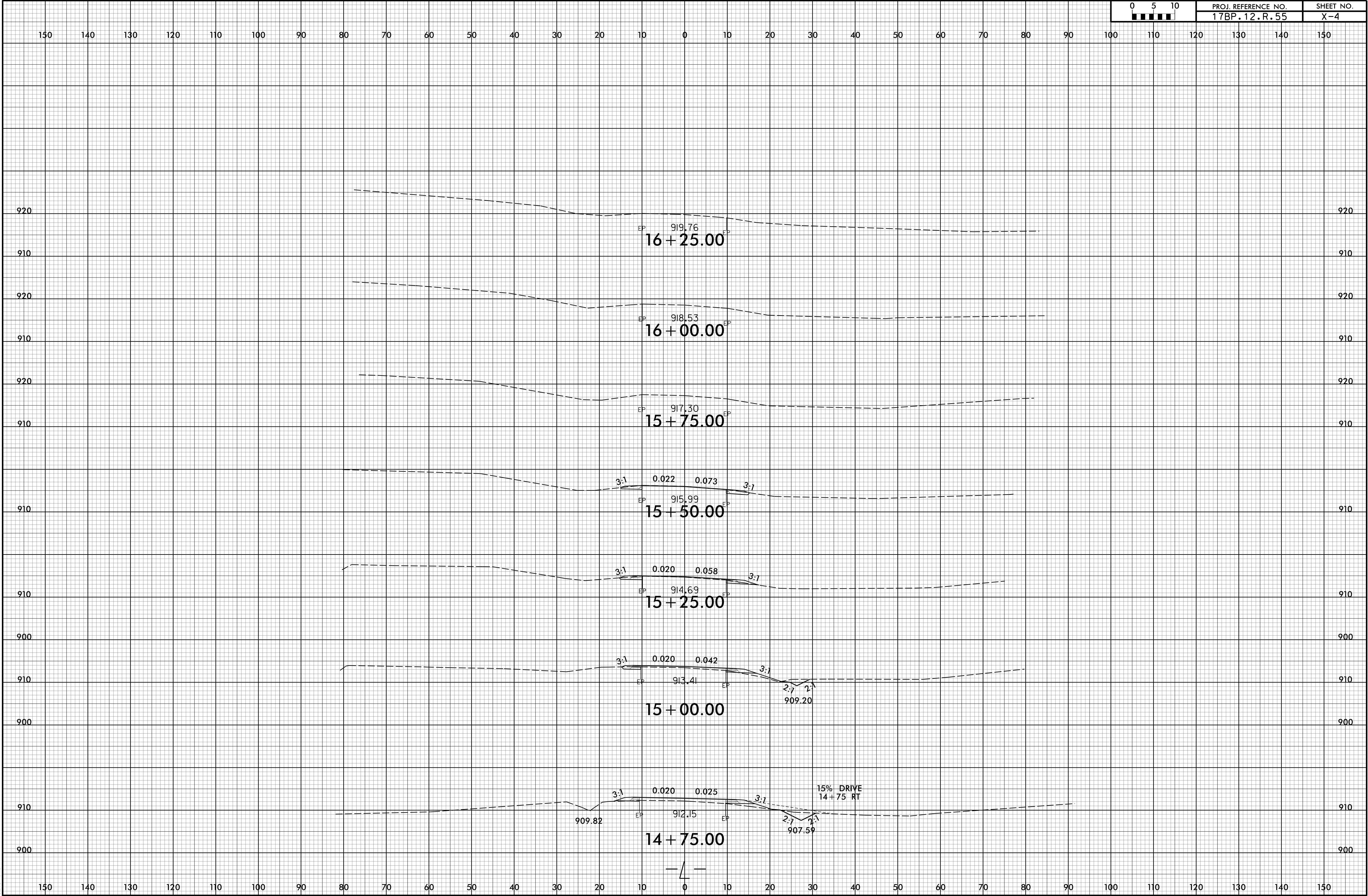
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PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



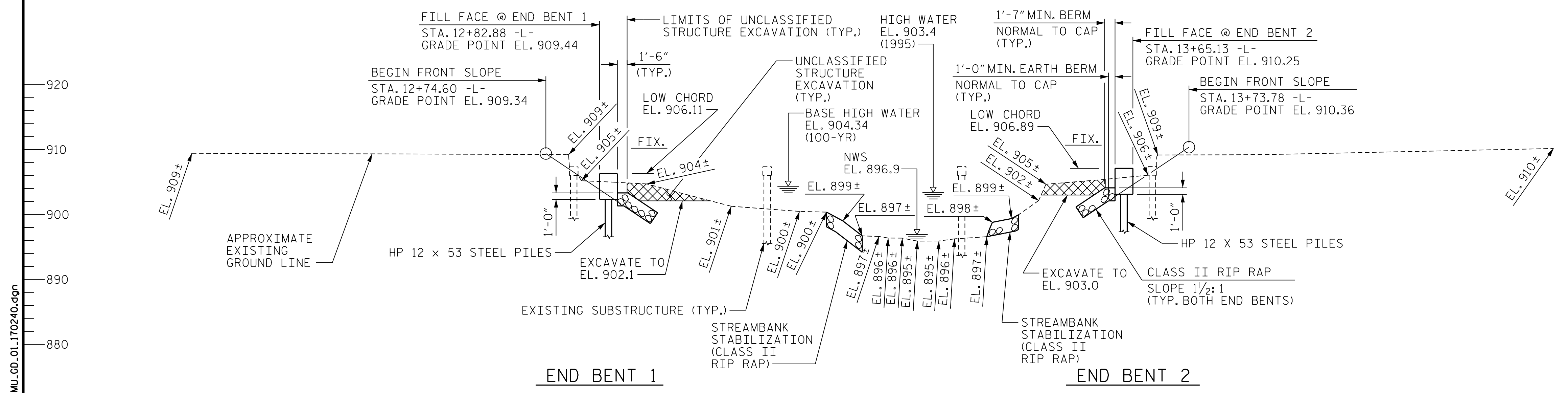




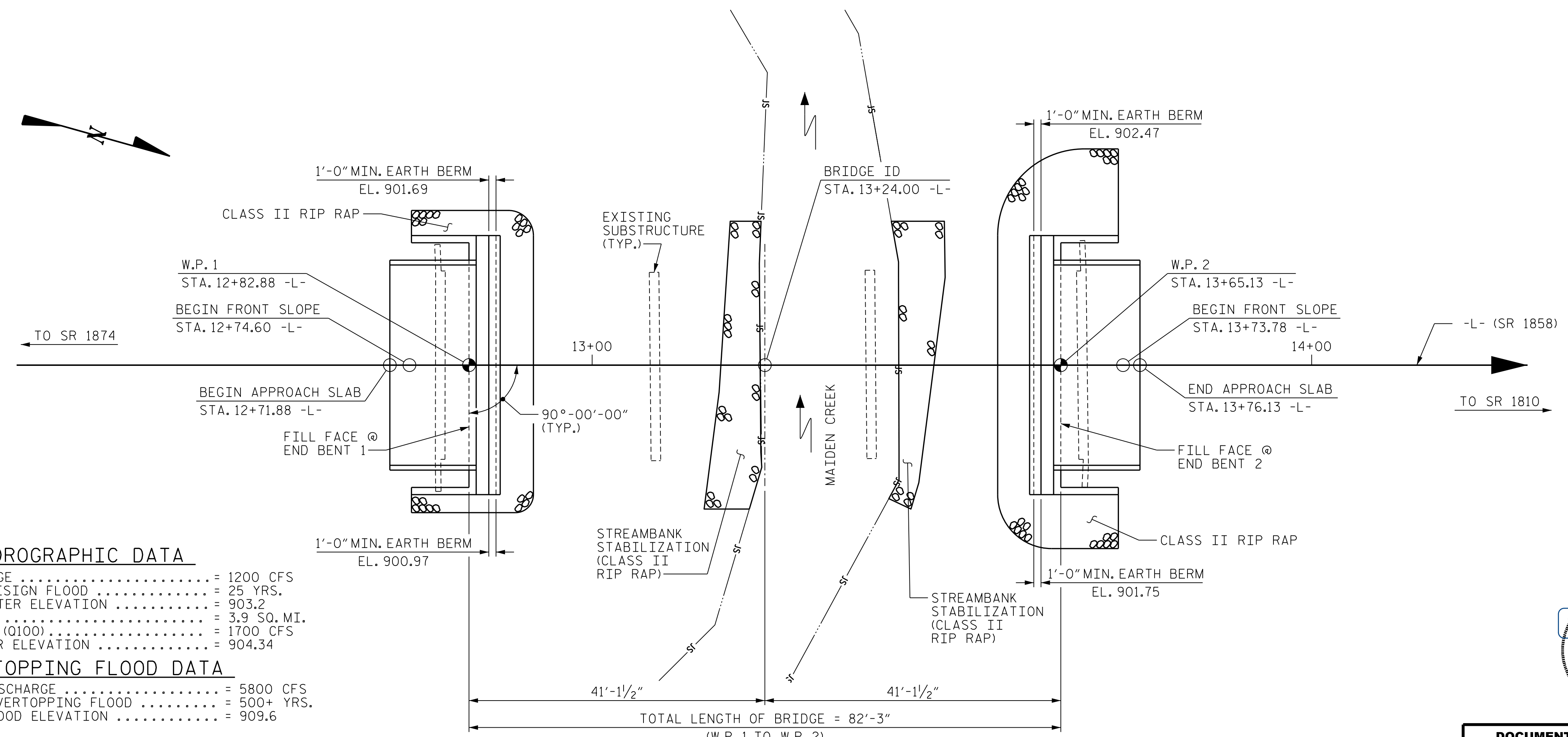
-1.2889% Δ +1.0000%
PVI = 12+40.00 -L-
EL. = 908.99
V.C. = 112.00'
GRADE DATA -L-

-1.0000% Δ +4.9000%
PVI = 14+50.00 -L-
EL. = 911.09
V.C. = 190.00'
GRADE DATA -L-

SPAN A



SECTION ALONG -L-



HYDROGRAPHIC DATA

DESIGN DISCHARGE = 1200 CFS
FREQUENCY OF DESIGN FLOOD = 25 YRS.
DESIGN HIGH WATER ELEVATION = 903.2
DRAINAGE AREA = 3.9 SQ. MI.
BASE DISCHARGE (Q100) = 1700 CFS
BASE HIGH WATER ELEVATION = 904.34

OVERTOPPING FLOOD DATA

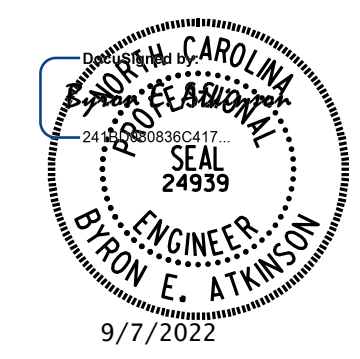
OVERTOPPING DISCHARGE = 5800 CFS
FREQUENCY OF OVERTOPPING FLOOD = 500+ YRS.
OVERTOPPING FLOOD ELEVATION = 909.6

PLAN

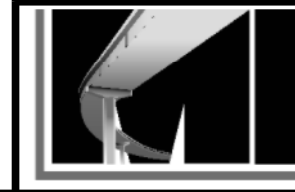
(PILES AT END BENTS ARE NOT SHOWN FOR CLARITY)

PROJECT NO. 17BP.12.R.55
CATAWBA COUNTY
STATION: 13+24.00 -L-

SHEET 1 OF 2 BRIDGE NO. 170240



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



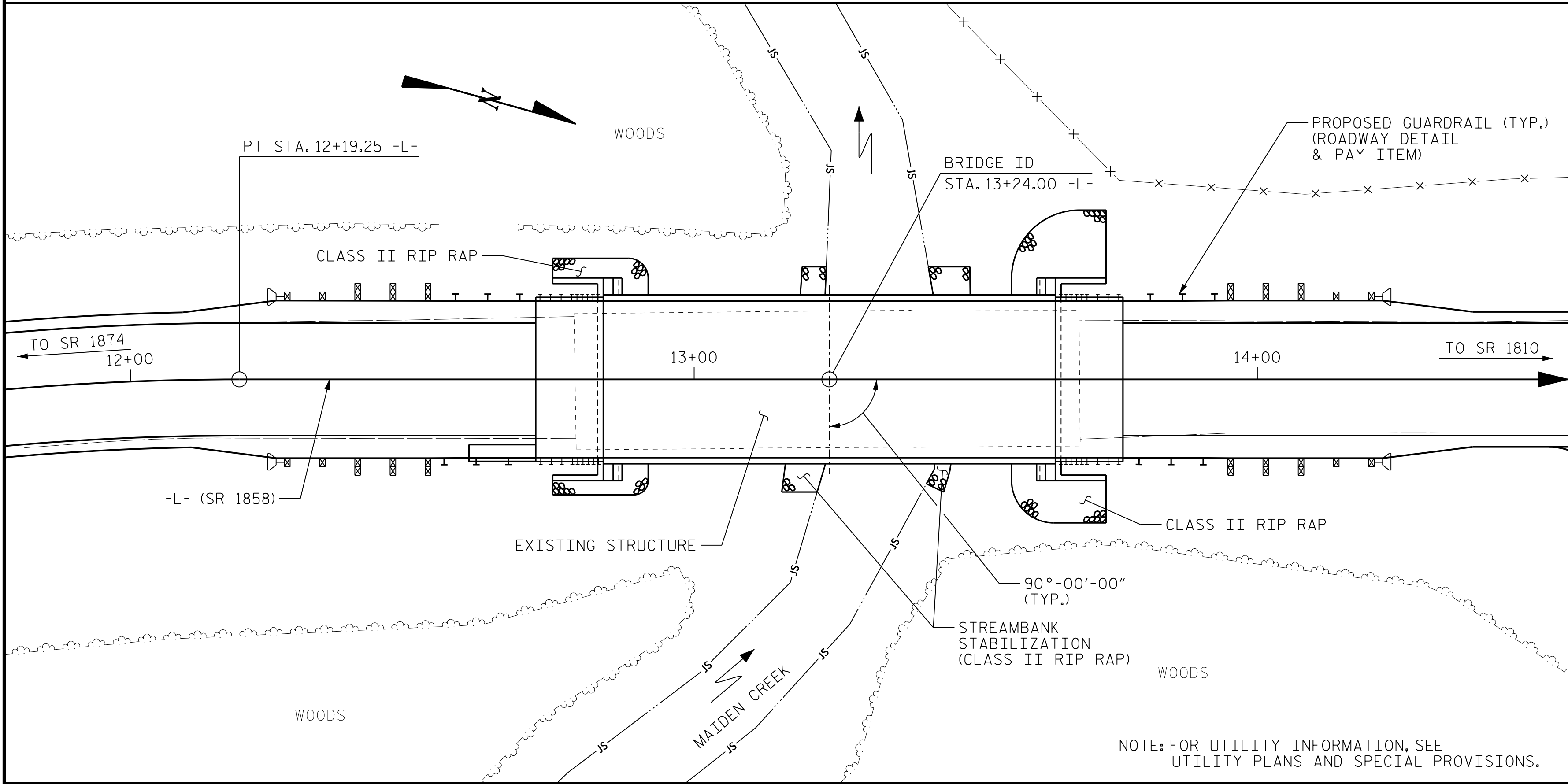
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-01
2			4			
TOTAL SHEETS						15

9/7/2022 1:13:30 PM
User: blanning
Filename: N:\NC Bridges\13009 - Div 12 Bridge Replacements.MA Engr\13009.09.Cat\cwb 240\17BP12R55\Structures\401_001_17BP12R55.SMU.CD.01.170240.dgn

DRAWN BY : B.E. LANNING DATE : 08/2022
CHECKED BY : B.E. ATKINSON DATE : 08/2022
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 08/2022

B.M. #1: RR SPIKE SET IN 38"RED OAK, 92.7' RIGHT OF STA. 12+28.75 -L-, EL. 910.35.



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 EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THE EXISTING STRUCTURE CONSISTING OF THREE SPANS (1 @ 30'-7", 1 @ 30'-1", 1 @ 30'-8"), WITH ASPHALT WEARING SURFACE ON PRESTRESSED CONCRETE CHANNELS AND A CLEAR ROADWAY WIDTH OF 24'-6" ON PRESTRESSED CONCRETE CAP WITH TIMBER PILES AT END BENTS AND INTERIOR BENTS AND LOCATED AT THE SITE OF THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, 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. THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR. THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

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

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE UP TO 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.

ASPHALT WEARING SURFACE IS INCLUDED IN THE ROADWAY QUANTITY. SEE ROADWAY QUANTITIES.

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

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

FOUNDATION NOTES

FOR PILES, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT 1 AND END BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 120 TONS PER PILE.

DRIVE PILES AT END BENT 1 AND END BENT 2 TO A REQUIRED DRIVING RESISTANCE OF 200 TONS PER PILE.

STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENT 1 AND END BENT 2. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

TESTING PILES WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING MAY BE REQUIRED AT END BENT 1 AND END BENT 2. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

TOTAL BILL OF MATERIAL

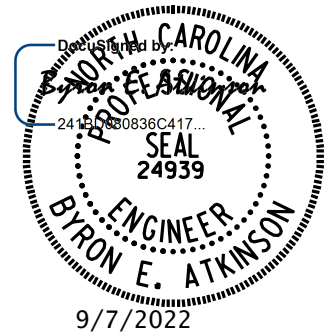
	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	PDA TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES
	LUMP SUM	LUMP SUM	EACH	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	EACH
SUPERSTRUCTURE						LUMP SUM		
END BENT 1				LUMP SUM	23.8		3342	5
END BENT 2				LUMP SUM	23.8		3342	5
TOTAL	LUMP SUM	LUMP SUM	1	LUMP SUM	47.6	LUMP SUM	6684	10

TOTAL BILL OF MATERIAL

	HP 12 X 53 STEEL PILES		STEEL PILE POINTS	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 2'-9" PRESTRESSED CONCRETE BOX BEAMS	
	NO.	LIN. FT.	NO.	LIN. FT.	TON	SO. YDS.	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE				160.00			LUMP SUM	10	800.00
END BENT 1	5	75	5		129	139			
END BENT 2	5	100	5		124	133			
TOTAL	10	175	10	160.00	253	272	LUMP SUM	10	800.00

PROJECT NO. 17BP.12.R.55
CATAWBA COUNTY
STATION: 13+24.00 -L-

SHEET 2 OF 2



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

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON SR 1858
OVER MAIDEN CREEK
BETWEEN SR 1874 & SR 1810

REVISIONS						SHEET NO. S-02 TOTAL SHEETS 15
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

DRAWN BY : B.E. LANNING DATE : 08/2022
CHECKED BY : B.E. ATKINSON DATE : 08/2022
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 08/2022

9/7/2022 1:15:32 PM User: blanning Filename: N:\NC Bridges\W3009 - Div 12 Bridge Replacements.MA Engr\W3009.09.Cat.cwba 240\17BP12R55\Structures\401_003_17BP12R55.SMU.CD.02_170240.dgn

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

LEVEL		VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER	
							LIVELOAD FACTORS	MOMENT					SHEAR					LIVELOAD FACTORS	MOMENT					
								DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)		DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION		DISTANCE FROM LEFT END OF SPAN (ft)
DESIGN LOAD RATING		HL-93(Inv)	N/A	1	1.155	--	1.75	0.273	1.72	A	EL	39.25	0.502	1.51	A	EL	7.85	0.80	0.273	1.15	A	EL	39.25	
		HL-93(0pr)	N/A	--	1.958	--	1.35	0.273	2.23	A	EL	39.25	0.502	1.96	A	EL	7.85	N/A	--	--	--	--	--	
		HS-20(Inv)	36.000	2	1.533	55.181	1.75	0.273	2.28	A	EL	39.25	0.502	1.91	A	EL	7.85	0.80	0.273	1.53	A	EL	39.25	
		HS-20(0pr)	36.000	--	2.473	89.021	1.35	0.273	2.96	A	EL	39.25	0.502	2.47	A	EL	7.85	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.509	47.376	1.40	0.273	6.53	A	EL	39.25	0.502	5.73	A	EL	7.85	0.80	0.273	3.51	A	EL	39.25	
		SNGARBS2	20.000	--	2.594	51.88	1.40	0.273	4.82	A	EL	39.25	0.502	4.06	A	EL	7.85	0.80	0.273	2.59	A	EL	39.25	
		SNAGRIS2	22.000	--	2.448	53.85	1.40	0.273	4.55	A	EL	39.25	0.502	3.76	A	EL	7.85	0.80	0.273	2.45	A	EL	39.25	
		SNCOTTS3	27.250	--	1.746	47.571	1.40	0.273	3.25	A	EL	39.25	0.502	2.86	A	EL	7.85	0.80	0.273	1.75	A	EL	39.25	
		SNAGGRS4	34.925	--	1.451	50.667	1.40	0.273	2.70	A	EL	39.25	0.502	2.36	A	EL	7.85	0.80	0.273	1.45	A	EL	39.25	
		SNS5A	35.550	--	1.419	50.453	1.40	0.273	2.64	A	EL	39.25	0.502	2.38	A	EL	7.85	0.80	0.273	1.42	A	EL	39.25	
		SNS6A	39.950	--	1.299	51.885	1.40	0.273	2.42	A	EL	39.25	0.502	2.17	A	EL	7.85	0.80	0.273	1.30	A	EL	39.25	
		SNS7B	42.000	--	1.237	51.941	1.40	0.273	2.30	A	EL	39.25	0.502	2.13	A	EL	7.85	0.80	0.273	1.24	A	EL	39.25	
	TTST	TNAGRIT3	33.000	--	1.583	52.231	1.40	0.273	2.94	A	EL	39.25	0.502	2.59	A	EL	7.85	0.80	0.273	1.58	A	EL	39.25	
		TNT4A	33.075	--	1.589	52.55	1.40	0.273	2.96	A	EL	39.25	0.502	2.53	A	EL	7.85	0.80	0.273	1.59	A	EL	39.25	
		TNT6A	41.600	--	1.296	53.907	1.40	0.273	2.41	A	EL	39.25	0.502	2.25	A	EL	7.85	0.80	0.273	1.30	A	EL	39.25	
		TNT7A	42.000	--	1.301	54.625	1.40	0.273	2.42	A	EL	39.25	0.502	2.21	A	EL	7.85	0.80	0.273	1.30	A	EL	39.25	
		TNT7B	42.000	--	1.341	56.333	1.40	0.273	2.49	A	EL	39.25	0.502	2.08	A	EL	7.85	0.80	0.273	1.34	A	EL	39.25	
		TNAGRIT4	43.000	--	1.279	55.001	1.40	0.273	2.38	A	EL	39.25	0.502	2.02	A	EL	7.85	0.80	0.273	1.28	A	EL	39.25	
TNAGT5A		45.000	--	1.207	54.337	1.40	0.273	2.25	A	EL	39.25	0.502	2.00	A	EL	7.85	0.80	0.273	1.21	A	EL	39.25		
TNAGT5B		45.000	3	1.194	53.739	1.40	0.273	2.22	A	EL	39.25	0.502	1.92	A	EL	7.85	0.80	0.273	1.19	A	EL	39.25		

LOAD FACTORS:

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

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.
ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

1.
2.
3.
4.

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

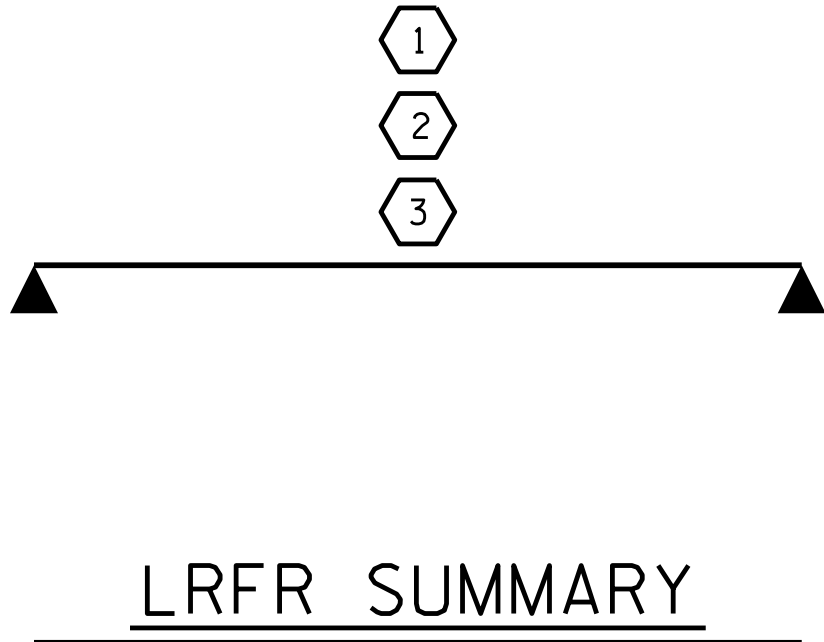
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



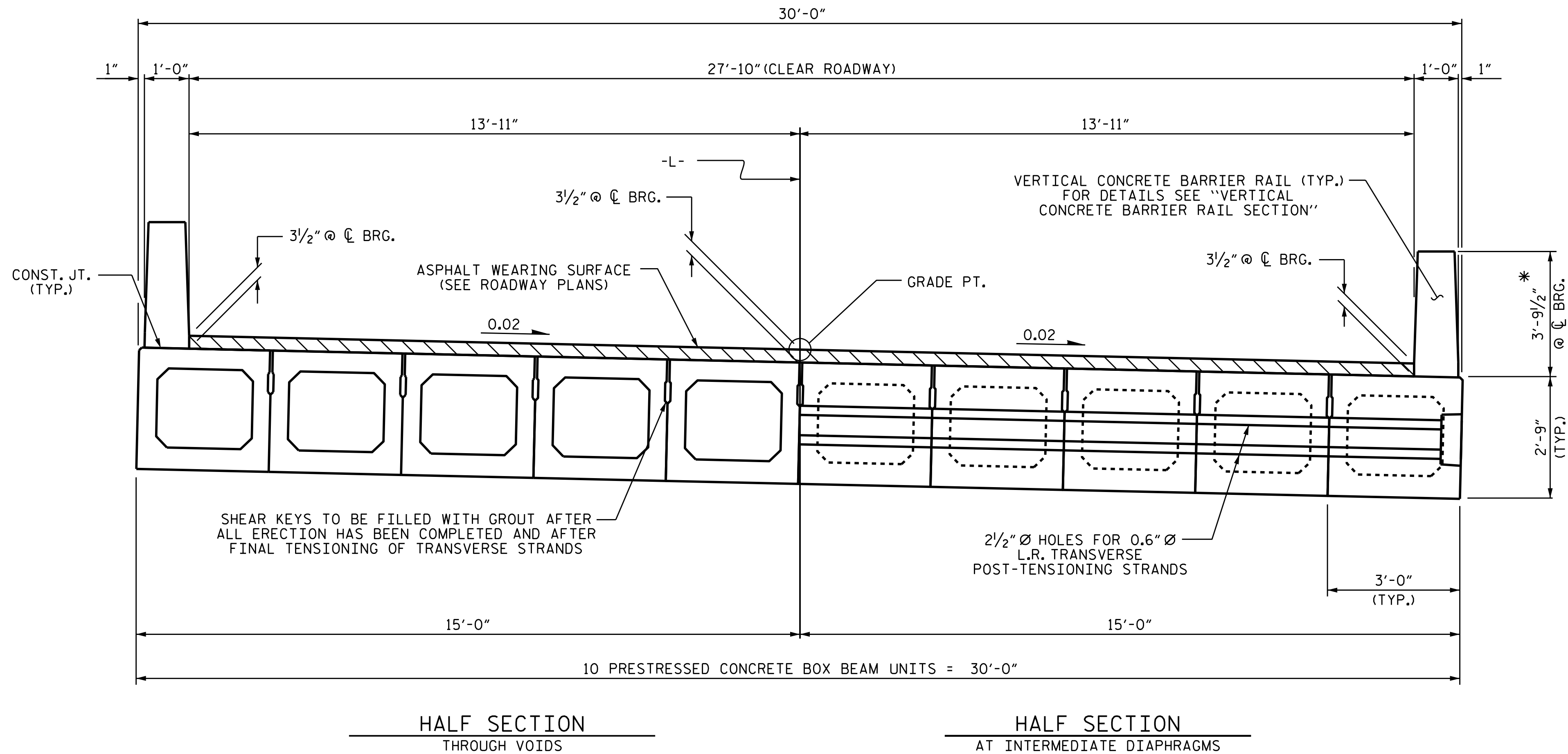
PROJECT NO. 17BP.12.R.55
CATAWBA COUNTY
STATION: 13+24.00 -L-

ASSEMBLED BY : M.ALINACHIAN DATE : 9/28/2018	
CHECKED BY : H. A. LOCKLEAR DATE : 6/2022	
DRAWN BY : TMG II/II	
CHECKED BY : AAC II/II	



DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD LRFR SUMMARY FOR 80' BOX BEAM UNIT 90° SKEW (NON-INTERSTATE TRAFFIC)						REVISIONS			SHEET NO. S-03
NO.	BY:	DATE:	NO.	BY:	DATE:				TOTAL SHEETS 15
1			3						
2			4						

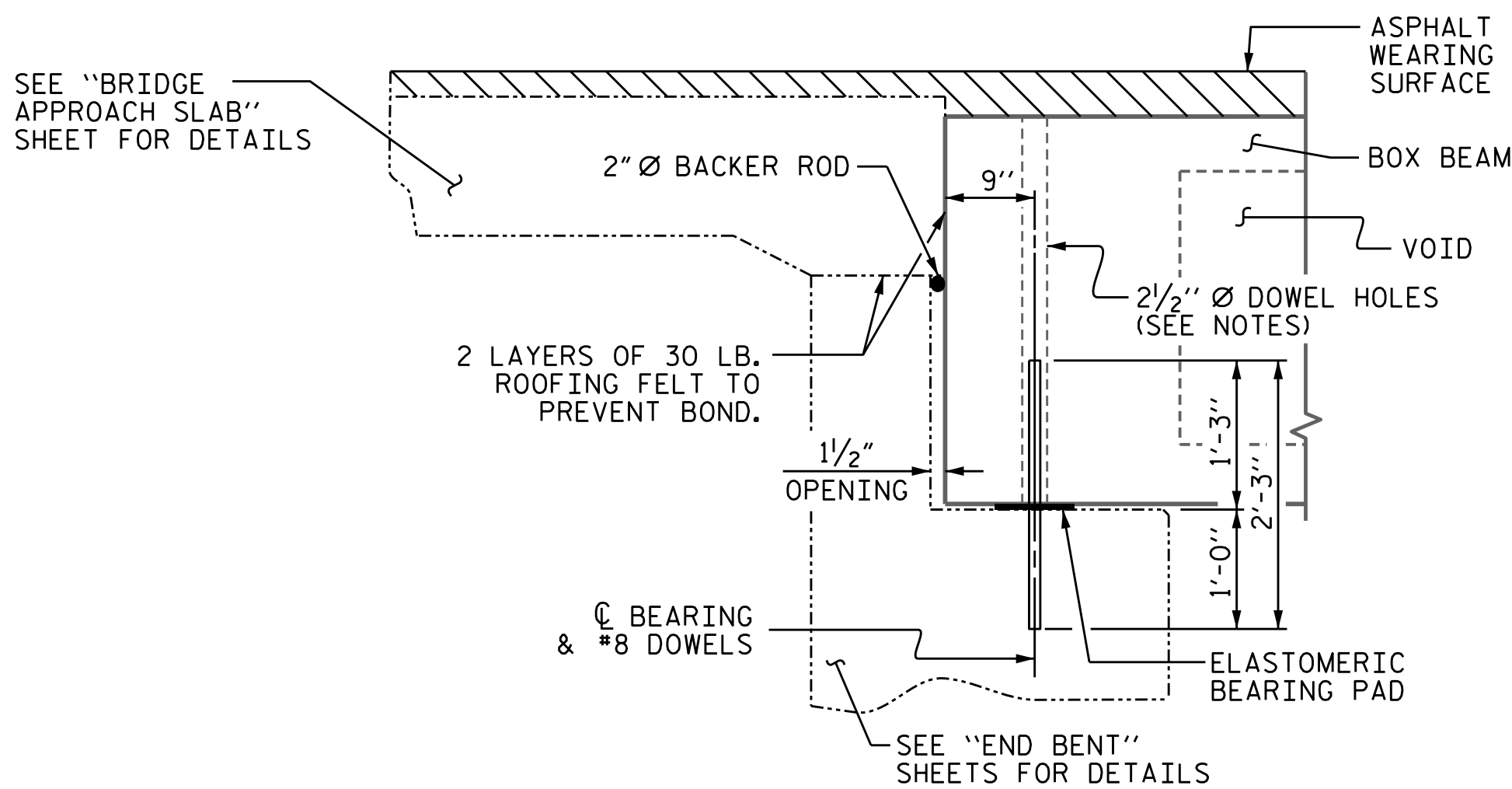


HALF SECTION THROUGH VOIDS
HALF SECTION AT INTERMEDIATE DIAPHRAGMS

TYPICAL SECTION

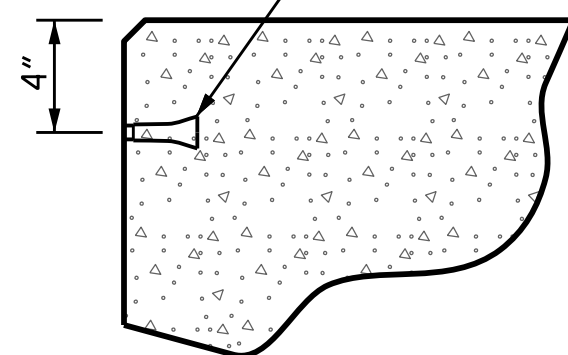
*THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.

FIXED END



SECTION AT END BENT

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



THREADED INSERT DETAIL

NOTES

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

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

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

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

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

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

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE BOX BEAM UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6000 PSI.

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

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

APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS.

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

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

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 5". THE HEIGHT OF THE BLOCKOUT IN THE VERTICAL CONCRETE BARRIER RAIL SHALL EXTEND FROM THE TOP OF THE BOX BEAM UNIT TO THE TOP OF THE DRAIN OPENING.

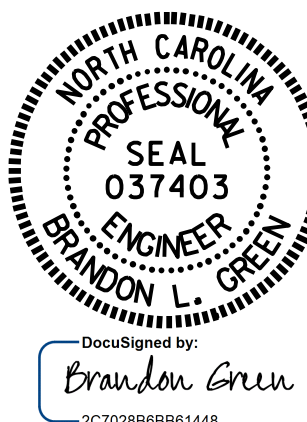
APPLY EPOXY PROTECTIVE COATING TO EXTERIOR FACE OF THE EXTERIOR BOX BEAM UNITS THAT REQUIRE DRAINS IN THE BARRIER RAIL.

PROJECT NO. 17BP.12.R.55

CATAWBA COUNTY

STATION: 13+24.00 -L-

SHEET 1 OF 5



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
3'-0" X 2'-9"
PRESTRESSED CONCRETE
BOX BEAM UNIT

ASSEMBLED BY : M.ALINAGHIAN DATE : 09/28/18
CHECKED BY : H.A. LOCKLEAR DATE : 6/2022

DRAWN BY : DGE 8/II
CHECKED BY : TMG II/II

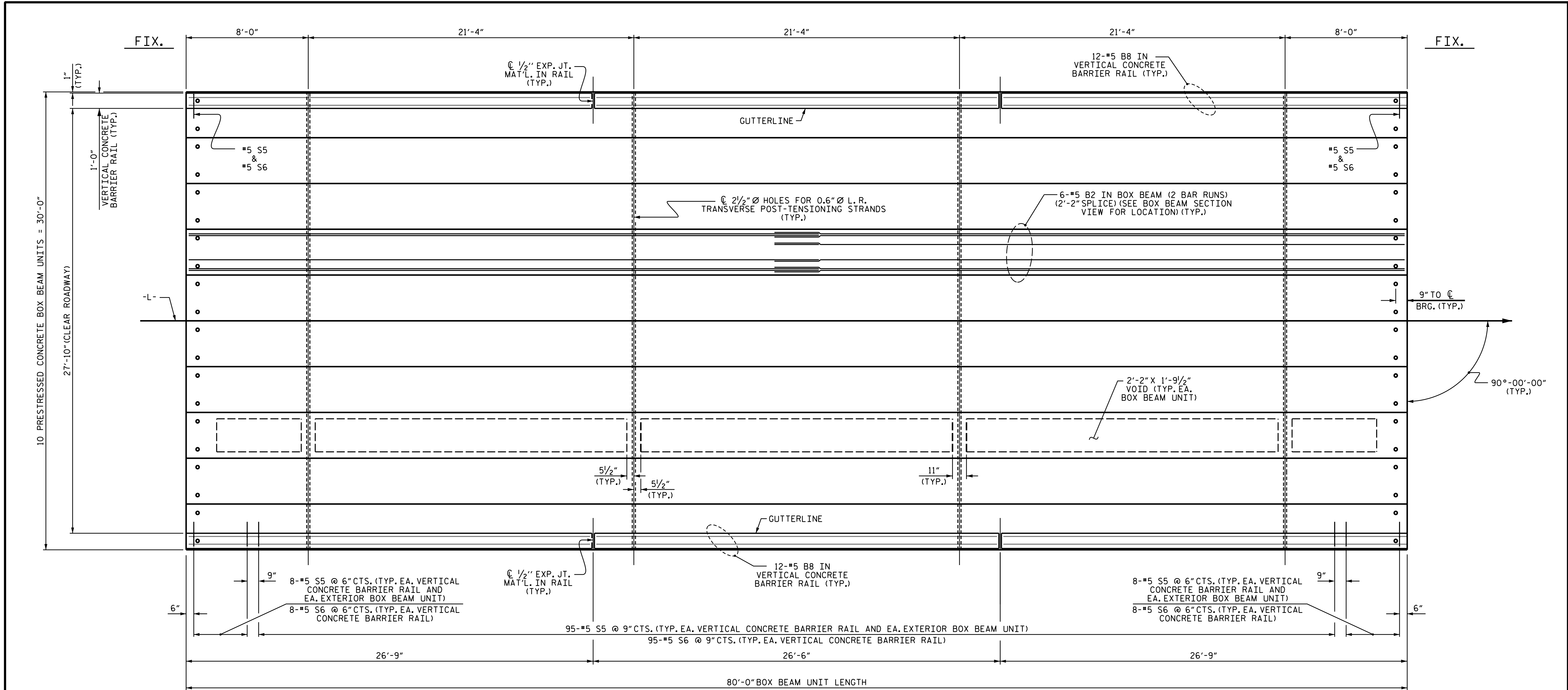
REV. 8/14 MAA/TMG

9/2/2022
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bgreen

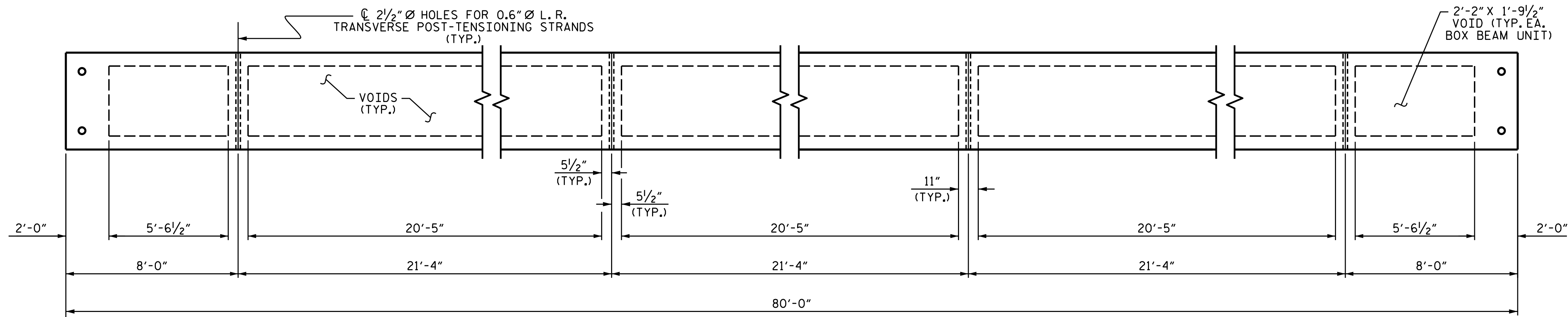
DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-04
2			4			TOTAL SHEETS 15

STD. NO. STD.33PCBB1-30



PLAN OF UNIT



DIAPHRAGM AND VOID LAYOUT

PROJECT NO. 17BP.12.R.55
CATAWBA COUNTY
STATION: 13+24.00 -L-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 80' UNIT
27'-10" CLEAR ROADWAY
90° SKEW



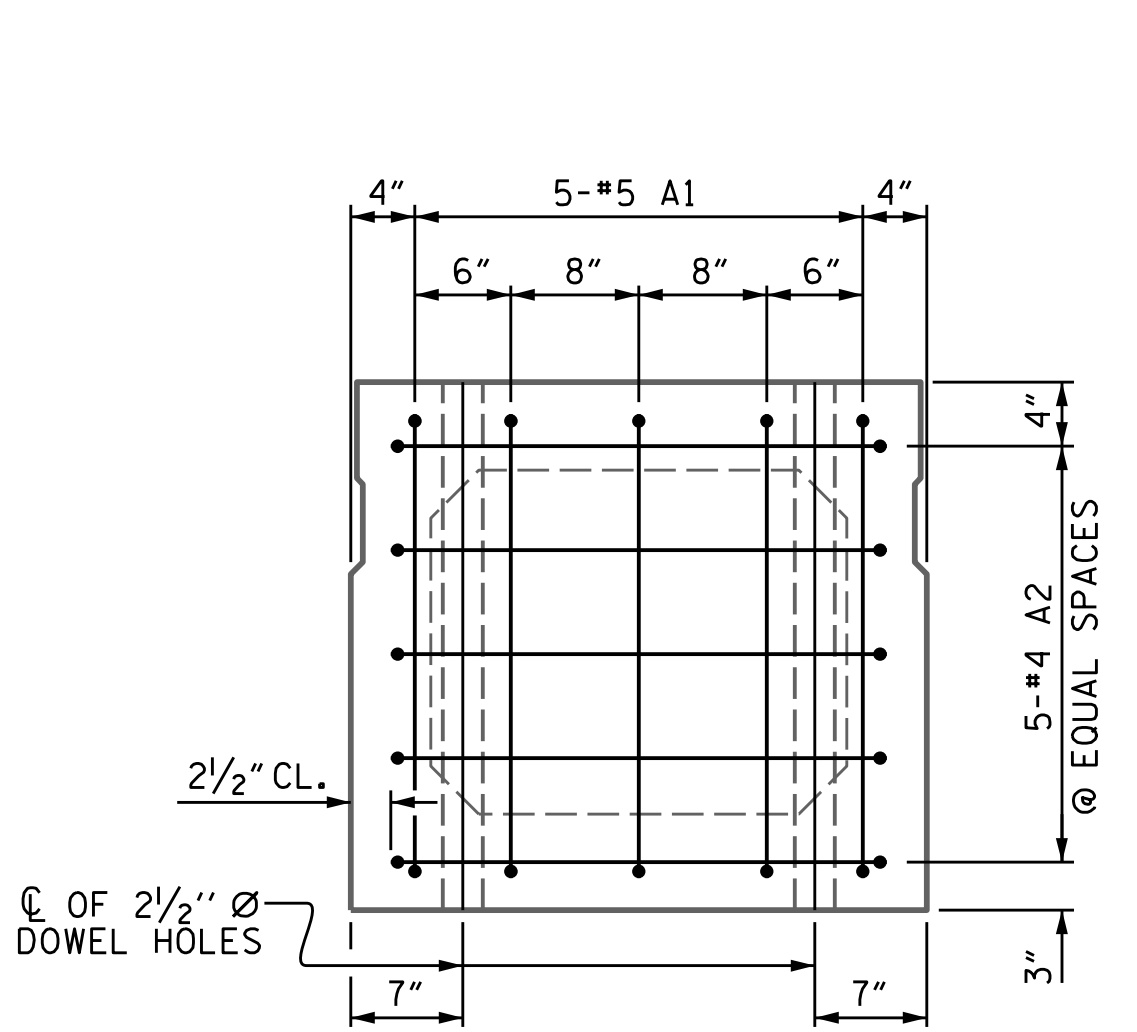
DocuSign by
Brandon Green
2C7028B8B8B1445
09/02/2022

ASSEMBLED BY : M.ALINAGHIAN DATE : 9/28/18
CHECKED BY : H.A. LOCKLEAR DATE : 6/2022
DRAWN BY : DGE 8/II
CHECKED BY : TMG II/II

REV. 8/14 MAA/TMG

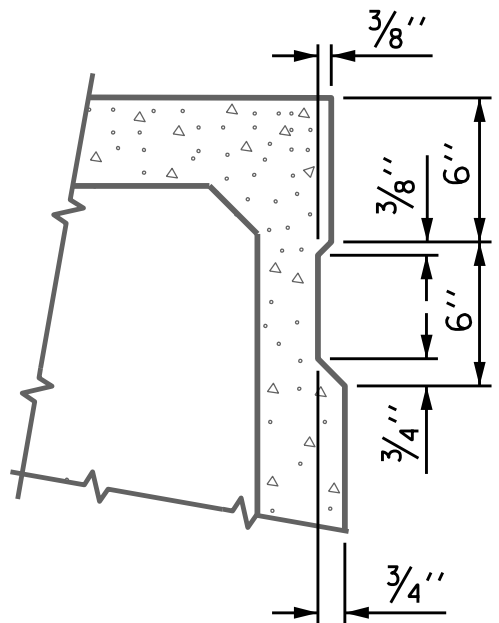
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SIGNATURES COMPLETED

REVISIONS						SHEET NO. S-05
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 15
2			4			



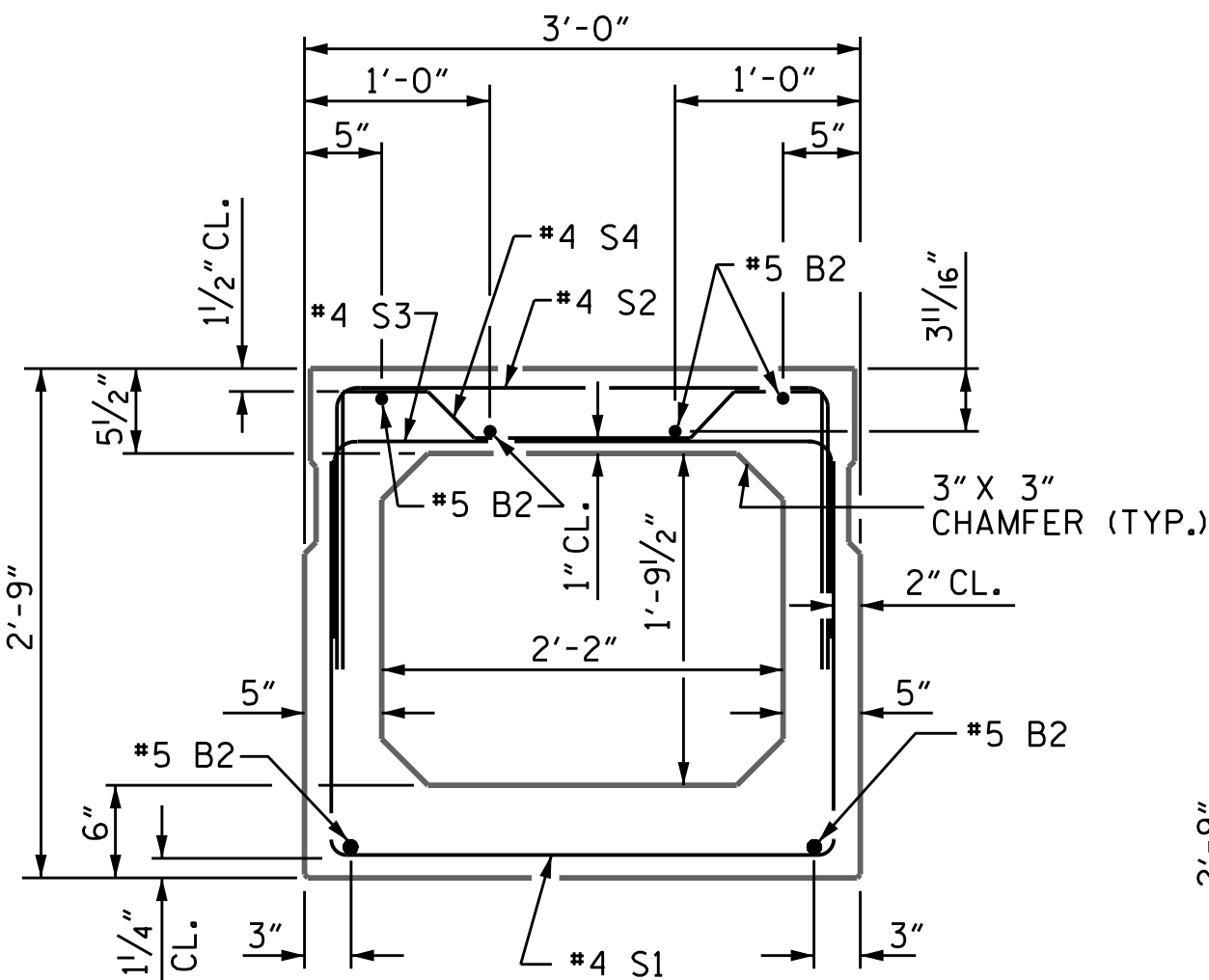
END ELEVATION

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



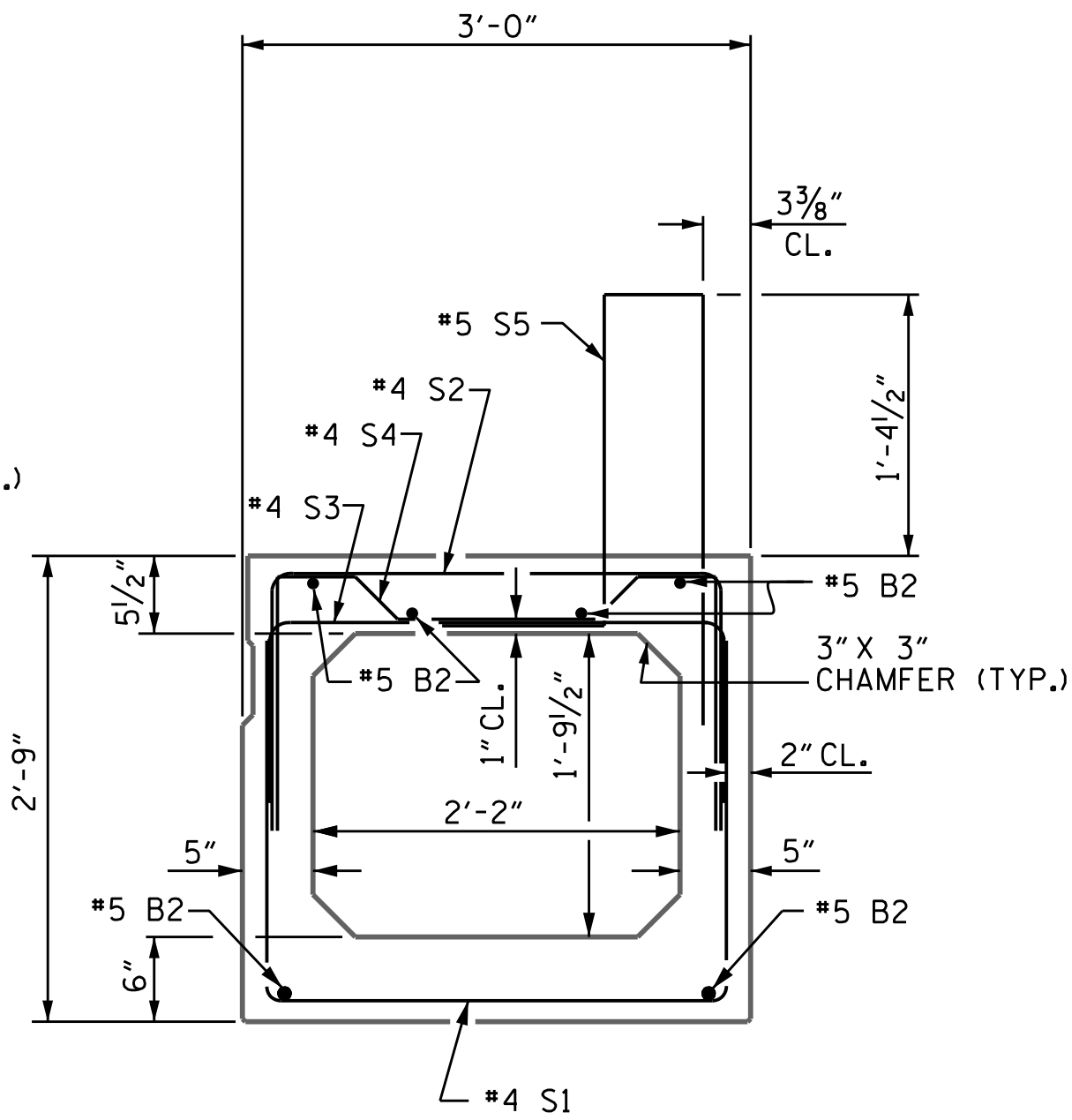
SHEAR KEY DETAIL

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



INTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)

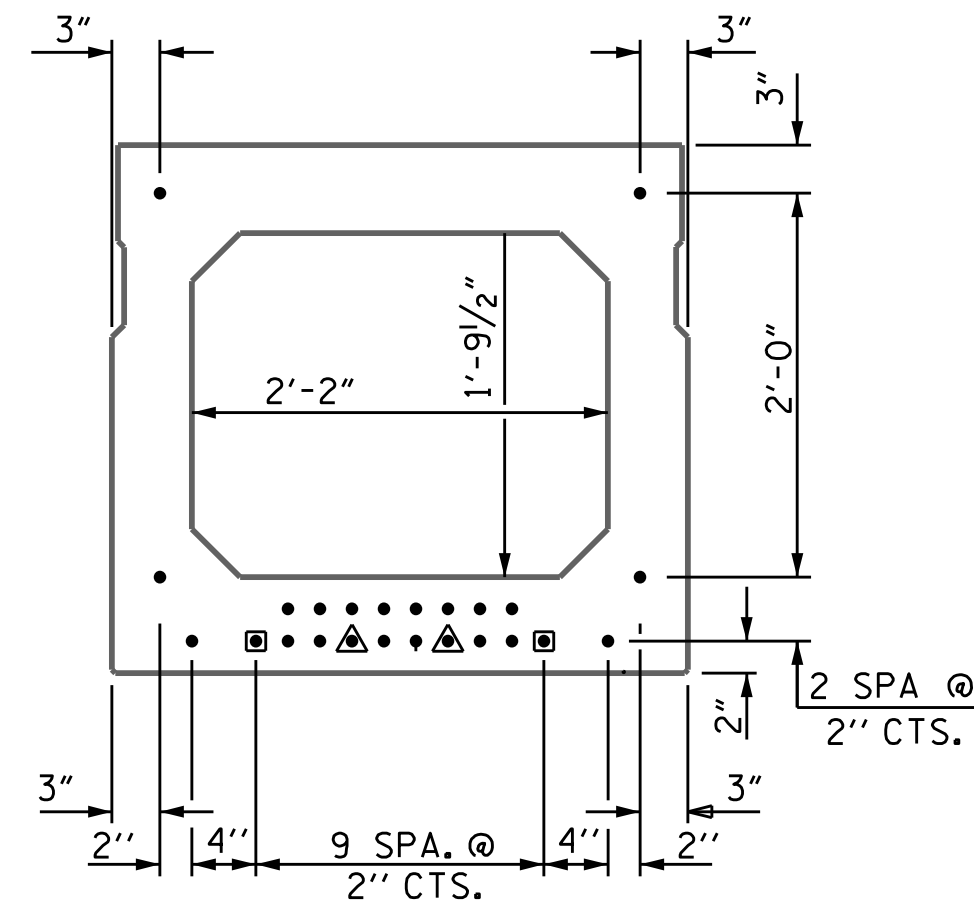


EXTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)

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

0.6" Ø LOW RELAXATION STRAND LAYOUT



TYPICAL STRAND LOCATION

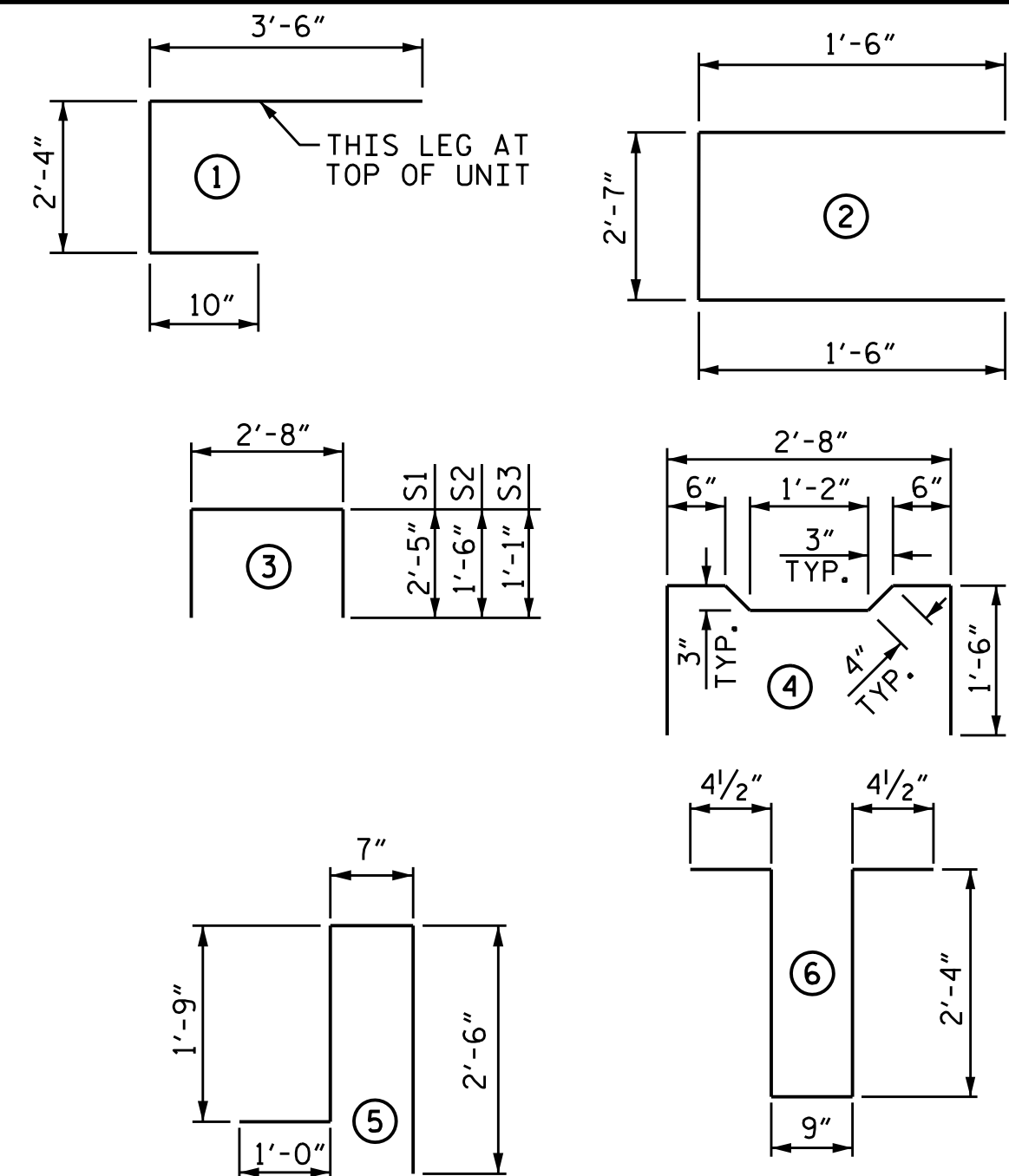
(24 STRANDS REQUIRED)

DEBONDING LEGEND

- FULLY BONDED STRANDS
- STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER

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

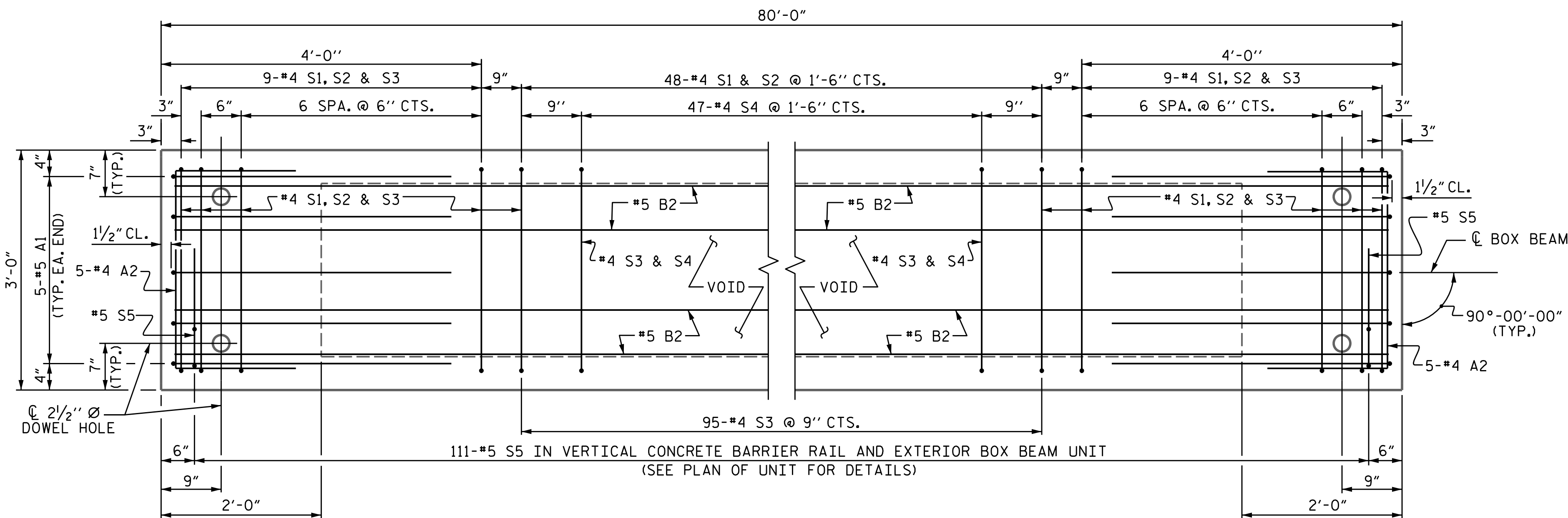
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE BOX BEAM SECTION

BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
A1	10	#5	1	6'-8"	70	6'-8"	70
A2	34	#4	2	5'-7"	127	5'-7"	127
B2	12	#5	STR	40'-11"	512	40'-11"	512
K1	12	#4	6	6'-2"	49	6'-2"	49
K2	8	#4	STR	2'-7"	14	2'-7"	14
S1	66	#4	3	7'-6"	331	7'-6"	331
S2	66	#4	3	5'-8"	250	5'-8"	250
S3	113	#4	3	4'-10"	365	4'-10"	365
S4	47	#4	4	5'-10"	183	5'-10"	183
* S5	111	#5	5	5'-10"	675	--	--
REINFORCING STEEL				1901	LBS.	1901	LBS.
* EPOXY COATED REINF. STEEL				675	LBS.		
8000 P.S.I. CONCRETE				14.2	CU. YDS.	14.1	CU. YDS.
0.6" Ø L.R. STRANDS				No. 24		No. 24	



PLAN OF BOX BEAM

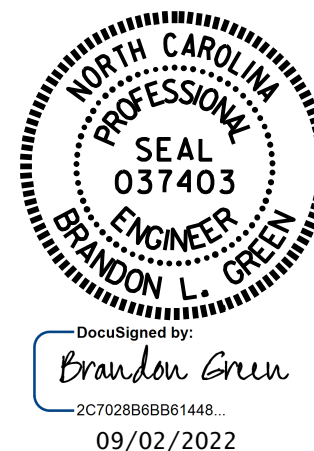
EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS. FOR LOCATION OF DIAPHRAGMS, SEE "PLAN OF UNIT". FOR THREADED INSERTS, SEE "THREADED INSERT DETAIL". FOR REINFORCING STEEL IN DIAPHRAGMS, SEE "DOUBLE DIAPHRAGM DETAILS".

PROJECT NO. 17BP.12.R.55

CATAWBA COUNTY

STATION: 13+24.00 -L-

SHEET 3 OF 5



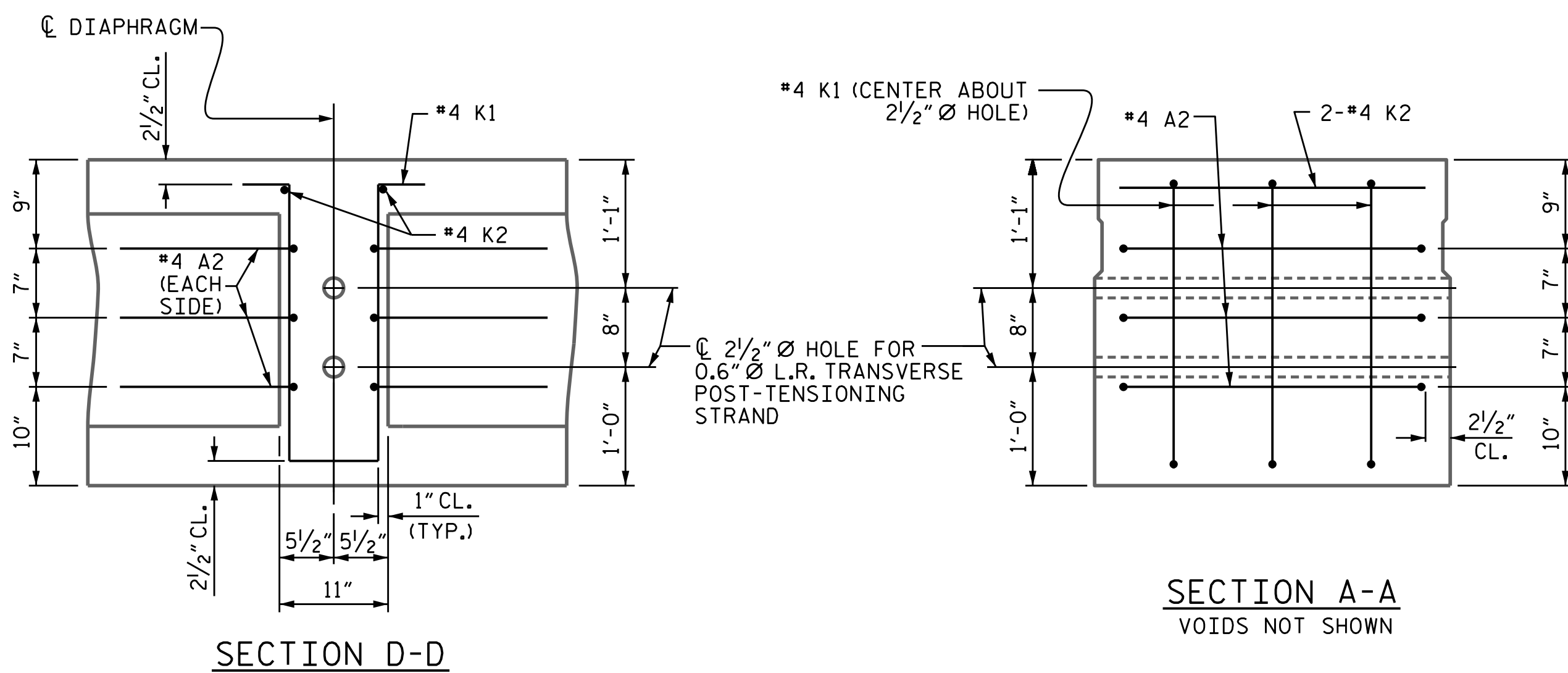
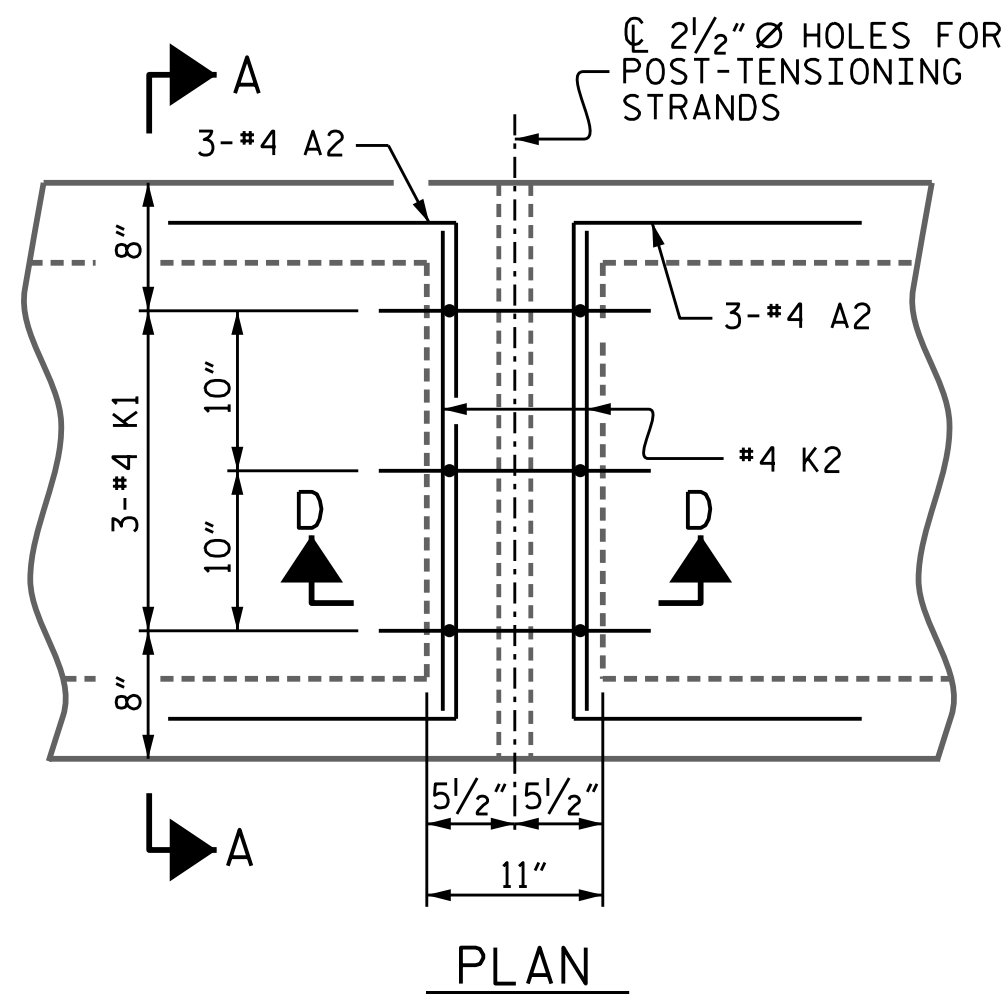
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

3'-0" X 2'-9"
PRESTRESSED CONCRETE
BOX BEAM UNIT

REVISIONS						SHEET NO. S-06
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 15
2			4			

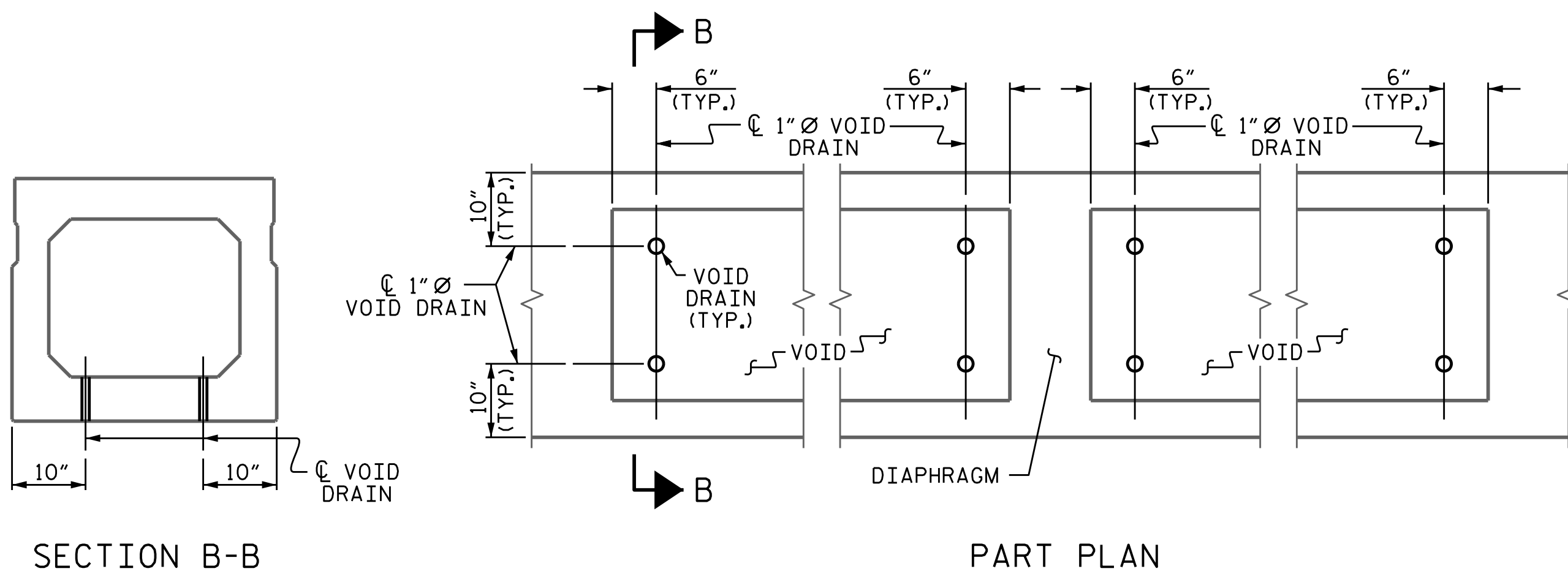
DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

ASSEMBLED BY : M.ALINAGHIAN	DATE : 09/28/18
CHECKED BY : H.A. LOCKLEAR	DATE : 6/2022
DRAWN BY : DGE 10/11	REV. 9/14
CHECKED BY : TMG 11/11	MAA/TMG



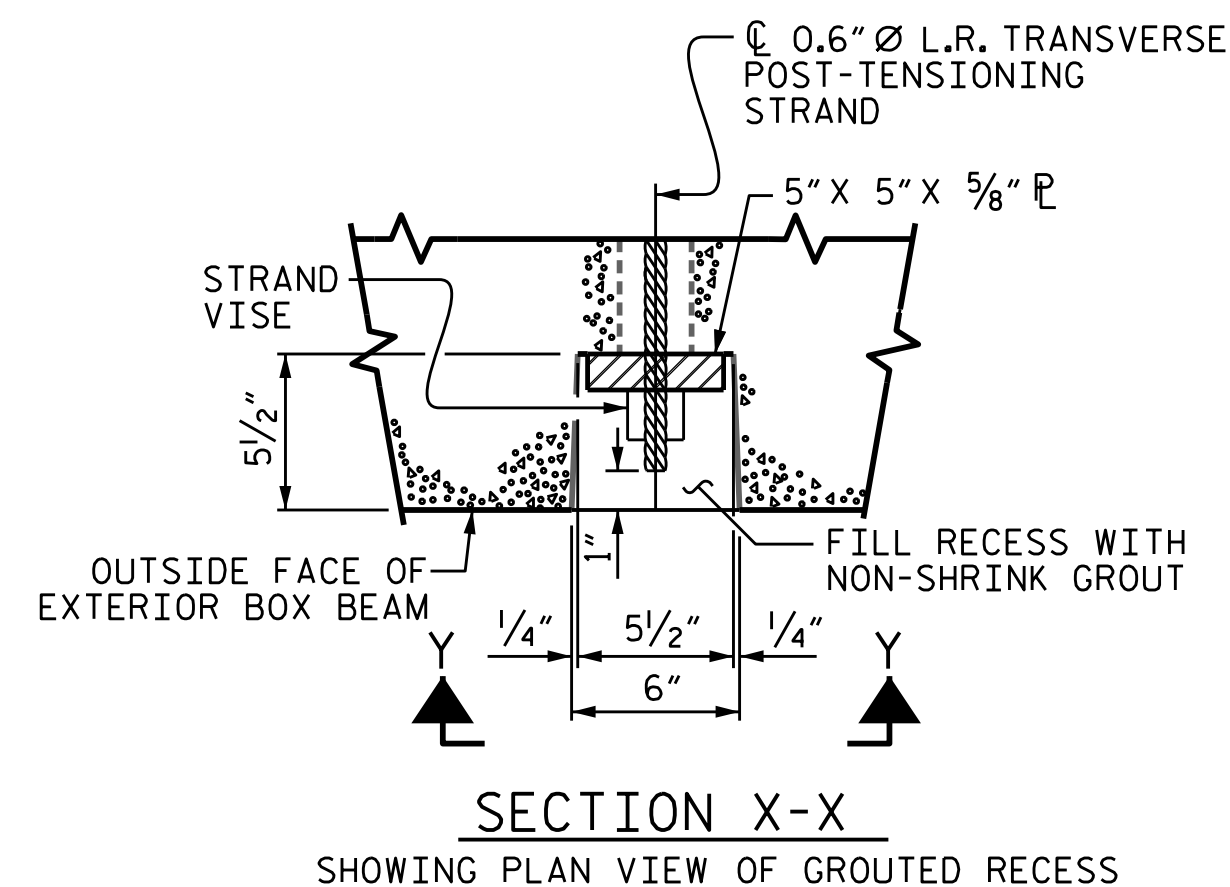
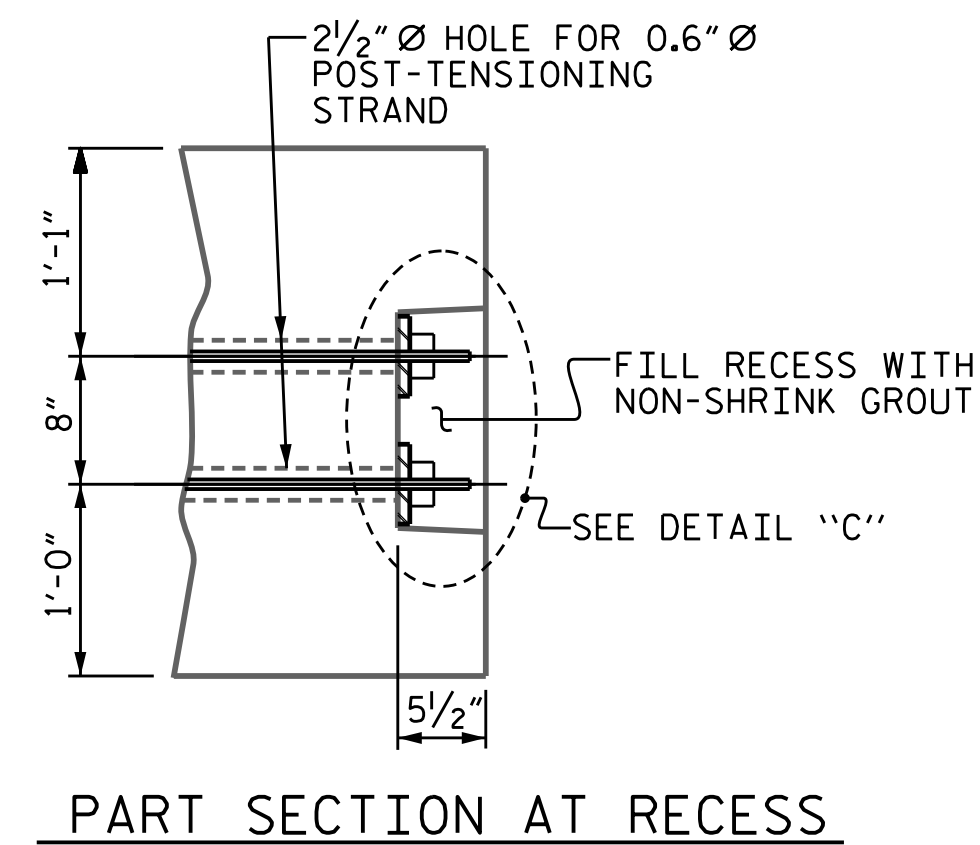
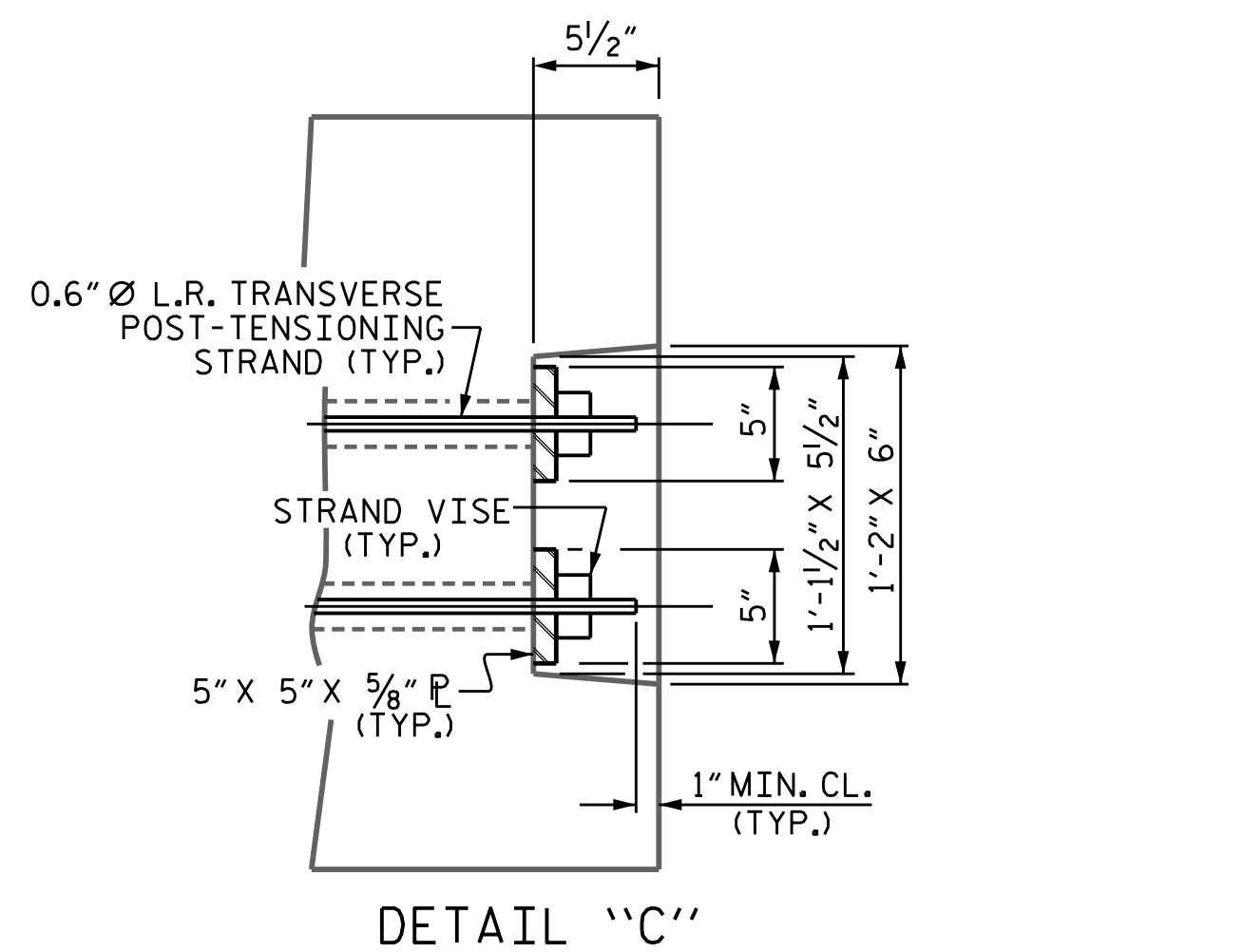
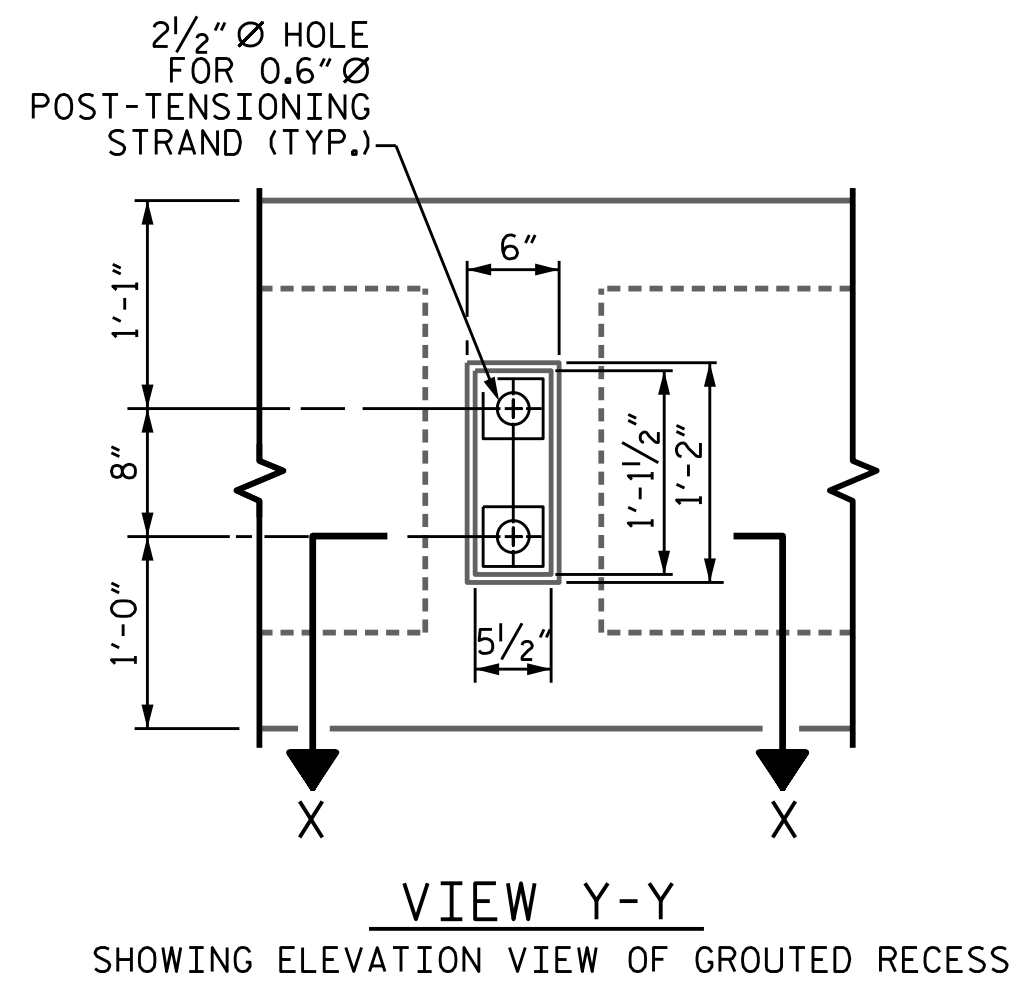
DOUBLE DIAPHRAGM DETAILS

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



VOID DRAIN DETAILS

(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)

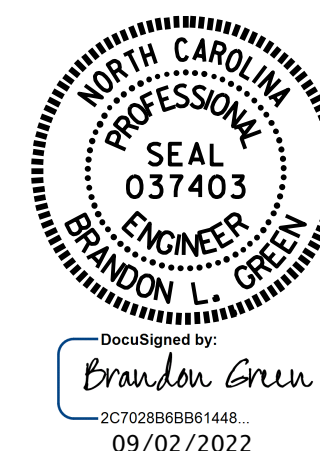


GROUDED RECESS DETAIL AT END OF POST-TENSIONED STRANDS OF EXTERIOR BOX BEAM

DEAD LOAD DEFLECTION AND CAMBER	
80' BOX BEAM UNIT	3'-0" x 2'-9"
CAMBER (SLAB ALONE IN PLACE)	0.6" Ø L.R. STRAND
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	1 3/4" ↑
FINAL CAMBER	1/2" ↓
** INCLUDES FUTURE WEARING SURFACE	

PROJECT NO. 17BP.12.R.55
CATAWBA COUNTY
STATION: 13+24.00 -L-

SHEET 4 OF 5



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
3'-0" X 2'-9"
PRESTRESSED CONCRETE
BOX BEAM UNIT

ASSEMBLED BY : M.ALINAGHIAN DATE : 9/28/18
CHECKED BY : H.A. LOCKLEAR DATE : 6/2022
DRAWN BY : DGE 10/11
CHECKED BY : TMG 11/11

REV. 8/14 MAA/TMG

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REVISIONS						SHEET NO. S-07
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 15
2			4			

STD.NO.33PCBB5_90S



ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.



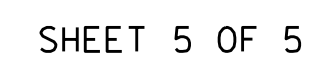
Diagram 1: A cross-section of a bollard labeled "BAR TYPE". The dimensions are: top width 6", height 3'-4", and base width 7 3/4".



SECTION S-S
T DAM IN OPEN JOINT
IS IS TO BE USED ONLY
EN SLIP FORM IS USED)



	ASPHALT OVERLAY THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
80' UNITS	2 1/4"	3'-8 1/4"



3'-0" X 2'-9"
PRESTRESSED CONCRETE
BOX BEAM UNIT

REVISIONS						SHEET NO. S-08
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 15
2			4			

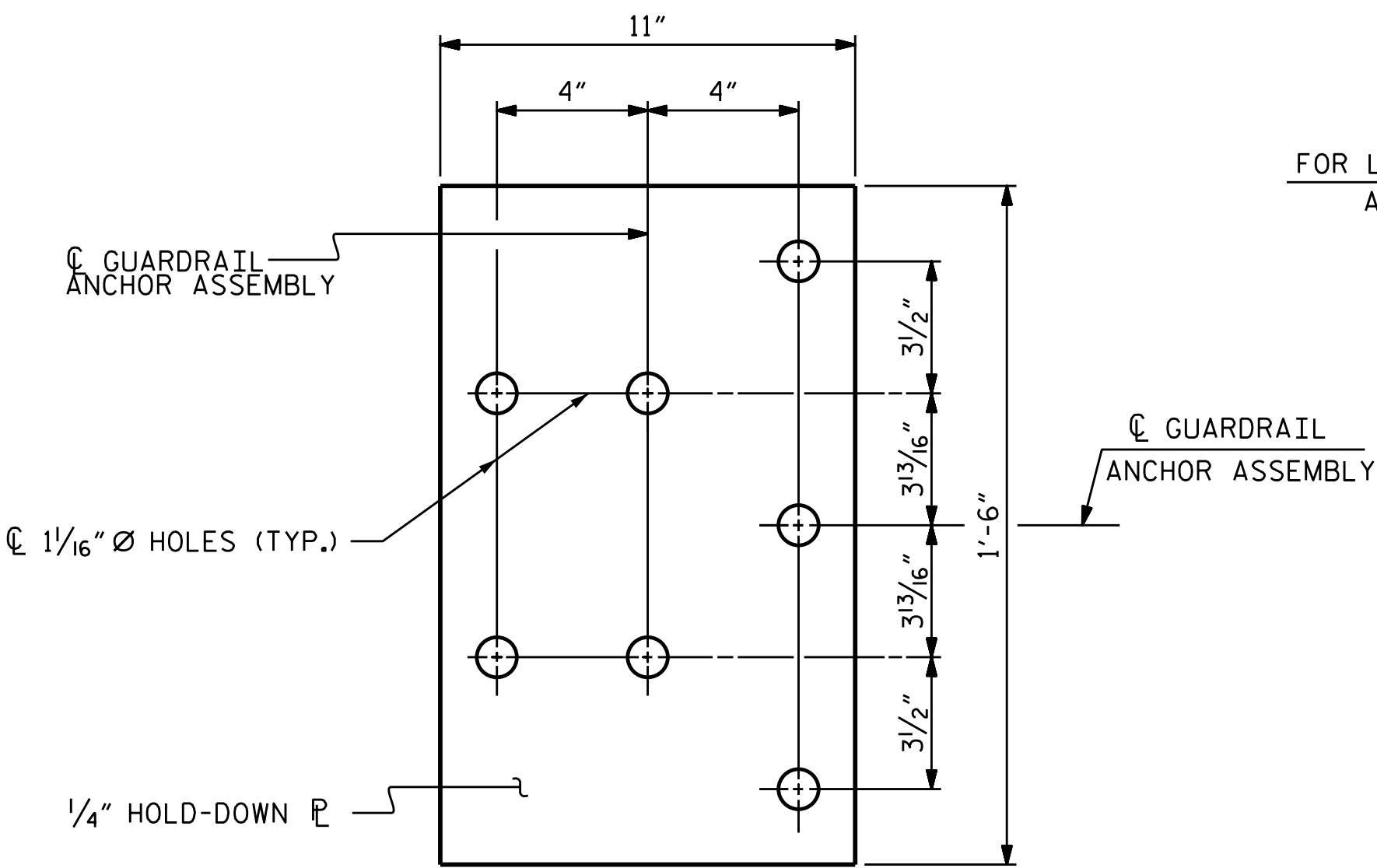
STD. NO. 33PCBB8_90S

DRAWN BY : DGE 10/II	REV. 5/18	MAA/THC
CHECKED BY : TMG 11/II		

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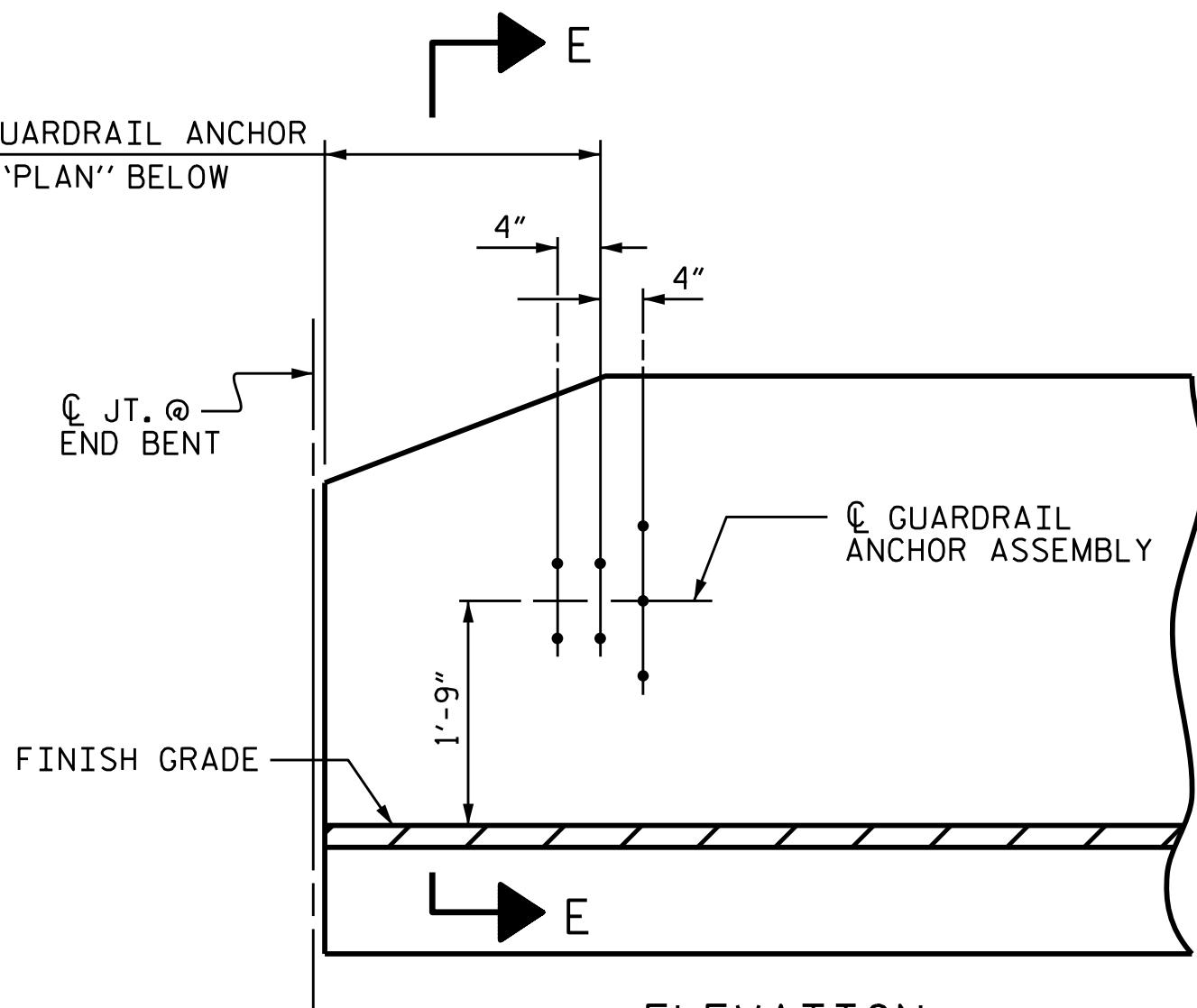


DocuSigned by:
Brandon Green
2C7028B6BB61448...
09/02/2022

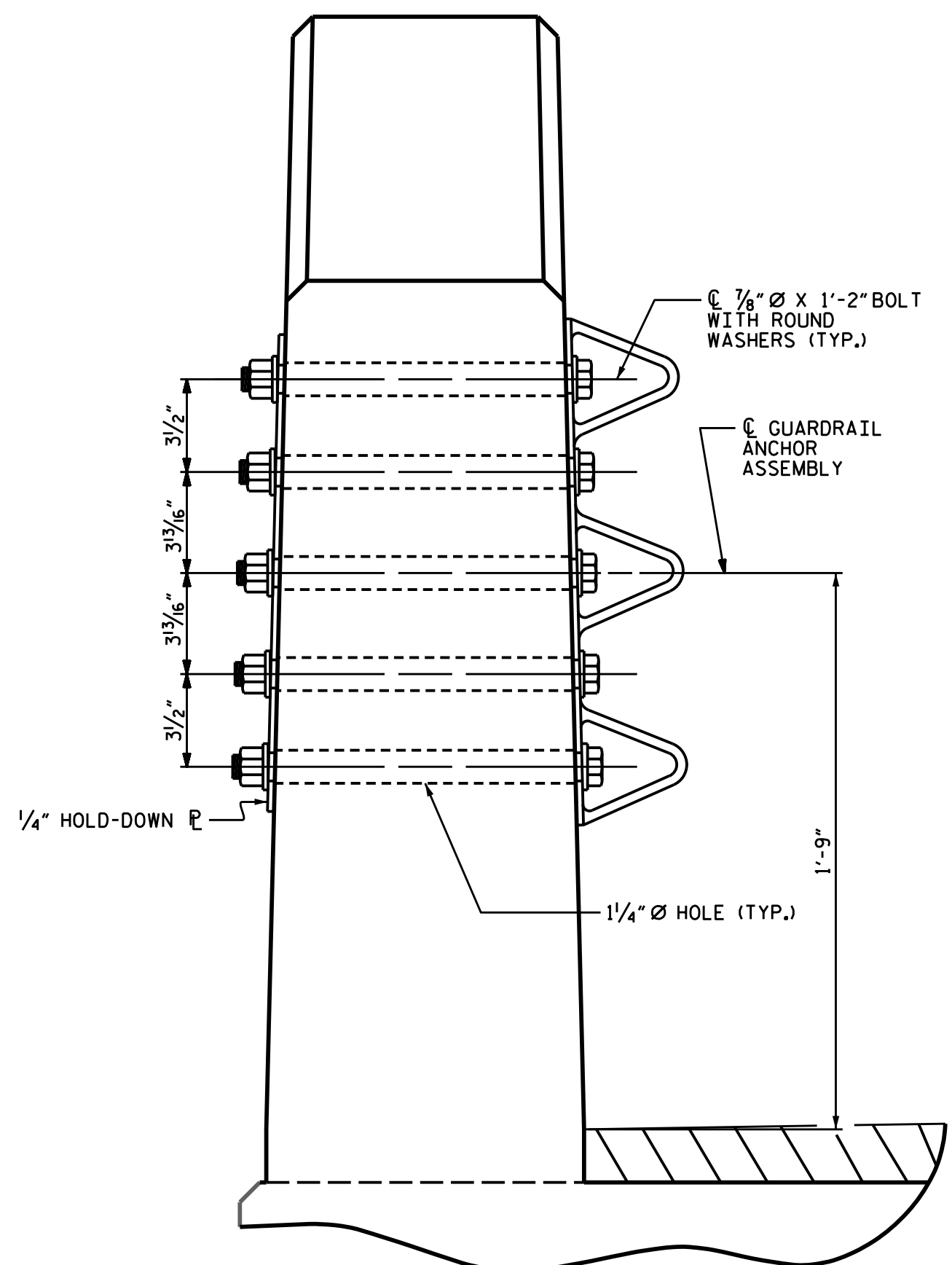


PLAN

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

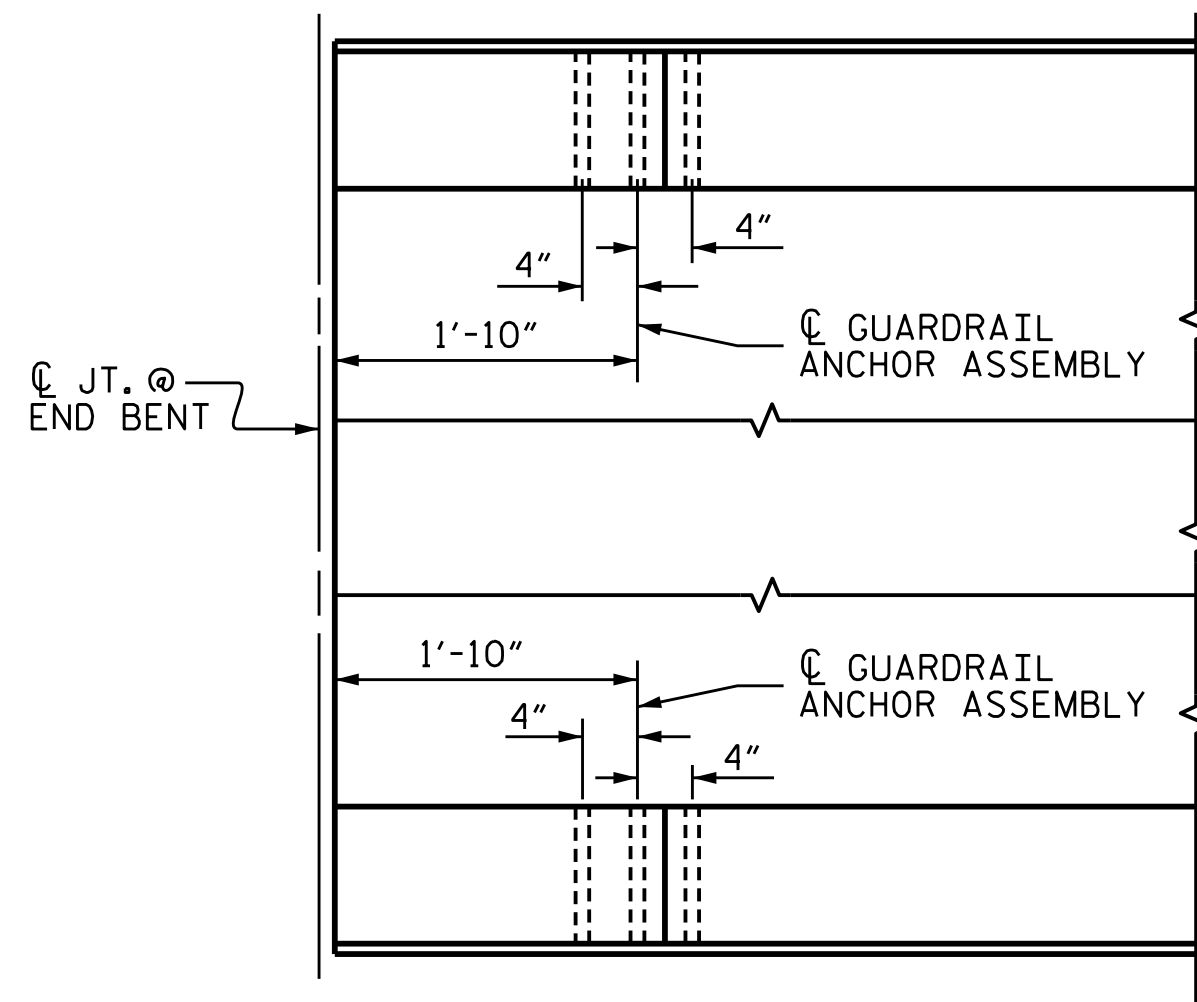


ELEVATION



SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

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



SKETCH SHOWING POINTS OF ATTACHMENT

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

NOTES

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

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

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 1/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

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

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

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

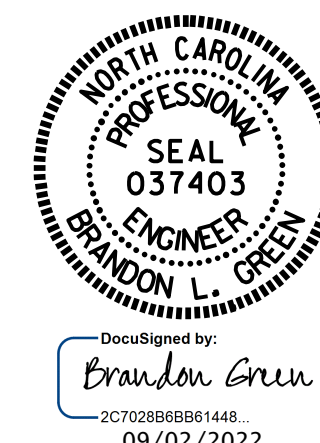
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

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

PROJECT NO. 17BP.12.R.55

CATAWBA COUNTY

STATION: 13+24.00 -L-



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

ASSEMBLED BY : M.ALINAGHIAN	DATE : 09/28/18
CHECKED BY : H.A. LOCKLEAR	DATE : 6/2022
DRAWN BY : MAA 5/10	REV. 1/15 MAA/TMC
CHECKED BY : GM 5/10	REV. 12/17 MAA/THC
	REV. 5/18 MAA/THC

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-09
2			4			
TOTAL SHEETS 15						

(SHT 1) STD. NO. GRA3

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

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

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



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

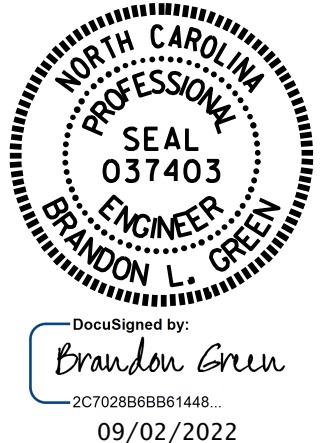
0.02 SLOPE

PROJECT NO. 17BP.12.R.55
CATAWBA COUNTY
 STATION: 13+24.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT No. 1



ASSEMBLED BY : M.ALINAGHIAN		DATE : 9/28/18	
CHECKED BY : H.A. LOCKLEAR		DATE : 6/2022	
DRAWN BY : WJH		12/11	REV. 4/15
CHECKED BY : AAC		12/11	MAA/TMG

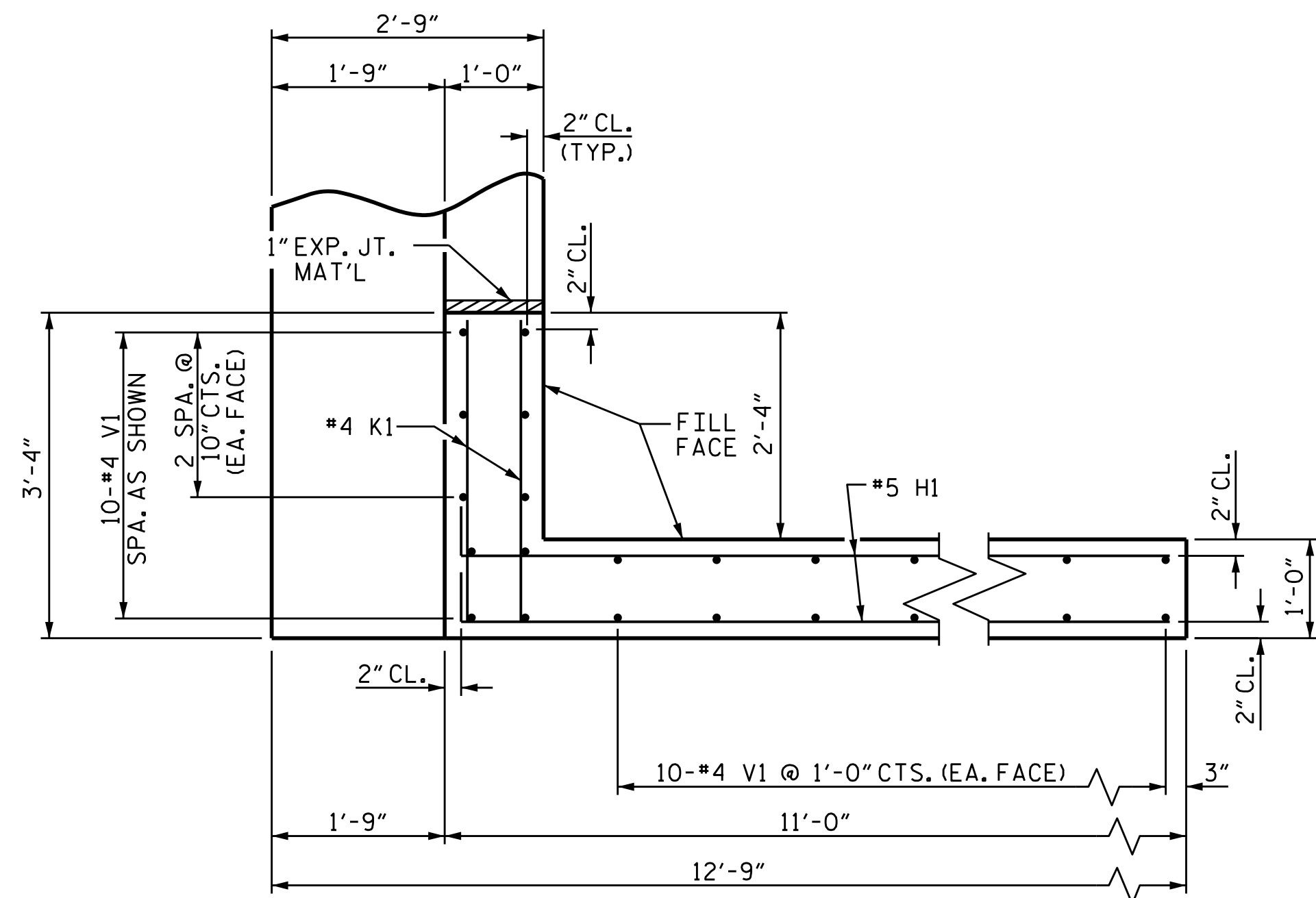
09/02/2022		REVISONS						SHEET NO.	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		NO.	BY:	DATE:	NO.	BY:	DATE:	S-10	
		①			③			TOTAL SHEETS	
		②			④			15	

FOR WING DETAILS, SEE SHEET 3 OF 4.

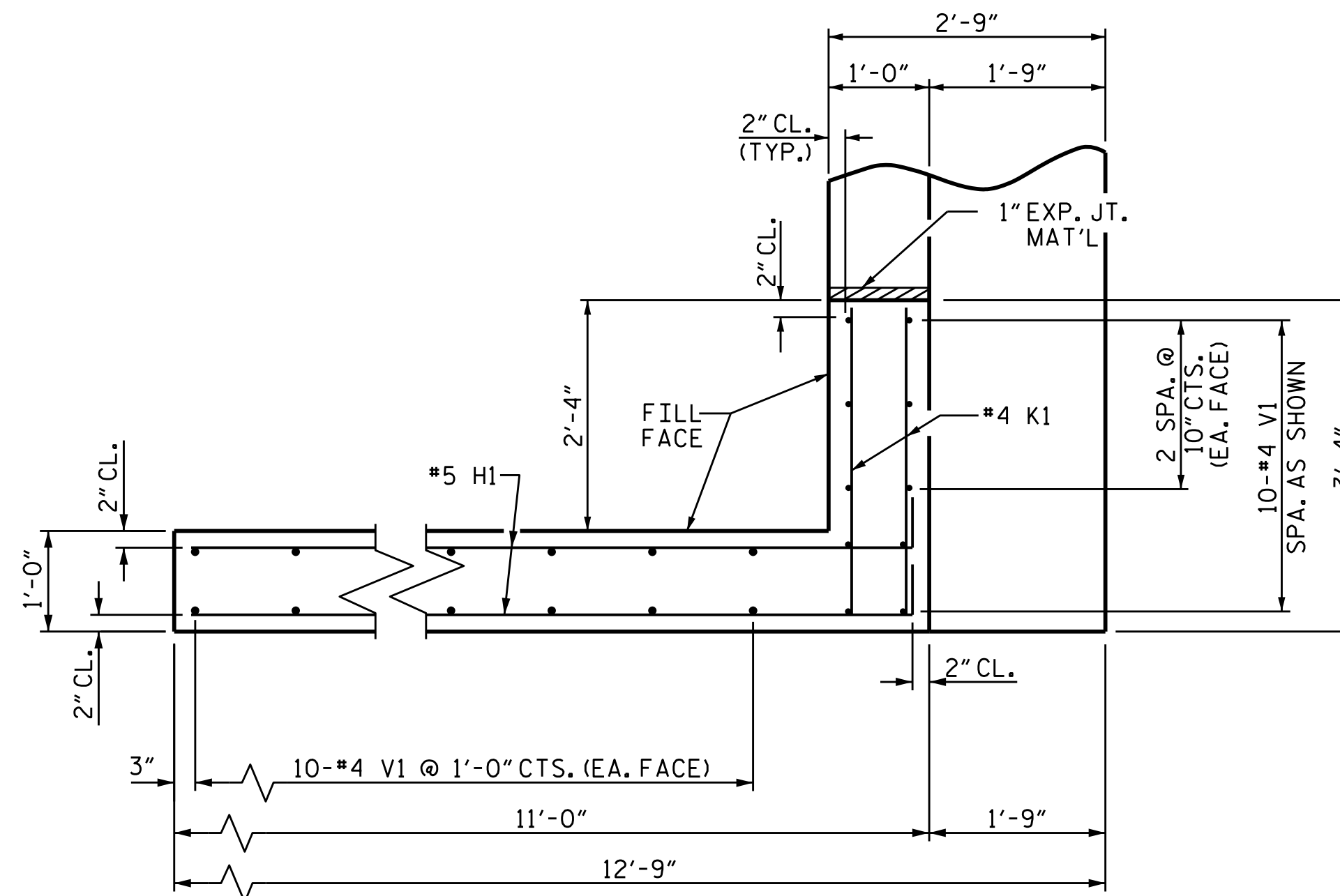
0.02 SLOPE

STD. NO. EB_30_90S4_33BB

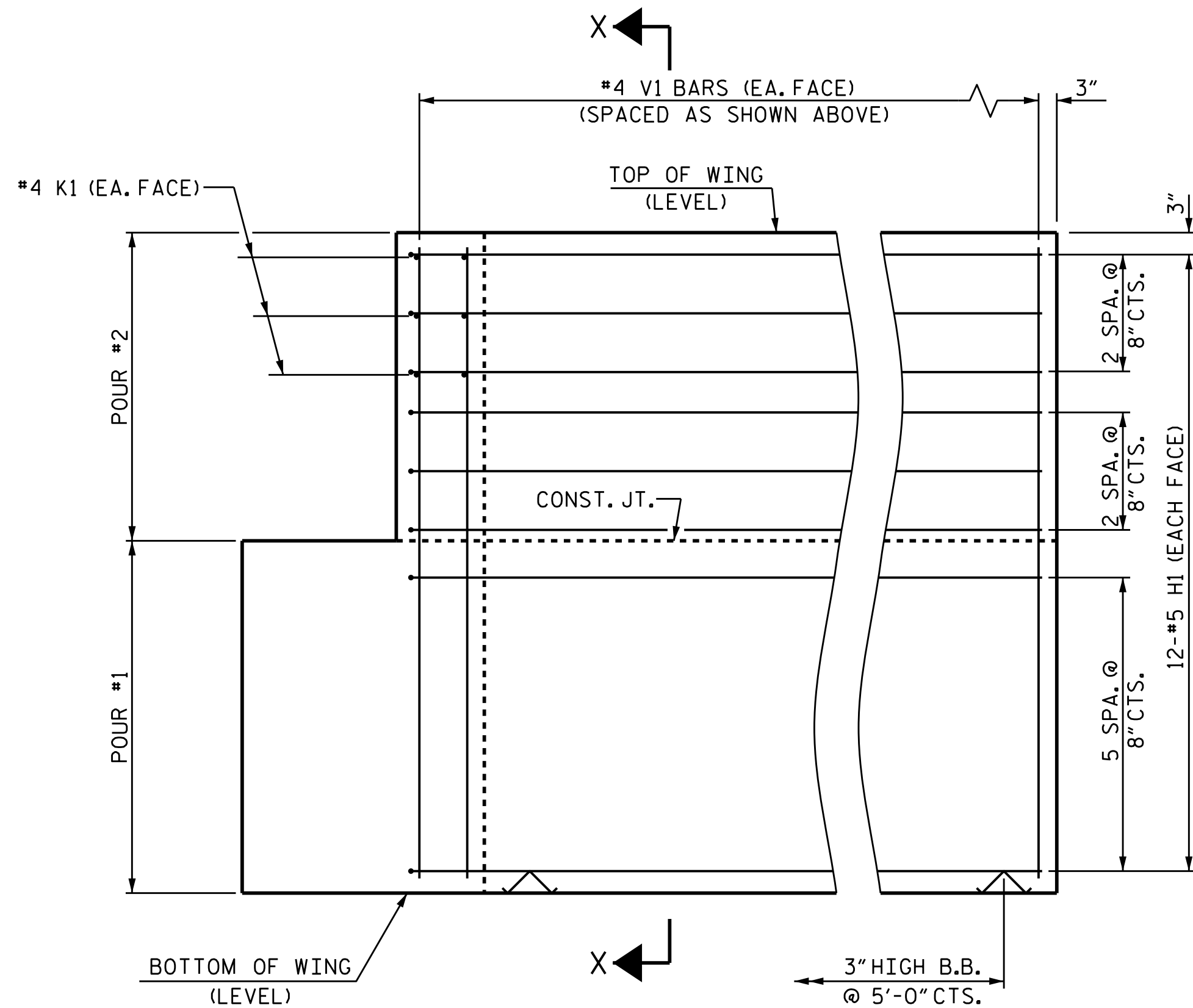




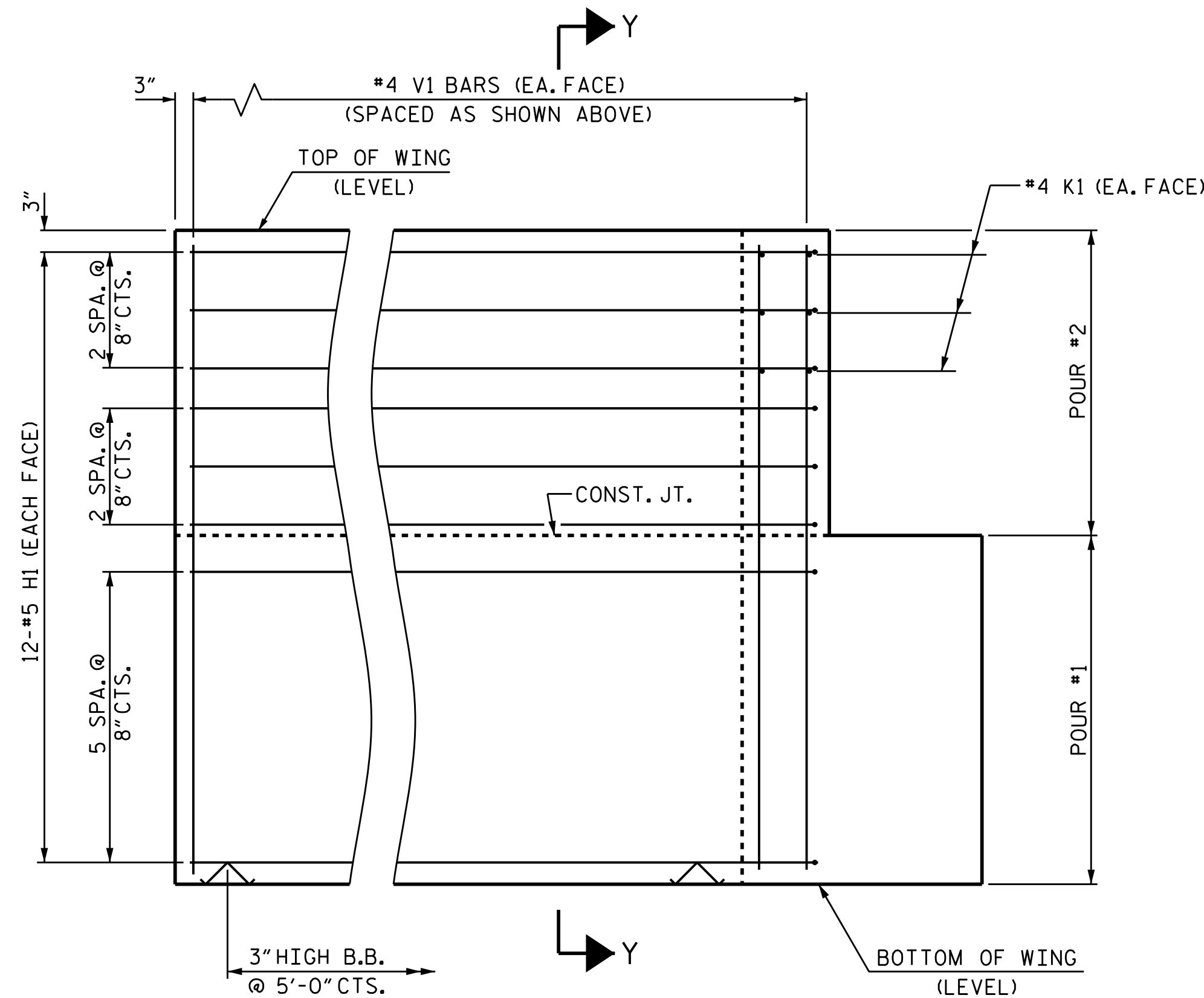
PLAN OF WING (W1)



PLAN OF WING (W2)

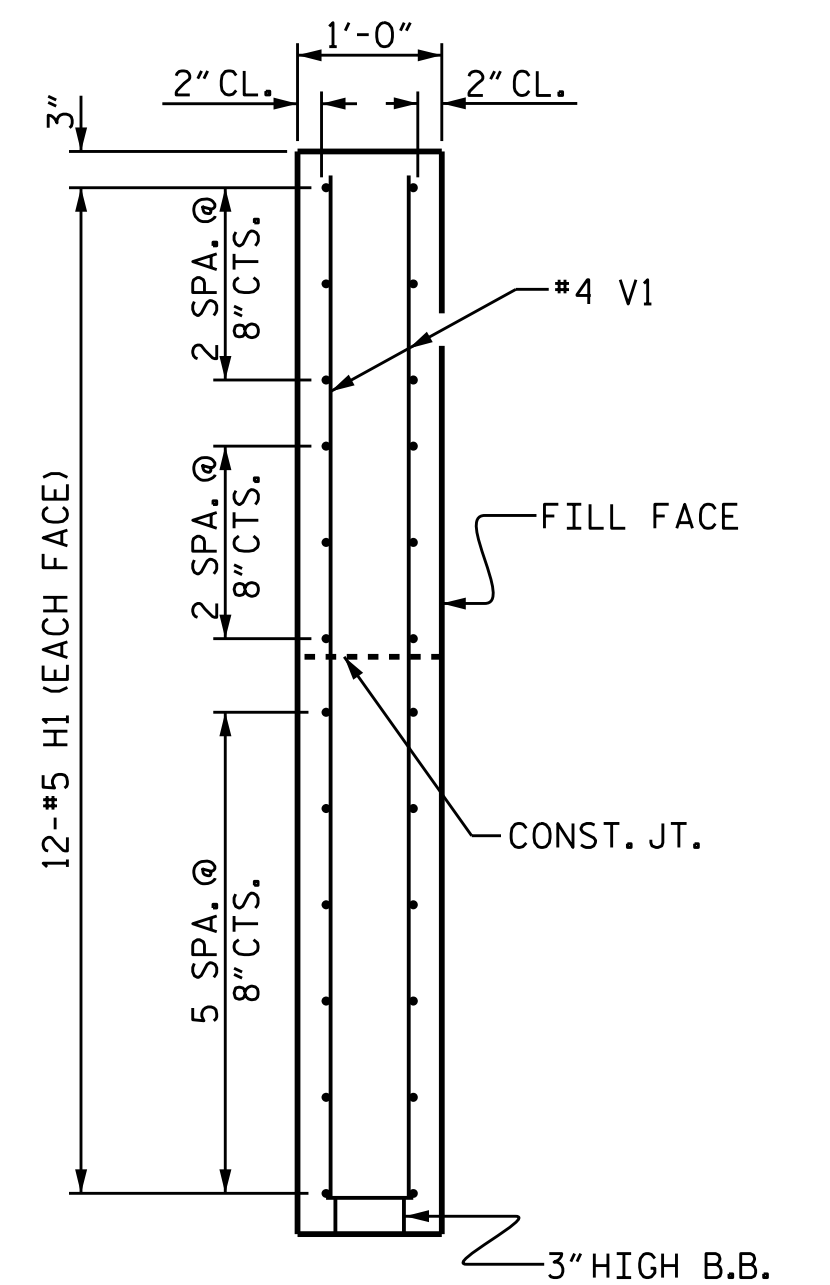


ELEVATION OF WING (W1)

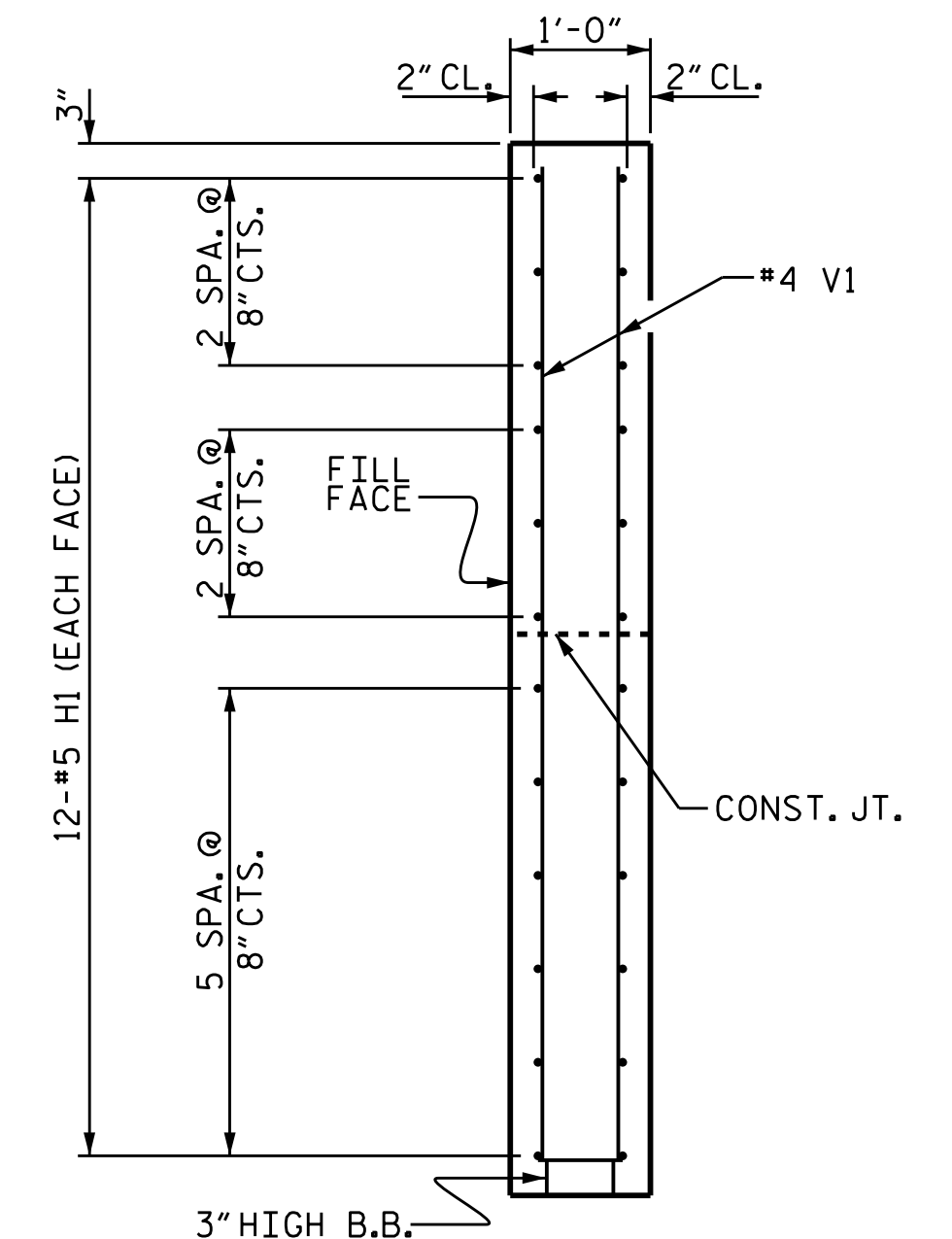


ELEVATION OF WING (W2)

WING DETAILS



SECTION X-X



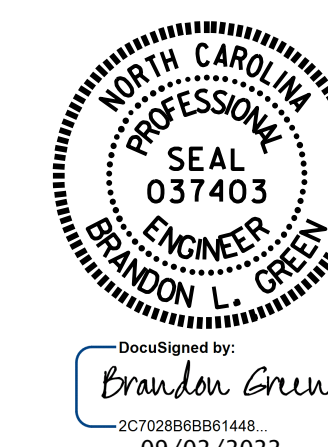
SECTION Y-Y

PROJECT NO. 17BP.12.R.55

CATAWBA COUNTY

STATION: 13+24.00 -L-

SHEET 3 OF 4



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

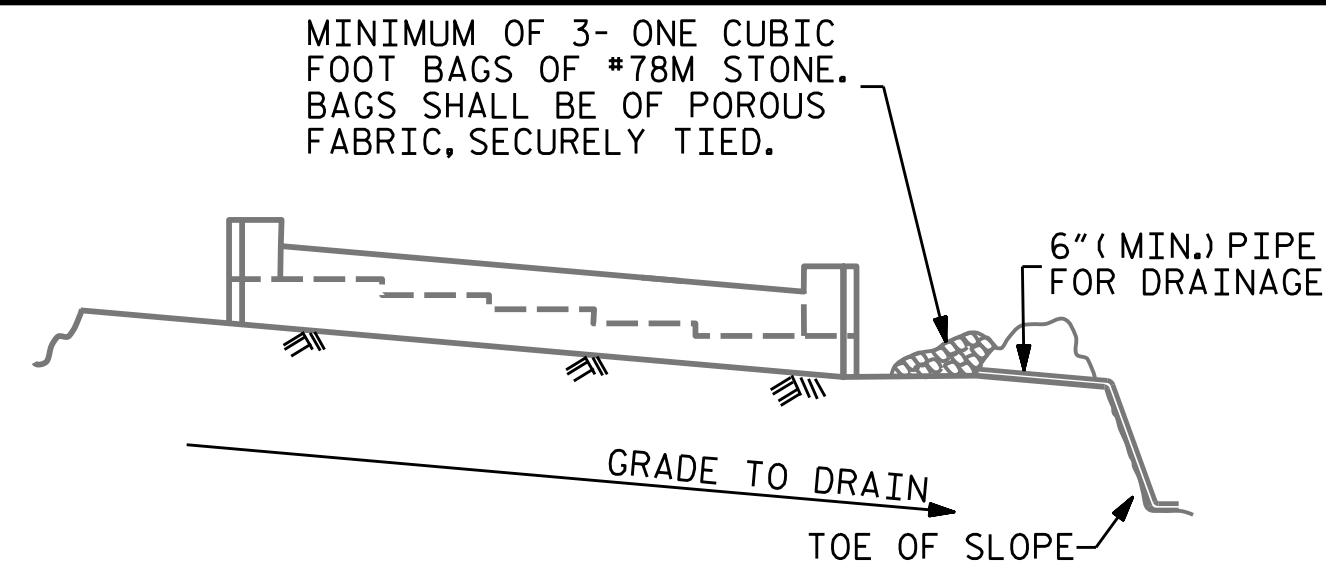
SUBSTRUCTURE
END BENT
WING DETAILS

ASSEMBLED BY : M.ALINAGHIAN	DATE : 09/28/18
CHECKED BY : H.A. LOCKLEAR	DATE : 6/2022
DRAWN BY : WJH 12/11	REV. 4/15
CHECKED BY : AAC 12/11	MAA/TMG

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SIGNATURES COMPLETED

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1			3			S-12
2			4			TOTAL SHEETS 15

STD. NO. EB_30_90S4_33BB

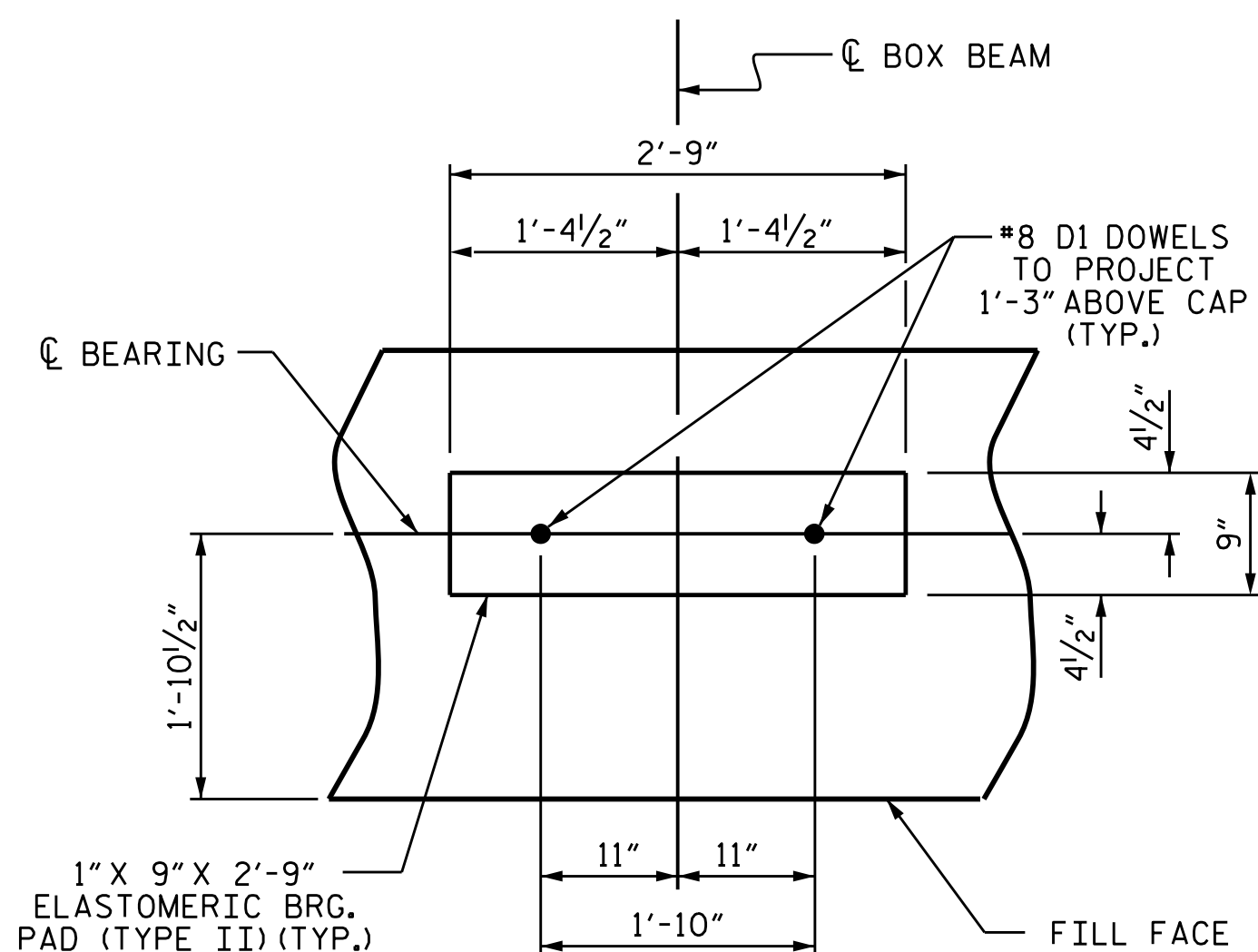


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

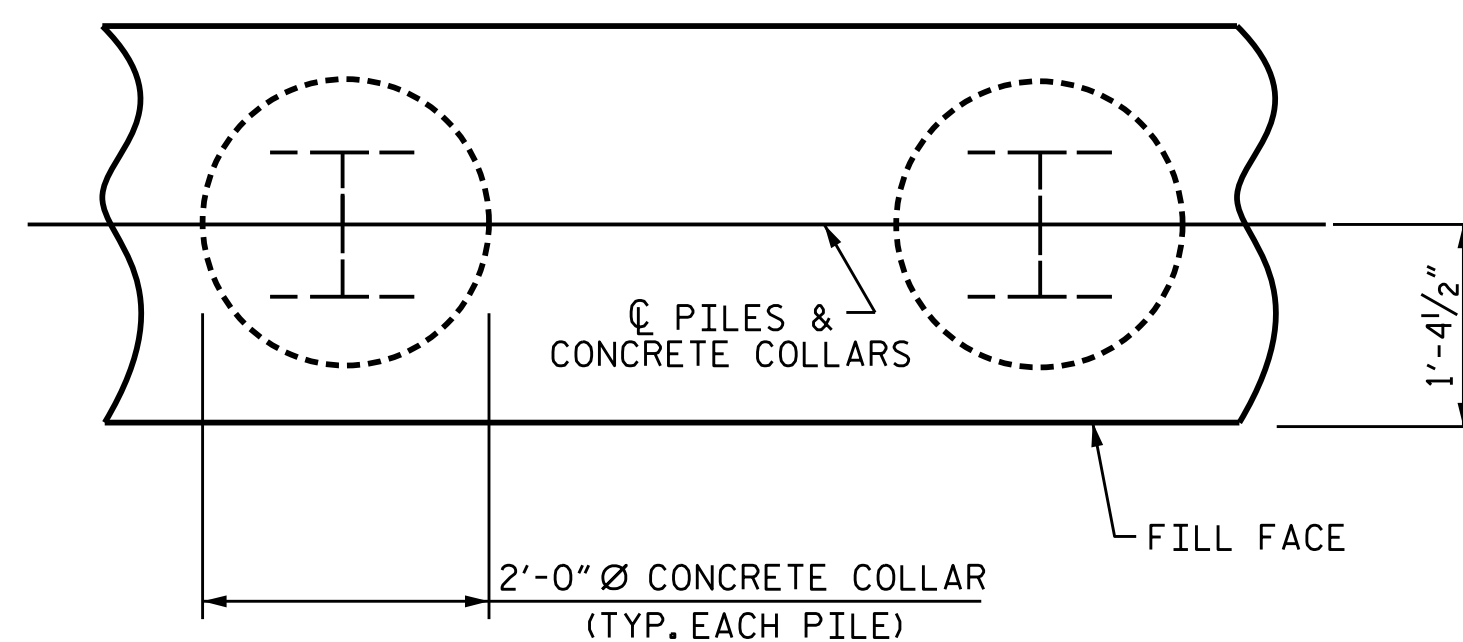
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



DETAIL "A"

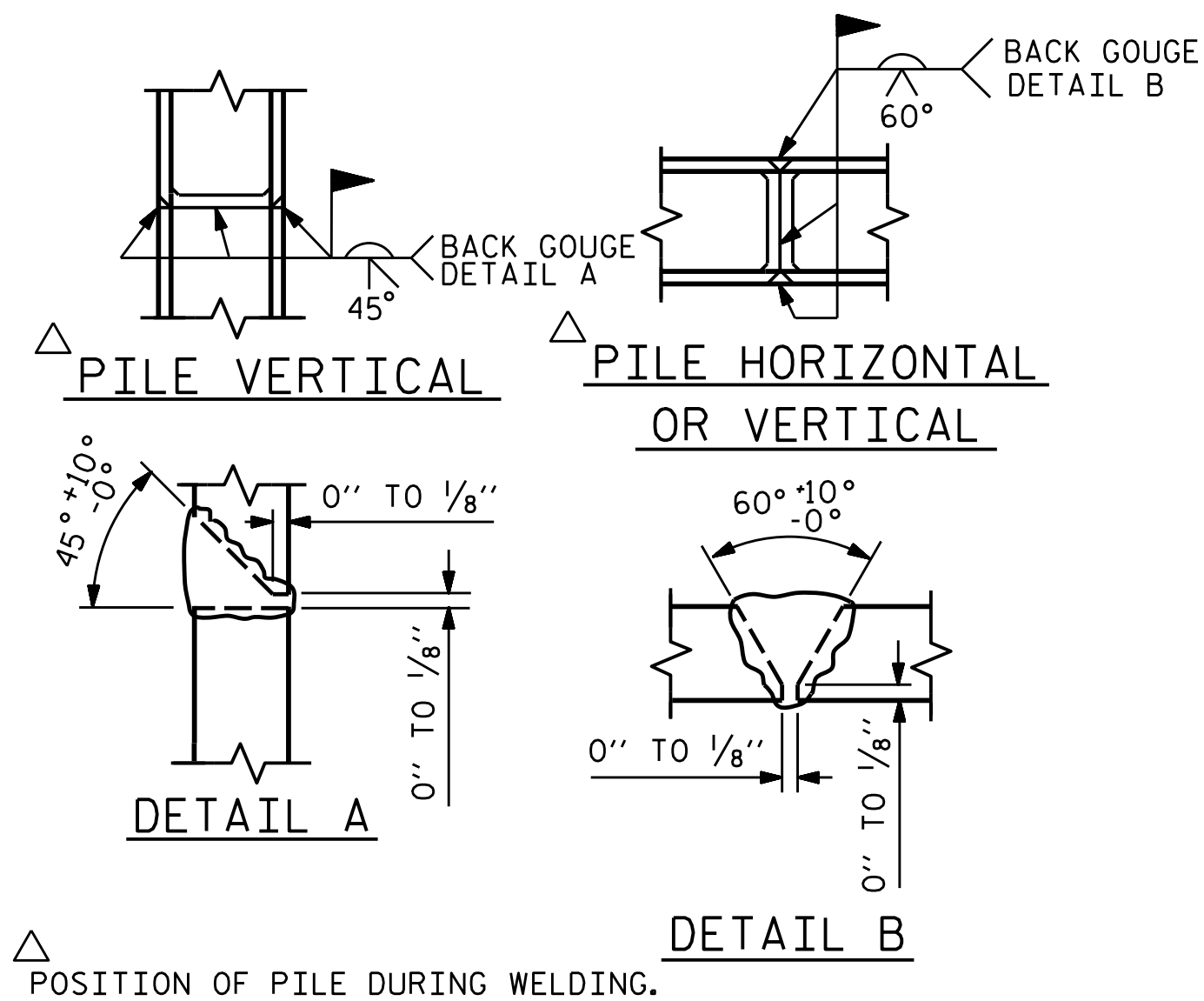
(END BENT No.1 SHOWN,END BENT No.2 SIMILAR BY ROTATION)



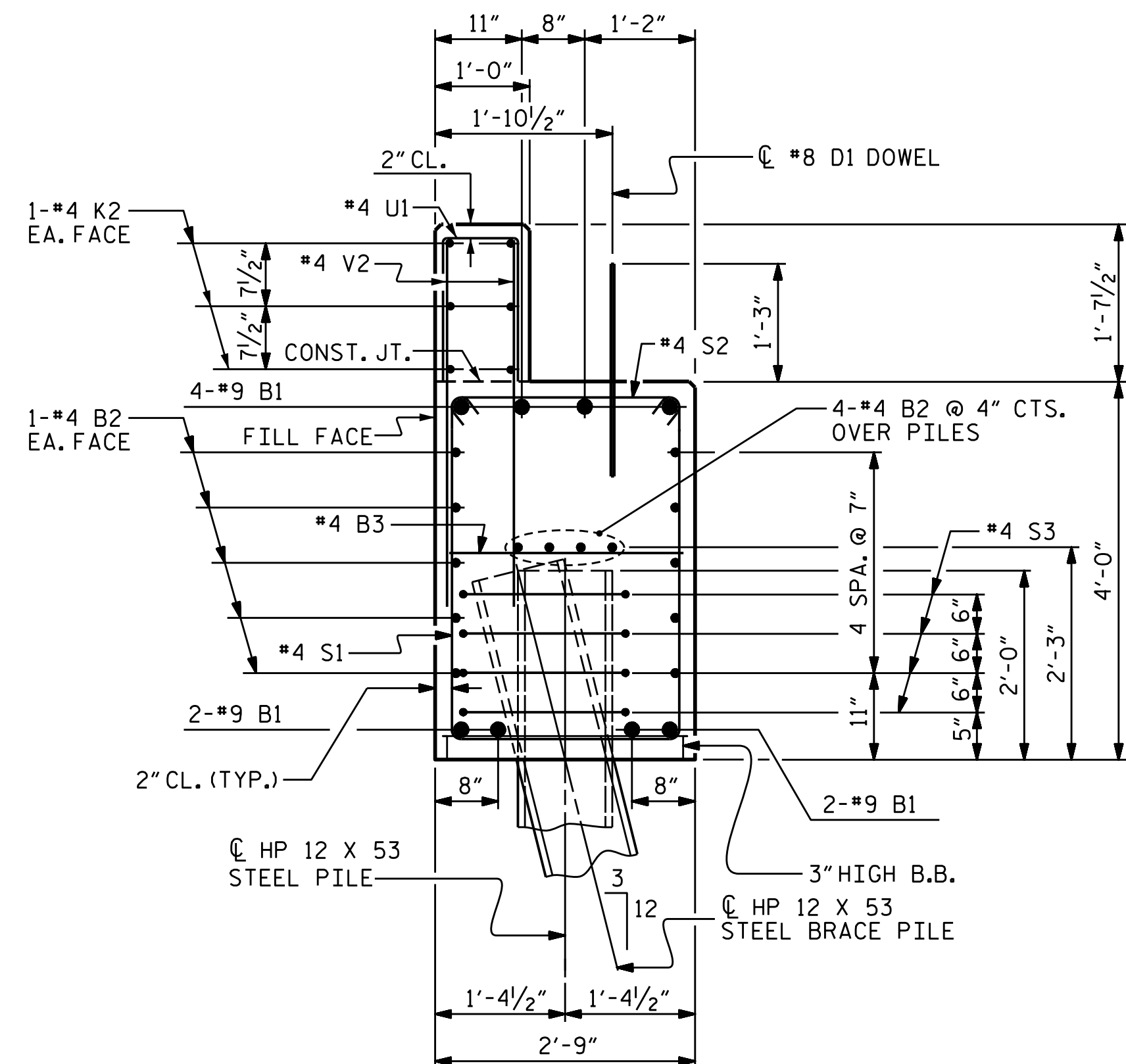
PLAN

CORROSION PROTECTION FOR STEEL PILES DETAIL

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



PILE SPLICE DETAILS



SECTION A-A

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

BAR TYPES	
Diagram 1: End bent bar. Dimensions: 1'-3" HK, 35'-6", 1'-3" HK.	Diagram 4: End bent bar. Dimensions: 4 1/2" HK, 2'-5", 4 1/2" HK.
Diagram 2: Straight bar. Dimensions: 8", 10'-8".	Diagram 5: Circular bar. Dimensions: 1'-3" LAP, 1'-8" Ø.
Diagram 3: U-shaped bar. Dimensions: 4 1/2" HK, 3'-7 1/2", 2'-5".	Diagram 6: Square bar. Dimensions: 8", 1'-5 1/2".
ALL BAR DIMENSIONS ARE OUT TO OUT.	
END BENT No. 1 HP 12 X 53 STEEL PILES NO: 5 LIN. FT. = 75	END BENT No. 2 HP 12 X 53 STEEL PILES NO: 5 LIN. FT. = 100
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 5	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 5
STEEL PILE POINTS NO: 5	STEEL PILE POINTS NO: 5

BILL OF MATERIAL					
FOR ONE END BENT					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	38'-0"	1034
B2	28	#4	STR	19'-1"	357
B3	9	#4	STR	2'-5"	15
D1	20	#8	STR	2'-3"	120
H1	48	#5	2	11'-4"	567
K1	12	#4	STR	2'-11"	23
K2	12	#4	STR	19'-1"	153
S1	46	#4	3	10'-5"	320
S2	46	#4	4	3'-2"	97
S3	20	#4	5	6'-6"	87
U1	30	#4	6	3'-7"	72
V1	60	#4	STR	7'-2"	287
V2	60	#4	STR	5'-3"	210
REINFORCING STEEL (FOR ONE END BENT)					3342 LBS.
CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)					
POUR #1		CAP, LOWER PART OF WINGS & COLLARS			18.5 C.Y.
POUR #2		BACKWALL & UPPER PART OF WINGS			5.2 C.Y.
TOTAL CLASS A CONCRETE					23.8 C.Y.

PROJECT NO. 17BP.12.R.55
CATAWBA COUNTY
 STATION: 13+24.00 -L-

SHEET 4 OF 4



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No.1 & 2
DETAILS

REVISIONS						SHEET NO. S-13
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 15
2			4			

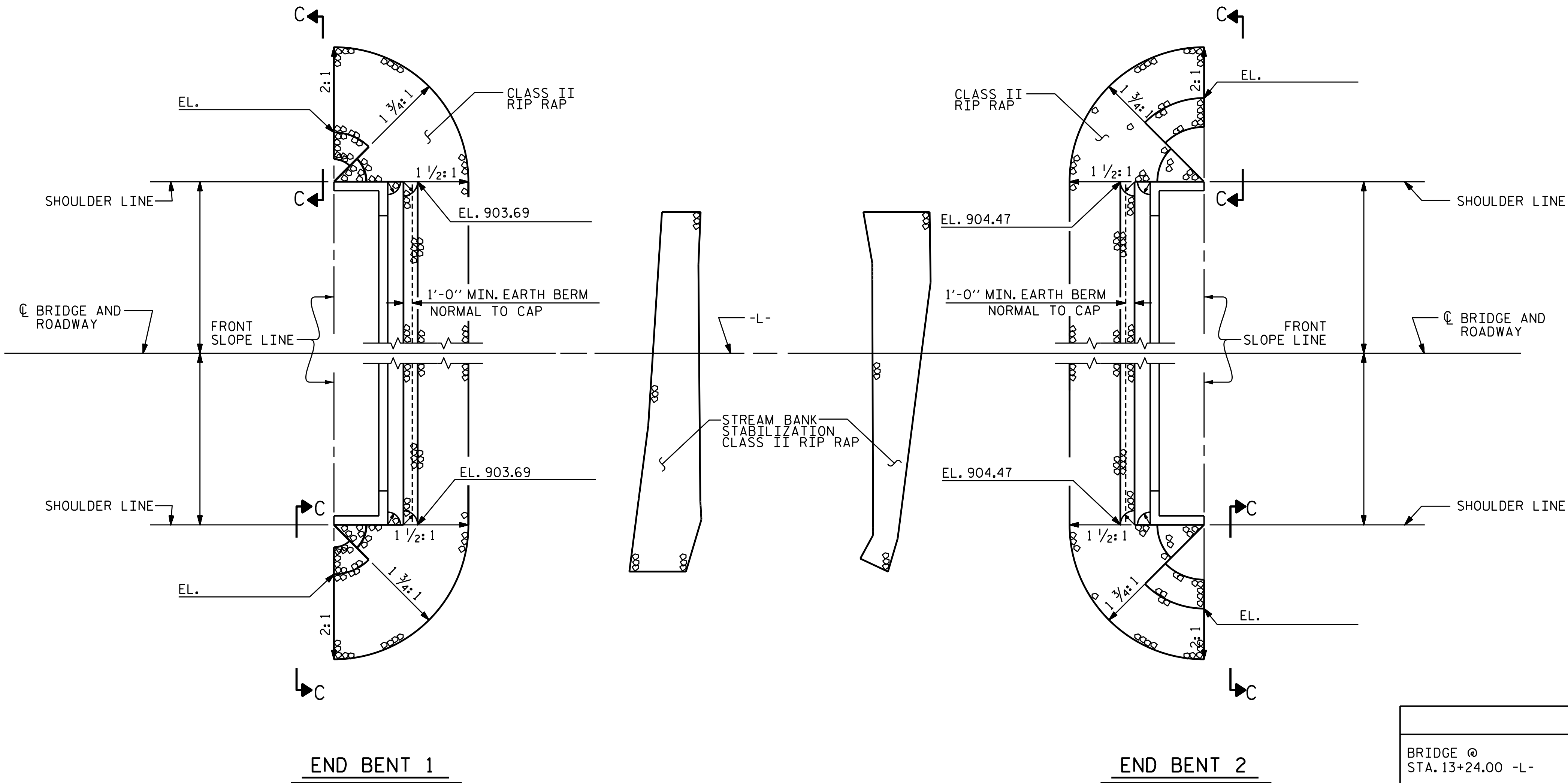
ASSEMBLED BY : M. ALINAGHIAN		DATE : 09/15/18	
CHECKED BY : H. A. LOCKLEAR		DATE : 6/2022	
DRAWN BY : WJH 12/11		REV. 4/17 MAA/THC	
CHECKED BY : AAC 12/11			

9/2/2022
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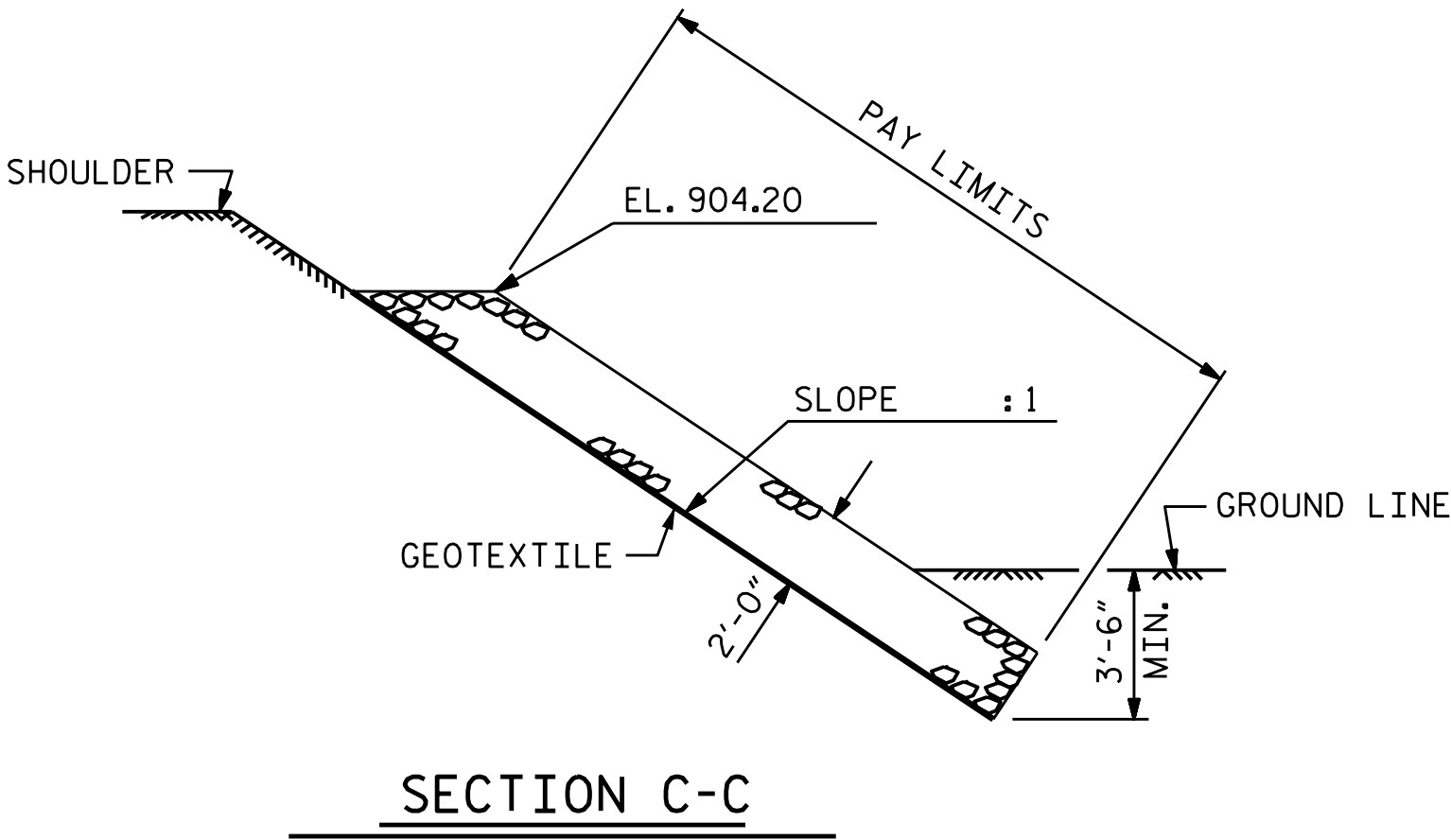
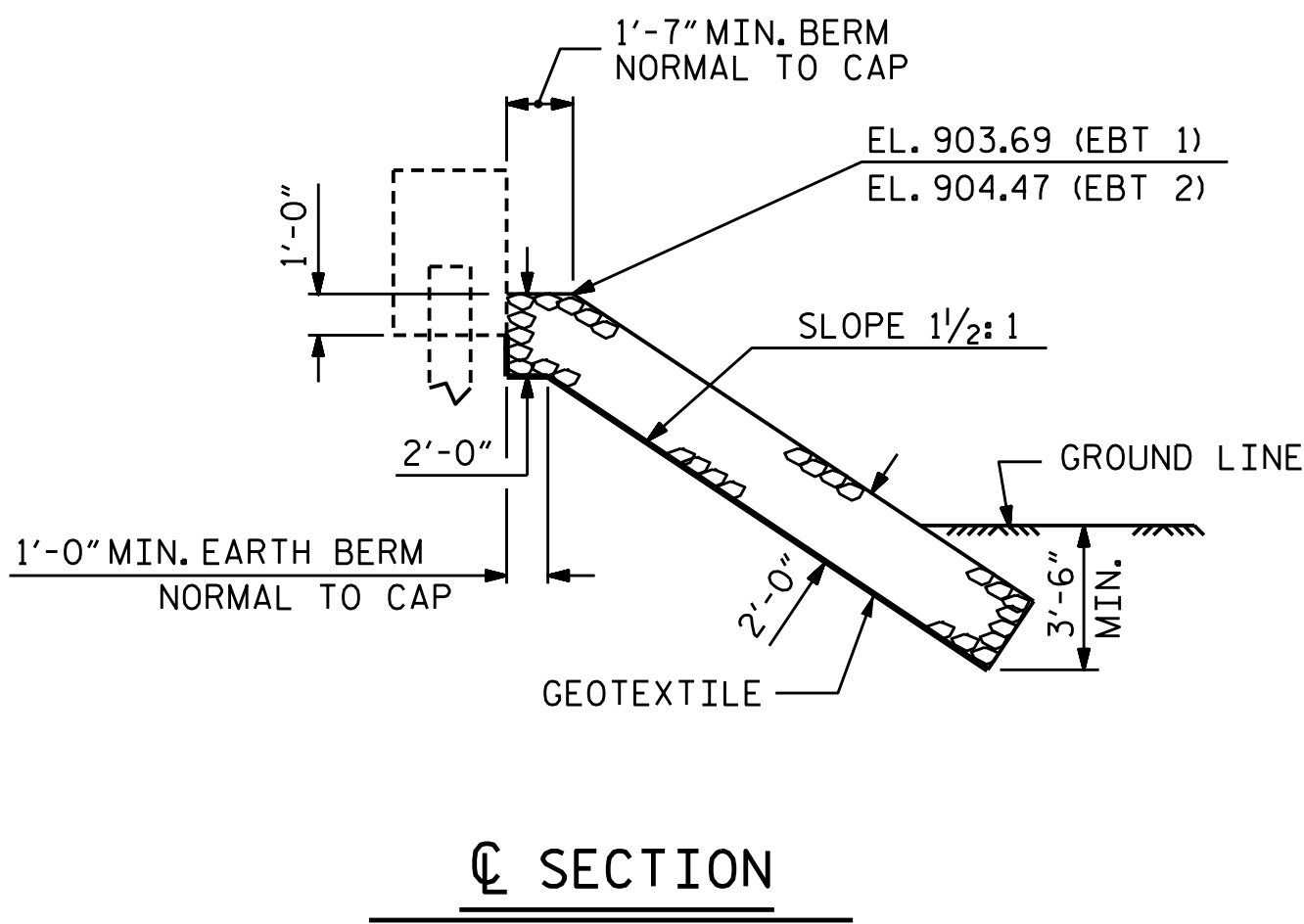
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FINAL UNLESS ALL
SIGNATURES COMPLETED

STD. NO. EB_30_90S4_33BB

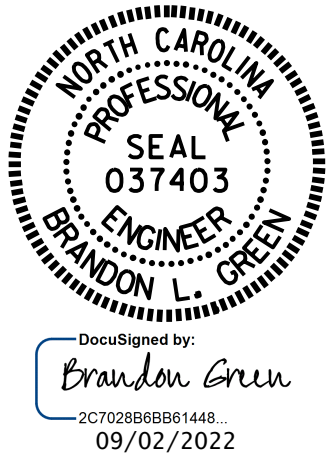
NOTES :
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.



ESTIMATED QUANTITIES		
BRIDGE @ STA. 13+24.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	100	110
END BENT 2	95	105
STREAM BANK STABILIZATION	58	57
TOTAL	253	272



PROJECT NO. 17BP.12.R.55
CATAWBA COUNTY
STATION: 13+24.00 -L-



STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

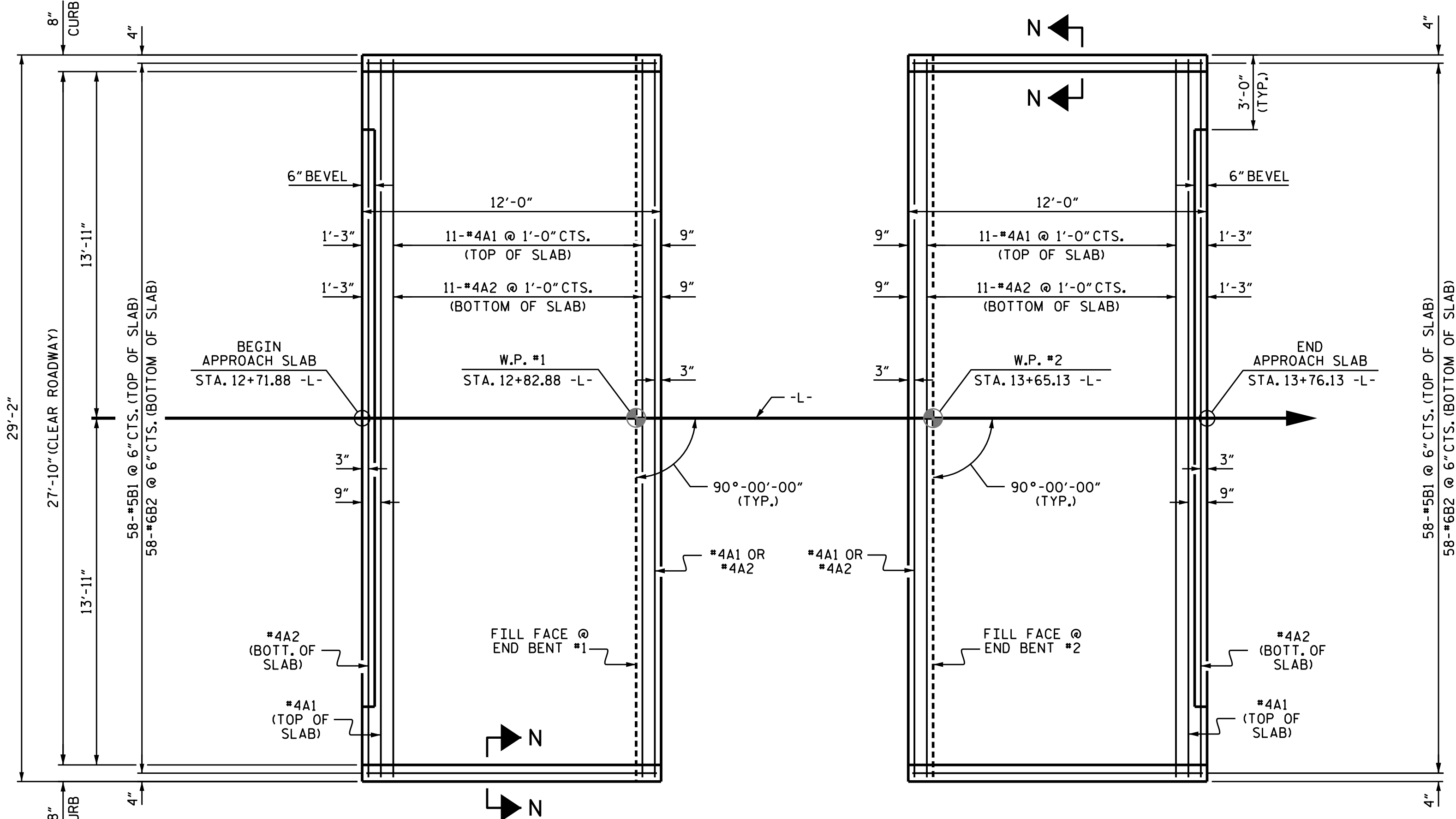
STANDARD

RIP RAP DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			15

ASSEMBLED BY : H.A. LOCKLEAR	DATE : 8/2022
CHECKED BY :	DATE :
DRAWN BY : REK 1/84	REV. 10/1/11 MAA/GM
CHECKED BY : RDU 1/84	REV. 12/21/11 MAA/GM
	REV. 12/17 MAA/THC

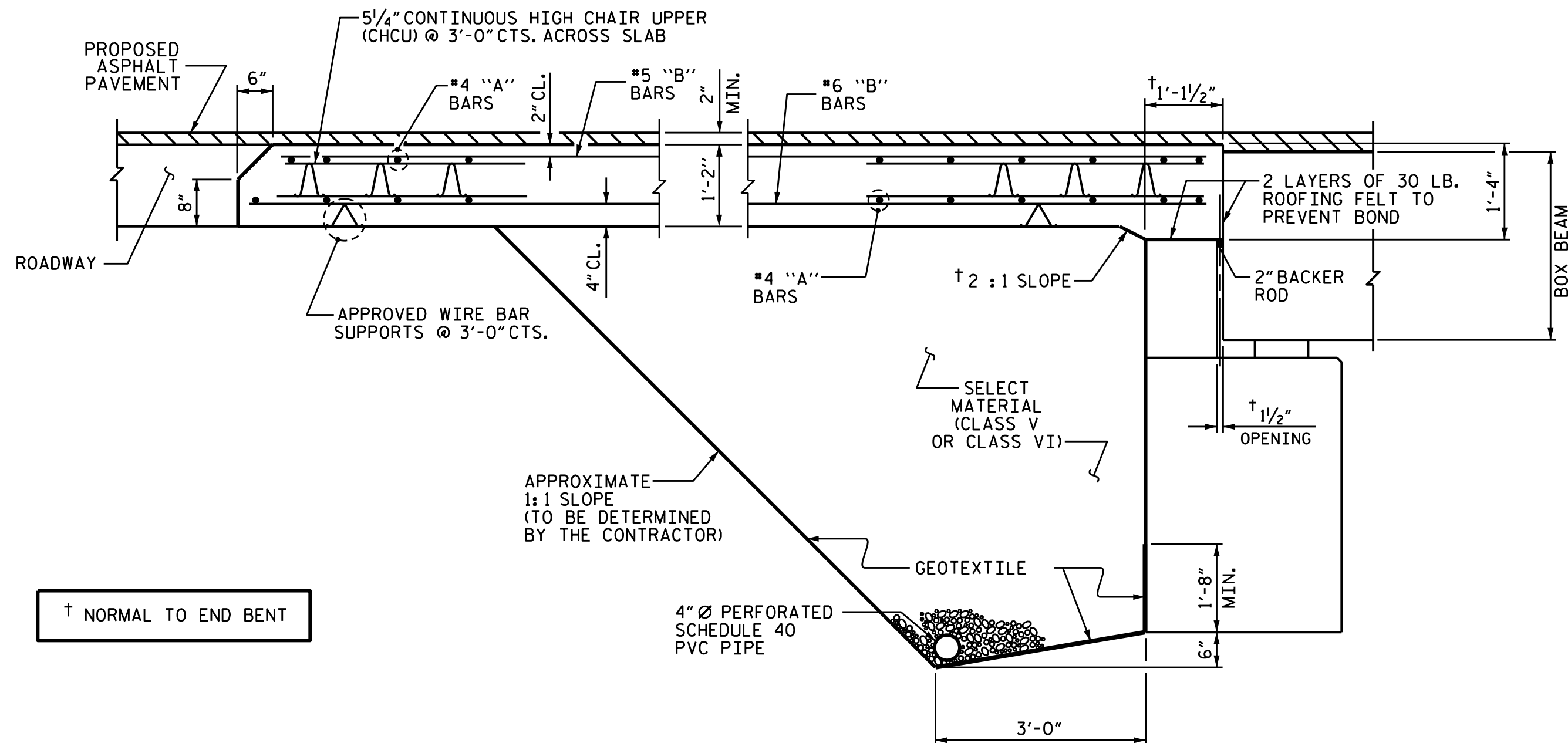
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PLAN @ END BENT #1

PLAN @ END BENT #2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



SECTION THRU SLAB

(TYPE II - MODIFIED APPROACH FILL)

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.

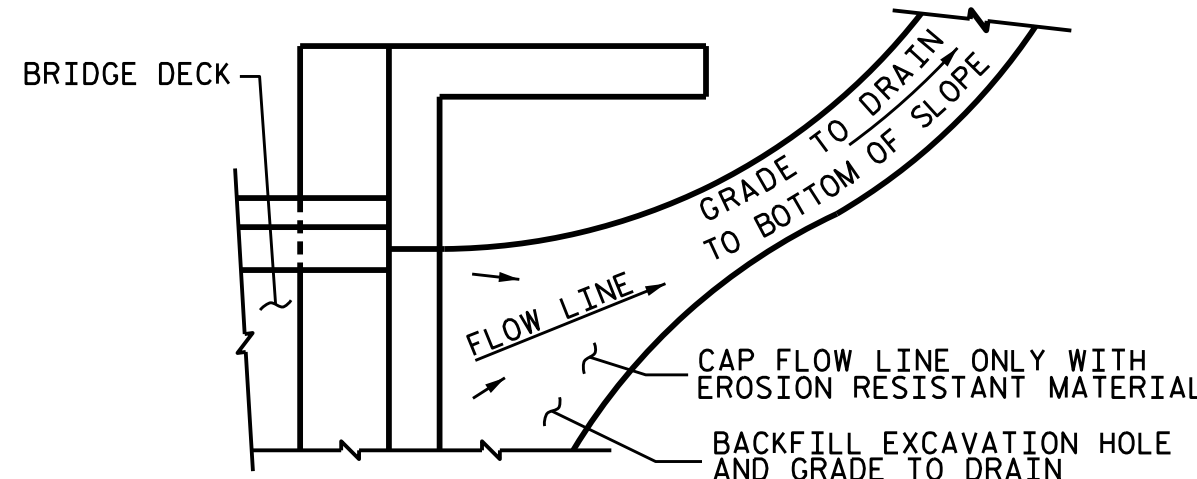
SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

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

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.

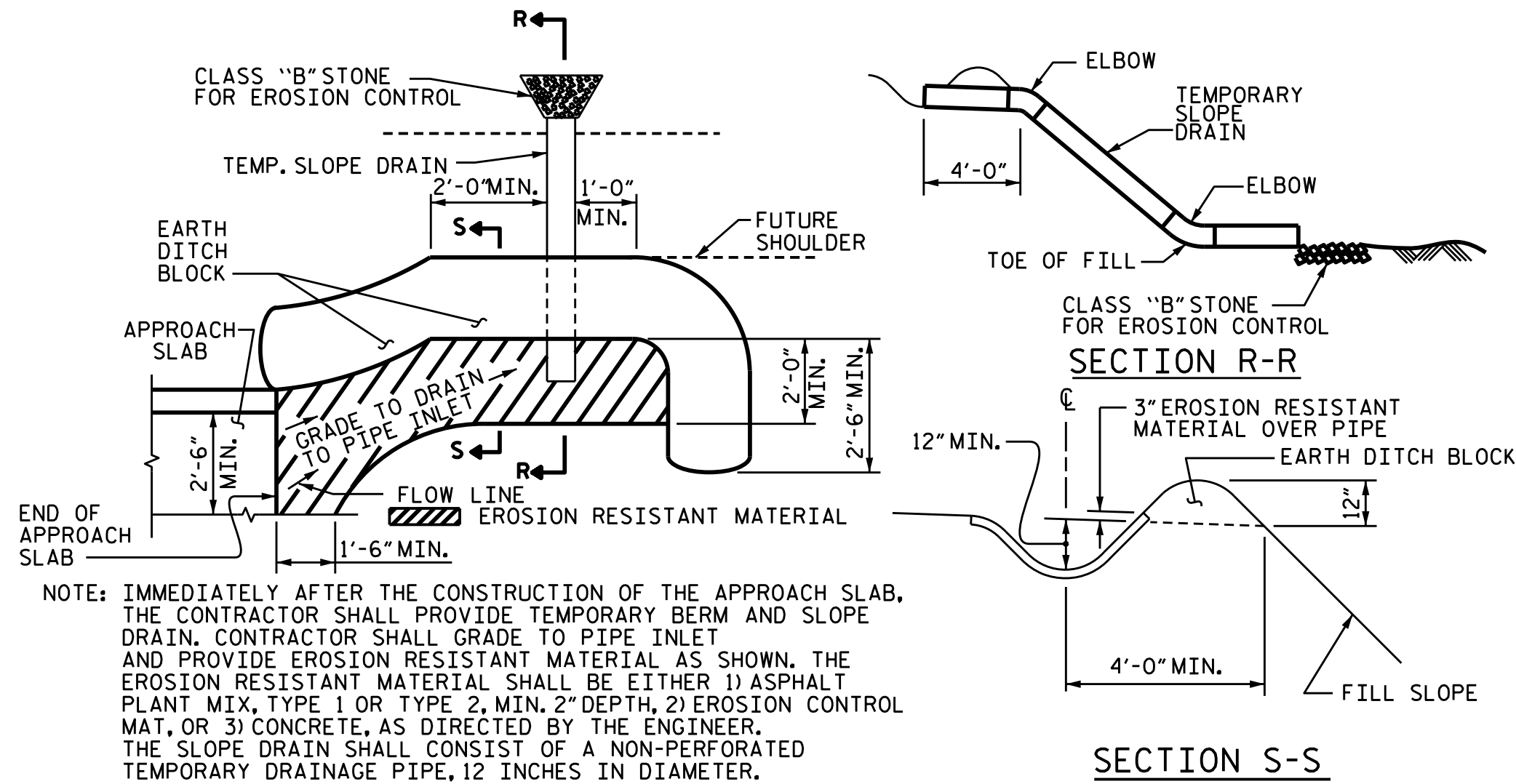
FOR THE 4"Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

APPROACH SLAB GROOVING IS NOT REQUIRED.



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

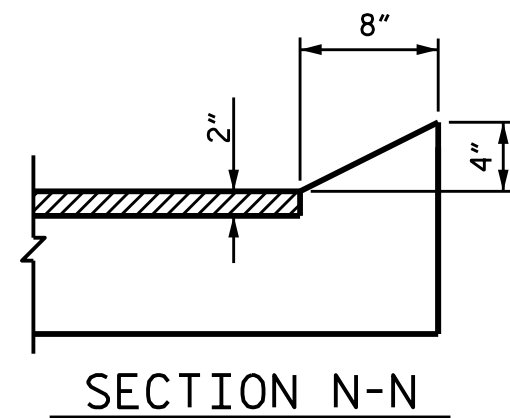
TEMPORARY DRAINAGE DETAIL



PLAN VIEW

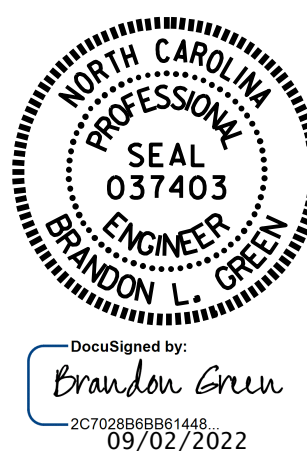
TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



CURB DETAILS

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



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BILL OF MATERIAL

APPROACH SLAB AT EB #1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	13	#4	STR	28'-10"	250
A2	13	#4	STR	28'-10"	250
*B1	58	#5	STR	11'-2"	676
B2	58	#6	STR	11'-8"	1016

REINFORCING STEEL LBS. 1266

*EPOXY COATED REINFORCING STEEL LBS. 926

CLASS AA CONCRETE C. Y. 15.4

APPROACH SLAB AT EB #2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	13	#4	STR	28'-10"	250
A2	13	#4	STR	28'-10"	250
*B1	58	#5	STR	11'-2"	676
B2	58	#6	STR	11'-8"	1016

REINFORCING STEEL LBS. 1266

*EPOXY COATED REINFORCING STEEL LBS. 926

CLASS AA CONCRETE C. Y. 15.4

ASSEMBLED BY : O. O. FOLARIN	DATE : 6/7/2022
CHECKED BY : H. A. LOCKLEAR	DATE : 6/8/2022
DRAWN BY : MAA	11/11
CHECKED BY : AAC	11/11
REV. 12-17	MAA/THC
REV. 08-19	BNB/THC

9/2/2022
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bgreen

STD. NO. BAS_BB_30_90S

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

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

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

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

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990

STD. NO. SN