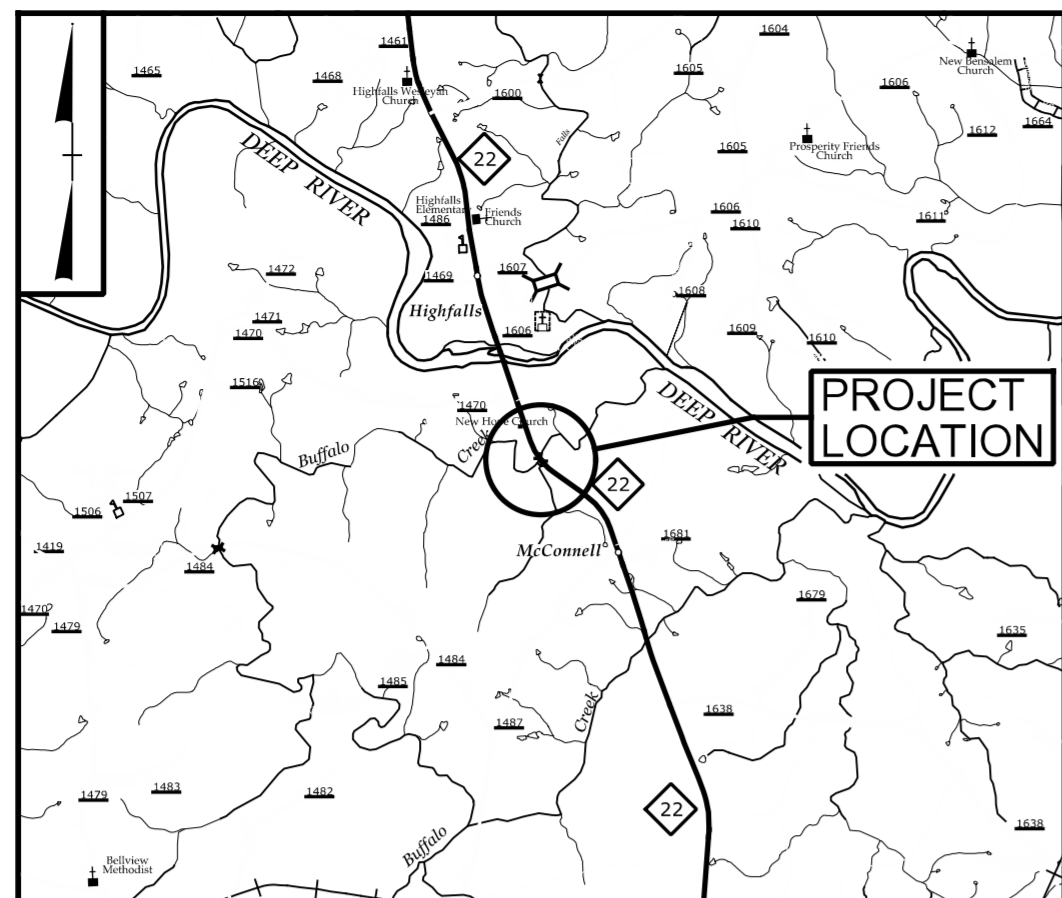


09/08/19

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



VICINITY MAP

FINAL PLANS

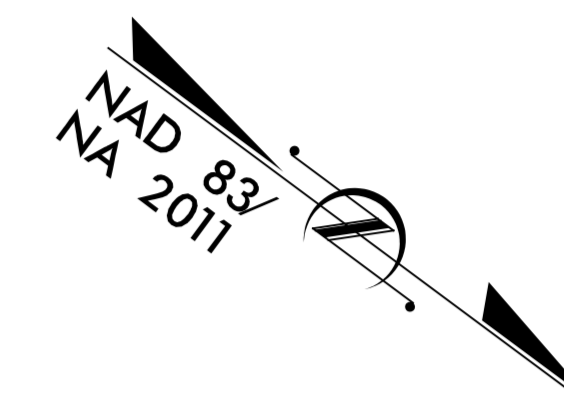
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MOORE COUNTY

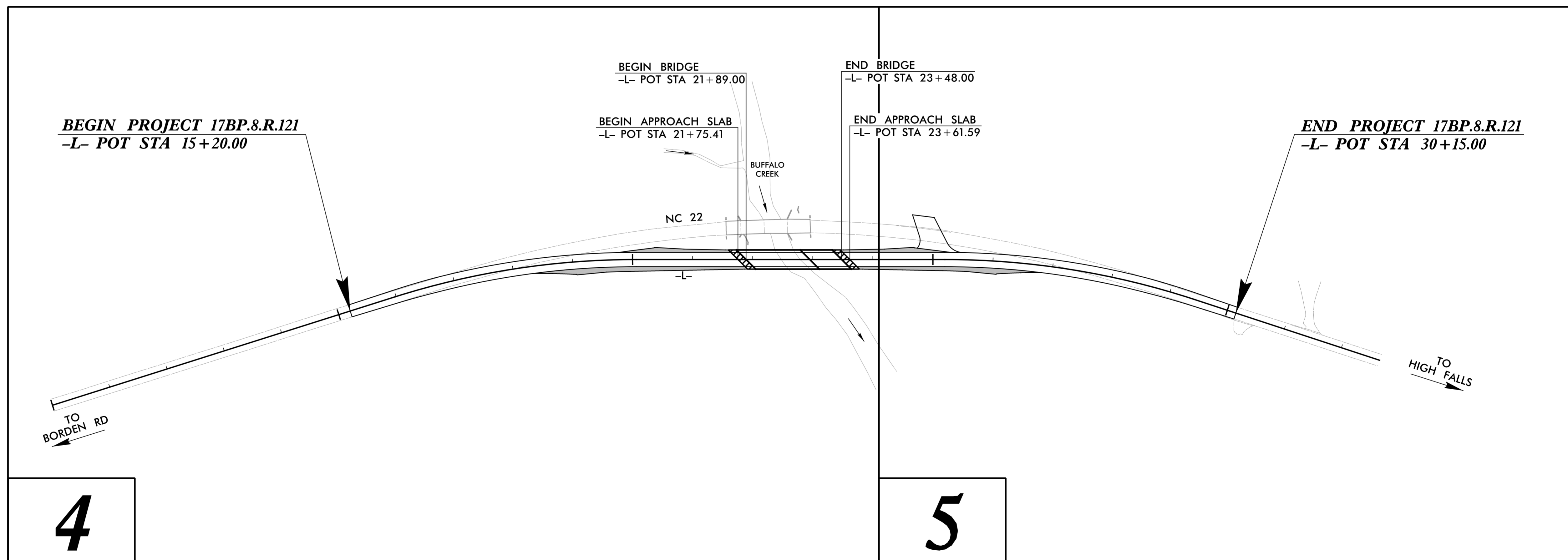
LOCATION: REPLACE BRIDGE NO. 063 OVER BUFFALO CREEK ON NC 22

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.8.R.121	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.8.R.121		P.E.	
17BP.8.R.121		CONSTRUCTION	



PROJECT: 17BP.8.R.121



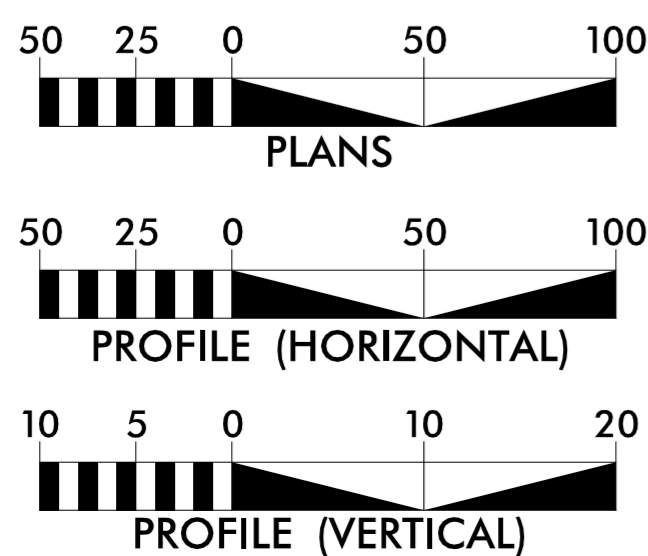
4

5

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

CONTRACT:

GRAPHIC SCALES



DESIGN DATA

ADT (2018) = 1950
K = %
D = %
T = 7 %
V = 60 MPH
TTST = % DUAL %
FUNC CLASS = RURAL COLLECTOR REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT 17BP.8.R.121 = 0.254 MILES
LENGTH STRUCTURES PROJECT 17BP.8.R.121 = 0.029 MILES
TOTAL LENGTH PROJECT 17BP.8.R.121 = 0.283 MILES

Prepared for the
North Carolina Department
of Transportation
In the office of:



HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
NOVEMBER 30, 2017

LETTING DATE:
AUGUST 14, 2018

PHILLIP E. ROGERS, PE
PROJECT ENGINEER

ALEXANDER D. SNIDER, PE
PROJECT DESIGN ENGINEER

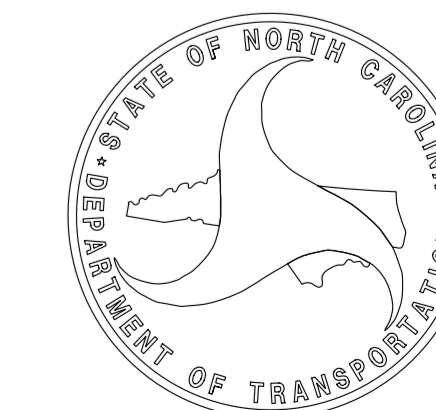
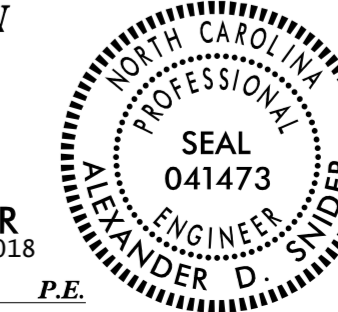
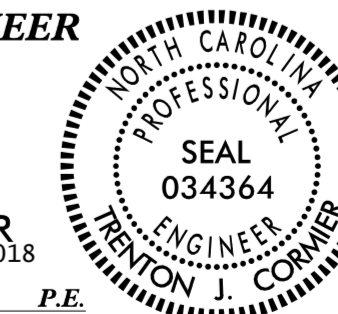
TIM WELCH, PE
NCDOT CONTACT
DIV 8 BRIDGE PROGRAM MANAGER

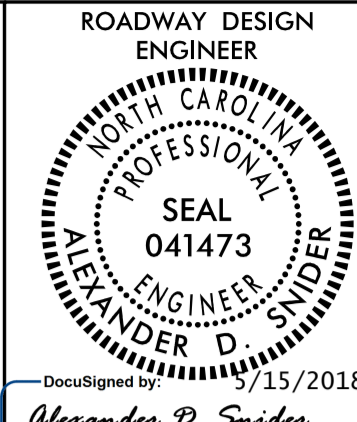
HYDRAULICS ENGINEER

TRENTON J. CORMIER
P.E.
9/15/2018

ROADWAY DESIGN
ENGINEER

ALEXANDER D. SNIDER
P.E.
5/15/2018





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

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
1C-1	SURVEY CONTROL SHEET
2A-1 THRU 2A-2	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2B-1 THRU 2B-2	ROADWAY DETAILS
2D-1	DRAINAGE DETAILS
3B-1 THRU 3B-2	ROADWAY SUMMARIES
3D-1	DRAINAGE SUMMARY
3G-1	GEOTECHNICAL SUMMARIES
4 THRU 6	PLAN AND PROFILE SHEETS
TMP-1 THRU TMP-5	TRAFFIC MANAGEMENT PLANS
EC-1 THRU EC-7	EROSION CONTROL PLANS
UO-1 THRU UO-3	UTILITIES BY OTHERS PLANS
X-1 THRU X-13	CROSS-SECTIONS
S-1 THRU S-33	STRUCTURE PLANS

GENERAL NOTES:

2018 SPECIFICATIONS
EFFECTIVE: 01-16-2018
REVISED:

GRADE LINE GRADING AND SURFACING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

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

BERM DITCHES:

BERM DITCHES SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 240.01 AT LOCATIONS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

SUBSURFACE DRAINS:

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

GUARDRAIL:

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

TEMPORARY SHORING:

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING".

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 RANDOLPH ELECTRIC MEMBERSHIP CORP. AND RANDOLPH TELEPHONE MEMBERSHIP CORP.

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT-OF-WAY MARKERS:

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

ROCK

ROCK IS ANTICIPATED BETWEEN 15+20 to 16+75. BLASTING MAY BE REQUIRED FOR EXCAVATION ON THE PROJECT. SEE SECTION 220 OF THE STANDARD SPECIFICATIONS AND IF APPLICABLE, ROCK BLASTING PROVISION.

2018 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD. NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superlevation - Two Lane Pavement
240.01	Guide for Berm Ditch Construction
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.02	Parallel Pipe End Section - Precast Concrete Section for 15" to 24" Pipe
310.04	Parallel Pipe End Section - Prefabricated Steel Section for 15" to 24" Pipe
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
422.01	Bridge Approach Fills - Type I Standard Approach Fill
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
815.02	Subsurface Drain
840.00	Concrete Base Pad for Drainage Structures
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" Pipe
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.19	Concrete Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.22	Frames and Wide Slot Sag Grates
840.25	Anchorages for Frames - Brick or Concrete or Precast
840.28	Brick Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.66	Drainage Structure Steps
846.04	Drop Inlet Installation in Shoulder Berm Gutter
850.10	Guide for Berm Drainage Outlet - 15" and 18" Pipe
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

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

BOUNDARIES AND PROPERTY:

State Line	_____
County Line	_____
Township Line	_____
City Line	_____
Reservation Line	_____
Property Line	_____
Existing Iron Pin	○ EIP
Computed Property Corner	_____
Property Monument	□ ECM
Parcel/Sequence Number	(23)
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	-WLB-
Proposed Wetland Boundary	-WLB-
Existing Endangered Animal Boundary	-EAB-
Existing Endangered Plant Boundary	-EPB-
Existing Historic Property Boundary	-HPB-
Known Contamination Area: Soil	-S-S-
Potential Contamination Area: Soil	-S-S-
Known Contamination Area: Water	-W-W-
Potential Contamination Area: Water	-W-W-
Contaminated Site: Known or Potential	☠ ?

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

Standard Gauge	_____
RR Signal Milepost	○ MILEPOST 35
Switch	□ 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 Easement 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 RW 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	-C-
Proposed Slope Stakes Fill	-F-
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	_____

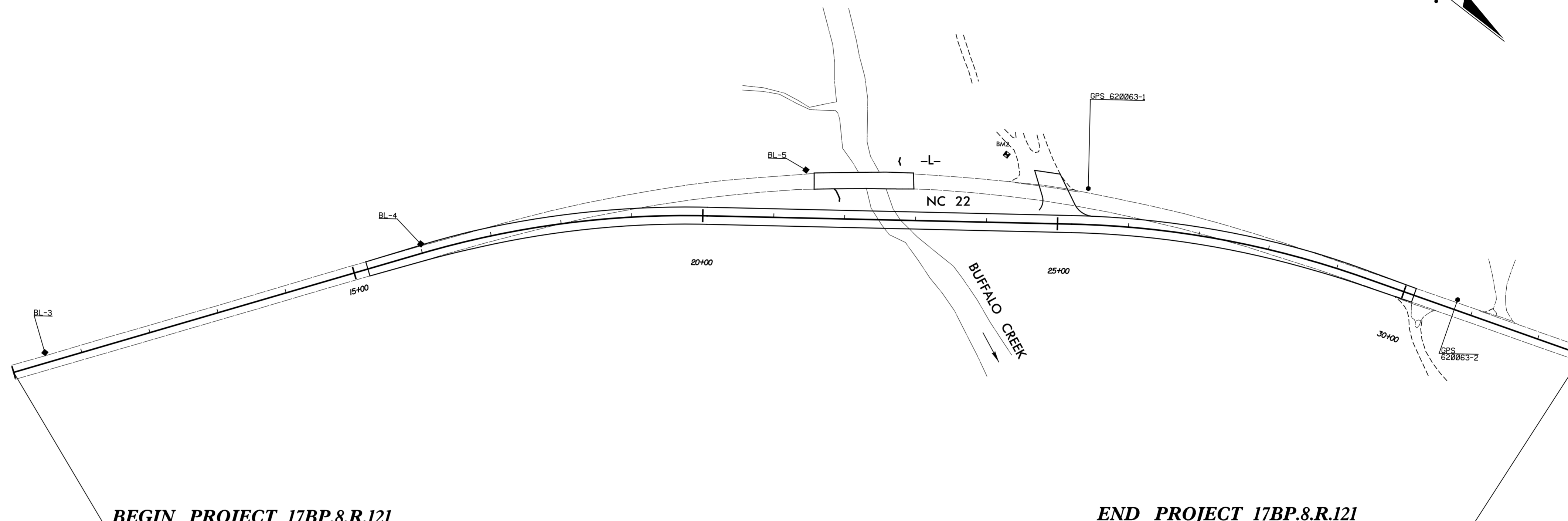
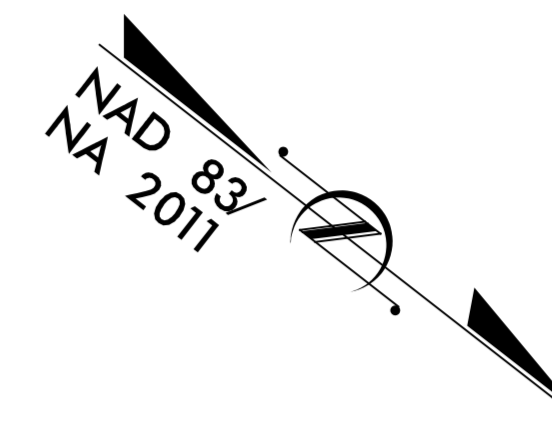
SANITARY SEWER:

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	AATUR
End of Information	E.O.I.

17BP.8.R.121 SURVEY CONTROL SHEET



BEGIN PROJECT 17BP.8.R.121
-L- POT STA 10+00.00
LOCALIZED PROJECT COORDINATES
N = 625855.4537 E = 1847206.3454

END PROJECT 17BP.8.R.121
-L- POT STA 32+67.03
LOCALIZED PROJECT COORDINATES
N = 627584.8846 E = 1845828.8795

BENCHMARK DATA

BM1	ELEVATION = 370.56
N 625831	E 1847378
BL STATION	5+00.00
S 79°19'03" E	224.35
BM SPIKE SET IN	15' PINE
BM2	ELEVATION = 302.75
N 626771	E 1846105
BL STATION	18+85.00 40 LEFT
BM SPIKE SET IN	15' OAK

BASELINE DATA

BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	GPS 620063-1	626891.4308	1846071.8139	307.75	25+41.47	50.75 LT
2	GPS 620063-2	627398.2399	1845875.6810	327.99	30+75.17	14.60 LT
3	BL-3	625872.9820	1847157.2880	363.71	10+50.03	14.51 LT
4	BL-4	626196.9380	1846711.2260	340.22	16+01.29	13.03 LT
5	BL-5	626561.3230	1846295.6100	308.77	21+43.85	67.69 LT

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "620063-1"

WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
 NORTHING: 626891.4308(ft) EASTING: 1846071.8139(ft)
 ELEVATION: 307.745(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: .99986961

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "620063-1" TO -L- STATION 10+00.00 IS
 S 47°35'59.3" E 1536.36'

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

NOTES

- THE CONTROL DATA FOR THIS PROJECT WAS PROVIDED BY NCDOT. CONTROL POINTS PROVIDED ARE AS FOLLOWS:

620063-1	N = 626891.4308	E = 1846071.8139	ELEV. = 307.75
620063-2	N = 627398.2399	E = 1845875.6810	ELEV. = 327.99

SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

◆ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY NCDOT.

◆ INDICATES CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY NCDOT.

NOTE: DRAWING NOT TO SCALE

8/17/09

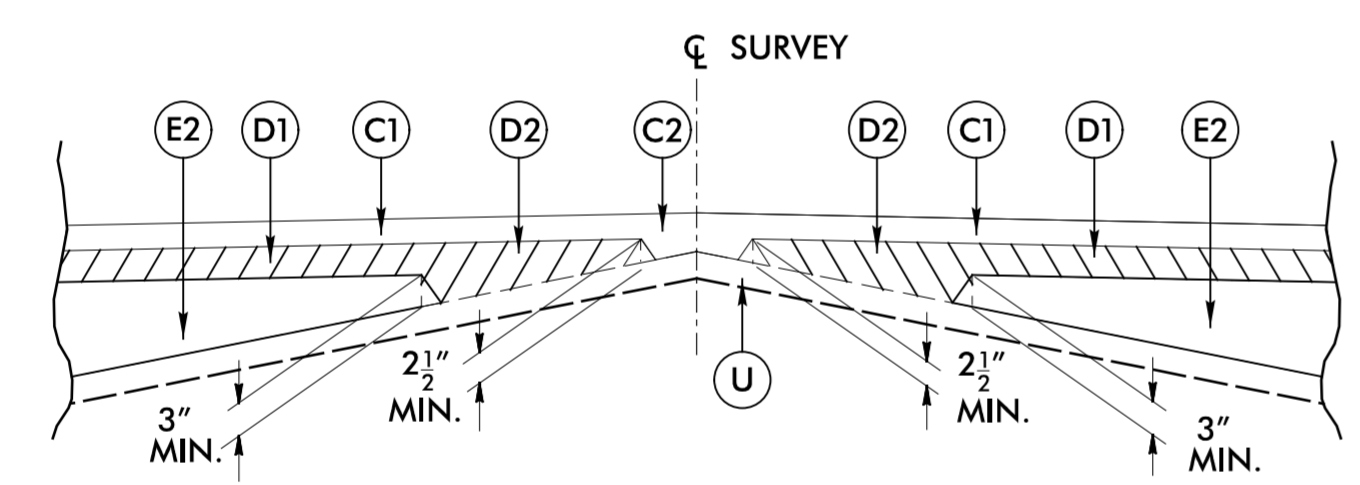
5/9/2008 10:58:01 AM \\00249897\MOORE_063_RDY_PSH_IC-1.dgn

6/2/99

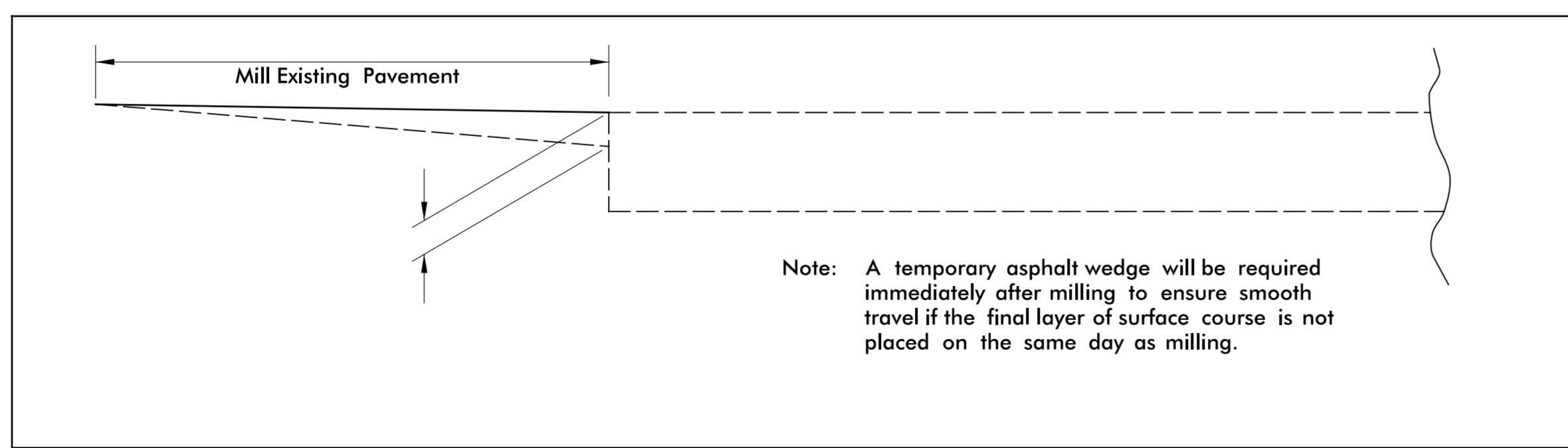
PAVEMENT SCHEDULE

C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1 1/2" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1 1/2" IN DEPTH.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2 1/2" 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 SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH.
L1	CLASS IV SUBGRADE STABILIZATION
N1	GEOTEXTILE FOR SOIL STABILIZATION
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING (SEE DETAIL SHOWING METHOD OF WEDGING)

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

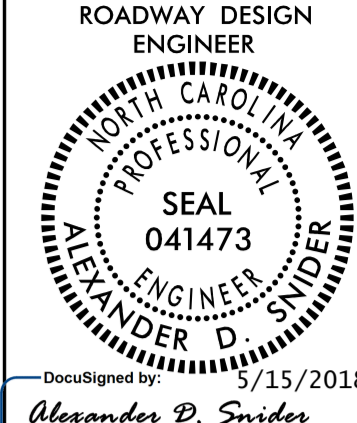


Detail Showing Method of Wedging
USE IN CONJUNCTION WITH TYPICAL SECTION NO. 1

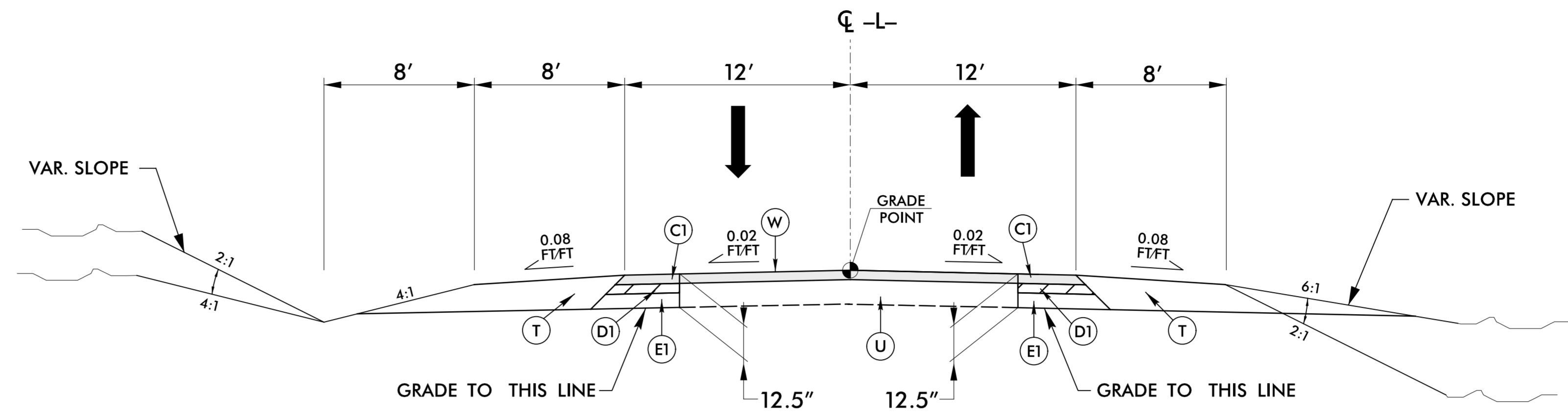


HDR HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO. 17BP.8.RJ21 SHEET NO. 2A-1



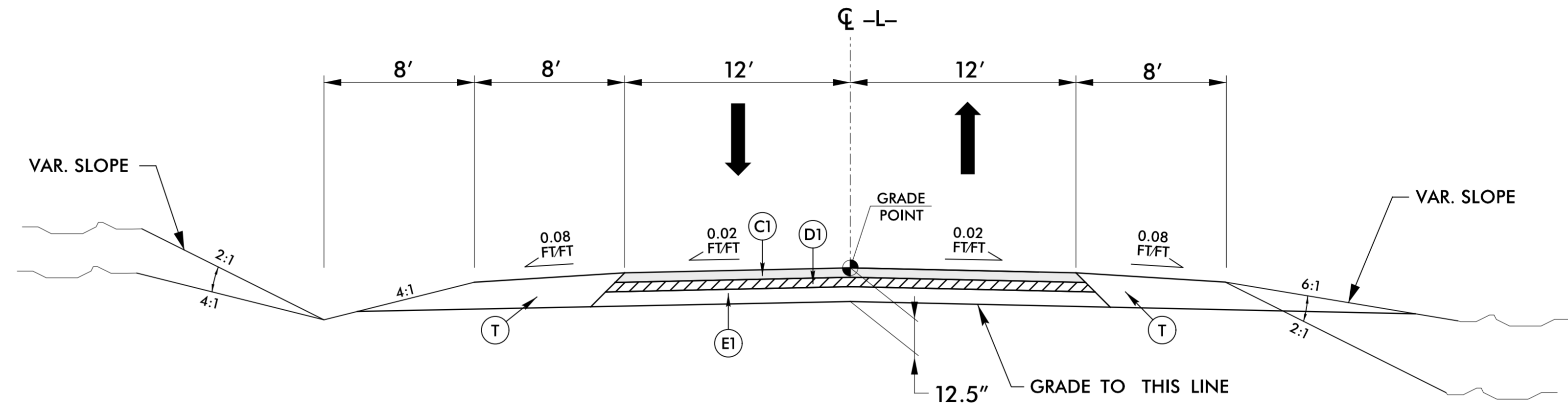
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1 FROM:

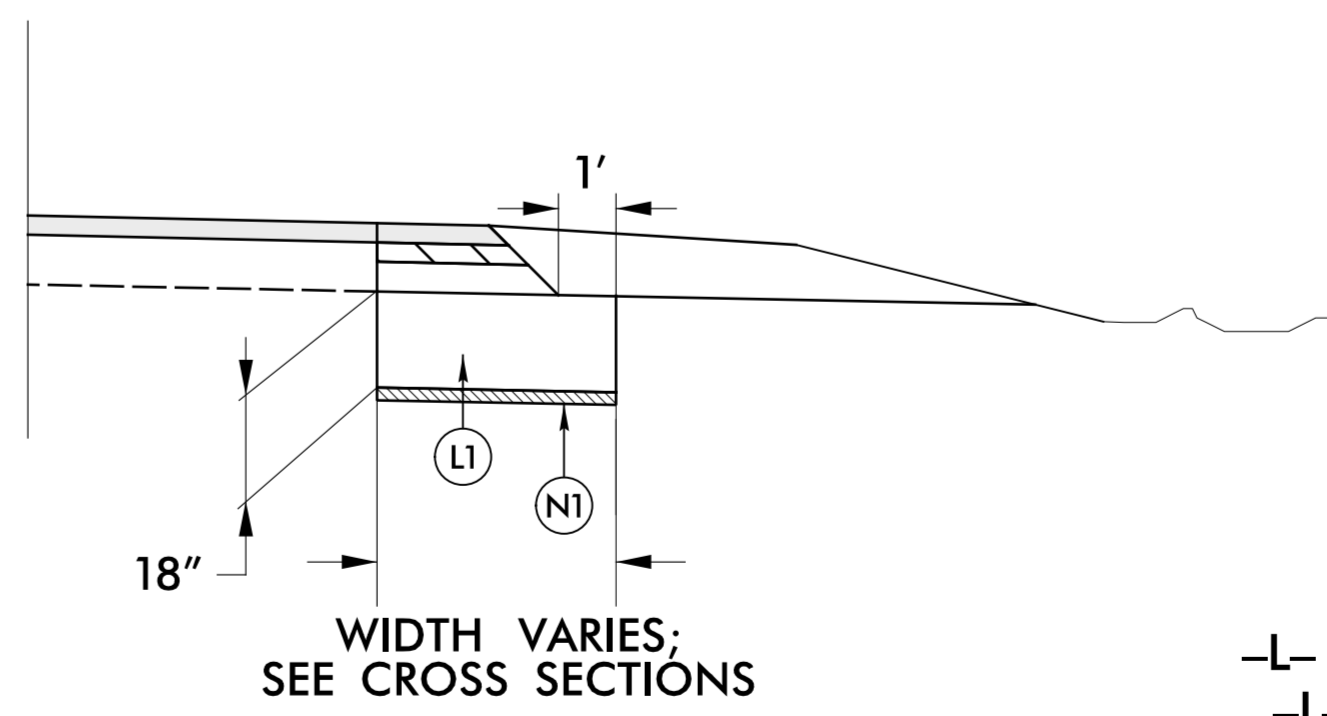
- L- STA 15+20.00 TO -L- STA 18+00.00 RT
- L- STA 15+20.00 TO -L- STA 19+00.00 LT
- L- STA 27+00.00 TO -L- STA 30+15.00 LT
- L- STA 27+50.00 TO -L- STA 30+15.00 RT



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2 FROM:

- L- STA 18+00.00 TO -L- STA 19+05.00 RT
- L- STA 19+00.00 TO -L- STA 20+35.50 LT
- L- STA 24+69.50 TO -L- STA 27+00.00 LT
- L- STA 26+07.75 TO -L- STA 27+50.00 RT



TYPICAL SECTION NO. 1A

USE TYPICAL SECTION NO. 1A FROM:

- L- STA 26+75.00 TO -L- STA 27+75.00 CL TO RT
- L- STA 29+25.00 TO -L- STA 30+15.50 RT & LT

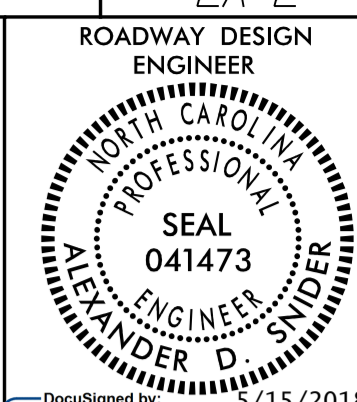
5/9/2018
MOORE, R.D.Y., TYP. FOR
HCA ENGINEERING, INC.

6/2/19

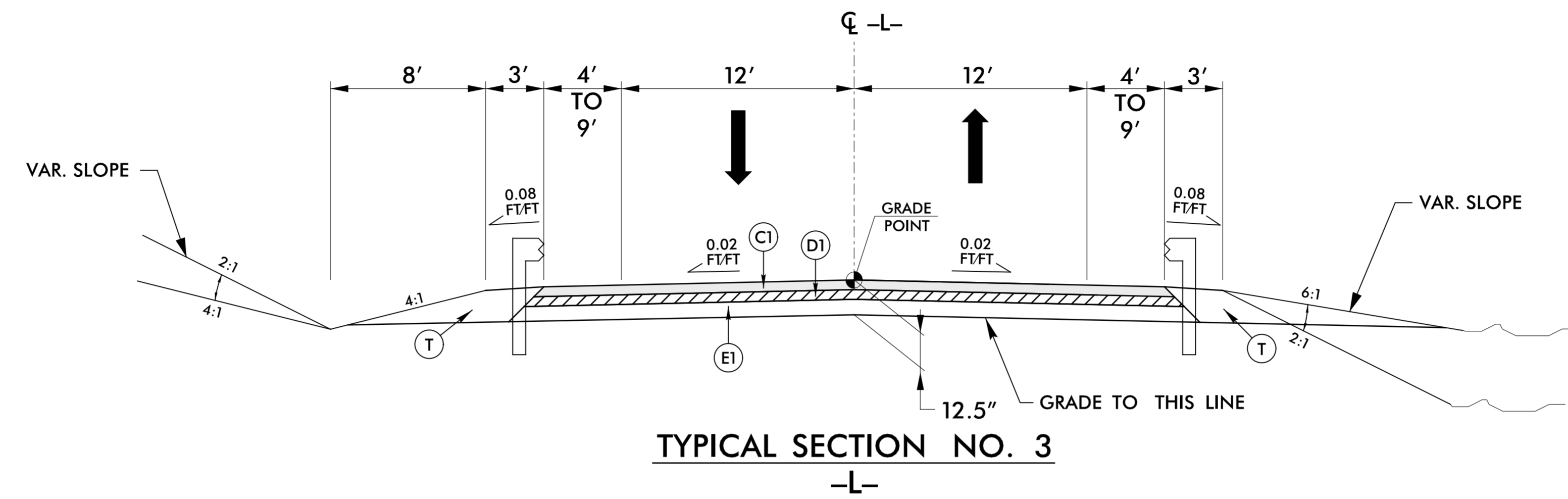
5/9/2018
 MOORE, R.D.Y., TYP. FOR
 ICA ENGINEERING, INC.

C1	3" S9.5B
C2	VAR S9.5B
D1	4" I19.0C
D2	VAR I19.0C
E1	5.5" B25.0C
E2	VAR B25.0C
L1	STABILIZATION
N1	GEOTEXTILE
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	VAR WEDGING

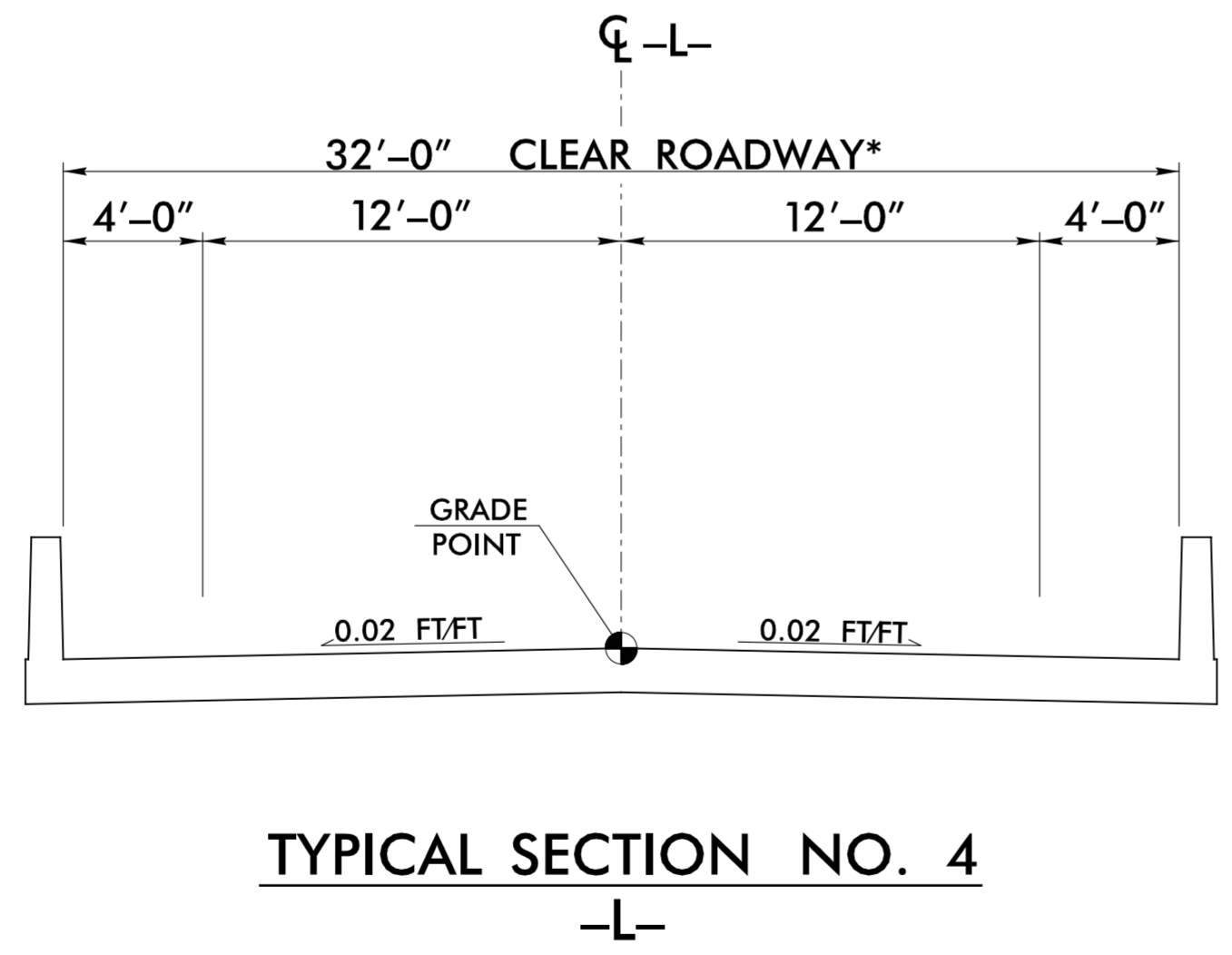
HDR HDR Engineering, Inc. of the Carolinas
 555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
 N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO. <i>17BP.8.RJ21</i>	SHEET NO. <i>2A-2</i>
ROADWAY DESIGN ENGINEER	
	
DocuSign 5/15/2018 Alexander D. Smider	

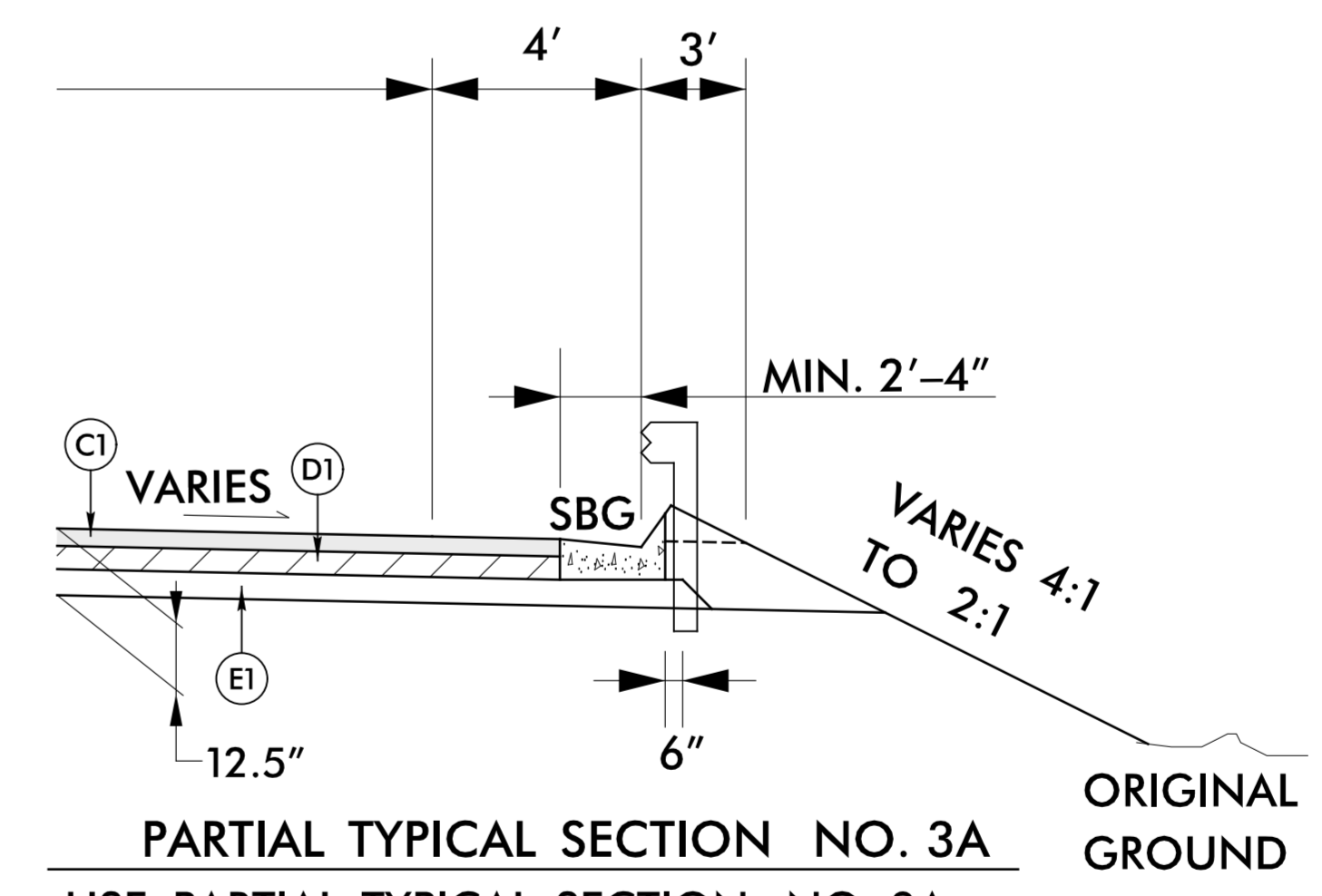
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 UNLESS ALL SIGNATURES COMPLETED**



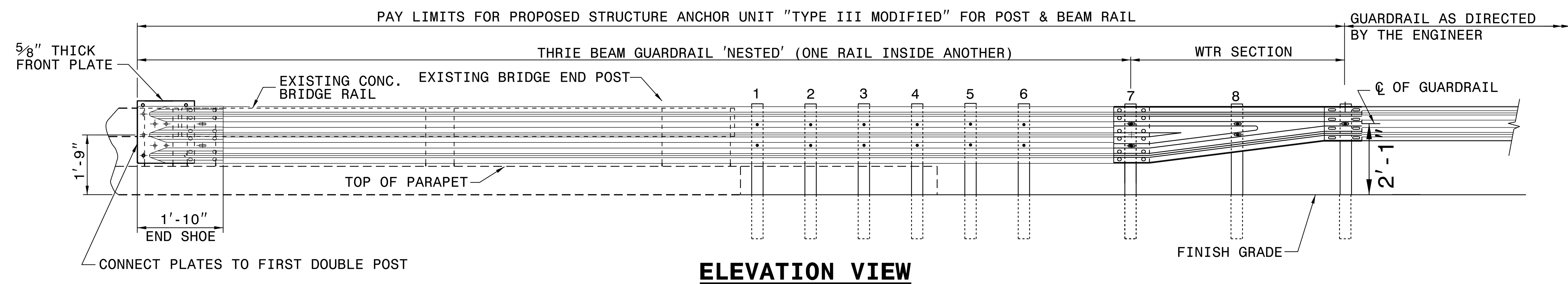
USE TYPICAL SECTION NO. 3 FROM:
 -L- STA 19+05.00 TO -L- STA 21+91.41 RT
 -L- STA 20+35.50 TO -L- STA 21+59.41 LT
 -L- STA 23+45.59 TO -L- STA 24+69.50 LT
 -L- STA 23+93.00 TO -L- STA 26+07.75 RT



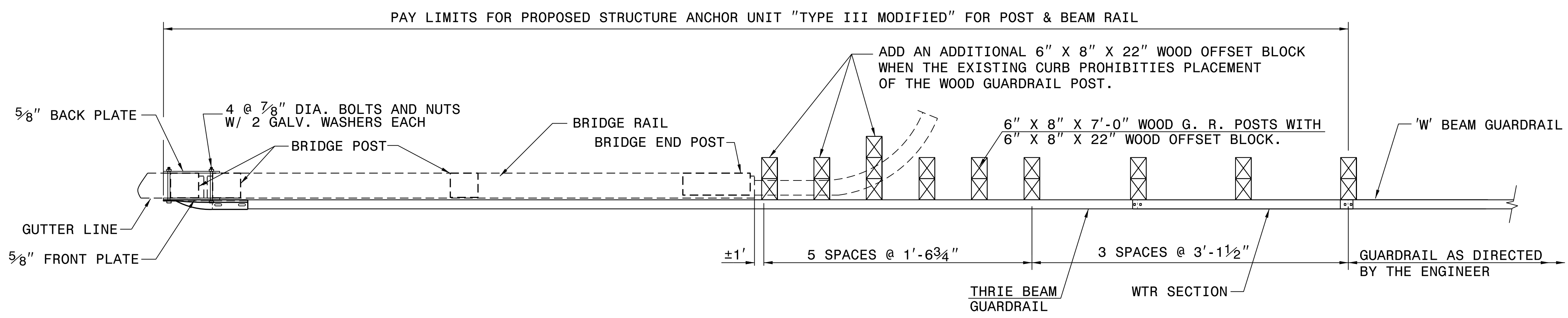
USE TYPICAL SECTION NO. 4 FROM:
 -L- BEGIN BRIDGE STA 21+89.00 TO END BRIDGE STA 23+48.00
 *32'-0" CLEAR ROADWAY WIDTH; DECK DRAINS REQUIRED



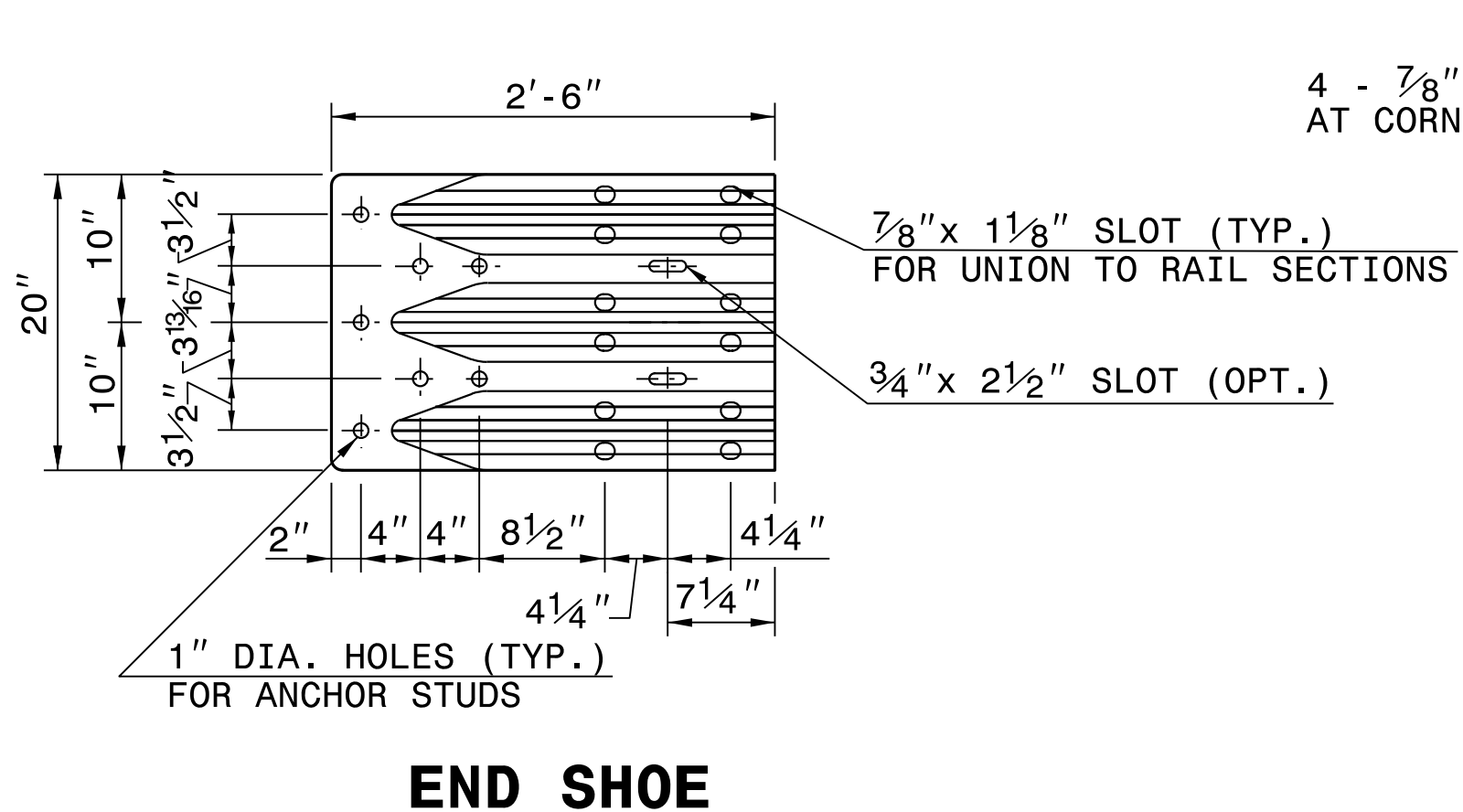
**USE PARTIAL TYPICAL SECTION NO. 3A
 IN CONJUNCTION WITH TYPICAL
 SECTION NO. 3 AS FOLLOWS:**
 -L- STA 23+48.00 TO -L- STA 23+67.00 LT
 -L- STA 23+77.59 TO -L- STA 23+93.00 RT



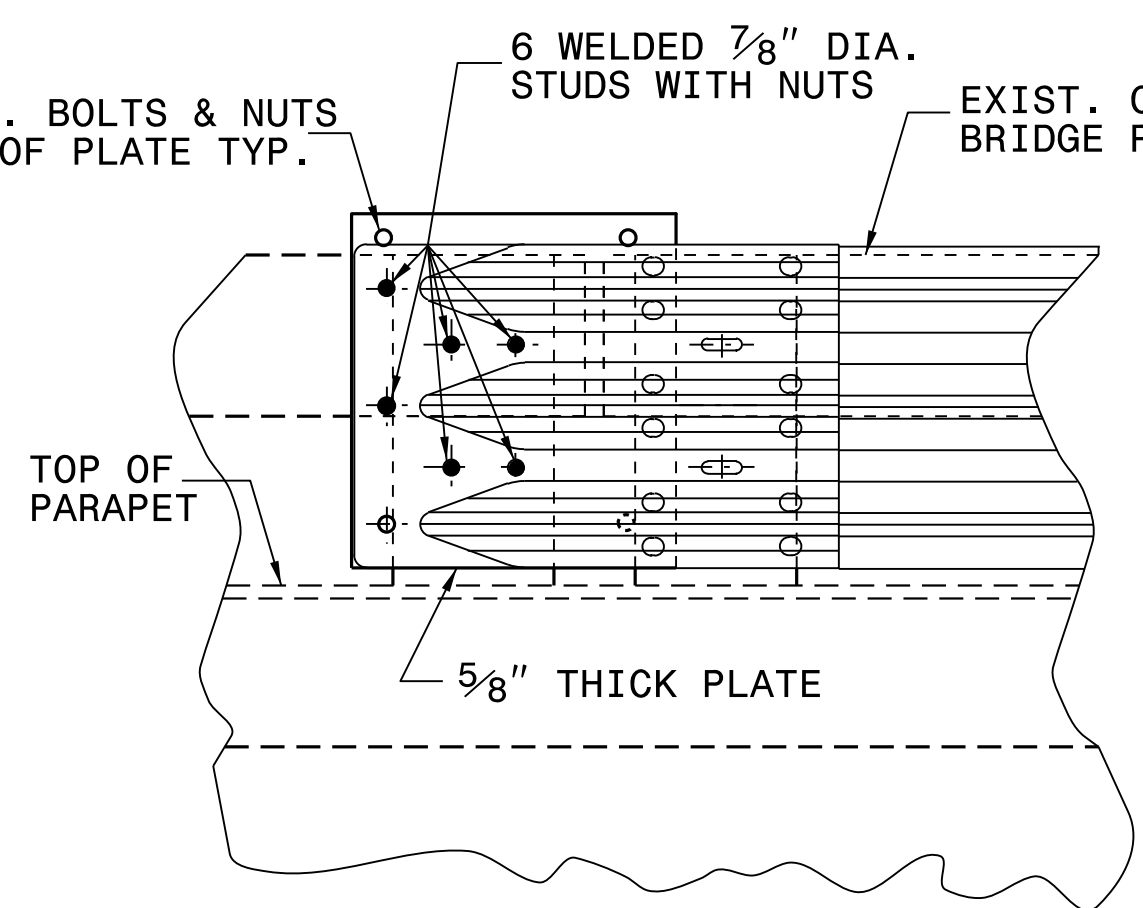
ELEVATION VIEW



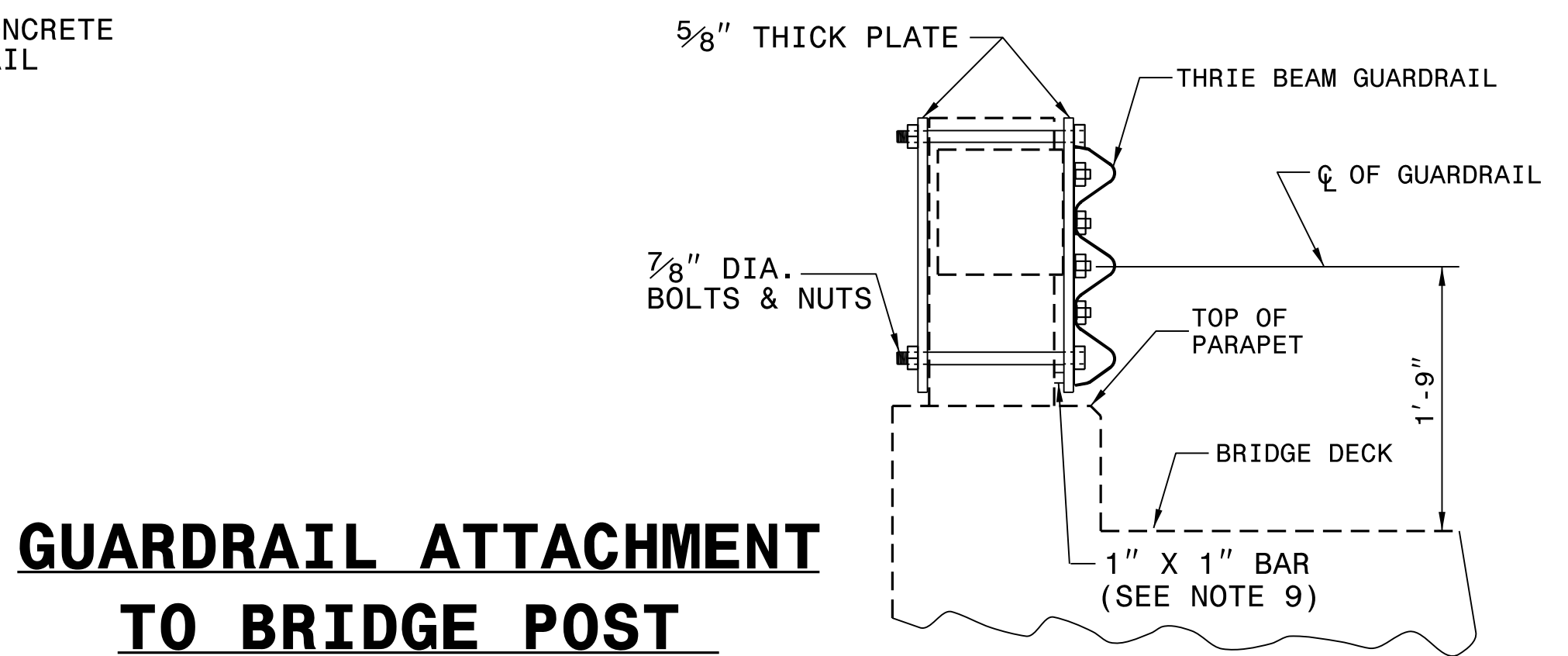
PLAN VIEW



END SHOE



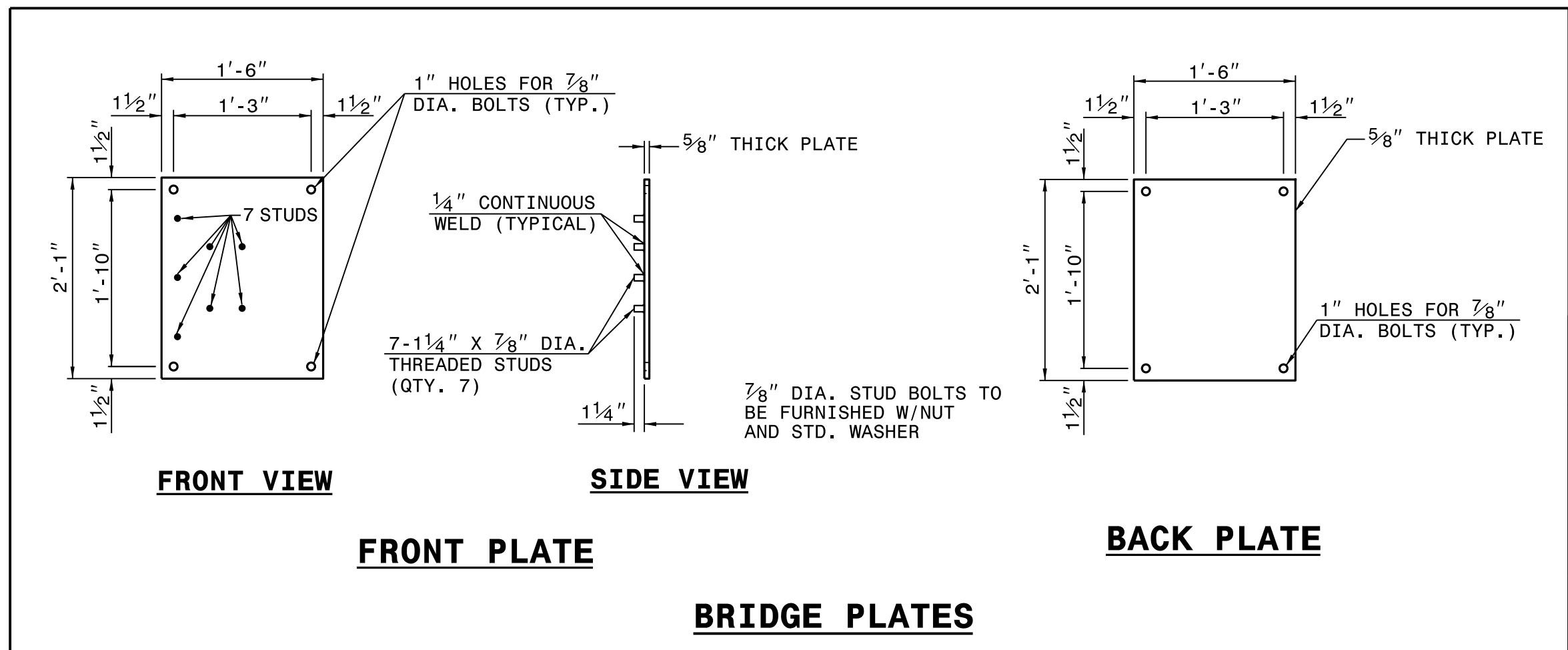
ELEVATION VIEW



SECTION VIEW

GUARDRAIL ATTACHMENT TO BRIDGE POST

- GENERAL NOTES:**
1. USE NUTS, BOLTS, AND WASHERS CONFORMING TO THE REQUIREMENTS OF A.S.T.M. A-307 AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF STAND. SPECS.
 2. TAP NUTS FOR THE 7/8" DIA. STUDS AND BOLTS AFTER GALVANIZING SEE A.S.T.M. A-563.
 3. USE PLATES AND TUBES CONFORMING TO THE REQUIREMENTS OF A.S.T.M. A-36 AND GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH SECTION 1076 OF STAND. SPECS.
 4. ADDITIONAL FIELD HOLES MAY BE DRILLED IN STEEL RAIL AS DIRECTED BY THE ENGINEER.
 5. INSTALL FACE OF GUARDRAIL AS NEAR AS POSSIBLE TO PLUMB WITH THE PARAPET FACE AT BRIDGE END POST SPACER TUBE LOCATION BY USING STANDARD OR ALTERED SPACER TUBES OR A COMBINATION THEREOF OR AS DIRECTED BY THE ENGINEER. FOR VERY SMALL PARAPET WIDTHS, GUARDRAIL MAY BE INSTALLED AGAINST BRIDGE RAIL WITHOUT SPACER TUBES.
 6. DO NOT DRILL BRIDGE RAIL IN ORDER TO INSTALL GUARDRAIL ANCHOR UNIT.
 7. USE THIS DETAIL ONLY FOR BRIGES WITH POST AND BEAM TYPE RAIL.
 8. ATTACH 1" X 1" BAR AND THREADED STUDS TO PLATE WITH 1/4" WELDS ALL AROUND.
 9. 1" X 1" BAR MAY NOT BE NEEDED ON BRIDGE RAILS WHERE FACE OF RAIL DOES NOT PROJECT BEYOND FACE OF POST.
 10. PROVIDE SHOP DRAWINGS OF THE PLATES TO THE ENGINEER FOR APPROVAL BEFORE FABRICATING THE PLATES.
 11. LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
 12. SEE ROADWAY STARDARD DRAWING 862.03 SHEET 3 FOR ADDITIONAL INFORMATION ON THE TYPE III ANCHOR UNIT



FRONT VIEW

SIDE VIEW

BACK PLATE

FRONT PLATE

BRIDGE PLATES



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

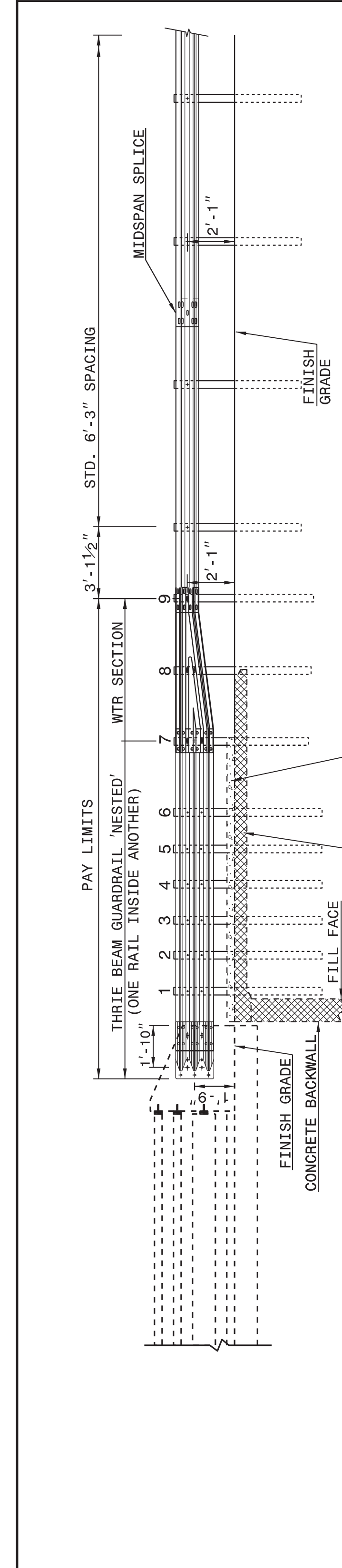
STRUCTURE ANCHOR UNIT TYPE III MODIFIED

ORIGINAL BY: C.O. CUEVAS DATE: 12-00
 MODIFIED BY: JS HOWERTON DATE: 01-18
 CHECKED BY: DATE:
 FILE SPEC.: \usr\details\stand\bp\ii.dgn

24-JAN-2018 14:52 S:\Contracts\Special Details\Vericard\usr\details\stand\bp_iii_originel.dgn .jhowerton AT USD-292595

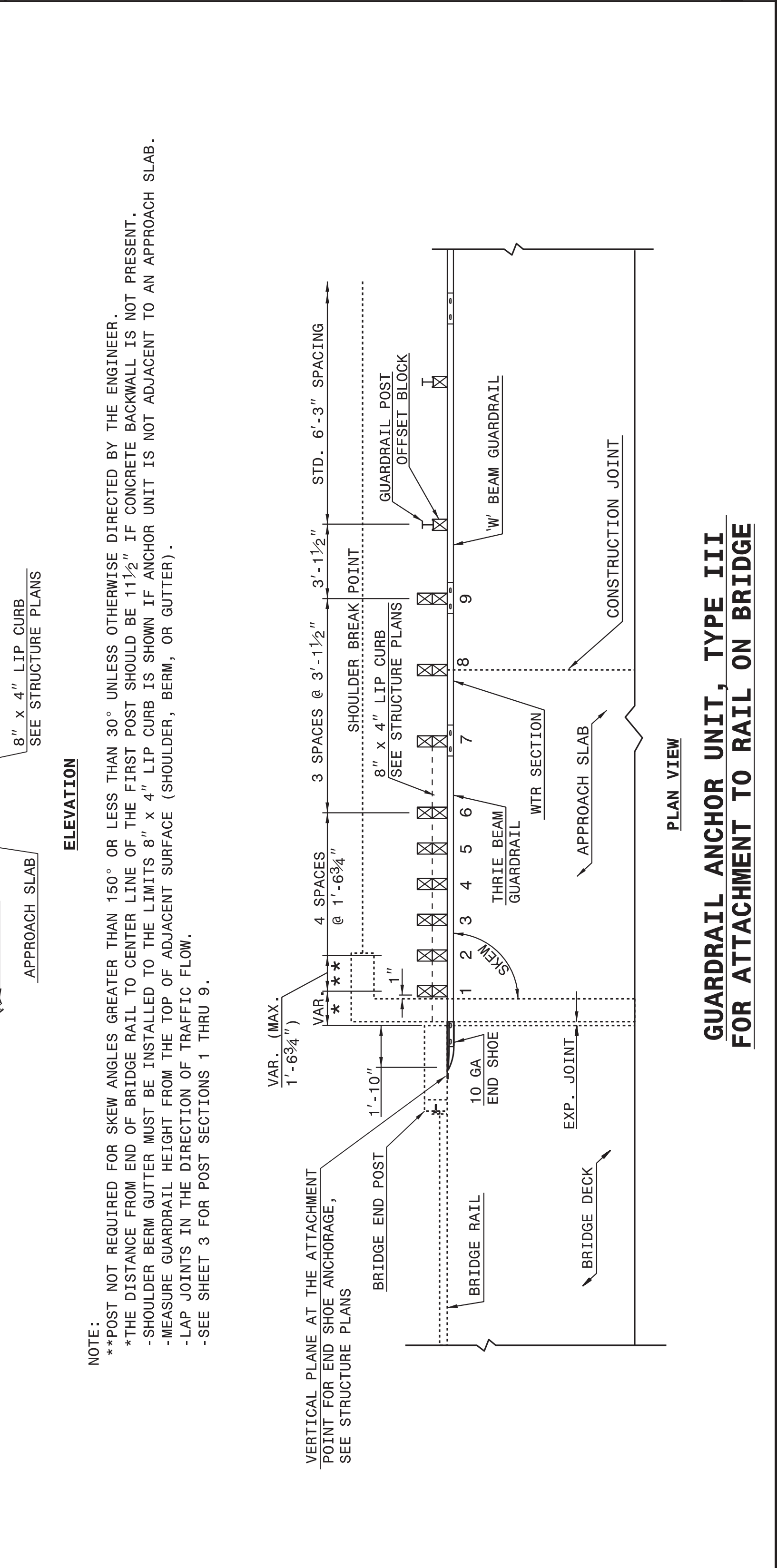
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STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

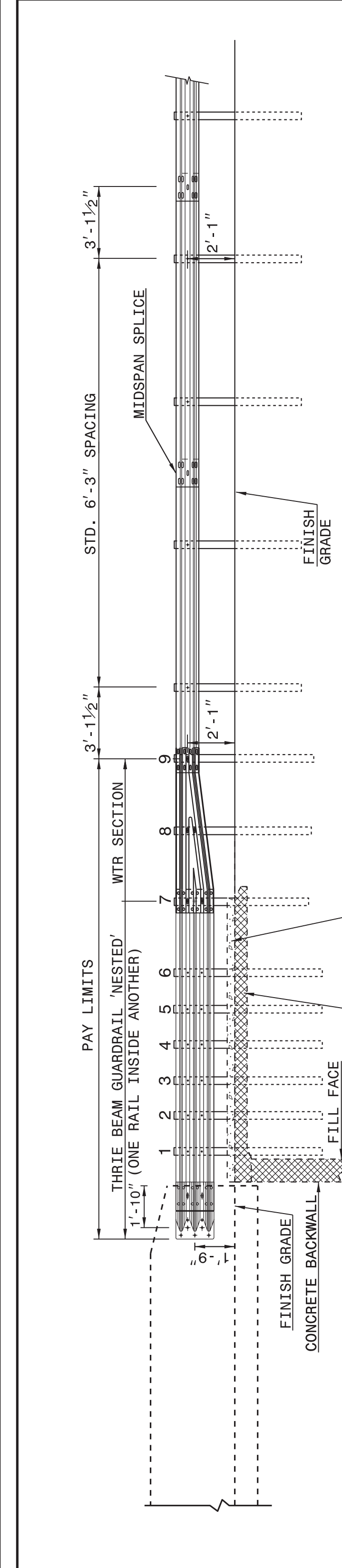


ROADWAY DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE

SHEET 1 OF 7
862D03

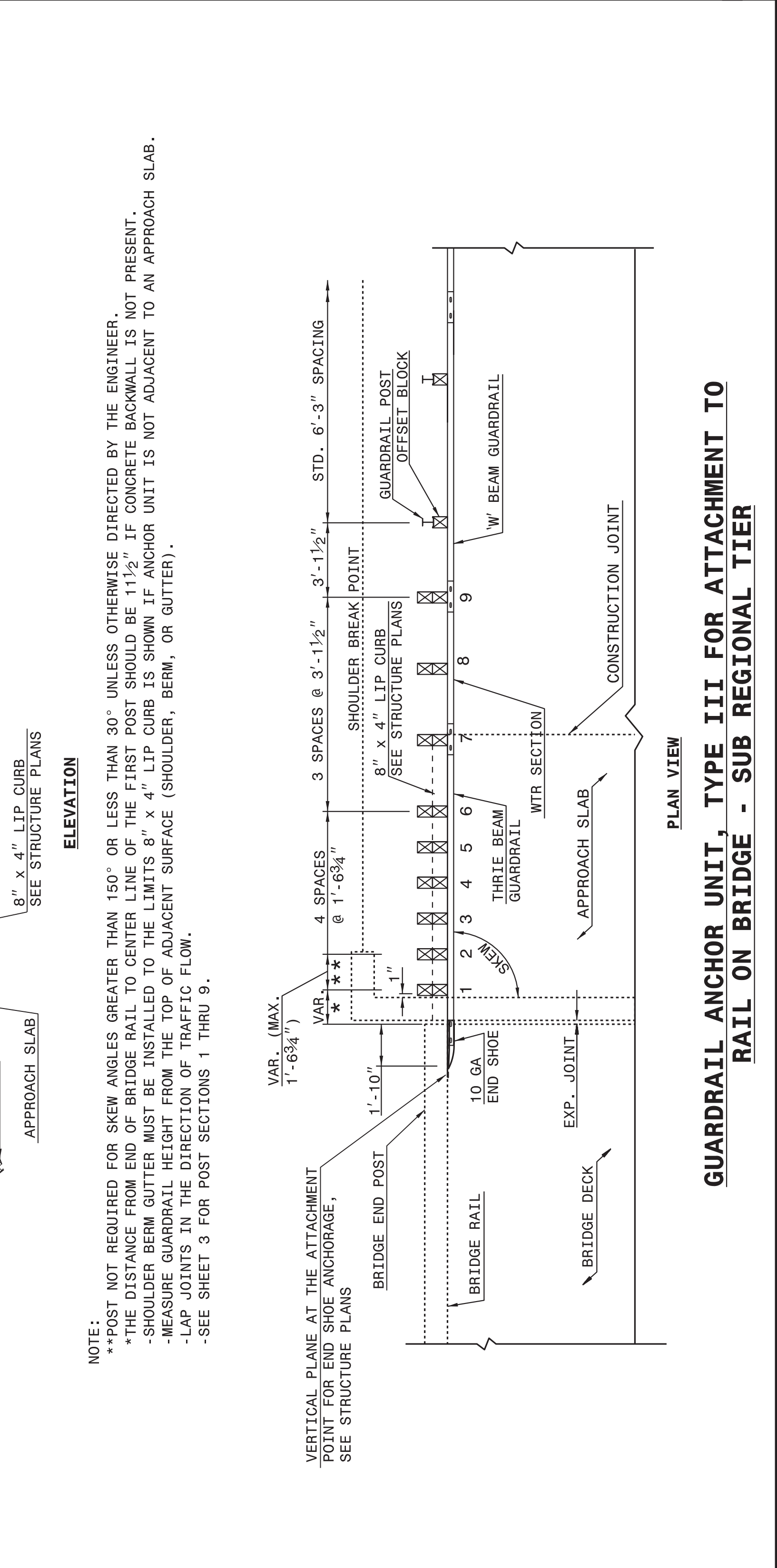


STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

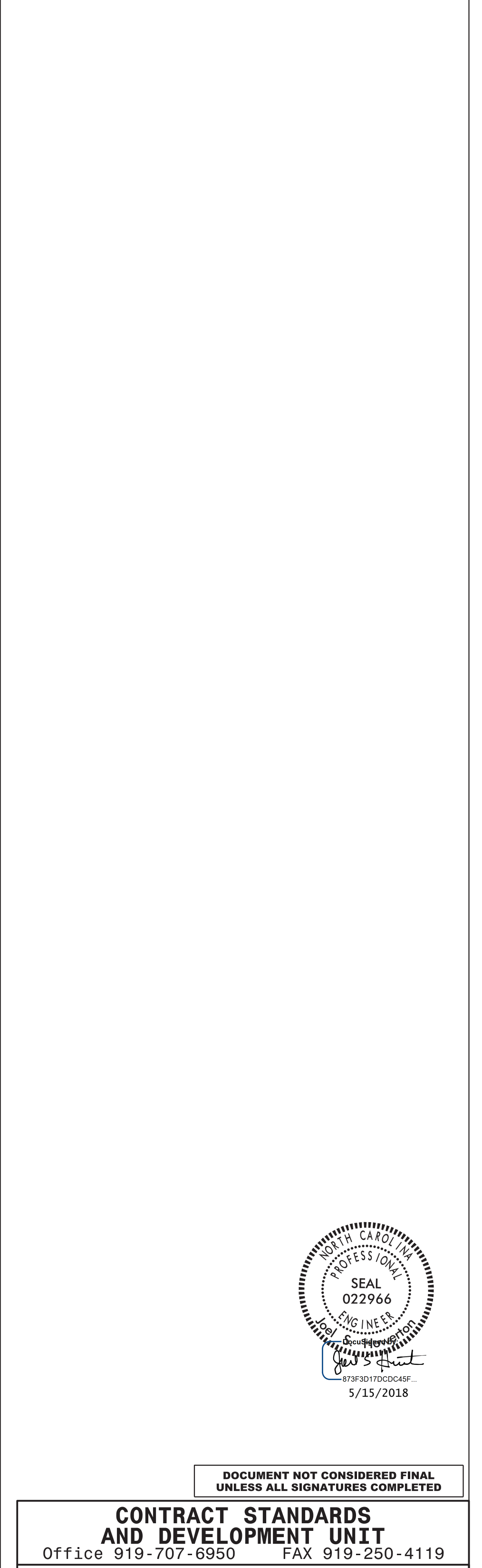


ROADWAY DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7
862D03

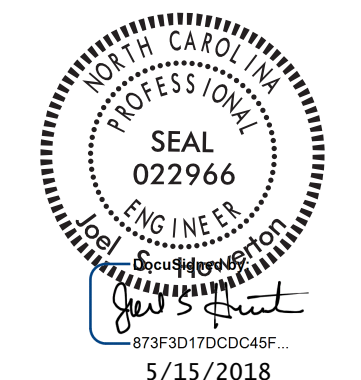


STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.



NOTE:
 **POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
 *THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11 1/2" IF CONCRETE BACKWALL IS NOT PRESENT.
 -SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
 -MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
 -LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
 -SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.

NOTE:
 **POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
 *THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11 1/2" IF CONCRETE BACKWALL IS NOT PRESENT.
 -SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
 -MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
 -LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
 -SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.






DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

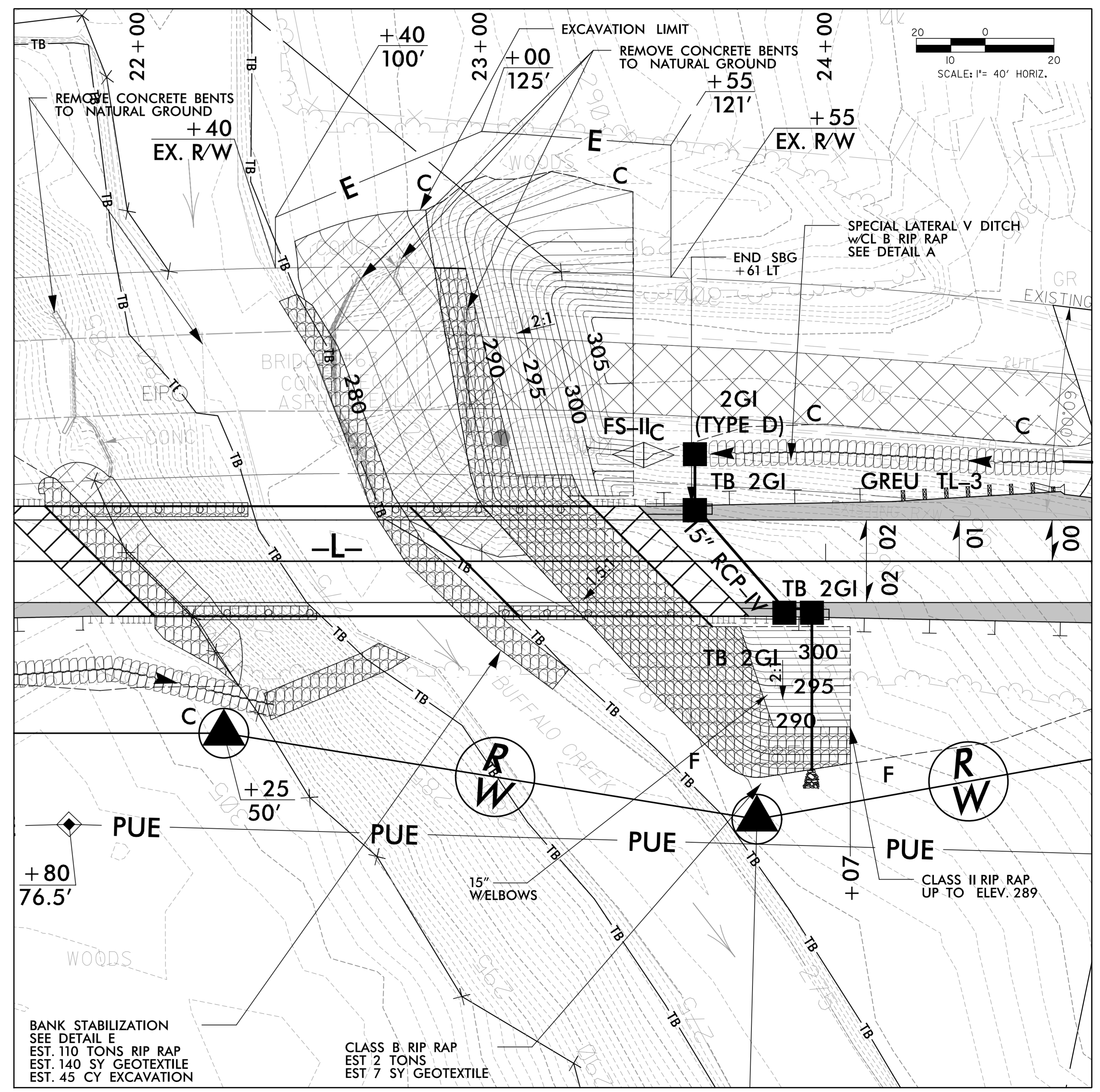
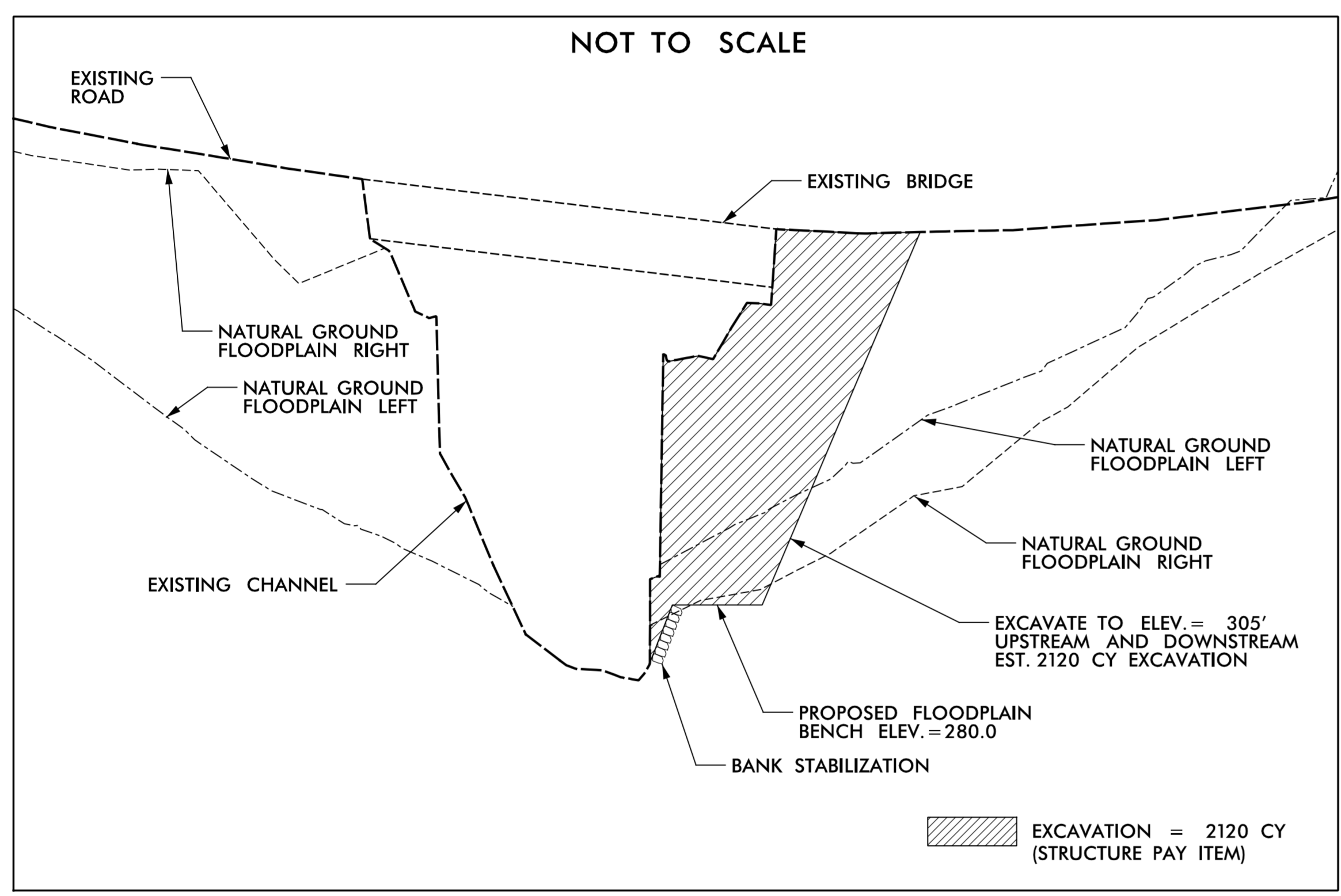
SEE TITLE BLOCK

ORIGINAL BY: J. HOWERTON DATE: 06-22-12
 MODIFIED BY: DATE:
 CHECKED BY: DATE:
 FILE SPEC.: DATE:

 HDR Engineering, Inc. of the Carolinas 555 Fayetteville St. Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116	PROJECT REFERENCE NO. <i>17BP.8.RJ21</i>	SHEET NO. <i>2D-1</i>
	RW SHEET NO.	
ROADWAY DESIGN ENGINEER  SEAL 041473 ALEXANDER D. SNIDER	HYDRAULICS ENGINEER  SEAL 034364 PEYTON J. CORNER	
DocuSigned by: Alexander D. Snider 5/22/2018	DocuSigned by: Peyton J. Corner 5/22/2018	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		



PROPOSED GRADING UNDER BRIDGE



BANK STABILIZATION
SEE DETAIL E
EST. 110 TONS RIP RAP
EST. 140 SY GEOTEXTILE
EST. 45 CY EXCAVATION

CLASS B RIP RAP
EST 2 TONS
EST 7 SY GEOTEXTILE

CLASS II RIP RAP
UP TO ELEV. 289

 PAVEMENT REMOVAL

COMPUTED BY: ADS	DATE: 2/1/2018
CHECKED BY: DCS	DATE: 2/1/2018

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

HDR HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO. <i>17BP.8.R.121</i>	SHEET NO. <i>3B-1</i>
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PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD ²
-L-	19+13.00	21+56.00	LT	350
-L-	22+95.00	24+51.00	LT	415
-L-	25+13.00	26+14.00	LT	75
TOTAL:				840
SAY:				840

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

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS										IMPACT ATTENUATOR TYPE 350			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS			
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	XI	GREU, TL-3	GREU, MEDIAN	XIII	AT-1	VI MOD	TYPE-III	TYPE-III MODIFIED	EA	G	NG								
-L-	19+05.00	22+05.00	RT	300.00			22+05.00		4	11	50		1																					
-L-	20+35.50	21+73.00	LT	137.5				21+73.00	4	9		50																					88	
-L-	23+64.00	26+14.00	RT	250.00				23+64.00	4	11		50																						
-L-	23+32.00	24+69.50	LT	137.5			23+32.00		4	9	50		1																					
	TOTAL			825																														
	DEDUCTIONS FOR ANCHOR UNITS			275																														
	SAY			550																														
TEMPORARY																																		
-L-	19+99.75	21+56.00	LT	156.25			19+99.75	21+56.00	3	5	50		1																				SEE DETAIL SHEET 2B-1	
-L-	22+97.00	24+65.75	LT	168.75			22+97.00	24+65.75	3	5		50																					SEE DETAIL SHEET 2B-1	
	TOTAL			325																														
	DEDUCTIONS FOR ANCHOR UNITS			137.5																														
	SAY			187.5																														

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COMPUTED BY: AN DATE: 2/15/18
 CHECKED BY: KRB DATE: 2/15/18

PROJECT NO. 17BP.8.R.121
 SHEET NO. 3G-1

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
CONTINGENCY				SD	200
TOTAL LF:					200

*UD = Underdrain
 *BD = Blind Drain
 *SD = Subsurface Drain

SUMMARY OF GEOTEXTILE FOR PAVEMENT STABILIZATION

LINE	Station	Station	Geotextile for Pavement Stabilization SY	Class IV Subgrade Stabilization TONS
CONTINGENCY				
TOTAL SY/TONS:			0	0*

*Total tons of "Class IV Subgrade Stabilization" is only the estimated quantity for pavement stabilization and may only represent a portion of the subgrade stabilization quantity shown in the Item Sheets of the Proposal.

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type* ASU/AST	Aggregate Thickness INCHES	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
L	26+75	27+75	ASU		70	145	125		
L	29+25	30+15	ASU		30	45	85		
CONTINGENCY			ASU		100	200	350		
TOTAL CY/TONS/SY:					200	390**	560**	0	0

*ASU = Aggregate Subgrade
 *AST = Aggregate Stabilization
 **Total tons of "Class IV Subgrade Stabilization" and total square yards of "Geotextile for Soil Stabilization" are only the estimated quantities for ASU/AST and may only represent a portion of the subgrade stabilization and geotextile quantities shown in the Item Sheets of the Proposal.

SUMMARY OF ROCK PLATING

LINE	Beginning Slope (H:V)	Approx. Station	Ending Slope (H:V)	Approx. Station	Location LT/RT	Rock Plating Detail No. 1/2/3/4	Riprap Class* 1/2/B	Rock Plating SY
TOTAL SY:								0

*Use Class 1, 2 or B riprap if riprap class is not shown for rock plating location.

SUMMARY OF REINFORCED SOIL SLOPES AND SLOPE EROSION CONTROL

LINE	Beginning Slope/ RSS (H:V)	Approx. Station	Ending Slope/ RSS (H:V)	Approx. Station	Location LT/RT	Reinforced Soil Slope (RSS) SY	Geocells SY	Coir Fiber Mat SY	Matting for Erosion Control SY
TOTAL SY:						0	0	0*	0**

*Total square yards of "Coir Fiber Mat" is only the estimated quantity for slopes steeper than 2:1 (H:V) and may only represent a portion of the coir fiber mat quantity shown in the Item Sheets of the Proposal.
 **Total square yards of "Matting for Erosion Control" is only the estimated quantity for RSS and may only represent a portion of the matting quantity shown in the Item Sheets of the Proposal.

SUMMARY OF PRE-SPLITTING OF ROCK

LINE	Beginning Rock Cut Slope (H:V)	Approx. Station	Ending Rock Cut Slope (H:V)	Approx. Station	Location LT/RT	Pre-splitting of Rock SY
L	2:1	15+20	2:1	16+75	RT	160
CONTINGENCY						100
TOTAL SY:						260

SUMMARY OF SURCHARGES AND SURCHARGE WAITING PERIODS

LINE	Station	Station	Surcharge Height FT	MONTHS

SUMMARY OF SETTLEMENT GAUGES

Gauge No.	LINE and Station	Offset		
		Distance FT	Direction LT/RT	
TOTAL GAUGES (EACH):				

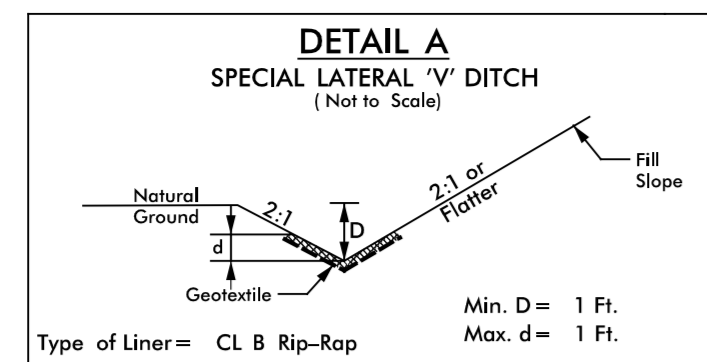
SUMMARY OF EMBANKMENT WAITING PERIODS

LINE	Station	Station	MONTHS

SUMMARY OF BRIDGE WAITING PERIODS

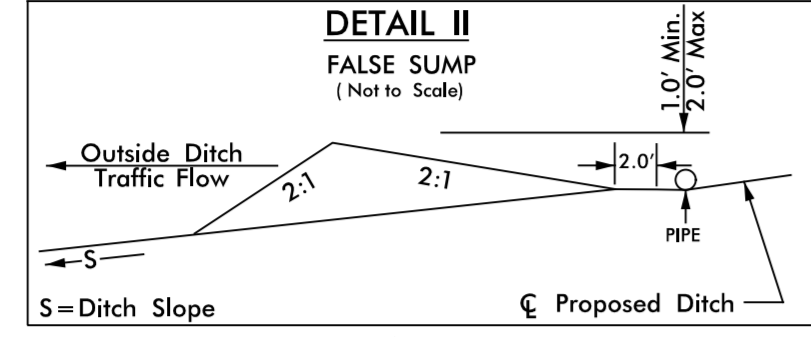
Bridge Description	End Bent/ Bent No.	MONTHS

8/17/19

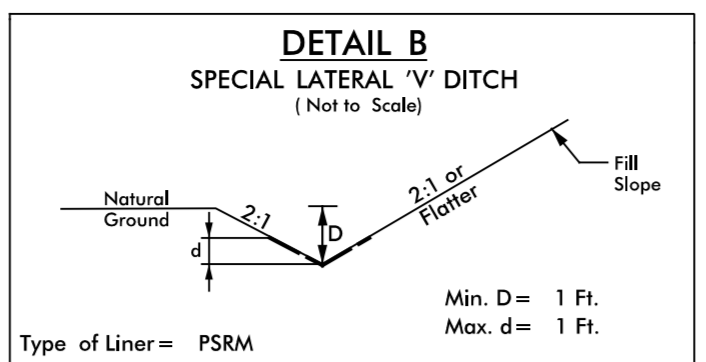


Type of Liner = CL B Rip-Rap
 Min. D = 1 Ft.
 Max. d = 1 Ft.

-L- FROM STA. 20+00 TO STA. 21+35 LT
 -L- FROM STA. 21+00 TO STA. 22+40 RT
 -L- FROM STA. 23+62 TO STA. 24+10 LT

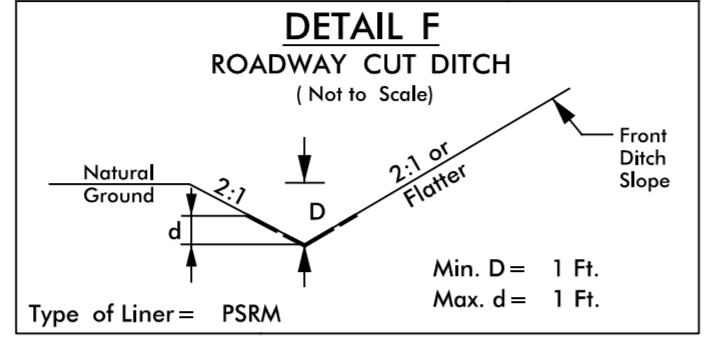


-L- STA. 21+50 LT
 -L- STA. 23+47 LT



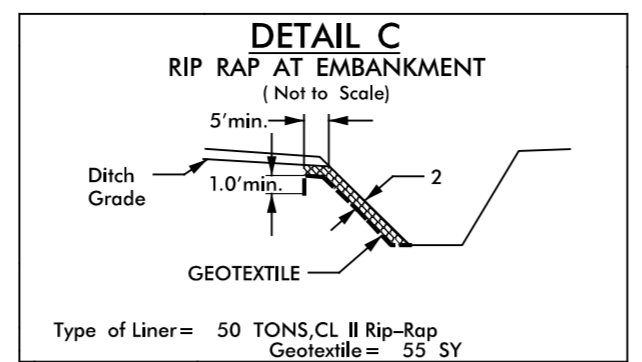
Type of Liner = PSRM
 Min. D = 1 Ft.
 Max. d = 1 Ft.

-L- FROM STA. 16+50 TO STA. 18+00 LT
 -L- FROM STA. 18+50 TO STA. 20+00 RT



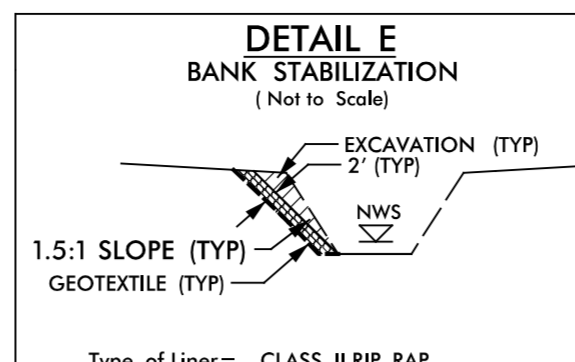
Type of Liner = PSRM
 Min. D = 1 Ft.
 Max. d = 1 Ft.

-L- STA. 15+50 TO 16+50 LT
 -L- STA. 18+20 TO 20+00 LT
 -L- STA. 15+50 TO 17+50 RT
 -L- STA. 20+00 TO 21+00 RT



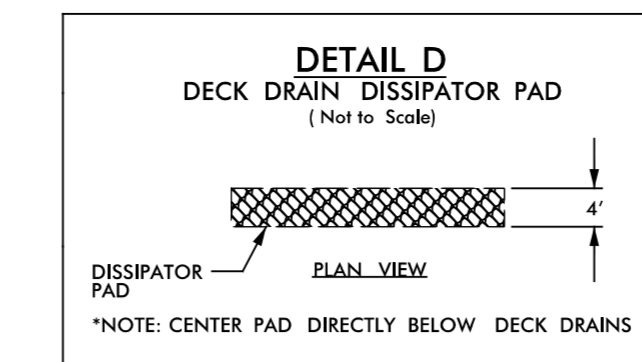
Type of Liner = 50 TONS CL II Rip-Rap
 Geotextile = 55 SY

-L- FROM STA. 22+40 TO STA. 22+88 RT



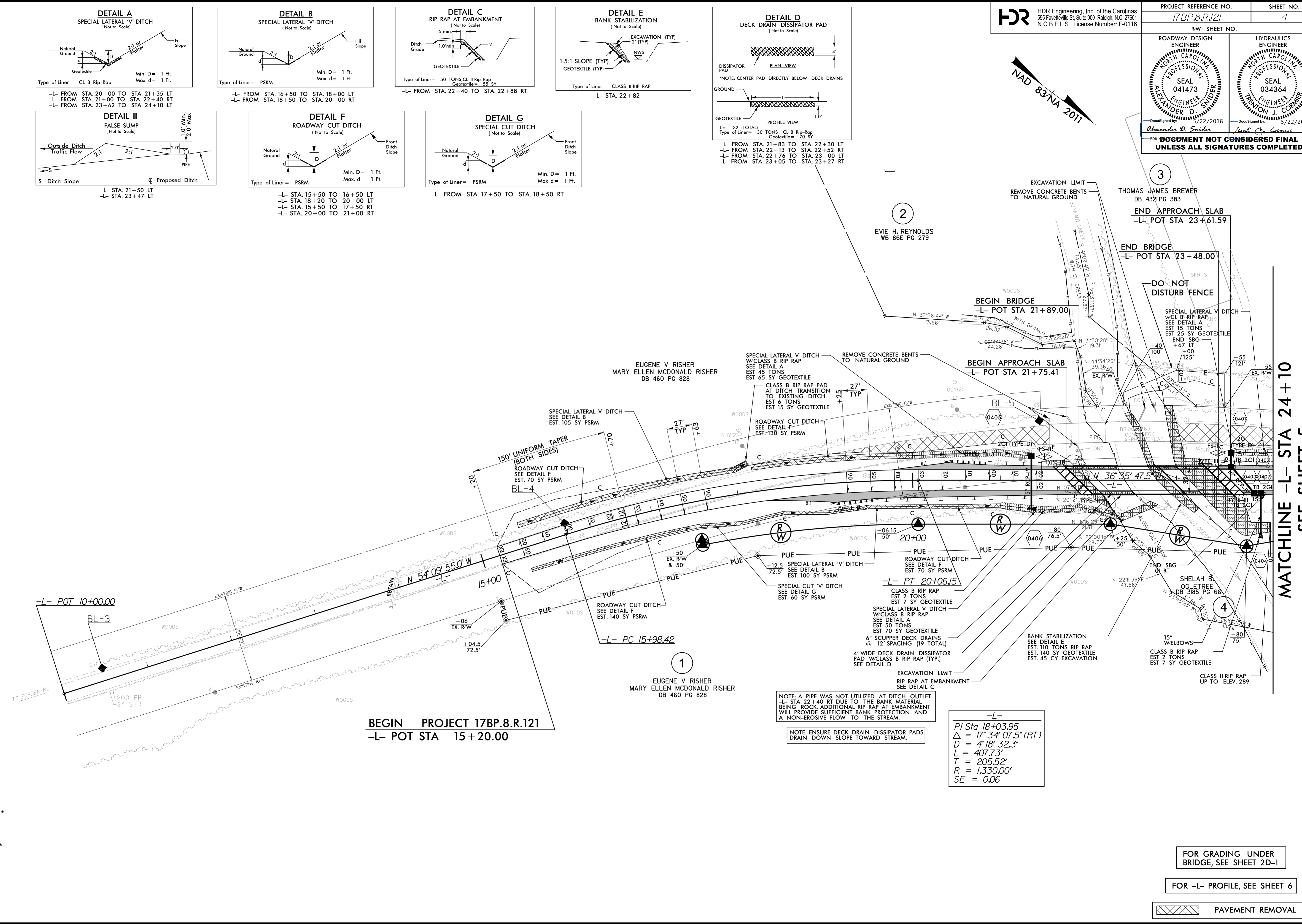
Type of Liner = CLASS II RIP RAP

-L- STA. 22+82



L = 132 (TOTAL)
 Type of Liner = 30 TONS CL B Rip-Rap
 Geotextile = 70 SY

-L- FROM STA. 21+83 TO STA. 22+30 LT
 -L- FROM STA. 22+13 TO STA. 22+52 RT
 -L- FROM STA. 22+76 TO STA. 23+00 LT
 -L- FROM STA. 23+05 TO STA. 23+27 RT



HDR HDR Engineering, Inc. of the Carolinas
 555 Fayetteville St., Suite 900, Raleigh, N.C. 27601
 N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO. 17BP.8.R.121
 SHEET NO. 4

RW SHEET NO.

ROADWAY DESIGN ENGINEER
 SEAL 041473
 ALEXANDER D. SWIDER

HYDRAULICS ENGINEER
 SEAL 034364
 BREWTON J. CORNER

DocuSigned by: Alexander D. Swider 5/22/2018
 DocuSigned by: Brewton J. Corner 5/22/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-
 PI Sta 18+03.95
 $\Delta = 17^{\circ} 34' 07.5''$ (RT)
 D = 418' 32.3"
 L = 407.73'
 T = 205.52'
 R = 1,330.00'
 SE = 0.06

NOTE: A PIPE WAS NOT UTILIZED AT DITCH OUTLET -L- STA. 22+40 RT DUE TO THE BANK MATERIAL BEING ROCK. ADDITIONAL RIP RAP AT EMBANKMENT WILL PROVIDE SUFFICIENT BANK PROTECTION AND A NON-EROSIVE FLOW TO THE STREAM.

NOTE: ENSURE DECK DRAIN DISSIPATOR PADS DRAIN DOWN SLOPE TOWARD STREAM.

FOR GRADING UNDER BRIDGE, SEE SHEET 2D-1

FOR -L- PROFILE, SEE SHEET 6



MATCHLINE -L- STA 24+10 SEE SHEET 5

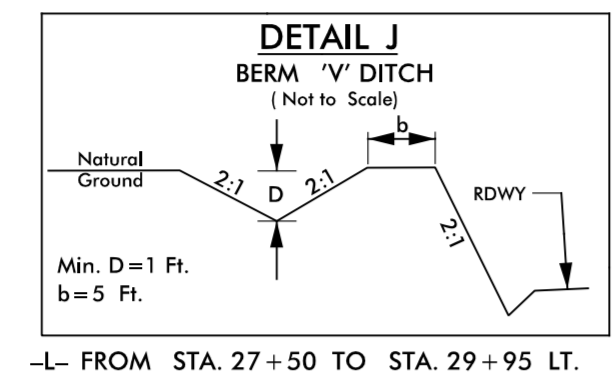
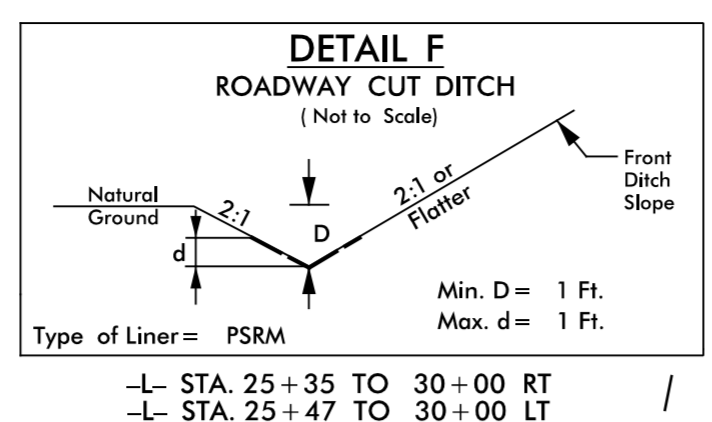
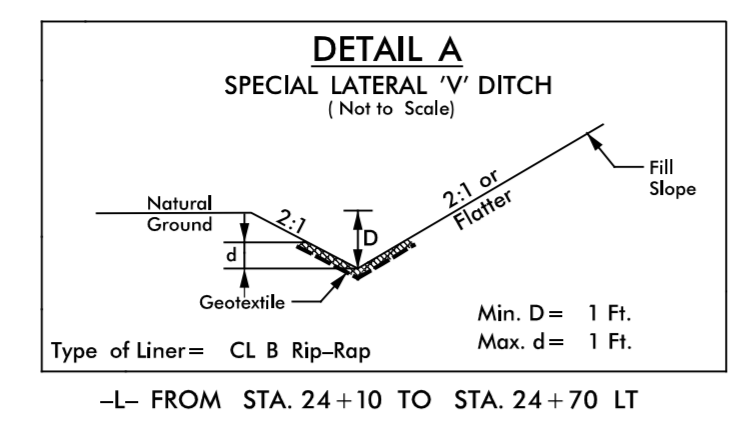
5/22/2018 MOORE_063_RDY_PSH_04.dgn ICA ENGINEERING, INC.

8/17/19

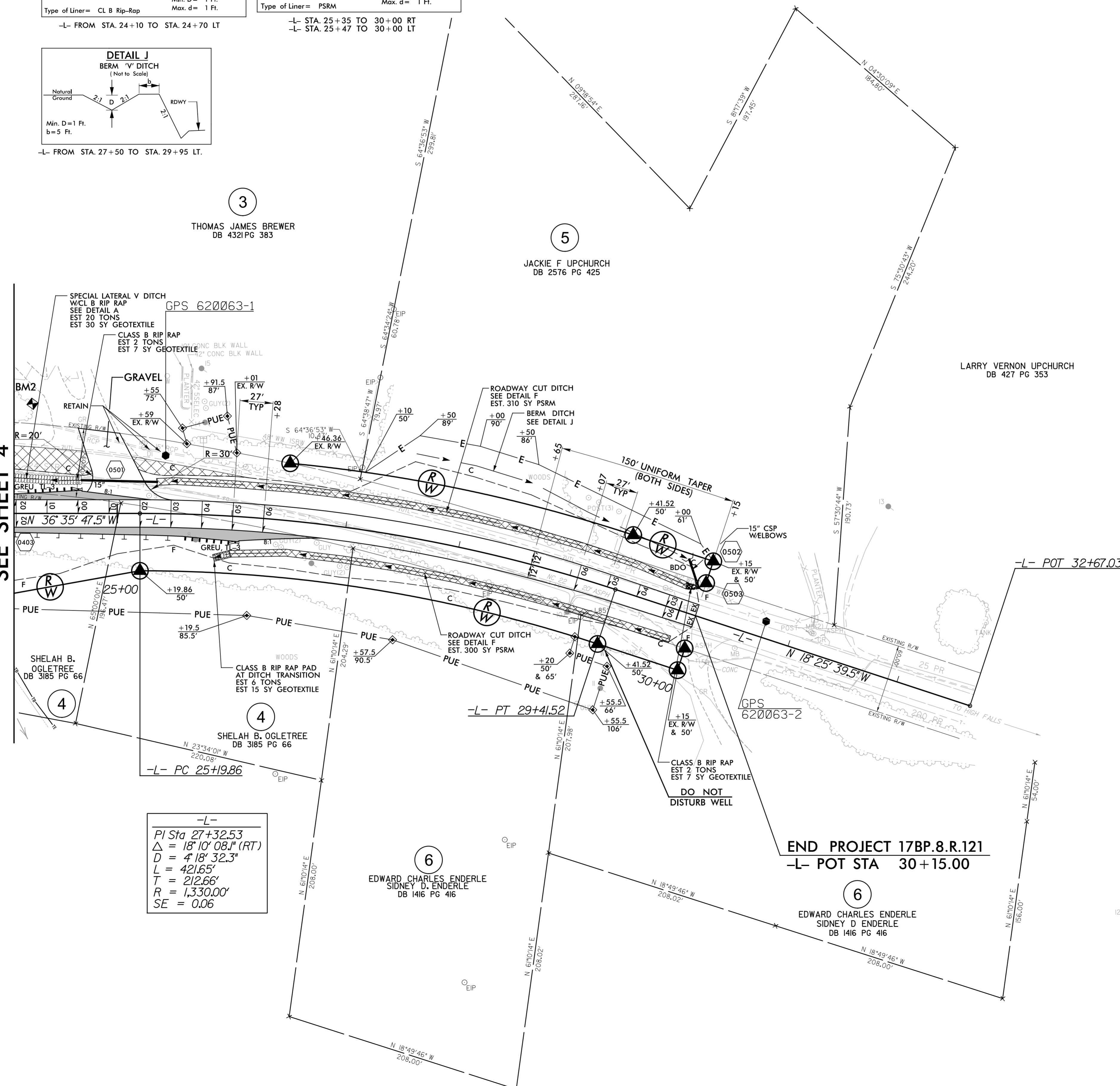
ROADWAY DESIGN ENGINEER
ALEXANDER D. SNIDER
SEAL 041473
NORTH CAROLINA PROFESSIONAL ENGINEER

HYDRAULICS ENGINEER
BRENTON J. CORNER
SEAL 034364
NORTH CAROLINA PROFESSIONAL ENGINEER

DocuSigned by: Alexander D. Snider 5/15/2018
DocuSigned by: Brenton J. Corner 5/15/2018



MATCHLINE -L- STA 24+10
SEE SHEET 4



-L-
PI Sta 27+32.53
 $\Delta = 18^{\circ}10'08.1''$ (RT)
D = 4' 18" 32.3"
L = 421.65'
T = 212.66'
R = 1,330.00'
SE = 0.06

FOR -L- PROFILE, SEE SHEET 6



5/28/19

BEGIN GRADE
-L- STA 15+20.00
EL = 346.45'
PI = 16+00.00
EL = 341.98'
VC = 160'
K = 73
DS = 45 MPH
DESIGN EXCEPTION REQUIRED

PI = 19+35.00
EL = 315.95'
VC = 280'
K = 64
DS = 40 MPH
DESIGN EXCEPTION REQUIRED

PI = 24+40.00
EL = 298.71'
VC = 560'
K = 65
DS = 40 MPH
DESIGN EXCEPTION REQUIRED

BRIDGE HYDRAULIC DATA
DESIGN DISCHARGE = 4200 CFS
DESIGN FREQUENCY = 50 YRS
DESIGN HW ELEVATION = 288J FT
BASE DISCHARGE = 5120 CFS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 289.5 FT
OVERTOPPING DISCHARGE = 26,000 CFS
OVERTOPPING FREQUENCY = 500+ YRS
OVERTOPPING ELEVATION = 304.5 FT

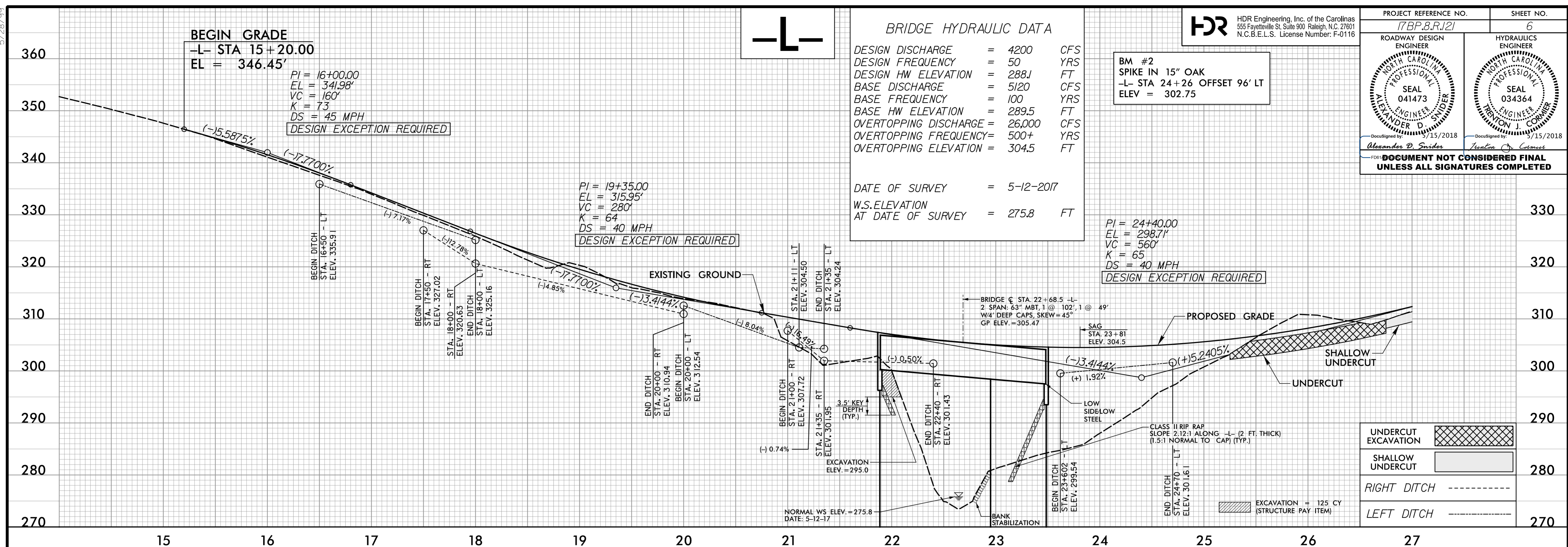
DATE OF SURVEY = 5-12-2017
W.S. ELEVATION AT DATE OF SURVEY = 275.8 FT

BM #2
SPIKE IN 15" OAK
-L- STA 24+26 OFFSET 96' LT
ELEV = 302.75

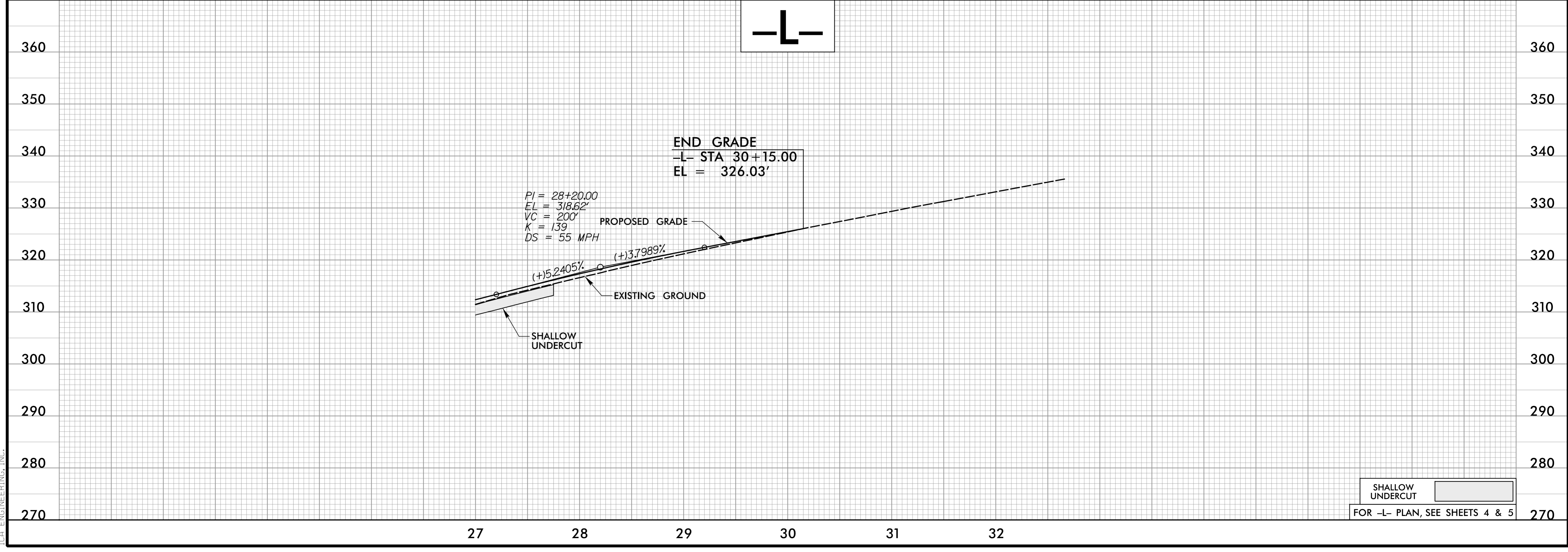


HDR Engineering, Inc. of the Carolinas
555 Fayetteville St. Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO. 17BP.8.R.121	SHEET NO. 6
ROADWAY DESIGN ENGINEER ALEXANDER D. SWIDER	HYDRAULICS ENGINEER DEVON J. COMBER
PROFESSIONAL SEAL 041473	PROFESSIONAL SEAL 034364
DocuSigned by: Alexander D. Swider 5/15/2018	DocuSigned by: Devon J. Comber 5/15/2018
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UNDERCUT EXCAVATION		290
SHALLOW UNDERCUT		280
RIGHT DITCH		270
LEFT DITCH		270



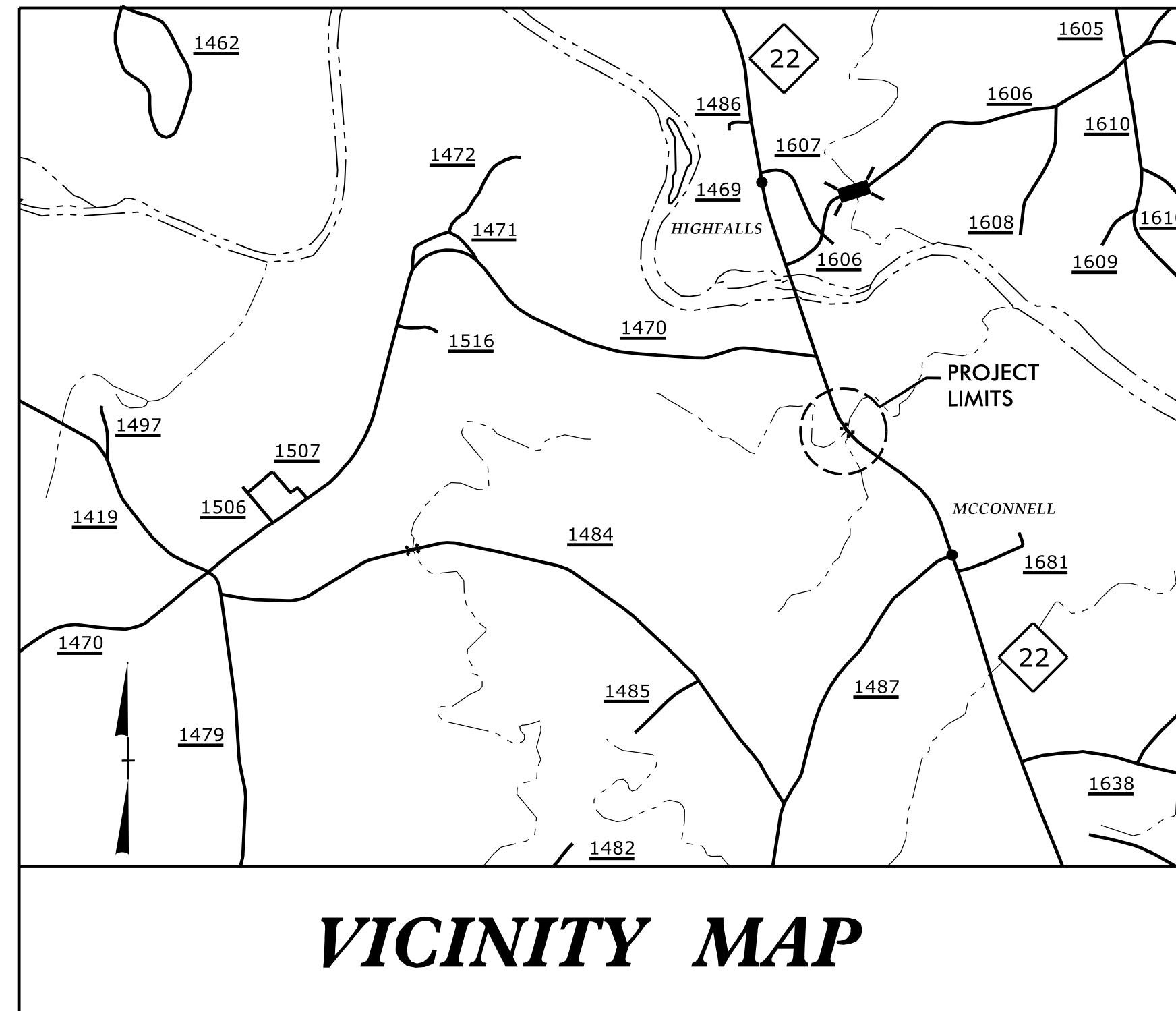
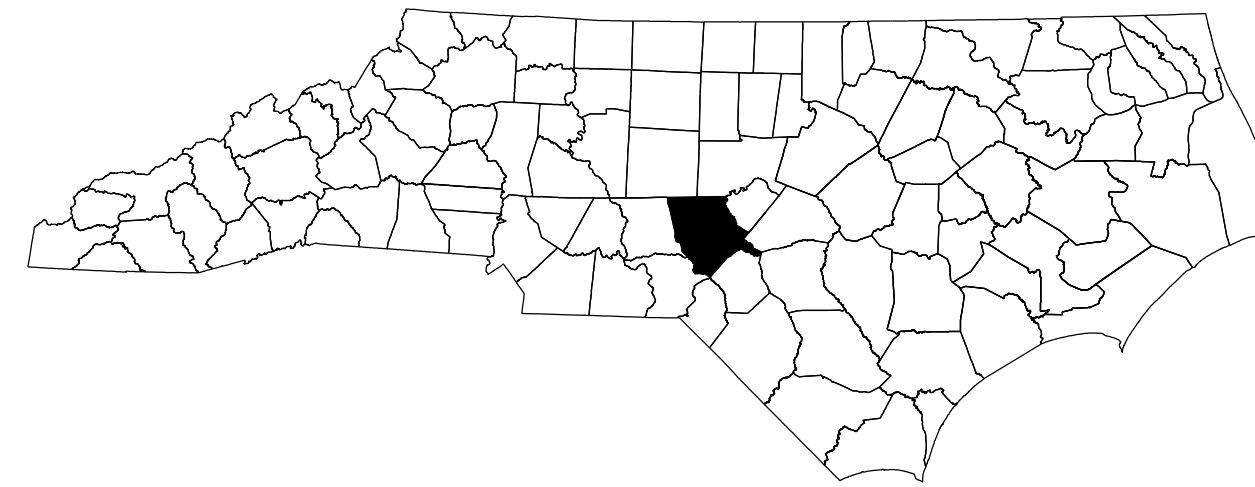
SHALLOW UNDERCUT
FOR -L- PLAN, SEE SHEETS 4 & 5

5/9/2018
MODIFIED BY: R.D.Y.
TCA ENGINEERING, INC.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

MOORE COUNTY



LOCATION: REPLACE BRIDGE NO. 063 OVER BUFFALO CREEK ON NC 22
TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE

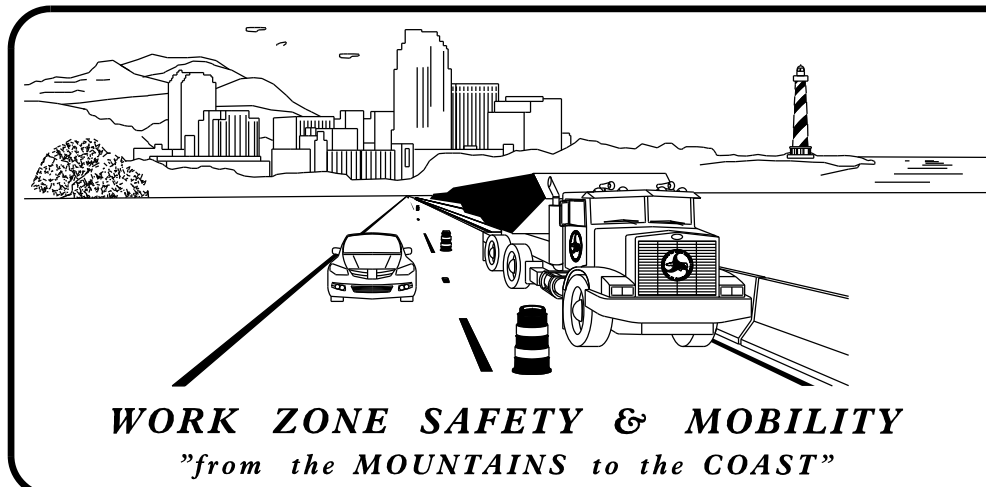
<u>SHEET NO.</u>	<u>TITLE</u>
TMP-1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, AND LEGEND
TMP-2	TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGY GENERAL NOTES)
TMP-2A	TEMPORARY SHORING DETAIL
TMP-3	PHASING
TMP-4	PHASE I DETAIL
TMP-5	PHASE II DETAIL

SHEET NO.
TMP-1

17BP.8.R.122

TIP PROJECT:

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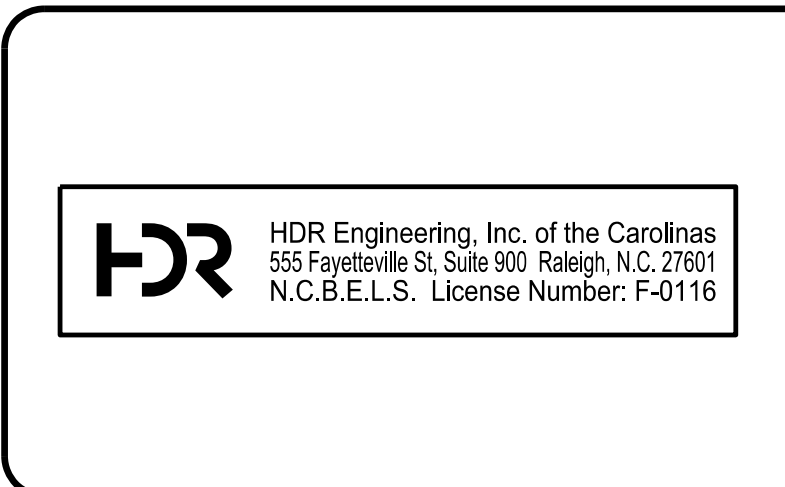
M. RZEPKA, P.E.
PROJECT ENGINEER

Y. MARIOTTE
PROJECT DESIGN ENGINEER

T. WELCH, P.E.
DIV. 8 BRIDGE PROGRAM MANAGER



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APPROVED: Michael T. Rzepka
DATE: 5/15/2018

SEAL
15876
MICHAEL T. RZEPKA
ENGINEER

ROADWAY STANDARD DRAWINGS

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

<u>STD. NO.</u>	<u>TITLE</u>
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.06	WARNING SIGNS FOR BLASTING ZONES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUM
1135.01	CONES
1145.01	BARRICADES
1165.01	TRUCK MOUNTED ATTENUATOR
1180.01	SKINNY-DRUM
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - TEMPORARY
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
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- TEMP. SHORING (LOCATION PURPOSES ONLY)

- WORK AREA
- RESURFACING/WEDGING
- REMOVAL

TRAFFIC CONTROL DEVICES

- BARRICADE (TYPE III)
- CONE
- DRUM SKINNY DRUM TUBULAR MARKER

TEMPORARY SIGNING

- STATIONARY SIGN

TEMPORARY PAVEMENT MARKING

<u>SYMBOL</u>	<u>DESCRIPTION</u>
	<u>PAINT (4")</u>
PA	WHITE EDGELINE
PI	DOUBLE YELLOW CENTERLINE
	<u>TEMPORARY RAISED MARKERS</u>
MH	YELLOW & YELLOW

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APPROVED: DATE: 5/15/2018			<h2 style="margin: 0;">ROADWAY STANDARD DRAWINGS, LEGEND & TEMPORARY PAVEMENT MARKING SCHEDULE</h2>
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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 UNDESIRABLE OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER.

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

TIME RESTRICTIONS

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

ROAD NAME	DAY AND TIME RESTRICTIONS
NC 22	WHEN SCHOOL IS IN SESSION, 7:00 AM - 9:00 AM 2:00 PM - 4:00 PM

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

ROAD NAME
NC 22

HOLIDAY

- FOR ANY UNEXPECTED OCCURRENCE THAT CREATES UNUSUALLY HIGH TRAFFIC VOLUMES, AS DIRECTED BY THE ENGINEER.
- FOR NEW YEAR'S, BETWEEN THE HOURS OF 7:00 A.M. DECEMBER 31st TO 4:00 P.M. JANUARY 2ND. IF NEW YEAR'S DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN UNTIL 4:00 P.M. THE FOLLOWING TUESDAY.
- FOR EASTER, BETWEEN THE HOURS OF 7:00 A.M. THURSDAY AND 4:00 P.M. MONDAY.
- FOR MEMORIAL DAY, BETWEEN THE HOURS OF 7:00 A.M. FRIDAY TO 4:00 P.M. TUESDAY.
- FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 7:00 A.M. THE DAY BEFORE INDEPENDENCE DAY AND 4:00 P.M. THE DAY AFTER INDEPENDENCE DAY.

IF INDEPENDENCE DAY IS ON A FRIDAY, SATURDAY, SUNDAY OR MONDAY THEN BETWEEN THE HOURS OF 7:00 A.M. THE THURSDAY BEFORE INDEPENDENCE DAY AND 4:00 P.M. THE TUESDAY AFTER INDEPENDENCE DAY.
- FOR LABOR DAY, BETWEEN THE HOURS OF 7:00 A.M. FRIDAY AND 4:00 P.M. TUESDAY.
- FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 7:00 A.M. TUESDAY TO 4:00 P.M. MONDAY.
- FOR CHRISTMAS, BETWEEN THE HOURS OF 7:00 A.M. THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 4:00 P.M. THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS.

C) DO NOT STOP TRAFFIC AS FOLLOWS:

ROAD NAME	DAY AND TIME RESTRICTIONS	DURATION AND OPERATION
NC 22	WHEN SCHOOL IS IN SESSION, 7:00 AM - 9:00 AM 2:00 PM - 4:00 PM	15 MINUTES TRAFFIC SHIFT

D) 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

E) 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.

- F) 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.
- G) 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.
- H) 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.
- I) 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.
- J) DO NOT INSTALL MORE THAN ONE LANE CLOSURE IN ANY ONE DIRECTION ON NC 22.

PAVEMENT EDGE DROP OFF REQUIREMENTS

- K) 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.
- L) 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) 200 FEET IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

- N) 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.
- O) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.
- P) INSTALL BLACK ON ORANGE "DIP" SIGNS (W8-2) AND/OR "BUMP" SIGNS (W8-1) 200 FEET IN ADVANCE OF THE UNEVEN AREA, OR AS DIRECTED BY THE ENGINEER.

TRAFFIC CONTROL DEVICES

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

PAVEMENT MARKINGS AND MARKERS

S) INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY PAVEMENT MARKERS ON INTERIM LAYERS OF PAVEMENT AS FOLLOWS:

ROAD NAME	MARKING	MARKER
NC 22	PAINT	TEMPORARY RAISED
NC 22 (BRIDGE DECK)	PAINT	TEMPORARY RAISED

- T) PLACE ONE APPLICATION OF PAINT FOR TEMPORARY TRAFFIC PATTERNS. PLACE A SECOND APPLICATION OF PAINT SIX (6) MONTHS AFTER THE INITIAL APPLICATION AND EVERY SIX MONTHS AS DIRECTED BY THE ENGINEER.
- U) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- V) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

MANAGEMENT STRATEGY


THE PROJECT CONSISTS OF REPLACING BRIDGE NO. 63 OVER BUFFALO CREEK. DURING CONSTRUCTION, TRAFFIC WILL BE MAINTAINED IN A TWO-LANE, TWO-WAY PATTERN ON EXISTING ROADWAY AND BRIDGE DURING BRIDGE AND REALIGNMENT CONSTRUCTION PERFORMED AWAY FROM TRAFFIC.

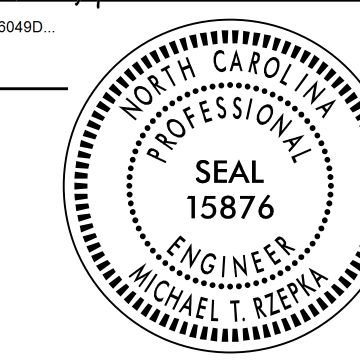
FOR TIE-IN CONSTRUCTION OF -L- TO EXISTING NC 22, LANE CLOSURES AND FLAGGING WILL BE USED.

TEMPORARY GUARDRAIL AND TEMPORARY SHORING INSTALLATION, TIE-IN CONSTRUCTION, TRAFFIC SHIFTS, AND PLACEMENT OF FINAL SURFACE COURSE AND PAVEMENT MARKINGS WILL BE PERFORMED USING FLAGGER OPERATIONS.

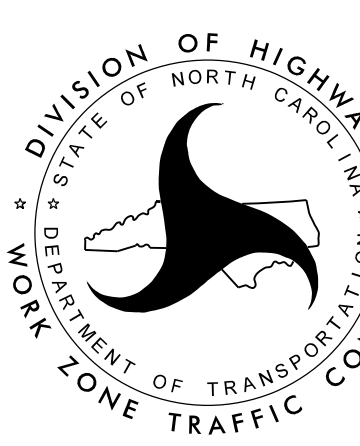
ACCESS FOR LOCAL TRAFFIC, INCLUDING DRIVEWAYS, MUST BE PROVIDED AT ALL TIMES WITHIN THE PROJECT LIMITS.

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TRANSPORTATION OPERATIONS PLAN

TEMPORARY SHORING NOTES

(SEE SHEET TMP-4)

Temporary Shoring No. ①

FOR STANDARD TEMPORARY SHORING, SEE STANDARD SHORING PROVISION.

DESIGN TEMPORARY SHORING FROM STATION 21+25± -L-, 25 FT. LEFT TO STATION 21+75± -L-, 25 FT. LEFT FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

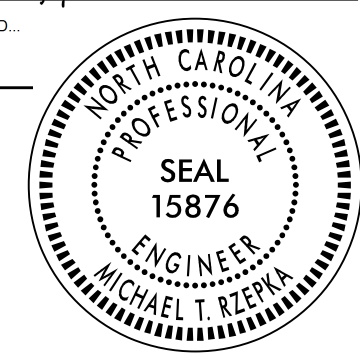
EXISTING GROUND SURFACE TO ELEV. 301.5 FT. ±
UNIT WEIGHT OF SOIL, γ = 120 PCF
FRICTION ANGLE, ϕ = 30 DEGREES
COHESION, c = 0 PSF

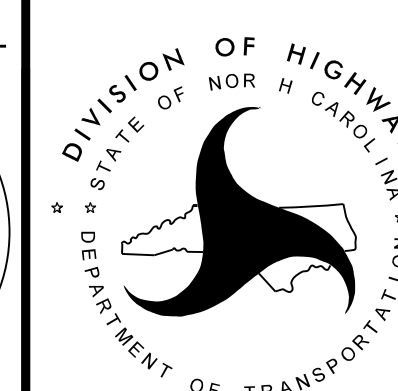
BEFORE BEGINNING TEMPORARY SHORING DESIGN OR CONSTRUCTION, SURVEY EXISTING GROUND ELEVATIONS IN THE VICINITY OF SHORING LOCATIONS TO DETERMINE ACTUAL SHORING HEIGHTS.

DRIVEN PILING FOR TEMPORARY SHORING FROM STATION 21+25± -L-, 25 FT. LEFT TO STATION 21+75± -L-, 25 FT. LEFT WILL NOT PENETRATE BELOW ELEVATION 301.5 FT. DUE TO WEATHERED OR HARD ROCK.

DUE TO THE PRESENCE OF WEATHERED OR HARD ROCK, CONTRACTOR SHALL UTILIZE DRILLED-IN H-PILES WITH TIMBER LAGGING SHORING WALL FOR TEMPORARY SHORING FROM STATION 21+25± -L-, 25 FT. LEFT TO STATION 21+75± -L-, 25 FT. LEFT. SEE STANDARD DETAIL NO. 1801.01 FOR STANDARD TEMPORARY SHORING.

THE TEMPORARY SHORING NOTES SHOWN ON THIS SHEET WERE PROVIDED THROUGH A SEALED DOCUMENT FROM GEOTECHNICAL ENGINEERING. THE DOCUMENT WAS SUBMITTED ON 02-01-2018 AND SEALED BY A PROFESSIONAL ENGINEER, KENNETH R. BUSSEY, JR., PE, LICENSE #038206.

APPROVED: *Michael T. Kiepk*
DATE: 5/15/2018

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TEMPORARY SHORING NOTES

PHASING

PHASE 1

STEP 1

PRIOR TO CONSTRUCTION, USING RSD 1101.01, SHEET 3 OF 3, INSTALL WORK ZONE ADVANCE WARNING SIGNS ALONG NC 22.

STEP 2

(REFER TO SHEET TMP-4)

USING RSD 1101.02 (SHEET 1 OF 14), REMOVE EXISTING GUARDRAIL ALONG RIGHT SIDE OF EXISTING NC 22 AND INSTALL TEMPORARY GUARDRAILS ALONG RIGHT SIDE OF EXISTING NC 22. CONNECT TEMPORARY GUARDRAILS TO EXISTING BRIDGE (SEE ROADWAY PLANS FOR CONNECTION DETAIL).

STEP 3

(REFER TO SHEETS TMP-4)

USING RSD 1101.02 (SHEET 1 OF 14), WEDGE AND CONSTRUCT PROPOSED WIDENING OF EXISTING PAVEMENT AT THE FOLLOWING STATIONS:

- L- STA 15+20± TO STA 19+10±
- L- STA 26+23± TO STA 30+15±

BEHIND TEMPORARY GUARDRAIL AND USING RSD 1101.02 (SHEET 1 OF 14), INSTALL TEMPORARY SHORING AND CONSTRUCT PROPOSED STRUCTURE AND ROADWAY FROM -L- STA 19+10± TO STA 26+23±. AWAY FROM TRAFFIC PLACE TEMPORARY PAVEMENT MARKINGS AND MARKERS ON -L- FOR PHASE 2 TRAFFIC SHIFT.

PHASE 2

STEP 1

(REFER TO SHEETS TMP-5)

USING RSD 1101.02 (SHEET 1 OF 14), COMPLETE THE FOLLOWING:

- MASK CONFLICTING EXISTING MARKINGS
- PLACE TEMPORARY MARKINGS AND MARKERS AND TIE TO EXISTING
- SHIFT TRAFFIC TO -L- ALIGNMENT AND PROPOSED STRUCTURE IN FINAL PATTERN

STEP 2

(REFER TO SHEETS TMP-5 AND ROADWAY PLANS)

USING RSD 1101.02 (SHEET 1 OF 14) AND BEHIND GUARDRAIL, COMPLETE THE FOLLOWING:

- REMOVE EXISTING BRIDGE AND ROADWAY
- CONSTRUCT DRIVE TIE AT -L- STA 25+00±
- GRADE SHOULDERS TO FINAL SLOPES

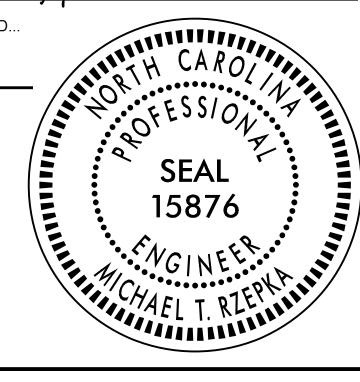
STEP 3

USING RSD 1101.02 (SHEET 1 OF 14), PLACE FINAL LAYER OF SURFACE COURSE AND FINAL MARKINGS AND MARKERS. REMOVE REMAINING TRAFFIC CONTROL DEVICES.

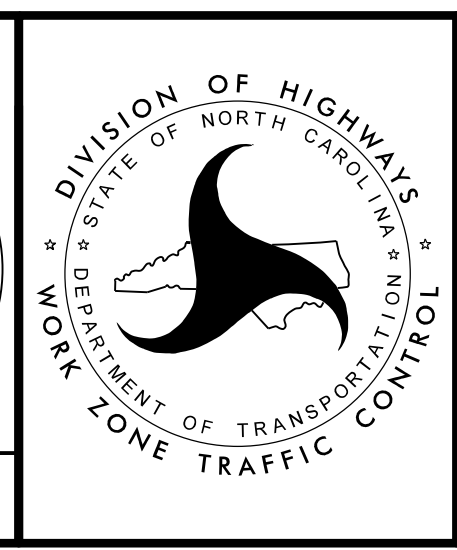
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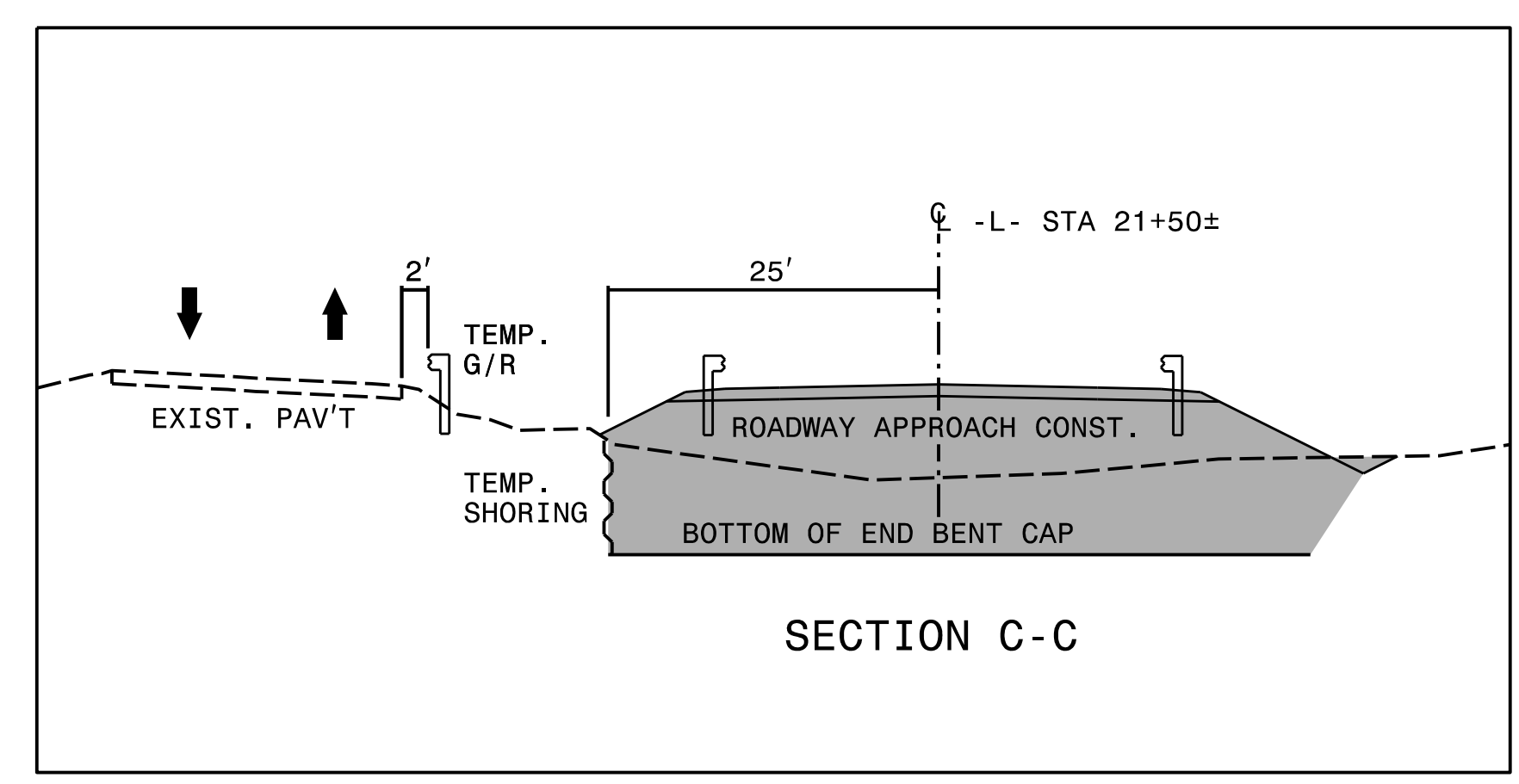
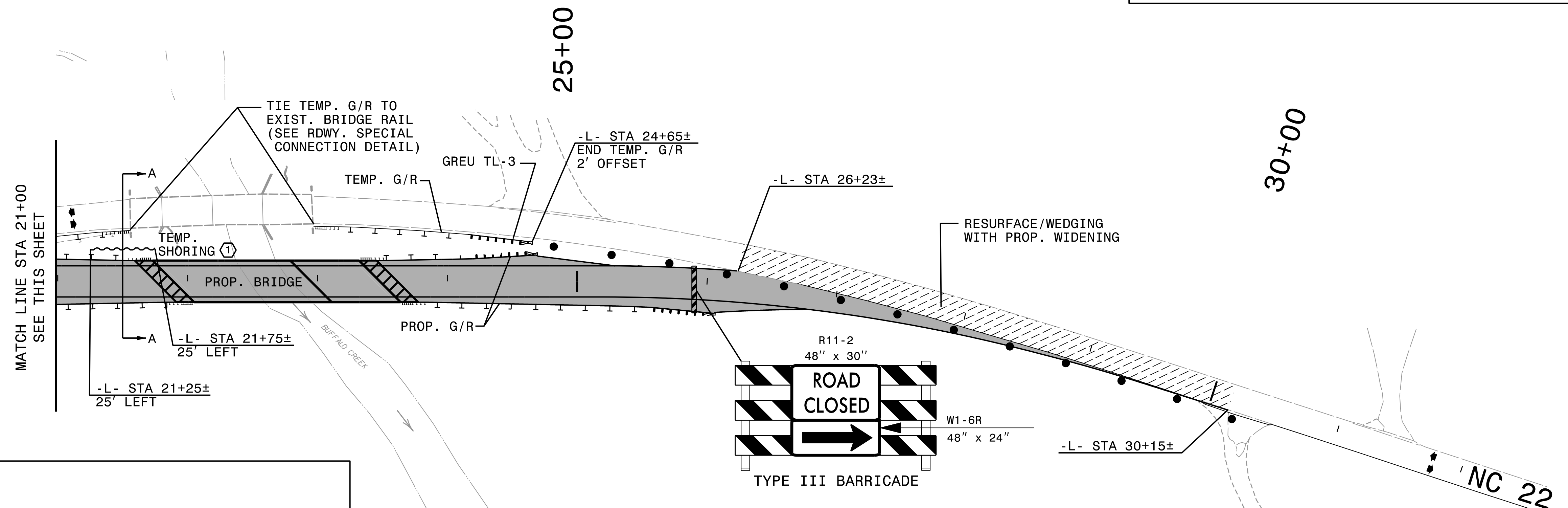
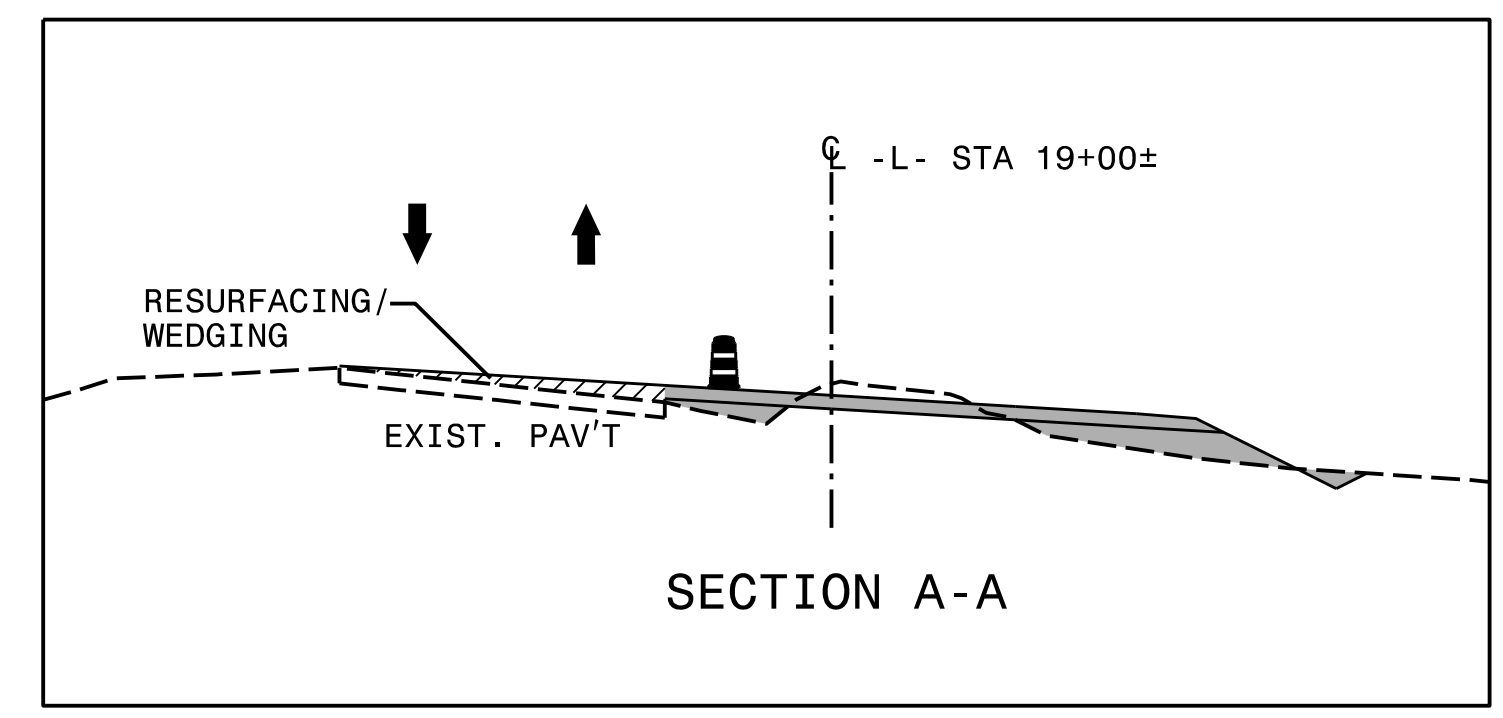
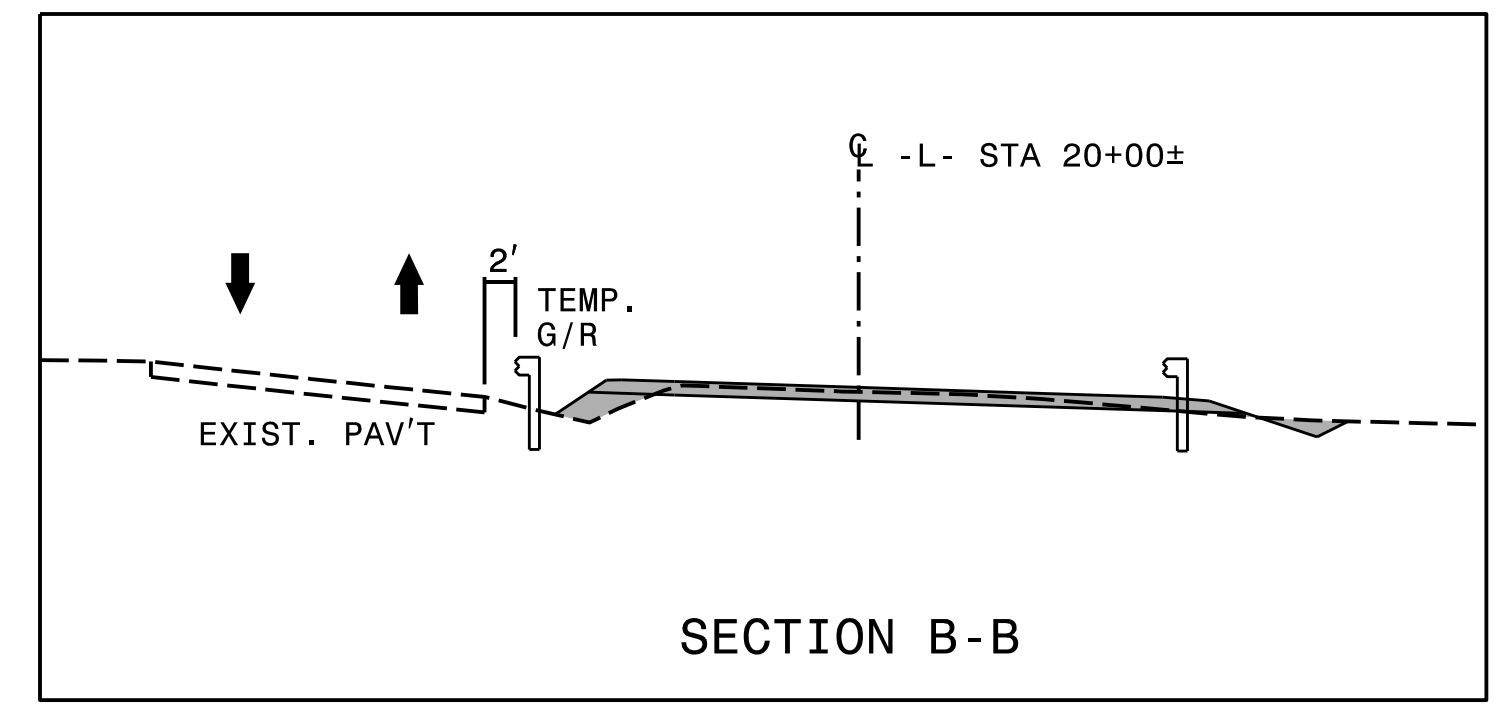
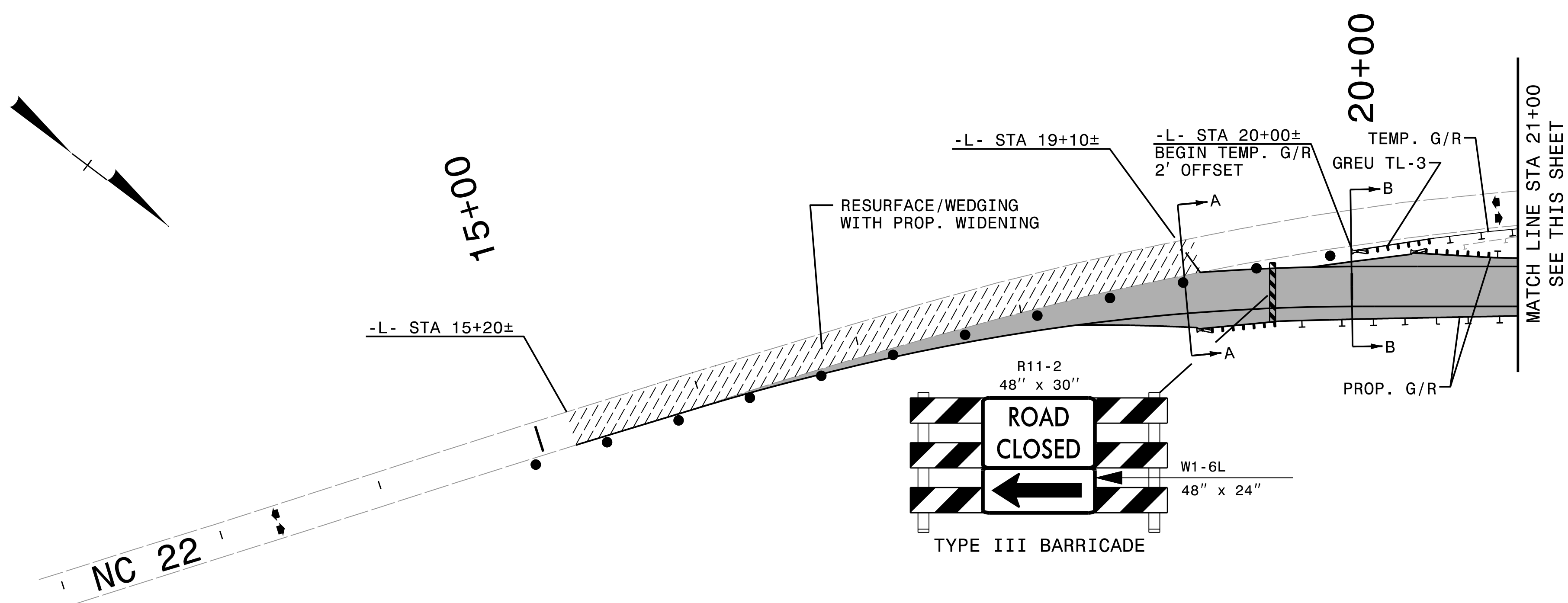
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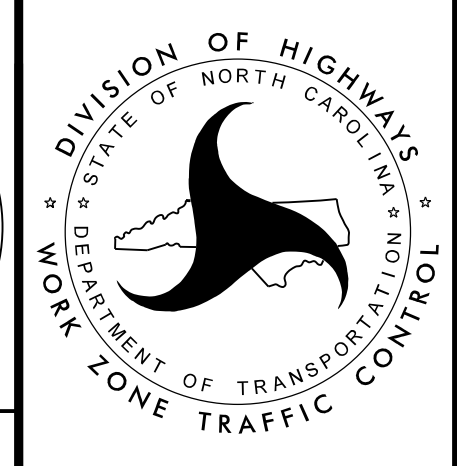
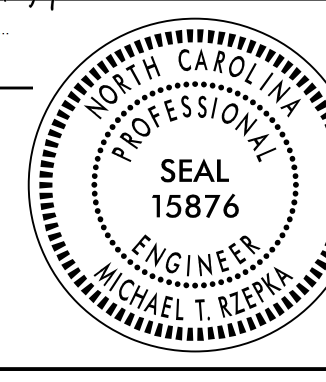
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PHASING



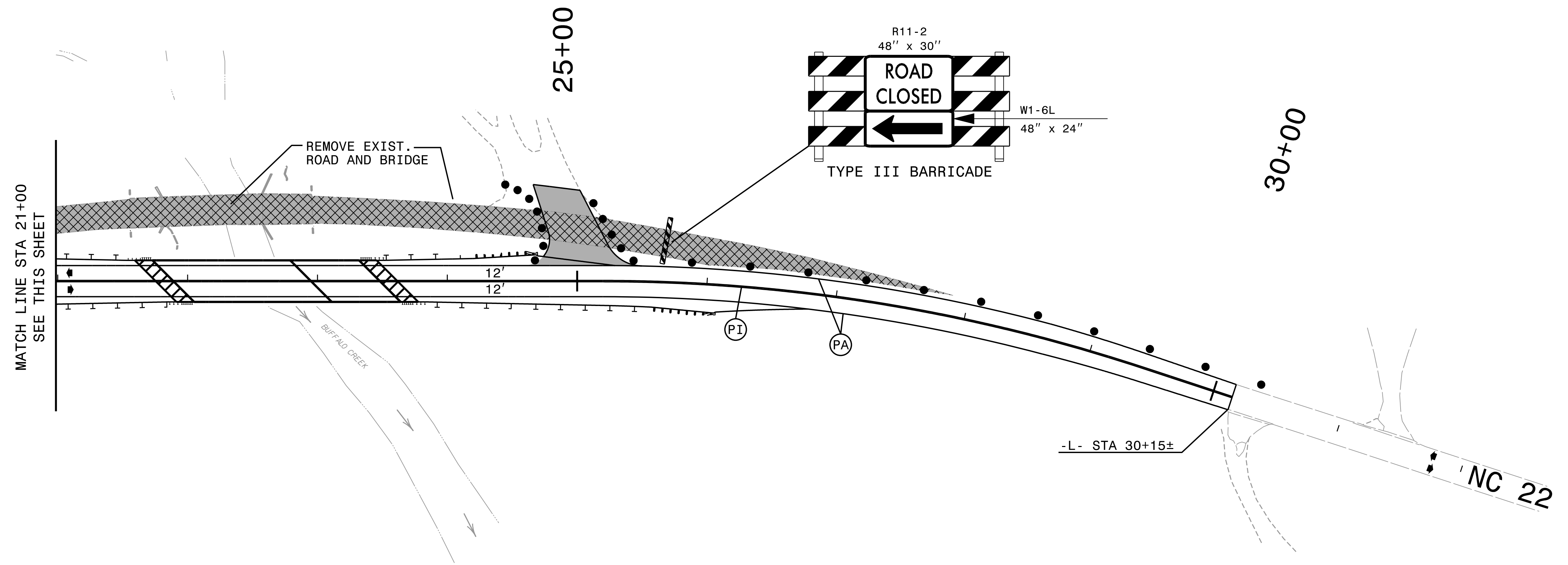
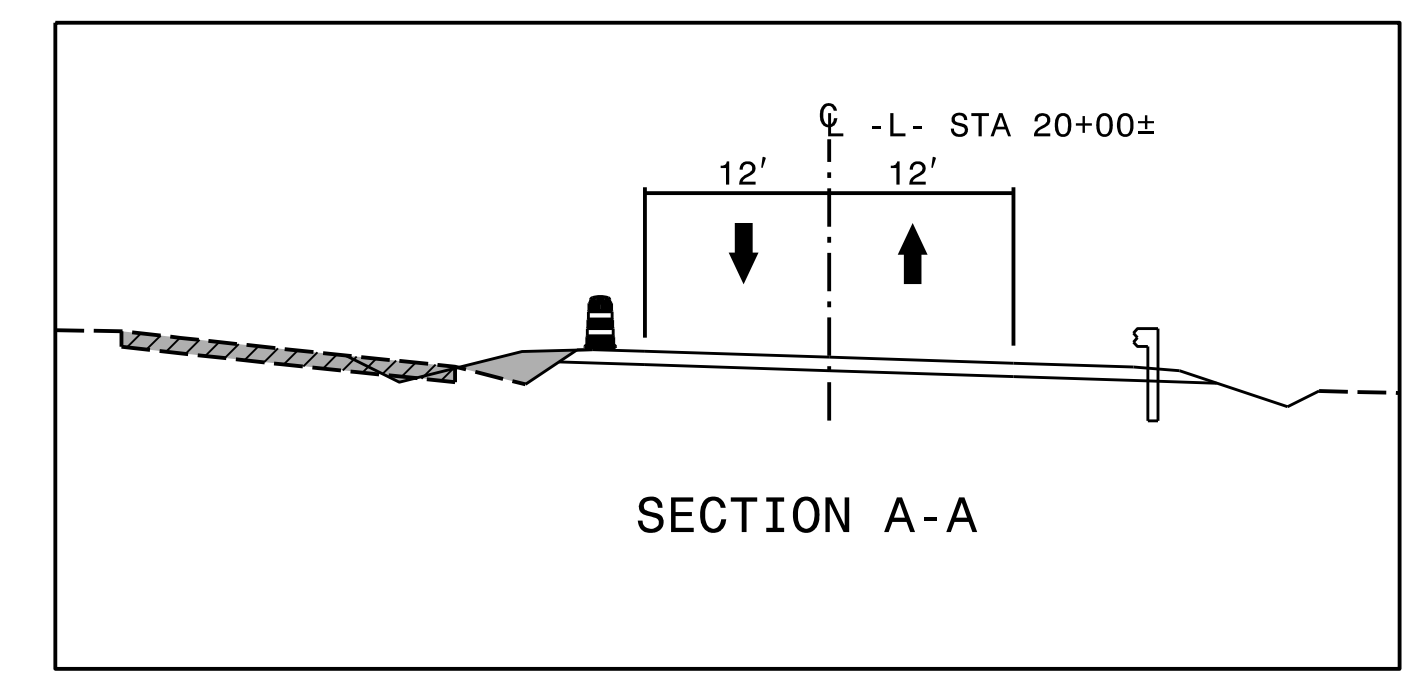
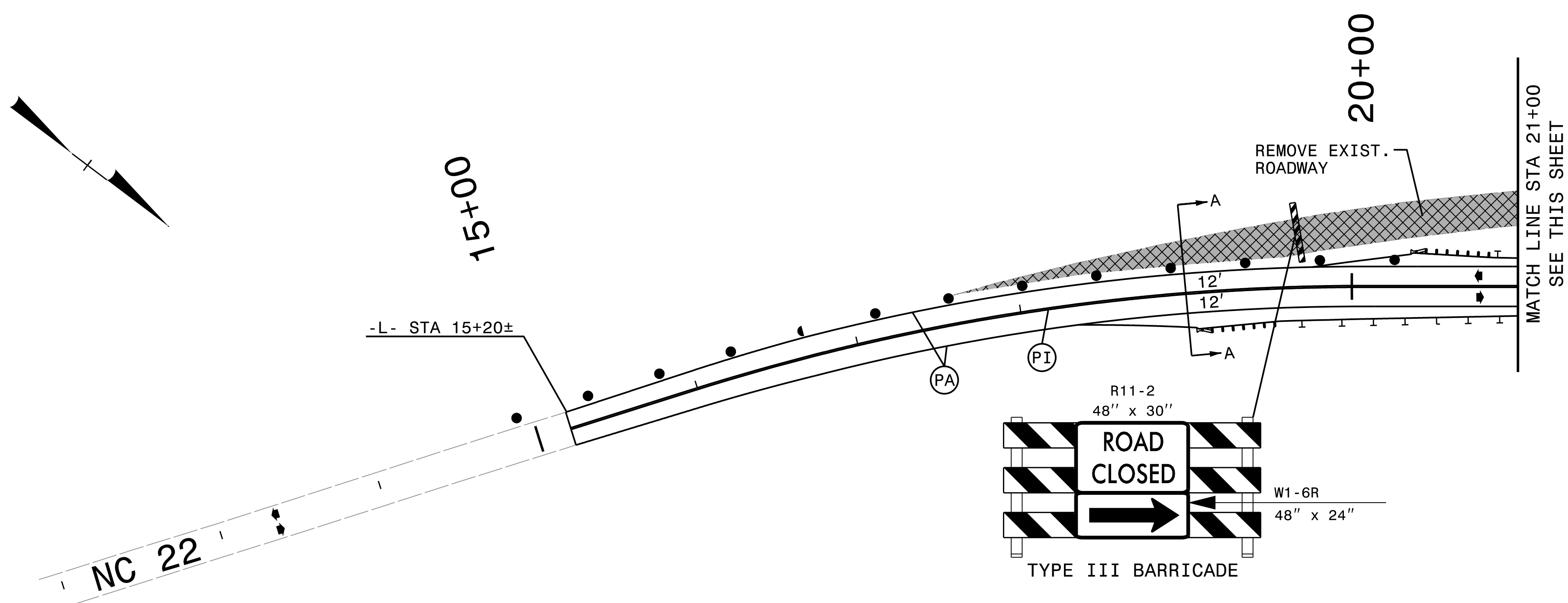
APPROVED: *Michael T. Kopyta*
DocuSigned by:
Michael T. Kopyta
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 DATE: 5/15/2018



PHASE 1 DETAIL

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UNLESS ALL SIGNATURES COMPLETED

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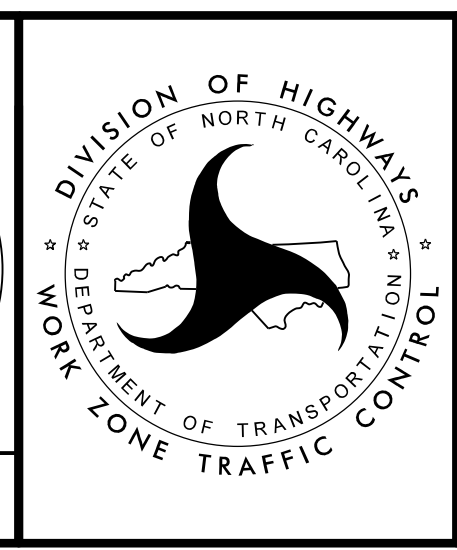
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APPROVED: *Michael T. Krepla*
DATE: 5/15/2018

019C3480C28049D...

NORTH CAROLINA PROFESSIONAL ENGINEER
SEAL 15876
MICHAEL T. KREPLA

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



PHASE 2 DETAIL

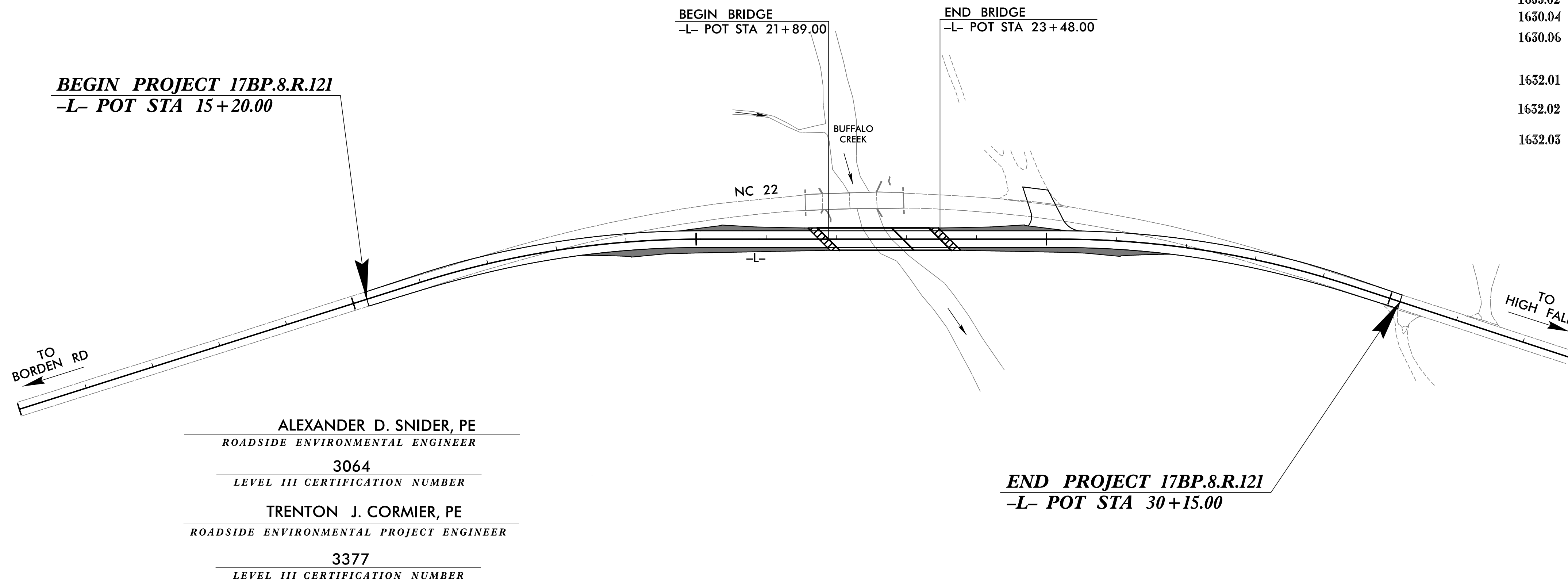
PROJECT: 17BP.8.R.121

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

MOORE COUNTY

BRIDGE NO. 63 OVER
BUFFALO CREEK ON NC 22

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE



ALEXANDER D. SNIDER, PE
 ROADSIDE ENVIRONMENTAL ENGINEER
 3064
 LEVEL III CERTIFICATION NUMBER
TRENTON J. CORMIER, PE
 ROADSIDE ENVIRONMENTAL PROJECT ENGINEER
 3377
 LEVEL III CERTIFICATION NUMBER

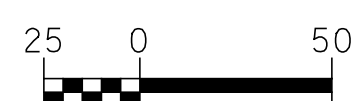
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.8.R.121	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	

EROSION AND SEDIMENT CONTROL MEASURES

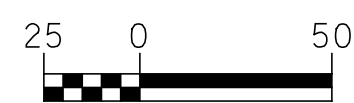
Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	▲▲▲
1622.01	Temporary Berms and Slope Drains	—
1630.02	Silt Basin Type B	▨
1633.01	Temporary Rock Silt Check Type-A	▩
	Temporary Rock Silt Check 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	A
1632.02	Type B	B
1632.03	Type C	C
	Skimmer Basin	▭
	Tiered Skimmer Basin	▭
	Infiltration Basin	▭

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

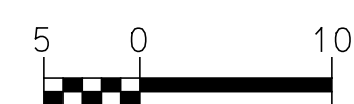
GRAPHIC SCALE



PLANS



PROFILE (HORIZONTAL)



PROFILE (VERTICAL)

THESE EROSION AND SEDIMENT
 CONTROL PLANS COMPLY WITH
 THE REGULATIONS SET FORTH
 BY THE NCG-010000 GENERAL
 CONSTRUCTION PERMIT EFFECTIVE
 AUGUST 1, 2016 AND ISSUED BY
 THE NORTH CAROLINA DEPARTMENT
 OF ENVIRONMENT AND NATURAL
 RESOURCES DIVISION OF WATER
 RESOURCES.

Prepared in the Office of:

HDR Engineering, Inc. of the Carolinas
 555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
 N.C.B.E.L.S. License Number: F-0116

Designed by:

ALEXANDER D. SNIDER, PE 3064
 NAME LEVEL III CERTIFICATION NO.

Reviewed In the Office of:

ROADSIDE ENVIRONMENTAL UNIT
 1 South Wilmington St.
 Raleigh, NC 27611

2018 STANDARD SPECIFICATIONS

Reviewed by:

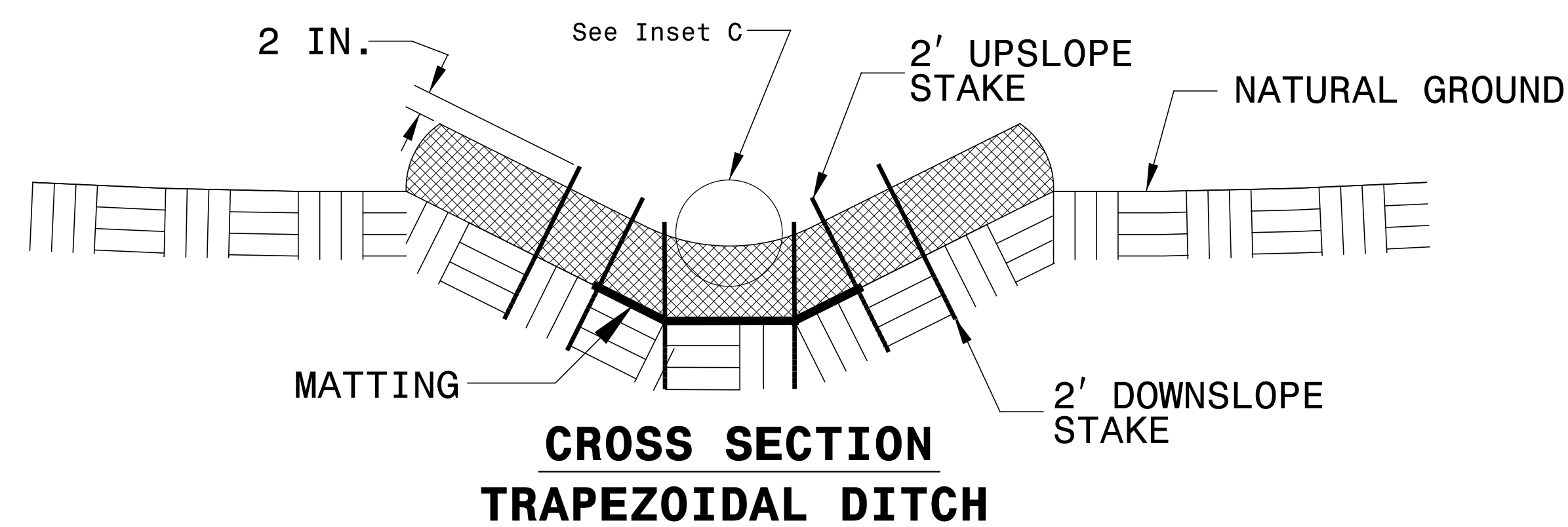
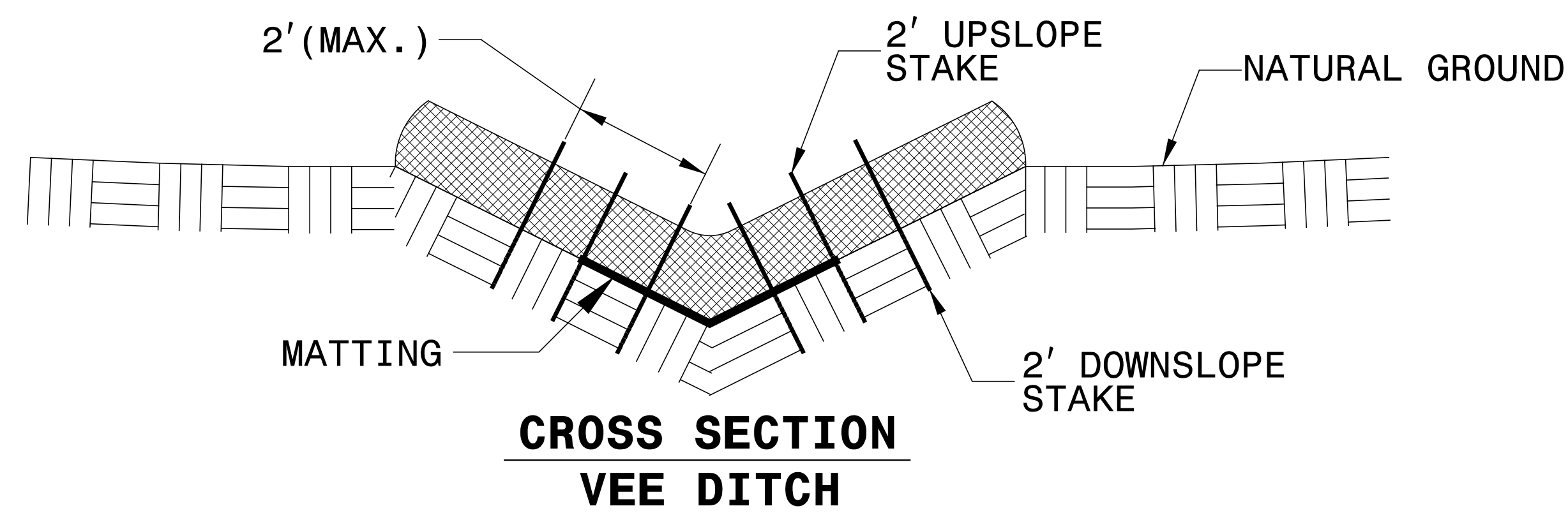
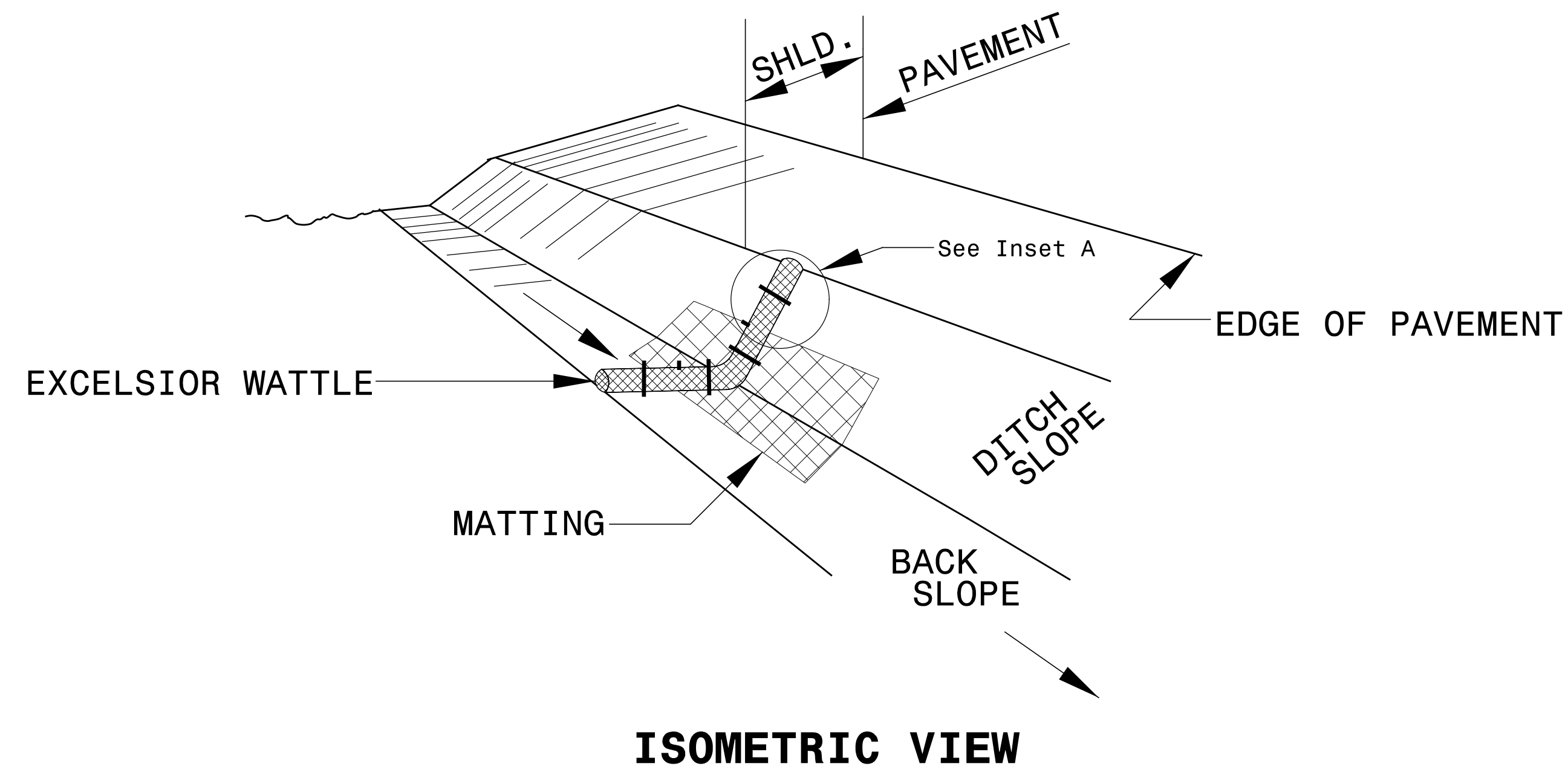
AARON HARPER, EI

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 Silt 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	

WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



NOTES:

USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE.

USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.

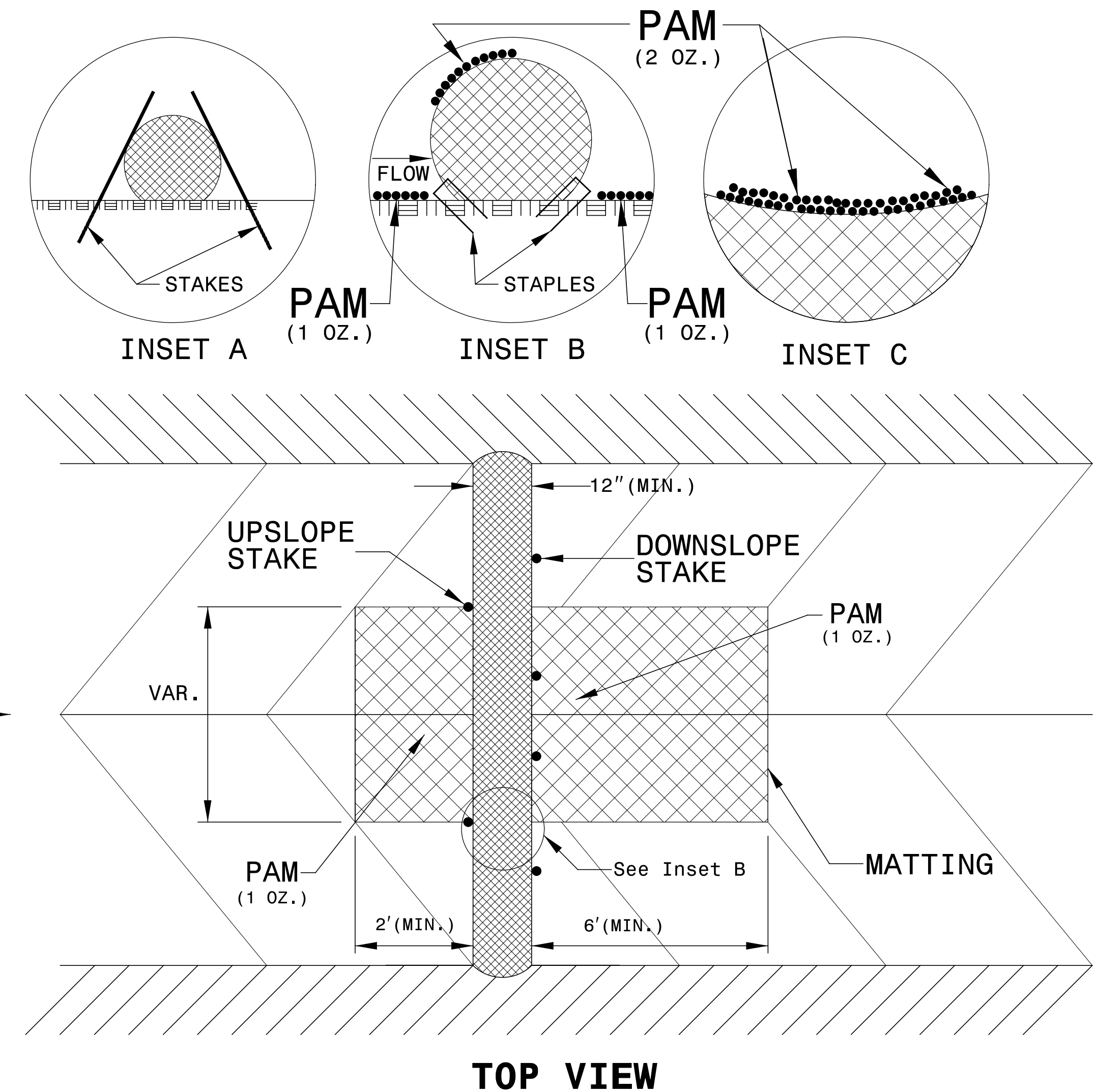
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

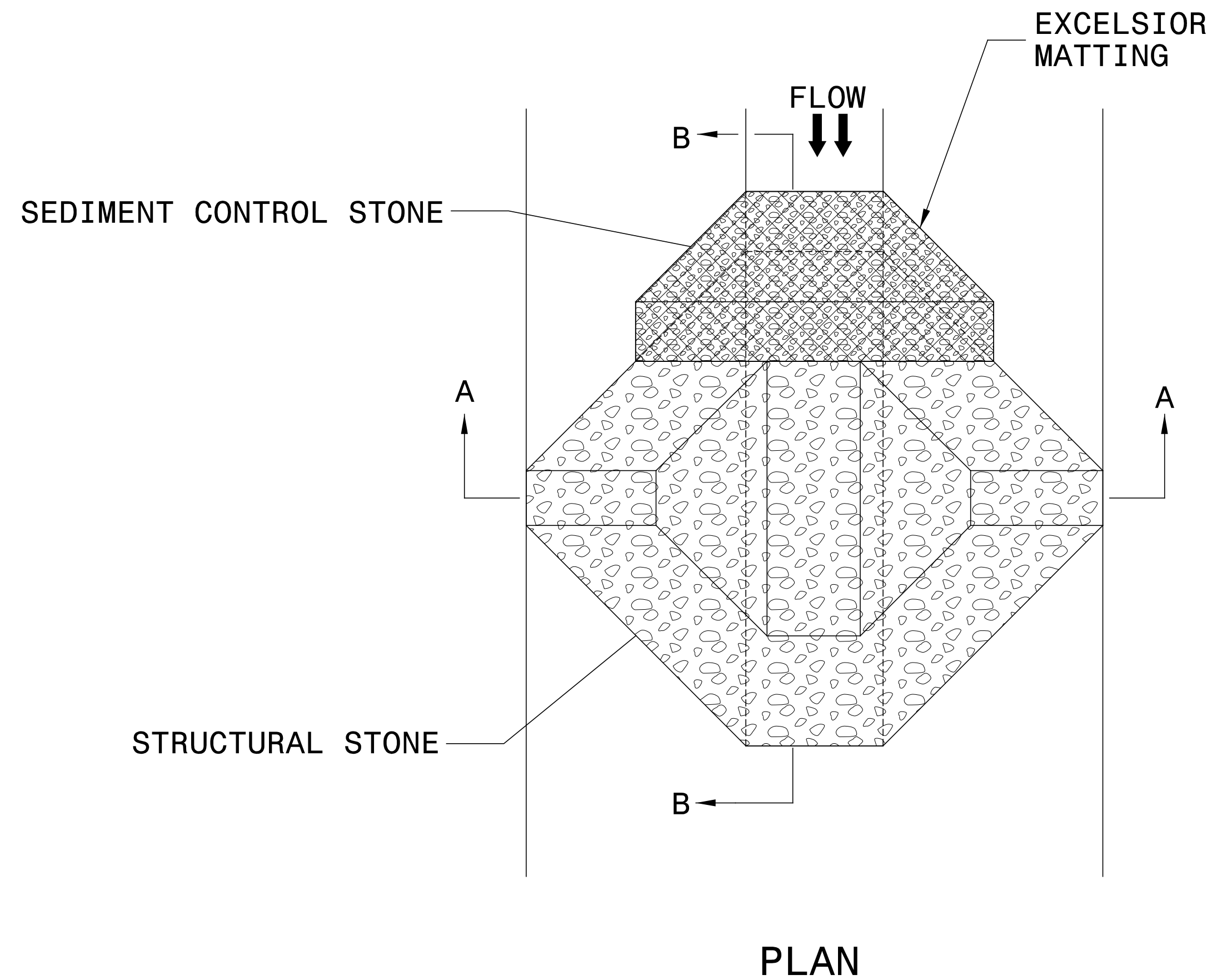
INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.

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 WATTLE.

INITIALLY APPLY 2 OUNCES OF ANIONIC OR NEUTRALLY CHARGED PAM OVER WATTLE WHERE WATER WILL FLOW AND 1 OUNCE OF PAM ON MATTING ON EACH SIDE OF WATTLE. REAPPLY PAM AFTER EVERY RAINFALL EVENT THAT IS EQUAL TO OR EXCEEDS 0.50 IN.



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



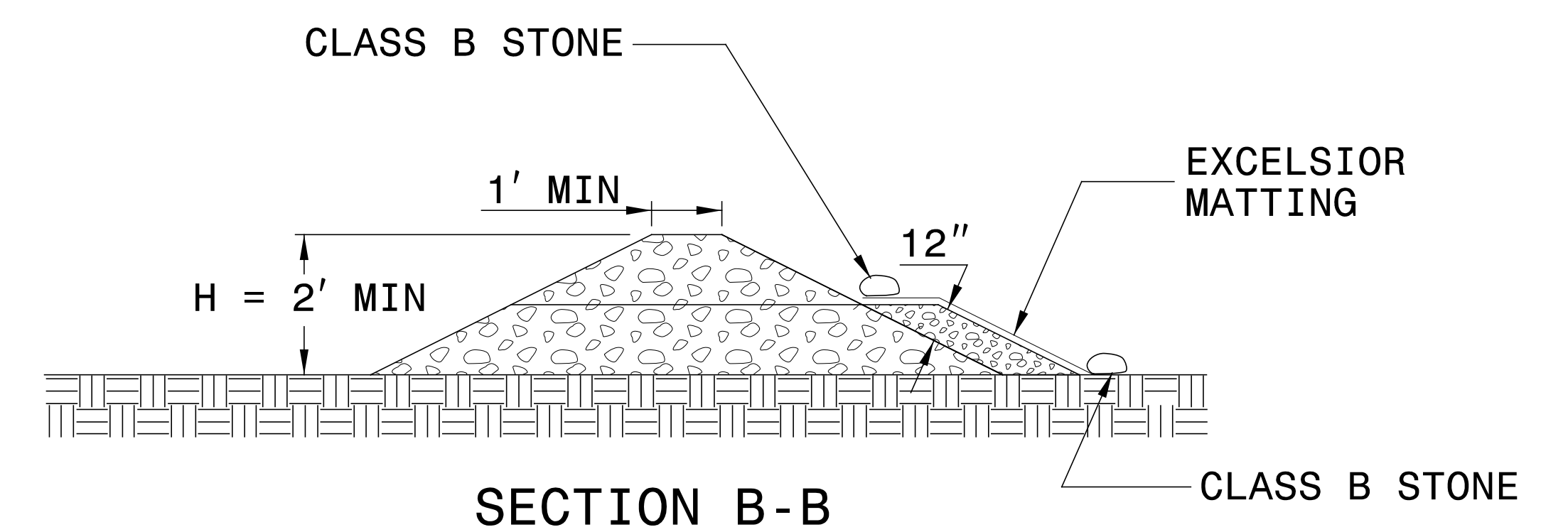
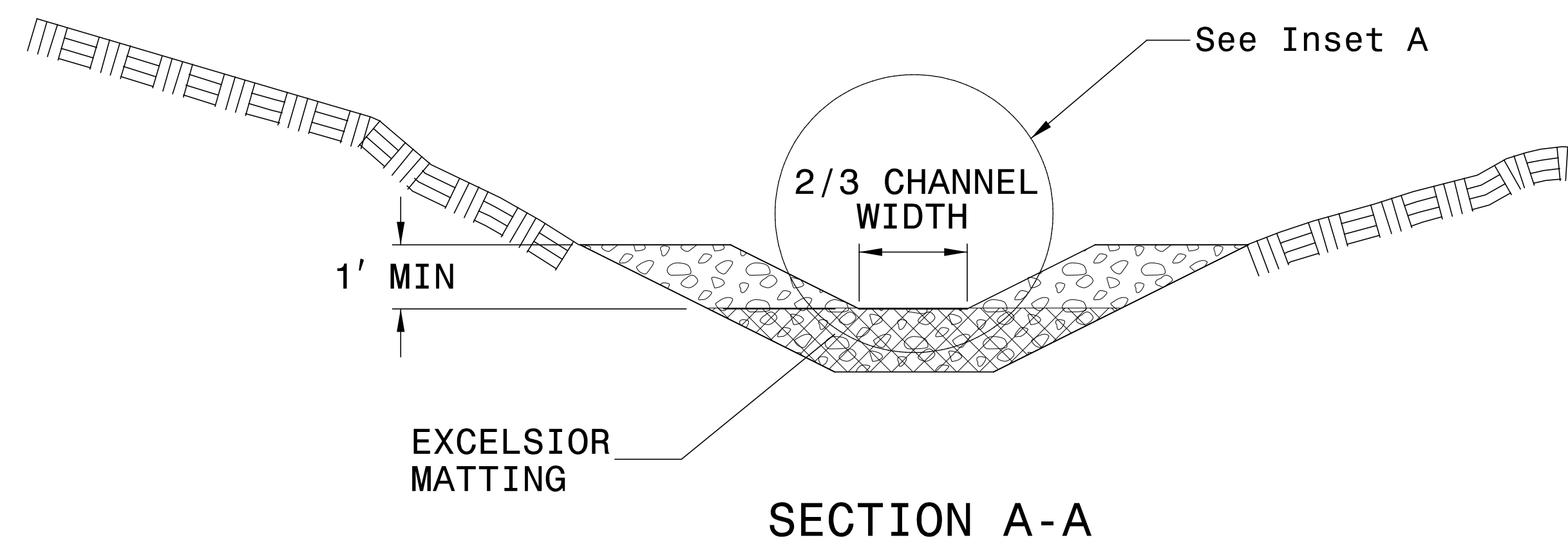
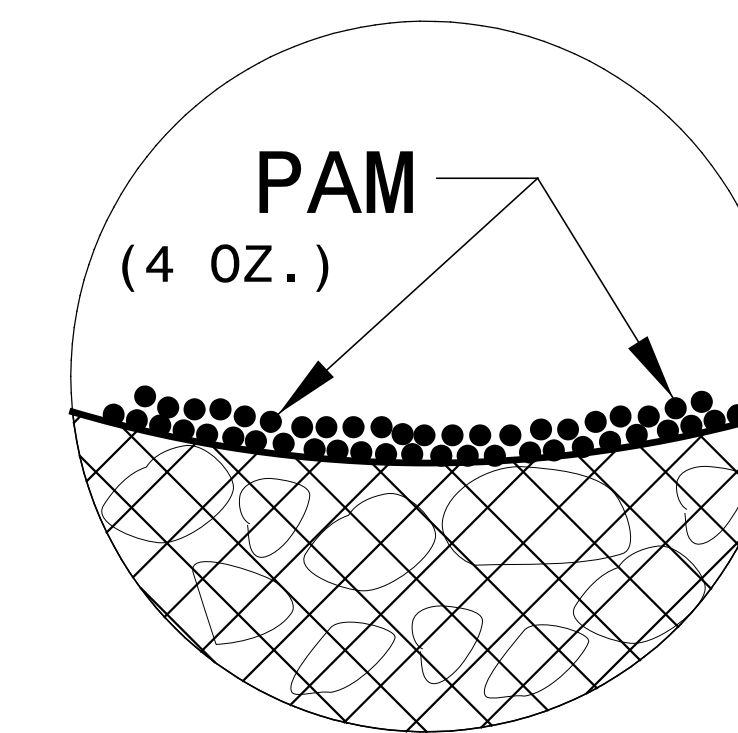
NOTES:

INSTALL TEMPORARY ROCK SILT CHECK TYPE A IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1633.01.

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.



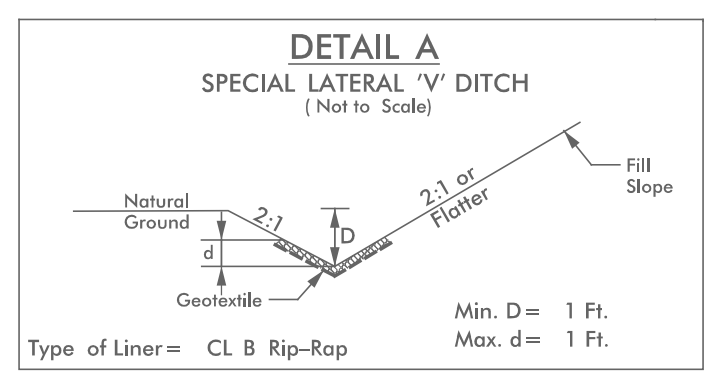
NOT TO SCALE

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

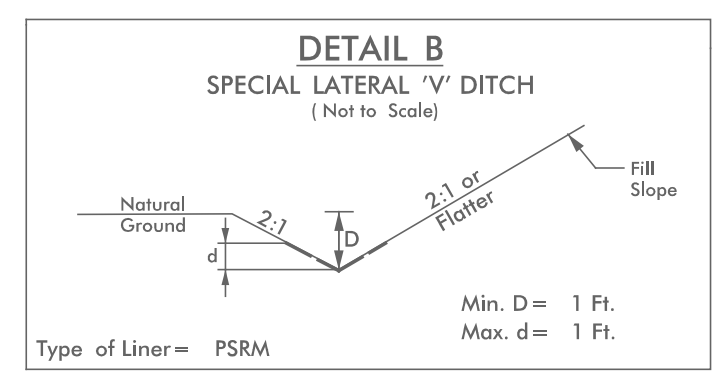
SOIL STABILIZATION TIMEFRAMES

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

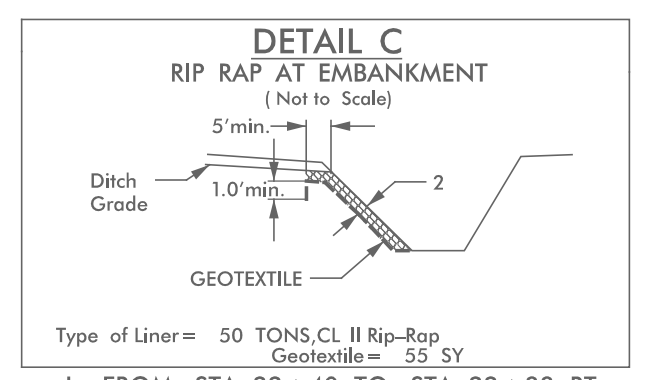
8/17/09
 \$DATE\$
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 \$\$\$SUBSERNAME\$\$\$



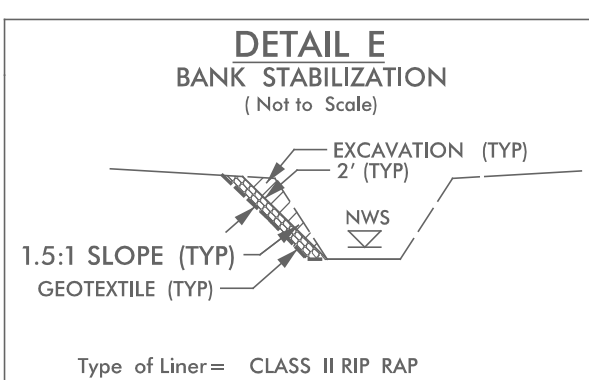
-L- FROM STA. 20+00 TO STA. 21+35 LT
 -L- FROM STA. 21+00 TO STA. 22+40 RT
 -L- FROM STA. 23+62 TO STA. 24+10 LT



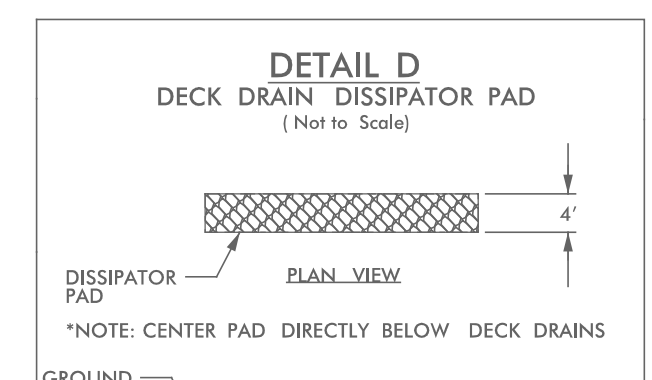
-L- FROM STA. 16+50 TO STA. 18+00 LT
 -L- FROM STA. 18+50 TO STA. 20+00 RT



-L- FROM STA. 22+40 TO STA. 22+88 RT

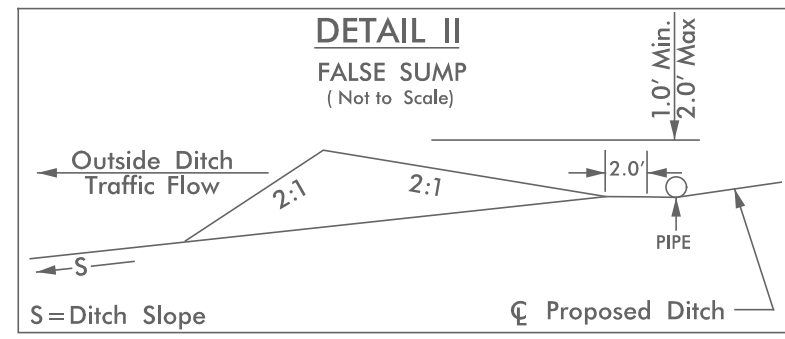


-L- STA. 22+82

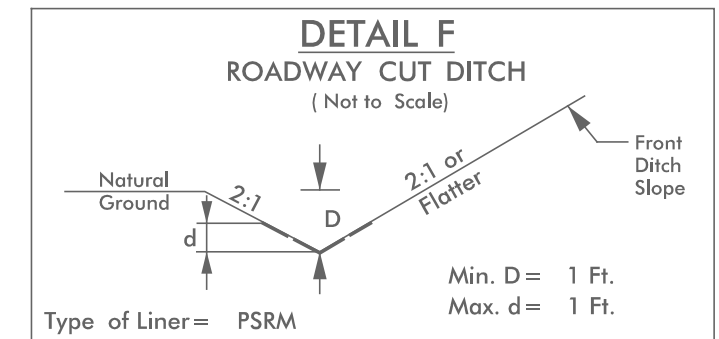


L = 132 (TOTAL)
 Type of Liner = 30 TONS CL B Rip-Rap
 Geotextile = 70 SY

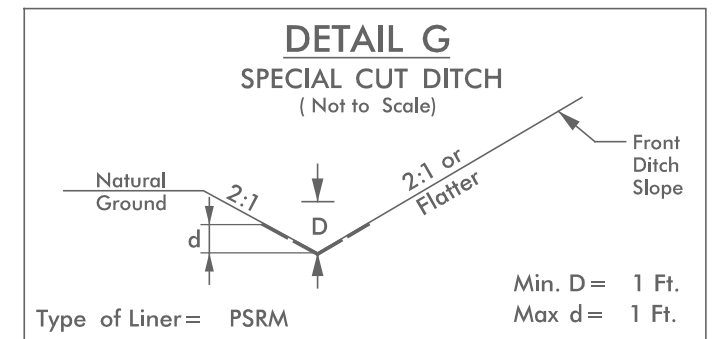
-L- FROM STA. 21+83 TO STA. 22+30 LT
 -L- FROM STA. 22+13 TO STA. 22+52 RT
 -L- FROM STA. 22+76 TO STA. 23+00 LT
 -L- FROM STA. 23+05 TO STA. 23+27 RT



-L- STA. 21+50 LT
 -L- STA. 23+47 LT



-L- STA. 15+50 TO 16+50 LT
 -L- STA. 18+20 TO 20+00 LT
 -L- STA. 15+50 TO 17+50 RT
 -L- STA. 20+00 TO 21+00 RT



-L- FROM STA. 17+50 TO STA. 18+50 RT

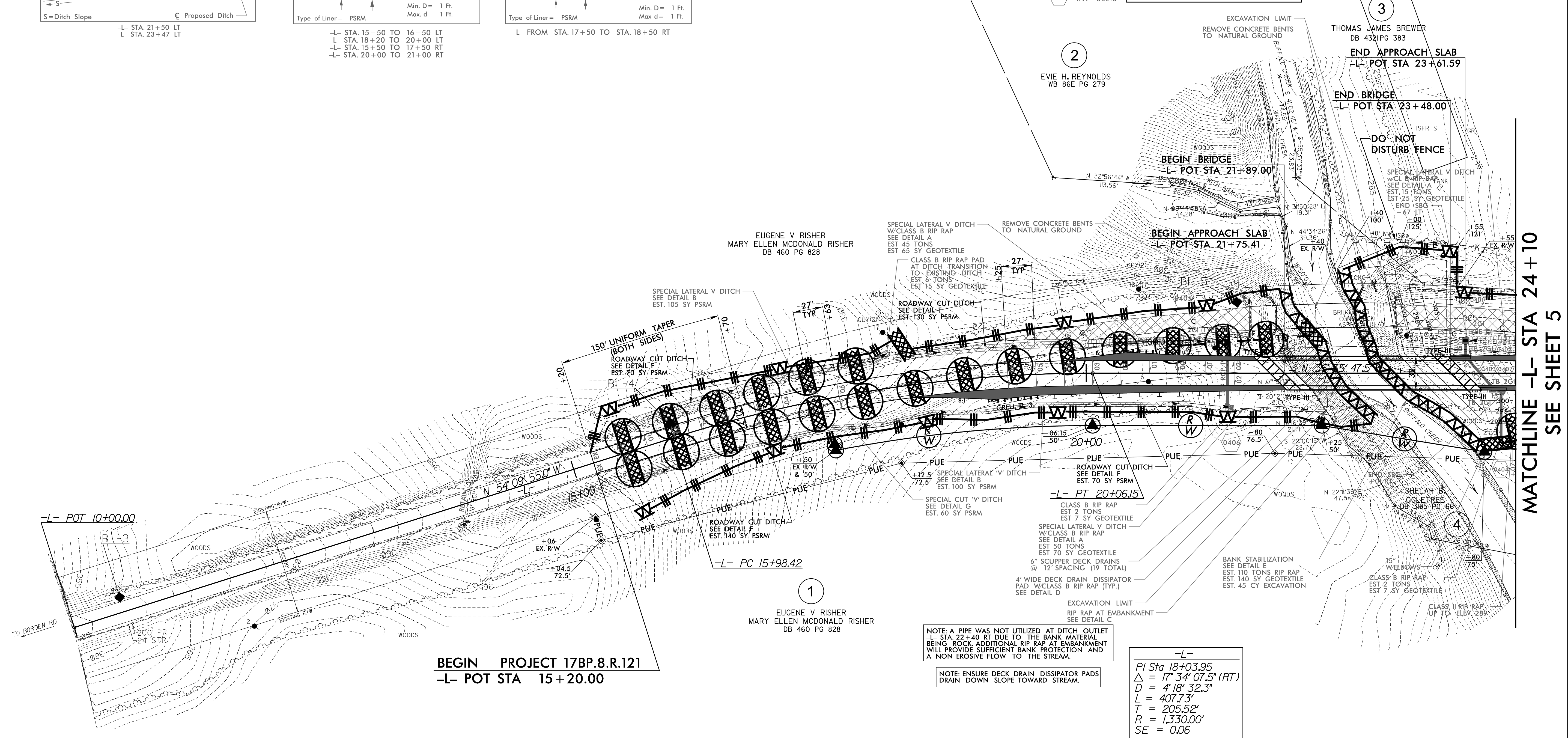
- 0401 2G1 TYPE D
TOP = 299.5
INV = 297.6
- 0402 TB 2G1
TOP = 304.2
INV = 297.5
- 0403 TB 2G1
TOP = 304.2
INV = 297.3
- 0407 TB 2G1
TOP = 304.2
INV = 297.2
- 0404 OUTLET
INV = 283.0
- 0405 TB 2G1 (TYPE D)
TOP = 304.2
INV = 302.3
- 0406 OUTLET
INV = 302.0

HDR Engineering, Inc. of the Carolinas
 555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
 N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO. <i>17BP.8.R.121</i>	SHEET NO. <i>EC-04/CONST.04</i>
RW SHEET NO.	
ROADSIDE ENVIRONMENTAL PROJECT ENGINEER	

LEVEL III CERTIFIED BY:
 ALEXANDER D SNIDER, PE
 CERTIFICATION NUMBER: 3064
 ISSUED: OCTOBER 26, 2017

**CLEARING AND GRUBBING
 EROSION CONTROL FOR
 CONSTRUCTION SHEET 04**



NOTE: A PIPE WAS NOT UTILIZED AT DITCH OUTLET -L- STA. 22+40 RT DUE TO THE BANK MATERIAL BEING ROCK. ADDITIONAL RIP RAP AT EMBANKMENT WILL PROVIDE SUFFICIENT BANK PROTECTION AND A NON-EROSIVE FLOW TO THE STREAM.

NOTE: ENSURE DECK DRAIN DISSIPATOR PADS DRAIN DOWN SLOPE TOWARD STREAM.

-L-
PI Sta 18+03.95
 $\Delta = 17' 34" 07.5" (RT)$
 $D = 4' 18" 32.3"$
 $L = 407.73'$
 $T = 205.52'$
 $R = 1,330.00'$
 $SE = 0.06$

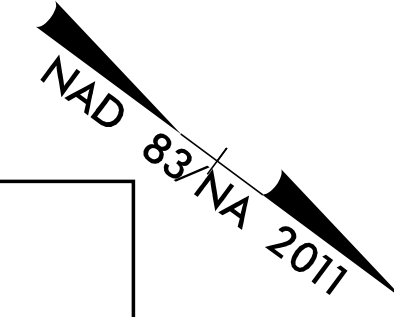
NOTE: ALL EROSION CONTROL DEVICES SHOWN ARE LOCATED WITHIN RW OR EASEMENT.

NOTE: PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.

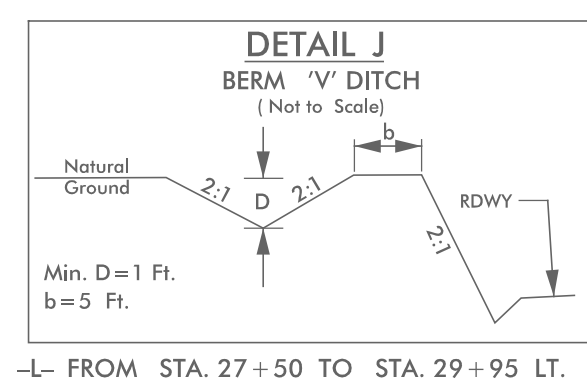
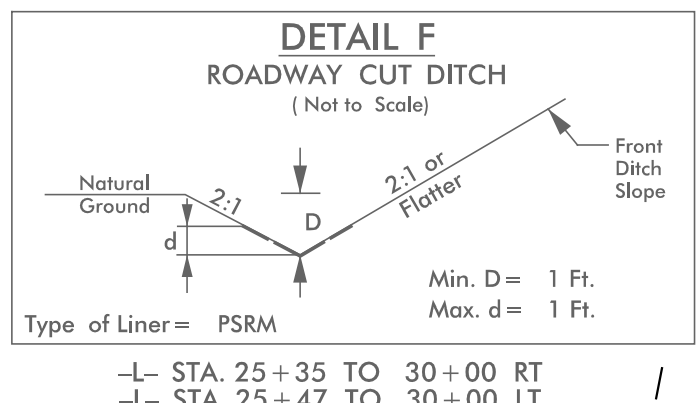
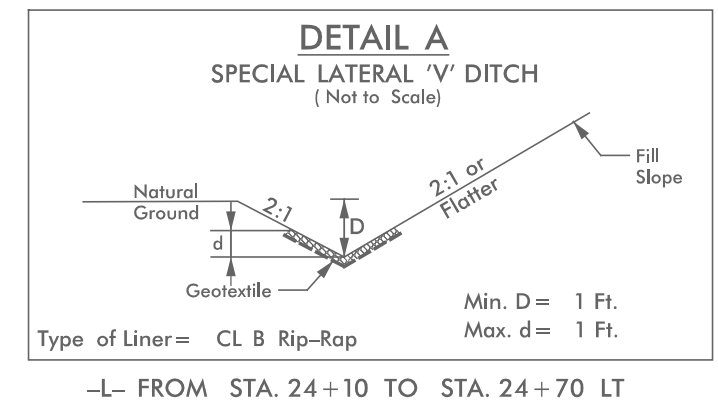
NOTE: PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B AND TEMPORARY ROCK SILT CHECKS TYPE - A AT DRAINAGE OUTLETS.

**MATCHLINE -L- STA 24+10
 SEE SHEET 5**

LEVEL III CERTIFIED BY:
 ALEXANDER D SNIDER, PE
 CERTIFICATION NUMBER: 3064
 ISSUED: OCTOBER 26, 2017

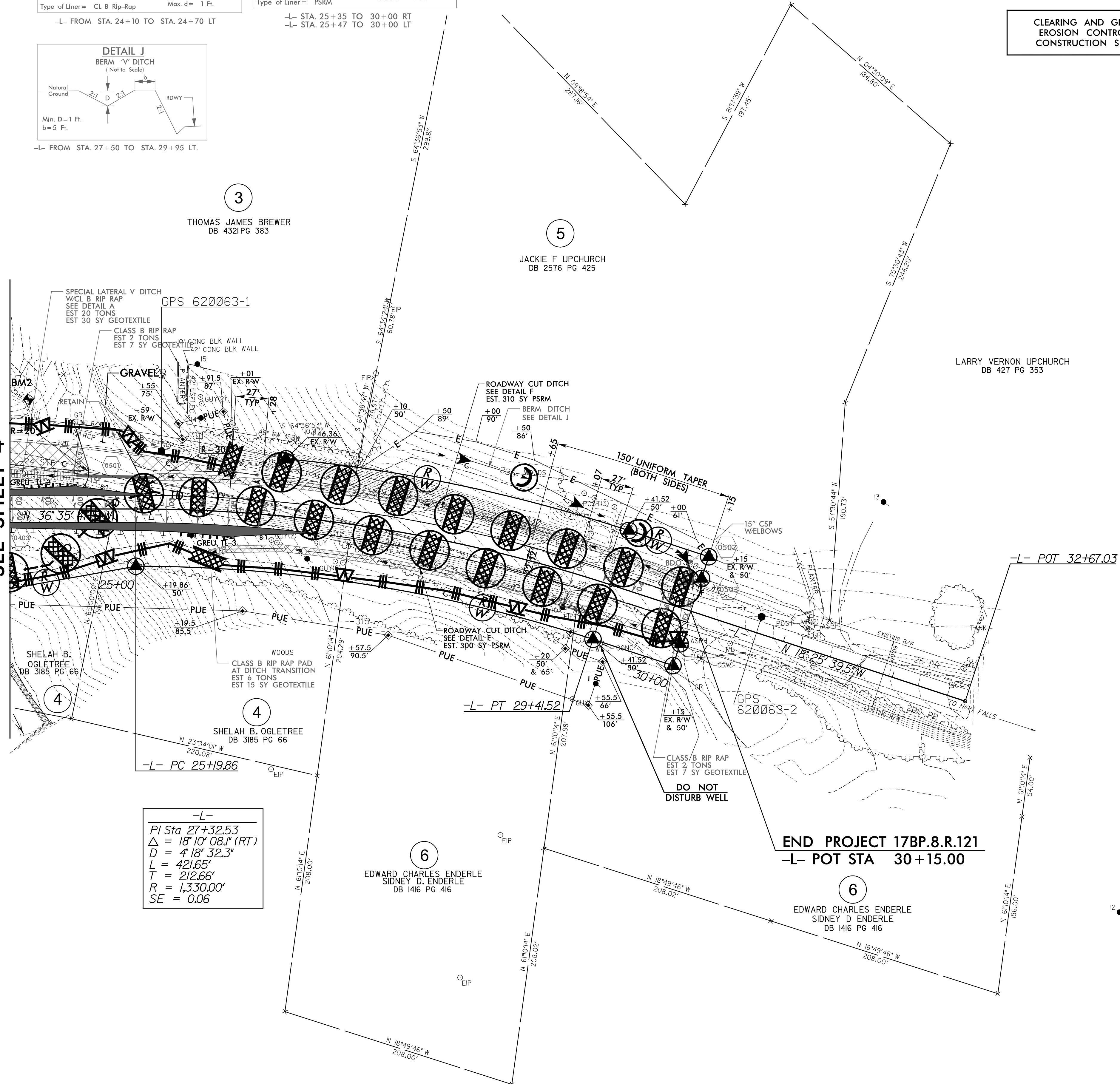


CLEARING AND GRUBBING
 EROSION CONTROL FOR
 CONSTRUCTION SHEET 05



- 0501 DRIVEWAY PIPE
- 0502 BDO
TOP = 330.0
INV = 328.7
- 0503 OUTLET
INV = 323.5

MATCHLINE -L- STA 24+10
SEE SHEET 4



-L-
 PI Sta 27+32.53
 $\Delta = 18' 10'' 08.1'' (RT)$
 $D = 4' 18'' 32.3''$
 $L = 421.65'$
 $T = 212.66'$
 $R = 1,330.00'$
 $SE = 0.06$

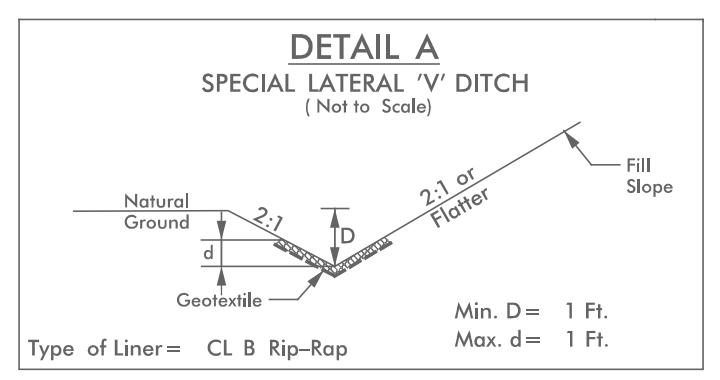
NOTE:
 ALL EROSION CONTROL DEVICES SHOWN ARE
 LOCATED WITHIN RW OR EASEMENT.

NOTE:
 PERIMETER EROSION CONTROL MEASURES SHALL BE
 INSTALLED DURING CLEARING AND GRUBBING PHASE.

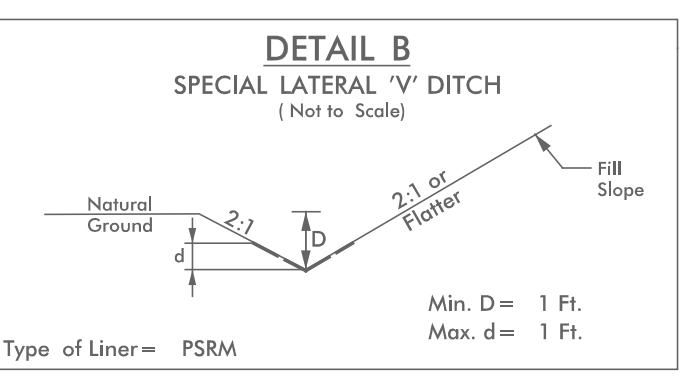
NOTE:
 PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B
 AND TEMPORARY ROCK SILT CHECKS TYPE - A AT
 DRAINAGE OUTLETS.

8.17.17/99
 \$DATE\$
 \$FILE\$
 \$\$\$SUBSERIALNAME\$\$\$

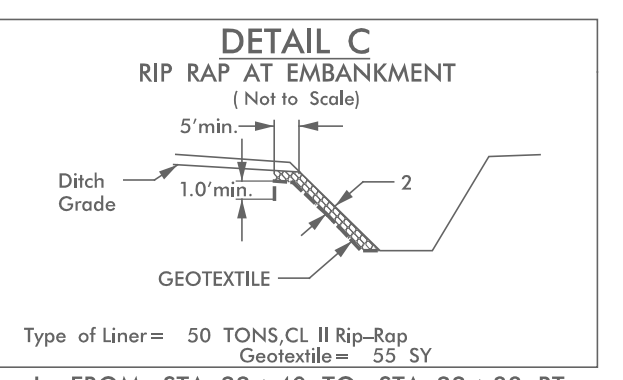
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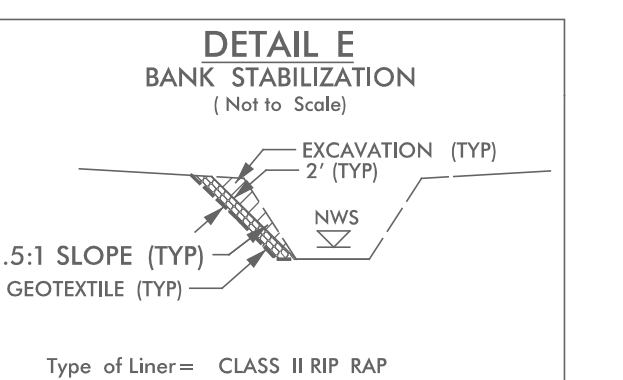
-L- FROM STA. 20+00 TO STA. 21+35 LT
 -L- FROM STA. 21+00 TO STA. 22+40 RT
 -L- FROM STA. 23+62 TO STA. 24+10 LT



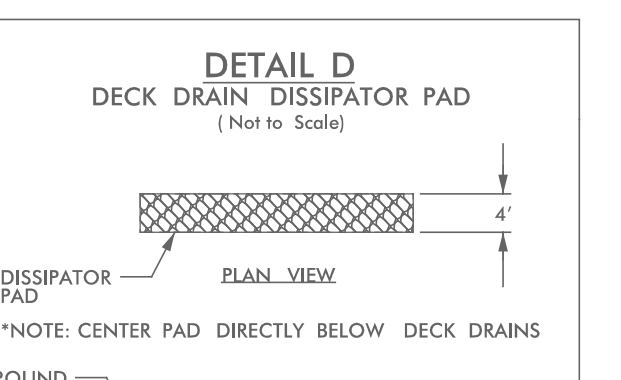
-L- FROM STA. 16+50 TO STA. 18+00 LT
 -L- FROM STA. 18+50 TO STA. 20+00 RT



-L- FROM STA. 22+40 TO STA. 22+88 RT

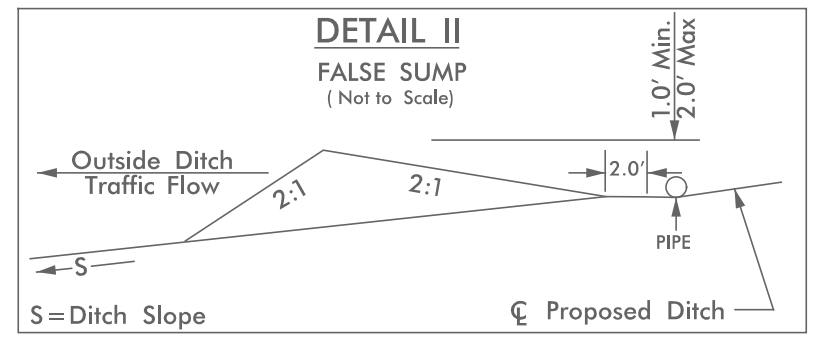


-L- STA. 22+82

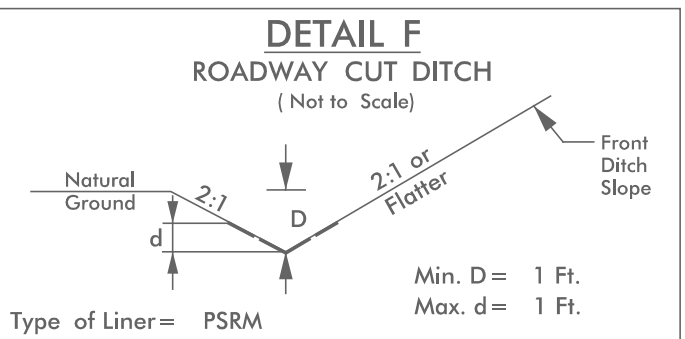


L = 132 (TOTAL)
 Type of Liner = 30 TONS CL B Rip-Rap
 Geotextile = 70 SY

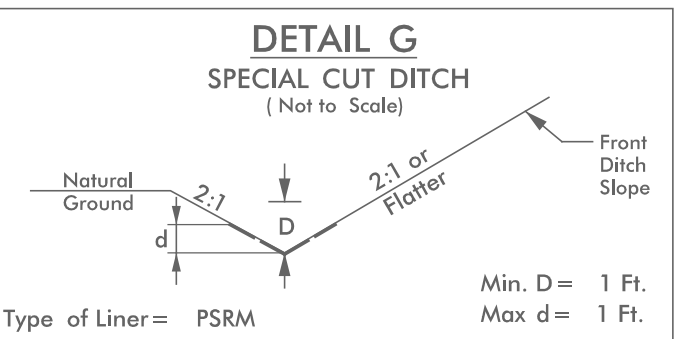
-L- FROM STA. 21+83 TO STA. 22+30 LT
 -L- FROM STA. 22+13 TO STA. 22+52 RT
 -L- FROM STA. 22+76 TO STA. 23+00 LT
 -L- FROM STA. 23+05 TO STA. 23+27 RT



-L- STA. 21+50 LT
 -L- STA. 23+47 LT



-L- STA. 15+50 TO 16+50 LT
 -L- STA. 18+20 TO 20+00 LT
 -L- STA. 15+50 TO 17+50 RT
 -L- STA. 20+00 TO 21+00 RT

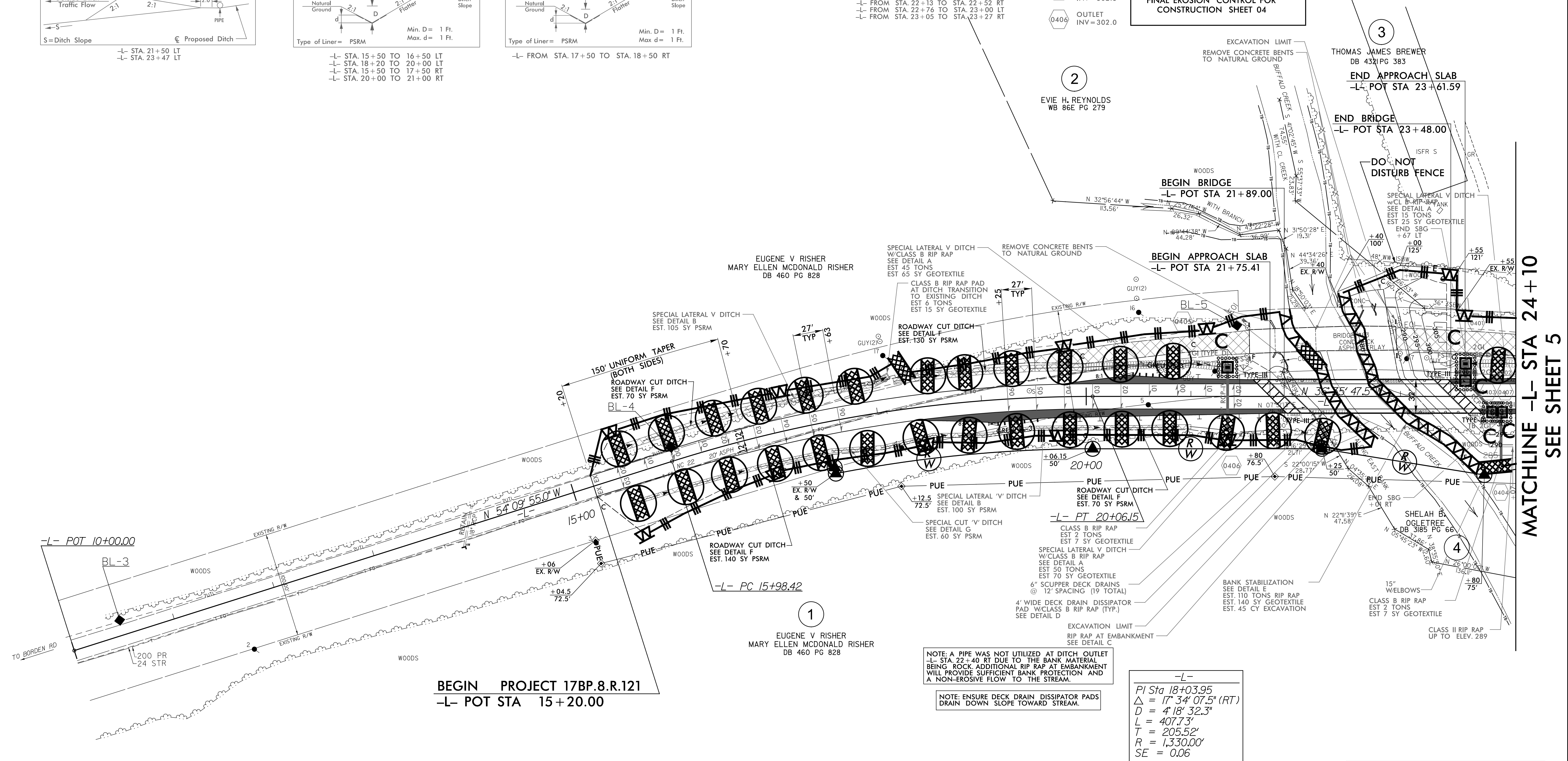


-L- FROM STA. 17+50 TO STA. 18+50 RT

HDR HDR Engineering, Inc. of the Carolinas
 555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
 N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO. <i>17BP.8.R.121</i>	SHEET NO. <i>EC-06/CONST.04</i>
RW SHEET NO.	
ROADSIDE ENVIRONMENTAL PROJECT ENGINEER	
LEVEL III CERTIFIED BY: ALEXANDER D SNIDER, PE CERTIFICATION NUMBER: 3064 ISSUED: OCTOBER 26, 2017	

NAD 83 NA 2011



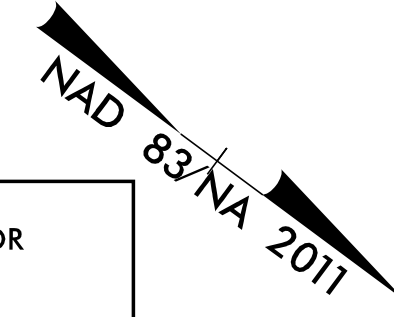
BEGIN PROJECT 17BP.8.R.121
 -L- POT STA 15+20.00

-L-
 Pi Sta 18+03.95
 $\Delta = 17' 34' 07.5''$ (RT)
 $D = 4' 18' 32.3''$
 $L = 407.73'$
 $T = 205.52'$
 $R = 1,330.00'$
 $SE = 0.06$

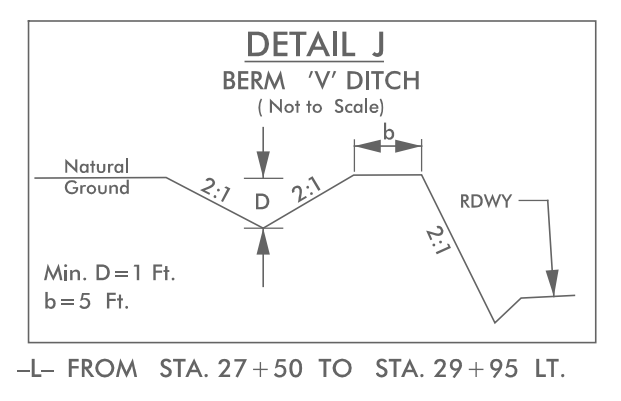
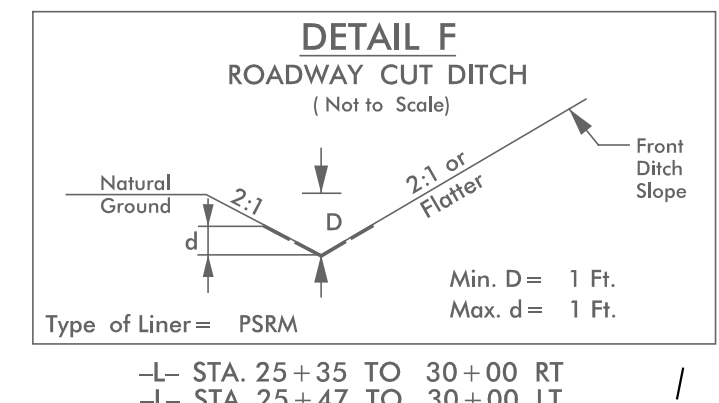
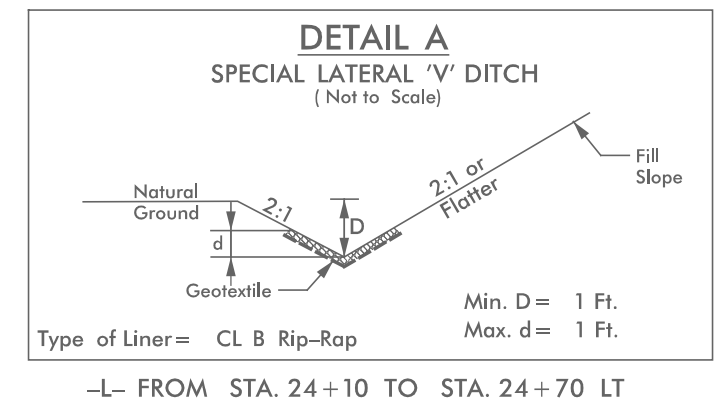
NOTE: ALL EROSION CONTROL DEVICES SHOWN ARE LOCATED WITHIN RW OR EASEMENT.

MATCHLINE -L- STA 24+10 SEE SHEET 5

LEVEL III CERTIFIED BY:
 ALEXANDER D SNIDER, PE
 CERTIFICATION NUMBER: 3064
 ISSUED: OCTOBER 26, 2017

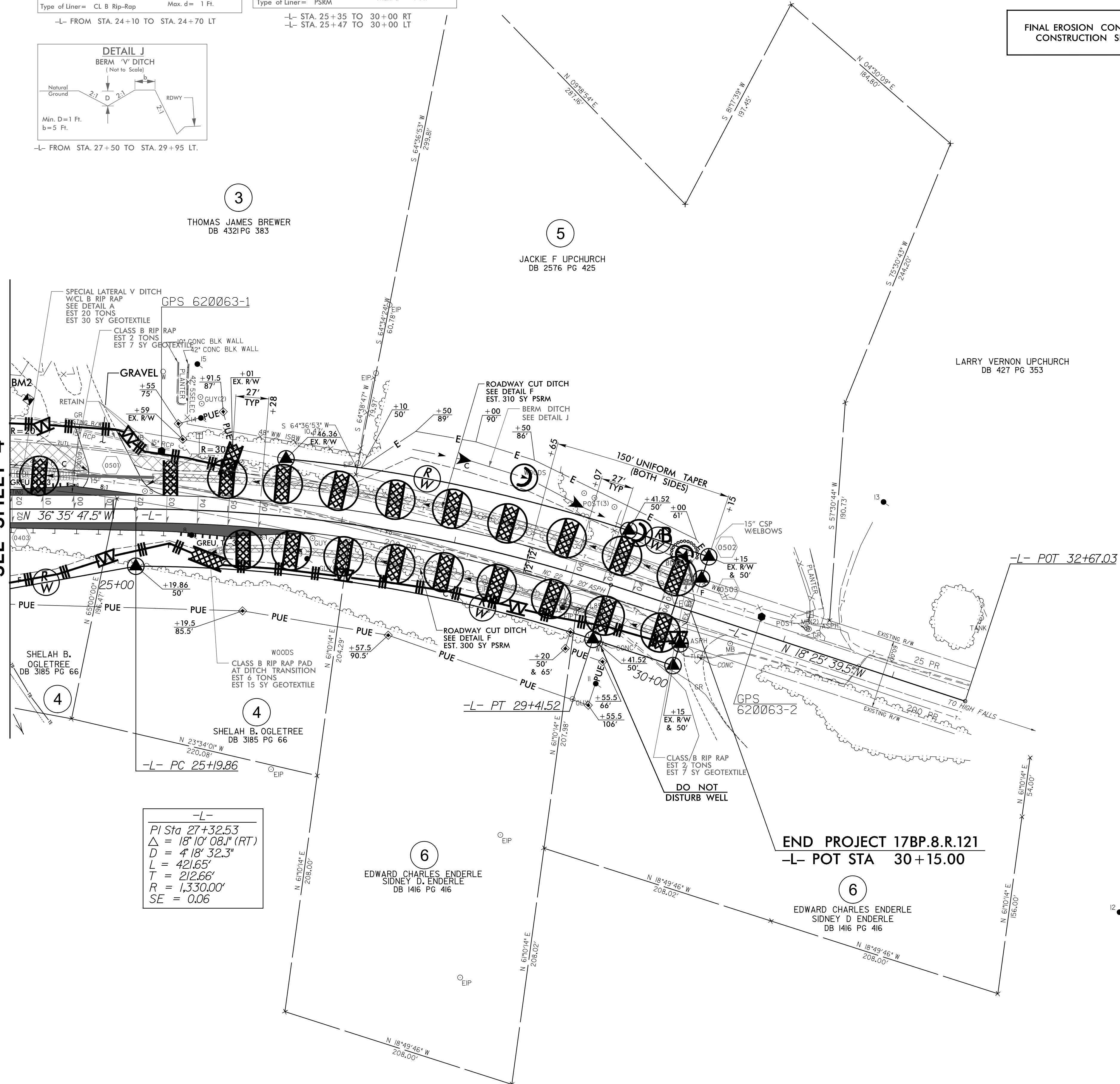


FINAL EROSION CONTROL FOR
 CONSTRUCTION SHEET 05



- 0501 DRIVEWAY PIPE
- 0502 BDO
TOP = 330.0
INV = 328.7
- 0503 OUTLET
INV = 323.5

MATCHLINE -L- STA 24+10
SEE SHEET 4



-L-
 PI Sta 27+32.53
 $\Delta = 18' 10'' 08.1'' (RT)$
 $D = 4' 18'' 32.3''$
 $L = 421.65'$
 $T = 212.66'$
 $R = 1,330.00'$
 $SE = 0.06$

NOTE:
 ALL EROSION CONTROL DEVICES SHOWN ARE
 LOCATED WITHIN RW OR EASEMENT.

8/17/99
 \$DATE\$
 \$FILE\$
 \$\$\$SUBSERNAME\$\$\$

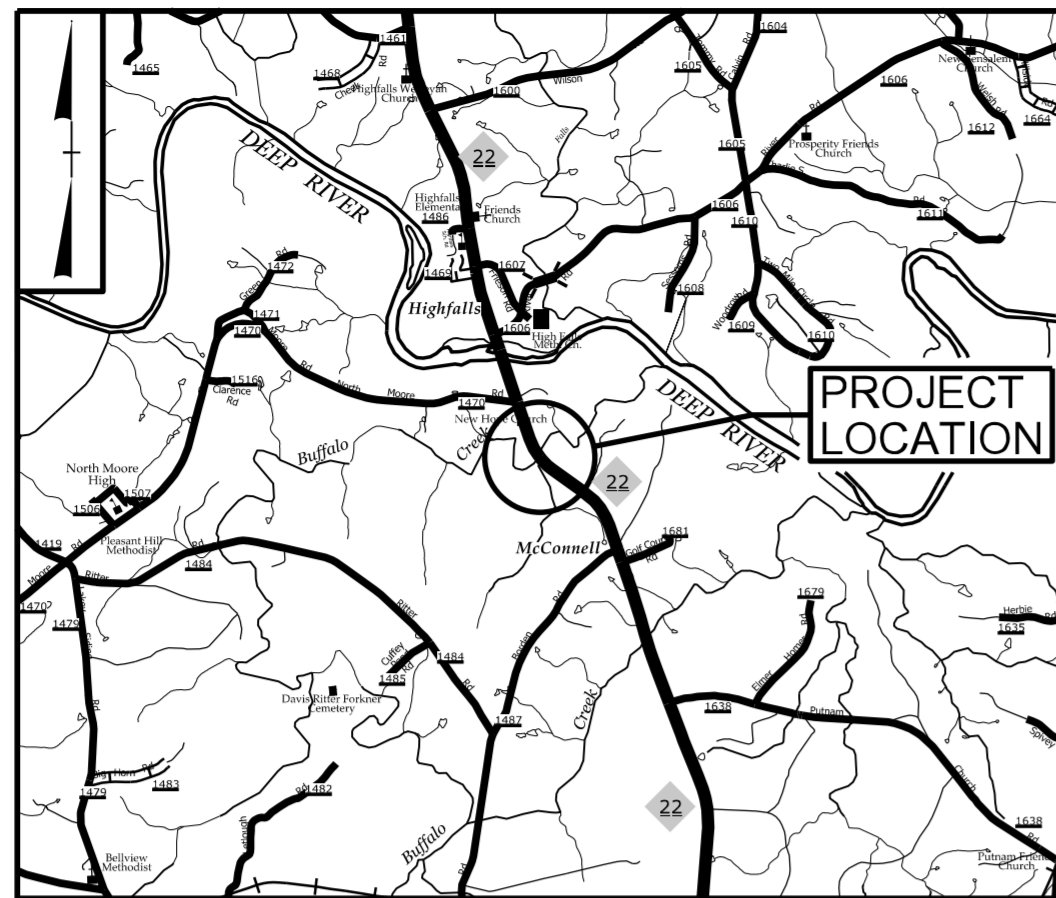
09/08/99

TIP PROJECT: 17BP.8.R.121

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

T.I.P. NO.	SHEET NO.
17BP.8.R.121	UO-1

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

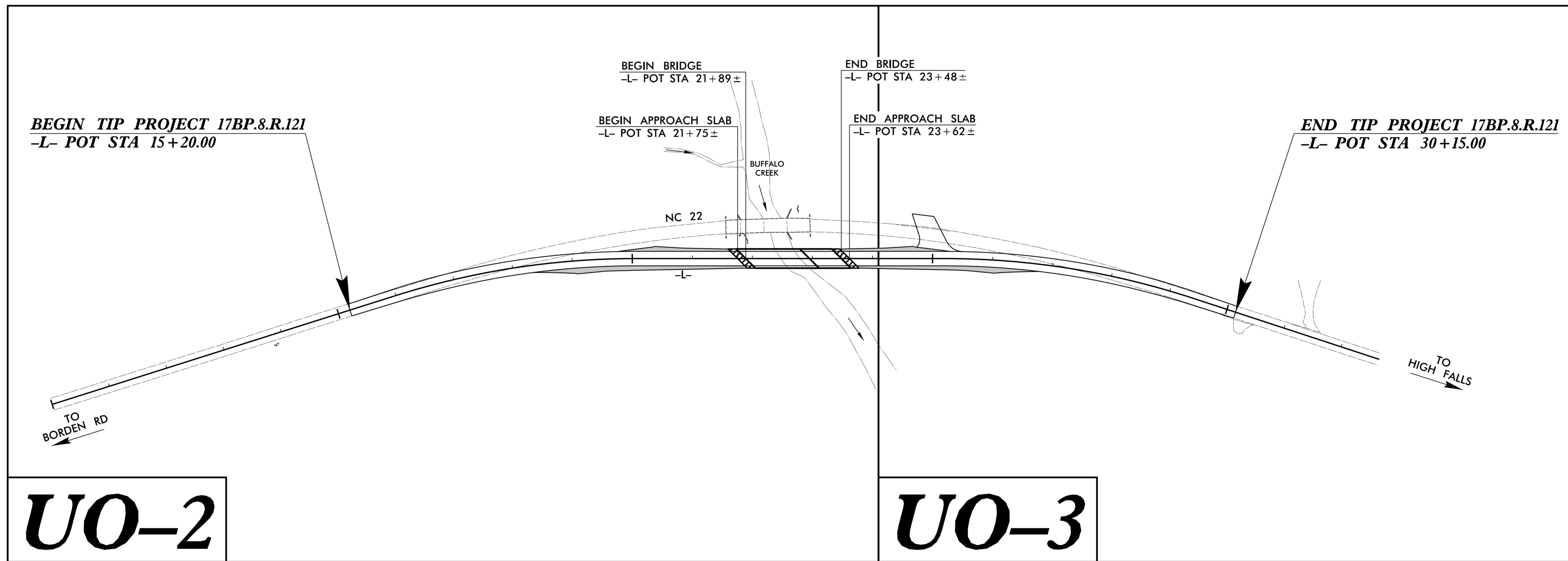


VICINITY MAP

**UTILITIES BY OTHERS PLANS
MOORE COUNTY**

LOCATION: REPLACE BRIDGE NO. 063 OVER BUFFALO CREEK ON NC 22

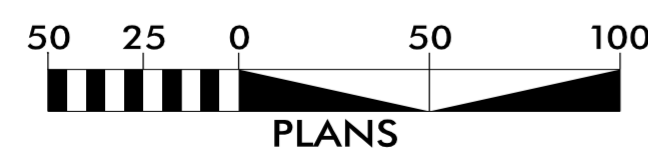
TYPE OF WORK: POWER AND TELEPHONE RELOCATION



UO-2

UO-3

GRAPHIC SCALES



INDEX OF SHEETS

SHEET NO.:	DESCRIPTION:
UO-1	TITLE SHEET
UO-2 THRU UO-3	UBO PLAN SHEETS

UTILITY OWNERS ON PROJECT

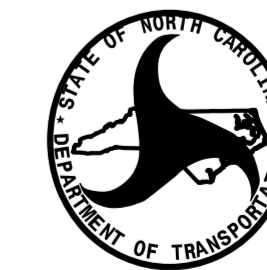
- (A) POWER DISTRIBUTION - RANDOLPH EMC
- (B) TELEPHONE - RANDOLPH TELEPHONE MEMBERSHIP CORPORATION

PREPARED IN THE OFFICE OF:



3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

UTILITIES PROJECT ENGINEER
Mary Jo Lee, P.E.



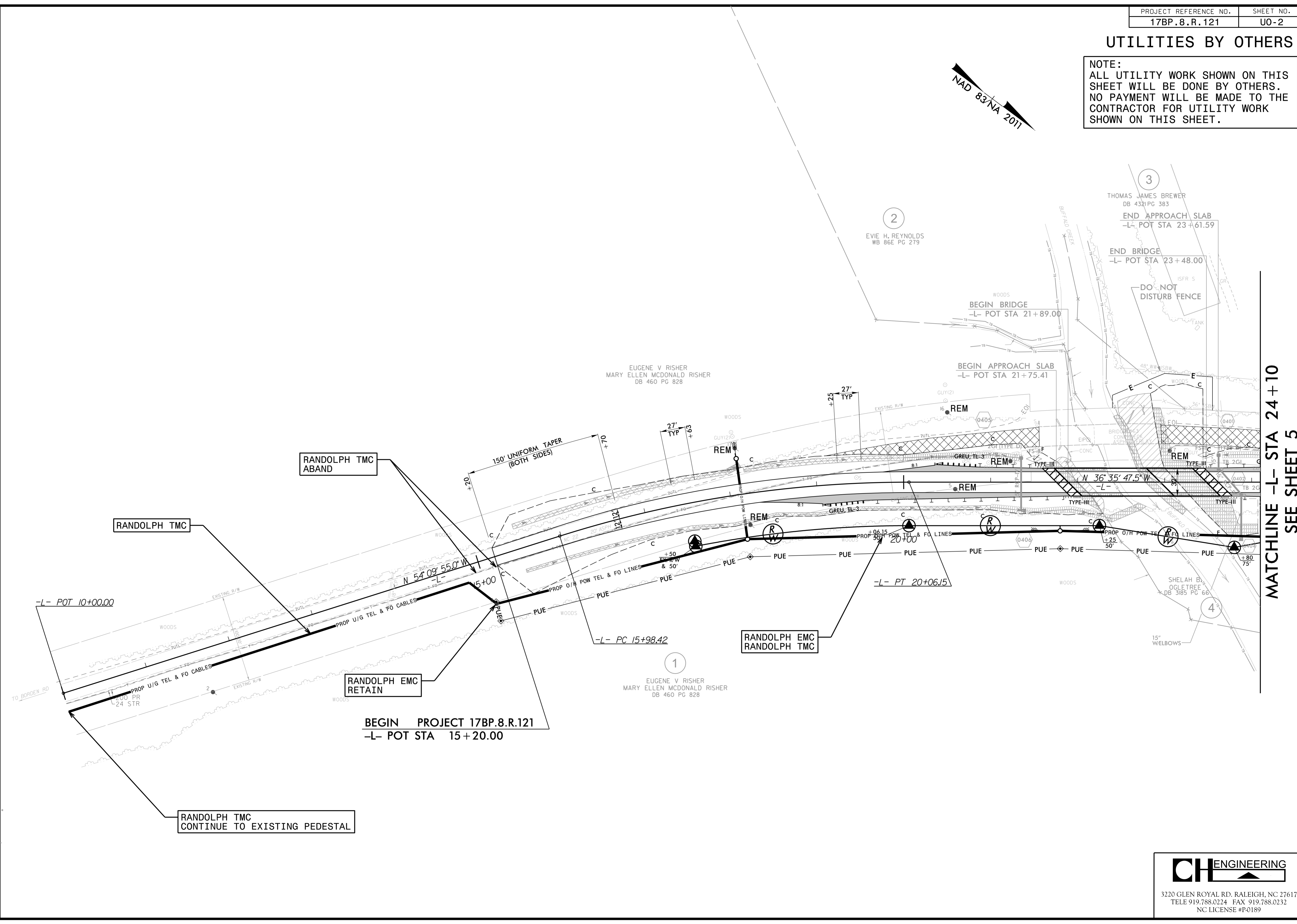
DIVISION OF HIGHWAYS
DIVISION 8

902 NORTH SANDHILLS BLVD.
ABERDEEN, NC 28315

JAMIE YOW	DIVISION CONTACT #1
TIM WELCH	DIVISION CONTACT #2
XXXX	DIVISION CONTACT #3
XXXX	DIVISION CONTACT #4

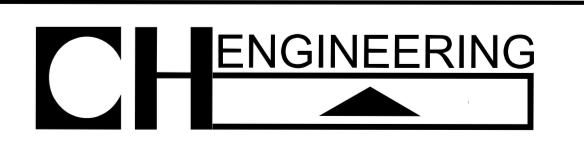
UTILITIES BY OTHERS

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



MATCHLINE -L- STA 24+10
SEE SHEET 5

5/14/99
K:\30\2018\17BP.8.R.121\Engineering\UBD\Pro\17BP.8.R.121\17BP.8.R.121_UO02_psh.dgn



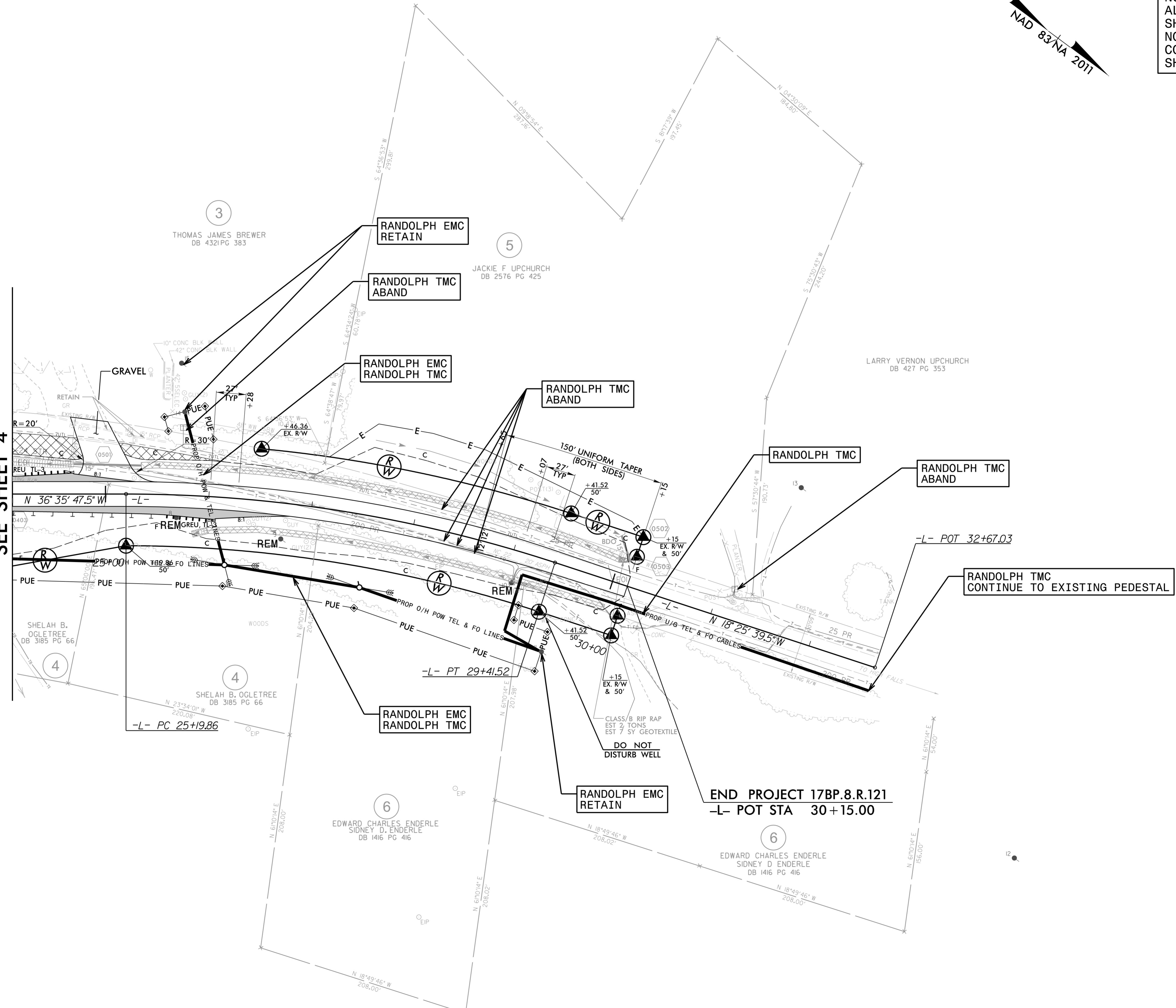
3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

UTILITIES BY OTHERS

NOTE:
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 NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR UTILITY WORK SHOWN ON THIS SHEET.



MATCHLINE -L- STA 24+10
SEE SHEET 4

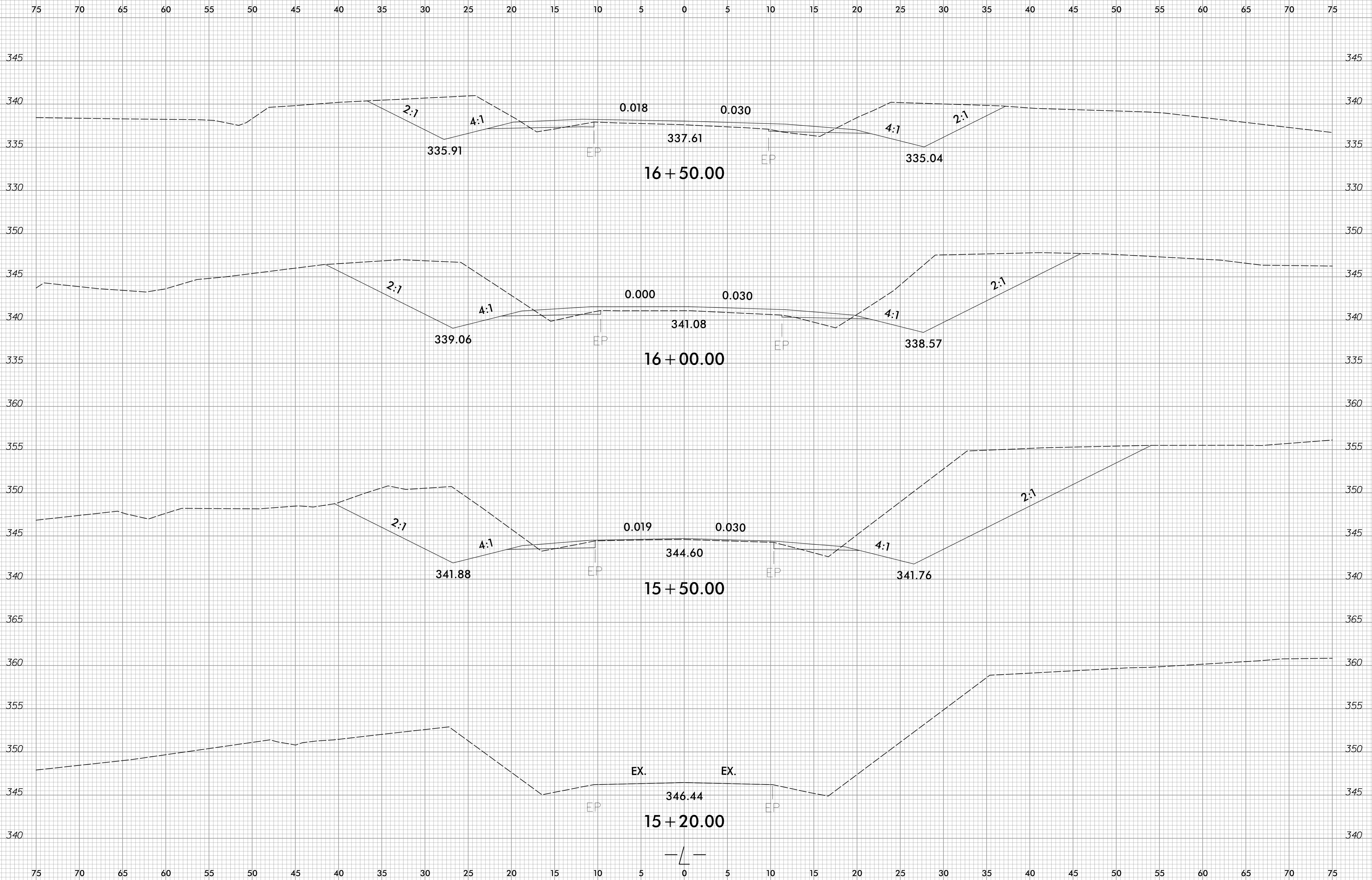


5/14/99

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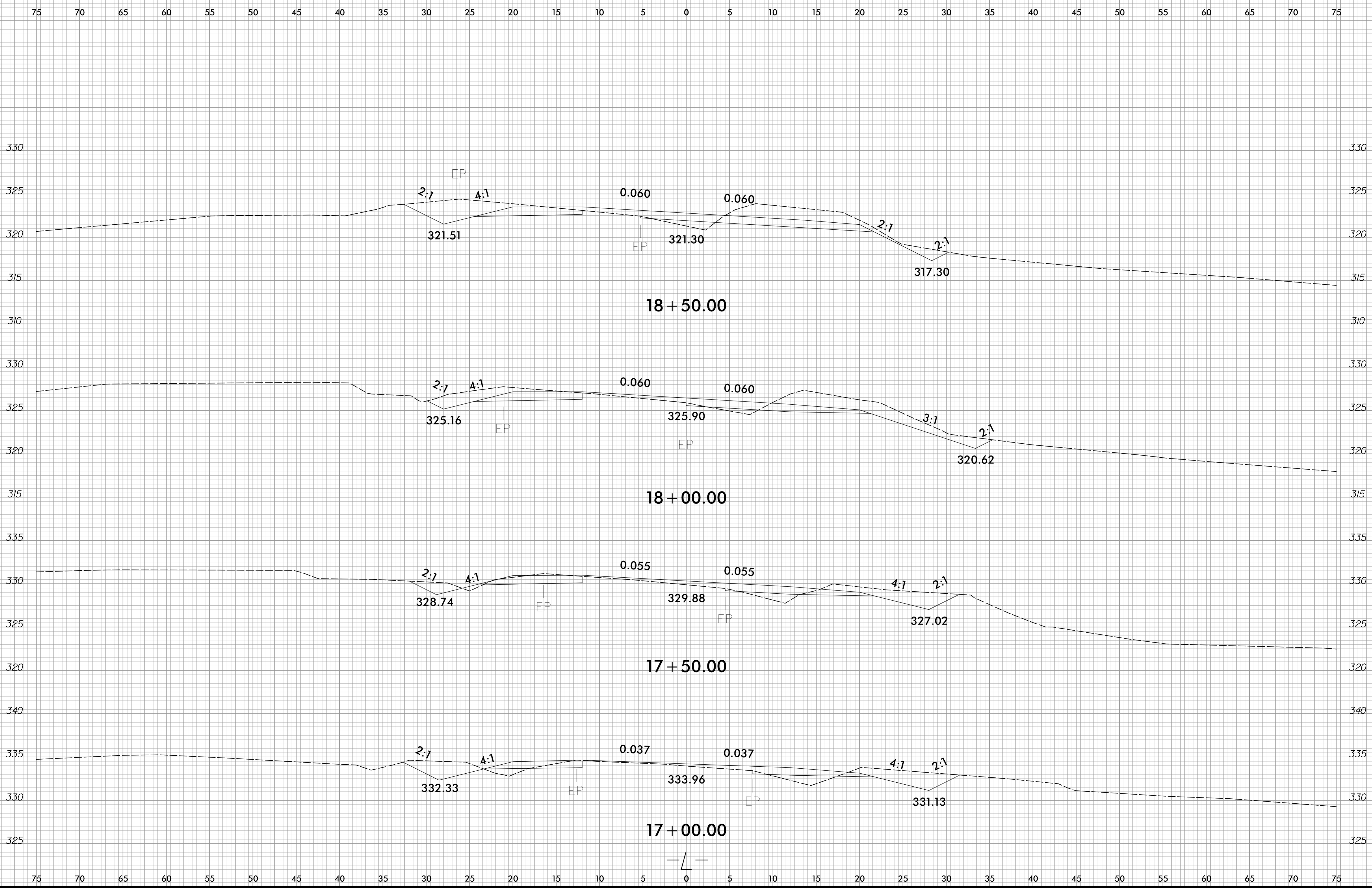
6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.8.R.121	X-1



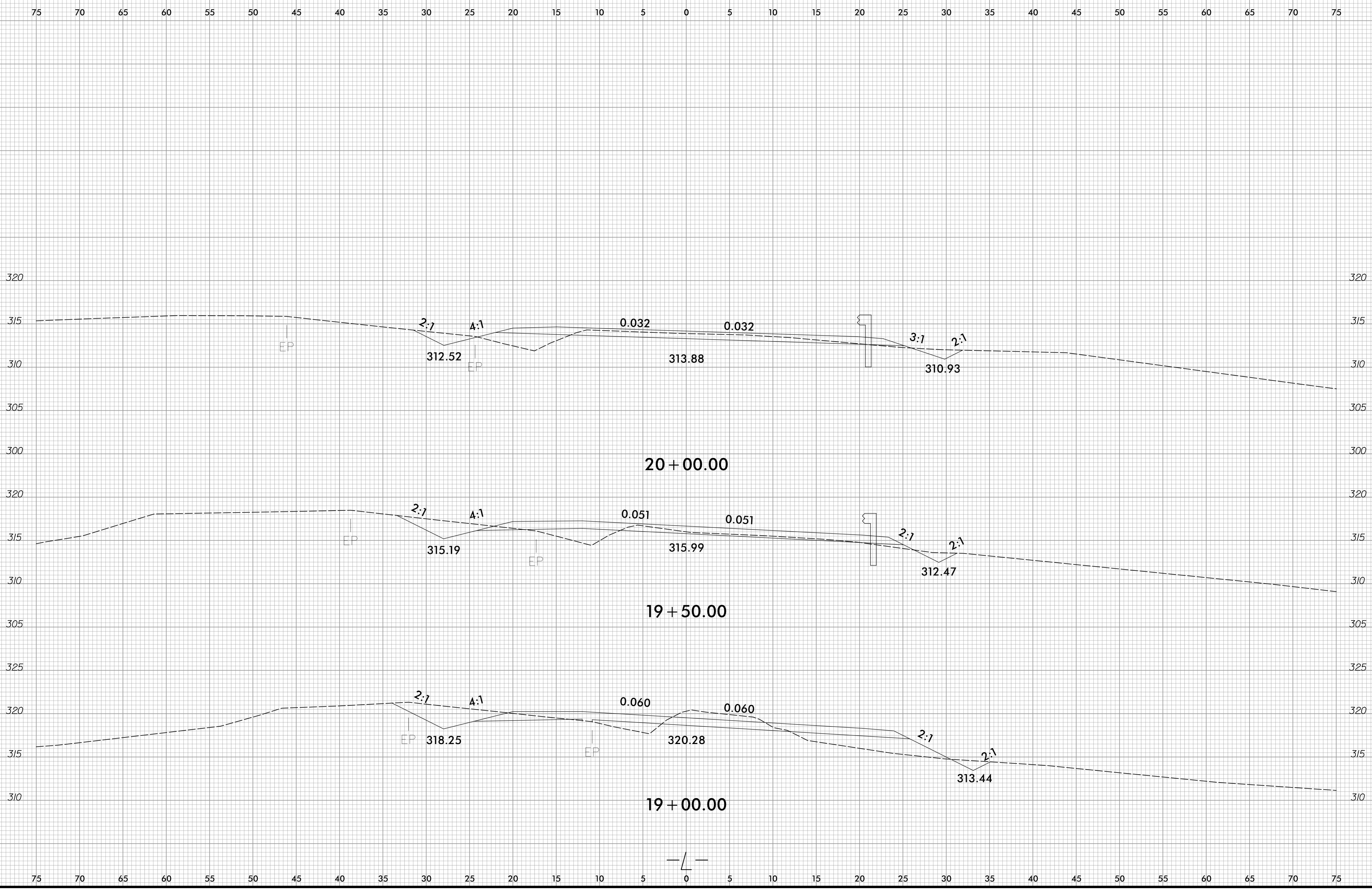
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6/23/16

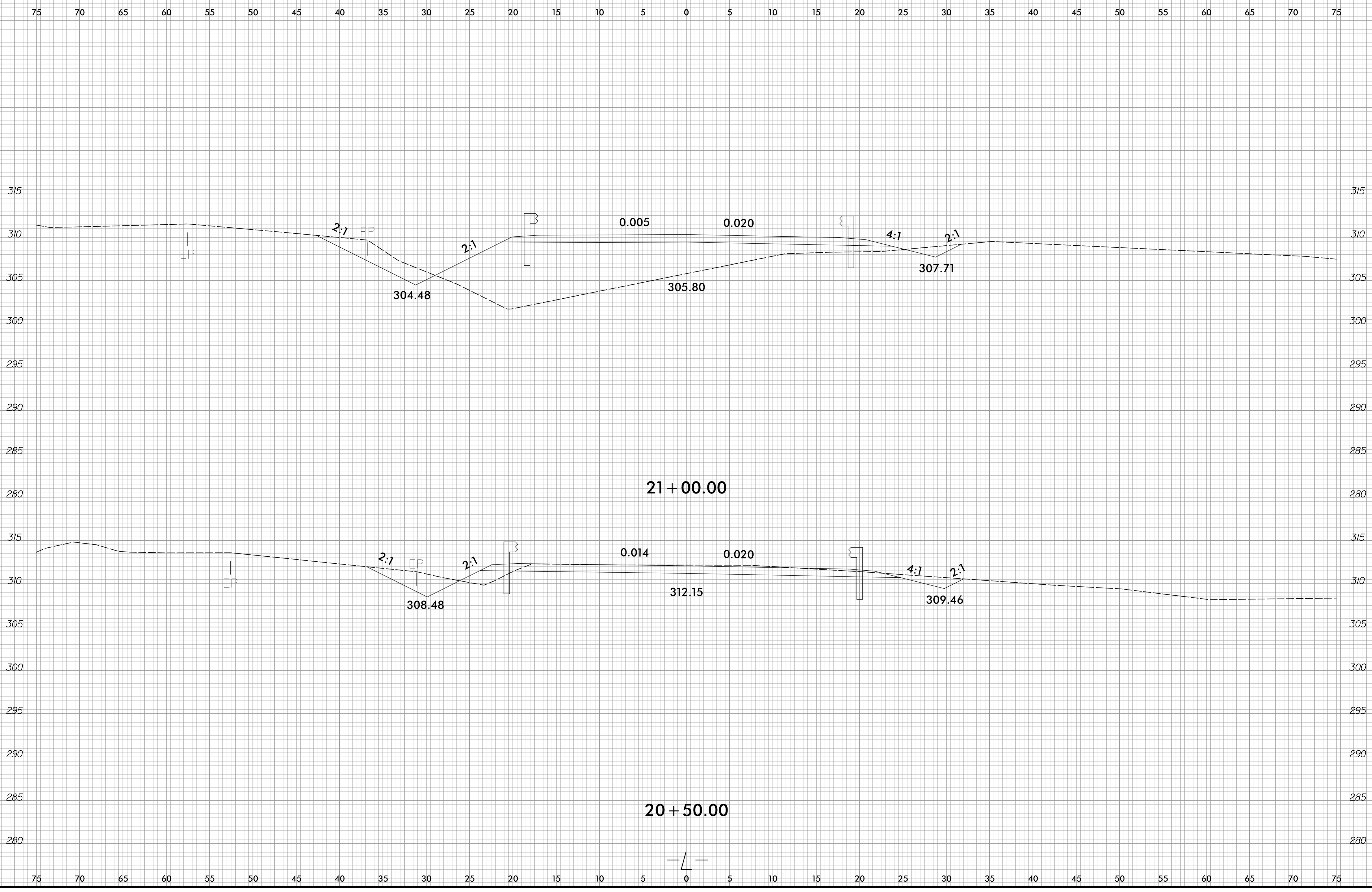


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CH ENGINEERING, INC.

6/23/16

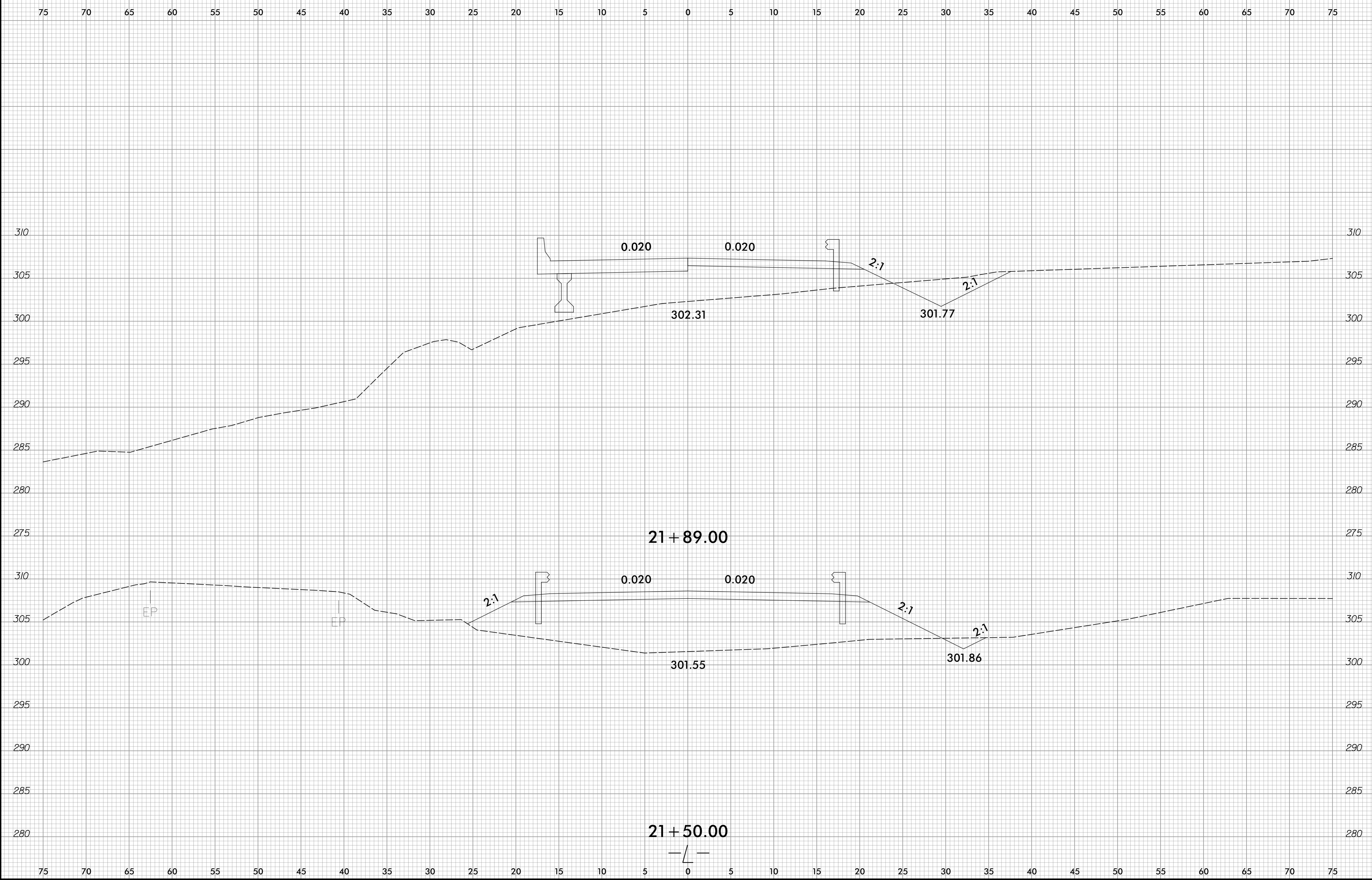


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6/23/16

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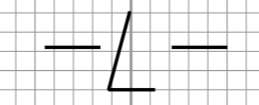
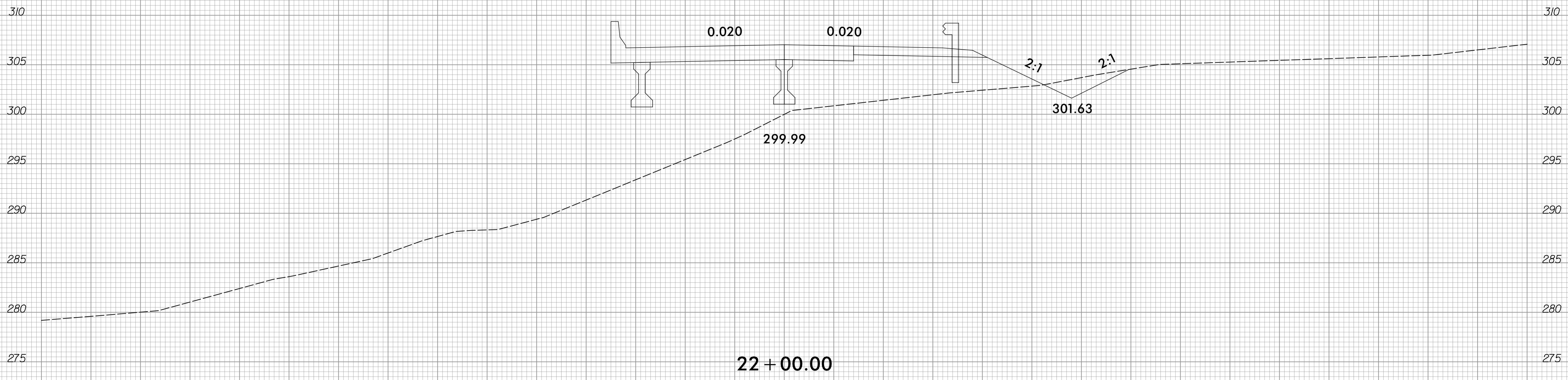
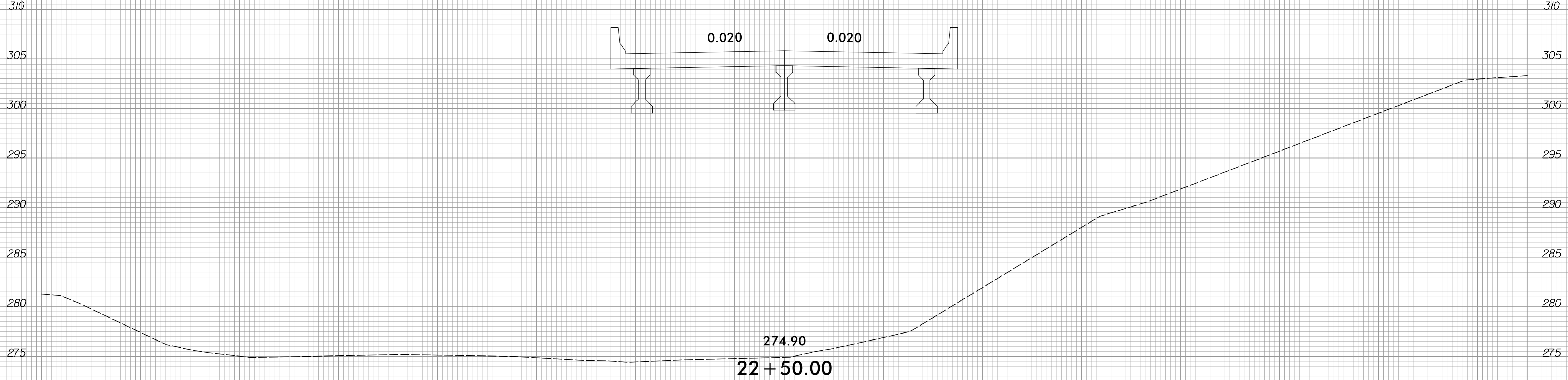


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CH ENGINEERING, INC.

6/23/16

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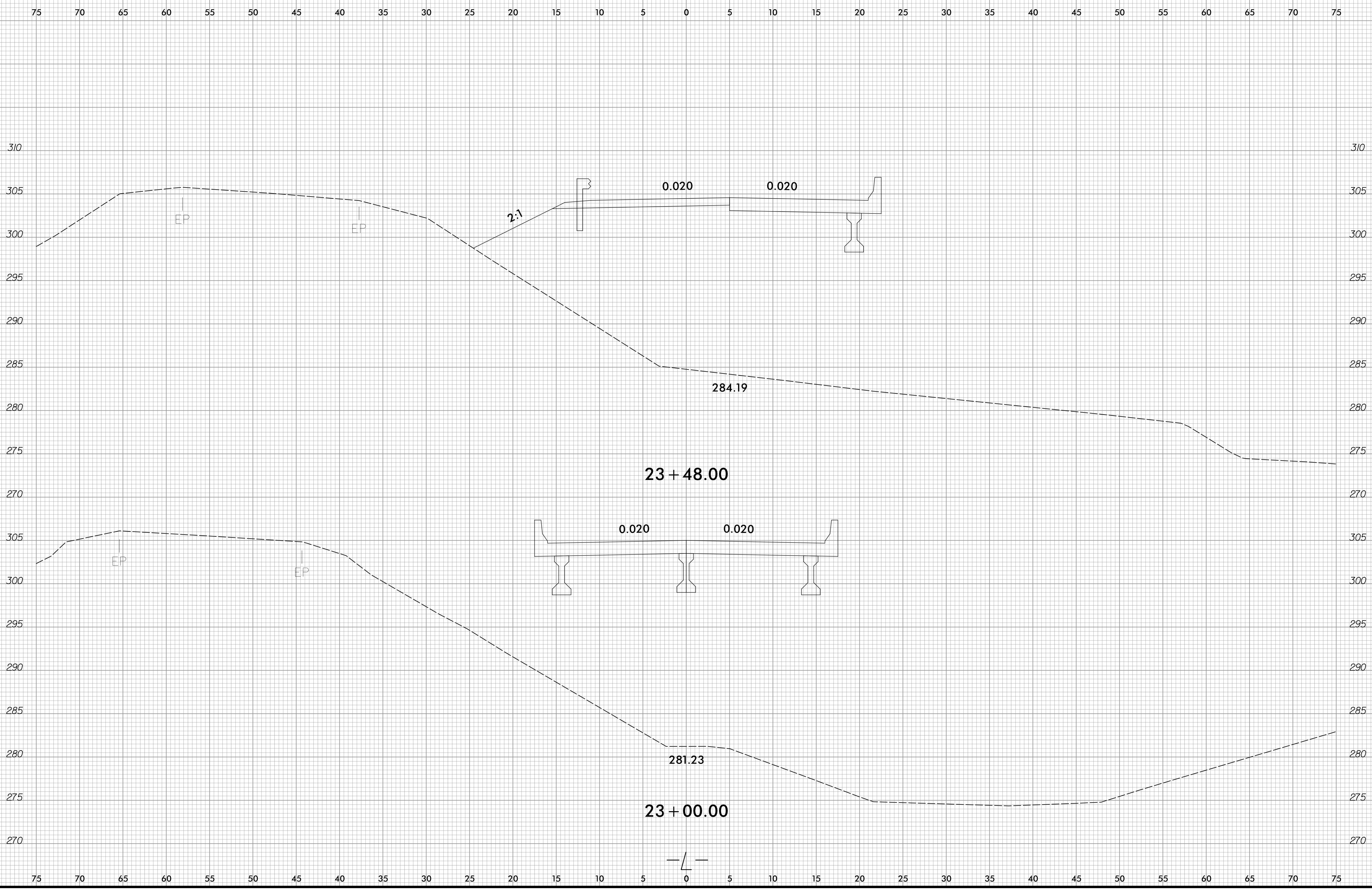
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5/9/2018
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 CH ENGINEERING, INC.

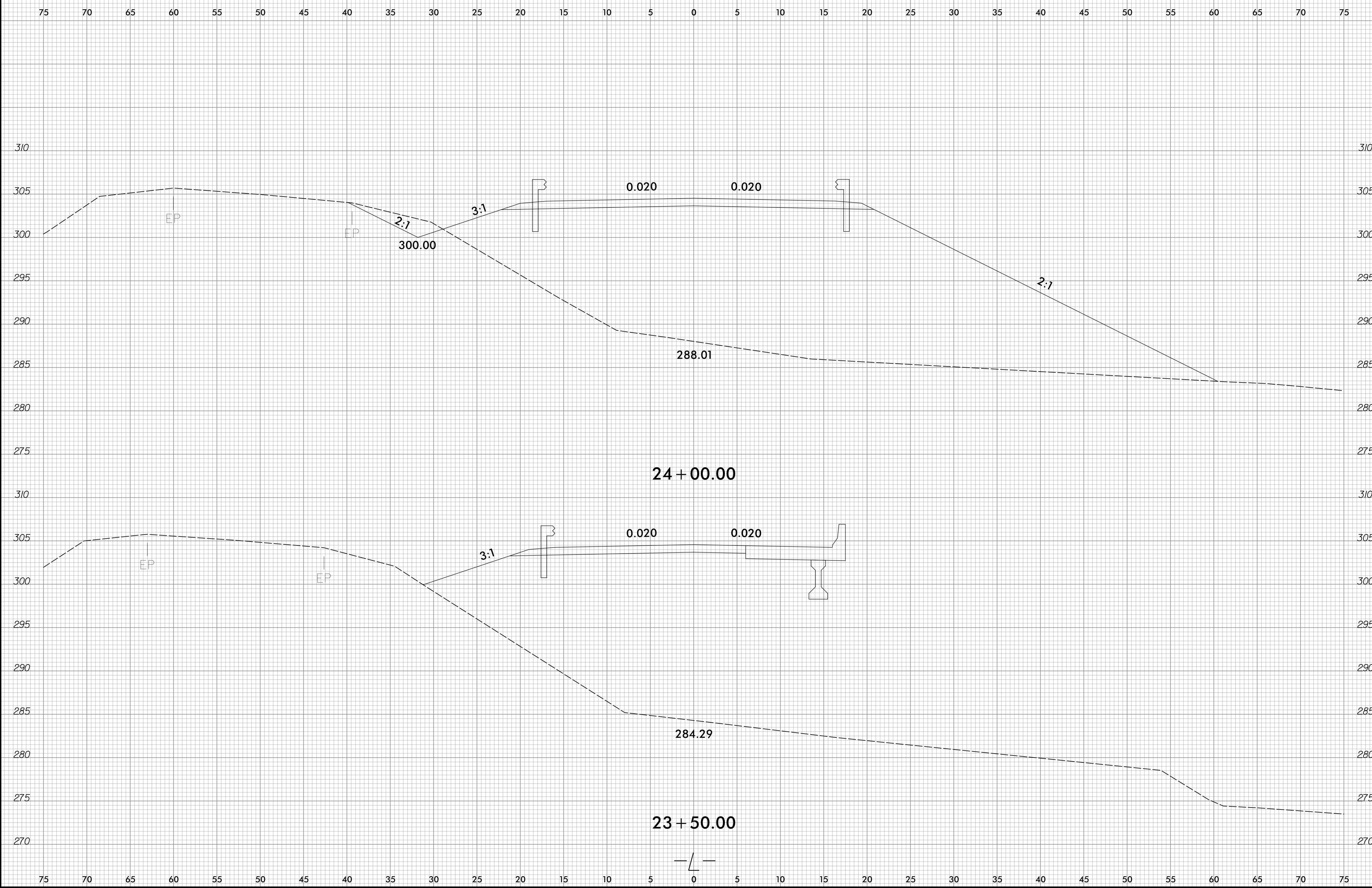
6/23/16



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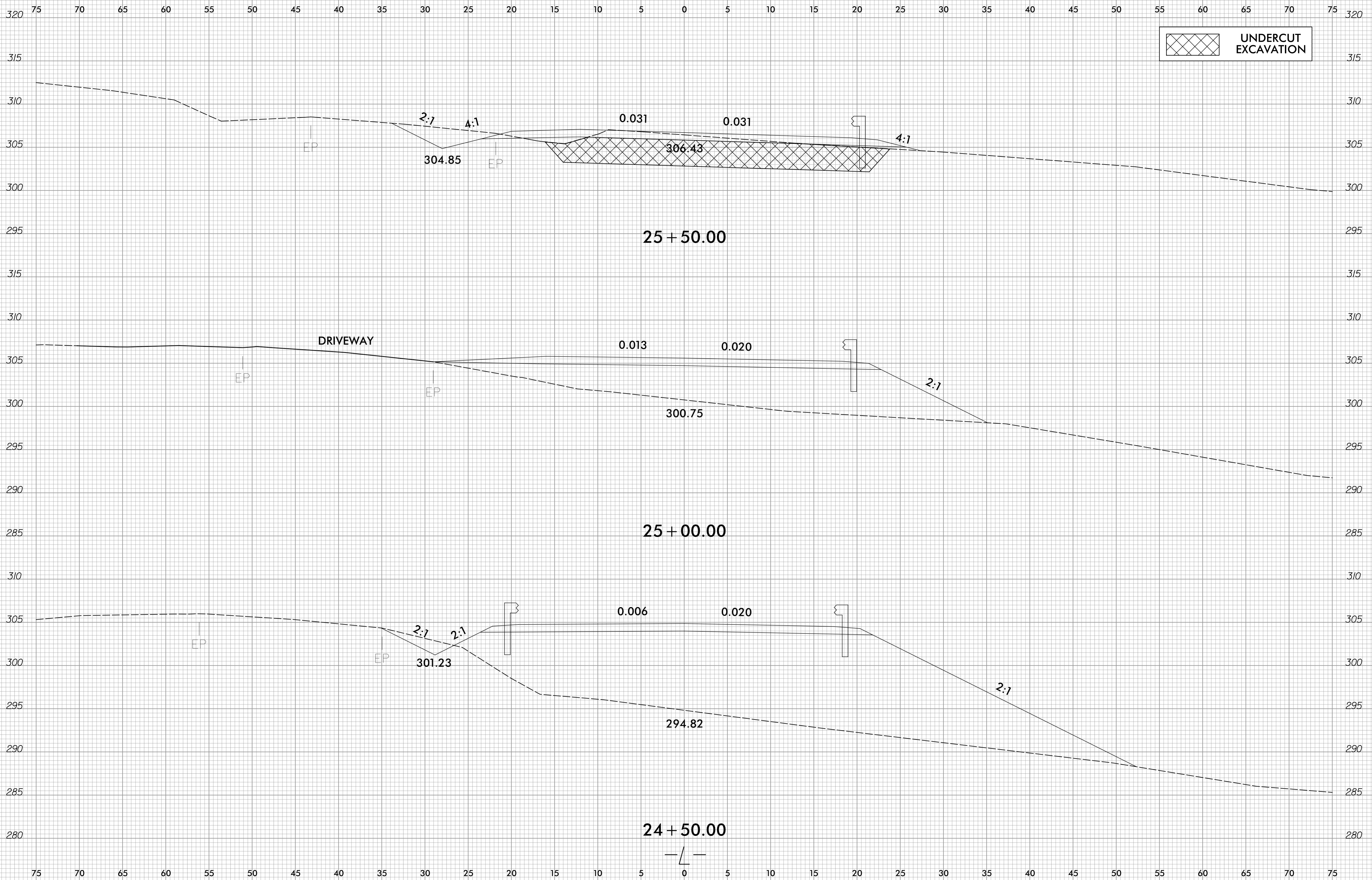
6/23/16

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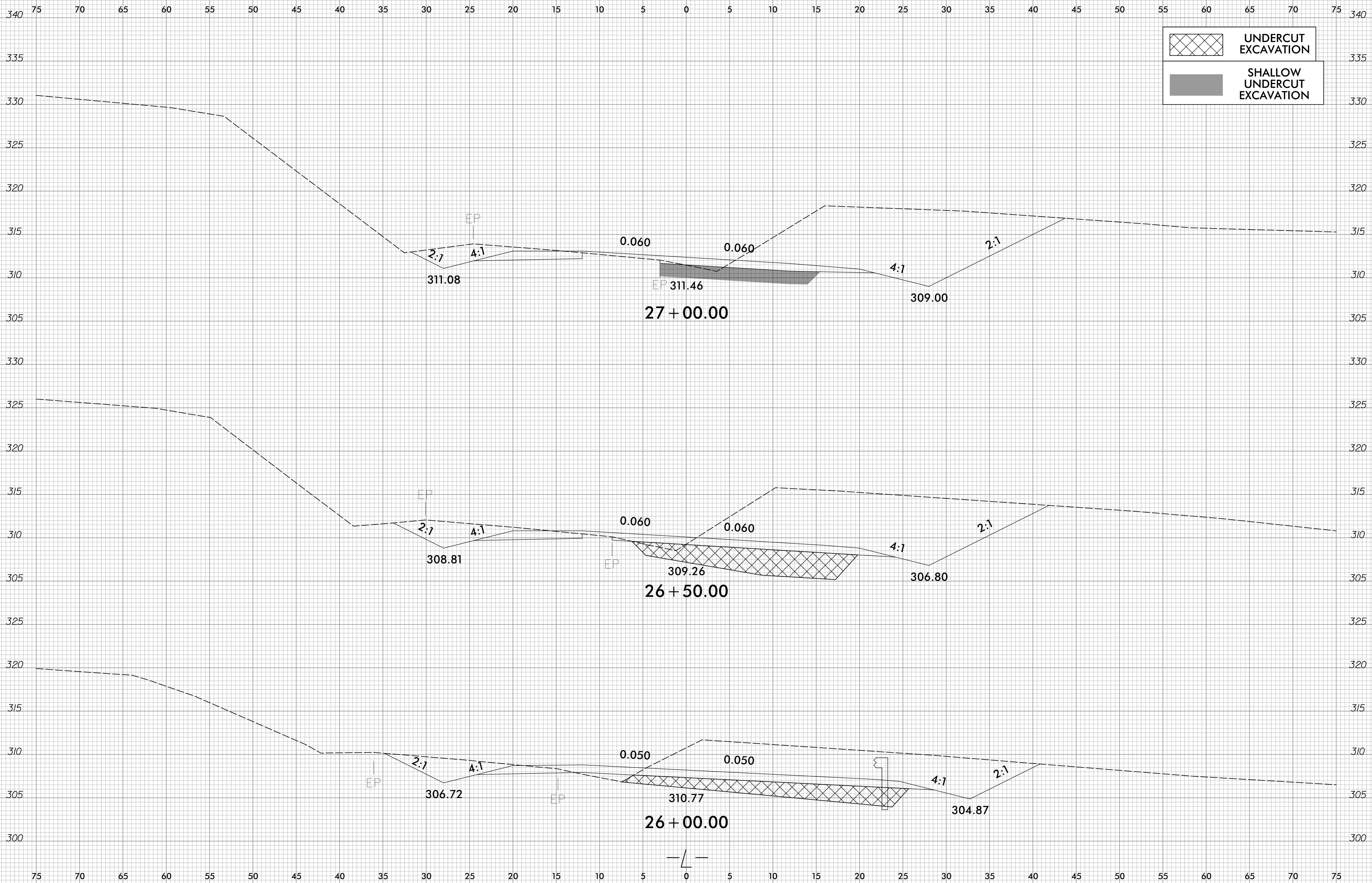
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6/23/16



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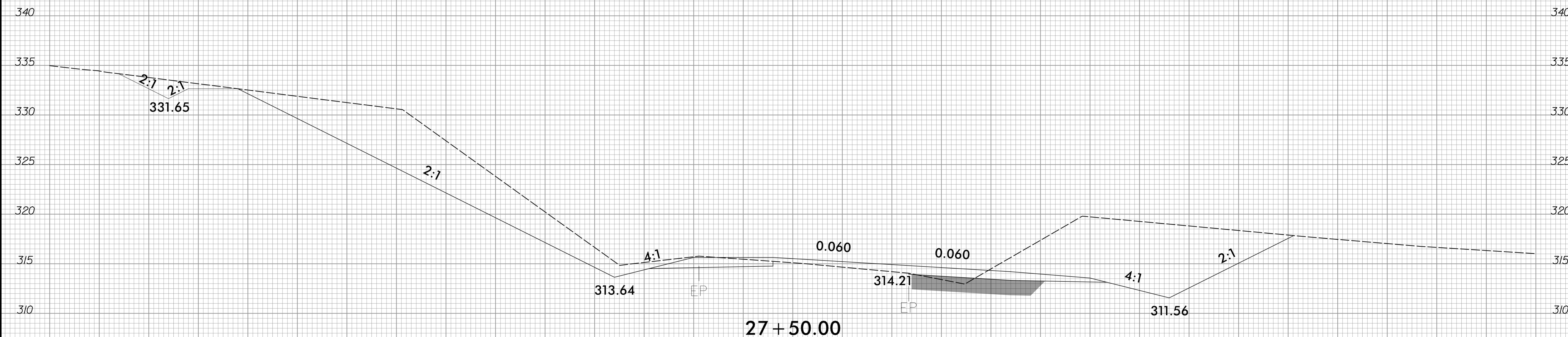
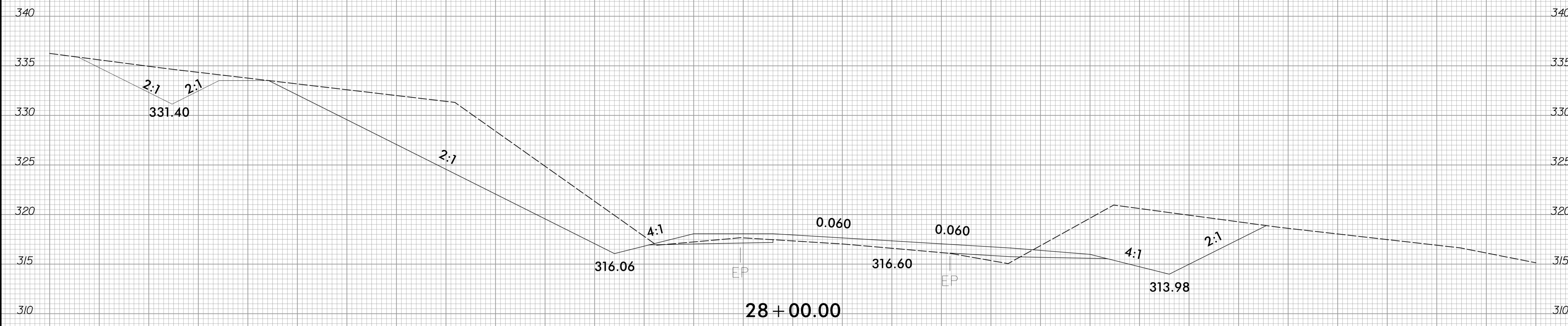
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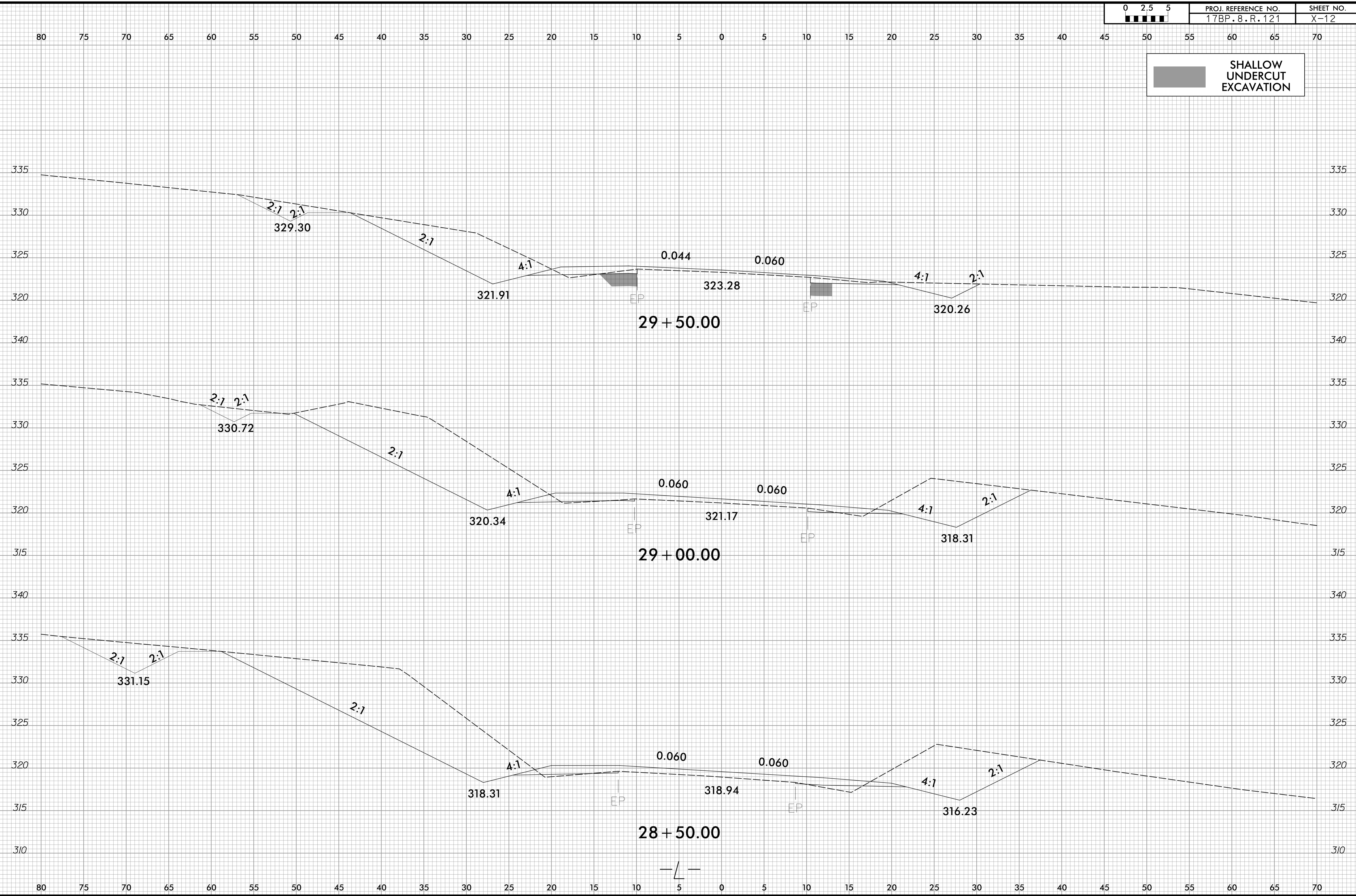
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SHALLOW UNDERCUT EXCAVATION



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6/23/16

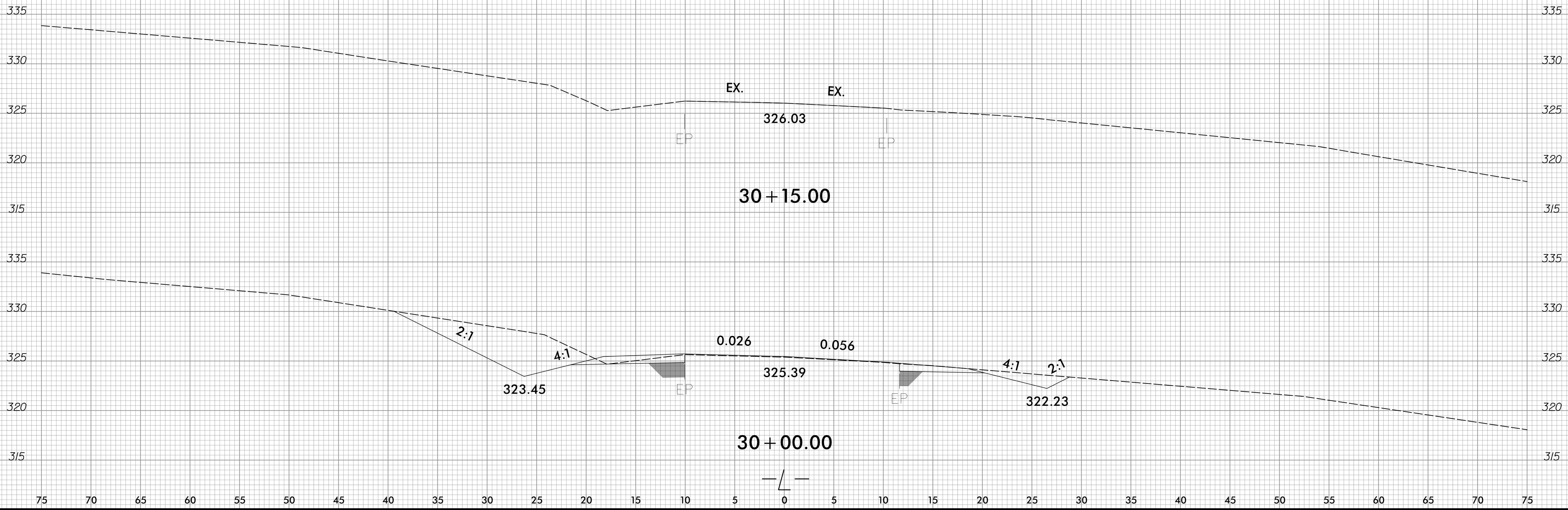


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6/23/16

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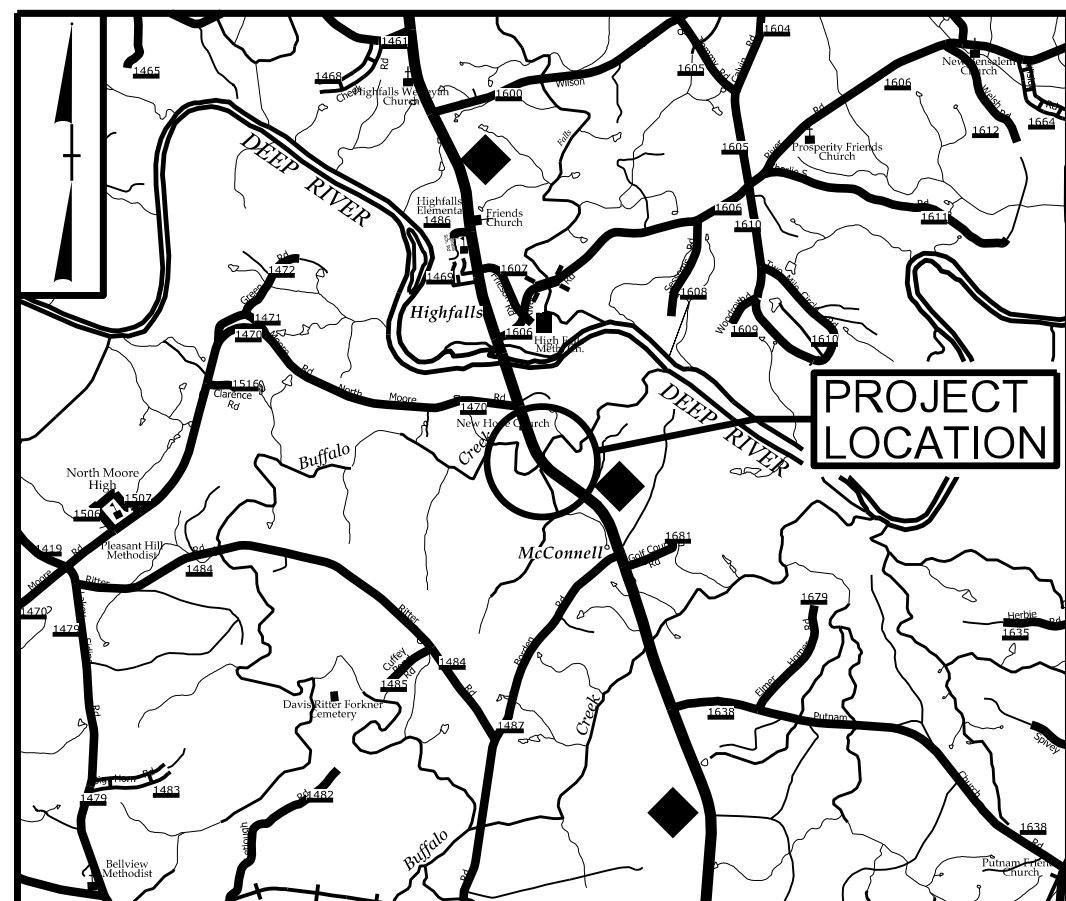
SHALLOW UNDERCUT EXCAVATION



5/9/2018
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 CH ENGINEERING, INC.

09/08/09

PROJECT: 17BP.8.R.121



VICINITY MAP

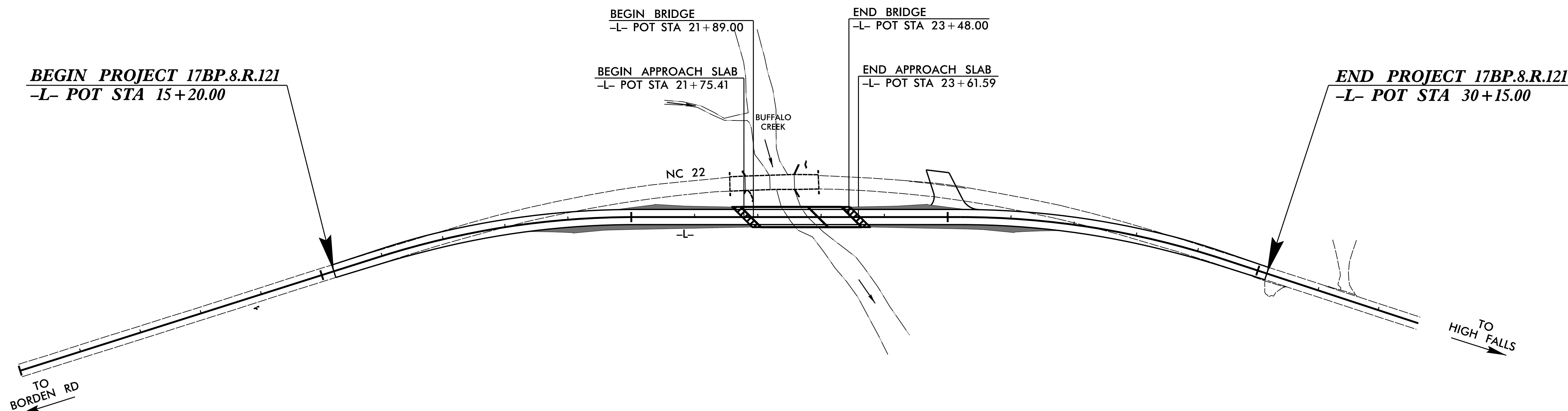
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MOORE COUNTY

LOCATION: REPLACE BRIDGE NO. 063 OVER BUFFALO CREEK ON NC 22

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.8.R.121		33
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.8.R.121		P.E.	
17BP.8.R.121		CONSTRUCTION	



STRUCTURES

NOTES:

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

CONTRACT:

DESIGN DATA

ADT (2018) = 1950
 K = %
 D = %
 T = 7 %
 V = 60 MPH
 TTST = % DUAL %
 FUNC CLASS =
 RURAL COLLECTOR
 REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT 17BP.8.R.121 = 0.254 MILES
 LENGTH STRUCTURES PROJECT 17BP.8.R.121 = 0.029 MILES
 TOTAL LENGTH PROJECT 17BP.8.R.121 = 0.283 MILES

Prepared for the
 North Carolina Department
 of Transportation
 In the office of: **HDR** HDR Engineering, Inc. of the Carolinas
 555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
 N.C.B.E.L.S. License Number: F-0116

2018 STANDARD SPECIFICATIONS
RIGHT OF WAY DATE:
 NOVEMBER 30, 2017

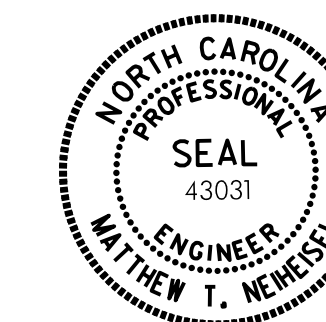
LETTING DATE:
 AUGUST 14, 2018

PHILLIP E. ROGERS, PE
 PROJECT ENGINEER

ALEXANDER D. SNIDER, PE
 PROJECT DESIGN ENGINEER

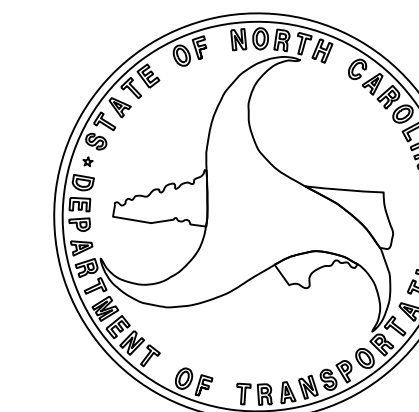
TIM WELCH, PE
 NCDOT CONTACT
 DIV 8 BRIDGE PROGRAM MANAGER

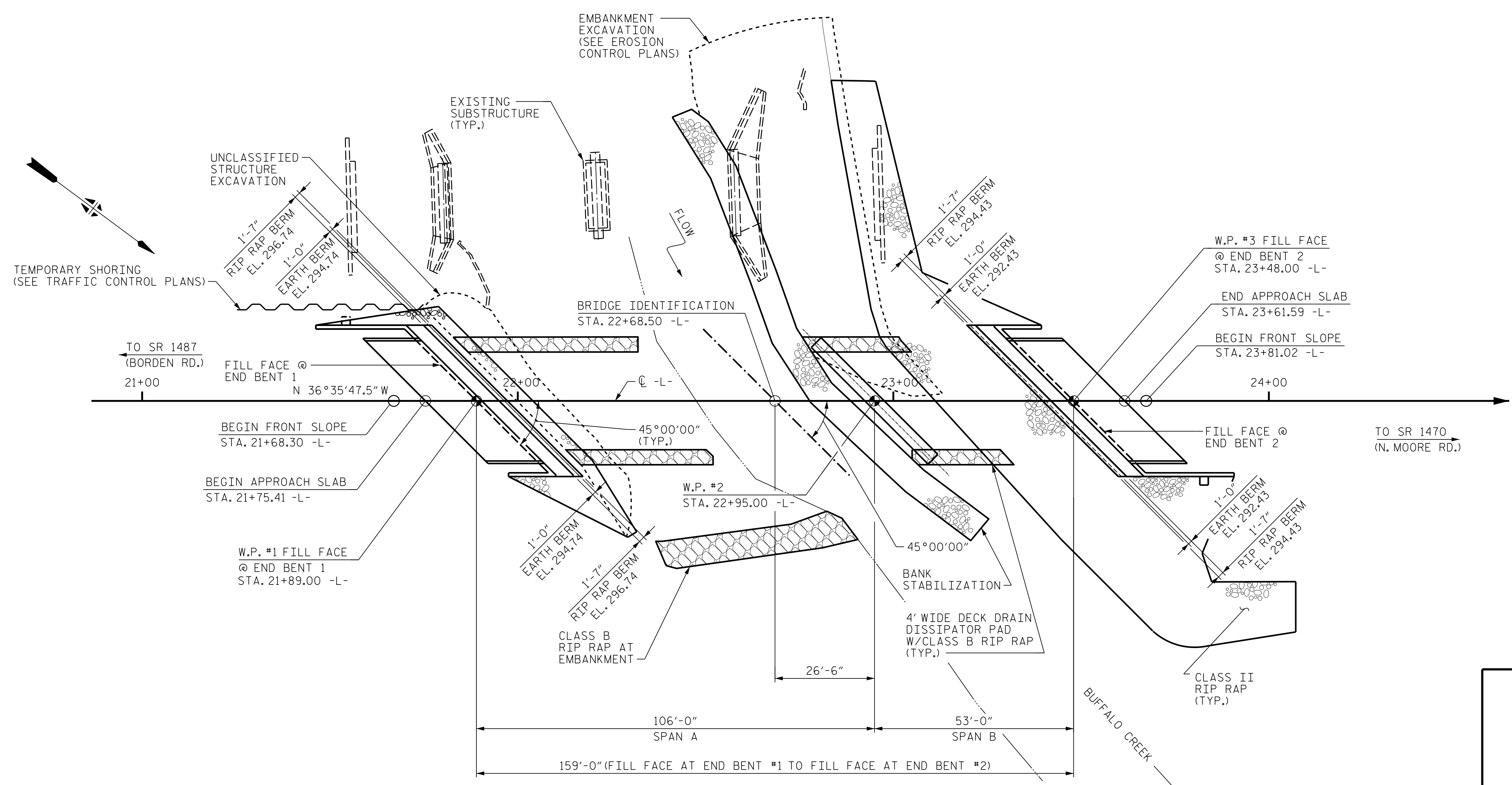
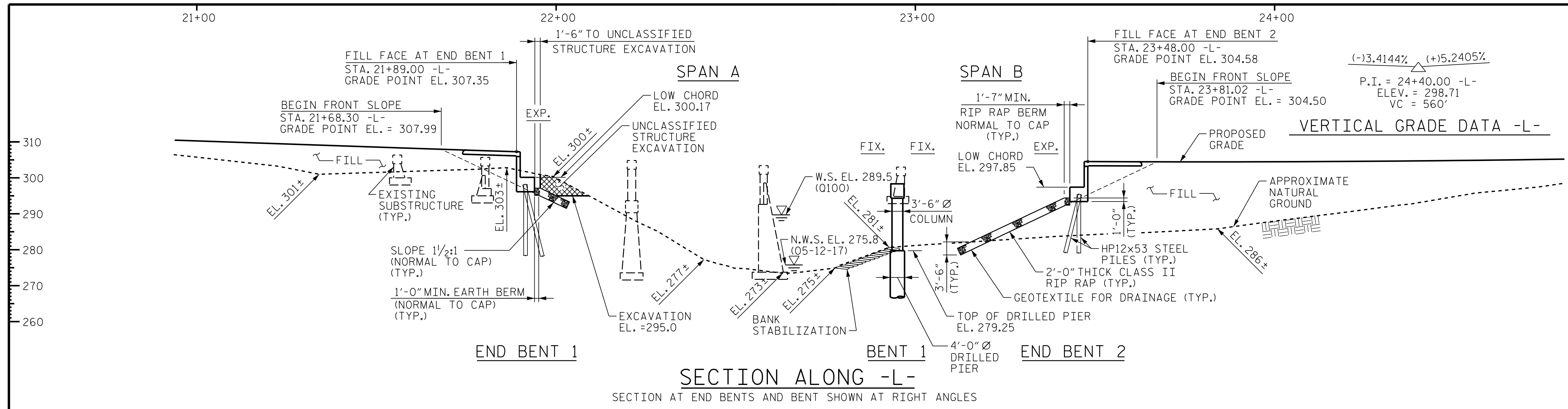
ENGINEER



Matl. Prepared 6/13/2018

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

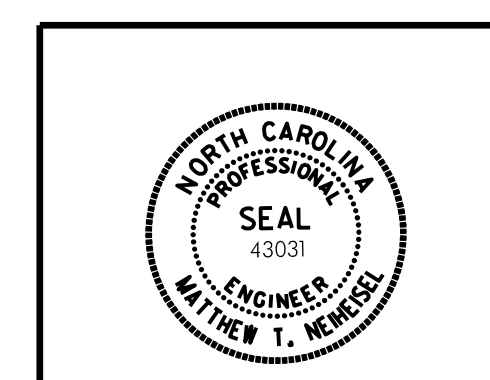




PROJECT NO. 17BP.8.R.121
MOORE COUNTY
 STATION: 22+68.50 -L-
 SHEET 1 OF 4 REPLACES BRIDGE NO. 63

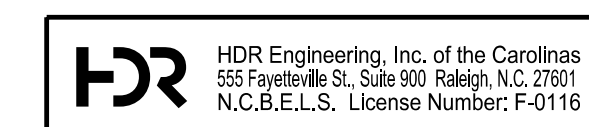
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE OVER BUFFALO
 CREEK ON NC 22 BETWEEN
 SR 1487 AND SR 1470



Matthew Nemmel 6/13/2018

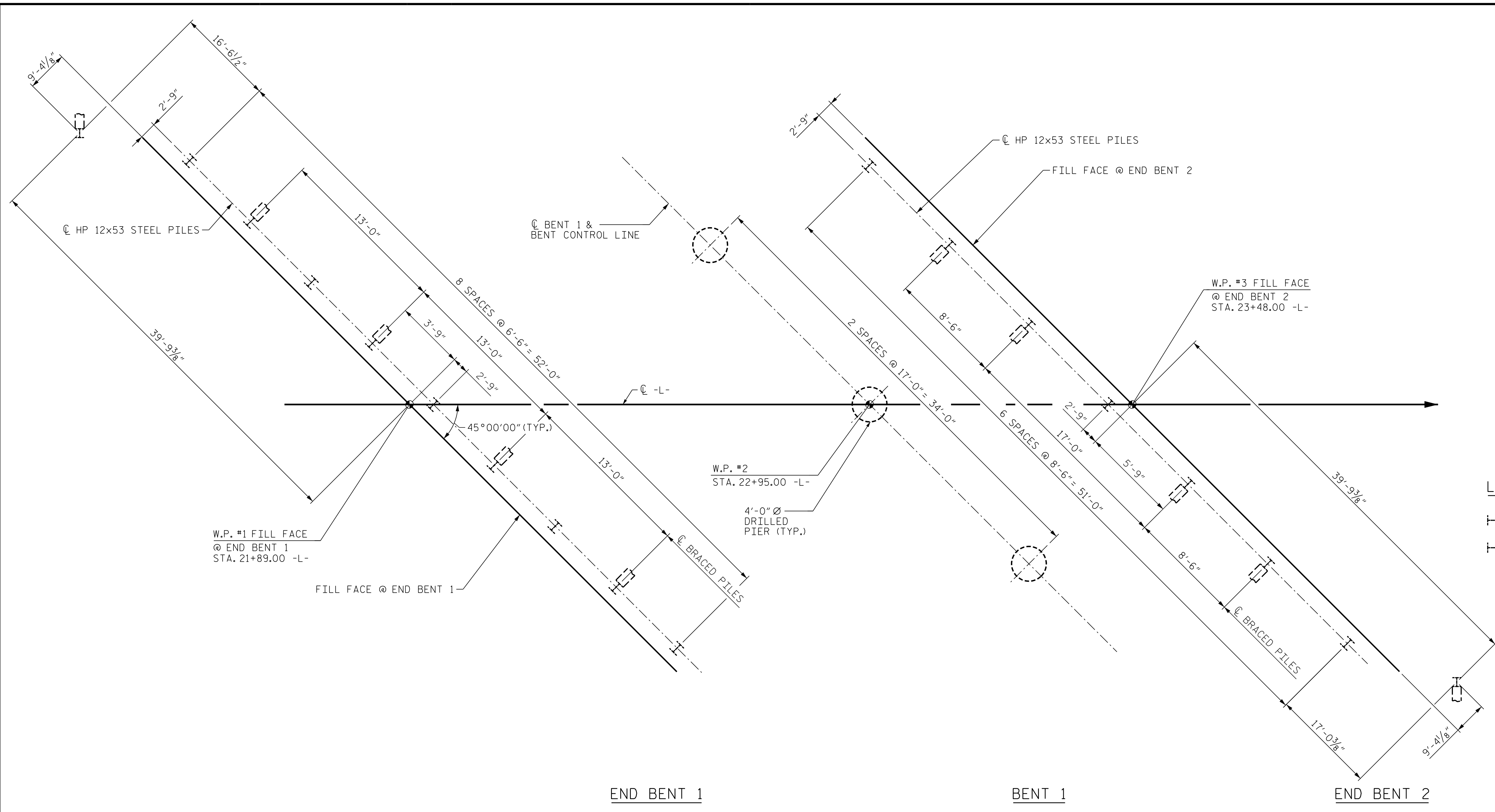
DRAWN BY : D. H. CARTER DATE : JUN 2018
 CHECKED BY : P. KUMAR DATE : JUN 2018
 DESIGN ENGINEER OF RECORD: M. T. NEIHEISEL DATE : JUN 2018



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			33

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLOT DRIVER: NCDOT_STRUCTURES_DEFAULT_PLOTTER.plt
 USER: MNEIHEIS DATE: 6/1/2018
 FILE: ... \NCAD\3.0_FinalPlans\0300



LEGEND

	VERTICAL HP 12x53 STEEL PILE
	BATTERED HP 12x53 STEEL PILE (3:12 BATTER)

FOUNDATION LAYOUT

ALL PILES ARE HP 12x53 STEEL PILES.
DIMENSIONS LOCATING PILES ARE SHOWN TO THE CENTERLINE OF PILES.

FOUNDATION NOTES

FOR PILES, SEE SECTION 450 OF STANDARD SPECIFICATIONS.
 PILES AT END BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 100 TONS PER PILE.
 DRILLED-IN PILES ARE REQUIRED FOR END BENT NO.1. EXCAVATE HOLES AT PILE LOCATIONS TO ELEVATION 285 FT. FOR PILE EXCAVATION, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
 CONCRETE OR GROUT IS REQUIRED TO FILL HOLES FOR PILE EXCAVATION AT END BENT NO. 1.
 FOR DRILLED PIERS, SEE SECTION 411 OF STANDARD SPECIFICATIONS.
 INSTALL DRILLED PIERS AT BENT NO.1 TO A TIP ELEVATION NO HIGHER THAN 263.4 FEET AND A PENETRATION OF 6.0 FEET INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.
 DRILLED PIERS AT BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 425 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 80 TSF.

THE SCOUR CRITICAL ELEVATION FOR BENT NO.1 IS 271.20 FEET. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
 CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL NEED TO DETERMINE THE NEED FOR CSL TESTING. FOR CSL TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
 PERMANENT STEEL CASING MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO 1. IF REQUIRED, DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 271.80 FT WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT CASINGS.
 PILES AT END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 90 TONS PER PILE. DRIVE PILES AT END BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 150 TONS PER PILE.
 STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENT NO.2. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

SPECIAL NOTES ON PLANS

DO NOT DRIVE PILES AT END BENT NO.1 AFTER PLACING PILES IN EXCAVATED HOLES.

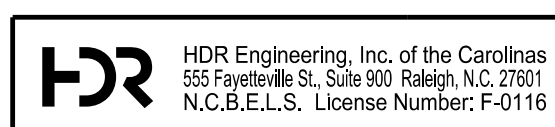
PROJECT NO. 17BP.8.R.121
MOORE COUNTY
 STATION: 22+68.50 -L-
 SHEET 2 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
FOUNDATION LAYOUT

DRAWN BY :	D. H. CARTER	DATE :	JUN 2018
CHECKED BY :	M. K. CHRISTIAN	DATE :	JUN 2018
DESIGN ENGINEER OF RECORD :	M. T. NEIHEISEL	DATE :	JUN 2018

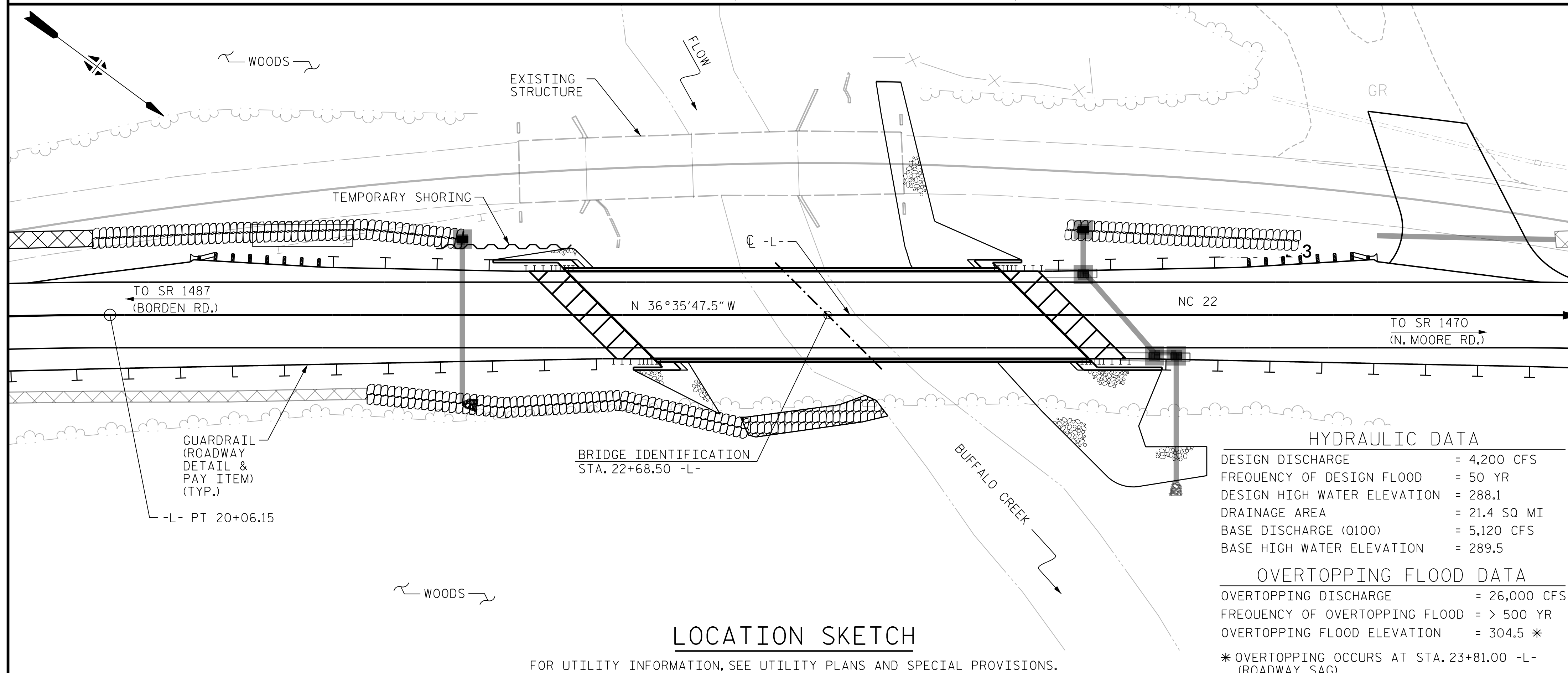


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			33

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLOT DRIVER: NCDOT STRUCTURES DEFAULT PLOTTER.PH
 USER: MNEIHEIS DATE: 6/1/2018 TIME: 4:07:16 PM
 FILE: ... \NCAD\3.0 FinalPlans\0310

BENCH MARK #2 : BENCH TIE SPIKE IN 15" OAK, 96' LT. OF STA. 24+26 -L-, EL. 302.75



LOCATION SKETCH

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

GENERAL 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 S-33.
 FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
 FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
 FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
 FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
 REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
 NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 22+68.50."

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 24.5 FT LEFT AND 36.5 FT RIGHT 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.

FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS. FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.

AFTER SERVING AS A TEMPORARY STRUCTURE THE EXISTING STRUCTURE BRIDGE #63 CONSISTING OF 4 SPANS, (1 @ 24'-10 1/2", 1 @ 38'-9", 1 @ 38'-10", 1 @ 38'-7") WITH REINFORCED CONCRETE DECK AND 5" ASPHALT WEARING SURFACE ON STEEL I-BEAMS AND CLEAR ROADWAY WIDTH OF 24'-0" ON REINFORCED CONCRETE SPILL THROUGH END BENTS AND REINFORCED CONCRETE POST AND BEAM BENTS ON TOP OF WALL BENTS AND LOCATED 55'-0" UPSTREAM FROM PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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

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

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

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 1 IS ELEVATION 271.80. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.

HYDRAULIC DATA

DESIGN DISCHARGE	= 4,200 CFS
FREQUENCY OF DESIGN FLOOD	= 50 YR
DESIGN HIGH WATER ELEVATION	= 288.1
DRAINAGE AREA	= 21.4 SQ MI
BASE DISCHARGE (Q100)	= 5,120 CFS
BASE HIGH WATER ELEVATION	= 289.5

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 26,000 CFS
FREQUENCY OF OVERTOPPING FLOOD	= > 500 YR
OVERTOPPING FLOOD ELEVATION	= 304.5 *

* OVERTOPPING OCCURS AT STA. 23+81.00 -L- (ROADWAY SAG)

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE AT STATION 22+68.50 -L-	ASBESTOS ASSESSMENT	PILE EXCAVATION IN SOIL	PILE EXCAVATION NOT IN SOIL	4'-0" DIA. DRILLED PIER IN SOIL	4'-0" DIA. DRILLED PIER NOT IN SOIL	PERMANENT STEEL CASING FOR 4'-0" DIA. DRILLED PIER	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION AT STATION 22+68.50 -L-	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS, AT STATION 22+68.50 -L-	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL
	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	EA.	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	LBS.
SUPERSTRUCTURE										5,345	5,377		LUMP SUM		
END BENT NO. 1			20	80										11,285	
BENT NO. 1					23.6	24	30							13,285	2,440
END BENT NO. 2														10,626	
TOTAL	LUMP SUM	LUMP SUM	20	80	23.6	24	30	1	LUMP SUM	5,345	5,377	180.5	LUMP SUM	35,196	2,440

TOTAL BILL OF MATERIAL

	MODIFIED 63" PRESTRESSED CONCRETE GIRDERS	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	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	FOAM JOINT SEALS
	NO. LIN. FT.	EA.	NO. LIN. FT.	EA.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE	8 607.00				311.88			LUMP SUM	LUMP SUM
END BENT NO. 1			10 150			81	89		
BENT NO. 1									
END BENT NO. 2		8	8 160	8		510	566		
TOTAL	8 607.00	8	18 310	8	311.88	591	655	LUMP SUM	LUMP SUM

PROJECT NO. 17BP.8.R.121

MOORE COUNTY

STATION: 22+68.50 -L-

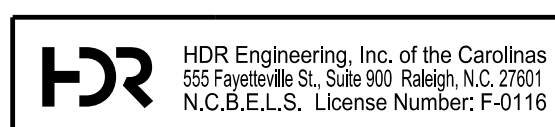
SHEET 3 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 LOCATION SKETCH
 AND GENERAL NOTES

DRAWN BY : D. H. CARTER DATE : JUN 2018
 CHECKED BY : A. E. SMITH DATE : JUN 2018
 DESIGN ENGINEER OF RECORD : M. T. NEIHEISEL DATE : JUN 2018



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS 33
2			4			

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LOAD AND RESISTANCE FACTOR RATING (LRFR) 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			
						MOMENT					SHEAR					MOMENT								
						LIVE-LOAD FACTORS (γ _L)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	LIVE-LOAD FACTORS (γ _L)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.02	--	1.75	0.78	1.24	A	EL, ER	50.48	1.03	1.42	A	I	91.43	0.80	0.78	1.02	A	EL, ER	50.48		
	HL-93 (OPERATING)	N/A		1.61	--	1.35	0.78	1.61	A	EL, ER	50.48	1.03	1.87	A	I	91.43	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	②	1.43	51.48	1.75	0.78	1.74	A	EL, ER	50.48	1.03	1.94	A	I	91.43	0.80	0.78	1.43	A	EL, ER	50.48		
	HS-20 (OPERATING)	36.000		2.25	81.00	1.35	0.78	2.25	A	EL, ER	50.48	1.03	2.55	A	I	91.43	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.40	45.90	1.40	0.78	5.16	A	EL, ER	50.48	1.03	6.19	A	I	100.96	0.80	0.78	3.40	A	EL, ER	50.48	
		SNGARBS2	20.000		2.46	49.20	1.40	0.78	3.73	A	EL, ER	50.48	1.03	4.30	A	I	9.53	0.80	0.78	2.46	A	EL, ER	50.48	
		SNAGRIS2	22.000		2.30	50.60	1.40	0.78	3.49	A	EL, ER	50.48	1.03	3.96	A	I	91.43	0.80	0.78	2.30	A	EL, ER	50.48	
		SNCOTTS3	27.250		1.69	46.05	1.40	0.78	2.57	A	EL, ER	50.48	1.03	3.03	A	I	91.43	0.80	0.78	1.69	A	EL, ER	50.48	
		SNAGGRS4	34.925		1.38	48.20	1.40	0.78	2.10	A	EL, ER	50.48	1.03	2.45	A	I	91.43	0.80	0.78	1.38	A	EL, ER	50.48	
		SNS5A	35.550		1.35	47.99	1.40	0.78	2.06	A	EL, ER	50.48	1.03	2.46	A	I	91.43	0.80	0.78	1.35	A	EL, ER	50.48	
		SNS6A	39.950		1.23	49.14	1.40	0.78	1.87	A	EL, ER	50.48	1.03	2.22	A	I	9.53	0.80	0.78	1.23	A	EL, ER	50.48	
	SNS7B	42.000		1.17	49.14	1.40	0.78	1.78	A	EL, ER	50.48	1.03	2.15	A	I	91.43	0.80	0.78	1.17	A	EL, ER	50.48		
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.50	49.50	1.40	0.78	2.27	A	EL, ER	50.48	1.03	2.67	A	I	9.53	0.80	0.78	1.50	A	EL, ER	50.48	
		TNT4A	33.075		1.50	49.61	1.40	0.78	2.28	A	EL, ER	50.48	1.03	2.62	A	I	91.43	0.80	0.78	1.50	A	EL, ER	50.48	
		TNT6A	41.600		1.22	50.75	1.40	0.78	1.85	A	EL, ER	50.48	1.03	2.26	A	I	91.43	0.80	0.78	1.22	A	EL, ER	50.48	
		TNT7A	42.000		1.22	51.24	1.40	0.78	1.85	A	EL, ER	50.48	1.03	2.22	A	I	91.43	0.80	0.78	1.22	A	EL, ER	50.48	
		TNT7B	42.000		1.24	52.08	1.40	0.78	1.89	A	EL, ER	50.48	1.03	2.12	A	I	91.43	0.80	0.78	1.24	A	EL, ER	50.48	
		TNAGRIT4	43.000		1.19	51.17	1.40	0.78	1.81	A	EL, ER	50.48	1.03	2.05	A	I	91.43	0.80	0.78	1.19	A	EL, ER	50.48	
TNAGT5A		45.000		1.13	50.85	1.40	0.78	1.72	A	EL, ER	50.48	1.03	2.01	A	I	91.43	0.80	0.78	1.13	A	EL, ER	50.48		
TNAGT5B	45.000	③	1.12	50.40	1.40	0.78	1.70	A	EL, ER	50.48	1.03	1.95	A	I	91.43	0.80	0.78	1.12	A	EL, ER	50.48			

LOAD FACTORS:

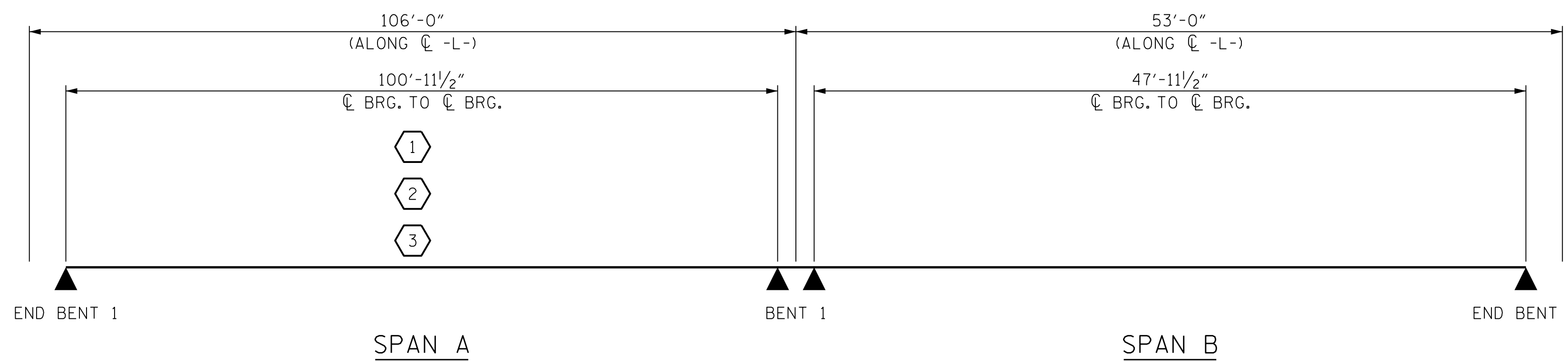
DESIGN LOAD RATING FACTORS	LIMIT STATE	γ _{DC}	γ _{DW}
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

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.

DISTANCE FROM LEFT END OF SPAN IS GIVEN WITH RESPECT TO THE CENTERLINE OF BEARING AND IS MEASURED ALONG THE CONTROLLING GIRDER.



③ 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

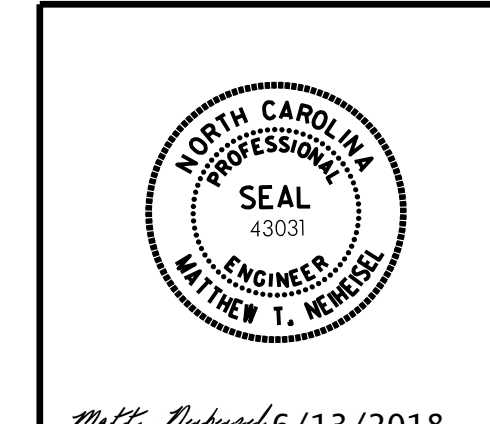
I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER

PROJECT NO. 17BP.8.R.121

MOORE COUNTY

STATION: 22+68.50 -L-

SHEET 4 OF 4



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

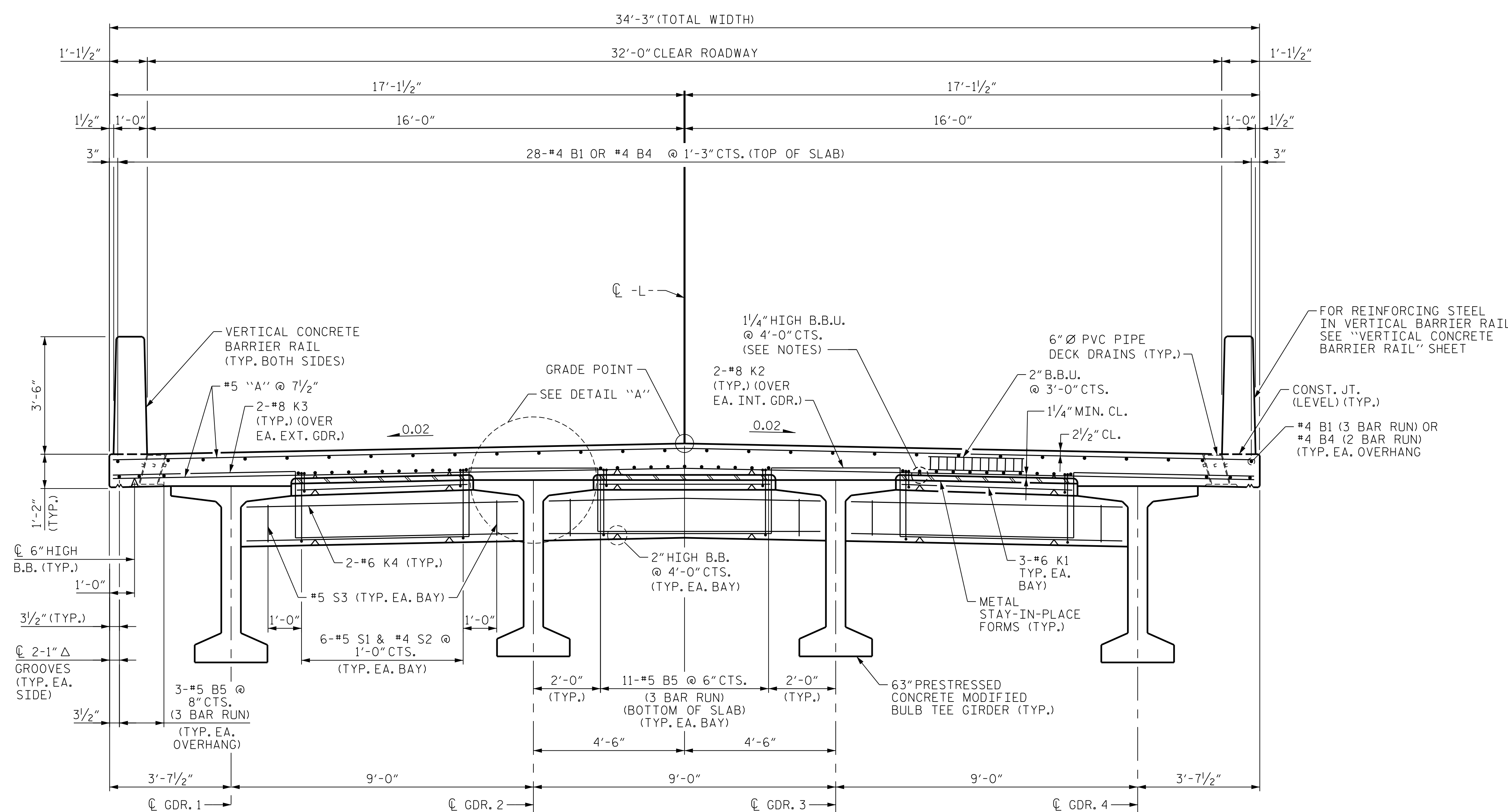
GENERAL DRAWING
LRFR SUMMARY FOR
PRESTRESSED
CONCRETE GIRDERS
(NON-INTERSTATE TRAFFIC)

DRAWN BY : D. H. CARTER DATE : JUN 2018
 CHECKED BY : A. E. SMITH DATE : JUN 2018
 DESIGN ENGINEER OF RECORD: M. T. NEIHEISEL DATE : JUN 2018

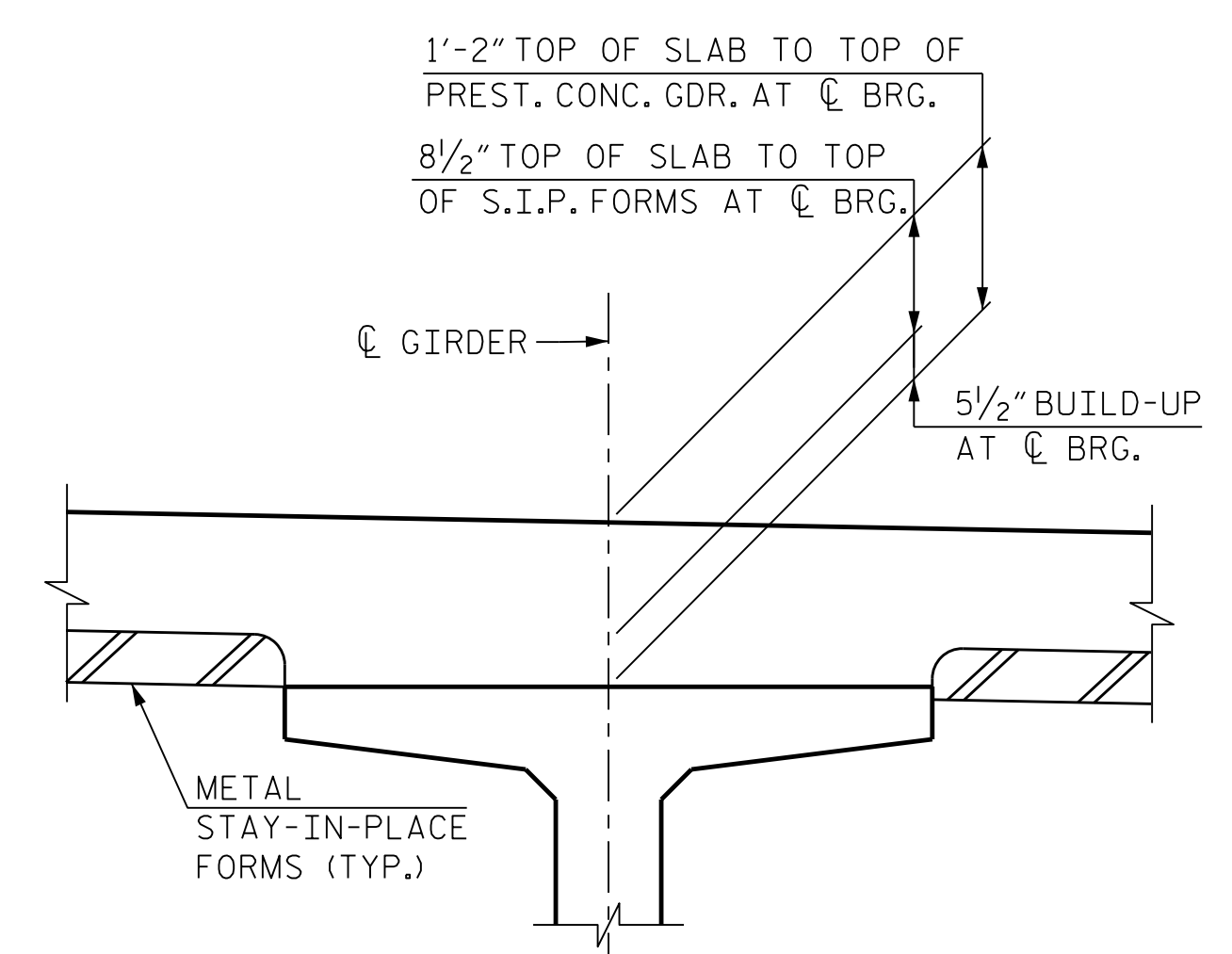
HDR HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			33

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TYPICAL SECTION AT END BENT DIAPHRAGMS



DETAIL "A"
(TYPICAL EACH GIRDER)

NOTES:

PROVIDE 1 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF "A" BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 2 1/2" ABOVE THE TOP OF THE REMOVABLE FORM.

LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS AND 6" Ø PIPE DRAINS.

PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

VERTICAL BARRIER RAIL IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

FOR REINFORCING STEEL IN VERTICAL BARRIER RAIL SEE "VERTICAL CONCRETE BARRIER RAIL" SHEET

CONST. JT. (LEVEL) (TYP.)
#4 B1 (3 BAR RUN) OR #4 B4 (2 BAR RUN) (TYP. EA. OVERHANG)

PROJECT NO. 17BP.8.R.121

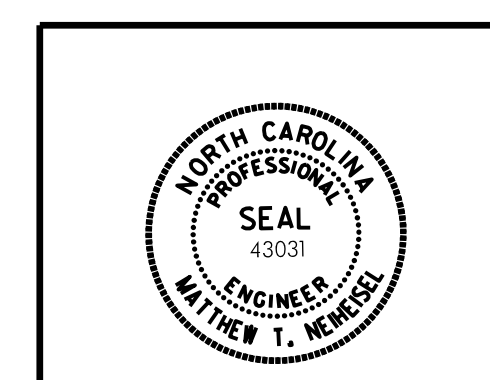
MOORE COUNTY

STATION: 22+68.50 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
TYPICAL SECTION



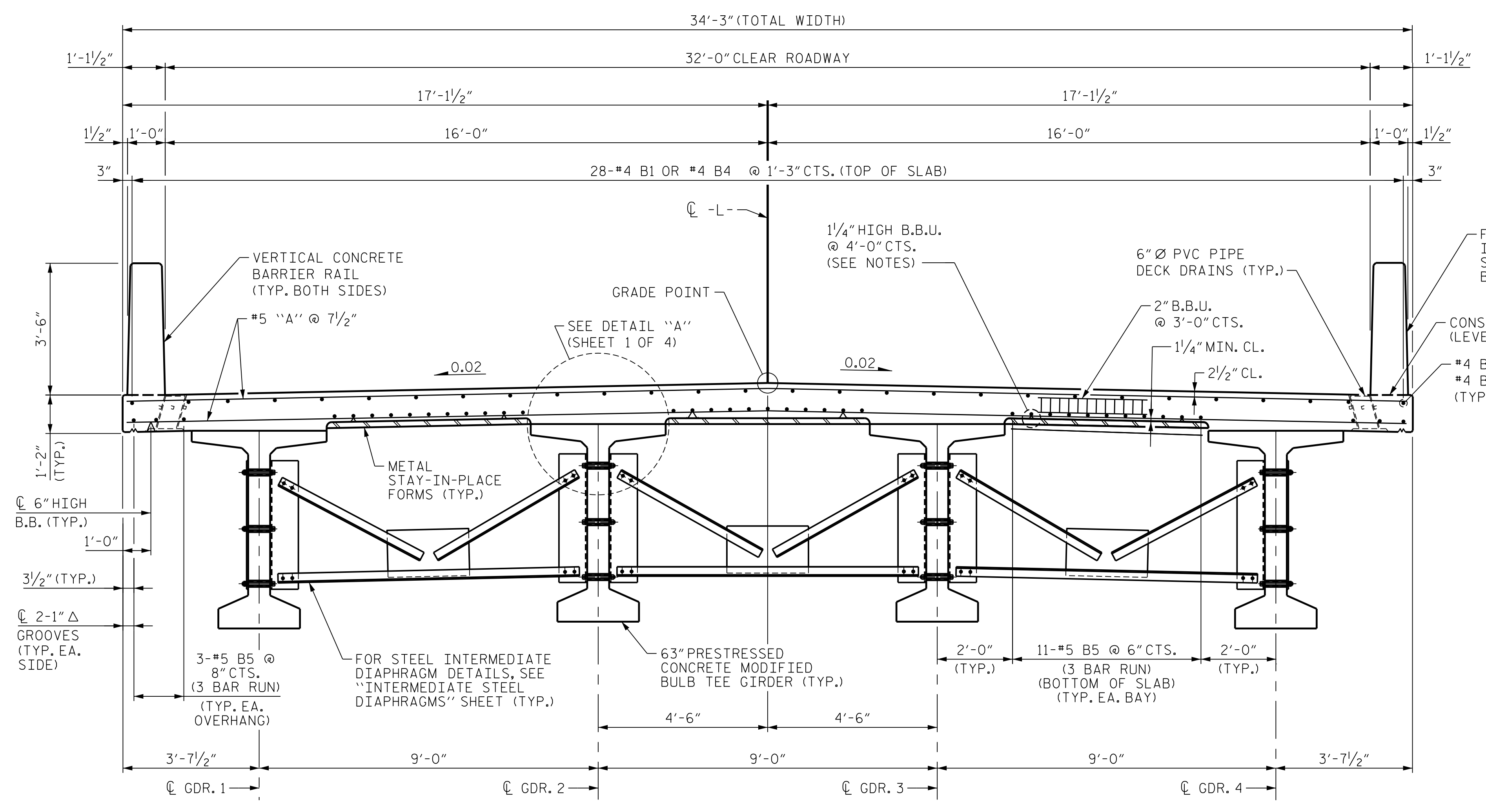
Matthew T. Nemmel 6/13/2018

REVISIONS						SHEET NO.
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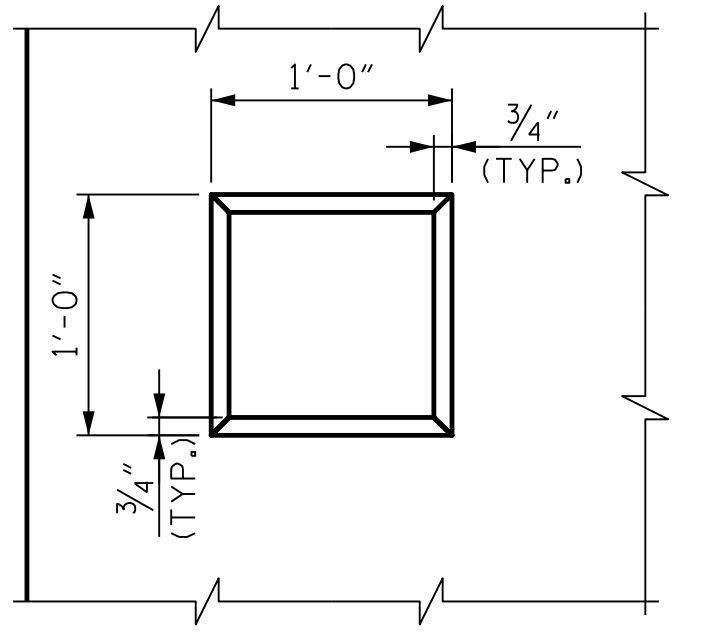
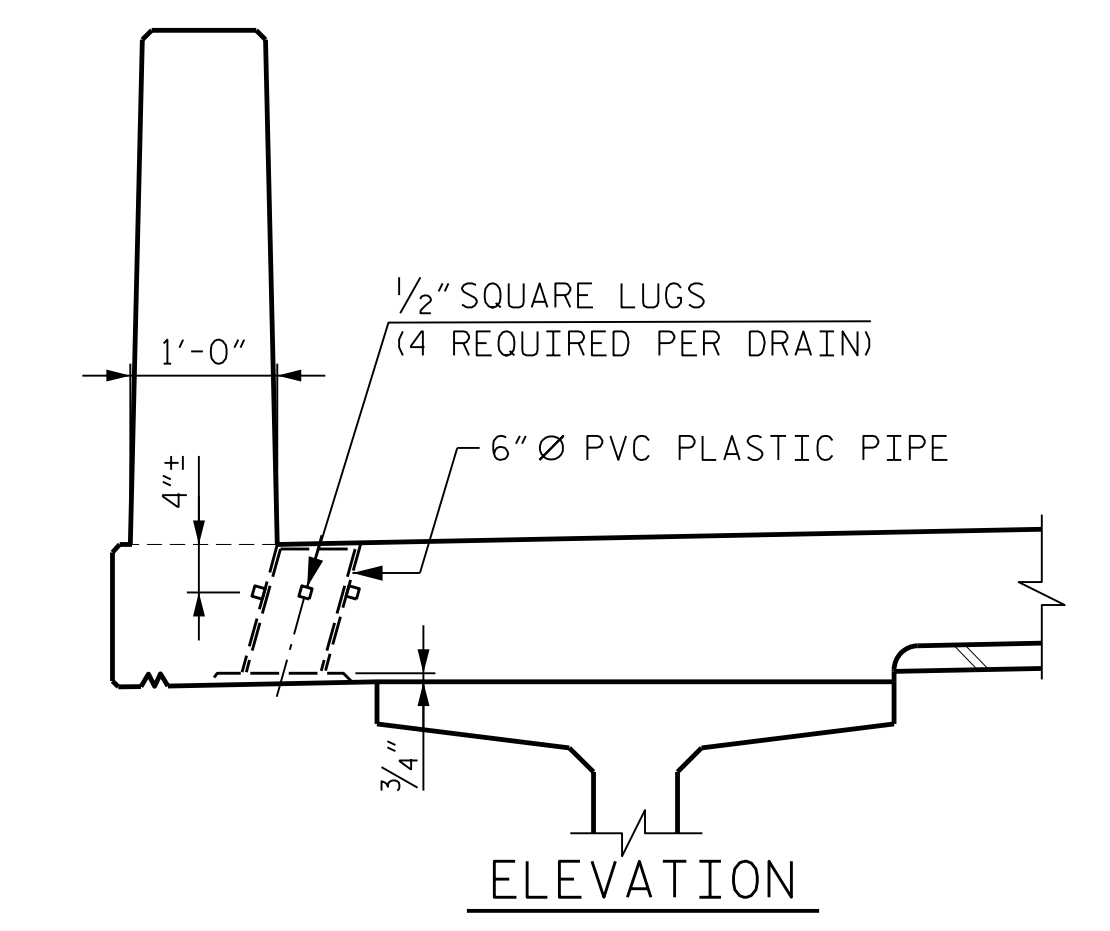
HDR HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C. B.E.L.S. License Number: F-0116

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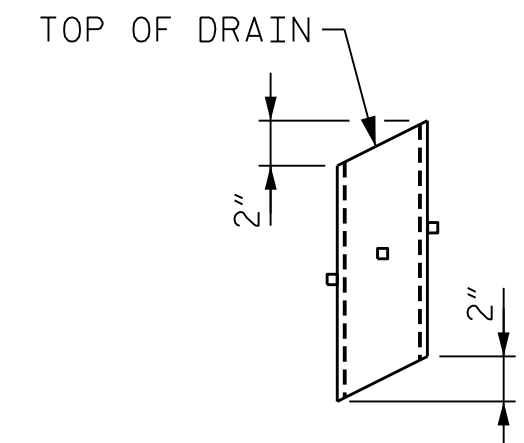
DRAWN BY : D. H. CARTER DATE : JUN 2018
CHECKED BY : M. K. CHRISTIAN DATE : JUN 2018
DESIGN ENGINEER OF RECORD: M. T. NEIHEISEL DATE : JUN 2018



TYPICAL SECTION AT INTERMEDIATE DIAPHRAGMS



PLAN OF RECESS

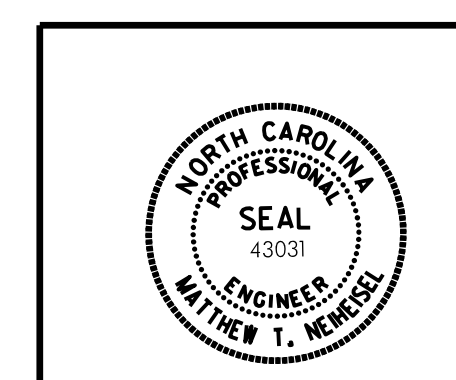


PIPE DETAIL (18 DRAINS REQUIRED) DRAIN DETAILS

FOR DRAIN SPACING, SEE "PLAN OF SPANS" SHEETS.
 TOP OF FLOOR DRAIN TO BE SET 3/8" BELOW SURFACE OF SLAB.
 4 - 1/2" SQUARE LUGS TO BE GLUED TO THE PVC PLASTIC PIPE AT EQUAL SPACES AROUND THE PIPE DRAIN APPROXIMATELY 4" FROM THE TOP OF THE PIPE.
 THE 6" Ø PVC PLASTIC PIPE AND FITTINGS SHALL BE SCHEDULE 40 AND CONFORM TO ASTM D1785.

PROJECT NO. 17BP.8.R.121
 MOORE COUNTY
 STATION: 22+68.50 -L-
 SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 TYPICAL SECTION



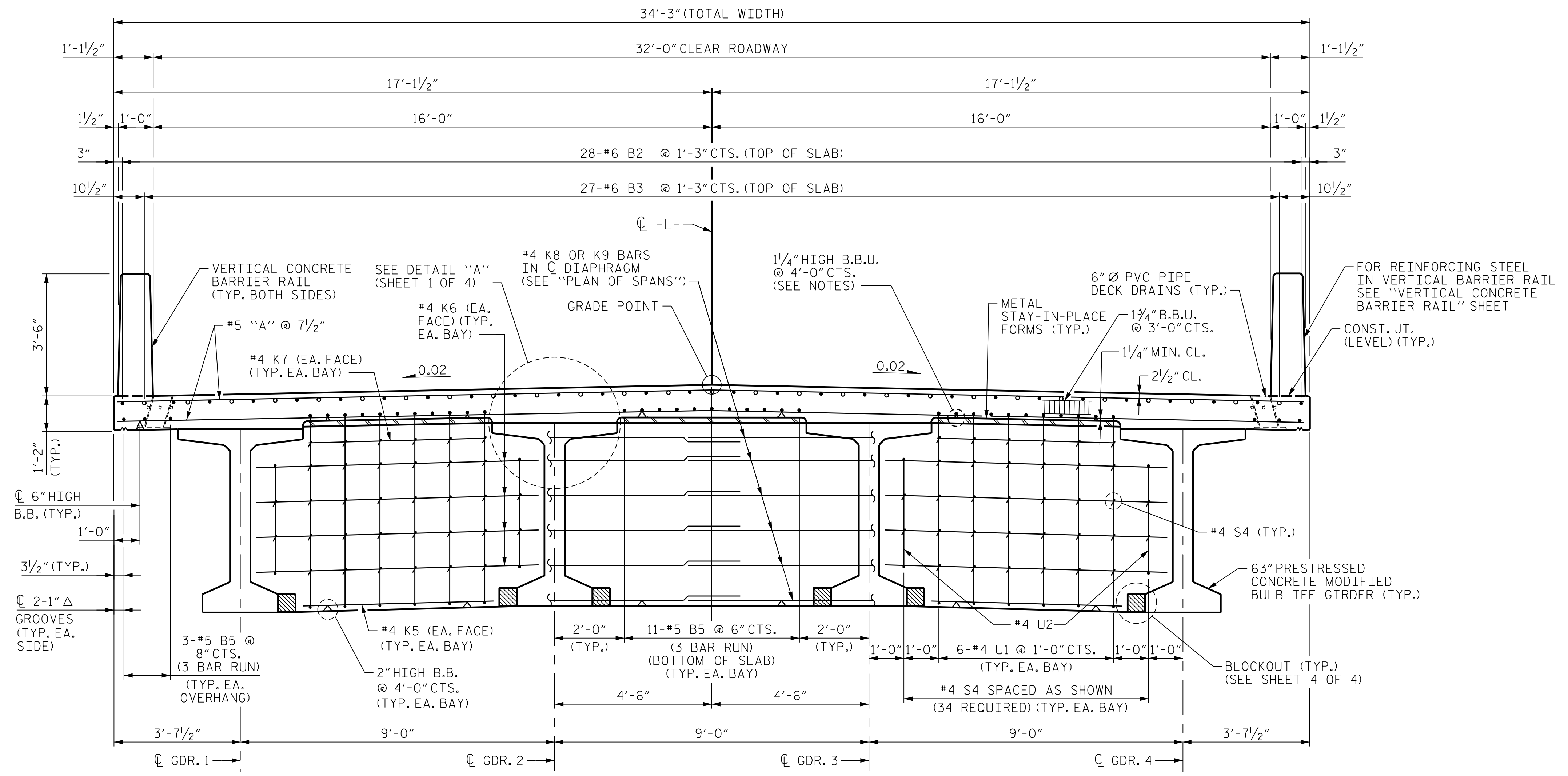
Matthew T. Nemisz 6/13/2018

DRAWN BY : D. H. CARTER DATE : JUN 2018
 CHECKED BY : M. K. CHRISTIAN DATE : JUN 2018
 DESIGN ENGINEER OF RECORD : M. T. NEIHEISEL DATE : JUN 2018

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			TOTAL SHEETS
2			4			33

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TYPICAL SECTION AT BENT DIAPHRAGMS

PROJECT NO. 17BP.8.R.121
 MOORE COUNTY
 STATION: 22+68.50 -L-
 SHEET 3 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 TYPICAL SECTION



Matthew Neiheisel 6/13/2018

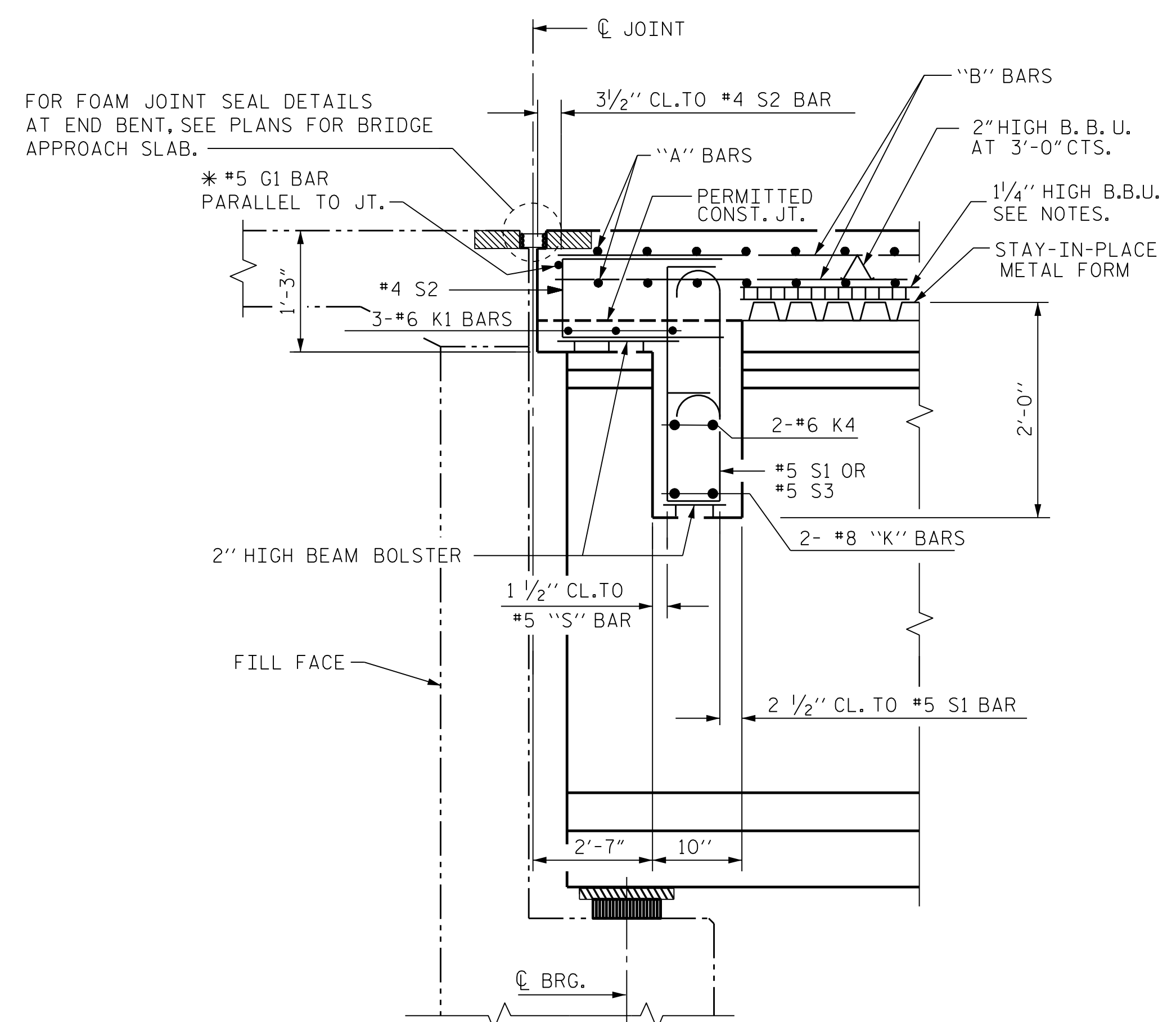
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DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

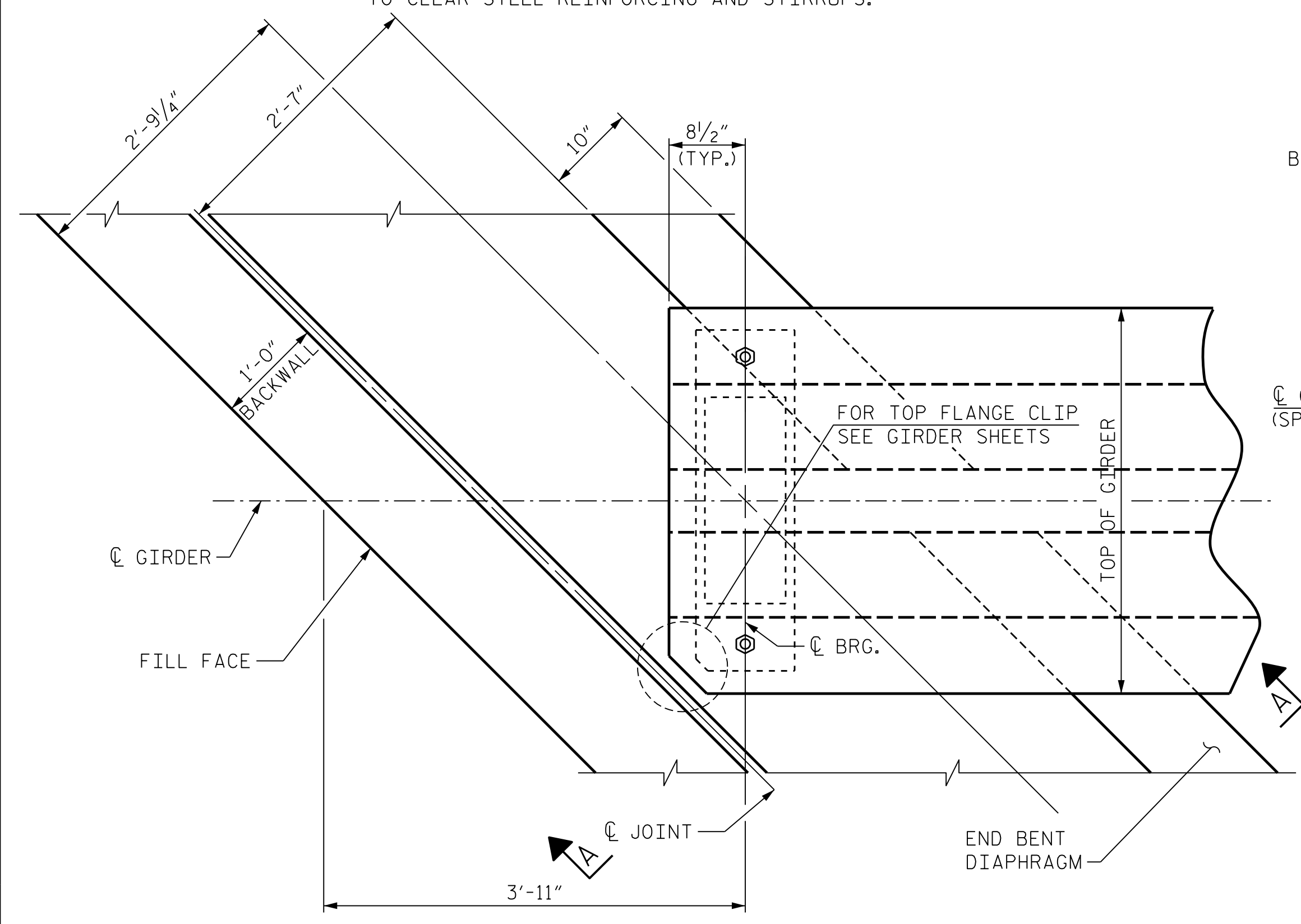
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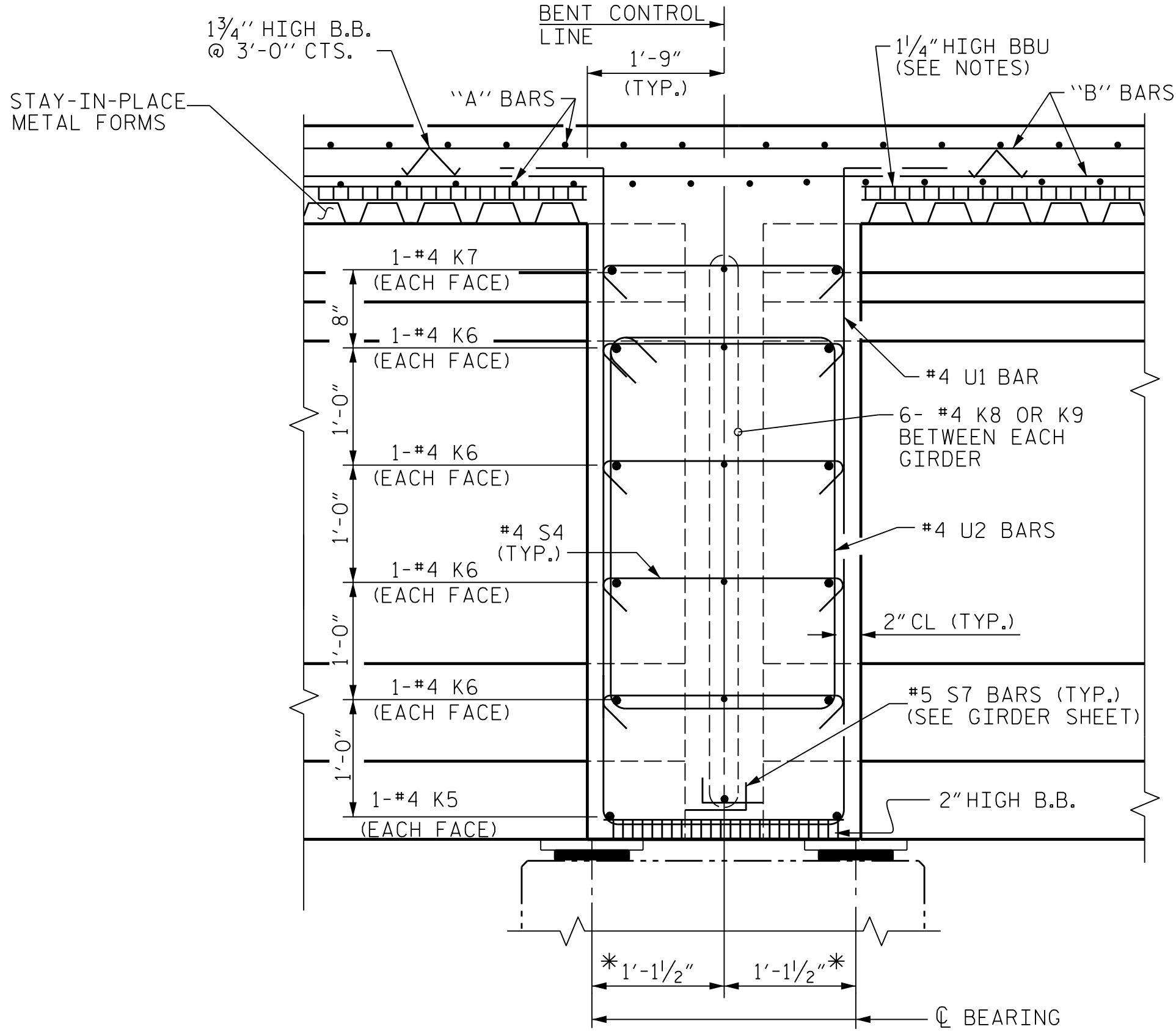
SECTION A-A
SECTION THRU END BENT DIAPHRAGM

* #5 G1 BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR STEEL REINFORCING AND STIRRUPS.



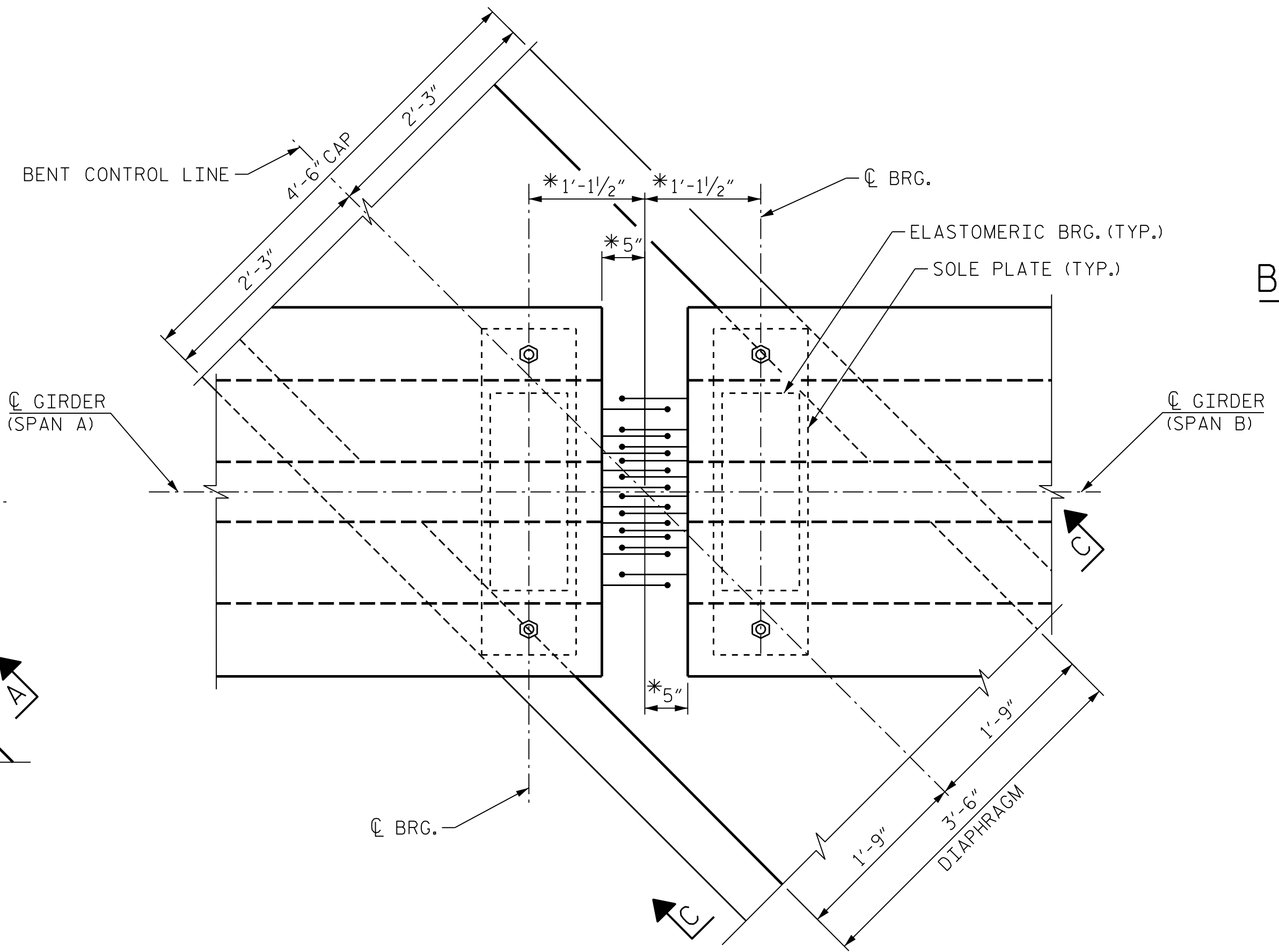
END BENT DIAPHRAGM
 (END BENT 1 SHOWN, END BENT 2 SIMILAR)

DRAWN BY : D. H. CARTER DATE : JUN 2018
 CHECKED BY : M. K. CHRISTIAN DATE : JUN 2018
 DESIGN ENGINEER OF RECORD : M. T. NEIHEISEL DATE : JUN 2018

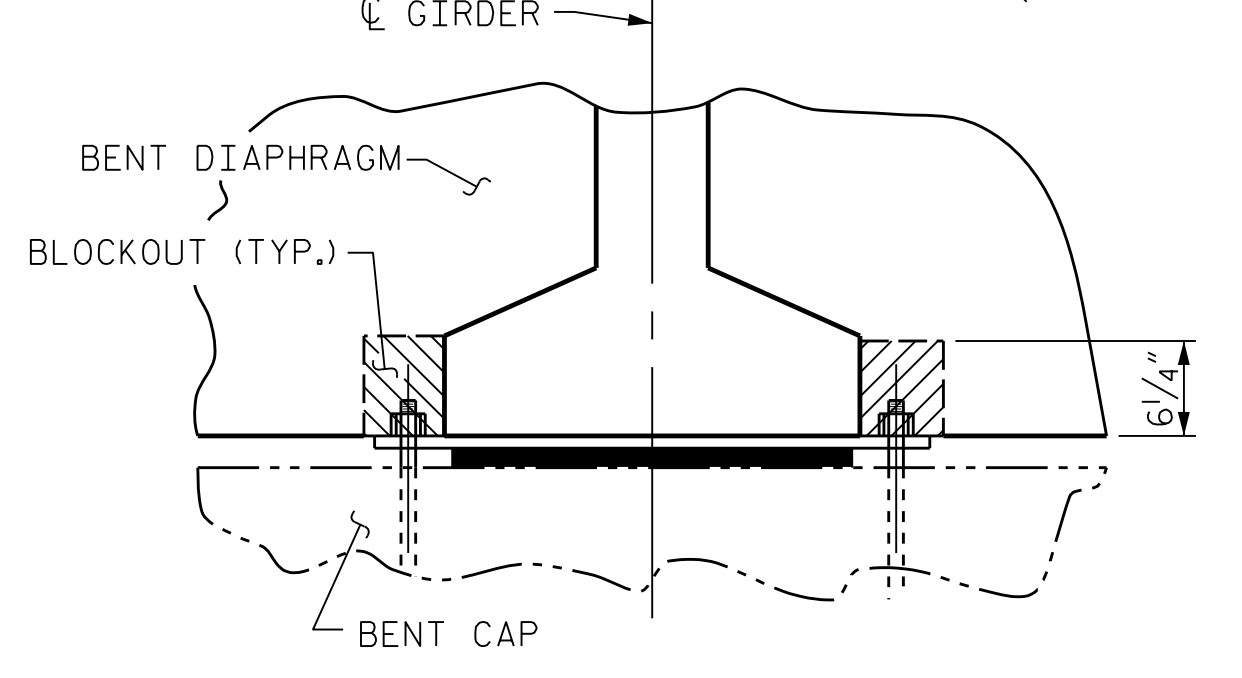
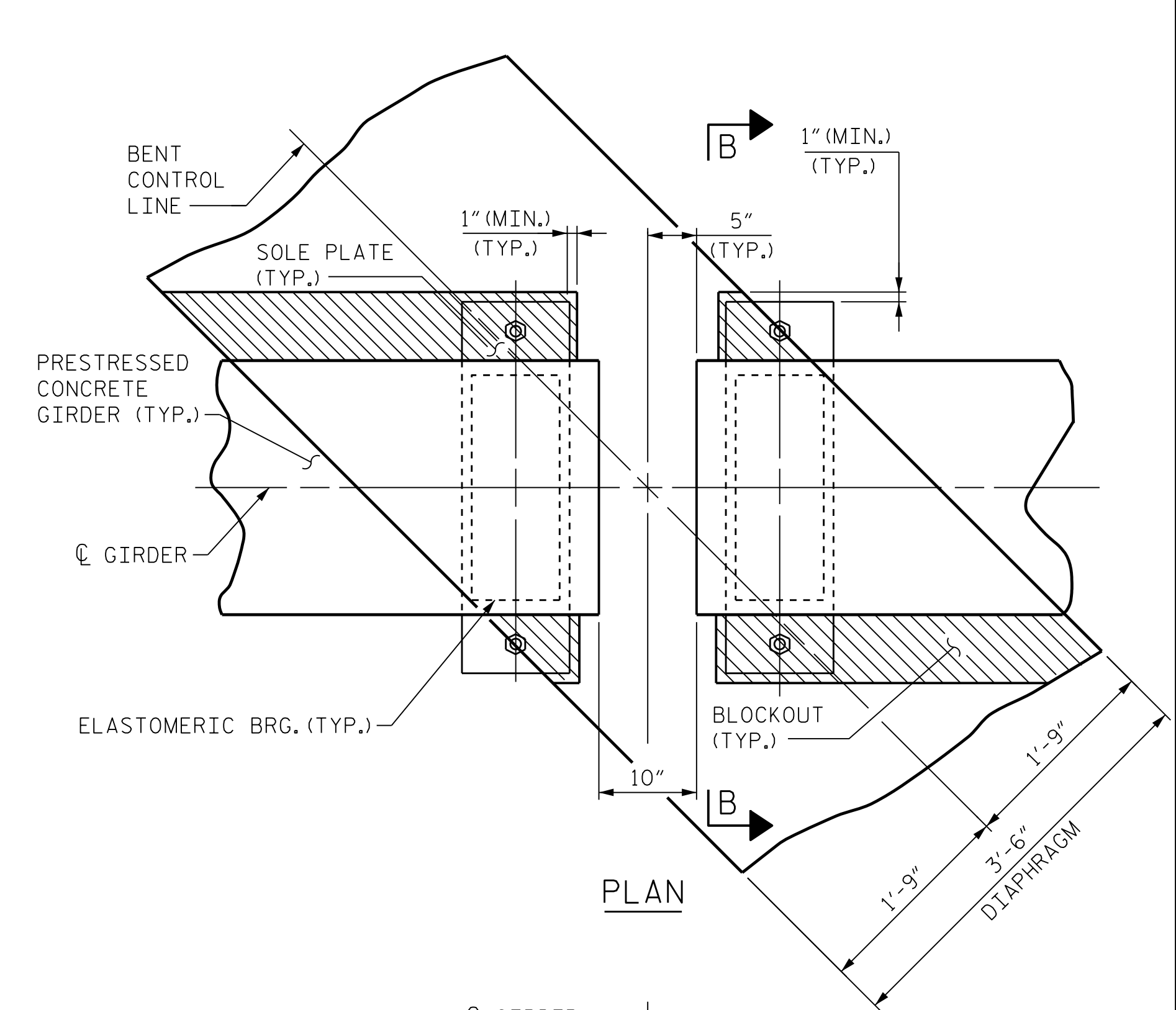


SECTION C-C
SECTION THRU BENT 1 DIAPHRAGM

(DIMENSIONS SHOWN ARE NORMAL TO THE BENT EXCEPT AS NOTED)
 * MEASURED ALONG \bar{C} GIRDER



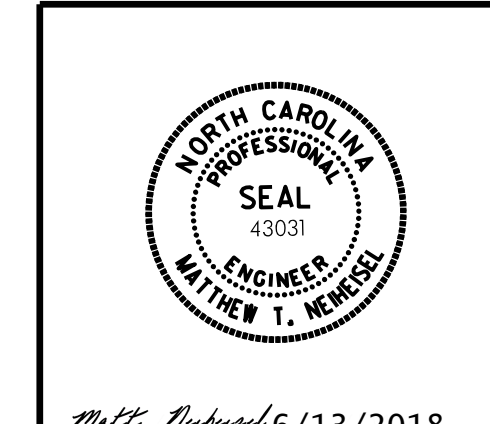
BENT 1 DIAPHRAGM
 (CONTINUOUS DECK SLAB NOT SHOWN FOR CLARITY)
 * MEASURED ALONG \bar{C} GIRDER



SECTION B-B

BENT DIAPHRAGM BLOCKOUT DETAIL

PROJECT NO. 17BP.8.R.121
 MOORE COUNTY
 STATION: 22+68.50 -L-
 SHEET 4 OF 4



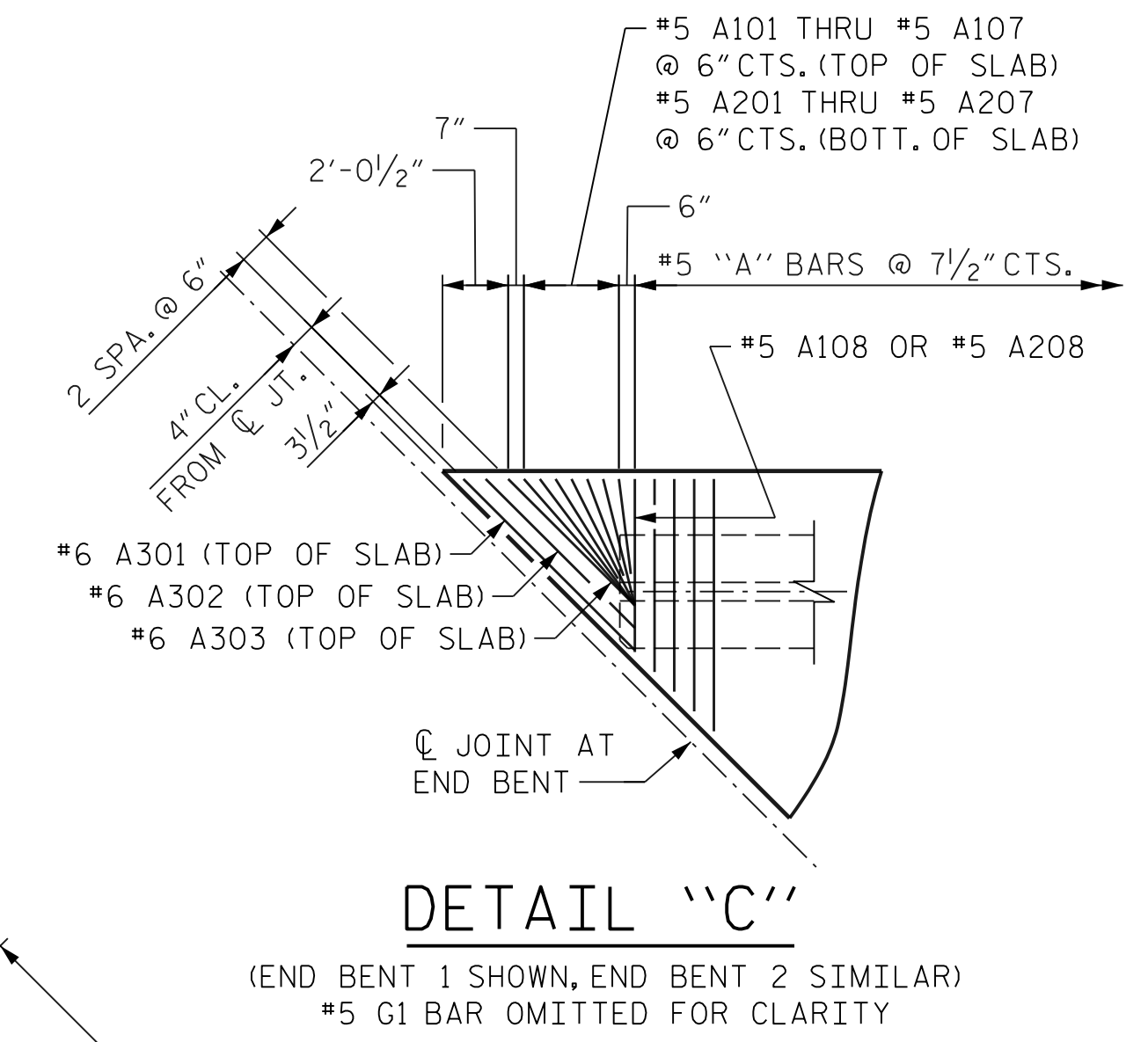
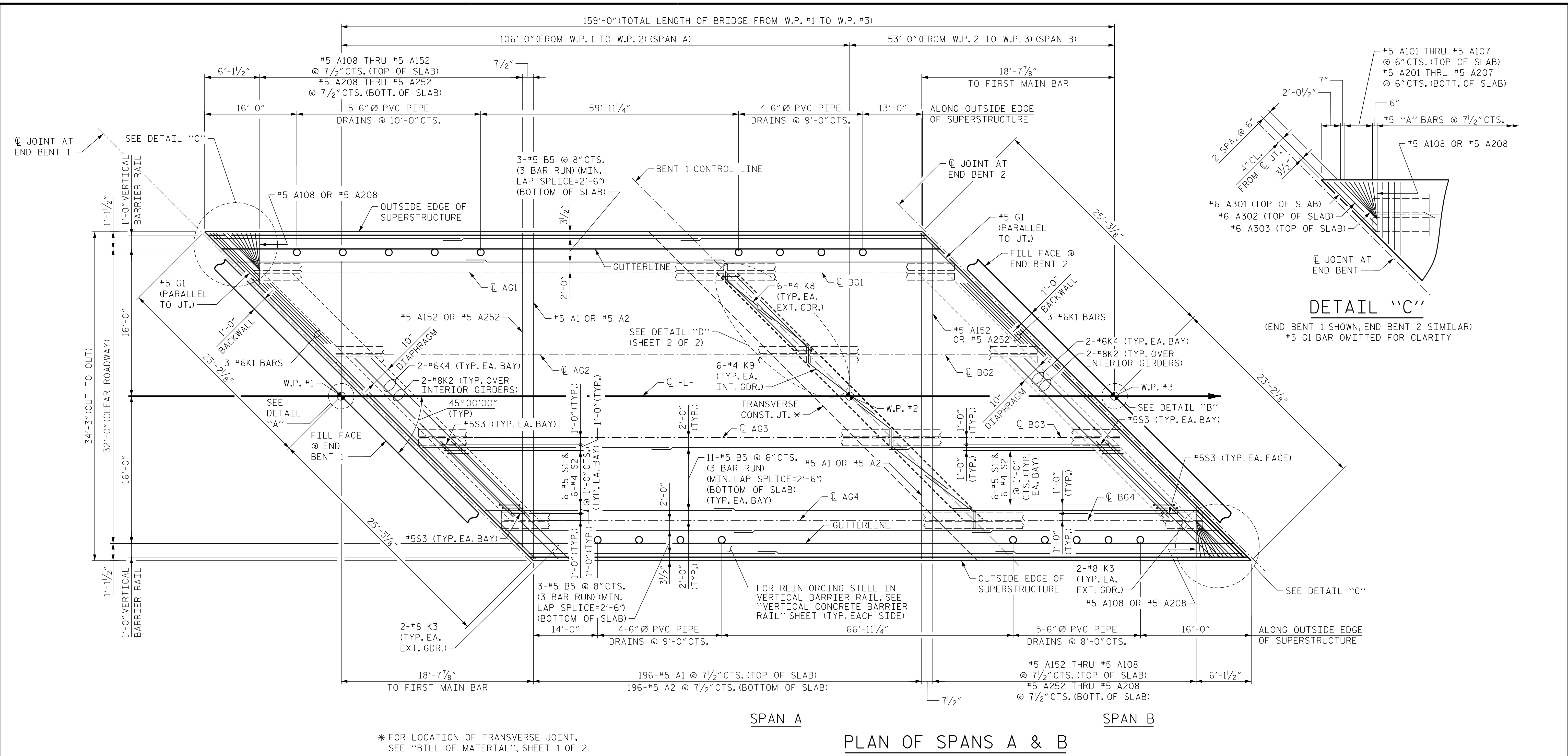
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 TYPICAL SECTION DETAILS

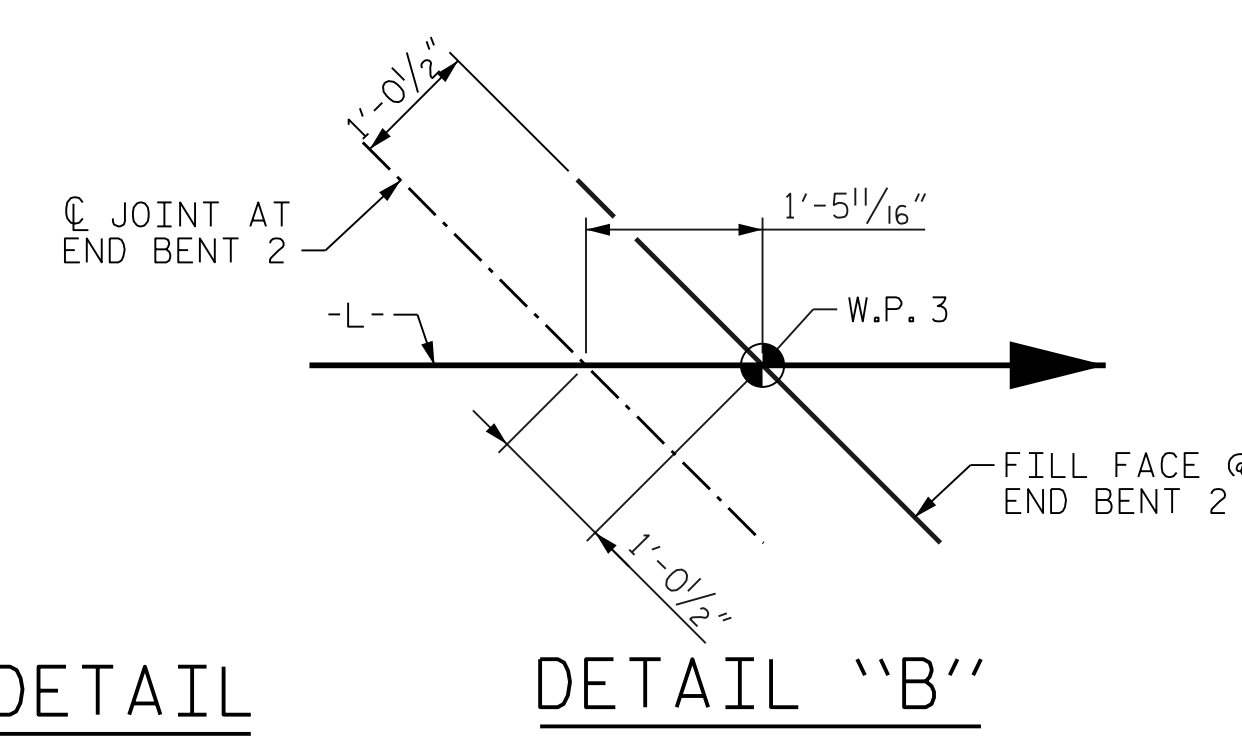
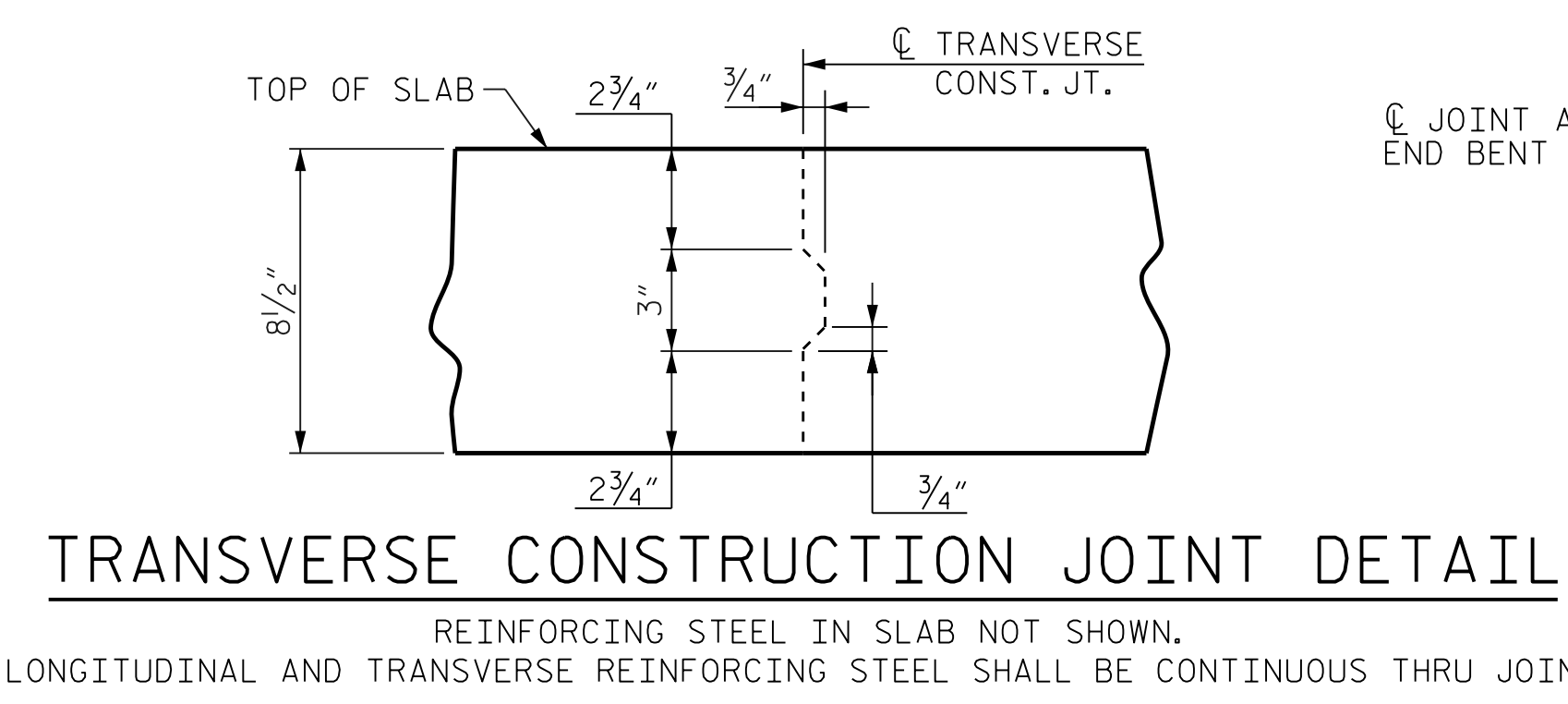
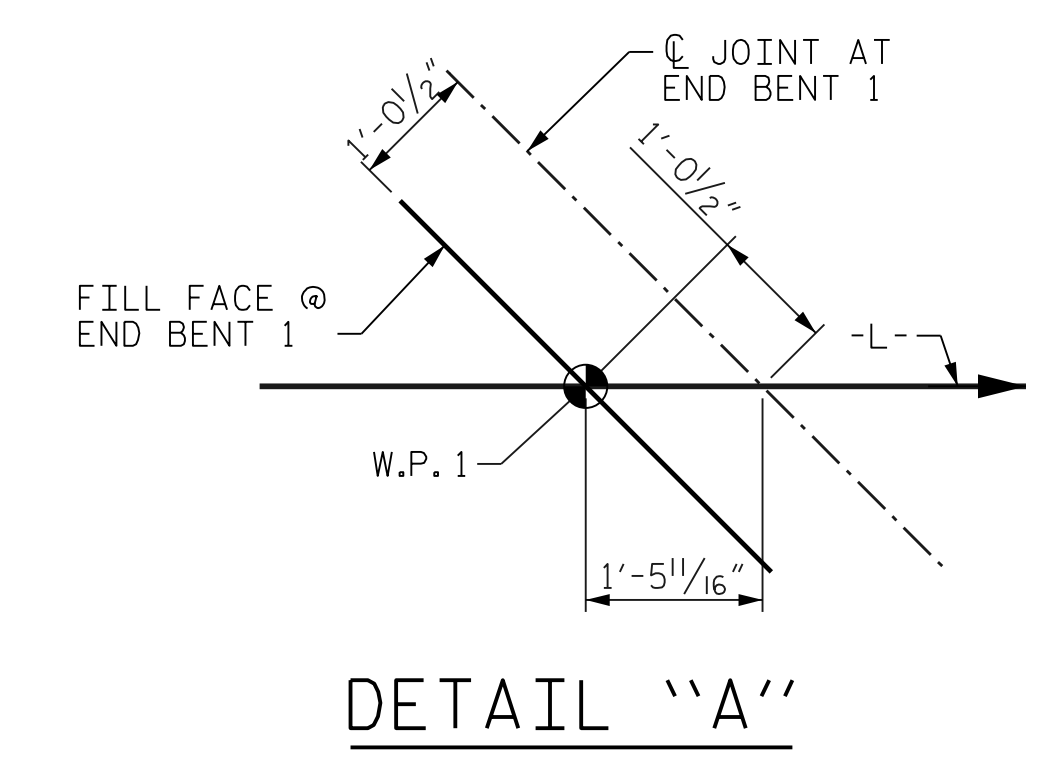
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			33

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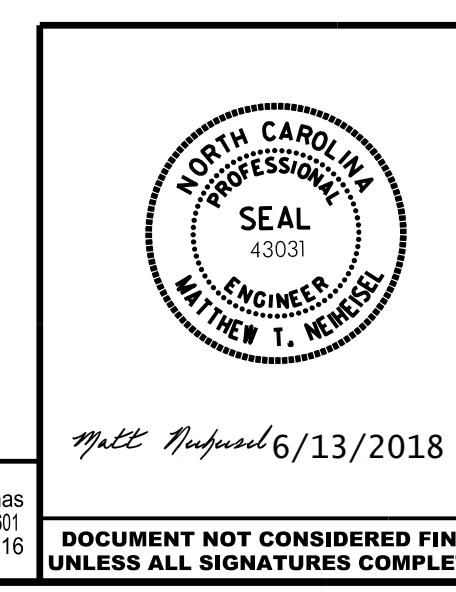


PLAN OF SPANS A & B
 FOR LONGITUDINAL BARS IN TOP OF SLAB, SEE "B BAR LAYOUT" SHEET.
 * FOR LOCATION OF TRANSVERSE JOINT, SEE "BILL OF MATERIAL", SHEET 1 OF 2.



PROJECT NO. 17BP.8.R.121
 MOORE COUNTY
 STATION: 22+68.50 -L-
 SHEET 1 OF 2

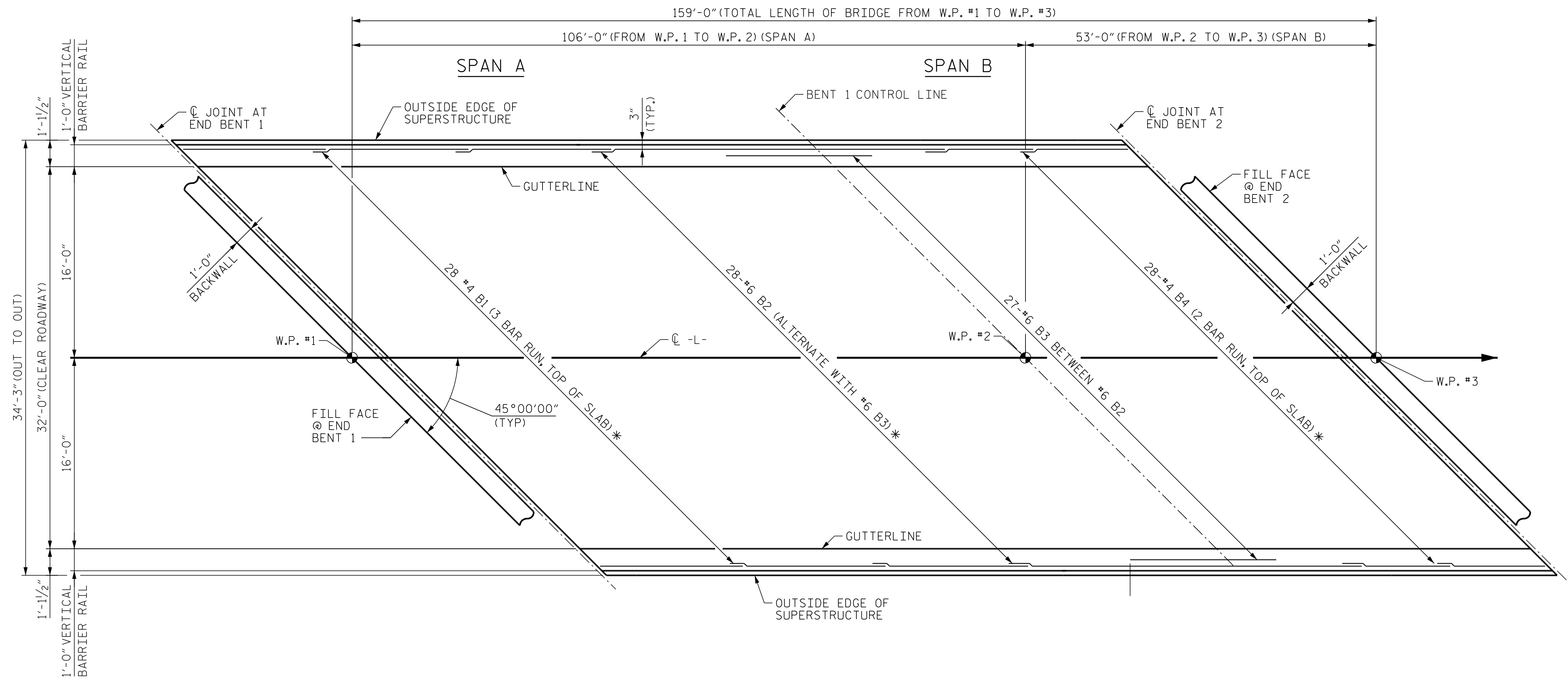
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE					
PLAN OF SPANS SPANS A & B					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-9					TOTAL SHEETS 33



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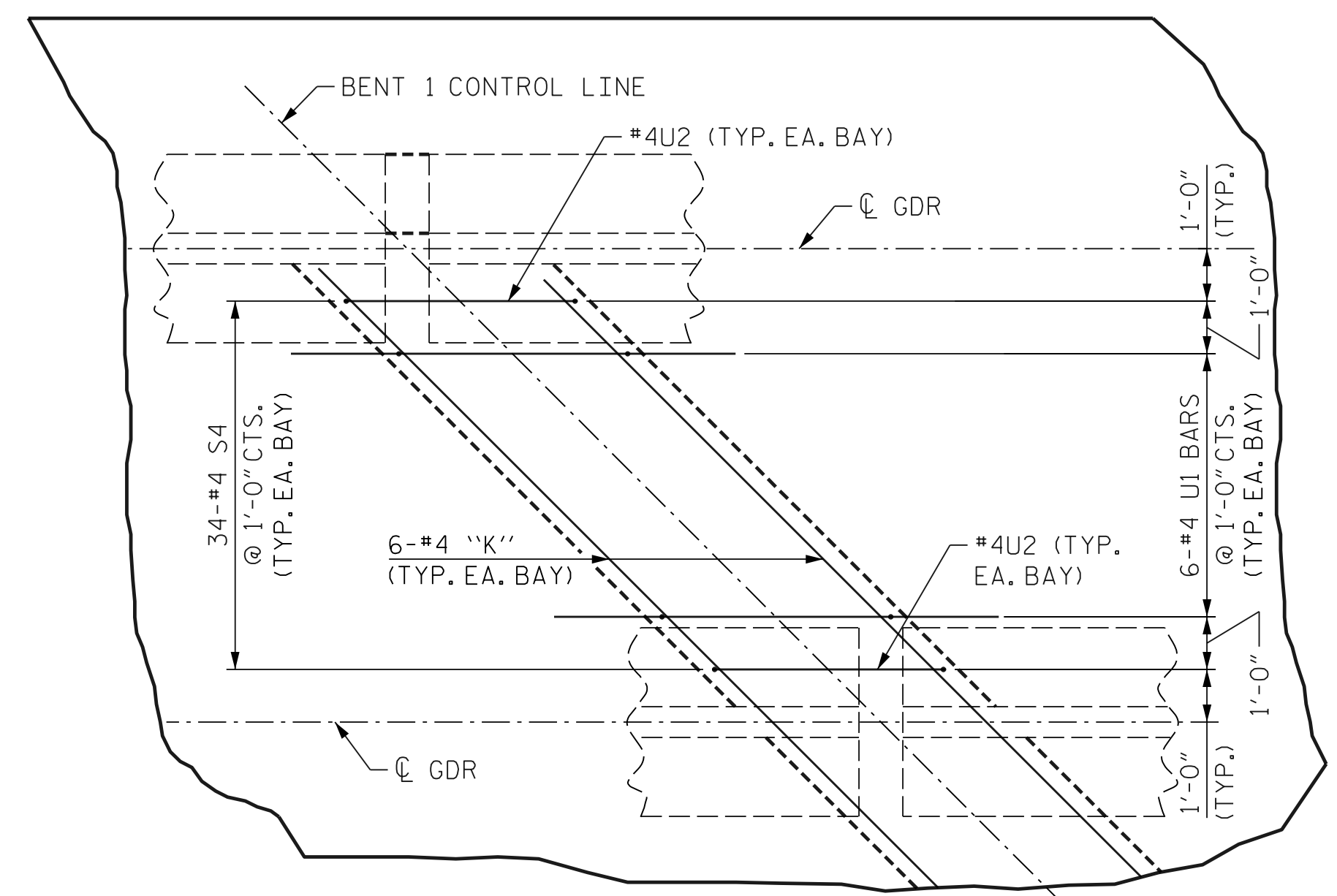
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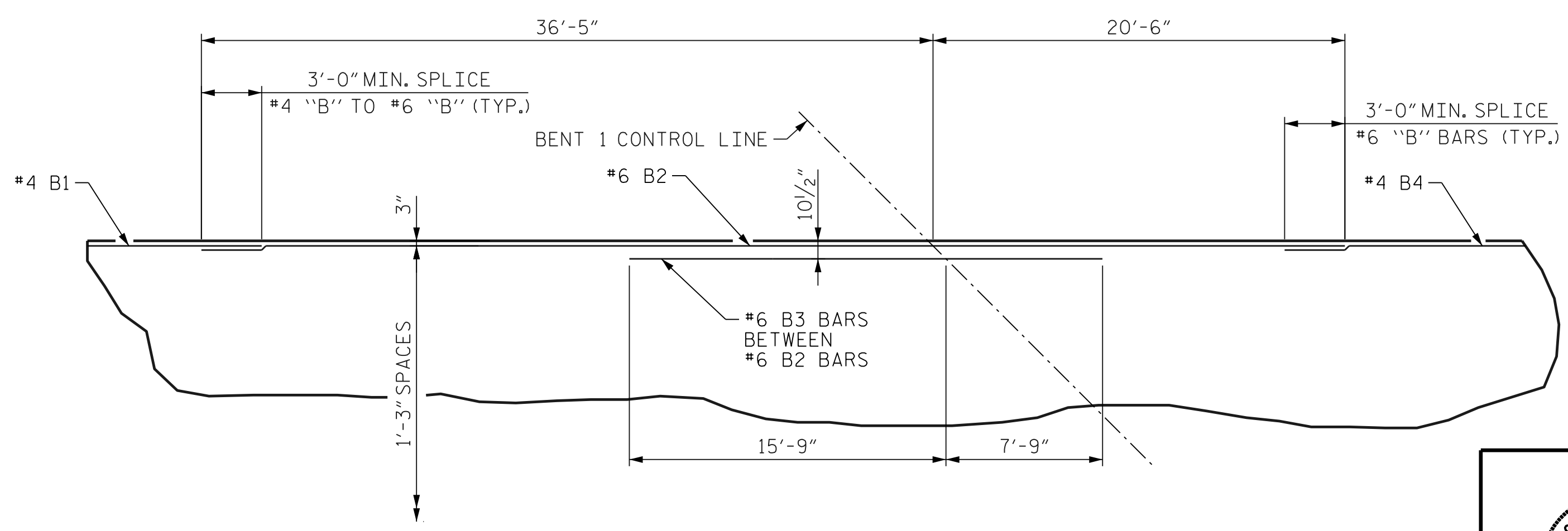


* SEE PARTIAL PLAN OF TOP "B" BARS

PLAN OF TOP OF SLAB "B" BAR LAYOUT
 FOR "B" BAR SPACING, SEE "SUPERSTRUCTURE TYPICAL PLAN" SHEETS



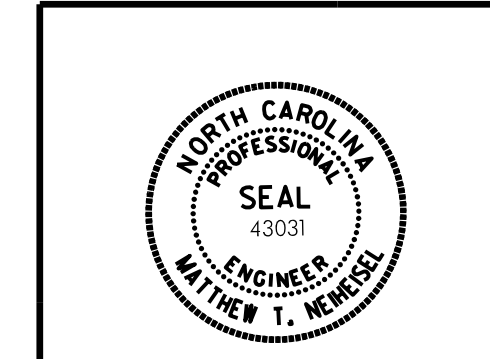
DETAIL "D"
 #4 K8 & #4 K9 BARS OMITTED FOR CLARITY



PARTIAL PLAN OF TOP "B" BARS AT BENT 1

PROJECT NO. 17BP.8.R.121
MOORE COUNTY
 STATION: 22+68.50 -L-
 SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
SUPERSTRUCTURE
 PLAN OF SPANS
 "B" BAR LAYOUT



Matthew Memmel 6/13/2018

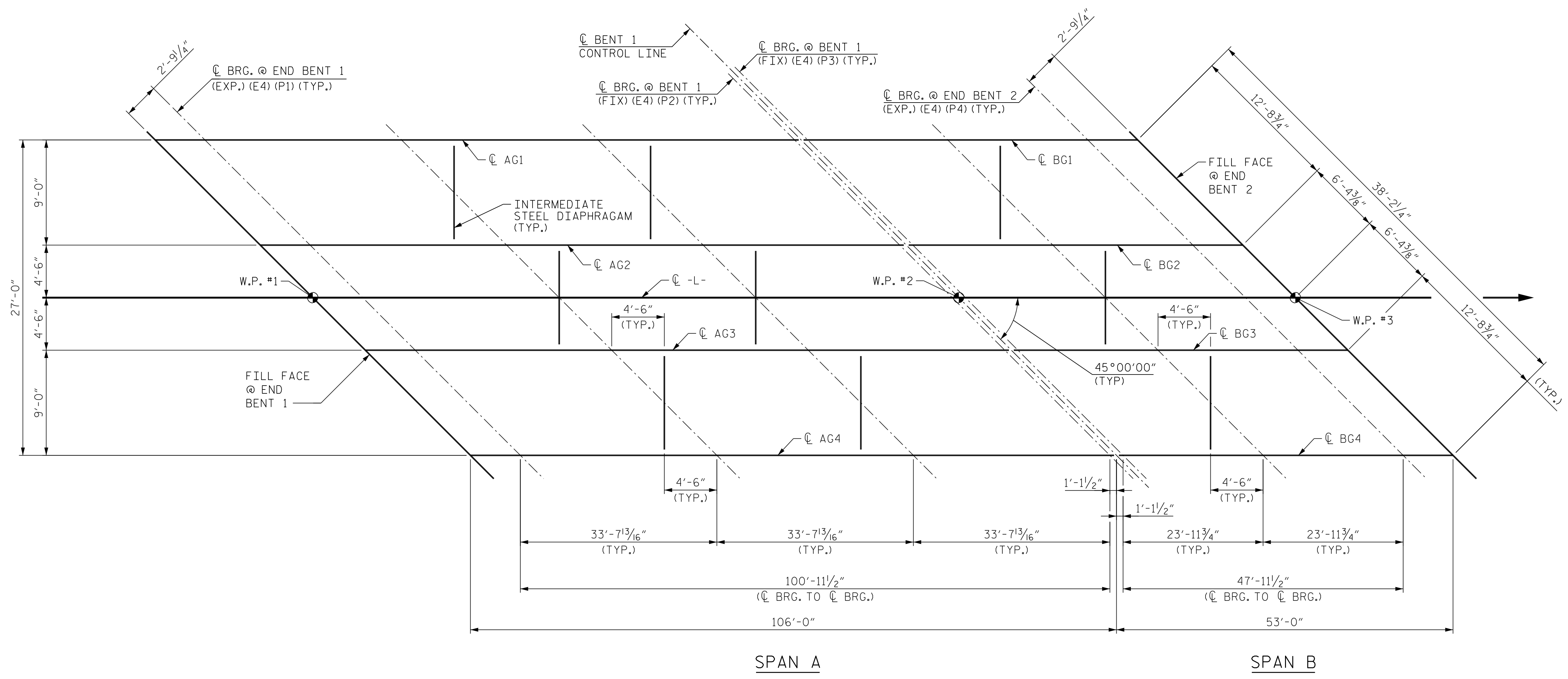
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DRAWN BY : D. H. CARTER DATE : JUN 2018
 CHECKED BY : M. K. CHRISTIAN DATE : JUN 2018
 DESIGN ENGINEER OF RECORD: M. T. NEIHEISEL DATE : JUN 2018



FRAMING PLAN
 END BENT 1, BENT 1, AND END BENT 2 ARE PARALLEL

PROJECT NO. 17BP.8.R.121
MOORE COUNTY
 STATION: 22+68.50 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE

FRAMING PLAN
 SPANS A, & B



Matthew Neiheisel 6/13/2018

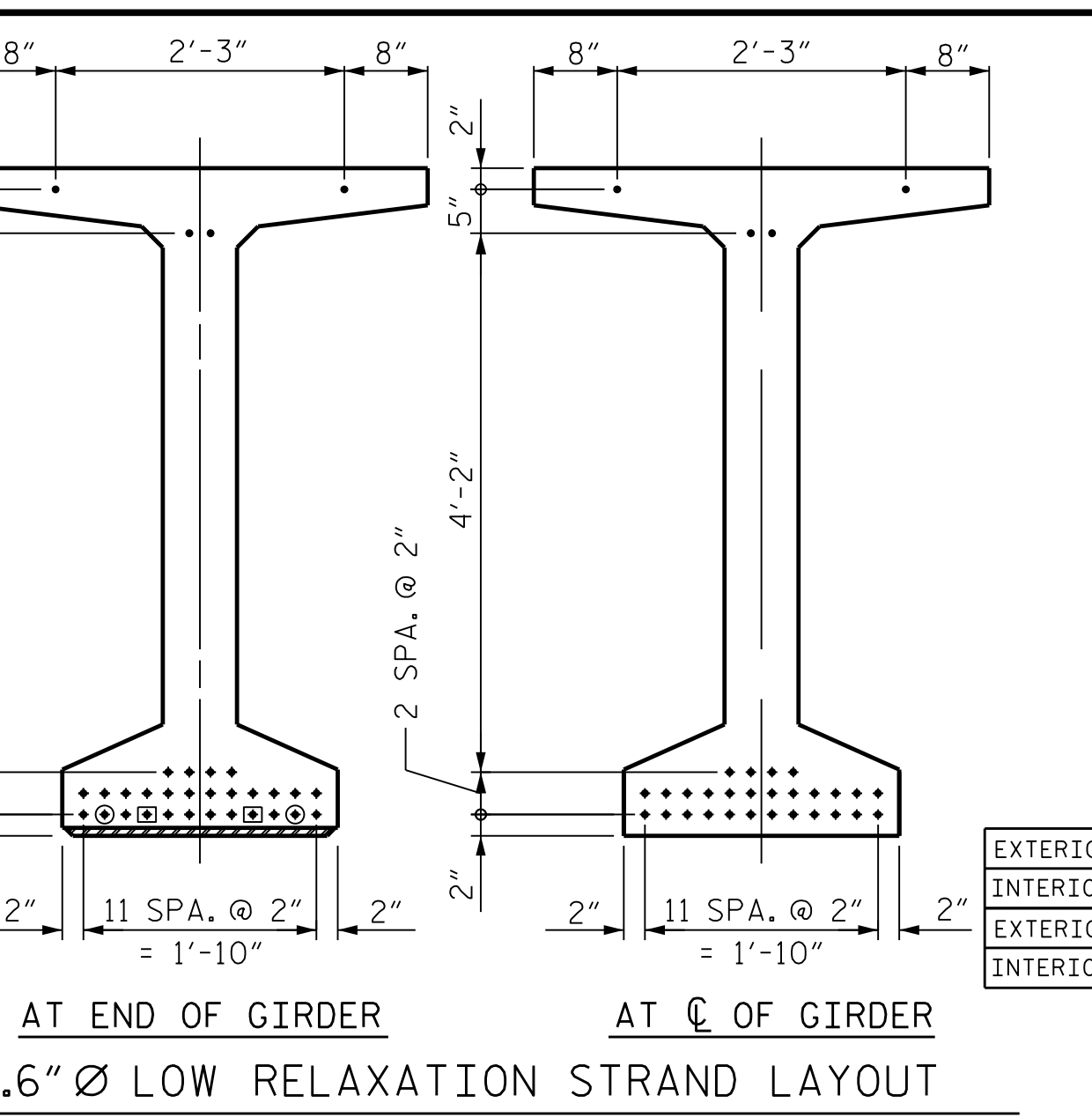
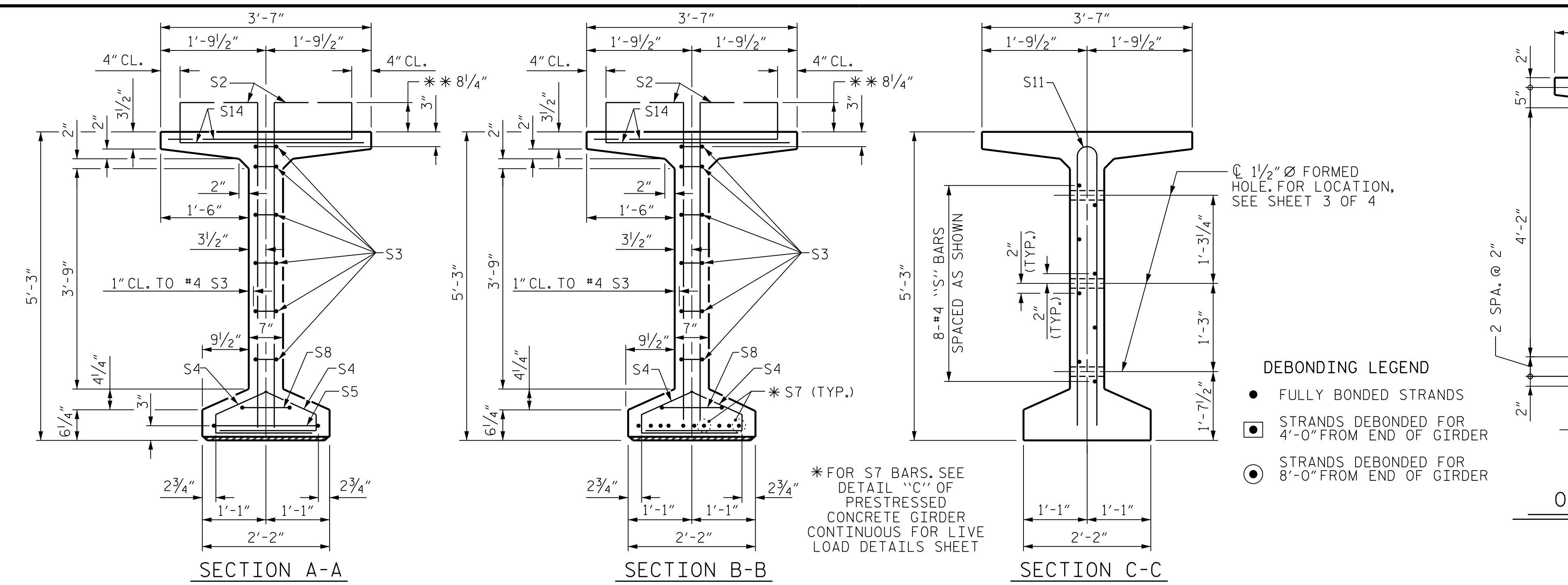
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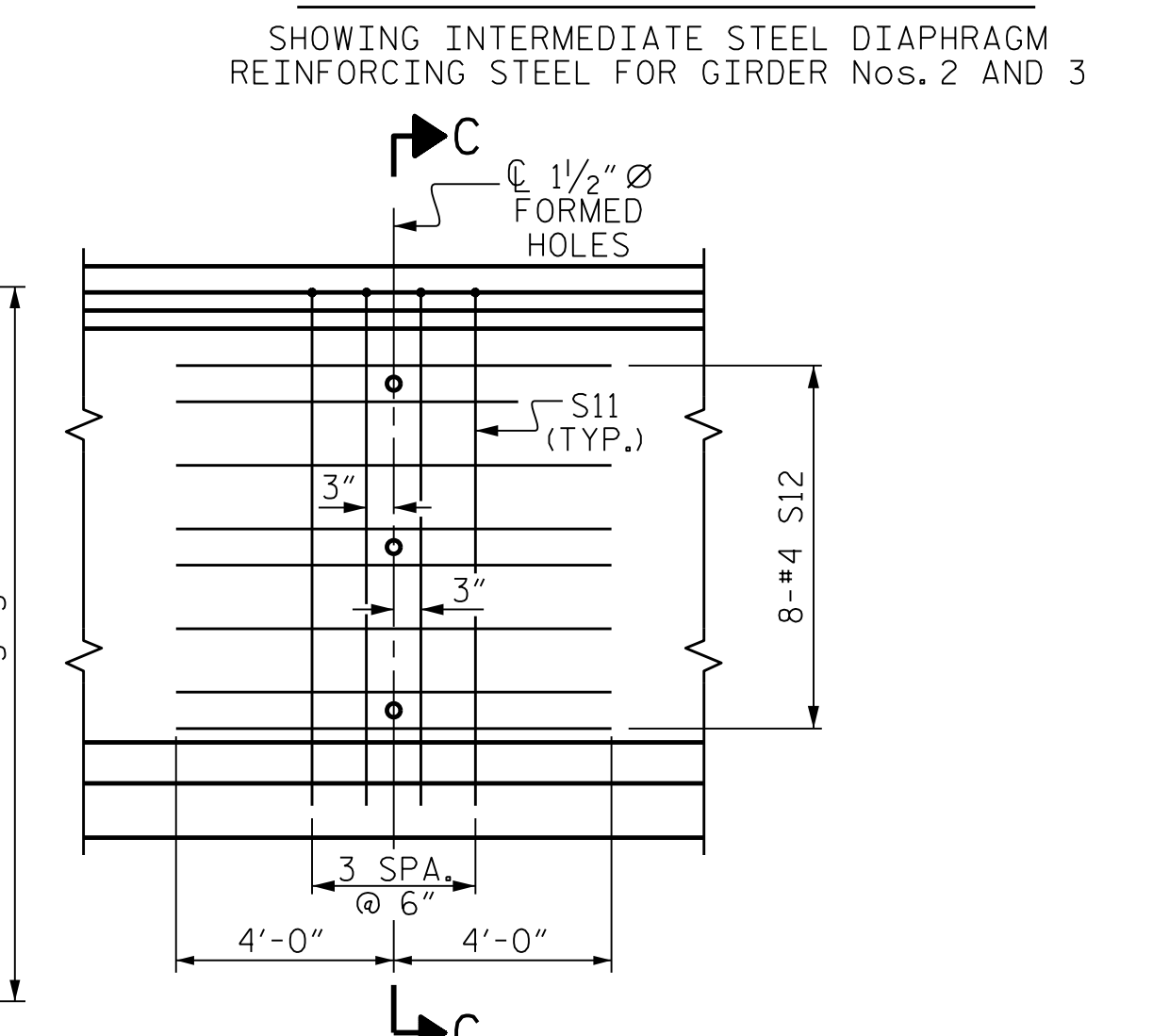
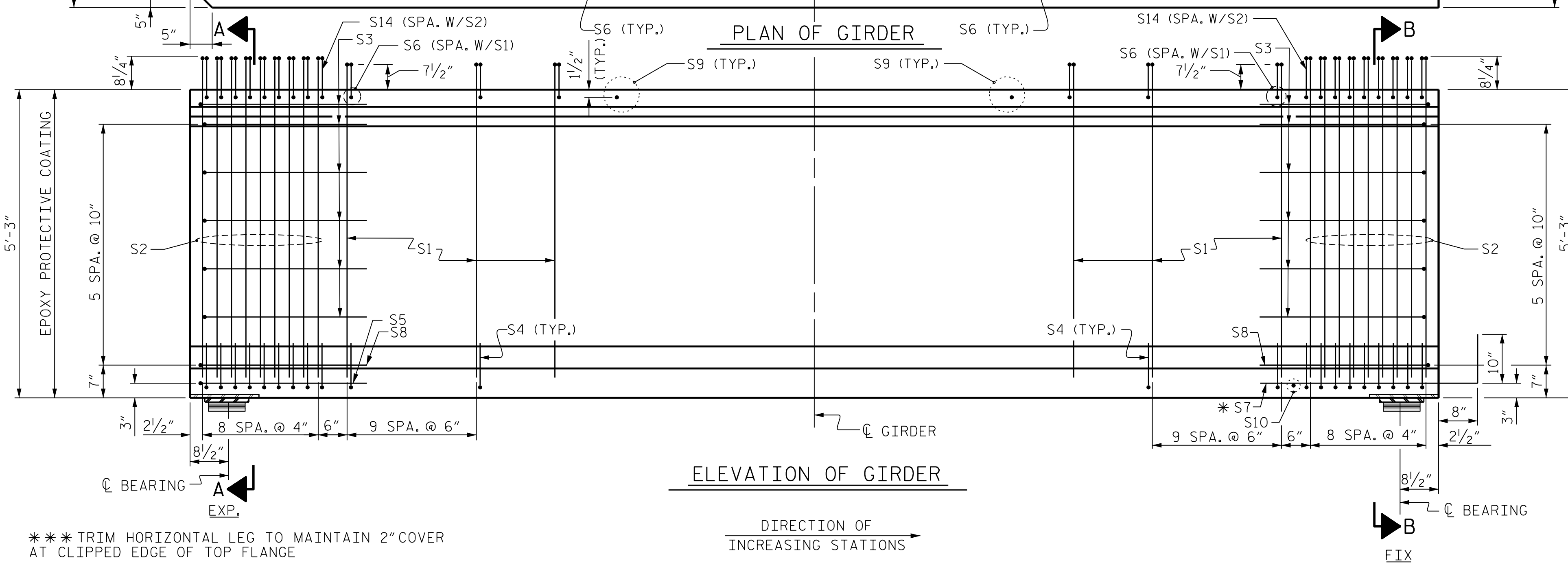
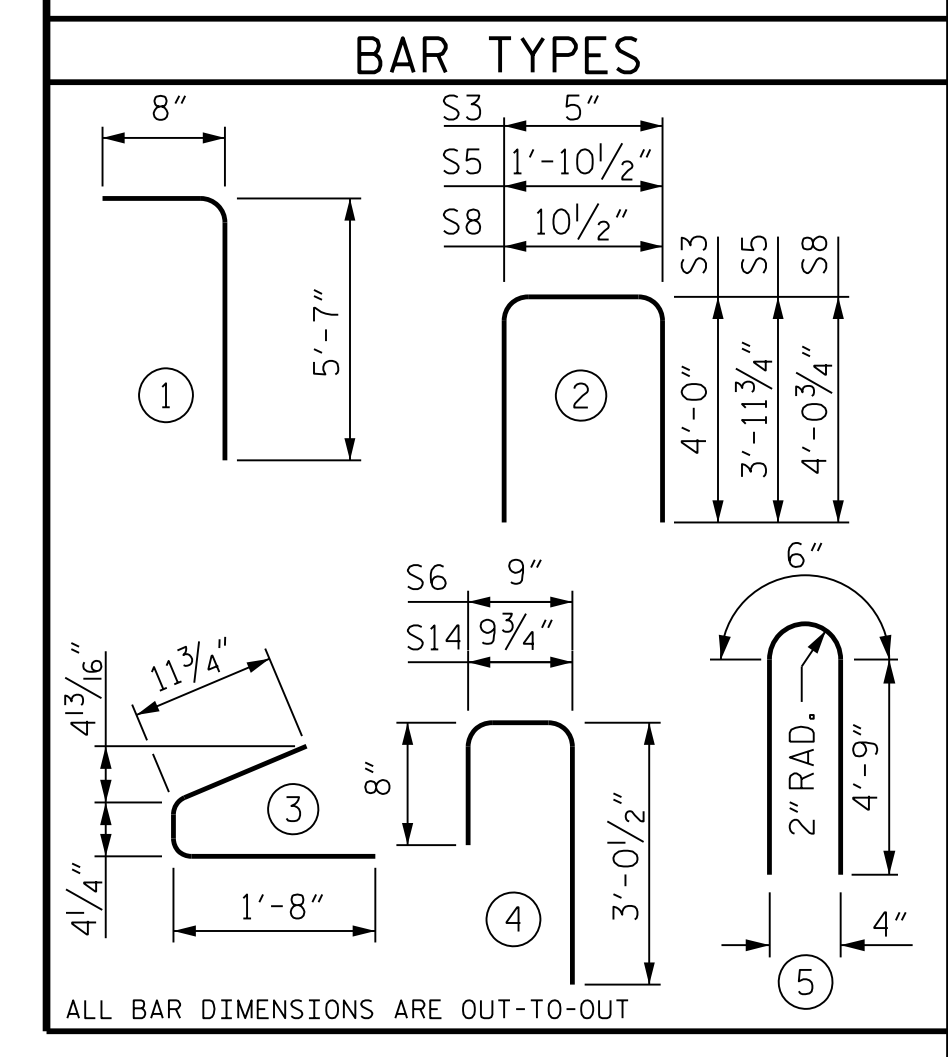
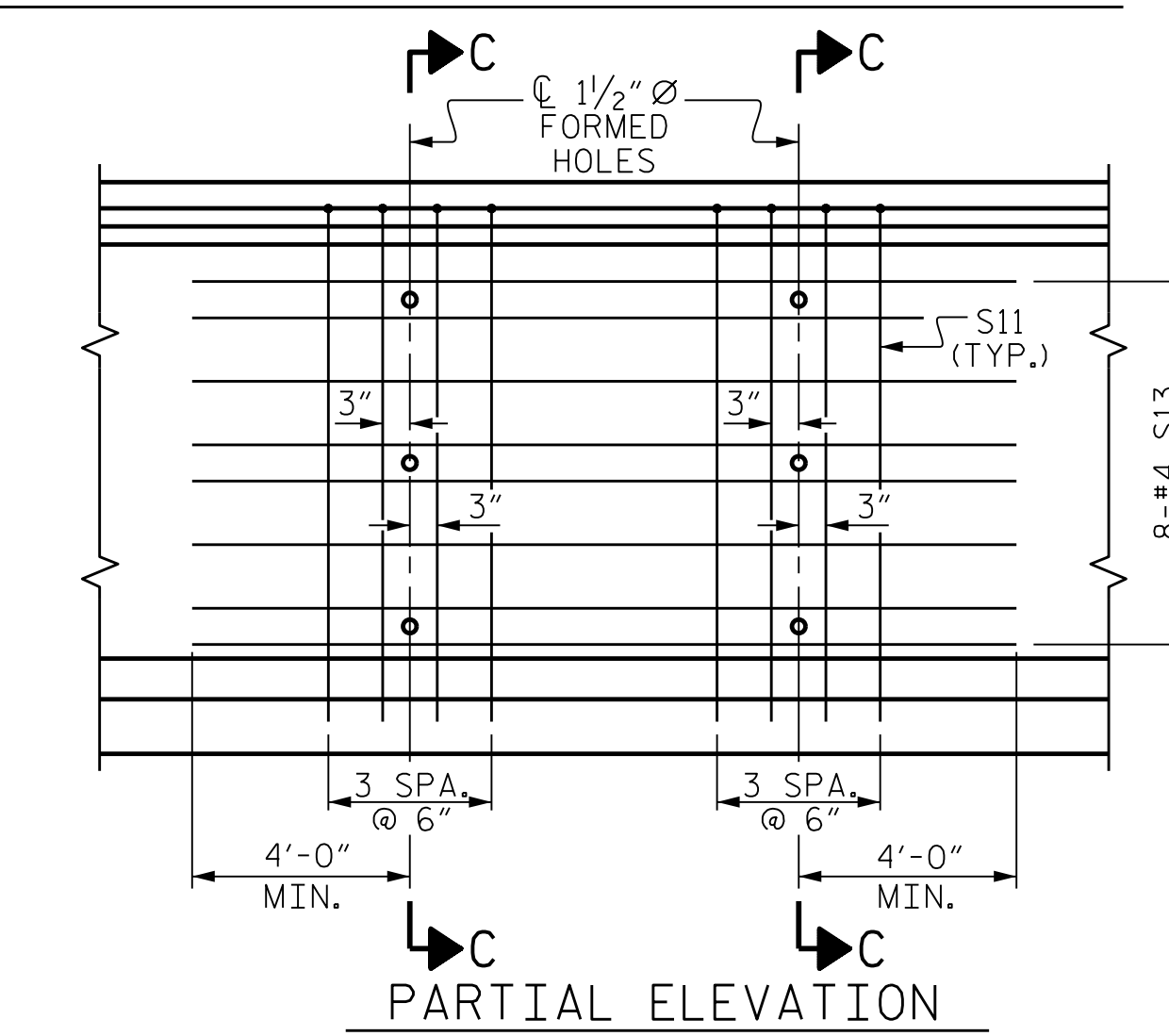
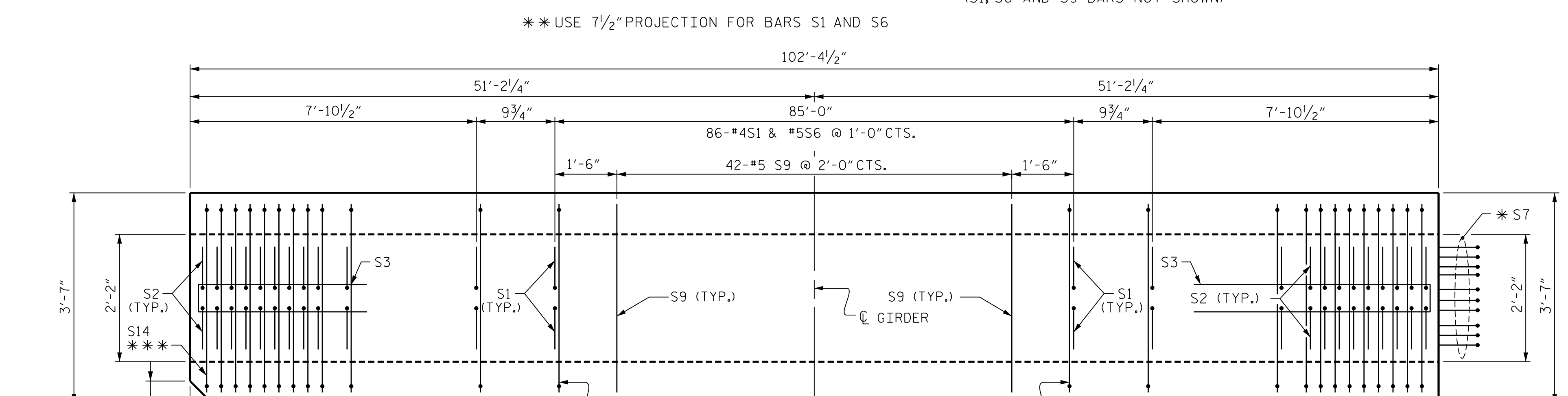
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DRAWN BY : D. H. CARTER DATE : JUN 2018
 CHECKED BY : A.E. SMITH DATE : JUN 2018
 DESIGN ENGINEER OF RECORD: M. T. NEIHEISEL DATE : JUN 2018



0.6" Ø L. R. GRADE 270 STRANDS				
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)		
0.217	58,600	43,950		
REINFORCING STEEL FOR ONE GDR				
BAR	NUMBER	SIZE	TYPE	LENGTH WEIGHT
S1	212	#4	1	6'-3" 886
S2	36	#5	1	6'-4" 238
S3	12	#4	2	8'-5" 68
S4	76	#4	3	3'-0" 153
S5	1	#5	2	9'-10" 11
S6	212	#5	4	4'-6" 996
*S7	10	#5	STR	3'-8" 39
S8	2	#5	2	9'-0" 19
S9	42	#5	STR	3'-3" 143
S10	1	#3	STR	1'-10" 1
EXTERIOR GDR.	S11	8	#5	5 10'-0" 84
INTERIOR GDR.	S11	16	#5	5 10'-0" 167
EXTERIOR GDR.	S12	16	#4	STR 8'-0" 86
INTERIOR GDR.	S13	16	#4	STR 17'-0" 182
	S14	36	#5	4 4'-7" 173

* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.



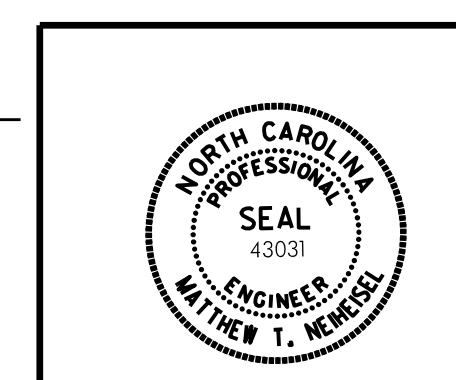
QUANTITIES FOR ONE GIRDER			
	REINFORCING STEEL	7500 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
EXTERIOR GIRDER	2897	20.3	32
INTERIOR GIRDER	3076	20.3	32
GIRDERS REQUIRED			
NUMBER	LENGTH	TOTAL LENGTH	
4	102'-4 1/2"	409'-6"	

PROJECT NO. 17BP.8.R.121
 MOORE COUNTY
 STATION: 22+68.50 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

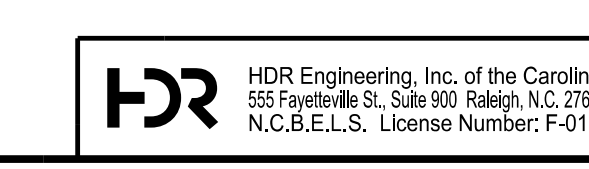
SUPERSTRUCTURE
 63" PRESTRESSED CONCRETE
 MODIFIED BULB TEE
 CONTINUOUS FOR LIVE LOAD
 SPAN A



6/13/2018

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SHEET NO. S-12
 TOTAL SHEETS 33

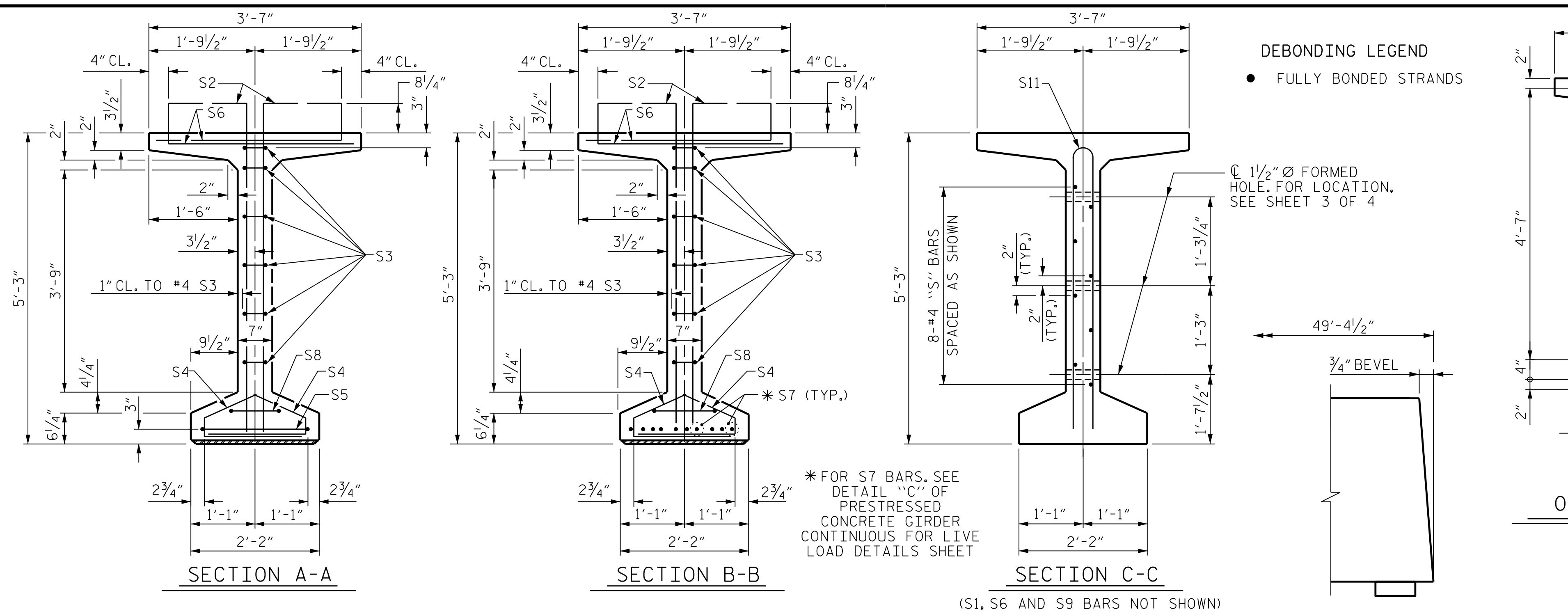


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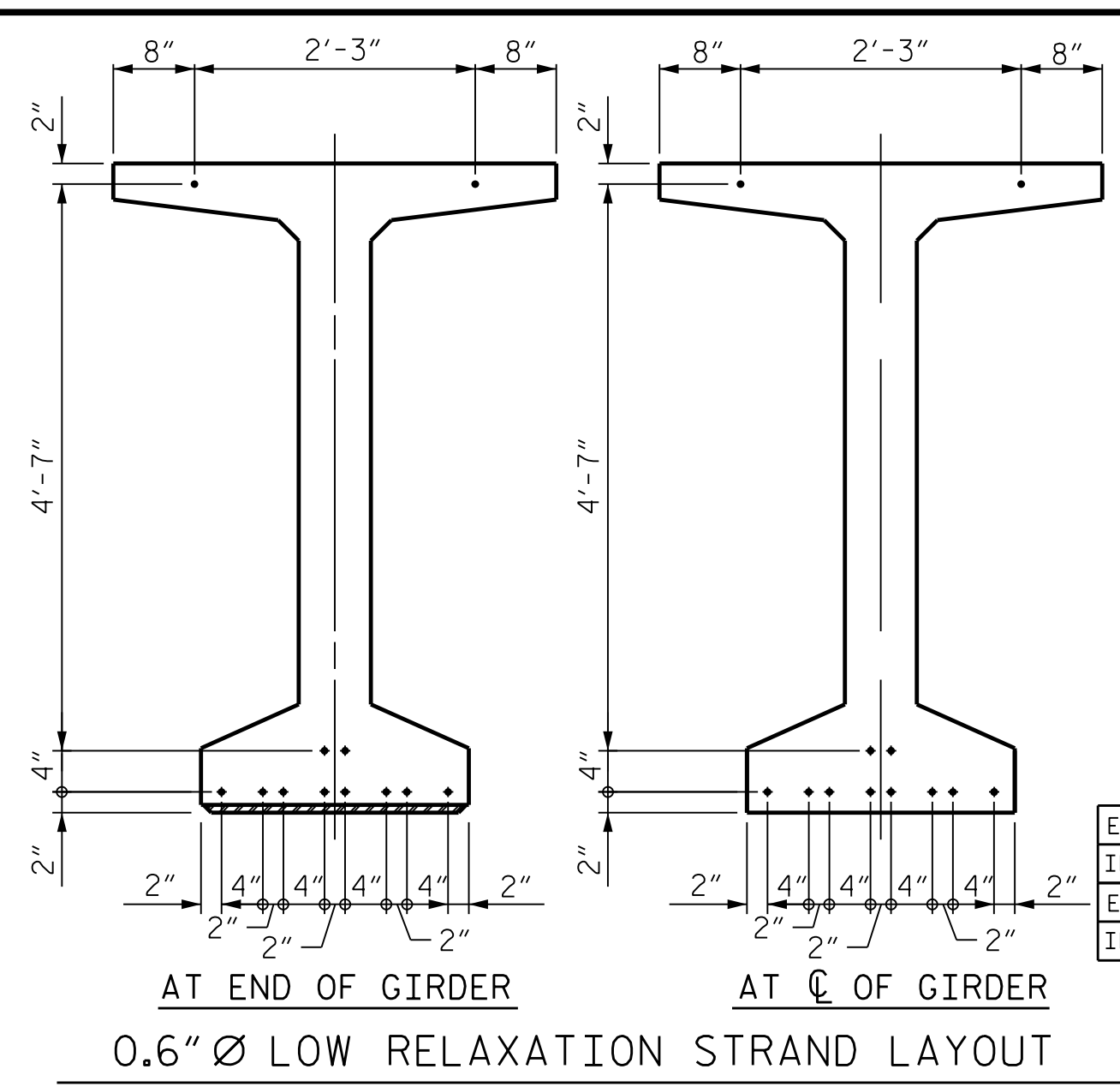
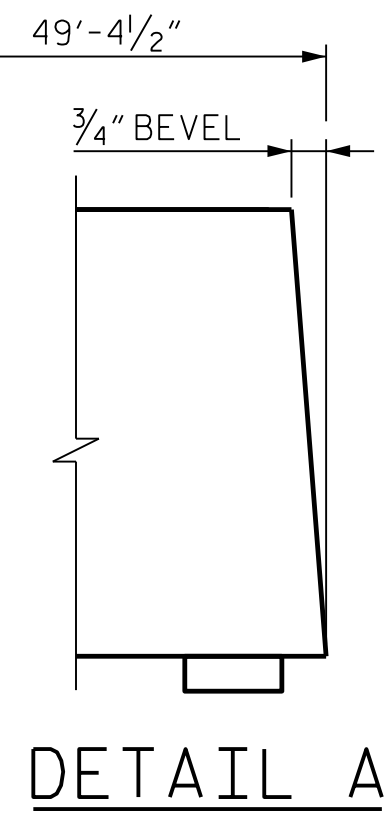
DRAWN BY: D. H. CARTER DATE: JUN 2018
 CHECKED BY: A. E. SMITH DATE: JUN 2018
 DESIGN ENGINEER OF RECORD: M. T. NEIHEISEL DATE: JUN 2018

*** TRIM HORIZONTAL LEG TO MAINTAIN 2" COVER AT CLIPPED EDGE OF TOP FLANGE



DEBONDING LEGEND
 ● FULLY BONDED STRANDS

1/2" Ø FORMED HOLE, FOR LOCATION, SEE SHEET 3 OF 4



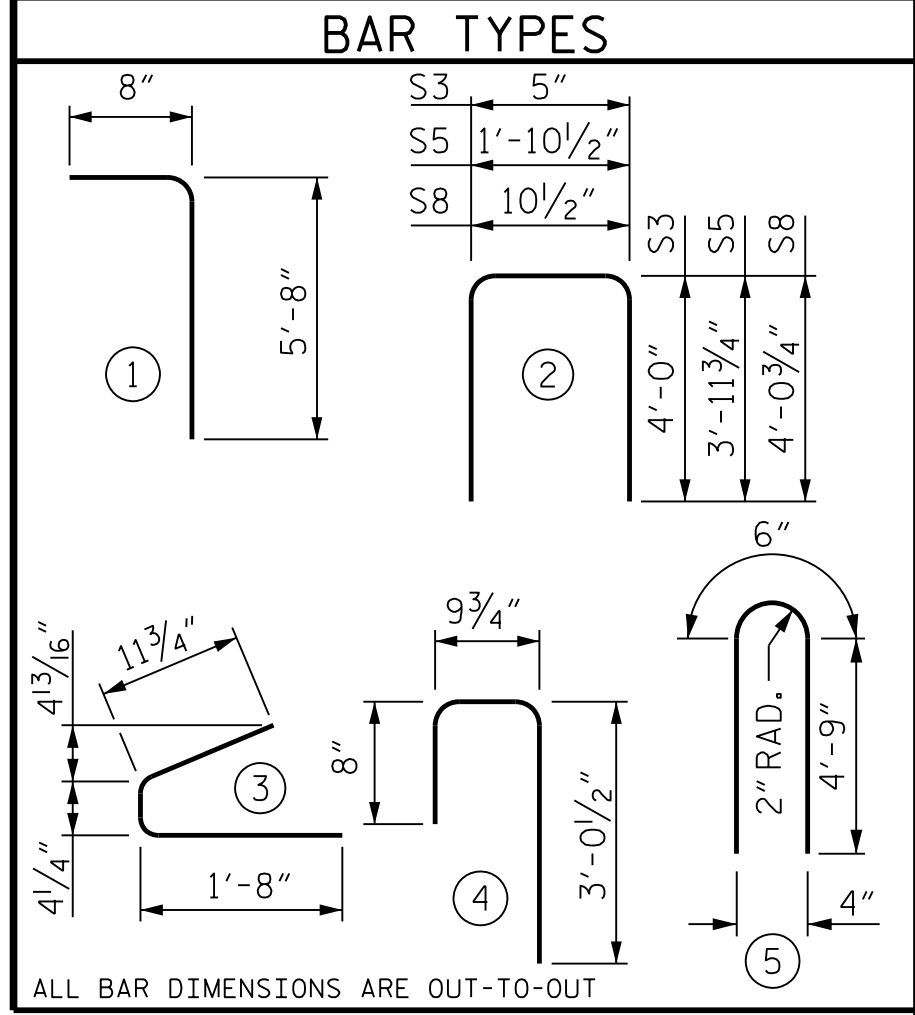
0.6" Ø L. R. GRADE 270 STRANDS

AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GDR

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	
S1	114	#4	1	6'-4"	483	
S2	24	#5	1	6'-4"	159	
S3	12	#4	2	8'-5"	68	
S4	72	#4	3	3'-0"	145	
S5	1	#5	2	9'-10"	11	
S6	138	#5	4	4'-7"	660	
*S7	10	#5	STR	3'-8"	39	
S8	2	#5	2	9'-0"	19	
S9	16	#5	STR	3'-3"	55	
S10	1	#3	STR	1'-10"	1	
S11	4	#5	5	10'-0"	42	
INTERIOR GDR.	S11	8	#5	5	10'-0"	84
EXTERIOR GDR.	S12	8	#4	STR	8'-0"	43
INTERIOR GDR.	S13	8	#4	STR	17'-0"	91

* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.



QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL (LB.)	7500 PSI CONCRETE (C.Y.)	0.6" Ø L.R. STRANDS (No.)
EXTERIOR GIRDER	1725	9.8	12
INTERIOR GIRDER	1815	9.8	12

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
4	49'-1/2"	197'-6"

PROJECT NO. 17BP.8.R.121
 MOORE COUNTY
 STATION: 22+68.50 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 63" PRESTRESSED CONCRETE
 MODIFIED BULB TEE
 CONTINUOUS FOR LIVE LOAD
 SPAN B

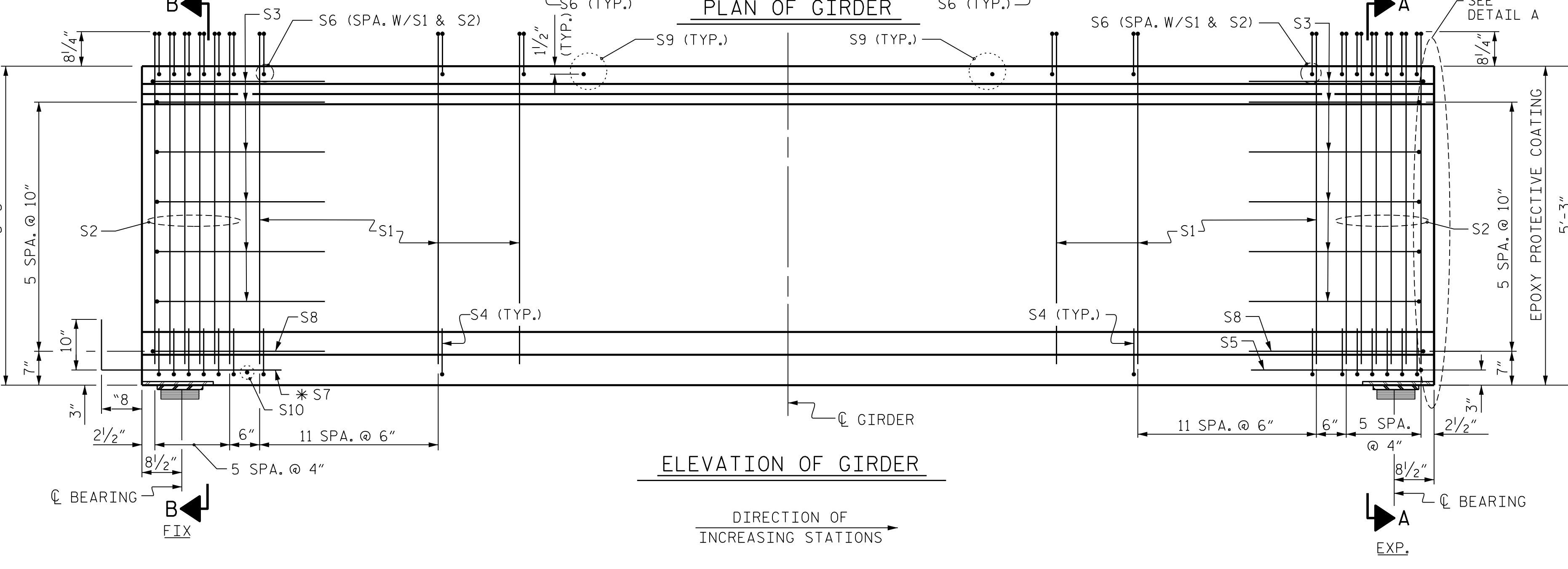
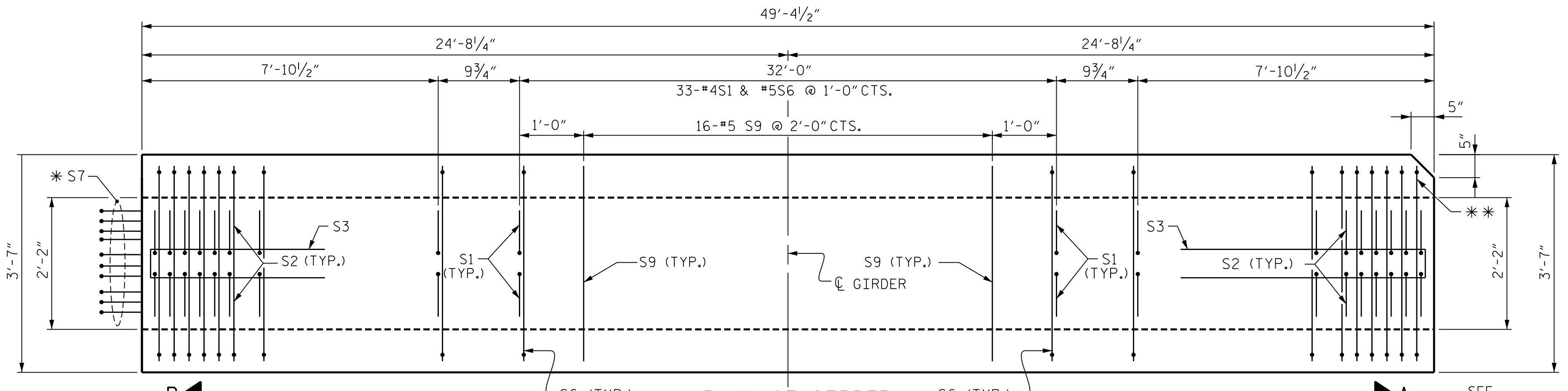
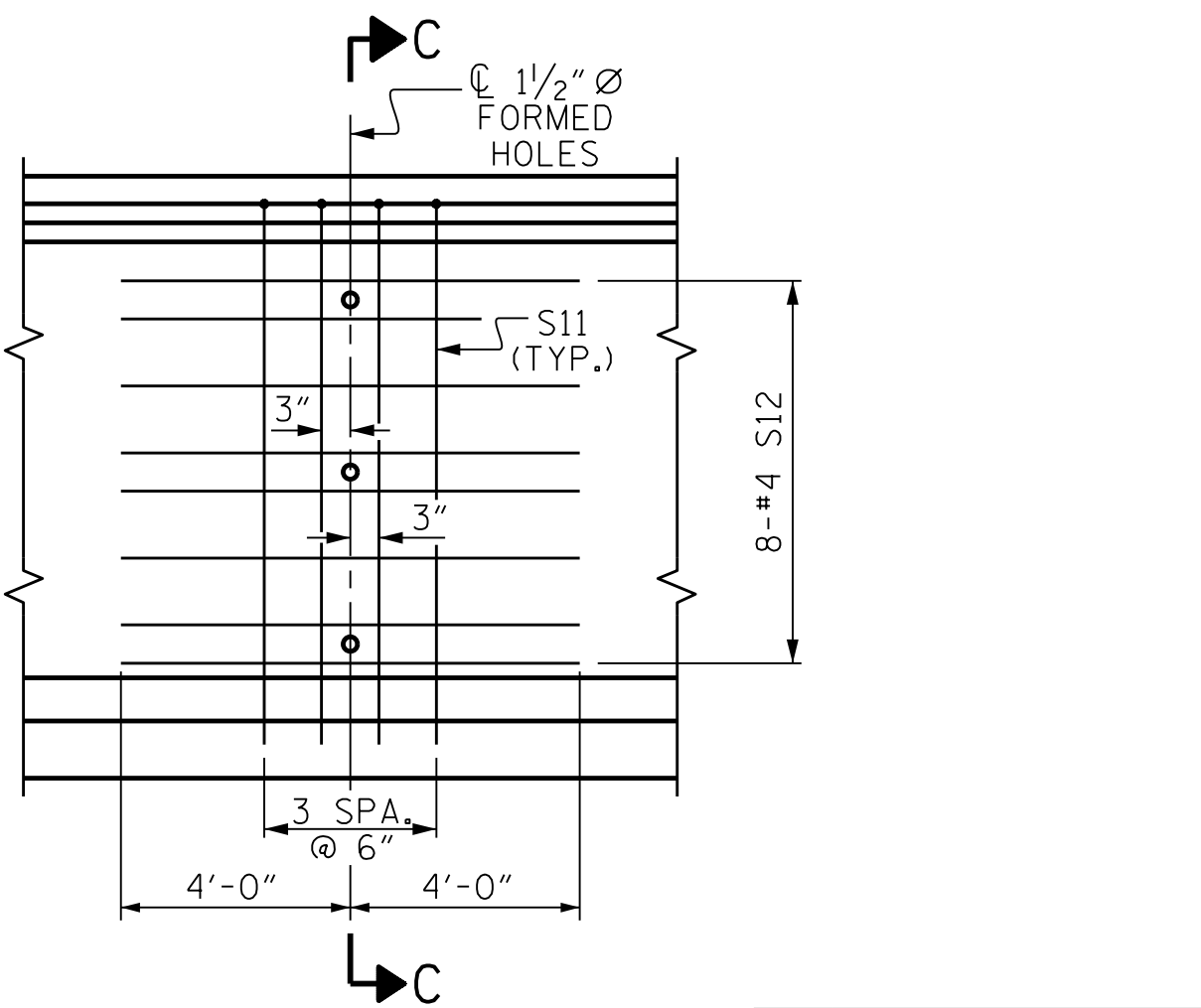
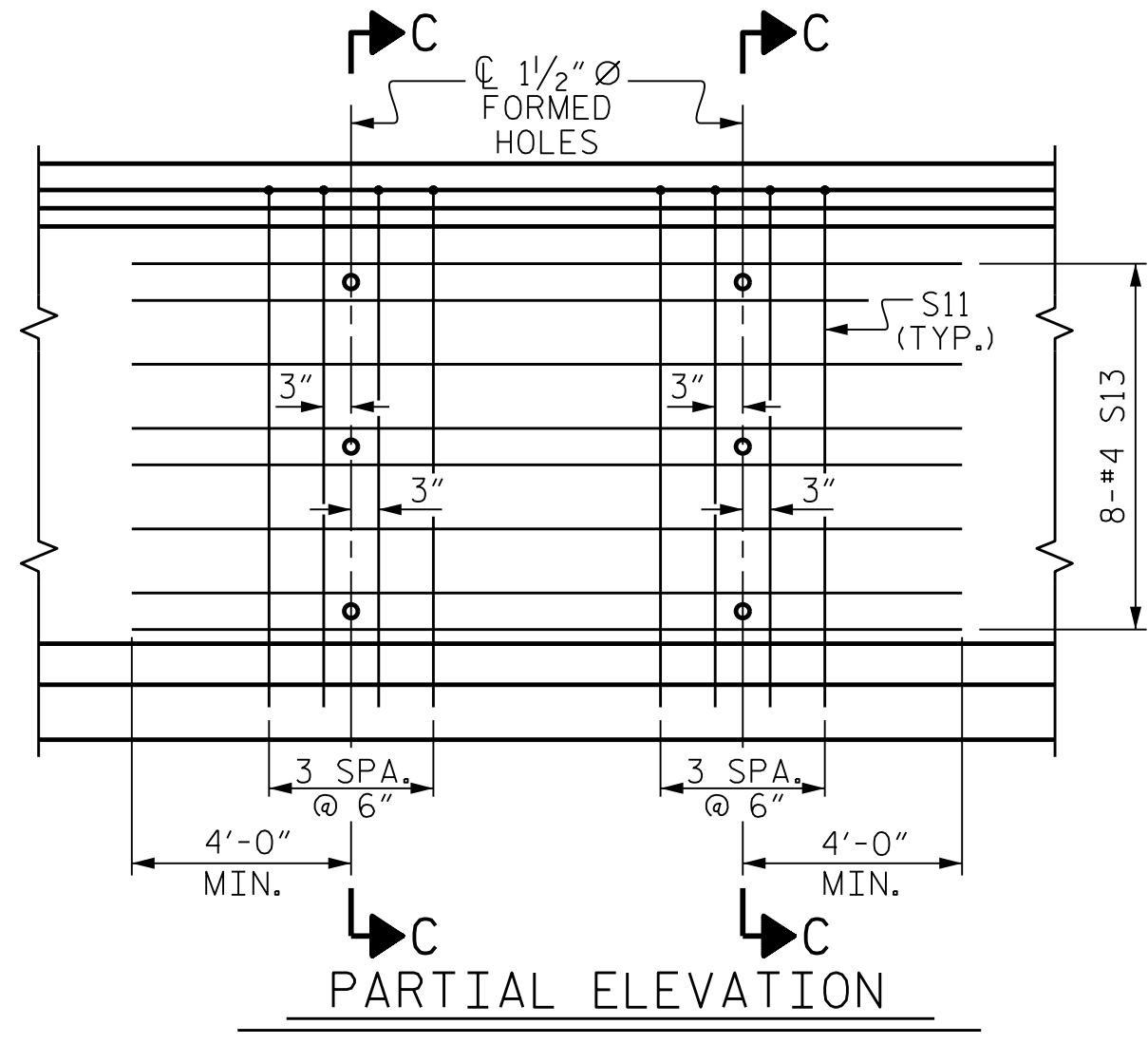


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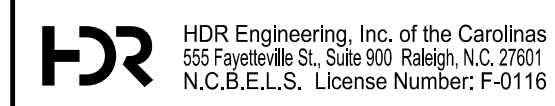
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SHEET NO. S-13
 TOTAL SHEETS 33



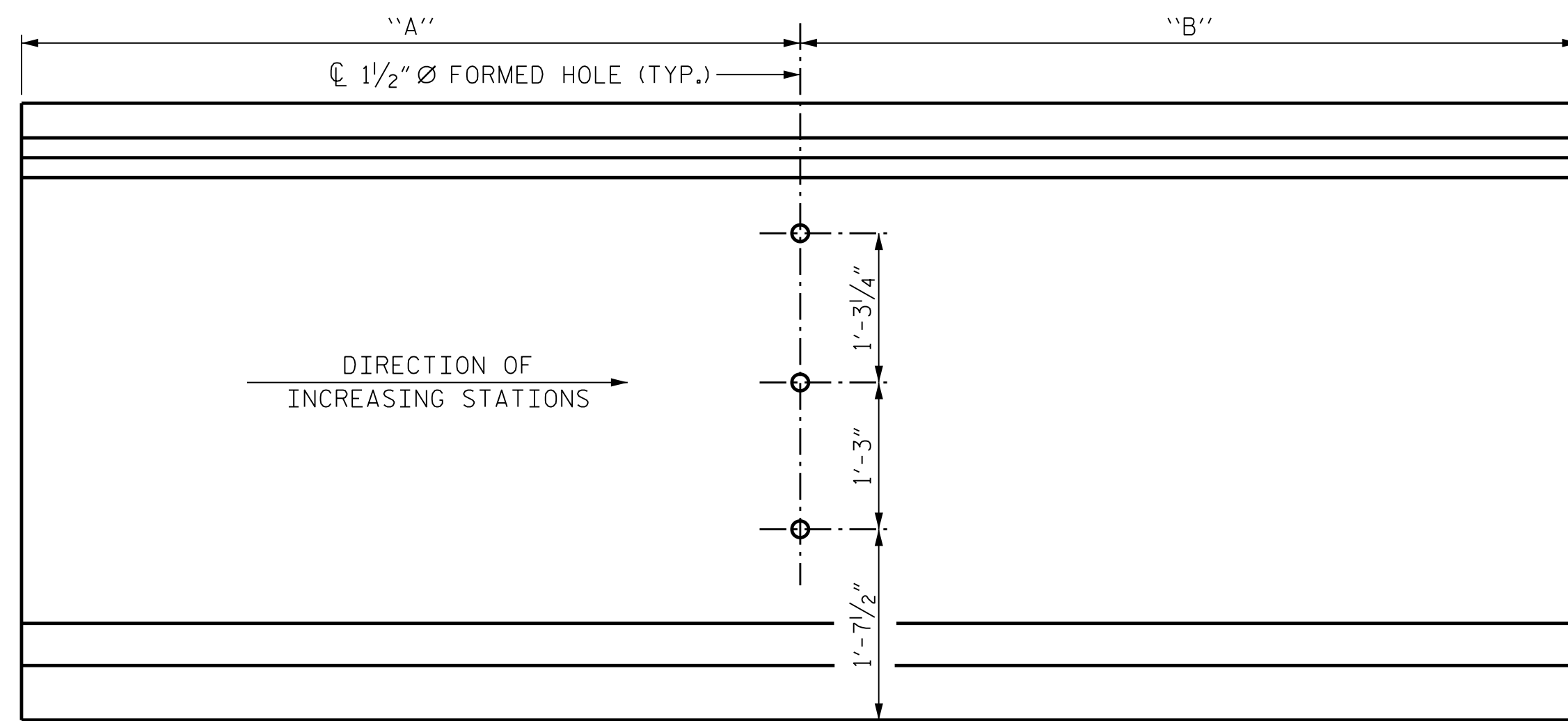
** TRIM HORIZONTAL LEG TO MAINTAIN 2" COVER AT CLIPPED EDGE OF TOP FLANGE



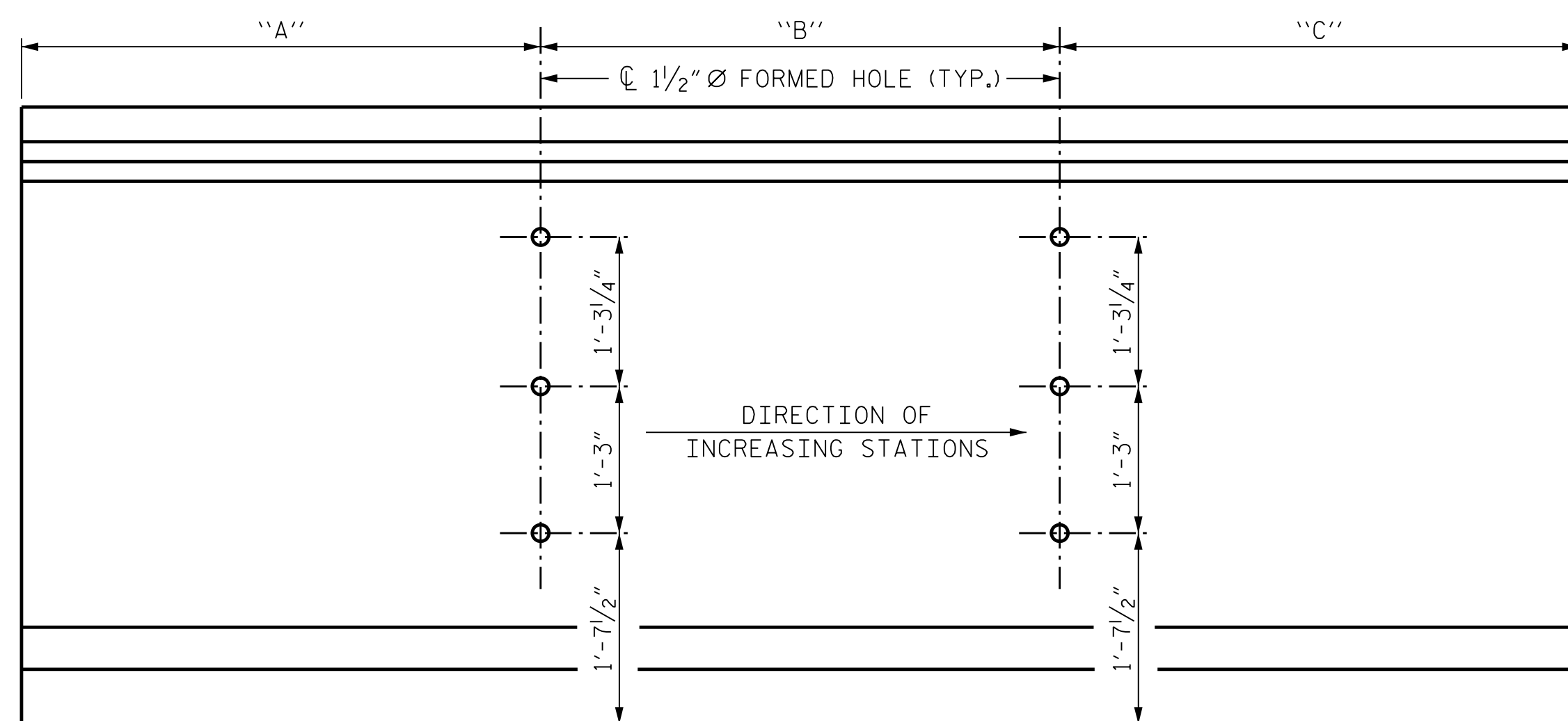
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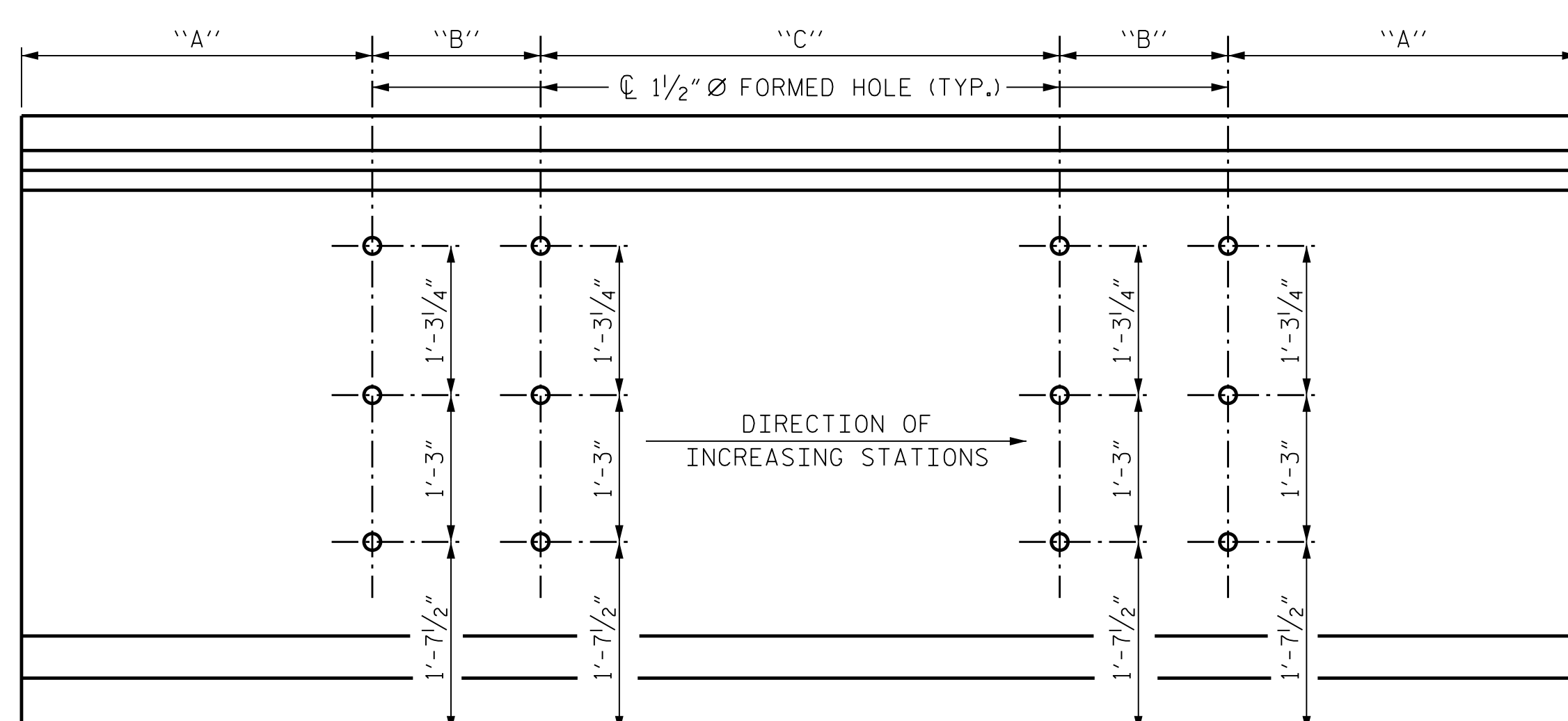
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 CHECKED BY: A. E. SMITH DATE: JUN 2018
 DESIGN ENGINEER OF RECORD: M. T. NEIHEISEL DATE: JUN 2018



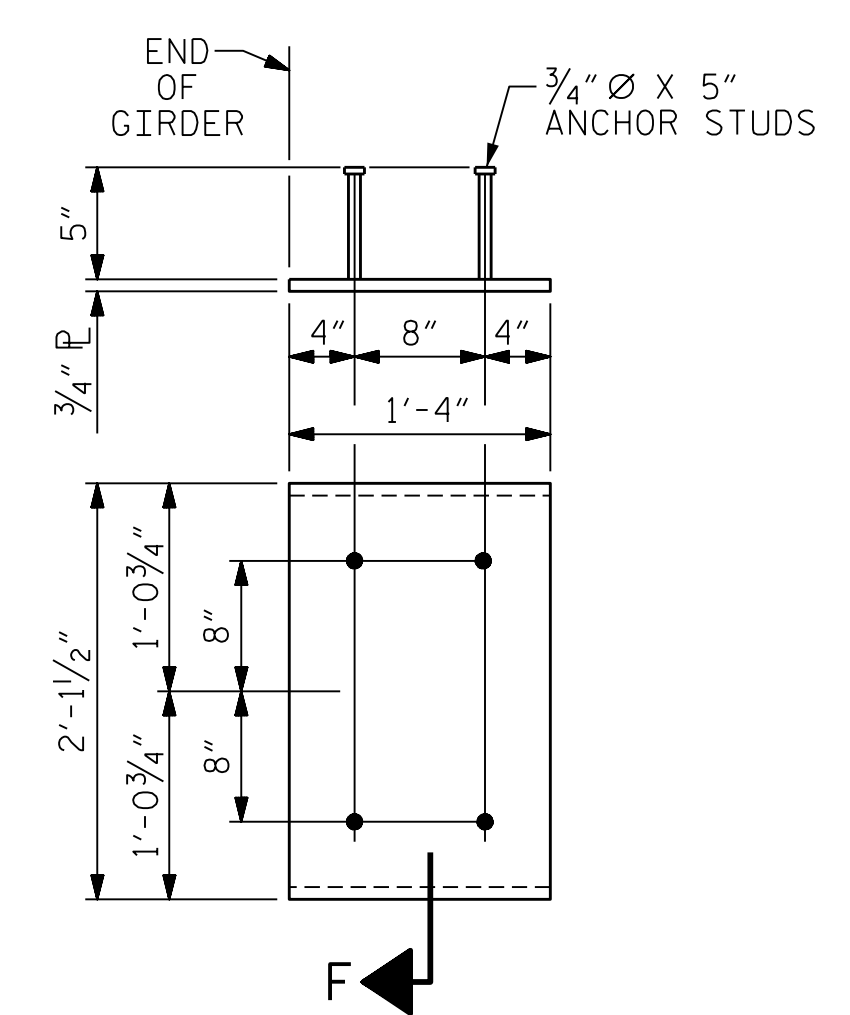
LOCATION OF 1 1/2" Ø HOLES
GIRDERS B1 & B4



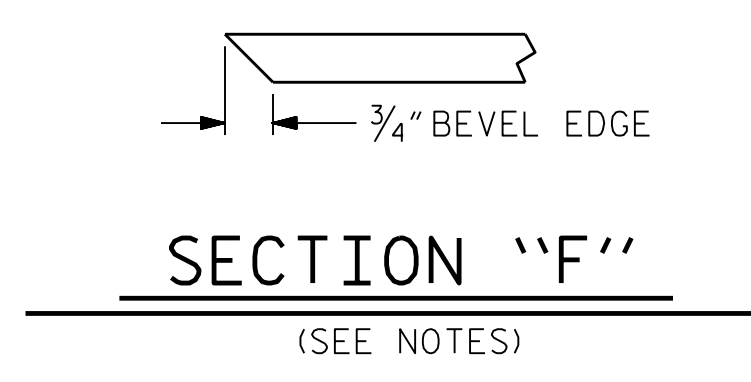
LOCATION OF 1 1/2" Ø HOLES
GIRDERS A1, A4, B2, & B3



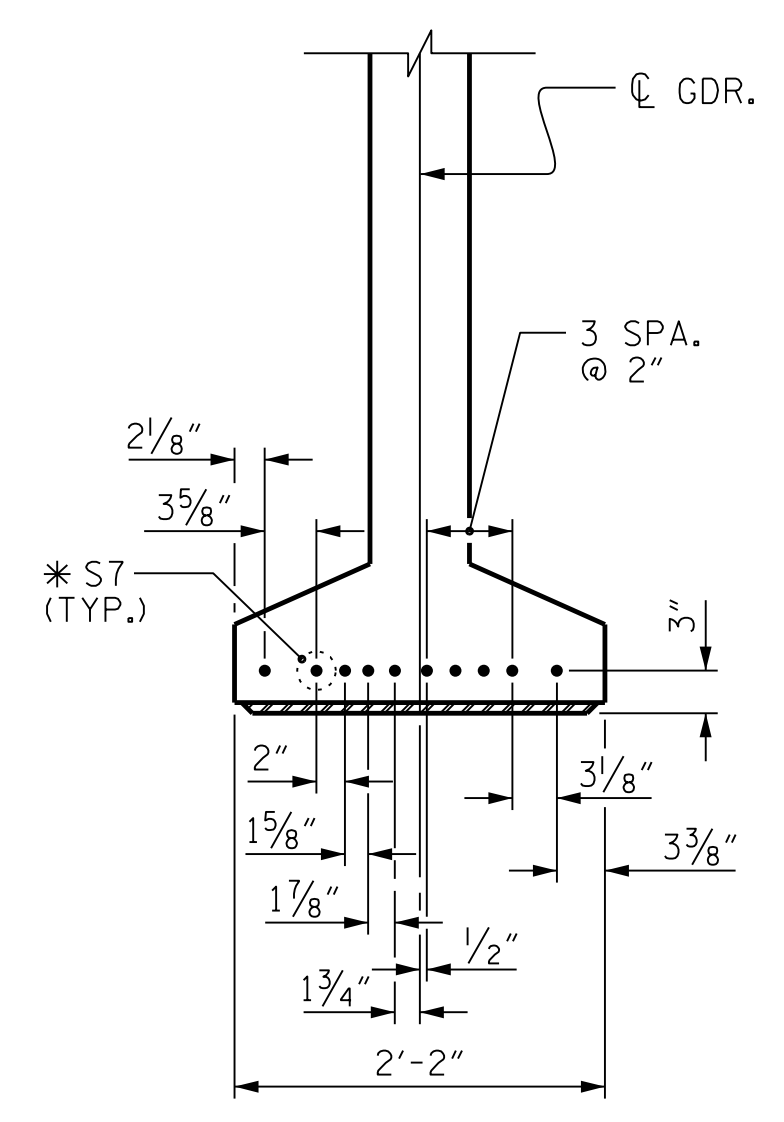
LOCATION OF 1 1/2" Ø HOLES
GIRDERS A2 & A3



EMBEDDED PLATE "B-1" DETAILS FOR AASHTO TYPE IV GIRDER AND 63" MODIFIED BULB TEES
(2 REQ'D PER GIRDER)



LOCATION OF 1 1/2" Ø HOLES			
GIRDER	"A"	"B"	"C"
A1	38'-1 13/16"	33'-7 13/16"	29'-1 13/16"
A2-A3	29'-1 13/16"	9'-0"	24'-7 13/16"
A4	29'-1 13/16"	33'-7 13/16"	38'-1 13/16"
B1	28'-5 3/4"	19'-5 3/4"	N/A
B2-B3	19'-5 3/4"	9'-0"	19'-5 3/4"
B4	19'-5 3/4"	28'-5 3/4"	N/A



DETAIL "C"
(FOR 63" & 72" MODIFIED BULB TEES)

NOTES

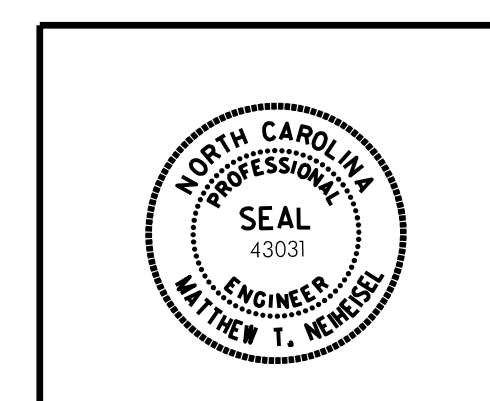
- ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW-RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
- ALL REINFORCING STEEL SHALL BE GRADE 60.
- APPLY EPOXY PROTECTIVE COATING TO END OF GIRDER SURFACES INDICATED IN ELEVATION VIEW.
- EMBEDDED PLATE "B-1" SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
- ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.
- AT ENDS OF GIRDERS TO BE EMBEDDED IN CONCRETE DIAPHRAGMS OR END WALLS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2" BEYOND THE GIRDER ENDS. OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.
- THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 5900 PSI.
- DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.
- THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF 1/4".
- A 2" x 2" CHAMFER IS ALLOWED AT THE INTERSECTION OF THE WEB AND THE BOTTOM FLANGE OF THE 63" AND 72" MODIFIED BULB TEES ONLY.
- THE CONTRACTOR HAS THE OPTION TO PROVIDE, AT NO ADDITIONAL COST TO THE DEPARTMENT, 2 ADDITIONAL STRANDS AT THE TOP OF THE GIRDER TO FACILITATE TYING OF THE REINFORCING STEEL. THESE STRANDS SHALL BE PULLED TO A LOAD OF 4500 lbs.

PROJECT NO. 17BP.8.R.121
MOORE COUNTY
 STATION: 22+68.50 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 PRESTRESSED CONCRETE GIRDER
 CONTINUOUS FOR LIVE LOAD
 DETAILS



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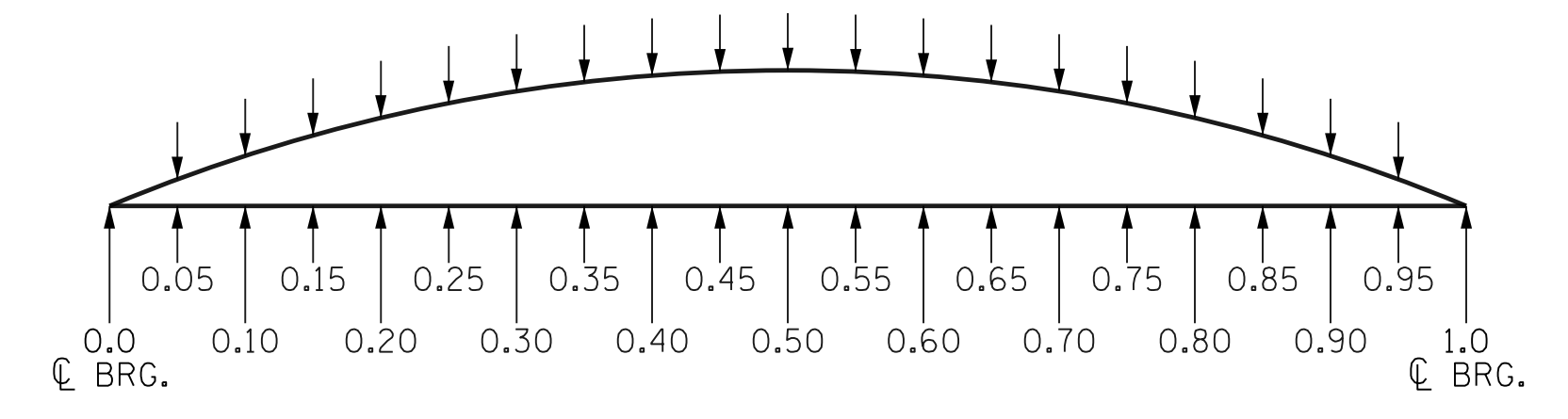
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DRAWN BY : D. H. CARTER DATE : JUN 2018
 CHECKED BY : A. E. SMITH DATE : JUN 2018
 DESIGN ENGINEER OF RECORD: M. T. NEIHEISEL DATE : JUN 2018

DEAD LOAD DEFLECTION AND CAMBER TABLE FOR GIRDERS - SPAN "A"

GIRDER		TWENTIETH POINTS																					
		0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	1.0	
AG1 AG2	CAMBER (GIRDER ALONE IN PLACE)	↑	0.00	0.033	0.065	0.096	0.124	0.149	0.169	0.186	0.198	0.206	0.208	0.206	0.198	0.186	0.169	0.149	0.124	0.096	0.065	0.033	0.00
AG3 AG4	DEFLECTION DUE TO SUPERIMPOSED D.L. *	↓	0.00	0.021	0.041	0.062	0.080	0.097	0.111	0.123	0.131	0.136	0.138	0.136	0.131	0.123	0.111	0.097	0.080	0.062	0.041	0.021	0.00
	FINAL CAMBER	↑	0"	1/8"	5/16"	7/16"	1/2"	5/8"	11/16"	3/4"	13/16"	13/16"	7/8"	13/16"	13/16"	3/4"	11/16"	5/8"	1/2"	7/16"	5/16"	1/8"	0"

* INCLUDES FUTURE WEARING SURFACE IN SUPER IMPOSED DEAD LOAD.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).



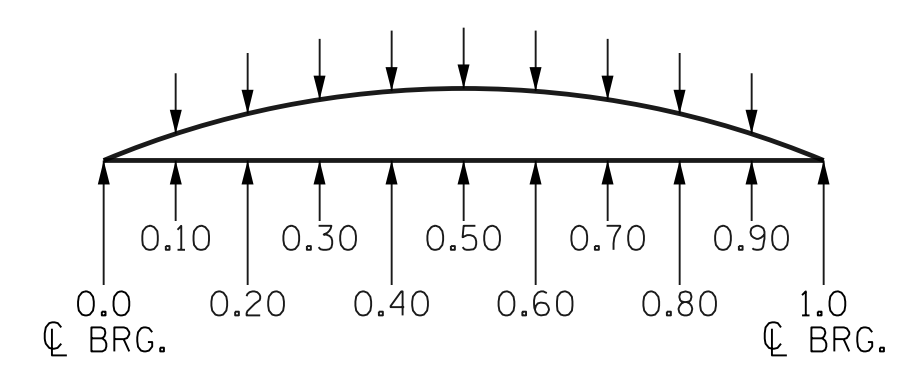
SPAN "A"

SCHMATIC CAMBER ORDINATES AT GIRDER TWENTIETH POINTS

DEAD LOAD DEFLECTION AND CAMBER TABLE FOR GIRDERS - SPAN "B"

GIRDER		TENTH POINTS											
		0	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.0	
BG1 BG2	CAMBER (GIRDER ALONE IN PLACE)	↑	0	0.007	0.013	0.018	0.021	0.022	0.021	0.018	0.013	0.007	0
BG3 BG4	DEFLECTION DUE TO SUPERIMPOSED D.L. *	↓	0	0.002	0.004	0.006	0.007	0.007	0.007	0.006	0.004	0.002	0
	FINAL CAMBER	↑	0"	1/16"	1/8"	1/8"	3/16"	3/16"	3/16"	1/8"	1/8"	1/16"	0"

* INCLUDES FUTURE WEARING SURFACE IN SUPER IMPOSED DEAD LOAD.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).



SPAN "B"

SCHMATIC CAMBER ORDINATES AT GIRDER TENTH POINTS

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PROJECT NO. 17BP.8.R.121

MOORE COUNTY

STATION: 22+68.50 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
GIRDER
CAMBER AND DEFLECTION
TABLES



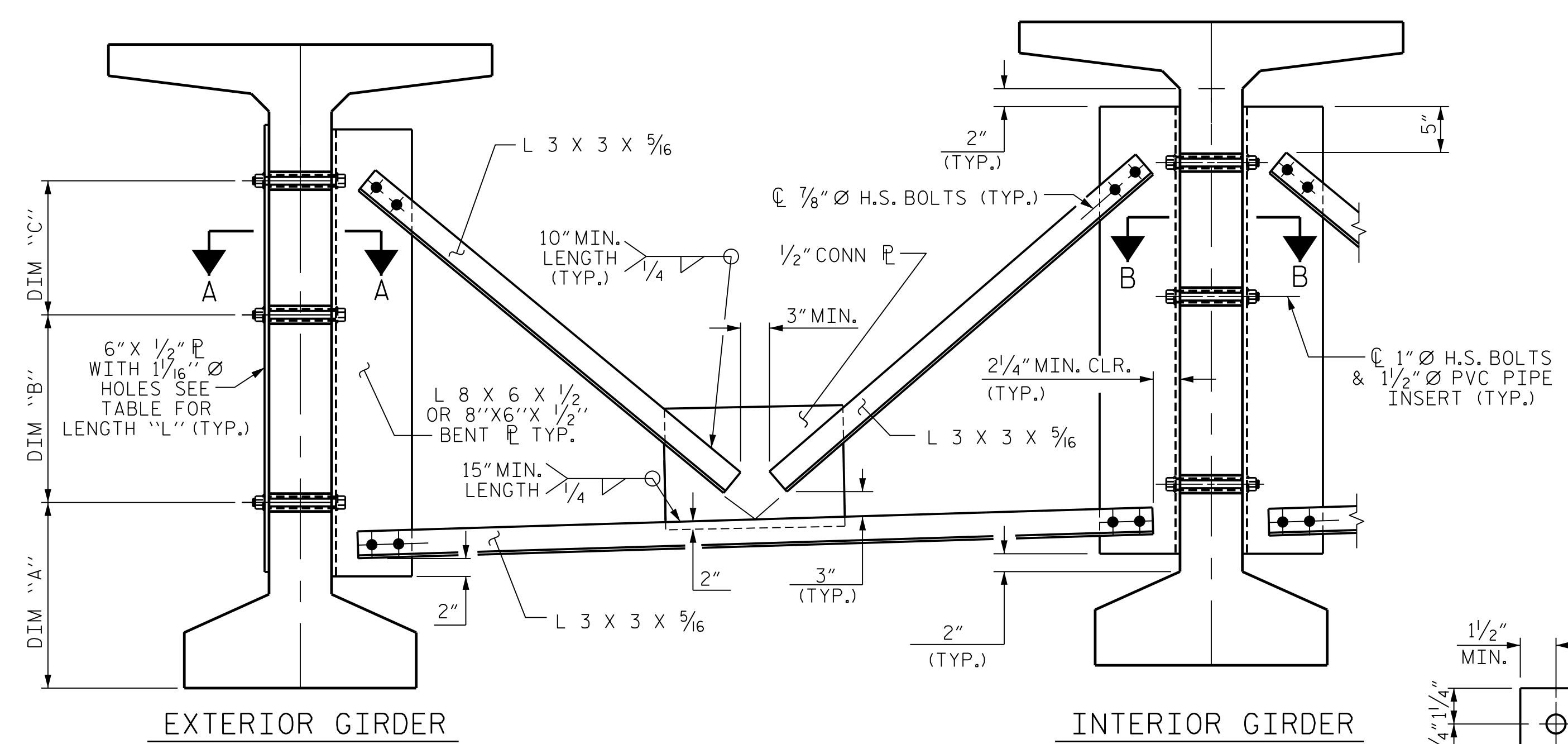
Matthew Neiheisel 6/13/2018

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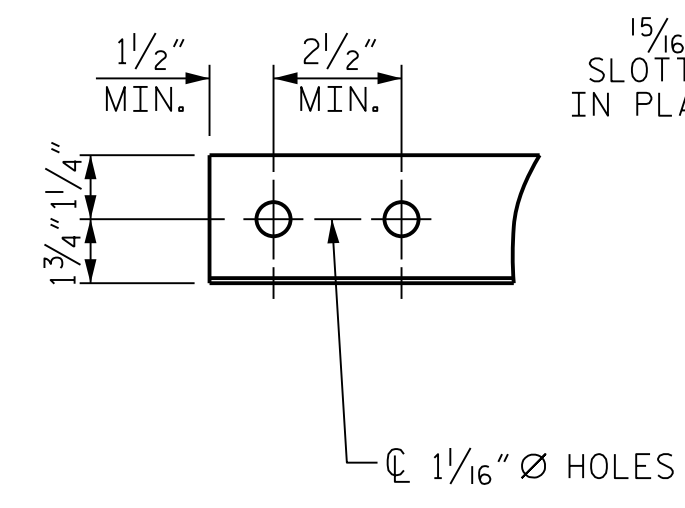
DRAWN BY : D. H. CARTER DATE : JUN 2018
CHECKED BY : A. E. SMITH DATE : JUN 2018
DESIGN ENGINEER OF RECORD: M. T. NEIHEISEL DATE : JUN 2018

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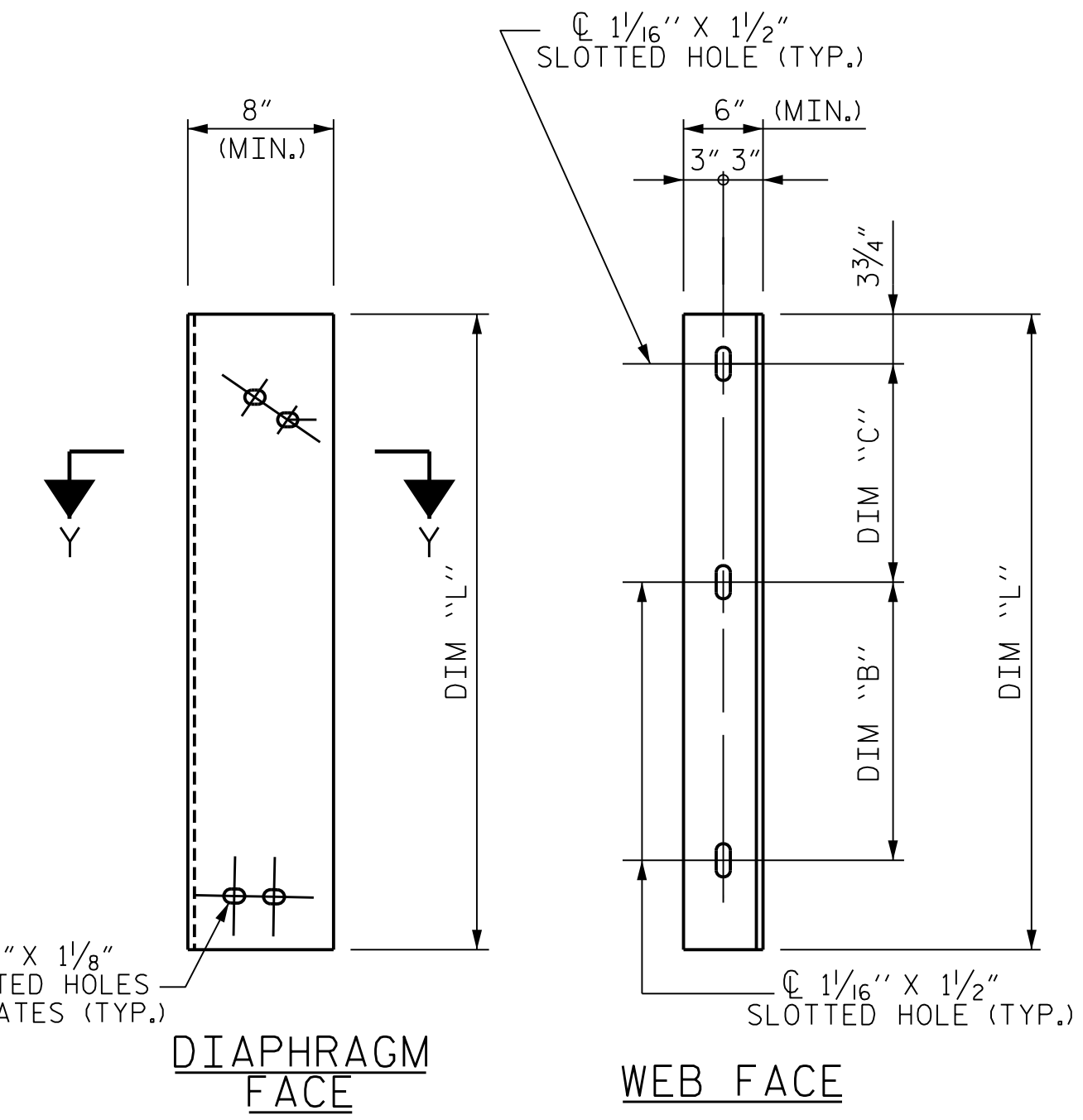
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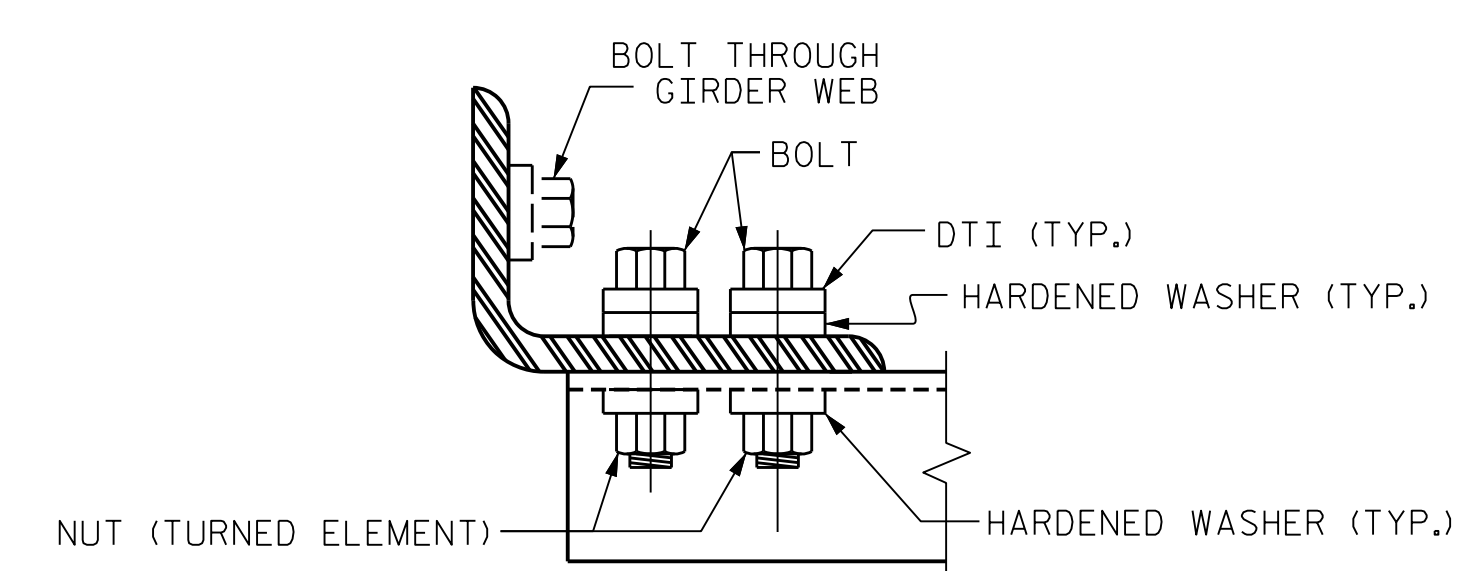
PART SECTION AT INTERMEDIATE DIAPHRAGM



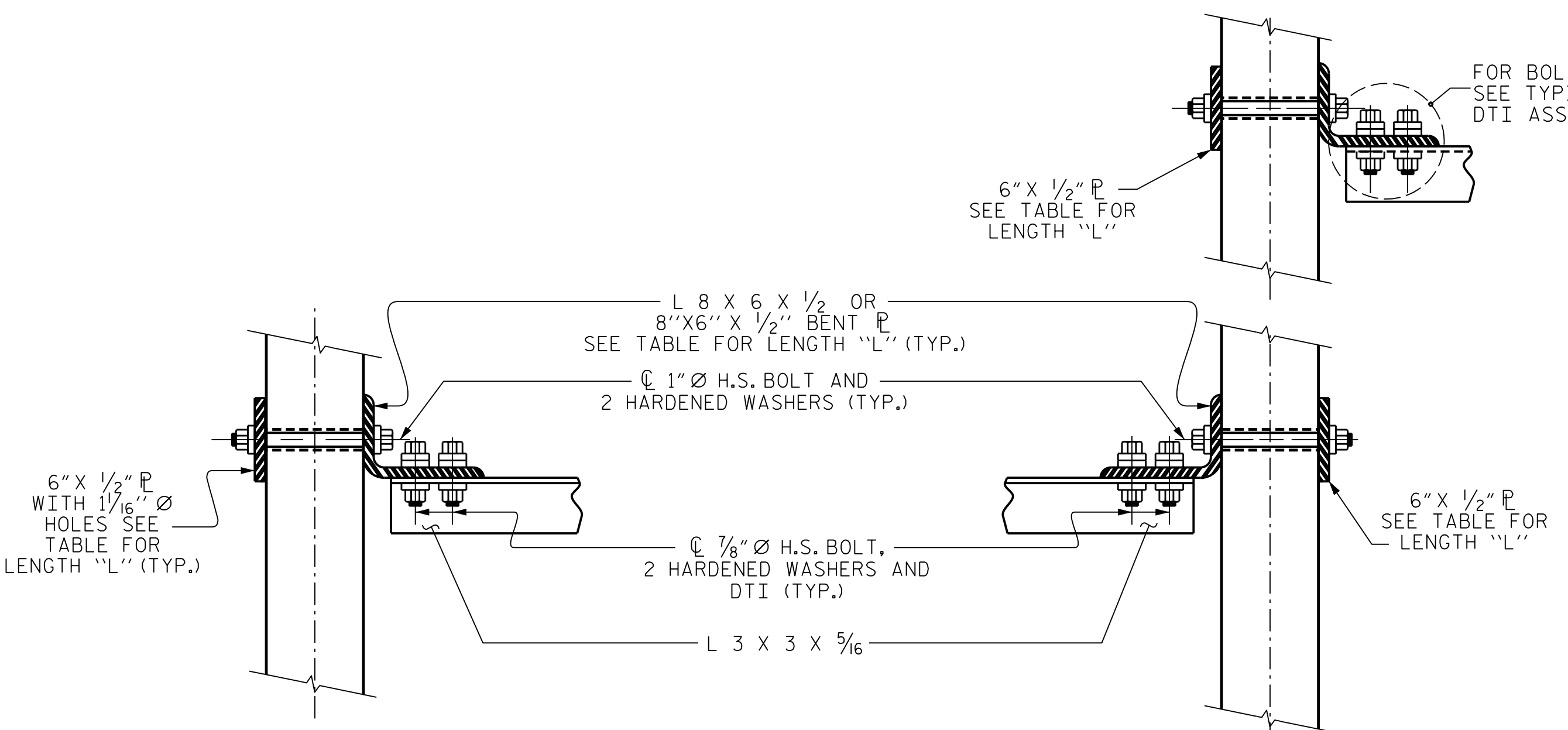
ANGLE END
(L 3 x 3 x 5/16)



CONNECTOR PLATE DETAIL



BOLT WITH DTI ASSEMBLY DETAIL



CONNECTION DETAILS

STRUCTURAL STEEL NOTES

ALL INTERMEDIATE DIAPHRAGM STEEL AND CONNECTOR PLATES SHALL BE AASHTO M270 GRADE 50 OR APPROVED EQUAL.

TENSION ON THE ASTM A325 BOLTS THROUGH THE ANGLE MEMBER SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

TENSION ON THE ASTM A449 BOLTS THROUGH THE GIRDER WEB SHALL BE SNUG TIGHTENED FOLLOWED BY AN ADDITIONAL 1/4 TURN.

THE PLATES, BENT PLATES, AND ANGLES SHALL BE GALVANIZED OR METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

FOR METALLIZATION, APPLY A THERMAL SPRAYED COATING WITH A SEAL COAT TO ALL STEEL DIAPHRAGM SURFACES IN ACCORDANCE WITH THE DEPARTMENTS THERMAL SPRAYED COATINGS (METALLIZATION) PROGRAM, THERMAL SPRAYED COATINGS SPECIAL PROVISION AND SECTION 442 OF THE STANDARD SPECIFICATIONS.

GALVANIZE THE HIGH STRENGTH BOLTS, NUTS, WASHERS AND DIRECT TENSION INDICATORS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

USE AN ASTM F436 HARDENED WASHER WITH STANDARD AND SLOTTED HOLES UNDER EACH BOLT HEAD AND NUT.

FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

INTERMEDIATE DIAPHRAGM ASSEMBLY SHALL COMPLY WITH SECTION 1072 OF THE STANDARD SPECIFICATIONS.

SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

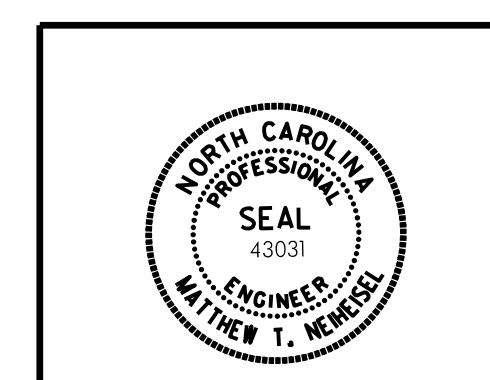
IN THE EXTERIOR BAYS, PLACE TEMPORARY STRUTS BETWEEN PRESTRESSED GIRDERS ADJACENT TO THE STEEL DIAPHRAGMS. STRUTS SHALL REMAIN IN PLACE 3 DAYS AFTER CONCRETE IS PLACED.

THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.

TABLE

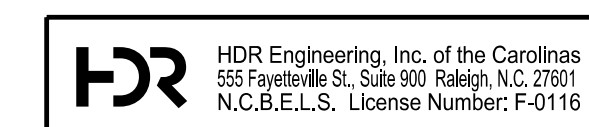
GIRDER TYPE	DIM "A"	DIM "B"	DIM "C"	DIM "L"
63" BULB TEE	1'-7 1/2"	1'-3"	1'-3 1/4"	3'-5"

PROJECT NO. 17BP.8.R.121
 MOORE COUNTY
 STATION: 22+68.50 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
SUPERSTRUCTURE
 INTERMEDIATE STEEL
 DIAPHRAGMS FOR 63" MODIFIED
 BULB TEE PRESTRESSED
 CONCRETE GIRDERS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-16
1			3			TOTAL SHEETS
2			4			33



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DRAWN BY : D. H. CARTER DATE : JUN 2018
 CHECKED BY : A. E. SMITH DATE : JUN 2018
 DESIGN ENGINEER OF RECORD: M. T. NEIHEISEL DATE : JUN 2018

NOTES

AT ALL FIXED POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED FINGER TIGHT AND THEN BACKED OFF 1/2 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

THE 2" Ø PIPE SLEEVE SHALL BE CUT FROM SCHEDULE 40 PVC PLASTIC PIPE. THE PVC PLASTIC PIPE SHALL MEET THE REQUIREMENTS OF ASTM D1785.

STEEL SOLE PLATES, ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

PRIOR TO WELDING, GRIND THE GALVANIZED SURFACE OF THE PORTION OF THE EMBEDDED PLATE AND SOLE PLATE THAT ARE TO BE WELDED. AFTER WELDING, DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

WHEN WELDING THE SOLE PLATE TO THE EMBEDDED PLATE IN THE GIRDER, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE SOLE PLATE DOES NOT EXCEED 300°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE ELASTOMER.

SOLE PLATE "P", BOLTS, NUTS, WASHERS, AND PIPE SLEEVE SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLT, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

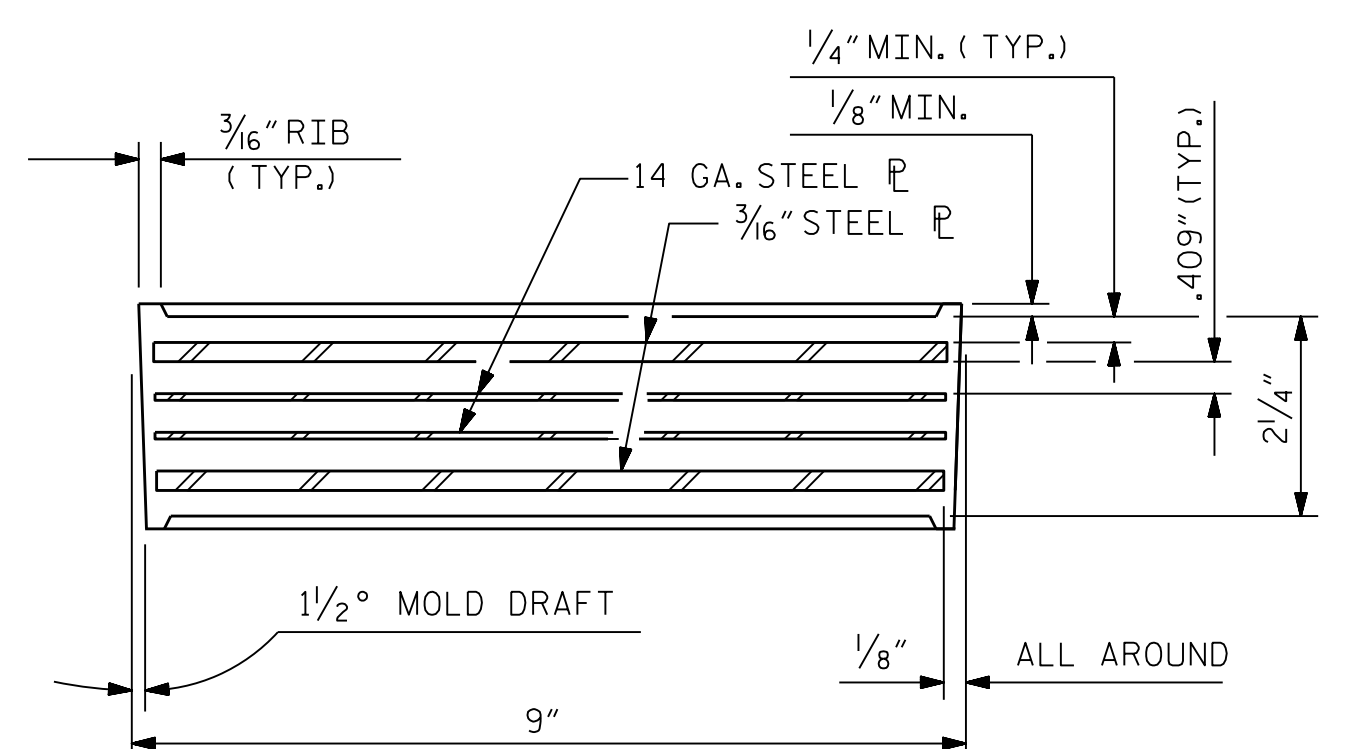
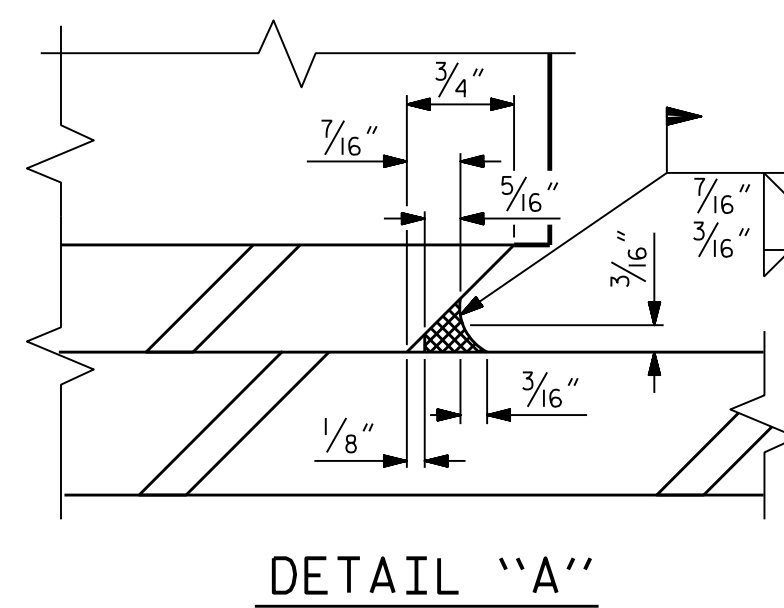
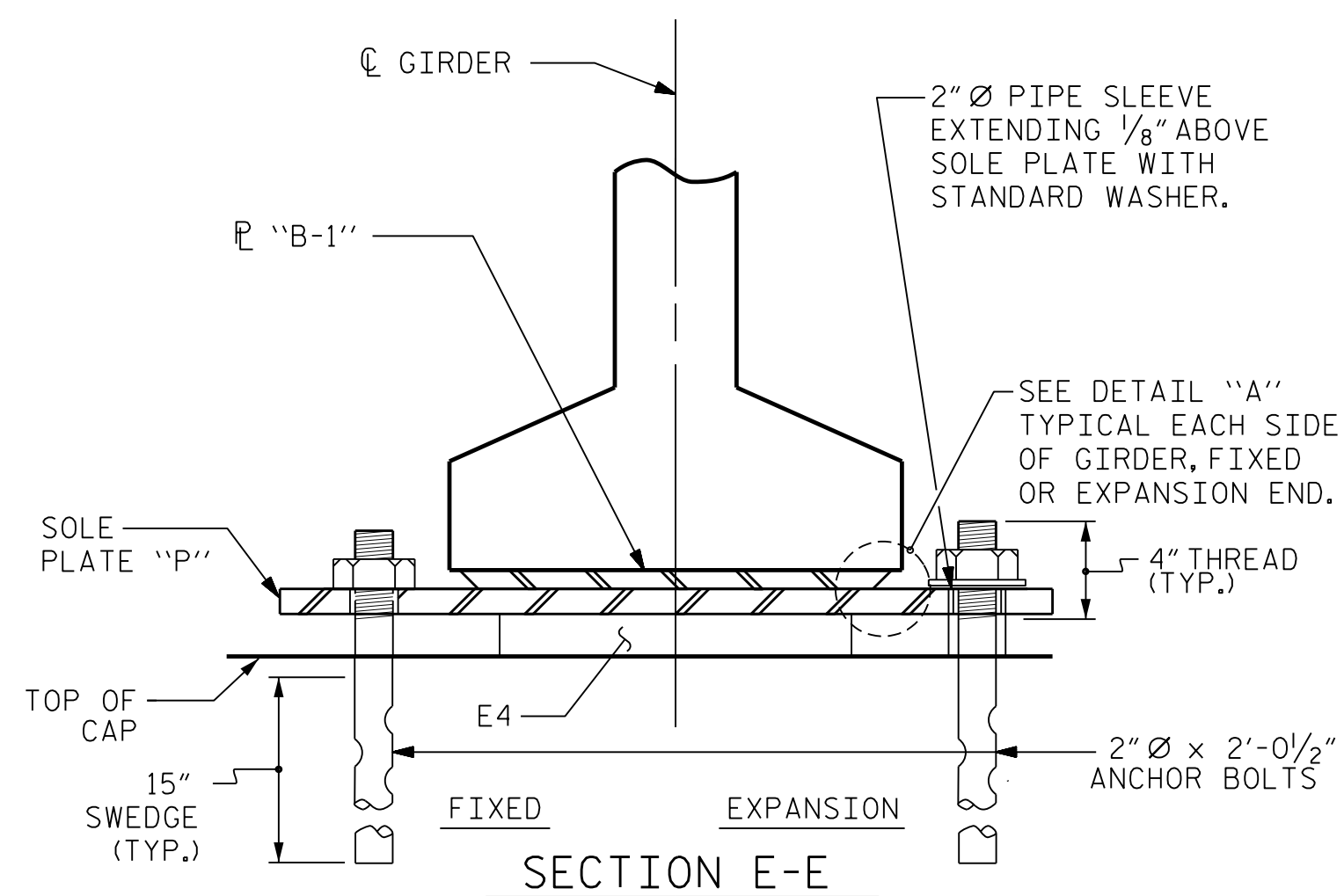
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.

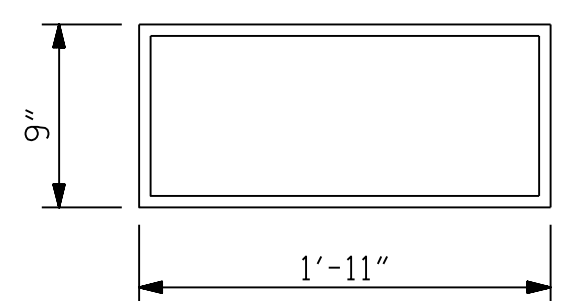
FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE V	320 k



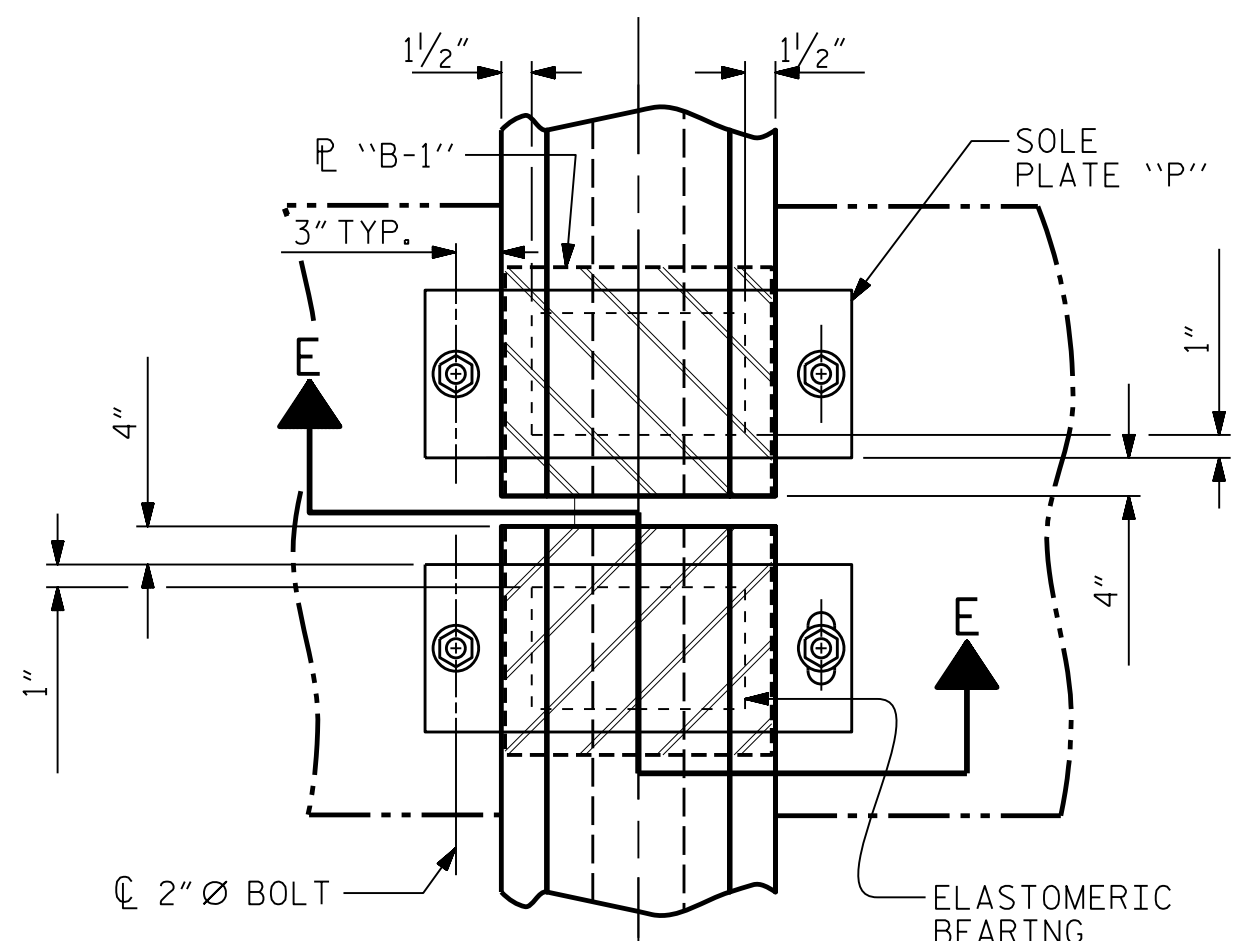
TYPICAL SECTION OF ELASTOMERIC BEARINGS



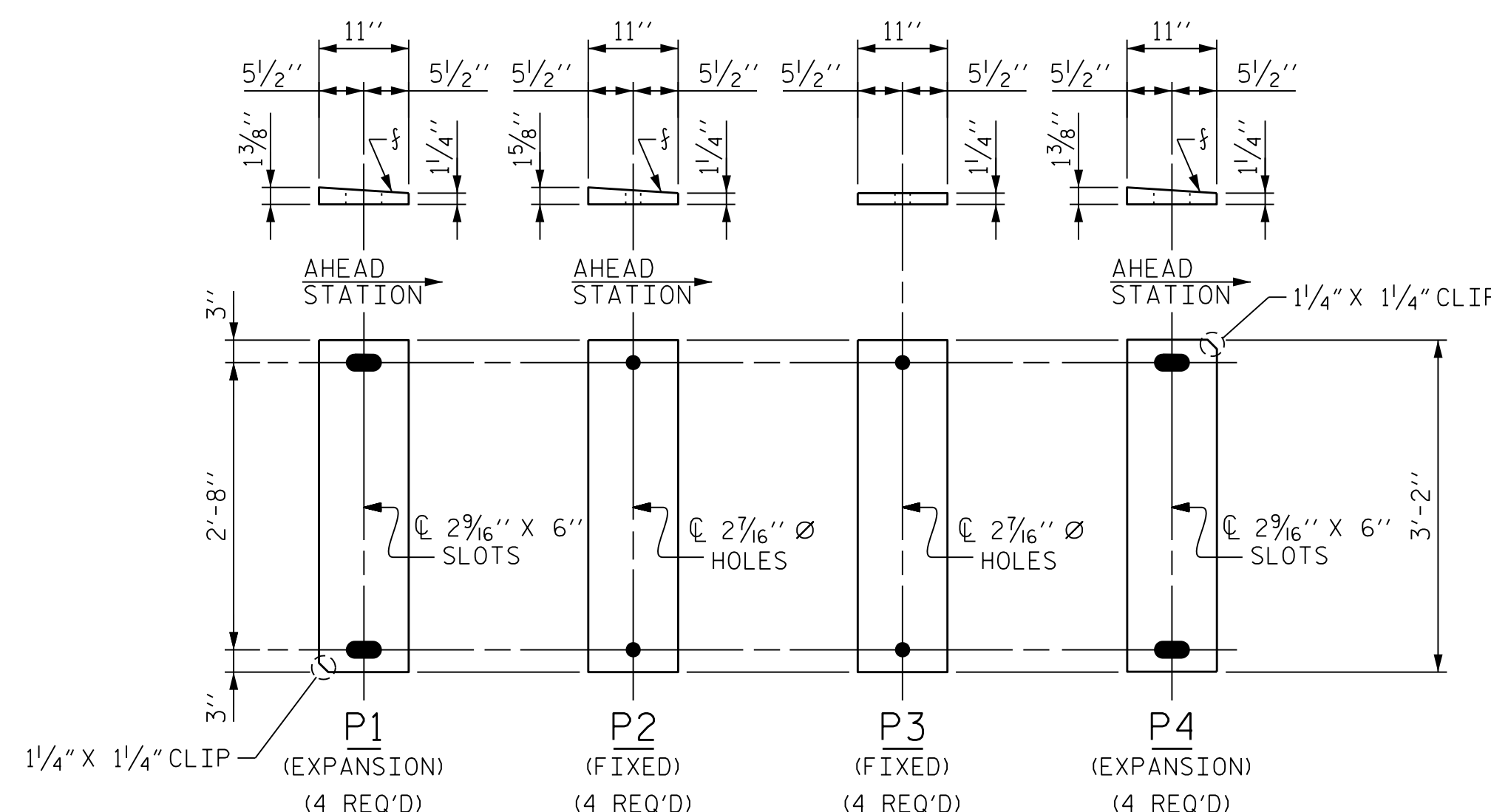
E4 (16 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

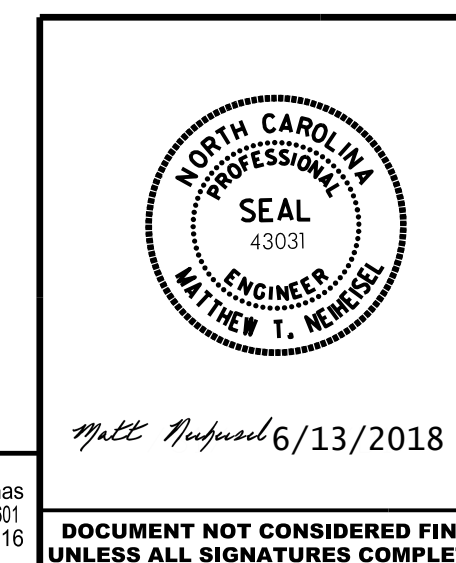
TYPE V



TYPICAL HALF-PLAN (SHOWING CONTINUOUS BENT) TYPICAL HALF-PLAN (SHOWING SIMPLE SPAN BENT)



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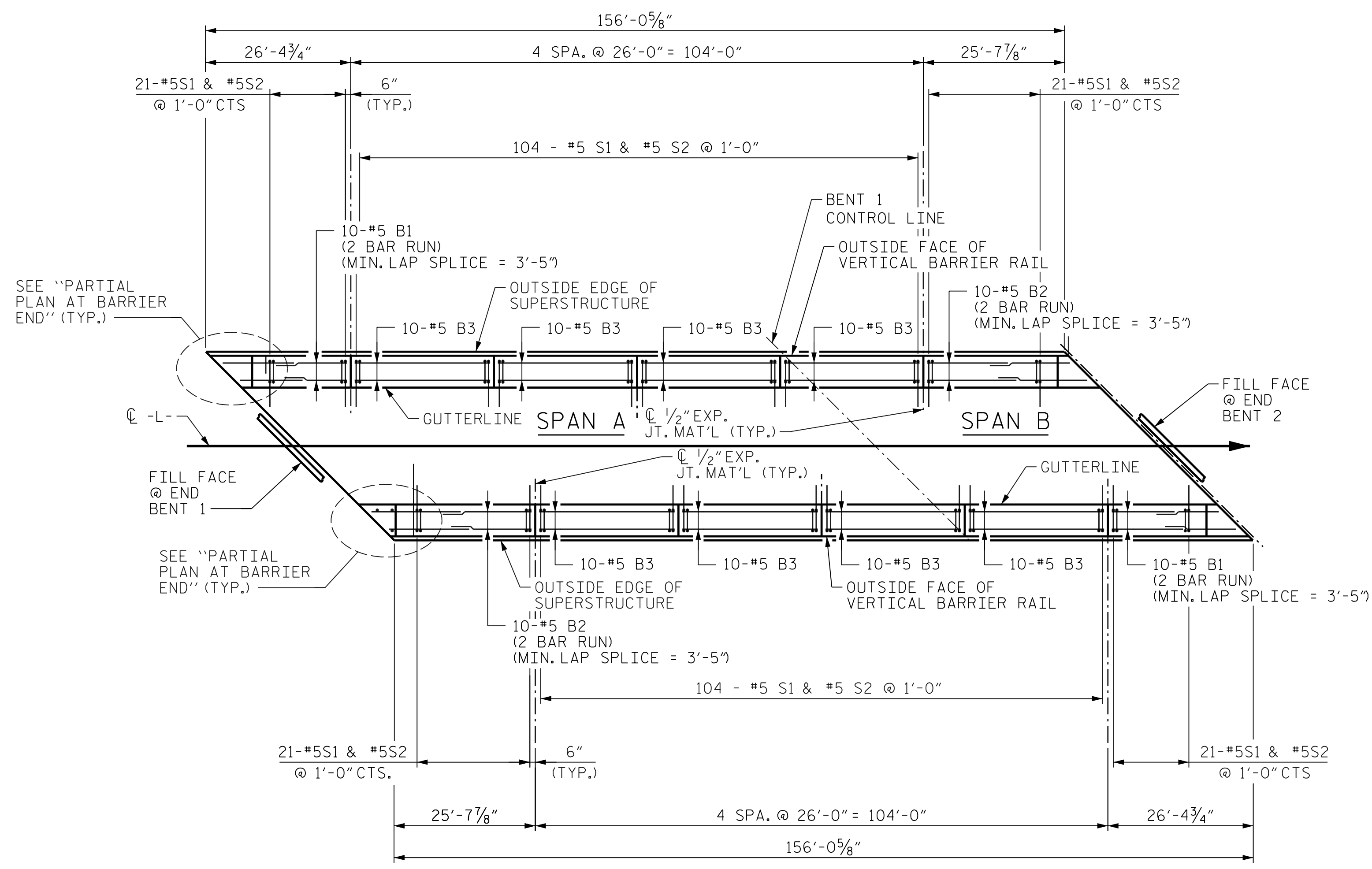
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SUPERSTRUCTURE ELASTOMERIC BEARING DETAILS PRESTRESSED CONCRETE GIRDER SUPERSTRUCTURE					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-17
					TOTAL SHEETS 33

DRAWN BY: D. H. CARTER DATE: JUN 2018
 CHECKED BY: A. E. SMITH DATE: JUN 2018
 DESIGN ENGINEER OF RECORD: M. T. NEIHEISEL DATE: JUN 2018

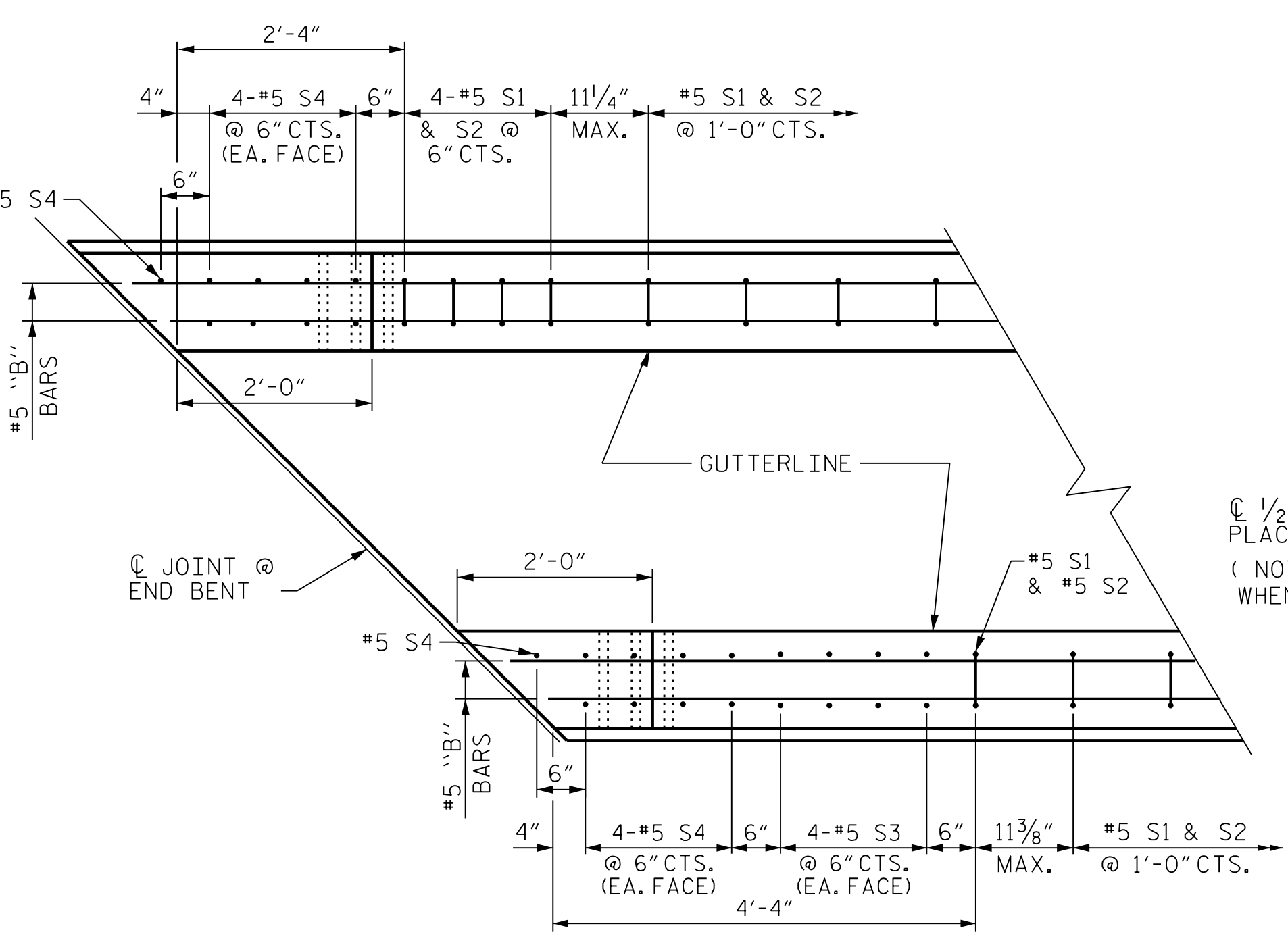


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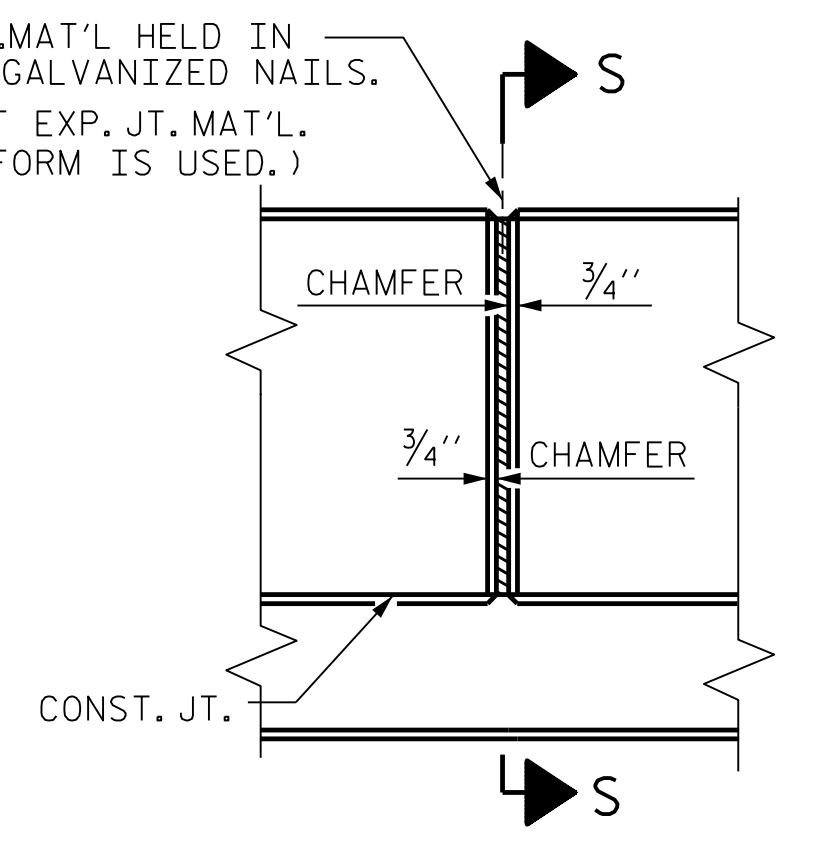
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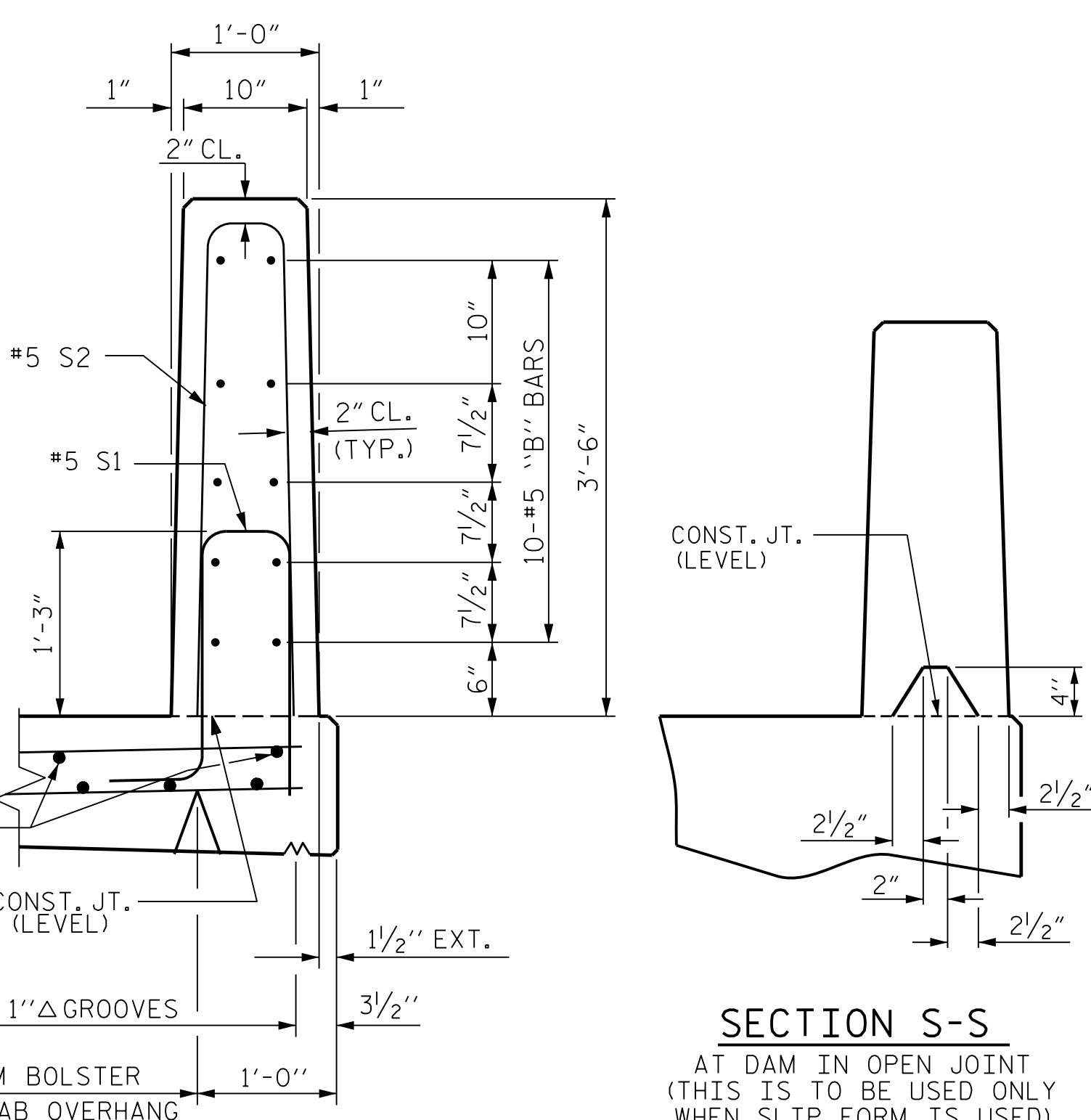
PLAN



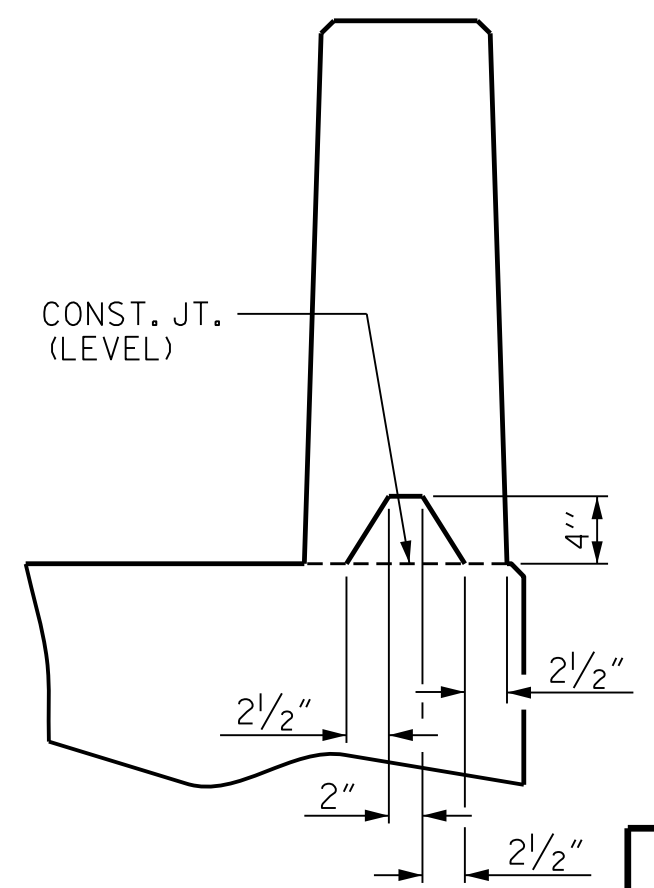
PARTIAL PLAN AT BARRIER ENDS



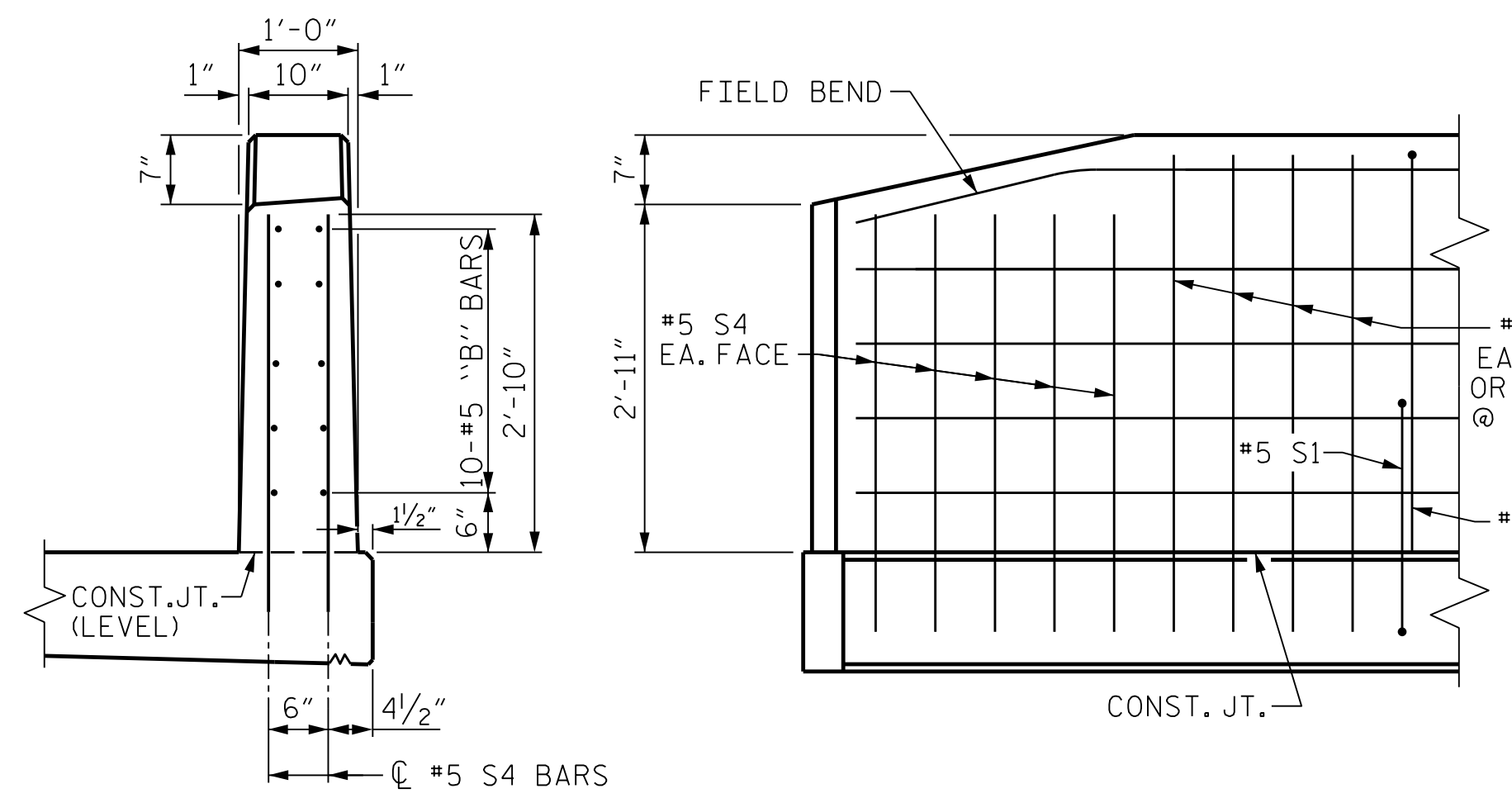
ELEVATION AT EXPANSION JOINTS



SECTION THRU RAIL



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



END VIEW SIDE VIEW

END OF RAIL DETAILS
FOR ADHESIVE ANCHORING AT SAWED JOINTS

NOTES

THE BARRIER RAIL IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

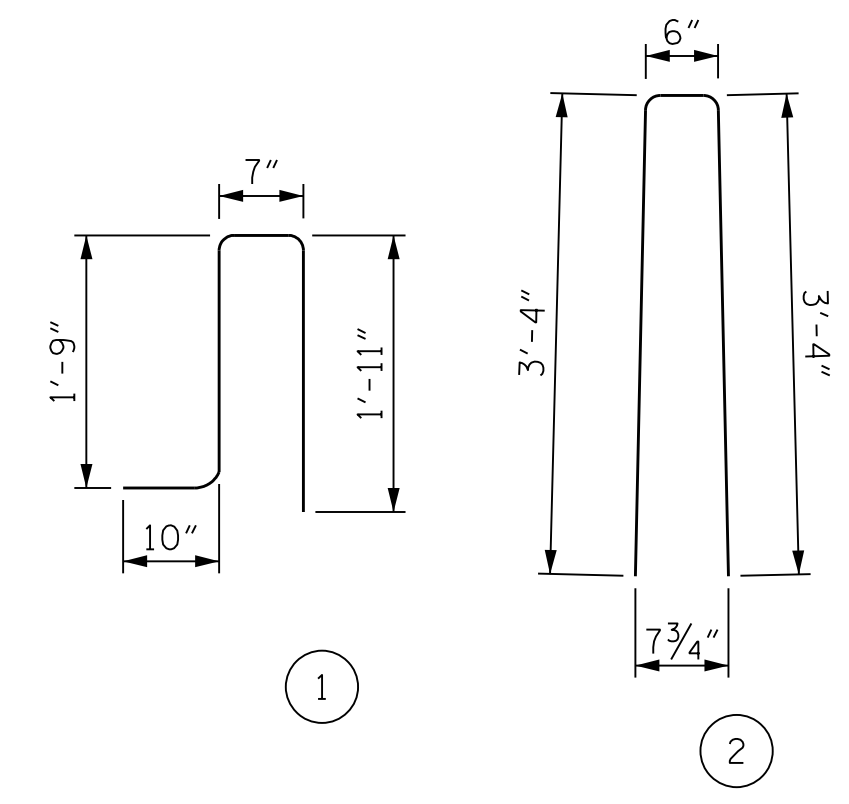
WHEN FOAM JOINT SEAL IS REQUIRED, THE JOINT IN THE DECK SHALL BE SAWED PRIOR TO THE CASTING OF VERTICAL CONCRETE BARRIER RAIL.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

THE #5 S3 & S4 BARS SHALL BE INSTALLED, USING AN ADHESIVE ANCHORING SYSTEM, AFTER SAWING THE JOINT. THE YIELD LOAD FOR THE #5 S3 & S4 BARS IS 18.6 KIPS. FIELD TESTING FOR THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

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. THE 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.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR VERTICAL CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	40	#5	STR	14'-9"	616
* B2	40	#5	STR	14'-7"	609
* B3	80	#5	STR	25'-8"	2,142
* S1	302	#5	1	5'-1"	1,602
* S2	302	#5	2	7'-2"	2,258
* S3	16	#5	STR	4'-0"	67
* S4	36	#5	STR	3'-6"	132
* EPOXY COATED REINFORCING STEEL					7,426 LBS.
CLASS AA CONCRETE					37.1 CU. YDS.
VERTICAL CONCRETE BARRIER RAIL					311.88 LIN. FT.

PROJECT NO. 17BP.8.R.121
MOORE COUNTY
STATION: 22+68.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**SUPERSTRUCTURE
VERTICAL
CONCRETE
BARRIER RAIL**



REVISIONS

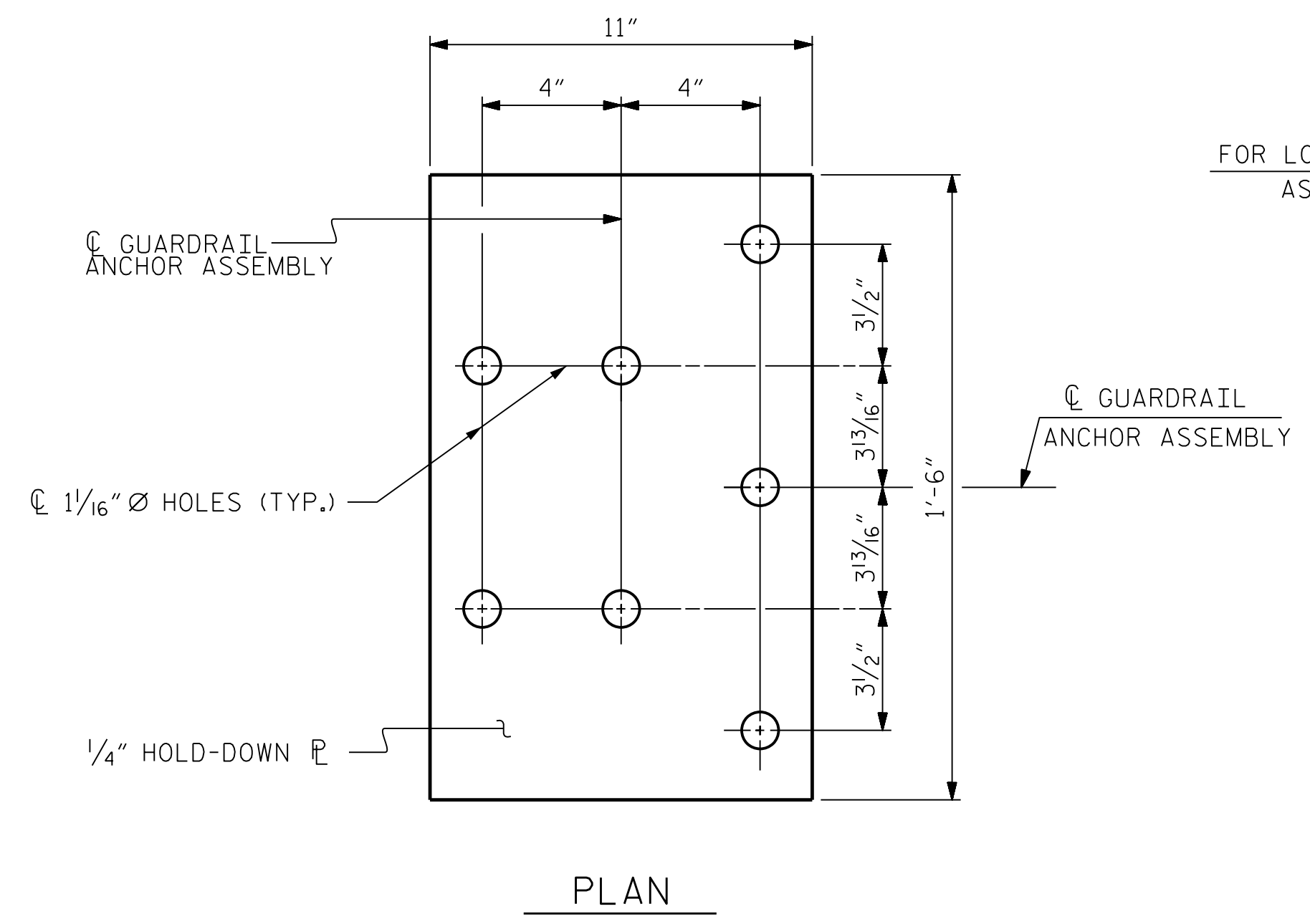
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SHEET NO. S-18
TOTAL SHEETS 33

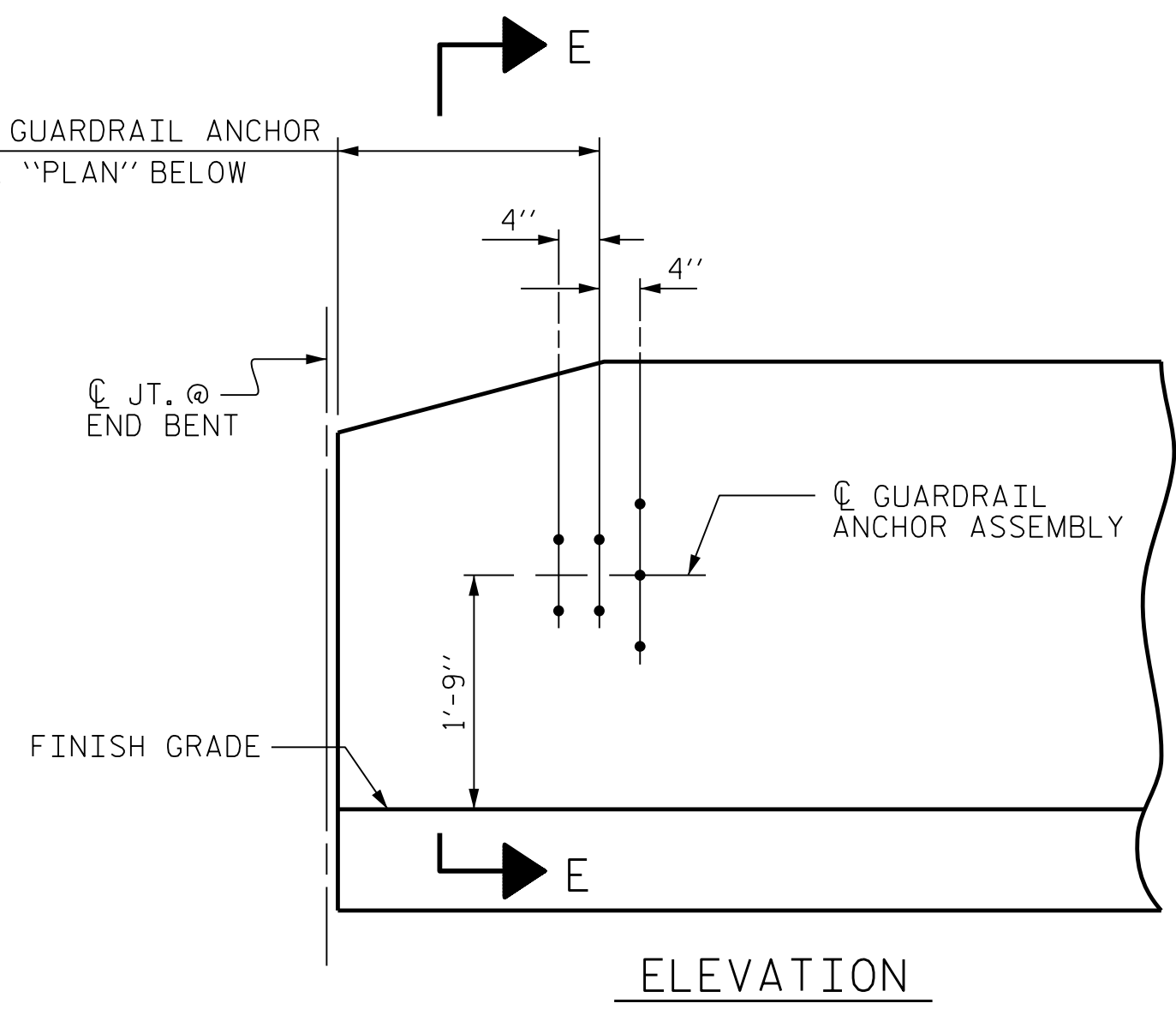
DRAWN BY: D. H. CARTER DATE: JUN 2018
CHECKED BY: A. E. SMITH DATE: JUN 2018
DESIGN ENGINEER OF RECORD: M. T. NEIHEISEL DATE: JUN 2018

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N.C.B.E.L.S. License Number: F-0116

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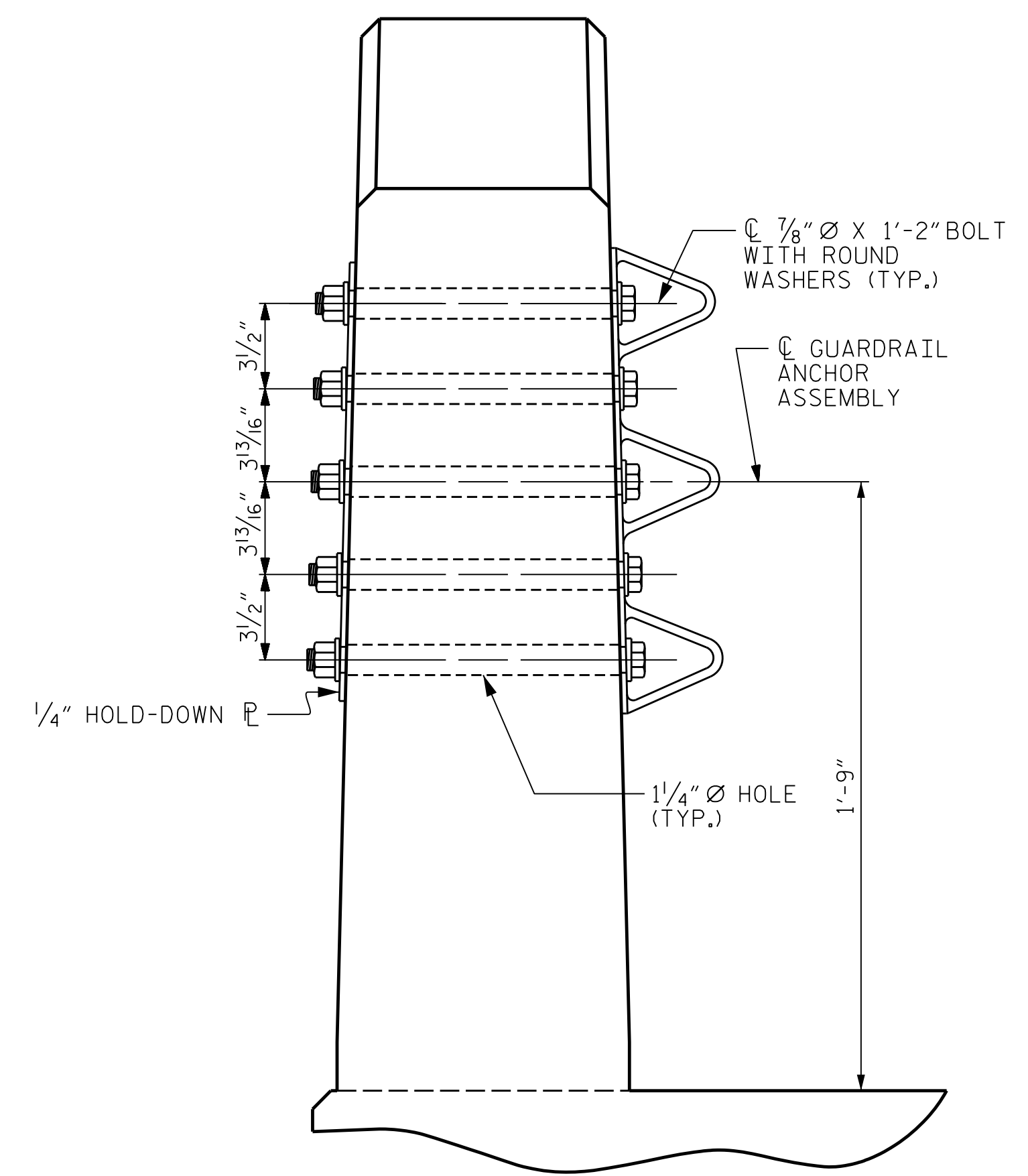


FOR LOCATION OF GUARDRAIL ANCHOR ASSEMBLY, SEE "PLAN" BELOW

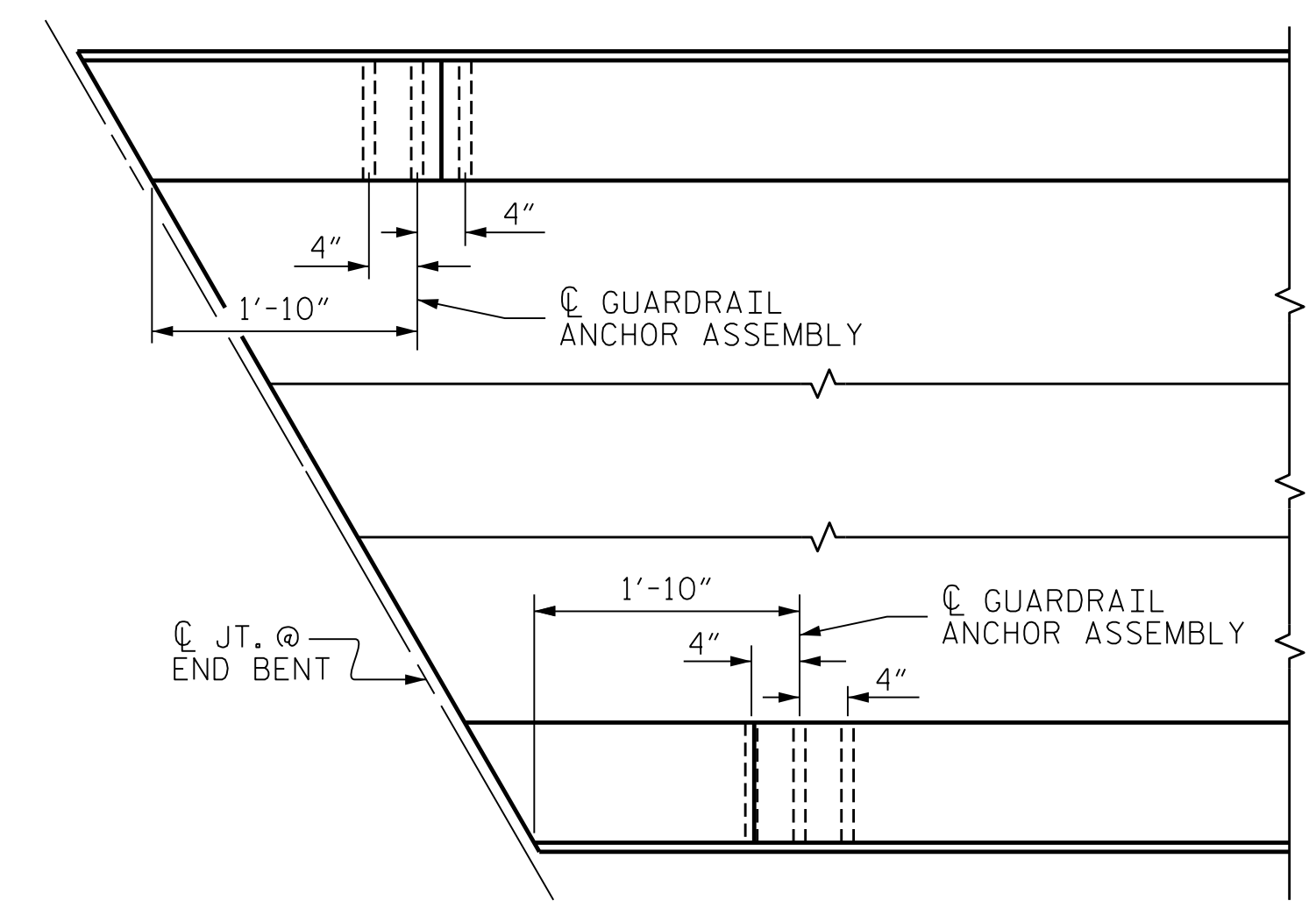


PLAN

ELEVATION

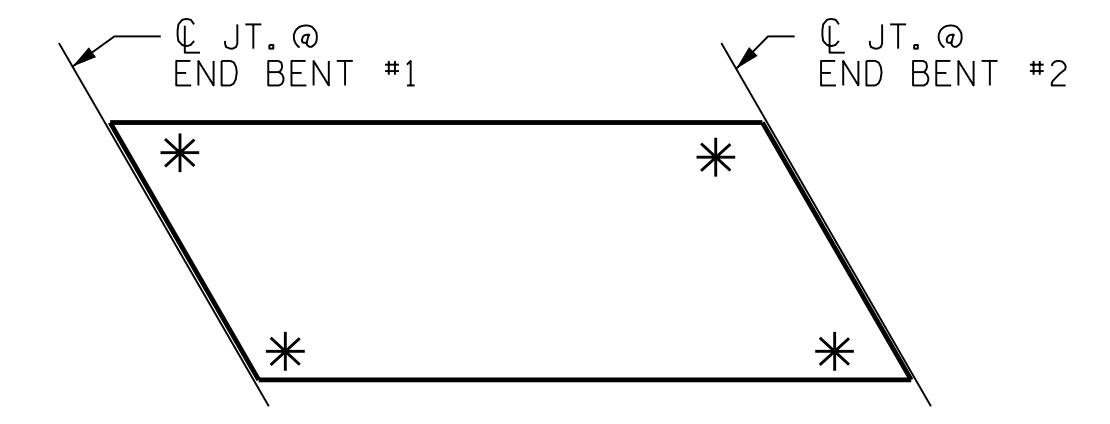


SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS



LOCATION OF ANCHORS FOR GUARDRAIL

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



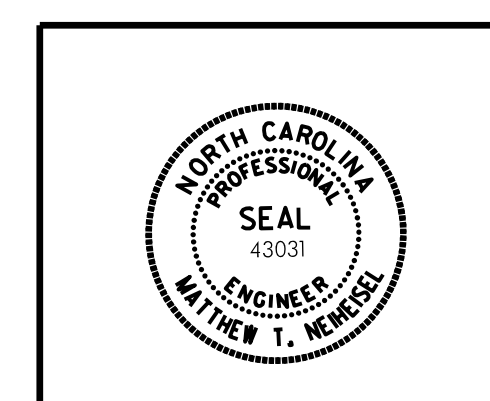
SKETCH SHOWING POINTS OF ATTACHMENT

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

NOTES

- THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 7/8" Ø BOLTS WITH NUTS AND WASHERS.
- THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.
- BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
- THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.
- AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.
- THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.
- THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.
- THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

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 MOORE COUNTY
 STATION: 22+68.50 -L-



Matthew Neiheisel 6/13/2018

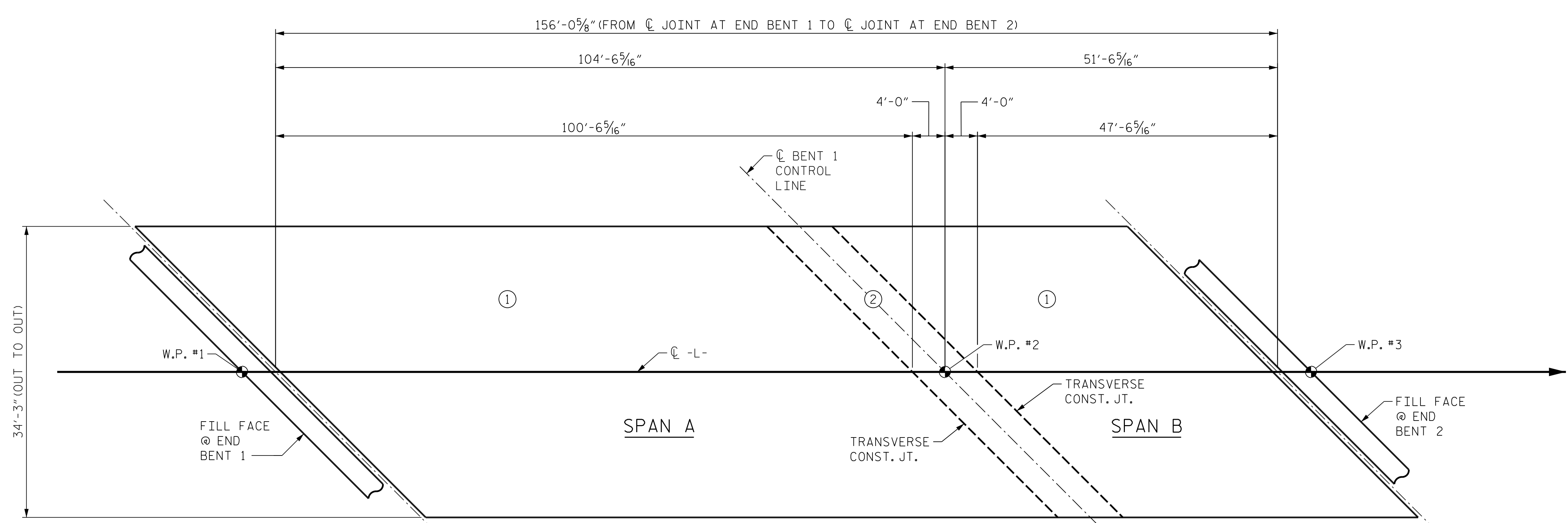
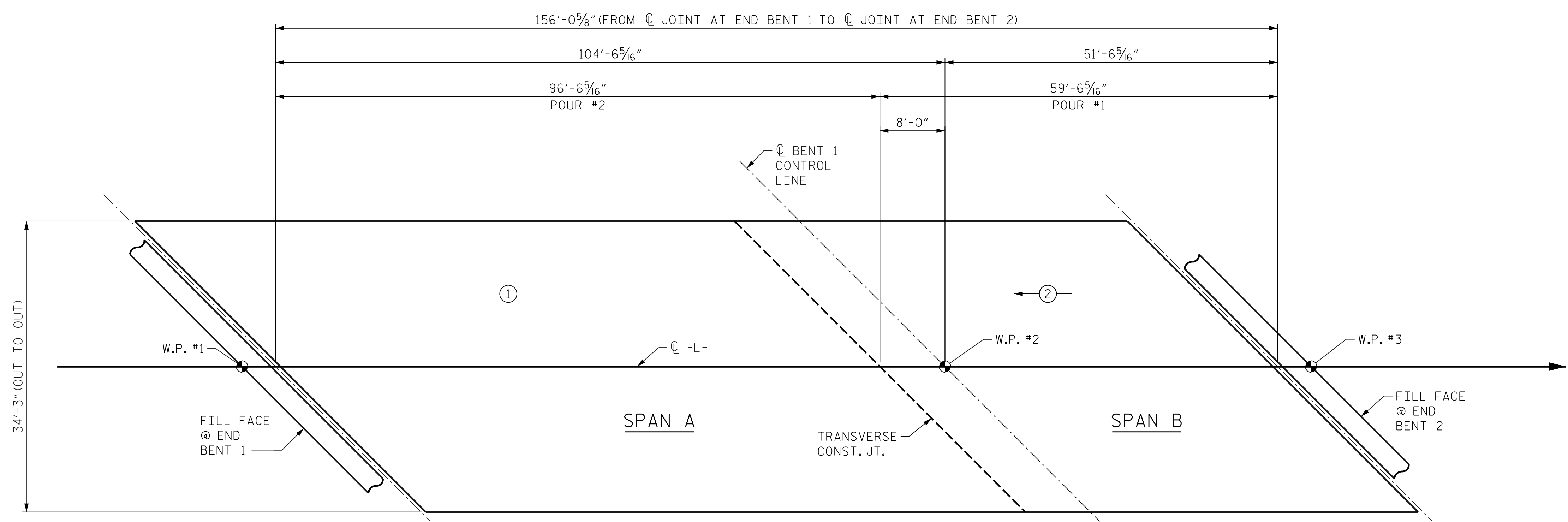
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 GUARDRAIL ANCHORAGE
 DETAILS
 FOR VERTICAL CONCRETE
 BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS 33
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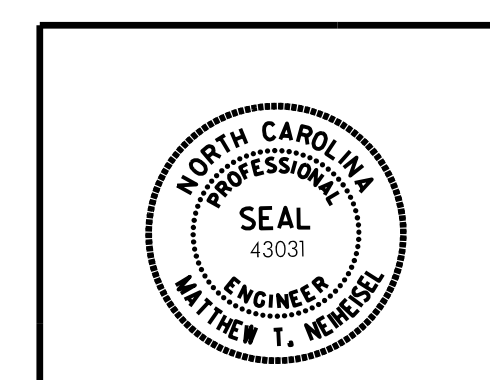


POUR ② CANNOT BE STARTED UNTIL BOTH ADJACENT ① POURS REACH A MINIMUM OF 3000 PSI.

PROJECT NO. 17BP.8.R.121
 MOORE COUNTY
 STATION: 22+68.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 BILL OF MATERIAL

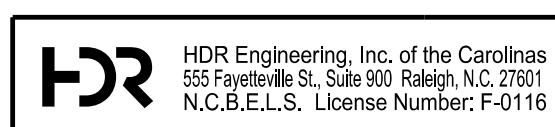


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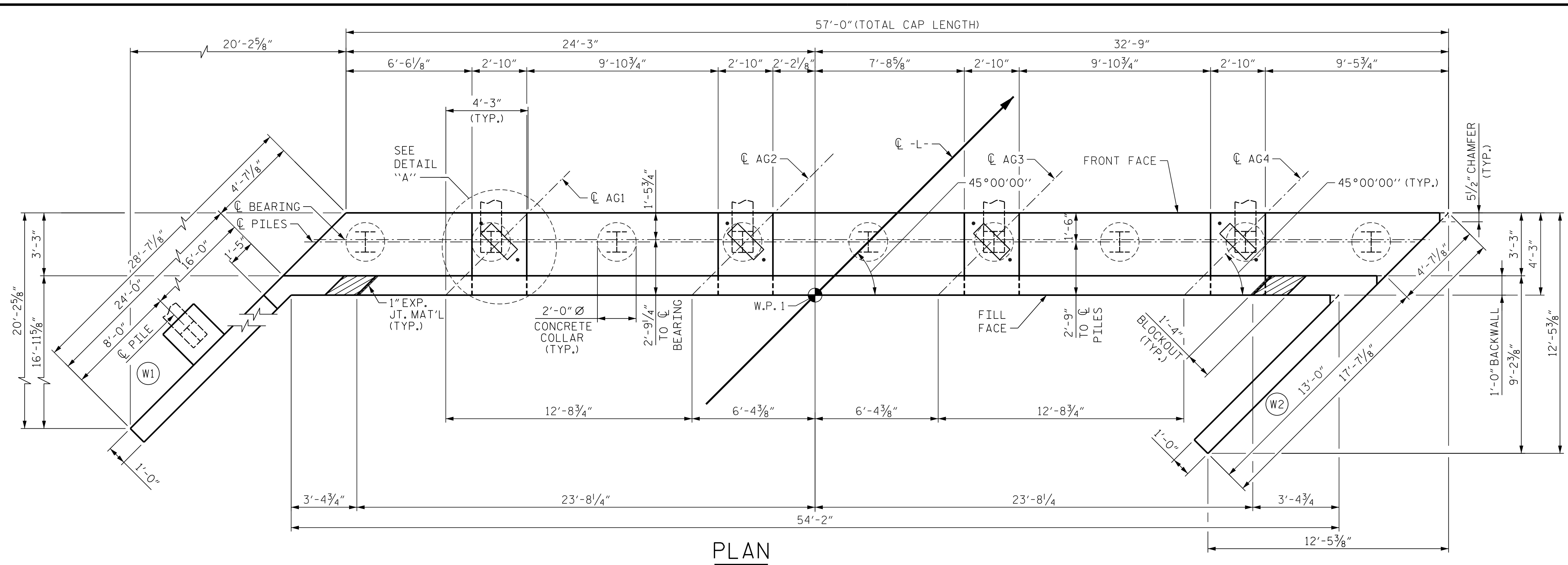
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DRAWN BY: D. H. CARTER DATE: JUN 2018
 CHECKED BY: P. KUMAR DATE: JUN 2018
 DESIGN ENGINEER OF RECORD: M. T. NEIHEISEL DATE: JUN 2018



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PLAN

NOTES:

STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

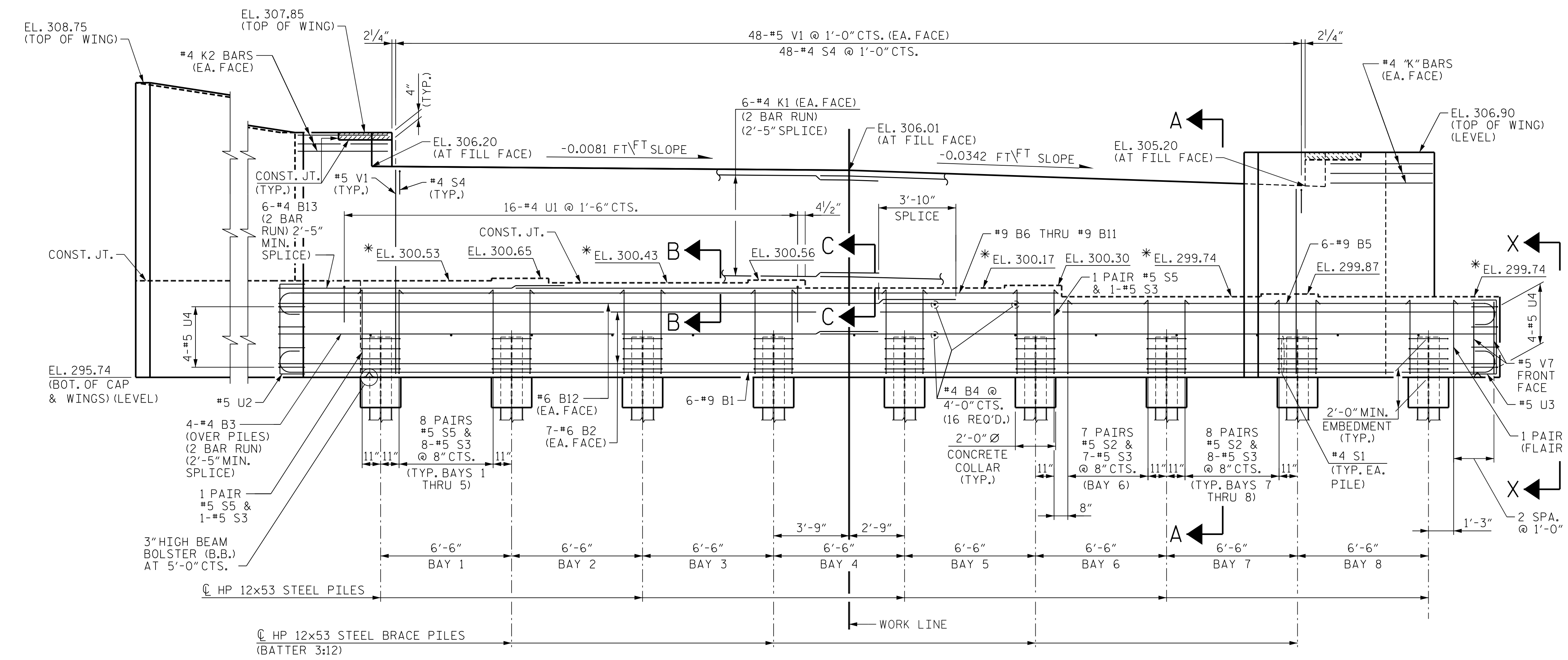
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

THE TOP SURFACE AREAS OF THE END BENT CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS, EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

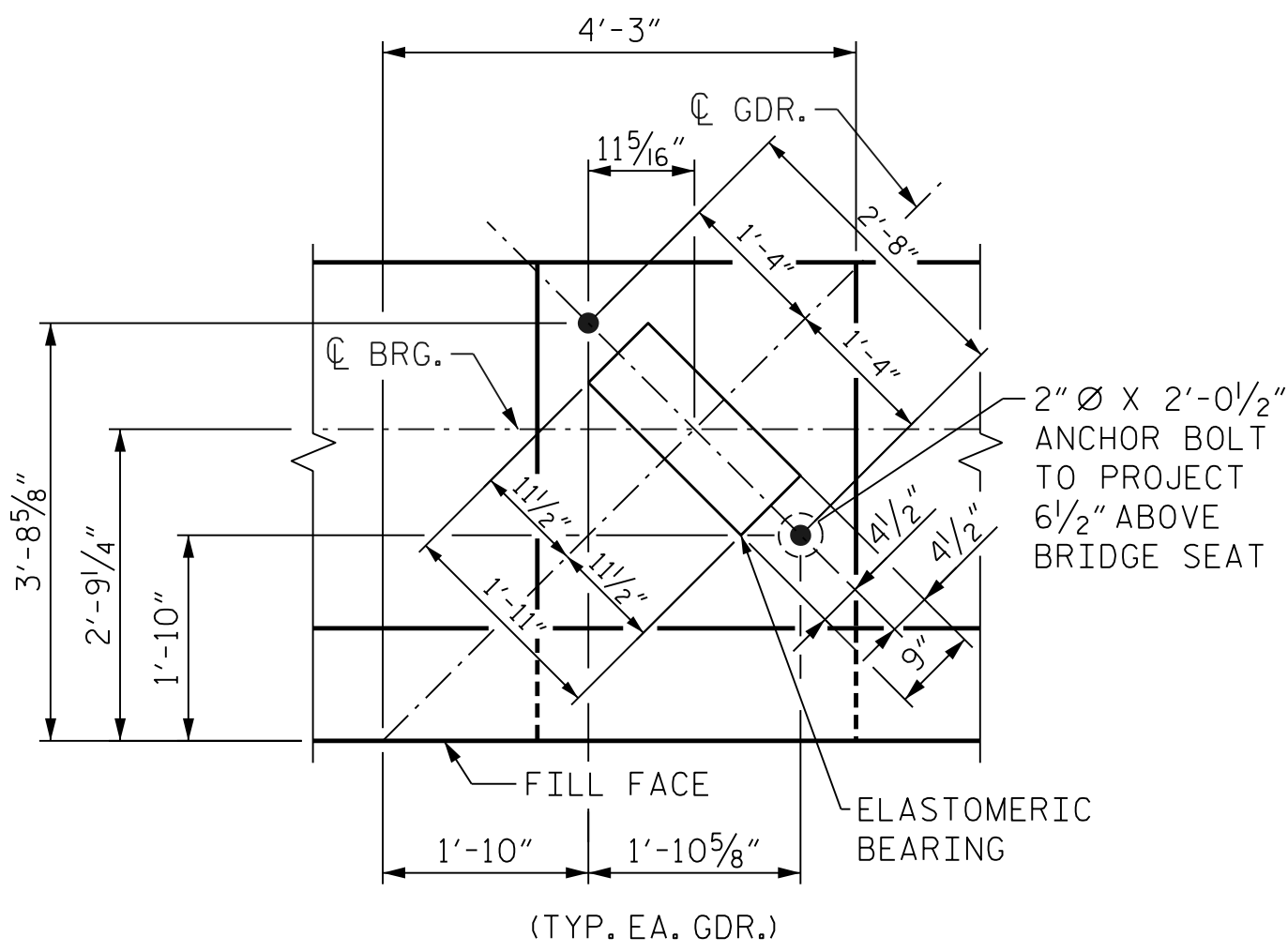
THE TOP SURFACE OF THE END BENT CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.

SEE GENERAL DRAWING FOR "FOUNDATION LAYOUT" FOR ADDITIONAL NOTES FOR DRIVING PILES.

FOR SECTIONS A-A, B-B, C-C, AND VIEW X-X SEE SHEET 3 OF 3.



ELEVATION



DETAIL "A"

PROJECT NO. 17BP.8.R.121
 MOORE COUNTY
 STATION: 22+68.50 -L-
 SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 1
 PLAN AND ELEVATION

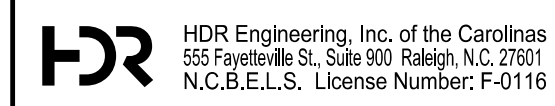


6/13/2018

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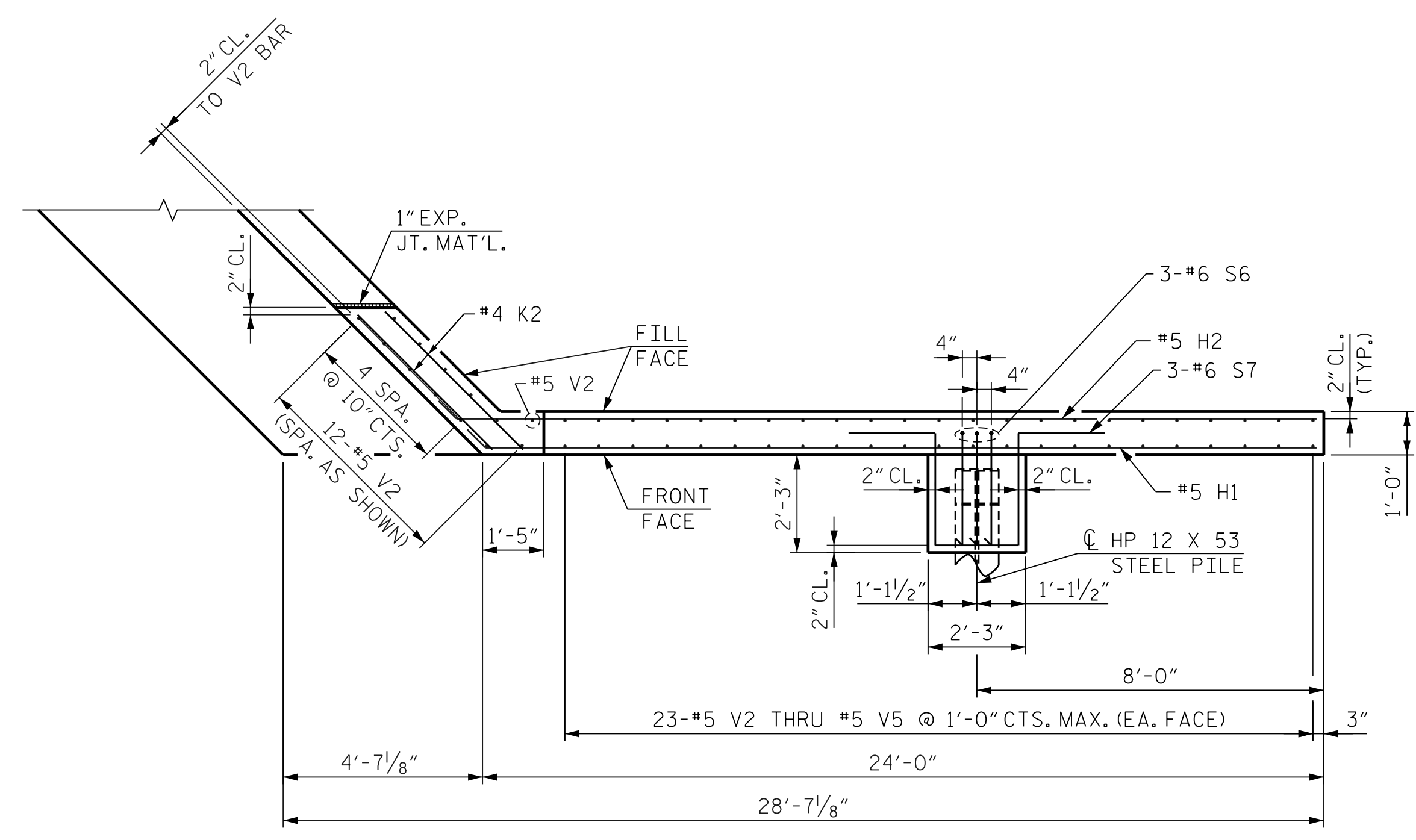
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 CHECKED BY: M. K. CHRISTIAN DATE: JUN 2018
 DESIGN ENGINEER OF RECORD: M. T. NEIHEISEL DATE: JUN 2018

* = SEE SHEET 3 OF 3 FOR LOCATIONS OF THESE ELEVATIONS

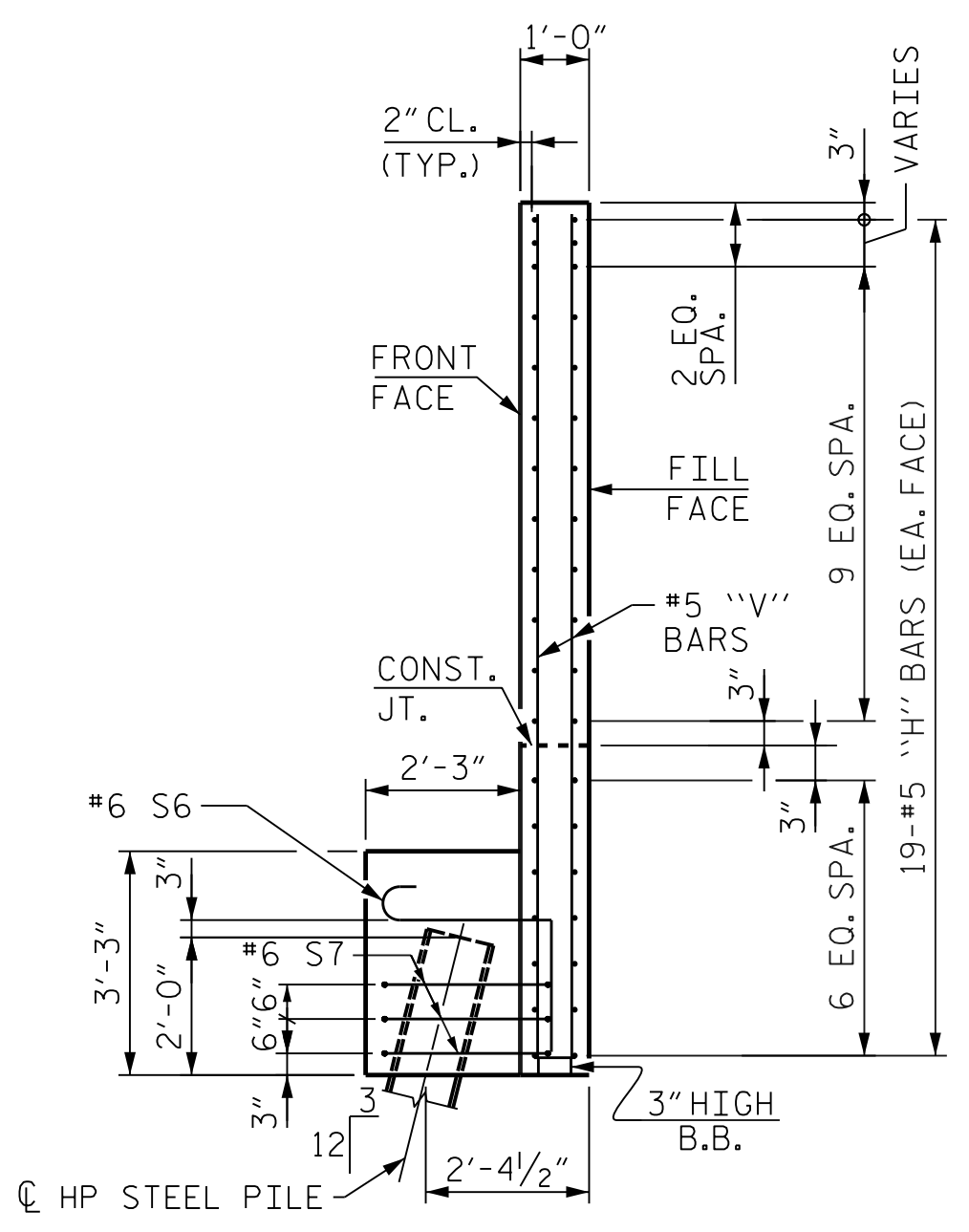


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

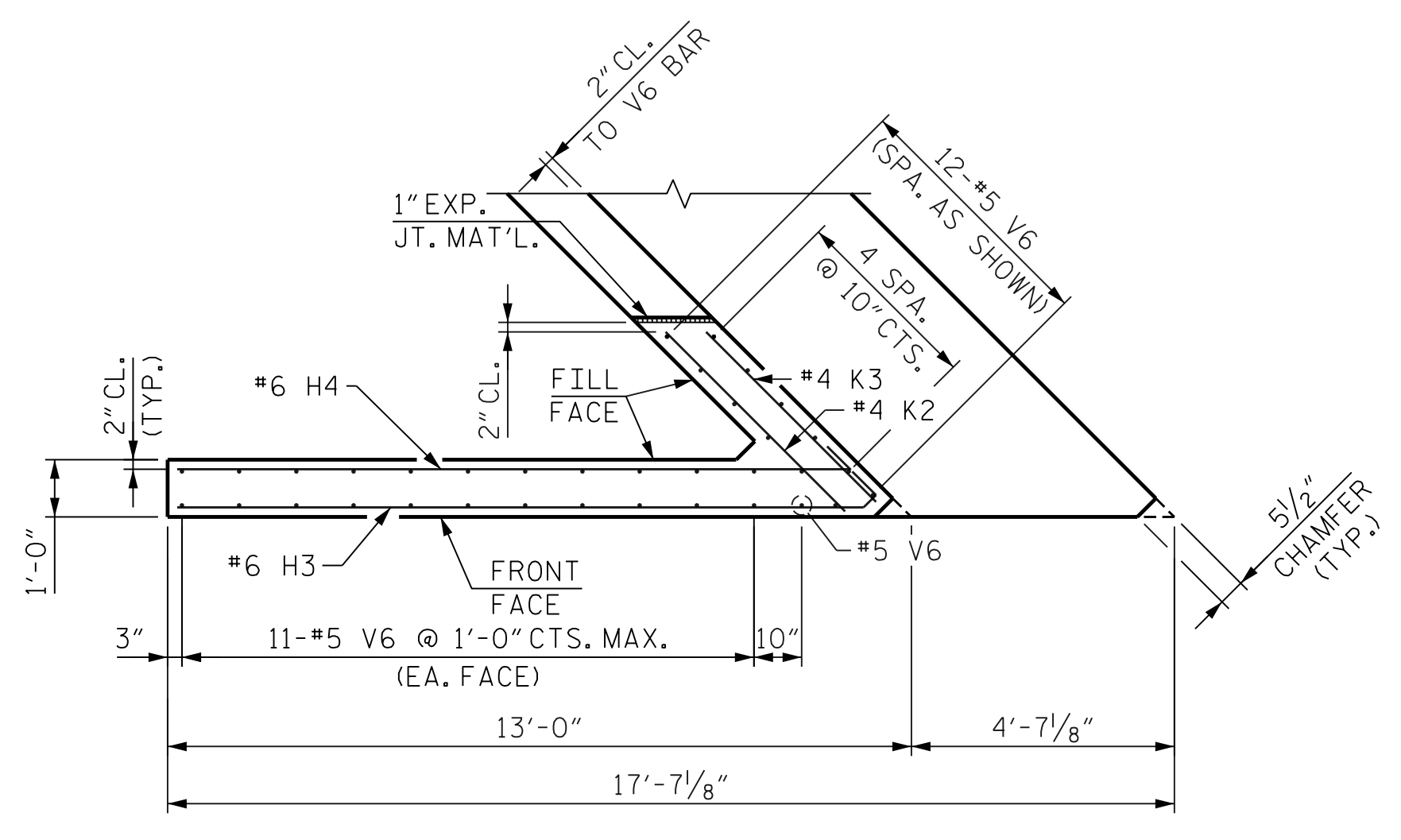
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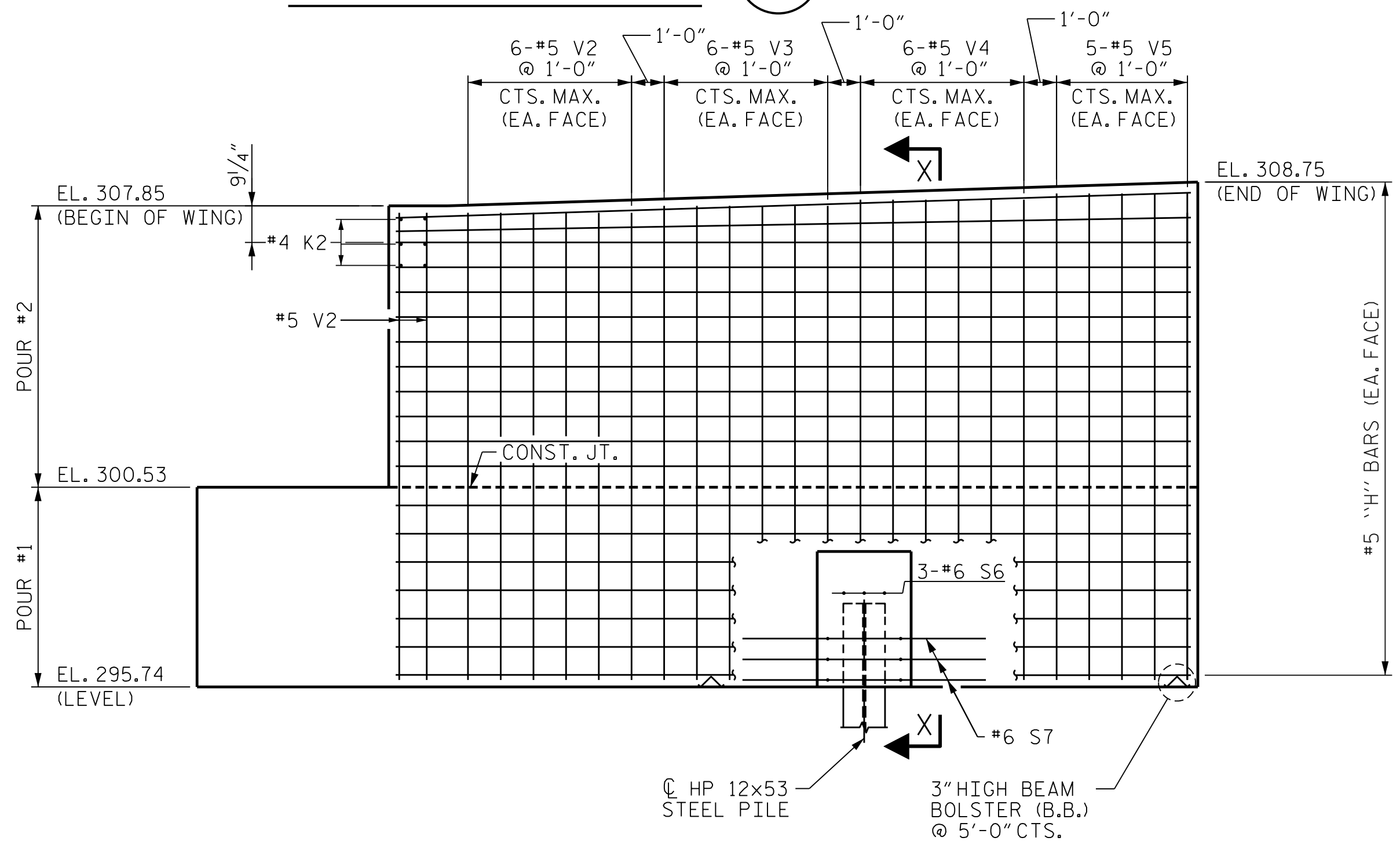
PLAN OF WING (W1)



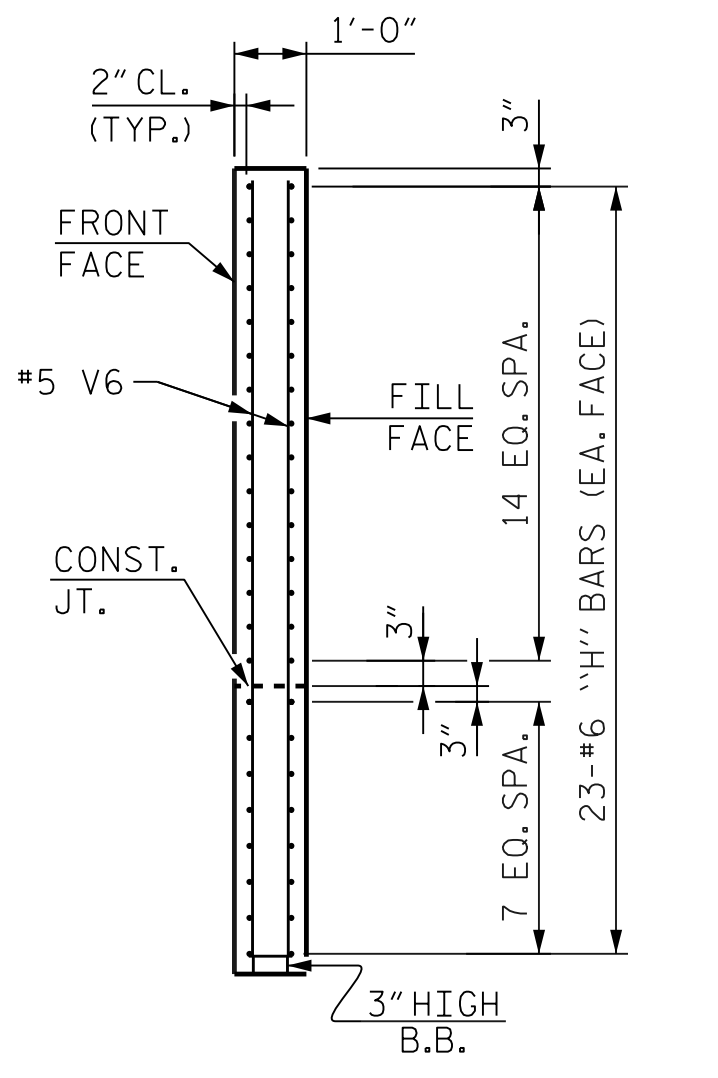
SECTION X-X



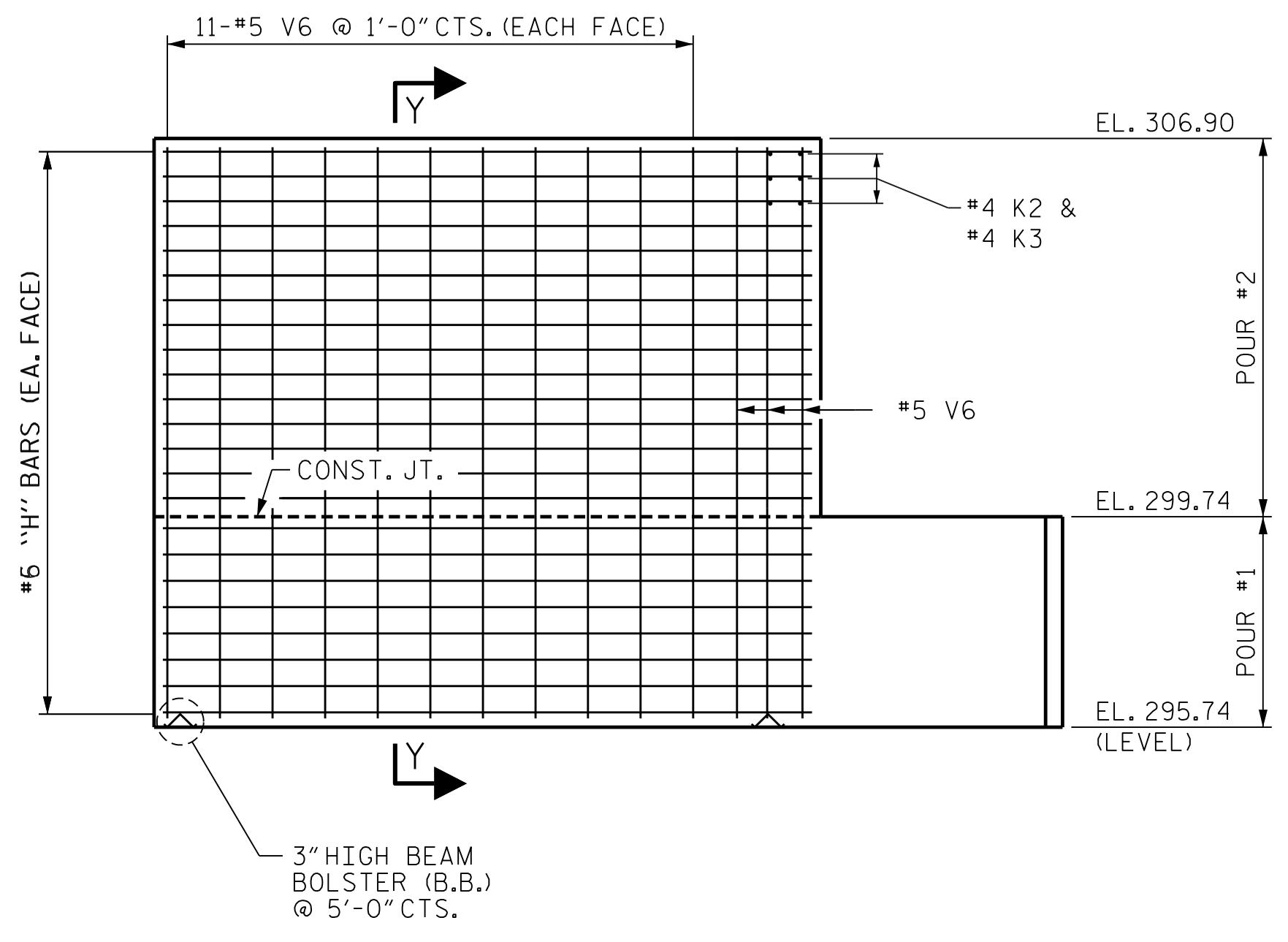
PLAN OF WING (W2)



ELEVATION OF WING (W1)



SECTION Y-Y



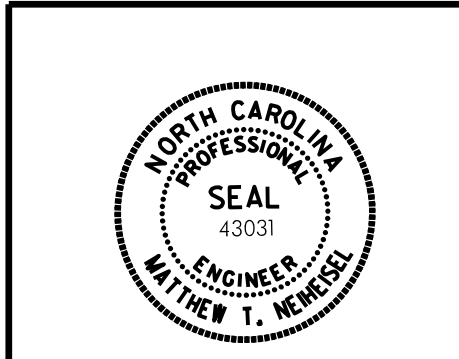
ELEVATION OF WING (W2)

PROJECT NO. 17BP.8.R.121
MOORE COUNTY
STATION: 22+68.50 -L-
SHEET 2 OF 3

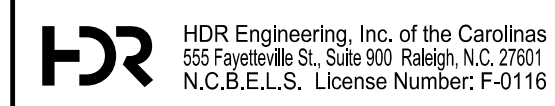
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
END BENT 1
WING WALL DETAILS

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

SHEET NO. S-23
TOTAL SHEETS 33



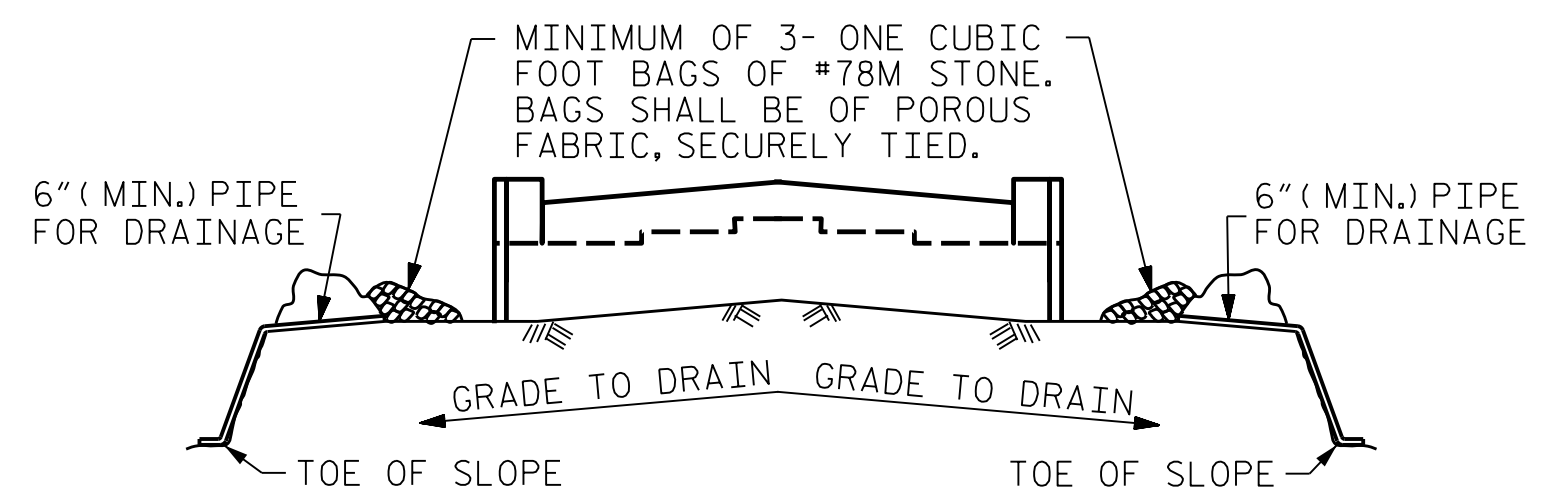
Matthew Memmel 6/13/2018



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PLOT DRIVER: NCDOT STRUCTURES DEFAULT PLOTTER.PHT
USER: MMEIHEIS DATE: 6/1/2018
FILE: ... \NCAD\3.0 Final\Plans\1101

DRAWN BY: D. H. CARTER DATE: JUN 2018
CHECKED BY: M. K. CHRISTIAN DATE: JUN 2018
DESIGN ENGINEER OF RECORD: M. T. NEIHEISEL DATE: JUN 2018

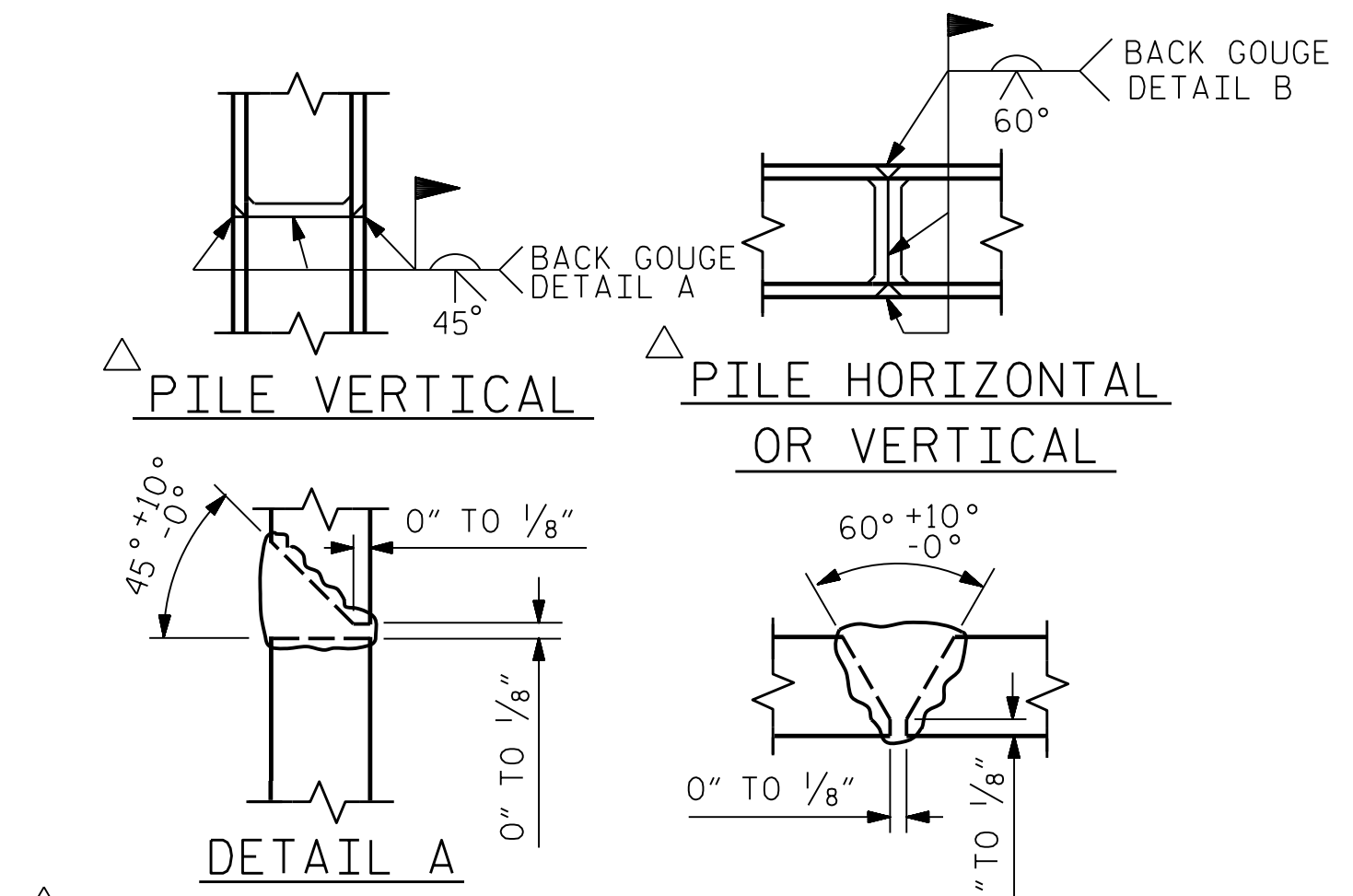


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

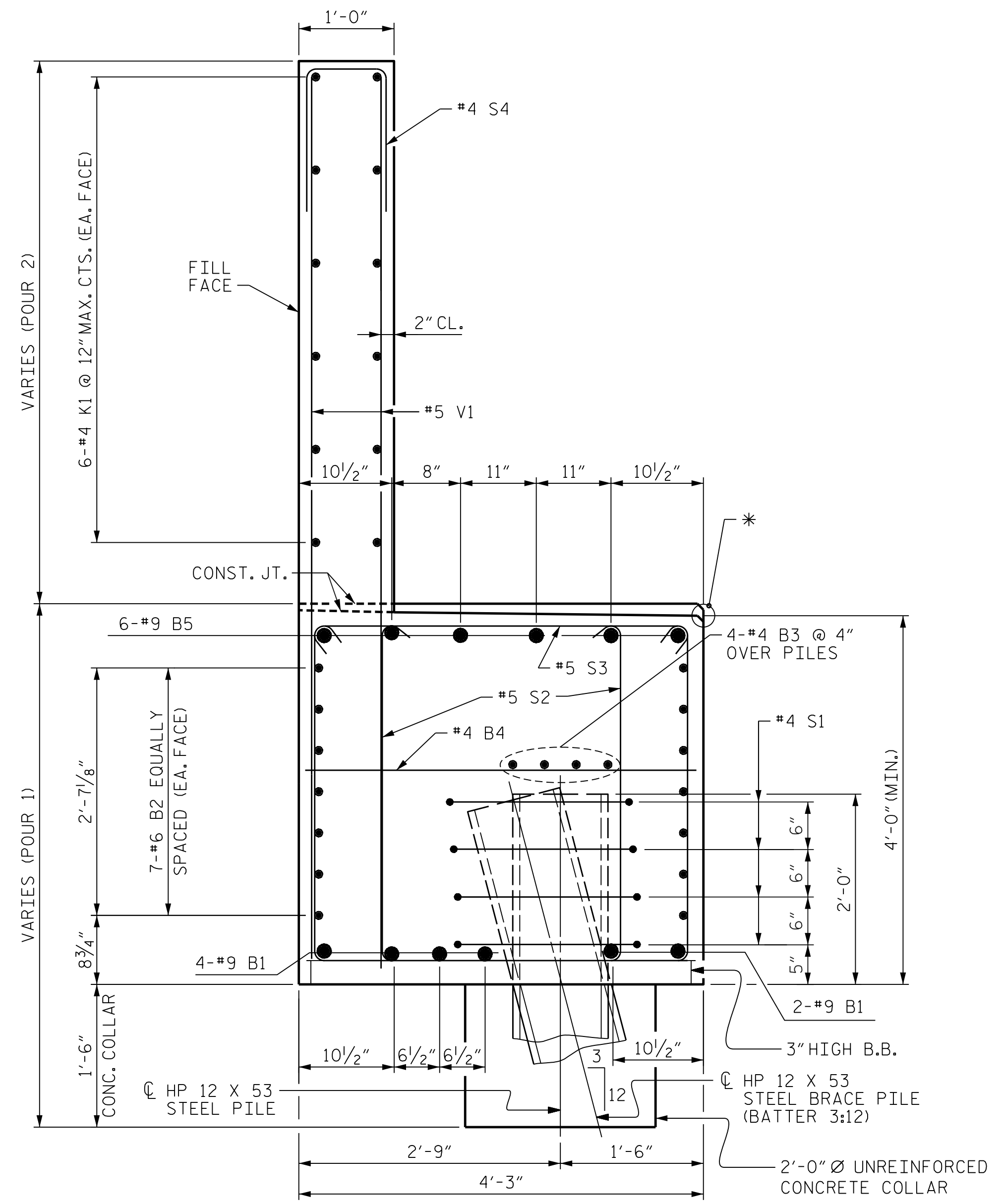
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

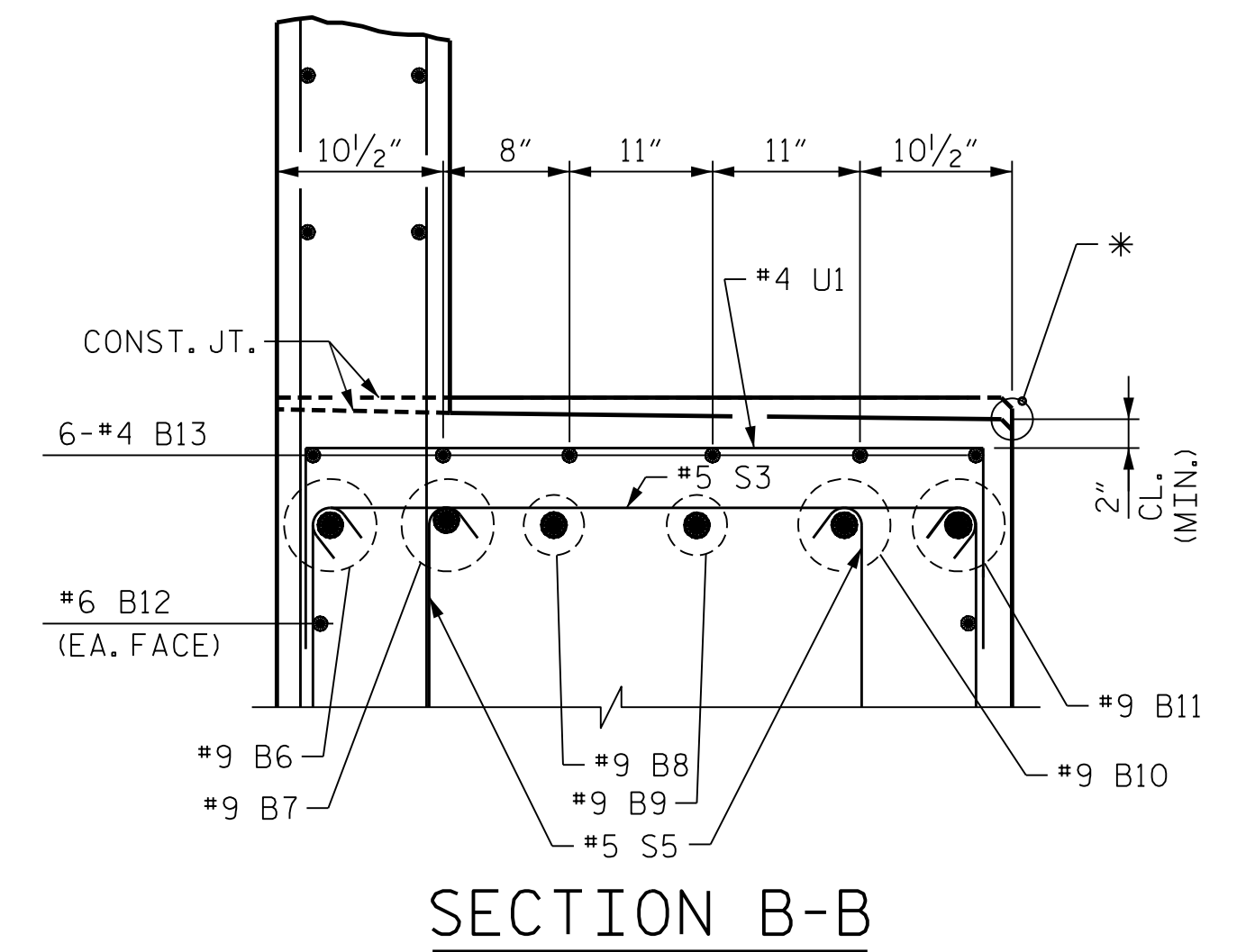
TEMPORARY DRAINAGE AT END BENT



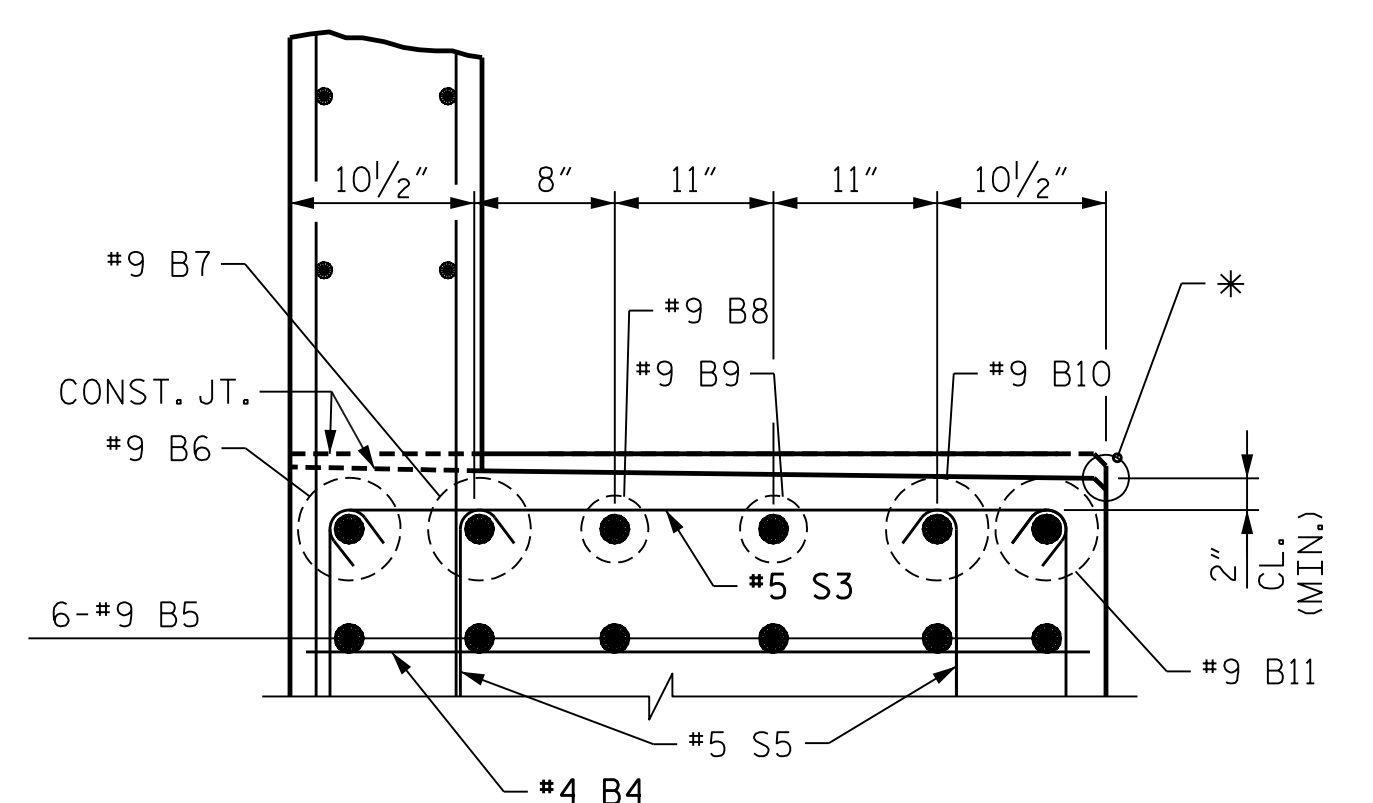
PILE SPLICE DETAILS



SECTION A-A



SECTION B-B



SECTION C-C

* = ELEVATIONS BETWEEN BRIDGE SEAT BUILD-UPS ARE TAKEN AT THIS POINT.

BAR TYPES

180° HK.

1'-3" (TYP.)

56'-7"

B1

8 1/2"

1'-0"

12'-7"

H3

11'-7"

H4

5 1/2"

3'-11"

5 1/2"

135° HK.

8 1/2"

23'-7"

H1

24'-7"

H2

135° HK. (TYP.)

5 1/2"

3'-7 1/2"

S5

S2

3'-4"

8"

3'-11"

U1

4'-4 1/2"

U2

3'-7"

U3

1'-3" LAP

1'-8" Ø

6

1'-6"

1'-6"

2'-7"

1'-11"

9

5'-6 1/2"

1'-3/4" (TYP.)

8

2'-0"

2'-7"

8"

180° HK.

1'-3"

30'-9"

B5

1'-3"

38'-6"

B6

1'-3"

37'-10"

B7

1'-3"

37'-2"

B8

1'-3"

36'-3"

B9

1'-3"

35'-4"

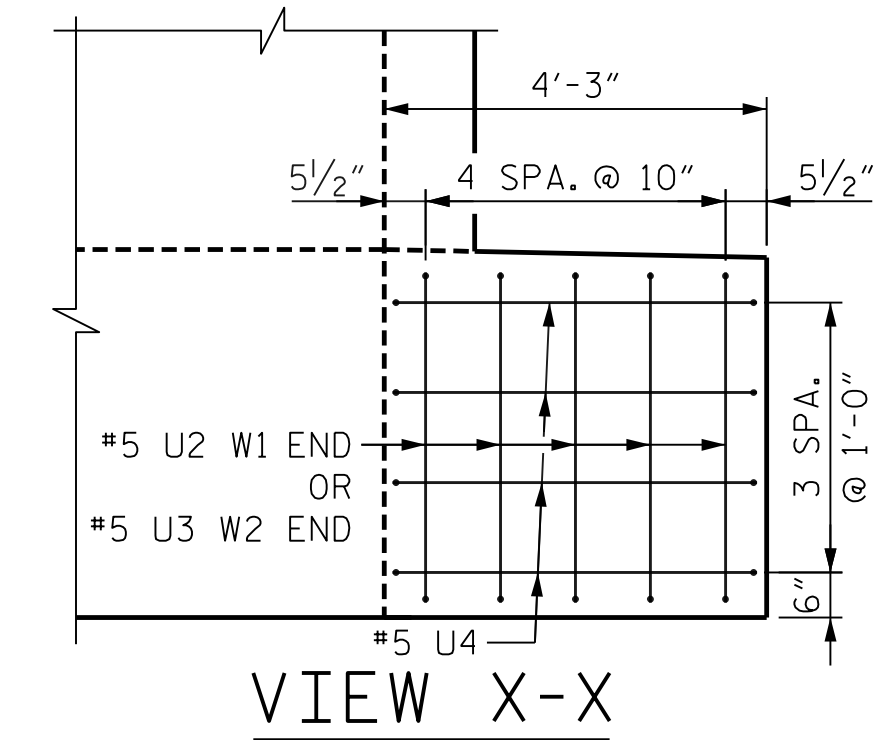
B10

1'-3"

34'-8"

B11

NOTE: ALL BAR DIMENSIONS ARE OUT TO OUT.



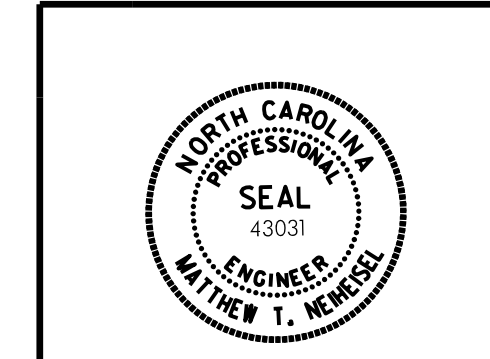
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BILL OF MATERIAL

END BENT 1

BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#9	1	59'-1"	1,206
B2	14	#6	STR	56'-7"	1,190
B3	8	#4	STR	29'-6"	158
B4	16	#4	STR	3'-11"	42
B5	6	#9	11	32'-0"	653
B6	1	#9	11	39'-9"	136
B7	1	#9	11	39'-1"	133
B8	1	#9	11	38'-5"	131
B9	1	#9	11	37'-6"	128
B10	1	#9	11	36'-7"	125
B11	1	#9	11	35'-11"	123
B12	2	#6	STR	31'-10"	96
B13	12	#4	STR	14'-11"	120
H1	19	#5	2	24'-7"	488
H2	19	#5	2	25'-7"	507
H3	23	#6	3	13'-7"	470
H4	23	#6	3	12'-7"	435
S1	36	#4	6	6'-6"	157
S2	48	#5	4	11'-6"	576
S3	66	#5	5	4'-10"	333
S4	48	#4	7	3'-8"	118
S5	84	#5	4	13'-1"	1147
S6	3	#6	10	5'-3"	24
S7	3	#6	9	10'-1"	46
U1	16	#4	7	6'-11"	74
U2	5	#5	7	7'-4"	39
U3	5	#5	7	6'-7"	35
U4	8	#5	8	8'-6"	71
V1	96	#5	STR	9'-0"	902
V2	25	#5	STR	11'-8"	305
V3	12	#5	STR	11'-11"	150
V4	12	#5	STR	12'-2"	153
V5	10	#5	STR	12'-5"	130
V6	35	#5	STR	10'-9"	393
K1	24	#4	STR	28'-4"	455
K2	9	#4	STR	4'-5"	27
K3	3	#4	STR	4'-2"	9
REINFORCING STEEL					11,285 LBS.
CLASS A CONCRETE					
POUR 1 (CAP, LOWER WINGS & COLLARS)					47.0 C.Y.
POUR 2 (BACKWALL & UPPER WINGS)					22.2 C.Y.
TOTAL					69.2 C.Y.
HP 12 x 53 STEEL PILES					
NO.					10
L.F.					150
PILE EXCAVATION					
IN SOIL					20 L.F.
NOT IN SOIL					80 L.F.

PROJECT NO. 17BP.8.R.121
MOORE COUNTY
STATION: 22+68.50 -L-
SHEET 3 OF 3



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1
MISCELLANEOUS DETAILS
AND BILL OF MATERIAL

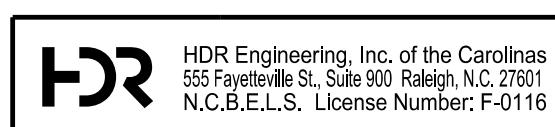
REVISIONS

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

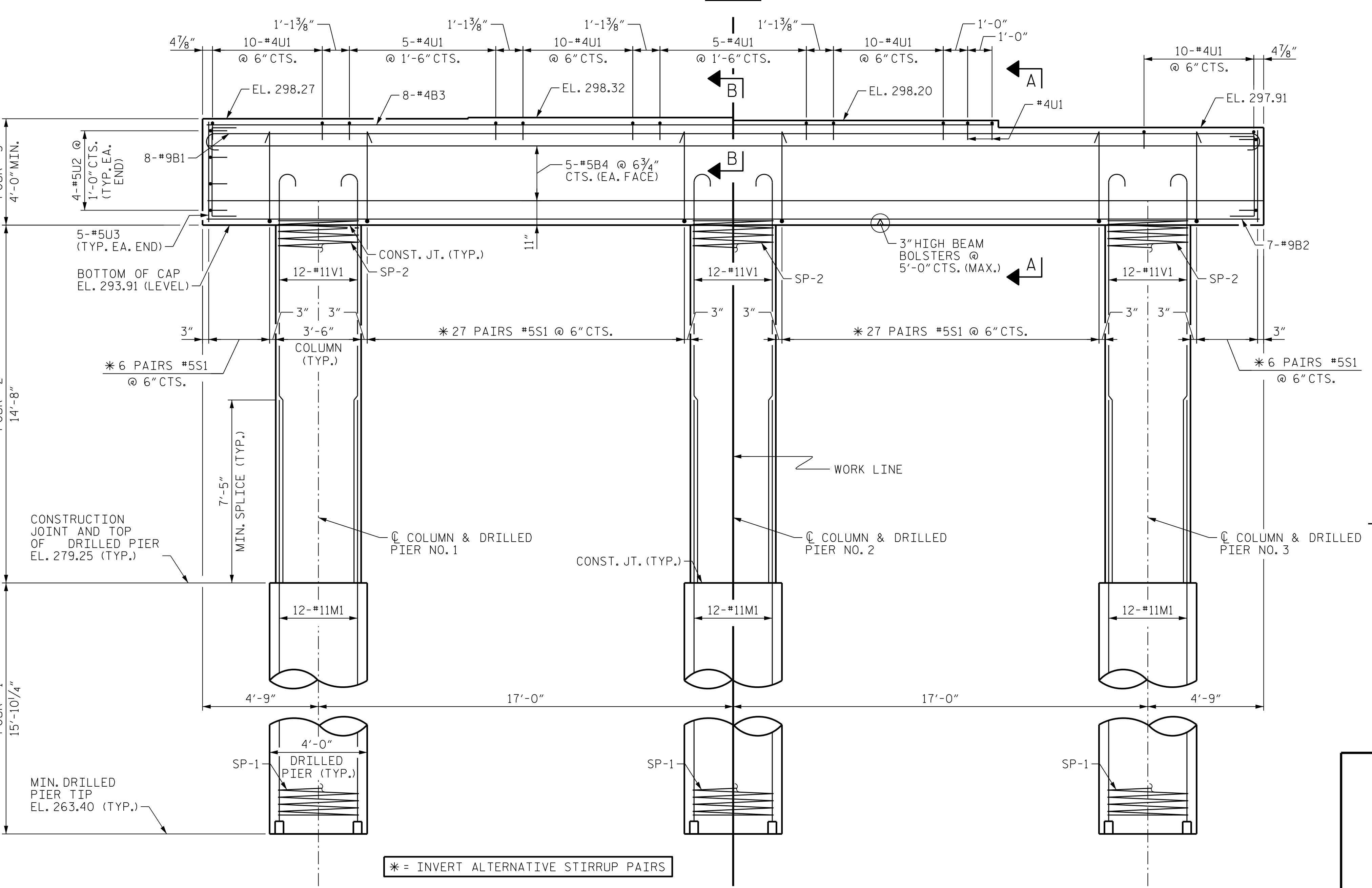
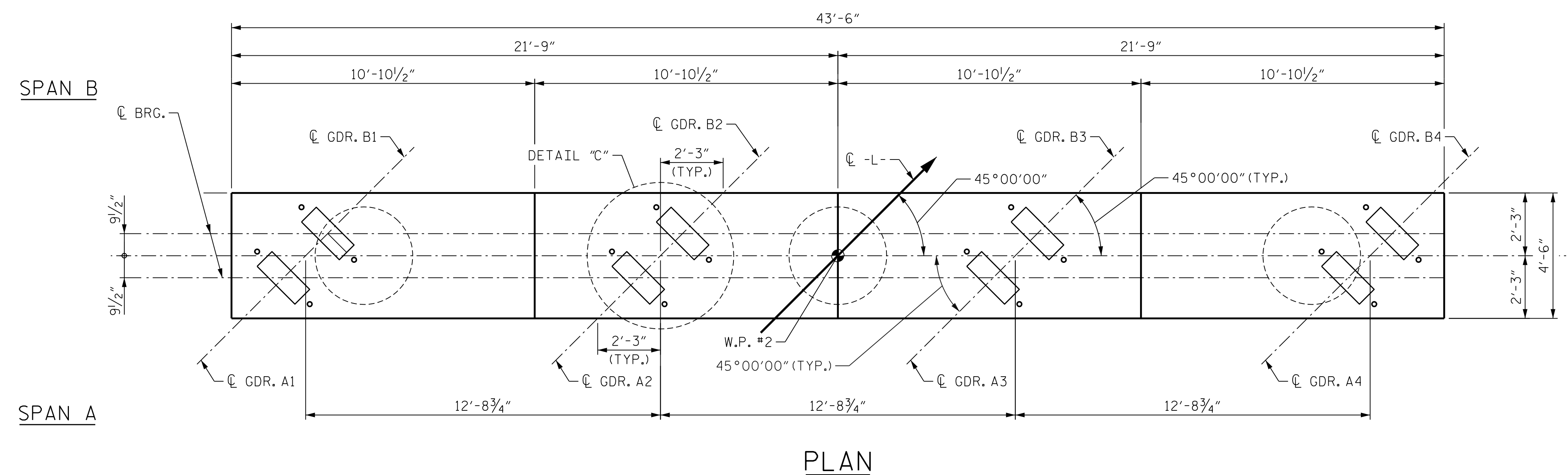
SHEET NO. S-24
TOTAL SHEETS 33

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 USER: MMEIHEIS
 DATE: 6/1/2018
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DRAWN BY: D. H. CARTER DATE: JUN 2018
 CHECKED BY: M. K. CHRISTIAN DATE: JUN 2018
 DESIGN ENGINEER OF RECORD: M. T. NEIHEISEL DATE: JUN 2018



Matthew Neiheisel 6/13/2018
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NOTES

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

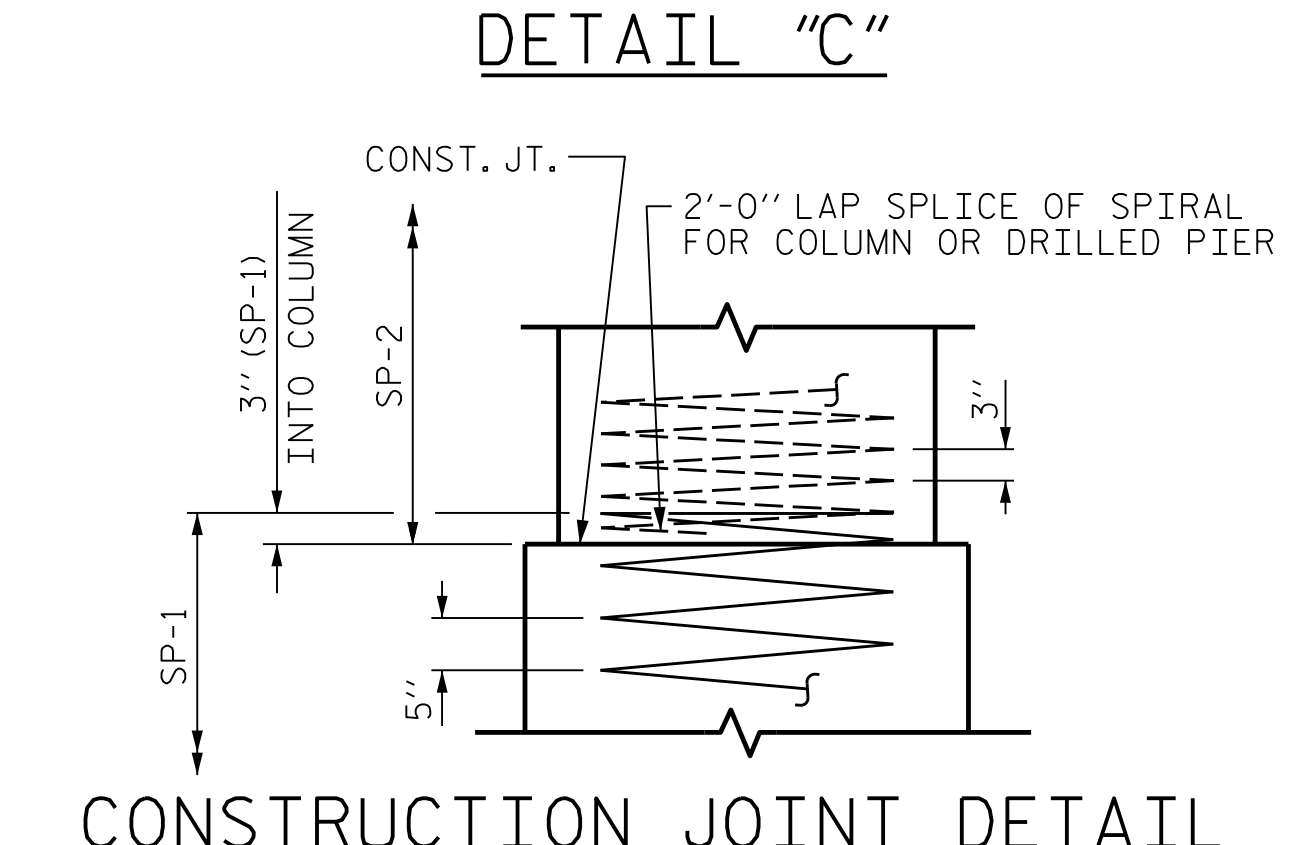
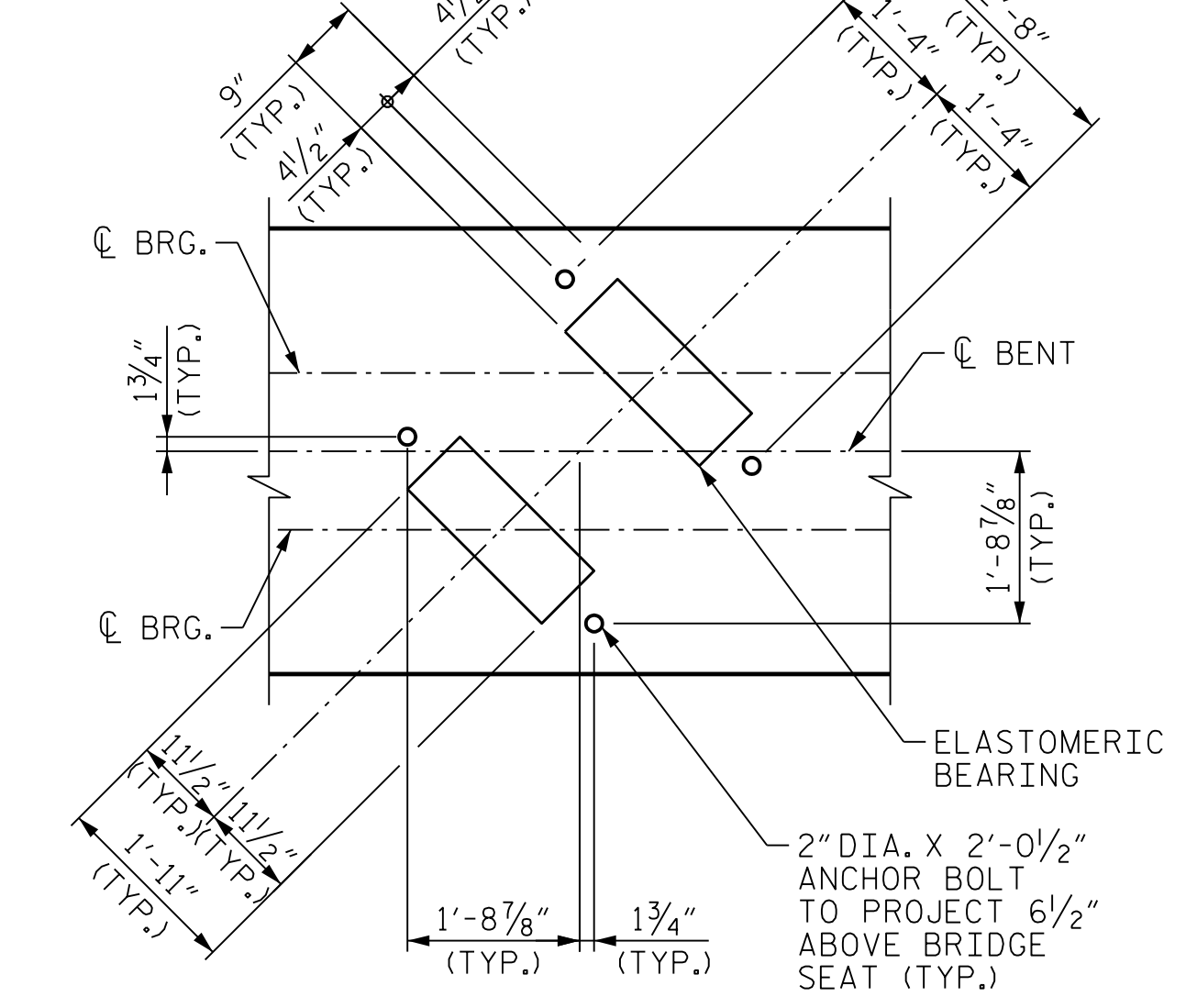
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".

STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

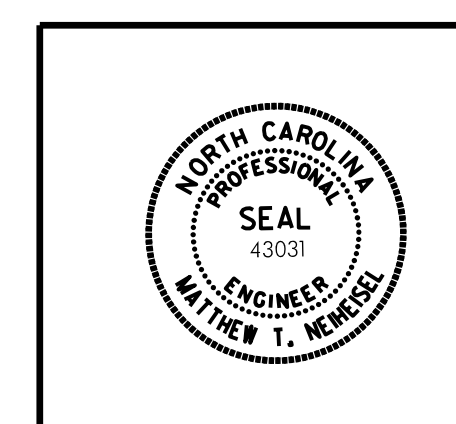
THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

FOR SECTION A-A, B-B, AND REINFORCING BILL OF MATERIAL, SEE SHEET 2 OF 2.

BENT CONTROL LINE, CAP, COLUMNS, & DRILLED PIERS

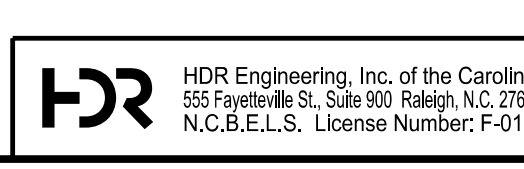


PROJECT NO. 17BP.8.R.121
 MOORE COUNTY
 STATION: 22+68.50 -L-
 SHEET 1 OF 2

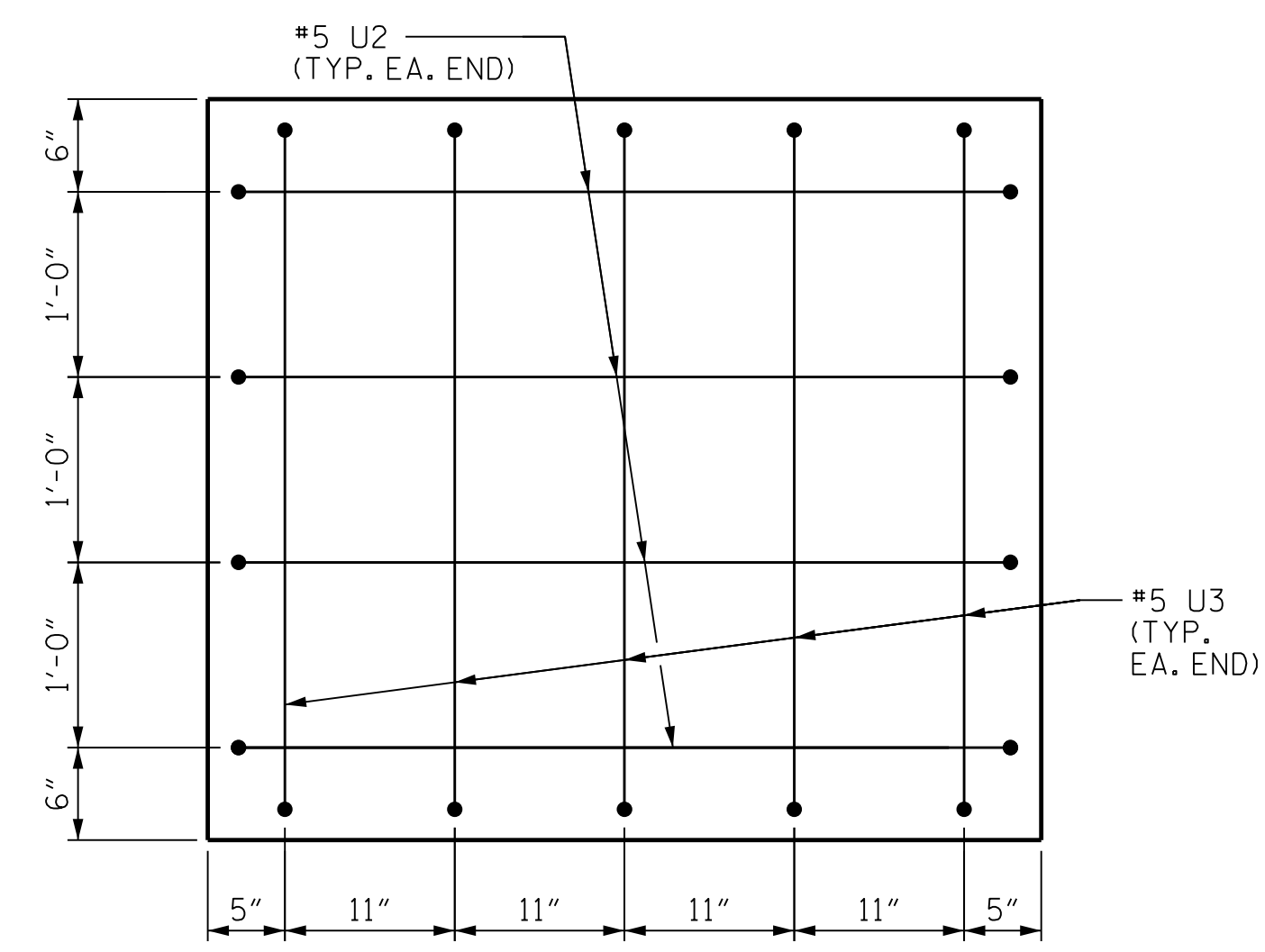


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT 1					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-25
					TOTAL SHEETS 33

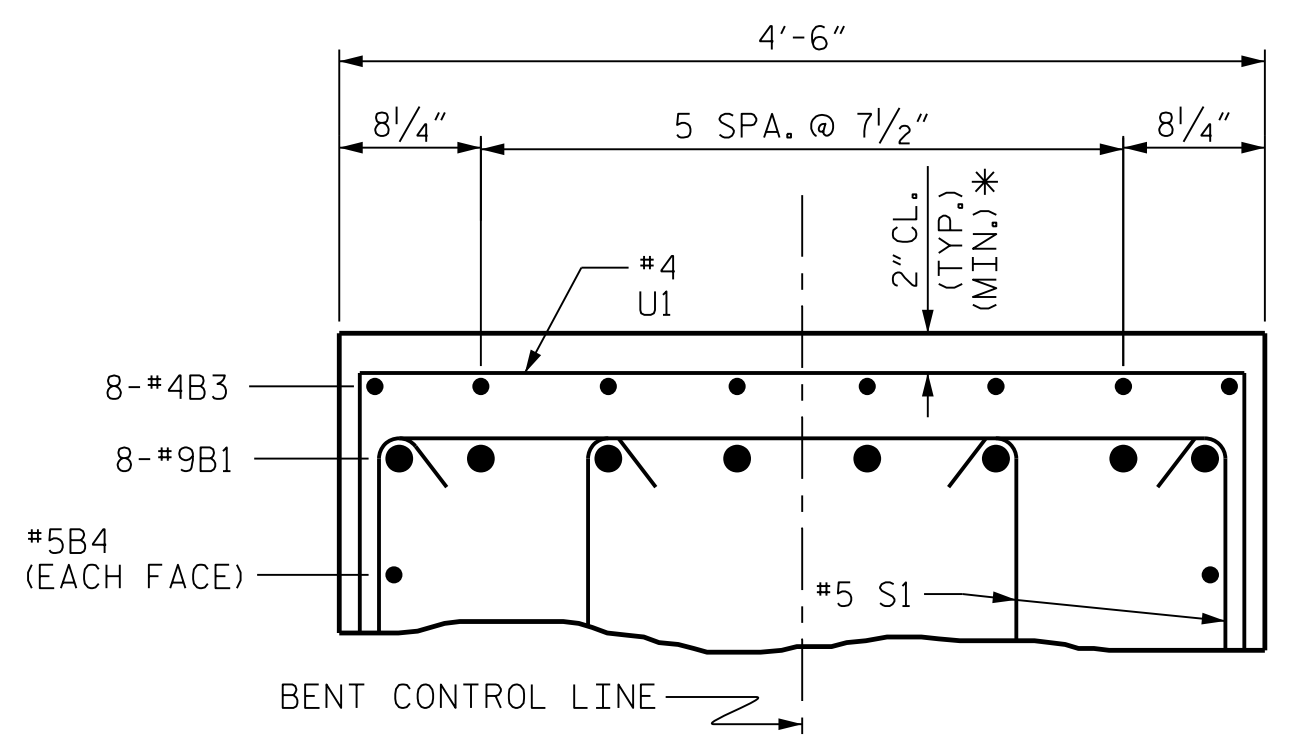
DRAWN BY: D. H. CARTER DATE: JUN 2018
 CHECKED BY: M. K. CHRISTIAN DATE: JUN 2018
 DESIGN ENGINEER OF RECORD: M. T. NEIHEISEL DATE: JUN 2018



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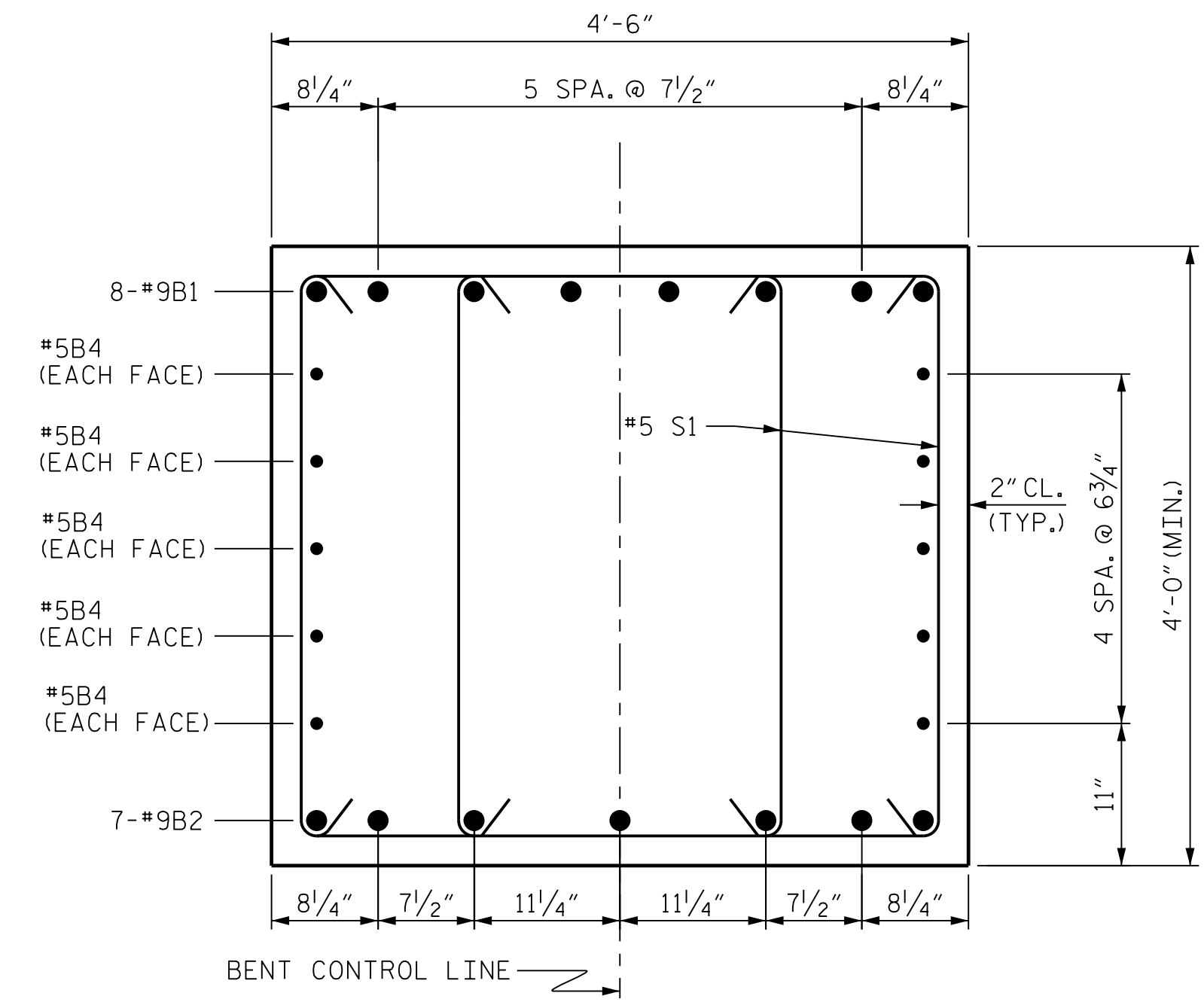


END OF CAP DETAIL (TYP.)

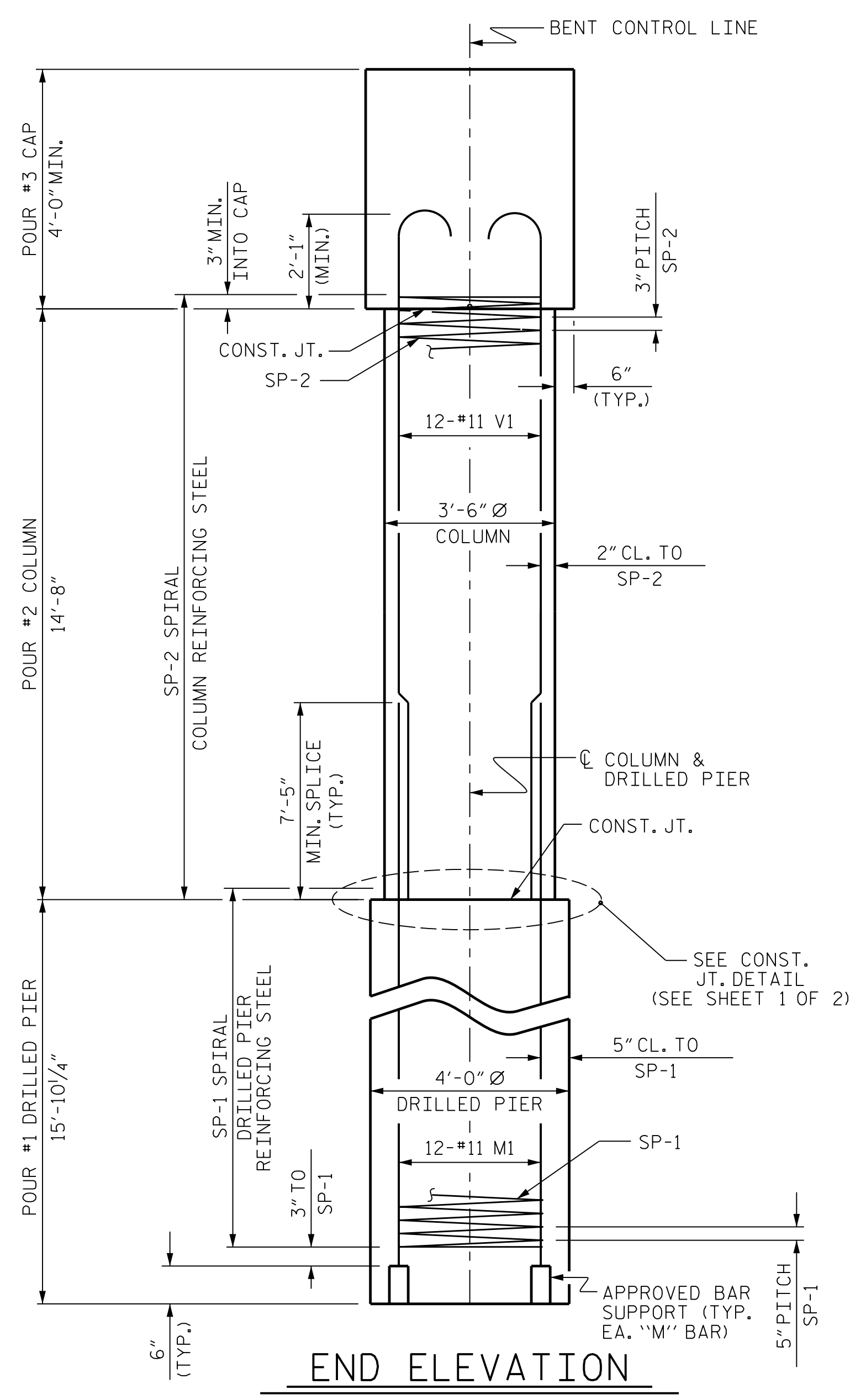


SECTION B-B

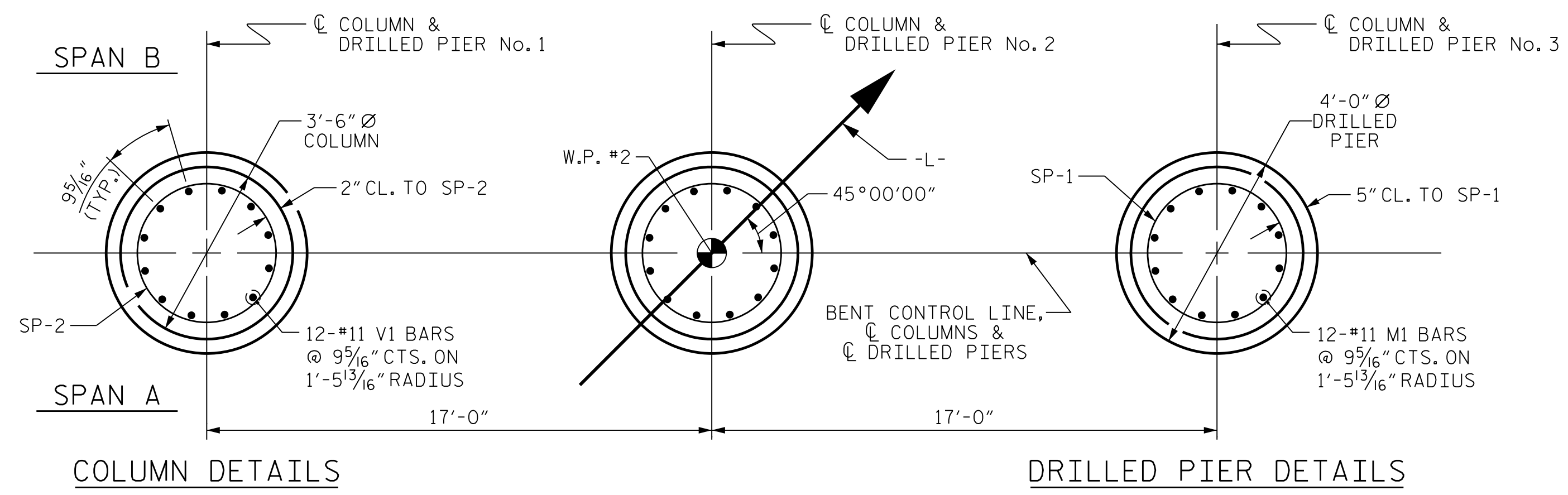
* MINIMUM CLEARANCE WILL INCREASE AS TOP OF CAP ELEVATIONS CHANGES



SECTION A-A



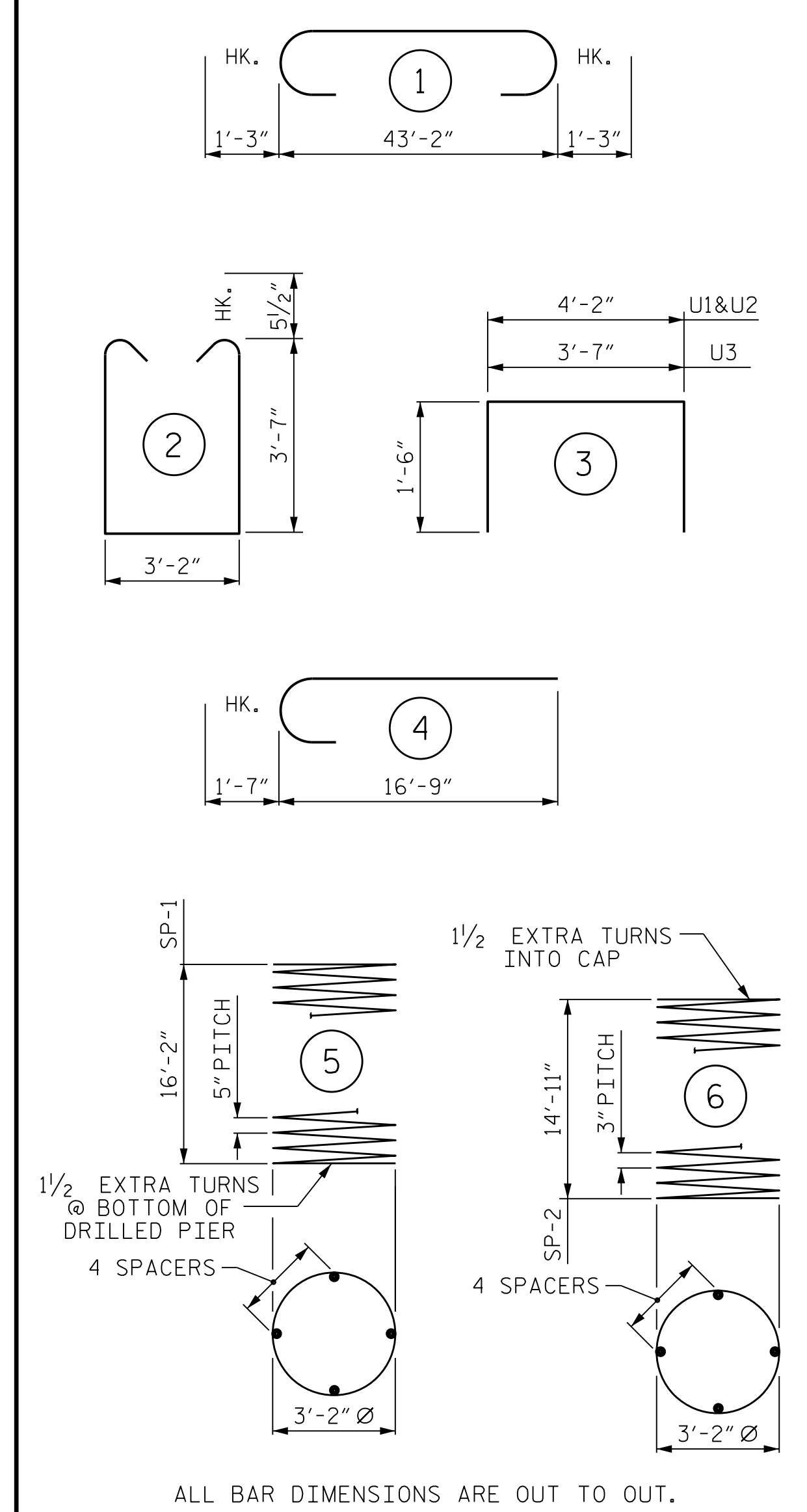
END ELEVATION



PLAN OF DRILLED PIERS & COLUMNS

(COLUMN AND DRILLED PIER DETAILS ARE TYPICAL)

BAR TYPES



BILL OF MATERIAL

BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9		45'-8"	1243
B2	7	#9	STR	43'-2"	1028
B3	16	#4	STR	17'-5"	187
B4	10	#5	STR	43'-2"	451
M1	36	#11	STR	25'-10"	4942
S1	132	#5	2	11'-3"	1549
U1	52	#4	3	7'-2"	249
U2	8	#5	3	7'-2"	60
U3	10	#5	3	6'-7"	69
V1	36	#11	4	18'-4"	3507

REINFORCING STEEL 13,285 LBS.

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
SP-1	3	*	5	394'-3"	1,234
SP-2	3	**	6	601'-7"	1,206

SPIRAL COLUMN REINFORCING STEEL 2,440 LBS.

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

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

CLASS A CONCRETE BREAKDOWN

POUR #2 (COLUMNS)	15.7 C.Y.
POUR #3 (CAP)	30.9 C.Y.
TOTAL CLASS A CONCRETE	46.6 C.Y.

DRILLED PIERS:

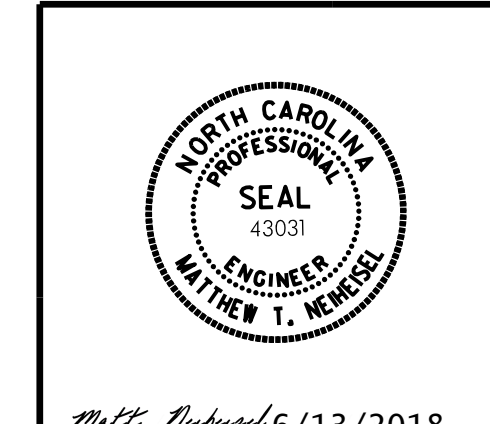
DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)	22.1 C.Y.
4'-0" Ø DRILLED PIERS NOT IN SOIL	24.0 LIN. FT.
4'-0" Ø DRILLED PIERS IN SOIL	23.6 LIN. FT.
PERMANENT STEEL CASING FOR 4'-0" Ø DRILLED PIERS	30.0 LIN. FT.
CSL TUBES	208.2 LIN. FT.

PROJECT NO. 17BP.8.R.121
 MOORE COUNTY
 STATION: 22+68.50 -L-
 SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

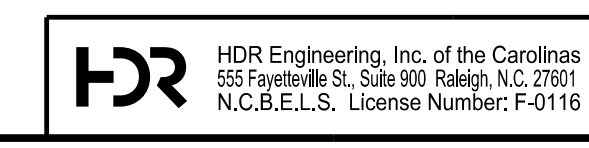
SUBSTRUCTURE

BENT 1



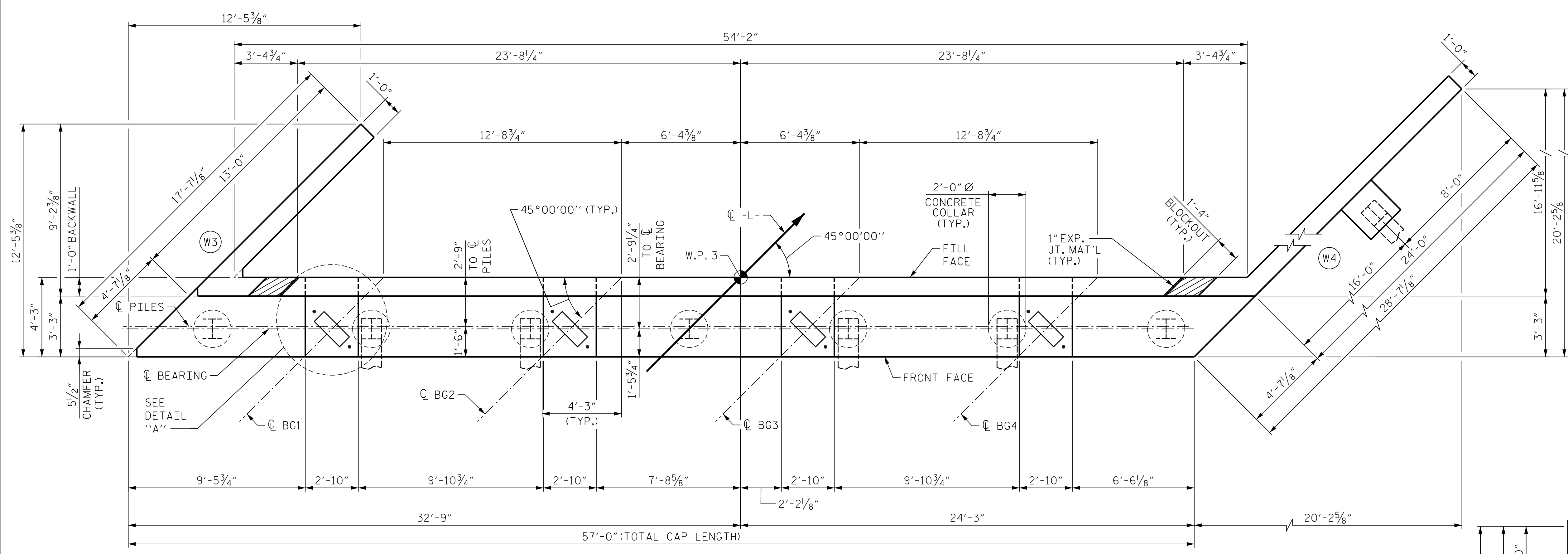
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SHEET NO.	
S-26	TOTAL SHEETS 33

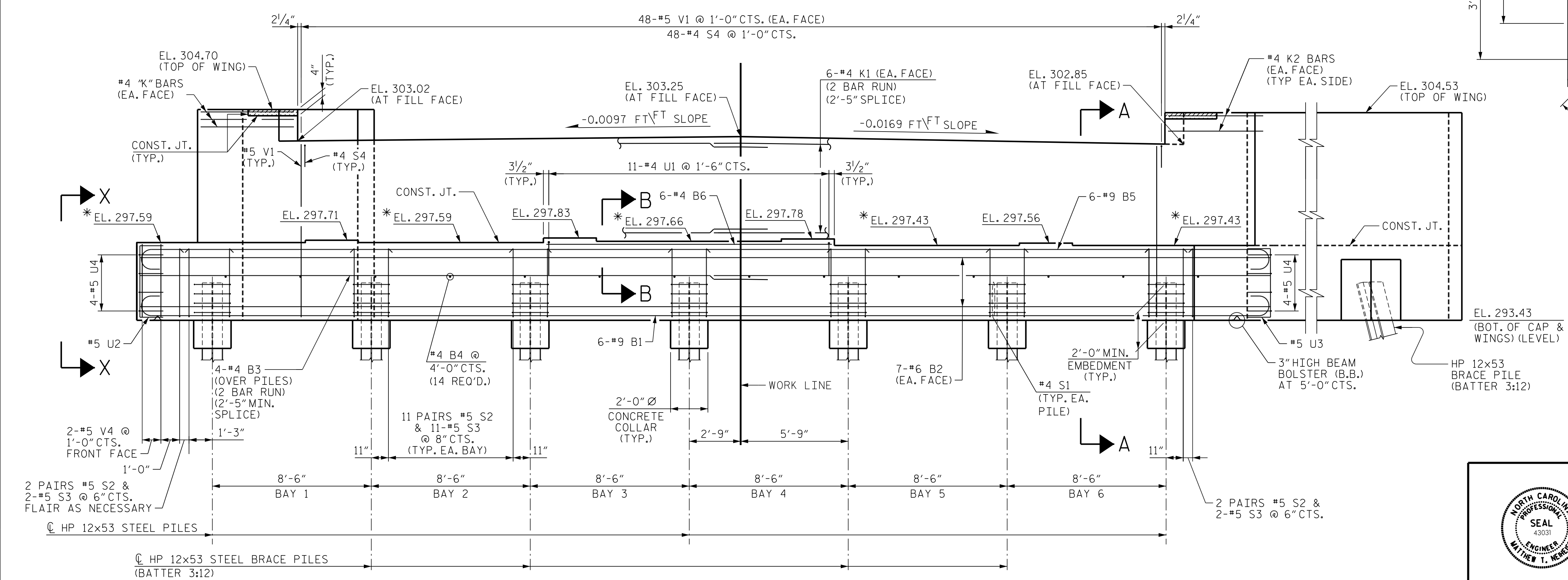


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DRAWN BY: D. H. CARTER DATE: JUN 2018
 CHECKED BY: M. K. CHRISTIAN DATE: JUN 2018
 DESIGN ENGINEER OF RECORD: M. T. NEIHEISEL DATE: JUN 2018



PLAN



ELEVATION

NOTES:

STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

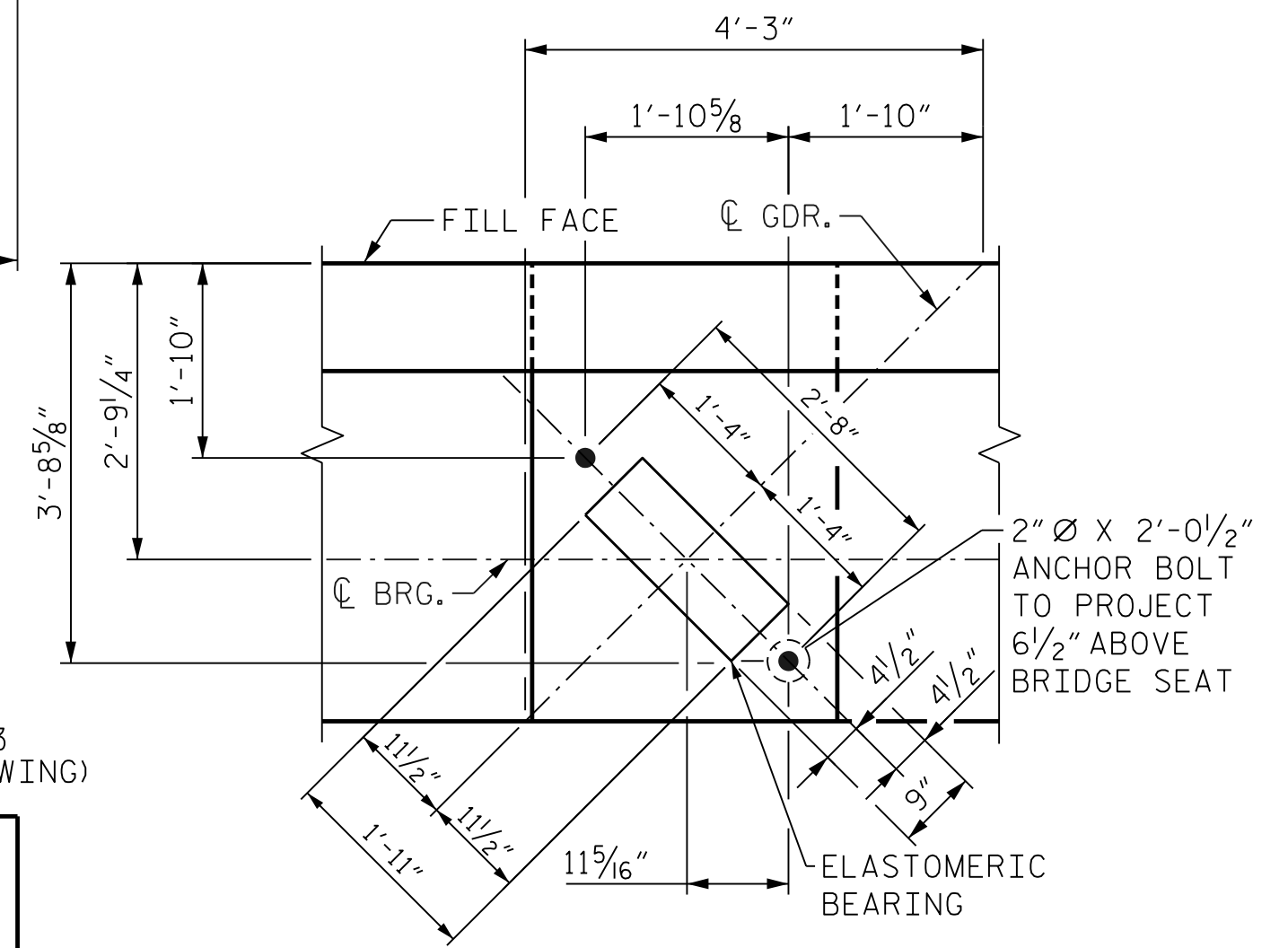
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

THE TOP SURFACE AREAS OF THE END BENT CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS, EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

THE TOP SURFACE OF THE END BENT CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.

SEE GENERAL DRAWING FOR "FOUNDATION LAYOUT" FOR ADDITIONAL NOTES FOR DRIVING PILES.

FOR SECTIONS A-A, B-B, C-C, AND VIEW X-X SEE SHEET 3 OF 3.



DETAIL "A"
(TYP. EA. GDR.)

PROJECT NO. 17BP.8.R.121
MOORE COUNTY
STATION: 22+68.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2
PLAN AND ELEVATION



6/13/2018

DRAWN BY: D. H. CARTER DATE: JUN 2018
CHECKED BY: M. K. CHRISTIAN DATE: JUN 2018
DESIGN ENGINEER OF RECORD: M. T. NEIHEISEL DATE: JUN 2018

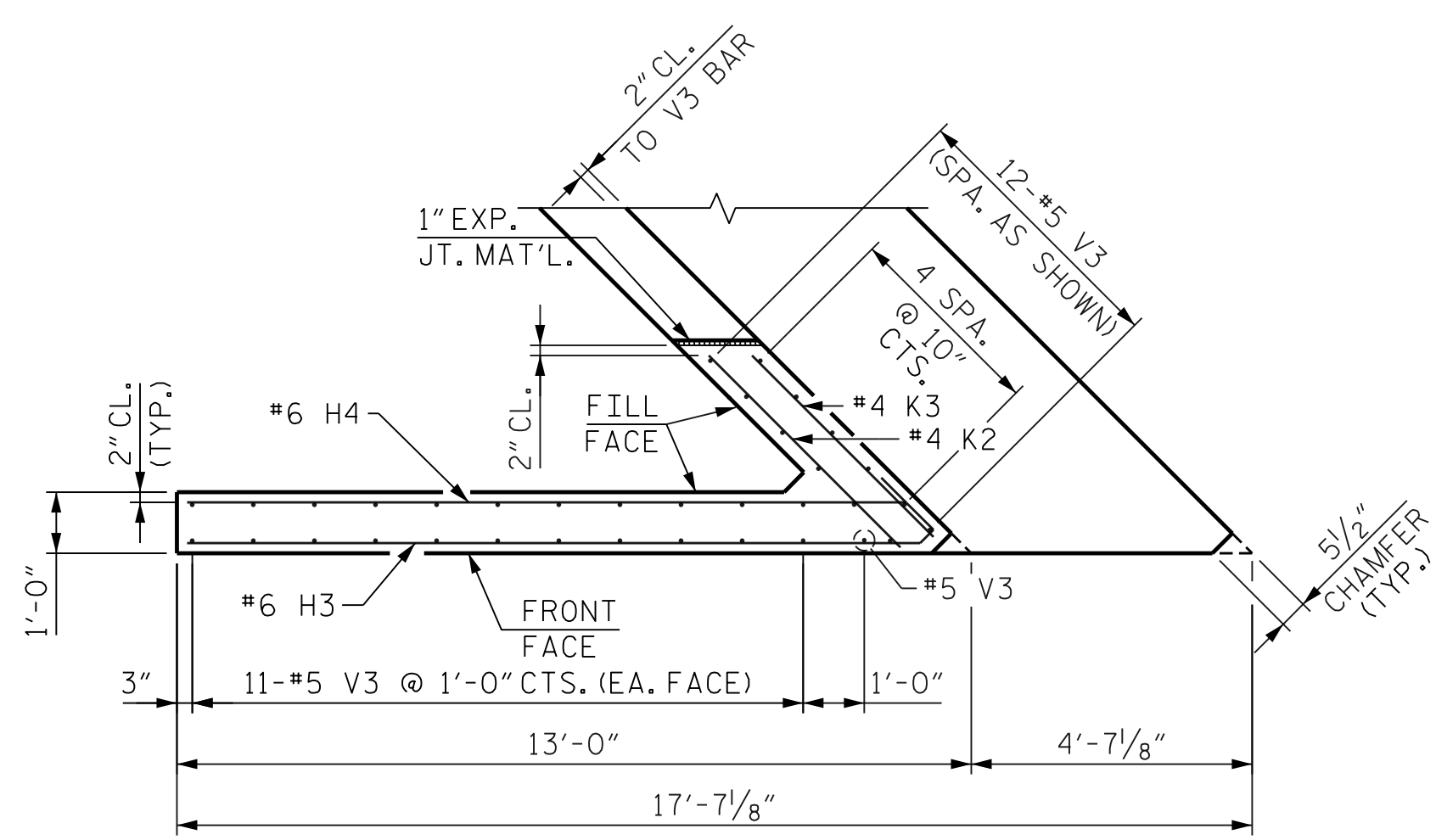
* = SEE SHEET 3 OF 3 FOR LOCATIONS OF THESE ELEVATIONS

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

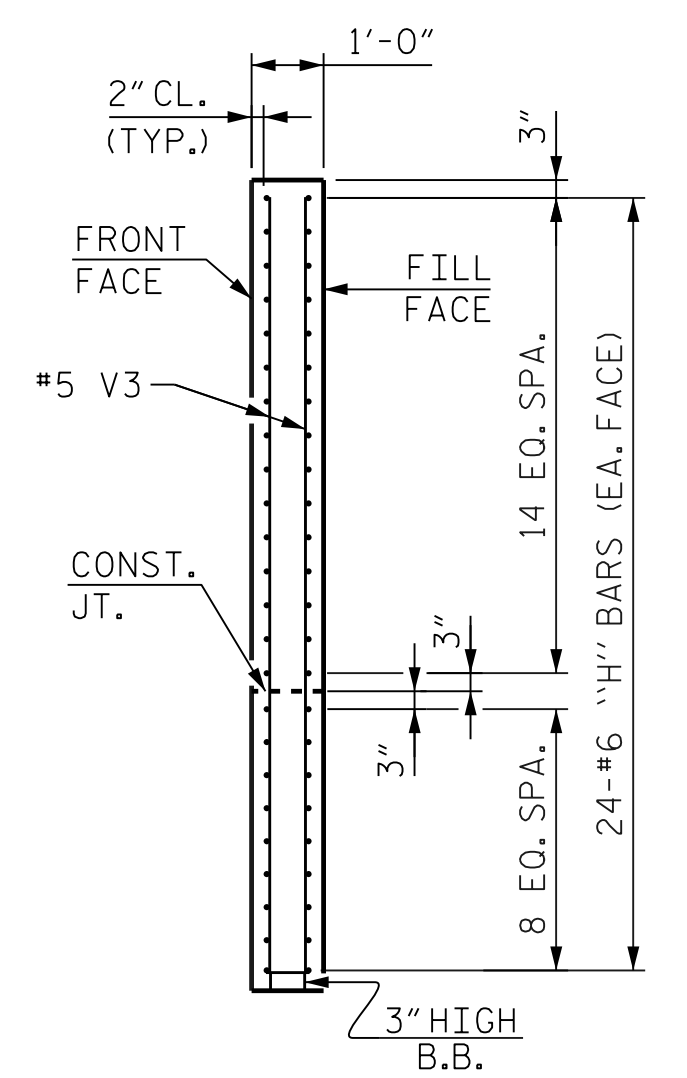
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REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27	
1			3			TOTAL SHEETS 33	
2			4				

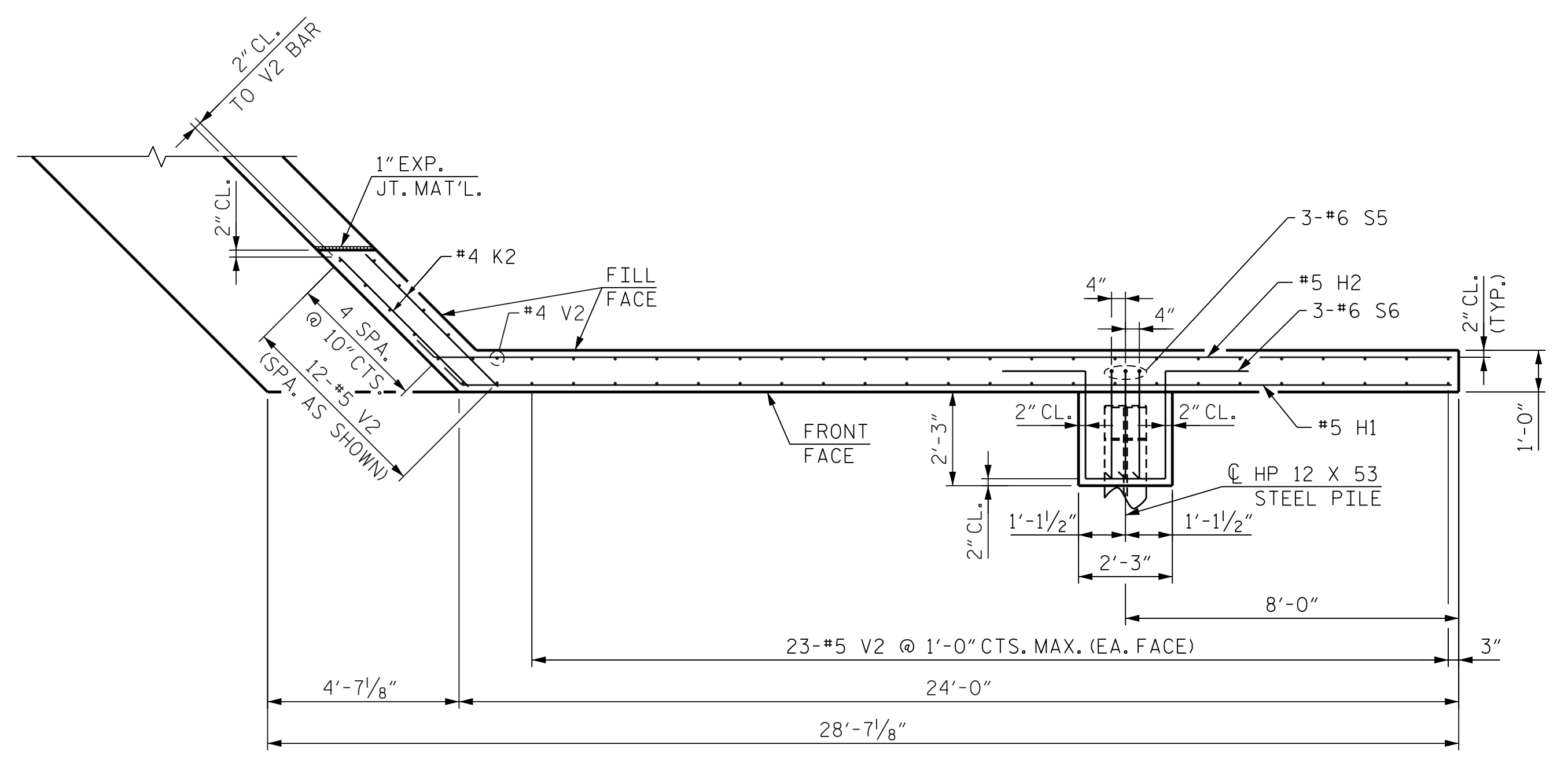
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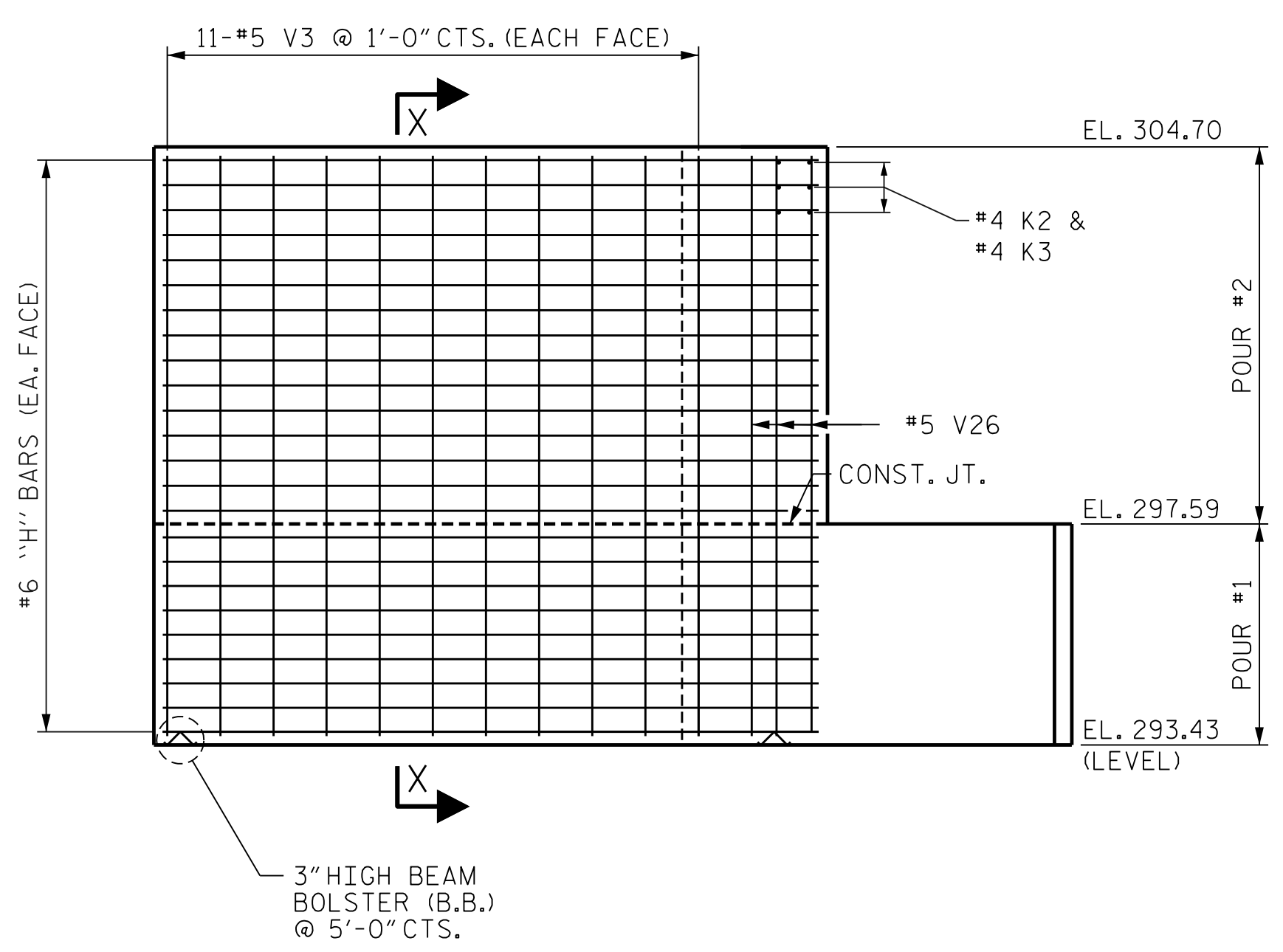
PLAN OF WING (W3)



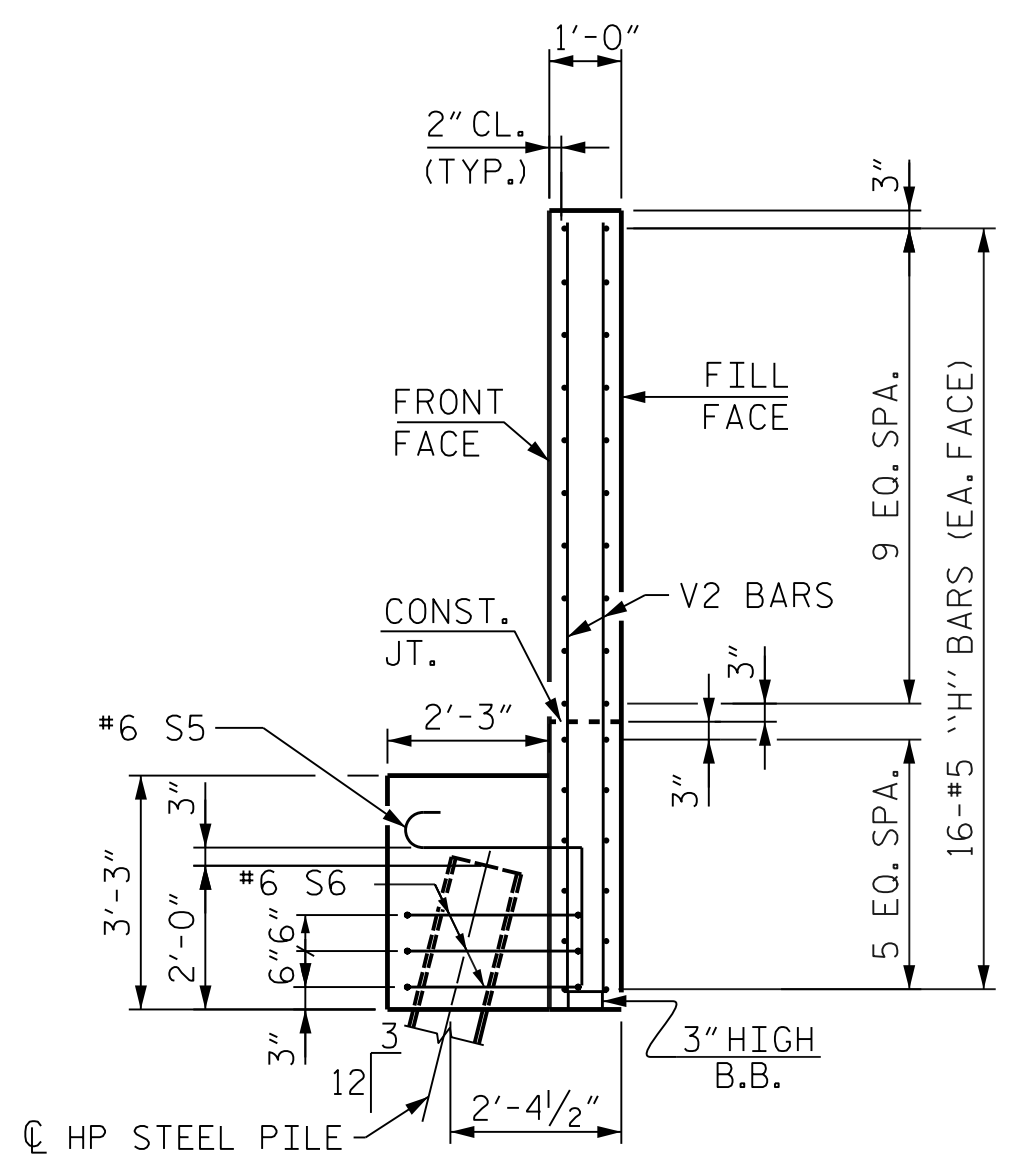
SECTION X-X



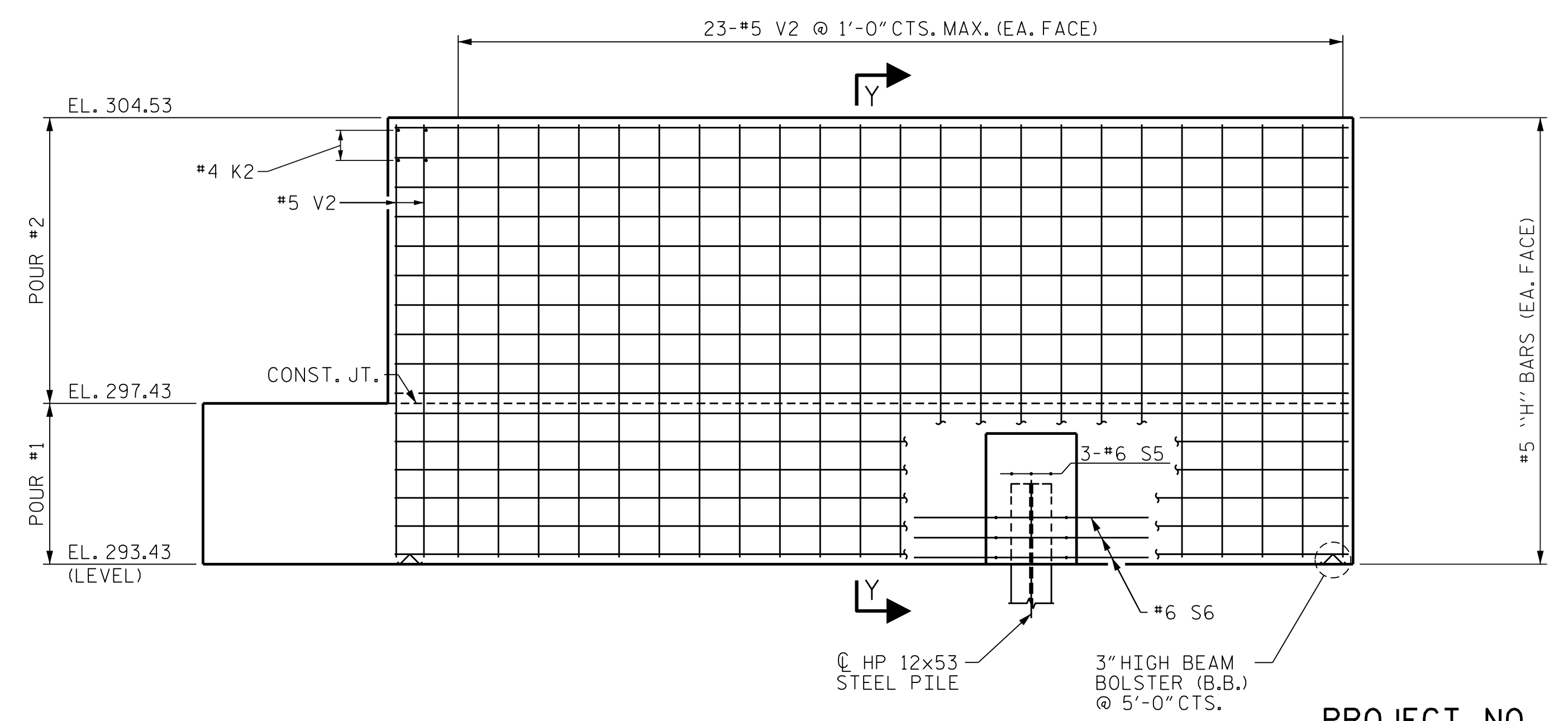
PLAN OF WING (W4)



ELEVATION OF WING (W3)



SECTION Y-Y



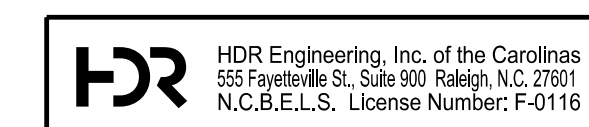
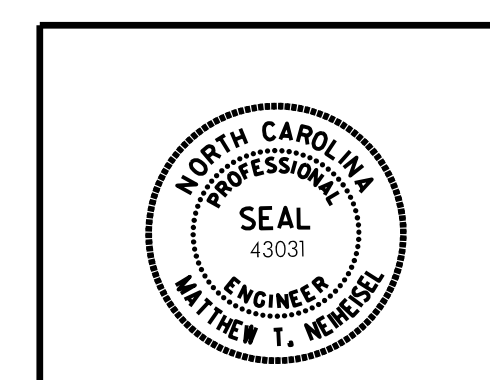
ELEVATION OF WING (W4)

PROJECT NO. 17BP.8.R.121
 MOORE COUNTY
 STATION: 22+68.50 -L-
 SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

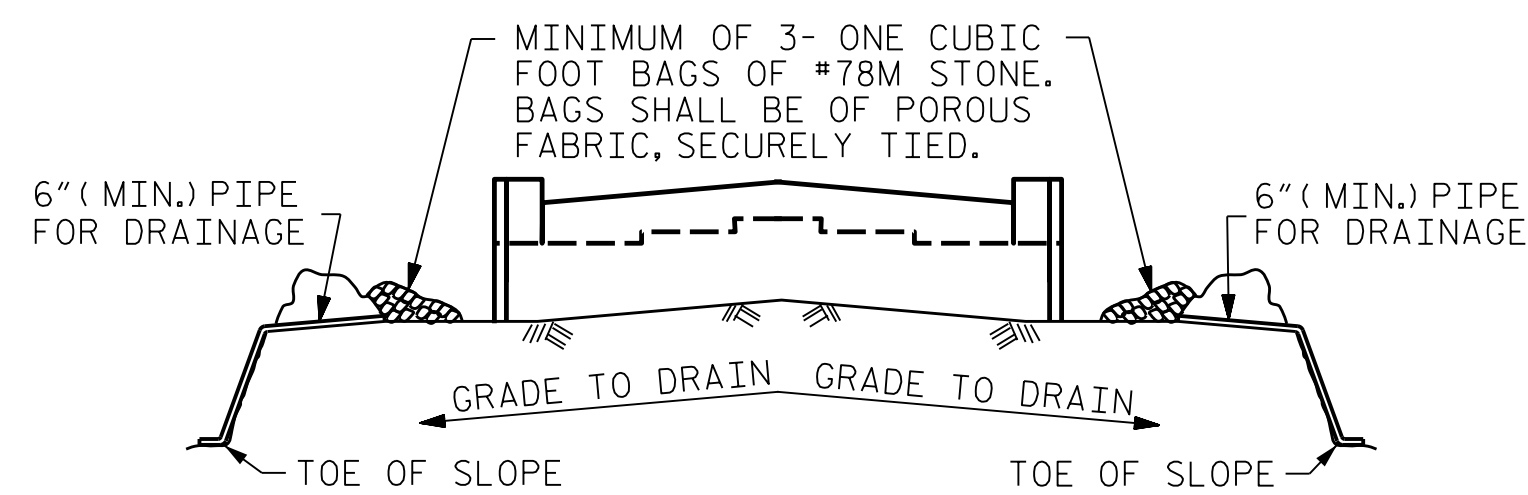
SUBSTRUCTURE
 END BENT 2
 WING WALL DETAILS

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28	
1			3			TOTAL SHEETS 33	
2			4				



DRAWN BY : D. H. CARTER DATE : JUN 2018
 CHECKED BY : M. K. CHRISTIAN DATE : JUN 2018
 DESIGN ENGINEER OF RECORD : M. T. NEIHEISEL DATE : JUN 2018

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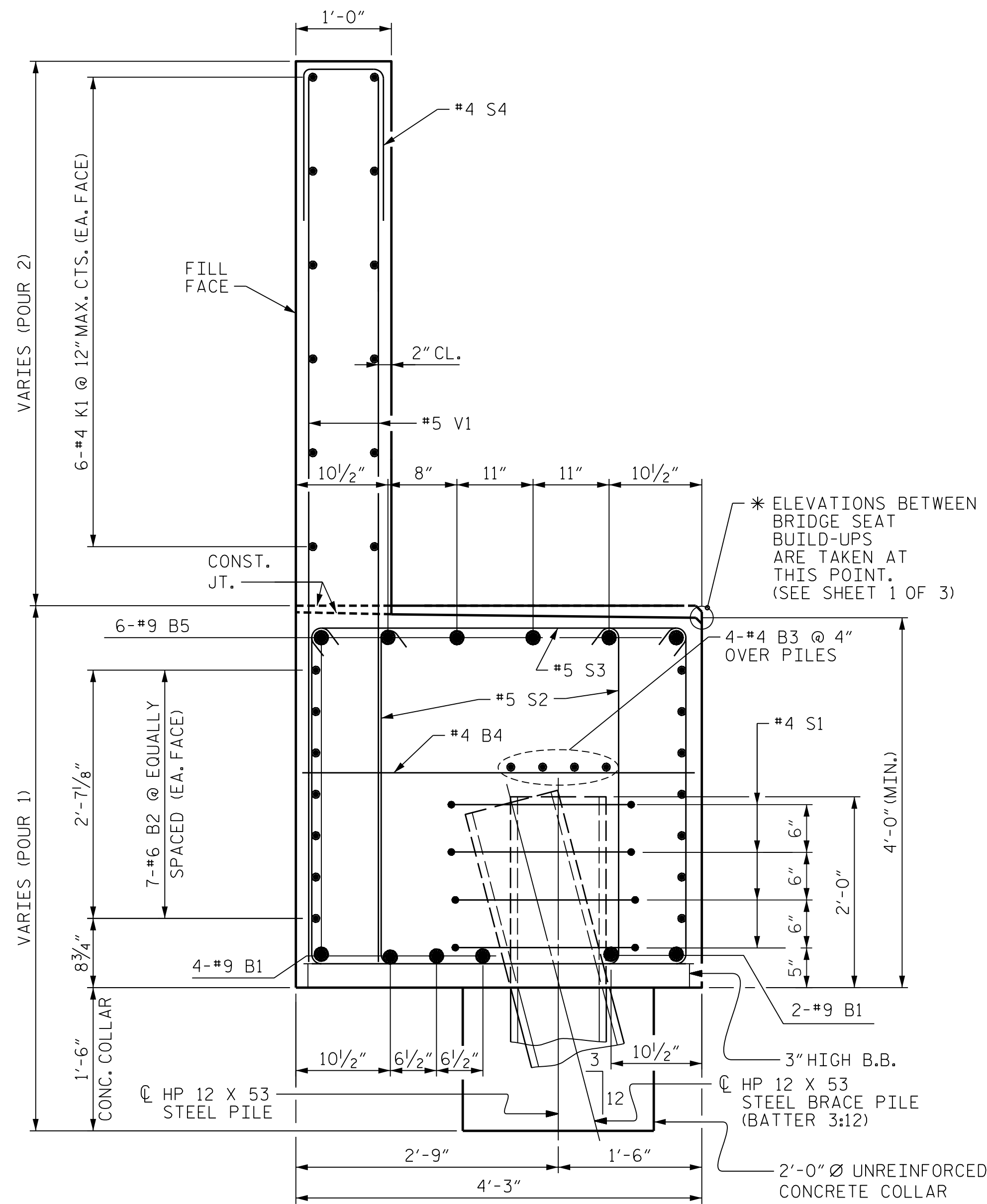


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

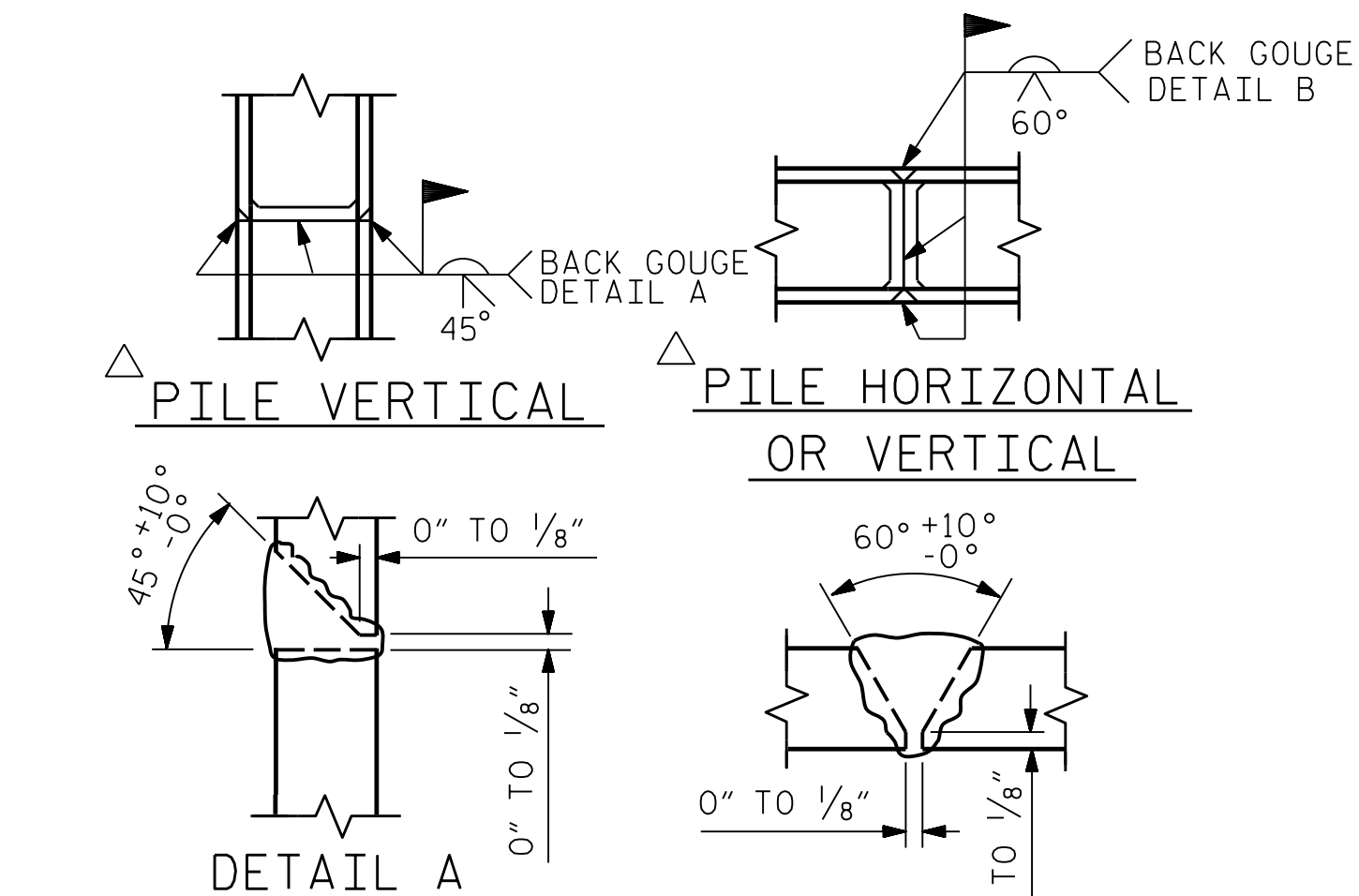
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

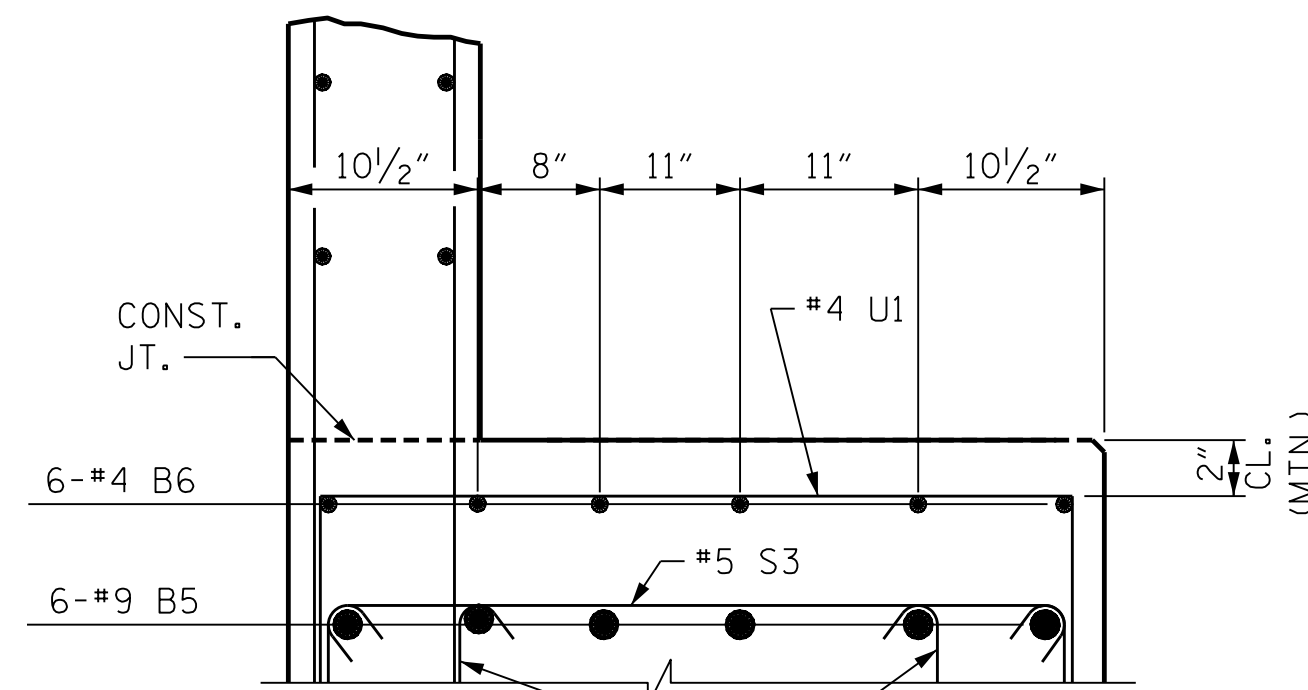


SECTION A-A

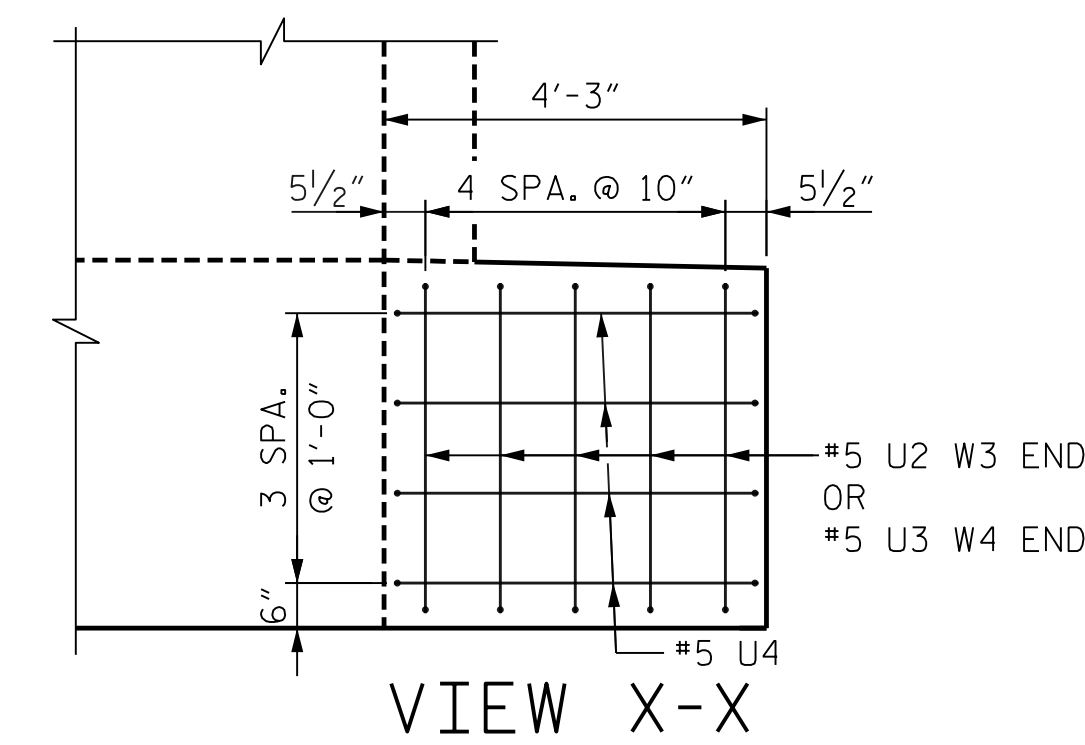
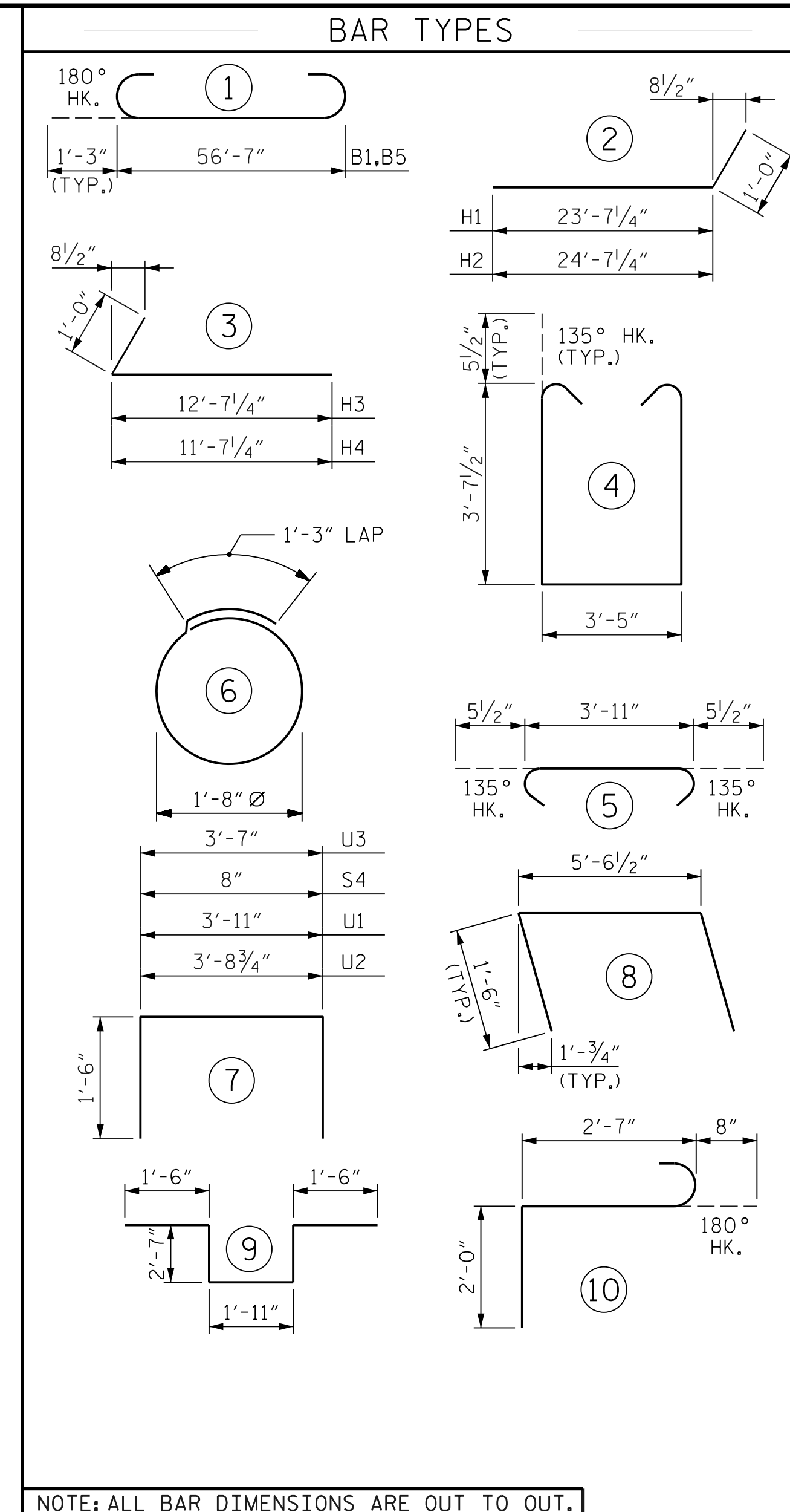
DRAWN BY : D. H. CARTER DATE : JUN 2018
 CHECKED BY : M. K. CHRISTIAN DATE : JUN 2018
 DESIGN ENGINEER OF RECORD : M. T. NEIHEISEL DATE : JUN 2018



PILE SPLICE DETAILS



SECTION B-B



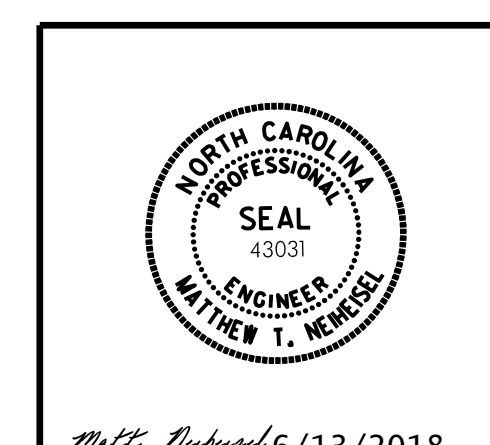
BILL OF MATERIAL

END BENT 2

BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#9	1	59'-1"	1,206
B2	14	#6	STR	56'-7"	1,190
B3	8	#4	STR	29'-6"	158
B4	14	#4	STR	3'-11"	37
B5	6	#9	1	59'-1"	1,206
B6	6	#4	STR	15'-3"	62
H1	16	#5	2	24'-7"	411
H2	16	#5	2	25'-7"	427
H3	24	#6	3	13'-7"	490
H4	24	#6	3	12'-7"	454
S1	28	#4	6	6'-6"	122
S2	140	#5	4	11'-6"	1,680
S3	70	#5	5	4'-10"	353
S4	48	#4	7	3'-8"	118
S5	3	#6	10	5'-3"	24
S6	3	#6	9	10'-1"	46
U1	11	#4	7	6'-11"	51
U2	5	#5	7	6'-9"	36
U3	5	#5	7	6'-7"	35
U4	8	#5	8	8'-7"	72
V1	96	#5	STR	9'-0"	902
V2	59	#5	STR	10'-8"	657
V3	35	#5	STR	10'-10"	396
V4	2	#5	STR	3'-9"	8
K1	24	#4	STR	28'-4"	455
K2	7	#4	STR	4'-5"	21
K3	3	#4	STR	4'-2"	9

REINFORCING STEEL	10,626 LBS.
CLASS A CONCRETE	
POUR 1 (CAP, LOWER WINGS & COLLARS)	43.5 C.Y.
POUR 2 (BACKWALL & UPPER WINGS)	21.2 C.Y.
TOTAL	64.7 C.Y.
HP 12 x 53 STEEL PILES	
NO.	8
L.F.	160
STEEL PILE POINTS	8 EA.
PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 PILES	8 EA.

PROJECT NO. 17BP.8.R.121
 MOORE COUNTY
 STATION: 22+68.50 -L-
 SHEET 3 OF 3



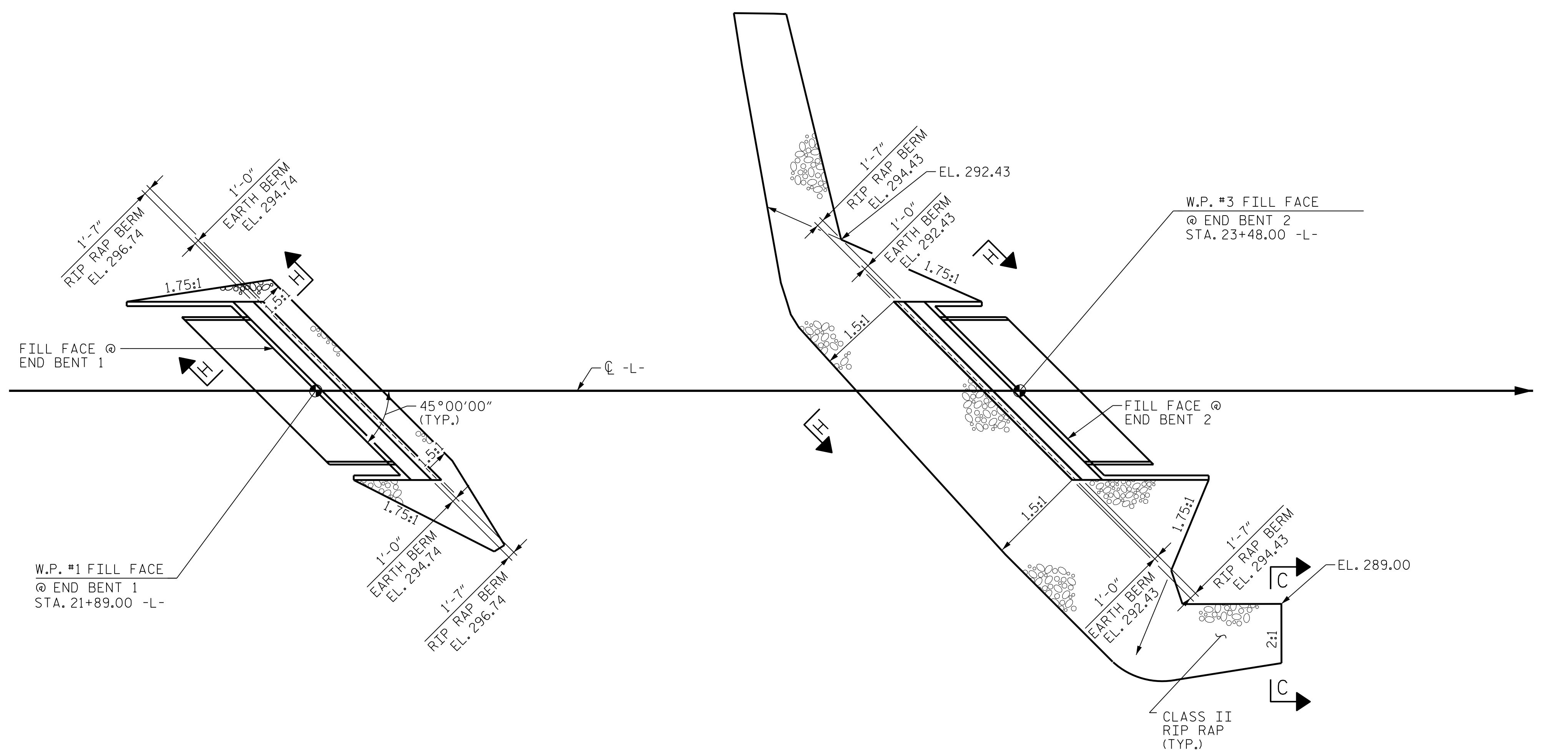
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
SUBSTRUCTURE
 END BENT 2
 MISCELLANEOUS DETAILS
 AND BILL OF MATERIAL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-29
1			3			TOTAL SHEETS 33
2			4			

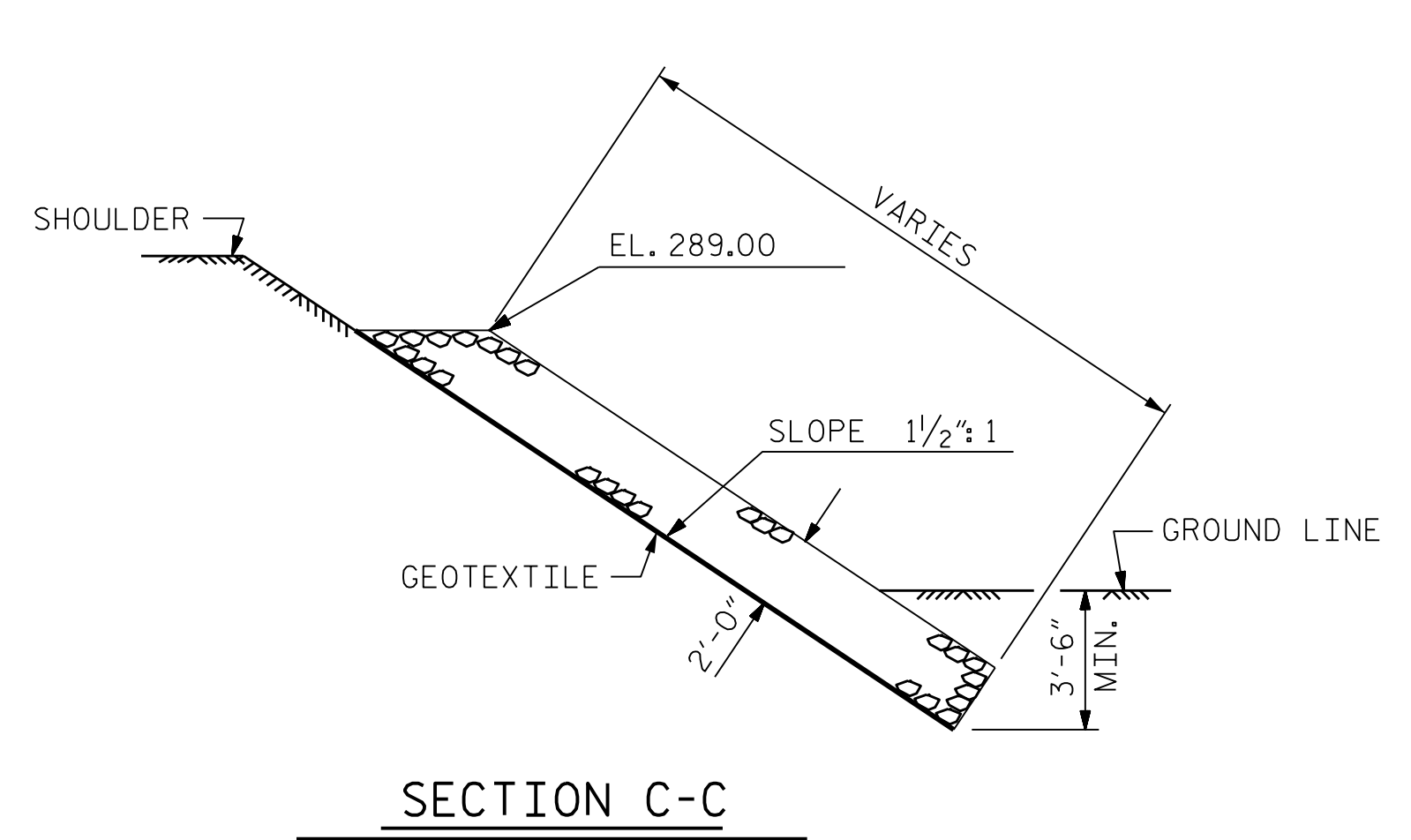
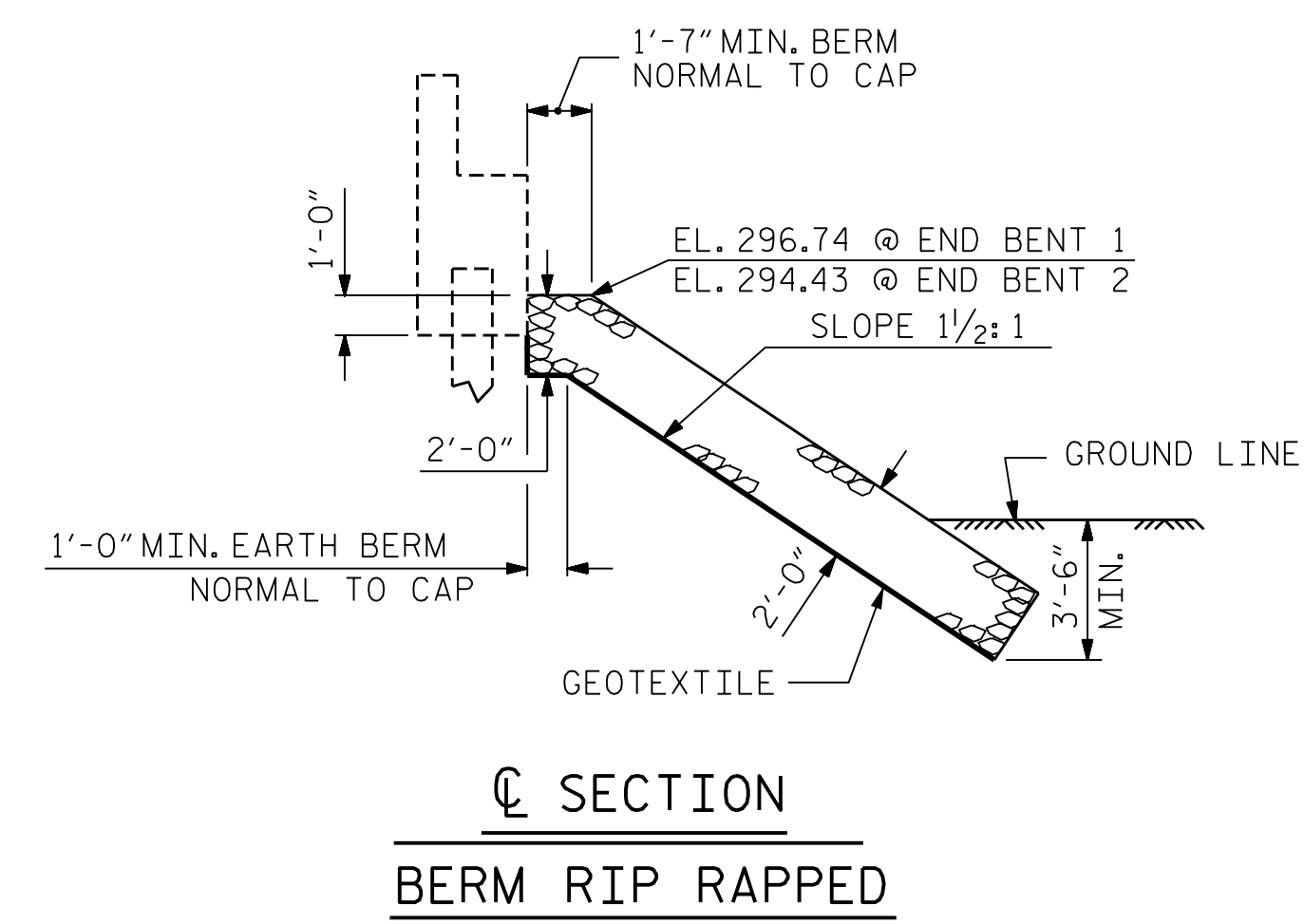
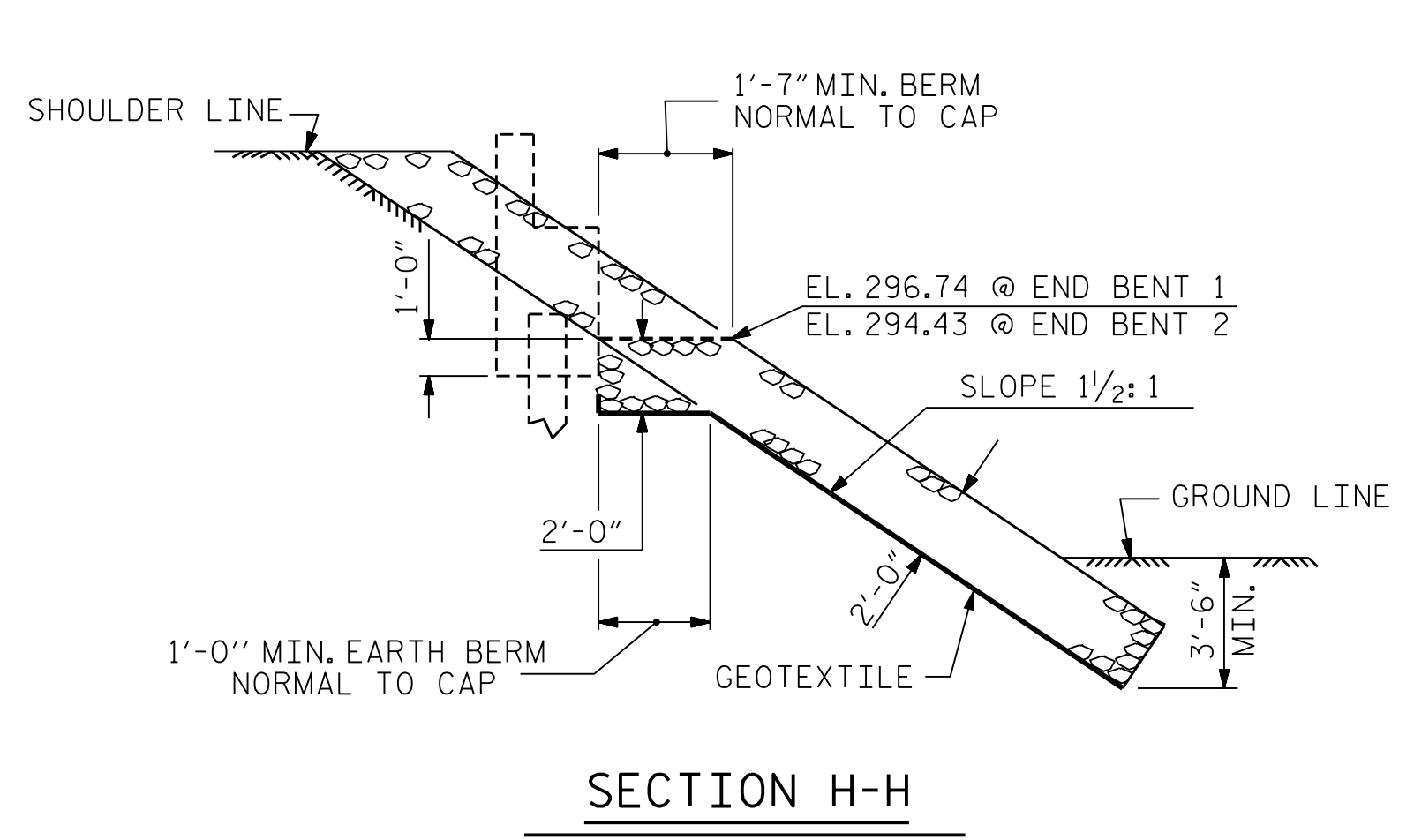
HDR HDR Engineering, Inc. of the Carolinas
 555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
 N.C.B.E.L.S. License Number: F-0116

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 USER: MNEIHEIS DATE: 6/1/2018 TIME: 4:09:14 PM
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NOTES :
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.



ESTIMATED QUANTITIES		
BRIDGE @ STA. 22+68.50	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	81	89
END BENT 2	510	566



PROJECT NO. 17BP.8.R.121
MOORE COUNTY
STATION: 22+68.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**STANDARD
RIP RAP DETAILS**



Matthew Neiheisel 6/13/2018

DRAWN BY : D. H. CARTER DATE : JUN 2018
CHECKED BY : P. KUMAR DATE : JUN 2018
DESIGN ENGINEER OF RECORD: M. T. NEIHEISEL DATE : JUN 2018

HDR HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-30
1			3			TOTAL SHEETS
2			4			33

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NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 6" 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.

APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.

THE JOINT SHALL BE SAWSD PRIOR TO THE CASTING OF THE BARRIER RAIL OR PARAPET AND END POST.

FOR THE 6" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

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

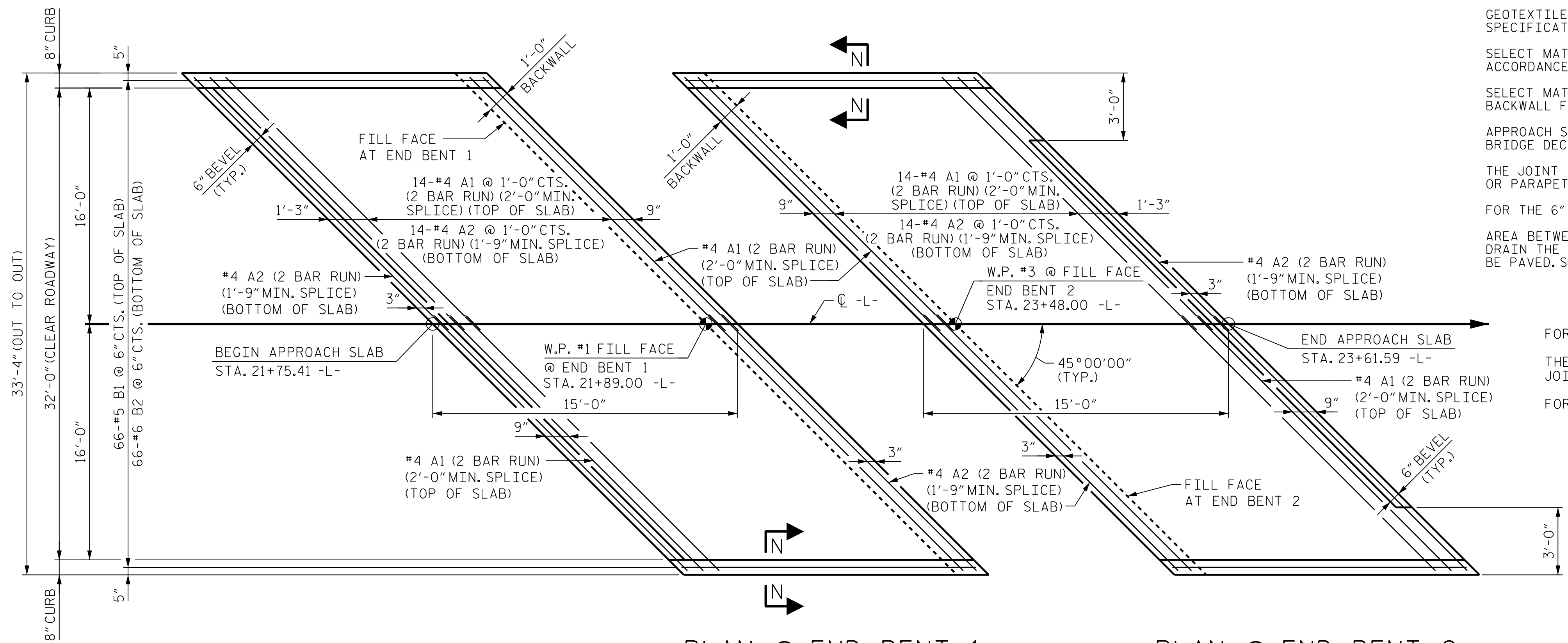
WITH FOAM JOINT SEAL

FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL SHALL BE 2".

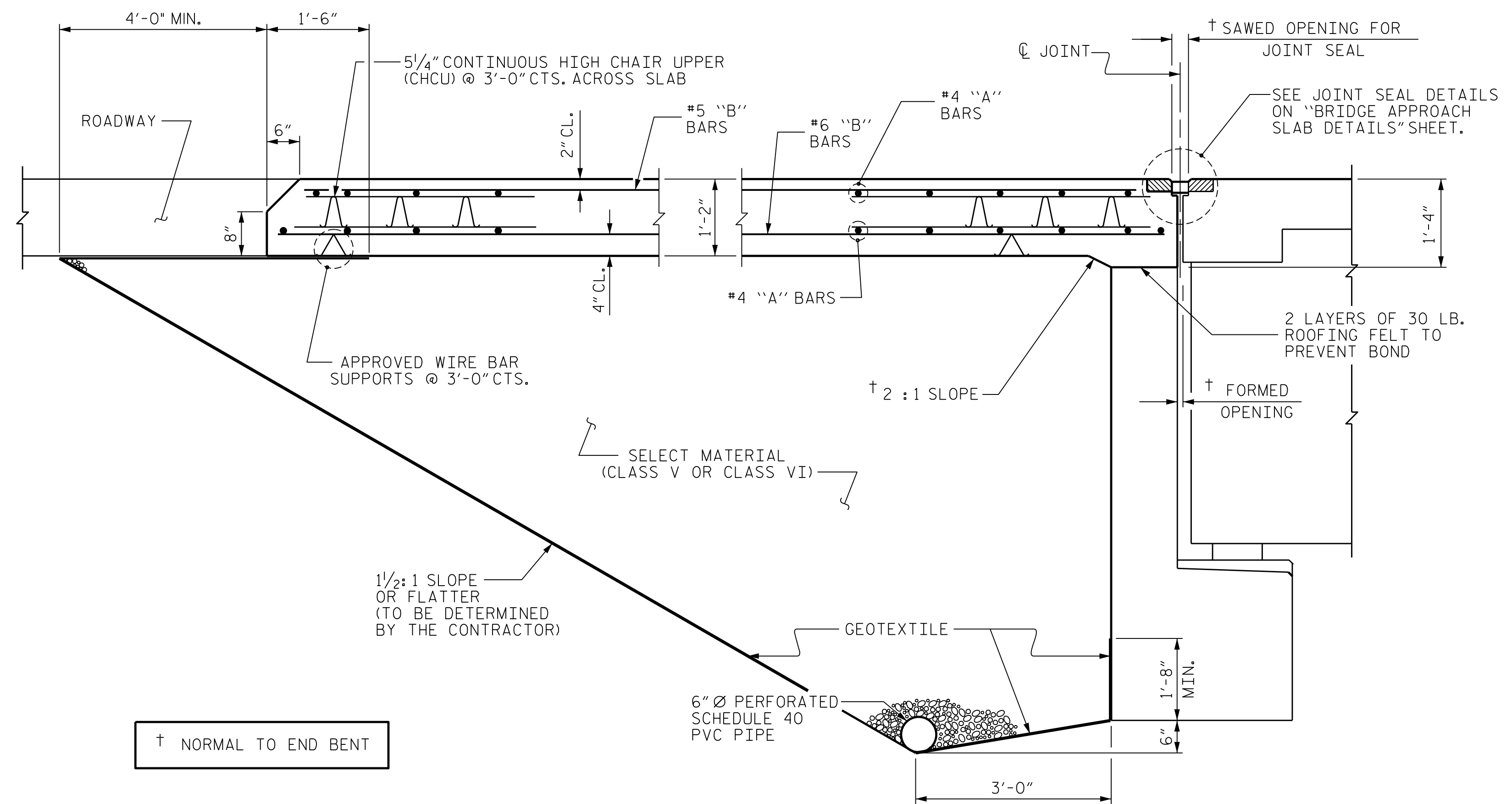
FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL					
APPROACH SLAB AT EB #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	30	#4	STR	24'-5"	490
A2	32	#4	STR	24'-3"	519
*B1	66	#5	STR	14'-8"	1,010
B2	66	#6	STR	14'-8"	1,454
REINFORCING STEEL				LBS.	1,973
*EPOXY COATED REINFORCING STEEL				LBS.	1,500
CLASS AA CONCRETE				C. Y.	21.8
APPROACH SLAB AT EB #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	30	#4	STR	24'-5"	490
A2	32	#4	STR	24'-3"	519
*B1	66	#5	STR	14'-8"	1,010
B2	66	#6	STR	14'-8"	1,454
REINFORCING STEEL				LBS.	1,973
*EPOXY COATED REINFORCING STEEL				LBS.	1,500
CLASS AA CONCRETE				C. Y.	21.8

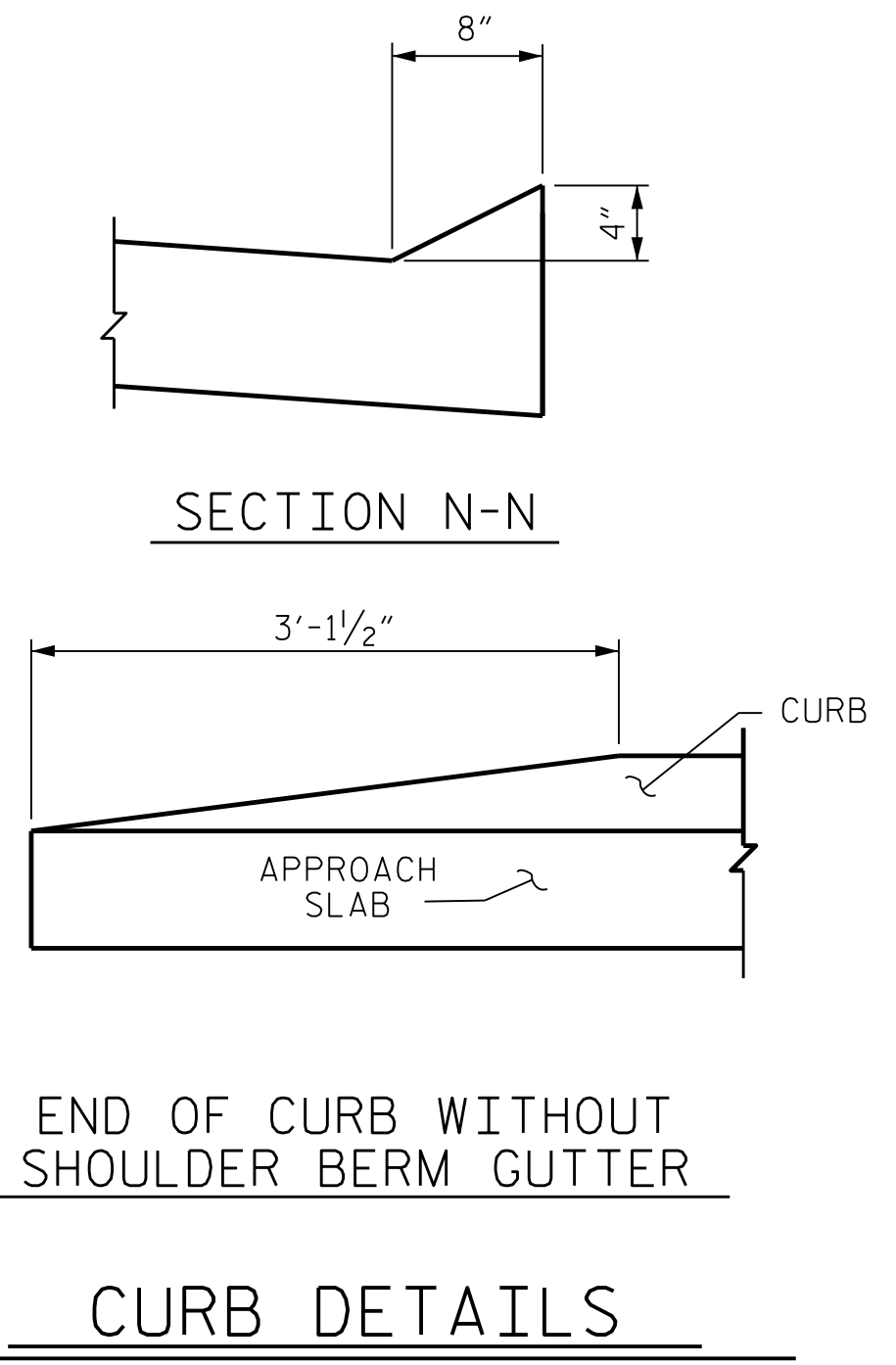


PLAN @ END BENT 1 PLAN @ END BENT 2
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#6	3'-10"	2'-7"



SECTION THRU SLAB
(TYPE I - STANDARD APPROACH FILL)



CURB DETAILS

PROJECT NO. 17BP.8.R.121
MOORE COUNTY
STATION: 22+68.50 -L-
SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

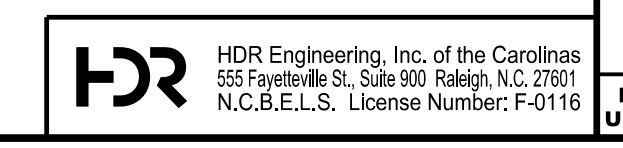
STANDARD
BRIDGE APPROACH SLAB
FOR FLEXIBLE PAVEMENT



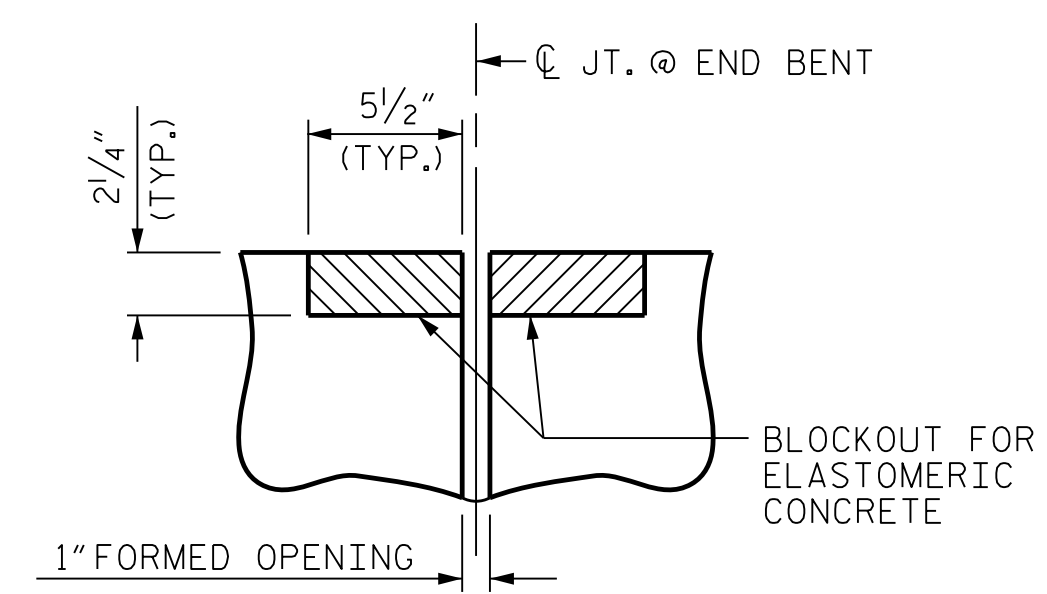
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-31
1			3			TOTAL SHEETS 33
2			4			

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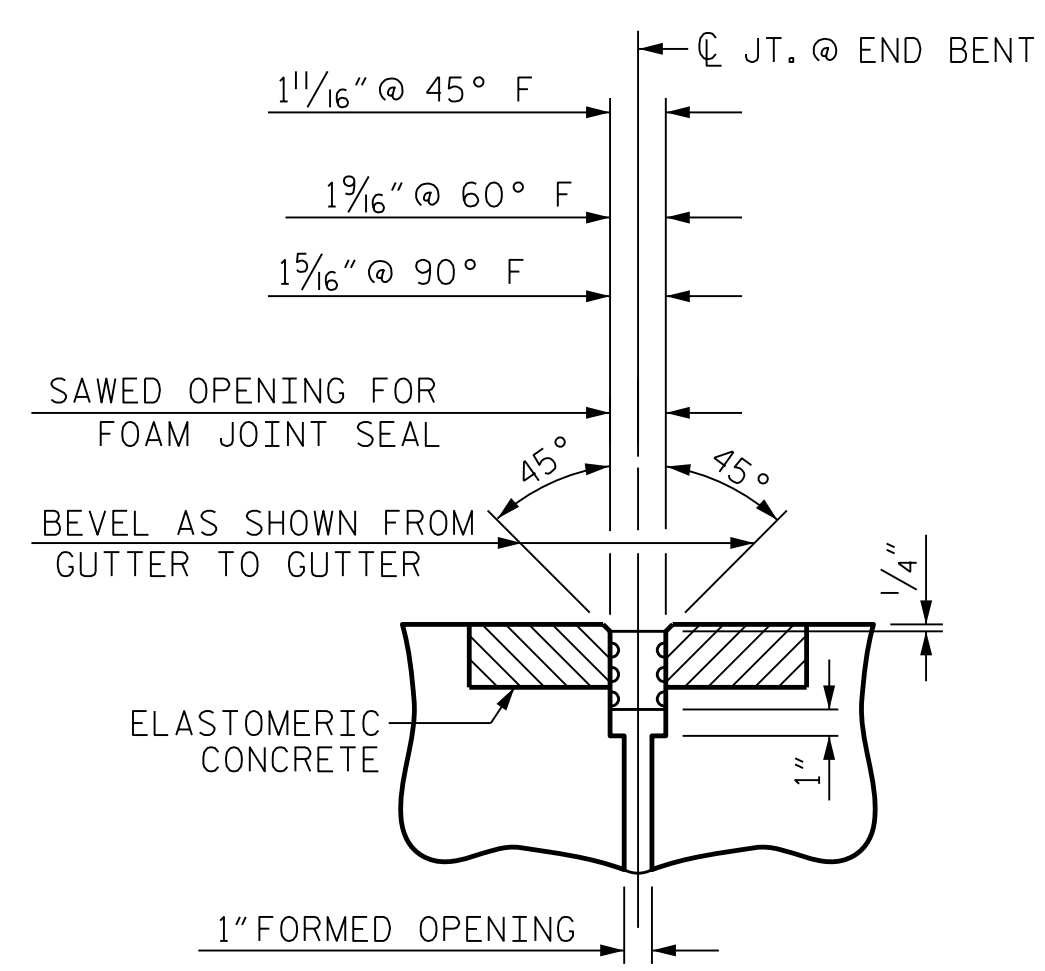
DRAWN BY: D. H. CARTER DATE: JUN 2018
CHECKED BY: A. E. SMITH DATE: JUN 2018
DESIGN ENGINEER OF RECORD: M. T. NEIHEISEL DATE: JUN 2018



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UNLESS ALL SIGNATURES COMPLETED



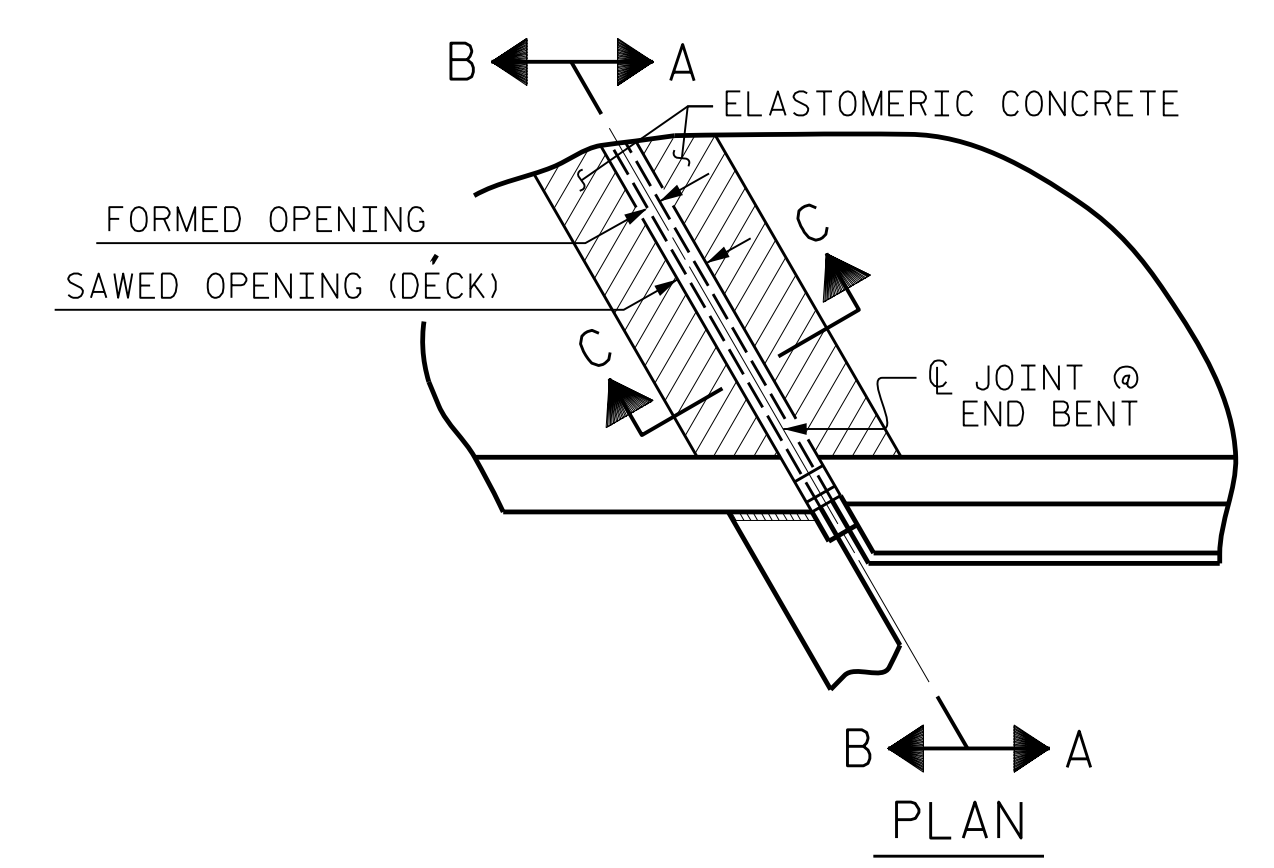
SECTION C-C
FOAM JOINT SEAL
(PRE-SAWED ELASTOMERIC
CONCRETE DIMENSIONS)



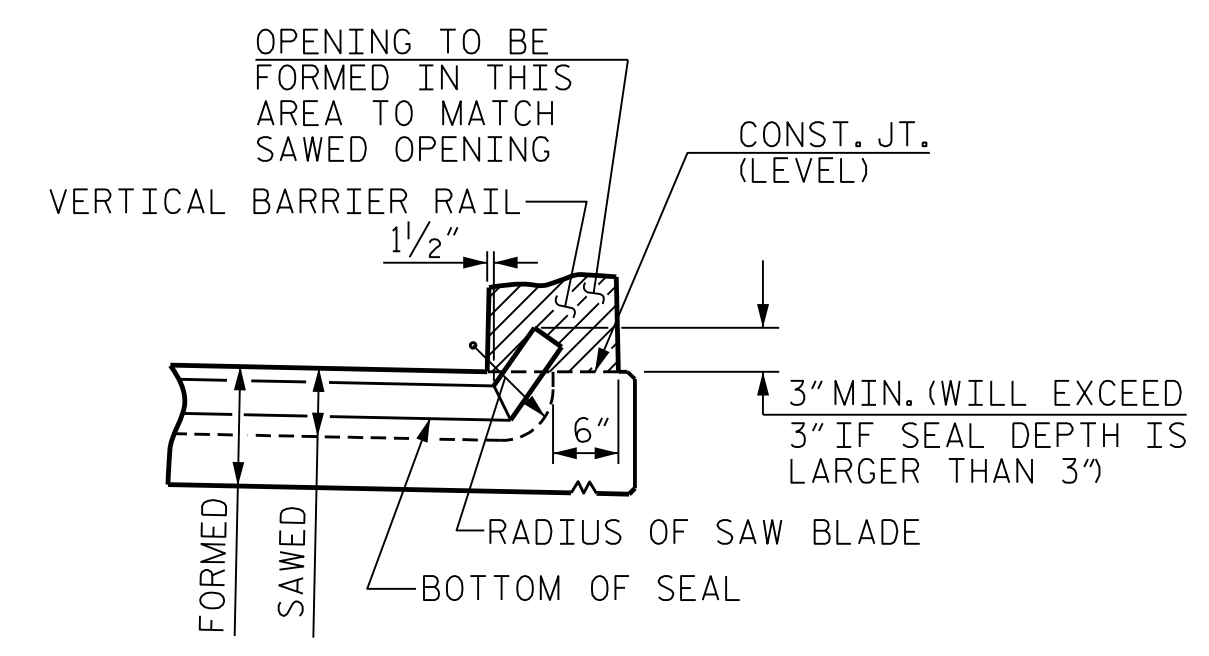
SECTION C-C
FOAM JOINT SEAL
(EXPANSION)

ELASTOMERIC CONCRETE	
END BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)
1	8.1
2	8.1
TOTAL	16.2

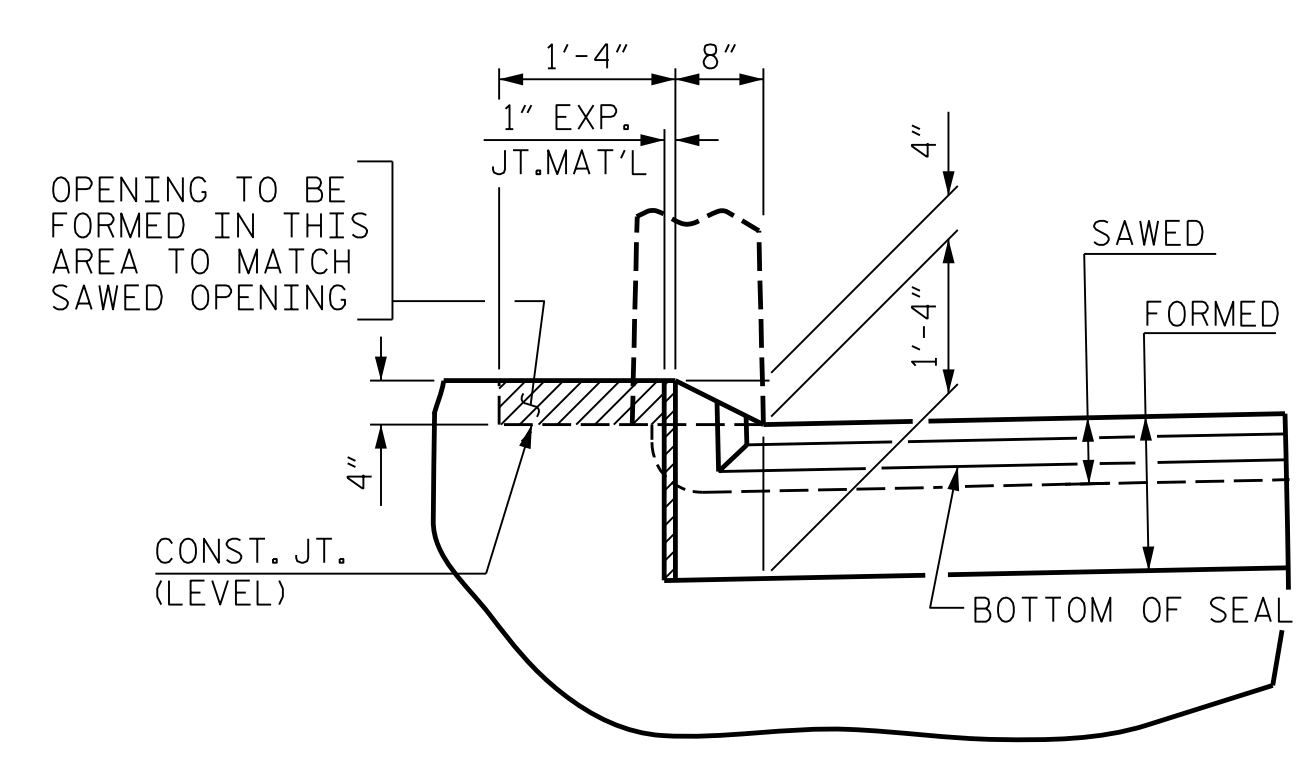
* BASED ON THE MINIMUM BLOCKOUT SHOWN.



PLAN

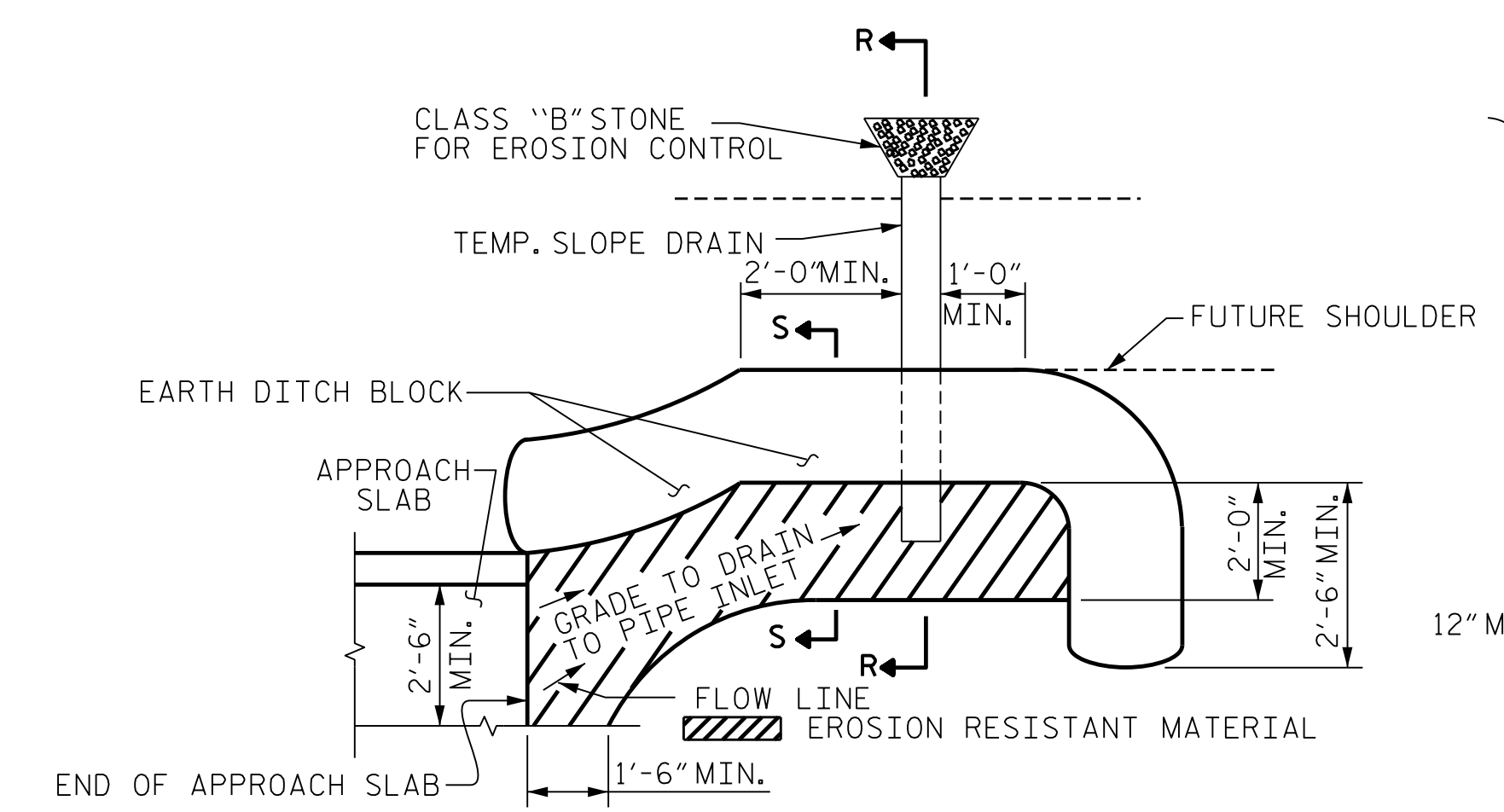


SECTION A-A



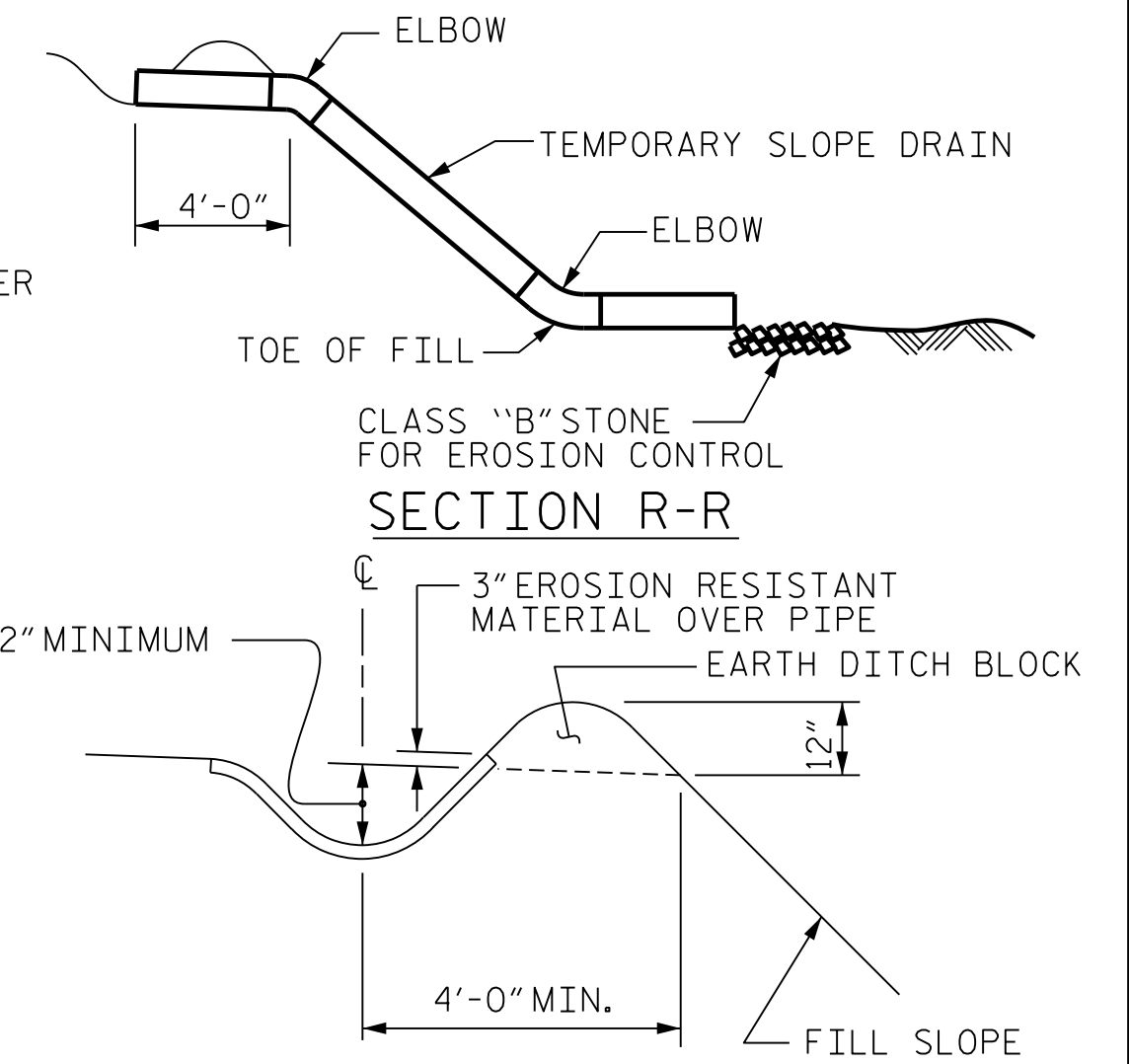
SECTION B-B

JOINT SEAL DETAILS @ END BENT
FOAM JOINT SEAL TO BE CUT, HEAT WELDED AND TURNED UP PARALLEL TO FACE OF VERTICAL BARRIER RAIL.
THE JOINT SHALL BE SAWED PRIOR TO THE CASTING OF THE VERTICAL BARRIER RAIL.



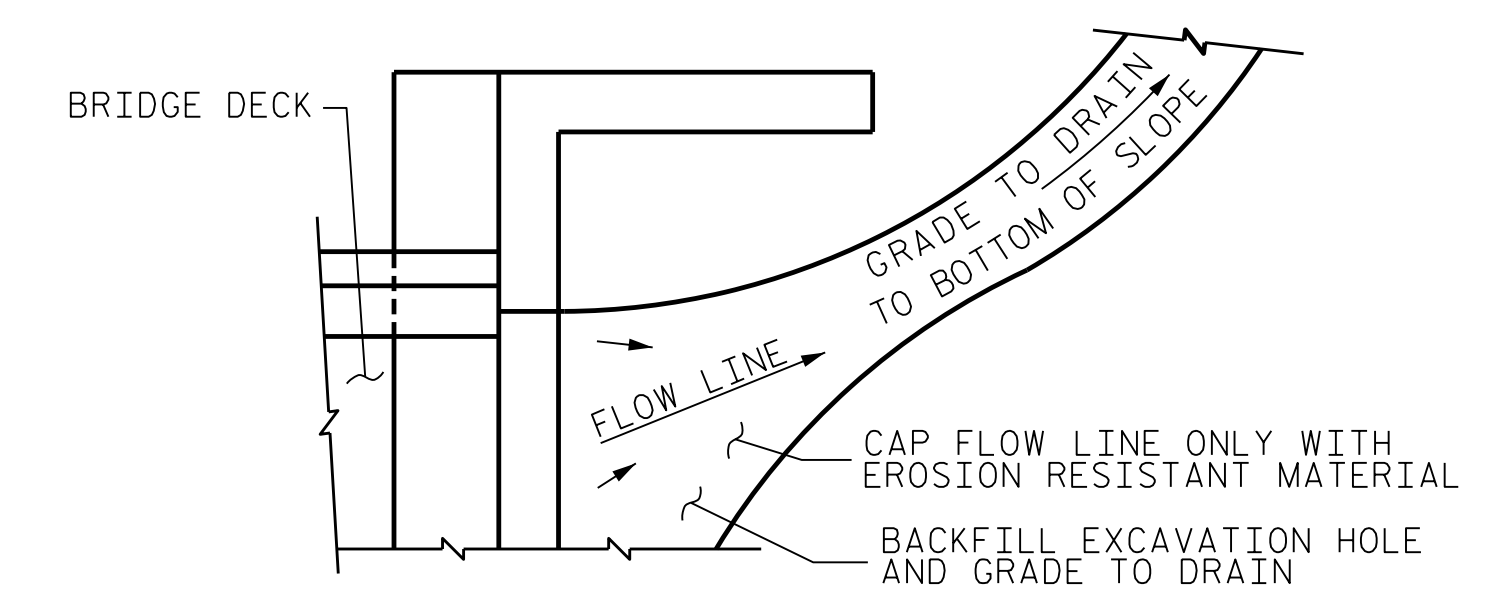
PLAN VIEW

NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 2" DEPTH, 2) EROSION CONTROL MAT, OR 3) CONCRETE, AS DIRECTED BY THE ENGINEER. THE SLOPE DRAIN SHALL CONSIST OF A NON-PERFORATED TEMPORARY DRAINAGE PIPE, 12 INCHES IN DIAMETER.



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS
(TO BE USED WHEN SHOULDER BERM GUTTER IS 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.

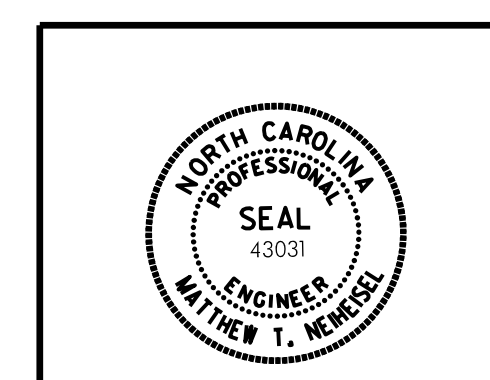
TEMPORARY DRAINAGE DETAIL

PROJECT NO. 17BP.8.R.121
MOORE COUNTY
STATION: 22+68.50 -L-
SHEET 2 OF 2

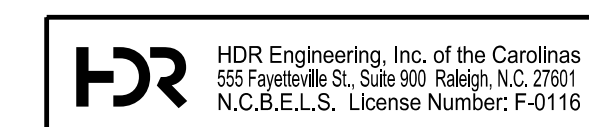
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**STANDARD
BRIDGE APPROACH
SLAB DETAILS**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-32
1			3			TOTAL SHEETS
2			4			33



Matthew Memmel 6/13/2018



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USER: MNEIHEIS DATE: 6/1/2018 TIME: 4:09:43 PM
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DRAWN BY: D. H. CARTER DATE: JUN 2018
CHECKED BY: A. E. SMITH DATE: JUN 2018
DESIGN ENGINEER OF RECORD: M. T. NEIHEISEL DATE: JUN 2018

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.

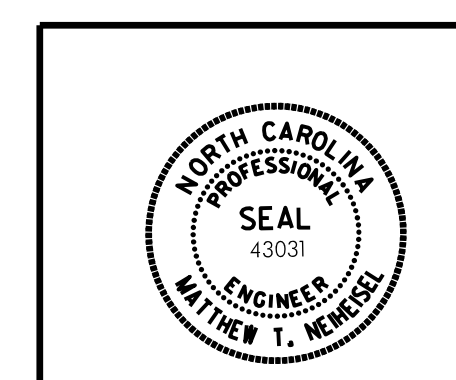
HANDRAILS AND POSTS:

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

SPECIAL NOTES:

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

PROJECT NO. 17BP.8.R.121
MOORE COUNTY
 STATION: 22+68.50 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD NOTES

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-33
1			3			TOTAL SHEETS
2			4			33

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 N.C. B.E.L.S. License Number: F-0116

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLOT DRIVER: NCDOT STRUCTURES DEFAULT PLOTTER.plt PENTABLE: NCDOT STRUCTURES DEFAULT PEN.tbl
 USER: MNEIHEIS DATE: 6/1/2018 TIME: 4:09:47 PM
 FILE: ... \NCAD\3.0 FinalPlans\1700

DRAWN BY : D. H. CARTER DATE : JUN 2018
 CHECKED BY : A. E. SMITH DATE : JUN 2018
 DESIGN ENGINEER OF RECORD: M. T. NEIHEISEL DATE : JUN 2018