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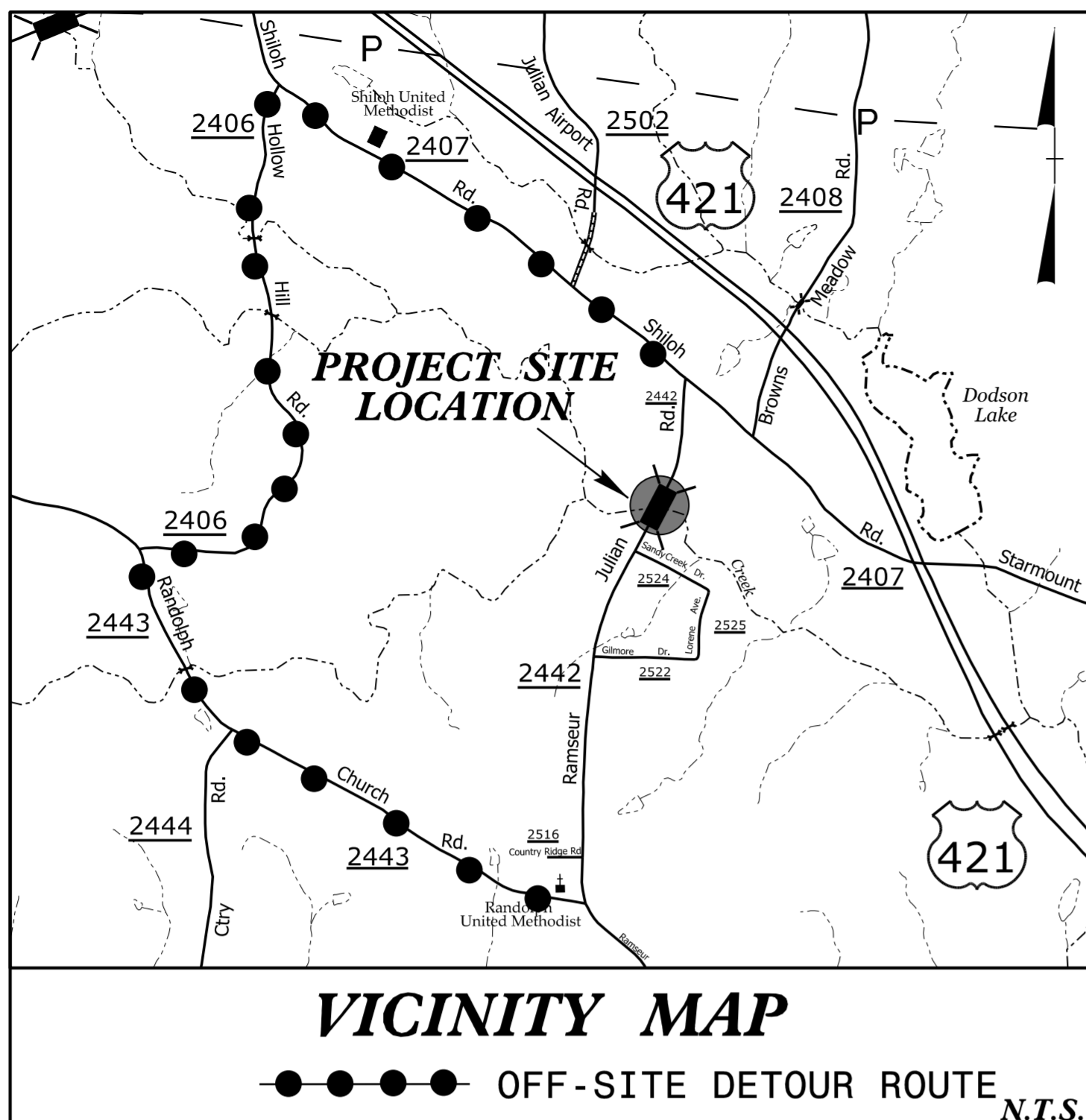
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09/08/09

See Sheet 1A For Index of Sheets

**TIP PROJECT: 17BP.8.R.115**



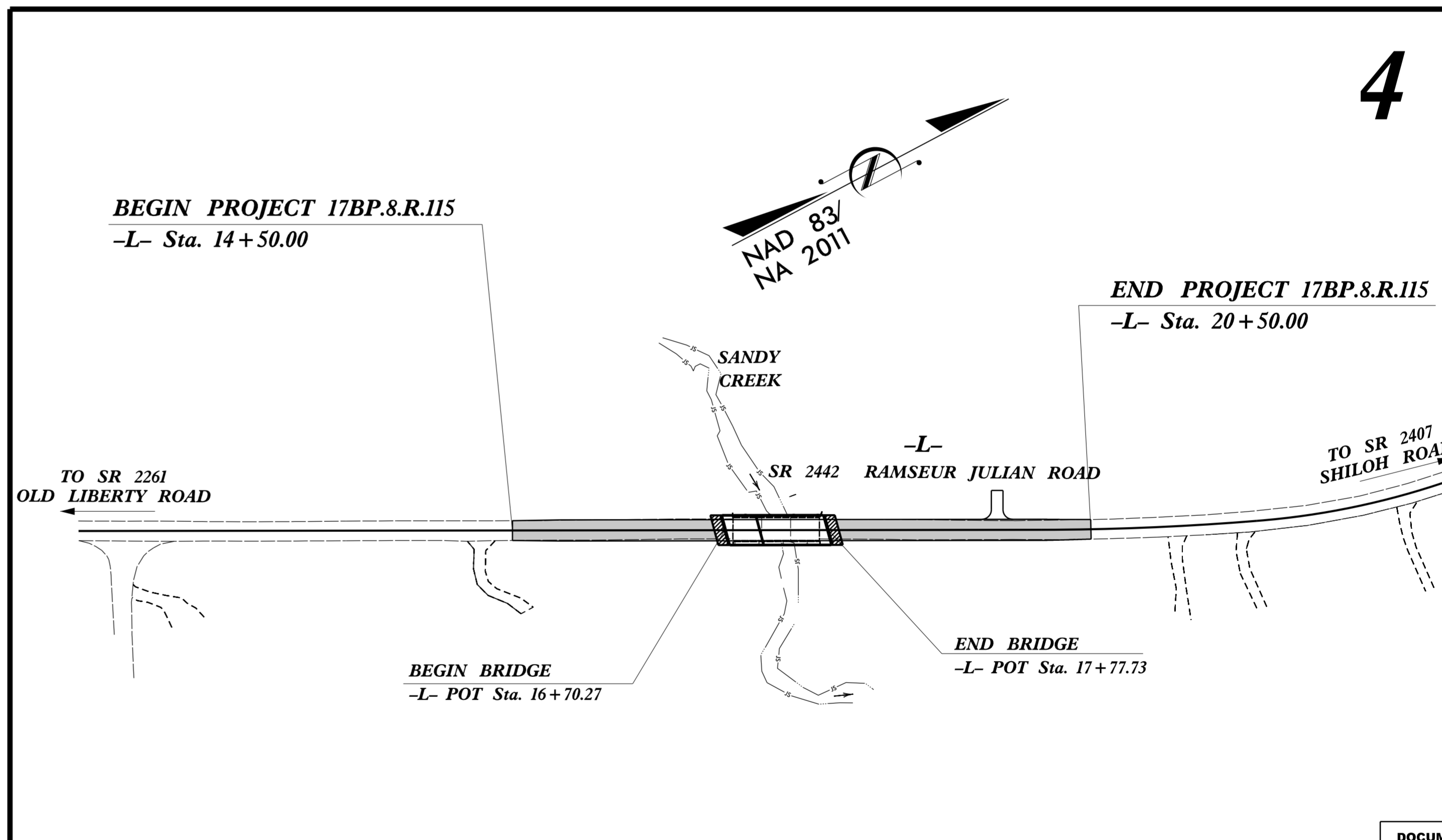
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**RANDOLPH COUNTY**

**LOCATION: BRIDGE NO. 750128 ON SR 2442 (RAMSEUR JULIAN ROAD)  
OVER SANDY CREEK**

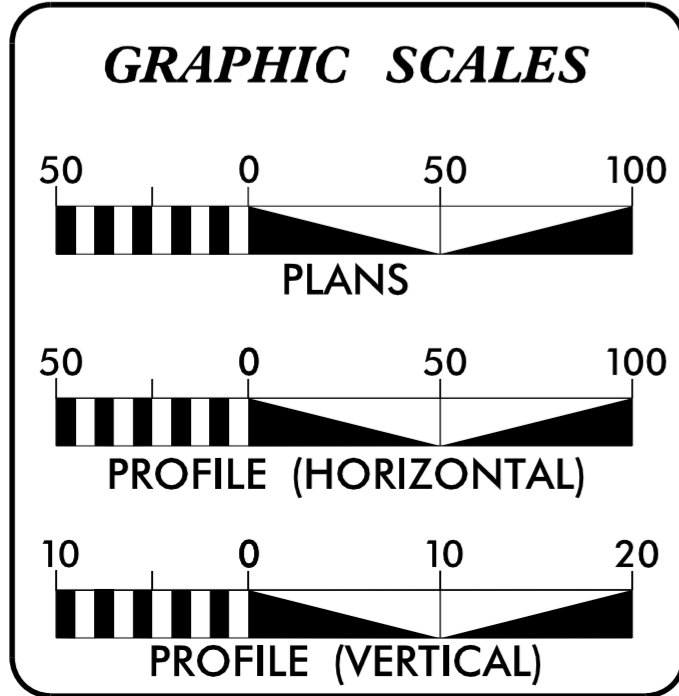
**TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURE**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.8.R.115	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.8.R.115		PE	



DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

**CONTRACT:**



**DESIGN DATA**

ADT 2012	=	1100
ADT 2025	=	2200
K	=	%
D	=	%
T	=	6 % *
V	=	60 MPH
* TTST	=	DUAL
FUNC CLASS	=	MINOR COLLECTOR
	=	SUBREGIONAL TIER

**PROJECT LENGTH**

LENGTH ROADWAY PROJECT 17BP.8.R.115	=	0.094 mi
LENGTH STRUCTURE PROJECT 17BP.8.R.115	=	0.020 mi
TOTAL LENGTH OF PROJECT 17BP.8.R.115	=	0.114 mi

**PLANS PREPARED BY:**  
**CH ENGINEERING**  
3220 GLEN ROYAL RD., RALEIGH, NC 27617  
TELE 919.788.0224 FAX 919.788.0232  
NC LICENSE #P-0189

**2012 STANDARD SPECIFICATIONS**

**RIGHT OF WAY DATE:**  
DECEMBER 2016

**LETTING DATE:**  
JUNE 2017

**PLANS PREPARED FOR:**  
**DIVISION OF HIGHWAYS  
DIVISION 8**  
902 N Sandhills Blvd  
Aberdeen, NC 28315

**BRIAN A. WILES, PE**  
PROJECT ENGINEER

**TIM WELCH, PE**  
NCDOT CONTACT  
DIV 8 BRIDGE PROGRAM MANAGER

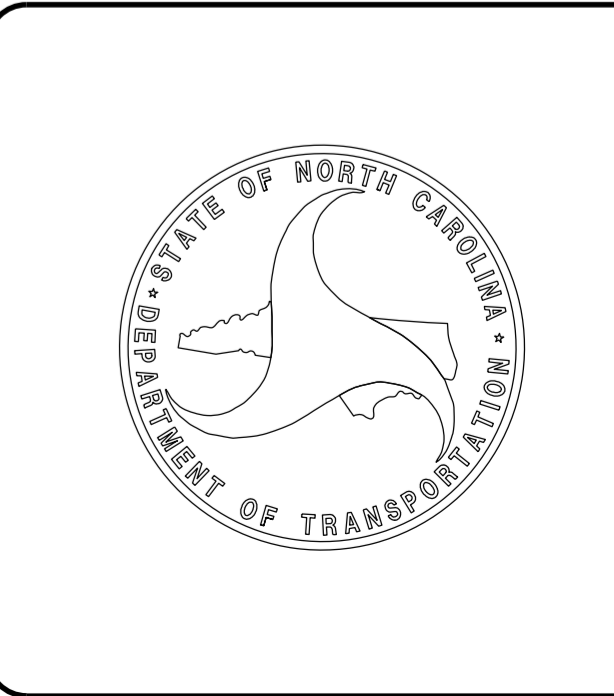
**HYDRAULICS ENGINEER**

**MI ENGINEERING**  
1011 SCHALUB DRIVE, SUITE 100  
RALEIGH, NC 27606  
(919) 851-6606  
FIRM PE NUMBER: P-0871

DocuSigned by:  
**Andrew T. Nottingham** 4/26/2017  
ES:204794042451  
SIGNATURE:

**ROADWAY DESIGN ENGINEER**

DocuSigned by:  
**Brian A Wiles** 4/26/2017  
88900DFEA2E34DE  
SIGNATURE:



8/17/09

A:\2017  
INSTRUMENTATION  
PROJ\PROJ\Nami28\_RdJ\_tsh\_1A.dgn

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
1C-1	SURVEY CONTROL SHEETS
2A-1	PAVEMENT SCHEDULE, TYPICAL SECTIONS AND WEDGING DETAILS
2C-1	DETAIL OF STRUCTURE ANCHOR UNIT, TYPE III
3B-1	SUMMARIES OF EARTHWORK, ASPHALT PAVEMENT REMOVAL, SHOULDER BERM GUTTER AND GUARDRAIL
3D-1	LIST OF PIPES, ENDWALLS, ETC. (for PIPES 48" & UNDER)
3G-1	SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION
4	PLAN SHEET
5	PROFILE SHEET
TMP-1 THRU TMP-3	TRAFFIC MANAGEMENT PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
UD-1 THRU UD-2	UTILITIES BY OTHERS PLANS
X-1 THRU X-12	CROSS-SECTIONS
S-1 THRU S-20	STRUCTURE PLANS

**GENERAL NOTES:** 2012 SPECIFICATIONS  
EFFECTIVE: 01-17-2012  
REVISED: 01-24-2017

**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.

**GUARDRAIL:**

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

**TEMPORARY SHORING:**

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

**END BENTS:**

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

**UTILITIES:**

UTILITY OWNERS ON THIS PROJECT ARE Duke Energy Progress - Power, Randolph Telephone Membership Corporation - Telephone and Randolph Telephone Membership Corporation - CATV.

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.

**CH ENGINEERING**

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

PROJECT REFERENCE NO. 17BP.8.R.115	SHEET NO. 1A
ROADWAY DESIGN ENGINEER 4/26/2017	
NORTH CAROLINA PROFESSIONAL SEAL 16689 BRIAN ALLEN WILES ENGINEER	

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

2012 ROADWAY ENGLISH STANDARD DRAWINGS

EFF. 01-17-2012  
REV. 02-29-2016

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2012 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
DIVISION 4 - MAJOR STRUCTURES	
422.11	Bridge Approach Fills - Sub Regional Tier
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
840.00	Concrete Base Pad for Drainage Structures
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.46	Traffic Bearing Precast Drainage Structure
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets

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

Note: Not to Scale \*S.U.E. = Subsurface Utility Engineering

### BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EIP
Property Corner	-----
Property Monument	□ ECM
Parcel/Sequence Number	(123)
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	----- NLB
Proposed Wetland Boundary	----- NLB
Existing Endangered Animal Boundary	----- EAB
Existing Endangered Plant Boundary	----- EPB
Existing Historic Property Boundary	----- HPB
Known Contamination Area: Soil	☠
Potential Contamination Area: Soil	☠?
Known Contamination Area: Water	☠
Potential Contamination Area: Water	☠?
Contaminated Site: Known or Potential	☠?

### BUILDINGS AND OTHER CULTURE:

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

### HYDROLOGY:

Stream or Body of Water	-----
Hydro, Pool or Reservoir	-----
Jurisdictional Stream	----- 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	○
Switch	□
RR Abandoned	-----
RR Dismantled	-----

### RIGHT OF WAY:

Baseline Control Point	◆
Existing Right of Way Marker	△
Existing Right of Way Line	-----
Proposed Right of Way Line	-----
Proposed Right of Way Line with Iron Pin and Cap Marker	-----
Proposed Right of Way Line with Concrete or Granite RW Marker	-----
Proposed Control of Access Line with Concrete CA Marker	-----
Existing Control of Access	-----
Proposed Control of Access	-----
Existing Easement Line	----- E
Proposed Temporary Construction Easement	----- E
Proposed Temporary Drainage Easement	----- TDE
Proposed Permanent Drainage Easement	----- PDE
Proposed Permanent Drainage / Utility Easement	----- DUE
Proposed Permanent Utility Easement	----- PUE
Proposed Temporary Utility Easement	----- TUE
Proposed Aerial Utility Easement	----- AUE
Proposed Permanent Easement with Iron Pin and Cap Marker	-----

### ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	----- C
Proposed Slope Stakes Fill	----- F
Proposed Curb Ramp	----- CR
Existing Metal Guardrail	-----
Proposed Guardrail	-----
Existing Cable Guiderail	-----
Proposed Cable Guiderail	-----
Equality Symbol	○
Pavement Removal	-----

### VEGETATION:

Single Tree	☼
Single Shrub	☼
Hedge	-----
Woods Line	-----

Orchard	☼
Vineyard	□

### EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	----- CONC
Bridge Wing Wall, Head Wall and End Wall	----- CONC WW
MINOR:	
Head and End Wall	----- CONC HW
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	□ CB
Paved Ditch Gutter	-----
Storm Sewer Manhole	○
Storm Sewer	----- S

### 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.*)	----- P
U/G Power Line LOS C (S.U.E.*)	----- P
U/G Power Line LOS D (S.U.E.*)	----- P

### 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.*)	----- T
U/G Telephone Cable LOS C (S.U.E.*)	----- T
U/G Telephone Cable LOS D (S.U.E.*)	----- T
U/G Telephone Conduit LOS B (S.U.E.*)	----- TC
U/G Telephone Conduit LOS C (S.U.E.*)	----- TC
U/G Telephone Conduit LOS D (S.U.E.*)	----- TC
U/G Fiber Optics Cable LOS B (S.U.E.*)	----- T FO
U/G Fiber Optics Cable LOS C (S.U.E.*)	----- T FO
U/G Fiber Optics Cable LOS D (S.U.E.*)	----- T FO

### WATER:

Water Manhole	○
Water Meter	○
Water Valve	⊗
Water Hydrant	⊕
U/G Water Line LOS B (S.U.E.*)	----- W
U/G Water Line LOS C (S.U.E.*)	----- W
U/G Water Line LOS D (S.U.E.*)	----- W
Above Ground Water Line	----- A/G Water

### TV:

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

### GAS:

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

### SANITARY SEWER:

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

### MISCELLANEOUS:

Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	□
Utility Unknown U/G Line LOS B (S.U.E.*)	----- TUTL
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.

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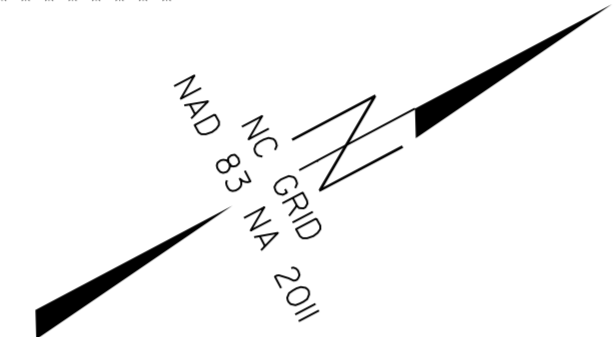
# SURVEY CONTROL SHEET 17BP.8.R.115 RANDOLPH COUNTY #128 (FINAL)

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

PROJECT REFERENCE NO.	SHEET NO.
17BP.8.R.115	1C-1

BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	BL-1	773422.4004	1808536.5640	657.20	OUTSIDE PROJECT LIMITS	
2	BL-2	773960.7200	1808817.5290	631.43	10+11.15	17.76 RT
3	BL-3	774545.7404	1809123.1370	609.52	16+71.17	14.50 RT
4	BL-4	775218.5760	1809429.5090	659.61	24+08.35	16.22 RT

\*\*\*\*\*  
 BM1 ELEVATION = 603.44  
 N 774471 E 1809248  
 L STATION 16+63.28 160.47' RIGHT  
 RR SPIKE IN 18" OAK  
 \*\*\*\*\*



**CENTERLINE CONTROL POINTS AND ROW CONTROL POINT TABLES PROVIDED BY NCDOT LOCATION AND SURVEYS**

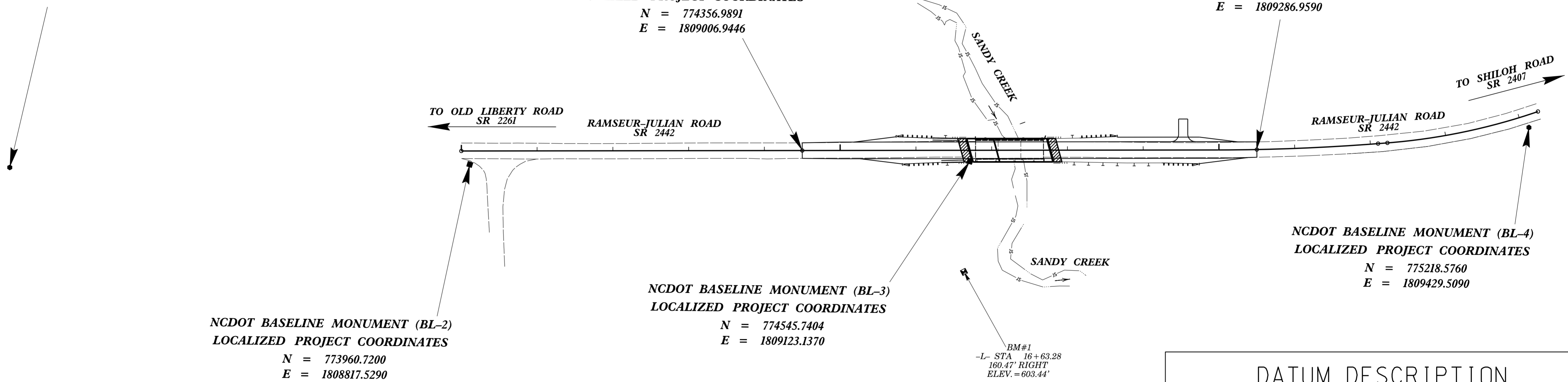
TYPE	STATION	NORTH	EAST
POT	10+00.00	773959.1661	1808796.6190
PC	19+98.98	774842.3131	1809263.5313
PT	22+10.27	775032.7134	1809355.0172
PC	22+22.65	775044.0743	1809359.9483
PT	24+26.17	775239.0094	1809416.4894

ALIGN	STATION	OFFSET	NORTH	EAST
L	16+00.00	-65.00	774519.97712	1809019.58986
L	16+00.00	-30.62	774503.90697	1809049.98593
L	19+98.98	-65.00	774872.69342	1809206.06797
L	19+98.98	-32.69	774857.59048	1809234.63461
L	19+98.98	27.31	774829.54669	1809287.67839
L	19+98.98	55.00	774816.60659	1809312.15410
L	16+00.00	55.00	774463.89028	1809125.67599
L	16+00.00	29.38	774475.86318	1809103.02971

**NCDOT BASELINE MONUMENT (BL-1)  
LOCALIZED PROJECT COORDINATES**  
 N = 773422.4004  
 E = 1808536.5640

**-L- POT STA. 14+50.00  
BEG PROJECT 17BP.8.R.115  
LOCALIZED PROJECT COORDINATES**  
 N = 774356.9891  
 E = 1809006.9446

**-L- POC STA. 20+50.00  
END PROJECT 17BP.8.R.115  
LOCALIZED PROJECT COORDINATES**  
 N = 774887.6384  
 E = 1809286.9590



**NCDOT BASELINE MONUMENT (BL-2)  
LOCALIZED PROJECT COORDINATES**  
 N = 773960.7200  
 E = 1808817.5290

**NCDOT BASELINE MONUMENT (BL-3)  
LOCALIZED PROJECT COORDINATES**  
 N = 774545.7404  
 E = 1809123.1370

**NCDOT BASELINE MONUMENT (BL-4)  
LOCALIZED PROJECT COORDINATES**  
 N = 775218.5760  
 E = 1809429.5090

BM#1  
 -L- STA 16+63.28  
 160.47' RIGHT  
 ELEV. = 603.44'

### NOTES:

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

- ◆ INDICATES CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
  - INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
- PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

### DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "BL-1" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 773422.4004(ft) EASTING: 1808536.5640(ft) ELEVATION: 657.20(ft)  
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999904647  
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BL-1" TO -L- STATION 14+50 IS N 26° 42' 58.38" E 1046.29'  
 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES  
 VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

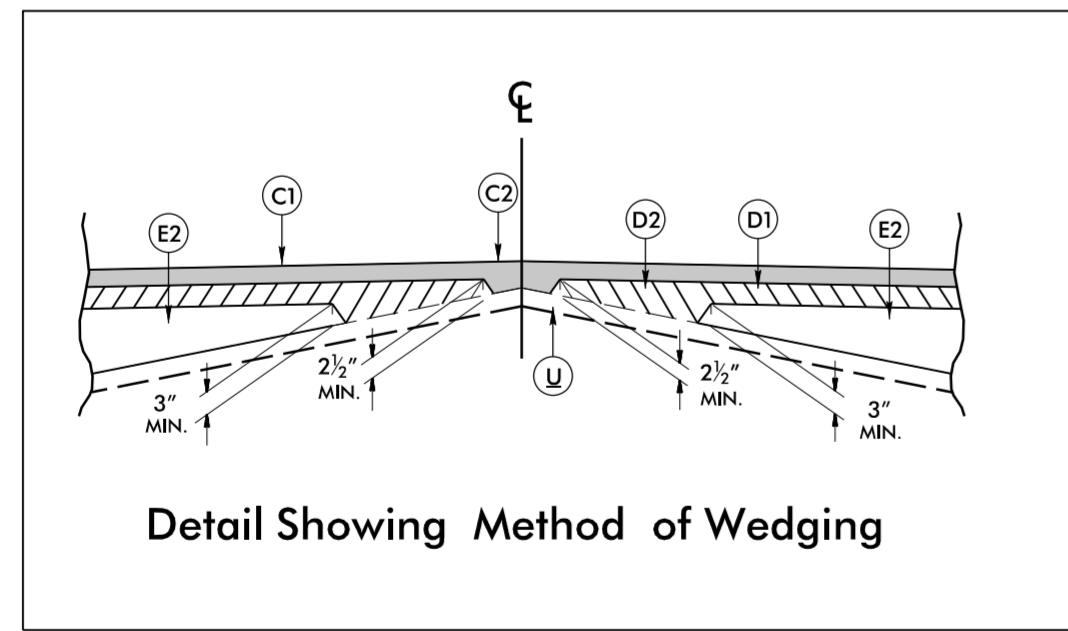
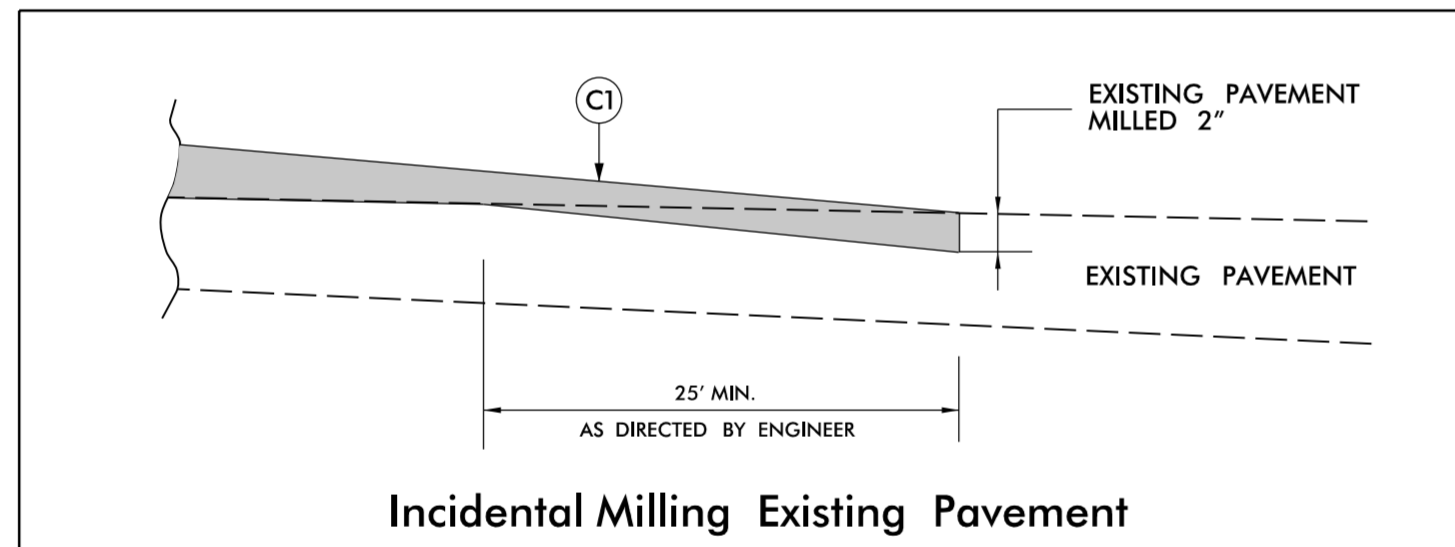
4/21/2017  
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 USER:RMB

6/2/2017

**PAVEMENT SCHEDULE**

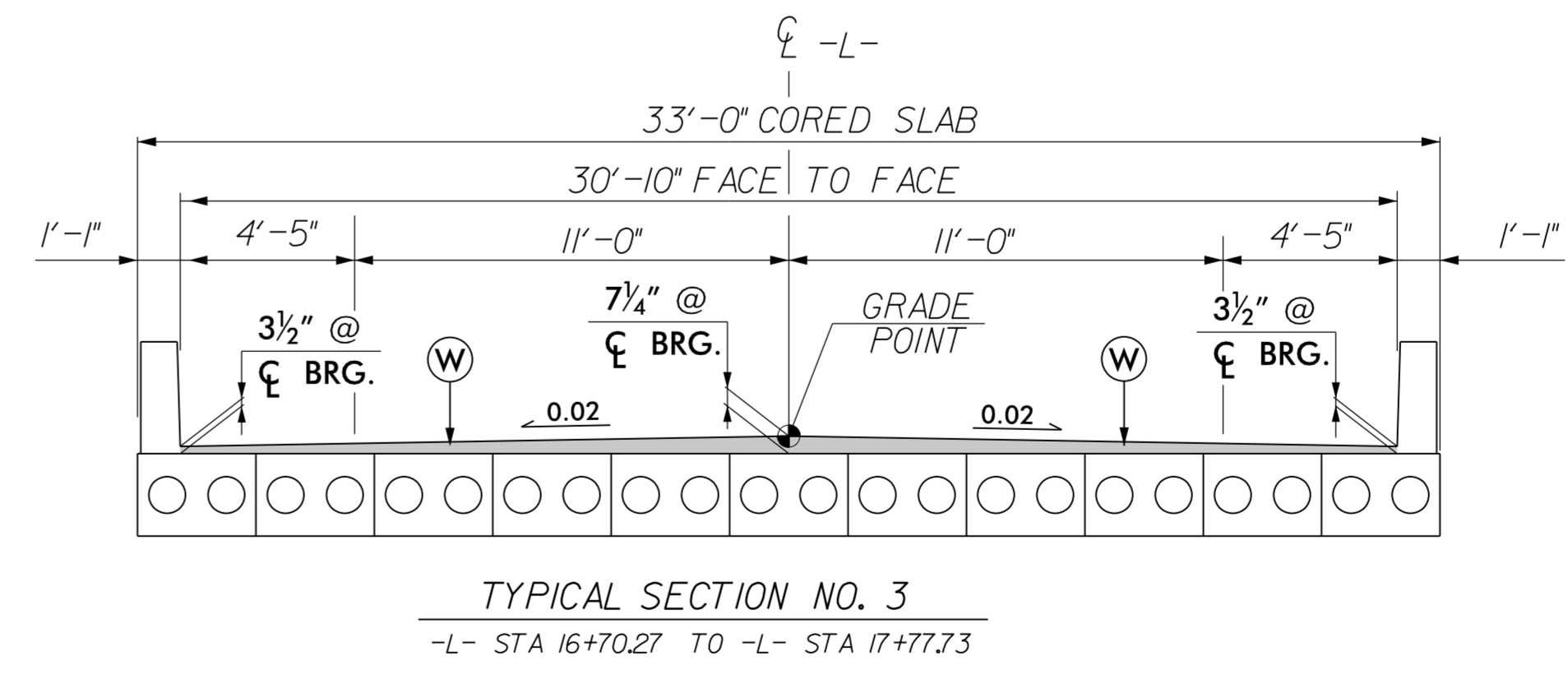
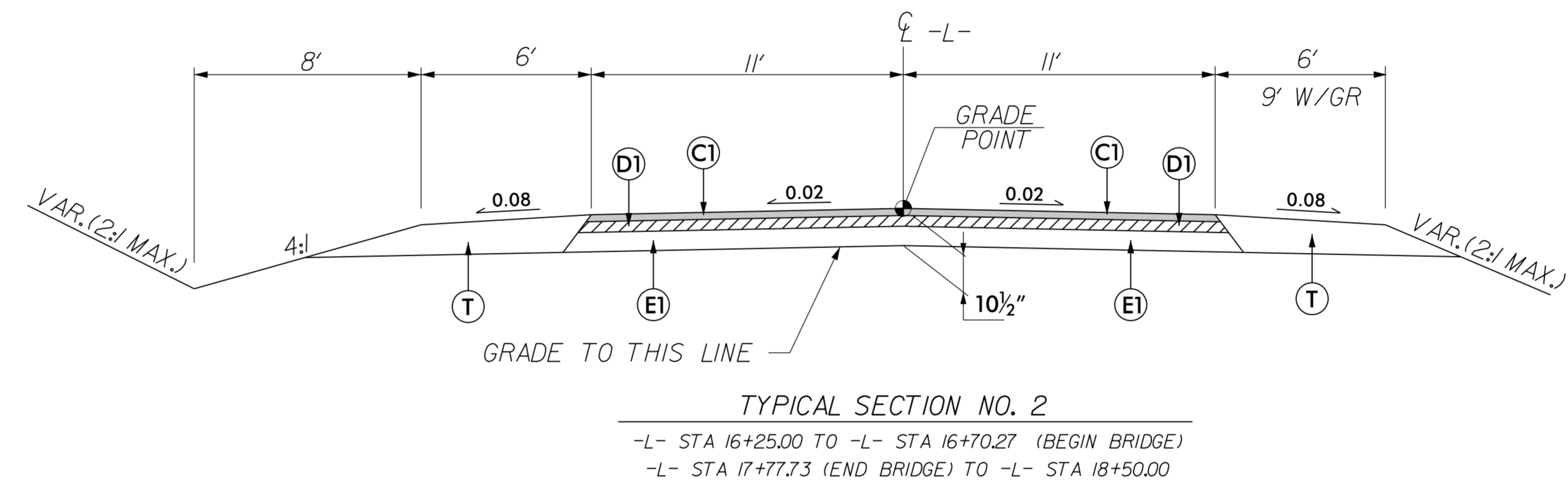
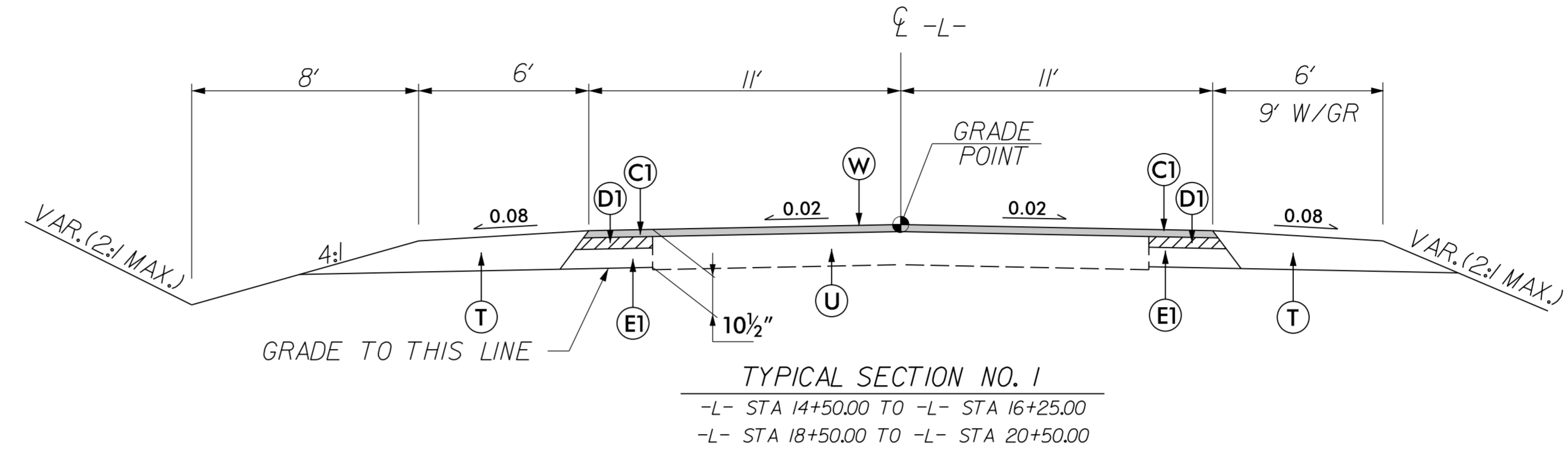
<b>C1</b>	PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
<b>C2</b>	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.
<b>D1</b>	PROP. APPROX. 3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
<b>D2</b>	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.
<b>E1</b>	PROP. APPROX. 5½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
<b>E2</b>	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, 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 5½" IN DEPTH.
<b>T</b>	EARTH MATERIAL.
<b>U</b>	EXISTING PAVEMENT.
<b>W</b>	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL THIS SHEET)

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



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

PROJECT REFERENCE NO. <b>17BP.8.R.J15</b>	SHEET NO. <b>2A-1</b>
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
Brian A Wildes 4/26/2017 DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



4/2/2017  
 Brian A Wildes  
 Pr-o\NANIZ8\_RdJ\_typ.dgn









COMPUTED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

PROJECT NO.  
17BP.8.R.115

SHEET NO.  
3G-1

**STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS**

**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
			ASU		100	100	100		
			<b>TOTAL CY/TONS/SY:</b>		100	100	100*	0	0

ASU = Aggregate Subgrade, AST = Aggregate Stabilization  
 \*Total square yards of Geotextile for Soil Stabilization is only the estimated quantity for ASU/AST and may only represent a portion of the geotextile quantity shown in the Item Sheets of the Proposal.

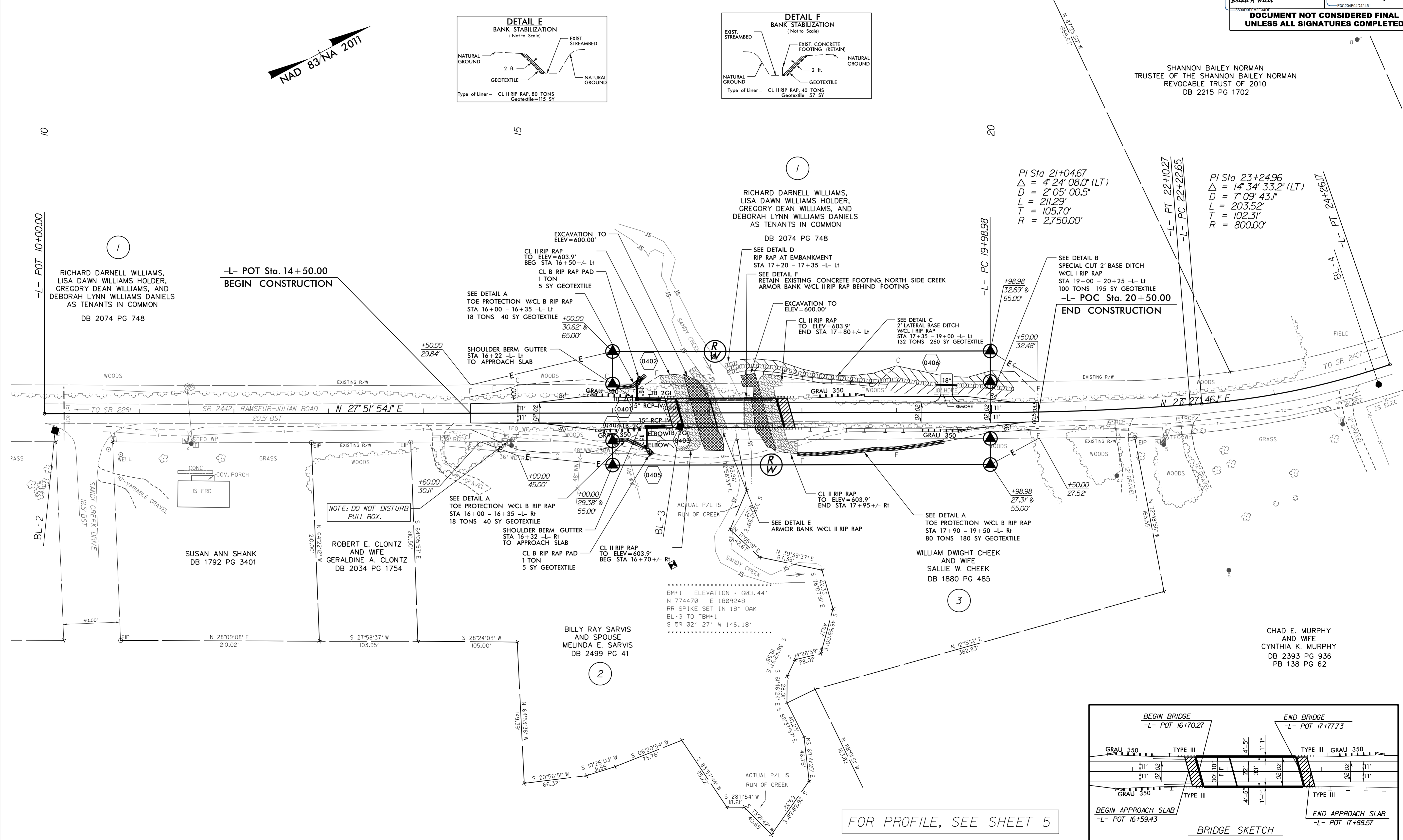
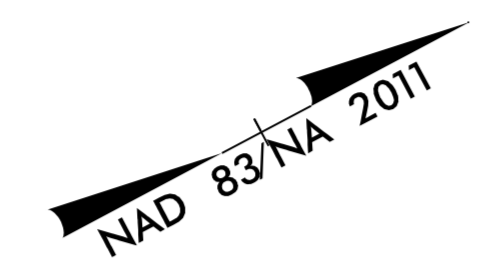
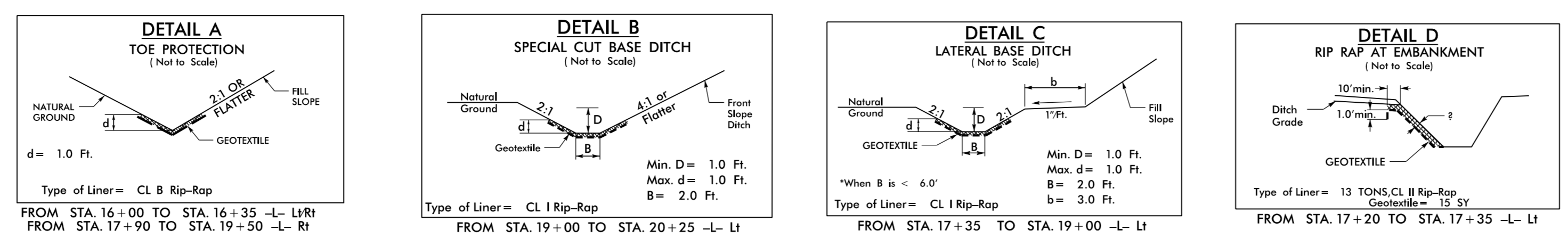
**CH ENGINEERING**  
 3220 GLEN ROYAL RD. RALEIGH, NC 27617  
 TELE 919.788.0224 FAX 919.788.0232  
 NC LICENSE #P-0189

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

PROJECT REFERENCE NO. 17BP.B.R.J15 SHEET NO. 4  
 RANDOLPH COUNTY BRIDGE 128  
 ROADWAY DESIGN ENGINEER 1/26/2017  
 HYDRAULICS ENGINEER 1/26/2017

SEAL 16689  
 Brian A. Wiley  
 SEAL 18533  
 Andrew T. Nottingham

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



8/17/09

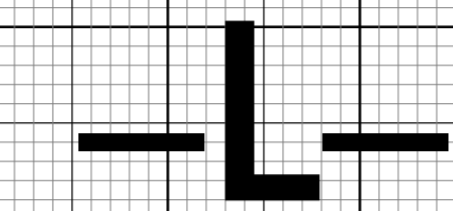
4/26/2017  
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**CH ENGINEERING**  
 3220 GLEN ROYAL RD. RALEIGH, NC 27617  
 TELE 919.788.0224 FAX 919.788.0232  
 NC LICENSE #P-0189

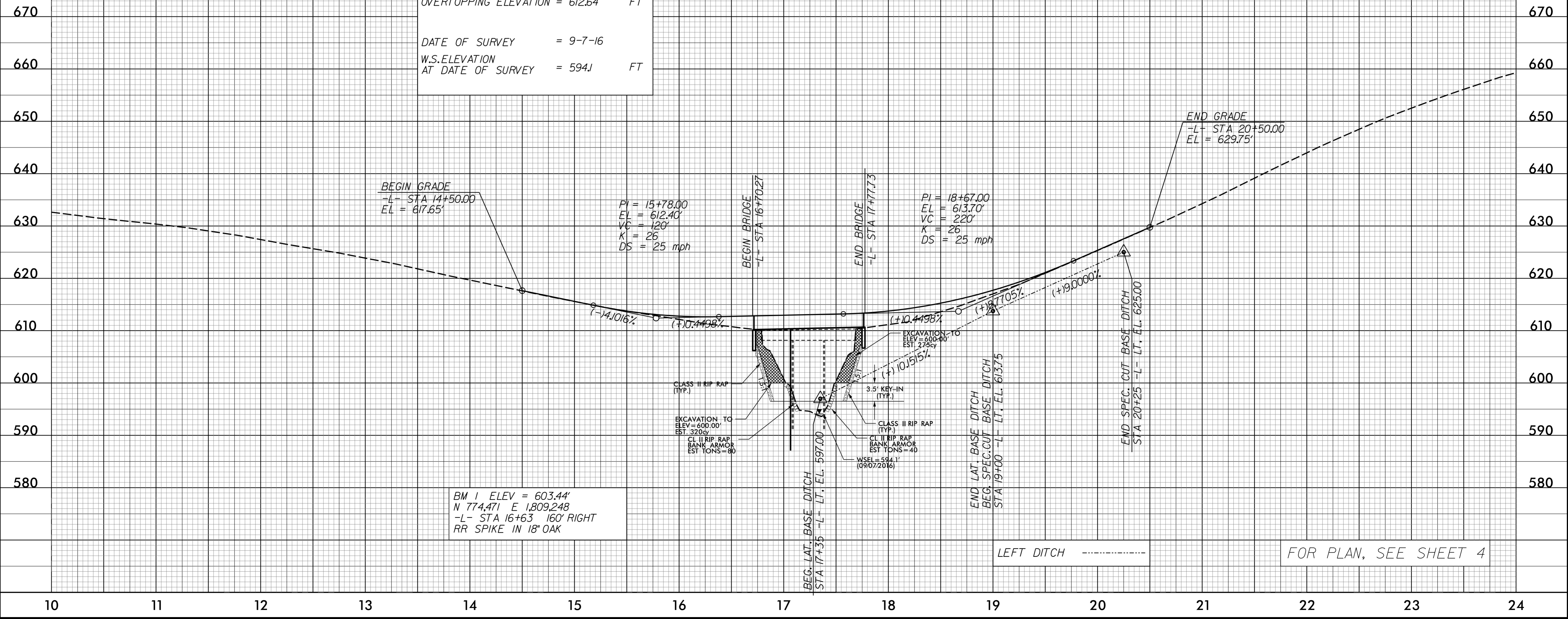
**MI ENGINEERING**  
 1011 SCHAUB DRIVE, SUITE 100  
 RALEIGH, NC 27606  
 (919) 851-6606  
 FIRM PE NUMBER : P-0671

PROJECT REFERENCE NO. <b>17BP.8.R.115</b>	SHEET NO. <b>5</b>
ROADWAY DESIGN ENGINEER A/26/2017	HYDRAULICS ENGINEER 4/26/2017
<i>Brian A. Wiles</i>	<i>Andrew T. Nottingham</i>

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



BRIDGE HYDRAULIC DATA		
DESIGN DISCHARGE	= 1,900	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 602.9	FT
BASE DISCHARGE	= 2,986	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 604.50	FT
OVERTOPPING DISCHARGE	= 10,600	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 612.64	FT
DATE OF SURVEY	= 9-7-16	
W.S. ELEVATION AT DATE OF SURVEY	= 594.1	FT



BM 1 ELEV = 603.44'  
 N 774.471 E 1,809.248  
 -L- STA 16+63 160' RIGHT  
 RR SPIKE IN 18" OAK

LEFT DITCH -----

FOR PLAN, SEE SHEET 4

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD.	TITLE
1101.03	TEMPORARY ROAD CLOSURES
1110.01	STATIONARY WORK ZONE SIGNS
1145.01	BARRICADES
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.12	PAVEMENT MARKINGS - BRIDGES
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - TYPES AND MOUNTING
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

### 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 UNDESIRED OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER.

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

#### TRAFFIC PATTERN ALTERATIONS

- A) NOTIFY THE ENGINEER TWENTY ONE (21) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTEN ALTERATION.

#### SIGNING

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

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

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

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

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

#### TRAFFIC CONTROL DEVICES

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

#### PAVEMENT MARKINGS AND MARKERS

- F) INSTALL PAVEMENT MARKINGS ON THE FINAL SURFACE.

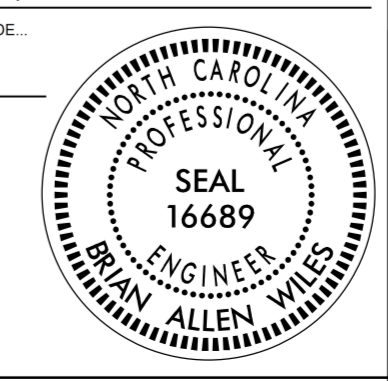
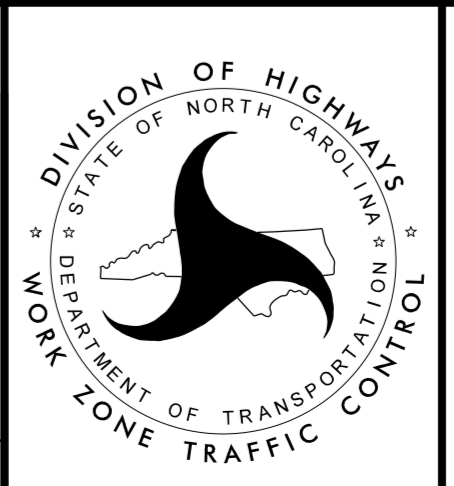
### PHASING

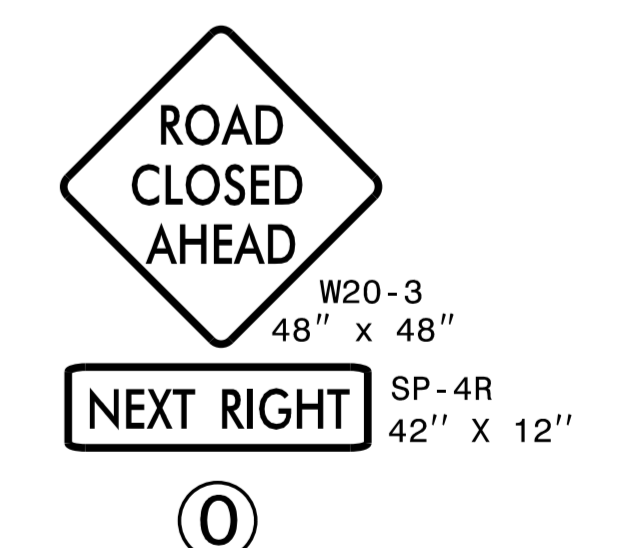
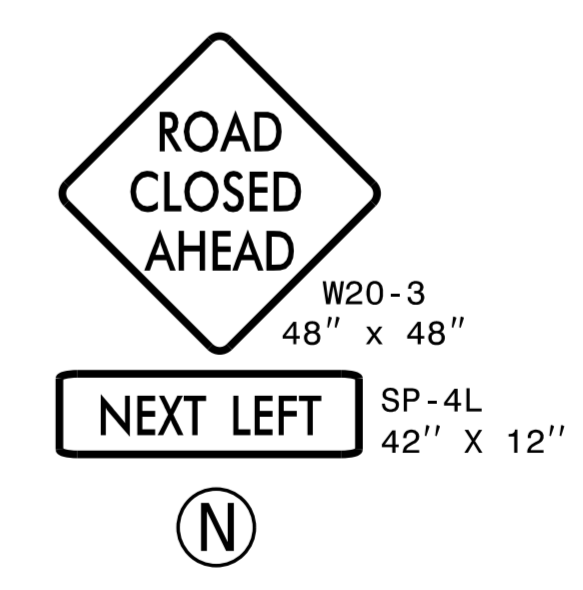
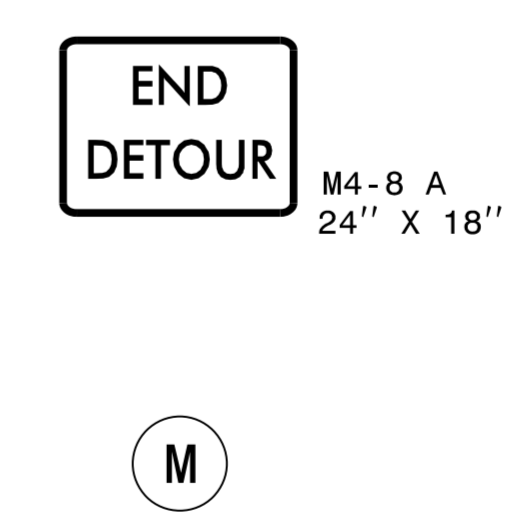
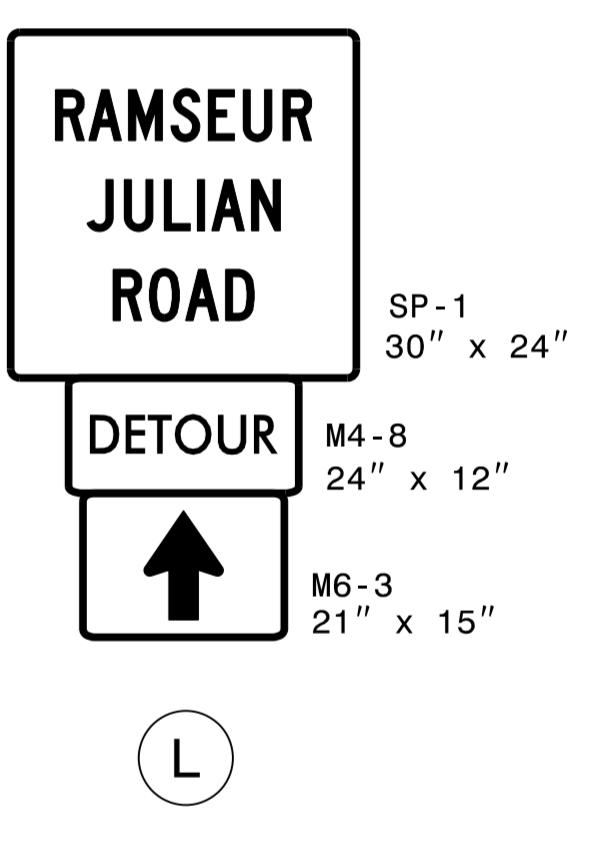
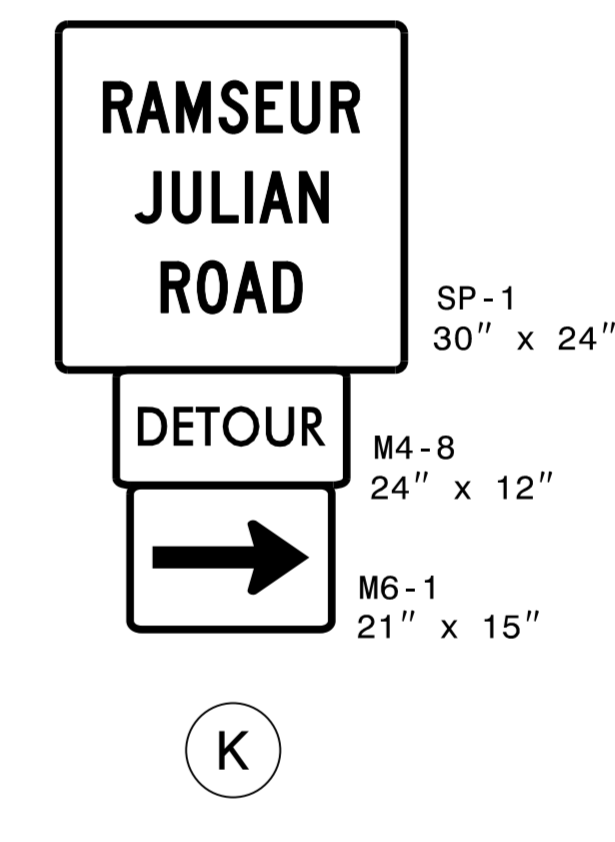
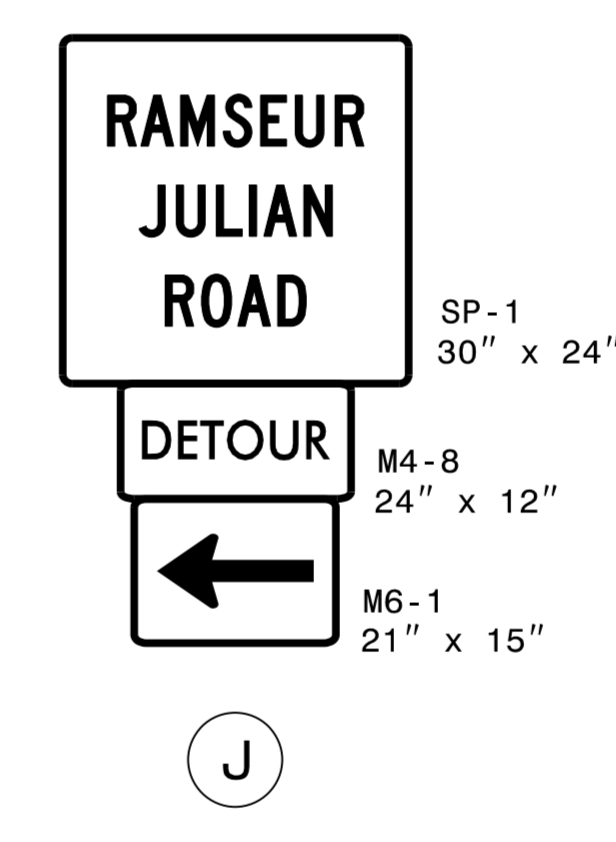
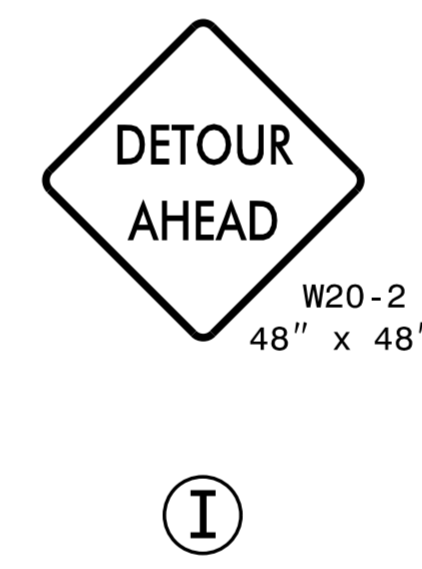
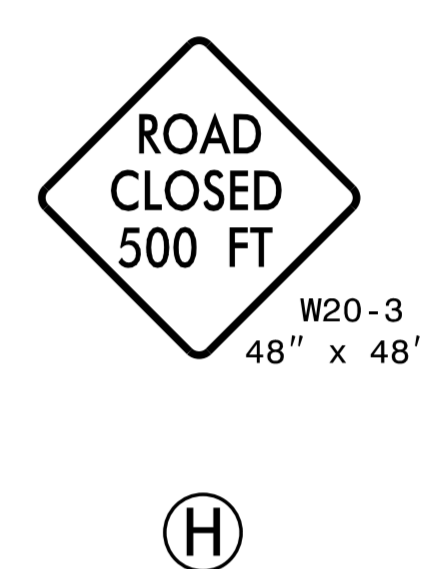
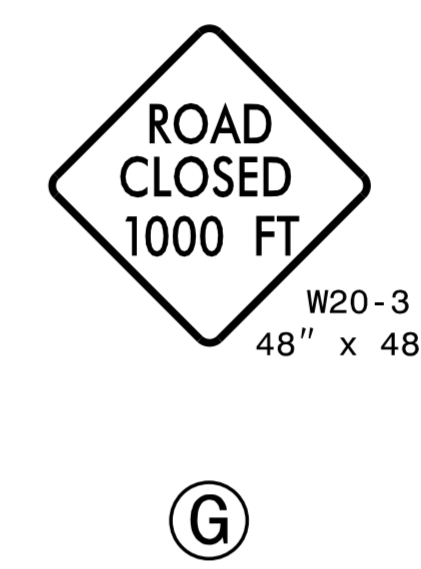
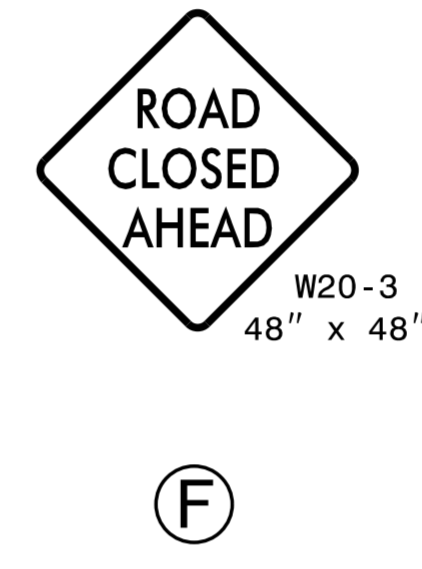
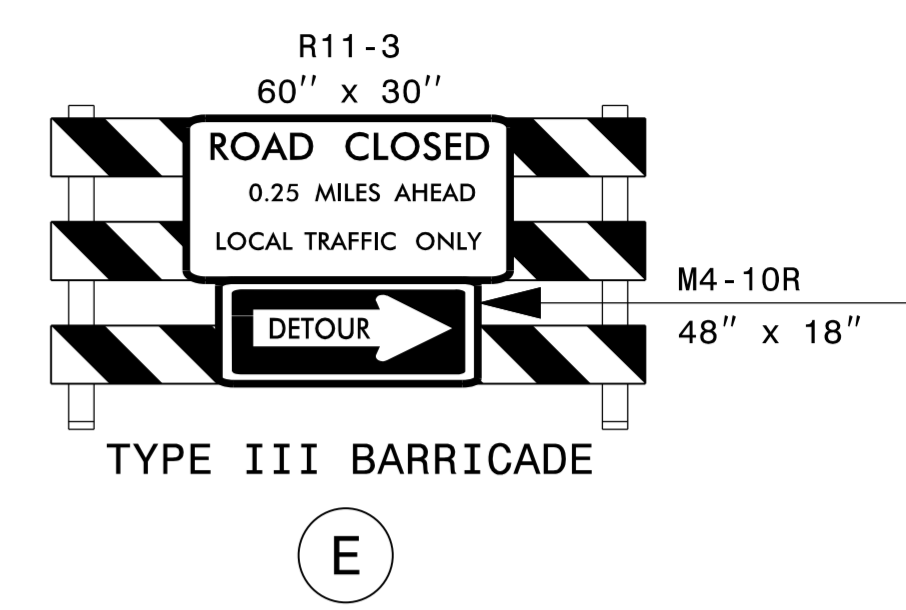
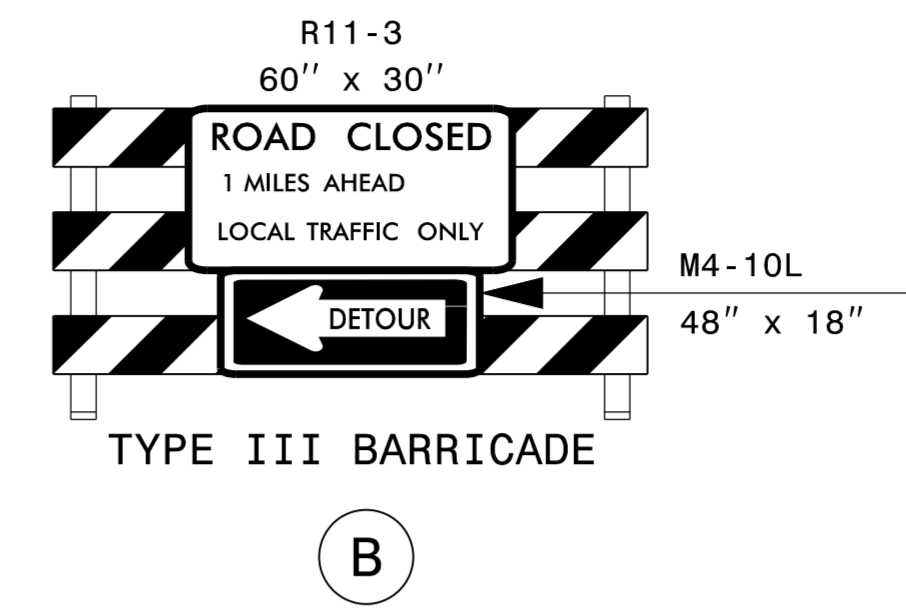
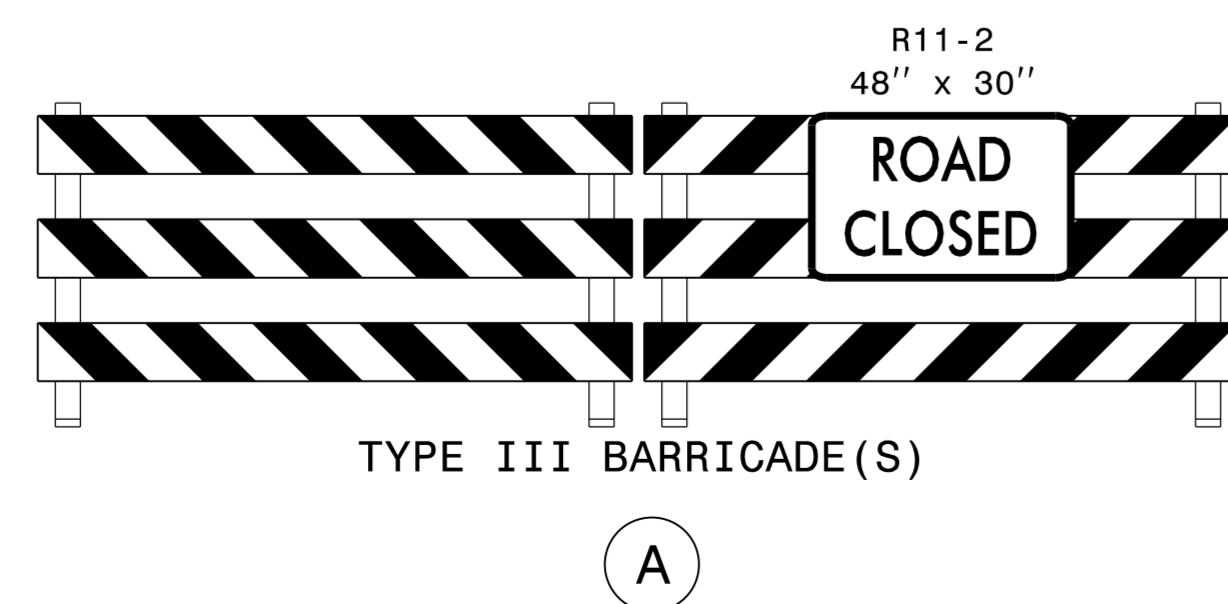
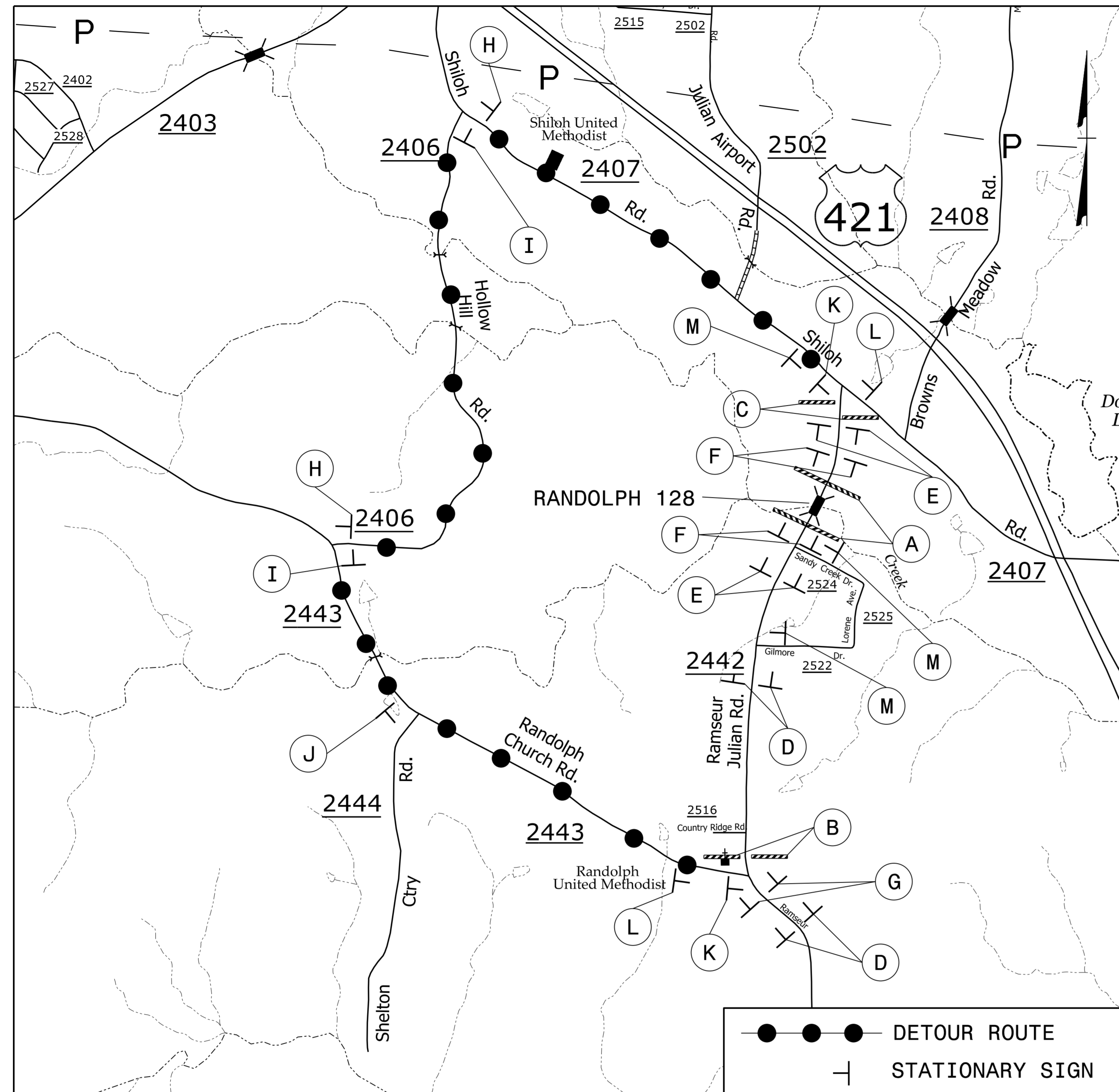
- STEP 1: USING ROADWAY STANDARD DRAWING NUMBER 1101.03, SHEET 1 OF 9, AND TMP-2, PERFORM THE FOLLOWING:  
 - INSTALL ALL ROAD CLOSURE AND DETOUR SIGNING INCLUDING BARRICADES  
 - CLOSE SR 2442 (RAMSEUR JULIAN ROAD)  
 - PLACE TRAFFIC ONTO OFF-SITE DETOUR
- STEP 2: REMOVE EXISTING BRIDGE #128 AND CONSTRUCT THE PROPOSED BRIDGE AND APPROACHES AS SHOWN IN THE CONSTRUCTION PLANS.
- STEP 3: INSTALL FINAL PAVEMENT MARKINGS.
- STEP 4: REMOVE ALL TRAFFIC CONTROL SIGNING AND DEVICES AND RE-OPEN SR 2442 (RAMSEUR JULIAN ROAD) TO THE FINAL TRAFFIC PATTERN.

### PAVEMENT MARKING

THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)	1200 LF
THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)	1200 LF

PERMANENT RAISED PAVEMENT MARKERS	15 EACH
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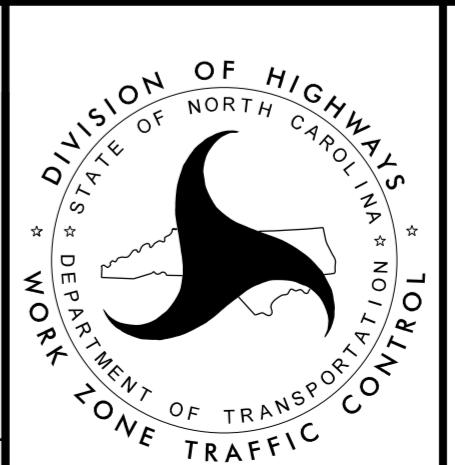
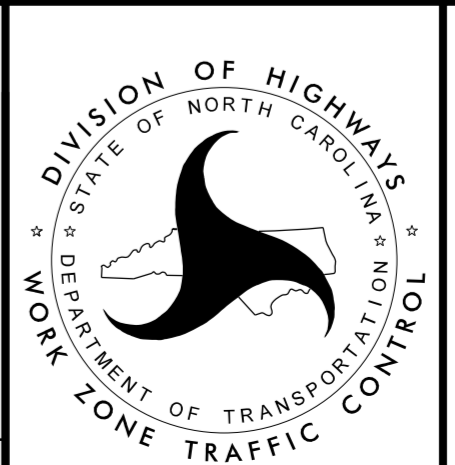
APPROVED: <u>Brian A Wiles</u> <small>DocuSigned by: 989000FA2E34DE</small> DATE: 4/26/2017  SEAL  		<h2 style="margin: 0;">TRANSPORTATION OPERATIONS PLAN</h2>
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>		



APPROVED: *Brian A Wildes*  
 DATE: 4/26/2017

SEAL

DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED



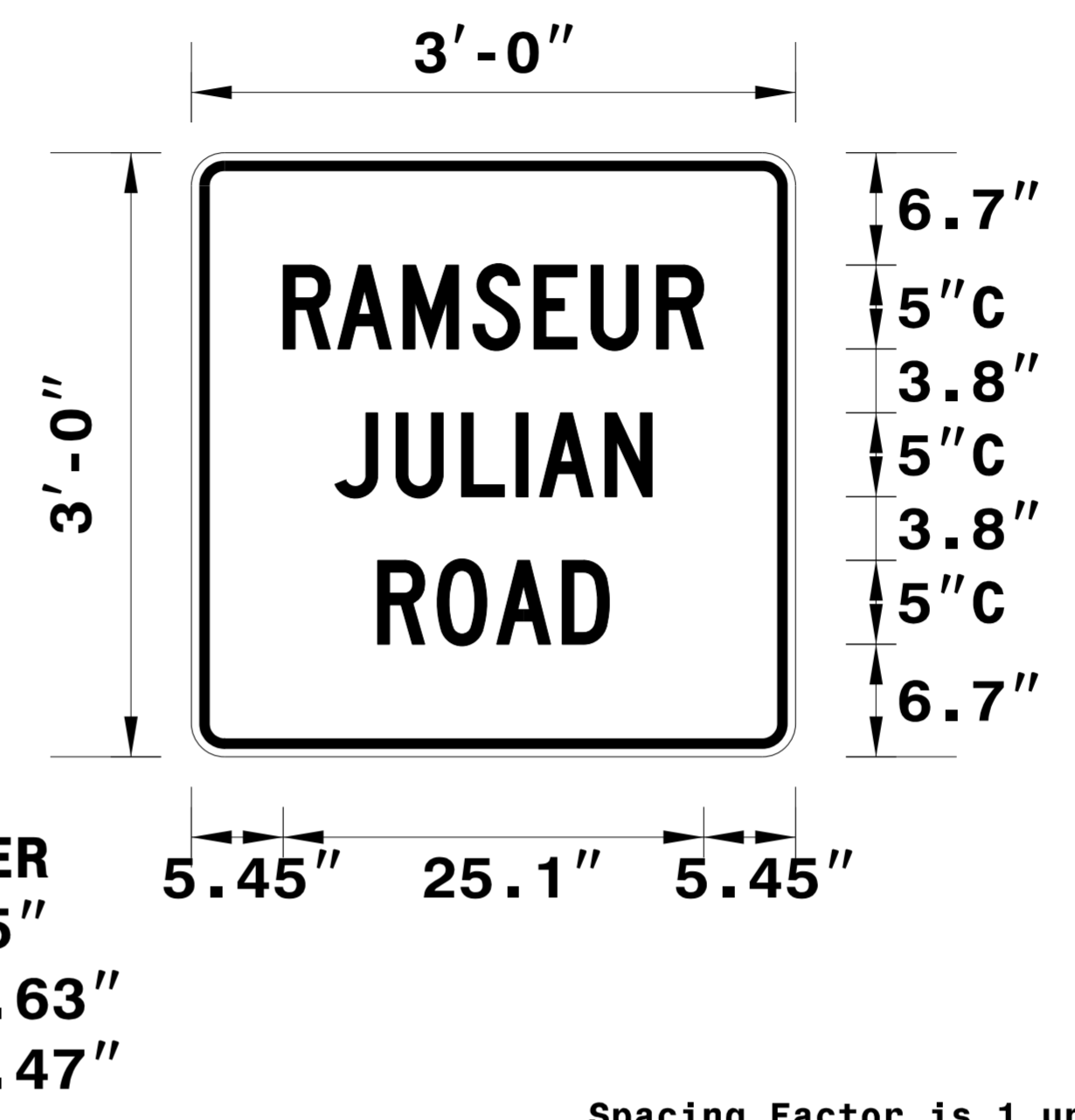
DETOUR ROUTE  
 AND  
 SIGNS

4/26/2017  
 R:\TrafficControl\TCP\Randolph128\_TC\_TMP.dgn  
 USERNAME

SIGN NUMBER: SP-1  
 TYPE: STATIONARY  
 QUANTITY: SEE PLANS  
 SIGN WIDTH: 3'-0"  
 HEIGHT: 3'-0"  
 TOTAL AREA: 9.0 Sq.Ft.  
 BORDER TYPE: INSET  
 RECESS: 0.47"  
 WIDTH: 0.63"  
 RADII: 1.5"  
 NO. Z BARS:  
 LENGTH:

BACKG COLOR: Fluorescent Orange  
 COPY COLOR: Black  
 SYMBO L X Y WID HT  
 MAT'L: 0.080" (2.0 mm) ALUMINUM

DESIGN BY: PROJECT ID: 17BP.8.R.115  
 CHECKED BY: LOCATION:  
 Apr 24, 2017  
 DIV: 8



Spacing Factor is 1 unless specified otherwise

- USE NOTES: 1,2
- Legend and border shall be direct applied black non-reflective sheeting.
  - Background shall be NC GRADE B fluorescent orange retroreflective sheeting.

LETTER POSITIONS

Letter spacings are to start of next letter

		R	A	M	S	E	U	R													Series/Size Text Length
	5.5	3.3	3.9	4.1	3.6	3.4	3.9	2.8	5.5												C 2000 25.1
		J	U	L	I	A	N														C 2000 18.9
		R	O	A	D																C 2000 13.8
	11.1	3.6	3.5	3.9	2.8	11.1															

FILENAME: rand128\_ramseur julian rd\_sign\_design

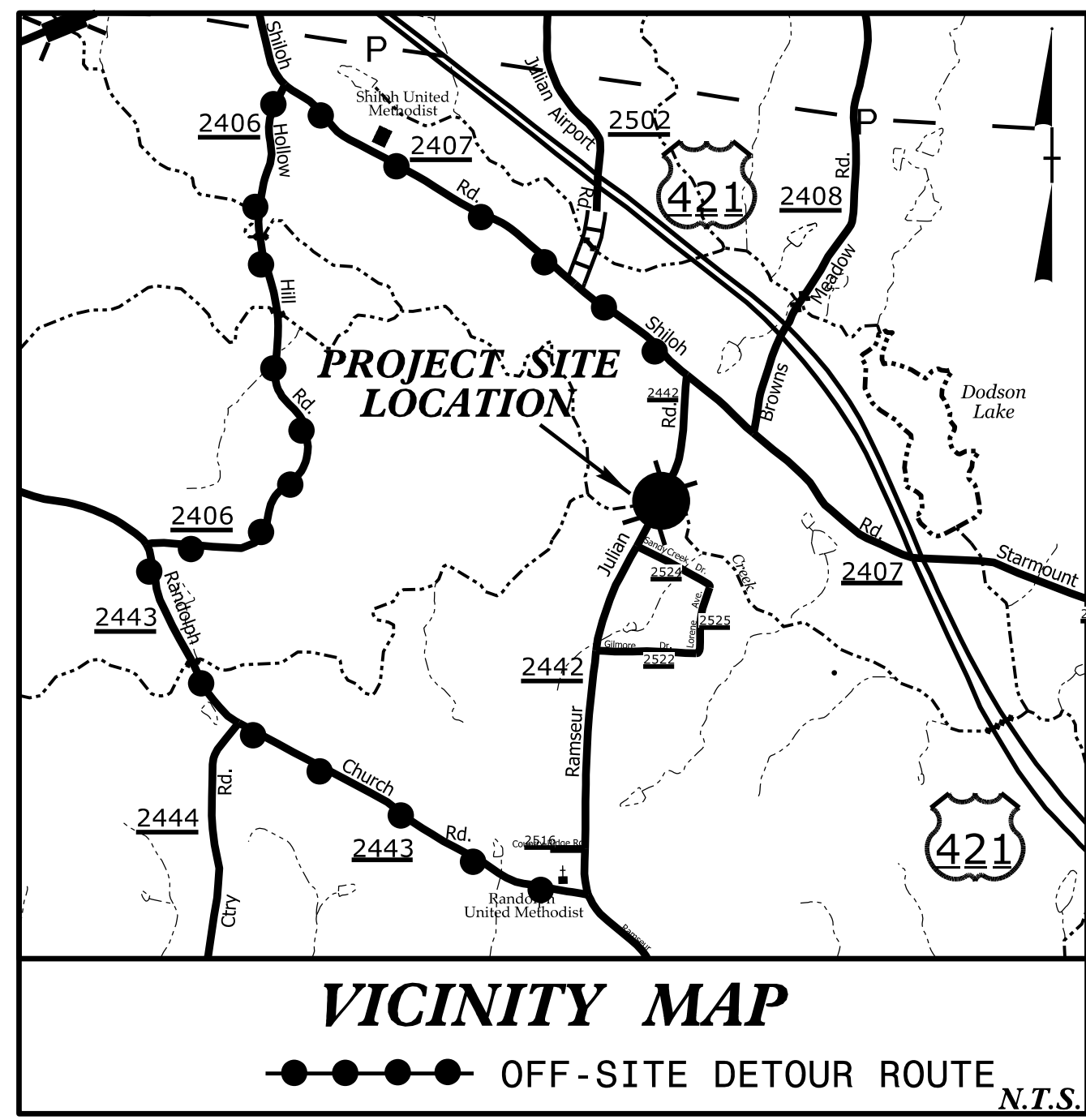
NORTH CAROLINA D.O.T. SIGN DETAIL

4/25/2017 R:\TrafficControl\TCP\Randolph128\_TC\_specialsign.dgn USERNAME

APPROVED: <u>Brian A Wiles</u> DATE: 4/26/2017 SEAL 		<h1>SIGN DESIGN</h1>
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.8.R.115	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	

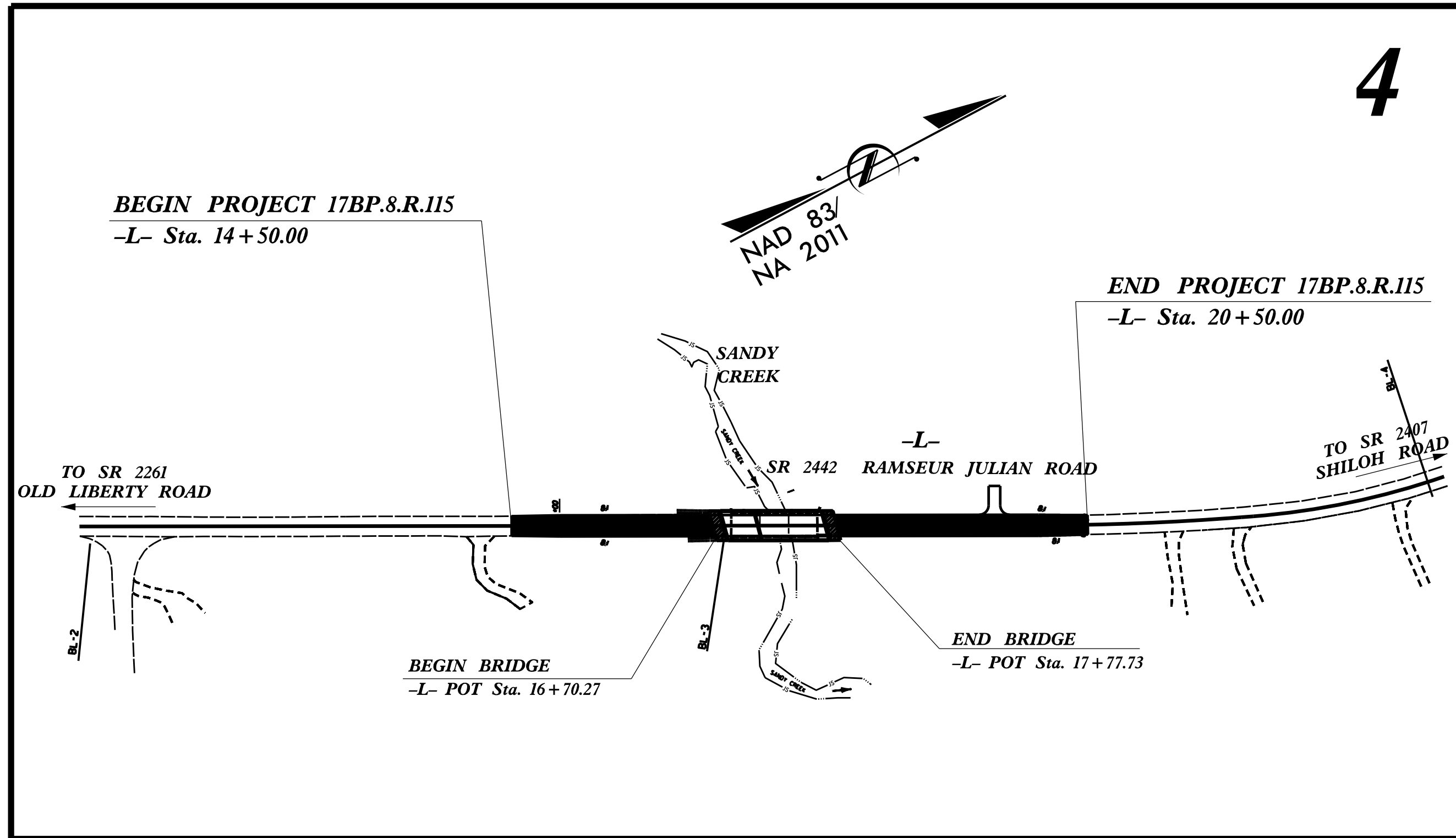
**TIP PROJECT: 17BP.8.R.115**



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

LOCATION: BRIDGE NO. 750128 ON SR 2442 (RAMSEUR JULIAN ROAD)  
OVER SANDY CREEK

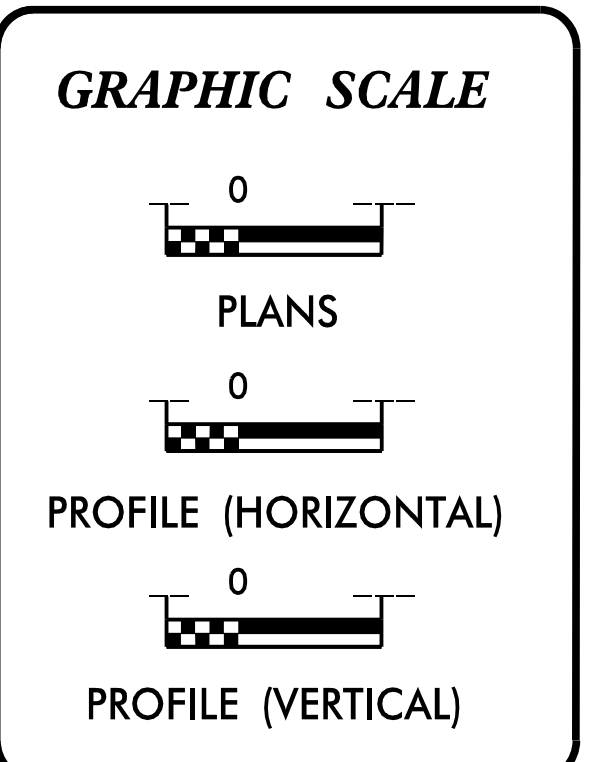
TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURE



**EROSION AND SEDIMENT CONTROL MEASURES**

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



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:  
**MI-ENGINEERING**  
1011 SCHAUB DRIVE, SUITE 100  
RALEIGH, NC 27606

Designed by:  
**MELANIE NGUYEN, PE** 3223  
NAME LEVEL III CERTIFICATION NO.

Reviewed In the Office of:  
**ROADSIDE ENVIRONMENTAL UNIT**  
1 South Wilmington St.  
Raleigh, NC 27611

2012 STANDARD SPECIFICATIONS

Reviewed by:  
**JENNIFER PARISH**

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 2012 and the latest revision thereto are applicable to this project and by reference hereby are considered a part of these plans.

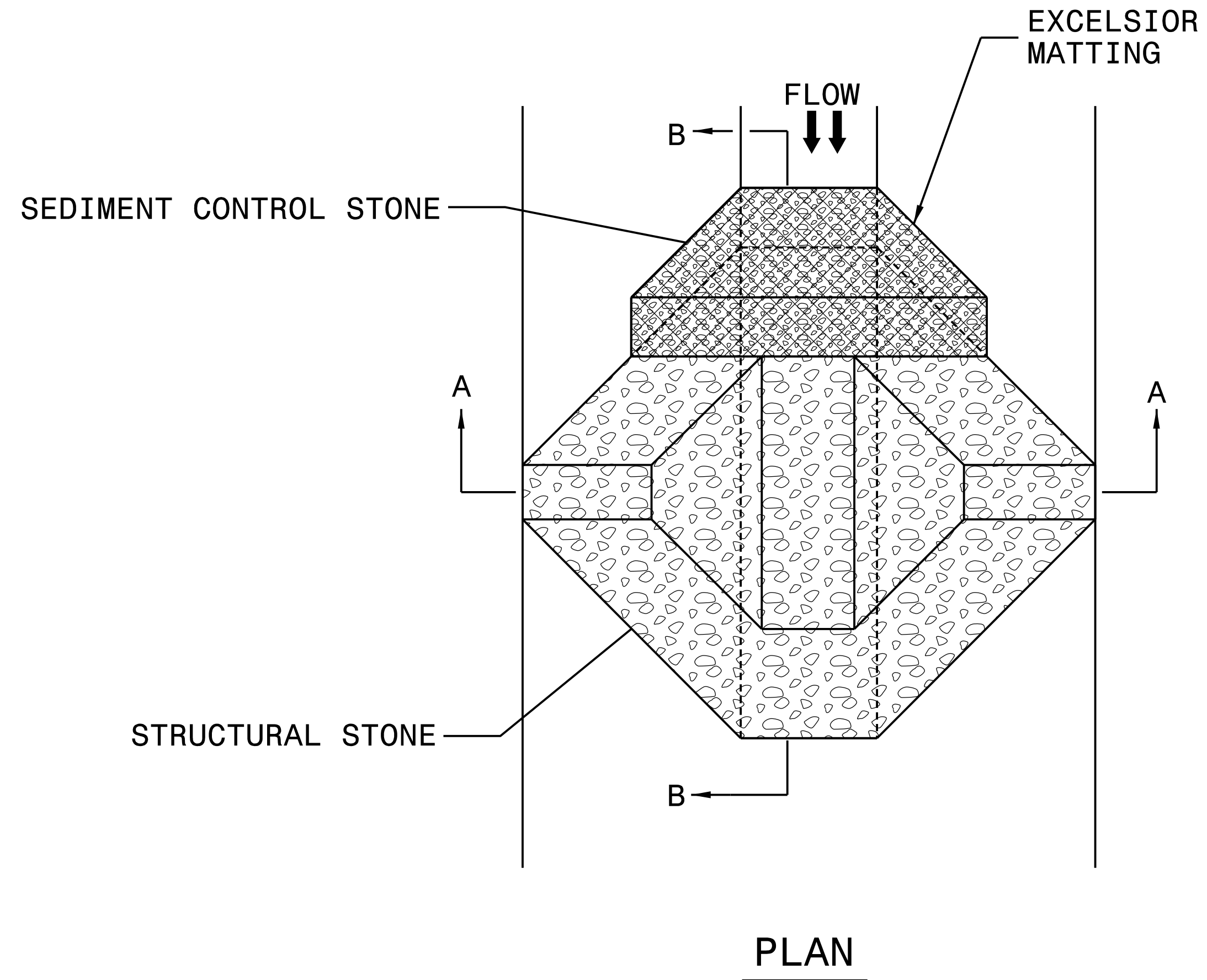
1604.01 Railroad Erosion Control Detail	1632.01 Rock Inlet Sediment Trap Type A
1605.01 Temporary Silt Fence	1632.02 Rock Inlet Sediment Trap Type B
1606.01 Special Sediment Control Fence	1632.03 Rock Inlet Sediment Trap Type C
1607.01 Gravel Construction Entrance	1633.01 Temporary Rock Silt Check Type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

\*\*\*\*\*STANDARD DRAWINGS\*\*\*\*\*



PROJECT REFERENCE NO. 17BP.B.R.115	SHEET NO. EC-2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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



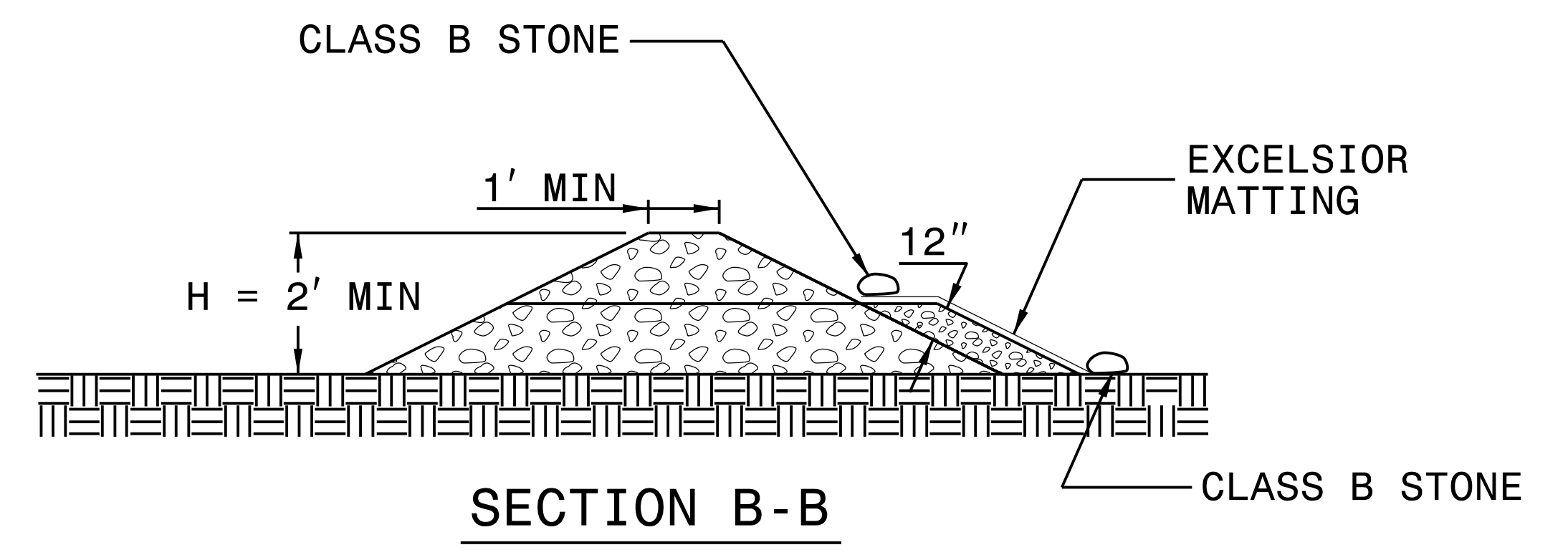
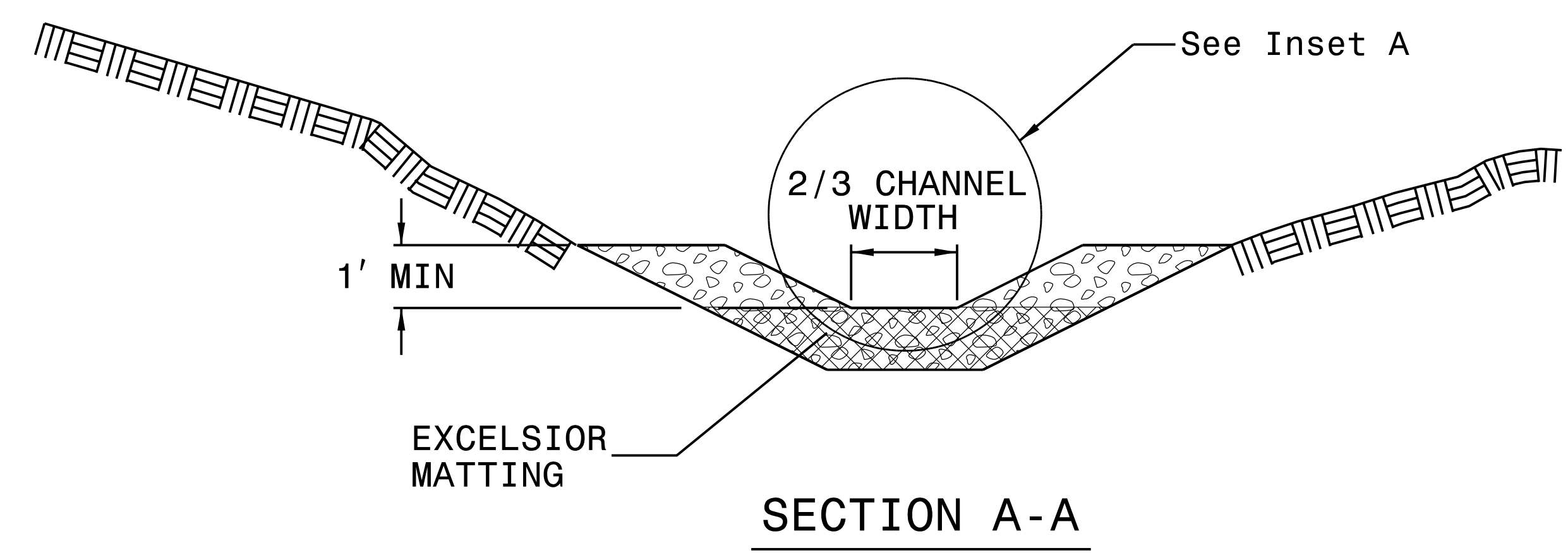
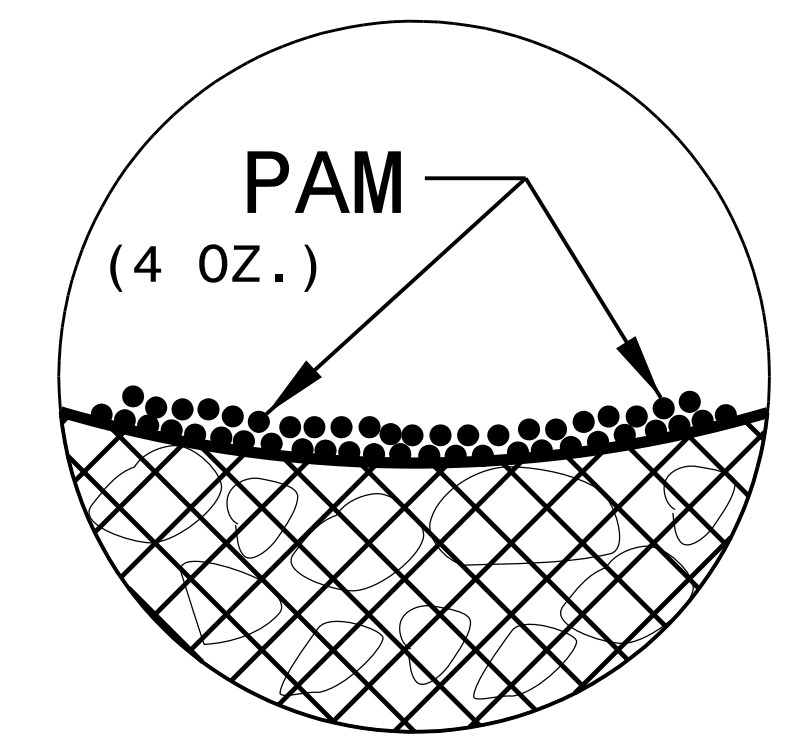
**NOTES:**

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

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PROJECT REFERENCE NO.	SHEET NO.
17BP.8.R.115	EC-3A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

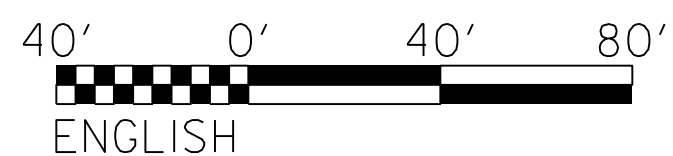
## ***SOIL STABILIZATION TIMEFRAMES***

<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.

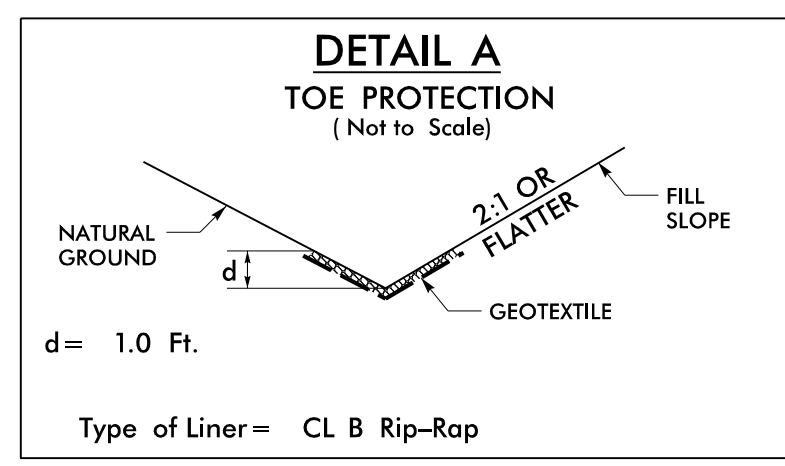
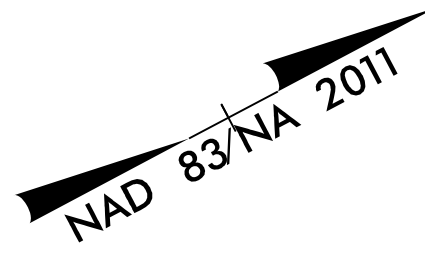


8/17/99

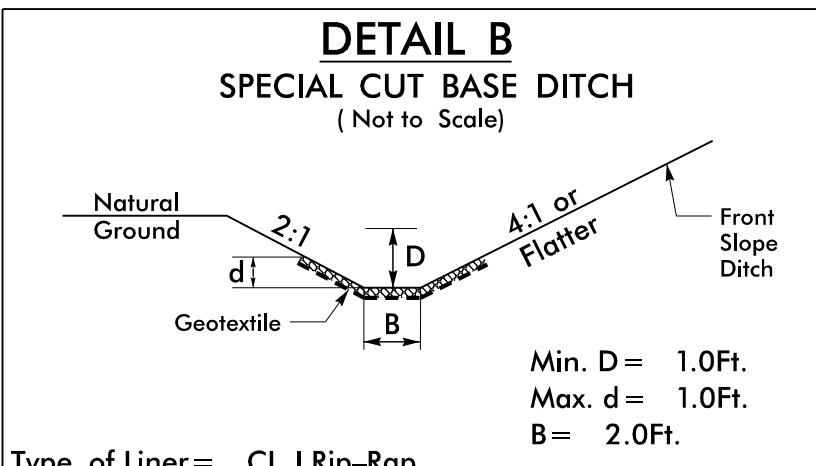
# FINAL GRADE PLAN



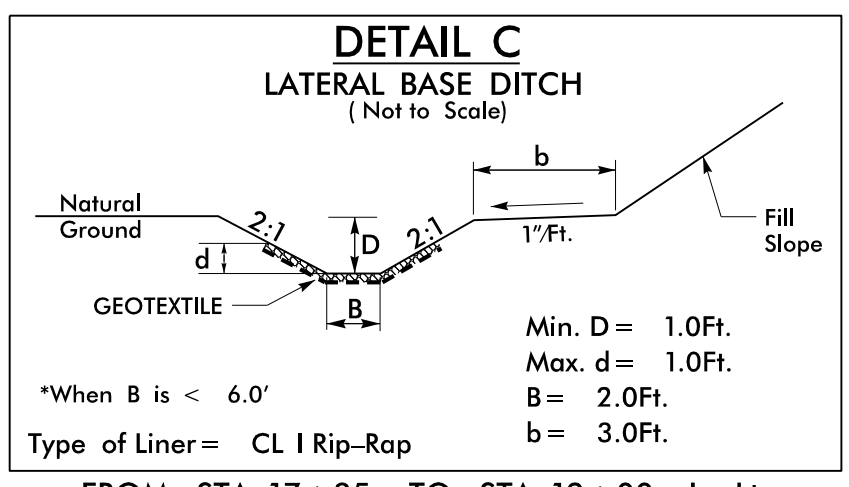
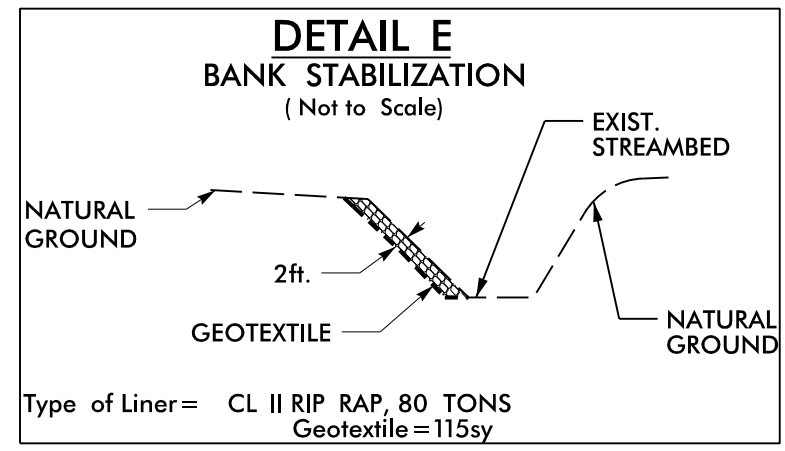
PROJECT REFERENCE NO. 17BP.8.R.115	SHEET NO. EC-05/CONST.04
RANDOLPH 128	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



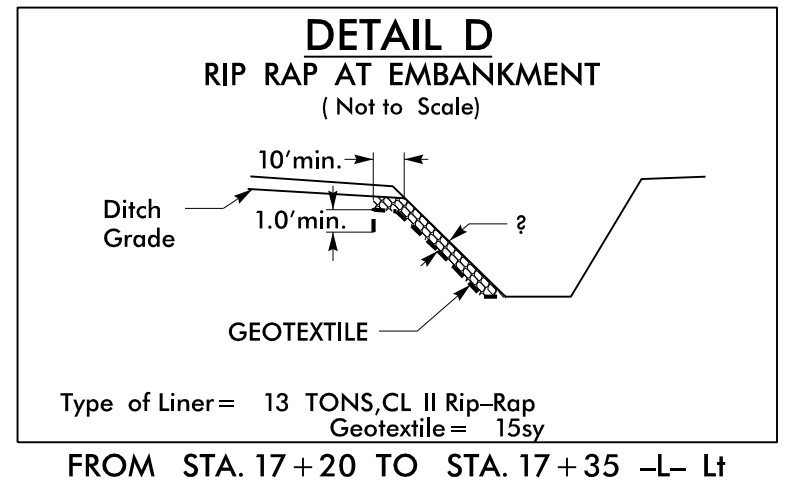
FROM STA. 16+00 TO STA. 16+35 -L- Lt Rt  
FROM STA. 17+90 TO STA. 19+50 -L- Lt



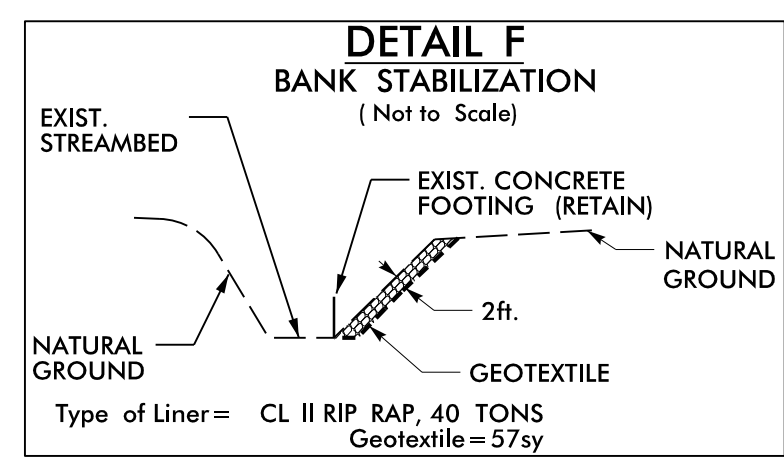
FROM STA. 19+00 TO STA. 20+25 -L- Lt



FROM STA. 17+35 TO STA. 19+00 -L- Lt



FROM STA. 17+20 TO STA. 17+35 -L- Lt



RICHARD DARNELL WILLIAMS,  
LISA DAWN WILLIAMS HOLDER,  
GREGORY DEAN WILLIAMS, AND  
DEBORAH LYNN WILLIAMS DANIELS  
AS TENANTS IN COMMON

DB 2074 PG 748

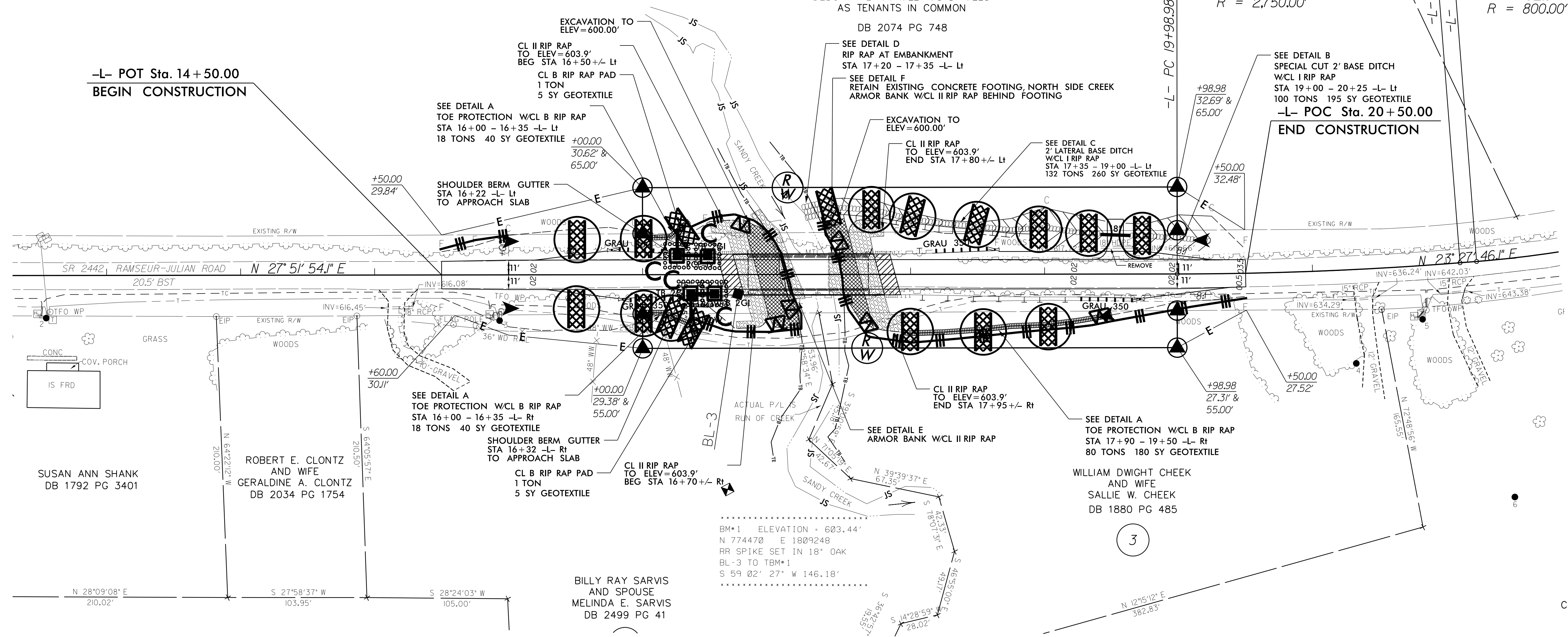
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PI Sta 21+04.67  
Δ = 4° 24' 08.0" (LT)  
D = 2° 05' 00.5"  
L = 211.29'  
T = 105.70'  
R = 2,750.00'

PI Sta 23+24.96  
Δ = 14° 34' 33.2"  
D = 7° 09' 43.1"  
L = 203.52'  
T = 102.31'  
R = 800.00'

-L- POT Sta. 14+50.00  
BEGIN CONSTRUCTION

END CONSTRUCTION



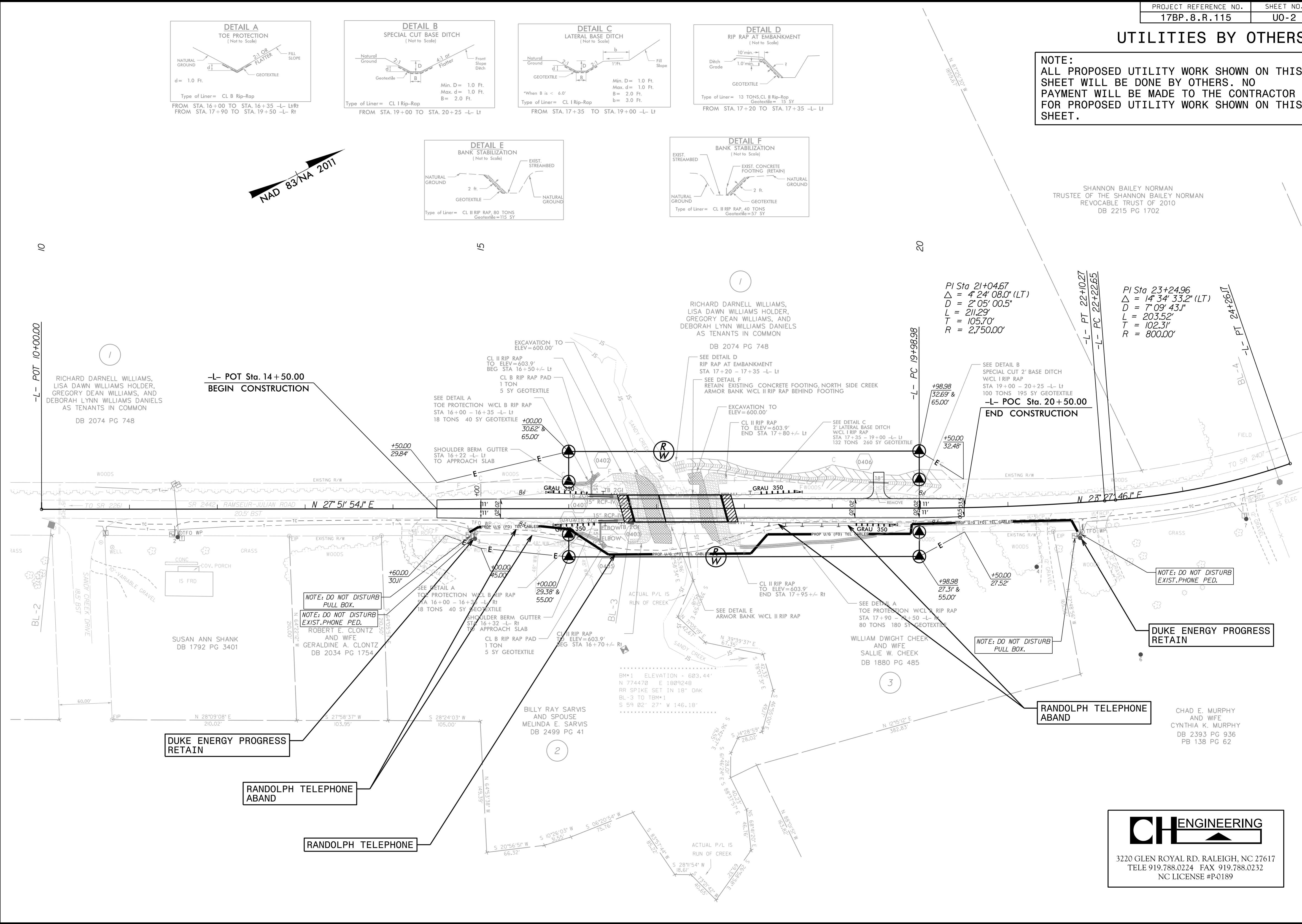
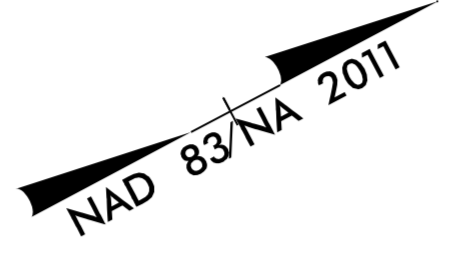
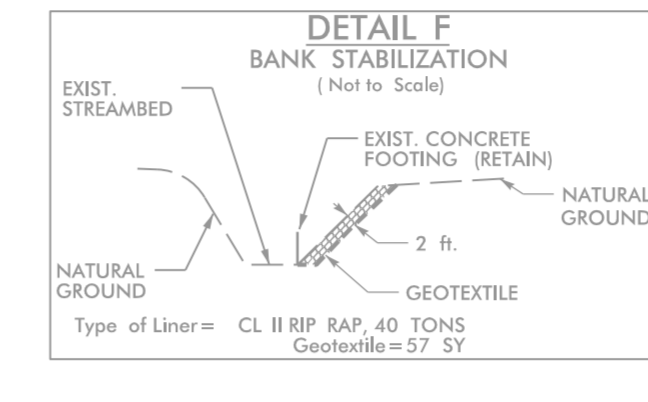
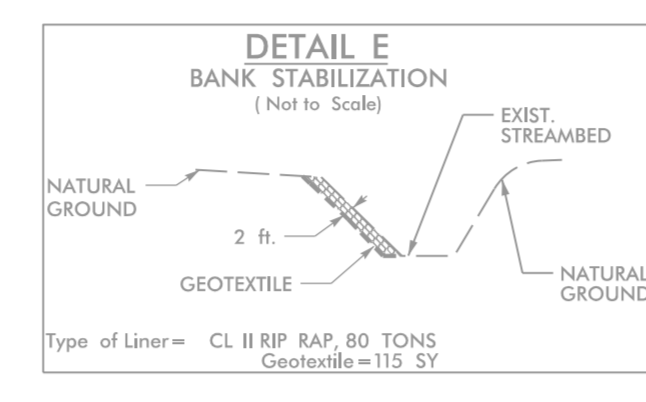
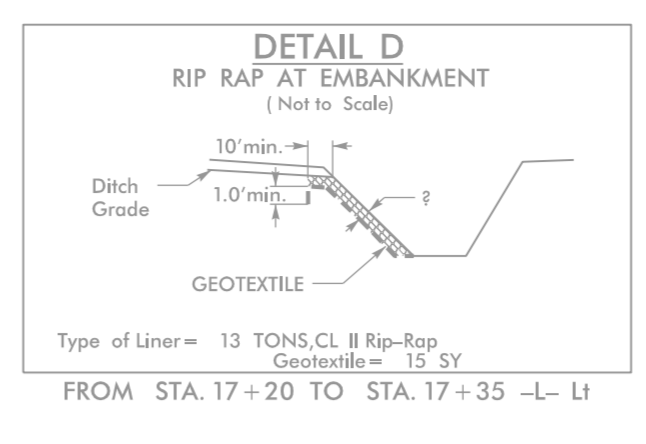
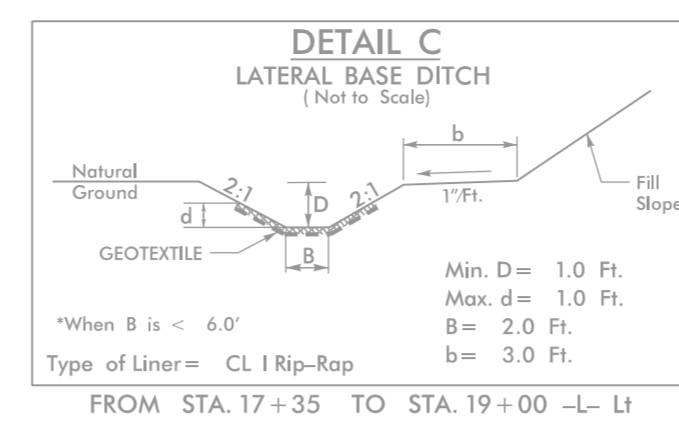
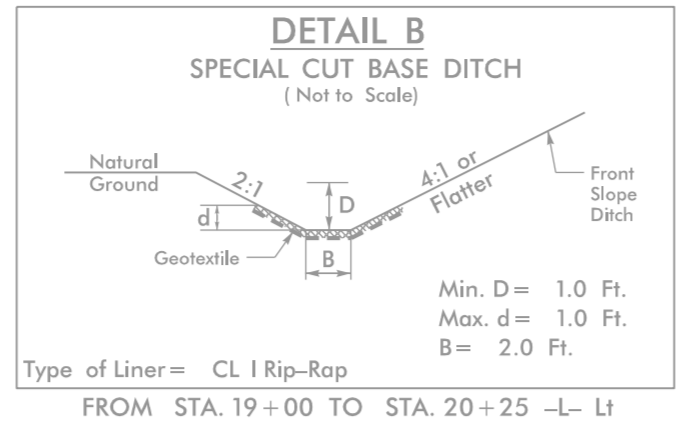
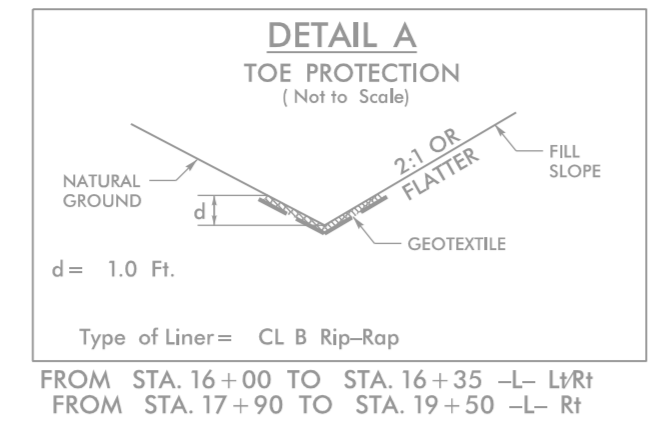
CH.  
CYNT  
DB  
PT



UTILITIES BY OTHERS

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

SHANNON BAILEY NORMAN  
 TRUSTEE OF THE SHANNON BAILEY NORMAN  
 REVOCABLE TRUST OF 2010  
 DB 2215 PG 1702



PI Sta 21+04.67  
 $\Delta = 4' 24' 08.0''$  (LT)  
 $D = 2' 05' 00.5''$   
 $L = 211.29'$   
 $T = 105.70'$   
 $R = 2750.00'$

PI Sta 23+24.96  
 $\Delta = 14' 34' 33.2''$  (LT)  
 $D = 7' 09' 43.1''$   
 $L = 203.52'$   
 $T = 102.31'$   
 $R = 800.00'$

DUKE ENERGY PROGRESS  
 RETAIN

RANDOLPH TELEPHONE  
 ABAND

RANDOLPH TELEPHONE

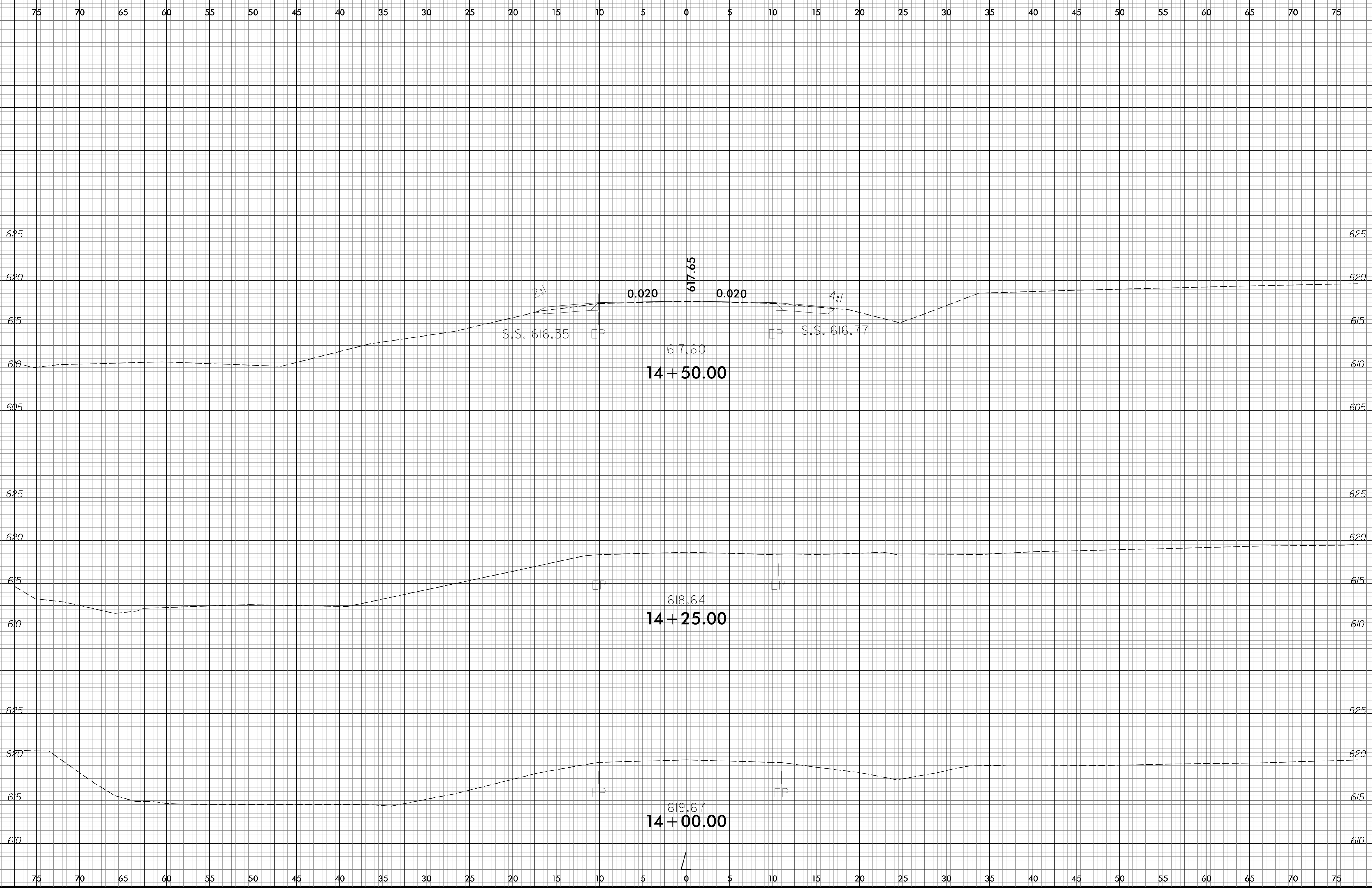
DUKE ENERGY PROGRESS  
 RETAIN

RANDOLPH TELEPHONE  
 ABAND

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

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 5/14/99

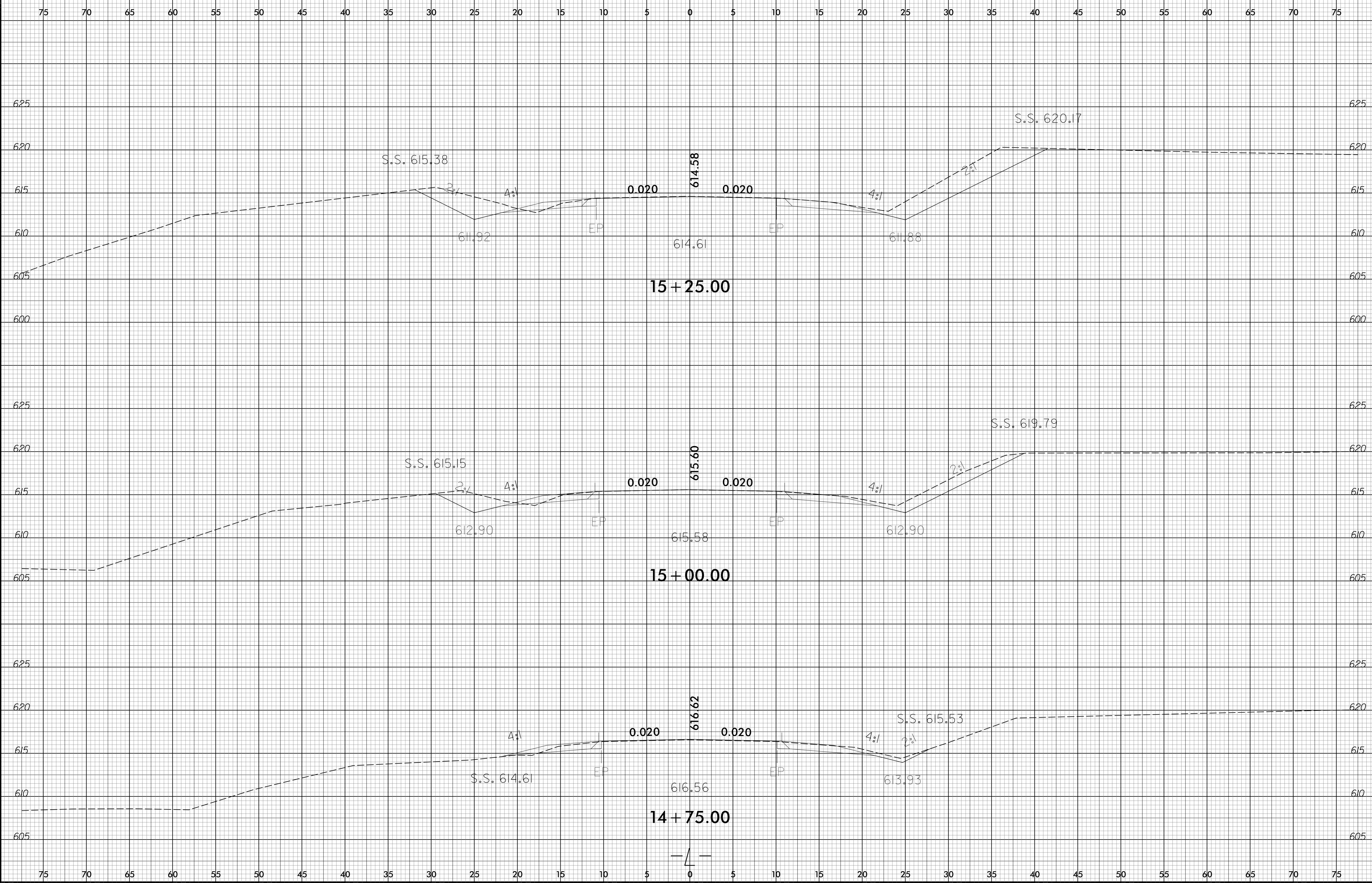
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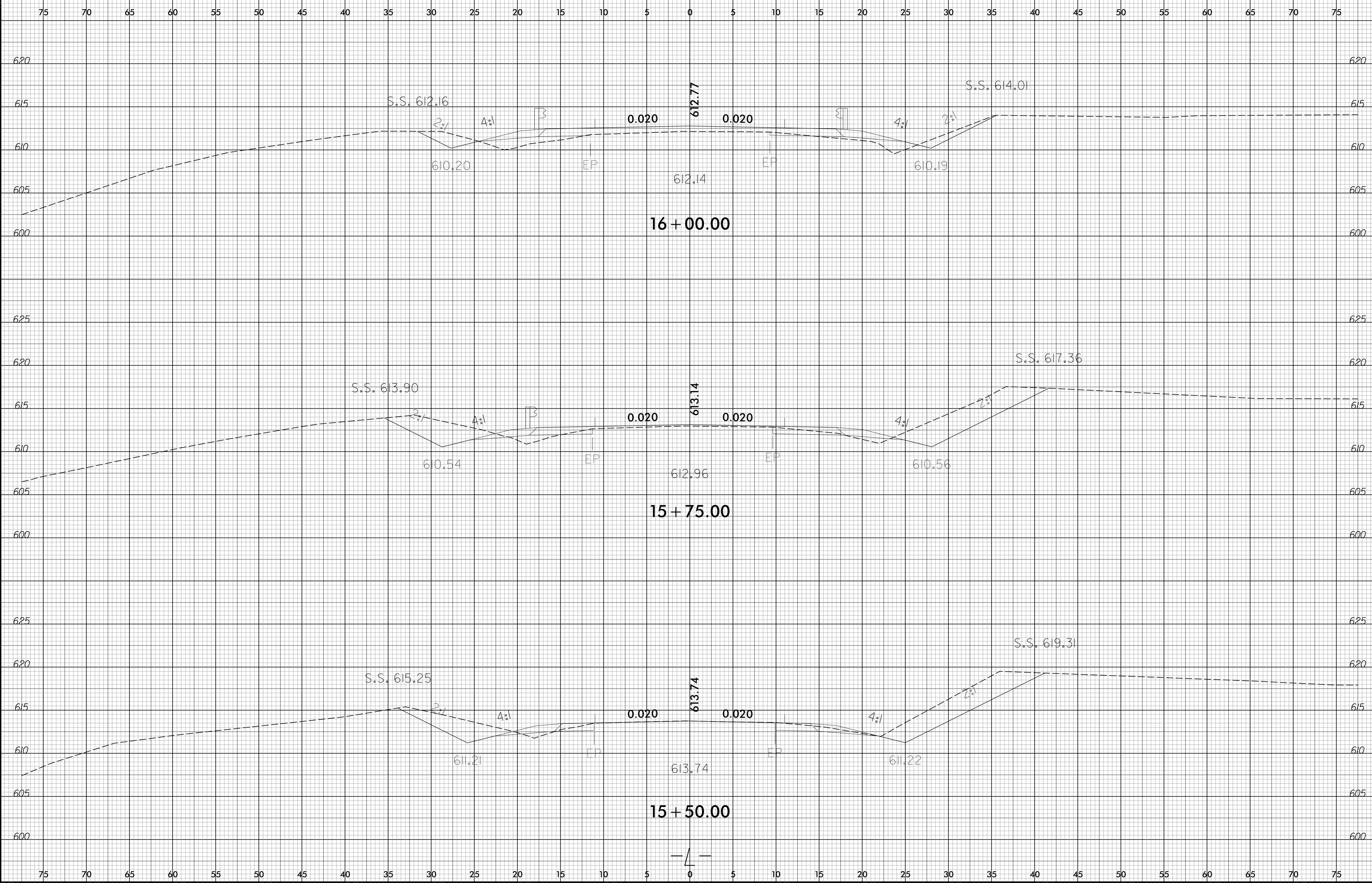
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6/23/16

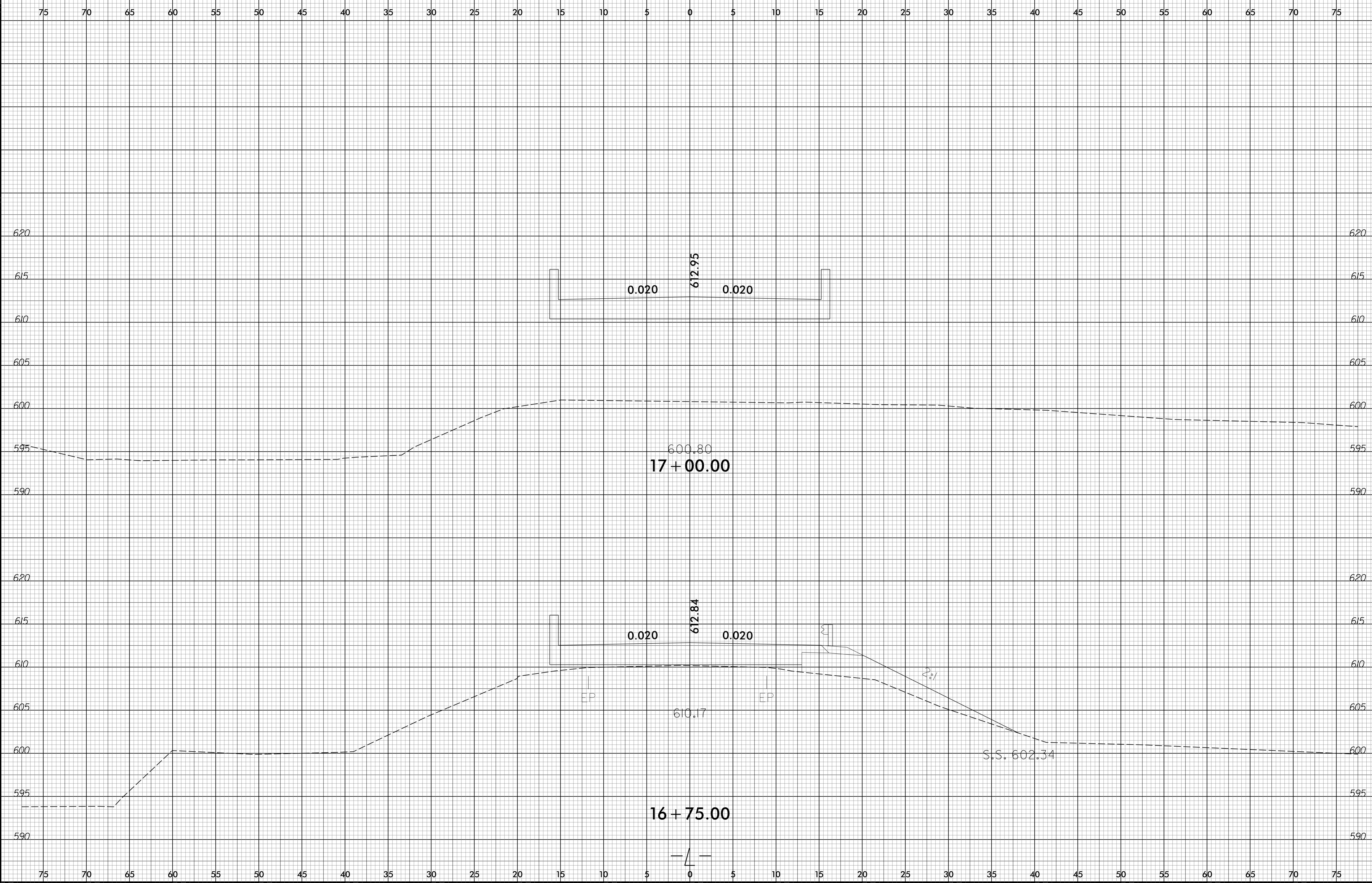
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	17BP.8.R.115	X-3



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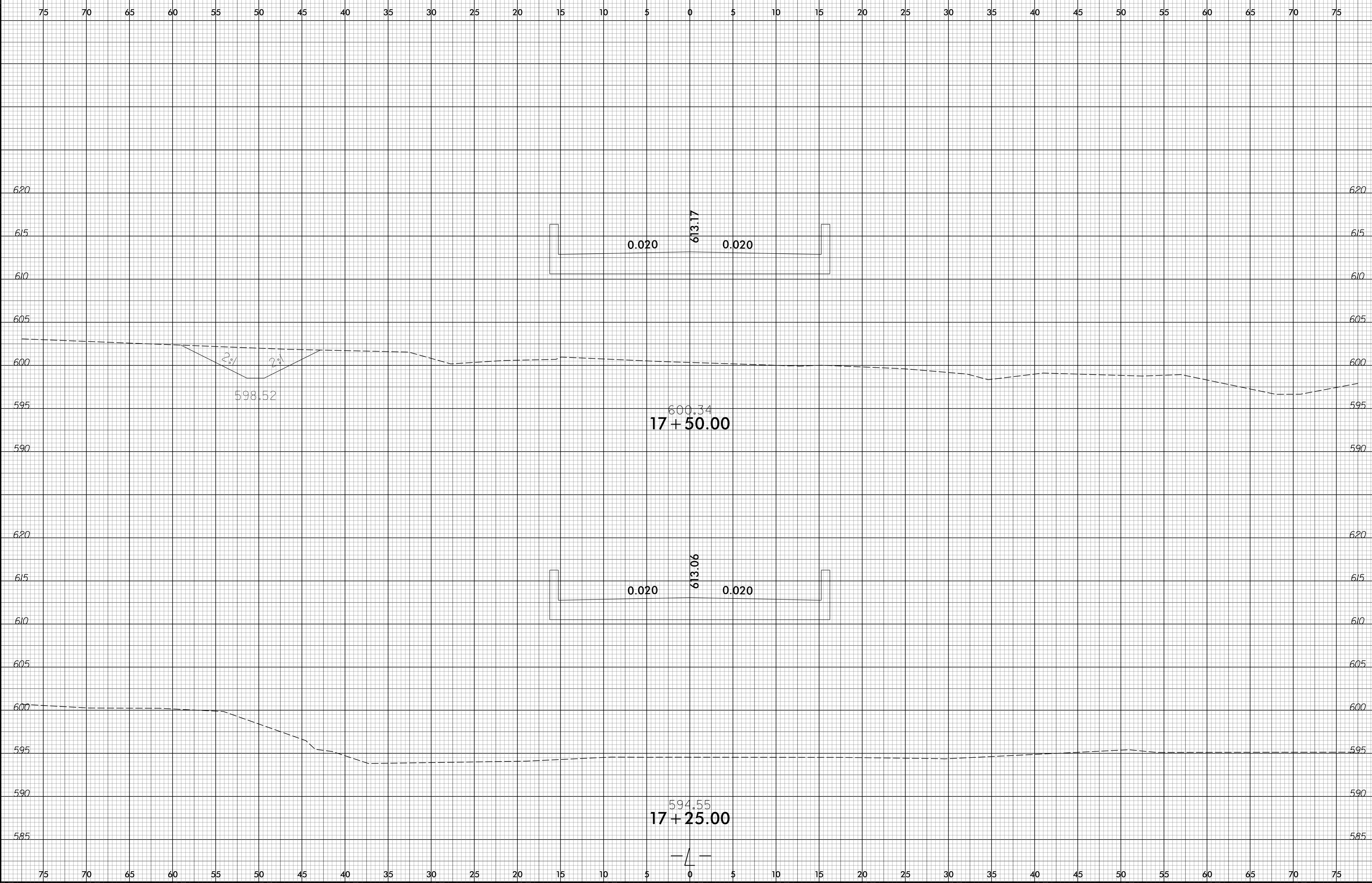
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6/23/16

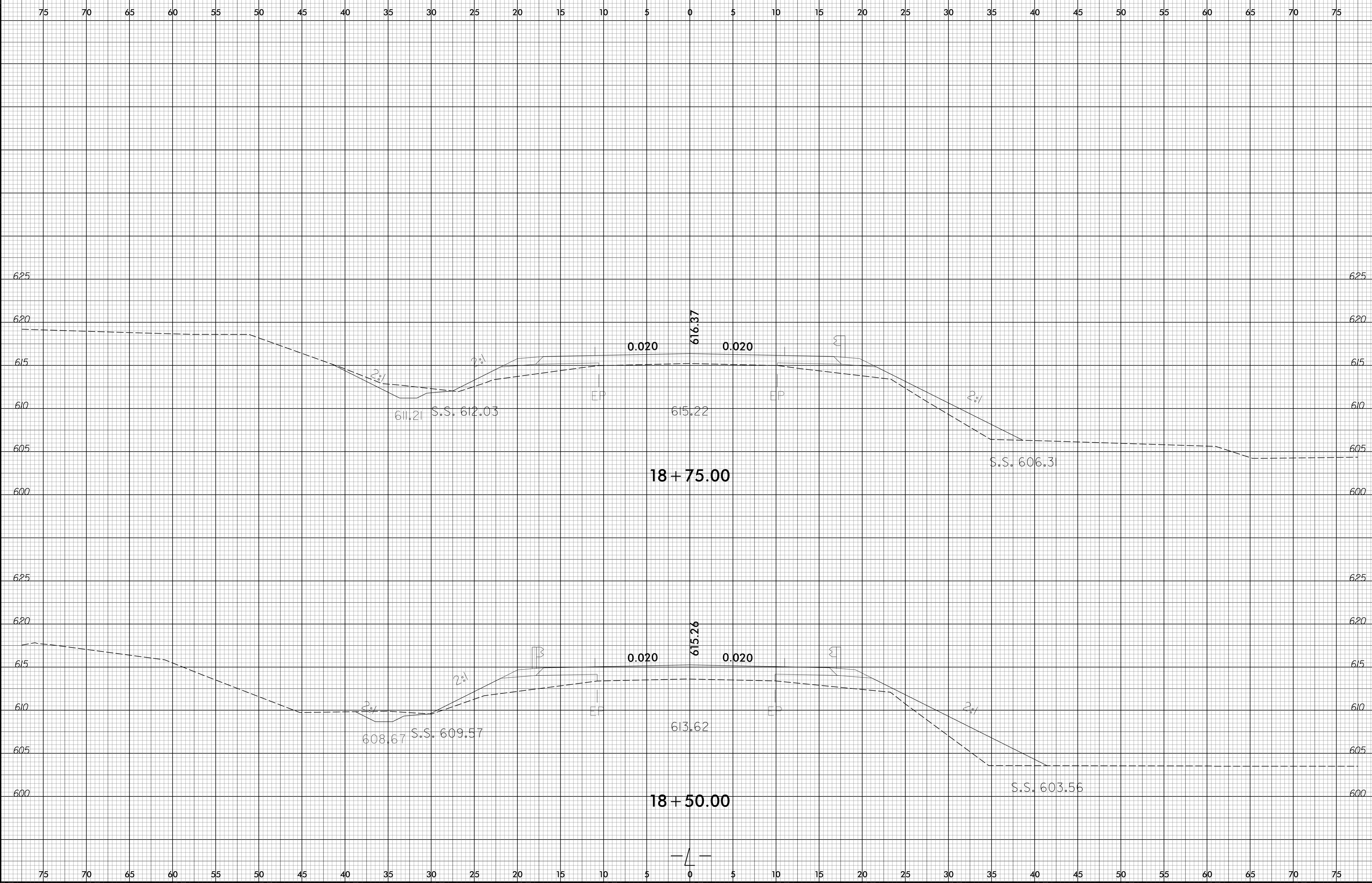
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	17BP.8.R.115	X-6



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6/23/16

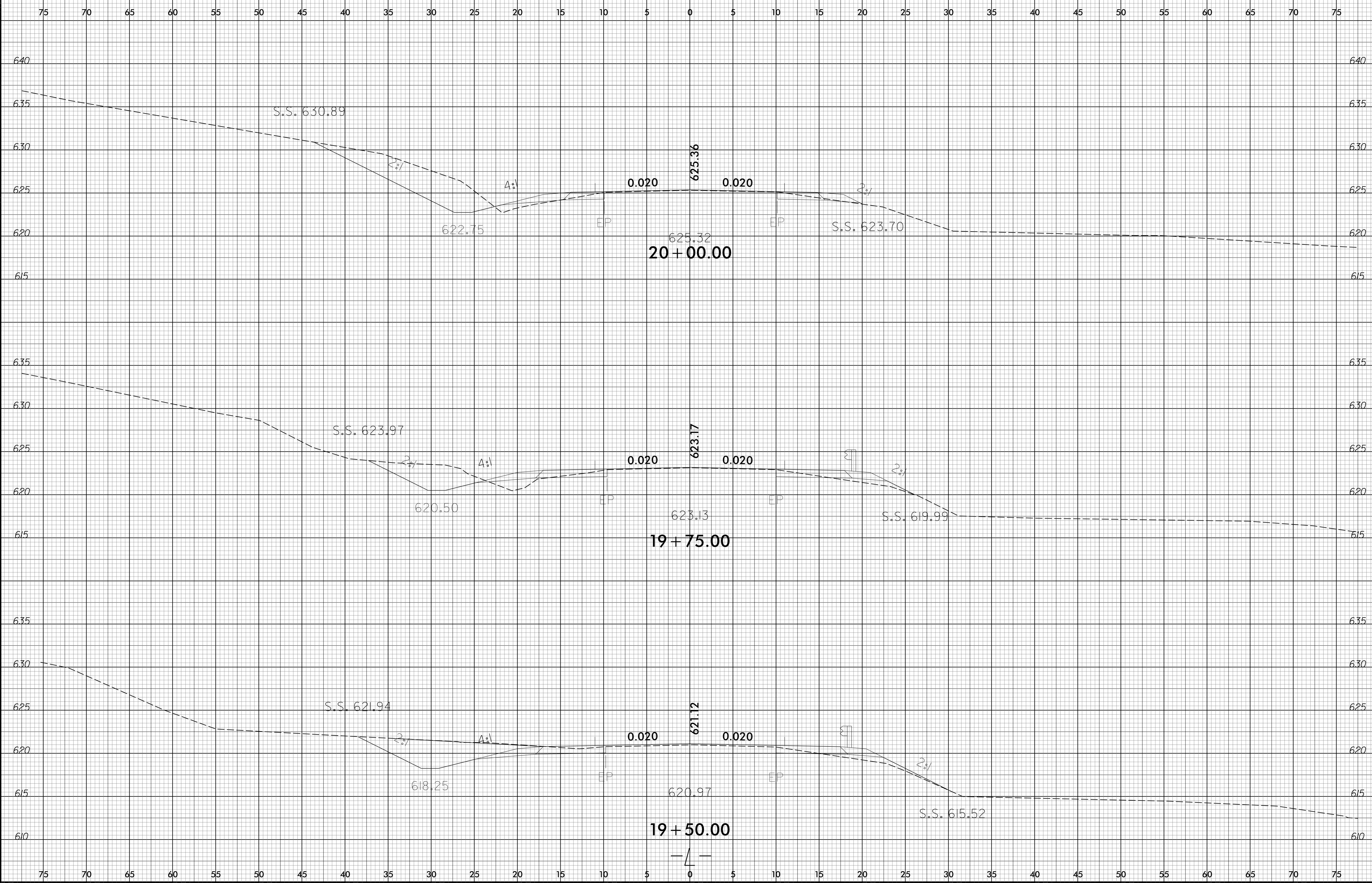


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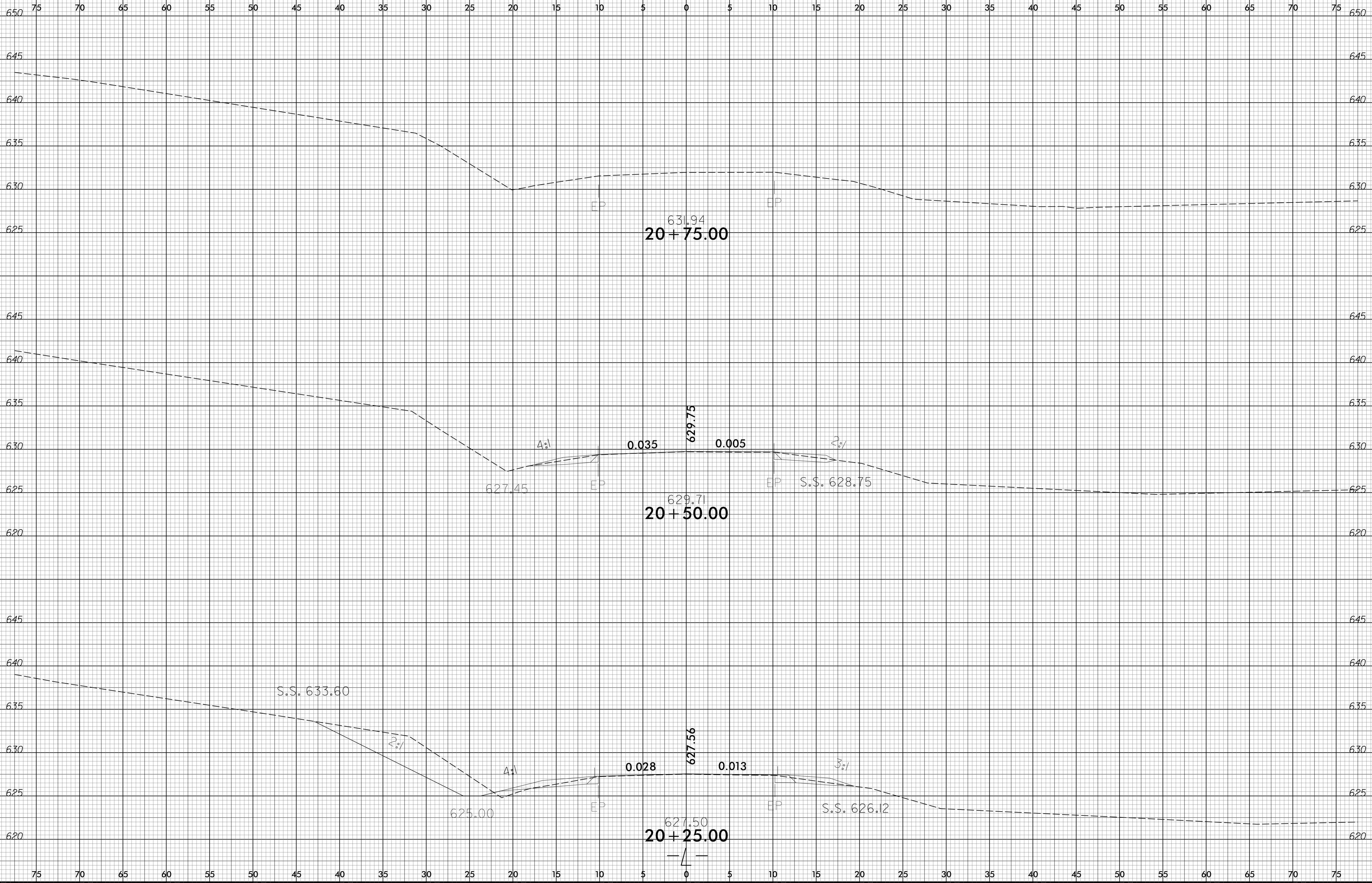


6/23/16



4/2/2017  
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USER:RANIE

6/23/16



4/2/2017  
R:\Projects\17BP.8.R.115\XSC\17BP.8.R.115.X-11.dgn  
USER:VME



-4.1016% +0.4498%

PVI = 15+78.00 -L-  
EL. = 612.40  
V.C. = 120.00 FT.

17+00

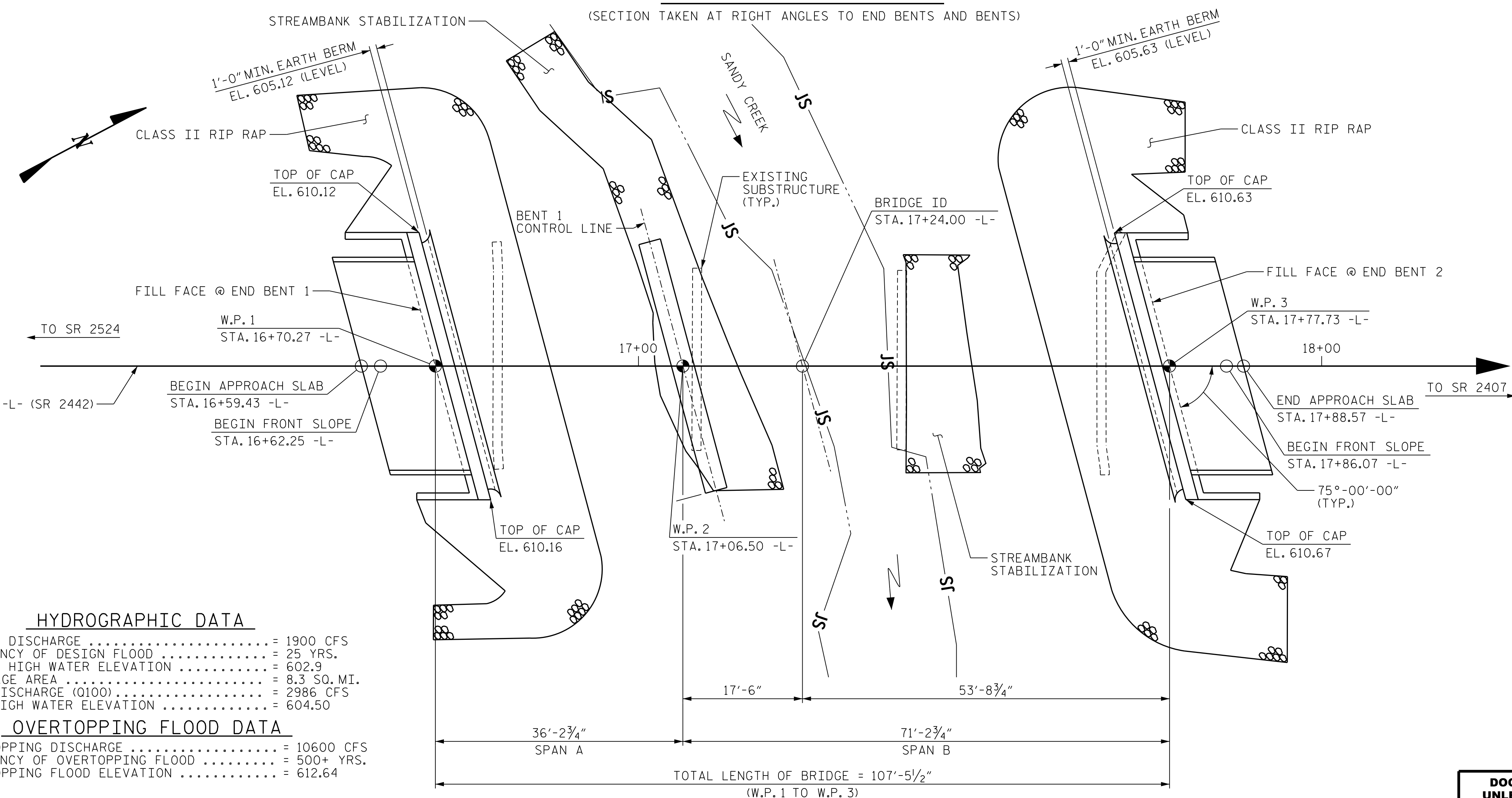
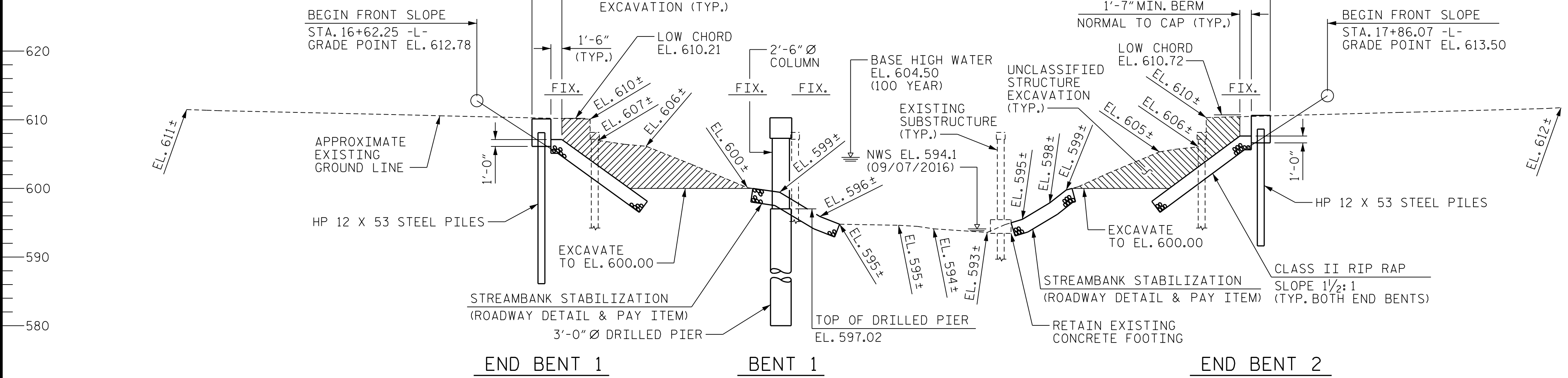
18+00

+0.4498% +8.7705%

PVI = 18+67.00 -L-  
EL. = 613.70  
V.C. = 220.00 FT.

GRADE DATA -L-

GRADE DATA -L-



I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

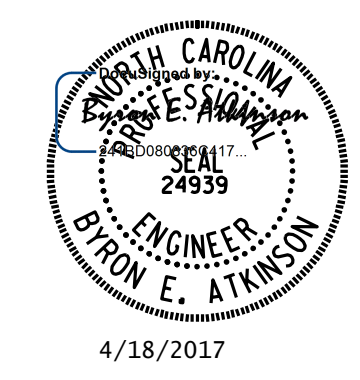
PROJECT NO. 17BP.8.R.115  
RANDOLPH COUNTY  
 STATION: 17+24.00 -L-

SHEET 1 OF 3 REPLACES BRIDGE NO. 128

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**GENERAL DRAWING**

FOR BRIDGE ON SR 2442  
 OVER SANDY CREEK  
 BETWEEN SR 2524 AND SR 2407



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

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

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

**HYDROGRAPHIC DATA**

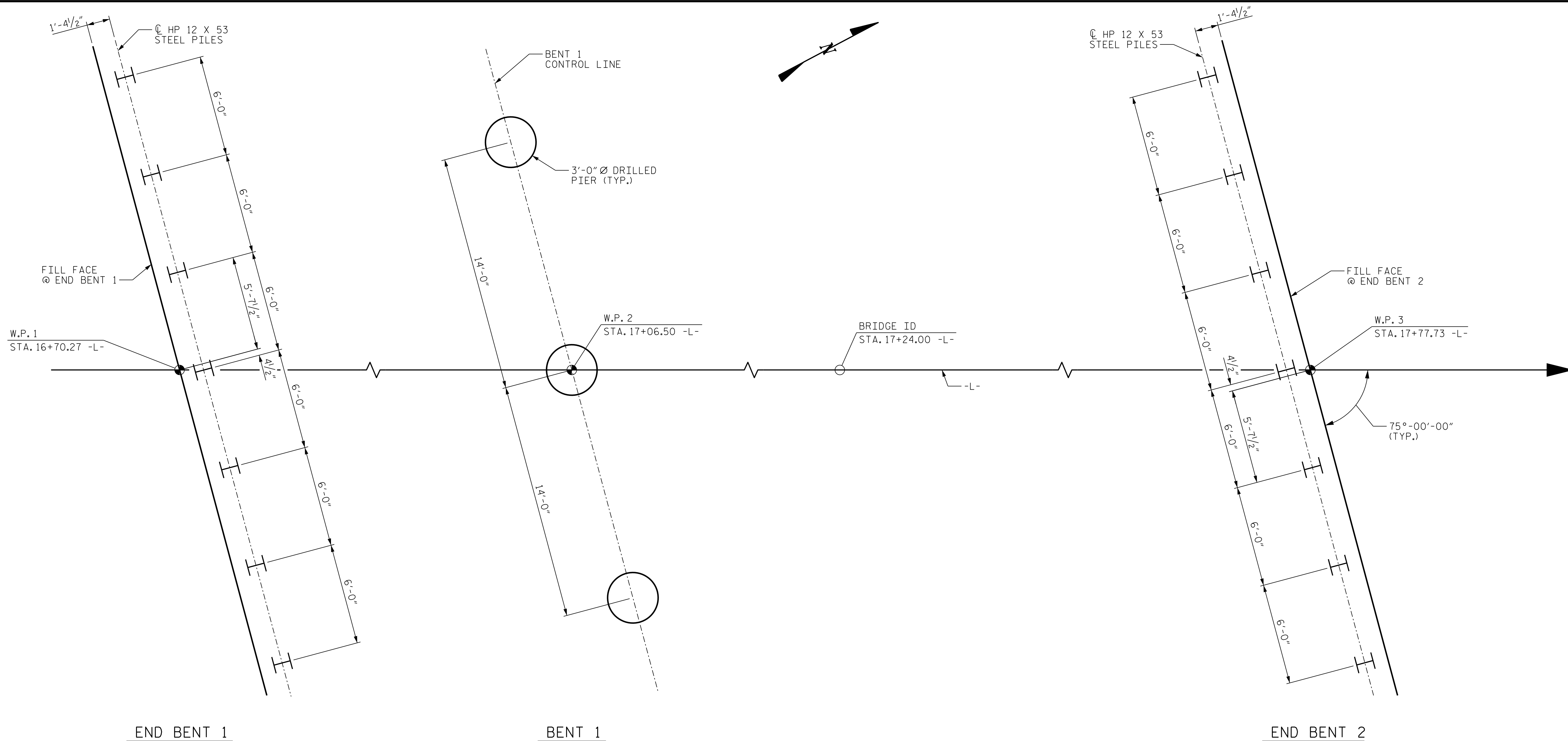
DESIGN DISCHARGE ..... = 1900 CFS  
 FREQUENCY OF DESIGN FLOOD ..... = 25 YRS.  
 DESIGN HIGH WATER ELEVATION ..... = 602.9  
 DRAINAGE AREA ..... = 8.3 SQ. MI.  
 BASE DISCHARGE (Q100) ..... = 2986 CFS  
 BASE HIGH WATER ELEVATION ..... = 604.50

**OVERTOPPING FLOOD DATA**

OVERTOPPING DISCHARGE ..... = 10600 CFS  
 FREQUENCY OF OVERTOPPING FLOOD ..... = 500+ YRS.  
 OVERTOPPING FLOOD ELEVATION ..... = 612.64

DRAWN BY : B.E. LANNING DATE : 12/16  
 CHECKED BY : B.E. ATKINSON DATE : 03/17  
 DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 03/17

4/18/2017 11:48:57 AM User: blanning File: P:\NC Bridges\MI6005.CH Eng. Div. 8 Br. Repl. 16 Bridges\MI6005.02.Randolph 128\17BP8R115\Structures\401\_001\_17BP8R115.SMU.G01.dgn



END BENT 1

BENT 1

END BENT 2

### FOUNDATION LAYOUT

DIMENSIONS LOCATING END BENT PILES ARE SHOWN TO THE PILE CENTERLINE AT THE BOTTOM OF CAP.  
 DIMENSIONS LOCATING BENT DRILLED PIERS ARE SHOWN TO  $\phi$  DRILLED PIERS.

### FOUNDATION NOTES

FOR DRILLED PIERS, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 411 OF THE STANDARD SPECIFICATIONS.

DRILLED PIERS AT BENT 1 (LEFT) ARE DESIGNED FOR A FACTORED RESISTANCE OF 360 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 110 TSF.

DRILLED PIERS AT BENT 1 (CENTER, RIGHT) ARE DESIGNED FOR A FACTORED RESISTANCE OF 360 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 10 TSF.

PERMANENT STEEL CASINGS MAY BE REQUIRED FOR DRILLED PIERS AT BENT 1. IF REQUIRED, DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 591.0 FT. (LEFT) AND 586.0 (CENTER, RIGHT) WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT CASINGS.

INSTALL DRILLED PIERS AT BENT 1 (LEFT) TO A TIP ELEVATION NO HIGHER THAN 573.0 FT. WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 1 FT. INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

INSTALL DRILLED PIERS AT BENT 1 (CENTER, RIGHT) TO A TIP ELEVATION NO HIGHER THAN 564.0 FT. WITH THE REQUIRED TIP RESISTANCE.

THE SCOUR CRITICAL ELEVATION FOR BENT 1 IS ELEVATION 590.9 FT. (LEFT) AND 585.4 (CENTER, RIGHT). SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

DO NOT USE SLURRY CONSTRUCTION FOR DRILLED PIERS AT BENT 1.

CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. FOR CSL TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

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

PILES AT END BENT 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 55 TONS PER PILE.

PILES AT END BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 85 TONS PER PILE.

DRIVE PILES AT END BENT 1 TO A REQUIRED DRIVING RESISTANCE OF 95 TONS PER PILE.

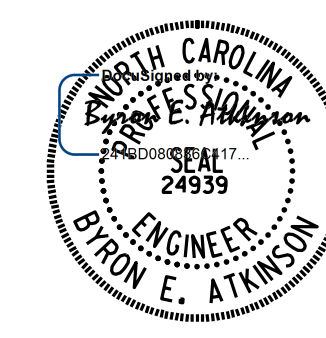
DRIVE PILES AT END BENT 2 TO A REQUIRED DRIVING RESISTANCE OF 145 TONS PER PILE.

TESTING THE PRODUCTION PILES WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING MAY BE REQUIRED FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

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

PROJECT NO. 17BP.8.R.115  
RANDOLPH COUNTY  
 STATION: 17+24.00 -L-

SHEET 2 OF 3



4/18/2017

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

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

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**GENERAL DRAWING**

FOR BRIDGE ON SR 2442  
 OVER SANDY CREEK  
 BETWEEN SR 2524 AND SR 2407

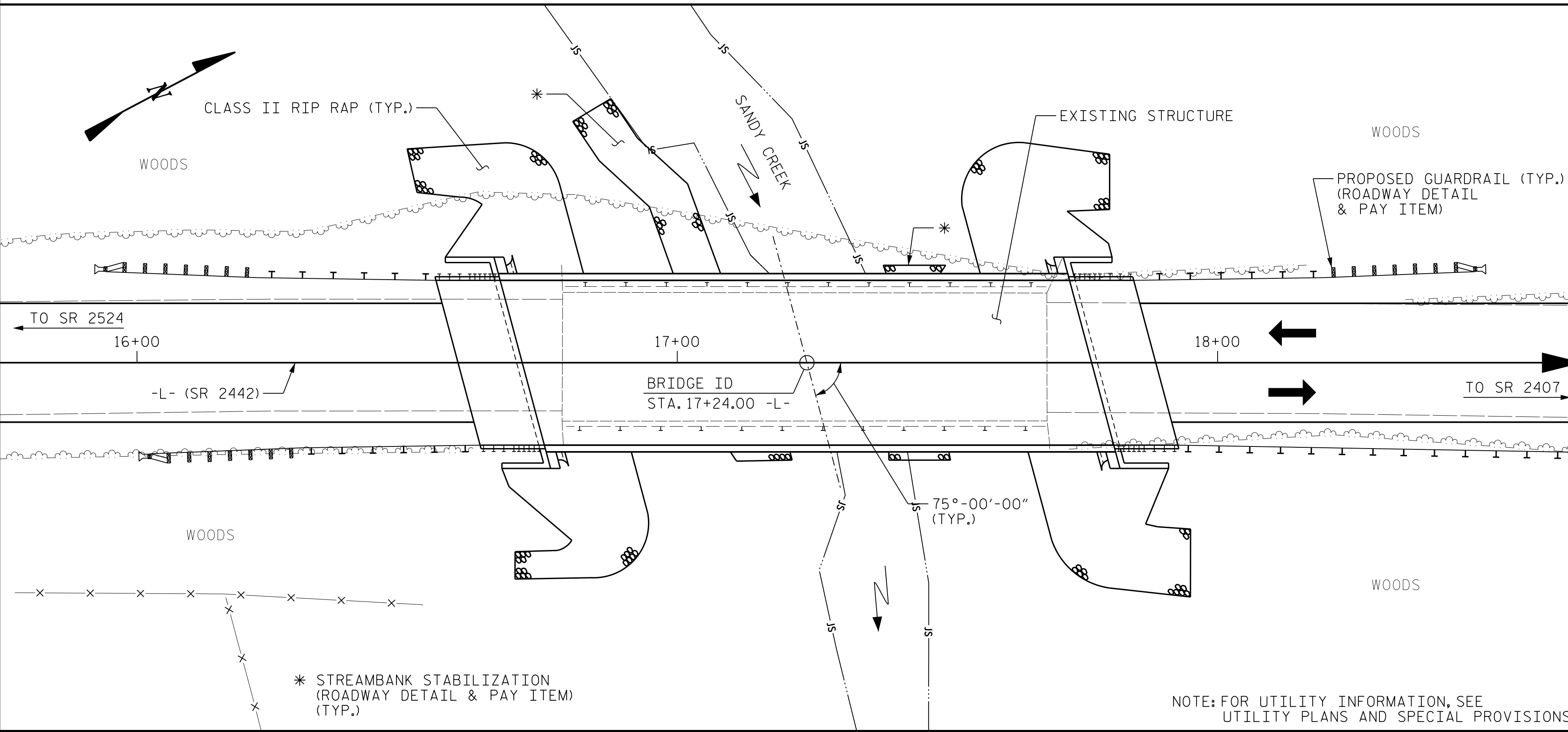
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. **S-2**  
 TOTAL SHEETS **20**

DRAWN BY : <u>B.E. LANNING</u>	DATE : <u>03/17</u>
CHECKED BY : <u>B.E. ATKINSON</u>	DATE : <u>03/17</u>
DESIGN ENGINEER OF RECORD : <u>B.E. ATKINSON</u>	DATE : <u>03/17</u>

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B.M. 1: RAILROAD SPIKE SET IN 18" OAK, 160.46 RT. OF STA. 15+63.28 -L-, EL. 603.44



LOCATION SKETCH

NOTES

ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THE EXISTING STRUCTURE CONSISTING OF THREE SPANS (2 @ 30'-3" AND 1 AT 30'-0"), WITH ASPHALT WEARING SURFACE ON PRESTRESSED CONCRETE CHANNELS AND A CLEAR ROADWAY WIDTH OF 24'-1" ON PRECAST CONCRETE CAP WITH TIMBER PILE END BENTS AND BENTS AND LOCATED AT THE SITE OF THE PROPOSED STRUCTURE SHALL BE REMOVED. FOR REMOVAL OF EXISTING STRUCTURE, SEE SPECIAL PROVISIONS.

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

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

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 40 FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

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

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR ASBESTOS ASSESSMENT, SEE SPECIAL PROVISIONS.

AT THE CONTRACTOR'S OPTION, PRESTRESSED CONCRETE END BENT AND BENT CAPS MAY BE SUBSTITUTED IN PLACE OF THE CAST-IN-PLACE CAPS. THE CONTRACTOR SHALL COORDINATE WITH THE RESIDENT ENGINEER TO RECEIVE REVISED PLANS AND DETAILS FROM THE STRUCTURES MANAGEMENT UNIT. THE REDESIGN AND ANY ADDITIONAL MATERIALS NEEDED WILL BE AT NO ADDITIONAL COST TO THE CONTRACTOR.

FOR FOUNDATION NOTES, SEE "FOUNDATION LAYOUT" SHEET.

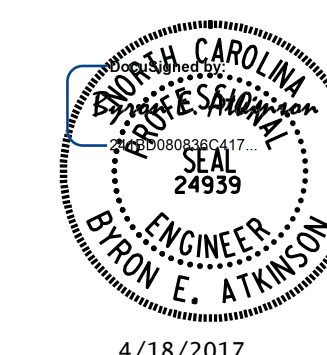
NOTE: FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	3'-0" Ø DRILLED PIER IN SOIL	3'-0" Ø DRILLED PIER NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIER	PDA TESTING	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	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	3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLABS		ASBESTOS ASSESSMENT
	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	LBS.	EACH	NO.	LIN. FT.	EACH	LIN. FT.	TON	SQ. YDS.	LUMP SUM	NO.	LIN. FT.	LUMP SUM
SUPERSTRUCTURE									LUMP SUM							210.51			LUMP SUM	22	1155.00	
END BENT 1							LUMP SUM	22.4		2714		7	7	175	7		190	211				
BENT 1		59.8	31.0	28.1				19.0		11,729	2095											
END BENT 2							LUMP SUM	22.4		2714		7	7	154	7		206	229				
TOTAL	LUMP SUM	59.8	31.0	28.1	1	1	LUMP SUM	63.8	LUMP SUM	17,157	2095	14	14	329	14	210.51	396	440	LUMP SUM	22	1155.00	LUMP SUM

PROJECT NO. 17BP.8.R.115  
RANDOLPH COUNTY  
 STATION: 17+24.00 -L-

SHEET 3 OF 3



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

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

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 FOR BRIDGE ON SR 2442  
 OVER SANDY CREEK  
 BETWEEN SR 2524 AND SR 2407

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

DRAWN BY : B.E. LANNING DATE : 12/16  
 CHECKED BY : B.E. ATKINSON DATE : 03/17  
 DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 03/17

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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						LIVELOAD FACTORS	MOMENT					SHEAR					LIVELOAD FACTORS	MOMENT						
							DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)		DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	<b>1</b>	1.32	--	1.75	0.285	1.77	35'	EL	17.0	0.659	3.12	35'	I	1.8	0.80	0.285	<b>1.32</b>	35'	EL	17.0		
	HL-93(0pr)	N/A	--	2.29	--	1.35	0.285	2.29	35'	EL	17.0	0.659	4.04	35'	I	1.8	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	<b>2</b>	1.76	63.36	1.75	0.285	2.34	35'	EL	13.6	0.659	3.59	35'	I	1.8	0.80	0.285	<b>1.76</b>	35'	EL	17.0		
	HS-20(0pr)	36.000	--	3.04	109.44	1.35	0.285	3.04	35'	EL	13.6	0.659	4.65	35'	I	1.8	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.01	40.64	1.40	0.285	5.05	35'	EL	17.0	0.659	9.23	35'	I	1.8	0.80	0.285	3.01	35'	EL	17.0	
		SNGARBS2	20.000	--	2.61	52.20	1.40	0.285	4.30	35'	EL	13.6	0.659	6.98	35'	I	1.8	0.80	0.285	2.61	35'	EL	13.6	
		SNAGRIS2	22.000	--	2.58	56.76	1.40	0.285	4.26	35'	EL	13.6	0.659	6.66	35'	I	1.8	0.80	0.285	2.58	35'	EL	13.6	
		SNCOTTS3	27.250	--	1.51	41.15	1.40	0.285	2.53	35'	EL	17.0	0.659	4.69	35'	I	1.8	0.80	0.285	1.51	35'	EL	17.0	
		SNAGGRS4	34.925	--	1.36	47.50	1.40	0.285	2.34	35'	EL	17.0	0.659	4.20	35'	I	1.8	0.80	0.285	1.36	35'	EL	17.0	
		SNS5A	35.550	--	1.35	47.99	1.40	0.285	2.27	35'	EL	17.0	0.659	4.44	35'	I	1.8	0.80	0.285	1.35	35'	EL	17.0	
		SNS6A	39.950	--	1.31	52.33	1.40	0.285	2.19	35'	EL	17.0	0.659	4.17	35'	I	1.8	0.80	0.285	1.31	35'	EL	17.0	
	SNS7B	42.000	<b>3</b>	1.25	52.50	1.40	0.285	2.09	35'	EL	17.0	0.659	4.27	35'	I	1.8	0.80	0.285	<b>1.25</b>	35'	EL	17.0		
	TTST	TNAGRIT3	33.000	--	1.61	53.13	1.40	0.285	2.71	35'	EL	17.0	0.659	4.87	35'	I	1.8	0.80	0.285	1.61	35'	EL	17.0	
		TNT4A	33.075	--	1.61	53.25	1.40	0.285	2.71	35'	EL	17.0	0.659	4.59	35'	I	1.8	0.80	0.285	1.61	35'	EL	17.0	
		TNT6A	41.600	--	1.41	58.66	1.40	0.285	2.37	35'	EL	17.0	0.659	4.50	35'	I	1.8	0.80	0.285	1.41	35'	EL	17.0	
		TNT7A	42.000	--	1.46	61.32	1.40	0.285	2.45	35'	EL	17.0	0.659	4.18	35'	I	1.8	0.80	0.285	1.46	35'	EL	17.0	
		TNT7B	42.000	--	1.43	60.06	1.40	0.285	2.41	35'	EL	17.0	0.659	4.06	35'	I	1.8	0.80	0.285	1.43	35'	EL	17.0	
		TNAGRIT4	43.000	--	1.45	62.35	1.40	0.285	2.42	35'	EL	13.6	0.659	3.90	35'	I	1.8	0.80	0.285	1.45	35'	EL	17.0	
TNAGT5A		45.000	--	1.34	60.30	1.40	0.285	2.25	35'	EL	17.0	0.659	4.12	35'	I	1.8	0.80	0.285	1.34	35'	EL	17.0		
TNAGT5B	45.000	--	1.29	58.05	1.40	0.285	2.17	35'	EL	17.0	0.659	3.68	35'	I	1.8	0.80	0.285	1.29	35'	EL	17.0			

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	$\gamma_{DC}$	$\gamma_{DW}$
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

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

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

COMMENTS:

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- 
- 

# CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

2 DESIGN LOAD RATING (HS-20)

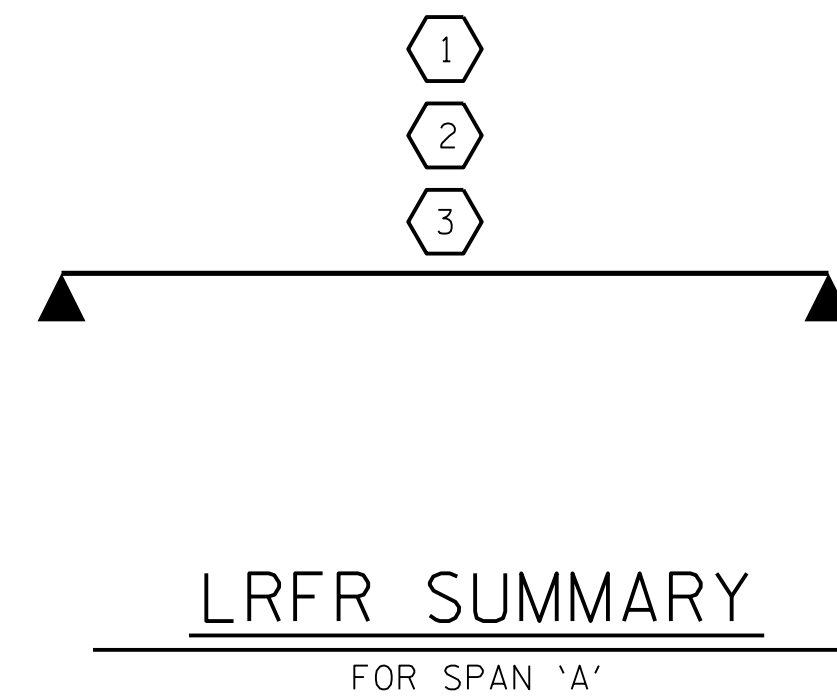
3 LEGAL LOAD RATING \*\*

\*\* SEE CHART FOR VEHICLE TYPE

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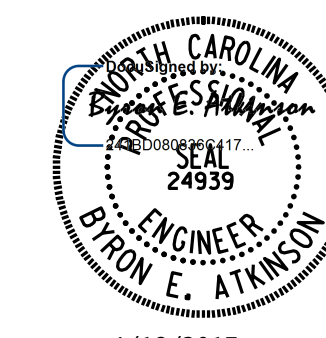
GIRDER LOCATION

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



PROJECT NO. 17BP.8.R.115  
RANDOLPH COUNTY  
 STATION: 17+24.00 -L-

SHEET 1 OF 2



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

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

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

LRFR SUMMARY FOR  
35' CORED SLAB UNIT  
75° SKEW  
SPAN A  
(NON-INTERSTATE TRAFFIC)

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

ASSEMBLED BY: B.E. LANNING	DATE: 12/16
CHECKED BY: B.E. ATKINSON	DATE: 01/17
DESIGN ENGINEER OF RECORD: B.E. ATKINSON	DATE: 03/17
DRAWN BY: CVC 6/10	
CHECKED BY: DNS 6/10	

4/18/2017 11:49:03 AM User: blanning  
 Filename: P:\NC Bridges\MI6005.CH Eng.Div. 8 Br. Repl. 16 Bridges\MI6005.02.Randolph 128\17BP8R115\Structures\401\_005\_17BP8R115\_SML\_LRFR.dgn

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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVELOAD FACTORS	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)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	<b>1</b>	1.014	--	1.75	0.269	1.04	70'	EL	34.482	0.608	1.1	70'	EL	3.448	0.80	0.269	<b>1.01</b>	70'	EL	<b>34.482</b>		
	HL-93(Opr)	N/A	--	1.355	--	1.35	0.269	1.35	70'	EL	34.482	0.608	1.43	70'	EL	3.448	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	<b>2</b>	1.315	47.356	1.75	0.269	1.36	70'	EL	34.482	0.608	1.38	70'	EL	3.448	0.80	0.269	<b>1.32</b>	70'	EL	<b>34.482</b>		
	HS-20(Opr)	36.000	--	1.757	63.236	1.35	0.269	1.76	70'	EL	34.482	0.608	1.79	70'	EL	3.448	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.938	39.656	1.4	0.269	3.78	70'	EL	34.482	0.608	4.12	70'	EL	3.448	0.80	0.269	2.94	70'	EL	34.482	
		SNGARBS2	20.000	--	2.203	44.052	1.4	0.269	2.84	70'	EL	34.482	0.608	2.93	70'	EL	3.448	0.80	0.269	2.20	70'	EL	34.482	
		SNAGRIS2	22.000	--	2.092	46.016	1.4	0.269	2.69	70'	EL	34.482	0.608	2.72	70'	EL	3.448	0.80	0.269	2.09	70'	EL	34.482	
		SNCOTTS3	27.250	--	1.462	39.844	1.4	0.269	1.88	70'	EL	34.482	0.608	2.06	70'	EL	3.448	0.80	0.269	1.46	70'	EL	34.482	
		SNAGGRS4	34.925	--	1.227	42.856	1.4	0.269	1.58	70'	EL	34.482	0.608	1.71	70'	EL	3.448	0.80	0.269	1.23	70'	EL	34.482	
		SNS5A	35.550	--	1.2	42.646	1.4	0.269	1.54	70'	EL	34.482	0.608	1.73	70'	EL	3.448	0.80	0.269	1.20	70'	EL	34.482	
		SNS6A	39.950	--	1.103	44.058	1.4	0.269	1.42	70'	EL	34.482	0.608	1.58	70'	EL	3.448	0.80	0.269	1.10	70'	EL	34.482	
	SNS7B	42.000	--	1.05	44.113	1.4	0.269	1.35	70'	EL	34.482	0.608	1.55	70'	EL	3.448	0.80	0.269	1.05	70'	EL	34.482		
	TTST	TNAGRIT3	33.000	--	1.345	44.401	1.4	0.269	1.73	70'	EL	34.482	0.608	1.88	70'	EL	3.448	0.80	0.269	1.35	70'	EL	34.482	
		TNT4A	33.075	--	1.352	44.717	1.4	0.269	1.74	70'	EL	34.482	0.608	1.83	70'	EL	3.448	0.80	0.269	1.35	70'	EL	34.482	
		TNT6A	41.600	--	1.108	46.073	1.4	0.269	1.43	70'	EL	34.482	0.608	1.65	70'	EL	3.448	0.80	0.269	1.11	70'	EL	34.482	
		TNT7A	42.000	--	1.114	46.794	1.4	0.269	1.43	70'	EL	34.482	0.608	1.62	70'	EL	3.448	0.80	0.269	1.11	70'	EL	34.482	
		TNT7B	42.000	--	1.155	48.526	1.4	0.269	1.49	70'	EL	34.482	0.608	1.51	70'	EL	3.448	0.80	0.269	1.16	70'	EL	34.482	
		TNAGRIT4	43.000	--	1.097	47.174	1.4	0.269	1.41	70'	EL	34.482	0.608	1.46	70'	EL	3.448	0.80	0.269	1.10	70'	EL	34.482	
TNAGT5A		45.000	--	1.033	46.505	1.4	0.269	1.33	70'	EL	34.482	0.608	1.45	70'	EL	3.448	0.80	0.269	1.03	70'	EL	34.482		
TNAGT5B	45.000	<b>3</b>	1.02	45.905	1.4	0.269	1.31	70'	EL	34.482	0.608	1.39	70'	EL	3.448	0.80	0.269	<b>1.02</b>	70'	EL	<b>34.482</b>			

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	$\gamma_{DC}$	$\gamma_{DW}$
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

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

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

COMMENTS:

- 
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- 
- 

# CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

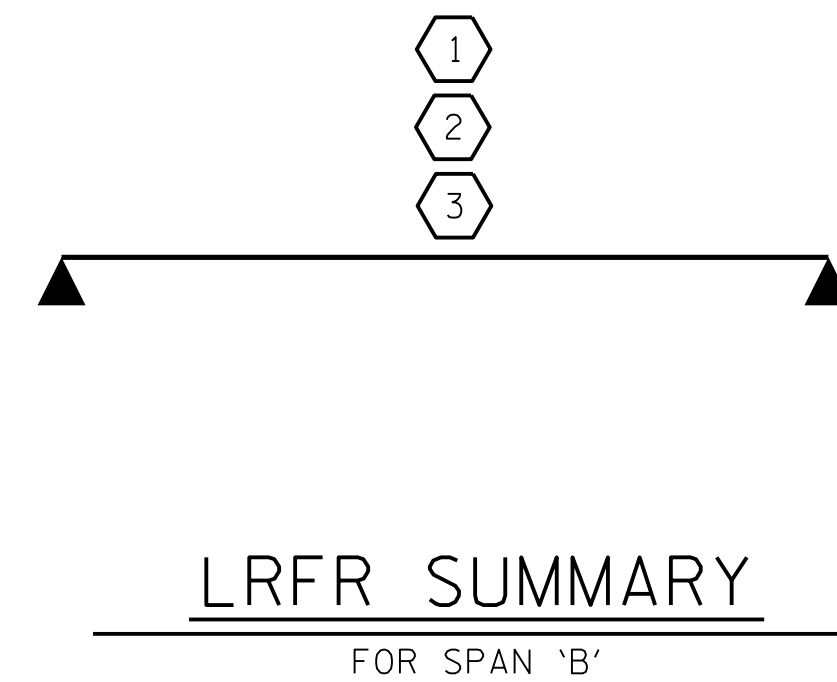
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING \*\*

\*\* SEE CHART FOR VEHICLE TYPE

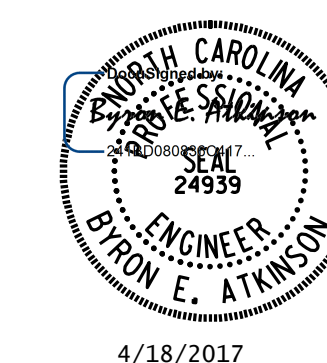
GIRDER LOCATION

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



PROJECT NO. 17BP.8.R.115  
RANDOLPH COUNTY  
STATION: 17+24.00 -L-

SHEET 2 OF 2



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

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

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

STANDARD  
LRFR SUMMARY FOR  
70' CORED SLAB UNIT  
75° SKEW  
SPAN B  
(NON-INTERSTATE TRAFFIC)

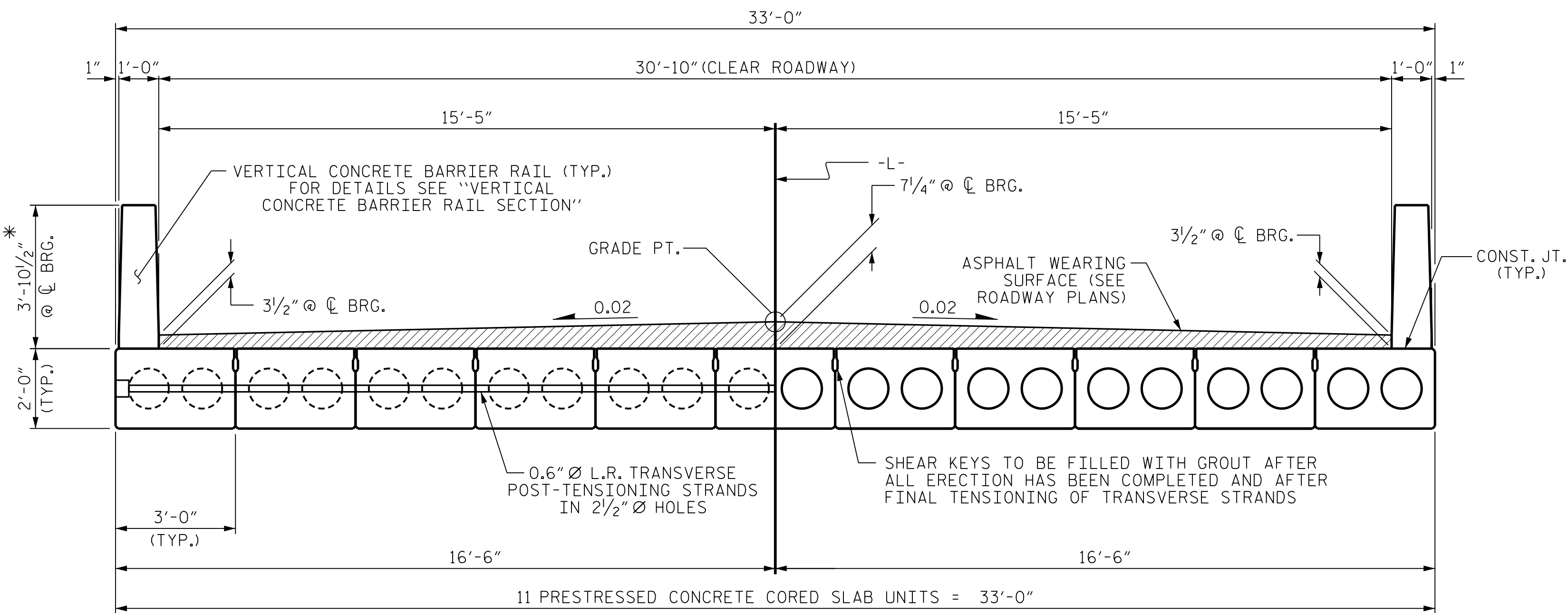
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5 TOTAL SHEETS 20
1			3			
2			4			

STD. NO. 24LRFR1\_75&105S\_70L

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ASSEMBLED BY: B.E. LANNING	DATE: 12/16
CHECKED BY: B.E. ATKINSON	DATE: 01/17
DESIGN ENGINEER OF RECORD: B.E. ATKINSON	DATE: 03/17
DRAWN BY: CVC 6/10	
CHECKED BY: DNS 6/10	

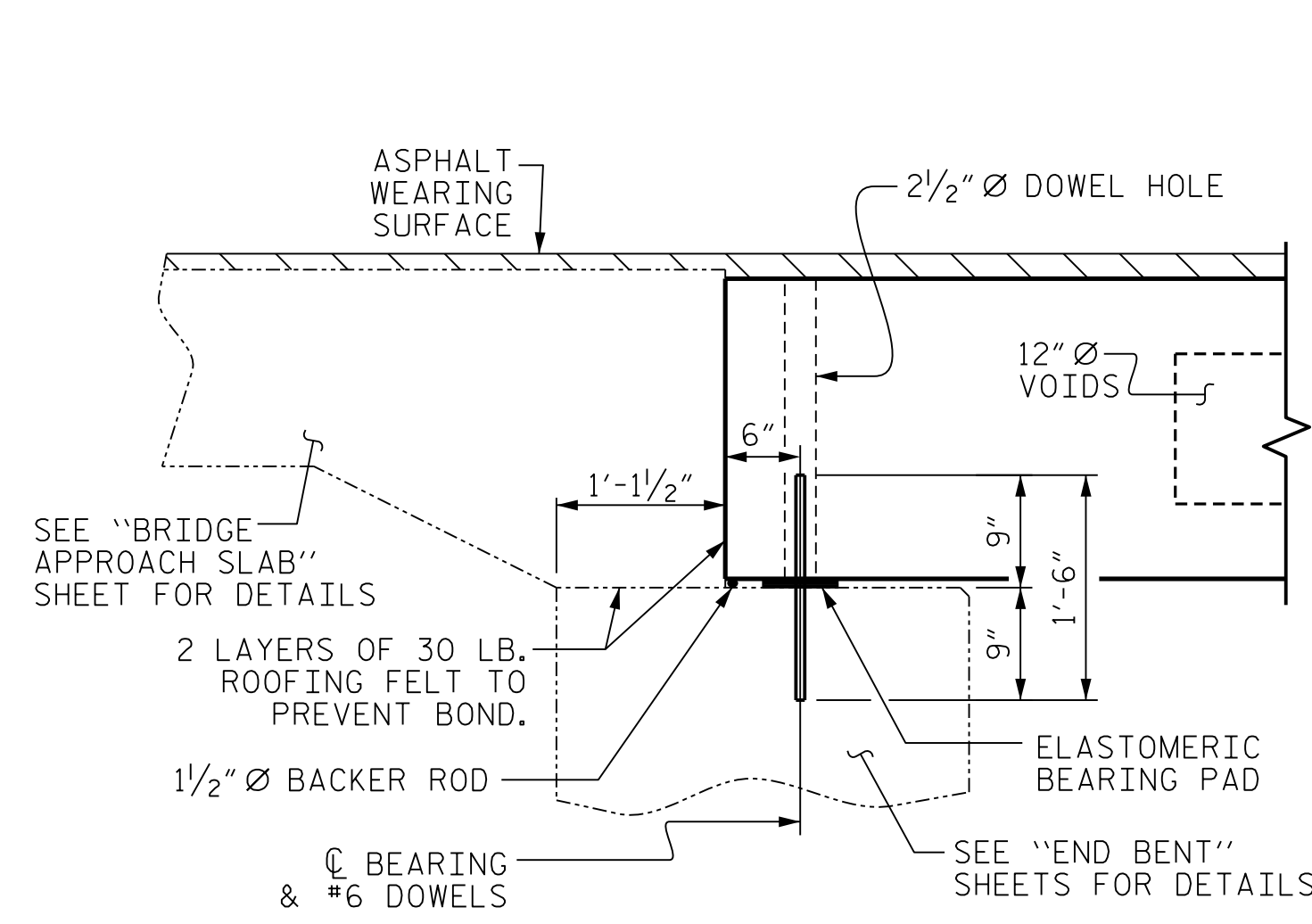




HALF SECTION AT INTERMEDIATE DIAPHRAGMS **TYPICAL SECTION** HALF SECTION THROUGH VOIDS

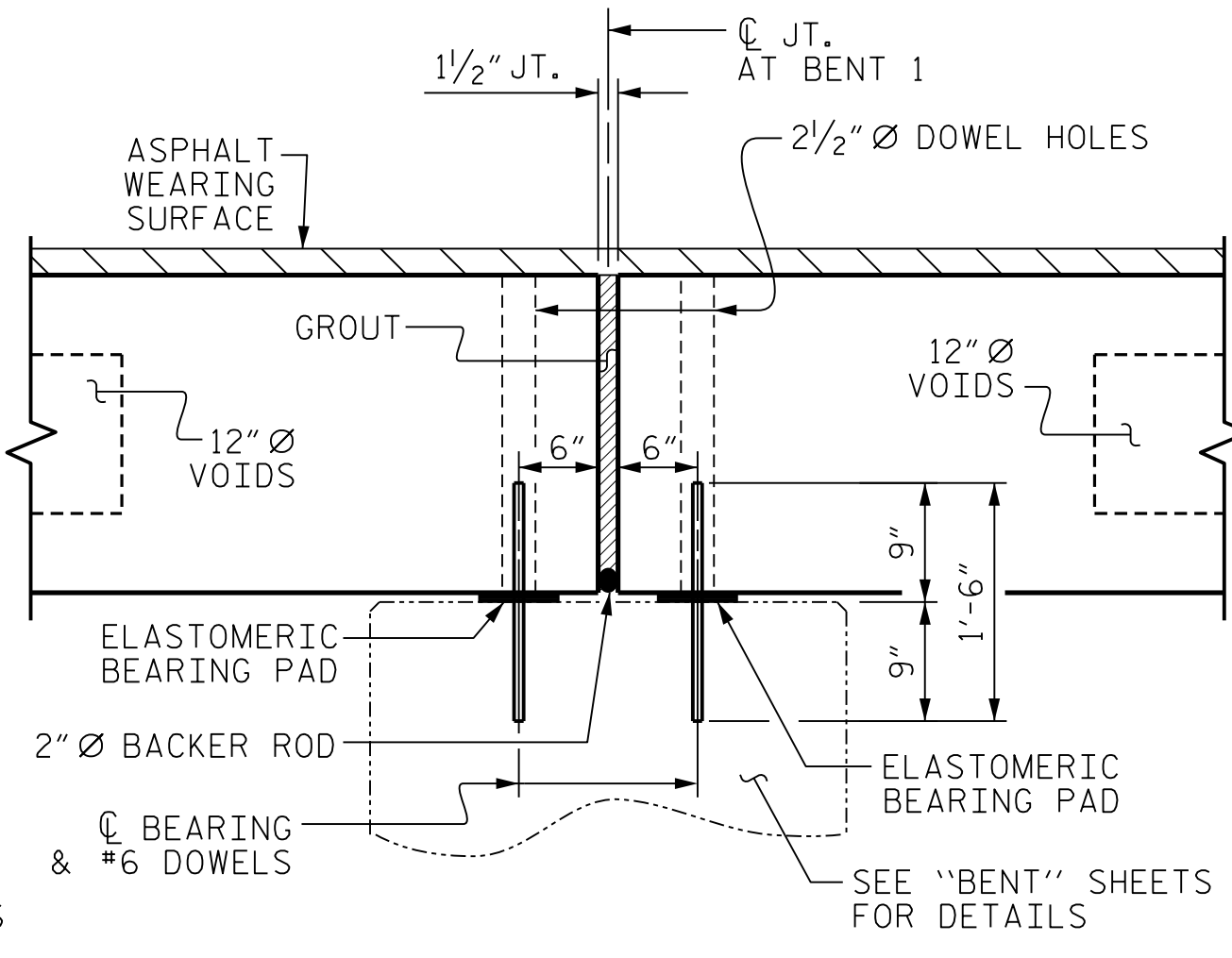
\* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.

**FIXED END**



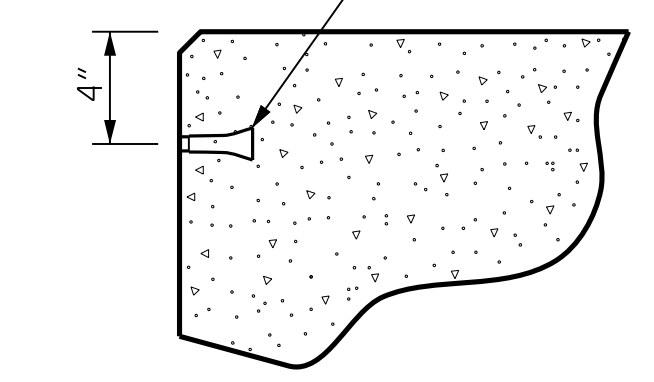
**SECTION AT END BENT 1**

**FIXED END**

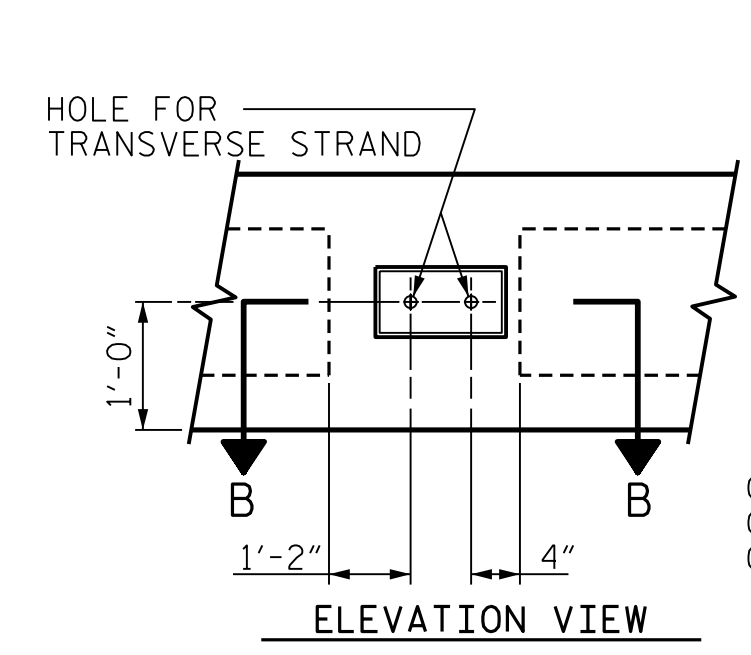


**SECTION AT BENT 1**

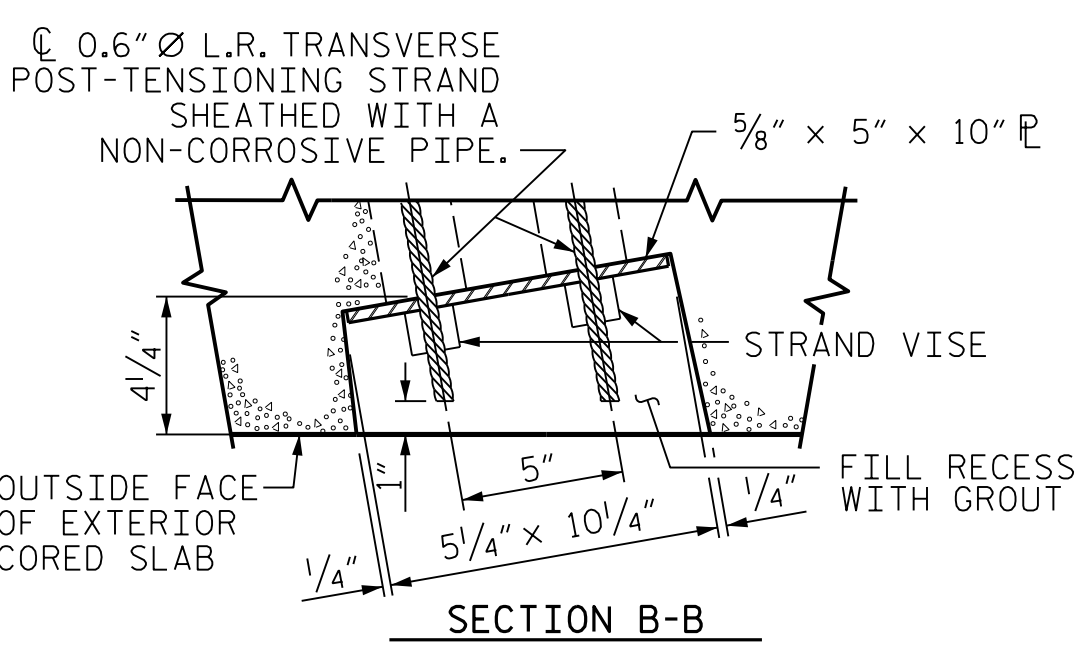
PERMITTED THREADED INSERT CAST IN OUTSIDE FACE OF EXTERIOR UNIT AND RECESSED 3/8" SIZE TO BE DETERMINED BY CONTRACTOR.



**THREADED INSERT DETAIL**

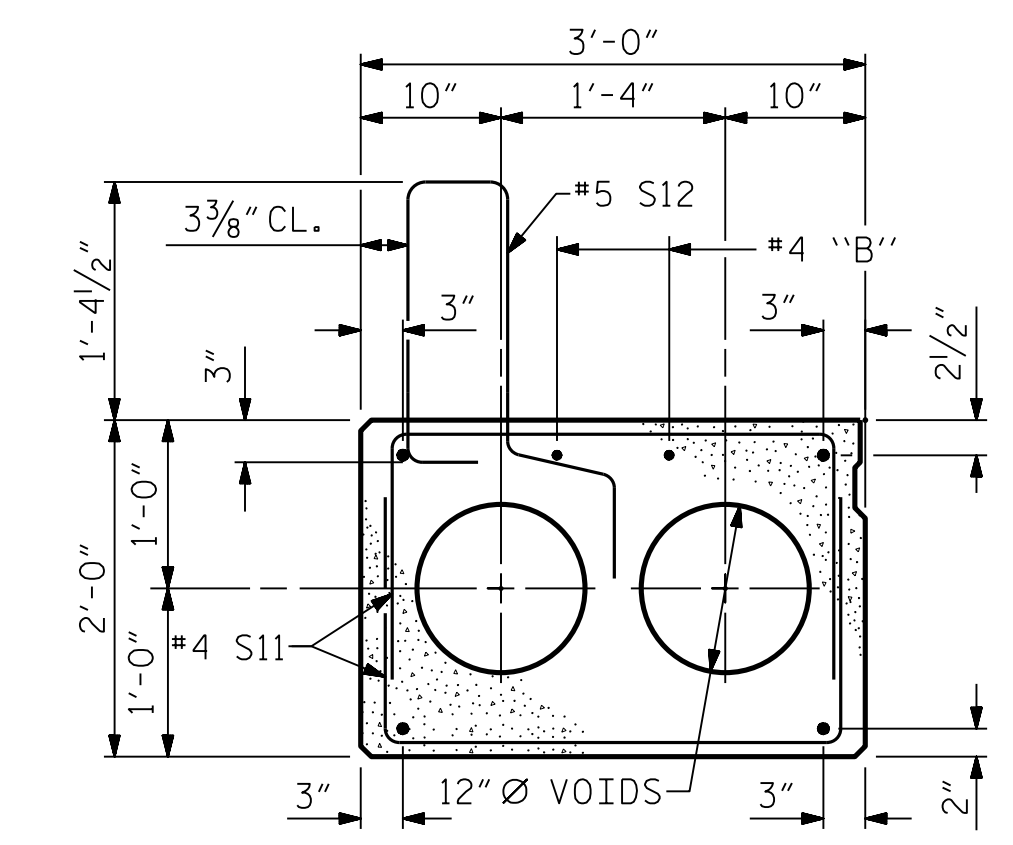


**ELEVATION VIEW**



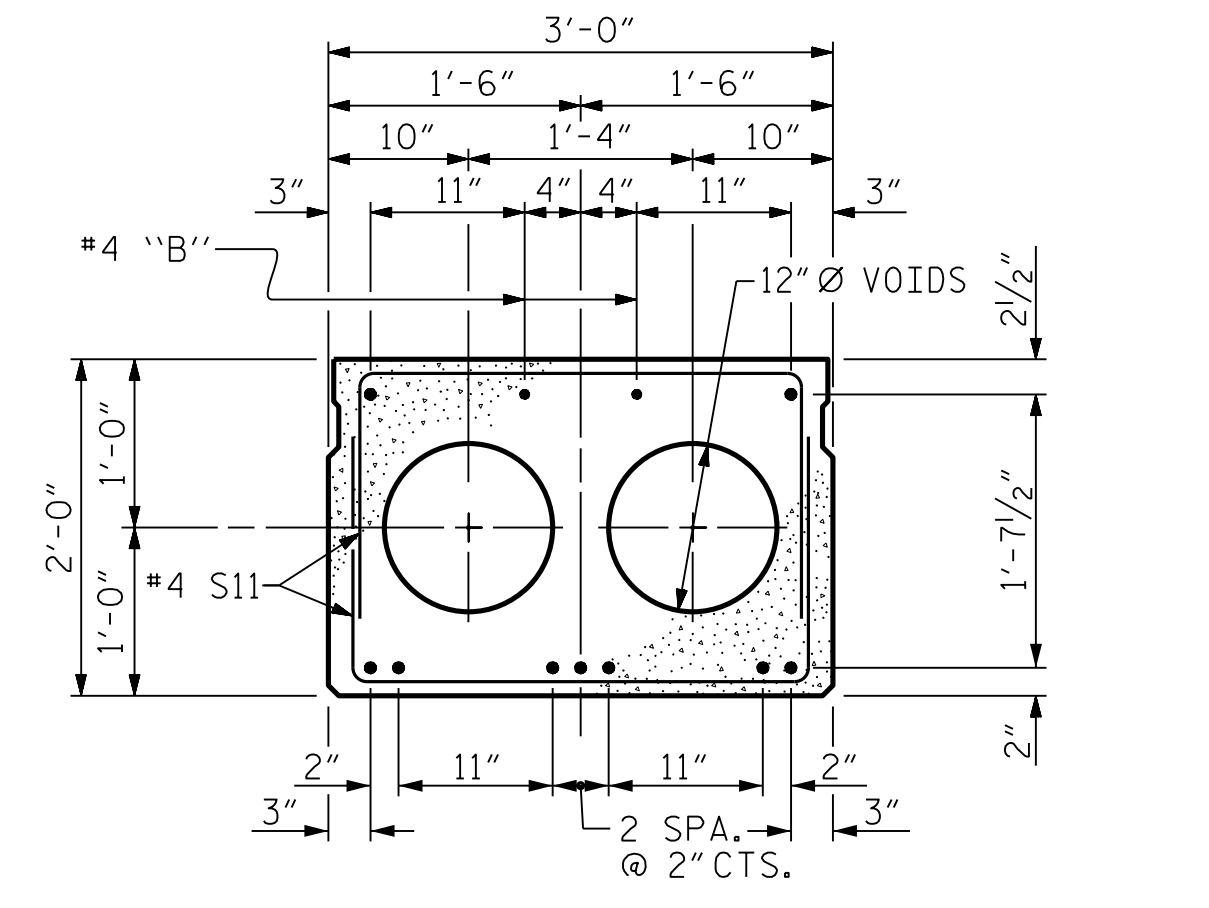
**SECTION B-B**

**GROUTED RECESS AT END OF POST-TENSIONED STRAND-CORED SLABS**



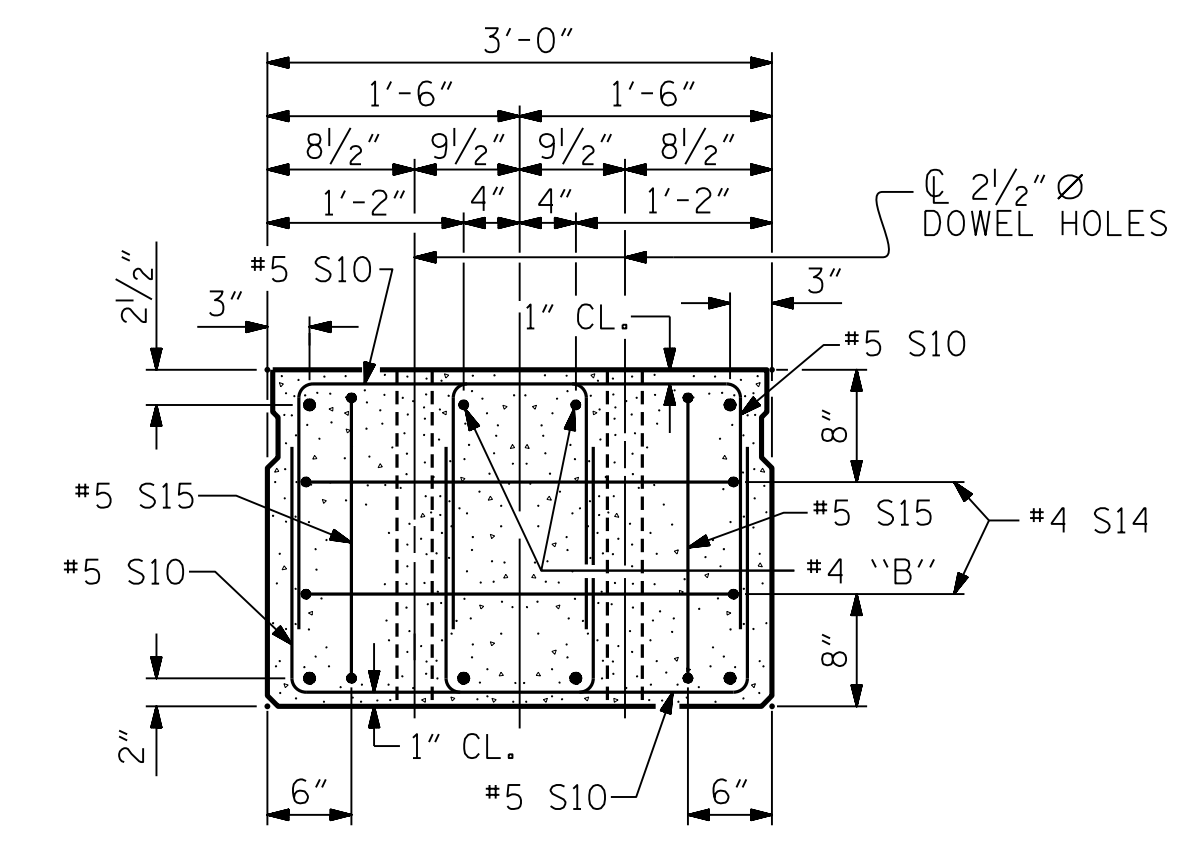
**EXTERIOR SLAB SECTION**

(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)



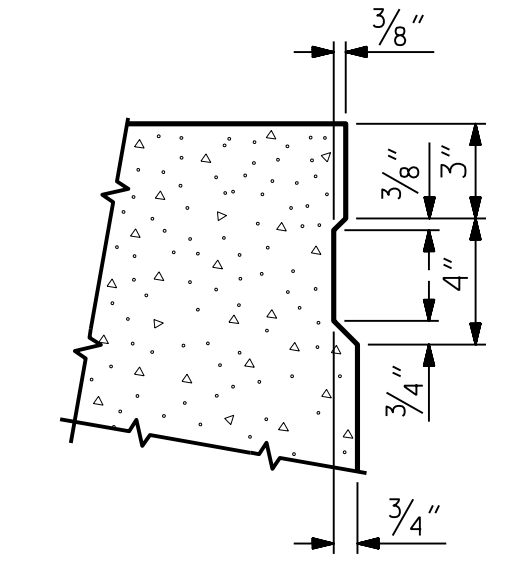
**INTERIOR SLAB SECTION (35' UNIT)**

(9 STRANDS REQUIRED)  
**0.6" Ø LOW RELAXATION STRAND LAYOUT**



**END ELEVATION**

SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.) INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.



**SHEAR KEY DETAIL**

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.

PROJECT NO. 17BP.8.R.115  
RANDOLPH COUNTY  
STATION: 17+24.00 -L-

SHEET 1 OF 6



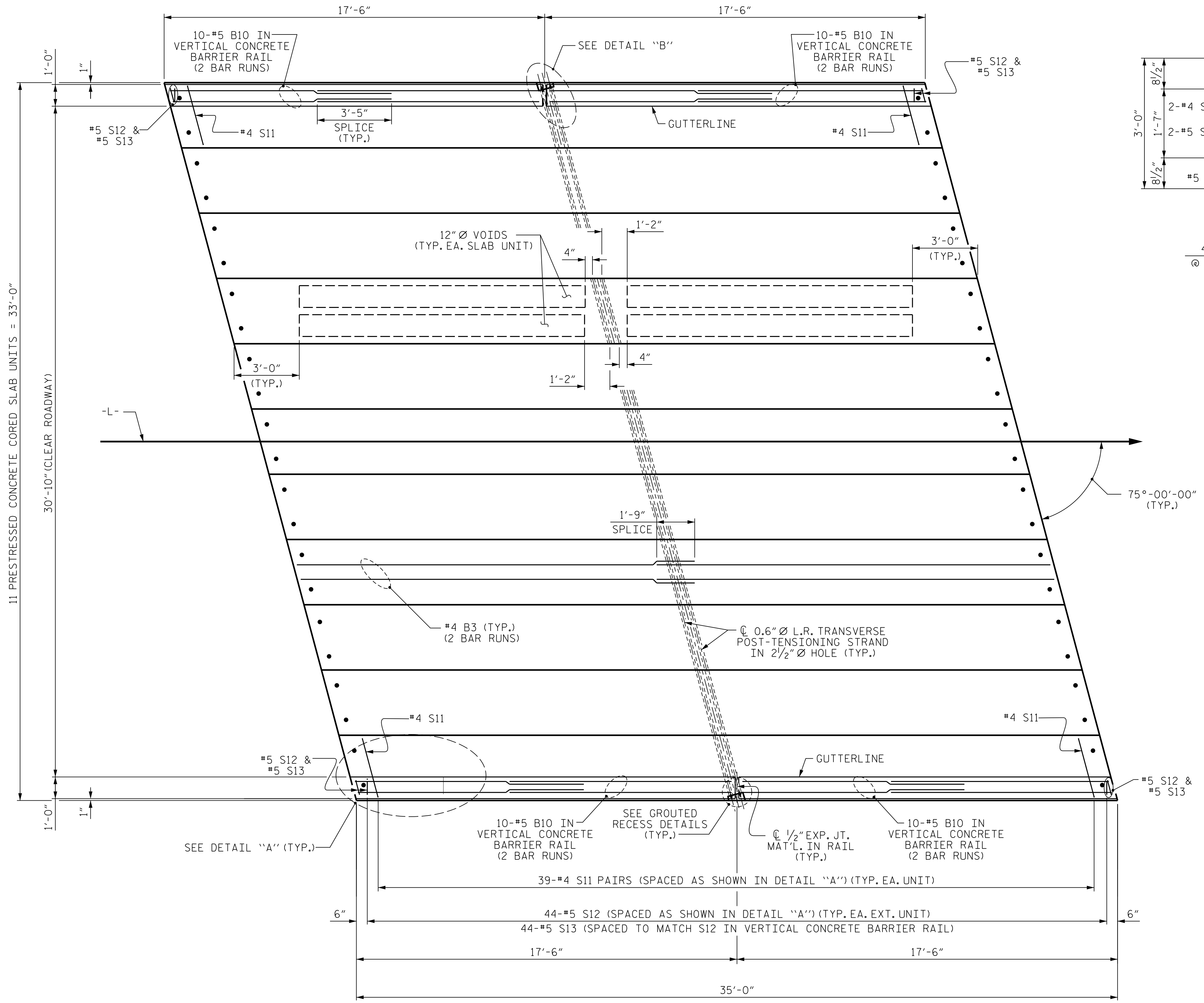
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
**3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLAB UNIT SPAN A**

<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>					
MI ENGINEERING 1011 SCHAUB DRIVE, SUITE 100 RALEIGH, NC 27606 (919) 851-6606 FIRM PE NUMBER: P-0671					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. <b>S-6</b>					TOTAL SHEETS <b>20</b>

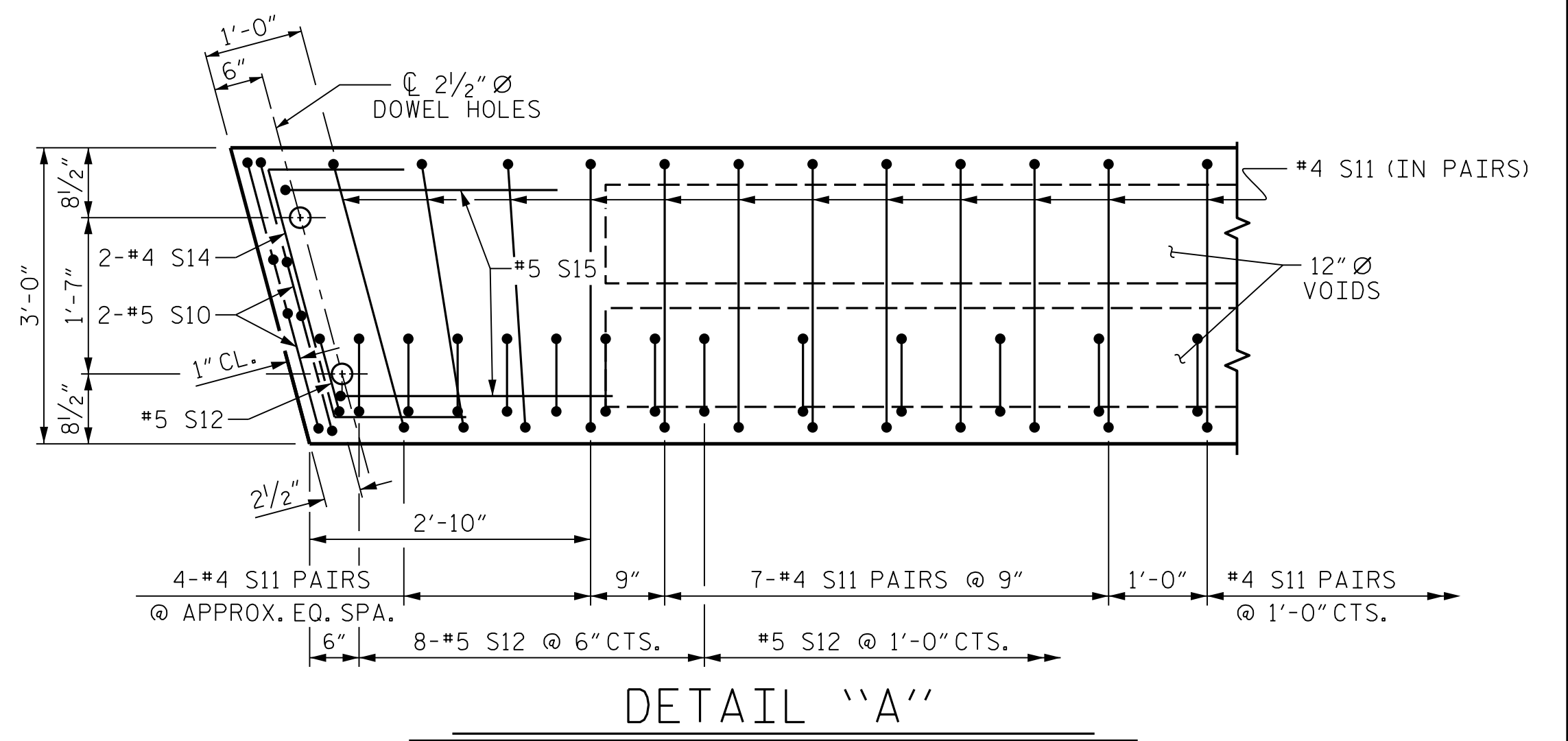
4/18/2017 11:49:08 AM User: blanning File: P:\NC Bridges\MI6005.CH Eng. Div. 8 Br. Repl. 16 Bridges\MI6005.02.Randolph 128\17BP8R115\Structures\401\_009\_17BP8R115\_SMU\_CSUI.dgn

DRAWN BY: B.E. LANNING DATE: 12/16  
CHECKED BY: B.E. ATKINSON DATE: 01/17  
DESIGN ENGINEER OF RECORD: B.E. ATKINSON DATE: 03/17

4/18/2017 11:49:10 AM User: blanning  
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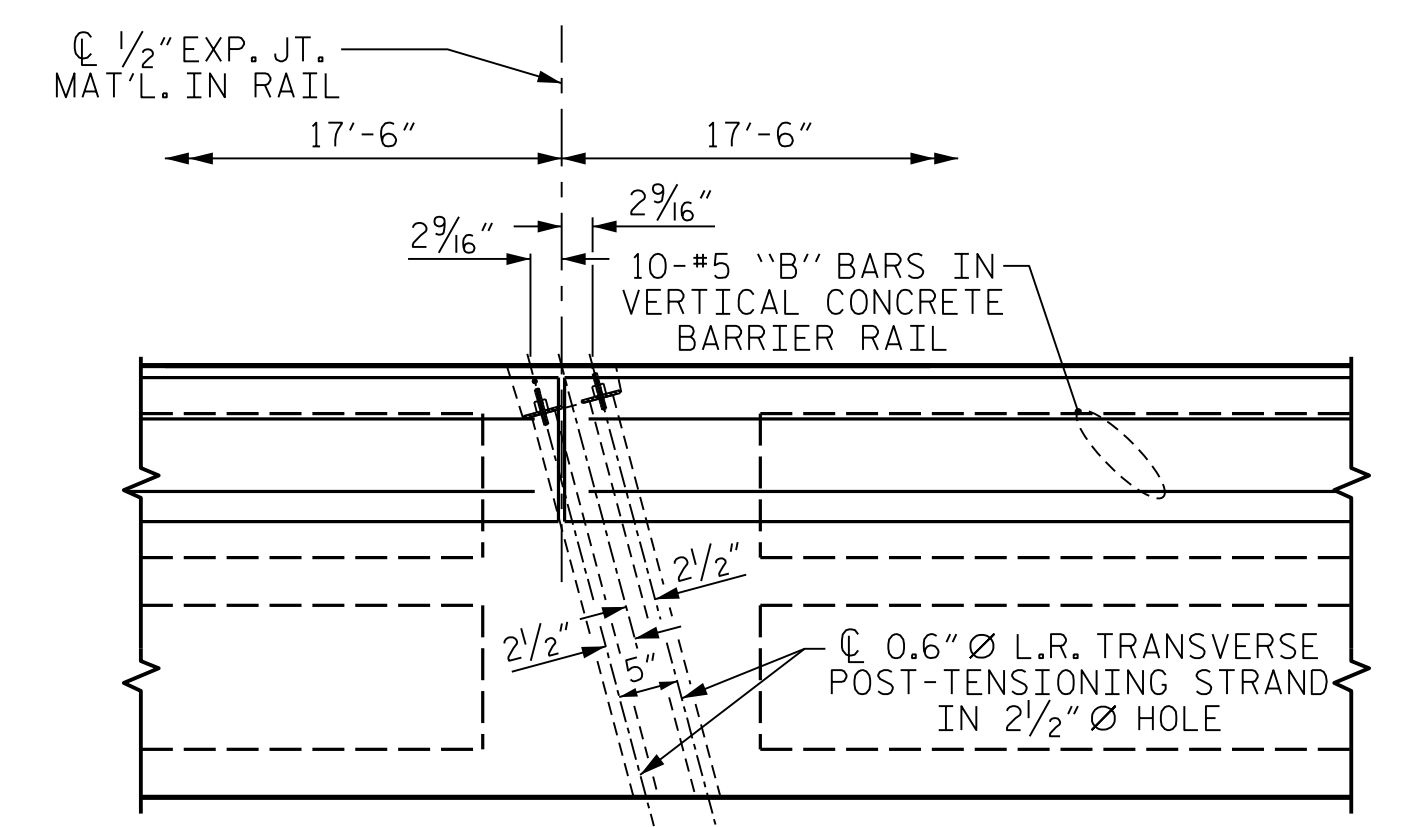


**PLAN OF UNIT**



**DETAIL "A"**

(SIMILAR EACH END OF UNIT)  
 NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S12 BARS.

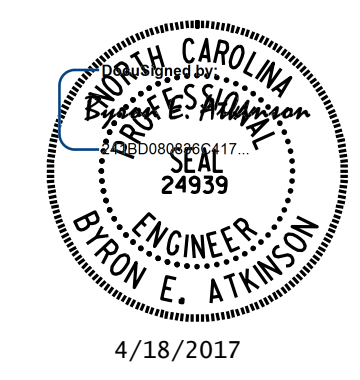


**DETAIL "B"**

#4 S11 BARS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO GROUDED RECESS AND 2 1/2" Ø TRANSVERSE POST-TENSIONING STRAND HOLES

PROJECT NO. 17BP.8.R.115  
 RANDOLPH COUNTY  
 STATION: 17+24.00 -L-

SHEET 2 OF 6



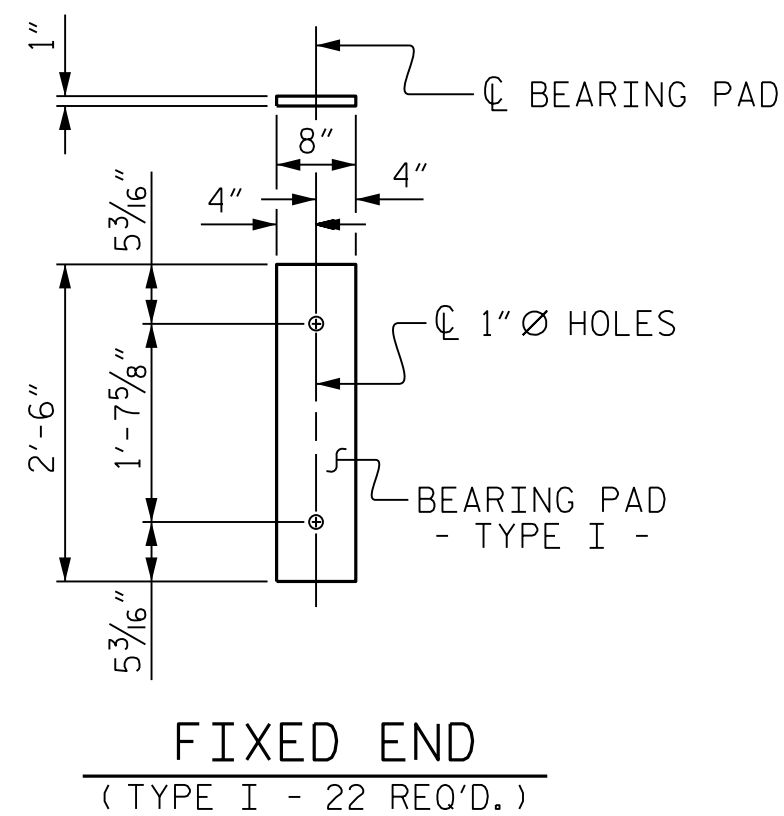
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 PLAN OF 35' UNIT  
 30'-10" CLEAR ROADWAY  
 75° SKEW  
 SPAN A

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

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-7
2			4			TOTAL SHEETS 20

DRAWN BY: B.E. LANNING DATE: 12/16  
 CHECKED BY: B.E. ATKINSON DATE: 01/17  
 DESIGN ENGINEER OF RECORD: B.E. ATKINSON DATE: 03/17



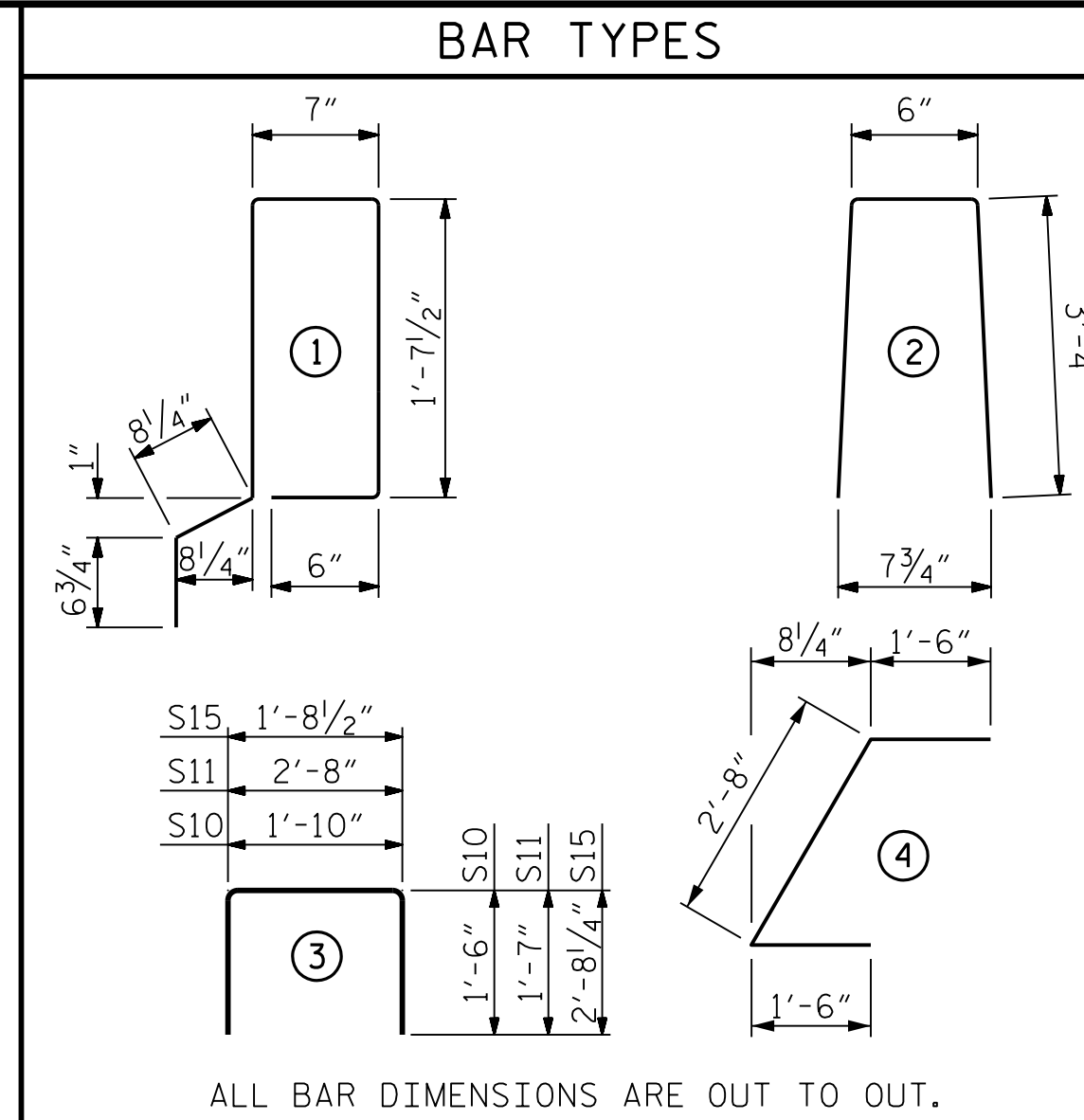
**ELASTOMERIC BEARING DETAILS**

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

CORED SLABS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
35' UNIT			
EXTERIOR C.S.	2	35'-0"	70'-0"
INTERIOR C.S.	9	35'-0"	315'-0"
TOTAL	11		385'-0"

DEAD LOAD DEFLECTION AND CAMBER	
3'-0" x 2'-0"	
35' CORED SLAB UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1/4" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	1/16" ↓
FINAL CAMBER	3/16" ↑

\*\* INCLUDES FUTURE WEARING SURFACE



ALL BAR DIMENSIONS ARE OUT TO OUT.

**NOTES**

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

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

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

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

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

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

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

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

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A 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.

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

MAINTAIN A SYMMETRIC TENSION FORCE BETWEEN EACH PAIR OF TRANSVERSE POST TENSIONING STRANDS IN THE DIAPHRAGM.

THE #4 S11 STIRRUPS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO THE GROUTED RECESS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

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

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

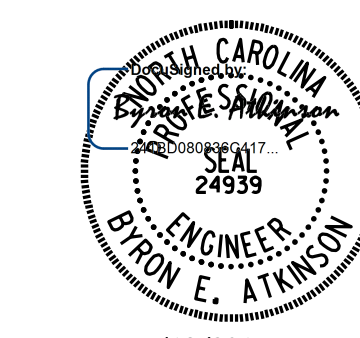
THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.

POST-TENSIONING SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

CONCRETE RELEASE STRENGTH	
UNIT	PSI
35' UNIT	4000

PROJECT NO. 17BP.8.R.115  
RANDOLPH COUNTY  
 STATION: 17+24.00 -L-

SHEET 3 OF 6



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 3'-0" X 2'-0"  
 PRESTRESSED CONCRETE  
 CORED SLAB UNIT  
 SPAN A

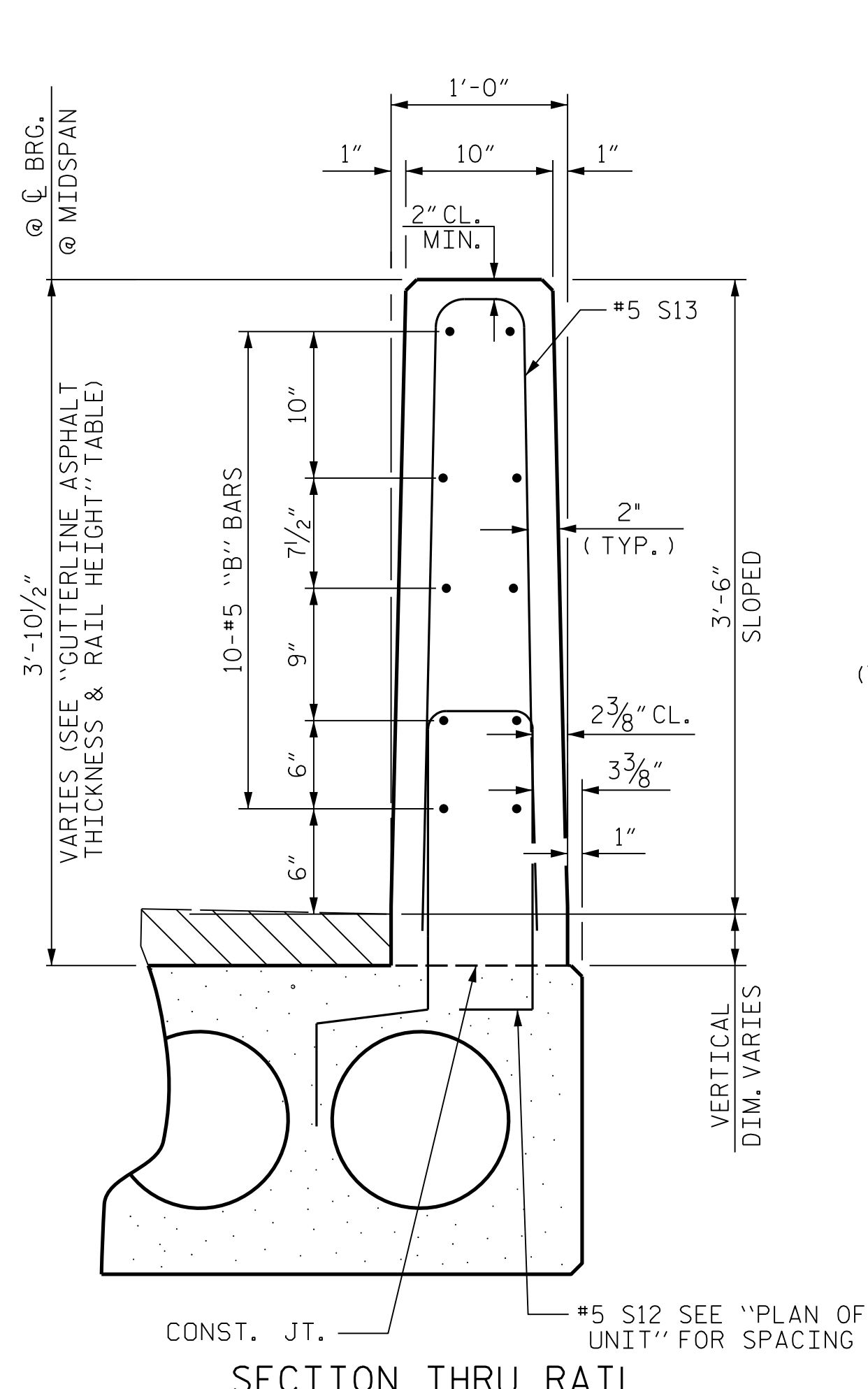
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED					
MI ENGINEERING			REVISIONS		
1011 SCHAUB DRIVE, SUITE 100 RALEIGH, NC 27606 (919) 851-6606 FIRM PE NUMBER : P-0671			NO.	BY:	DATE:
			1		
			2		
			3		
			4		

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
	ASPHALT OVERLAY THICKNESS	RAIL HEIGHT
	@ MID-SPAN	@ MID-SPAN
35' UNIT	3 3/16"	3'-10 3/16"

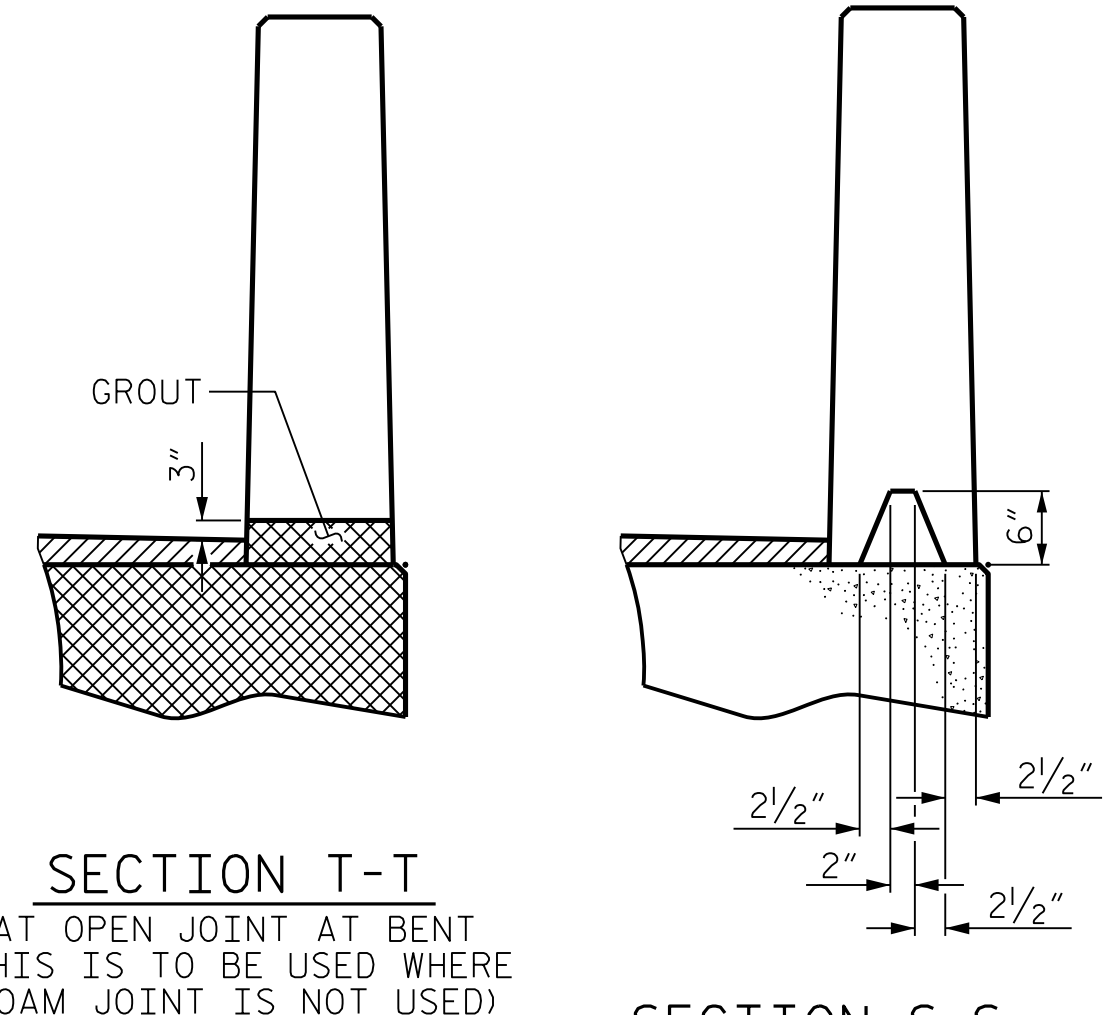
GRADE 270 STRANDS	
	0.6" Ø L.R.
AREA ( SQUARE INCHES )	0.217
ULTIMATE STRENGTH (LBS. PER STRAND )	58,600
APPLIED PRESTRESS (LBS. PER STRAND )	43,950

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
35' UNIT						
*B10	80	80	#5	STR	10'-5"	869
*S13	88	88	#5	2	7'-2"	658
*EPOXY COATED REINFORCING STEEL					LBS.	1527
CLASS AA CONCRETE					CU.YDS.	9.1
TOTAL VERTICAL CONCRETE BARRIER RAIL					LN. FT.	70.25

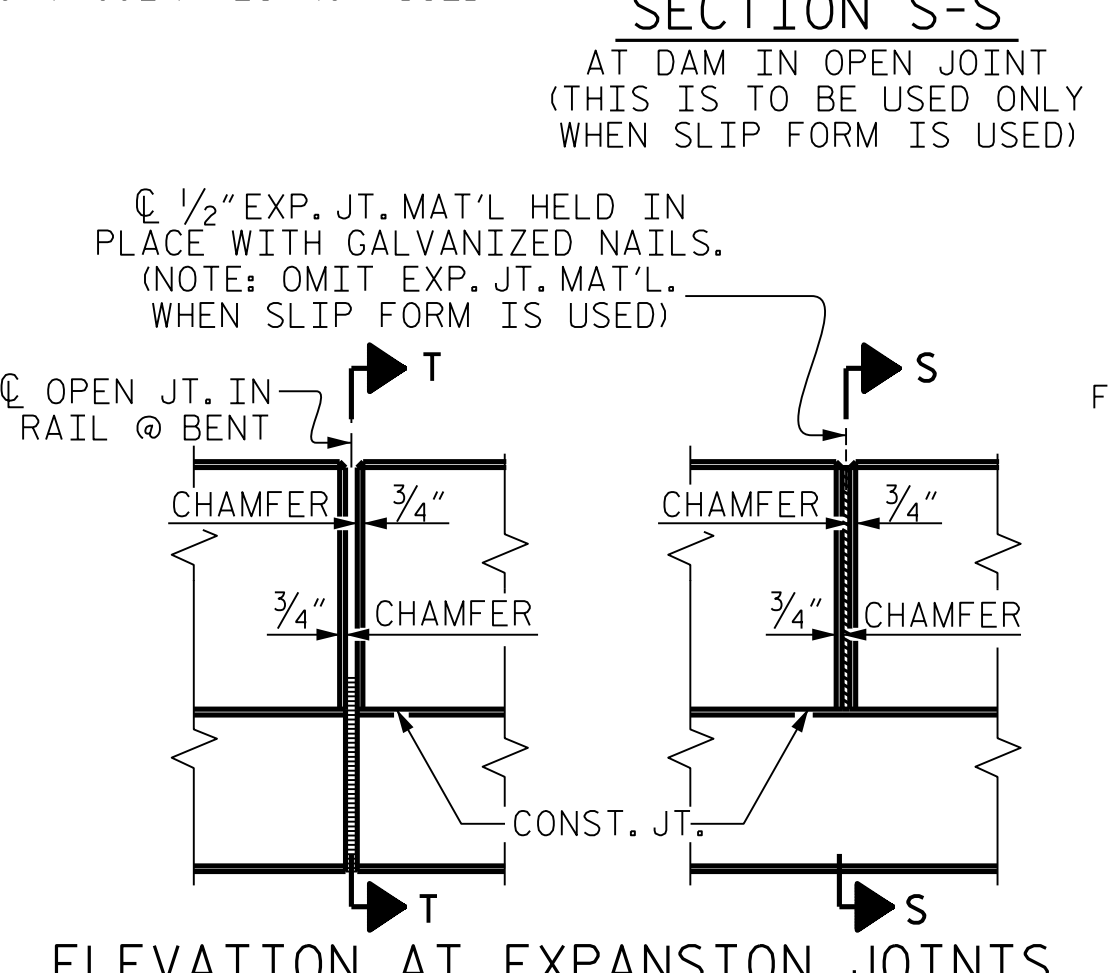
BILL OF MATERIAL FOR ONE 35' CORED SLAB UNIT							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT LENGTH	EXTERIOR UNIT WEIGHT	INTERIOR UNIT LENGTH	INTERIOR UNIT WEIGHT
B3	4	#4	STR	18'-3"	49	18'-3"	49
S10	8	#5	3	4'-10"	40	4'-10"	40
S11	78	#4	3	5'-10"	304	5'-10"	304
*S12	44	#5	1	5'-7"	256		
S14	4	#4	4	5'-8"	15	5'-8"	15
S15	4	#5	3	7'-1"	30	7'-1"	30
REINFORCING STEEL				LBS.	438	438	
*EPOXY COATED REINFORCING STEEL				LBS.	256		
5000 P.S.I. CONCRETE				CU. YDS.	6.3	6.3	
0.6" Ø L.R. STRANDS				No.	9	9	



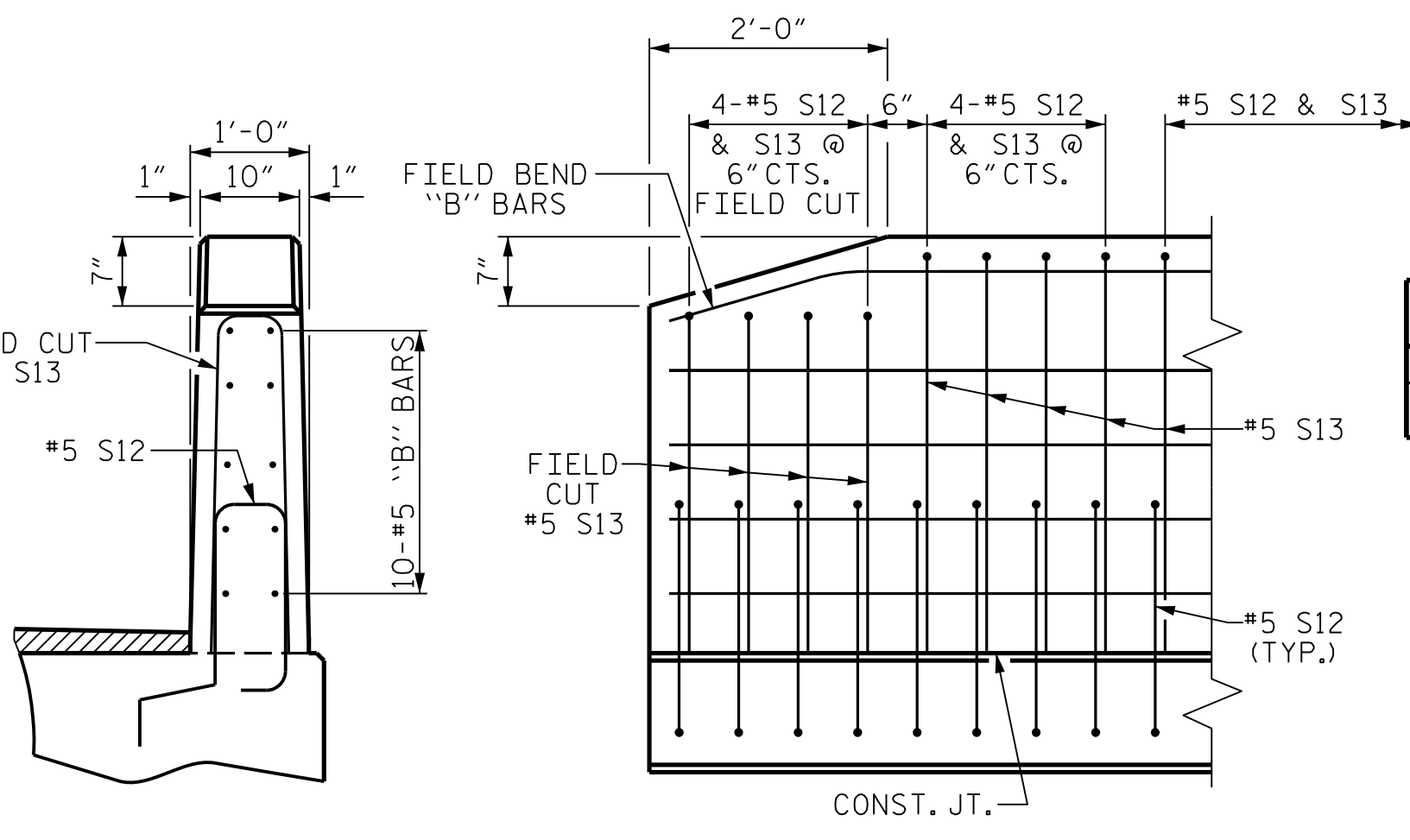
SECTION THRU RAIL



SECTION T-T AT OPEN JOINT AT BENT (THIS IS TO BE USED WHERE FOAM JOINT IS NOT USED)



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



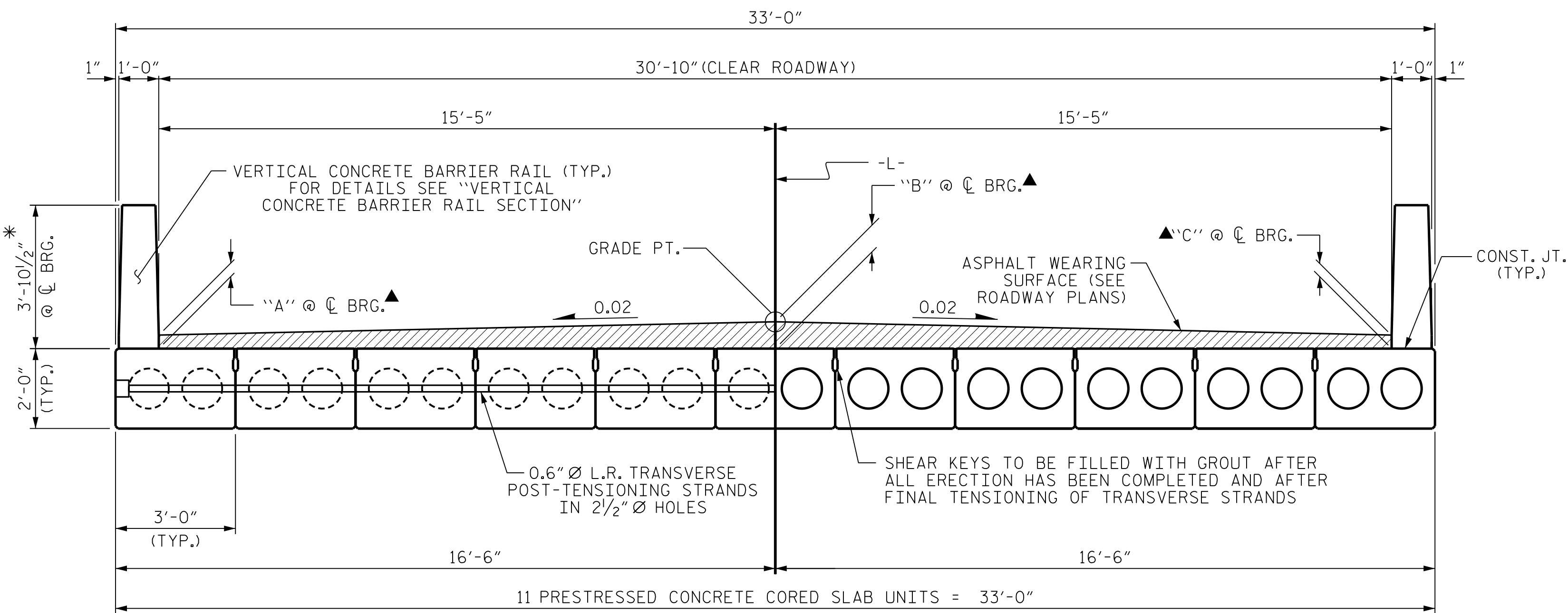
END VIEW SIDE VIEW

**END OF RAIL DETAILS**

4/18/2017 11:49:12 AM User: blanning File: P:\NC Bridges\MI6005.CH Eng. Div. 8 Br. Repl. 16 Bridges\MI6005.02.Randolph 128\17BP8R115\Structures\401.013.17BP8R115.SMU.CS\3.dgn

DRAWN BY : B.E. LANNING	DATE : 12/16
CHECKED BY : B.E. ATKINSON	DATE : 01/17
DESIGN ENGINEER OF RECORD : B.E. ATKINSON	DATE : 03/17

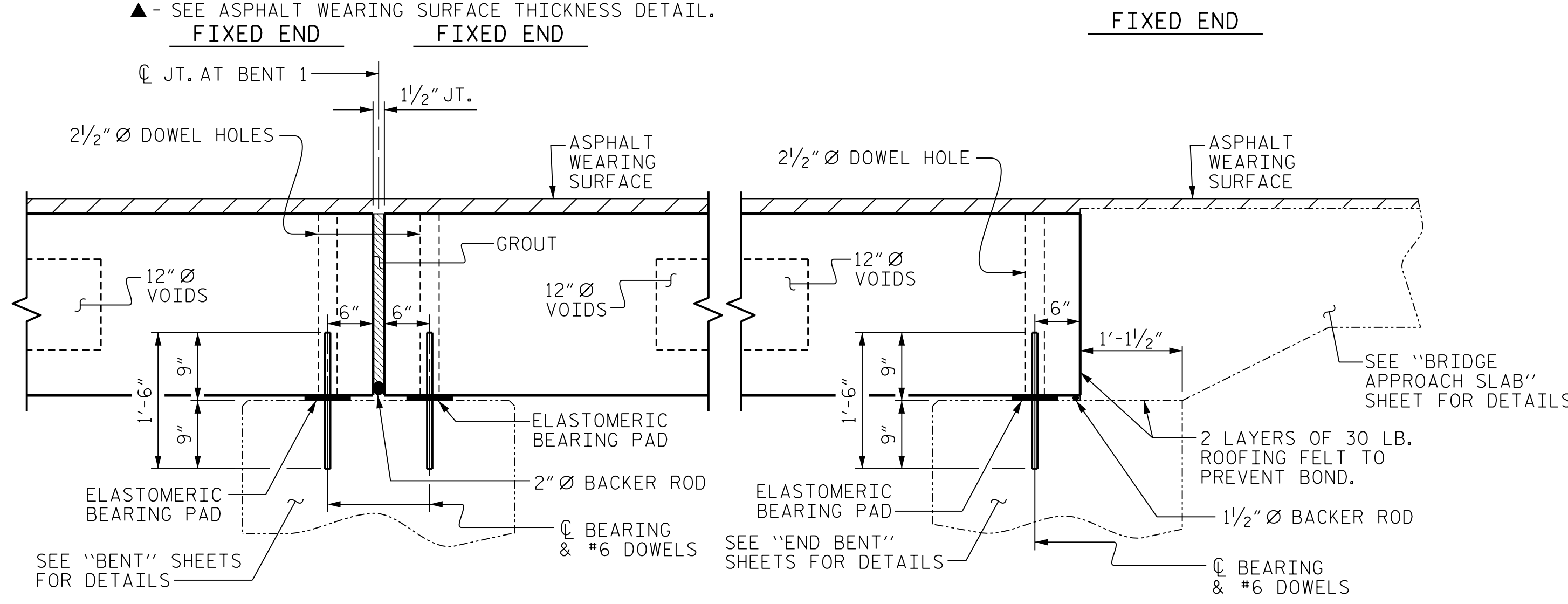
SHEET NO.	
S-8	
TOTAL SHEETS	
20	



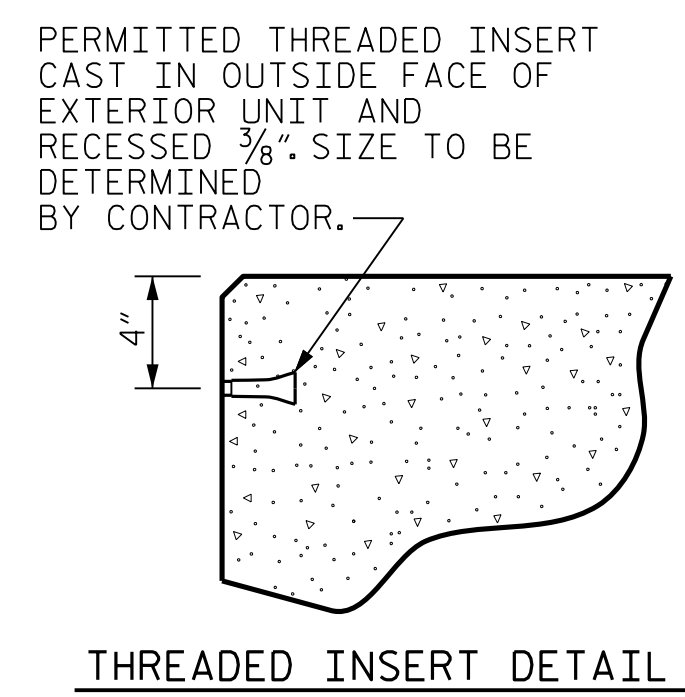
HALF SECTION AT INTERMEDIATE DIAPHRAGMS  
**TYPICAL SECTION**  
 HALF SECTION THROUGH VOIDS  
 FIXED END

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

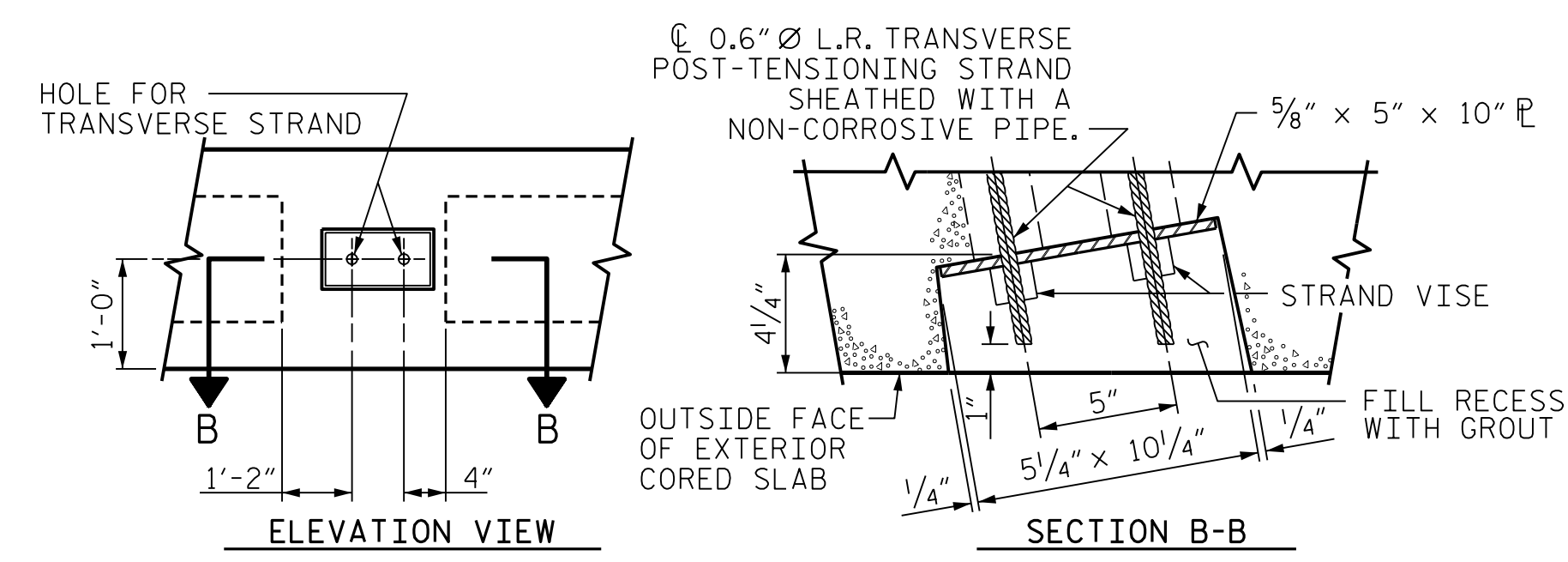
▲ - SEE ASPHALT WEARING SURFACE THICKNESS DETAIL.



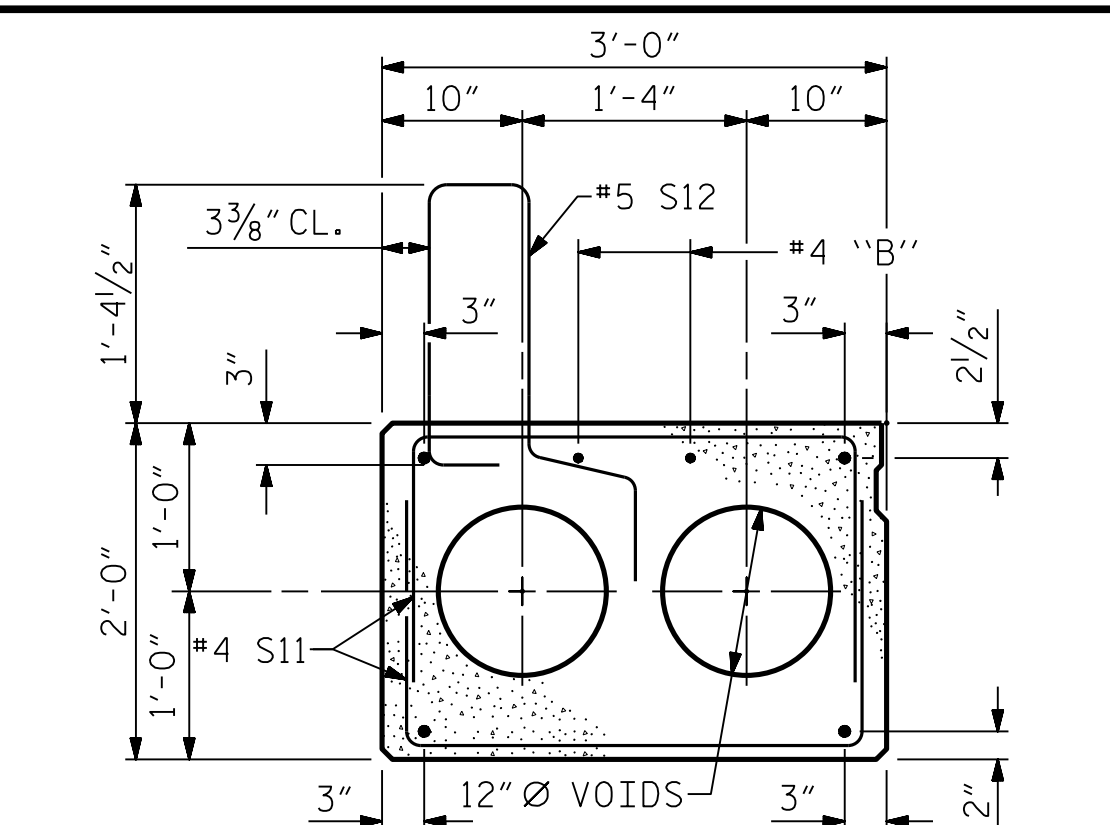
**SECTION AT BENT 1**  
**SECTION AT END BENT 2**



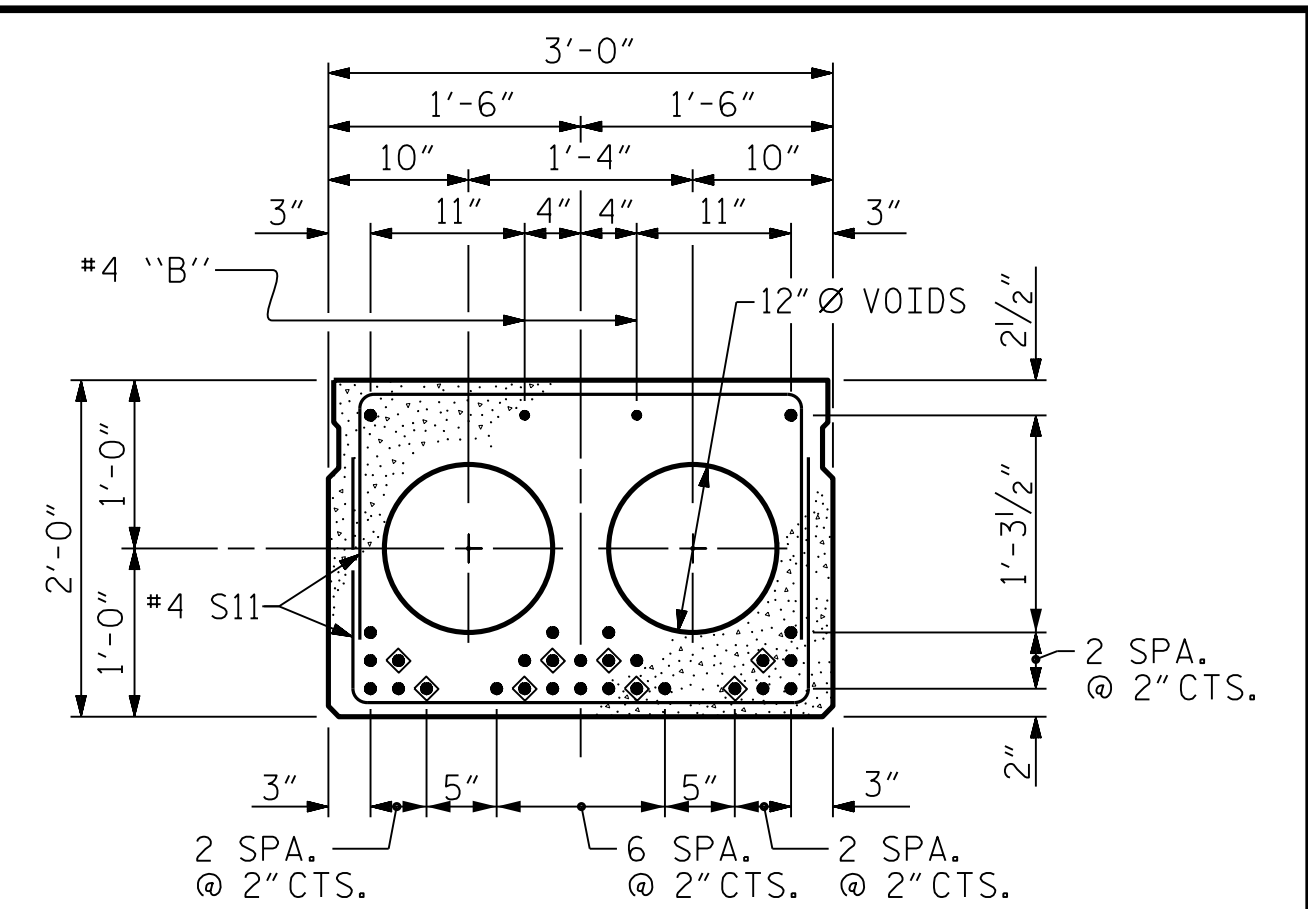
**THREADED INSERT DETAIL**



**ELEVATION VIEW**  
**SECTION B-B**  
**GROUTED RECESS AT END OF POST-TENSIONED STRAND-CORED SLABS**



**EXTERIOR SLAB SECTION**  
 (FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)

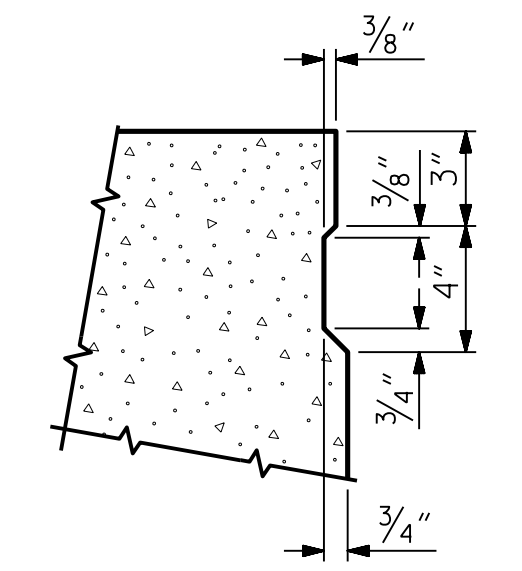


**INTERIOR SLAB SECTION (70' UNIT)**  
 (28 STRANDS REQUIRED)

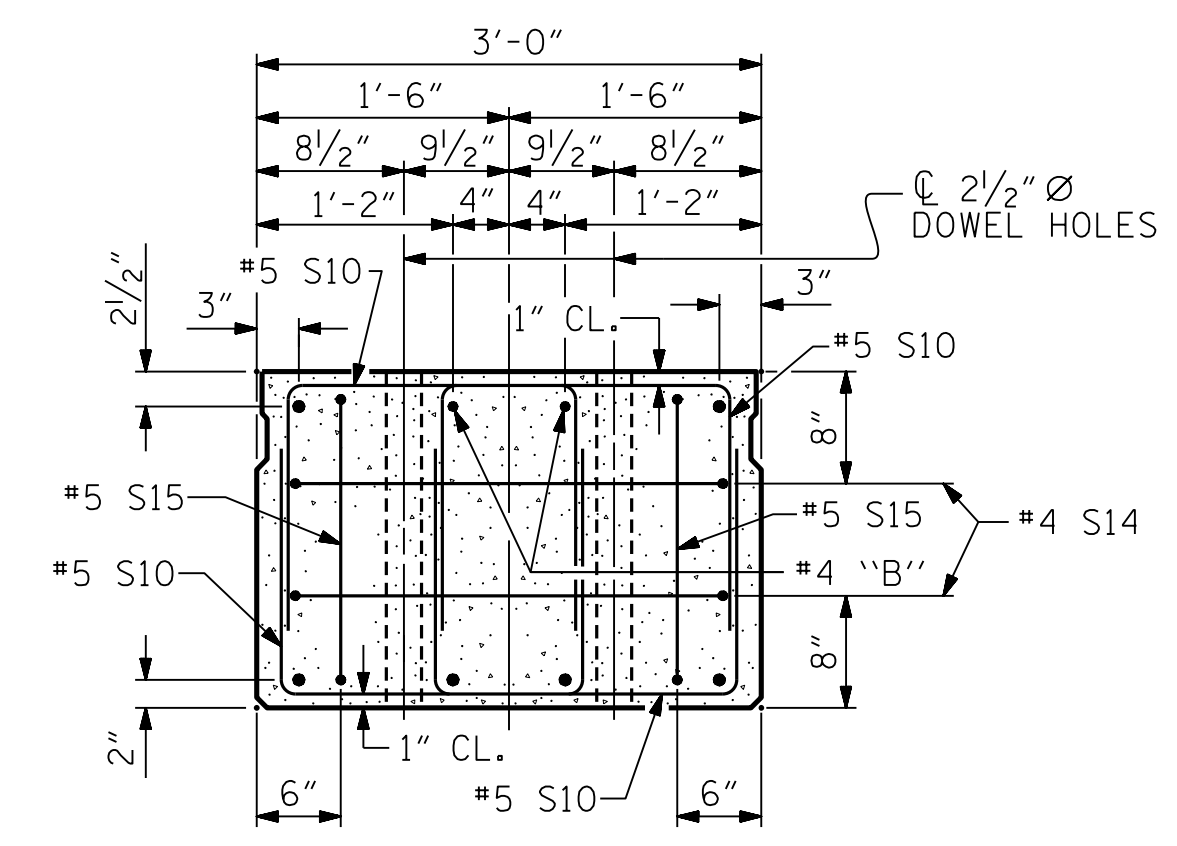
**0.6" Ø LOW RELAXATION STRAND LAYOUT**

◆ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 12'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

**DEBONDING LEGEND**



**SHEAR KEY DETAIL**  
 NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.



**END ELEVATION**  
 SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.)  
 INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.

**ASPHALT WEARING SURFACE THICKNESS**

NOTE: AWS THICKNESS INCLUDES IMPACT OF SAG VERTICAL CURVE AND BRIDGE SKEW.

	BENT 1	END BENT 2
DIM. "A"	3 1/2"	3 1/2"
DIM. "B"	7 1/4"	7 1/2"
DIM. "C"	3 1/2"	4 3/16"

PROJECT NO. **17BP.8.R.115**

**RANDOLPH** COUNTY

STATION: **17+24.00 -L-**

SHEET 4 OF 6



4/18/2017

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

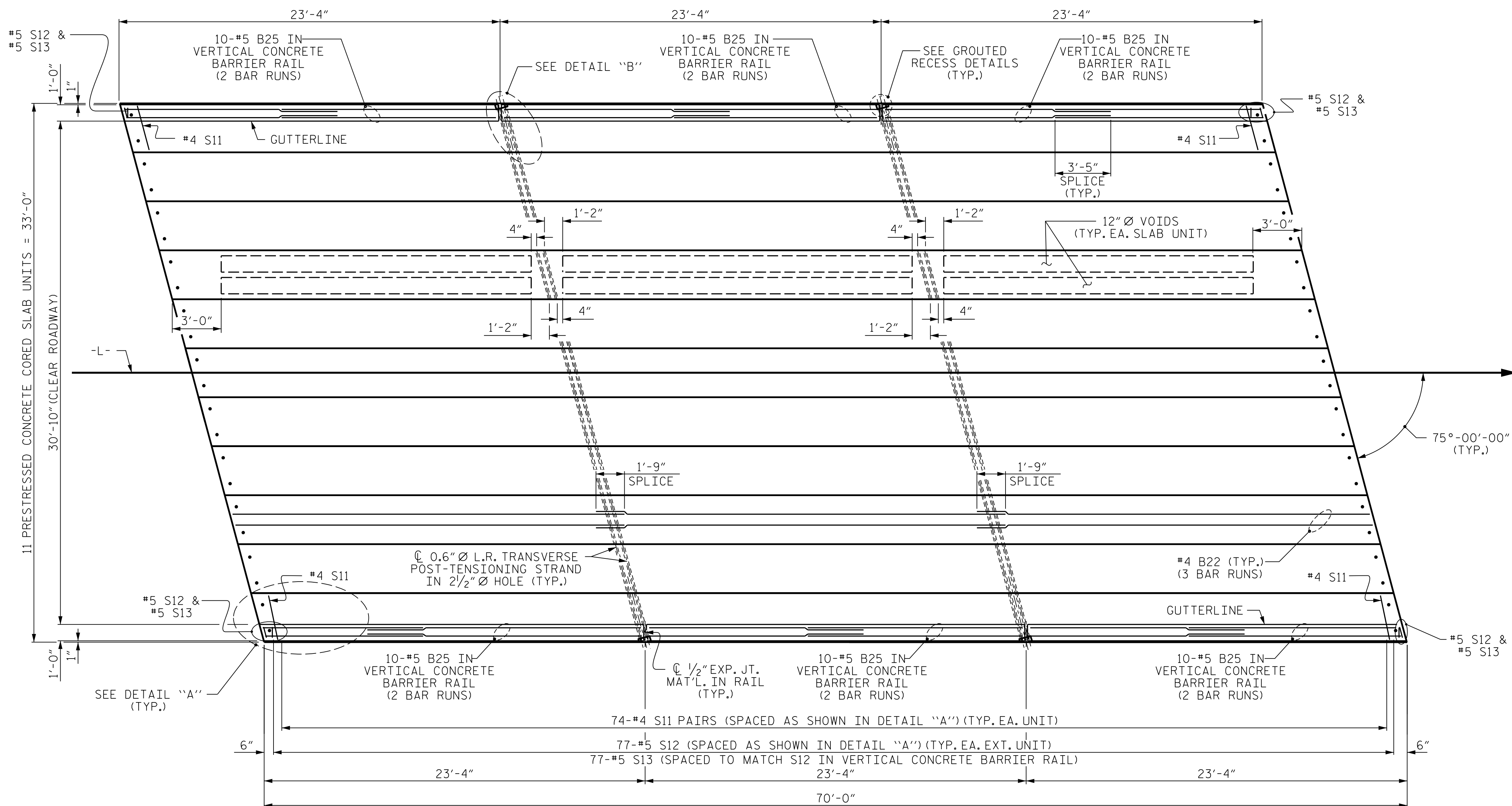
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 3'-0" X 2'-0"  
 PRESTRESSED CONCRETE  
 CORED SLAB UNIT  
 SPAN B

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-9
2			4			TOTAL SHEETS 20

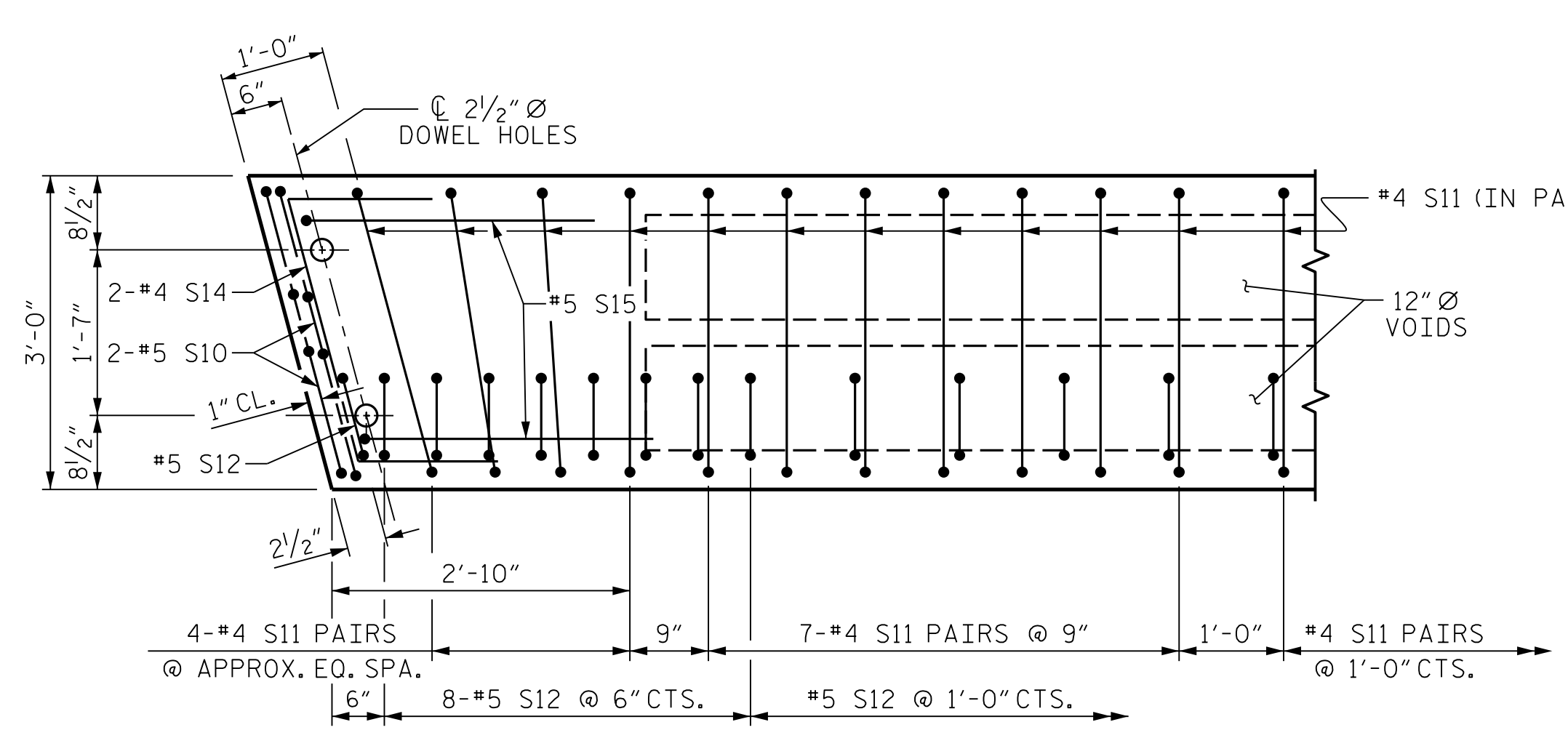
STD. NO. 24PCS4\_33\_75S

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ASSEMBLED BY: B.E. LANNING	DATE: 12/16
CHECKED BY: B.E. ATKINSON	DATE: 01/17
DESIGN ENGINEER OF RECORD: B.E. ATKINSON	DATE: 03/17
DRAWN BY: MAA 6/10	REV. 9/14 MAA/TMG
CHECKED BY: MKT 7/10	

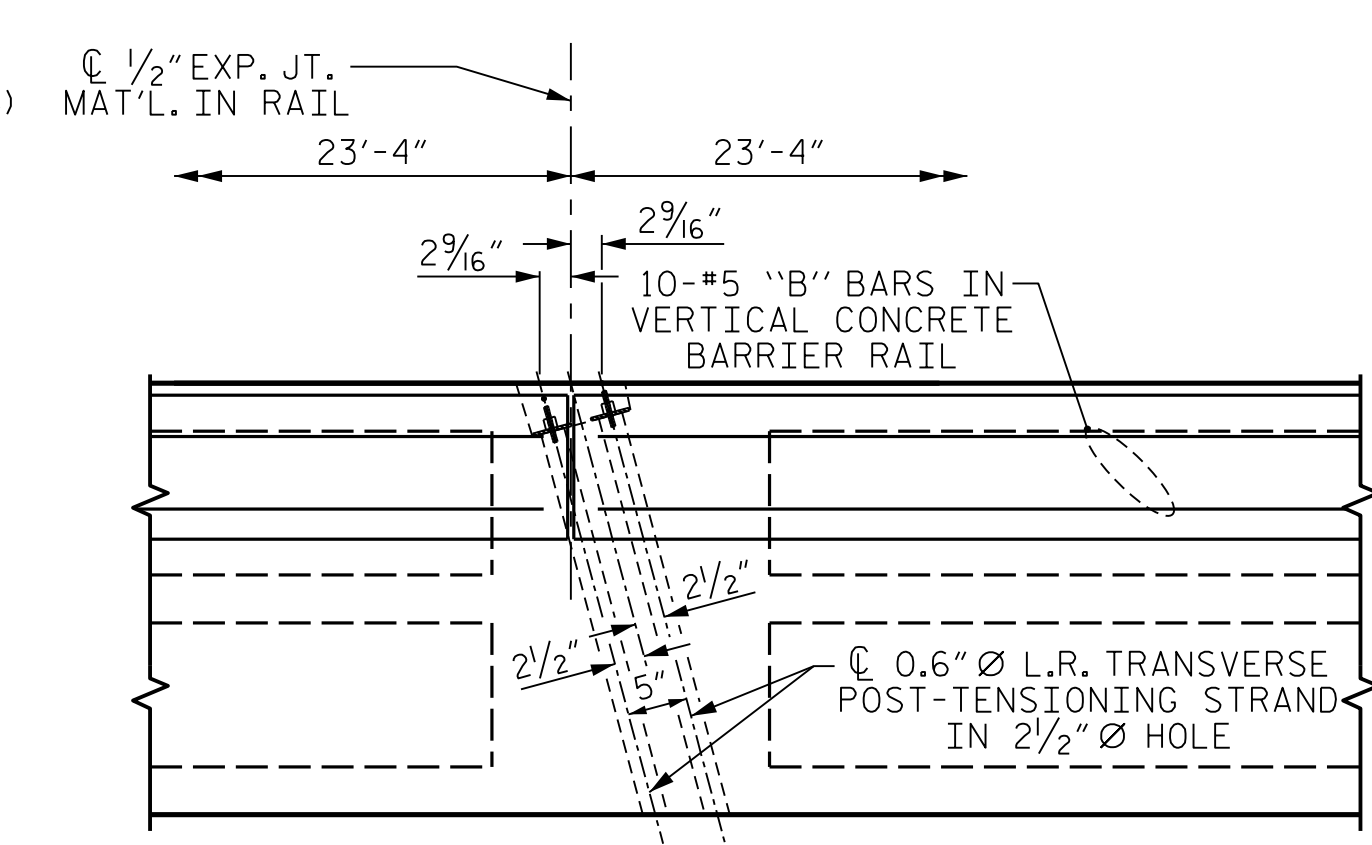


PLAN OF UNIT



DETAIL "A"

(SIMILAR EACH END OF UNIT)  
 NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S12 BARS.

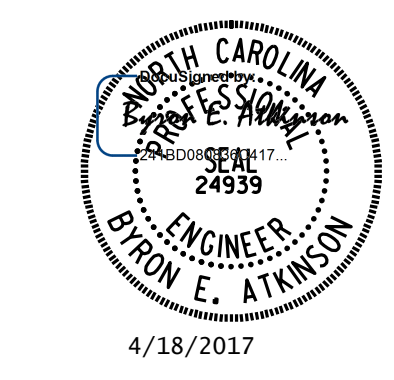


DETAIL "B"

#4 S11 BARS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO GROUDED RECESS AND 2 1/2" Ø TRANSVERSE POST-TENSIONING STRAND HOLES

4/18/2017 11:49:17 AM User: blanning  
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ASSEMBLED BY: B.E. LANNING	DATE: 12/16
CHECKED BY: B.E. ATKINSON	DATE: 01/17
DESIGN ENGINEER OF RECORD: B.E. ATKINSON	DATE: 03/17
DRAWN BY: MAA 6/10	REV. 12/5/11 MAA/AAC
CHECKED BY: MKT 7/10	REV. 8/14 MAA/TMG



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

PROJECT NO. 17BP.8.R.115  
 RANDOLPH COUNTY  
 STATION: 17+24.00 -L-  
 SHEET 5 OF 6

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 PLAN OF 70' UNIT  
 30'-10" CLEAR ROADWAY  
 75° SKEW  
 SPAN B

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10	
1			3			TOTAL SHEETS 20	
2			4				

STD. NO. 24PCS\_33.75S\_70L



NOTES

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

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

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

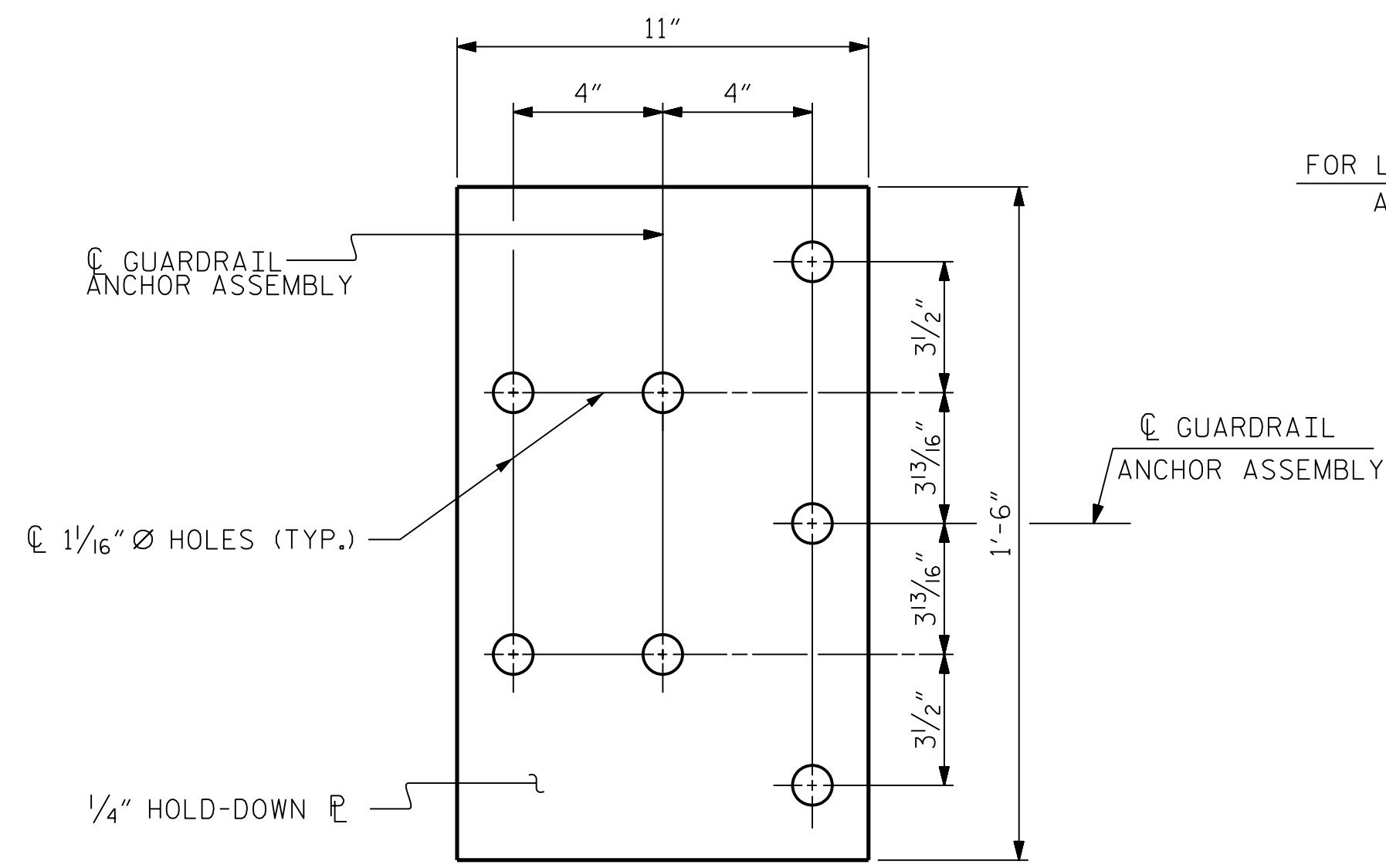
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

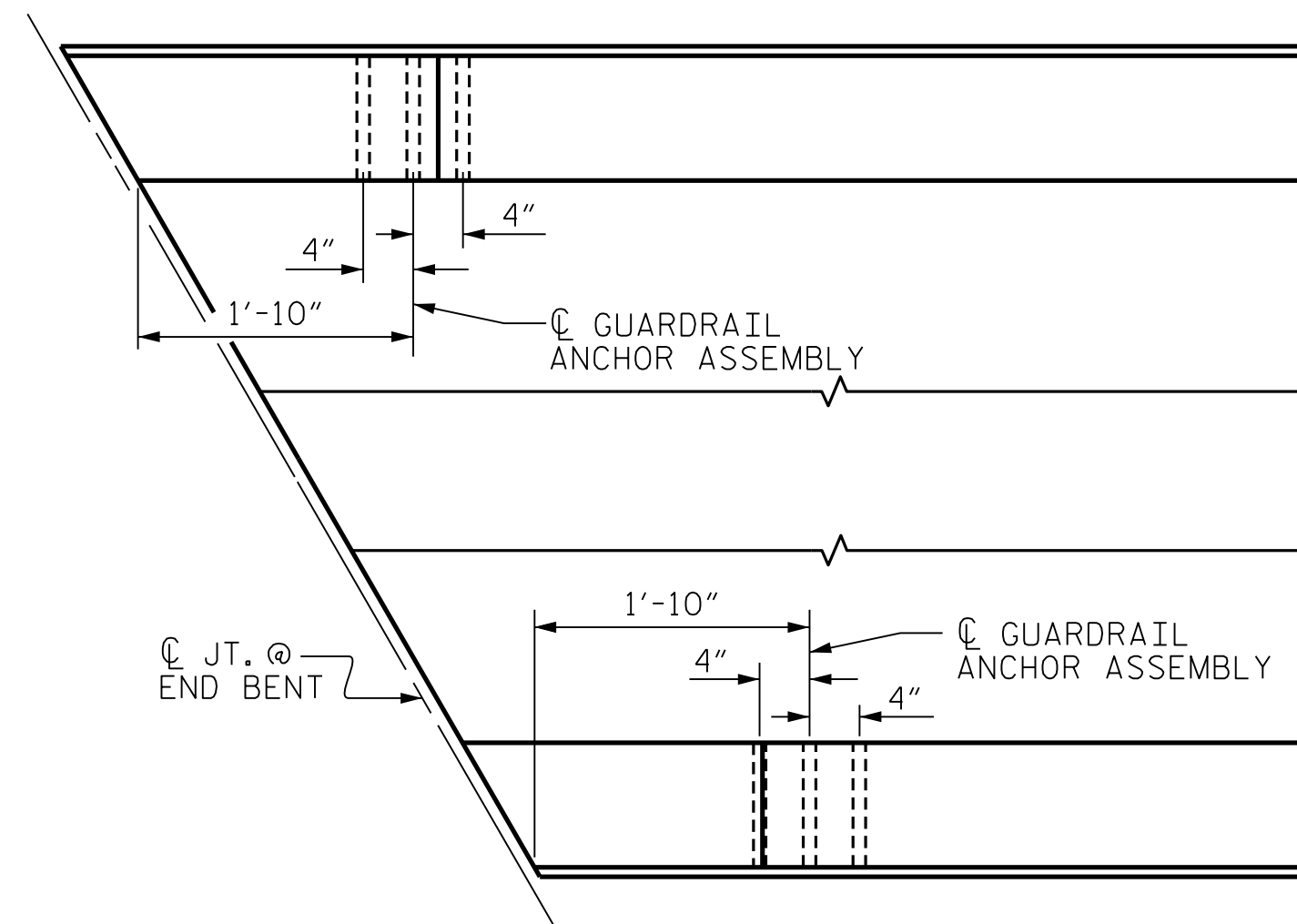
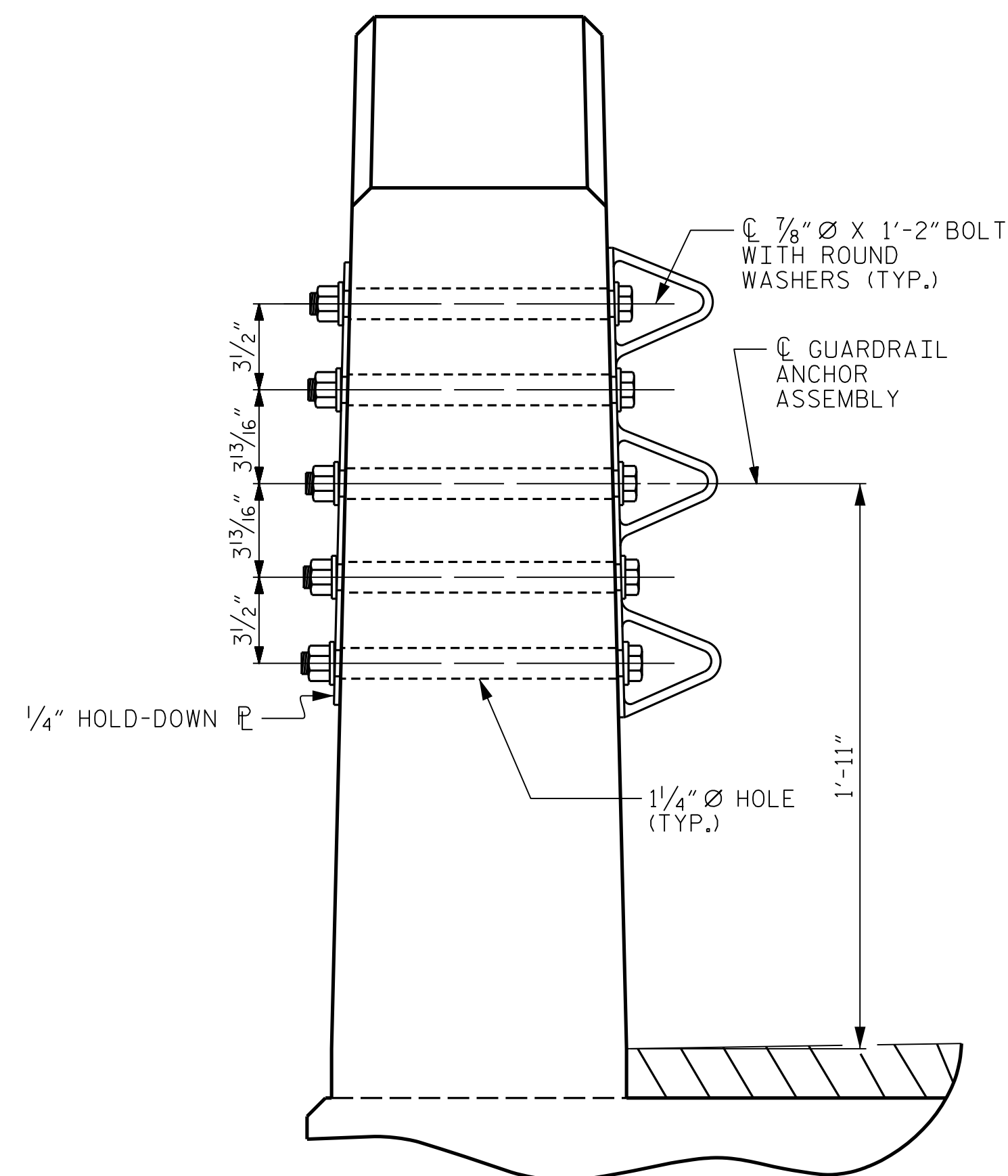
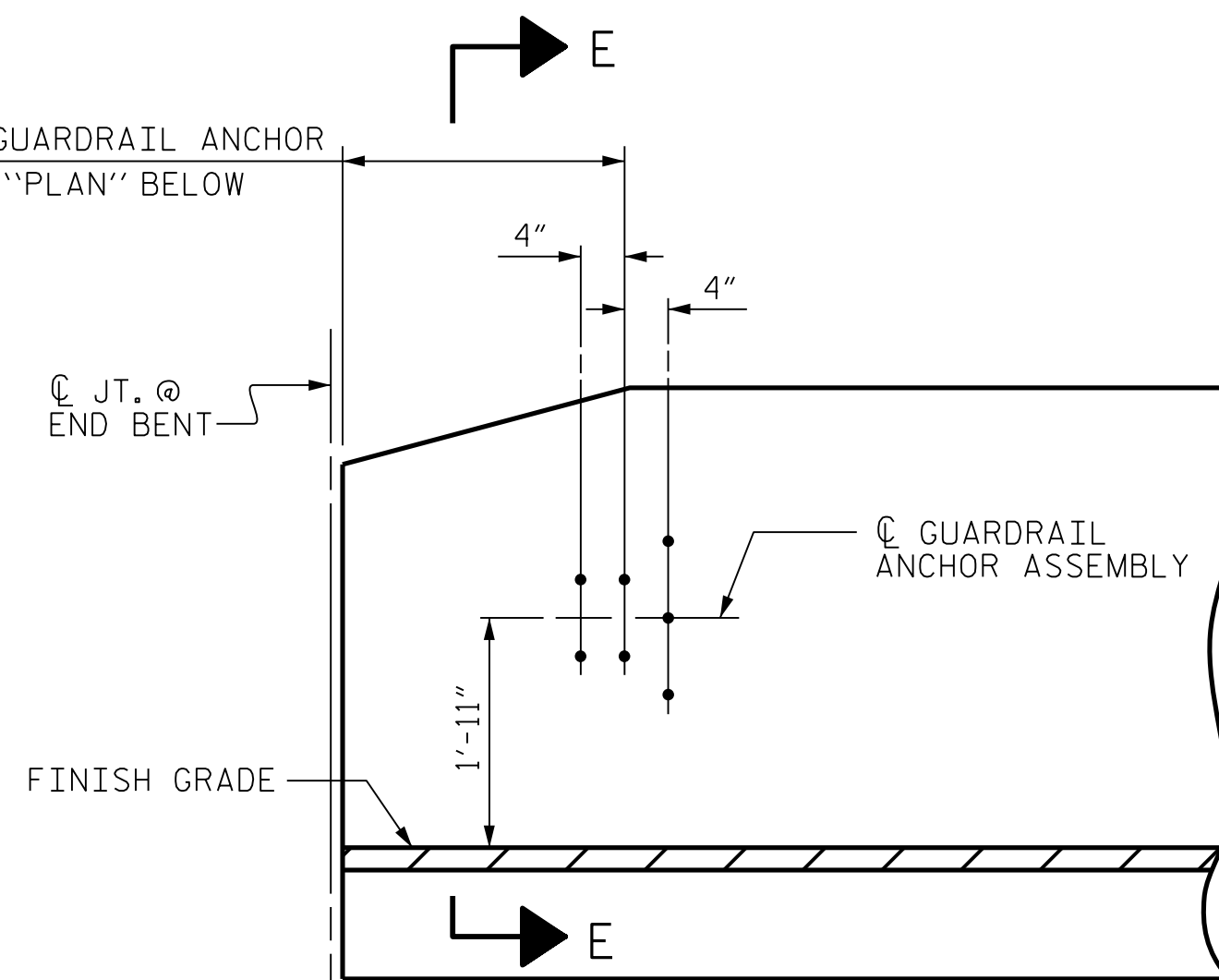
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.

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

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

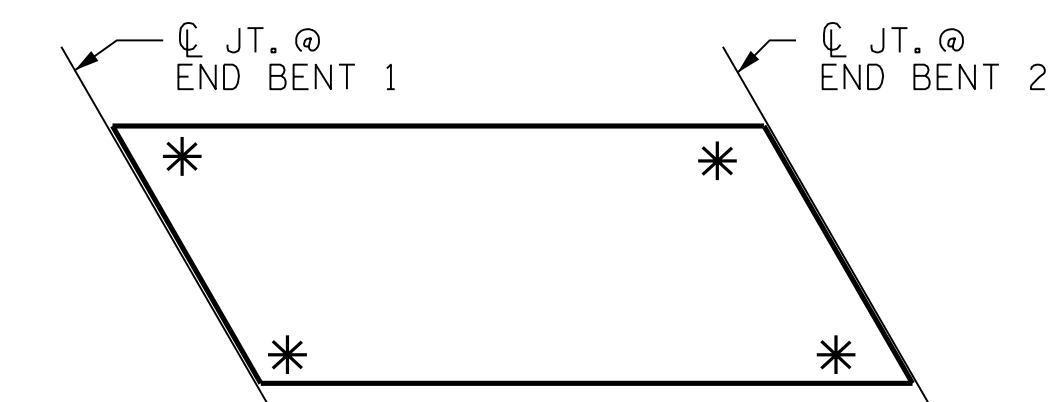


FOR LOCATION OF GUARDRAIL ANCHOR ASSEMBLY, SEE "PLAN" BELOW



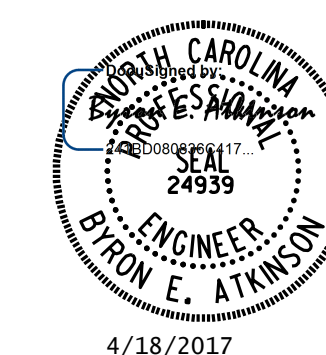
LOCATION OF ANCHORS FOR GUARDRAIL

END BENT 1 SHOWN, END BENT 2 SIMILAR.



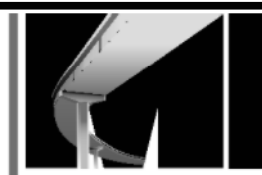
\* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. 17BP.8.R.115  
RANDOLPH COUNTY  
 STATION: 17+24.00 -L-



4/18/2017

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

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-12
2			4			TOTAL SHEETS 20

(SHT 1b) STD. NO. GRA3

ASSEMBLED BY: B.E. LANNING	DATE: 12/16
CHECKED BY: B.E. ATKINSON	DATE: 01/17
DESIGN ENGINEER OF RECORD: B.E. ATKINSON	DATE: 03/17
DRAWN BY: MAA 5/10	REV. 12/5/11 MAA/GM
CHECKED BY: GM 5/10	REV. 6/13 MAA/GM
	REV. 1/15 MAA/TMG

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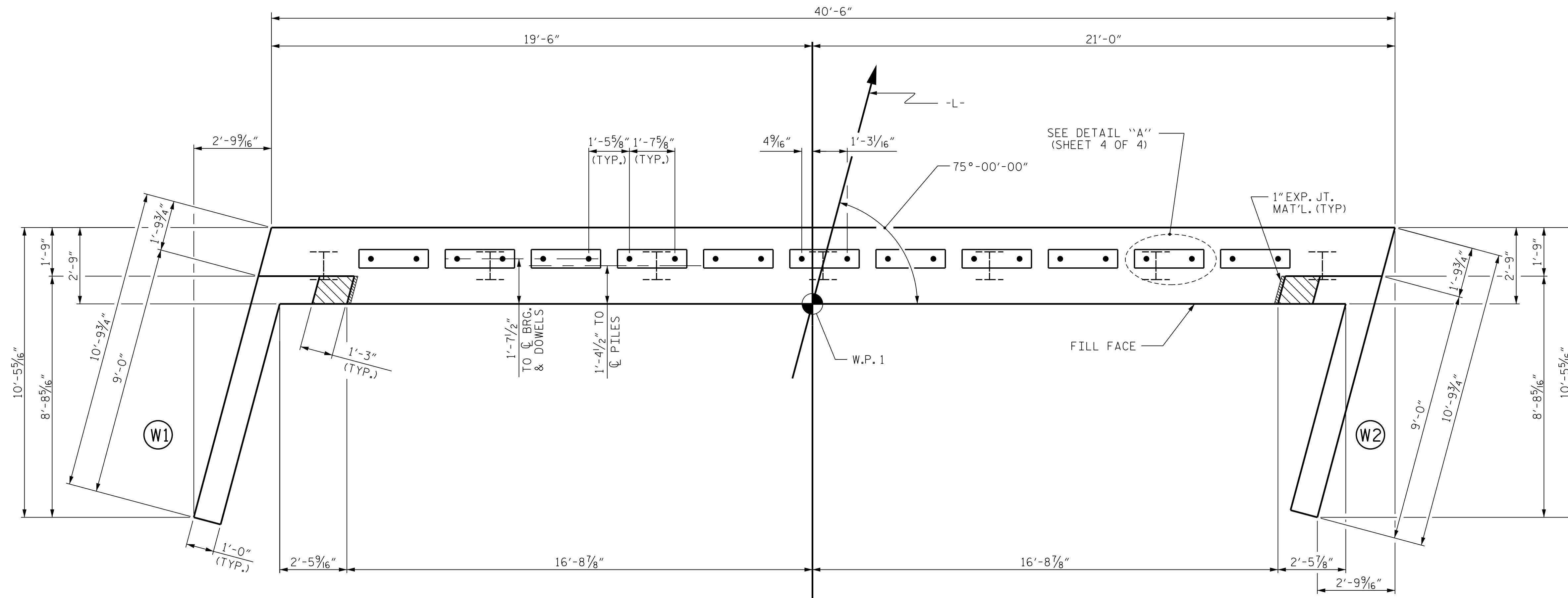
**NOTES**

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

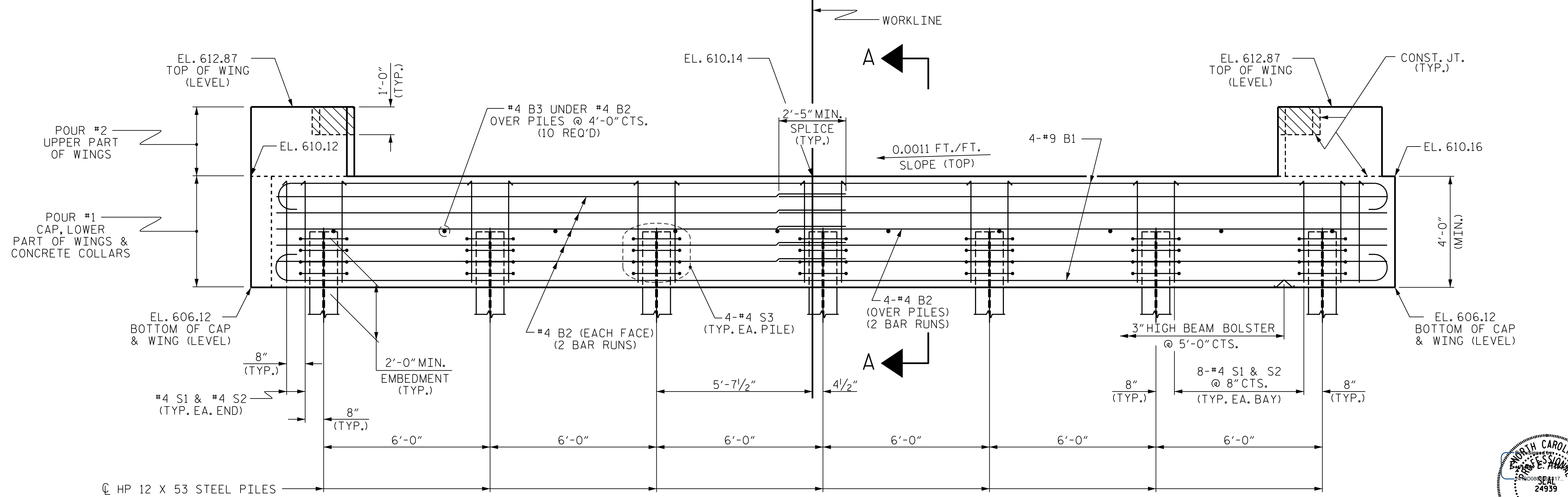
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



**PLAN**



**ELEVATION**

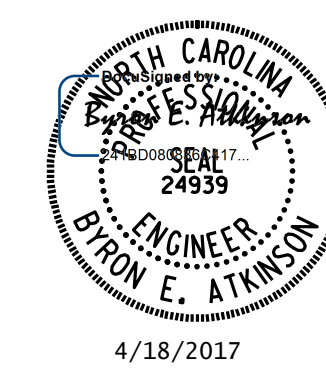
WINGS NOT SHOWN FOR CLARITY.  
FOR SECTION A-A, SEE SHEET 4 OF 4.  
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.  
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

PROJECT NO. 17BP.8.R.115  
RANDOLPH COUNTY  
STATION: 17+24.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
END BENT No. 1



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

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			20

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ASSEMBLED BY: B.E. LANNING	DATE: 12/16
CHECKED BY: B.E. ATKINSON	DATE: 03/17
DESIGN ENGINEER OF RECORD: B.E. ATKINSON	DATE: 03/17
DRAWN BY: W.JH 12/11	REV. 4/15
CHECKED BY: AAC 12/11	MAA/TMG



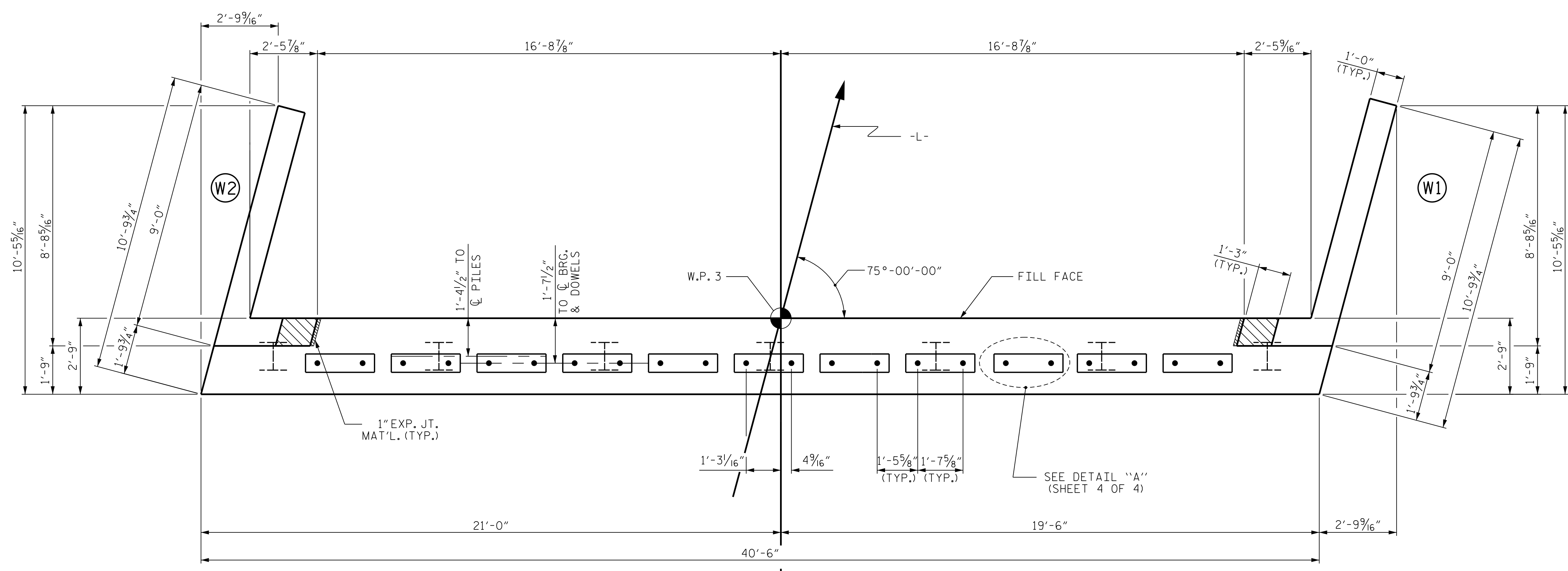
**NOTES**

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

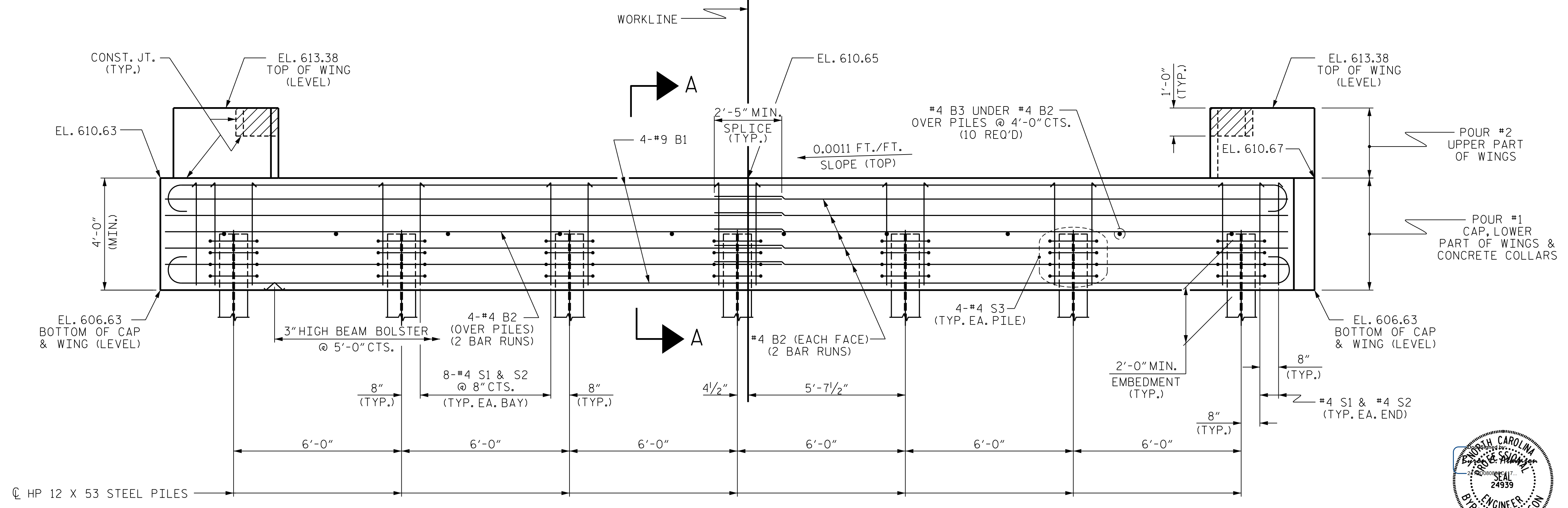
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



**PLAN**



**ELEVATION**

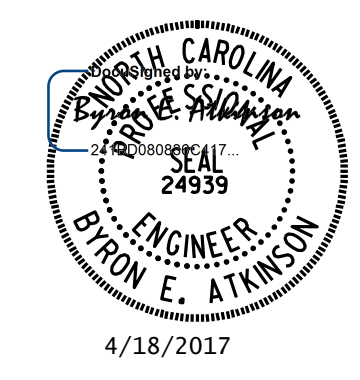
WINGS NOT SHOWN FOR CLARITY.  
 FOR SECTION A-A, SEE SHEET 4 OF 4.  
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.  
 SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

PROJECT NO. 17BP.8.R.115  
RANDOLPH COUNTY  
 STATION: 17+24.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT No. 2



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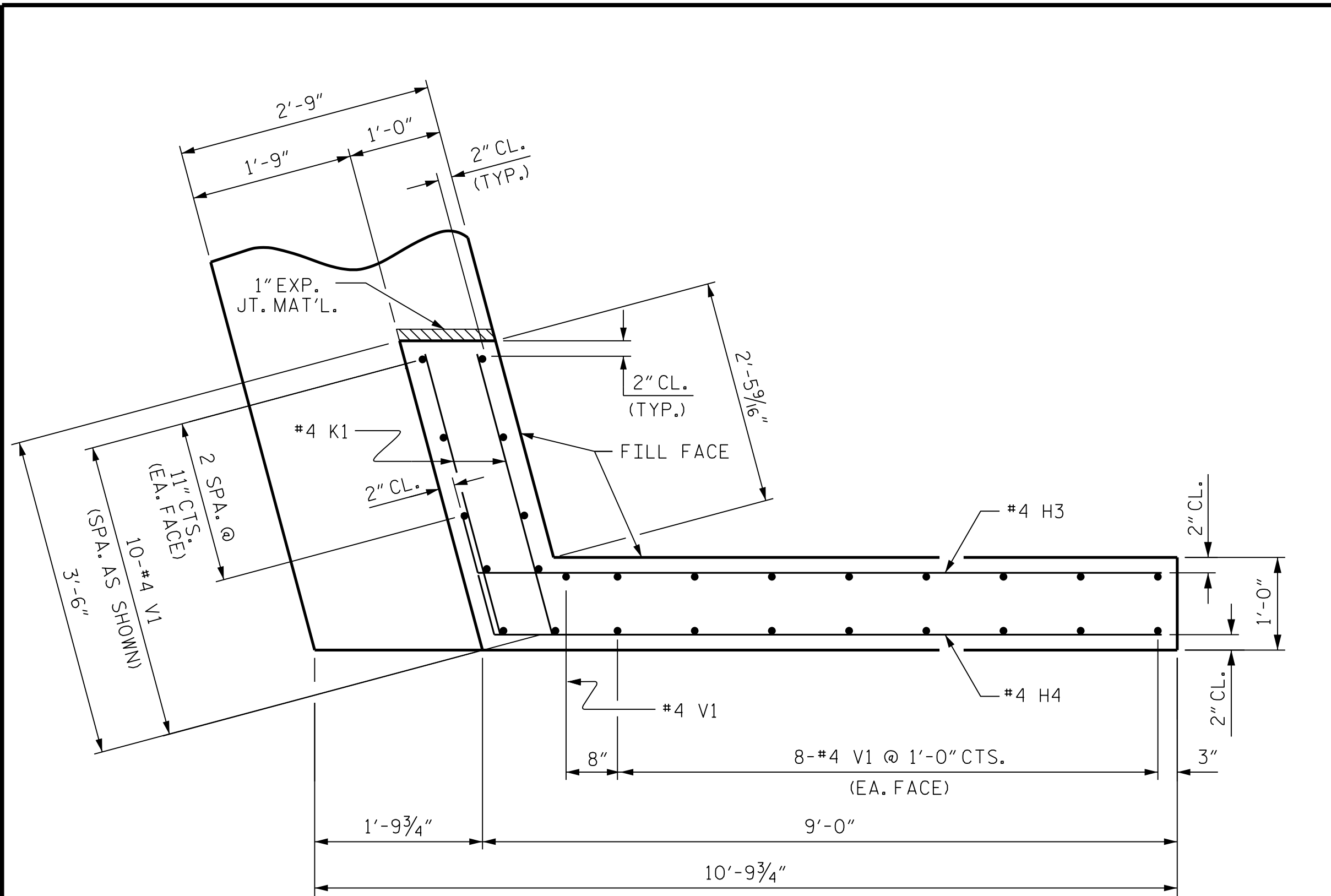
MI ENGINEERING  
 1011 SCHAUB DRIVE, SUITE 100  
 RALEIGH, NC 27606  
 (919) 851-6606  
 FIRM PE NUMBER: P-0671

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

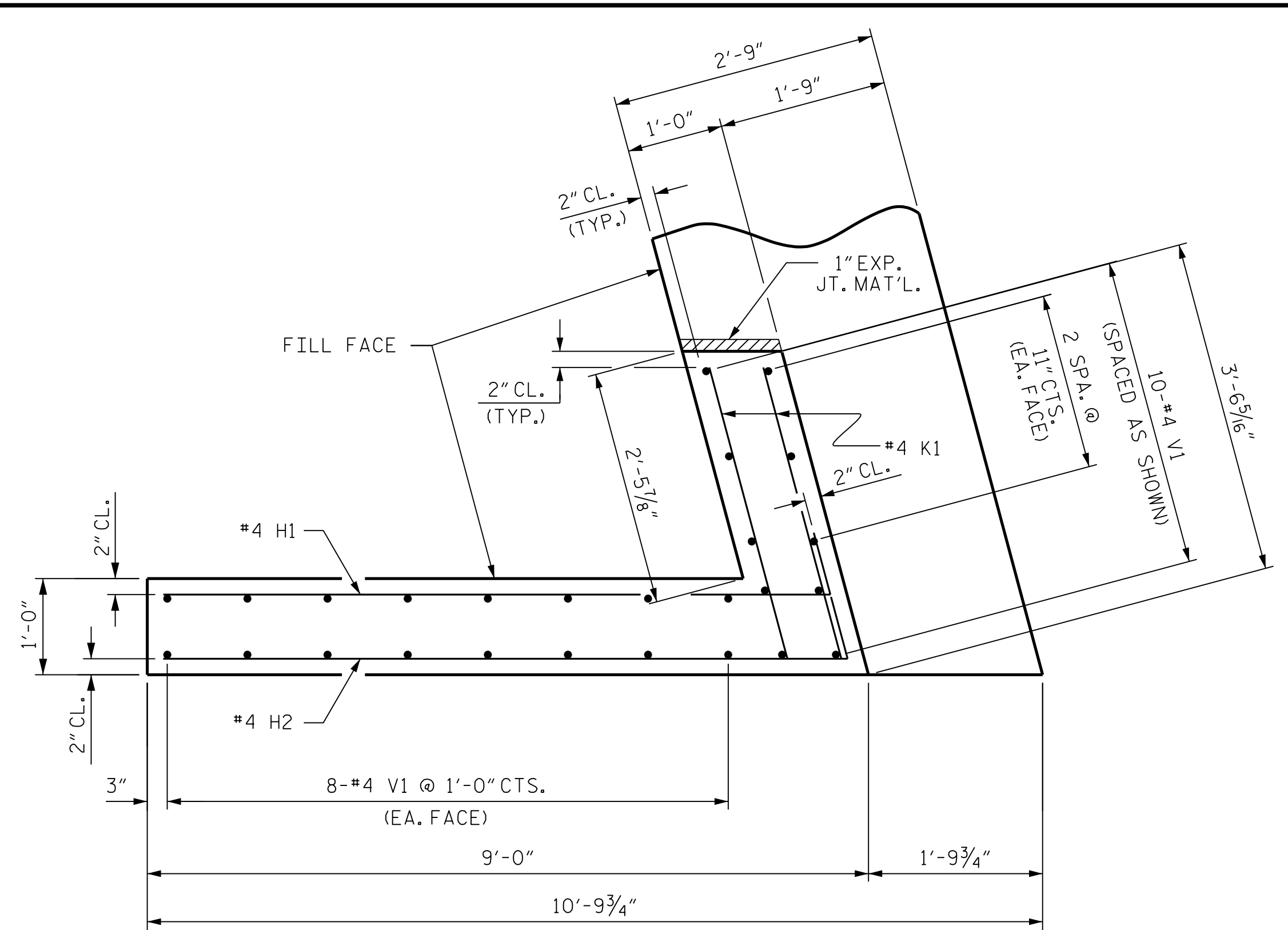
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ASSEMBLED BY: B.E. LANNING	DATE: 12/16
CHECKED BY: B.E. ATKINSON	DATE: 03/17
DESIGN ENGINEER OF RECORD: B.E. ATKINSON	DATE: 03/17
DRAWN BY: WJH 12/11	REV. 4/15
CHECKED BY: AAC 12/11	MAA/TMG

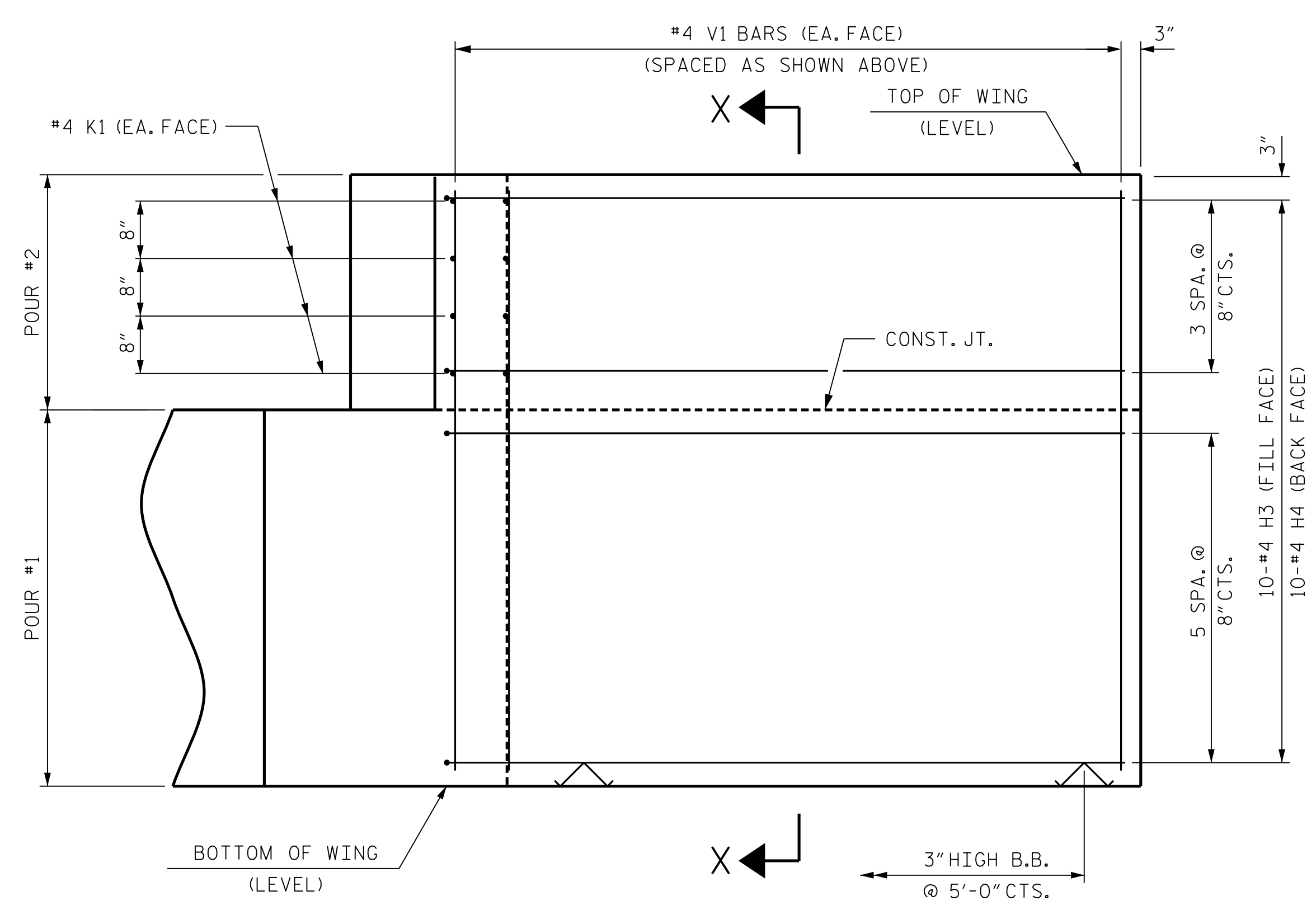
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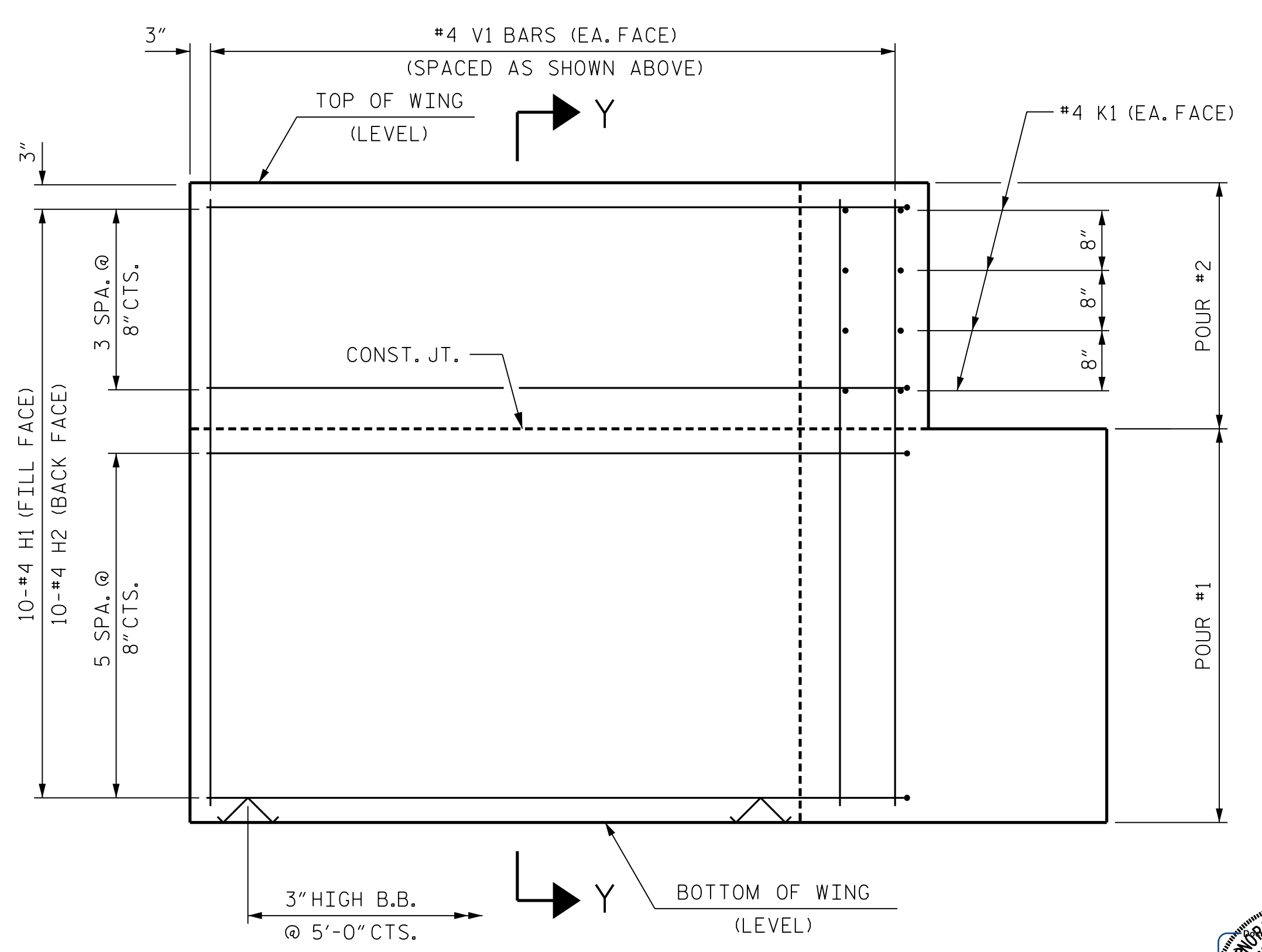
PLAN OF WING (W1)



PLAN OF WING (W2)

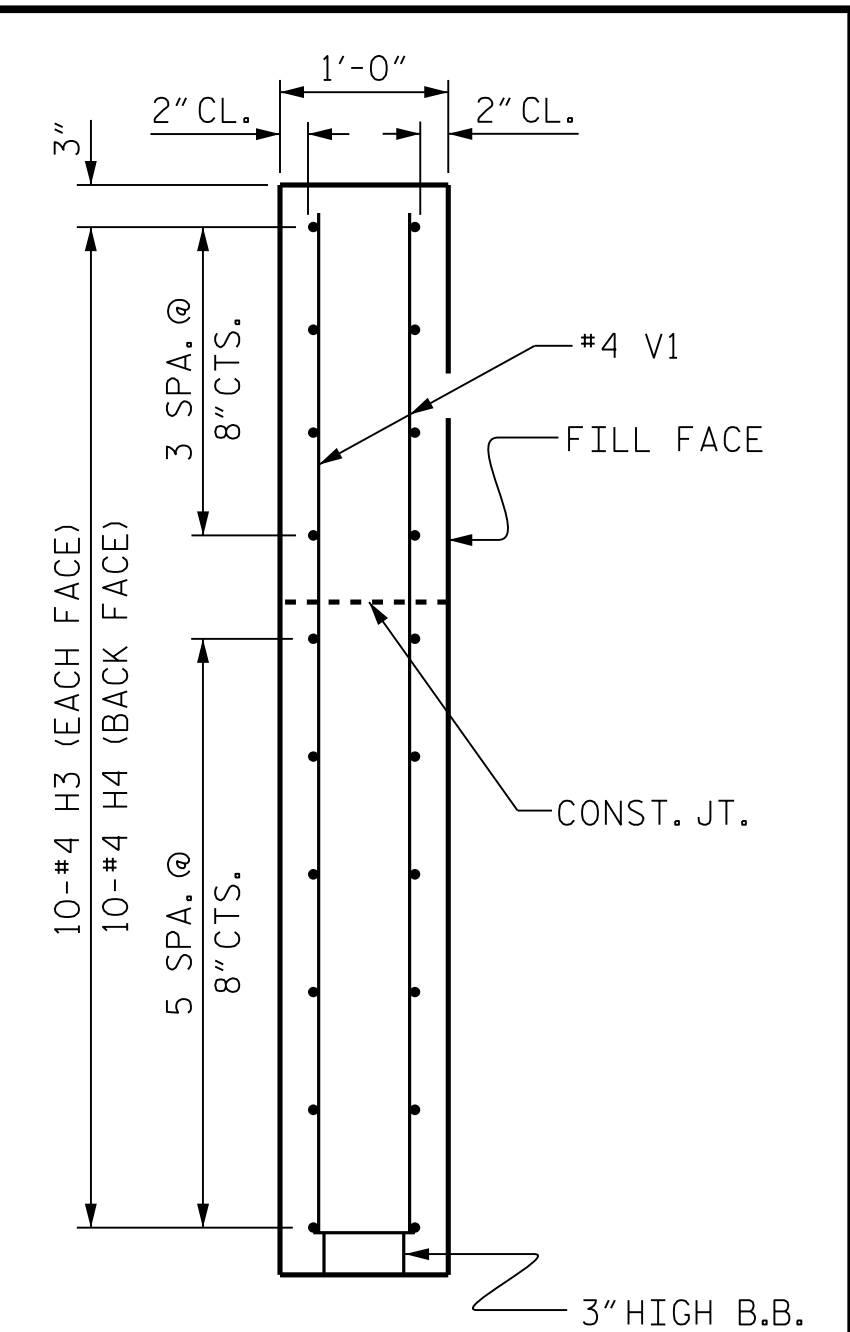


ELEVATION OF WING (W1)

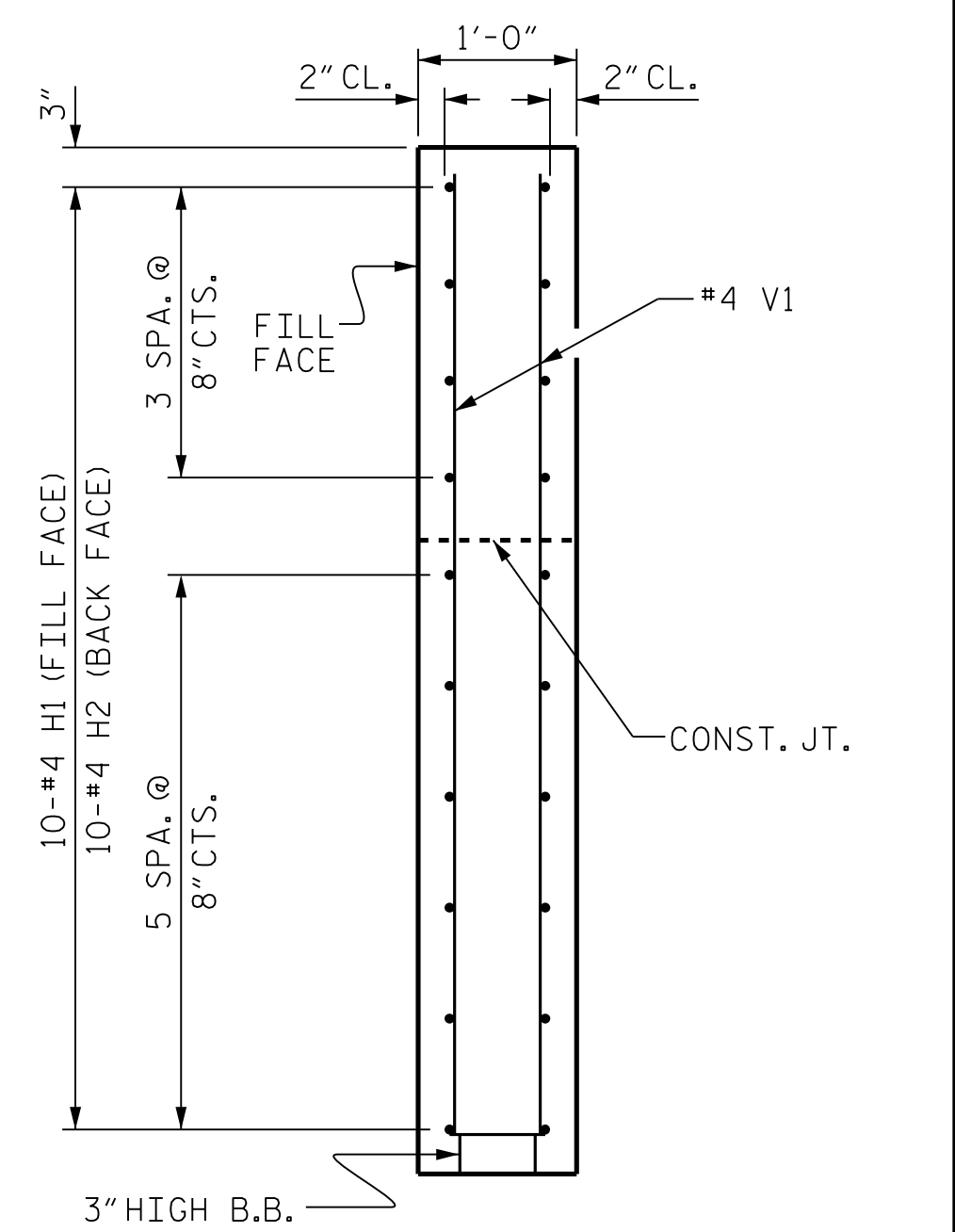


ELEVATION OF WING (W2)

WING DETAILS

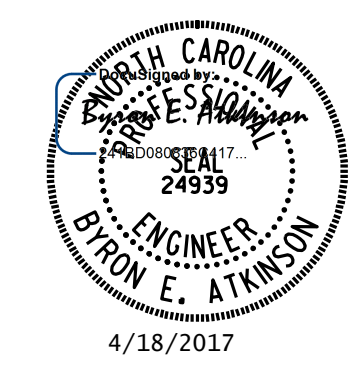


SECTION X-X



SECTION Y-Y

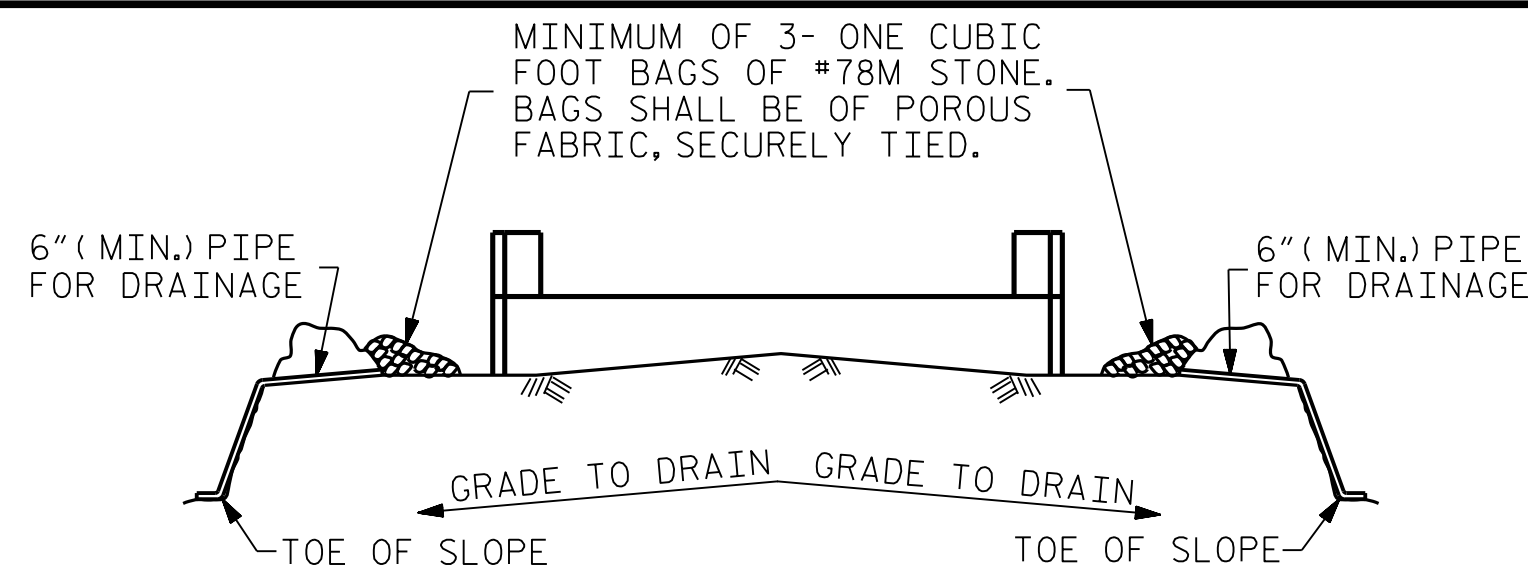
PROJECT NO. 17BP.8.R.115  
 RANDOLPH COUNTY  
 STATION: 17+24.00 -L-  
 SHEET 3 OF 4



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

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT WING DETAILS					
SHEET NO. S-15					
TOTAL SHEETS 20					
STD. NO. EB_33_75S4					

ASSEMBLED BY: B.E. LANNING	DATE: 12/16
CHECKED BY: B.E. ATKINSON	DATE: 03/17
DESIGN ENGINEER OF RECORD: B.E. ATKINSON	DATE: 03/17
DRAWN BY: WJH 12/11	REV. 4/15
CHECKED BY: AAC 12/11	MAA/TMG

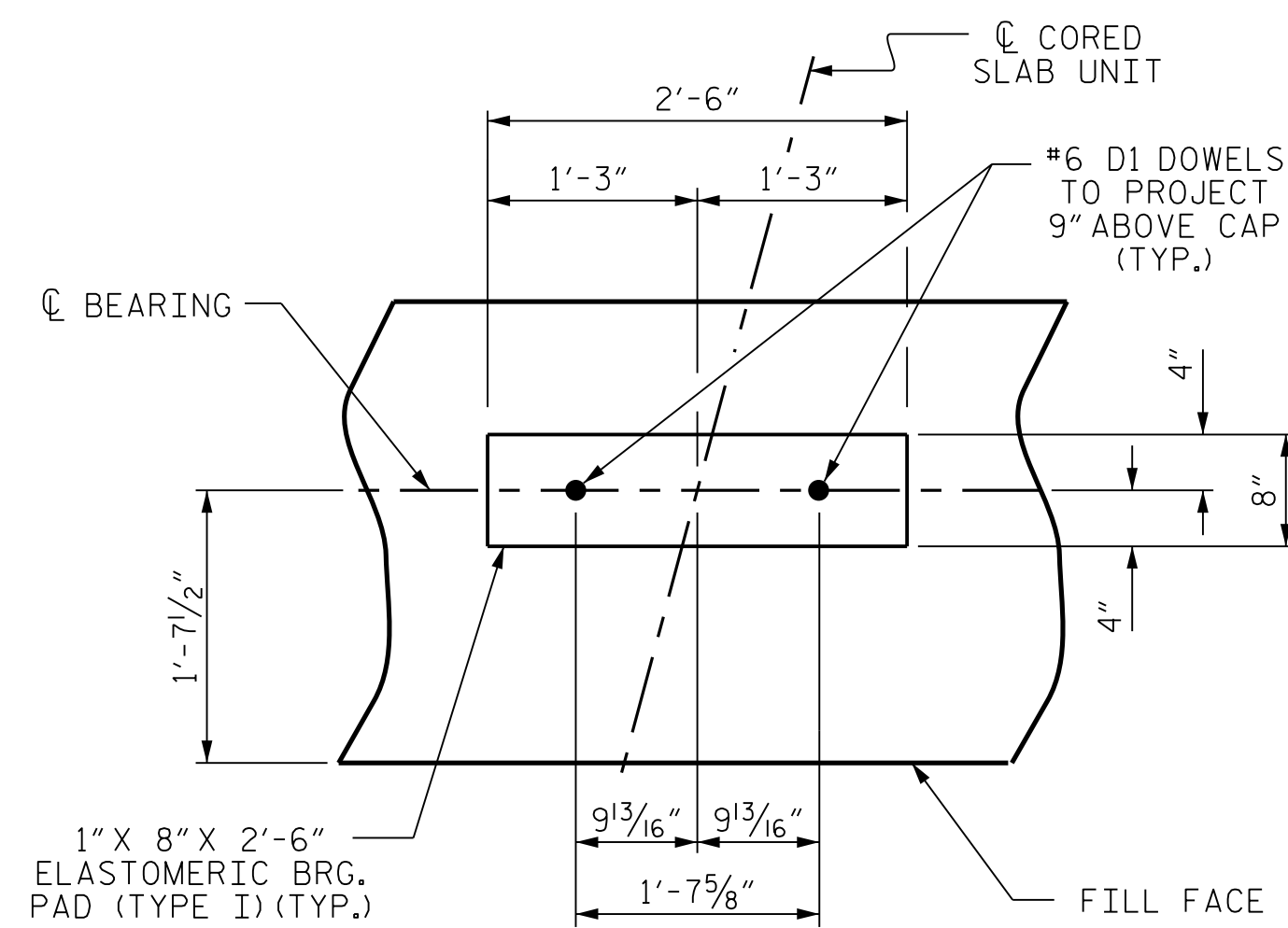


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

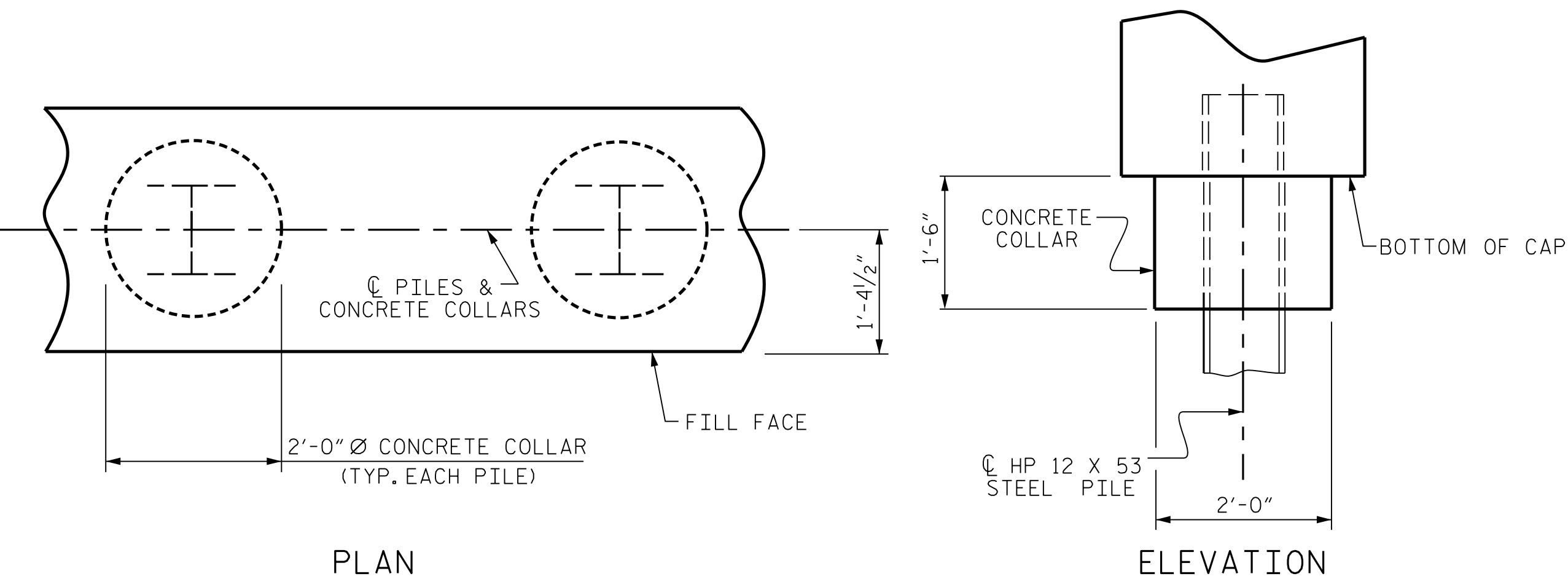
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

### TEMPORARY DRAINAGE AT END BENT



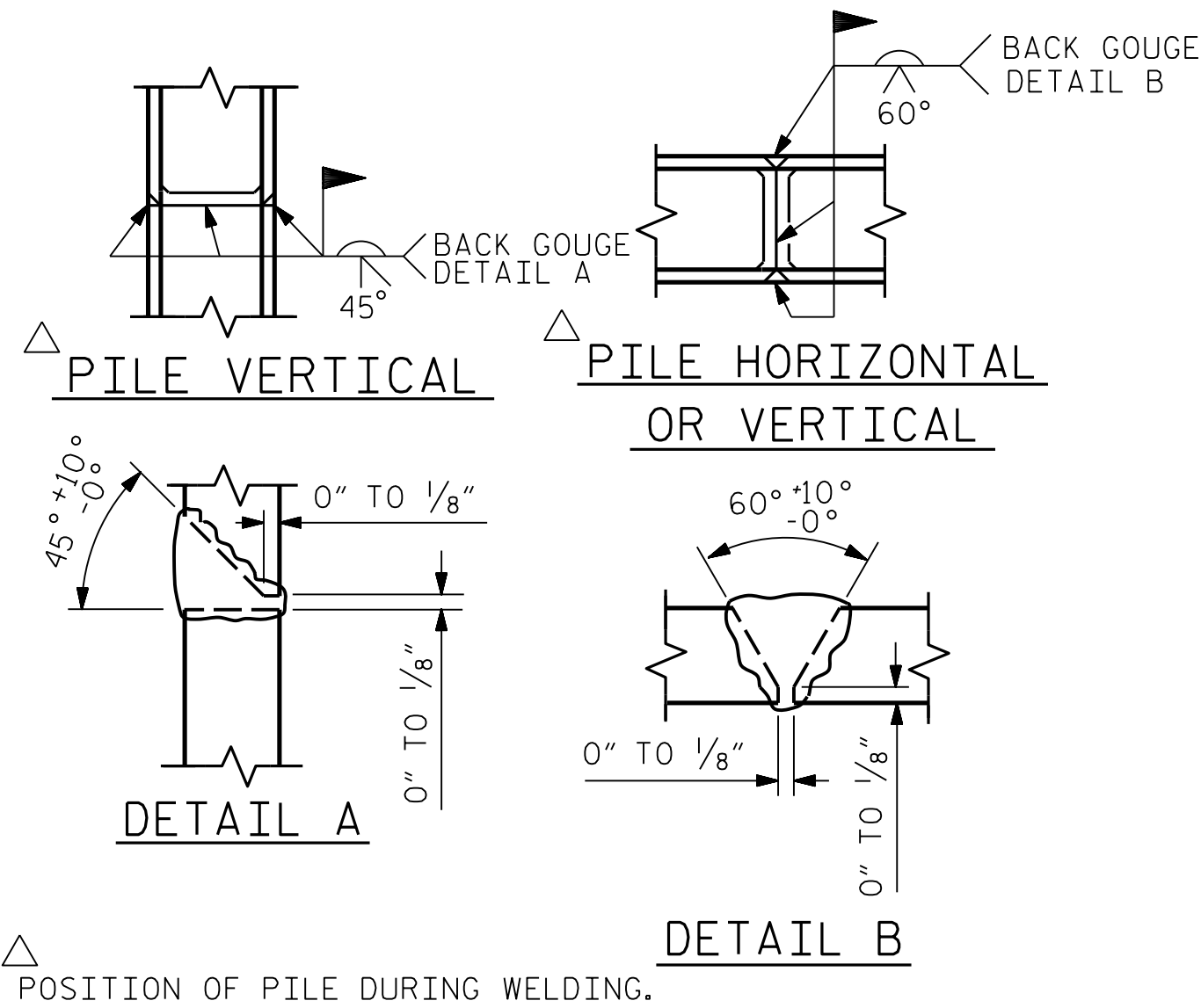
### DETAIL "A"

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

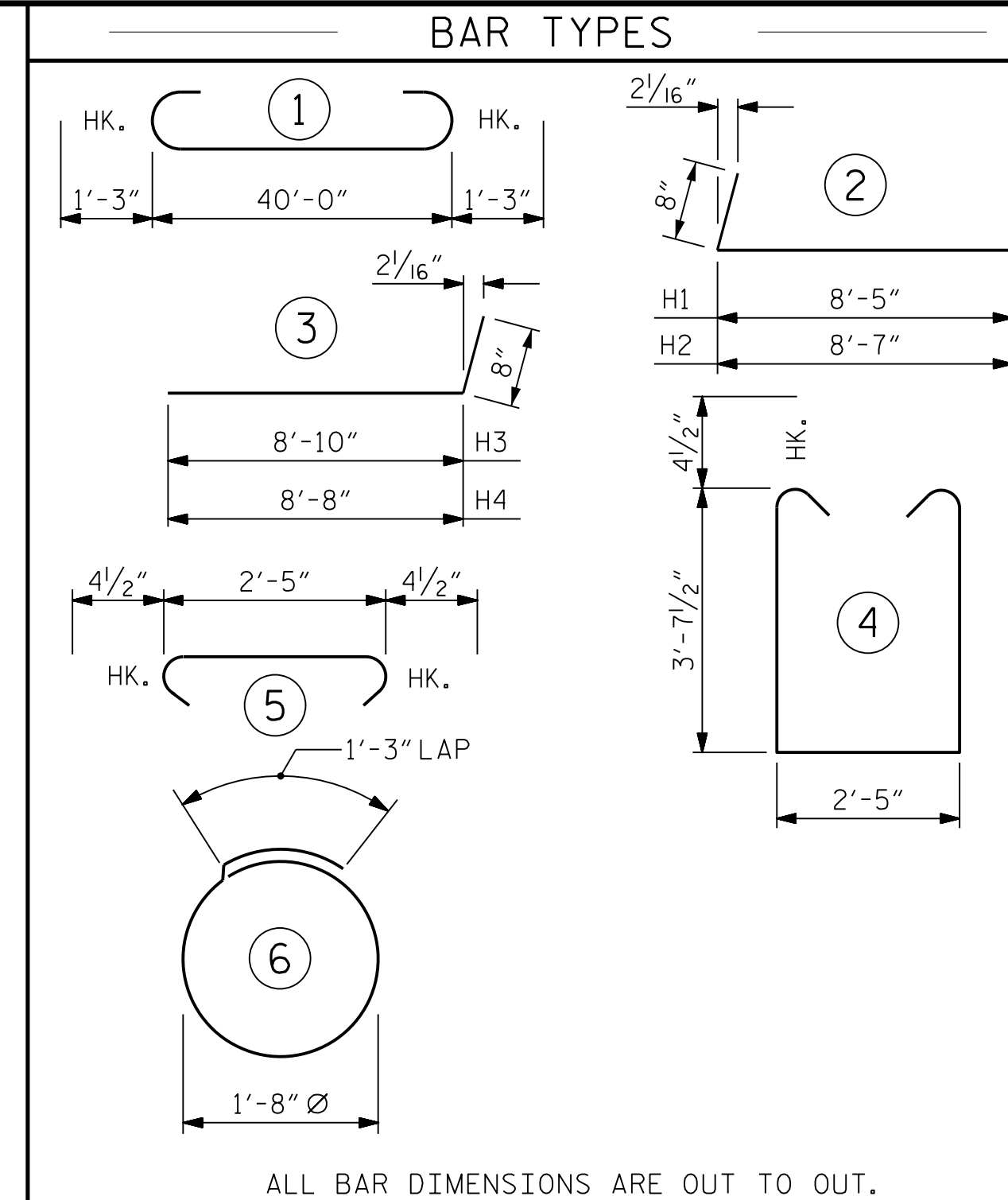


### CORROSION PROTECTION FOR STEEL PILES DETAIL

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



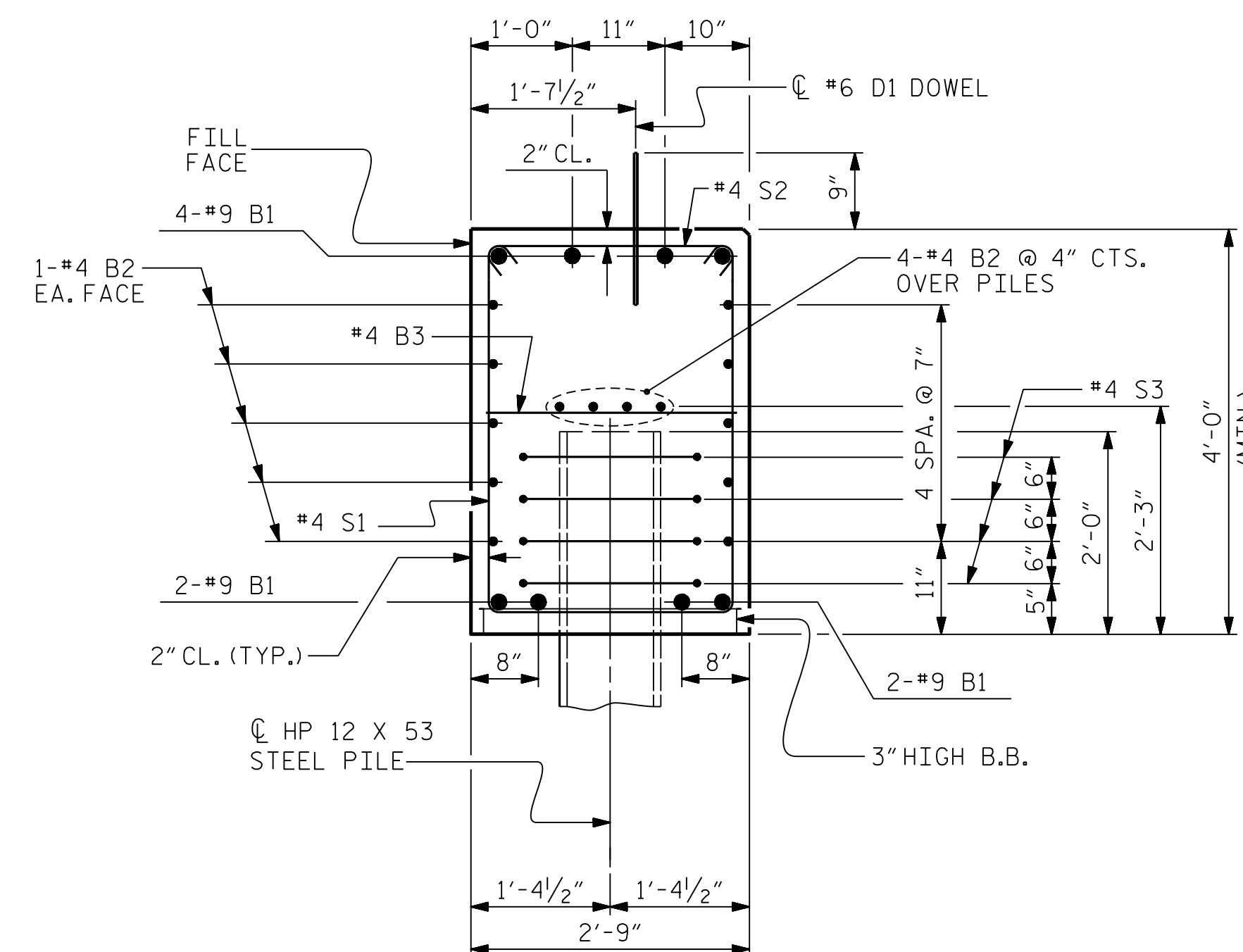
### PILE SPLICE DETAILS



ALL BAR DIMENSIONS ARE OUT TO OUT.

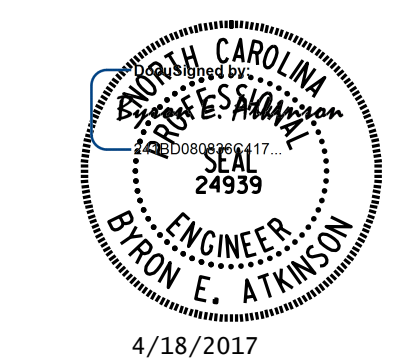
END BENT No. 1		END BENT No. 2	
HP 12 X 53 STEEL PILES	NO: 7	HP 12 X 53 STEEL PILES	NO: 7
	LIN. FT.= 175		LIN. FT.= 154
STEEL PILE POINTS	EA. = 7	STEEL PILE POINTS	EA. = 7
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	EA. = 7	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	EA. = 7

BILL OF MATERIAL					
FOR ONE END BENT					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	42'-6"	1156
B2	28	#4	STR	21'-4"	399
B3	10	#4	STR	2'-5"	16
D1	22	#6	STR	1'-6"	50
H1	10	#4	2	9'-1"	61
H2	10	#4	2	9'-3"	62
H3	10	#4	3	9'-6"	63
H4	10	#4	3	9'-4"	62
K1	16	#4	STR	3'-1"	33
S1	52	#4	4	10'-5"	362
S2	52	#4	5	3'-2"	110
S3	28	#4	6	6'-6"	122
V1	53	#4	STR	6'-2"	218
REINFORCING STEEL (FOR ONE END BENT)					2714 LBS.
CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)					
POUR #1	CAP, LOWER PART OF WINGS & COLLARS				20.1 C.Y.
POUR #2	UPPER PART OF WINGS				2.3 C.Y.
TOTAL CLASS A CONCRETE					22.4 C.Y.



### SECTION A-A

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



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

PROJECT NO. 17BP.8.R.115  
RANDOLPH COUNTY  
STATION: 17+24.00 -L-  
SHEET 4 OF 4  
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SUBSTRUCTURE  
END BENT No. 1 & 2  
DETAILS

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

SHEET NO. S-16  
TOTAL SHEETS 20

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**NOTES**

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

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

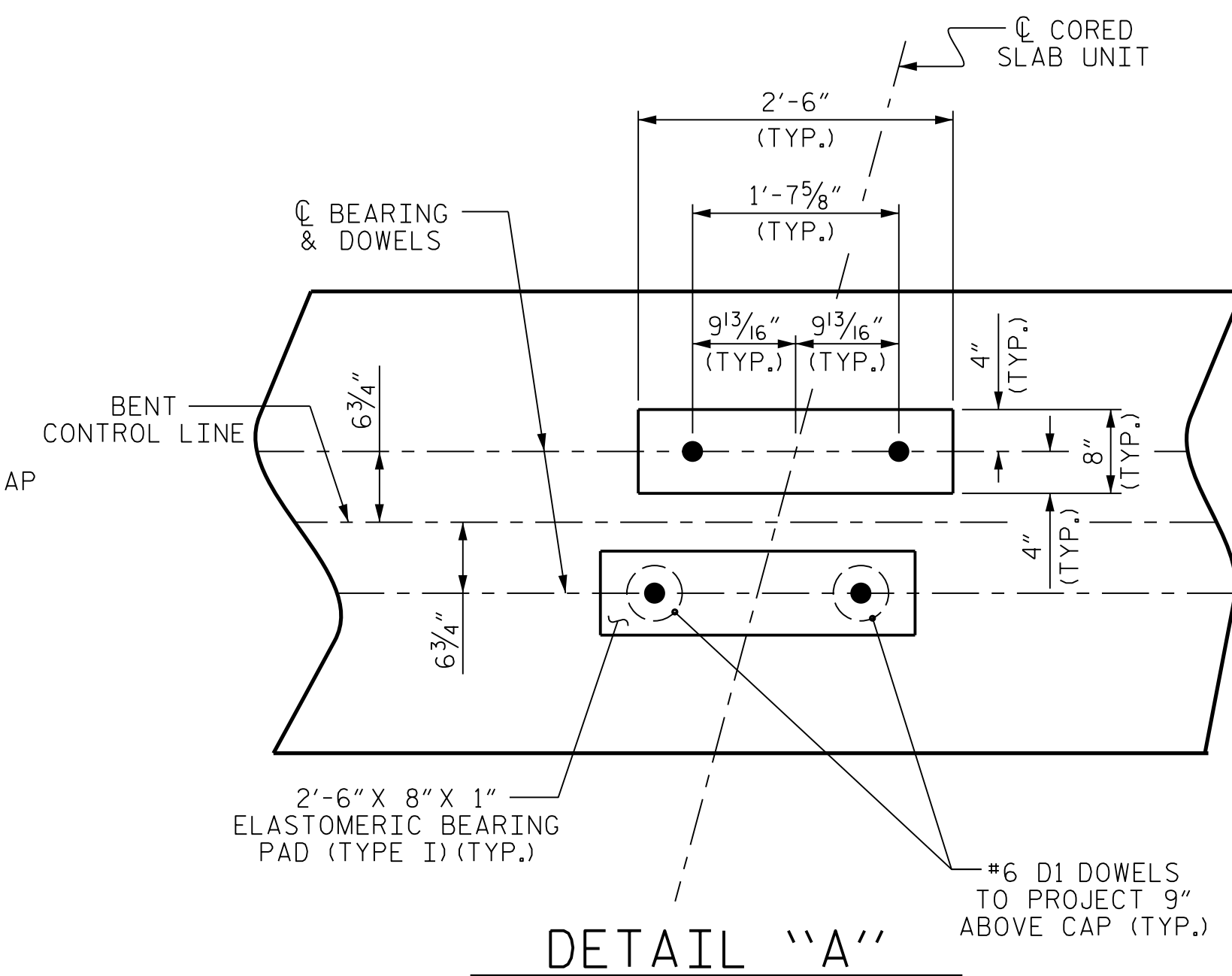
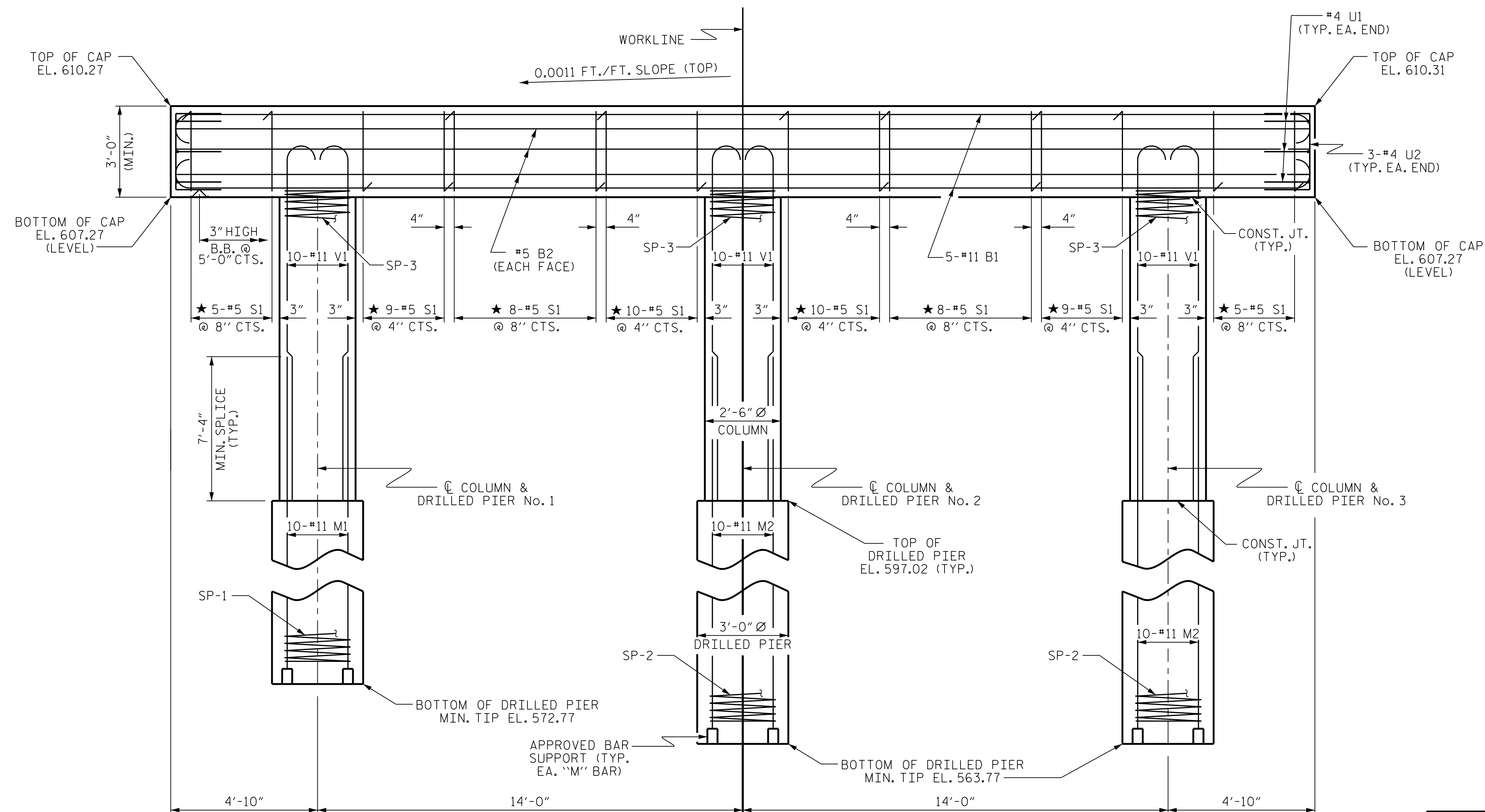
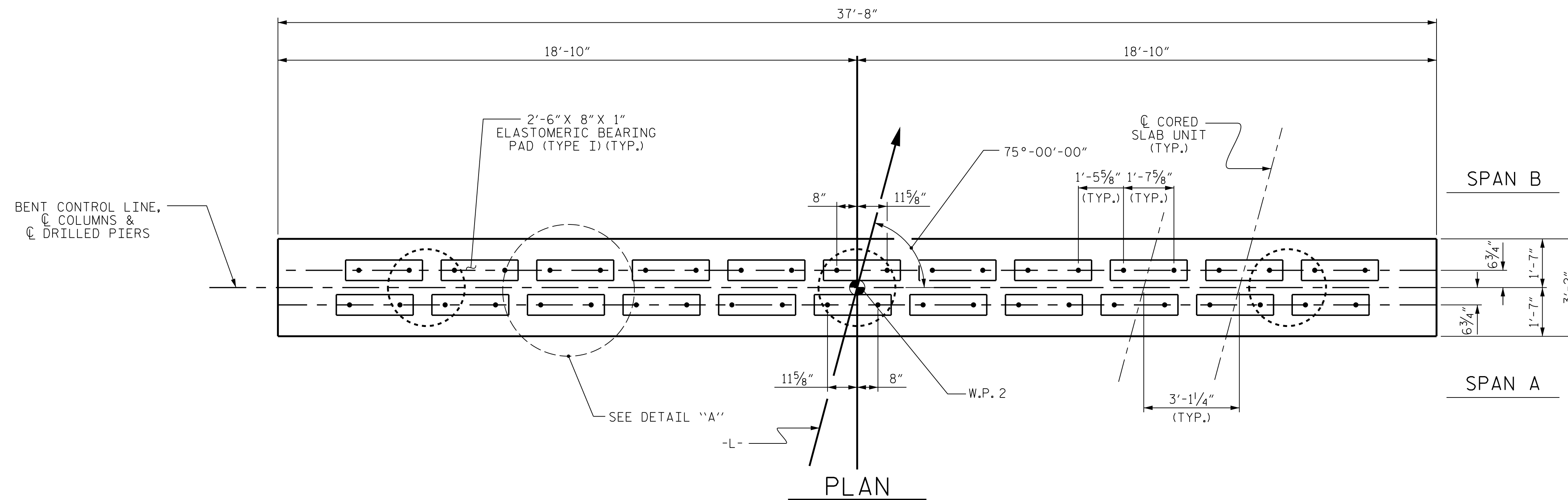
FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

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

★ INVERT ALTERNATE STIRRUPS.

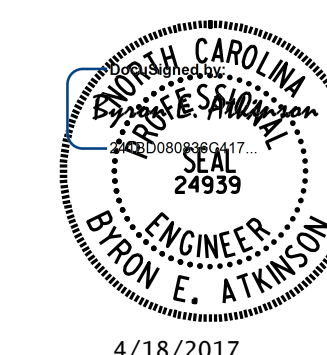
THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT ONE FOOT BELOW THE GROUND LINE.

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



PROJECT NO. 17BP.8.R.115  
 RANDOLPH COUNTY  
 STATION: 17+24.00 -L-

SHEET 1 OF 2



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

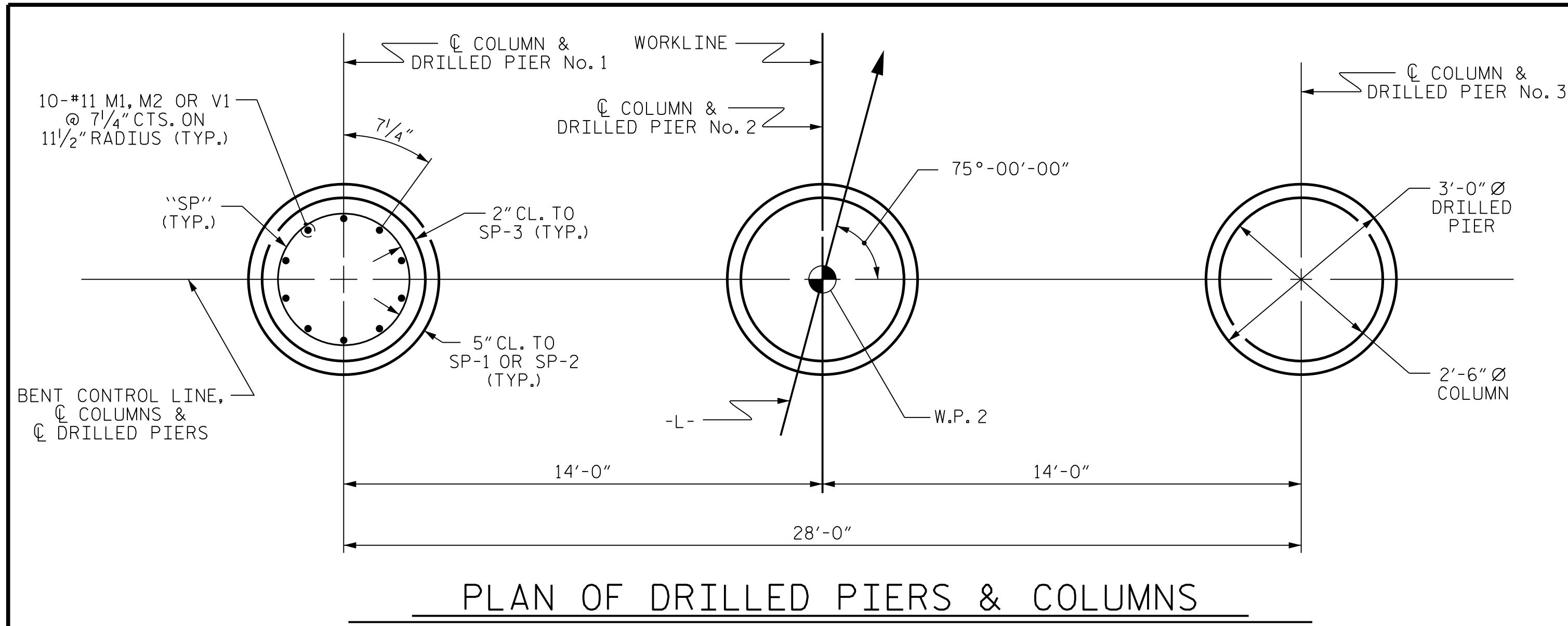
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT No. 1					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-17
TOTAL SHEETS					20

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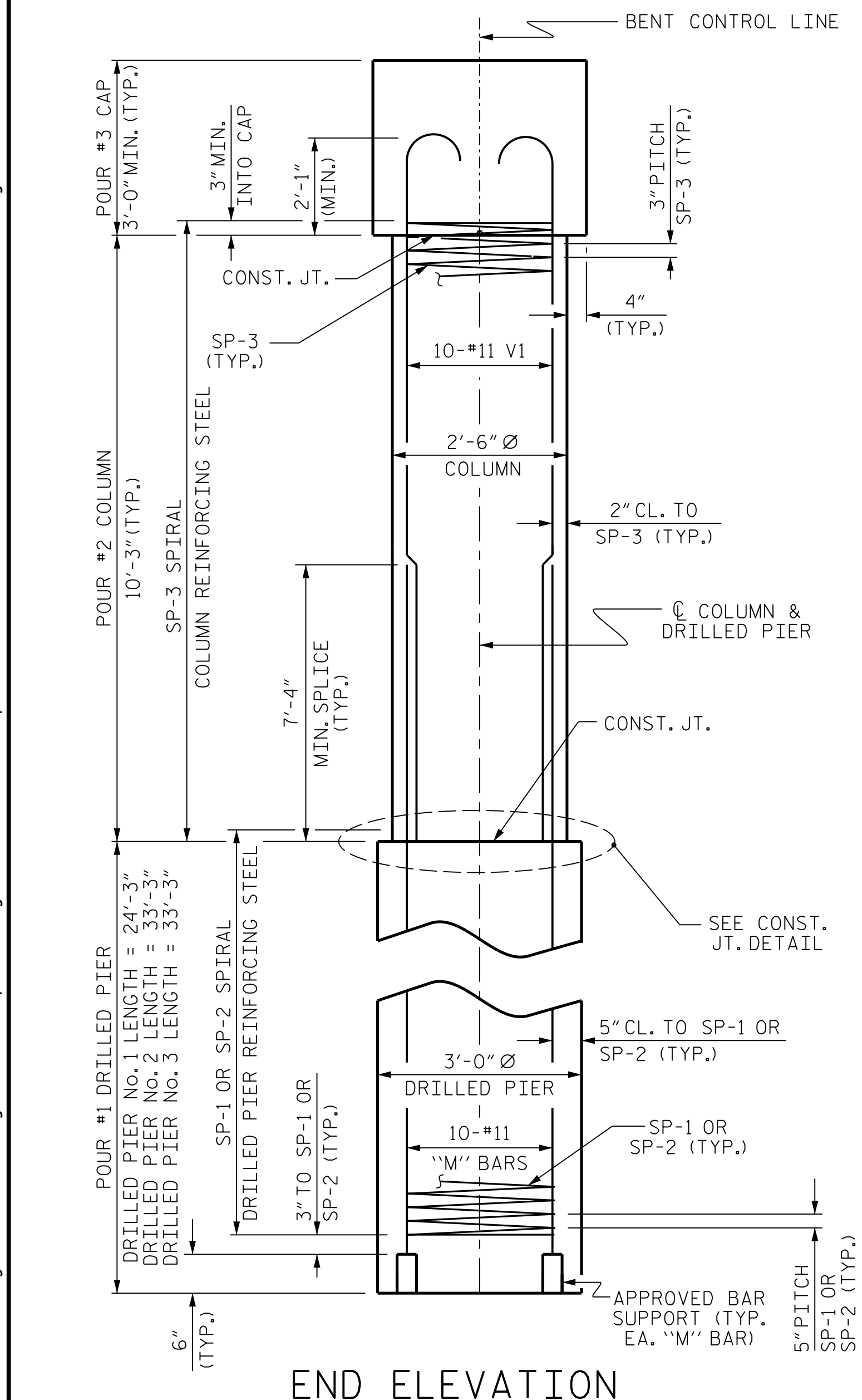
DRAWN BY: B.E. LANNING DATE: 12/16  
 CHECKED BY: B.E. ATKINSON DATE: 03/17  
 DESIGN ENGINEER OF RECORD: B.E. ATKINSON DATE: 03/17

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

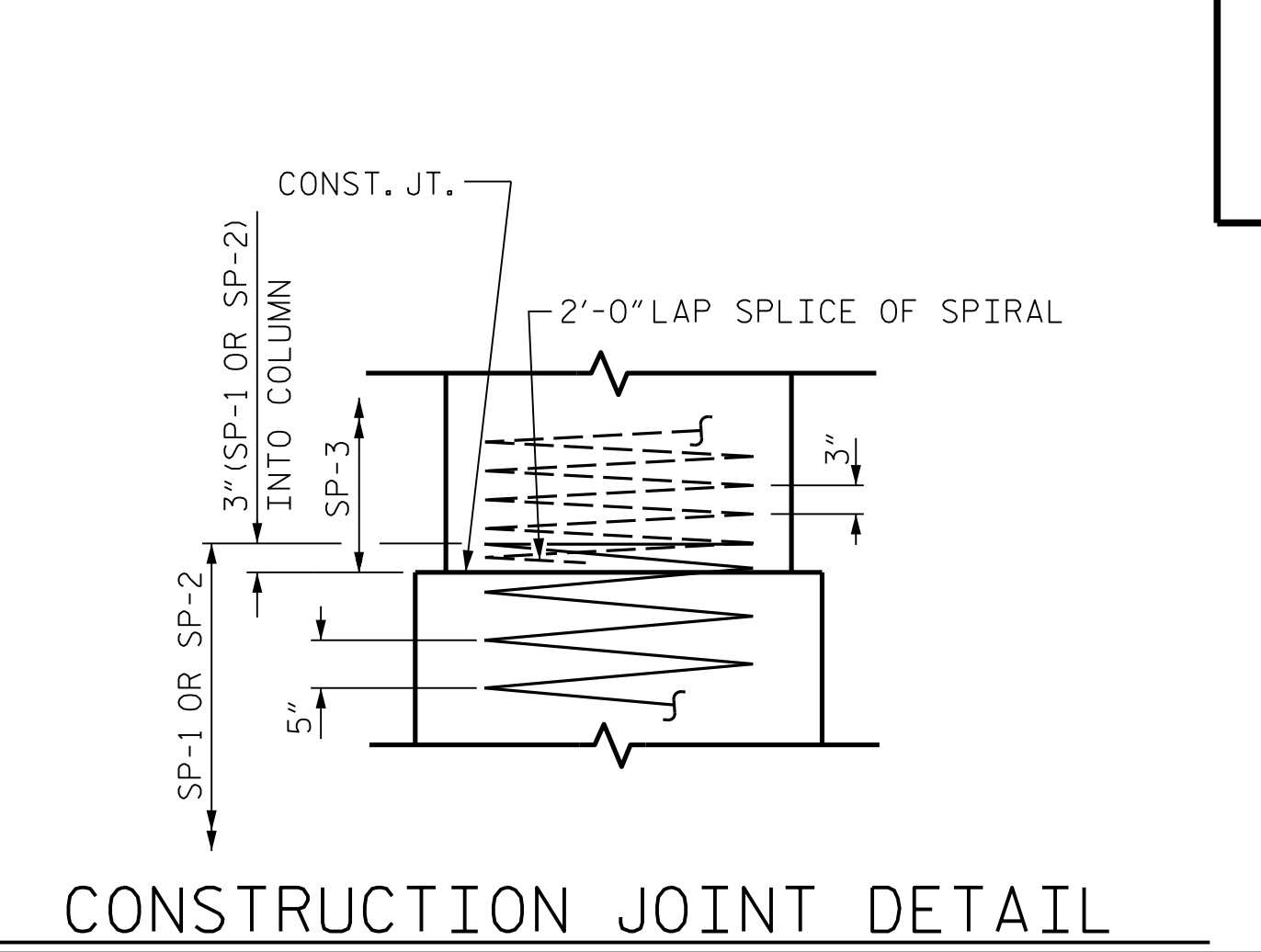
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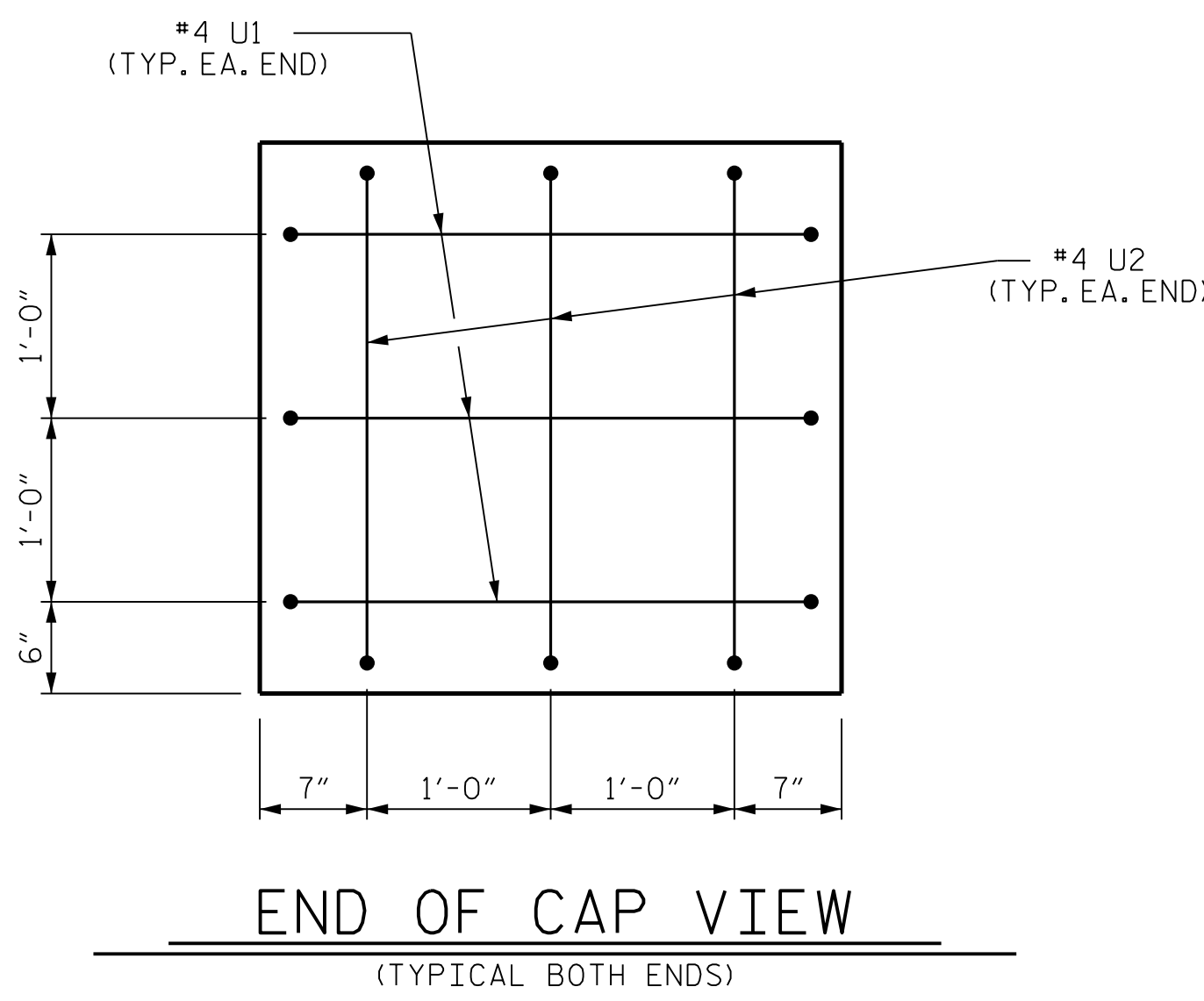
PLAN OF DRILLED PIERS & COLUMNS



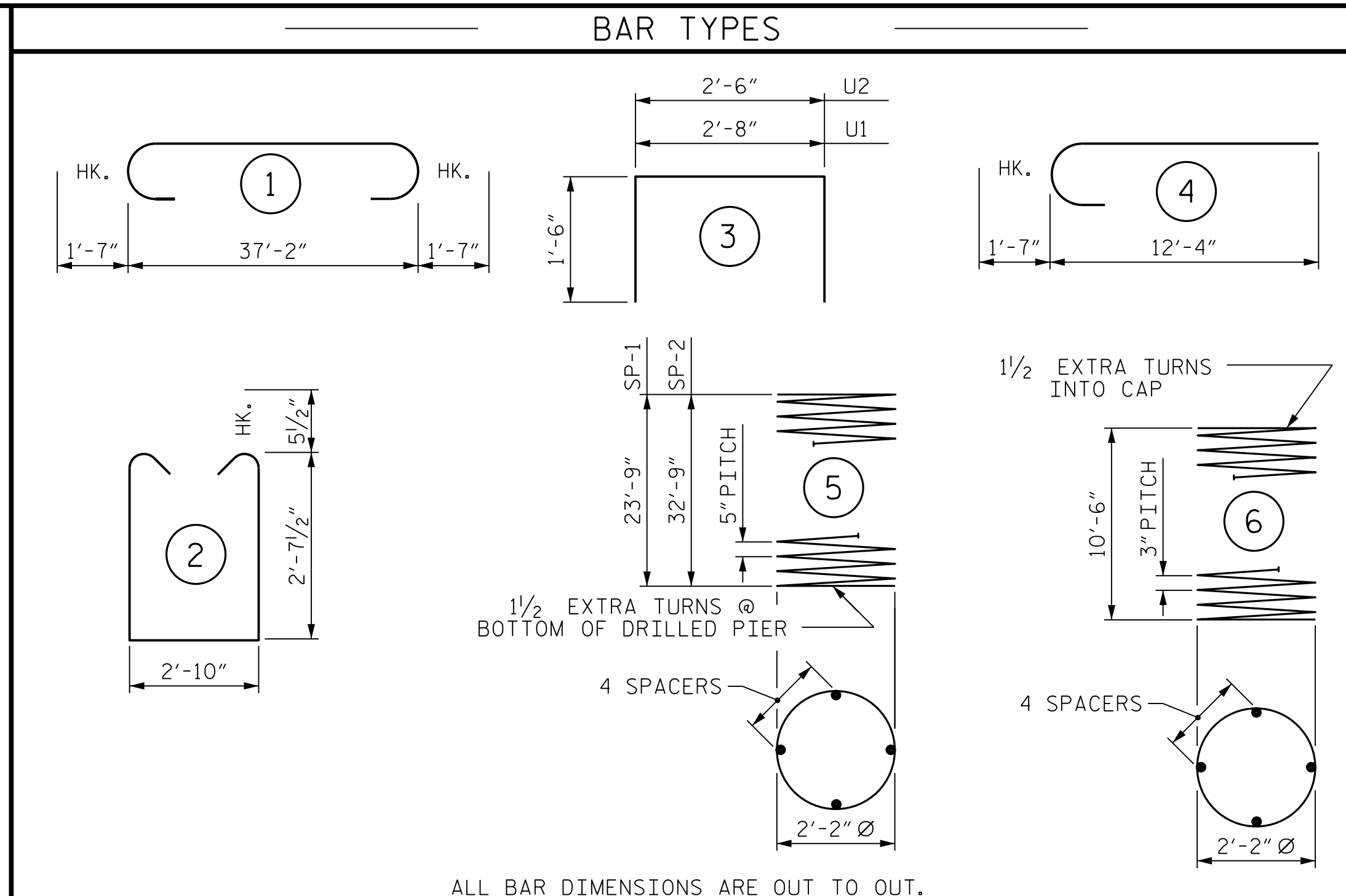
END ELEVATION



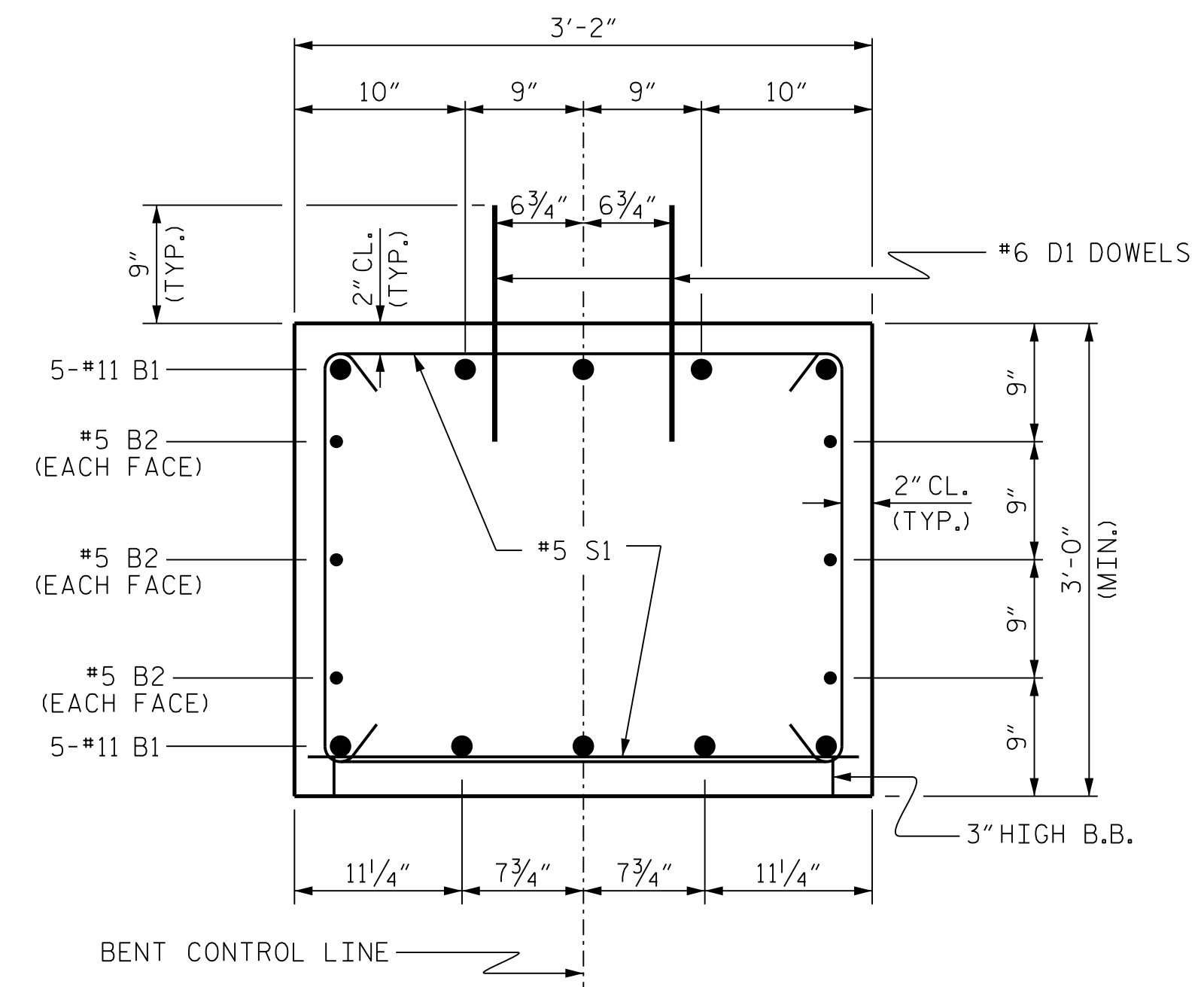
CONSTRUCTION JOINT DETAIL



END OF CAP VIEW  
(TYPICAL BOTH ENDS)



ALL BAR DIMENSIONS ARE OUT TO OUT.



SECTION THRU CAP

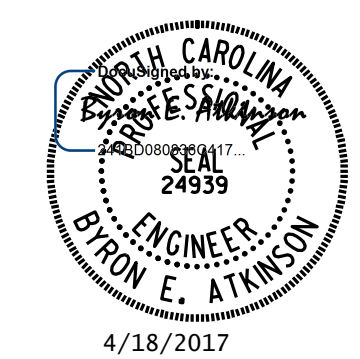
BILL OF MATERIAL					
BENT No. 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11	1	40'-4"	2143
B2	6	#5	STR	37'-4"	234
D1	44	#6	STR	1'-6"	99
M1	10	#11	STR	34'-1"	1811
M2	20	#11	STR	43'-1"	4578
S1	64	#5	2	9'-0"	601
U1	6	#4	3	5'-8"	23
U2	6	#4	3	5'-6"	22
V1	30	#11	4	13'-11"	2218
REINFORCING STEEL					11,729 LBS.
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
SP-1	1	*	5	388'-5"	405
SP-2	2	*	5	531'-10"	1109
SP-3	3	**	6	289'-11"	581
SPIRAL COLUMN REINFORCING STEEL					2095 LBS.
* THE SP-1 & SP-2 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR					
** THE SP-3 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)	5.6 C.Y.
POUR #3 (CAP)	13.4 C.Y.
<b>TOTAL CLASS A CONCRETE</b>	<b>19.0 C.Y.</b>

DRILLED PIERS:	
DRILLED PIER CONCRETE	
POUR #1 (DRILLED PIERS)	23.8 C.Y.
3'-0" Ø DRILLED PIER NOT IN SOIL	31.0 LIN. FT.
3'-0" Ø DRILLED PIER IN SOIL	59.8 LIN. FT.
PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIER	28.1 LIN. FT.
CSL TUBES	381.0 LIN. FT.

PROJECT NO. 17BP.8.R.115  
 RANDOLPH COUNTY  
 STATION: 17+24.00 -L-

SHEET 2 OF 2



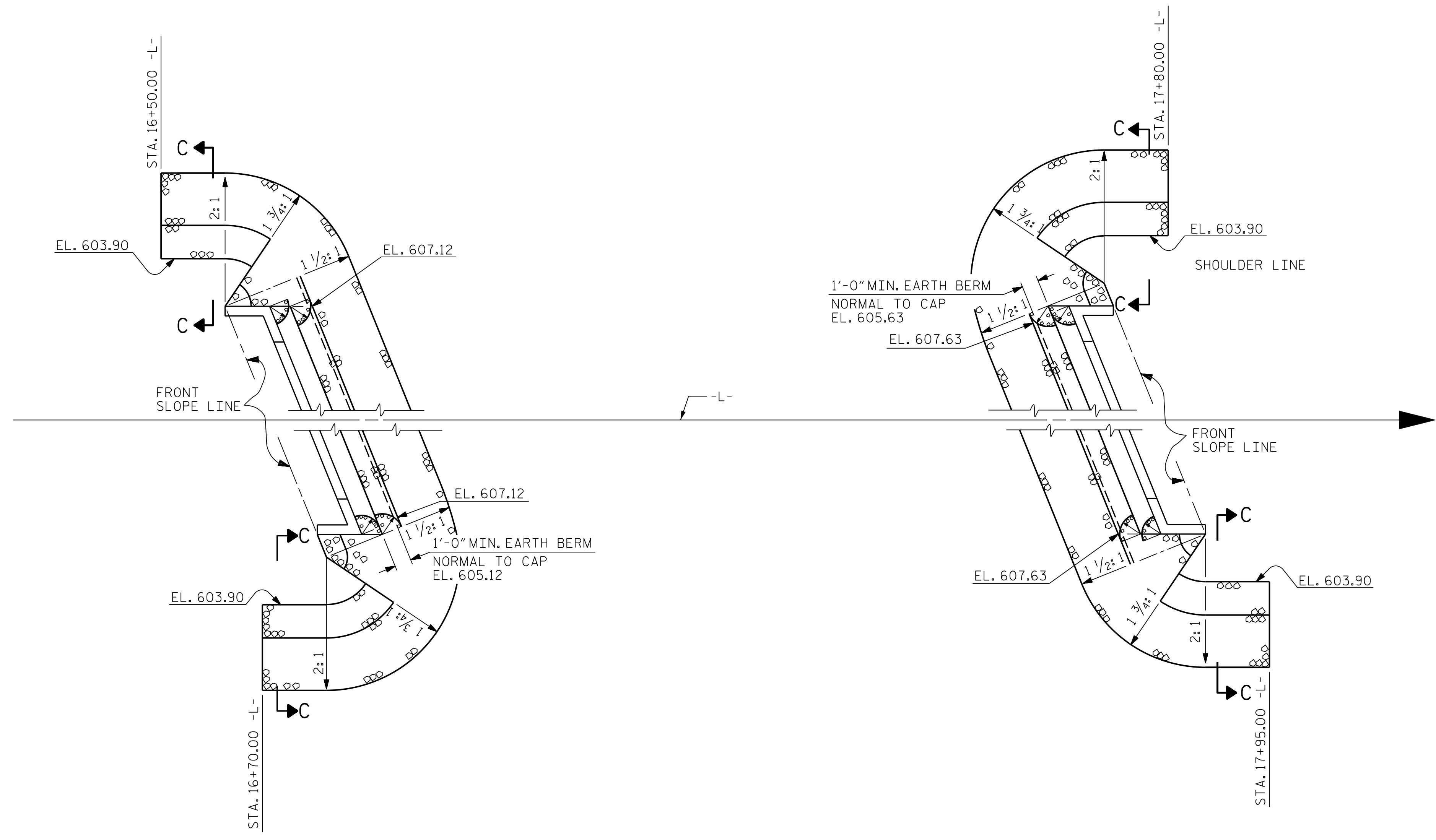
**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**  
 MI ENGINEERING  
 1011 SCHAUH DRIVE, SUITE 100  
 RALEIGH, NC 27606  
 (919) 851-6606  
 FIRM PE NUMBER: P-0671

DEPARTMENT OF TRANSPORTATION					
RALEIGH					
SUBSTRUCTURE					
BENT No. 1					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

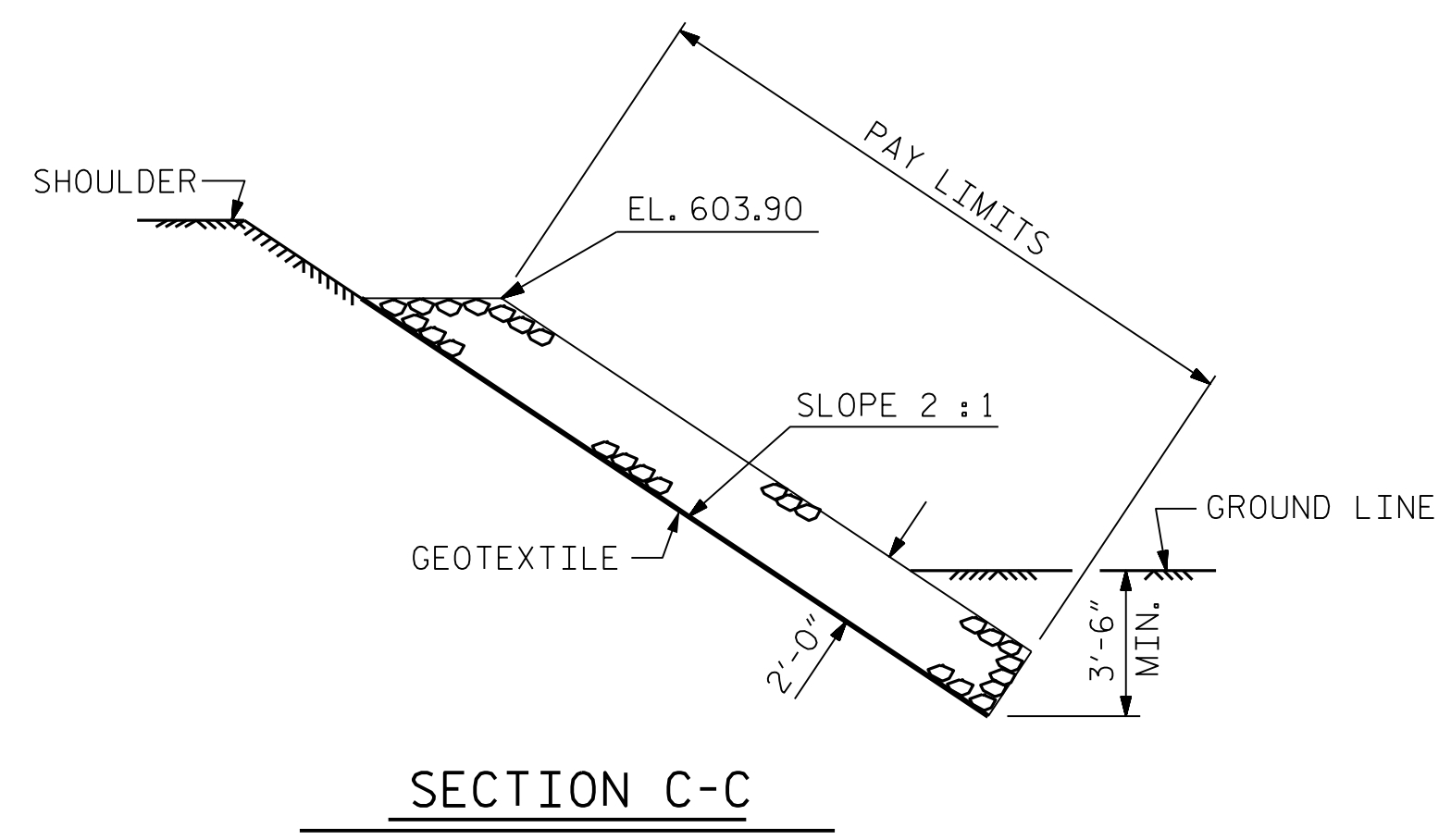
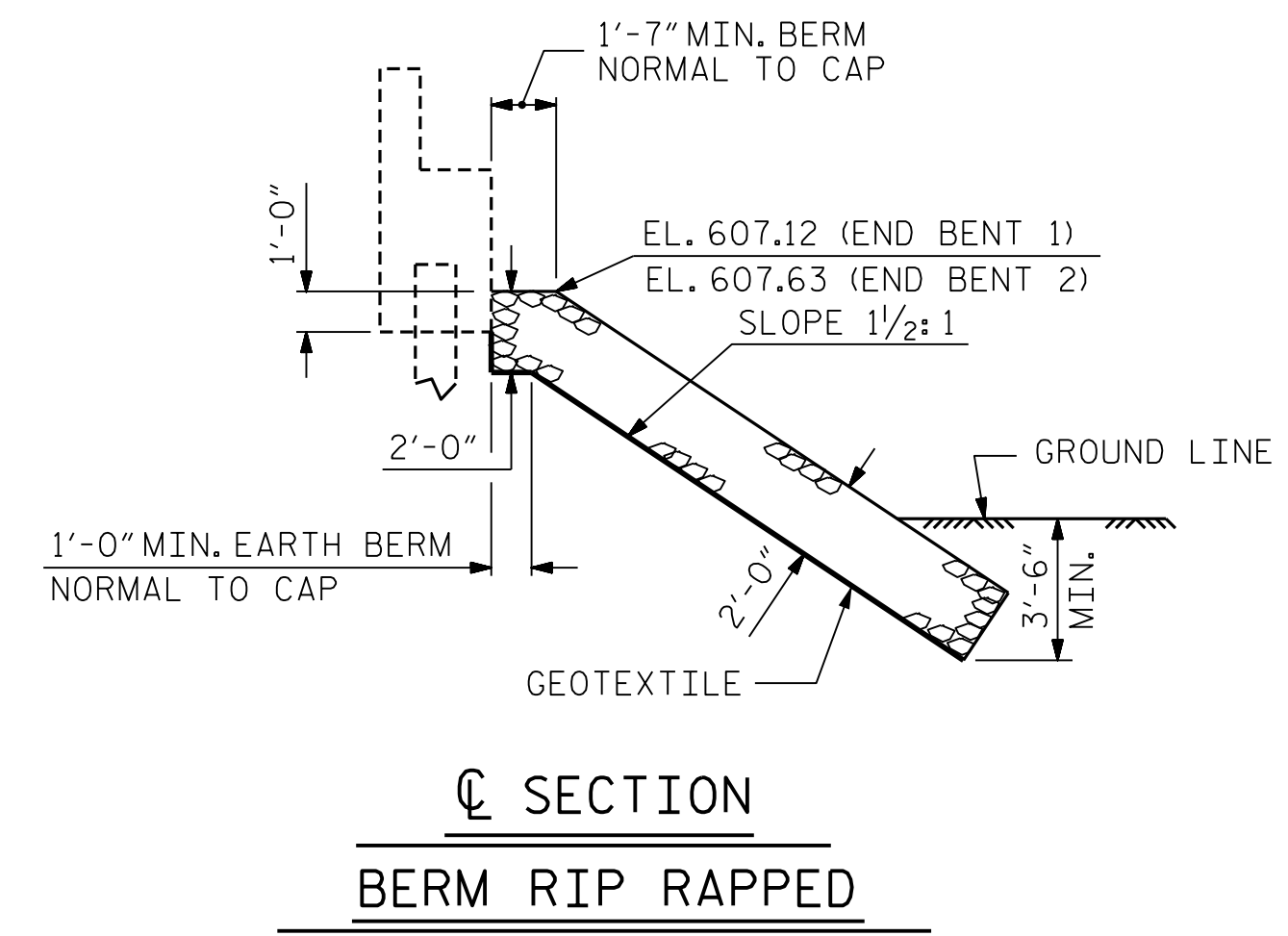
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TOTAL SHEETS	<b>20</b>

DRAWN BY: B.E. LANNING	DATE: 12/16
CHECKED BY: B.E. ATKINSON	DATE: 03/17
DESIGN ENGINEER OF RECORD: B.E. ATKINSON	DATE: 03/17

NOTES :  
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.



ESTIMATED QUANTITIES		
BRIDGE @ STA. 17+24.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	190	211
END BENT 2	206	229



PROJECT NO. 17BP.8.R.115  
RANDOLPH COUNTY  
STATION: 17+24.00 -L-



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
= RIP RAP DETAILS =

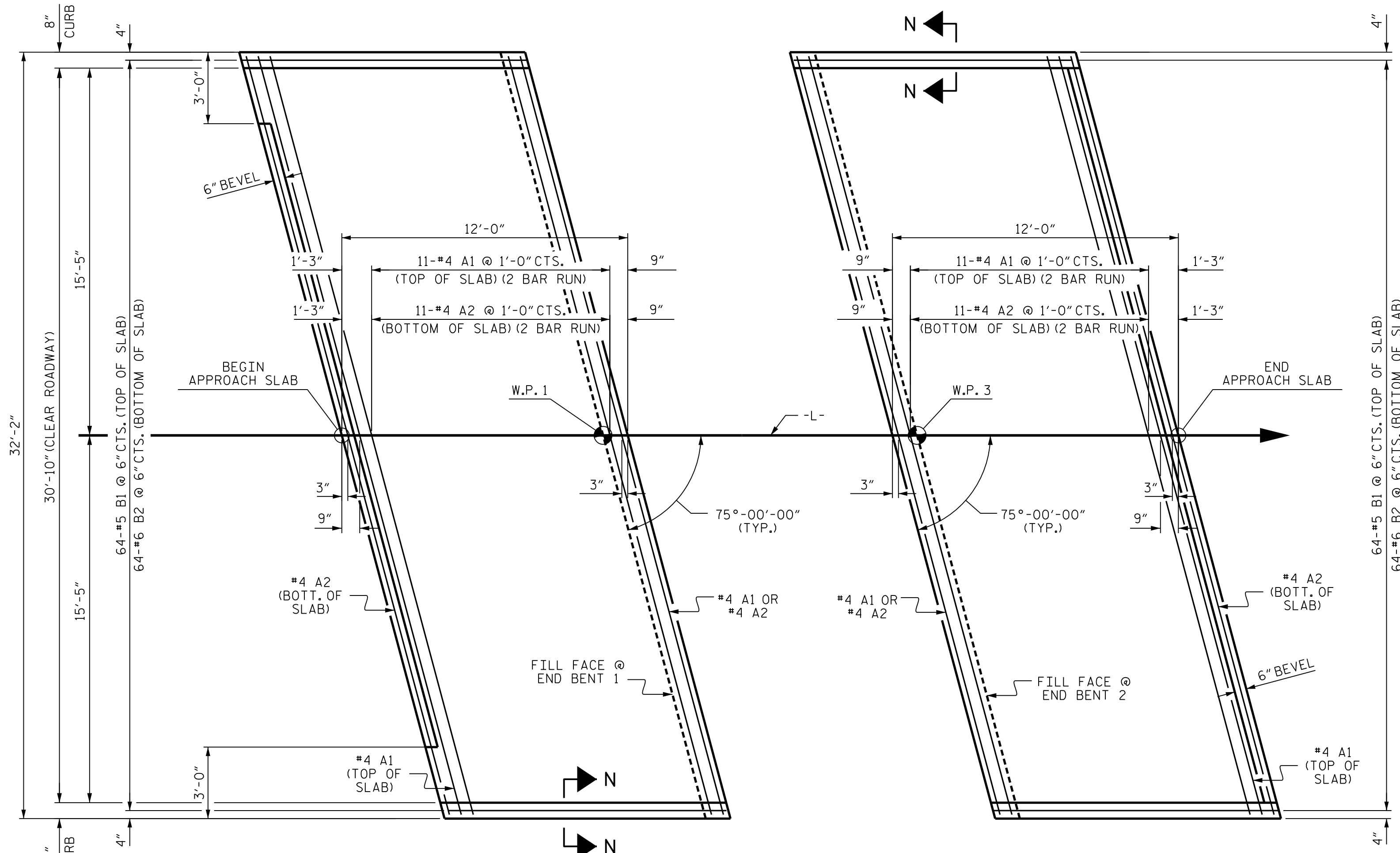
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MI ENGINEERING  
1011 SCHAUB DRIVE, SUITE 100  
RALEIGH, NC 27606  
(919) 851-6606  
FIRM PE NUMBER : P-0671

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

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ASSEMBLED BY: B.E. LANNING	DATE: 12/16
CHECKED BY: B.E. ATKINSON	DATE: 01/17
DESIGN ENGINEER OF RECORD: B.E. ATKINSON	DATE: 03/17
DRAWN BY: REK 1/84	REV. 5/1/06R TLA/GM
CHECKED BY: RDU 1/84	REV. 10/1/11 MAA/GM
	REV. 12/21/11 MAA/GM



PLAN @ END BENT 1      PLAN @ END BENT 2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

**NOTES**

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4" Ø DRAINAGE PIPE, AND #78M STONE BACKFILL, SEE ROADWAY PLANS.

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

#78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

#78M STONE BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

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

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

APPROACH SLAB GROOVING IS NOT REQUIRED.

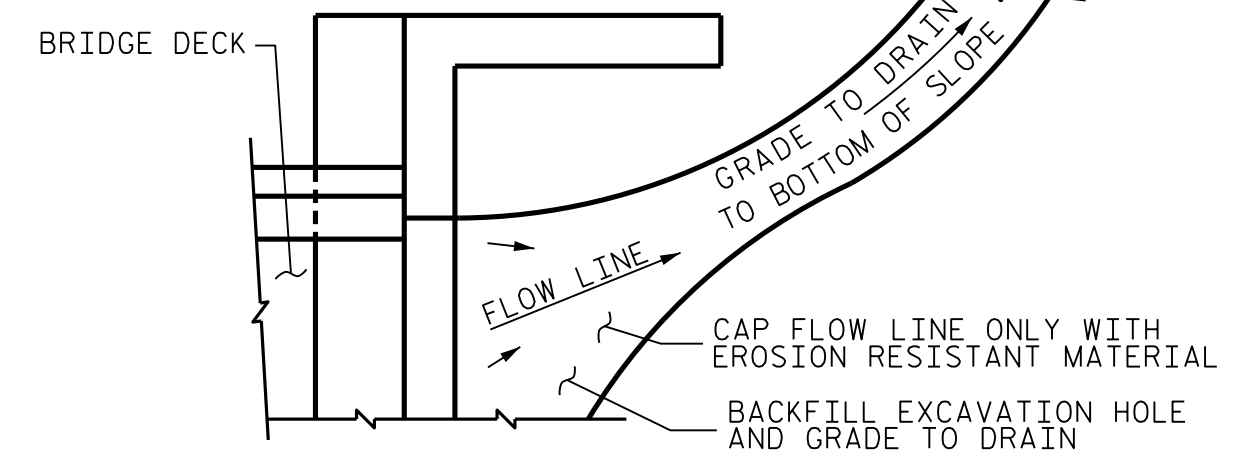
**BILL OF MATERIAL**

**APPROACH SLAB AT EB 1**

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	26	#4	STR	17'-6"	304
A2	26	#4	STR	17'-5"	302
*B1	64	#5	STR	11'-1"	740
B2	64	#6	STR	11'-7"	1113
REINFORCING STEEL				LBS.	1415
*EPOXY COATED REINFORCING STEEL				LBS.	1044
CLASS AA CONCRETE				C. Y.	19.5

**APPROACH SLAB AT EB 2**

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	26	#4	STR	17'-6"	304
A2	26	#4	STR	17'-5"	302
*B1	64	#5	STR	11'-1"	740
B2	64	#6	STR	11'-7"	1113
REINFORCING STEEL				LBS.	1415
*EPOXY COATED REINFORCING STEEL				LBS.	1044
CLASS AA CONCRETE				C. Y.	19.5

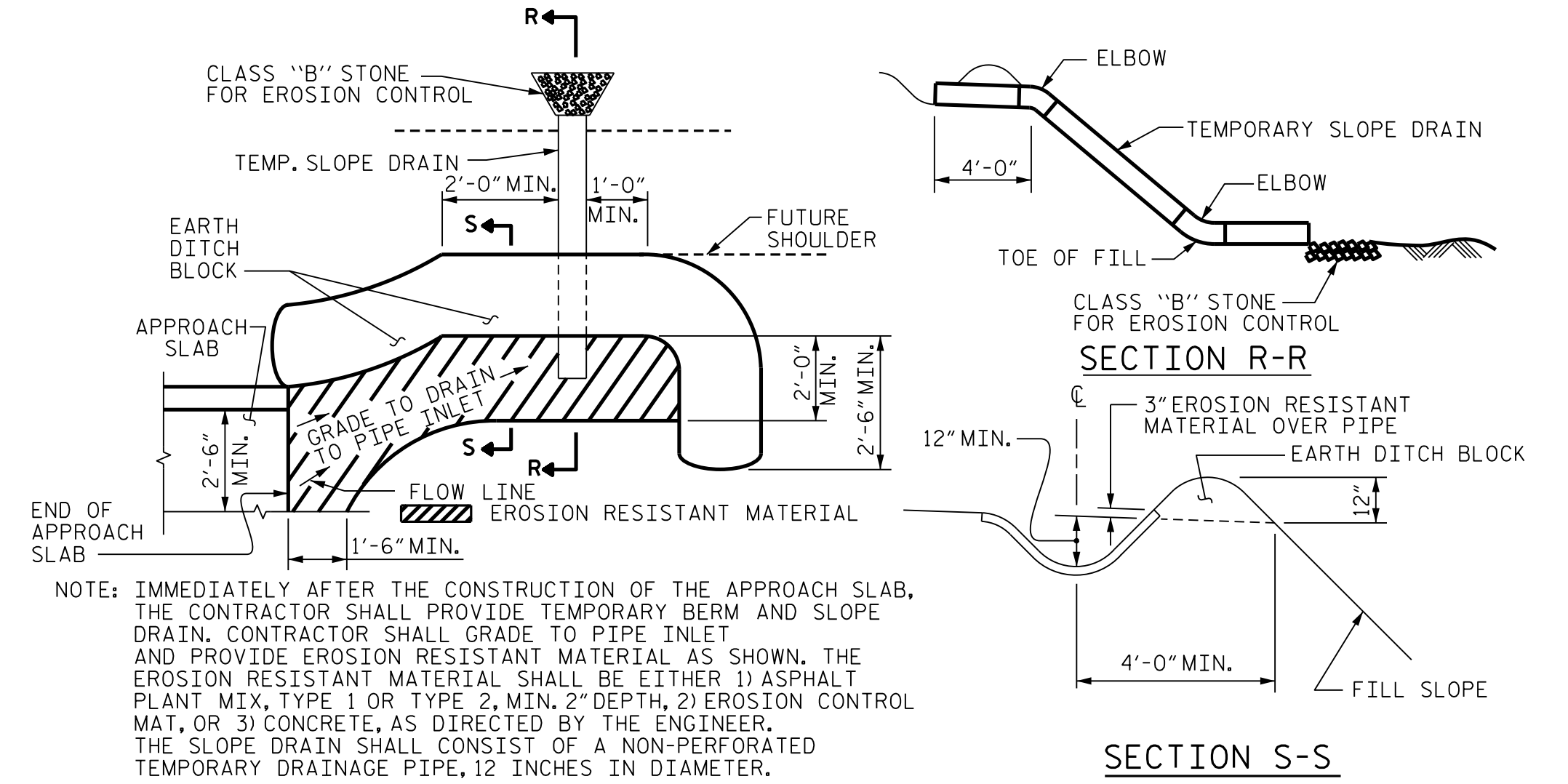


**NOTE:** IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

**SPLICE LENGTHS**

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

**TEMPORARY DRAINAGE DETAIL**

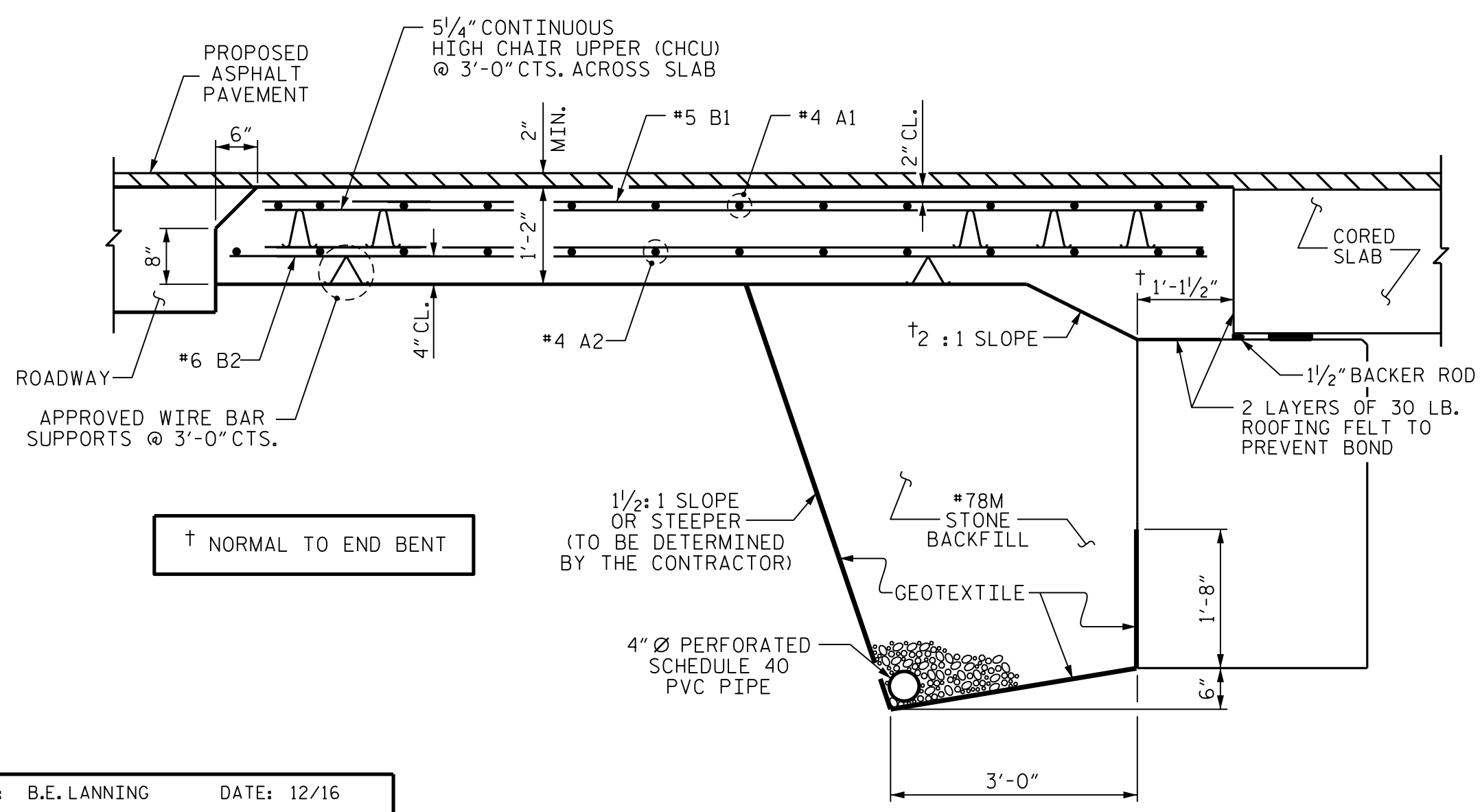


**NOTE:** IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2,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

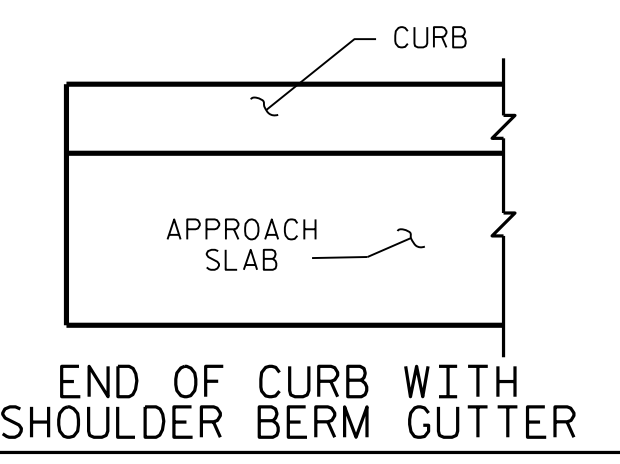
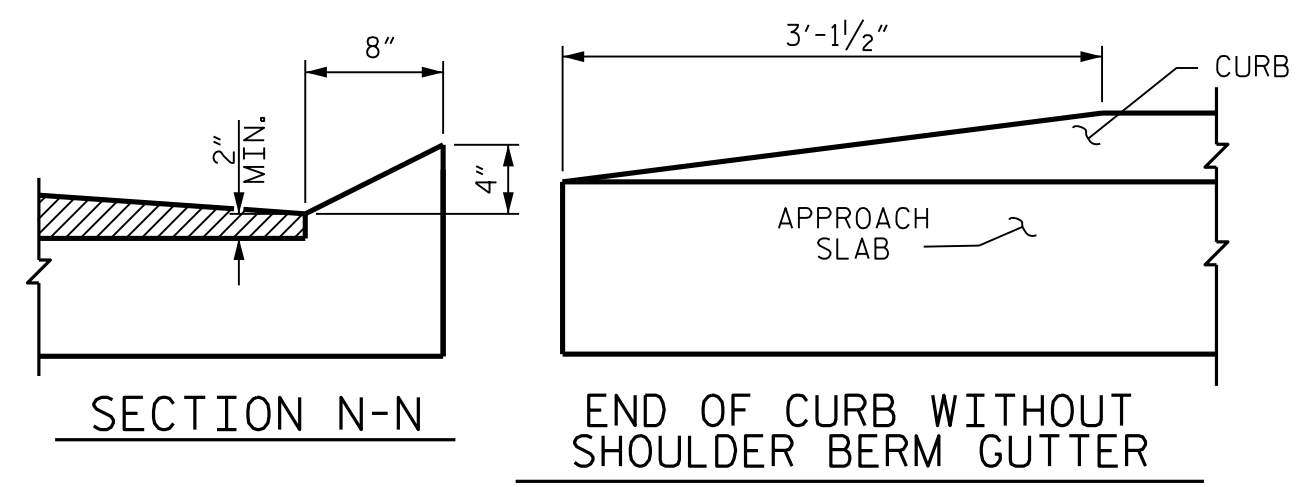
**PLAN VIEW**

**TEMPORARY BERM AND SLOPE DRAIN DETAILS**

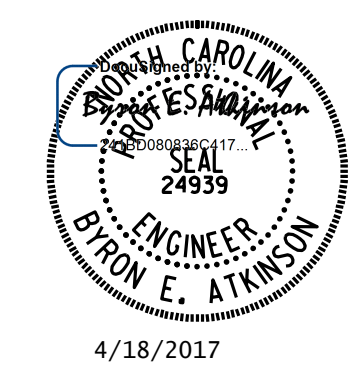
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



SECTION THRU SLAB



CURB DETAILS



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

PROJECT NO. 17BP.8.R.115  
RANDOLPH COUNTY  
STATION: 17+24.00 -L-

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
BRIDGE APPROACH SLAB  
FOR PRESTRESSED CONCRETE  
CORED SLAB UNIT  
(SUB-REGIONAL TIER)  
75° SKEW

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

4/18/2017 11:49:44 AM User: blanning  
 Filename: P:\NC Bridges\MI6005.CH Eng.Div. 8 Br. Repl. 16 Bridges\MI6005.02.Randolph 128\17BP8R115\Structures\401.037.17BP8R115.SMU.BAS1.dgn

ASSEMBLED BY: B.E. LANNING	DATE: 12/16
CHECKED BY: B.E. ATKINSON	DATE: 01/17
DESIGN ENGINEER OF RECORD: B.E. ATKINSON	DATE: 03/17
DRAWN BY: SHS/MAA 5-09	REV. 9-15
CHECKED BY: BCH 5-09	MAA/TMG

