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09, 08, 09

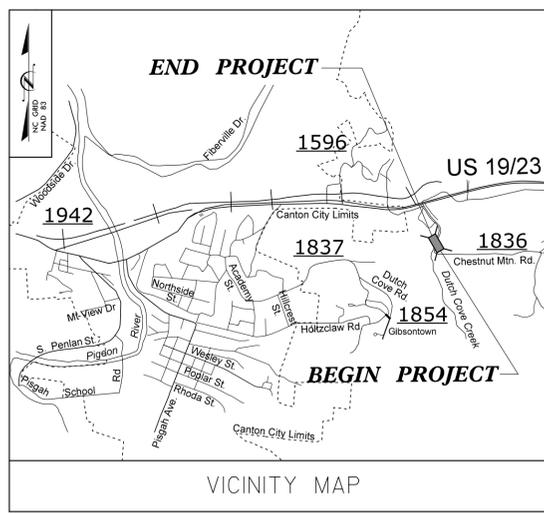
PROJECT: 17BP.14.R.131

CONTRACT: DN00111

\$\$\$ SYSTEMS \$\$\$  
\$\$\$ DGN \$\$\$  
\$\$\$ USERNAME \$\$\$

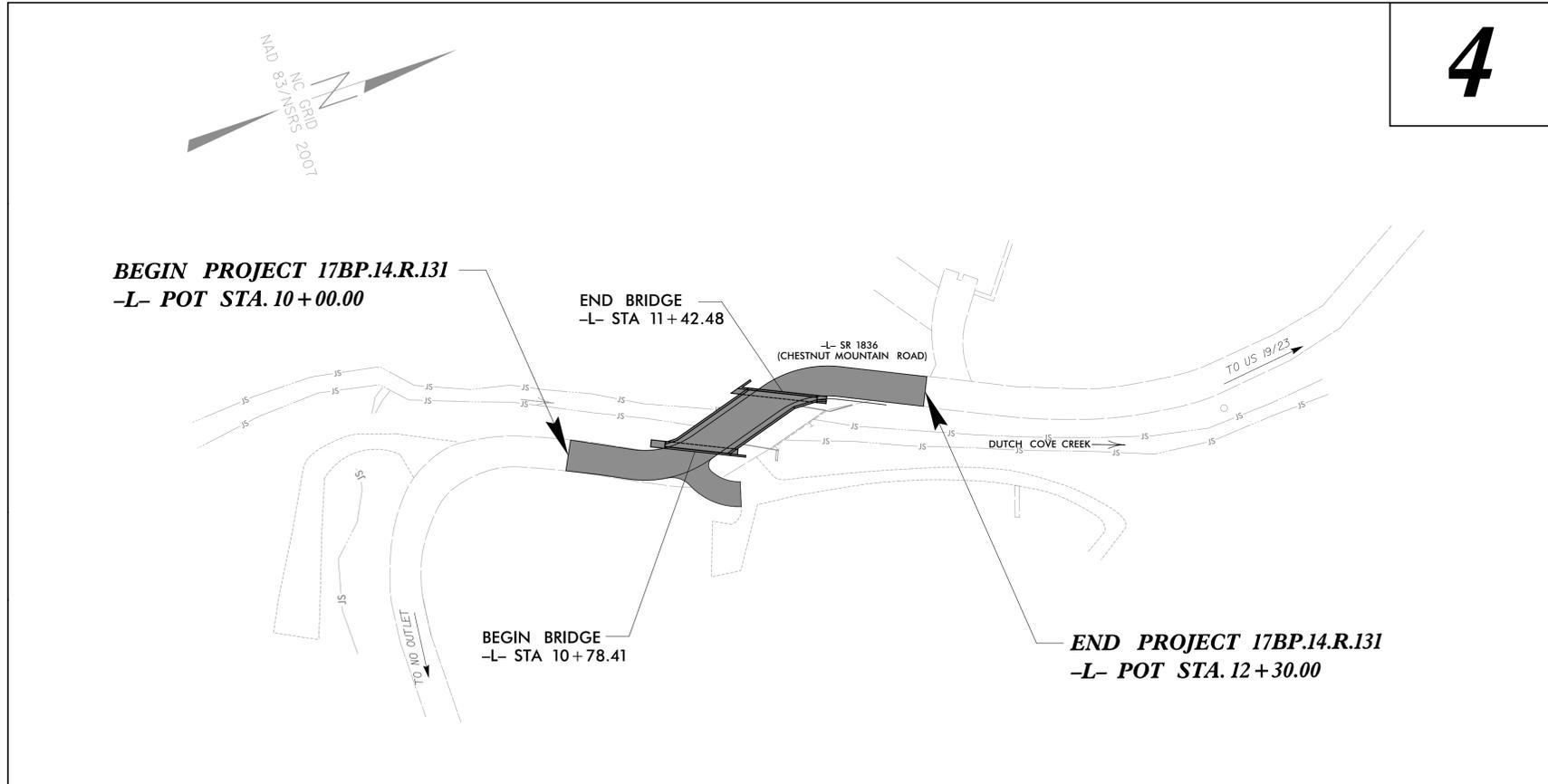
# STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS HAYWOOD COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.14.R.131	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
45360.1.24	BRZ-1836(2)	PE	
45360.2.24	BRZ-1836(2)	RW & UTILITIES CONST.	
17BP.14.R.131			

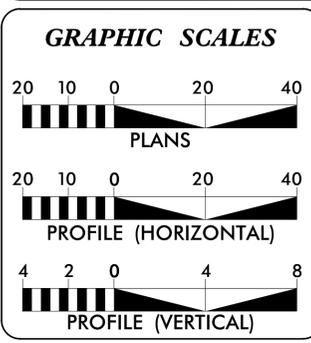


**LOCATION: BRIDGE NO. 144 OVER DUTCH COVE CREEK  
ON SR 1836 (CHESTNUT MOUNTAIN ROAD)**

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



4



**DESIGN DATA**

ADT 2009 = 440  
ADT 2025 = 880  
T = 6%  
V = 25 MPH

FUNCT. CLASS = RURAL LOCAL  
SUB-REGIONAL TIER

**PROJECT LENGTH**

LENGTH ROADWAY PROJECT 17BP.14.R.131 = 0.032 MI  
LENGTH STRUCTURE PROJECT 17BP.14.R.131 = 0.012 MI  
TOTAL LENGTH OF PROJECT 17BP.14.R.131 = 0.044 MI

Prepared in the Office of:  
**VAUGHN & MELTON**  
1318-F PATTON AVE.  
ASHEVILLE NC, 28806

FOR THE NORTH CAROLINA DIVISION OF HIGHWAYS

2012 STANDARD SPECIFICATIONS

**RIGHT OF WAY DATE:**  
MAY 22, 2013

**LETTING DATE:**

HARDY WILLIS, PE  
PROJECT ENGINEER

REECE SCHULER, PE  
PROJECT DESIGN ENGINEER

NC DOT CONTACT:  
JOSH DEYTON, PE  
DIVISION 14 BRIDGE PROJECT MANAGER

**HYDRAULICS ENGINEER**

10/6/14

Signature: Bradley S. Ridman, PE

**ROADWAY DESIGN ENGINEER**

10/6/14

Signature: [Handwritten Signature]

Professional Engineer Seals for both roles.

**DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA**

**V&M**  
Vaughn & Melton  
Consulting Engineers

Asheville, North Carolina 828-253-2796

Charlotte, North Carolina 704-377-5488  
Tri-Cities, Tennessee 423-467-8401  
Knoxville, Tennessee 865-546-5800  
Middlesboro, Kentucky 606-248-4600  
Spartanburg, South Carolina 864-574-4775

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Note: Not to Scale

\*S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# CONVENTIONAL PLAN SHEET SYMBOLS

### BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EP
Property Corner	-----x
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	-----WLB-----
Proposed Wetland Boundary	-----WLB-----
Existing Endangered Animal Boundary	-----EAB-----
Existing Endangered Plant Boundary	-----EPB-----

### BUILDINGS AND OTHER CULTURE:

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

### HYDROLOGY:

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

### RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○ MILEPOST 35
Switch	□ 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	-----R/W-----
Proposed Right of Way Line with Iron Pin and Cap Marker	-----R/W-----▲
Proposed Right of Way Line with Concrete or Granite Marker	-----R/W-----▲
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 Utility Easement	-----PUE-----

### ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	-----C-----
Proposed Slope Stakes Fill	-----F-----
Proposed Wheel Chair Ramp	-----WCR-----
Proposed Wheel Chair Ramp Curb Cut	-----WCC-----
Curb Cut for Future Wheel Chair Ramp	-----CCFR-----
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	-----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	●
Recorded U/G Power Line	-----P-----
Designated U/G Power Line (S.U.E.*)	-----P-----

### TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	○
Telephone Booth	□
Telephone Pedestal	□
Telephone Cell Tower	⊗
U/G Telephone Cable Hand Hole	□
Recorded U/G Telephone Cable	-----T-----
Designated U/G Telephone Cable (S.U.E.*)	-----T-----
Recorded U/G Telephone Conduit	-----TC-----
Designated U/G Telephone Conduit (S.U.E.*)	-----TC-----
Recorded U/G Fiber Optics Cable	-----T FO-----
Designated U/G Fiber Optics Cable (S.U.E.*)	-----T FO-----

### WATER:

Water Manhole	○
Water Meter	○
Water Valve	⊗
Water Hydrant	⊕
Recorded U/G Water Line	-----
Designated U/G Water Line (S.U.E.*)	-----
Above Ground Water Line	-----A/G Water-----

### TV:

TV Satellite Dish	⊗
TV Pedestal	□
TV Tower	⊗
U/G TV Cable Hand Hole	□
Recorded U/G TV Cable	-----TV-----
Designated U/G TV Cable (S.U.E.*)	-----TV-----
Recorded U/G Fiber Optic Cable	-----TV FO-----
Designated U/G Fiber Optic Cable (S.U.E.*)	-----TV FO-----

### GAS:

Gas Valve	◇
Gas Meter	⊕
Recorded U/G Gas Line	-----G-----
Designated U/G Gas Line (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-----
Recorded SS Forced Main Line	-----FSS-----
Designated SS Forced Main Line (S.U.E.*)	-----FSS-----

### MISCELLANEOUS:

Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	□
Utility Unknown U/G Line	-----?U/L-----
U/G Tank; Water, Gas, Oil	□
A/G Tank; Water, Gas, Oil	□
U/G Test Hole (S.U.E.*)	⊕
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

# SURVEY CONTROL SHEET 17BP.14.R.131

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.131	1-C
Location and Surveys	

BL	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
	1	BL-1	670337.3920	864191.4106	2433.53	OUTSIDE PROJECT LIMITS	
	2	BL-2	670595.7103	864191.7550	2424.12	11+50.15	2.42 RT
	3	BL-3	670846.5291	864276.8209	2414.52	OUTSIDE PROJECT LIMITS	

.....  
 BM1 ELEVATION = 2427.25  
 N 670410 E 864148  
 BL STATION 5+72.57 43.61 LEFT  
 RR SPIKE IN BASE OF 12' POPLAR  
 .....  
 BM2 ELEVATION = 2424.40  
 N 670500 E 864186  
 BL STATION 7+43.00 5.51 LEFT  
 RR SPIKE IN BASE OF TELEPHONE POLE  
 .....

ROW MARKER IRON PIN AND CAP-E

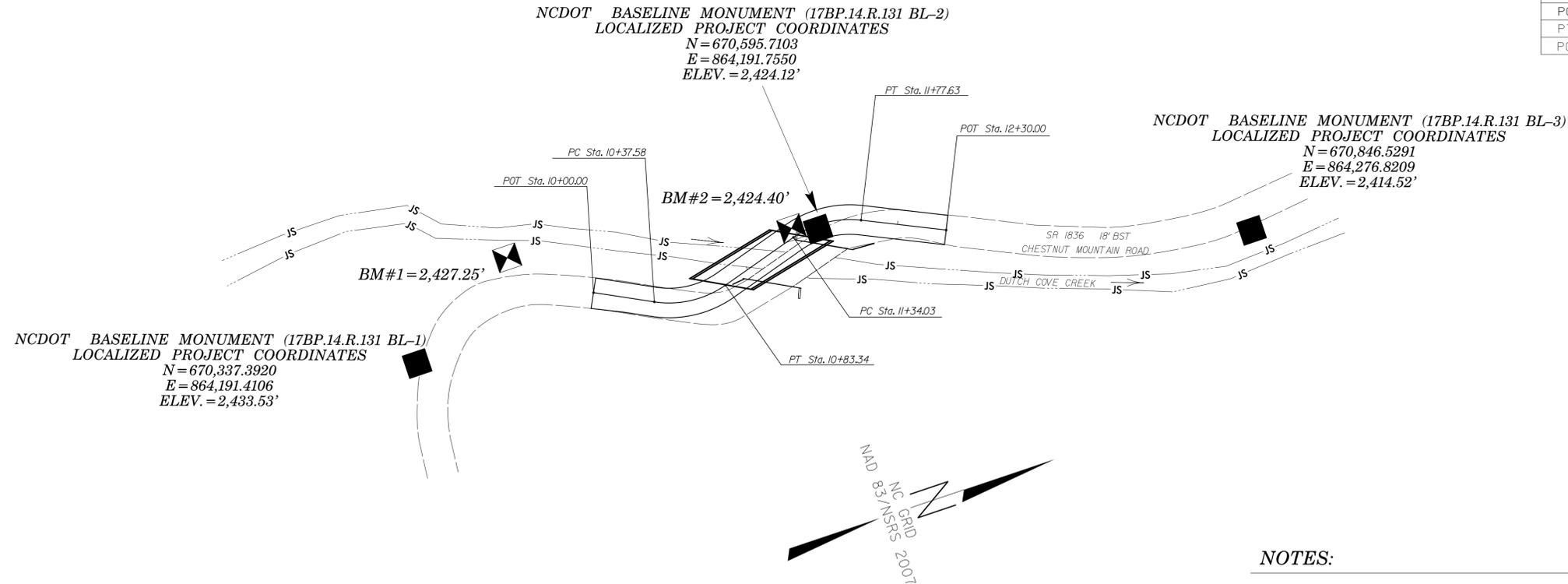
ALIGN	STATION	OFFSET	NORTH	EAST
L	10+00.00	-20.00	670462.4418	864167.0189
L	10+00.00	-25.00	670464.7286	864162.5725
L	10+37.58	-25.00	670498.1479	864179.7599
L	10+83.34	-25.00	670524.0846	864182.1976
L	11+34.03	-20.00	670574.1112	864172.6126
L	11+34.03	-25.00	670572.6929	864167.8179
L	11+77.63	-20.00	670630.8055	864176.9100
L	12+30.00	-20.00	670678.2147	864199.1686

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	9+79.70	-20.00	670441.7547	864157.8655
L	11+58.47	-31.32	670607.7057	864158.6606
L	11+70.09	-29.53	670624.4082	864164.1579
L	12+01.62	-29.84	670656.7102	864178.2036
L	12+06.79	-20.00	670657.2278	864189.3116

FINAL -L-

TYPE	STATION	NORTH	EAST
POT	10+00.00	670453.2947	864184.8045
PC	10+37.58	670486.7146	864201.9923
PT	10+83.34	670531.1765	864206.1706
PC	11+34.03	670579.7859	864191.7906
PT	11+77.63	670622.3057	864195.0140
POT	12+30.00	670669.7123	864217.2713



**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "430144 BL-2" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 670595.7103(±) EASTING: 864191.7550(±) ELEVATION: 2424.12(±±)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99972815

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "430144 BL-2" TO -L- STATION 10+00.00 IS S 2°47'39" W 142.59'

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

**NOTES:**

1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:  
[HTTP://WWW.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/](http://www.ncdot.org/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/)

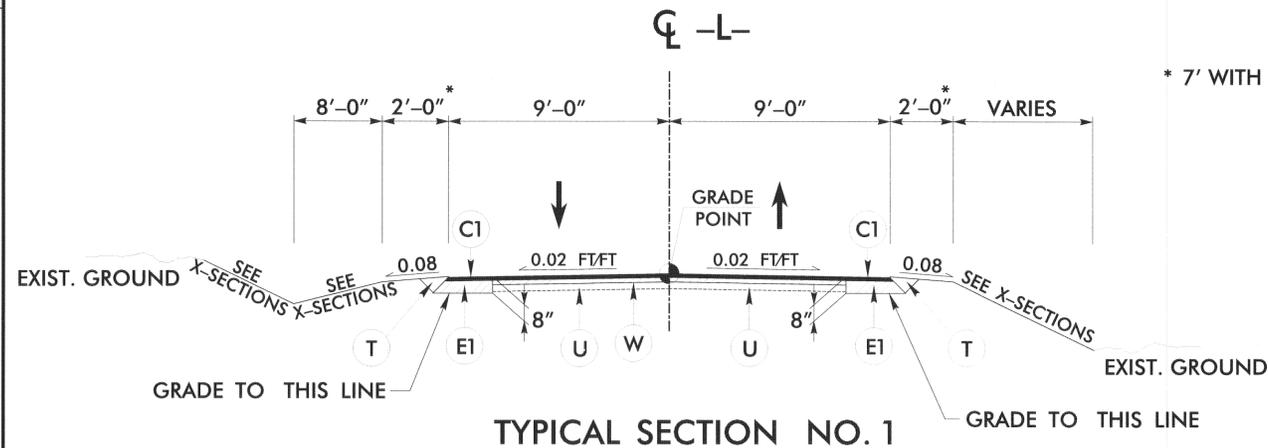
THE FILES TO BE FOUND ARE AS FOLLOWS:  
 17BP.14.R.131\_LS\_CONTROL\_1302XX.TXT

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

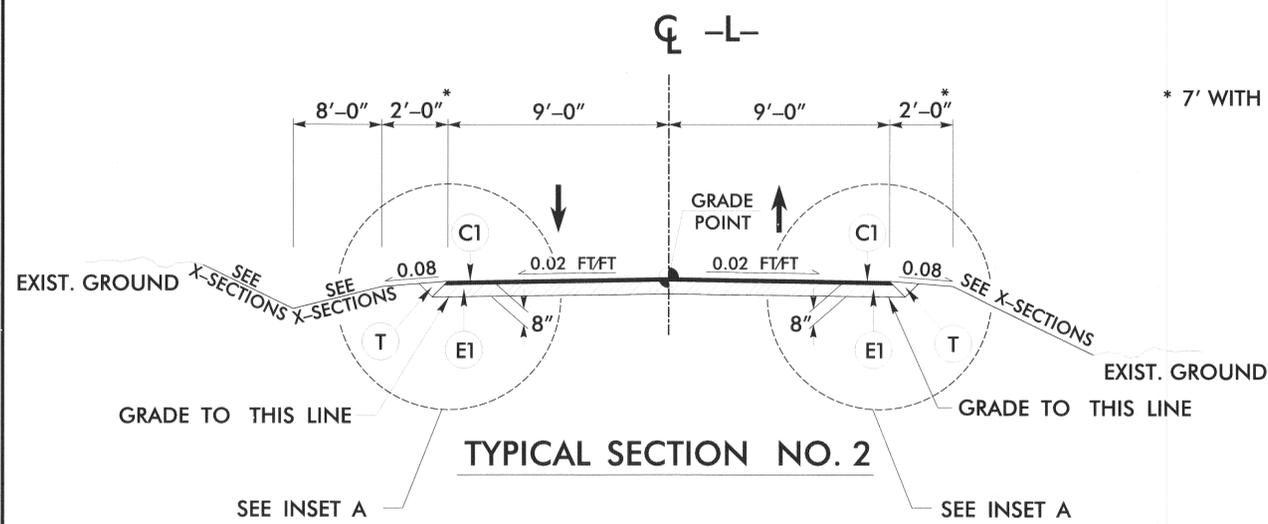
◆ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.  
 NETWORK ESTABLISHED FROM NGS ONLINE POSITIONING SERVICE (OPUS)

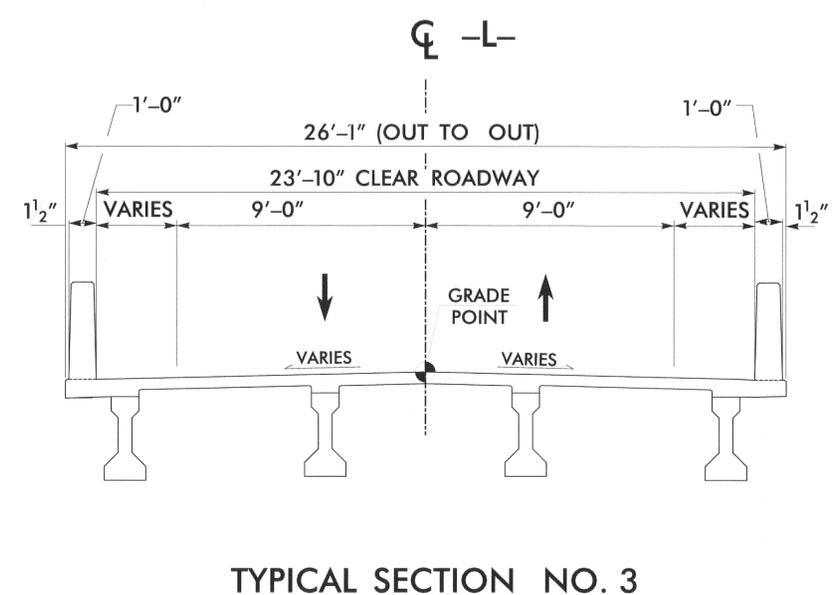
NOTE: DRAWING NOT TO SCALE



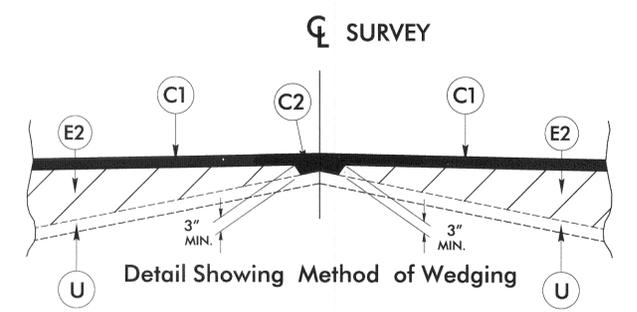
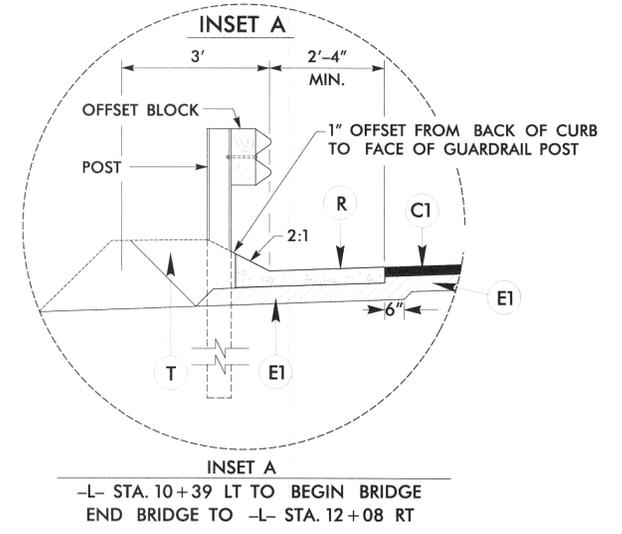
**USE TYPICAL SECTION NO. 1**  
 -L- STA. 10+00.00 (BEGIN PROJECT) TO STA. 10+40.00  
 -L- STA. 12+00.00 TO STA. 12+30.00 (END PROJECT)



**USE TYPICAL SECTION NO. 2**  
 -L- STA. 10+40.00 TO 10+78.41 (BEGIN BRIDGE)  
 -L- STA. 11+42.48 (END BRIDGE) TO STA. 12+00.00



**USE TYPICAL SECTION NO. 3**  
 -L- STA. 10+78.41 (BEGIN BRIDGE) TO  
 -L- STA. 11+42.48 (END BRIDGE)



PAVEMENT SCHEDULE	
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
E1	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
E2	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 5 1/2" IN DEPTH.
R	SHOULDER BERM GUTTER (NCDOT STD. DRAWING NO. 846.01)
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	PROPOSED WEDGING (SEE APPROPRIATE DETAILS)

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



DIVISION OF HIGHWAYS  
 STATE OF NORTH CAROLINA

**SUMMARY OF EARTHWORK**  
 IN CUBIC YARDS

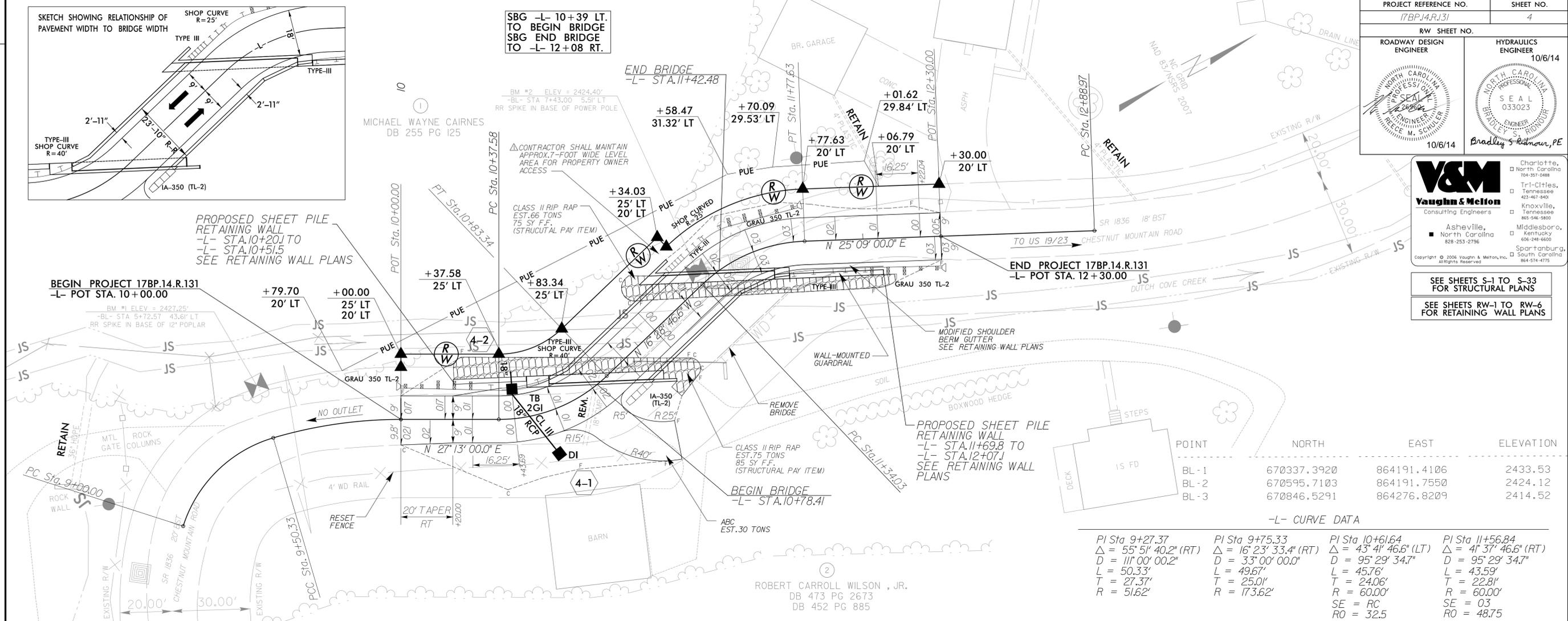
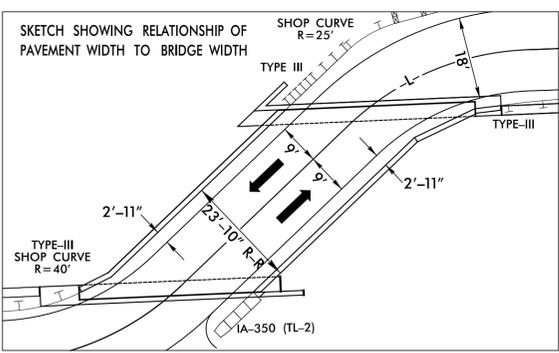
LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT + %	BORROW	WASTE
SUMMARY NO.1					
-L- STA. 10+00 TO STA. 10+78.41 (BEG. BRIDGE)	9		38	29	
SUBTOTAL SUMMARY NO.1	9		38	29	
SUMMARY NO.2	18		135	117	
-L- STA. 11+42.48 (END BRIDGE) TO STA. 12+30	18		135	117	
SUBTOTAL SUMMARY NO.2					
PROJECT SUBTOTAL	27		173	146	
EST. 5% FOR REPLACING TOP SOIL ON BORROW PITS				7	
GRAND TOTAL	27		173	153	
SAY	30			155	

CONTINGENCY ITEMS:  
 INCIDENTAL STONE = 50 TONS  
 UNDERCUT EXCAVATION = 50 CY  
 SELECT GRANULAR MATERIAL = 50 CY  
 CLASS IV SUBGRADE STABILIZATION = 50 TONS  
 GEOTEXTILE FOR SOIL STABILIZATION = 50 SY

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



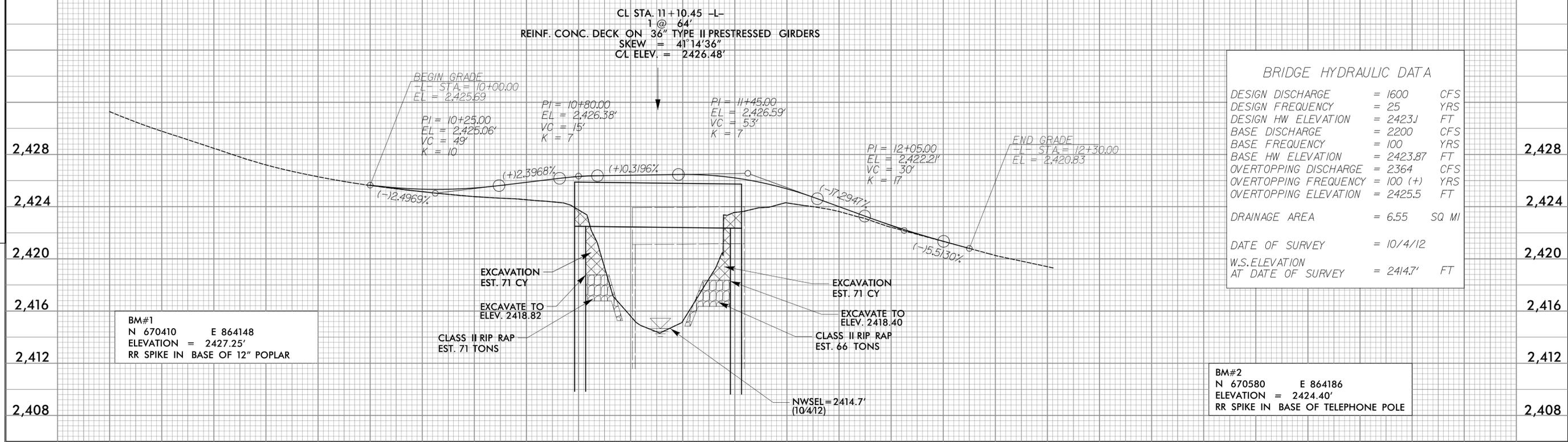
SEE SHEETS S-1 TO S-33 FOR STRUCTURAL PLANS  
SEE SHEETS RW-1 TO RW-6 FOR RETAINING WALL PLANS



POINT	NORTH	EAST	ELEVATION
BL-1	670337.3920	864191.4106	2433.53
BL-2	670595.7103	864191.7550	2424.12
BL-3	670846.5291	864276.8209	2414.52

-L- CURVE DATA

PI Sta	Δ	D	L	T	R
9+27.37	55° 51' 40.2" (RT)	111' 00" 00.2"	50.33'	27.37'	51.62'
9+75.33	16° 23' 33.4" (RT)	33' 00" 00.0"	49.67'	25.01'	173.62'
10+61.64	43° 41' 46.6" (LT)	95' 29' 34.7"	45.76'	24.06'	60.00'
11+56.84	4° 37' 46.6" (RT)	95' 29' 34.7"	43.59'	22.81'	60.00'
				SE = 03	
				RO = 32.5	RO = 48.75



BRIDGE HYDRAULIC DATA	
DESIGN DISCHARGE	= 1600 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 2423.1 FT
BASE DISCHARGE	= 2200 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 2423.87 FT
OVERTOPPING DISCHARGE	= 2364 CFS
OVERTOPPING FREQUENCY	= 100 (+) YRS
OVERTOPPING ELEVATION	= 2425.5 FT
DRAINAGE AREA	= 6.55 SQ MI
DATE OF SURVEY	= 10/4/12
W.S. ELEVATION AT DATE OF SURVEY	= 2414.7' FT

BM#2  
N 670580 E 864186  
ELEVATION = 2424.40'  
RR SPIKE IN BASE OF TELEPHONE POLE

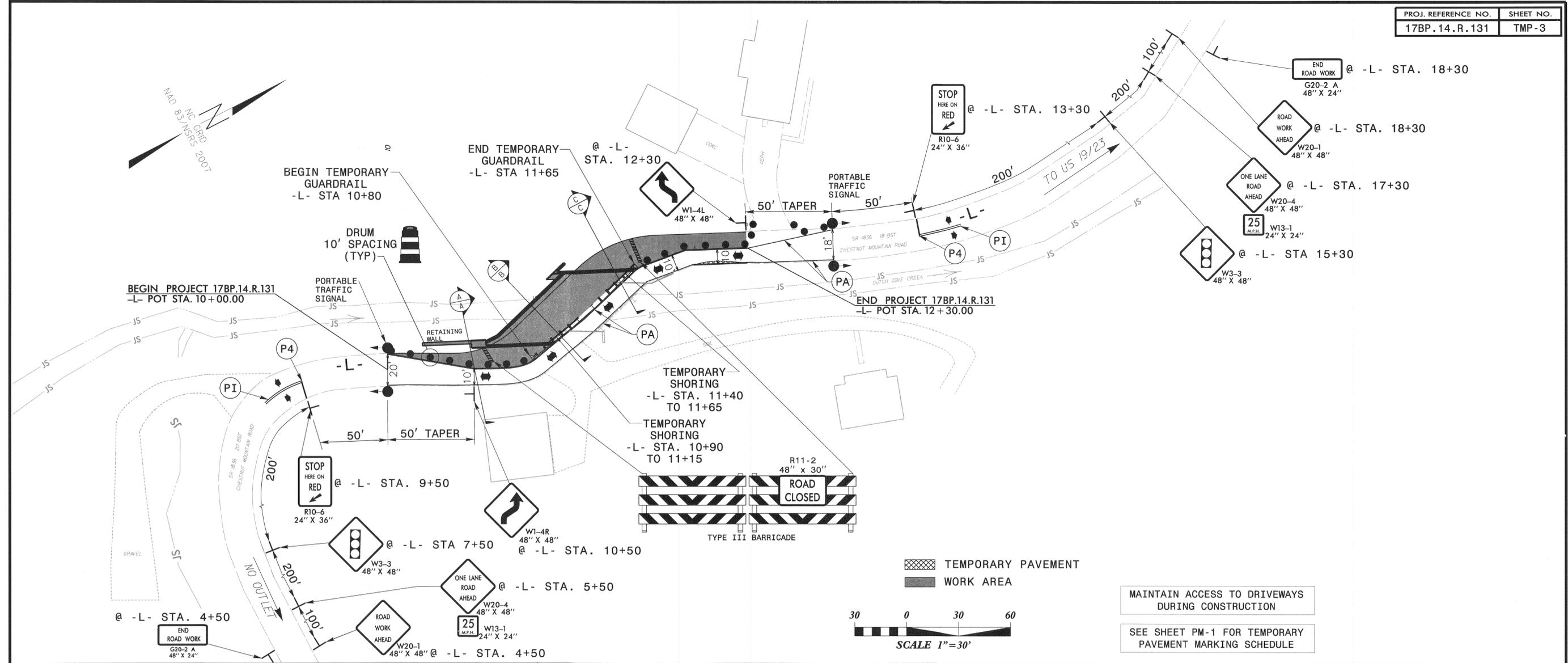
△ CONTRACTOR SHALL MAINTAIN APPROX. 7' WIDE LEVEL AREA FOR PARCEL #1.





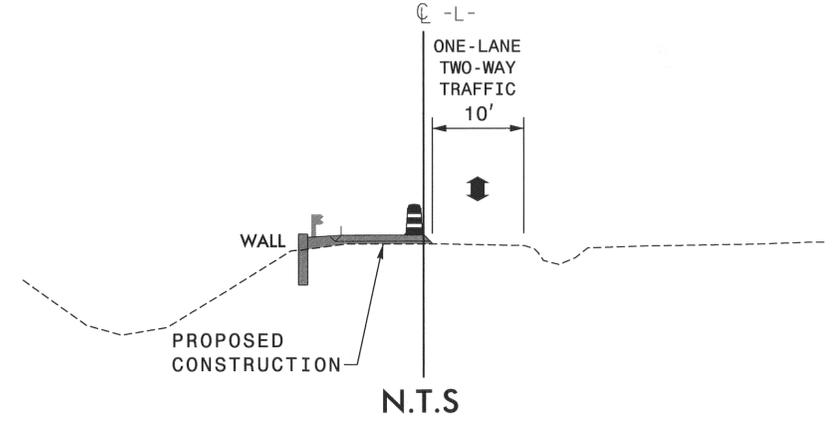






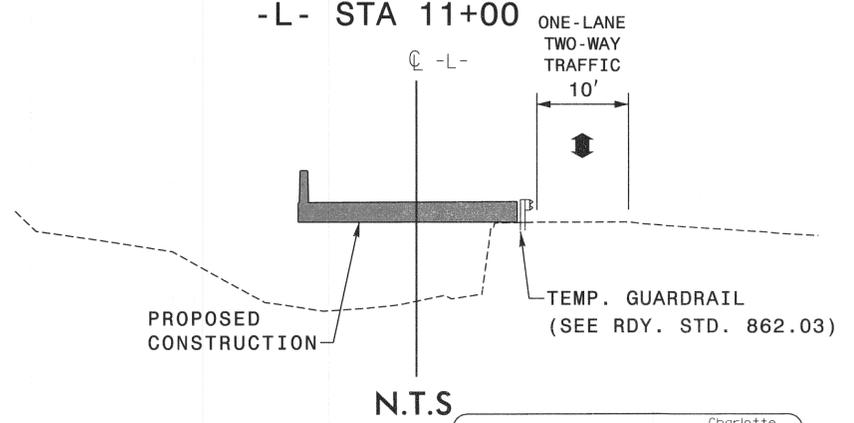
### SECTION A-A

-L- STA 10+50



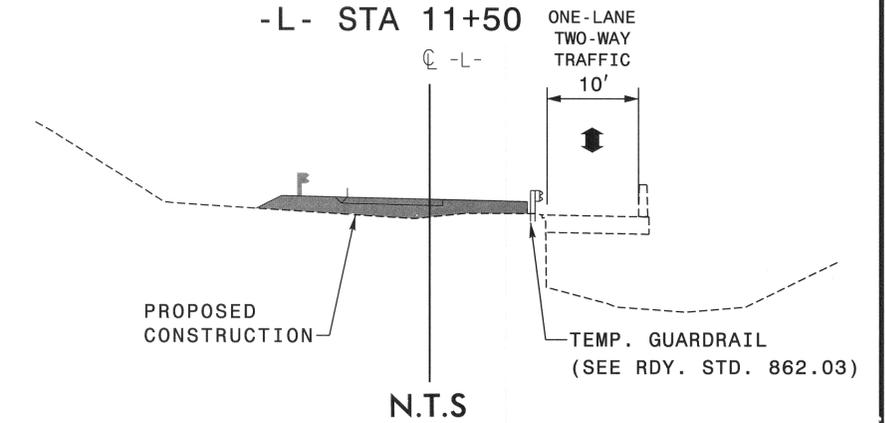
### SECTION B-B

-L- STA 11+00



### SECTION C-C

-L- STA 11+50



**V&M**  
**Vaughn & Melton**  
 Consulting Engineers

Asheville, North Carolina 828-253-2796

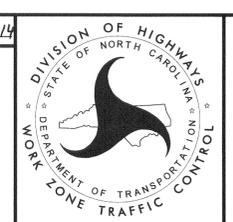
Charlotte, North Carolina 704-357-0488  
 Tri-Cities, Tennessee 423-467-8400  
 Knoxville, Tennessee 865-546-5800  
 Middlesboro, Kentucky 606-248-9600  
 Spartanburg, South Carolina 864-574-4775  
 Atlanta, Georgia 770-627-3590

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APPROVED: [Signature] DATE: 10-7-2014

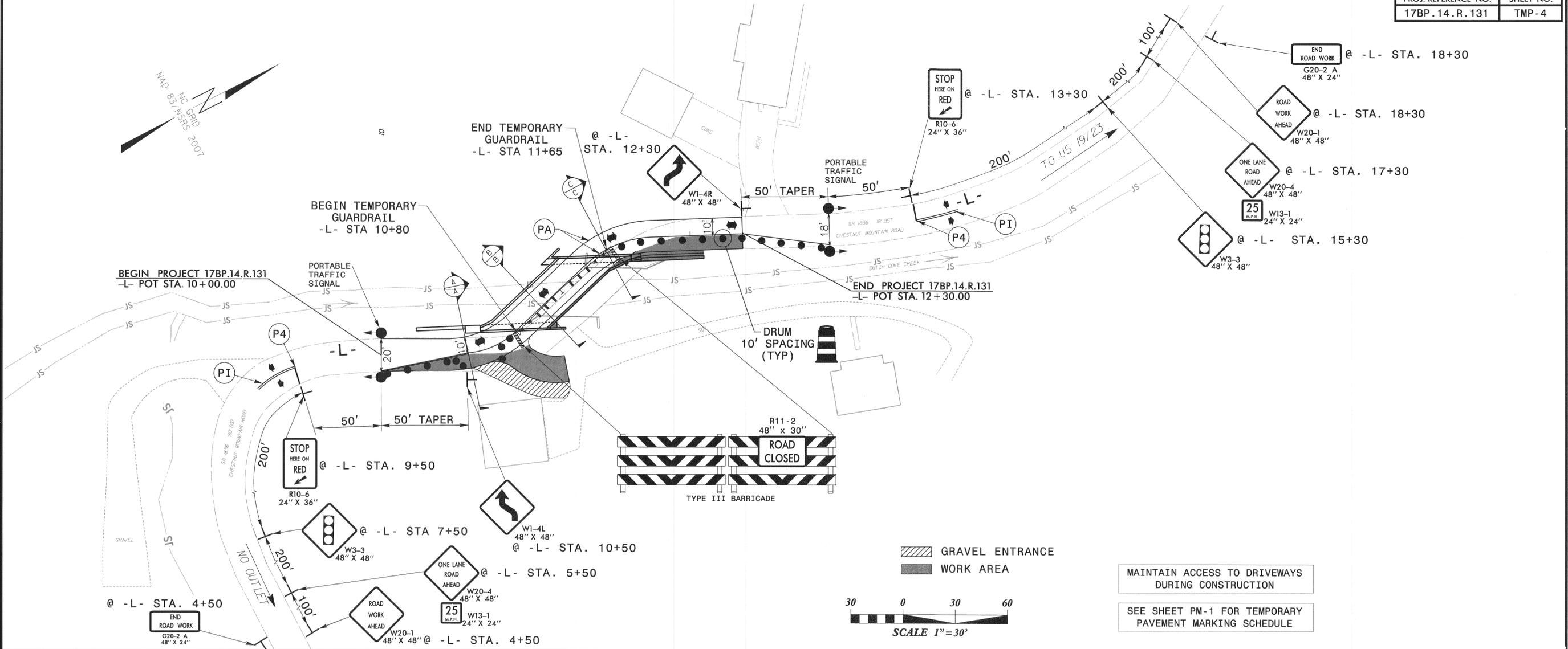
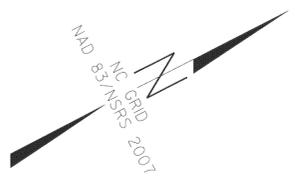
SEAL

PROFESSIONAL ENGINEER  
 LLOYD D. BROWN



# PHASE I

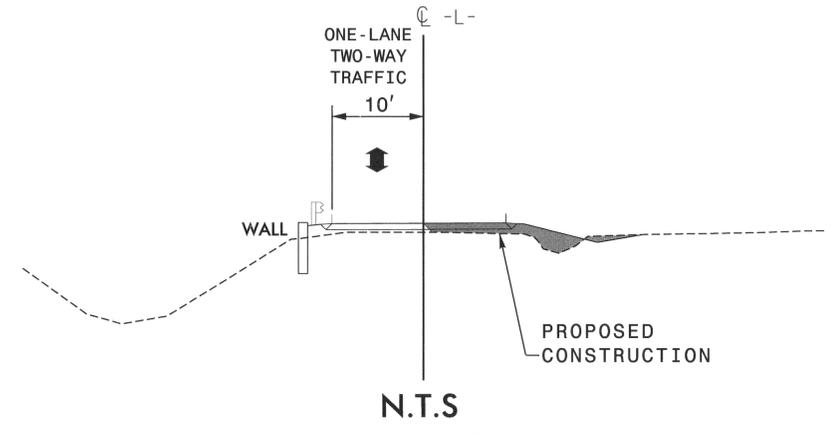
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 \$\$\$\$\$\$CON\$\$\$\$\$  
 \$\$\$\$\$\$SERNAME\$\$\$\$\$



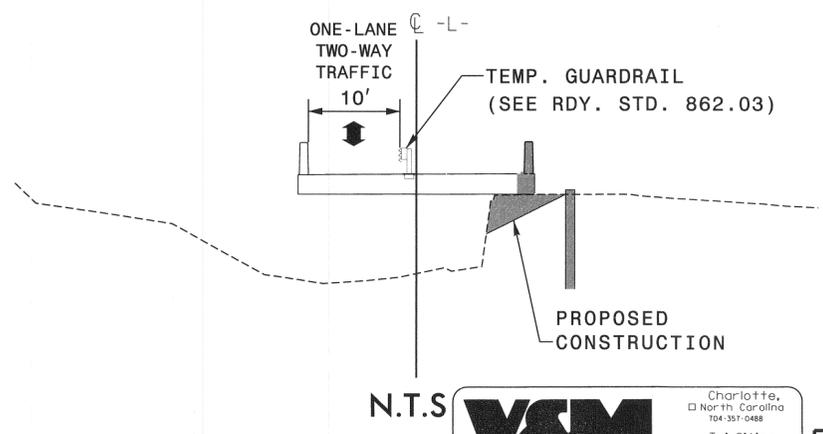
MAINTAIN ACCESS TO DRIVEWAYS DURING CONSTRUCTION

SEE SHEET PM-1 FOR TEMPORARY PAVEMENT MARKING SCHEDULE

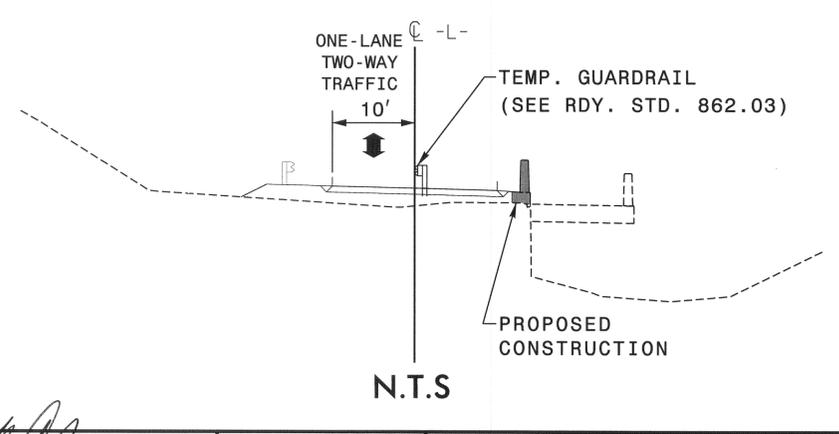
### SECTION A-A -L- STA 10+50



### SECTION B-B -L- STA 11+00



### SECTION C-C -L- STA 11+50



**V&M**  
Vaughn & Melton  
Consulting Engineers

Asheville, North Carolina  
828-253-2796

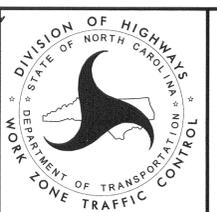
Charlotte, North Carolina 704-357-0488  
Tri-Cities, Tennessee 423-627-9400  
Knoxville, Tennessee 865-546-5800  
Middlesboro, Kentucky 606-248-5600  
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Atlanta, Georgia 770-521-9590

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APPROVED: *[Signature]* DATE: 10-7-2017

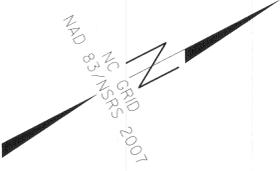
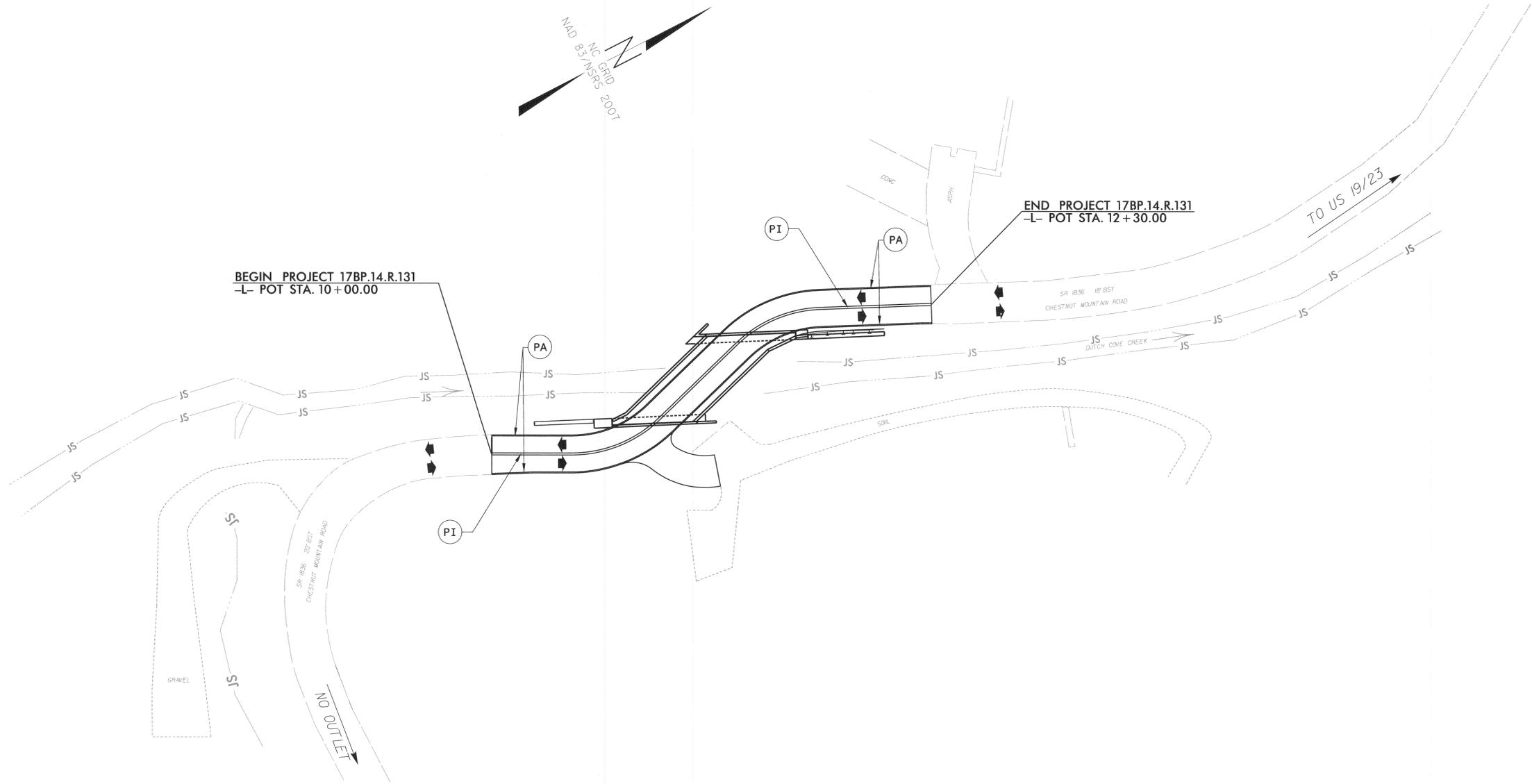
SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER  
20119  
LLOYD D. BROWN



# PHASE II

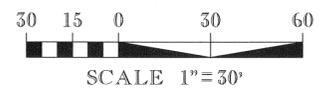
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 \$\$\$\$\$\$TIME\$\$\$\$\$  
 \$\$\$\$\$\$BY\$\$\$\$\$  
 \$\$\$\$\$\$JOBNO\$\$\$\$\$  
 \$\$\$\$\$\$PROJECT\$\$\$\$\$  
 \$\$\$\$\$\$SHEET\$\$\$\$\$  
 \$\$\$\$\$\$TOTAL\$\$\$\$\$  
 \$\$\$\$\$\$JOBNAME\$\$\$\$\$  
 \$\$\$\$\$\$JOBNO\$\$\$\$\$  
 \$\$\$\$\$\$PROJECT\$\$\$\$\$  
 \$\$\$\$\$\$SHEET\$\$\$\$\$  
 \$\$\$\$\$\$TOTAL\$\$\$\$\$



**FINAL PAVEMENT MARKING SCHEDULE**

SYMBOL	DESCRIPTION	QUANTITY BREAKDOWN	PAY ITEM	TOTAL QUANTITY
PAVEMENT MARKING LINES				
PA	WHITE SOLID EDGE LINE	230 FT	PAINT (4")	920 FT
PI	YELLOW DOUBLE CENTER LINE	230 FT	PAINT (4")	920 FT

NOTE: TEMPORARY PAVEMENT MARKINGS = 1 COAT OF PAINT  
 FINAL PAVEMENT MARKINGS = 2 COATS OF PAINT



**V&M**  
**Vaughn & Melton**  
 Consulting Engineers

Charlotte, North Carolina 704-357-0488  
 Tri-Cities, Tennessee 423-467-8900  
 Knoxville, Tennessee 865-546-5800  
 Middlesboro, Kentucky 606-248-6600  
 Spartanburg, South Carolina 864-574-4775

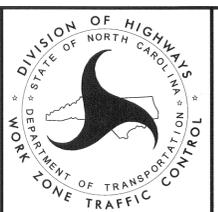
Asheville, North Carolina 828-253-2796

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APPROVED: *[Signature]* DATE: 10-7-24

SEAL

**PROFESSIONAL ENGINEER**  
 FLOYD D. BROWN  
 20119



**PERMANENT PAVEMENT MARKING PLAN**

\$\$\$\$\$\$ SCHEMATIC \$\$\$\$\$\$  
 \$\$\$\$\$\$ NOT FOR CONSTRUCTION \$\$\$\$\$\$  
 \$\$\$\$\$\$ FOR INFORMATION ONLY \$\$\$\$\$\$  
 \$\$\$\$\$\$ DO NOT SCALE \$\$\$\$\$\$



# EROSION CONTROL PLAN

PROJECT REFERENCE NO. 17BP.14.R.131  
SHEET NO. EC-1/CONS-4

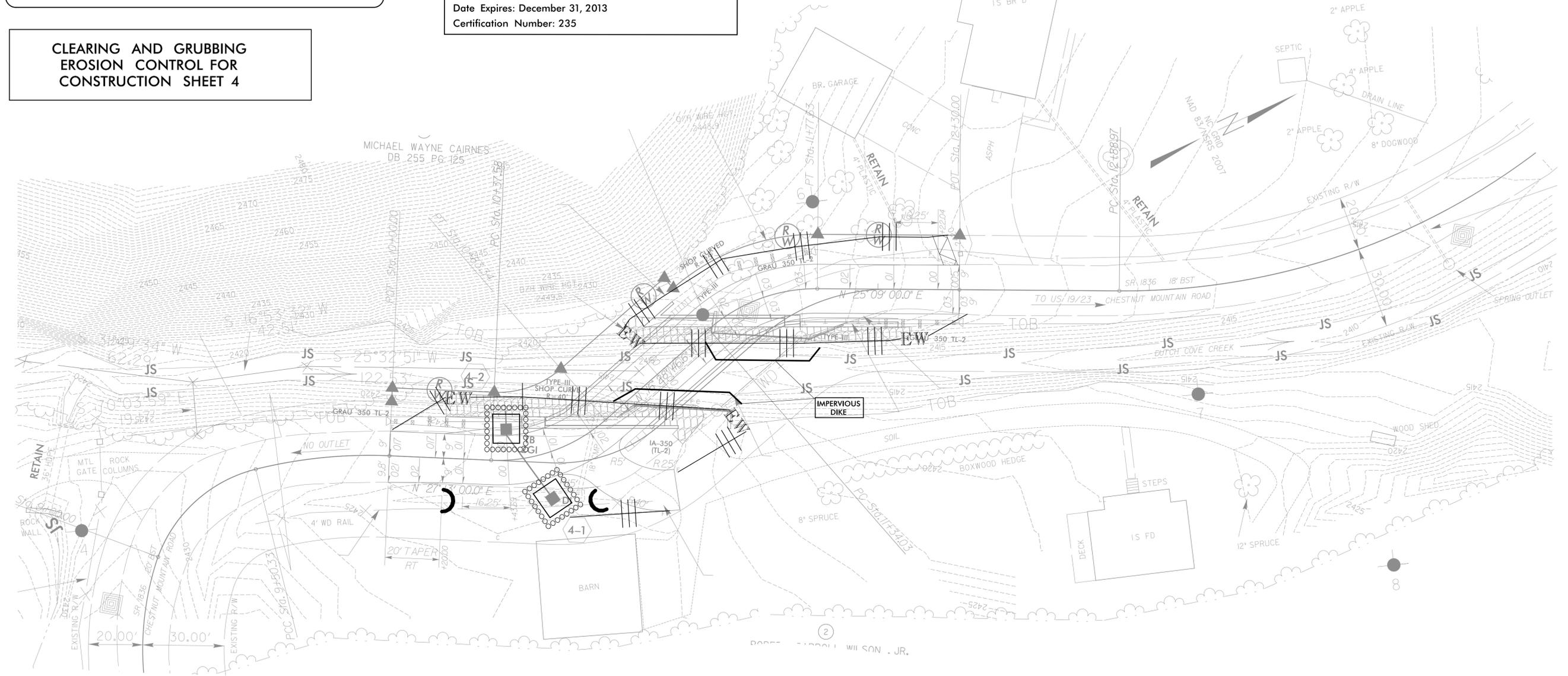


Charlotte, North Carolina 704-357-0488  
Tri-Cities, Tennessee 423-467-8401  
Knoxville, Tennessee 865-546-5800  
Middlesboro, Kentucky 606-249-6600  
Spartanburg, South Carolina 864-574-4775  
Asheville, North Carolina 828-253-2796  
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THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 3, 2011 ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES DIVISION OF WATER QUALITY.

Level III-A: Designer of Erosion and Sediment Control Plans  
Garry Moore, PLS  
Date Issued: November 30, 2013  
Date Expires: December 31, 2013  
Certification Number: 235

CLEARING AND GRUBBING  
EROSION CONTROL FOR  
CONSTRUCTION SHEET 4



Std. #	Description	Symbol
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	▲▲▲
1632.03	Rock Inlet Sediment Trap Type C	□
1633.01	Temporary Rock Silt Check Type-A	▨
1633.01	Wattle / Coir Fiber Wattle	⌒ -EW-
	with Polyacrylamide (PAM)	⌒

NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.  
  
ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

ROADSIDE ENVIRONMENTAL UNIT  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.  
  
2012 STANDARD SPECIFICATIONS

PROJECT NO. 17BP.14.R.131  
COUNTY HAYWOOD  
STATION: 11+10.44 -L-  
REPLACES BRIDGE NO. 144

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
BRIDGE #144 ON SR 1836  
OVER DUTCH COVE CREEK

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

PROJECT REFERENCE NO.	SHEET NO.
17BPJ4.R.131	EC-2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

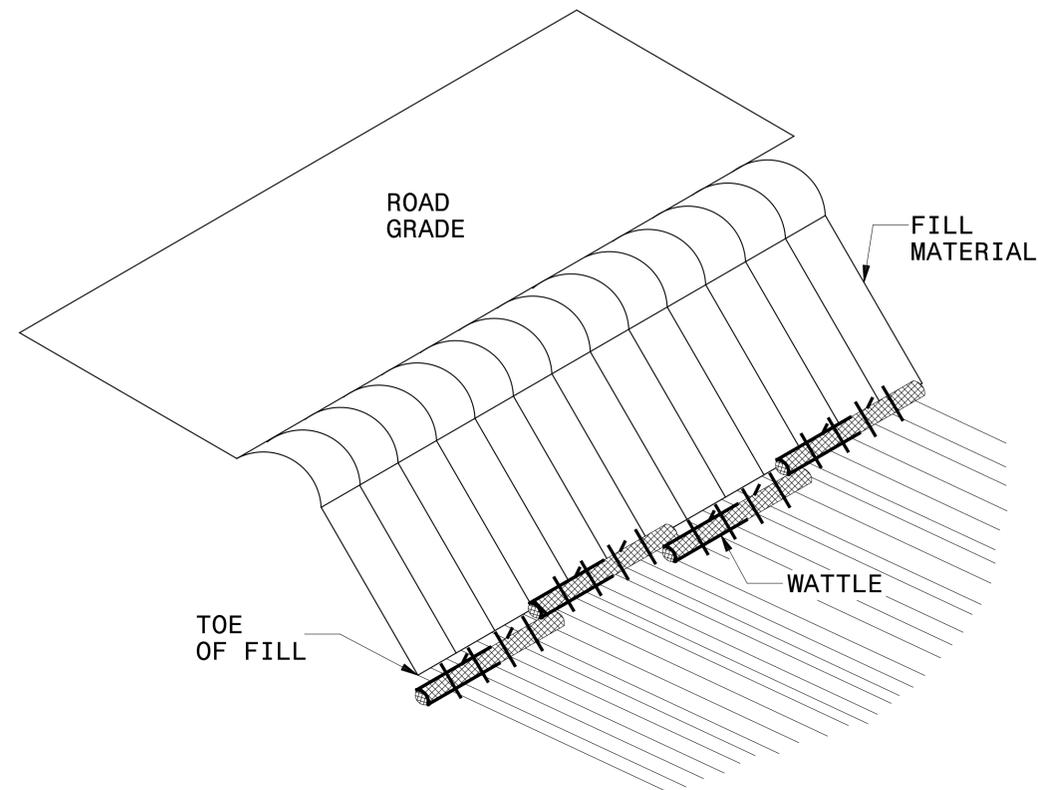
***SOIL STABILIZATION TIMEFRAMES***

<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.

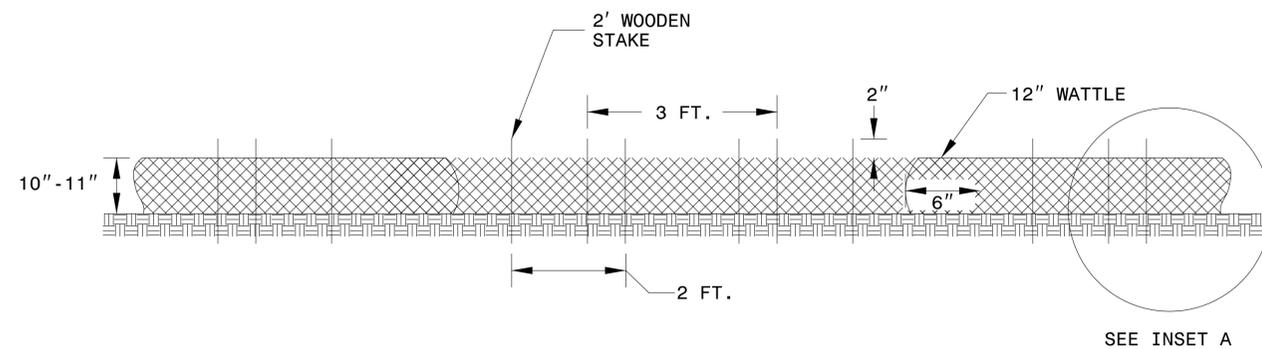


PROJECT REFERENCE NO. 17BPJ4R131	SHEET NO. EC-4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

# WATTLE BARRIER DETAIL



**ISOMETRIC VIEW**



**FRONT VIEW**

**NOTES:**

USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE AND LENGTH OF 10 FT.

EXCAVATE A 1 TO 2 INCH TRENCH FOR WATTLE TO BE PLACED.

DO NOT PLACE WATTLES ON TOE OF SLOPE.

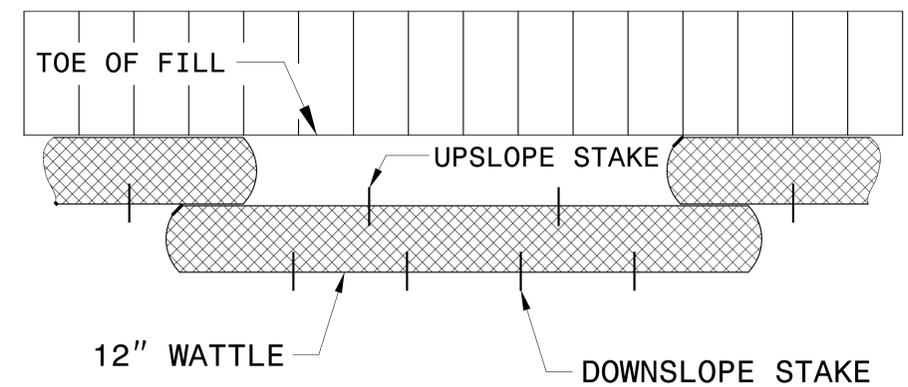
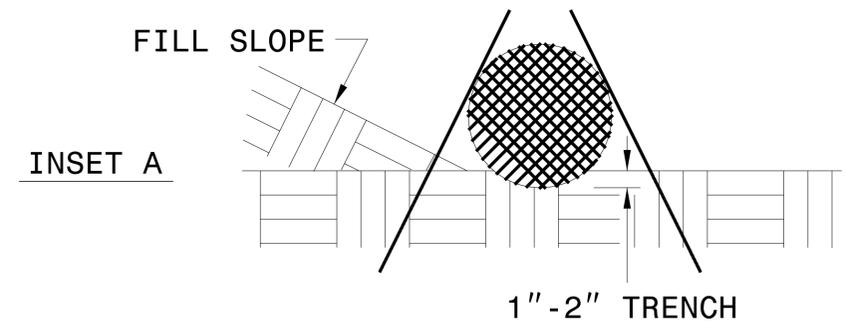
USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

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

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

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

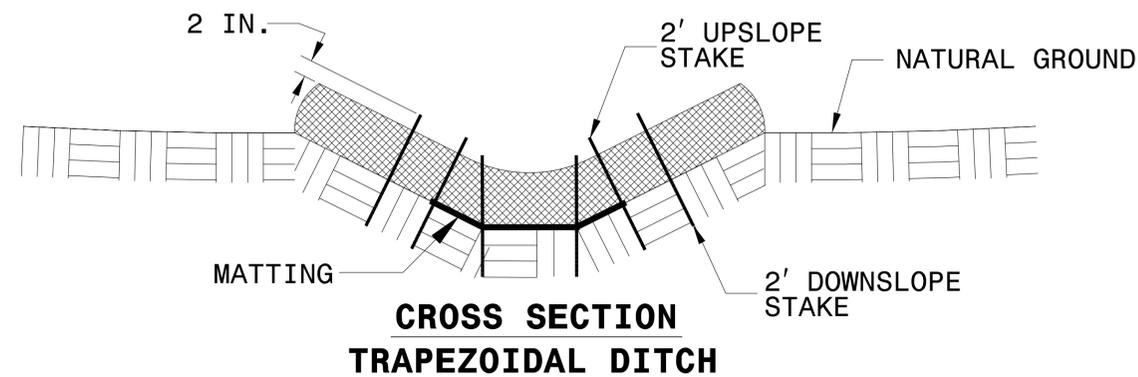
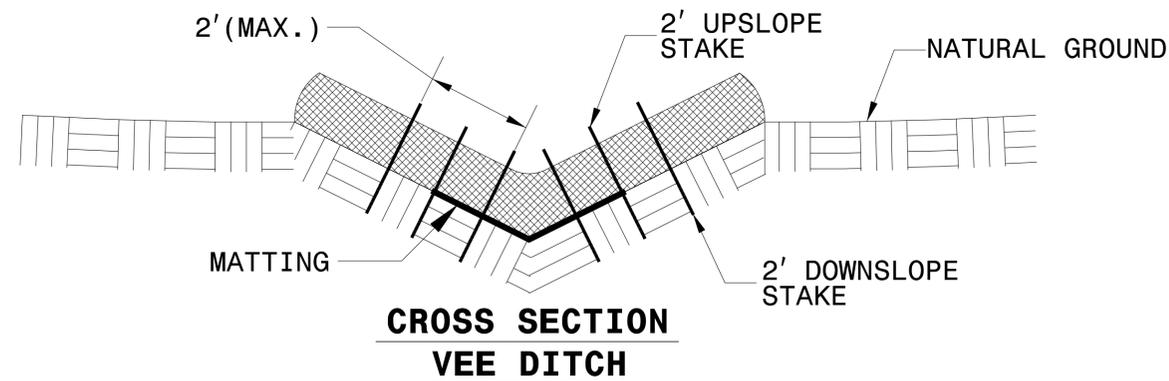
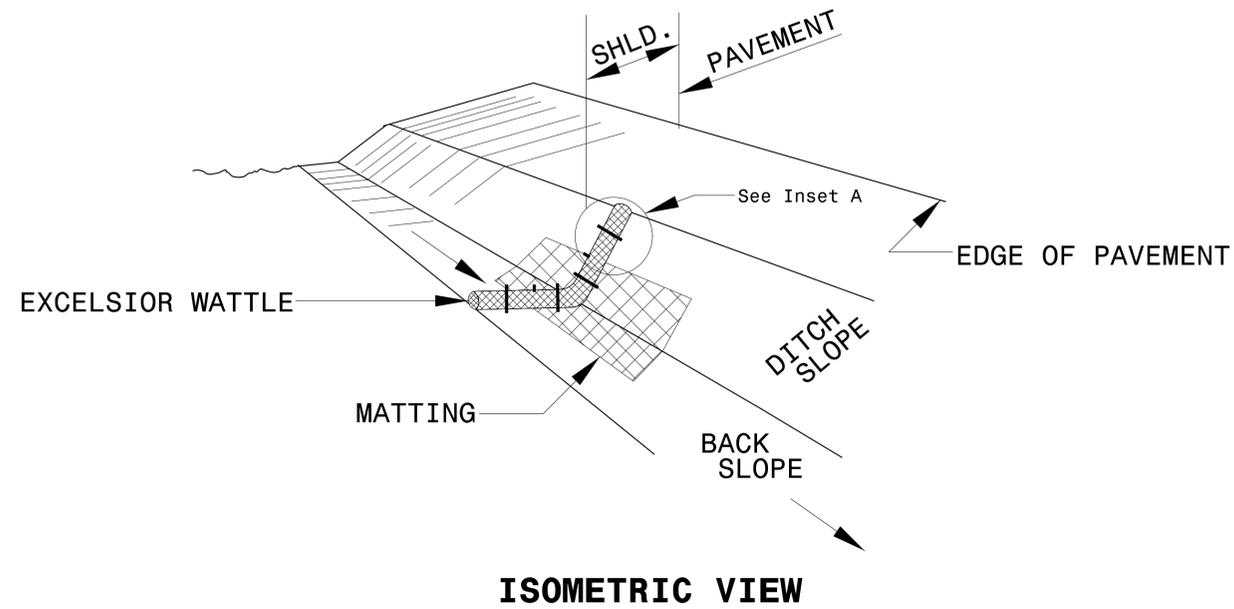
FOR BREAKS ALONG LARGE SLOPES, USE MAXIMUM SPACING OF 20 FT.



**TOP VIEW**

PROJECT REFERENCE NO. 17BPJ4.R.131	SHEET NO. EC-3
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

# WATTLE DETAIL



**NOTES:**

USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE.

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

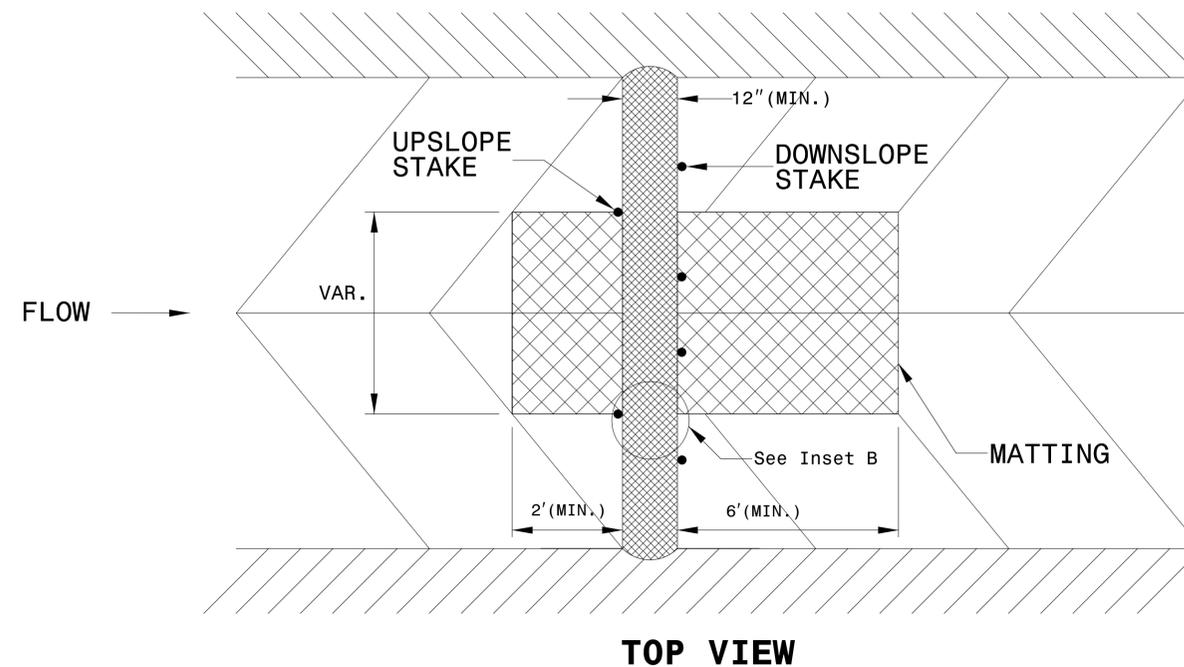
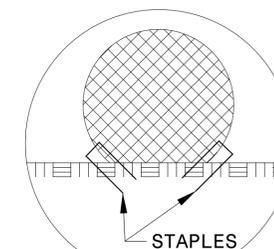
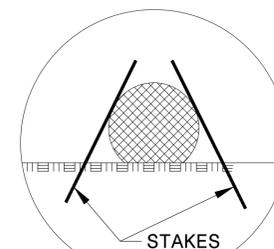
ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

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

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

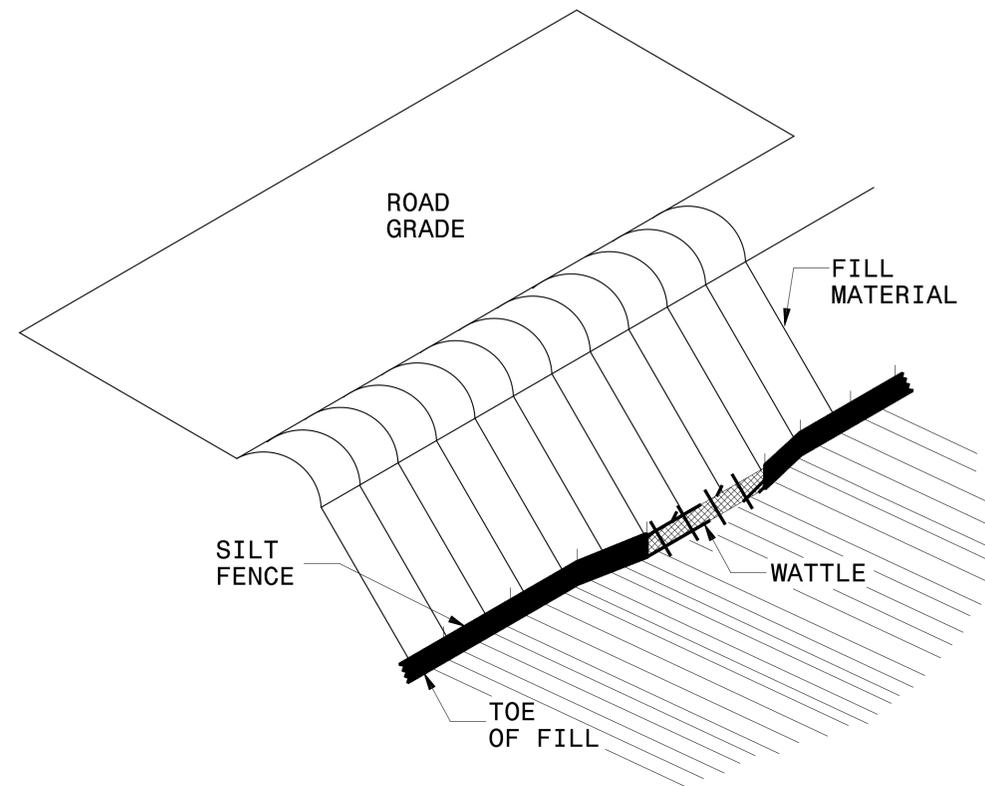
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

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

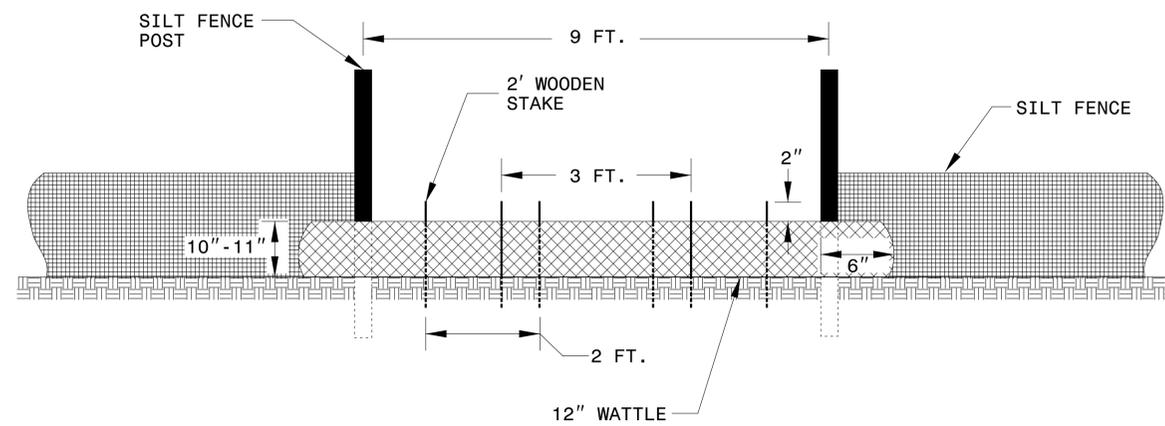


# SILT FENCE WATTLE BREAK DETAIL

PROJECT REFERENCE NO. 17BPJ4.RJ31		SHEET NO. EC-5	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	



**ISOMETRIC VIEW**

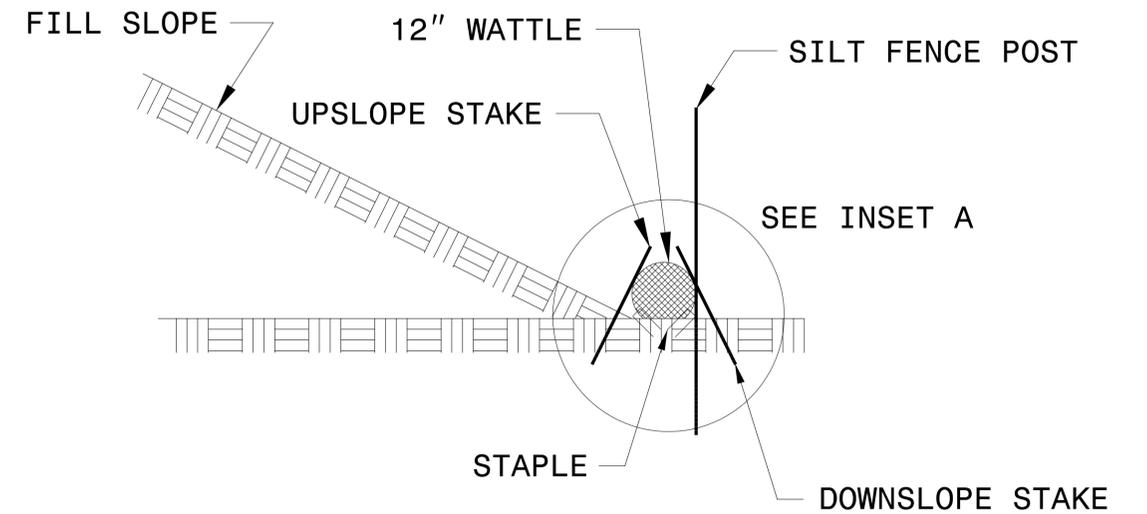
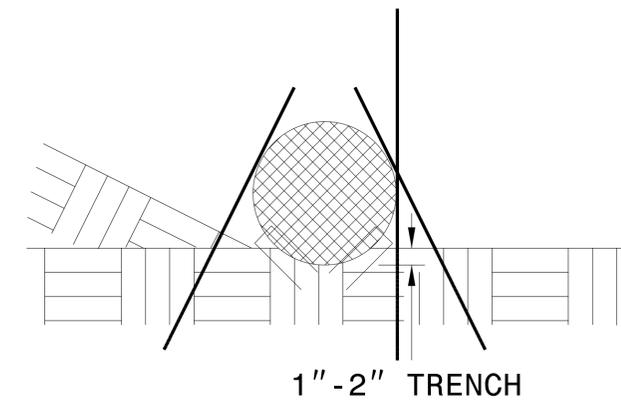


**VIEW FROM SLOPE**

**NOTES:**

- USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE AND LENGTH OF 10 FT.
- EXCAVATE A 1 TO 2 INCH TRENCH FOR WATTLE TO BE PLACED.
- DO NOT PLACE WATTLE ON TOE OF SLOPE.
- USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.
- INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO GROUND.
- PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.
- INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.
- WATTLE INSTALLATION CAN BE ON OUTSIDE OF THE SILT FENCE AS DIRECTED.
- INSTALL TEMPORARY SILT FENCE IN ACCORDANCE WITH SECTION 1605 OF THE STANDARD SPECIFICATIONS.

**INSET A**



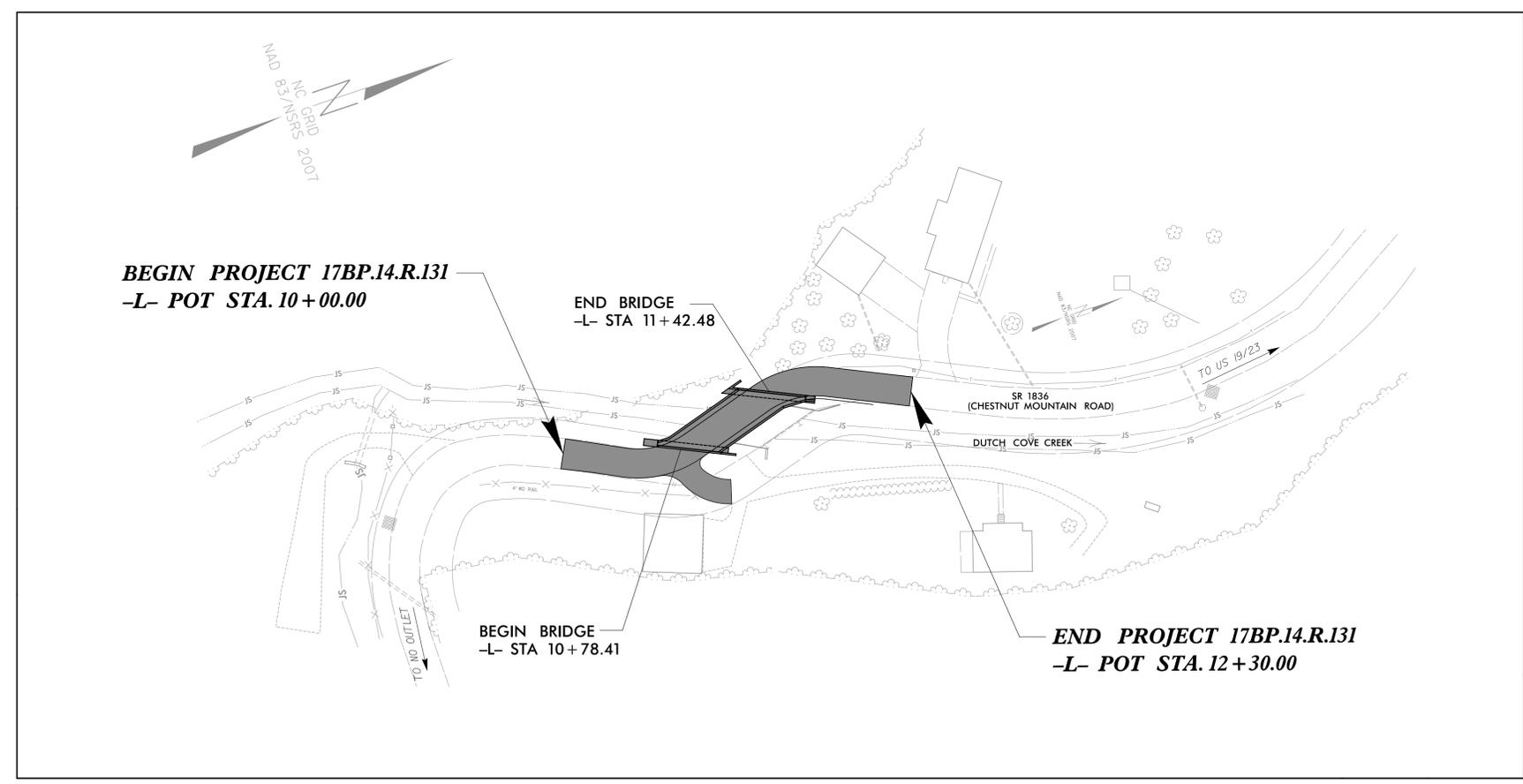
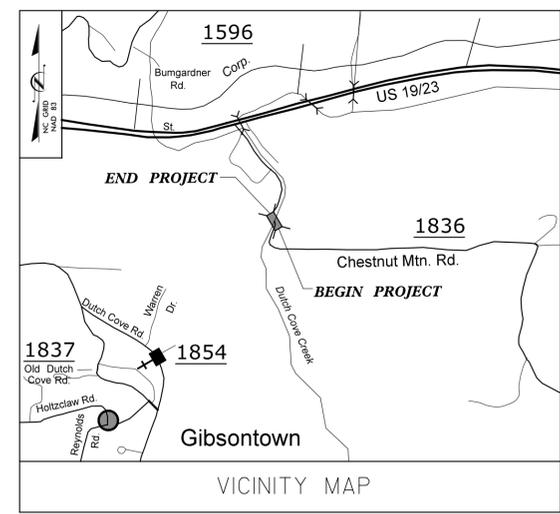
**SIDE VIEW**

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# UTILITIES BY OTHERS HAYWOOD COUNTY

LOCATION: BRIDGE NO. 144 OVER DUTCH COVE CREEK  
ON SR 1836 (CHESTNUT MOUNTAIN ROAD)

TYPE OF WORK: AERIAL POWER AND AERIAL & UNDERGROUND TELEPHONE



**V&M**  
Vaughn & Melton  
Consulting Engineers

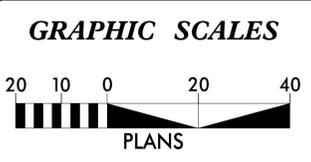
Asheville, North Carolina  
828-253-2796

Charlotte, North Carolina 704-357-0488  
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Knoxville, Tennessee 865-946-5900  
Middlesboro, Kentucky 606-248-6600  
Spartanburg, South Carolina 864-574-4775

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PROJECT: 17BP.14.R.131

CONTRACT: DN00111



INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
UO-1	TITLE SHEET
UO-2	UTILITIES BY OTHERS PLAN SHEET

UTILITY OWNERS ON PROJECT

(1) POWER - DUKE ENERGY

(2) TELEPHONE - AT&T

PLANS PREPARED BY:

**V&M**  
Vaughn & Melton  
Consulting Engineers  
1318-F Patton Ave.  
Asheville, NC 28806  
828-253-2796

PREPARED FOR THE OFFICE OF:  
**DIVISION OF HIGHWAYS  
UTILITIES ENGINEERING  
SECTION**

1591 MAIL SERVICES CENTER  
RALEIGH, NC 27699-1591  
PHONE (919) 250-4128  
FAX (919) 250-4119

<u>Roger Worthington, P.E.</u>	UTILITIES SECTION ENGINEER
<u>Xxxxx Xxxxx, P.E.</u>	UTILITIES SQUAD LEADER PROJECT ENGINEER
<u>Lynn Mann, P.G.</u>	UTILITIES PROJECT DESIGNER

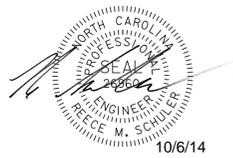
06/26/13

V&M PROJECT #31235-02  
TRANSPORTATION\31235-02 UTILITIES\UO-1.DGN



DIVISION OF HIGHWAYS  
 STATE OF NORTH CAROLINA

**CROSS SECTION SUMMARY**  
 IN CUBIC YARDS



-L- LOCATION	UNCLASSIFIED EXCAVATION	EMBT
10 + 00	0	0
10 + 50	2	33
10 + 78.41 BEGIN BRIDGE	7	0
11 + 42.48 END BRIDGE	2	13
11 + 50	16	47
12 + 00	0	52
12 + 30	0	5

NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT.

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



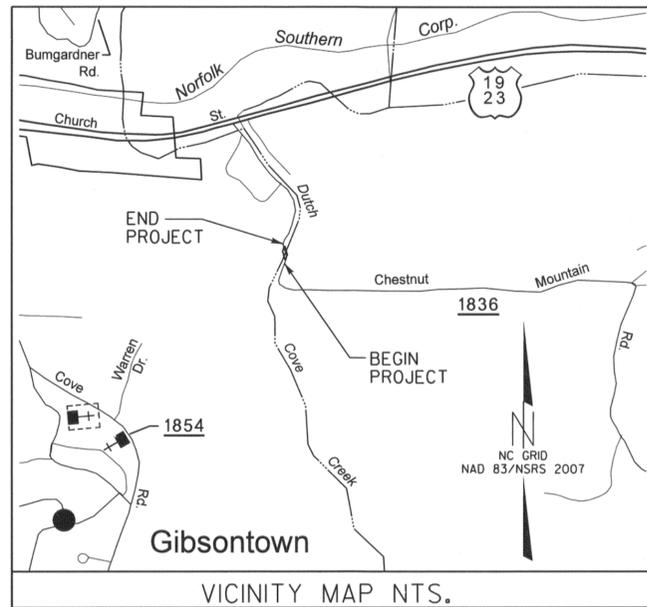




NO: 17BP.14.R.131

CONTRACT: DN00111

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.14.R.131		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
45360.1.24	BRZ-1836(2)	P.E.	
45360.2.24	BRZ-1836(2)	RW	
17BP.14.R.131		CONST.	

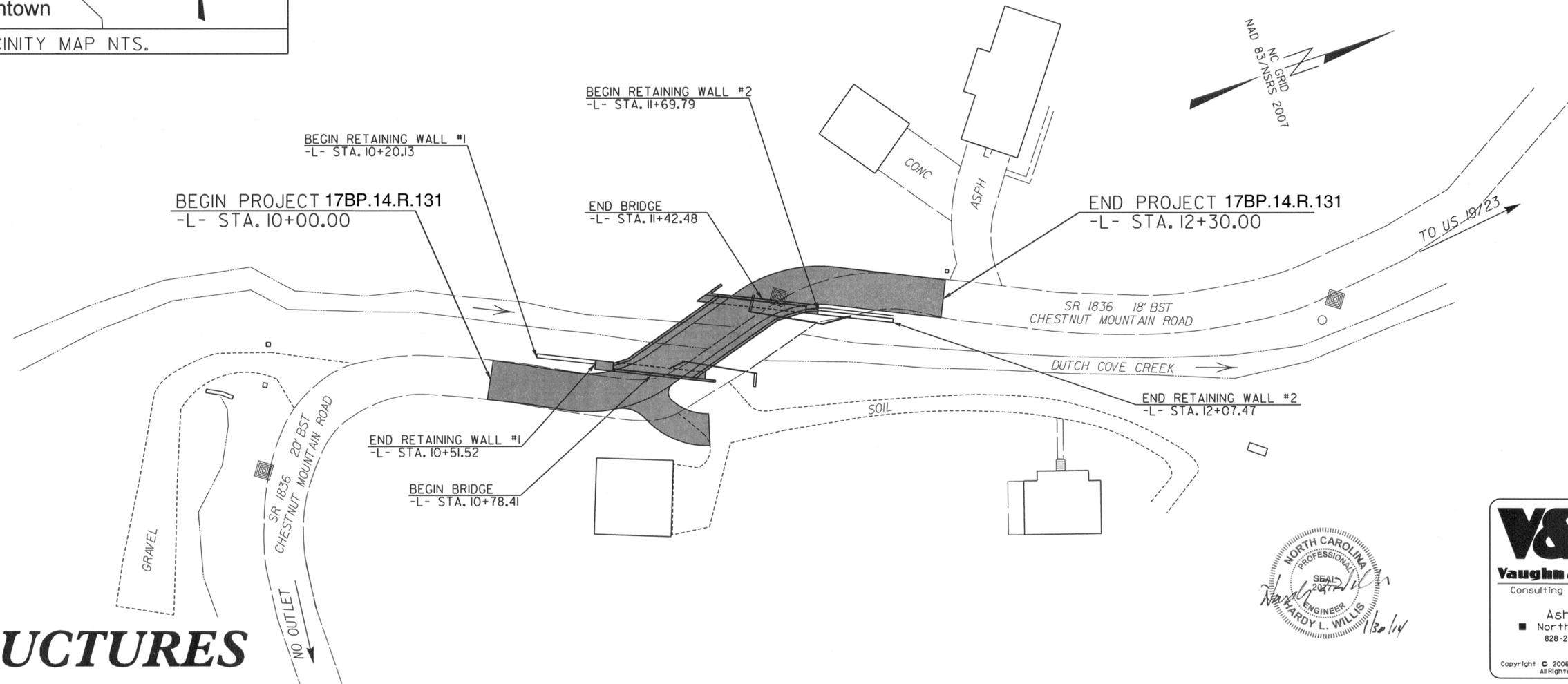


STATE OF NORTH CAROLINA

DIVISION OF HIGHWAYS

# HAYWOOD COUNTY

**BRIDGE NO. 144 OVER DUTCH COVE CREEK  
ON SR 1836 (CHESTNUT MOUNTAIN ROAD)**



## STRUCTURES

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Middlesboro, Kentucky 606-248-6600  
Spartanburg, South Carolina 864-574-4775

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**DESIGN DATA**

ADT 2009 = 440  
ADT 2025 = 880  
T = 6%  
V = 25 MPH

FUNCT. CLASS=RURAL LOCAL  
SUB-REGIONAL TIER

**PROJECT LENGTH**

LENGTH ROADWAY	PROJECT 17BP.14.R.131=	0.032 MI
LENGTH STRUCTURE	PROJECT 17BP.14.R.131=	0.012 MI
TOTAL LENGTH OF	PROJECT 17BP.14.R.131=	0.044 MI

Prepared In the Office of:  
**VAUGHN & MELTON**  
1318-F PATTON AVE.  
ASHEVILLE NC, 28806  
FOR THE NORTH CAROLINA DIVISION OF HIGHWAYS

2012 STANDARD SPECIFICATIONS

LETTING DATE :

HARDY WILLIS, PE  
PROJECT ENGINEER

RYAN SHIPMAN, EI  
PROJECT DESIGN ENGINEER

**STRUCTURES MANAGEMENT UNIT**  
1000 BIRCH RIDGE DR.  
RALEIGH, N.C. 27610

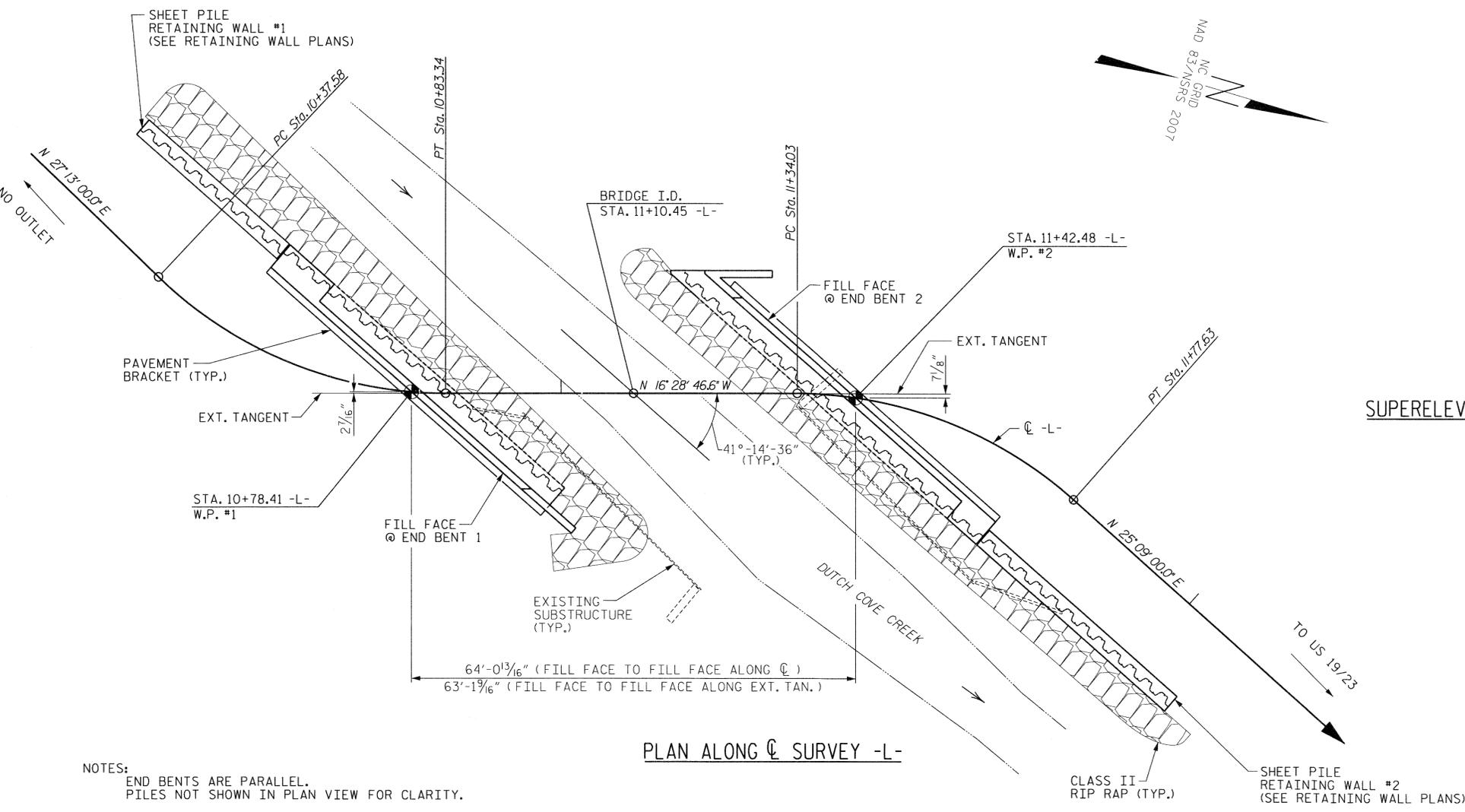
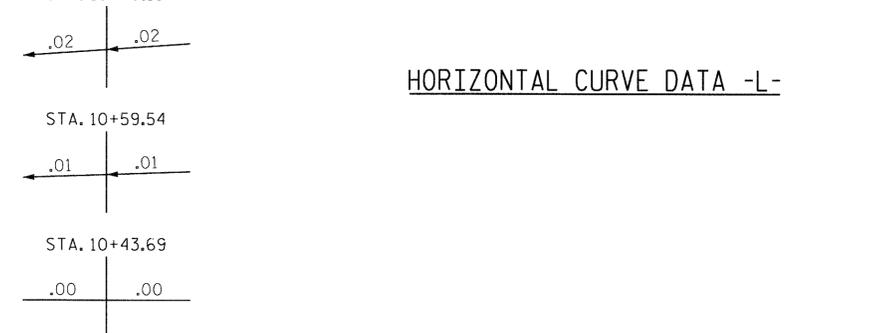
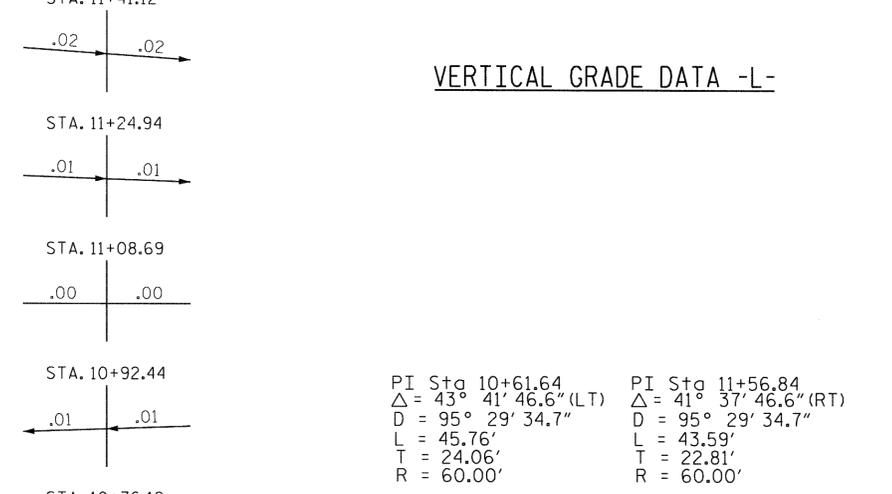
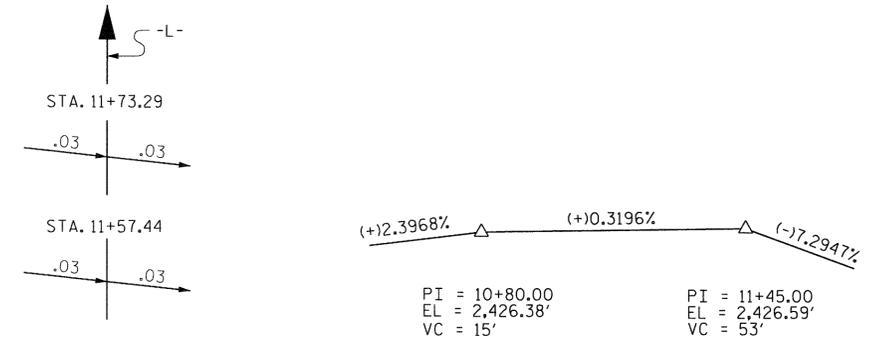
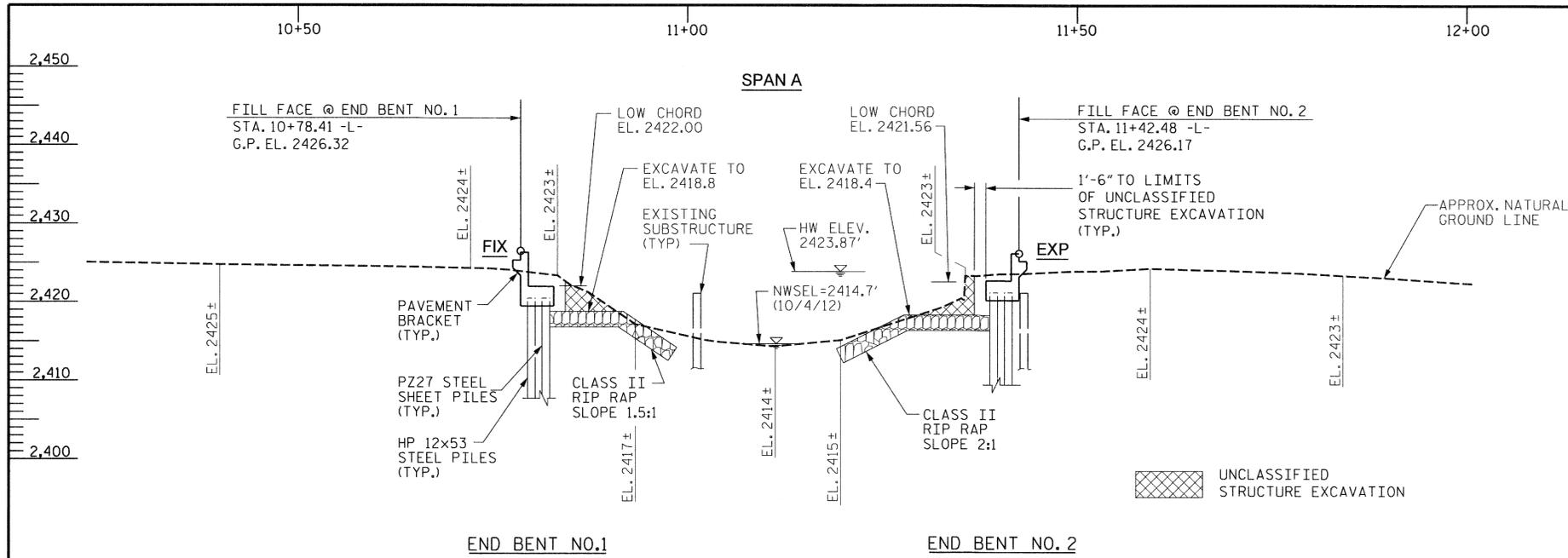
**DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA**

GREG PERFETTI P.E.  
STATE DESIGN ENGINEER

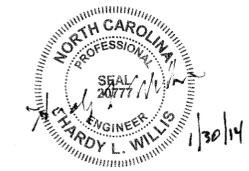
DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION

APPROVED JOSH DEYTON, PE  
DIVISION ADMINISTRATOR

DATE



NOTES:  
END BENTS ARE PARALLEL.  
PILES NOT SHOWN IN PLAN VIEW FOR CLARITY.



**V&M**  
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 Spartanburg, South Carolina 864-574-4775

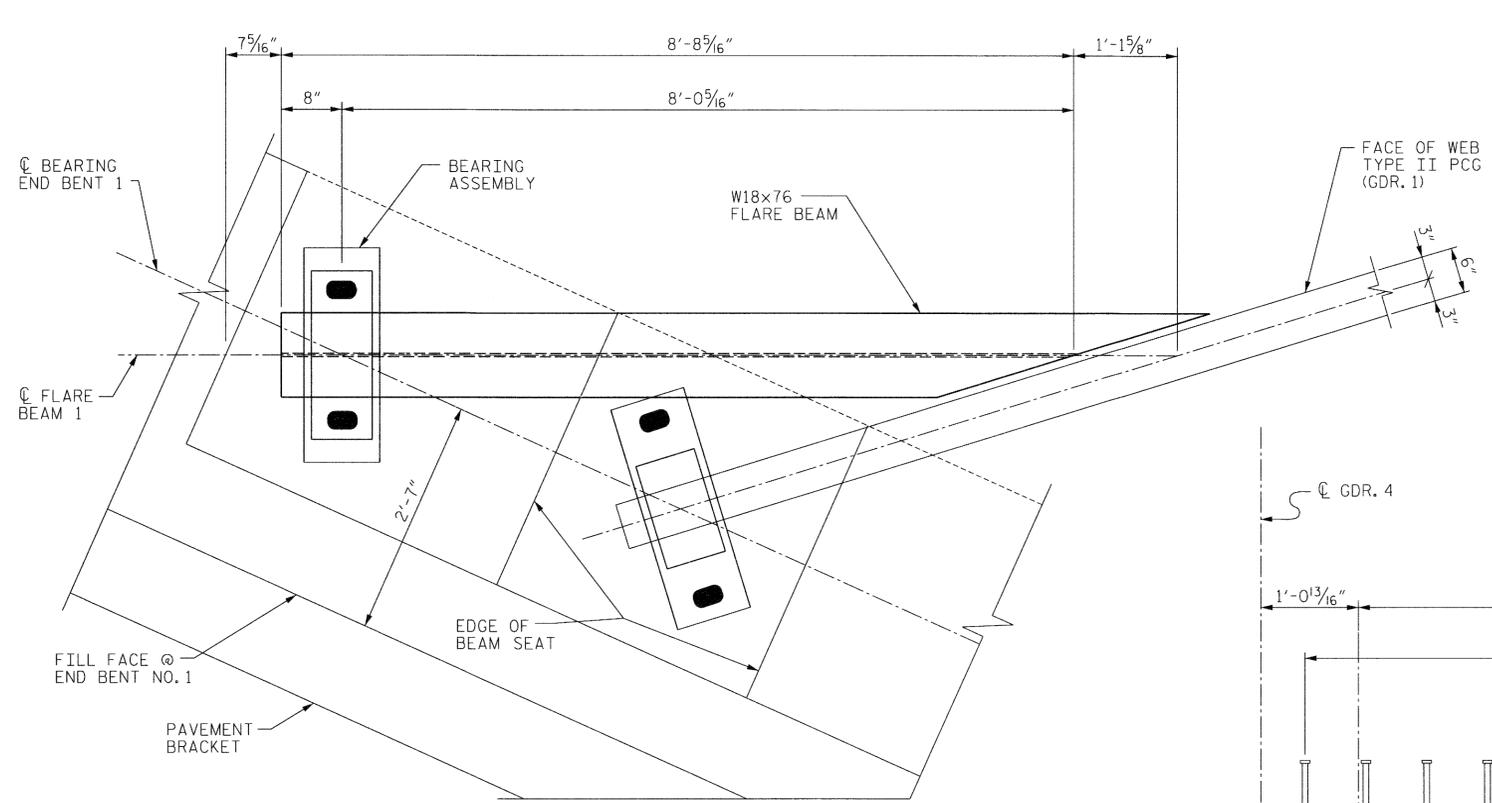
PROJECT NO. 17BP.14.R.131  
 HAYWOOD COUNTY  
 STATION: 11+10.45 -L-  
 SHEET 1 OF 3 REPLACES BRIDGE NO. 144

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

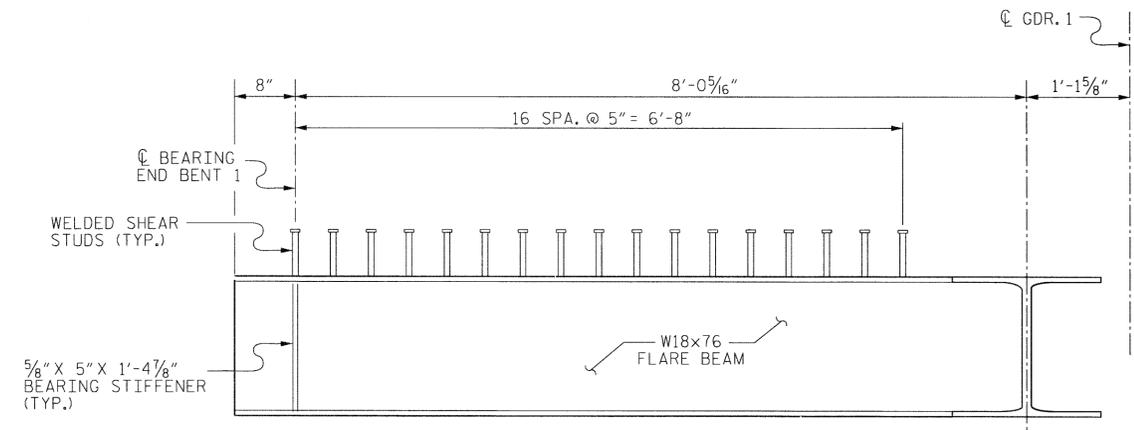
**GENERAL DRAWING**  
 FOR BRIDGE OVER  
 DUTCH COVE CREEK  
 ON SR 1836 BETWEEN US 19/23  
 AND NO OUTLET

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

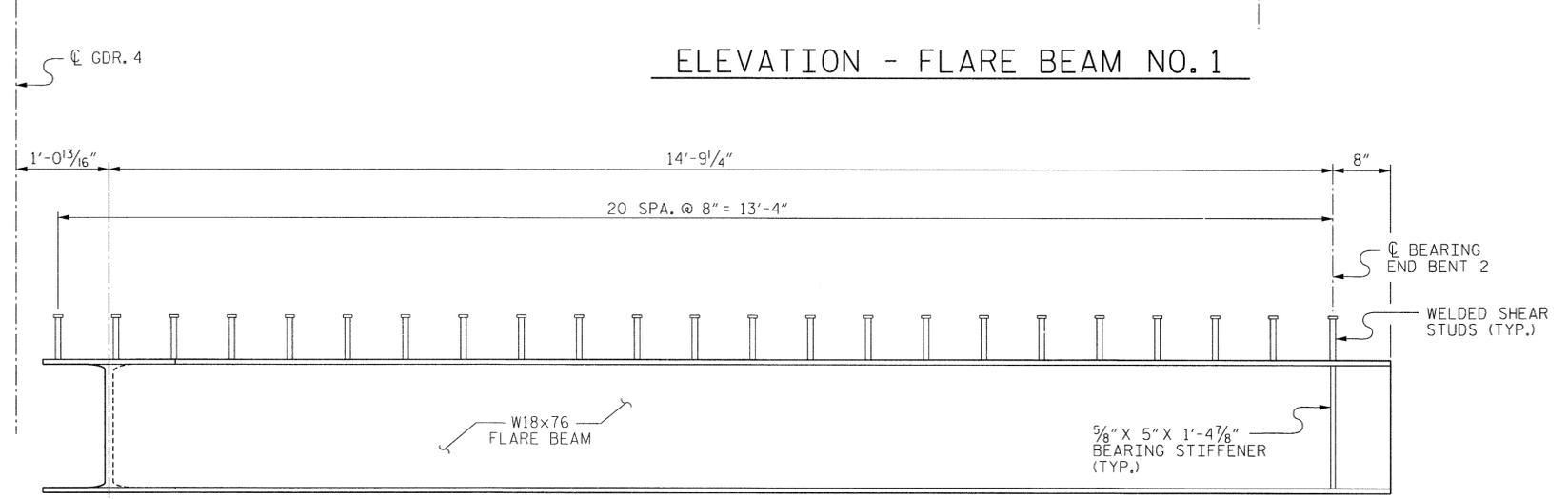
DWN. BY: MAF	DATE: 1/14	TOTAL SHEETS 33
CHKD. BY: HLW	DATE: 1/14	
DSN. ENG. OF RECORD: RTS	DATE: 1/14	



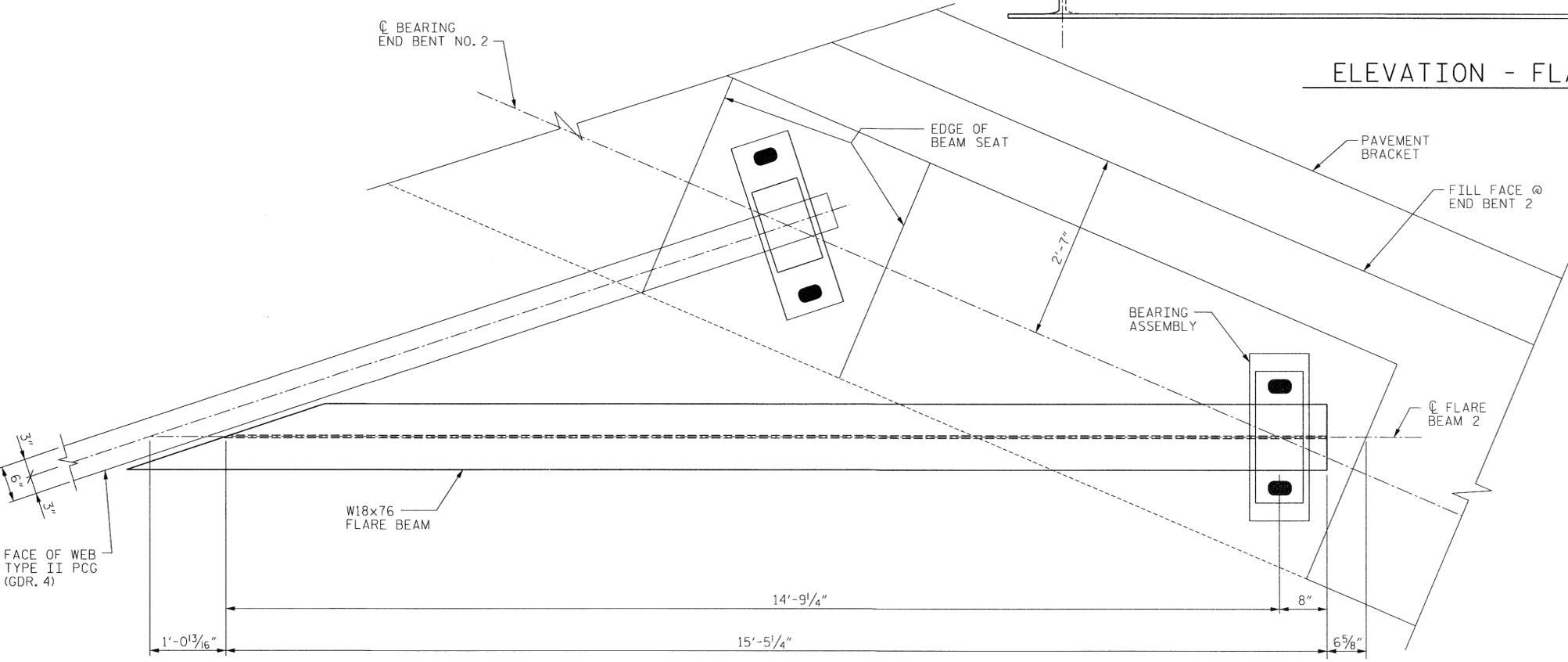
PLAN - FLARE BEAM NO. 1



ELEVATION - FLARE BEAM NO. 1



ELEVATION - FLARE BEAM NO. 2



PLAN - FLARE BEAM NO. 2



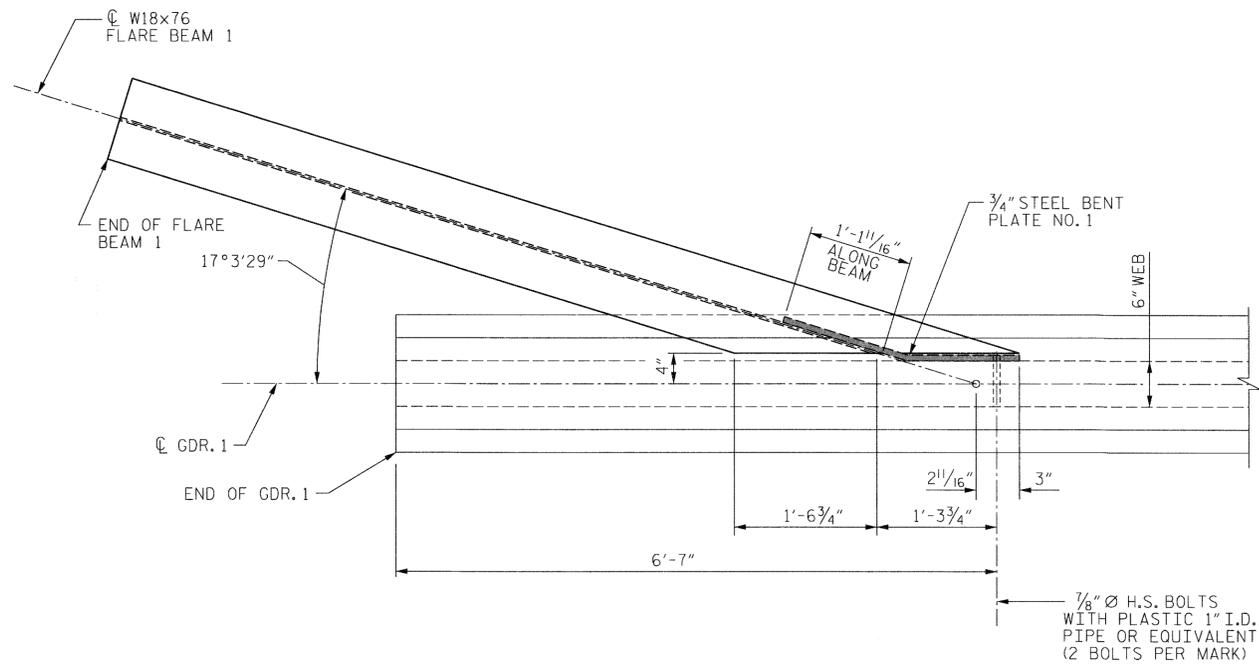
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**Vaughn & Melton**  
 Consulting Engineers  
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 Tri-Cities, Tennessee 423-467-8407  
 Knoxville, Tennessee 865-546-5800  
 Asheville, North Carolina 828-253-2196  
 Middlesboro, Kentucky 606-248-8800  
 Spartanburg, South Carolina 864-514-4775  
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PROJECT NO. 17BP.14.R.131  
 HAYWOOD COUNTY  
 STATION: 11+10.45 -L-  
 SHEET 1 OF 3

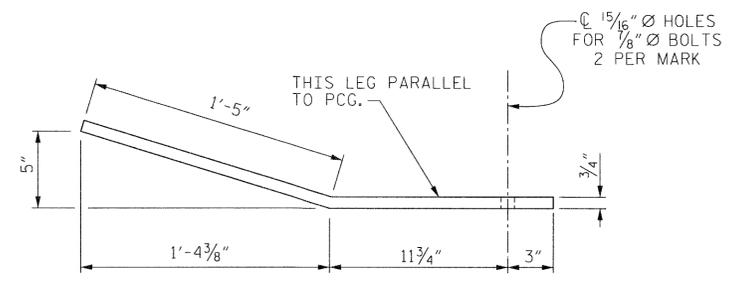
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**FLARE BEAM  
 DETAILS**

REVISIONS				SHEET NO.			
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19	
1			3			TOTAL SHEETS	
2			4			33	

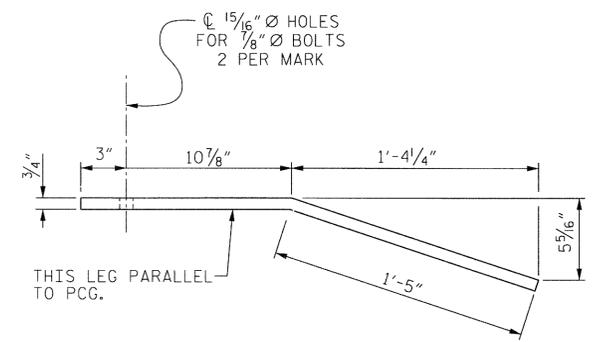
DWN. BY: MAF DATE: 1/14  
 CHKD. BY: HLW DATE: 1/14  
 DSN. ENG. OF RECORD: RTS DATE: 1/14



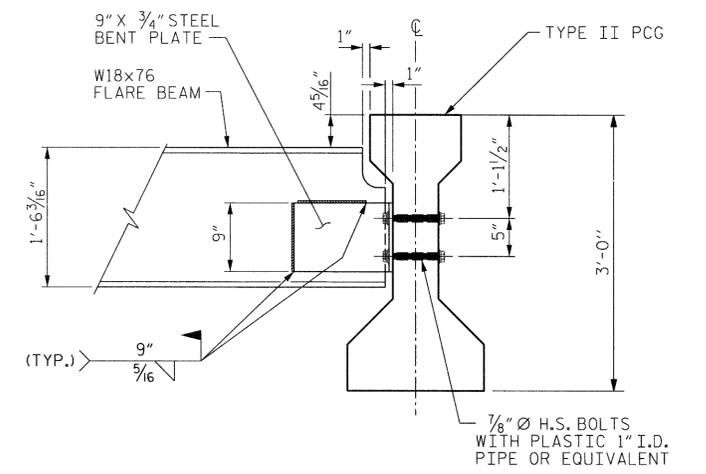
ATTACHMENT DETAIL - FLARE BEAM 1



BENT PLATE NO. 1

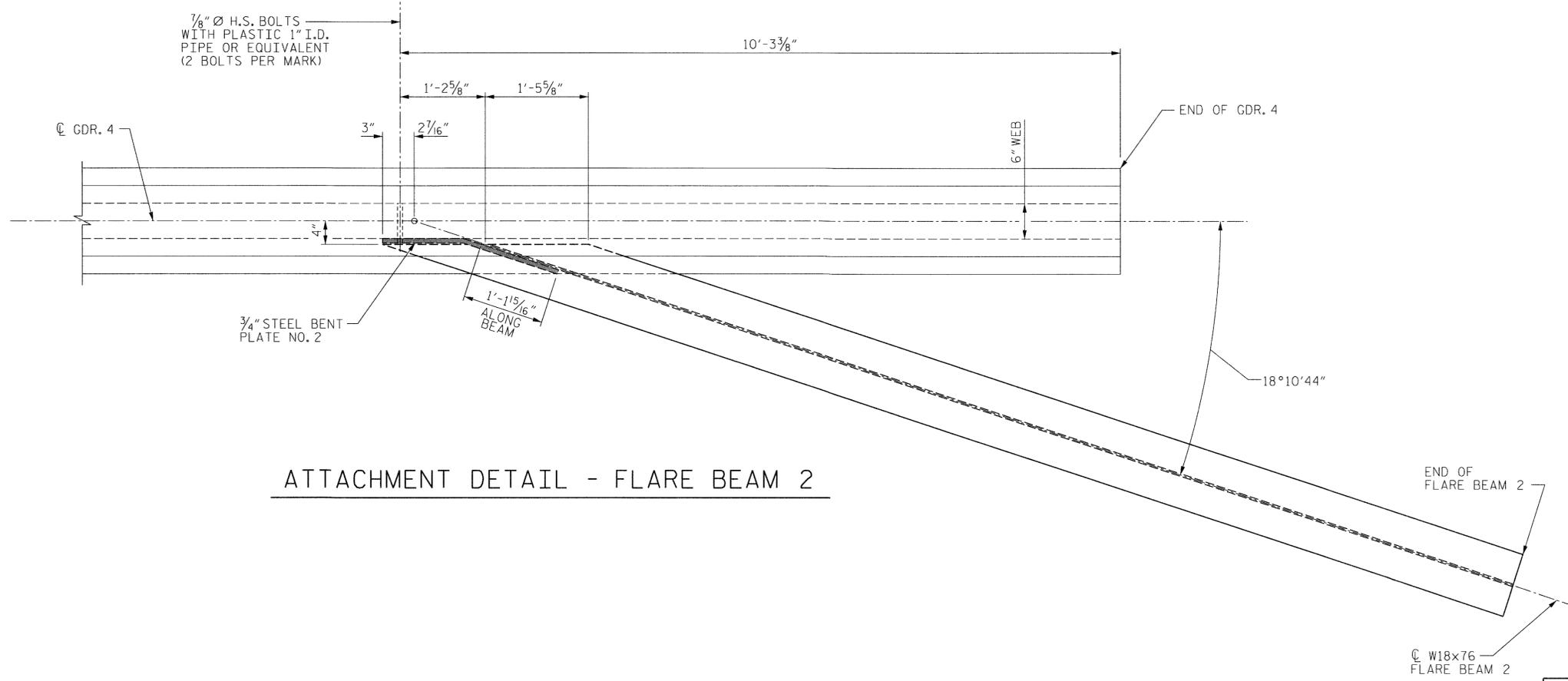


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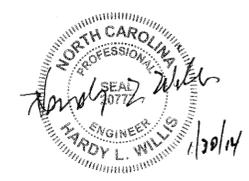


ELEVATION

W18X76 FLARE BEAM CONNECTION



ATTACHMENT DETAIL - FLARE BEAM 2



PROJECT NO. 17BP.14.R.131  
 HAYWOOD COUNTY  
 STATION: 11+10.45 -L-  
 SHEET 2 OF 3

**V&M**  
 Vaughn & Melton  
 Consulting Engineers

Charlotte, North Carolina 704-357-0488  
 Tri-Cities, Tennessee 423-467-9503  
 Knoxville, Tennessee 865-546-5800  
 Asheville, North Carolina 828-253-2196  
 Middlesboro, Kentucky 606-248-6500  
 Spartanburg, South Carolina 864-574-4175

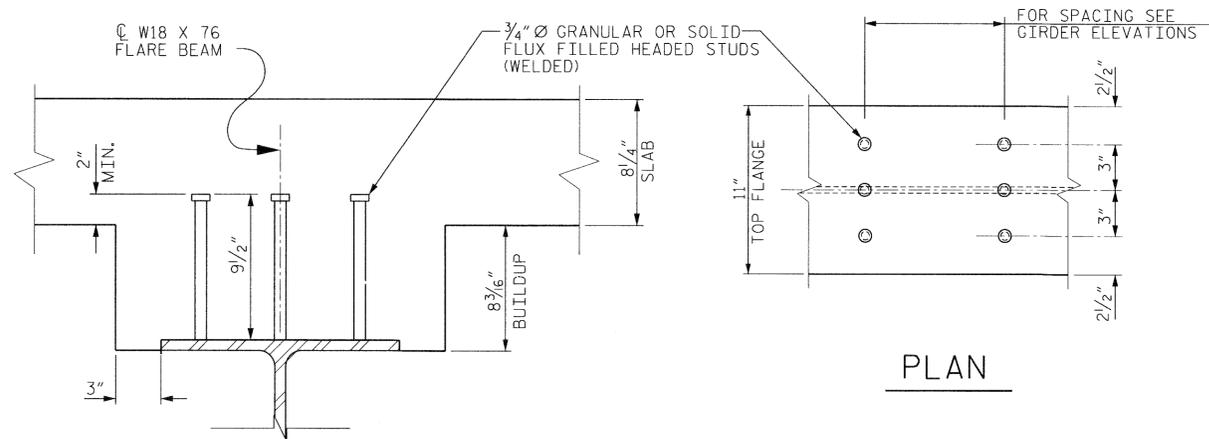
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STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**FLARE BEAM  
 DETAILS**

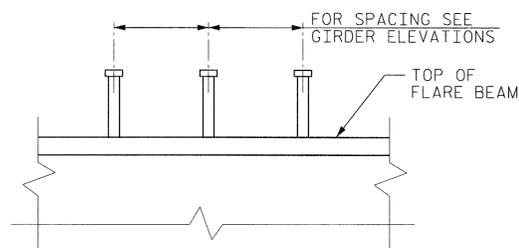
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

DWN. BY: MAF	DATE: 1/14	TOTAL SHEETS 33
CHKD. BY: HLW	DATE: 1/14	
DSN. ENG. OF RECORD: RTS	DATE: 1/14	

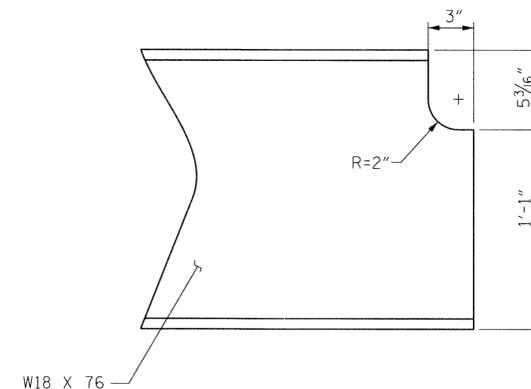


SECTION

PLAN

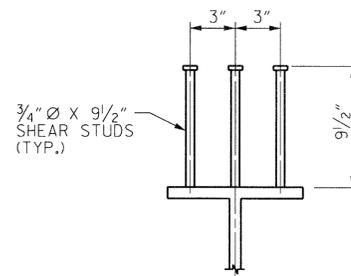


ELEVATION



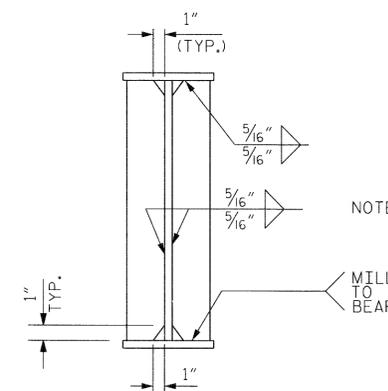
COPING DETAIL

SHEAR CONNECTOR DETAILS



SHEAR STUD DETAILS

SCALE: NOT TO SCALE



BEARING STIFFENER

STRUCTURAL STEEL NOTES:

ALL FLARE BEAM, BEARING STIFFENER AND BENT PLATE STEEL SHALL BE AASHTO M270, GRADE 50.

BEARING STIFFENER SHALL BE PERPENDICULAR TO THE BEAM FLANGES.

SHOP DRAWINGS:

SUBMIT SHOP DRAWINGS FOR THE STEEL FLARE BEAMS TO THE ENGINEER FOR APPROVAL.



**V&M**  
Vaughn & Melton  
Consulting Engineers

- Charlotte, North Carolina 304-357-0488
- Tri-Cities, Tennessee 423-467-8401
- Knoxville, Tennessee 865-546-5800
- Middlesboro, Kentucky 606-248-6600
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PROJECT NO. 17BP.14.R.131  
HAYWOOD COUNTY  
STATION: 11+10.45 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

FLARE BEAM  
DETAILS

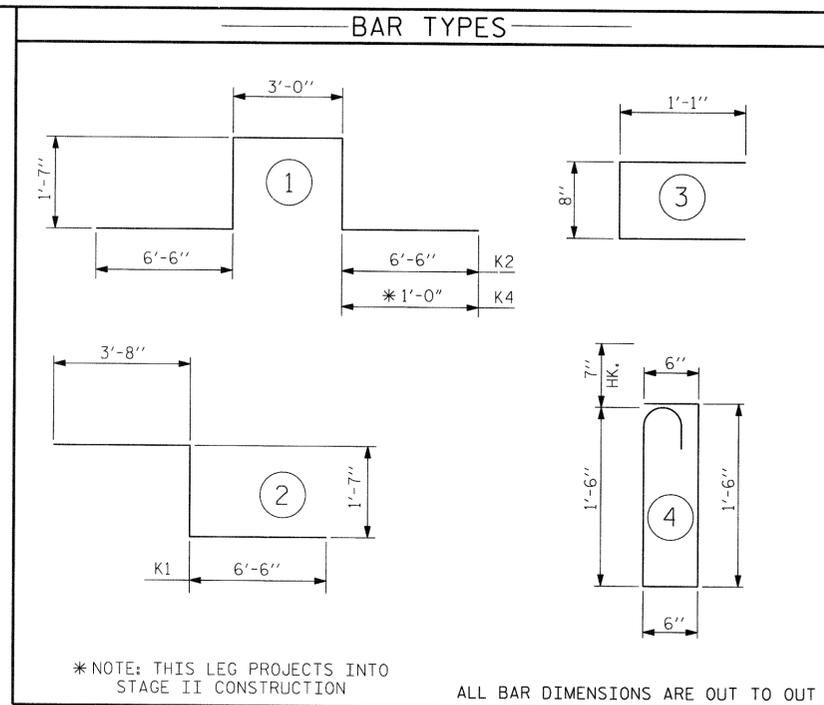
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			33

DWN. BY: MAF DATE: 1/14  
CHKD. BY: HLW DATE: 1/14  
DSN. ENG. OF RECORD: RTS DATE: 1/14

**BILL OF MATERIAL - STAGE I**

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	79	#5	STR	17'-4"	1428	* A161	1	#5	STR	7'-3"	8	A252	1	#5	STR	11'-3"	12
A2	79	#5	STR	17'-4"	1428	* A162	1	#5	STR	6'-10"	7	A253	1	#5	STR	10'-9"	11
						* A163	1	#5	STR	6'-5"	7	A254	1	#5	STR	10'-4"	11
* A101	1	#5	STR	17'-2"	18	* A164	1	#5	STR	6'-0"	6	A255	1	#5	STR	9'-11"	10
* A102	1	#5	STR	16'-9"	17	* A165	1	#5	STR	5'-6"	6	A256	1	#5	STR	9'-6"	10
* A103	1	#5	STR	16'-4"	17	* A166	1	#5	STR	5'-1"	5	A257	1	#5	STR	9'-0"	9
* A104	1	#5	STR	15'-10"	17	* A167	1	#5	STR	4'-8"	5	A258	1	#5	STR	8'-7"	9
* A105	1	#5	STR	15'-5"	16	* A168	1	#5	STR	4'-3"	4	A259	1	#5	STR	8'-2"	9
* A106	1	#5	STR	15'-0"	16	* A169	1	#5	STR	3'-9"	4	A260	1	#5	STR	7'-9"	8
* A107	1	#5	STR	14'-7"	15	* A170	1	#5	STR	3'-4"	3	A261	1	#5	STR	7'-3"	8
* A108	1	#5	STR	14'-1"	15	* A171	1	#5	STR	2'-11"	3	A262	1	#5	STR	6'-10"	7
* A109	1	#5	STR	13'-8"	14	* A172	1	#5	STR	2'-6"	3	A263	1	#5	STR	6'-5"	7
* A110	1	#5	STR	13'-3"	14	* A173	1	#5	STR	2'-0"	2	A264	1	#5	STR	6'-0"	6
* A111	1	#5	STR	12'-10"	13	* A174	1	#5	STR	1'-7"	2	A265	1	#5	STR	5'-6"	6
* A112	1	#5	STR	12'-4"	13	* A175	1	#5	STR	1'-2"	1	A266	1	#5	STR	5'-1"	5
* A113	1	#5	STR	11'-11"	12							A267	1	#5	STR	4'-8"	5
* A114	1	#5	STR	11'-6"	12	A201	1	#5	STR	17'-2"	18	A268	1	#5	STR	4'-3"	4
* A115	1	#5	STR	11'-0"	11	A202	1	#5	STR	16'-9"	17	A269	1	#5	STR	3'-9"	4
* A116	1	#5	STR	10'-7"	11	A203	1	#5	STR	16'-4"	17	A270	1	#5	STR	3'-4"	3
* A117	1	#5	STR	10'-2"	11	A204	1	#5	STR	15'-10"	17	A271	1	#5	STR	2'-11"	3
* A118	1	#5	STR	9'-9"	10	A205	1	#5	STR	15'-5"	16	A272	1	#5	STR	2'-6"	3
* A119	1	#5	STR	9'-3"	10	A206	1	#5	STR	15'-0"	16	A273	1	#5	STR	2'-0"	2
* A120	1	#5	STR	8'-10"	9	A207	1	#5	STR	14'-7"	15	A274	1	#5	STR	1'-7"	2
* A121	1	#5	STR	8'-5"	9	A208	1	#5	STR	14'-1"	15	A275	1	#5	STR	1'-2"	1
* A122	1	#5	STR	8'-0"	8	A209	1	#5	STR	13'-8"	14						
* A123	1	#5	STR	7'-6"	8	A210	1	#5	STR	13'-3"	14	* B1	39	#4	STR	21'-3"	554
* A124	1	#5	STR	7'-1"	7	A211	1	#5	STR	12'-10"	13	B2	44	#5	STR	31'-1"	1426
* A125	1	#5	STR	6'-9"	7	A212	1	#5	STR	12'-4"	13						
* A126	1	#5	STR	6'-6"	7	A213	1	#5	STR	11'-11"	12	* B101	1	#4	STR	6'-9"	5
* A127	1	#5	STR	6'-2"	6	A214	1	#5	STR	11'-6"	12	* B102	1	#4	STR	4'-8"	3
* A128	1	#5	STR	5'-11"	6	A215	1	#5	STR	11'-0"	11	* B103	1	#4	STR	2'-8"	2
* A129	1	#5	STR	5'-7"	6	A216	1	#5	STR	10'-7"	11						
* A130	1	#5	STR	5'-4"	6	A217	1	#5	STR	10'-2"	11	B201	1	#5	STR	6'-9"	7
* A131	1	#5	STR	5'-1"	5	A218	1	#5	STR	9'-9"	10	B202	1	#5	STR	4'-8"	5
* A132	1	#5	STR	4'-9"	5	A219	1	#5	STR	9'-3"	10	B203	1	#5	STR	2'-8"	3
* A133	1	#5	STR	4'-6"	5	A220	1	#5	STR	8'-10"	9						
* A134	1	#5	STR	4'-2"	4	A221	1	#5	STR	8'-5"	9	* D1	110	#6	STR	4'-0"	661
* A135	1	#5	STR	3'-11"	4	A222	1	#5	STR	8'-0"	8						
* A136	1	#5	STR	3'-7"	4	A223	1	#5	STR	7'-6"	8	* G1	1	#5	STR	26'-10"	28
* A137	1	#5	STR	3'-4"	3	A224	1	#5	STR	7'-1"	7	* G2	1	#5	STR	26'-3"	27
* A138	1	#5	STR	2'-11"	3	A225	1	#5	STR	6'-9"	7						
* A139	1	#5	STR	16'-11"	18	A226	1	#5	STR	6'-6"	7	* K1	4	#8	2	11'-9"	125
* A140	1	#5	STR	16'-6"	17	A227	1	#5	STR	6'-2"	6	* K2	4	#8	1	19'-2"	205
* A141	1	#5	STR	16'-1"	17	A228	1	#5	STR	5'-11"	6	* K3	12	#6	STR	8'-11"	161
* A142	1	#5	STR	15'-7"	16	A229	1	#5	STR	5'-7"	6	* K4	4	#8	2	13'-8"	146
* A143	1	#5	STR	15'-2"	16	A230	1	#5	STR	5'-4"	6						
* A144	1	#5	STR	14'-9"	15	A231	1	#5	STR	5'-1"	5	* S1	36	#5	4	4'-7"	172
* A145	1	#5	STR	14'-4"	15	A232	1	#5	STR	4'-9"	5						
* A146	1	#5	STR	13'-10"	14	A233	1	#5	STR	4'-6"	5	* U1	36	#4	3	2'-10"	68
* A147	1	#5	STR	13'-5"	14	A234	1	#5	STR	4'-2"	4						
* A148	1	#5	STR	13'-0"	14	A235	1	#5	STR	3'-11"	4						
* A149	1	#5	STR	12'-7"	13	A236	1	#5	STR	3'-7"	4						
* A150	1	#5	STR	12'-1"	13	A237	1	#5	STR	3'-4"	3						
* A151	1	#5	STR	11'-8"	12	A238	1	#5	STR	2'-11"	3						
* A152	1	#5	STR	11'-3"	12	A239	1	#5	STR	16'-11"	18						
* A153	1	#5	STR	10'-9"	11	A240	1	#5	STR	16'-6"	17						
* A154	1	#5	STR	10'-4"	11	A241	1	#5	STR	16'-1"	17						
* A155	1	#5	STR	9'-11"	10	A242	1	#5	STR	15'-7"	16						
* A156	1	#5	STR	9'-6"	10	A243	1	#5	STR	15'-2"	16						
* A157	1	#5	STR	9'-0"	9	A244	1	#5	STR	14'-9"	15						
* A158	1	#5	STR	8'-7"	9	A245	1	#5	STR	14'-4"	15						
* A159	1	#5	STR	8'-2"	9	A246	1	#5	STR	13'-10"	14						
* A160	1	#5	STR	7'-9"	8	A247	1	#5	STR	13'-5"	14						
						A248	1	#5	STR	13'-0"	14						
						A249	1	#5	STR	12'-7"	13						
						A250	1	#5	STR	12'-1"	13						
						A251	1	#5	STR	11'-8"	12						

DSN. ENG. OF RECORD: RTS DATE: 10/13  
 ASSEMBLED BY: MAF DATE: 1/14  
 CHECKED BY: HLW DATE: 1/14  
 DRAWN BY: JMB 5/87 REV. 8/16/99 RWW/LES  
 CHECKED BY: SJD 9/87 REV. 5/1/06 TLA/GM  
 REV. 10/1/11 MAA/GM



\* NOTE: THIS LEG PROJECTS INTO STAGE II CONSTRUCTION  
 ALL BAR DIMENSIONS ARE OUT TO OUT

SEE SHEET 2 OF 2 FOR SUPERSTRUCTURE BILL OF MATERIAL.

**SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS**

BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	2'-0"	1'-9"	2'-0"	1'-9"	2'-9"
#5	2'-6"	2'-2"	2'-6"	2'-2"	3'-5"
#6	3'-0"	2'-7"	3'-10"	2'-7"	4'-4"
#7	5'-3"	3'-6"			
#8	6'-10"	4'-7"			

PROJECT NO. 17BP.14.R.131  
 HAYWOOD COUNTY  
 STATION: 11+10.45 -L-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**STANDARD SUPERSTRUCTURE BILL OF MATERIAL STAGE I**

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

TOTAL SHEETS 33



BILL OF MATERIAL - STAGE II											
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A3	95	#5	STR	8'-0"	793	A416	1	#5	STR	1'-3"	1
A4	95	#5	STR	8'-0"	793	A417	1	#5	STR	8'-2"	9
						A418	1	#5	STR	8'-4"	9
* A301	1	#5	STR	7'-10"	8	A419	1	#5	STR	8'-6"	9
* A302	1	#5	STR	7'-5"	8	A420	1	#5	STR	8'-8"	9
* A303	1	#5	STR	6'-11"	7	A421	1	#5	STR	8'-10"	9
* A304	1	#5	STR	6'-6"	7	A422	1	#5	STR	8'-9"	9
* A305	1	#5	STR	6'-1"	6	A423	1	#5	STR	8'-6"	9
* A306	1	#5	STR	5'-8"	6	A424	1	#5	STR	8'-2"	9
* A307	1	#5	STR	5'-2"	5	A425	1	#5	STR	7'-11"	8
* A308	1	#5	STR	4'-9"	5	A426	1	#5	STR	7'-8"	8
* A309	1	#5	STR	4'-4"	5	A427	1	#5	STR	7'-5"	8
* A310	1	#5	STR	3'-11"	4	A428	1	#5	STR	7'-1"	7
* A311	1	#5	STR	3'-5"	4	A429	1	#5	STR	6'-10"	7
* A312	1	#5	STR	3'-0"	3	A430	1	#5	STR	6'-7"	7
* A313	1	#5	STR	2'-7"	3	A431	1	#5	STR	6'-3"	7
* A314	1	#5	STR	2'-2"	2	A432	1	#5	STR	6'-0"	6
* A315	1	#5	STR	1'-8"	2	A433	1	#5	STR	5'-9"	6
* A316	1	#5	STR	1'-3"	1	A434	1	#5	STR	5'-6"	6
* A317	1	#5	STR	8'-2"	9	A435	1	#5	STR	5'-2"	5
* A318	1	#5	STR	8'-4"	9	A436	1	#5	STR	4'-11"	5
* A319	1	#5	STR	8'-6"	9	A437	1	#5	STR	4'-8"	5
* A320	1	#5	STR	8'-8"	9	A438	1	#5	STR	4'-4"	5
* A321	1	#5	STR	8'-10"	9	A439	1	#5	STR	4'-1"	4
* A322	1	#5	STR	8'-9"	9	A440	1	#5	STR	3'-10"	4
* A323	1	#5	STR	8'-6"	9	A441	1	#5	STR	3'-7"	4
* A324	1	#5	STR	8'-2"	9	A442	1	#5	STR	3'-3"	3
* A325	1	#5	STR	7'-11"	8	A443	1	#5	STR	2'-7"	3
* A326	1	#5	STR	7'-8"	8	A444	1	#5	STR	1'-7"	2
* A327	1	#5	STR	7'-5"	8						
* A328	1	#5	STR	7'-1"	7	* B1	21	#4	STR	21'-3"	298
* A329	1	#5	STR	6'-10"	7	B2	22	#5	STR	31'-1"	713
* A330	1	#5	STR	6'-7"	7						
* A331	1	#5	STR	6'-3"	7	* B104	1	#4	STR	10'-11"	7
* A332	1	#5	STR	6'-0"	6	* B105	1	#4	STR	10'-1"	7
* A333	1	#5	STR	5'-9"	6	* B106	1	#4	STR	9'-1"	6
* A334	1	#5	STR	5'-6"	6	* B107	1	#4	STR	8'-2"	5
* A335	1	#5	STR	5'-2"	5	* B108	1	#4	STR	7'-2"	5
* A336	1	#5	STR	4'-11"	5	* B109	1	#4	STR	5'-5"	4
* A337	1	#5	STR	4'-8"	5	* B110	1	#4	STR	3'-6"	4
* A338	1	#5	STR	4'-4"	5						
* A339	1	#5	STR	4'-1"	4	B204	1	#5	STR	10'-11"	11
* A340	1	#5	STR	3'-10"	4	B205	1	#5	STR	10'-1"	11
* A341	1	#5	STR	3'-7"	4	B206	1	#5	STR	9'-1"	9
* A342	1	#5	STR	3'-3"	3	B207	1	#5	STR	8'-2"	9
* A343	1	#5	STR	2'-7"	3	B208	1	#5	STR	7'-2"	7
* A344	1	#5	STR	1'-7"	2	B209	1	#5	STR	5'-5"	6
						B210	1	#5	STR	3'-6"	4
A401	1	#5	STR	7'-10"	8						
A402	1	#5	STR	7'-5"	8	* G3	1	#5	STR	12'-0"	13
A403	1	#5	STR	6'-11"	7	* G4	1	#5	STR	16'-0"	17
A404	1	#5	STR	6'-6"	7						
A405	1	#5	STR	6'-1"	6	* K1	4	#8	2	11'-9"	125
A406	1	#5	STR	5'-8"	6	* K5	4	#8	STR	5'-6"	59
A407	1	#5	STR	5'-2"	5	* K6	6	#6	STR	8'-4"	75
A408	1	#5	STR	4'-9"	5						
A409	1	#5	STR	4'-4"	5	* S1	18	#5	4	4'-7"	86
A410	1	#5	STR	3'-11"	4						
A411	1	#5	STR	3'-5"	4	* U1	18	#4	3	2'-10"	34
A412	1	#5	STR	3'-0"	3						
A413	1	#5	STR	2'-7"	3						
A414	1	#5	STR	2'-2"	2						
A415	1	#5	STR	1'-8"	2						

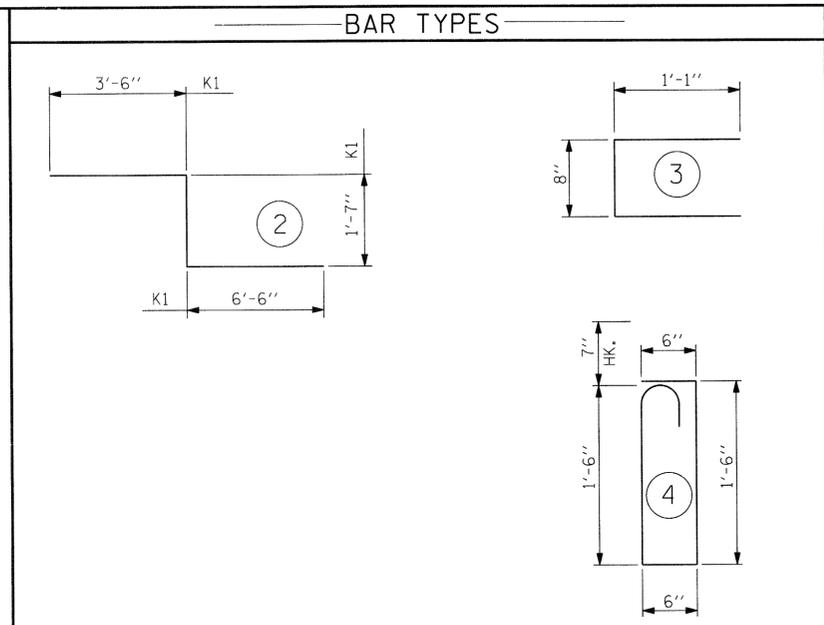
DES. ENG. OF RECORD: RTS DATE 1/14

ASSEMBLED BY : MAF DATE : 1/14  
 CHECKED BY : HLW DATE : 1/14

DRAWN BY : JMB 5/87 REV. 8/16/99 RWW/LES  
 CHECKED BY : SJD 9/87 REV. 5/1/06 TLA/GM  
 REV. 10/1/11 MAA/GM

SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	2'-0"	1'-9"	2'-0"	1'-9"	2'-9"
#5	2'-6"	2'-2"	2'-6"	2'-2"	3'-5"
#6	3'-0"	2'-7"	3'-10"	2'-7"	4'-4"
#7	5'-3"	3'-6"			
#8	6'-10"	4'-7"			



ALL BAR DIMENSIONS ARE OUT TO OUT

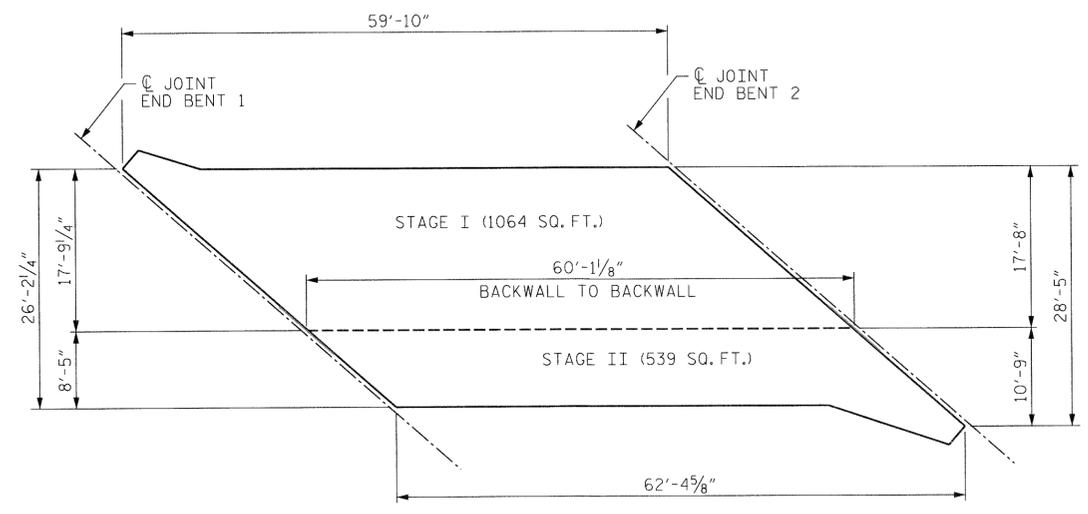
—SUPERSTRUCTURE BILL OF MATERIAL—

	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	EPOXY COATED REINFORCING STEEL (LBS.)
STAGE I	35.3	3592	4308
STAGE II	18.5	1821	1796
TOTALS *	53.8	5413	6104

\* QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

GROOVING BRIDGE FLOORS

BRIDGE DECK	1259 SQ.FT.
TOTAL	1259 SQ.FT.



LAYOUT FOR COMPUTING AREA REINFORCED CONCRETE DECK SLAB (SQ. FT. = 1603)

PROJECT NO. 17BP.14.R.131  
 HAYWOOD COUNTY  
 STATION: 11+10.45 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

STANDARD SUPERSTRUCTURE BILL OF MATERIAL STAGE II

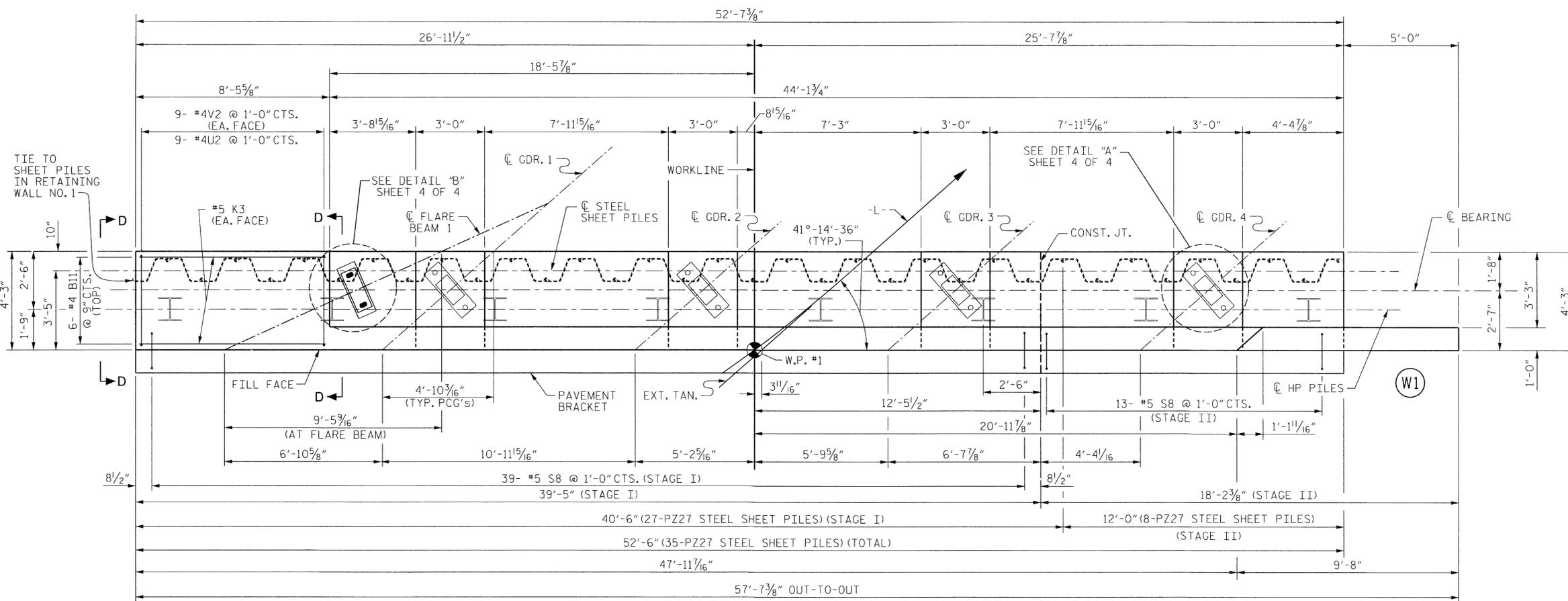
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NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 33
2			4			



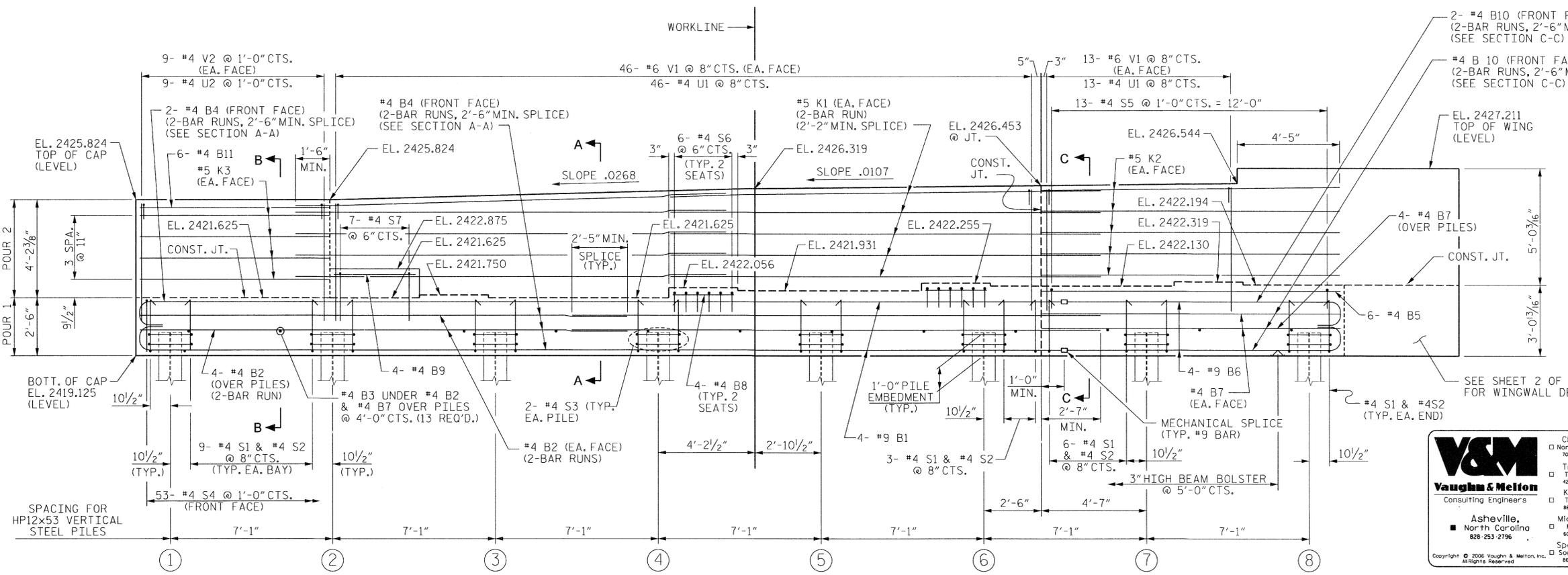
STD. NO. BOM2

**NOTES**

THE TOP SURFACE AREAS OF THE END BENT CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.  
 BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.  
 STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.  
 THE TOP SURFACE OF THE END BENT CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK AT THE RATE OF 2%.



**PLAN**



**ELEVATION**

PAVEMENT BRACKET NOT SHOWN FOR CLARITY.



PROJECT NO. 17BP.14.R.131  
 HAYWOOD COUNTY  
 STATION: 11+10.45 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA  
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**SUBSTRUCTURE  
 END BENT NO. 1**

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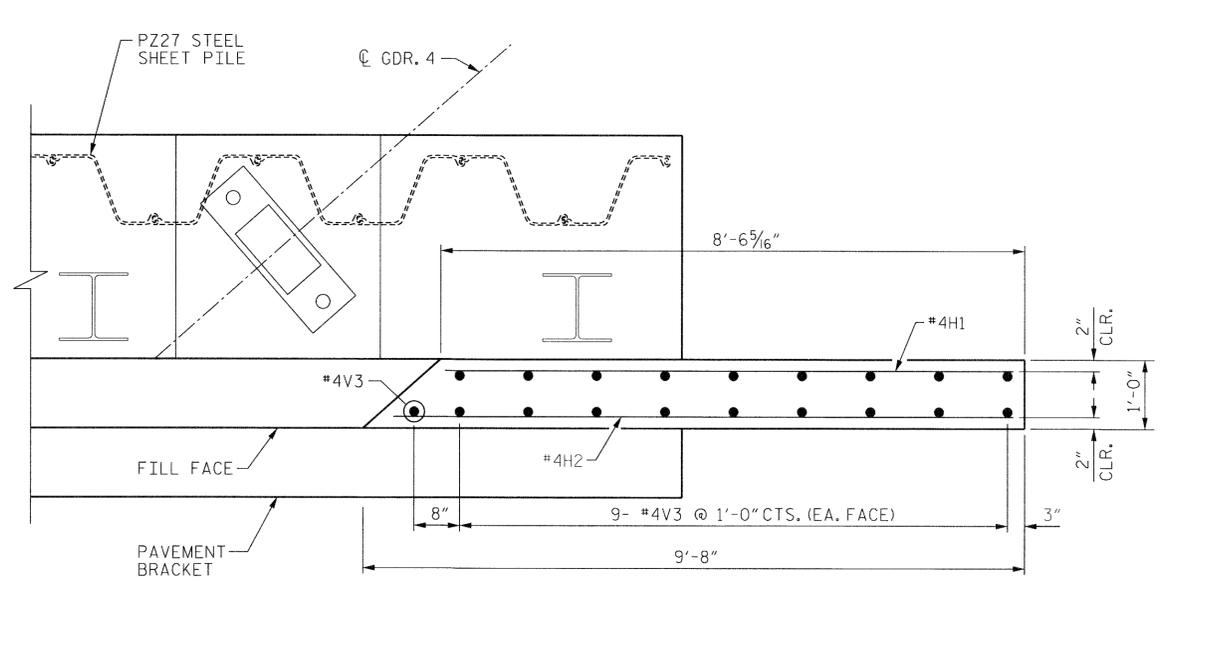
Charlotte, North Carolina 704-357-0488  
 Tri-Cities, Tennessee 423-461-8400  
 Knoxville, Tennessee 865-546-5800  
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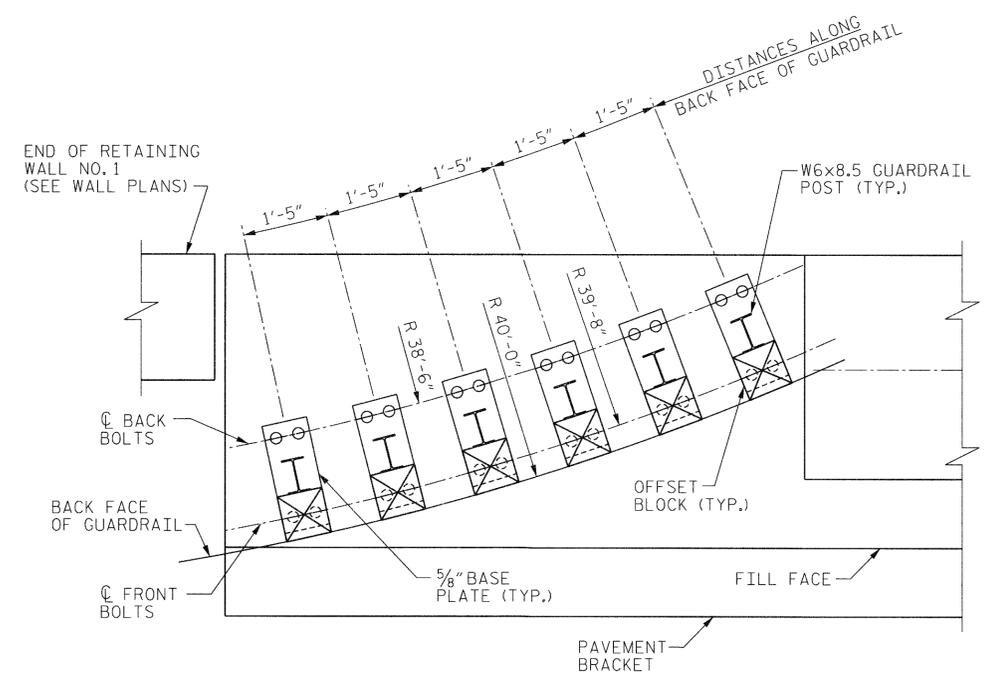
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 CHKD. BY: HLW  
 DSN. ENG. OF RECORD: RTS

DATE: 1/14  
 DATE: 1/14  
 DATE: 1/14

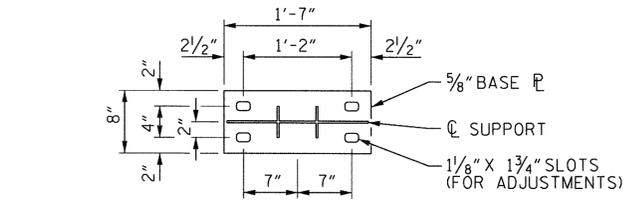
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NO.	BY:	DATE:	DATE:	
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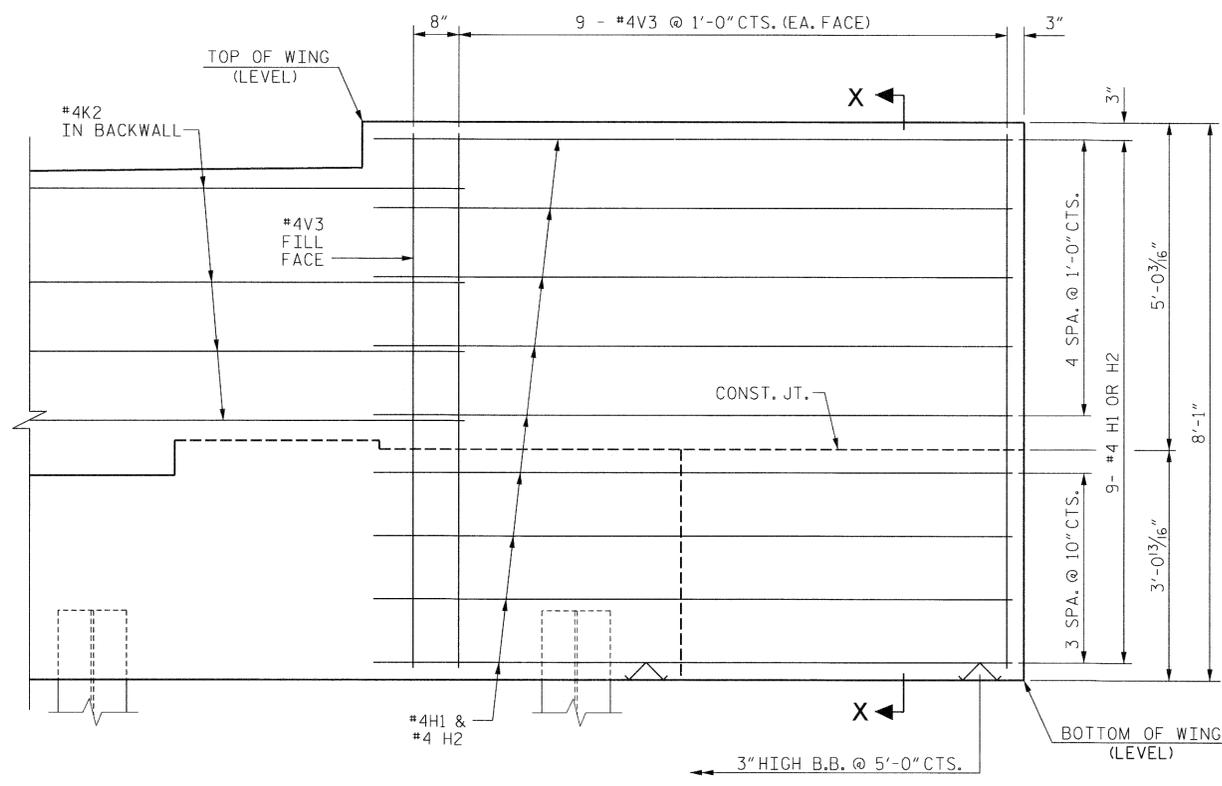
PLAN - WING W1



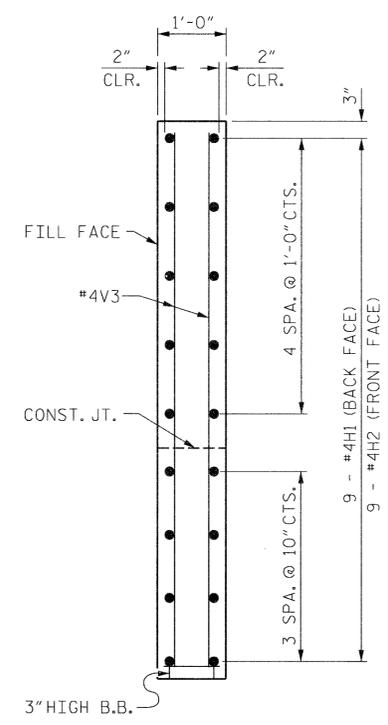
GUARDRAIL ANCHORAGE DETAIL



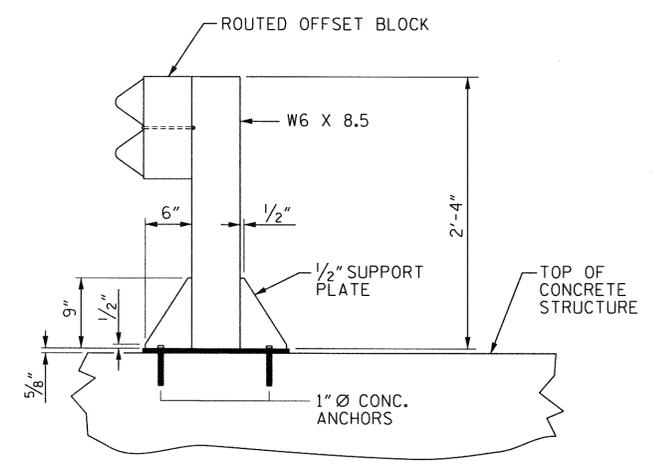
PLAN



ELEVATION - WING W1



SECTION X-X



ELEVATION

GUARDRAIL ANCHORAGE ON CONCRETE STRUCTURE



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PROJECT NO. 17BP.14.R.131  
HAYWOOD COUNTY  
 STATION: 11+10.45 -L-  
 SHEET 2 OF 4

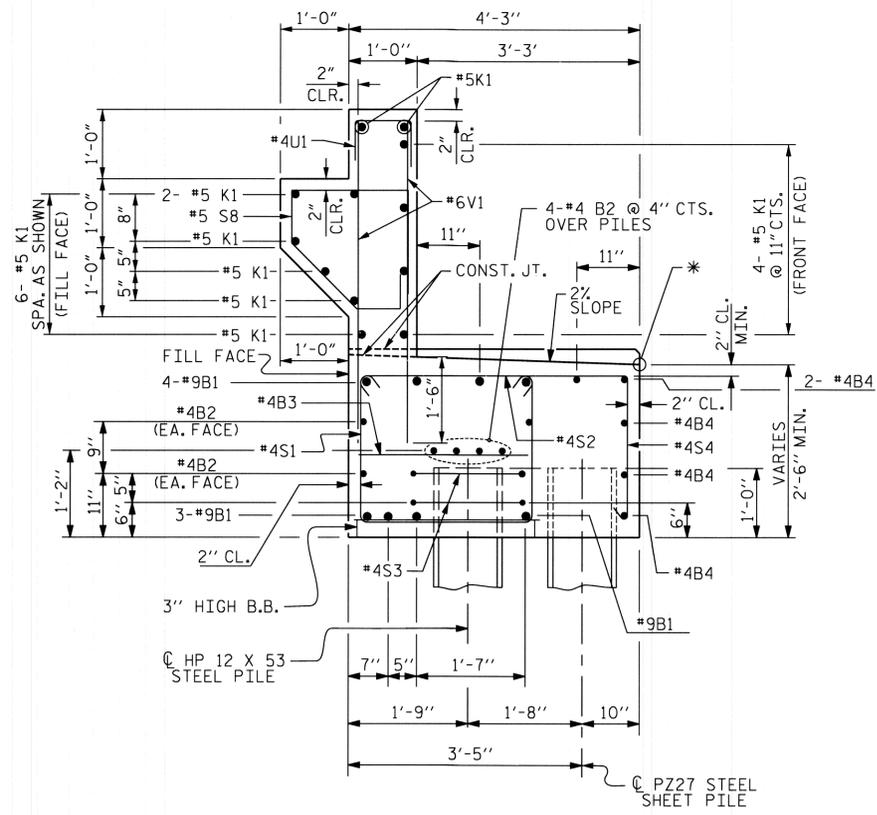
STATE OF NORTH CAROLINA  
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**SUBSTRUCTURE  
 END BENT NO. 1**

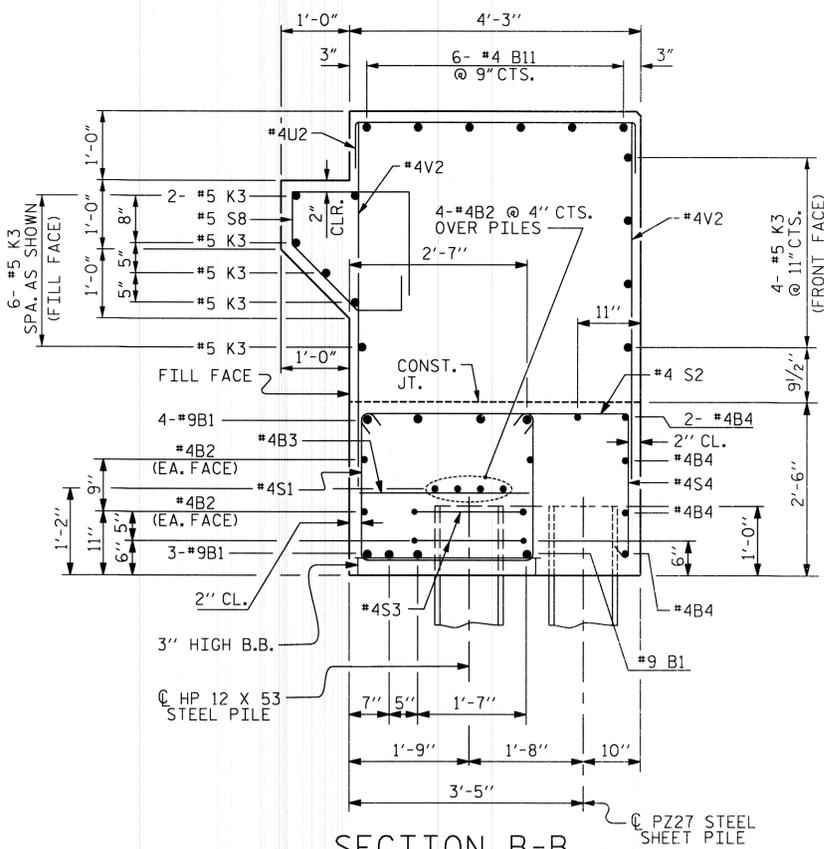
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NO.	BY:	DATE:	NO.	BY:	DATE:
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DSN. ENG. OF RECORD: RTS	DATE: 1/14		

TOTAL SHEETS	33
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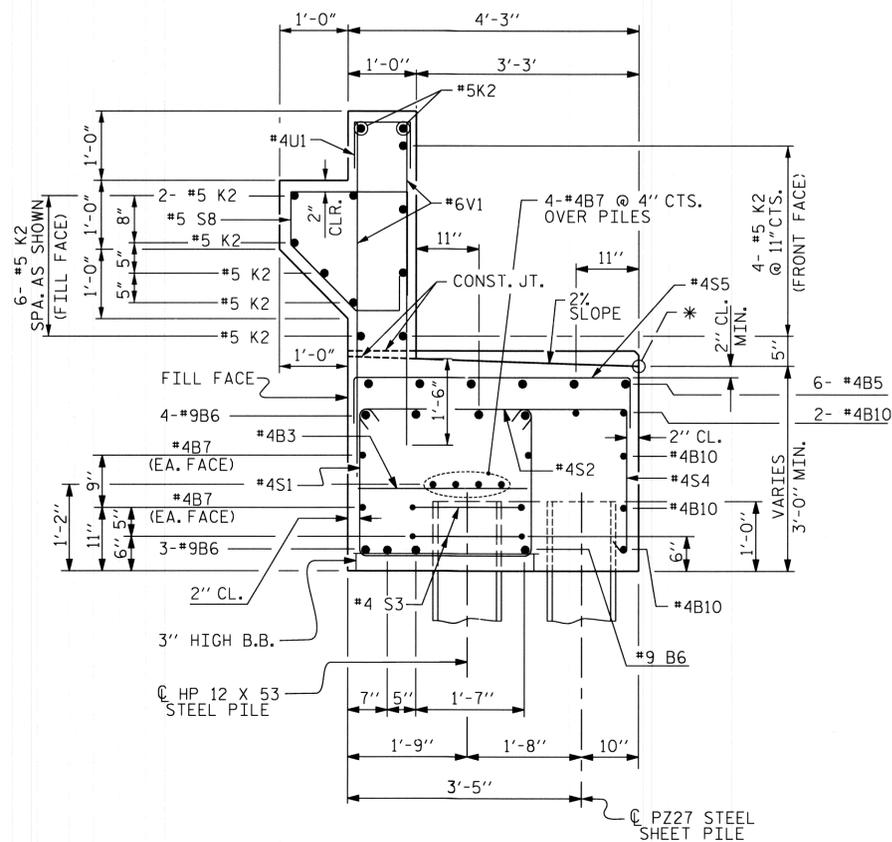


SECTION A-A

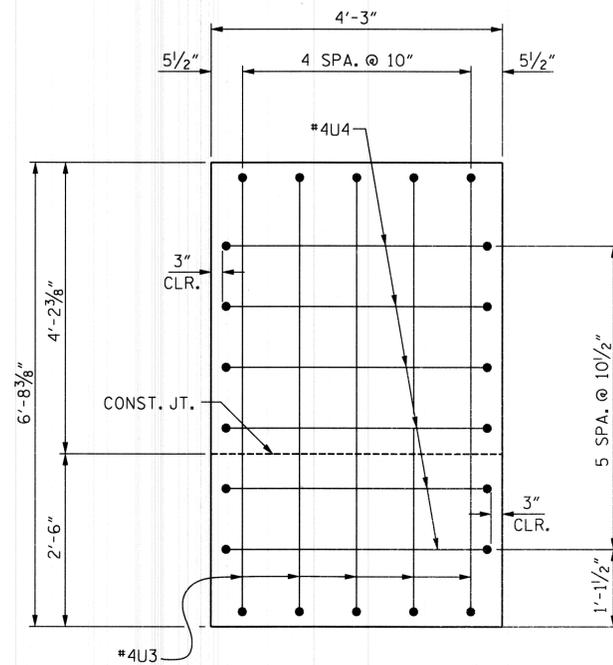


SECTION B-B

\* ELEVATIONS BETWEEN BRIDGE SEAT BUILDUPS ON SHEET 1 OF 4 ARE SHOWN AT THIS POINT.



SECTION C-C



VIEW D-D

OUTSIDE SHOWN, INSIDE SIMILAR. PAVEMENT BRACKET NOT SHOWN FOR CLARITY.



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PROJECT NO. 17BP.14.R.131  
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STATION: 11+10.45 -L-  
SHEET 3 OF 4

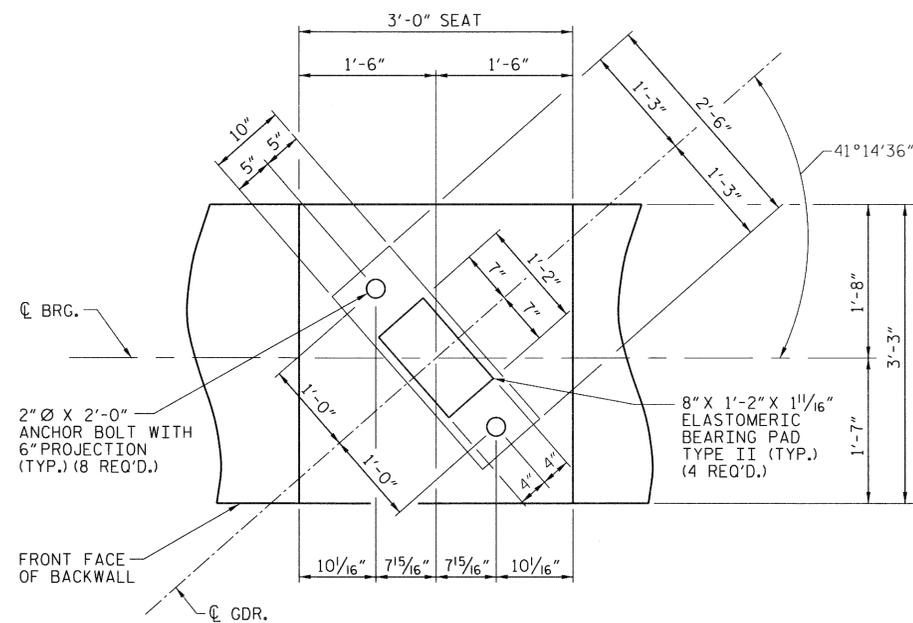
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DEPARTMENT OF TRANSPORTATION  
RALEIGH

**SUBSTRUCTURE  
END BENT NO. 1**

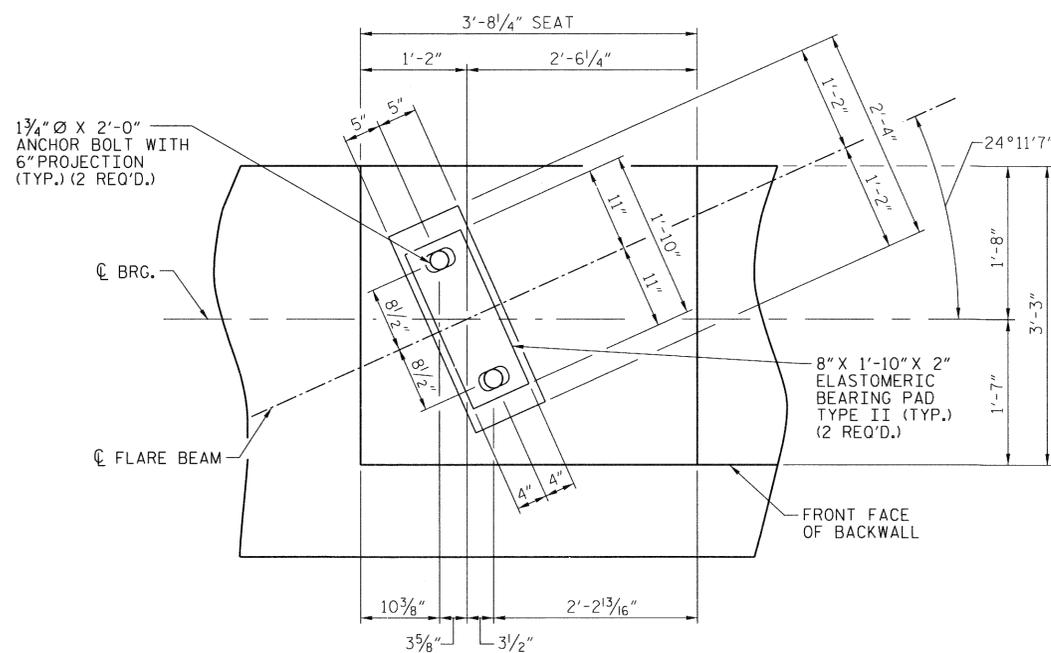
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

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CHKD. BY: HLW DATE: 1/14  
DSN. ENG. OF RECORD: RTS DATE: 1/14

TOTAL SHEETS: 33

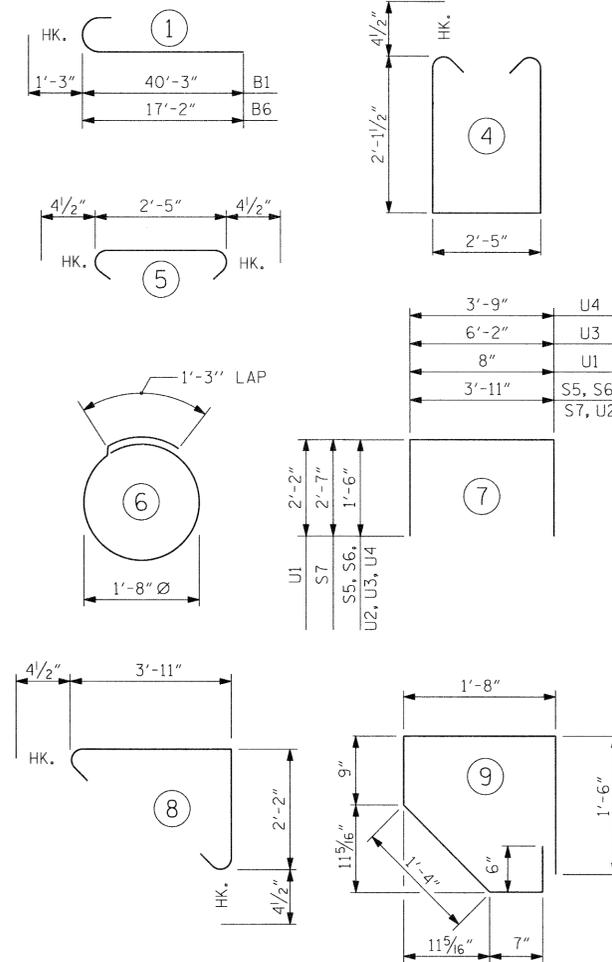


DETAIL "A"



DETAIL "B"

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL FOR END BENT NO. 1

STAGE I					STAGE II				
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	#8		41'-6"	1129	B3	#4	STR	2'-5"	5
B2	#4	STR	22'-3"	238	B5	#4	STR	17'-10"	72
B3	#4	STR	2'-5"	16	B6	#9	1	18'-5"	501
B4	#4	STR	22'-3"	149	B7	#4	STR	17'-10"	95
B8	#4	STR	2'-8"	14	B10	#4	STR	17'-10"	60
B9	#4	STR	3'-4	9					
B11	#4	STR	8'-1	32					
					H1	#4	STR	8'-3"	50
					H2	#4	STR	9'-3"	56
					K1	#5	STR	17'-7"	440
					K3	#5	STR	8'-1"	84
					K2	#5	STR	13'-0"	163
S1	#4	4	7'-5"	243					
S2	#4	5	3'-2"	104	S1	#4	4	7'-5"	79
S3	#4	6	6'-6"	52	S2	#4	5	3'-2"	34
S4	#4	8	6'-10"	183	S3	#4	6	6'-6"	17
S6	#4	7	6'-11"	55	S4	#4	8	6'-10"	59
S7	#4	7	9'-1"	43	S5	#4	7	6'-11"	60
S8	#5	9	6'-4"	258	S8	#5	9	6'-4"	86
U1	#4	7	5'-0"	154	U1	#4	7	5'-0"	43
U2	#4	7	6'-11"	42					
U3	#4	7	9'-2"	61	V1	#6	STR	5'-6"	215
U4	#4	7	6'-9"	56	V3	#4	STR	7'-9"	98
V1	#6	STR	5'-6"	760					
V2	#4	STR	5'-6"	66					

STAGE I SUBTOTAL: 4188 LBS.

STAGE II SUBTOTAL: 1693 LBS.

REINFORCING STEEL (FOR END BENT NO. 1) 5881 LBS.

CLASS A CONCRETE BREAKDOWN (FOR END BENT NO. 1)

POUR #1 CAP, LOWER PART OF WINGS 23.6 C.Y.

POUR #2 UPPER PART OF WINGS, BACKWALL & PAVEMENT BRACKET 16.5 C.Y.

TOTAL CLASS A CONCRETE 40.1 C.Y.

HP 12 X 53 STEEL PILES NO: 8 LIN. FT. = 160

18" STEEL SHEET PILES NO. PZ27 = 35 SO. FT. = 755



PROJECT NO. 17BP.14.R.131  
HAYWOOD COUNTY  
STATION: 11+10.45 -L-

SHEET 4 OF 4

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SUBSTRUCTURE  
END BENT NO. 1  
DETAILS

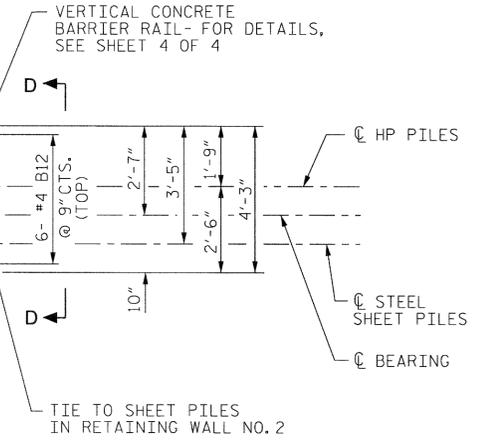
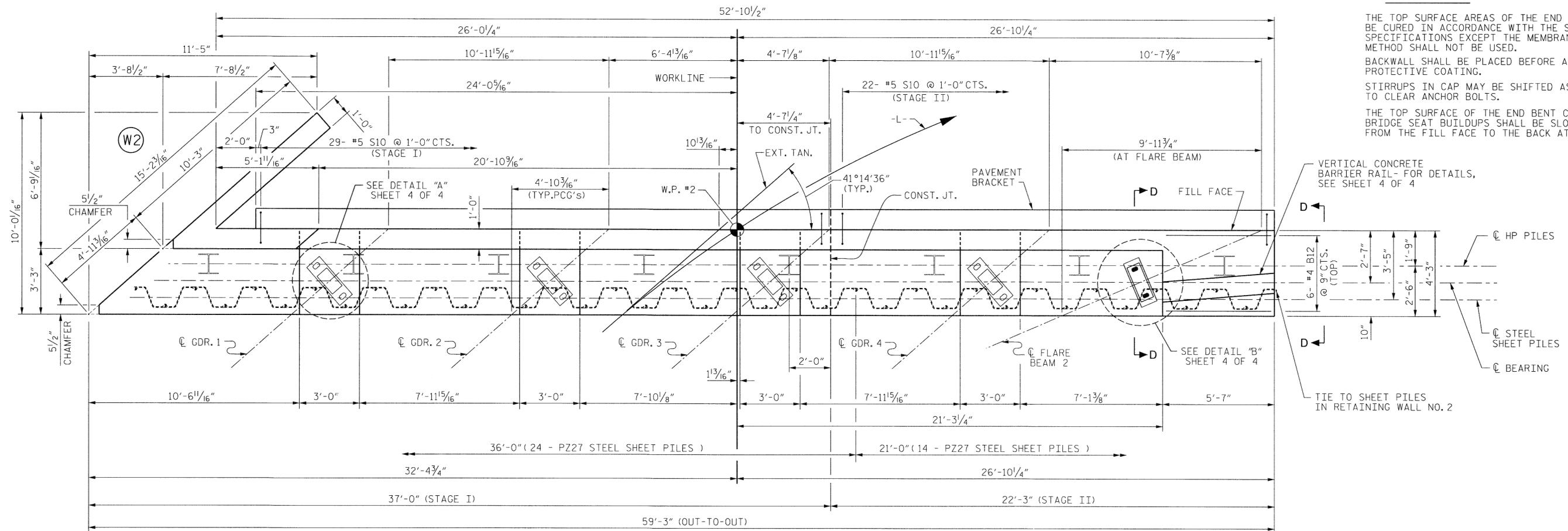
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
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2			4		

DWN. BY: MAF DATE: 1/14  
CHKD. BY: HLW DATE: 1/14  
DSN. ENG. OF RECORD: RTS DATE: 1/14

TOTAL SHEETS 33

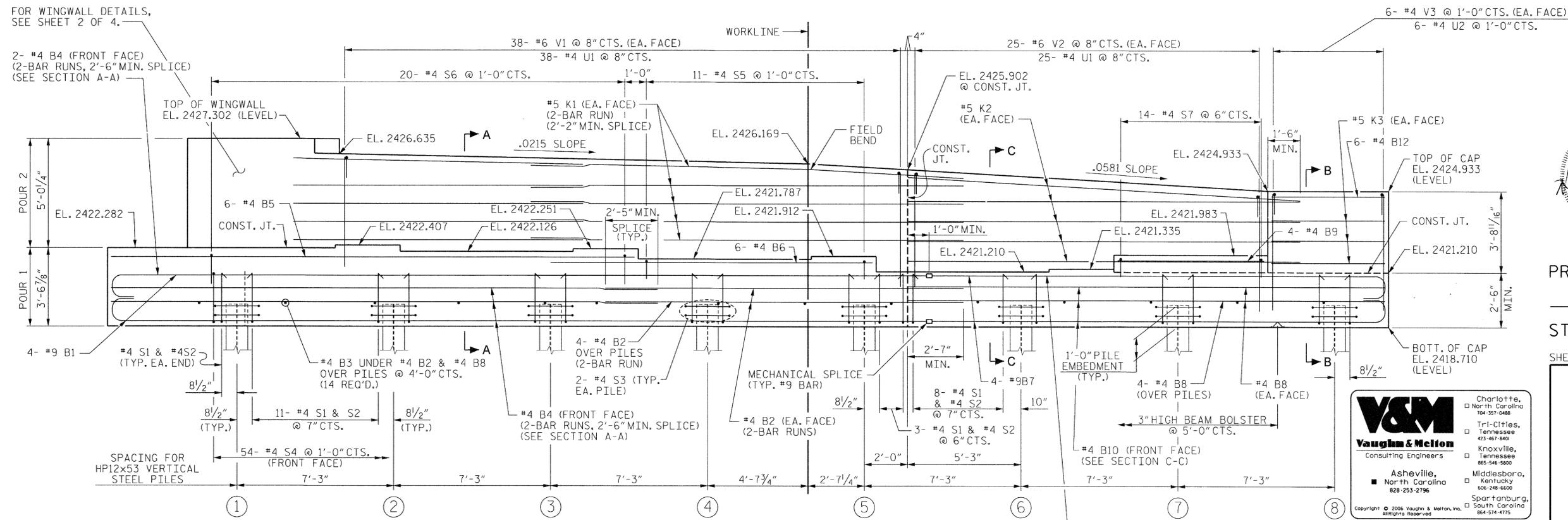
**NOTES**

THE TOP SURFACE AREAS OF THE END BENT CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.  
 BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.  
 STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.  
 THE TOP SURFACE OF THE END BENT CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK AT THE RATE OF 2%.



FOR WINGWALL DETAILS, SEE SHEET 2 OF 4.

2- #4 B4 (FRONT FACE) (2-BAR RUNS, 2'-6" MIN. SPLICE) (SEE SECTION A-A)



PROJECT NO. 17BP.14.R.131  
 HAYWOOD COUNTY  
 STATION: 11+10.45 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE END BENT NO. 2**

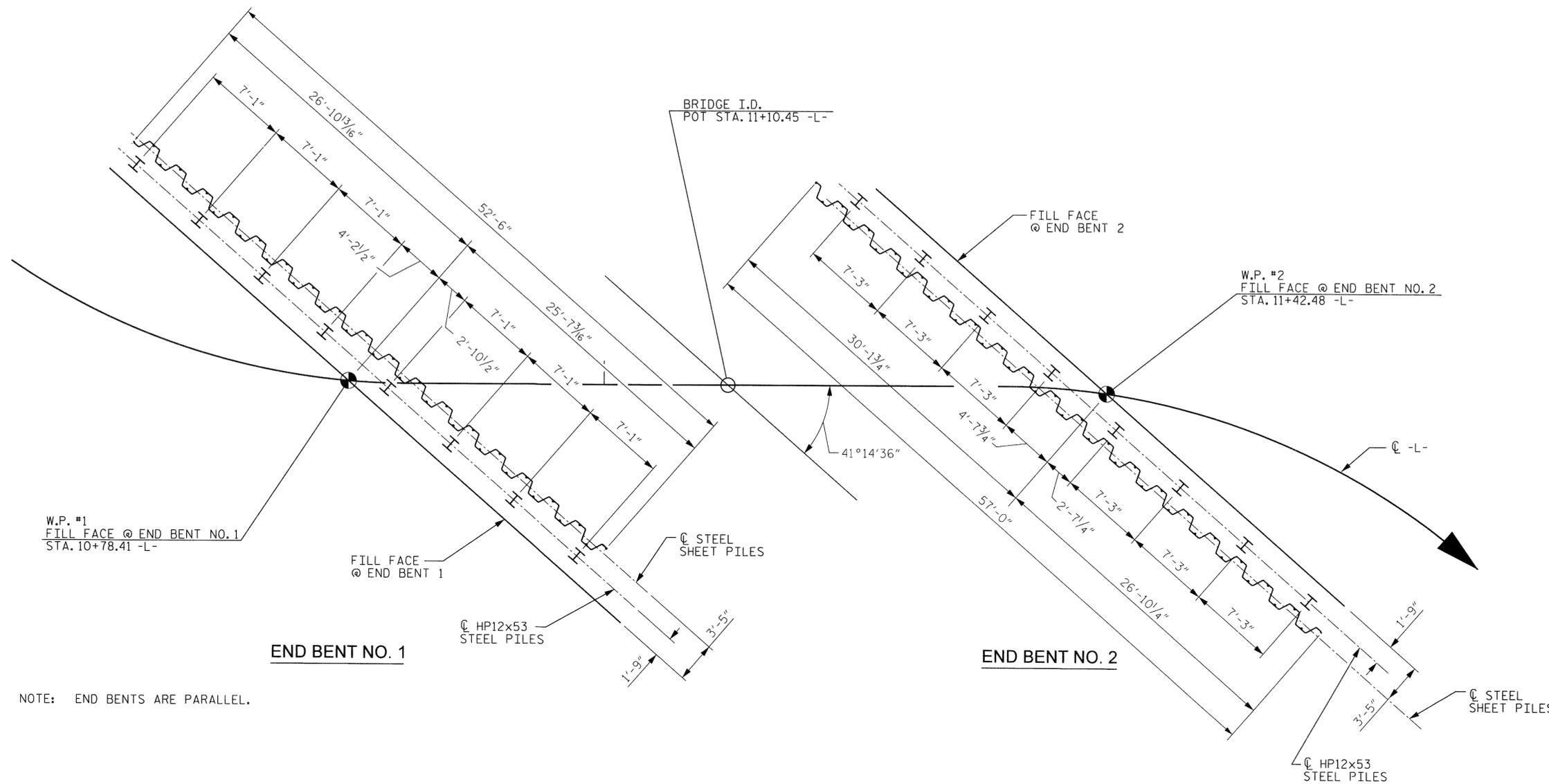
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DWN. BY: MAF	DATE: 1/14	NO. 1	BY:	DATE:	NO. 3	BY:	DATE:	SHEET NO. S-28
CHKD. BY: HLW	DATE: 1/14	2			4			TOTAL SHEETS 33
DSN. ENG. OF RECORD: RTS	DATE: 1/14							



W.P. #1  
FILL FACE @ END BENT NO. 1  
STA. 10+78.41 -L-

FILL FACE @ END BENT 1

HP12x53  
STEEL PILES

END BENT NO. 1

BRIDGE I.D.  
POT STA. 11+10.45 -L-

FILL FACE @ END BENT 2

W.P. #2  
FILL FACE @ END BENT NO. 2  
STA. 11+42.48 -L-

END BENT NO. 2

HP12x53  
STEEL PILES

STEEL SHEET PILES

NOTE: END BENTS ARE PARALLEL.

**FOUNDATION LAYOUT**

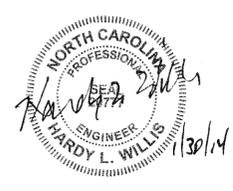
DIMENSIONS LOCATING HP PILES AND SHEET PILES ARE SHOWN TO THE CENTERLINES.

**LEGEND**

- H VERTICAL PILE
- ~ SHEET PILE

PROJECT NO. 17BP.14.R.131  
HAYWOOD COUNTY  
STATION: 11+10.45 -L-

SHEET 2 OF 3



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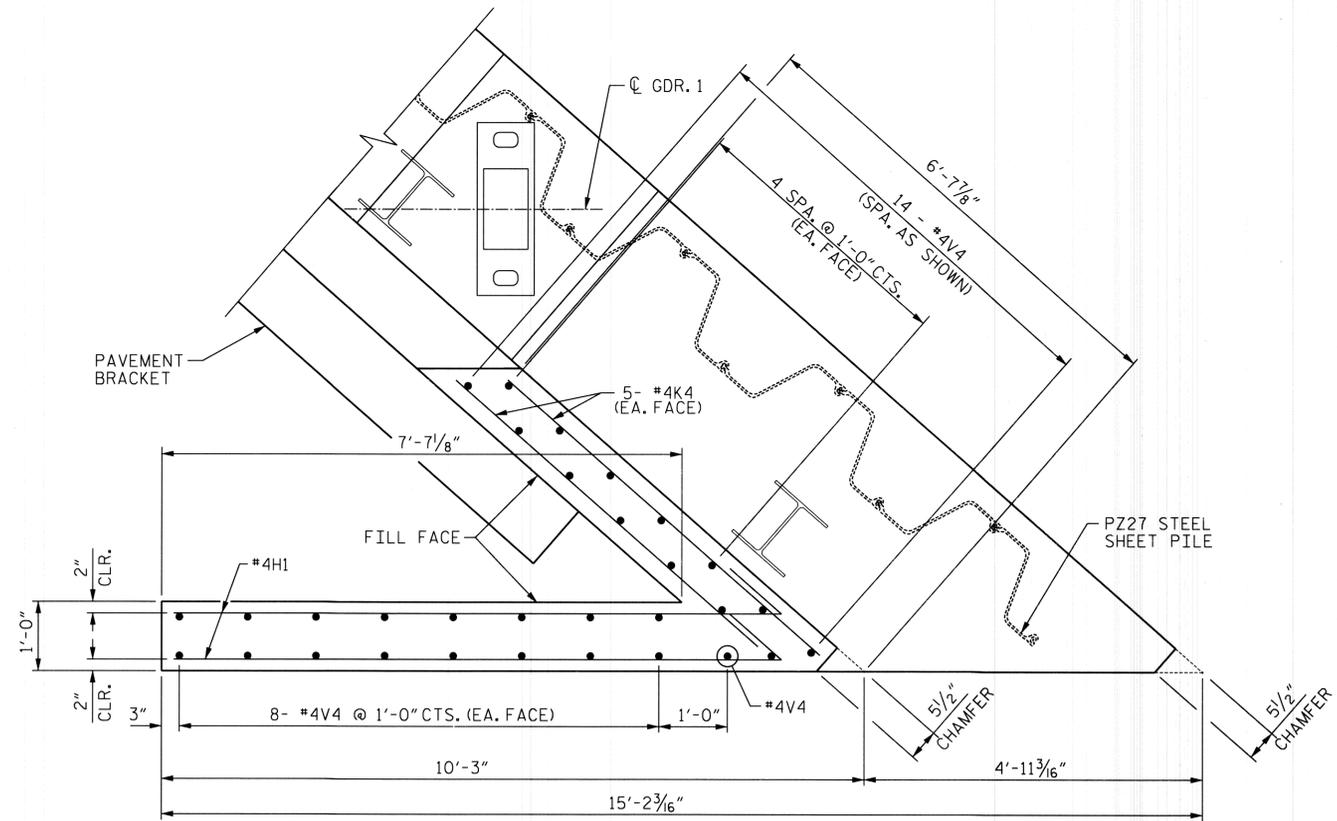
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RALEIGH

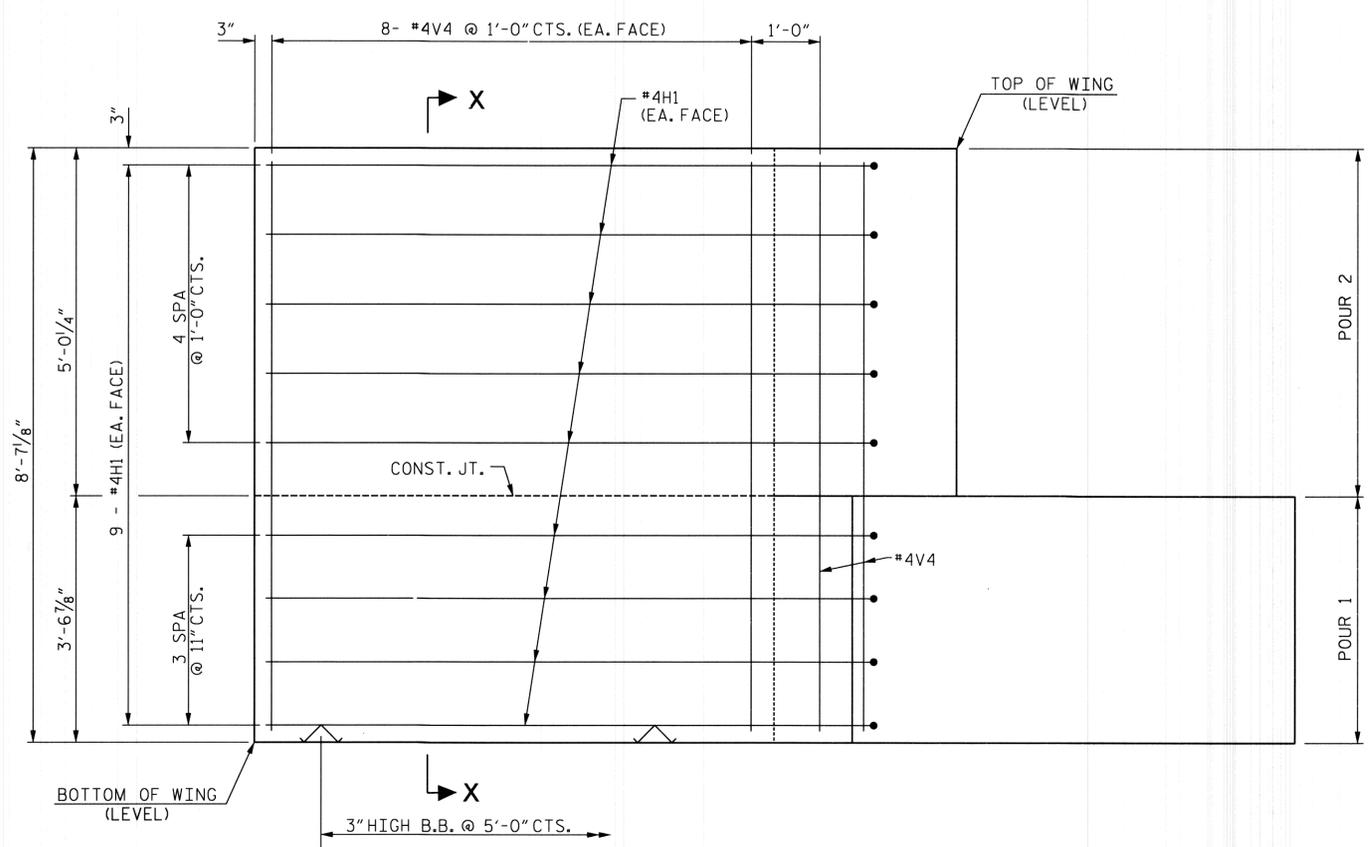
**FOUNDATION LAYOUT**

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CHKD. BY: HLW	DATE: 1/14
DSN. ENG. OF RECORD: RTS	DATE: 1/14

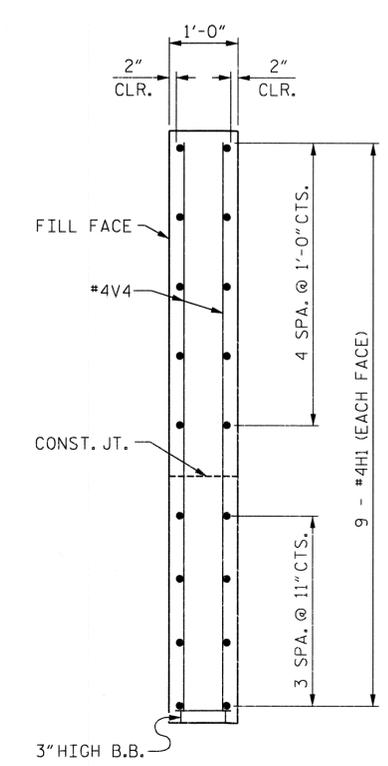
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			33



PLAN - WING W2



ELEVATION - WING W2



SECTION X-X



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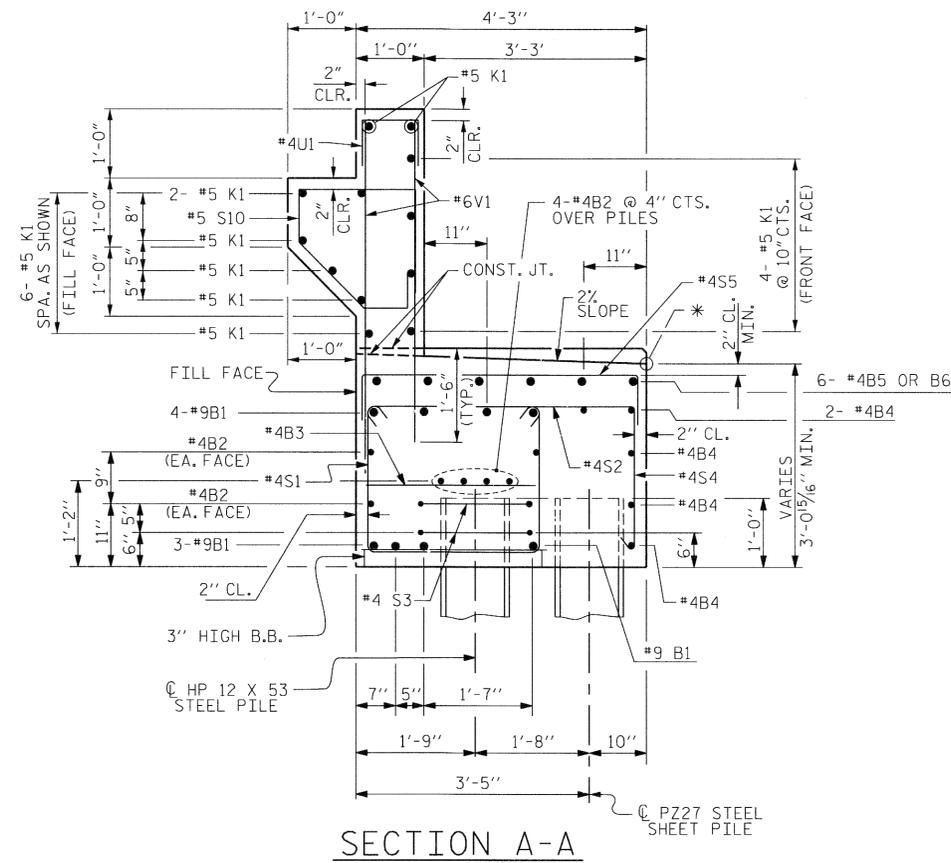
PROJECT NO. ~~17BPM1.14.131~~ 17BPM1.14.131  
 HAYWOOD COUNTY  
 STATION: 11+10.45 -L-  
 SHEET 2 OF 4

STATE OF NORTH CAROLINA  
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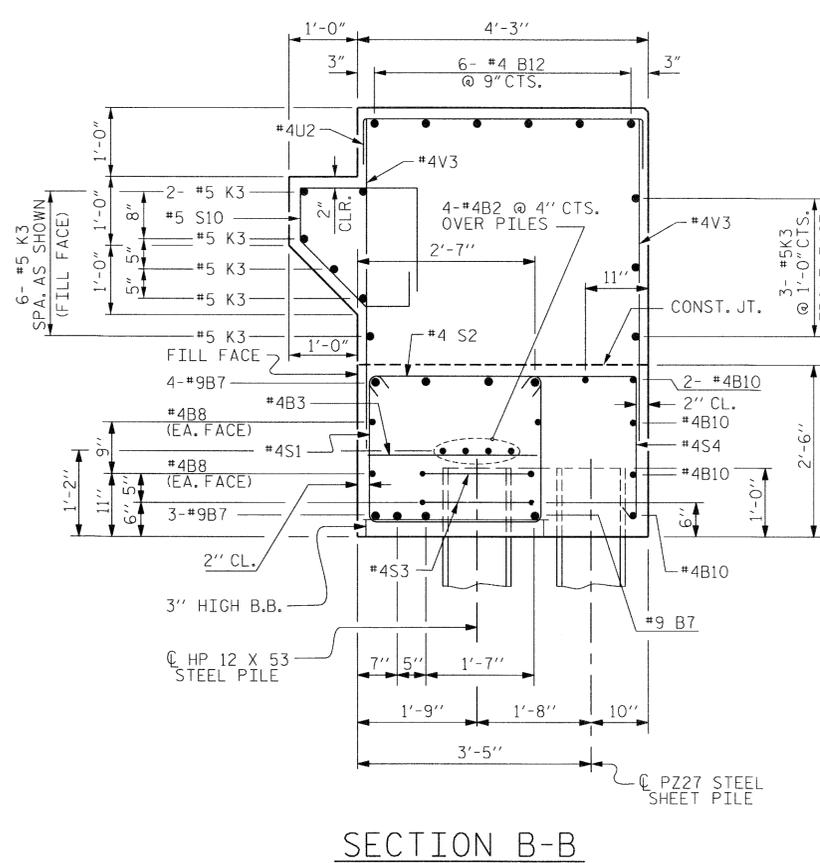
**SUBSTRUCTURE  
 END BENT NO. 2**

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2			4		

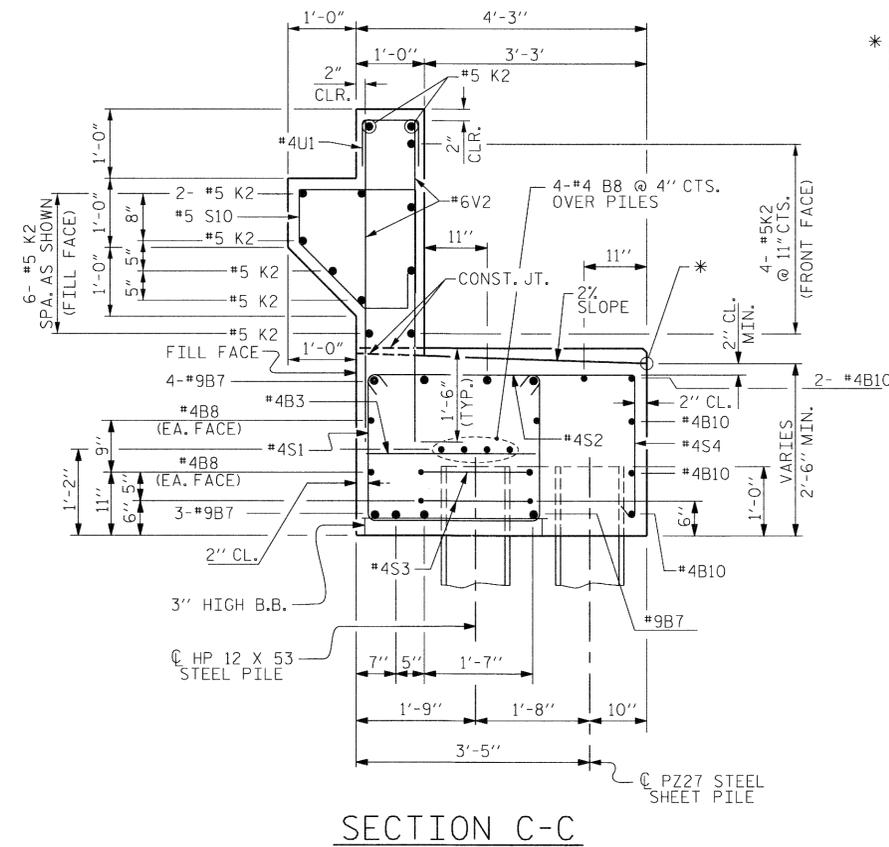
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CHKD. BY: HLW	DATE: 1/14		
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SECTION A-A

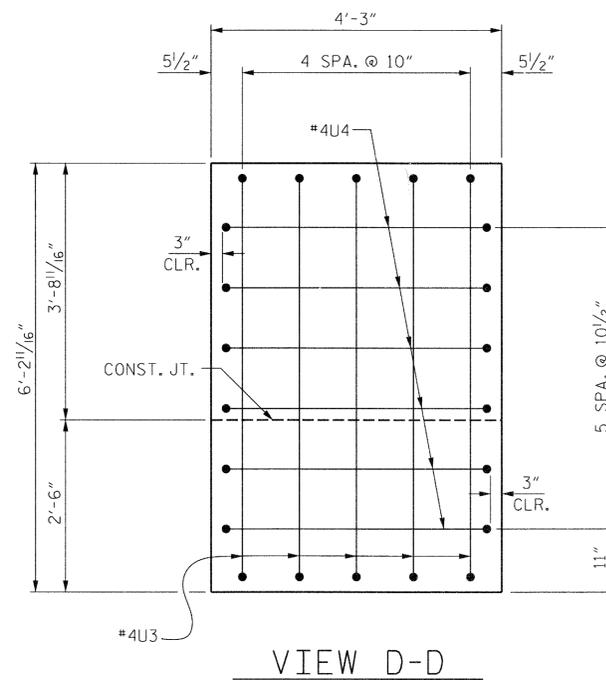


SECTION B-B



SECTION C-C

\* ELEVATIONS BETWEEN BRIDGE SEAT BUILDUPS ON SHEET 1 OF 4 ARE SHOWN AT THIS POINT.



VIEW D-D

OUTSIDE SHOWN, INSIDE SIMILAR. PAVEMENT BRACKET NOT SHOWN FOR CLARITY.



PROJECT NO. 17BP.14.R.131  
 HAYWOOD COUNTY  
 STATION: 11+10.45 -L-

SHEET 3 OF 4

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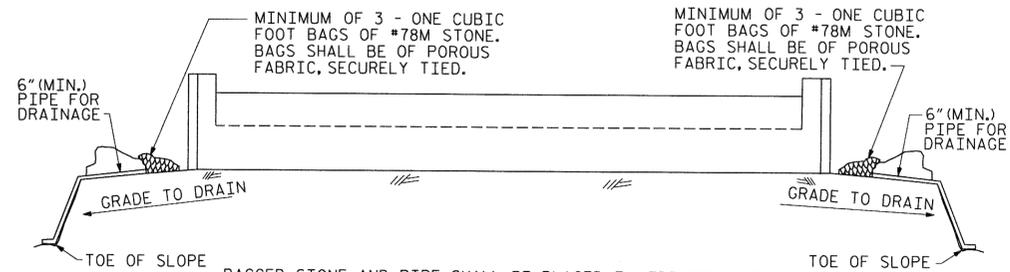
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SUBSTRUCTURE  
 END BENT NO. 2

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

DWN. BY: MAF DATE: 1/14  
 CHKD. BY: HLW DATE: 1/14  
 DSN. ENG. OF RECORD: RTS DATE: 1/14



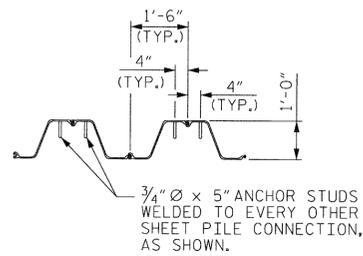


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

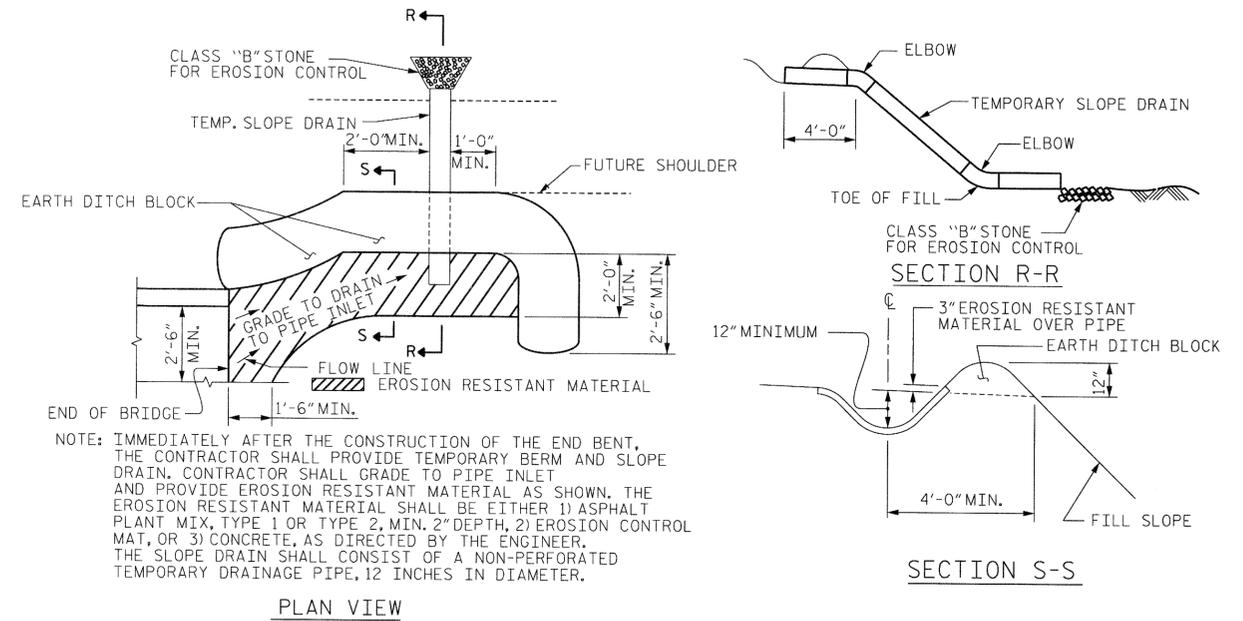
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

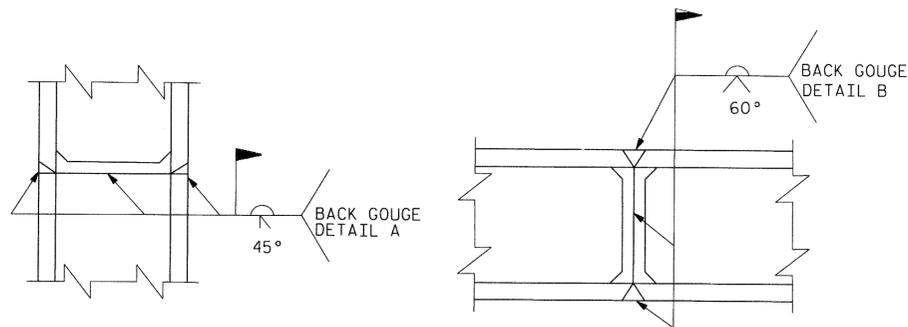


ANCHOR STUD DETAIL



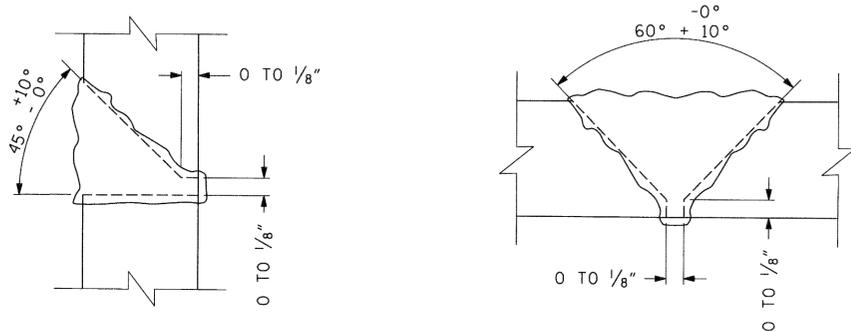
TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM CUTTER IS REQUIRED)



\* PILE VERTICAL

\* PILE HORIZONTAL OR VERTICAL

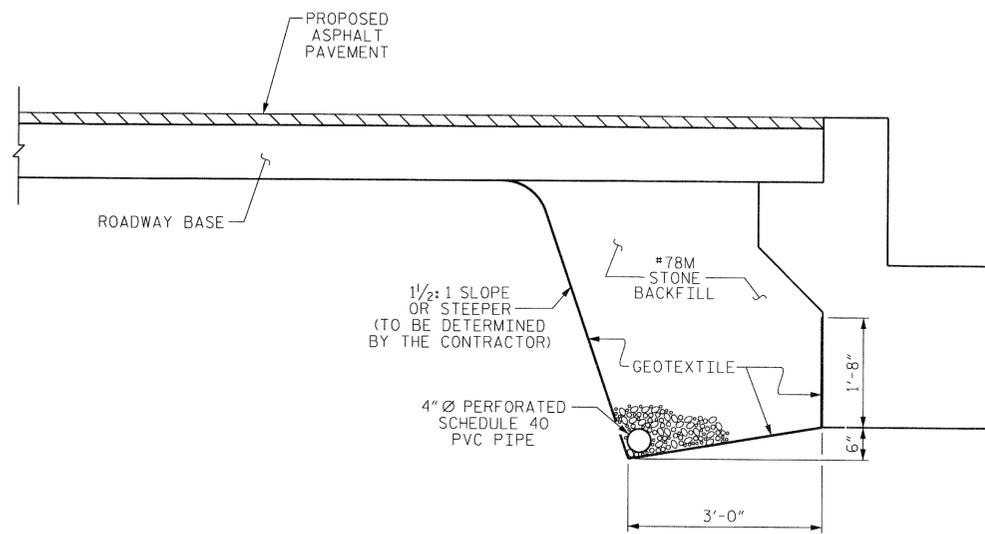


DETAIL A

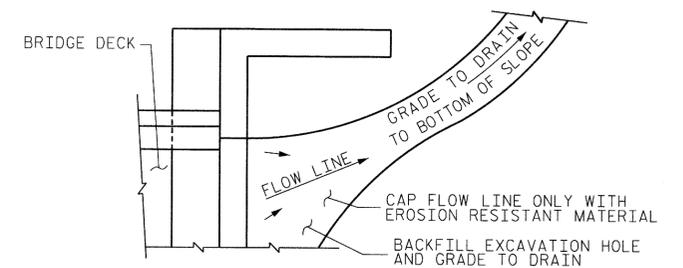
DETAIL B

\* POSITION OF PILE DURING WELDING

PILE SPLICE DETAILS



SECTION THRU END BENT



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 ROADWAY.

TEMPORARY DRAINAGE DETAIL



PROJECT NO. 17BP.14.R.131  
 HAYWOOD COUNTY  
 STATION: 11+10.45 -L-

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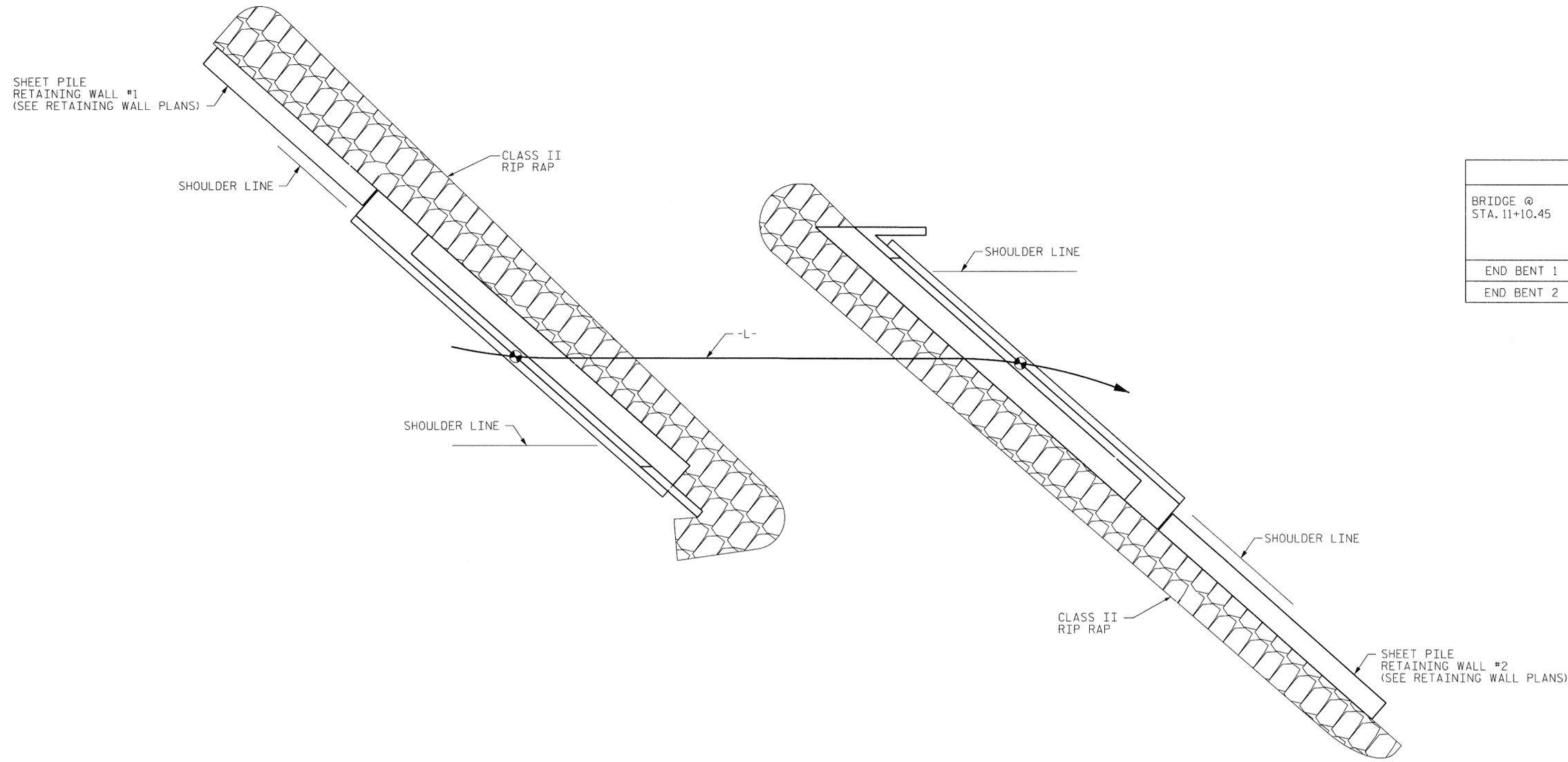
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 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE END BENT DETAILS

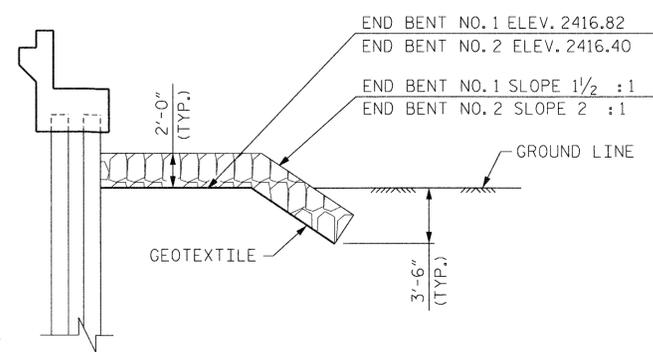
DWN. BY: MAF DATE: 1/14  
 CHKD. BY: HLW DATE: 1/14  
 DSN. ENG. OF RECORD: RTS DATE: 1/14

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

NOTES :  
 PLACE RIP RAP ALONG STREAM BANK AS SHOWN.



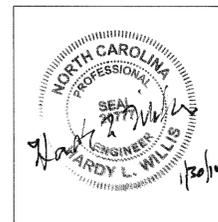
ESTIMATED QUANTITIES		
BRIDGE @ STA. 11+10.45	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	75	85
END BENT 2	66	75



SECTION  
 BERM RIP RAPPED

PROJECT NO. 17BP.14.R.131  
 HAYWOOD COUNTY  
 STATION: 11+10.45 -L-

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



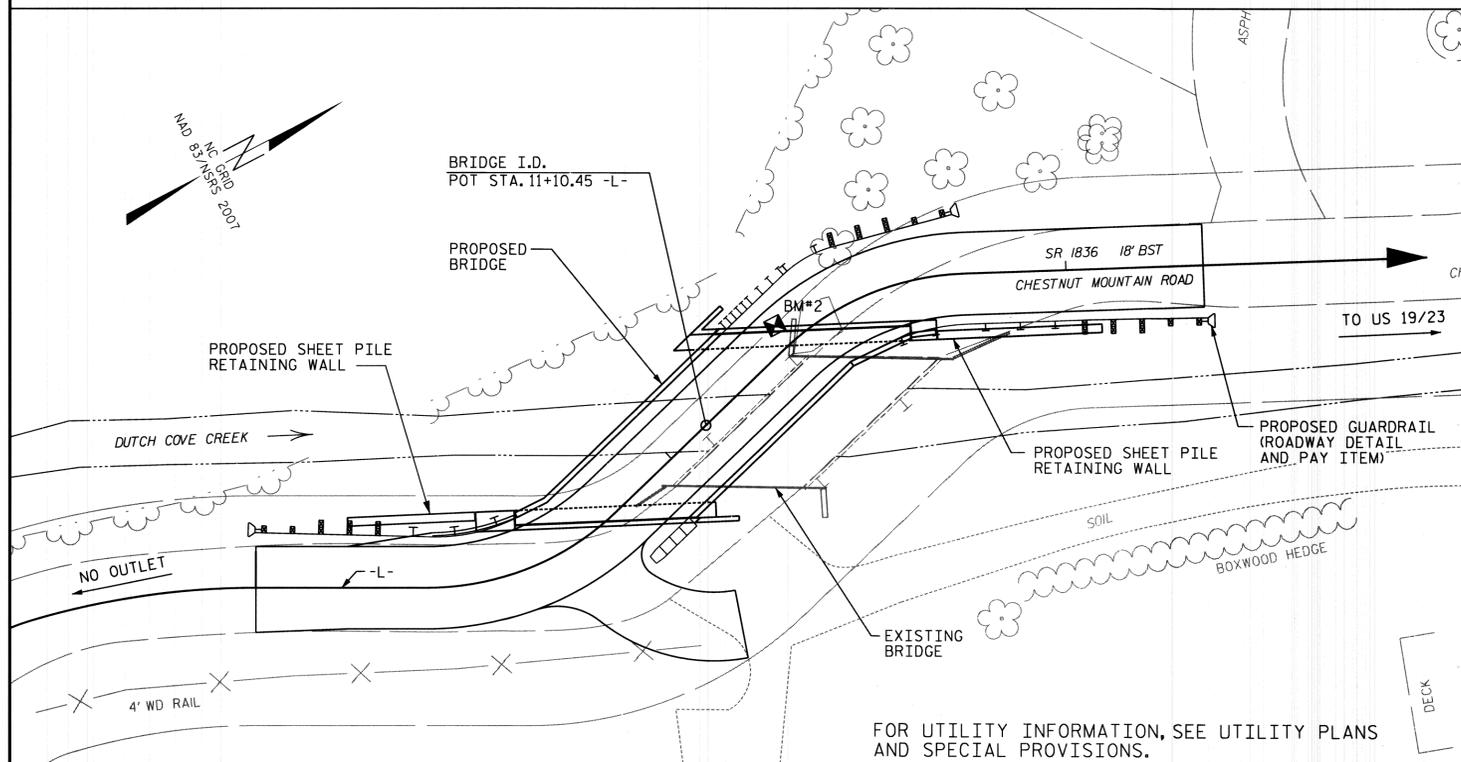
ASSEMBLED BY : MAF	DATE : 1/14
CHECKED BY : HLW	DATE : 1/14
DRAWN BY : REK 1/84	REV. 5/1/06R TLA/GM
CHECKED BY : RDU 1/84	REV. 10/1/11 MAA/GM
	REV. 12/21/11 MAA/GM

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

\*\*\*\*\*SYSTEM\*\*\*\*\*  
 \*\*\*\*\*DCN\*\*\*\*\*



BM #1 -BL- STA 5+72.57 43.61' LT ELEV. 2427.25' RR SPIKE IN BOTTOM OF 12" POPLAR



LOCATION SKETCH

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

GENERAL NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.  
 THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF 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 A ONE SPAN, 41.25-FOOT LONG TIMBER DECK ON STEEL I-BEAMS BEAMS, 20.6 FEET WIDE, ON TIMBER CAPS AND TIMBER PILES, AND LOCATED AT THE PROPOSED STRUCTURE, SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.  
 REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.  
 THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.  
 THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH HFC 18, "EVALUATING SCOUR AT BRIDGES", MAY 2001.  
 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.  
 THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 25 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.  
 INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 11+10.45."  
 THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.  
 PILES AT END BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 85 TONS PER PILE.  
 DRIVE PILES AT END BENT NO. 1 TO A REQUIRED DRIVING RESISTANCE OF 145 TONS PER PILE.  
 PILES AT END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 90 TONS PER PILE.  
 DRIVE PILES AT END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 150 TONS PER PILE.  
 STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENT NO. 1 AND END BENT NO. 2. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.  
 TESTING PILES WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING MAY BE REQUIRED. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS (AND FOR PILE DRIVING CRITERIA, SEE PILE DRIVING CRITERIA PROVISION).  
 FOR STEEL SHEET PILES, SEE SECTION 1084 OF THE STANDARD SPECIFICATIONS.  
 PZ27 SHEETING IS TO BE DRIVEN IN FRONT (STREAM SIDE) OF THE HP12X53 PILES AT END BENT NO. 1 AND END BENT NO. 2 AS SHOWN IN THE STRUCTURE PLANS.  
 SHEET PILES SHOULD BE DRIVEN TO REFUSAL. FOR END BENT NO. 1, REFUSAL IS ESTIMATED AT ELEVATION 2405.5 FT. (LT) AND 2406.0 FT. (RT). AT THE END OF THE WING WALL, REFUSAL IS ESTIMATED AT ELEVATION 2411.5 FT.  
 SHEET PILES SHOULD BE DRIVEN TO REFUSAL. FOR END BENT NO. 2, REFUSAL IS ESTIMATED AT ELEVATION 2405.5 FT. (LT) AND 2405.5 FT. (RT). AT THE END OF THE WING WALL, REFUSAL IS ESTIMATED AT ELEVATION 2399.5 FT.  
 THE SCOUR CRITICAL ELEVATION FOR END BENT NO. 1 IS ELEVATION 2410.0 FT. AND FOR END BENT NO. 2 IS ELEVATION 2406.0 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

HYDRAULIC DATA	
DESIGN DISCHARGE	= 1600 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 2423.1 FT
BASE DISCHARGE	= 2200 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 2423.87 FT
OVERTOPPING FLOOD DATA	
OVERTOPPING DISCHARGE	= 2364 CFS
OVERTOPPING FREQUENCY	= 100(+) YRS
OVERTOPPING ELEVATION	= 2425.5 FT
DRAINAGE AREA	= 6.55 SQ. MI

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	PDA TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	REINFORCING STEEL	EPOXY-COATED REINFORCING STEEL	STRUCTURAL STEEL	TYPE II PRESTRESSED CONCRETE GIRDERS	HP 12 X 53 STEEL PILES	STEEL PILE POINTS	STEEL SHEET PILES	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	FOAM JOINT SEALS	
	LUMP SUM	EACH	LUMP SUM	SQ. FT.	SQ. FT.	CU. YARDS	LBS.	LBS.	APPROX. LBS.	NO.	NO.	EACH	SQ. FT.	TONS	SQ. YARDS		LUMP SUM	LUMP SUM	
SUPERSTRUCTURE				1603	1259				2587	4				120.2				LUMP SUM	LUMP SUM
END BENT 1			LUMP SUM			40.1	5881				8	160	8	755	75	85			
END BENT 2			LUMP SUM			44.7	6301	132			8	160	8	834	66	75			
TOTAL	LUMP SUM	1	LUMP SUM	1603	1259	84.8	12,182	132	2587	4	16	320	16	1589	141	160	LUMP SUM	LUMP SUM	

PROJECT NO. ~~17BBP4R10~~ 131  
 HAYWOOD COUNTY  
 STATION: 11+10.45 -L-  
 SHEET 3 OF 3

**V&M**  
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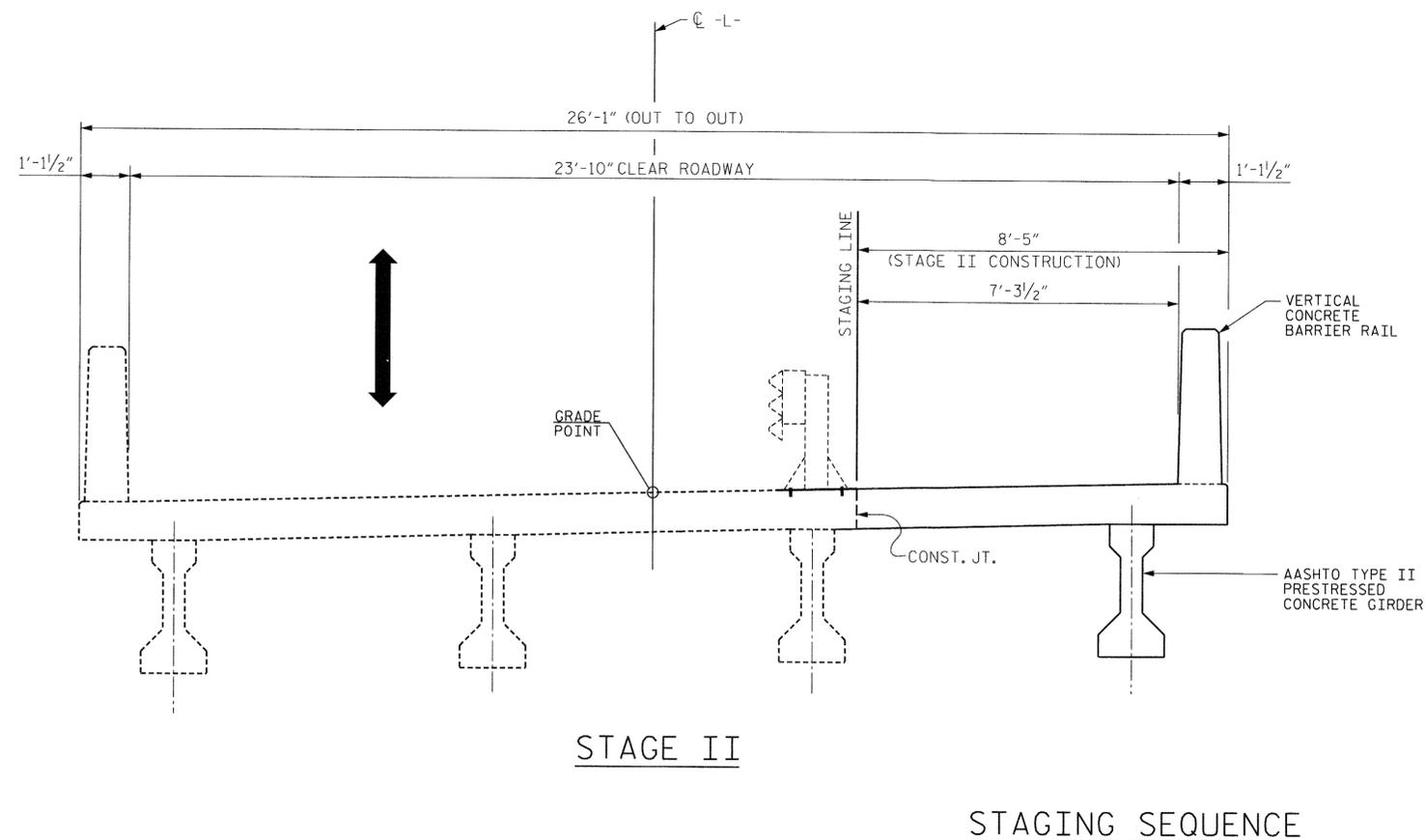
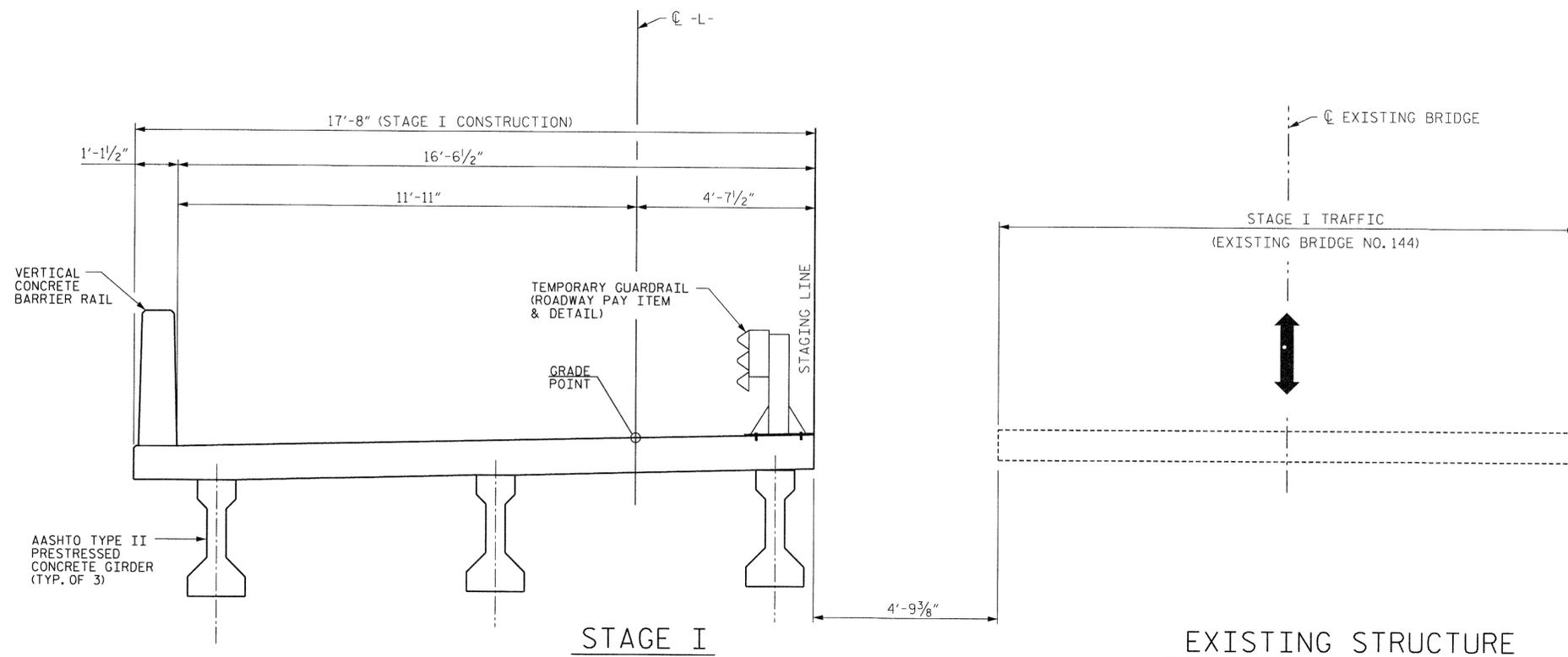
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 LOCATION SKETCH AND TOTAL BILL OF MATERIALS

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

DWN. BY: MAF	DATE: 1/14		
CHKD. BY: HLW	DATE: 1/14		
DSN. ENG. OF RECORD: RTS	DATE: 1/14		

TOTAL SHEETS	33
SHEET NO.	S-3

NOTE:  
SEE TRAFFIC CONTROL PLANS FOR  
LOCATION AND PAY LIMITS OF  
THE TEMPORARY GUARDRAIL.



PROJECT NO. 17BP.14.R.131  
HAYWOOD COUNTY  
STATION: 11+10.45 -L-



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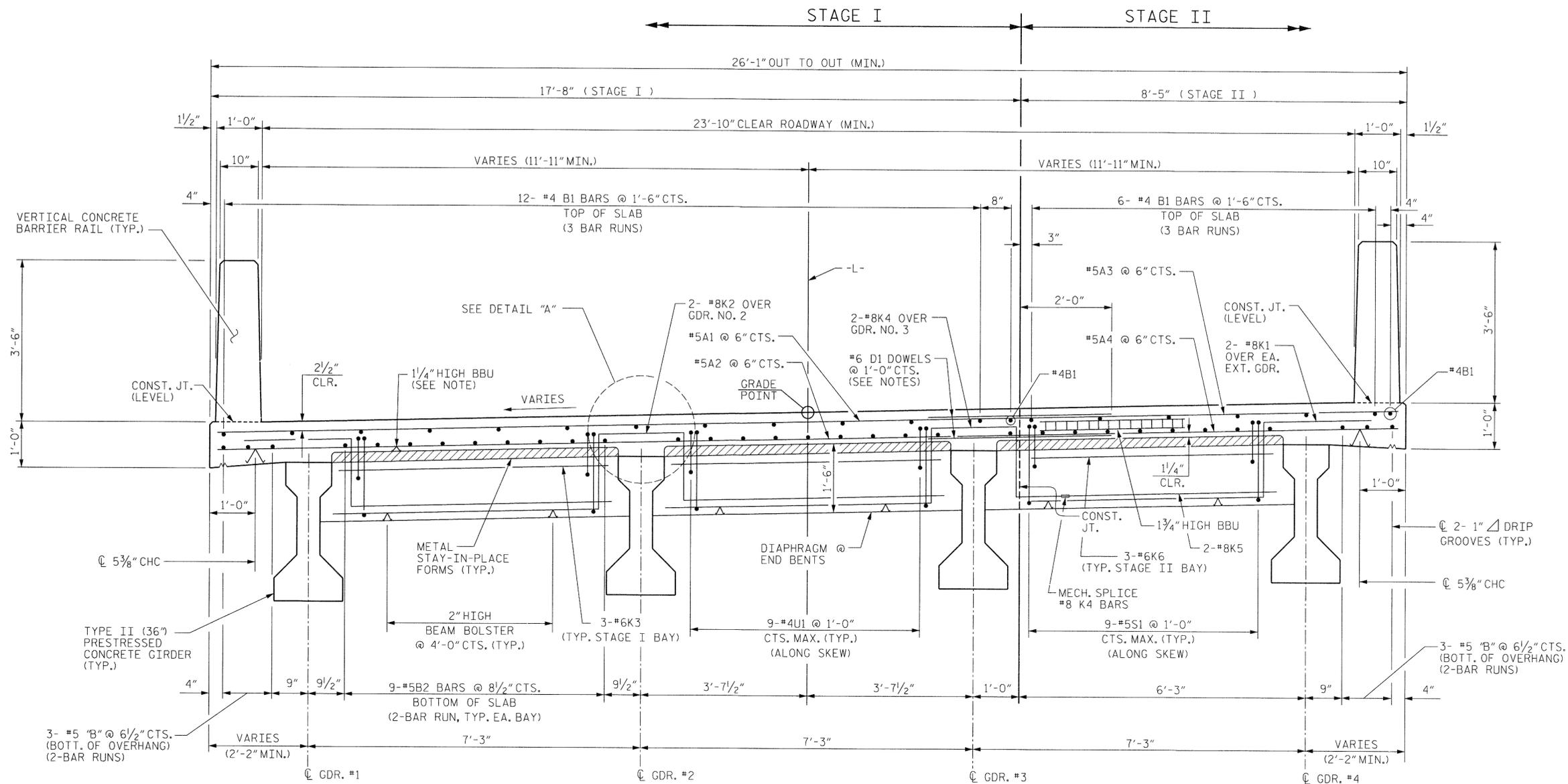
CONSTRUCTION  
SEQUENCE

DWN. BY: MAF DATE: 1/14  
CHKD. BY: HLW DATE: 1/14  
DSN. ENG. OF RECORD: RTS DATE: 1/14

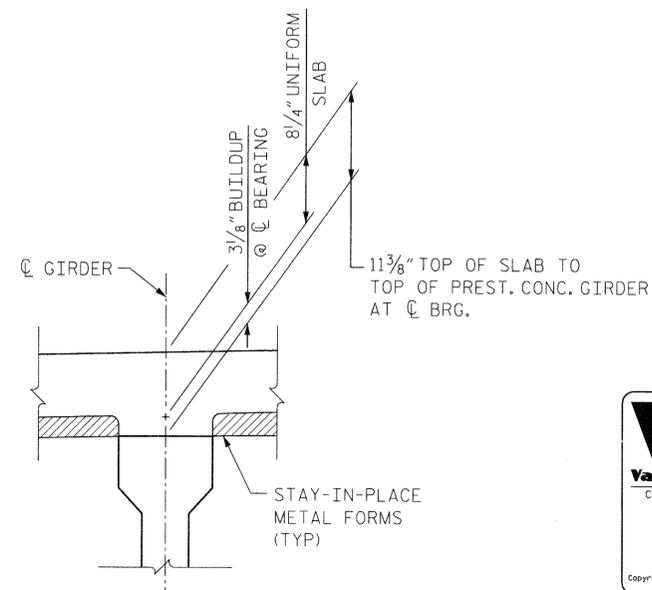
REVISIONS

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

SHEET NO.  
S-4  
TOTAL SHEETS  
33



TYPICAL SECTION



DETAIL "A"

NOTES:

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

BARRIER RAIL SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3000psi.

PREVIOUSLY CAST CONCRETE SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3000psi BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.

#6D1 DOWELS SHALL BE PLACED IN THE SAME HORIZONTAL PLANE AS THE TOP AND BOTTOM SLAB REINFORCING STEEL.



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PROJECT NO. 17BP.14.R.131  
 HAYWOOD COUNTY  
 STATION: 11+10.45 -L-

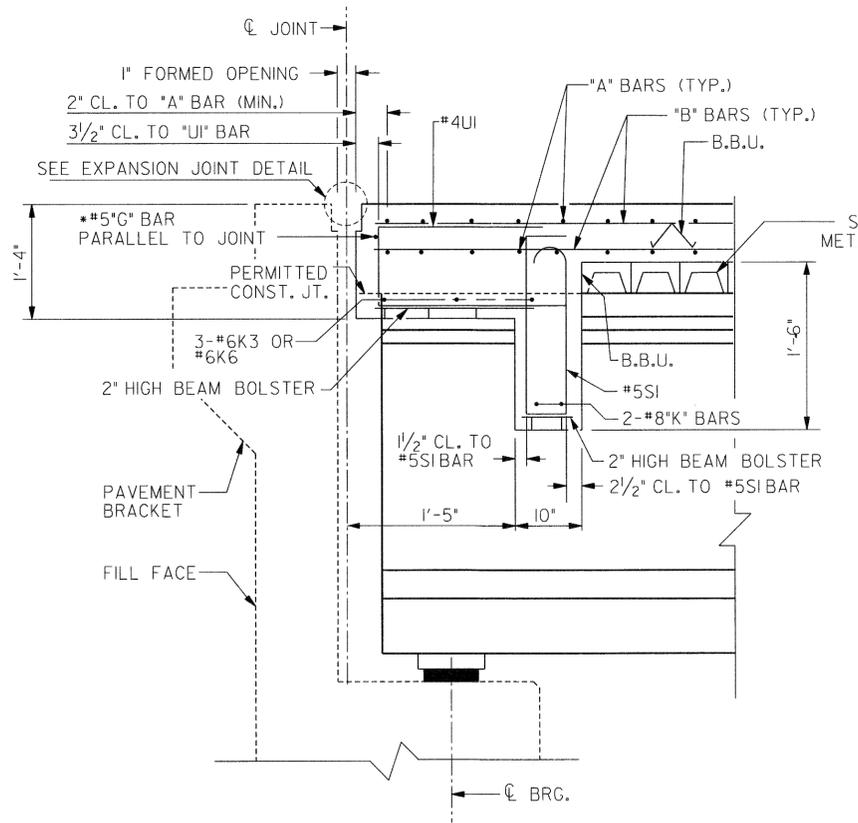
SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUPERSTRUCTURE  
 TYPICAL SECTION**

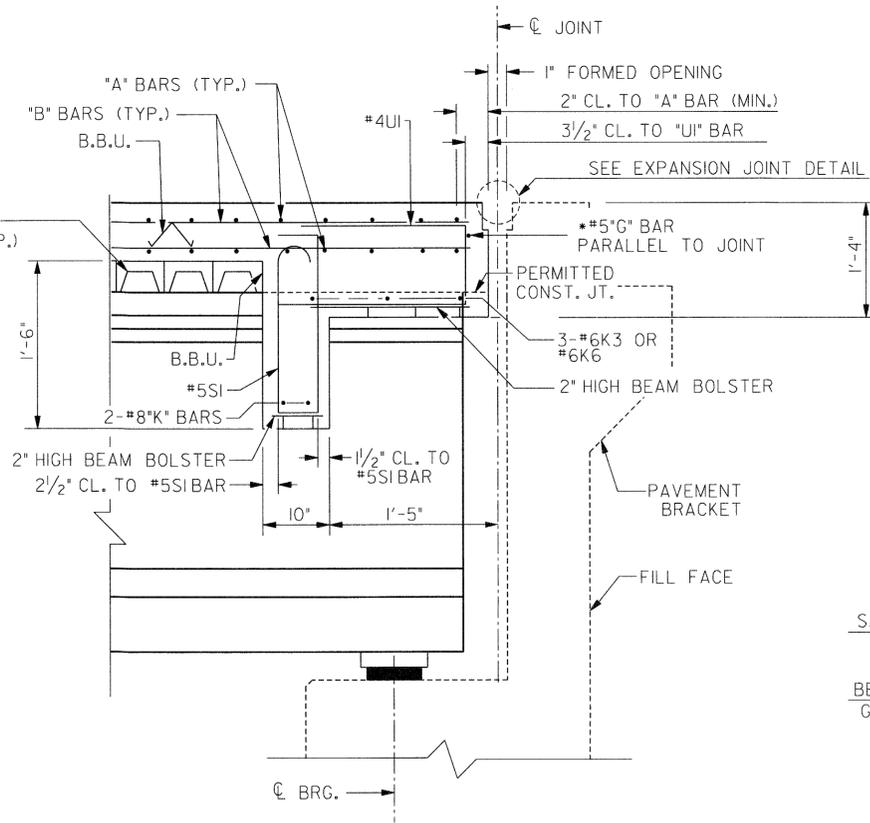
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			33

DWN. BY: MAF DATE: 1/14  
 CHKD. BY: HLW DATE: 1/14  
 DSN. ENG. OF RECORD: RTS DATE: 1/14



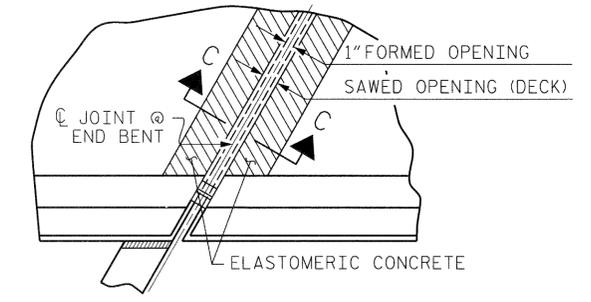
SECTION THRU END BENT NO. 1 DIAPHRAGM

\*#5G BARS MAY BE SHIFTED SLIGHTLY AS NECESSARY, TO CLEAR REINFORCING STEEL AND STIRRUPS

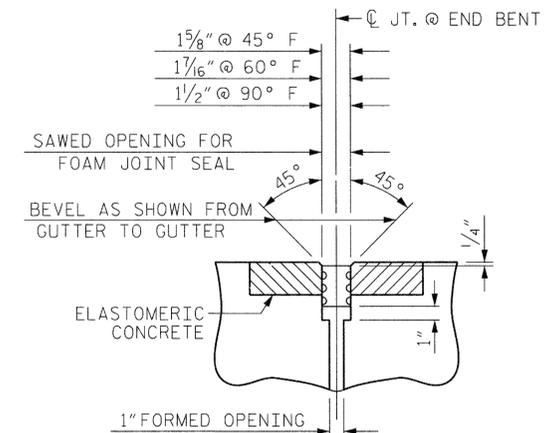


SECTION THRU END BENT NO. 2 DIAPHRAGM

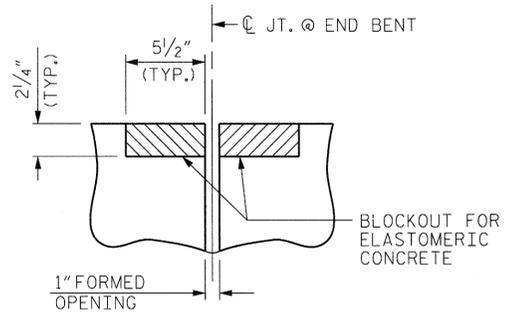
\*#5G BARS MAY BE SHIFTED SLIGHTLY AS NECESSARY, TO CLEAR REINFORCING STEEL AND STIRRUPS



PLAN



SECTION C-C  
FOAM JOINT SEAL  
(EXPANSION)



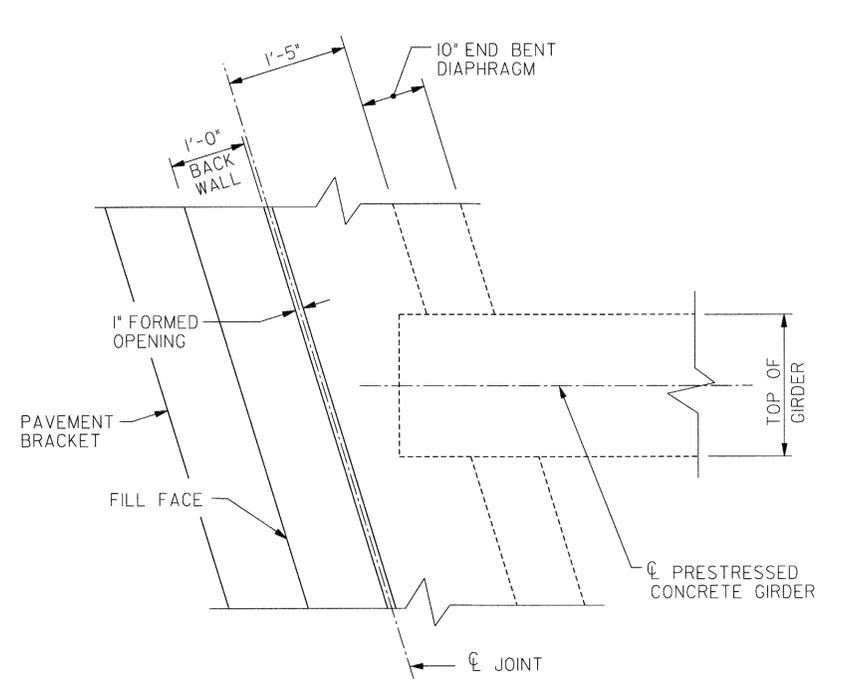
SECTION C-C  
FOAM JOINT SEAL  
(PRE-SAWED ELASTOMERIC  
CONCRETE DIMENSIONS)

JOINT SEAL DETAILS @ END BENT

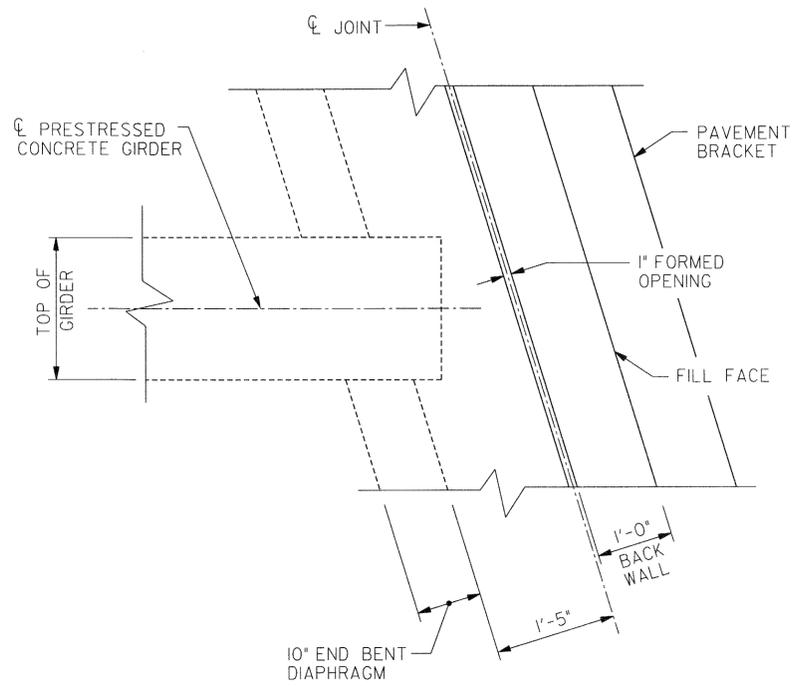
FOAM JOINT SEAL TO BE CUT, HEAT WELDED AND TURNED UP PARALLEL TO SLOPED FACE OF THE BARRIER RAIL.  
THE JOINT SHALL BE SAWED PRIOR TO THE CASTING OF THE BARRIER RAIL.

ELASTOMERIC CONCRETE	
LOCATION	ELASTOMERIC CONCRETE * (CU. FT.)
END BENT NO. 1	0.3
END BENT NO. 2	0.3
TOTAL	0.6

\* BASED ON THE MINIMUM BLOCKOUT SHOWN.



PLAN OF DIAPHRAGM AT END BENT NO. 1



PLAN OF DIAPHRAGM AT END BENT NO. 2



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PROJECT NO. 17BP.14.R.131  
HAYWOOD COUNTY  
STATION: 11+10.45 -L-

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

TYPICAL SECTION  
DETAILS

REVISIONS				SHEET NO.			
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6	
1			3			TOTAL SHEETS	
2			4			33	

DWN. BY: MAF DATE: 1/14  
CHKD. BY: HLW DATE: 1/14  
DSN. ENG. OF RECORD: RTS DATE: 1/14

INFORMATION FOR TYPE II PCG (SPAN A)

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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE								SERVICE III LIMIT STATE					COMMENT NUMBER	
						MOMENT				SHEAR				MOMENT						
						LIVE-LOAD FACTORS (%L)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN NUMBER	DISTANCE FROM LEFT END OF SPAN (FF)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN NUMBER	DISTANCE FROM LEFT END OF SPAN (FF)	LIVE-LOAD FACTORS (%L)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN NUMBER		DISTANCE FROM LEFT END OF SPAN (FF)
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	1	1.48	----	1.75	0.8316	1.79	A	27.72	0.9684	2.64	A	52.22	0.80	0.8316	1.48	A	27.72	
	HL-93 (OPERATING)	N/A		2.32	----	1.35	0.8316	2.32	A	27.72	0.9684	3.42	A	52.22	----	----	----	----	----	
	HS-20 (INVENTORY)	36.00	2	1.86	67.08	1.75	0.8316	2.25	A	27.72	0.9684	3.20	A	52.22	0.80	0.8316	1.86	A	27.72	
	HS-20 (OPERATING)	36.00		2.92	105.15	1.35	0.8316	2.92	A	27.72	0.9684	4.14	A	52.22	----	----	----	----	----	
LEGAL LOAD RATING	SNSH	13.50		2.55	34.48	1.40	0.8316	3.85	A	27.72	0.9684	6.17	A	52.22	0.80	0.8316	2.55	A	27.72	
	SNGAR BS2	20.00		3.05	60.95	1.40	0.8316	4.61	A	27.72	0.9684	6.64	A	52.22	0.80	0.8316	3.05	A	27.72	
	SNAG RIS2	22.00		2.94	64.63	1.40	0.8316	4.43	A	27.72	0.9684	6.20	A	52.22	0.80	0.8316	2.94	A	27.72	
	SNCOT TS3	27.25		1.97	53.56	1.40	0.8316	2.97	A	27.72	0.9684	4.60	A	52.22	0.80	0.8316	1.97	A	27.72	
	SNAG GRS4	34.93		1.69	58.87	1.40	0.8316	2.54	A	27.72	0.9684	3.89	A	52.22	0.80	0.8316	1.69	A	27.72	
	SNS5A	35.55		1.64	58.47	1.40	0.8316	2.48	A	27.72	0.9684	3.97	A	52.22	0.80	0.8316	1.64	A	27.72	
	SNS6A	39.95		1.54	61.41	1.40	0.8316	2.32	A	27.72	0.9684	3.68	A	52.22	0.80	0.8316	1.54	A	27.72	
	SNS7B	42.00		1.45	61.09	1.40	0.8316	2.20	A	27.72	0.9684	3.62	A	52.22	0.80	0.8316	1.45	A	27.72	
	TNAG RIT3	33.00		1.87	61.60	1.40	0.8316	2.82	A	27.72	0.9684	4.32	A	52.22	0.80	0.8316	1.87	A	27.72	
	TNT4A	33.08		1.88	62.19	1.40	0.8316	2.84	A	27.72	0.9684	4.18	A	52.22	0.80	0.8316	1.88	A	27.72	
	TNAG RIT4	43.00		1.55	66.77	1.40	0.8316	2.35	A	27.72	0.9684	3.39	A	52.22	0.80	0.8316	1.55	A	27.72	
	TNAG RIT5A	45.00	3	1.21	54.54	1.40	0.8316	1.83	A	27.72	0.9684	2.89	A	52.22	0.80	0.8316	1.21	A	27.72	
	TNAG RIT5B	45.00		1.43	64.39	1.40	0.8316	2.16	A	27.72	0.9684	3.22	A	52.22	0.80	0.8316	1.43	A	27.72	
	TNT6A	41.60		1.56	64.69	1.40	0.8316	2.35	A	27.72	0.9684	3.92	A	52.22	0.80	0.8316	1.56	A	27.72	
TNT7A	42.00		1.57	66.04	1.40	0.8316	2.38	A	27.72	0.9684	3.73	A	52.22	0.80	0.8316	1.57	A	27.72		
TNT7B	42.00		1.64	68.97	1.40	0.8316	2.48	A	27.72	0.9684	3.51	A	52.22	0.80	0.8316	1.64	A	27.72		

LOAD FACTORS:

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

NOTES:

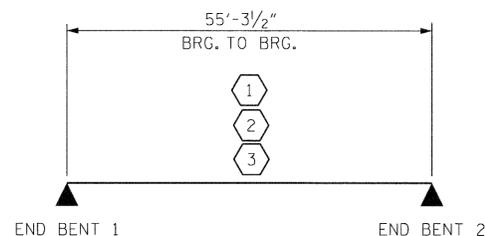
MINIMUM RATING FACTORS FOR DESIGN LOAD RATING ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

MINIMUM RATING FACTORS FOR LEGAL LOAD RATING ARE BASED ON THE STRENGTH I LIMIT STATE.

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

COMMENTS:

NONE



LRFR SUMMARY - SPAN A

#	CONTROLLING LOAD RATING
1	DESIGN LOAD RATING (HL-93) **
2	DESIGN LOAD RATING (HS-20) **
3	LEGAL LOAD RATING **
** SEE CHART FOR VEHICLE TYPE	

PROJECT NO. 17BP.14.R.131  
HAYWOOD COUNTY  
 STATION: 11+10.45 -L-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-7
2			4			TOTAL SHEETS 33



DSN. ENG. OF RECORD: RTS DATE: 1/14

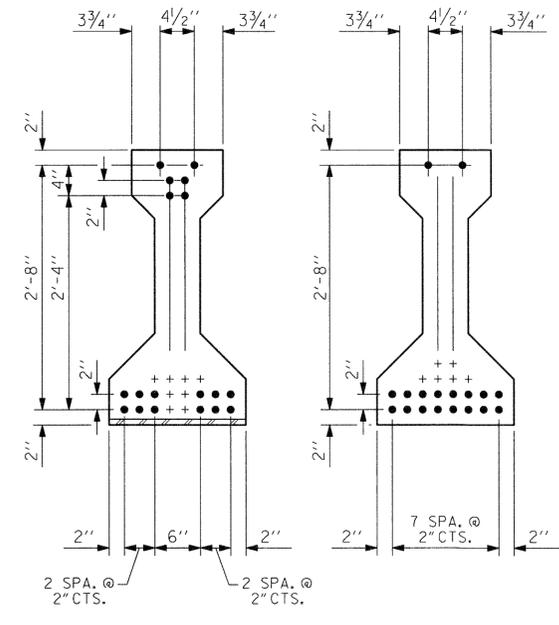
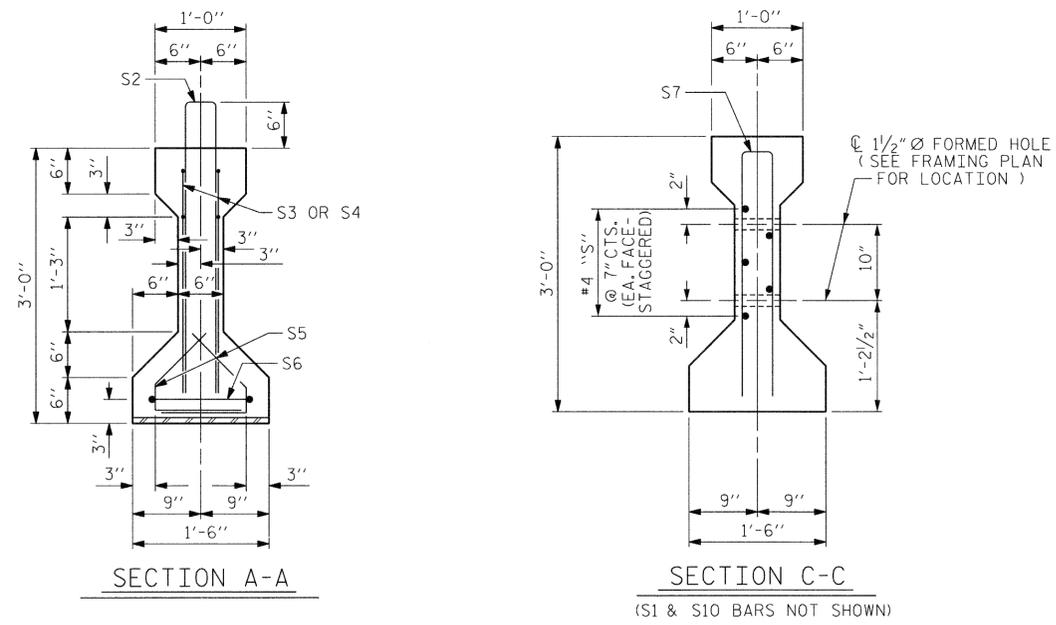
ASSEMBLED BY: MAF DATE: 1/14  
 CHECKED BY: HLW DATE: 1/14

DRAWN BY: MAA 1/08  
 CHECKED BY: GM/DI 2/08

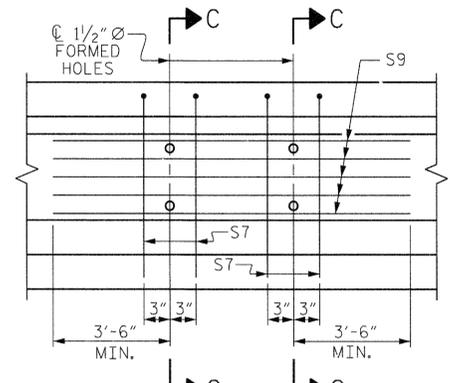
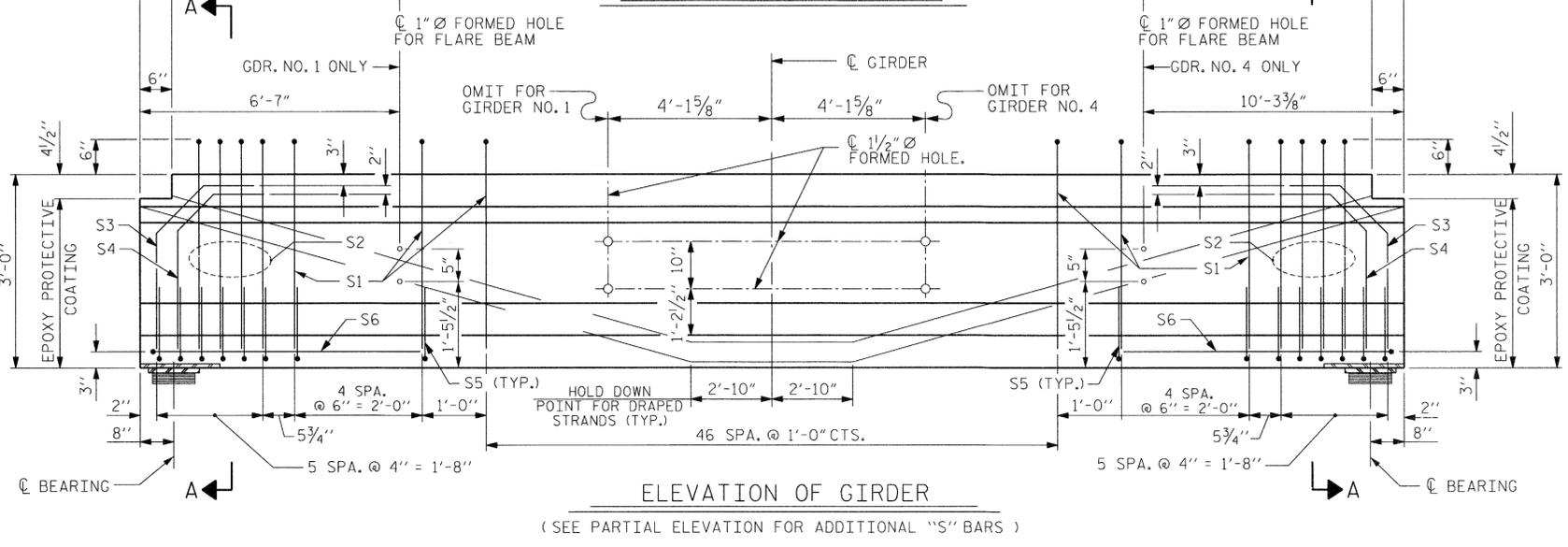
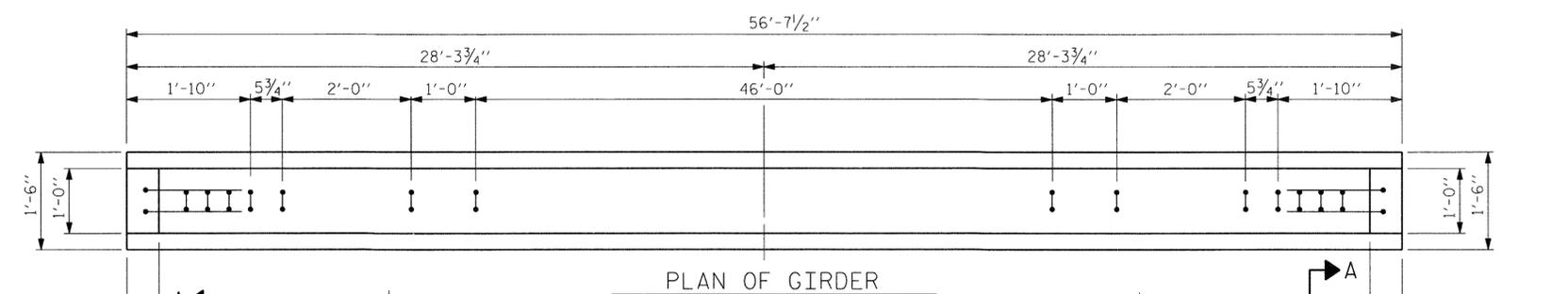
REV. ???/??/?? ???/???



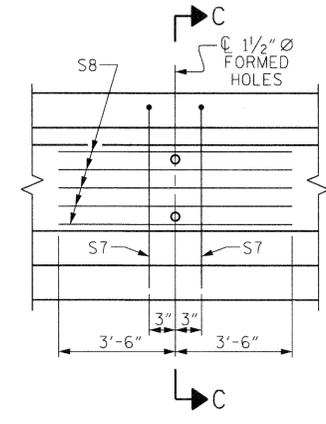




0.6" Ø LOW RELAXATION STRAND LAYOUT



SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 2 & 3 (FOR INTERIOR GDRS. WITH SKEW < 70° OR SKEW > 110°)



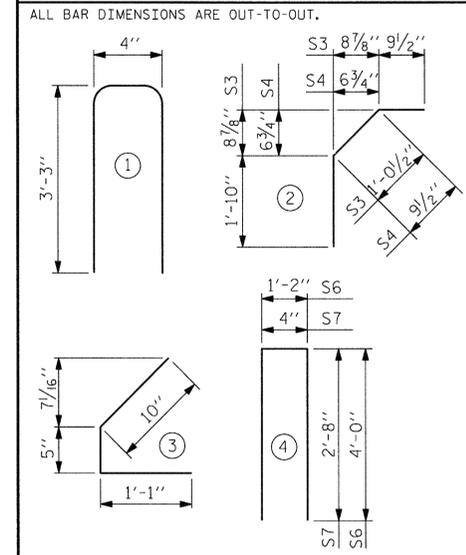
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 1 & 4 (FOR ALL EXTERIOR GIRDERS AND INTERIOR GIRDERS WITH 70° < SKEW < 110°)

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

REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	57	#4	1	6'-10"	260
S2	8	#5	1	6'-10"	57
S3	4	#5	2	3'-8"	15
S4	4	#5	2	3'-5"	14
S5	44	#4	3	2'-4"	69
S6	2	#4	4	9'-2"	12
S7	2	#5	4	5'-8"	12
S8	4	#5	4	5'-8"	24
S9	5	#4	STR	7'-0"	23
S10	5	#4	STR	15'-6"	52

EXTERIOR GDR.	S7	2	#5	4	5'-8"	12
INTERIOR GDR.	S7	4	#5	4	5'-8"	24
EXTERIOR GDR.	S8	5	#4	STR	7'-0"	23
INTERIOR GDR.	S9	5	#4	STR	15'-6"	52

**BAR TYPES**



**QUANTITIES FOR ONE GIRDER**

	REINFORCING STEEL	7000 PSI CONCRETE	0.6" Ø L. R. STRANDS
	LB.	C.Y.	No.
EXTERIOR GIRDER	462	5.37	18
INTERIOR GIRDER	503	5.37	18

**GIRDERS REQUIRED**

NUMBER	LENGTH	TOTAL LENGTH
4	56'-7 1/2"	226'-6"

PROJECT NO. 17BP.14.R.131  
 HAYWOOD COUNTY  
 STATION: 11+10.45 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 AASHTO TYPE II  
 PRESTRESSED CONCRETE GIRDER

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10	
1			3			TOTAL SHEETS	
2			4			33	



DSN. ENG. OF RECORD: RTS	DATE: 1/14
ASSEMBLED BY: MAF	DATE: 1/14
CHECKED BY: HLW	DATE: 1/14
DRAWN BY: JMB 12/87	REV. 8/16/99RR RWW/LES
CHECKED BY: ARB 12/87	REV. 5/1/06R TLA/GM
	REV. 10/1/11 MAA/GM

\*\*\*\*\*SYTIME\*\*\*\*\*  
 \*\*\*\*\*DON\*\*\*\*\*  
 \*\*\*\*\*\*\*\*\*\*

STD. NO. PCG1

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.

APPLY EPOXY PROTECTIVE COATING TO END OF GIRDER SURFACES. EMBEDDED PLATE "B-1" SHALL BE GALVANIZED IN ACCORDANCE WITH THE SPECIFICATIONS.

BEVEL EDGES OF PLATE "B-1" TO GIVE CLOSE FIT BUT NOT TIGHT FIT TO STEEL CASTING FORM.

ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

ALL PRESTRESSED STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

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

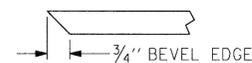
DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

THE TOP SURFACE OF THE GIRDER SHALL BE RAKED TO A DEPTH OF 1/4" EXCEPT IN THE AREA BETWEEN THE STIRRUP AND THE EDGE OF THE GIRDER.

WHEN DRAPED STRANDS ARE DETAILED, THE LONGITUDINAL LOCATION OF THE HOLD DOWN DEVICES SHALL BE WITHIN 6" OF THE LOCATION SHOWN AND THE CENTER OF GRAVITY OF THE GROUP OF DRAPED STRANDS SHALL BE LOCATED WITHIN 1/2" OF THE THEORETICAL LOCATION SHOWN.

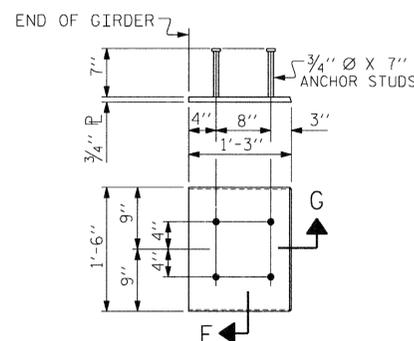


SECTION "G"



SECTION "F"

(SEE NOTES)



EMBEDDED PLATE "B-1" DETAILS

TWO EMBEDDED PLATES "B-1" ARE REQUIRED FOR EACH GIRDER.

PROJECT NO. 17BP.14.R.131  
HAYWOOD COUNTY  
 STATION: 11+10.45 -L-

SHEET 2 OF 2



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 AASHTO TYPE II  
 PRESTRESSED CONCRETE GIRDER  
 DETAILS

DSN. ENG. OF RECORD: RTS		DATE: 1/14	
ASSEMBLED BY: MAF	DATE: 1/14		
CHECKED BY: HLW	DATE: 1/14		
DRAWN BY: ELR 11/91	REV. 10/17/00	RWW/LES	
CHECKED BY: GRP 11/91	REV. 7/10/01RR	LES/RDR	
	REV. 5/1/06	TLA/GM	

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			33

\*\*\*\*\*SYTIME\*\*\*\*\*  
 \*\*\*\*\*SDGN\*\*\*\*\*  
 \*\*\*\*\*USERNAME\*\*\*\*\*

NOTES

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

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

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

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

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

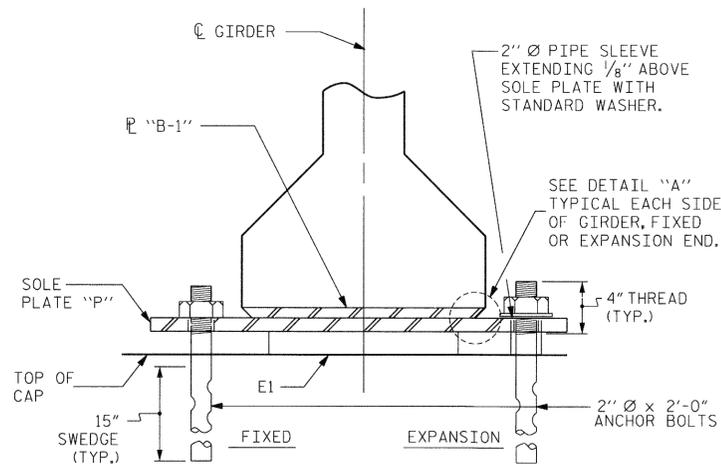
SOLE PLATE "P", BOLTS, NUTS, WASHERS, AND PIPE SLEEVE SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

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

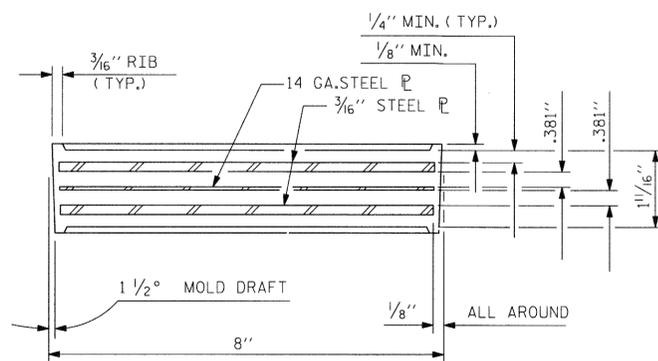
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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

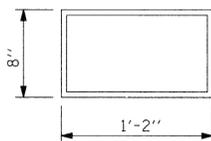
FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.



SECTION E-E



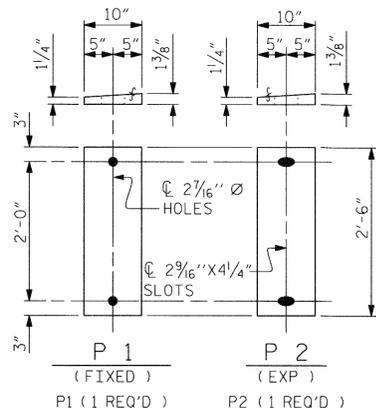
TYPICAL SECTION OF ELASTOMERIC BEARINGS



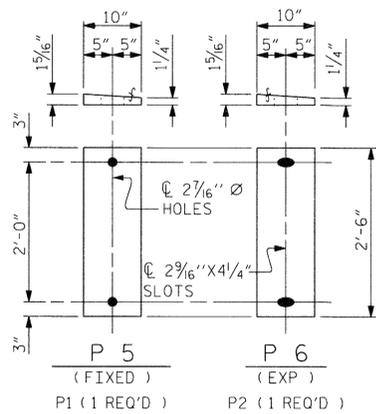
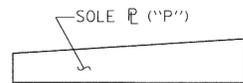
E1 (8 REQ'D)  
PLAN VIEW OF ELASTOMERIC BEARING

TYPE II

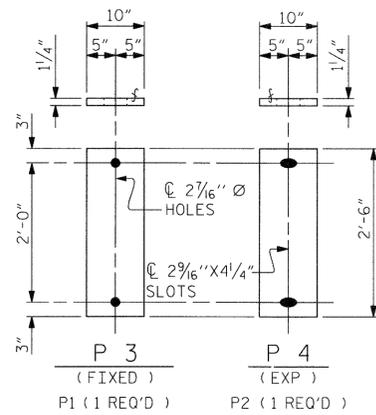
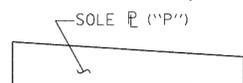
MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE II	145 k



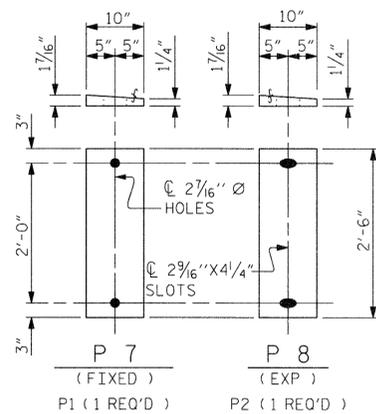
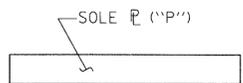
UP-STATION



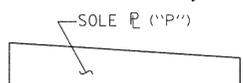
UP-STATION



UP-STATION



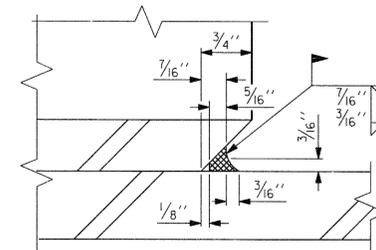
UP-STATION



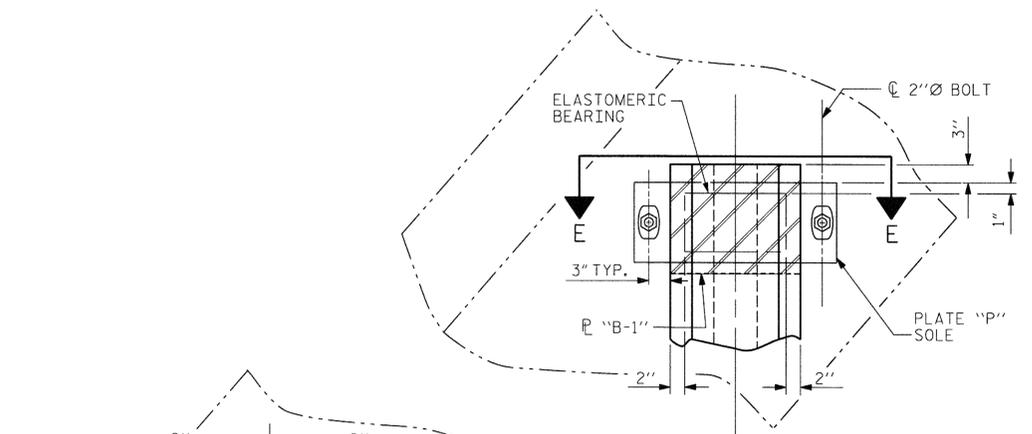
SOLE P PLACEMENT DETAIL

SOLE P PLACEMENT DETAIL

SOLE PLATE DETAILS ("P")

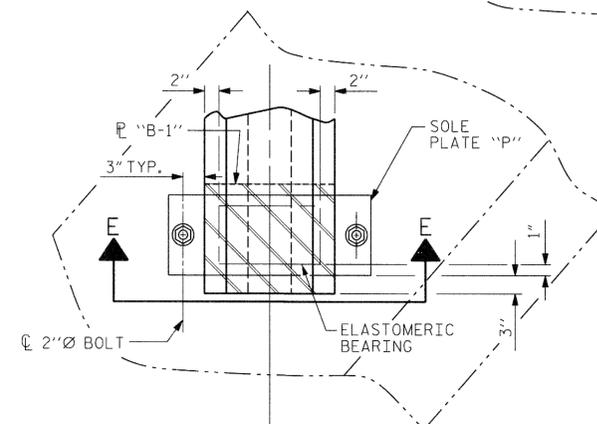


DETAIL "A"



END BENT NO. 2

(EXP)



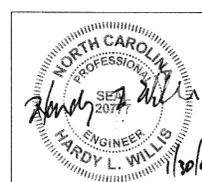
END BENT NO. 1

(FIXED)

PROJECT NO. 17BP.14.R.131  
HAYWOOD COUNTY  
STATION: 11+10.45 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
ELASTOMERIC BEARING  
DETAILS  
PRESTRESSED CONCRETE GIRDER  
SUPERSTRUCTURE



REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12	
1			3			TOTAL SHEETS	
2			4			33	

DSN. ENG. OF RECORD: RTS DATE: 1/14	
ASSEMBLED BY: MAF	DATE: 1/14
CHECKED BY: HLW	DATE: 1/14
DRAWN BY: WJH 8/89	REV. 5/1/06 TLA/GM
CHECKED BY: CRK 8/89	REV. 10/1/11 MAA/GM
	REV. 10/24/12 AAC/MAA

\*\*\*\*\*SYTIME\*\*\*\*\*  
\*\*\*\*\*SDCN\*\*\*\*\*  
\*\*\*\*\*USERNAME\*\*\*\*\*

NOTES

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

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

THE PAYMENT FOR THE PIPE SLEEVES SHALL BE INCLUDED IN THE SEVERAL PAY ITEMS.

FOR PAINTED STRUCTURAL STEEL (EXCLUDING AASHTO M270 GRADE 50W), SOLE PLATES, ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

FOR AASHTO M270 GRADE 50W STRUCTURAL STEEL, SOLE PLATE SHALL BE AASHTO M270 GRADE 50W AND SHALL NOT BE GALVANIZED. ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

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

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

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FOLLOWING PROCEDURE, WHICH MAY BE REQUIRED BY THE ENGINEER, TO RESET ELASTOMERIC BEARINGS DUE TO GIRDER TRANSLATION AND END ROTATION:

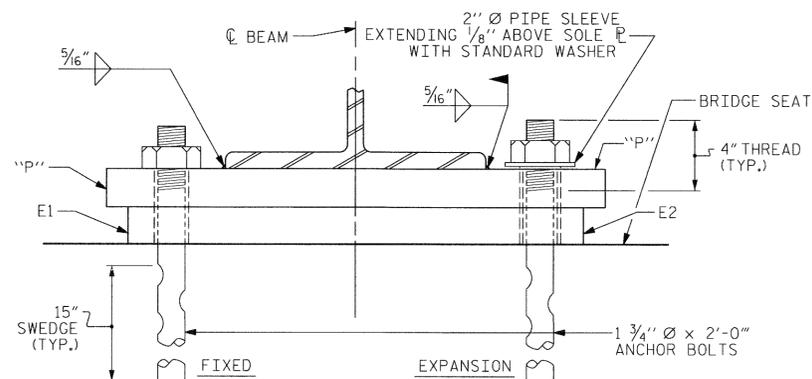
1. ONCE THE DECK HAS CURED, THE GIRDERS SHALL BE JACKED AND THE ELASTOMERIC BEARING SLOTS CENTERED AS NEARLY AS PRACTICAL ABOUT THE BEARING STIFFENER. THIS OPERATION SHALL BE PERFORMED AT APPROXIMATELY 60° F.

THE CONTRACTOR MAY PROPOSE ALTERNATE METHODS, PROVIDED DETAILS ARE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL.

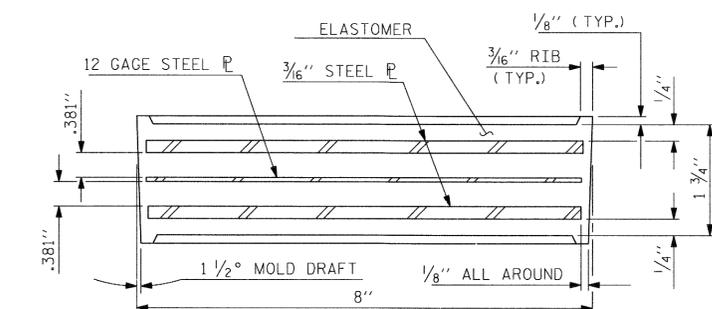
MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE I	140 K

PROJECT NO. 17BP.14.R.131  
HAYWOOD COUNTY  
 STATION: 11+10.45 -L-

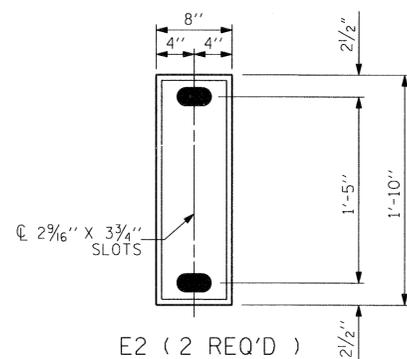
SHEET 2 OF 2



END VIEW

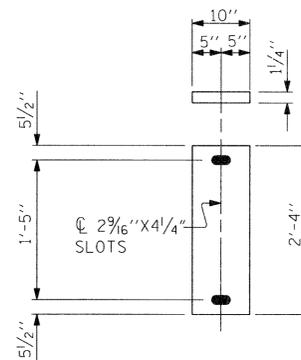


TYPICAL SECTION OF ELASTOMERIC BEARINGS



PLAN VIEW OF ELASTOMERIC BEARING

TYPE I



P 1 (2 REQ'D.)  
(EXPANSION)

SOLE PLATE DETAILS ("P")

DSN. ENG. OF RECORD: RTS DATE: 1/14			
ASSEMBLED BY : DPP		DATE : 1/14	
CHECKED BY : RTS		DATE : 1/14	
DRAWN BY : WJH 8/89	REV. 5/1/06	TLA/GM	
CHECKED BY : CRK 8/89	REV. 10/1/11	MAA/GM	
	REV. 6/13	AAC/MAA	

\*\*\*\*\*SYSTEM\*\*\*\*\*  
 \*\*\*\*\*DGN\*\*\*\*\*  
 \*\*\*\*\*USERNAME\*\*\*\*\*



STATE OF NORTH CAROLINA					
DEPARTMENT OF TRANSPORTATION					
RALEIGH					
STANDARD					
ELASTOMERIC BEARING					
DETAILS					
(STEEL SUPERSTRUCTURE)					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					33

STD. NO. EB1

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

0.60" $\phi$ LOW RELAXATION	GIRDER A2 OR A3											GIRDER A1 OR A4										
	TENTH POINTS	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
CAMBER (GIRDER ALONE IN PLACE) (UP)	0.000	0.492	0.984	1.439	1.666	1.720	1.666	1.439	0.984	0.492	0.000	0.000	0.492	0.984	1.438	1.660	1.710	1.660	1.438	0.984	0.492	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L. (DOWN)	0.000	0.232	0.464	0.680	0.798	0.830	0.798	0.680	0.464	0.232	0.000	0.000	0.212	0.424	0.622	0.730	0.760	0.730	0.622	0.424	0.212	0.000
FINAL CAMBER (DECIMAL INCHES) (UP)	0	0.260	0.520	0.758	0.868	0.890	0.868	0.758	0.520	0.260	0.000	0	0.280	0.560	0.816	0.930	0.950	0.930	0.816	0.560	0.280	0.000
FINAL CAMBER (INCHES) (UP)	0"	1/4"	1/2"	3/4"	7/8"	7/8"	7/8"	3/4"	1/2"	1/4"	0"	0"	1/4"	9/16"	13/16"	15/16"	15/16"	15/16"	13/16"	9/16"	1/4"	0"

\* INCLUDES WEIGHT OF SLAB, BUILDUP, STAY-IN-PLACE FORMS, AND FUTURE WEARING SURFACE.

SLOPE FOR THE ZERO CAMBER BASELINE VARIES.

PROJECT NO. 17BP.14.R.131  
HAYWOOD COUNTY  
 STATION: 11+10.45 -L-



**V&M**  
 Vaughn & Melton  
 Consulting Engineers

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Asheville, North Carolina 828-253-2796

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STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUPERSTRUCTURE  
 DEAD LOAD  
 DEFLECTIONS

DWN. BY: MAF DATE: 1/14  
 CHKD. BY: HLW DATE: 1/14  
 DSN. ENG. OF RECORD: RTS DATE: 1/14

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

TOTAL SHEETS: 33

NOTES

THE COST OF THE TEMPORARY GUARDRAIL ANCHOR ASSEMBLY COMPLETE IN PLACE SHALL BE INCLUDED, AS APPLICABLE, IN THE UNIT CONTRACT PRICE BID FOR REINFORCED CONCRETE DECK SLAB.

PAYMENT FOR TEMPORARY GUARDRAIL, POST, AND POST BASE PLATES IS INCLUDED IN ROADWAY PAY ITEMS.

EXPANSION ANCHORS WILL NOT BE PERMITTED FOR USE ON BRIDGE DECKS.

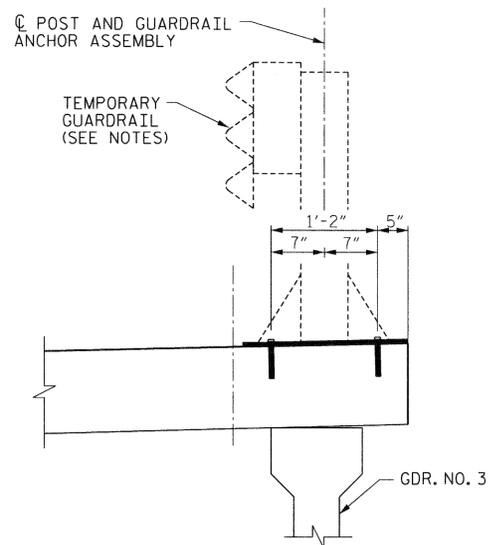
USE ASTM A325 HIGH STRENGTH GALVANIZED ANCHOR BOLTS.

DRILL ANCHOR HOLES IN CONCRETE WITH A PNEUMATIC DRILL.

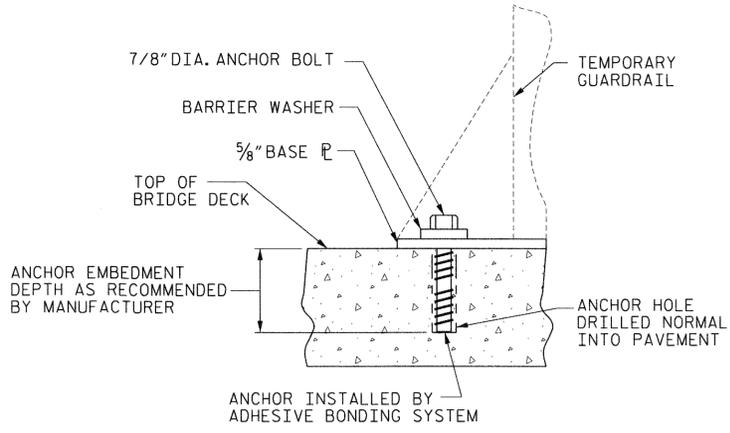
TIGHTEN ANCHORS "SNUG TIGHT". TURN THREADED RODS AT LEAST ONE (1) FULL OF THREADS EXTENDING ABOVE THE NUT.

COAT ANCHORS USED WITH THE ADHESIVE BONDING ANCHORING SYSTEM WITH A DEBONDING AGENT SO THE ANCHORS CAN BE EASILY REMOVED. DO NOT REDUCE THE STRENGTH OF THE ANCHOR SYSTEM WITH THE DEBONDING AGENT.

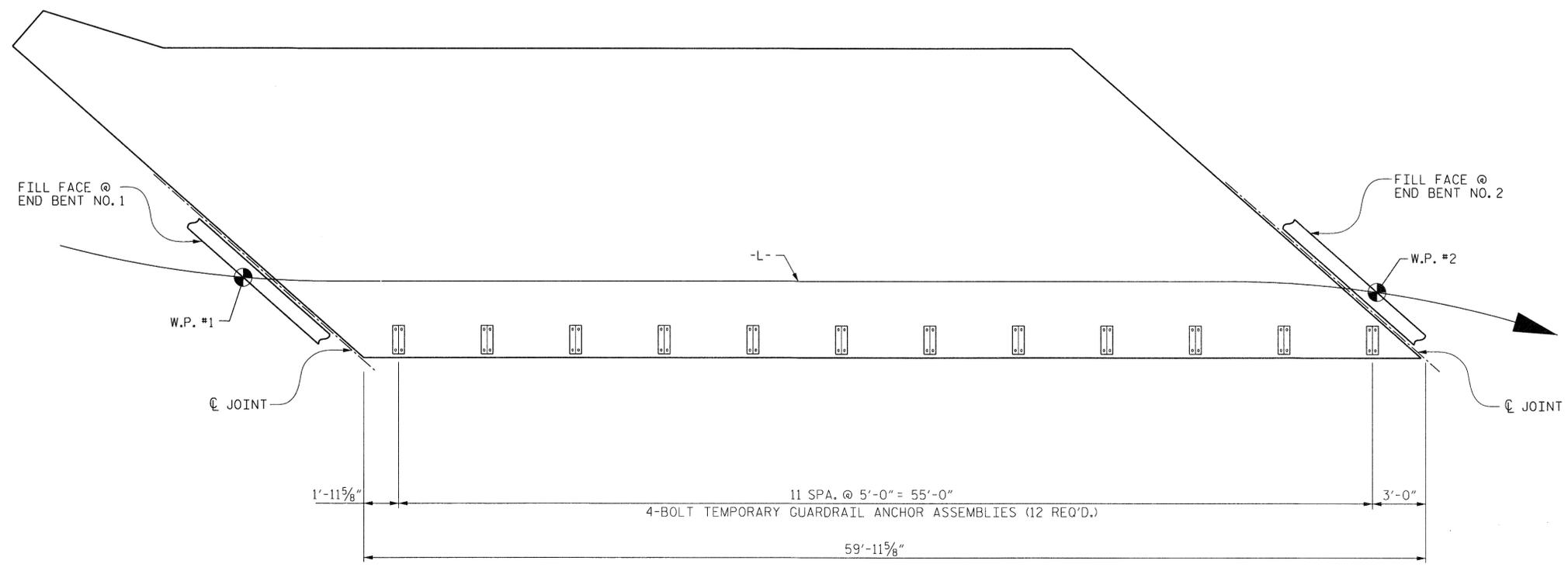
ONCE REMOVED, COMPLETELY FILL ANCHOR HOLES WITH AN APPROVED, NON-SHRINK, NON-METALLIC GROUT, OR AS DIRECTED BY THE ENGINEER.



SECTION OF ANCHOR ASSEMBLY LOCATION



ADHESIVE BONDING SYSTEM ANCHOR METHOD



RAIL POST SPACING FOR TEMPORARY GUARDRAIL - STAGE I



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PROJECT NO. 17BP.14.R.131  
HAYWOOD COUNTY  
STATION: 11+10.45 -L-

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

TEMPORARY GUARDRAIL ANCHORAGE DETAILS FOR CONCRETE DECK SLAB

DWN. BY: MAF	DATE: 1/14	NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.		
CHKD. BY: HLW	DATE: 1/14							1	3	S-15
DSN. ENG. OF RECORD: RTS	DATE: 1/14							2	4	TOTAL SHEETS: 33

NOTES

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

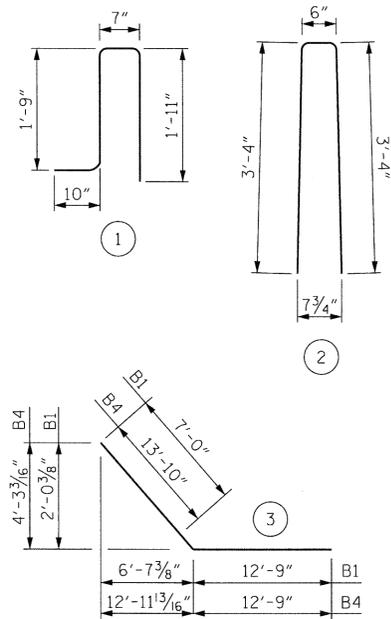
THE JOINT IN THE DECK SHALL BE SAWED PRIOR TO THE CASTING OF VERTICAL CONCRETE BARRIER RAIL.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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

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

BAR TYPES

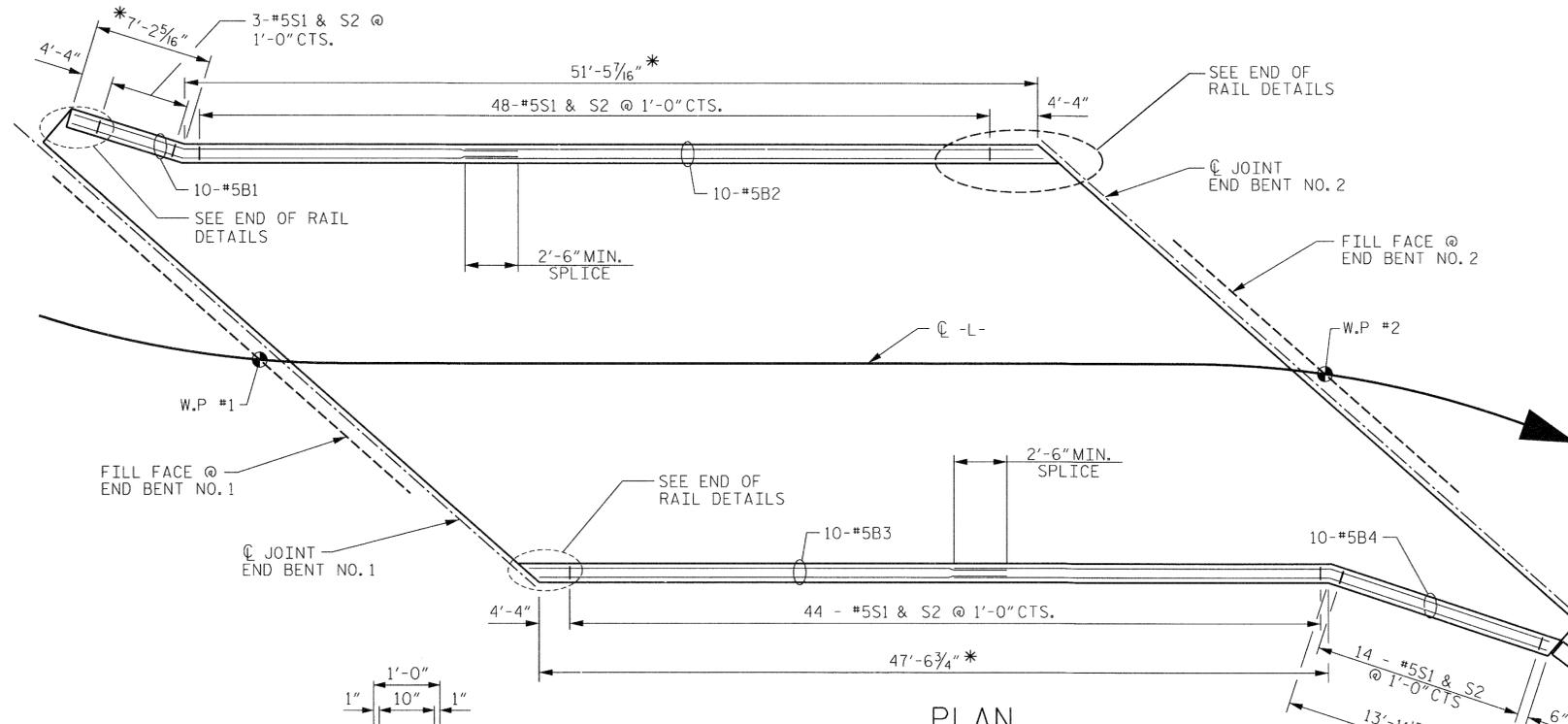


ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

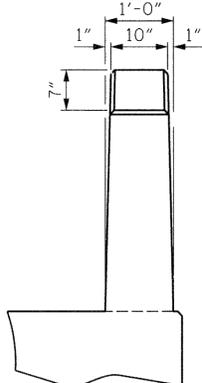
FOR VERTICAL CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	10	#5	3	19'-9"	206
* B2	10	#5	STR	41'-11"	437
* B3	10	#5	STR	37'-11"	395
* B4	10	#5	3	26'-7"	277
* S1	116	#5	1	5'-1"	615
* S2	116	#5	2	7'-2"	867
* S3	40	#5	STR	3'-2"	132
* EPOXY COATED REINFORCING STEEL					2929 LBS.
CLASS AA CONCRETE					14.3 CU. YDS.
VERTICAL CONCRETE BARRIER RAIL					120.20 LIN. FT.

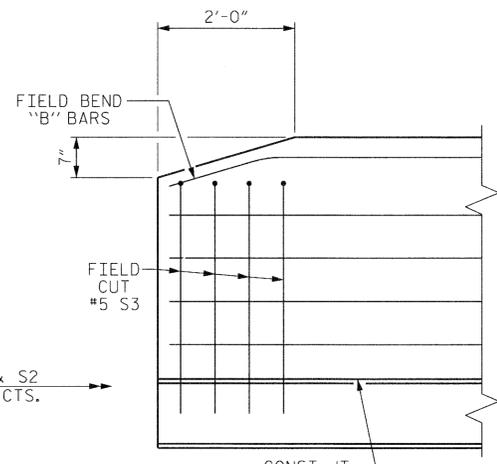


PLAN

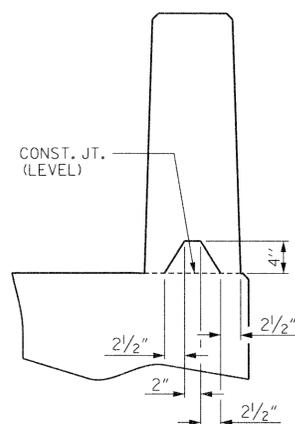
\* DIMENSIONS MEASURED ALONG BACK FACE OF BARRIER RAIL.



END VIEW

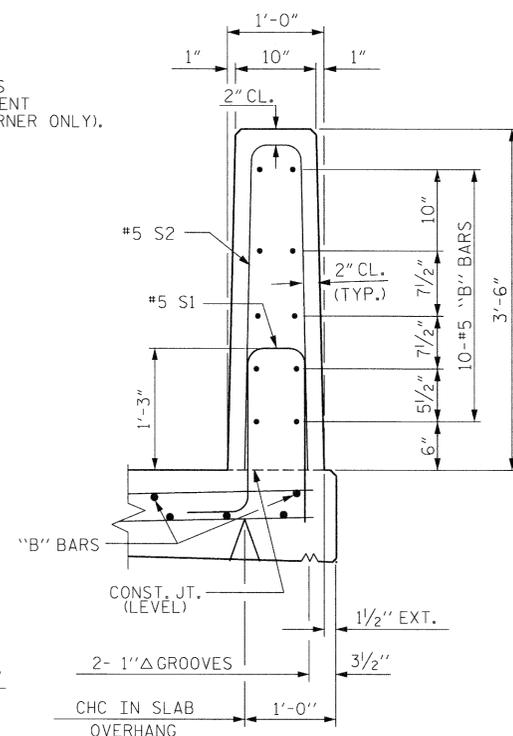


SIDE VIEW

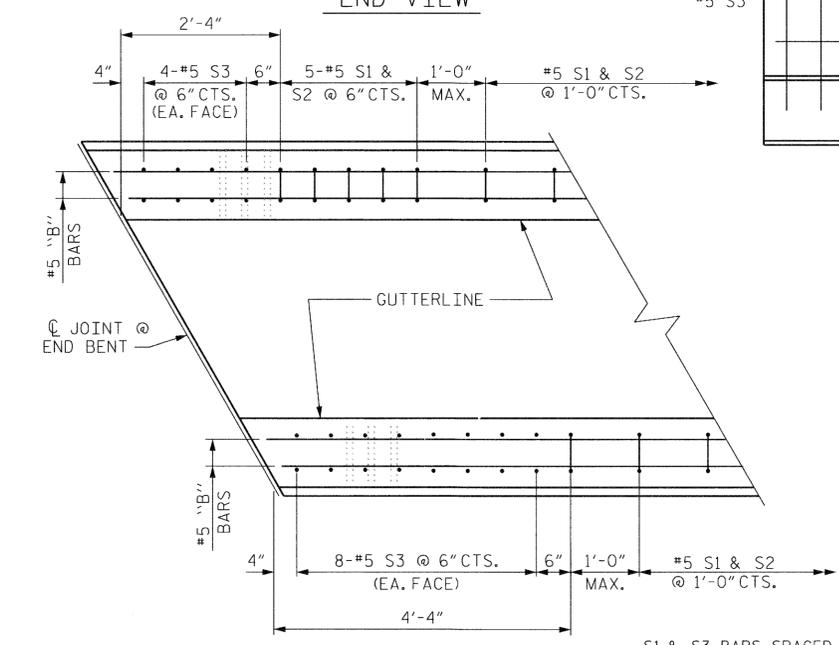


SECTION S-S

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

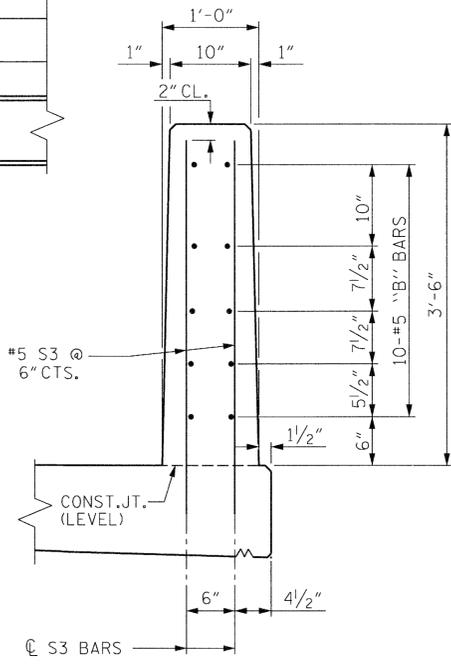


SECTION THRU RAIL



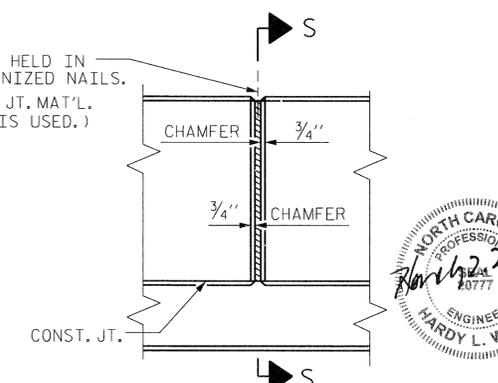
PLAN

S1 & S3 BARS SPACED 6" CTS. FOR 4'-0" EACH END AND 1'-0" CTS. OR PER DESIGN ELSEWHERE



END VIEW

1/2" EXP. JT. MAT'L HELD IN PLACE WITH GALVANIZED NAILS. (NOTE: OMIT EXP. JT. MAT'L. WHEN SLIP FORM IS USED.)



ELEVATION AT EXPANSION JOINTS

BARRIER RAIL DETAILS



PROJECT NO. 17BP.14.R.131  
HAYWOOD COUNTY  
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RALEIGH

VERTICAL CONCRETE BARRIER RAIL

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

DSN. ENG. OF RECORD: RTS DATE: 1/14	
ASSEMBLED BY: MAF DATE: 1/14	CHECKED BY: HLW DATE: 1/14
DRAWN BY: MAA 5/10	ADDED 5/6/10
CHECKED BY: GM 5/10	REV. 10/1/11
	REV. 12/5/11
	MAA/GM
	MAA/GM

END OF RAIL DETAILS

FOR ADHESIVE ANCHORING AT SAWED JOINTS

\*\*\*\*\*SYSTEM\*\*\*\*\*  
\*\*\*\*\*DCN\*\*\*\*\*  
\*\*\*\*\*USER\*\*\*\*\*

NOTES

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

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

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

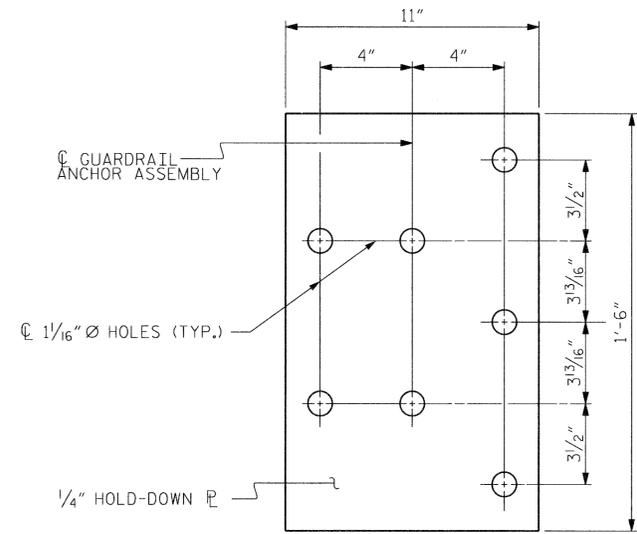
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

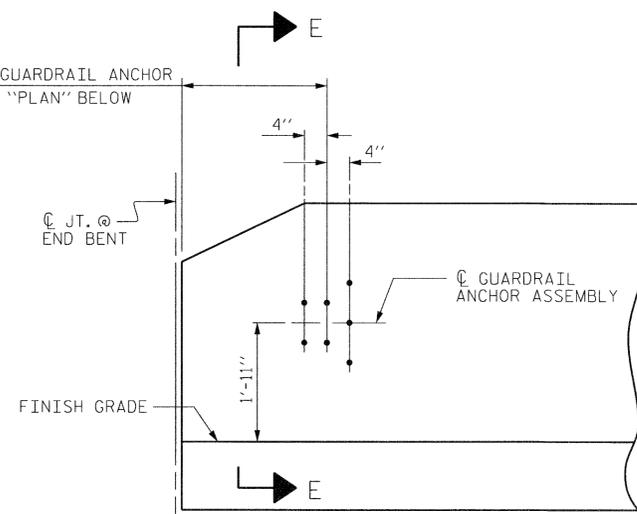
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

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

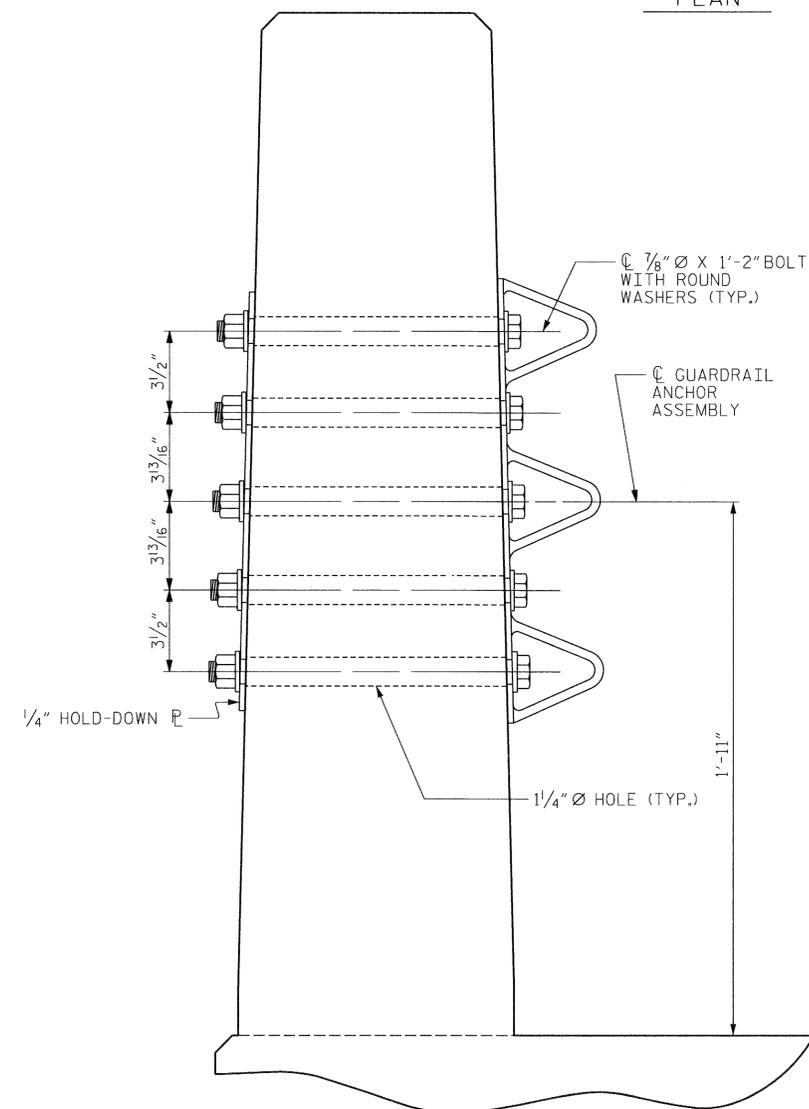


PLAN

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

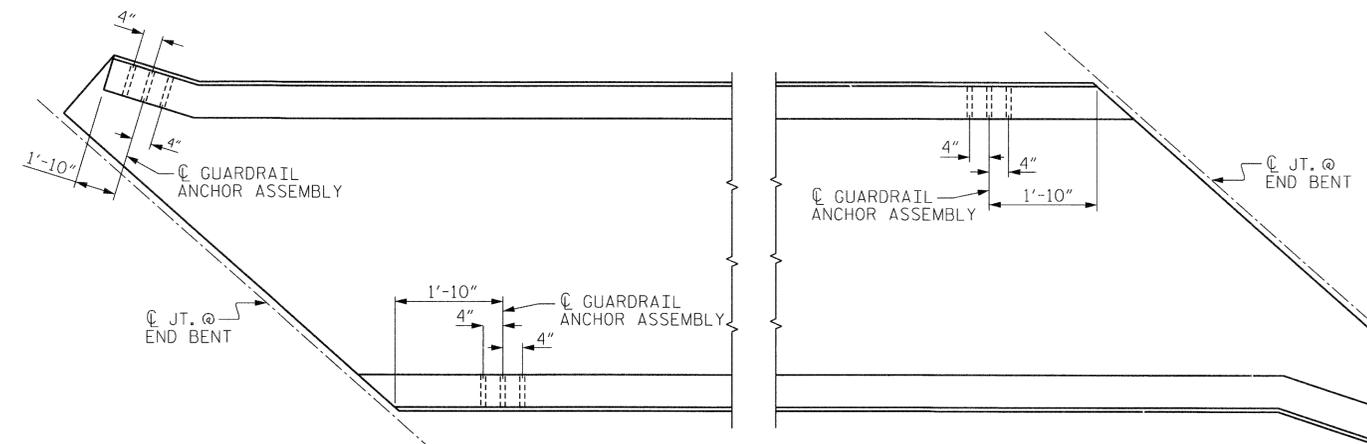


ELEVATION



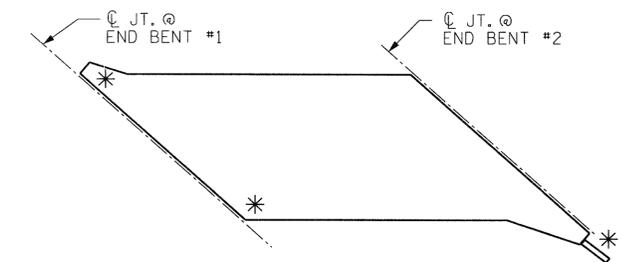
SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



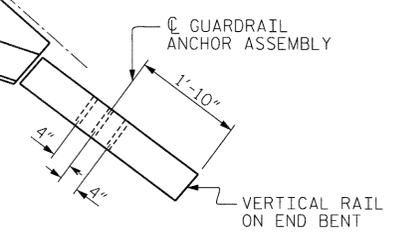
PLAN

LOCATION OF ANCHORS FOR GUARDRAIL



SKETCH SHOWING POINTS OF ATTACHMENT

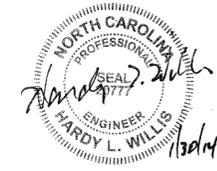
\* DENOTES GUARDRAIL ANCHOR ASSEMBLY



PROJECT NO. 17BP.14.R.131  
HAYWOOD COUNTY  
 STATION: 11+10.45 -L-

DSN. ENG. OF RECORD: RTS DATE: 1/14	
ASSEMBLED BY: MAF	DATE: 1/14
CHECKED BY: HLW	DATE: 1/14
DRAWN BY: MAA 5/10	ADDED 5/6/10
CHECKED BY: GM 5/10	REV. 10/1/11
	REV. 12/5/11
	MAA/GM
	MAA/GM

\*\*\*\*\*SYSTEM\*\*\*\*\*  
 \*\*\*\*\*DCGN\*\*\*\*\*  
 \*\*\*\*\*USERNAME\*\*\*\*\*



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD GUARDRAIL ANCHORAGE FOR VERTICAL CONCRETE BARRIER RAIL					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					33

STRUCTURAL STEEL NOTES

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

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

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

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

FOR METALLIZATION, APPLY AN 8 MIL THICK 99.99 PERCENT ZINC (W-Zn-1) THERMAL SPRAYED COATING WITH A 0.5 MIL THICK SEAL COAT TO ALL STEEL DIAPHRAGM SURFACES IN ACCORDANCE WITH THE THERMAL SPRAYED COATINGS SPECIAL PROVISION AND SECTION 442 OF THE STANDARD SPECIFICATIONS.

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

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

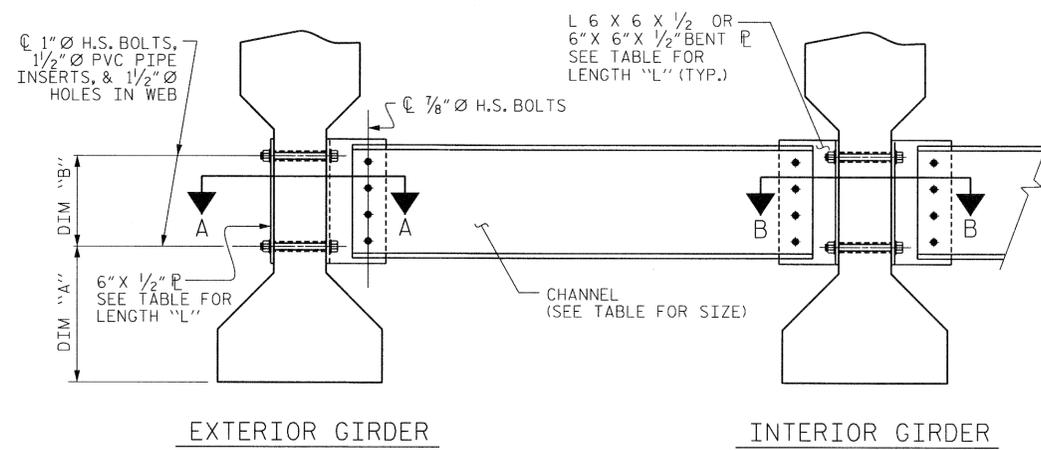
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

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

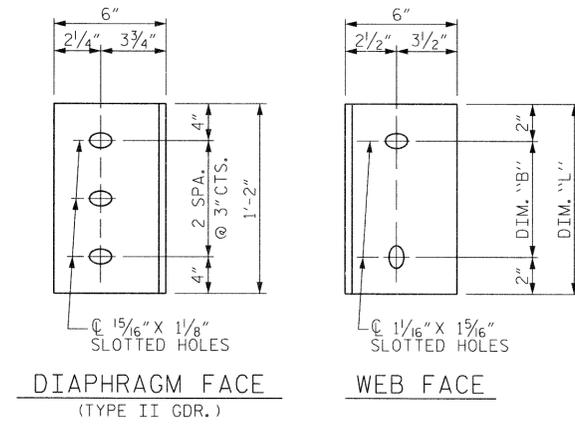
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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

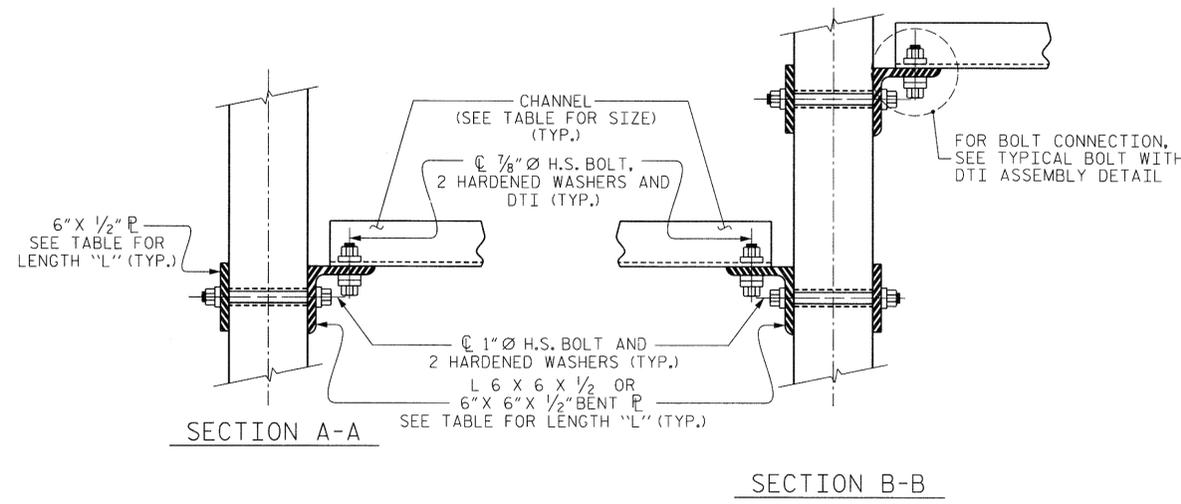
THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.



PART SECTION AT INTERMEDIATE DIAPHRAGM  
(TYPE III OR TYPE IV GIRDER SHOWN)



CONNECTOR PLATE DETAILS



CONNECTION DETAILS

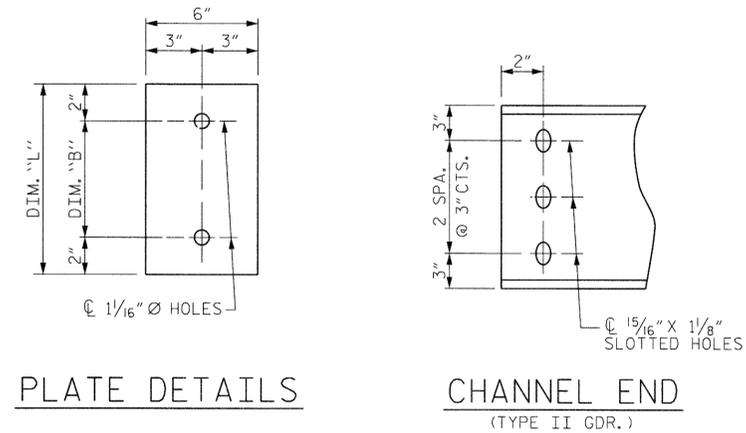
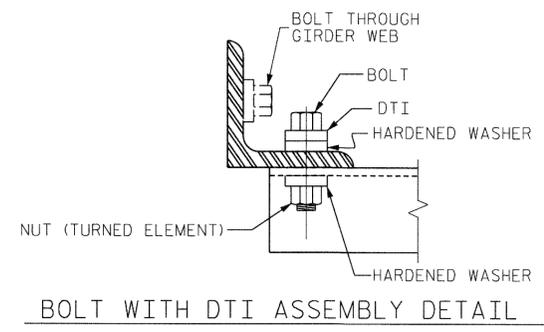


PLATE DETAILS CHANNEL END  
(TYPE II GDR.)

TABLE

GIRDER TYPE	CHANNEL SIZE	DIM "A"	DIM "B"	DIM "L"
II	MC 12 x 31	1'-2 1/2"	10"	1'-2"



BOLT WITH DTI ASSEMBLY DETAIL

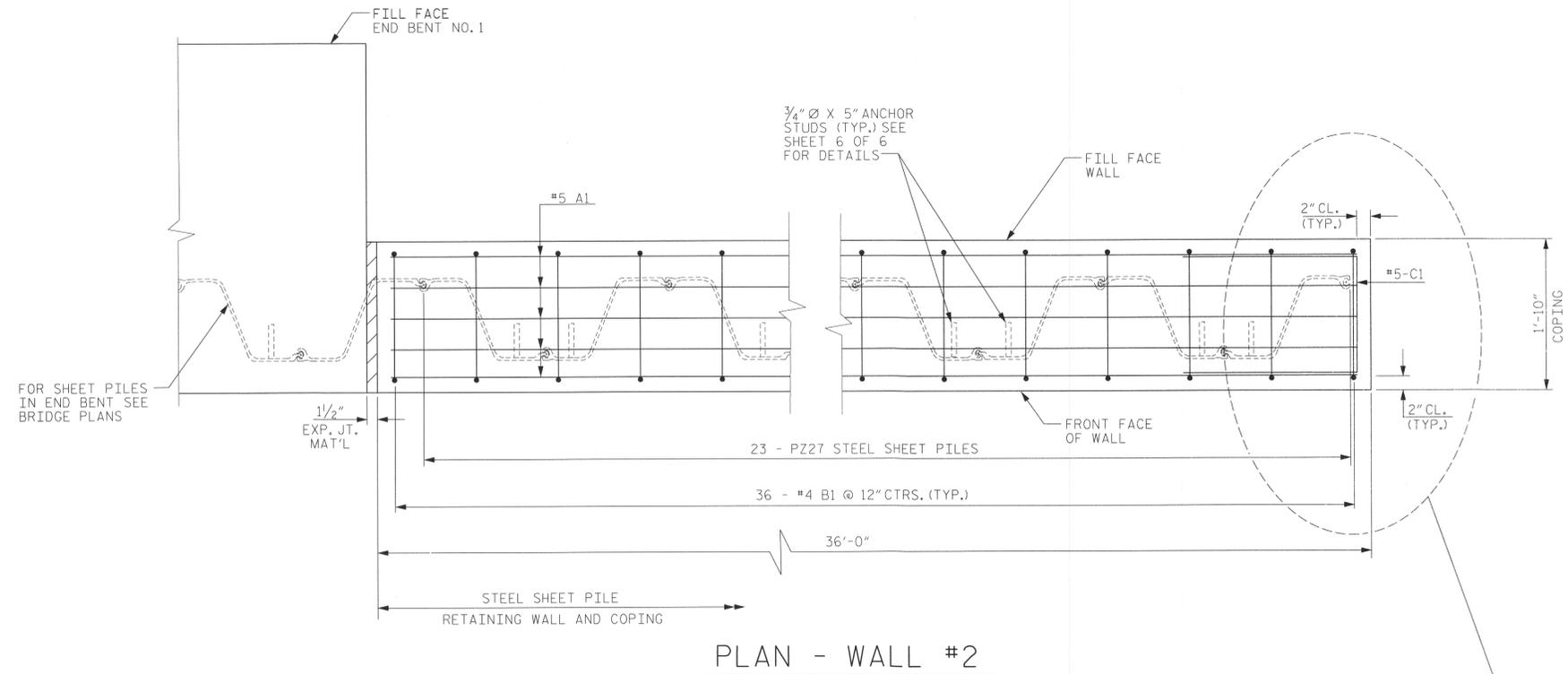
PROJECT NO. 17BP.14.R.131  
HAYWOOD COUNTY  
 STATION: 11+10.45 -L-



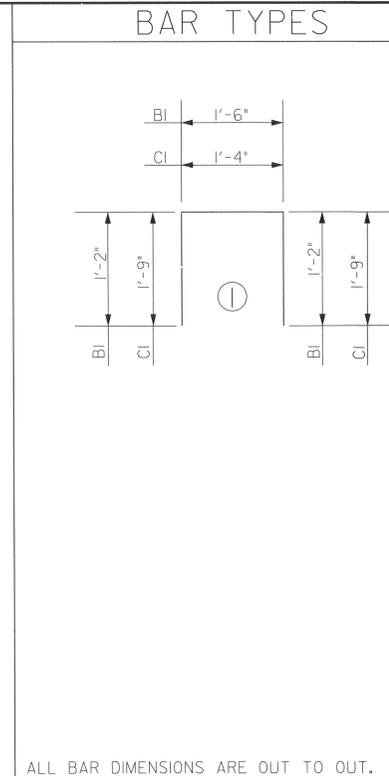
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 INTERMEDIATE  
 STEEL DIAPHRAGMS  
 FOR TYPE II  
 PRESTRESSED CONCRETE  
 GIRDERS

DSN. ENG. OF RECORD: RTS DATE: 1/14  
 ASSEMBLED BY: MAF DATE: 1/14  
 CHECKED BY: HLW DATE: 1/14  
 DRAWN BY: TLA 6/05  
 CHECKED BY: VC 6/05  
 REV. 10/21/05 KMM/GM  
 REV. 5/1/06RRR MAA/GM  
 REV. 10/1/11

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			33



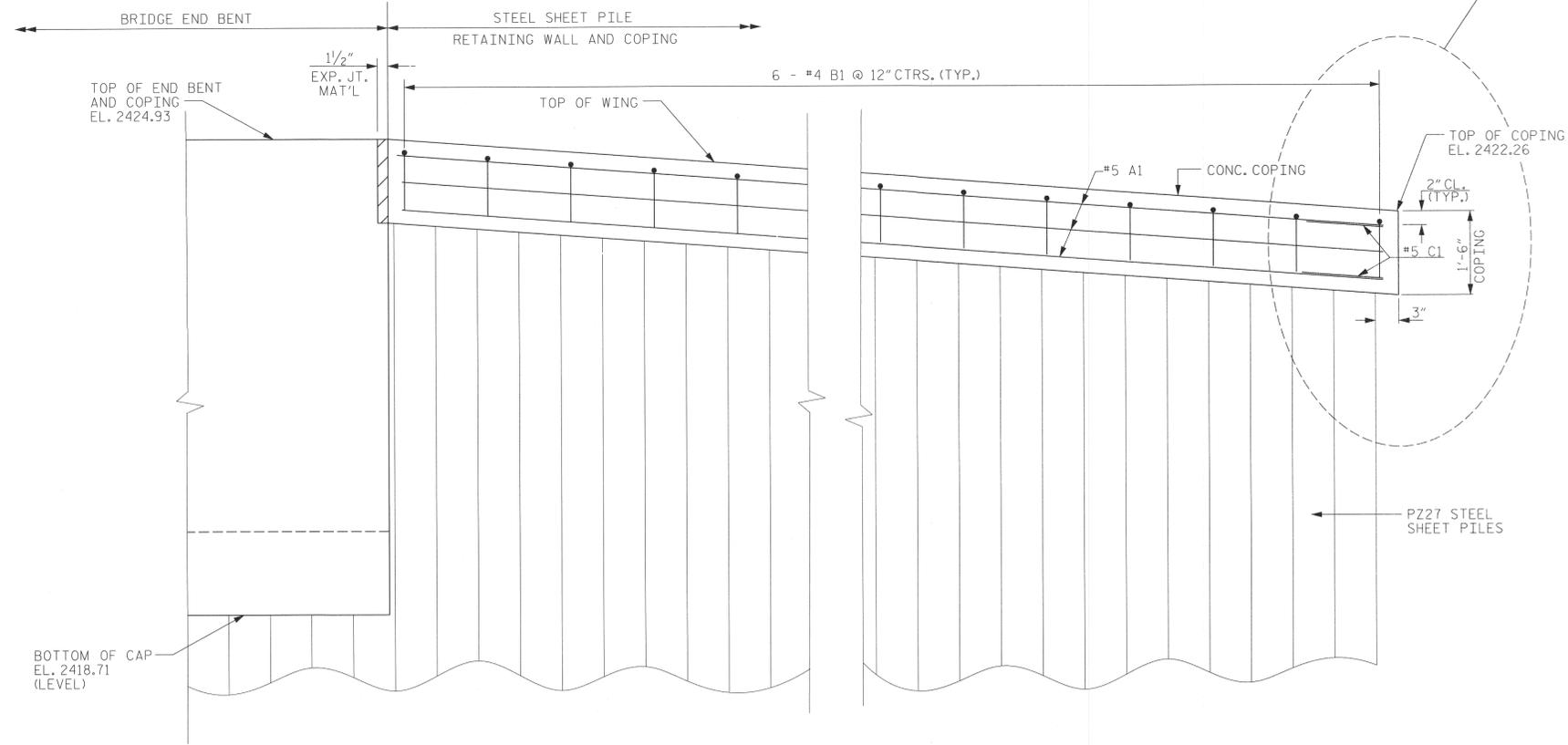
PLAN - WALL #2



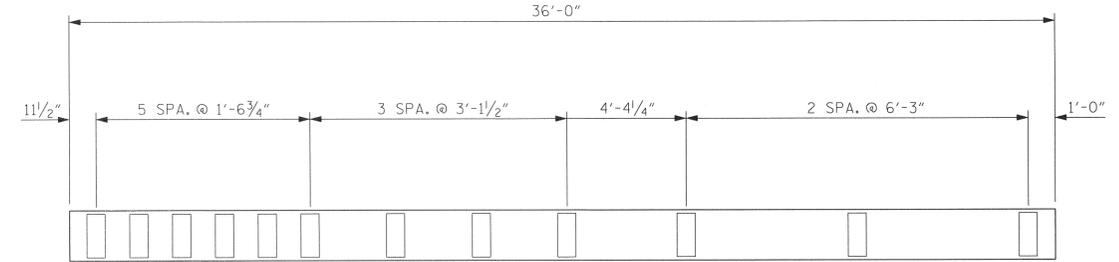
BILL OF MATERIAL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
AI	9	#5	STR	35'-7"	334
BI	36	#4	I	3'-10"	92
CI	2	#5	I	4'-10"	10
REINFORCING STEEL					436 LBS.
CLASS "A" CONCRETE BREAKDOWN					
WALL COPING					3.7 C.Y.
TOTAL CLASS "A" CONCRETE					3.7 C.Y.
18" STEEL SHEET PILES					
NO. PZ27 = 23					
TOTAL NO. = 23					777 SQ. FT.

ALL BAR DIMENSIONS ARE OUT TO OUT.

SEE END OF COPING DETAILS (SHEET 6 OF 6) FOR ADDITIONAL REINFORCEMENT IN THIS AREA

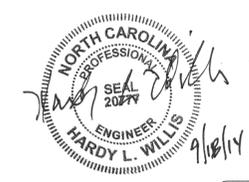


ELEVATION - WALL #2  
VIEWING FRONT FACE



GUARDRAIL POST SPACING - WALL #2

SEE SHEET 6 OF 6 FOR GUARDRAIL POST ANCHORAGE DETAILS



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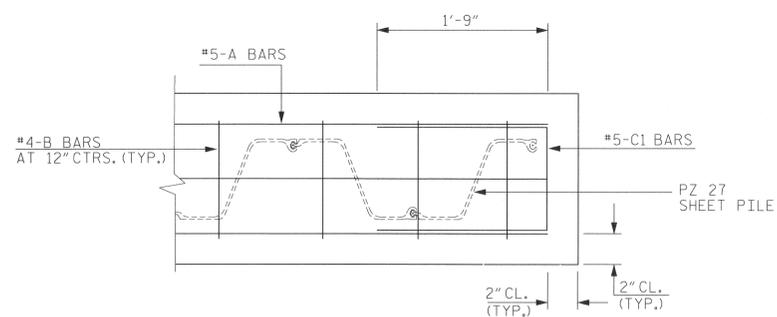
PROJECT NO. 17BP.14.R.131  
HAYWOOD COUNTY  
STATION: 11+10.45 -L-

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

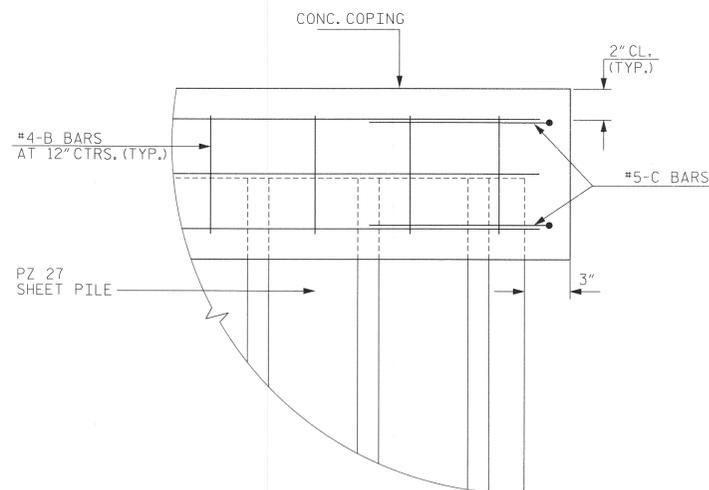
SHEET PILE  
WALL CONSTRUCTION  
DETAILS

REVISIONS						SHEET NO. RW-5
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			6

DWN. BY: MAF DATE: 1/14  
CHKD. BY: HLW DATE: 1/14  
DSN. ENG. OF RECORD: RTS DATE: 1/14



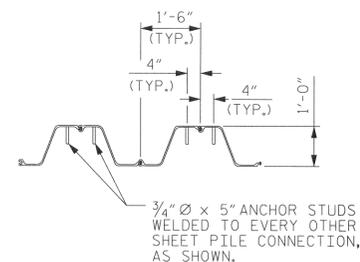
TOP VIEW



FRONT VIEW

END OF COPING DETAILS

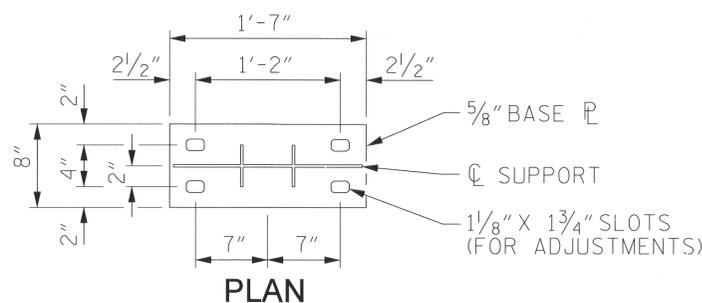
N.T.S.



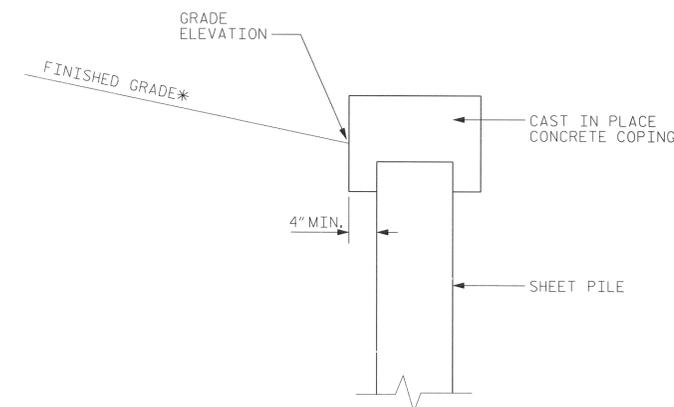
ANCHOR STUD DETAIL

NOTES:

FOR 18" STEEL SHEET PILES, SEE SECTION 1084-2 OF THE STANDARD SPECIFICATIONS.  
 STEEL SHEET PILES SHALL BE EMBEDDED A MINIMUM OF 1'-0" INTO COPING.  
 GUARDRAIL AND ATTACHMENT TO WALL IS A ROADWAY DETAIL AND PAY ITEM.

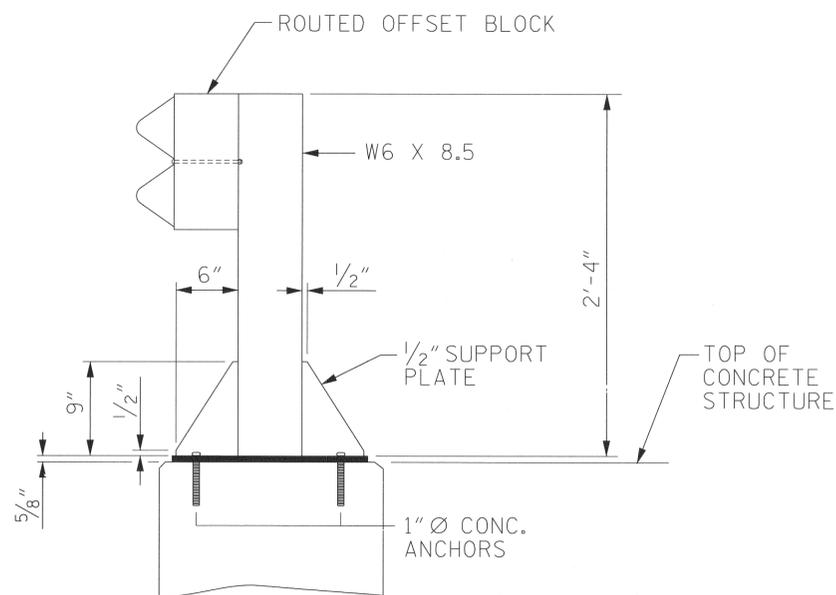


PLAN



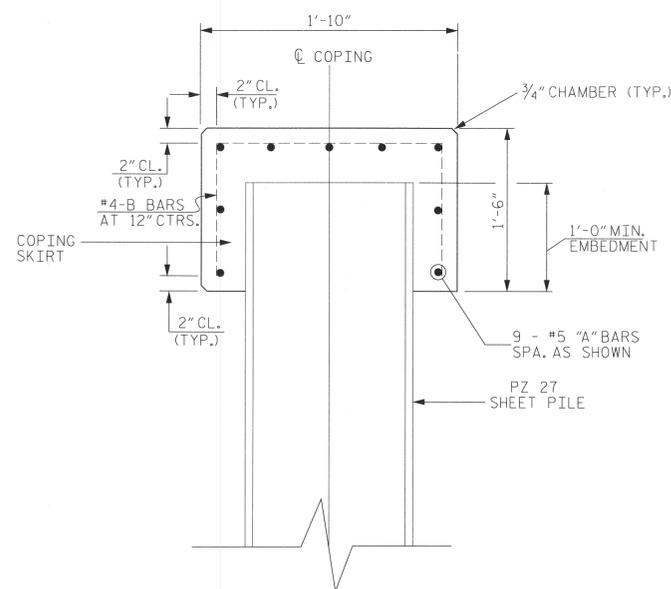
COPING DETAILS

\* SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.



ELEVATION

GUARDRAIL ANCHORAGE ON CONCRETE STRUCTURE



FULL COPING DETAIL

N.T.S.



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 HAYWOOD COUNTY  
 STATION: 11+10.45 -L-

SHEET 6 OF 6

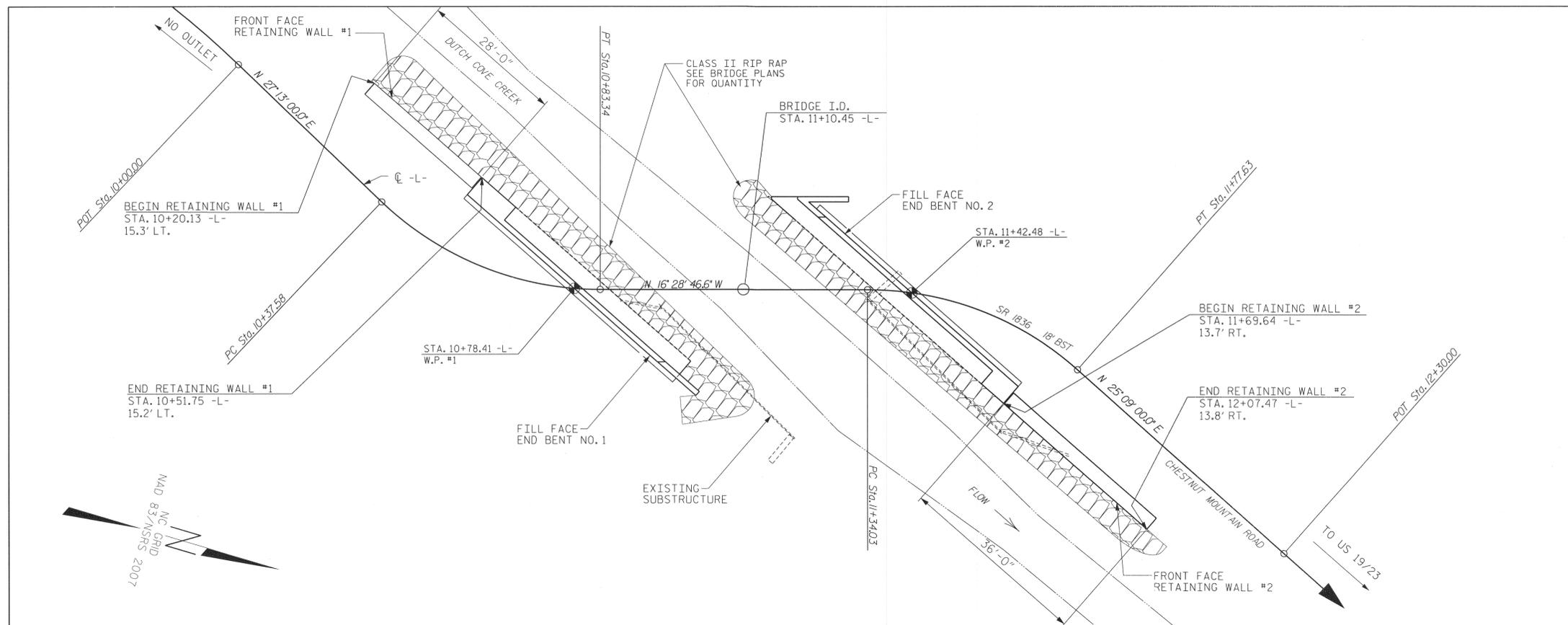
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SHEET PILE WALL CONSTRUCTION DETAILS

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

DWN. BY: MAF DATE: 1/14  
 CHKD. BY: HLW DATE: 1/14  
 DSN. ENG. OF RECORD: RTS DATE: 1/14

TOTAL SHEETS: 6

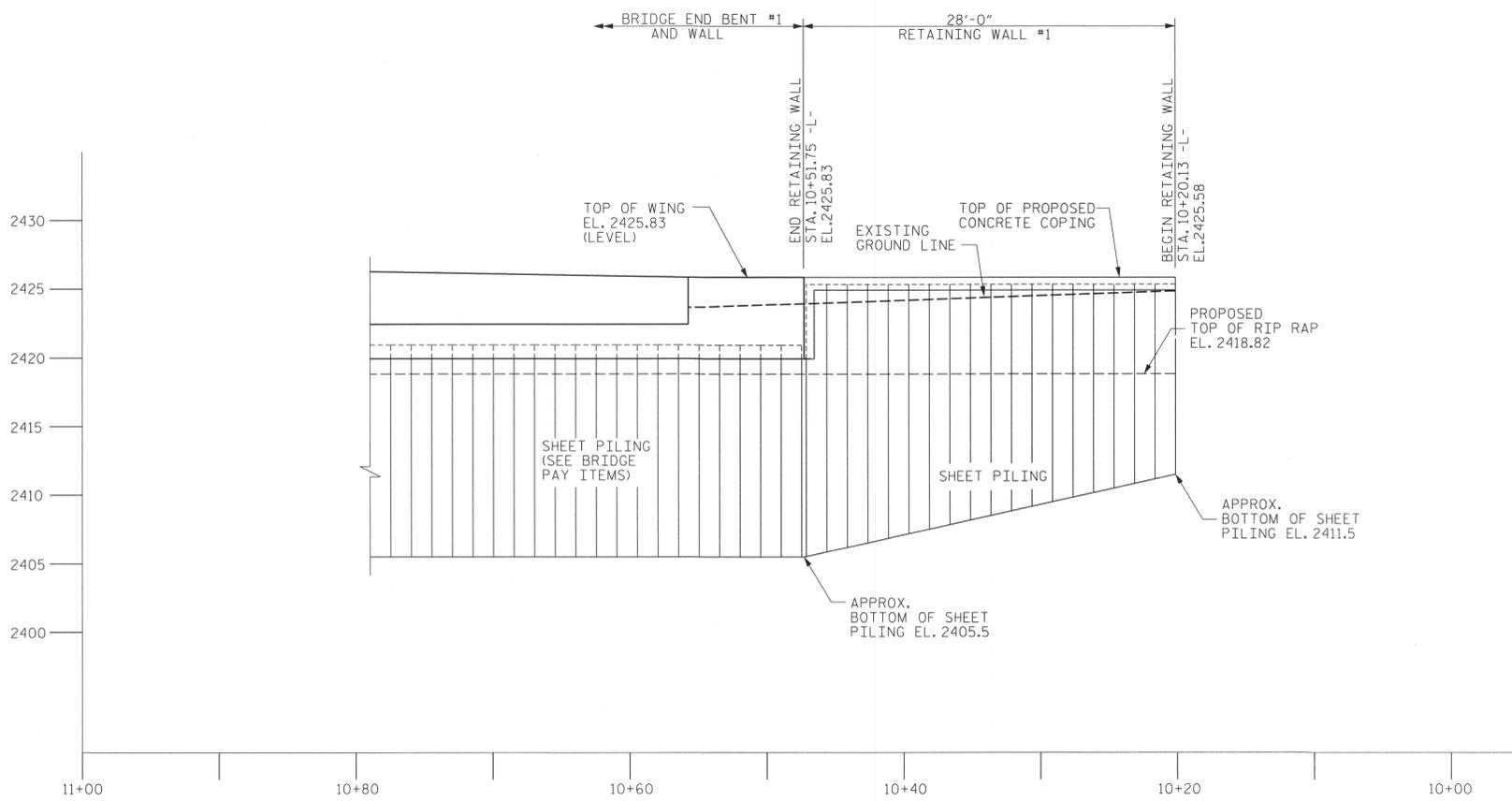


LOCATION SKETCH

**NOTES:**

- FIELD ADJUSTMENT OF "A" BARS MAY BE NECESSARY FOR PLACEMENT IN COPING.
- ALL REINFORCING STEEL SHALL BE GRADE 60 AS DESCRIBED IN SECTION 1070 OF THE STANDARD SPECIFICATIONS.
- FOR 18" STEEL SHEET PILES, SEE SECTION 1084-2 OF THE STANDARD SPECIFICATIONS.
- INSTALL SHEET PILING TO THE MINIMUM DEPTH SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER.
- SHEETING IS TO BE CONTINUOUS BETWEEN THE END BENT AND THE RETAINING WALL.
- FIELD ADJUSTMENT OF THE COPING/END BENT INTERFACE MAY BE NECESSARY, AS DIRECTED BY THE ENGINEER.
- FOR ADDITIONAL NOTES, SEE BRIDGE PLANS.

PAY ITEMS	
SHEET PILE RETAINING WALL #1	
STEEL SHEET PILES	482 SQ. FT.
CLASS 'A' CONCRETE (COPING)	2.9 C.Y.
REINFORCING STEEL	341 LBS.
SHEET PILE RETAINING WALL #2	
STEEL SHEET PILES	777 SQ. FT.
CLASS 'A' CONCRETE (COPING)	3.7 C.Y.
REINFORCING STEEL	436 LBS.



WALL #1 ENVELOPE  
VIEWING FRONT FACE



PROJECT NO. 17BP.14.R.131  
 HAYWOOD COUNTY  
 STATION: 11+10.45 -L-  
 SHEET 1 OF 6

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 Middlesboro, KY 606-248-6600  
 Spartanburg, SC 864-574-4775

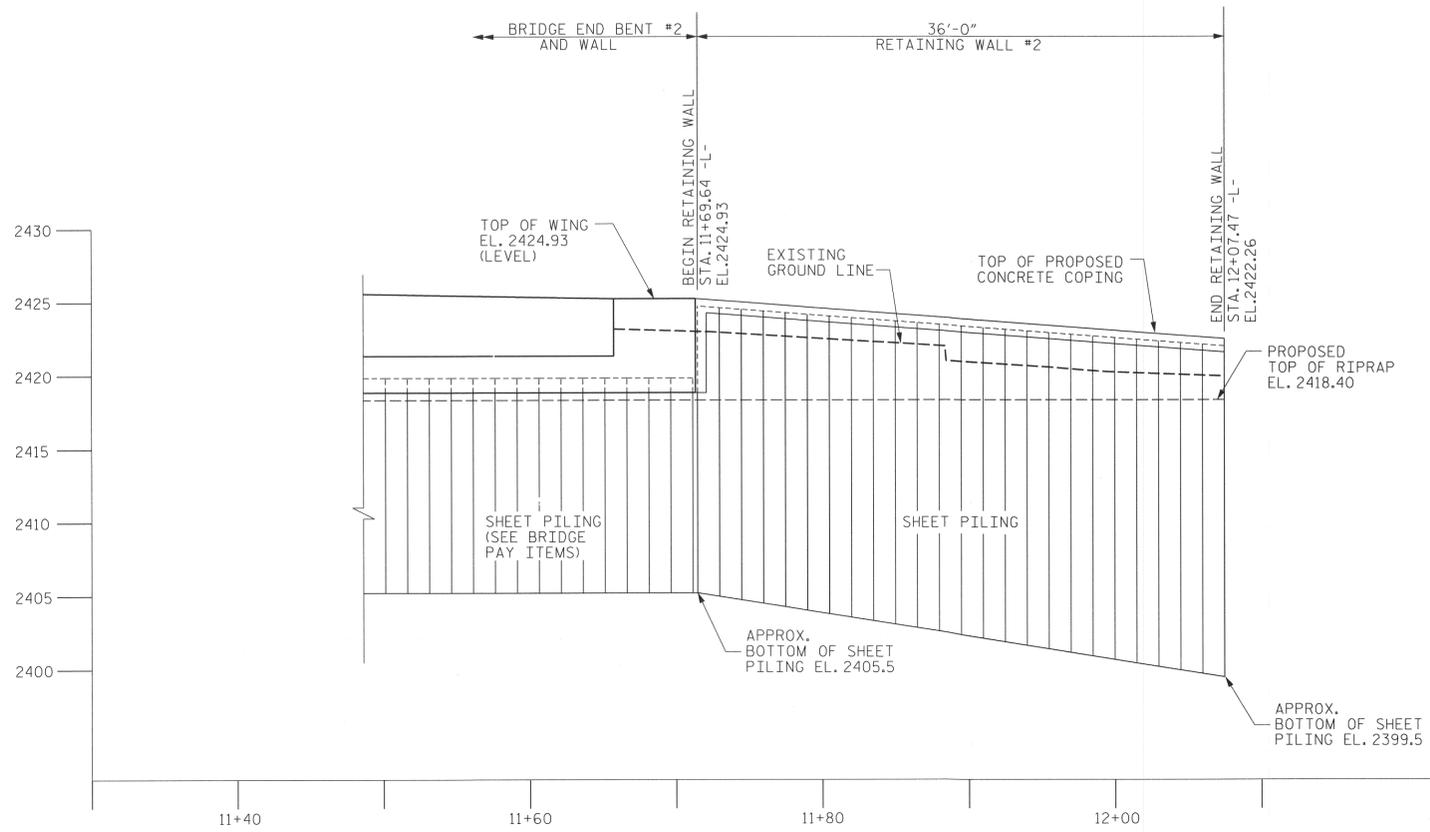
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STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SHEET PILE WALL CONSTRUCTION DETAILS**

REVISIONS						SHEET NO. RW-1
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			6

DWN. BY: MAF DATE: 1/14  
 CHKD. BY: HLW DATE: 1/14  
 DSN. ENG. OF RECORD: RTS DATE: 1/14



**WALL #2 ENVELOPE**  
VIEWING FRONT FACE



PROJECT NO. 17BP.14.R.131  
HAYWOOD COUNTY  
 STATION: 11+10.45 -L-

SHEET 2 OF 6

**V&M**  
**Vaughn & Melton**  
 Consulting Engineers

Charlotte, NC 704-357-0488  
 Tri-Cities, TN 423-467-8401  
 Knoxville, TN 865-546-5800  
 Asheville, NC 828-253-2796  
 Middlesboro, KY 606-248-6600  
 Spartanburg, SC 864-574-4775

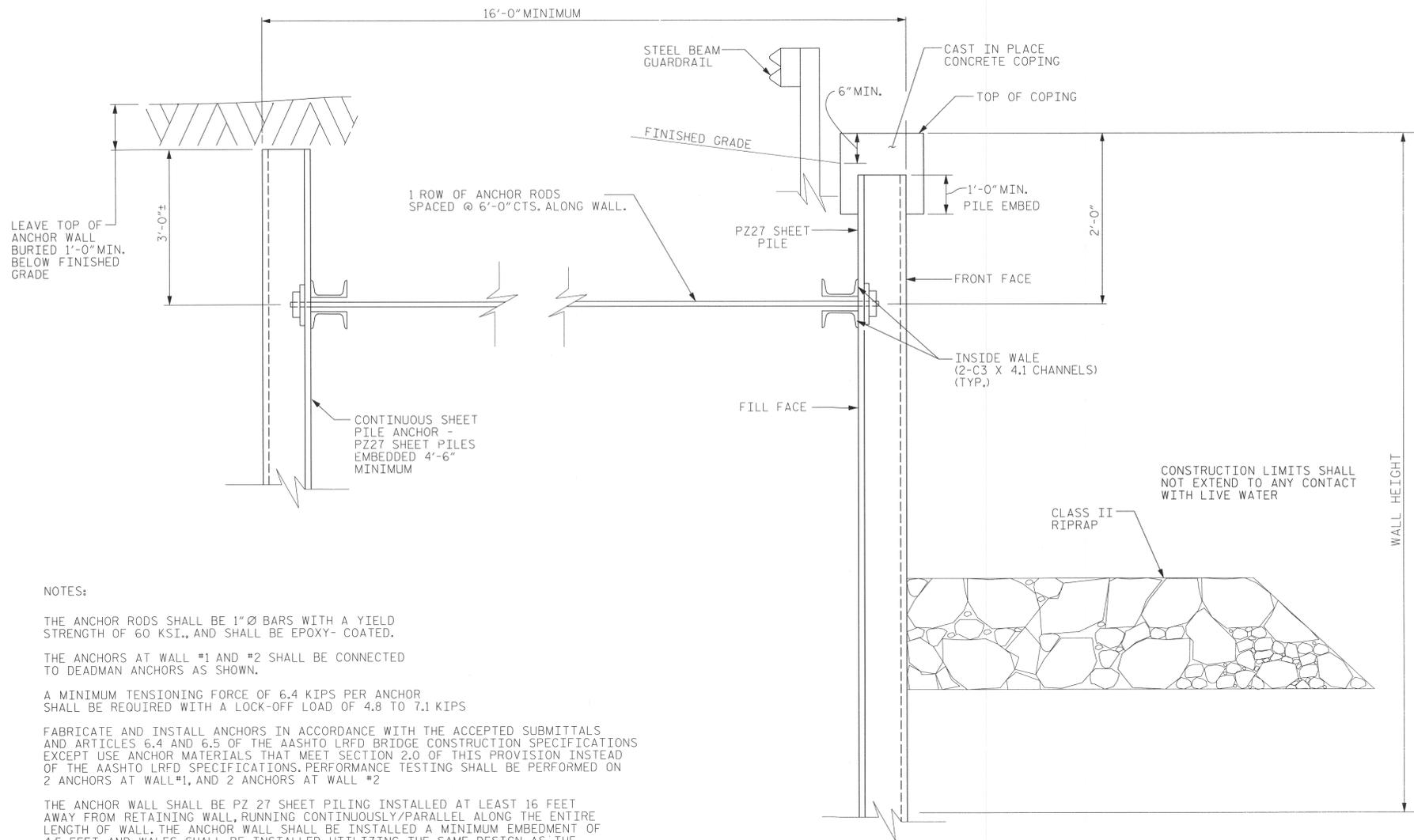
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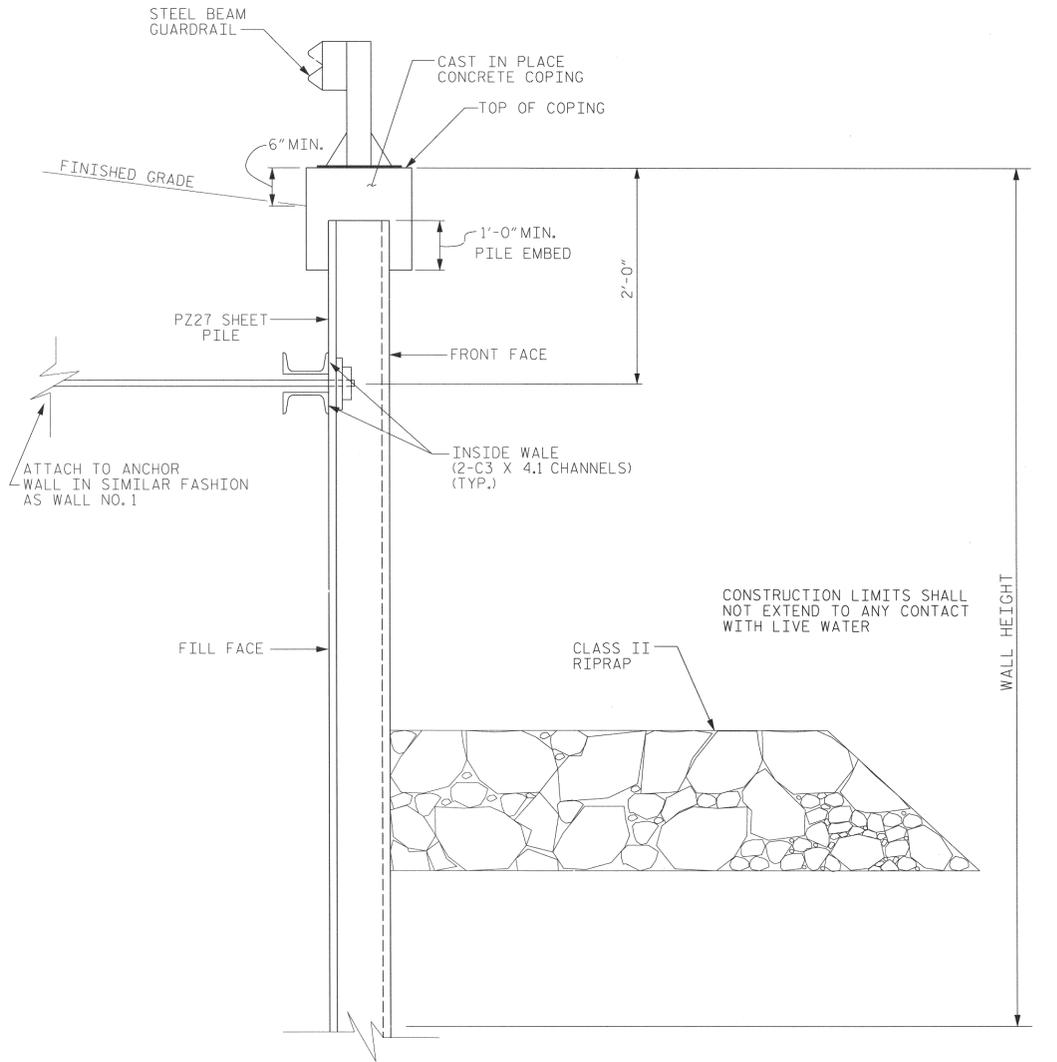
**SHEET PILE  
 WALL CONSTRUCTION  
 DETAILS**

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	RW-2	
1			3			TOTAL SHEETS	6
2			4				

DWN. BY: MAF DATE: 1/14  
 CHKD. BY: HLW DATE: 1/14  
 DSN. ENG. OF RECORD: RTS DATE: 1/14



RETAINING WALL NO. 1 - TYPICAL SECTION  
LOOKING BACK STATION



RETAINING WALL NO. 2 - TYPICAL SECTION  
LOOKING AHEAD STATION

NOTES:

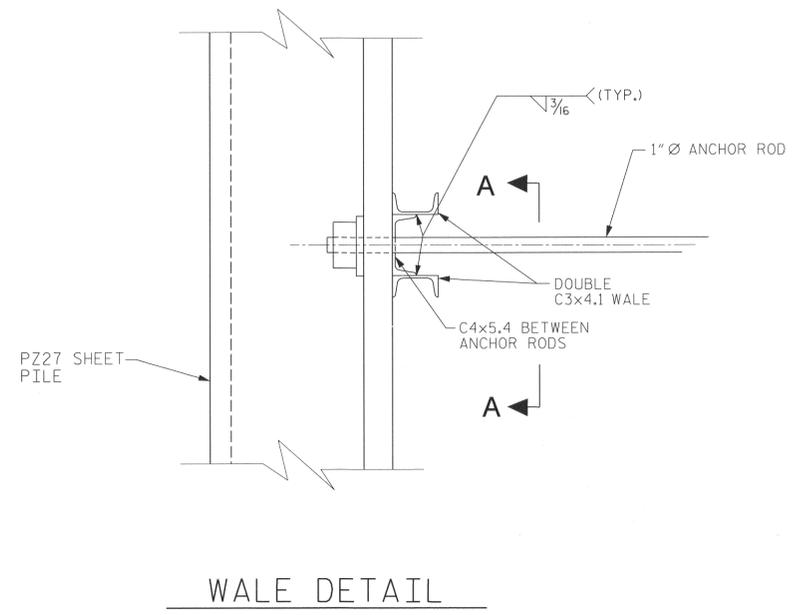
THE ANCHOR RODS SHALL BE 1" Ø BARS WITH A YIELD STRENGTH OF 60 KSI., AND SHALL BE EPOXY-COATED.

THE ANCHORS AT WALL #1 AND #2 SHALL BE CONNECTED TO DEADMAN ANCHORS AS SHOWN.

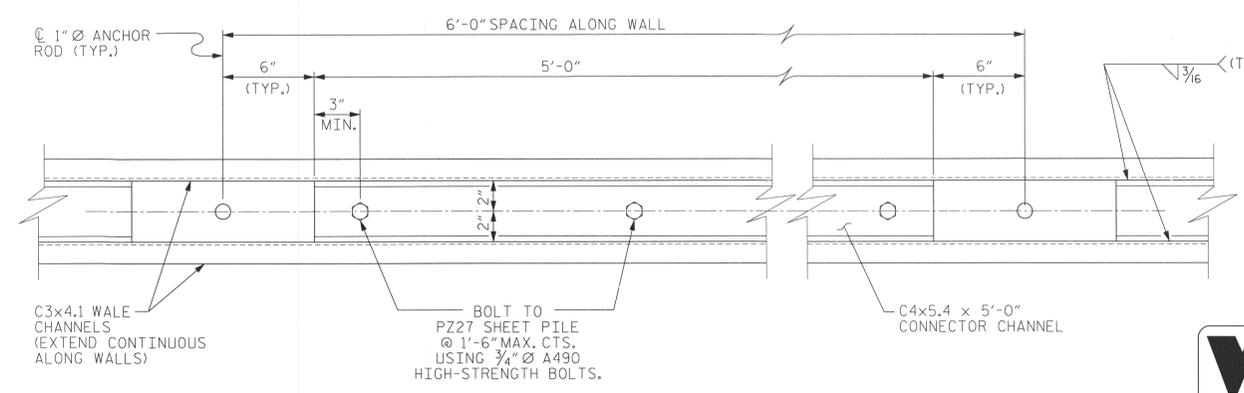
A MINIMUM TENSIONING FORCE OF 6.4 KIPS PER ANCHOR SHALL BE REQUIRED WITH A LOCK-OFF LOAD OF 4.8 TO 7.1 KIPS

FABRICATE AND INSTALL ANCHORS IN ACCORDANCE WITH THE ACCEPTED SUBMITTALS AND ARTICLES 6.4 AND 6.5 OF THE AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS EXCEPT USE ANCHOR MATERIALS THAT MEET SECTION 2.0 OF THIS PROVISION INSTEAD OF THE AASHTO LRFD SPECIFICATIONS. PERFORMANCE TESTING SHALL BE PERFORMED ON 2 ANCHORS AT WALL #1, AND 2 ANCHORS AT WALL #2

THE ANCHOR WALL SHALL BE PZ 27 SHEET PILING INSTALLED AT LEAST 16 FEET AWAY FROM RETAINING WALL, RUNNING CONTINUOUSLY/PARALLEL ALONG THE ENTIRE LENGTH OF WALL. THE ANCHOR WALL SHALL BE INSTALLED A MINIMUM EMBEDMENT OF 4.5 FEET AND WALES SHALL BE INSTALLED UTILIZING THE SAME DESIGN AS THE MAIN RETAINING WALL.



WALE DETAIL



SECTION A-A



PROJECT NO. 17BP.14.R.131  
HAYWOOD COUNTY  
STATION: 11+10.45 -L-

SHEET 3 OF 6

**V&M**  
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Asheville, North Carolina 828-253-2196

Charlotte, North Carolina 704-357-0488

Tri-Cities, Tennessee 423-651-9400

Knoxville, Tennessee 865-546-5800

Middlesboro, Kentucky 606-248-6600

Spartanburg, South Carolina 864-574-4715

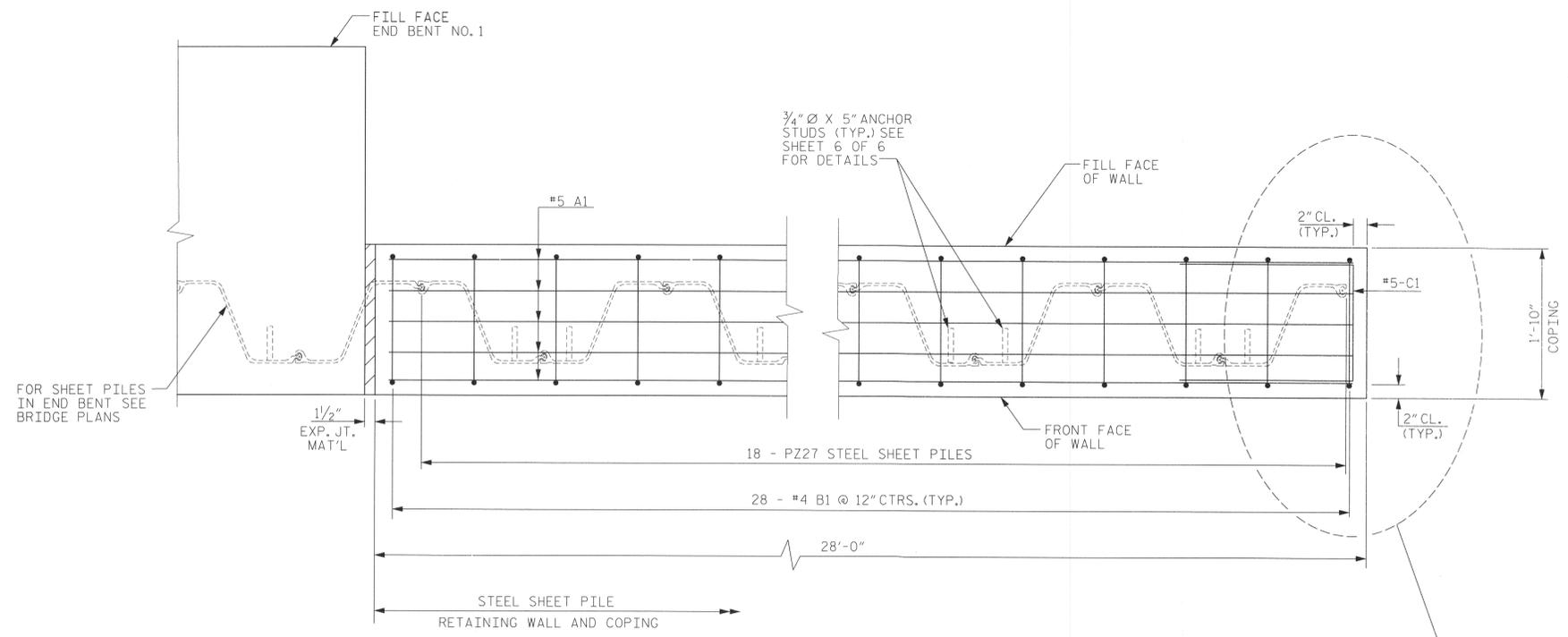
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STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SHEET PILE  
WALL CONSTRUCTION  
DETAILS

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

DWN. BY: MAF	DATE: 1/14	RW-3
CHKD. BY: HLW	DATE: 1/14	
DSN. ENG. OF RECORD: RTS	DATE: 1/14	

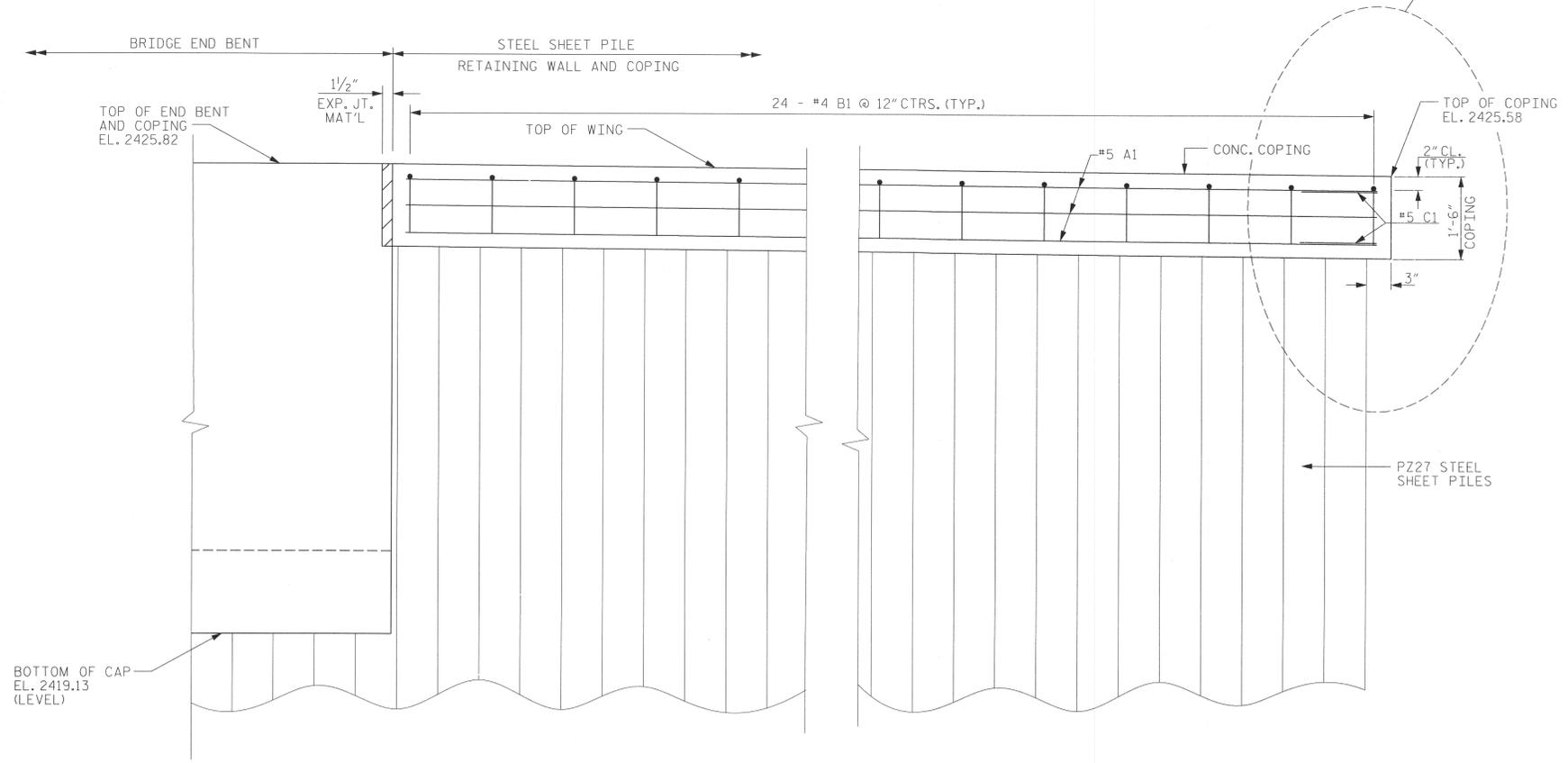


PLAN - WALL #1

SEE END OF COPING DETAILS (SHEET 6 OF 6) FOR ADDITIONAL REINFORCEMENT IN THIS AREA

BAR TYPES		BILL OF MATERIAL				
BI	9	#5	STR	27'-7"	259	
BI	28	#4	I	3'-10"	72	
CI	2	#5	I	4'-10"	10	
REINFORCING STEEL					341 LBS.	
CLASS "A" CONCRETE BREAKDOWN						
WALL COPING					2.9 C.Y.	
TOTAL CLASS "A" CONCRETE					2.9 C.Y.	
18" STEEL SHEET PILES						
NO. PZ27 = 18						
TOTAL NO. = 18					482 SQ. FT.	

ALL BAR DIMENSIONS ARE OUT TO OUT.



ELEVATION - WALL #1  
VIEWING FRONT FACE



PROJECT NO. 17BP.14.R.131  
 HAYWOOD COUNTY  
 STATION: 11+10.45 -L-  
 SHEET 4 OF 6

**V&M**  
**Vaughn & Melton**  
 Consulting Engineers

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 Tri-Cities, TN 423-461-8400  
 Knoxville, TN 865-546-5800  
 Asheville, NC 828-253-2196  
 Middleboro, KY 606-248-6600  
 Spartanburg, SC 864-574-4775

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 RALEIGH

**SHEET PILE WALL CONSTRUCTION DETAILS**

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

DWN. BY: MAF DATE: 1/14  
 CHKD. BY: HLW DATE: 1/14  
 DSN. ENG. OF RECORD: RTS DATE: 1/14

TOTAL SHEETS: 6