

09/05/09

TIP PROJECT: BD-5113J

CONTRACT: DM00075

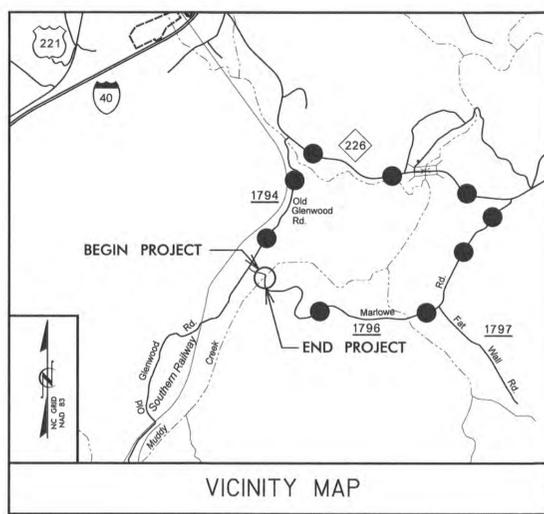
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**McDOWELL COUNTY**

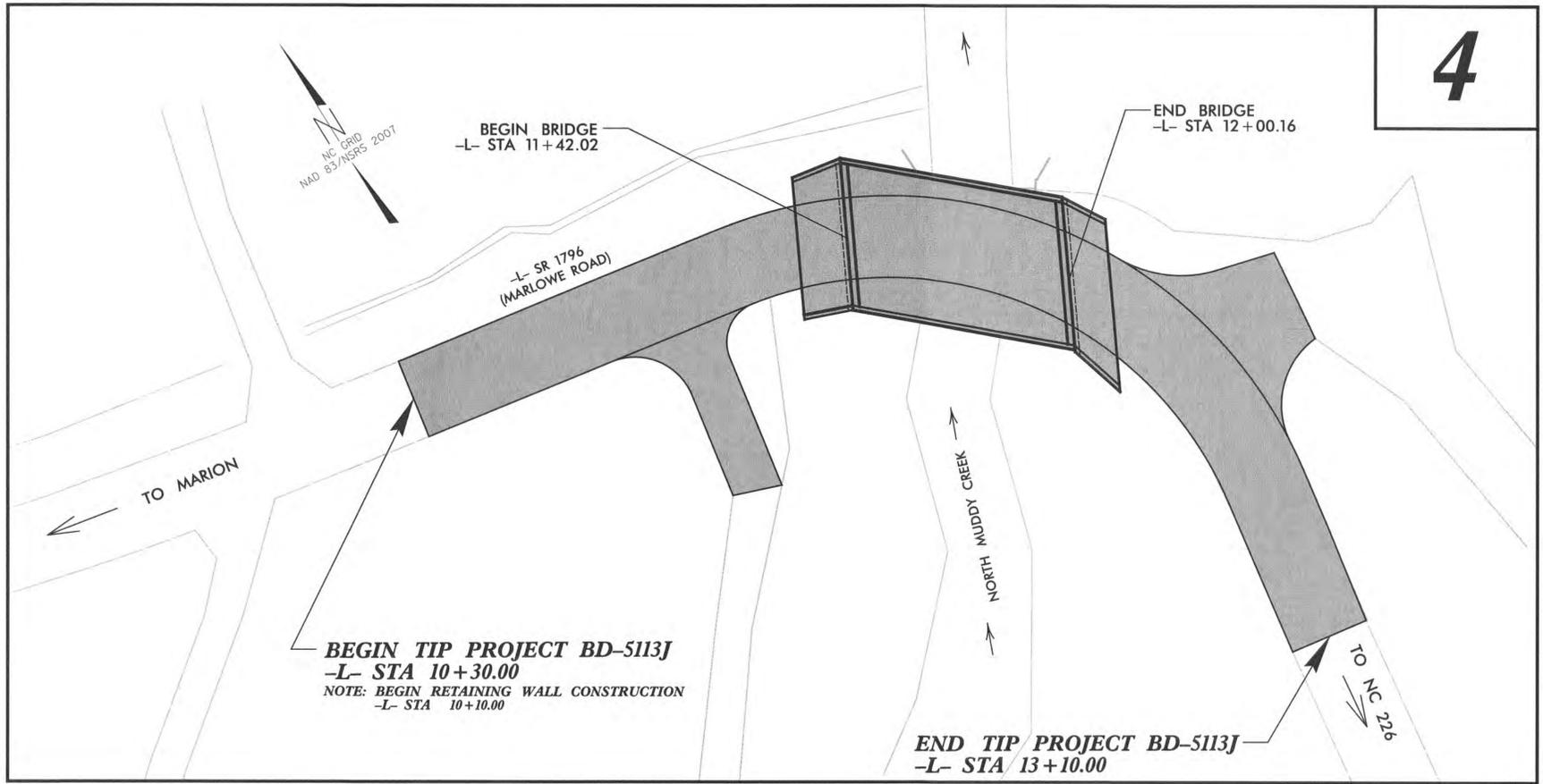
LOCATION: BRIDGE NO. 38 OVER NORTH MUDDY CREEK  
ON SR 1796 (MARLOWE ROAD)

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BD-5113J	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
45359.1.10	BRZ-1796(1)	PE	
45359.2.10	BRZ-1796(1)	R /W	
45359.3.10	BRZ-1796(1)	CONST.	



●●●●● DETOUR ROUTE

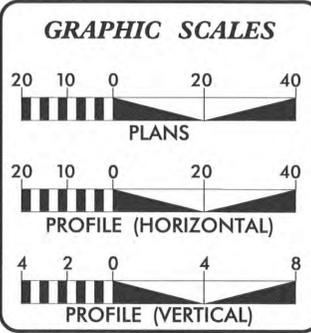


4

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

Charlotte, NC 104-357-0488  
Tri-Cities, TN 423-467-8400  
Knoxville, TN 865-546-5800  
Asheville, NC 828-253-2736  
Middleboro, KY 606-248-6600  
Spartanburg, SC 864-574-4715

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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 TIP PROJECT BD-5113J = 0.042 MI  
LENGTH STRUCTURE TIP PROJECT BD-5113J = 0.011 MI  
TOTAL LENGTH OF TIP PROJECT BD-5113J = 0.053 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:**  
MARCH 15, 2013

**LETTING DATE:**  
JANUARY 15, 2014

REECE SCHULER, PE  
PROJECT ENGINEER

CHASE CARVER, EI  
PROJECT DESIGN ENGINEER

NCDOT CONTACT:  
PAUL SPROUSE, PE  
PROJECT ENGINEER - BRIDGE MANAGEMENT

**HYDRAULICS ENGINEER**

Signature: *K. B. [unclear]*  
P.E. 8/15/13

**ROADWAY DESIGN ENGINEER**

Signature: *[unclear]*  
P.E. 8/15/13

**DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA**

\$\$\$\$\$SYTIME\$\$\$\$\$  
\$\$\$\$\$DGN\$\$\$\$\$  
\$\$\$\$\$USERNAME\$\$\$\$\$



**Note: Not to Scale**

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

# CONVENTIONAL PLAN SHEET SYMBOLS

**BOUNDARIES AND PROPERTY:**

State Line	_____
County Line	_____
Township Line	_____
City Line	_____
Reservation Line	_____
Property Line	_____
Existing Iron Pin	_____ 
Property Corner	_____ 
Property Monument	_____ 
Parcel/Sequence Number	_____ 
Existing Fence Line	_____ 
Proposed Woven Wire Fence	_____ 
Proposed Chain Link Fence	_____ 
Proposed Barbed Wire Fence	_____ 
Existing Wetland Boundary	_____ 
Proposed Wetland Boundary	_____ 
Existing Endangered Animal Boundary	_____ 
Existing Endangered Plant Boundary	_____ 
Known Soil Contamination: Area or Site	_____ 
Potential Soil Contamination: Area or Site	_____ 

**BUILDINGS AND OTHER CULTURE:**

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

**HYDROLOGY:**

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

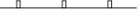
**RAILROADS:**

Standard Gauge	_____ 
RR Signal Milepost	_____ 
Switch	_____ 
RR Abandoned	_____ 
RR Dismantled	_____ 

**RIGHT OF WAY:**

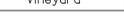
Baseline Control Point	_____ 
Existing Right of Way Marker	_____ 
Existing Right of Way Line	_____ 
Proposed Right of Way Line	_____ 
Proposed Right of Way Line with Iron Pin and Cap Marker	_____ 
Proposed Right of Way Line with Concrete or Granite RW Marker	_____ 
Proposed Control of Access Line with Concrete CA Marker	_____ 
Existing Control of Access	_____ 
Proposed Control of Access	_____ 
Existing Easement Line	_____ 
Proposed Temporary Construction Easement	_____ 
Proposed Temporary Drainage Easement	_____ 
Proposed Permanent Drainage Easement	_____ 
Proposed Permanent Drainage / Utility Easement	_____ 
Proposed Permanent Utility Easement	_____ 
Proposed Temporary Utility Easement	_____ 
Proposed Aerial Utility Easement	_____ 
Proposed Permanent Easement with Iron Pin and Cap Marker	_____ 

**ROADS AND RELATED FEATURES:**

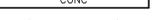
Existing Edge of Pavement	_____ 
Existing Curb	_____ 
Proposed Slope Stakes Cut	_____ 
Proposed Slope Stakes Fill	_____ 
Proposed Curb Ramp	_____ 
Existing Metal Guardrail	_____ 
Proposed Guardrail	_____ 
Existing Cable Guiderail	_____ 
Proposed Cable Guiderail	_____ 
Equality Symbol	_____ 
Pavement Removal	_____ 

**VEGETATION:**

Single Tree	_____ 
Single Shrub	_____ 
Hedge	_____ 
Woods Line	_____ 

Orchard	_____ 
Vineyard	_____ 

**EXISTING STRUCTURES:**

MAJOR:	
Bridge, Tunnel or Box Culvert	_____ 
Bridge Wing Wall, Head Wall and End Wall	_____ 
MINOR:	
Head and End Wall	_____ 
Pipe Culvert	_____ 
Footbridge	_____ 
Drainage Box: Catch Basin, DI or JB	_____ 
Paved Ditch Gutter	_____ 
Storm Sewer Manhole	_____ 
Storm Sewer	_____ 

**UTILITIES:**

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	_____ 
Designated U/G Power Line (S.U.E.*)	_____ 

**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	_____ 
Designated U/G Telephone Cable (S.U.E.*)	_____ 
Recorded U/G Telephone Conduit	_____ 
Designated U/G Telephone Conduit (S.U.E.*)	_____ 
Recorded U/G Fiber Optics Cable	_____ 
Designated U/G Fiber Optics Cable (S.U.E.*)	_____ 

**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	_____ 

**TV:**

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

**GAS:**

Gas Valve	_____ 
Gas Meter	_____ 
Recorded U/G Gas Line	_____ 
Designated U/G Gas Line (S.U.E.*)	_____ 
Above Ground Gas Line	_____ 

**SANITARY SEWER:**

Sanitary Sewer Manhole	_____ 
Sanitary Sewer Cleanout	_____ 
U/G Sanitary Sewer Line	_____ 
Above Ground Sanitary Sewer	_____ 
Recorded SS Forced Main Line	_____ 
Designated SS Forced Main Line (S.U.E.*)	_____ 

**MISCELLANEOUS:**

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

# SURVEY CONTROL SHEET BD-5113J

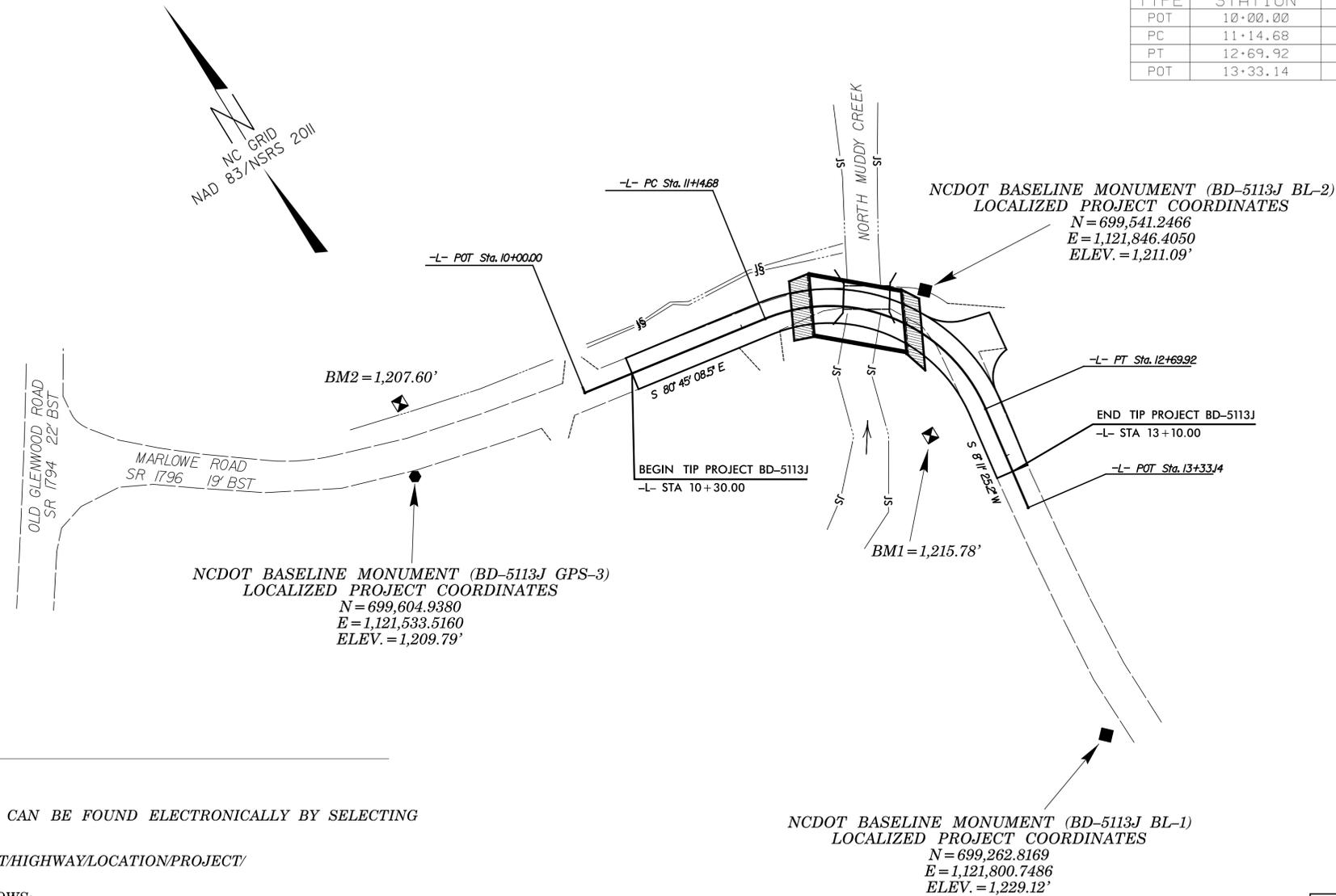
PROJECT REFERENCE NO.	SHEET NO.
BD-5113J	1C
Location and Surveys	

BL	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	BL-1		699262.8169	1121800.7486	1229.12	OUTSIDE PROJECT LIMITS	
2	BL-2		699541.2466	1121846.4050	1211.09	12+00.99	22.72 LT
3	GPS-3		699604.9380	1121533.5160	1209.79	OUTSIDE PROJECT LIMITS	

ALIGN	STATION	OFFSET	NORTH	EAST
L	10+90.00	25.00	699555.4760	1121729.2411
L	12+27.51	25.00	699498.2931	1121813.6064
L	12+69.92	25.00	699466.7994	1121815.7860

.....  
 BM1 ELEVATION = 1215.78  
 N 699467 E 1121805  
 BL STATION 7+02.00 29 LEFT  
 RR SPIKE IN POWER POLE  
 .....  
 BM2 ELEVATION = 1207.60  
 N 699646 E 1121548  
 BL STATION 10+95.00 43 RIGHT  
 RR SPIKE IN POWER POLE  
 .....

TYPE	STATION	NORTH	EAST
POT	10+00.00	699594.6142	1121644.4284
PC	11+14.68	699576.1844	1121757.6212
PT	12+69.92	699463.2379	1121840.5310
POT	13+33.14	699400.6633	1121831.5247



**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:  
 BD-5113J\_LS\_CONTROL\_130124.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)

**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "580038 GPS-3" WITH NAD 83/NSRS 2011 STATE PLANE GRID COORDINATES OF NORTHING: 699604.9380(ft) EASTING: 1121533.5160(ft) ELEVATION: 1209.79(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999842132

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "580038 GPS-3" TO -L- STATION 10+00.00 IS S 84°40'56" E 111.39'

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

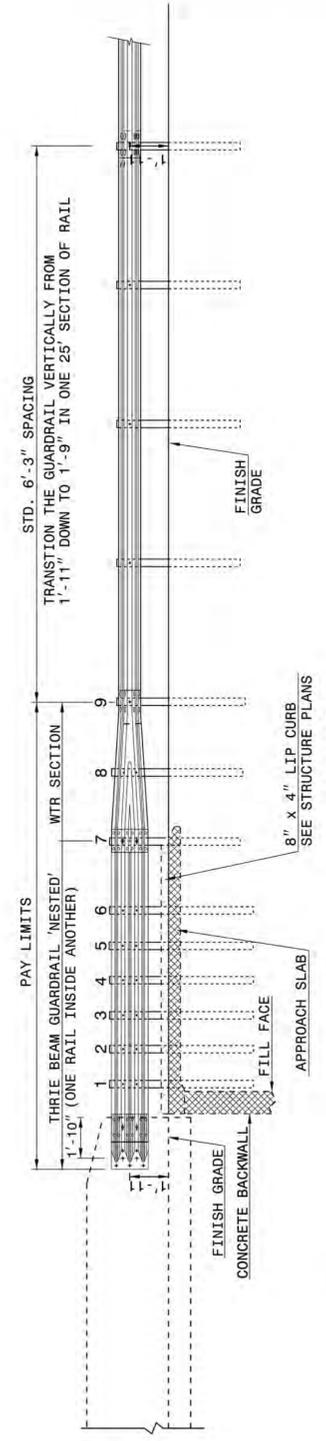
NOTE: DRAWING NOT TO SCALE



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

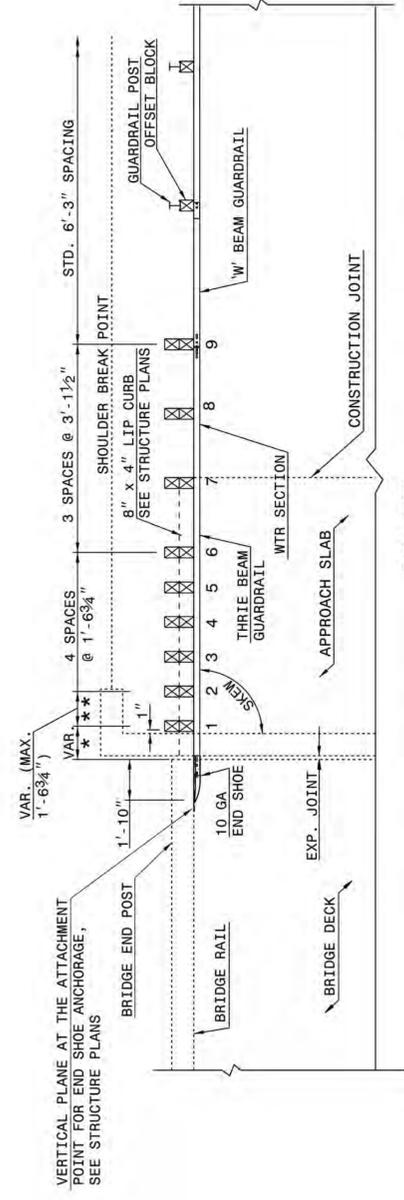
ENGLISH DETAIL DRAWING FOR  
**STRUCTURE ANCHOR UNITS**  
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO  
RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7  
**862d03**



**ELEVATION**

NOTE:  
 \*\*POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.  
 \*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 1'1/2". IF CONCRETE BACKWALL IS NOT PRESENT.  
 -SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8' x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.  
 -MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).  
 -LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.  
 -SEE SHEET 5 FOR POST SECTIONS 1 THRU 9.



**GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO  
RAIL ON BRIDGE - SUB REGIONAL TIER**

SHEET 2 OF 7  
**862d03**

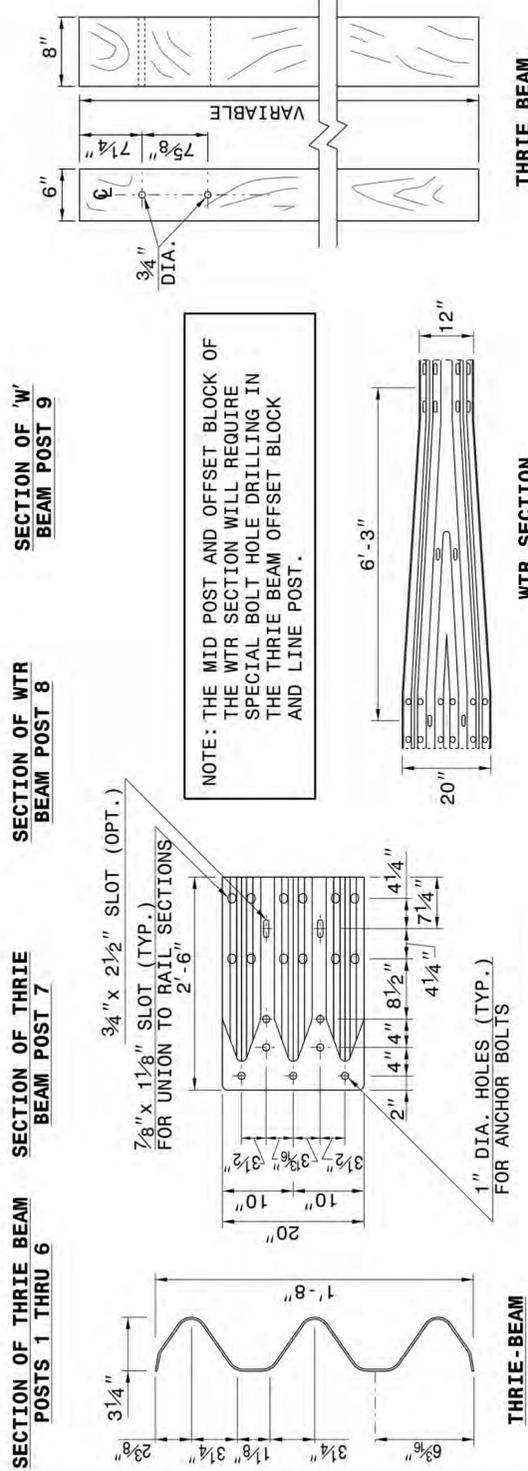
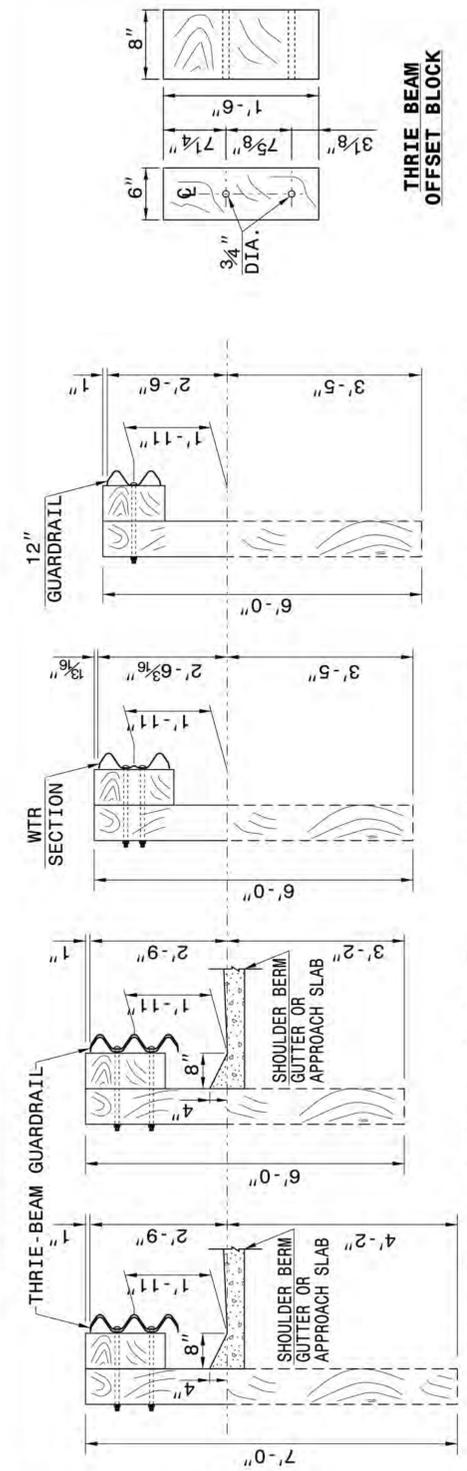
STATE OF  
NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

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

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

ENGLISH DETAIL DRAWING FOR  
**STRUCTURE ANCHOR UNITS**  
GUARDRAIL ANCHOR UNIT, TYPE III

SHEET 3 OF 7  
**862d03**



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

ENGLISH DETAIL DRAWING FOR  
**STRUCTURE ANCHOR UNITS**  
GUARDRAIL ANCHOR UNIT, TYPE III

SHEET 3 OF 7  
**862d03**

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

**SEE TITLE BLOCK**

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





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+30.00 TO STA. 11+42.02 (BEG. BRIDGE)	6		18	12	
SUBTOTAL SUMMARY NO.1	6		18	12	
SUMMARY NO.2					
-L- STA. 12+00.16 (END BRIDGE) TO STA. 13+10.00	25		43	18	
SUBTOTAL SUMMARY NO.2	25		43	18	
PROJECT SUBTOTAL	31		61	30	
EST. 5% FOR REPLACING TOPO SOIL ON BORROW PITS				2	
GRAND TOTAL	31		61	32	
SAY	35			35	

CONTINGENCY ITEMS:  
 DDE = 3 CY  
 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

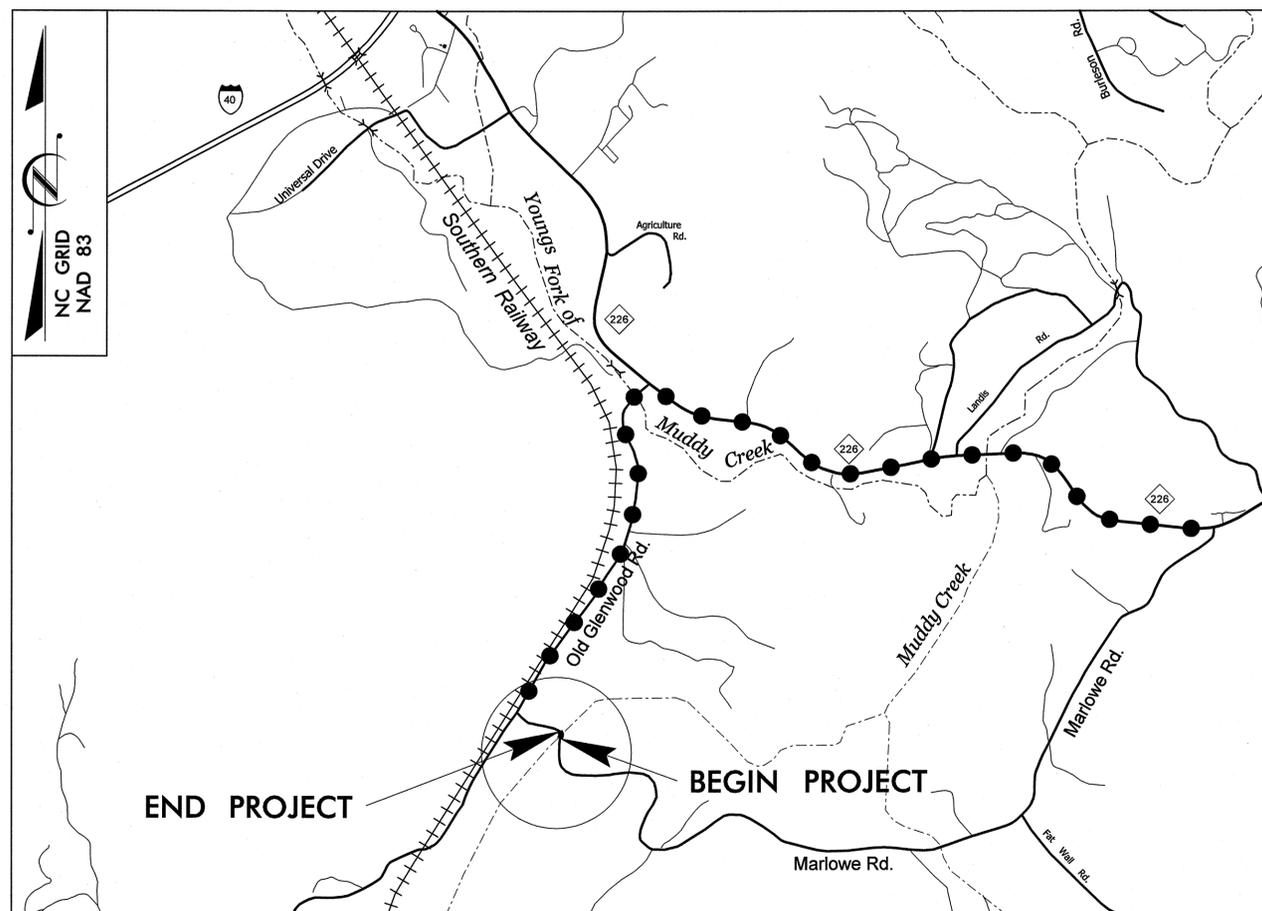
Approximate quantities only. Unclassified excavation, borrow excavation, fine grading, clearing and grubbing, and removal of existing pavement will be paid for at the contract lump sum price for "grading".



STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**TRANSPORTATION MANAGEMENT PLAN**

**MCDOWELL COUNTY  
DIVISION 13**



**VICINITY MAP**

<b>INDEX OF SHEETS</b>	
SHEET NO.	TITLE
TMP-1	TITLE SHEET AND INDEX OF SHEETS
TMP-1A	ROADWAY STANDARD DRAWINGS AND LEGEND
TMP-1B	GENERAL NOTES AND PHASING NOTES
TMP-2	OFFSITE DETOUR SIGNING AND ROAD CLOSURE

SHEET NO.  
TMP-1

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

Charlotte, North Carolina 704-357-0488  
Tri-Cities, Tennessee 423-467-8401  
Knoxville, Tennessee 865-546-5800  
Asheville, North Carolina 828-253-2796  
Middlesboro, Kentucky 606-248-6600  
Spartanburg, South Carolina 864-574-4775

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**STV / Ralph Whitehead Associates, Inc.**  
1000 West Morehead St., Ste. 200  
Charlotte, NC 28208  
NC License Number F-0991

PROJECT ENGINEER **JOHN JOHNSON, PE**  
DESIGN ENGINEER **RICHARD ODYNSKI, PE**

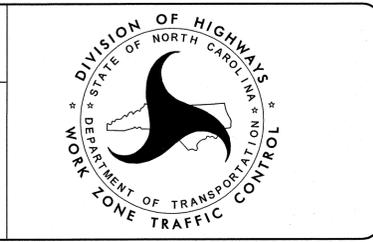
APPROVED: \_\_\_\_\_  
DATE: \_\_\_\_\_

*(Professional Seal and Signature)*  
4-8-13

**WORK ZONE SAFETY & MOBILITY**  
"from the MOUNTAINS to the COAST"

**N.C.D.O.T. WORK ZONE TRAFFIC CONTROL**  
1561 MAIL SERVICE CENTER (MSC) RALEIGH, NC 27699-1561  
750 N. GREENFIELD PARKWAY, GARNER, NC 27529 (DELIVERY)  
PHONE: (919) 773-2800 FAX: (919) 771-2745

**J. S. BOURNE, P.E.** STATE TRAFFIC MANAGEMENT ENGINEER  
\_\_\_\_\_ TRAFFIC CONTROL PROJECT ENGINEER  
\_\_\_\_\_ TRAFFIC CONTROL PROJECT DESIGN ENGINEER  
\_\_\_\_\_ TRAFFIC CONTROL DESIGN ENGINEER



4/8/2013 R:\Traffic\TrafficControl\TCP\BD5113J\_TCP\_TSH.dgn odynskrr

**TIP PROJECT: BD-5113J**

# ROADWAY STANDARD DRAWINGS

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

STD.NO.	TITLE
1101.03	TEMPORARY ROAD CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1145.01	BARRICADES

## GENERAL

- DIRECTION OF TRAFFIC FLOW
- DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- WORK AREA
- REMOVAL

## TRAFFIC CONTROL DEVICES

- BARRICADE (TYPE III)
- CONE
- DRUM SKINNY DRUM TUBULAR MARKER
- TEMPORARY CRASH CUSHION
- FLASHING ARROW PANEL (TYPE C)
- FLAGGER
- LAW ENFORCEMENT
- TRUCK MOUNTED IMPACT ATTENUATOR (TMIA)
- CHANGEABLE MESSAGE SIGN

# LEGEND

## TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

## SIGNALS

- EXISTING
- PROPOSED
- TEMPORARY

## PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

## PAVEMENT MARKERS

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

## PAVEMENT MARKING SYMBOLS

- PAVEMENT MARKING SYMBOLS

PROJ. REFERENCE NO. BD-5113J	SHEET NO. TMP-1A
 STV/Ralph Whitehead Associates, Inc. 1000 West Morehead St., Ste. 200 Charlotte, NC 28208 NC License Number F-0991	
 Vaughn & Melton Consulting Engineers	
Charlotte, North Carolina 704-357-0488 Tri-Cities, Tennessee 423-487-8400 Knoxville, Tennessee 865-546-5800	Middleboro, Kentucky 606-248-6600 Spartanburg, South Carolina 864-514-4715
Asheville, North Carolina 828-253-2796	
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APPROVED: _____	DATE: _____
ROADWAY STANDARD DRAWINGS & LEGEND	

4/8/2013  
 R:\TrafficControl\TCP\BD5113J\_TCP\_1A.dgn  
 odynskrd

PROJ. REFERENCE NO.	SHEET NO.
BD-5113J	TMP-1B
 STV / Ralph Whitehead Associates, Inc. 1000 West Morehead St., Ste. 200 Charlotte, NC 28208 NC License Number F-0991	
 <b>V&amp;M</b> Vaughn & Melton Consulting Engineers	
Charlotte, North Carolina 704-353-0488 Tri-Cities, Tennessee 423-467-8401 Knoxville, Tennessee 865-545-5900	Middlesboro, Kentucky 606-248-6600 Spartanburg, South Carolina 864-574-4775
Asheville, North Carolina 828-253-2756	
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## GENERAL NOTES

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

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

### TIME RESTRICTIONS

A) DO NOT CLOSE SR 1796 (MARLOWE RD.) DURING HOLIDAYS AND SPECIAL EVENTS AS FOLLOWS:

1. FOR ANY UNEXPECTED OCCURRENCE THAT CREATES UNUSUALLY HIGH TRAFFIC VOLUMES, AS DIRECTED BY THE ENGINEER.
2. FOR NEW YEAR'S, BETWEEN THE HOURS OF 6:00 A.M. DECEMBER 31st TO 9:00 P.M. JANUARY 2ND. IF NEW YEAR'S DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN UNTIL 9:00 P.M. THE FOLLOWING TUESDAY.
3. FOR EASTER, BETWEEN THE HOURS OF 6:00 A.M. THURSDAY AND 9:00 P.M. MONDAY.
4. FOR MEMORIAL DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY TO 9:00 P.M. TUESDAY.
5. FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 6:00 A.M. THE DAY BEFORE INDEPENDENCE DAY AND 9:00 P.M. THE DAY AFTER INDEPENDENCE DAY.

IF INDEPENDENCE DAY IS ON A FRIDAY, SATURDAY, SUNDAY OR MONDAY THEN BETWEEN THE HOURS OF 6:00 A.M. THE THURSDAY BEFORE INDEPENDENCE DAY AND 9:00 P.M. THE TUESDAY AFTER INDEPENDENCE DAY.

6. FOR LABOR DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY AND 9:00 P.M. TUESDAY.
7. FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 6:00 A.M. TUESDAY TO 9:00 P.M. MONDAY.
8. FOR CHRISTMAS, BETWEEN THE HOURS OF 6:00 A.M. THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 9:00 P.M. THE FOLLOWING MONDAY AFTER THE WEEK OF CHRISTMAS.

### PAVEMENT EDGE DROP OFF REQUIREMENTS

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

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

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

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

### TRAFFIC PATTERN ALTERATIONS

C) NOTIFY THE ENGINEER TWENTY ONE (21) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

### SIGNING

- D) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.
- E) PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRAFFIC CONTROL PLANS.
- F) COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE IS NOT IN OPERATION.
- G) COVER OR REMOVE ALL SIGNS REQUIRED FOR THE OFF-SITE DETOUR WHEN THE DETOUR IS NOT IN OPERATION.
- H) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

## PHASING NOTES

STEP 1: USING RSD 1101.03 SHEET 1 OF 9, AND TMP-2, INSTALL DETOUR SIGNS AND PLACE TYPE III BARRICADES TO CLOSE SR 1796 (MARLOWE RD.) TO THRU TRAFFIC AND DETOUR ONTO PROPOSED DETOUR.

STEP 2: AWAY FROM TRAFFIC, PERFORM THE FOLLOWING:

REMOVE EXISTING STRUCTURE AND CONSTRUCT PROPOSED STRUCTURE. SEE ROADWAY AND STRUCTURE PLANS.

CONSTRUCT PROPOSED -L- UP TO BUT NOT INCLUDING FINAL LAYER OF SURFACE COURSE.

STEP 3: PLACE FINAL LAYER OF SURFACE COURSE

STEP 4: PLACE FINAL PAVEMENT MARKINGS AND TIE TO EXISTING MARKINGS (SEE PAVEMENT MARKING PLAN).

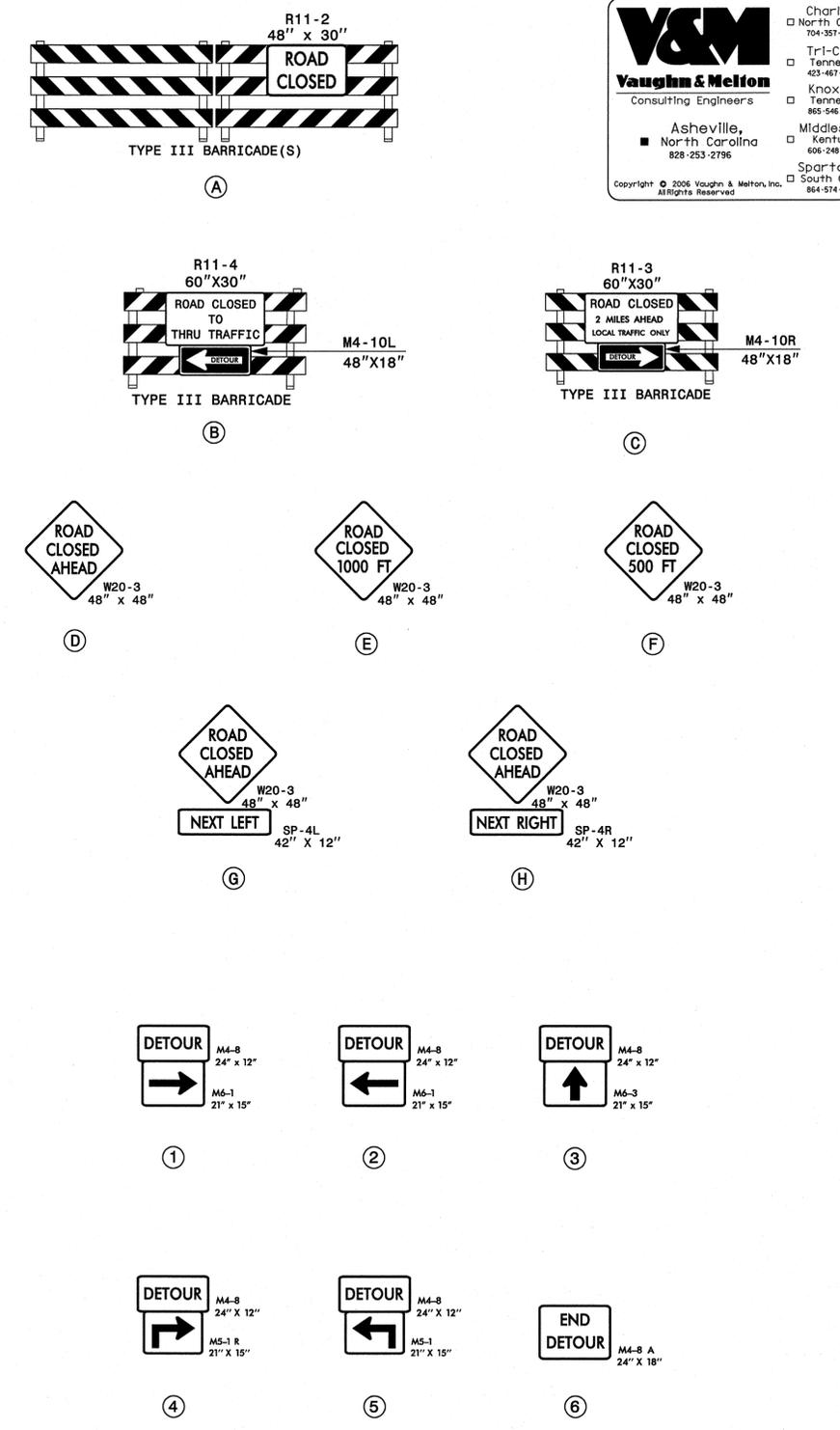
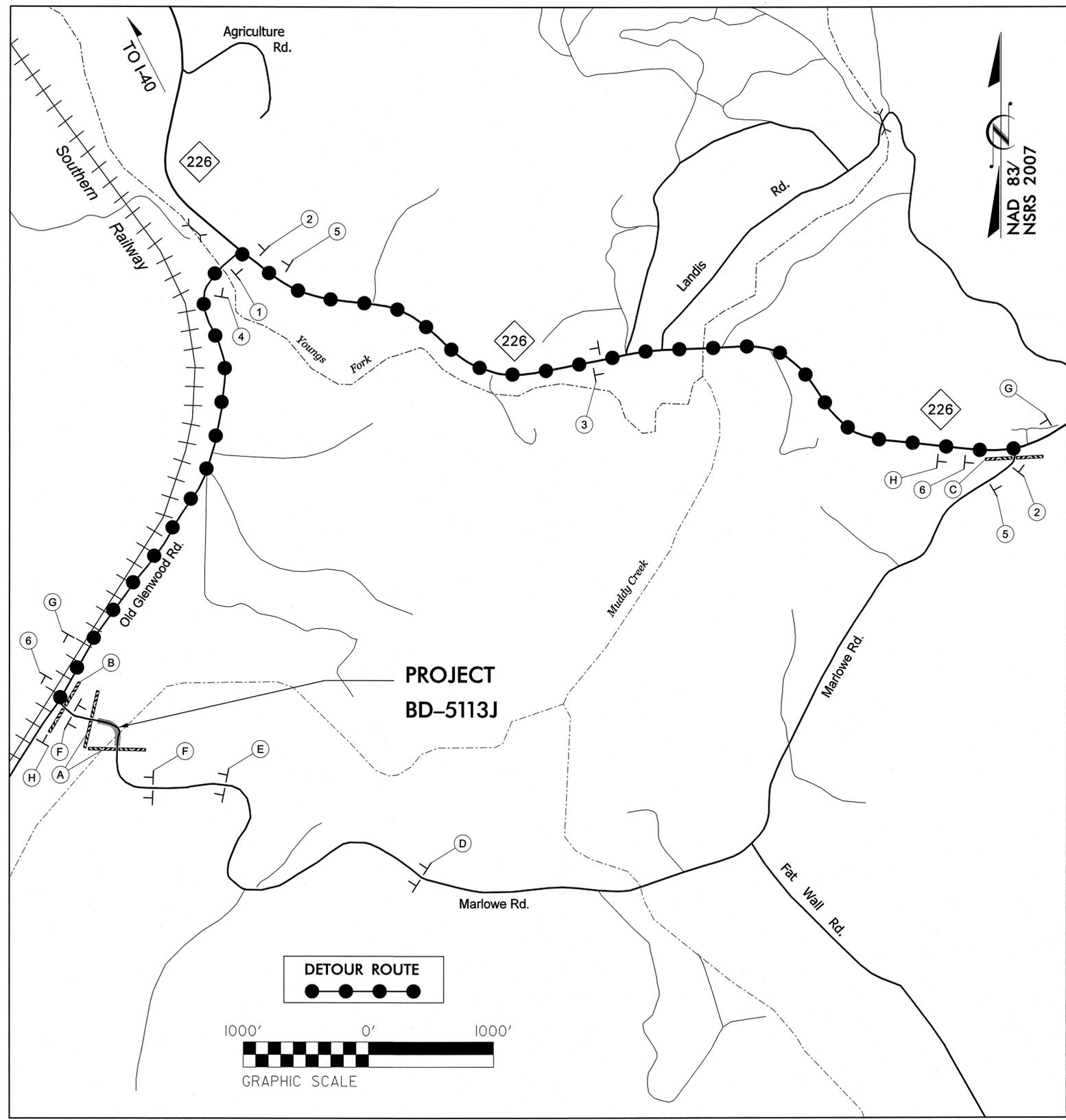
STEP 5: REMOVE ALL TRAFFIC CONTROL DEVICES, SIGNING AND DETOUR ROUTE SIGNING.

OPEN SR 1796 (MARLOWE RD.) TO FINAL TRAFFIC PATTERN.

## LOCAL NOTES

1. NOTIFY MCDOWELL COUNTY EMERGENCY SERVICES AND PUBLIC SCHOOLS AT LEAST ONE MONTH PRIOR TO ROAD CLOSURE.

APPROVED: _____ DATE: _____  <div style="text-align: center;">           SEAL       </div>	<div style="text-align: center;">           DIVISION OF NORTH CAROLINA          DEPARTMENT OF TRANSPORTATION          WORK ZONE TRAFFIC CONTROL       </div>	<h3>GENERAL NOTES AND PHASING NOTES</h3>
---	---	--



NOTES:  
 TRAFFIC CONTROL DEVICES (A) THRU (H) SHALL BE INSTALLED ACCORDING TO ROADWAY STANDARD DRAWING 1101.03, SHEET 1 OF 9.  
 TRAFFIC CONTROL DEVICES (1) THRU (6) SHALL BE INSTALLED AS PER ENGINEER'S INSTRUCTION.

APPROVED: _____ DATE: _____	 DIVISION OF HIGHWAYS DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL	<b>OFFSITE DETOUR          SIGNING AND ROAD          CLOSURE</b>
 SEAL 4-8-13		

4/8/2013  
 R:\TrafficControl\TCP\BD5113J\_TCP\_2.dgn  
 odymskrd

# EROSION CONTROL PLAN

PROJECT REFERENCE NO. BD-5113J SHEET NO. EC-1

KEVIN B. ALFORD, PE  
LEVEL IIIA NAME

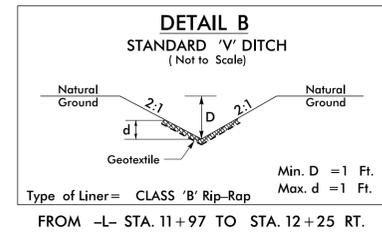
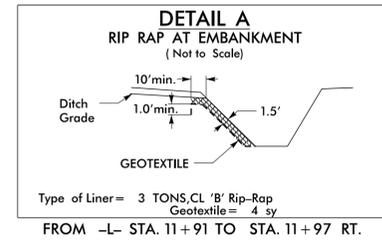
396  
LEVEL IIIA CERTIFICATION NO.

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.

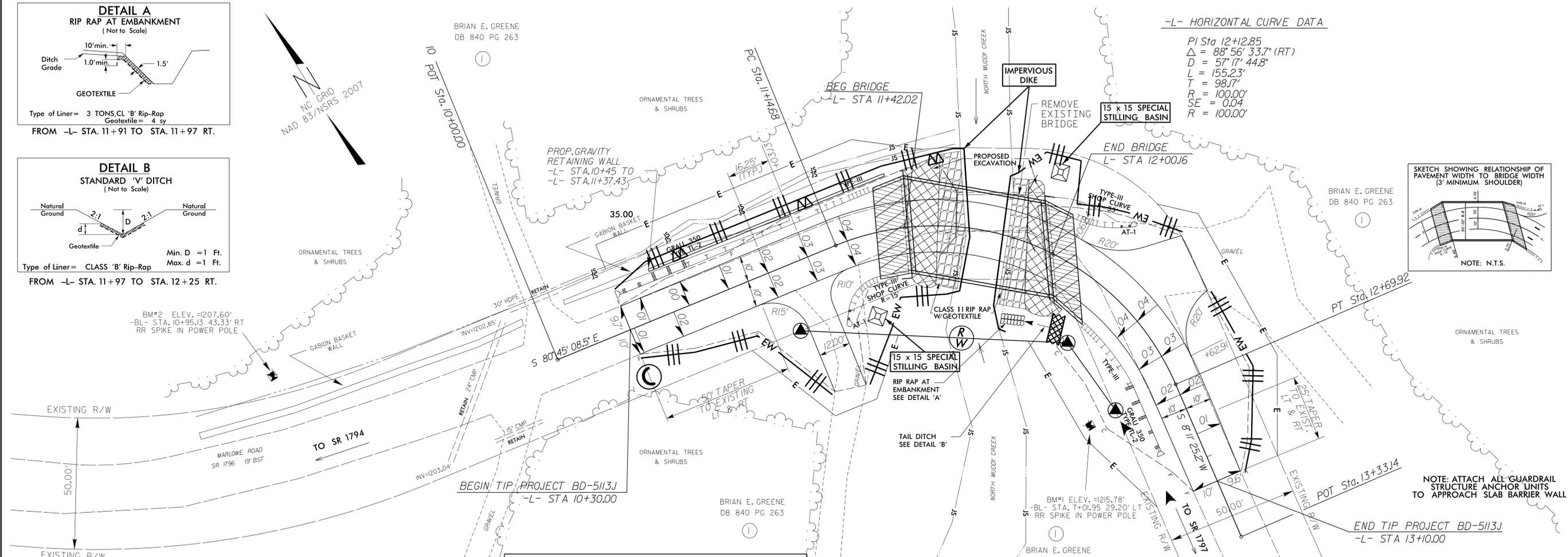
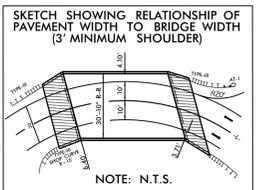
ROADSIDE ENVIRONMENTAL UNIT  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.  
2012 STANDARD SPECIFICATIONS

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.



-L- HORIZONTAL CURVE DATA

PI Sta 12+12.85  
 $\Delta = 88^\circ 56' 33.7''$  (RT)  
D = 57' 17" 44.8"  
L = 155.23'  
T = 98.17'  
R = 100.00'  
SE = 0.04  
R = 100.00'



REVISIONS

2:35:58 PM  
11/20/12  
4/22/2013  
Erosion Control\580038.ec.psh4.dgn  
#38\_McDowell.Vaughn & Melton

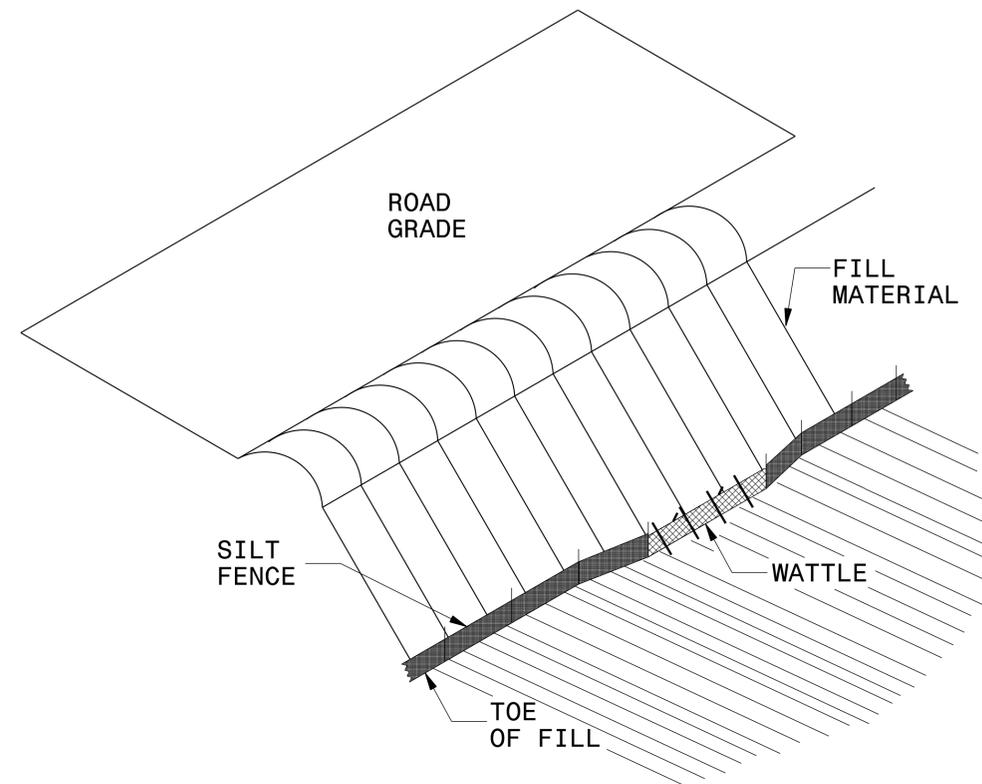
**2012 STANDARD DRAWINGS**

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

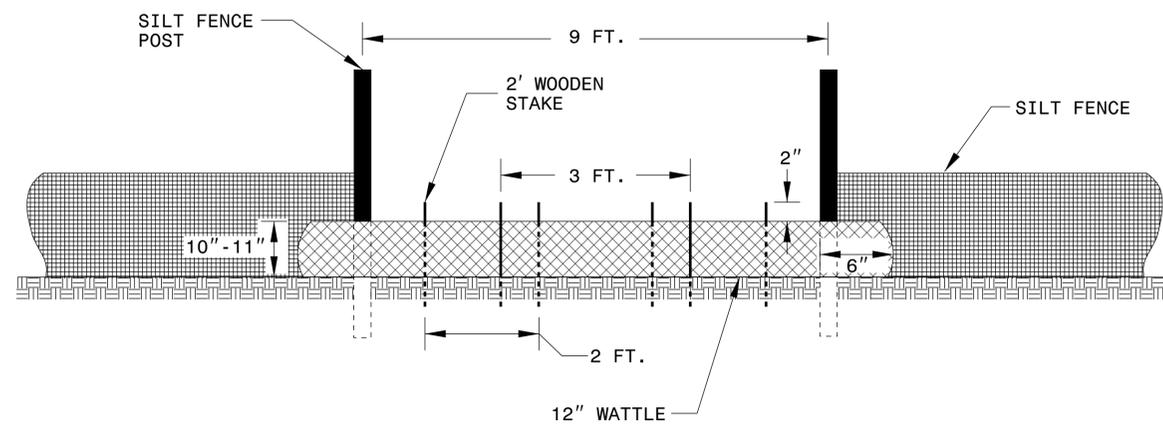
Std. #	Description	Symbol
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	— T —
1630.02	Silt Basin Type B	▨
1630.05	Temporary Silt Ditch	— TD —
1630.05	Temporary Diversion	— TD —
1630.06	Special Stilling Basin	— TD —
1632.05	Rock Inlet Sediment Trap Type C	□
1633.01	Temporary Rock Silt Check Type-A	▨
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	▨
1633.02	Temporary Rock Silt Check Type-B	▨
	Silt Fence Excelsior Wattle Break	- EW -
	Wattle with Polyacrylamide (PAM)	○
1634.02	Temporary Rock Sediment Dam Type-B	▨
1635.01	Rock Pipe Inlet Sediment Trap Type-A	○

NOTE: ATTACH ALL GUARDRAIL STRUCTURE ANCHOR UNITS TO APPROACH SLAB BARRIER WALL

# SILT FENCE WATTLE BREAK DETAIL



**ISOMETRIC VIEW**

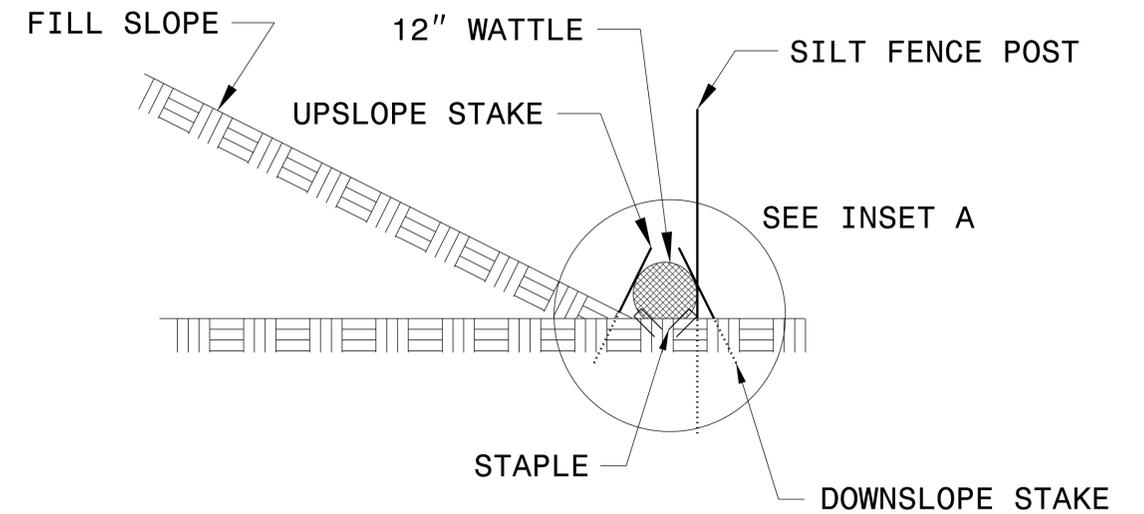
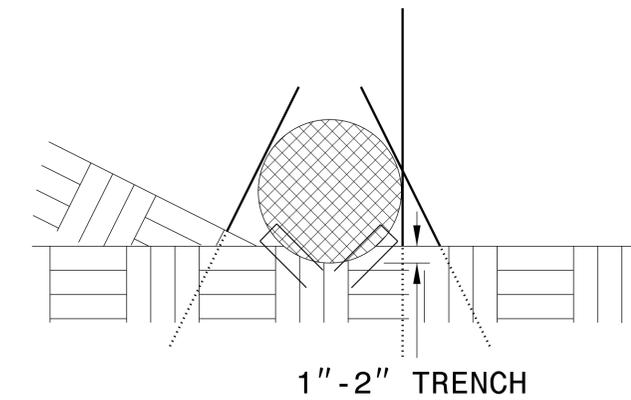


**VIEW FROM SLOPE**

**NOTES:**

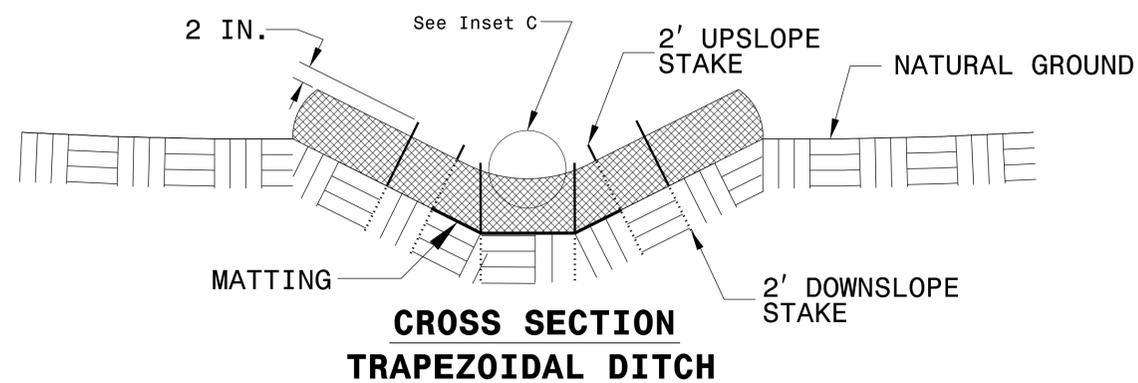
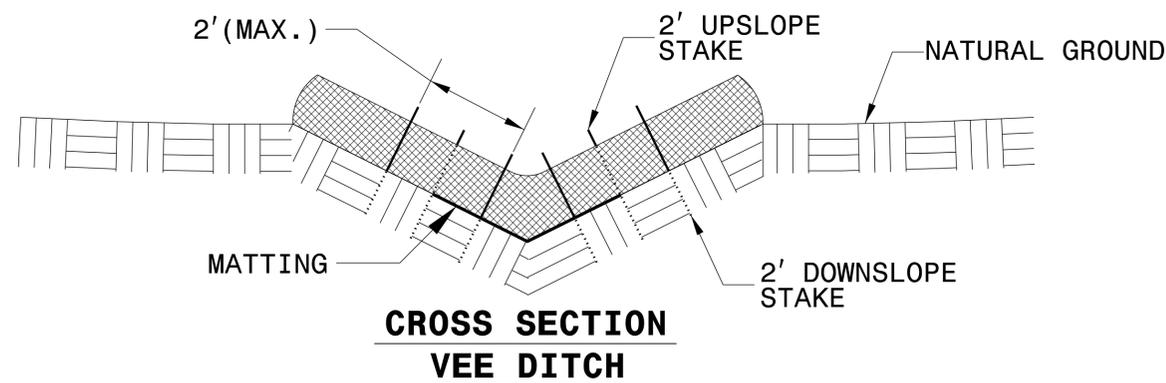
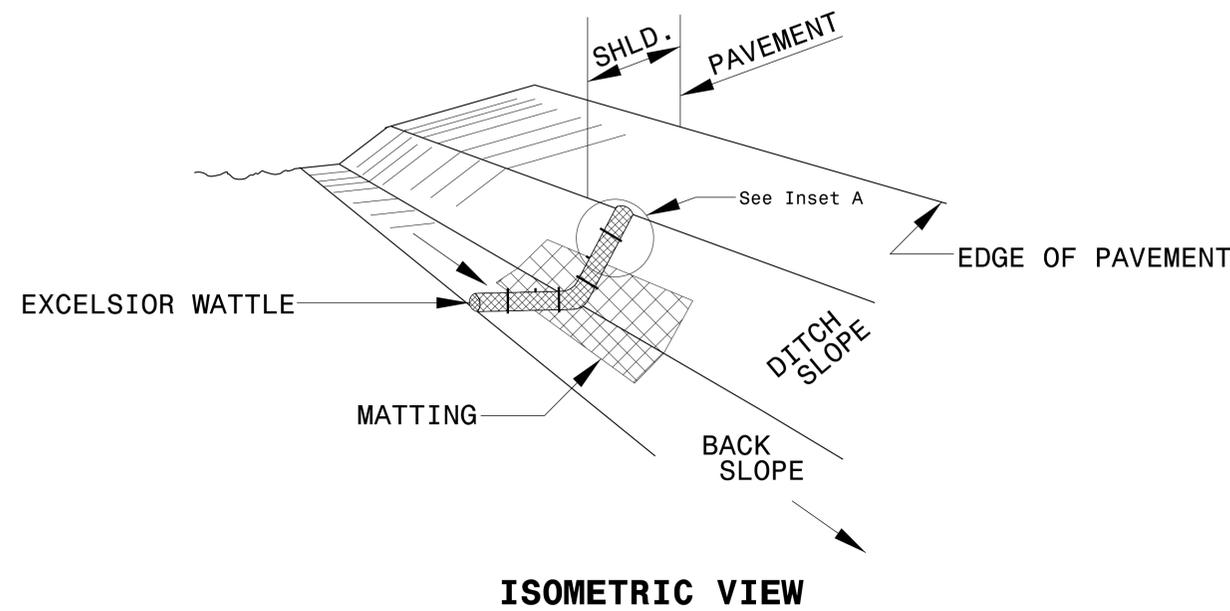
- USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE AND LENGTH OF 10 FT.
- EXCAVATE A 1 TO 2 INCH TRENCH FOR WATTLE TO BE PLACED.
- DO NOT PLACE WATTLE ON TOE OF SLOPE.
- USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.
- INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT 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**

# WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



**NOTES:**

USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE.

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

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

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

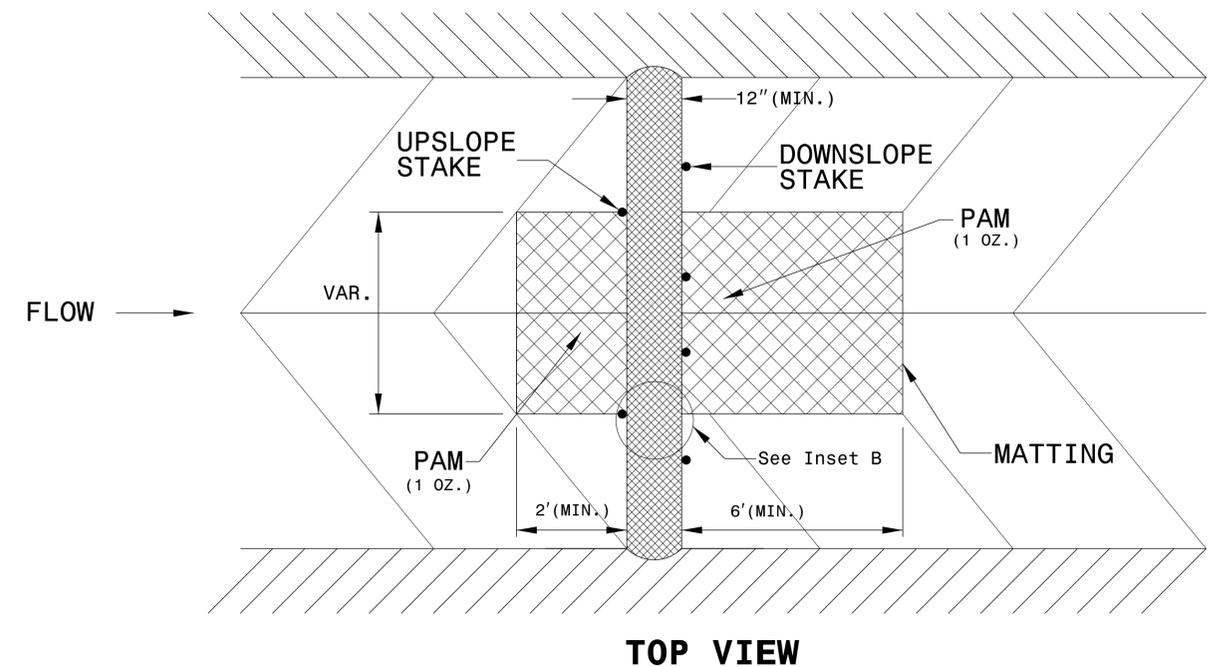
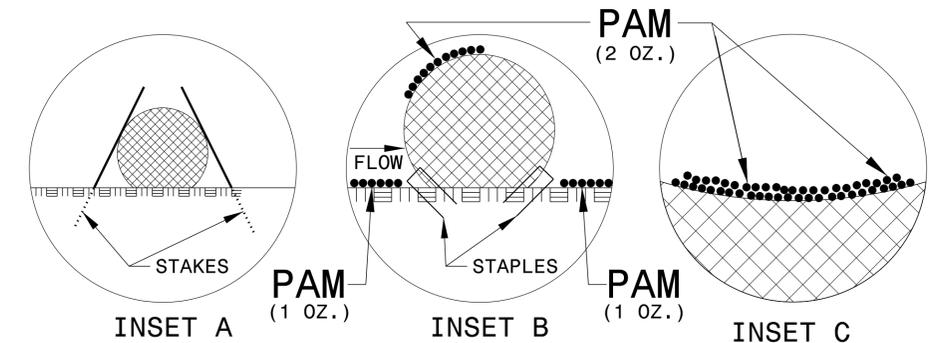
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

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

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

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

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





DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

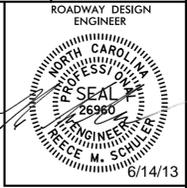
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## ***SOIL STABILIZATION TIMEFRAMES***

<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.



DIVISION OF HIGHWAYS  
 STATE OF NORTH CAROLINA

**CROSS SECTION SUMMARY**  
 IN CUBIC YARDS

-L- LOCATION	UNCLASSIFIED EXCAVATION	EMBT
10+30	0	3
10+50	0	0
11+00	0	13
11+42.02 BEGIN BRIDGE	6	0
12+00.16 END BRIDGE	0	7
12+50	17	17
13+00	8	13
13+10	0	0

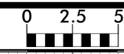
NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT.

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".

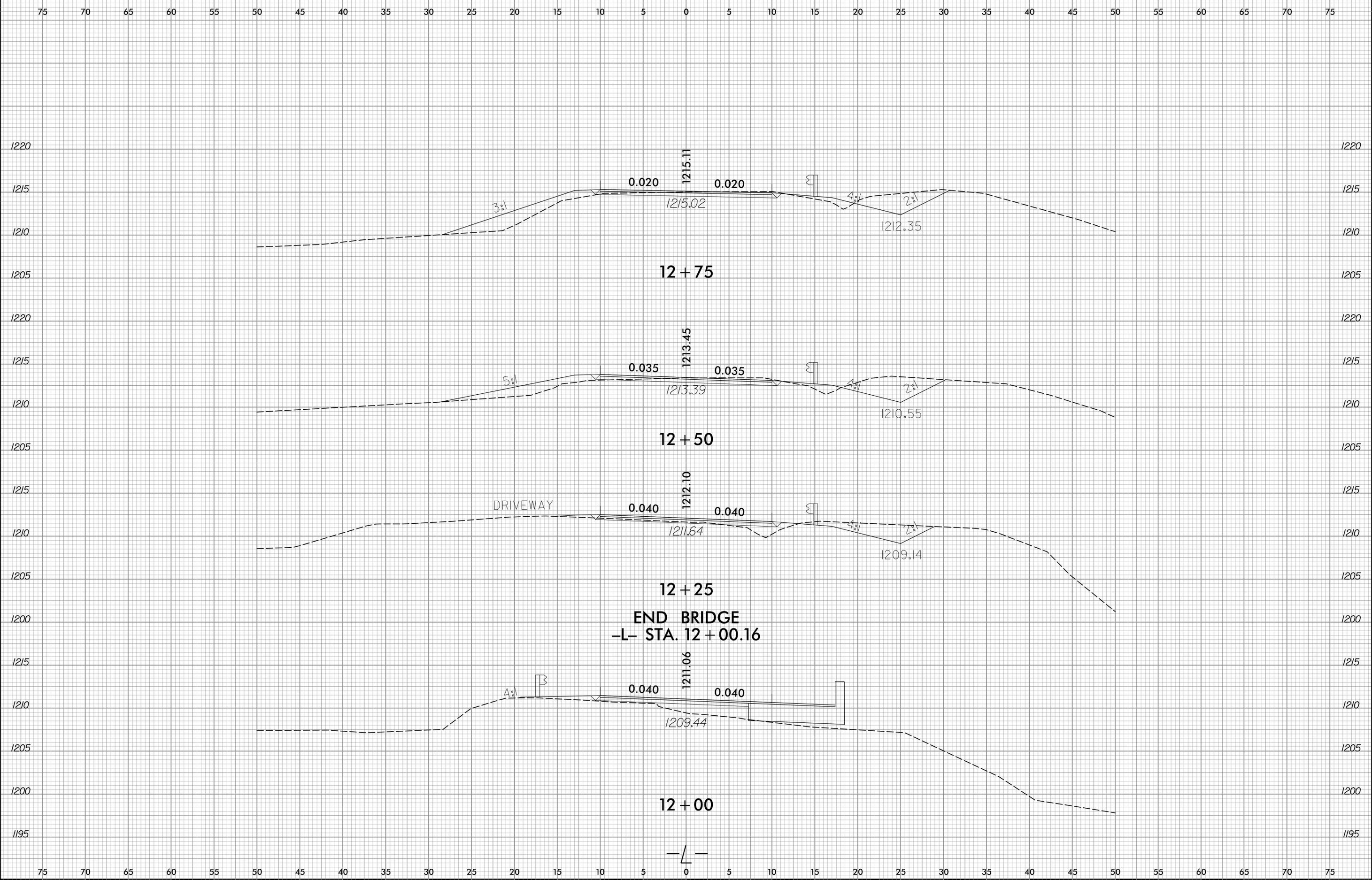




8/23/99



PROJ. REFERENCE NO.	SHEET NO.
BD-5113J	X-3



8/23/99



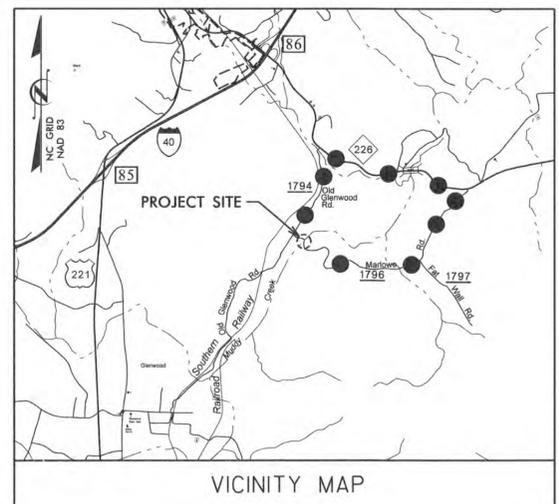
TIP NO: BD-5113J

CONTRACT: DM00075

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BD-5113J		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
45359.1.10	BRZ-1796(1)	P.E.	
45359.2.10	BRZ-1796(1)	RW.	
45359.3.10	BRZ-1796(1)	CONST.	

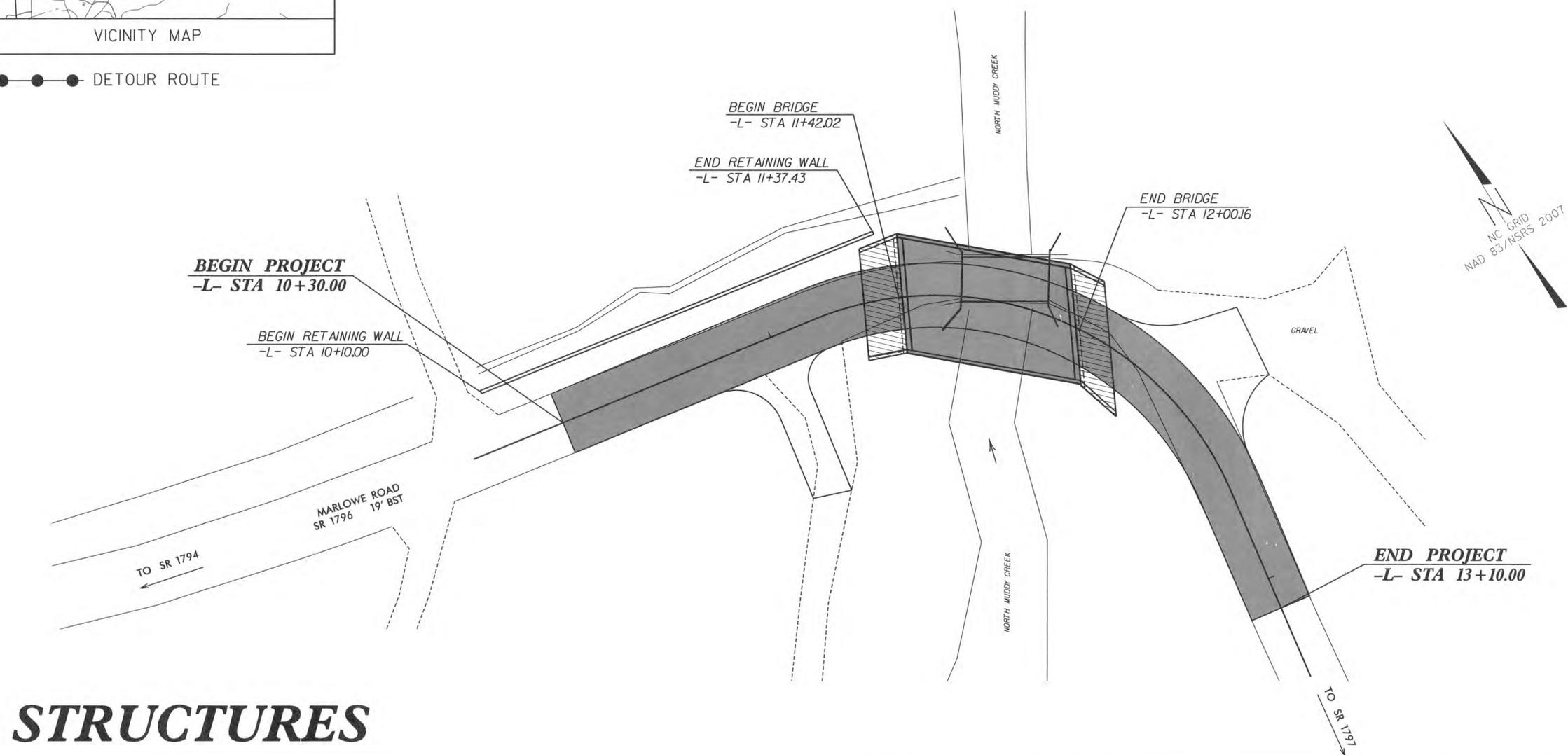
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# McDOWELL COUNTY



VICINITY MAP

●●●●● DETOUR ROUTE



## STRUCTURES



**DESIGN DATA**

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

FUNCT. CLASS = RURAL LOCAL  
SUB-REGIONAL TIER

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT BD-5113J = 0.042 MI  
LENGTH STRUCTURE TIP PROJECT BD-5113J = 0.011 MI  
TOTAL LENGTH OF TIP PROJECT BD-5113J = 0.053 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 :  
JANUARY 15, 2014

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

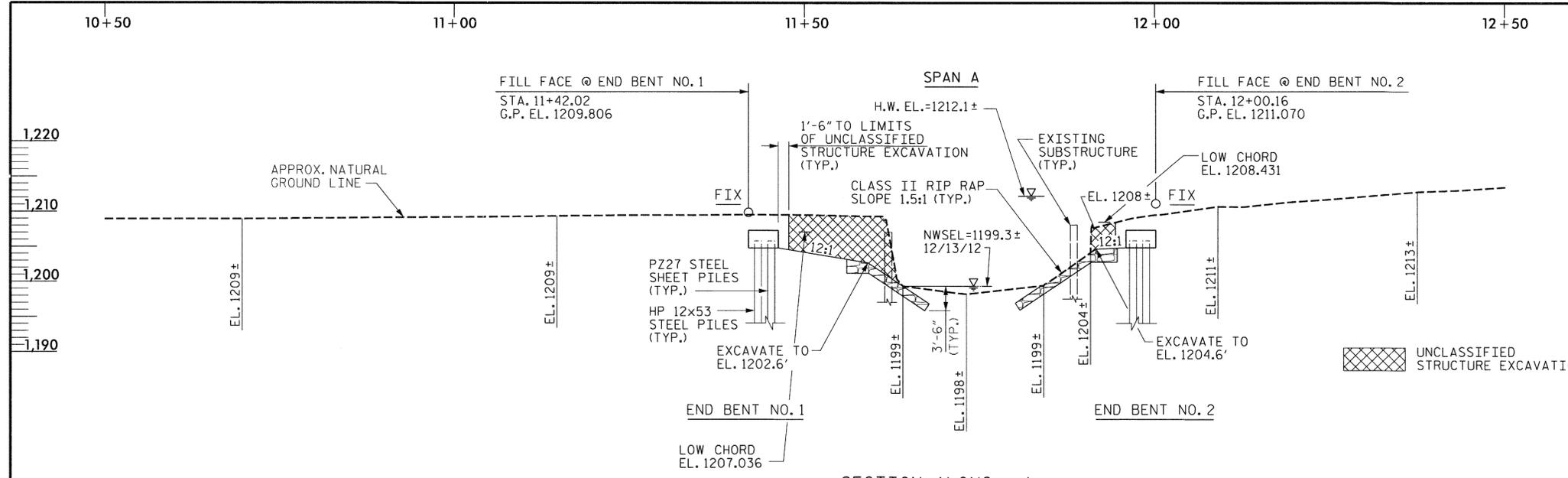
PAUL SPROUSE P.E.  
STATE DESIGN ENGINEER  
DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION

APPROVED DIVISION ADMINISTRATOR DATE

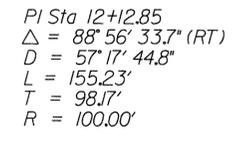
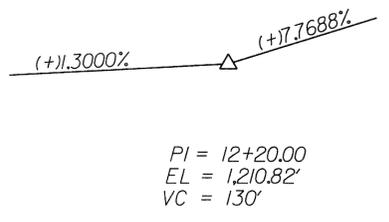
**V&M**  
Vaughn & Melton  
Consulting Engineers

Charlotte, North Carolina 704-357-0488  
Tri-Cities, Tennessee 423-467-8401  
Knoxville, Tennessee 865-546-5800  
Asheville, North Carolina 828-253-2796  
Middlesboro, Kentucky 606-248-6600  
Spartanburg, South Carolina 864-574-4775

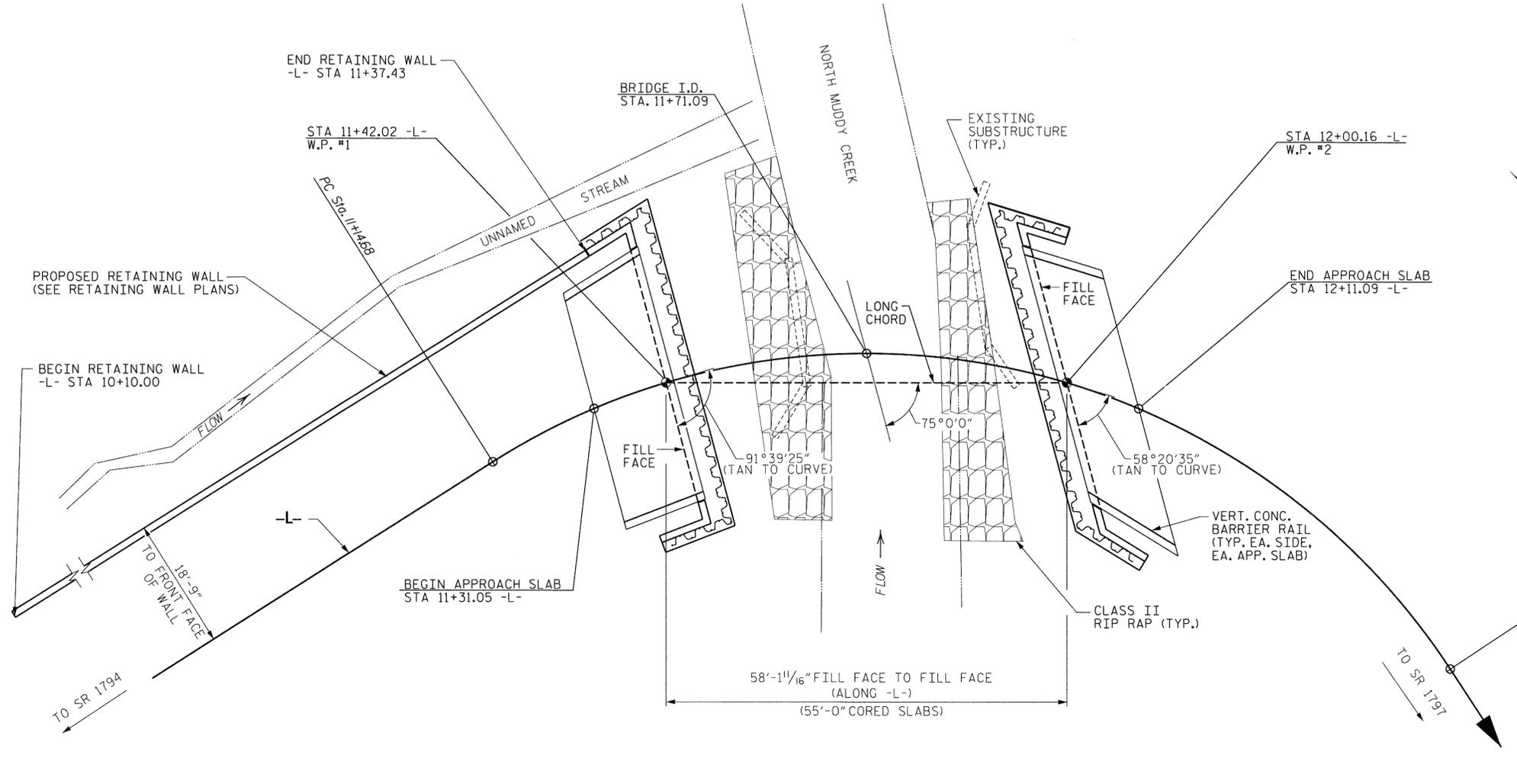
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**SECTION ALONG -L-**  
 SECTIONS AT END BENTS ARE AT RIGHT ANGLES.  
 THE APPROXIMATE NATURAL GROUND ELEVATIONS  
 SHOWN ARE ALONG THE EDGE OF THE BRIDGE ON  
 THE UPSTREAM SIDE.

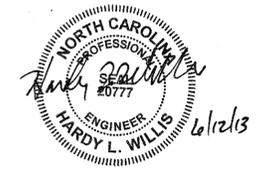
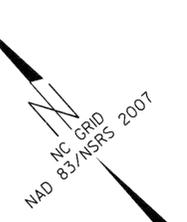


**HORIZONTAL CURVE DATA -L-**

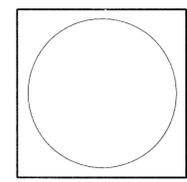


**PLAN ALONG -L-**

**NOTES:**  
 END BENTS ARE PARALLEL.  
 PILES NOT SHOWN IN PLAN VIEW FOR CLARITY.  
 CORED SLABS ARE PARALLEL TO LONG CHORD.



I HEREBY CERTIFY  
 THAT THESE PLANS  
 ARE THE  
 AS-BUILT PLANS.



PROJECT NO. BD-5113J  
McDOWELL COUNTY  
 STATION: 11+71.09 -L-  
 SHEET 1 OF 3 REPLACES BRIDGE NO. 38

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

Charlotte, NC  
 Tri-Cities, TN  
 Knoxville, TN  
 Asheville, NC  
 North Carolina

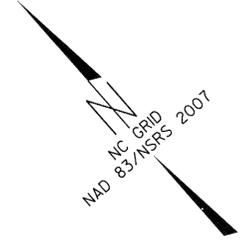
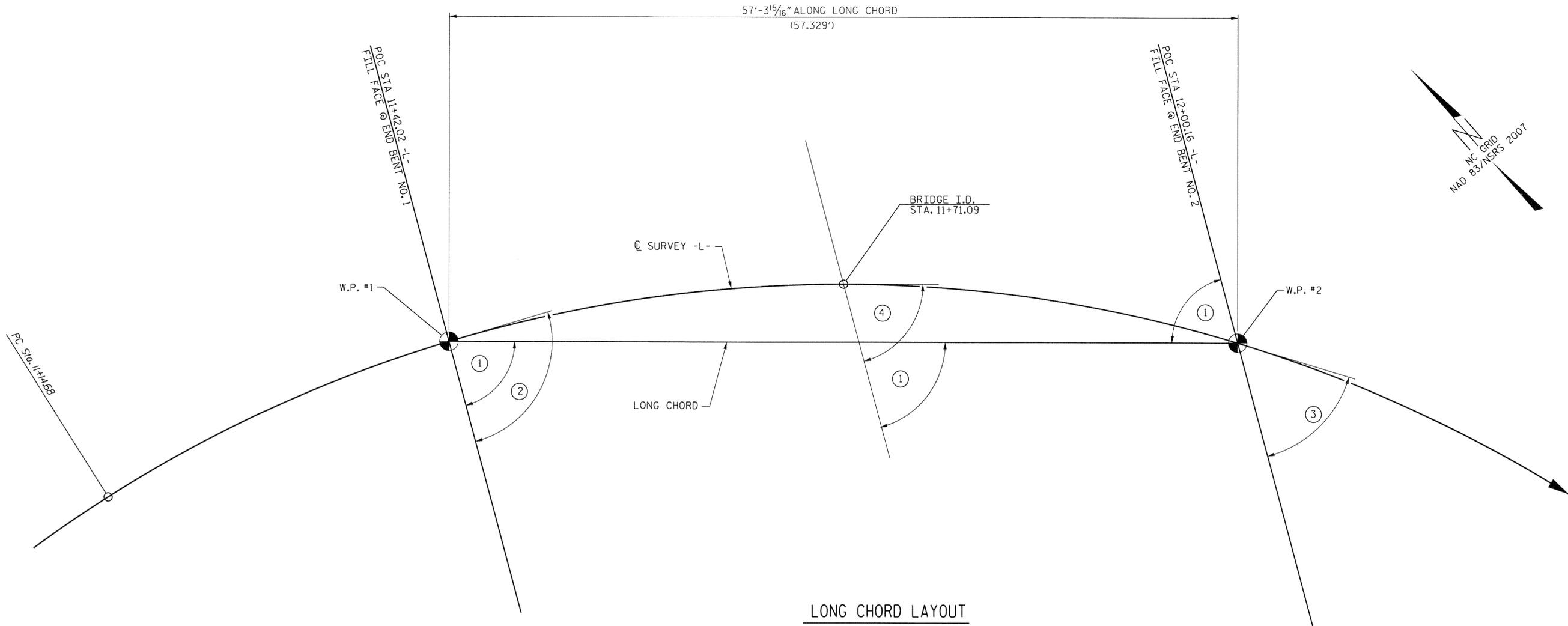
Middlesboro, KY  
 Kentucky  
 Spartanburg, SC  
 South Carolina

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STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**GENERAL DRAWING**  
 BRIDGE on SR 1796 (MARLOWE ROAD)  
 over NORTH MUDDY CREEK  
 Between SR 1794 & SR 1797

DWN. BY: MAF	DATE: 4/2013	NO. 1	BY:	DATE:	NO. 3	BY:	DATE:	SHEET NO. S-1
CHKD. BY: HLW	DATE: 4/2013	2			4			TOTAL SHEETS 17
DES. EGR. OF RECORD: RTS	DATE: 4/2013							



**LONG CHORD LAYOUT**  
END BENTS ARE PARALLEL.

- ① 75°00'00" TO LONG CHORD
- ② 91°39'21" TAN TO CURVE, CL SURVEY -L-
- ③ 58°20'39" TAN TO CURVE, CL SURVEY -L-
- ④ 75°00'00" TAN TO CURVE, CL SURVEY -L-

PI Sta 12+12.85  
 $\Delta = 88^{\circ}56'33.7"$  (RT)  
 $D = 57^{\circ}17'44.8"$   
 $L = 155.23'$   
 $T = 98.17'$   
 $R = 100.00'$

**HORIZONTAL CURVE DATA -L-**



PROJECT NO. BD-5113J  
McDOWELL COUNTY  
 STATION: 11+71.09 -L-

SHEET 2 OF 3

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

Charlotte, North Carolina 704-351-0488  
 Tri-Cities, Tennessee 423-461-8400  
 Knoxville, Tennessee 865-546-1800  
 Asheville, North Carolina 828-253-2796  
 Middlesboro, Kentucky 606-248-6600  
 Spartanburg, South Carolina 864-574-4715

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STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

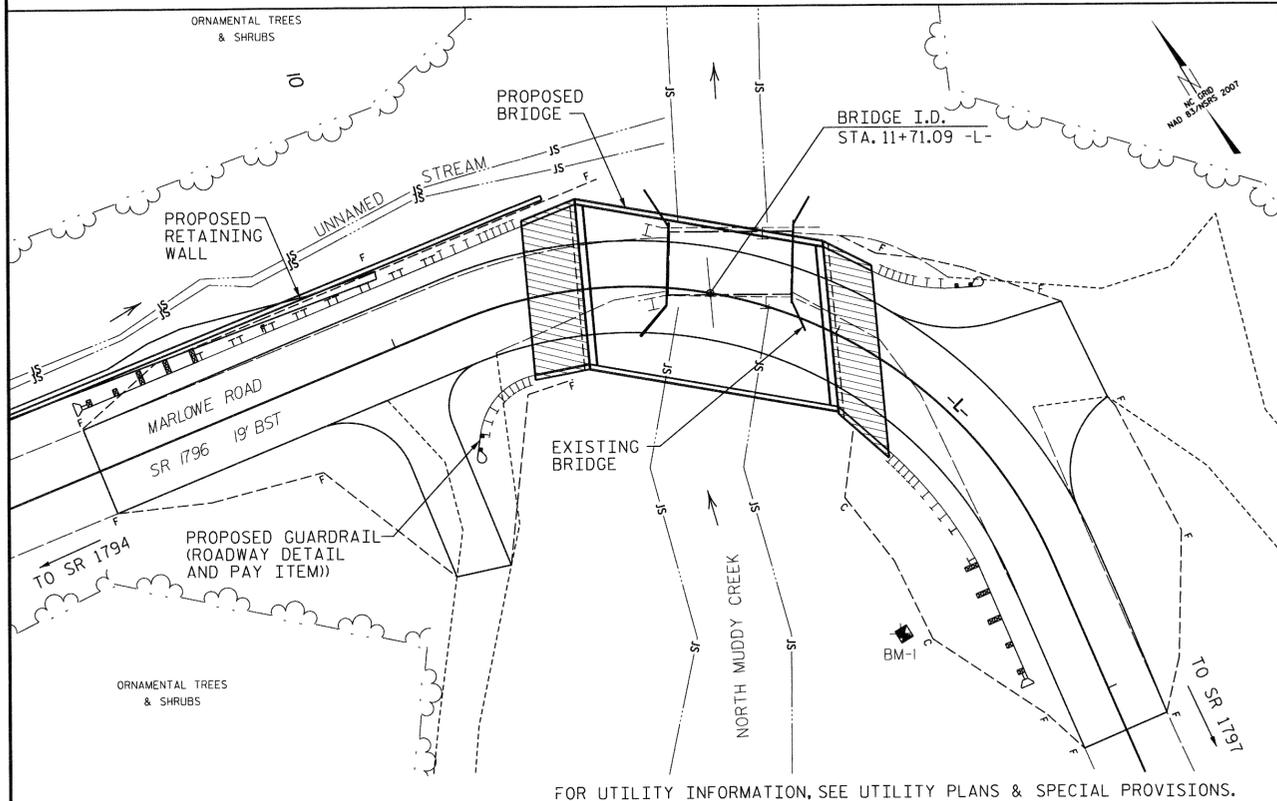
**LONG CHORD LAYOUT**  
 BRIDGE on SR 1796 (MARLOWE ROAD)  
 over NORTH MUDDY CREEK  
 Between SR 1794 & SR 1797

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

DWN. BY: MAF	DATE: 4/2013
CHKD. BY: HLW	DATE: 4/2013
DES. EGR. OF RECORD: RTS	DATE: 4/2013

S-2
TOTAL SHEETS
17

BM#1 N 699467 E 1121805 -BL-7+02.00 29' LT ELEV=1215.78' RR SPIKE IN POWER POLE



LOCATION SKETCH

FOR UTILITY INFORMATION, SEE UTILITY PLANS & 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 "STANDARD NOTES" SHEET SN.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THE EXISTING STRUCTURE, CONSISTING OF A SINGLE SPAN, 28-FOOT LONG TIMBER DECK ON STEEL I-BEAMS, 14 FEET WIDE, ON TIMBER VERTICAL END BENTS, 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 "HEC 18, EVALUATING SCOUR AT BRIDGES."

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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.

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

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.

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+71.09."

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 75 TONS PER PILE.

DRIVE PILES AT END BENT NO. 1 TO A REQUIRED DRIVING RESISTANCE OF 125 TONS PER PILE.

PILES AT END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 75 TONS PER PILE.

DRIVE PILES AT END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 125 TONS PER PILE.

STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENT NO. 2. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

FOR STEEL SHEET PILES, SEE SPECIAL PROVISIONS.

PZ27 SHEETING IS TO BE DRIVEN IN FRONT (STREAM SIDE) OF HP 12X53 AT EACH END BENT AS SHOWN IN THE STRUCTURE PLANS.

SHEET PILES SHOULD BE DRIVEN TO REFUSAL OR ELEVATION 1186 FT., WHICHEVER OCCURS FIRST.

PILES AT END BENT NO. 2 ARE ANTICIPATED TO VARY IN LENGTH. ESTIMATED PILE LENGTHS ARE 40 FT. LEFT AND 20 FT. RIGHT.

**HYDRAULIC DATA**

DESIGN DISCHARGE	= 1200 CFS
DESIGN FREQUENCY	= 2 YRS
DESIGN HW ELEVATION	= 1207.8 FT
BASE DISCHARGE	= 6087.7 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 1212.14 FT

**OVERTOPPING FLOOD DATA**

OVERTOPPING DISCHARGE	= 1800 CFS
OVERTOPPING FREQUENCY	= 2+ YRS
OVERTOPPING ELEVATION	= 1208.9 FT

DRAINAGE AREA = 21.3 SQ. MI.

**TOTAL BILL OF MATERIAL**

	REMOVAL OF EXISTING STRUCTURE	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	HP 12 X 53 STEEL PILES		STEEL PILE POINTS	18" STEEL SHEET PILES	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" x 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT	
						LBS.	NO.							NO.	LIN. FT.
	LUMP SUM	LUMP SUM	CU. YARDS	LUMP SUM				EACH	SQ. FT.	LIN. FT.	TONS	SQ. YARDS	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE				LUMP SUM						110.25			LUMP SUM	12	660.0
END BENT 1		LUMP SUM	24.5		2,904	7	315		1329		50	53			
END BENT 2		LUMP SUM	24.1		2,940	7	210	7	1413		40	42			
TOTAL	LUMP SUM	LUMP SUM	48.6	LUMP SUM	5,844	14	525	7	2742	110.25	90	95	LUMP SUM	12	660.0



PROJECT NO. BD-5113J

McDOWELL COUNTY

STATION: 11+71.09 -L-

SHEET 3 OF 3

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

Charlotte, North Carolina 704-387-0408  
Tri-Cities, Tennessee 423-467-8400  
Knoxville, Tennessee 865-546-9800  
Asheville, North Carolina 828-253-2796  
Middlesboro, Kentucky 606-248-6600  
Spartanburg, South Carolina 864-574-4775

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STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

**GENERAL DRAWING**

BRIDGE on SR 1796 (MARLOWE ROAD)  
over NORTH MUDDY CREEK  
Between SR 1794 & SR 1797

DWN. BY:	CHKD. BY:	DES. EGR. OF RECORD:	DATE:	REVISIONS			SHEET NO.
				NO.	BY:	DATE:	
MAF	HLW	RTS	4/2013	1			S-3
			4/2013	2			TOTAL SHEETS
			4/2013	3			17
				4			

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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	1.065	--	1.75	0.27	1.25	55'	EL	26.982	0.616	1.12	55'	EL	5.396	0.80	0.27	<b>1.07</b>	55'	EL	<b>26.982</b>		
	HL-93(0pr)	N/A	--	1.452	--	1.35	0.27	1.61	55'	EL	26.982	0.616	1.45	55'	EL	5.396	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.335	48.043	1.75	0.27	1.56	55'	EL	26.982	0.616	1.34	55'	EL	5.396	0.80	0.27	<b>1.33</b>	55'	EL	<b>26.982</b>		
	HS-20(0pr)	36.000	--	1.734	62.425	1.35	0.27	2.02	55'	EL	26.982	0.616	1.73	55'	EL	5.396	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.802	37.83	1.4	0.27	4.09	55'	EL	26.982	0.616	3.81	55'	EL	5.396	0.80	0.27	2.80	55'	EL	26.982	
		SNGARBS2	20.000	--	2.175	43.506	1.4	0.27	3.18	55'	EL	26.982	0.616	2.76	55'	EL	5.396	0.80	0.27	2.18	55'	EL	26.982	
		SNAGRIS2	22.000	--	2.099	46.173	1.4	0.27	3.07	55'	EL	26.982	0.616	2.58	55'	EL	5.396	0.80	0.27	2.10	55'	EL	26.982	
		SNCOTTS3	27.250	--	1.397	38.065	1.4	0.27	2.04	55'	EL	26.982	0.616	1.91	55'	EL	5.396	0.80	0.27	1.40	55'	EL	26.982	
		SNAGGRS4	34.925	--	1.2	41.922	1.4	0.27	1.75	55'	EL	26.982	0.616	1.62	55'	EL	5.396	0.80	0.27	1.20	55'	EL	26.982	
		SNS5A	35.550	--	1.172	41.648	1.4	0.27	1.71	55'	EL	26.982	0.616	1.66	55'	EL	5.396	0.80	0.27	1.17	55'	EL	26.982	
		SNS6A	39.950	--	1.089	43.514	1.4	0.27	1.59	55'	EL	26.982	0.616	1.53	55'	EL	5.396	0.80	0.27	1.09	55'	EL	26.982	
	TTST	TNAGRIT3	33.000	--	1.333	43.973	1.4	0.27	1.95	55'	EL	26.982	0.616	1.81	55'	EL	5.396	0.80	0.27	1.33	55'	EL	26.982	
		TNT4A	33.075	--	1.342	44.4	1.4	0.27	1.96	55'	EL	26.982	0.616	1.75	55'	EL	5.396	0.80	0.27	1.34	55'	EL	26.982	
		TNT6A	41.600	--	1.112	46.252	1.4	0.27	1.62	55'	EL	26.982	0.616	1.67	55'	EL	5.396	0.80	0.27	1.11	55'	EL	26.982	
		TNT7A	42.000	--	1.125	47.255	1.4	0.27	1.64	55'	EL	26.982	0.616	1.56	55'	EL	5.396	0.80	0.27	1.13	55'	EL	26.982	
		TNT7B	42.000	--	1.174	49.318	1.4	0.27	1.72	55'	EL	26.982	0.616	1.47	55'	EL	5.396	0.80	0.27	1.17	55'	EL	26.982	
		TNAGRIT4	43.000	--	1.111	47.786	1.4	0.27	1.62	55'	EL	26.982	0.616	1.42	55'	EL	5.396	0.80	0.27	1.11	55'	EL	26.982	
		TNAGT5A	45.000	--	1.041	46.851	1.4	0.27	1.52	55'	EL	26.982	0.616	1.44	55'	EL	5.396	0.80	0.27	1.04	55'	EL	26.982	
TNAGT5B	45.000	3	1.023	46.02	1.4	0.27	1.49	55'	EL	26.982	0.616	1.35	55'	EL	5.396	0.80	0.27	<b>1.02</b>	55'	EL	<b>26.982</b>			

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ <sub>DC</sub>	γ <sub>DW</sub>
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

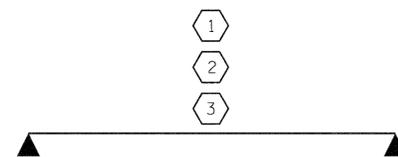
NOTES:

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

COMMENTS:

- 1.
- 2.
- 3.
- 4.

#	CONTROLLING LOAD RATING
1	DESIGN LOAD RATING (HL-93)
2	DESIGN LOAD RATING (HS-20)
3	LEGAL LOAD RATING **
** SEE CHART FOR VEHICLE TYPE	
GIRDER LOCATION	
I - INTERIOR GIRDER EL - EXTERIOR LEFT GIRDER ER - EXTERIOR RIGHT GIRDER	



LRFR SUMMARY  
FOR SINGLE SPAN

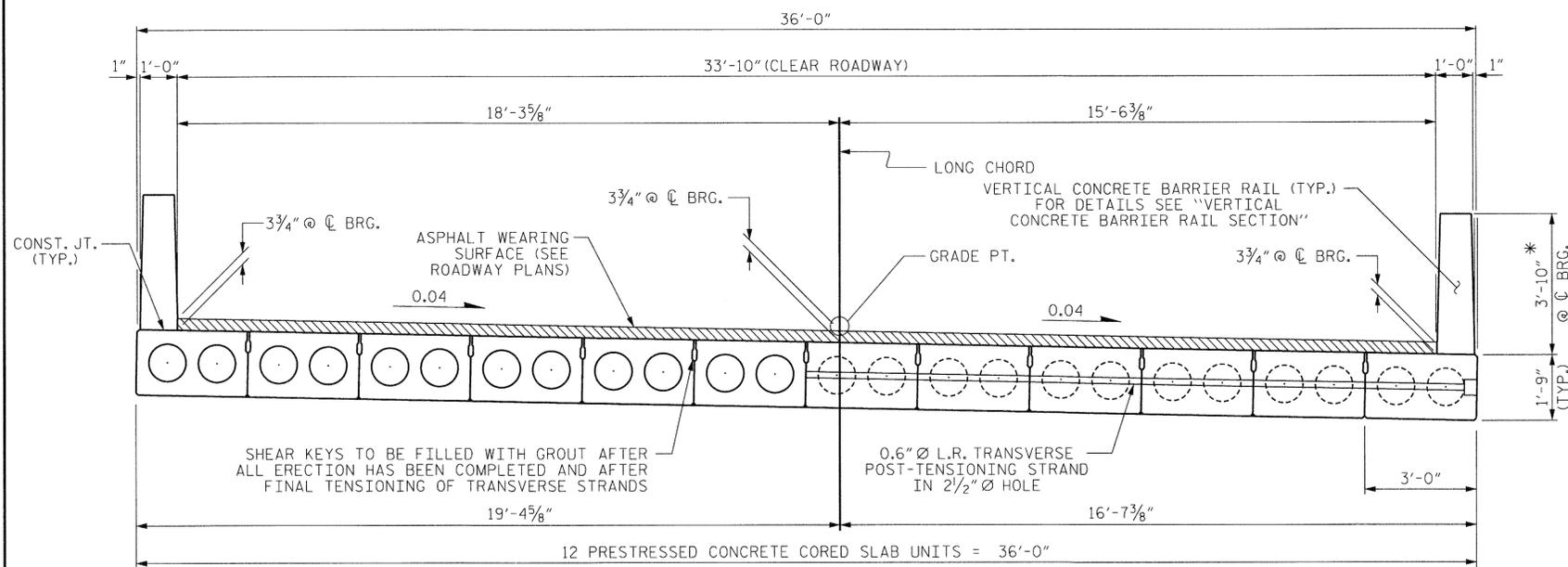


PROJECT NO. BD-5113J  
McDOWELL COUNTY  
STATION: 11+71.09 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO.
STANDARD LRFR SUMMARY FOR 55' CORED SLAB UNIT 75° SKEW (NON-INTERSTATE TRAFFIC)						S-4
REVISIONS						TOTAL SHEETS
NO.	BY:	DATE:	NO.	BY:	DATE:	17
1			3			
2			4			

ASSEMBLED BY : MAF	DATE : 4/13
CHECKED BY : HLW	DATE : 4/13
DRAWN BY : CVC 6/10	
CHECKED BY : DNS 6/10	

\*\*\*\*\*SYSTEMTIME\*\*\*\*\*  
\*\*\*\*\*DGN\*\*\*\*\*  
\*\*\*\*\*USERNAME\*\*\*\*\*

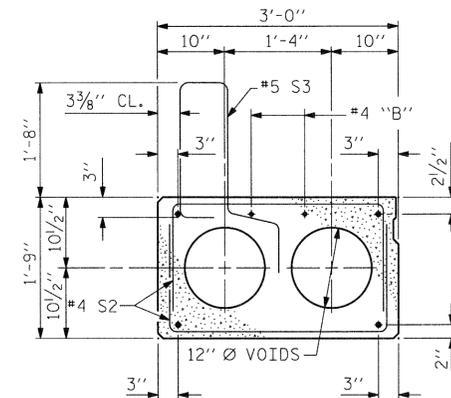


HALF SECTION  
AT INTERMEDIATE DIAPHRAGMS

HALF SECTION  
THROUGH VOIDS

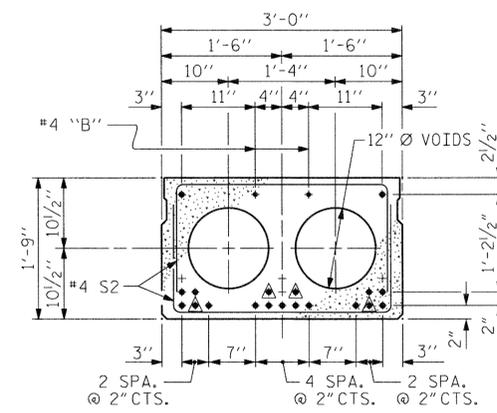
**TYPICAL SECTION**

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



**EXT. SLAB SECTION**

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

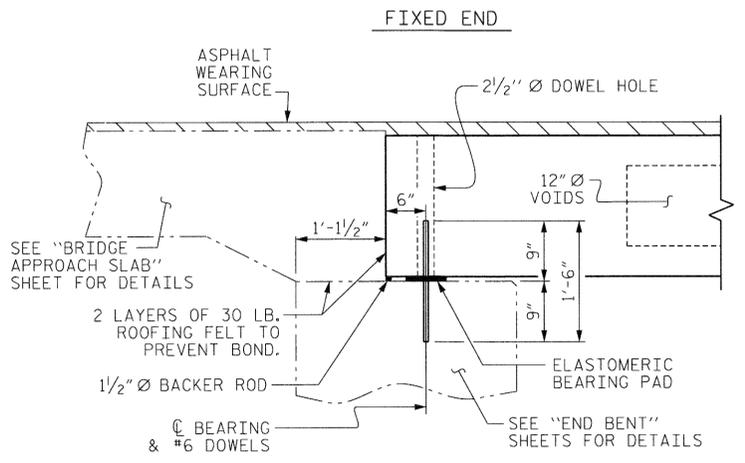


INTERIOR SLAB SECTION  
(55' UNIT)  
(19 STRANDS REQUIRED)

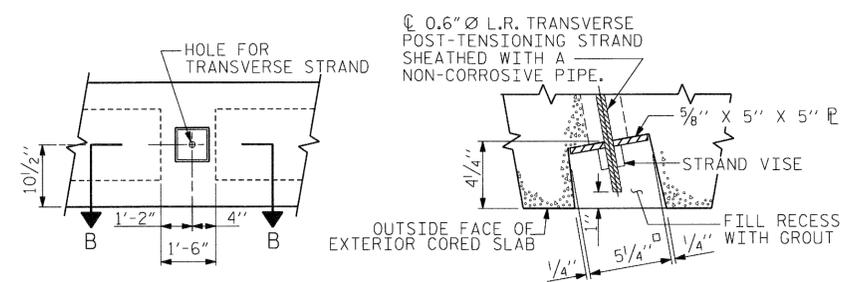
**0.6" Ø LOW RELAXATION STRAND LAYOUT**

▲ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

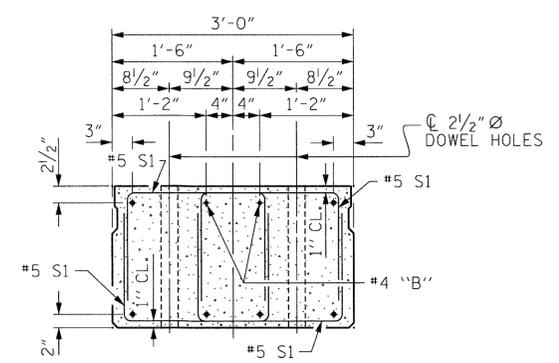
**DEBONDING LEGEND**



**SECTION AT END BENT**

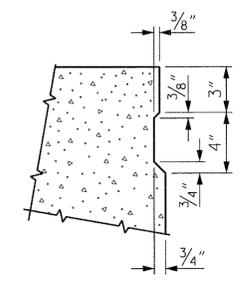


**ELEVATION VIEW**  
**SECTION B-B**  
**GROUTED RECESS AT END OF POST-TENSIONED STRAND OF CORED SLABS**



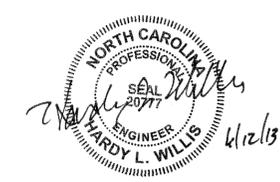
**END ELEVATION**

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



**SHEAR KEY DETAIL**

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



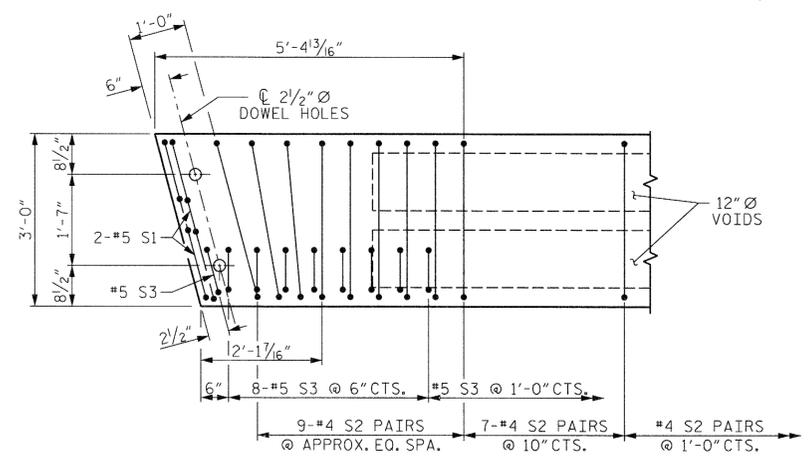
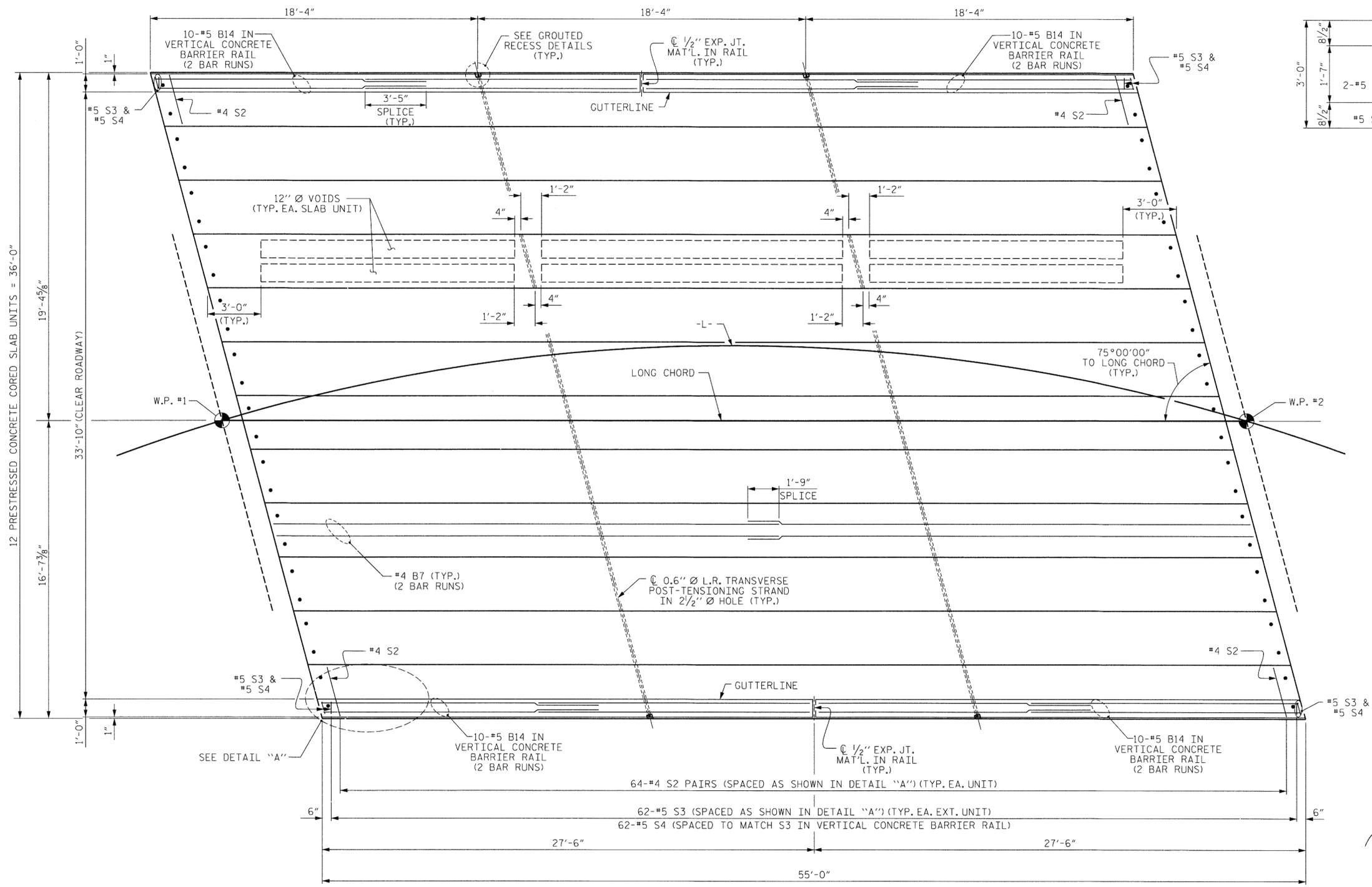
PROJECT NO. BD-5113J  
McDOWELL COUNTY  
STATION: 11+71.09 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO.
STANDARD 3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT 75° SKEW						S-5
REVISIONS						TOTAL SHEETS
NO.	BY:	DATE:	NO.	BY:	DATE:	17
1			3			
2			4			

ASSEMBLED BY :	MAF	DATE :	4/13
CHECKED BY :	HLW	DATE :	4/13
DRAWN BY :	DCE 5/09	REV. 12/11	MAA/AAC
CHECKED BY :	BCH 6/09		

\*\*\*\*\*SYTIME\*\*\*\*\*  
\*\*\*\*\*DGN\*\*\*\*\*  
\*\*\*\*\*



DETAIL "A"  
 NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

PLAN OF UNIT

PROJECT NO. BD-5113J  
McDOWELL COUNTY  
 STATION: 11+17.09 -L-



SHEET 2 OF 3  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 PLAN OF 55' UNIT  
 33'-10" CLEAR ROADWAY  
 75° SKEW

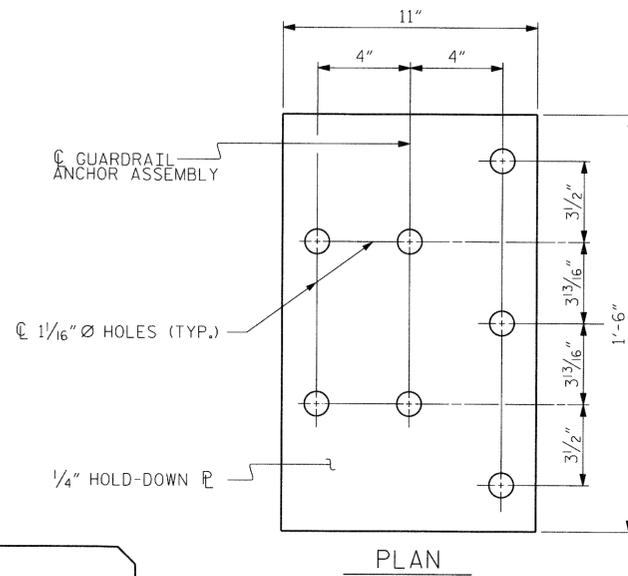
ASSEMBLED BY :	MAF	DATE :	4/13
CHECKED BY :	HLW	DATE :	4/13
DRAWN BY :	DCE 5/09	REV.	12/5/11 MAA/AAC
CHECKED BY :	BCH 6/09		

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

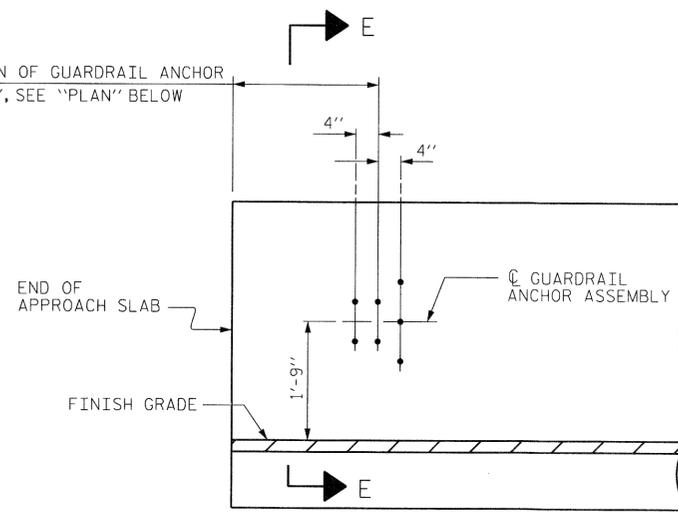
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-6
1			3			TOTAL SHEETS
2			4			17

STD. NO. 21" PCS\_36\_75S\_55L

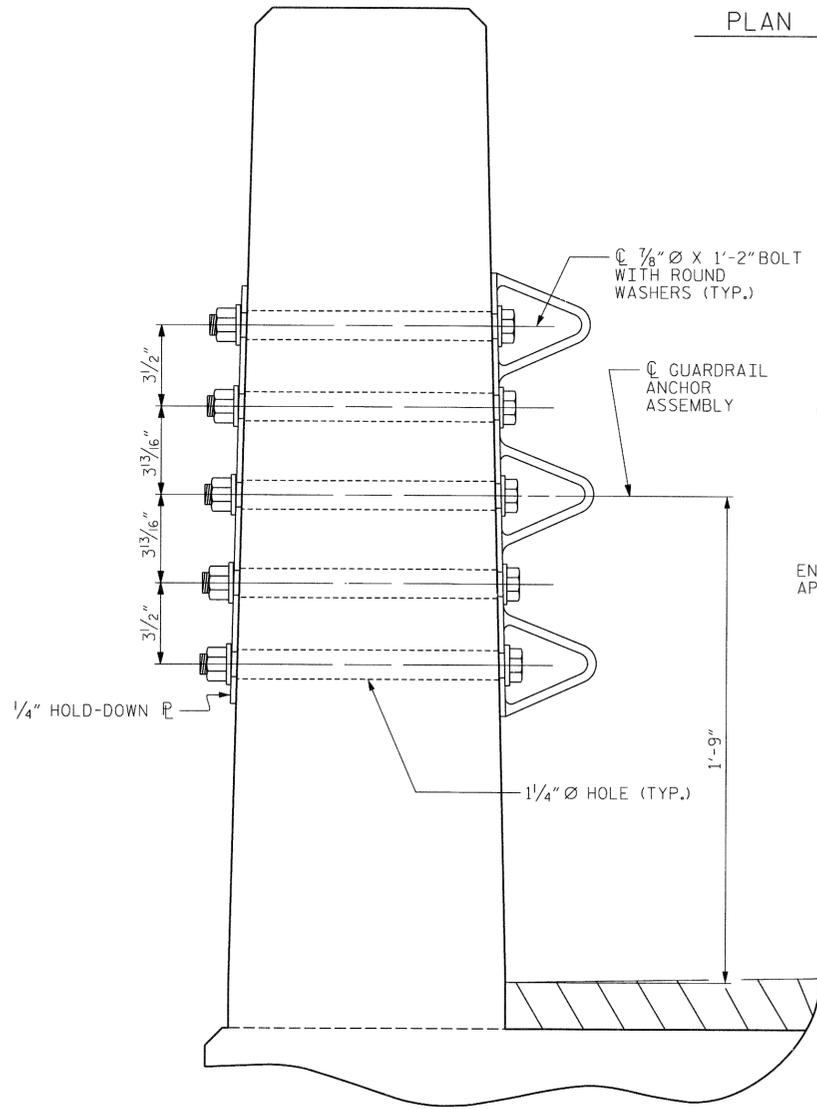




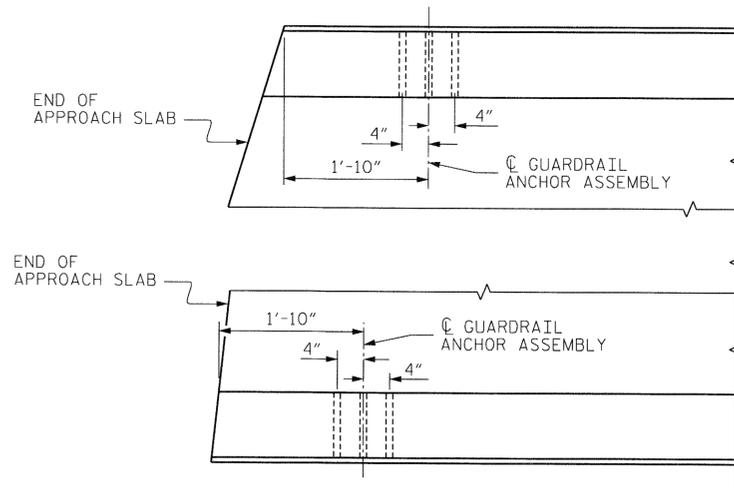
FOR LOCATION OF GUARDRAIL ANCHOR ASSEMBLY, SEE "PLAN" BELOW



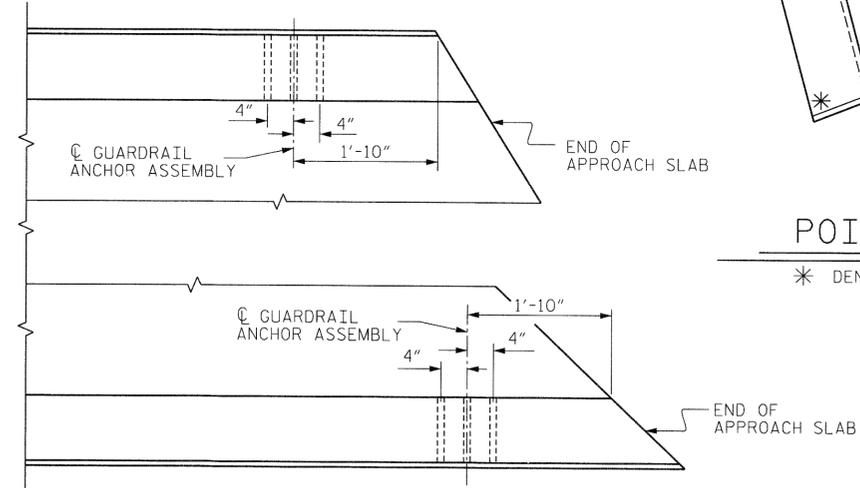
ELEVATION



SECTION E-E  
GUARDRAIL ANCHOR ASSEMBLY DETAILS



APPROACH SLAB @ END BENT #1



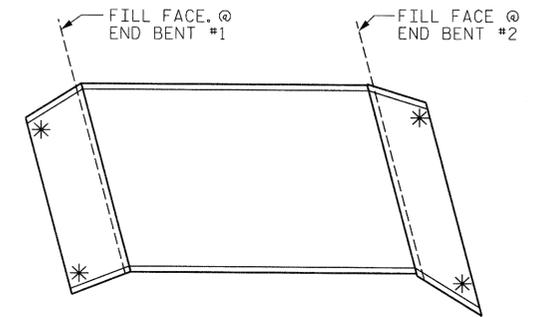
APPROACH SLAB @ END BENT #2

PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

NOTES

- THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 1/8" Ø BOLTS WITH NUTS AND WASHERS.
- THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.
- BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 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.



SKETCH SHOWING POINTS OF ATTACHMENT

\* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. BD-5113J  
McDOWELL COUNTY  
 STATION: 11+71.09 -L-



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

ASSEMBLED BY :	MAF	DATE :	4/13
CHECKED BY :	HLW	DATE :	4/13
DRAWN BY :	MAA 5/10	ADDED :	5/6/10
CHECKED BY :	GM 5/10	REV. :	10/1/11 MAA/GM
		REV. :	12/5/11 MAA/GM

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

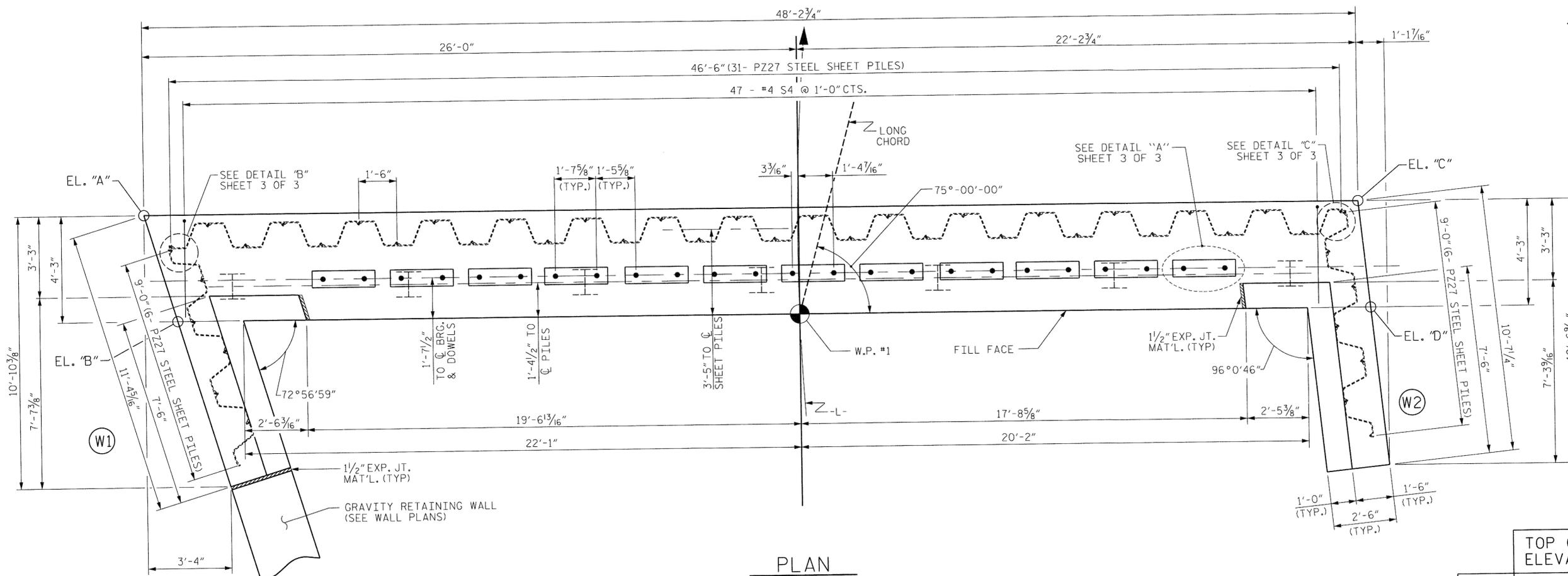
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			17

NOTES

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

FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

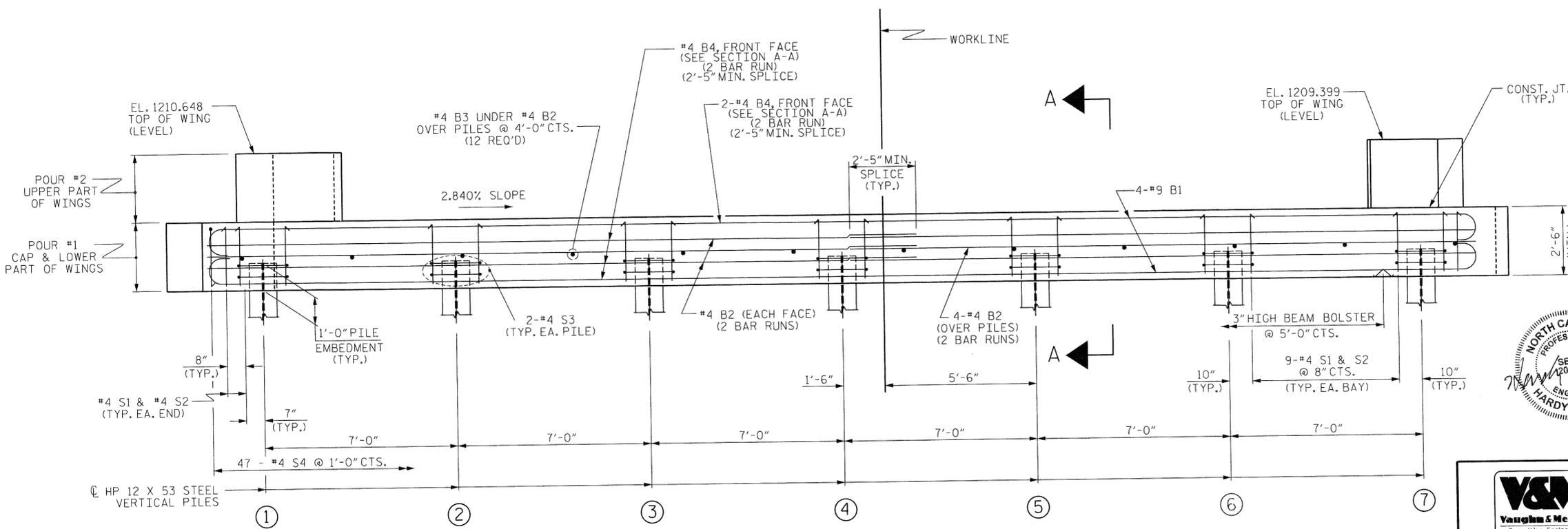
FOR WING DETAILS, SEE SHEET 2 OF 3.



PLAN

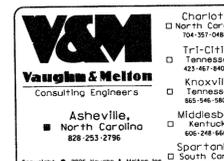
TOP OF PILE ELEVATIONS	
①	1206.609
②	1206.410
③	1206.211
④	1206.025
⑤	1205.826
⑥	1205.627
⑦	1205.429

	TOP OF CAP ELEVATIONS	BOTTOM OF CAP ELEVATIONS
Ⓐ	1208.182	1205.682
Ⓑ	1208.212	1205.712
Ⓒ	1206.812	1204.312
Ⓓ	1206.867	1204.367



ELEVATION

WINGS NOT SHOWN FOR CLARITY. FOR SECTION A-A, SEE SHEET 3 OF 3. SHEET PILES NOT SHOWN FOR CLARITY.



PROJECT NO. BD-5113J

McDOWELL COUNTY

STATION: 11+71.09 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
END BENT No. 1

REVISIONS

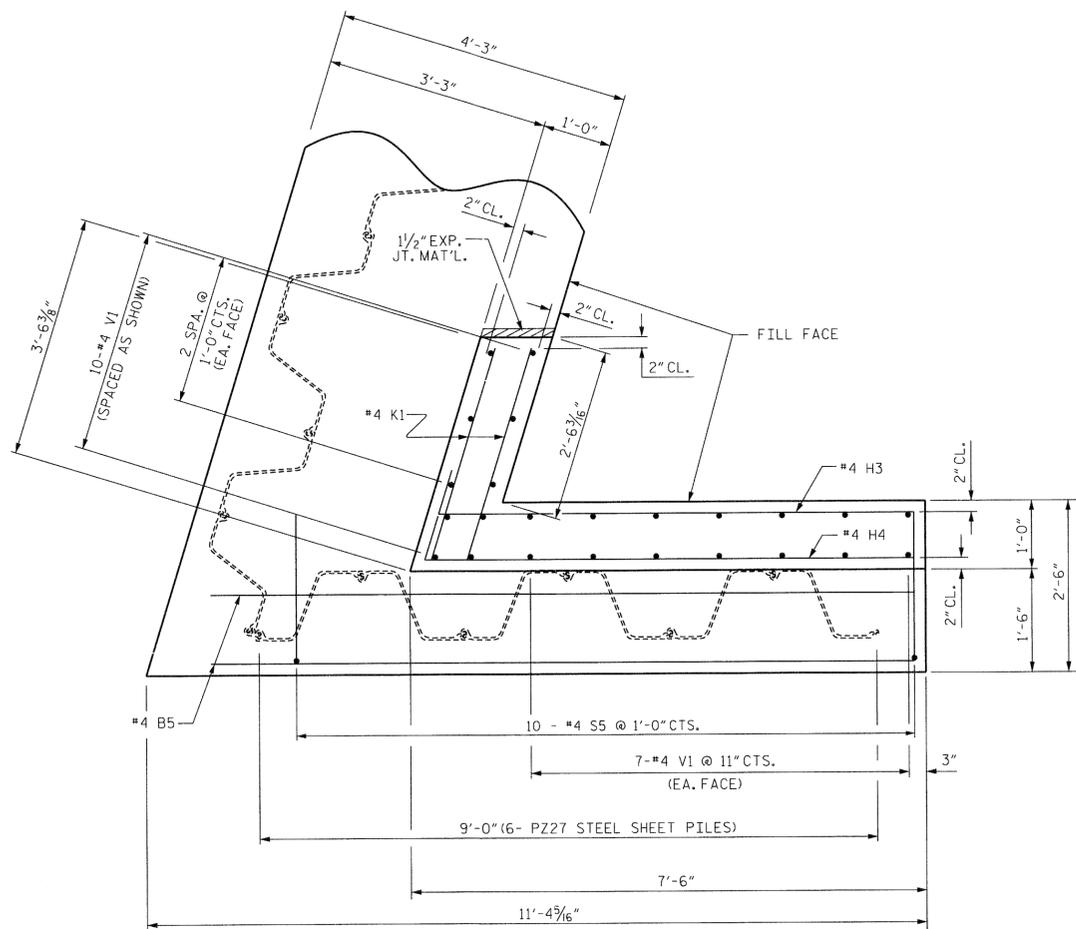
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.

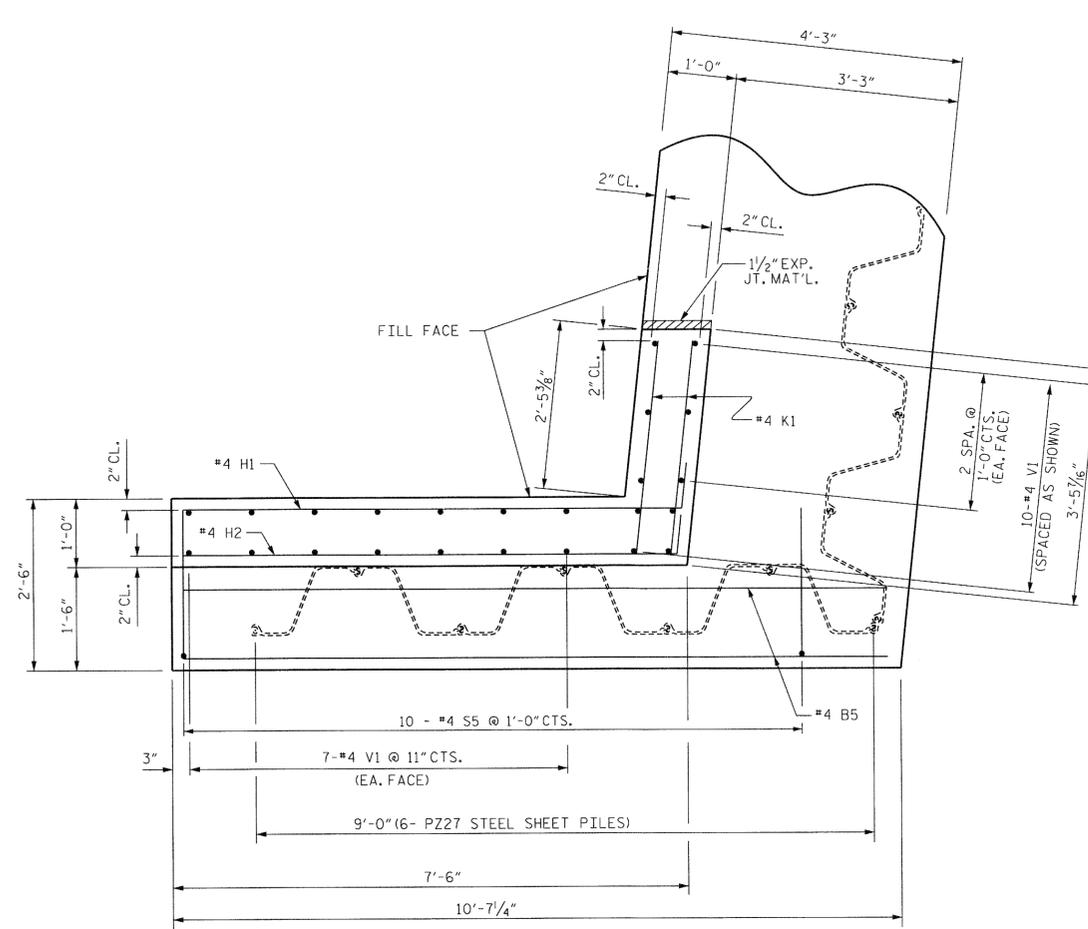
S-9  
TOTAL SHEETS 17

ASSEMBLED BY : MAF DATE : 4/13  
CHECKED BY : HLW DATE : 4/13  
DRAWN BY : WJH 12/11  
CHECKED BY : AAC 12/11

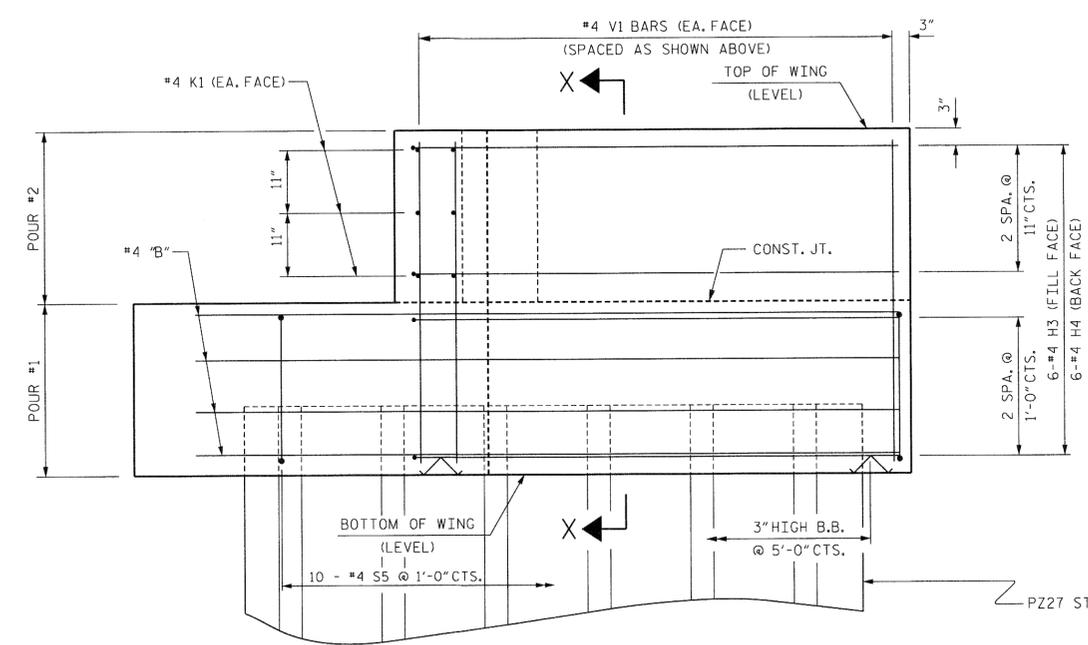
DWN. BY: MAF DATE: 4/2013  
CHKD. BY: HLW DATE: 4/2013  
DES. EGR. OF RECORD: RTS DATE: 4/2013



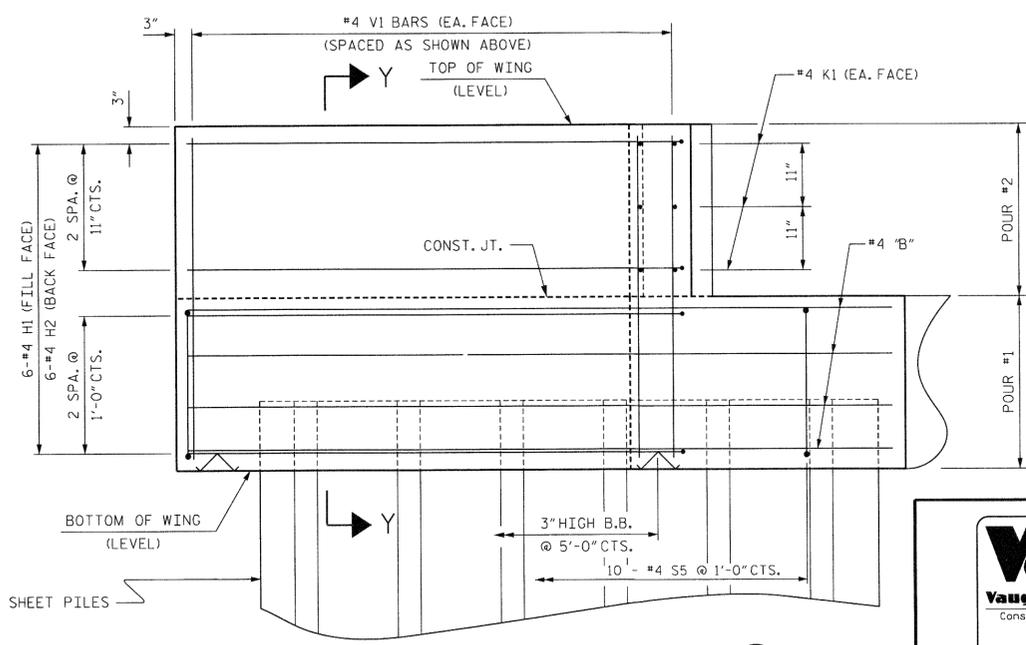
PLAN OF WING (W1)



PLAN OF WING (W2)

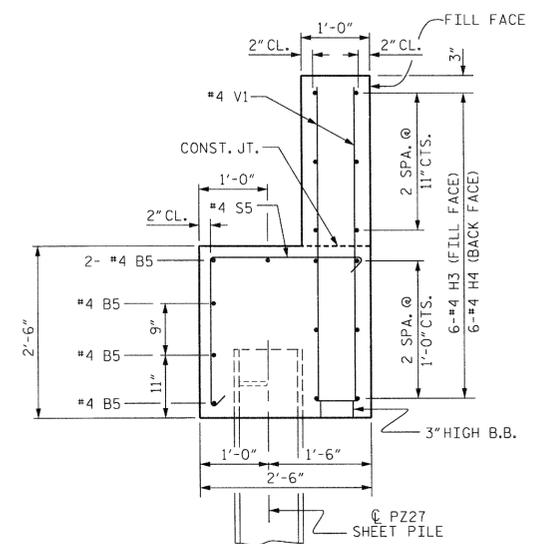


ELEVATION OF WING (W1)

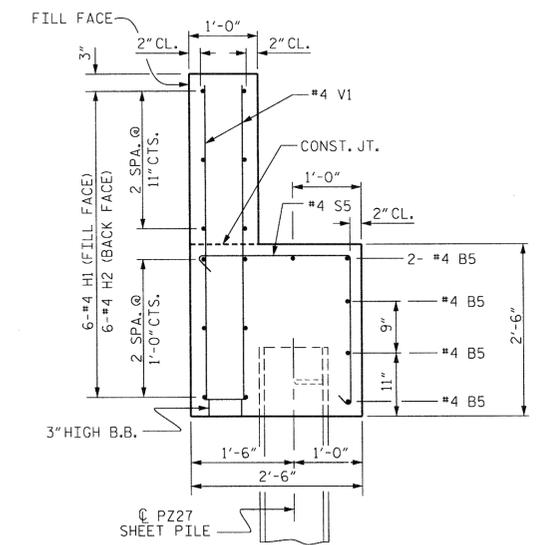


ELEVATION OF WING (W2)

WING DETAILS



SECTION X-X



SECTION Y-Y



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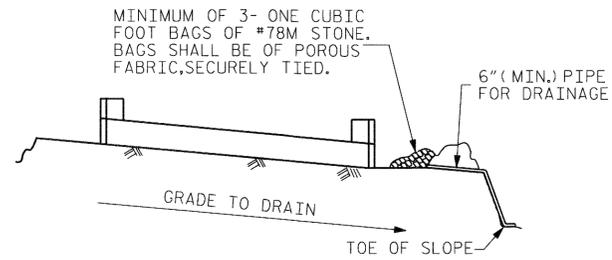
PROJECT NO. BD-5113J  
McDOWELL COUNTY  
 STATION: 11+71.09 -L-  
 SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT NO. 1

ASSEMBLED BY : MAF	DATE : 4/13
CHECKED BY : HLW	DATE : 4/13
DRAWN BY : DGE 03/10	
CHECKED BY : MKT 03/10	

REVISIONS						SHEET NO. S-10
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 17
2			4			

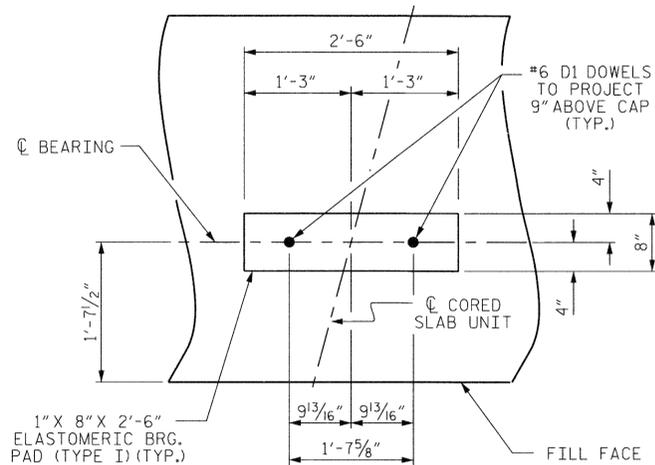


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

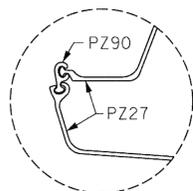
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

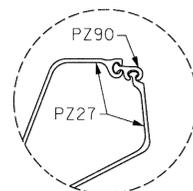
### TEMPORARY DRAINAGE AT END BENT



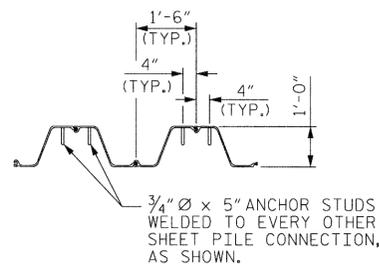
DETAIL "A"



DETAIL "B"

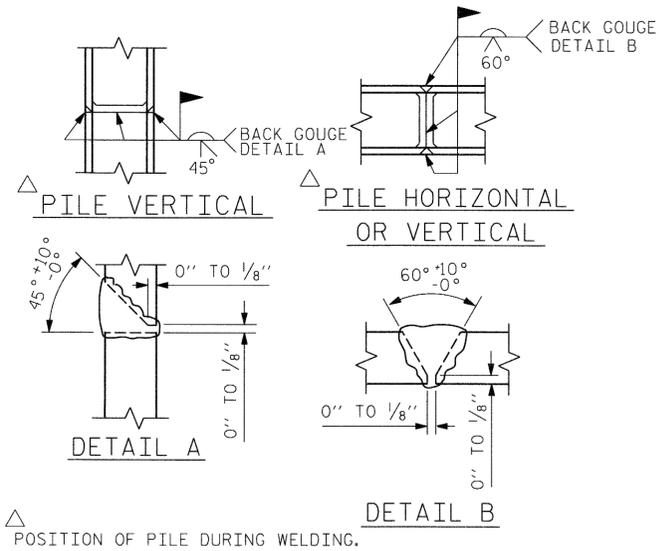


DETAIL "C"

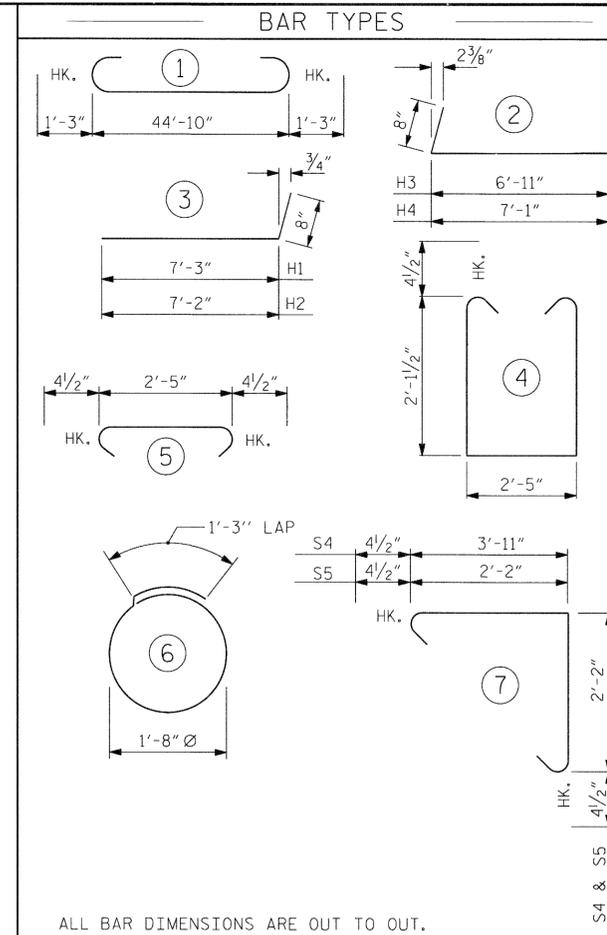


ANCHOR STUD DETAIL

### SHEET PILE CONNECTION DETAILS

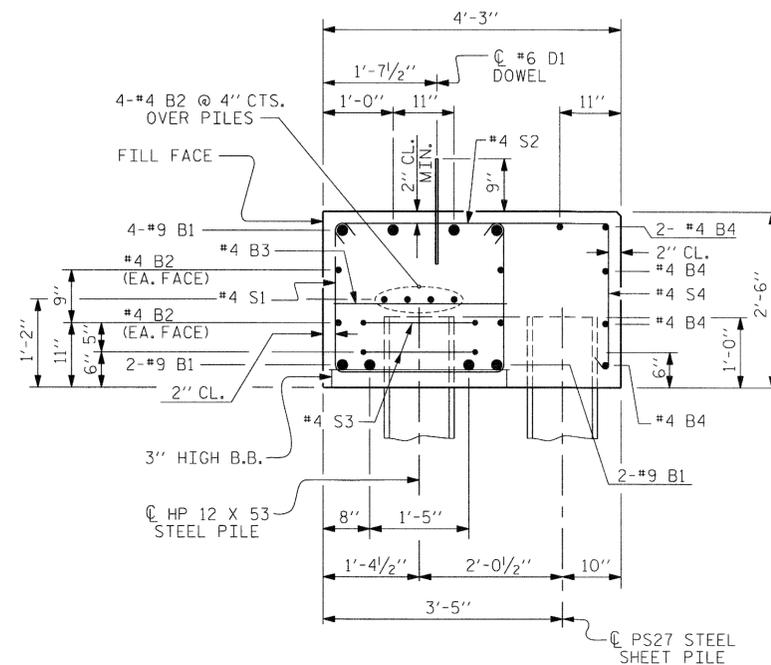


### PILE SPLICE DETAILS



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL FOR END BENT NO. 1					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9		47'-4"	1287
B2	16	#4	STR	23'-10"	255
B3	12	#4	STR	2'-5"	19
B4	10	#4	STR	25'-2"	168
B5	10	#4	STR	10'-3"	68
D1	24	#6	STR	1'-6"	54
H1	6	#4		7'-11"	32
H2	6	#4		7'-10"	31
H3	6	#4		7'-7"	30
H4	6	#4		7'-9"	31
K1	12	#4	STR	3'-1"	25
S1	58	#4		7'-5"	287
S2	58	#4		3'-2"	123
S3	14	#4		6'-6"	61
S4	47	#4		6'-10"	215
S5	20	#4		5'-1"	68
V1	48	#4	STR	4'-8"	150
REINFORCING STEEL (FOR END BENT NO. 1)					2904 LBS.
END BENT NO. 1					
CLASS A CONCRETE BREAKDOWN (FOR END BENT NO. 1)					
POUR #1	CAP & LOWER PART OF WINGS				22.7 C.Y.
POUR #2	UPPER PART OF WINGS				1.8 C.Y.
TOTAL CLASS A CONCRETE					24.5 C.Y.
HP 12 X 53 STEEL PILES					
NO: 7		LIN. FT. = 315			
18" STEEL SHEET PILES					
NO. PZ27 : 43					
NO. PZ90 : 2					
TOTAL : 45		SQ. FT. = 1329			



### SECTION A-A

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



PROJECT NO. BD-5113J  
McDOWELL COUNTY  
 STATION: 11+71.09 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT No. 1  
 DETAILS

#### REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-11
2			4			TOTAL SHEETS 17

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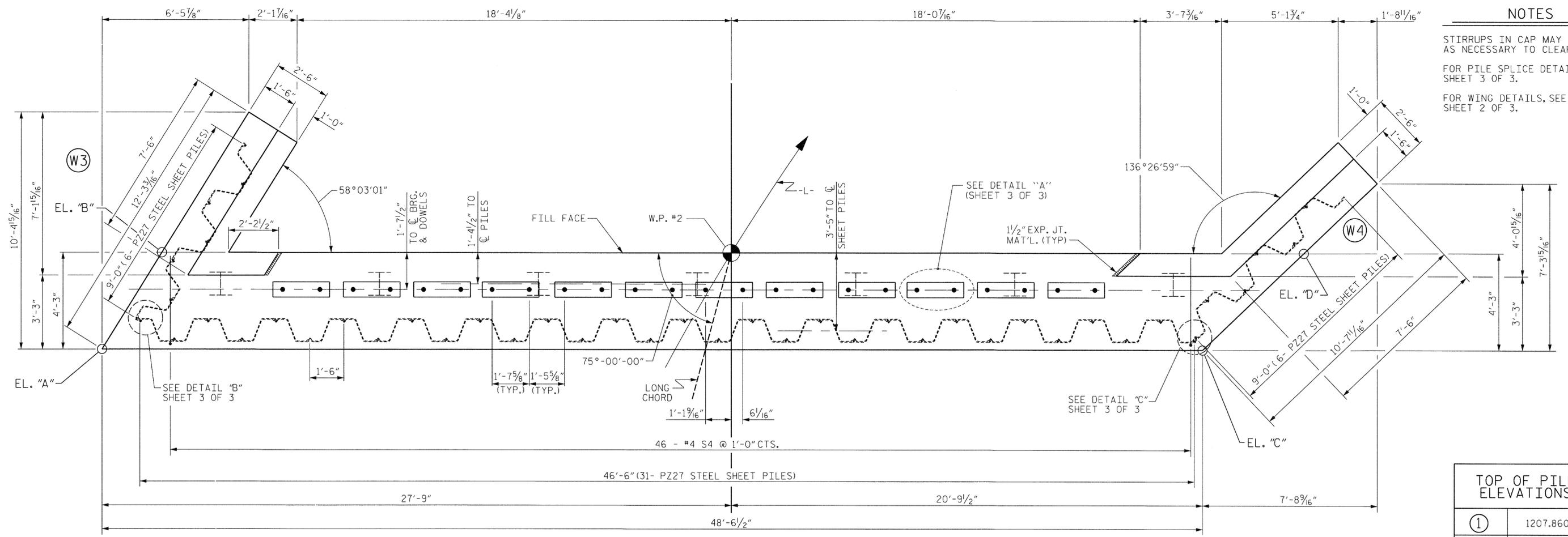
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 CHKD. BY: HLW DATE: 4/2013  
 DES. EGR. OF RECORD: RTS DATE: 4/2013

ASSEMBLED BY : MAF	DATE : 4/13
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DRAWN BY : DGE 03/10	
CHECKED BY : MKT 03/10	

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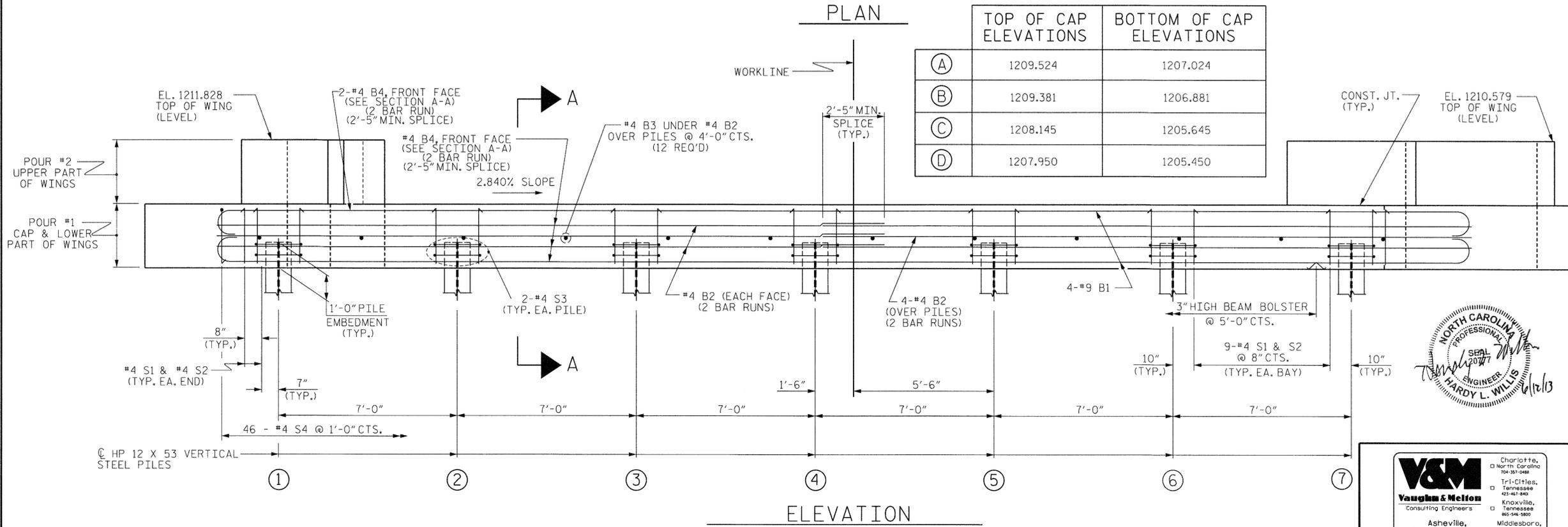
NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.  
 FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.  
 FOR WING DETAILS, SEE SHEET 2 OF 3.



TOP OF PILE ELEVATIONS	
①	1207.860
②	1207.661
③	1207.462
④	1207.263
⑤	1207.064
⑥	1206.866
⑦	1206.667

	TOP OF CAP ELEVATIONS	BOTTOM OF CAP ELEVATIONS
Ⓐ	1209.524	1207.024
Ⓑ	1209.381	1206.881
Ⓒ	1208.145	1205.645
Ⓓ	1207.950	1205.450



ELEVATION

WINGS NOT SHOWN FOR CLARITY. FOR SECTION A-A, SEE SHEET 3 OF 3. SHEET PILES NOT SHOWN FOR CLARITY.

PROJECT NO. BD-5113J  
MCDOWELL COUNTY  
 STATION: 11+71.09 -L-  
 SHEET 1 OF 3



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT No. 2

ASSEMBLED BY : MAF DATE : 4/13  
 CHECKED BY : HLW DATE : 4/13  
 DRAWN BY : WJH 12/11  
 CHECKED BY : AAC 12/11

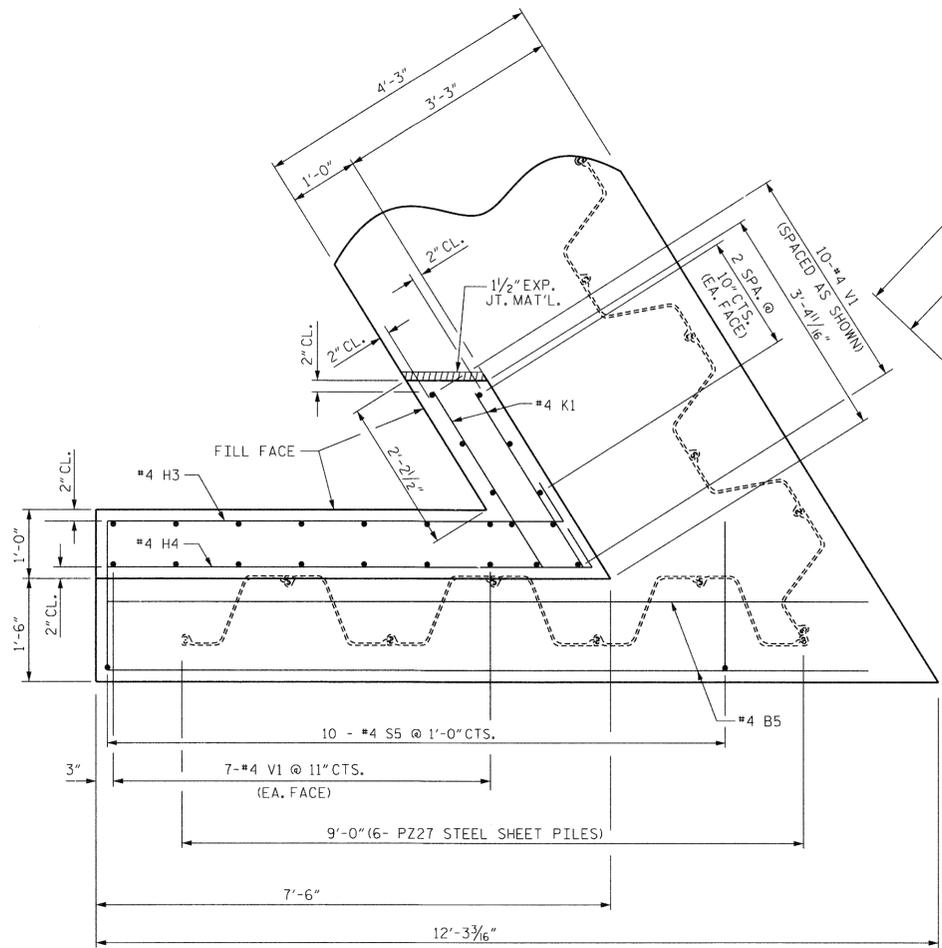
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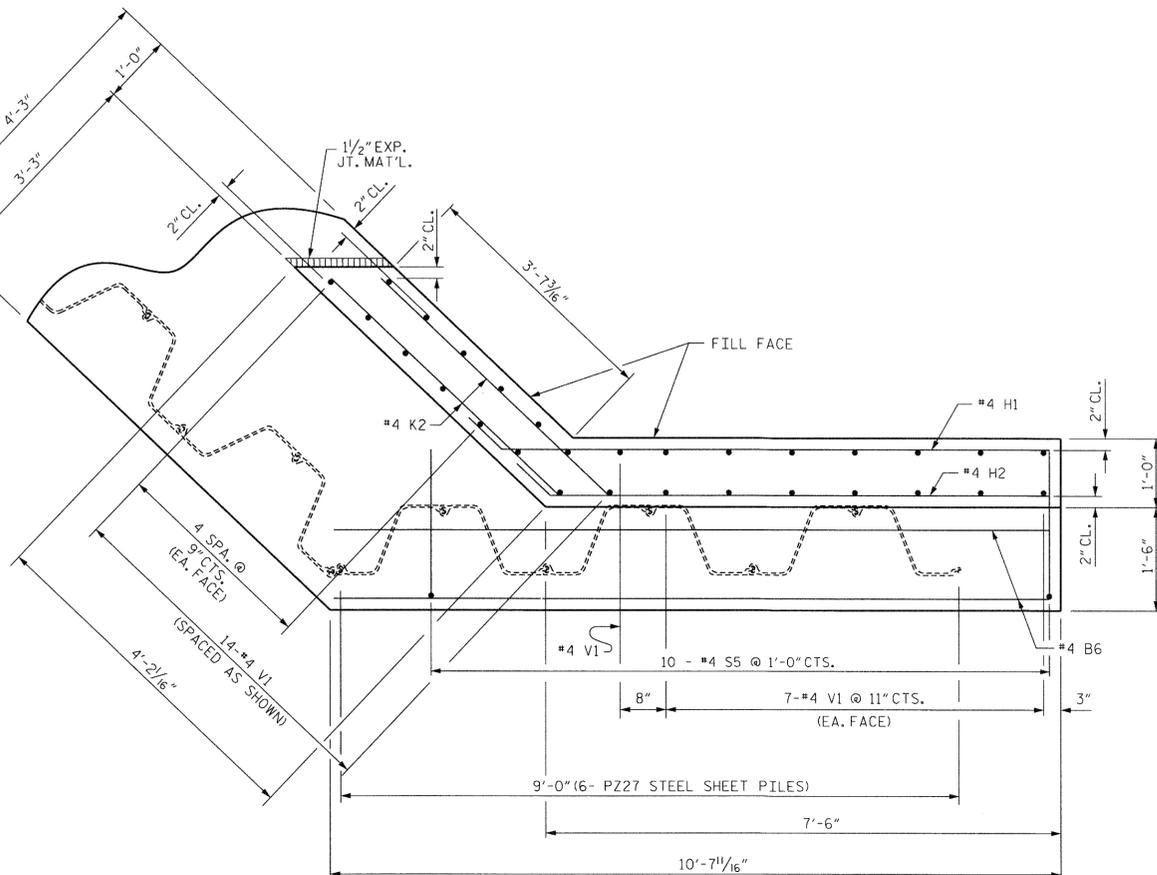
DWN. BY: MAF DATE: 4/2013  
 CHKD. BY: HLW DATE: 4/2013  
 DES. EGR. OF RECORD: RTS DATE: 4/2013

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			17
2			4			

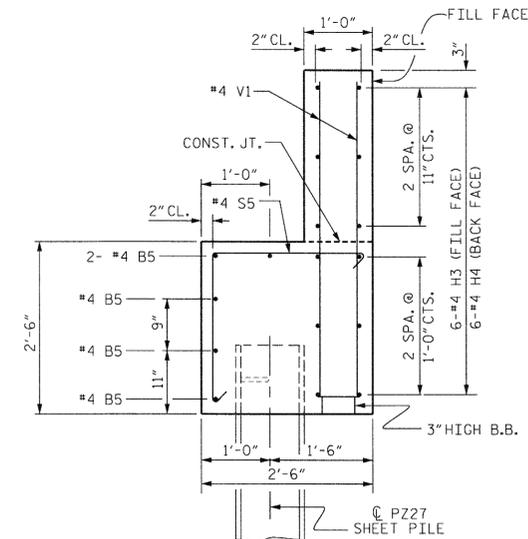
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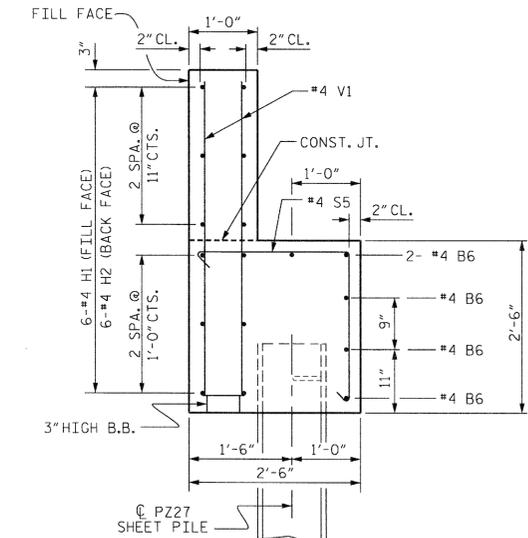
PLAN OF WING (W3)



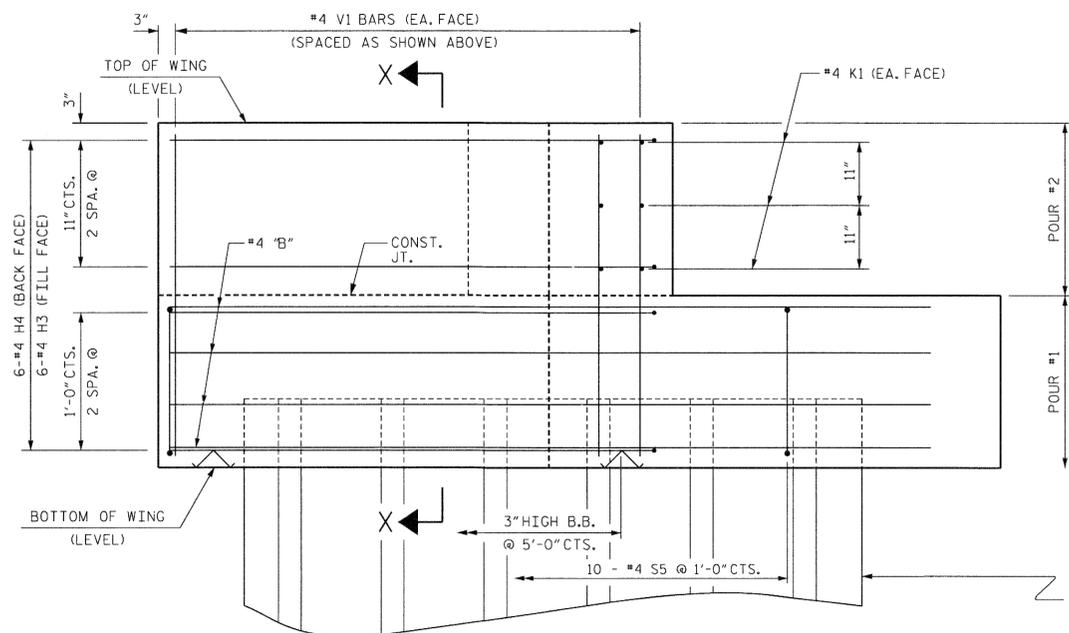
PLAN OF WING (W4)



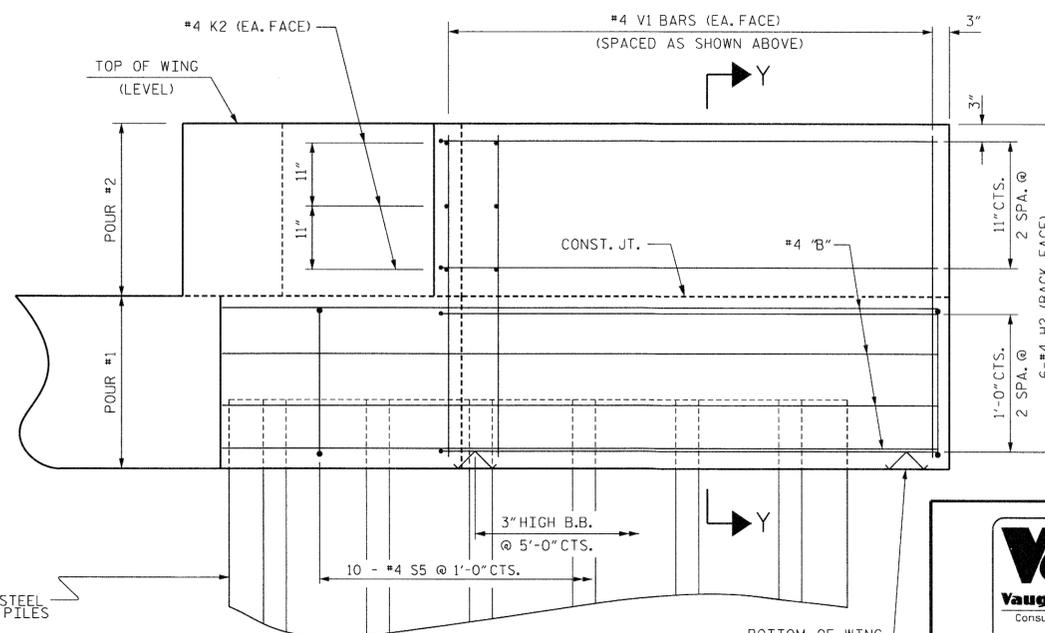
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W3)



ELEVATION OF WING (W4)

WING DETAILS



PROJECT NO. BD-5113J  
McDOWELL COUNTY  
 STATION: 11+71.09 -L-  
 SHEET 2 OF 3

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STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**SUBSTRUCTURE**  
**END BENT NO. 2**

ASSEMBLED BY : MAF	DATE : 4/13
CHECKED BY : HLW	DATE : 4/13
DRAWN BY : DGE 03/10	
CHECKED BY : MKT 03/10	

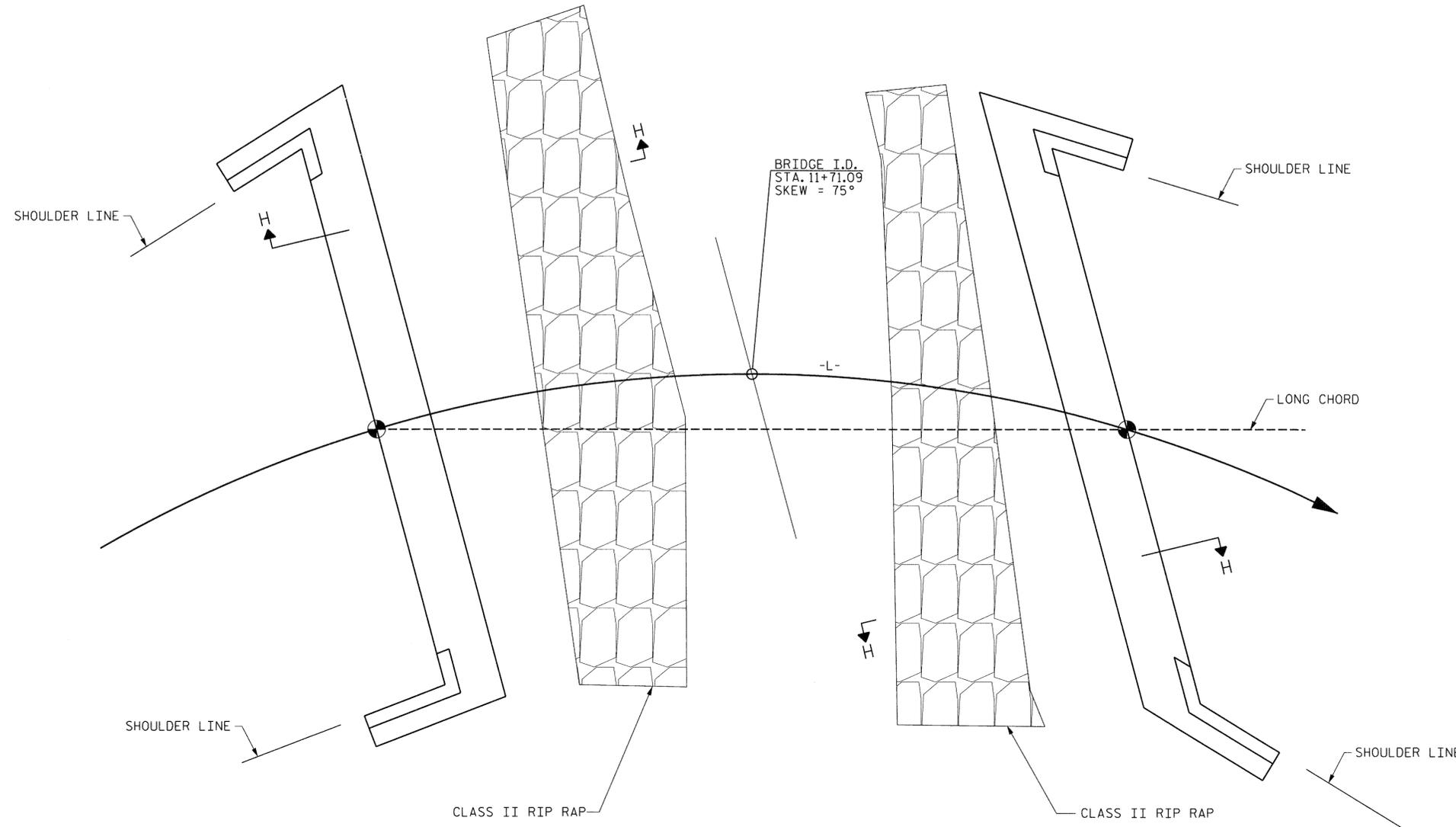
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CHKD. BY: HLW	DATE: 4/2013
DES. EGR. OF RECORD: RTS	DATE: 4/2013

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13	
1			3			TOTAL SHEETS	
2			4			17	

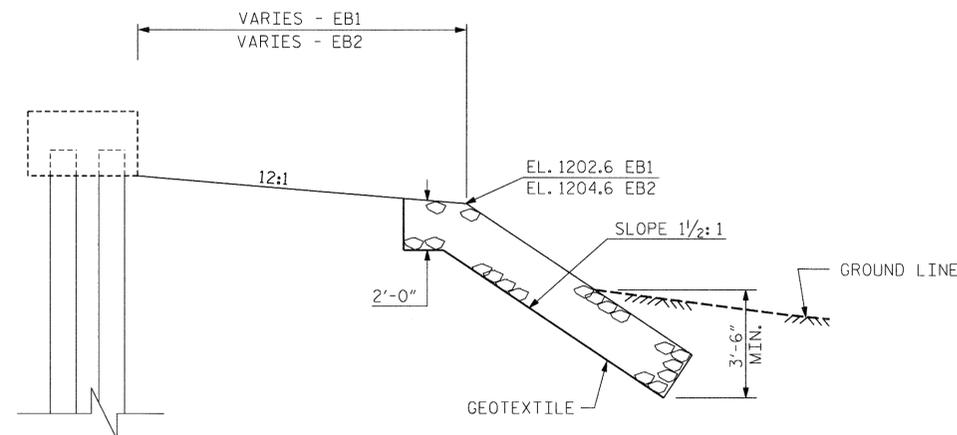
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 \*\*\*\*\*USER\*\*\*\*\*



NOTES :  
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.



ESTIMATED QUANTITIES		
BRIDGE @ STA. 11+71.09	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	50	53
END BENT 2	40	42



SECTION H-H



PROJECT NO. BD-5113J  
McDOWELL COUNTY  
STATION: 11+71.09 -L-

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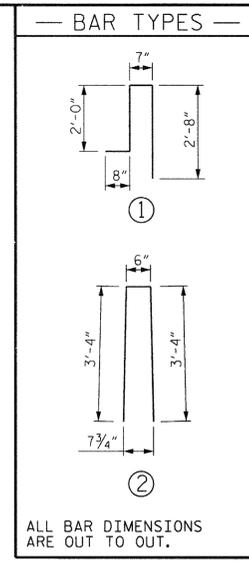
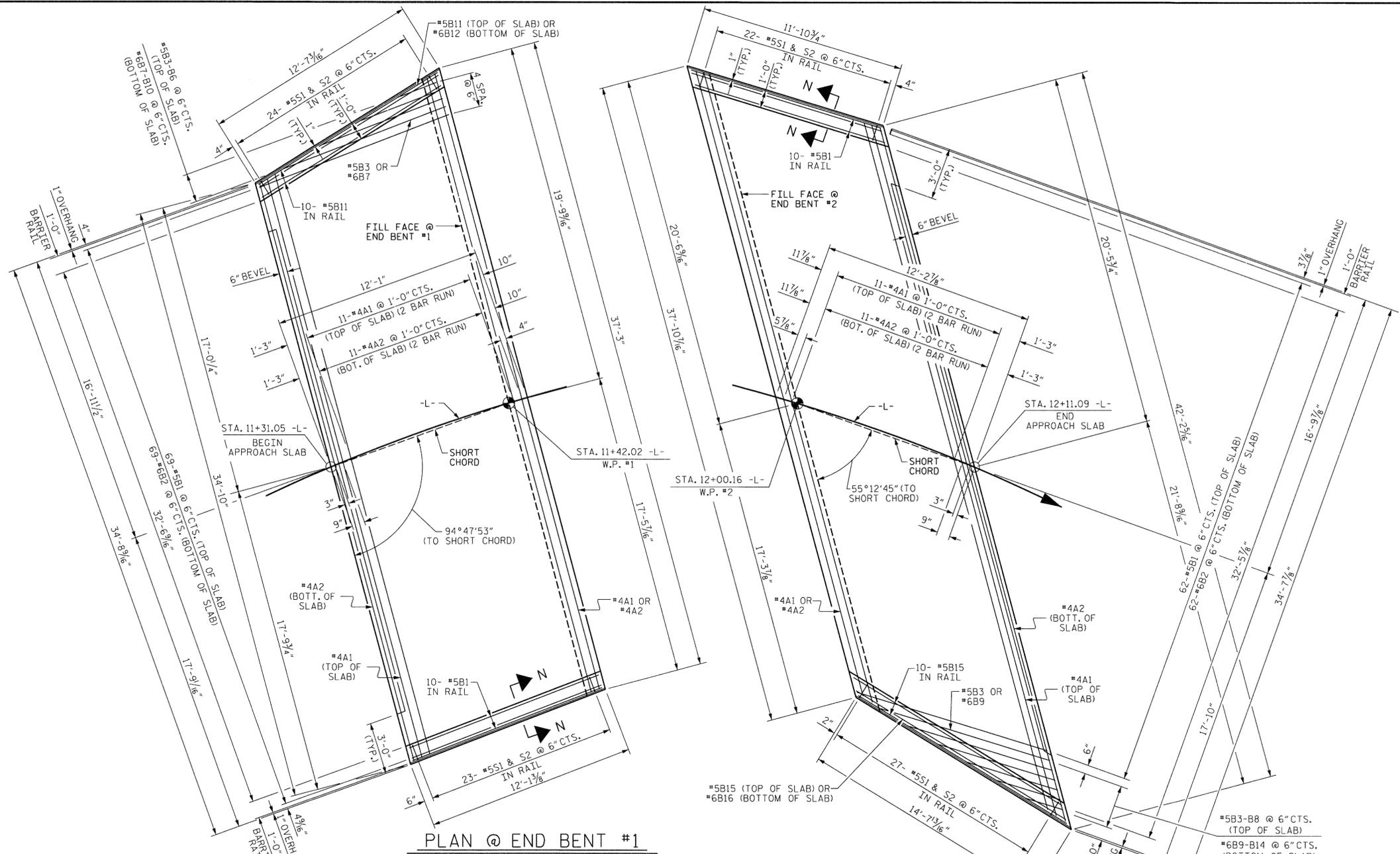
STANDARD  
= RIP RAP DETAILS =

ASSEMBLED BY : MAF	DATE : 3/13
CHECKED BY : HLW	DATE : 3/13
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

DWN. BY: MAF	DATE: 4/2013
CHKD. BY: HLW	DATE: 4/2013
DES. EGR. OF RECORD: RTS	DATE: 4/2013

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			17

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



BILL OF MATERIAL					
APPROACH SLAB AT EB #1					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	26	#4	STR 19'-6"	339	
A2	26	#4	STR 19'-4"	336	
*B1	79	#5	STR 11'-2"	920	
B2	69	#6	STR 11'-8"	1209	
*B3	1	#5	STR 10'-1"	11	
*B4	1	#5	STR 7'-6"	8	
*B5	1	#5	STR 4'-11"	5	
*B6	1	#5	STR 2'-4"	2	
B7	1	#6	STR 10'-1"	15	
B8	1	#6	STR 7'-6"	11	
B9	1	#6	STR 4'-11"	7	
B10	1	#6	STR 2'-4"	4	
*B11	11	#5	STR 12'-1"	139	
B12	1	#6	STR 12'-1"	18	
*S1	47	#5	① 5'-11"	290	
*S2	47	#5	② 7'-2"	351	
REINFORCING STEEL			LBS.	1600	
*EPOXY COATED REINFORCING STEEL			LBS.	2065	
CLASS AA CONCRETE			C. Y.	21.2	

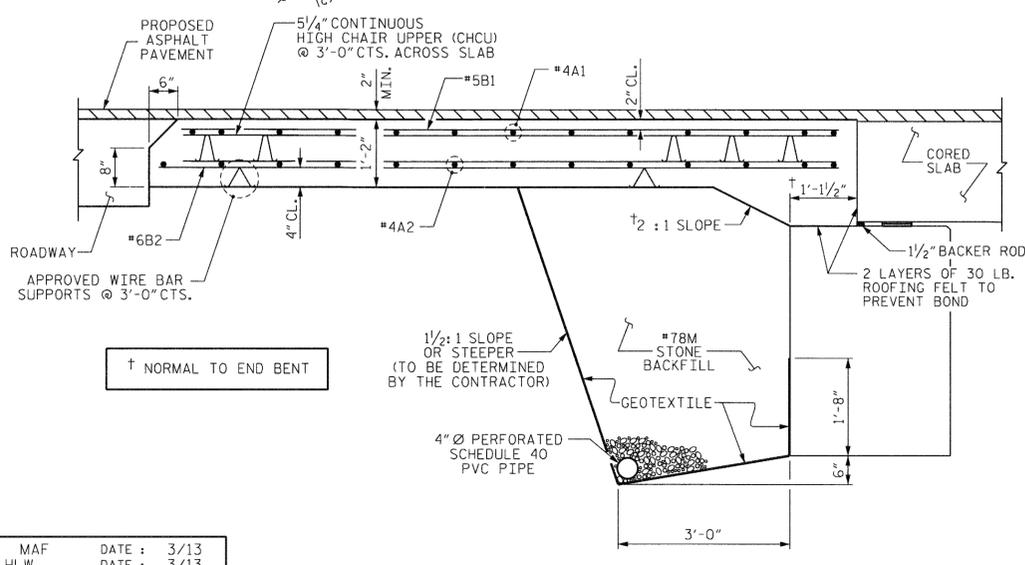
APPROACH SLAB AT EB #2					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	26	#4	STR 21'-11"	381	
A2	26	#4	STR 21'-9"	378	
*B1	72	#5	STR 11'-3"	845	
B2	62	#6	STR 11'-9"	1094	
*B3	1	#5	STR 10'-4"	11	
*B4	1	#5	STR 8'-9"	9	
*B5	1	#5	STR 7'-1"	7	
*B6	1	#5	STR 5'-6"	6	
*B7	1	#5	STR 3'-10"	4	
*B8	1	#5	STR 2'-3"	2	
B9	1	#6	STR 10'-4"	16	
B10	1	#6	STR 8'-9"	13	
B11	1	#6	STR 7'-1"	11	
B12	1	#6	STR 5'-6"	8	
B13	1	#6	STR 3'-10"	6	
B14	1	#6	STR 2'-3"	3	
*B15	11	#5	STR 14'-1"	162	
B16	1	#6	STR 14'-1"	21	
*S1	49	#5	① 5'-11"	302	
*S2	49	#5	② 7'-2"	366	
REINFORCING STEEL			LBS.	1550	
*EPOXY COATED REINFORCING STEEL			LBS.	2095	
CLASS AA CONCRETE			C. Y.	19.9	

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

PLAN @ END BENT #1

PLAN @ END BENT #2

NOTE: BEGINNING AND END OF EACH APPROACH SLAB ARE PARALLEL. SIDES OF EACH APPROACH SLAB ARE NOT PARALLEL. SEE SHEET 2 OF 2 FOR SECTION N-N.



SECTION THRU SLAB



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Middleboro, KY  
Spartanburg, SC

PROJECT NO. BD-5113J  
McDOWELL COUNTY  
STATION: 11+71.09

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

STANDARD  
BRIDGE APPROACH SLAB  
FOR PRESTRESSED CONCRETE  
CORED SLAB UNIT  
(SUB-REGIONAL TIER)  
75° SKEW

ASSEMBLED BY :	MAF	DATE :	3/13
CHECKED BY :	HLW	DATE :	3/13
DRAWN BY :	SHS/MAA 5-09	REV. 12-11	MAA/AAC
CHECKED BY :	BCH 5-09		

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

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16	
1			3			TOTAL SHEETS	
2			4			17	

NOTES

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

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

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

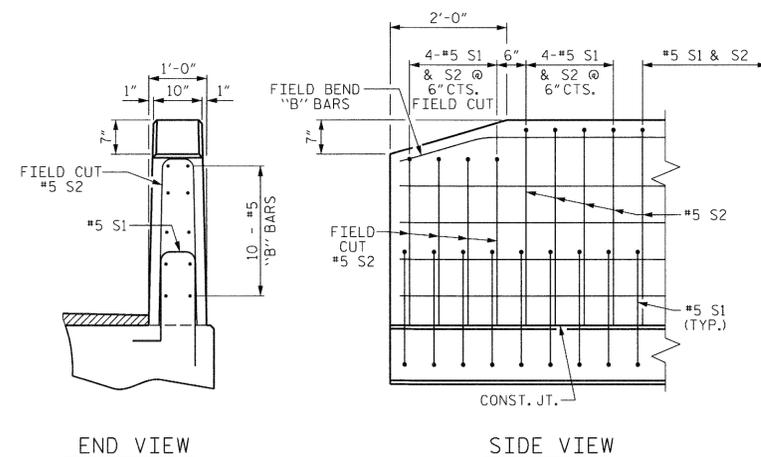
#78M STONE BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

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

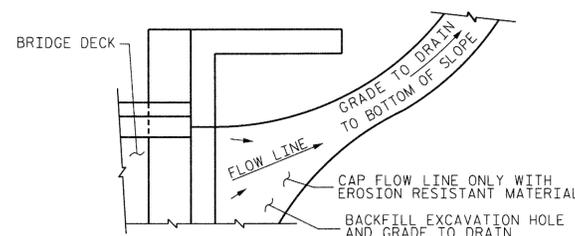
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.

THE COST OF THE VERTICAL CONCRETE BARRIER RAILS ON THE APPROACH SLABS SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE BID FOR BRIDGE APPROACH SLABS.

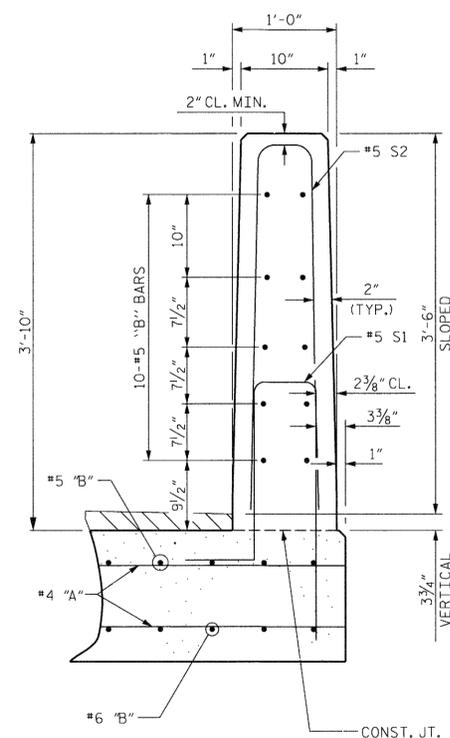


END OF RAIL DETAILS

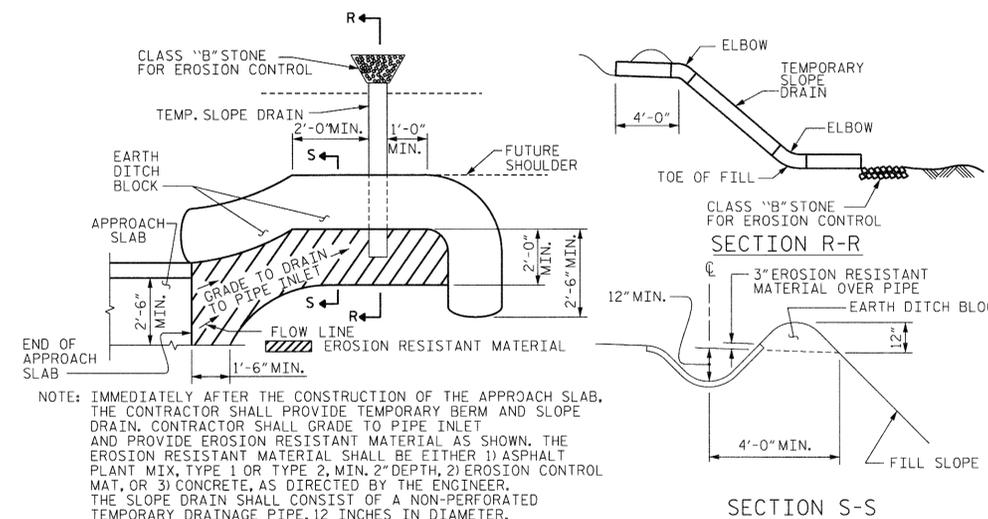


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL



SECTION N-N  
VERTICAL CONCRETE BARRIER RAIL SECTION



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

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



PROJECT NO. BD-5113J  
MCDOWELL COUNTY  
 STATION: 11+71.09

SHEET 2 OF 2

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

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

Charlotte, North Carolina 704-357-0488  
 Tri-Cities, Tennessee 423-487-8400  
 Knoxville, Tennessee 865-546-5800  
 Asheville, North Carolina 828-253-2796  
 Middleboro, Kentucky 606-248-6600  
 Spartanburg, South Carolina 864-574-4775

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ASSEMBLED BY : MAF	DATE : 3/13
CHECKED BY : HLW	DATE : 3/13
DRAWN BY : SHS/MAA	5-09
CHECKED BY : BCH	5-09
REV. 12-11	MAA/AAC

DWN. BY: MAF	DATE: 4/2013
CHKD. BY: HLW	DATE: 4/2013
DES. EGR. OF RECORD: RTS	DATE: 4/2013

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			17

\*\*\*\*\*SYTIME\*\*\*\*\*  
 \*\*\*\*\*DGN\*\*\*\*\*  
 \*\*\*\*\*

## STANDARD NOTES

### DESIGN DATA:

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

### MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2012 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

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

### CONCRETE:

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

### CONCRETE CHAMFERS:

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

### DOWELS:

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

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

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE. ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS; VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER. DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

### REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS. WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

### STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0". EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED. WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

### HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB. METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINIS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

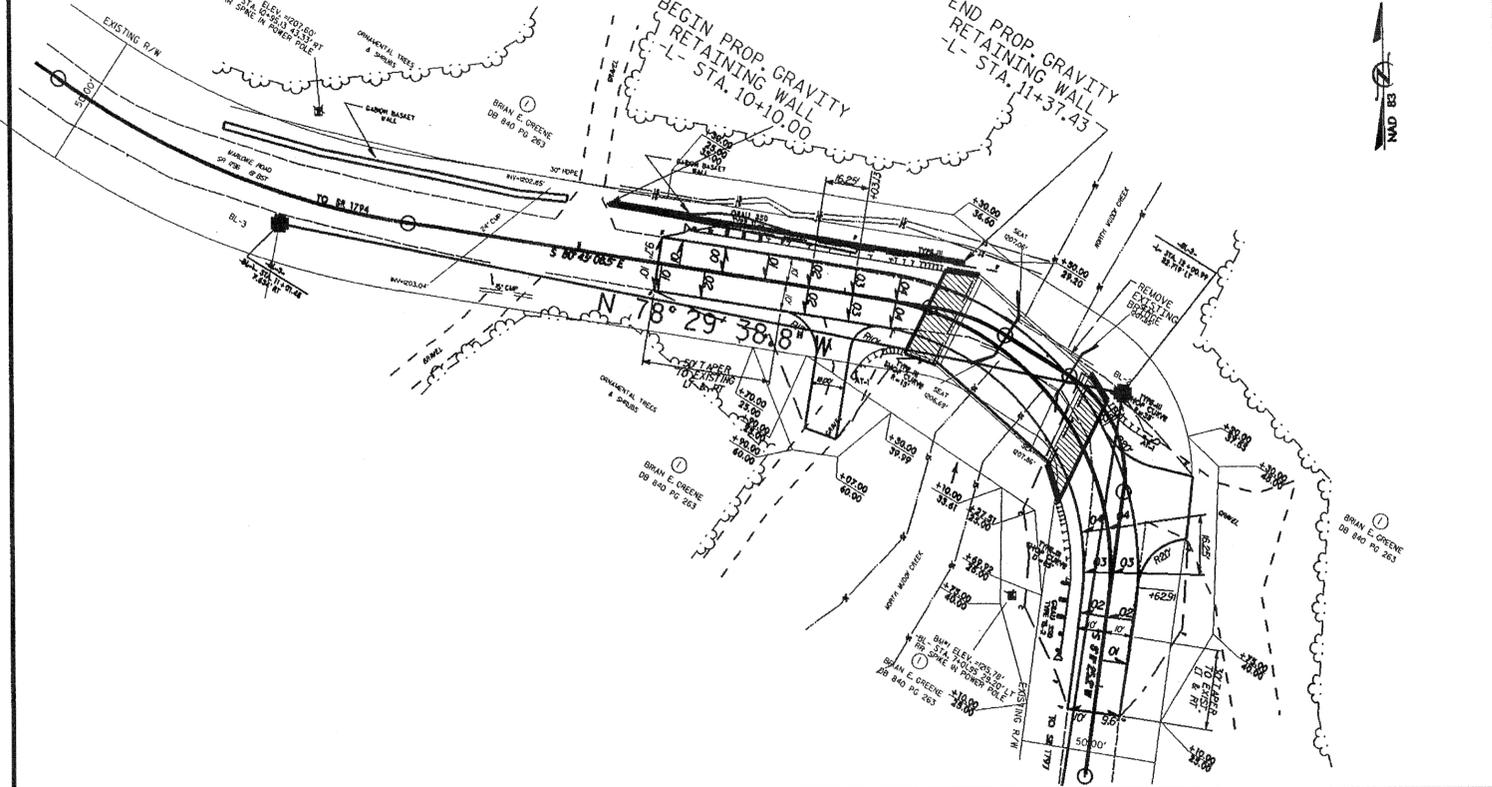
### SPECIAL NOTES:

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

# ENGLISH

JANUARY, 1990

BL - 2 NCDOT BASELINE MONUMENT -L- STA. 12+00.99 22.72' LT.  
 EL. = 1,229.12' N 699541 E 1121846

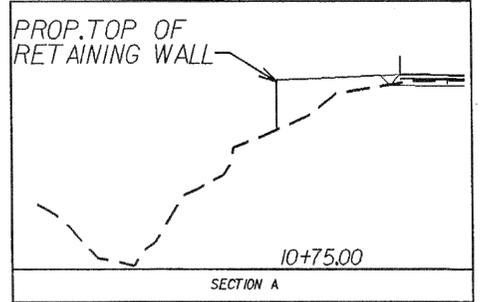
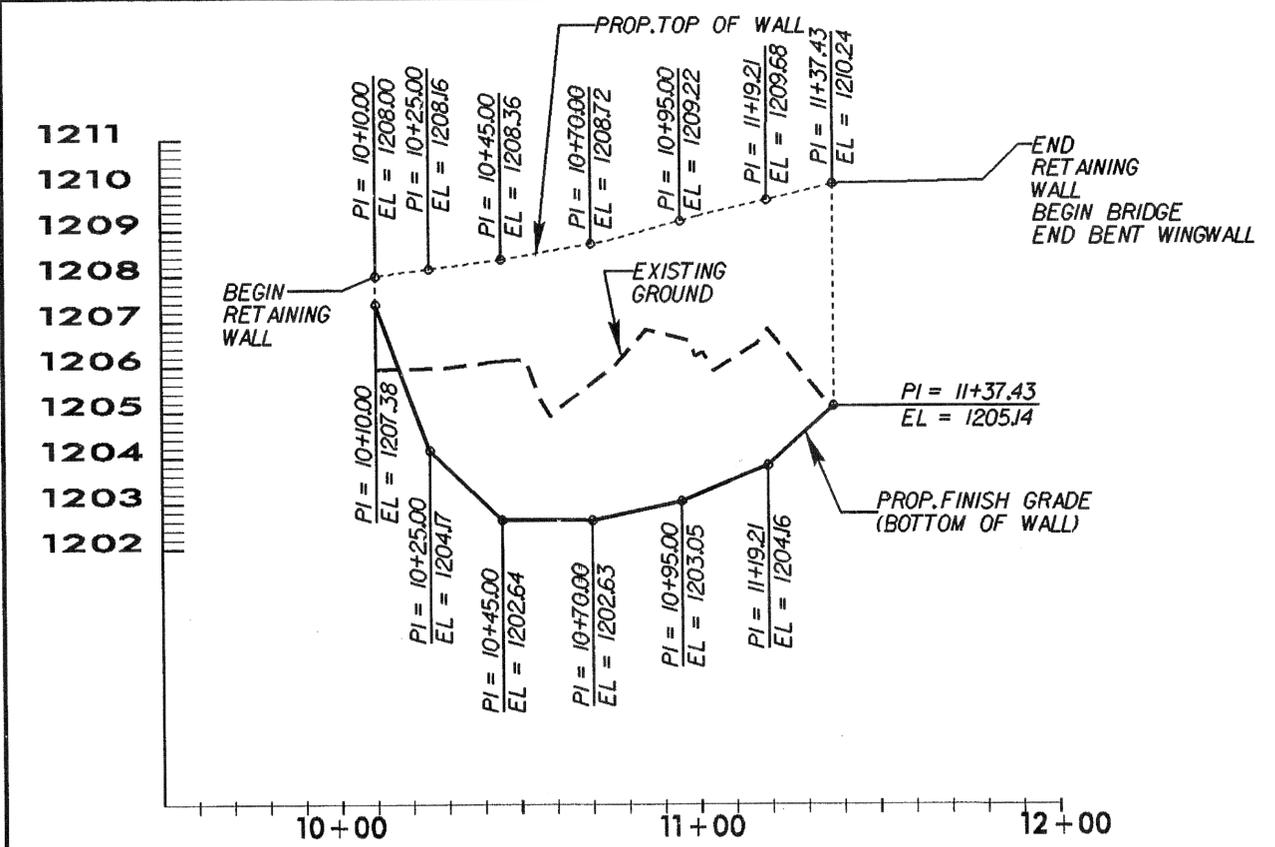


GEOTECHNICAL ENGINEER  S. Clark 5/1/13 SIGNATURE DATE	ENGINEER  SIGNATURE DATE
---	--------------------------------

RETAINING WALL ELEVATIONS				
-L- STA	OFFSET FROM CL (RIGHT)	ELEV @ TOP OF WALL	* PROPOSED FINISHED GRADE	* EXPOSED WALL HEIGHT
10+10.00	17.85	1208.00	1207.38	0.62
10+25.00	17.85	1208.16	1204.17	3.99
10+45.00	17.85	1208.36	1202.64	5.72
10+70.00	17.85	1208.72	1202.63	6.09
10+95.00	17.60	1209.22	1203.05	6.17
11+19.21	17.60	1209.68	1204.16	5.52
11+37.43	23.70	1210.24	1205.14	5.10

\* ELEVATION @ PROPOSED FINISHED GRADE AND EXPOSED WALL HEIGHT DO NOT INCLUDE EMBEDMENT DEPTH  
 \*\* FOR DESIGN WALL HEIGHT "H", SEE THE GRAVITY WALL DETAILS ON SHEET 2 OF 2.

LOCATION SKETCH



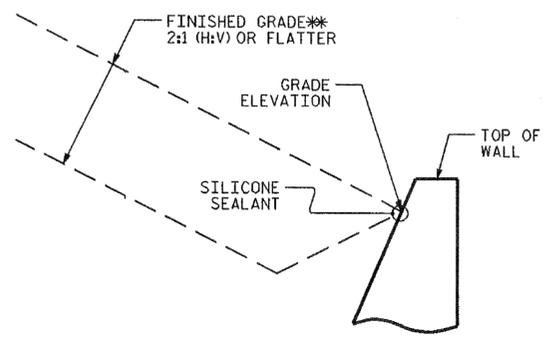
TOTAL STRUCTURE QUANTITIES	
GRAVITY RETAINING WALL	675 SQ. FT.

PROJECT NO.: BD-5113J  
 McDOWELL COUNTY  
 STATION: 10+10.00 -L- TO 11+37.43 -L-  
 SHEET 1 OF 2

PREPARED BY: J.T.W. DATE: 6.13  
 REVIEWED BY: S.C.C. DATE: 6.13

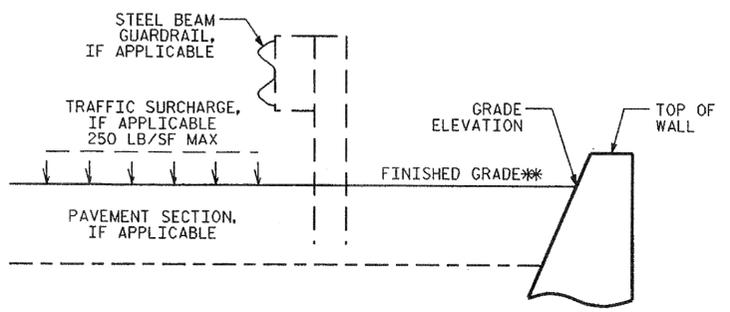
**GEOTECHNICAL ENGINEERING UNIT**  
 EASTERN REGIONAL OFFICE  
 WESTERN REGIONAL OFFICE  
 CONTRACT OFFICE  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

CAST-IN-PLACE (CIP) GRAVITY RETAINING WALL NO. 1					
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		
					TOTAL SHEETS



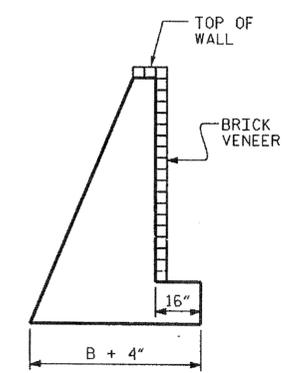
**SLOPE CASE**

\*\*SEE ROADWAY PLANS FOR FINISHED GRADE AND DITCH DETAILS.



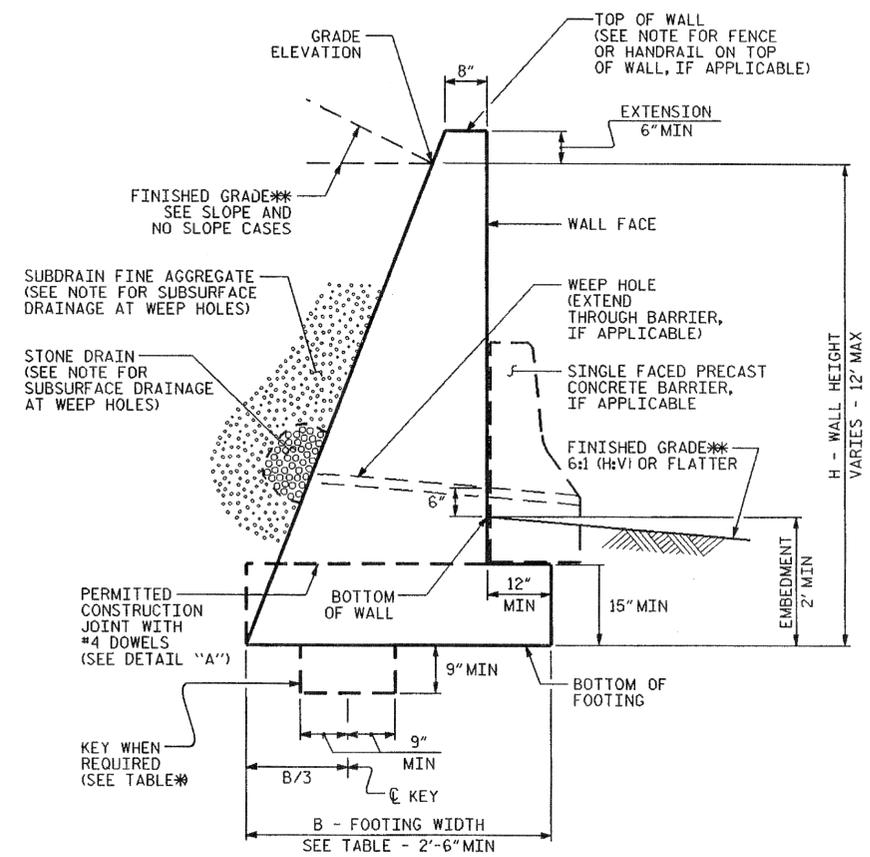
**NO SLOPE CASE**

\*\*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.



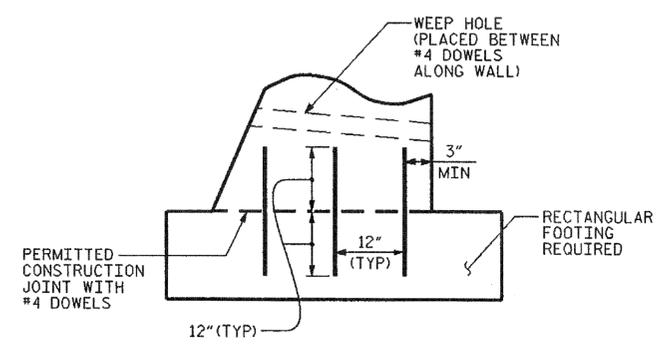
**BRICK VENEER DETAIL**

(WHEN APPLICABLE)



**STANDARD CIP GRAVITY WALL**

\*\*SEE ROADWAY PLANS FOR FINISHED GRADE AND DITCH DETAILS.



**DETAIL "A"**

H (FT)	3 - < 6	6 - 9	> 9 - 12
SLOPE CASE	.66	.70*	.75*
NO SLOPE CASE WITH TRAFFIC SURCHARGE	.80	.75*	.70*
NO SLOPE CASE WITHOUT TRAFFIC SURCHARGE	.60	.60	.60

**B/H RATIO (B = 2'-6" MIN)**

\*KEY IS REQUIRED FOR "SLOPE CASE" OR "NO SLOPE CASE WITH TRAFFIC SURCHARGE" WHEN H IS 6' OR GREATER.

**NOTES:**

FOR STANDARD CAST-IN-PLACE (CIP) GRAVITY RETAINING WALLS, SEE CAST-IN-PLACE GRAVITY RETAINING WALLS PROVISION.

REMOVE EXISTING GABION WALL AND STONE AS REQUIRED TO CONSTRUCT CAST-IN-PLACE GRAVITY RETAINING WALL.

FOR STEEL BEAM GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.

FOR SUBSURFACE DRAINAGE AT WEEP HOLES, SEE ARTICLE 414-8 OF THE STANDARD SPECIFICATIONS.

STANDARD CIP GRAVITY WALLS ARE BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:  
 UNIT WEIGHT,  $\gamma = 120 \text{ LB/CF}$   
 FRICTION ANGLE,  $\phi = 35 \text{ DEGREES}$  (GROUNDWATER WITHIN 7' OF BOTTOM OF FOOTING)  
 FRICTION ANGLE,  $\phi = 30 \text{ DEGREES}$  (GROUNDWATER MORE THAN 7' BELOW BOTTOM OF FOOTING)  
 COHESION,  $c = 0 \text{ LB/SF}$

DO NOT USE STANDARD CIP GRAVITY WALLS IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE OR GROUNDWATER IS ABOVE BOTTOM OF FOOTING.

DO NOT USE STANDARD CIP GRAVITY WALLS WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS BELOW WALLS.

BEFORE BEGINNING STANDARD CIP GRAVITY WALL CONSTRUCTION, SURVEY WALL LOCATIONS AND SUBMIT WALL PROFILE VIEWS (WALL ENVELOPES) FOR REVIEW. FOR WALL ENVELOPES, INCLUDE BOTTOM OF WALL, EXISTING GROUND AND GRADE ELEVATIONS AND OTHER ELEVATIONS AS NEEDED AT INTERVALS OF 25' OR LESS ALONG WALLS. DO NOT START WALL CONSTRUCTION UNTIL WALL ENVELOPES ARE ACCEPTED.

DO NOT PLACE CONCRETE FOR FOOTINGS UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.

WHEN CONSTRUCTING STANDARD CIP GRAVITY WALLS WITH A CONSTRUCTION JOINT AS SHOWN IN DETAIL "A", PROVIDE A MINIMUM OF 3 EQUALLY SPACED #4 DOWELS AT INTERVALS OF 1'-6" ALONG WALLS.

**PROJECT NO.:** BD-5113J

**McDOWELL COUNTY**

**STATION:** 10+10.00 -L- TO 11+37.43 -L-

SHEET 2 OF 2

**GEOTECHNICAL ENGINEERING UNIT**

EASTERN REGIONAL OFFICE

WESTERN REGIONAL OFFICE

CONTRACT OFFICE

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

**CAST-IN-PLACE (CIP) GRAVITY RETAINING WALL DETAILS**

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