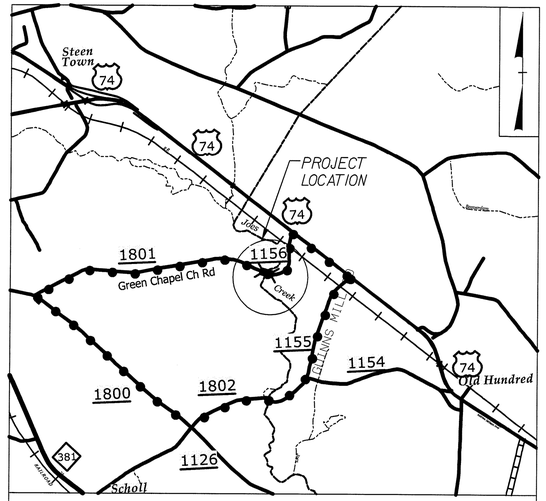
09/08/99

PROJECT: BD-5108AA

CONTRACT:

$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$$

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional symbols
See Sheet 1-C For Survey Control Sheet



VICINITY MAP

OFF-SITE DETOUR ROUTE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

RICHMOND COUNTY

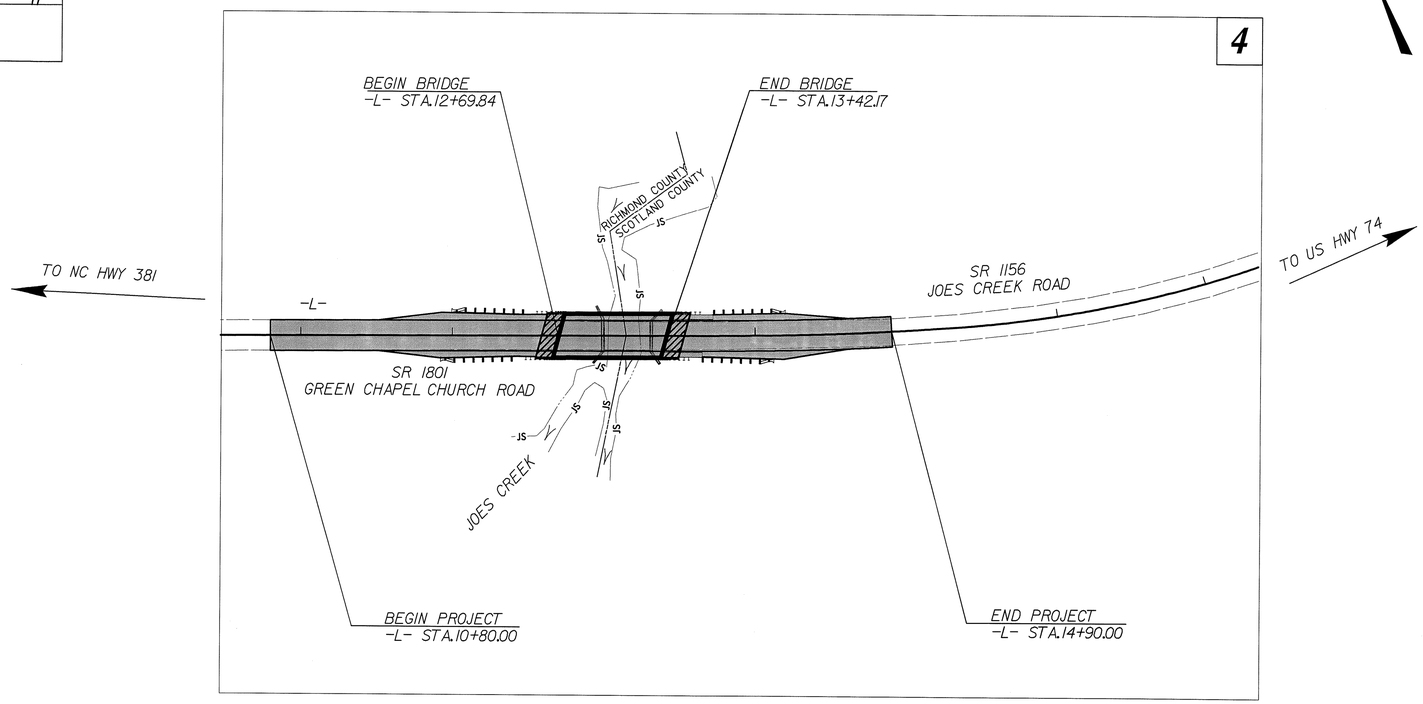
LOCATION: BRIDGE NO. 13 OVER JOES CREEK ON SR 1801 (GREEN CHAPEL CHURCH ROAD) / SR 1156 (JOES CREEK ROAD)

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BD-5108AA	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
45354.1.28		PE
45354.2.FD28		R/W & UTIL.
45354.3.FD28		CONST

NC GRID
NAD 83 NA 2011



DESIGN EXCEPTION REQUIRED – VERTICAL CURVE

GRAPHIC SCALES

50 25 0 50 100
PLANS

20 10 0 20 40
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2013 = 270

T = 6 % *
V = 55 MPH
* TTST = 3% DUAL 3%
FUNC CLASS = LOCAL

SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT BD-5108AA = 0.064 MI
LENGTH OF STRUCTURE PROJECT BD-5108AA = 0.014 MI
TOTAL LENGTH OF PROJECT BD-5108AA = 0.078 MI

Prepared In the Office of:
SEPI ENGINEERING & CONSTRUCTION
1025 Wade Avenue
Raleigh, NC 27605
Tel:919-789-9977
Fax:919-789-9591
License: C-2197

FOR THE NORTH CAROLINA DEPT. OF TRANSPORATION

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
FEBRUARY, 2014

LETTING DATE:
JULY 22, 2014

STEVE SCOTT, PE
PROJECT ENGINEER

AGNIESZKA NAU, PE
PROJECT DESIGN ENGINEER

TIM WELCH, PE
NCDOT CONTACT

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 035621 ENGINEER ANDREW M. HOWELL
10-25-14 P.E.

SIGNATURE:

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029712 ENGINEER AGNIESZKA J. NAU
06-25-14 P.E.

SIGNATURE:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
BD-5108AA	1-A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARDS

INDEX OF SHEETS

GENERAL NOTES: 2012 SPECIFICATIONS
EFFECTIVE: 01-17-12
REVISED: 11-01-11

GRADE LINE:
GRADING AND SURFACING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

GUARDRAIL:

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

END BENTS:

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

RIGHT-OF-WAY MARKERS:

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

EFF. 01-17-12
REV. 11-01-11

2012 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated July 18, 2006 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
310.10	Driveway Pipe Construction
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

$$$$SYSTIME$$$$
$$$$DGN$$$$
$$$$USERNAME$$$$

04/16/11

PROJECT REFERENCE NO.	SHEET NO.
BD-5108AA	1B

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 — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- 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
- 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 — S
- Well — W
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

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

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- 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 — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite R/W Marker — RW
- Proposed Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- Proposed Control of Access — CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Drainage / Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed Aerial Utility Easement — AUE
- Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

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

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard — 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 — S
- Storm Sewer — S

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- 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 — T
- Telephone Booth
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- 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 — W
- Water Meter
- Water Valve
- Water Hydrant
- Recorded U/G Water Line — W
- Designated U/G Water Line (S.U.E.*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Satellite Dish
- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- 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 — S
- Utility Unknown U/G Line — ?UTL
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. — UST
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- U/G Test Hole (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

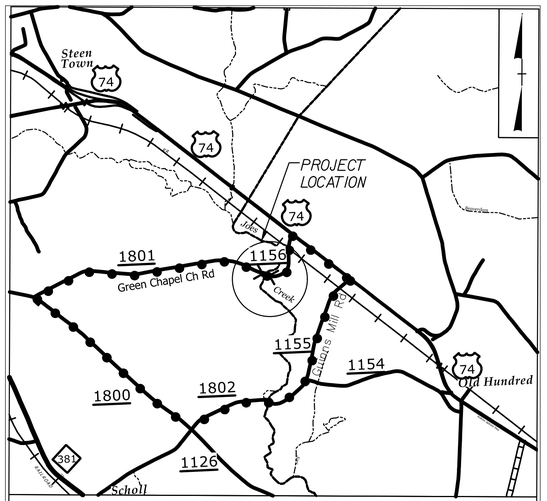
8/17/99

REVISIONS

SURVEY CONTROL SHEET BD-5108AA

SEPI ENGINEERING & CONSTRUCTION
1025 Wade Avenue
Raleigh, NC 27605
Tel:919-789-9977
Fax:919-789-9591
License: C-2197

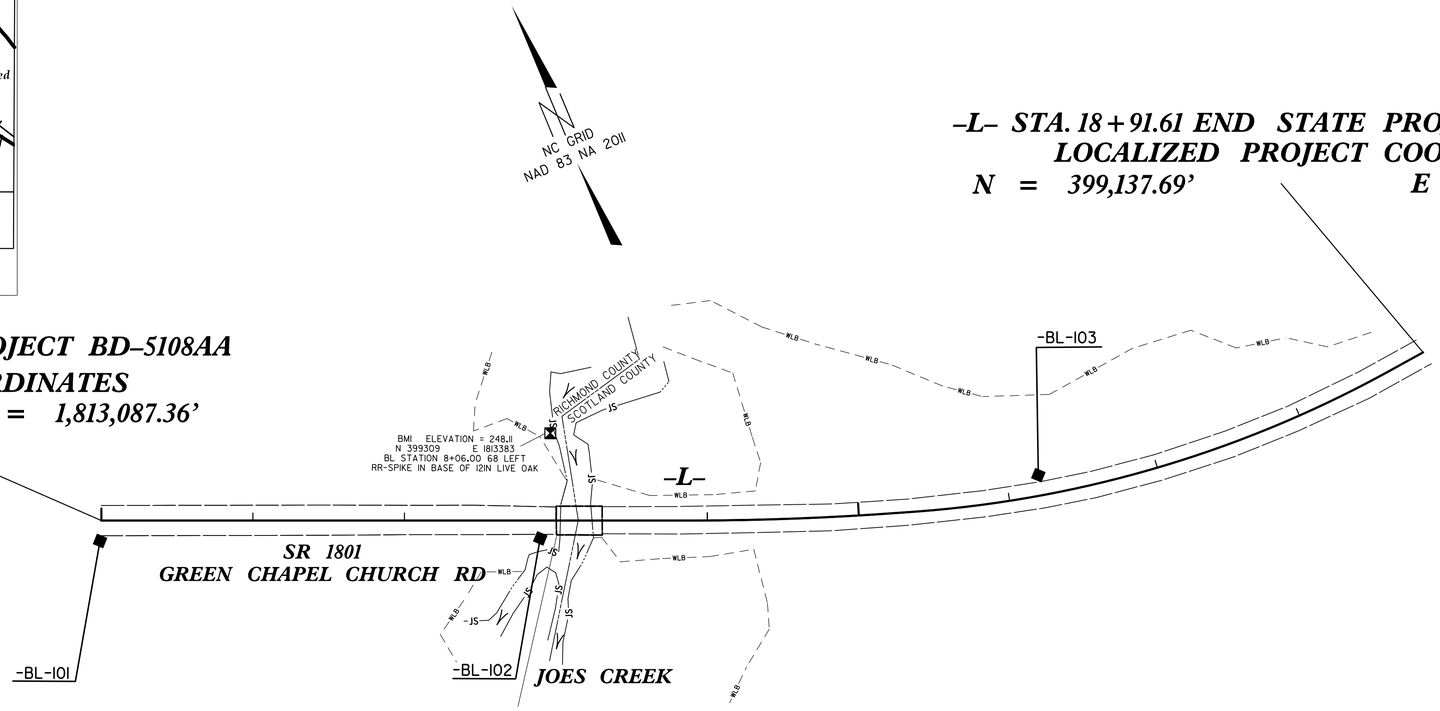
PROJECT REFERENCE NO.	SHEET NO.
BD-5108AA	1-C
R/W SHEET NO.	



-L- ALIGNMENT						
Point	BL Point	North	East	Elevation	Station	Offset
BL-101	BL-101	399,357.76'	1,813,081.38'	269.23'	OUTSIDE PROJECT LIMITS	
BL-102	BL-102	399,247.85	1,813,350.31'	250.96'	12+89.64	11.77'
BL-103	BL-103	399,160.26'	1,813,669.91'	250.59'	16+21.74	-13.46'

-L- STA. 10+00.00 BEGIN STATE PROJECT BD-5108AA
LOCALIZED PROJECT COORDINATES
N = 399,369.86' ***E = 1,813,087.36'***

-L- STA. 18+91.61 END STATE PROJECT BD-5108AA
LOCALIZED PROJECT COORDINATES
N = 399,137.69' ***E = 1,813,935.47'***



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "BD5108AA-1"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 399591.3270(ft) EASTING: 1812669.6510(ft)
ELEVATION: 294.6480(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999888394
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BD5108AA-1" TO -L- STATION 10+00.00 IS 472.7832'
S62°04'03.22"E
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTES:

1. *THE CONTROL DATA FOR THIS PROJECT WAS PROVIDED BY NCDOT.*
   CONTROL POINTS PROVIDED ARE AS FOLLOWS:
   BD5108AA-1 N=399,591.3270 E=1,812,669.6510 ELEV=294.648'

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

NOTE: DRAWING NOT TO SCALE

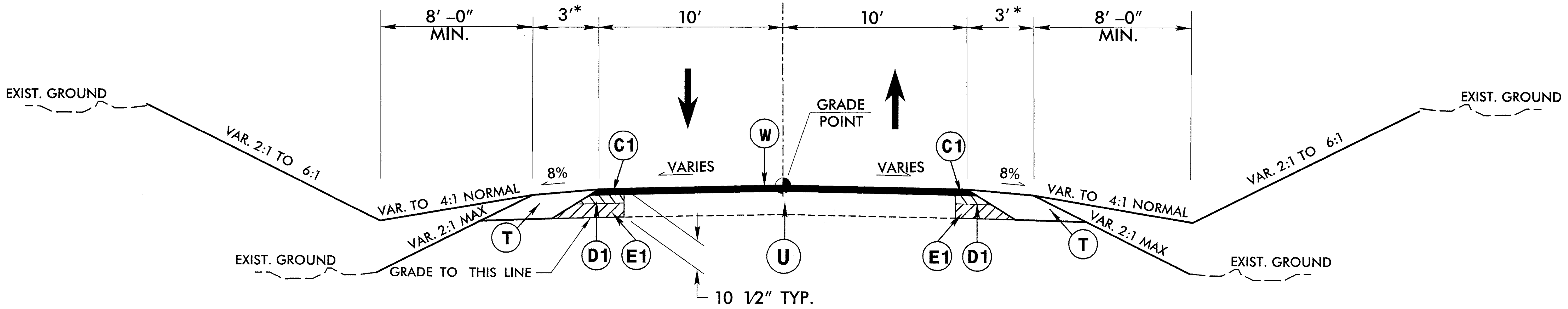
$$SYSTIME$$ $$CONFIG$$ $$FILENAME$$

SEPI
ENGINEERING & CONSTRUCTION
1025 Wade Avenue
Raleigh, NC 27605
Tel:919-789-9977
Fax:919-789-9591
License: C-2197

PROJECT REFERENCE NO.	SHEET NO.
BD-5108AA	2
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

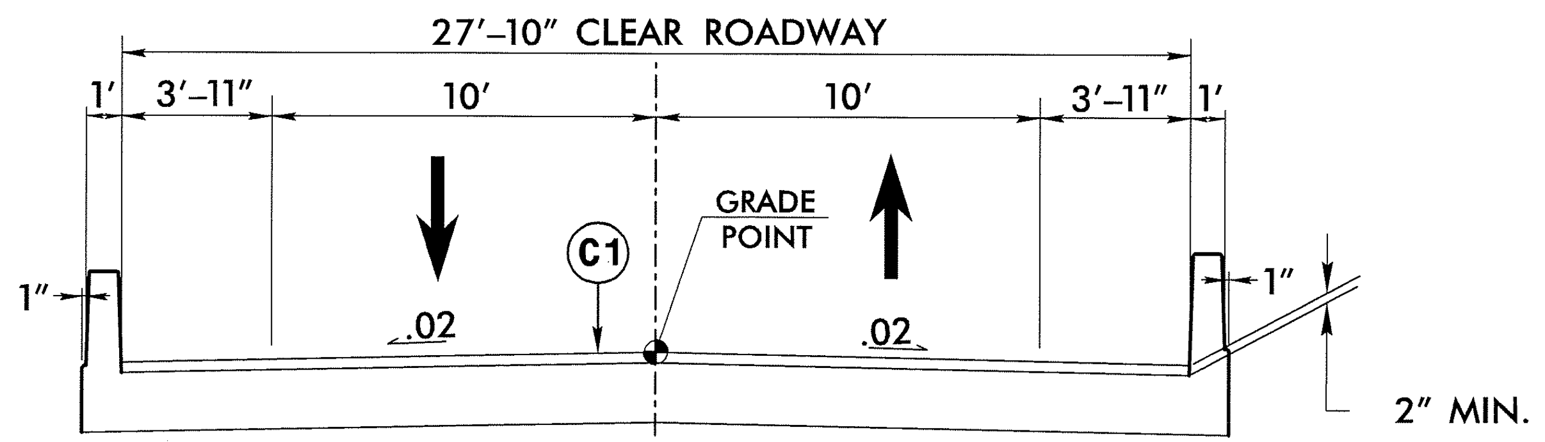
SEAL 029712
AGNIESZKA J. NAU
06-04-14



* PAVE SHOULDER TO FACE OF GUARDRAIL
ADD 3' TO SHOULDERS FOR GUARDRAIL

TYPICAL SECTION NO. 1

–L– STA. 10+80.00 TO –L– STA. 12+69.84 (BEGIN BRIDGE)
–L– STA. 13+42.17 (END BRIDGE) TO –L– STA. 14+90.00



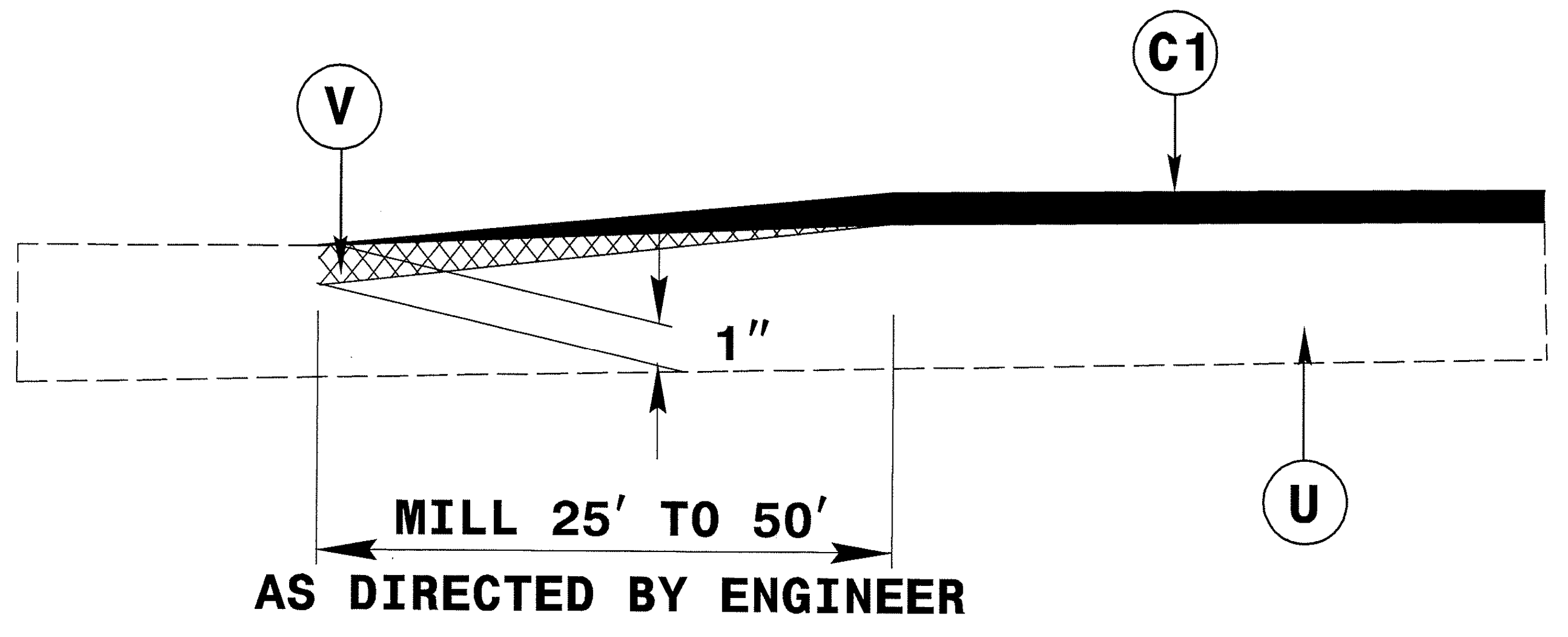
TYPICAL SECTION NO. 2

–L– STA. 12+69.84 (BEGIN BRIDGE)
TO –L– STA. 13+42.17 (END BRIDGE)

PAVEMENT SCHEDULE

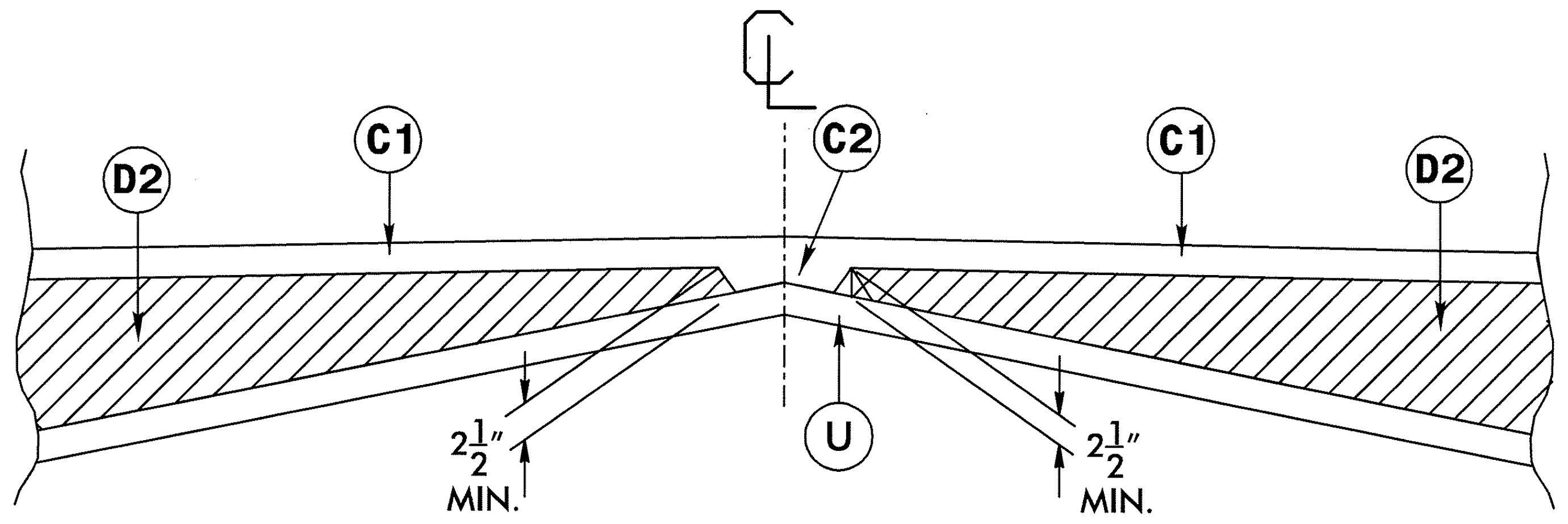
C1	PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.
D1	PROP. APPROX. 3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 5.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	WEDGING (SEE DETAIL)
V	MILLING

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



MILLING DETAIL

–L– 10+80.00
–L– 14+90.00



Detail Showing Method of Wedging

6/21/00

COMPUTED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
BD-5108AA	3

ITEM NUMBER	SECTION NUMBER	DESCRIPTION	QUANTITY	UNIT
0000100000-N	800	MOBILIZATION	1	LS
0030000000-N	SP	BRIDGE APPROACH FILL-SUB REGIONAL TIER, STATION -L- STA. 13+06.00	1	LS
0043000000-N	226	GRADING	1	LS
0050000000-E	226	SUPPLEMENTARY CLEARING & GRUBBING	1	ACR
0196000000-E	270	GEOTEXTILE FOR SOIL STABILIZATION	50	SY
0318000000-E	300	FOUNDATION CONDITIONING MATERIAL, MINOR STRUCTURES	4	TON
0335200000-E	305	15" DRAINAGE PIPE	32	LF
1220000000-E	545	INCIDENTAL STONE	100	TON
1489000000-E	610	ASPHALT CONC BASE COURSE, TYPE B25.0B	70	TON
1498000000-E	610	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B	40	TON
1525000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE SF9.5A	200	TON
1575000000-E	620	ASPHALT BINDER FOR PLANT MIX	20	TON
2000000000-N	806	RIGHT OF WAY MARKERS	8	EA
2286000000-N	840	MASONARY DRAINAGE STRUCTURE	2	EA
2364200000-N	840	WIDE SLOT FLAT GRATE, 840.20	2	EA
2556000000-E	846	SHOULDER BERM GUTTER	53	LF
3030000000-E	862	STEEL BM GUARDRAIL	25	LF
3150000000-N	862	ADDITIONAL GUARDRAIL POSTS	5	EA
3215000000-N	862	GUARDRAIL ANCHOR UNITS, TYPE III	4	EA
3270000000-N	SP	GUARDRAIL ANCHOR UNITS, TYPE 350	4	EA
3628000000-E	876	RIP RAP, CLASS I	175	TON
3656000000-E	876	GEOTEXTILE FOR DRAINAGE	539	SY
4457000000-N	SP	TEMPORARY TRAFFIC CONTROL	1	LS
4810000000-E	1205	PAINT PAVEMENT MARKING LINES (4")	1,640	LF
6000000000-E	1605	TEMPORARY SILT FENCE	875	LF
6006000000-E	1610	STONE FOR EROSION CONTROL, CLASS A	65	TON
6009000000-E	1610	STONE FOR EROSION CONTROL, CLASS B	250	TON
6012000000-E	1610	SEDIMENT CONTROL STONE	180	TON
6015000000-E	1615	TEMPORARY MULCHING	0.5	ACR
6018000000-E	1620	SEED FOR TEMPORARY SEEDING	100	LB
6021000000-E	1620	FERTILIZER FOR TEMPORARY SEEDING	0.5	TON
6024000000-E	1622	TEMPORARY SLOPE DRAINS	200	LF
6029000000-E	SP	SAFETY FENCE	100	LF
6030000000-E	1630	SILT EXCAVATION	260	CY
6036000000-E	1631	MATTING FOR EROSION CONTROL	6,525	SY
6037000000-E	SP	COIR FIBER MAT	100	SY
6038000000-E	SP	PERMANENT SOIL REINFORCEMENT MAT	190	SY
6042000000-E	1632	1/4" HARDWARE CLOTH	585	LF
6071012000-E	SP	COIR FIBER WATTLE	125	LF
6071020000-E	SP	POLYACRYLAMIDE (PAM)	30	LB
6084000000-E	1660	SEEDING AND MULCHING	0.5	ACR
6087000000-E	1660	MOWING	0.5	ACR
6090000000-E	1661	SEED FOR REPAIR SEEDING	50	LB
6093000000-E	1661	FERTILIZER FOR REPAIR SEEDING	0.25	TON
6096000000-E	1662	SEED FOR SUPPLEMENTAL SEEDING	50	LB
6108000000-E	1665	FERTILIZER TOPDRESSING	0.5	TON
6114500000-N	1667	SPECIALIZED HAND MOWING	10	MHR
6117000000-N	SP	RESPONSE FOR EROSION CONTROL	13	EA

ITEM NUMBER	SECTION NUMBER	DESCRIPTION	QUANTITY	UNIT
8035000000-N	402	REM OF EX STRUCTURE AT STATION 13+06.00 -L-	1	LS
8121000000-N	412	UNCLASSIFIED STRUCTURE EXCAVATION AT STATION 13+06.00 -L-	1	LS
8182000000-E	420	CLASS A CONCRETE (BRIDGE)	27.4	CY
8210000000-N	422	BRIDGE APPROACH SLABS, STATION -L- 13+06.00	1	LS
8217000000-E	425	REINFORCING STEEL (BRIDGE)	4096	LB
8364000000-E	450	HP 12X53 STEEL PILES	350	LF
8505000000-E	460	VERTICAL CONCRETE BARRIER RAIL	140	LF
8606000000-E	876	RIP RAP CLASS II (2'-0" THICK)	115	TON
8622000000-E	876	GEOTEXTILE FOR DRAINAGE	125	SY
8657000000-N	430	ELASTOMERIC BEARINGS, Type I	1	LS
8763000000-E	430	3'-0" X 2'-0" PRESTRESSED CONC CORED SLABS	700.00	LF

$$$$SYSTIME$$$$
$$$$USERNAME$$$$

4/04/06

COMPUTED BY: AJN DATE: 11/27/13
CHECKED BY: DATE:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
SUB-REGIONAL & REGIONAL
LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48” & UNDER)

SEPI
ENGINEERING & CONSTRUCTION
1025 Wade Avenue
Raleigh, NC 27605
Tel:919-789-9977
Fax:919-789-9591
License: C-2197

PROJECT REFERENCE NO.	SHEET NO.
BD-5108AA	3-A

STATION	LOCATION (LT,RT, OR CL)	STRUCTURE NO.		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC)												C.S. PIPE							R.C. PIPE (CLASS III)							R.C. PIPE (CLASS IV)							
SIZE		FROM	TO					12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	12"	15"	18"	24"	36"	42"	48"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"	42"	48"
THICKNESS OR GAUGE																				.064	.064	.064	.064	.079	.109	.109															
-L- 13+67	LT	0401	0402	251.47	247.80	246.66	8.1%		16								X	X																							
-L- 13+60	RT	0403	0404	251.65	248.48	247.32	8.9%		16								X	X																							
TOTAL									32																																

STATION	**" R. C. PIPE (CLASS V)	**" R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	**" R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS		QUANTITIES FOR DRAINAGE STRUCTURES	* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B')		C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03				CONCRETE TRANSITIONAL SECTION			G.D.I. FRAME WITH TWO GRATES STD. 840.20	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	T.B.G.D.I. STD. 840.35	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
						STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE)			LIN. *FT.																			
						CU. YDS.			A	B																		
						R.C.P.	C.S.P.	PER EACH (0' THRU 5.0')	5.0' THRU 10.0'	10.0' AND ABOVE		TYPE OF GRATE				CATCH BASIN	DROP INLET											
												E	F	G														
-L- 13+67								1											1				1					
-L- 13+60								1											1				1					
TOTAL								2											2				2					

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I. (N.S.)	GRATED DROP INLET (NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

$$$$SYSTIME$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

5/14/99

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SEPI
ENGINEERING &
CONSTRUCTION
1025 Wade Avenue
Raleigh, NC 27605
Tel:919-789-9977
Fax:919-789-9591
License: C-2197

PROJECT REFERENCE NO.	SHEET NO.
BD-5108AA	3-B
R/W SHEET NO.	

SUMMARY OF EARTHWORK
IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
–L– STA. 10+80.00 TO BRIDGE	159		71		88
SUBTOTAL	159		71		88
BRIDGE TO –L– STA. 14+90.00	47		230	183	
SUBTOTAL	47		230	183	
TOTAL	206		301	183	88
LOSS DUE TO CLEAR & GRUB.					
WASTE IN LEU OF BORROW				–88	–88
PROJECT TOTAL	206		301	95	
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT				5	
GRAND TOTAL	206		301	100	
SAY	210				

NOTE: Approximate quantities only. Unclassified Excavation, Fine Grading, Clearing and Grubbing, and Removal of Existing Pavement will be paid for at the contract lump sum price for "Grading."

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

GUARDRAIL SUMMARY

SURVEY LINE	BEGINNING STATION	END STATION	LOCATION	LENGTH			WARRENT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS			REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GRAU–350	AT–1	TYPE III	
–L–	11+93	12+68	RT	75.00′			12+68		4′–0″	7′–0″					1		1	
–L–	13+36	14+11	RT	75.00′				13+36	4′–0″	7′–0″					1		1	
–L–	14+20	13+45	LT	75.00′			13+45		4′–0″	7′–0″					1		1	
–L–	12+76	12+01	LT	75.00′				12+76	4′–0″	7′–0″					1		1	
SUBTOTAL				300.00′														
LESS ANCHOR DEDUCTIONS																		
GRAU–350 4 @ 50′ =				–200.00′														
TYPE III 4 @ 18.75′ =				–75.00′														
			TOTAL	25.00′			ADDITIONAL GUARDRAIL POSTS – 5 EA											
			SAY	25.00′											4		4	

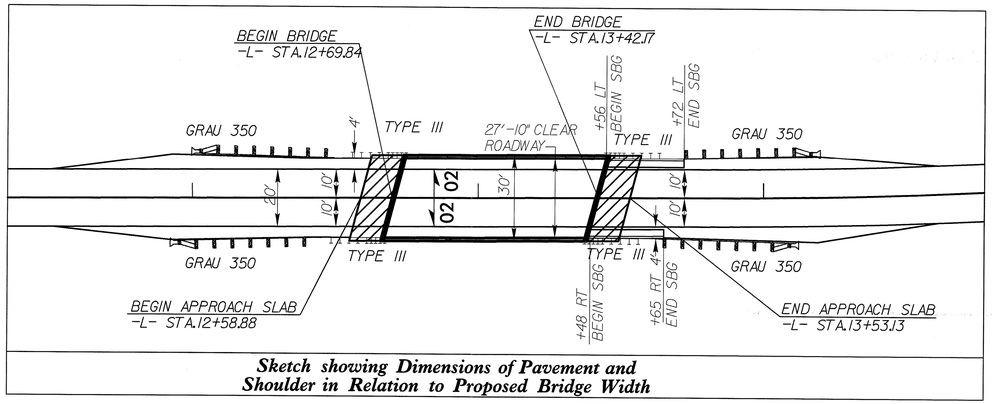
$$$$$SYSTIME$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$
$$$$$USERNAME$$$$

8/17/99

REVISIONS

SEPI
ENGINEERING & CONSTRUCTION
1025 Wade Avenue
Raleigh, NC 27605
Tel:919-789-9977
Fax:919-789-9591
License: C-2197

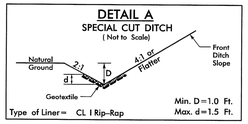
PROJECT REFERENCE NO.	SHEET NO.
BD-5108AA	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
SEAL 029712 AGNIESZKA J. NAU 04-03-14	SEAL 035621 ANDREW M. HOWELL 4-3-14

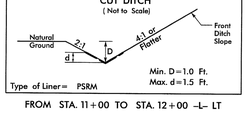


Sketch showing Dimensions of Pavement and Shoulder in Relation to Proposed Bridge Width

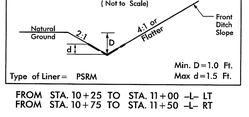
-L-

PI Sta 14+51.47	PI Sta 17+02.97
Δ = 3° 56' 22.8" (LT)	Δ = 24° 57' 16.0" (LT)
D = 3° 00' 56.0"	D = 7° 29' 22.7"
L = 130.64'	L = 333.19'
T = 65.35'	T = 169.28'
R = 1,900.00'	R = 765.00'

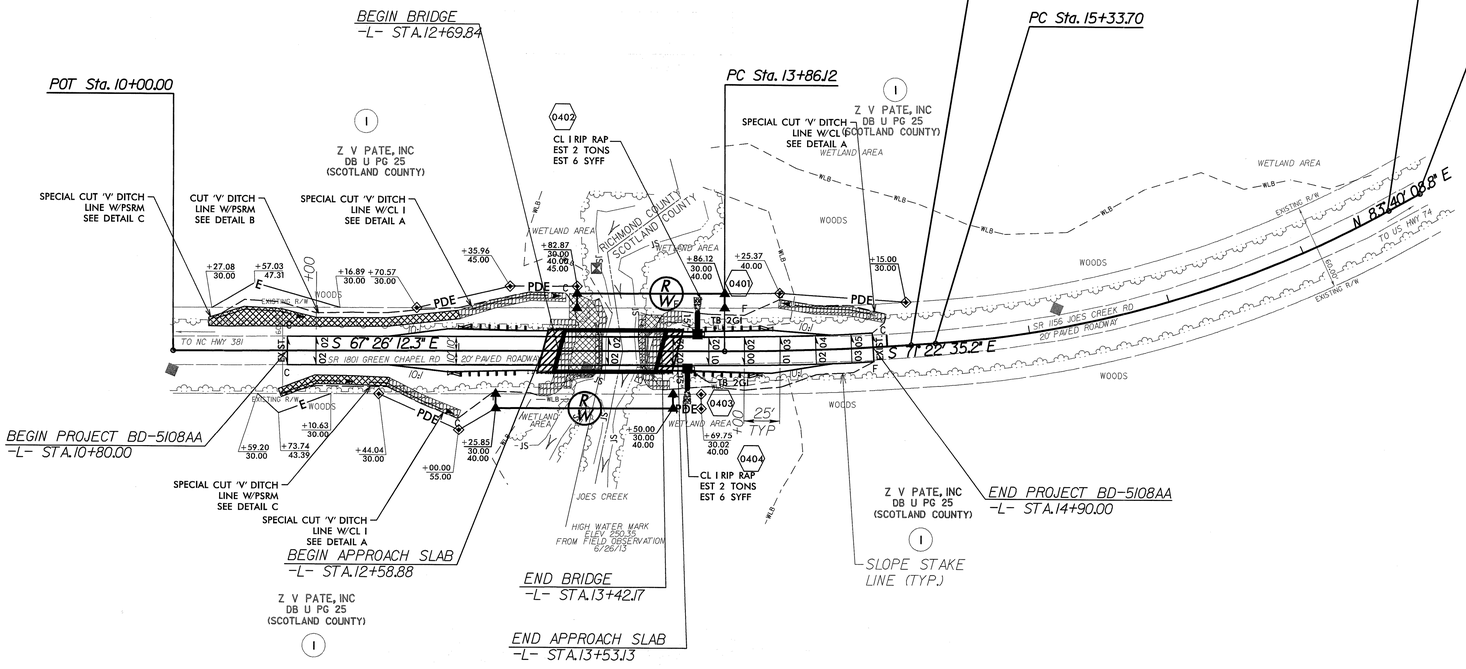




FROM STA. 12+00 TO STA. 12+75 -L- LT
FROM STA. 11+50 TO STA. 12+00 -L- RT
FROM STA. 14+25 TO STA. 15+00 -L- LT



FROM STA. 11+00 TO STA. 12+00 -L- LT



FROM STA. 10+25 TO STA. 11+00 -L- LT
FROM STA. 10+75 TO STA. 11+50 -L- RT

NOTE: SEE PLAN SHEET 5 FOR PROFILE

NOTE: SEE SHEETS S-1 THRU S-12 FOR STRUCTURE PLANS

$$$$$$$$$$SYSTIME$$$$$$$$$$
$$$$$$$$$USERNAME$$$$$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
BD-5108AA	5

SEPI ENGINEERING & CONSTRUCTION
1025 Wade Avenue
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Fax:919-789-9591
License: C-2197

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029712 ENGINEER ANNA J. MAIO
4-2-14

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 035621 ENGINEER ANDREW M. HOWELL
4-2-14

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 500	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 248.7	FT
BASE DISCHARGE	= 700	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 249.30	FT
OVERTOPPING DISCHARGE	= 1,495	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 251.74	FT
DATE OF SURVEY	= 03-17-2011	
W.S. ELEVATION AT DATE OF SURVEY	= 247.1	FT

BM 1
Sta.-BL- 8+06.00
OFF 68' LT
ELEV. 248.11'
RR SPIKE IN BASE
OF 12IN OAK

-L-
Sta. 12+96.31
OFF 57.62' LT

BEGIN GRADE
-L- STA. 10+80.00
263.34

PI = 11+68.79
EL = 256.87'
VC = 176'
K = 38
DS = 30 mph

BEGIN BRIDGE
-L- STA. 12+69.84

END BRIDGE
-L- STA. 13+42.17

PI = 13+81.89
EL = 251.25'
VC = 74'
K = 26
DS = 25 mph

END GRADE
-L- STA. 14+90.00
251.46

(-)15.9600%
(-)16.9000%
(-)11.2823%
(-)12.6398%
(-)18.7200%
(-)18.6000%
(-)12.0000%
(-)18.7800%
(-)10.6400%
(-)12.6398%
(+)0.1999%
(+)12.8000%
(+)0.8800%
(+)18.1200%

BEGIN DITCH GRADE PI=0+75 RT ELEV=260.98
END DITCH GRADE PI=4+00 LT ELEV=259.49
PI=11+00 RT ELEV=259.49
PI=11+50 RT ELEV=256.04
PI=11+75 RT ELEV=252.11
END DITCH GRADE PI=12+00 RT ELEV=249.36
BEGIN DITCH GRADE PI=12+00 LT ELEV=253.93
PI=12+25 LT ELEV=256.93
PI=12+50 LT ELEV=246.14
END DITCH GRADE PI=12+75 LT ELEV=246.58
1.5:1
1.5:1
BEGIN DITCH GRADE PI=14+25 LT ELEV=246.82
PI=14+50 LT ELEV=246.97
PI=14+75 LT ELEV=247.19
END DITCH GRADE PI=15+00 LT ELEV=248.22

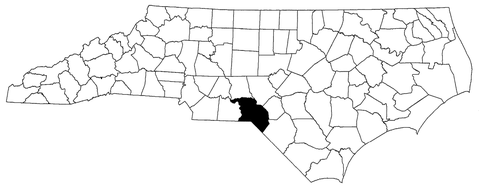
NOTE: SEE PLAN SHEET 4 FOR PLAN
NOTE: SEE SHEETS S-1 THRU S-12 FOR STRUCTURE PLANS

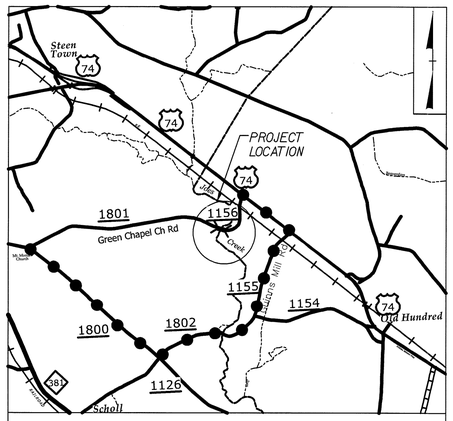
$$$$$$SYSTIME$$$$$$
$$$$$$USERNAME$$$$$$

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

RICHMOND & SCOTLAND COUNTIES





VICINITY MAP

OFF-SITE DETOUR ROUTE

LOCATION: ***BRIDGE NO. 13 OVER JOES CREEK ON SR 1801 (GREEN CHAPEL CHURCH ROAD) / SR 1156 (JOES CREEK ROAD)***

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

INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS AND LEGEND
TMP-1B	TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES, GENERAL NOTES, LOCAL NOTES, AND PHASING)
TMP-2	OFF-SITE DETOUR
TMP-3	ROAD CLOSURE

SHEET NO.
TMP-1

BD-5108AA

TIP PROJECT:

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*
J. ISHAK, P.E. *TRAFFIC CONTROL PROJECT ENGINEER*
TRAFFIC CONTROL PROJECT DESIGN ENGINEER
TRAFFIC CONTROL DESIGN ENGINEER

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

SEPI ENGINEERING & CONSTRUCTION
1025 Wade Avenue
Raleigh, NC 27605
Tel:919-789-9977
Fax:919-789-9591
License: C-2197

APPROVED: [signature]
DATE: 4-2-14

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 037026 ENGINEER STEVEN D. MILLER

PROJ. REFERENCE NO.	SHEET NO.
BD-5108AA	TMP-1A

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 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
1145.01	BARRICADES-TYPE III

LEGEND

GENERAL

- DIRECTION OF TRAFFIC FLOW
- DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- TEMP. SHORING (LOCATION PURPOSES ONLY)
- WORK AREA
- REMOVAL
- USER DEFINED (IF NEEDED)
- USER DEFINED (IF NEEDED)

SIGNALS

EXISTING PROPOSED TEMPORARY

PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

TRAFFIC CONTROL DEVICES

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

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

PAVEMENT MARKERS

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

PAVEMENT MARKING SYMBOLS

PAVEMENT MARKING SYMBOLS

APPROVED: _____ DATE: 4-2-14

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 037026 ENGINEER STEVEN D. MILLER

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

ROADWAY STANDARD DRAWINGS & LEGEND

$$$$$$$SYSTIME$$$$$$$
$$$$$$$USERNAME$$$$$$$

PROJ. REFERENCE NO.	SHEET NO.
BD-5108AA	TMP-1B

MANAGEMENT STRATEGIES

-CLOSE SR 1801 (GREEN CHAPEL CHURCH RD) AND SR 1156 (JOES CREEK RD) AND DETOUR TRAFFIC OFF-SITE

-LOCAL ACCESS TO ALL RESIDENCES AND BUSINESSES WILL BE MAINTAINED BETWEEN CLOSURE POINTS AT ALL TIMES DURING CONSTRUCTION

LOCAL NOTES

1. NOTIFY THE ENGINEER AT LEAST ONE MONTH PRIOR TO ANY TRAFFIC PATTERN ALTERATION.
2. NOTIFY RICHMOND AND SCOTLAND COUNTY SCHOOLS AT LEAST ONE MONTH PRIOR TO ROAD CLOSURE.
3. NOTIFY RICHMOND AND SCOTLAND COUNTY EMERGENCY SERVICES AT LEAST ONE MONTH PRIOR TO ROAD CLOSURE.

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.

SIGNING

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

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

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

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

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

PHASING

STEP 1 USING RSD 1101.03 SHEET 1 OF 9, CLOSE GREEN CHAPEL CHURCH ROAD (SR 1801) AND JOES CREEK ROAD (SR 1156) AND DETOUR TRAFFIC OFF-SITE AS SHOWN ON TMP-2. MAINTAIN ACCESS TO ALL RESIDENCES AND BUSINESSES BETWEEN CLOSURE POINTS.

STEP 2 REMOVE THE EXISTING STRUCTURE.

STEP 3 CONSTRUCT THE PROPOSED STRUCTURE AND ROADWAY.

STEP 4 PLACE FINAL PAVEMENT MARKINGS ACCORDING TO THE PAVEMENT MARKING PLANS.

STEP 5 OPEN GREEN CHAPEL CHURCH ROAD (SR 1801) AND JOES CREEK ROAD (SR 1156) TO TRAFFIC AND REMOVE ALL TRAFFIC CONTROL DEVICES.

APPROVED: _____ DATE: 9-3-14

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 037026 ENGINEER STEVEN D. MILLER

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

TRANSPORTATION OPERATIONS PLAN

$$$$$$SYSTIME$$$$
$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

PROJ. REFERENCE NO.	SHEET NO.
BD-5108AA	TMP-2

1842

Eddies Ln

INSET A
(SEE TMP-3)

74

Joes

G

1801

1801

Green Chapel Ch Rd

Joes Creek Rd

1156

Creek

H

I

1800

H

G

1155

Guinns Mill Rd

RICHMOND CO.
SCOTLAND CO.

Mount Moriah Church Rd

1154

Marsh Rd

1802

1800

H

1155

I

County Line Rd

DETOUR ROUTE

(SEE TMP-3 FOR SIGN LEGEND)

381

CSX

1805

RAILROAD

1126

APPROVED: _____ DATE: 9-3-14

SEAL

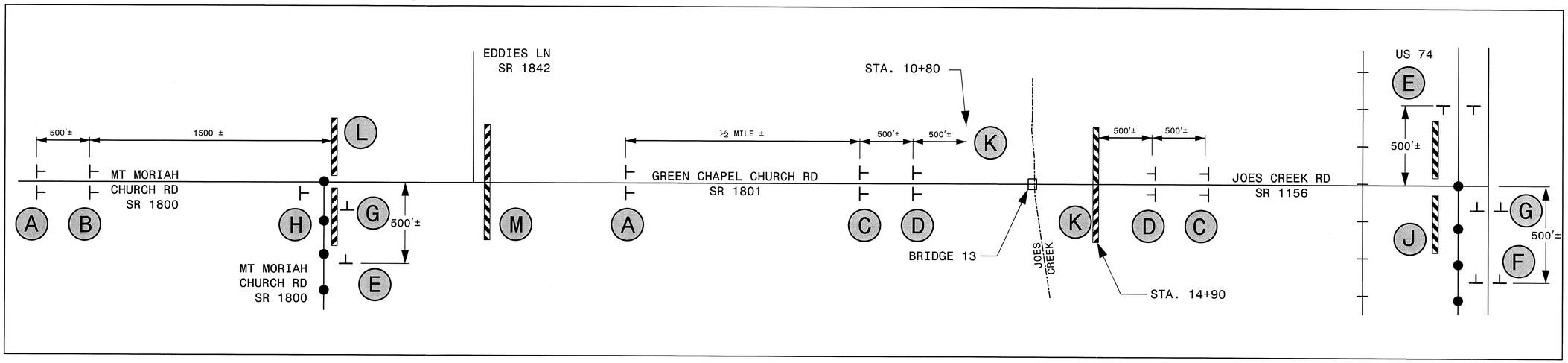
NORTH CAROLINA PROFESSIONAL SEAL 037026 ENGINEER STEVEN D. MILLER

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

OFF-SITE DETOUR

PROJ. REFERENCE NO.	SHEET NO.
BD-5108AA	TMP-3

INSET A



A

B

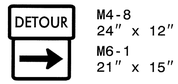
C

D

E

F

G



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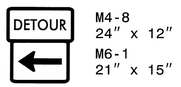

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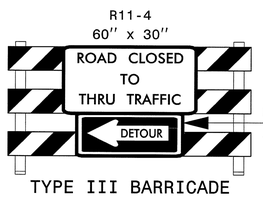
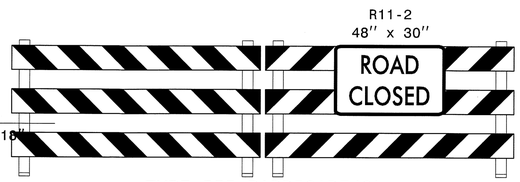


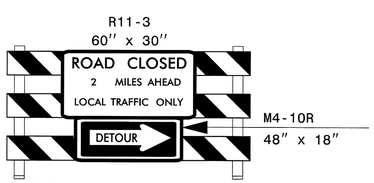
TYPE III BARRICADE

J



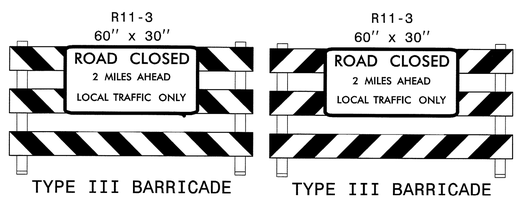
TYPE III BARRICADE(S)

K



TYPE III BARRICADE

L



TYPE III BARRICADE

TYPE III BARRICADE

M

APPROVED: _____ DATE: 9-1-14

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 037026 ENGINEER STEVEN D. MILLER

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

ROAD CLOSURE

TIP PROJECT: BD-5108AA

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BD-5108AA	EC-1	7

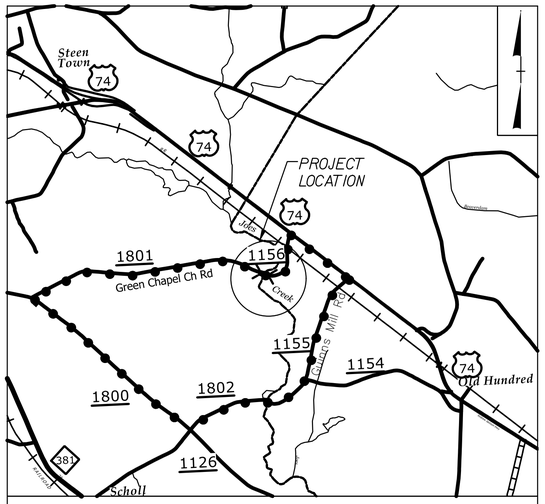
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
45354.1.28		PE
45354.1.28		R/W & UTIL.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
RICHMOND COUNTY

LOCATION: BRIDGE NO. 13 OVER JOES CREEK ON SR 1801 (GREEN CHAPEL CHURCH ROAD) / SR 1156 (JOES CREEK ROAD)

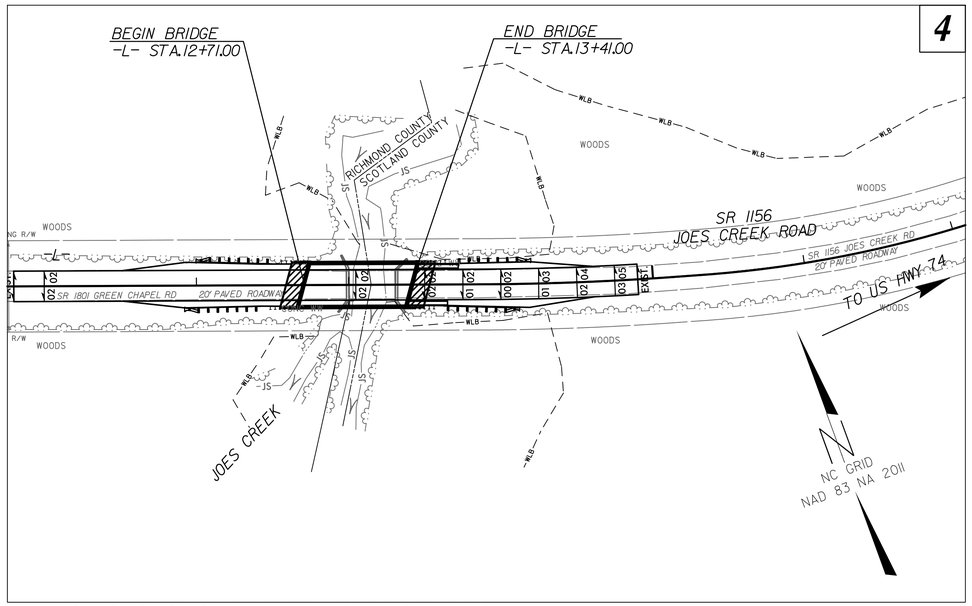
TYPE OF WORK: GRADING, DRAINAGE, PAVING, & STRUCTURE

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL



VICINITY MAP

OFF-SITE DETOUR ROUTE



THIS PROJECT IS NOT WITHIN MUNICIPAL BOUNDARIES
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II MODIFIED.

EROSION AND SEDIMENT CONTROL MEASURES

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

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

GRAPHIC SCALE

15′ 0 30′
PLANS

10′ 0 20′
PROFILE (HORIZONTAL)

2′ 0 4′
PROFILE (VERTICAL)

ROADSIDE ENVIRONMENTAL UNIT
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

ANDREW M. HOWELL, P.E.
LEVEL III DESIGNER OF EROSION AND SEDIMENT CONTROL PLANS
3105
LEVEL III CERTIFICATION NO.

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.

Prepared In the Office of:

SEPI ENGINEERING & CONSTRUCTION
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Raleigh, NC 27605
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Fax:919-789-9591
License: C-2197

2012 STANDARD SPECIFICATIONS

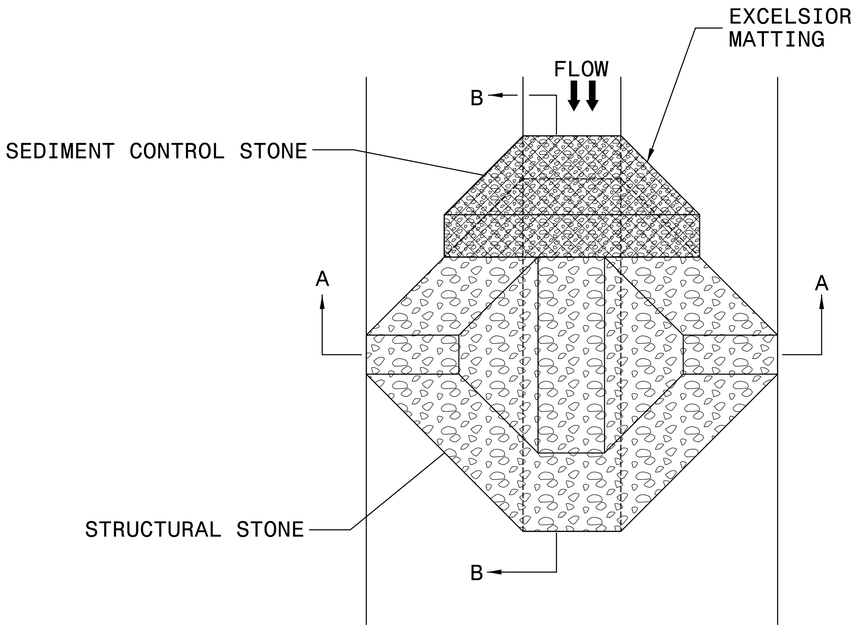
Roadway Standard Drawings

The following roadway english standards as appear in "Roadway Standard Drawings"– Roadway Design Unit – N. C. Department of Transportation – Raleigh, N. C., dated January 2012 and the latest revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

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

PROJECT REFERENCE NO.	SHEET NO.
BD-5108AA	EC-2

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



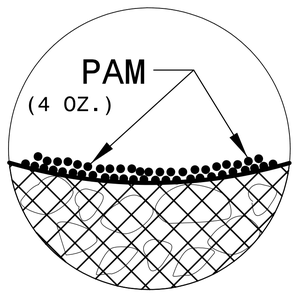
PLAN

NOTES

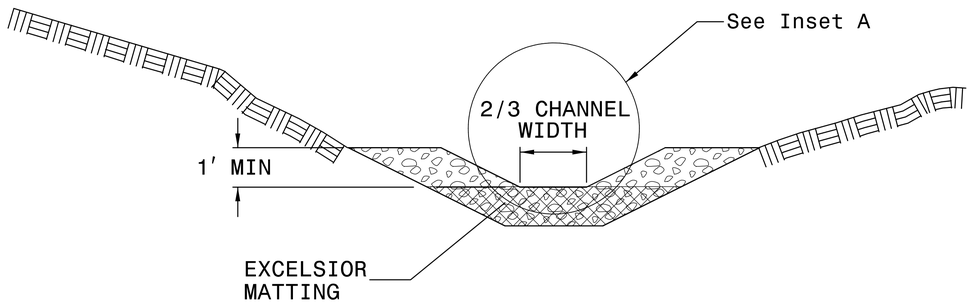
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

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

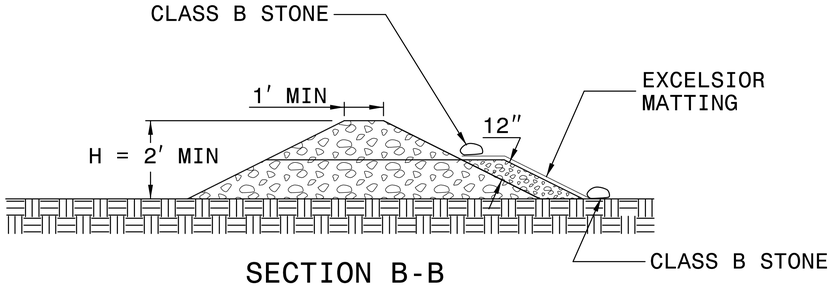
INITIALLY APPLY 4 OUNCES OF POLYACRYLAMIDE (PAM) TO TOP OF MATTING SECTION AND AFTER EVERY RAINFALL EVENT THAT EQUALS OR EXCEEDS 0.50 INCHES.



INSET A



SECTION A-A



SECTION B-B

NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
BD-5108AA	EC-3

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

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

PROJECT REFERENCE NO.	SHEET NO.
BD-5108AA	EC-4/CONST.4

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30' 0' 60'

NC GRID
NAD 83 NA 2011

POT Sta. 10+00.00
BEGIN PROJECT

PC Sta. 13+86.12

PT Sta. 15+16.77

PC Sta. 15+33.70
END PROJECT

Z V PATE, INC
DB U PG 25
(SCOTLAND COUNTY)

BEGIN BRIDGE
-L- STA.12+71.0

END BRIDGE
-L- STA.13+41.0

STRUCTURE NO. 760013
WOOD & STEEL BRIDGE
WITH PAVED DECK

RICHMOND COUNTY
SCOTLAND COUNTY

CLASS II RIP RAP
TO ELEV. 249.6
STA. 13+48 (RT)
STA. 13+56 (LT)

CLASS II RIP RAP
TO ELEV. 249.6
STA. 12+56 (RT)
STA. 12+64 (LT)

CLASS II RIP RAP
ALONG DISTURBED BANK

HIGH WATER MARK
ELEV 250.35
FROM FIELD OBSERVATION
6/26/13

JOES CREEK

WETLAND AREA

WOODS

TEMPORARY
EARTH BERM

TO NC HWY 381

SR 1801 GREEN CHAPEL RD
20' PAVED ROADWAY

SR 1156 JOES CREEK RD
20' PAVED ROADWAY

TO US HWY 74

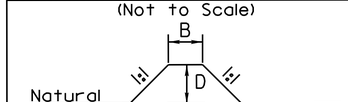
EXISTING R/W

S 67° 26' 42.3" E

S 71° 22' 35.2" E

TEMPORARY EARTH BERM

(Not to Scale)



D = 1Ft.
B = 1Ft.

STABILIZE EARTH BERM

FROM STA. 11+75 TO STA. 12+00 -L- RT
FROM STA. 12+50 TO STA. 12+75 -L- LT
FROM STA. 14+50 TO STA. 14+75 -L- LT

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4

INSTALL FILTRATION GEOTEXTILE UNDER
TEMPORARY ROCK SILT CHECK(S)
TYPE A IN PERMITTED WETLANDS.

NOTE:
PLACE TEMPORARY ROCK SILT CHECKS TYPE – A
AT DRAINAGE OUTLETS.

NOTE:
TEMPORARY SILT FENCE SHALL BE INSTALLED A MINIMUM
OF 3 FEET FROM TOE OF FILL IN WETLAND AREAS

EXCAVATION

PROJECT REFERENCE NO.	SHEET NO.
BD-5108AA	EC-5/CONST.4

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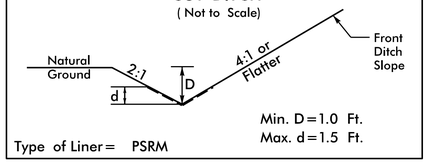
10

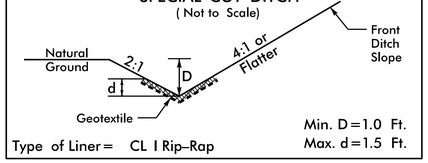
DETAIL B
CUT DITCH
(Not to Scale)



Type of Liner= PSRM

FROM STA. 11+00 TO STA. 12+00 –L– LT

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)



Type of Liner= CL I Rip–Rap

FROM STA. 12+00 TO STA. 12+75 –L– LT
FROM STA. 11+50 TO STA. 12+00 –L– RT
FROM STA. 14+25 TO STA. 15+00 –L– LT

NC GRID
NAD 83 NA 2011

30' 0' 60'

POT Sta. 10+00.00
BEGIN PROJECT

PC Sta. 13+86.12

PT Sta. 15+16.77

PC Sta. 15+33.70
END PROJECT

Z V PATE, INC
DB U PG 25
(SCOTLAND COUNTY)

SPECIAL CUT 'V' DITCH LINE W/PSRM SEE DETAIL C

CUT 'V' DITCH LINE W/PSRM SEE DETAIL B

SPECIAL CUT 'V' DITCH LINE W/CL I SEE DETAIL A

BEGIN BRIDGE -L- STA.12+71.0

EXCAVATION

WETLAND AREA

RICHMOND COUNTY
SCOTLAND COUNTY

CLASS II RIP RAP TO ELEV. 249.6
STA. 13+48 (RT)
STA. 13+56 (LT)

CL B RIP RAP
EST 2 TONS
EST 7 SYFF

TEMPORARY EARTH BERM

WOODS

EXISTING R/W

PDE

TO NC HWY 381

SR 1801 GREEN CHAPEL RD

20' PAVED ROADWAY

S 67° 26' 42.3" E

S 71° 22' 35.2" E

SR 1156 JOES CREEK RD

TO US HWY 74

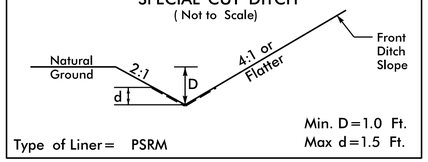
END BRIDGE -L- STA.13+41.0

JOES CREEK

HIGH WATER MARK ELEV 250.35 FROM FIELD OBSERVATION 6/26/13

CLASS II RIP RAP ALONG DISTURBED BANK

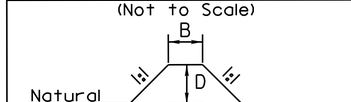
DETAIL C
SPECIAL CUT DITCH
(Not to Scale)



Type of Liner= PSRM

FROM STA. 10+25 TO STA. 11+00 –L– LT
FROM STA. 10+75 TO STA. 11+50 –L– RT

TEMPORARY EARTH BERM
(Not to Scale)



STABILIZE EARTH BERM

FROM STA. 11+75 TO STA. 12+00 –L– RT
FROM STA. 12+50 TO STA. 12+75 –L– LT
FROM STA. 14+50 TO STA. 14+75 –L– LT

INSTALL FILTRATION GEOTEXTILE UNDER TEMPORARY ROCK SILT CHECK(S) TYPE A IN PERMITTED WETLANDS.

NOTE:
PLACE TEMPORARY ROCK SILT CHECKS TYPE – A AT DRAINAGE OUTLETS.

NOTE:
TEMPORARY SILT FENCE SHALL BE INSTALLED A MINIMUM OF 3 FEET FROM TOE OF FILL IN WETLAND AREAS

EXCAVATION

Place 75 SY (+/–) Matting for Erosion Control on Slopes Adjacent to Permitted Wetlands as Work Allows.
FROM STA. 13+56 TO STA. 14+20 –L– LT

Place 100 SY (+/–) Matting for Erosion Control on Slopes Adjacent to Permitted Wetlands as Work Allows.
FROM STA. 13+48 TO STA. 14+31 –L– RT

INSTALL 135 SY (+/–) PSRM IN THE PROPOSED DITCH LINE
FROM STA. 10+25 TO 12+00 –L– LT

INSTALL 55 SY (+/–) PSRM IN THE PROPOSED DITCH LINE
FROM STA. 10+75 TO 11+50 –L– RT

PROJECT REFERENCE NO.	SHEET NO.
BD-5108AA	X-1

CROSS SECTION INDEX

X-1 CROSS SECTION INDEX

X-2 THRU X-7 -L-

PROJ. REFERENCE NO.	SHEET NO.
BD-5108AA	X-2

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8/23/99

$$$$$$SYSTIME$$$$
$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$
$$$$$USERNAME$$$$

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BD-5108AA	X-3

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

265 260 255 250 270 265

2:1 4:1 0.020 0.020 4:1 2:1

258.34

256.43 256.04

11+50.00

2:1 4:1 0.020 0.020 4:1 2:1

260.11

257.88 257.77

11+25.00

2:1 4:1 0.020 0.020 4:1 2:1

261.87

259.49 259.49

11+00.00

-4-

$$$$$$$$SCXTIME$$$$$$$$
$$$$$$$$SCXDGN$$$$$$$$$$$$$$$$$$$$
$$$$$$$$SCXNAME$$$$$$$$
$$$$$$$$USERNAME$$$$$$$$

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BD-5108AA	X-4

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

260 255 250 245 265 260

4:1 0.020 0.020 2:1

254.12

250.93

12+25.00

2:1 4:1 0.020 0.020 2:1

255.31

253.93

12+00.00

2:1 4:1 0.020 0.020 4:1

256.82

255.10

252.11

11+75.00

-4-

$$$$SCXTIME$$$$
$$$$SCXNAME$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BD-5108AA	X-5

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

260 255 250 245 240

0.020 0.020

249.92

13+00.00

260 255 250 245 240

0.020 0.020

252.54

12+75.00

260 255 250 245 240

4:1

0.020 0.020

2:1

253.02

248.74

12+50.00

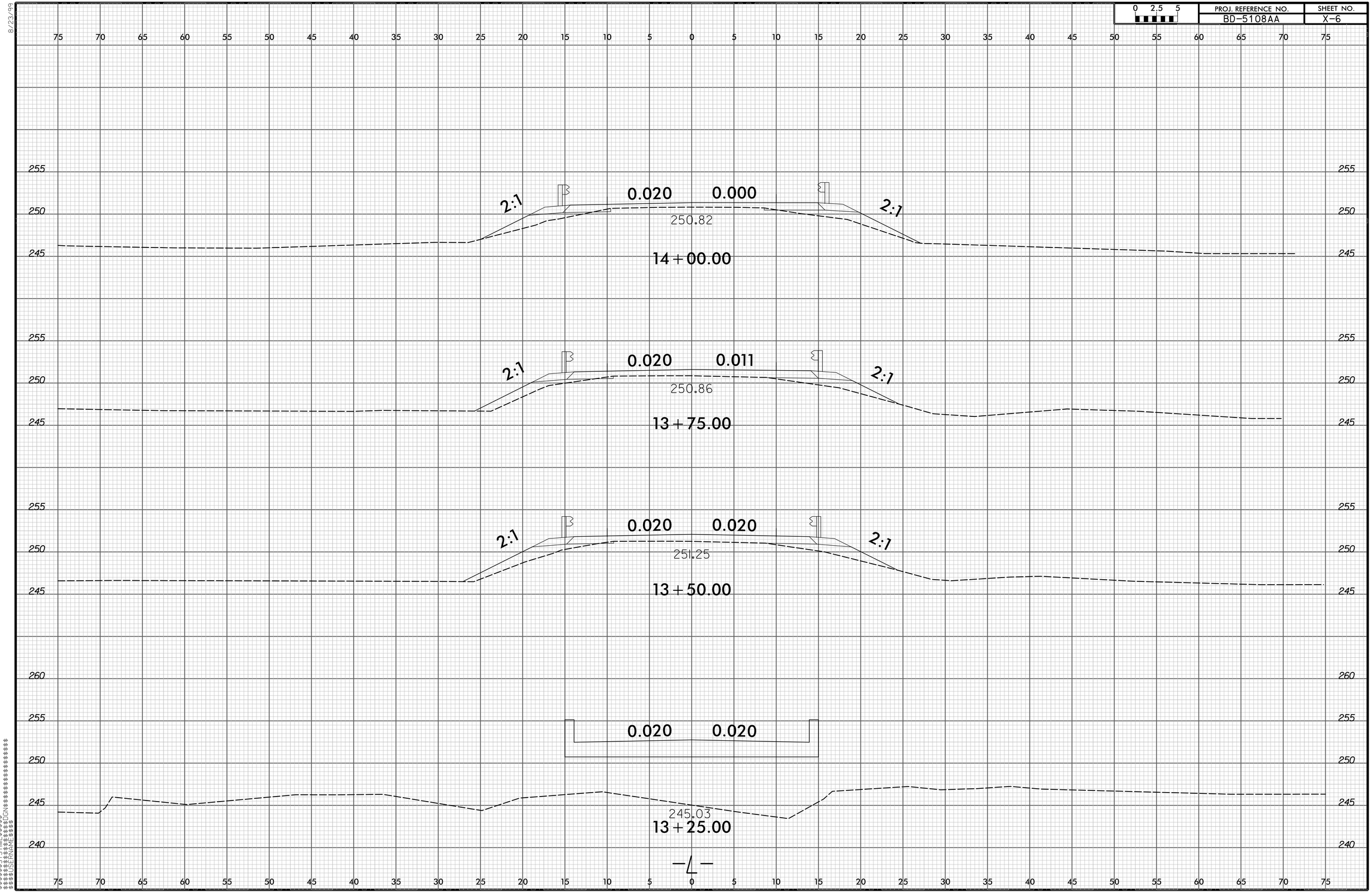
—L—

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

$$$$$$$$$$SCXTIME$$$$$$$$$$
$$$$$$$$$$SCXNAME$$$$$$$$$$
$$$$$$$$$$USERNAME$$$$$$$$$$

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BD-5108AA	X-6



$$$$$$$$SCXTIME$$$$$$$$
$$$$$$$$SCXNAME$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$$$USERNAME$$$$$$$$

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BD-5108AA	X-7

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

255
250
245
240

251.49
15+00.00

255
250
245

4:1 0.050 0.030 4:1
251.37
2:1 247.19
14+75.00

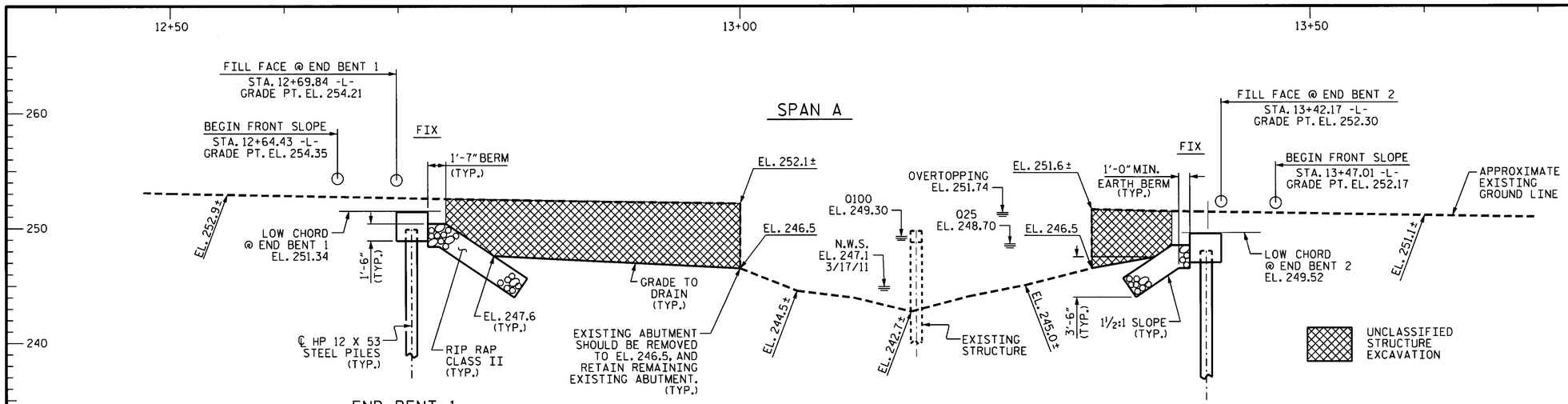
255
250
245
240

4:1 0.040 0.020 2:1
25.12
2:1 246.97
14+50.00

255
250
245

2:1 0.030 0.010 2:1
250.90
14+25.00

F.A. PROJECT BRZ-1801(4)



PLAN

END BENT PILES NOT SHOWN FOR CLARITY.
FOR PILE LOCATIONS, SEE "END BENT" SHEETS

-2.6398% 0.1999%

GRADE DATA

P.I. STA. = 13+81.89 -L-
P.I. EL.= 251.25
V.C. = 74'

RIP RAP ESTIMATED QUANTITIES

	RIP RAP CLASS II (TONS)	GEOTEXTILE FOR DRAINAGE (SQ. YARDS)
END BENT 1	65	70
END BENT 2	50	55
TOTAL	115	125

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

NORTH CAROLINA PROFESSIONAL SEAL 16301 ENGINEER TING CHUNG FANG
3/21/14

NORTH CAROLINA PROFESSIONAL SEAL 21545 ENGINEER STEVEN L. WANCE
03/21/14

DRAWN BY : S. WANCE DATE : 11/22/13
CHECKED BY : S. B. WILLIAMS DATE : 01/14
DESIGN ENGINEER OF RECORD: S. WANCE DATE : 03/14

21-MAR-2014 12:52
S:\DPG2\Ting\DIV8BD\BD-5108AARichmnd13\Final_plans\BD5108AA_cs_plans.dgn
swance

PROJECT NO. BD-5108AA
RICHMOND COUNTY
STATION: 13+06.00 -L-

SHEET 1 OF 2 REPLACES BRIDGE NO. 13

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

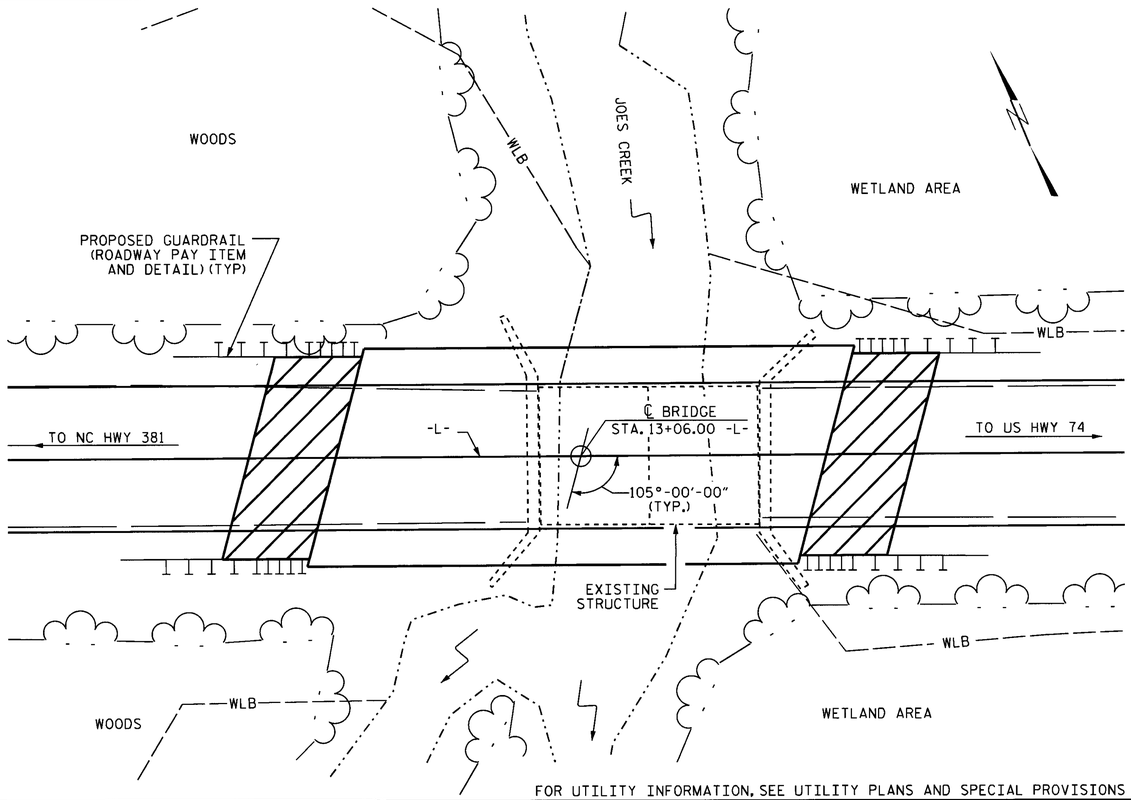
FOR BRIDGE OVER JOES CREEK ON SR 1801 (GREEN CHAPEL RD.) BETWEEN SR 1800 AND CSX RR

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

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		VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLABS	
	LUMP SUM	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	NO.	LIN. FT.	LIN. FT.	TON	SQ. YD.	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE				LUMP SUM				140.0			LUMP SUM	10	700
END BENT 1		LUMP SUM	13.7		2,048	5	175		65	70			
END BENT 2		LUMP SUM	13.7		2,048	5	175		50	55			
TOTAL	LUMP SUM	LUMP SUM	27.4	LUMP SUM	4,096	10	350	140.0	115	125	LUMP SUM	10	700

BM #1 RR SPIKE IN BASE OF 12" OAK, 68' LEFT OF -L- STA. 12+96.310, EL. 248.11



FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS

LOCATION SKETCH

FOUNDATION NOTES

FOR PILES SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENTS 1 & 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 97 TONS PER PILE.

DRIVE PILES AT END BENTS 1 & 2 TO REQUIRED DRIVING RESISTANCE OF 165 TONS PER PILE.

HYDRAULIC DATA

DESIGN DISCHARGE	= 500 CFS
FREQUENCY OF DESIGN FLOOD	= 25 YR.
DESIGN HIGH WATER ELEVATION	= 248.7 FT.
DRAINAGE AREA	= 13.1 SQ.MI.
BASE DISCHARGE (Q100)	= 700 CFS
BASE HIGH WATER ELEVATION	= 249.30 FT.

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 1495 CFS
FREQUENCY OF OVERTOPPING FLOOD	= 100 YR.
OVERTOPPING FLOOD ELEVATION	= 251.74 FT.

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC PERFORMANCE ZONE 2.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET S-N.

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

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 SAME 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.

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.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 40 FT. LEFT SIDE, 20 FT. RIGHT SIDE OF CENTERLINE ROADWAY AT END BENT 1 AND 25 FT. LEFT SIDE, 15 FT. RIGHT SIDE OF CENTERLINE ROADWAY AT END BENT 2 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 13+06.00 -L-."

THE EXISTING STRUCTURE CONSISTING OF 2 SPANS @ 18'-8" EACH, A CLEAR ROADWAY WIDTH OF 19'-1" WITH TIMBER DECK ON STEEL I-BEAMS, RUBBLE MASONRY ABUTMENTS AND TIMBER CAP ON TIMBER PILES AT INTERIOR BENT LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT.

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

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

PROJECT NO. BD-5108AA

RICHMOND COUNTY

STATION: 13+06.00 -L-

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 21545 ENGINEER STEVEN L. WANCE

03/21/14

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER JOES CREEK ON SR 1801 (GREEN CHAPEL RD.) BETWEEN SR 1800 AND CSX RR

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

DRAWN BY : S. WANCE DATE : 12/13
CHECKED BY : S. B. WILLIAMS DATE : 01/14
DESIGN ENGINEER OF RECORD: S. WANCE DATE : 03/14

21-MAR-2014 11:47
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clyokeley

LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CORED SLAB UNITS

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	1.014	--	1.75	0.269	1.04	70'	EL	34.482	0.608	1.10	70'	EL	3.448	0.80	0.269	**1.01**	70'	EL	**34.482**	
		HL-93(Opr)	N/A	--	1.355	--	1.35	0.269	1.35	70'	EL	34.482	0.608	1.43	70'	EL	3.448	N/A	--	--	--	--	--	
		HS-20(Inv)	36.000	2	1.315	47.356	1.75	0.269	1.36	70'	EL	34.482	0.608	1.38	70'	EL	3.448	0.80	0.269	**1.32**	70'	EL	**34.482**	
		HS-20(Opr)	36.000	--	1.757	63.236	1.35	0.269	1.76	70'	EL	34.482	0.608	1.79	70'	EL	3.448	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.938	39.656	1.4	0.269	3.78	70'	EL	34.482	0.608	4.12	70'	EL	3.448	0.80	0.269	2.94	70'	EL	34.482	
		SNGARBS2	20.000	--	2.203	44.052	1.4	0.269	2.84	70'	EL	34.482	0.608	2.93	70'	EL	3.448	0.80	0.269	2.20	70'	EL	34.482	
		SNAGRIS2	22.000	--	2.092	46.016	1.4	0.269	2.69	70'	EL	34.482	0.608	2.72	70'	EL	3.448	0.80	0.269	2.09	70'	EL	34.482	
		SNCOTTS3	27.250	--	1.462	39.844	1.4	0.269	1.88	70'	EL	34.482	0.608	2.06	70'	EL	3.448	0.80	0.269	1.46	70'	EL	34.482	
		SNAGGRS4	34.925	--	1.227	42.856	1.4	0.269	1.58	70'	EL	34.482	0.608	1.71	70'	EL	3.448	0.80	0.269	1.23	70'	EL	34.482	
		SNS5A	35.550	--	1.200	42.646	1.4	0.269	1.54	70'	EL	34.482	0.608	1.73	70'	EL	3.448	0.80	0.269	1.20	70'	EL	34.482	
		SNS6A	39.950	--	1.103	44.058	1.4	0.269	1.42	70'	EL	34.482	0.608	1.58	70'	EL	3.448	0.80	0.269	1.10	70'	EL	34.482	
		SNS7B	42.000	--	1.050	44.113	1.4	0.269	1.35	70'	EL	34.482	0.608	1.55	70'	EL	3.448	0.80	0.269	1.05	70'	EL	34.482	
	TTST	TNAGRIT3	33.000	--	1.345	44.401	1.4	0.269	1.73	70'	EL	34.482	0.608	1.88	70'	EL	3.448	0.80	0.269	1.35	70'	EL	34.482	
		TNT4A	33.075	--	1.352	44.717	1.4	0.269	1.74	70'	EL	34.482	0.608	1.83	70'	EL	3.448	0.80	0.269	1.35	70'	EL	34.482	
		TNT6A	41.600	--	1.108	46.073	1.4	0.269	1.43	70'	EL	34.482	0.608	1.65	70'	EL	3.448	0.80	0.269	1.11	70'	EL	34.482	
		TNT7A	42.000	--	1.114	46.794	1.4	0.269	1.43	70'	EL	34.482	0.608	1.62	70'	EL	3.448	0.80	0.269	1.11	70'	EL	34.482	
		TNT7B	42.000	--	1.155	48.526	1.4	0.269	1.49	70'	EL	34.482	0.608	1.51	70'	EL	3.448	0.80	0.269	1.16	70'	EL	34.482	
		TNAGRIT4	43.000	--	1.097	47.174	1.4	0.269	1.41	70'	EL	34.482	0.608	1.46	70'	EL	3.448	0.80	0.269	1.10	70'	EL	34.482	
		TNAGT5A	45.000	--	1.033	46.505	1.4	0.269	1.33	70'	EL	34.482	0.608	1.45	70'	EL	3.448	0.80	0.269	1.03	70'	EL	34.482	
		TNAGT5B	45.000	3	1.020	45.905	1.4	0.269	1.31	70'	EL	34.482	0.608	1.39	70'	EL	3.448	0.80	0.269	**1.02**	70'	EL	**34.482**	

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

1.
2.
3.
4.

⟨#⟩ CONTROLLING LOAD RATING

⟨1⟩ DESIGN LOAD RATING (HL-93)

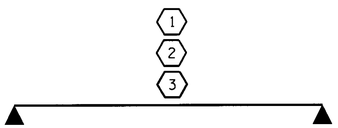
⟨2⟩ DESIGN LOAD RATING (HS-20)

⟨3⟩ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

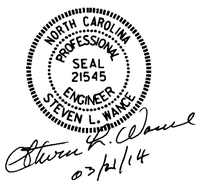
GIRDER LOCATION

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



LRFR SUMMARY

FOR SPAN A



PROJECT NO. BD-5108AA

RICHMOND COUNTY

STATION: 13+06.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
LRFR SUMMARY FOR
70' CORED SLAB UNIT
105° SKEW
(NON-INTERSTATE TRAFFIC)

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

ASSEMBLED BY :	S. WANCE	DATE : 11/26/13
CHECKED BY :	S. B. WILLIAMS	DATE : 01/14
DRAWN BY :	CVC 6/10	
CHECKED BY :	DNS 6/10	

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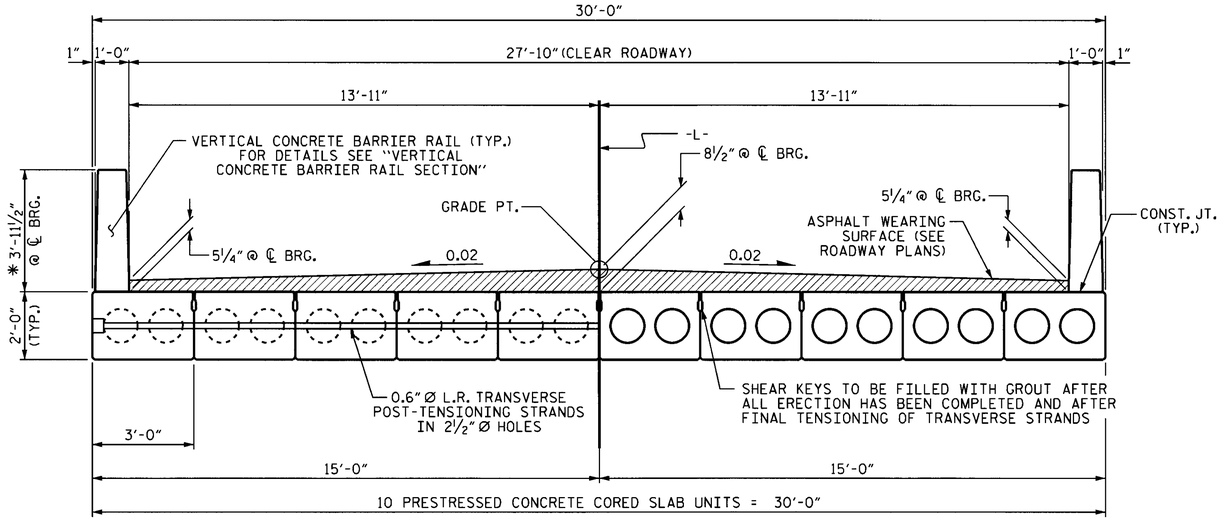
STD. NO. 24LRFR1_75&105S_70L



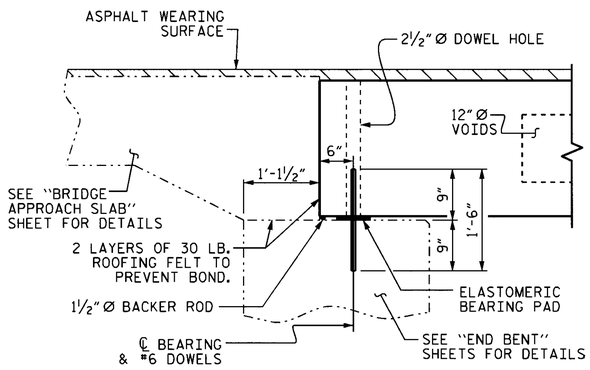
HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

HALF SECTION
THROUGH VOIDS

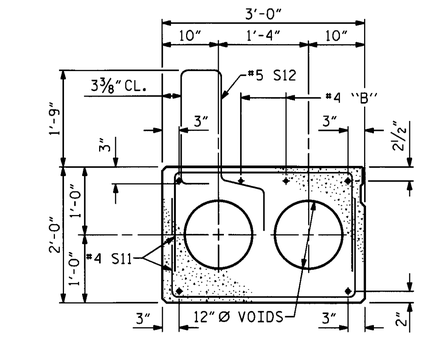
TYPICAL SECTION

* 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 GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.

FIXED END

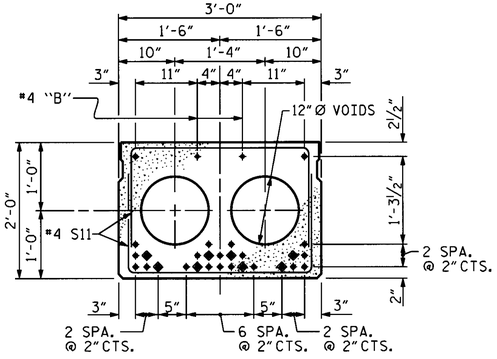


SECTION AT END BENT



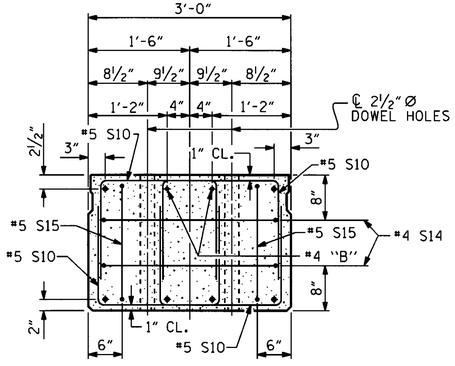
EXTERIOR SLAB SECTION

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



INTERIOR SLAB SECTION (70' UNIT)

(28 STRANDS REQUIRED)



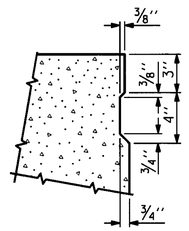
END ELEVATION

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.

0.6'' Ø LOW RELAXATION STRAND LAYOUT

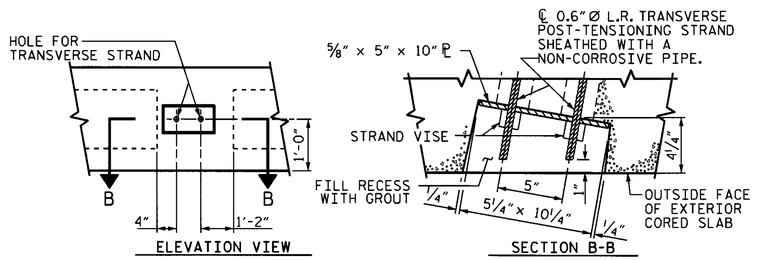
- ● FULLY BONDED STRANDS.
- ◈ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 12'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND



SHEAR KEY DETAIL

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



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

PROJECT NO. BD-5108AA
RICHMOND COUNTY
STATION: 13+06.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLAB UNIT

NORTH CAROLINA PROFESSIONAL SEAL 21545 ENGINEER STEVEN L. WANCE
03/21/14

ASSEMBLED BY : S. WANCE	DATE : 11/25/13
CHECKED BY : S. B. WILLIAM	DATE : 01/14
DRAWN BY : MAA 6/10	REV. 12/11 MAA/AAC
CHECKED BY : MKT 7/10	

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

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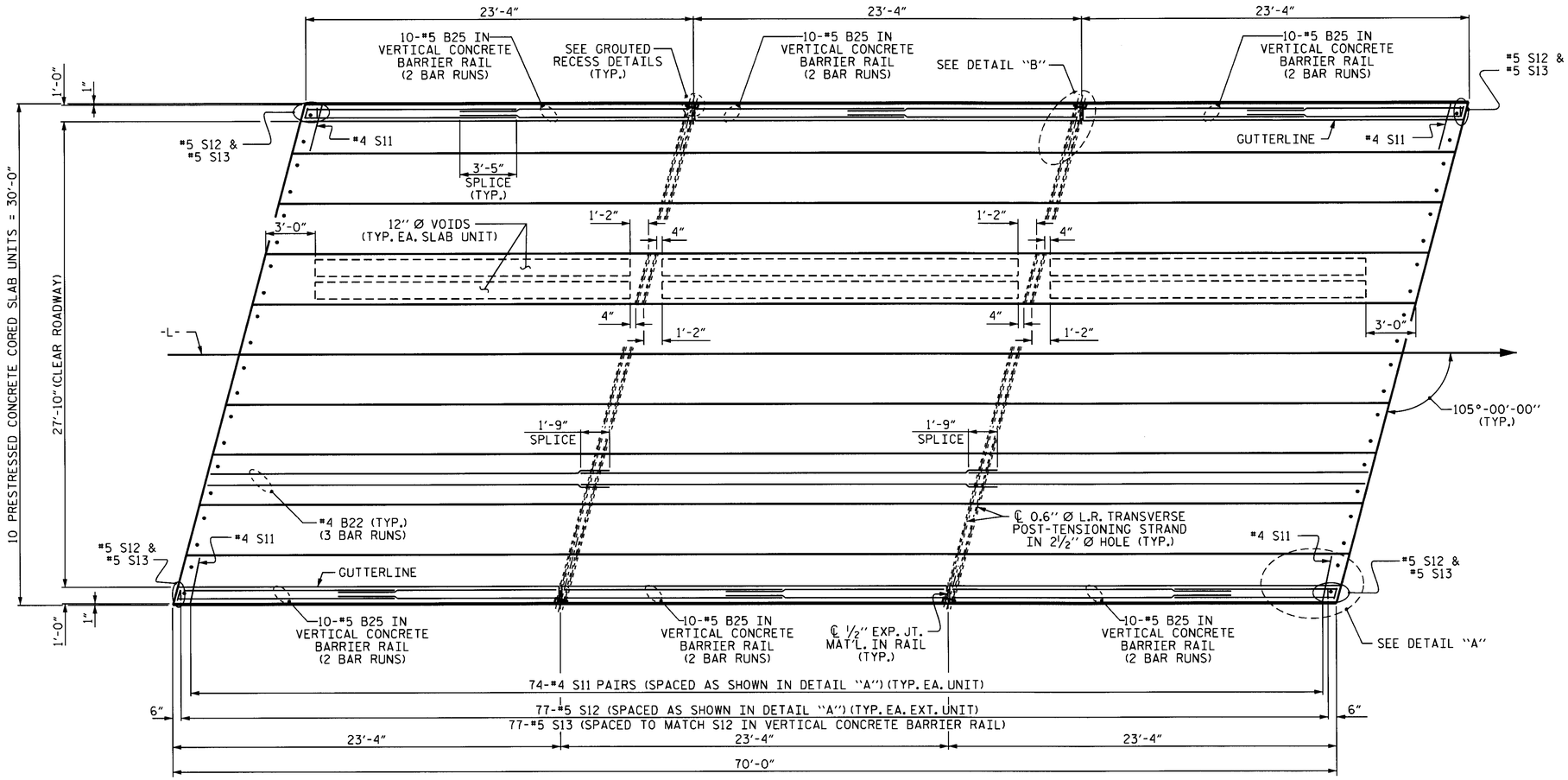
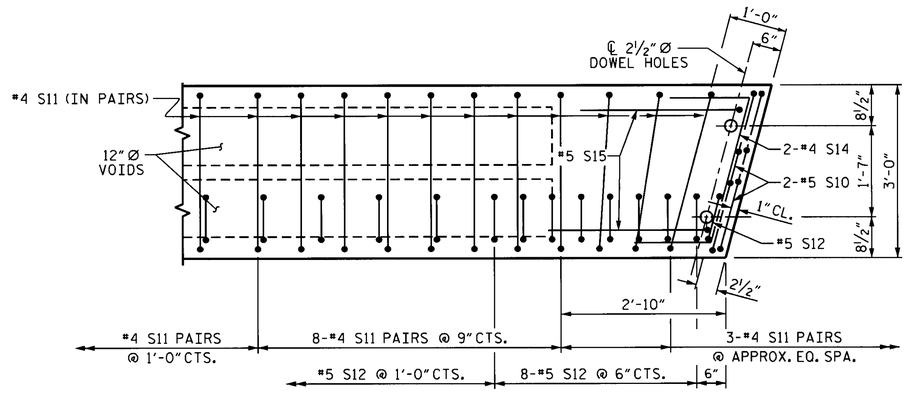
STD. NO. 24PCS4_30_105S

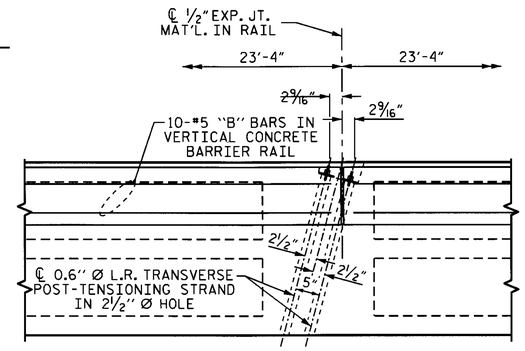


PLAN OF UNIT



DETAIL "A"

NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S12 BARS.



DETAIL "B"

#4 S11 BARS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO GROUTED RECESS AND 2½" Ø TRANSVERSE POST-TENSIONING STRAND HOLES

NORTH CAROLINA PROFESSIONAL SEAL 21545 ENGINEER STEVEN L. WANCE

03/24/14

PROJECT NO. BD-5108AA
RICHMOND COUNTY
STATION: 13+06.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 70' UNIT 27'-10" CLEAR ROADWAY 105° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			12

ASSEMBLED BY : S. WANCE	DATE : 11/25/13	
CHECKED BY : S. B. WILLIAMS	DATE : 01/14	
DRAWN BY : MAA 6/10	REV. 12/5/11 MAA/AAC	
CHECKED BY : MKT 7/10		

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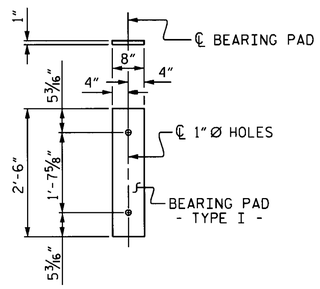


FIXED END
(TYPE I - 20 REQ'D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI

DEAD LOAD DEFLECTION AND CAMBER	3'-0" x 2'-0"
70' CORED SLAB UNIT	0.6"Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	4 5/16" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	13/16" ↓
FINAL CAMBER	3 1/2" ↑

** INCLUDES FUTURE WEARING SURFACE

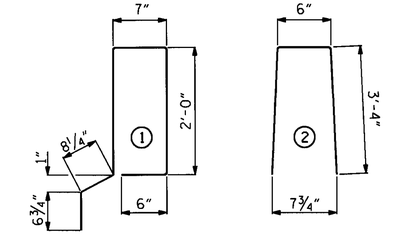
GRADE 270 STRANDS	0.6"Ø L.R.
AREA (SQUARE INCHES)	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950

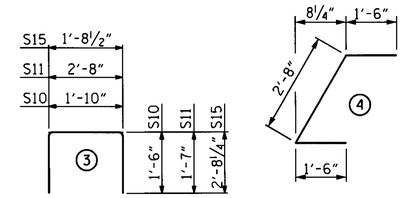
CORED SLABS REQUIRED	NUMBER	LENGTH	TOTAL LENGTH
70' UNIT			
EXTERIOR C.S.	2	70'-0"	140'-0"
INTERIOR C.S.	8	70'-0"	560'-0"
TOTAL	10		700'-0"

BILL OF MATERIAL FOR ONE 70' CORED SLAB UNIT

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B22	6	#4	STR	24'-6"	98	24'-6"	98
S10	8	#5	3	4'-10"	40	4'-10"	40
S11	148	#4	3	5'-10"	577	5'-10"	577
*S12	79	#5	1	6'-4"	522		
S14	4	#4	4	5'-8"	15	5'-8"	15
S15	4	#5	3	7'-1"	30	7'-1"	30
REINFORCING STEEL			LBS.		760		760
* EPOXY COATED REINFORCING STEEL			LBS.		522		
7000 P.S.I. CONCRETE			CU. YDS.		12.0		12.0
0.6"Ø L.R. STRANDS			No.		28		28

BAR TYPES





ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL

BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	70' UNIT					
*B25	120	120	#5	STR	13'-8"	1711
*S13	158	158	#5	2	7'-2"	1181
* EPOXY COATED REINFORCING STEEL				LBS.		2892
CLASS AA CONCRETE				CU.YDS.		18.9
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		140.26

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT

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

NOTES

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

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

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

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

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

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

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

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

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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

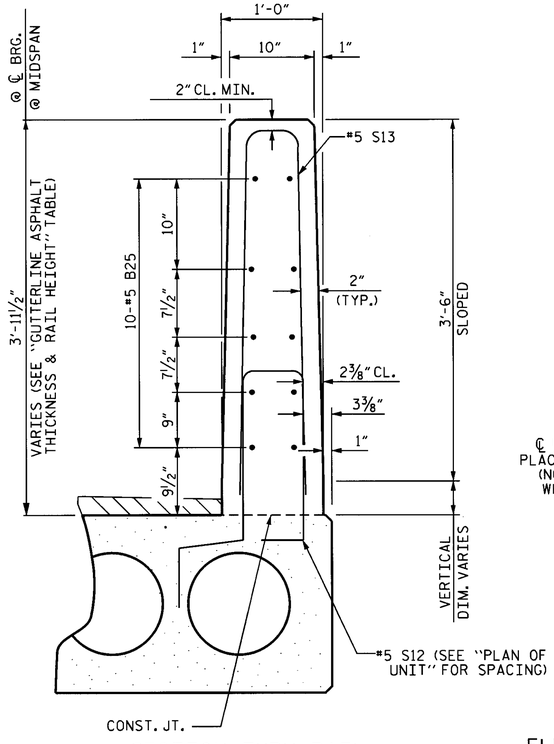
TRANSVERSE POST TENSIONING OF THE CORED SLAB UNITS SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

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

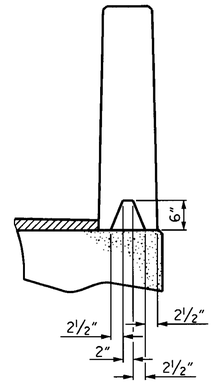
THE #4 S11 STIRRUPS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO THE GROUTED RECESS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

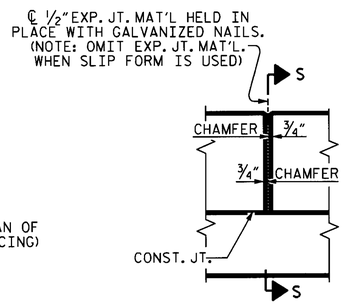
CONCRETE RELEASE STRENGTH	
UNIT	PSI
70' UNITS	5500



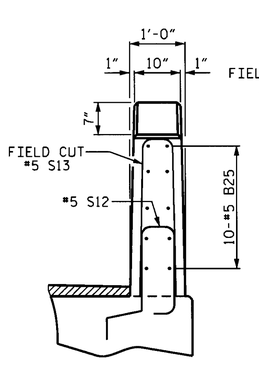
SECTION THRU RAIL



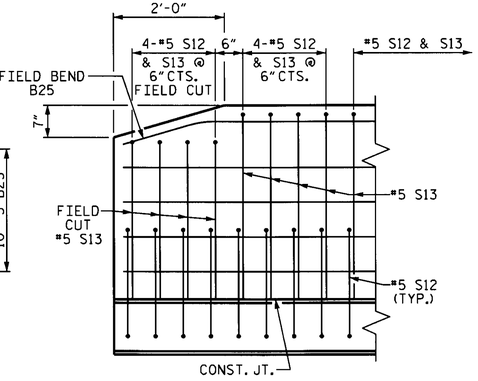
SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)



ELEVATION AT EXPANSION JOINTS



END VIEW



SIDE VIEW

VERTICAL CONCRETE BARRIER RAIL DETAILS

END OF RAIL DETAILS

PROJECT NO. BD-5108AA
RICHMOND COUNTY
STATION: 13+06.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

3'-0" X 2'-0"
PRESTRESSED CONCRETE
CORED SLAB UNIT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			12

NORTH CAROLINA PROFESSIONAL SEAL 21545 ENGINEER STEVEN L. WANCE
03/21/14

ASSEMBLED BY :	S. WANCE	DATE : 11/25/13
CHECKED BY :	S. B. WILLIAM	DATE : 01/14
DRAWN BY :	MAA	6/10
CHECKED BY :	MKT	7/10
REV. 12/11	MAA/AAC	

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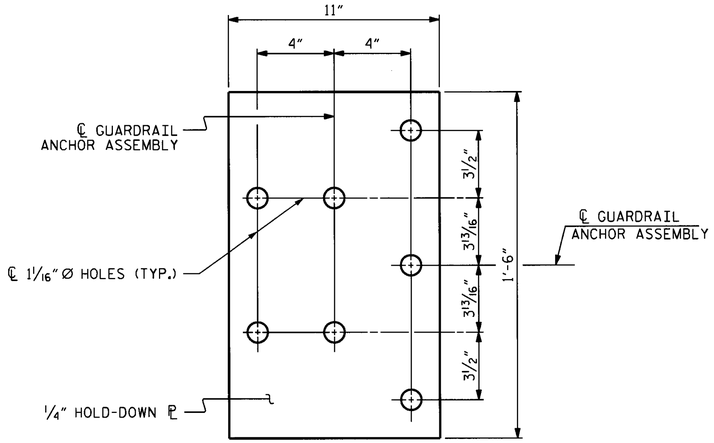
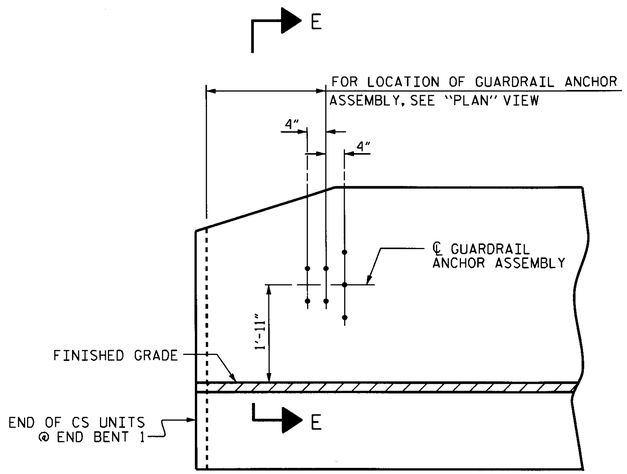
ciyokeley

STD. NO. 24PCS3_30_75&105S



PLAN



ELEVATION

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.)

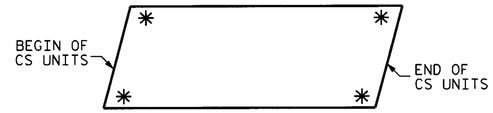
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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.

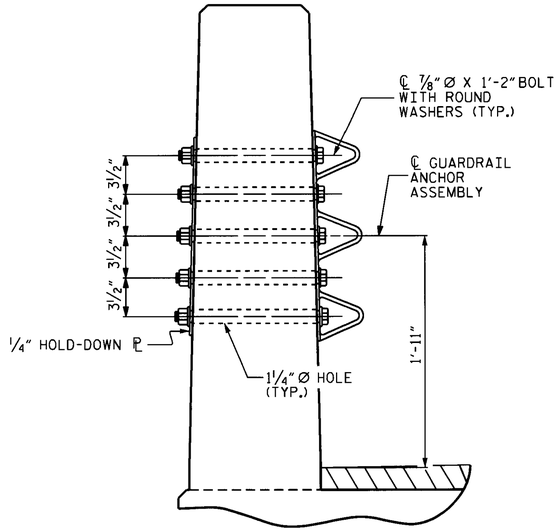
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

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.

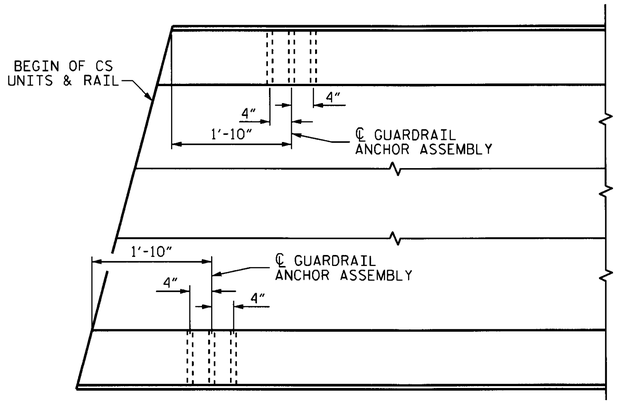


SKETCH SHOWING POINTS OF ATTACHMENT

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY



SECTION E-E



PLAN

GUARDRAIL ANCHOR ASSEMBLY DETAILS

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT 1 SHOWN, END BENT 2 SIMILAR.

PROJECT NO. BD-5108AA

RICHMOND COUNTY

STATION: 13+06.00 -L-

NORTH CAROLINA PROFESSIONAL SEAL 21545 ENGINEER STEVEN L. WANCE

03/21/14

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

GUARDRAIL ANCHORAGE FOR VERTICAL CONCRETE BARRIER RAIL

ASSEMBLED BY : S. WANCE	DATE : 11/13	REVISIONS				SHEET NO.
CHECKED BY : S. B. WILLIAMS	DATE : 01/14	NO.	BY:	DATE:	NO. BY: DATE:	S-7
DRAWN BY : MAA 5/10	REV. 10/1/11 MAA/GM	1			3	TOTAL SHEETS
CHECKED BY : GM 5/10	REV. 12/5/11 MAA/GM	2			4	12
	REV. 6/13 MAA/GM					

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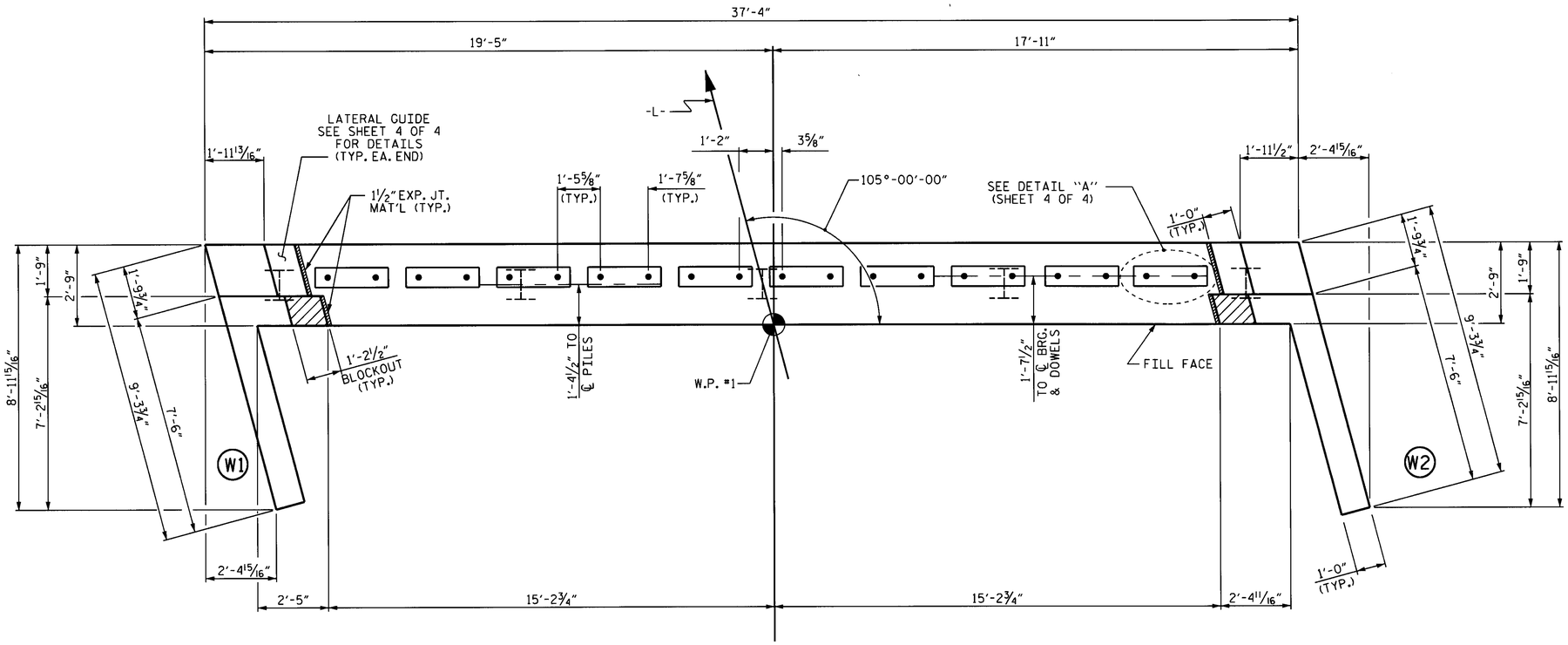
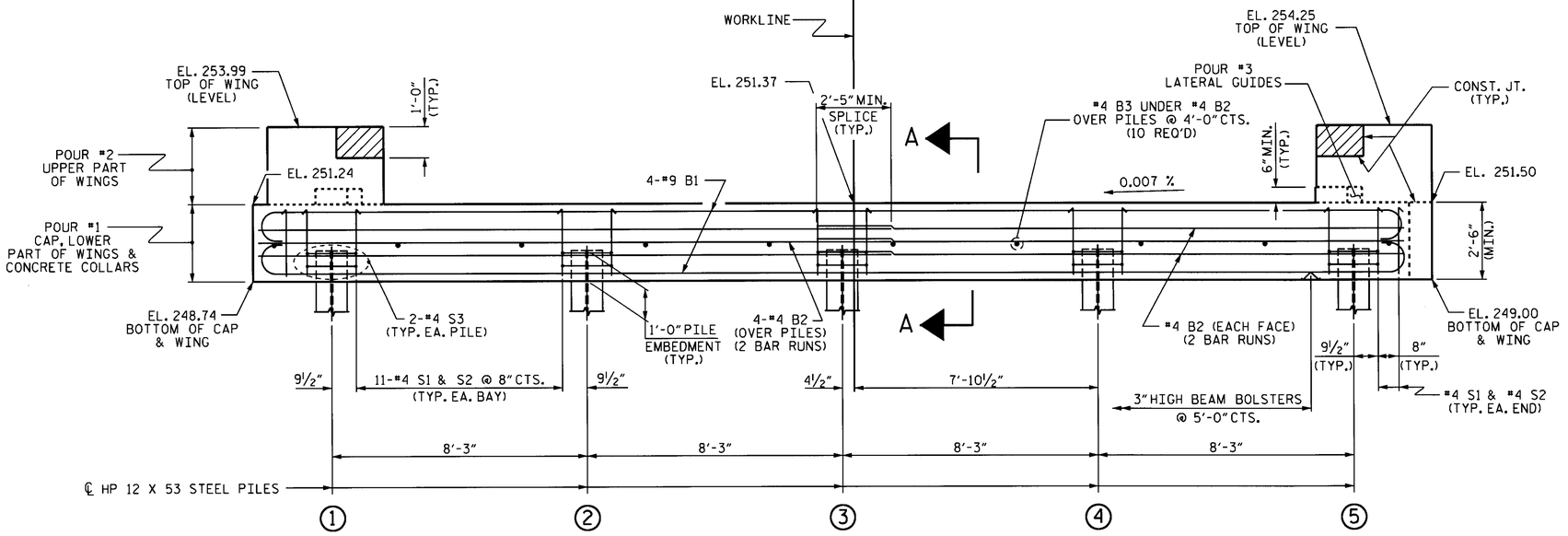
swance

(SHT 1) STD. NO. GRA3



PLAN



ELEVATION

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

NOTES

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

THE LATERAL GUIDES ARE NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.

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

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.

THE CONTRACTOR HAS THE OPTION TO OMIT THE LATERAL GUIDE IF APPROVED BY THE ENGINEER.

TOP OF PILE ELEVATIONS	
①	249.76
②	249.82
③	249.88
④	249.93
⑤	249.99

PROJECT NO. BD-5108AA
RICHMOND COUNTY
STATION: 13+06.00 -L-

SHEET 1 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 21545 ENGINEER STEVEN L. WANCE
03/21/14

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			12

ASSEMBLED BY : S. WANCE	DATE : 11/25/13
CHECKED BY : S. B. WILLIAMS	DATE : 01/14
DRAWN BY : DGE 02/10	
CHECKED BY : MKT 02/10	

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ciyokeley

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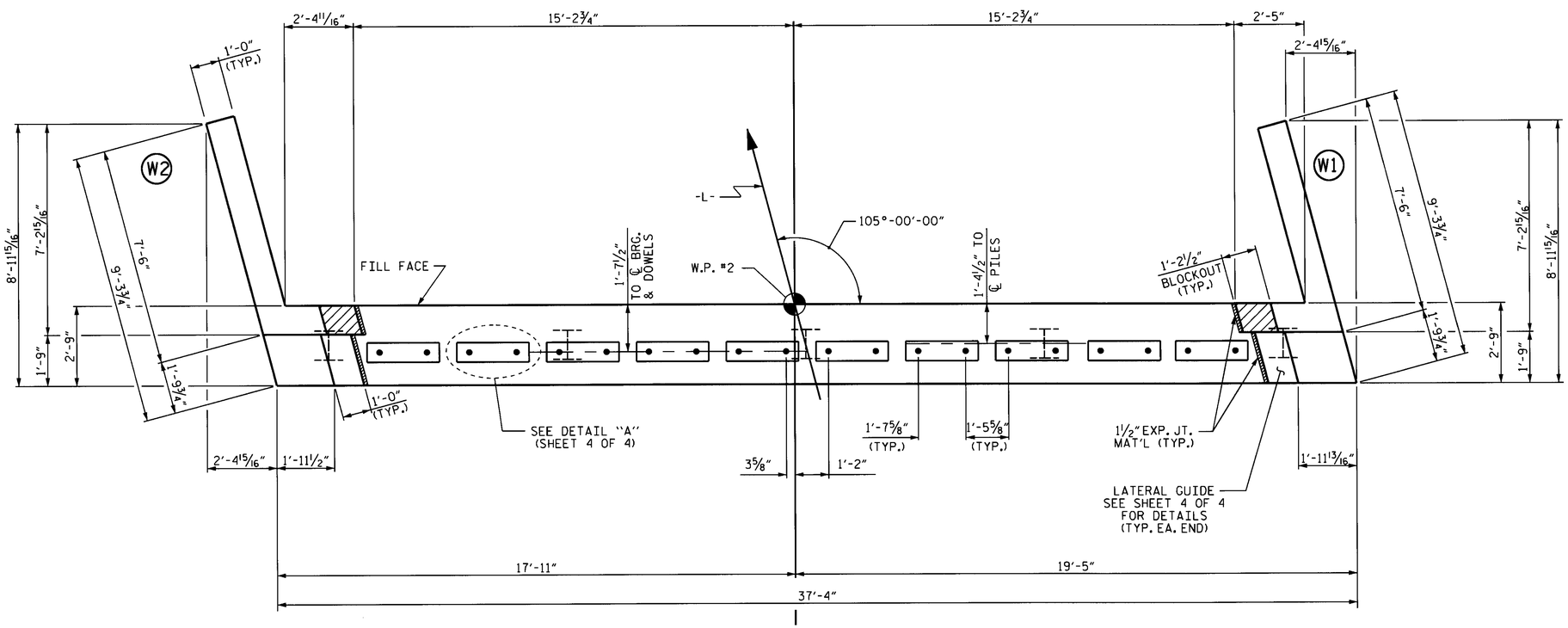
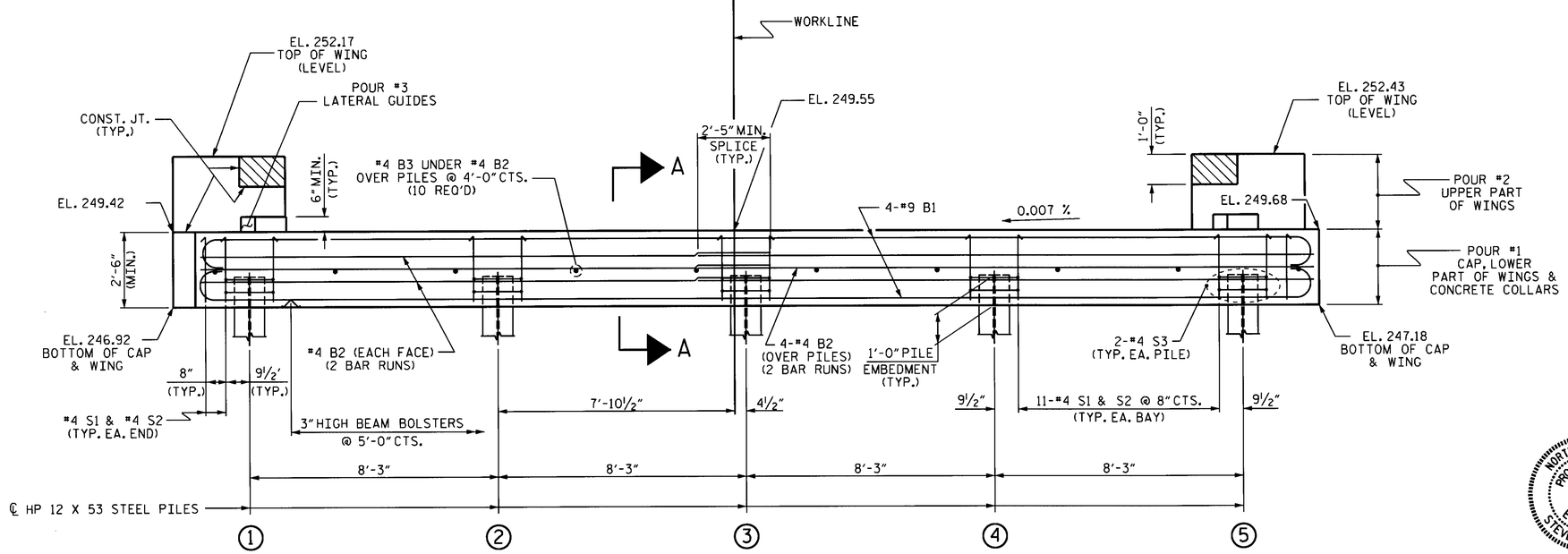


PLAN



ELEVATION

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

NOTES

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

THE LATERAL GUIDES ARE NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.

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

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.

THE CONTRACTOR HAS THE OPTION TO OMIT THE LATERAL GUIDE IF APPROVED BY THE ENGINEER.

TOP OF PILE ELEVATIONS	
①	247.94
②	248.00
③	248.05
④	248.11
⑤	248.17

PROJECT NO. BD-5108AA
RICHMOND COUNTY
STATION: 13+06.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2

NORTH CAROLINA PROFESSIONAL SEAL 21545 ENGINEER STEVEN L. WANCE
03/21/14

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			12

ASSEMBLED BY : S. WANCE DATE : 11/25/13
CHECKED BY : S. B. WILLIAMS DATE : 01/14
DRAWN BY : DGE 02/10
CHECKED BY : MKT 02/10

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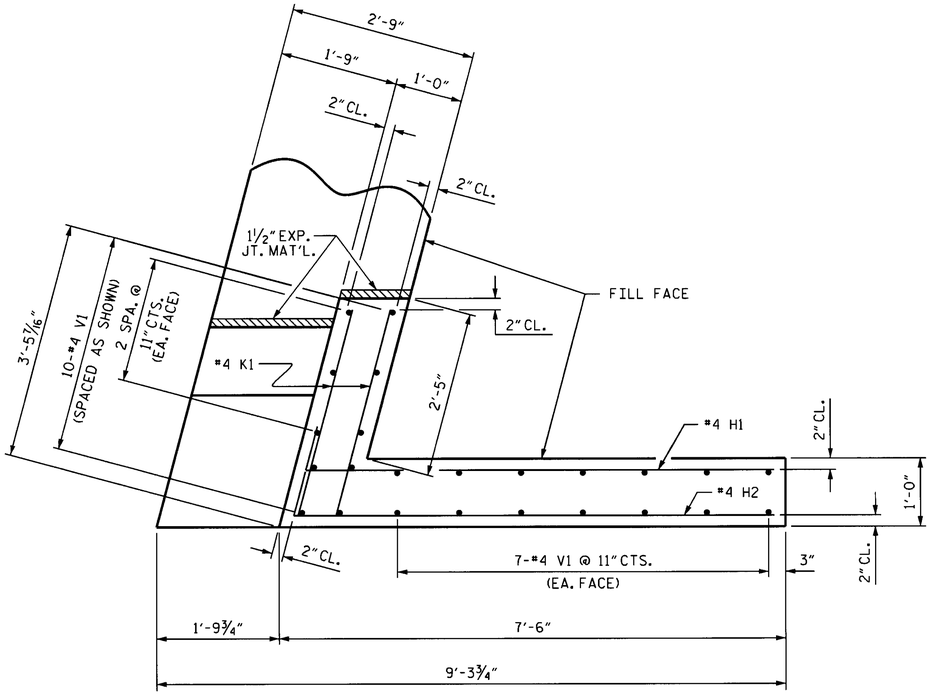
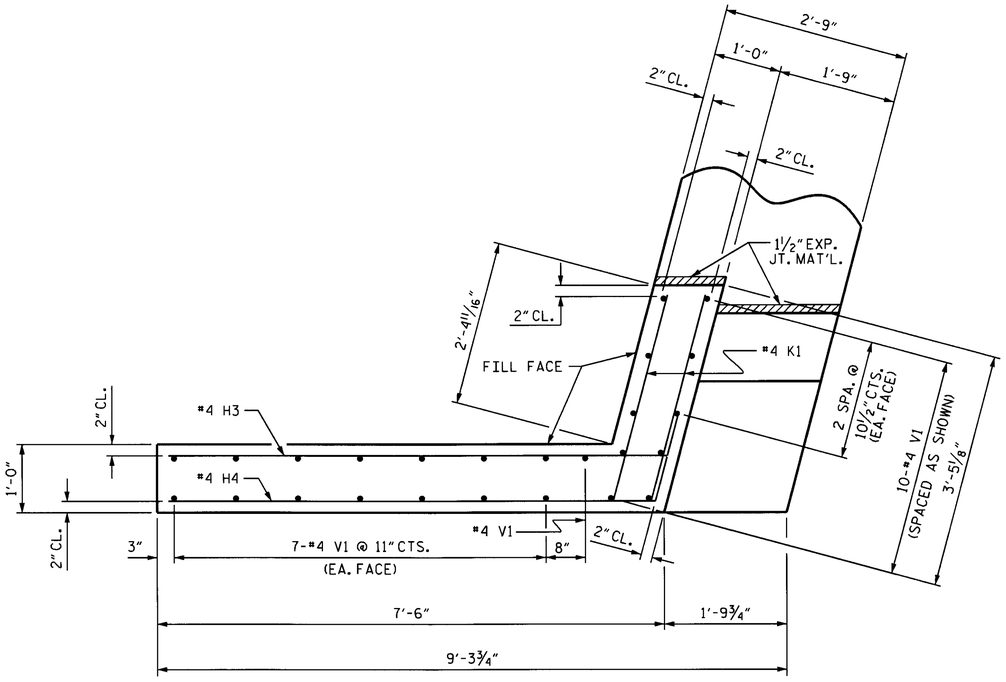
clyokeley

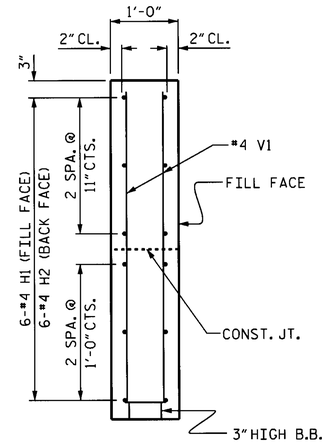
STD. NO. EB_30_105S



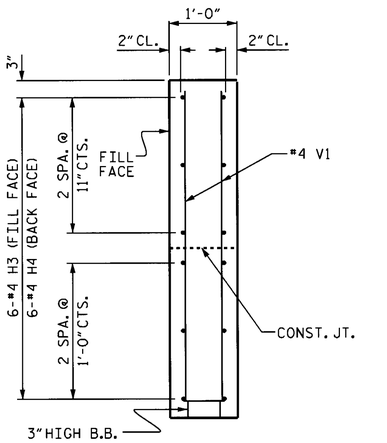
PLAN OF WING (W1)



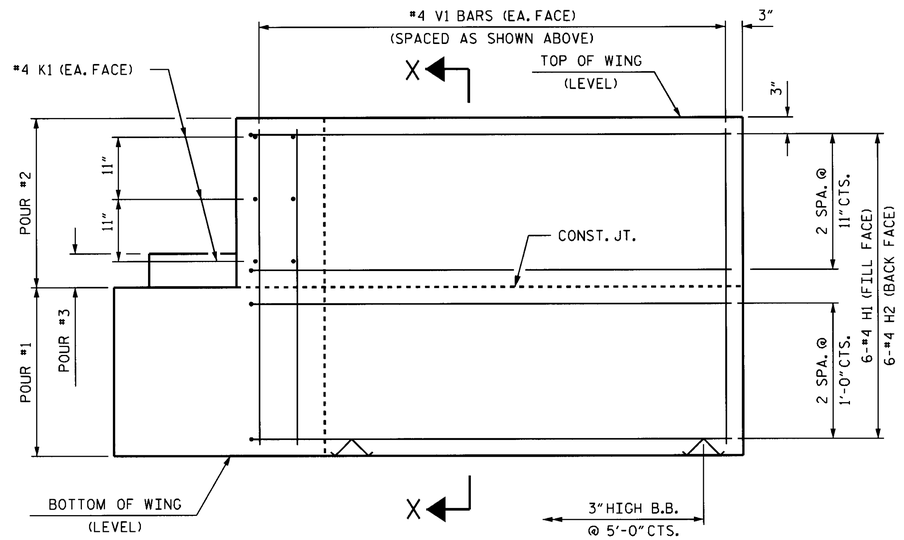
PLAN OF WING (W2)



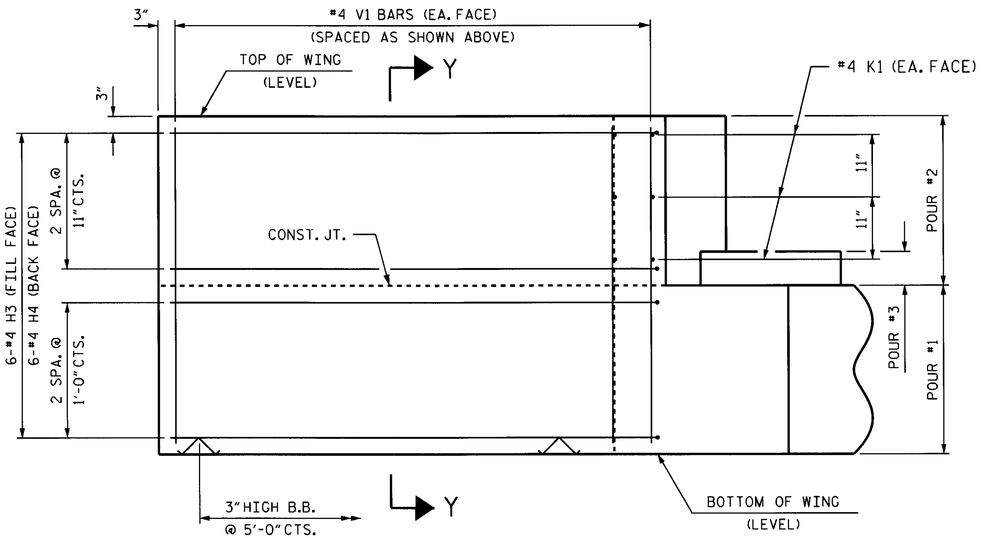
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

WING DETAILS

03/21/14

PROJECT NO. BD-5108AA

RICHMOND COUNTY

STATION: 13+06.00 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT
WING DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			12

ASSEMBLED BY : S. WANCE	DATE : 11/25/13	
CHECKED BY : S. B. WILLIAM	DATE : 01/14	
DRAWN BY : DGE 03/10		
CHECKED BY : MKT 03/10		

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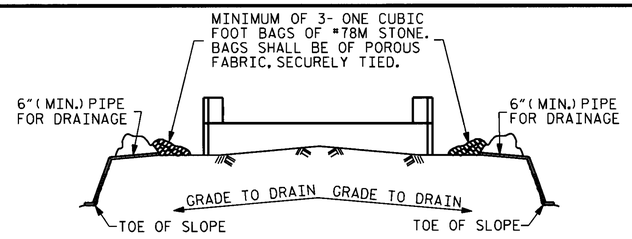
clyokeley

STD. NO. EB_30_105S

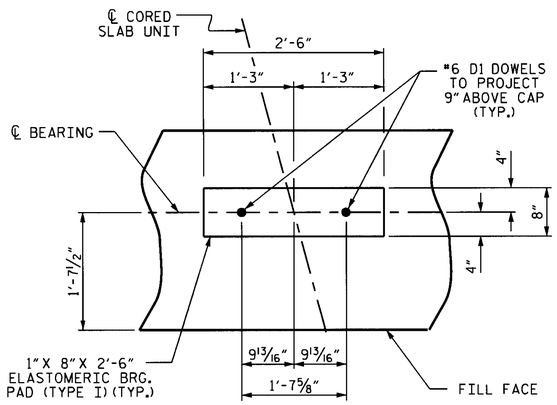


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

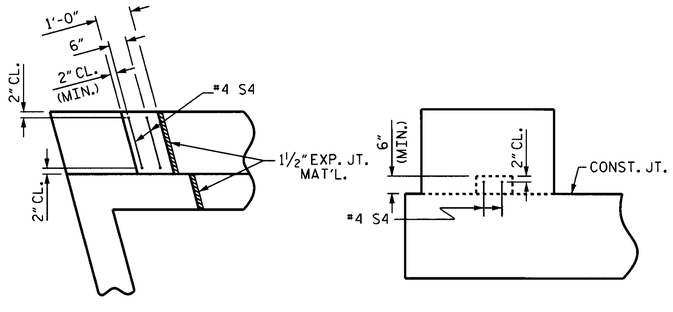
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



DETAIL "A"

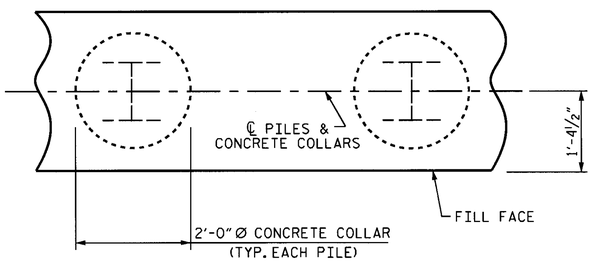
(END BENT 1 SHOWN, END BENT 2 SIMILAR BY ROTATION)



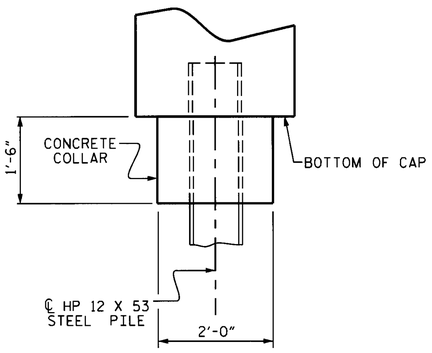
PLAN ELEVATION

LATERAL GUIDE DETAILS

(END BENT 1, LEFT LATERAL GUIDE SHOWN, RIGHT END SIMILAR)
(END BENT 2 SIMILAR BY ROTATION)



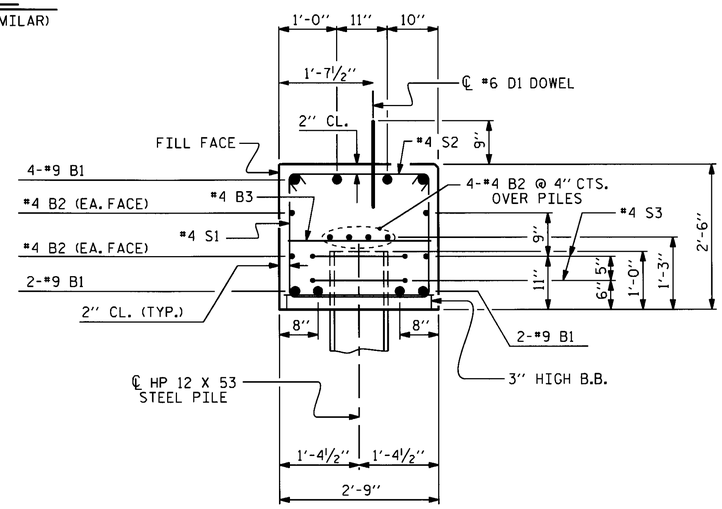
PLAN



ELEVATION

CORROSION PROTECTION FOR STEEL PILES DETAIL

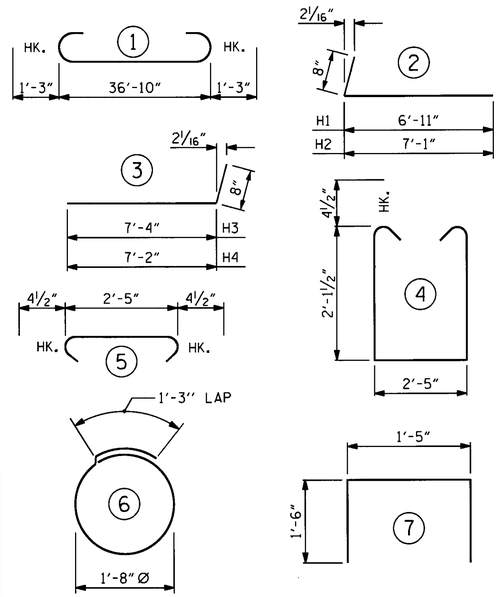
(END BENT 1 SHOWN, END BENT 2 SIMILAR BY ROTATION)



SECTION A-A

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

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

END BENT 1	END BENT 2
HP 12 X 53 STEEL PILES	HP 12 X 53 STEEL PILES
NO: 5 LIN. FT.= 175	NO: 5 LIN. FT.= 175

BILL OF MATERIAL

FOR ONE END BENT (2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	39'-4"	1070
B2	16	#4	STR	19'-9"	211
B3	10	#4	STR	2'-5"	16
D1	20	#6	STR	1'-6"	45
H1	6	#4	2	7'-7"	30
H2	6	#4	2	7'-9"	31
H3	6	#4	3	8'-0"	32
H4	6	#4	3	7'-10"	31
K1	12	#4	STR	3'-1"	25
S1	48	#4	4	7'-5"	238
S2	48	#4	5	3'-2"	102
S3	10	#4	6	6'-6"	43
S4	4	#4	7	4'-5"	12
V1	49	#4	STR	4'-11"	153

REINFORCING STEEL (FOR ONE END BENT) 2048 LBS.

CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)

POUR #1	CAP, LOWER PART OF WINGS & COLLARS	11.6 C.Y.
POUR #2	UPPER PART OF WINGS	2.0 C.Y.
POUR #3	LATERAL GUIDES	0.1 C.Y.
TOTAL CLASS A CONCRETE		13.7 C.Y.

NORTH CAROLINA PROFESSIONAL SEAL 21545 ENGINEER STEVEN L. WANCE
03/21/14

PROJECT NO. BD-5108AA
RICHMOND COUNTY
STATION: 13+06.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENTS 1 & 2 DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			12

ASSEMBLED BY :	S. WANCE	DATE : 11/25/13
CHECKED BY :	S. B. WILLIAMS	DATE : 01/14
DRAWN BY :	DGE	03/10
CHECKED BY :	MKT	03/10

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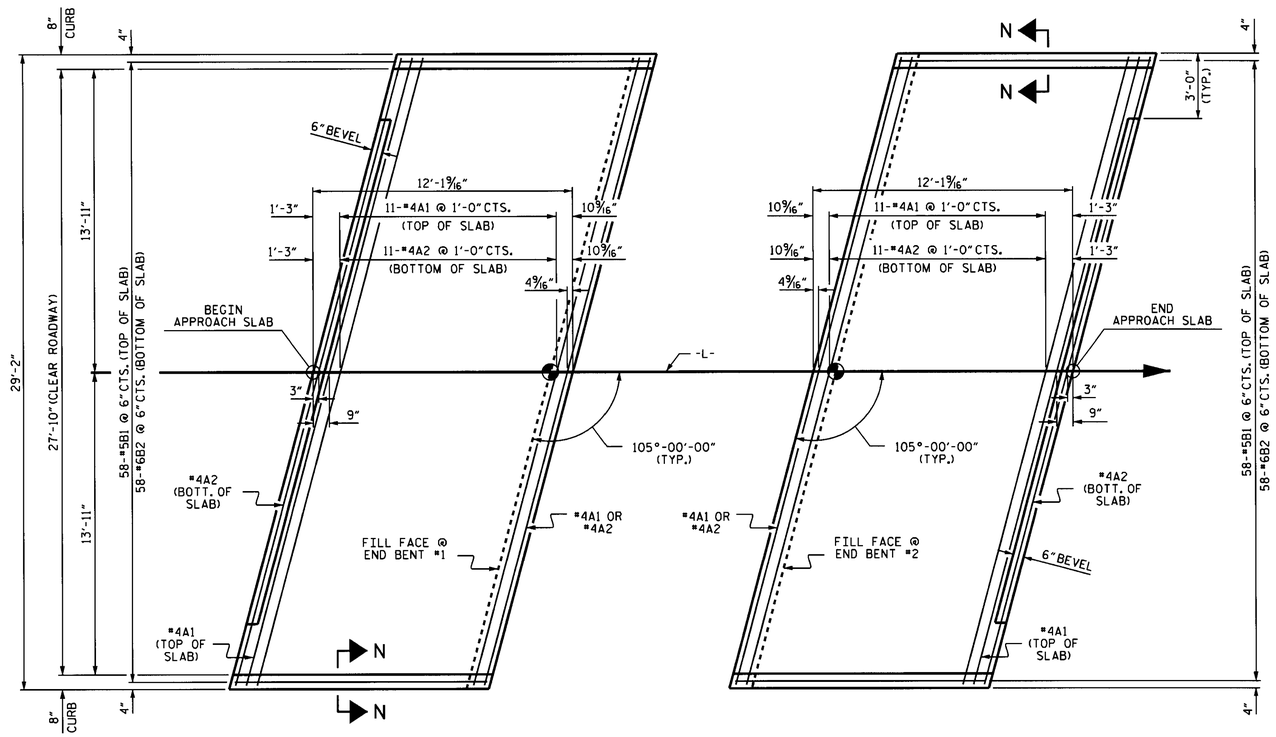
clyokeley

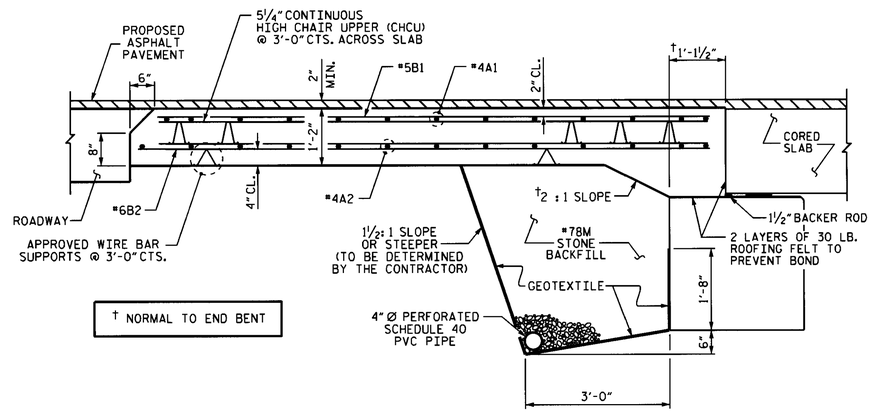
STD. NO. EB_30_105S



PLAN @ END BENT 1

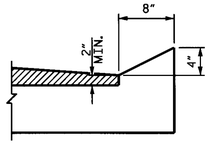
PLAN @ END BENT 2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

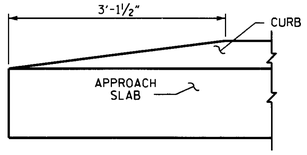


† NORMAL TO END BENT

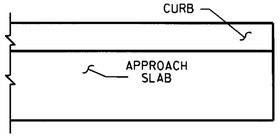
SECTION THRU SLAB



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER



END OF CURB WITH SHOULDER BERM GUTTER

CURB DETAILS

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.

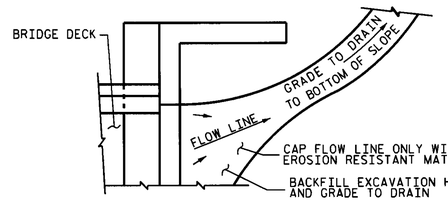
#78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

#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.

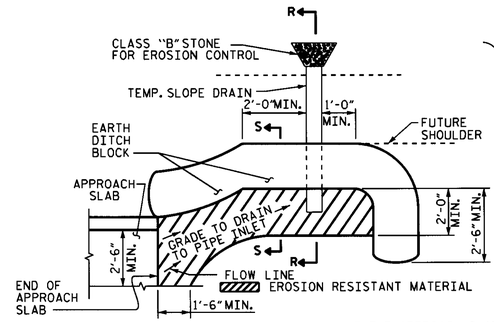
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.



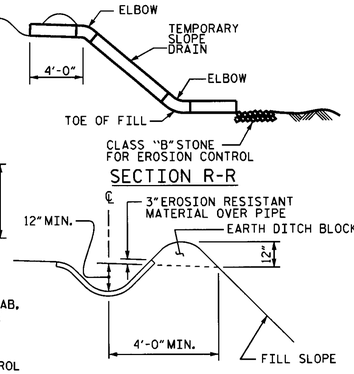
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL



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

PLAN VIEW



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

BILL OF MATERIAL

APPROACH SLAB AT EB 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	13	#4	STR	29'-10"	259
A2	13	#4	STR	29'-10"	259
* B1	58	#5	STR	11'-1"	670
B2	58	#6	STR	11'-7"	1009
REINFORCING STEEL				LBS.	1268
* EPOXY COATED REINFORCING STEEL				LBS.	929
CLASS AA CONCRETE				C. Y.	18.2

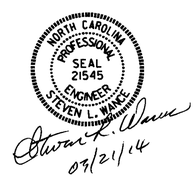
APPROACH SLAB AT EB 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	13	#4	STR	29'-10"	259
A2	13	#4	STR	29'-10"	259
* B1	58	#5	STR	11'-1"	670
B2	58	#6	STR	11'-7"	1009
REINFORCING STEEL				LBS.	1268
* EPOXY COATED REINFORCING STEEL				LBS.	929
CLASS AA CONCRETE				C. Y.	18.2

PROJECT NO. BD-5108AA

RICHMOND COUNTY

STATION: 13+06.00 -L-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
BRIDGE APPROACH SLAB
FOR PRESTRESSED CONCRETE
CORED SLAB UNIT
(SUB-REGIONAL TIER)
105° SKEW

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

ASSEMBLED BY : S. WANCE	DATE : 11/26/13	
CHECKED BY : T. H. FANG	DATE : 3-20-14	
DRAWN BY : SHS/MAA 5-09	REV. 12-11	MAA/AAC
CHECKED BY : BCH 5-09		

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clyoke@ley

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