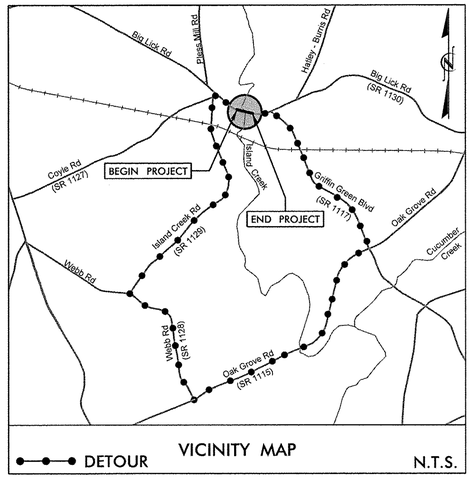
TIP PROJECT: BD-5110Z

CONTRACT:

FINAL PLANS
4/15/2014

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Standard Symbology Sheet



FINAL PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STANLY COUNTY

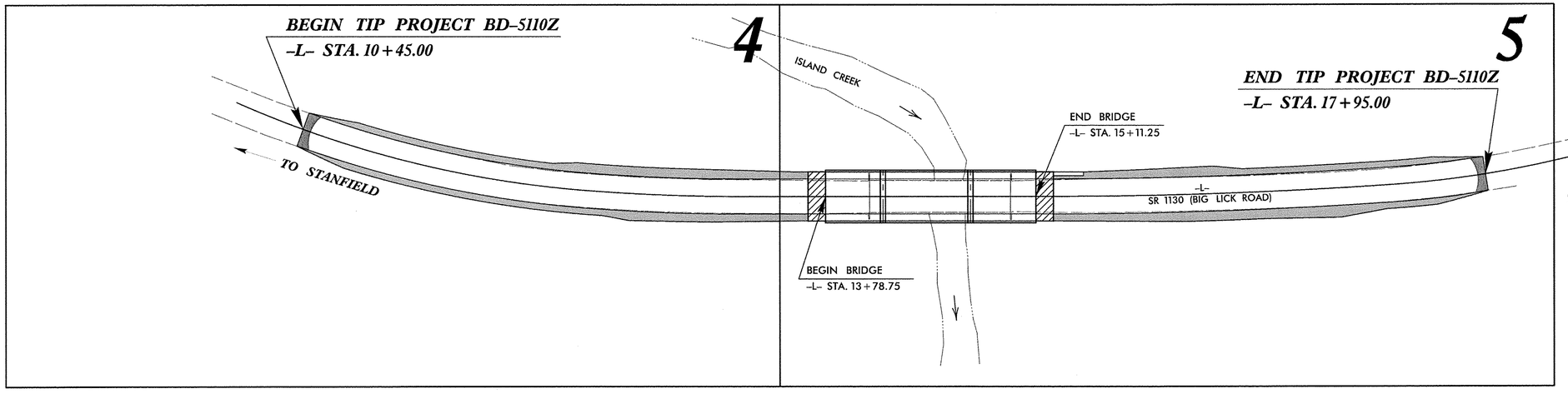
LOCATION: BRIDGE #125 OVER ISLAND CREEK ON SR 1130 (BIG LICK ROAD)

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BD-5110Z	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
45356.1.26	BRZ-1130(11)	P.E.
45356.2.FD26	BRZ-1130(11)	R/W & UTILITIES
45356.3.FD26	BRZ-1130(11)	CONST.

NSRS 2007
NAD 83



GRAPHIC SCALES

20 10 0 20 40
PLANS

20 10 0 20 40
PROFILE (HORIZONTAL)

4 2 0 4 8
PROFILE (VERTICAL)

DESIGN DATA

ADT 2013 = 3,375
ADT 2035 = 7,088
DHV = N/A
D = N/A
T = 6%
V = 45 MPH

FUNC. CLASSIFICATION: LOCAL

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT BD-5110Z = 0.117 MILES

LENGTH OF STRUCTURE TIP PROJECT BD-5110Z = 0.025 MILES

TOTAL LENGTH OF TIP PROJECT BD-5110Z = 0.142 MILES

NCDOT CONTACT: GARLAND HAYWOOD, PE
Division Bridge Manager

PLANS PREPARED FOR THE NCDOT BY:
STV/RALPH WHITEHEAD ASSOCIATES, INC.
900 West Trade St., Ste. 715, Charlotte NC, 28202
NC License Number F-0991

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: AUGUST 6, 2013

LETTING DATE: MAY 21, 2014

NIKKI T. HONEYCUTT, PE
PROJECT ENGINEER

SEAN C. STEPHENS, EI
PROJECT DESIGNER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 038053 ENGINEER DAVID C. MORRISON
SIGNATURE: _____ P.E.
4/15/14

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 039234 ENGINEER NIKKI T. HONEYCUTT
SIGNATURE: _____ P.E.
15APR14

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION

PROJECT REFERENCE NO.	SHEET NO.
BD-5110Z	1-A
R/W SHEET NO.	

STV/ Ralph Whitehead Associates, Inc.
900 West Trade St., Ste. 715
Charlotte, NC 28202
NC License Number F-0991

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 039234 ENGINEER NIKKO T. HONEYCUTT
19MAR14

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
2	STRUCTURE ANCHOR UNITS DETAIL
3	SUMMARIES AND TYPICALS
4 THRU 5	PLAN AND PROFILE SHEET
TCP-1	TRAFFIC CONTROL PLAN
EC-1 THRU EC-5	EROSION CONTROL PLANS
UC-1 THRU UC-3	UTILITY CONSTRUCTION PLANS
X-1 THRU X-5	CROSS-SECTIONS

GENERAL NOTES

GENERAL NOTES: 2012 SPECIFICATIONS
EFFECTIVE: 01-01-2012

GRADE LINE:
GRADING AND SURFACING:

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

CLEARING:

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

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.

STANDARD DRAWINGS

2012 ROADWAY ENGLISH STANDARD DRAWINGS EFF. January, 2012

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

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet
846.01	Concrete Curb, Gutter and Curb & Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.d.03	Structure Anchor Unit
876.02	Guide for Rip Rap at Pipe Outlets
DIVISION 11 - WORK ZONE TRAFFIC CONTROL	
1101.03	Temporary Road Closures
1110.01	Stationary Work Zone Signs - Mounting Height & Lateral Clearance
1145.01	Barricades - Type III
DIVISION 16 - EROSION CONTROL AND ROADSIDE DEVELOPMENT	
1605.01	Temporary Silt Fence
1606.01	Special Sediment Control Fence
1607.01	Gravel Construction Entrance
1622.01	Guide for Temporary Berms and Slope Drains
1630.04	Stilling Basin For Pumped Effluent
1630.06	Special Stilling Basin
1632.03	Rock Inlet Sediment Trap Type C

3/19/2014 R:\Roadway\Proj\BD5110Z_rdy_pst01.dgn

04/16/11

PROJECT REFERENCE NO.	SHEET NO.
BD-5110Z	1-B

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: Boundary or Site
- Potential Soil Contamination: Boundary 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 Marker — RW
- 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
- Curb Cut Future Ramp — CCFR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard — Vineyard

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert — CONC
- Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR:

- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — 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:

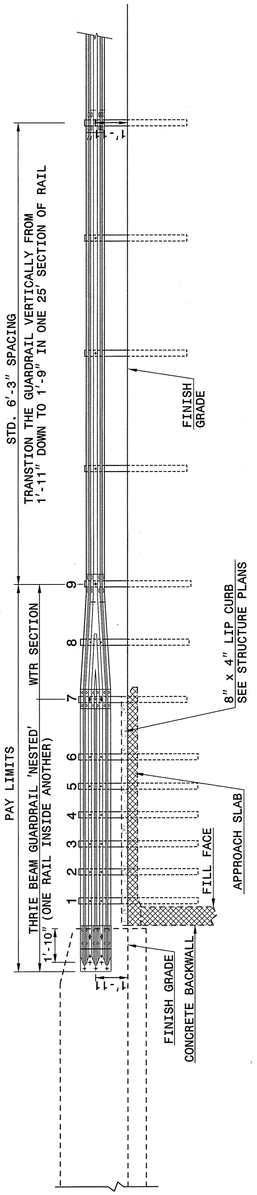
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

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.

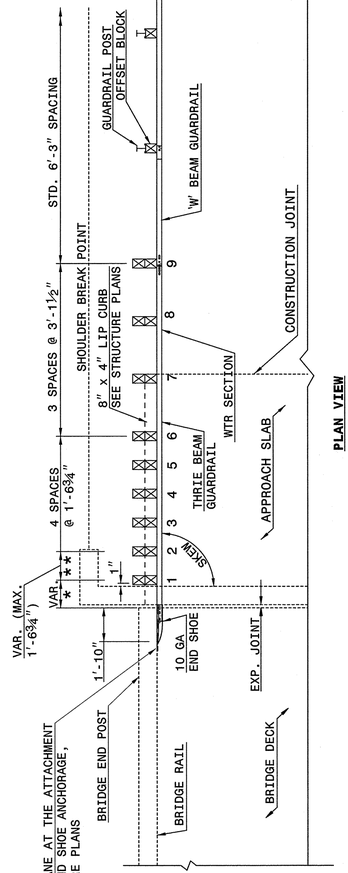
PROJECT REFERENCE NO.	SHEET NO.
BD-5110Z	2

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



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'-11½" IF CONCRETE BACKWALL IS NOT PRESENT.
-SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB 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.

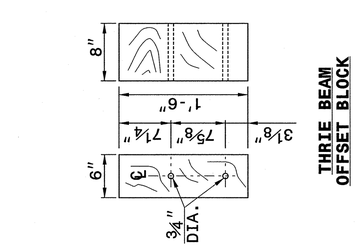


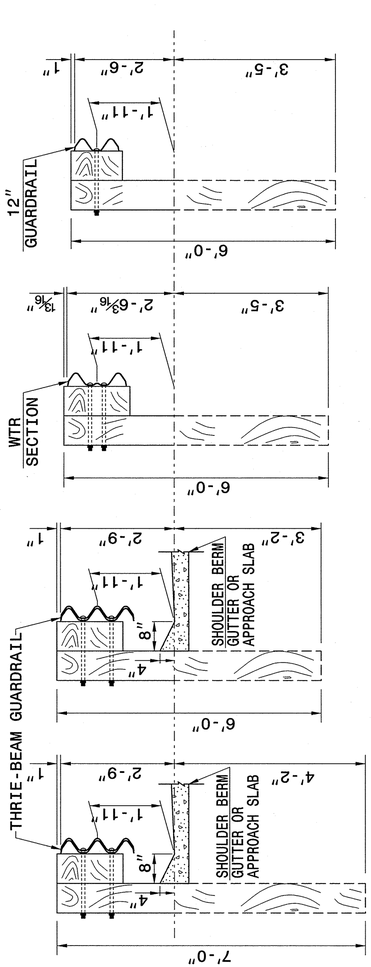
PLAN VIEW

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

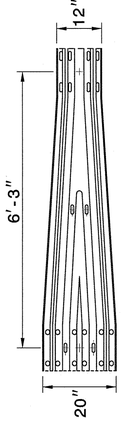
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ENGLISH DETAIL DRAWING FOR **STRUCTURE ANCHOR UNITS** GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER	SHEET 2 OF 7 862d03

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

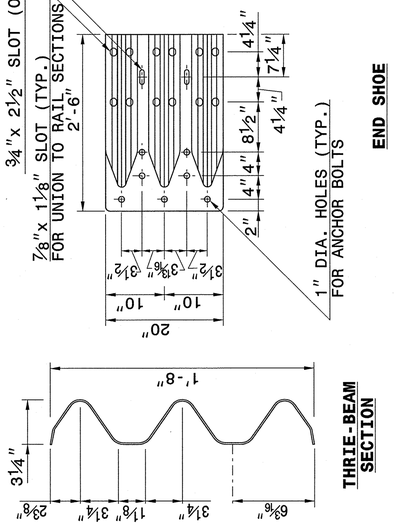




NOTE: THE MID POST AND OFFSET BLOCK OF THE WTR SECTION WILL REQUIRE SPECIAL BOLT HOLE DRILLING IN THE THRIE BEAM OFFSET BLOCK AND LINE POST.



WTR SECTION
ELEVATION VIEW



END SHOE

THRIE-BEAM SECTION

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.: _____

$$$$SYSTIME$$$$
$$$$TIME$$$$
$$$$USERNAME$$$$

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
BD-5110Z	3
R/W SHEET NO.	

PAVEMENT DESIGN ENGINEER	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PAVEMENT DESIGN PROVIDED BY NCDOT	NORTH CAROLINA PROFESSIONAL SEAL 039234 ENGINEER MINH T. HONEYCUTT 11MAR14	NORTH CAROLINA PROFESSIONAL SEAL 038053 ENGINEER DAVID C. MORRISON 3/17/14

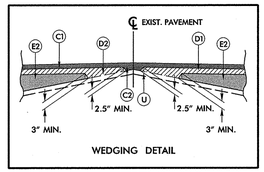
EARTHWORK SUMMARY (IN CUBIC YARDS)

CHAIN	FROM STATION	TO STATION	SIDE	UNCL. EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
–L–	10+45.00	13+78.75	LT & RT			2,394	2,394	
SUBTOTAL SUMMARY NO. 1						2,394	2,394	
–L–	15+11.25	17+95.00	LT & RT			1,148	1,148	
SUBTOTAL SUMMARY NO. 2						1,148	1,148	
SUBTOTAL SUMMARY 1–2						3,542	3,542	
LOSS DUE TO CLEARING AND GRUBBING							334	
PROJECT TOTAL						3,542	3,876	
WASTE IN LIEU OF BORROW								
ESTIMATE 5% FOR TOPSOIL ON BORROW PITS							194	
GRAND TOTAL						3,542	4070	
SAY							4075	

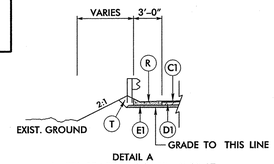
NOTE: Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

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

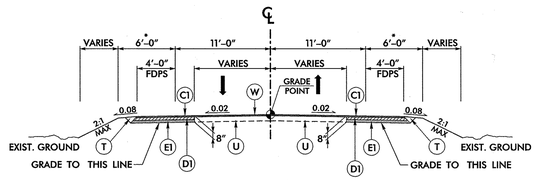
	PAVEMENT SCHEDULE
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1.5" IN DEPTH OR GREATER THAN 2.0" IN DEPTH.
D1	PROP. APPROX. 3.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 399 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 2.5" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 3" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3.0" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.
R	CONCRETE SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	PAVEMENT WEDGING



WEDGING DETAIL

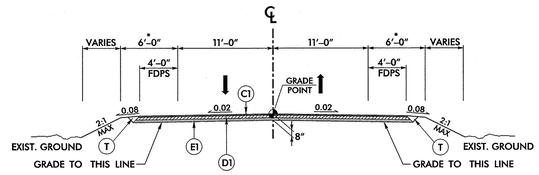


DETAIL A
–L– STA. 15+22.25 TO 15+41.35 LT.



TYPICAL SECTION NO. 1
–L– STA. 10+45.00 TO 11+00.00
–L– STA. 17+25.00 TO 17+95.00

* 9'–0" WITH GUARDRAIL
** ALL PAVEMENT SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.
*** SEE DETAIL A FOR SHOULDER BERM GUTTER LOCATION



TYPICAL SECTION NO. 2
–L– STA. 11+00.00 TO 13+78.75 (BEGIN BRIDGE)
–L– STA. 15+11.25 (END BRIDGE) TO 17+25.00

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

STATION	LOCATION (LT, RT, OR CL)*	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE	DRAINAGE PIPE THICKNESS OR GAUGE	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE SIZE	C.S. PIPE THICKNESS OR GAUGE	R.C. PIPE CLASS III SIZE	R.C. PIPE CLASS IV SIZE	** R.C. PIPE (CLASS V)	*** RC PIPE CULVERTS, CONTRACTOR DESIGN	**** RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') LIN. FT. A (5.0' THRU 10.0')	LIN. FT. B (10.0' AND ABOVE)	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CONCRETE TRANSITIONAL SECTION CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	TRAFFIC BEARING G.D.I. STD. 840.35	G.D.I. FRAME WITH GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	DRAINAGE PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
-L- 15+38.94	LT	1	OUT	507.99	505.32	496.32	33.33	27		X														1													2				
-L- 16+41.38	LT	2	OUT		506.14	505.00	4.23									27																									20		
SHEET TOTALS								27								27								1													2			20	

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.)	(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

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

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPROACH END	WARRANT POINT TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH APPROACH END	FLARE LENGTH TRAILING END	W* APPROACH END	W* TRAILING END	ANCHORS XI MOD	ANCHORS B-77	ANCHORS GRAU 350	ANCHORS M-350	ANCHORS TYPE III	ANCHORS CAT-1	ANCHORS VI MOD	ANCHORS BIC	ANCHORS AT-1	IMPACT ATTENUATOR TYPE 350 EA	IMPACT ATTENUATOR TYPE 350 G	IMPACT ATTENUATOR TYPE 350 NG	SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
–L–	11+05.61	13+78.75	LT	268.75				12+25.00	4.42–6.00	7.42–9.00		50.00′		1.00′			1		1												
–L–	12+54.73	13+78.75	RT	125.00			12+62.50		4.42–5.22	7.42–8.22	131.25′		1.00′				1		1												
–L–	15+11.25	16+24.25	LT	112.50			15+80.00		4.35–5.26	7.45–8.26	118.75′		1.00′				1		1												
–L–	15+11.25	17+04.02	RT	192.50				16+00.00	4.42–6.00	7.42–9.00		50.00′		1.00′			1		1												
			TOTAL:	700.00													4		4												
			TOTAL ANCHOR LENGTH:	275.00																												
			TOTAL GUARDRAIL LENGTH:	425.00																												
			SAY:	425.00																												

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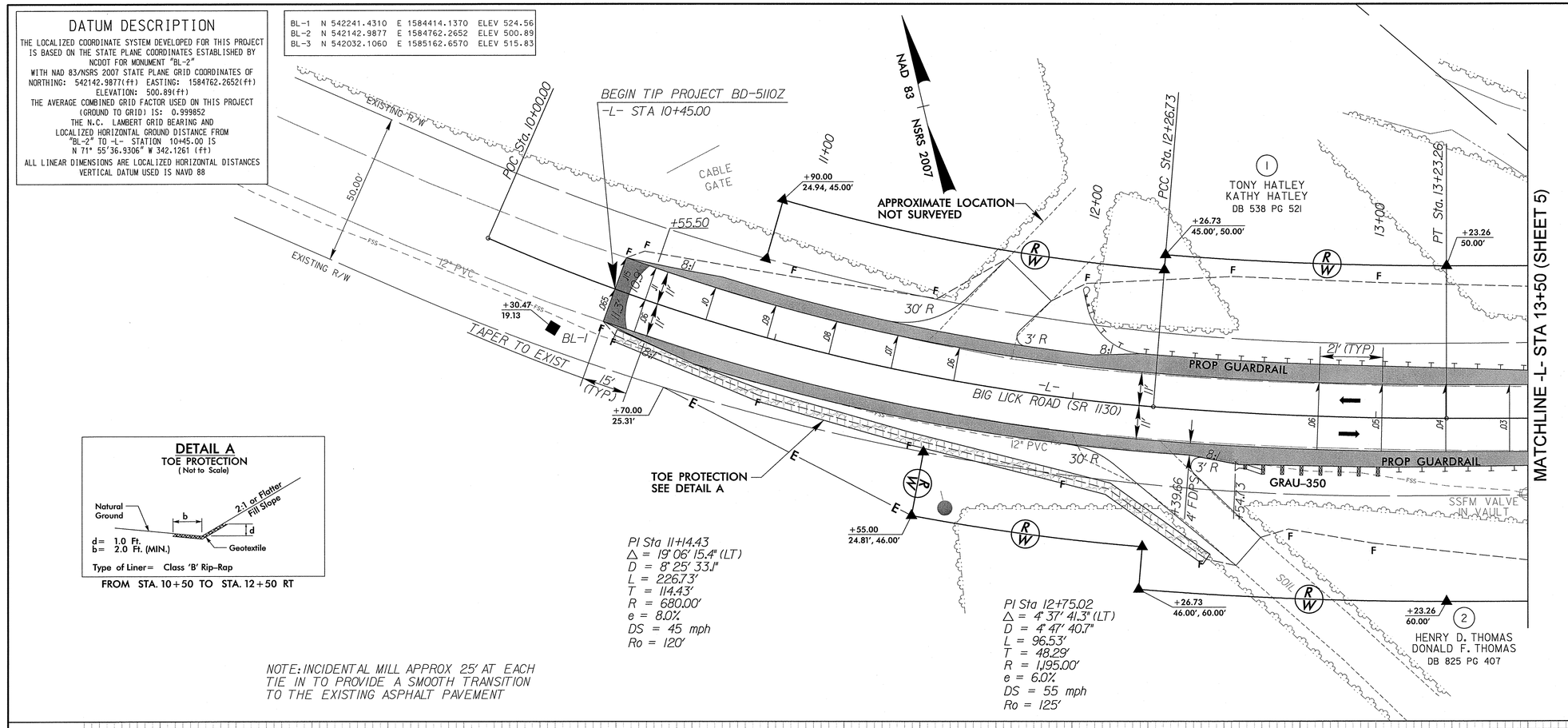
3/11/2014

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "BL-2"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 542142.9877(ft) EASTING: 1584762.2652(ft)
ELEVATION: 500.89(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999852
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BL-2" TO -L- STATION 10+45.00 IS N 71° 55'36.9306" W 342.1261 (ft)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

BL-1	N 542241.4310	E 1584414.1370	ELEV 524.56
BL-2	N 542142.9877	E 1584762.2652	ELEV 500.89
BL-3	N 542032.1060	E 1585162.6570	ELEV 515.83



DETAIL A
TOE PROTECTION
(Not to Scale)

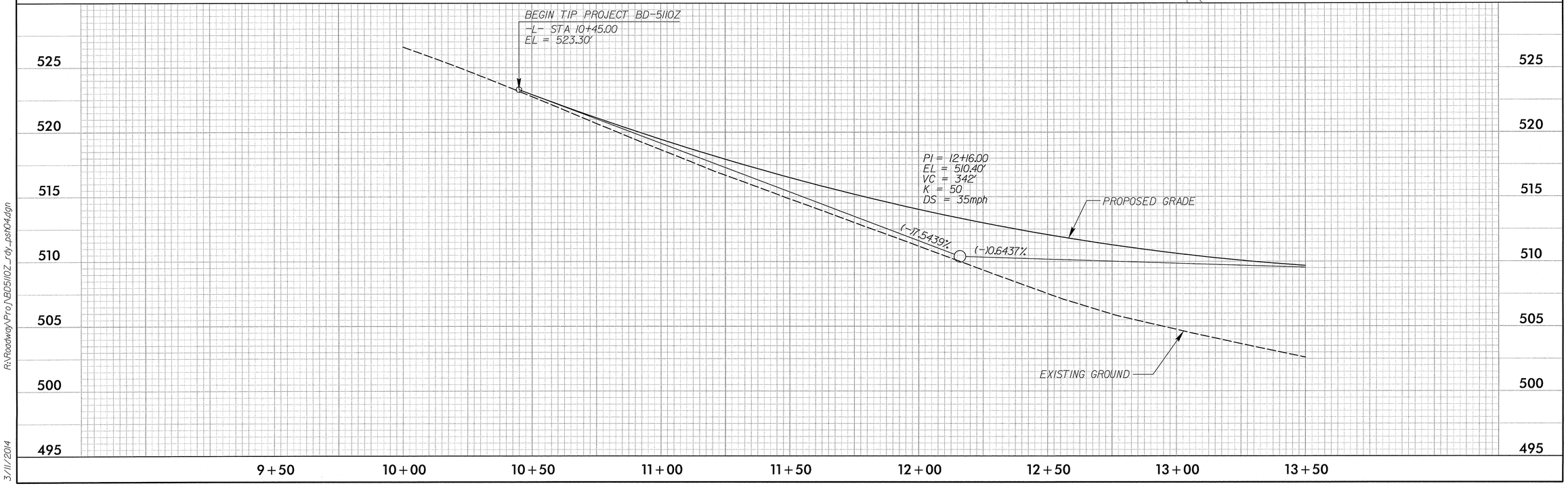
d= 1.0 Ft.
b= 2.0 Ft. (MIN.)
Type of Liner= Class 'B' Rip-Rap

FROM STA. 10+50 TO STA. 12+50 RT

PI Sta 11+14.43
Δ = 19° 06' 15.4" (LT)
D = 8° 25' 33.1"
L = 226.73'
T = 114.43'
R = 680.00'
e = 8.0%
DS = 45 mph
Ro = 120'

PI Sta 12+75.02
Δ = 4° 37' 41.3" (LT)
D = 4° 47' 40.7"
L = 96.53'
T = 48.29'
R = 1,195.00'
e = 6.0%
DS = 55 mph
Ro = 125'

NOTE: INCIDENTAL MILL APPROX 25' AT EACH TIE IN TO PROVIDE A SMOOTH TRANSITION TO THE EXISTING ASPHALT PAVEMENT



PROJECT REFERENCE NO.	SHEET NO.
BD-5110Z	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 039234 ENGINEER MARK T. HONEYCUTT
19 MAR 14

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 038053 ENGINEER DAVID C. MORRISON
3/17/14

STV / Ralph Whitehead Associates, Inc.
900 West Trade St., Ste. 715
Charlotte, NC 28202
NC License Number F-0991

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3/11/2014

PROJECT REFERENCE NO.	SHEET NO.
BD-5110Z	5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 039234 ENGINEER NIKKI T. HONEYCUTT

19 MAR 19

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 038053 ENGINEER DAVID C. MORRISON

3/7/14

STV / Ralph Whitehead Associates, Inc.
900 West Trade St., Ste. 715
Charlotte, NC 28202
NC License Number F-0991

DETAIL A
TOE PROTECTION
(Not to Scale)

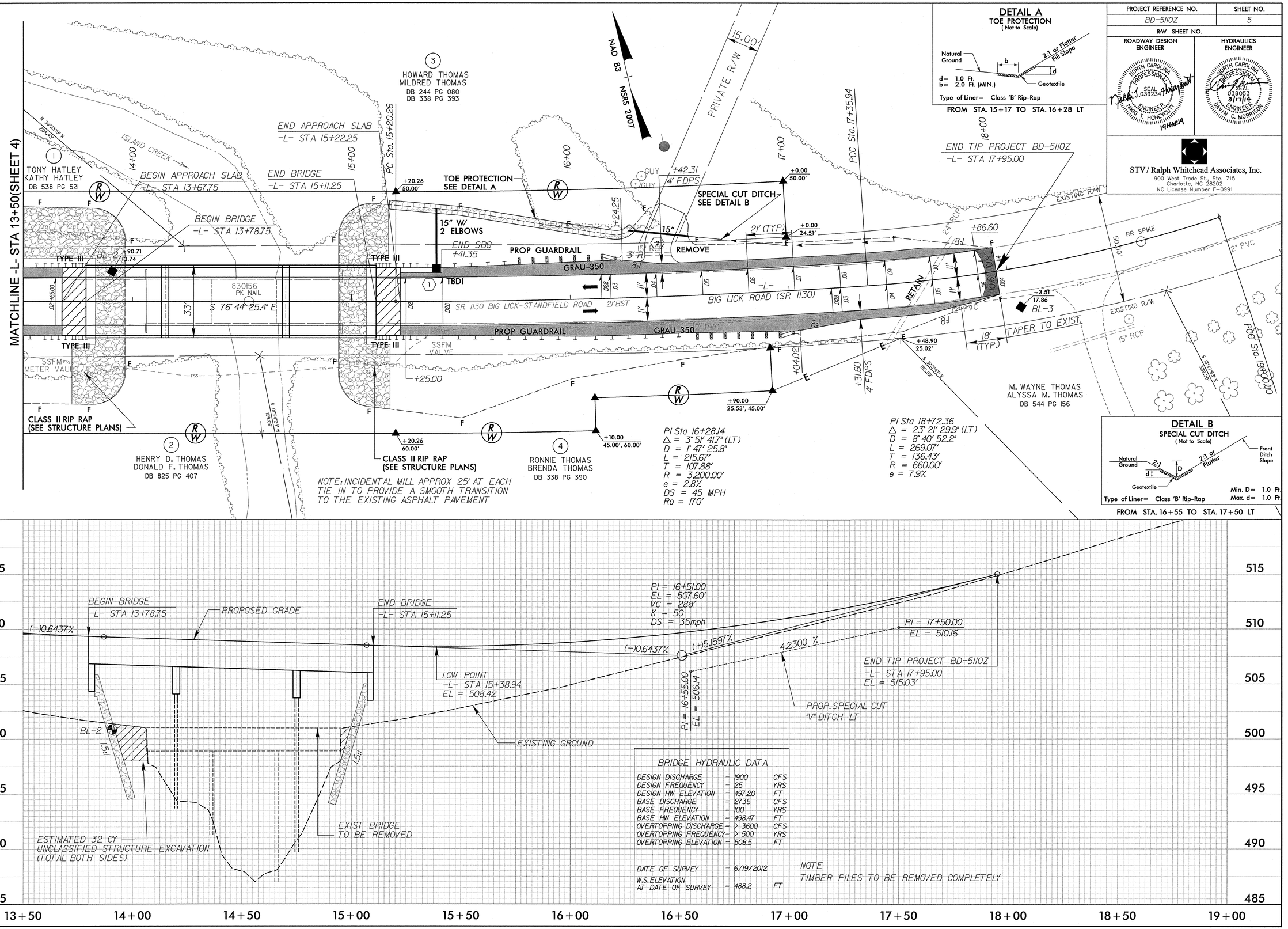
d = 1.0 Ft.
b = 2.0 Ft. (MIN.)
Type of Liner = Class 'B' Rip-Rap

FROM STA. 15+17 TO STA. 16+28 LT

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)

Type of Liner = Class 'B' Rip-Rap
Min. D = 1.0 Ft.
Max. d = 1.0 Ft.

FROM STA. 16+55 TO STA. 17+50 LT



BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 1900	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 497.20	FT
BASE DISCHARGE	= 2735	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 498.47	FT
OVERTOPPING DISCHARGE	= > 3600	CFS
OVERTOPPING FREQUENCY	= > 500	YRS
OVERTOPPING ELEVATION	= 508.5	FT
DATE OF SURVEY	= 6/19/2012	
W.S. ELEVATION AT DATE OF SURVEY	= 488.2	FT

NOTE
TIMBER PILES TO BE REMOVED COMPLETELY

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3/11/2014

PROJECT REFERENCE NO.	SHEET NO.
BD-5110Z	TCP-1
R/W SHEET NO.	

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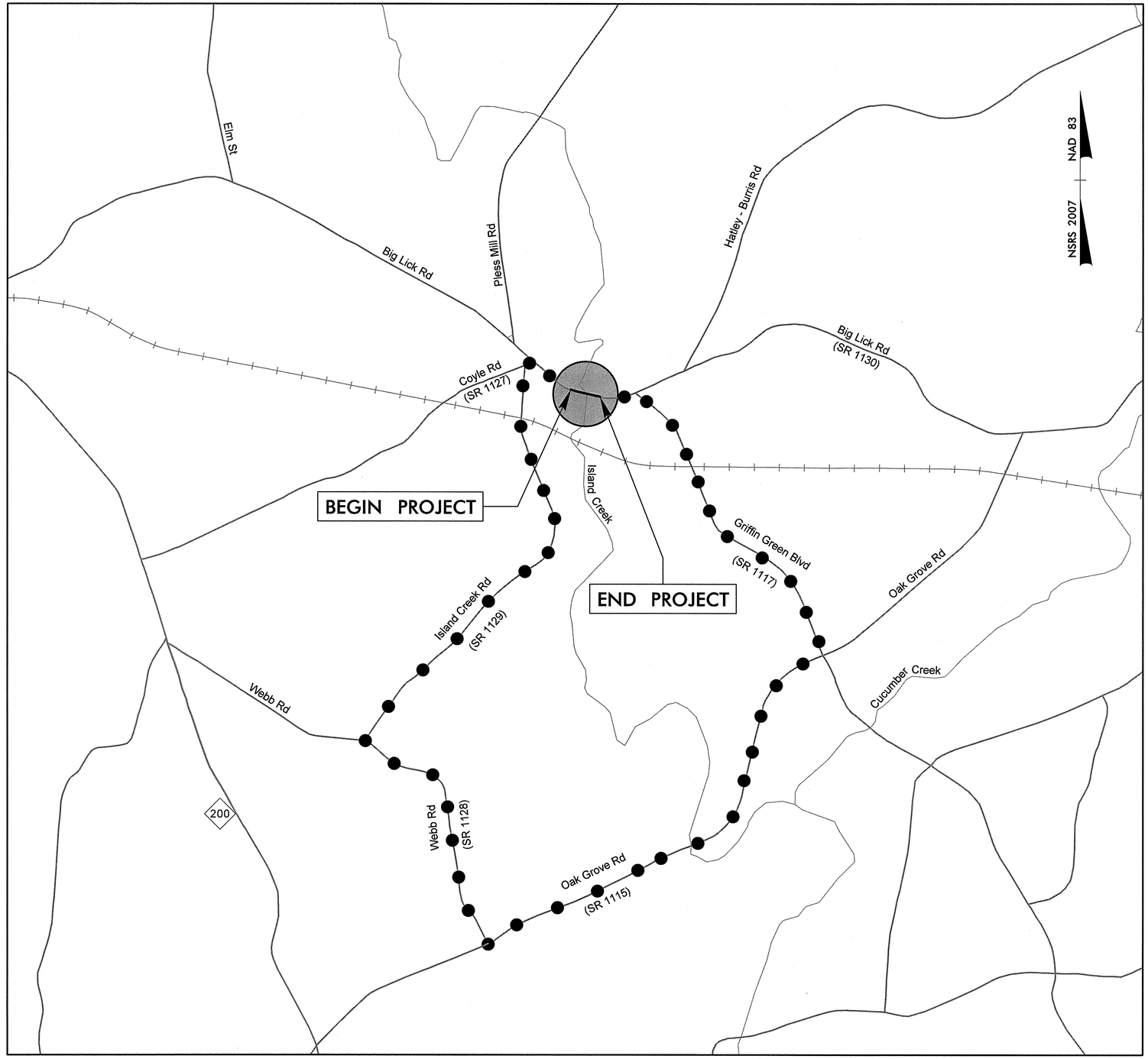
900 West Trade St., Ste. 715
Charlotte, NC 28202
NC License Number F-0991

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 039234 ENGINEER NIKKI T. HONEYCUTT
19 MAR 14

DETOUR ROUTE



900 450 0 900 1800

Scale: 1" = 900'

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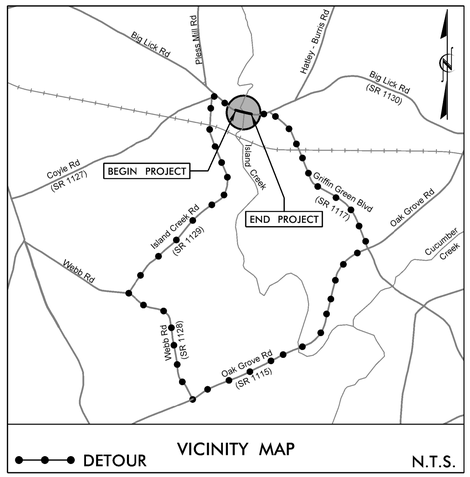
3/11/2014

TIP PROJECT: BD-5110Z

CONTRACT:

EROSION CONTROL PLANS
4/5/2014

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Standard Symbology Sheet



EROSION CONTROL PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

STANLY COUNTY

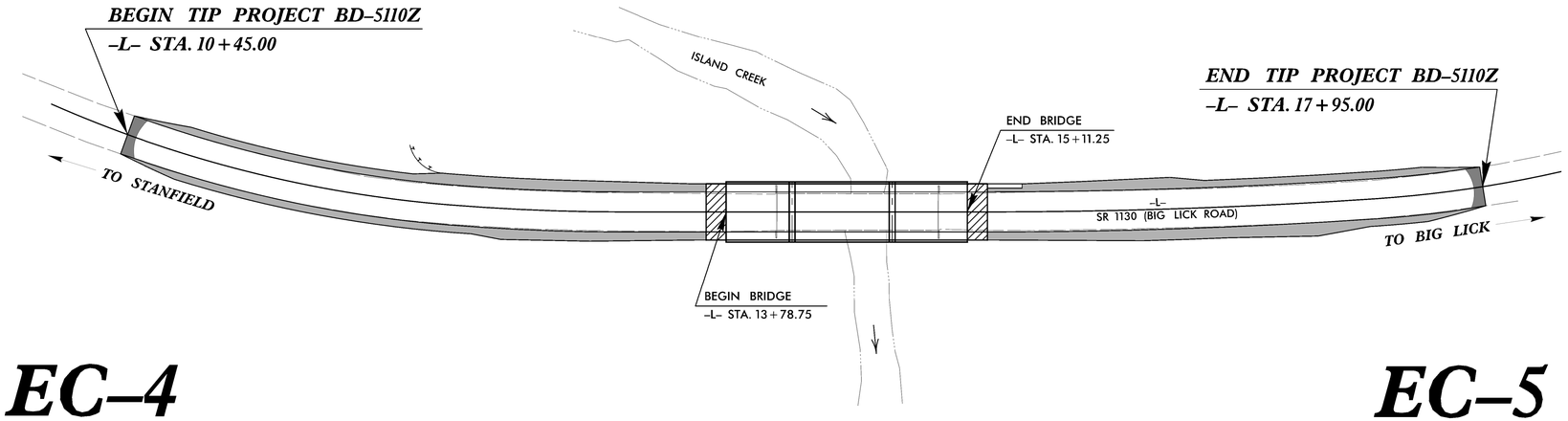
LOCATION: BRIDGE #125 OVER ISLAND CREEK ON SR 1130 (BIG LICK ROAD)

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BD-5110Z	EC-1	5

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
45356.1.26	BRZ-1130(11)	P.E.
45356.2.FD26	BRZ-1130(11)	R /W & UTILITIES
45356.3.FD26	BRZ-1130(11)	CONSTRUCTION

NAD 83 - NSRS 2007

BEGIN TIP PROJECT BD-5110Z
-L- STA. 10+45.00



END TIP PROJECT BD-5110Z
-L- STA. 17+95.00

EC-4

EC-5

EROSION AND SEDIMENT CONTROL MEASURES

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.

Std. #	Description	Symbol
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1607.01	Gravel Construction Entrance	
1622.01	Temporary Berms and Slope Drains	
1630.01	Riser Basin	
1630.03	Temporary Silt Ditch	TSD
1630.04	Stilling Basin	
1630.05	Temporary Diversion	TD
1630.06	Special Stilling Basin	
1632.01	Rock Inlet Sediment Trap Type A	A
1632.02	Rock Inlet Sediment Trap Type B	B
1632.03	Rock Inlet Sediment Trap Type C	C
1633.01	Temporary Rock Silt Check Type-A	
1633.02	Temporary Rock Silt Check Type-B	
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	
SP	Silt Basin Type B	
SP	Skimmer Basin	
SP	Tiered Skimmer Basin	
SP	Infiltration Basin	
SP	Wattle	
SP	Wattle w/ Polyacrylamide (PAM)	
SP	Coir Fiber Matting	

These Erosion and Sediment Control Plans comply with the regulations set forth by the NCG010000 general construction permit effective August 3, 2011 issued by the North Carolina Department of Environment and Natural resources Division of Water Quality.

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

GRAPHIC SCALE

20 10 0 20 40

PLANS

ROADSIDE ENVIRONMENTAL UNIT
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

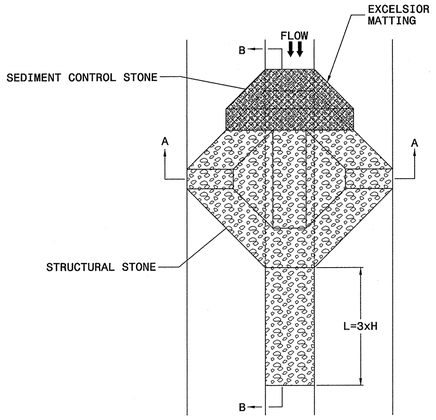
Level III Designer
Davin Morrison, PE #3126

Prepared In the Office of:

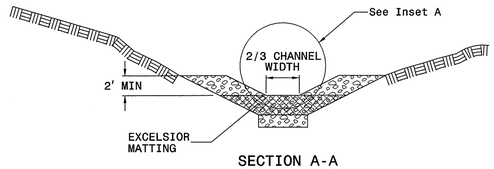
STV/RALPH WHITEHEAD ASSOCIATES, INC.
900 West Trade St., Ste. 715, Charlotte NC, 28202
NC License Number F-0991
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2012 STANDARD SPECIFICATIONS

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



PLAN



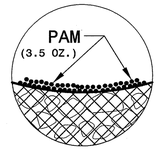
SECTION A-A

NOTES

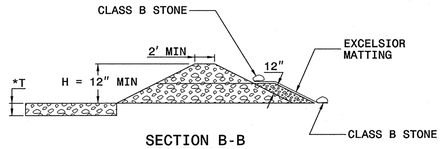
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

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



INSET A



SECTION B-B

*T = 12" MIN., 18" MAX.

NOT TO SCALE

STABILIZATION REQUIREMENTS

Stabilization for this project shall comply with the time frame guidelines as specified 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. Temporary or permanent ground cover stabilization shall occur within 7 calendar days from the last land-disturbing activity, with the following exceptions in which temporary or permanent ground cover shall be provided in 14 calendar days from the last land-disturbing activity:

· Slopes between 2:1 and 3:1, with a slope length of 10 ft. or less

· Slopes 3:1 or flatter, with a slope of length of 50 ft. or less

· Slopes 4:1 or flatter

The stabilization timeframe for High Quality Water (HQW) Zones shall be 7 calendar days with no exceptions for slope grades or lengths. High Quality Water Zones (HQW) Zones are defined by North Carolina Administrative Code 15A NCAC 04A.0105 (25). Temporary and permanent ground cover stabilization shall be achieved in accordance with the provisions in this contract and as directed.

PROJECT REFERENCE NO.	SHEET NO.
BD-5110Z	EC-2
RW SHEET NO.	

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NC License Number F-0991

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PROJECT REFERENCE NO.	SHEET NO.
BD-5110Z	EC-3
R/W SHEET NO.	

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Charlotte, NC 28202
NC License Number F-0991

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

MATTING FOR EROSION CONTROL (FOR SLOPE STABILIZATION)

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
				SUBTOTAL	1830
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					185
				TOTAL	2015
				SAY	2020

COIR FIBER MATTING (FOR FLOOD BENCH STABILIZATION)

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
				SUBTOTAL	60
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					10
				TOTAL	70
				SAY	75

PROPOSED CLASS 'B' RIP RAP (FOR DITCH STABILIZATION)

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (TN)	GEOTEXTILE ESTIMATE (SY)
4	-L- TOE PROT.	10+50	12+50	RT	45	90
4	-L- TOE PROT.	15+17	16+28	LT	25	50
4	-L- TOE PROT.	16+55	17+50	LT	20	40
				SUBTOTAL	90	180
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					10	20
				TOTAL	100	200
				SAY	110	220

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PROJECT REFERENCE NO.	SHEET NO.
BD-5110Z	EC-4
R/W SHEET NO.	

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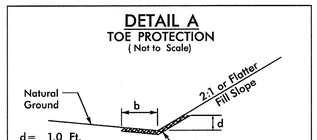
Charlotte, NC 28202
NC License Number F-0991

DETAIL A
TOE PROTECTION
(Not to Scale)



d= 1.0 Ft.
b= 2.0 Ft. (MIN.)

Type of Liner= Class 'B' Rip-Rap

FROM STA. 10+50 TO STA. 12+50 RT

NAD 83
NSRS 2007

Place Matting for Erosion Control on Slope as Work Progresses

EXISTING R/W
50.00'
EXISTING R/W
CABLE GATE
11+00
12+00
13+00
12" PVC
TONY HATLEY
KATHY HATLEY
DB 538 PG 521
TEMP. SILT FENCE (TYP.)
SSFM VALVE IN VAULT
TEMP. ROCK ROCK SILT CHECK TYPE 'A' W/PAM (TYP.)
TEMP. ROCK ROCK SILT CHECK TYPE 'A' (TYP.)
SPECIAL SEDIMENT CONTROL FENCE OUTLETS SPACED MAX 50 FT APART (TYP.)
HENRY D. THOMAS
DONALD F. THOMAS
DB 825 PG 407

MATCHLINE -L- STA 13+50 (SHEET EC-5)

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.

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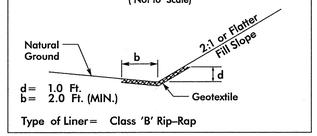
3/17/2014

PROJECT REFERENCE NO.	SHEET NO.
BD-5110Z	EC-5
R/W SHEET NO.	

STV / Ralph Whitehead Associates, Inc.
900 West Trade St., Ste. 715
Charlotte, NC 28202
NC License Number F-0991

DETAIL A
TOE PROTECTION
(Not to Scale)

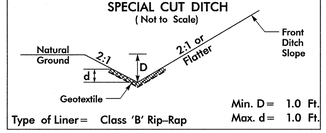


d= 1.0 Ft.
b= 2.0 Ft. (MIN.)

Type of Liner= Class 'B' Rip-Rap

FROM STA. 15+17 TO STA. 16+28 LT

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



Min. D= 1.0 Ft.
Max. d= 1.0 Ft.

Type of Liner= Class 'B' Rip-Rap

FROM STA. 16+55 TO STA. 17+50 LT

NAD 83
NSRS 2007

STILLING BASINS & SPECIAL STILLING BASINS SHOULD BE USED WHERE APPLICABLE

Place Matting for Erosion Control on Slope as Work Progresses

TEMP. SILT FENCE (TYP.)

TEMP. ROCK INLET SEDIMENT TRAP, TYPE C (TYP.)

TEMP. ROCK ROCK SILT CHECK TYPE 'A' (TYP.)

TEMP. ROCK ROCK SILT CHECK TYPE 'A' W/PAM (TYP.)

FLOATING TURBIDITY CURTAIN

3 HOWARD THOMAS
MILDRED THOMAS
DB 244 PG 080
DB 338 PG 393

1 TONY HATLEY
KATHY HATLEY
DB 538 PG 521

2 HENRY D. THOMAS
DONALD F. THOMAS
DB 825 PG 407

4 RONNIE THOMAS
BRENDA THOMAS
DB 338 PG 390

M. WAYNE THOMAS
ALYSSA M. THOMAS
DB 544 PG 156

ISLAND CREEK

PRIVATE R/W

15.00'

50.00'

EXISTING R/W

SR 1130 BIG LICK-STANDFIELD ROAD 21'BST

14+00 15+00 16+00 17+00 18+00 19+00

15" RCP

12" PVC

SSFM METER VAULT

SSFM VALVE

STABILIZE CHANNEL BANK WITH CLASS II RIP RAP

SPECIAL SEDIMENT CONTROL FENCE OUTLETS SPACED MAX 50 FT APART (TYP.)

Place Coir Fiber Matting on Floodplain Bench.

Place Matting for Erosion Control on Slope as Work Progresses

MATCHLINE -L- STA 13+50 (SHEET EC-4)

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.

R:\Roadway\Proj\EC\BD5110Z_rdy_EC05.dgn

3/11/2014

TIP PROJECT: BD–5110Z

CONTRACT:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

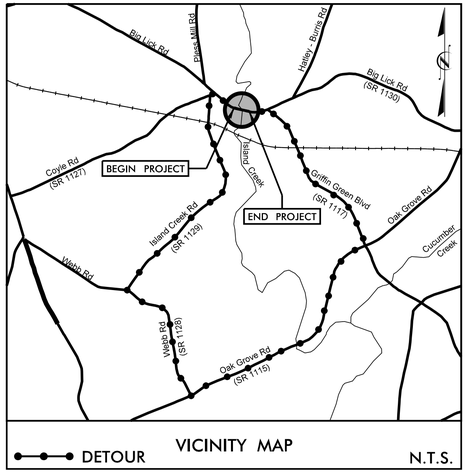
T.I.P. NO.	SHEET NO.
BD–5110Z	UC–1

UTILITY CONSTRUCTION PLANS
STANLY COUNTY

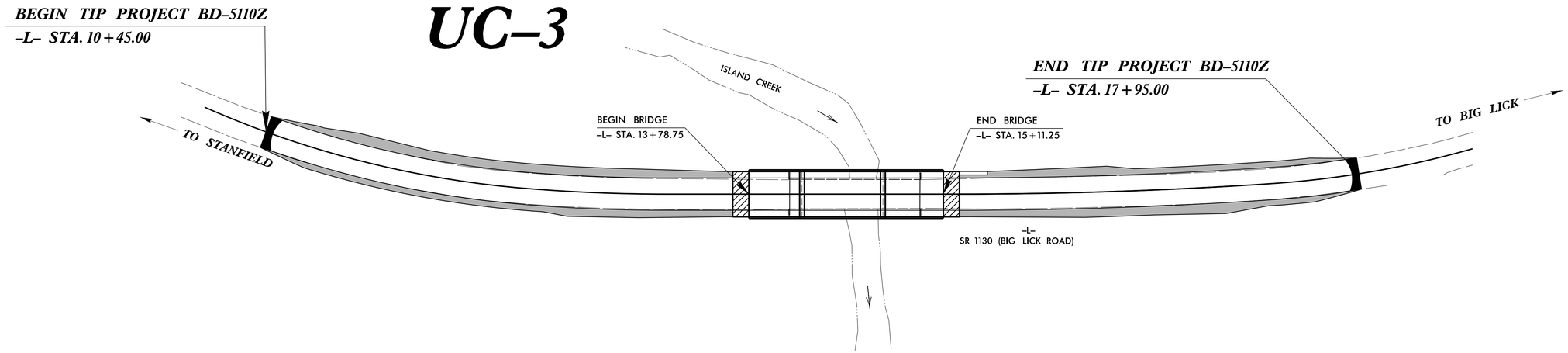
NSRS 2007
NAD 83

LOCATION: BRIDGE #125 OVER ISLAND CREEK ON SR 1130 (BIG LICK ROAD)

TYPE OF WORK: SANITARY SEWER FORCE MAIN



UC–3



GRAPHIC SCALES

20 10 0 20 40
PLANS

20 10 0 20 40
PROFILE (HORIZONTAL)

4 2 0 4 8
PROFILE (VERTICAL)

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
UC–1	TITLE SHEET
UC–2	SYMBOLOGY SHEET
UC–3	PLAN & PROFILE SHEET

SEWER OWNERS ON PROJECT

(1) SEWER – CITY OF LOCUST & TOWN OF STANFIELD

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 26960 ENGINEER REECE M. SCHULER
04/17/2014

V&M Vaughn & Melton
Consulting Engineers
3089-L Beam Road
Charlotte, NC 28217
704-357-0488

PREPARED FOR THE OFFICE OF:
DIVISION OF HIGHWAYS
UTILITIES ENGINEERING SECTION
1591 MAIL SERVICES CENTER
RALEIGH NC 27699-1591
PHONE (919) 250-4128
FAX (919) 250-4119

Roger Worthington, P.E.	*UTILITIES SECTION ENGINEER*
Xxxxx Xxxxx, P.E.	*UTILITIES SQUAD LEADER PROJECT ENGINEER*
Reece Schuler, PE	*UTILITIES PROJECT DESIGNER*

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
BD-5110Z	UC-2

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

- Water Line (Sized as Shown) — 6" WL
- 11¼ Degree Bend
- 22½ Degree Bend
- 45 Degree Bend
- 90 Degree Bend
- Plug
- Tee
- Cross
- Reducer
- Gate Valve — GV
- Butterfly Valve — BV
- Tapping Valve — TGV
- Line Stop — LS
- Line Stop with Bypass — LS/BP
- Blow Off — BO
- Fire Hydrant — PFH
- Relocate Fire Hydrant — REH
- Remove Fire Hydrant — REM FH
- Water Meter — PWM
- Relocate Water Meter — RWM
- Remove Water Meter — REM WM
- Water Pump Station — PS(W)
- RPZ Backflow Preventer — PBPZ
- DCV Backflow Preventer — PBFP
- Relocate RPZ Backflow Preventer — RBPZ
- Relocate DCV Backflow Preventer — RBFP

PROPOSED SEWER SYMBOLS

- Gravity Sewer Line (Sized as Shown) — PROP U/G GRAVITY SEWER LINE
- Force Main Sewer Line (Sized as Shown) — 12" FSS
- Manhole (Sized per Note)
- Sewer Pump Station — PS(SS)

PROPOSED MISCELLANOUS UTILITIES SYMBOLS

- Power Pole
- Telephone Pole
- Joint Use Pole
- Telephone Pedestal — TEL PED
- Utility Line by Others (Type as Shown)
- Trenchless Installation — 6" TL INSTALL
- Encasement by Open Cut — 10" ENCAS BY OC
- Encasement — 10" ENCAS
- Thrust Block
- Air Release Valve — AR
- Utility Vault — UV
- Concrete Pier — CP
- Steel Pier — SP
- Plan Note — NOTE
- Pay Item Note — PAY ITEM

EXISTING UTILITIES SYMBOLS

- Power Pole
- Telephone Pole
- Joint Use Pole
- Utility Pole
- Utility Pole with Base
- H-Frame Pole
- Power Transmission Line Tower
- Water Manhole — W
- Power Manhole — P
- Telephone Manhole — T
- Sanitary Sewer Manhole — SS
- Hand Hole for Cable — HH
- Power Transformer — PT
- Telephone Pedestal — T
- CATV Pedestal — C
- Gas Valve
- Gas Meter — G
- Located Miscellaneous Utility Object
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.
- *Underground Power Line — P
- *Underground Telephone Cable — T
- *Underground Telephone Conduit — TC
- *Underground Fiber Optics Telephone Cable — T FO
- *Underground TV Cable — TV
- *Underground Fiber Optics TV Cable — TV FO
- *Underground Gas Pipeline — G
- Aboveground Gas Pipeline — A/G Gas
- *Underground Water Line — W
- Aboveground Water Line — A/G Water
- *Underground Gravity Sanitary Sewer Line — SS
- Aboveground Gravity Sanitary Sewer Line — A/G Sanitary Sewer
- *Underground SS Forced Main Line — FSS
- Underground Unknown Utility Line — ?UTL
- SUE Test Hole
- Water Meter
- Water Valve
- Fire Hydrant
- Sanitary Sewer Cleanout

*For Existing Utilities

- Utility Line Drawn from Record (Type as Shown)
- Designated Utility Line (Type as Shown)

REV: 2/1/2012

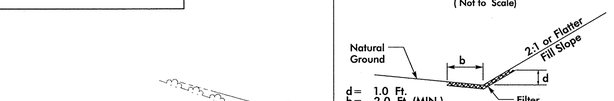
SYSTIME$$$

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "BL-2"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 542142.9877(ft) EASTING: 1584762.2652(ft)
ELEVATION: 500.89(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999852
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BL-2" TO -L- STATION 10+45.00 IS N 71° 55'36.9306" W 342.1261 (ft)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

BL-1	N 542241.4310	E 1584414.1370	ELEV 524.56
BL-2	N 542142.9877	E 1584762.2652	ELEV 500.89
BL-3	N 542032.1060	E 1585162.6570	ELEV 515.83

DETAIL A
TOE PROTECTION
(Not to Scale)



d= 1.0 Ft.
b= 2.0 Ft. (MIN.)
Type of Liner= Class 'B' Rip-Rap
FROM STA. 10+50 TO STA. 12+50 RT

V&M Vaughn & Melton Consulting Engineers
Charlotte, North Carolina 704-357-0488
Asheville, North Carolina 828-253-2796
Tri-Cities, Tennessee 423-467-8401
Knoxville, Tennessee 865 546-6800
Middlesboro, Kentucky 606-248-6600
Spartanburg, South Carolina 864-574-4775

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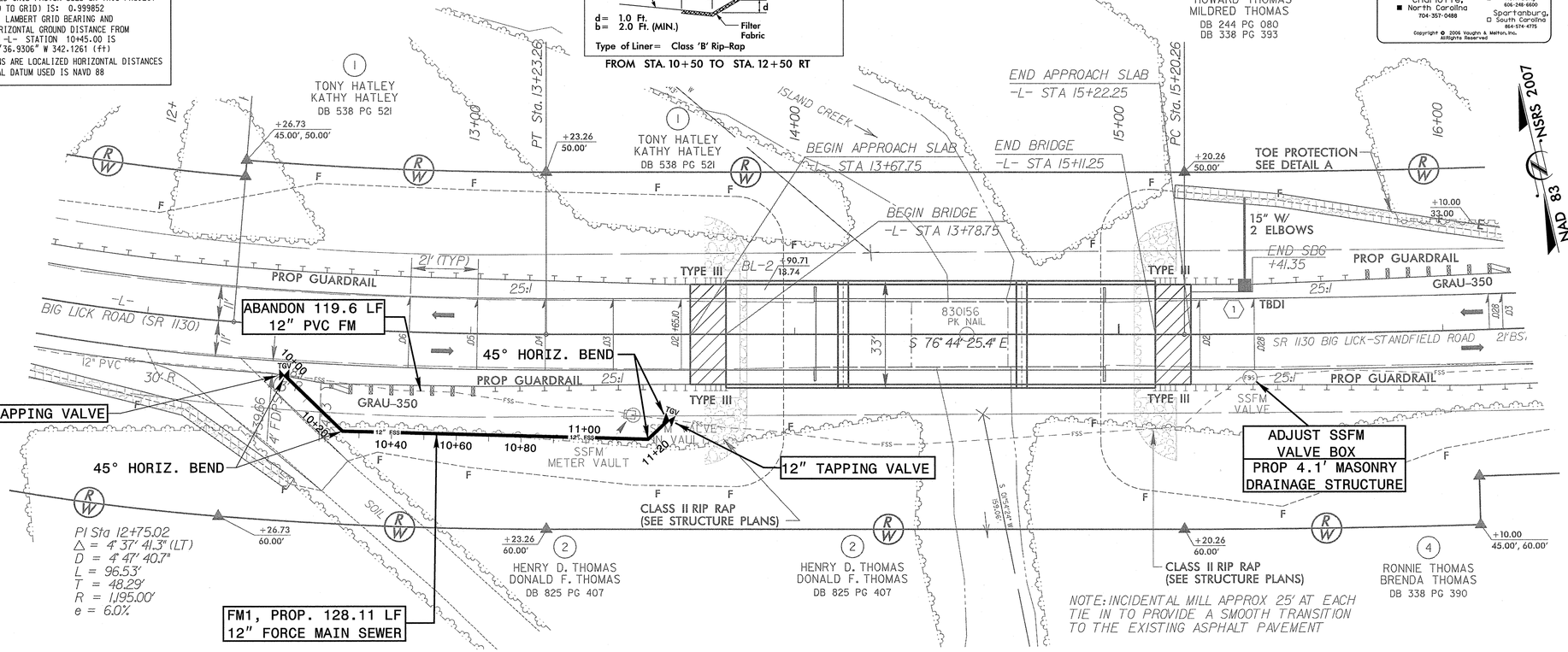
PROJECT REFERENCE NO.	SHEET NO.
BD-5110Z	UC-3
DESIGNED BY: RMS	
DRAWN BY: NVA	
CHECKED BY: RMS	
APPROVED BY:	
REVISED:	

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
UTILITIES ENGINEERING SEC.
PHONE:(919)250-4128
FAX:(919)250-4119

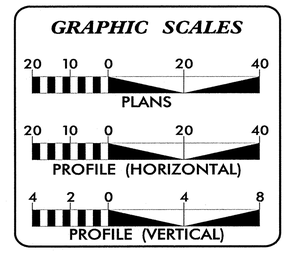
NORTH CAROLINA PROFESSIONAL SEAL 26960 ENGINEER REECE M. SCHEULER
11/26/2013
UTILITY CONSTRUCTION PLANS ONLY

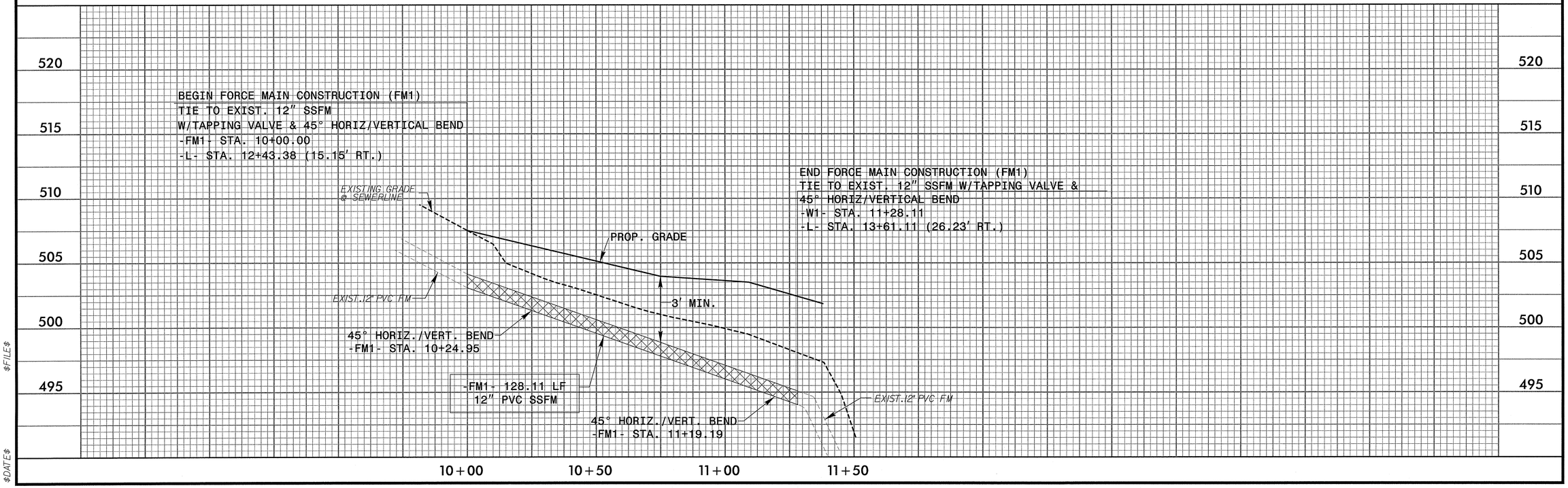
UTILITY CONSTRUCTION

NAD 83 NSRS 2007



GRAPHIC SCALES





$FILE$
$DATE$

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BD-5110Z	X-1

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

525 520 515 510 505

516.49

0.065 0.060

2:1 2:1

S.S. 511.11 514.84 S.S. 514.88

11+50

525 520 515 510 505

519.46

0.089 0.060

2:1 2:1

S.S. 515.66 518.65 S.S. 519.05

11+00

525 520 515 530

522.93

0.113 0.063

2:1 2:1

S.S. 520.69 522.77 S.S. 523.17

10+50

525 520 515 535 530

526.61

10+00

525 520

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

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

3/11/2014
N:\Roadway\XSC\BD5110Z_rdy_xpl_L.dgn
Roadway

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BD-5110Z	X-2

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

520 515 510 505 500 495

510.62
0.051
0.051
2:1
2:1
504.75
S.S. 497.35
S.S. 500.03

13+00

512.07
0.060
0.060
2:1
2:1
507.53
S.S. 498.60
S.S. 505.42

12+50

514.03
0.060
0.060
2:1
2:1
511.19
S.S. 504.81
S.S. 510.09

12+00

3/11/2014
B:\Hoag\VSC\BD5110Z_rdy_xpl_L.dgn
Bentley

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BD-5110Z	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

515 510 505 500 495 490 485

508.89

0.020 0.020

487.97

14+50

509.22

0.020 0.020

501.16

S.S. 497.66

14+00

BEGIN BRIDGE
13+78.75

509.68

0.027 0.027

2:1 2:1

502.60

S.S. 496.76

S.S. 495.71

13+50

3/11/2014
K:\Roadway\XSC\BD5110Z_rdy_xpl_L.dgn
Bentley

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

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BD-5110Z	X-4

16+50

509.67

0.045 0.028

2:1 2:1

507.43

S.S. 505.54 S.S. 505.37

16+00

508.80

0.028 0.028

2:1 2:1

504.92

S.S. 501.82 S.S. 500.60

15+50

508.44

0.028 0.028

2:1 2:1

502.82

S.S. 496.49 S.S. 491.19

END BRIDGE 15+11.25

508.57

0.020 0.020

501.09

15+00

3/11/2014
R:\Hoadley\XSC\BD5110Z_rdy_xpl_L.dgn
Bentley Systems

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BD-5110Z	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

520
515
510
505

515.17

18+00

520
515
510
505

S.S. 511.01
2:1
2:1
510.16
0.093
512.91
0.043
512.41
2:1
S.S. 510.62

17+50

520
515
510
505
500

S.S. 508.76
2:1
2:1
508.05
0.069
511.04
0.028
509.91
2:1
S.S. 507.53

17+00

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

3/11/2014
E:\Hoag\XSC\BD5110Z_rdy_xpLL.dgn
Bentley Systems, Inc.

F.A. PROJ. NO. BRZ-1130(11)

VERTICAL CURVE DATA -L-

(-)7.5439% (-)0.6437%

PI = 12+16.00
EL = 510.40
VC = 342.00'

VERTICAL CURVE DATA -L-

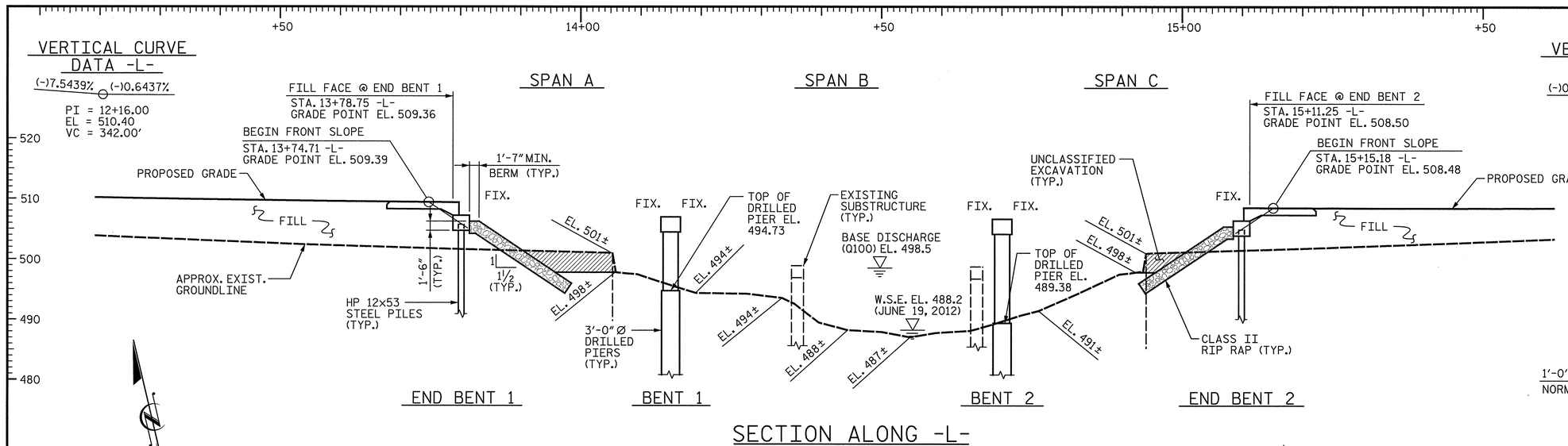
(-)0.6437% (+)5.1597%

PI = 16+51.00
EL = 507.60
VC = 288.00'

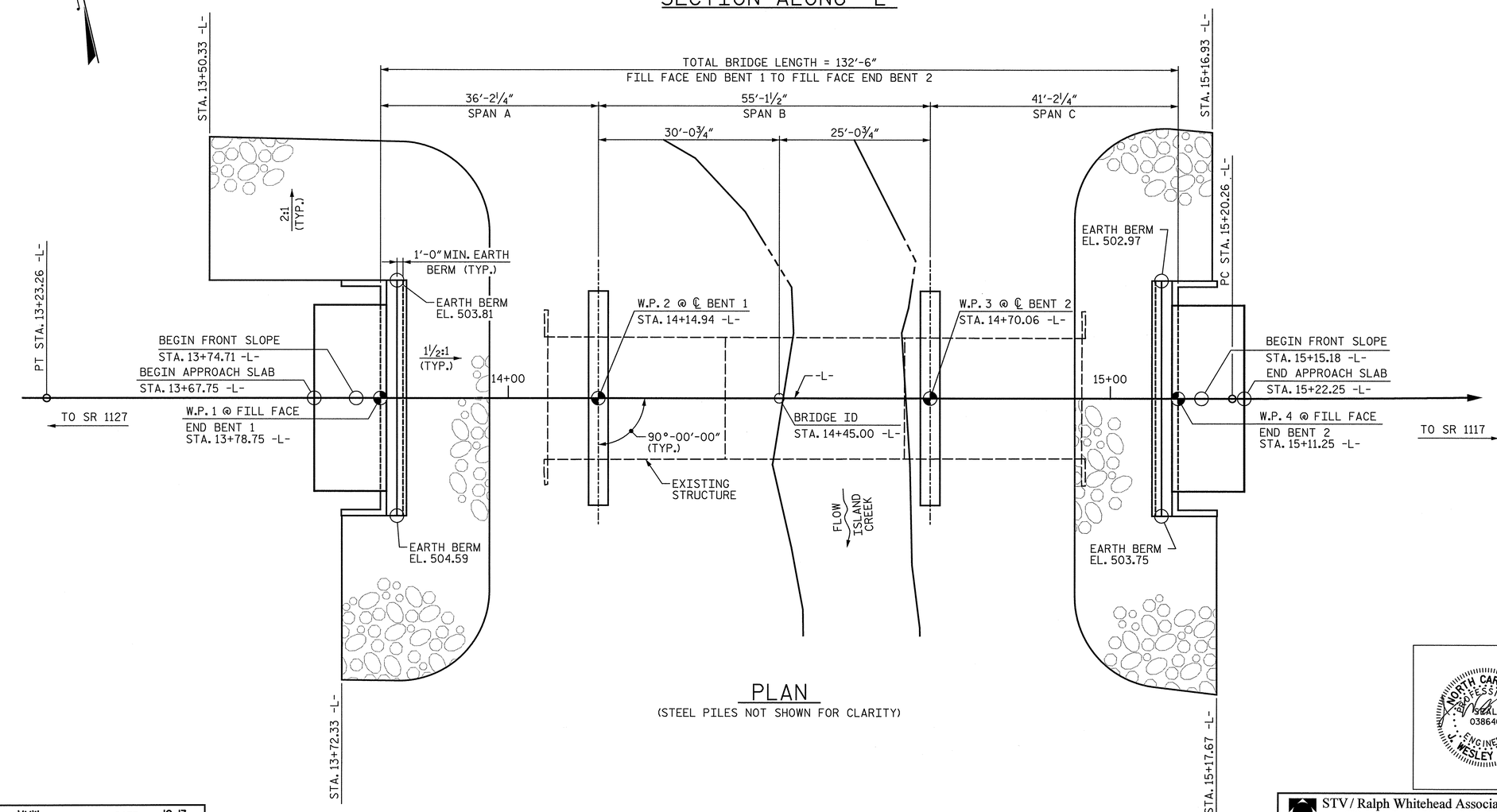
NOTES:

LOW CHORD ELEVATION AT END BENT 1 IS 506.9

LOW CHORD ELEVATION AT END BENT 2 IS 506.1

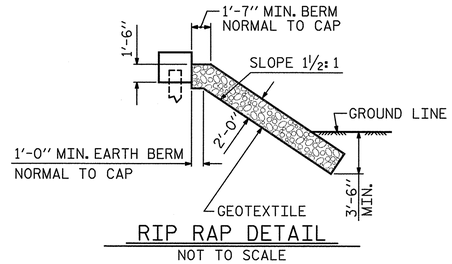


SECTION ALONG -L-



PLAN

(STEEL PILES NOT SHOWN FOR CLARITY)



RIP RAP DETAIL

NOT TO SCALE

I HEREBY CERTIFY THESE ARE THE AS-BUILT PLANS

RESIDENT ENGINEER

PROJECT NO. BD-5110Z

STANLY COUNTY

STATION: 14+45.00 -L-

SHEET 1 OF 2 REPLACES BRIDGE NO. 125

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 1130 (BIG LICK ROAD) OVER ISLAND CREEK BETWEEN SR 1127 AND SR 1117

NORTH CAROLINA PROFESSIONAL SEAL 038640 ENGINEER J. WESLEY JONES

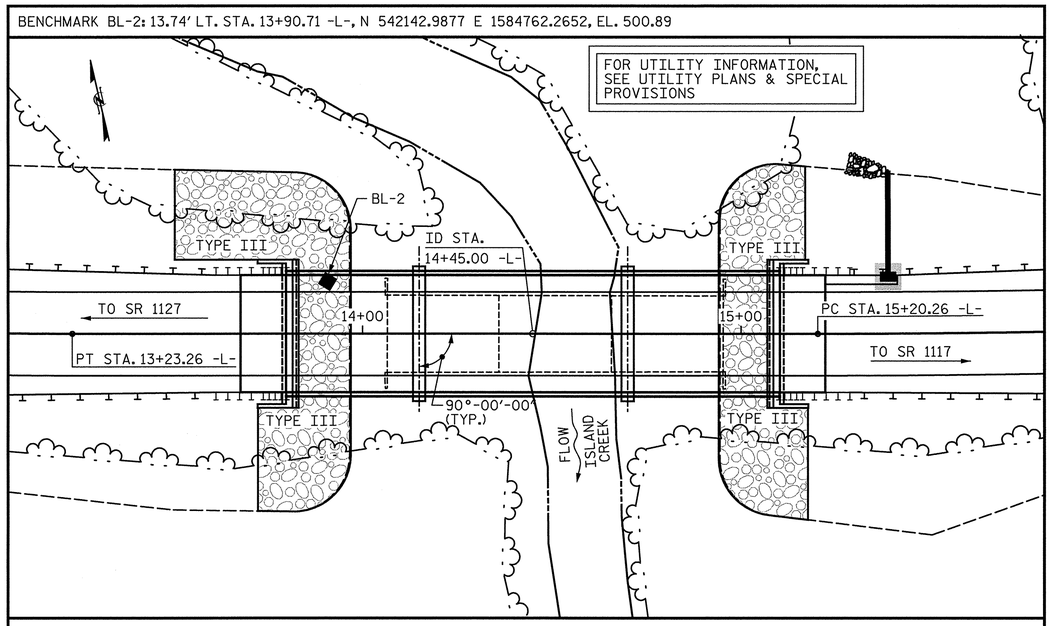
1-10-14

STV/ Ralph Whitehead Associates, Inc.
900 West Trade Street, Suite 715
Charlotte, NC 28202
NC License Number F-0991

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

DRAWN BY : VMW DATE : 10-13
CHECKED BY : JWJ DATE : 11-13

jjones 1/10/2014 9:05:46 AM R:\Structures\Finals\BD5110Z - (01) Plan and Profile.dgn



LOCATION SKETCH

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	3'-0" Ø DRILLED PIERS IN SOIL	3'-0" Ø DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIER	SID INSPECTIONS	SPT TESTING	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE
	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EA.	EA.	EA.	LUMP SUM	CU. YDS.
SUPERSTRUCTURE									
END BENT 1								LUMP SUM	14.3
BENT 1		31.0	38.0	17.0					17.6
BENT 2		18.0	36.0	16.0					20.4
END BENT 2								LUMP SUM	14.3
TOTAL	LUMP SUM	49.0	74.0	33.0	1	1	1	LUMP SUM	66.6

TOTAL BILL OF MATERIAL (CONT'D)

	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN 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 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT	
	LUMP SUM	LBS.	LBS.	NO.	LIN. FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE	LUMP SUM					260.75			LUMP SUM	33	1,430
END BENT 1		2,127		7	160.0		310	340			
BENT 1		10,314	1,698								
BENT 2		10,314	1,716								
END BENT 2		2,127		7	160.0		235	260			
TOTAL	LUMP SUM	24,882	3,414	14	320.0	260.75	545	600	LUMP SUM	33	1,430

GENERAL NOTES

ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE "STANDARD NOTES" SHEET.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THE EXISTING STRUCTURE CONSISTING OF (3) 30'± CONCRETE DECK ON STEEL I-BEAM SPANS WITH A CLEAR ROADWAY OF 20'± ON CONCRETE CAPS SUPPORTED ON TIMBER PILES AND TIMBER ABUTMENTS AND LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED. TIMBER ABUTMENTS SHALL BE REMOVED COMPLETELY.

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.

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 LUMP SUM PRICE BID FOR "REMOVAL OF EXISTING STRUCTURE".

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.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA (ON SHEET 1 OF 2) SHALL BE EXCAVATED FOR A DISTANCE FROM THE CENTERLINE OF ROADWAY OF APPROXIMATELY 40 FT. (LEFT AND RIGHT) AT BOTH END BENTS 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.

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", MAY, 2001.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

FOUNDATION NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 55 TONS PER PILE. DRIVE PILES AT END BENT NO. 1 TO A REQUIRED DRIVING RESISTANCE OF 92 TONS PER PILE.

PILES AT END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 60 TONS PER PILE. DRIVE PILES AT END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 100 TONS PER PILE.

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

INSTALL DRILLED PIERS AT BENT NO. 1 TO A TIP ELEVATION NO HIGHER THAN 472.0 FT AND WITH THE REQUIRED TIP RESISTANCE.

DRILLED PIERS AT BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 360 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 30.0 TSF.

PERMANENT STEEL CASINGS MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO. 1. IF REQUIRED, DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 489.0 FT WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT CASINGS.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 1 IS ELEVATION 479.0 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

INSTALL DRILLED PIERS AT BENT NO. 2 TO A TIP ELEVATION NO HIGHER THAN 472.0 FT AND WITH THE REQUIRED TIP RESISTANCE.

DRILLED PIERS AT BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 360 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 30.0 TSF.

PERMANENT STEEL CASINGS MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO. 2. IF REQUIRED, DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 484.0 FT WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT CASINGS.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 2 IS ELEVATION 482.0 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

SID INSPECTIONS MAY BE REQUIRED FOR DRILLED PIERS AT BENTS NO. 1 AND 2. FOR SID INSPECTIONS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

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

SPT MAY BE REQUIRED FOR DRILLED PIERS AT BENTS NO. 1 AND 2. FOR SPT TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

HYDRAULIC DATA

DESIGN DISCHARGE: 1,900 CFS
FREQUENCY OF DESIGN FLOOD: 25 YRS.
DESIGN HIGH WATER ELEVATION: 497.2
DRAINAGE AREA: 8.0 SQ. MI.
BASE DISCHARGE (Q100): 2,735 CFS
BASE HIGH WATER ELEVATION: 498.47

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE: >3,600 CFS
FREQUENCY OF OVERTOPPING FLOOD: >500 YRS.
OVERTOPPING FLOOD ELEVATION: 508.5

PROJECT NO. BD-5110Z
STANLY COUNTY
STATION: 14+45.00 -L-
SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 038640 ENGINEER J. WESLEY JONES
1-10-14

STV/ Ralph Whitehead Associates, Inc.
900 West Trade Street, Suite 715
Charlotte, NC 28202
NC License Number F-0991

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

TOTAL BILL OF MATERIAL AND GENERAL NOTES

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

DRAWN BY : VMW DATE : 10-13
CHECKED BY : JWJ DATE : 12-13

R:\Structures\Finals\BD5110Z - (02) TotalBOM.dgn 9:08:23 AM 1/10/2014 jjones

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**	1.09	--	1.75	0.283	1.36	35′	EL	17	0.561	1.87	35′	EL	1.7	0.80	0.283	**1.09**	35′	EL	**17**	
		HL-93(Opr)	N/A	--	1.77	--	1.35	0.283	1.77	35′	EL	17	0.561	2.58	35′	EL	1.7	N/A	--	--	--	--	--	
		HS-20(Inv)	36.000	**2**	1.46	52.560	1.75	0.283	1.77	35′	EL	13.6	0.561	2.26	35′	EL	1.7	0.80	0.283	**1.46**	35′	EL	**17**	
		HS-20(Opr)	36.000	--	2.30	82.800	1.35	0.283	2.30	35′	EL	13.6	0.561	3.00	35′	EL	1.7	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.49	33.615	1.4	0.283	3.89	35′	EL	17	0.561	6.14	35′	EL	1.7	0.80	0.283	2.49	35′	EL	17	
		SNGARBS2	20.000	--	2.16	43.200	1.4	0.283	3.25	35′	EL	13.6	0.561	4.60	35′	EL	1.7	0.80	0.283	2.16	35′	EL	13.6	
		SNAGRIS2	22.000	--	2.14	47.080	1.4	0.283	3.22	35′	EL	13.6	0.561	4.38	35′	EL	1.7	0.80	0.283	2.14	35′	EL	13.6	
		SNCOTTS3	27.250	--	1.25	34.063	1.4	0.283	1.95	35′	EL	17	0.561	3.03	35′	EL	1.7	0.80	0.283	1.25	35′	EL	17	
		SNAGGRS4	34.925	--	1.15	40.164	1.4	0.283	1.80	35′	EL	17	0.561	2.70	35′	EL	1.7	0.80	0.283	1.15	35′	EL	17	
		SNS5A	35.550	--	1.12	39.816	1.4	0.283	1.75	35′	EL	17	0.561	2.86	35′	EL	1.7	0.80	0.283	1.12	35′	EL	17	
		SNS6A	39.950	--	1.08	43.146	1.4	0.283	1.69	35′	EL	17	0.561	2.68	35′	EL	1.7	0.80	0.283	1.08	35′	EL	17	
		SNS7B	42.000	**3**	1.03	43.260	1.4	0.283	1.61	35′	EL	17	0.561	2.74	35′	EL	1.7	0.80	0.283	**1.03**	35′	EL	**17**	
	TTST	TNAGRIT3	33.000	--	1.33	43.890	1.4	0.283	2.09	35′	EL	17	0.561	3.16	35′	EL	1.7	0.80	0.283	1.33	35′	EL	17	
		TNT4A	33.075	--	1.33	43.990	1.4	0.283	2.09	35′	EL	17	0.561	2.97	35′	EL	1.7	0.80	0.283	1.33	35′	EL	17	
		TNT6A	41.600	--	1.17	48.672	1.4	0.283	1.83	35′	EL	17	0.561	2.91	35′	EL	1.7	0.80	0.283	1.17	35′	EL	17	
		TNT7A	42.000	--	1.21	50.820	1.4	0.283	1.87	35′	EL	13.6	0.561	2.69	35′	EL	1.7	0.80	0.283	1.21	35′	EL	17	
		TNT7B	42.000	--	1.19	49.980	1.4	0.283	1.86	35′	EL	17	0.561	2.60	35′	EL	1.7	0.80	0.283	1.19	35′	EL	17	
		TNAGRIT4	43.000	--	1.20	51.600	1.4	0.283	1.83	35′	EL	13.6	0.561	2.49	35′	EL	1.7	0.80	0.283	1.20	35′	EL	17	
		TNAGT5A	45.000	--	1.11	49.950	1.4	0.283	1.73	35′	EL	17	0.561	2.65	35′	EL	1.7	0.80	0.283	1.11	35′	EL	17	
		TNAGT5B	45.000	--	1.07	48.150	1.4	0.283	1.67	35′	EL	17	0.561	2.34	35′	EL	1.7	0.80	0.283	1.07	35′	EL	17	

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.

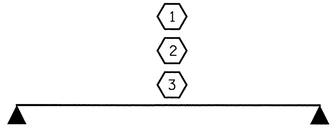
ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

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-5110Z

STANLY COUNTY

STATION: 14+45.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LRFR SUMMARY FOR 35′-0″ CORED SLAB UNIT 90° SKEW
(NON-INTERSTATE TRAFFIC)

NORTH CAROLINA PROFESSIONAL SEAL 038640 ENGINEER WESLEY JONES
1-10-14

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

STV/ Ralph Whitehead Associates, Inc.
900 West Trade Street, Suite 715
Charlotte, NC 28202
NC License Number F-0991

DRAWN BY : VMW DATE : 10-13
CHECKED BY : JWJ DATE : 12-13

1/10/2014 9:08:42 AM R:\Structures\Finals\BD5110Z - (03) LRFR Span A.dgn JJones

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**	1.26	--	1.75	0.277	1.26	55′	EL	27	0.523	1.77	55′	EL	2.7	0.80	0.277	**1.26**	55′	EL	**27**	
		HL-93(Opr)	N/A	--	1.63	--	1.35	0.277	1.63	55′	EL	27	0.523	2.46	55′	EL	2.7	N/A	--	--	--	--	--	
		HS-20(Inv)	36.000	**2**	1.58	56.880	1.75	0.277	1.58	55′	EL	27	0.523	2.29	55′	EL	2.7	0.80	0.277	**1.58**	55′	EL	**27**	
		HS-20(Opr)	36.000	--	2.05	73.800	1.35	0.277	2.05	55′	EL	27	0.523	3.00	55′	EL	2.7	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.33	44.955	1.4	0.277	4.15	55′	EL	27	0.523	6.75	55′	EL	2.7	0.80	0.277	3.33	55′	EL	27	
		SNGARBS2	20.000	--	2.58	51.600	1.4	0.277	3.22	55′	EL	27	0.523	4.85	55′	EL	2.7	0.80	0.277	2.58	55′	EL	27	
		SNAGRIS2	22.000	--	2.49	54.780	1.4	0.277	3.11	55′	EL	27	0.523	4.53	55′	EL	2.7	0.80	0.277	2.49	55′	EL	27	
		SNCOTTS3	27.250	--	1.66	45.235	1.4	0.277	2.07	55′	EL	27	0.523	3.33	55′	EL	2.7	0.80	0.277	1.66	55′	EL	27	
		SNAGGRS4	34.925	--	1.42	49.594	1.4	0.277	1.78	55′	EL	27	0.523	2.80	55′	EL	2.7	0.80	0.277	1.42	55′	EL	27	
		SNS5A	35.550	--	1.39	49.415	1.4	0.277	1.73	55′	EL	27	0.523	2.87	55′	EL	2.7	0.80	0.277	1.39	55′	EL	27	
		SNS6A	39.950	--	1.29	51.536	1.4	0.277	1.61	55′	EL	27	0.523	2.63	55′	EL	2.7	0.80	0.277	1.29	55′	EL	27	
		SNS7B	42.000	--	1.23	51.660	1.4	0.277	1.54	55′	EL	27	0.523	2.61	55′	EL	2.7	0.80	0.277	1.23	55′	EL	27	
	TTST	TNAGRIT3	33.000	--	1.58	52.140	1.4	0.277	1.97	55′	EL	27	0.523	3.13	55′	EL	2.7	0.80	0.277	1.58	55′	EL	27	
		TNT4A	33.075	--	1.59	52.589	1.4	0.277	1.99	55′	EL	27	0.523	3.01	55′	EL	2.7	0.80	0.277	1.59	55′	EL	27	
		TNT6A	41.600	--	1.32	54.912	1.4	0.277	1.65	55′	EL	27	0.523	2.85	55′	EL	2.7	0.80	0.277	1.32	55′	EL	27	
		TNT7A	42.000	--	1.33	55.860	1.4	0.277	1.66	55′	EL	27	0.523	2.69	55′	EL	2.7	0.80	0.277	1.33	55′	EL	27	
		TNT7B	42.000	--	1.39	58.380	1.4	0.277	1.74	55′	EL	27	0.523	2.53	55′	EL	2.7	0.80	0.277	1.39	55′	EL	27	
		TNAGRIT4	43.000	--	1.32	56.760	1.4	0.277	1.64	55′	EL	27	0.523	2.43	55′	EL	2.7	0.80	0.277	1.32	55′	EL	27	
		TNAGT5A	45.000	--	1.24	55.800	1.4	0.277	1.54	55′	EL	27	0.523	2.44	55′	EL	2.7	0.80	0.277	1.24	55′	EL	27	
		TNAGT5B	45.000	**3**	1.21	54.450	1.4	0.277	1.51	55′	EL	27	0.523	2.31	55′	EL	2.7	0.80	0.277	**1.21**	55′	EL	**27**	

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:

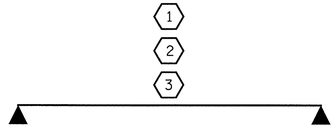
MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

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



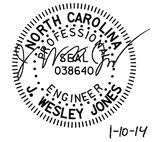
LRFR SUMMARY

FOR SPAN 'B'

PROJECT NO. BD-5110Z

STANLY COUNTY

STATION: 14+45.00 -L-



STV/ Ralph Whitehead Associates, Inc.
900 West Trade Street, Suite 715
Charlotte, NC 28202
NC License Number F-0991

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LRFR SUMMARY FOR 55′-0″ CORED SLAB UNIT 90° SKEW
(NON-INTERSTATE TRAFFIC)

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

DRAWN BY : VMW DATE : 10-13
CHECKED BY : JWJ DATE : 12-13

$USERNAME$ $DATE$ $TIME$ $FILE$

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**	1.66	--	1.75	0.281	1.88	40′	EL	19.5	0.549	2.23	40′	EL	7.8	0.80	0.281	**1.66**	40′	EL	**19.5**	
		HL-93(Opr)	N/A	--	2.44	--	1.35	0.281	2.44	40′	EL	19.5	0.549	2.98	40′	EL	7.8	N/A	--	--	--	--	--	
		HS-20(Inv)	36.000	**2**	2.08	74.880	1.75	0.281	2.36	40′	EL	19.5	0.549	2.60	40′	EL	7.8	0.80	0.281	**2.08**	40′	EL	**19.5**	
		HS-20(Opr)	36.000	--	3.06	110.160	1.35	0.281	3.06	40′	EL	19.5	0.549	3.47	40′	EL	7.8	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.84	51.840	1.4	0.281	5.46	40′	EL	19.5	0.549	7.09	40′	EL	7.8	0.80	0.281	3.84	40′	EL	19.5	
		SNGARBS2	20.000	--	3.19	63.800	1.4	0.281	4.51	40′	EL	15.6	0.549	5.34	40′	EL	7.8	0.80	0.281	3.19	40′	EL	19.5	
		SNAGRIS2	22.000	--	3.14	69.080	1.4	0.281	4.40	40′	EL	15.6	0.549	5.09	40′	EL	7.8	0.80	0.281	3.14	40′	EL	15.6	
		SNCOTTS3	27.250	--	1.92	52.320	1.4	0.281	2.73	40′	EL	19.5	0.549	3.42	40′	EL	7.8	0.80	0.281	1.92	40′	EL	19.5	
		SNAGGRS4	34.925	--	1.73	60.420	1.4	0.281	2.46	40′	EL	19.5	0.549	3.03	40′	EL	7.8	0.80	0.281	1.73	40′	EL	19.5	
		SNS5A	35.550	--	1.68	59.724	1.4	0.281	2.39	40′	EL	19.5	0.549	3.21	40′	EL	7.8	0.80	0.281	1.68	40′	EL	19.5	
		SNS6A	39.950	--	1.60	63.920	1.4	0.281	2.27	40′	EL	19.5	0.549	2.99	40′	EL	7.8	0.80	0.281	1.60	40′	EL	19.5	
		SNS7B	42.000	**3**	1.52	63.840	1.4	0.281	2.17	40′	EL	19.5	0.549	3.08	40′	EL	7.8	0.80	0.281	**1.52**	40′	EL	**19.5**	
	TTST	TNAGRIT3	33.000	--	1.97	65.010	1.4	0.281	2.80	40′	EL	19.5	0.549	3.61	40′	EL	7.8	0.80	0.281	1.97	40′	EL	19.5	
		TNT4A	33.075	--	1.99	65.819	1.4	0.281	2.83	40′	EL	19.5	0.549	3.36	40′	EL	7.8	0.80	0.281	1.99	40′	EL	19.5	
		TNT6A	41.600	--	1.69	70.304	1.4	0.281	2.40	40′	EL	19.5	0.549	3.27	40′	EL	7.8	0.80	0.281	1.69	40′	EL	19.5	
		TNT7A	42.000	--	1.73	72.660	1.4	0.281	2.46	40′	EL	19.5	0.549	3.03	40′	EL	7.8	0.80	0.281	1.73	40′	EL	19.5	
		TNT7B	42.000	--	1.77	74.340	1.4	0.281	2.52	40′	EL	19.5	0.549	2.91	40′	EL	7.8	0.80	0.281	1.77	40′	EL	19.5	
		TNAGRIT4	43.000	--	1.72	73.960	1.4	0.281	2.45	40′	EL	19.5	0.549	2.81	40′	EL	7.8	0.80	0.281	1.72	40′	EL	19.5	
		TNAGT5A	45.000	--	1.59	71.550	1.4	0.281	2.27	40′	EL	19.5	0.549	3.02	40′	EL	7.8	0.80	0.281	1.59	40′	EL	19.5	
		TNAGT5B	45.000	--	1.55	69.750	1.4	0.281	2.20	40′	EL	19.5	0.549	2.64	40′	EL	7.8	0.80	0.281	1.55	40′	EL	19.5	

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:

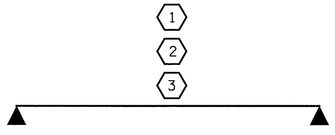
MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

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 'C'

PROJECT NO. BD-5110Z

STANLY COUNTY

STATION: 14+45.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LRFR SUMMARY FOR 40′-0″ CORED SLAB UNIT 90° SKEW (NON-INTERSTATE TRAFFIC)

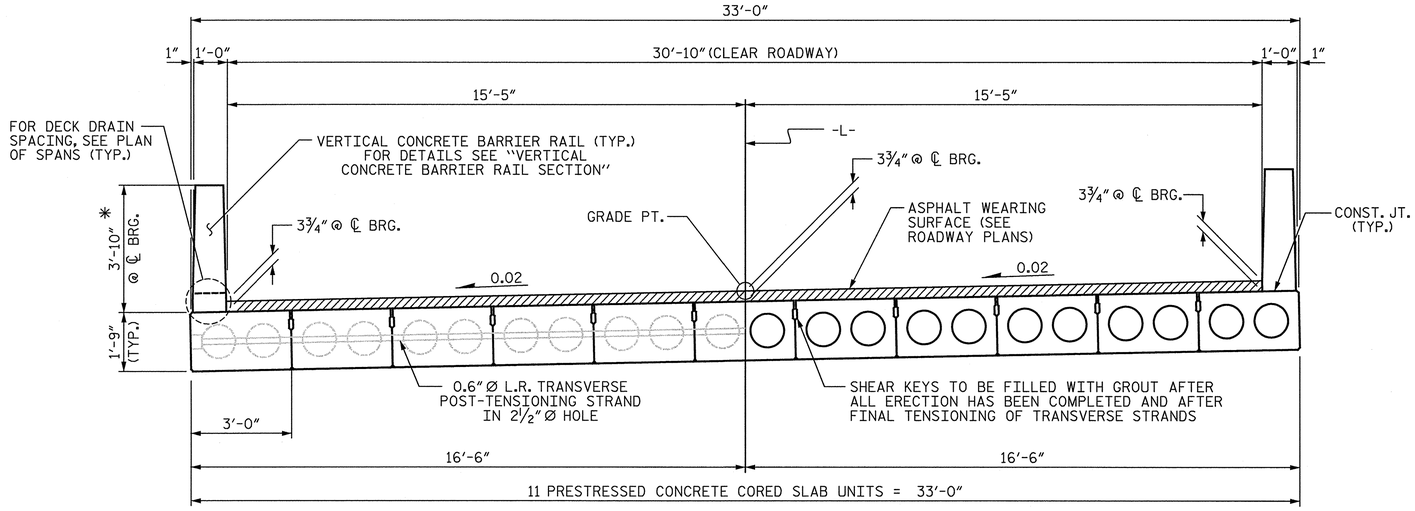
NORTH CAROLINA PROFESSIONAL SEAL 038640 ENGINEER WESLEY JONES 1-10-14

STV/ Ralph Whitehead Associates, Inc.
900 West Trade Street, Suite 715
Charlotte, NC 28202
NC License Number F-0991

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			21

DRAWN BY : VMW DATE : 10-13
CHECKED BY : JWJ DATE : 12-13

1/10/2014 9:09:14 AM R:\Structures\Finals\BD5110Z - (05) LRFR Span C.dgn JJones



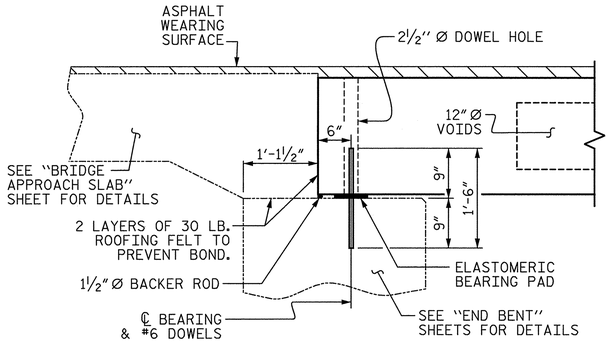
HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

HALF SECTION
THROUGH VOIDS

TYPICAL SECTION

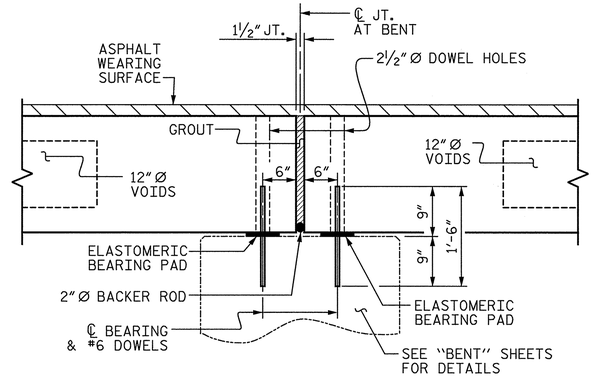
* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.

FIXED END

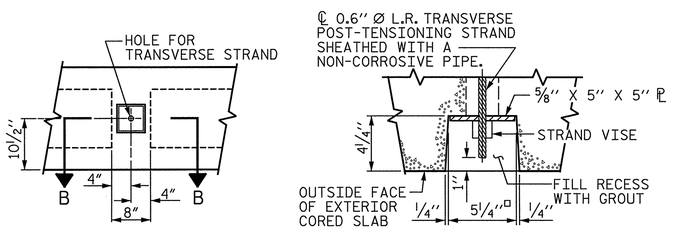


SECTION AT END BENT

FIXED END FIXED END



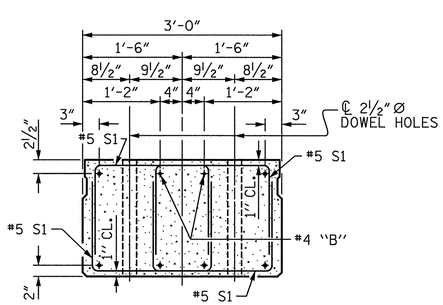
SECTION AT BENT



ELEVATION VIEW

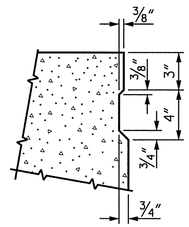
SECTION B-B

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



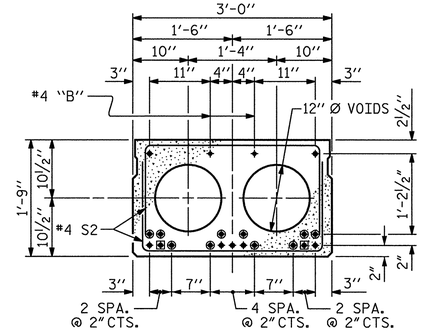
END ELEVATION

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.

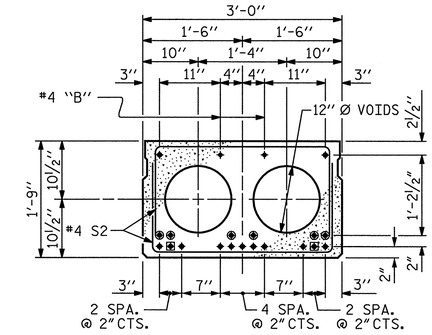


SHEAR KEY DETAIL

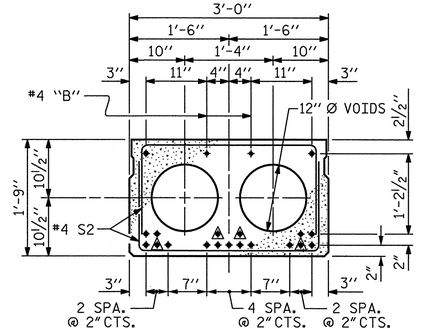
NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.



INTERIOR SLAB SECTION
35'-0" UNIT
(9 STRANDS REQUIRED)

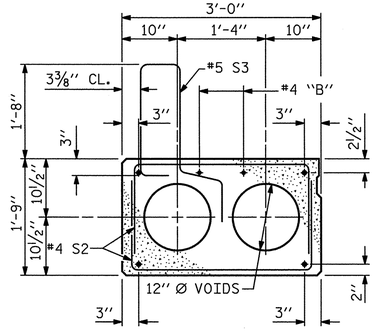


INTERIOR SLAB SECTION
40'-0" UNIT
(13 STRANDS REQUIRED)



INTERIOR SLAB SECTION
55'-0" UNIT
(19 STRANDS REQUIRED)

0.6" Ø LOW RELAXATION STRAND LAYOUT



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

▲ 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.

◉ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 2'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

◉ OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED. IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE CORED SLAB UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND

PROJECT NO. BD-5110Z

STANLY COUNTY

STATION: 14+45.00 -L-

SHEET 1 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT 90° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 038640 ENGINEER WESLEY JONES
1-10-14

ASSEMBLED BY : VMW	DATE : 10-13
CHECKED BY : JWJ	DATE : 12-13
DRAWN BY : DGE 5/09	REV. 12/11 MAA/AAC
CHECKED BY : BCH 6/09	

STV / Ralph Whitehead Associates, Inc.
900 West Trade Street, Suite 715
Charlotte, NC 28202
NC License Number F-0991

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			21

STD. NO. 21PCS2_33_90S

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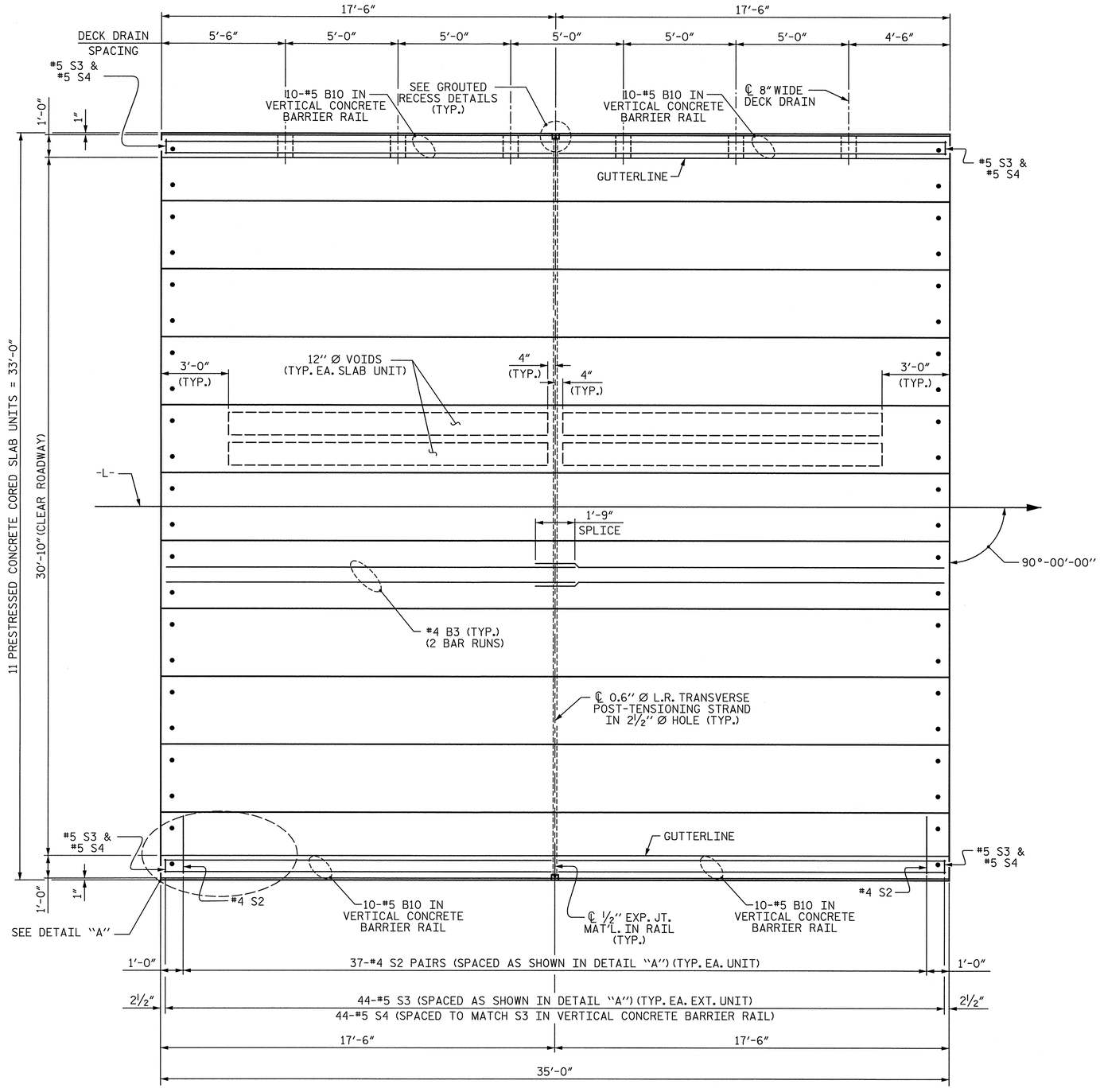
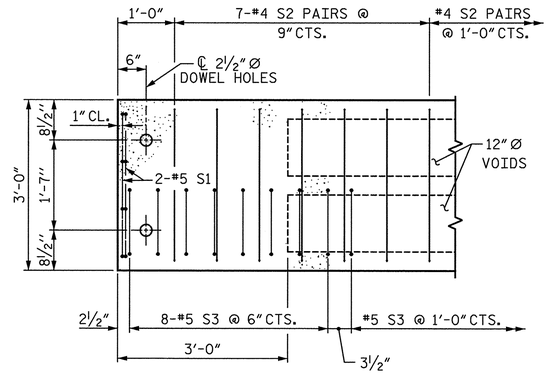


PLAN OF SPAN A



DETAIL "A"

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

PROJECT NO. BD-5110Z

STANLY COUNTY

STATION: 14+45.00 -L-

SHEET 2 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 35′-0″ UNIT 30′-10″ CLEAR ROADWAY 90° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 038640 ENGINEER J. WESLEY JONES
1-10-14

STV/ Ralph Whitehead Associates, Inc.
900 West Trade Street, Suite 715
Charlotte, NC 28202
NC License Number F-0991

ASSEMBLED BY :	VMW	DATE :	10-13
CHECKED BY :	JWJ	DATE :	12-13
DRAWN BY : DGE	3/09	REV. 12/5/11	MAA/AAC
CHECKED BY : BCH	3/09		

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			21

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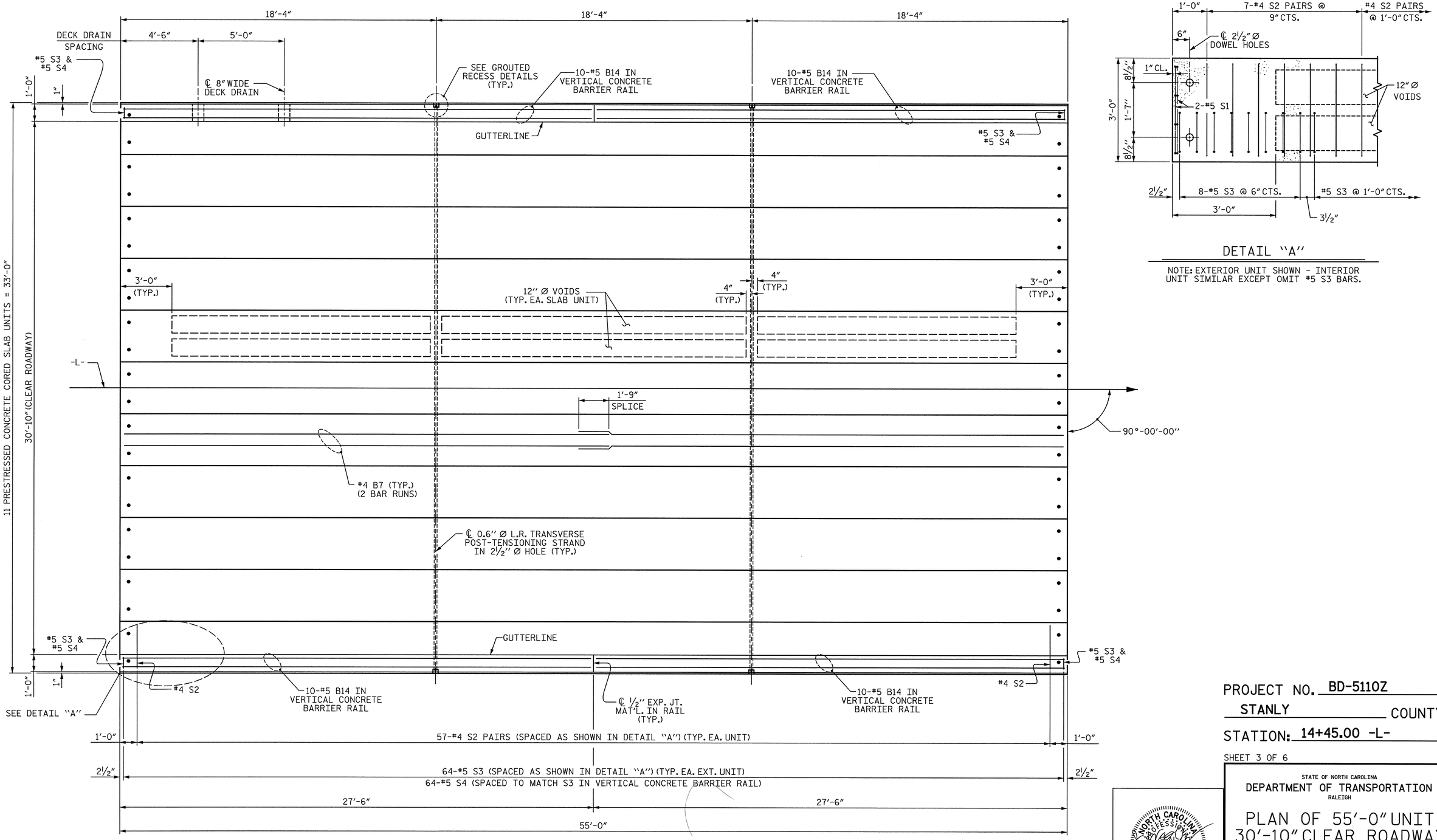

PLAN OF SPAN B

DETAIL "A"

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

PROJECT NO. BD-5110Z

STANLY COUNTY

STATION: 14+45.00 -L-

SHEET 3 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 55'-0" UNIT 30'-10" CLEAR ROADWAY 90° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 038640 ENGINEER J. WESLEY JONES
1-10-14

ASSEMBLED BY :	VMW	DATE :	10-13
CHECKED BY :	JWJ	DATE :	12-13
DRAWN BY : DGE	3/09	REV.	12/5/11 MAA/AAC
CHECKED BY : BCH	3/09		

STV / Ralph Whitehead Associates, Inc.
900 West Trade Street, Suite 715
Charlotte, NC 28202
NC License Number F-0991

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

SHEET NO. S-8
TOTAL SHEETS 21

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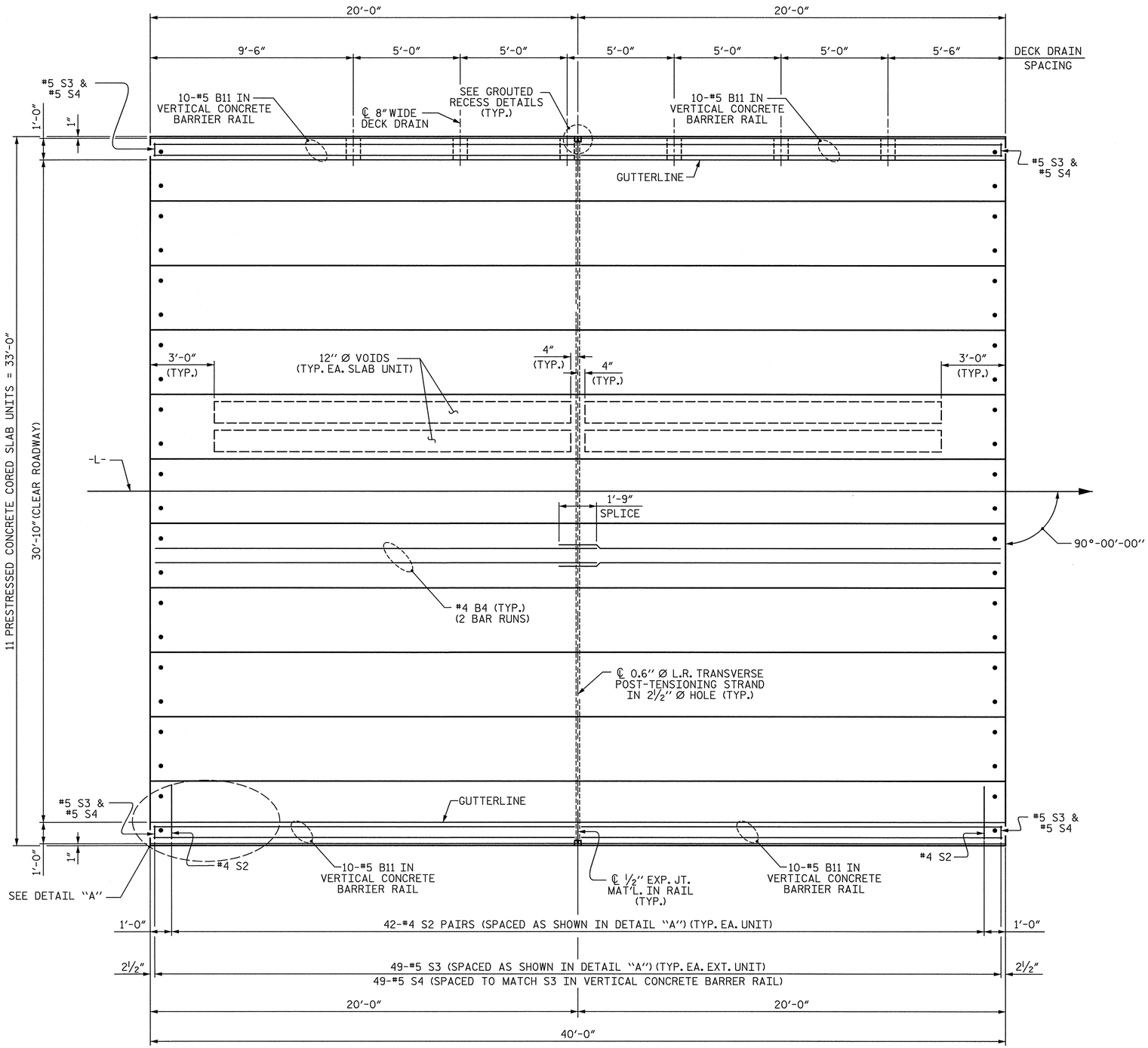
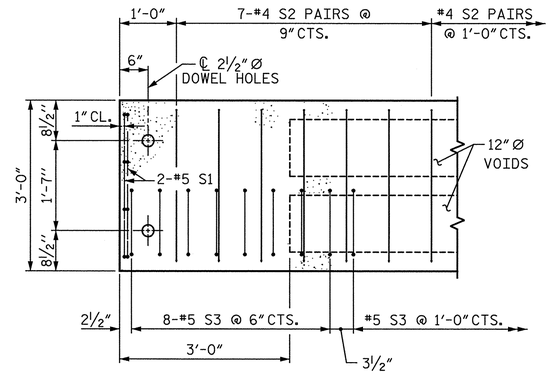


PLAN OF SPAN C



DETAIL "A"

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

PROJECT NO. BD-5110Z

STANLY COUNTY

STATION: 14+45.00 -L-

SHEET 4 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 40'-0" UNIT 30'-10" CLEAR ROADWAY 90° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 038640 ENGINEER J. WESLEY JONES 1-10-14

ASSEMBLED BY :	VMW	DATE :	10-13
CHECKED BY :	JWJ	DATE :	12-13
DRAWN BY : DGE	3/09	REV. 12/5/11	MAA/AAC
CHECKED BY : BCH	3/09		

STV / Ralph Whitehead Associates, Inc.
900 West Trade Street, Suite 715
Charlotte, NC 28202
NC License Number F-0991

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

SHEET NO. S-9

TOTAL SHEETS 21

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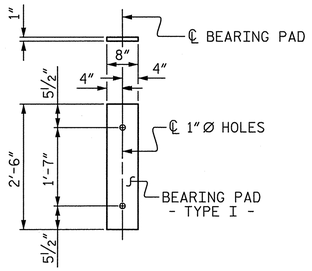
JJones



FIXED END
(TYPE I - 66 REQ'D)

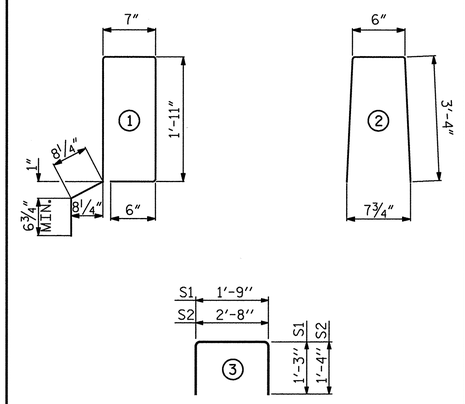
ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

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

CONCRETE RELEASE STRENGTH	
UNIT	PSI
35'-0" UNITS	4000
40'-0" UNITS	4000
55'-0" UNITS	4900

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

NOTES

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

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

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

THE 2½"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.

ALL REINFORCING STEEL IN THE VERTICAL CONCRETE BARRIER RAIL 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, ½" 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.

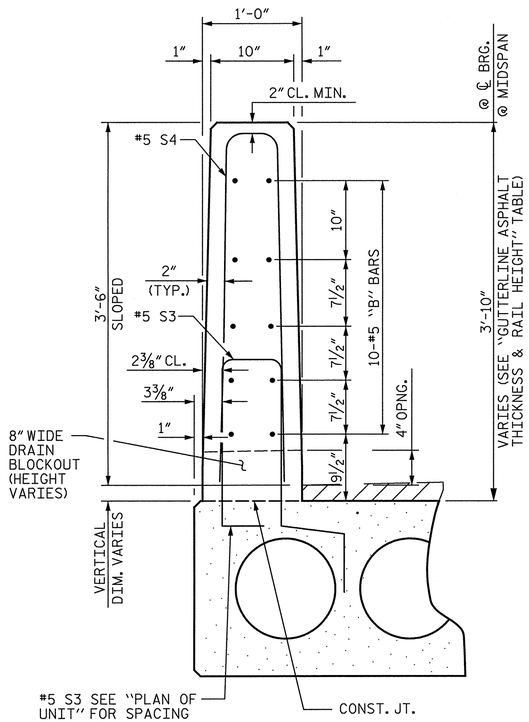
TRANSVERSE POST TENSIONING OF THE CORED SLAB UNITS SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

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.

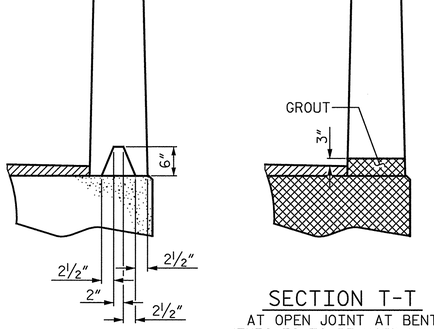
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE DRAIN OPENING AT THE GUTTERLINE SHALL BE 4"X 8", THE HEIGHT OF THE BLOCKOUT IN THE VERTICAL CONCRETE BARRIER RAIL SHALL EXTEND FROM THE TOP OF THE CORED SLAB UNIT TO THE TOP OF THE DRAIN OPENING.

APPLY EPOXY PROTECTIVE COATING TO EXTERIOR FACE OF THE EXTERIOR CORED SLAB UNITS THAT REQUIRE DRAINS IN THE BARRIER RAIL.

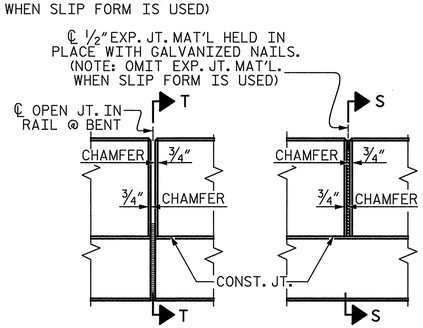


VERTICAL CONCRETE BARRIER RAIL SECTION



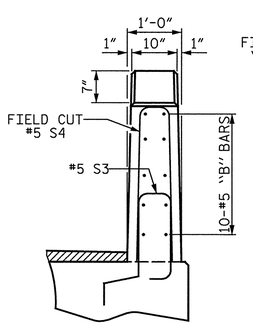
SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)

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

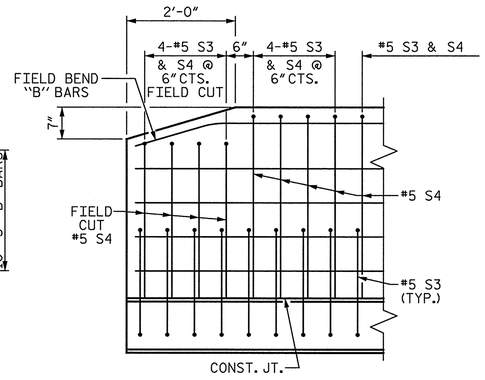


ELEVATION AT EXPANSION JOINTS

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
30'-10" CLEAR ROADWAY	ASPHALT OVERLAY THICKNESS	RAIL HEIGHT
	@ MID-SPAN	@ MID-SPAN
	SUPERED SECTION	
35'-0" UNITS	3⅜"	3'-9⅝"
40'-0" UNITS	2 13/16"	3'-9 1/16"
55'-0" UNITS	1 15/16"	3'-8 3/16"



END VIEW



SIDE VIEW

END OF RAIL DETAILS

PROJECT NO. BD-5110Z
STANLY COUNTY
STATION: 14+45.00 -L-
SHEET 5 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0"X 1-9" PRESTRESSED CONCRETE CORED SLAB UNIT 90° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 038640 ENGINEER J. WESLEY JONES
1-10-14

STV/ Ralph Whitehead Associates, Inc.
900 West Trade Street, Suite 715
Charlotte, NC 28202
NC License Number F-0991

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			21

DRAWN BY: VMW DATE : 10-13
CHECKED BY : JWJ DATE : 12-13

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1/10/2014 9:12:31 AM
jjones

BILL OF MATERIAL FOR ONE 35′-0″ CORED SLAB UNIT

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B3	4	#4	STR	18′-3″	49	18′-3″	49
S1	8	#5	3	4′-3″	35	4′-3″	35
S2	74	#4	3	5′-4″	264	5′-4″	264
✳ S3	44	#5	1	6′-2″	283		
REINFORCING STEEL			LBS.		348		348
✳EPOXY COATED REINFORCING STEEL			LBS.		283		
5000 P.S.I. CONCRETE			CU. YDS.		5.1		5.1
0.6″ Ø L.R. STRANDS			No.		9		9

BILL OF MATERIAL FOR ONE 40′-0″ CORED SLAB UNIT

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B4	4	#4	STR	20′-9″	55	20′-9″	55
S1	8	#5	3	4′-3″	35	4′-3″	35
S2	84	#4	3	5′-4″	299	5′-4″	299
✳ S3	49	#5	1	6′-2″	315		
REINFORCING STEEL			LBS.		389		389
✳EPOXY COATED REINFORCING STEEL			LBS.		315		
6500 P.S.I. CONCRETE			CU. YDS.		5.8		5.8
0.6″ Ø L.R. STRANDS			No.		13		13

BILL OF MATERIAL FOR ONE 55′-0″ CORED SLAB UNIT

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B7	4	#4	STR	28′-3″	75	28′-3″	75
S1	8	#5	3	4′-3″	35	4′-3″	35
S2	114	#4	3	5′-4″	406	5′-4″	406
✳ S3	64	#5	1	6′-2″	412		
REINFORCING STEEL			LBS.		516		516
✳EPOXY COATED REINFORCING STEEL			LBS.		412		
6500 P.S.I. CONCRETE			CU. YDS.		7.8		7.8
0.6″ Ø L.R. STRANDS			No.		19		19

CORED SLABS REQUIRED

	NUMBER	LENGTH	TOTAL LENGTH
35′-0″ UNIT			
EXTERIOR C.S.	2	35′-0″	70′-0″
INTERIOR C.S.	9	35′-0″	315′-0″
TOTAL	11		385′-0″

CORED SLABS REQUIRED

	NUMBER	LENGTH	TOTAL LENGTH
40′-0″ UNIT			
EXTERIOR C.S.	2	40′-0″	80′-0″
INTERIOR C.S.	9	40′-0″	360′-0″
TOTAL	11		440′-0″

CORED SLABS REQUIRED

	NUMBER	LENGTH	TOTAL LENGTH
55′-0″ UNIT			
EXTERIOR C.S.	2	55′-0″	110′-0″
INTERIOR C.S.	9	55′-0″	495′-0″
TOTAL	11		605′-0″

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL

BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	35′-0″ UNIT					
✳B10	40	40	#5	STR	17′-1″	713
✳ S4	88	88	#5	2	7′-2″	658
✳EPOXY COATED REINFORCING STEEL				LBS.		1371
CLASS AA CONCRETE				CU.YDS.		9.2
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		70.25

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL

BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	40′-0″ UNIT					
✳B11	40	40	#5	STR	19′-1″	817
✳ S4	98	98	#5	2	7′-2″	733
✳EPOXY COATED REINFORCING STEEL				LBS.		1550
CLASS AA CONCRETE				CU.YDS.		10.5
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		80.25

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL

BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	55′-0″ UNIT					
✳B14	40	40	#5	STR	27′-1″	1130
✳ S4	128	128	#5	2	7′-2″	957
✳EPOXY COATED REINFORCING STEEL				LBS.		2087
CLASS AA CONCRETE				CU.YDS.		14.4
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		110.25

DEAD LOAD DEFLECTION AND CAMBER

	3′-0″ x 1′-9″
35′-0″ CORED SLAB UNIT	0.6″ Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1/2″ ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD✳✳	1/8″ ↓
FINAL CAMBER	3/8″ ↑

✳✳ INCLUDES FUTURE WEARING SURFACE

DEAD LOAD DEFLECTION AND CAMBER

	3′-0″ x 1′-9″
40′-0″ CORED SLAB UNIT	0.6″ Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1 1/16″ ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD✳✳	1/8″ ↓
FINAL CAMBER	15/16″ ↑

✳✳ INCLUDES FUTURE WEARING SURFACE

DEAD LOAD DEFLECTION AND CAMBER

	3′-0″ x 1′-9″
55′-0″ CORED SLAB UNIT	0.6″ Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	2 1/4″ ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD✳✳	7/16″ ↓
FINAL CAMBER	1 13/16″ ↑

✳✳ INCLUDES FUTURE WEARING SURFACE

PROJECT NO. BD-5110Z

STANLY COUNTY

STATION: 14+45.00 -L-

SHEET 6 OF 6

NORTH CAROLINA PROFESSIONAL SEAL 038640 ENGINEER J. WESLEY JONES 1-10-14

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3′-0″ X 1-9″ PRESTRESSED CONCRETE CORED SLAB UNIT 90° SKEW

STV/ Ralph Whitehead Associates, Inc.
900 West Trade Street, Suite 715
Charlotte, NC 28202
NC License Number F-0991

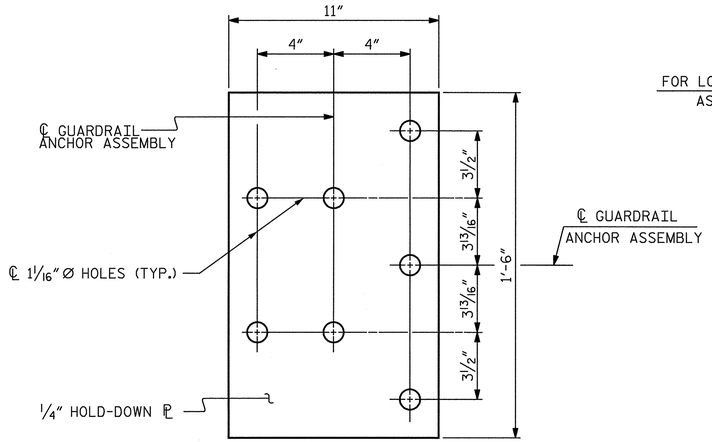
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-11

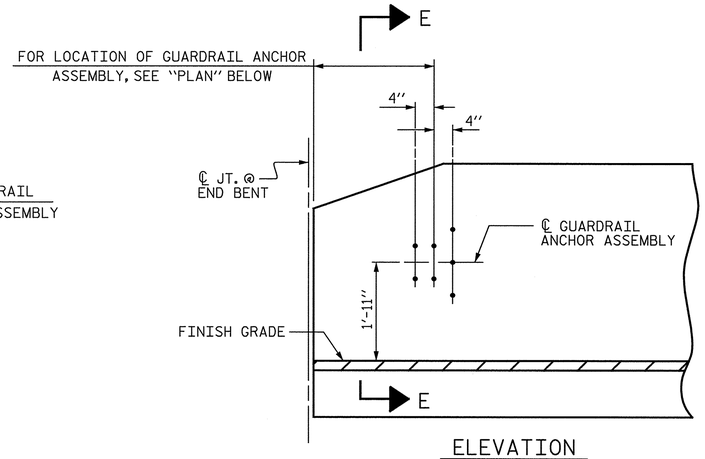
TOTAL SHEETS 21

DRAWN BY: VMW DATE : 10-13
CHECKED BY : JWJ DATE : 12-13

R:\Structures\Finals\BD5110Z - (8) Cored Slab BOM.dgn 9:12:43 AM 1/10/2014 JJones



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.)

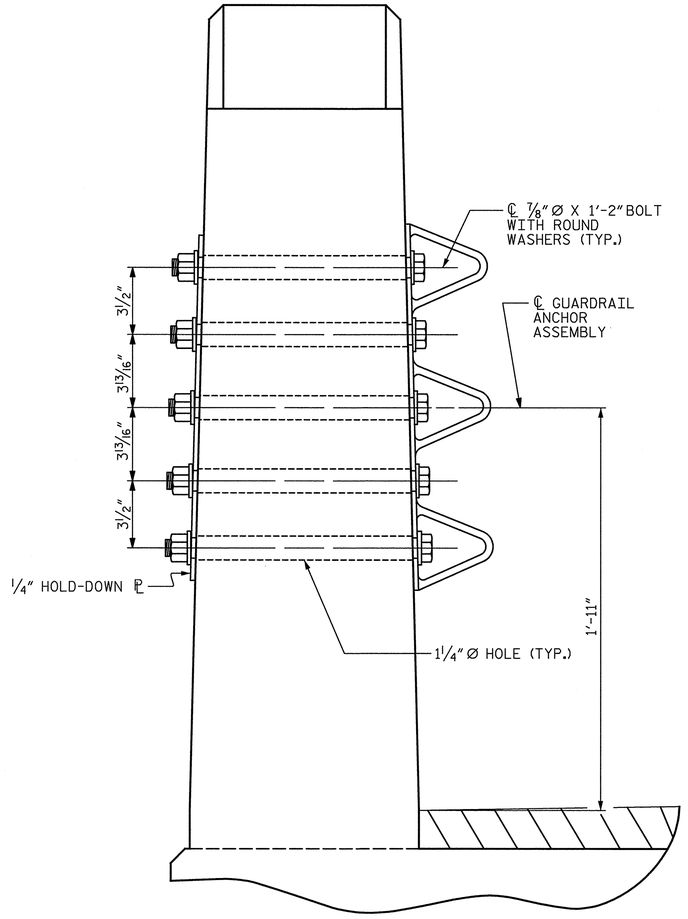
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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.

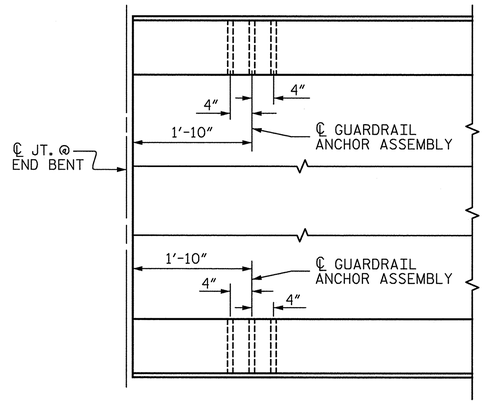
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

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.



SECTION E-E

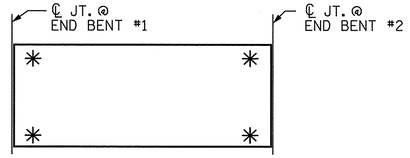
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

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



SKETCH SHOWING POINTS OF ATTACHMENT

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. BD-5110Z

STANLY COUNTY

STATION: 14+45.00 -L-

ASSEMBLED BY : VMW	DATE : 10-13	REV. 10/1/11	MAA/GM
CHECKED BY : JWJ	DATE : 12-13	REV. 12/5/11	MAA/GM
DRAWN BY : MAA 5/10		REV. 6/13	MAA/GM
CHECKED BY : GM 5/10			

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Charlotte, NC 28202
NC License Number F-0991

NORTH CAROLINA PROFESSIONAL SEAL 038640 ENGINEER J. WESLEY JONES
1-10-14

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

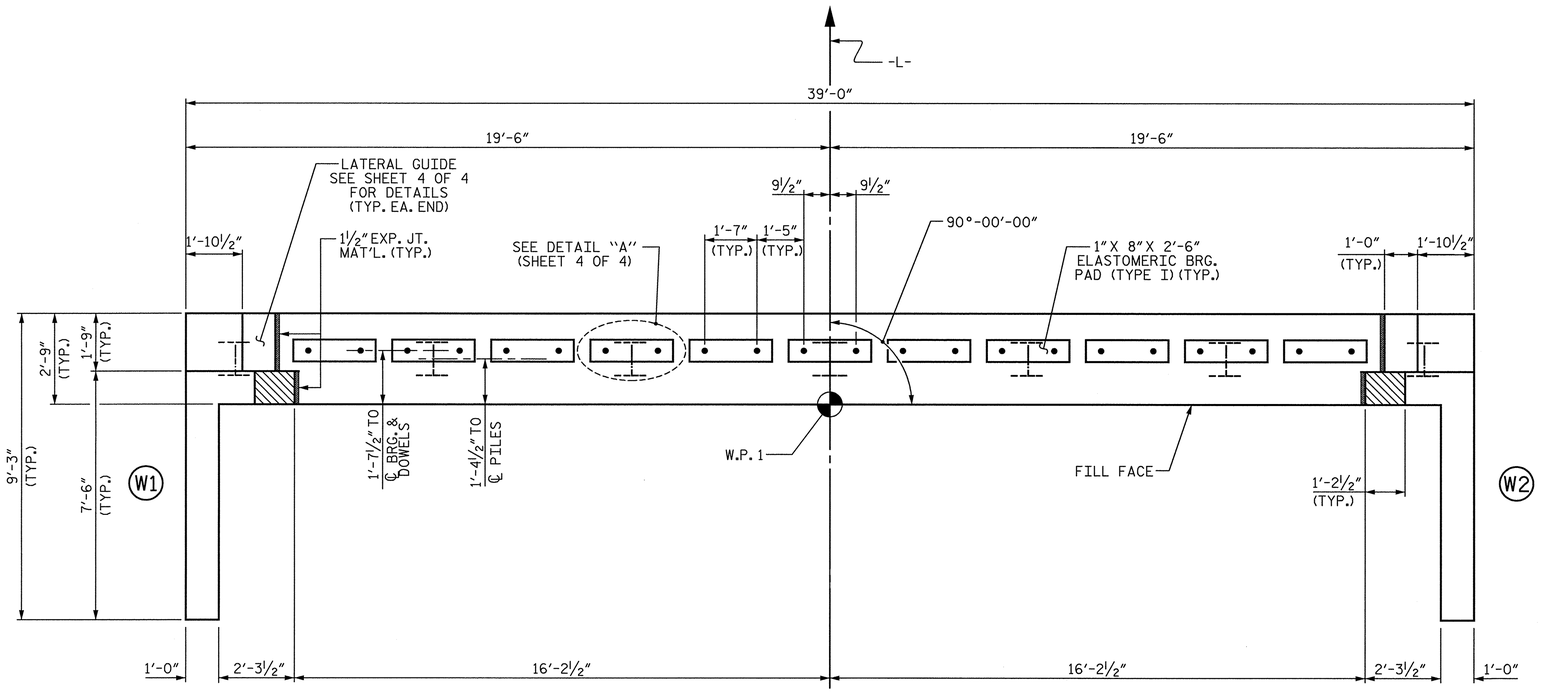
STANDARD
GUARDRAIL ANCHORAGE FOR VERTICAL CONCRETE BARRIER RAIL

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

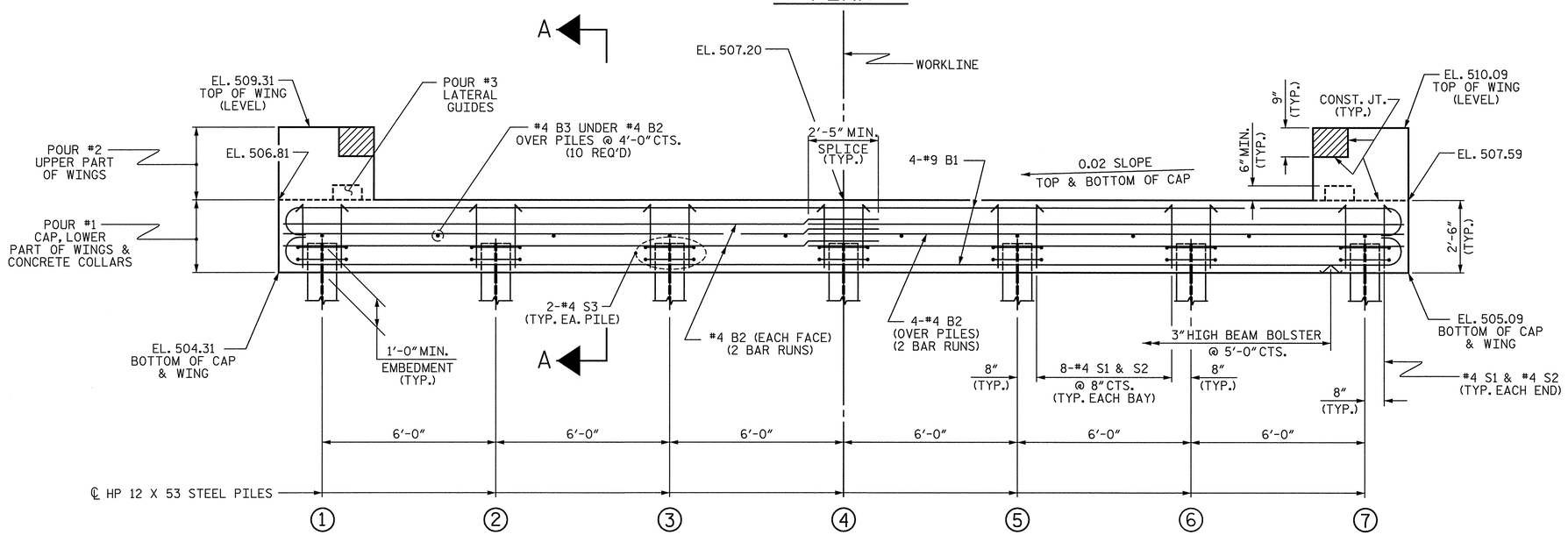
SHEET NO. S-12
TOTAL SHEETS 21

STD. NO. GRA3

1/10/2014 9:17:06 AM R:\Structures\Finals\BD5110Z - (12) Guardrail Attach.dgn jjones



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	505.34
②	505.46
③	505.58
④	505.70
⑤	505.82
⑥	505.94
⑦	506.06

PROJECT NO. BD-5110Z
STANLY COUNTY
STATION: 14+45.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 1

NORTH CAROLINA PROFESSIONAL SEAL 038640 ENGINEER J. WESLEY JONES
1-10-14

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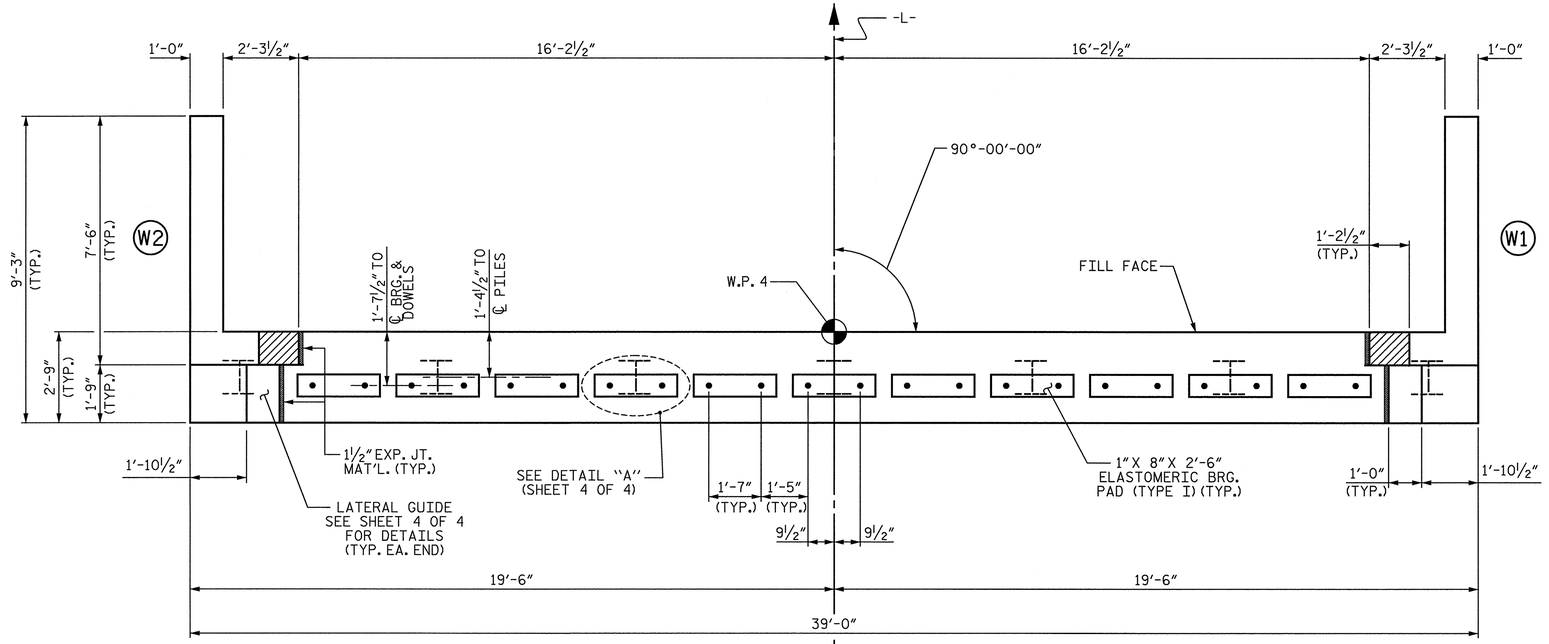
NC License Number F-0991

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			21

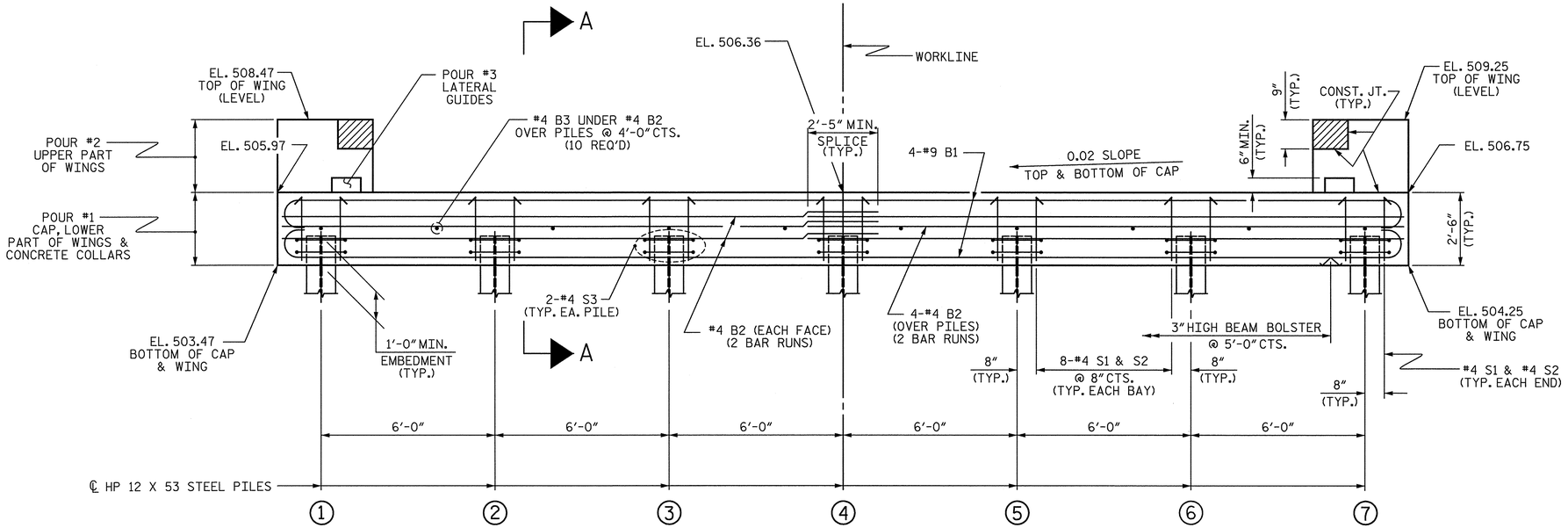
STD. NO. EB_33_90S

ASSEMBLED BY :	VMW	DATE :	10-13
CHECKED BY :	JWJ	DATE :	12-13
DRAWN BY : DGE	02/10		
CHECKED BY : MKT	02/10		

JJones 1/10/2014 9:17:50 AM R:\Structures\Finals\BD5110Z - (13) End Bent 1.dgn



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	504.50
②	504.62
③	504.74
④	504.86
⑤	504.98
⑥	505.10
⑦	505.22

PROJECT NO. BD-5110Z
STANLY COUNTY
STATION: 14+45.00 -L-
SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 2

NORTH CAROLINA PROFESSIONAL SEAL 038640 ENGINEER J. WESLEY JONES
1-10-14

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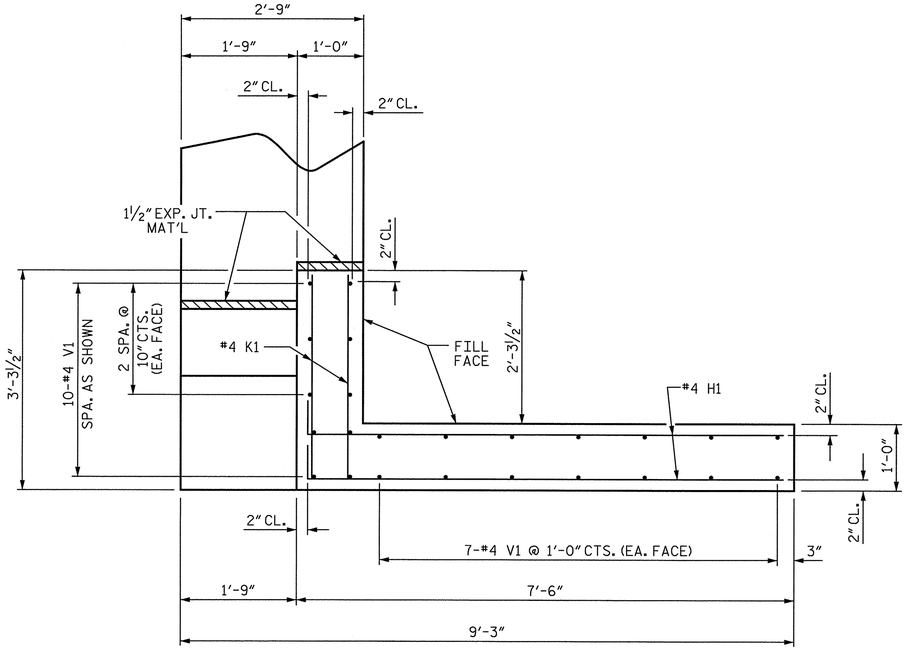
Charlotte, NC 28202
NC License Number F-0991

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			21

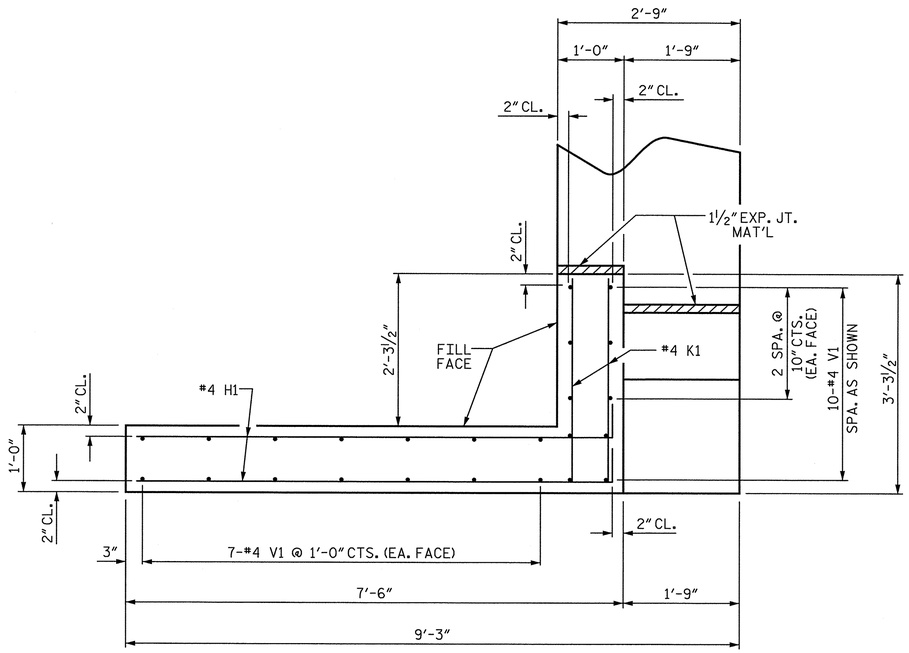
STD. NO. EB_33_90S

ASSEMBLED BY :	VMW	DATE :	10-13
CHECKED BY :	JWJ	DATE :	12-13
DRAWN BY :	DGE	02/10	
CHECKED BY :	MKT	02/10	

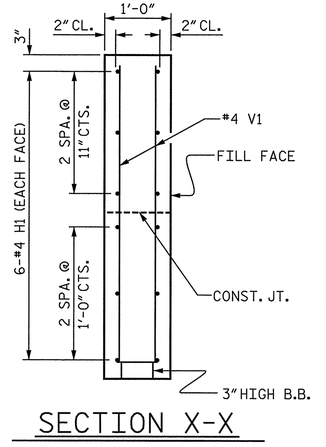
jjones 1/10/2014 9:18:17 AM R:\Structures\Finals\BD5110Z - (14) End Bent 2.dgn



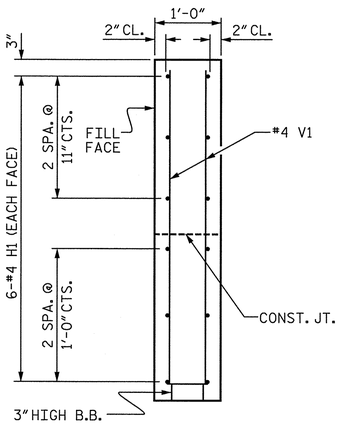
PLAN OF WING (W1)



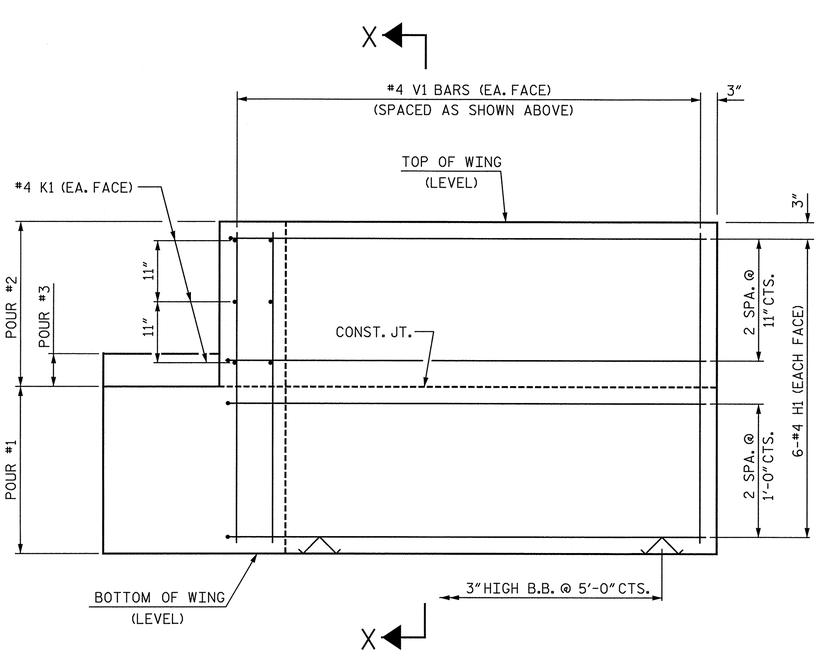
PLAN OF WING (W2)



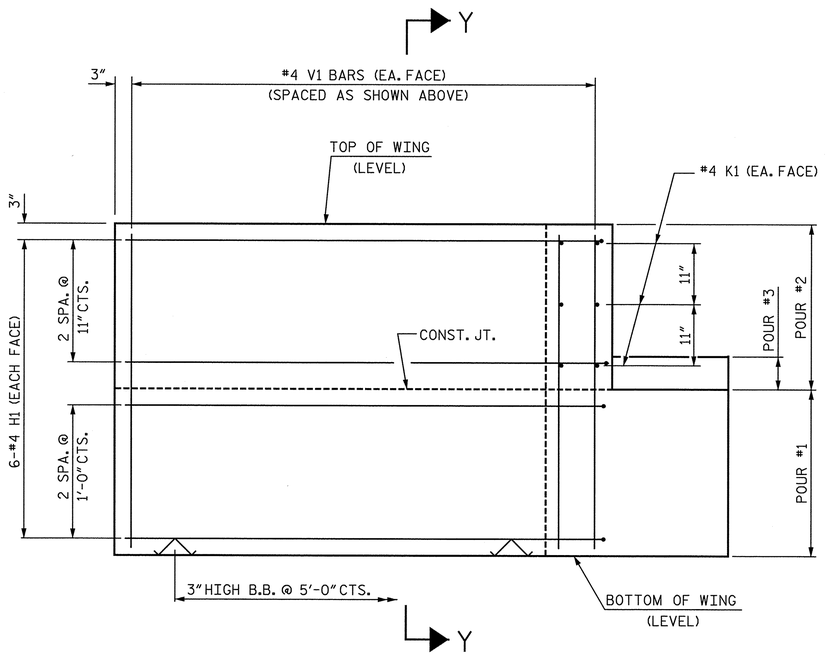
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

WING DETAILS

ASSEMBLED BY :	VMW	DATE :	10-13
CHECKED BY :	JWJ	DATE :	12-13
DRAWN BY : DGE	02/10		
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NORTH CAROLINA PROFESSIONAL SEAL 038640 ENGINEER WESLEY JONES
1-10-14

PROJECT NO. BD-5110Z
STANLY COUNTY
STATION: 14+45.00 -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-15
1			3			TOTAL SHEETS
2			4			21

STD. NO. EB_33_90S

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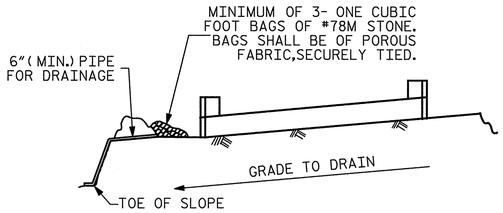
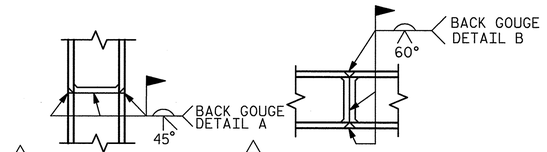


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

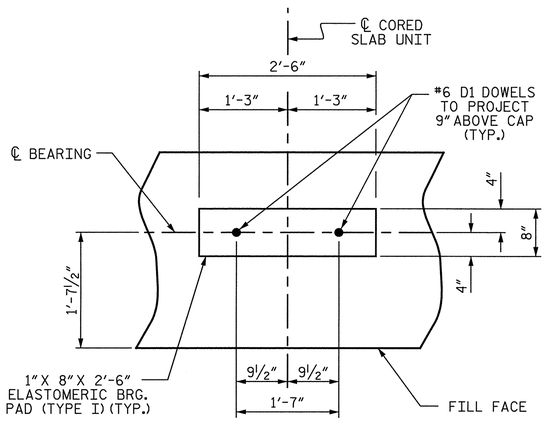
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



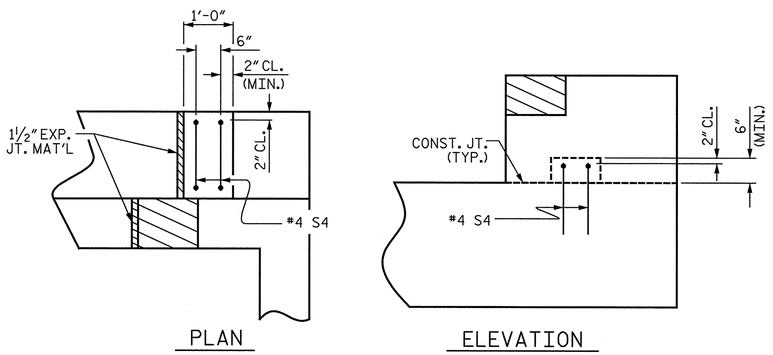
△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS



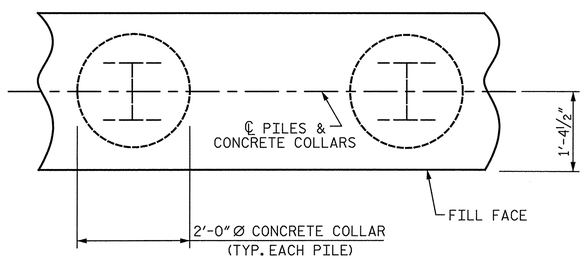
DETAIL "A"

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

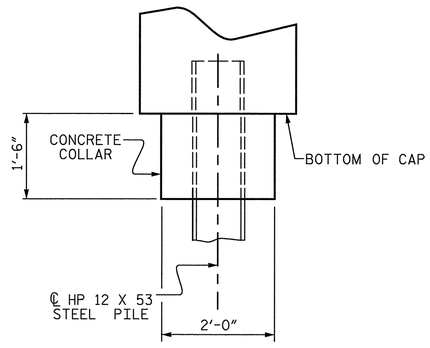


LATERAL GUIDE DETAILS

(RIGHT LATERAL GUIDE SHOWN, LEFT END SIMILAR)



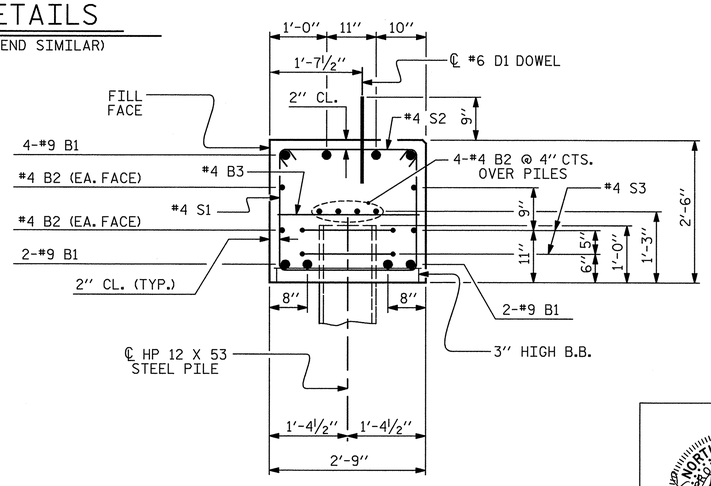
PLAN



ELEVATION

CORROSION PROTECTION FOR STEEL PILES DETAIL

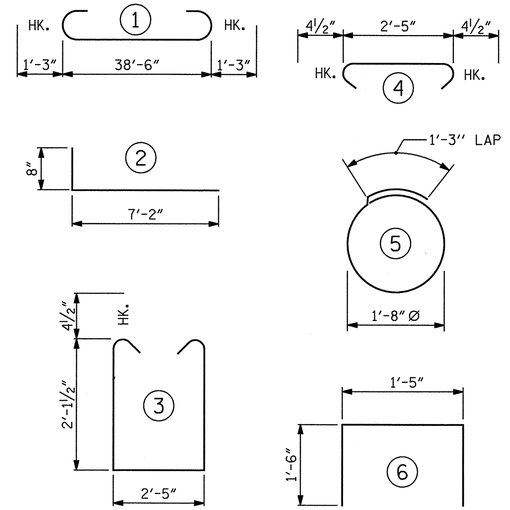
(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



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 No. 1		END BENT No. 2	
HP 12 X 53 STEEL PILES		HP 12 X 53 STEEL PILES	
NO: 7	LIN. FT.= 160	NO: 7	LIN. FT.= 160

BILL OF MATERIAL FOR ONE END BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	41'-0"	1115
B2	16	#4	STR	20'-7"	220
B3	10	#4	STR	2'-5"	16
D1	22	#6	STR	1'-6"	50
H1	24	#4	2	7'-10"	126
K1	12	#4	STR	2'-11"	23
S1	50	#4	3	7'-5"	248
S2	50	#4	4	3'-2"	106
S3	14	#4	5	6'-6"	61
S4	4	#4	6	4'-5"	12
V1	48	#4	STR	4'-8"	150

REINFORCING STEEL (FOR ONE END BENT) 2127 LBS.

CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)

POUR #1	CAP & LOWER PART OF WINGS & COLLARS	12.4 C.Y.
POUR #2	UPPER PART OF WINGS	1.8 C.Y.
POUR #3	LATERAL GUIDES	0.1 C.Y.
TOTAL CLASS A CONCRETE		14.3 C.Y.

PROJECT NO. BD-5110Z

STANLY COUNTY

STATION: 14+45.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 1 & 2 DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 038640 ENGINEER WESLEY JONES 1-10-14

STV / Ralph Whitehead Associates, Inc.
900 West Trade Street, Suite 715
Charlotte, NC 28202
NC License Number F-0991

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

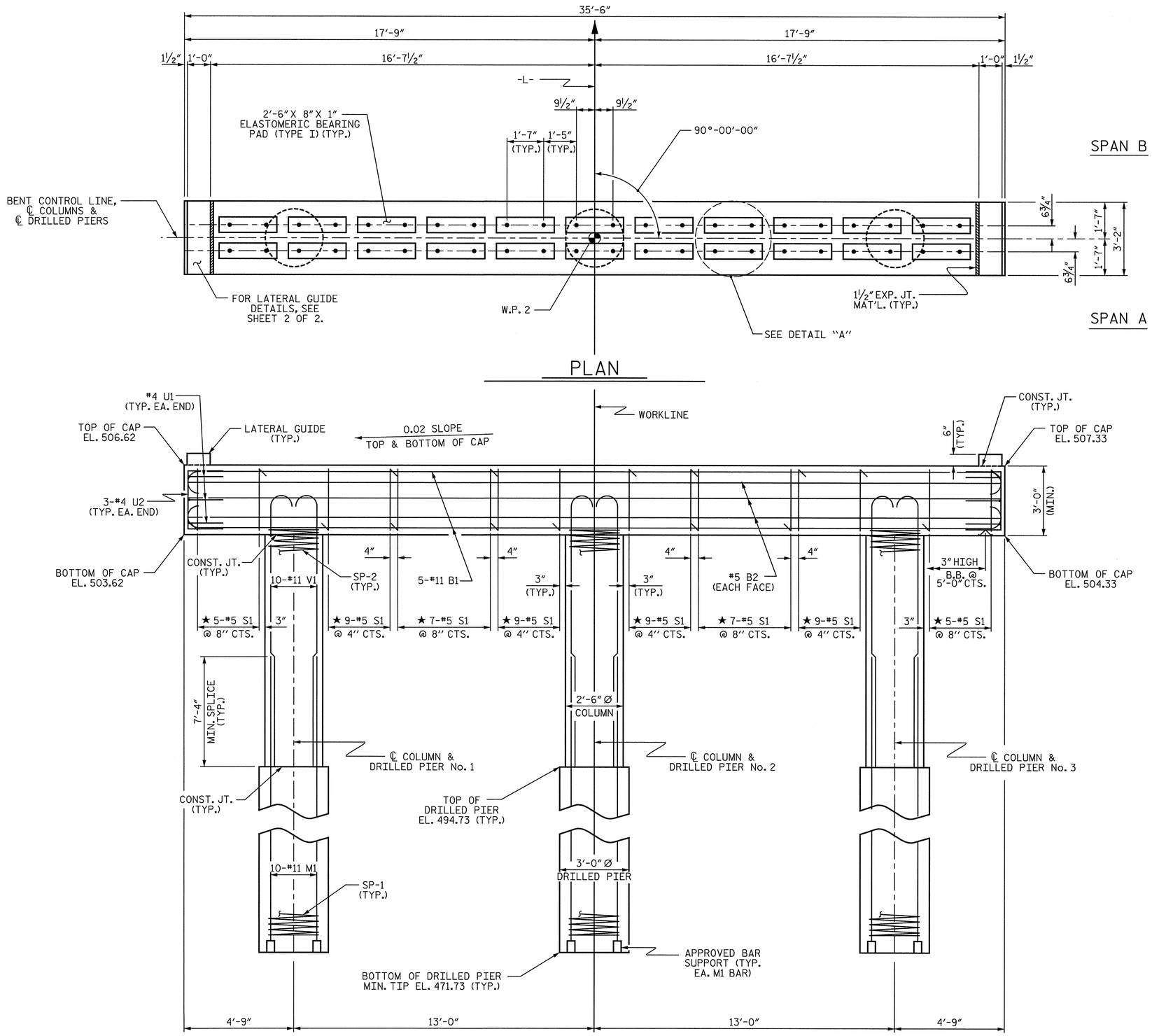
SHEET NO. S-16

TOTAL SHEETS 21

ASSEMBLED BY :	VMW	DATE :	10-13
CHECKED BY :	JWJ	DATE :	12-13
DRAWN BY : DGE	02/10		
CHECKED BY : MKT	02/10		

STD. NO. EB_33_90S

R:\Structures\Finals\BD5110Z - (16) End Bent Details.dgn 1/10/2014 9:19:11 AM Jjones



ELEVATION

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

NOTES

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

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

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

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

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

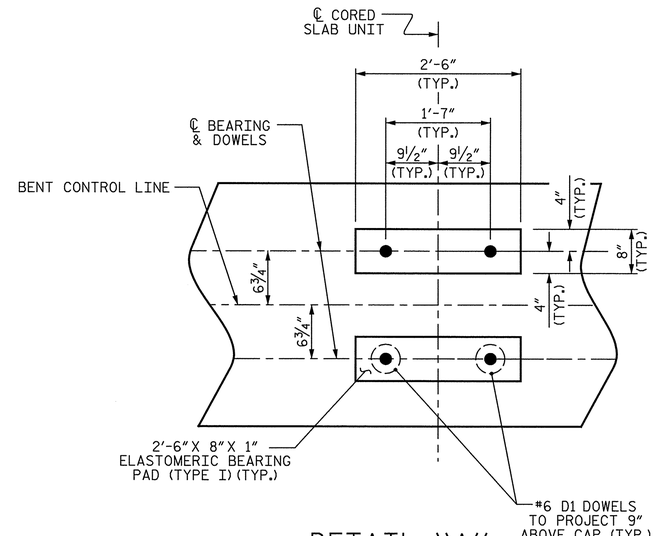
★ INVERT ALTERNATE STIRRUPS.

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

DRILLED PIERS SHALL BE TERMINATED ONE FOOT ± ABOVE NORMAL WATER SURFACE ELEVATION FOR SHAFTS LOCATED IN WATER.

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

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



DETAIL "A"

(DIMENSIONS ARE TYPICAL EACH BEARING)

PROJECT NO. BD-5110Z

STANLY COUNTY

STATION: 14+45.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT No. 1

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 038640 WESLEY JONES
1-10-14

ASSEMBLED BY :	VMW	DATE :	12-13
CHECKED BY :	JWJ	DATE :	12-13
DRAWN BY :	DGE	03/10	
CHECKED BY :	MKT	03/10	

STV / Ralph Whitehead Associates, Inc.
900 West Trade Street Suite 715
Charlotte, NC 28202
NC License Number F-0991

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			21

STD. NO. DP_BT_33_90S_<50'

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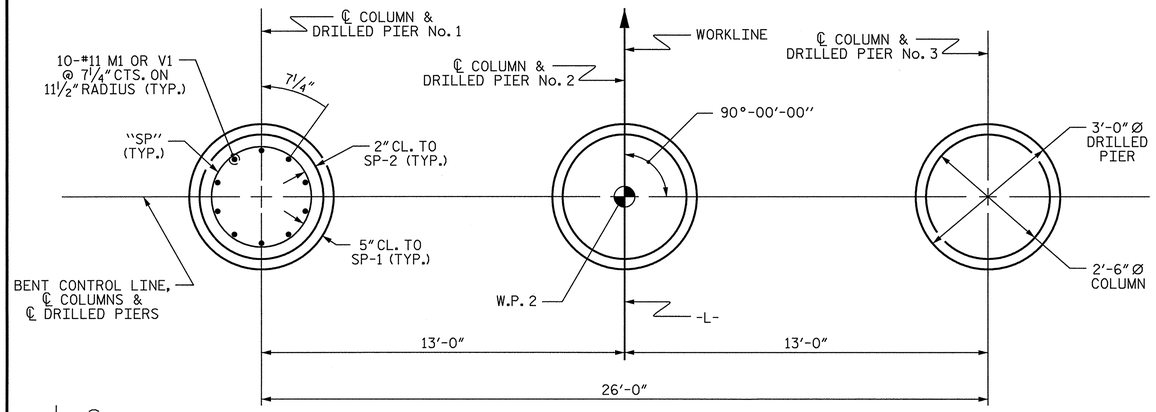
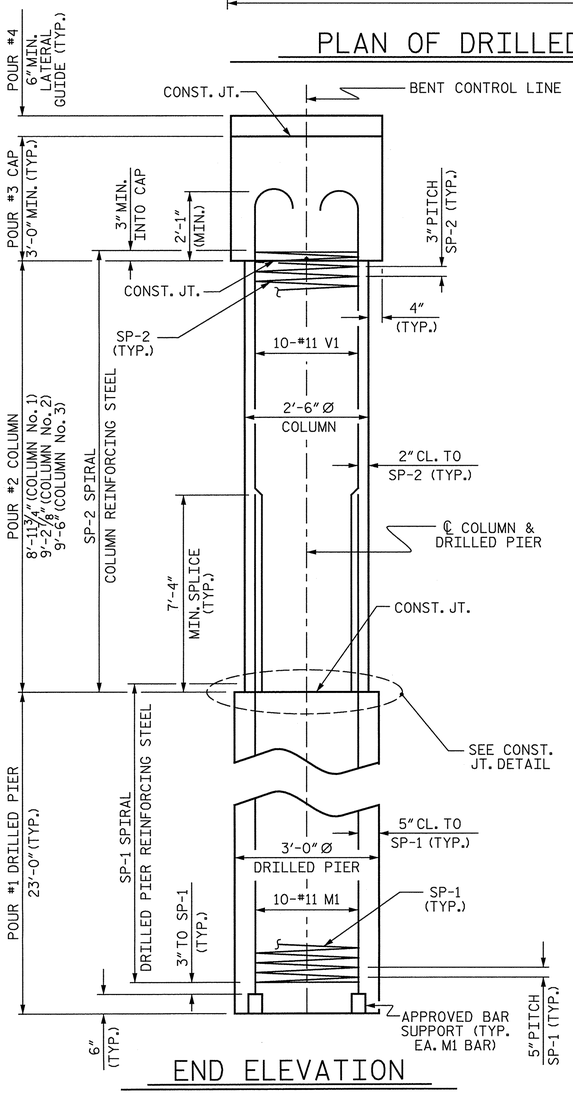


PLAN OF DRILLED PIERS & COLUMNS



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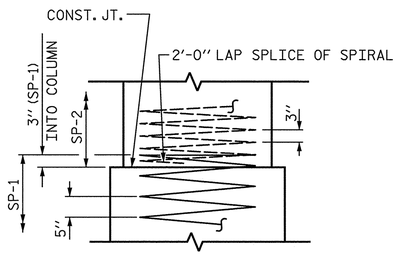
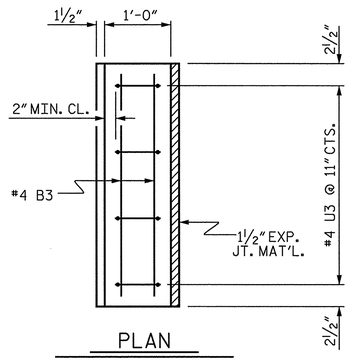
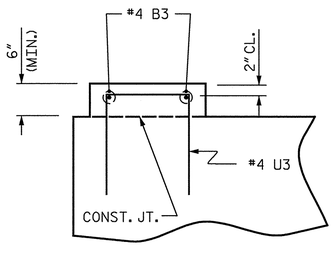


CONSTRUCTION JOINT DETAIL



PLAN

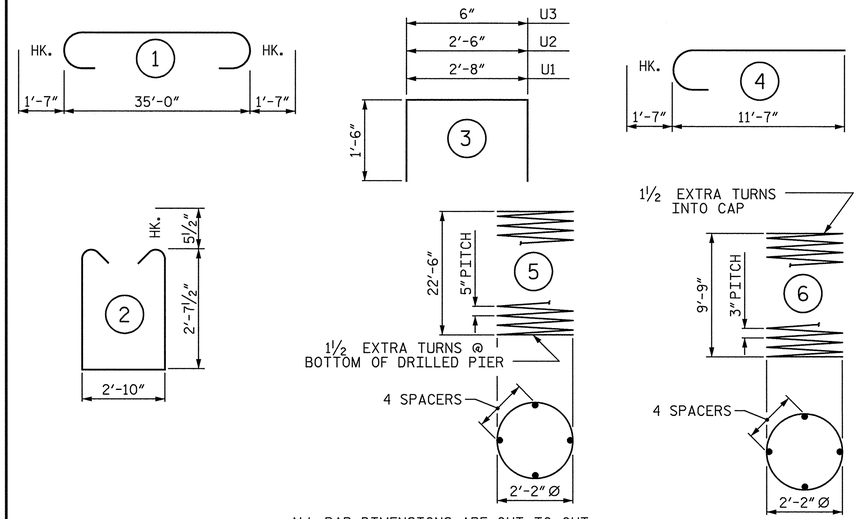


ELEVATION

LATERAL GUIDE DETAILS

(LEFT LATERAL GUIDE SHOWN, RIGHT SIDE SIMILAR)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR ONE BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11	1	38'-2"	2028
B2	6	#5	STR	35'-2"	220
B3	4	#4	STR	2'-10"	8
D1	44	#6	STR	1'-6"	99
M1	30	#11	STR	32'-10"	5233
S1	60	#5	2	9'-0"	563
U1	6	#4	3	5'-8"	23
U2	6	#4	3	5'-6"	22
U3	8	#4	3	3'-6"	19
V1	30	#11	4	13'-2"	2099

REINFORCING STEEL (FOR ONE BENT) 10314 LBS.

SP-1	3	*	5	369'-6"	1156
SP-2	3	**	6	270'-7"	542

SPIRAL COLUMN REINFORCING STEEL (FOR ONE BENT) 1698 LBS.

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

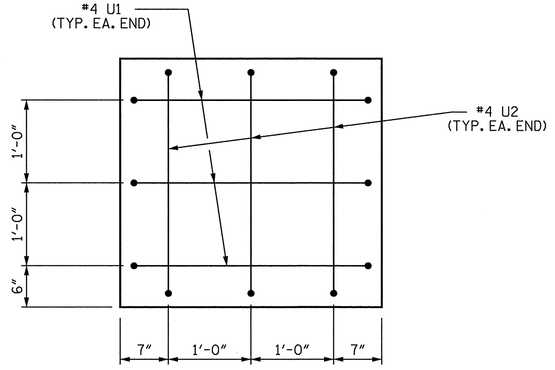
** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR

CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)

POUR #2 (COLUMNS)	5.0 C.Y.
POUR #3 (CAP)	12.5 C.Y.
POUR #4 (LATERAL GUIDE)	0.1 C.Y.
TOTAL CLASS A CONCRETE	17.6 C.Y.

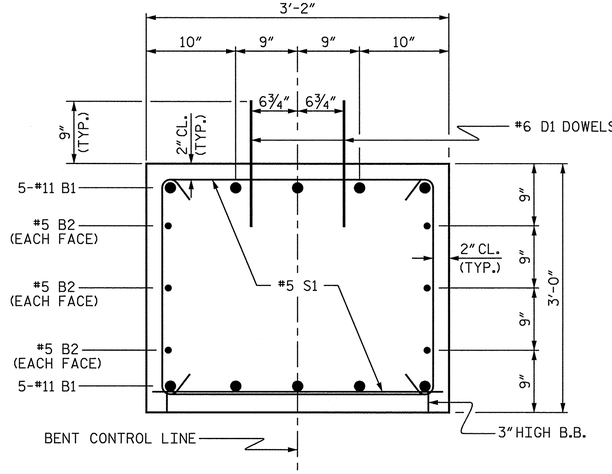
DRILLED PIERS: (FOR ONE BENT)

DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)	18.1 C.Y.
3'-0" Ø DRILLED PIER NOT IN SOIL	38 LIN. FT.
3'-0" Ø DRILLED PIER IN SOIL	31 LIN. FT.
PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIER	17 LIN. FT.
CSL TUBES	310 LIN. FT.



END OF CAP VIEW

(TYPICAL BOTH ENDS)



SECTION THRU CAP

PROJECT NO. BD-5110Z

STANLY COUNTY

STATION: 14+45.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT No. 1

NORTH CAROLINA PROFESSIONAL SEAL 038640 ENGINEER J. WESLEY JONES 1-10-14

ASSEMBLED BY : VMW	DATE : 12-13
CHECKED BY : JWJ	DATE : 12-13
DRAWN BY : DGE 03/10	
CHECKED BY : MKT 03/10	

STV/ Ralph Whitehead Associates, Inc.
900 West Trade Street, Suite 715
Charlotte, NC 28202
NC License Number F-0991

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			21

STD. NO. DP_BT_33_90S_<50'

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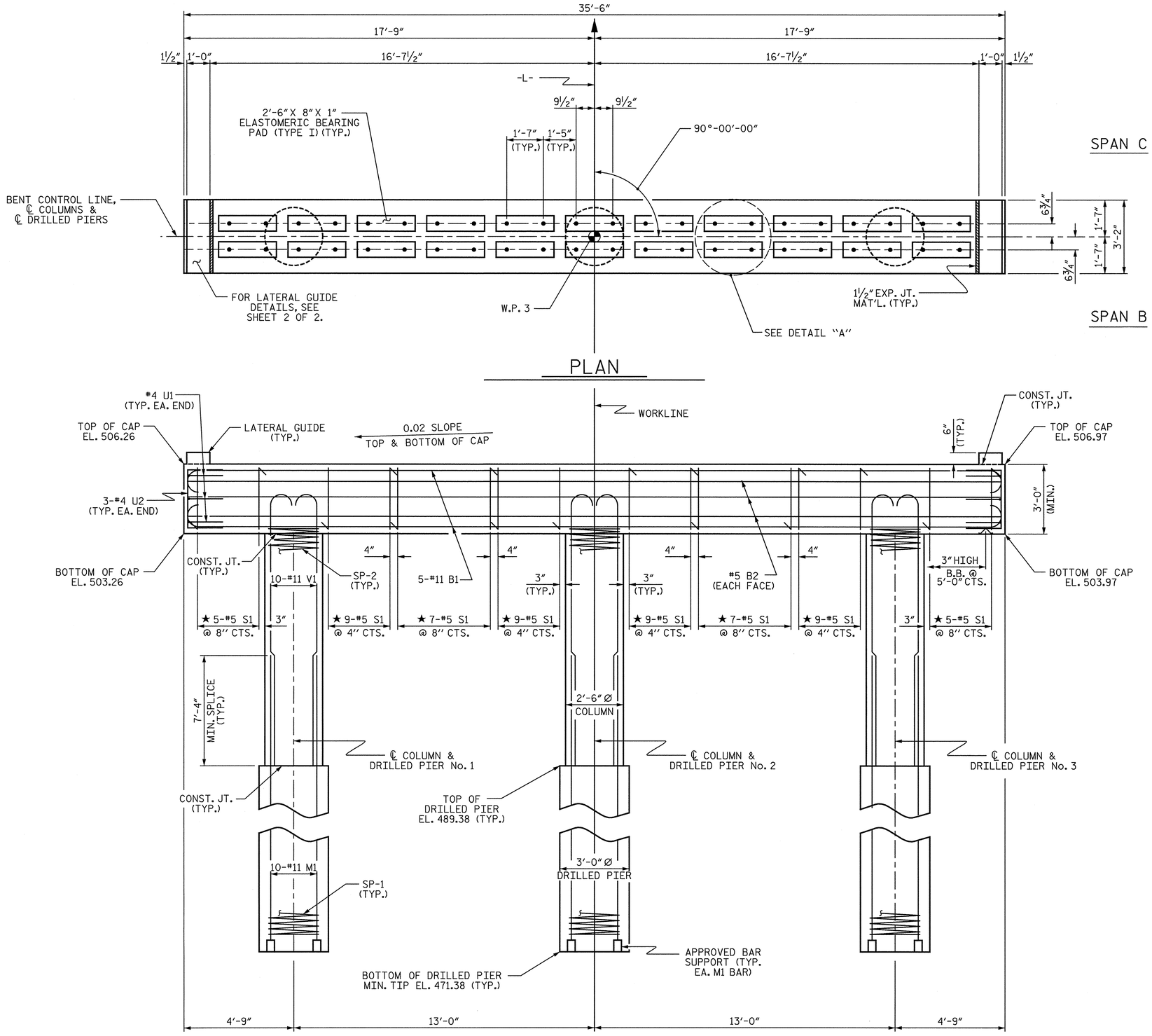

ELEVATION

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

NOTES

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

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

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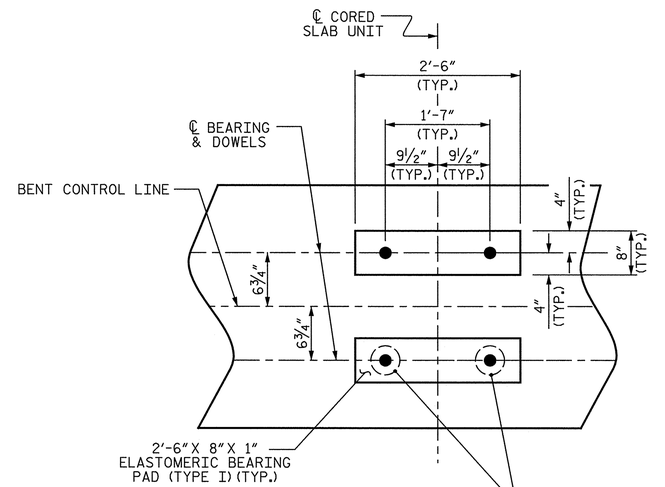

DETAIL "A"

(DIMENSIONS ARE TYPICAL EACH BEARING)

PROJECT NO. BD-5110Z

STANLY COUNTY

STATION: 14+45.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT No. 2

NORTH CAROLINA PROFESSIONAL SEAL 038640 ENGINEER WESLEY JONES
1-10-14

STV / Ralph Whitehead Associates, Inc.
900 West Trade Street, Suite 715
Charlotte, NC 28202
NC License Number F-0991

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			21

ASSEMBLED BY :	VMW	DATE :	12-13
CHECKED BY :	JWJ	DATE :	12-13
DRAWN BY :	DGE	03/10	
CHECKED BY :	MKT	03/10	

STD. NO. DP_BT_33_90S_<50'

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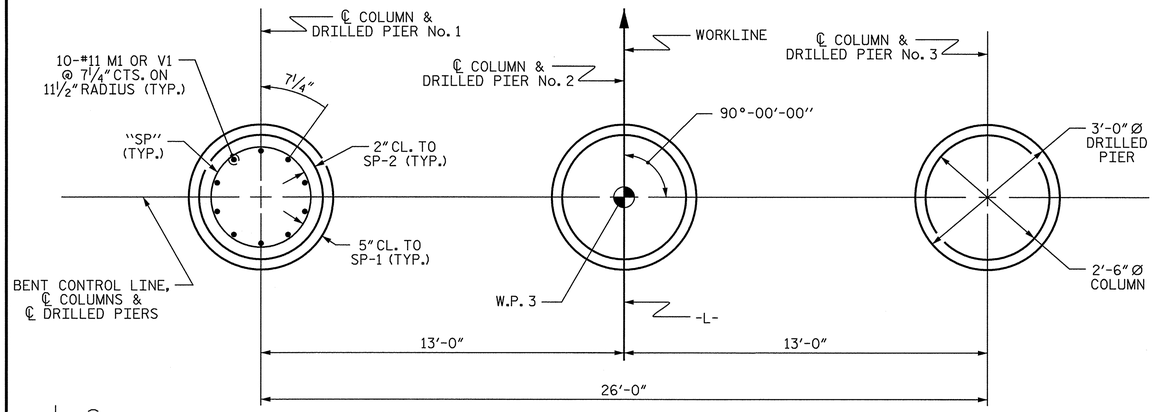
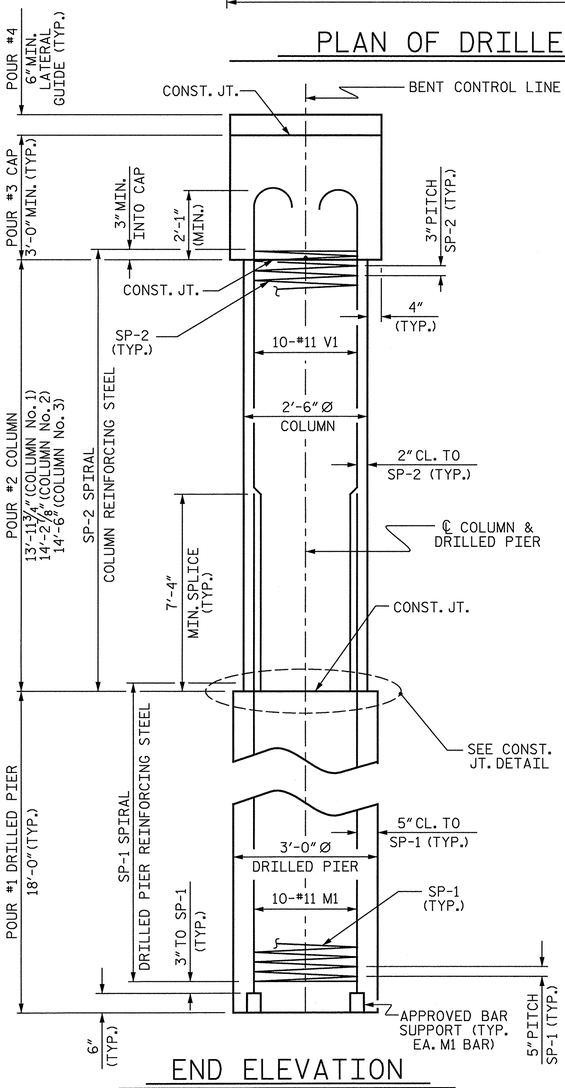
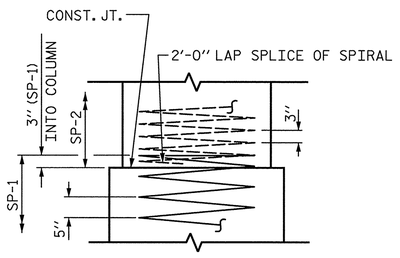


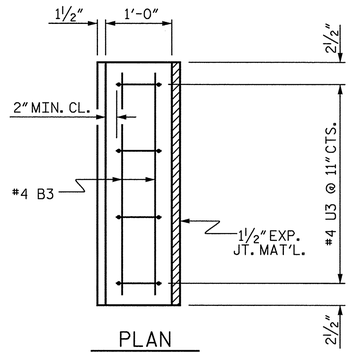
PLAN OF DRILLED PIERS & COLUMNS



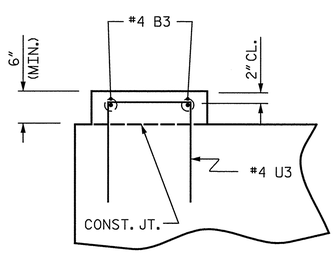
END ELEVATION



CONSTRUCTION JOINT DETAIL



PLAN

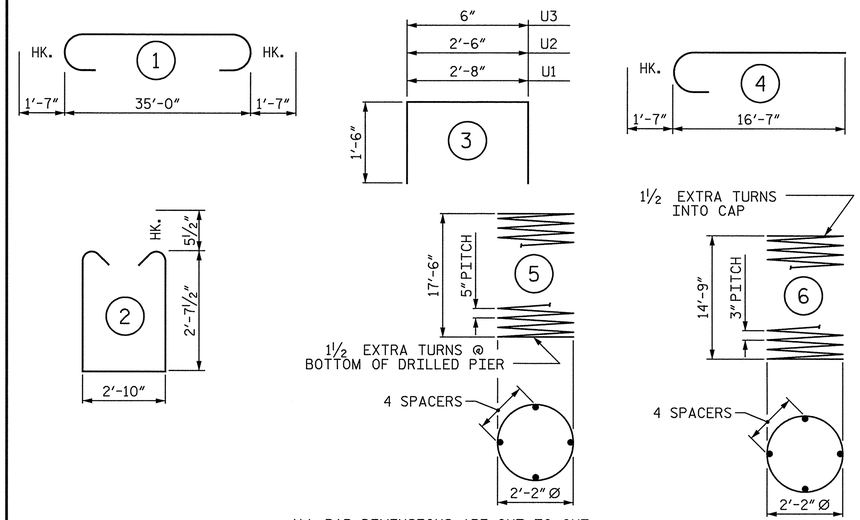


ELEVATION

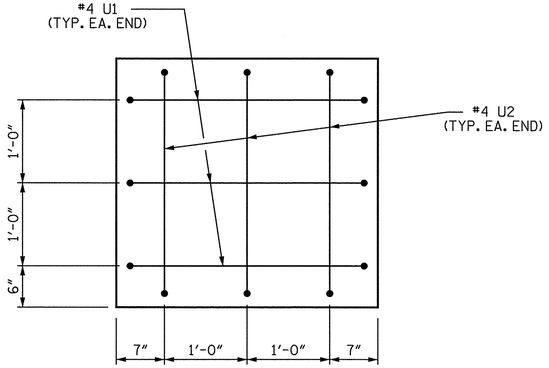
LATERAL GUIDE DETAILS

(LEFT LATERAL GUIDE SHOWN, RIGHT SIDE SIMILAR)

BAR TYPES

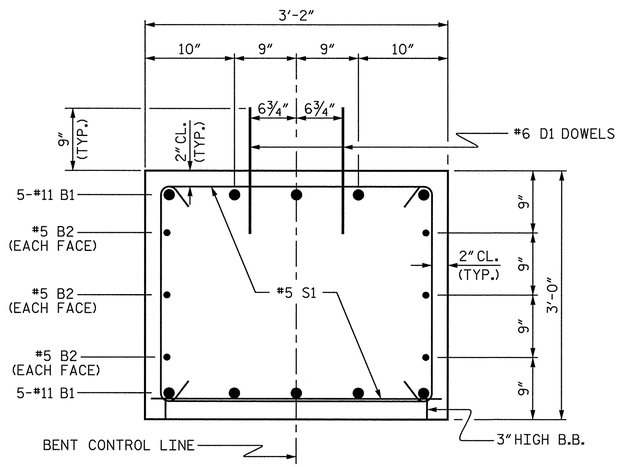


ALL BAR DIMENSIONS ARE OUT TO OUT



END OF CAP VIEW

(TYPICAL BOTH ENDS)



SECTION THRU CAP

BILL OF MATERIAL

FOR ONE BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11	1	38'-2"	2028
B2	6	#5	STR	35'-2"	220
B3	4	#4	STR	2'-10"	8
D1	44	#6	STR	1'-6"	99
M1	30	#11	STR	27'-10"	4436
S1	60	#5	2	9'-0"	563
U1	6	#4	3	5'-8"	23
U2	6	#4	3	5'-6"	22
U3	8	#4	3	3'-6"	19
V1	30	#11	4	18'-2"	2896

REINFORCING STEEL (FOR ONE BENT) 10314 LBS.

SP-1	3	*	5	289'-7"	906
SP-2	3	**	6	404'-3"	810

SPIRAL COLUMN REINFORCING STEEL (FOR ONE BENT) 1716 LBS.

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

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

CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)

POUR #2 (COLUMNS)	7.8 C.Y.
POUR #3 (CAP)	12.5 C.Y.
POUR #4 (LATERAL GUIDE)	0.1 C.Y.
TOTAL CLASS A CONCRETE	20.4 C.Y.

DRILLED PIERS: (FOR ONE BENT)

DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)	14.1 C.Y.
3'-0" Ø DRILLED PIER NOT IN SOIL	36 LIN. FT.
3'-0" Ø DRILLED PIER IN SOIL	18 LIN. FT.
PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIER	16 LIN. FT.
CSL TUBES	237 LIN. FT.

PROJECT NO. BD-5110Z

STANLY COUNTY

STATION: 14+45.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT No. 2

NORTH CAROLINA PROFESSIONAL SEAL 038640 ENGINEER WESLEY JONES 1-10-14

STV / Ralph Whitehead Associates, Inc.
900 West Trade Street, Suite 715
Charlotte, NC 28202
NC License Number F-0991

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

SHEET NO. S-20

TOTAL SHEETS 21

ASSEMBLED BY :	VMW	DATE : 12-13
CHECKED BY :	JWJ	DATE : 12-13
DRAWN BY :	DGE	03/10
CHECKED BY :	MKT	03/10

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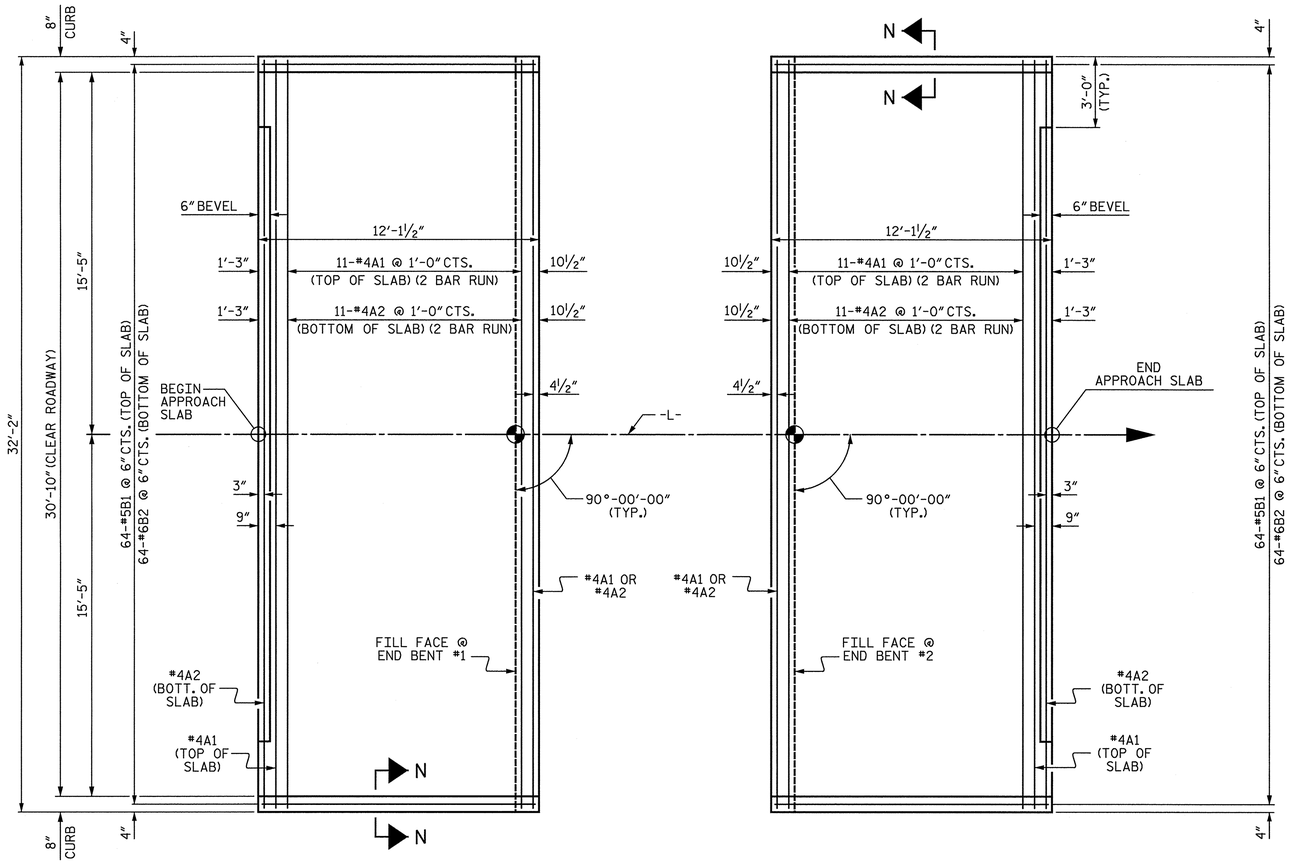
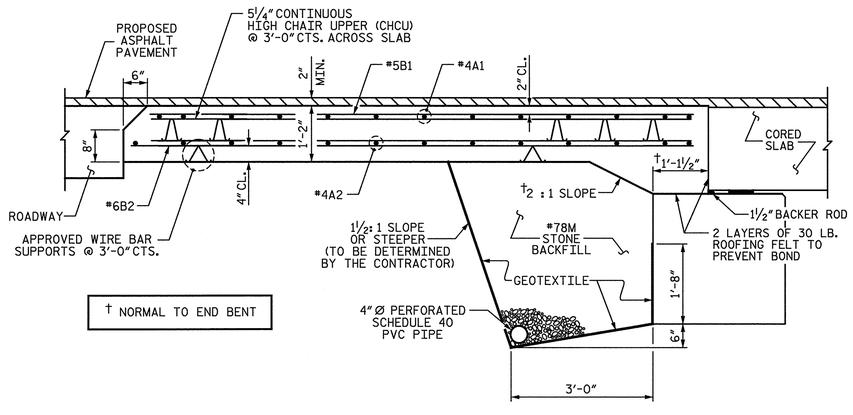


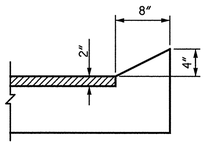
PLAN @ END BENT #1

PLAN @ END BENT #2

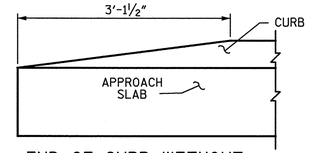
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



SECTION THRU SLAB



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

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

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.

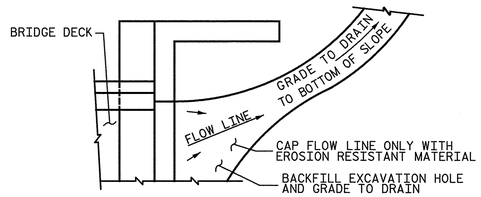
#78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

#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.

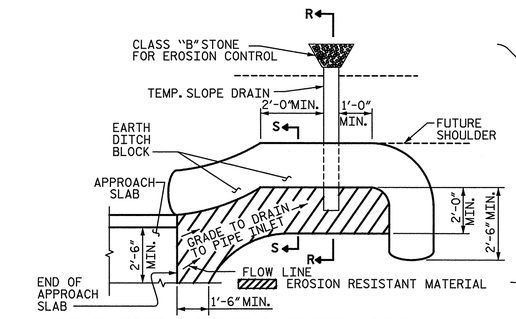
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.



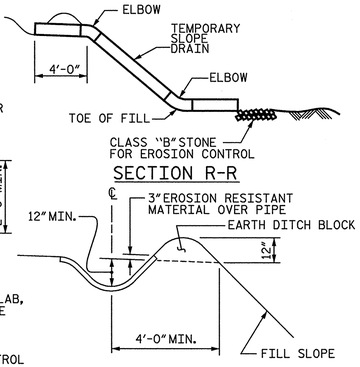
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT 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 R-R

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	26	#4	STR	16'-11"	294
A2	26	#4	STR	16'-9"	291
* B1	64	#5	STR	11'-2"	745
B2	64	#6	STR	11'-8"	1121
REINFORCING STEEL				LBS.	1412
* EPOXY COATED REINFORCING STEEL				LBS.	1039
CLASS AA CONCRETE				C.Y.	18.6
APPROACH SLAB AT EB #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	26	#4	STR	16'-11"	294
A2	26	#4	STR	16'-9"	291
* B1	64	#5	STR	11'-2"	745
B2	64	#6	STR	11'-8"	1121
REINFORCING STEEL				LBS.	1412
* EPOXY COATED REINFORCING STEEL				LBS.	1039
CLASS AA CONCRETE				C.Y.	18.6

PROJECT NO. BD-5110Z

STANLY COUNTY

STATION: 14+45.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB UNIT (SUB-REGIONAL TIER) 90° SKEW

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

STV/ Ralph Whitehead Associates, Inc.
900 West Trade Street, Suite 715
Charlotte, NC 28202
NC License Number F-0991

STD. NO. BAS_33_90S

ASSEMBLED BY :	VMW	DATE :	10-13
CHECKED BY :	JWJ	DATE :	12-13
DRAWN BY : SHS/MAA	5-09	REV. 12-11	MAA/AAC
CHECKED BY : BCH	5-09		

jlones 1/10/2014 9:20:21 AM R:\Structures\Finals\BD5110Z - (2) Approach Slab.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. FINS 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

STD. NO. SN

REV. 6-16-95 EEM (V) RGW REV. 5-7-03 RWW (V) JTE REV. 10-1-11 MAA (V) GM
REV. 8-16-99 RWW (V) LES REV. 5-1-06 TLA (V) GM

1/10/2014
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JJones