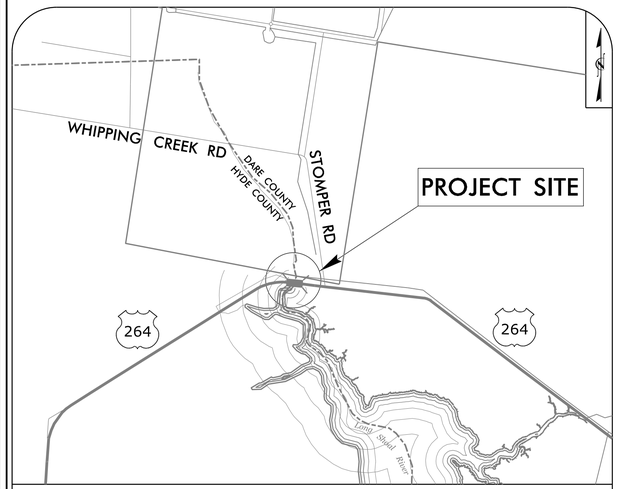
PROJECT: 17BP.1.R.67

CONTRACT:



VICINITY MAP
(NOT TO SCALE)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HYDE & DARE COUNTIES

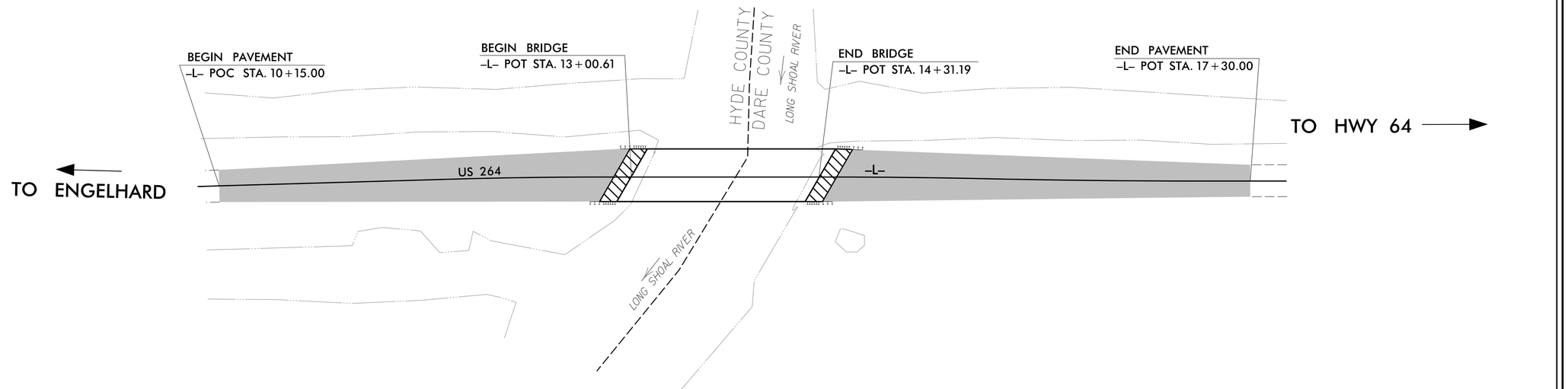
LOCATION: BRIDGE NO. 56 OVER LONG SHOAL RIVER ON US 264

TYPE OF WORK: PAVING, GRADING, DRAINAGE & STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.1.R.67	1	68

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
17BP.1.R.67		PE
17BP.1.R.67		ROW, UTIL.
17BP.1.R.67		CONST.

NAD 83/NA 2011



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

GRAPHIC SCALES

25 12.5 0 25 50
PLANS

25 12.5 0 25 50
PROFILE (HORIZONTAL)

5 2.5 0 5 10
PROFILE (VERTICAL)

DESIGN DATA

ADT 2010 = 480

K = NA
D = NA
T = 8 %
V = 60 MPH

FUNC CLASSIFICATION = MINOR ARTERIAL

REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT = 0.110 Miles
LENGTH OF STRUCTURE PROJECT = 0.025 Miles

TOTAL LENGTH OF PROJECT = 0.135 Miles

Prepared In the Office of:
URS Corporation – North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415
NC LICENSE • C-2243

URS

2012 STANDARD SPECIFICATIONS

LETTING DATE:

DENNIS K. HOYLE, PE
PROJECT ENGINEER

JERRY B. JAVELLANA, PE
PROJECT DESIGN ENGINEER

PREPARED FOR
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
HIGHWAY DIVISION 1

NCDOT CONTACT:
JOHN S. ABEL, Jr.
Bridge Program Manager

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

PROJECT REFERENCE NO.	SHEET NO.
17BP.1.R.67	1-A

ROADWAY DESIGN

Prepared by
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URS Corporation - North Carolina
1600 Perimeter Park Drive, Suite 400
Morrisville, NC 27560
PHONE: (919) 461-1100 FAX: (919) 461-1415
NC LIC. # C-2243

9/23/2015
NORTH CAROLINA PROFESSIONAL SEAL 039831 ENGINEER JERRY B. JAVELLANA
DocuSigned by: Jerry Javellana

INDEX OF SHEETS

SHEET NUMBER	TITLE
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
2	TYPICAL SECTIONS, PAVEMENT SCHEDULE , AND WEDGING DETAIL
2-A	DETAIL FOR STRUCTURE ANCHOR UNIT, TYPE III
2-B	DETAIL FOR MODIFIED CONCRETE FLUME
3-A	SUMMARY OF DRAINAGE QUANTITIES, SUMMARY OF GUARDRAIL, EARTHWORK SUMMARY, AND REMOVAL OF EXISTING ASPHALT PAVEMENT SUMMARY
4	PLAN SHEET & PROFILE
TMP-1 THRU TMP-03	TRAFFIC MANAGEMENT PLANS
EC-1 THRU EC-4, RF-1	EROSION CONTROL PLANS
X-1 THRU X-8	CROSS-SECTIONS
S-1 THRU S-40	STRUCTURE PLANS
N/A	STRUCTURE STANDARD NOTES

GENERAL NOTES

GENERAL NOTES: **2012 SPECIFICATIONS** EFFECTIVE: 01-17-2012
REVISED: 10-31-2014

GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED 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 (MODIFIED).

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.

TEMPORARY SHORING:

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

SUBSURFACE PLANS:

NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

END BENTS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE MCNC (TELEPHONE) AND CENTURY LINK (TELEPHONE).

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

STANDARD DRAWINGS

2012 ROADWAY ENGLISH STANDARD DRAWINGS EFF. 01-17-2012
REV. 10-30-2012

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 Modified
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
300.03	Cross Pipe End Section - Precast Concrete Section for 18" to 30" Pipe
DIVISION 4 - MAJOR STRUCTURES	
422.10	Reinforced Bridge Approach Fills
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
840.00	Concrete Base Pad for Drainage Structures
840.20	Frames and Wide Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.46	Traffic Bearing Precast Drainage Structure
862.01	Guardrail Placement
862.02	Guardrail Installation
876.02	Guide for Rip Rap at Pipe Outlets

6/2/99
6/30/2015
R:\Roadway\Proj\Hyde56_rdy_1-A.dgn
Jerry Javellana

12/05/11

PROJECT REFERENCE NO.	SHEET NO.
17BPJ.R.67	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: Area or Site
- Potential Soil Contamination: Area or Site

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — SWITCH
- RR Abandoned
- RR Dismantled

RIGHT OF WAY:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole
- H–Frame Pole
- Recorded U/G Power Line — P
- Designated U/G Power Line (S.U.E.*) — P

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

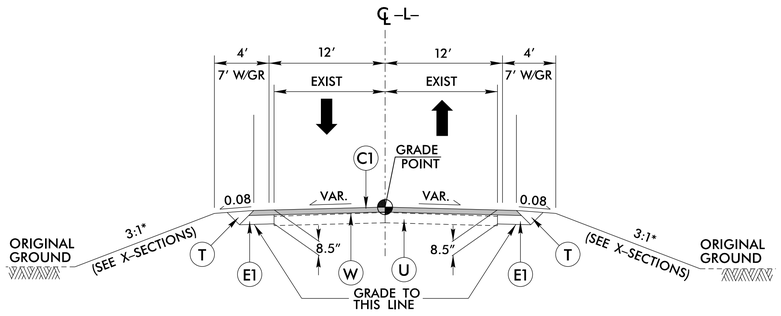
SANITARY SEWER:

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

MISCELLANEOUS:

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

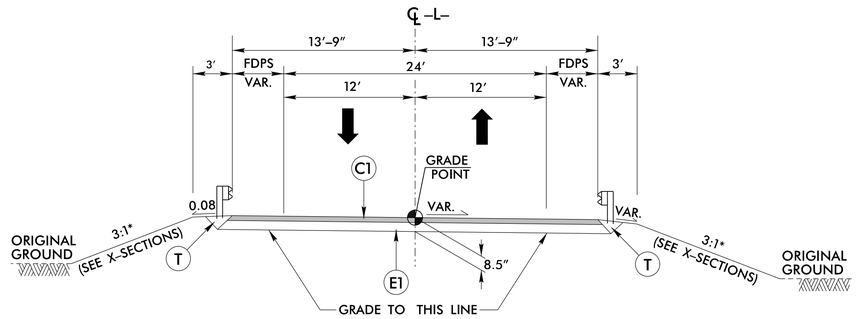
6/2/99



TYPICAL SECTION NO. 1

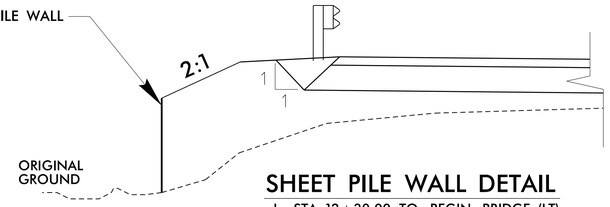
–L– STA. 10+15.00 TO –L– STA. 12+40.00
–L– STA. 15+30.00 TO –L– STA. 17+30.00

* 2:1 IN GUARDRAIL LOCATIONS



TYPICAL SECTION NO. 2

–L– STA. 12+40.00 TO –L– STA. 13+00.61 (BEGIN BRIDGE)
–L– STA. 14+31.19 (END BRIDGE) TO –L– STA. 15+30.00



SHEET PILE WALL DETAIL

–L– STA. 12+30.00 TO BEGIN BRIDGE (LT)
END BRIDGE TO –L– STA. 15+50.00 (LT)

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NC LIC. # C-2243

PROJECT REFERENCE NO.	SHEET NO.
17BP.I.R.67	2
HYDE COUNTY BRIDGE NO. 470056	

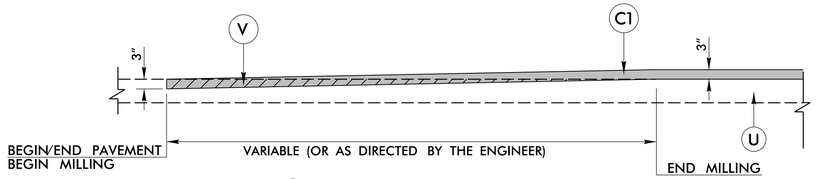
ROADWAY DESIGN ENGINEER
9/23/2015
NORTH CAROLINA PROFESSIONAL SEAL 039831 ENGINEER JERRY B. JAVELLANA
DocuSigned by: Jerry Javellana

PAVEMENT DESIGN ENGINEER

PAVEMENT SCHEDULE

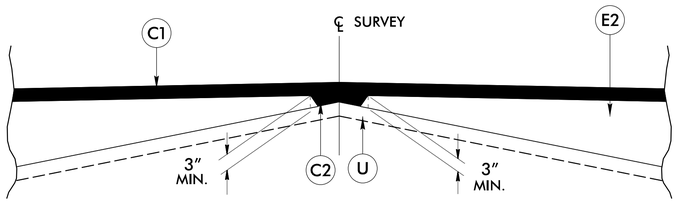
A	PROP. VAR. DEPTH PORTLAND CEMENT CONCRETE WEARING SURFACE.
C1	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1.0″ IN DEPTH OR GREATER THAN 1.5″ IN DEPTH.
E1	PROP. APPROX. 5.5″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3″ IN DEPTH OR GREATER THAN 5.5″ IN DEPTH.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V	TIE-IN MILLING.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

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



(V) TIE–IN MILLING DETAIL

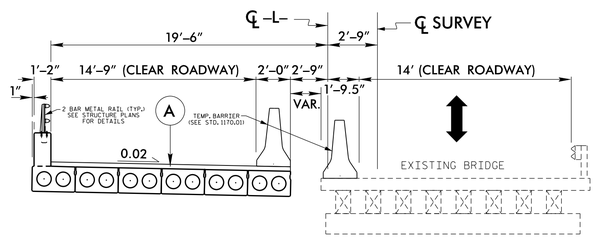
NOTE: END MILLING WHERE PROPOSED GRADE IS 3″ ABOVE EXISTING PAVEMENT



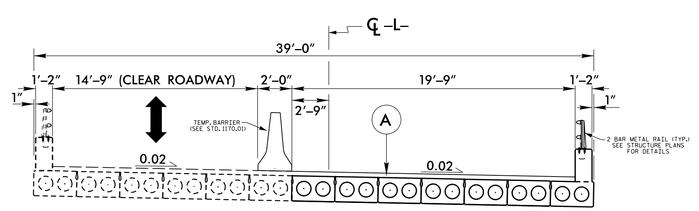
(W) DETAIL SHOWING METHOD OF WEDGING

TYPICAL SECTION ON STRUCTURE (SEE STRUCTURE PLANS)

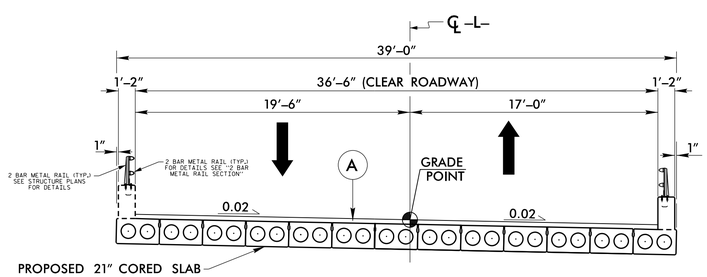
USE TYPICAL ON STRUCTURE
–L– STA. 13+00.61 (BEGIN BRIDGE)
TO –L– STA. 14+31.19 (END BRIDGE)



STAGE 1 CONSTRUCTION



STAGE 2 CONSTRUCTION



FINAL TYPICAL SECTION

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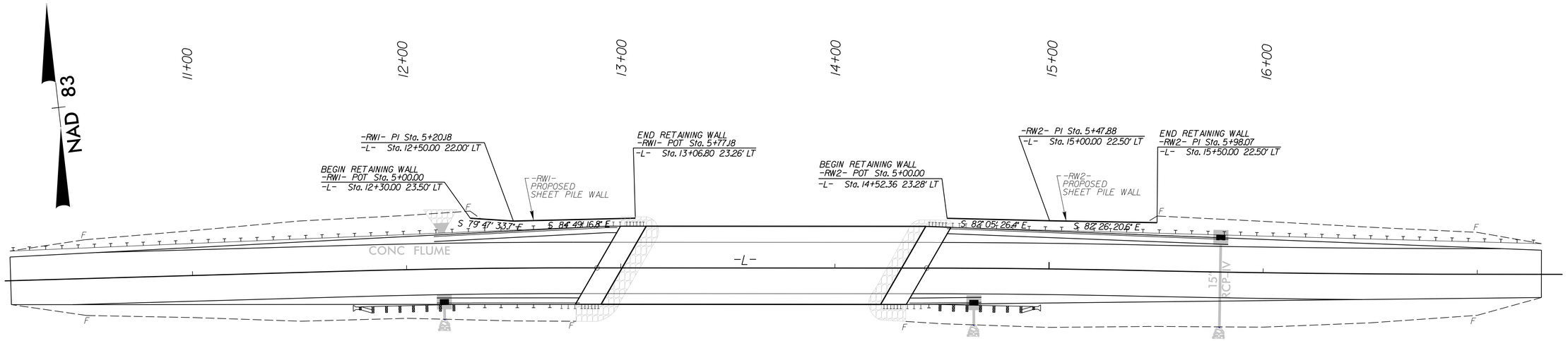
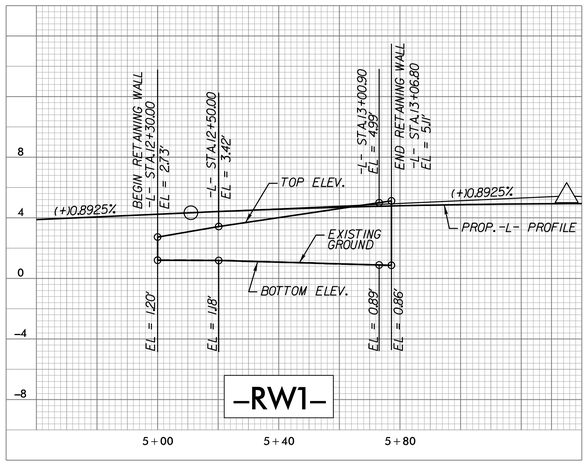
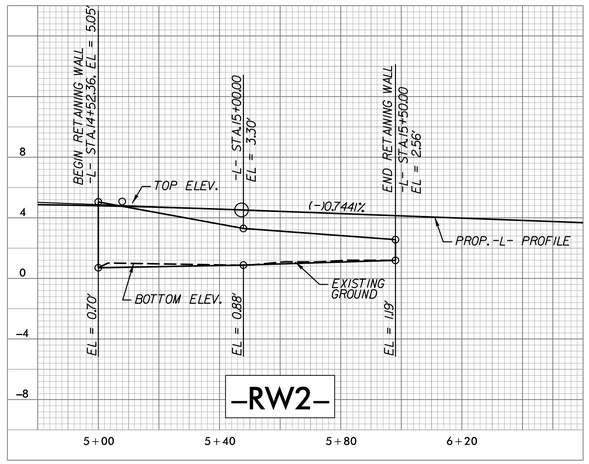
jjavellana

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.1.R.67	2-A







SHEET PILE WALL ENVELOPE

SHEET PILE WALL ENVELOPE DATA					
-RW1- STA.	-L- STA.	OFFSET FROM ℄	TOP ELEV.	BOTTOM ELEV.	WALL HEIGHT
5+00.00	12+30.00	-23.50	2.73	1.20	1.53
5+20.18	12+50.00	-22.00	3.42	1.18	2.24
5+71.30	13+00.90	-23.12	4.99	0.89	4.10
5+77.18	13+06.80	-23.26	5.11	0.86	4.25
-RW2- STA.					
5+00.00	14+52.36	-23.28	5.05	0.70	4.35
5+47.88	15+00.00	-22.50	3.30	0.88	2.42
5+98.07	15+50.00	-22.50	2.56	1.19	1.37

NOTES:
1. APPROXIMATE WALL LENGTH: -RW1- = 77.18', -RW2- = 98.07'
2. BOTTOM OF WALL ELEVATIONS IS TO EXISTING GROUND

9/23/2015

NORTH CAROLINA PROFESSIONAL SEAL 039831 ENGINEER JERRY B. JAVELLANA

DocuSigned by: Jerry Javellana 1A363F025A194D7...

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NC LIC.# C-2243

9/24/2015
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Jerry Javellana

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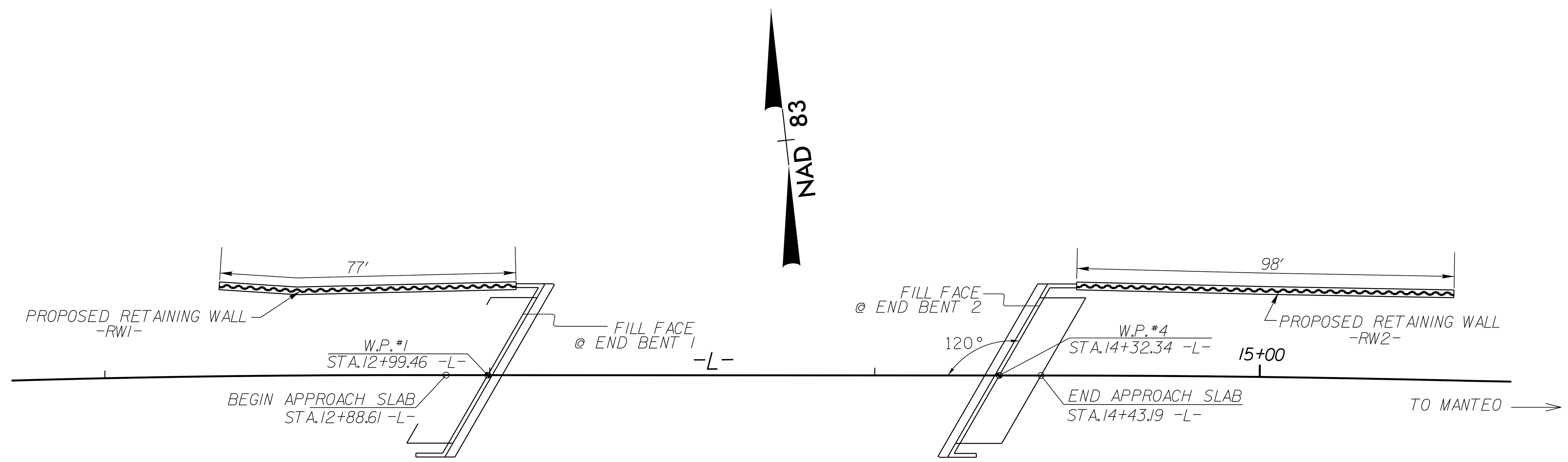
NC LIC. # C-2243

9/23/2015

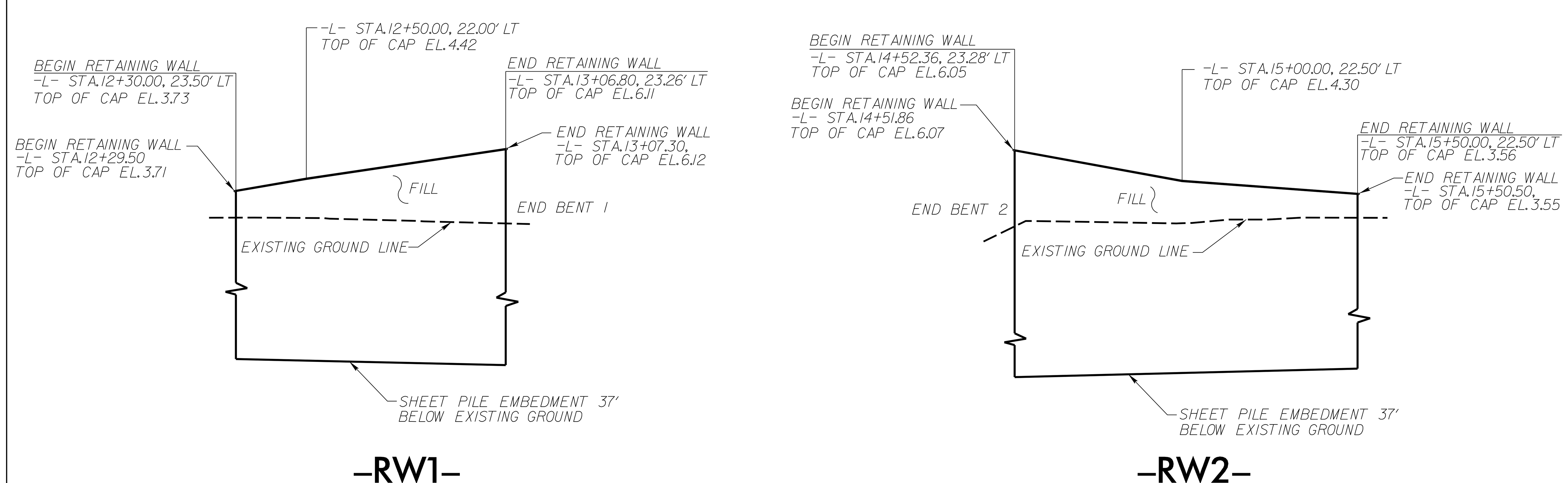
NORTH CAROLINA PROFESSIONAL SEAL 19391 ENGINEER JOHN A. BOVE

DocuSigned by: John A. Bove

STEEL SHEET PILE RETAINING WALL DETAILS



PLAN



ELEVATION

TOTAL BILL OF MATERIAL

18" STEEL SHEET PILE (PZ-27)
RETAINING WALLS .... 655 SQ. FT.

NOTES

FOR STEEL SHEET PILE RETAINING WALL, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWING, SEE SPECIAL PROVISIONS.

THE RETAINING WALL SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 452 OF THE STANDARD SPECIFICATIONS.

THE RETAINING WALL SHALL BE MEASURED AND PAID AS THE ACTUAL NUMBER OF SQUARE FEET OF EXPOSED FACE AREA INCORPORATED INTO THE COMPLETED RETAINING WALL. THE RETAINING WALL HEIGHT IS MEASURED AS THE DIFFERENCE BETWEEN THE TOP AND BOTTOM OF THE RETAINING WALL. THE TOP OF THE RETAINING WALL IS DEFINED AS THE TOP OF THE CONCRETE CAP. THE BOTTOM OF THE RETAINING WALL IS DEFINED AS THE EXISTING GROUND LINE.

CLASS AA CONCRETE SHALL BE USED IN THE CAST-IN-PLACE CAP AND SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR.

VERTICAL GROOVED CONTRACTION JOINTS, ½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE CONCRETE CAP AND SPACED A MAXIMUM OF 10 FEET.

INSTALL THE SHEETING TO THE REQUIRED EMBEDMENT AS SHOWN ON THE PLANS.

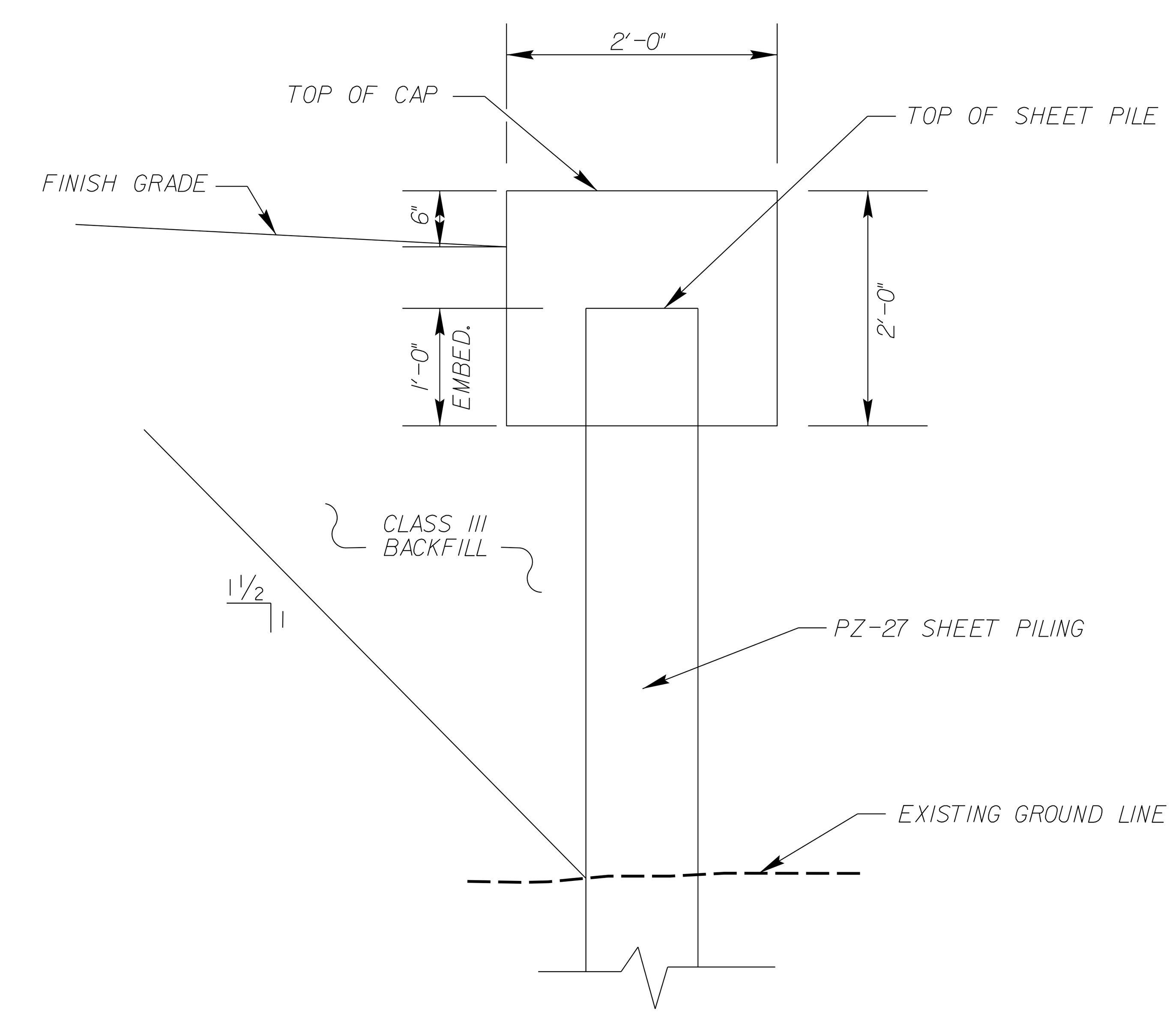
STEEL SHEET PILING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A690 AND SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

STEEL SHEET PILING SHALL BE HOT ROLLED.

THE SCOUR CRITICAL ELEVATION FOR THE RETAINING WALL IS -5 FT. THE SCOUR CRITICAL ELEVATION IS USED BY MAINTENANCE FORCES TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

USE SELECT MATERIAL CLASS III, ACCORDING TO SECTION 1016 OF THE NCDOT STANDARD SPECIFICATIONS, AS BACKFILL BEHIND THE RETAINING WALL. NO SEPARATE PAYMENT WILL BE MADE FOR THIS ITEM. ALL MATERIALS, EQUIPMENT OR LABOR FOR PLACING AND COMPACTING THIS MATERIAL SHALL BE INCLUDED IN THE CONTRACT BID PRICE FOR SQUARE FOOT OF 18" STEEL SHEET PILE RETAINING WALLS.

THE FINISH GRADE OF THE BACK FILL SHALL BE GRADED TO PROVIDE ADEQUATE DRAINAGE AS DIRECTED BY THE ENGINEER.



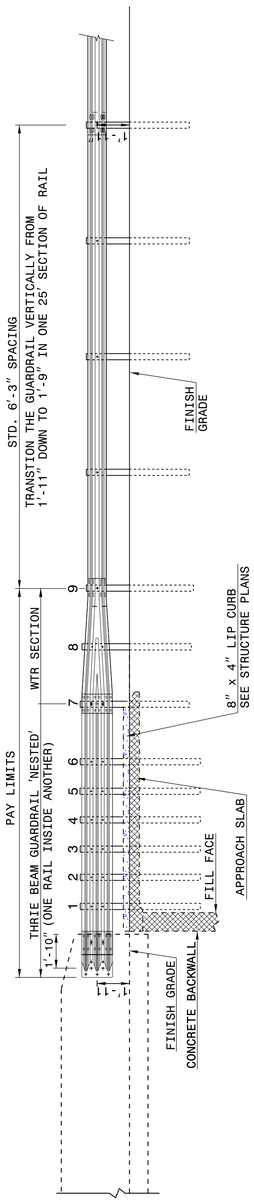
RETAINING WALL CAP DETAIL

PROJECT REFERENCE NO.	SHEET NO.
17BP.1.R.67	2-C

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

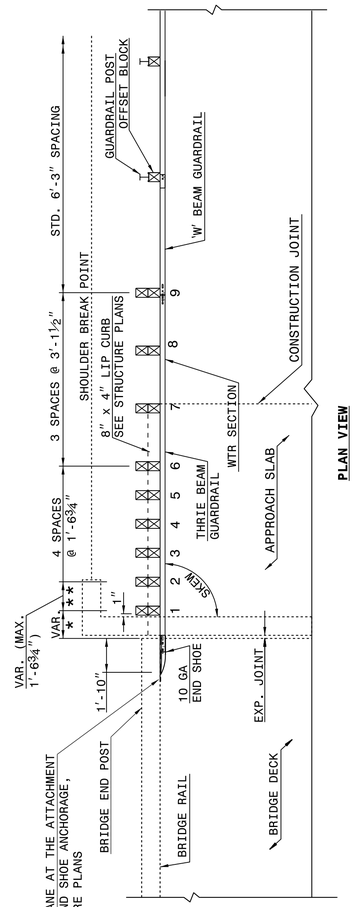
ENGLISH DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7
862d03



ELEVATION

NOTE:
**POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.
-SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
-MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
-LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
-SEE SHEET 5 FOR POST SECTIONS 1 THRU 9.



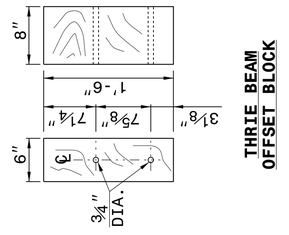
PLAN VIEW

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

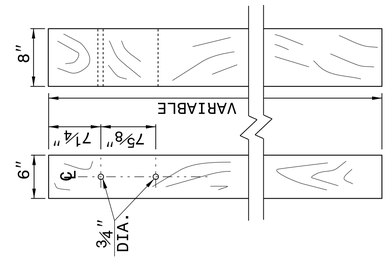
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

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

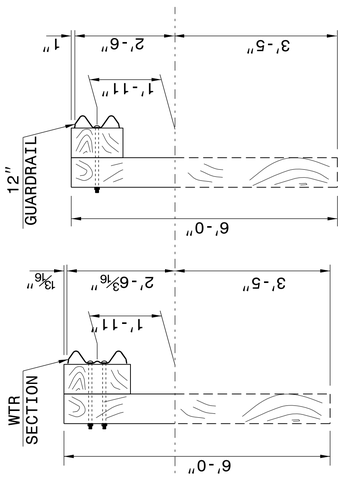
SHEET 3 OF 7
862d03



THRIE BEAM OFFSET BLOCK

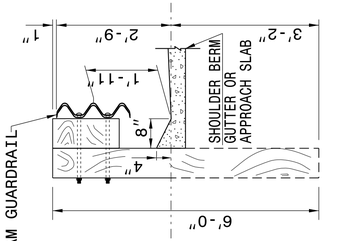


THRIE BEAM LINE POST

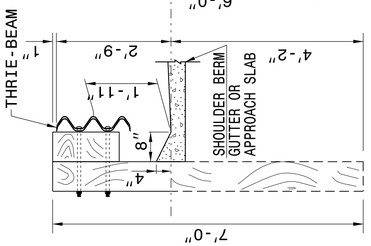


SECTION OF 'W' BEAM POST 9

SECTION OF WTR BEAM POST 8

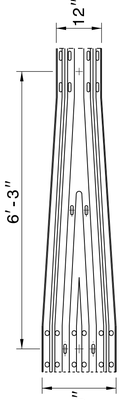


SECTION OF THRIE BEAM POST 7

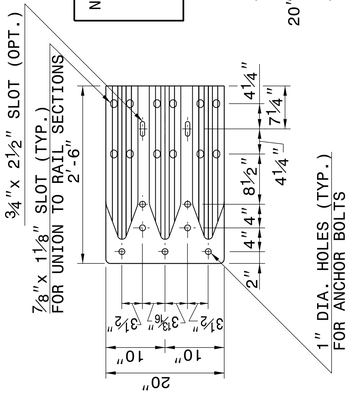


SECTION OF THRIE BEAM POSTS 1 THRU 6

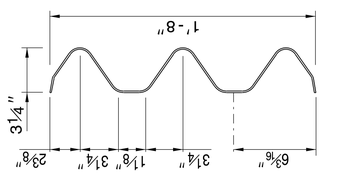
NOTE: THE MID POST AND OFFSET BLOCK OF THE WTR SECTION WILL REQUIRE SPECIAL BOLT HOLE DRILLING IN THE THRIE BEAM OFFSET BLOCK AND LINE POST.



WTR SECTION
ELEVATION VIEW



END SHOE



THRIE-BEAM SECTION

9/22/2015
NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S Howerton
DocuSigned by: Joel Howerton B73F3D17DCDC45F...

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

SEE TITLE BLOCK

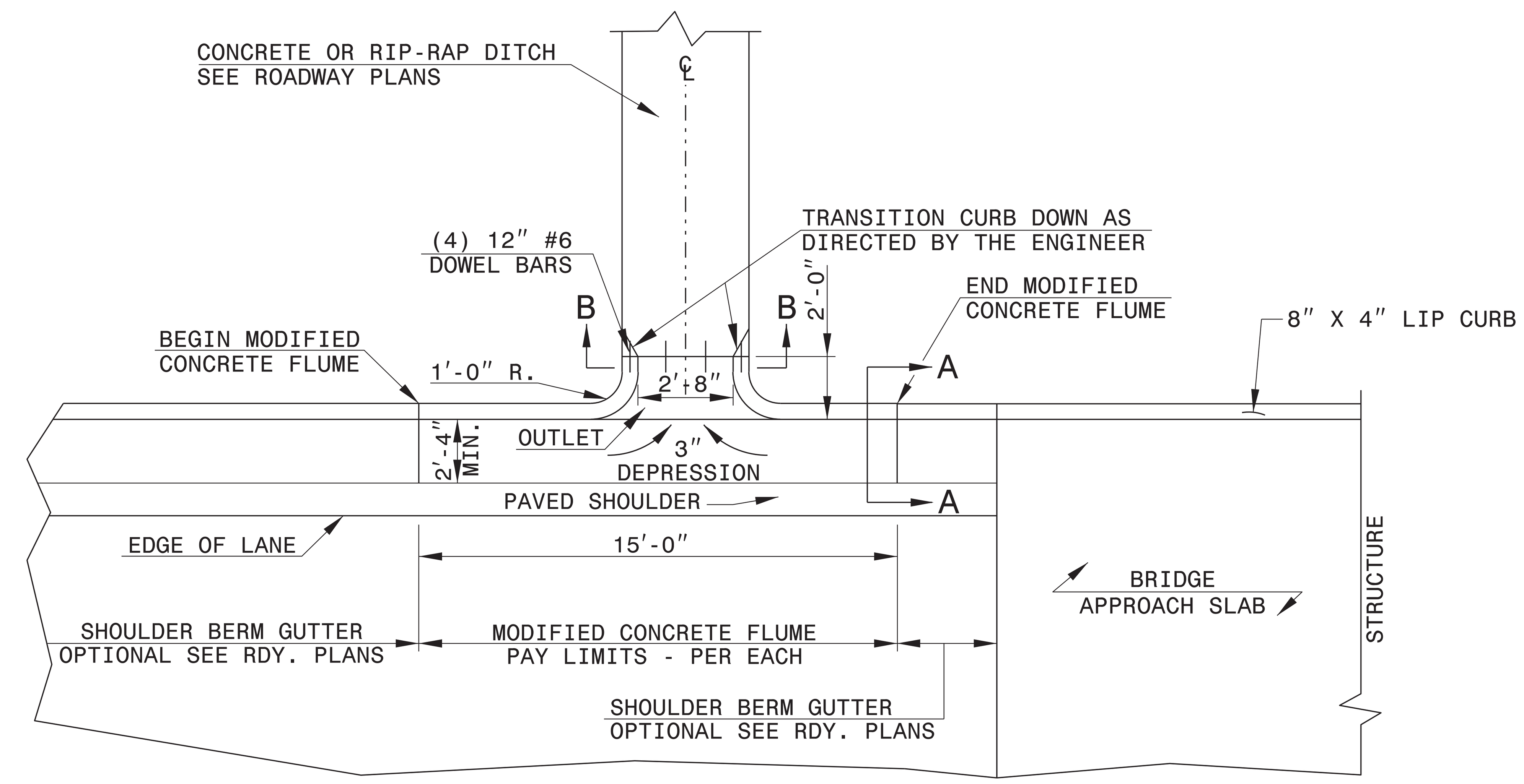
ORIGINAL BY: J HOWERTON DATE: 06-22-12
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: _____

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

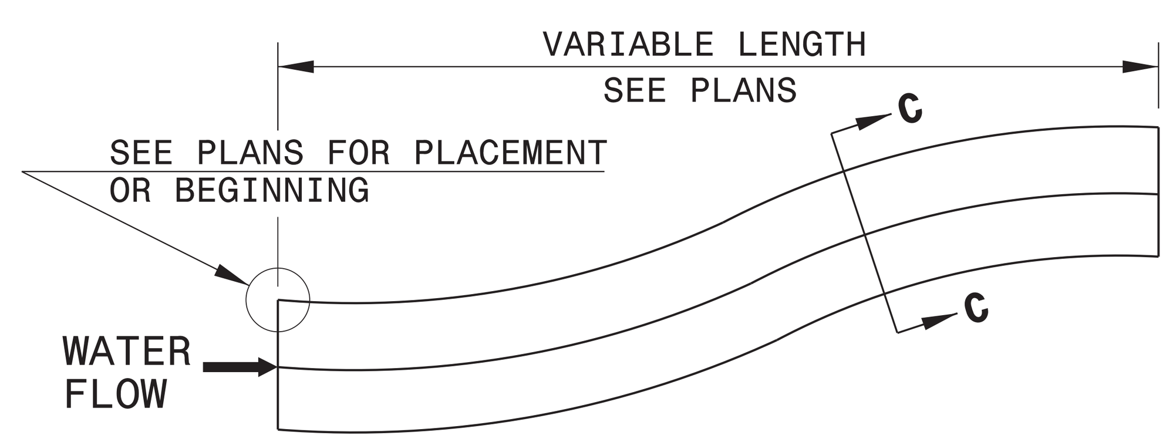
PROJECT REFERENCE NO.	SHEET NO.
17BP.1.R.67	2-D

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

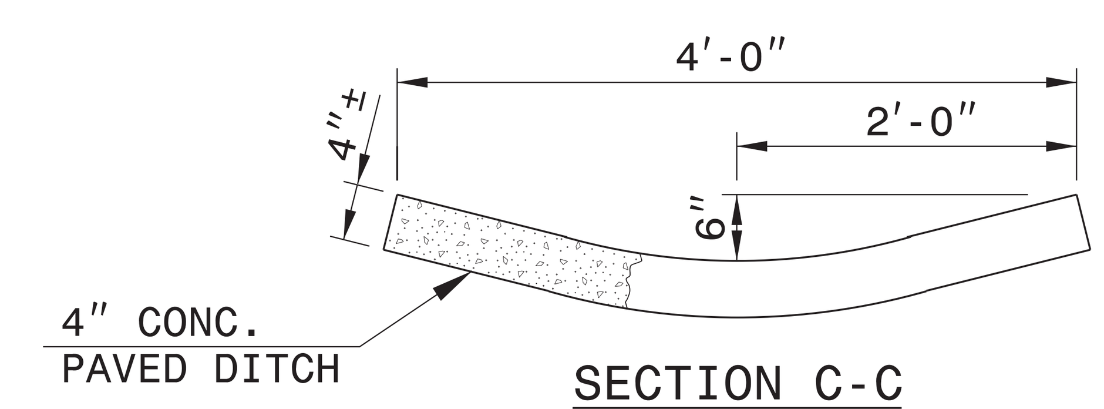
ENGLISH DETAIL DRAWING FOR
MODIFIED CONCRETE FLUME
WITH CONCRETE OR RIP-RAP DITCH



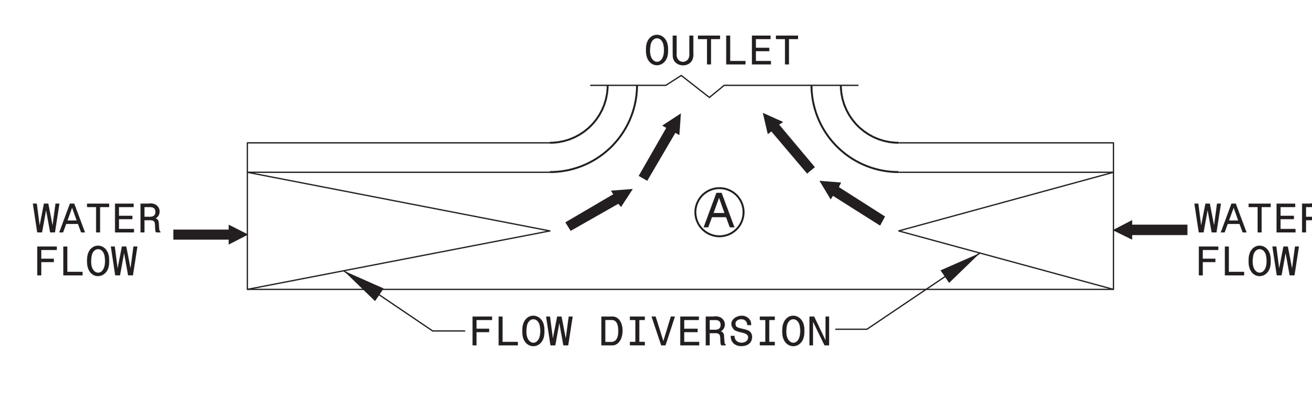
PLAN VIEW



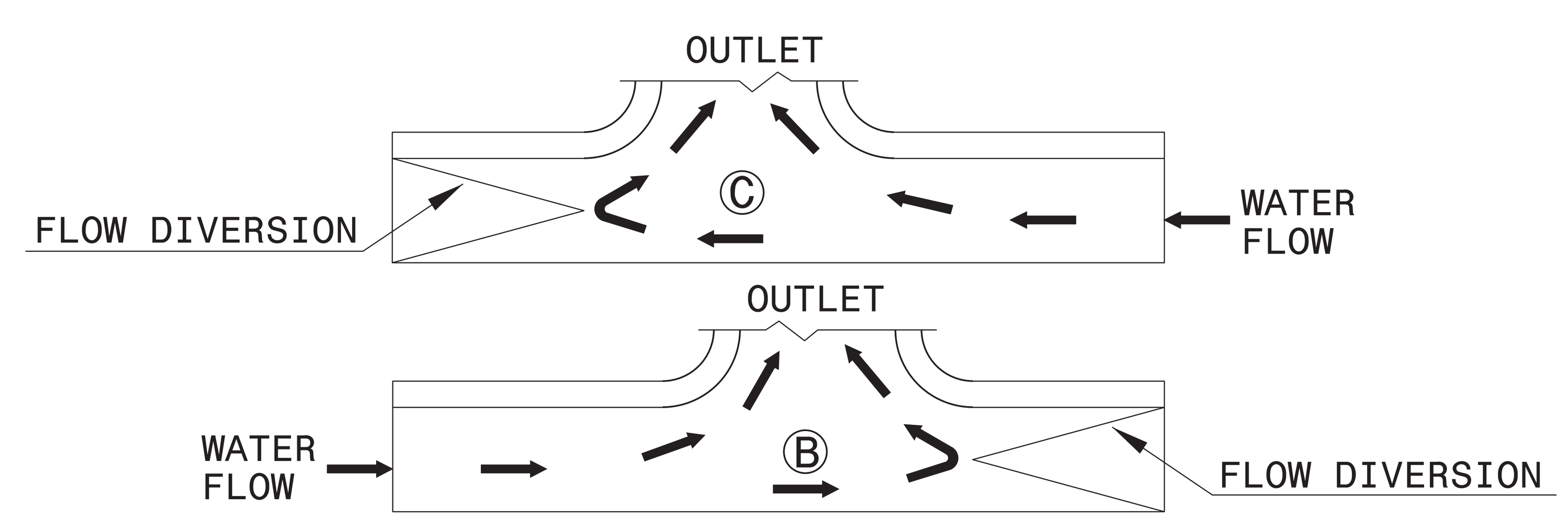
DOWNGRADE OR SAG



SECTION C-C

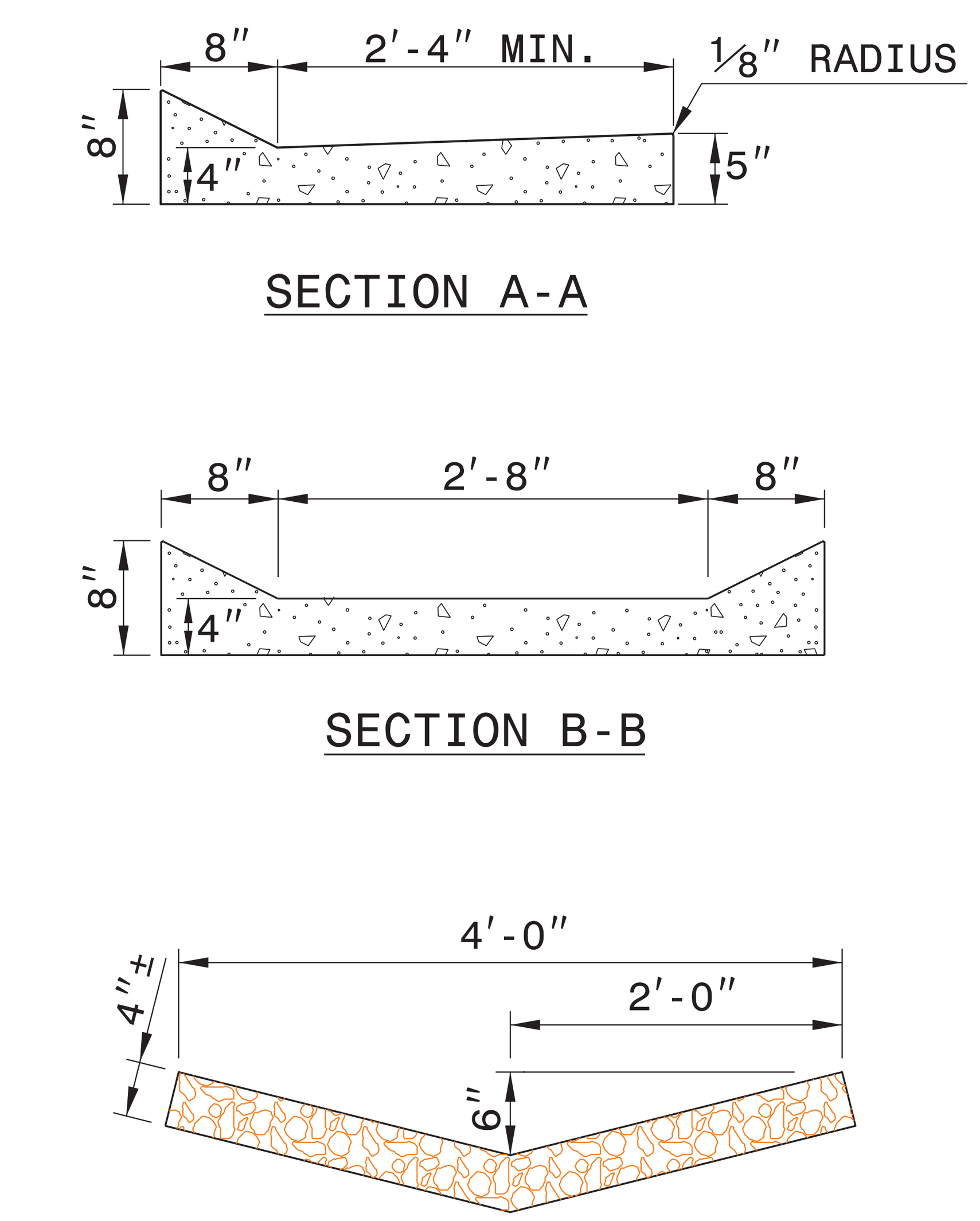


SAG



DOWN GRADE

FLOW DIVERSION EXAMPLES



RIP-RAP LINED DITCH

NOTES:

- CONSTRUCT MODIFIED CONCRETE FLUME AND SHOULDER BERM GUTTER IN ACCORDANCE WITH THIS DETAIL.
- CONSTRUCT CONCRETE DITCH IN ACCORDANCE WITH STD. DWG. NO. 850.01.
- CONSTRUCT RIP RAP LINED DITCH IN ACCORDANCE WITH THIS DETAIL, IF CALLED FOR IN PLANS.
- CONCRETE OR RIP RAP LINED DITCH SHALL BE THE TYPE AND LENGTH SPECIFIED BY THE ROADWAY PLANS. THE DITCH SHALL TERMINATE AS SHOWN ON THE PLANS. IF NO TERMINATION IS INDICATED PLACE RIP-RAP AT THE END OF THE DITCH AS INDICATED BY STD. DWG. 876.02 FOR AN 18" PIPE. TRANSITIONS FROM THE DITCH TO TERMINATION SHALL BE AS DIRECTED BY THE ENGINEER.
- MODIFICATIONS SHALL BE AS DICTATED BY SITE CONDITIONS AND DIRECTED BY THE ENGINEER.

SHEET 1 OF 1
MODFLMDTCH

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

ENGLISH DETAIL DRAWING FOR
MODIFIED CONCRETE FLUME
WITH CONCRETE OR RIP-RAP DITCH

SHEET 1 OF 1
MODFLMDTCH

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

SEE PLATE FOR TITLE

ORIGINAL BY: E.E. Ward DATE: Apr. 2002
MODIFIED BY: E.E. Ward DATE: July 2004
CHECKED BY: DATE:
FILE SPEC.: w:details\stand\modifiedflume.dgn

6/21/00

COMPUTED BY: JBJ DATE: 06-26-2015
CHECKED BY: LHJ DATE: 06-29-2015

PROJECT REFERENCE NO.	SHEET NO.
17BP.1.R.67	3-A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

LINE & STATION SIZE THICKNESS OR GAUGE	OFFSET		STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	% MINIMUM REQUIRED SLOPE	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	30" .079	54" .079	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	60"	R.C. PIPE CLASS IV 12"	15"	18"
12+17.37	15	RT	0403		3.59																													
		RT	0403	0404		1.67	1.50																				8							
14+65.00	16	RT	0405		4.18																													
		RT	0405	0406		1.43	0.96																				12							
15+80.00	16	LT	0407		3.13																													
		LT	0407	0408		0.82	0.69																										44	
12+16.50		LT	0401																															
TOTAL																											20						44	

LINE & STATION	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A+(1.3 X B)) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G	CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES 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. (W.S. FLAT) FRAME W/2 GRATES STD. 840.20	T.B.D.I. STD. 840.35	MODIFIED CONCRETE FLUME EA	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71 CY	PIPE REMOVAL LIN.FT. LIN. FT.	REMARKS
12+17.37						1													1	1				2GI
14+65.00						1													1	1				2GI
15+80.00						1													1	1				2GI
12+16.50																					1			
TOTAL						3													3	3	1			

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

"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	TYPE III	GRAU 350 TL-3	M-350	XIII	CAT-1	VI MOD	BIC	AT-1	IMPACT ATTENUATOR TYPE 350 EA	G	NG	SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
-L-	10+15.00	13+12.16	LT	297.16'			BRIDGE	CANAL	VAR.	VAR.						1												715.37'		TIE BEGINNING OF GUARDRAIL TO EXISTING
-L-	11+74.61	12+91.09	RT	116.48'				BRIDGE	VAR.	VAR.	50.00'		1.00'			1	1											324.25'		
-L-	14+42.16	17+30.00	LT	287.84'			CANAL	BRIDGE	VAR.	VAR.						1														TIE END OF GUARDRAIL TO EXISTING
-L-	14+21.09	14+96.28	RT	75.19'			BRIDGE		VAR.	VAR.		50.00'		1.00'		1	1													
TOTAL				776.67'												4	2											1039.62'		
DEDUCTION FOR ANCHORS				-175.00'											DEDUCTION FOR ANCHORS: (GRAU 350 TL-3) 2 @ 50' = 100'															
PROJECT TOTAL				601.67'											(TYPE IIII) 4 @ 18.75' = 75'															
SAY				612.50'											TOTAL DEDUCTIONS = 175'													1040.00'		
ADDITIONAL GUARDRAIL POST = 8 EACH																														

SUMMARY OF EARTHWORK

IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
-L-					
10+15.00 TO 13+00.61 (BEGIN BRIDGE)	2		248	246	
14+31.19 (END BRIDGE) TO 17+30.00	4		350	346	
SUB-TOTAL	6		598	592	
LOSS DUE TO CLEARING & GRUBBING					
PROJECT TOTAL	6		598	592	
5% TO REPLACE TOP SOIL ON BORROW PIT				30	
GRAND TOTAL	6			622	
SAY	10			650	

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

REMOVAL OF EXISTING ASPHALT PAVEMENT

LINE	BEGIN STATION	END STATION	LOCATION	SQ. YD.
-L-	12+40.00	13+00.90	LT/RT	147.90
-L-	14+30.90	15+30.00	LT/RT	255.28
			TOTAL	403.18
			SAY	410

6/30/2015
R:\Roadway\Proj\Hyde56_rdy_sum.dgn
Jerry_Javellana

8/17/99

REVISIONS

CURVE DATA

PI Sta 10+11.60	PI Sta 12+26.77	PI Sta 14+92.94	PI Sta 16+20.21
Δ = 0° 10' 38.1" (RT)	Δ = 1° 39' 26.1" (RT)	Δ = 1° 14' 17.0" (RT)	Δ = 1° 14' 17.0" (LT)
D = 0° 45' 50.2"	D = 1° 37' 23.2"	D = 1° 13' 08.6"	D = 0° 48' 33.3"
L = 23.20'	L = 102.10'	L = 101.56'	L = 152.99'
T = 11.60'	T = 51.06'	T = 50.78'	T = 76.50'
R = 7,500.00'	R = 3,530.00'	R = 4,700.00'	R = 7,080.00'

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY JOYNER KEENY FOR MONUMENT "BL-2" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 704527.35(ft) EASTING: 2923740.17(ft) ELEVATION: 3.24(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999902145
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BL-2" TO -L- STATION 10+15 IS S 81° 28' 32.8" E 411.97'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

Prepared by
URS
URS Corporation - North Carolina
1600 Perimeter Park Drive, Suite 400
Morrisville, NC 27560
PHONE: 919 461-1100 FAX: 919 461-1415
NC Lic.: C-2243

PROJECT REFERENCE NO.	SHEET NO.
17BP.1.R.67	4
HYDE COUNTY BRIDGE NO. 470056	

ROADWAY DESIGN ENGINEER
9/23/2015
NORTH CAROLINA PROFESSIONAL SEAL 039831 ENGINEER JERRY B. JAVELLANA
Docusigned by: Jerry Javellana 1A363F025A194D7...

HYDRAULICS ENGINEER
9/23/2015
NORTH CAROLINA PROFESSIONAL SEAL 020754 ENGINEER WILLIAM T. STEPHENS, JR.
Docusigned by: William T. Stephens, Jr. 48831FC51CAF4B6...

NAD 83

-L- PC Sta. 10+00.00
TIE PROP. GR TO EXIST. GR
BEGIN PAVEMENT
-L- POC STA. 10+15.00
-L- PT Sta. 10+23.20
GR LENGTH = 298'
-L- PC Sta. 11+75.71
EST. 1 TON CLASS B RIP RAP
EST. 4 SY GEOTEXTILE FABRIC
EXISTING R/W
0401
INV=1.25
EL=4.21
CONC FLUME
S 85° 05' 52.7" E
0403
TOP=3.59
INV=1.67
TB 2GI
TYPE-D
INV=1.50
15" RCP
0404
26.5' INC. TYP.
+26.00
EXISTING R/W
BROKEN BST
WLB
BST BOAT LANDING
TYPE 350 G.R. ANCHOR (TYP.)
FDPS TAPER TO EXISTING (LT.& RT.)
BEGIN SBG -L- STA.12+10 LT & RT
S 57°46'50" W 30.88'
S 52°03'42" W 50.32'
S 37°48'00" W 24.70'
EST. 1 TON CLASS B RIP RAP
EST. 5 SY GEOTEXTILE FABRIC
NATURE CONSERVANCY
DB 127 PG 714
MB R3 PG 5
TALL GREEN
M. C. DAVIS TRUSTEE
DB 216 PG 735
MB R3 PG 1E
BEGIN BRIDGE
-L- POT STA. 13+00.61
BEGIN APPROACH SLAB
-L- POT STA. 12+88.61
-L- PT Sta. 12+77.81
PROP. SHEET PILE WALL
-L- STA.12+30 TO BEG.BR.
N 25°37'30" E 46.08'
N 17°35'28" E 46.02'
HYDE COUNTY
DARE COUNTY
LONG SHOAL RIVER
CLASS II RIPRAP
36'-6" CLEAR
12' LANE
12' LANE
S 83°26'26.6" E
SHOULDER BERM GUTTER
GR LENGTH = 116'
S 30°13'35" W 41.80'
LOW WIRE ELEV= 29.6
(POWER)
N 08°13'46" E 38.84'
N 05°06'10" E 50.56'
END BRIDGE
-L- POT STA. 14+31.19
-L- PC Sta. 14+42.16
-L- PRC Sta. 15+43.72
END APPROACH SLAB
-L- POT STA. 14+43.19
PROP. SHEET PILE WALL
END BR. TO -L- STA. 15+50
EXISTING R/W
0405
TOP=4.18
INV=1.13
TB 2GI
INV=0.99
15" RCP
0406
END SBG -L- STA.14+70 RT
GR LENGTH = 75'
EST. 1 TON CLASS B RIP RAP
EST. 5 SY GEOTEXTILE FABRIC
SHOULDER BERM GUTTER
UNITED STATES OF AMERICA
FISH AND WILDLIFE SVC
DB 735 PG 13
TALL GRASS
0407
END SBG -L- STA.15+87 LT
TB 2GI
TYPE-D
POCKET C
TOP=3.13
INV=0.82
15" RCP
INV=0.69
0408
EXISTING R/W
FDPS TAPER TO EXISTING (LT.& RT.SIDE)
26.5' INC. TYP.
+07.00
TIE PROP. GR TO EXIST. GR
-L- PT Sta. 16+96.70
S 83°26'26.6" E
GR LENGTH = 288'
END PAVEMENT
-L- POT STA. 17+30.00
TALL GRASS
UNITED STATES OF AMERICA
FISH AND WILDLIFE SVC
NO DEED FOUND
TBM-1
RAILROAD SPIKE IN NORTH EP OF US 264
9.45' LEFT OF -L- STA. 15+81.76
ELEVATION = 3.09'

DENOTES TYPE III GUARDRAIL CONNECTION REQ'D. SEE SHEET S-21
NOTE: GUARDRAIL LENGTHS AS SHOWN INCLUDE ANCHOR UNITS.

10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00

BEGIN GRADE
-L- STA. 10+15.00
EL=2.32'
PROP. GRADE
(+)0.8925%
BEGIN BRIDGE
-L- STA. 13+00.61
CENTER BRIDGE STA. 13+65.90 -L-
130' LENGTH; 3 SPAN (1@35', 1@50', 1@45')
21" PCCS; 120 SKEW;
CL GRADE ELEV. = 4.93'
PI = 13+65.00
EL = 5.44'
VC = 248'
K = 151
DS = 60mph
EXISTING BRIDGE TO BE REMOVED
(+)0.8925%
(-)0.7441%
END BRIDGE
-L- STA. 14+31.19
(-)0.7441%
50-YR WSE = 2.0'
100-YR WSE = 2.06'
NWSE = 1.2'
STRUCTURE EXCAVATION END BENT 1 = 75 CY TO ELEV -0.2
1.5:1
1.5:1
2.0'
PROP. LOW SIDE LOW CHORD
STRUCTURE EXCAVATION END BENT 2 = 45 CY TO ELEV -0.2
KEY IN CLASS II RIPRAP 3.5' (TYP)
THEORETICAL OT BACKWATER SCOUR = 5.6' FROM BOTTOM OF BED
MATCH LINE -L- STA. 16+75.00
END GRADE
-L- STA. 17+30.00
EL=2.72'
(-)0.7441%
MATCH LINE -L- STA. 16+75.00

5.0
0
-5.0
-10.0

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 1000	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 2.0	FT
BASE DISCHARGE	= 1200	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 2.06	FT
OVERTOPPING DISCHARGE	= 2920	CFS
OVERTOPPING FREQUENCY	>500	YRS
OVERTOPPING ELEVATION	= 2.3	FT

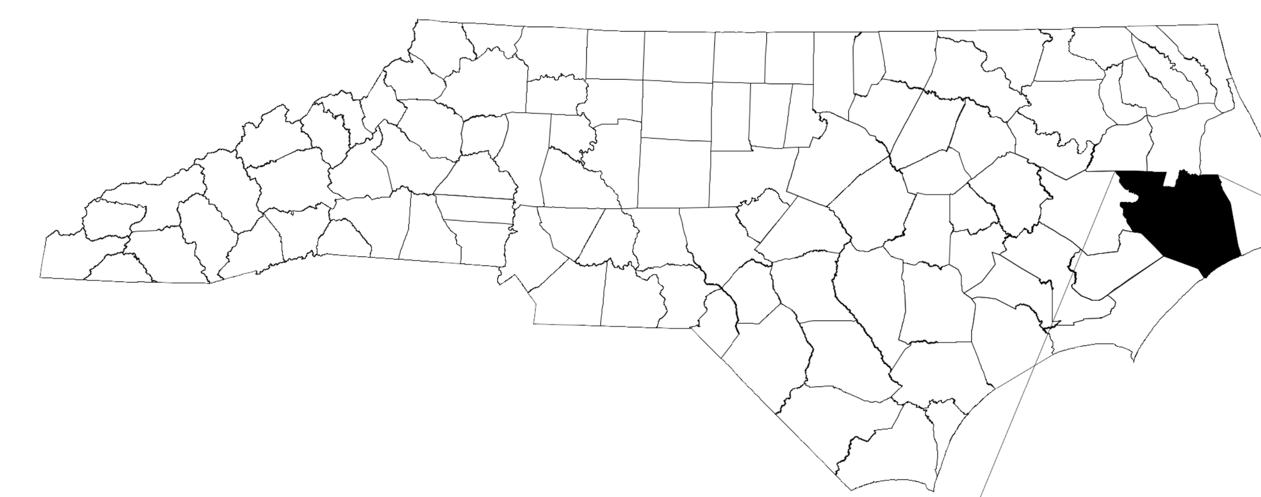
US 264

6/30/2015
R:\Projects\Proj\Hyde56_rdy_psh_4.dgn
jjavellana

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

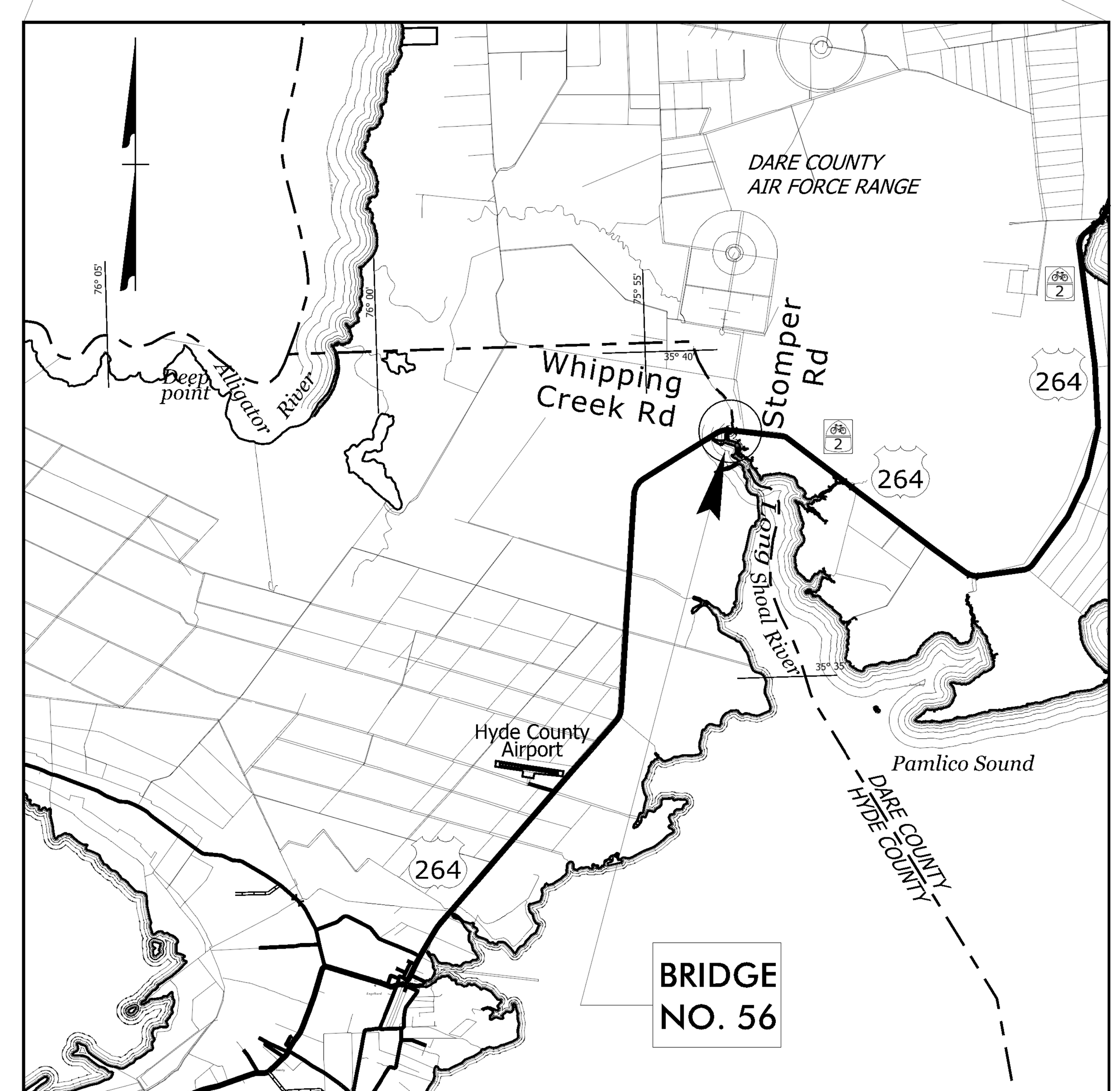
HYDE COUNTY



ROADWAY STANDARD DRAWINGS

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

STD. NO.	TITLE
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUM
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION



VICINITY MAP N.T.S.

INDEX OF SHEETS

LEGEND

GENERAL

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

TRAFFIC CONTROL DEVICES

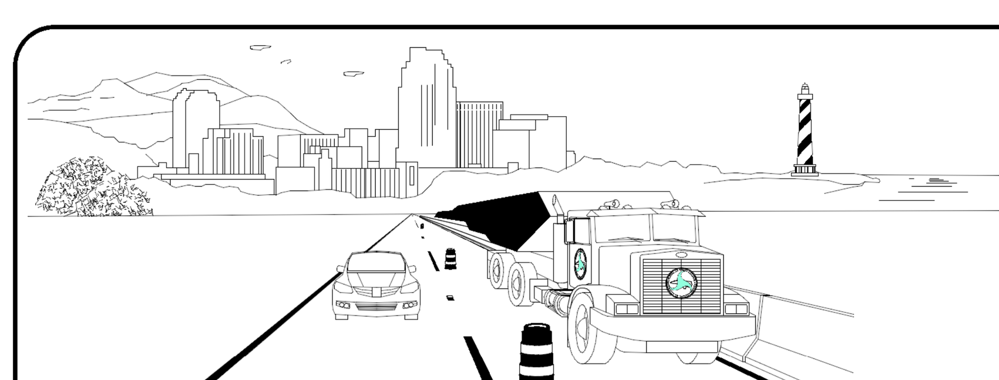
- BARRICADE (TYPE III)
- DRUM
- TEMPORARY CRASH CUSHION
- FLAGGER
- TRUCK MOUNTED ATTENUATOR (TMA)
- TEMPORARY SIGNAL

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN

TEMPORARY PAVEMENT MARKING

P2 WHITE STOPBAR (24") PAINT



T.E. HILDEBRAND, PE — TRAFFIC CONTROL ENGINEER
L.H. JAMISON — TRAFFIC CONTROL PROJECT DESIGNER

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

Prepared by
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NC LIC.# C-2243

APPROVED:
DATE: 9/23/2015

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 038501 ENGINEER THOMAS E. HILDEBRAND

TIP PROJECT: 17BP.1.R.67

PROJ. REFERENCE NO.	SHEET NO.
17BP.1.R.67	TMP-1A

GENERAL NOTES

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

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

LANE AND SHOULDER CLOSURE REQUIREMENTS

A) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.

B) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.

C) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

D) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.

E) DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.

PAVEMENT EDGE DROP OFF REQUIREMENTS

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

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

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

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

G) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

H) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

TRAFFIC BARRIER

I) INSTALL TEMPORARY BARRIER ACCORDING TO THE TRANSPORTATION MANAGEMENT PLANS A MAXIMUM OF TWO (2) WEEKS PRIOR TO BEGINNING WORK IN ANY LOCATION. ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION PROCEED IN A CONTINUOUS MANNER TO COMPLETE THE PROPOSED WORK IN THAT LOCATION UNLESS OTHERWISE STATED IN THE TRANSPORTATION MANAGEMENT PLANS OR AS DIRECTED BY THE ENGINEER.

DO NOT PLACE BARRIER DIRECTLY ON ANY SURFACE OTHER THAN ASPHALT OR CONCRETE.

ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION AND NO WORK IS PERFORMED BEHIND THE TEMPORARY BARRIER FOR A PERIOD LONGER THAN TWO (2) MONTHS, REMOVE / RESET TEMPORARY BARRIER AT NO COST TO THE DEPARTMENT UNLESS OTHERWISE STATED IN THE TRANSPORTATION MANAGEMENT PLANS, TEMPORARY BARRIER IS PROTECTING A HAZARD, OR AS DIRECTED BY THE ENGINEER.

INSTALL TEMPORARY BARRIER WITH THE TRAFFIC FLOW BEGINNING WITH THE UPSTREAM SIDE OF TRAFFIC. REMOVE TEMPORARY BARRIER AGAINST THE TRAFFIC FLOW BEGINNING WITH THE DOWNSTREAM SIDE OF TRAFFIC.

INSTALL AND SPACE DRUMS NO GREATER THAN TWICE THE POSTED SPEED LIMIT (MPH) TO CLOSE OR KEEP THE SECTION OF THE ROADWAY CLOSED UNTIL THE TEMPORARY BARRIER CAN BE PLACED OR AFTER THE TEMPORARY BARRIER IS REMOVED.

J) PROTECT THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER AT ALL TIMES DURING THE INSTALLATION AND REMOVAL OF THE BARRIER BY EITHER A TRUCK MOUNTED ATTENUATOR (MAXIMUM 72 HOURS) OR A TEMPORARY CRASH CUSHION.

PROTECT THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER FROM ONCOMING TRAFFIC AT ALL TIMES BY A TEMPORARY CRASH CUSHION UNLESS THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER IS OFFSET FROM ONCOMING TRAFFIC AS FOLLOWS OR AS SHOWN IN THE PLANS: (SEE ALSO 1101.05)

POSTED SPEED LIMIT	MINIMUM OFFSET
40 OR LESS	15 FT
45 - 50	20 FT
55	25 FT
60 MPH or HIGHER	30 FT

TRAFFIC CONTROL DEVICES

K) WHEN LANE CLOSURES ARE NOT IN EFFECT SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (MPH) EXCEPT, 10 FT ON-CENTER IN RADII, AND 3 FT OFF THE EDGE OF AN OPEN TRAVELWAY. REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTIONS 1130 (DRUMS), 1135 (CONES) AND 1180 (SKINNY DRUMS) FOR ADDITIONAL REQUIREMENTS.

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

PAVEMENT MARKINGS AND MARKERS

M) INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY PAVEMENT MARKERS ON INTERIM LAYERS OF PAVEMENT AS FOLLOWS:

ROAD TYPE	MARKING	MARKER
ASPHALT	PAINT	N/A

N) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS SHOWN IN PAVEMENT MARKING PLAN.

O) STATE FORCES WILL INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE.

P) PLACE ONE APPLICATION OF PAINT FOR TEMPORARY TRAFFIC PATTERNS. PLACE A SECOND APPLICATION OF PAINT SIX (6) MONTHS AFTER THE INITIAL APPLICATION AND EVERY SIX MONTHS AS DIRECTED BY THE ENGINEER.

Q) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

R) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

TRAFFIC CONTROL PHASING

PHASE I

STEP 1:

ERECT ADVANCED WORK ZONE SIGNS ON US 264 AND STOMPER ROAD IN ACCORDANCE WITH RDWY STD 1101.01 SHEET 3, AND TMP-2. USING RDW STD 1101.02 (SHEET 1 OF 15) AND FLAGGERS FOR TEMPORARY LANE CLOSURE, INSTALL PORTABLE CONCRETE BARRIER AND TEMPORARY SIGNALS AND PLACE TEMPORARY PAVEMENT MARKING (PAINT) AS SHOWN IN TMP-02.

STEP 2:
WORKING BEHIND BARRIER, REMOVE THE SECTION OF EXISTING BRIDGE NO. 56, CONSTRUCT STAGE I STRUCTURE, AND CONSTRUCT ROADWAY APPROACHES FROM -L- STA 10+15 TO -L- STA 17+30, UP TO EDGE AND ELEVATION OF THE EXISTING US 264 PAVEMENT, (SEE TMP-2, ROADWAY PLANS, AND STRUCTURE PLANS).

NOTE:
COMPLETE THE WORK REQUIED IN PHASE II, STEP 1 IN CONTINUOUS OPERATION.

PHASE II

STEP 1:

USING RDWY STD 1101.02 (SHEET 1 of 15) (ALTERNATING LANE CLOSURES), WEDGE/PLACE REMAINING PAVEMENT AND TEMPORARY PAVEMENT MARKINGS AND SHIFT US 264 TRAFFIC ONTO THE COMPLETED STAGE I STRUCTURE AND ROADWAY APPROACHES, (SEE TMP-3). USING RDW STD 1101.02 (SHEET 1 OF 15) FOR ALTERNATING LANE CLOSURES, RESET PCB, AND WEDGE/PLACE REMAINING PAVEMENT AND TEMPORARY PAVEMENT MARKINGS. USING FLAGGER, SHIFT US 264 TRAFFIC ONTO THE COMPLETED STAGE I STRUCTURE AND ROADWAY APPROACHES (SEE TMP-3).

STEP 2:

REMOVE REMAINING EXISTING BRIDGE NO. 56 AND CONSTRUCT STAGE II STRUCTURE AND ROADWAY APPROACHES FROM -L- STA 10+15 TO -L- STA 17+30, EXCLUDING THE FINAL LAYER OF SURFACE COURSE, (SEE TMP-3, ROADWAY PLANS, AND STRUCTURE PLANS).

PHASE III

STEP 1:

USING RDWY STD 1101.02 SHEET 1 (ALTERNATING LANE CLOSURES), PLACE THE FINAL LAYER OF SURFACE COURSE AND PLACE FINAL PAVEMENT MARKINGS FROM -L- STA 10+15 TO -L- STA 17+30 IN THE ORIGNAL 2-LANE, 2-WAY PATTERN.

STEP 2:

REMOVE TRAFFIC CONTROL DEVICES AND OPEN US 264 TO ITS FINAL TRAFFIC PATTERN.

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NC LIC.# C-2243

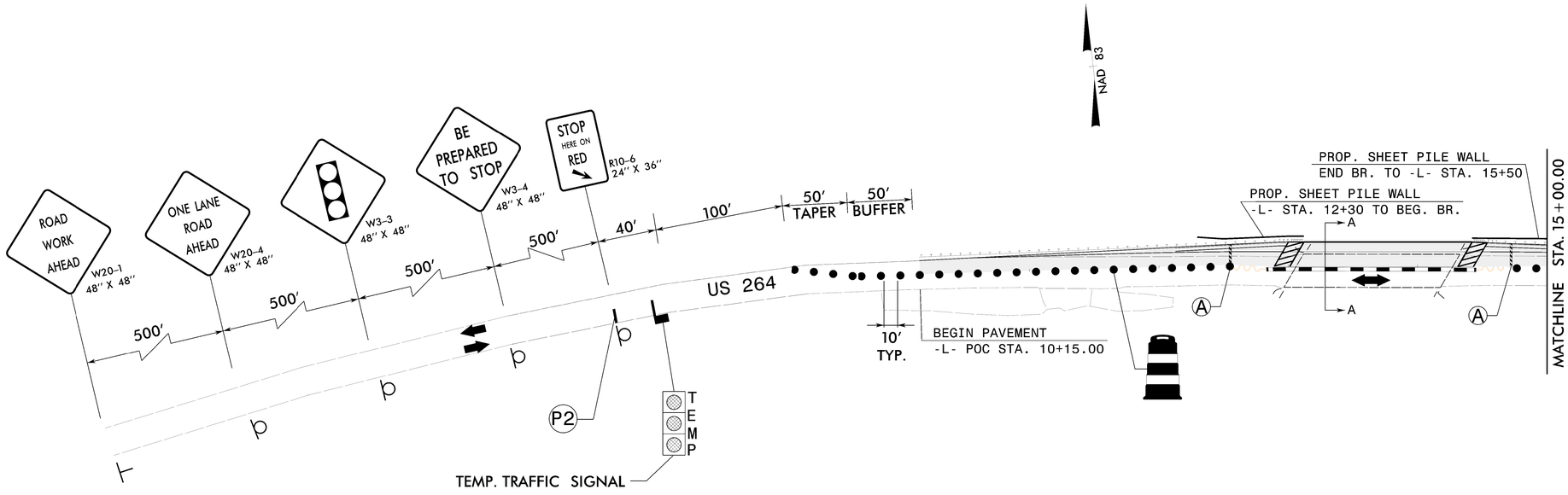
APPROVED: DATE:

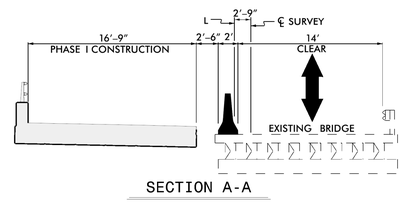
SEAL — 9/23/2015 — NORTH CAROLINA PROFESSIONAL SEAL 038501 ENGINEER THOMAS E HILDEBRAND — DocuSigned by:

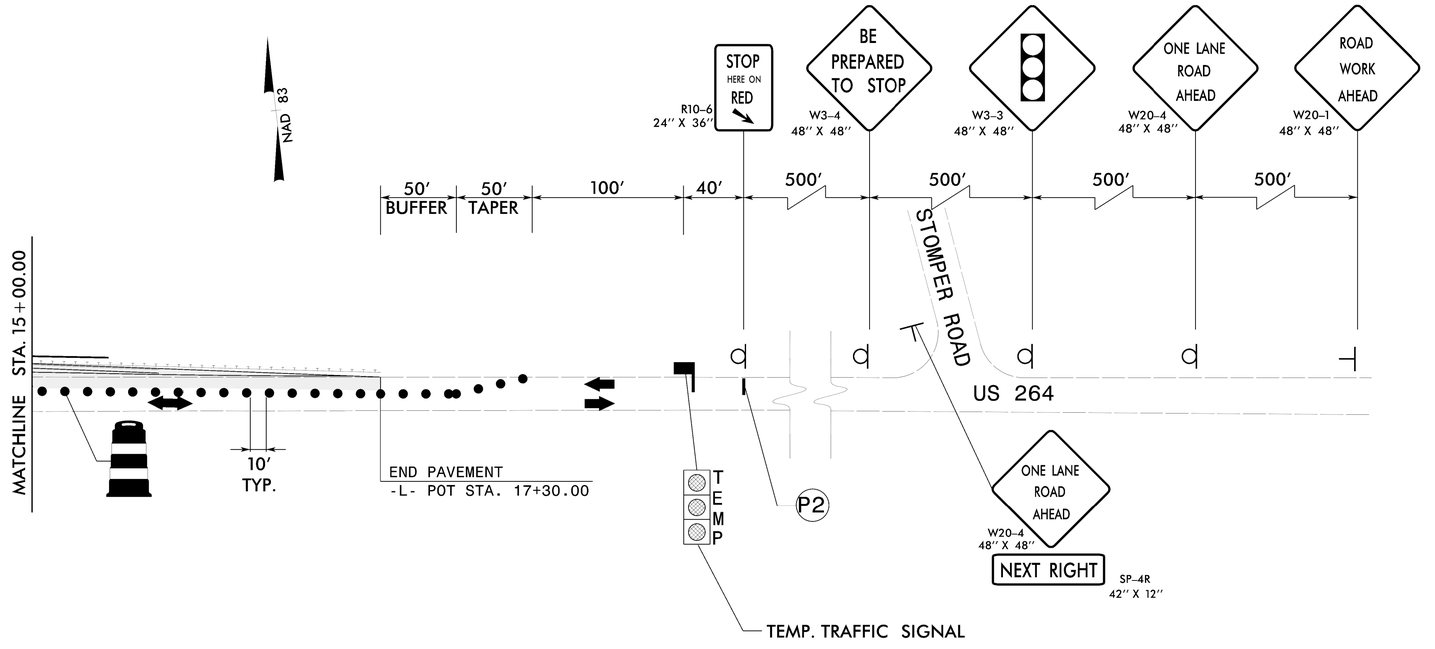
DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

TRANSPORTATION OPERATIONS PLAN

PROJ. REFERENCE NO.	SHEET NO.
17BP.1.R.67	TMP-02







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APPROVED: _____
DATE: 9/23/2015
SEAL

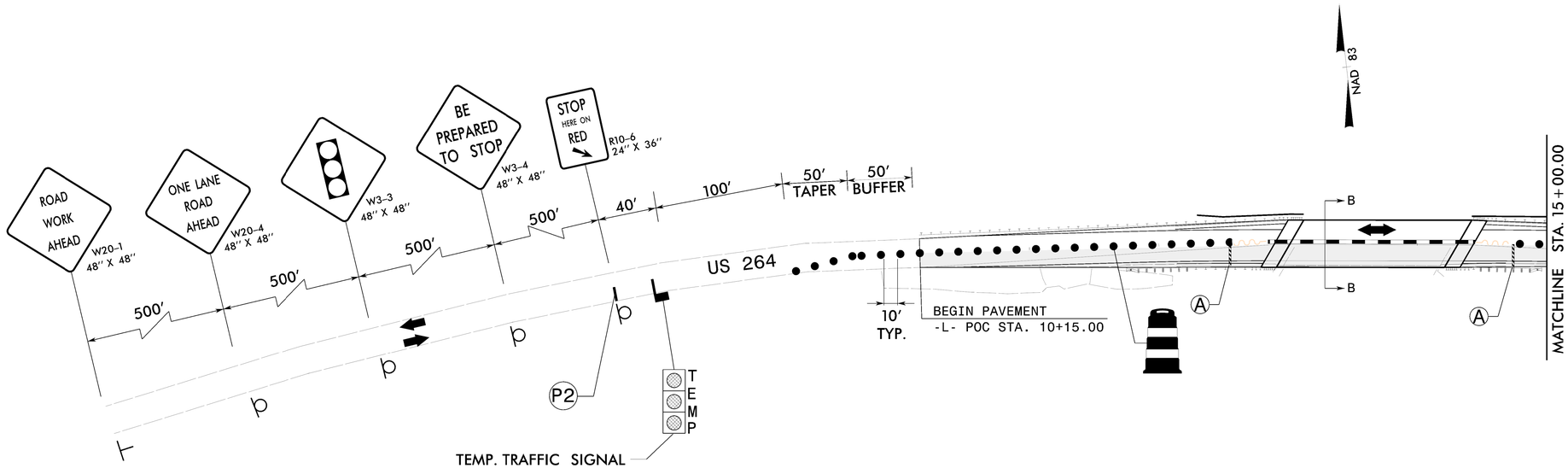
NORTH CAROLINA PROFESSIONAL SEAL 038501 ENGINEER THOMAS E HILDEBRAND
DocuSigned by: Thomas E. Hildebrand

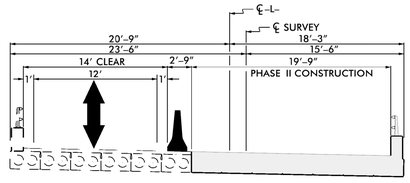
DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

PHASE I DETAIL

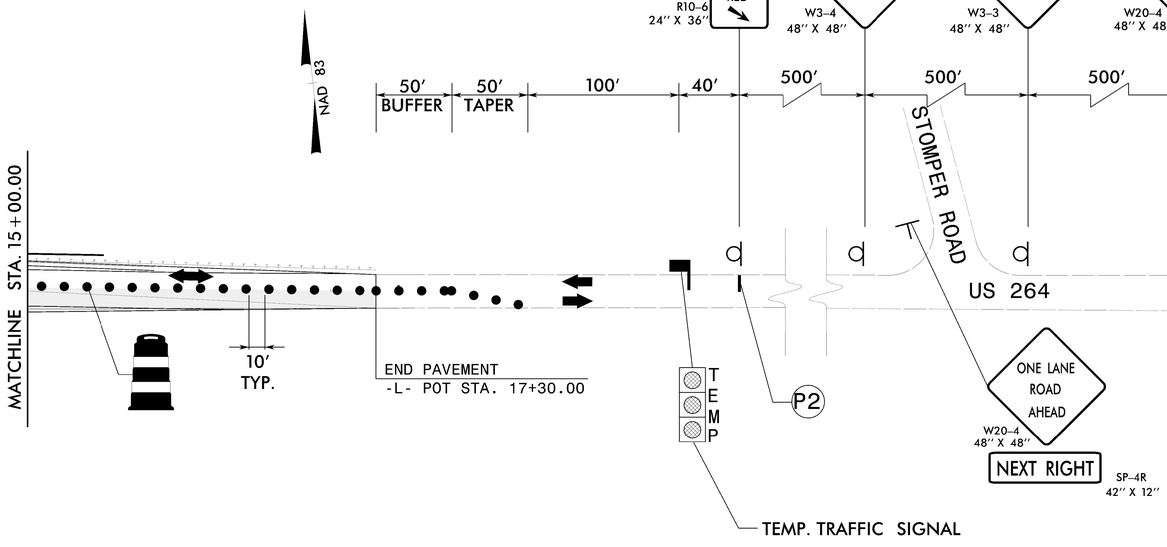
GRAPHIC SCALE
50 25 0 50 100
PLANS

PROJ. REFERENCE NO.	SHEET NO.
17BP.1.R.67	TMP-03





SECTION B-B



TYPE III BARRICADE
Ⓐ

GRAPHIC SCALE
50 25 0 50 100
PLANS

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APPROVED: 9/23/2015
DATE:
SEAL

NORTH CAROLINA PROFESSIONAL SEAL 038501 ENGINEER TRAVIS CHASE HILDEBRAND

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

PHASE II DETAIL

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

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

WBS # 17BP.1.R.67

CONTRACT #:

PROJECT: 17BP.1.R.67

HYDE COUNTY

STATION: 13+65.90 -L-

REPLACES BRIDGE NO. 470056

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

EROSION CONTROL PLAN

BRIDGE #470056
ON US 264
OVER LONG SHOAL RIVER

36'-6" CLEAR ROADWAY - 120° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	*EC-1*
1			1			TOTAL SHEETS
2			2			5

WBS # 17BP.1.R.67

CONTRACT #:

EROSION CONTROL PLAN

EXIST BRIDGE NO. 470056
26.2' CLEAR ROADWAY
SPANS: 1@8'-6"
CONC. DECK ON CONC. AND TIMBER PILINGS
WOODEN WINGWALLS
CONC. HEADWALLS

UTILITIES TO BE PERFORMED BY OTHERS

SBG FROM -L- STA. 12+10 LT TO -L- STA. 13+12 LT

SBG FROM -L- STA. 14+42 LT TO -L- STA. 15+87 LT

NC GRID NAD 83 NA 2011

BM: TBM-1
RAILROAD SPIKE IN NORTH EP OF US 264
9.4' LT OF -L- STA. 15+81.76
N 704537.1 E 2923897
ELEV. 3.09'

M. C. DAVIS TRUSTEE
DB 216 PG 735
MB R3 PG 1E

UNITED STATES OF AMERICA
FISH AND WILDLIFE SVC
DB 735 PG 13

BEGIN PAVEMENT
-L- POC STA. 10+15.00

EST. 1 TON CLASS B RIP RAP
EST. 4 SY GEOTEXTILE FABRIC

CLASS II RIPRAP

PROP. SHEET PILE WALL
-L- STA. 12+30 TO 13+06.80

PROP. SHEET PILE WALL
-L- STA. 14+52.36 TO 15+50

EXISTING R/W

CONC FLUME

MB 2GI TYPE D

RCP 15"

EST. 1 TON CLASS B RIP RAP
EST. 5 SY GEOTEXTILE FABRIC

END PAVEMENT
-L- POT STA. 17+30.00

NATURE CONSERVANCY
DB 127 PG 714
MB R3 PG 5

UNITED STATES OF AMERICA
FISH AND WILDLIFE SVC
NO DEED FOUND

SBG FROM -L- STA. 14+21 RT TO -L- STA. 14+70 RT

SBG FROM -L- STA. 12+10 RT TO -L- STA. 12+92 RT

LONG SHOAL RIVER

US 264 22' BST

TO MANTEO

PLAN

SCALE: 1" = 25'

ALL WETLANDS AREAS DETERMINED BY CLAY WILLIS DIVISION ENVIRONMENTAL OFFICER AS WETLANDS A,B,C,D

IN-WATER MORATORIUM FROM FEBRUARY 15 THROUGH SEPTEMBER 30

METHOD II MODIFIED CLEARING

ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

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.

MEME D. BUSCEMI
LEVEL III NAME

3276 EXP. 12/31/17
LEVEL III CERTIFICATION NO.

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

DRAWN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

NOTE: PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.

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

2012 STANDARD SPECIFICATIONS

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 3, 2011 ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES DIVISION OF WATER QUALITY.

Place Matting for Erosion Control on Slopes Adjacent to Permitted Wetlands as Work Allows.

Std. #	Description	Symbol
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	W
1607.01	Gravel Construction Entrance	
1631.01	Matting Installation	
1632.03	Rock Inlet Sediment Trap Type C	C
N/A	Coir Fiber Wattle Barrier	
N/A	Silt Fence Coir Fiber Wattle Break	CFW
N/A	Wattle	

MATTING FOR EROSION CONTROL

CONST. SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
1	-L-	10+33	13+12	LT	214
1	-L-	15+70	17+30	LT	123
1	-L-	12+32	12+79	RT	36
1	-L-	14+33	17+04	RT	322
				SUBTOTAL	695
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					335
				TOTAL	1030
				SAY	1030

Prepared by
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PHONE: 919 461-1100 FAX: 919 461-1415
NC LIC. • C-2243

PROJECT: 17BP.1.R.67
HYDE COUNTY
STATION: 13+65.90 -L-
REPLACES BRIDGE NO. 470056

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

EROSION CONTROL PLAN

BRIDGE #470056
ON US 264
OVER LONG SHOAL RIVER

36'-6" CLEAR ROADWAY - 120° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	EC-2
1			1			TOTAL SHEETS
2			2			5

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.1.R.67	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

15 10 5 0 −5 −10

EXROW

TIE TO EXIST. SS

0.029

0.049

3:1

BOAT ACCESS PAVEMENT

EXROW

S.S. 2.36

2.31

S.S. 1.31

CANAL

WLB

WLB

10+50.00

15 10 5 0 −5 −10

EXROW

EXIST.

EXIST. BOAT ACCESS PAVEMENT

EXROW

2.32

CANAL

WLB

WLB

10+15.00

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

6/25/2015
R:\Projects\XSC\Hyde56_rdy_xpl.dgn
Jerry.Javelona

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.1.R.67	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

15 10 5 0 -5 -10

EXROW

2%

0.020

2.54

3%

BOAT ACCESS PAVEMENT

EXROW

S.S. 0.79

S.S. 0.88

CANAL

WLB

WLB

11+50.00

15 10 5 0 -5 -10

EXROW

2%

0.020

0.030

2.29

3%

BOAT ACCESS PAVEMENT

EXROW

S.S. 1.59

S.S. 1.25

CANAL

WLB

WLB

11+00.00

6/25/2015
R:\Roadway\XSC\Hyde56_rdy_xpl.dgn
Jerry Javellana

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.
	17BP.1.R.67	X-3

BEGIN SHEET PILE WALL –L– STA. 12+30.00

EXROW

SHEET PILE WALL

2:1

0.030

3.26

2:1

S.S. 1.95

EXROW

CANAL

WLB

WLB

12+30.00

EXROW

2:1

0.029

2.99

BOAT ACCESS PAVEMENT

2:1

EXROW

S.S. 1.13

S.S. 1.74

CANAL

WLB

WLB

12+00.00

–L–

6/25/2015
R:\Roadway\XSC\Hyde56_rdy_xs1.dgn
Jerry.Javeliana

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.1.R.67	X-4

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

15 10 5 0 −5 −10

CANAL

EXROW

SHEET PILE WALL

0.020

WLB

−2.20

EXROW

13+12.16

CANAL

EXROW

SHEET PILE WALL

0.020

3.97

WLB

EXROW

BEGIN BRIDGE −L− STA. 13+00.61

13+00.90

EXROW

SHEET PILE WALL

2%

0.030

3.46

2%

S.S. 1.28

CANAL

WLB

WLB

12+50.00

−L−

6/25/2015
R:\Projects\XSC\Hyde56_rdy_xpl.dgn
Jerry.Javelona

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.1.R.67	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

15 10 5 0 -5 -10

EXROW

0.020

4.01

2%

S.S. 1.86

EXROW

WLB

END BRIDGE –L– STA. 14+31.19

14+30.90

EXROW

0.020

EXROW

-6.53

14+00.00

EXROW

0.020

EXROW

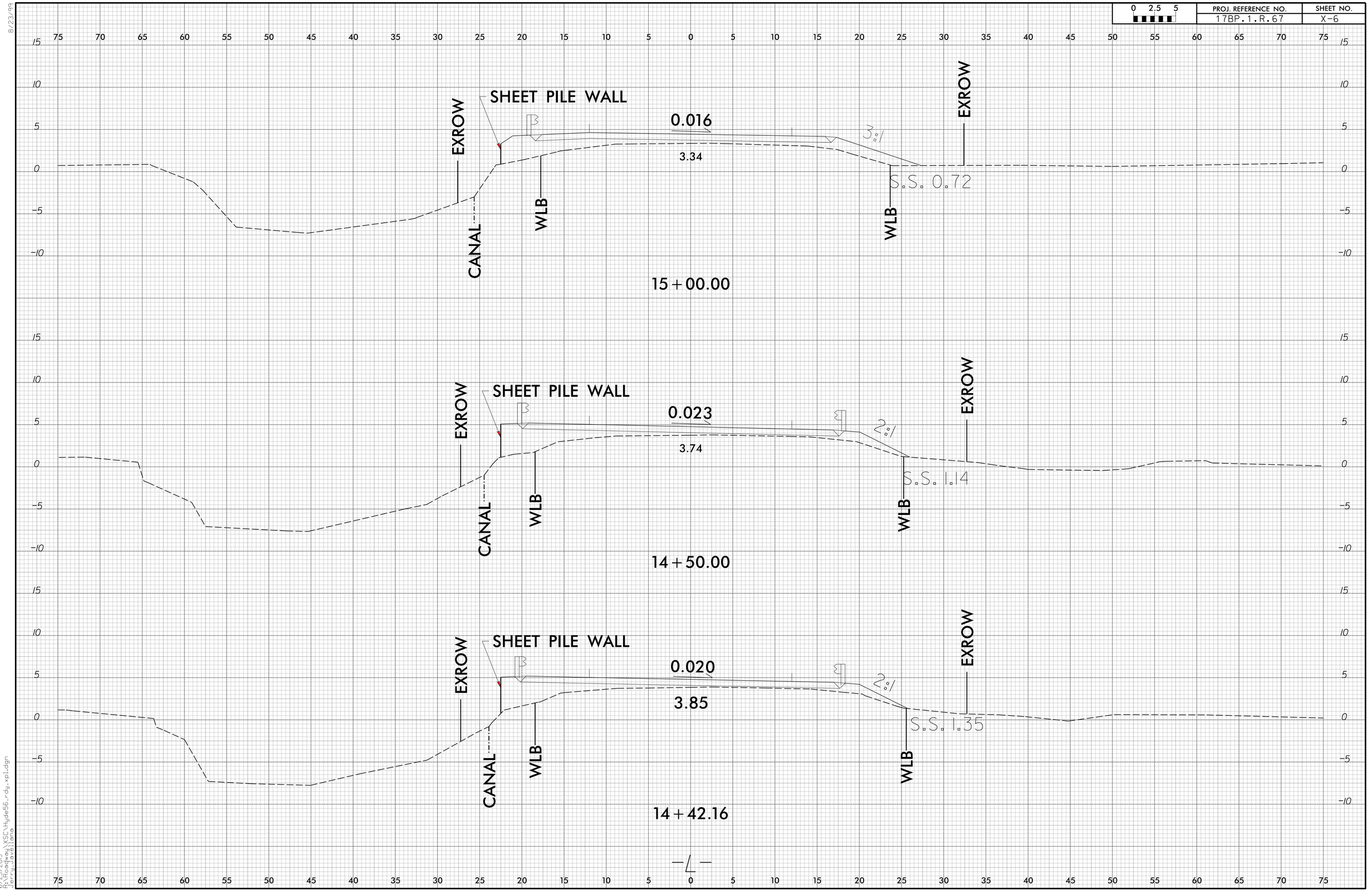
-9.54

13+50.00

6/25/2015
R:\Roadway\XSC\Hyde56_rdy_xpl.dgn
Jerry_Javellana

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.1.R.67	X-6



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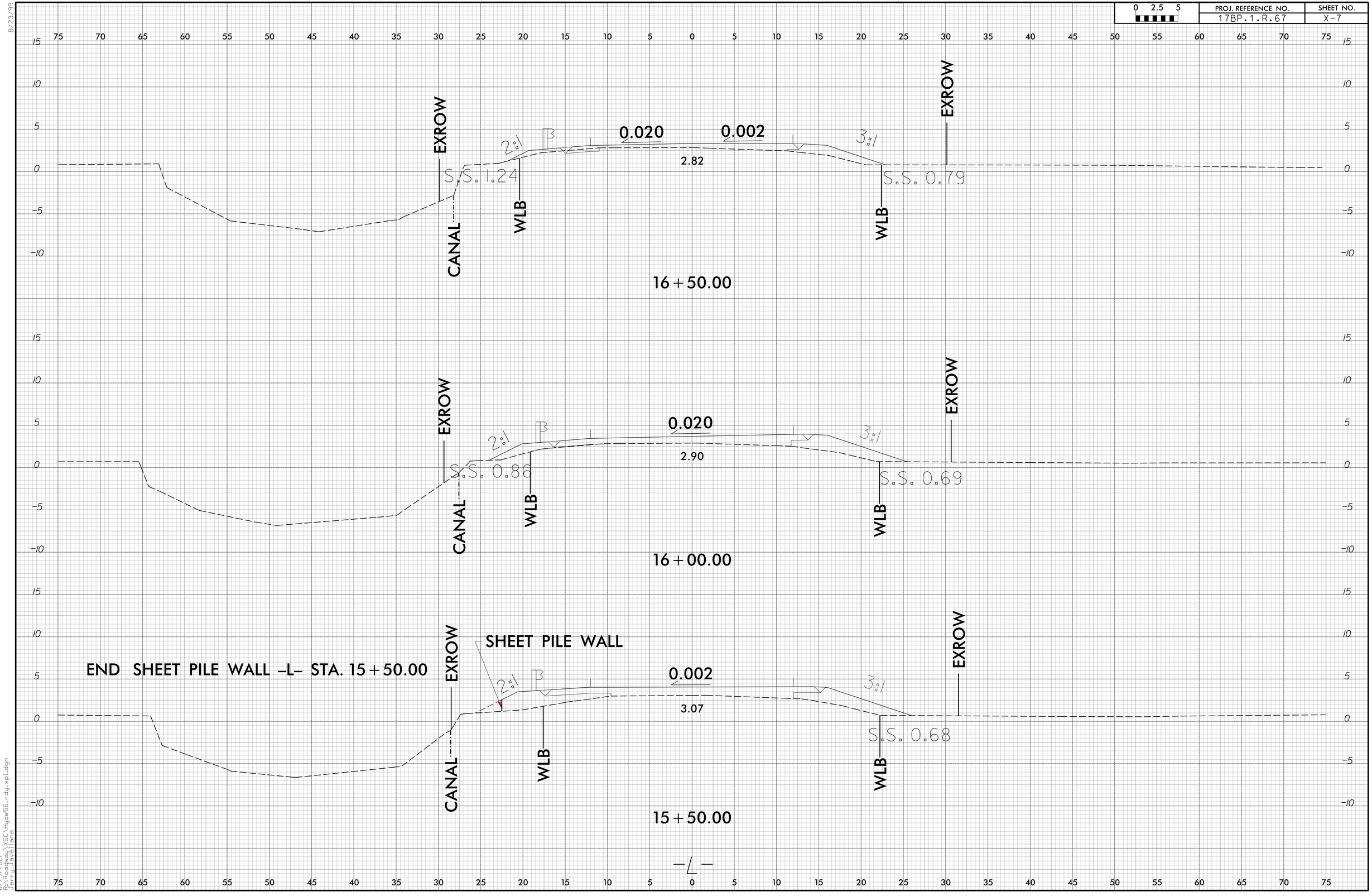
R:\Projects\XSC\Hyde56_rdy_xpl.dgn
Jerry_Javellana

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.1.R.67	X-7



6/25/2015
R:\Projects\XSC\Hyde56_rdy_xpl.dgn
Jerry Javellana

8/23/99

PROJ. REFERENCE NO.	SHEET NO.
17BP.1.R.67	X-8

6/25/2015
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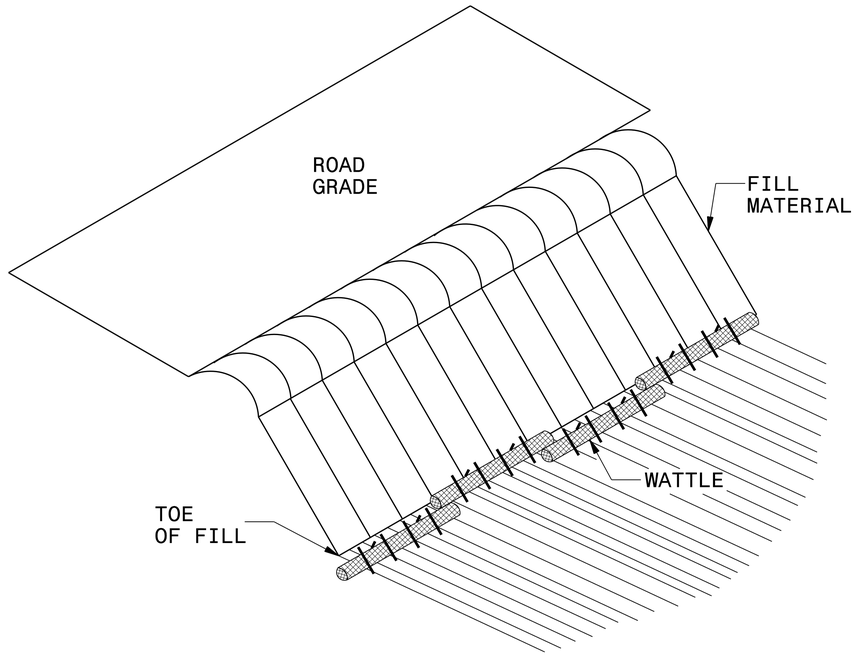
WBS # 17BP.1.R.67

CONTRACT #:

WATTLE BARRIER DETAIL



ISOMETRIC VIEW

NOTES:

USE MINIMUM 18 IN. NOMINAL DIAMETER EXCELSIOR WATTLE AND LENGTH OF 10 FT.

EXCAVATE A 2 TO 3 INCH TRENCH FOR WATTLE TO BE PLACED.

DO NOT PLACE WATTLES ON TOE OF SLOPE.

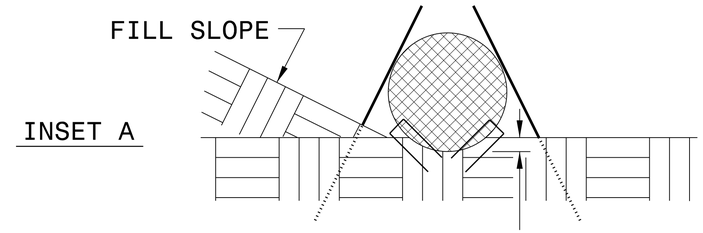
USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

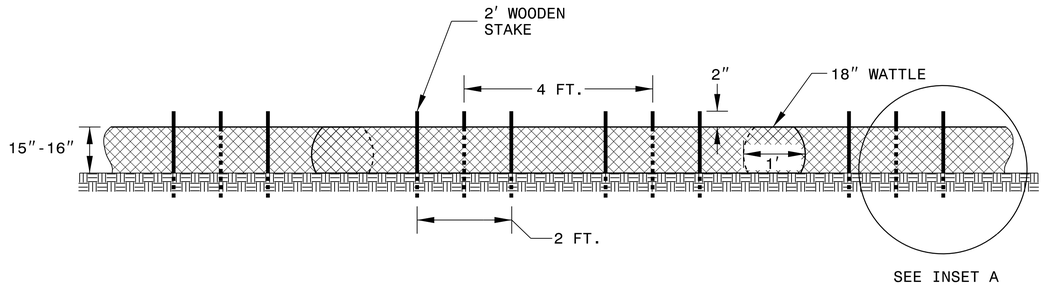
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO GROUND.

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

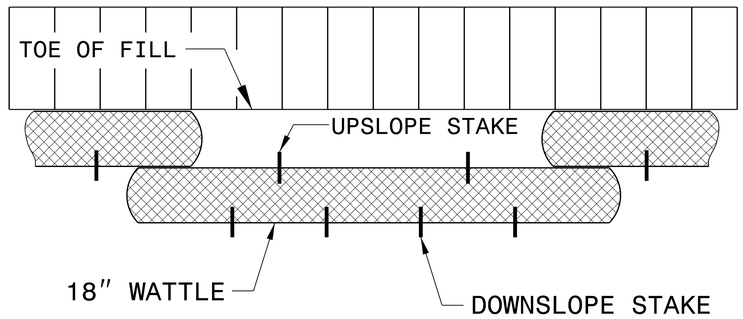
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

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





FRONT VIEW



TOP VIEW

PROJECT: 17BP.1.R.67

HYDE COUNTY

STATION: 13+65.90 -L-

REPLACES BRIDGE NO. 470056

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

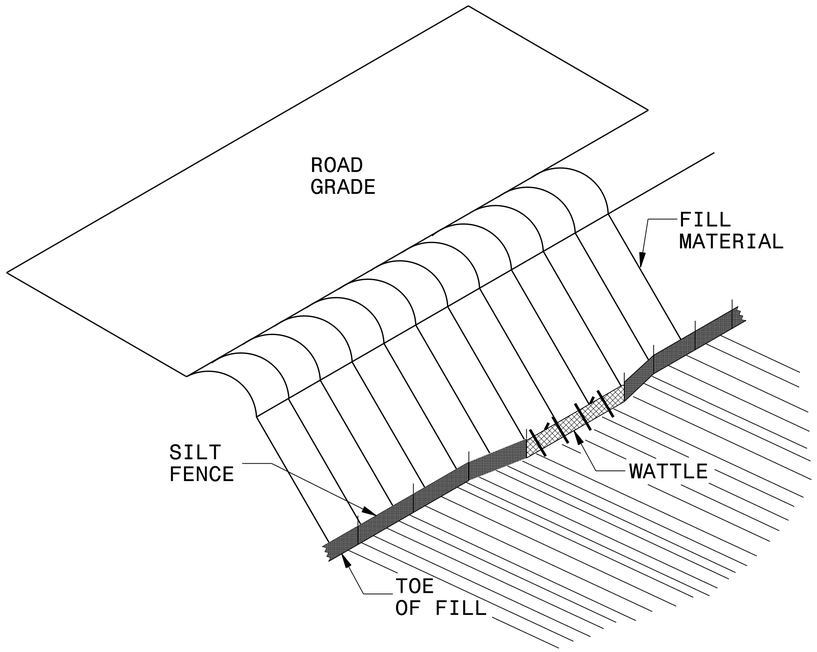
EROSION CONTROL PLAN

BRIDGE #470056
ON US 264
OVER LONG SHOAL RIVER

36′-6″ CLEAR ROADWAY - 120° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	EC-3
1			1			TOTAL SHEETS
2			2			5

SILT FENCE COIR FIBER WATTLE BREAK DETAIL



ISOMETRIC VIEW

NOTES:

USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE AND LENGTH OF 10 FT.

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

DO NOT PLACE WATTLE ON TOE OF SLOPE.

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

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

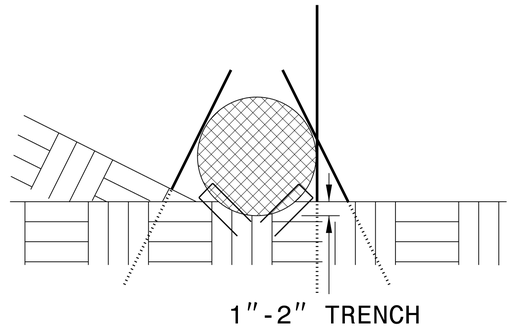
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

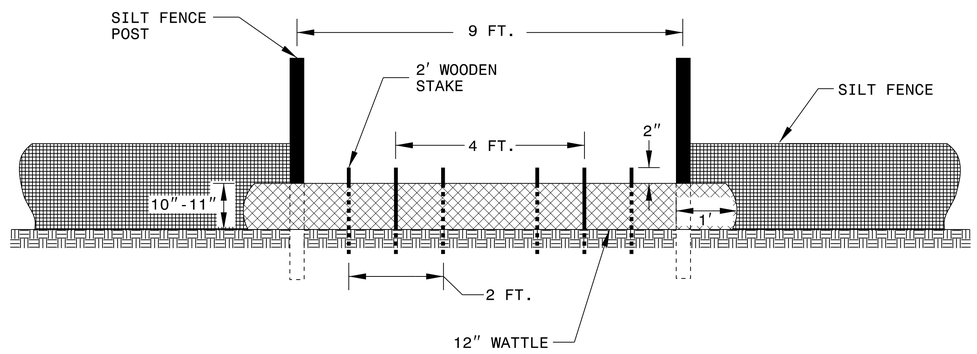
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

WATTLE INSTALLATION CAN BE ON OUTSIDE OF THE SILT FENCE AS DIRECTED.

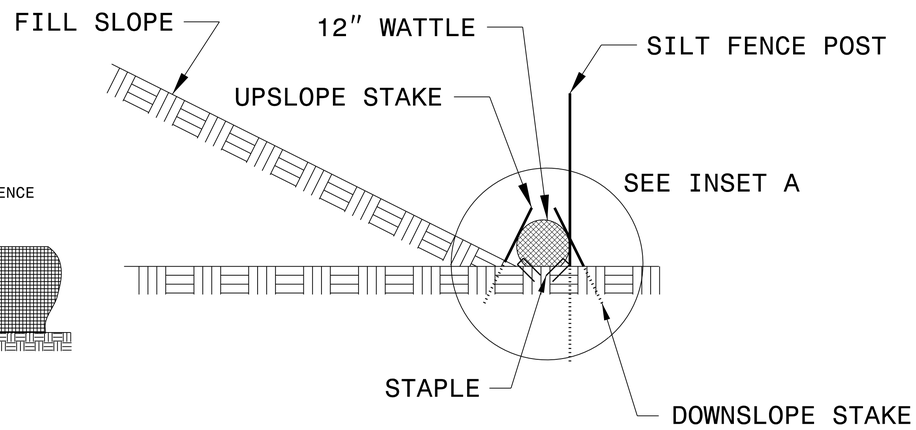
INSTALL TEMPORARY SILT FENCE IN ACCORDANCE WITH SECTION 1605 OF THE STANDARD SPECIFICATIONS.

INSET A





VIEW FROM SLOPE



SIDE VIEW

PROJECT: 17BP.1.R.67

HYDE COUNTY

STATION: 13+65.90 -L-

REPLACES BRIDGE NO. 470056

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

EROSION CONTROL PLAN

BRIDGE #470056
ON US 264
OVER LONG SHOAL RIVER

36′-6″ CLEAR ROADWAY - 120° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	EC-4
1			1			TOTAL SHEETS
2			2			5

WBS # 17BP.1.R.67

CONTRACT #:

WBS # 17BP.1.R.67

CONTRACT #:

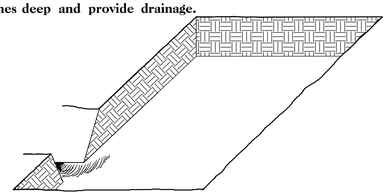
PLANTING DETAILS

SEEDLING / LINER BAREROOT PLANTING DETAIL

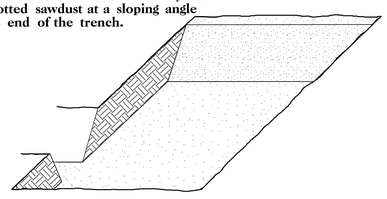
HEALING IN

1. Locate a healing-in site in a shady, well protected area.

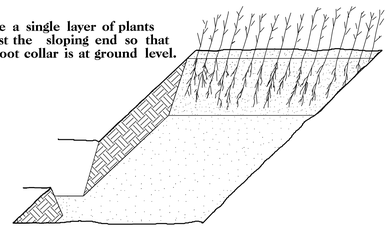
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



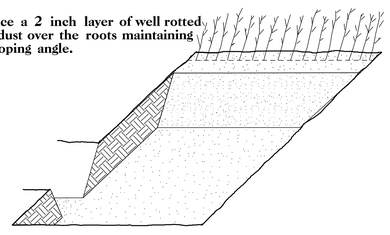
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



4. Place a single layer of plants against the sloping end so that the root collar is at ground level.

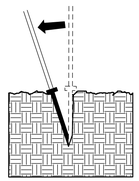


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

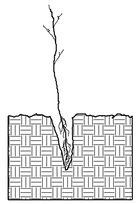


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

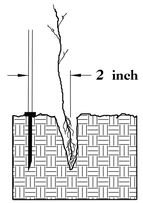
DIBBLE PLANTING METHOD
USING THE KBC PLANTING BAR



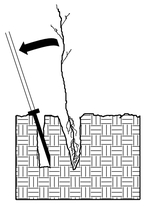
1. Insert planting bar as shown and pull handle toward planter.



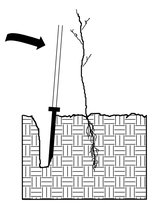
2. Remove planting bar and place seedling at correct depth.



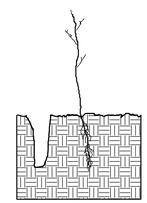
3. Insert planting bar 2 inches toward planter from seedling.



4. Pull handle of bar toward planter, firming soil at bottom.



5. Push handle forward firming soil at top.



6. Leave compaction hole open. Water thoroughly.

PLANTING NOTES:

PLANTING BAG
During planting, seedlings shall be kept in a moist canvas bag or similar container to prevent the root systems from drying.

KBC PLANTING BAR
Planting bar shall have a blade with a triangular cross section, and shall be 12 inches long, 4 inches wide and 1 inch thick at center.

ROOT PRUNING
All seedlings shall be root pruned, if necessary, so that no roots extend more than 10 inches below the root collar.

REFORESTATION DETAIL SHEET

N.C.D.O.T. - ROADSIDE ENVIRONMENTAL UNIT

REFORESTATION

☐ TREE REFORESTATION SHALL BE PLANTED 6 FT. TO 10 FT. ON CENTER, RANDOM SPACING, AVERAGING 8 FT. ON CENTER, APPROXIMATELY 680 PLANTS PER ACRE.

REFORESTATION

MIXTURE, TYPE, SIZE, AND FURNISH SHALL CONFORM TO THE FOLLOWING:

25%	LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in – 18 in BR
25%	PLATANUS OCCIDENTALIS	SYCAMORE	12 in – 18 in BR
25%	FRAXINUS PENNSYLVANICA	GREEN ASH	12 in – 18 in BR
25%	BETULA NIGRA	RIVER BIRCH	12 in – 18 in BR

PROJECT: 17BP.1.R.67

HYDE COUNTY

STATION: 13+65.90 -L-

REPLACES BRIDGE NO. 470056

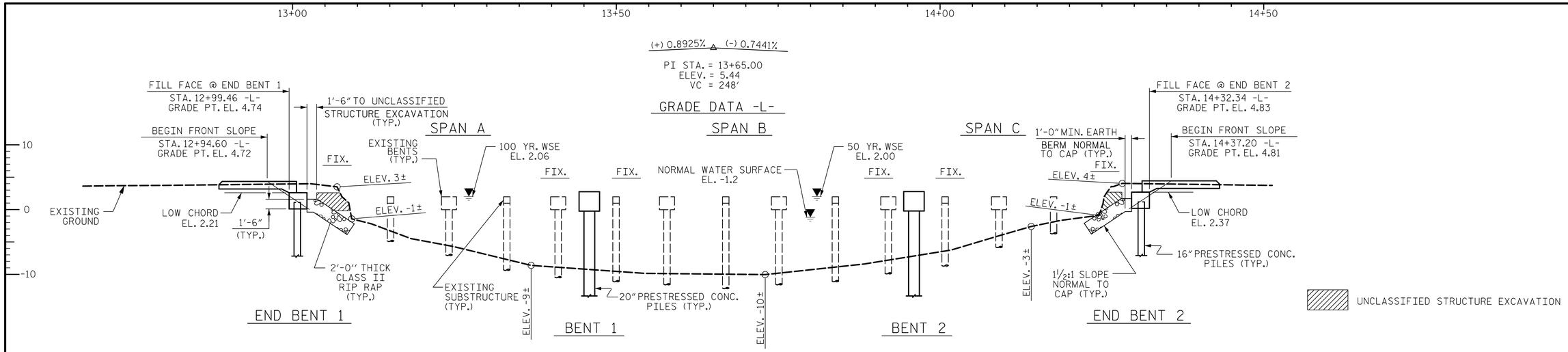
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

EROSION CONTROL PLAN

BRIDGE #470056
ON US 264
OVER LONG SHOAL RIVER

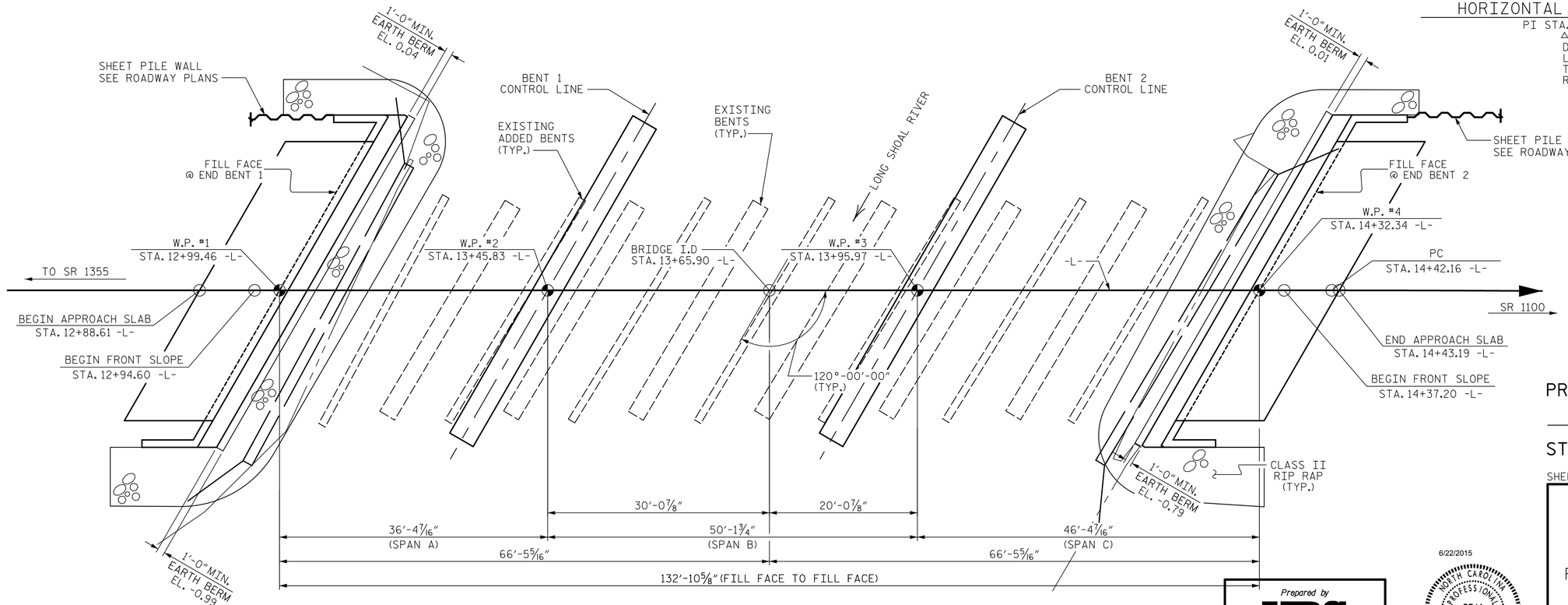
36'-6" CLEAR ROADWAY - 120° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	RF-1
1			1			TOTAL SHEETS
2			2			5



SECTION ALONG -L-

(SECTIONS AT END BENTS AND BENTS ARE TAKEN AT RIGHT ANGLES)



PLAN

PILES ARE NOT SHOWN IN PLAN VIEW

HORIZONTAL CURVE DATA -L-

PI STA.=14+92.94 -L-
Δ=1°-14'-17.0" RT.
D=1°-13'-8.60"
L=101.56'
T=50.78'
R=4700.00'

PROJECT NO. 17BP.1.R.67

HYDE COUNTY

STATION: 13+65.90-L-

SHEET 1 OF 2 REPLACES BRIDGE No. 470056

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON US 264 OVER LONG SHOAL RIVER BETWEEN SR 1355 AND SR 1100

36'-6" CLEAR ROADWAY - 120° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			40

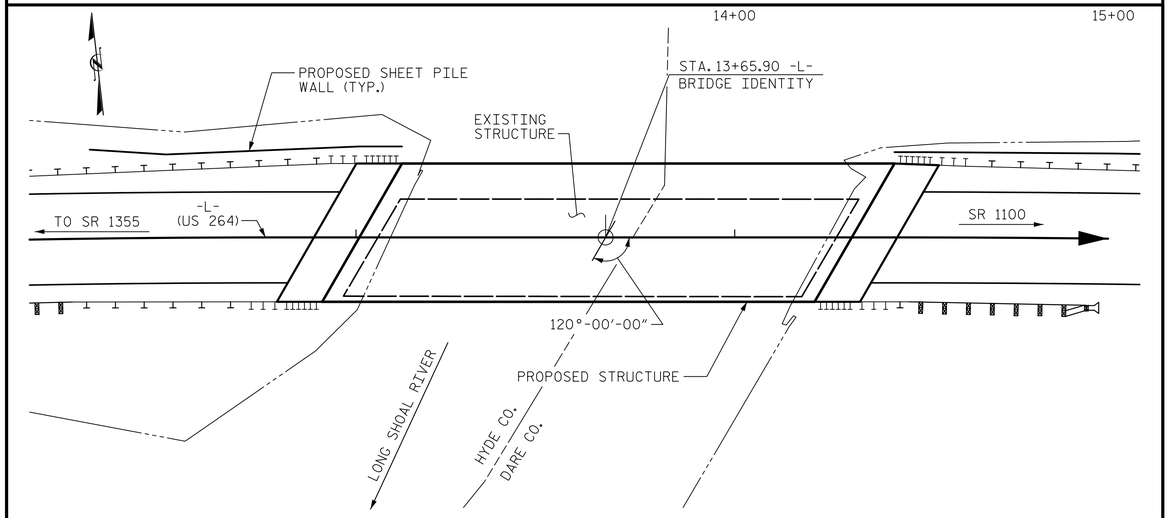
DRAWN BY : Z. H. BROWN DATE : 3/13/15
CHECKED BY : R. L. WHITCHER DATE : 3/15/15
DESIGNED BY : M. K. TOM DATE : 7/23/14

Prepared by
URS
URS Corporation - North Carolina
1600 Perimeter Park Drive, Suite 400
Morrisville, NC 27560
PHONE: (919) 461-1100 FAX: (919) 461-1415
NC LIC.# C-2243

6/22/2015
NORTH CAROLINA PROFESSIONAL SEAL 039173 ENGINEER MATTHEW K. TOM
Docusigned by: Matthew K. Tom 749E6F30B64442A...

6/17/2015
S:\Hyde 56\Structures\Submittals\2015_05_19 Final Design and Tracings\Drawings\01 Hyde 56_GD_01.dgn
matt_tom

TBM-1: EL. 3.09 FT., N 704537 E 2923897, BL STATION 12+71.14 27 LEFT
RAILROAD SPIKE IN NORTH EP OF US 264



FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH

NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASTHO LRFD BRIDGE DESIGN SPECIFICATIONS FOR SEISMIC ZONE 1.

THIS STRUCTURE CONTAINS THE NECESSARY CORROSION PROTECTION REQUIRED FOR A CORROSIVE SITE.

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURE, SEE SPECIAL PROVISIONS.

MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 24 FT TO THE LEFT AND 25 FT TO THE RIGHT OF THE CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICAITONS.

CLASS AA CONCRETE SHALL BE USED IN ALL CAST-IN-PLACE COLUMNS, BENT CAPS, PILE CAPS, AND FOOTINGS, AND SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR IN ACCORDANCE WITH THE STANDARD SPECIFICAITONS.

ALL BAR SUPPORTS USED IN THE PARAPET, BENT CAPS, END BENTS CAPS AND ALL INCIDENTAL REINFORCING STEEL SHALL BE EPOXY COATED IN ACCORDANCE WITH THE STANDARD SPECIFICAITONS.

THE CONCRETE IN THE BENT CAPS, END BENT CAPS, AND PILES OF BENT NO. 1 & 2, AND END BENTS NO. 1 & 2 SHALL CONTAIN SILICA FUME. SILICA FUME SHALL BE SUBSTITUTED FOR 5% OF THE PORTLAND CEMENT BY WEIGHT. IF THE OPTION OF CLASS F FLY ASH FOR PORTLAND CEMENT IS EXERCIED, THEN THE RATE OF FLY ASH SUBSTITUTION SHALL BE REDUCED TO 1.0 LB OF FLY ASH PER 1.0 LB OF CEMENT. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE VARIOUS PAY ITEMS.

AFTER SERVING AS A TEMPORARY STRUCTURE THE EXISTING STRUCTURE CONSISTING OF 14 SPANS TOTALING 119'-0", EIGHTEEN (18) TIMBER JOIST, ON REINFORCED CONCRETE CAPS WITH TIMBER PILES, AND 26'-2" CLEAR ROADWAY TO BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECASSARY DURING THE LIFE OF THE PROJECT.

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 TRANSPORATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED 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.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

FOR CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.

FOUNDATION NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICIATIONS.

PILES AT END BENTS No. 1 AND 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 60 AND 70 TONS PER PILE, RESPECTIVELY.

DRIVE PILES AT END BENTS No. 1 AND 2 TO A REQUIRED DRIVING RESISTANCE OF 100 AND 120 TONES PER PILE, RESPECTIVELY.

PILES AT BENTS No. 1 AND 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 105 AND 125 TONS PER PILE, RESPECTIVELY.

DRIVE PILES AT BENTS No. 1 AND 2 TO A REQUIRED DRIVING RESISTANCE OF 205 AND 230 TONS PER PILE, RESPECTIVELY. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWNDRAG OR SCOUR.

INSTALL PILES AT BENT No. 1 AND 2 TO A TIP ELEVATION NO HIGHER THAN -52 FT.

THE SCOUR CRITICAL ELEVATION FOR BENT No. 1 ND 2 IS ELEVATION -18 FT. SCOUR CRITICAL ELEVATION IS USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 15 TO 25 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENTS No. 1 AND 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 40 TO 55 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BENTS No. 1 AND 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

TESTING PILES WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING MAY BE REQUIRED. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PDA TESTING, SEE STANDARD SPECIFICATIONS AND FOR PILE DRIVING CRITERIA, SEE PILE DRIVING CRITERIA PROVISION.

STEEL PILE TIPS ARE REQUIRED FOR PRESTRESSED CONCRETE PILES AT END BENTS No. 1 AND 2, AND BENTS No. 1 AND 2. FOR STEEL PILE TIPS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

HYDRAULIC DATA

DESIGN DISCHARGE	= 1000 CFS.
FREQUENCY OF DESIGN FLOOD	= 50 YR.
DESIGN HIGH WATER ELEVATION	= 2.0 FT.
DRAINAGE AREA	= 6.9 SQ. MI.
BASE FLOOD DISCHARGE (Q100)	= 1200 CFS.
BASE HIGH WATER ELEVATION	= 2.06 FT.

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 2920 CFS
FREQUENCY OF OVERTOPPING FLOOD	= 500(+) YR.
OVERTOPPING FLOOD ELEVATION	= 2.3 FT.*

*NOTE: OVERTOPPING ELEVATION AT ROADWAY LOW POINT STA. 10+15.00 -L-

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE AT STA 13+65.90 -L-	UNCLASSIFIED STRUCTURE EXCAVATION	GROOVING BRIDGE FLOORS	BRIDGE APPROACH SLAB	16" PRESTRESSED CONCRETE PILES		20" PRESTRESSED CONCRETE PILES		RIP RIP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	CONSTRUCTION OF SUBSTRUCTURE	CONSTRUCTION OF SUPERSTRUCTURE
	LUMP SUM	LUMP SUM	SQ. FT.	LUMP SUM	No.	LIN. FT.	No.	LIN. FT.	TON	SQ. YDS.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE			5025									
END BENT 1					8	560			116	130		
BENT 1							8	680.0				
BENT 2							8	720.0				
END BENT 2					8	600			117	130		
TOTAL	LUMP SUM	LUMP SUM	5025	LUMP SUM	16	1160	16	1400	233	260	LUMP SUM	LUMP SUM

PROJECT NO. 17BP.1.R.67
HYDE COUNTY
STATION: 13+65.90 -L-

SHEET 2 OF 2 REPLACES BRIDGE NO. 470056

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON US 264 OVER LONG SHOAL RIVER BETWEEN SR 1355 AND SR 1100
36'-6" CLEAR ROADWAY - 120° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			40

Prepared by
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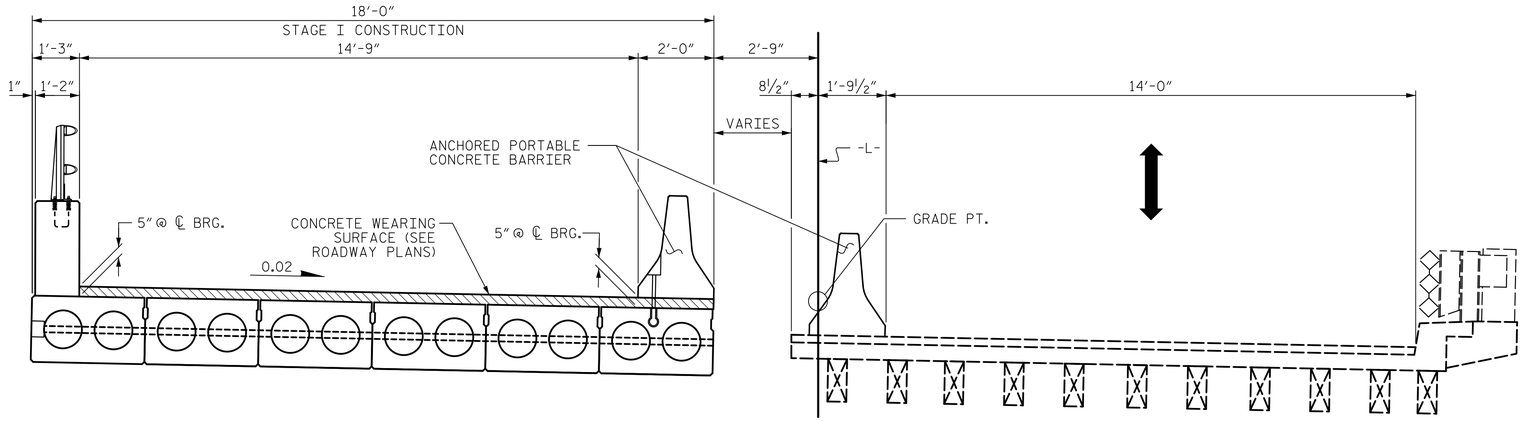
NC LIC.# C-2243

6/22/2015
NORTH CAROLINA PROFESSIONAL SEAL 039173 ENGINEER MATTHEW K. TOM
DocuSigned by: Matthew K. Tom 749E6F30B64442A...

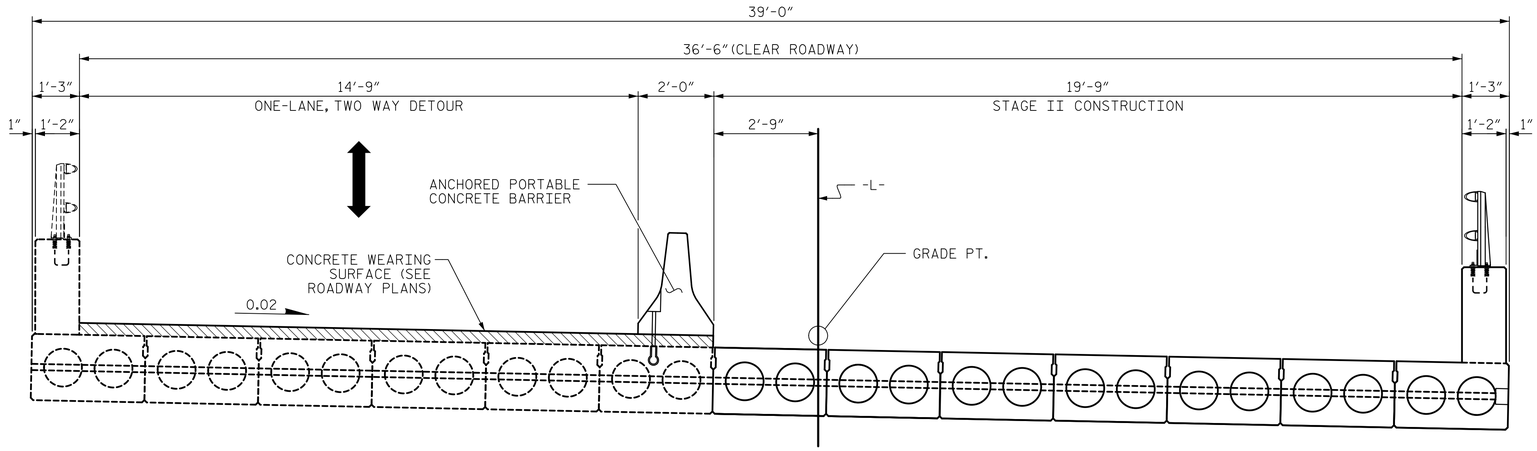
DRAWN BY : Z. H. BROWN DATE : 12/16/14
CHECKED BY : R. L. WHITCHER DATE : 1/7/15
DESIGNED BY : M. K. TOM DATE : 7/22/14

6/17/2015
S:\Hyde 56\Structures\Submittals\2015_05_19 FinalDesign and Tracings\Drawings\02 Hyde 56_GD_02.dgn
matt_tom



STAGE I CONSTRUCTION

CONSTRUCT STAGE I CONSTRUCTION, ATTACH TEMPORARY ANCHORED PORTABLE CONCRETE BARRIER USING FERRULE INSERTS ON CORED SLAB UNTIS, AND PLACE FIRST CONCRETE WEARING SURFACE COURSE ON STAGE I.



STAGE II CONSTRUCTION

REMOVE EXISTING STRUCTURE, CONSTRUCT STAGE II CONSTRUCTION.

PROJECT NO. 17BP.1.R.67

HYDE COUNTY

STATION: 13+65.90 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONSTRUCTION SEQUENCE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			40

Prepared by
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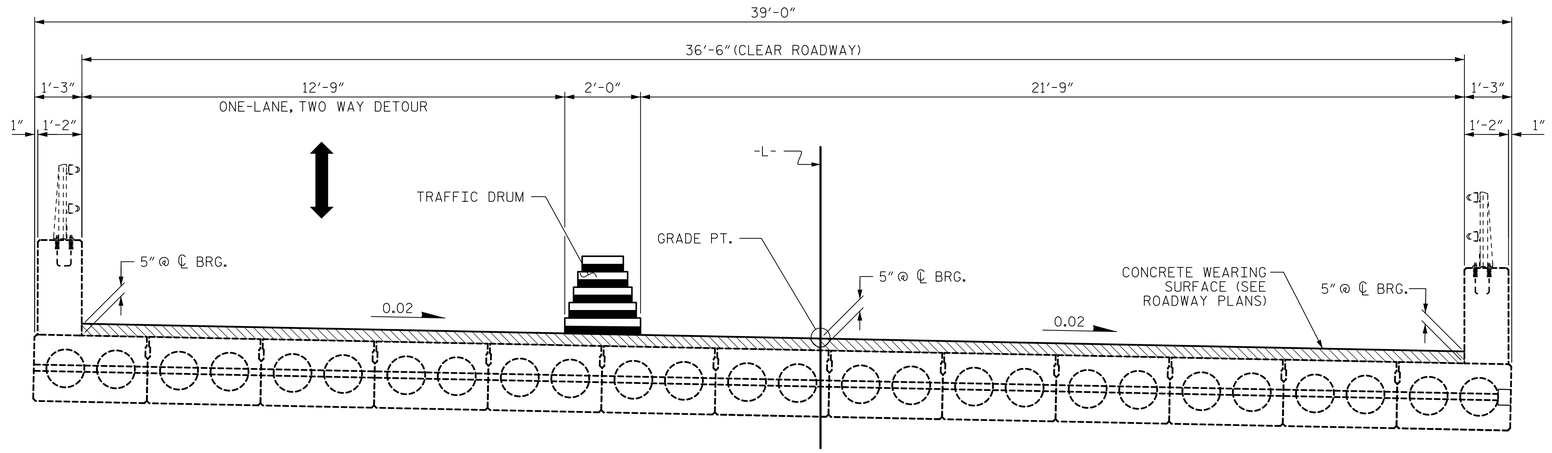
6/22/2015

NORTH CAROLINA PROFESSIONAL SEAL 039173 ENGINEER MATTHEW K. TOM

DocuSigned by: Matthew K. Tom 749E6F30B64442A...

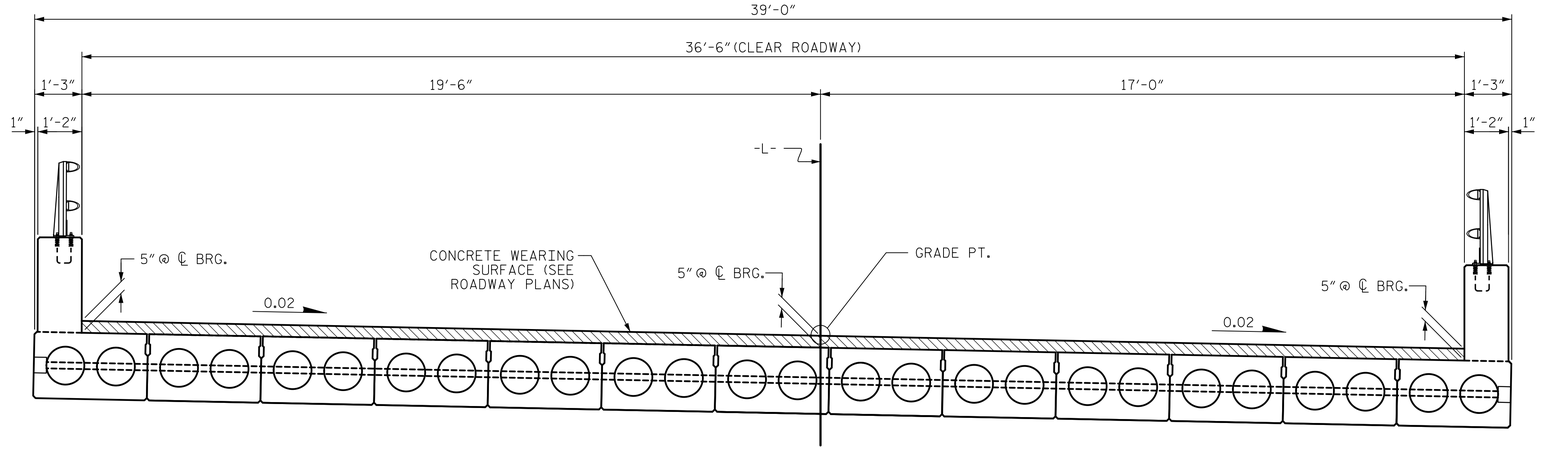
DRAWN BY : Z. H. BROWN DATE : 12/2/14
CHECKED BY : R. L. WHITCHER DATE : 1/5/15
DESIGNED BY : M. K. TOM DATE : 7/22/14

6/17/2015
S:\Hyde 56\Structures\Submittals\2015_05_19 Final Design and Tracings\Drawings\03 Hyde 56_CS_01.dgn
matt_tom



STAGE III CONSTRUCTION

PLACE TRAFFIC DRUMS AS SHOWN AND REMOVE TEMPORARY ANCHORED PORTABLE CONCRETE BARRIER IN STAGE I. FILL CONCRETE INSERTS WITH GROUT, PLACE REMAINING CONCRETE WEARING SURFACE.



FINAL CONSTRUCTION

RELOCATE TRAFFIC DRUMS AS NECESSARY.

PROJECT NO. 17BP.1.R.67

HYDE COUNTY

STATION: 13+65.90 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONSTRUCTION SEQUENCE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			40

Prepared by
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6/22/2015

NORTH CAROLINA PROFESSIONAL SEAL 039173 ENGINEER MATTHEW K. TOM

DocuSigned by: Matthew K. Tom
749E6F30B64442A...

DRAWN BY : Z. H. BROWN DATE : 12/2/14
CHECKED BY : R. L. WHITCHER DATE : 1/5/15
DESIGNED BY : M. K. TOM DATE : 7/22/14

6/17/2015
S:\Hyde 56\Structures\Submittals\2015_05_19 Final Design and Tracings\Drawings\04 Hyde 56_CS_02.dgn
matt_tom

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**	1.142	--	1.75	0.254	1.5	35′	EL	16.923	0.653	**1.14**	35′	EL	**1.692**	0.80	0.254	1.16	35′	EL	16.923	
		HL-93(Opr)	N/A	--	1.48	--	1.35	0.254	1.95	35′	EL	16.923	0.653	1.48	35′	EL	1.692	N/A	--	--	--	--	--	
		HS-20(Inv)	36.000	**2**	1.318	47.43	1.75	0.254	1.99	35′	EL	13.538	0.653	**1.32**	35′	EL	**1.692**	0.80	0.254	1.54	35′	EL	16.923	
		HS-20(Opr)	36.000	--	1.708	61.484	1.35	0.254	2.57	35′	EL	13.538	0.653	1.71	35′	EL	1.692	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.649	35.758	1.4	0.254	4.3	35′	EL	16.923	0.653	3.39	35′	EL	1.692	0.80	0.254	2.65	35′	EL	16.923	
		SNGARBS2	20.000	--	2.276	45.521	1.4	0.254	3.64	35′	EL	13.538	0.653	2.56	35′	EL	1.692	0.80	0.254	2.28	35′	EL	13.538	
		SNAGRIS2	22.000	--	2.27	49.949	1.4	0.254	3.61	35′	EL	13.538	0.653	2.44	35′	EL	1.692	0.80	0.254	2.27	35′	EL	13.538	
		SNCOTTS3	27.250	--	1.326	36.138	1.4	0.254	2.15	35′	EL	16.923	0.653	1.71	35′	EL	1.692	0.80	0.254	1.33	35′	EL	16.923	
		SNAGGRS4	34.925	--	1.228	42.883	1.4	0.254	1.99	35′	EL	16.923	0.653	1.53	35′	EL	1.692	0.80	0.254	1.23	35′	EL	16.923	
		SNS5A	35.550	--	1.192	42.369	1.4	0.254	1.93	35′	EL	16.923	0.653	1.61	35′	EL	1.692	0.80	0.254	1.19	35′	EL	16.923	
		SNS6A	39.950	--	1.15	45.932	1.4	0.254	1.87	35′	EL	16.923	0.653	1.52	35′	EL	1.692	0.80	0.254	1.15	35′	EL	16.923	
		SNS7B	42.000	**3**	1.098	46.1	1.4	0.254	1.78	35′	EL	16.923	0.653	1.55	35′	EL	1.692	0.80	0.254	**1.10**	35′	EL	**16.923**	
	TTST	TNAGRIT3	33.000	--	1.422	46.913	1.4	0.254	2.31	35′	EL	16.923	0.653	1.77	35′	EL	1.692	0.80	0.254	1.42	35′	EL	16.923	
		TNT4A	33.075	--	1.419	46.934	1.4	0.254	2.3	35′	EL	16.923	0.653	1.67	35′	EL	1.692	0.80	0.254	1.42	35′	EL	16.923	
		TNT6A	41.600	--	1.244	51.758	1.4	0.254	2.02	35′	EL	16.923	0.653	1.64	35′	EL	1.692	0.80	0.254	1.24	35′	EL	16.923	
		TNT7A	42.000	--	1.286	54.015	1.4	0.254	2.09	35′	EL	16.923	0.653	1.52	35′	EL	1.692	0.80	0.254	1.29	35′	EL	16.923	
		TNT7B	42.000	--	1.263	53.051	1.4	0.254	2.05	35′	EL	16.923	0.653	1.48	35′	EL	1.692	0.80	0.254	1.26	35′	EL	16.923	
		TNAGRIT4	43.000	--	1.279	55.012	1.4	0.254	2.06	35′	EL	13.538	0.653	1.42	35′	EL	1.692	0.80	0.254	1.28	35′	EL	16.923	
		TNAGT5A	45.000	--	1.182	53.19	1.4	0.254	1.92	35′	EL	16.923	0.653	1.5	35′	EL	1.692	0.80	0.254	1.18	35′	EL	16.923	
		TNAGT5B	45.000	--	1.14	51.296	1.4	0.254	1.85	35′	EL	16.923	0.653	1.34	35′	EL	1.692	0.80	0.254	1.14	35′	EL	16.923	

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)

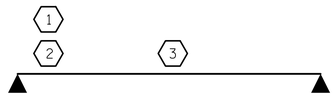
(2) DESIGN LOAD RATING (HS-20)

(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. 17BP.1.R.67

HYDE COUNTY

STATION: 13+65.90 -L-

SHEET 1 OF 3

ASSEMBLED BY : M. K. TOM	DATE : 12/19/14
CHECKED BY : R. L. WHITCHER	DATE : 2/11/15
DESIGNED BY : M. K. TOM	DATE : 10/19/14
DRAWN BY : CVC 6/10	
CHECKED BY : DNS 6/10	

Prepared by
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6/22/2015

NORTH CAROLINA PROFESSIONAL SEAL 039173 ENGINEER MATTHEW K. TOM

DocuSigned by: Matthew K. Tom 749E6F30B64442A...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

LRFR SUMMARY FOR 35′ CORED SLAB UNIT 60° SKEW & 120° SKEW (NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			40

STD. NO. 21LRFR1_60&120S_35L

6/17/2015
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matt_tom

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	1.35	--	1.75	0.25	1.74	50′	EL	24.423	0.656	**1.35**	50′	EL	**9.769**	0.80	0.25	1.59	50′	EL	24.423	
		HL-93(Opr)	N/A	--	1.75	--	1.35	0.25	2.25	50′	EL	24.423	0.656	1.75	50′	EL	9.769	N/A	--	--	--	--	--	
		HS-20(Inv)	36.000	2	1.586	57.108	1.75	0.25	2.15	50′	EL	24.423	0.656	**1.59**	50′	EL	**9.769**	0.80	0.25	1.97	50′	EL	24.423	
		HS-20(Opr)	36.000	--	2.056	74.028	1.35	0.25	2.79	50′	EL	24.423	0.656	2.06	50′	EL	9.769	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SV	SNSH	13.500	--	4.009	54.117	1.4	0.25	5.47	50′	EL	24.423	0.656	4.31	50′	EL	9.769	0.80	0.25	4.01	50′	EL	24.423	
		SNGARBS2	20.000	--	3.168	63.352	1.4	0.25	4.32	50′	EL	24.423	0.656	3.19	50′	EL	9.769	0.80	0.25	3.17	50′	EL	24.423	
		SNAGRIS2	22.000	--	3.009	66.192	1.4	0.25	4.18	50′	EL	19.538	0.656	3.01	50′	EL	9.769	0.80	0.25	3.07	50′	EL	24.423	
		SNCOTTS3	27.250	--	2	54.493	1.4	0.25	2.73	50′	EL	24.423	0.656	2.16	50′	EL	9.769	0.80	0.25	2.00	50′	EL	24.423	
		SNAGGRS4	34.925	--	1.739	60.742	1.4	0.25	2.37	50′	EL	24.423	0.656	1.88	50′	EL	9.769	0.80	0.25	1.74	50′	EL	24.423	
		SNS5A	35.550	--	1.696	60.292	1.4	0.25	2.31	50′	EL	24.423	0.656	1.96	50′	EL	9.769	0.80	0.25	1.70	50′	EL	24.423	
		SNS6A	39.950	--	1.586	63.364	1.4	0.25	2.16	50′	EL	24.423	0.656	1.82	50′	EL	9.769	0.80	0.25	1.59	50′	EL	24.423	
		SNS7B	42.000	--	1.512	63.487	1.4	0.25	2.06	50′	EL	24.423	0.656	1.85	50′	EL	9.769	0.80	0.25	1.51	50′	EL	24.423	
	TTST	TNAGRIT3	33.000	--	1.943	64.127	1.4	0.25	2.65	50′	EL	24.423	0.656	2.14	50′	EL	9.769	0.80	0.25	1.94	50′	EL	24.423	
		TNT4A	33.075	--	1.96	64.837	1.4	0.25	2.67	50′	EL	24.423	0.656	2.04	50′	EL	9.769	0.80	0.25	1.96	50′	EL	24.423	
		TNT6A	41.600	--	1.633	67.938	1.4	0.25	2.23	50′	EL	24.423	0.656	2	50′	EL	9.769	0.80	0.25	1.63	50′	EL	24.423	
		TNT7A	42.000	--	1.658	69.634	1.4	0.25	2.26	50′	EL	24.423	0.656	1.86	50′	EL	9.769	0.80	0.25	1.66	50′	EL	24.423	
		TNT7B	42.000	--	1.728	72.595	1.4	0.25	2.36	50′	EL	24.423	0.656	1.76	50′	EL	9.769	0.80	0.25	1.73	50′	EL	24.423	
		TNAGRIT4	43.000	--	1.64	70.537	1.4	0.25	2.24	50′	EL	24.423	0.656	1.69	50′	EL	9.769	0.80	0.25	1.64	50′	EL	24.423	
		TNAGT5A	45.000	--	1.532	68.95	1.4	0.25	2.09	50′	EL	24.423	0.656	1.75	50′	EL	9.769	0.80	0.25	1.53	50′	EL	24.423	
		TNAGT5B	45.000	3	1.501	67.548	1.4	0.25	2.05	50′	EL	24.423	0.656	1.6	50′	EL	9.769	0.80	0.25	**1.50**	50′	EL	**24.423**	

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.

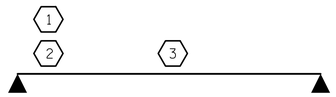
ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

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. 17BP.1.R.67

HYDE COUNTY

STATION: 13+65.90 -L-

SHEET 2 OF 3

ASSEMBLED BY : M. K. TOM	DATE : 12/19/14
CHECKED BY : R. L. WHITCHER	DATE : 2/11/15
DESIGNED BY: M. K. TOM	DATE : 10/19/14
DRAWN BY : CVC 6/10	
CHECKED BY : DNS 6/10	

Prepared by
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NC LIC.# C-2243

6/22/2015

NORTH CAROLINA PROFESSIONAL SEAL 039173 ENGINEER MATTHEW K. TOM

DocuSigned by: Matthew K. Tom 749E8F30B6442A...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

LRFR SUMMARY FOR 50′ CORED SLAB UNIT 60° SKEW & 120° SKEW (NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			40

STD. NO. 21LRFR1_60&120S_50L

6/17/2015
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matt_tom

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	1.179	--	1.75	0.251	1.48	45'	EL	21.923	0.654	**1.18**	45'	EL	**8.769**	0.80	0.251	1.20	45'	EL	21.923	
		HL-93(Opr)	N/A	--	1.529	--	1.35	0.251	1.92	45'	EL	21.923	0.654	1.53	45'	EL	8.769	N/A	--	--	--	--	--	
		HS-20(Inv)	36.000	2	1.36	48.973	1.75	0.251	1.82	45'	EL	21.923	0.654	**1.36**	45'	EL	**8.769**	0.80	0.251	1.47	45'	EL	21.923	
		HS-20(Opr)	36.000	--	1.763	63.484	1.35	0.251	2.36	45'	EL	21.923	0.654	1.76	45'	EL	8.769	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.873	38.783	1.4	0.251	4.44	45'	EL	21.923	0.654	3.59	45'	EL	8.769	0.80	0.251	2.87	45'	EL	21.923	
		SNGARBS2	20.000	--	2.321	46.427	1.4	0.251	3.59	45'	EL	21.923	0.654	2.69	45'	EL	8.769	0.80	0.251	2.32	45'	EL	21.923	
		SNAGRIS2	22.000	--	2.277	50.09	1.4	0.251	3.48	45'	EL	17.538	0.654	2.55	45'	EL	8.769	0.80	0.251	2.28	45'	EL	21.923	
		SNCOTTS3	27.250	--	1.434	39.088	1.4	0.251	2.22	45'	EL	21.923	0.654	1.81	45'	EL	8.769	0.80	0.251	1.43	45'	EL	21.923	
		SNAGGRS4	34.925	--	1.266	44.231	1.4	0.251	1.96	45'	EL	21.923	0.654	1.6	45'	EL	8.769	0.80	0.251	1.27	45'	EL	21.923	
		SNS5A	35.550	--	1.234	43.856	1.4	0.251	1.91	45'	EL	21.923	0.654	1.67	45'	EL	8.769	0.80	0.251	1.23	45'	EL	21.923	
		SNS6A	39.950	--	1.162	46.437	1.4	0.251	1.8	45'	EL	21.923	0.654	1.57	45'	EL	8.769	0.80	0.251	1.16	45'	EL	21.923	
		SNS7B	42.000	3	1.108	46.54	1.4	0.251	1.71	45'	EL	21.923	0.654	1.61	45'	EL	8.769	0.80	0.251	**1.11**	45'	EL	**21.923**	
	TTST	TNAGRIT3	33.000	--	1.427	47.083	1.4	0.251	2.21	45'	EL	21.923	0.654	1.83	45'	EL	8.769	0.80	0.251	1.43	45'	EL	21.923	
		TNT4A	33.075	--	1.442	47.687	1.4	0.251	2.23	45'	EL	21.923	0.654	1.74	45'	EL	8.769	0.80	0.251	1.44	45'	EL	21.923	
		TNT6A	41.600	--	1.21	50.352	1.4	0.251	1.87	45'	EL	21.923	0.654	1.71	45'	EL	8.769	0.80	0.251	1.21	45'	EL	21.923	
		TNT7A	42.000	--	1.234	51.826	1.4	0.251	1.91	45'	EL	21.923	0.654	1.59	45'	EL	8.769	0.80	0.251	1.23	45'	EL	21.923	
		TNT7B	42.000	--	1.285	53.952	1.4	0.251	1.99	45'	EL	21.923	0.654	1.52	45'	EL	8.769	0.80	0.251	1.28	45'	EL	21.923	
		TNAGRIT4	43.000	--	1.224	52.616	1.4	0.251	1.89	45'	EL	21.923	0.654	1.46	45'	EL	8.769	0.80	0.251	1.22	45'	EL	21.923	
		TNAGT5A	45.000	--	1.138	51.23	1.4	0.251	1.76	45'	EL	21.923	0.654	1.52	45'	EL	8.769	0.80	0.251	1.14	45'	EL	21.923	
		TNAGT5B	45.000	--	1.111	50.015	1.4	0.251	1.72	45'	EL	21.923	0.654	1.38	45'	EL	8.769	0.80	0.251	1.11	45'	EL	21.923	

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)

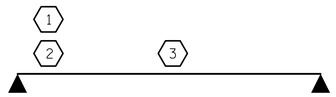
(2) DESIGN LOAD RATING (HS-20)

(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. 17BP.1.R.67

HYDE COUNTY

STATION: 13+65.90 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
LRFR SUMMARY FOR 45' CORED SLAB UNIT 60° SKEW & 120° SKEW
(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			40

Prepared by
URS
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1600 Perimeter Park Drive, Suite 400
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NC LIC.# C-2243

6/22/2015
NORTH CAROLINA PROFESSIONAL SEAL 039173 ENGINEER MATTHEW K. TOM
DocuSigned by: Matthew K. Tom 749E6F30B6442A...

ASSEMBLED BY :	M. K. TOM	DATE : 12/19/14
CHECKED BY :	R. L. WHITCHER	DATE : 2/11/15
DESIGNED BY :	M. K. TOM	DATE : 10/19/14
DRAWN BY : CVC	6/10	
CHECKED BY : DNS	6/10	

6/17/2015
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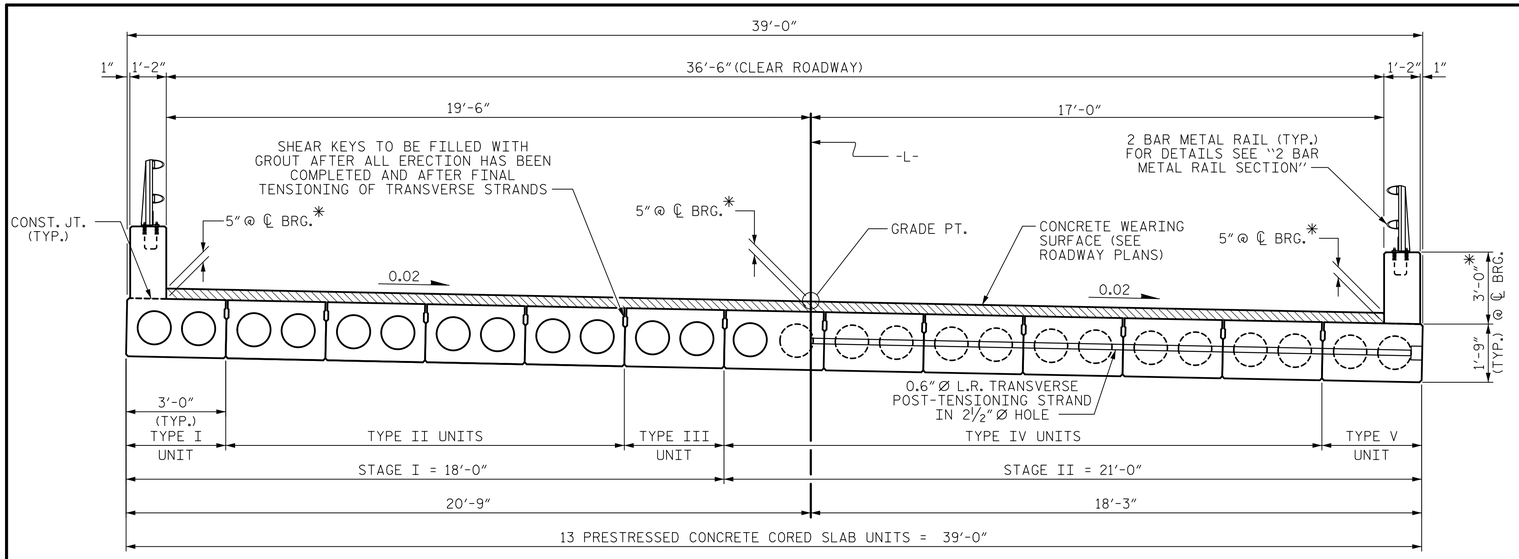
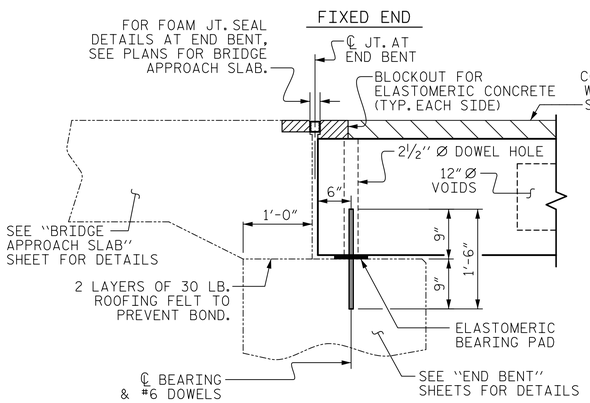
matt_tom

STD. NO. 21LRFR1_60&120S_45L

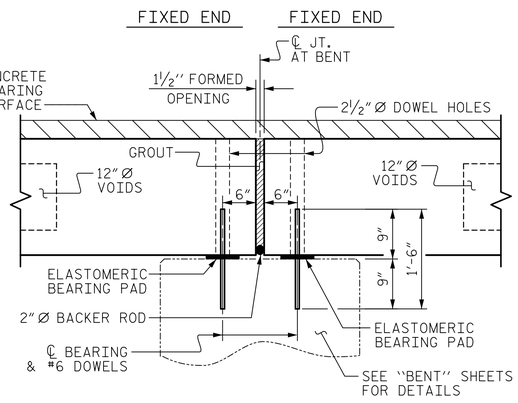


TYPICAL SECTION

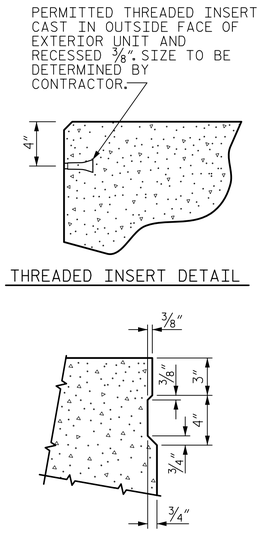
*-THE MAXIMUM BARRIER RAIL HEIGHT AND CONCRETE WEARING SURFACE THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND CONCRETE WEARING SURFACE THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND CONCRETE WEARING SURFACE THICKNESS SEE THE ″2 BAR METAL RAIL SECTION″ DETAIL.



SECTION AT END BENT

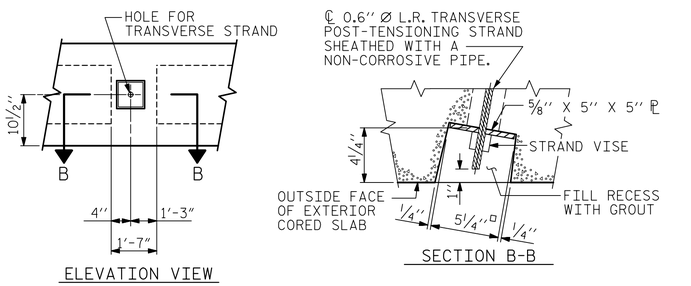


SECTION AT BENT



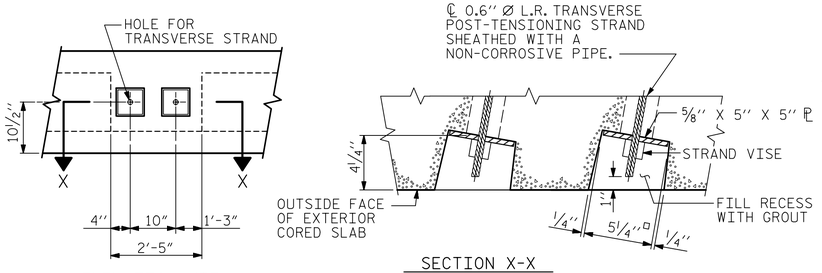
SHEAR KEY DETAIL

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



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

(STAGE II)



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

(STAGE I)

ASSEMBLED BY : L. H. JAMISON	DATE : 11/6/14		
CHECKED BY : M. K. TOM	DATE : 11/6/14		
DESIGNED BY : M. K. TOM	DATE : 9/12/14		
DRAWN BY : DGE 5/09	REV. 12/11	MAA/AAC	
CHECKED BY : BCH 6/09	REV. 8/14	MAA/TMG	

6/17/2015
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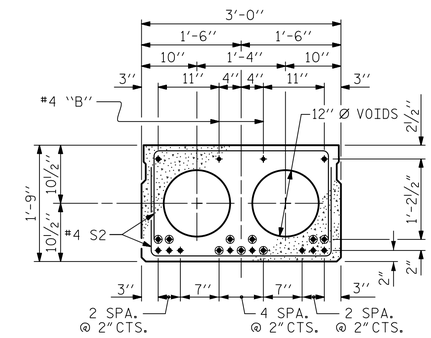
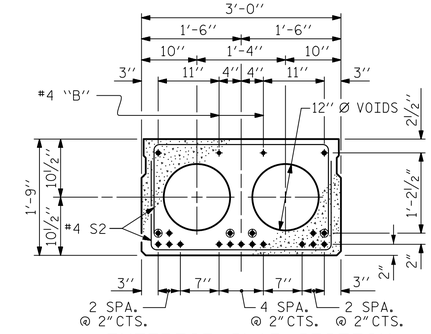
matt_tom



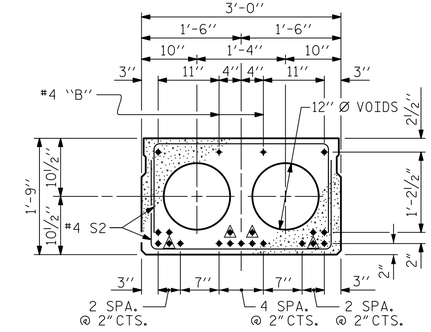
INTERIOR SLAB SECTION (35′ UNIT)

(10 STRANDS REQUIRED)



INTERIOR SLAB SECTION (45′ UNIT)

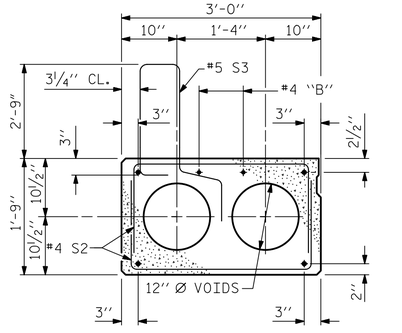
(15 STRANDS REQUIRED)



INTERIOR SLAB SECTION (50′ 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.

◉ 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

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.

PROJECT NO. 17BP.1.R.67

HYDE COUNTY

STATION: 13+65.90 -L-

Prepared by
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6/22/2015
NORTH CAROLINA PROFESSIONAL SEAL 039173 ENGINEER MATTHEW K. TOM
DocuSigned by: Matthew K. Tom
749E6F30B64442A...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

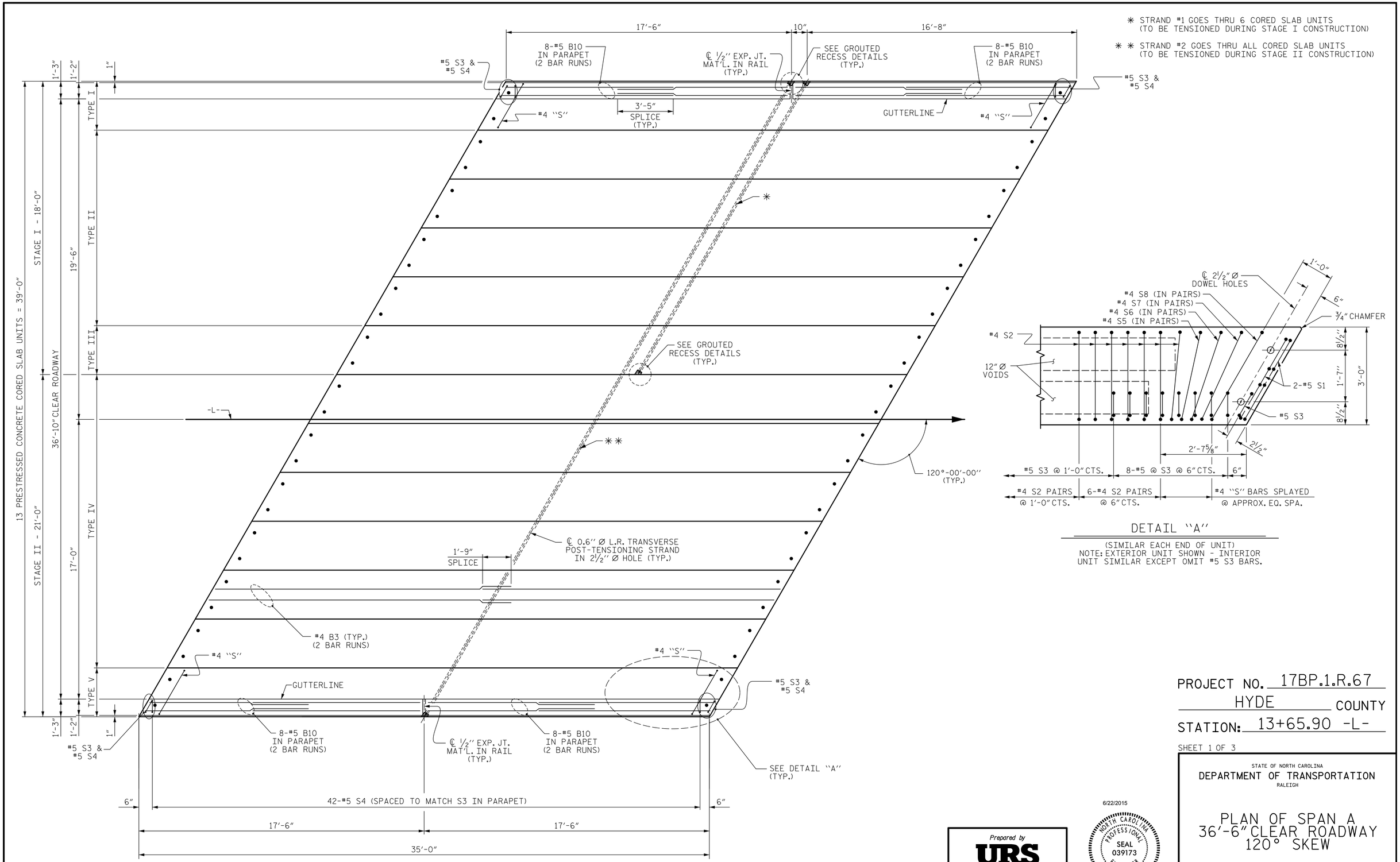
STANDARD
3′-0″ X 1′-9″
PRESTRESSED CONCRETE CORED SLAB UNIT
120° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			40

STD. NO. 21″PCS2_39_120S

✳ STRAND #1 GOES THRU 6 CORED SLAB UNITS (TO BE TENSIONED DURING STAGE I CONSTRUCTION)

✳ ✳ STRAND #2 GOES THRU ALL CORED SLAB UNITS (TO BE TENSIONED DURING STAGE II CONSTRUCTION)



DETAIL "A"

(SIMILAR EACH END OF UNIT)
NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

PLAN OF SPAN A

DRAWN BY : L. H. JAMISON DATE : 11/7/14
CHECKED BY : M. K. TOM DATE : 11/7/14
DESIGNED BY : M. K. TOM DATE : 9/12/14

6/17/2015
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PROJECT NO. 17BP.1.R.67
HYDE COUNTY
STATION: 13+65.90 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF SPAN A
36'-6" CLEAR ROADWAY
120° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			40

Prepared by
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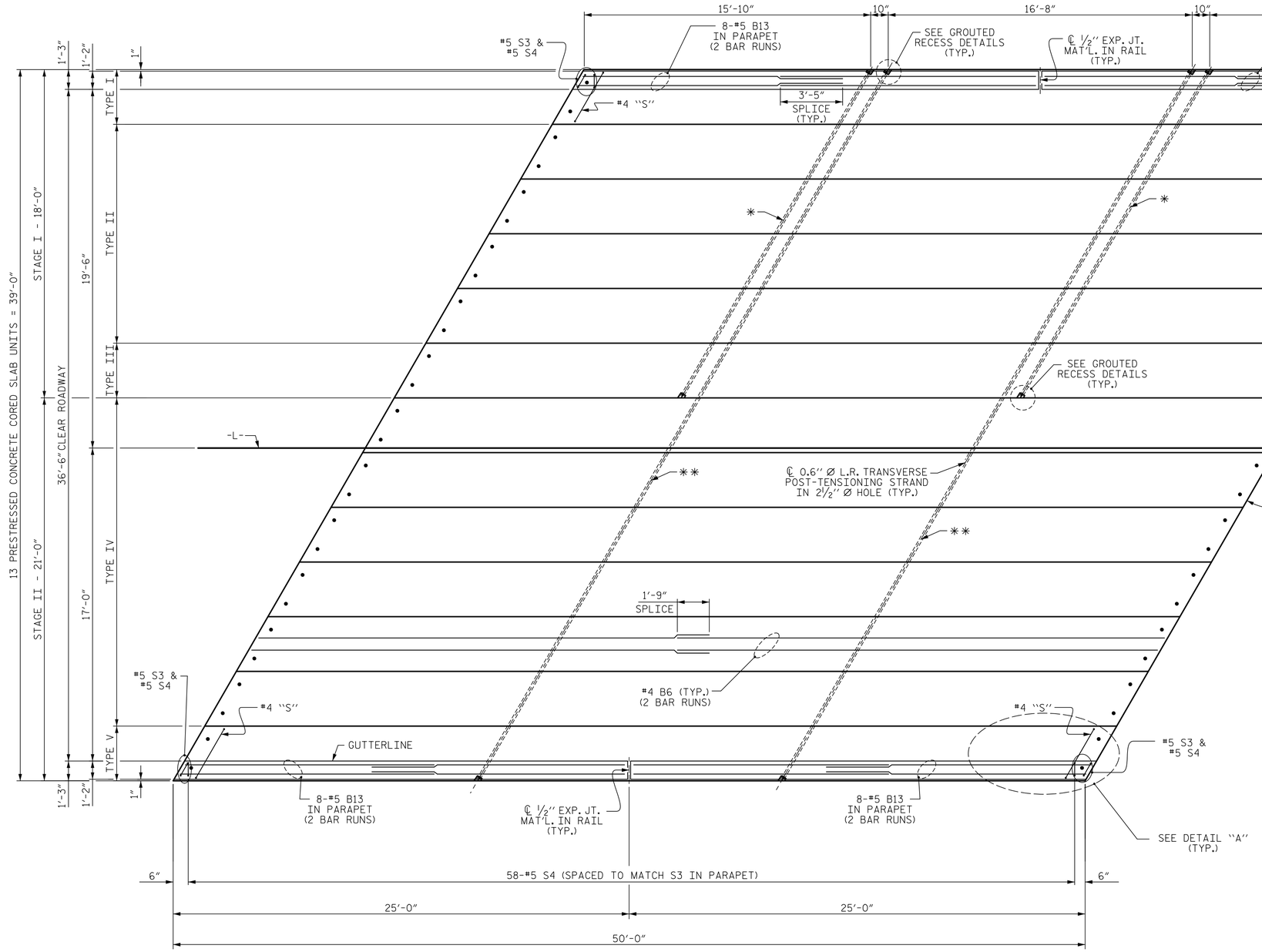
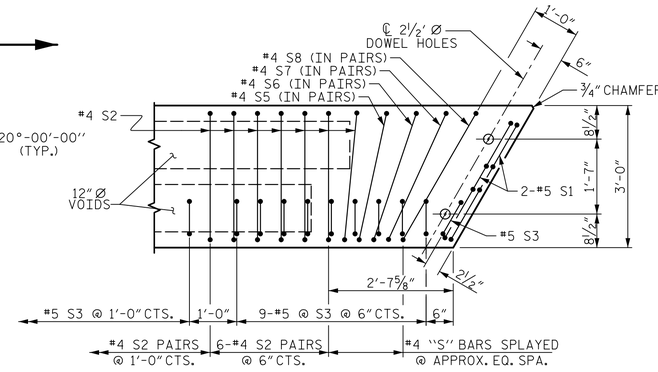
6/22/2015
NORTH CAROLINA PROFESSIONAL SEAL 039173 ENGINEER MATTHEW K. TOM
DocuSigned by: Matthew K. Tom
749E6F30B64442A...

* STRAND #1 GOES THRU 6 CORED SLAB UNITS
(TO BE TENSIONED DURING STAGE I CONSTRUCTION)

** STRAND #2 GOES THRU ALL CORED SLAB UNITS
(TO BE TENSIONED DURING STAGE II CONSTRUCTION)





DETAIL "A"

(SIMILAR EACH END OF UNIT)
NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

PLAN OF SPAN B

PROJECT NO. 17BP.1.R.67

HYDE COUNTY

STATION: 13+65.90 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF SPAN B
36'-6" CLEAR ROADWAY
120° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			40

DRAWN BY : L. H. JAMISON DATE : 11/7/14
CHECKED BY : M. K. TOM DATE : 11/7/14
DESIGNED BY : M. K. TOM DATE : 9/12/14

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6/17/2015
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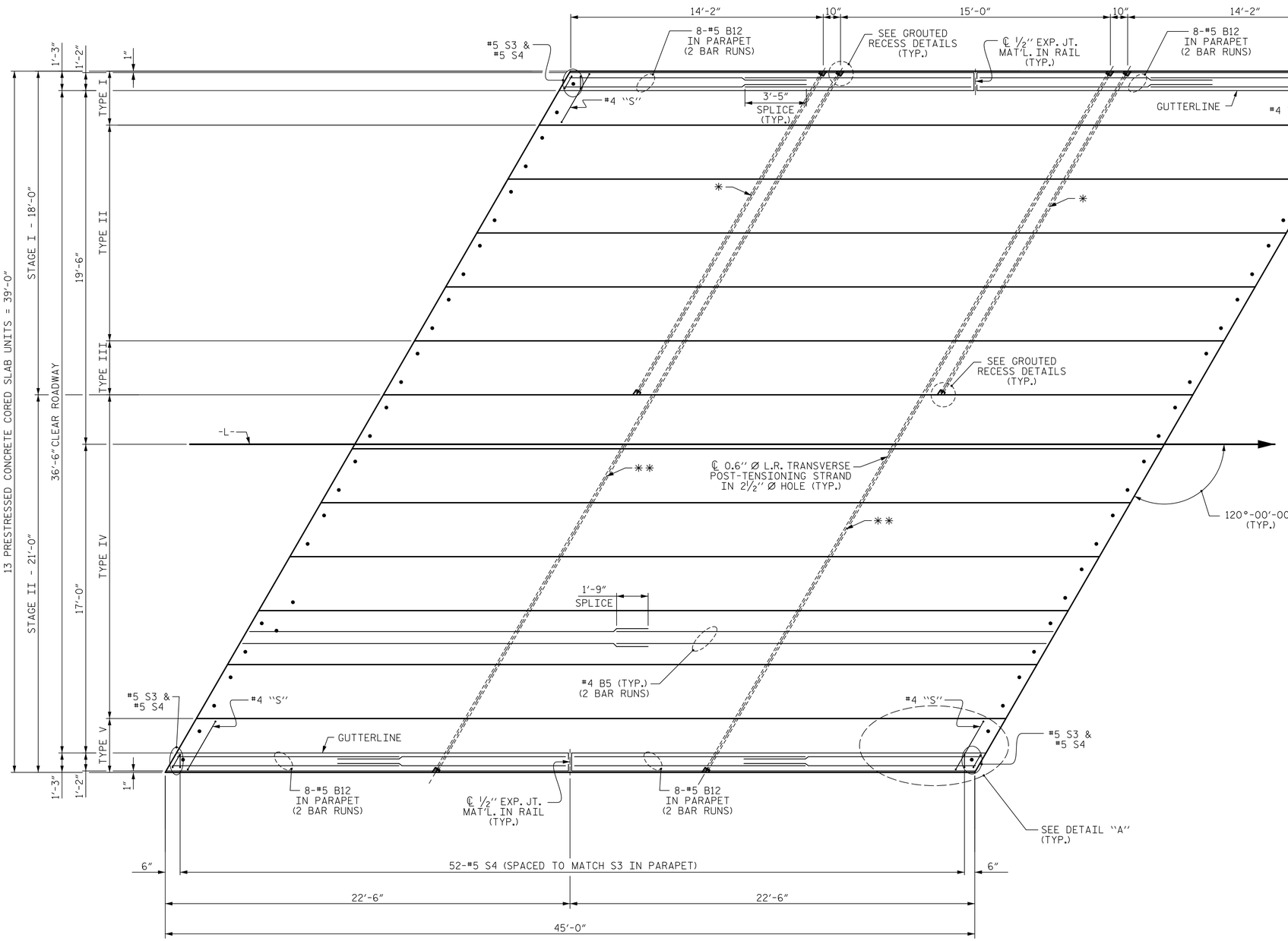
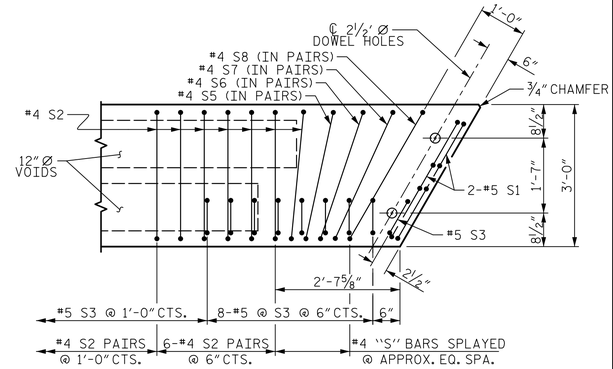
matt_tom

✳ STRAND #1 GOES THRU 6 CORED SLAB UNITS
(TO BE TENSIONED DURING STAGE I CONSTRUCTION)

✳ ✳ STRAND #2 GOES THRU ALL CORED SLAB UNITS
(TO BE TENSIONED DURING STAGE II CONSTRUCTION)



PLAN OF SPAN C



DETAIL ″A″

(SIMILAR EACH END OF UNIT)
NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

PROJECT NO. 17BP.1.R.67

HYDE COUNTY

STATION: 13+65.90 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF SPAN C
36′-6″ CLEAR ROADWAY
120° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			40

DRAWN BY : L. H. JAMISON DATE : 11/7/14
CHECKED BY : M. K. TOM DATE : 11/7/14
DESIGNED BY : M. K. TOM DATE : 9/12/14

Prepared by
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6/22/2015
NORTH CAROLINA PROFESSIONAL SEAL 039173 ENGINEER MATTHEW K. TOM
DocuSigned by: Matthew K. Tom
749E6F30B6442A...

6/17/2015
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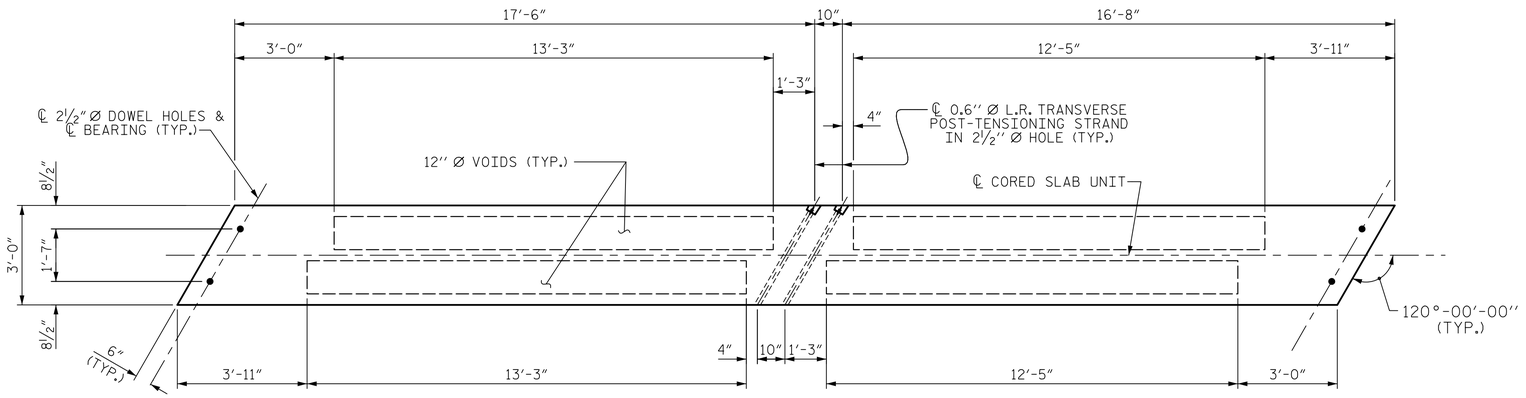
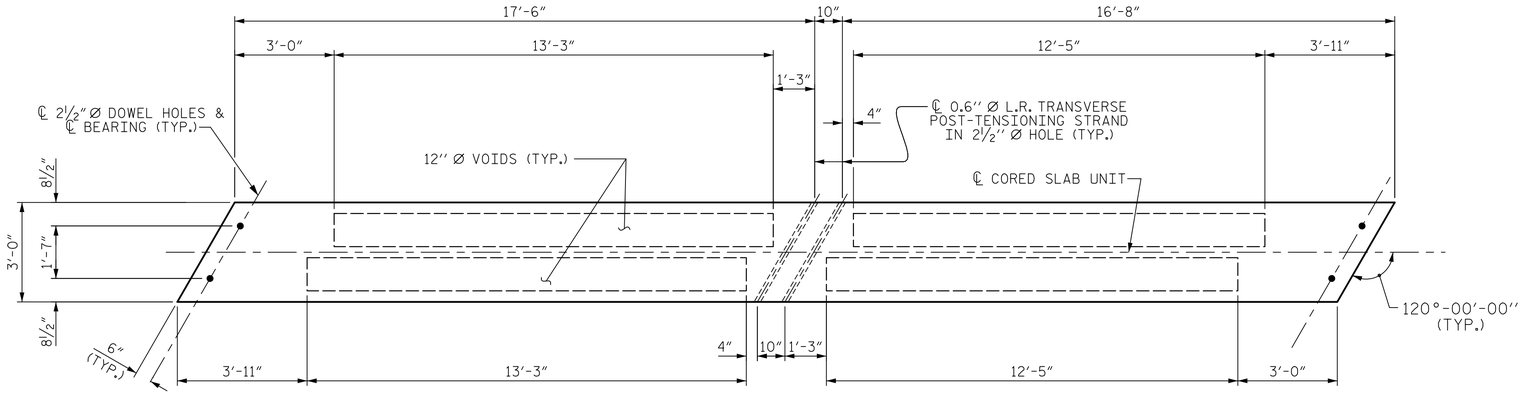
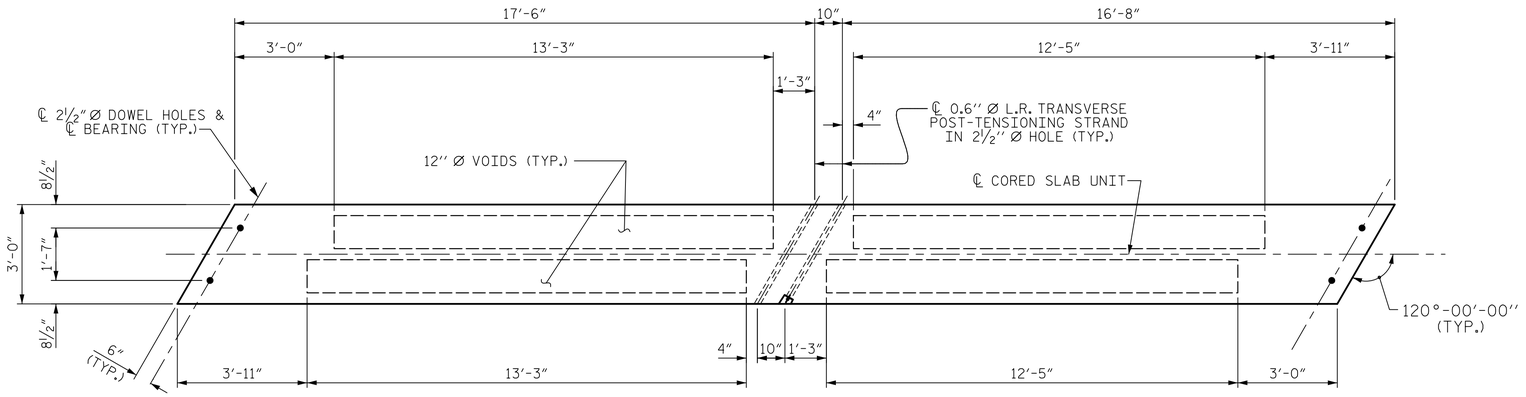
matt_tom



PLAN OF SPAN A EXTERIOR CORED SLAB UNIT - TYPE I



PLAN OF SPAN A INTERIOR CORED SLAB UNIT - TYPE II



PLAN OF SPAN A INTERIOR CORED SLAB UNIT - TYPE III

Prepared by
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Morrisville, NC 27560
PHONE: 919 461-1100 FAX: 919 461-1415
NC LIC.# C-2243

PROJECT NO. 17BP.1.R.67

HYDE COUNTY

STATION: 13+65.90 -L-

SHEET 1 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3′-0″ X 1′-9″ PRESTRESSED CONCRETE CORED SLAB UNIT DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			40

6/22/2015

NORTH CAROLINA PROFESSIONAL SEAL 039173 ENGINEER MATTHEW K. TOM

DocuSigned by: Matthew K. Tom 749E6F30B64442A...

DRAWN BY : L. H. JAMISON DATE : 11/11/14
CHECKED BY : M. K. TOM DATE : 11/14/14
DESIGNED BY : M. K. TOM DATE : 9/12/14

6/17/2015
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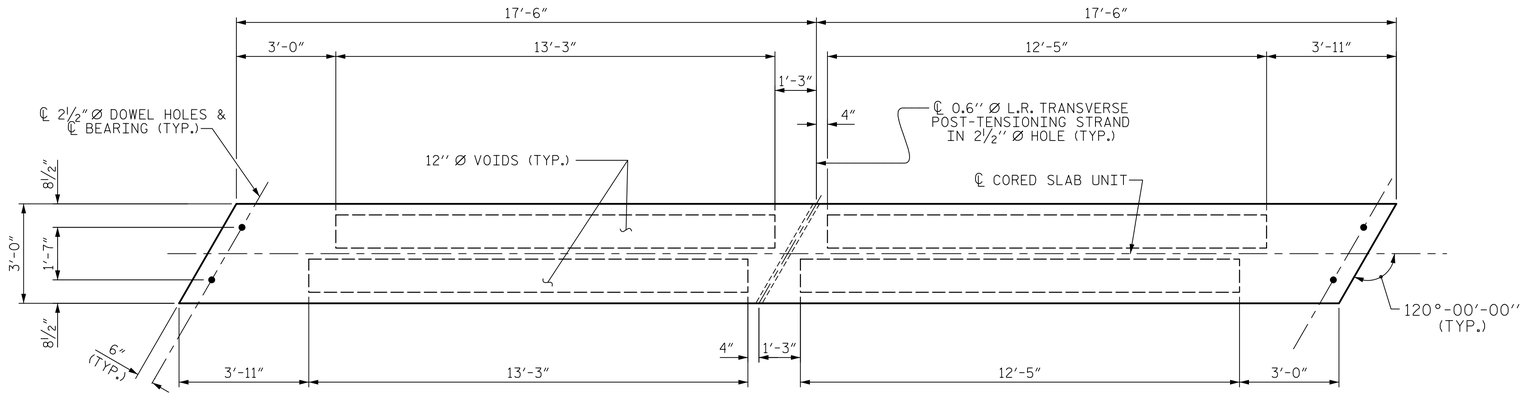
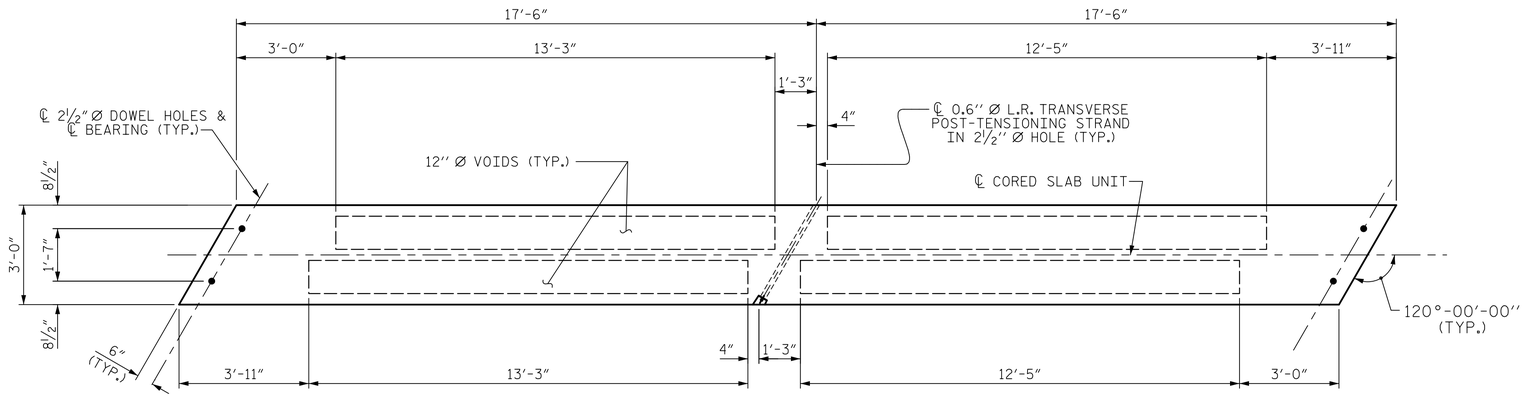
matt_tom



PLAN OF SPAN A INTERIOR CORED SLAB UNIT - TYPE IV



PLAN OF SPAN A EXTERIOR CORED SLAB UNIT - TYPE V

PROJECT NO. 17BP.1.R.67

HYDE COUNTY

STATION: 13+65.90 -L-

SHEET 2 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3′-0″ X 1′-9″ PRESTRESSED CONCRETE CORED SLAB UNIT DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			40

Prepared by
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6/22/2015

NORTH CAROLINA PROFESSIONAL SEAL 039173 ENGINEER MATTHEW K. TOM

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DESIGNED BY : M. K. TOM DATE : 9/12/14

6/17/2015
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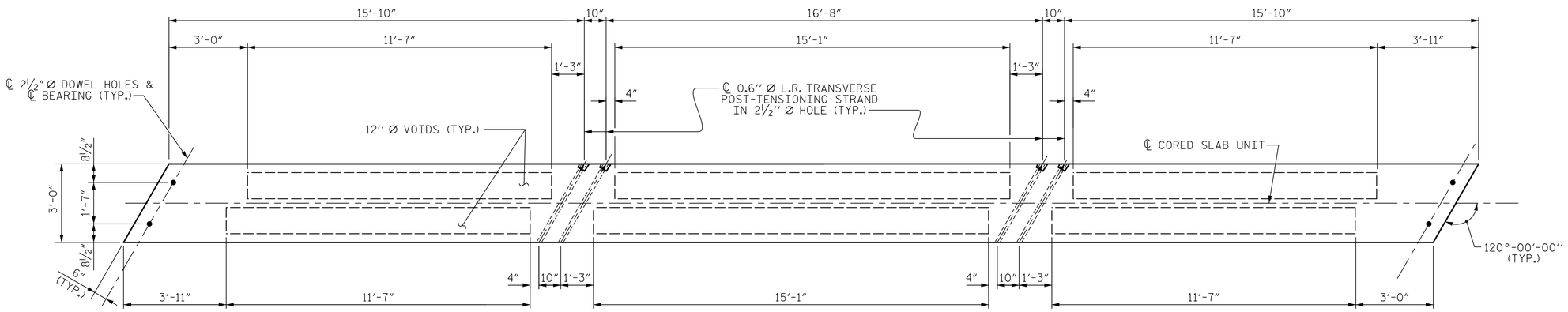
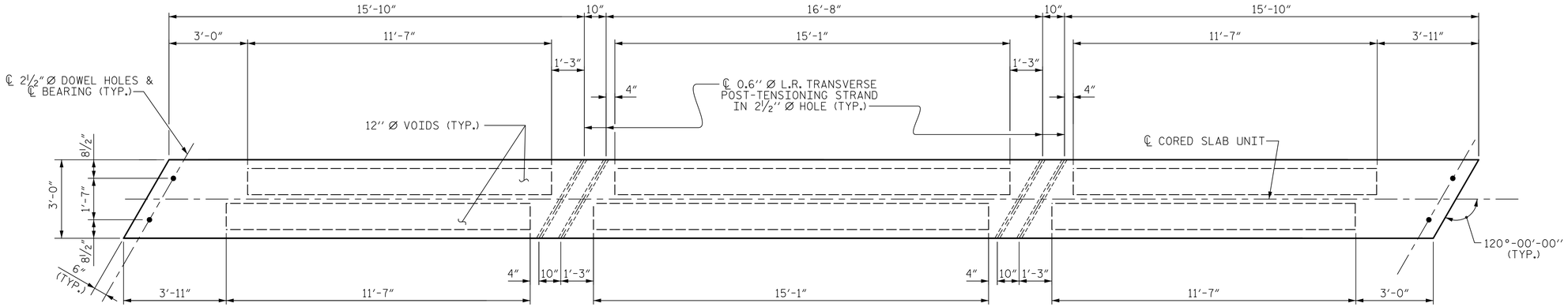
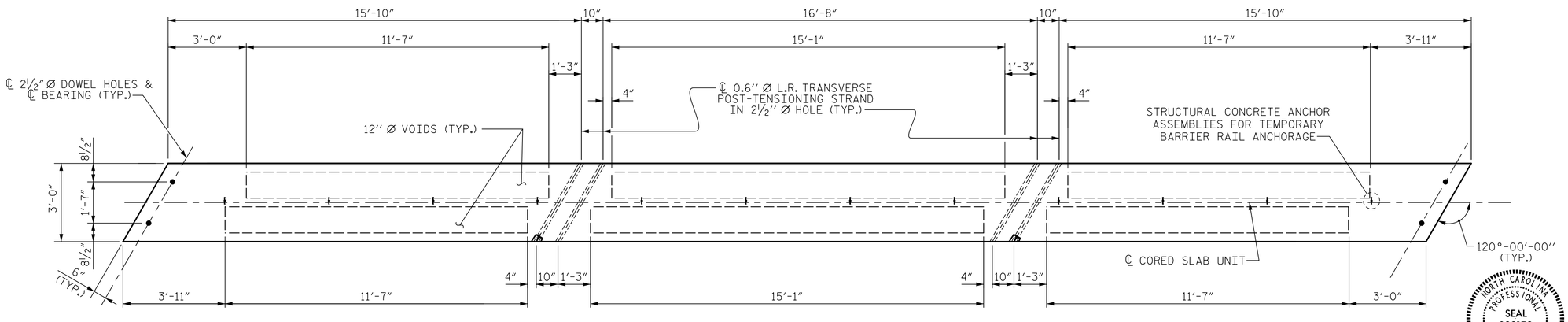


PLAN OF SPAN B EXTERIOR CORED SLAB UNIT - TYPE I



PLAN OF SPAN B INTERIOR CORED SLAB UNIT - TYPE II



PLAN OF SPAN B INTERIOR CORED SLAB UNIT - TYPE III

DRAWN BY :	L. H. JAMISON	DATE :	11/11/14
CHECKED BY :	M. K. TOM	DATE :	11/14/14
DESIGNED BY :	M. K. TOM	DATE :	9/12/14

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PROJECT NO. 17BP.1.R.67

HYDE COUNTY

STATION: 13+65.90 -L-

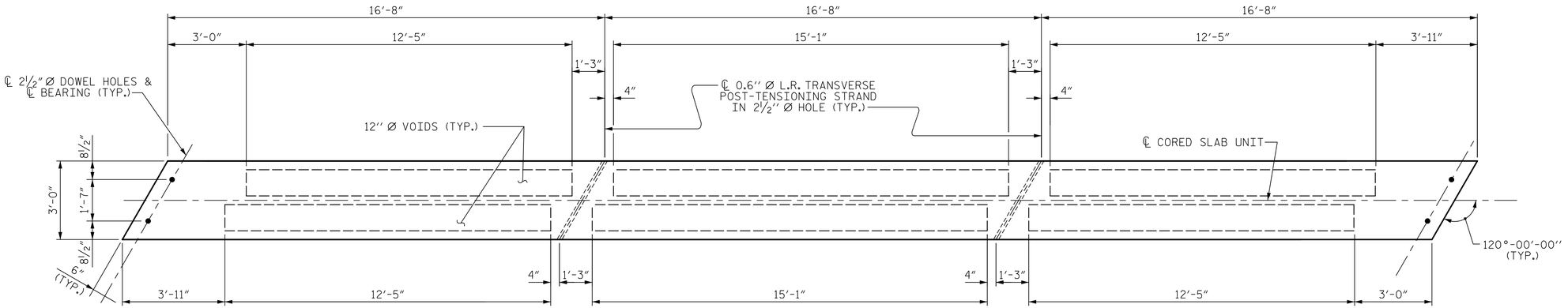
SHEET 3 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

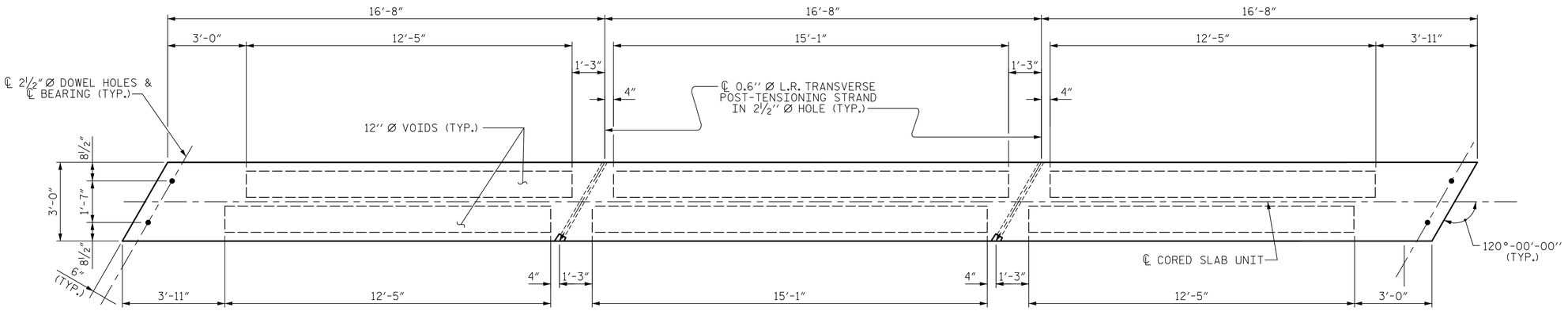
3′-0″ X 1′-9″ PRESTRESSED CONCRETE CORED SLAB UNIT DETAILS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 039173 MATTHEW K. TOM
6/22/2015
DocuSigned by: Matthew K. Tom 749E6F30B64442A...

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			40



PLAN OF SPAN B INTERIOR CORED SLAB UNIT - TYPE IV



PLAN OF SPAN B EXTERIOR CORED SLAB UNIT - TYPE V

PROJECT NO. 17BP.1.R.67

HYDE COUNTY

STATION: 13+65.90 -L-

SHEET 4 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3′-0″ X 1′-9″ PRESTRESSED CONCRETE CORED SLAB UNIT DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			40

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6/22/2015

NORTH CAROLINA PROFESSIONAL SEAL 039173 ENGINEER MATTHEW K. TOM

DocuSigned by: Matthew K. Tom 749E6F30B64442A...

DRAWN BY : L. H. JAMISON DATE : 11/11/14
CHECKED BY : M. K. TOM DATE : 11/14/14
DESIGNED BY : M. K. TOM DATE : 9/12/14

6/17/2015
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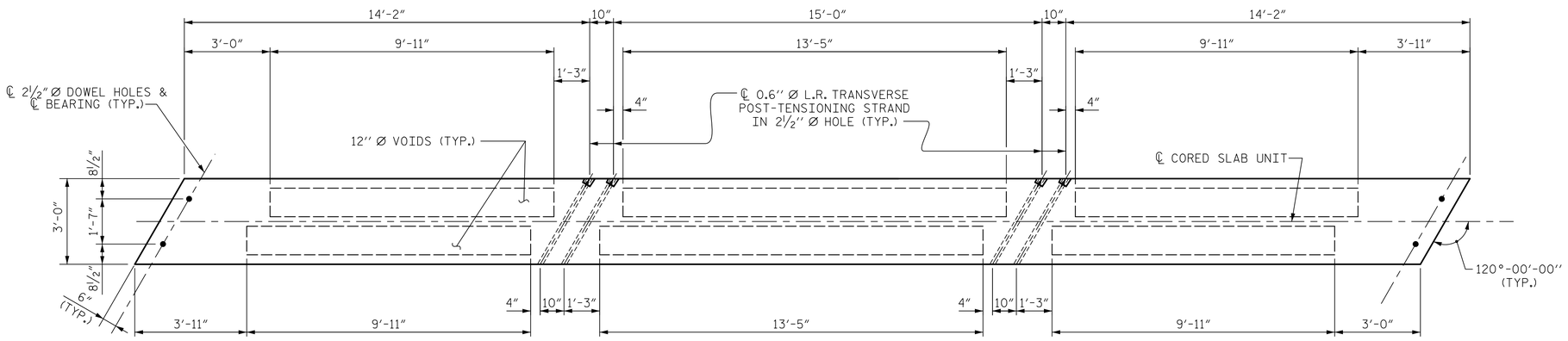
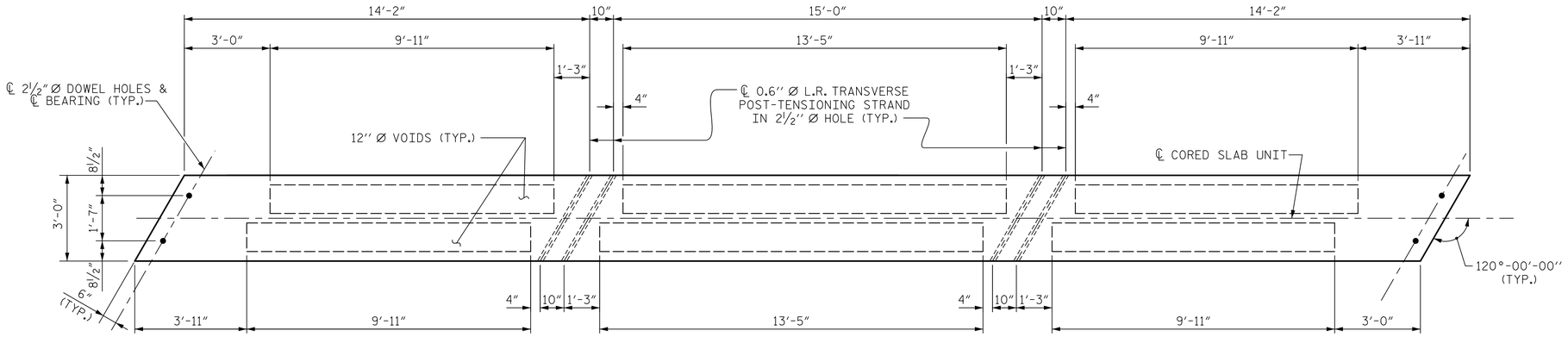
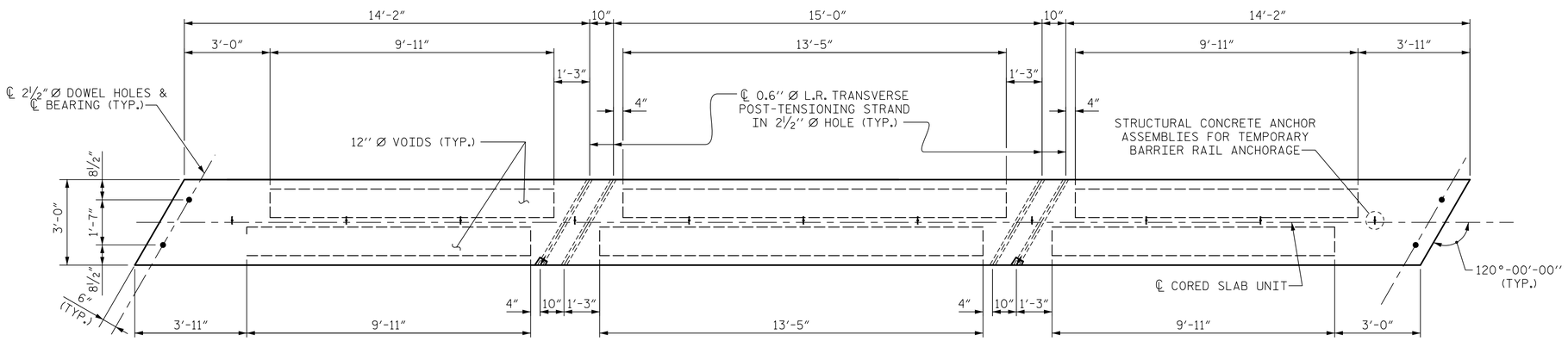


PLAN OF SPAN C EXTERIOR CORED SLAB UNIT - TYPE I



PLAN OF SPAN C INTERIOR CORED SLAB UNIT - TYPE II



PLAN OF SPAN C INTERIOR CORED SLAB UNIT - TYPE III

DRAWN BY :	L. H. JAMISON	DATE :	11/11/14
CHECKED BY :	M. K. TOM	DATE :	11/14/14
DESIGNED BY :	M. K. TOM	DATE :	9/12/14

6/17/2015
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PROJECT NO. 17BP.1.R.67

HYDE COUNTY

STATION: 13+65.90 -L-

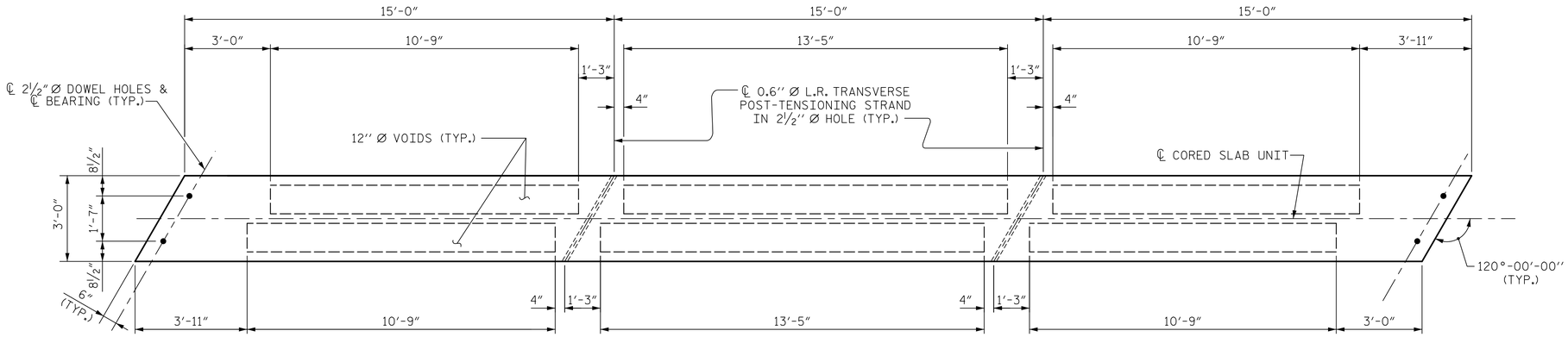
SHEET 5 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

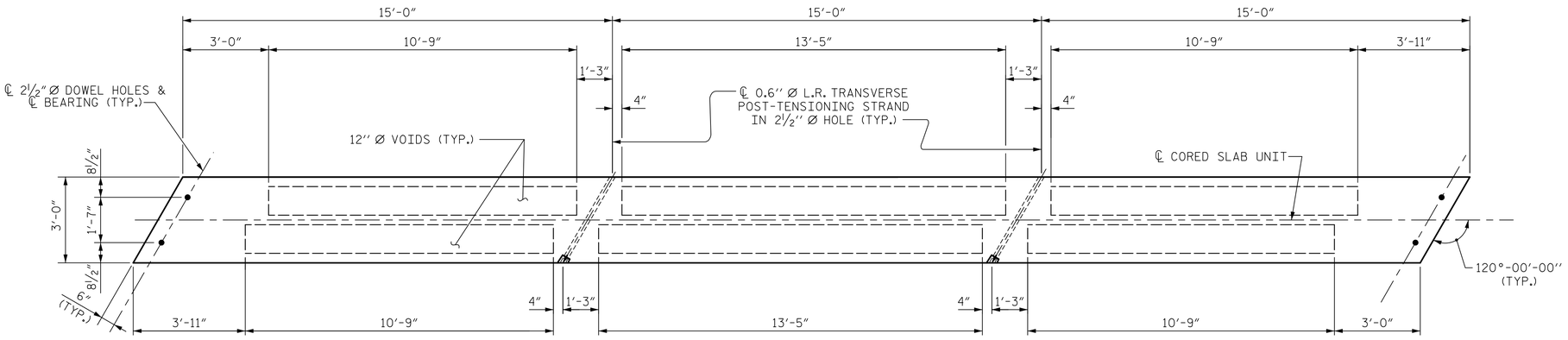
3′-0″ X 1′-9″ PRESTRESSED CONCRETE CORED SLAB UNIT DETAILS

6/22/2015
NORTH CAROLINA PROFESSIONAL SEAL 039173 ENGINEER MATTHEW K. TOM
DocuSigned by: Matthew K. Tom 749E6F30B64442A...

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			40



PLAN OF SPAN C INTERIOR CORED SLAB UNIT - TYPE IV



PLAN OF SPAN C EXTERIOR CORED SLAB UNIT - TYPE V

PROJECT NO. 17BP.1.R.67

HYDE COUNTY

STATION: 13+65.90 -L-

SHEET 6 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3′-0″ X 1′-9″ PRESTRESSED CONCRETE CORED SLAB UNIT DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			40

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6/22/2015
NORTH CAROLINA PROFESSIONAL SEAL 039173 ENGINEER MATTHEW K. TOM

DocuSigned by: Matthew K. Tom
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DRAWN BY : L. H. JAMISON DATE : 11/11/14
CHECKED BY : M. K. TOM DATE : 11/14/14
DESIGNED BY : M. K. TOM DATE : 9/12/14

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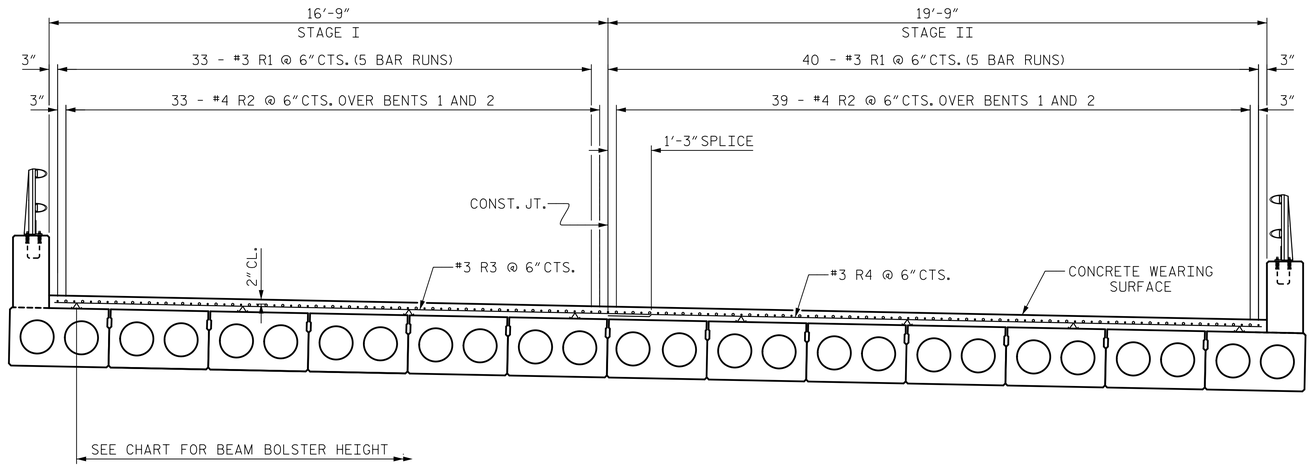


REINFORCING STEEL FOR CONCRETE WEARING SURFACE

BILL OF MATERIAL

CONCRETE WEARING SURFACE STAGE I

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
✳R1	165	3	STR.	27′-0″	1675
✳R2	66	4	STR.	20′-0″	882
✳R3	259	3	STR.	20′-5″	1988

✳EPOXY COATED REINF. STEEL = 4,545 LBS.
CONCRETE WEARING SURFACE = 2,162 SQ. FT.

CONCRETE WEARING SURFACE STAGE II

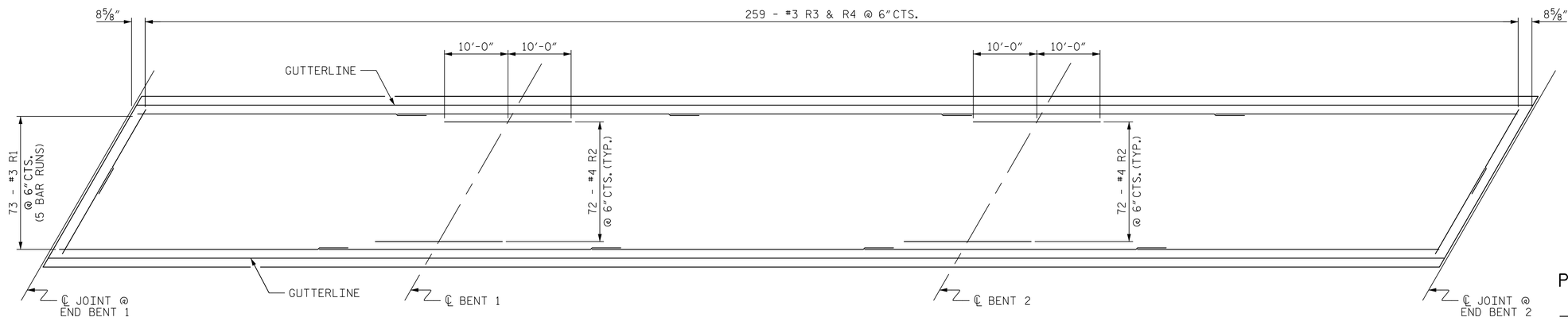
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
✳R1	200	3	STR.	27′-0″	2030
✳R2	78	4	STR.	20′-0″	1042
✳R4	259	3	STR.	22′-7″	2199

✳EPOXY COATED REINF. STEEL = 5,271 LBS.
CONCRETE WEARING SURFACE = 2,549 SQ. FT.

SPLICE LENGTH CHART	
BAR SIZE	EPOXY COATED
#3	1′-3″

BEAM BOLSTER HEIGHT		
SPAN	CL. BRG.	MID. SPAN
35′	2″	1¾″
50′	2″	¾″
45′	2″	1″

GROOVING BRIDGE FLOORS	
APPROACH SLABS	704 SQ. FT.
BRIDGE DECK	4321 SQ. FT.
TOTAL	5025 SQ. FT.



PLAN OF CONCRETE WEARING SURFACE

PROJECT NO. 17BP.1.R.67
HYDE COUNTY
STATION: 13+65.90 -L-

NOTES:

PLACEMENT OF CONCRETE WEARING SURFACE SHALL OCCUR AFTER CASTING THE CONCRETE PARAPET. THE COST OF THE REINFORCING STEEL CAST WITH THE CONCRETE WEARING SURFACE AND THE CONCRETE WEARING SURFACE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONSTRUCTION OF SUPERSTRUCTURE. FOR CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.

ALL REINFORCING FOR THE CONCRETE WEARING SURFACE SHALL BE EPOXY COATED.

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DocuSigned by: Matthew K. Tom 749E6F30B64442A...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE WEARING SURFACE DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			40

DRAWN BY : M. K. TOM DATE : 12/16/14
CHECKED BY : R. L. WHITCHER DATE : 1/20/15
DESIGNED BY : M. K. TOM DATE : 12/23/14

6/17/2015
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BILL OF MATERIAL FOR ONE 35′ CORED SLAB UNIT

				STAGE I						STAGE II			
				TYPE I		TYPE II		TYPE III		TYPE IV		TYPE V	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT
B3	4	#4	STR	18′-3″	49	18′-3″	49	18′-3″	49	18′-3″	49	18′-3″	49
S1	8	#5	3	4′-6″	38	4′-6″	38	4′-6″	38	4′-6″	38	4′-6″	38
S2	72	#4	3	5′-4″	257	5′-4″	257	5′-4″	257	5′-4″	257	5′-4″	257
✳ S3	44	#5	1	6′-3″	287							6′-3″	287
S5	4	#4	3	5′-5″	14	5′-5″	14	5′-5″	14	5′-5″	14	5′-5″	14
S6	4	#4	3	5′-6″	15	5′-6″	15	5′-6″	15	5′-6″	15	5′-6″	15
S7	4	#4	3	5′-7″	15	5′-7″	15	5′-7″	15	5′-7″	15	5′-7″	15
S8	4	#4	3	5′-9″	15	5′-9″	15	5′-9″	15	5′-9″	15	5′-9″	15
REINFORCING STEEL LBS.					403		403		403		403		403
✳ EPOXY COATED REINFORCING STEEL LBS.					287								287
5000 P.S.I. CONCRETE CU. YDS.					5.4		5.4		5.4		5.2		5.2
0.6″ Ø L.R. STRANDS No.					10		10		10		10		10

BILL OF MATERIAL FOR ONE 50′ CORED SLAB UNIT

				STAGE I						STAGE II			
				TYPE I		TYPE II		TYPE III		TYPE IV		TYPE V	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT
B6	4	#4	STR	25′-9″	69	25′-9″	69	25′-9″	69	25′-9″	69	25′-9″	69
S1	8	#5	3	4′-6″	38	4′-6″	38	4′-6″	38	4′-6″	38	4′-6″	38
S2	102	#4	3	5′-4″	363	5′-4″	363	5′-4″	363	5′-4″	363	5′-4″	363
✳ S3	60	#5	1	6′-3″	391							6′-3″	391
S5	4	#4	3	5′-5″	14	5′-5″	14	5′-5″	14	5′-5″	14	5′-5″	14
S6	4	#4	3	5′-6″	15	5′-6″	15	5′-6″	15	5′-6″	15	5′-6″	15
S7	4	#4	3	5′-7″	15	5′-7″	15	5′-7″	15	5′-7″	15	5′-7″	15
S8	4	#4	3	5′-9″	15	5′-9″	15	5′-9″	15	5′-9″	15	5′-9″	15
REINFORCING STEEL LBS.					529		529		529		529		529
✳ EPOXY COATED REINFORCING STEEL LBS.					391								391
6500 P.S.I. CONCRETE CU. YDS.					7.4		7.4		7.4		7.3		7.3
0.6″ Ø L.R. STRANDS No.					19		19		19		19		19

BILL OF MATERIAL FOR ONE 45′ CORED SLAB UNIT

				STAGE I						STAGE II			
				TYPE I		TYPE II		TYPE III		TYPE IV		TYPE V	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT
B5	4	#4	STR	23′-3″	62	23′-3″	62	23′-3″	62	23′-3″	62	23′-3″	62
S1	8	#5	3	4′-6″	38	4′-6″	38	4′-6″	38	4′-6″	38	4′-6″	38
S2	92	#4	3	5′-4″	328	5′-4″	328	5′-4″	328	5′-4″	328	5′-4″	328
✳ S3	54	#5	1	6′-3″	352							6′-3″	352
S5	4	#4	3	5′-5″	14	5′-5″	14	5′-5″	14	5′-5″	14	5′-5″	14
S6	4	#4	3	5′-6″	15	5′-6″	15	5′-6″	15	5′-6″	15	5′-6″	15
S7	4	#4	3	5′-7″	15	5′-7″	15	5′-7″	15	5′-7″	15	5′-7″	15
S8	4	#4	3	5′-9″	15	5′-9″	15	5′-9″	15	5′-9″	15	5′-9″	15
REINFORCING STEEL LBS.					414		487		487		487		487
✳ EPOXY COATED REINFORCING STEEL LBS.					352								352
6500 P.S.I. CONCRETE CU. YDS.					6.7		6.7		6.7		6.6		6.6
0.6″ Ø L.R. STRANDS No.					15		15		15		15		15

CORED SLABS REQUIRED

		35′-0″ SPAN			50′-0″ SPAN			45′-0″ SPAN		
		NUMBER	LENGTH	TOTAL LENGTH	NUMBER	LENGTH	TOTAL LENGTH	NUMBER	LENGTH	TOTAL LENGTH
STAGE I	TYPE I	1	35′-0″	35′-0″	1	50′-0″	50′-0″	1	45′-0″	45′-0″
	TYPE II	4	35′-0″	140′-0″	4	50′-0″	200′-0″	4	45′-0″	180′-0″
	TYPE III	1	35′-0″	35′-0″	1	50′-0″	50′-0″	1	45′-0″	45′-0″
	STAGE I TOTAL	6		210′-0″	6		300′-0″	6		270′-0″
STAGE II	TYPE IV	6	35′-0″	210′-0″	6	50′-0″	300′-0″	6	45′-0″	270′-0″
	TYPE V	1	35′-0″	35′-0″	1	50′-0″	50′-0″	1	45′-0″	45′-0″
	STAGE II TOTAL	7		245′-0″	7		350′-0″	7		315′-0″
	TOTAL	13		455′-0″	13		650′-0″	13		585′-0″

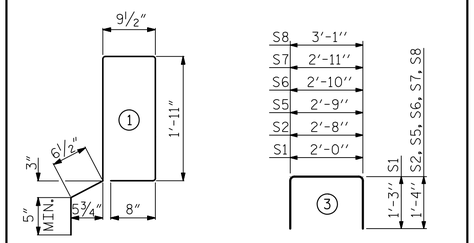
CONCRETE RELEASE STRENGTH

UNIT	PSI
35′-0″ SPAN	4000
50′-0″ SPAN	4900
45′-0″ SPAN	4000

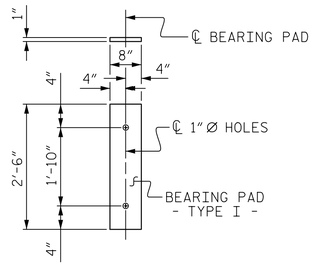
GRADE 270 STRANDS

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

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT



FIXED END
(TYPE I - 78 REQ′D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

DEAD LOAD DEFLECTION AND CAMBER

	3′-0″ x 1′-9″
35′ CORED SLAB UNIT	0.6″ Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	7/16″ ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD✳✳	1/16″ ↓
FINAL CAMBER	3/8″ ↑
	3′-0″ x 1′-9″
50′ CORED SLAB UNIT	0.6″ Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1½″ ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD✳✳	5/16″ ↓
FINAL CAMBER	1 3/16″ ↑
	3′-0″ x 1′-9″
45′ CORED SLAB UNIT	0.6″ Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1 3/16″ ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD✳✳	3/16″ ↓
FINAL CAMBER	1″ ↑

✳✳ INCLUDES ONLY CONCRETE WEARING SURFACE

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 LUMP SUM BID FOR CONSTRUCTION OF SUPERSTRUCTURE.

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.

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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

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

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

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

THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR CONSTRUCTION OF SUPERSTRUCTURE.

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

PRESTRESSED CONCRETE CORED SLAB UNITS ARE DESIGNED FOR 0 PSI TENSION IN THE PRECOMPRESSED TENSILE ZONE UNDER ALL LOADING CONDITIONS.

PRESTRESSED CONCRETE CORED SLAB UNITS SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

SPLICE LENGTH CHART

BAR	SIZE	SPLICE LENGTH
B3, B5, B6	#4	1′-9″

PROJECT NO. 17BP.1.R.67

HYDE COUNTY

STATION: 13+65.90 -L-

ASSEMBLED BY : M. K. TOM	DATE : 12/15/14	
CHECKED BY : R. L. WHITCHER	DATE : 1/6/15	
DESIGNED BY : M. K. TOM	DATE : 9/12/14	
DRAWN BY : DGE 5/09	REV. 12/11	MAA/AAC
CHECKED BY : BCH 6/09	REV. 8/14	MAA/TMG

6/17/2015
S:\Hyde 56\Structures\Submittals\2015_05_19 Final Design and Tracings\Drawings\19 Hyde 56_BOM_01.dgn
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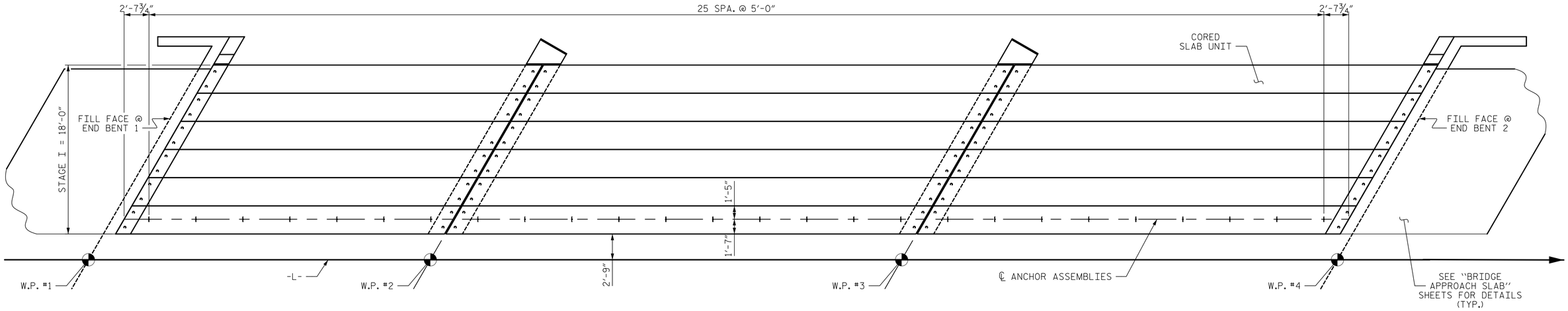
6/22/2015
NORTH CAROLINA PROFESSIONAL SEAL 039173 ENGINEER MATTHEW K. TOM
DocuSigned by: Matthew K. Tom 749E6F30B64442A...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
3′-0″ X 1′-9″
PRESTRESSED CONCRETE
CORED SLAB UNIT
120° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			40

STD. NO. 21″PCS3_39_120S



CONCRETE INSERT SPACING FOR TEMPORARY BARRIER RAIL - STAGE I

NOTES:

THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASTHO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1⅝″.

B. 1-⅞″ Ø X 8½″ BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A325. BOLT AND WASHER SHALL BE GALVANIZED. AT THE CONTRACTORS OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE ⅞″ Ø X 8½″ GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A325. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.

C. WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI.

D. STRUCTURAL CONCRETE INSERT ASSEMBLIES SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

THE COST OF THE STRUCTURAL CONCRETE INSERT ASSEMBLY, COMPLETE IN PLACE, SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR CONSTRUCTION OF SUPERSTRUCTURE.

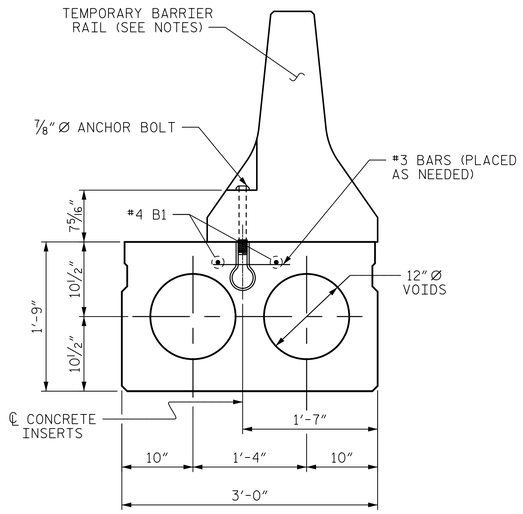
TO FACILITATE PLACEMENT OF STRUCTURAL CONCRETE INSERT ASSEMBLIES, #3 BARS MAY BE TIED TO THE #4 "B" BARS IN THE CORED SLAB UNITS. THE COST OF THE #3 BARS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR CONSTRUCTION OF SUPERSTRUCTURE.

STIRRUPS IN THE CORED SLAB UNITS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR STRUCTURAL CONCRETE INSERT ASSEMBLIES.

FERRULES TO BE PLUGGED DURING CASTING OF THE CORED SLAB UNITS AS RECOMMENDED BY THE MANUFACTURER.

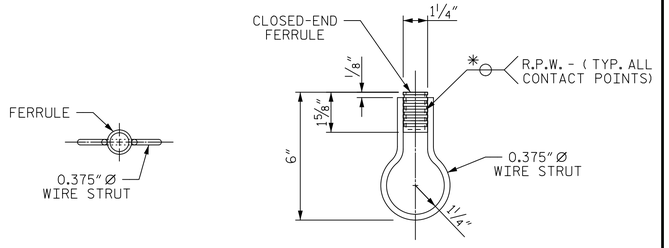
SEE TRAFFIC CONTROL PLANS FOR TEMPORARY BARRIER RAIL.

AFTER REMOVAL OF TEMPORARY BARRIER RAIL, THE STRUCTURAL CONCRETE INSERTS SHALL BE FILLED WITH GROUT.



TEMPORARY BARRIER RAIL

(TYPE III UNIT, STAGE I)



PLAN ELEVATION

STRUCTURAL CONCRETE INSERT

✳EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.

PROJECT NO. 17BP.1.R.67

HYDE COUNTY

STATION: 13+65.90 -L-

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6/22/2015
NORTH CAROLINA PROFESSIONAL SEAL 039173 ENGINEER MATTHEW K. TOM
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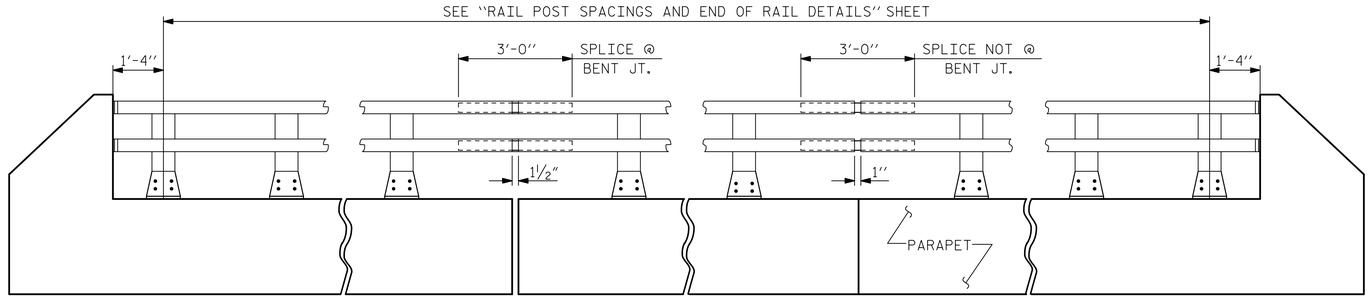
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TEMPORARY BARRIER RAIL ANCHORAGE DETAILS FOR TYPE III CORED SLAB UNIT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			40

DRAWN BY : M. K. TOM DATE : 12/10/14
CHECKED BY : R. L. WHITCHER DATE : 1/6/15
DESIGNED BY : M. K. TOM DATE : 9/12/14

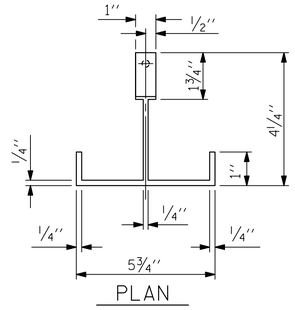
6/17/2015
S:\Hyde 56\Structures\Submittals\2015_05_19 Final Design and Tracings\Drawings\20 Hyde 56_TB_01.dgn
matt_tom



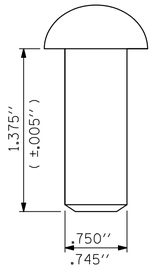
ELEVATION

NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE STANDARD NO. BMR2.

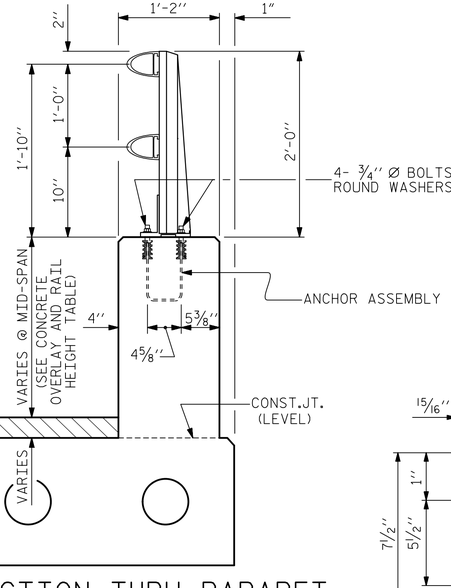
CONCRETE OVERLAY THICKNESS AND PARAPET HEIGHT		
	CONCRETE OVERLAY	PARAPET HEIGHT
SPAN	@ MID-SPAN	@ MID-SPAN
35'	4⅝"	2'-10⅝"
50'	3 13/16"	2'-9 13/16"
45'	4"	2'-10"



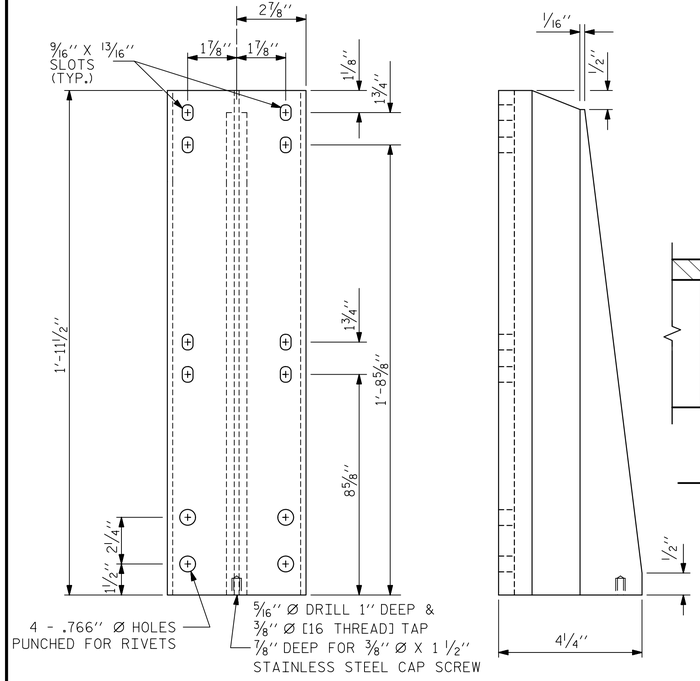
PLAN



RIVET DETAIL



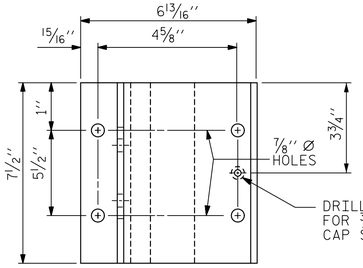
SECTION THRU PARAPET AND RAIL



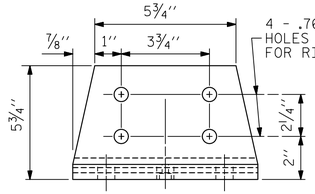
FRONT ELEVATION

SIDE ELEVATION

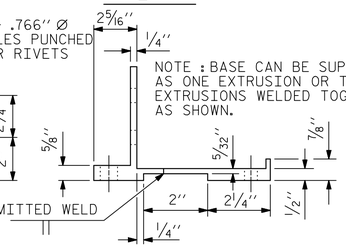
DETAILS OF POST



PLAN



FRONT ELEVATION



SIDE ELEVATION

POST BASE DETAILS

NOTES

AT THE CONTRACTOR'S OPTION, METAL RAIL MAY BE EITHER ALUMINUM OR GALVANIZED STEEL IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS FOR THE ALTERNATE MATERIALS; HOWEVER, THE CONTRACTOR WILL BE REQUIRED TO USE THE SAME RAIL MATERIAL ON ALL STRUCTURES ON THE PROJECT FOR WHICH METAL RAIL IS DESIGNATED.

UNLESS OTHERWISE REQUIRED IN THE CONTRACT DOCUMENTS, THE CONTRACTOR HAS THE OPTION TO USE AN ALTERNATE TO THE 2 BAR METAL RAIL. THE ALTERNATE RAIL SHALL MEET THE REQUIREMENTS OF THE AASHTO LRFDBRIDGE DESIGN SPECIFICATIONS AND MUST BE LISTED ON THE DEPARTMENT'S APPROVED PRODUCTS LIST (APL) UNDER "2 BAR METAL RAIL ALTERNATE". ADJUSTMENTS TO THE CONCRETE PARAPET WILL NOT BE ALLOWED.

ALUMINUM RAILS

MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B-221 ALLOY 6061-T6.

MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND CONE POINT COLD DRIVEN AS PER DRAWING.

THE BASE OF RAIL POSTS, OR ANY OTHER ALUMINUM SURFACE IN CONTACT WITH CONCRETE SHALL BE THOROUGHLY COATED WITH AN ALUMINUM IMPREGNATED CAULKING COMPOUND OF APPROVED QUALITY.

MATERIAL FOR SHIMS TO BE ASTM B209 ALLOY 6061-T6.

GALVANIZED STEEL RAILS

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

POST, POST BASES, RAILS, EXPANSION BARS AND CLAMP BARS: AASHTO M270 GRADE 36 STRUCTURAL STEEL - GALVANIZED TO AASHTO M111.

RIVETS: RIVETS SHALL MEET THE REQUIREMENTS OF ASTM A502 FOR GRADE 1 RIVETS.

THE CUT ENDS OF GALVANIZED STEEL RAILING, AFTER GRINDING SMOOTH SHALL BE GIVEN TWO COATS OF ZINC RICH PAINT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION MIL-P-26915 USAF TYPE 1, OR OF FEDERAL SPECIFICATIONS TT-P-641.

SHIMS: SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

RAIL CAPS: RAIL CAPS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

GENERAL NOTES

RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR2.

CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL. WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED.

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

METHOD OF MEASUREMENT FOR METAL RAILS: FOR LENGTH OF METAL RAILS TO BE PAID FOR, SEE THE STANDARD SPECIFICATIONS.

CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.

TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAINS VISIBLE AFTER RAIL PLACEMENT.

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL.

GROOVED CONTRACTION JOINTS, ½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF PARAPET SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

PAY LENGTH = 244.5 LIN. FT.

PROJECT NO. 17BP.1.R.67

HYDE COUNTY

STATION: 13+65.90 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

2 BAR METAL RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			40

STD. NO. BMR3

ASSEMBLED BY :	M. K. TOM	DATE : 12/11/14
CHECKED BY :	R. L. WHITCHER	DATE : 1/6/15
DESIGNED BY :	M. K. TOM	DATE : 12/11/14
DRAWN BY : EEM	6/94	REV. 5/1/06 TLA/GM
CHECKED BY : RGW	6/94	REV. 10/1/11 MAA/GM
		REV. 6/13 MAA/GM

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6/22/2015
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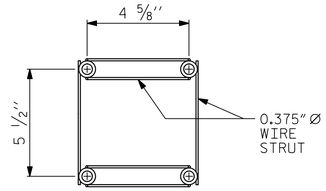
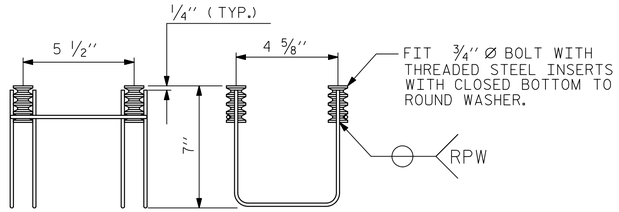
6/17/2015
S:\Hyde 56\Structures\Submittals\2015_05_19 Final Design and Tracings\Drawings\21 Hyde 56_2BMR_01.dgn
matt_tom



PLAN



SIDE VIEW ELEVATION

4-BOLT METAL RAIL ANCHOR ASSEMBLY

(42 ASSEMBLIES REQUIRED)

NOTES

STRUCTURAL CONCRETE ANCHOR ASSEMBLY

THE STRUCTURAL CONCRETE ANCHOR ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS :

A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2'' FOR 3/4'' FERRULES.

B. 4 - 3/4'' Ø X 2 1/2'' BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 3/4'' Ø X 2 1/2'' GALVANIZED BOLTS 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.

C. WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16'' Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

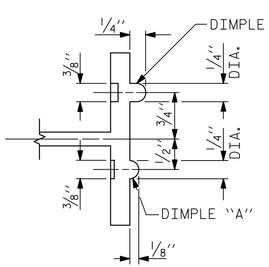
D. THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.

E. THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR CONSTRUCTION OF SUPERSTRUCTURE.

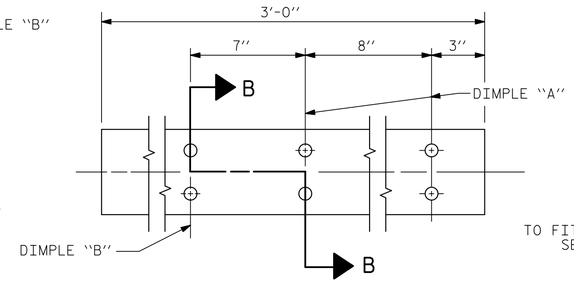
F. BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

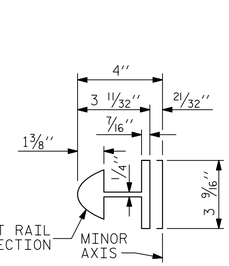
THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE METAL RAIL ANCHOR ASSEMBLY. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE THE STANDARD SPECIFICATIONS.

WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS SHALL MEET THE REQUIREMENTS OF ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI ULTIMATE STRENGTH. NUTS SHALL MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.



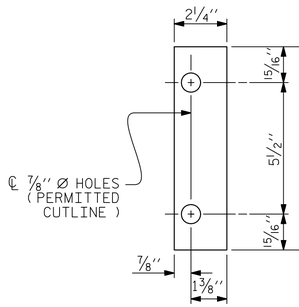
SECTION B - B



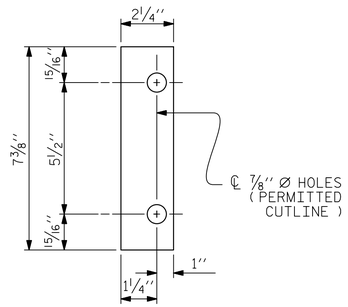


BAR SECTION

EXPANSION BAR DETAILS



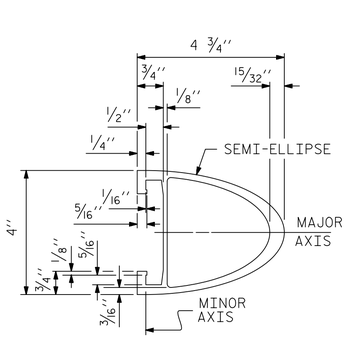
FRONT PLATE



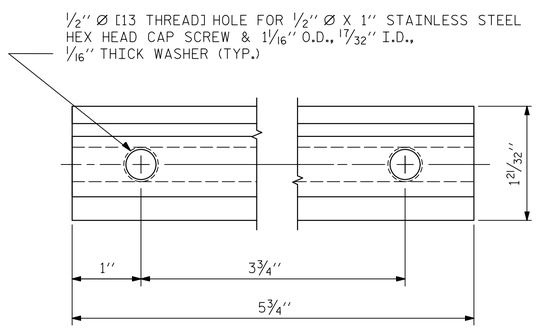
REAR PLATE

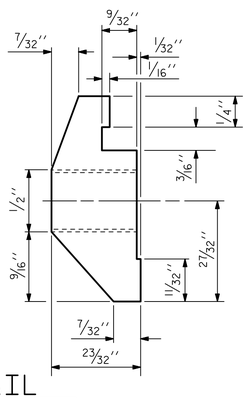
SHIM DETAILS

NOTE :
SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.



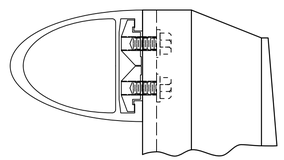
RAIL SECTION



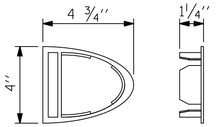


CLAMP BAR DETAIL

(42 ASSEMBLIES REQUIRED)



CLAMP ASSEMBLY



RAIL CAP

PROJECT NO. 17BP.1.R.67

HYDE COUNTY

STATION: 13+65.90 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

2 BAR METAL RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			40

ASSEMBLED BY :	M. K. TOM	DATE : 12/11/14
CHECKED BY :	R. L. WHITCHER	DATE : 1/6/15
DESIGNED BY :	M. K. TOM	DATE : 12/11/14
DRAWN BY : EEM	6/94	
CHECKED BY : RGW	6/94	

REV.	8/16/99	MAB/LES
REV.	5/1/06R	KMM/GM
REV.	10/1/11	MAA/GM

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6/22/2015
NORTH CAROLINA PROFESSIONAL SEAL 039173 ENGINEER MATTHEW K. TOM

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6/17/2015
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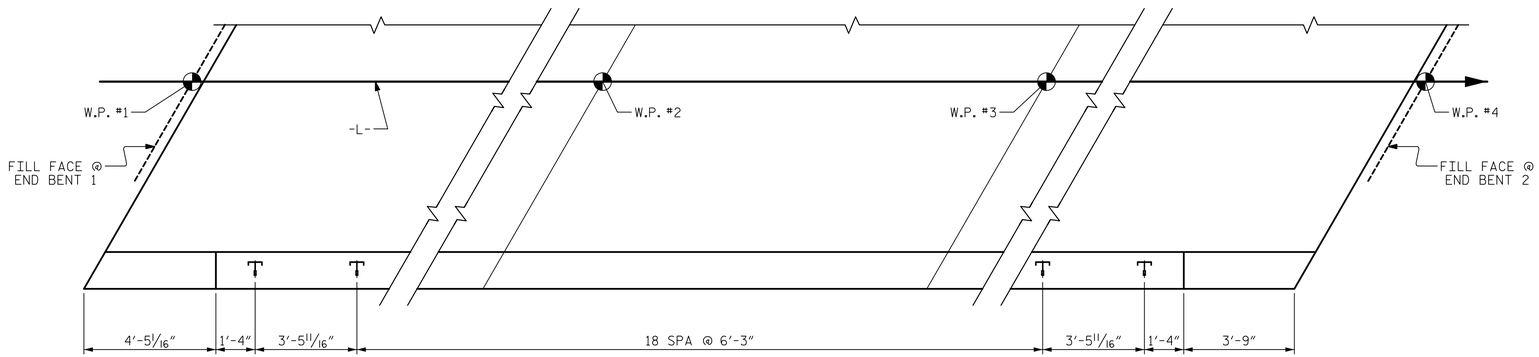
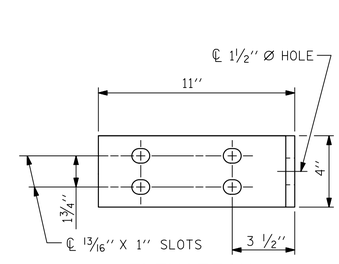
matt_tom

STD. NO. BMR4

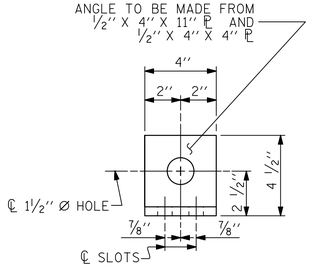


PLAN OF RAIL POST SPACINGS

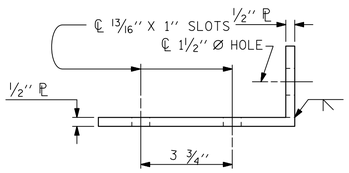
(RIGHT SIDE SHOWN, LEFT SIDE SIMILAR WITH END POSTS ROTATED)



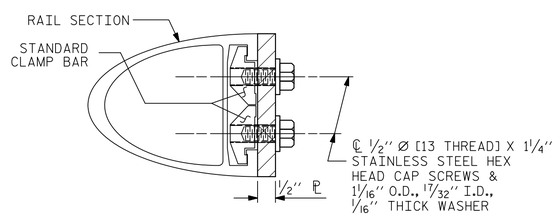
ELEVATION



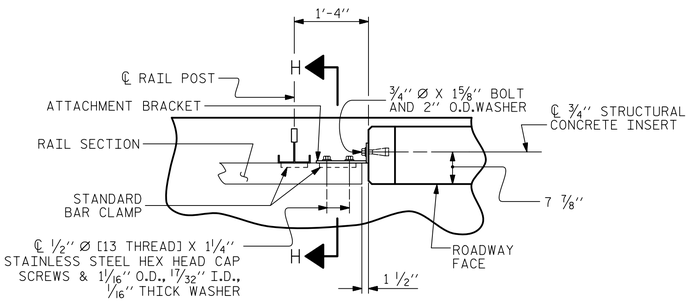
END VIEW (FIX AND EXP.)



TOP VIEW



SECTION H-H (FIX)



PLAN - RAIL AND END POST

NOTES

STRUCTURAL CONCRETE INSERT

THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1½".

B. 1 - ¾" Ø X 1⅝" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE ¾" Ø X 1⅝" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

C. WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

NOTES

METAL RAIL TO END POST CONNECTION

THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:

A. ½" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.

B. ¾" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A ¾"Ø X 1⅝" BOLT WITH 2" O.D. WASHER IN PLACE. THE ¾"Ø X 1⅝" BOLT SHALL HAVE N. C. THREADS.

C. CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°F.

D. STANDARD CLAMP BARS (SEE METAL RAIL SHEET).

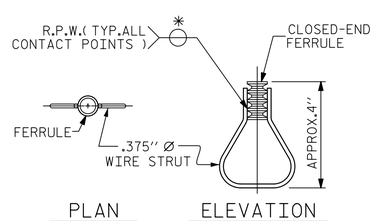
E. ½" Ø PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.

THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 1 OR 2 BAR METAL RAILS.

THE ¾" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE ¾" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE ½" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE ¾" Ø X 1⅝" BOLT WITH WASHER SHALL BE REPLACED WITH A ¾"Ø X 6½" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE ¾" Ø X 1⅝" BOLT SHALL APPLY TO THE ¾"Ø X 6 ½" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.



PLAN ELEVATION

STRUCTURAL CONCRETE INSERT

* EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.

DETAILS FOR ATTACHING METAL RAIL TO END POST

PROJECT NO. 17BP.1.R.67

HYDE COUNTY

STATION: 13+65.90 -L-

ASSEMBLED BY : M. K. TOM	DATE : 12/11/14		
CHECKED BY : R. L. WHITCHER	DATE : 1/6/15		
DESIGNED BY : M. K. TOM	DATE : 12/11/14		
DRAWN BY : FCJ 1/88	REV. 5/7/03	RWW/JTE	
CHECKED BY : CRK 3/89	REV. 5/1/06	TLA/GM	
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DocuSigned by: Matthew K. Tom 749E6F30B644424...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
RAIL POST SPACINGS AND END OF RAIL DETAILS
FOR ONE OR TWO BAR METAL RAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23
1			3			TOTAL SHEETS
2			4			40

STD. NO. BMR2

6/17/2015
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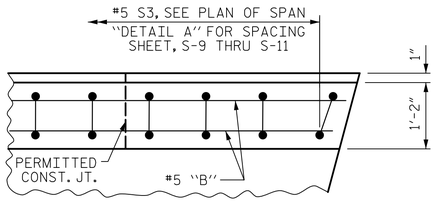
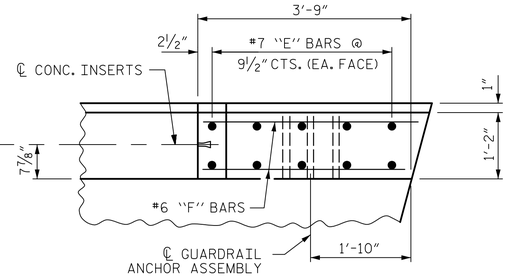
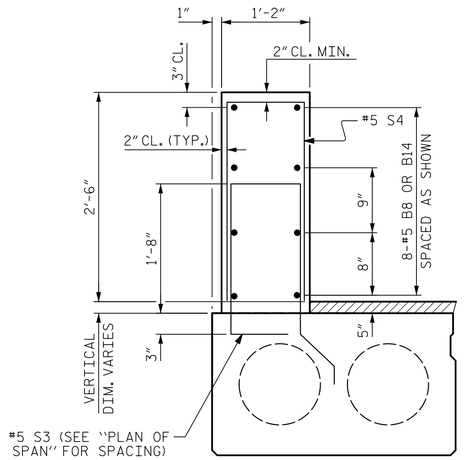


PLAN OF PARAPET

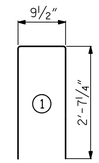


PLAN OF END POST



TWO BAR METAL
RAIL PARAPET SECTION

BAR TYPES



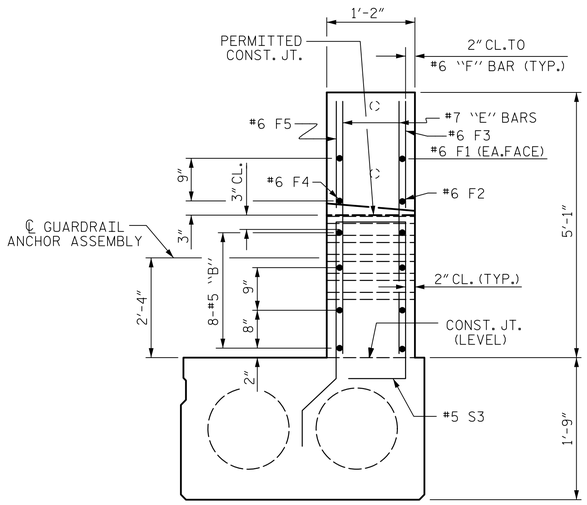
ALL BAR DIMENSIONS
ARE OUT TO OUT

TWO BAR METAL RAIL

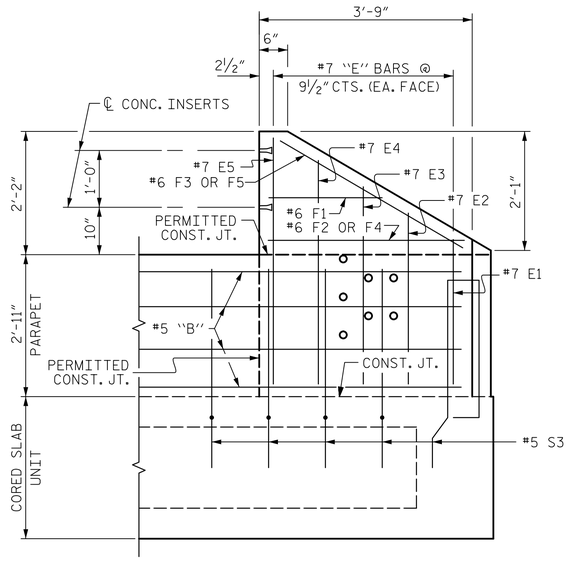
BILL OF MATERIAL FOR
2 PARAPETS AND 4 END POSTS

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
✱B10	64	5	STR.	10'-5"	695
✱B12	64	5	STR.	13'-0"	868
✱B13	64	5	STR.	14'-3"	951
✱E1	8	7	STR.	2'-11"	48
✱E2	8	7	STR.	3'-5"	56
✱E3	8	7	STR.	3'-11"	64
✱E4	8	7	STR.	4'-5"	72
✱E5	8	7	STR.	4'-10"	79
✱F1	8	6	STR.	1'-10"	22
✱F2	4	6	STR.	3'-4"	20
✱F3	4	6	STR.	3'-10"	23
✱F4	4	6	STR.	2'-10"	17
✱F5	4	6	STR.	3'-4"	20
✱S4	316	5	1	6'-0"	1978

✱EPOXY COATED REINFORCING STEEL	4,913 LBS.
CLASS AA CONCRETE	34.1 CU. YDS.
CONCRETE PARAPET	260.9 L.F.
TWO BAR METAL RAIL	244.5 L.F.

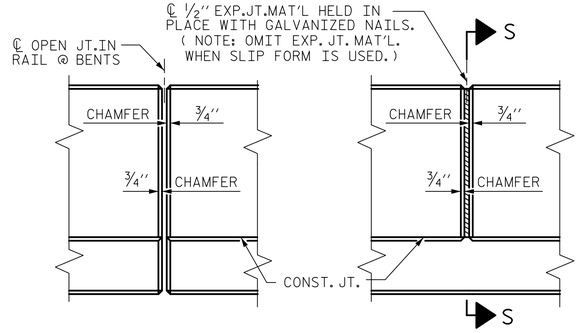


END VIEW

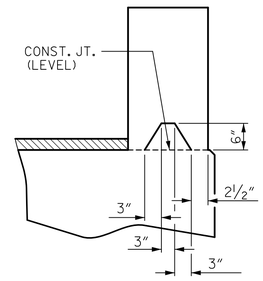


ELEVATION

PARAPET AND END POST FOR TWO BAR RAIL



ELEVATION AT EXPANSION JOINTS



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

TWO BAR METAIL
RAIL PARAPET SECTION

NOTES

FOR DETAILS OF CONCRETE INSERT AND GUARDRAIL ANCHOR ASSEMBLY, SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS" SHEETS.

ALL REINFORCING STEEL IN CONCRETE PARAPET SHALL BE EPOXY COATED.

THE REINFORCING STEEL AND CONCRETE IN THE END POSTS IS INCLUDED IN THE LUMP SUM PRICE BID FOR CONSTRUCTION OF SUPERSTRUCTURE.

#5 S3 BARS ARE INCLUDED IN THE BILL OF MATERIAL FOR CORED SLAB UNITS.

ALL BARS SUPPORTS USED IN THE PARAPET AND ALL INCIDENTAL REINFORCING STEEL SHALL BE EPOXY COATED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

PROJECT NO. 17BP.1.R.67

HYDE COUNTY

STATION: 13+65.90 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

CONCRETE PARAPET
AND END POST
DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24
1			3			TOTAL SHEETS
2			4			40

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6/22/2015

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DRAWN BY : M. K. TOM DATE : 12/12/14
CHECKED BY : R. L. WHITCHER DATE : 1/13/15
DESIGNED BY : M. K. TOM DATE : 12/12/14

6/17/2015
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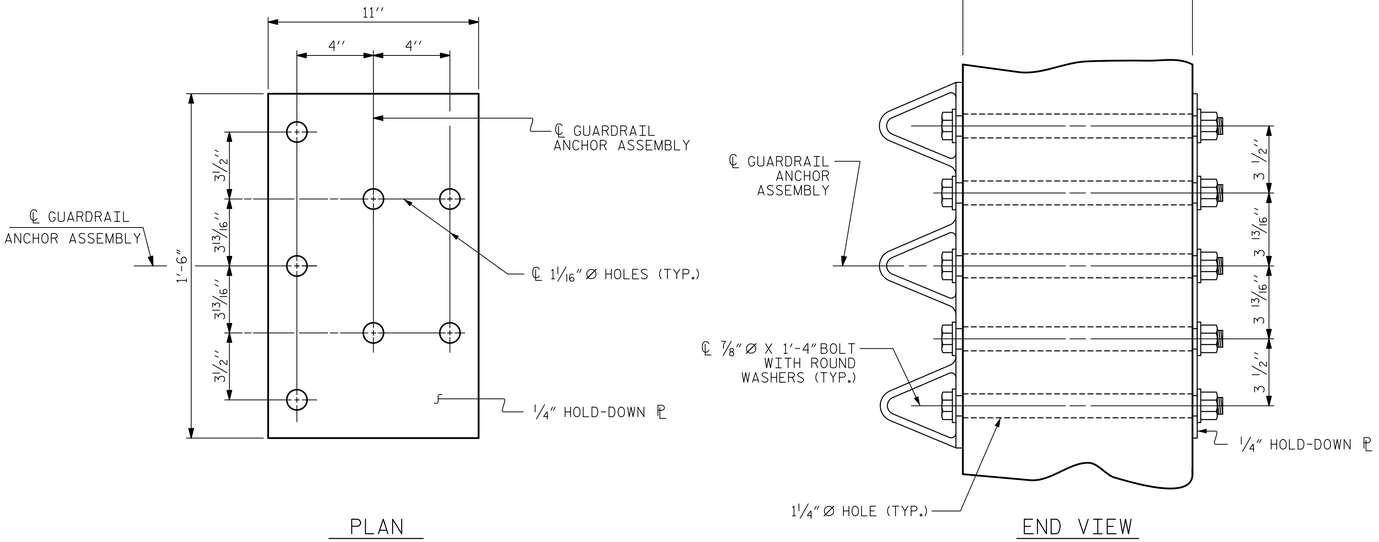


PLAN

END VIEW

GUARDRAIL ANCHOR ASSEMBLY DETAILS

NOTES (FOR METAL RAILS)

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A ¼'' HOLD DOWN PLATE AND 7 - ⅞'' 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 ⅞'' 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.

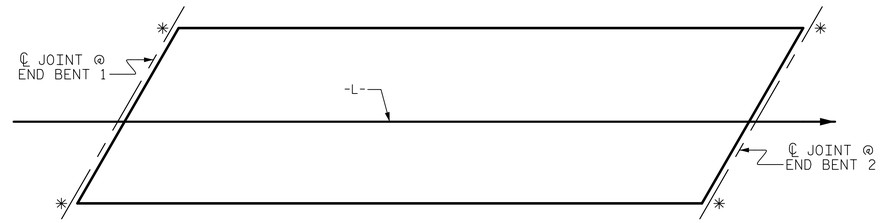
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE UNIT LUMP SUM PRICE BID FOR CONSTRUCTION OF SUPERSTRUCTURE.

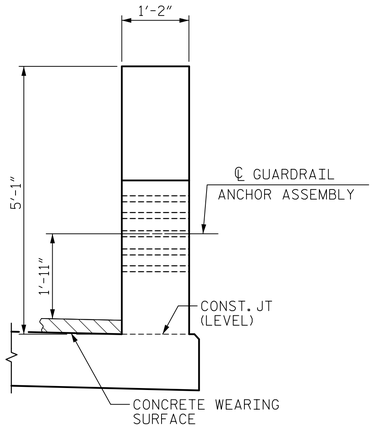
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

THE 1 ¼'' Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

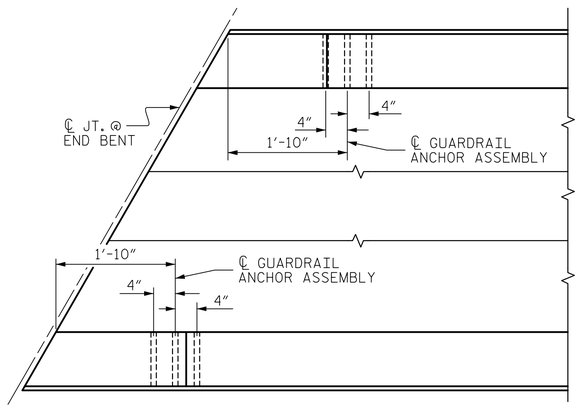


SKETCH SHOWING POINTS OF ATTACHMENT

*LOCATION OF GUARDRAIL ATTACHMENT



END VIEW
(TWO BAR METAL RAIL)



PLAN

LOCATION OF GUARDRAIL ANCHOR AT END POST

PROJECT NO. 17BP.1.R.67

HYDE COUNTY

STATION: 13+65.90 -L-

ASSEMBLED BY :	M. K. TOM	DATE :	12/11/14
CHECKED BY :	R. L. WHITCHER	DATE :	1/6/15
DESIGNED BY :	M. K. TOM	DATE :	12/11/14
DRAWN BY : MAA	5/10	REV. 10/1/11	MAA/GM
CHECKED BY : GM	5/10	REV. 12/5/11	MAA/GM
		REV. 6/13	MAA/GM

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6/22/2015
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS & VERTICAL CONCRETE BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3			TOTAL SHEETS
2			4			40

STD. NO. GRA3

6/17/2015
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matt_tom

NOTES

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

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

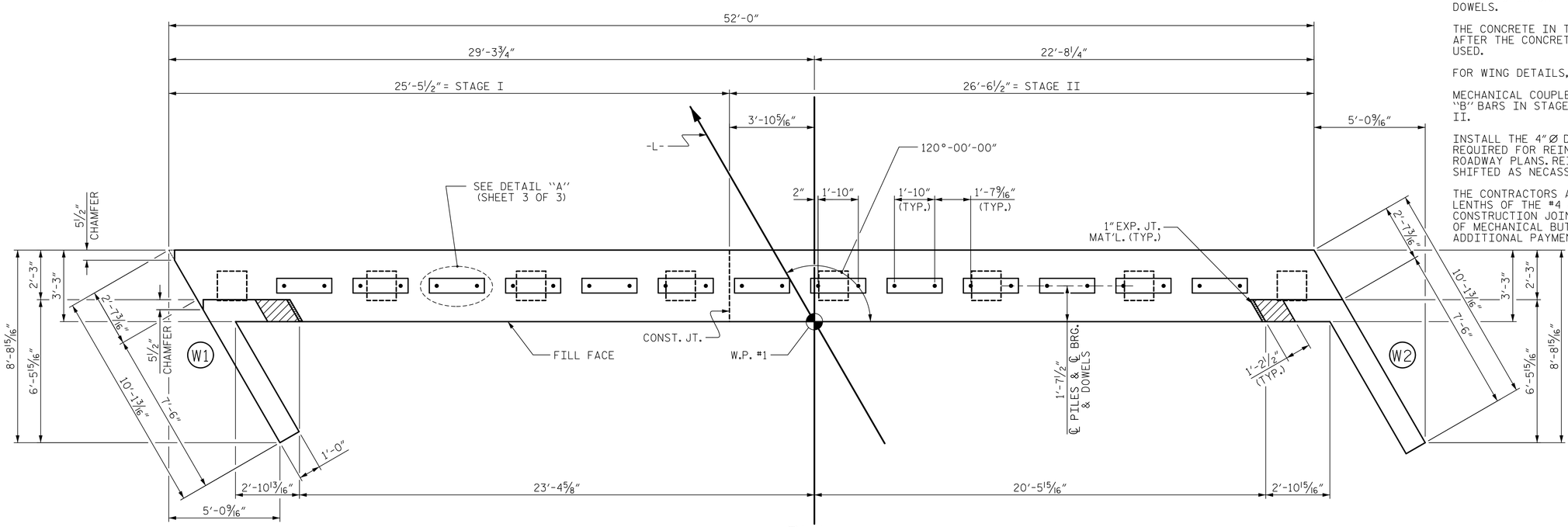
FOR WING DETAILS, SEE SHEET 2 OF 3.

MECHANICAL COUPLERS SHALL BE USED TO JOIN THE #4, AND #10 "B" BARS IN STAGE I WITH THE #4, AND #10 "B" BARS IN STAGE II.

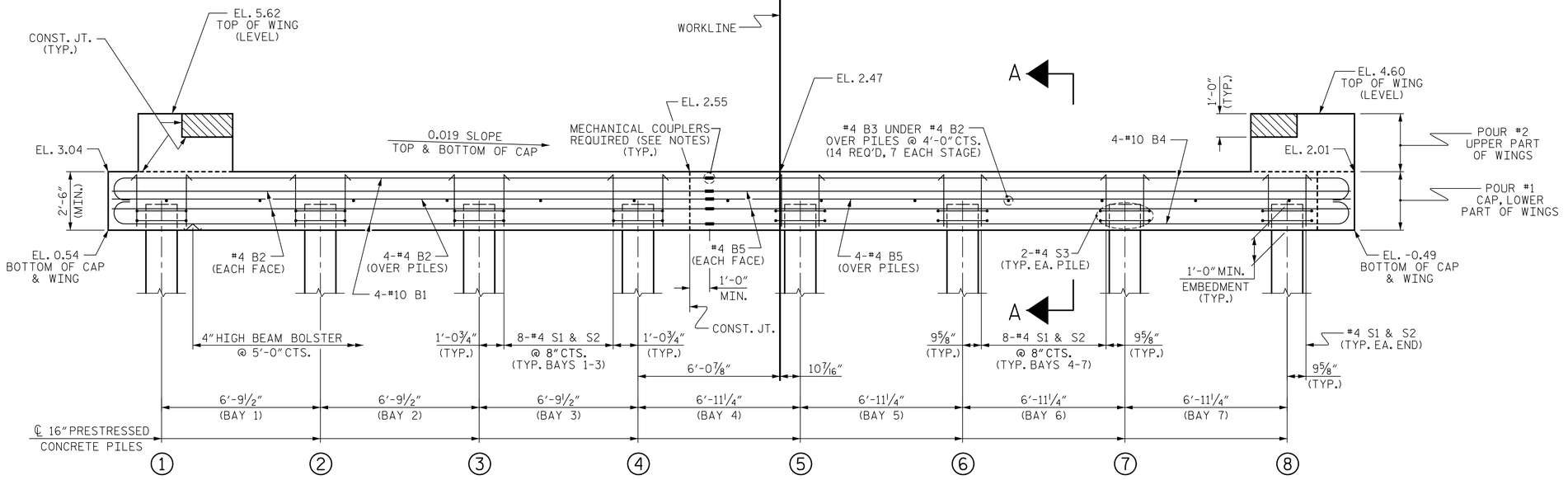
INSTALL THE 4"Ø DRAIN PIPE THROUGH THE WINGWALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS. SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WINGWALL MAY BE SHIFTED AS NECASSARY TO CLEAR THE DRAIN PIPE.

THE CONTRACTORS ATTENTION IS CALLED TO THE FACT THAT THE LENTHS OF THE #4 AND #10 "B" BARS AT THE STAGED CONSTRUCTION JOINT MAY NEED TO BE ADJUSTED DUE TO THE TYPE OF MECHANICAL BUTT SPLICE CHOSEN BY THE CONTRACTOR. NO ADDITIONAL PAYMENT WILL BE MADE FOR ANY ADJUSTMENTS.

THE CONCRETE IN THE END BENT CAPS OF END BENT NO. 1 SHALL CONTAIN SILICA FUME. SILICA FUME SHALL BE SUBSTITUTED FOR 5% OF THE PORTLAND CEMENT BY WEIGHT. IF THE OPTION OF ARTICLE 1024-1 OF THE STANDARD SPECIFICATIONS TO PARTIALLY SUBSTITUTE CLASS F FLY ASH FOR PORTLAND CEMENT IS EXERCISED, THEN THE RATE OF FLY ASH SUBSTITUTION SHALL BE REDUCED TO 1.0 LB OF FLY ASH PER 1.0 LB. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL LUMP SUM PRICE BID FOR CONSTRUCTION OF SUBSTRUCTURE.



PLAN



ELEVATION

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

TOP OF PILE ELEVATIONS	
①	1.50
②	1.37
③	1.23
④	1.10
⑤	0.96
⑥	0.82
⑦	0.69
⑧	0.55

PROJECT NO. 17BP.1.R.67
HYDE COUNTY
STATION: 13+65.90 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS
2			4			40

DRAWN BY : M. K. TOM DATE : 2/1/15
CHECKED BY : R. L. WHITCHER DATE : 2/20/15
DESIGNED BY : M. K. TOM DATE : 1/22/15

6/17/2015
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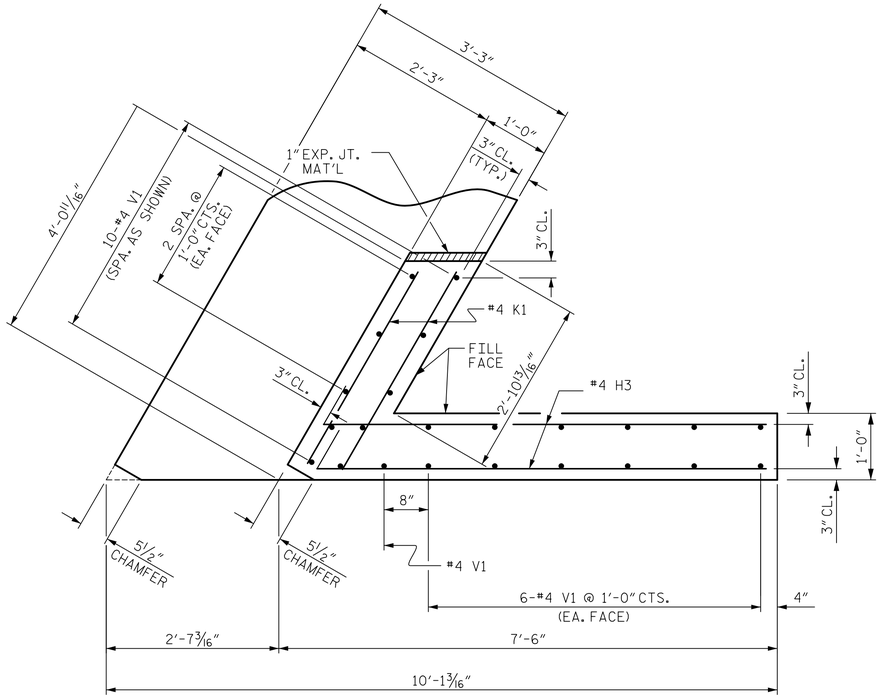
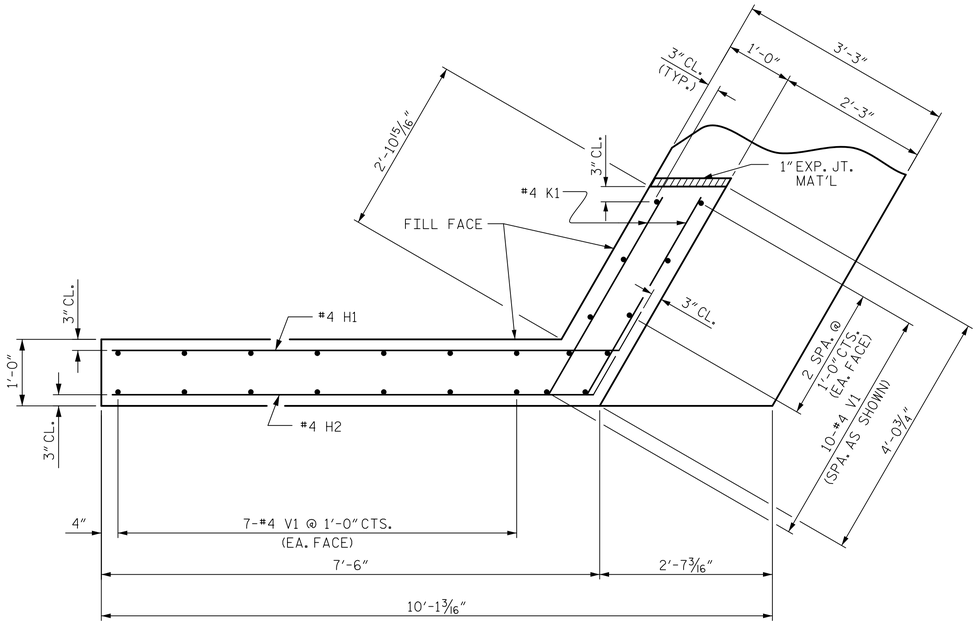
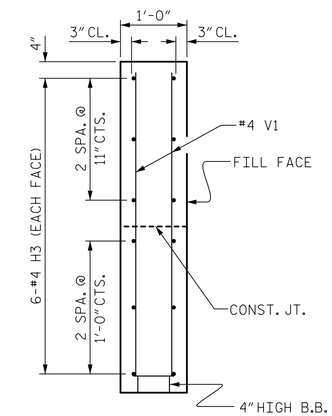
DocuSigned by: Matthew K. Tom
749E6F30B64442A...



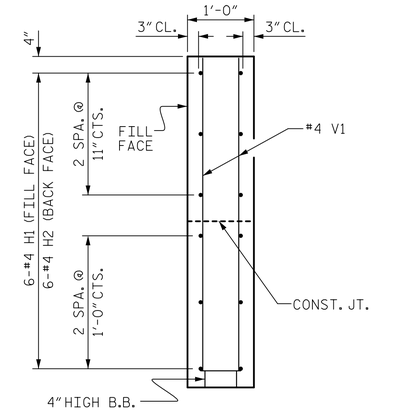
PLAN OF WING (W1)



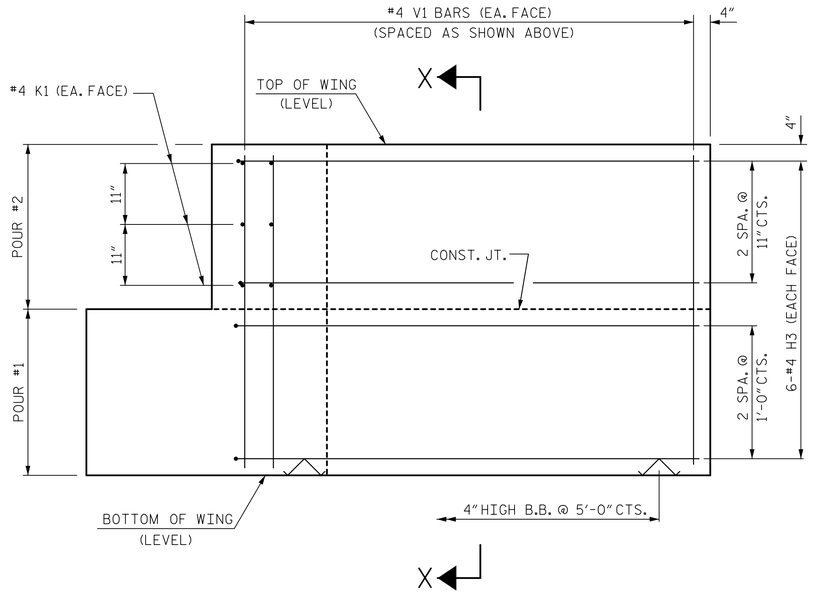
PLAN OF WING (W2)



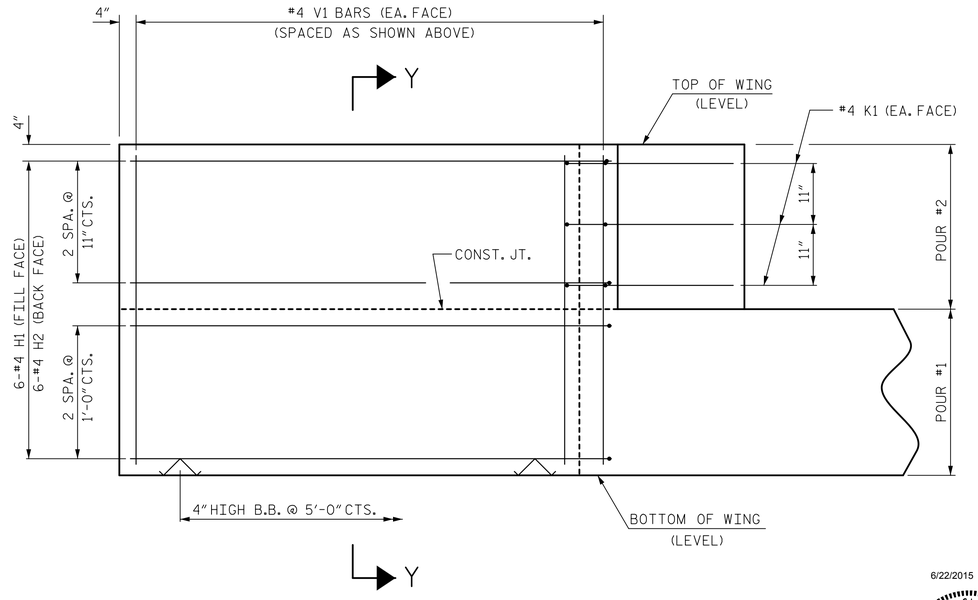
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

WING DETAILS

ASSEMBLED BY :	R. L. WHITCHER	DATE :	2/10/15
CHECKED BY :	M. K. TOM	DATE :	2/10/15
DESIGNED BY :	R. L. WHITCHER	DATE :	1/22/15
DRAWN BY :	DGE		12/09
CHECKED BY :	MKT		01/10

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NC LIC. # C-2243

6/22/2015
NORTH CAROLINA PROFESSIONAL SEAL 039173 ENGINEER MATTHEW K. TOM
DocuSigned by: Matthew K. Tom
749E6F30B64442A...

PROJECT NO. 17BP.1.R.67
HYDE COUNTY
STATION: 13+65.90 -L-

SHEET 2 OF 3

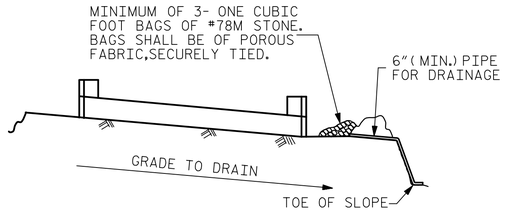
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1
WING DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27
1			3			TOTAL SHEETS
2			4			40

STD. NO. EB_39_120S

6/17/2015
S:\Hyde 56\Structures\Submittals\2015_05_19 Final Design and Tracings\Drawings\27 Hyde 56_E1_02.dgn
matt_tom

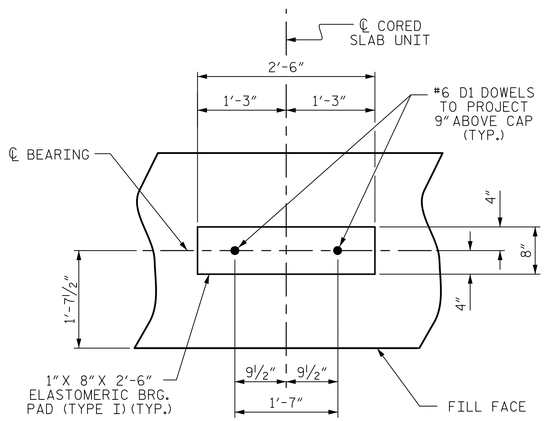


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

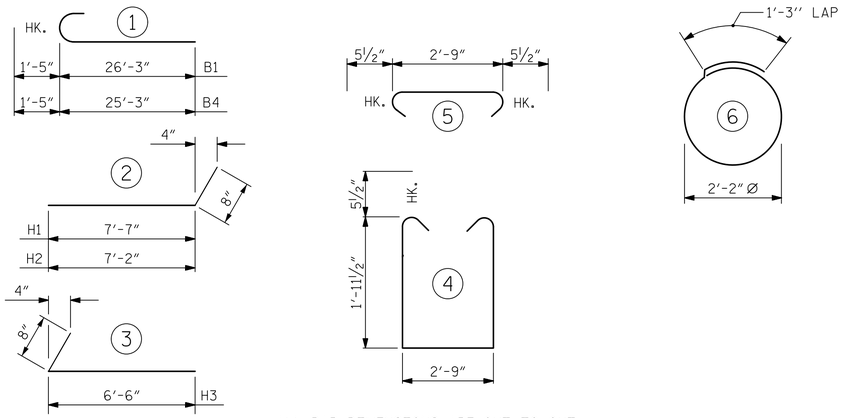
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



DETAIL "A"

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL - FOR ONE END BENT

STAGE I

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳B1	8	10	1	27'-8"	952
✳B2	8	4	STR.	26'-2"	140
✳B3	7	4	STR.	3'-6"	16
✳D1	12	6	STR.	1'-6"	27
✳H3	12	4	3	7'-2"	57
✳K1	6	4	STR.	3'-5"	14
✳S1	27	5	4	7'-7"	214
✳S2	27	5	5	3'-8"	103
✳S3	8	4	6	8'-1"	43
✳V1	23	4	STR.	4'-5"	68

EPOXY COATED REINFORCING STEEL (FOR ONE END BENT) 1634 LBS.

CLASS AA CONCRETE BREAKDOWN (FOR ONE END BENT)

POUR #1	CAP, LOWER PART OF WINGS	▲ 7.67 C.Y.
POUR #2	UPPER PART OF WINGS	0.96 C.Y.
TOTAL CLASS AA CONCRETE		8.63 C.Y.

16"PRESTRESSED CONCRETE PILES (FOR ONE END BENT)

No. 4 LIN. FT. 280

STAGE II

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳B3	7	4	STR.	2'-9"	13
✳B4	8	10	1	26'-8"	918
✳B5	8	4	STR.	26'-4"	141
✳D1	14	6	STR.	1'-6"	32
✳H1	6	4	2	8'-1"	32
✳H2	6	4	2	7'-8"	31
✳K1	6	4	STR.	3'-5"	14
✳S1	31	5	4	7'-7"	245
✳S2	31	5	5	3'-8"	119
✳S3	8	4	6	8'-1"	43
✳V1	24	4	STR.	4'-5"	71

EPOXY COATED REINFORCING STEEL (FOR ONE END BENT) 1659 LBS.

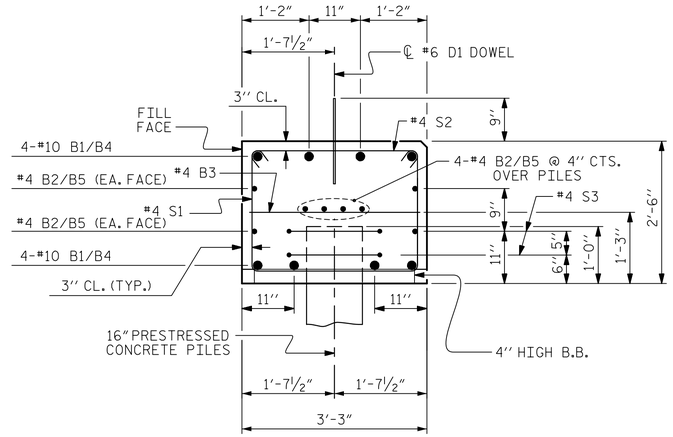
CLASS AA CONCRETE BREAKDOWN (FOR ONE END BENT)

POUR #1	CAP, LOWER PART OF WINGS	▲ 8.62 C.Y.
POUR #2	UPPER PART OF WINGS	1.03 C.Y.
TOTAL CLASS AA CONCRETE		9.65 C.Y.

16"PRESTRESSED CONCRETE PILES (FOR ONE END BENT)

No. 4 LIN. FT. 280

▲ CONCRETE DISPLACED BY THE 16"PRESTRESSED CONCRETE PILES HAS BEEN DEDUCTED FROM THE CONCRETE QUANTITY.



SECTION A-A

PROJECT NO. 17BP.1.R.67

HYDE COUNTY

STATION: 13+65.90 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 1 DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28
1			3			TOTAL SHEETS
2			4			40

ASSEMBLED BY :	R. L. WHITCHER	DATE : 2/10/15
CHECKED BY :	M. K. TOM	DATE : 2/20/15
DESIGNED BY :	M. K. TOM	DATE : 1/22/15
DRAWN BY :	DGE 12/09	
CHECKED BY :	MKT 01/10	

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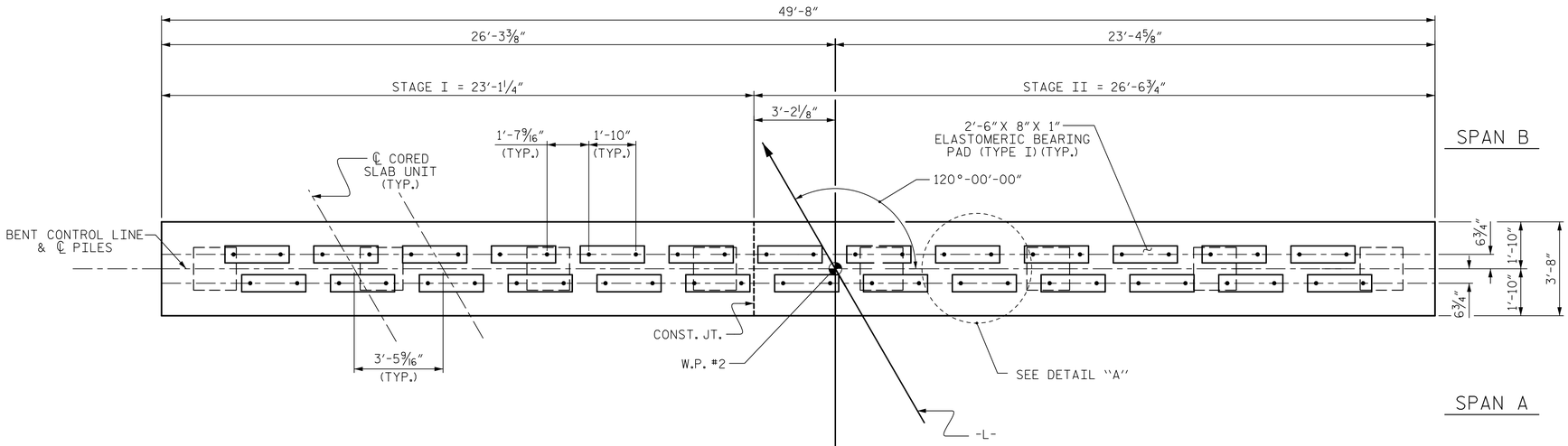
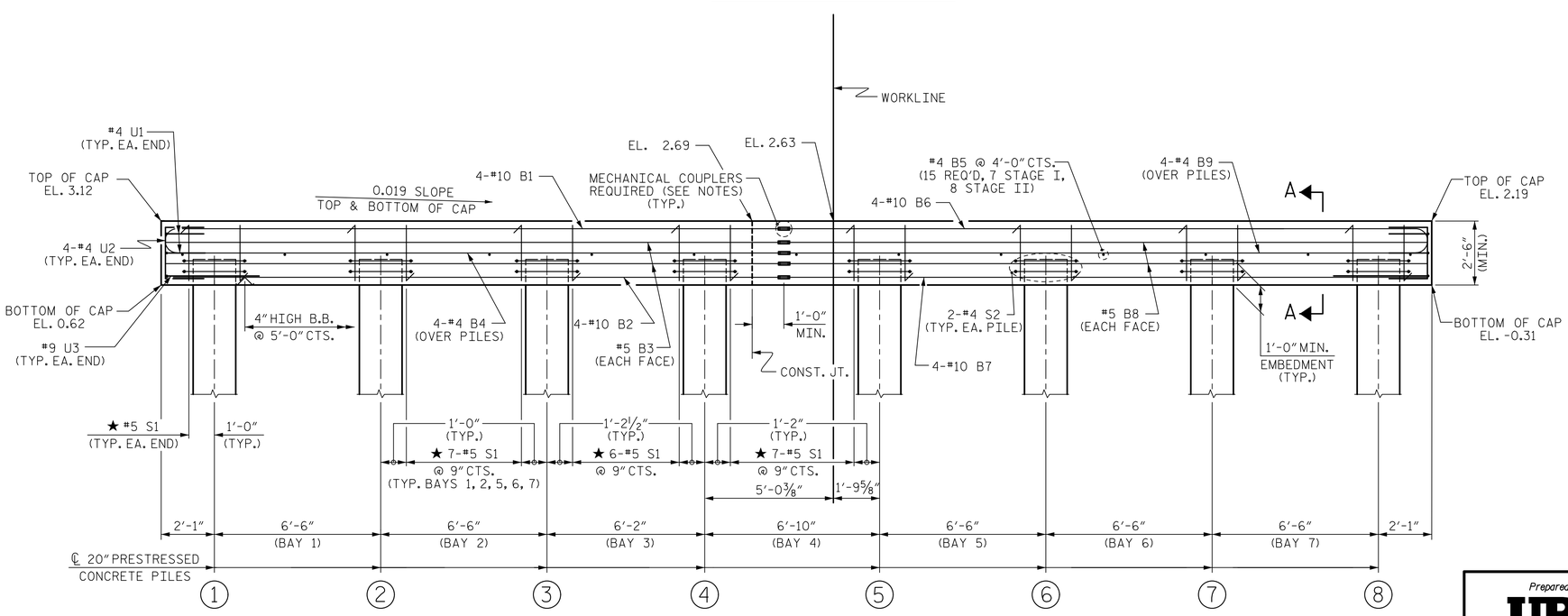
NC LIC. # C-2243

6/22/2015
NORTH CAROLINA PROFESSIONAL SEAL 039173 ENGINEER MATTHEW K. TOM
DocuSigned by: Matthew K. Tom 749E6F30B64442A...

6/17/2015
S:\Hyde 56\Structures\Submittals\2015_05_19 FinalDesign and Tracings\Drawings\28 Hyde 56_E1_03.dgn
matt_tom



PLAN



ELEVATION

FOR SECTION A-A, SEE SHEET 2 OF 2

NOTES

★ INVERT ALTERNATE STIRRUPS.

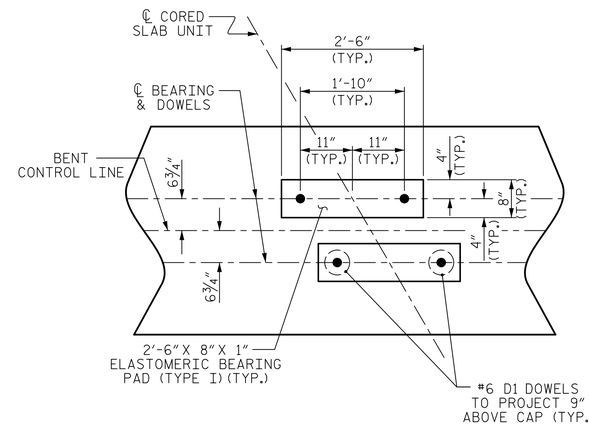
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

MECHANICAL COUPLERS SHALL BE USED TO JOIN THE #4, #5 AND #10 ″B″ BARS IN STAGE I WITH THE #4, #5 AND #10 ″B″ IN STAGE II.

FOR MECHANICAL COUPLERS, SEE MECHANICAL BUTT SPLICES FOR REINFORCING STEEL IN STANDARD SPECIFICATIONS.

THE CONTRACTOR′S ATTENTION IS CALLED TO THE FACT THAT THE LENGTHS OF THE #5 AND #10 ″B″ BARS AT THE STAGED CONSTRUCTION JOINT MAY NEED TO BE ADJUSTED DUE TO THE TYPE OF MECHANICAL BUTT SPLICE CHOSEN BY THE CONTRACTOR. NO ADDITIONAL PAYMENT WILL BE MADE FOR ANY ADJUSTMENTS.

THE CONCRETE IN THE BENT CAPS OF BENT NO. 1 SHALL CONTAIN SILICA FUME. SILICA FUME SHALL BE SUBSTITUTED FOR 5% OF THE PORTLAND CEMENT BY WEIGHT. IF THE OPTION OF ARTICLE 1024-1 OF THE STANDARD SPECIFICATIONS TO PARTIALLY SUBSTITUTE CLASS F FLY ASH FOR PORTLAND CEMENT IS EXERCISED, THEN THE RATE OF FLY ASH SUBSTITUTION SHALL BE REDUCED TO 1.0 LB OF FLY ASH PER 1.0 LB. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE LUMP SUM PRICE BID FOR CONSTRUCTION OF SUBSTRUCTURE.



DETAIL ″A″

(DIMENSIONS ARE TYPICAL EACH BEARING)

TOP OF PILE ELEVATIONS	
1	1.58
2	1.46
3	1.34
4	1.22
5	1.10
6	0.97
7	0.85
8	0.73

PROJECT NO. 17BP.1.R.67

HYDE COUNTY

STATION: 13+65.90 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT No. 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-29
1			3			TOTAL SHEETS
2			4			40

DRAWN BY : R. L. WHITCHER DATE : 1/8/15
CHECKED BY : M. K. TOM DATE : 2/5/15
DESIGNED BY : M. K. TOM DATE : 1/22/15

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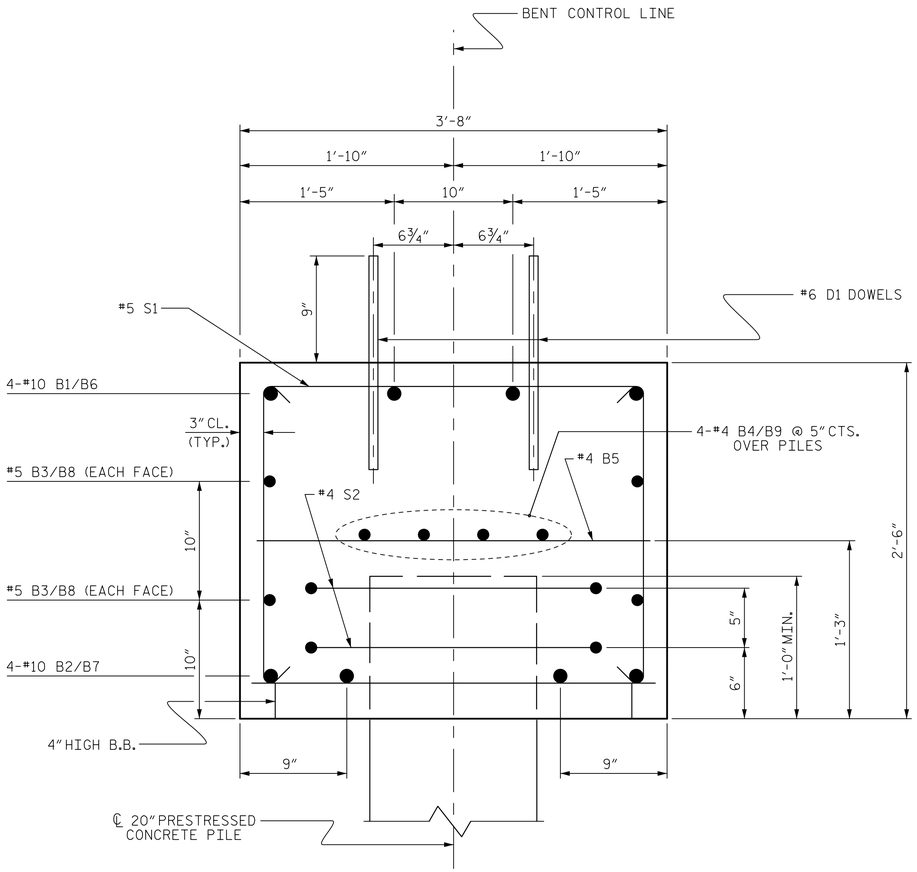
NC LIC. • C-2243

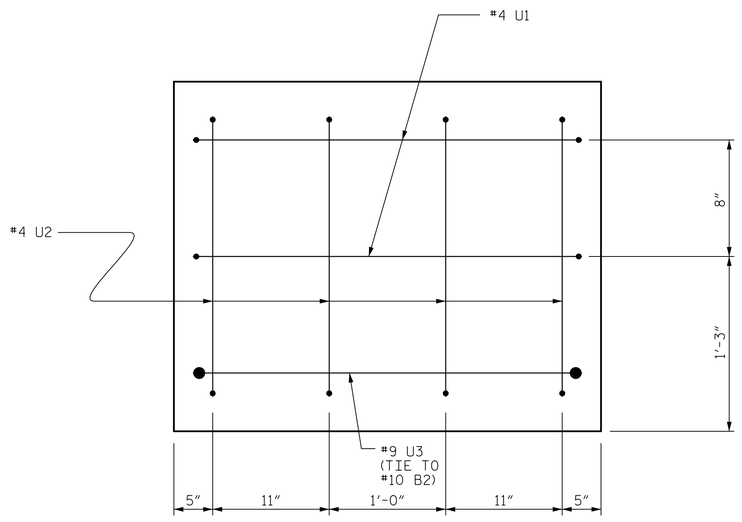
6/22/2015
NORTH CAROLINA PROFESSIONAL SEAL 039173 ENGINEER MATTHEW K. TOM

Docusigned by: Matthew K. Tom
749E6F30B64442A...

6/17/2015
S:\Hyde 56\Structures\Submittals\2015_05_19 Final Design and Tracings\Drawings\29 Hyde 56_B1_01.dgn
matt_tom



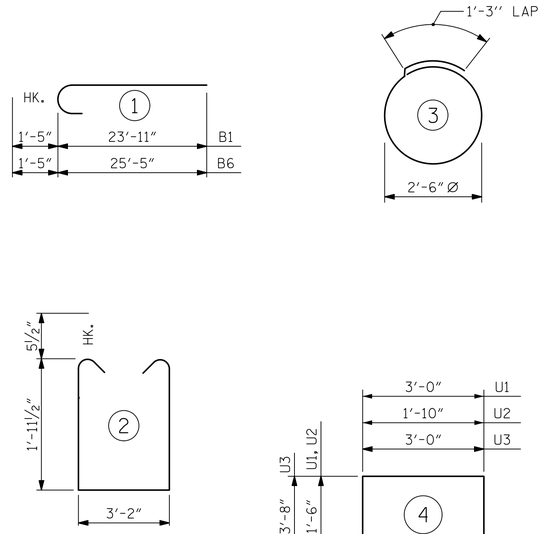
SECTION A-A



END OF CAP VIEW

(TYPICAL BOTH ENDS)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

STAGE I

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳B1	4	10	1	25′-4″	436
✳B2	4	10	STR	23′-11″	412
✳B3	4	5	STR	23′-11″	100
✳B4	4	4	STR	23′-11″	64
✳B5	6	4	STR	3′-4″	13
✳D1	24	5	2	1′-6″	38
✳S1	28	5	2	8′-0″	234
✳S2	8	4	3	9′-2″	49
✳U1	2	4	4	6′-0″	8
✳U2	4	4	4	4′-10″	13
✳U3	1	9	4	10′-4″	35

EPOXY COATED REINFORCING STEEL (FOR ONE BENT) 1,402 LBS.

CLASS AA CONCRETE BREAKDOWN (FOR ONE BENT)

POUR #1 (CAP) ▲ 7.43 C.Y

TOTAL CLASS AA CONCRETE 7.43 C.Y

20″ PRESTRESSED CONCRETE PILES (FOR ONE BENT)

No. 4 LIN. FT. 340

STAGE II

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳B5	7	4	STR	3′-4″	16
✳B6	4	10	1	26′-10″	462
✳B7	4	10	STR	25′-5″	437
✳B8	4	5	STR	25′-5″	106
✳B9	4	4	STR	25′-5″	68
✳D1	28	5	2	1′-6″	44
✳S1	22	5	2	8′-0″	184
✳S2	8	4	3	9′-2″	49
✳U1	2	4	4	6′-0″	8
✳U2	4	4	4	4′-10″	13
✳U3	1	9	4	10′-4″	35

EPOXY COATED REINFORCING STEEL (FOR ONE BENT) 1,422 LBS.

CLASS AA CONCRETE BREAKDOWN (FOR ONE BENT)

POUR #1 (CAP) ▲ 8.61 C.Y.

TOTAL CLASS AA CONCRETE 8.61 C.Y.

20″ PRESTRESSED CONCRETE PILES (FOR ONE BENT)

No. 4 LIN. FT. 340

▲ CONCRETE DISPLACED BY THE 20″ PRESTRESSED CONCRETE PILES HAS BEEN DEDUCTED FROM THE CONCRETE QUANTITY.

PROJECT NO. 17BP.1.R.67

HYDE COUNTY

STATION: 13+65.90 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT No. 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-30
1			3			TOTAL SHEETS
2			4			40

DRAWN BY : R. L. WHITCHER DATE : 1/18/15
CHECKED BY : M. K. TOM DATE : 2/5/15
DESIGNED BY : M. K. TOM DATE : 1/22/15

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6/22/2015
NORTH CAROLINA PROFESSIONAL SEAL 039173 ENGINEER MATTHEW K. TOM
DocuSigned by: Matthew K. Tom
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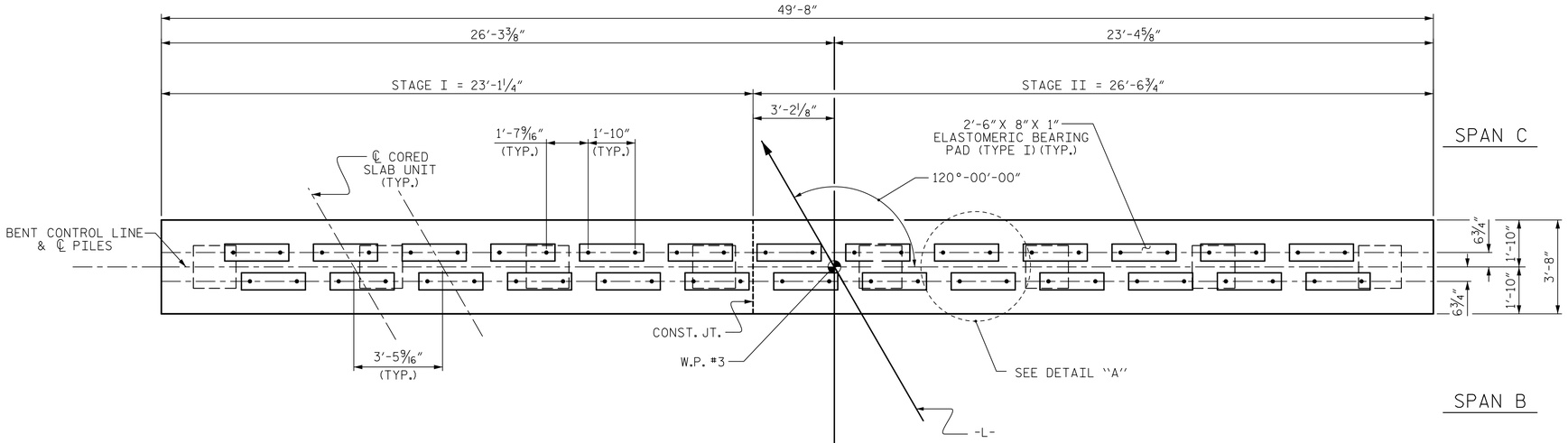
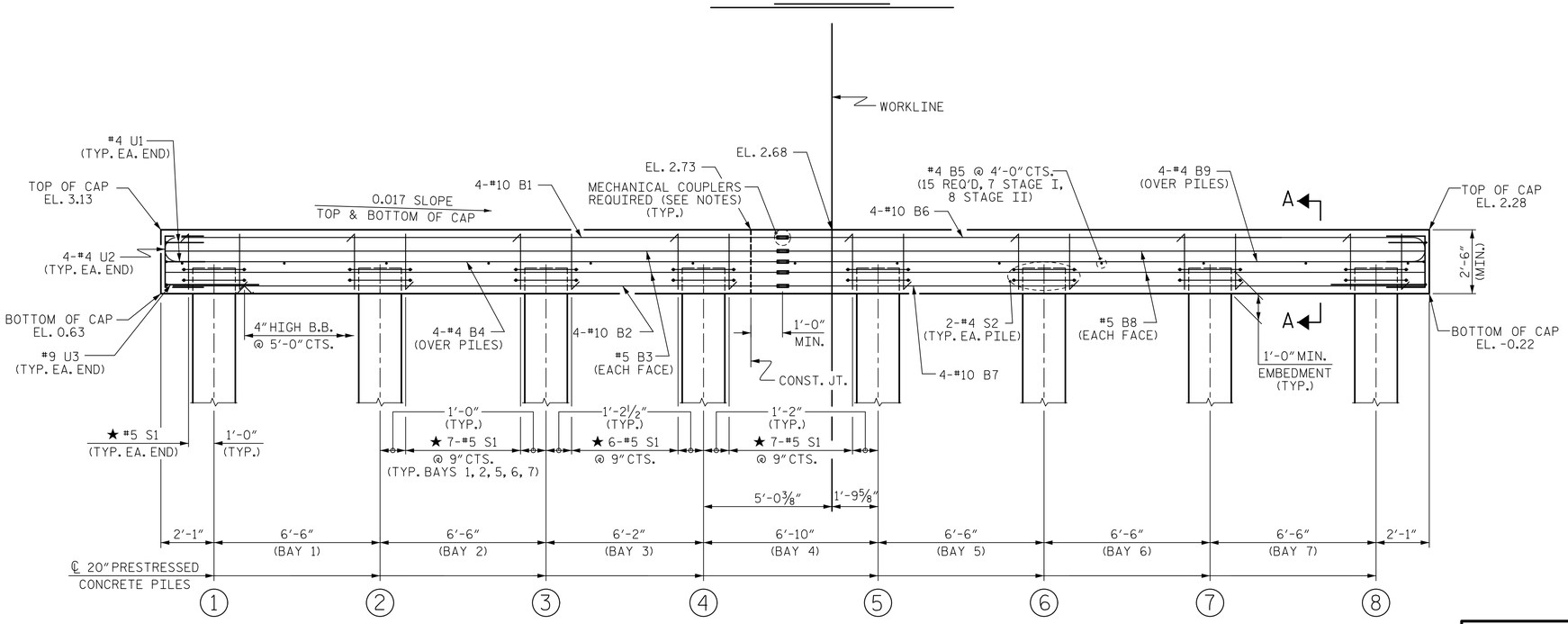
6/17/2015
S:\Hyde 56\Structures\Submittals\2015_05_19 Final Design and Tracings\Drawings\30 Hyde 56_B1_02.dgn
matt_tom



PLAN



ELEVATION

FOR SECTION A-A, SEE SHEET 2 OF 2

NOTES

★ INVERT ALTERNATE STIRRUPS.

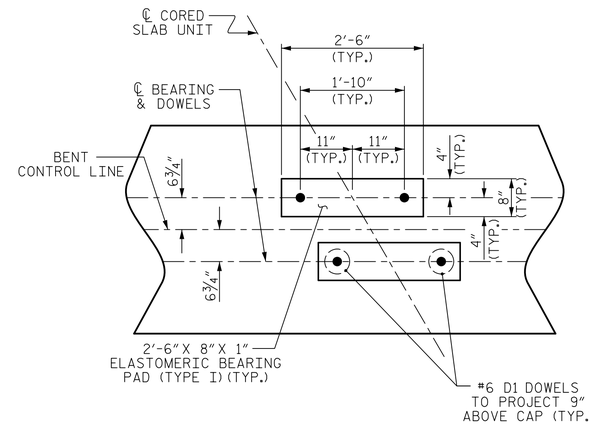
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

MECHANICAL COUPLERS SHALL BE USED TO JOIN THE #4, #5 AND #10 ″B″ BARS IN STAGE I WITH THE #4, #5 AND #10 ″B″ IN STAGE II.

FOR MECHANICAL COUPLERS, SEE MECHANICAL BUTT SPLICES FOR REINFORCING STEEL IN STANDARD SPECIFICATIONS.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LENGTHS OF THE #5 AND #10 ″B″ BARS AT THE STAGED CONSTRUCTION JOINT MAY NEED TO BE ADJUSTED DUE TO THE TYPE OF MECHANICAL BUTT SPLICE CHOSEN BY THE CONTRACTOR. NO ADDITIONAL PAYMENT WILL BE MADE FOR ANY ADJUSTMENTS.

THE CONCRETE IN THE BENT CAPS OF BENT NO. 1 SHALL CONTAIN SILICA FUME. SILICA FUME SHALL BE SUBSTITUTED FOR 5% OF THE PORTLAND CEMENT BY WEIGHT. IF THE OPTION OF ARTICLE 1024-1 OF THE STANDARD SPECIFICATIONS TO PARTIALLY SUBSTITUTE CLASS F FLY ASH FOR PORTLAND CEMENT IS EXERCISED, THEN THE RATE OF FLY ASH SUBSTITUTION SHALL BE REDUCED TO 1.0 LB OF FLY ASH PER 1.0 LB. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE LUMP SUM PRICE BID FOR CONSTRUCTION OF SUBSTRUCTURE.



DETAIL ″A″

(DIMENSIONS ARE TYPICAL EACH BEARING)

TOP OF PILE ELEVATIONS

1	1.59
2	1.48
3	1.37
4	1.27
5	1.15
6	1.04
7	0.93
8	0.82

6/22/2015

PROJECT NO. 17BP.1.R.67

HYDE COUNTY

STATION: 13+65.90 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT No. 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-31
1			3			TOTAL SHEETS
2			4			40

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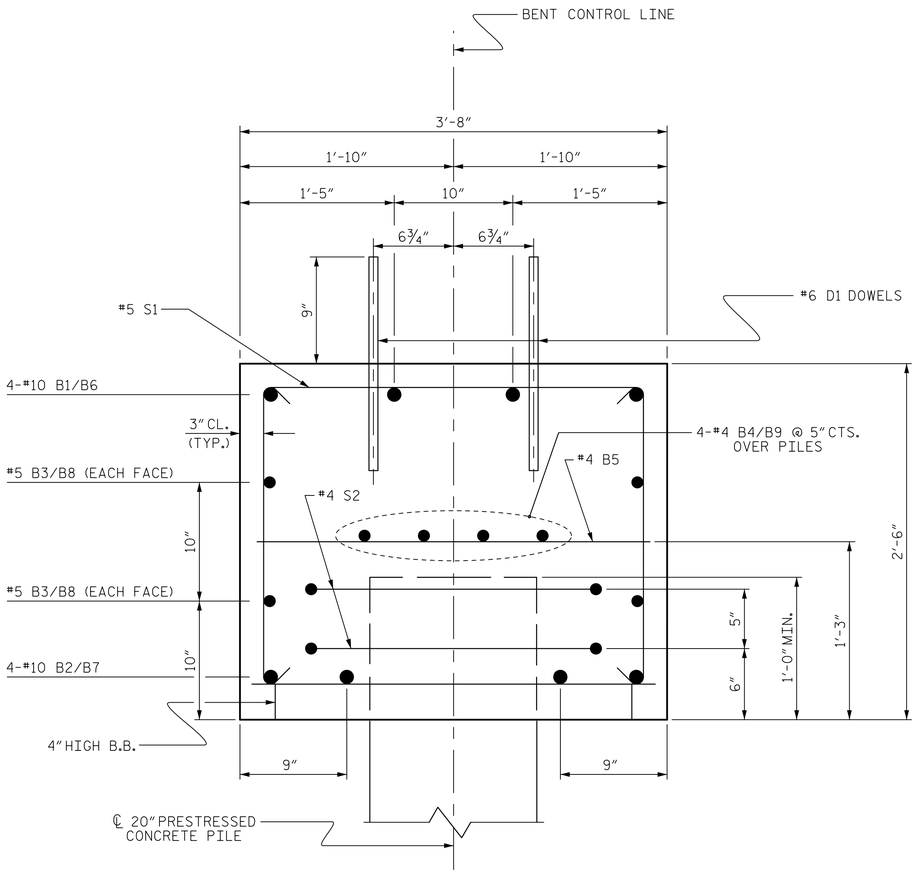
NC LIC. # C-2243

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 039173 MATTHEW K. TOM

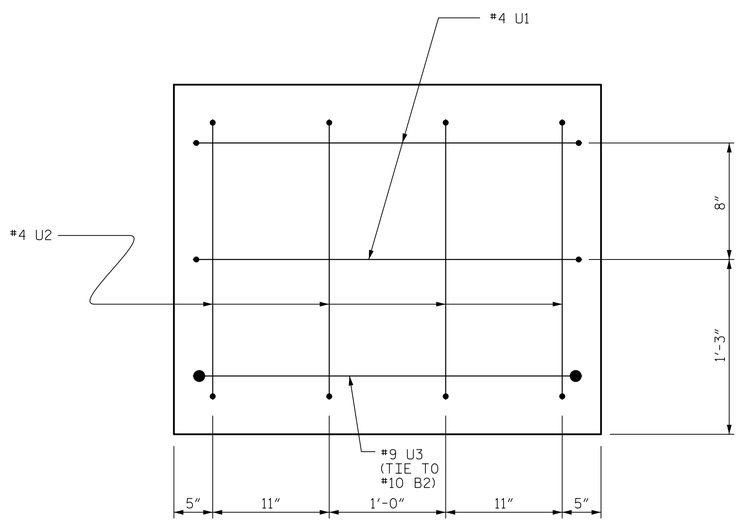
DocuSigned by: Matthew K. Tom 749E6F30B64442A...

DRAWN BY : R. L. WHITCHER DATE : 2/5/15
CHECKED BY : M. K. TOM DATE : 2/24/15
DESIGNED BY : M. K. TOM DATE : 1/22/15

6/17/2015
S:\Hyde 56\Structures\Submittals\2015_05_19 Final Design and Tracings\Drawings\31 Hyde 56_B2_01.dgn
matt_tom



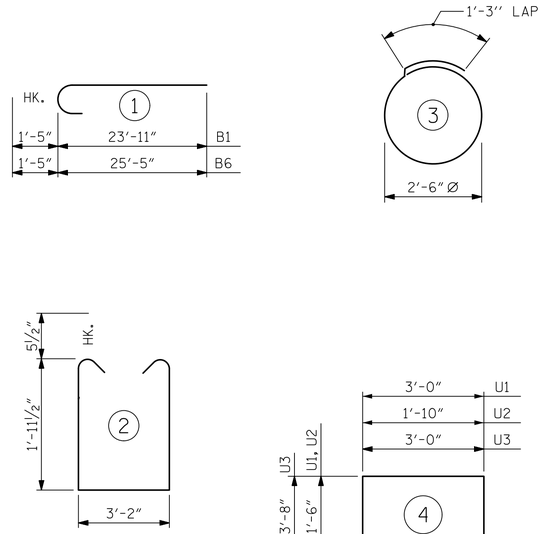
SECTION A-A



END OF CAP VIEW

(TYPICAL BOTH ENDS)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

STAGE I

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳B1	4	10	1	25′-4″	436
✳B2	4	10	STR	23′-11″	412
✳B3	4	5	STR	23′-11″	100
✳B4	4	4	STR	23′-11″	64
✳B5	6	4	STR	3′-4″	13
✳D1	24	5	2	1′-6″	38
✳S1	28	5	2	8′-0″	234
✳S2	8	4	3	9′-2″	49
✳U1	2	4	4	6′-0″	8
✳U2	4	4	4	4′-10″	13
✳U3	1	9	4	10′-4″	35

EPOXY COATED REINFORCING STEEL (FOR ONE BENT) 1,402 LBS.

CLASS AA CONCRETE BREAKDOWN (FOR ONE BENT)

POUR #1 (CAP) ▲ 7.43 C.Y

TOTAL CLASS AA CONCRETE 7.43 C.Y

20″ PRESTRESSED CONCRETE PILES (FOR ONE BENT)

No. 4 LIN. FT. 360

STAGE II

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳B5	7	4	STR	3′-4″	16
✳B6	4	10	1	26′-10″	462
✳B7	4	10	STR	25′-5″	437
✳B8	4	5	STR	25′-5″	106
✳B9	4	4	STR	25′-5″	68
✳D1	28	5	2	1′-6″	44
✳S1	22	5	2	8′-0″	184
✳S2	8	4	3	9′-2″	49
✳U1	2	4	4	6′-0″	8
✳U2	4	4	4	4′-10″	13
✳U3	1	9	4	10′-4″	35

EPOXY COATED REINFORCING STEEL (FOR ONE BENT) 1,422 LBS.

CLASS AA CONCRETE BREAKDOWN (FOR ONE BENT)

POUR #1 (CAP) ▲ 8.61 C.Y.

TOTAL CLASS AA CONCRETE 8.61 C.Y.

20″ PRESTRESSED CONCRETE PILES (FOR ONE BENT)

No. 4 LIN. FT. 360

▲ CONCRETE DISPLACED BY THE 20″ PRESTRESSED CONCRETE PILES HAS BEEN DEDUCTED FROM THE CONCRETE QUANTITY.

DRAWN BY : M. K. TOM DATE : 2/24/15
CHECKED BY : R. L. WHITCHER DATE : 2/24/15
DESIGNED BY : M. K. TOM DATE : 1/22/15

6/17/2015
S:\Hyde 56\Structures\Submittals\2015_05_19 Final Design and Tracings\Drawings\32 Hyde 56_B2_02.dgn
matt_tom

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NC LIC. # C-2243

6/22/2015
NORTH CAROLINA PROFESSIONAL SEAL 039173 ENGINEER MATTHEW K. TOM
DocuSigned by: Matthew K. Tom 749E6F30B64442A...

PROJECT NO. 17BP.1.R.67
HYDE COUNTY
STATION: 13+65.90 -L-

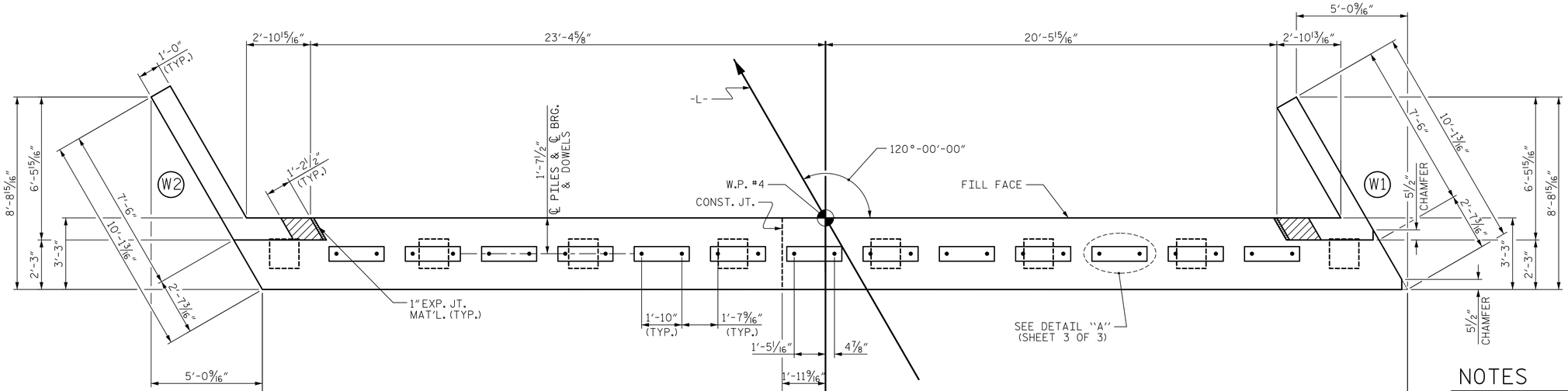
SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

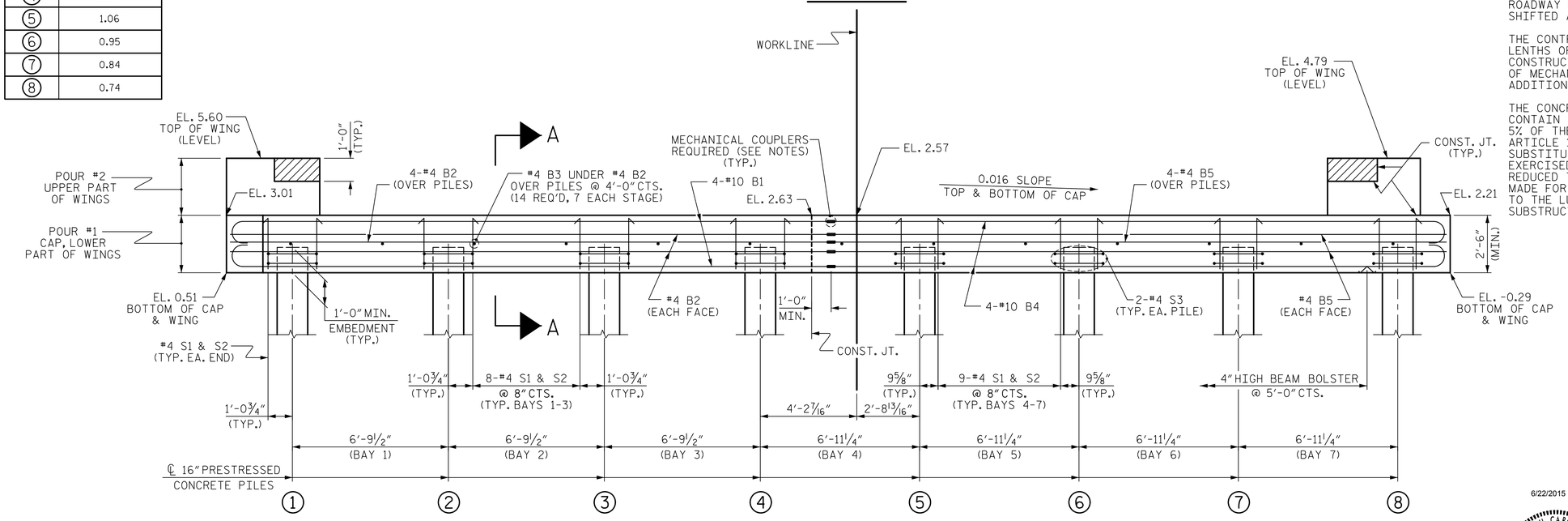
SUBSTRUCTURE

BENT No. 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-32
1			3			TOTAL SHEETS
2			4			40



PLAN



ELEVATION

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

TOP OF PILE ELEVATIONS	
1	1.48
2	1.38
3	1.27
4	1.17
5	1.06
6	0.95
7	0.84
8	0.74

NOTES

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

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

FOR WING DETAILS, SEE SHEET 2 OF 3.

MECHANICAL COUPLERS SHALL BE USED TO JOIN THE #4, AND #10 "B" BARS IN STAGE I WITH THE #4, AND #10 "B" BARS IN STAGE II.

INSTALL THE 4"Ø DRAIN PIPE THROUGH THE WINGWALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WINGWALL MAY BE SHIFTED AS NECASSARY TO CLEAR THE DRAIN PIPE.

THE CONTRACTORS ATTENTION IS CALLED TO THE FACT THAT THE LENTHS OF THE #4 AND #10 "B" BARS AT THE STAGED CONSTRUCTION JOINT MAY NEED TO BE ADJUSTED DUE TO THE TYPE OF MECHANICAL BUTT SPLICE CHOSEN BY THE CONTRACTOR. NO ADDITIONAL PAYMENT WILL BE MADE FOR ANY ADJUSTMENTS.

THE CONCRETE IN THE END BENT CAPS OF END BENT NO. 1 SHALL CONTAIN SILICA FUME. SILICA FUME SHALL BE SUBSTITUTED FOR 5% OF THE PORTLAND CEMENT BY WEIGHT. IF THE OPTION OF ARTICLE 1024-1 OF THE STANDARD SPECIFICATIONS TO PARTIALLY SUBSTITUTE CLASS F FLY ASH FOR PORTLAND CEMENT IS EXERCISED, THEN THE RATE OF FLY ASH SUBSTITUTION SHALL BE REDUCED TO 1.0 LB OF FLY ASH PER 1.0 LB. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE LUMP SUM PRICE BID FOR CONSTRUCTION OF SUBSTRUCTURE.

PROJECT NO. 17BP.1.R.67
HYDE COUNTY
STATION: 13+65.90 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-33
1			3			TOTAL SHEETS
2			4			40

DRAWN BY : R. L. WHITCHER DATE : 2/1/15
CHECKED BY : M. K. TOM DATE : 2/20/15
DESIGNED BY : M. K. TOM DATE : 1/22/15

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6/22/2015
NORTH CAROLINA PROFESSIONAL SEAL 039173 ENGINEER MATTHEW K. TOM
Docusigned by: Matthew K. Tom 749E6F30B64442A...

6/17/2015
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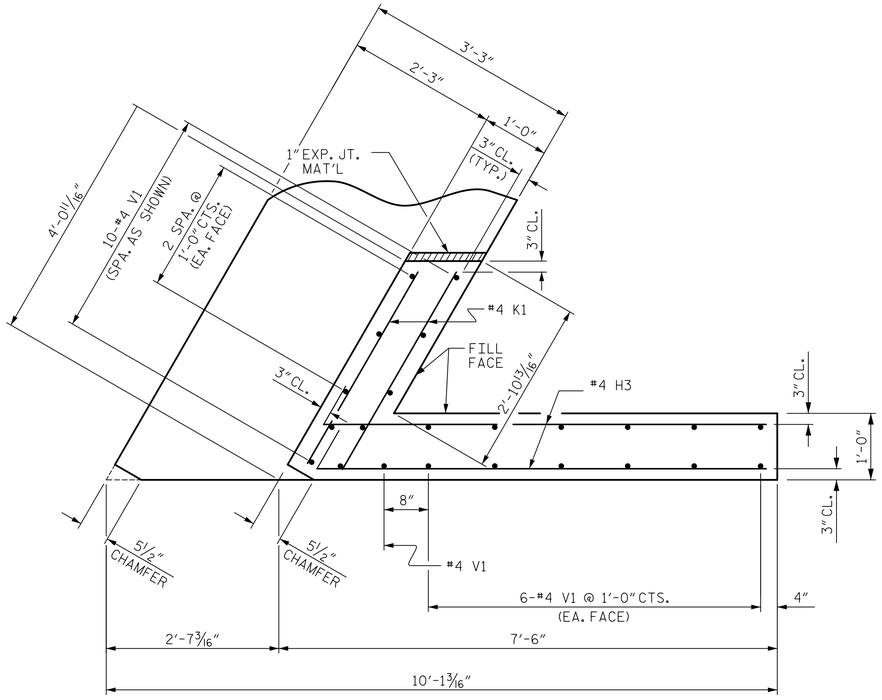
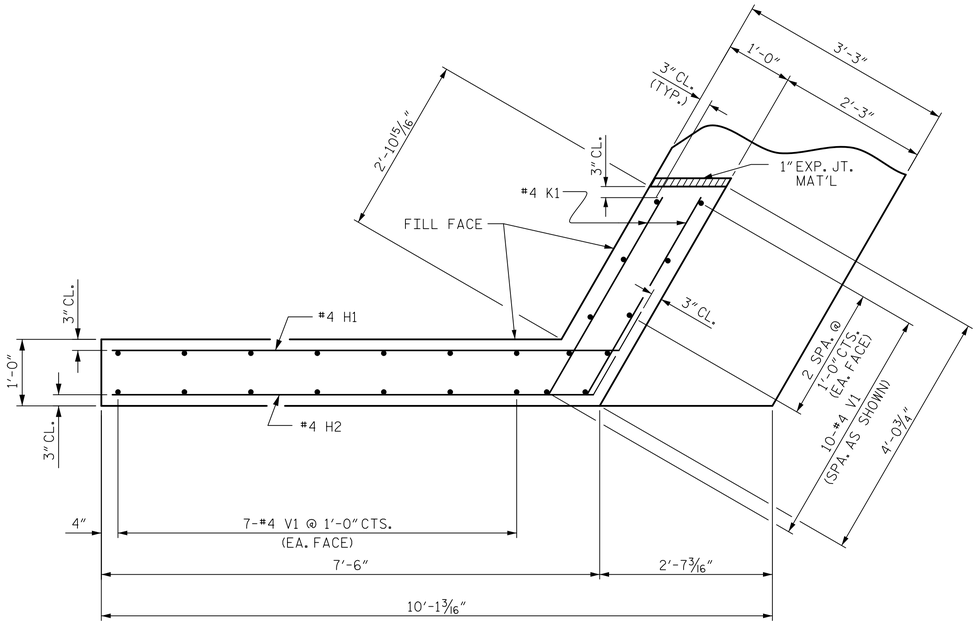
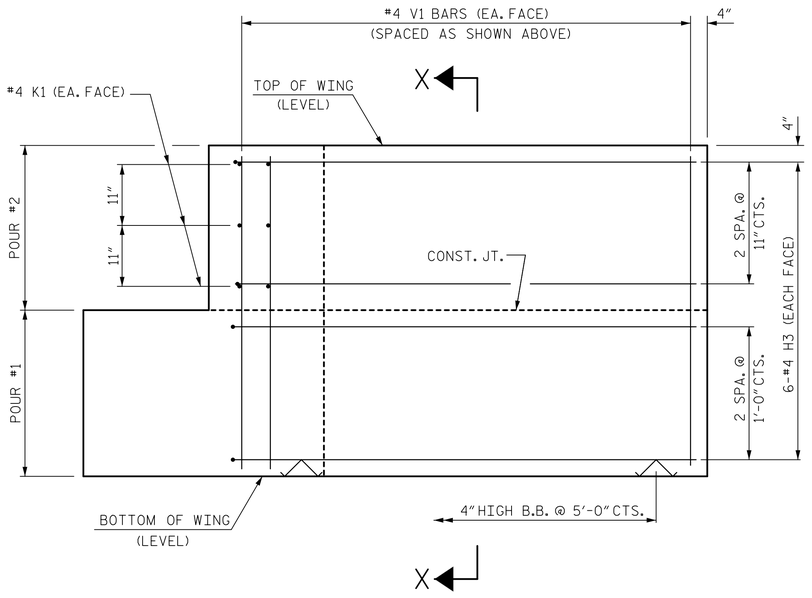


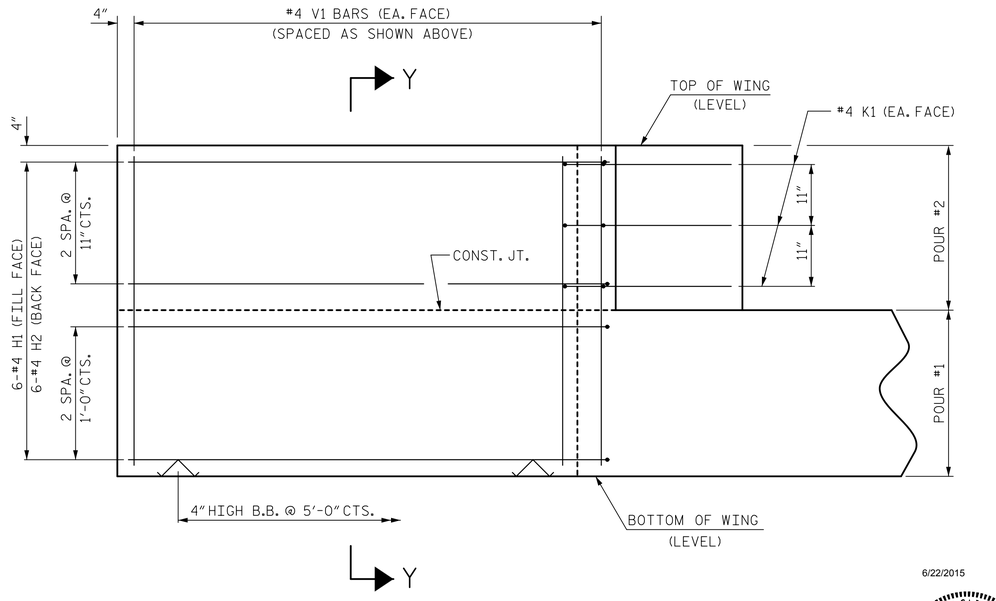
PLAN OF WING (W1)



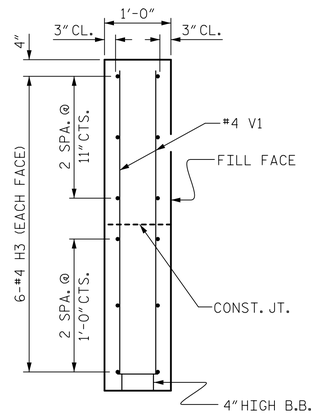
PLAN OF WING (W2)



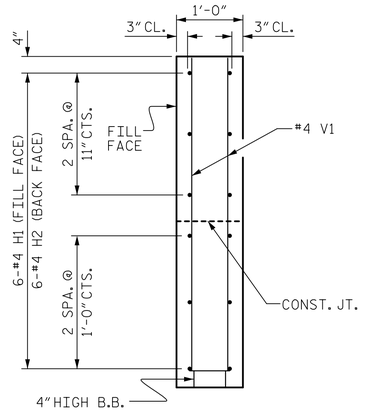
ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION X-X



SECTION Y-Y

PROJECT NO. 17BP.1.R.67

HYDE COUNTY

STATION: 13+65.90 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 2
WING DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-34
1			3			TOTAL SHEETS
2			4			40

ASSEMBLED BY :	R. L. WHITCHER	DATE : 2/10/15
CHECKED BY :	M. K. TOM	DATE : 2/20/15
DESIGNED BY :	M. K. TOM	DATE : 1/22/15
DRAWN BY :	DGE	12/09
CHECKED BY :	MKT	01/10

WING DETAILS

Prepared by
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6/22/2015
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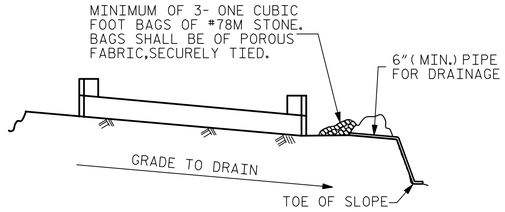
STD. NO. EB_39_120S

6/17/2015
S:\Hyde 56\Structures\Submittals\2015_05_19 Final Design and Tracings\Drawings\34 Hyde 56_E2_02.dgn
matt_tom

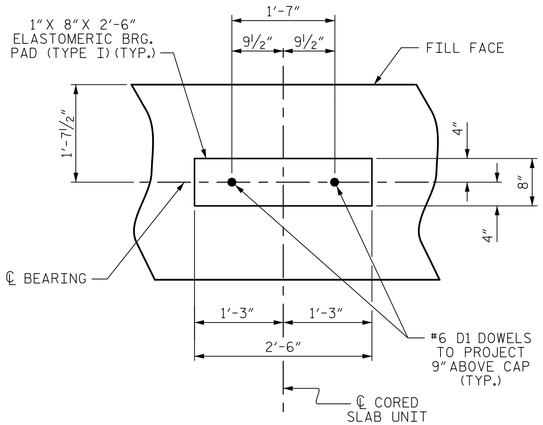


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

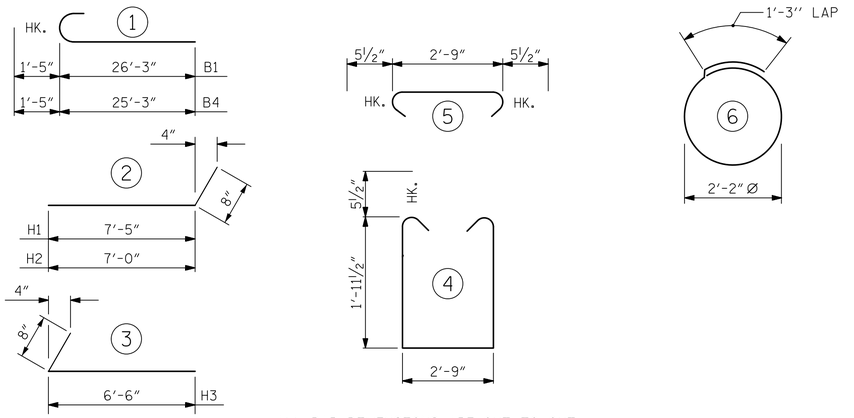
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



DETAIL "A"

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL - FOR ONE END BENT

STAGE I

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳B1	8	10	1	27'-8"	952
✳B2	8	4	STR.	26'-2"	140
✳B3	7	4	STR.	3'-6"	16
✳D1	12	6	STR.	1'-6"	27
✳H1	6	4	2	8'-1"	32
✳H2	6	4	2	7'-8"	31
✳K1	6	4	STR.	3'-5"	14
✳S1	27	5	4	7'-7"	214
✳S2	27	5	5	3'-8"	103
✳S3	8	4	6	8'-1"	43
✳V1	23	4	STR.	4'-5"	68

EPOXY COATED REINFORCING STEEL (FOR ONE END BENT) 1640 LBS.

CLASS AA CONCRETE BREAKDOWN (FOR ONE END BENT)

POUR #1	CAP, LOWER PART OF WINGS	▲ 7.74 C.Y.
POUR #2	UPPER PART OF WINGS	1.06 C.Y.
TOTAL CLASS AA CONCRETE		8.79 C.Y.

16" PRESTRESSED CONCRETE PILES (FOR ONE END BENT)

No. 4 LIN. FT. 300

STAGE II

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳B3	7	4	STR.	2'-9"	13
✳B4	8	10	1	26'-8"	918
✳B5	8	4	STR.	26'-4"	141
✳D1	14	6	STR.	1'-6"	32
✳H3	12	4	3	7'-2"	57
✳K1	6	4	STR.	3'-5"	14
✳S1	31	5	4	7'-7"	245
✳S2	31	5	5	3'-8"	119
✳S3	8	4	6	8'-1"	43
✳V1	24	4	STR.	4'-5"	71

EPOXY COATED REINFORCING STEEL (FOR ONE END BENT) 1653 LBS.

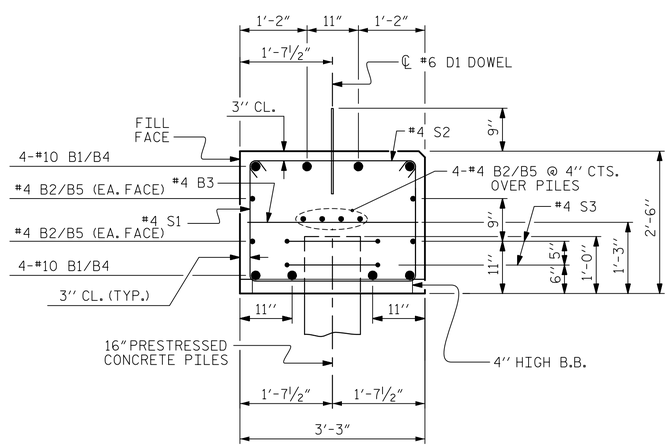
CLASS AA CONCRETE BREAKDOWN (FOR ONE END BENT)

POUR #1	CAP, LOWER PART OF WINGS	▲ 8.56 C.Y.
POUR #2	UPPER PART OF WINGS	0.99 C.Y.
TOTAL CLASS AA CONCRETE		9.55 C.Y.

16" PRESTRESSED CONCRETE PILES (FOR ONE END BENT)

No. 4 LIN. FT. 300

▲ CONCRETE DISPLACED BY THE 16" PRESTRESSED CONCRETE PILES HAS BEEN DEDUCTED FROM THE CONCRETE QUANTITY.



SECTION A-A

PROJECT NO. 17BP.1.R.67

HYDE COUNTY

STATION: 13+65.90 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 2 DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-35
1			3			TOTAL SHEETS
2			4			40

ASSEMBLED BY :	R. L. WHITCHER	DATE : 2/10/15
CHECKED BY :	M. K. TOM	DATE : 2/20/15
DESIGNED BY :	M. K. TOM	DATE : 1/22/15
DRAWN BY :	DGE 12/09	
CHECKED BY :	MKT 01/10	

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NC LIC. # C-2243

6/22/2015
NORTH CAROLINA PROFESSIONAL SEAL 039173 ENGINEER MATTHEW K. TOM
DocuSigned by: Matthew K. Tom 749E6F30B64442A...

6/17/2015
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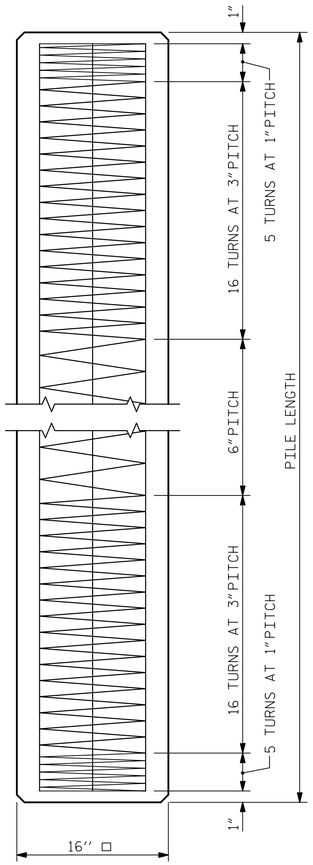
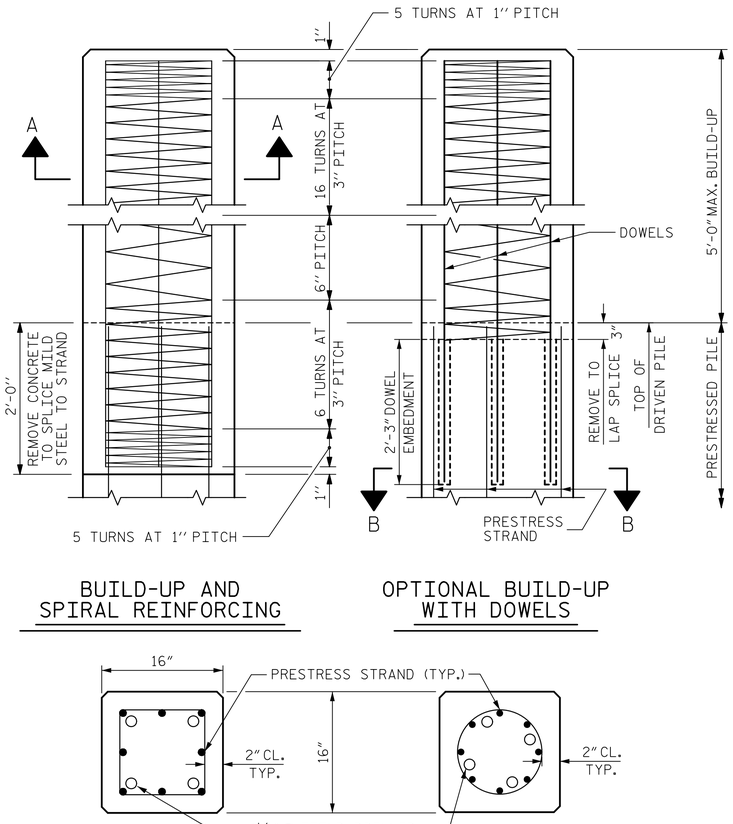
matt_tom

STD. NO. EB_39_120S

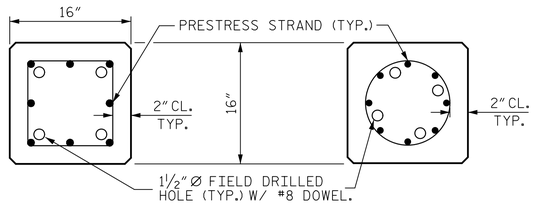


ELEVATION



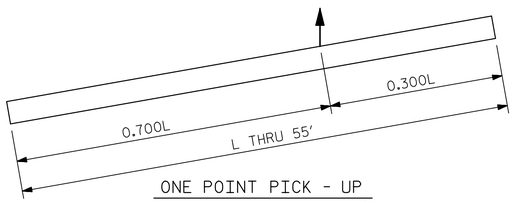
BUILD-UP AND SPIRAL REINFORCING

OPTIONAL BUILD-UP WITH DOWELS

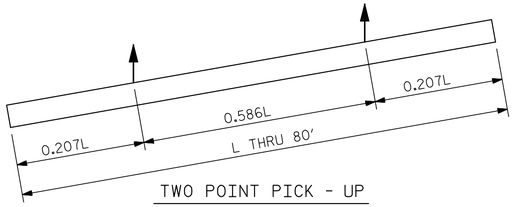


SECTION "B-B"

(AT THE CONTRACTOR'S OPTION, PILE BUILD-UP MAY BE CONSTRUCTED WITH DOWELS.)

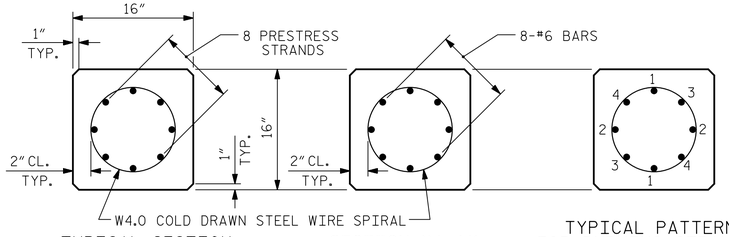


ONE POINT PICK - UP



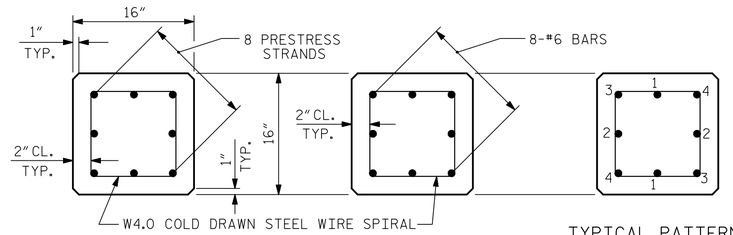
TWO POINT PICK - UP

PICK - UP POINTS



TYPICAL SECTION SECTION "A-A" TYPICAL PATTERN FOR BURNING STRANDS

½" OR 0.6" Ø GRADE 270 L.R. PRESTRESS STRANDS

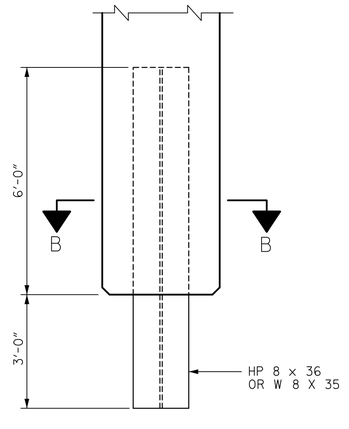


TYPICAL SECTION SECTION "A-A" TYPICAL PATTERN FOR BURNING STRANDS

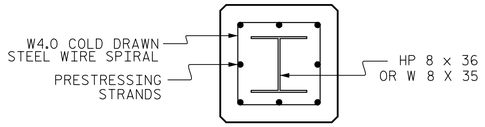
½" OR 0.6" Ø GRADE 270 L.R. PRESTRESS STRANDS

QUANTITIES FOR ONE 16" PRESTRESSED PILE

LENGTH	CONCRETE CU. YDS.	PILE WT. TONS	ONE POINT PICK-UP 0.300L	ONE POINT PICK-UP 0.700L	TWO POINT PICK-UP 0.207L	TWO POINT PICK-UP 0.586L
25'-0"	1.63	3.31	7'-6"	17'-6"	5'-2"	14'-8"
30'-0"	1.96	3.97	9'-0"	21'-0"	6'-2½"	17'-7"
35'-0"	2.29	4.63	10'-6"	24'-6"	7'-3"	20'-6"
40'-0"	2.61	5.29	12'-0"	28'-0"	8'-3½"	23'-5"
45'-0"	2.94	5.95	13'-6"	31'-6"	9'-4"	26'-4"
50'-0"	3.27	6.61	15'-0"	35'-0"	10'-4"	29'-4"
55'-0"	3.59	7.28	16'-6"	38'-6"	11'-4½"	32'-3"
60'-0"	3.92	7.94			12'-5"	35'-2"
65'-0"	4.25	8.60			13'-5½"	38'-1"
70'-0"	4.57	9.26			14'-6"	41'-0"
75'-0"	4.90	9.92			15'-6½"	43'-11"
80'-0"	5.23	10.58			16'-7"	46'-10"



ELEVATION



SECTION B-B

PILE TIP DETAILS

FOR 16" SQUARE PRESTRESSED CONCRETE PILE

NOTES

PRESTRESSED CONCRETE STRENGTH : f'c= 7,500 PSI

BUILD-UP CONCRETE STRENGTH : f'c= 7,500 PSI

STRAND DATA:

SIZE	GRADE	AREA	ULTIMATE STRENGTH	APPLIED PRESTRESS FORCE
½"	270 L.R.	0.153	41,300# PER STRAND	30,980# PER STRAND
0.6"	270 L.R.	0.217	58,600# PER STRAND	43,940# PER STRAND

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW-RELAXATION GRADE 270 STRANDS CONFORMING TO AASHTO M203. STRAND SAMPLING REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

AT THE CONTRACTOR'S OPTION, 1#2" OR 0.6" STRANDS MAY BE USED IN THE STRAND CONFIGURATION SHOWN IN THE TYPICAL SECTION DETAIL. MIXING OF STRAND SIZE IS NOT ALLOWED.

THE SLIP-FORM METHOD OF CASTING PILES WILL NOT BE PERMITTED.

TRANSFER THE LOAD FROM THE ANCHORAGES TO THE PILE AFTER THE CONCRETE HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI.

IF STRAND STRESS IS RELIEVED BY BURNING, THE STRANDS SHALL BE BURNED IN OPPOSITE PAIRS AS INDICATED IN THE TYPICAL PATTERN SHOWN. FOR ANY NUMBER OF STRANDS, BURN IN OPPOSITE PAIRS AND SYMMETRICALLY ABOUT BOTH THE VERTICAL AND HORIZONTAL AXES, STRANDS 1-1 SHALL BE BURNED BEFORE 2-2, ETC. NOT MORE THAN 4 STRANDS, SAY 5-5 AND 6-6, MAY BE BURNED AT ANY ONE SECTION BEFORE THESE SAME PAIRS OF STRANDS ARE BURNED AT BOTH ENDS OF THE BED AND BETWEEN EACH PAIR OF PILES IN THE BED.

PROPOSED DEVICES FOR LIFTING PILES, RECESS DETAILS, AND PATCHING MATERIAL SHALL BE DETAILED IN SHOP DRAWINGS. AFTER ATTACHMENTS HAVE BEEN REMOVED, OPENINGS SHALL BE REPAIRED SUCH THAT THE APPEARANCE OF THE PILE IS UNIFORM.

WHERE CAST-IN-PLACE LIFTING DEVICES ARE NOT USED, PICK-UP POINTS ARE TO BE INDICATED WITH A 2" WIDE BLACK MARK.

DRIVE PILES USING A METHOD APPROVED BY THE ENGINEER, WHEREBY THE HEAD OF THE PILE IS NOT DAMAGED.

DRIVING OF THE BUILT-UP PILE WILL NOT BE PERMITTED UNTIL THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF 5,000 PSI AND UNTIL A PERIOD OF SEVEN DAYS HAS ELAPSED SINCE CASTING OF THE BUILD-UP.

THE WATER/CEMENT RATIO FOR CONCRETE PILES SHALL NOT EXCEED 0.40.

PRESTRESSED PILES SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

THE CONCRETE IN THE PILES OF BENT NO. 1 AND 2 SHALL CONTAIN SILICA FUME. SILICA FUME SHALL BE SUBSTITUTED FOR 5% OF THE PORTLAND CEMENT BY WEIGHT. IF THE OPTION OF ARTICLE 1024-1 OF THE STANDARD SPECIFICATIONS TO PARTIALLY SUBSTITUTE CLASS F FLY ASH FOR PORTLAND CEMENT IS EXERCISED, THEN THE RATE OF FLY ASH SUBSTITUTION SHALL BE REDUCED TO 1.0 LB OF FLY ASH PER 1.0 LB. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE LUMP SUM PRICE BID FOR CONSTRUCTION OF SUBSTRUCTURE.

DOWEL INSTALLATION FOR OPTIONAL BUILD-UP

GROUT COMPRESSIVE STRENGTH: f'c= 5,000 PSI

BEFORE DRILLING DOWEL HOLES, REMOVE THE UPPER 3" OF CONCRETE FROM THE TOP OF THE PILE WITHOUT DAMAGE TO THE REINFORCING STEEL. THE REMOVAL PLANE SHOULD BE NORMAL TO THE EDGE OF THE PILE.

DOWEL HOLES SHALL BE POSITIONED TO MAINTAIN ½" CLEAR TO ALL EXISTING PRESTRESSING STRANDS IN THE CONCRETE PILE.

FIELD DRILLED HOLES SHALL BE CLEAN AND FREE OF ANY OBSTRUCTIONS BEFORE GROUTING OF DOWELS. DOWEL BARS SHALL BE INSTALLED AND GROUTED WITH AN APPROVED NON-SHRINK GROUT.

THE SPIRAL REINFORCING IN ALL BUILD-UPS SHALL BE W4.0 COLD DRAWN WIRE WHICH SHALL BE SECURED TO THE LONGITUDINAL REINFORCEMENT TO MAINTAIN PITCH.

THE SPIRAL REINFORCING IN THE BUILD-UP AND THE PRESTRESSED CONCRETE PILE SHALL BE SPLICED BY OVERLAPPING A MIN. OF ONE TURN.

Prepared by
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NORTH CAROLINA PROFESSIONAL SEAL 039173 ENGINEER MATTHEW K. TOM
1/22/2015
DocuSigned by: Matthew K. Tom
749E6F30B64442A...

PROJECT NO. 17BP.1.R.67

HYDE COUNTY

STATION: 13+65.90 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

16" PRESTRESSED CONCRETE PILE

ASSEMBLED BY : M. K. TOM	DATE : 1/22/15
CHECKED BY : R. L. WHITCHER	DATE : 3/2/15
DESIGNED BY : M. K. TOM	DATE : 1/22/15
DRAWN BY : RH 9/98	REV. 11/30/10 WMC/GM
CHECKED BY : LES 10/98	REV. 10/1/11 MAA/GM
	REV. 12/14 MAA/TMG

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-36
1			3			TOTAL SHEETS
2			4			40

6/17/2015
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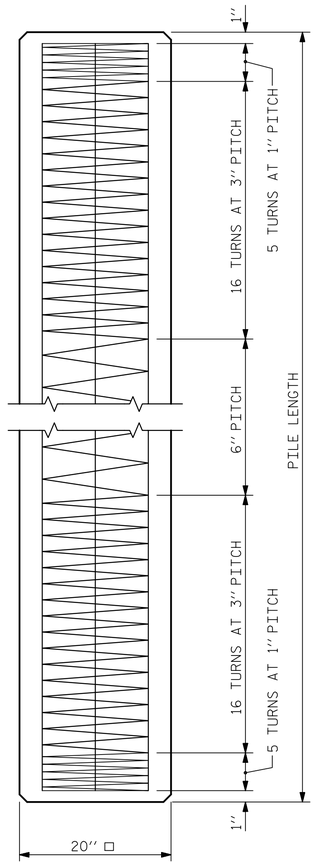
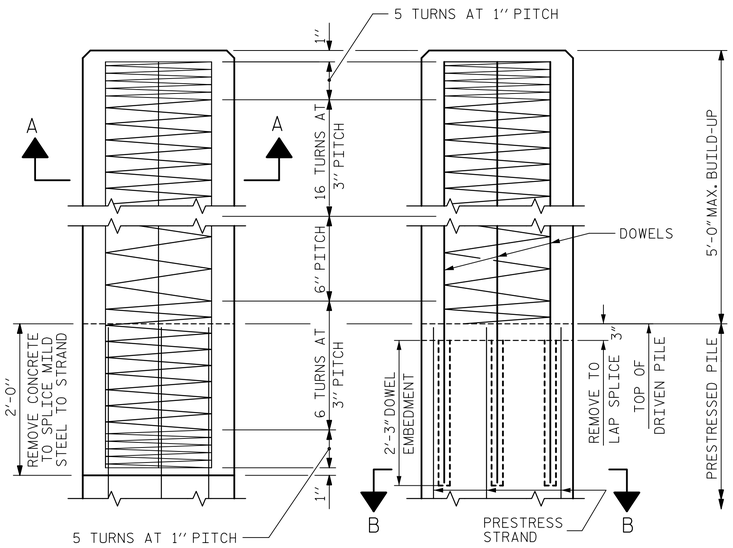
matt_tom

STD. NO. PCP2

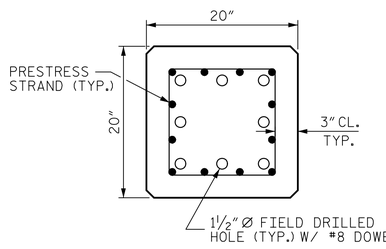


ELEVATION



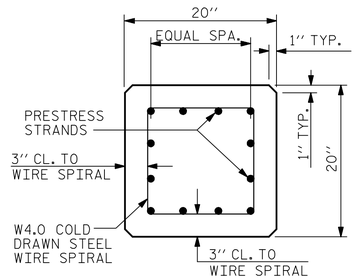
BUILD-UP AND SPIRAL REINFORCING

OPTIONAL BUILD-UP WITH DOWELS

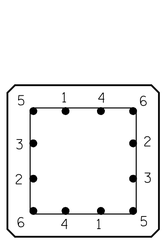


SECTION ''B-B''

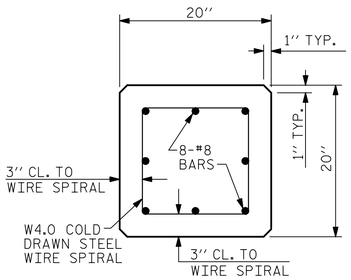
(AT THE CONTRACTOR'S OPTION, PILE BUILD-UP MAY BE CONSTRUCTED WITH DOWELS.)



TYPICAL SECTION

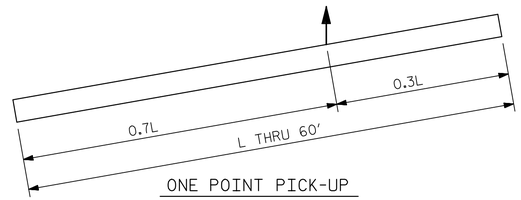


TYPICAL PATTERN FOR BURNING STRANDS

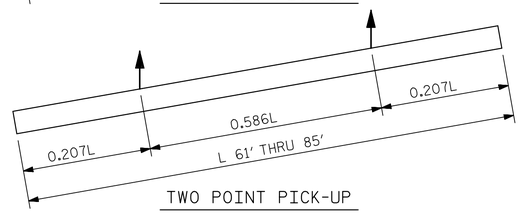


SECTION A-A

½'' OR 0.6'' Ø GRADE 270 L.R. PRESTRESS STRANDS



ONE POINT PICK-UP

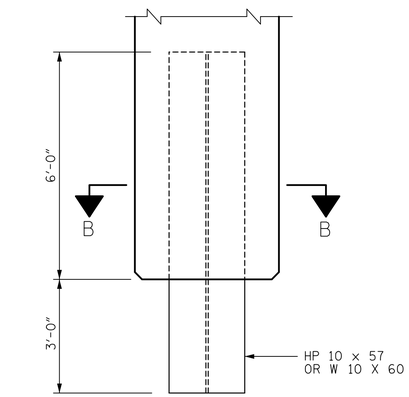


TWO POINT PICK-UP

PICK-UP POINTS

QUANTITIES FOR ONE 20'' SQUARE PILE

LENGTH	CONCRETE CU. YDS.	PILE WT. TONS	ONE POINT PICK-UP 0.3L	ONE POINT PICK-UP 0.7L	TWO POINT PICK-UP 0.207L	TWO POINT PICK-UP 0.586L
25'-0''	2.56	5.18	7'-6''	17'-6''		
30'-0''	3.07	6.22	9'-0''	21'-0''		
35'-0''	3.58	7.26	10'-6''	24'-6''		
40'-0''	4.09	8.29	12'-0''	28'-0''		
45'-0''	4.61	9.33	13'-6''	31'-6''		
50'-0''	5.12	10.36	15'-0''	35'-0''		
55'-0''	5.63	11.40	16'-6''	38'-6''		
60'-0''	6.14	12.44	18'-0''	42'-0''		
65'-0''	6.65	13.47			13'-5½''	38'-1''
70'-0''	7.17	14.51			14'-6''	41'-0''
75'-0''	7.68	15.55			15'-6½''	43'-11''
80'-0''	8.19	16.58			16'-6½''	46'-11''
85'-0''	8.70	17.62			17'-7''	49'-10''



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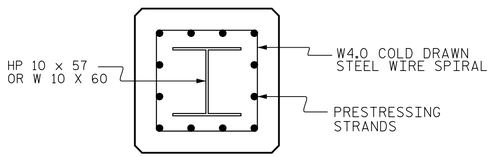

SECTION B-B

PILE TIP DETAILS

FOR 20'' SQUARE PRESTRESSED CONCRETE PILE

NOTES

PRESTRESSED CONCRETE STRENGTH : f'c= 7,500 PSI

BUILD-UP CONCRETE STRENGTH : f'c= 7,500 PSI

STRAND DATA:

SIZE	GRADE	AREA	ULTIMATE STRENGTH	APPLIED PRESTRESS FORCE
½''	270 L.R.	0.153	41,300# PER STRAND	30,980# PER STRAND
0.6''	270 L.R.	0.217	58,600# PER STRAND	43,940# PER STRAND

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW-RELAXATION GRADE 270 STRANDS CONFORMING TO AASHTO M203. STRAND SAMPLING REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

AT THE CONTRACTOR'S OPTION, 1#2'' OR 0.6'' STRANDS MAY BE USED IN THE STRAND CONFIGURATION SHOWN IN THE TYPICAL SECTION DETAIL. MIXING OF STRAND SIZE IS NOT ALLOWED.

THE SLIP-FORM METHOD OF CASTING PILES WILL NOT BE PERMITTED.

TRANSFER THE LOAD FROM THE ANCHORAGES TO THE PILE AFTER THE CONCRETE HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI.

IF STRAND STRESS IS RELIEVED BY BURNING, THE STRANDS SHALL BE BURNED IN OPPOSITE PAIRS AS INDICATED IN THE TYPICAL PATTERN SHOWN. FOR ANY NUMBER OF STRANDS, BURN IN OPPOSITE PAIRS AND SYMMETRICALLY ABOUT BOTH THE VERTICAL AND HORIZONTAL AXES, STRANDS 1-1 SHALL BE BURNED BEFORE 2-2, ETC. NOT MORE THAN 4 STRANDS, SAY 5-5 AND 6-6, MAY BE BURNED AT ANY ONE SECTION BEFORE THESE SAME PAIRS OF STRANDS ARE BURNED AT BOTH ENDS OF THE BED AND BETWEEN EACH PAIR OF PILES IN THE BED.

PROPOSED DEVICES FOR LIFTING PILES, RECESS DETAILS, AND PATCHING MATERIAL SHALL BE DETAILED IN SHOP DRAWINGS. AFTER ATTACHMENTS HAVE BEEN REMOVED, OPENINGS SHALL BE REPAIRED SUCH THAT THE APPEARANCE OF THE PILE IS UNIFORM.

WHERE CAST-IN-PLACE LIFTING DEVICES ARE NOT USED, PICK-UP POINTS ARE TO BE INDICATED WITH A 2'' WIDE BLACK MARK.

DRIVE PILES USING A METHOD APPROVED BY THE ENGINEER, WHEREBY THE HEAD OF THE PILE IS NOT DAMAGED.

DRIVING OF THE BUILT-UP PILE WILL NOT BE PERMITTED UNTIL THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF 5,000 PSI AND UNTIL A PERIOD OF SEVEN DAYS HAS ELAPSED SINCE CASTING OF THE BUILD-UP.

THE WATER/CEMENT RATIO FOR CONCRETE PILES SHALL NOT EXCEED 0.40.

PRESTRESSED PILES SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

THE CONCRETE IN THE PILES OF BENT NO. 1 AND 2 SHALL CONTAIN SILICA FUME. SILICA FUME SHALL BE SUBSTITUTED FOR 5% OF THE PORTLAND CEMENT BY WEIGHT. IF THE OPTION OF ARTICLE 1024-1 OF THE STANDARD SPECIFICATIONS TO PARTIALLY SUBSTITUTE CLASS F FLY ASH FOR PORTLAND CEMENT IS EXERCISED, THEN THE RATE OF FLY ASH SUBSTITUTION SHALL BE REDUCED TO 1.0 LB OF FLY ASH PER 1.0 LB. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE LUMP SUM PRICE BID FOR CONSTRUCTION OF SUBSTRUCTURE.

DOWEL INSTALLATION FOR OPTIONAL BUILD-UP

GROUT COMPRESSIVE STRENGTH: f'c= 5,000 PSI

BEFORE DRILLING DOWEL HOLES, REMOVE THE UPPER 3'' OF CONCRETE FROM THE TOP OF THE PILE WITHOUT DAMAGE TO THE REINFORCING STEEL. THE REMOVAL PLANE SHOULD BE NORMAL TO THE EDGE OF THE PILE.

DOWEL HOLES SHALL BE POSITIONED TO MAINTAIN ½'' CLEAR TO ALL EXISTING PRESTRESSING STRANDS IN THE CONCRETE PILE.

FIELD DRILLED HOLES SHALL BE CLEAN AND FREE OF ANY OBSTRUCTIONS BEFORE GROUTING OF DOWELS. DOWEL BARS SHALL BE INSTALLED AND GROUTED WITH AN APPROVED NON-SHRINK GROUT.

THE SPIRAL REINFORCING IN ALL BUILD-UPS SHALL BE W4.0 COLD DRAWN WIRE WHICH SHALL BE SECURED TO THE LONGITUDINAL REINFORCEMENT TO MAINTAIN PITCH.

THE SPIRAL REINFORCING IN THE BUILD-UP AND THE PRESTRESSED CONCRETE PILE SHALL BE SPLICED BY OVERLAPPING A MIN. OF ONE TURN.

PROJECT NO. 17BP.1.R.67

HYDE COUNTY

STATION: 13+65.90 -L-

SHEET 2 OF 2

ASSEMBLED BY :	M. K. TOM	DATE : 1/22/15
CHECKED BY :	R. L. WHITCHER	DATE : 3/2/15
DESIGNED BY :	M. K. TOM	DATE : 1/22/15
DRAWN BY : WJH 1/89	REV. 11/30/10	WMC/GM
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	REV. 12/14	MAA/TMG

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6/22/2015

NORTH CAROLINA PROFESSIONAL SEAL 039173 ENGINEER MATTHEW K. TOM

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

20'' PRESTRESSED CONCRETE PILE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-37
1			3			TOTAL SHEETS
2			4			40

STD. NO. PCP3

6/17/2015
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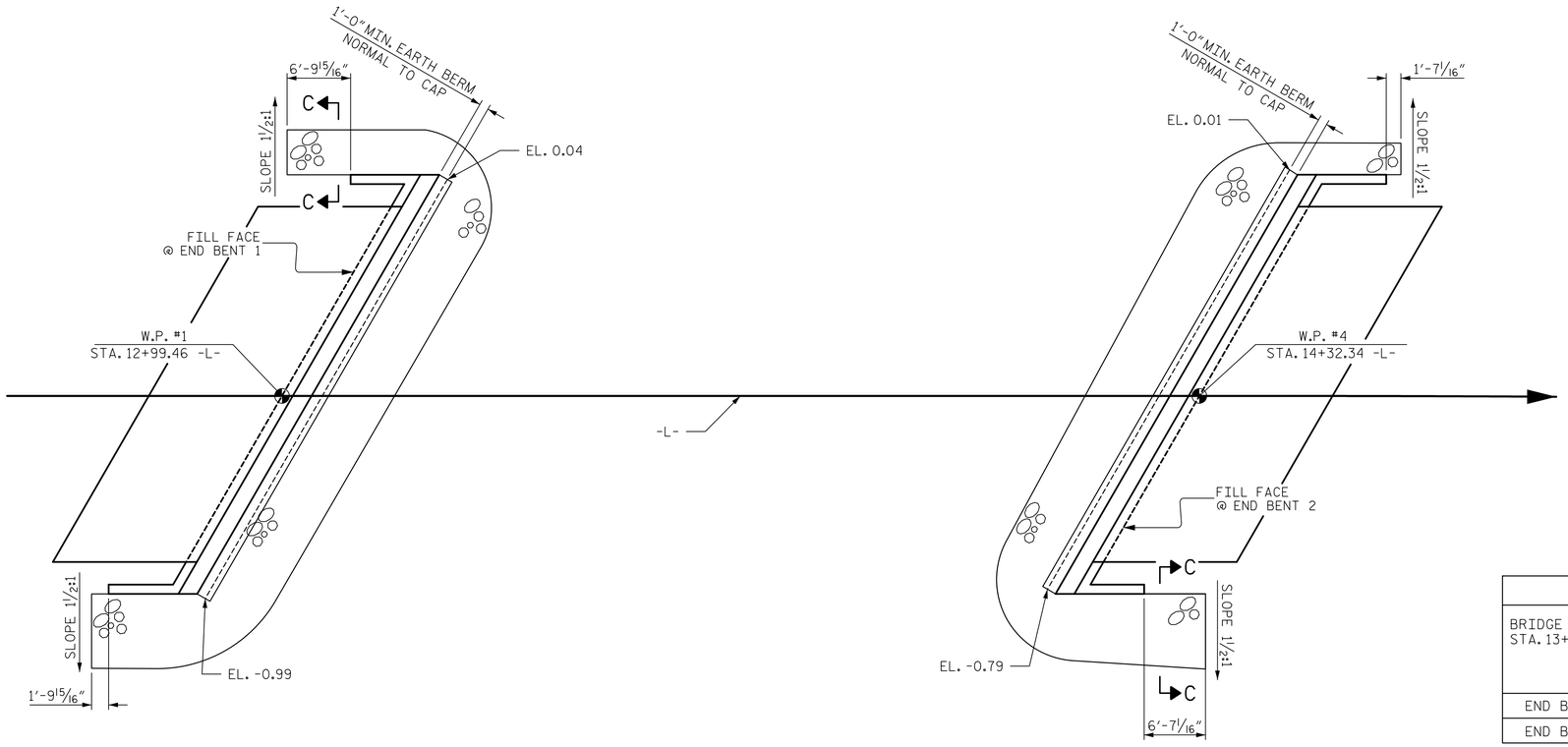


END BENT 1

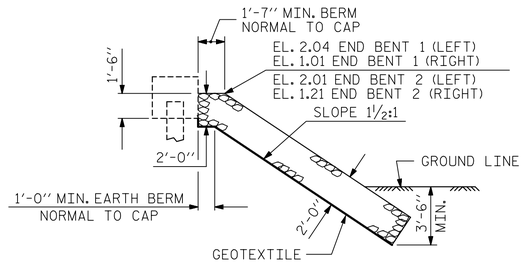
END BENT 2

NOTES :

FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

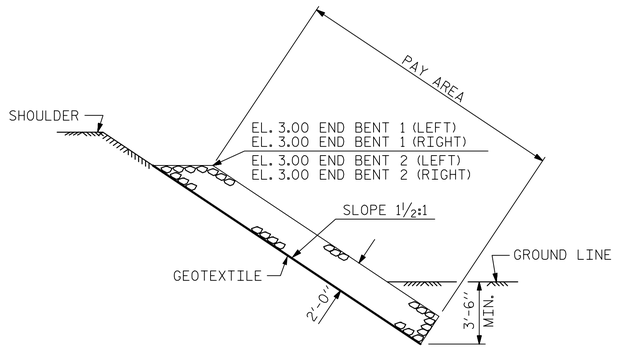
ESTIMATED QUANTITIES		
BRIDGE @ STA. 13+65.90 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	116	130
END BENT 2	117	130

PLAN OF RIP RAP



℄ SECTION

BERM RIP RAPPED



SECTION C-C

PROJECT NO. 17BP.1.R.67

HYDE COUNTY

STATION: 13+65.90 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

RIP RAP DETAILS

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6/22/2015

NORTH CAROLINA PROFESSIONAL SEAL 039173 ENGINEER MATTHEW K. TOM

DocuSigned by: Matthew K. Tom 749E6F30B64442A...

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-38
1			3			TOTAL SHEETS
2			4			40

DRAWN BY : M. K. TOM DATE : 2/3/15
CHECKED BY : R. L. WHITCHER DATE : 3/4/15
DESIGNED BY : M. K. TOM DATE : 2/3/15

6/17/2015
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matt_tom

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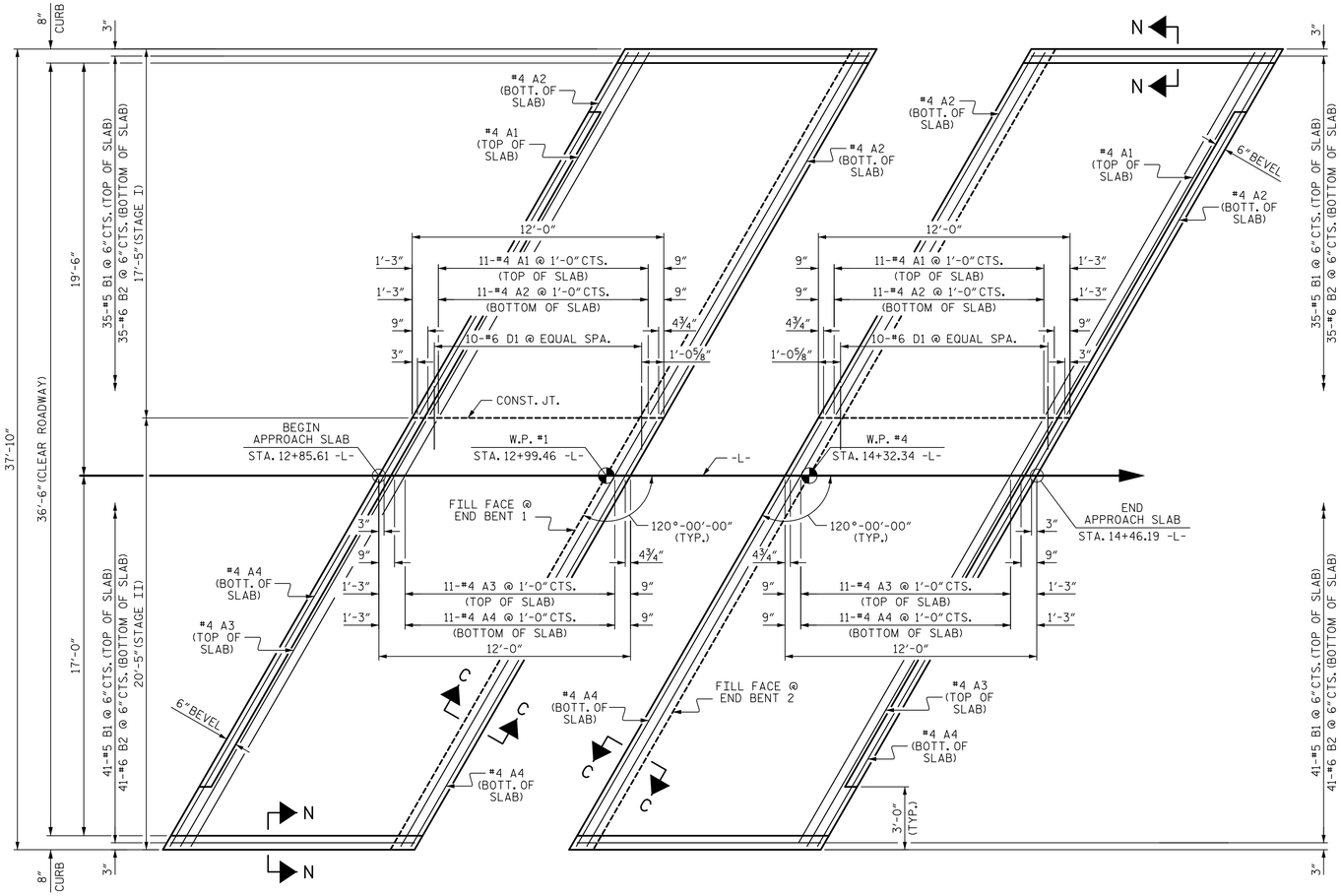
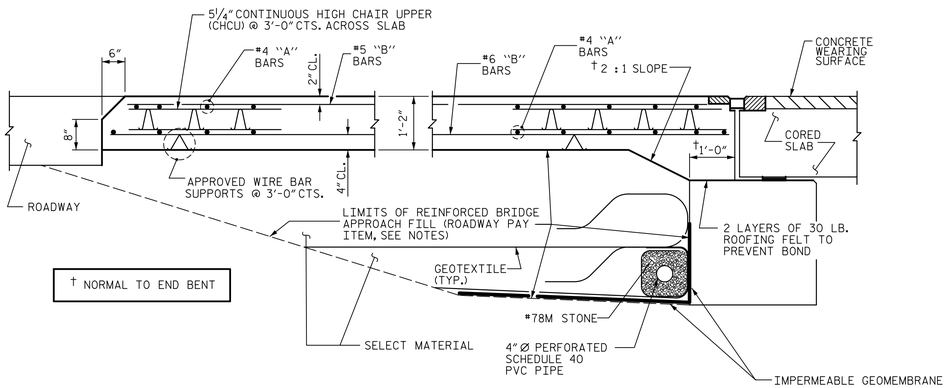


PLAN @ END BENT 1

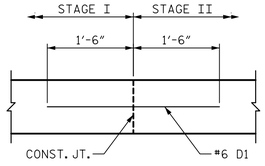
PLAN @ END BENT 2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

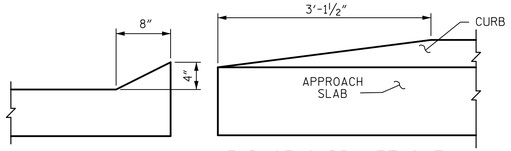


† NORMAL TO END BENT

SECTION THRU SLAB



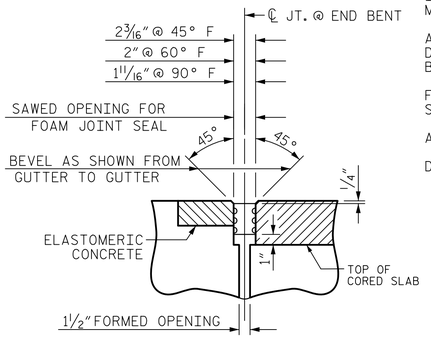
DOWEL DETAIL
(ELEVATION VIEW)



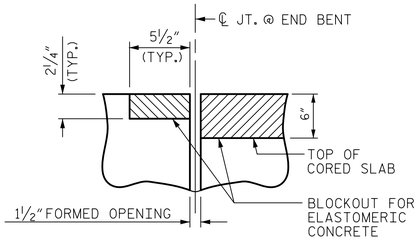
SECTION N-N

END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS



SECTION C-C
FOAM JOINT SEAL
(EXPANSION)



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

ELASTOMERIC CONCRETE	
END BENT NO.	ELASTOMERIC CONCRETE ✳ (CU. FT.)
1	13.3
2	13.3
TOTAL	26.6

✳ BASED ON THE MINIMUM BLOCKOUT SHOWN.

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

BILL OF MATERIAL
APPROACH SLAB AT EB #1
STAGE I

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
✳ A1	12	#4	STR.	19'-8"	158
A2	13	#4	STR.	19'-8"	171
✳ B1	35	#5	STR.	11'-1"	405
B2	35	#6	STR.	11'-7"	609
✳ D1	10	#6	STR.	3'-0"	45
REINFORCING STEEL = 780 LBS.					
✳ EPOXY COATED REINFORCING STEEL = 608 LBS.					
CLASS AA CONCRETE = 10.5 C.Y.					

BILL OF MATERIAL
PPROACH SLAB AT EB #2
STAGE I

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
✳ A1	12	#4	STR.	19'-8"	158
A2	13	#4	STR.	19'-8"	171
✳ B1	35	#5	STR.	11'-1"	405
B2	35	#6	STR.	11'-7"	609
✳ D1	10	#6	STR.	3'-0"	45
REINFORCING STEEL = 780 LBS.					
✳ EPOXY COATED REINFORCING STEEL = 608 LBS.					
CLASS AA CONCRETE = 10.5 C.Y.					

BILL OF MATERIAL
APPROACH SLAB AT EB #1
STAGE II

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
✳ A3	12	#4	STR.	23'-2"	186
A4	13	#4	STR.	23'-2"	201
✳ B1	41	#5	STR.	11'-1"	474
B2	41	#6	STR.	11'-7"	713
REINFORCING STEEL = 914 LBS.					
✳ EPOXY COATED REINFORCING STEEL = 660 LBS.					
CLASS AA CONCRETE = 12.5 C.Y.					

BILL OF MATERIAL
APPROACH SLAB AT EB #2
STAGE II

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
✳ A3	12	#4	STR.	23'-2"	186
A4	13	#4	STR.	23'-2"	201
✳ B1	41	#5	STR.	11'-1"	474
B2	41	#6	STR.	11'-7"	713
REINFORCING STEEL = 914 LBS.					
✳ EPOXY COATED REINFORCING STEEL = 660 LBS.					
CLASS AA CONCRETE = 12.5 C.Y.					

NOTES

FOR REINFORCED BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, IMPERMEABLE GEOMEMBRANE, 4" Ø DRAINAGE PIPE, #78M STONE, AND SELECT MATERIAL, SEE ROADWAY PLANS.

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.

FOR JOINT DETAILS, SEE "PRESTRESSED CONCRETE CORED SLAB UNIT" SHEETS.

APPROACH SLAB GROOVING IS REQUIRED.

DOWEL BARS TO BE PLACED PRIOR TO POURING STAGE 1 CONCRETE.

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PROJECT NO. 17BP.1.R.67
HYDE COUNTY
STATION: 13+65.90 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB UNIT
(SUB-REGIONAL TIER)
120° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-39
1			3			TOTAL SHEETS
2			4			40

6/22/2015
NORTH CAROLINA PROFESSIONAL SEAL 039173 ENGINEER MATTHEW K. TOM
DocuSigned by: Matthew K. Tom
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ASSEMBLED BY :	M. K. TOM	DATE : 12/19/14
CHECKED BY :	R. L. WHITCHER	DATE : 1/7/15
DESIGNED BY :	M. K. TOM	DATE : 12/19/14
DRAWN BY : SHS/MAA 5-09	REV. 12-11	MAA/AAC
CHECKED BY : BCH 5-09	REV. 8-14	MAA/TMG

6/17/2015
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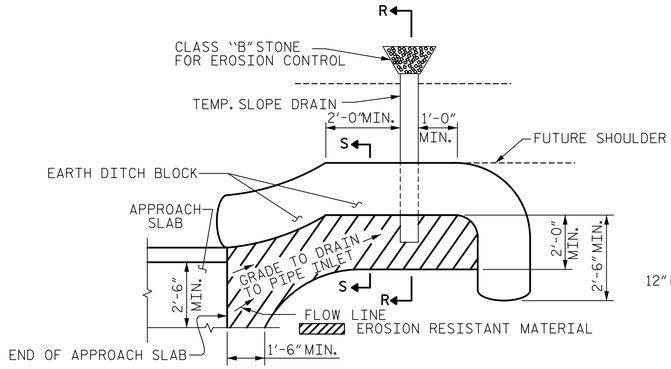
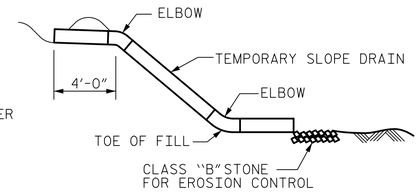
STD. NO. BAS_39_120S

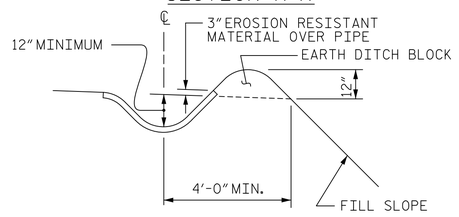


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 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



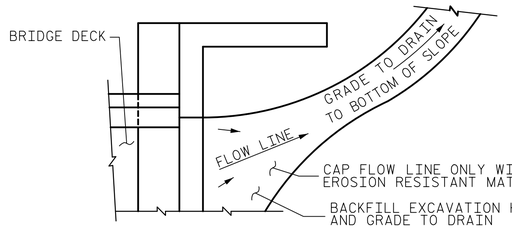
SECTION R-R



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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

ASSEMBLED BY :	M. K. TOM	DATE :	12/22/14
CHECKED BY :	R. L. WHITCHER	DATE :	1/7/15
DESIGNED BY :	M. K. TOM	DATE :	12/22/14
DRAWN BY : FCJ	11/88	REV. 10/1/11	MAA/GM
CHECKED BY : ARB	11/88	REV. 7/12	MAA/GM
		REV. 6/13	MAA/GM

6/17/2015
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matt_tom

Prepared by
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PHONE: (919) 461-1100 FAX: (919) 461-1415
NC LIC. # C-2243

6/22/2015

NORTH CAROLINA PROFESSIONAL SEAL 039173 ENGINEER MATTHEW K. TOM

DocuSigned by: Matthew K. Tom
749E6F30B64442A...

PROJECT NO. 17BP.1.R.67

HYDE COUNTY

STATION: 13+65.90 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-40
1			3			TOTAL SHEETS
2			4			40

STD. NO. BAS4

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

6/17/2015
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matt_tom