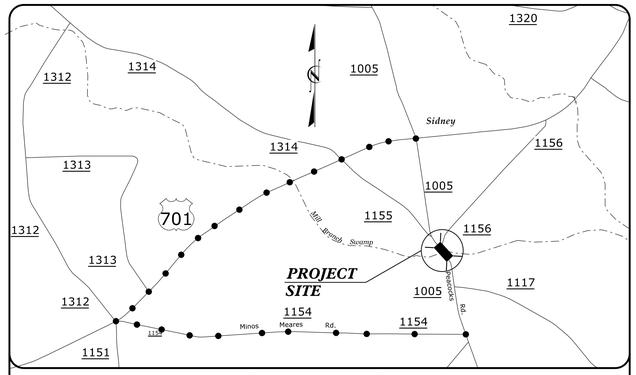
09/08/99

PROJECT: 17BP.6.R.42

CONTRACT: DF00117



VICINITY MAP

OFF–SITE DETOUR

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

COLUMBUS COUNTY

LOCATION: BRIDGE NO. 230093 OVER MILL BRANCH SWAMP ON SR 1005 (PEACOCK RD.)

TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.6.R.42	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
17BP.6.R.42		PE, UTIL., R/W
		CONST.

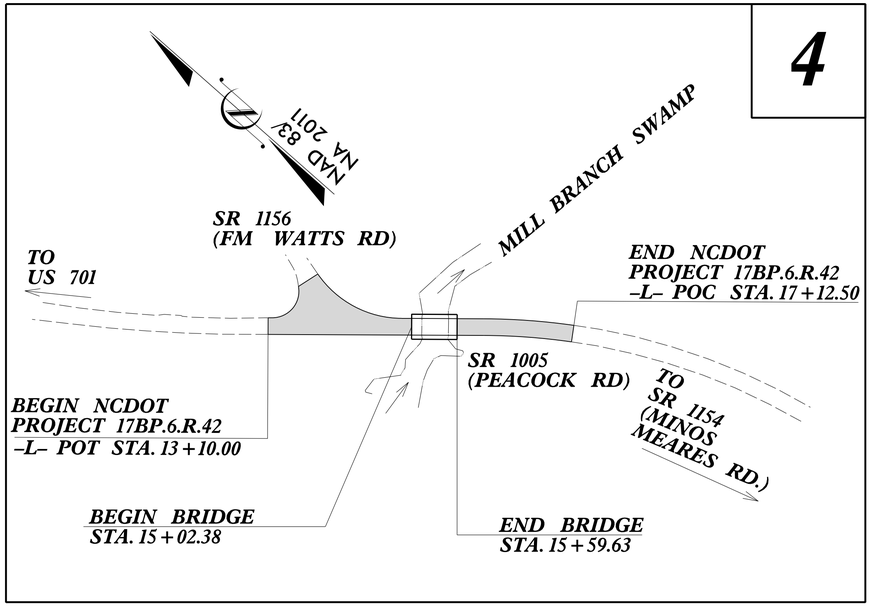
WETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
License No. F–0377
Bus: 919 851 8077
Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN – BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN – GIS/GPS – CONSTRUCTION OBSERVATION

BRIDGE #230093

FINAL PLANS

4



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

30 15 0 30 60
PLANS

30 15 0 30 60
PROFILE (HORIZONTAL)

6 3 0 6 12
PROFILE (VERTICAL)

DESIGN DATA

ADT 2015 = 1400
ADT FY = N/A
DHV = N/A
D = N/A
T = 6 % *
V = 55 MPH
* (TTST = 3% + DUAL = 3%)
FUNC CLASS =
RURAL MINOR COLLECTOR
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT 17BP.6.R.42 =	0.065 MILES
LENGTH STRUCTURE PROJECT 17BP.6.R.42 =	0.011 MILES
TOTAL LENGTH PROJECT 17BP.6.R.42 =	0.076 MILES

NCDOT CONTACT: BRICE BELL, PE
DIVISION 6 BRIDGE PROGRAM MANAGER

Prepared for:
DIVISION OF HIGHWAYS
DIVISION SIX
558 Gillespie Street, Fayetteville NC, 28301

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: AUGUST 26, 2015

LETTING DATE: FEBRUARY 17, 2016

EDWARD G. WETHERILL, PE
PROJECT ENGINEER

GREG S. PURVIS, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 026459 DUSTIN D. CREECH 1/18/2016

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022999 GREG S. PURVIS 1/19/2016

SIGNATURE: *P.E.*

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

ROADWAY DESIGN ENGINEER
Greg S. Purvis
NORTH CAROLINA PROFESSIONAL SEAL 022999 ENGINEER GREG S. PURVIS
1/13/2016

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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BRIDGE #230093

GENERAL NOTES

GENERAL NOTES: 2012 SPECIFICATIONS
EFFECTIVE: 01–17–12
REVISED: 07–30–2012

GRADING AND SURFACING:

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

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

GUARDRAIL:

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

END BENTS: THE SURVEYOR 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 CENTURYLINK (PHONE), DUKE ENERGY (POWER), & TIME WARNER CABLE (CABLE).
ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS

RIGHT OF WAY MARKERS:

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

LIST OF ROADWAY STANDARD DRAWINGS

2012 ROADWAY ENGLISH STANDARD DRAWINGS
EFF. 01–17–12
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
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
DIVISION 4 – MAJOR STRUCTURES	
422.11	Reinforced Bridge Approach Fills – Sub Regional Tier
DIVISION 5 – SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction – High Side of Superelevated Curve – Method I
DIVISION 8 – INCIDENTALS	
806.01	Concrete Right of Way Markers
840.00	Concrete Base Pad for Drainage Structures
840.25	Anchorage for Frames – Brick or Concrete or Precast
840.29	Frames and Narrow Slot Grates
840.35	Traffic Bearing Grated Drop Inlet
840.46	Traffic Bearing Precast Drainage Structure
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.02	Guide for Rip Rap at Pipe Outlets

INDEX OF SHEETS

04/16/11

PROJECT REFERENCE NO.	SHEET NO.
17BP.6.R.42	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.

SURVEY CONTROL SHEET 23–0093

PROJECT REFERENCE NO.	SHEET NO.
17BP.6.R.42	1C–1
Location and Surveys	

BRIDGE #230093

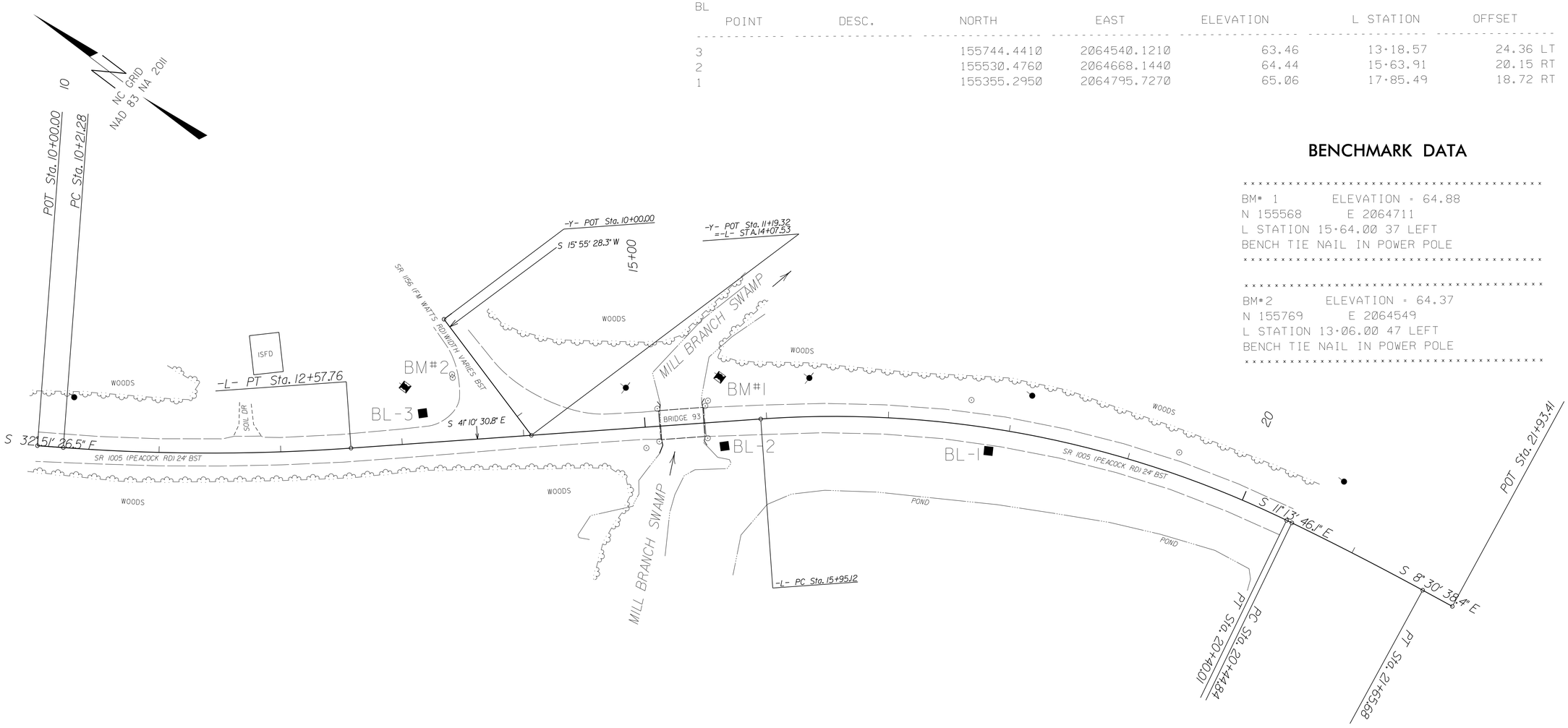
BASELINE DATA

BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
3		155744.4410	2064540.1210	63.46	13+18.57	24.36 LT
2		155530.4760	2064668.1440	64.44	15+63.91	20.15 RT
1		155355.2950	2064795.7270	65.06	17+85.49	18.72 RT

BENCHMARK DATA

BM# 1 ELEVATION = 64.88
N 155568 E 2064711
L STATION 15+64.00 37 LEFT
BENCH TIE NAIL IN POWER POLE

BM#2 ELEVATION = 64.37
N 155769 E 2064549
L STATION 13+06.00 47 LEFT
BENCH TIE NAIL IN POWER POLE



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY OTHERS FOR MONUMENT "BL-2"
WITH NAD 83/NSRS 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 155530.48(ft) EASTING: 2064668.14(ft)
ELEVATION: 64.44(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99998740
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BL-2" TO -L- STATION 10+00.00 IS N 37°04'24.83" W 564.30'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

NOTES:

1. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT: HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/*

   THE FILES TO BE FOUND ARE AS FOLLOWS: 230093_WEI_CONTROL.TXT

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

INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY WETHERILL ENGINEERING.

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

PROJECT REFERENCE NO.	SHEET NO.
17BP.6.R.42	2

DocuSigned by: Greg S. Purvis
NORTH CAROLINA PROFESSIONAL SEAL 022999 ENGINEER GREG S. PURVIS
1/13/2016

WETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

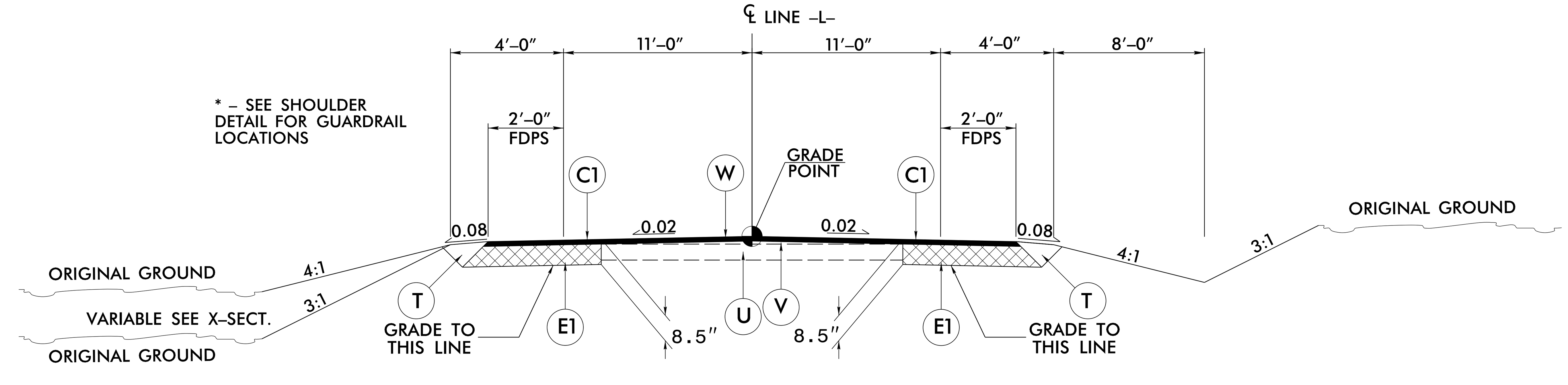
BRIDGE #230093

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVEMENT SCHEDULE

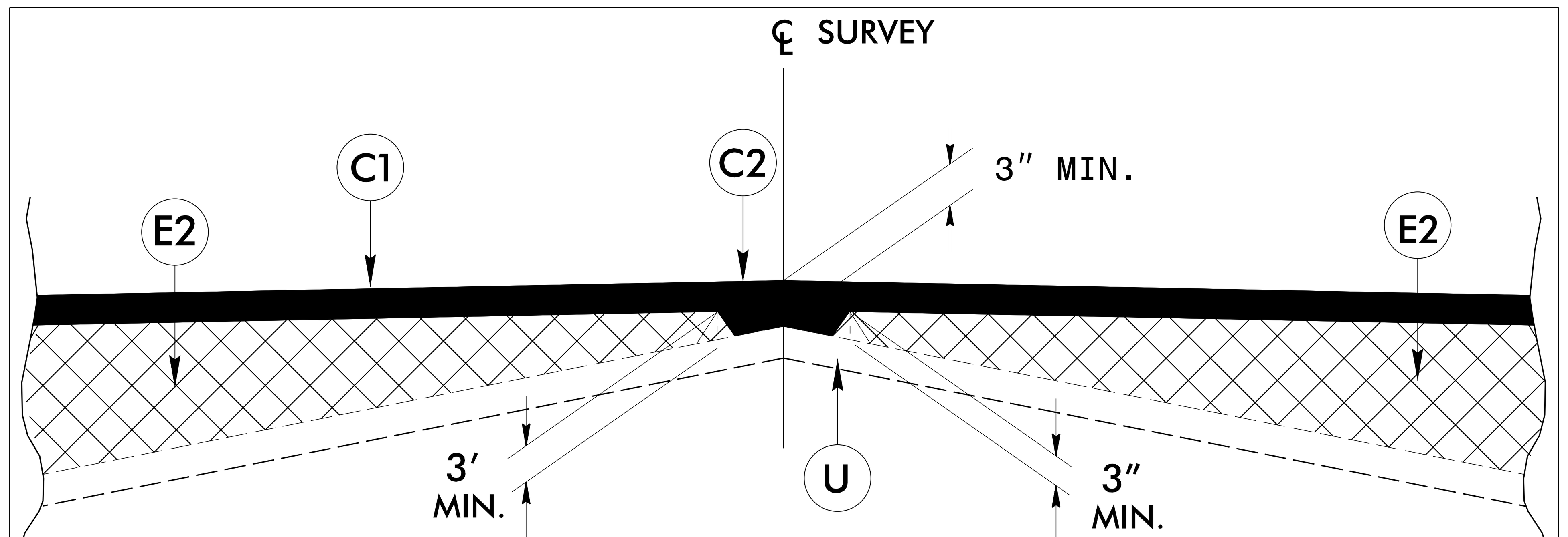
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.
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 5½" IN DEPTH.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V	MILLING BITUMINOUS PAVEMENT. (SEE MILLING DETAIL)
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

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

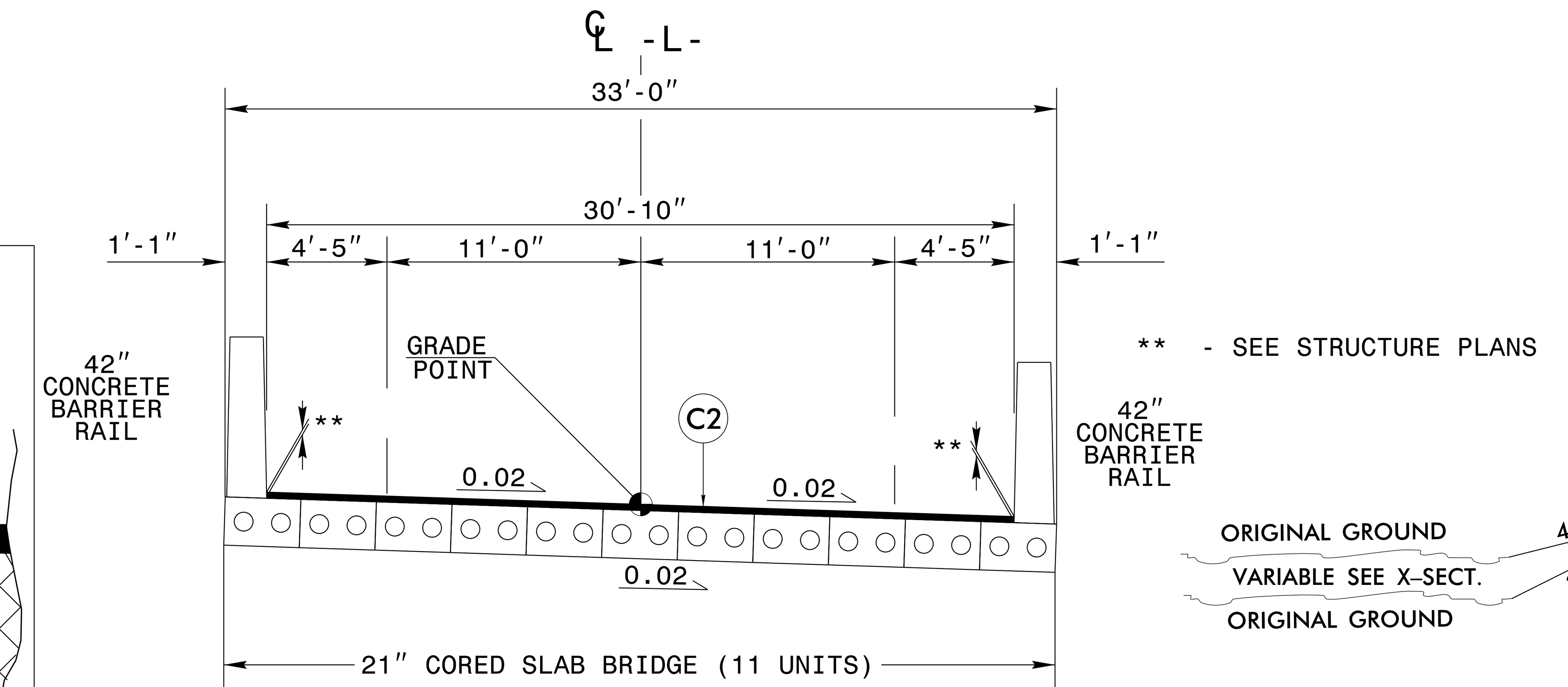


TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1 AS FOLLOWS:
-L- STA. 13+10.00 TO -L- STA. 13+35.00
-L- STA. 16+25.00 TO -L- STA. 17+12.50



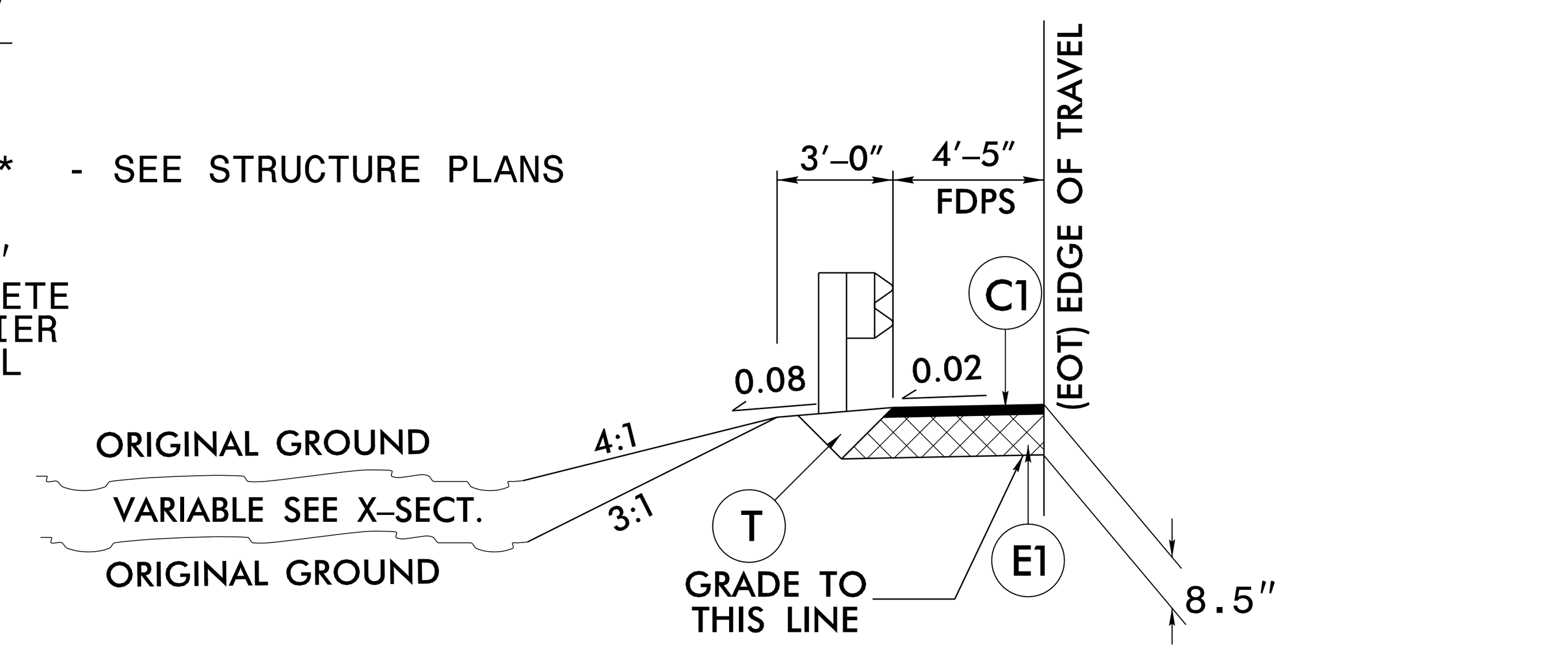
W: Detail Showing Method of Wedging



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3 AS FOLLOWS:
-L- STA. 15+02.38 (BEGIN BRIDGE) TO -L- STA. 15+59.63 (END BRIDGE)

** - SEE STRUCTURE PLANS



SHOULDER DETAIL

USE SHOULDER DETAIL IN CONJUNCTION WITH TYPICAL SECTIONS NO. 1 & 2:
-L- STA. 14+27.38 TO -L- STA. 15+02.38 RT.
-L- STA. 14+29.61 TO -L- STA. 15+02.38 LT.
-L- STA. 15+59.63 TO -L- STA. 16+34.63 LT. & RT.

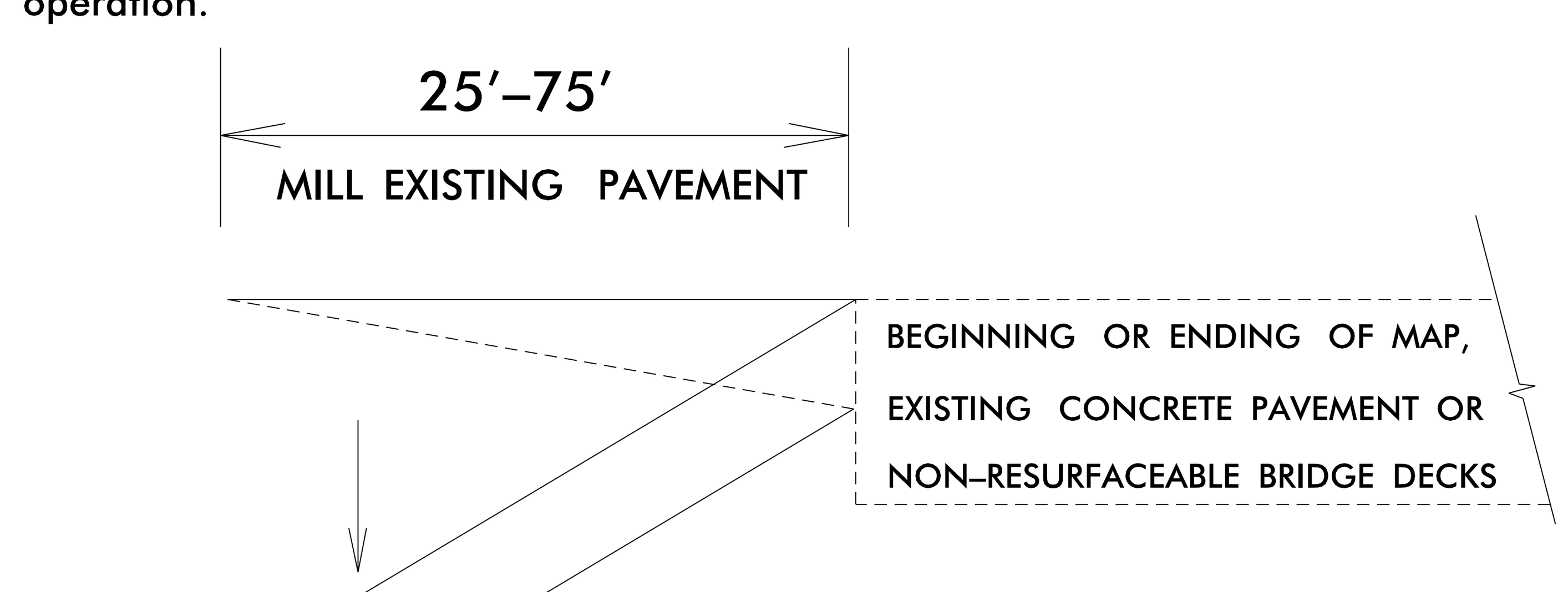
MILLING AT PAVEMENT TIE-INS

NOTES TO CONTRACTOR

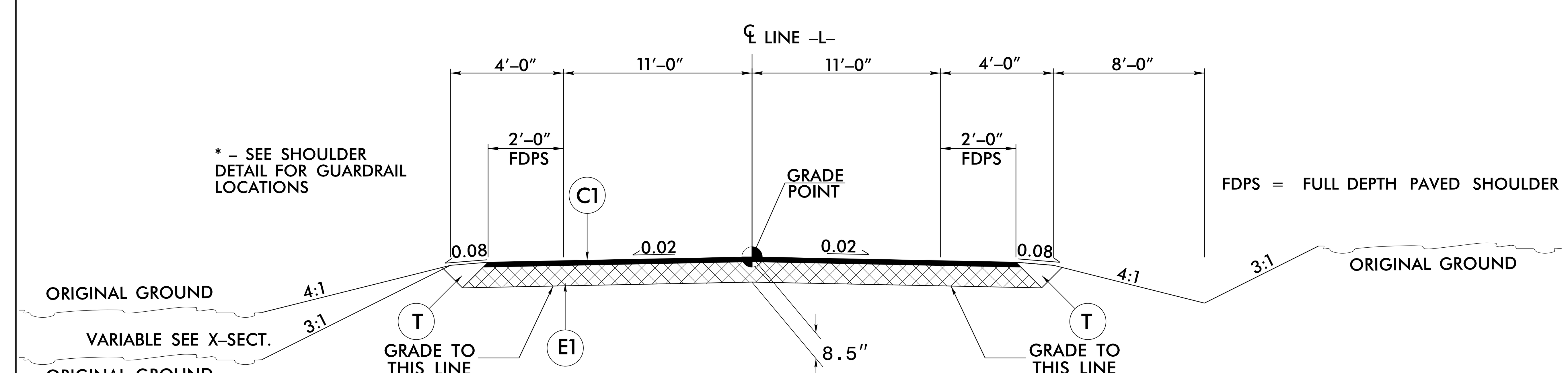
For surface mixes over 1" in thickness, mill the existing pavement in acoordance with the following sketch as directed by the Engineer.

Locations shall include ties into existing concrete pavement, at bridge approaches where the bridge will not be resurfaced, and at the beginning and ending point of each resurfacing map.

Perform the work in accordance with Section 607 of the January 2012 North Carolina Department of Transportation Standard Specifications for Roads and Structures. Resurfacing will be accomplished at the same time as the milling operation.



PERFORM VARIABLE DEPTH MILLING AT THE FOLLOWING LOCATIONS:
-L- STA. 13+10.00 TO -L- STA. 13+35.00
-L- STA. 16+25.00 TO -L- STA. 17+12.50

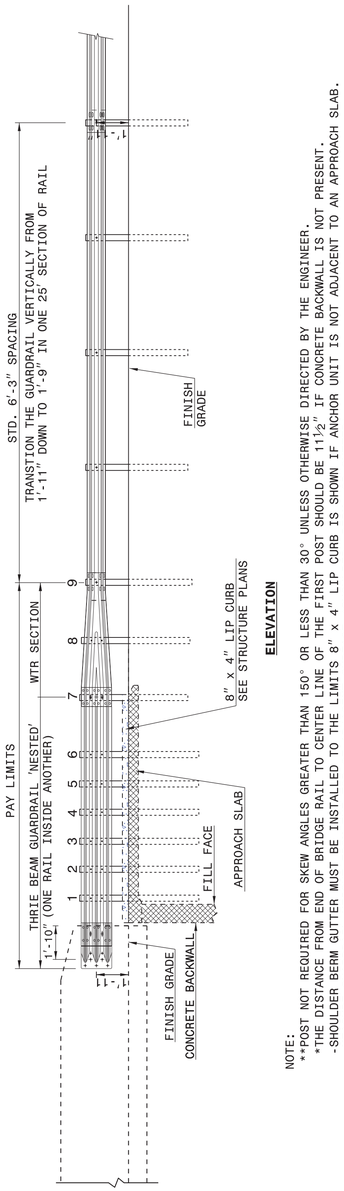


FDPS = FULL DEPTH PAVED SHOULDER

TYPICAL SECTION NO. 2

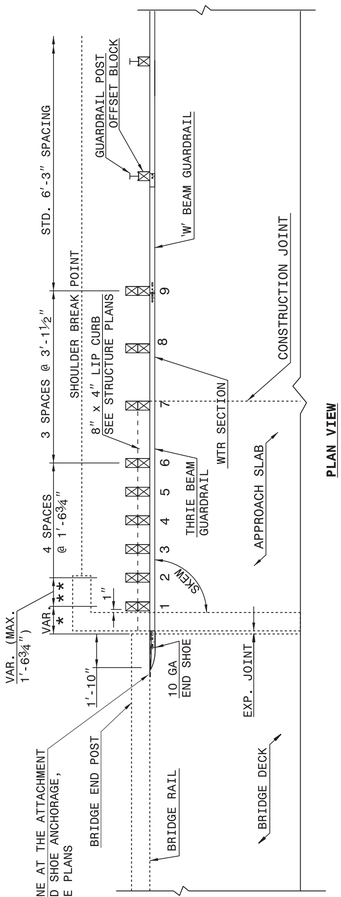
USE TYPICAL SECTION NO. 2 AS FOLLOWS:
-L- STA. 13+35.00 TO -L- STA. 15+02.38 (BEGIN BRIDGE)
-L- STA. 15+59.63 (END BRIDGE) TO -L- STA. 16+25.00

PROJECT REFERENCE NO.	SHEET NO.
17BP.6.R.42	2-A



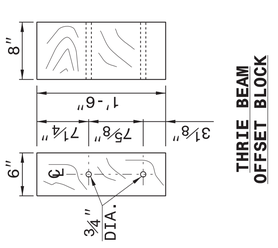
ELEVATION

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.

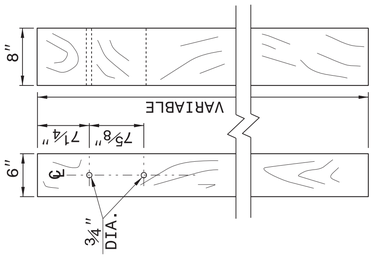


PLAN VIEW

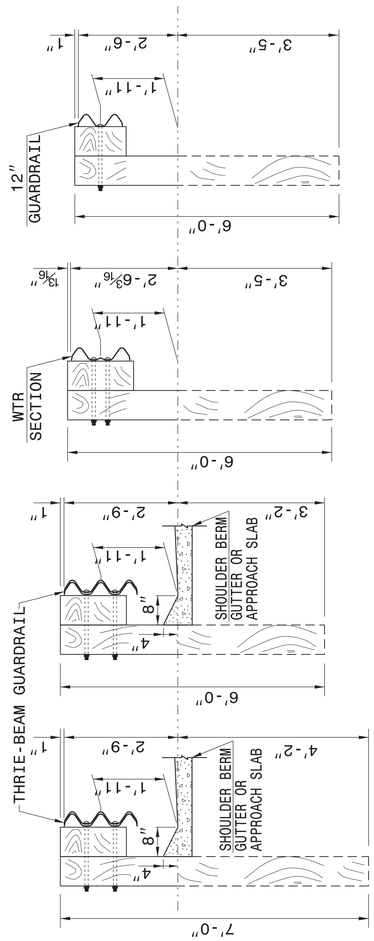
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER



THRIE BEAM OFFSET BLOCK



THRIE BEAM LINE POST



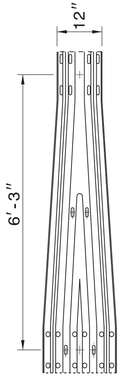
SECTION OF 'W' BEAM POST 9

SECTION OF WTR BEAM POST 8

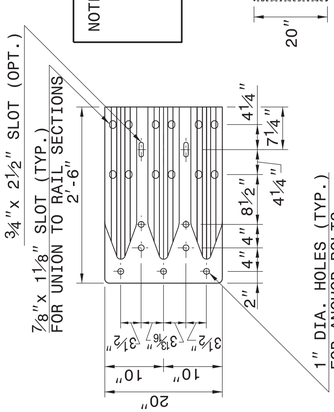
SECTION OF THRIE BEAM POST 7

SECTION OF THRIE BEAM POSTS 1 THRU 6

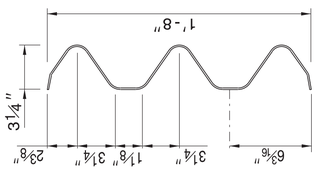
NOTE: THE MID POST AND OFFSET BLOCK OF THE WTR SECTION WILL REQUIRE SPECIAL BOLT HOLE DRILLING IN THE THRIE BEAM OFFSET BLOCK AND LINE POST.



WTR SECTION
ELEVATION VIEW



END SHOE



THRIE-BEAM SECTION

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.: _____

COMPUTED BY: SLK	DATE: 01/20/15
CHECKED BY: GSP	DATE: 01/20/15

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

SUMMARY OF EARTHWORK

STATION	STATION	UNCL. EXCAV.	EMBANK. +%	BORROW	WASTE
-L- 13+10.00	-L- 15+02.38 (BEGIN BRIDGE)	90	14		76
SUBTOTALS:		90	14		76
-L- 15+59.63 (END BRIDGE)	-L- 17+12.50	27	29	2	
SUBTOTALS:		27	29	2	
PROJECT SUBTOTALS:		117	43	2	76
WASTE TO REPLACE BORROW				-2	-2
GRAND TOTALS:		117	43		74
SAY:		125			

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

PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD^2
-L-	13+35	15+12	CL	611
-L-	15+49	16+25	CL	205
			TOTAL:	816
			SAY:	820

SHOULDER BERM GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LENGTH
-L- RT.	14+78.50	14+91.38	12.80'
		TOTAL:	12.80'
		SAY:	15'

BRIDGE #230093

RIGHT OF WAY AREA DATA

PARCEL NO.	PROPERTY OWNERS NAMES	TOTAL ACREAGE	AREA TAKEN	AREA REMAINING RT.	AREA REMAINING LT.	PERM. DRAINAGE EASE.	PERM. UTILITY EASE.	TEMP. CONST. EASE.
1	HEIRS OF JOHNNY RAY HUGGINS					568.89 SF		
2	HEIRS OF JOHNNY RAY HUGGINS		2400.82 SF					
3	THOMAS & BELINDA MATHEWS							453.94 SF

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

NOTE: Invert Elevations are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
-L- 14+82	RT.	401		64.3	60.2														
-L- 14+82	RT.	401	402		60.2	60.1													
-L- 14+28	LT.	404																	
TOTAL																			

STATION	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	36" .079	42" .109	48" .109	R.C. PIPE (CLASS III) 15"	18"	24"	30"	36"	42"	48"	R.C. PIPE (CLASS IV) 12"	15"	18"	24"	30"	36"	42"	48"
-L- 14+82																						
-L- 14+82								28'														
-L- 14+28											28'											
TOTAL								28'			28'											

STATION	**" R. C. PIPE (CLASS V)	**" R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	**" R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. *FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION	CATCH BASIN	DROP INLET	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	T.B.D.I. STD. 840.35	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	M.H. FRAME & COVER STD. 840.54	T.B.J.B. STD. 840.34	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
-L- 14+82								1												1	1							
-L- 14+82																												
-L- 14+28																									0.656			REMOVE 8 LF OF EXIST. 30" RCP
TOTAL								1												1	1				0.656			

ABBREVIATIONS

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

"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	SHOP CURVED	DOUBLE FACED	WARRANT POINT APPROACH END	TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH APPROACH END	TRAILING END	W APPROACH END	TRAILING END
-L-	14+56.70	15+02.38	LT.	31.25'	45.00'			15+02.38	4'-5"	7'-5"		50'-0"		1'-0"
-L-	14+27.38	15+02.38	RT.	75.00'			15+02.38		4'-5"	7'-5"	50'-0"		1'-0"	
-L-	15+59.63	16+34.63	LT.	75.00'			15+59.63		4'-5"	7'-5"	50'-0"		1'-0"	
-L-	15+59.63	16+34.63	RT.	75.00'				15+59.63	4'-5"	7'-5"		50'-0"		1'-0"
			PROJECT SUBTOTAL	256.25'										
		LESS ANCHOR DEDUCTIONS		(-)231.25'										
		PROJECT TOTAL		25.00'										
		SAY		25.00'										
						ADDITIONAL GUARDRAIL POSTS = 5 EACH								

SURVEY LINE	BEG. STA.	ANCHORS XI MOD	TYPE III	GRAU TL-3	M-350	B-77	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-	14+56.70		1							1							
-L-	14+27.38		1	1													
-L-	15+59.63		1	1													
-L-	15+59.63		1	1													
PROJECT SUBTOTAL			4	3						1							

GUARDRAIL ANCHOR DEDUCTIONS
TYPE III = 4 @ 18.75' = 75'
GRAU TL-3 = 3 @ 50' = 150'
AT-1 = 1 @ 6.25' = 6.25'
TOTAL DEDUCTIONS = 231.25'

12/06/07
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BRIDGE 230093	
FINAL PLANS	

PROJECT REFERENCE NO.	SHEET NO.
17BP.6.R.42	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
Docusigned by: Greg S Purvis
NORTH CAROLINA PROFESSIONAL SEAL 022999 ENGINEER GREG S PURVIS
1/13/2016

HYDRAULICS ENGINEER
Docusigned by: Dustin D Cretch
NORTH CAROLINA PROFESSIONAL SEAL 034959 ENGINEER DUSTIN D. CRETCH
1/18/2016

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REVISIONS 8/17/99

JOHNNY RAY HUGGINS DB 210 PG 659

HEIRS OF JOHNNY RAY HUGGINS DB 146 PG 151

GEORGIANNIA M. SWINTON, ET AL DB 340 PG 55

JOHN DAVID TODD DB 263 PG 522

BEGIN NCDOT PROJECT 17BP.6.R.42

–L– POT STA. 13+10.00

STANDARD 2 FT. BASE DITCH SEE DETAIL A

BM#2 -L- 13+05.63 46.89' LEFT ELEV.=64.37' "BENCH TIE NAIL SET IN POWER POLE"

ISFD

–L– PT Sta. 12+57.76

SR 1536 (FM WATTS RD) VARIES WIDTH BST

EXISTING R/W

+10.00 2' P.S.

19' 11'

RETAIN

30" RCP

8" PVC WATER LINE (FROM PLANS)

TO US 701

SR 1005 (PEACOCK RD) 24' BST

EX. TEX. 11' 11'

S 41° 10' 30.8" E

TB 2GI 8:1 GRAU 350 TL-3

0401 15" RCP–III

0402 0403 0404

2' P.S.

24' TYP. +34.00

–Y– POT Sta. 11+19.32 =–L– STA.14+07.53

BEGIN SHOULDER BERM GUTTER –L– STA. 14+78.5(RT)

+70.00 EX.R/W, 50' RT

N 85°29'03" W 219.07'

N 01°16'15" E 242.61'

ROGER DALE WORLEY DB 473 PG 105

HEIRS OF JOHNNY RAY HUGGINS DB 210 PG 659

MILL BRANCH SWAMP

CLASS B RIP RAP

+91.00 50' RT

+03.00 EX.R/W RT

BL-2 -L- STA. 15+63.91 20.15' RT.

+36.00 EX.R/W, 42' RT

ROGER DALE WORLEY DB 473 PG 105

+44.59 –Y– EX.R/W LT

2' P.S. LT. & RT.

BEGIN CONSTRUCTION –Y– STA. 10+44.59

COLLAR AND EXTEND

REMOVE 8 Ft.+/– 30" RCP–III

CL B RIP RAP 5 TONS 16 SY GEOTEXTILE

+06.00 43' LT

+12.00 EX.R/W LT

–Y– POT Sta. 10+00.00

S 15° 55' 28.3" W 15+00

BM#1 -L- 15+63.97 36.52' LEFT ELEV.=64.88' "BENCH TIE NAIL SET IN POWER POLE"

N 56°11'20" W 41.25'

S 89°30'50" W 134.52'

S 08°52'30" E 151.56'

EXCAVATE TO ELEVATION 60.7 FT.

RETAIN

EXCAVATE TO ELEVATION 60.7 FT.

BRIDGE 93

GRAU 350 TL-3

+72.00 EX.R/W, 42' RT

+88.50 24' TYP. 3' P.S.

BEGIN LAID BACK 2:1 SLOPES NORMAL TO CAP AT FRONT EDGE OF SHEET PILING FROM EXCAVATION ELEV 60.7' (TYP.)

–L– PC Sta. 15+95.12

3

THOMAS & BELINDA MATHEWS DB 923 PG 254

MILL BRANCH SWAMP PROPERTY LINE IS CL OF CREEK

WOODS

POND

BL-1 -L- STA. 17+85.49 18.72' RT.

END NCDOT PROJECT 17BP.6.R.42

–L– POC STA. 17+12.50

WOODS GRID NAD 83 NA 2011

SR 1005 (PEACOCK RD) 24' BST

TO SR 1154 (MINOS MEARES RD)

PI Sta 11+39.73
Δ = 8° 19' 04.3" (LT)
D = 3° 31' 02.3"
L = 236.48'
T = 118.45'
R = 1,628.97'
DS = 60MPH+
SE = SEE PLANS

PI Sta 18+22.77
Δ = 29° 56' 44.7" (RT)
D = 6° 43' 52.0"
L = 444.89'
T = 227.65'
R = 851.21'
DS = 45MPH
SE = SEE PLANS

SEE SHEETS S–1 THRU S–14 FOR STRUCTURE PLANS

BM#1 -L- 13+05.63 46.89' LEFT ELEV.=64.37' "BENCH TIE NAIL SET IN POWER POLE"

BEGIN GRADE STA.13+10.00 EL.64.86

–L–

PI = 14+27.55
EL = 64.32'
VC = 145'
K = 151
DS = 60MPH+

BEGIN BRIDGE STA.15+02.38

℄ –L– STA. 15+31.0
PROP. 1@55'
21" CORED SLAB (2'–6" DEEP CAPS)
PROP. GRADE=64.84'
SKEW=90°

END BRIDGE STA.15+59.63

PI = 16+34.52
EL = 65.35'
VC = 150'
K = 332
DS = 60MPH+

END GRADE STA.17+12.50 EL.66.09

BM#1 -L- 15+6.97 36.52' LEFT ELEV.=64.88' "BENCH TIE NAIL SET IN POWER POLE"

(–)0.4617% (+)0.4967% (+)0.4967% (+)0.9491%

EXISTING BRIDGE (TO BE REMOVED)

EXCAVATE TO ELEVATION 60.7'

CUT OFF EXISTING TIMBER PILES AT ELEVATION 60.7'

PROPOSED PZ27 SHEET PILING

LOWEST LOW CHORD ELEVATION

WATER SURFACE AT DATE OF SURVEY=60.7' (FIELD OBSERVATION JANUARY 22, 2015)

UNCLASSIFIED STRUCTURE EXCAVATION EST. 120 CU. YDS.

BEGIN BRIDGE –L– STA. 15+02.38
END APPROACH SLAB –L– STA. 15+70.63
4'–5" TYPE III 11' 11' 02 02 33' O-O
BEG. APPROACH SLAB –L– STA. 14+91.38
END BRIDGE –L– STA. 15+59.63

SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP

DETAIL A
STANDARD BASE DITCH
(Not to Scale)

Natural Ground 2:1 D 2:1 Natural Ground B

B= 2.0 Ft.
Min. D= Match existing ditch grade.

–Y– STA. 10+75(LT) TO –L– STA. 14+45(LT)

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 650	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 63.6	FT
BASE DISCHARGE	= 1,000	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 64.60	FT
OVERTOPPING DISCHARGE	= 980	CFS
OVERTOPPING FREQUENCY	= 100+/-	YRS
OVERTOPPING ELEVATION	= 64.5	FT
DATE OF SURVEY	= 01/22/2015	
W.S.ELEVATION AT DATE OF SURVEY	= 60.7	FT

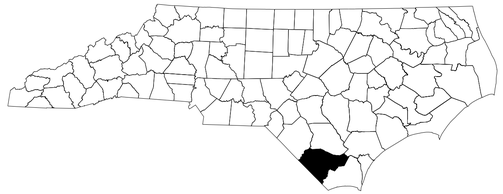
78 72 66 60 54 48 42 36 30

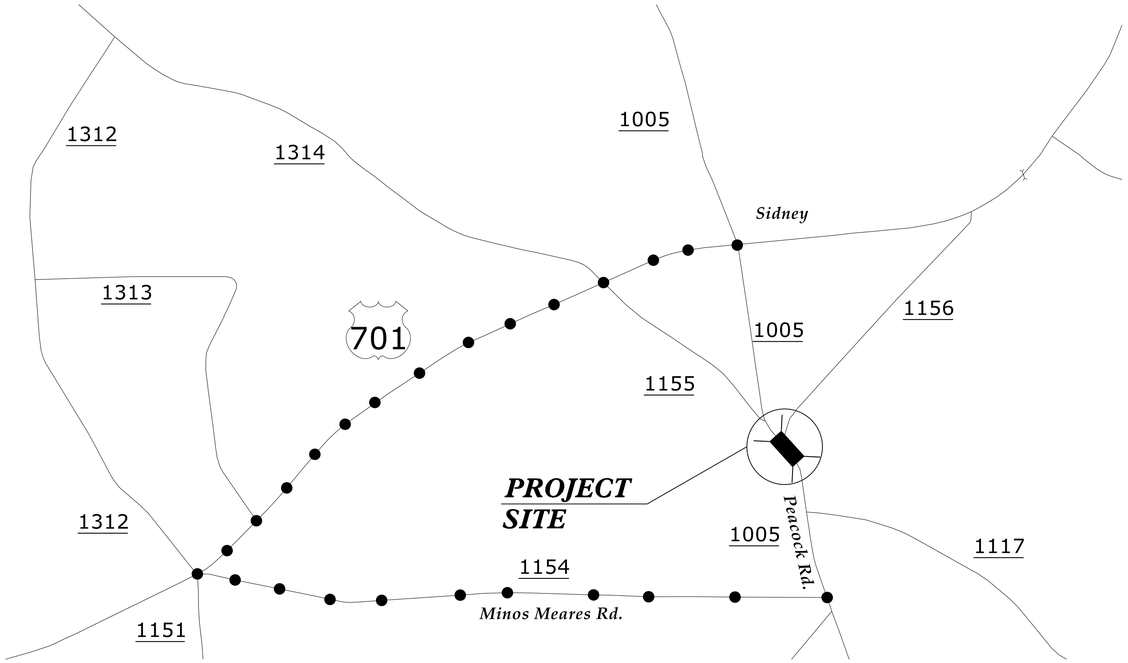
11 12 13 14 15 16 17 18 19

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

COLUMBUS COUNTY





OFF–SITE DETOUR

LOCATION: BRIDGE NO. 230093 OVER MILL BRANCH SWAMP ON SR 1005 (PEACOCK RD.)

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

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

J. S. BOURNE, P.E. — STATE TRAFFIC MANAGEMENT ENGINEER

_____ — TRAFFIC CONTROL PROJECT ENGINEER

_____ — TRAFFIC CONTROL PROJECT DESIGN ENGINEER

_____ — TRAFFIC CONTROL DESIGN ENGINEER

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

INDEX OF SHEETS

ROADWAY STANDARD DRAWINGS

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

STD. NO.	TITLE
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES

LEGEND

GENERAL

DIRECTION OF TRAFFIC FLOW

EXIST. PVMT.

NORTH ARROW

PROPOSED PVMT.

WORK AREA

TEMPORARY SIGNING

STATIONARY SIGN

TRAFFIC CONTROL DEVICES

BARRICADE (TYPE III)

CONE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLAN PREPARED FOR NCDOT BY: WETHERILL ENGINEERING

GREG PURVIS, P.E. — PROJECT ENGINEER

C.L. MULLEN — TRAFFIC CONTROL & PAVEMENT MARKING SPECIALIST

APPROVED: _____

DATE: _____

SEAL

NORTH CAROLINA — Professional Engineer — Seal — Greg S. Purvis — 22999 — 1/13/2016 — ENGINEER — GREG S. PURVIS

SHEET NO.
TMP-1

17BP.6.R.42

TIP PROJECT:

PROJ. REFERENCE NO.	SHEET NO.
17BP.6.R.42	TMP-1A

BRIDGE #230093

MANAGEMENT STRATEGIES

TRAFFIC OPERATIONS

SR 1005 (PEACOCK RD.) TRAFFIC WILL BE DETOURED OFF-SITE DURING REPLACEMENT OF THE EXISTING STRUCTURE.

THE OFF-SITE DETOUR ROUTING WILL BE AS FOLLOWS:

1. SR 1154 (MINOS MEARES RD.)
2. US 701

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

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) 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.

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

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

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

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

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

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

TRAFFIC CONTROL DEVICES

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

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CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

APPROVED:_____ DATE:_____

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22999 Greg S. Purvis 1/13/2016 ENGINEER GREG S. PURVIS

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

TRANSPORTATION OPERATIONS PLAN

PROJ. REFERENCE NO.	SHEET NO.
17BP.6.R.42	TMP-2

BRIDGE #230093

SIGN NUMBER: SP
TYPE: STATIONARY
QUANTITY: SEE PLANS

BACKG COLOR: Fluorescent Orange
COPY COLOR: Black

SYMBOL	X	Y	WID	HT

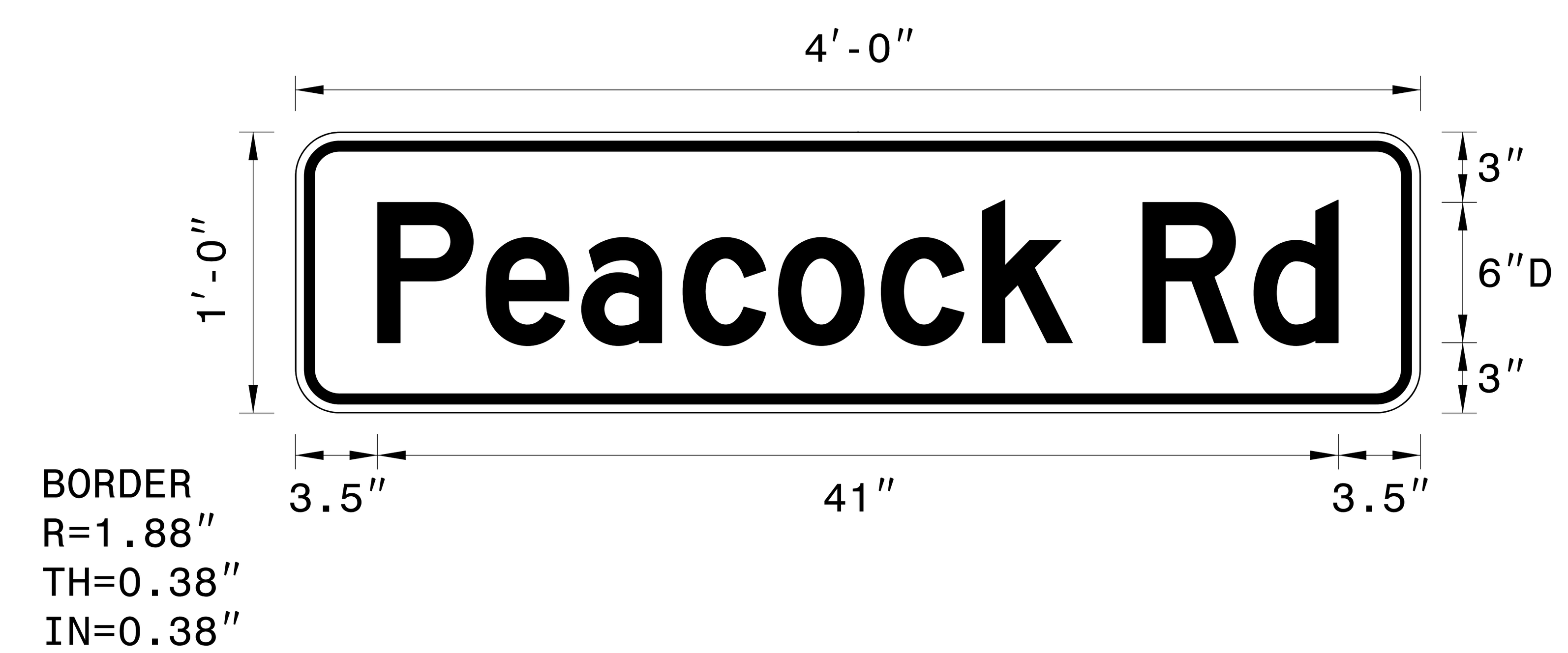
SIGN WIDTH: 4'-0"
HEIGHT: 1'-0"
TOTAL AREA: 4.0 Sq.Ft.

BORDER TYPE: INSET
RECESS: 0.38"
WIDTH: 0.38"
RADII: 1.88"

MAT'L: 0.125" (3.2 mm) ALUMINUM

NO. Z BARS:
LENGTH:

DESIGN BY: CLM
PROJECT ID: 17BP.6.R.42
CHECKED BY: GP
DIV: 6
DATE: Apr 13, 2015



USE NOTES: 1,2

1. Legend and border shall be direct applied black non-reflective sheeting.
2. Background shall be NC GRADE B fluoresent orange retroreflective sheeting.

Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter spacings are to start of next letter

	P	e	a	c	o	c	k		R	d		Series/Size Text Length
3.5	4.6	4.1	4.3	4.1	4.4	4.3	3.8	3	4.7	3.6	3.5	D 2000 41

FILENAME: Guidesign6

NORTH CAROLINA D.O.T. SIGN DETAIL

NOTE: TEMPORARY SIGNS TO BE PAID FOR AS "STATIONARY WORK ZONE SIGNS".

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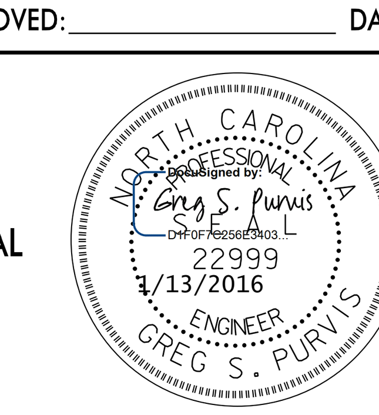
APPROVED: DATE:

SEAL



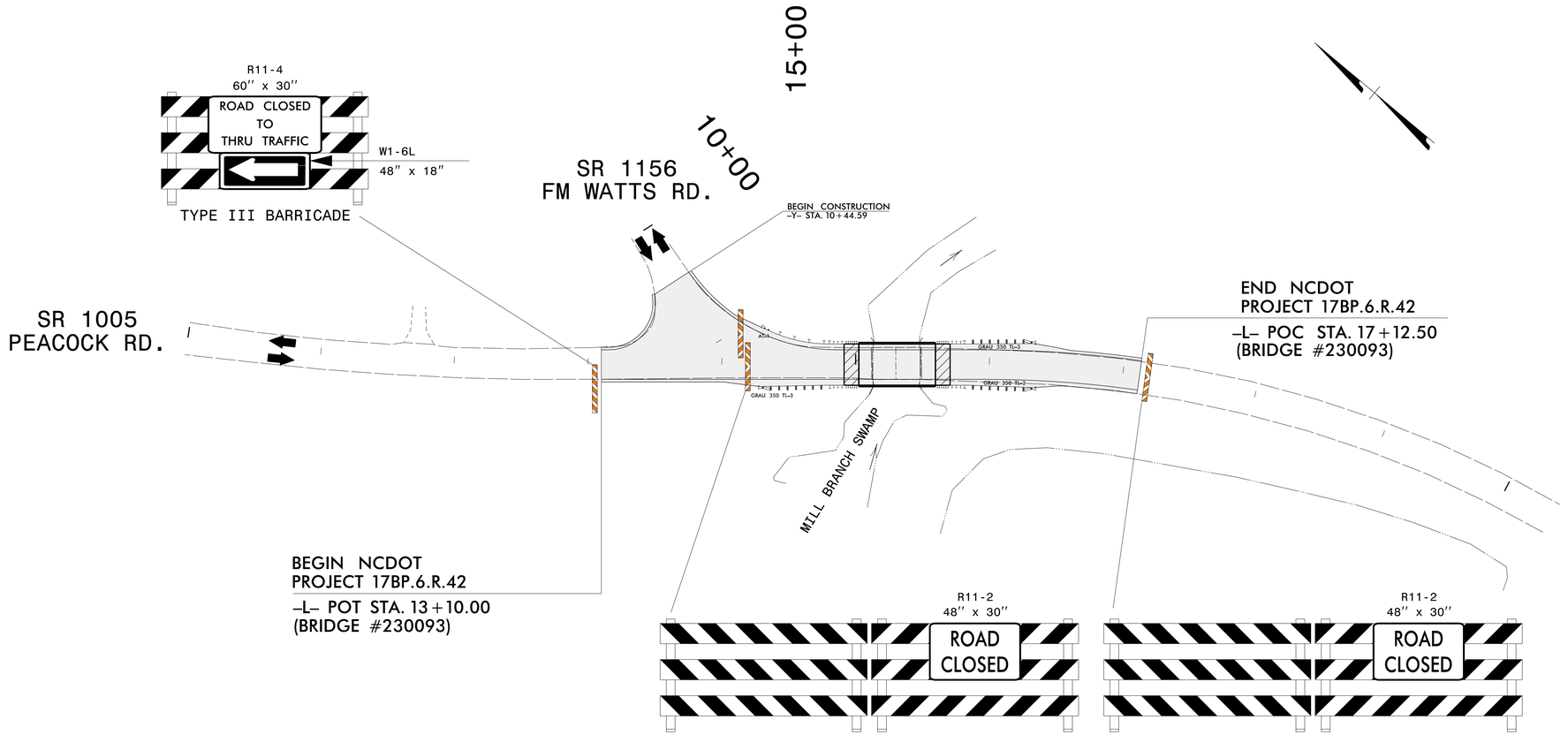
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WORK ZONE TRAFFIC CONTROL

SPECIAL SIGN DESIGN

9/22/2015
P:\2015\COLUMBUS 93\TrafficControl\Tcp\230093_TC_TMP_PSH_2.dgn
12:25:13 PM

PROJ. REFERENCE NO.	SHEET NO.
17BP.6.R.42	TMP-3

BRIDGE #230093



PHASING

STEP 1. INSTALL AND COVER OFF-SITE DETOUR AND TRAILBLAZE SIGNING ACCORDING TO TMP-4 AND ROADWAY STANDARD DRAWINGS NO. 1101.03, SHEET 1 OF 9.

STEP 2. UNCOVER OFF-SITE DETOUR AND TRAILBLAZE SIGNING AS SHOWN ON TMP-4. PLACE TYPE III BARRICADES TO CLOSE SR 1005 (PEACOCK RD.)TO TRAFFIC. PLACE ADDITIONAL BARRICADES AS NEEDED.

STEP 3. REMOVE EXISTING STRUCTURE AND CONSTRUCT PROPOSED -L- STRUCTURE AND APPROACHES. WHEN WORK OCCURS WITHIN THE PEACOCK RD./FM WATTS RD. INTERSECTION, USE FLAGGERS AS NECESSARY TO MAINTAIN TRAFFIC.

STEP 4. PLACE FINAL PAVEMENT MARKINGS ON -L- ROADWAY.

STEP 5. REMOVE TYPE III BARRICADES AND REOPEN SR 1005 (PEACOCK RD.) TO THRU TRAFFIC. REMOVE ALL OFF-SITE DETOUR AND TRAILBLAZE SIGNING.

SEE TMP-4 FOR OFF-SITE DETOUR ROUTE AND SIGNING.

SEE PAVEMENT MARKING PLANS FOR MARKING AND MARKER TYPES.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Liscense No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN – BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN – GIS/GPS – CONSTRUCTION OBSERVATION

APPROVED: _____ DATE: _____

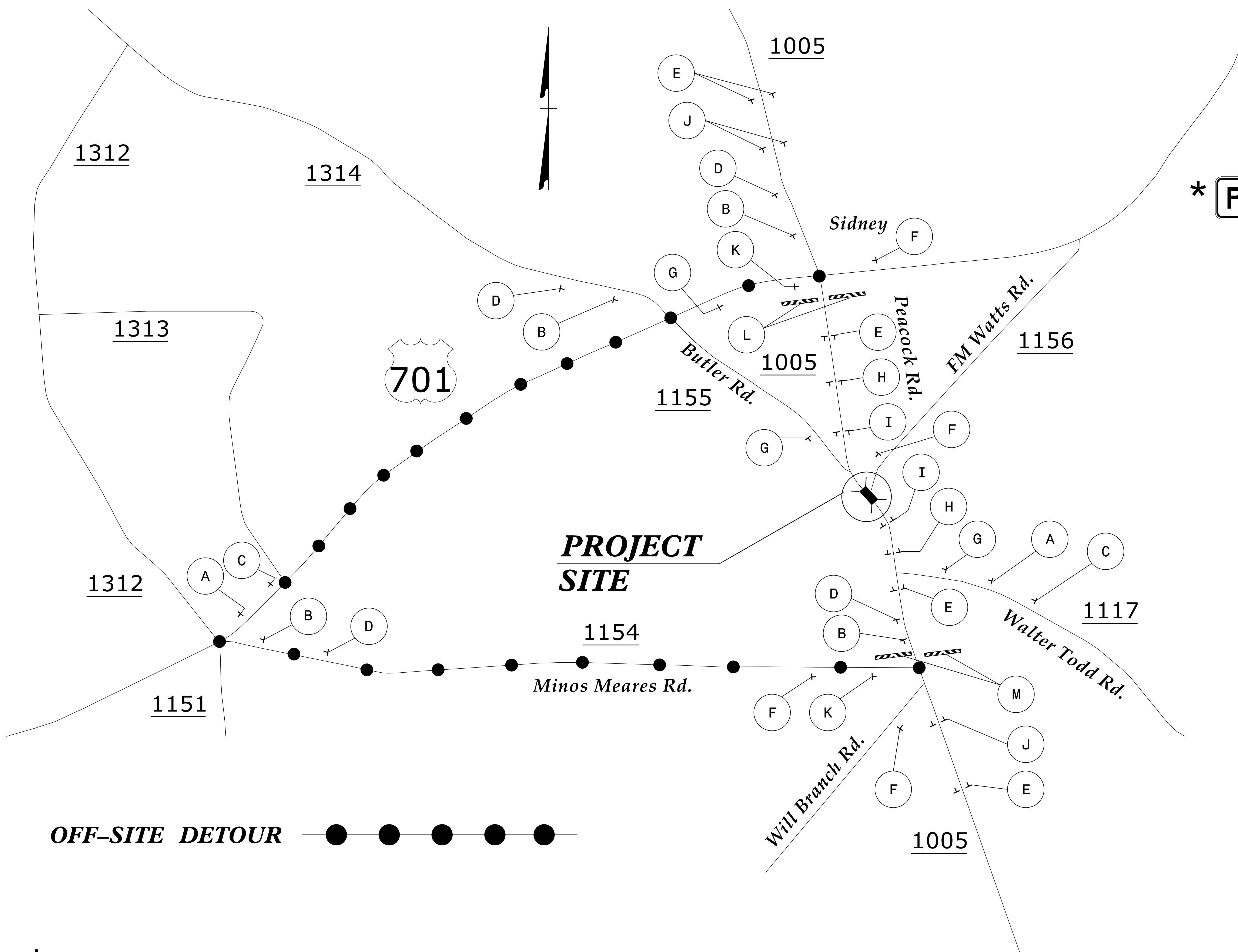
SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22999 GREG S. PURVIS 1/14/2016

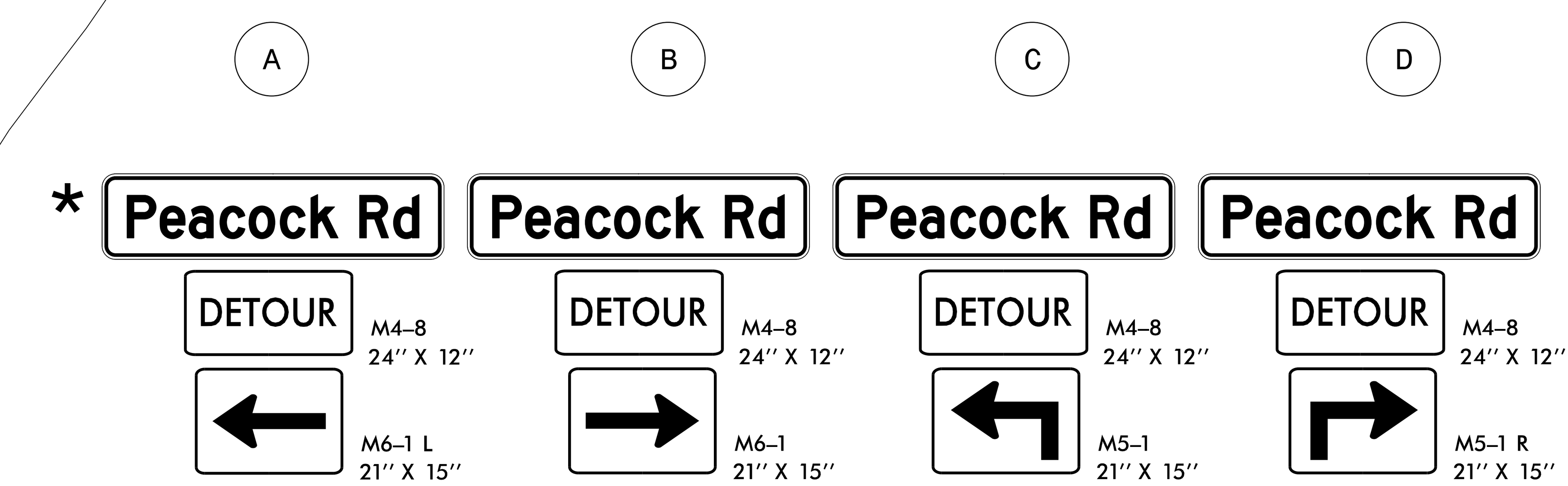
DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

TEMPORARY TRAFFIC CONTROL DETAIL

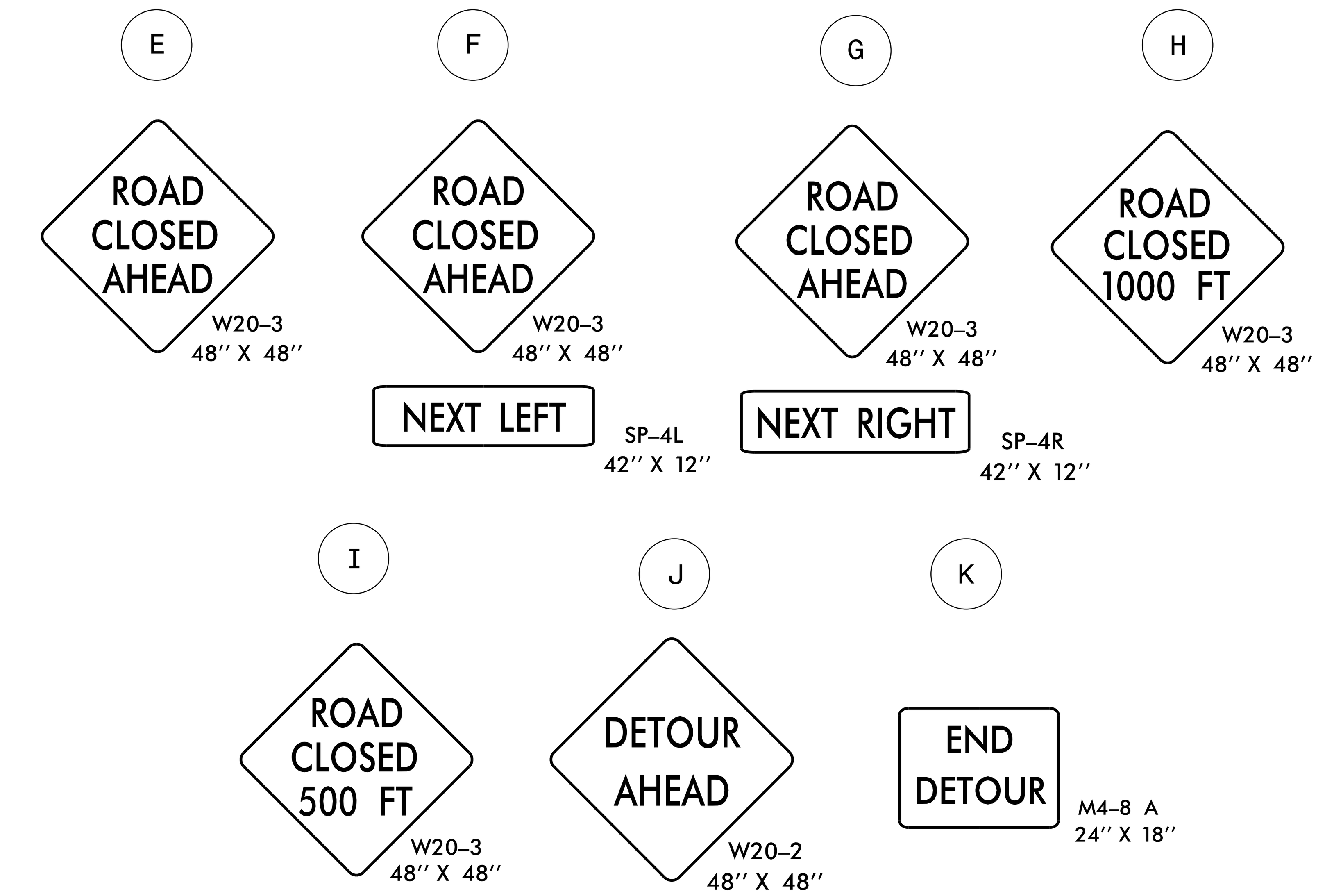
BRIDGE #230093



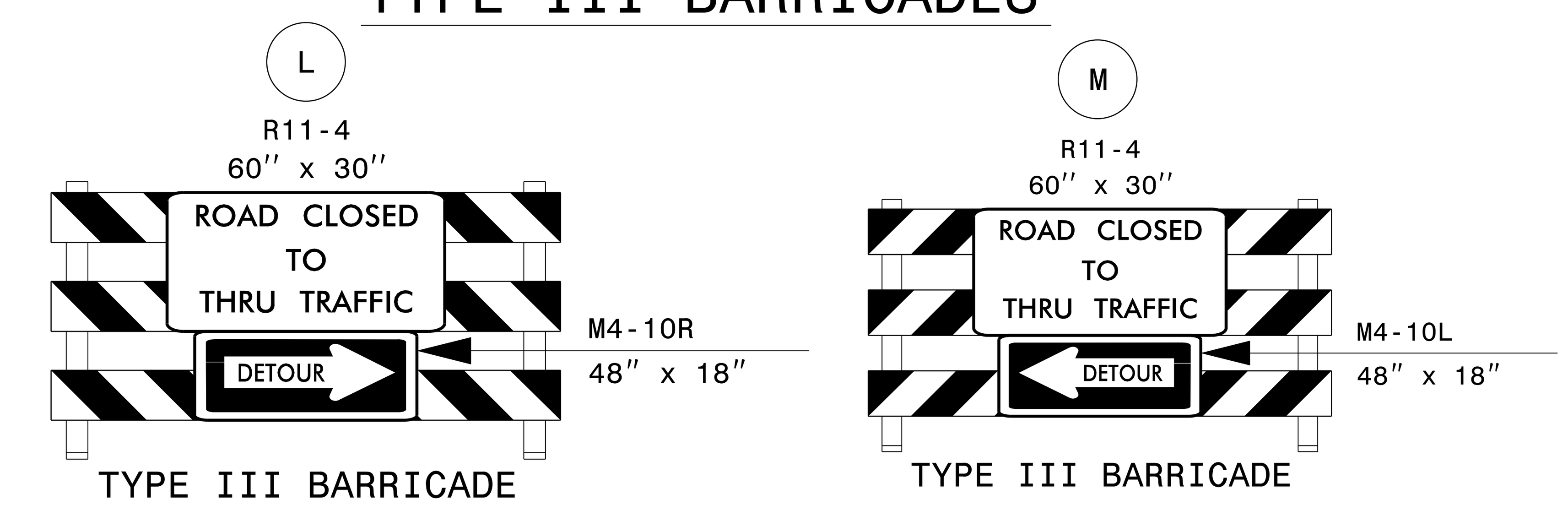
TRAILBLAZE SIGNING



ROAD CLOSURE SIGNING



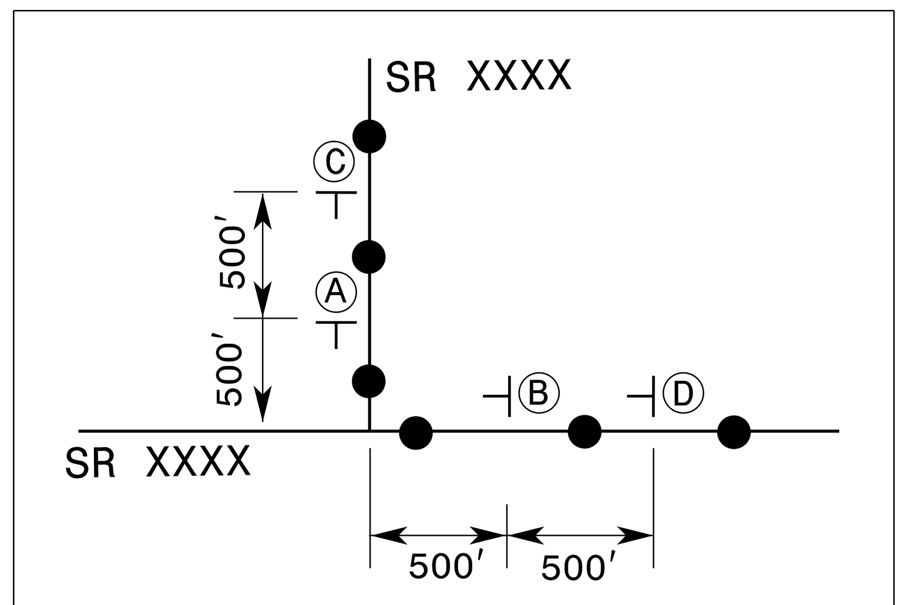
TYPE III BARRICADES



* SEE TMP-2 FOR SR 1005 (PEACOCK RD.) DETOUR SIGN DESIGN.

SEE TMP-3 FOR TYPE III BARRICADE PLACEMENT AT THE PROJECT SITE.

SEE ROADWAY STANDARD DRAWING 1101.03, SHEET 1 OF 9, FOR ADDITIONAL SIGNING AND SPACING REQUIREMENTS APPROACHING THE PROJECT SITE (ROAD CLOSURE POINT).



TYPICAL TRAILBLAZE SIGNING PLACEMENT AT EXISTING OFF-SITE INTERSECTIONS

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CIVIL/SITE DESIGN – GIS/GPS – CONSTRUCTION OBSERVATION

APPROVED:____________ DATE:________

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 22999 ENGINEER GREG S. PURVIS
DocuSigned by: Greg S. Purvis
1/13/2016

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

TEMPORARY TRAFFIC CONTROL DETAIL

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

T.I.P.: 17BP.6.R.42

CONTRACT:

TIP NO.	SHEET NO.
17BP.6.R.42	PMP-1

APPROVED: ______

DATE: ______

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 22999 ENGINEER GREG S. PURVIS — DocuSigned by: Greg S. Purvis 1/13/2016

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLAN
COLUMBUS COUNTY

BRIDGE #230093

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INDEX

ROADWAY STANDARD DRAWING

THE FOLLOWING ROADWAY STANDARDS AS APPEAR 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
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTILANE 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

GENERAL NOTES

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.

A) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS FOLLOWS:

ROAD NAME	MARKING	MARKER
1. PEACOCK RD.	THERMOPLASTIC	RAISED REFLECTIVE

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

C) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS.

D) PASSING ZONES WILL BE DETERMINED IN THE FIELD AND MUST BE APPROVED BY THE ENGINEER.

E) ON ASPHALT SURFACES, USE HEATED-IN-PLACE THERMOPLASTIC OR EXTRUDED THERMOPLASTIC FOR STOP BARS, SYMBOLS, CHARACTERS AND DIAGONALS.

F) MARKERS SHALL BE INSTALLED ACCORDING TO THE NCDOT ROADWAY STANDARD DRAWING 1250.01.

PLAN REVIEWED BY: N.C.D.O.T. SIGNING AND DELINEATION UNIT

AYMAN ALQUDWAH, P.E. SIGNING & DELINEATION STANDARDS ENGINEER

______ SIGNING & DELINEATION PROJECT DESIGN ENGINEER

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

PLAN PREPARED BY:

GREG PURVIS, P.E. PROJECT ENGINEER

CHARLES MULLEN TRAFFIC CONTROL AND PAVEMENT MARKING SPECIALIST

WETHERILL ENGINEERING

1223 Jones Franklin Rd.
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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

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

TIP NO.	SHEET NO.
17BP.6.R.42	PMP-2

APPROVED: ______________________

DATE: ______________________

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 22999 ENGINEER GREG S. PURVIS 1/13/2016

BRIDGE #230093

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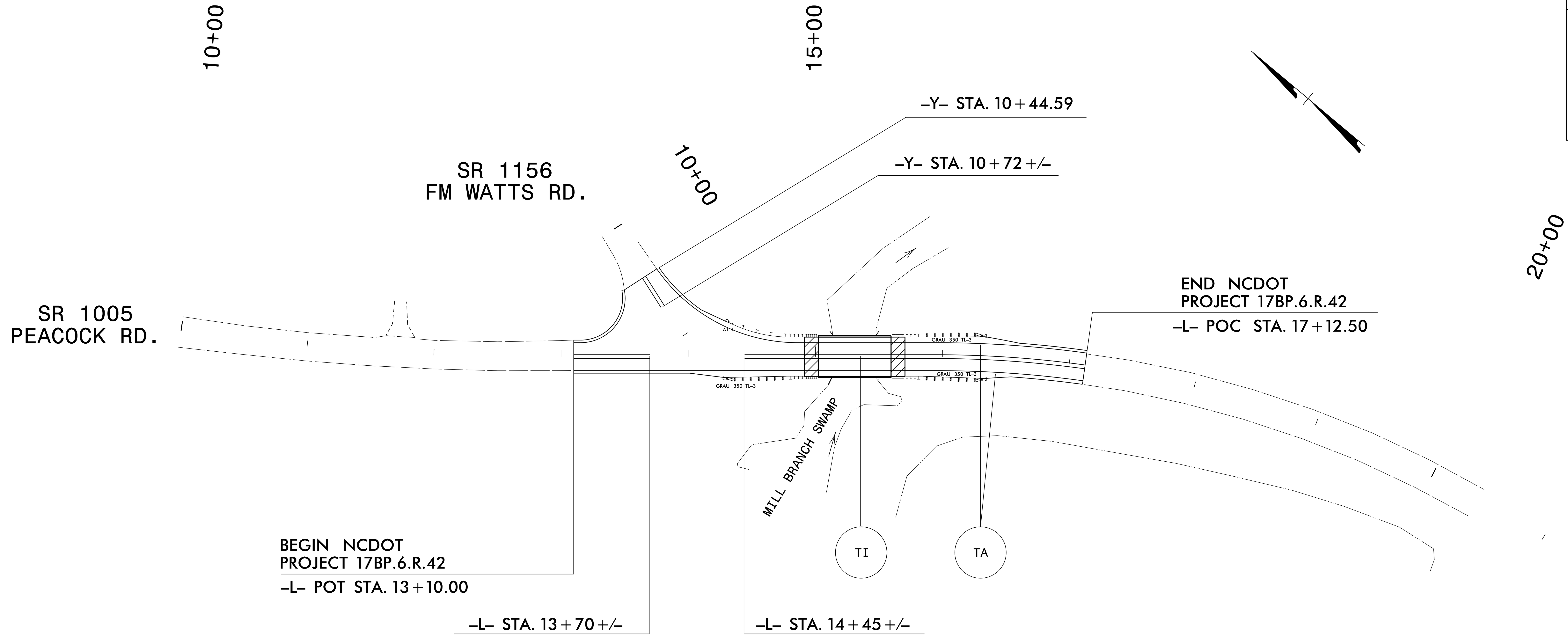

PAVEMENT MARKING SCHEDULE

SYBOL	DESCRIPTION	PAY ITEM
		FINAL PAVEMENT MARKINGS
		THERMOPLASTIC (4", 90 MILS)
TA	WHITE EDGELINE	
		THERMOPLASTIC (4", 120 MILS)
TI	YELLOW DOUBLE CENTER	
		MARKERS
MA	YELLOW/YELLOW	

PROPOSED TRAVEL LANES ARE 11' WIDTH UNLESS OTHERWISE NOTED.

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

PAVEMENT MARKING DETAIL AND SCHEDULE

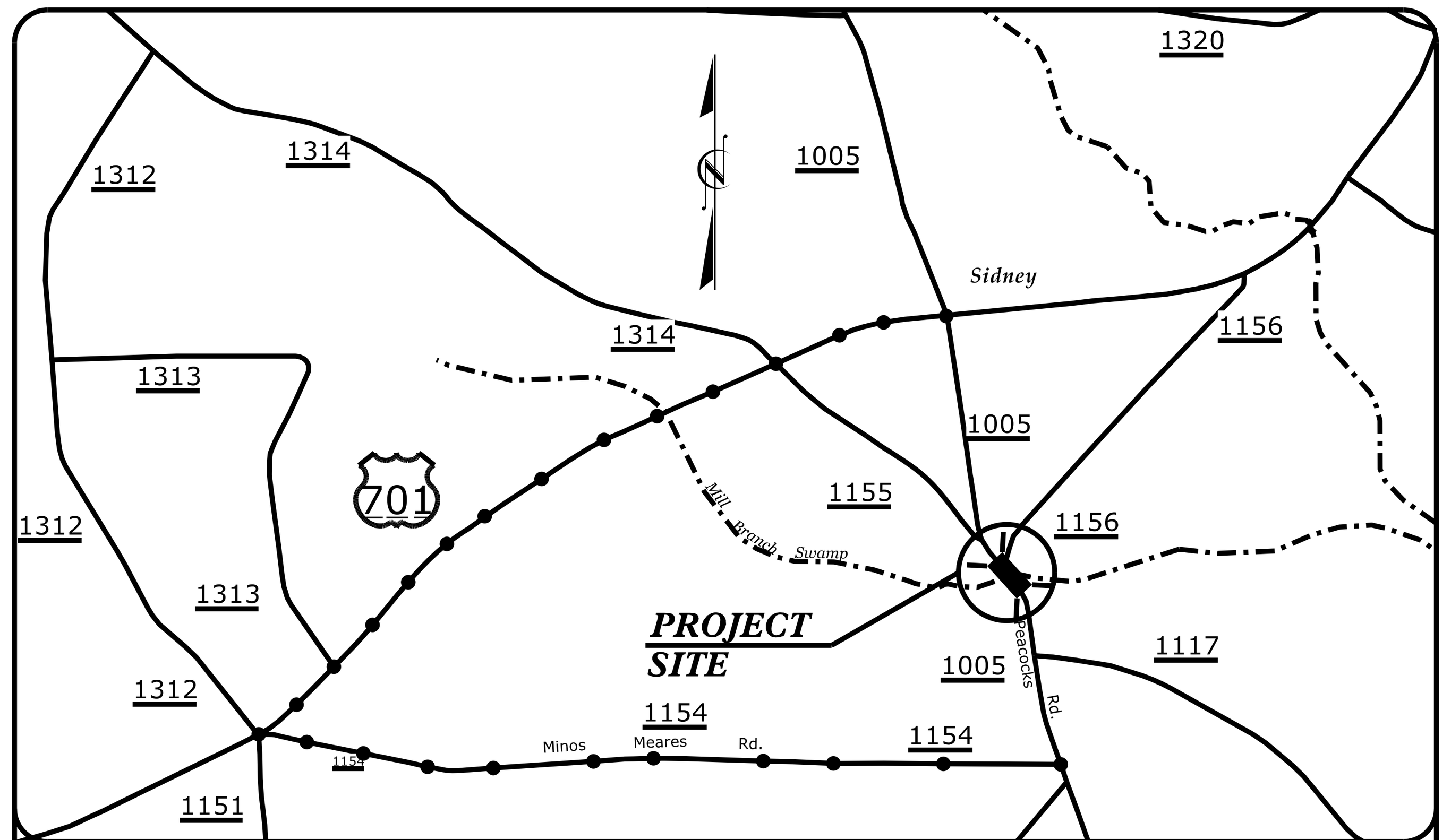
TIP PROJECT: 17BP.6.R.42

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.6.R.42	EC-1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED HIGHWAY EROSION CONTROL



VICINITY MAP

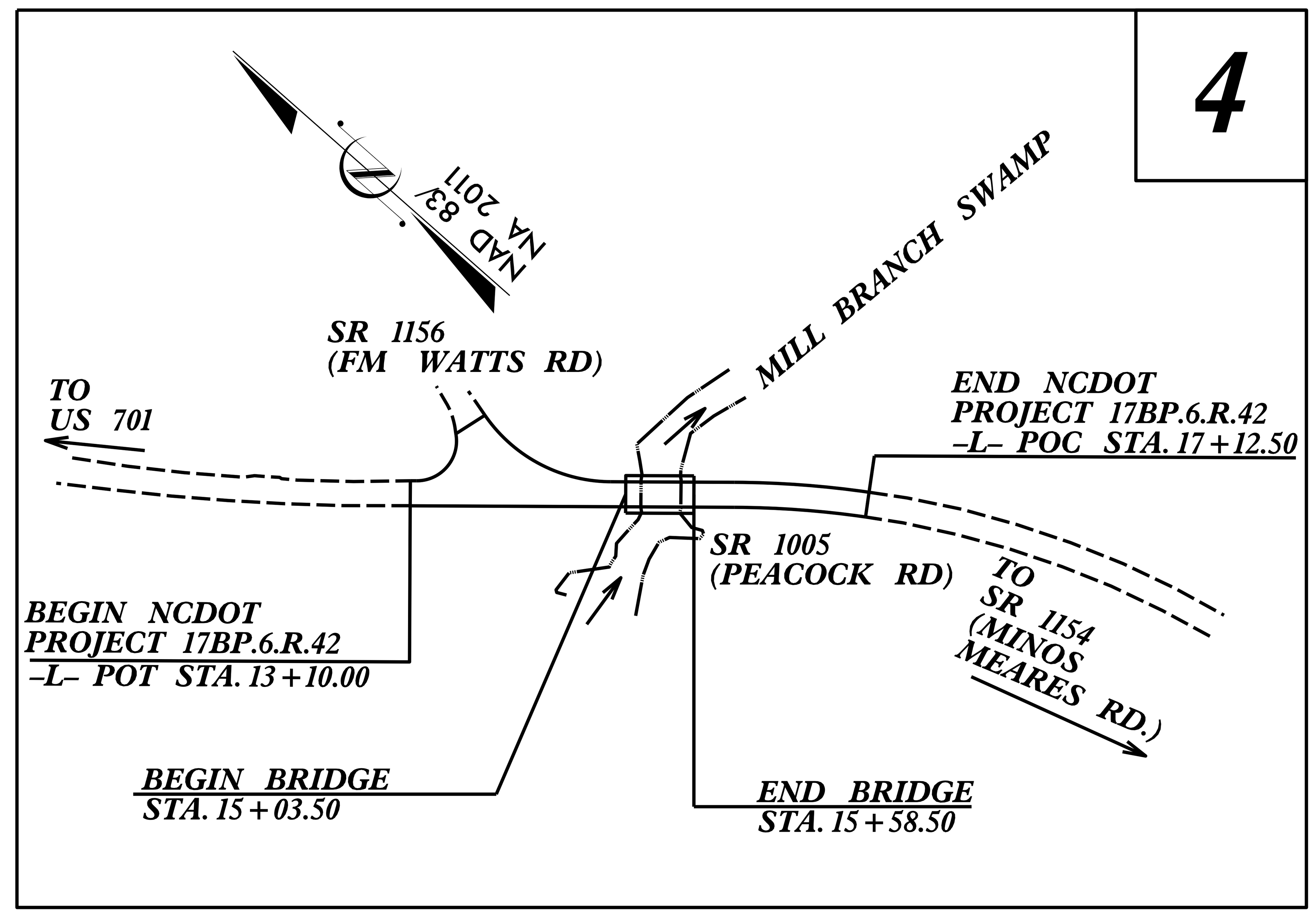
OFF-SITE DETOUR

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols

COLUMBUS COUNTY

LOCATION: BRIDGE NO. 230093 OVER MILL BRANCH SWAMP ON SR 1005 (PEACOCK RD.)

TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURE



EROSION AND SEDIMENT CONTROL MEASURES

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

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

GRAPHIC SCALE

25 0 50
PLANS
25 0 50
PROFILE (HORIZONTAL)
5 0 10
PROFILE (VERTICAL)

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

Prepared in the Office of:

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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

2012 STANDARD SPECIFICATIONS

Designed by:

Anne D. Gamber, PE, CFM — 3022
NAME — LEVEL III CERTIFICATION NO.

Reviewed in the Office of:

ROADSIDE ENVIRONMENTAL UNIT
1 South Wilmington St.
Raleigh, NC 27611

2012 STANDARD SPECIFICATIONS

Reviewed by:

Division 6

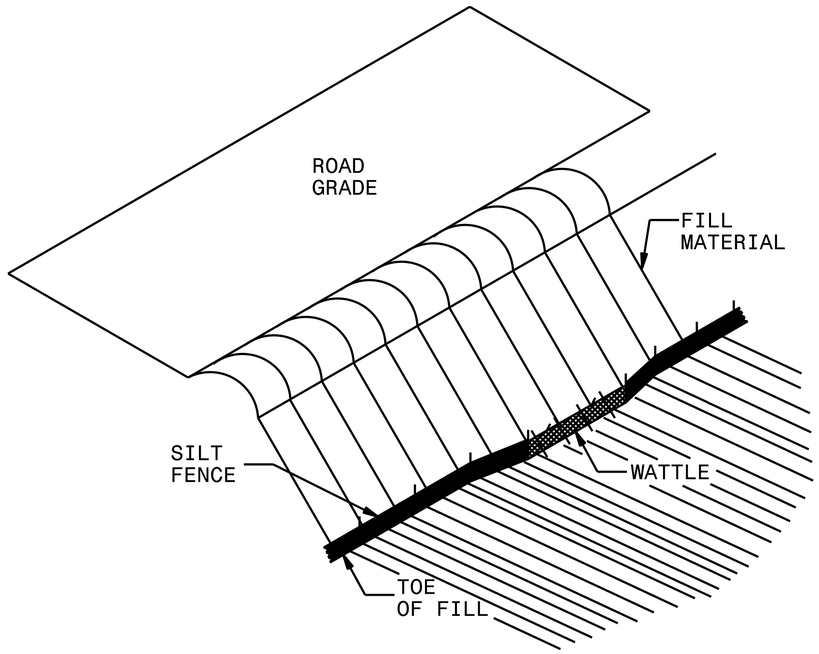
Roadway Standard Drawings

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

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

PROJECT REFERENCE NO.	SHEET NO.
SF-230093	EC-2A
R/W SHEET NO.	

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.

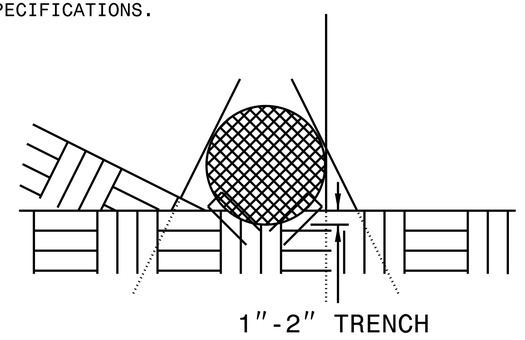
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

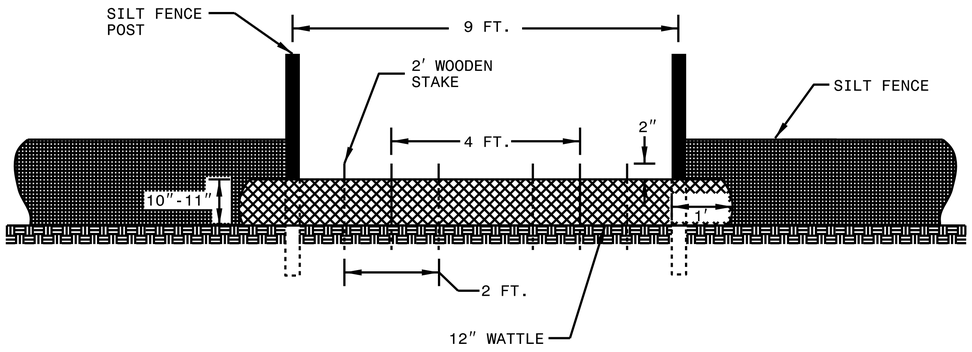
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

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

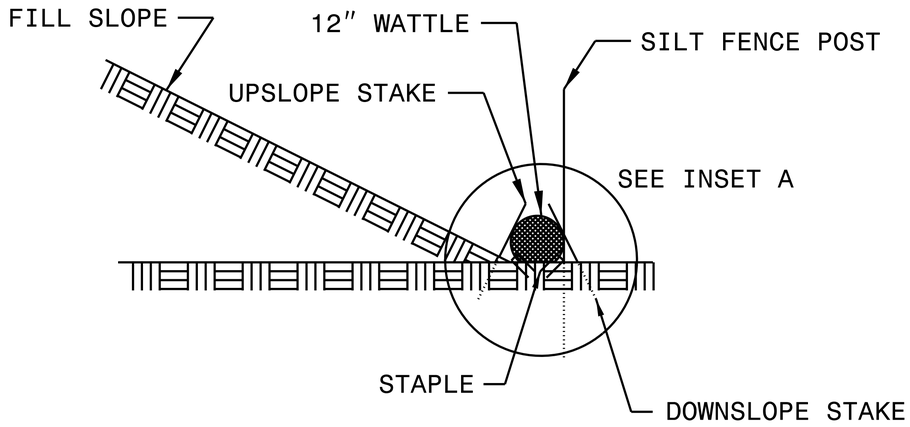
INSTALL TEMPORARY SILT FENCE IN ACCORDANCE WITH SECTION 1605 OF THE STANDARD SPECIFICATIONS.

INSET A





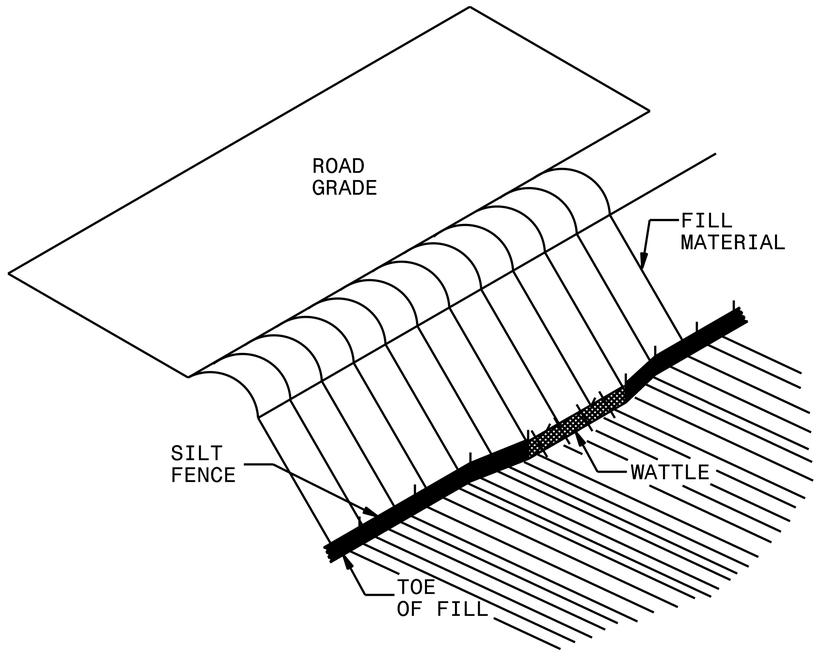
VIEW FROM SLOPE



SIDE VIEW

PROJECT REFERENCE NO.	SHEET NO.
SF-230093	EC-2A
R/W SHEET NO.	

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.

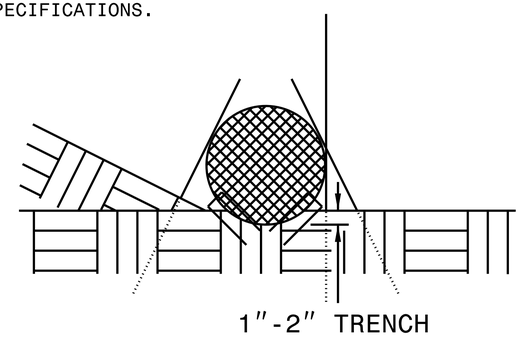
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

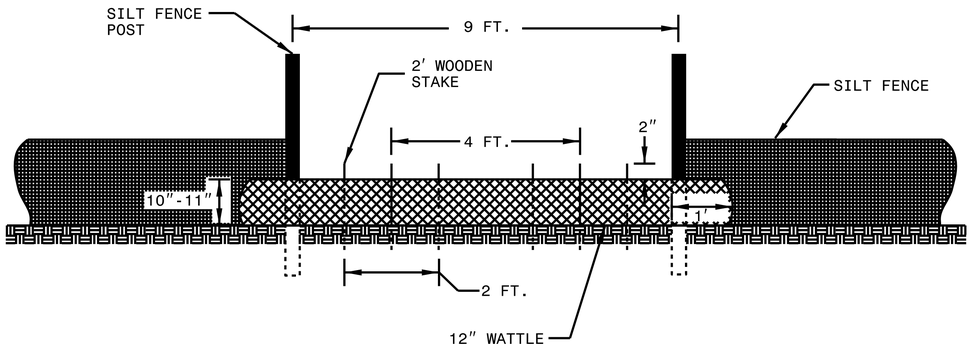
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

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

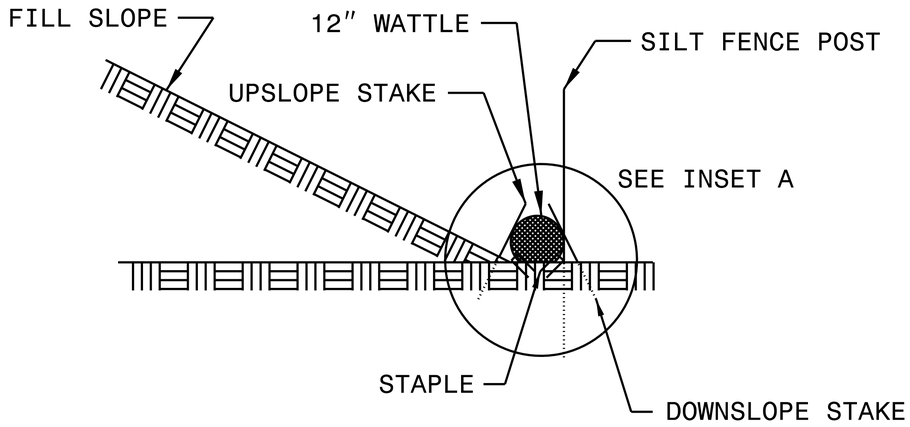
INSTALL TEMPORARY SILT FENCE IN ACCORDANCE WITH SECTION 1605 OF THE STANDARD SPECIFICATIONS.

INSET A





VIEW FROM SLOPE



SIDE VIEW

PROJECT REFERENCE NO.	SHEET NO.
SF-230093	EC-3

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

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

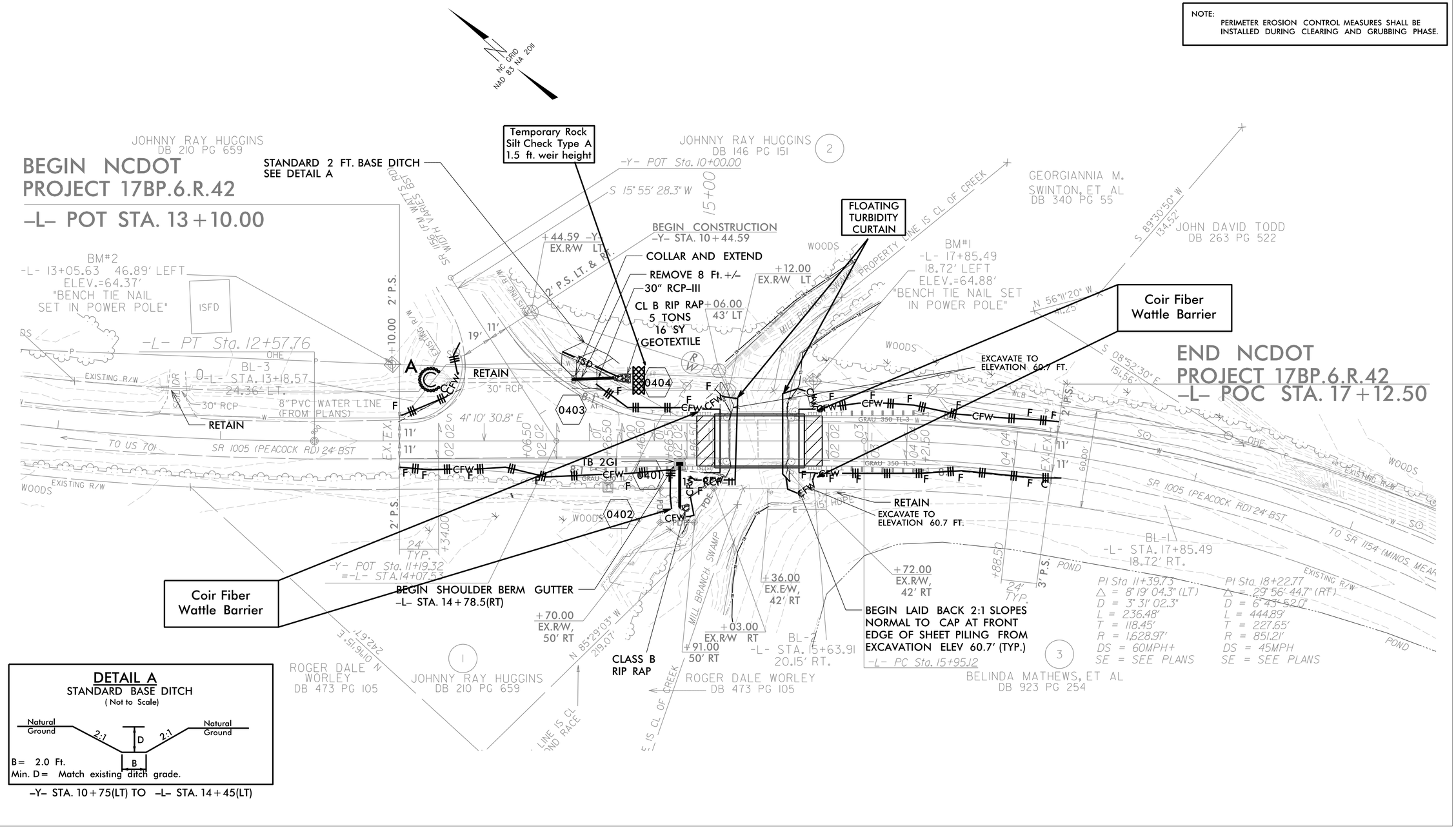
PROJECT REFERENCE NO.	SHEET NO.
SF-230093	EC-4/CONST.4
R/W SHEET NO.	____

EROSION CONTROL PLAN

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 4

NOTE: PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE – B AND TEMPORARY ROCK SILT CHECKS TYPE – A AT DRAINAGE OUTLETS.

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



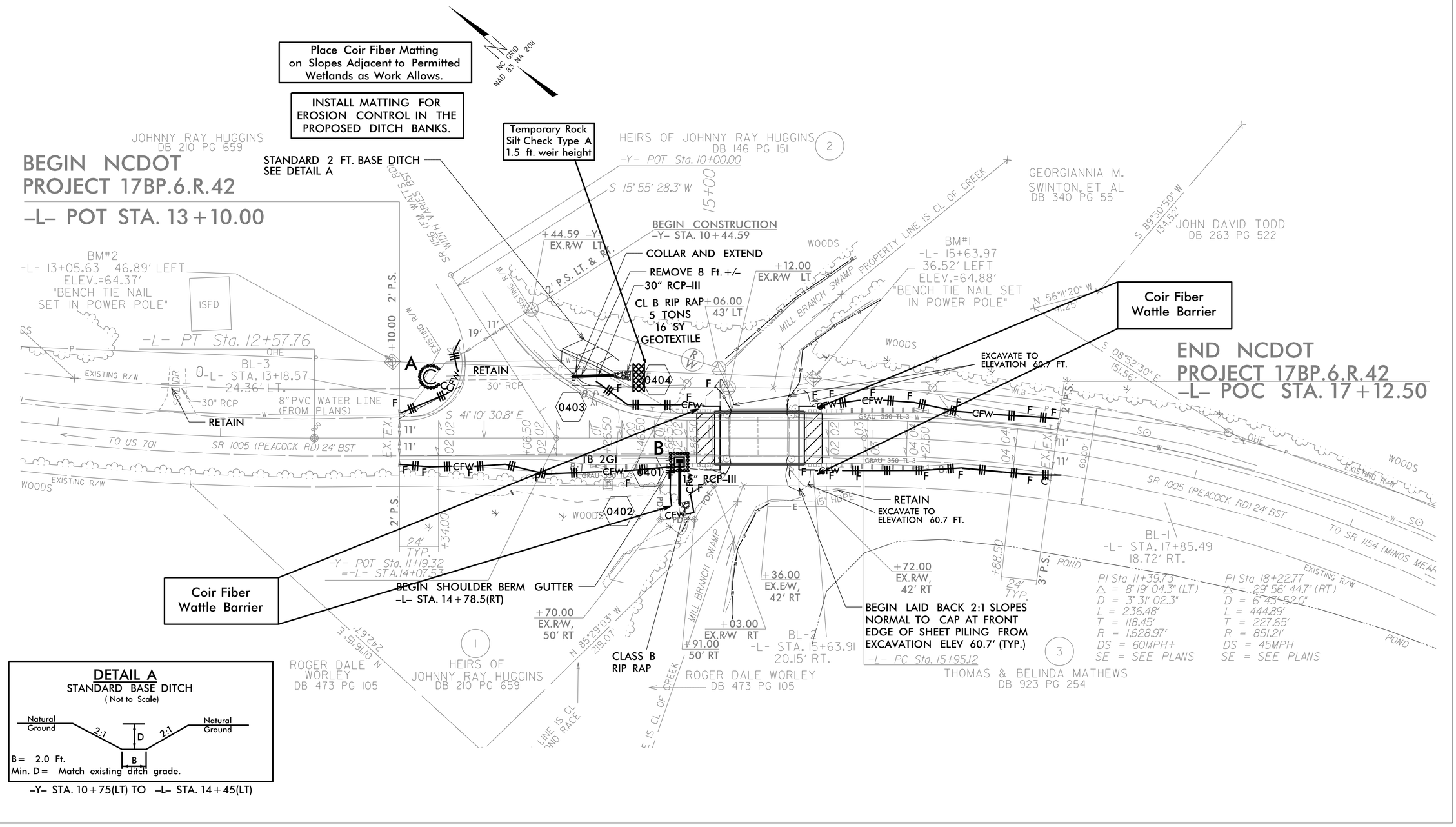
DETAIL A
STANDARD BASE DITCH
(Not to Scale)

B= 2.0 Ft.
Min. D= Match existing ditch grade.

–Y– STA. 10+75(LT) TO –L– STA. 14+45(LT)

PROJECT REFERENCE NO.	SHEET NO.
SF-230093	EC-5/CONST.4
R/W SHEET NO.	____

EROSION CONTROL PLAN



DETAIL A
STANDARD BASE DITCH
(Not to Scale)

B= 2.0 Ft.
Min. D= Match existing ditch grade.

-Y- STA. 10+75(LT) TO -L- STA. 14+45(LT)

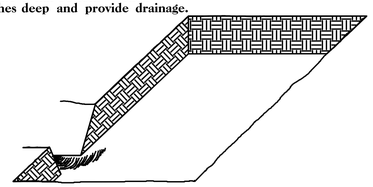
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	SF-230093	RF-1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	

PLANTING DETAILS

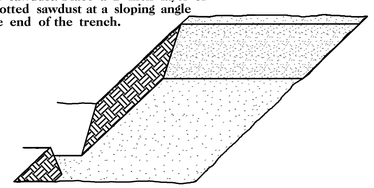
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

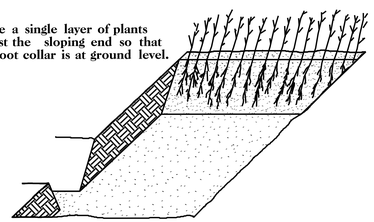
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



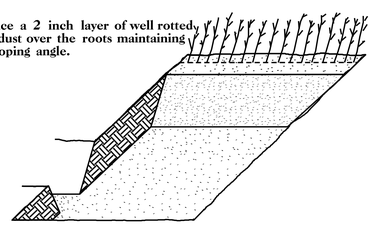
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



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

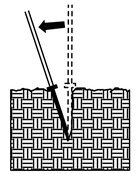


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

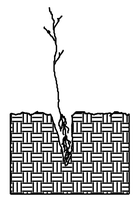


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

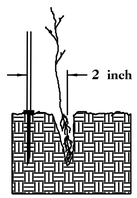
DIBBLE PLANTING METHOD
USING THE KBC PLANTING BAR



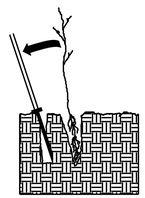
1. Insert planting bar as shown and pull handle toward planter.



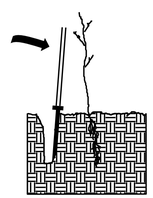
2. Remove planting bar and place seedling at correct depth.



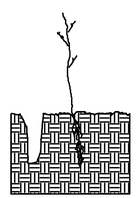
3. Insert planting bar 2 inches toward planter from seedling.



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

☐ 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	AMERICAN 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

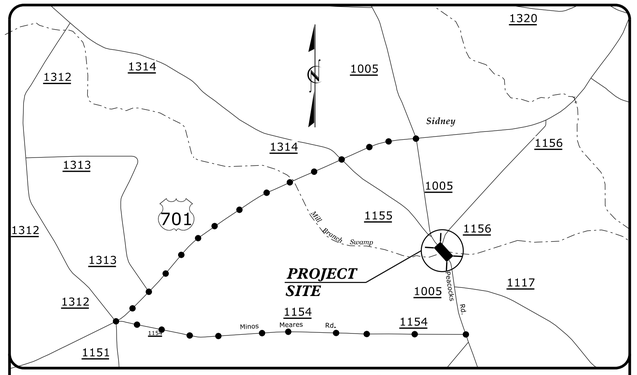
REFORESTATION DETAIL SHEET

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

09/08/09

PROJECT: 17BP.6.R.42

CONTRACT:



VICINITY MAP

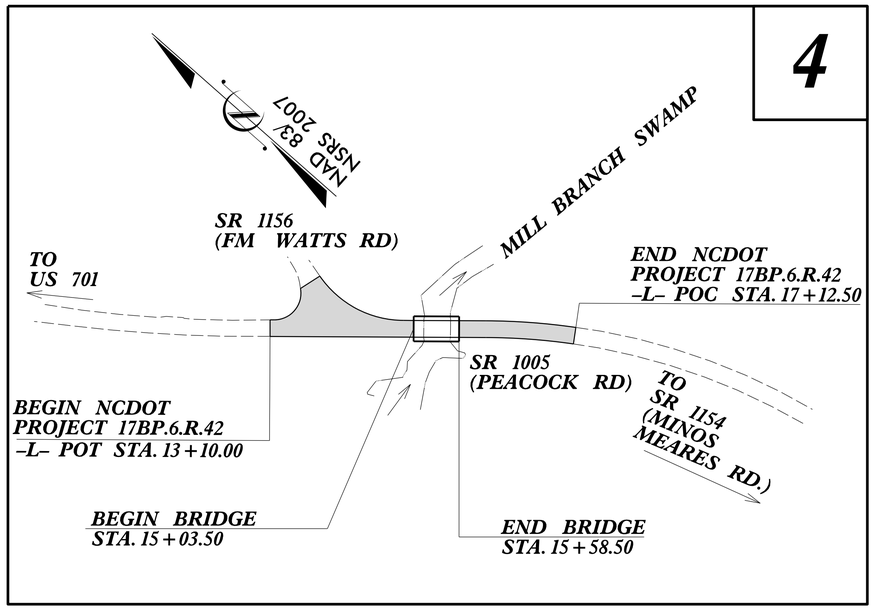
OFF–SITE DETOUR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITY CONSTRUCTION PLANS
COLUMBUS COUNTY

LOCATION: BRIDGE NO. 230093 OVER MILL BRANCH SWAMP ON SR 1005 (PEACOCK RD.)

TYPE OF WORK: UTILITY CONSTRUCTION



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

T.I.P. NO.	SHEET NO.
17BP.6.R.42	UC–1

WETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
License No. F–0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN – BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN – GIS/GPS – CONSTRUCTION OBSERVATION

BRIDGE #230093

Digitally signed by Michael Zaccardo
NORTH CAROLINA PROFESSIONAL SEAL 022321 ENGINEER MICHAEL V. ZACCARDO
1/14/2016
UTILITY CONSTRUCTION PLANS ONLY

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

30 15 0 30 60
PLANS

30 15 0 30 60
PROFILE (HORIZONTAL)

6 3 0 6 12
PROFILE (VERTICAL)

INDEX OF SHEETS

WATER AND SEWER OWNERS ON PROJECT

(1) COLUMBUS COUNTY (WATER)

WETHERILL ENGINEERING
1223 JONES FRANKLIN ROAD
Raleigh, N.C. 27606
License No. F–0377
Bus: 919 851 8077
Fax: 919 851 8107

Prepared for: DIVISION OF HIGHWAYS DIVISION SIX in the Office of:

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

LETTING DATE:

EDWARD G. WETHERILL, PE
PROJECT ENGINEER

GREG S. PURVIS, PE
PROJECT DESIGN ENGINEER

MICHAEL V. ZACCARDO, PE
UTILITY DESIGN ENGINEER

NCDOT CONTACT: BRICE BELL, PE
DIVISION 6 BRIDGE PROGRAM MANAGER

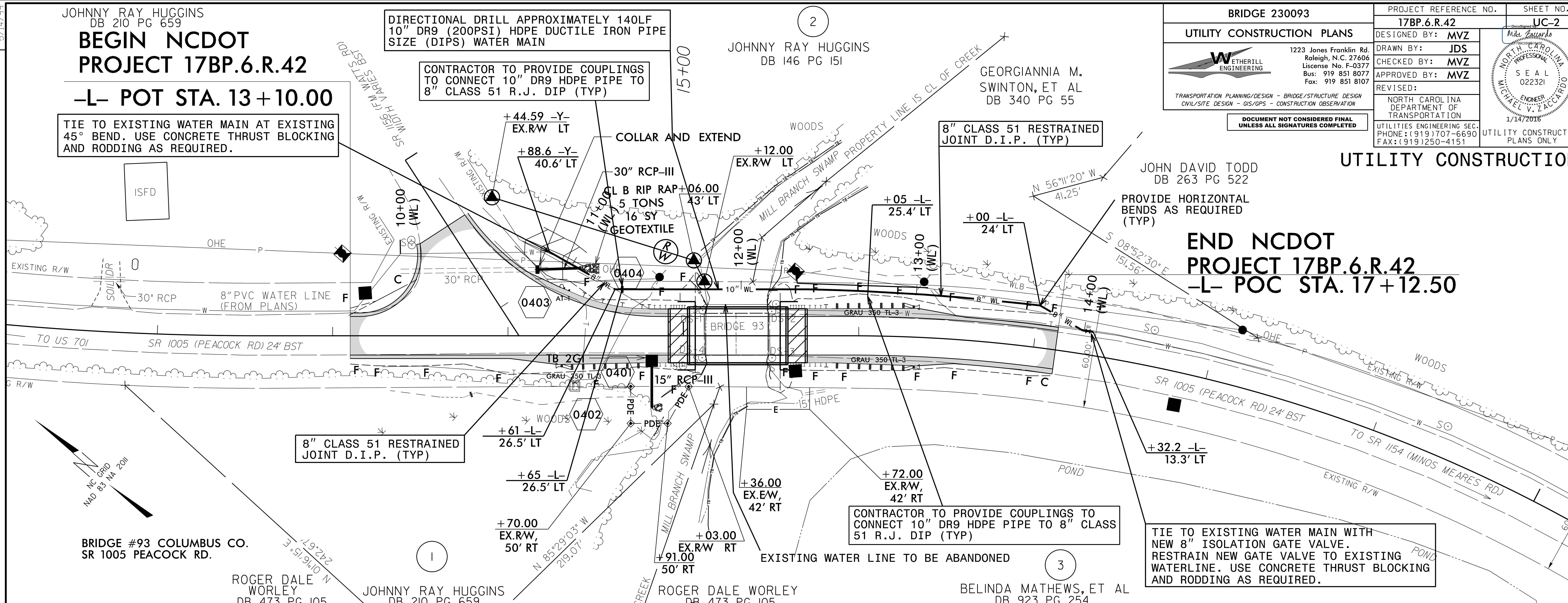
STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION ·

1/13/2016
I:\PROJ\230093_ut_tsh_UC1.psh.dgn
USER:rkeys

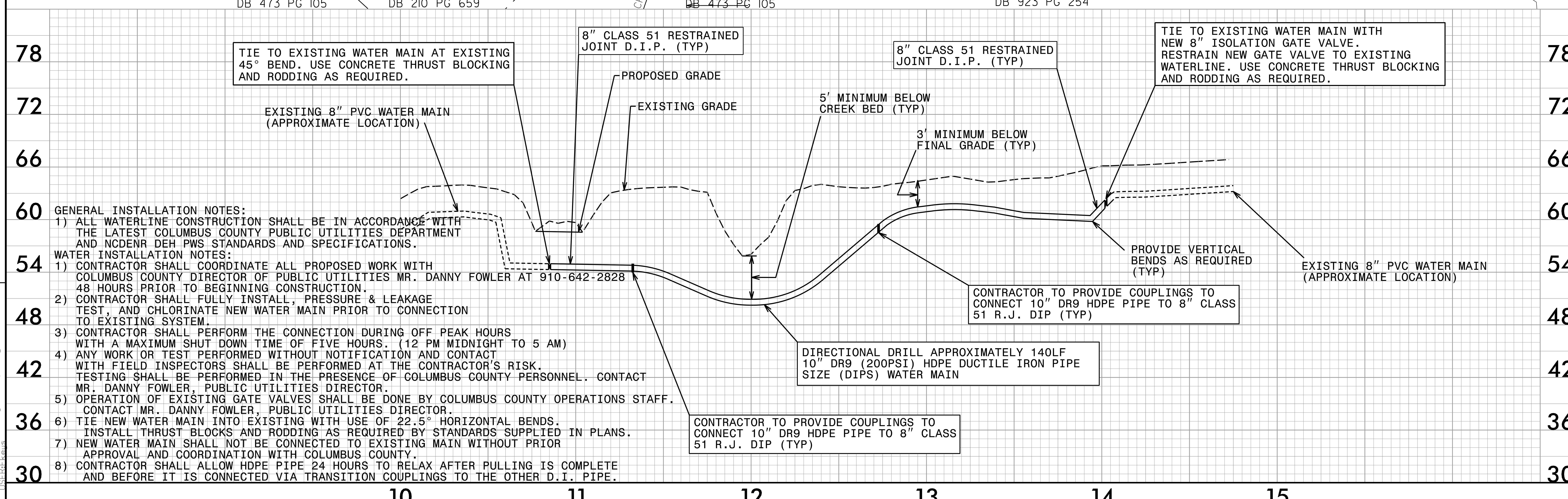
BRIDGE 230093	PROJECT REFERENCE NO. 17BP.6.R.42	SHEET NO. UC-2
UTILITY CONSTRUCTION PLANS	DESIGNED BY: MVZ	
WETHERILL ENGINEERING, 1223 Jones Franklin Rd., Raleigh, N.C. 27606, Liscense No. F-0377, Bus: 919 851 8077, Fax: 919 851 8107	DRAWN BY: JDS	
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN, CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION	CHECKED BY: MVZ	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	APPROVED BY: MVZ	
	REVISED:	
	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
	UTILITIES ENGINEERING SEC. PHONE: (919)707-6690 FAX: (919)250-4151	UTILITY CONSTRUCTION PLANS ONLY

NORTH CAROLINA PROFESSIONAL SEAL 022321 ENGINEER MICHAEL V. ZACCARDO 1/14/2016

UTILITY CONSTRUCTION



BEGIN NCDOT PROJECT 17BP.6.R.42
-L- POT STA. 13+10.00
TIE TO EXISTING WATER MAIN AT EXISTING 45° BEND. USE CONCRETE THRUST BLOCKING AND RODDING AS REQUIRED.
DIRECTIONAL DRILL APPROXIMATELY 140LF 10" DR9 (200PSI) HDPE DUCTILE IRON PIPE SIZE (DIPS) WATER MAIN
CONTRACTOR TO PROVIDE COUPLINGS TO CONNECT 10" DR9 HDPE PIPE TO 8" CLASS 51 R.J. DIP (TYP)
JOHNNY RAY HUGGINS DB 210 PG 659
JOHNNY RAY HUGGINS DB 146 PG 151
GEORGIANNIA M. SWINTON, ET AL DB 340 PG 55
8" CLASS 51 RESTRAINED JOINT D.I.P. (TYP)
JOHN DAVID TODD DB 263 PG 522
PROVIDE HORIZONTAL BENDS AS REQUIRED (TYP)
END NCDOT PROJECT 17BP.6.R.42
-L- POC STA. 17+12.50
COLLAR AND EXTEND
30" RCP-III
CL B RIP RAP 5 TONS 16 SY GEOTEXTILE
SR 1005 (PEACOCK RD) 24' BST
TO US 701
TO SR 1154 (MINOS MEARES RD)
8" PVC WATER LINE (FROM PLANS)
BRIDGE 93
MILL BRANCH SWAMP
TIE TO EXISTING WATER MAIN WITH NEW 8" ISOLATION GATE VALVE. RESTRAIN NEW GATE VALVE TO EXISTING WATERLINE. USE CONCRETE THRUST BLOCKING AND RODDING AS REQUIRED.
EXISTING WATER LINE TO BE ABANDONED
BRIDGE #93 COLUMBUS CO. SR 1005 PEACOCK RD.
ROGER DALE WORLEY DB 473 PG 105
BELINDA MATHEWS, ET AL DB 923 PG 254
NC GRID NAD 83 NA 2011



TIE TO EXISTING WATER MAIN AT EXISTING 45° BEND. USE CONCRETE THRUST BLOCKING AND RODDING AS REQUIRED.
8" CLASS 51 RESTRAINED JOINT D.I.P. (TYP)
PROPOSED GRADE
EXISTING GRADE
EXISTING 8" PVC WATER MAIN (APPROXIMATE LOCATION)
5' MINIMUM BELOW CREEK BED (TYP)
3' MINIMUM BELOW FINAL GRADE (TYP)
TIE TO EXISTING WATER MAIN WITH NEW 8" ISOLATION GATE VALVE. RESTRAIN NEW GATE VALVE TO EXISTING WATERLINE. USE CONCRETE THRUST BLOCKING AND RODDING AS REQUIRED.
PROVIDE VERTICAL BENDS AS REQUIRED (TYP)
CONTRACTOR TO PROVIDE COUPLINGS TO CONNECT 10" DR9 HDPE PIPE TO 8" CLASS 51 R.J. DIP (TYP)
DIRECTIONAL DRILL APPROXIMATELY 140LF 10" DR9 (200PSI) HDPE DUCTILE IRON PIPE SIZE (DIPS) WATER MAIN
78
72
66
60
54
48
42
36
30
10
11
12
13
14
15

GENERAL INSTALLATION NOTES:

1) ALL WATERLINE CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST COLUMBUS COUNTY PUBLIC UTILITIES DEPARTMENT AND NCDENR DEH PWS STANDARDS AND SPECIFICATIONS.

WATER INSTALLATION NOTES:

1) CONTRACTOR SHALL COORDINATE ALL PROPOSED WORK WITH COLUMBUS COUNTY DIRECTOR OF PUBLIC UTILITIES MR. DANNY FOWLER AT 910-642-2828 48 HOURS PRIOR TO BEGINNING CONSTRUCTION.
2) CONTRACTOR SHALL FULLY INSTALL, PRESSURE & LEAKAGE TEST, AND CHLORINATE NEW WATER MAIN PRIOR TO CONNECTION TO EXISTING SYSTEM.
3) CONTRACTOR SHALL PERFORM THE CONNECTION DURING OFF PEAK HOURS WITH A MAXIMUM SHUT DOWN TIME OF FIVE HOURS. (12 PM MIDNIGHT TO 5 AM)
4) ANY WORK OR TEST PERFORMED WITHOUT NOTIFICATION AND CONTACT WITH FIELD INSPECTORS SHALL BE PERFORMED AT THE CONTRACTOR'S RISK. TESTING SHALL BE PERFORMED IN THE PRESENCE OF COLUMBUS COUNTY PERSONNEL. CONTACT MR. DANNY FOWLER, PUBLIC UTILITIES DIRECTOR.
5) OPERATION OF EXISTING GATE VALVES SHALL BE DONE BY COLUMBUS COUNTY OPERATIONS STAFF. CONTACT MR. DANNY FOWLER, PUBLIC UTILITIES DIRECTOR.
6) TIE NEW WATER MAIN INTO EXISTING WITH USE OF 22.5° HORIZONTAL BENDS. INSTALL THRUST BLOCKS AND RODDING AS REQUIRED BY STANDARDS SUPPLIED IN PLANS.
7) NEW WATER MAIN SHALL NOT BE CONNECTED TO EXISTING MAIN WITHOUT PRIOR APPROVAL AND COORDINATION WITH COLUMBUS COUNTY.
8) CONTRACTOR SHALL ALLOW HDPE PIPE 24 HOURS TO RELAX AFTER PULLING IS COMPLETE AND BEFORE IT IS CONNECTED VIA TRANSITION COUPLINGS TO THE OTHER D.I. PIPE.

REVISIONS

1/13/2016 230093_ut_rdy4_UC2_psh.dgn

8/17/99

REVISIONS

BRIDGE 230093	PROJECT REFERENCE NO.	SHEET NO.
UTILITY CONSTRUCTION PLANS	17BP.6.R.42	UC-3

WETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Liscense No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

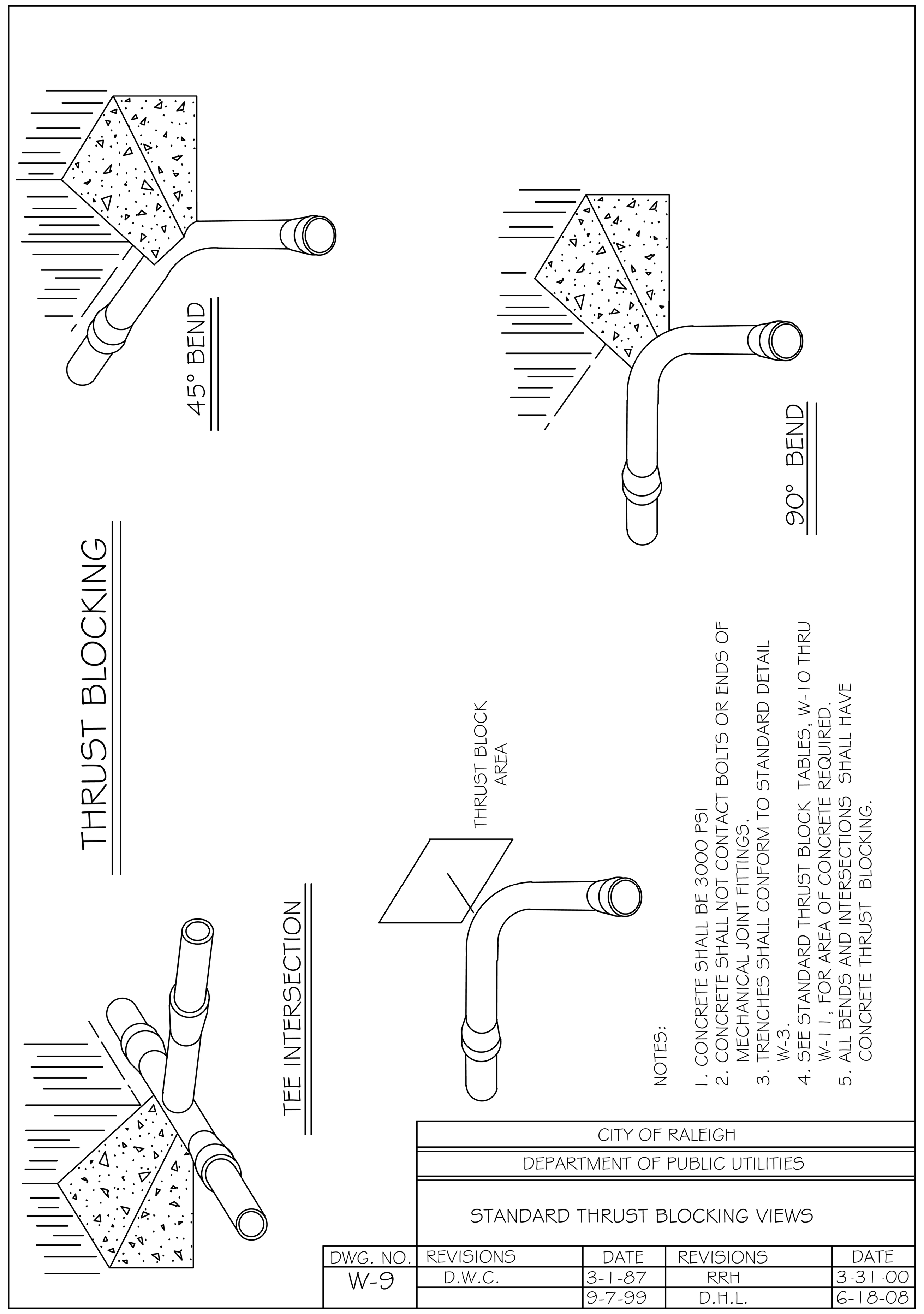
DESIGNED BY: MVZ
DRAWN BY: JDS
CHECKED BY: MVZ
APPROVED BY: MVZ
REVISED:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
UTILITIES ENGINEERING SEC.
PHONE: (919)707-6690
FAX: (919)250-4151

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022321 MICHAEL V. ZACCARDO
1/18/2016

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION



REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS

BASED ON TEST PRESSURE OF 200 P.S.I.

ALL AREAS GIVEN IN SQUARE FEET.

SIZE AND DEGREE OF BEND	STATIC THRUST IN POUNDS	MODERATELY DRY CLAY 4000 LBS/FT²	SOFT CLAY 2000 LBS/FT²	1600 LBS/FT² GRAVEL / COARSE SAND	8000 LBS/FT² DRY CLAY - ALWAYS DRY	SAND, COMPACT FIRM 8000 LBS/FT²	SAND - CLEAN DRY 4000 LBS/FT²	SOIL 1000 LBS/FT² QUICKSAND - VERY POOR	ROCK - POOR 10,000 LBS/FT²
6"									
11 1/4°	1,108	1	1	1	1	1	1	2	1
22 1/2°	2,207	1	2	2	1	1	1	3	1
45°	4,328	2	3	3	1	1	2	5	1
90°	7,996	2	4	5	1	1	2	8	1
PLUG	5,655	2	3	4	1	1	2	6	1
8"									
11 1/4°	1,970	1	1	2	1	1	1	2	1
22 1/2°	3,922	1	2	3	1	1	1	4	1
45°	7,694	2	4	5	1	1	2	8	1
90°	14,215	4	8	9	2	2	4	15	2
PLUG	10,053	3	5	6	2	2	3	10	1
12"									
11 1/4°	4,433	2	3	3	1	1	2	5	1
22 1/2°	8,826	3	5	6	2	2	3	9	1
45°	17,312	5	9	11	3	3	5	18	2
90°	31,983	8	16	19	4	4	8	32	4
PLUG	22,619	6	12	14	3	3	6	23	3
16"									
11 1/4°	7,881	2	4	5	1	1	2	8	1
22 1/2°	15,691	4	8	10	2	2	4	16	2
45°	30,779	8	16	19	4	4	8	31	4
90°	56,861	15	29	35	8	8	15	57	6
PLUG	40,213	10	21	25	5	5	10	41	5

REACTION BEARING AREAS ARE IN SQUARE FEET MEASURED IN A VERTICAL PLANE IN THE TRENCH SIDE AT AN ANGLE OF 90° TO THE THRUST VECTOR.

USE 6" - 90 BEND VALUE FOR HYDRANTS FOR ADDITIONAL SAFETY FACTOR.

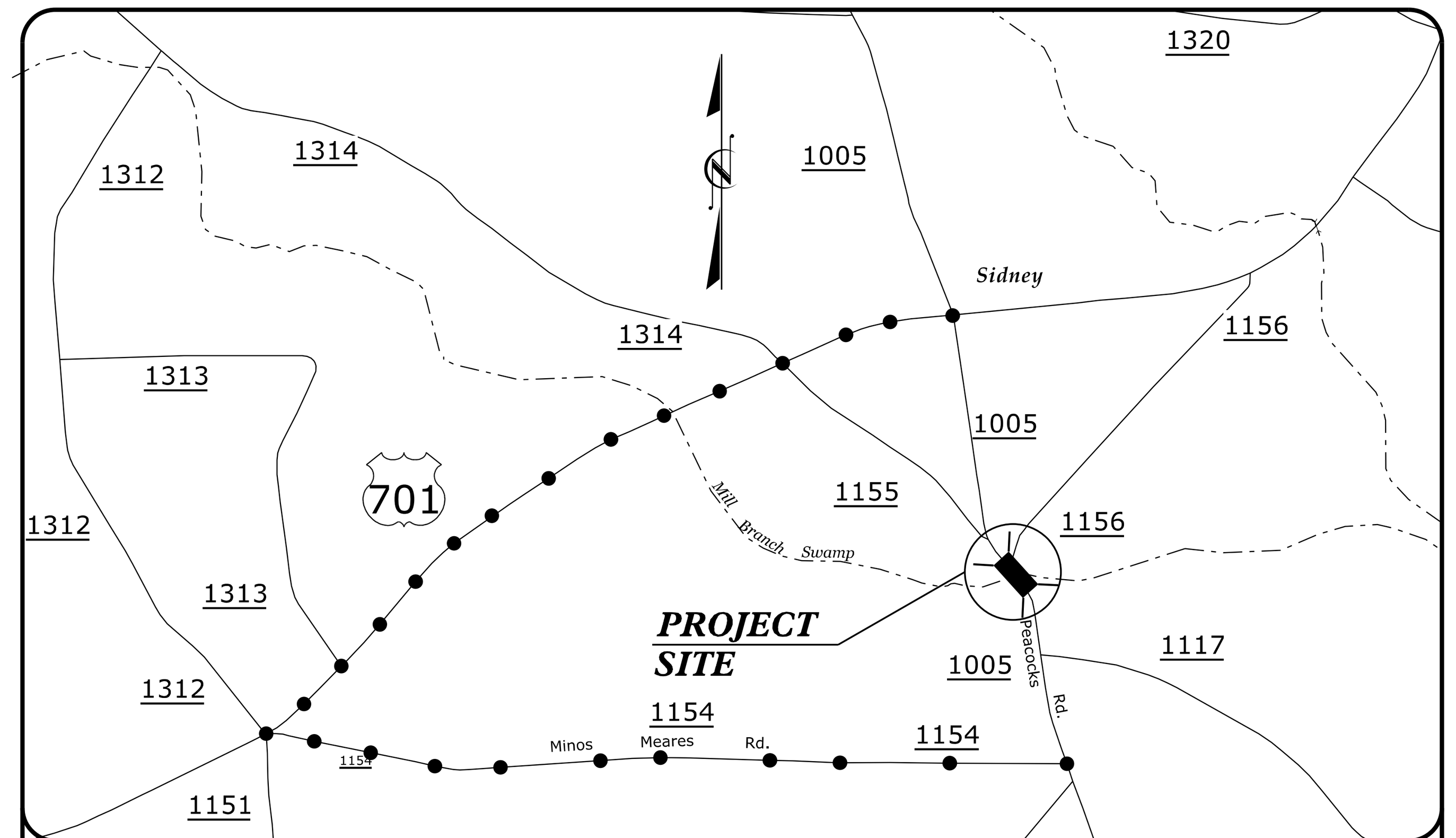
CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
THRUST BLOCKING DESIGN QUANTITY TABLE

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-10	D.W.C.	6-23-99		

1/18/2016
230093_ut_rdy4_UC3_psh.dgn

PROJECT: 17BP.6.R.42

CONTRACT:



VICINITY MAP

OFF–SITE DETOUR ●—●—●—●—●

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES BY OTHERS PLANS COLUMBUS COUNTY

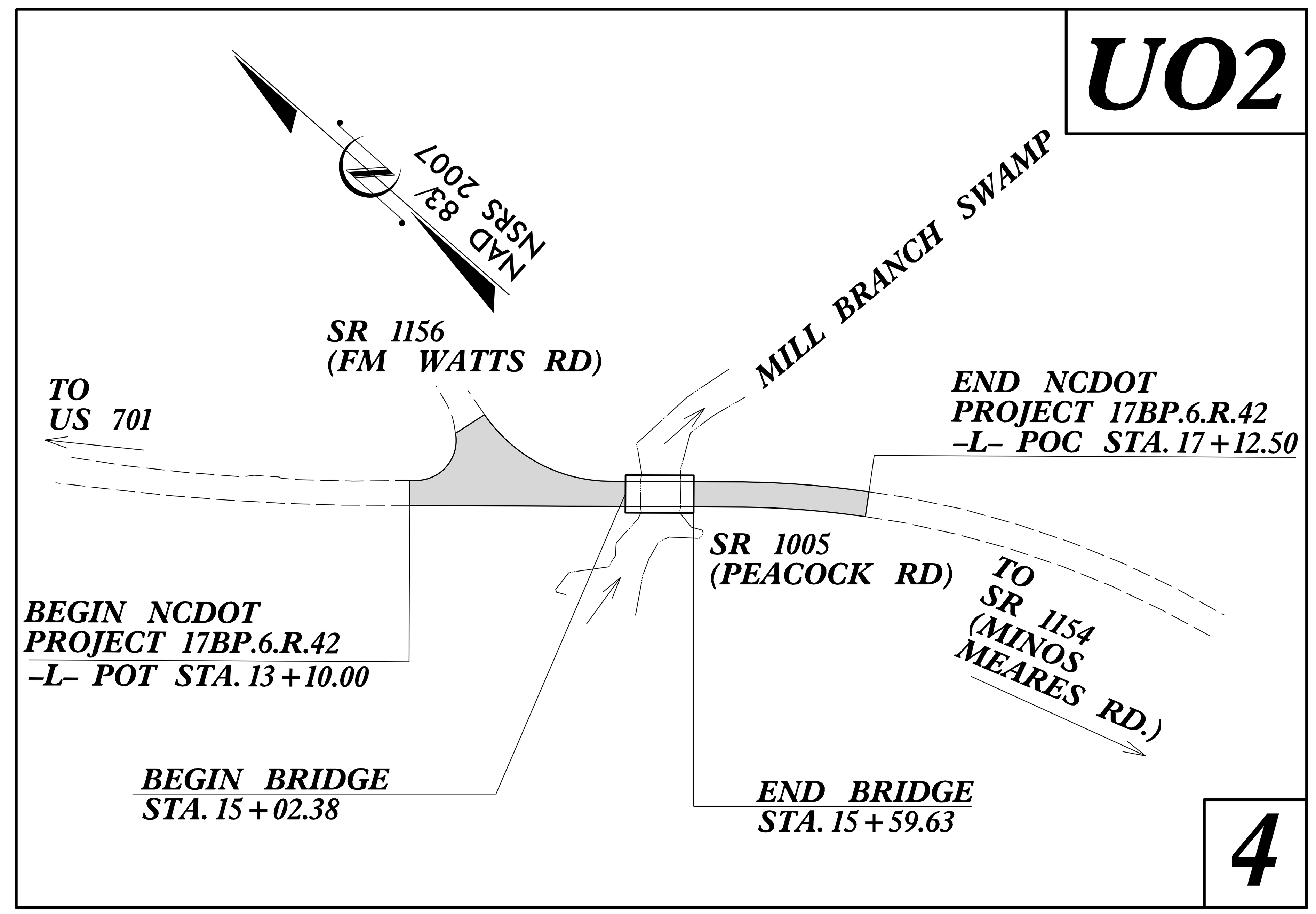
LOCATION: BRIDGE NO. 230093 OVER MILL BRANCH SWAMP ON SR 1005 (PEACOCK RD.)

TYPE OF WORK: UTILITIES RELOCATION

T.I.P. NO.	SHEET NO.
17BP.6.R.42	UO–1

WETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
License No. F–0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN – BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN – GIS/GPS – CONSTRUCTION OBSERVATION

BRIDGE #230093



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

GRAPHIC SCALES

30 15 0 30 60 — PLANS
30 15 0 30 60 — PROFILE (HORIZONTAL)
6 3 0 6 12 — PROFILE (VERTICAL)

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
UO–1	TITLE SHEET
UO–2	UTILITY BY OTHERS PLAN SHEETS

UTILITY OWNERS ON PROJECT

(A) BRUNSWICK EMC (POWER DISTRIBUTION)
(B) CENTURYLINK (TELEPHONE)
(C) TIME WARNER CABLE (CATV)

Prepared for:
DIVISION OF HIGHWAYS DIVISION SIX
558 Gillespie Street, Fayetteville NC, 28301

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

LETTING DATE:

EDWARD G. WETHERILL, PE — PROJECT ENGINEER
GREG S. PURVIS, PE — PROJECT DESIGN ENGINEER
SONNY UPOLE — UTILITY COORDINATOR

NCDOT CONTACT: BRICE BELL, PE — DIVISION 6 BRIDGE PROGRAM MANAGER

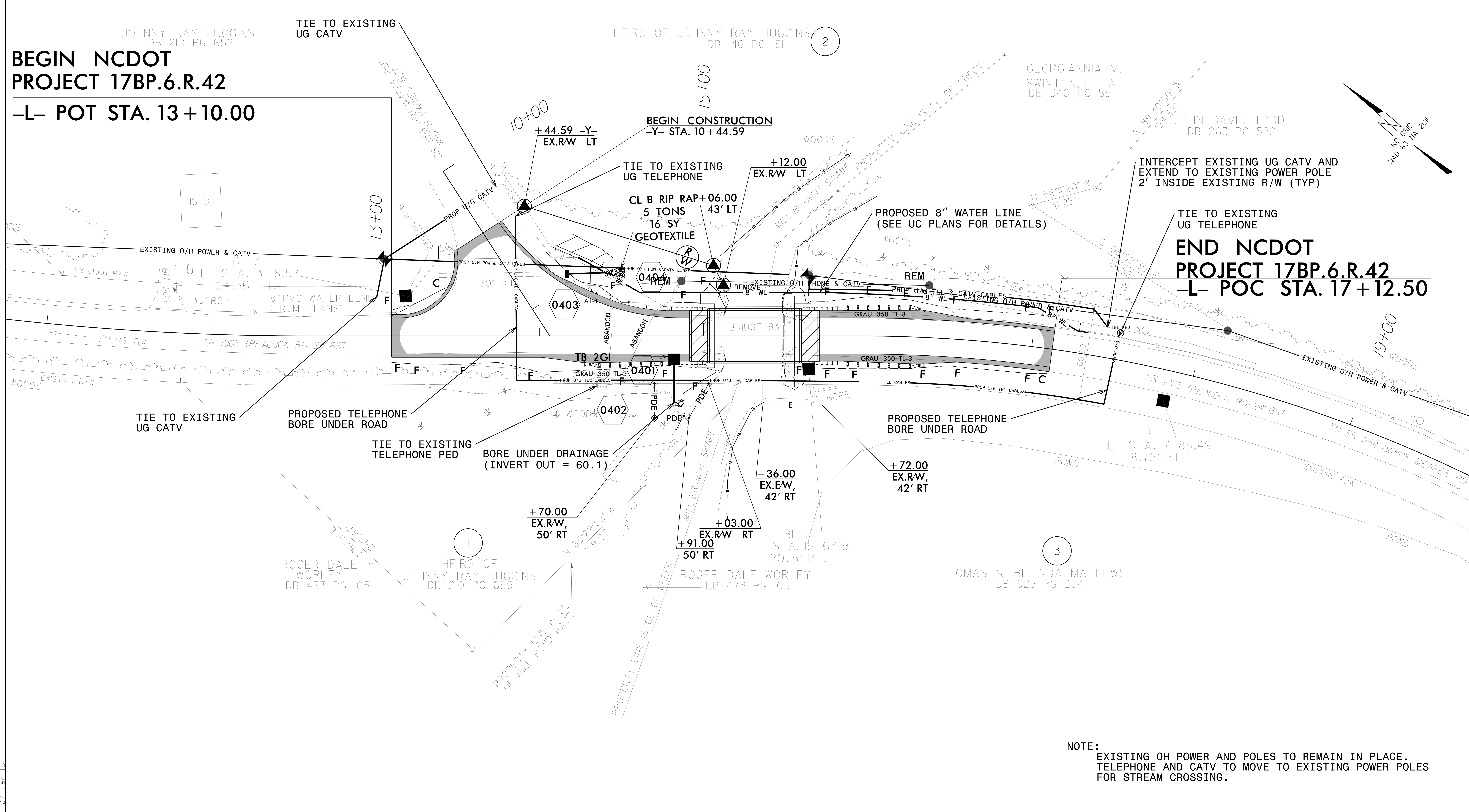
BRIDGE 230093	PROJECT REFERENCE NO.	SHEET NO.
	17BP.6.R.42	UO-2

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR PROPOSED UTILITY WORK SHOWN ON THIS SHEET.

WETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Liscense No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

REVISIONS



NOTE:
EXISTING OH POWER AND POLES TO REMAIN IN PLACE. TELEPHONE AND CATV TO MOVE TO EXISTING POWER POLES FOR STREAM CROSSING.

5/14/99
7:41:09 AM
COLUMBUS 93\Utilities\Rdy_Ut\Proj\230093_ut_rdy4_U02_psh.dgn

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.6.R.42	X-6

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75
70
65
60

R/W

4:1

0.034

0.047

S.S. 65.22

66.09

17+12.50

S.S. 65.33

R/W

75
70
65
60

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

7:49:29 AM
P:\2015\COLUMBUS 93\Roadway\Xsc\2300193_rdy_xp1.dgn
9/22/2015

PROJ. REFERENCE NO.	SHEET NO.
17BP.6.R.42	X-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CROSS-SECTION SUMMARY

-L-

NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
13+10.00	0	0
13+25.00	2	0
13+50.00	7	1
13+75.00	13	0
14+00.00	15	0
14+50.00	28	2
14+75.00	13	2
15+02.38	12	6
Station L	**Uncl. Exc. (cu. yd.)**	**Embt (cu. yd.)**
15+59.63	0	0
15+75.00	3	3
16+00.00	5	5
16+25.00	7	6
16+50.00	6	4
17+00.00	5	4
17+12.50	1	1

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

CROSS SECTION INDEX

SHEET	LINE	BEGIN STATION	END STATION
X-2	-L-	13+10.00	13+75.00
X-3	-L-	14+00.00	15+02.38
X-4	-L-	15+25.00	15+75.00
X-5	-L-	16+00.00	17+00.00
X-6	-L-	17+12.50	

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.6.R.42	X-2

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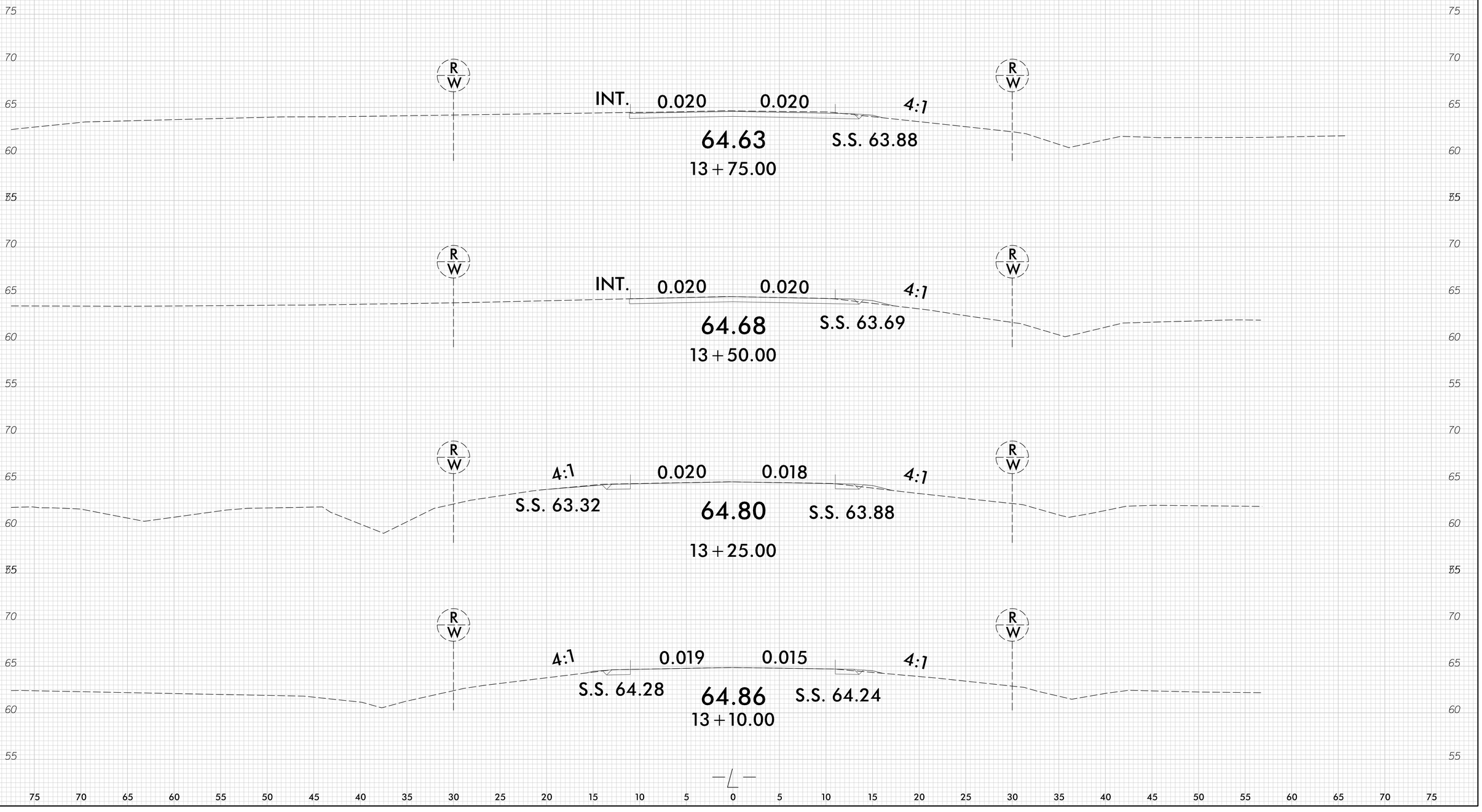

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8/23/99

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9/22/2015

8/23/99

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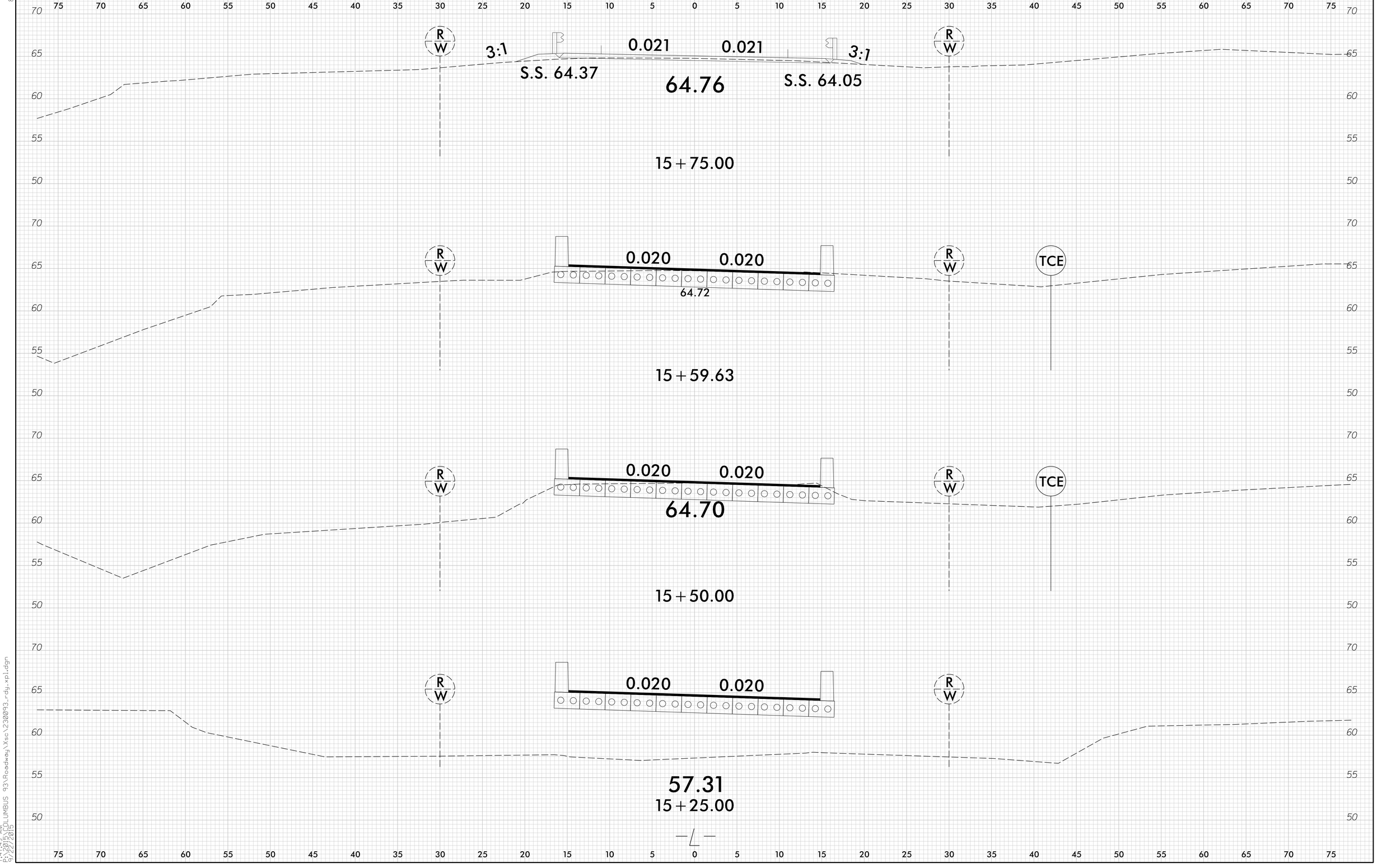
	17BP.6.R.42	X-4



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9/22/2015

8/23/99

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	17BP.6.R.42	X-5

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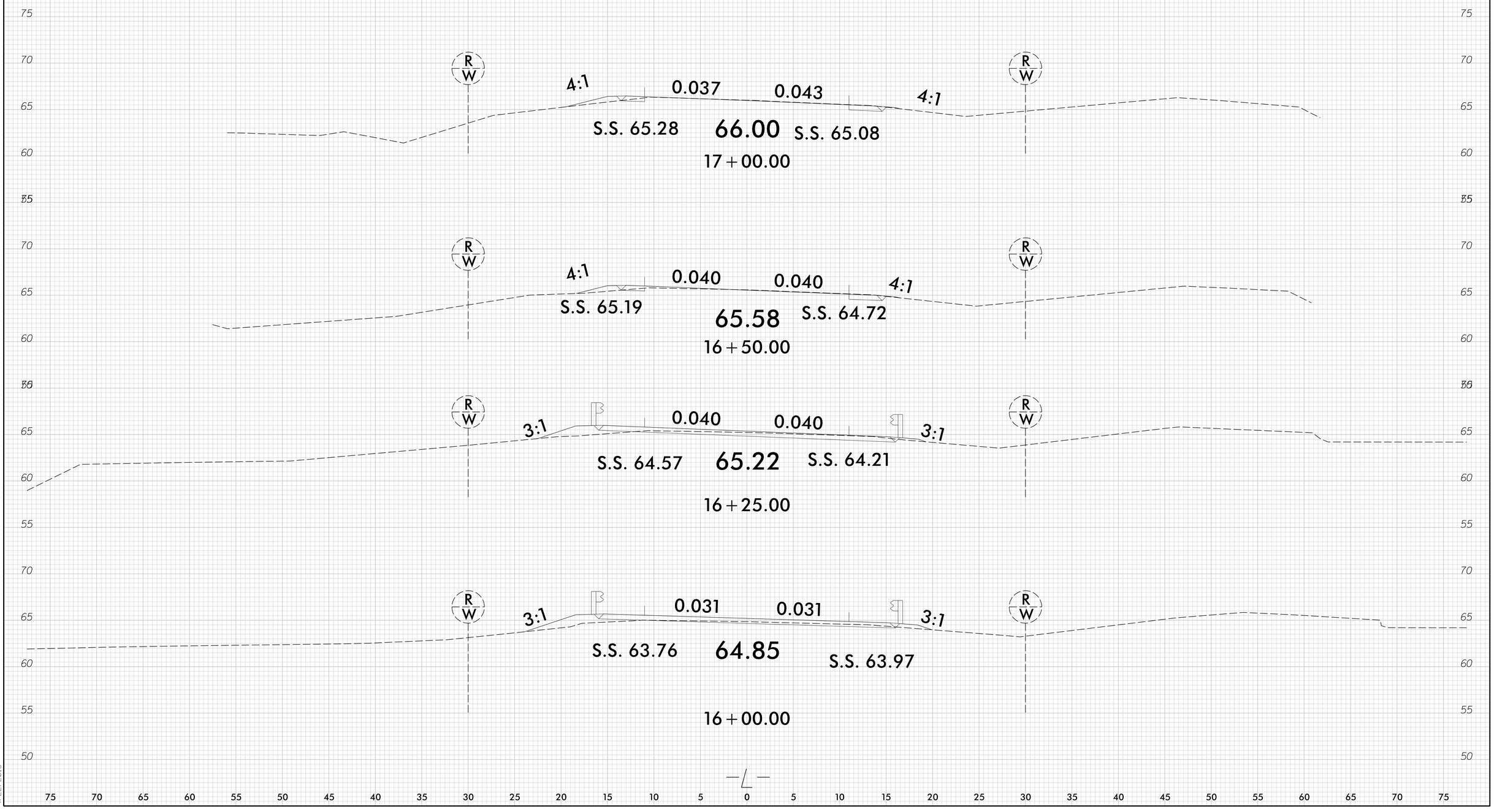

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9/22/2015

14+75 15+00 15+25 15+50 15+75

GRADE DATA

-0.4617% ▽ +0.4967%

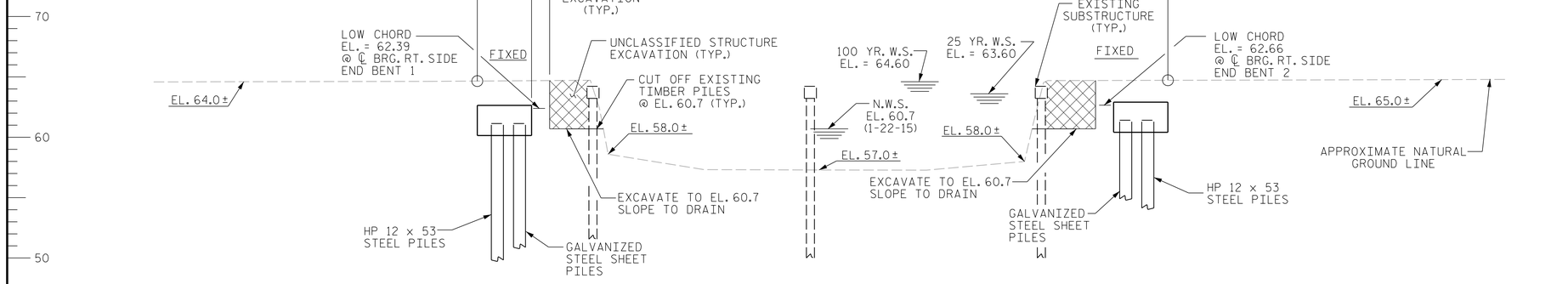
PI = 14+27.55 -L-
EL. = 64.32
VC = 145'

GRADE DATA

+0.4967% ▽ +0.9491%

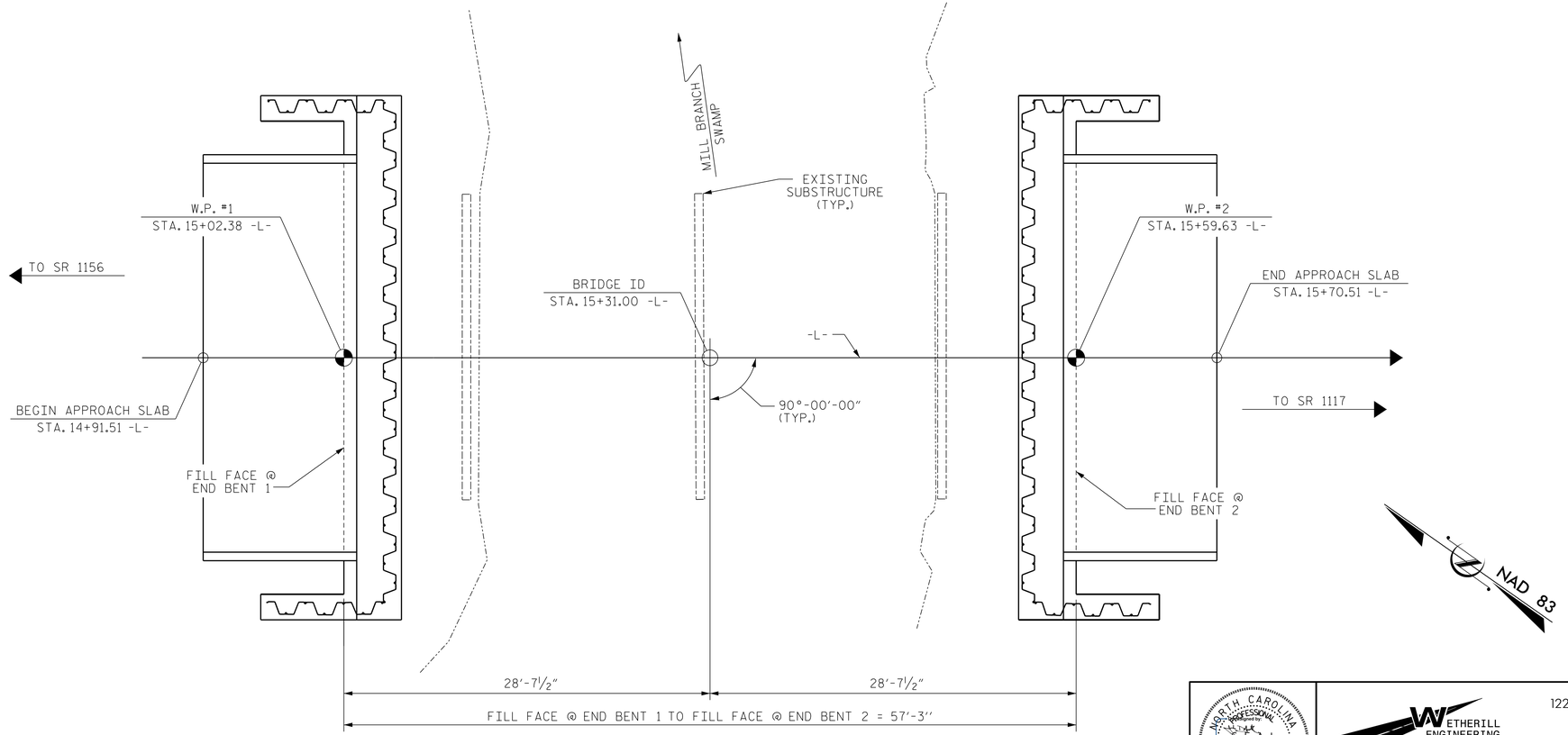
PI = 16+34.52 -L-
EL. = 65.35
VC = 150'

SPAN ''A''



END BENT 1 END BENT 2

SECTION ALONG -L-



PLAN

(HP PILES NOT SHOWN FOR CLARITY)

HYDRAULIC DATA

DESIGN DISCHARGE	650 CFS
DESIGN FREQUENCY	25 YR.
DESIGN HW ELEVATION	63.6
DRAINAGE AREA	4.3 SQ.MI.
BASE DISCHARGE (Q100)	1000 CFS
BASE HW ELEVATION	64.60

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	980 CFS
OVERTOPPING FREQUENCY	100± YRS
OVERTOPPING ELEVATION	64.5

OVERTOPPING OCCURS @ CENTERLINE OF -L- STA. 14+24.90

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. 17BP.6.R.42

COLUMBUS COUNTY

STATION: 15+31.00 -L-

SHEET 1 OF 2 REPLACES BRIDGE No. 93

DRAWN BY : G. WILSON DATE : 5/2015
CHECKED BY: J. DILWORTH DATE : 5/2015
DESIGN ENGINEER OF RECORD: J. DILWORTH DATE : 9/2015

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1/8/2016 11:33:59 AM

NORTH CAROLINA PROFESSIONAL SEAL 22072 ENGINEER JOHN ARTHUR DILWORTH 1/13/2016

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Raleigh, N.C. 27606
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Fax: 919 851 8107
License: F-0377
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

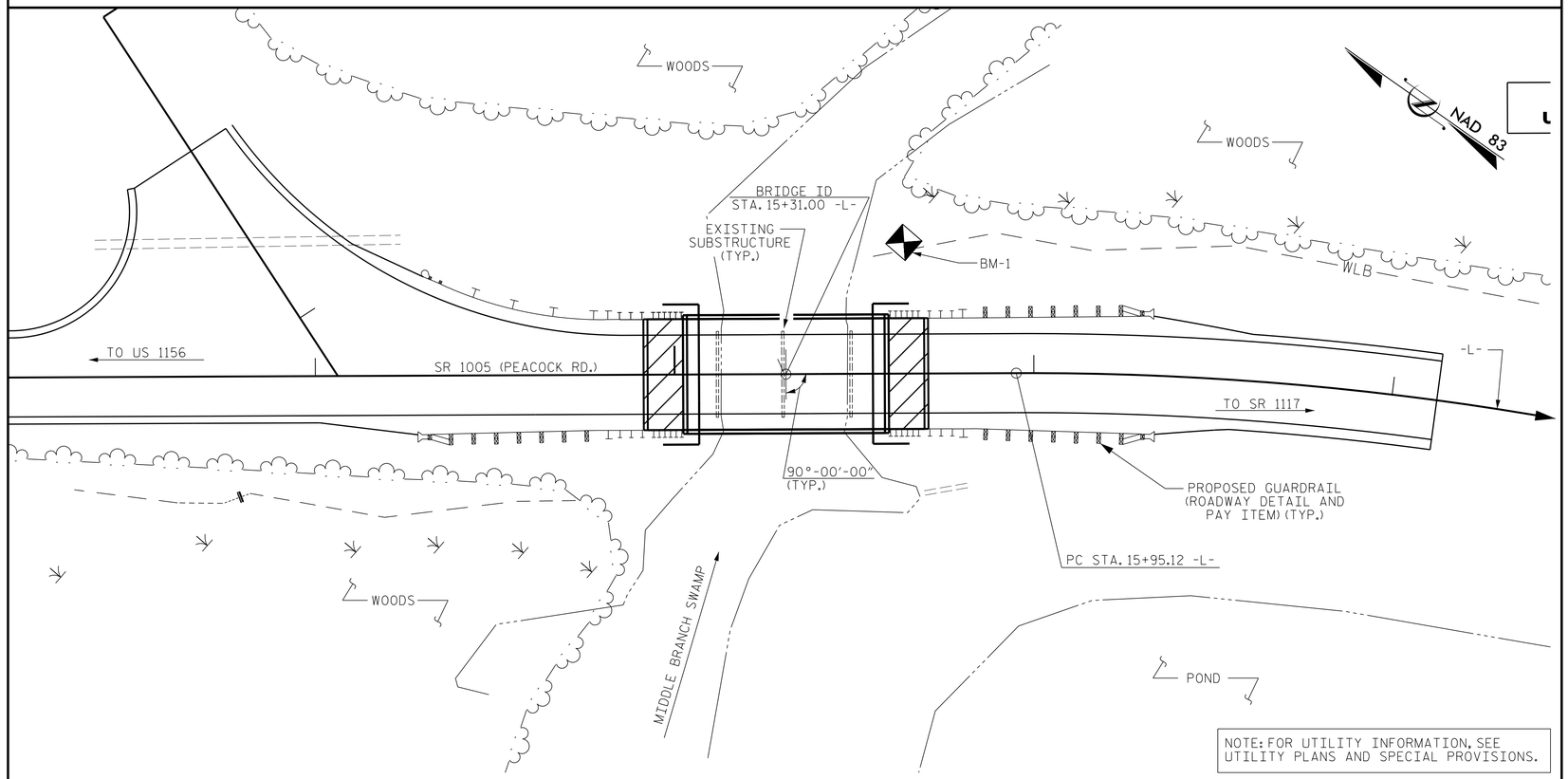
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BRIDGE ON
SR 1005 (PEACOCK RD.)
OVER MILL BRANCH SWAMP
BETWEEN
SR 1156 & SR 1117

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

BM-1 (BENCH TIE NAIL SET IN POWER POLE), -L- STA. 15+63.97, 36.52' LT., N 155567.737, E 2064710.843' ELEV. 64.88



NOTE: FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	PDA TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	HP 12 x 53 STEEL PILES		PILE REDRIVES	VERTICAL CONCRETE BARRIER RAIL	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS		GALVANIZED STEEL SHEET PILES	ASBESTOS ASSESSMENT
	LUMP SUM	EACH	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	NO.	LIN. FT.	EACH	LIN. FT.	LUMP SUM	NO.	LIN. FT.	SQ. FT.	LUMP SUM
SUPERSTRUCTURE					LUMP SUM					110.00	LUMP SUM	11	605.00		
END BENT 1				18.9		3069	7	350	7					1808	
END BENT 2				18.9		3069	7	350	7					1824	
TOTAL	LUMP SUM	1	LUMP SUM	37.8	LUMP SUM	6138	14	700	14	110.00	LUMP SUM	11	605.00	3632	LUMP SUM

FOUNDATION NOTES:

FOR PILES, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENTS NO. 1 AND 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 75 TONS PER PILE. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 125 TONS PER PILE.

TESTING THE FIRST PRODUCTION PILES WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS AND FOR PILE DRIVING CRITERIA, SEE GEOTECHNICAL SPECIAL PROVISIONS.

INSTALL PZ-27 OR EQUIVALENT SHEETING TO A TIP ELEVATION NO HIGHER THAN 31.5 AT END BENTS NO. 1 AND 2.

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 2.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 15+31.00 -L-."

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 30 FT EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

THE EXISTING STRUCTURE CONSISTING OF 2 SPANS @ 18'-0" WITH A REINFORCED CONCRETE FLOOR ON AN I-BEAM SUPERSTRUCTURE AND A CLEAR ROADWAY WIDTH OF 24.00' ON A SUBSTRUCTURE CONSISTING OF REINFORCED CONCRETE CAPS ON TIMBER PILES AND LOCATED AT THE PROPOSED STRUCTURE LOCATION SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT.

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCE 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.

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

FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

VIBRATION MONITORING WILL NOT BE REQUIRED FOR THE ADJACENT DAM DURING PILE AND SHEET WALL INSTALLATION.

DRAWN BY : G.WILSON DATE : 5/2015
CHECKED BY: J.DILWORTH DATE : 5/2015
DESIGN ENGINEER OF RECORD: J. DILWORTH DATE : 9/2015

NORTH CAROLINA PROFESSIONAL SEAL 22072 ENGINEER JOHN ARTHUR DILWORTH 1/20/2016

WETHERILL ENGINEERING
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License: F-0377

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT NO. 17BP.6.R.42
COLUMBUS COUNTY
STATION: 15+31.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
BRIDGE ON
SR 1005 (PEACOCK RD.)
OVER MILL BRANCH SWAMP
BETWEEN
SR 1156 & SR 1117

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

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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	1.055	--	1.75	0.275	1.23	55′	EL	27	0.523	1.23	55′	EL	5.4	0.80	0.275	1.05	55′	EL	27	
		HL-93(Opr)	N/A	--	1.591	--	1.35	0.275	1.59	55′	EL	27	0.523	1.59	55′	EL	5.4	N/A	--	--	--	--	--	
		HS-20(Inv)	36.000	2	1.322	47.585	1.75	0.275	1.54	55′	EL	27	0.523	1.47	55′	EL	5.4	0.80	0.275	1.32	55′	EL	27	
		HS-20(Opr)	36.000	--	1.9	68.396	1.35	0.275	1.99	55′	EL	27	0.523	1.9	55′	EL	5.4	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.776	37.476	1.4	0.275	4.04	55′	EL	27	0.523	4.17	55′	EL	5.4	0.80	0.275	2.78	55′	EL	27	
		SNGARBS2	20.000	--	2.155	43.095	1.4	0.275	3.14	55′	EL	27	0.523	3.02	55′	EL	5.4	0.80	0.275	2.15	55′	EL	27	
		SNAGRIS2	22.000	--	2.079	45.734	1.4	0.275	3.03	55′	EL	27	0.523	2.83	55′	EL	5.4	0.80	0.275	2.08	55′	EL	27	
		SNCOTTS3	27.250	--	1.384	37.708	1.4	0.275	2.01	55′	EL	27	0.523	2.09	55′	EL	5.4	0.80	0.275	1.38	55′	EL	27	
		SNAGGRS4	34.925	--	1.189	41.527	1.4	0.275	1.73	55′	EL	27	0.523	1.77	55′	EL	5.4	0.80	0.275	1.19	55′	EL	27	
		SNS5A	35.550	--	1.16	41.255	1.4	0.275	1.69	55′	EL	27	0.523	1.82	55′	EL	5.4	0.80	0.275	1.16	55′	EL	27	
		SNS6A	39.950	--	1.079	43.102	1.4	0.275	1.57	55′	EL	27	0.523	1.68	55′	EL	5.4	0.80	0.275	1.08	55′	EL	27	
		SNS7B	42.000	--	1.028	43.175	1.4	0.275	1.5	55′	EL	27	0.523	1.67	55′	EL	5.4	0.80	0.275	1.03	55′	EL	27	
	TTST	TNAGRIT3	33.000	--	1.32	43.556	1.4	0.275	1.92	55′	EL	27	0.523	1.98	55′	EL	5.4	0.80	0.275	1.32	55′	EL	27	
		TNT4A	33.075	--	1.33	43.979	1.4	0.275	1.94	55′	EL	27	0.523	1.91	55′	EL	5.4	0.80	0.275	1.33	55′	EL	27	
		TNT6A	41.600	--	1.101	45.811	1.4	0.275	1.6	55′	EL	27	0.523	1.83	55′	EL	5.4	0.80	0.275	1.10	55′	EL	27	
		TNT7A	42.000	--	1.114	46.804	1.4	0.275	1.62	55′	EL	27	0.523	1.71	55′	EL	5.4	0.80	0.275	1.11	55′	EL	27	
		TNT7B	42.000	--	1.163	48.848	1.4	0.275	1.69	55′	EL	27	0.523	1.62	55′	EL	5.4	0.80	0.275	1.16	55′	EL	27	
		TNAGRIT4	43.000	--	1.101	47.33	1.4	0.275	1.6	55′	EL	27	0.523	1.56	55′	EL	5.4	0.80	0.275	1.10	55′	EL	27	
		TNAGT5A	45.000	--	1.031	46.405	1.4	0.275	1.5	55′	EL	27	0.523	1.58	55′	EL	5.4	0.80	0.275	1.03	55′	EL	27	
		TNAGT5B	45.000	3	1.013	45.582	1.4	0.275	1.47	55′	EL	27	0.523	1.48	55′	EL	5.4	0.80	0.275	1.01	55′	EL	27	

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

1.
2.
3.
4.

(#) CONTROLLING LOAD RATING

(1) DESIGN LOAD RATING (HL-93)

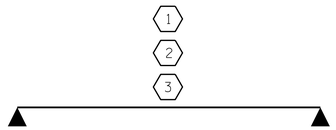
(2) DESIGN LOAD RATING (HS-20)

(3) LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY

FOR SPAN 'A'

PROJECT NO. 17BP.6.R.42

COLUMBUS COUNTY

STATION: 15+31.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

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

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

STD. NO. 21LRFR1_90S_55L

NORTH CAROLINA PROFESSIONAL SEAL 22072 ENGINEER JOHN ARTHUR DILWORTH 1/13/2016

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Fax: 919 851 8107
License: F-0377

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

DRAWN BY : J. PENDERGRAFT DATE : 5-15
CHECKED BY: J. A. DILWORTH DATE : 5-15
DESIGN ENGINEER OF RECORD: J. DILWORTH DATE : 9/2015

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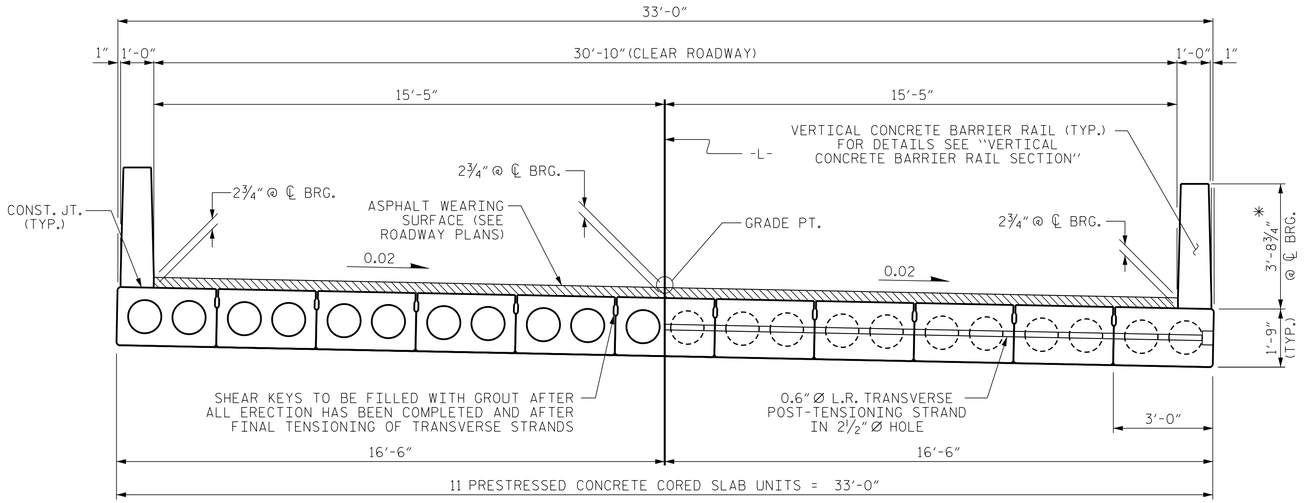


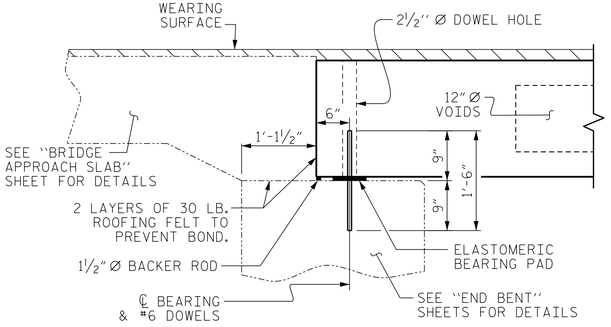
HALF SECTION THROUGH VOIDS

HALF SECTION AT INTERMEDIATE DIAPHRAGMS

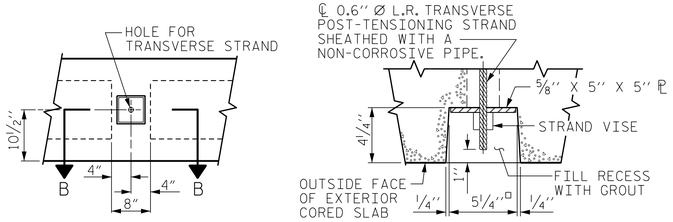
TYPICAL SECTION

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

FIXED END



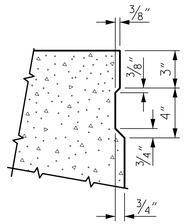
SECTION AT END BENT



ELEVATION VIEW

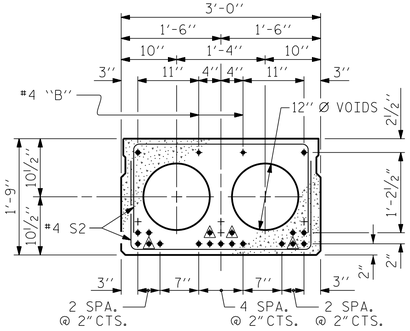
SECTION B-B

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



SHEAR KEY DETAIL

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



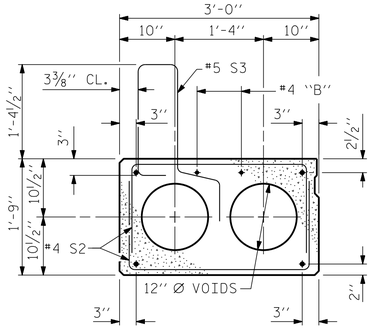
END ELEVATION

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

INTERIOR SLAB SECTION (55' UNIT)

(19 STRANDS REQUIRED)

0.6" Ø LOW RELAXATION STRAND LAYOUT



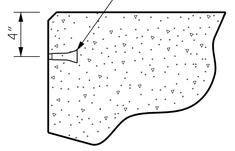
EXT. SLAB SECTION

(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.

DEBONDING LEGEND

PERMITTED THREADED INSERT CAST IN OUTSIDE FACE OF EXTERIOR UNIT AND RECESSED ⅜" SIZE TO BE DETERMINED BY CONTRACTOR.



THREADED INSERT DETAIL

PROJECT NO. 17BP.6.R.42

COLUMBUS COUNTY

STATION: 15+31.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

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

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

STD. NO. 21"PCS2_33_90S

DRAWN BY : J. PENDERGRAFT DATE : 5-15
CHECKED BY: J. A. DILWORTH DATE : 5-15
DESIGN ENGINEER OF RECORD: J. DILWORTH DATE : 9/2015

NORTH CAROLINA PROFESSIONAL SEAL 22072 ENGINEER JOHN ARTHUR DILWORTH 5/13/2016

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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

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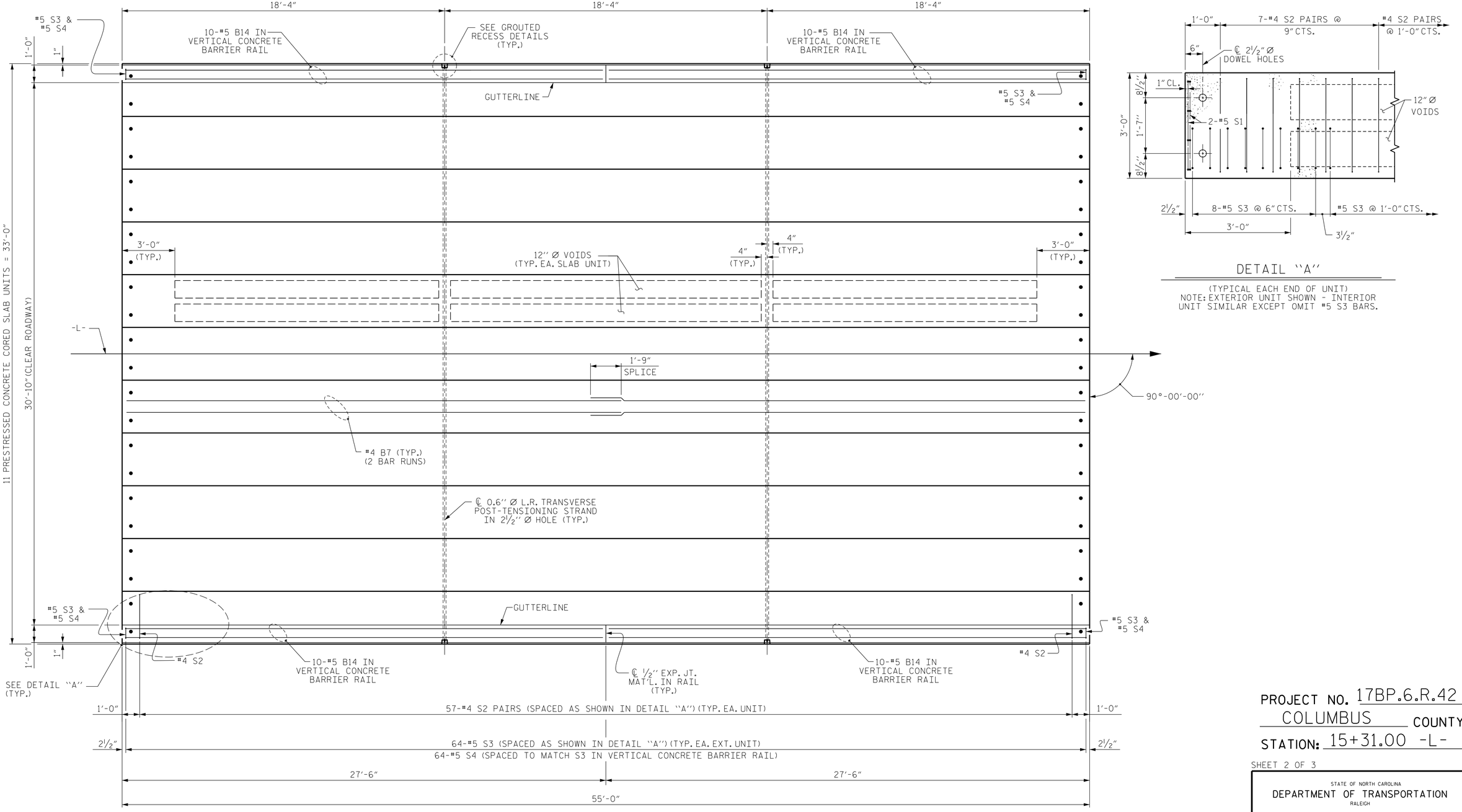

PLAN OF UNIT

DETAIL ″A″

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

PROJECT NO. 17BP.6.R.42
COLUMBUS COUNTY
STATION: 15+31.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 55′ UNIT
30′-10″ CLEAR ROADWAY
90° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			14

DRAWN BY : J. PENDERGRAFT DATE : 5-15
CHECKED BY: J. A. DILWORTH DATE : 5-15
DESIGN ENGINEER OF RECORD: J. DILWORTH DATE : 9/2015

NORTH CAROLINA PROFESSIONAL SEAL 22072 ENGINEER JOHN ARTHUR DILWORTH 3/23/2016

WETHERILL ENGINEERING
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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

STD. NO. 21″PCS_33_90S_55L

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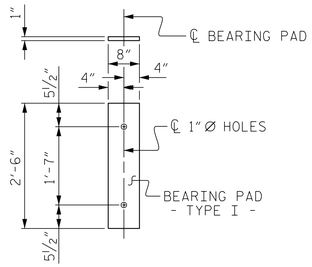


FIXED END
(TYPE I - 22 REQ'D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

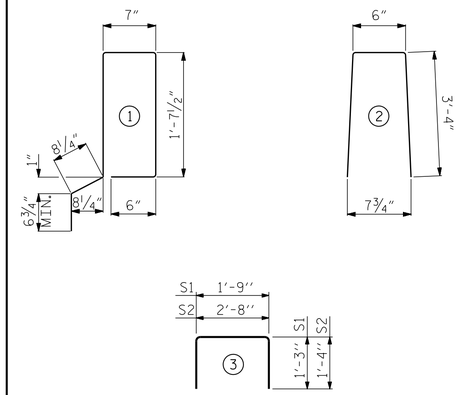
BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL

BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	55' UNIT					
✳B14	40	40	#5	STR	27'-1"	1130
✳ S4	128	128	#5	2	7'-2"	957
✳EPOXY COATED REINFORCING STEEL				LBS.		2087
CLASS AA CONCRETE				CU.YDS.		14.1
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		110.00

BILL OF MATERIAL FOR ONE 55' CORED SLAB UNIT

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B7	4	#4	STR	28'-3"	75	28'-3"	75
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	114	#4	3	5'-4"	406	5'-4"	406
✳ S3	64	#5	1	5'-7"	373		
REINFORCING STEEL			LBS.		516		516
✳EPOXY COATED REINFORCING STEEL			LBS.		373		
6500 P.S.I. CONCRETE			CU. YDS.		7.8		7.8
0.6"Ø L.R. STRANDS			No.		19		19

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

CORED SLABS REQUIRED

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

DEAD LOAD DEFLECTION AND CAMBER

	3'-0" x 1'-9"
55' CORED SLAB UNIT	0.6"Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1½" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	⅜" ↓
FINAL CAMBER	1⅛" ↑

** INCLUDES FUTURE WEARING SURFACE

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT

	ASPHALT OVERLAY THICKNESS	RAIL HEIGHT
	@ MID-SPAN	@ MID-SPAN
55' UNITS	1⅝"	3'-7⅝"

NOTES

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

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

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

THE 2½"Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

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

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

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

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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

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.

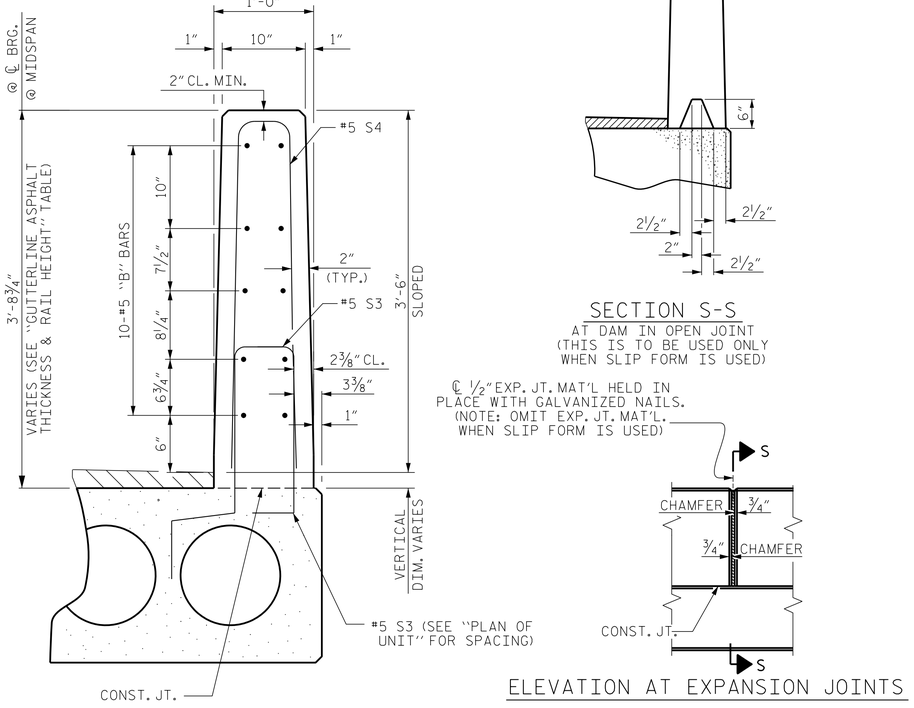
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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.

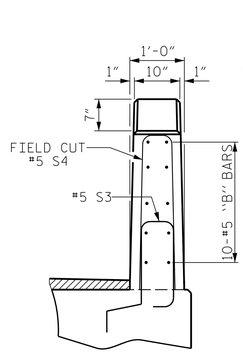
THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.



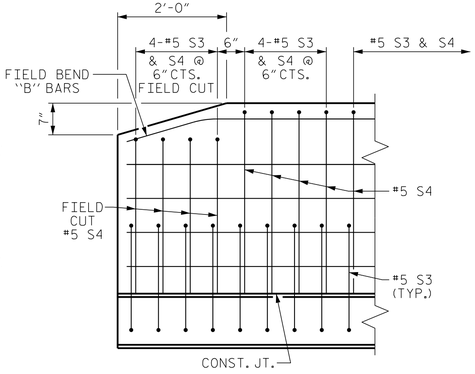
VERTICAL CONCRETE BARRIER RAIL SECTION

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

ELEVATION AT EXPANSION JOINTS



END VIEW



SIDE VIEW

END OF RAIL DETAILS

CONCRETE RELEASE STRENGTH

UNIT	PSI
55' UNITS	4900

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

PROJECT NO. 17BP.6.R.42
COLUMBUS COUNTY
STATION: 15+31.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			14

STD. NO. 21"PCS3_33_90S

DRAWN BY : J. PENDERGRAFT DATE : 5-15
CHECKED BY: J. A. DILWORTH DATE : 5-15
DESIGN ENGINEER OF RECORD: J. DILWORTH DATE : 9/2015

NORTH CAROLINA PROFESSIONAL SEAL 22072 ENGINEER JOHN ARTHUR DILWORTH 5/23/2016

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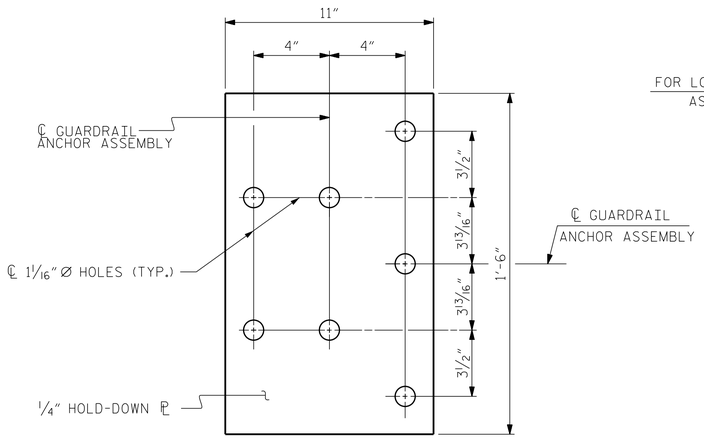
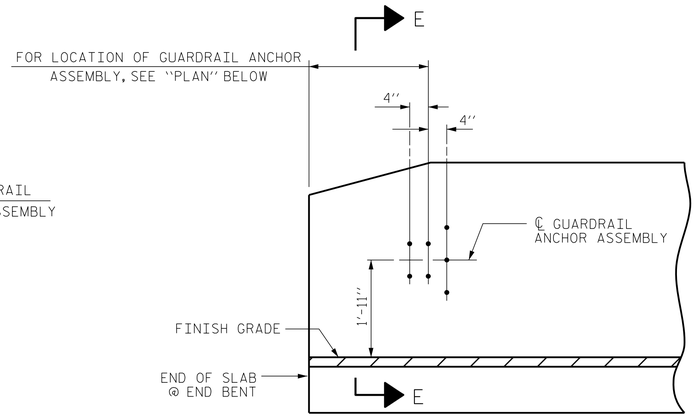


PLAN



ELEVATION

NOTES

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

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

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

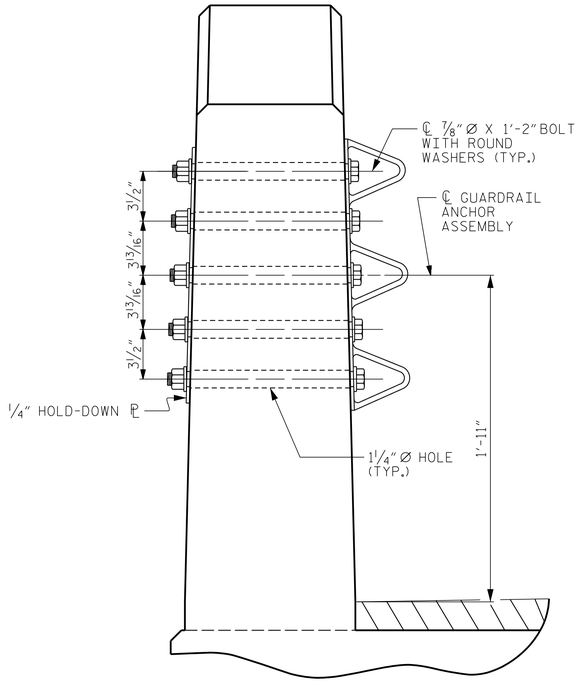
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

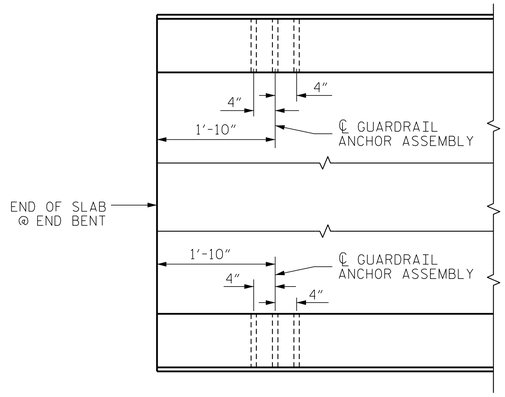
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

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



SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

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

SKETCH SHOWING POINTS OF ATTACHMENT

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. 17BP.6.R.42

COLUMBUS COUNTY

STATION: 15+31.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
GUARDRAIL ANCHORAGE DETAILS FOR VERTICAL CONCRETE BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			14

NORTH CAROLINA PROFESSIONAL SEAL 22072 ENGINEER JOHN ARTHUR DILWORTH 1/13/2016

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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

DRAWN BY : J. PENDERGRAFT DATE : 5-15
CHECKED BY: J. A. DILWORTH DATE : 5-15
DESIGN ENGINEER OF RECORD: J. DILWORTH DATE : 9/2015

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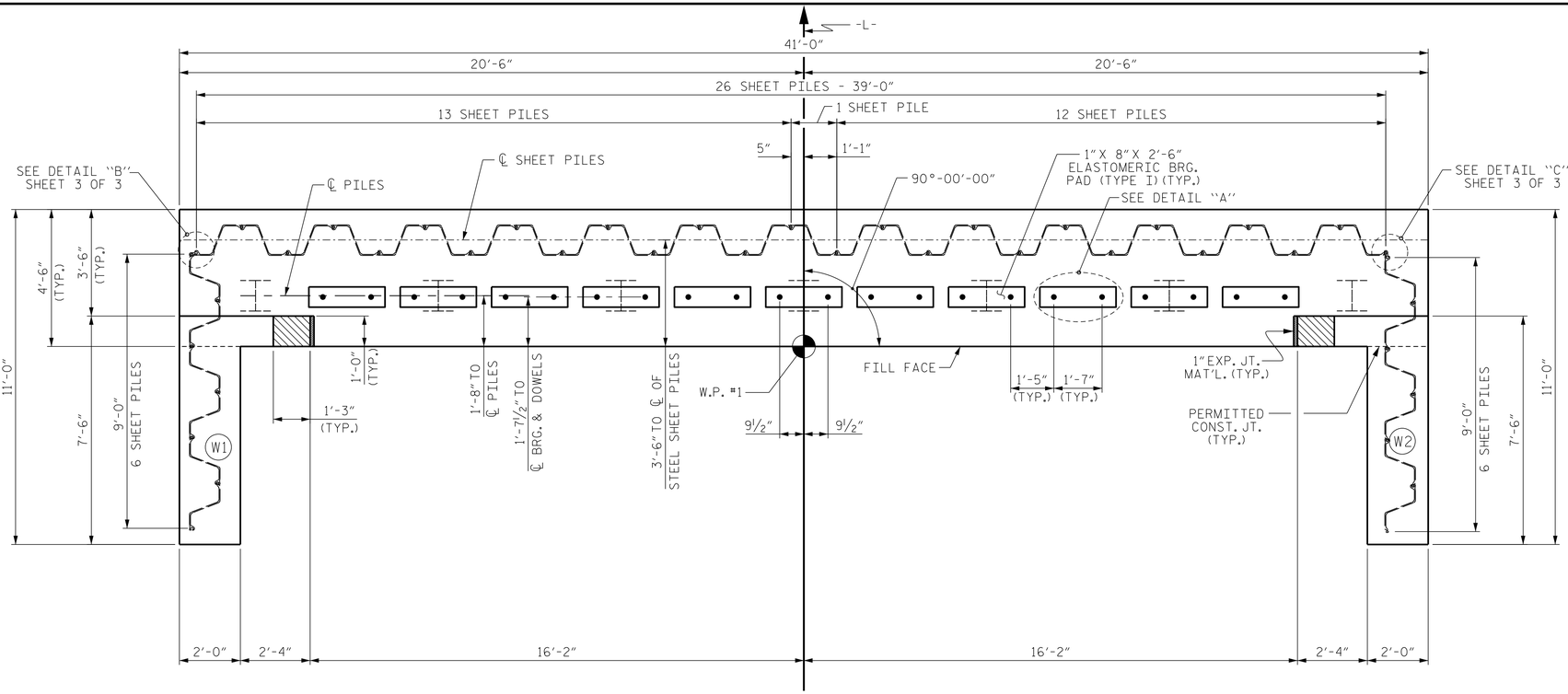
(SHT 1) STD. NO. GRA3



PLAN

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 BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

INSTALL THE 4"Ø DRAIN THROUGH THE SHEET PILES AS REQUIRED. FOR REINFORCED BRIDGE APPROACH FILLS. SEE ROADWAY PLANS.

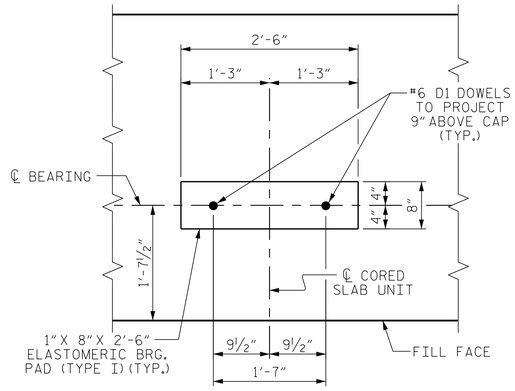
DRILL OR CUT 2"Ø MAX. HOLE IN SHEET PILE FOR #9 B2 AND #4 S2 BARS AS NECESSARY.

STEEL SHEET PILES SHALL BE GALVANIZED. FOR GALVANIZED STEEL SHEET PILES, SEE SPECIAL PROVISIONS.

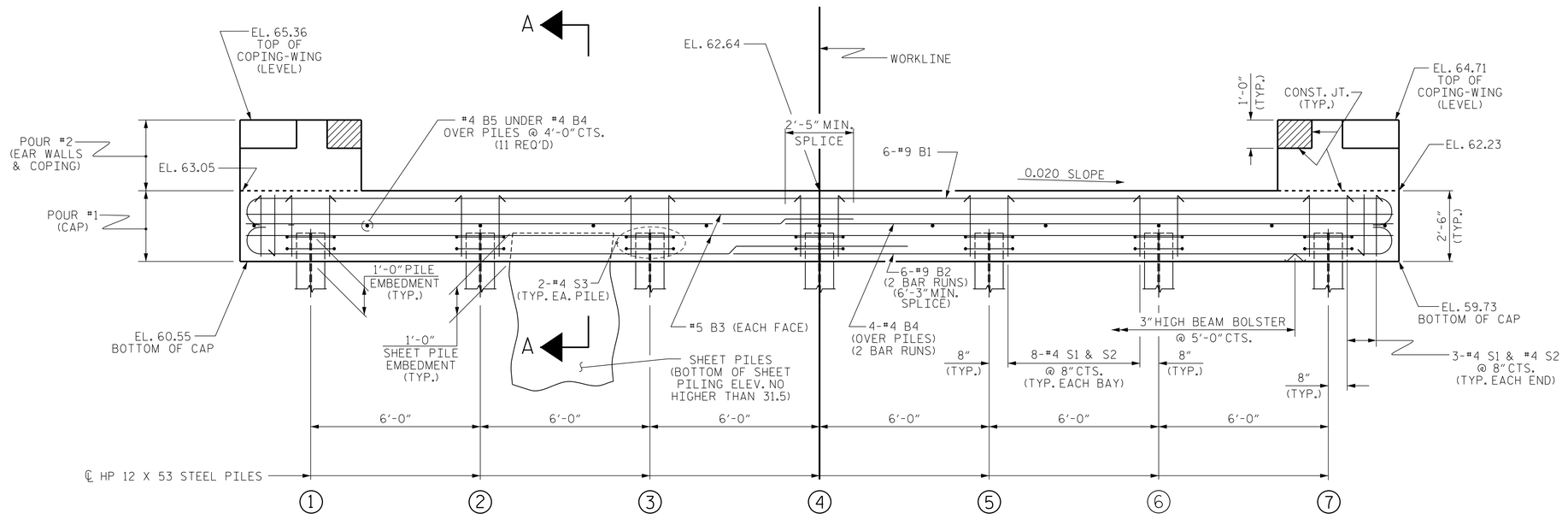
THE STEEL SHEET PILES SHALL HAVE A MINIMUM SECTION MODULUS OF 30 IN³/FT.

FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

FOR COPING-WING DETAILS, SEE SHEET 2 OF 3.



DETAIL "A"



ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 3 OF 3.
SHEET PILES PARTIALLY OMITTED IN ELEVATION VIEW FOR CLARITY

TOP OF PILE ELEVATIONS	
①	61.50
②	61.38
③	61.26
④	61.14
⑤	61.02
⑥	60.90
⑦	60.78

PROJECT NO. 17BP.6.R.42
COLUMBUS COUNTY
STATION: 15+31.00 -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-8
1			3			TOTAL SHEETS
2			4			14

NORTH CAROLINA PROFESSIONAL SEAL 22072 ENGINEER J. ARTHUR DILWORTH 1/13/2016

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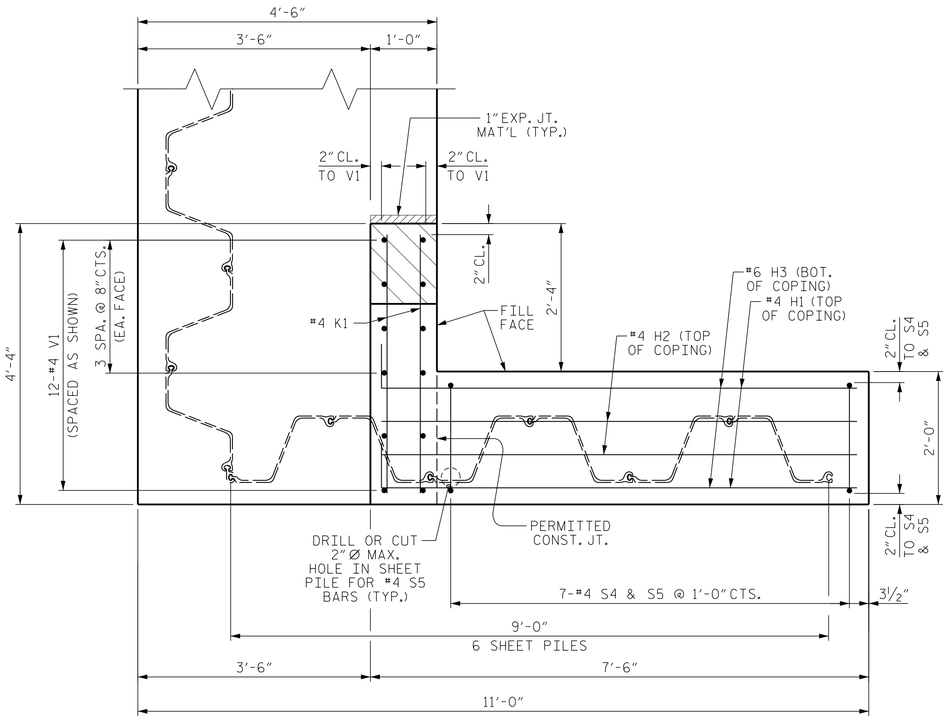
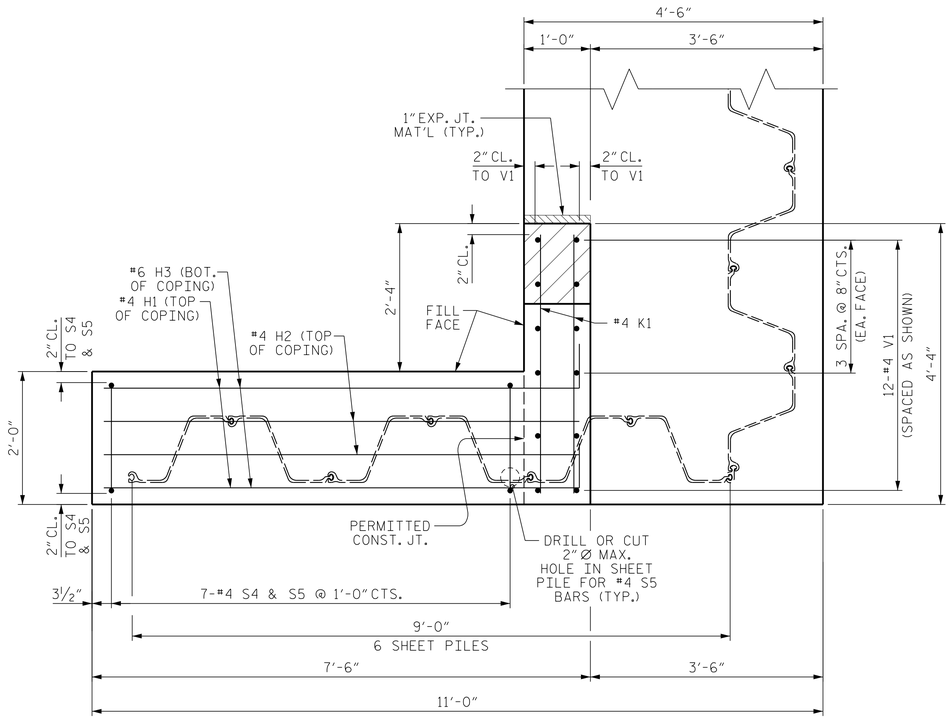
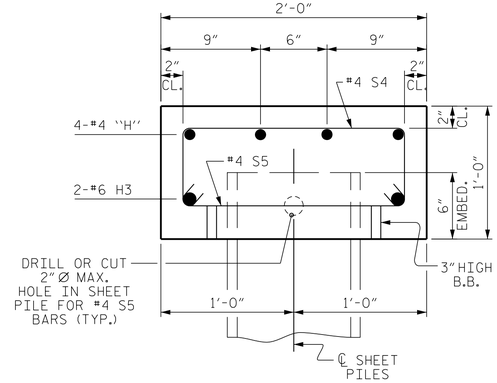


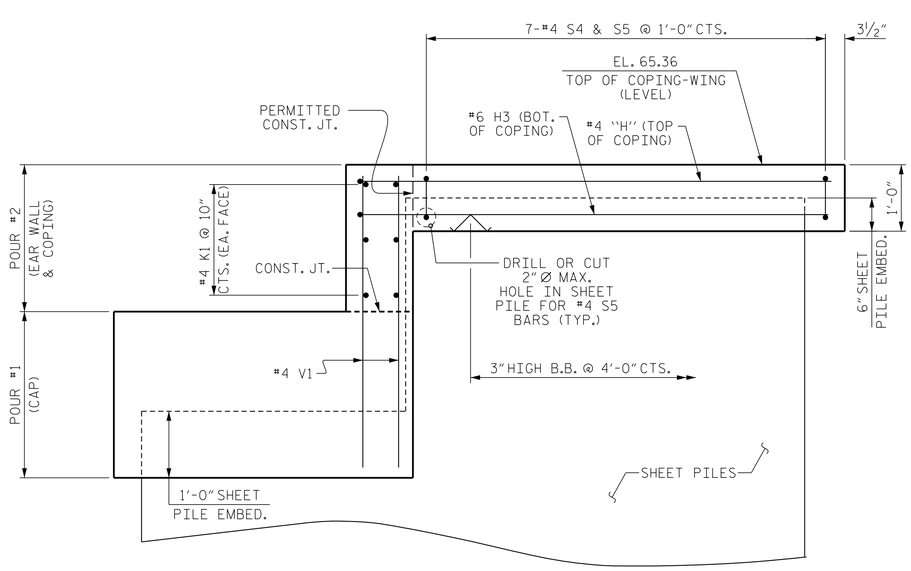
PLAN OF COPING-WING (W1)



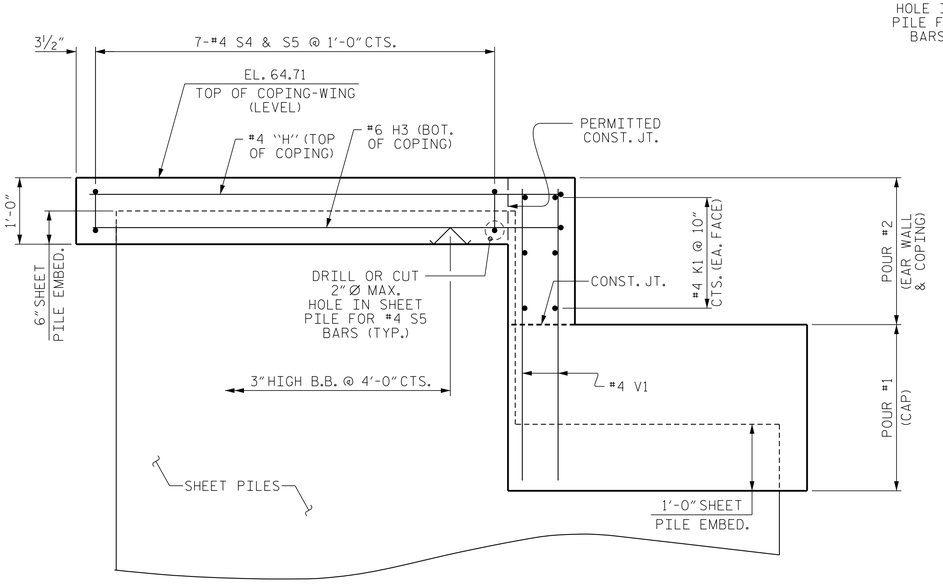
PLAN OF COPING-WING (W2)



SECTION THROUGH COPING



ELEVATION OF COPING-WING (W1)



ELEVATION OF COPING-WING (W2)

PROJECT NO. 17BP.6.R.42
COLUMBUS COUNTY
STATION: 15+31.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1
COPING-WING
DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			14

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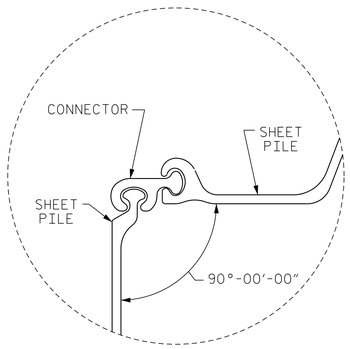

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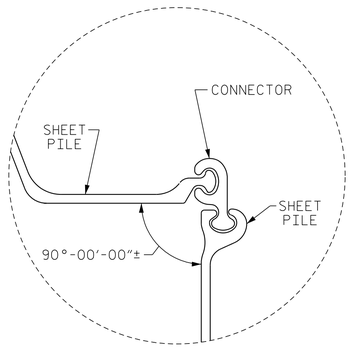
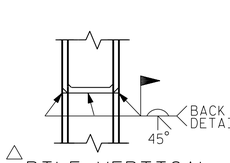
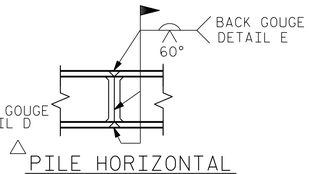


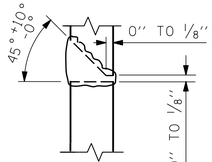
DETAIL "C"



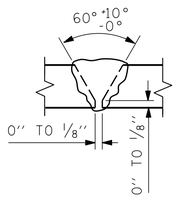
△ PILE VERTICAL



△ PILE HORIZONTAL OR VERTICAL



DETAIL D

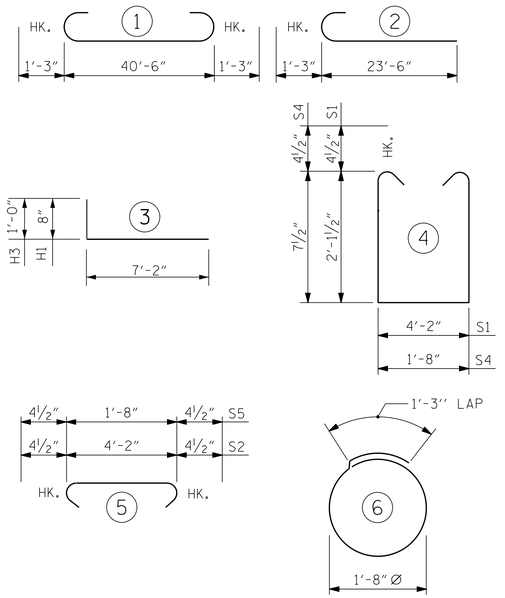


DETAIL E

△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT No.1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#9	1	43'-0"	877
B2	12	#9	2	24'-9"	1010
B3	4	#5	STR	40'-8"	170
B4	8	#4	STR	21'-7"	115
B5	11	#4	STR	4'-2"	31
D1	22	#6	STR	1'-6"	50
H1	4	#4	3	7'-10"	21
H2	4	#4	STR	7'-2"	19
H3	4	#6	3	8'-2"	49
K1	12	#4	STR	4'-0"	32
S1	54	#4	4	9'-2"	331
S2	54	#4	5	4'-11"	177
S3	14	#4	6	6'-6"	61
S4	14	#4	4	3'-8"	34
S5	14	#4	5	2'-5"	23
V1	24	#4	STR	4'-4"	69

REINFORCING STEEL LBS 3069

CLASS A CONCRETE:

POUR #1: CAP 17.1 C.Y.

POUR #2: EAR WALLS & COPING 1.8 C.Y.

TOTAL 18.9 C.Y.

HP 12 X 53 STEEL PILES

NO: 7 LIN. FT. = 350

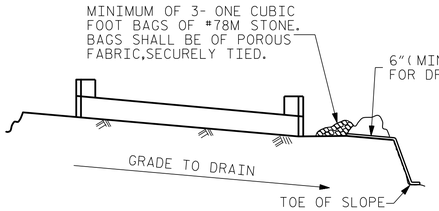
PILE REDRIVES EA. 7

STEEL SHEET PILES

NO = 38 SQ. FT. 1788.0

NO. CONNECTOR = 2 SQ. FT. 20.0

TOTAL NO. = 40 SQ. FT. 1808.0

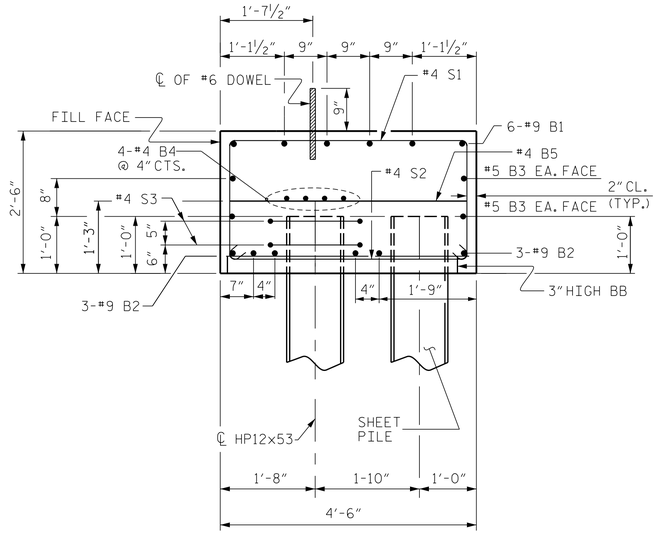


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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



SECTION A-A

DRILL OR CUT 2" Ø MAX. HOLE IN SHEET PILES FOR #9 B2 AND #5 S2 BARS

PROJECT NO. 17BP.6.R.42

COLUMBUS COUNTY

STATION: 15+31.00 -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-10
1			3			TOTAL SHEETS
2			4			14

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22072 5/13/2016 JOHN ARTHUR DILWORTH

WETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
License: F-0377
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

DRAWN BY : J. PENDERGRAFT DATE : 5-15
CHECKED BY: J. A. DILWORTH DATE : 5-15
DESIGN ENGINEER OF RECORD: J. DILWORTH DATE : 9/2015

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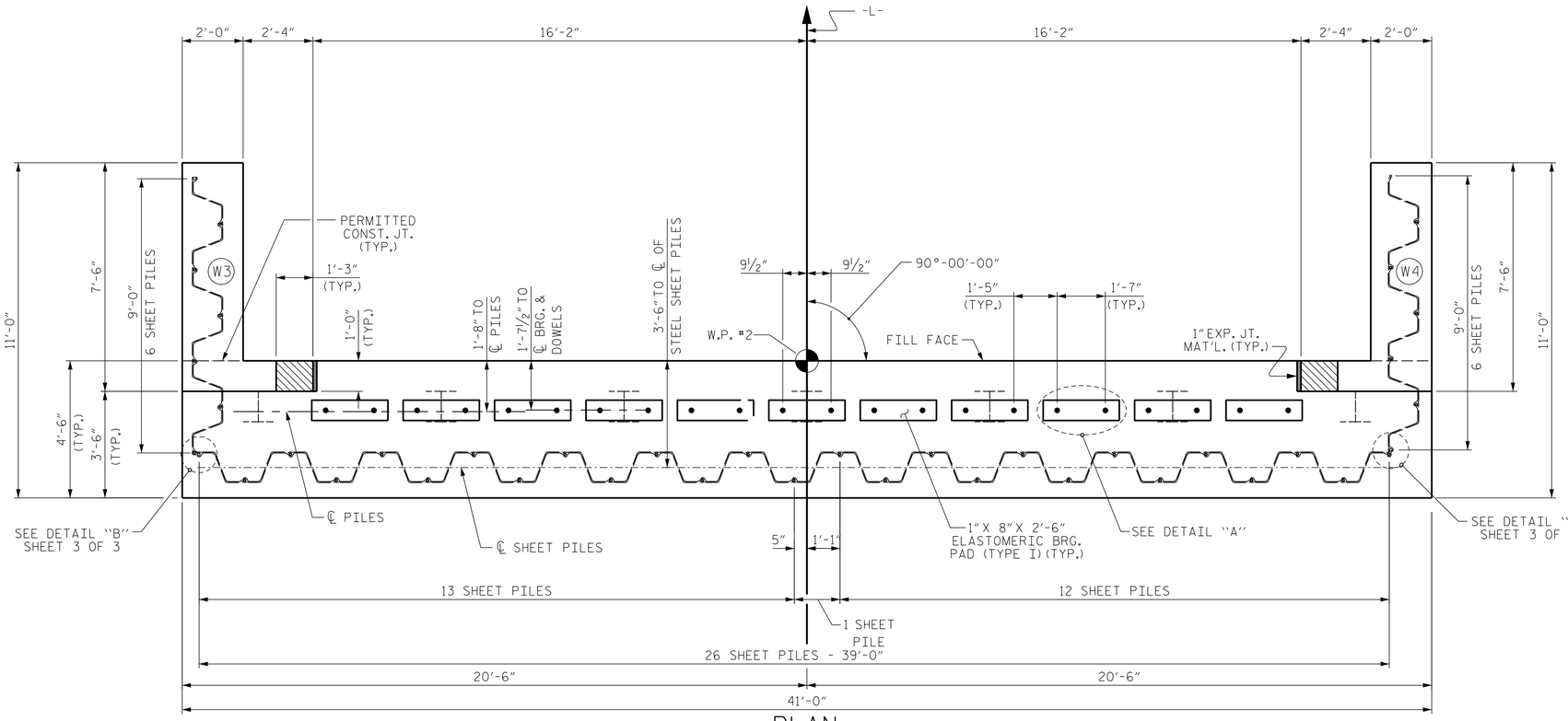
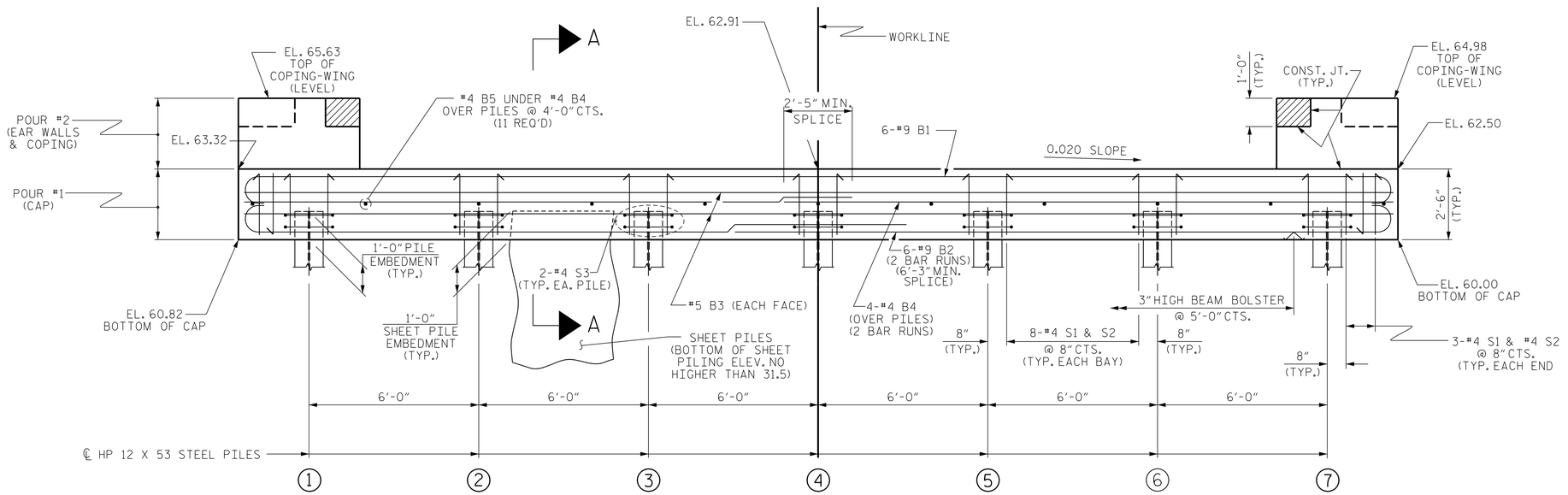


PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 3 OF 3.
SHEET PILES PARTIALLY OMITTED
IN ELEVATION VIEW FOR CLARITY

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 BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

INSTALL THE 4"Ø DRAIN THROUGH THE SHEET PILES AS REQUIRED. FOR REINFORCED BRIDGE APPROACH FILLS. SEE ROADWAY PLANS.

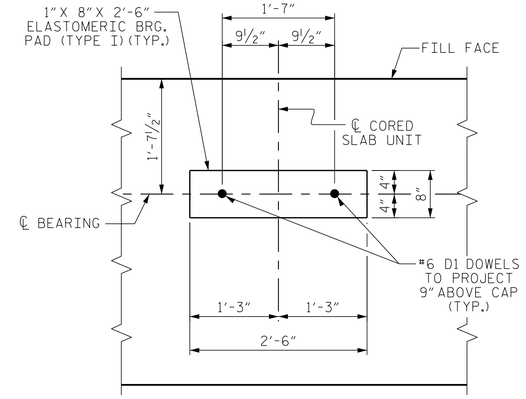
DRILL OR CUT 2"Ø MAX. HOLE IN SHEET PILE FOR #9 B2 AND #4 S2 BARS AS NECESSARY.

STEEL SHEET PILES SHALL BE GALVANIZED. FOR GALVANIZED STEEL SHEET PILES, SEE SPECIAL PROVISIONS.

THE STEEL SHEET PILES SHALL HAVE A MINIMUM SECTION MODULUS OF 30 IN ³/FT.

FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

FOR COPING-WING DETAILS, SEE SHEET 2 OF 3.



DETAIL "A"

TOP OF PILE ELEVATIONS	
①	61.77
②	61.65
③	61.53
④	61.41
⑤	61.29
⑥	61.17
⑦	61.05

PROJECT NO. 17BP.6.R.42
COLUMBUS COUNTY
STATION: 15+31.00 -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-11
1			3			TOTAL SHEETS
2			4			14

NORTH CAROLINA PROFESSIONAL SEAL 22072 ENGINEER JOHN ARTHUR DILWORTH 1/13/2016

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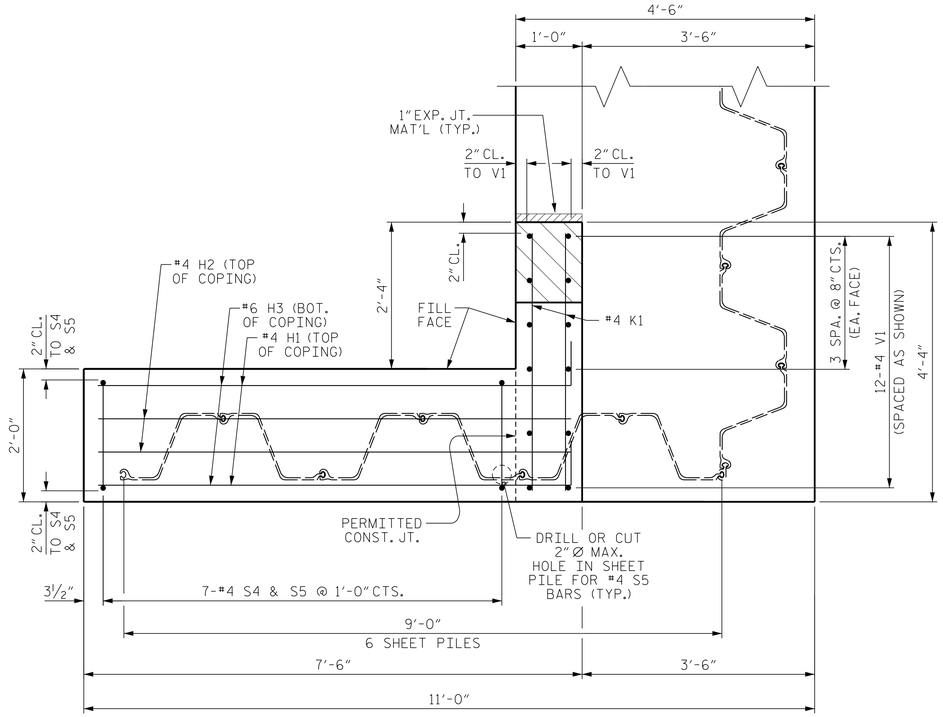
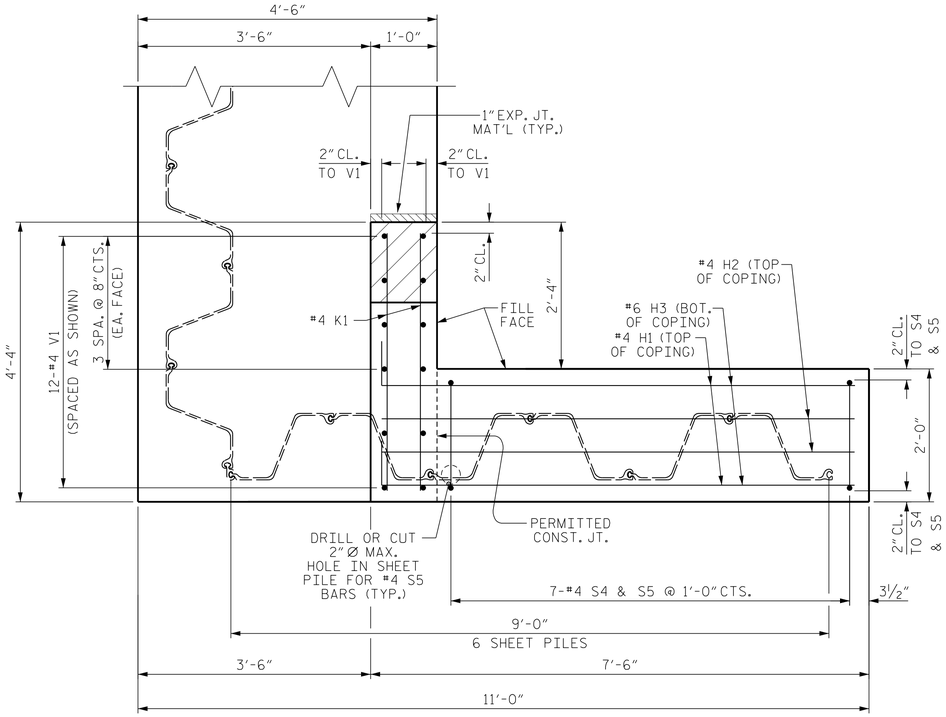
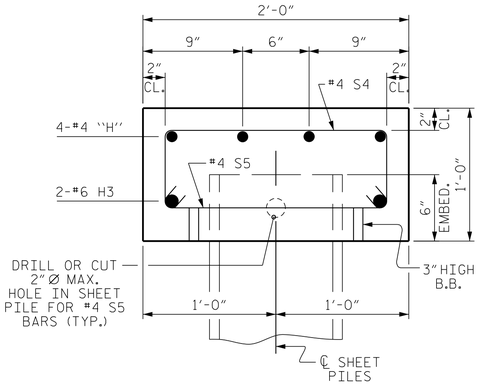


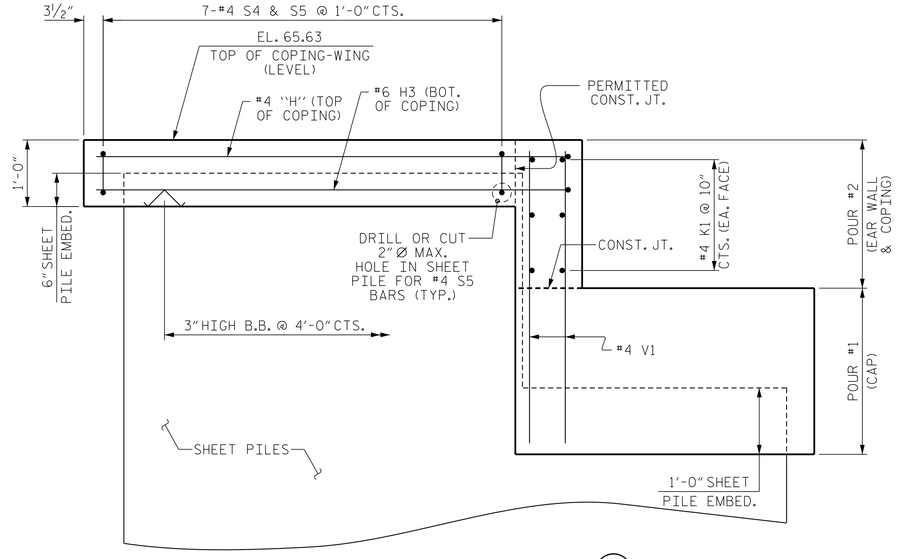
PLAN OF COPING-WING (W3)



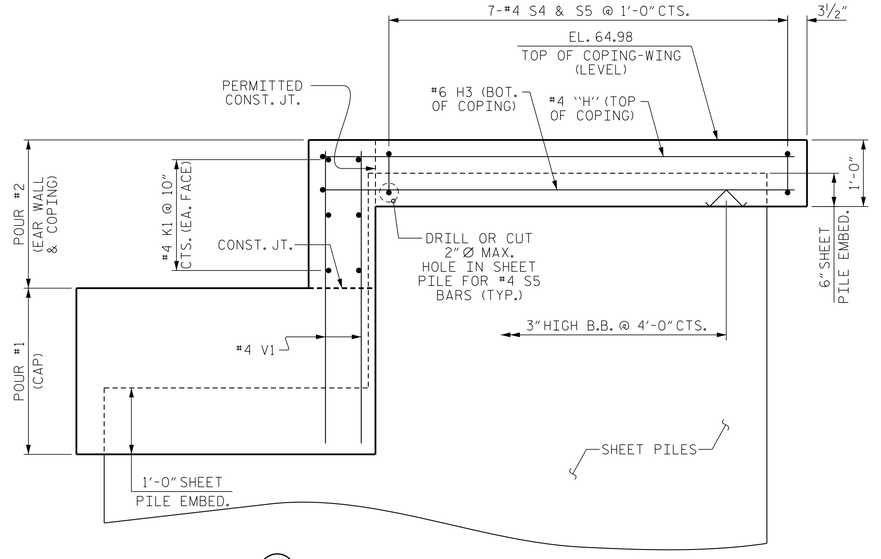
(W4) PLAN OF COPING-WING



SECTION THROUGH COPING



ELEVATION OF COPING-WING (W3)



(W4) ELEVATION OF COPING-WING

PROJECT NO. 17BP.6.R.42

COLUMBUS COUNTY

STATION: 15+31.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 2
COPING-WING
DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			14

DRAWN BY : J. PENDERGRAFT DATE : 5-15
CHECKED BY: J. A. DILWORTH DATE : 5-15
DESIGN ENGINEER OF RECORD: J. DILWORTH DATE : 9/2015

NORTH CAROLINA PROFESSIONAL SEAL 22072 ENGINEER JOHN ARTHUR DILWORTH 9/23/2015

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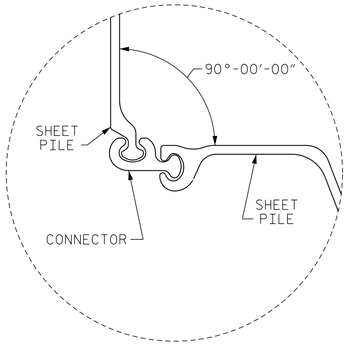
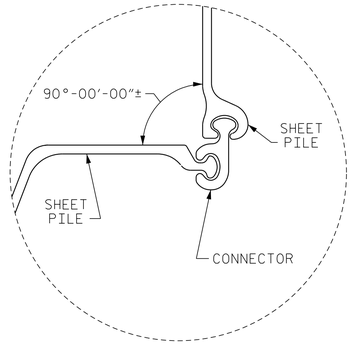
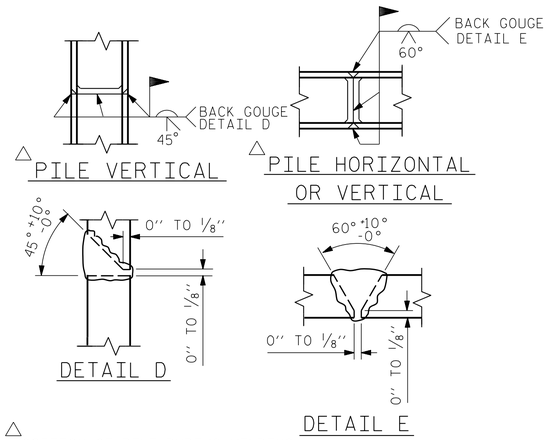


DETAIL "B"



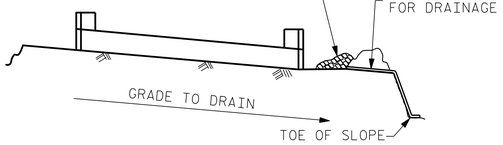
DETAIL "C"



△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

MINIMUM OF 3- ONE CUBIC FOOT BAGS OF #78M STONE. BAGS SHALL BE OF POROUS FABRIC, SECURELY TIED.



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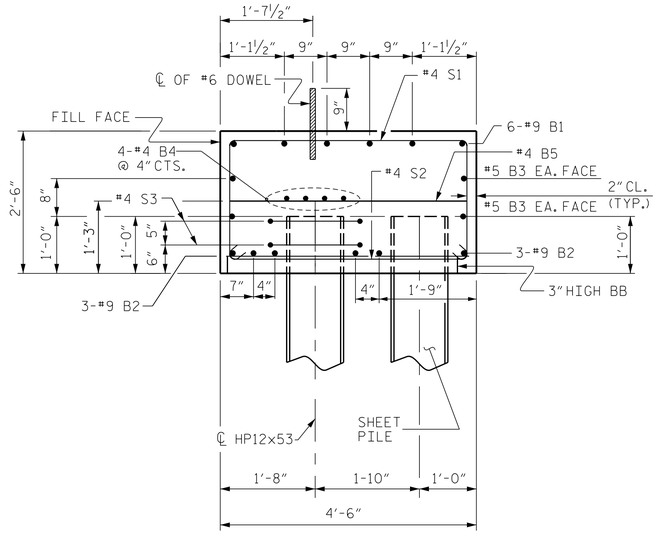
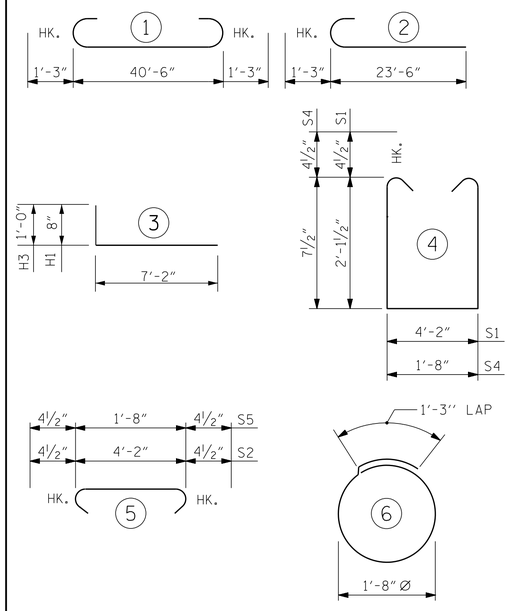
TEMPORARY DRAINAGE AT END BENT



SECTION A-A

DRILL OR CUT 2" Ø MAX. HOLE IN SHEET PILES FOR #9 B2 AND #5 S2 BARS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT No. 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#9	1	43'-0"	877
B2	12	#9	2	24'-9"	1010
B3	4	#5	STR	40'-8"	170
B4	8	#4	STR	21'-7"	115
B5	11	#4	STR	4'-2"	31
D1	22	#6	STR	1'-6"	50
H1	4	#4	3	7'-10"	21
H2	4	#4	STR	7'-2"	19
H3	4	#6	3	8'-2"	49
K1	12	#4	STR	4'-0"	32
S1	54	#4	4	9'-2"	331
S2	54	#4	5	4'-11"	177
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S4	14	#4	4	3'-8"	34
S5	14	#4	5	2'-5"	23
V1	24	#4	STR	4'-4"	69

REINFORCING STEEL LBS 3069

CLASS A CONCRETE:

POUR #1: CAP 17.1 C.Y.

POUR #2: EAR WALLS & COPING 1.8 C.Y.

TOTAL 18.9 C.Y.

HP 12 X 53 STEEL PILES

NO: 7 LIN. FT. = 350

PILE REDRIVES EA. 7

STEEL SHEET PILES

NO = 38 SQ. FT. 1803.7

NO. CONNECTOR = 2 SQ. FT. 20.3

TOTAL NO. = 40 SQ. FT. 1824.0

PROJECT NO. 17BP.6.R.42

COLUMBUS COUNTY

STATION: 15+31.00 -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-13
1			3			TOTAL SHEETS
2			4			14

DRAWN BY : J. PENDERGRAFT DATE : 5-15
CHECKED BY: J. A. DILWORTH DATE : 5-15
DESIGN ENGINEER OF RECORD: J. DILWORTH DATE : 9/2015

NORTH CAROLINA PROFESSIONAL SEAL 22072 ENGINEER JOHN ARTHUR DILWORTH 3/23/2016

WETHERILL ENGINEERING
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CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

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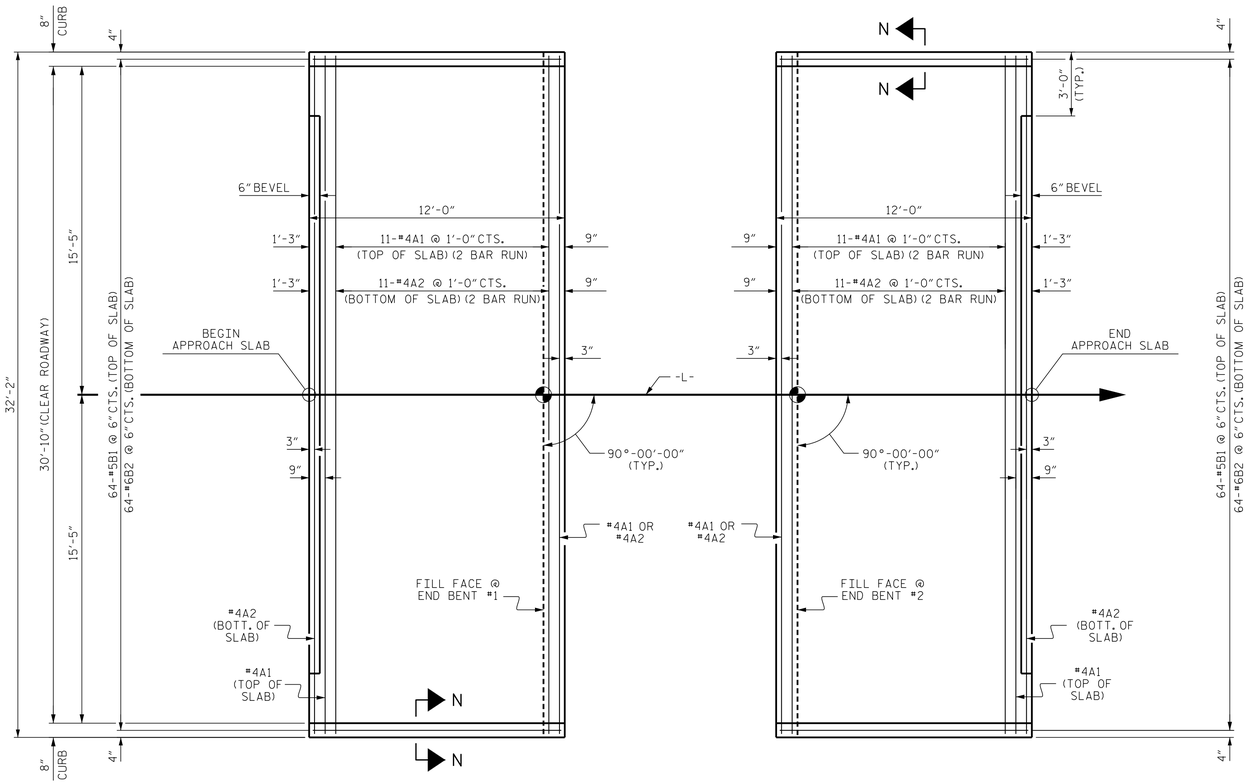
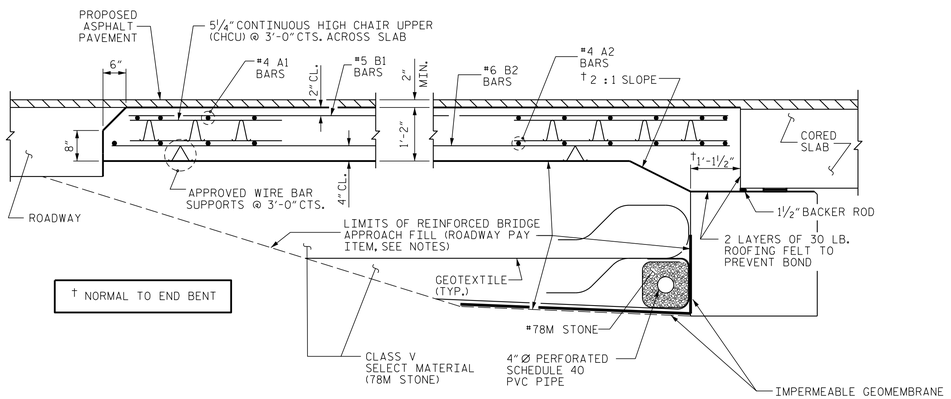


PLAN @ END BENT #1 PLAN @ END BENT #2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



SECTION THRU SLAB

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

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.

APPROACH SLAB GROOVING IS NOT REQUIRED.

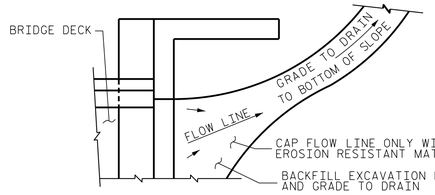
BILL OF MATERIAL

APPROACH SLAB AT EB #1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	26	#4	STR	16'-11"	294
A2	26	#4	STR	16'-9"	291
* B1	64	#5	STR	11'-2"	745
B2	64	#6	STR	11'-8"	1121
REINFORCING STEEL				LBS.	1412
* EPOXY COATED REINFORCING STEEL				LBS.	1039
CLASS AA CONCRETE				C.Y.	18.4

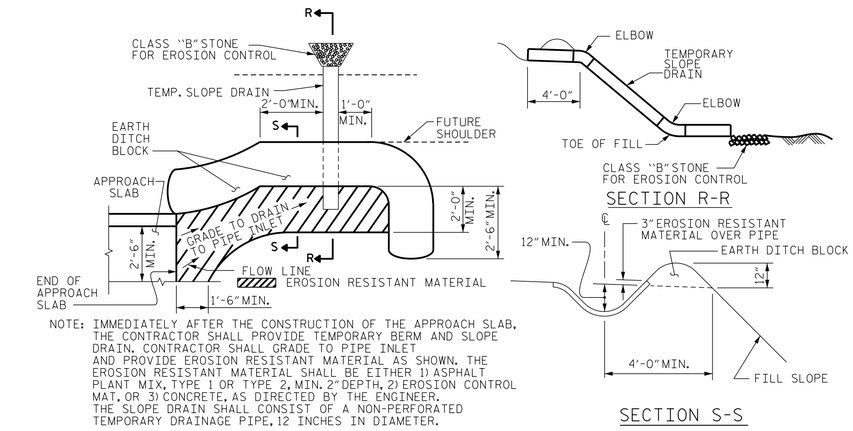
APPROACH SLAB AT EB #2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	26	#4	STR	16'-11"	294
A2	26	#4	STR	16'-9"	291
* B1	64	#5	STR	11'-2"	745
B2	64	#6	STR	11'-8"	1121
REINFORCING STEEL				LBS.	1412
* EPOXY COATED REINFORCING STEEL				LBS.	1039
CLASS AA CONCRETE				C.Y.	18.4



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

TEMPORARY DRAINAGE DETAIL



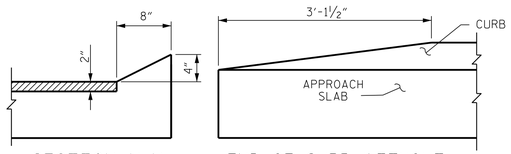
NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

PLAN VIEW

SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



SECTION N-N END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

PROJECT NO. 17BP.6.R.42

COLUMBUS COUNTY

STATION: 15+31.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

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

NORTH CAROLINA PROFESSIONAL SEAL 22072 ENGINEER JOHN ARTHUR DILWORTH 5/13/2016

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DESIGN ENGINEER OF RECORD: J. DILWORTH DATE : 9/2015

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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.

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

ENGLISH

JANUARY, 1990

STD. NO. SN