09/08/99

PROJECT: 17BP.6.R.76

CONTRACT: DF00261

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

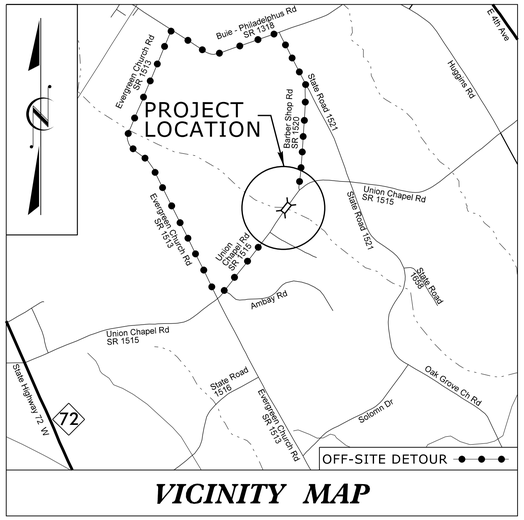
ROBESON COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.6.R.76	1	

W.B.S. NO.	F. A. PROJ. NO.	DESCRIPTION
17BP.6.R.76		PE
17BP.6.R.76		R/W
17BP.6.R.76		CONSTRUCTION

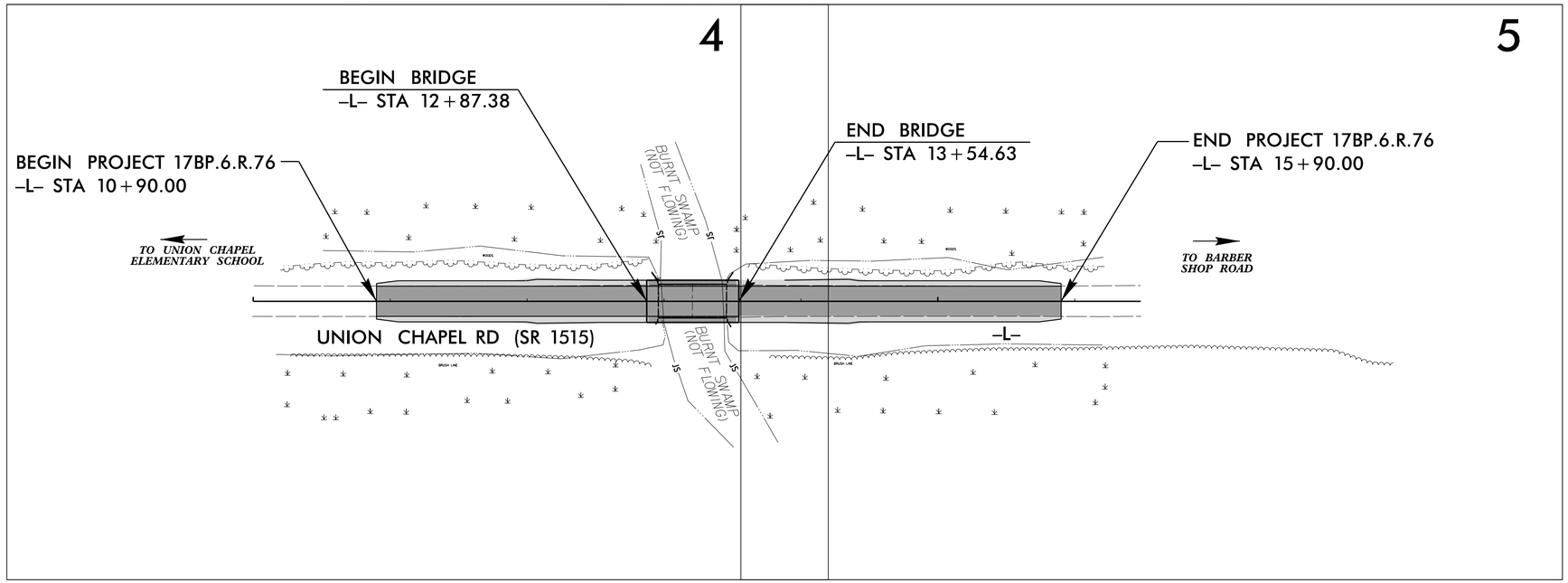
LOCATION: BRIDGE NO. 770239 UNION CHAPEL ROAD (SR 1515) OVER BURNT SWAMP

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



VICINITY MAP

NAD 83 / NA 2011



NO DESIGN EXCEPTION NEEDED

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

PLANS: 20 10 0 20 40

PROFILE (HORIZONTAL): 20 10 0 20 40

PROFILE (VERTICAL): 4 2 0 4 8

DESIGN DATA

ADT 2016 = 4,100

V = 55 MPH

TTST = 3%

DUALS = 3%

FUNC CLASS = LOCAL RURAL

SUB–REGIONAL TIER GUIDELINES

PROJECT LENGTH

LENGTH ROADWAY T.I.P. PROJECT 17BP.6.R.76	=	0.082 MILES
LENGTH STRUCTURES T.I.P. PROJECT 17BP.6.R.76	=	0.013 MILES
TOTAL LENGTH T.I.P. PROJECT 17BP.6.R.76	=	0.095 MILES

Prepared in the Office of:

ATKINS

1616 E. MILLBROOK ROAD, SUITE #160
RALEIGH, NORTH CAROLINA 27609
(919) 876–6888 NCBEES #F–0326

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
AUGUST 15, 2018

LETTING DATE:
FEBRUARY 3, 2021

BRUCE PAYNE, P.E.
PROJECT ENGINEER

BRYCE REID, EI
PROJECT DESIGN ENGINEER

CHRISTY WRIGHT HUFF, P.E.
NCDOT CONTACT

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 043351 ENGINEER CHRISTY WRIGHT HUFF

SIGNATURE 11/30/2020 *P.E.*

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022610 ENGINEER BRUCE PAYNE

SIGNATURE 11/30/2020 *P.E.*

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE HIGHWAY DESIGN ENGINEER

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.6.R.76	1A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022610 ENGINEER BRUCE R. PAYNE

DocuSigned by: Bruce Payne 3/8/2019
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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
1C-1	SURVEY CONTROL SHEETS
1D-1	PROPOSED ALIGNMENT CONTROL SHEET
2A-1	PAVEMENT SCHEDULE, TYPICAL SECTIONS, WEDGING DETAIL, AND MILLING DETAIL
2C-1	MODIFIED CONCRETE FLUME
3B-1	SUMMARY OF GUARDRAIL, EARTHWORK SUMMARY, ASPHALT PAVEMENT REMOVAL SUMMARY, DRAINAGE SUMMARY, AND SHOULDER BERM GUTTER SUMMARY
4 THRU 5	PLAN SHEETS
6	PROFILE SHEET
TMP-1 THRU TMP-3	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-3	PAVEMENT MARKING PLANS
EC-1 THRU EC-7	EROSION CONTROL PLANS
UO-1 THRU UO-3	UTILITIES BY OTHERS PLANS
X-1A THRU X-1B	CROSS-SECTION INDEX SHEET AND SUMMARY
X-1 THRU X-7	CROSS-SECTIONS
S-1 THRU S-14	STRUCTURE PLANS

GENERAL NOTES:

2018 SPECIFICATIONS
EFFECTIVE: 01-16-2018
REVISED:

GRADE LINE:
GRADING AND SURFACING:

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

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

GUARDRAIL:

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

SUBSURFACE PLANS:

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

END BENTS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE

AT&T, LUMBEE RIVER EMC, ROBESON COUNTY WATER

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

EFF. 01-16-2018
REV.

2018 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2018 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 4 - MAJOR STRUCTURES	
422.02	Bridge Approach Fills - Type II Modified Approach Fill
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
846.01	Concrete Curb, Gutter and Curb & Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units

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12/2/2016

PROJECT REFERENCE NO.	SHEET NO.
17BP.6.R.76	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale **S.U.E. = Subsurface Utility Engineering*

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Computed 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
- Existing Historic Property Boundary — HPB
- Known Contamination Area: Soil — S
- Potential Contamination Area: Soil — S
- Known Contamination Area: Water — W
- Potential Contamination Area: Water — W
- Contaminated Site: Known or Potential

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 & PROJECT CONTROL:

- Secondary Horiz and Vert Control Point
- Primary Horiz Control Point
- Primary Horiz and Vert Control Point
- Exist Permanent Easement Pin and Cap
- New Permanent Easement Pin and Cap
- Vertical Benchmark
- Existing Right of Way Marker
- Existing Right of Way Line
- New Right of Way Line — RW
- New Right of Way Line with Pin and Cap — RW
- New Right of Way Line with Concrete or Granite R/W Marker — RW
- New Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- New Control of Access — CA
- Existing Easement Line — E
- New Temporary Construction Easement — E
- New Temporary Drainage Easement — TDE
- New Permanent Drainage Easement — PDE
- New Permanent Drainage / Utility Easement — DUE
- New Permanent Utility Easement — PUE
- New Temporary Utility Easement — TUE
- New Aerial Utility Easement — AUE

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
- U/G Power Line LOS B (S.U.E.*) — P
- U/G Power Line LOS C (S.U.E.*) — P
- U/G Power Line LOS D (S.U.E.*) — P

TELEPHONE:

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

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- U/G Water Line LOS B (S.U.E*) — W
- U/G Water Line LOS C (S.U.E*) — W
- U/G Water Line LOS D (S.U.E*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- U/G TV Cable LOS B (S.U.E.*) — TV
- U/G TV Cable LOS C (S.U.E.*) — TV
- U/G TV Cable LOS D (S.U.E.*) — TV
- U/G Fiber Optic Cable LOS B (S.U.E.*) — TV FO
- U/G Fiber Optic Cable LOS C (S.U.E.*) — TV FO
- U/G Fiber Optic Cable LOS D (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- U/G Gas Line LOS B (S.U.E.*) — G
- U/G Gas Line LOS C (S.U.E.*) — G
- U/G Gas Line LOS D (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
- SS Forced Main Line LOS B (S.U.E.*) — FSS
- SS Forced Main Line LOS C (S.U.E.*) — FSS
- SS Forced Main Line LOS D (S.U.E.*) — FSS

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line LOS B (S.U.E.*) — ?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 LOS A (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

PROJECT REFERENCE NO.	SHEET NO.
17BP.6.R.76	1C-1
Location and Surveys	

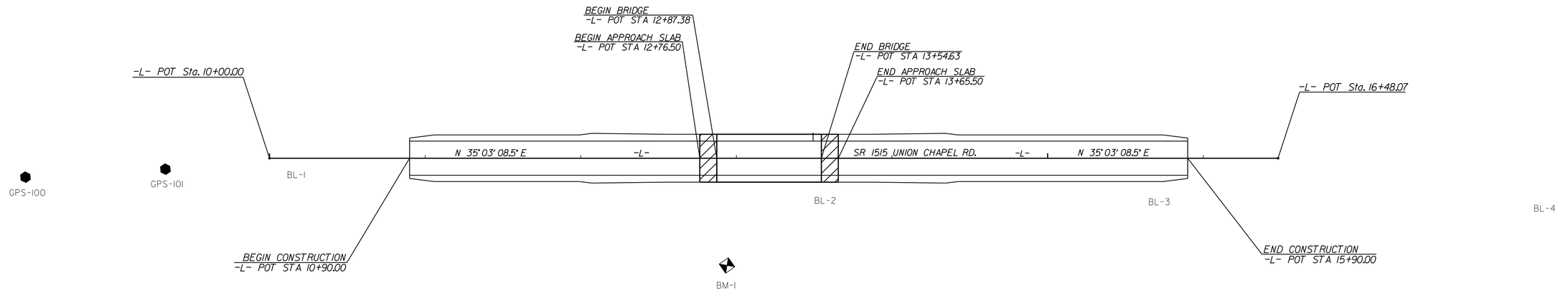
SURVEY CONTROL SHEET 17BP.6.R.76

BL

POINT	DESC.		NORTH	EAST	ELEVATION
100	770239	GPS-10	351119.5272	1960805.2690	168.70
101	770239	GPS-10	352127.0924	1961547.4826	152.10
1	770239	BL-1	352295.5492	1961644.5778	151.46
2	770239	BL-2	352565.4570	1961854.8792	152.81
3	770239	BL-3	352741.7326	1961977.2466	151.34
4	770239	BL-4	352942.0906	1962122.7055	152.34

NC GRID
NAD 83 NA 2011

```
**********************************************
BM1       ELEVATION = 153.51
N 352484      E 1961861
L STATION 12+94.00 69 RIGHT
"BENCHTIE" NAIL SET IN 10" PINE TREE
**********************************************
```



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "GPS-101"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 352127.092(ft) EASTING: 1961547.483(ft)
ELEVATION: 152.10(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99991374
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS101" TO -L- STATION 10+00.00 IS 179.499 AT A BEARING OF N 29°31'59.39" E
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAD 83/2011

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

REVISIONS

6/2/9

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PROJECT REFERENCE NO.	SHEET NO.
17BP.6.R.76	1D-1
Location and Surveys	

PROPOSED ALIGNMENT CONTROL SHEET 17BP.6.R.76

L

POINT	N	E	BEARING	DIST
POT	352283.270	1961635.963		
LINE			N 35°03′08.5" E	648.07
POT	352813.799	1962008.167		

REVISIONS

NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

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6/2/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.6.R.76	2A-1
ROADWAY DESIGN	PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022610 ENGINEER BRUCE B. PAYNE JR.

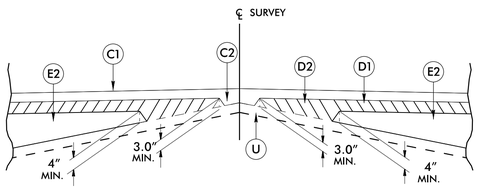
DocuSigned by: Bruce Payne 10/17/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

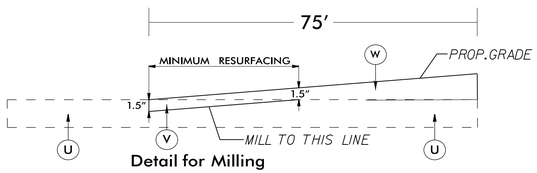
PAVEMENT SCHEDULE
PER NCDOT DIVISION 6 EMAIL, JULY 19, 2017

C1	PROP. APPROX. 3.0″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1.5″ IN DEPTH.
D1	PROP. APPROX. 2.5″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2.5″ IN DEPTH OR GREATER THAN 4″ IN DEPTH.
E1	PROP. APPROX. 4″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 4″ IN DEPTH OR GREATER THAN 5.5″ IN DEPTH.
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING BITUMINOUS PAVEMENT. 1.5″ DEPTH.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

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

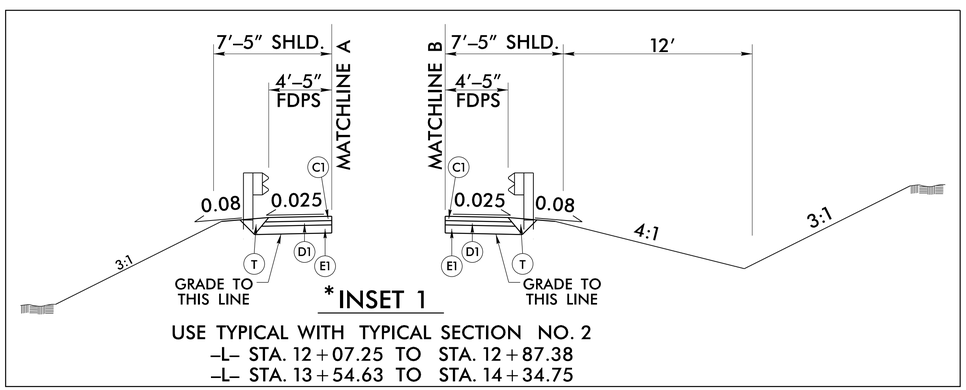


Detail Showing Method of Wedging



Detail for Milling

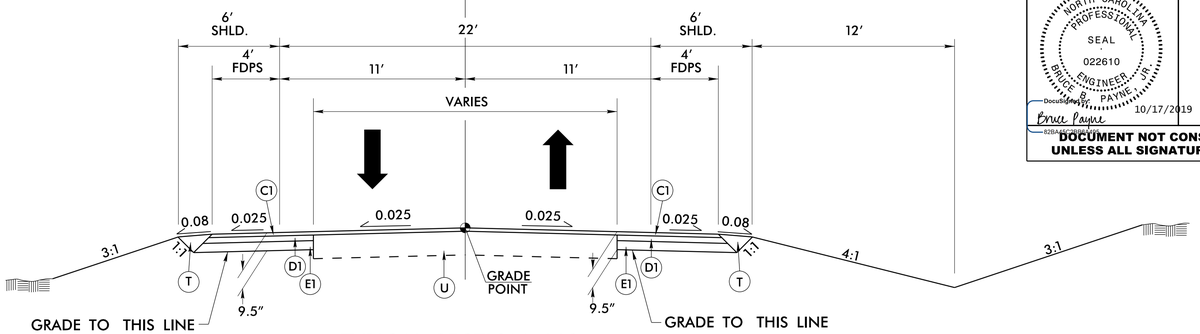
USE DETAIL FOR MILLING AS FOLLOWS:
–L– STA. 10+90.00 TO STA. 11+88.50
–L– STA. 14+53.50 TO STA. 15+90.00



*INSET 1

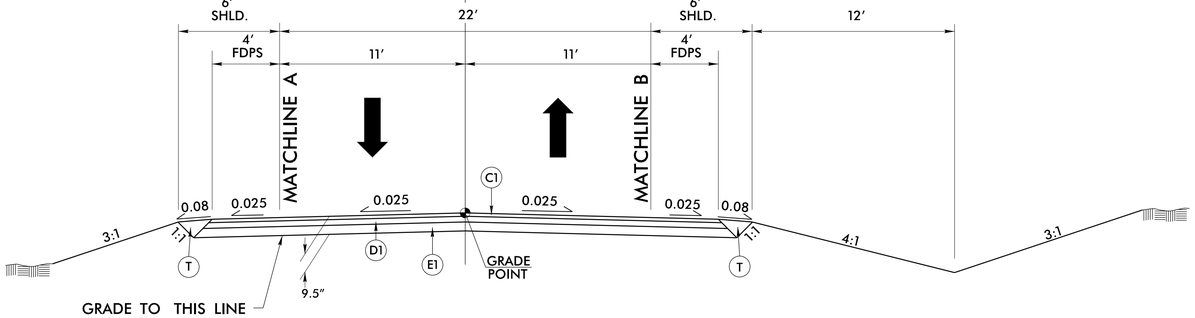
USE TYPICAL WITH TYPICAL SECTION NO. 2
–L– STA. 12+07.25 TO STA. 12+87.38
–L– STA. 13+54.63 TO STA. 14+34.75

℄ –L– UNION CHAPEL RD (SR 1515)



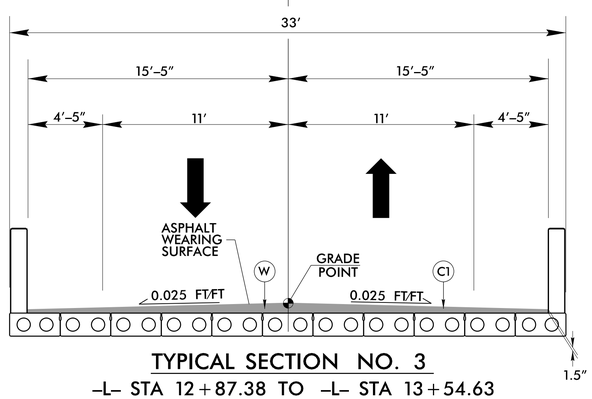
TYPICAL SECTION NO. 1
–L– STA 10+90.00 TO –L– STA 11+88.50
–L– STA 14+53.50 TO –L– STA 15+90.00
NOTE: USE LEVELING COURSE AS NEEDED

℄ –L– UNION CHAPEL RD (SR 1515)



TYPICAL SECTION NO. 2
–L– STA 11+88.50 TO –L– STA 12+87.38 (BEGIN BRIDGE)
–L– STA 13+54.63 (END BRIDGE) TO –L– STA 14+53.50

℄ –L– UNION CHAPEL RD (SR 1515)



TYPICAL SECTION NO. 3
–L– STA 12+87.38 TO –L– STA 13+54.63

12/06/07

COMPUTED BY: BDR	DATE: 6/5/18
CHECKED BY: BBP	DATE: 8/1/18

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
17BP.6.R.76	3B-1

SUMMARY OF EARTHWORK

STATION	STATION	UNCL. EXCAV.	UNDERCUT EXCAV.	EMBANK. +%	BORROW	WASTE
-L-						
10+90.00	12+88.26	38	0	21	0	17
13+53.26	15+90.00	5	0	144	139	0
PROJECT TOTALS:		43			139	17
USE SUIT. WASTE TO REPLACE BORROW					-17	-17
PROJECT TOTALS:		43			122	0
SAY:		50			130	

Earthwork quantities were calculated by the roadway design group. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

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

See "Standard Specifications For Roads and Structures, Section 300-5".

SHOULDER BERM GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LENGTH
-L-	12+45	12+48	3'
-L-	12+45	12+48	3'
-L-	12+63	12+88	25'
-L-	12+63	12+88	25'
TOTAL:			56'
SAY:			56'

PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION	YD
-L-	11+88.50	12+95.80	CL	269
-L-	13+45.73	14+53.50	CL	273
			TOTAL:	542
			SAY:	550

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

STATION / SIZE / THICKNESS OR GAUGE	OFFSET	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	% MINIMUM REQUIRED SLOPE	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"		DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP
12+56 -L-	14 LT	0401													
12+56 -L-	15 RT	0402													
TOTAL															

STATION	C.S. PIPE (UNLESS NOTED OTHRWISE) 12" .064	15" .064	18" .064	24" .064	24"	30" .079	30"	36" .079	36"	42" .109	42"	48" .109	48"	CLASS III R.C. PIPE (UNLESS OTHERWISE NOTED) 12"	15"	18"	24"	30"	36"	42"	48"
12+56 -L-																					
12+56 -L-																					
TOTAL																					

STATION	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" 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 * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') PER EACH (0' THRU 5.0')	LIN. *FT. A 5.0' THRU 10.0'	LIN. *FT. B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	
12+56 -L-													
12+56 -L-													
TOTAL													

STATION	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	T.B.D.I. FRAME WITH TWO GRATES STD. 840.36	T.B.D.I. STD. 840.35						FLOWABLE FILL CY	CONC. COLLARS CL. "B" C.Y. STD 840.72 CY	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71 CY	MODIFIED COCRETE FLUME	REMARKS
12+56 -L-																					1	
12+56 -L-																					1	
TOTAL																					2	

ABBREVIATIONS

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

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

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPROACH END	WARRANT POINT TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH APPROACH END	FLARE LENGTH TRAILING END	W APPROACH END	W TRAILING END	ANCHORS XI MOD	XI	GREU TL-3	M-350	TYPE-III	CAT-1	VI MOD	MOD B-77	AT-1	IMPACT ATTENUATOR TYPE 350 EA	G	NG	SINGLE FACED GUARDRAIL	REMOVE AND RESET EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
-L-	12+07.25	12+87.38 (BEGIN BRIDGE)	RT	80.13'			12+87.38		4'-5"	7'-5"	50'		1'				1		1											
-L-	13+54.63 (END BRIDGE)	14+34.75	RT	80.12'				13+54.63	4'-5"	7'-5"		50'		1'			1		1											
-L-	12+07.25	12+87.38 (BEGIN BRIDGE)	LT	80.13'				12+87.38	4'-5"	7'-5"		50'		1'			1		1											
-L-	13+54.63 (END BRIDGE)	14+34.75	LT	80.12'			13+54.63		4'-5"	7'-5"	50'		1'				1		1											
			SUBTOTAL	320.5'																										
		ANCHOR UNIT DEDUCTIONS																												
		LESS 4 TYPE III @ 18.75' EACH		-75'																										
		LESS 4 GREU TL-3 @ 50' EACH		-200'																										
		TOTAL		-275'																										
			TOTAL	45.5'													4		4											
			SAY	50'													4		4											
		ADDITIONAL GUARDRAIL POSTS		5																										

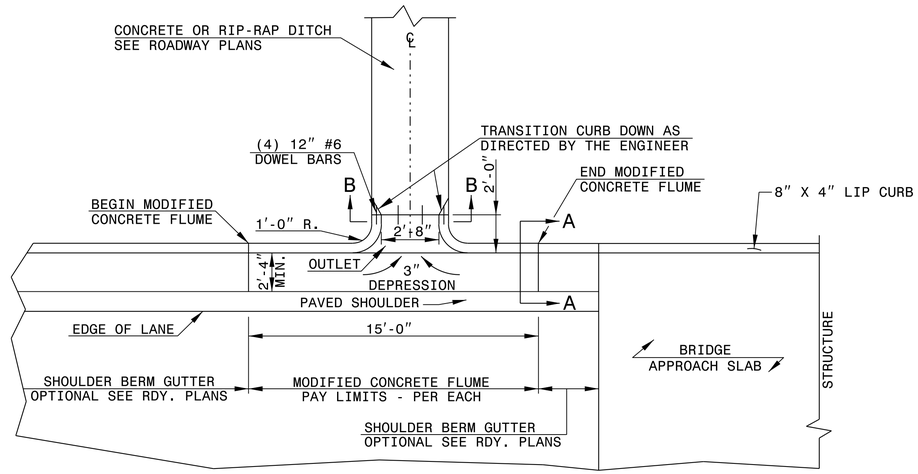
PROJECT REFERENCE NO.	SHEET NO.
17BP.6.R.76	2C-1

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

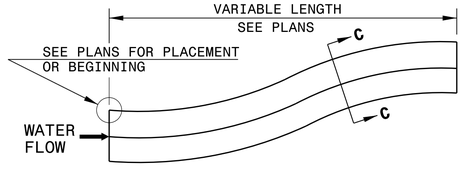
ENGLISH DETAIL DRAWING FOR

MODIFIED CONCRETE FLUME

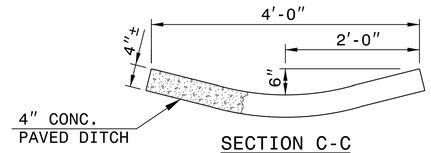
WITH CONCRETE OR RIP-RAP DITCH



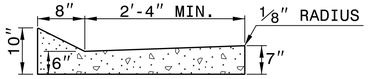
PLAN VIEW



DOWNGRADE OR SAG



SECTION C-C



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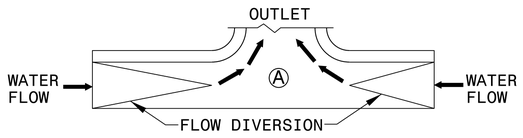
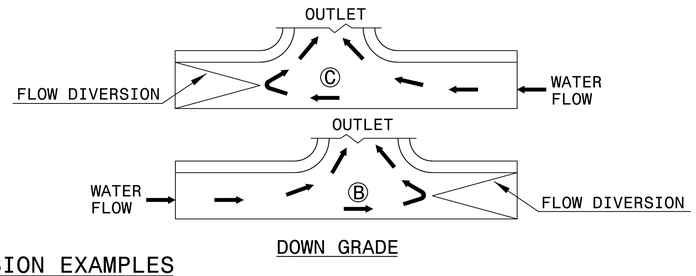
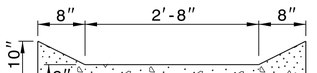


SAG

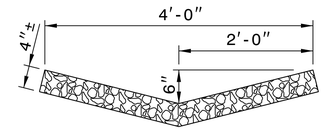


DOWN GRADE

FLOW DIVERSION EXAMPLES



SECTION B-B



RIP-RAP LINED DITCH

NOTES:

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

SHEET 1 OF 1

MODFLMDTCH

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

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

SHEET 1 OF 1
MODFLMDTCH

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

SEE PLATE FOR TITLE

ORIGINAL BY: E.E. Ward DATE: Apr. 2002
MODIFIED BY: J.S. Howerton DATE: October 2017
CHECKED BY: _____ DATE: _____
FILE SPEC.: w:details\stand\modifiedflume.dgn

PROJECT REFERENCE NO.	SHEET NO.
17BP6.R.76	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022610 ENGINEER BRUCE D. PAYNE, JR. — 3/8/2019	NORTH CAROLINA PROFESSIONAL SEAL 043351 ENGINEER KENNETH D. HUNU — 3/8/2019

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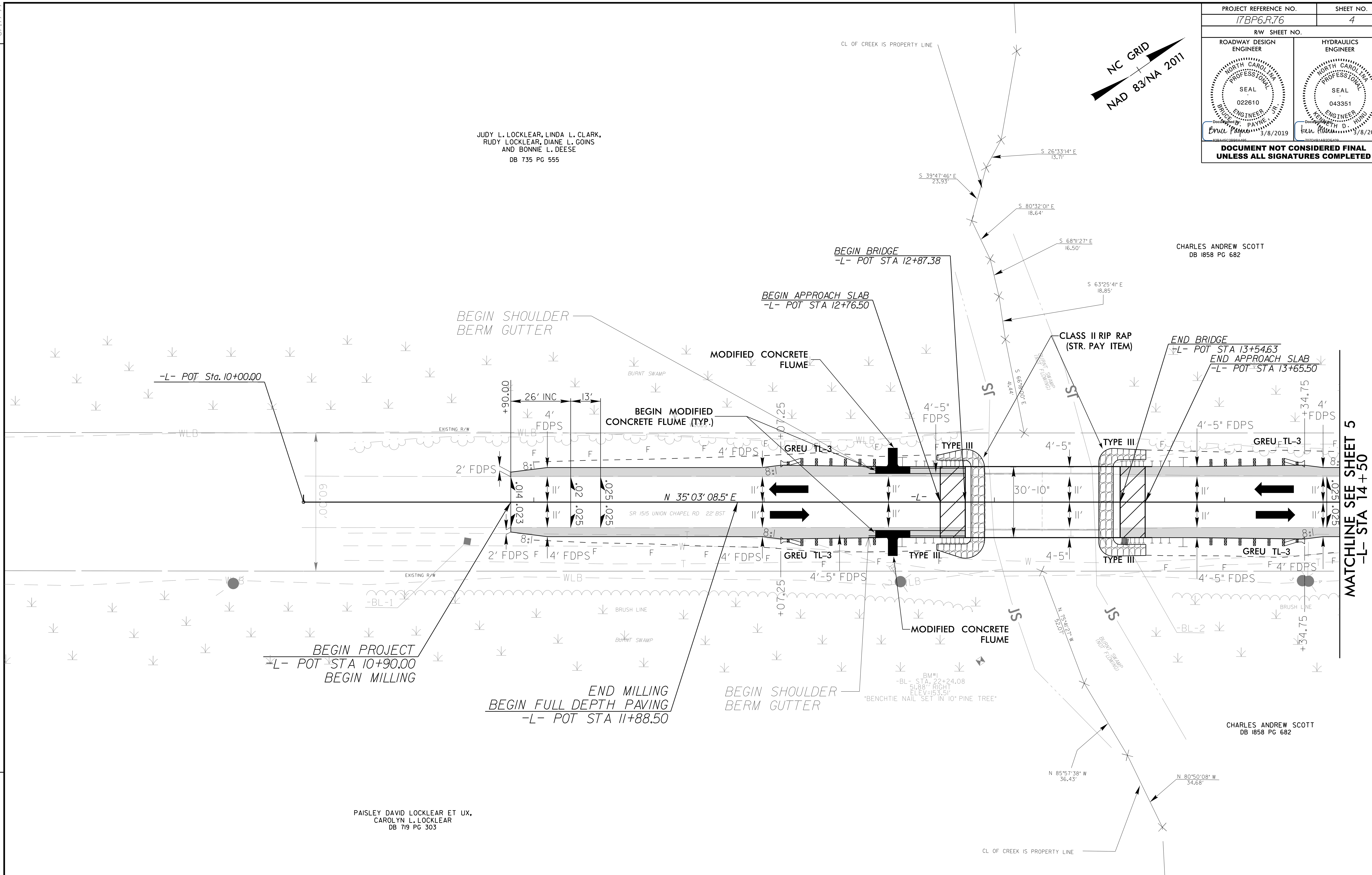
REVISIONS

8/17/99



NC GRID
NAD 83/NA 2011
JUDY L. LOCKLEAR, LINDA L. CLARK, RUDY LOCKLEAR, DIANE L. GOINS AND BONNIE L. DEESE
DB 735 PG 555
CL OF CREEK IS PROPERTY LINE
S 26°33'14" E 13.71'
S 39°47'46" E 23.93'
S 80°32'01" E 18.64'
S 68°11'27" E 16.50'
S 63°25'41" E 18.85'
CHARLES ANDREW SCOTT
DB 1858 PG 682
BEGIN BRIDGE
-L- POT STA 12+87.38
BEGIN APPROACH SLAB
-L- POT STA 12+76.50
BEGIN SHOULDER BERM GUTTER
MODIFIED CONCRETE FLUME
CLASS II RIP RAP (STR. PAY ITEM)
END BRIDGE
-L- POT STA 13+54.63
END APPROACH SLAB
-L- POT STA 13+65.50
-L- POT Sta. 10+00.00
BURNT SWAMP
26' INC
13'
4' FDPS
+90.00
BEGIN MODIFIED CONCRETE FLUME (TYP.)
+07.25
4'-5" FDPS
TYPE III
GREU TL-3
4' FDPS
EXISTING R/W
WLB
2' FDPS
8:1
60.00'
11'
N 35°03'08.5" E
SR 1515 UNION CHAPEL RD 22' BST
-L-
30'-10"
4'-5"
+34.75
MATCHLINE SEE SHEET 5
-L- STA 14+50
-BL-1
-BL-2
BRUSH LINE
MODIFIED CONCRETE FLUME
BEGIN PROJECT
-L- POT STA 10+90.00
BEGIN MILLING
END MILLING
BEGIN FULL DEPTH PAVING
-L- POT STA 11+88.50
BM#1
-BL- STA. 22+24.08
51.88' RIGHT
ELEV=153.51'
"BENCHTIE NAIL SET IN 10" PINE TREE"
N 15°41'27" W 52.07'
N 85°57'38" W 36.43'
N 80°50'08" W 34.68'
PAISLEY DAVID LOCKLEAR ET UX. CAROLYN L. LOCKLEAR
DB 719 PG 303

PAVED SHOULDER

SEE SHEET 6 FOR PROFILE VIEW

SEE SHEET S-1 THRU S-14 FOR STRUCTURE PLANS

08-MAR-2019 12:42
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PROJECT REFERENCE NO.	SHEET NO.
17BP.6.R.76	5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022610 ENGINEER BRUCE A. PAYNE, JR.

DocuSigned by: Bruce Payne 3/8/2019

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 043351 ENGINEER KEITH D. HUNNU

DocuSigned by: Keith Hunnu 3/8/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NC GRID / NAD 83/NA 2011

8/17/99

REVISIONS

15

CHARLES ANDREW SCOTT
DB 1858 PG 682

N 73°08'55" W
204.22'

BURNT SWAMP

WOODS

13'

26' INC.

+90.00

4' FDPS

EXISTING R/W

-L- POT Sta. 16+48.07

REBAR

4' FDPS

8:1

2' FDPS

MATCHLINE SEE SHEET -L- STA 14+50

.025 11' .025 .025 11' .029

-L- N 35°03'08.5" E

.025 11' .025 .03 11' .039

SR 1515 UNION CHAPEL RD 22' BST

60.00'

8:1

4' FDPS 4' FDPS 2' FDPS

EXISTING R/W

BURNT SWAMP

-BL-3

-BL-4

END FULL DEPTH PAVING
BEGIN MILLING
-L- POT STA 14+53.50

END PROJECT
-L- POT STA 15+90.00
END MILLING

S 67°41'07" E
263.14'

CHARLES ANDREW SCOTT
DB 1858 PG 682

PAVED SHOULDER

SEE SHEET 6 FOR PROFILE VIEW

28-JAN-2019 09:00
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PROJECT REFERENCE NO.	SHEET NO.
17BP.6.R.76	6
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022610 — BRUCE B. PAYNE, JR. — 3/8/2019

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 043351 — KENNETH D. HUNU — 3/8/2019

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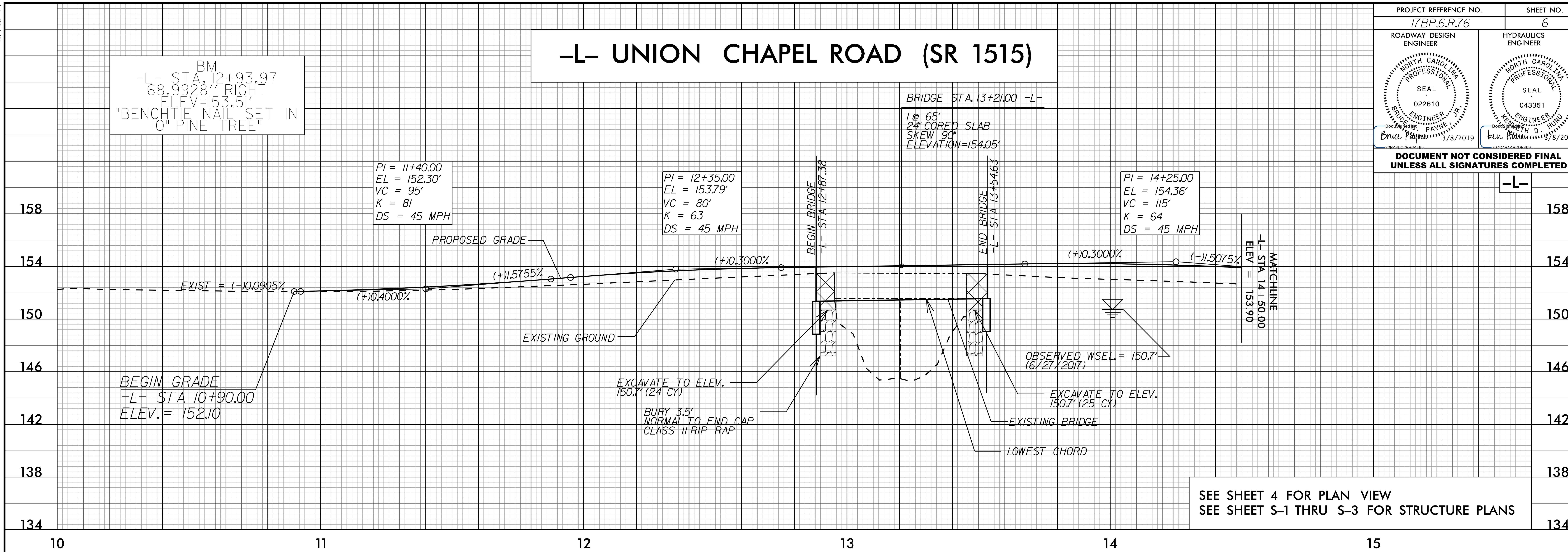
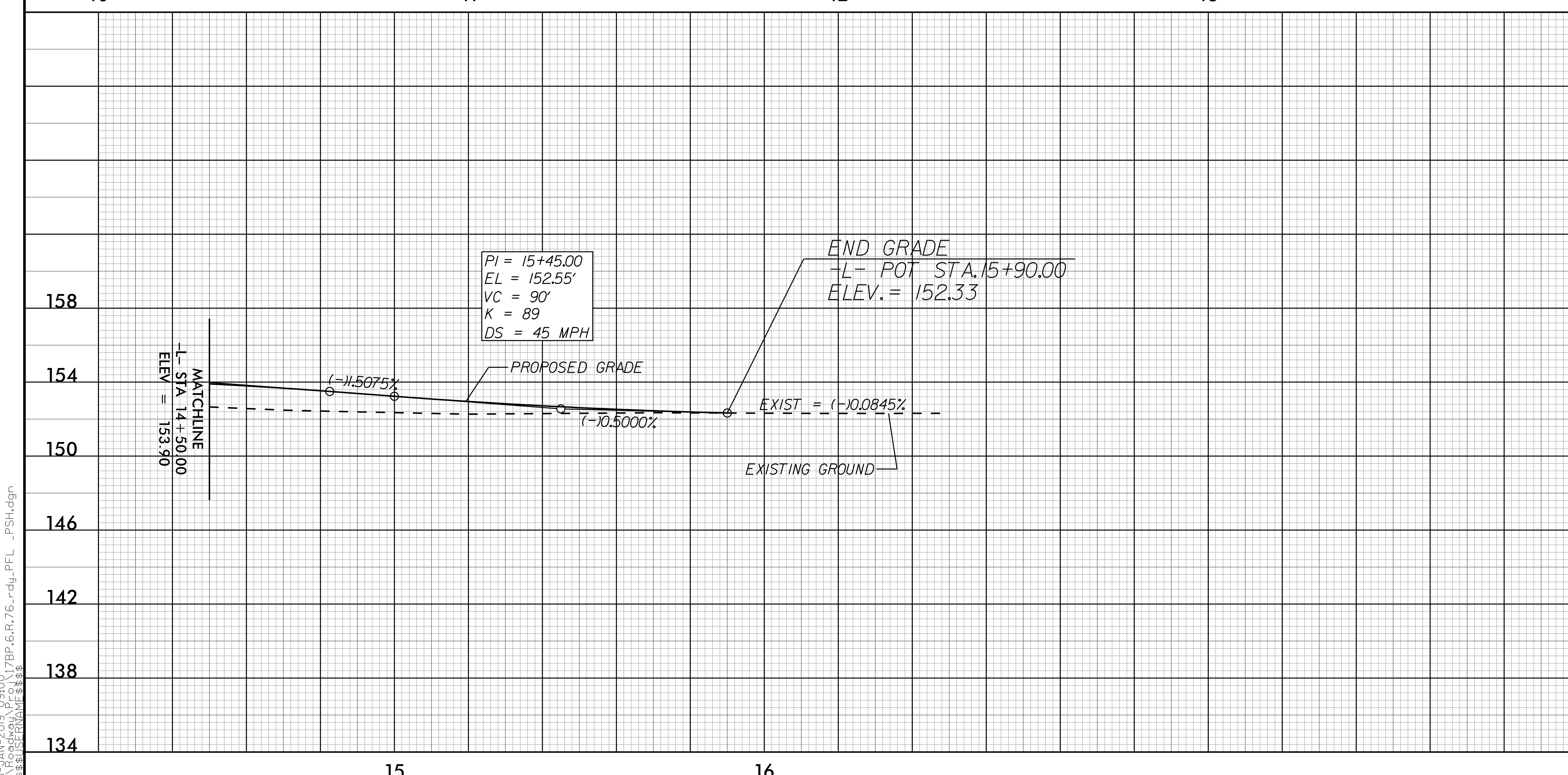
–L– UNION CHAPEL ROAD (SR 1515)



5/28/99
BM
-L- STA. 12+93.97
68.9928' RIGHT
ELEV=153.51'
"BENCHTIE NAIL SET IN 10" PINE TREE"
BRIDGE STA. 13+21.00 -L-
1 @ 65'
24" CORED SLAB
SKEW 90°
ELEVATION=154.05'
PI = 11+40.00
EL = 152.30'
VC = 95'
K = 81
DS = 45 MPH
PI = 12+35.00
EL = 153.79'
VC = 80'
K = 63
DS = 45 MPH
PI = 14+25.00
EL = 154.36'
VC = 115'
K = 64
DS = 45 MPH
BEGIN BRIDGE -L- STA 12+87.38
END BRIDGE -L- STA 13+54.63
–L–
PROPOSED GRADE
(+)1.5755%
(+)0.3000%
(+)0.3000%
(–)1.5075%
EXIST = (–)0.0905%
(+)0.4000%
EXISTING GROUND
MATCHLINE -L- STA 14+50.00 ELEV = 153.90
OBSERVED WSEL = 150.7' (6/27/2017)
EXCAVATE TO ELEV. 150.7' (24 CY)
BURY 3.5' NORMAL TO END CAP CLASS II RIP RAP
EXCAVATE TO ELEV. 150.7' (25 CY)
EXISTING BRIDGE
LOWEST CHORD
BEGIN GRADE
-L- STA 10+90.00
ELEV.= 152.10
SEE SHEET 4 FOR PLAN VIEW
SEE SHEET S-1 THRU S-3 FOR STRUCTURE PLANS
158
154
150
146
142
138
134
10
11
12
13
14
15



STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 870	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 152.3	FT
BASE DISCHARGE	= 1300	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 152.7	FT
OVERTOPPING DISCHARGE	= 870	CFS
OVERTOPPING FREQUENCY	= 25	YRS
OVERTOPPING ELEVATION	= 152.1	FT

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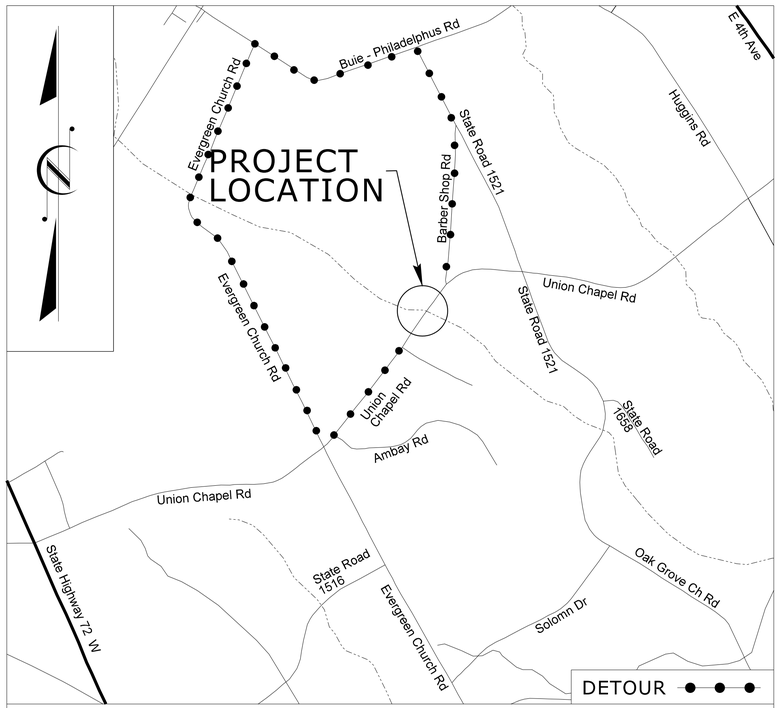
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

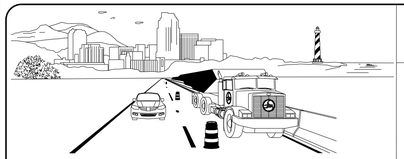
ROBESON COUNTY



VICINITY MAP

LOCATION: REPLACE BRIDGE NO. 770239 ON UNION CHAPEL RD (SR 1515) OVER BURNT SWAMP

PLAN PREPARED FOR N.C.D.O.T. BY:
ATKINS
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326



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

N.C.D.O.T. DIVISION 06 TRAFFIC ENGINEERING
PO BOX 1150, FAYETTEVILLE, NC 28302 (MAIL)
450 TRANSPORTATION DRIVE, FAYETTEVILLE, NC 28301 (DELIVERY)
PHONE: (910) 364-0606 FAX: (910) 437-2599

FRANK D. WEST, JR *DIVISION TRAFFIC ENGINEER*
JAMES V. FLOWERS *ASSISTANT DIVISION TRAFFIC ENGINEER*

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

INDEX OF SHEETS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

APPROVED: DocuSigned by: Melissa Toth D80DCF8E04D04AF...

DATE: 2/28/2019

NORTH CAROLINA PROFESSIONAL SEAL 025892 ENGINEER MELISSA B. TOTH

SHEET NO.
TMP-1

TIP PROJECT: 17BP.6.R.76

2/28/2019
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User:ACEV709

PROJ. REFERENCE NO.	SHEET NO.
17BP.6.R.76	TMP-1A

ROADWAY STANDARD DRAWINGS

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

STD. NO.	TITLE
1101.03	TEMPORARY ROAD CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1145.01	BARRICADES
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.12	PAVEMENT MARKINGS - BRIDGES
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY

LEGEND

GENERAL

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

TRAFFIC CONTROL DEVICES

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

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

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.

TRAFFIC PATTERN ALTERATIONS

A) NOTIFY THE ENGINEER THIRTY-ONE (31) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

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

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 AND DEVICES REQUIRED FOR THE OFF-SITE DETOUR WHEN THE 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 ROAD.

PAVEMENT MARKINGS AND MARKERS

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

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

PHASING

STEP 1: INSTALL ALL DETOUR SIGNING KEEPING SIGNS COVERED (SEE SHEET TMP-3)

STEP 2: USING ROADWAY STANDARD DRAWING 1101.03, SHEETS 1 OF 9, CLOSE UNION CHAPEL ROAD (SR 1515) TO TRAFFIC. UNCOVER ALL DETOUR SIGNING AND SHIFT TRAFFIC TO DETOUR (SEE SHEET TMP-3).

STEP 3: DISMANTLE AND REMOVE EXISTING BRIDGE

STEP 4: CONSTRUCT PROPOSED STRUCTURE, APPROACH ROADWAY TIE-INS AND ASSOCIATED ITEMS INCLUDING FINAL PAVEMENT MARKINGS AND MARKERS.

STEP 5: REMOVE ALL DETOUR SIGNING, ALL TEMPORARY TRAFFIC CONTROL DEVICES, AND OPEN UNION CHAPEL ROAD (SR 1515) TO TRAFFIC.

ATKINS 1616 EAST MILLBROOK ROAD, SUITE 160 RALEIGH, NORTH CAROLINA 27609 (919) 876-6888 NCBEES #F-0326

APPROVED: Melissa Toth (DocuSigned by: D86DCFBE04D04AF...)

DATE: 2/28/2019

NORTH CAROLINA PROFESSIONAL SEAL 025892 ENGINEER MELISSA B. TOTH

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

ROADWAY STANDARD DRAWINGS, LEGEND, GENERAL NOTES AND PHASING

PROJ. REFERENCE NO.	SHEET NO.
17BP.6.R.76	TMP-2

SIGN NUMBER: SP1
TYPE: STATIONARY
QUANTITY: SEE PLANS

SIGN WIDTH: 4′-6″
HEIGHT: 2′-0″
TOTAL AREA: 9.0 Sq.Ft.

BORDER TYPE: INSET
RECESS: 0.47″
WIDTH: 0.63″
RADII: 1.5″

NO. Z BARS:
LENGTH:

BACKG COLOR: Fluorescent Orange
COPY COLOR: Black

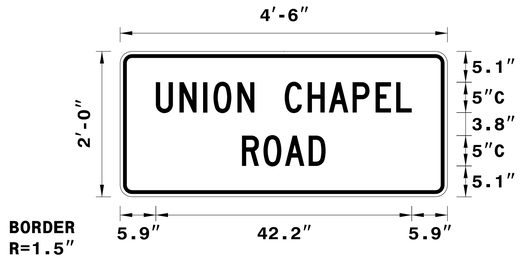
SYMBOL	X	Y	WID	HT

MAT′L: 0.080″ (2.0 mm) ALUMINUM

DESIGN BY: JG OERTER
CHECKED BY:
July 18, 2017
PROJECT ID: 17BP.6.R.76
LOCATION: ROBESON COUNTY
DIV: 6

USE NOTES: 1,2

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



BORDER
R=1.5″
TH=0.63″
IN=0.47″

Panel Style: construction_guide.ssi
M.U.T.C.D.: 2009 Edition

Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter locations are panel edge to lower left corner

																										Series/Size Text Length
	U	N	I	O	N		C	H	A	P	E	L														C 2000
	5.9	9.8	13.7	15.4	19.4	22.2	27.2	31.3	34.5	38.4	42.2	45.6														42.2
	R	O	A	D																						C 2000
	20.1	23.7	27.2	31.1																						13.8

NORTH CAROLINA D.O.T. SIGN DETAIL

APPROVED: DocuSigned by: Melissa Toth D86DCF8E04D04AF...
DATE: 2/28/2019

NORTH CAROLINA PROFESSIONAL SEAL 025892 ENGINEER MELISSA B. TOTH

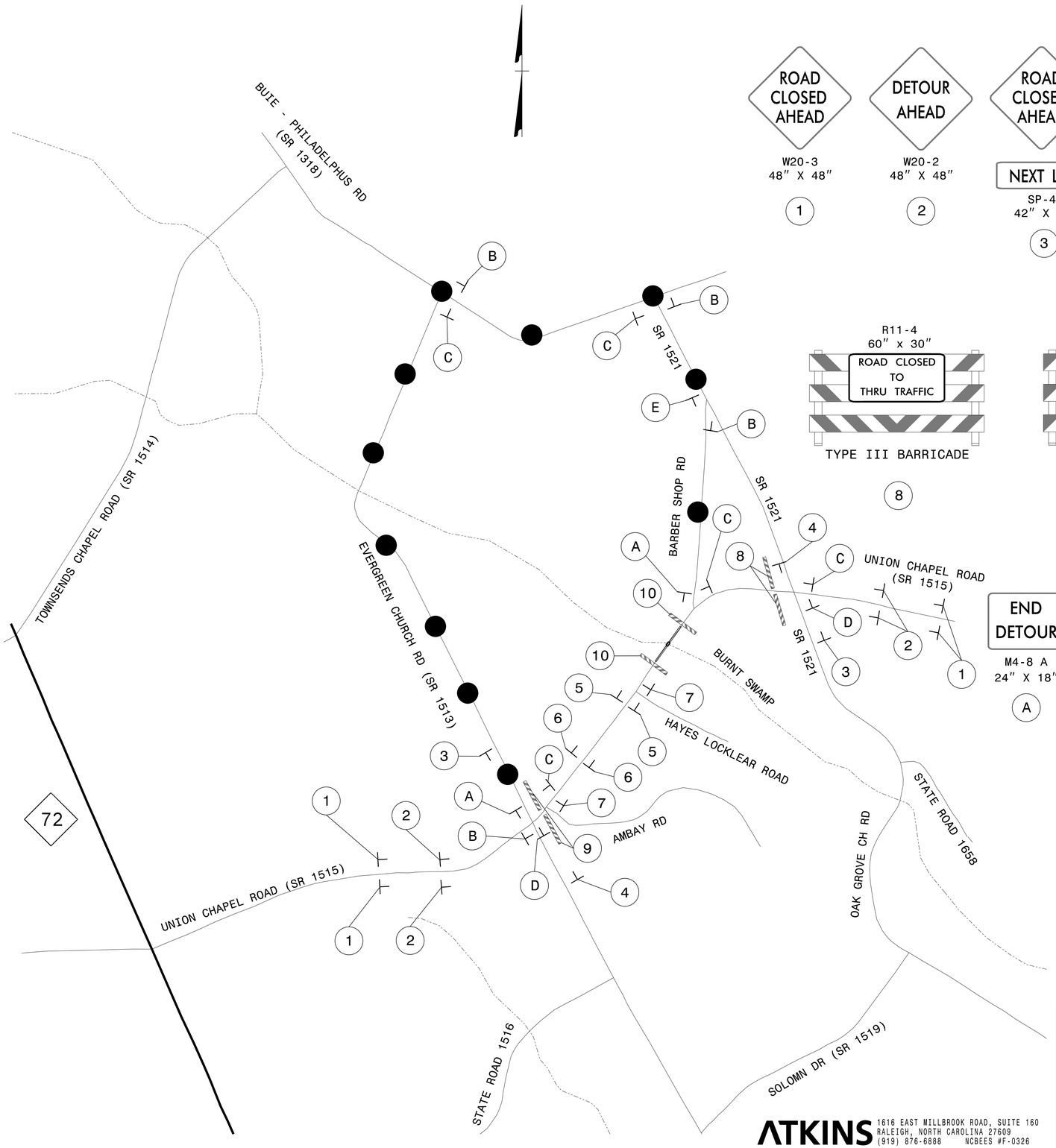
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

UNION CHAPEL ROAD (SR 1515) SPECIAL SIGN DESIGN

ATKINS 1616 EAST MILLBROOK ROAD, SUITE 160 RALEIGH, NORTH CAROLINA 27609 (919) 876-6888 NCBEES #F-0326

PROJ. REFERENCE NO.	SHEET NO.
17BP.6.R.76	TMP-3



ROAD CLOSED AHEAD
W20-3
48" X 48"
1

DETOUR AHEAD
W20-2
48" X 48"
2

ROAD CLOSED AHEAD
W20-3
48" X 48"
NEXT LEFT
SP-4L
42" X 12"
3

ROAD CLOSED AHEAD
W20-3
48" X 48"
NEXT RIGHT
SP-4R
42" X 12"
4

ROAD CLOSED 500 FT
W20-3
48" X 48"
5

ROAD CLOSED 1000 FT
W20-3
48" X 48"
6

ROAD CLOSED AHEAD
W20-3
48" X 48"
R3-1
24" X 24"
7

R11-4
60" x 30"
ROAD CLOSED TO THRU TRAFFIC
TYPE III BARRICADE
8

R11-4
60" x 30"
ROAD CLOSED TO THRU TRAFFIC
DETOUR
M4-10L
48" x 18"
TYPE III BARRICADE
9

R11-2
48" x 30"
ROAD CLOSED
TYPE III BARRICADE
10

UNION CHAPEL RD
DETOUR
M6-1
21" X 15"
SEE TMP-2 FOR SIGN DESIGN
54" X 24"
M4-8
24" X 12"
B

UNION CHAPEL RD
DETOUR
M6-1
21" X 15"
SEE TMP-2 FOR SIGN DESIGN
54" X 24"
M4-8
24" X 12"
C

UNION CHAPEL RD
DETOUR
M6-3
21" X 15"
SEE TMP-2 FOR SIGN DESIGN
54" X 24"
M4-8
24" X 12"
D

UNION CHAPEL RD
DETOUR
M6-2
21" X 15"
SEE TMP-2 FOR SIGN DESIGN
54" X 24"
M4-8
24" X 12"
E

DETOUR ROUTE

SEE RSD 1101.03, SHEET 1 OF 9, AND 2 OF 9 FOR ADDITIONAL INFOMRAITON ON SIGN LOCATIONS AND NOTES.

APPROVED: DocuSigned by: Melissa Toth DB6DCFBE04D04AF...
DATE: 2/28/2019

NORTH CAROLINA PROFESSIONAL SEAL 025892 ENGINEER MELISSA B. TOTH

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

UNION CHAPEL ROAD (SR 1515) OFF-SITE DETOUR AND DETOUR SIGNS

ATKINS 1616 EAST MILLBROOK ROAD, SUITE 160 RALEIGH, NORTH CAROLINA 27609 (919) 876-6888 NCBEES #F-0326

2/28/2019
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PROJECT REFERENCE NO.	SHEET NO.
17BP.6.R.76	PMP-1

APPROVED: DocuSigned by: Melissa Toth D86DCFBE04D04AF...

DATE: 12/9/2020

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 025892 ENGINEER MELISSA B. TOTH

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

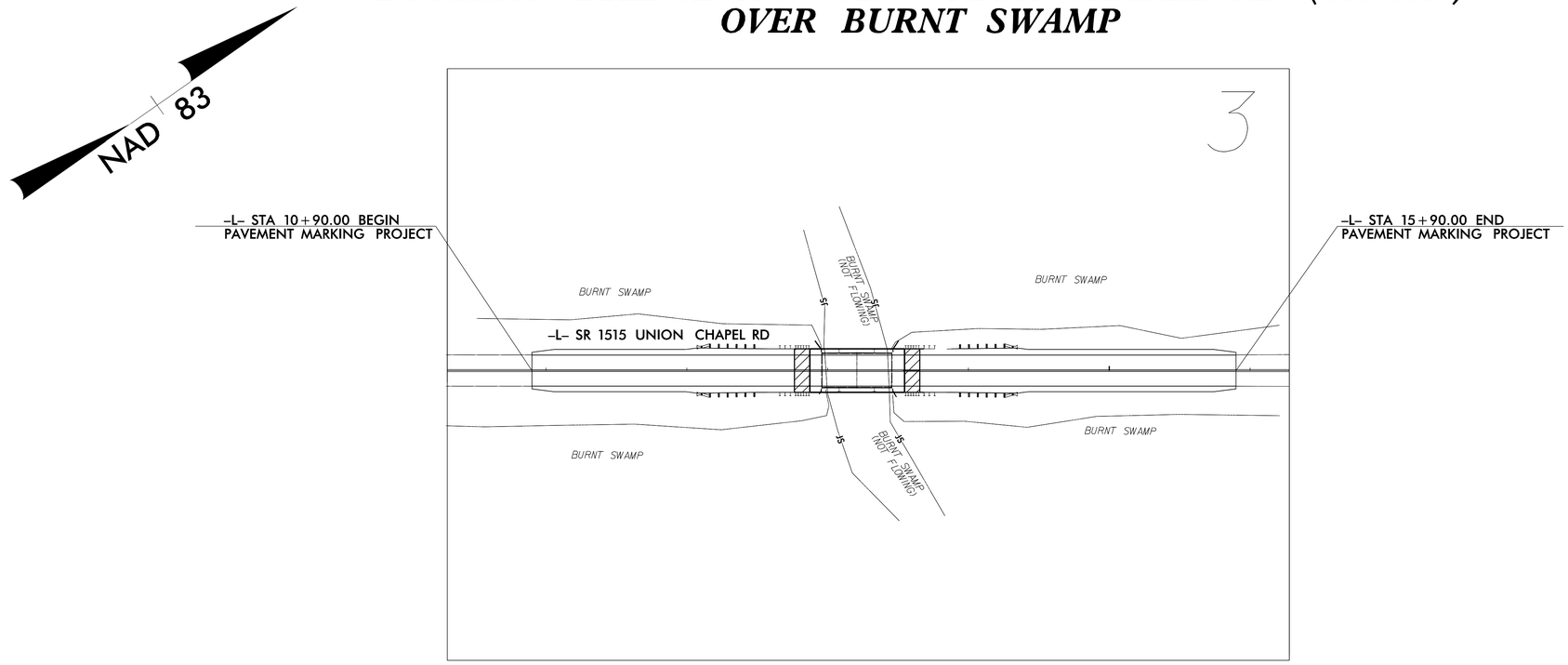
PAVEMENT MARKING PLAN

ROBESON COUNTY

LOCATION: BRIDGE NO. 770239 UNION CHAPEL RD (SR 1515) OVER BURNT SWAMP

PROJECT: 17BP.6.R.76

CONTRACT: DF00261



INDEX

SHEET NO.	DESCRIPTION
PMP-1	PAVEMENT MARKING PLAN TITLE AND INDEX
PMP-2	PAVEMENT MARKING NOTES AND QUANTITIES
PMP-3	PAVEMENT MARKING PLAN SHEET

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

_____ SIGNING & DELINEATION STANDARDS ENGINEER

_____ SIGNING & DELINEATION PROJECT DESIGN ENGINEER

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION ·

PLAN PREPARED BY: ATKINS

MELISSA B. TOTH,PE PROJECT ENGINEER

MILTON ACEVEDO PROJECT DESIGN ENGINEER

ATKINS 1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

12/3/2020
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User:ACEVEDO

PROJECT REFERENCE NO.	SHEET NO.
17BP.6.R.76	PMP-2

APPROVED: DocuSigned by: Melissa Toth D86DCF8E04D04AF...
DATE: 12/9/2020

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 025892 ENGINEER MELISSA B. TOTH

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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 2018 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
1205D12	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 AND SPACING
1261.02	GUARDRAIL & BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION	
TA	WHITE EDGELINE	THERMOPLASTIC (4", 90 MILS)
TI	YELLOW DOUBLE CENTER	THERMOPLASTIC (4", 90 MILS)
MA	YELLOW & YELLOW	PERMANENT RAISED MARKER

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
SR 1515 (UNION CHAPEL RD)	THERMOPLASTIC	PAVEMENT RAISED

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.

SUMMARY OF QUANTITIES

ITEM NO.		ITEM DESCRIPTION	QUANTITY	UNIT
DESC. NO.	SECT. NO.			
4685000000	1205	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)	2000	LF
4900000000	1251	PERMANENT RAISED MARKER	6	EA

ATKINS
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

PAVEMENT MARKING NOTES AND QUANTITIES

PROJECT REFERENCE NO.	SHEET NO.
17BP.6.R.76	PMP-3

APPROVED: DocuSigned by: Melissa Toth D86DCFBE04DD4AF...

DATE: 4/10/2019

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 025892 ENGINEER MELISSA B. TOTH

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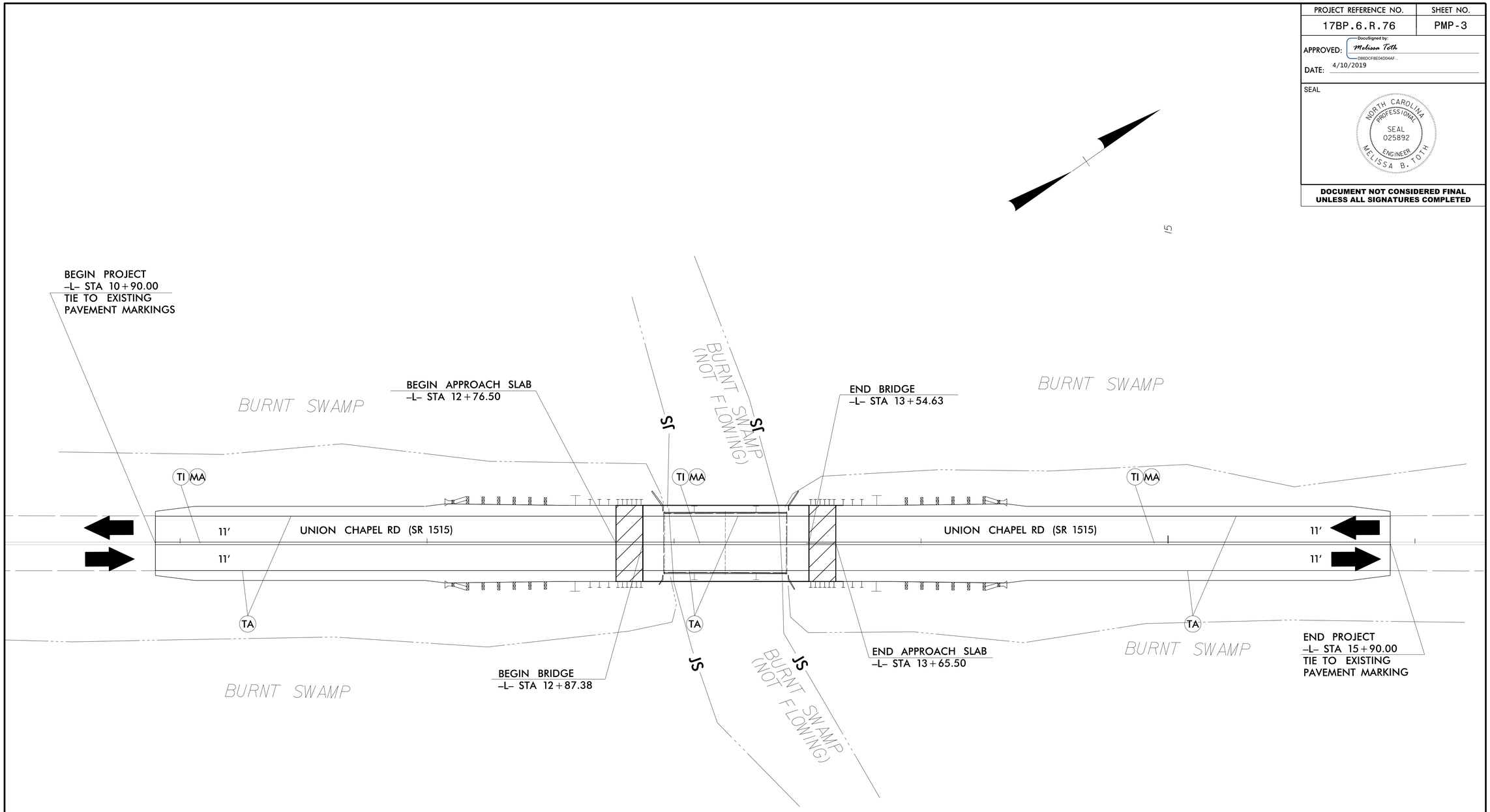

ATKINS 1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

PAVEMENT MARKING -L- STA. 10+90 TO STA. 15+90

4/10/2019
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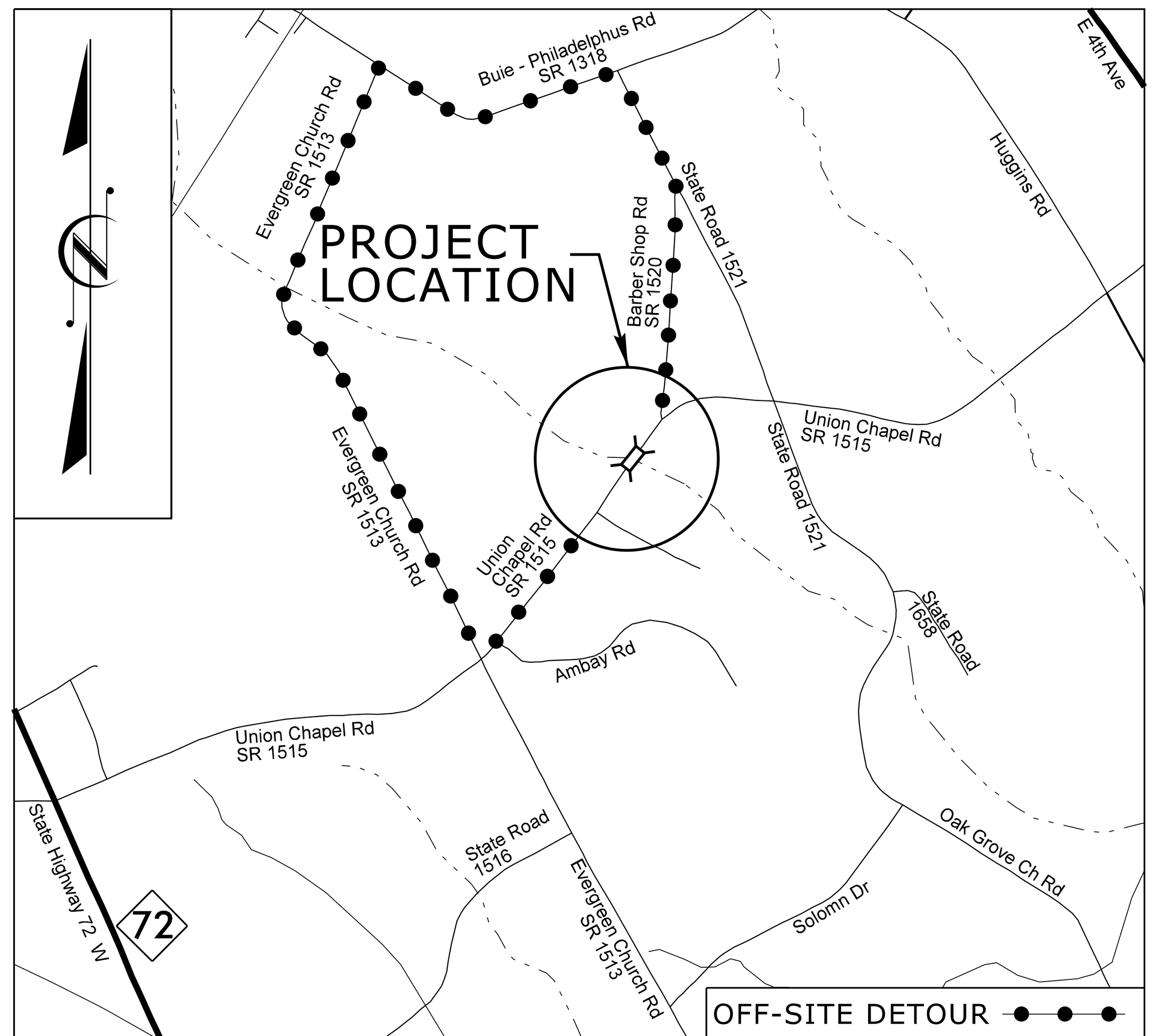
TIP PROJECT: 17BP.6.R.76

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.6.R.76	EC-1	

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



VICINITY MAP

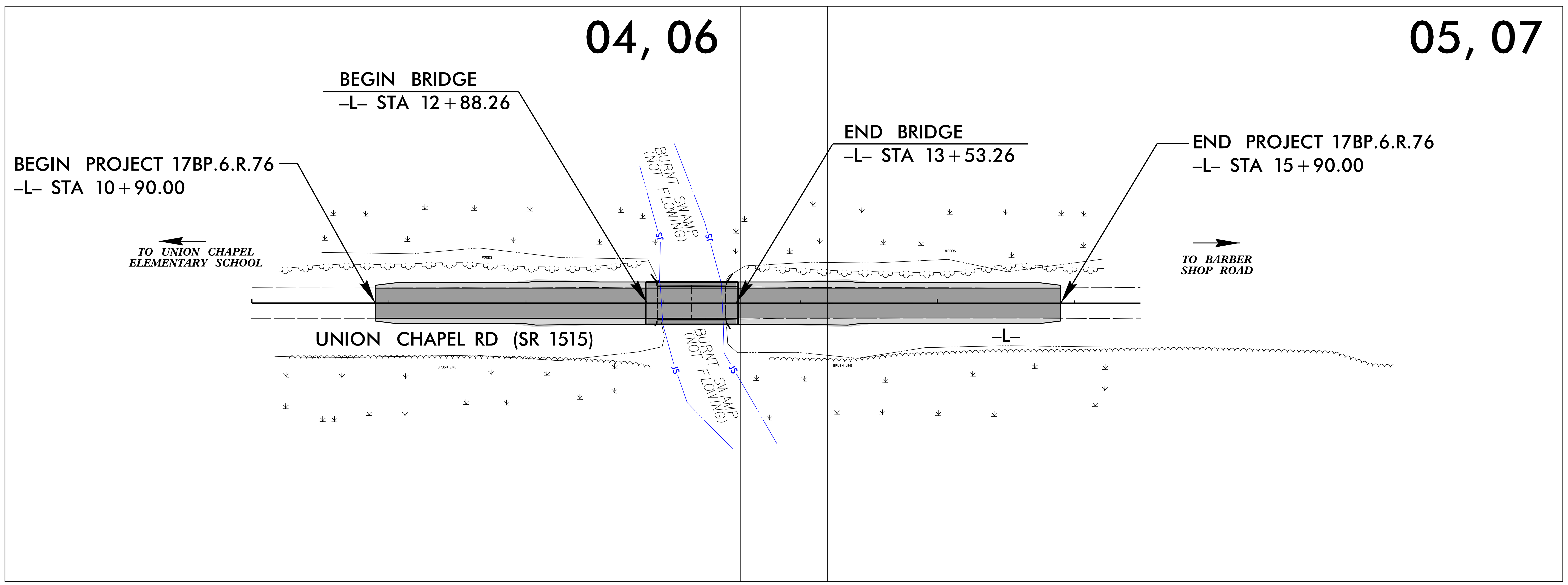
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

ROBESON COUNTY

LOCATION: BRIDGE NO. 770239 UNION CHAPEL ROAD (SR 1515) OVER BURNT SWAMP

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



EROSION AND SEDIMENT CONTROL MEASURES

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

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

NAD 83 / NA 2011

GRAPHIC SCALE

20 — PLANS

20 — PROFILE (HORIZONTAL)

4 — PROFILE (VERTICAL)

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 1, 2016 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES.

Prepared In the Office of:

ATKINS *1616 E. MILLBROOK ROAD, SUITE #160 RALEIGH, NORTH CAROLINA 27609 (919) 876-6888 NCBEES #F-0326*

Designed by:

NADIA MATA, PE, CPESC ***3863***

NAME *LEVEL III CERTIFICATION NO.*

Reviewed In the Office of:

ROADSIDE ENVIRONMENTAL UNIT

1 South Wilmington St. Raleigh, NC 27611

2018 STANDARD SPECIFICATIONS

Reviewed by:

NOELLE RING, CPESC

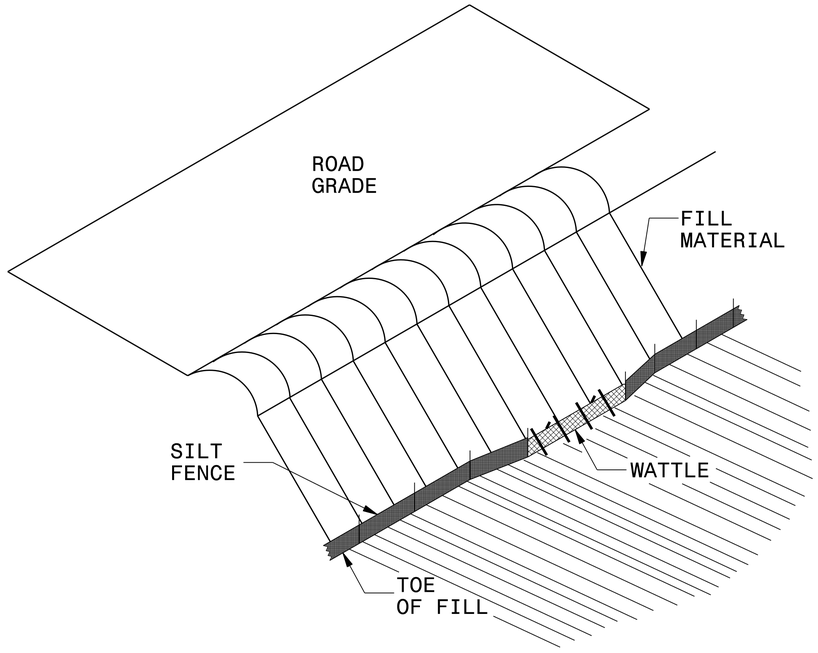
Roadway Standard Drawings

The following roadway english standards as appear in "Roadway Standard Drawings"– Roadway Design Unit – N. C. Department of Transportation – Raleigh, N. C., dated January 2018 and the latest revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

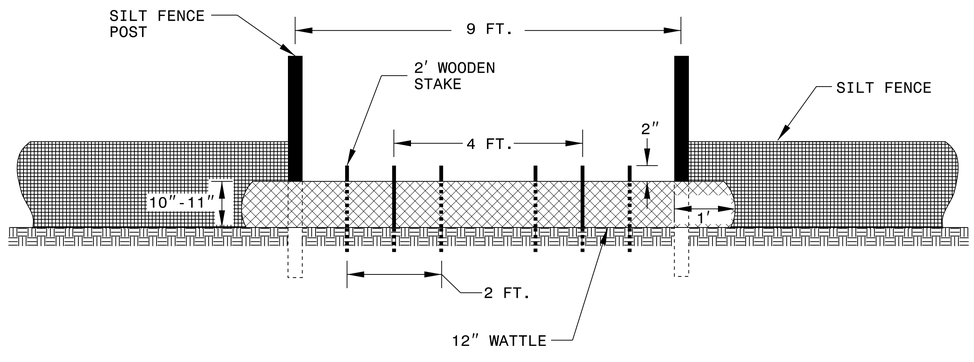
- 1604.01 Railroad Erosion Control Detail
- 1605.01 Temporary Silt Fence
- 1606.01 Special Sediment Control Fence
- 1607.01 Gravel Construction Entrance
- 1622.01 Temporary Berms and Slope Drains
- 1630.01 Riser Basin
- 1630.02 Silt Basin Type B
- 1630.03 Temporary Silt Ditch
- 1630.04 Stilling Basin
- 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.
17BP.6.R.76	EC-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SILT FENCE COIR FIBER WATTLE BREAK DETAIL



ISOMETRIC VIEW



VIEW FROM SLOPE

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.

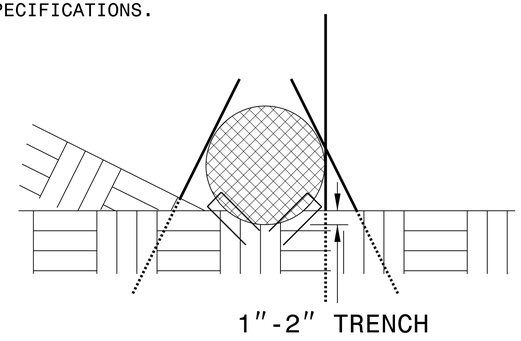
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

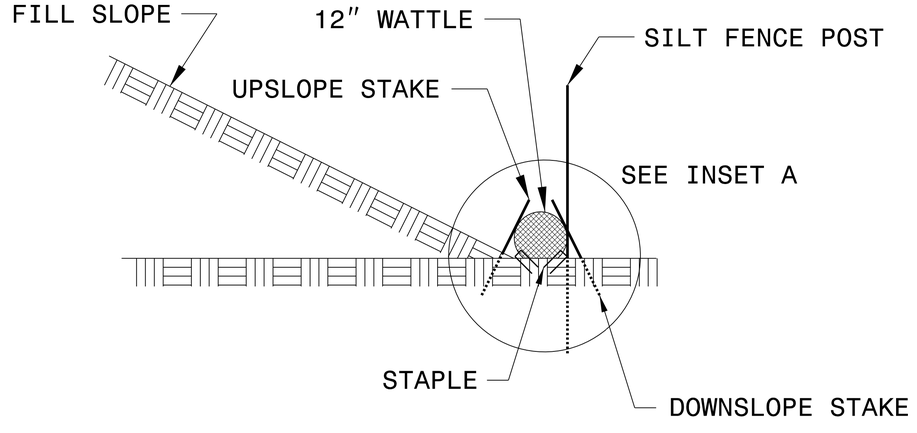
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

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

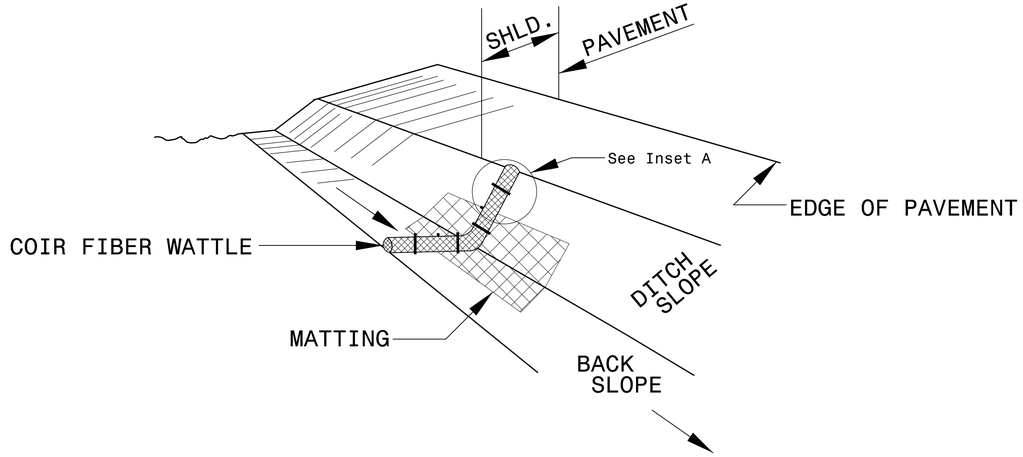




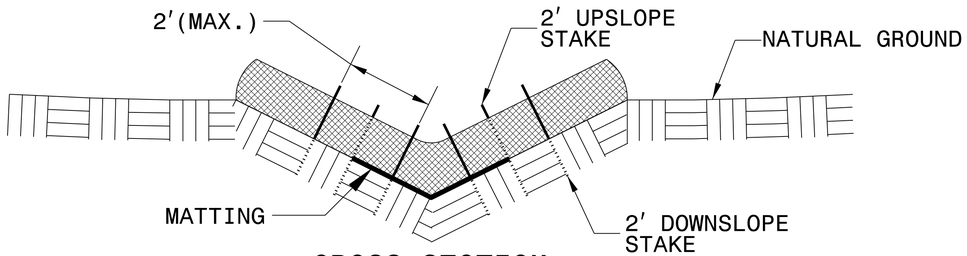
SIDE VIEW

PROJECT REFERENCE NO.	SHEET NO.
17BP.6.R.76	EC-2A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

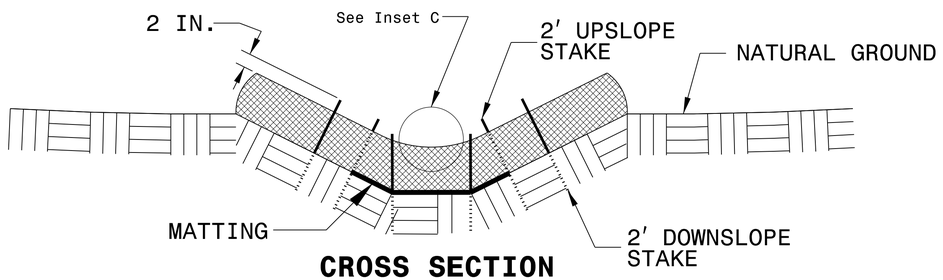
COIR FIBER WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



ISOMETRIC VIEW



CROSS SECTION VEE DITCH



CROSS SECTION TRAPEZOIDAL DITCH

NOTES:

USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE.

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

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

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

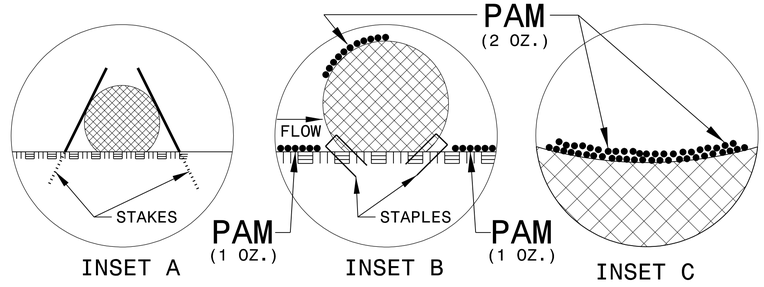
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

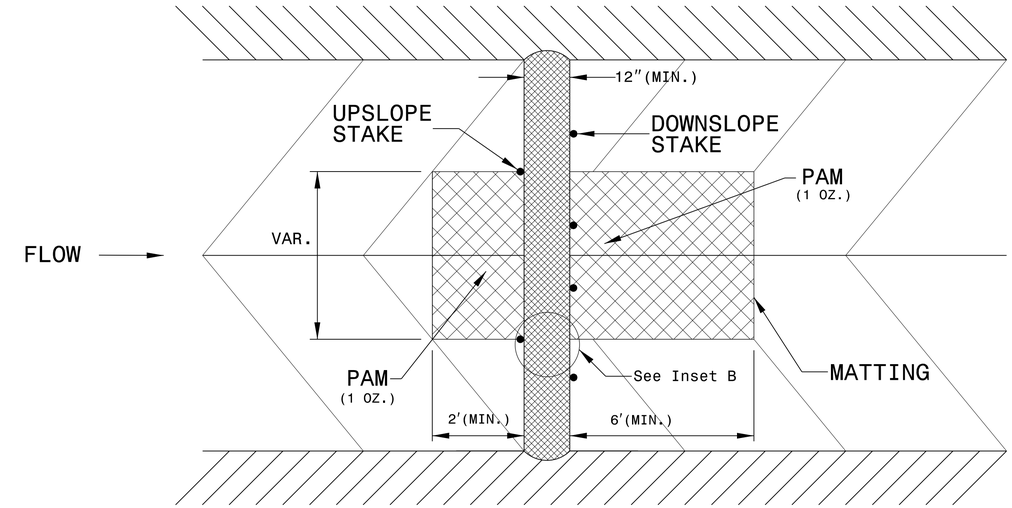
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

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

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

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





TOP VIEW

PROJECT REFERENCE NO.	SHEET NO.
17.BP.6.R.76	EC-3
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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.

8/17/99

REVISIONS

NOTE:
PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO COMMENCEMENT OF CLEARING AND GRUBBING ACTIVITIES.

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 04

NOTE:
IMPERVIOUS DIKES MAY BE MODIFIED AND/OR ELIMINATED AS DIRECTED

NOTE:
UTILIZE SPECIAL STILLING BASIN(S) AS NEEDED

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

PROJECT REFERENCE NO.	SHEET NO.
17BP6.R.76	EC-04/CONST.04
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NC GRID
NAD 83/NA 2011

1

JUDY L. LOCKLEAR, LINDA L. CLARK,
RUDY LOCKLEAR, DIANE L. GOINS
AND BONNIE L. DEESE
DB 735 PG 555

3

CHARLES ANDREW SCOTT
DB 1858 PG 682

BEGIN BRIDGE
-L- POT STA 12+87.38

BEGIN APPROACH SLAB
-L- POT STA 12+76.50

END BRIDGE
-L- POT STA 13+54.63

END APPROACH SLAB
-L- POT STA 13+65.50

-L- POT Sta. 10+00.00

SILT FENCE WATTLE BREAK (TYP.)

TEMPORARY SILT FENCE (TYP.)

MODIFIED CONCRETE FLUME

BEGIN MODIFIED CONCRETE FLUME (TYP.)

CLASS II RIP RAP (STR. PAY ITEM)

IMPERVIOUS DIKE

26' INC

13'

60.00'

N 35°03'08.5" E

SR 1515 UNION CHAPEL RD 22' BST

EXISTING R/W

WOODS

BRUSH LINE

BURNT SWAMP

BURNT SWAMP (NOT FLOWING)

HIGHWAY SWAMP (NOT FLOWING)

CFW

GREU TL-3

TYPE III

4'-5" FDPS

2' FDPS

4' FDPS

30'-10"

BEGIN PROJECT
-L- POT STA 10+90.00
BEGIN MILLING

END MILLING
BEGIN FULL DEPTH PAVING
-L- POT STA 11+88.50

MODIFIED CONCRETE FLUME

BM#1
-BL- STA. 22+24.08
51.88' RIGHT
ELEV=153.51'
"BENCHTIE NAIL SET IN 10" PINE TREE"

2

PAISLEY DAVID LOCKLEAR ET UX,
CAROLYN L. LOCKLEAR
DB 719 PG 303

CHARLES ANDREW SCOTT
DB 1858 PG 682

3

MATCHLINE SEE SHEET EC-05
-L- STA 14+50

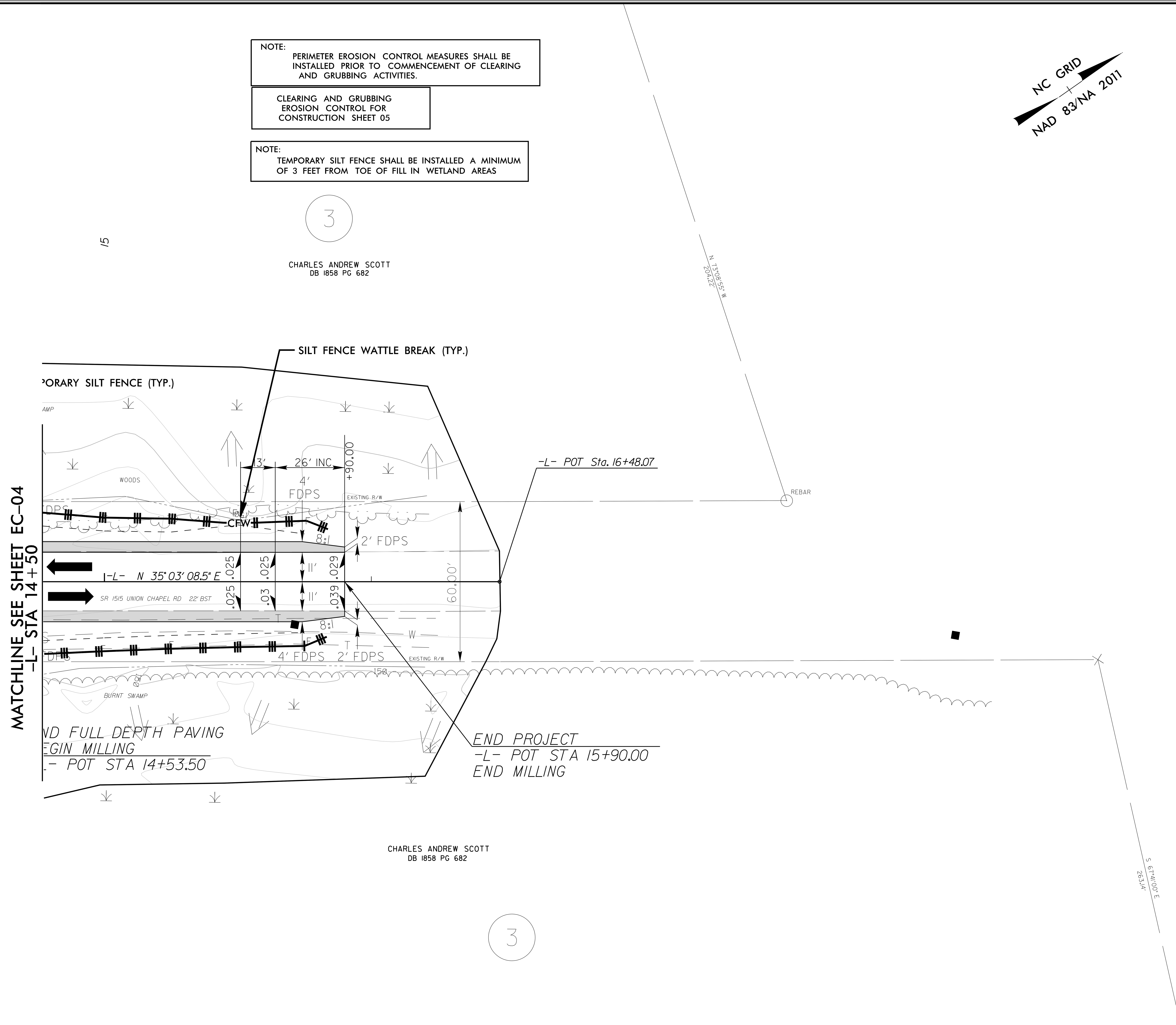
17-OCT-2019 13:12
R:\Hydraulics\ADD\PSH\EC\17BP.6.R.76_EC_psh_4.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
17BP.6.R.76	EC-05/CONST.05
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NOTE:
PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO COMMENCEMENT OF CLEARING AND GRUBBING ACTIVITIES.

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 05

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



REVISIONS

8/17/99

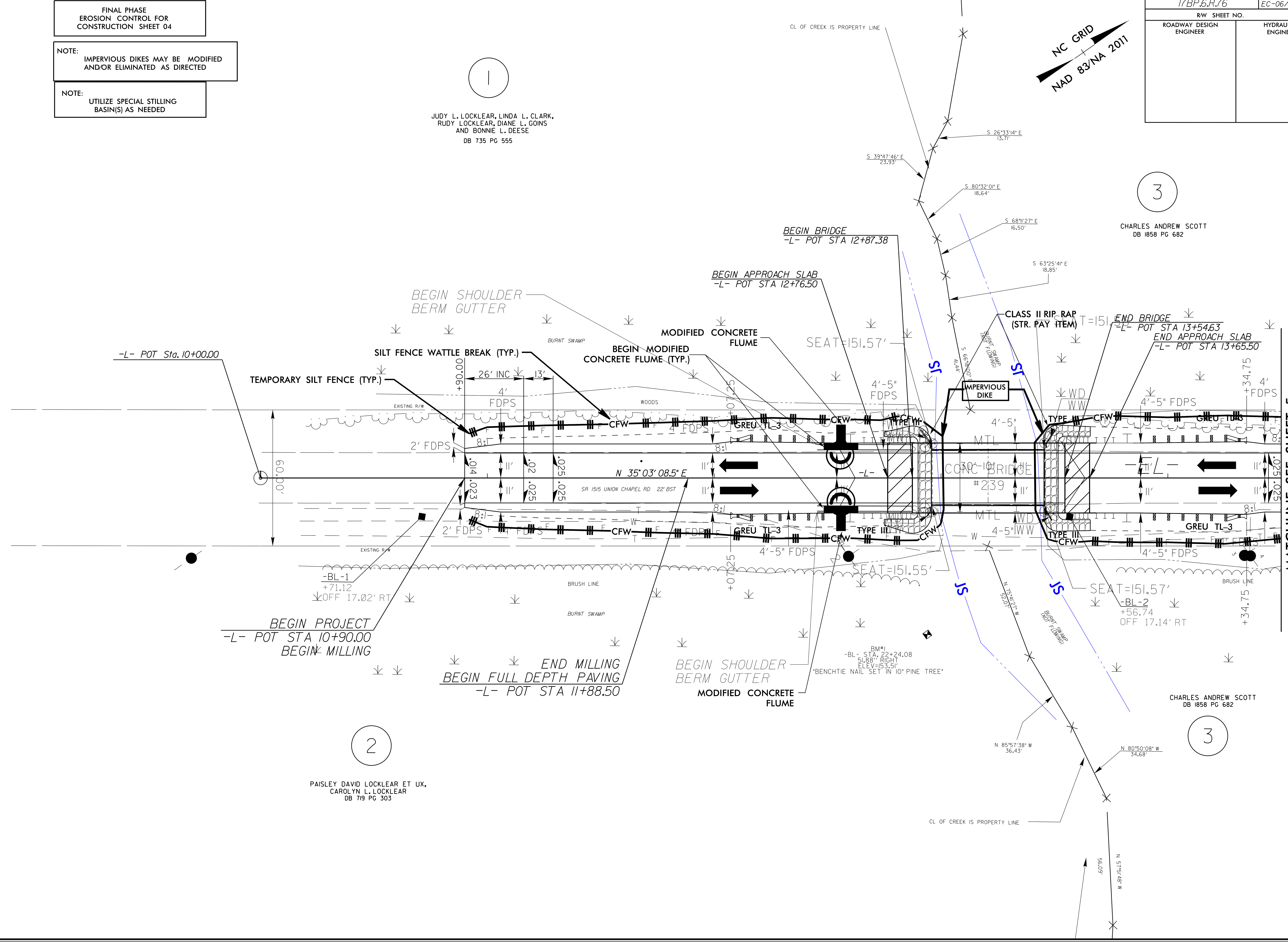
17-OCT-2019 14:49

PROJECT REFERENCE NO.	SHEET NO.
17BP.6.R.76	EC-06/CONST.04
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

FINAL PHASE
EROSION CONTROL FOR
CONSTRUCTION SHEET 04

NOTE:
IMPERVIOUS DIKES MAY BE MODIFIED AND/OR ELIMINATED AS DIRECTED

NOTE:
UTILIZE SPECIAL STILLING BASIN(S) AS NEEDED



NC GRID
NAD 83/NA 2011
1
JUDY L. LOCKLEAR, LINDA L. CLARK, RUDY LOCKLEAR, DIANE L. GOINS AND BONNIE L. DEESE
DB 735 PG 555
2
PAISLEY DAVID LOCKLEAR ET UX, CAROLYN L. LOCKLEAR
DB 719 PG 303
3
CHARLES ANDREW SCOTT
DB 1858 PG 682
CL OF CREEK IS PROPERTY LINE
S 26°33'14" E 13.71'
S 39°47'46" E 23.93'
S 80°32'01" E 18.64'
S 68°11'27" E 16.50'
S 63°25'41" E 18.85'
N 85°57'38" W 36.43'
N 80°50'08" W 34.68'
BEGIN BRIDGE -L- POT STA 12+87.38
BEGIN APPROACH SLAB -L- POT STA 12+76.50
END BRIDGE -L- POT STA 13+54.63
END APPROACH SLAB -L- POT STA 13+65.50
CLASS II RIP RAP (STR. PAY ITEM)
IMPERVIOUS DIKE
BEGIN SHOULDER BERM GUTTER
MODIFIED CONCRETE FLUME
BEGIN MODIFIED CONCRETE FLUME (TYP.)
SILT FENCE WATTLE BREAK (TYP.)
TEMPORARY SILT FENCE (TYP.)
-L- POT Sta. 10+00.00
SEAT=151.57'
SEAT=151.55'
30"-10" CONC BRIDGE #239
N 35° 03' 08.5" E
SR 1515 UNION CHAPEL RD 22' BST
BURNT SWAMP
WOODS
BRUSH LINE
EXISTING R/W
4'-5" FDPS
2' FDPS
4' FDPS
GREU TL-3
TYPE III
CFW
MTL
60.00'
26' INC
13'
-BL-1 +71.12 OFF 17.02' RT
-BL-2 +56.74 OFF 17.14' RT
BEGIN PROJECT -L- POT STA 10+90.00 BEGIN MILLING
END MILLING BEGIN FULL DEPTH PAVING -L- POT STA 11+88.50
BM#1 -BL- STA. 22+24.08 51.88' RIGHT ELEV=153.51' "BENCHTIE NAIL SET IN 10" PINE TREE"
MATCHLINE SEE SHEET 5 -L- STA 14+50

REVISIONS

8/17/99

17-OCT-2019 14:32
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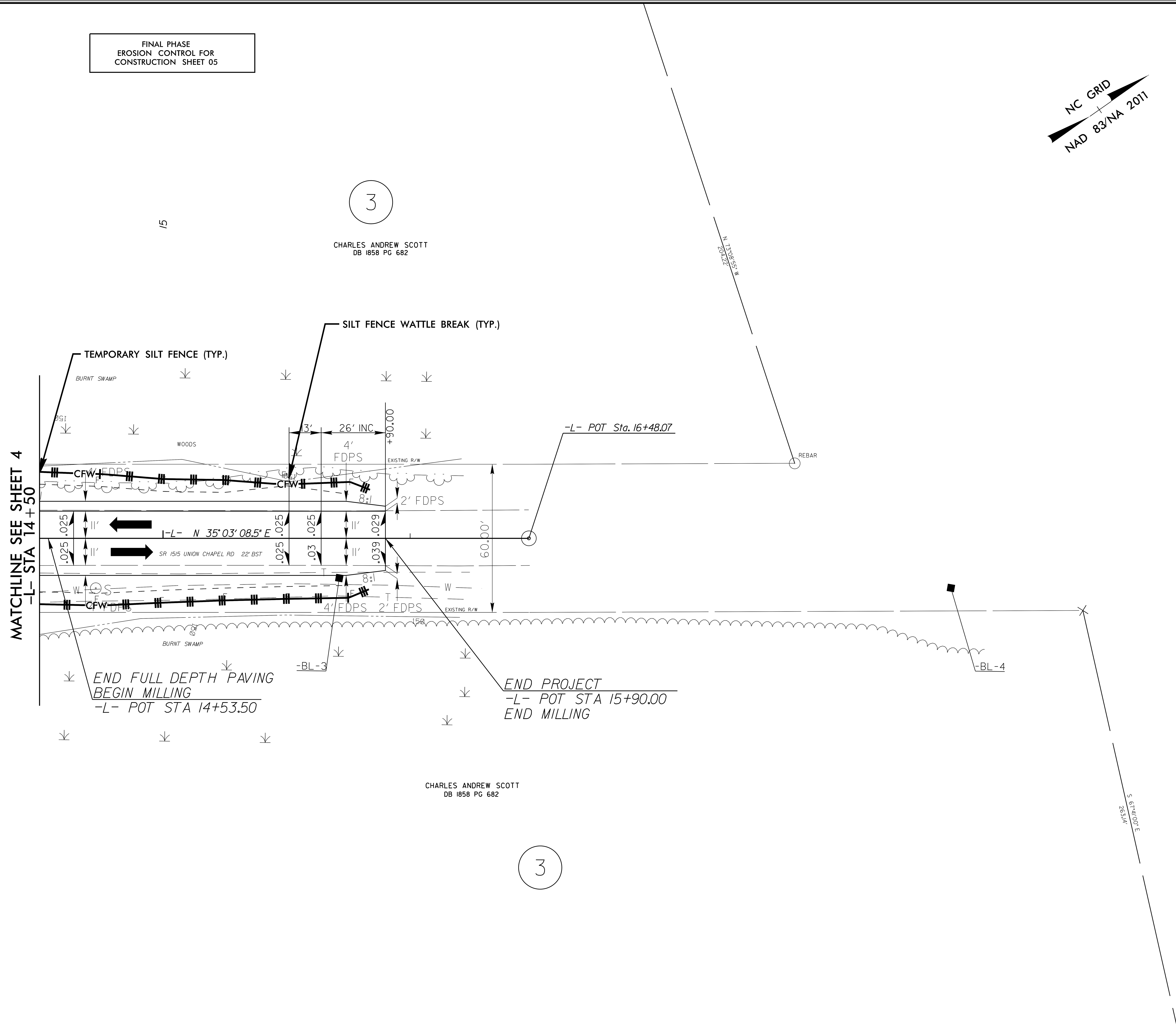
FINAL PHASE
EROSION CONTROL FOR
CONSTRUCTION SHEET 05

PROJECT REFERENCE NO.	SHEET NO.
17BP.6.R.76	EC-07/CONST.05
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER


NC GRID
NAD 83/NA 2011
3
CHARLES ANDREW SCOTT
DB 1858 PG 682
TEMPORARY SILT FENCE (TYP.)
SILT FENCE WATTLE BREAK (TYP.)
BURNT SWAMP
WOODS
13'
26' INC
4' FDPS
+90.00
EXISTING R/W
-L- POT Sta. 16+48.07
REBAR
CFW
2' FDPS
8:1
11'
-L- N 35° 03' 08.5" E
SR 1515 UNION CHAPEL RD 22' BST
.025
.03
.029
.039
60.00'
MATCHLINE SEE SHEET 4
-L- STA 14+50
4' FDPS 2' FDPS
-BL-3
-BL-4
END FULL DEPTH PAVING
BEGIN MILLING
-L- POT STA 14+53.50
END PROJECT
-L- POT STA 15+90.00
END MILLING
CHARLES ANDREW SCOTT
DB 1858 PG 682
3

REVISIONS

8/17/99

17-OCT-2019 14:34
R:\Hydraulics\CADD\PSH\EC\17BP.6.R.76_EC_psh_7.dgn

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.6.R.76	UO-1	3

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

DIVISION OF HIGHWAYS

ROBESON COUNTY

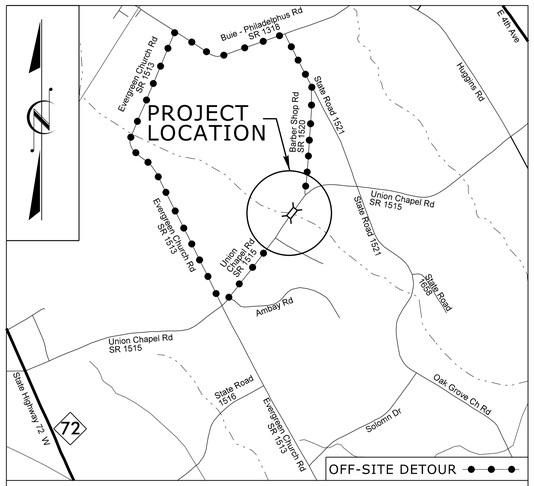
LOCATION: BRIDGE NO. 770239 UNION CHAPEL ROAD (SR 1515) OVER BURNT SWAMP

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

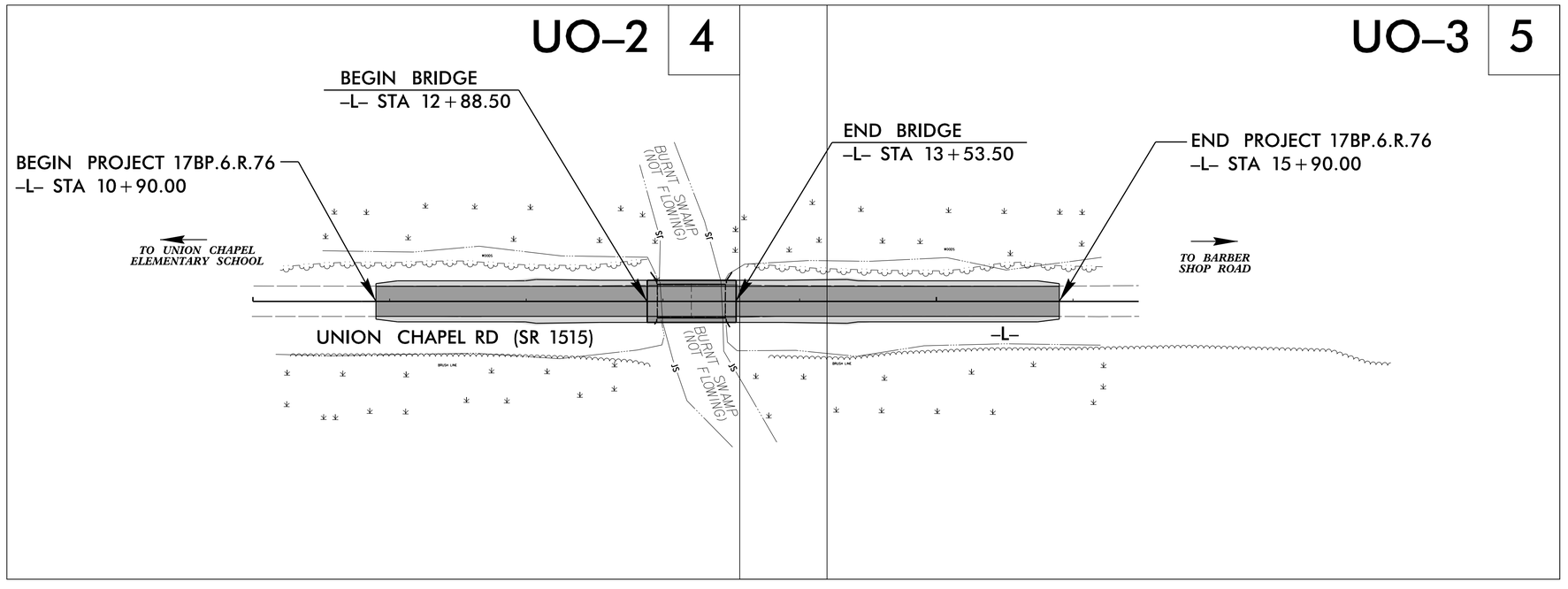
NAD 83 / NA 2011

PROJECT: 17BP.6.R.76

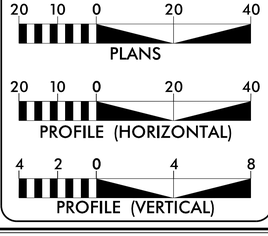
CONTRACT:



VICINITY MAP



GRAPHIC SCALES



INDEX OF UTILITY SHEETS

SHEET NO.	DESCRIPTION
UO–1	TITLE SHEET
UO–2 THRU UO–3	UTILITY PLAN SHEETS

Prepared in the Office of:
ATKINS
1616 E. MILLBROOK ROAD, SUITE #160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
AUGUST 15, 2018

LETTING DATE:
APRIL 17, 2019

BRUCE PAYNE, P.E.
PROJECT ENGINEER

IAN BERDEAU, P.E.
PROJECT DESIGN ENGINEER

CHRISTY WRIGHT HUFF, P.E.
NCDOT CONTACT

UTILITY OWNERS

POWER OVERHEAD – ENERGY UNITED

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

09-AUG-2018 17:29
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$$$$USERNAME$$$$
09/08/99

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
17BP6.R.76	U0-2
R/W SHEET NO.	

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "GPS-101"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 352127.092(ft) EASTING: 1961547.483(ft)
ELEVATION: 152.10(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99991374
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS101" TO -L- STATION 10+15.00 IS 194.4355' AT A BEARING OF N 29°57'29.87" E
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAD 83/2011

NC GRID
NAD 83/NA 2011

CL OF CREEK IS PROPERTY LINE

(1)
JUDY L. LOCKLEAR, LINDA L. CLARK, RUDY LOCKLEAR, DIANE L. GOINS AND BONNIE L. DEESE
DB 735 PG 555

S 26°33'14" E 13.71'
S 39°47'46" E 23.93'
S 80°32'01" E 18.64'
S 68°11'27" E 16.50'
S 63°25'41" E 18.85'
S 66°18'00" E 41.44'

CHARLES ANDREW SCOTT
DB 1858 PG 682
(3)

BEGIN BRIDGE
-L- POT STA 12+88.50

BEGIN APPROACH SLAB
-L- POT STA 12+76.50

END BRIDGE
-L- POT STA 13+53.50

END APPROACH SLAB
-L- POT STA 13+65.50

-L- POT Sta. 10+00.00

BURNT SWAMP
WOODS
EXISTING R/W
BRUSH LINE
BURNT SWAMP NOT FLOWING

PDE
PDE
PDE
18"
18" RCP-V
-L-

GREU TL-3
TYPE III
GREU TL-3
TYPE III
GREU TL-3
TYPE III

N 35°03'08.5" E
SR 1515 UNION CHAPEL RD 22' BST

JS
JS
N 75°41'27" W 32.07'

N 85°57'38" W 36.43'
N 80°50'08" W 34.68'

CL OF CREEK IS PROPERTY LINE

BEGIN CONSTRUCTION
-L- POT STA 10+90.00
BEGIN MILLING

END MILLING
BEGIN FULL DEPTH PAVING
-L- POT STA 11+88.50

AT&T TELEPHONE CABLE TO BE MOVED ONCE THE GUARDRAIL HAS BEEN STAKED IN THE FIELD

ROBESON COUNTY WATERLINE WILL BE MOVED IF IT IS DETERMINED THAT THE GUARDRAIL CANNOT BE INSTALLED WITHOUT IMPACTING THE WATERLINE.

(2)
PAISLEY DAVID LOCKLEAR ET UX, CAROLYN L. LOCKLEAR
DB 719 PG 303

(3)
CHARLES ANDREW SCOTT
DB 1858 PG 682

MATCHLINE SEE SHEET U0-3
-L- STA 14+50

PAVED SHOULDER

SEE SHEET 6 FOR PROFILE VIEW
SEE SHEET S-I THRU S-X FOR STRUCTURE PLANS

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.6.R.76	U0-3
R/W SHEET NO.	

NC GRID
NAD 83/NA 2011

15

3
CHARLES ANDREW SCOTT
DB 1858 PG 682

N 73°08'55" W
204.22'

BURNT SWAMP

WOODS

EXISTING R/W

-L- POT Sta. 16+48.07

REBAR

MATCHLINE SEE SHEET U0-2
-L- STA 14+50

-L- N 35°03'08.5" E

SR 1515 UNION CHAPEL RD 22' BST

60.00'

EXISTING R/W

BURNT SWAMP

END FULL DEPTH PAVING
BEGIN MILLING
-L- POT STA 14+53.50

END CONSTRUCTION
-L- POT STA 15+90.00
END MILLING

3
CHARLES ANDREW SCOTT
DB 1858 PG 682

S 67°41'00" E
263.41'

PAVED SHOULDER

SEE SHEET 6 FOR PROFILE VIEW

08-AUG-2018 17:29
U3_Construction\Roadway\NCDOT\Division06\17BP.6.R.76\Utilities\17BP.6.R.76_rdy_psh_U0-3.dgn
$$$$USERNAME$$$$

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CROSS SECTON INDEX SHEET

Chain	Beg Sta	End Sta	LOC	Sheet No.	Comments / Log File
-L-	11+00	15+75		X-1 TO X-7	

Chain	Beg Sta	End Sta	LOC	Sheet No.	Comments / Log File

PROJ. REFERENCE NO.	SHEET NO.
17BP.6.R.76	X–1B

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CROSS-SECTION SUMMARY

NOTE: Embankment does not include backfill for undercut.

Station	Uncl. Exc.	Undercut	Embt	Station	Uncl. Exc.	Undercut	Embt	Station	Uncl. Exc.	Undercut	Embt	Station	Uncl. Exc.	Undercut	Embt
-L-	(cu. yd.)	(cu. yd.)	(cu. yd.)		(cu. yd.)	(cu. yd.)	(cu. yd.)		(cu. yd.)	(cu. yd.)	(cu. yd.)		(cu. yd.)	(cu. yd.)	(cu. yd.)
10+90.00	0	0	0												
11+00.00	1	0	0												
11+25.00	5	0	0												
11+50.00	5	0	0												
11+75.00	7	0	1												
12+00.00	7	0	2												
12+25.00	3	0	4												
12+50.00	3	0	4												
12+75.00	4	0	3												
12+87.38	3	0	1												
13+00.00	0	0	0												
13+25.00	0	0	0												
13+50.00	0	0	0												
13+54.63	0	0	0												
13+75.00	0	0	13												
14+00.00	0	0	19												
14+25.00	0	0	23												
14+50.00	0	0	24												
14+75.00	0	0	17												
15+00.00	0	0	9												
15+25.00	0	0	5												
15+50.00	1	0	3												
15+75.00	3	0	2												
15+90.00	1	0	0												

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

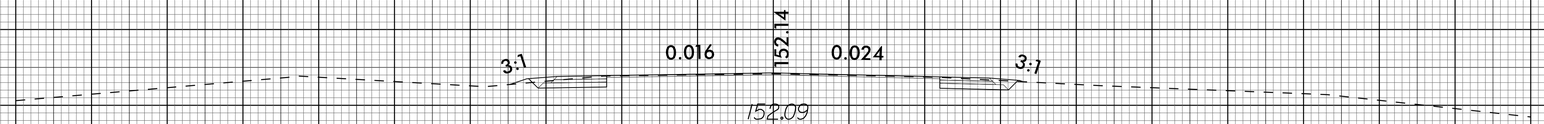
6/23/16

PROJ. REFERENCE NO.	SHEET NO.
17BP.6.R.76	X-1

0 2.5 5

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

160
155
150
145



152.09
11+00.00

BEGIN PROJECT
–L– STA. 10+90.00

152.11
10+75.00

152.17
10+50.00

152.23
10+25.00

Note: "Quantities are approximate only. The Resident Engineer will re–cross–section the work accurately when the project is staked out. These cross–section notes will be used in computing the final quantities for which the contractor will be paid."

28-JAN-2019 09:01
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6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
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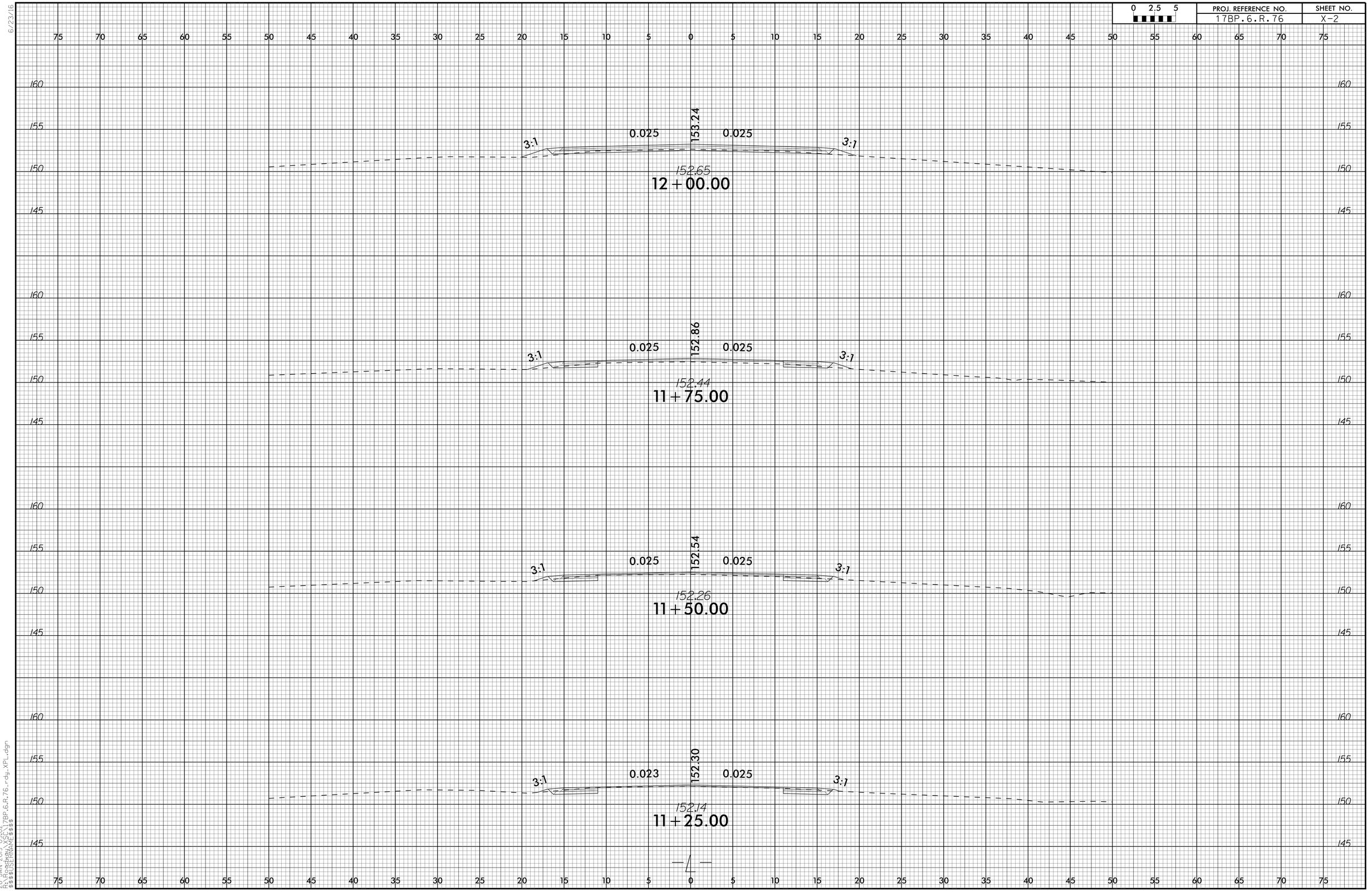

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6/23/16

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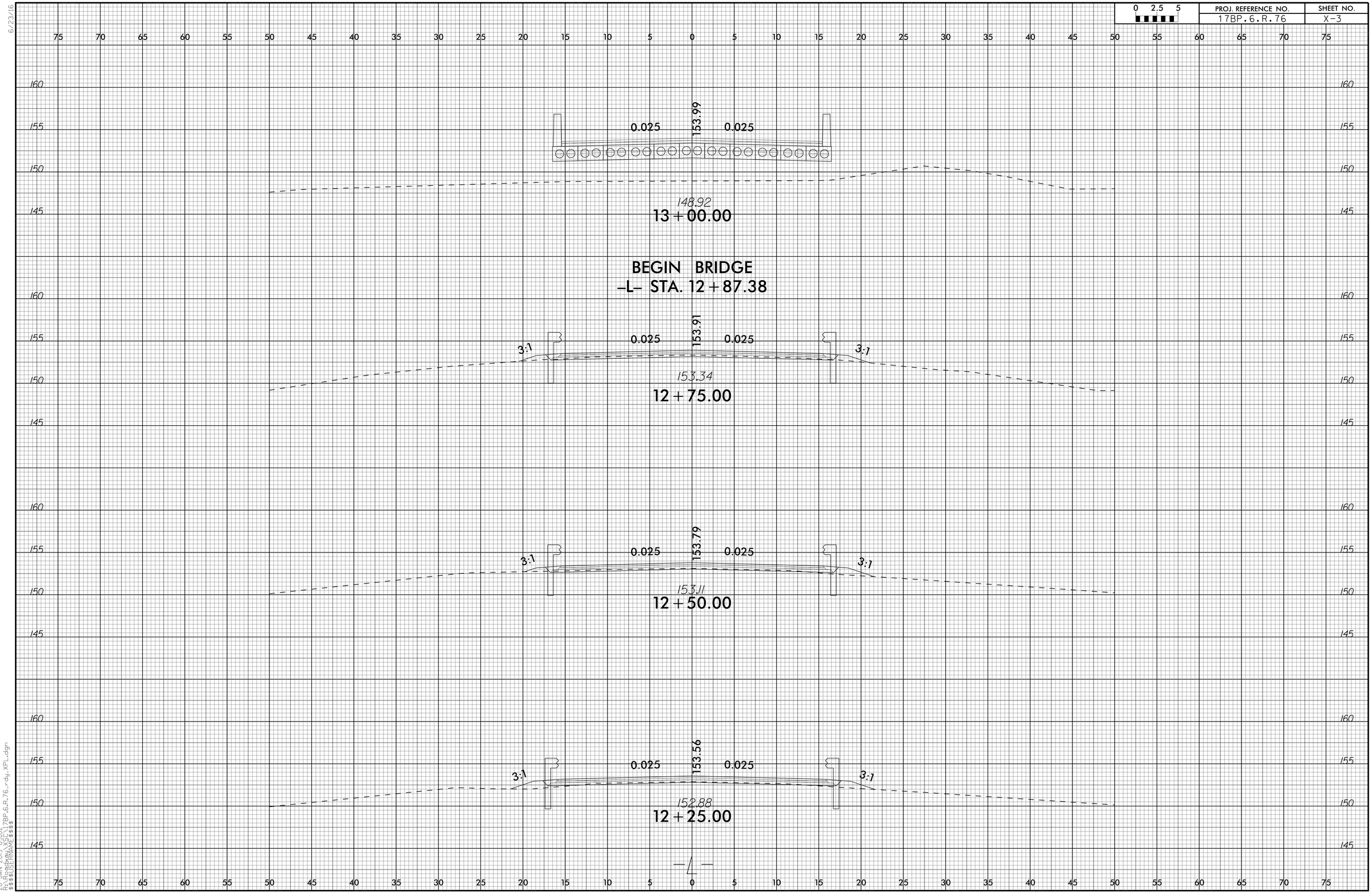

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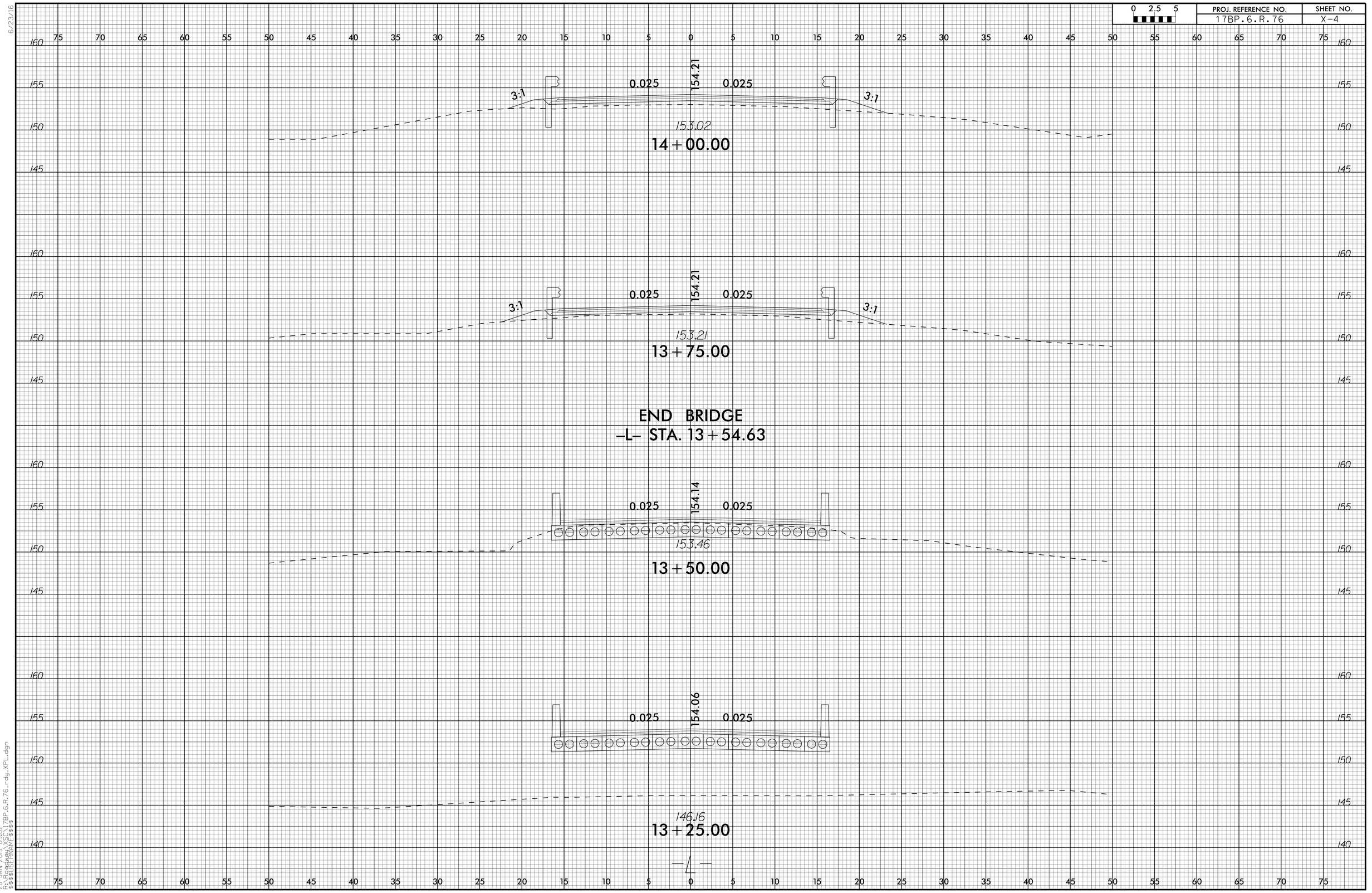

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
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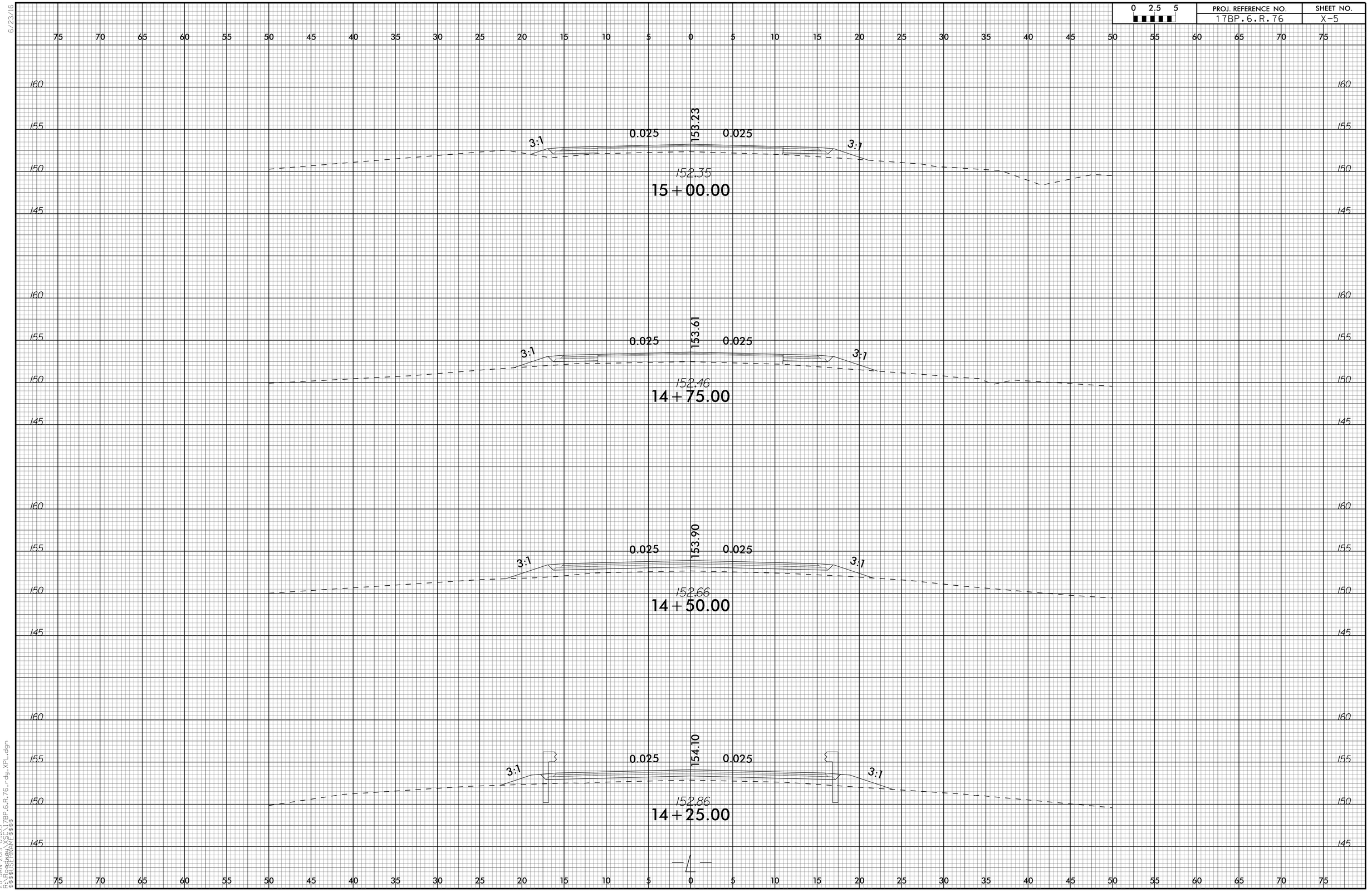

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0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.6.R.76	X-6

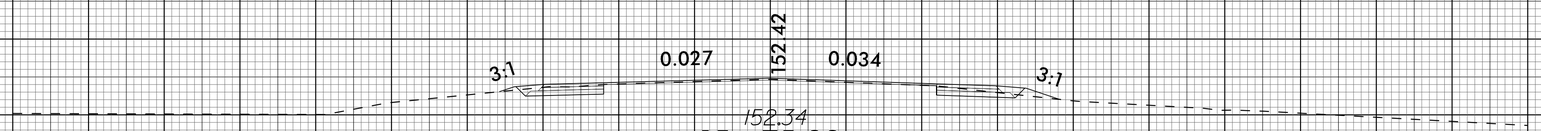
75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

155 150 145

152.32
16+00.00

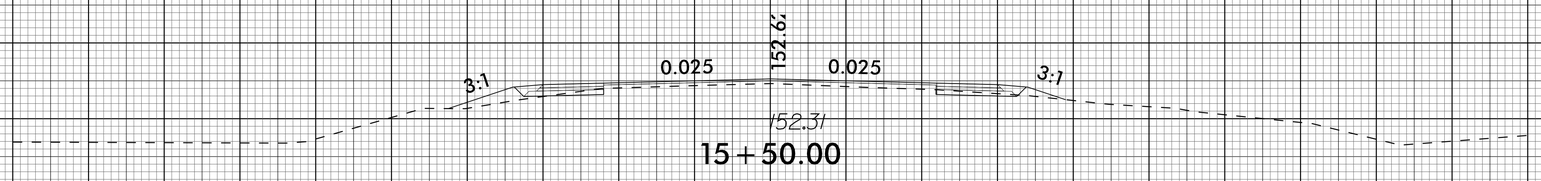
END PROJECT
–L– STA. 15+90.00

160 155 150 145



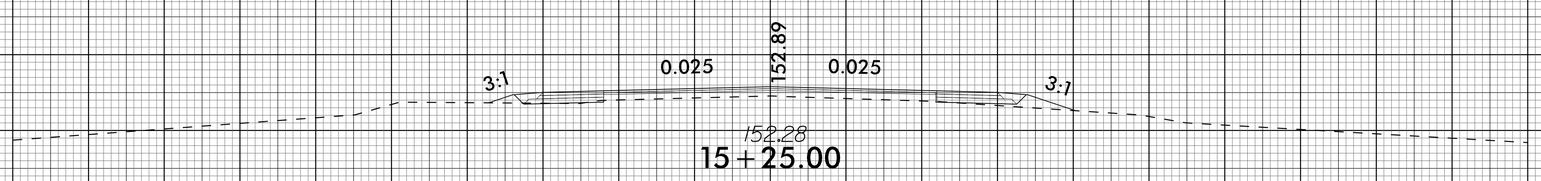
152.34
15+75.00

160 155 150 145



152.31
15+50.00

160 155 150 145



152.28
15+25.00

160 155 150 145

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	17BP.6.R.76	X-7

6/23/16

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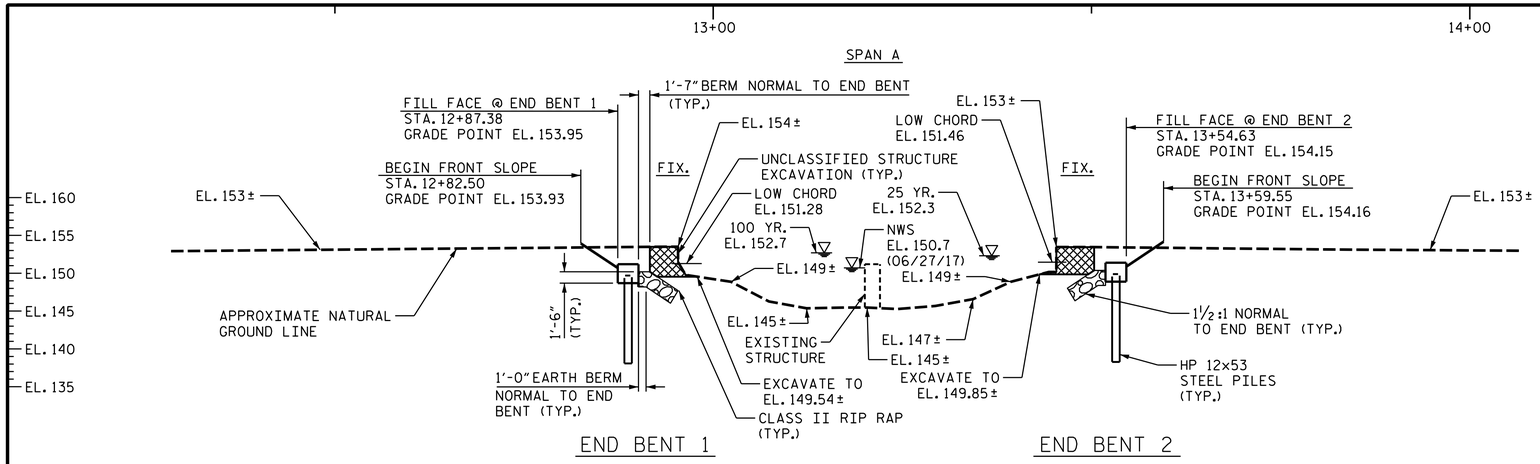


SECTION ALONG -L-

(+)0.3000%

P.I. 12+35.00
EL. 153.79
V.C. = 80'

P.I. 14+25.00
EL. 154.36
V.C. = 115'

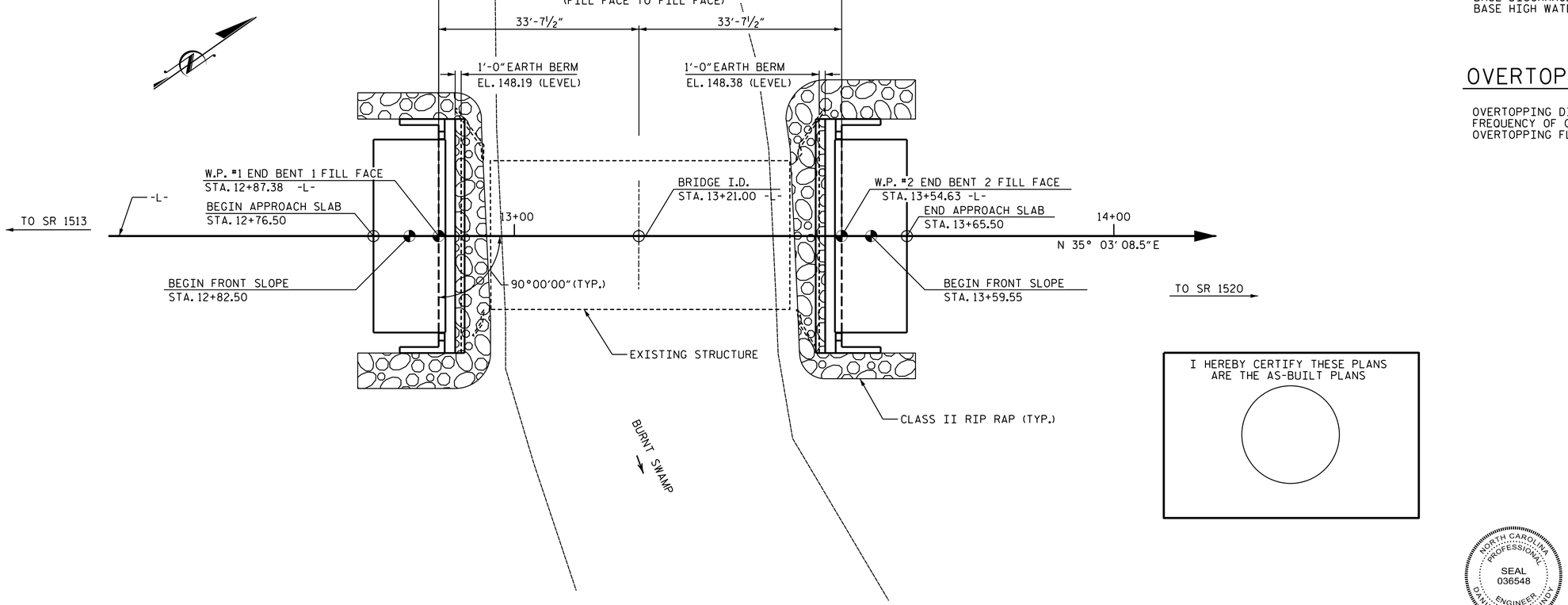
GRADE DATA -L-

HYDRAULIC DATA

DESIGN DISCHARGE	= 870 CFS
FREQUENCY OF DESIGN FLOOD	= 25 YR.
DESIGN HIGH WATER ELEVATION	= 152.3 FT.
DRAINAGE AREA	= 8.06 SQ. MI.
BASE DISCHARGE (Q_{100})	= 1,300 CFS
BASE HIGH WATER ELEVATION	= 152.7 FT.

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 870 CFS
FREQUENCY OF OVERTOPPING FLOOD	= 25+/- YR.
OVERTOPPING FLOOD ELEVATION	= 152.1 FT.



PLAN

PILES NOT SHOWN FOR CLARITY

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

NORTH CAROLINA PROFESSIONAL SEAL 036548 ENGINEER DANIEL R. BURGUND

DocuSigned by: Daniel R Burgund 4/7/2019
14D5C9A37EEC4B7...

PREPARED IN THE OFFICE OF:
ATKINS
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

DRAWN BY :	CAB	DATE :	2/19
CHECKED BY :	FAO	DATE :	2/19
DESIGN ENGINEER OF RECORD:	DRB	DATE :	2/19

PROJECT NO. 17BP.6.R.76
ROBESON COUNTY
STATION: 13+21.00 -L-

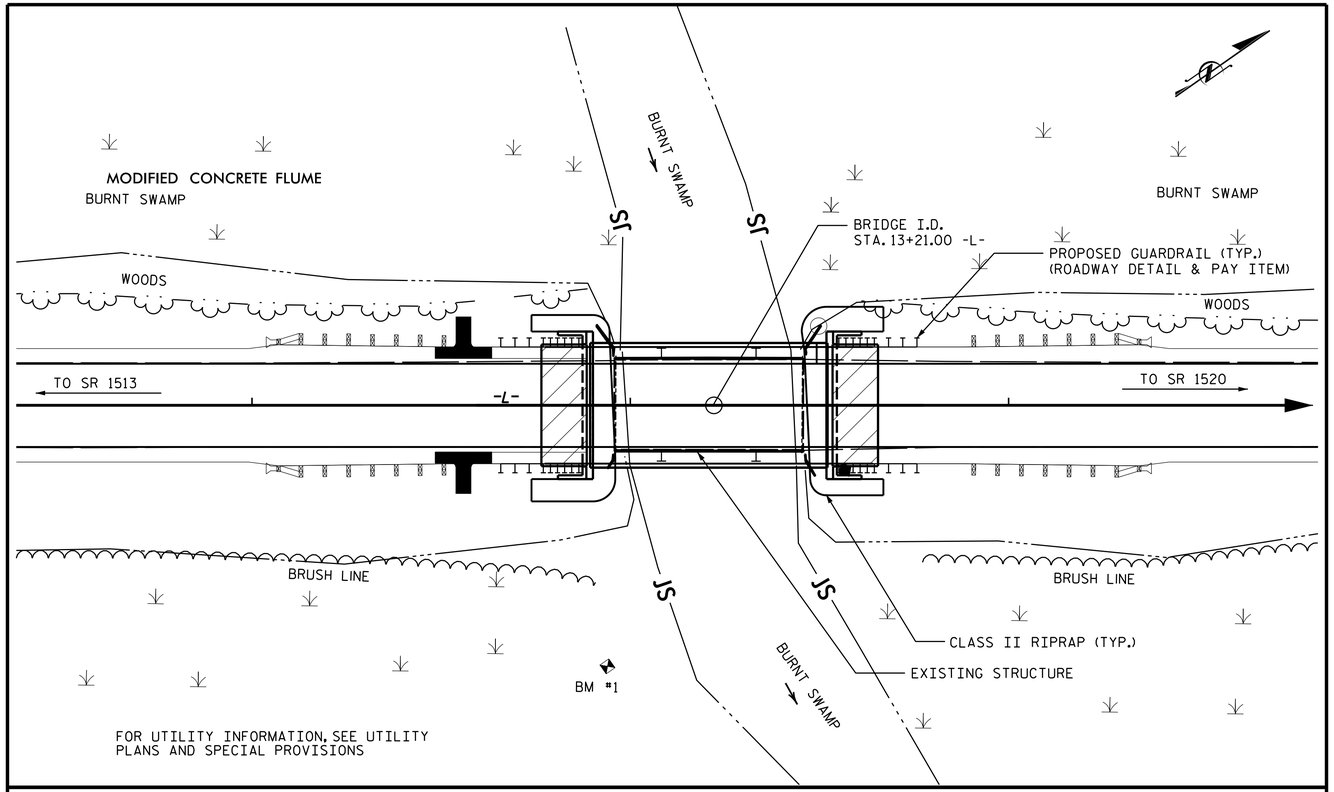
SHEET 1 OF 2 REPLACES BRIDGE NO. 239

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON SR 1515 (UNION CHAPEL ROAD) OVER BURNT SWAMP BETWEEN SR 1520 AND SR 1513

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

BM#1: BENCH TIE NAIL SET IN 10" PINE TREE
AT STA. 12+93.96 -L-, 69' RT. EL 153.51'



LOCATION SKETCH

GENERAL NOTES:

ASSUMED LIVE LOAD = HL93 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 FRAME 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 13+21.00."

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET S-1 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) 25'-6" SPANS; 25'-3" OUT-TO-OUT WIDTH ON PPC CAPS ON TIMBER PILES AND LOCATED ON THE SAME ALIGNMENT AS THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE BRIDGE PROJECT.

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

REMOVE OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

THE STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC18-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.

FOUNDATION NOTES:

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATION.

PILES AT END BENTS NO. 1 AND 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 80 TONS PER PILE.

DRIVE PILES AT END BENTS NO. 1 AND 2 TO A REQUIRED DRIVING RESISTANCE OF 135 TONS PER PILE.

TESTING PILES WITH THE PDA DURING DRIVING, RESTRIKING, OR REDRIVING MAY BE REQUIRED. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE AT STA. 13+21.00	ASBESTOS ASSESMENT	PDA TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	HP 12x53 STEEL PILES		PILE REDRIVES	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTROMERIC BEARINGS	3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLABS	
	LUMP SUM	LUMP SUM	EA.	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	EA.	NO.	LIN. FT.	EA.	LIN. FT.	TON	SQ. YDS.	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE						LUMP SUM						130.25				11	715
END BENT 1					14.4		2155	7	7	427	4		46	51			
END BENT 2					14.4		2155	7	7	392	4		46	51			
TOTAL	LUMP SUM	LUMP SUM	1	LUMP SUM	28.8	LUMP SUM	4310	14	14	819	8	130.25	92	102	LUMP SUM	11	715

PREPARED IN THE OFFICE OF:
ATKINS
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

DRAWN BY : CAB DATE : 2/19
CHECKED BY : FAQ DATE : 2/19
DESIGN ENGINEER OF RECORD : DRB DATE : 2/19

NORTH CAROLINA PROFESSIONAL SEAL 036548 ENGINEER DANIEL R. BURGUND
DocuSigned by: Daniel R Burgund 2/7/2019
14D5C9A37EEC4B7...

PROJECT NO. 17BP.6.R.76
ROBESON COUNTY
STATION: 13+21.00 -L-

SHEET 2 OF 2 REPLACES BRIDGE NO. 239

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON SR 1515
(UNION CHAPEL ROAD) OVER
BURNT SWAMP BETWEEN
SR 1520 AND SR 1513

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

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**	1.018	--	1.75	0.274	1.05	65'	EL	32	0.513	1.2	65'	EL	6.4	0.80	0.274	**1.02**	65'	EL	**32**	
		HL-93(Opr)	N/A	--	1.358	--	1.35	0.274	1.36	65'	EL	32	0.513	1.56	65'	EL	6.4	N/A	--	--	--	--	--	
		HS-20(Inv)	36.000	**2**	1.306	47.014	1.75	0.274	1.34	65'	EL	32	0.513	1.48	65'	EL	6.4	0.80	0.274	**1.31**	65'	EL	**32**	
		HS-20(Opr)	36.000	--	1.742	62.706	1.35	0.274	1.74	65'	EL	32	0.513	1.92	65'	EL	6.4	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.868	38.725	1.4	0.274	3.69	65'	EL	32	0.513	4.33	65'	EL	6.4	0.80	0.274	2.87	65'	EL	32	
		SNGARBS2	20.000	--	2.171	43.424	1.4	0.274	2.79	65'	EL	32	0.513	3.11	65'	EL	6.4	0.80	0.274	2.17	65'	EL	32	
		SNAGRIS2	22.000	--	2.071	45.552	1.4	0.274	2.66	65'	EL	32	0.513	2.89	65'	EL	6.4	0.80	0.274	2.07	65'	EL	32	
		SNCOTTS3	27.250	--	1.428	38.924	1.4	0.274	1.84	65'	EL	32	0.513	2.17	65'	EL	6.4	0.80	0.274	1.43	65'	EL	32	
		SNAGGRS4	34.925	--	1.206	42.136	1.4	0.274	1.55	65'	EL	32	0.513	1.81	65'	EL	6.4	0.80	0.274	1.21	65'	EL	32	
		SNS5A	35.550	--	1.179	41.911	1.4	0.274	1.52	65'	EL	32	0.513	1.85	65'	EL	6.4	0.80	0.274	1.18	65'	EL	32	
		SNS6A	39.950	--	1.087	43.43	1.4	0.274	1.4	65'	EL	32	0.513	1.69	65'	EL	6.4	0.80	0.274	1.09	65'	EL	32	
		SNS7B	42.000	--	1.035	43.489	1.4	0.274	1.33	65'	EL	32	0.513	1.67	65'	EL	6.4	0.80	0.274	1.04	65'	EL	32	
	TTST	TNAGRIT3	33.000	--	1.327	43.8	1.4	0.274	1.71	65'	EL	32	0.513	2.01	65'	EL	6.4	0.80	0.274	1.33	65'	EL	32	
		TNT4A	33.075	--	1.335	44.142	1.4	0.274	1.72	65'	EL	32	0.513	1.95	65'	EL	6.4	0.80	0.274	1.33	65'	EL	32	
		TNT6A	41.600	--	1.096	45.613	1.4	0.274	1.41	65'	EL	32	0.513	1.8	65'	EL	6.4	0.80	0.274	1.10	65'	EL	32	
		TNT7A	42.000	--	1.105	46.4	1.4	0.274	1.42	65'	EL	32	0.513	1.74	65'	EL	6.4	0.80	0.274	1.10	65'	EL	32	
		TNT7B	42.000	--	1.15	48.298	1.4	0.274	1.48	65'	EL	32	0.513	1.62	65'	EL	6.4	0.80	0.274	1.15	65'	EL	32	
		TNAGRIT4	43.000	--	1.089	46.815	1.4	0.274	1.4	65'	EL	32	0.513	1.57	65'	EL	6.4	0.80	0.274	1.09	65'	EL	32	
		TNAGT5A	45.000	--	1.024	46.084	1.4	0.274	1.32	65'	EL	32	0.513	1.57	65'	EL	6.4	0.80	0.274	1.02	65'	EL	32	
		TNAGT5B	45.000	**3**	1.01	45.431	1.4	0.274	1.3	65'	EL	32	0.513	1.49	65'	EL	6.4	0.80	0.274	**1.01**	65'	EL	**32**	

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.

(#) CONTROLLING LOAD RATING

(1) DESIGN LOAD RATING (HL-93)

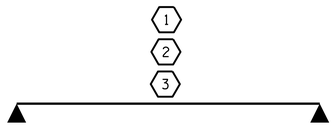
(2) DESIGN LOAD RATING (HS-20)

(3) LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY

PROJECT NO. 17BP.6.R.76

ROBESON COUNTY

STATION: 13+21.00 -L-

NORTH CAROLINA PROFESSIONAL SEAL 036548 ENGINEER DANIEL R BURGUND

DocuSigned by: Daniel R Burgundy 7/2019

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

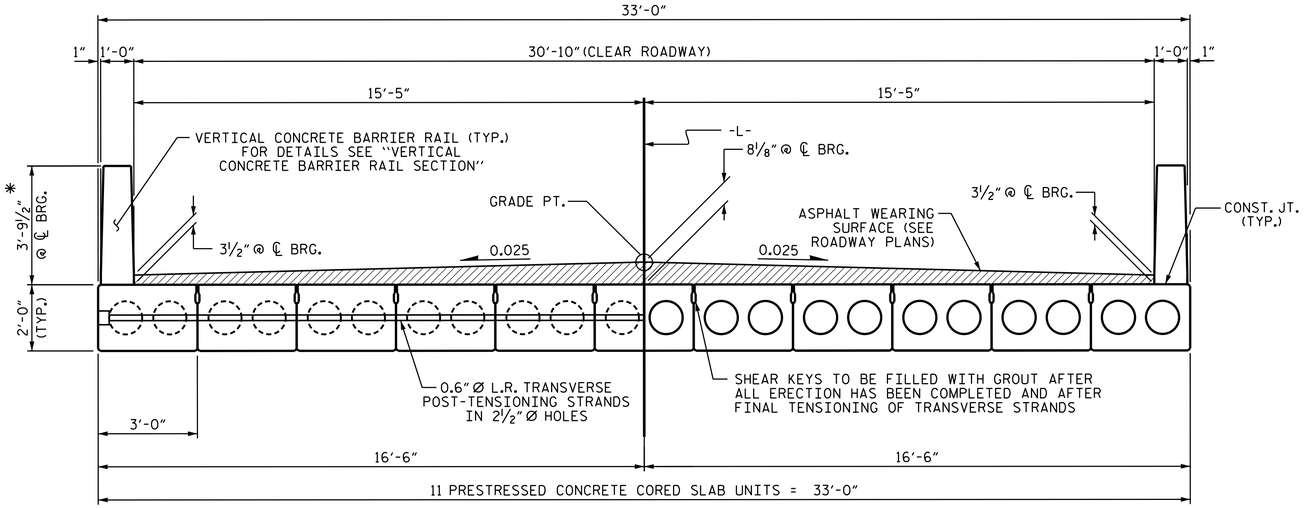
STANDARD

LRFR SUMMARY FOR 65' 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			13

STD. NO. LRFR1

ASSEMBLED BY :	MHR	DATE : 2/19	
CHECKED BY :	FAO	DATE : 2/19	
DRAWN BY : MAA 1/08	REV. 11/12/08RR	MAA/GM	
CHECKED BY : GM/DI 2/08	REV. 10/1/11	MAA/GM	
	REV. 12/17	MAA/THC	

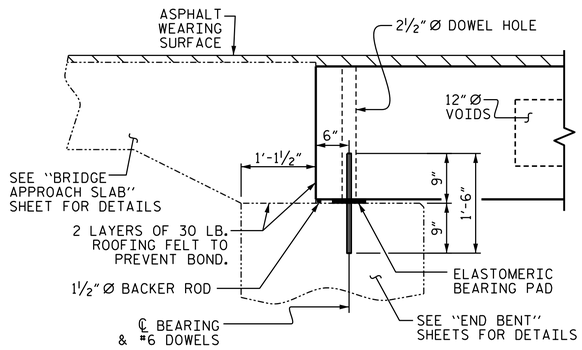


HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

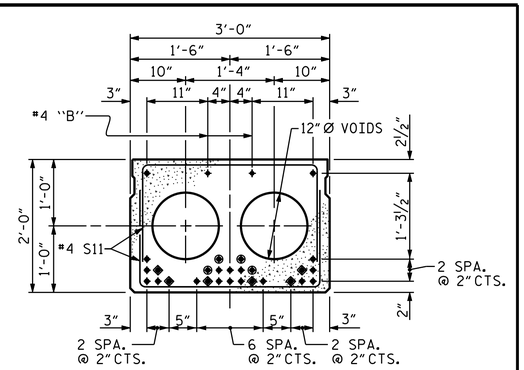
HALF SECTION
THROUGH VOIDS

* - 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.

TYPICAL SECTION



SECTION AT END BENT



INTERIOR SLAB SECTION (65′ UNIT)

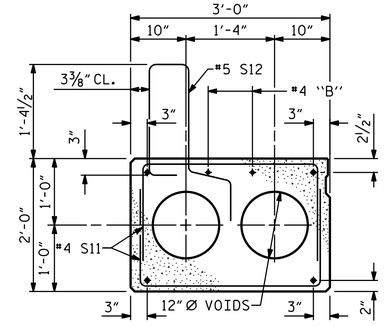
(24 STRANDS REQUIRED)

0.6'' Ø LOW RELAXATION STRAND LAYOUT

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

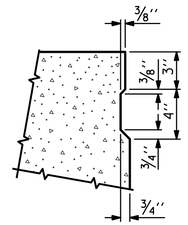
◉ OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED. IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE CORED SLAB UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND



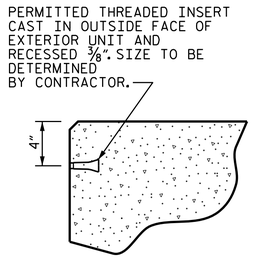
EXTERIOR SLAB SECTION

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

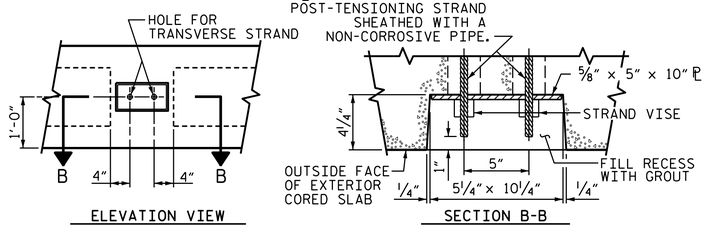


SHEAR KEY DETAIL

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



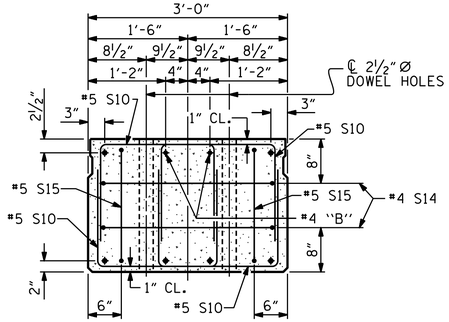
THREADED INSERT DETAIL



ELEVATION VIEW

SECTION B-B

GROUTED RECESS AT END OF POST-TENSIONED STRAND-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.

ASSEMBLED BY :	MHR	DATE :	2/19
CHECKED BY :	FAQ	DATE :	2/19
DRAWN BY : MAA	6/10	REV. 9/14	MAA/TMG
CHECKED BY : MKT	7/10		

PROJECT NO. 17BP.6.R.76

ROBESON COUNTY

STATION: 13+21.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
3′-0'' X 2′-0''
PRESTRESSED CONCRETE
CORED SLAB UNIT
90° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 036548 ENGINEER DANIEL R BURGUNDY
DocuSigned by: Daniel R Burgundy 2019
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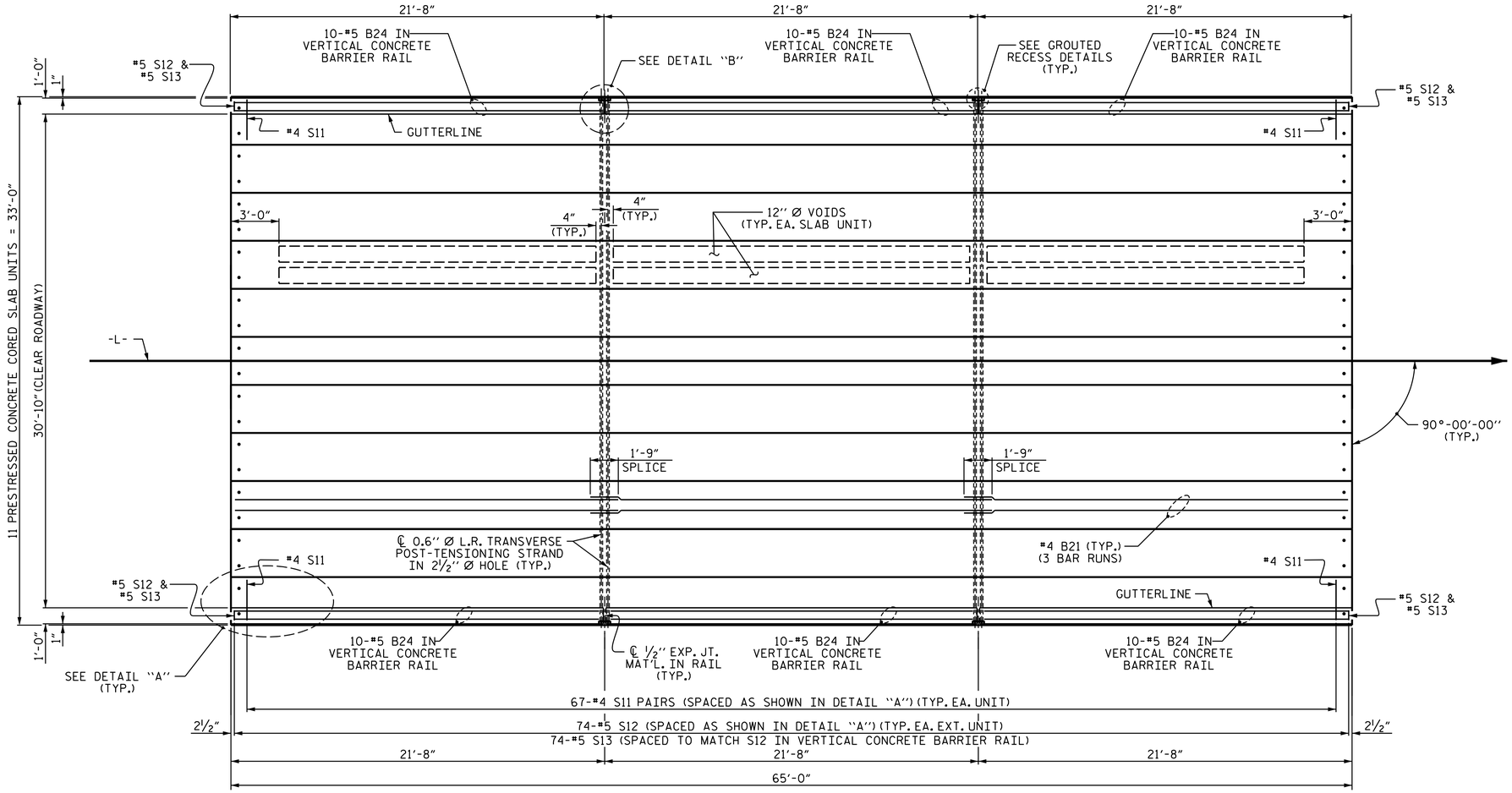
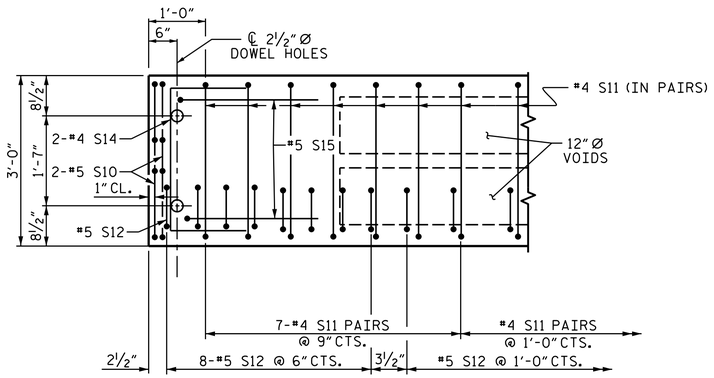
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			13

STD. NO. 24PCS4_33_90S

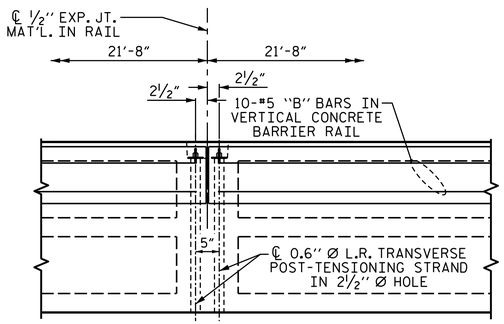


PLAN OF UNIT



DETAIL "A"

(TYPICAL EACH END OF UNIT)
NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S12 BARS.



DETAIL "B"

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

ASSEMBLED BY :	MHR	DATE :	2/19
CHECKED BY :	FAQ	DATE :	2/19
DRAWN BY : MAA	6/10	REV. 12/5/11	MAA/AAC
CHECKED BY : MKT	7/10	REV. 8/14	MAA/TMG

PROJECT NO. 17BP.6.R.76
ROBESON COUNTY
STATION: 13+21.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 65′ UNIT 30′-10″ CLEAR ROADWAY 90° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 036548 ENGINEER DANIEL R. BURGUNDY
DocuSigned by: Daniel R Burgundy 4/7/2019
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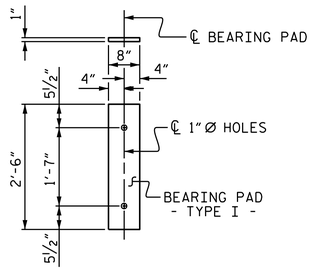
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			13

STD. NO. 24PCS_33_90S_65L



FIXED END
(TYPE I - 22 REQ'D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

CORED SLABS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
65' UNIT			
EXTERIOR C.S.	2	65'-0"	130'-0"
INTERIOR C.S.	9	65'-0"	585'-0"
TOTAL	11		715'-0"

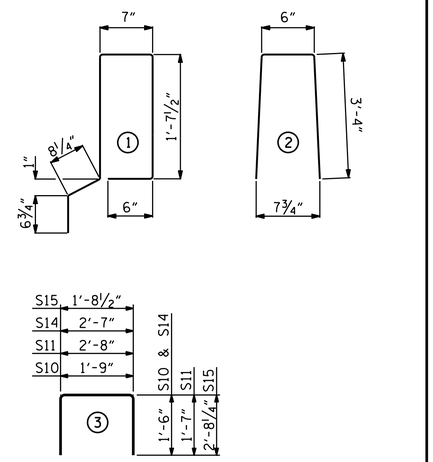
DEAD LOAD DEFLECTION AND CAMBER	
	3'-0" x 2'-0"
65' CORED SLAB UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1⅞" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	½" ↓
FINAL CAMBER	1⅜" ↑

** INCLUDES FUTURE WEARING SURFACE

BILL OF MATERIAL FOR ONE 65' CORED SLAB UNIT

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B21	6	#4	STR	22'-10"	92	22'-10"	92
S10	8	#5	3	4'-9"	40	4'-9"	40
S11	134	#4	3	5'-10"	522	5'-10"	522
*S12	74	#5	1	5'-7"	431		
S14	4	#4	3	5'-7"	15	5'-7"	15
S15	4	#5	3	7'-1"	30	7'-1"	30
REINFORCING STEEL			LBS.		699		699
*EPOXY COATED REINFORCING STEEL			LBS.		431		
6000 P.S.I. CONCRETE			CU. YDS.		11.0		11.0
0.6" Ø L.R. STRANDS			No.		24		24

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL

BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	65' UNIT					
*B24	60	60	#5	STR	21'-3"	1330
*S13	148	148	#5	2	7'-2"	1106
*EPOXY COATED REINFORCING STEEL				LBS.		2436
CLASS AA CONCRETE				CU.YDS.		16.9
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		130.25

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT

	ASPHALT OVERLAY THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
65' UNITS	2⅛"	3'-8⅛"

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.

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

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

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

GROOVED CONTRACTION JOINTS, 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.

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

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

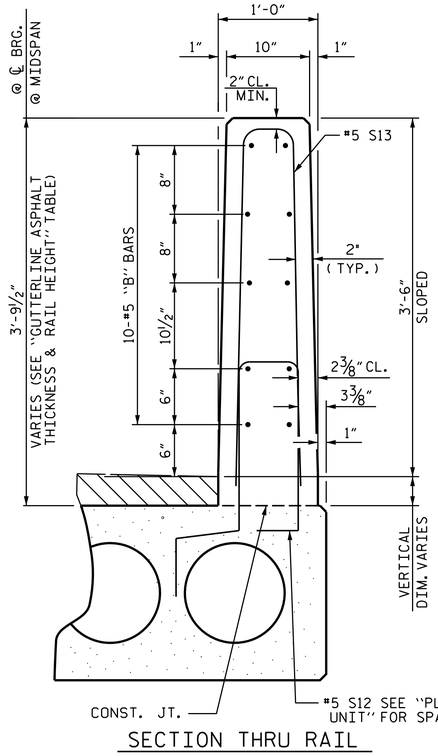
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

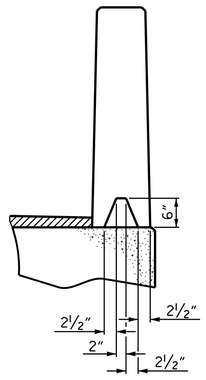
THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4'-0" CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.

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

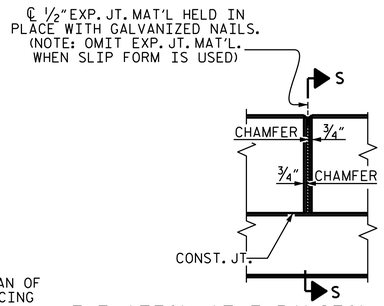
THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.



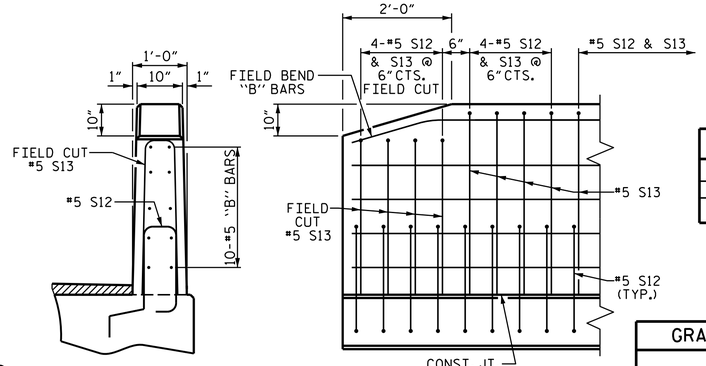
SECTION THRU RAIL



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



ELEVATION AT EXPANSION JOINTS



END VIEW

SIDE VIEW

END OF RAIL DETAILS

CONCRETE RELEASE STRENGTH	
UNIT	PSI
60' & 65' UNITS	4800

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

NORTH CAROLINA PROFESSIONAL SEAL 036548 ENGINEER DANIEL R. BURGUND

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PROJECT NO. 17BP.6.R.76

ROBESON COUNTY

STATION: 13+21.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

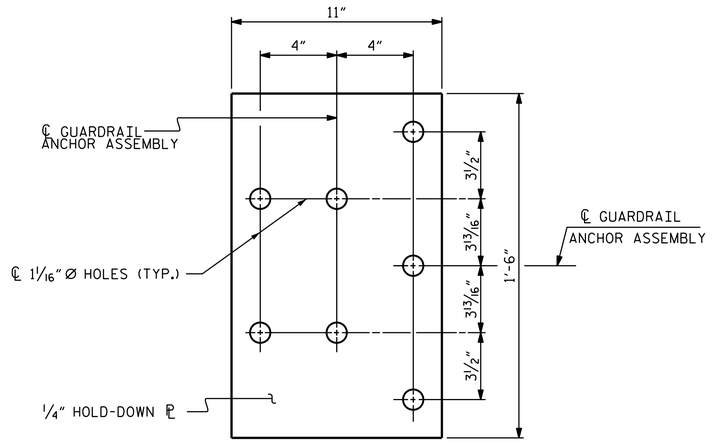
STANDARD
3'-0" X 2'-0"
PRESTRESSED CONCRETE
CORED SLAB UNIT
90° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			13

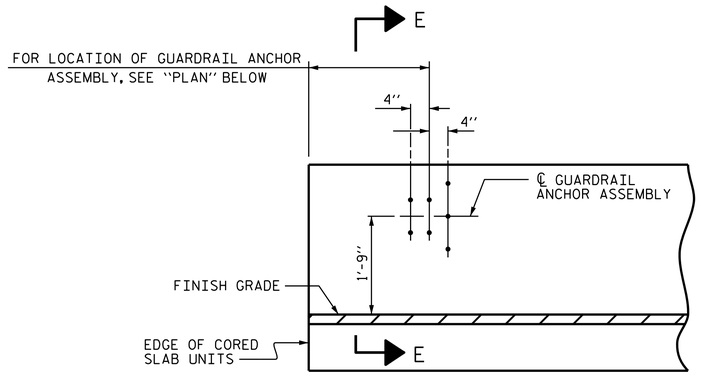
ASSEMBLED BY :	MHR	DATE :	2/19
CHECKED BY :	FAQ	DATE :	2/19
DRAWN BY : MAA	6/10	REV. 5/18	MAA/TMC
CHECKED BY : MKT	7/10		

VERTICAL CONCRETE BARRIER RAIL DETAILS

STD. NO. 24PCS3_33_90S



PLAN



ELEVATION

NOTES (FOR VERTICAL CONCRETE BARRIER RAIL)

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

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

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

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

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

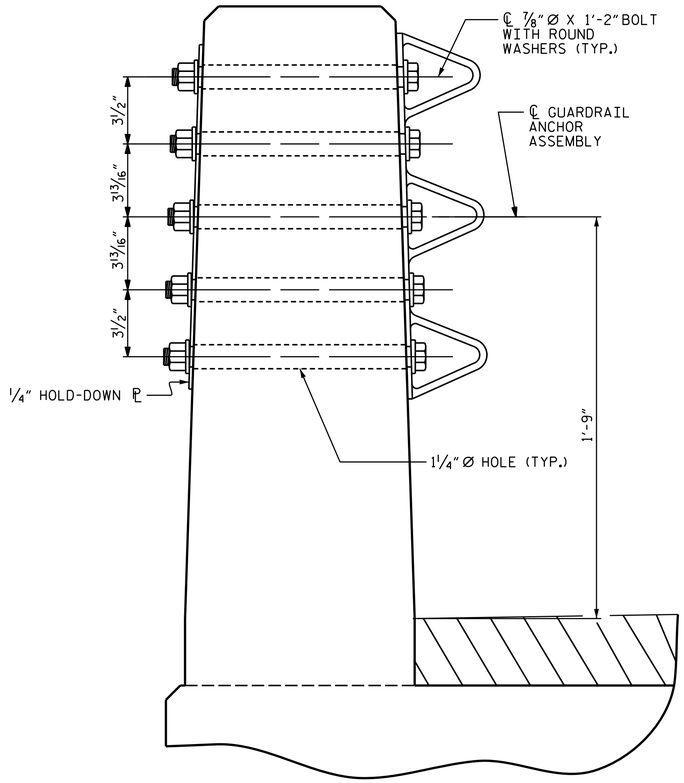
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.

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

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

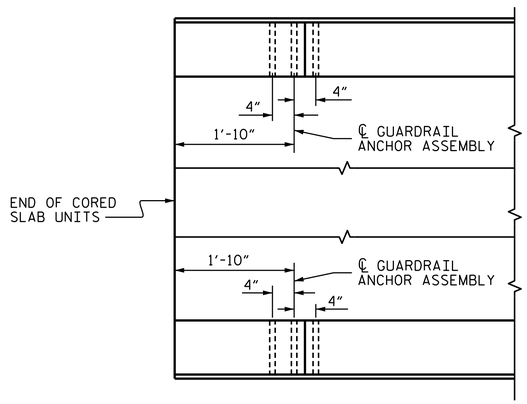
SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT



SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATIONS OF ANCHORS FOR GUARDRAIL

END BENT #1 SHOWN, END BENT #2 SIMILAR

PROJECT NO. 17BP.6.R.76

ROBESON COUNTY

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NORTH CAROLINA PROFESSIONAL SEAL 036548 ENGINEER DANIEL R. BURGUND

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS & VERTICAL CONCRETE BARRIER RAIL

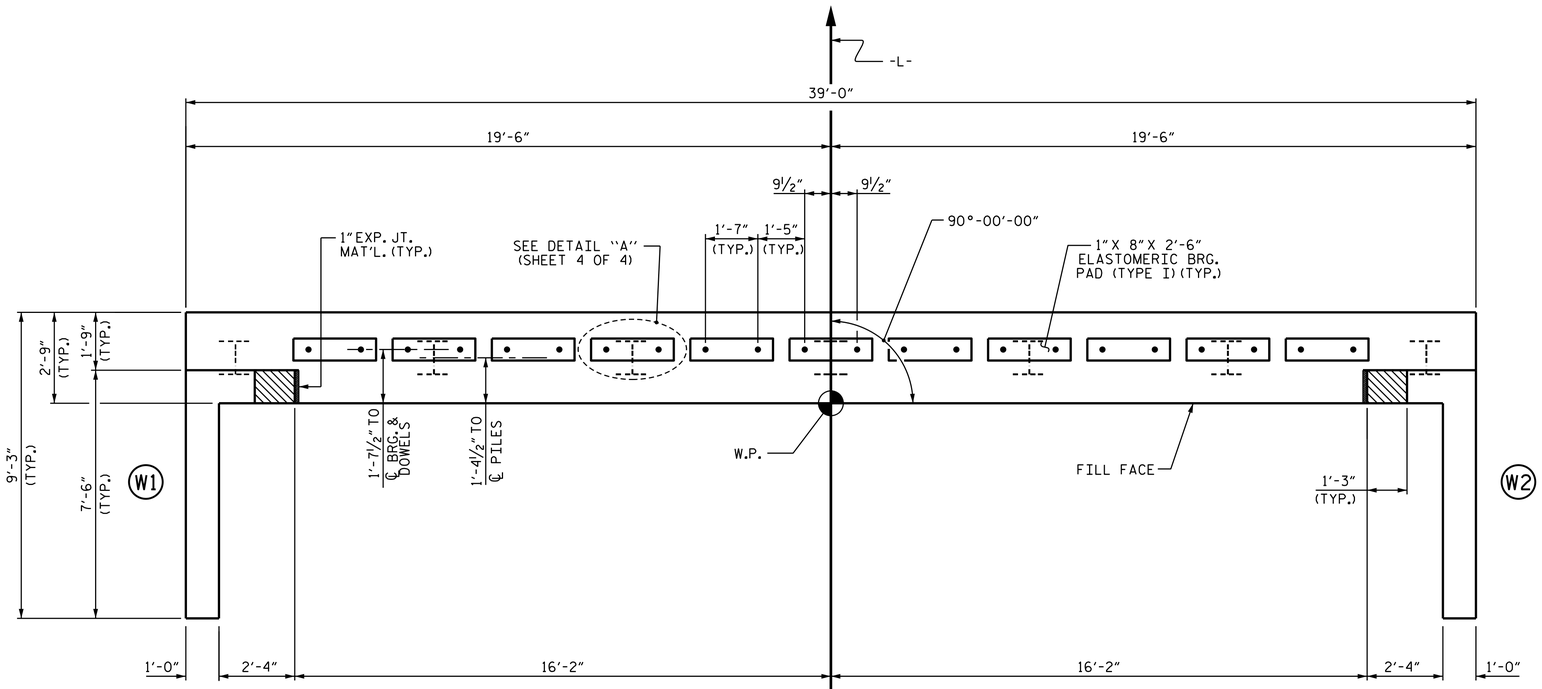
ASSEMBLED BY :	MHR	DATE :	2/19
CHECKED BY :	FAQ	DATE :	2/19
DRAWN BY : MAA	5/10	REV. 1/15	MAA/TMG
CHECKED BY : GM	5/10	REV. 12/17	MAA/THC
		REV. 5/18	MAA/THC

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

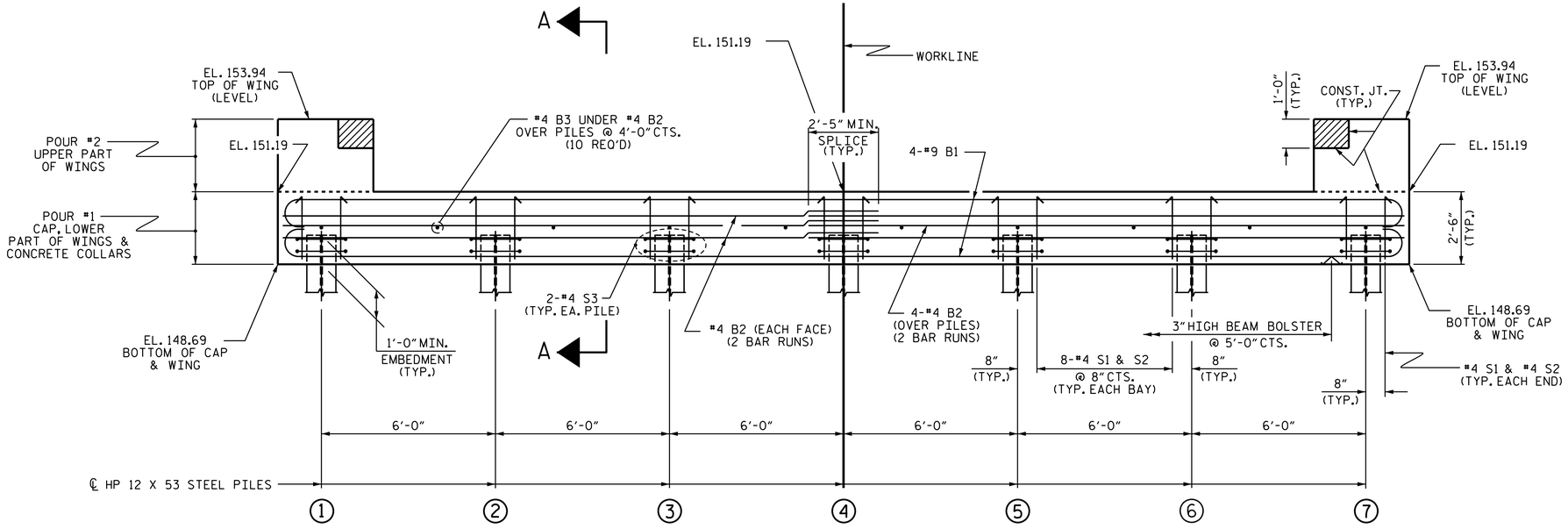
SHEET NO. S-7

TOTAL SHEETS 13

STD. NO. GRA3



PLAN



ELEVATION

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

NOTES

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

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

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.

ASSEMBLED BY : MHR	DATE : 2/19		
CHECKED BY : FAQ	DATE : 2/19		
DRAWN BY : DGE 01/10	REV. 4/15	MAA/TMG	
CHECKED BY : MKT 01/10			

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ROBESON COUNTY

STATION: 13+21.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 1

NORTH CAROLINA PROFESSIONAL SEAL 036548 ENGINEER DANIEL R. BURGUND

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			13

STD. NO. EB_33_90S

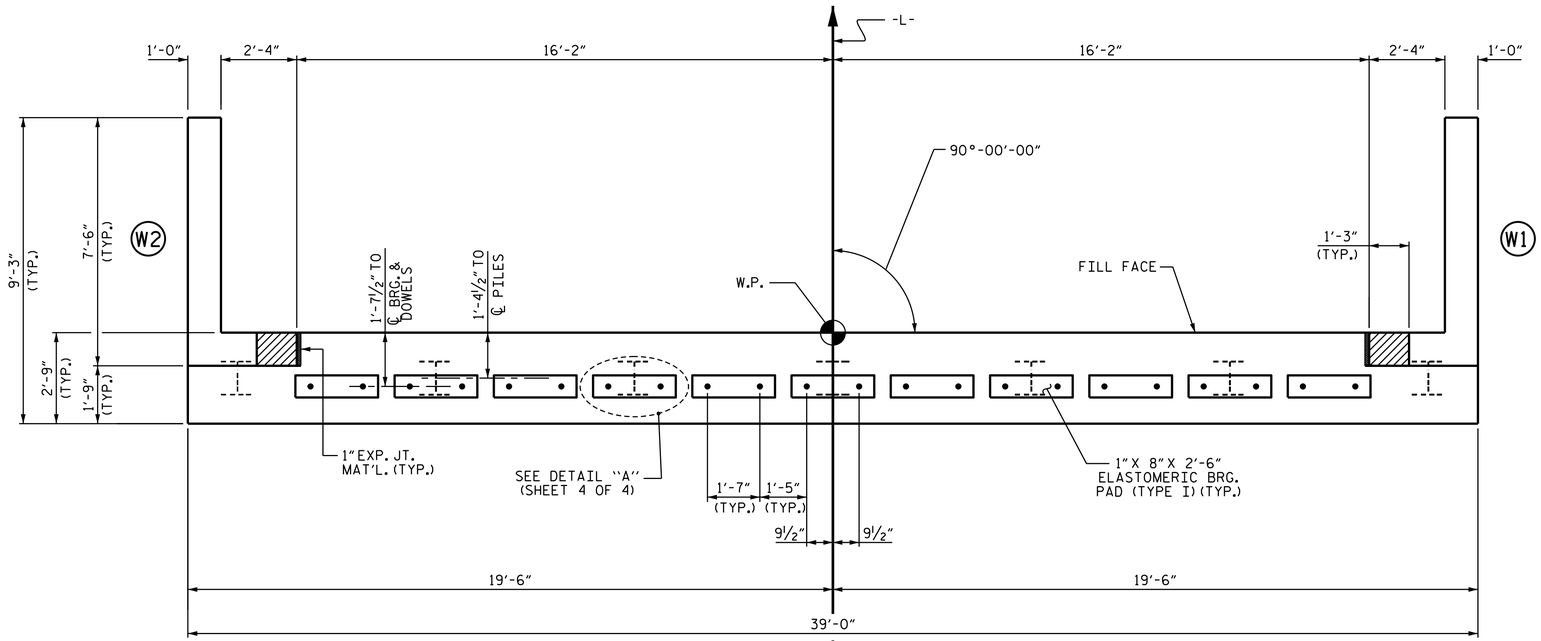
NOTES

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

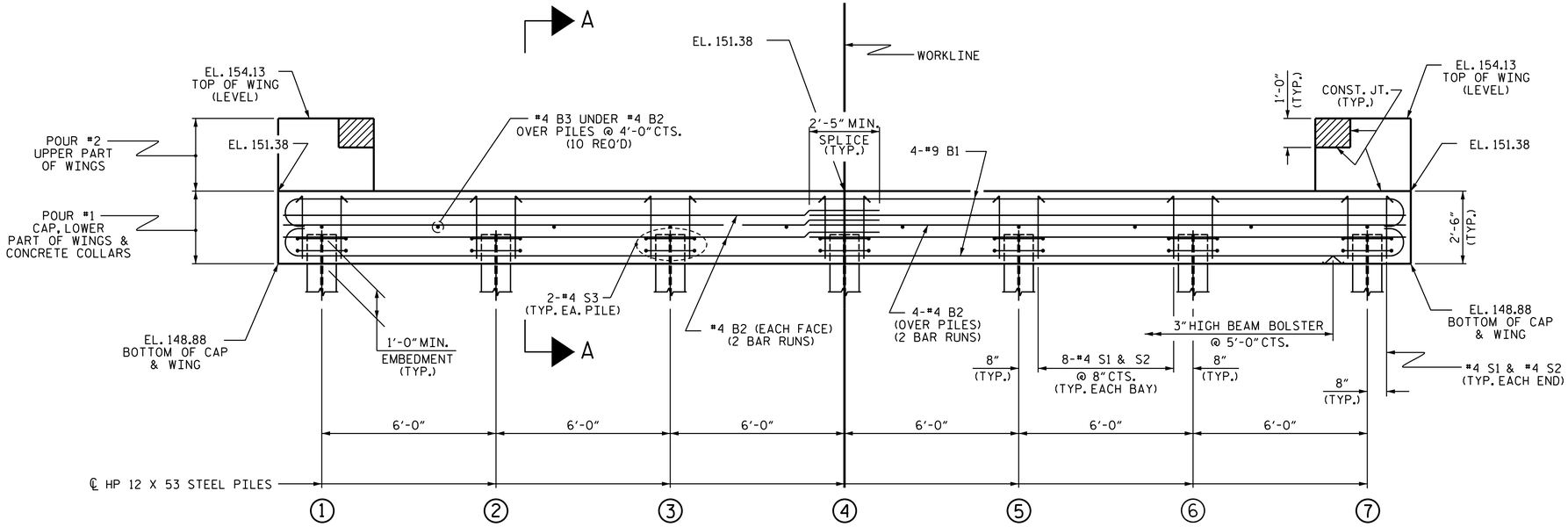
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN



ELEVATION

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

ASSEMBLED BY : MHR	DATE : 2/19		
CHECKED BY : FAQ	DATE : 2/19		
DRAWN BY : DGE 01/10	REV. 4/15	MAA/TMG	
CHECKED BY : MKT 01/10			

PROJECT NO. 17BP.6.R.76

ROBESON COUNTY

STATION: 13+21.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 2

NORTH CAROLINA PROFESSIONAL SEAL 036548 ENGINEER DANIEL R. BURGUNDY

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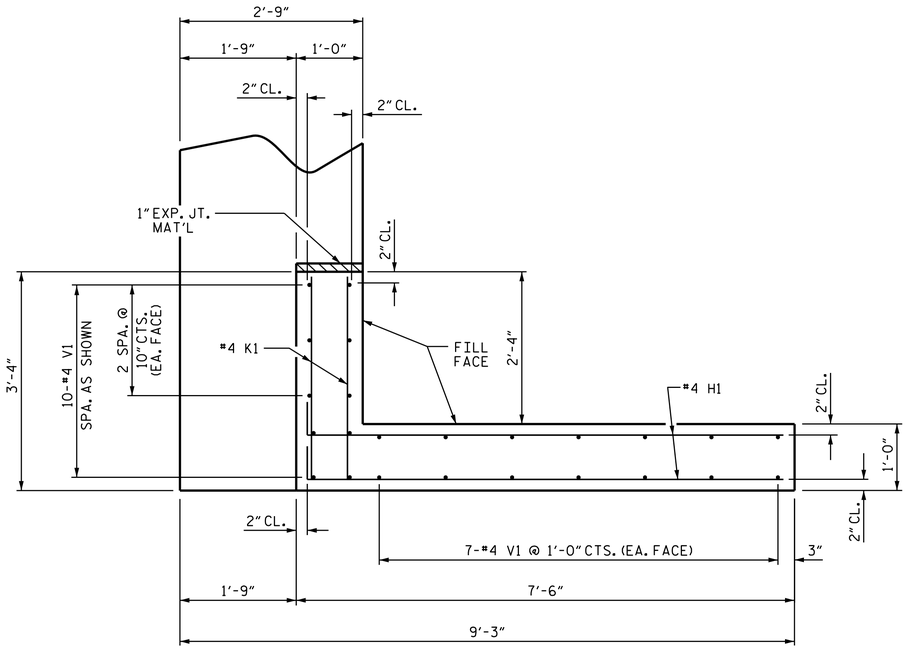
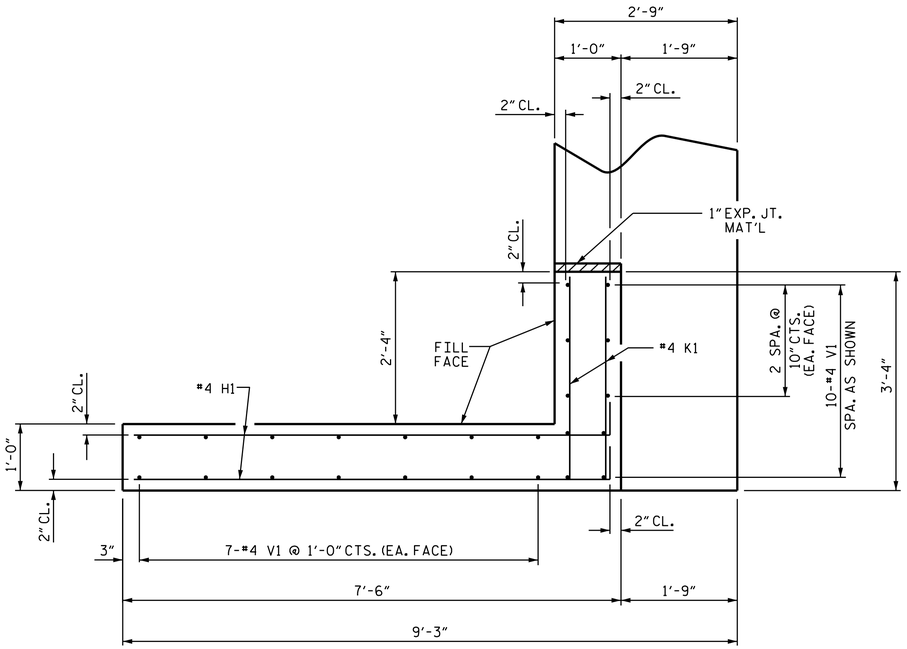
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			13

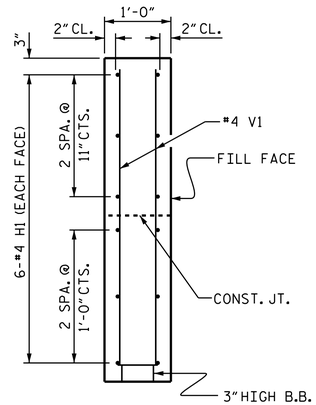
STD. NO. EB_33_90S



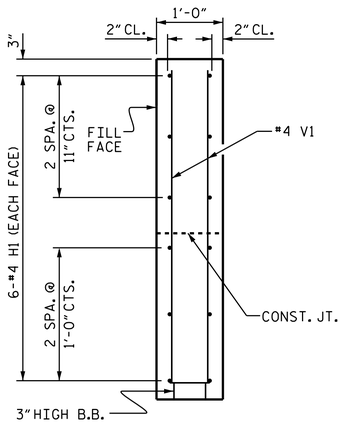
PLAN OF WING (W1)



PLAN OF WING (W2)

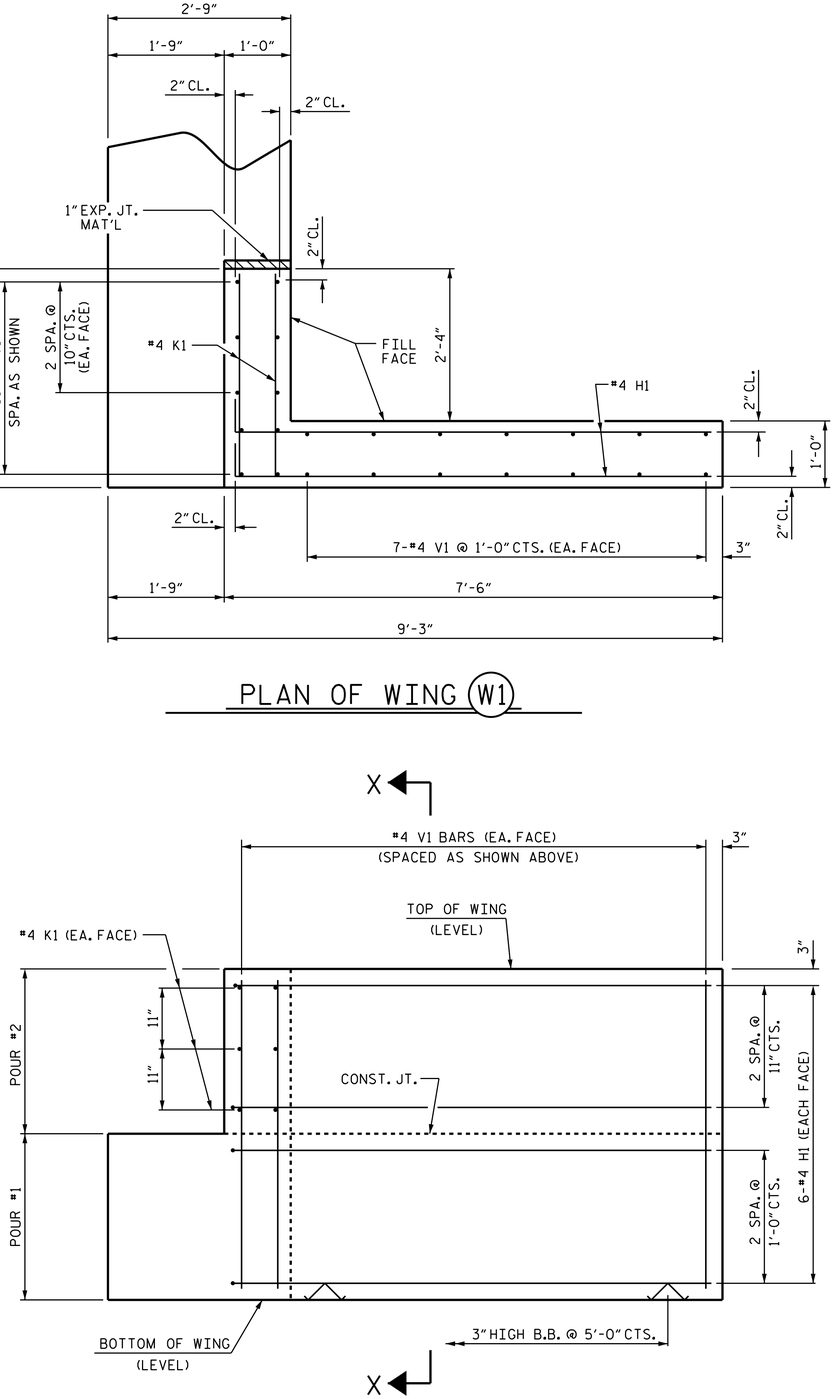


SECTION X-X



SECTION Y-Y

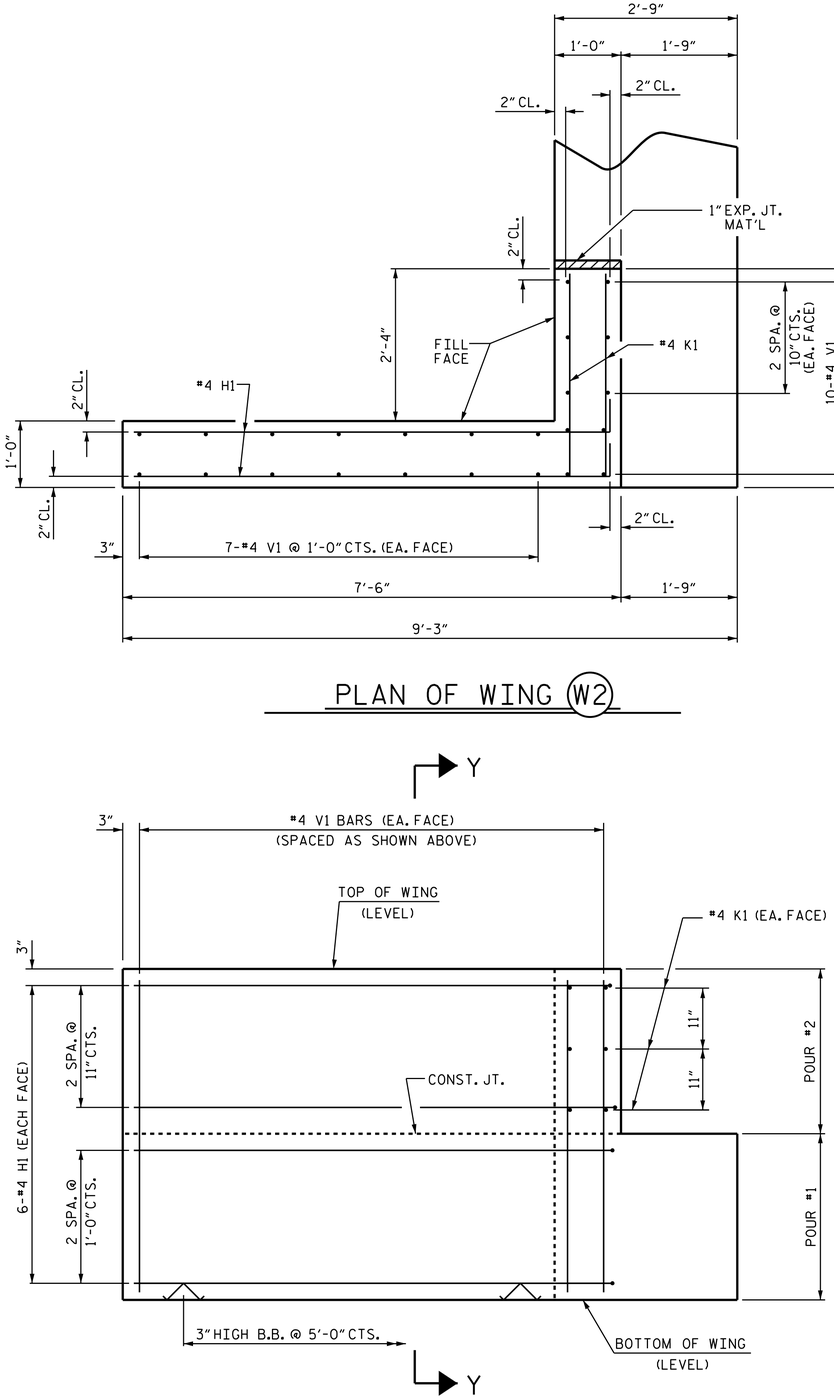
X



X

ELEVATION OF WING (W1)

Y



Y

ELEVATION OF WING (W2)

WING DETAILS

ASSEMBLED BY :	MHR	DATE :	2/19
CHECKED BY :	FAO	DATE :	2/19
DRAWN BY : DGE	02/10	REV. 4/15	MAA/TMG
CHECKED BY : MKT	02/10		

NORTH CAROLINA PROFESSIONAL SEAL 036548 ENGINEER DANIEL R BURGIN

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PROJECT NO. 17BP.6.R.76

ROBESON COUNTY

STATION: 13+21.00 -L-

SHEET 3 OF 4

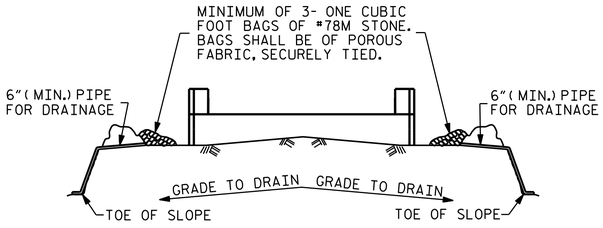
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT
WING DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			13

STD. NO. EB_33_90S

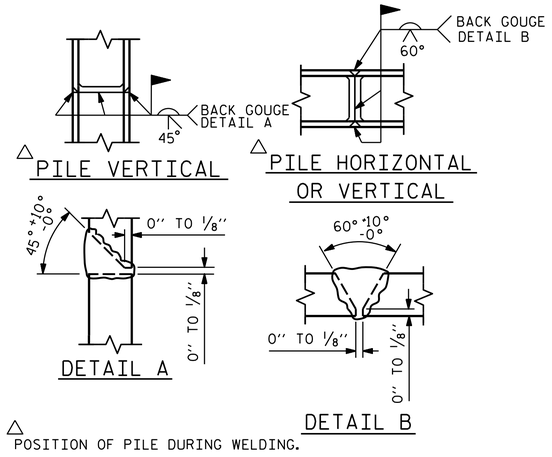


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

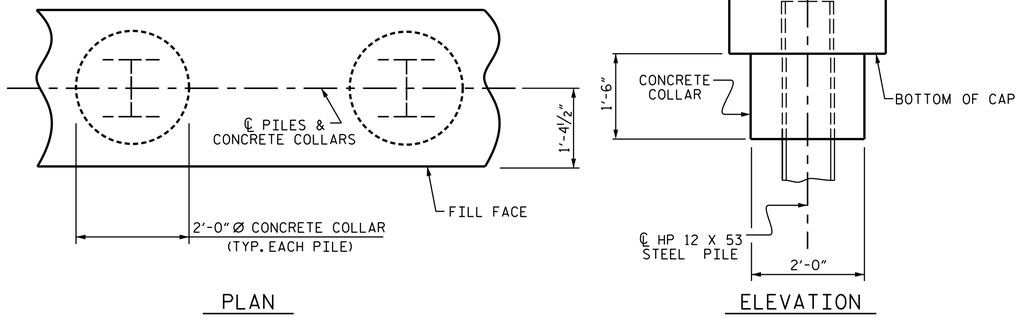
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



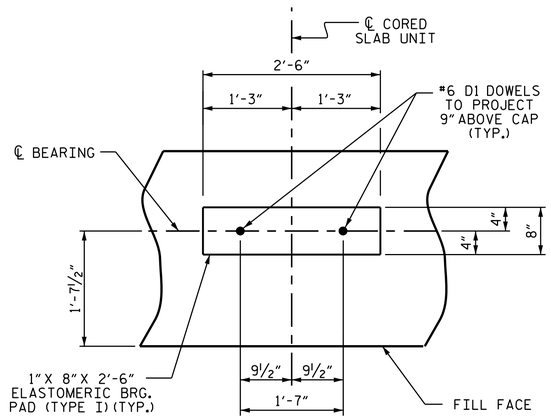
△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS



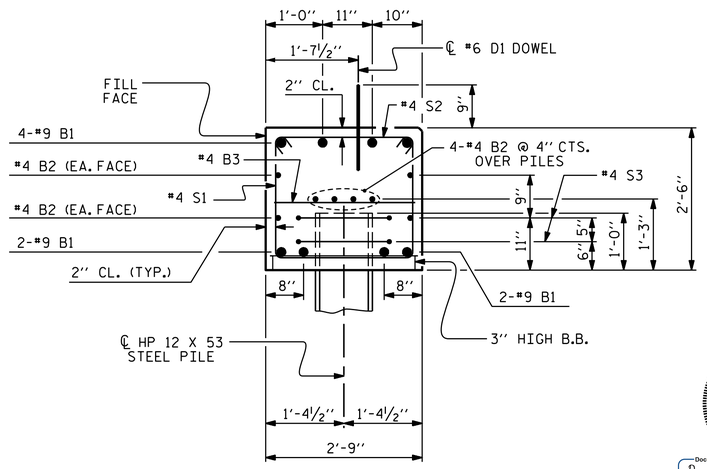
CORROSION PROTECTION FOR STEEL PILES DETAIL

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



DETAIL "A"

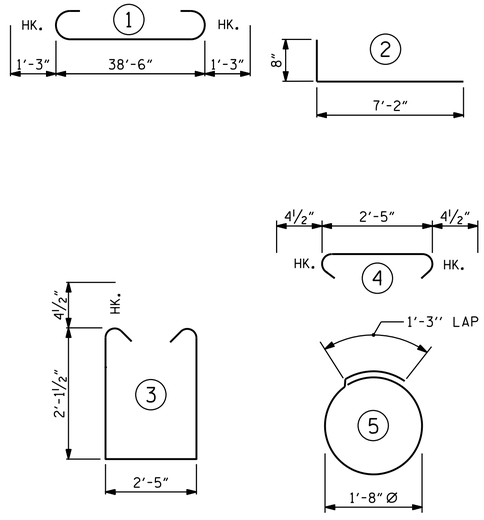
(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



SECTION A-A

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

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

END BENT No. 1	END BENT No. 2
HP 12 X 53 STEEL PILES NO: 7 LIN. FT.= 427	HP 12 X 53 STEEL PILES NO: 7 LIN. FT.= 392
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 7	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 7
PILE REDRIVES NO: 4	PILE REDRIVES NO: 4

BILL OF MATERIAL

FOR ONE END BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	41'-0"	1115
B2	16	#4	STR	20'-7"	220
B3	10	#4	STR	2'-5"	16
D1	22	#6	STR	1'-6"	50
H1	24	#4	2	7'-10"	126
K1	12	#4	STR	2'-11"	23
S1	50	#4	3	7'-5"	248
S2	50	#4	4	3'-2"	106
S3	14	#4	5	6'-6"	61
V1	48	#4	STR	5'-11"	190

REINFORCING STEEL (FOR ONE END BENT) 2155 LBS.

CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)

POUR #1 CAP, LOWER PART OF WINGS & COLLARS 12.4 C.Y.

POUR #2 UPPER PART OF WINGS 2.0 C.Y.

TOTAL CLASS A CONCRETE 14.4 C.Y.

ASSEMBLED BY :	MHR	DATE :	2/19
CHECKED BY :	FAQ	DATE :	2/19
DRAWN BY : DGE	12/09	REV. 4/17	MAA/THC
CHECKED BY : MKT	01/10		

PROJECT NO. 17BP.6.R.76

ROBESON COUNTY

STATION: 13+21.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 1 & 2 DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			13

NORTH CAROLINA PROFESSIONAL SEAL 036548 ENGINEER DANIEL R. BURGUND

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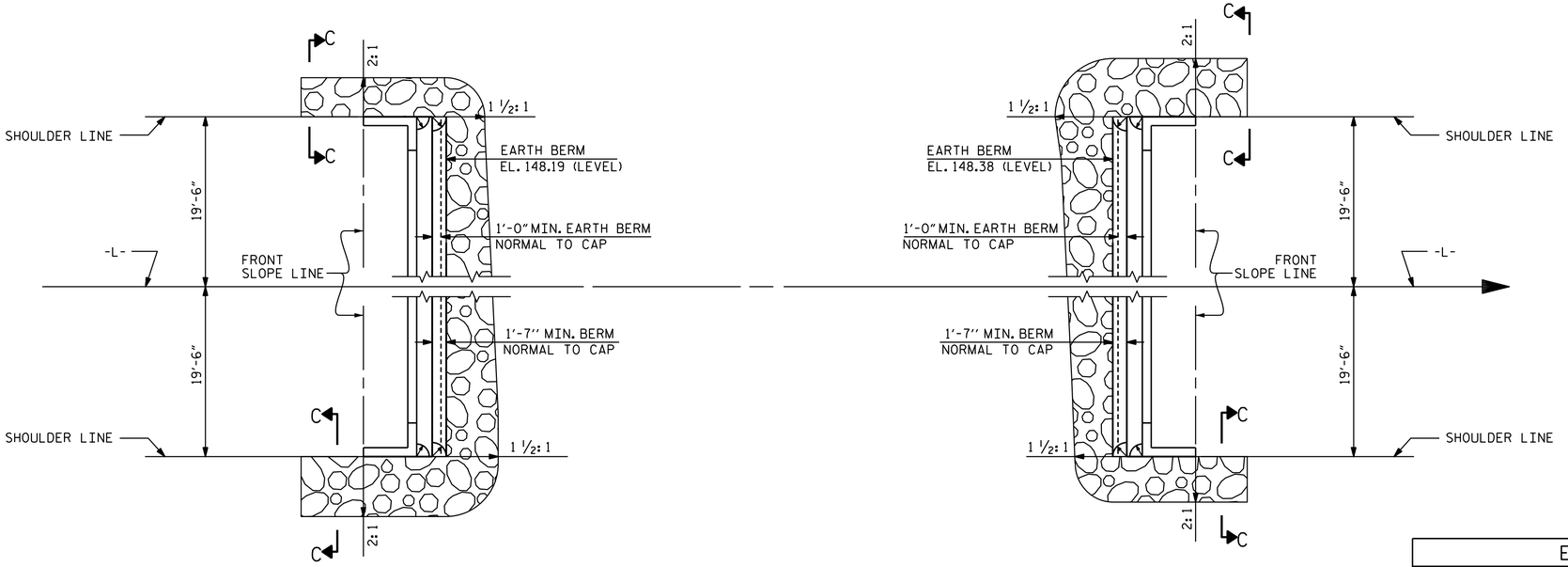
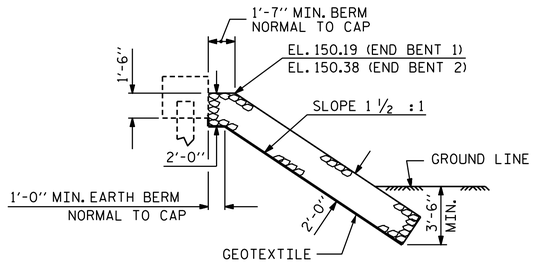


END BENT 1

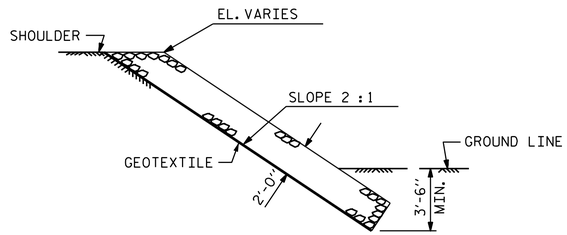
END BENT 2

PLAN

ESTIMATED QUANTITIES		
BRIDGE @ STA. 13+21.00	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	46	51
END BENT 2	46	51



℄ SECTION
BERM RIP RAPPED



SECTION C-C

PROJECT NO. 17BP.6.R.76
ROBESON COUNTY
STATION: 13+21.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

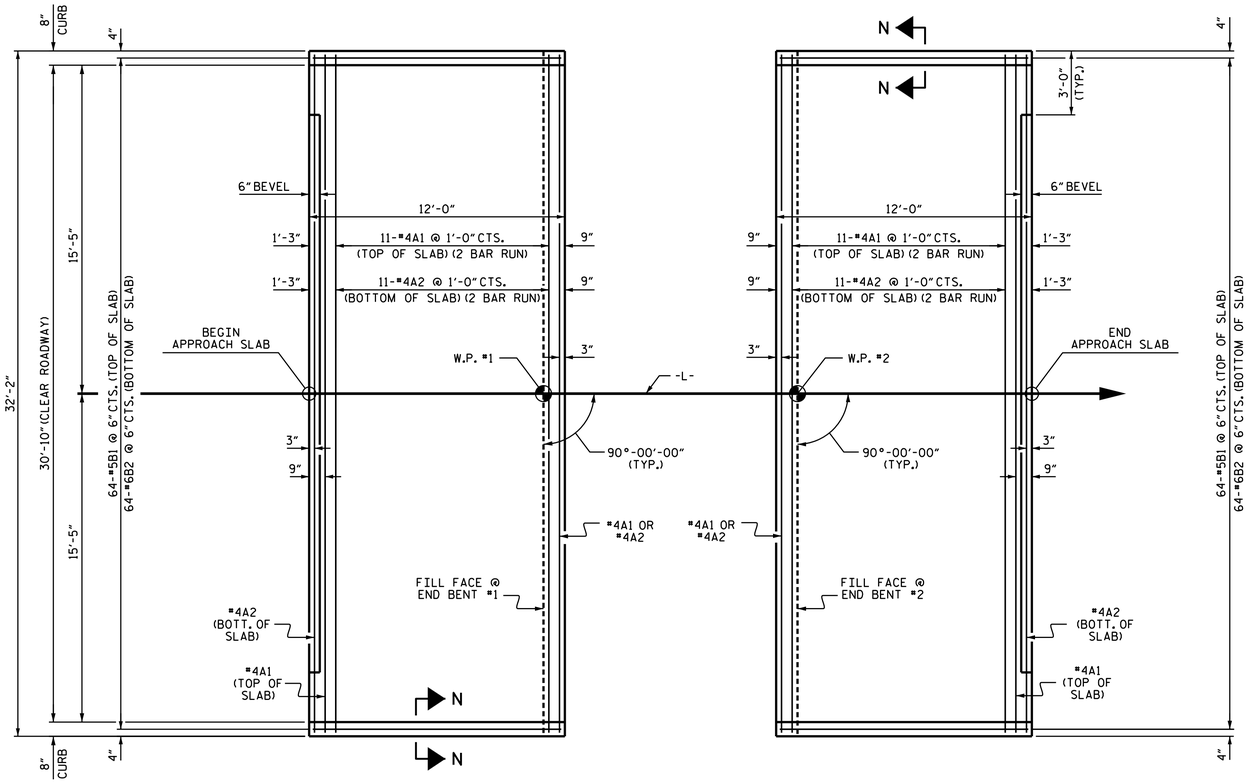
RIP RAP DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 036548 ENGINEER DANIEL R BURGUND
DocuSigned by: Daniel R Burgund 1/7/2019
14D5C9A37EEC4B7...

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			13

ASSEMBLED BY : MHR	DATE : 2/19	
CHECKED BY : FAO	DATE : 2/19	
DRAWN BY : REK 1/84	REV. 10/1/11	MAA/GM
CHECKED BY : RDU 1/84	REV. 12/21/11	MAA/GM
	REV. 12/17	MAA/THC

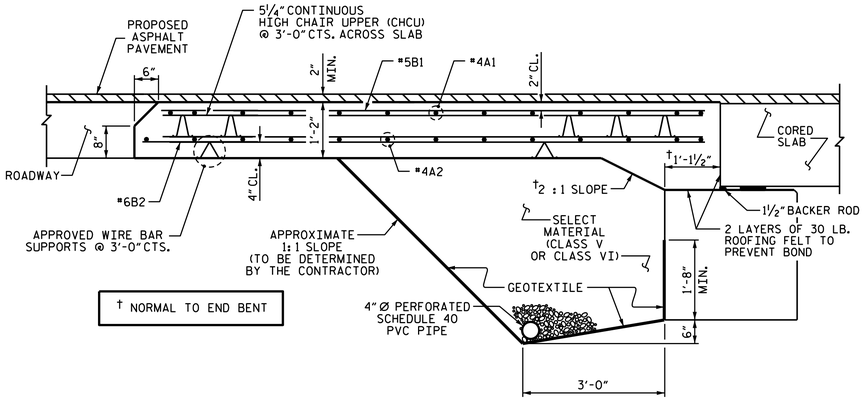
STD. NO. RR1



PLAN @ END BENT #1

PLAN @ END BENT #2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



SECTION THRU SLAB

(TYPE II - MODIFIED APPROACH FILL)

NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4" Ø DRAINAGE PIPE, AND SELECT MATERIAL BACKFILL, SEE ROADWAY PLANS.

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

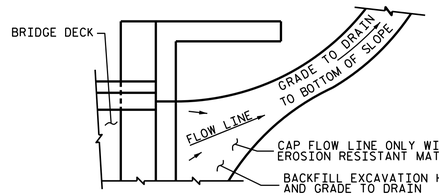
SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

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

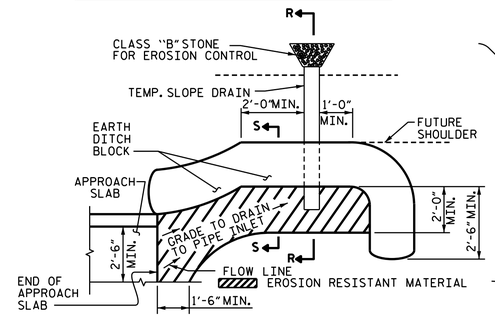
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

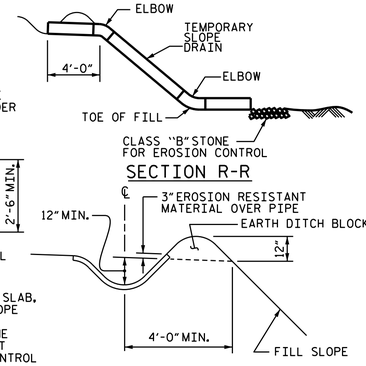
APPROACH SLAB GROOVING IS NOT REQUIRED.



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

TEMPORARY DRAINAGE DETAIL





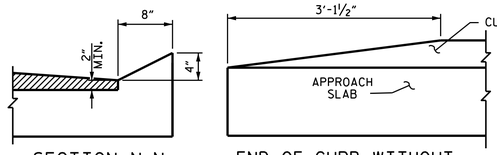
SECTION S-S

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

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



CURB DETAILS

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.	19.5
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.	19.5

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

NORTH CAROLINA PROFESSIONAL SEAL 036548 ENGINEER DANIEL R. BURGUNDY

DocuSigned by: Daniel R Burgundy 7/2019

PROJECT NO. 17BP.6.R.76

ROBESON COUNTY

STATION: 13+21.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

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

ASSEMBLED BY :	MHR	DATE :	2/19
CHECKED BY :	FAQ	DATE :	2/19
DRAWN BY : SHS/MAA	5-09	REV. 12-17	MAA/THC
CHECKED BY : BCH	5-09		

STD. NO. BAS_33_90S

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 2018 "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 ¾" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1½" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A ¼" 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 ¼" 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.

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STRUCTURAL STEEL:

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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.

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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 REV. 12-17 MAA (/) THC

ENGLISH

JANUARY, 1990

STD. NO. SN

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ENGLISH

JANUARY, 1990

STD. NO. SN