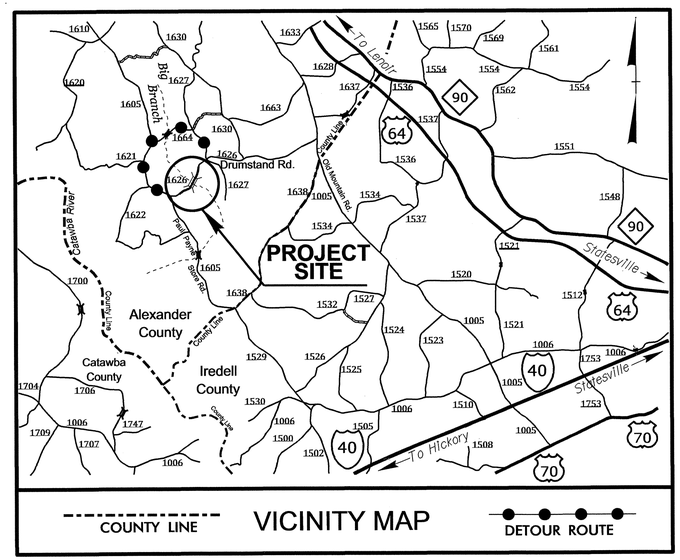
09/08/99

TIP PROJECT: B-5110

CONTRACT: C203353

See Sheet 1-A For Index of Sheets



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ALEXANDER

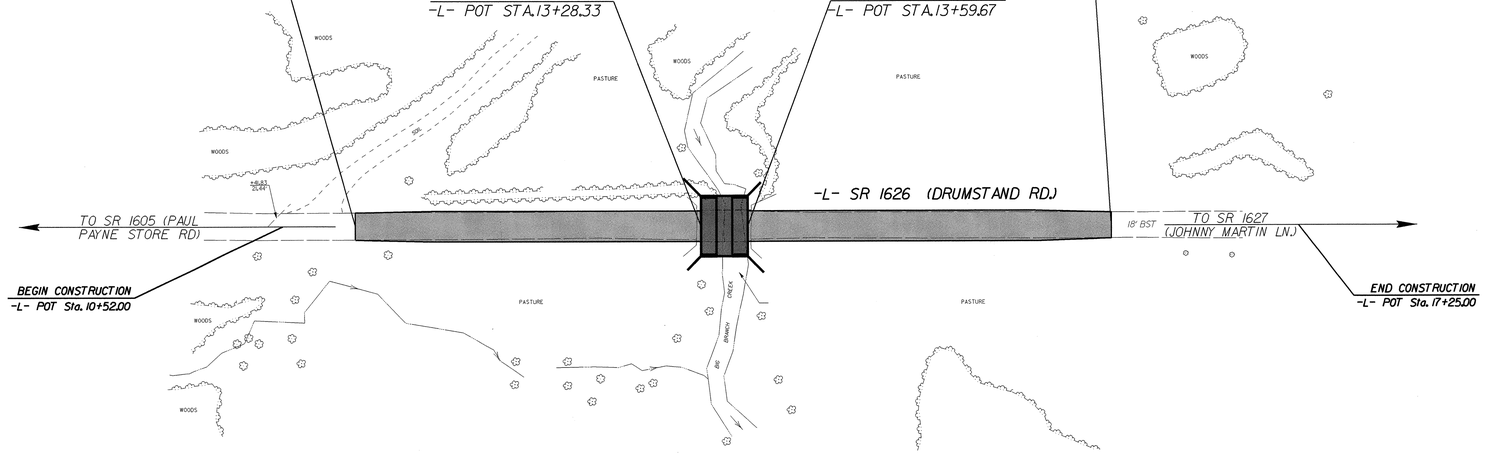
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5110	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
42248.1.1	BRZ-1626(3)	P.E.
42248.2.1	BRZ-1626(3)	RW/UTIL
42248.3.FD1	BRZ-1626(3)	CONST

LOCATION: BRIDGE 129 OVER BIG BRANCH CREEK ON SR 1626

TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND CULVERT

NAD 83/ NSRS 2007



GRAPHIC SCALES

30 15 0 30 60
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2013 = 318
ADT 2035 = 450
K = 10 %
D = 60 %
T = 5 % *
V = 50 MPH
* TTST = 2 DUAL = 3
FUNC CLASS = LOCAL
SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH STRUCTURE TIP PROJECT B-5110 = 0.006 MI.

LENGTH ROADWAY TIP PROJECT B-5110 = 0.089 MI.

TOTAL LENGTH OF TIP PROJECT B-5110 = 0.095 MI.

Accelerated Project Prepared In the Office of:

DIVISION OF HIGHWAYS

1000 Birch Ridge Dr., Raleigh NC, 27610

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JULY 20, 2012

LETTING DATE: FEBRUARY 18, 2014

JASON MOORE, PE
PROJECT ENGINEER

BRYAN KEY, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN

SIGNATURE: 11/8/13

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26964 ENGINEER BRYAN C. KEY

SIGNATURE: 11-8-13 P.E.

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
B-5110	1-A

ROADWAY DESIGN ENGINEER

11-8-13

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

INDEX OF SHEETS

GENERAL NOTES:

2012 SPECIFICATIONS
EFFECTIVE: 01-17-2012
REVISED: 07-30-2012

GRADE LINE:

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

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

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

UNDERDRAINS:
UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.03 AT LOCATIONS DIRECTED BY THE ENGINEER.

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

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

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

UTILITIES:
UTILITY OWNERS ON THIS PROJECT ARE :
- Duke (Power Distribution)
- AT&T (Telecommunications)
- Energy United Water Corporation (Water)

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

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

EFF. 01-17-2012
REV. 10-30-2012

2012 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
815.03	Pipe Underdrain and Blind Drain
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
866.04	Barbed Wire Fence with Wood Posts (2 - 7 Strands)

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04/16/11

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

Note: Not to Scale

****S.U.E. = Subsurface Utility Engineering***

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Known Soil Contamination: Boundary or Site
- Potential Soil Contamination: Boundary or Site

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

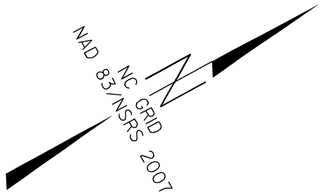
MISCELLANEOUS:

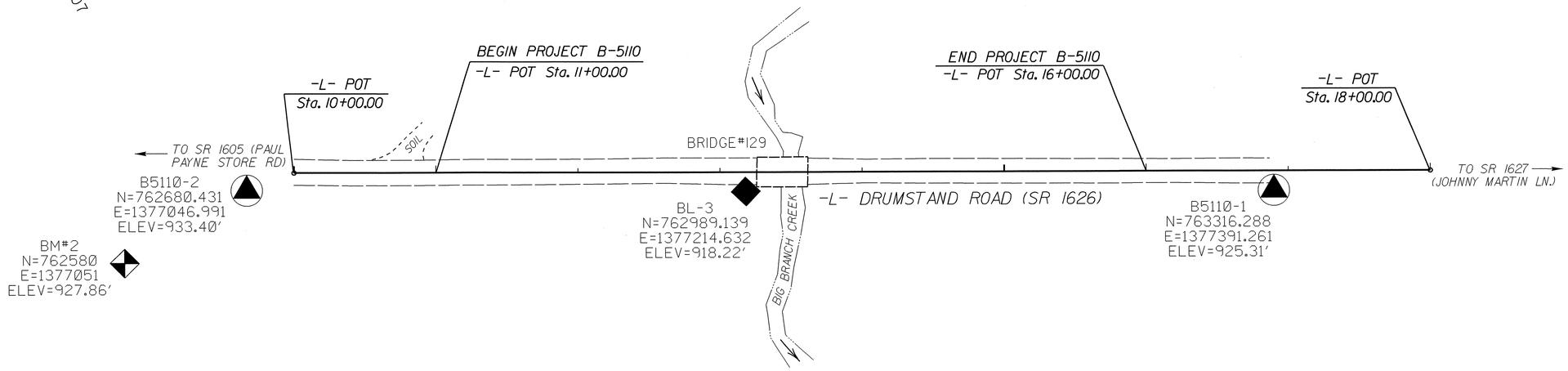
- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line — ?UTL
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. — UST
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- U/G Test Hole (S.U.E.*)
- Abandoned According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

PROJECT REFERENCE NO.	SHEET NO.
B-5110	1-C
Location and Surveys	

SURVEY CONTROL SHEET B-5110

FINAL





BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
2	BL5110-2	762680.4310	1377046.9910	933.40	OUTSIDE PROJECT LIMITS	
3	BL-3	762989.1391	1377214.6316	918.22	13+18.03	13.56 RT
1	BL5110-1	763316.2880	1377391.2610	925.31	OUTSIDE PROJECT LIMITS	

NOTES:

1. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:*
   HTTP://WWW.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   B5110_LS_CONTROL.TXT

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

INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "GPS-1" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 762985.5867(ft) EASTING: 1377214.0350(ft) ELEVATION: 918.09(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999883100
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS-1" TO -L- STATION 10+00.00 IS S31°00'32.3"W 314.97'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: GPS-1 HAS SINCE BEEN DESTROYED. TWO NEW GPS PAIRS WERE ESTABLISHED ON OPPOSITE ENDS OF THE PROJECT IN APRIL 2011. BASELINE POINT "BL-3" WAS ESTABLISHED IN THE VICINITY OF THE DESTROYED "GPS-1".

NOTE: DRAWING NOT TO SCALE

BENCHMARKS (NAVD 88)
****
BM#1 ELEVATION = 914.68'
N 763023 E 1377445
L STATION 14+58.00 200' RIGHT
RR SPIKE IN 18-INCH BLACK WALNUT
****
****
BM#2 ELEVATION = 927.86'
N 762580 E 1377051
FROM B5110-2 TO BM#2
S 02°24'08" E DIST 100.24'
RR SPIKE IN 24-INCH MAPLE
****

PROJECT REFERENCE NO.	SHEET NO.
B-5110	1-D
Location and Surveys	

SURVEY CONTROL SHEET B-5110
FINAL

DESIGN ALIGNMENT

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	762715.6326	1377051.7726
POT	18+00.00	763419.8174	1377431.4090

GRANITE OR CONCRETE MONUMENT

ALIGN	STATION	OFFSET	NORTH	EAST
L	11+00.00	30.00	762789.4193	1377125.6341
L	11+00.00	15.00	762796.5375	1377112.4307
L	11+00.00	-15.00	762810.7739	1377086.0237
L	11+00.00	-30.00	762817.8921	1377072.8203
L	13+15.00	30.00	762978.6690	1377227.6614
L	13+15.00	55.00	762966.8054	1377249.6672
L	13+15.00	-50.00	763016.6326	1377157.2429
L	13+15.00	-30.00	763007.1417	1377174.8475
L	13+75.00	55.00	763019.6192	1377278.1399
L	13+75.00	30.00	763031.4829	1377256.1341
L	13+75.00	-30.00	763059.9556	1377203.3203
L	13+75.00	-50.00	763069.4465	1377185.7156
L	17+08.63	-30.00	763353.6308	1377361.6449

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	11+04.00	45.00	762785.8221	1377140.7358
L	11+04.00	30.00	762792.9403	1377127.5323
L	11+19.00	-50.00	762844.1074	1377064.2320
L	11+19.00	-30.00	762834.6165	1377081.8366
L	11+31.00	-50.00	762854.6701	1377069.9265
L	11+31.00	-30.00	762845.1792	1377087.5312
L	12+98.00	79.00	762940.4524	1377262.7254
L	12+98.00	84.00	762938.0796	1377267.1266
L	13+09.00	86.00	762946.8131	1377274.1071
L	13+09.00	80.00	762949.6604	1377268.8257
L	13+84.00	80.00	763015.6777	1377304.4166
L	13+84.00	86.00	763012.8304	1377309.6980
L	13+95.00	84.00	763023.4620	1377313.1575
L	13+95.00	80.00	763025.3602	1377309.6366
L	16+86.00	-44.00	763340.3511	1377338.5807
L	16+86.00	-30.00	763333.7074	1377350.9039
L	17+08.63	-47.00	763361.6943	1377346.6789
L	17+24.00	30.00	763338.6835	1377421.7505
L	17+24.00	43.00	763332.5144	1377433.1935

NOTES:

1. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:*
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INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "GPS-1"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 762985.5867(ft) EASTING: 1377214.0350(ft)
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ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: GPS-1 HAS SINCE BEEN DESTROYED. TWO NEW GPS PAIRS WERE ESTABLISHED ON OPPOSITE ENDS OF THE PROJECT IN APRIL 2011. BASELINE POINT "BL-3" WAS ESTABLISHED IN THE VICINITY OF THE DESTROYED "GPS-1".

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PROJECT REFERENCE NO.	SHEET NO.
B-5110	2

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26984 ENGINEER MARVAN C. KEY

11-8-13

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 039018 ENGINEER JACKIE T. HEYWARD, JR.

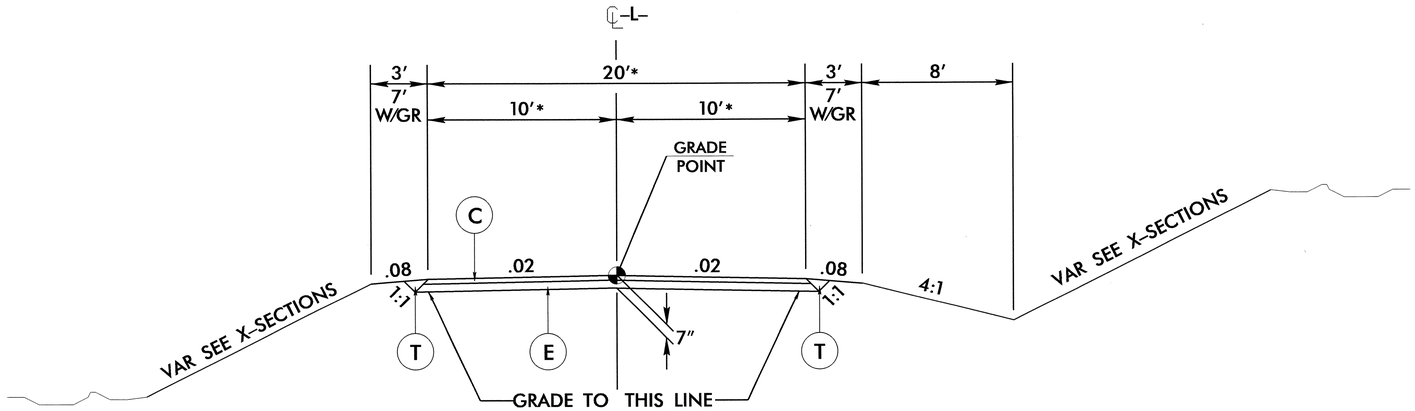
OCTOBER 17, 2013

PAVEMENT SCHEDULE

(FINAL PAVEMENT DESIGN)

C	PROP. APPROX. 2 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
E	PROP. APPROX. 4 1/2" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.
T	EARTH MATERIAL.

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



USE TYPICAL SECTION NO. 1

–L– STA. 11+00.00 TO 16+00.00

TYPICAL SECTION NO. 1

* TRANSITION TO EXISTING: –L– STA. 11+00 TO 11+50 AND 15+50 TO 16+00

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12/06/07

COMPUTED BY: TO DATE: 09/17/2013
CHECKED BY: BCK DATE: 10/3/2013

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-5110	3-A

SUMMARY OF EARTHWORK

STATION	STATION	UNCL. EXCAV.	EMBANK. +%	BORROW	WASTE
-L-					
11+00.00	13+28.33	83	419	336	
13+28.33	13+59.67		79	79	
13+59.67	16+00.00	128	206	78	
SUBTOTALS:		211	704	493	
LOSS DUE TO CLEARING AND GRUBBING		-5		5	
BORROW FOR BENCH CONSTRUCTION (LT)			6	6	
BORROW FOR BENCH CONSTRUCTION (RT)			12	12	
PROJECT TOTALS:		206	722	516	
EST. 5% TO REPLACE TOPSOIL				26	
ON BORROW PIT					
GRAND TOTALS:		206	722	542	
SAY:		250		600	

DRAINAGE DITCH EXCAVATION = 65 CY
UNDERCUT EXCAVATION = 100 CY
GEOTEXTILE FOR SOIL STABILIZATION = 100 SY
CLASS IV SUBGRADE STABILIZATION = 125 TONS
SELECT GRANULAR MATERIAL = 100 CY
SHALLOW UNDERCUT = 145 CY
6" PERFORATED SUBDRAIN PIPE = 100 LF

PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD²
-L-	11+00.00	13+25.78	CL	451.56
-L-	13+61.75	16+00.00	CL	476.50
			TOTAL:	928.06
			TOTAL:	950

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

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

SUMMARY OF PERMANENT BARBED WIRE FENCING

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	LF
-L-	10+52	13+20	RT	282
-L-	11+04	13+17	LT	213
-L-	13+68	17+09	LT	340
-L-	13+70	17+24	RT	364
			TOTAL:	1199
			SAY:	1225

SUMMARY OF TEMPORARY BARBED WIRE FENCING

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	LF
-L-	10+52	17+24	RT	719
-L-	11+19	11+31	LT	52
-L-	12+60	15+50	LT	303
-L-	16+86	17+09	LT	54
			TOTAL:	1128
			SAY:	1150

"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			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS								IMPACT ATTENUATOR TYPE 350			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	XI	GRAU 350	M-350	XIII	CAT-1	VI MOD	BIC	AT-1	EA	G	NG				
-L-	12+53.50	15+28.50	LT	275'			15+28.50	13+59.50	4'	7'	50'	50'	1'	1'			2												
-L-	11+59.50	14+34.50	RT	275'			15+28.50	13+59.50	4'	7'	50'	50'	1'	1'			2												
SUB-TOTAL				550'													4												
ANCHOR DEDUCTIONS		GRAU-350	4 @ 50 ft	-200'																									
TOTAL				350'													4												
SAY				375'													4												

ADDITIONAL GUARDRAIL POSTS = 5 EA

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
B-5110	4
RW SHEET NO.	

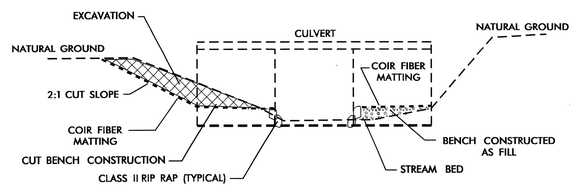
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26954 ENGINEER BRIAN C. KEE
11-8-13

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORRISON
11/8/13

LOW FLOW BENCH DETAIL AT CULVERT (NOT TO SCALE)



BUILD LOW FLOW BENCH AS EITHER A CUT OR FILL SECTION.
TOP OF BENCH ELEVATION SHOULD BE 908.0 (2.5' ABOVE CULVERT FLOOR)
USE COIR FIBER MATTING ALONG BENCH TOP AND CUT SLOPES FOR STABILITY.
LINE TOE OF BENCH WITH CLASS II RIP RAP.

BACKFILL HIGH FLOW CULVERT BARRELS WITH NATIVE BED MATERIAL TO SILL HEIGHT
DO NOT USE MATTING INSIDE CULVERT (SEE STRUCTURE PLANS)

NAD 83/ NSRS 2007

ROBERT S. HOOVER
NO DEED LISTED
PIN: 3776 0072 4443

15+00

H. WAYNE SMITH
DB 369 PG 1897
PIN: 3776 0062 1981

BEGIN PROJECT B-5110
-L- POT Sta. 11+00.00

-L- POT Sta.11+04 +/- LT
TIE TO EXISTING FENCE

BEGIN CONSTRUCTION
-L- POT Sta. 10+52.00

LOW FLOW BENCH (TYP.)
CLASS II RIP RAP
EST. 7 TONS
EST. 35 C.Y. DDE
EST. 40 S.Y. MATTING

PROPOSED REINFORCED CONCRETE BOX CULVERT 3 @ 10x10

CLASS II RIP RAP
EST. 6 TONS
EST. 5 C.Y. BORROW
EST. 20 S.Y MATTING

BEGIN CULVERT
-L- POT STA. 13+28.33

END CULVERT
-L- POT STA. 13+59.67

END PROJECT B-5110
-L- POT Sta. 16+00.00

-L- POT Sta. 18+00.00

-L- POT Sta.17+09 +/- LT
TIE TO EXISTING FENCE

END CONSTRUCTION
-L- POT Sta. 17+25.00

-L- POT Sta.17+24 +/- RT
TIE TO EXISTING FENCE

-L- POT Sta.10+52 +/- RT
TIE TO EXISTING FENCE

-L- POT Sta. 10+00.00

GPS B5110-2

GPS B5110-1

N 28° 19' 47.5" E

N 16°04'16" W
410.02'

N 52°04'05" E
174.60'

N 51°35'22" E
348.42'

BRIDGE #29
STEEL WOOD DECK
SR 1626 DRUMSTAND RD

BIG BRANCH CREEK

WOODS
PASTURE
EXISTING R/W
60' PROP. R/W
TEMPORARY FENCE
PERMANENT FENCE
PUE
GRAU 350
3SBW/IS ELECT
4SBW
WOOD WW
MTL GATE
25' INC
50' TRANSITION
50IL
18" RCP
15" CMP
EIP
R/W MON
EXIST. 47.00
EXIST. 43.00

+00.00 EXIST. 30.00
+04.00 30.00 45.00
+15.00 30.00 55.00
+19.00 30.00 50.00
+31.00 30.00 50.00
+60.00 30.00
+75.00 30.00 50.00
+98.00 79.00 84.00
+09.00 80.00 86.00
+84.00 80.00 86.00
+95.00 80.00 84.00
+00.00 30.00
+50.00 40.00
+00.00 40.00
+50.00 30.00
+86.00 30.00 44.00
+24.00 EXIST. 43.00
+50.00 EXIST.

ROBERT S. HOOVER
NO DEED LISTED
PIN: 3776 0072 4443

CLASS II RIP RAP
EST. 7 TONS
EST. 10 C.Y. BORROW
EST. 30 S.Y. MATTING

CLASS II RIP RAP
EST. 7 TONS
EST. 30 C.Y. DDE
EST. 60 S.Y MATTING

ROBERT S. HOOVER
DB 495 PG 85

ROBERT S. HOOVER
NO DEED LISTED
PIN: 3776 0072 4443

BL-3

NOTE: USE PERMANENT FENCE ALONG RIGHT OF WAY AND TEMPORARY FENCE ALONG EASEMENTS AS NEEDED. TIE PERMANENT FENCE TO CULVERT WING WALLS.

SEE SHEET 5 FOR -L- PROFILE

SEE SHEETS C-1 THRU C-6 FOR CULVERT PLANS

08-NOV-2013 13:55
R:\Roadway\Proj\B5110_Rdy_psh.dgn
$$$$USERNAME$$$$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-5110	5

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26994 ENGINEER BRIAN C. KEY

11-8-13

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MASON

11/8/13

-L- DRUMSTAND RD

Sta. 13+44
3 @ 10'x10' RCBC
Skew = 90 degrees

BEGIN GRADE
-L- POT. STA 11+00.00
EL = 925.32

PI = 13+50.00
EL = 913.70'
VC = 500'
K = 62
V_D = 35mph

END GRADE
-L- POT. STA 16+00.00
EL = 922.38

(-)4.6490%

(+)3.4731%

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 1183	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 914.5	FT
BASE DISCHARGE	= 1767	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 915.7	FT
OVERTOPPING DISCHARGE	= 3000	CFS
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING ELEVATION	= 919.0	FT

950 940 930 920 910 900 890 880

940 930 920 910 900 890

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

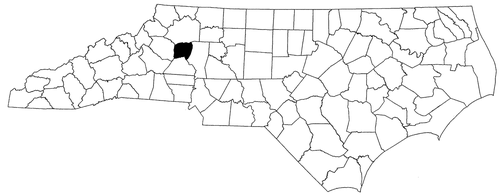
SEE SHEET NO. 4 FOR PLAN VIEW

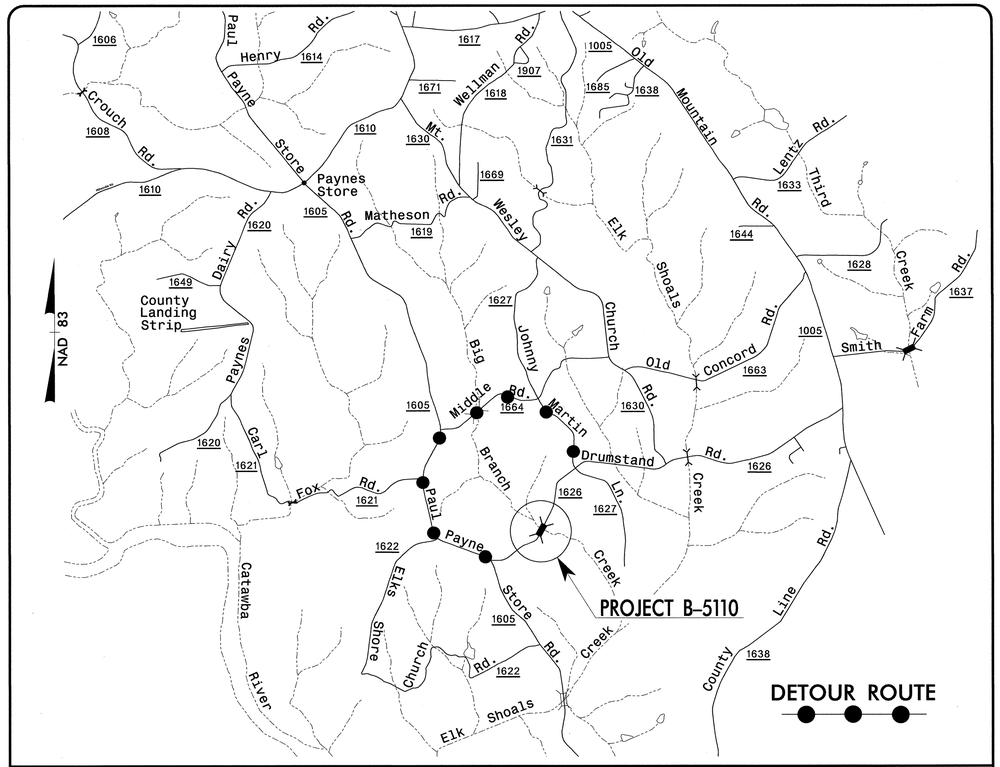
04-OCT-2013 11:37
R:\Roadway\Drawings\B5110_Rdy_pf1.dgn
$$$$USERNAME$$$$

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

ALEXANDER COUNTY





VICINITY MAP

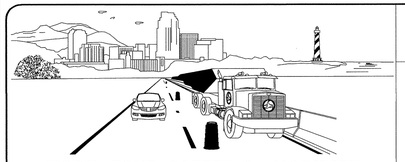
INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, LEGEND, AND TEMPORARY PAVEMENT MARKINGS
TMP-1B	TRANSPORTATION OPERATIONS PLAN: (TRANSPORTATION OPERATIONS AND GENERAL NOTES)
TMP-2	SPECIAL SIGN DESIGN - DRUMSTAND ROAD
TMP-3	TEMPORARY TRAFFIC CONTROL PHASING AND OFF-SITE DETOUR - DRUMSTAND ROAD - SR 1626

SHEET NO.
TMP-1

B-5110

TIP PROJECT:



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

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

J. S. BOURNE, P.E. — *STATE TRAFFIC MANAGEMENT ENGINEER*
G. L. GETTIER, P.E. — *TRAFFIC CONTROL PROJECT ENGINEER*
J. W. WOOLARD, P.E. — *TRAFFIC CONTROL PROJECT DESIGN ENGINEER*
S. B. COATS — *TRAFFIC CONTROL DESIGN ENGINEER*

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

APPROVED:
DATE: 10/21/13

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 19862 ENGINEER J. W. WOOLARD, JR.

10/10/2013
P:\TIPProjects-B\B5110\Traffic\TrafficControl\TCP\B5110_TC_TMP01.dgn
User:scoats

PROJ. REFERENCE NO.	SHEET NO.
B-5110	TMP-1A

ROADWAY STANDARD DRAWINGS

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

STD. NO.	TITLE
1101.03	TEMPORARY ROAD CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1145.01	BARRICADES

LEGEND

GENERAL

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

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

SIGNALS

EXISTING PROPOSED TEMPORARY

PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

PAVEMENT MARKERS

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

PAVEMENT MARKING SYMBOLS

PAVEMENT MARKING SYMBOLS

TEMPORARY PAVEMENT MARKINGS

NONE

APPROVED: _____ DATE: _____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 19862 ENGINEER T.W. WOOLARD JR.

10/21/13

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

ROADWAY STANDARD DRAWINGS & LEGEND

10/10/2013
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User:scogis

PROJ. REFERENCE NO.	SHEET NO.
B-5110	TMP-1B

TRANSPORTATION OPERATIONS

CONSTRUCTION

REMOVE AND REPLACE EXISTING STRUCTURE AND ROADWAY APPROACHES ALONG EXISTING ROADWAY ALIGNMENT AS SHOWN IN THE CONSTRUCTION PLANS.

TMP DESIGN PARAMETERS

TRAFFIC WILL BE DETOURED OFF-SITE DURING THE CONSTRUCTION PERIOD.

THE OFF-SITE DETOUR WILL INCLUDE SR 1605 (PAUL PAYNE STORE RD.), SR 1664 (MIDDLE RD.), AND SR 1627 (JOHNNY MARTIN LANE),(SEE SHEET TMP-3).

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 TWENTY ONE (21) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

B) 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.

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

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

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

TRAFFIC CONTROL DEVICES

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

APPROVED: _____ DATE: _____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 19862 ENGINEER W. WOOLARD III

10/21/13

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

TRANSPORTATION OPERATIONS PLAN

10/10/2013
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User:scoats

PROJ. REFERENCE NO.	SHEET NO.
B-5110	TMP-2

SIGN NUMBER: SP12221
TYPE: STATIONARY
QUANTITY: SEE PLANS

SIGN WIDTH: 4′-0″
HEIGHT: 2′-6″
TOTAL AREA: 10.0 Sq.Ft.

BORDER TYPE: INSET
RECESS: 0.75″
WIDTH: 0.75″
RADII: 3″

NO. Z BARS:
LENGTH:

BACKG COLOR: Fluorescent Orange
COPY COLOR: Black

SYMBOL	X	Y	WID	HT

MAT′L: 0.080″ (2.0 mm) ALUMINUM

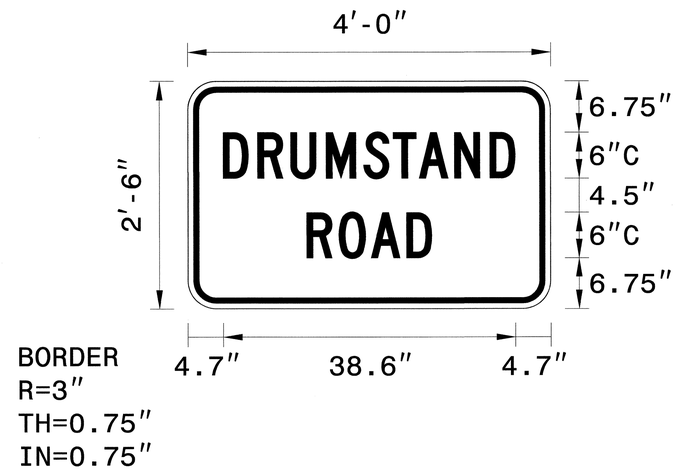
USE NOTES: 1,2

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

DESIGN BY: DHB
PROJECT ID: B-5110

CHECKED BY: KLJ
DIV: 12

DATE: Jun 11, 2012



Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter spacings are to start of next letter

																										Series/Size Text Length
		D	R	U	M	S	T	A	N	D																C 2000
	4.7	4.6	4.4	4.7	5	3.9	3.4	4.7	4.7	3.4	4.7															38.6
		R	O	A	D																					C 2000
	15.7	4.3	4.3	4.7	3.4	15.7																				16.6

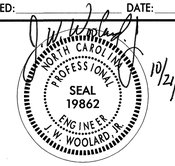
FILENAME: Work-Zone-SIGN_DESIGN

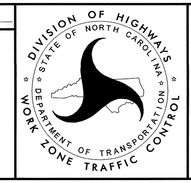
NORTH CAROLINA D.O.T. SIGN DETAIL

THE SPECIAL SIGN DESIGN SHOWN ON THIS SHEET WAS PROVIDED THROUGH A SEALED DOCUMENT FROM THE SIGNING AND DELINEATION UNIT. THE DOCUMENT WAS SUBMITTED TO WZTC ON 06-11-2012 AND SEALED BY A PROFESSIONAL ENGINEER, RONALD W. KING, P.E., LICENSE #022959.

APPROVED: _____ DATE: _____

SEAL





SPECIAL SIGN DESIGN
DRUMSTAND ROAD

10/10/2013
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User:scodts

TIP NO.	SHEET NO.
B-5110	PMP-1

APPROVED: [signature]
DATE: 10/16/13

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022959 ENGINEER RONALD W. KING

T.I.P.: B-5110

CONTRACT:

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLAN
ALEXANDER COUNTY
LOCATION: BRIDGE No. 129 OVER BIG BRANCH CREEK ON SR 1626

ROADWAY STANDARD DRAWING

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

STD. NO.	TITLE
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

GENERAL NOTES

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

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

ROAD NAME	MARKING	MARKER
-L- DRUMSTAND RD.	PAINT	NONE

B) PLACE TWO APPLICATIONS OF PAINT PAVEMENT MARKINGS ON THE FINAL WEARING SURFACE. PLACE THE SECOND APPLICATION OF PAINT UPON SUFFICIENT DRYING TIME OF THE FIRST.

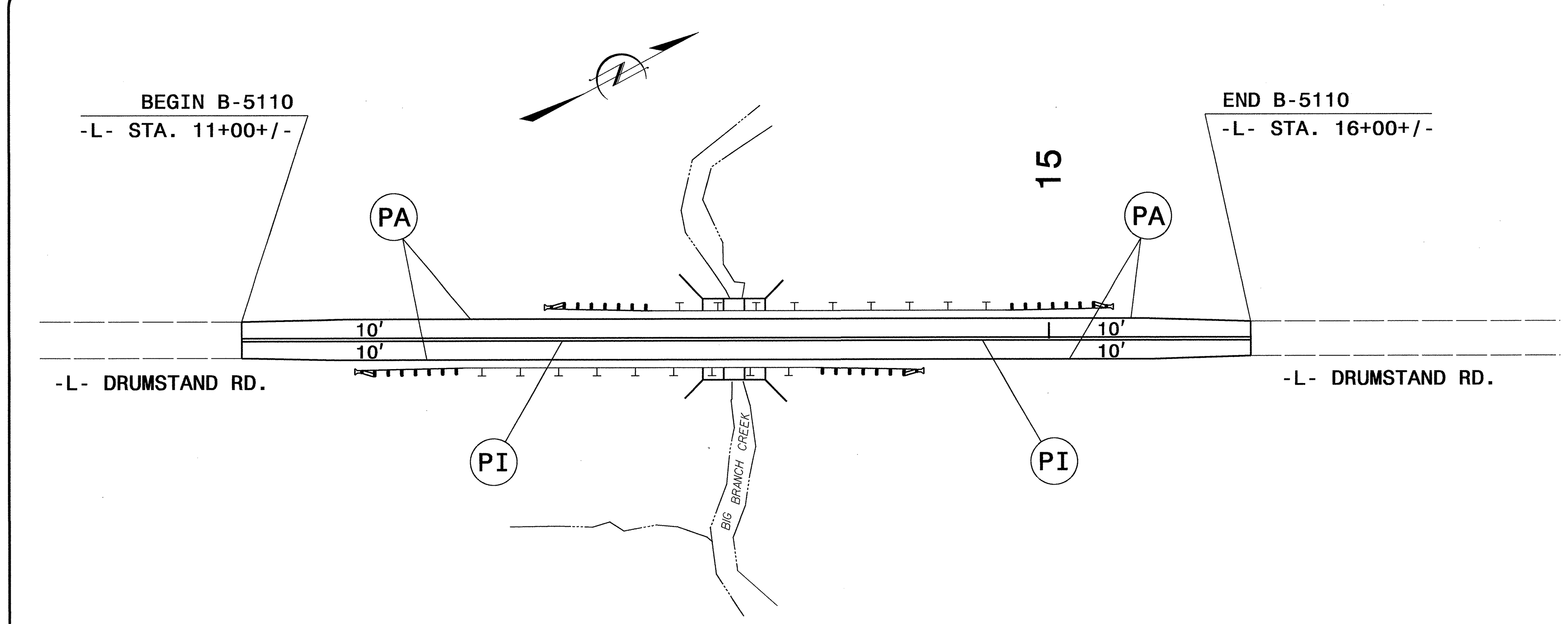
C) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

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

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

PAVEMENT MARKING SCHEDULE

SYMB	DESCRIPTION
	FINAL PAVEMENT MARKINGS
	PAINT (4")
PA	WHITE EDGELINE
PI	YELLOW DOUBLE CENTER



PLAN PREPARED BY: N.C.D.O.T. SIGNING AND DELINEATION UNIT	
KELVIN L. JORDAN	SIGNING & DELINEATION REGIONAL ENGINEER
DERRICK H. BEARD	SIGNING & DELINEATION PROJECT DESIGN ENGINEER

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

15-OCT-2013 14:29
\\ncdot\dfsroot01\Proj\TIPProjects-B\B5110\Traffic\Signing\CADD\PMP\Pavement Marking Seed.dgn
dhbeard AT TE265832

TIP PROJECT: B-5110

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5110	EC-1	

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

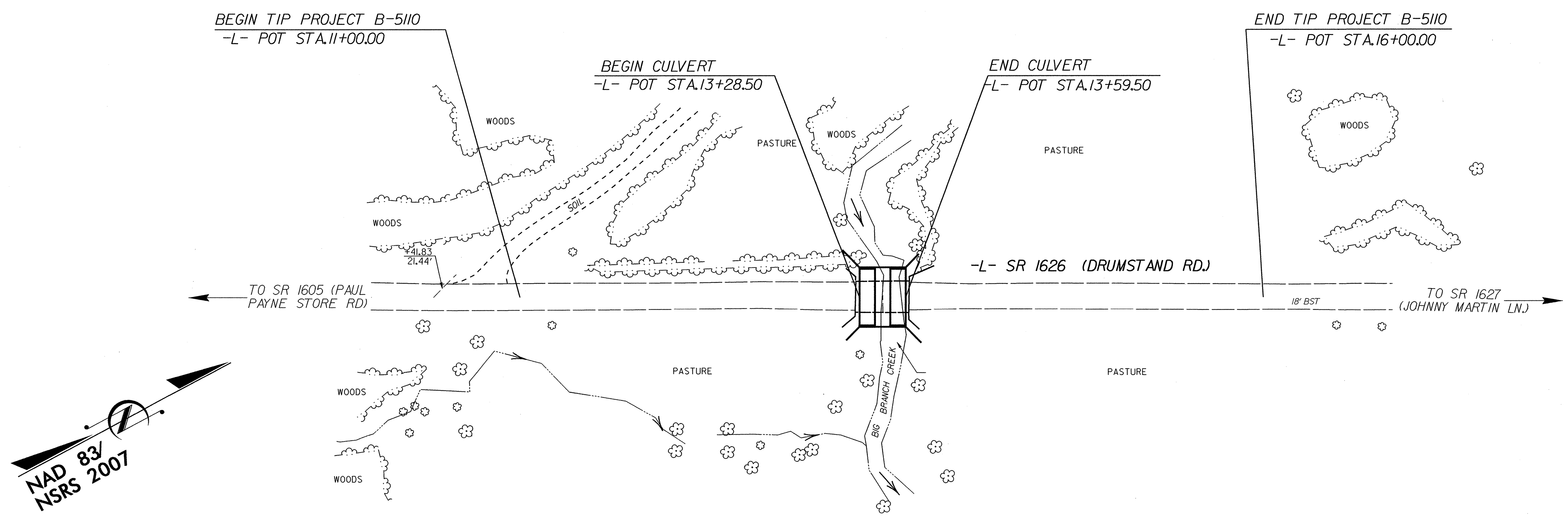
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

ALEXANDER COUNTY

LOCATION: BRIDGE 129 OVER BIG BRANCH CREEK ON SR 1626

TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND CULVERT



EROSION AND SEDIMENT CONTROL MEASURES

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

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

GRAPHIC SCALE

0
PLANS

0
PROFILE (HORIZONTAL)

0
PROFILE (VERTICAL)

ROADSIDE ENVIRONMENTAL UNIT
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

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

Prepared In the Office of:

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

2012 STANDARD SPECIFICATIONS

Roadway Standard Drawings

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

1604.01	Railroad Erosion Control Detail
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.
B-5110	EC-02
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

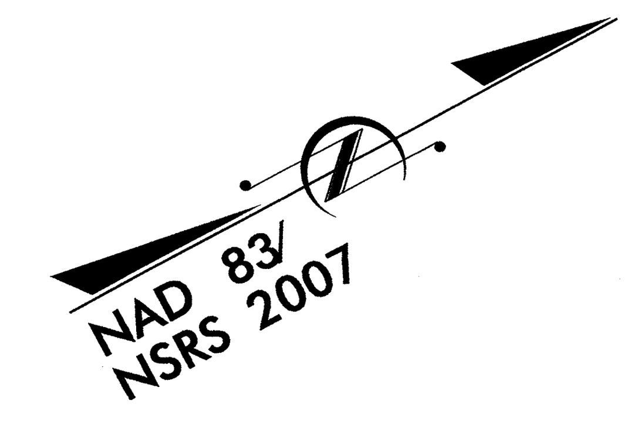
SOIL STABILIZATION TIMEFRAMES

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.

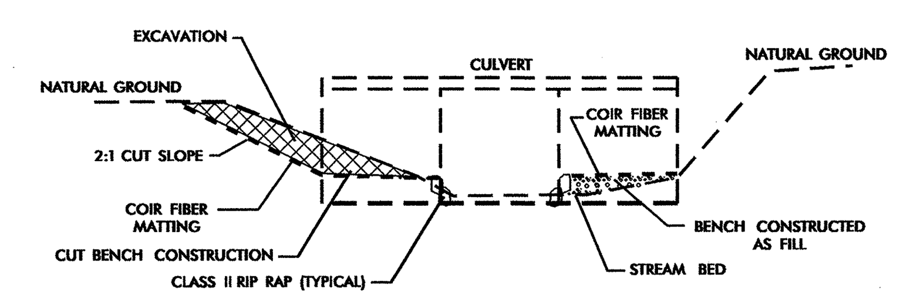
PROJECT REFERENCE NO.	SHEET NO.
B-5110	EC-03/CONST.04
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

REVISIONS

8/17/99

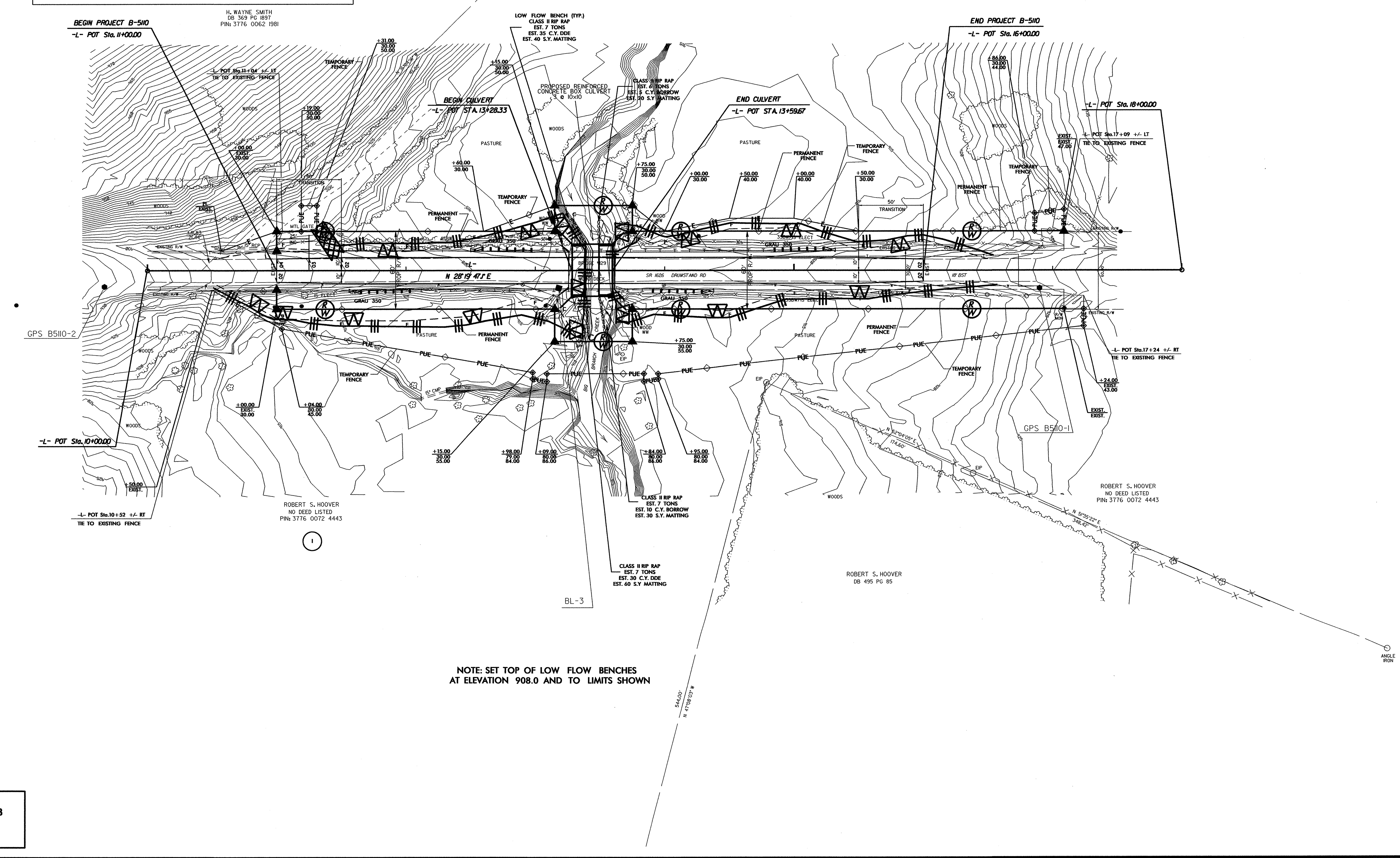


LOW FLOW BENCH DETAIL AT CULVERT (NOT TO SCALE)



BUILD LOW FLOW BENCH AS EITHER A CUT OR FILL SECTION.
TOP OF BENCH ELEVATION SHOULD BE 908.0 (2.5' ABOVE CULVERT FLOOR)
USE COIR FIBER MATTING ALONG BENCH TOP AND CUT SLOPES FOR STABILITY.
LINE TOE OF BENCH WITH CLASS II RIP RAP.

BACKFILL HIGH FLOW CULVERT BARRELS WITH NATIVE BED MATERIAL TO SILL HEIGHT
DO NOT USE MATTING INSIDE CULVERT (SEE STRUCTURE PLANS)



NOTE: SET TOP OF LOW FLOW BENCHES
AT ELEVATION 908.0 AND TO LIMITS SHOWN

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 04

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

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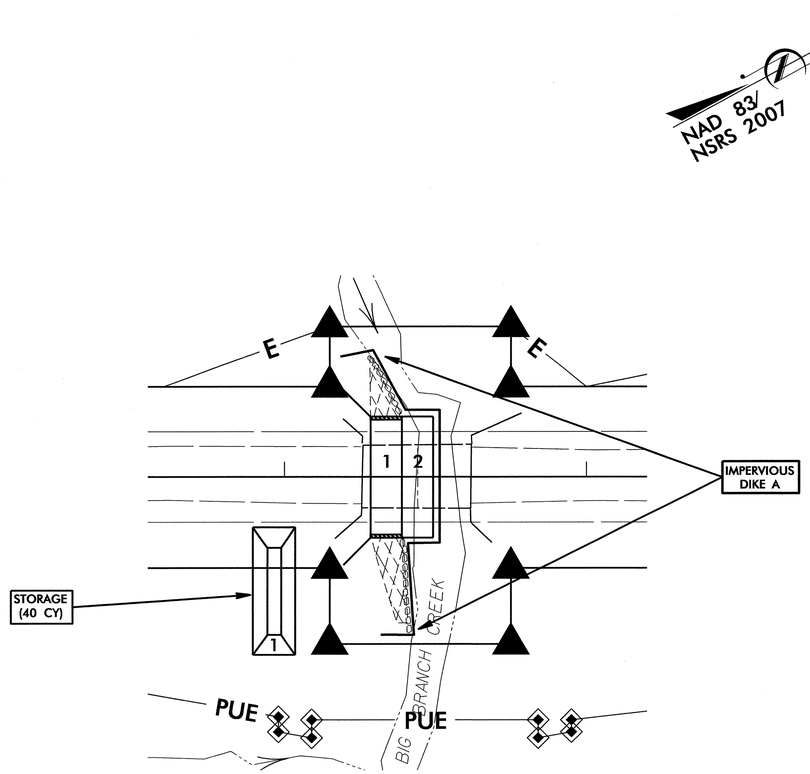
CULVERT CONSTRUCTION SEQUENCE STA. 13+44 –L–

PROJECT REFERENCE NO.	SHEET NO.
B-5110	EC-04/CONST.04
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PHASE I

1. CONSTRUCT STILLING BASIN 1 (40 CY).
2. REMOVE EXISTING BRIDGE.
3. CONSTRUCT IMPERVIOUS DIKE A.
4. CONSTRUCT BARRELS 1 AND 2 OF PROPOSED CULVERT, AND PORTION OF INLET/OUTLET CHANNEL IMPROVEMENTS.
5. REMOVE IMPERVIOUS DIKE A AND STILLING BASIN 1.



PHASE II

6. CONSTRUCT STILLING BASIN 2 (20 CY).
7. CONSTRUCT IMPERVIOUS DIKES B AND C, DIVERTING FLOW THROUGH BARREL 2 OF PROPOSED CULVERT.
8. CONSTRUCT BARREL 3 OF PROPOSED CULVERT, AND REMAINDER OF INLET/OUTLET CHANNEL IMPROVEMENTS.
9. REMOVE IMPERVIOUS DIKES B AND C, ALLOWING NORMAL FLOW THROUGH PROPOSED CULVERT.
10. REMOVE STILLING BASIN 2.
11. COMPLETE ROADWAY.

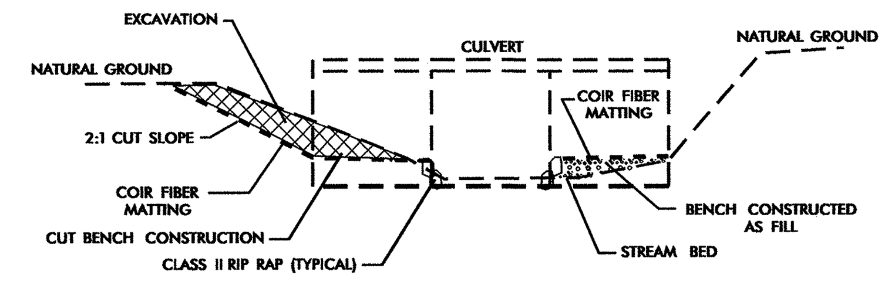
PROJECT REFERENCE NO.	SHEET NO.
B-5110	EC-05/CONST.04
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

8/17/99

REVISIONS

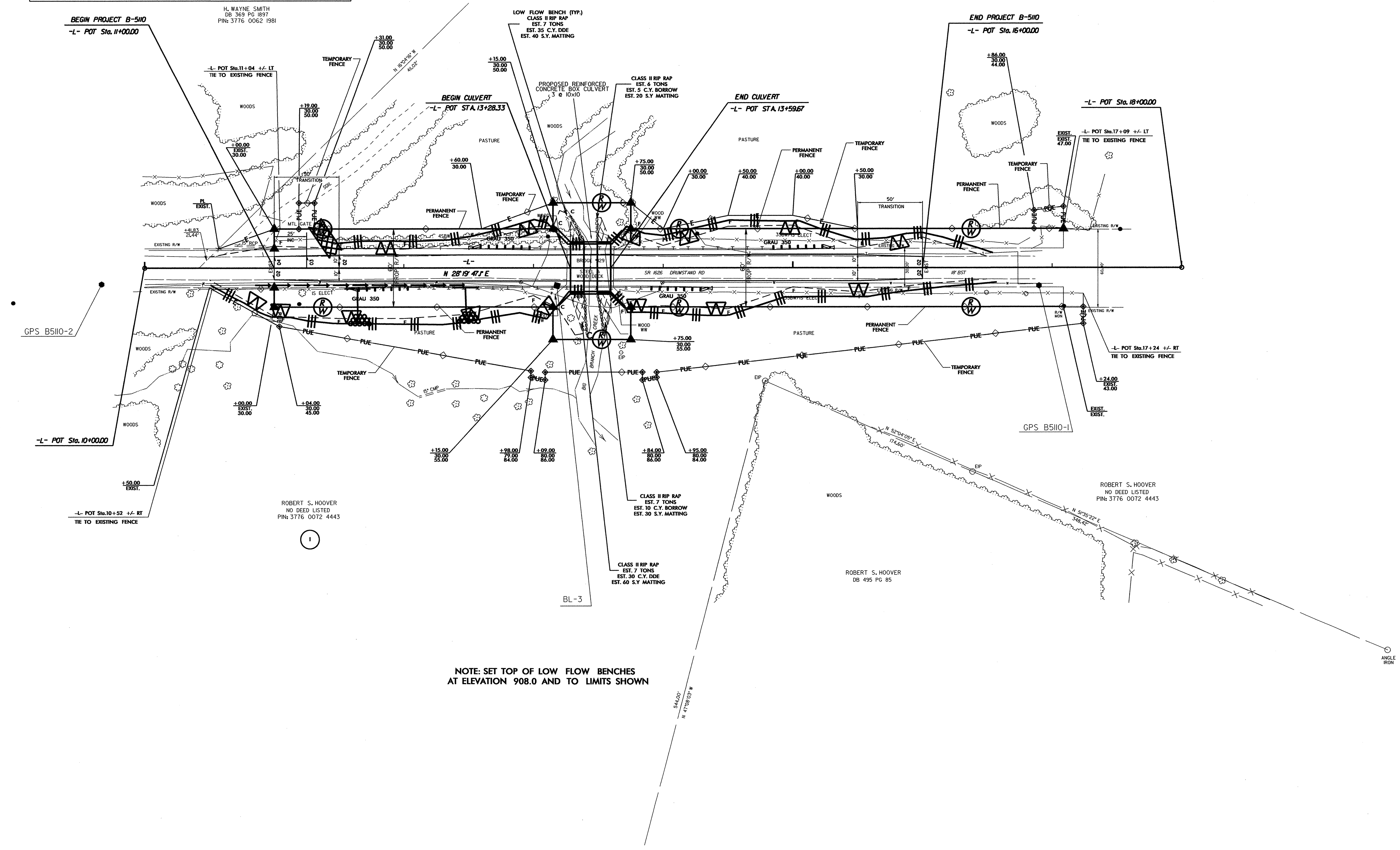
NAD 83/ NSRS 2007

LOW FLOW BENCH DETAIL AT CULVERT (NOT TO SCALE)



BUILD LOW FLOW BENCH AS EITHER A CUT OR FILL SECTION.
TOP OF BENCH ELEVATION SHOULD BE 908.0 (2.5' ABOVE CULVERT FLOOR)
USE COIR FIBER MATTING ALONG BENCH TOP AND CUT SLOPES FOR STABILITY.
LINE TOE OF BENCH WITH CLASS II RIP RAP.

BACKFILL HIGH FLOW CULVERT BARRELS WITH NATIVE BED MATERIAL TO SILL HEIGHT
DO NOT USE MATTING INSIDE CULVERT (SEE STRUCTURE PLANS)



NOTE: SET TOP OF LOW FLOW BENCHES AT ELEVATION 908.0 AND TO LIMITS SHOWN

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T.I.P.: B-5110

CONTRACT:

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

TIP NO.	SHEET NO.
B-5110	SIGN-1

APPROVED: _____ 10/16/13

DATE: _____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 022959 ENGINEER RONALD W. KING

SIGNING PLAN
ALEXANDER COUNTY

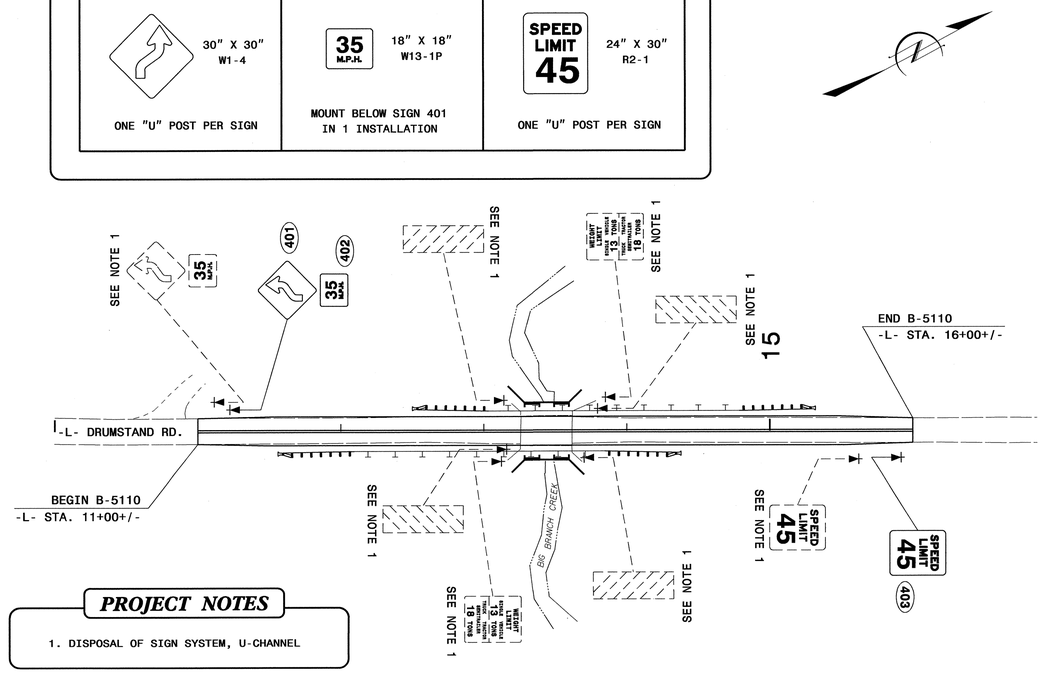
LOCATION: BRIDGE No. 129 OVER BIG BRANCH CREEK ON SR 1626

GENERAL NOTES

. SIGNS FURNISHED BY STATE
. IF REMOVAL OR RELOCATION OF SIGNS ON PRIVATE STREET (NON-STATE MAINTAINED) IS REQUIRED DUE TO CONSTRUCTION, THE CONTRACTOR SHALL INFORM THE ENGINEER. THE WORK WILL BE COMPLETED BY OTHERS.
. WHEN NOT STATIONED OR DIMENSIONED ON PLANS, ALL 'E' AND 'F' SIGNS SHALL BE FIELD LOCATED BY THE ENGINEER
. ALL EXISTING SIGNS ON "U" CHANNEL POST WITHIN THE PROJECT LIMITS SHALL BE REMOVED AND DISPOSED OF UNLESS OTHERWISE NOTED ON PLANS.
. WHEN EXISTING SIGNS ARE REMOVED AND INSTALLED ON NEW SUPPORTS, THE RE-ERECTION SHALL IMMEDIATELY FOLLOW THE REMOVAL.
. THE BACKGROUND FOR TYPE E & F SIGNS SHALL BE TYPE C REFLECTIVE SHEETING.
. SEE ROADWAY PLANS FOR GUARD/GUIDE RAIL DETAILS.

"E" SIGNS

(401) QUANTITY REQ'D _1_	(402) QUANTITY REQ'D _1_	(401) QUANTITY REQ'D _1_
30" X 30" W1-4	35 M.P.H. 18" X 18" W13-1P	SPEED LIMIT 45 24" X 30" R2-1
ONE "U" POST PER SIGN	MOUNT BELOW SIGN 401 IN 1 INSTALLATION	ONE "U" POST PER SIGN



PROJECT NOTES

1. DISPOSAL OF SIGN SYSTEM, U-CHANNEL

SUMMARY OF QUANTITIES

ITEM NO. DESC. NO.	ITEM NO. SECT. NO.	ITEM DESCRIPTION	QUANTITY	UNIT
4072000000	903	SUPPORTS, 3 LB STEEL U-CHANNEL	43	L.F.
4102000000	904	SIGN ERECTION, TYPE E	3	EA.
4155000000	907	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	8	EA.

ROADWAY STANDARD DRAWING

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

STD. NO.	TITLE
904.10	ORIENTATION OF GROUND MOUNTED SIGNS
904.50	MOUNTING OF TYPE 'D', 'E' AND 'F' SIGNS ON 'U' CHANNEL POSTS

INDEX

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

KELVIN L. JORDAN — SIGNING & DELINEATION REGIONAL ENGINEER

DERRICK H. BEARD — SIGNING & DELINEATION PROJECT DESIGN ENGINEER

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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TIP PROJECT: B-5110

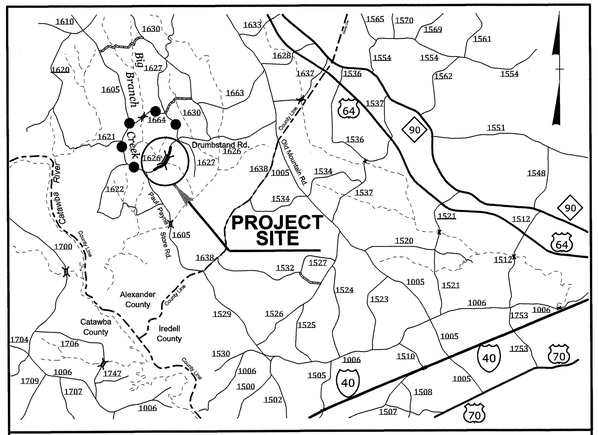
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

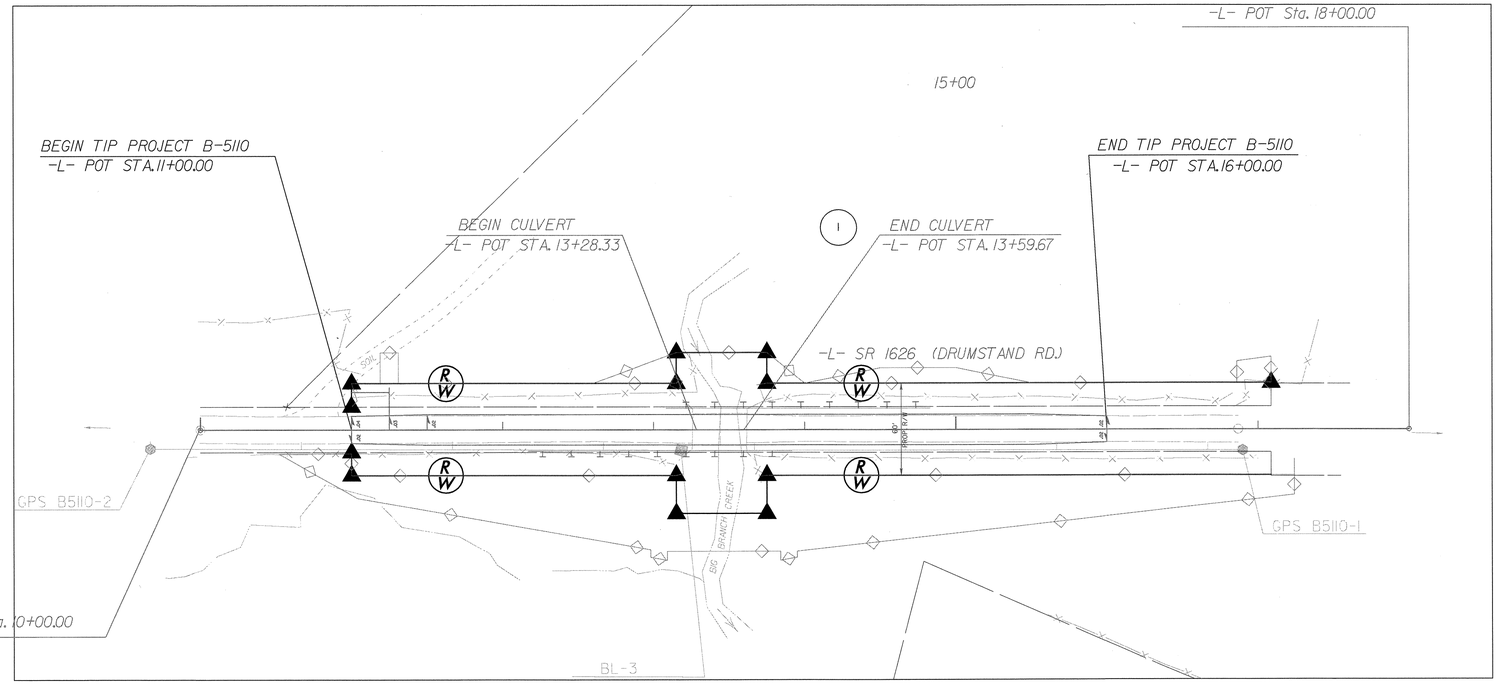
T.I.P. NO.	SHEET NO.
B-5110	UO-1

UTILITIES BY OTHERS PLAN
ALEXANDER COUNTY

LOCATION: BRIDGE NO. 129 OVER BIG BRANCH CREEK ON SR 1626

TYPE OF WORK: POWER DISTRIBUTION AND TELEPHONE COMMUNICATIONS RELOCATION





NAD 83/ NSRS 2007

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

INDEX OF SHEETS

UTILITY OWNERS ON PROJECT

(1) DUKE (Power Distribution)
(2) AT&T (Telecommunications)

Baker

Michael Baker Engineering, Inc.
8000 Regency Parkway,
Suite 600
Cary, NC 27518

UTILITIES COORDINATION CONSULTANT

Gus Kretschmer

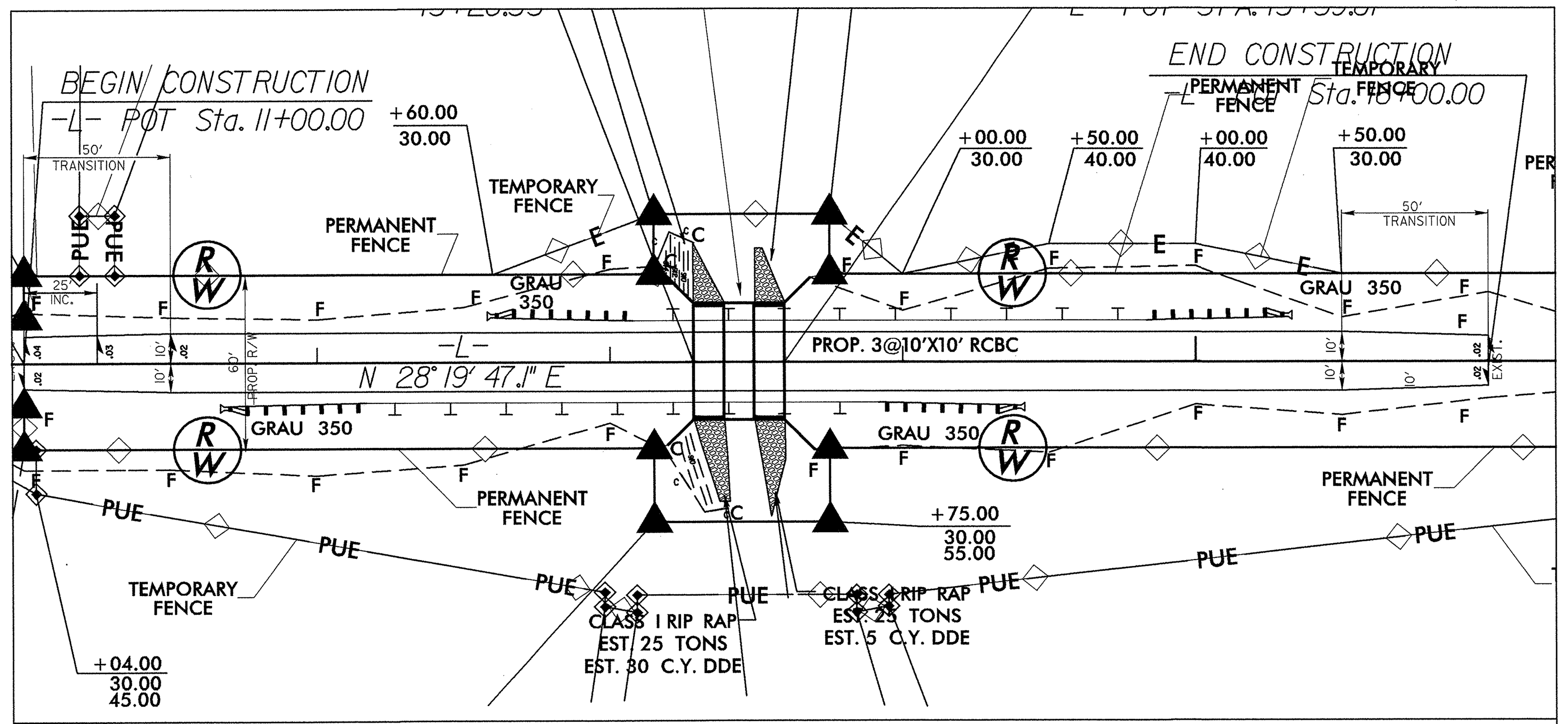
PREPARED IN THE OFFICE OF:
DIVISION OF HIGHWAYS
UTILITIES ENGINEERING SECTION
1591 MAIL SERVICES CENTER
RALEIGH NC 27699-1591
PHONE (919) 707-6690
FAX (919) 250-4151

Roger Worthington, P.E. UTILITIES SECTION ENGINEER
Carl Barclay, P.E. UTILITIES SQUAD LEADER PROJECT ENGINEER

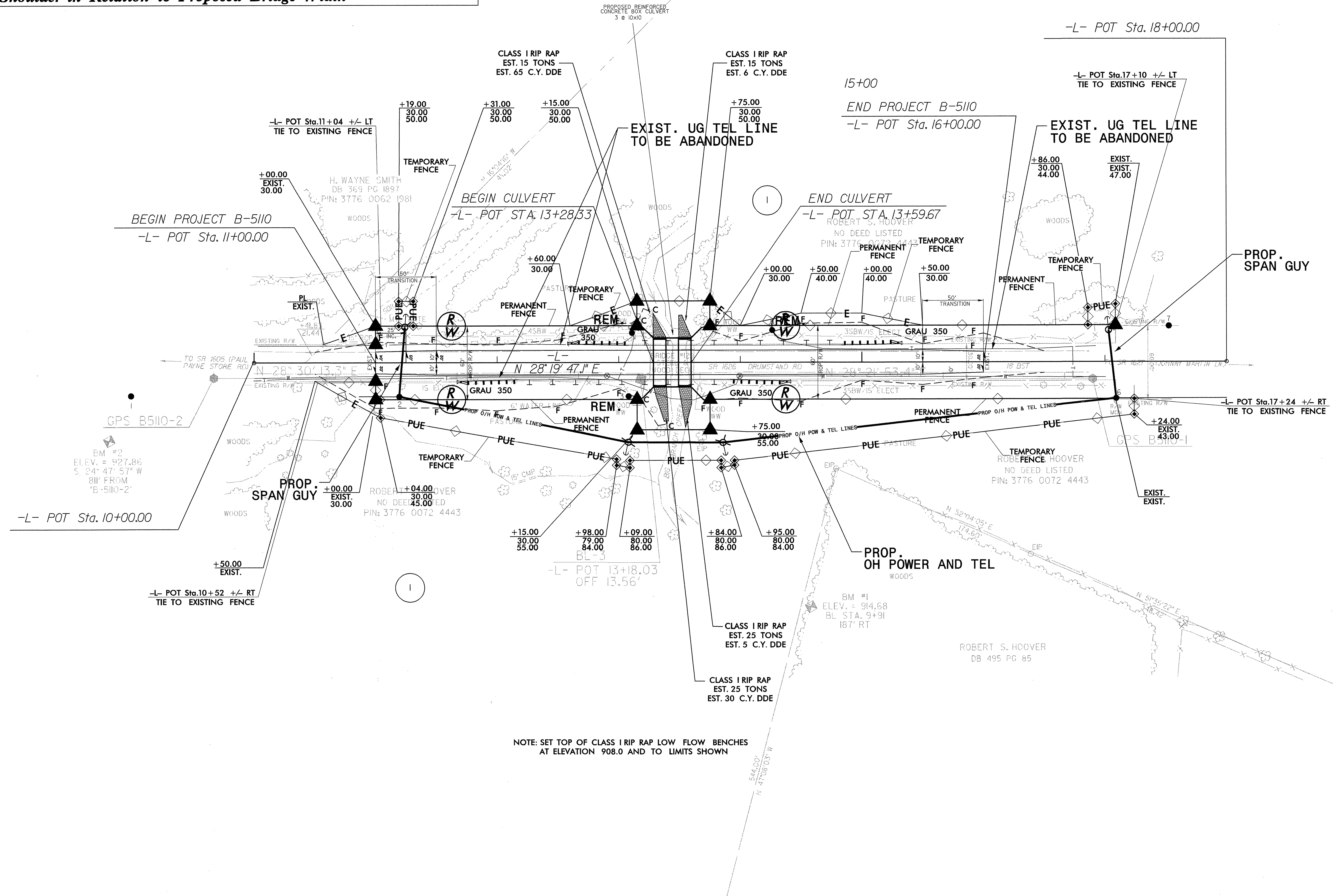
PROJECT REFERENCE NO.	SHEET NO.
B-5110	U0-2

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS



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



NOTE: SET TOP OF CLASS I RIP RAP LOW FLOW BENCHES AT ELEVATION 908.0 AND TO LIMITS SHOWN

REVISIONS

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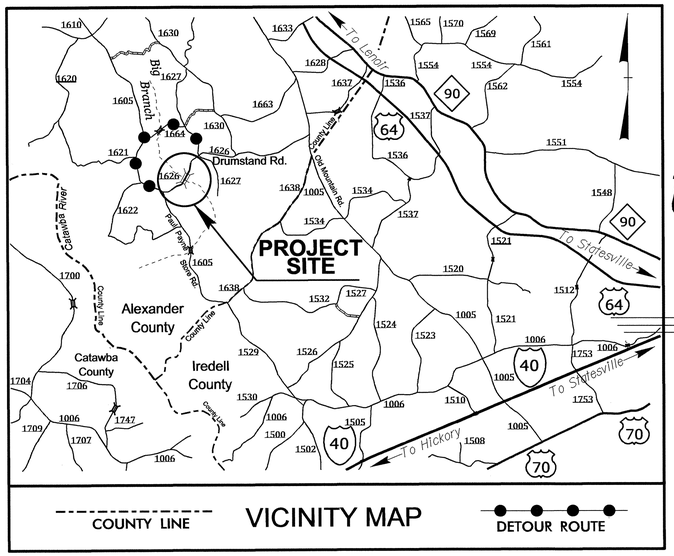
Baker
Michael Baker Engineering, Inc.
8000 Regency Parkway, Suite 600
Cary, NC 27518
919-463-5488

09/08/99

TIP PROJECT: B-5110



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

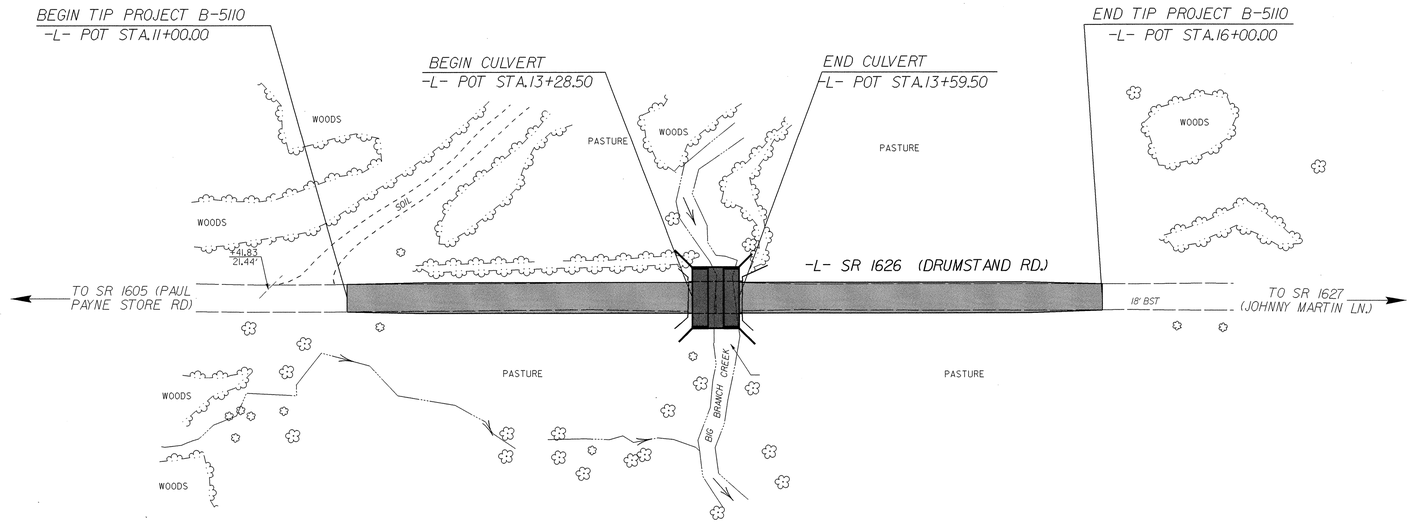
T.I.P. NO.	SHEET NO.
B-5110	UC-1

UTILITY CONSTRUCTION PLANS
ALEXANDER COUNTY

LOCATION: BRIDGE NO. 129 OVER BIG BRANCH CREEK ON SR 1626

TYPE OF WORK: WATER LINE RELOCATION

NAD 83/ NSRS 2007



GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

INDEX OF SHEETS

WATER AND SEWER OWNERS ON PROJECT

(1) WATER: ENERGY UNITED WATER CORPORATION

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 33366 ENGINEER ALI R. KOUCHEKI 11/5/2013

PREPARED IN THE OFFICE OF:
DIVISION OF HIGHWAYS
UTILITIES UNIT
UTILITIES ENGINEERING

1555 MAIL SERVICES CENTER
RALEIGH NC 27699-1555
PHONE (919) 707-6690
FAX (919) 250-4151

Roger Worthington, P.E. UTILITIES SECTION ENGINEER
CARL BARCLAY, P.E. UTILITIES SQUAD LEADER PROJECT ENGINEER
ALI KOUCHEKI, P.E. UTILITIES PROJECT DESIGNER

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5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-5110	UC-2

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

- Water Line (Sized as Shown) — 12" WL
- 11¼ Degree Bend
- 22½ Degree Bend
- 45 Degree Bend
- 90 Degree Bend
- Plug
- Tee
- Cross
- Reducer
- Gate Valve — GV
- Butterfly Valve — BV
- Tapping Valve — TGV
- Line Stop — LS
- Line Stop with Bypass — LS/BP
- Blow Off — BO
- Fire Hydrant — PFH
- Relocate Fire Hydrant — RFH
- Remove Fire Hydrant — REM FH
- Water Meter — PWM
- Relocate Water Meter — RWM
- Remove Water Meter — REM WM
- Water Pump Station — PS(W)
- RPZ Backflow Preventer — PRPZ
- DCV Backflow Preventer — PBFP
- Relocate RPZ Backflow Preventer — RRPZ
- Relocate DCV Backflow Preventer — RBFP

PROPOSED SEWER SYMBOLS

- Gravity Sewer Line (Sized as Shown) — 12" SS
- Force Main Sewer Line (Sized as Shown) — 12" FSS
- Manhole (Sized per Note)
- Sewer Pump Station — PS(SS)

PROPOSED MISCELLANOUS UTILITIES SYMBOLS

- Power Pole
- Telephone Pole
- Joint Use Pole
- Telephone Pedestal — TEL_PED
- Utility Line by Others (Type as Shown) — PROP O/H POW LINES
- Trenchless Installation — 12" TL INSTALL
- Encasement by Open Cut — 24" ENCAS BY OC
- Encasement — 24" ENCASEMENT
- Thrust Block
- Air Release Valve — AR
- Utility Vault — UV
- Concrete Pier — CP
- Steel Pier — SP
- Plan Note — NOTE
- Pay Item Note — PAY ITEM

EXISTING UTILITIES SYMBOLS

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

*For Existing Utilities

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

REV: 2/1/2012

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5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-5110	UC-3
DESIGNED BY: ARK	
DRAWN BY: ARK	
CHECKED BY: CAB	
APPROVED BY: CAB	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE:(919)707-6690 FAX:(919)250-4151	UTILITY CONSTRUCTION PLANS ONLY

NORTH CAROLINA PROFESSIONAL SEAL 33366 ENGINEER ALI R. KOLKHEG 11/5/2013

UTILITY CONSTRUCTION

UTILITY CONSTRUCTION

GENERAL NOTES:

1. THE PROPOSED UTILITY CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF THE NC DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2012.

2. THE EXISTING UTILITIES BELONG TO ENERGY UNTITED WATER CORPORATION

3. ALL WATER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL AND NATURAL RESOURCES, DIVISION OF ENVIRONMENTAL HEALTH. ALL SEWER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES, DIVISION OF WATER QUALITY. PERFORM ALL WORK IN ACCORDANCE WITH THE APPLICABLE PLUMBING CODES.

4. THE UTILITY OWNER OWNS THE EXISTING UTILITY FACILITIES AND WILL OWN THE NEW UTILITY FACILITIES AFTER ACCEPTANCE BY THE DEPARTMENT. THE DEPARTMENT OWNS THE CONSTRUCTION CONTRACT AND HAS ADMINISTRATIVE AUTHORITY. COMMUNICATIONS AND DECISIONS BETWEEN THE CONTRACTOR AND UTILITY OWNER ARE NOT BINDING UPON THE DEPARTMENT OR THIS CONTRACT UNLESS AUTHORIZED BY THE ENGINEER. AGREEMENTS BETWEEN THE UTILITY OWNER AND CONTRACTOR FOR THE WORK THAT IS NOT PART OF THIS CONTRACT OR IS SECONDARY TO THIS CONTRACT ARE ALLOWED, BUT ARE NOT BINDING UPON THE DEPARTMENT.

5. PROVIDE ACCESS FOR THE DEPARTMENT PERSONNEL AND THE OWNER'S REPRESENTATIVES TO ALL PHASES OF CONSTRUCTION. NOTIFY DEPARTMENT PERSONNEL AND THE UTILITY OWNER TWO WEEKS PRIOR TO COMMENCEMENT OF ANY WORK AND ONE WEEK PRIOR TO SERVICE INTERRUPTION. KEEP UTILITY OWNERS' REPRESENTATIVES INFORMED OF WORK PROGRESS AND PROVIDE OPPROTUNITY FOR INSPECTION OF CONSTRUCTION AND TESTING.

6. THE PLANS DEPICT THE BEST AVAILABLE INFORMATION FOR THE LOCATION, SIZE, AND TYPE OF MATERIAL FOR ALL EXISTING UTILITIES. MAKE INVESTIGATIONS FOR DETERMINING THE EXACT LOCATION, SIZE, AND TYPE MATERIAL OF THE EXISTING FACILITIES AS NECESSARY FOR THE CONSTRUCTION OF THE PROPOSED UTILITIES AND FOR AVOIDING DAMAGE TO EXISTING FACILITIES. REPAIR ANY DAMAGE INCURRED TO EXISTING FACILITIES TO THE ORIGINAL OR BETTER CONDITION AT NO ADDITONAL COST TO THE DEPARTMENT.

7. MAKE FINAL CONNECTIONS OF THE NEW WORK TO THE EXISTING SYSTEM WHERE INDICATED ON THE PLANS, AS REQUIRED TO FIT THE ACTUAL CONDITIONS, OR AS DIRECTED.

8. MAKE CONNECTIONS BETWEEN EXISTING AND PROPOSED UTILITIES AT TIMES MOST CONVENIENT TO THE PUBLIC, WITHOUT ENDANGERING THE UTILITY SERVICE, AND IN ACCORDANCE WITH THE UTILITY OWNER'S REQUIREMENTS. MAKE CONNECTIONS ON WEEKENDS, AT NIGHT, AND ON HOLIDAYS IF NECESSARY.

9. ALL UTILITY MATERIALS SHALL BE APPROVED PRIOR TO DELIVERY TO THE PROJECT. SEE 1500-7, " SUBMITTALS AND RECORDS" IN SECTION 1500 OF THE STANDARD SPECIFICATIONS.

PROJECT SPECIFIC NOTES:

1. CONTRACTOR'S ATTENTION IS DIRECTED TO SECTIONS 102, 107, AND 1550 OF THE STANDARD SPECIFICATIONS CONCERNING TRENCHLESS INSTALLATION. IT IS CONTRACTOR'S RESPONSIBILITY TO HAVE BORE PATH DESIGNED AND SEALED BY A LICENSED NORTH CAROLINA PROFESSIONAL ENGINEER. NO DAMAGE IS ALLOWED TO RIVER, WETLANDS, OR BUFFER ZONES.

2. IF HDPE PIPE IS INSTALLED BY DIRECTIONAL DRILL. IT SHALL BE FILLED WITH WATER AND NOT BE CONNECTED TO ANY OTHER PIPE OR FITTINGS FOR ONE WEEK FROM THE TIME OF INSTALLATION.

LIST OF STANDARD DRAWINGS

5/14/99

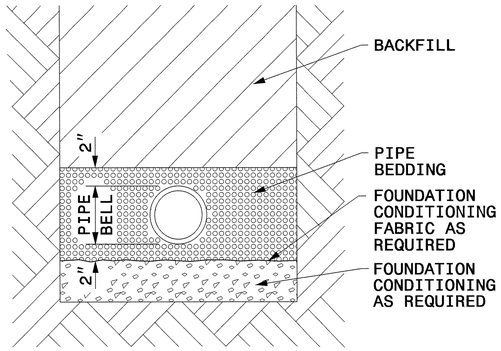
PROJECT REFERENCE NO.	SHEET NO.
B-5110	UC-3A
DESIGNED BY: ARK	
DRAWN BY: ARK	
CHECKED BY: CAB	
APPROVED BY: CAB	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE:(919)707-6690 FAX:(919)250-4151	UTILITY CONSTRUCTION PLANS ONLY

NORTH CAROLINA PROFESSIONAL SEAL 33366 ENGINEER M. R. KNIGHT 5/20/13

UTILITY CONSTRUCTION

PROJECT TYPICAL DETAILS

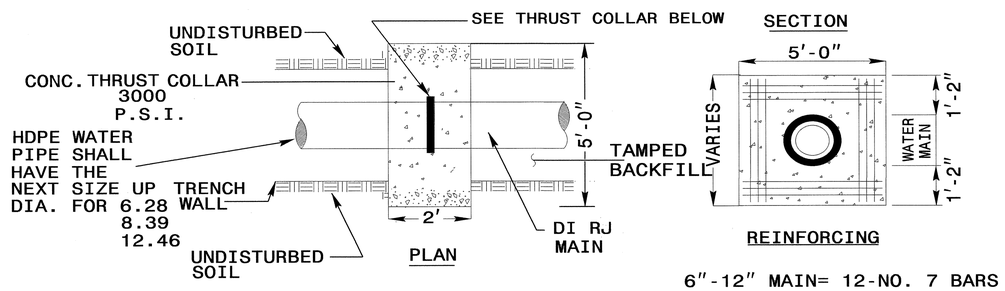
TRENCH DETAIL



PLACE FOUNDATION CONDITIONING MATERIAL BELOW BEDDING IF REQUIRED, AS DIRECTED BY ENGINEER. PIPE BEDDED IN SELECT MATERIAL, CLASS II (TYPE 1) OR CLASS III. TRENCH BACKFILLED IN LOOSE 6" LAYERS COMPACTED TO TOP OF TRENCH USING LOCAL EXCAVATED MATERIAL IF APPROVED BY THE ENGINEER, OR SELECT MATERIAL. ALL MATERIAL SHALL BE FREE OF ROCKS, FOREIGN MATERIAL, AND FROZEN EARTH. COMPACTION SHALL BE TO APPROXIMATELY 95% DENSITY IN ACCORDANCE WITH AASHTO T-99 AS MODIFIED BY THE DEPARTMENT OF TRANSPORTATION.

MAXIMUM TRENCH WIDTH
AT TOP OF PIPE

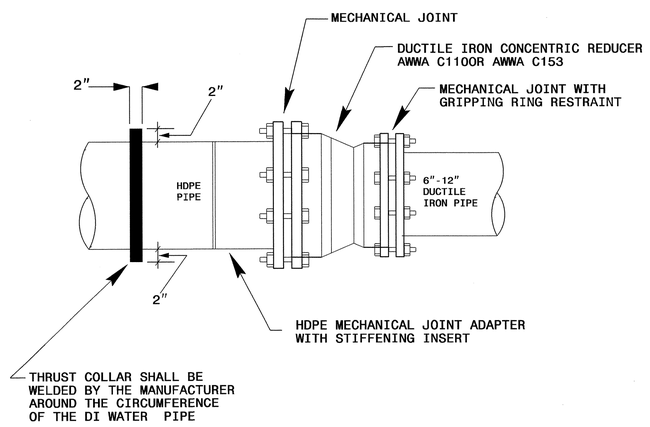
NOMINAL PIPE SIZE (INCHES)	TRENCH WIDTH (INCHES)	NOMINAL PIPE SIZE (INCHES)	TRENCH WIDTH (INCHES)
4	28	20	44
6	30	24	48
8	32	30	54
10	34	36	60
12	36	42	66
14	38	48	72
16	40	54	78
18	42		



6"-12" MAIN= 12-NO. 7 BARS
BARS PLACED AS SHOWN

NOTE: BOTTOM OF TRENCH NEEDS TO BE STABILIZED TO SUPPORT THE WEIGHT OF THE THRUST COLLAR.

CONCRETE THRUST COLLAR DETAIL - WATER LINE



NOTE: SEE SEPARATE DETAIL FOR CONCRETE THRUST COLLAR

TRANSITION DETAIL FROM HDPE TO DI WATER PIPE

5/14/99

REVISIONS

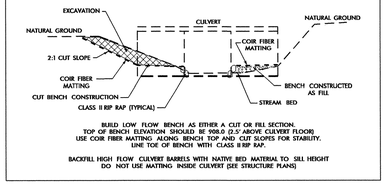
PROJECT REFERENCE NO.	SHEET NO.
B-5110	UC-4
DESIGNED BY: ARK	
DRAWN BY: ARK	
CHECKED BY: CAB	
APPROVED BY: CAB	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE:(919)707-6690 FAX:(919)250-4151	UTILITY CONSTRUCTION PLANS ONLY

NORTH CAROLINA PROFESSIONAL SEAL 33366 ENGINEER ALI R. KOLKHEL 5/20/13

UTILITY CONSTRUCTION

NAD 83/ NSRS 2007

LOW FLOW BENCH DETAIL AT CULVERT
(NOT TO SCALE)



BUILD LOW FLOW BENCH AS EITHER A CUT OR FILL SECTION.
TOP OF BENCH ELEVATION SHOULD BE 908.0 (2.5' ABOVE CULVERT FLOOR)
USE COIR FIBER MATTING ALONG BENCH TOP AND CUT SLOPES FOR STABILITY.
LINE TOE OF BENCH WITH CLASS II RIP RAP.

BACKFILL HIGH FLOW CULVERT BARRELS WITH NATIVE BED MATERIAL TO SILL HEIGHT
DO NOT USE MATTING INSIDE CULVERT (SEE STRUCTURE PLANS)

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-5110	UC-5

DESIGNED BY: ARK
DRAWN BY: ARK
CHECKED BY: CAB
APPROVED BY: CAB
REVISED:

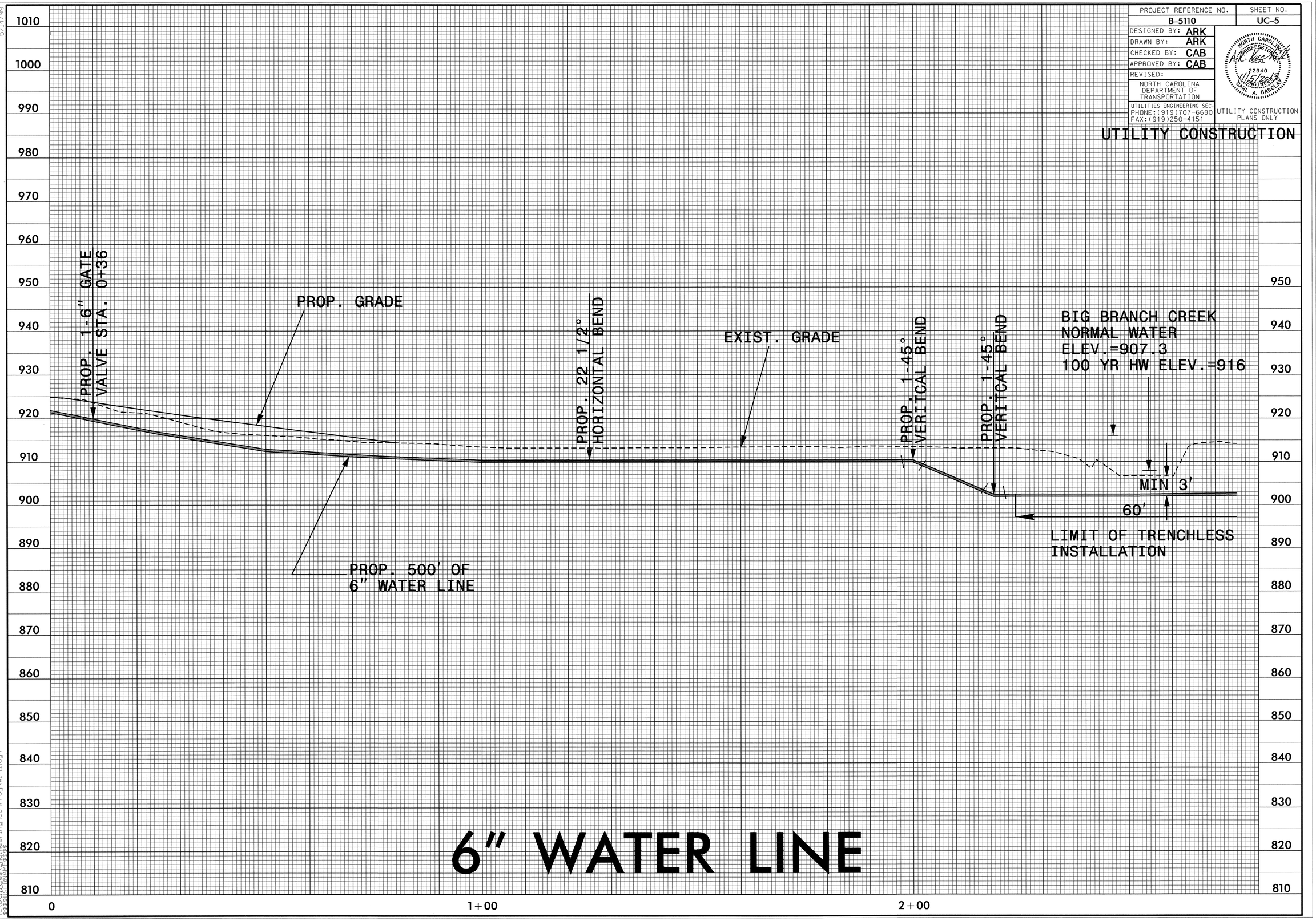
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

UTILITIES ENGINEERING SEC.
PHONE:(919)707-6690
FAX:(919)250-4151

NORTH CAROLINA PROFESSIONAL SEAL 22940 ENGINEER CARL A. BARCLAY 11/5/2013

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION



6" WATER LINE

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-5110	UC-6

DESIGNED BY: ARK
DRAWN BY: ARK
CHECKED BY: CAB
APPROVED BY: CAB
REVISED:

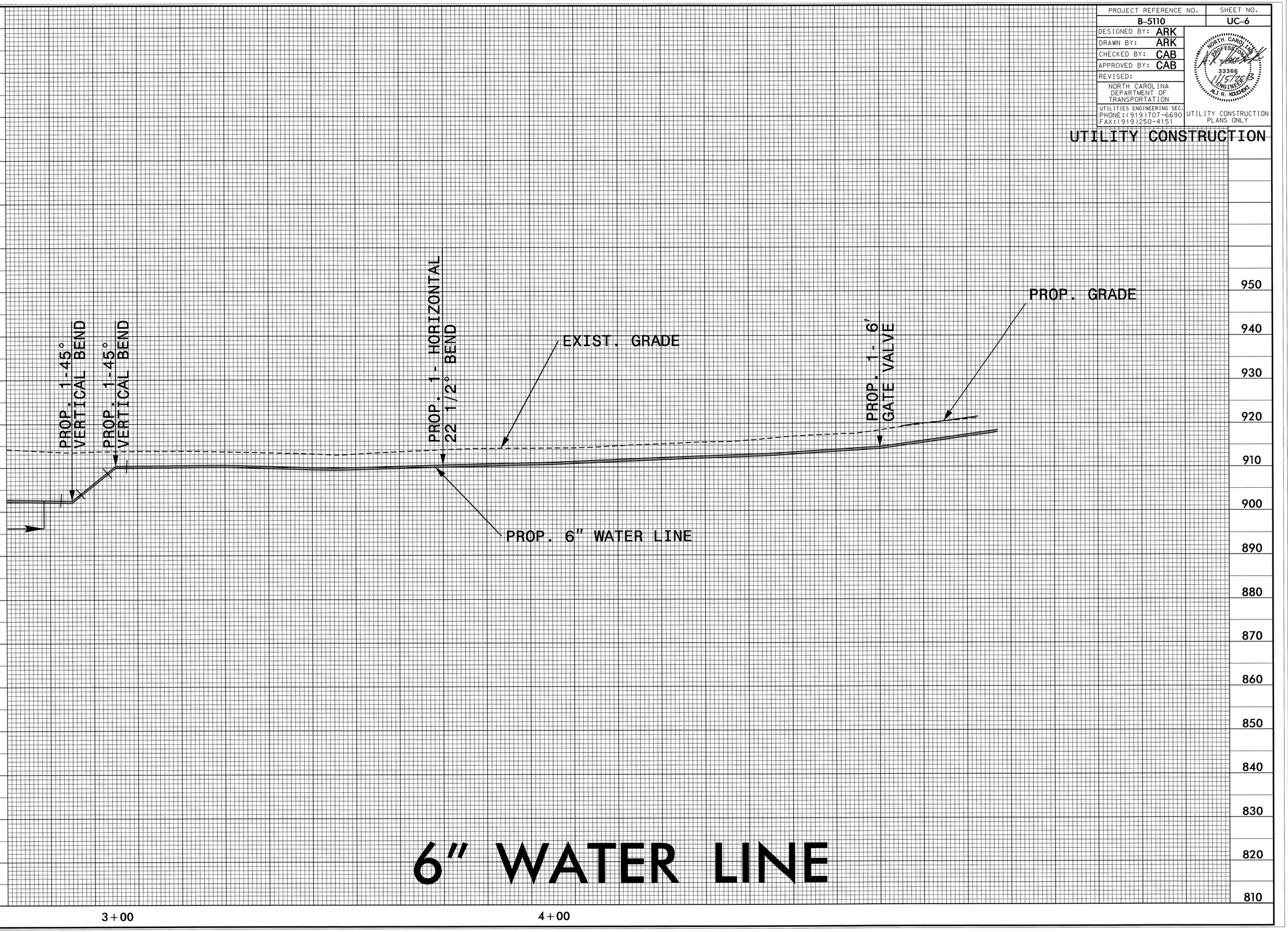
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

UTILITIES ENGINEERING SEC.
PHONE:(919)707-6690
FAX:(919)250-4151

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 33366 11/5/2013 ENGINEER M.I.R. HUQUEM

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION



6" WATER LINE

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PROJ. REFERENCE NO.	SHEET NO.
B-5110	X-0

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CROSS-SECTION SUMMARY

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

NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT

Station -L-	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
11+00.00	0	0
11+50.00	20	50
12+00.00	19	110
12+50.00	18	111
13+00.00	17	70
13+28.33	9	23

Station -L-	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
13+28.33	0	0
13+50.00	0	48
13+59.67	0	21

Station -L-	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
13+59.67	0	0
14+00.00	25	19
14+50.00	29	56
15+00.00	26	72
15+50.00	26	29
16+00.00	22	3

8/23/99

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

927.95

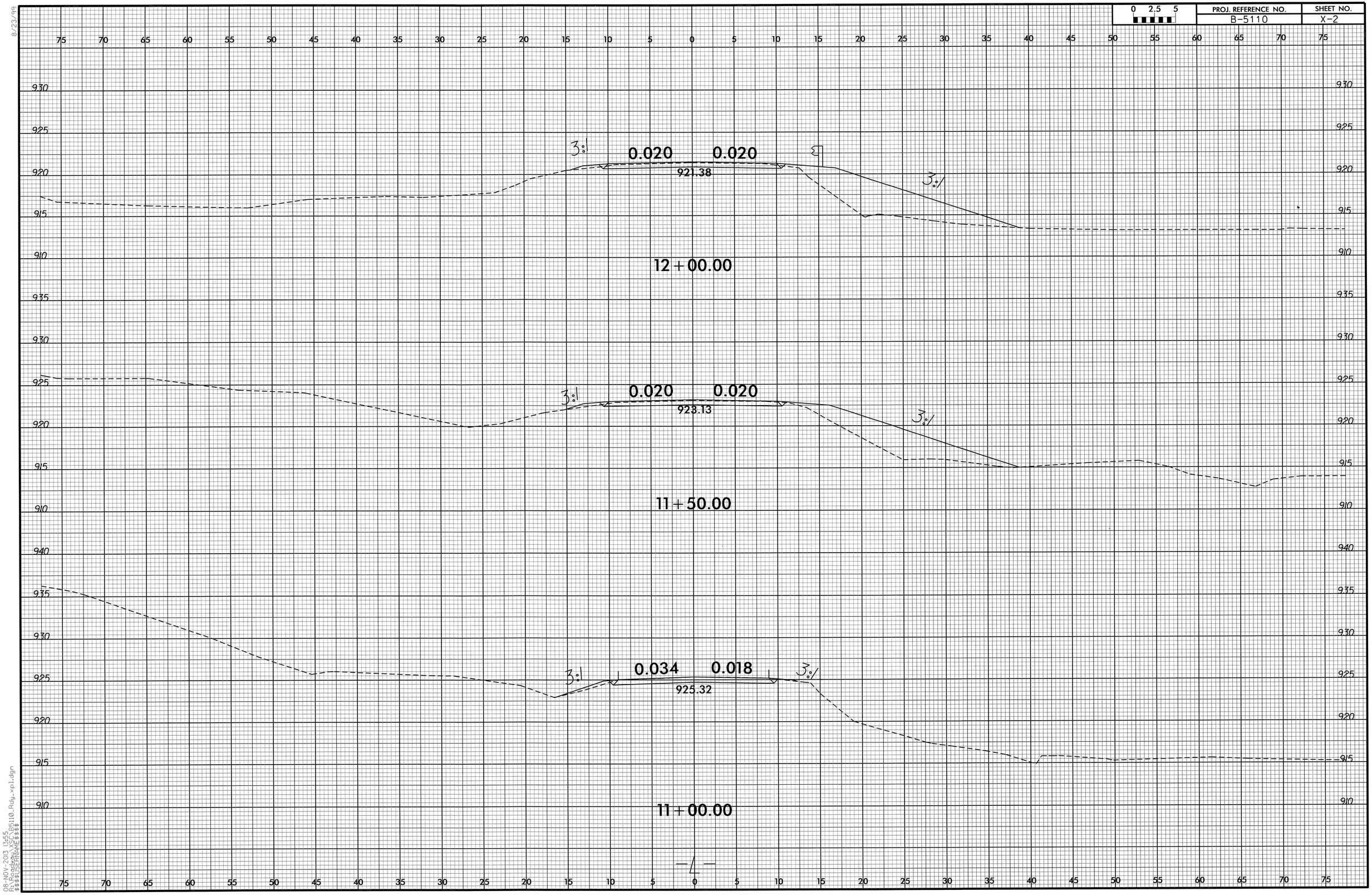
10+50.00

931.06

10+00.00

8/23/99

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



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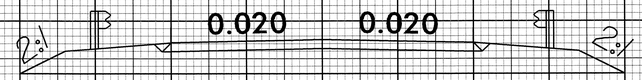
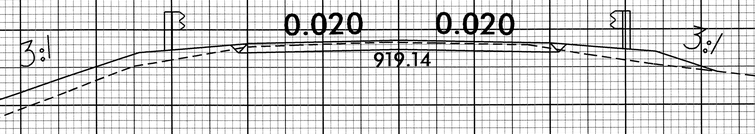
8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-5110	X-3



3@10'x10' RCBC

13+50.00



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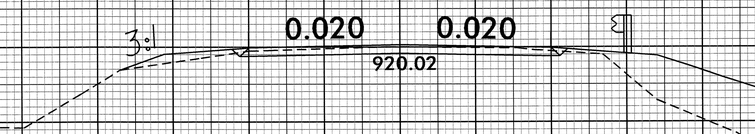

12+50.00

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PROJ. REFERENCE NO.	SHEET NO.
B-5110	X-4

8/23/99

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8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-5110	X-5

924.40

16+50.00

3.%

0.014 0.015

922.38

3.%

16+00.00

08-NOV-2013 13:55
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$$$$USERNAME$$$$