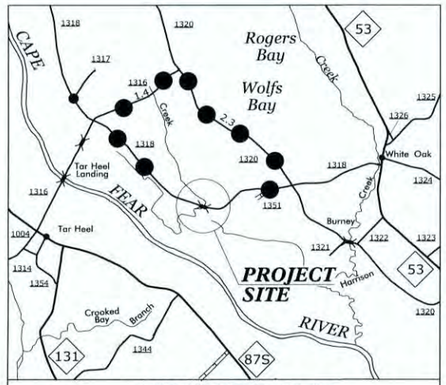
TIP PROJECT: B-5411

CONTRACT: DF-00071

See Sheet 1-A For Index of Sheets



VICINITY MAP

OFF-SITE DETOUR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

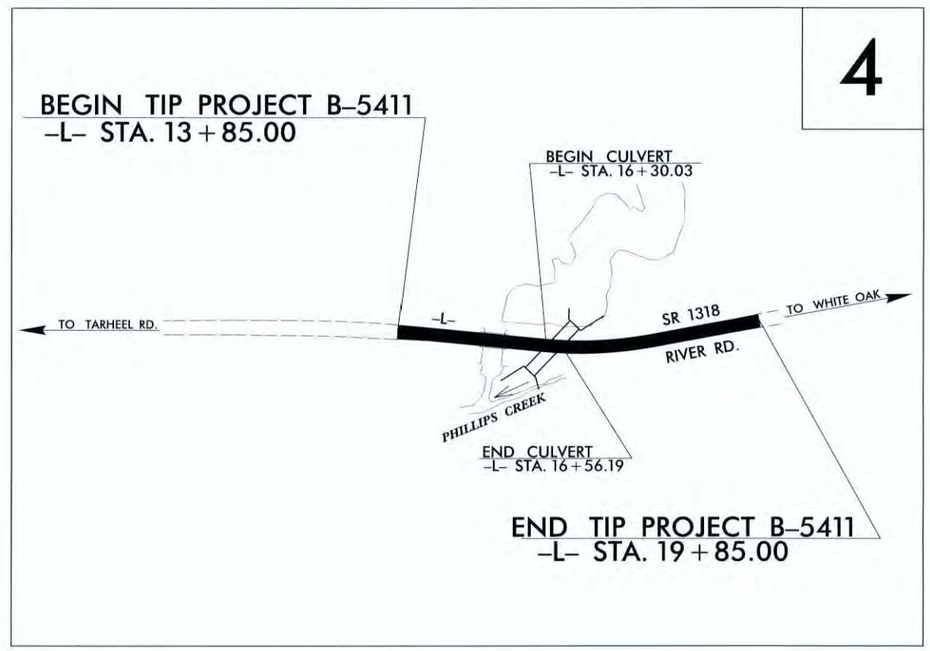
BLADEN COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5411	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
45427.1.1	BRZ-1318(13)	PE
45427.2.1	BRZ-1318(13)	R/W & UTIL.
45427.3.1	BRZ-1318(13)	CONST.

LOCATION: BRIDGE NO. 124 OVER PHILLIPS CREEK ON SR 1318 (RIVER RD.)

TYPE OF WORK: GRADING, DRAINAGE, PAVING & CULVERT



GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2011 = 2300
ADT 2031 = 4155
DHV = 10 %
D = 50 %
T = 8 % *
V = 55 MPH
* TTST = 3% DUAL 5%
FUNC CLASS =
RURAL LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-5411	=	0.109 MILES
LENGTH STRUCTURE TIP PROJECT B-5411	=	0.005 MILES
TOTAL LENGTH TIP PROJECT B-5411	=	0.114 MILES

WETHERILL ENGINEERING

Prepared for the North Carolina Department of Transportation in the Office of:
559 JONES FRANKLIN ROAD
SUITE 164
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

LETTING DATE:

EDWARD G. WETHERILL, PE
PROJECT ENGINEER

GREG S. PURVIS, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 023093 ENGINEER MAX S. PRICE

6/9/14

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022909 ENGINEER GREG S. PURVIS

6/9/14

SIGNATURE: *P.E.*

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

12:22:03 PM
P:\2013\3100.01\B-5411\Roadway\Proj\B5411_Rdy_tsh.dgn
6/9/2014

PROJECT REFERENCE NO.	SHEET NO.
B-5411	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022999 ENGINEER GREG S. PURVIS 6/9/14

GENERAL NOTES

GENERAL NOTES: 2012 SPECIFICATIONS

EFFECTIVE: 01-17-12
REVISED: 07-30-2012

GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

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

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.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE FOUR COUNTY EMC (POWER TRANSMISSION & DISTRIBUTION), STAR TELEPHONE (PHONE) AND BLADEN COUNTY PUBLIC WORKS (WATER).

RIGHT OF WAY MARKERS:

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

LIST OF ROADWAY STANDARD DRAWINGS

EFF. 01-17-12
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	
200.02	Method of Clearing – Method II
225.02	Guide for Grading Subgrade – Secondary and Local
225.04	Method of Obtaining Superelevation – Two Lane Pavement
DIVISION 5 – SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction – High Side of Superelevated Curve – Method I
DIVISION 8 – INCIDENTALS	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
862.01	Guardrail Placement
862.02	Guardrail Installation
876.01	Rip Rap in Channels

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
2	TYPICAL SECTIONS, PAVEMENT SCHEDULE, & MISCELLANEOUS DETAILS
3	GUARDRAIL SUMMARY, EARTHWORK SUMMARY DRAINAGE SUMMARY, PAVEMENT REMOVAL SUMMARY AND RIGHT OF WAY AREA DATA
4	PLAN & PROFILE SHEET
TMP-1 THRU TMP-4	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
EC-1 THRU EC-6	EROSION CONTROL PLANS
UC-1 THRU UC-2	UTILITIES CONSTRUCTION PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-1A	CROSS-SECTION SUMMARY SHEET
X-1 THRU X-6	CROSS-SECTIONS
C-1 THRU C-4	CULVERT PLANS & CULVERT NOTES

04/16/11

PROJECT REFERENCE NO.	SHEET NO.
B-5411	1-B

Note: Not to Scale

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- Recorded U/G Water Line
- Designated U/G Water Line (S.U.E.*)
- 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-5411	2

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022999 ENGINEER GREG S. PURVIS

6/9/14

WETHERILL ENGINEERING
559 James Franklin Rd. Suite 164
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

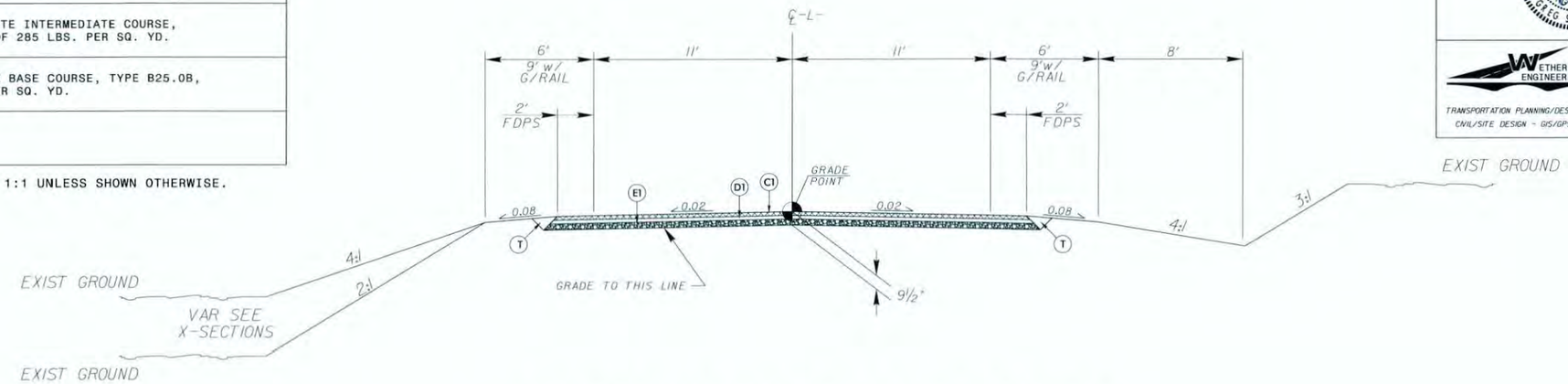
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PAVEMENT SCHEDULE

(PRELIMINARY PAVEMENT DESIGN)

C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
D1	PROP. APPROX. 2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
T	EARTH MATERIAL.

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



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1:

FDPS = FULL DEPTH PAVED SHOULDER

-L- STA. 13+85.00 TO -L- STA. 19+85.00

B-5411
BLADEN COUNTY

DETAIL A

(NOT TO SCALE)

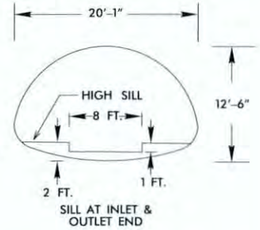
LOW FLOW CHANNEL AND SILLS

*NOTES:

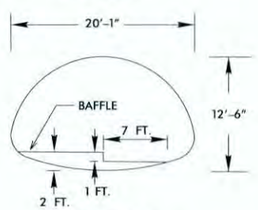
1) TOP OF LOW FLOW SILLS/BAFFLES SHOULD MATCH STREAM BED ELEVATION IN LOW FLOW CHANNEL OF STREAM. (THALWEG)

3) DO NOT SET ELEVATION OF HIGH SILL/BAFFLES ABOVE BANK FULL.

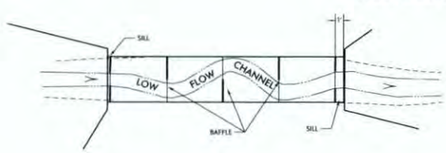
4) NUMBER OF SILL/BAFFLES MAY BE ADJUSTED BY THE ENGINEER AS NEEED.

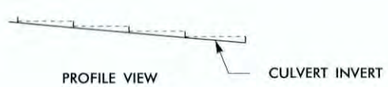


SILL AT INLET & OUTLET END



INTERNAL BAFFLE





PROFILE VIEW

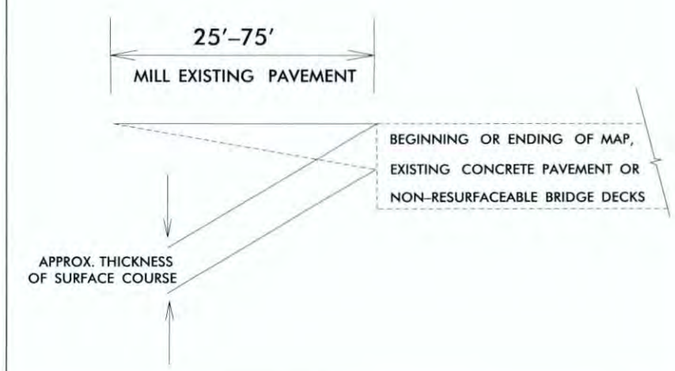
MILLING AT PAVEMENT TIE-INS

NOTES TO CONTRACTOR

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

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

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



COMPUTED BY: SLK	DATE: 3/2013
CHECKED BY: GSP	DATE: 3/2013

PROJECT REFERENCE NO.	SHEET NO.
B-5411	3

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

STATION	STATION	UNCL. EXCAV.	EMBANK. +%	BORROW	WASTE
-L- 13+85.00	-L- 19+85.00	299	4732	4433	2050
SUBTOTALS:		299	4732	4433	2050
PROJECT SUBTOTALS:		299	4732	4433	2050
PROJECT TOTALS:		299	4732	4433	2050
5% TO REPLACE TOPSOIL ON BORROW PIT				222	
GRAND TOTALS:		299	4115	4655	2050
SAY:		325		4675	

PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD²
-L-	13+85.00	19+85.00	CL	1720
			TOTAL:	1720
			SAY:	1725

RIGHT OF WAY AREA DATA

PARCEL NO.	PROPERTY OWNERS NAMES	TOTAL ACREAGE	AREA TAKEN	AREA REMAINING RT.	AREA REMAINING LT.	TEMP. CONST. EASE.	PERM. DRAIN. EASE.	TEMP. DRAIN. EASE.
1	ROCKING A RANCH, INC		4152.60 SF			1417.11 SF	3795.24 SF	
2	ROCKING A RANCH, INC		6820.71 SF				3465.85 SF	
3	ASTRAKEL INTERNATIONAL,LTD		5522.48 SF				2441.62 SF	

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

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

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

| STATION / SIZE / THICKNESS OR GAUGE | LOCATION (LT,RT, OR CL) | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | SLOPE CRITICAL | DRAINAGE PIPE (RCP or CSP) 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE | C.S. PIPE 12" | 15" | 18" | 24" | 36" | 42" | 48" | R.C. PIPE (CLASS III) 15" | 18" | 24" | 30" | 36" | 42" | 48" | R.C. PIPE (CLASS IV) 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | *** R.C. PIPE (CLASS V) | *** R.C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE | *** R.C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE | 15" SIDE DRAIN PIPE | 18" SIDE DRAIN PIPE | ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P. | C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" + (1.3 X COL. "B") LIN. FT. PER EACH (0' THRU 5.0') | 5.0' THRU 10.0' (A) | 10.0' AND ABOVE (B) | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G | CONCRETE TRANSITIONAL SECTION CATCH BASIN | DROP INLET | G.D.I. TYPE "B" STD. 840.18 OR 840.27 | G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24 | T.B.D.I. STD. 840.35 | G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29 | M.H. FRAME & COVER STD. 840.54 | T.B.J.B. STD. 840.34 | CORR. STEEL ELBOWS NO. & SIZE | CONC. COLLARS CL. "B" C.Y. STD. 840.72 | CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71 | PIPE REMOVAL LIN.FT. | REMARKS |
|---|---|---|---|---|---|---|---|---

PROJECT REFERENCE NO.	SHEET NO.
B-5411	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022999 ENGINEER CRAIG S. PURVIS

NORTH CAROLINA PROFESSIONAL SEAL 023993 ENGINEER MAX S. PRICE

6/9/14

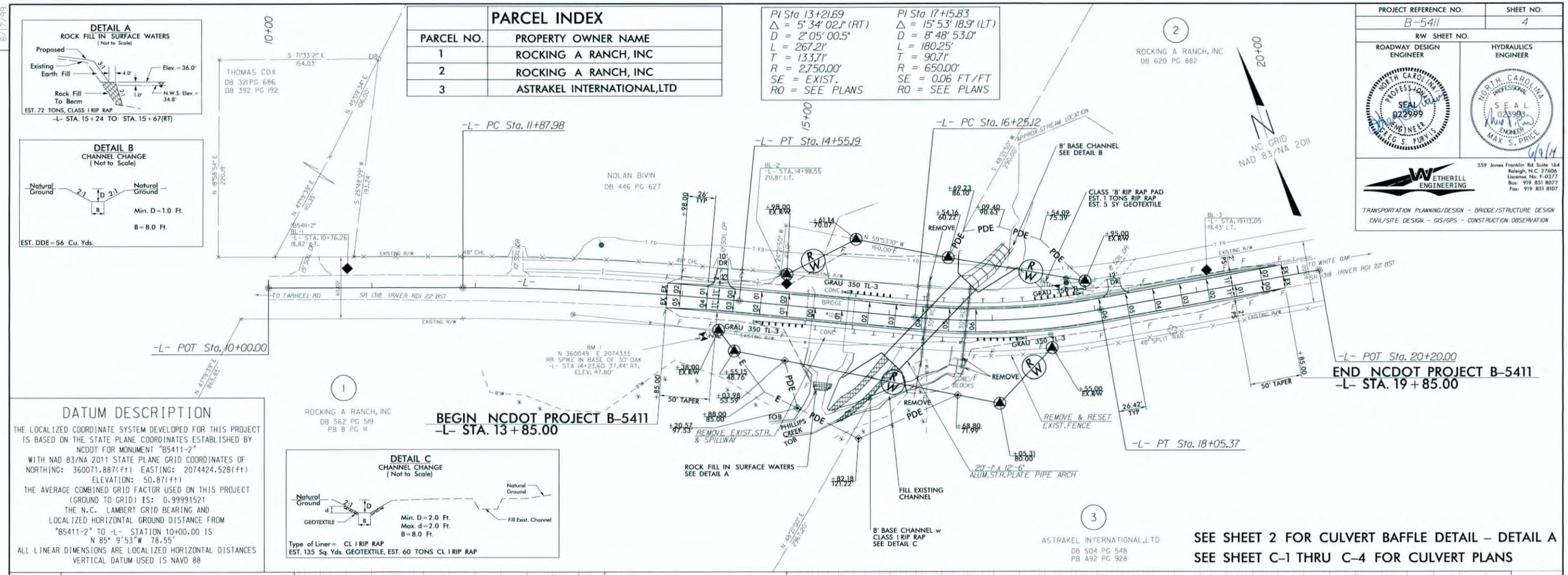
WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PARCEL INDEX

PARCEL NO.	PROPERTY OWNER NAME
1	ROCKING A RANCH, INC
2	ROCKING A RANCH, INC
3	ASTRAKEL INTERNATIONAL,LTD

PI Sta 13+21.69
Δ = 5° 34' 02.1" (RT)
D = 2° 05' 00.5"
L = 267.21'
T = 133.71'
R = 2,750.00'
SE = EXIST.
RO = SEE PLANS

PI Sta 17+15.83
Δ = 15° 53' 18.9" (LT)
D = 8° 48' 53.0"
L = 180.25'
T = 90.71'
R = 650.00'
SE = 0.06 FT/FT
RO = SEE PLANS



DATUM DESCRIPTION

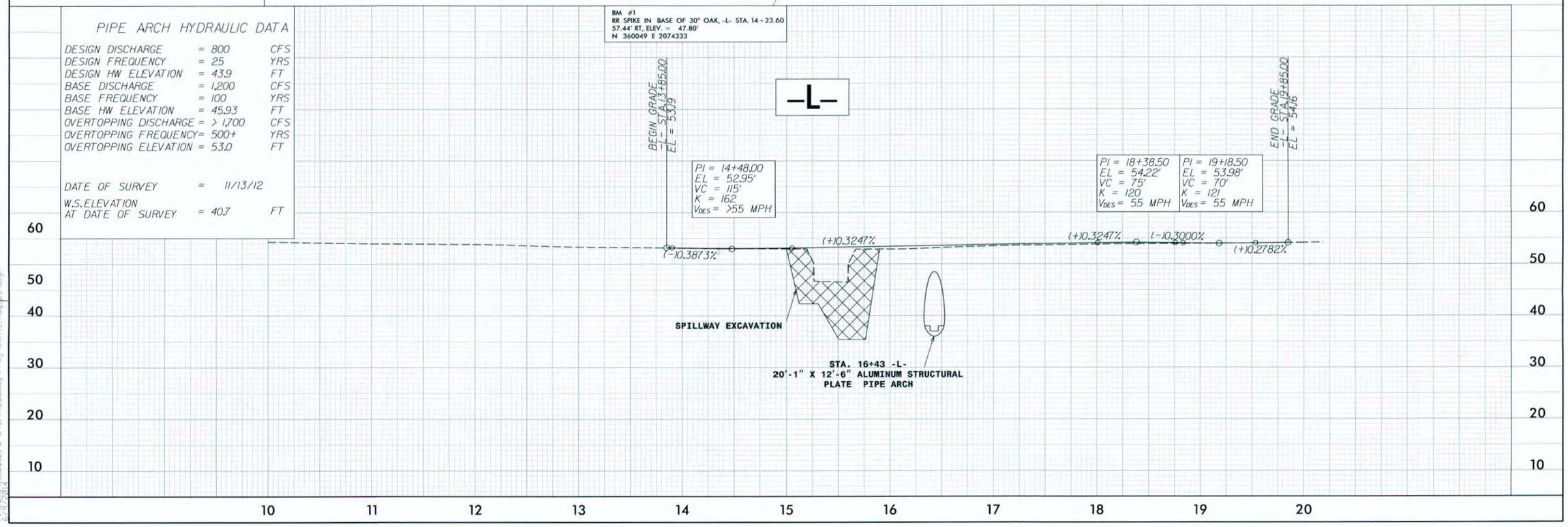
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B5411-2"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 360071.887(ft) EASTING: 2074424.528(ft)
ELEVATION: 50.87(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99991521
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B5411-2" TO -L- STATION 10+00.00 IS
N 85° 9' 53" W 78.55'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

SEE SHEET 2 FOR CULVERT BAFFLE DETAIL – DETAIL A
SEE SHEET C-1 THRU C-4 FOR CULVERT PLANS

PIPE ARCH HYDRAULIC DATA

DESIGN DISCHARGE	= 800	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 43.9	FT
BASE DISCHARGE	= 1,200	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 45.93	FT
OVERTOPPING DISCHARGE	= > 1,700	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 53.0	FT
DATE OF SURVEY	= 11/13/12	
W.S. ELEVATION AT DATE OF SURVEY	= 40.7	FT

BM #1
RR SPIKE IN BASE OF 30" OAK, -L- STA. 14+23.60
57.44' RT, ELEV. = 47.80'
N 360049 E 2074333



REVISIONS

8/17/99

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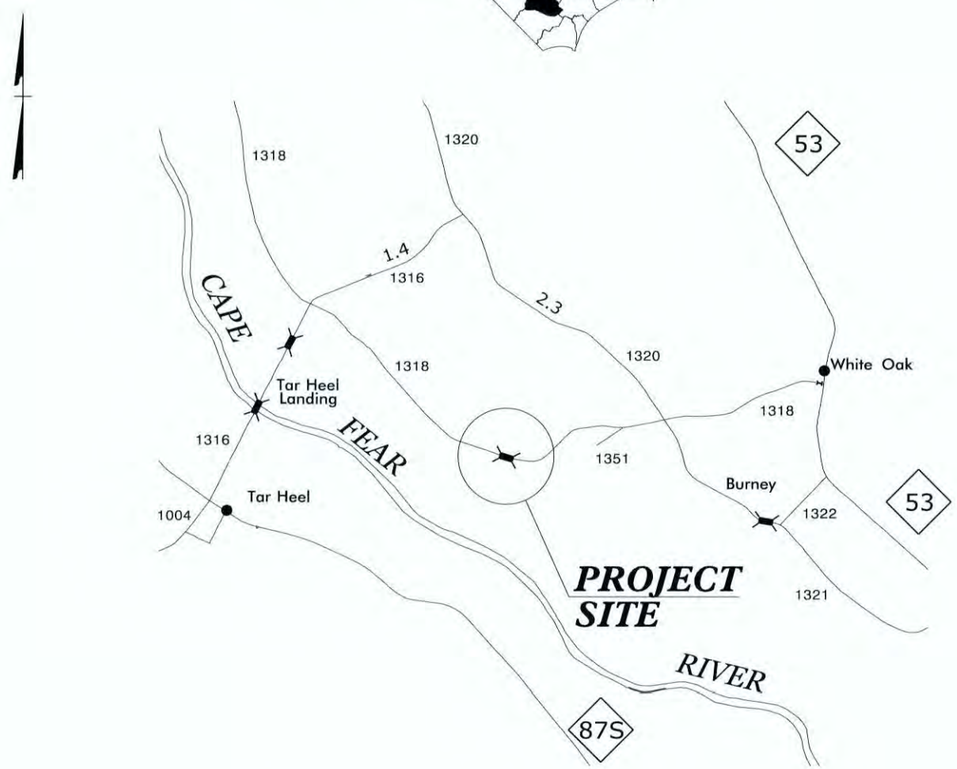
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

BLADEN COUNTY



LOCATION: BRIDGE NO. 124 OVER CREEK ON SR 1318 (RIVER ROAD)

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 MARKING
TMP-1B	TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES, GENERAL NOTES AND LOCAL NOTES)
TMP-2	SIGN DESIGN DETAIL
TMP-3	TEMPORARY TRAFFIC CONTROL DETAIL AND PHASING
TMP-4	RIVER ROAD OFF-SITE DETOUR

SHEET NO.
TMP-1

B-5411

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
J. S. KITE, P.E. — TRAFFIC CONTROL PROJECT ENGINEER
_____ — TRAFFIC CONTROL PROJECT DESIGN ENGINEER
_____ — TRAFFIC CONTROL DESIGN ENGINEER

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

PLAN PREPARED FOR NCDOT BY: WETHERILL ENGINEERING
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

GREG PURVIS, P.E. — PROJECT ENGINEER
CHARLES MULLEN — TRAFFIC CONTROL & PAVEMENT MARKING SPECIALIST

APPROVED: Greg S. Purvis
DATE: 6/9/14

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 22999 ENGINEER GREG S. PURVIS 6/9/14

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PROJ. REFERENCE NO.	SHEET NO.
B-5411	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
1101.04	TEMPORARY SHOULDER CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1135.01	CONES
1145.01	BARRICADES

LEGEND

GENERAL

DIRECTION OF TRAFFIC FLOW

EXIST. PVMT.

NORTH ARROW

PROPOSED PVMT.

WORK AREA

TRAFFIC CONTROL DEVICES

BARRICADE (TYPE III)

CONE

TEMPORARY SIGNING

PORTABLE SIGN

STATIONARY SIGN

PAVEMENT MARKINGS

EXISTING LINES

TEMPORARY LINES

TEMPORARY PAVEMENT MARKING

N/A

WETHERILL ENGINEERING

559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
Liscense No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

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

APPROVED: Greg Purvis DATE: 6/9/14

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 22999 ENGINEER GREG S. PURVIS 6/9/14

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

ROADWAY STANDARD DRAWINGS & LEGEND

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PROJ. REFERENCE NO.	SHEET NO.
B-5411	TMP-1B

MANAGEMENT STRATEGIES

TRAFFIC OPERATIONS

SR 1318 (RIVER ROAD) WILL BE DETOURED OFF-SITE DURING REPLACEMENT OF THE EXISTING STRUCTURE USING ROADWAY STANDARD DRAWING 1101.03, SHEET 1 OF 9, AND TRAILBLAZE SIGNS.

THE OFF-SITE DETOUR ROUTING WILL BE AS FOLLOWS:

1. SR 1316 (TAR HEEL FERRY ROAD)
2. SR 1320 (BURNEY ROAD)

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

NCDOT WILL FURNISH AND LOCATE CHANGEABLE MESSAGE BOARDS (CMB) FOR A 10-DAY ROAD CLOSURE NOTICE. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT A MINIMUM OF 30 DAYS PRIOR TO THE ACTUAL ROAD CLOSURE.

GENERAL NOTES / LOCAL NOTES

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

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

LANE AND SHOULDER CLOSURE REQUIREMENTS

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

TRAFFIC PATTERN ALTERATIONS

B) NOTIFY THE ENGINEER THIRTY (30) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

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

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

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

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

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

TRAFFIC CONTROL DEVICES

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

WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
Liscense No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

APPROVED: DATE: 6/9/14

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 22999 ENGINEER GREG S. PURVIS 6/9/14

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

TRANSPORTATION OPERATIONS PLAN

6/9/2014
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PROJ. REFERENCE NO.	SHEET NO.
B-5411	TMP-2

SIGN NUMBER: SP
TYPE: STATIONARY
QUANTITY: SEE PLANS

BACKG COLOR: Fluorescent Orange
COPY COLOR: Color 239

SYMBOL	X	Y	WID	HT

SIGN WIDTH: 2'-0"
HEIGHT: 1'-0"
TOTAL AREA: 2.0 Sq.Ft.

BORDER TYPE: INSET
RECESS: 0.31"
WIDTH: 0.31"
RADII: 1.81"

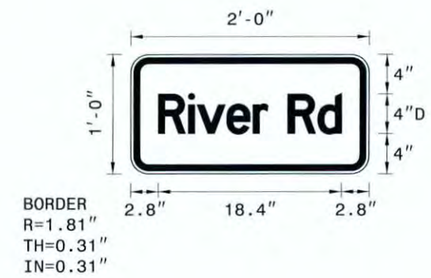
NO. Z BARS:
LENGTH:

MAT'L: 0.080" (2.0 mm) ALUMINUM

DESIGN BY: CLM
PROJECT ID: B-5411
CHECKED BY: GP
DIV: 6
DATE: Feb 20, 2013

USE NOTES: 1,2

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



Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter widths are shown

R	i	v	e	r		R	d																					Series/Size Text Length
2.7	0.6	2.8	2.4	1.5		2.7	2.4																					D 2000
																												18.4

FILENAME: Guidesign6

NORTH CAROLINA D.O.T. SIGN DETAIL

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

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

APPROVED: DATE: 6/9/14

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 22899 ENGINEER GREG S. PURVIS 6/9/14

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

SIGN DESIGN DETAIL

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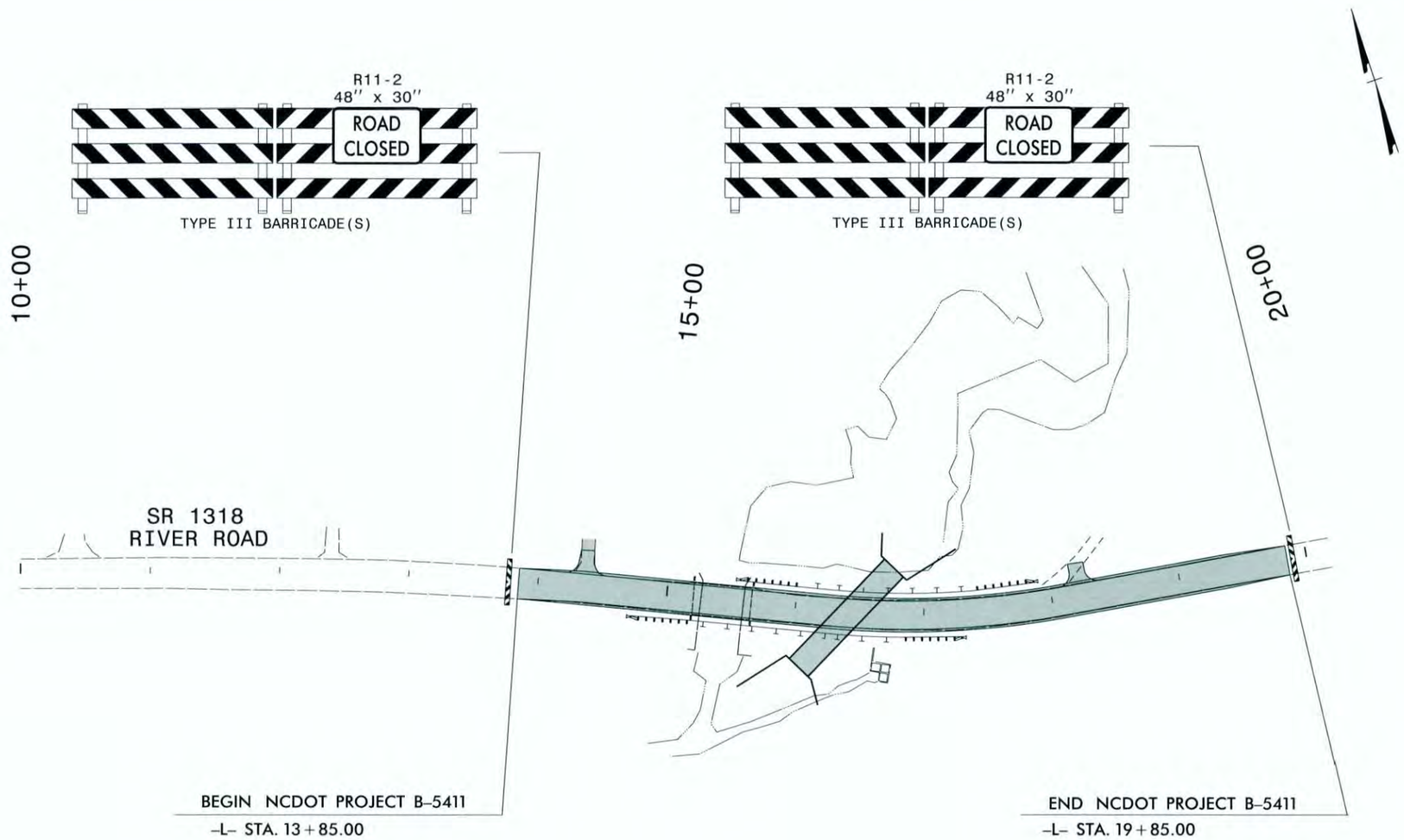
PROJ. REFERENCE NO.	SHEET NO.
B-5411	TMP-3



PHASING

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

STEP 2. PLACE TYPE III BARRICADES TO CLOSE RIVER ROAD TO TRAFFIC. UNCOVER ROAD CLOSURE AND TRAILBLAZE SIGNING AS SHOWN ON TMP-4.

STEP 3. REMOVE EXISTING STRUCTURE AND CONSTRUCT PROPOSED -L- STRUCTURE AND APPROACHES ACCORDING TO THE CONSTRUCTION PLANS.

STEP 4. PLACE FINAL PAVEMENT MARKINGS AND MARKERS ON -L- ROADWAY ACCORDING TO THE PAVEMENT MARKING PLANS.

STEP 5. REMOVE TYPE III BARRICADES AND REOPEN RIVER ROAD TO TRAFFIC. REMOVE ROAD CLOSURE SIGNS AND TRAILBLAZE SIGNS.

SEE TMP-4 FOR OFF-SITE DETOUR ROUTE AND TEMPORARY SIGNING.
SEE PAVEMENT MARKING PLANS FOR MARKING AND MARKER TYPES.

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

APPROVED: [signature] DATE: 6/9/14

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 22999 ENGINEER GREG S. PURVIS 6/9/14

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

TEMPORARY TRAFFIC CONTROL DETAIL AND PHASING

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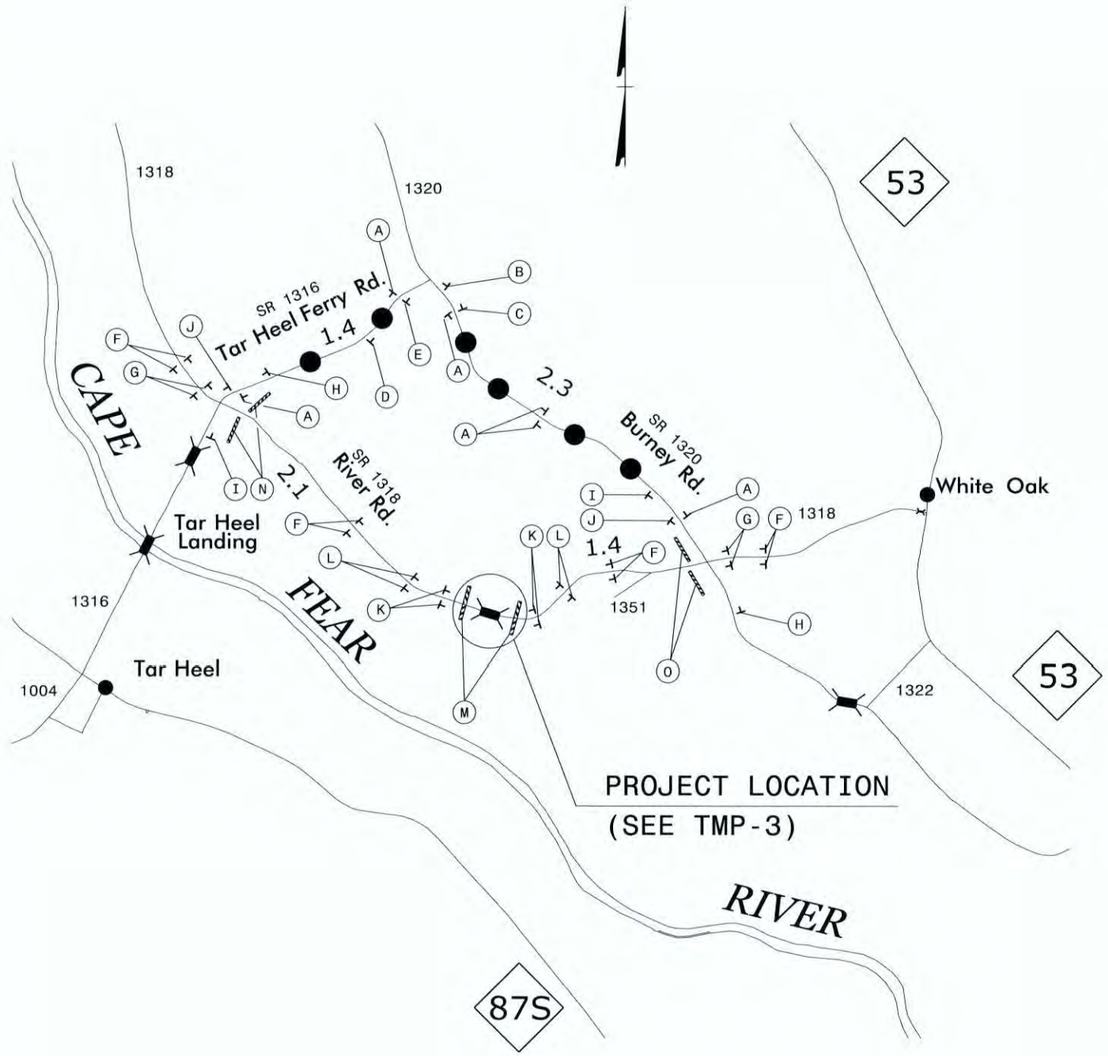
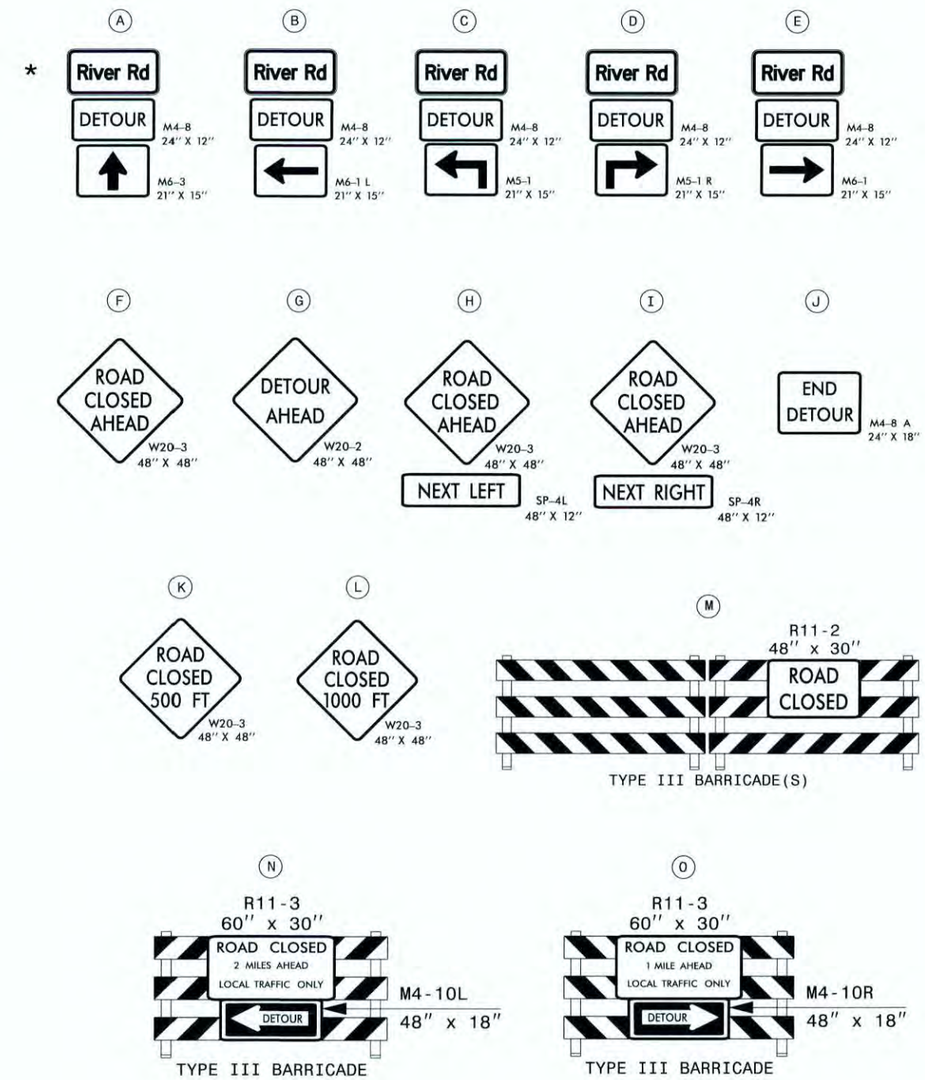
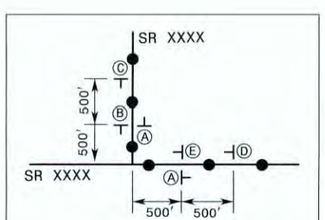
PROJ. REFERENCE NO.	SHEET NO.
B-5411	TMP-4



TEMPORARY DETOUR SIGNING AND TRAFFIC CONTROL DEVICES





TYPICAL TRAILBLAZE SIGNING PLACEMENT AT EXISTING OFF-SITE INTERSECTIONS

(OFF-SITE DETOUR ROUTE)

★ SEE TMP-2 FOR RIVER ROAD DETOUR SIGN DESIGN.

REFER TO ROADWAY STANDARD DRAWING 1101.03, SHEET 1 OF 9, FOR ROAD CLOSURE SIGN SPACING REQUIREMENTS.

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APPROVED: DATE: 6/9/14

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 22998 ENGINEER GREG S. PURVIS 6/9/14

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

RIVER ROAD OFF-SITE DETOUR

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T.I.P.: B-5411

CONTRACT:

TIP NO.	SHEET NO.
B-5411	PMP-1

APPROVED: [signature]

DATE: 6/9/14

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 22993 ENGINEER GREG S. PURVIS 6/9/14

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLAN
BLADEN COUNTY

INDEX

SHEET NO.	DESCRIPTION
PMP-1	PAVEMENT MARKING PLAN COVER SHEET
PMP-2	PAVEMENT MARKING DETAIL AND MARKING SCHEDULE

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 - 2 LANE AND MULTILANE ROADWAYS
1250.01	PAVEMENT MARKER SPACING
1251.01	RAISED PAVEMENT MARKERS - TEMPORARY AND PERMANENT
1261.01	GUARDRAIL AND BARRIER DELINEATOR SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATOR TYPES
1262.01	GUARDRAIL END DELINEATION

GENERAL NOTES

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

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

ROAD NAME	MARKING	MARKER
1. SR 1318 (RIVER RD.) (-L- ROADWAY)	THERMOPLASTIC	RAISED REFLECTIVE

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

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

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

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

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

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

_____ SIGNING & DELINEATION PROJECT DESIGN ENGINEER

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

PLAN PREPARED BY: WETHERILL ENGINEERING, INC.

GREG PURVIS, P.E. ROADWAY PROJECT ENGINEER

CHARLES MULLEN TRAFFIC CONTROL & PAVEMENT MARKING SPECIALIST

WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
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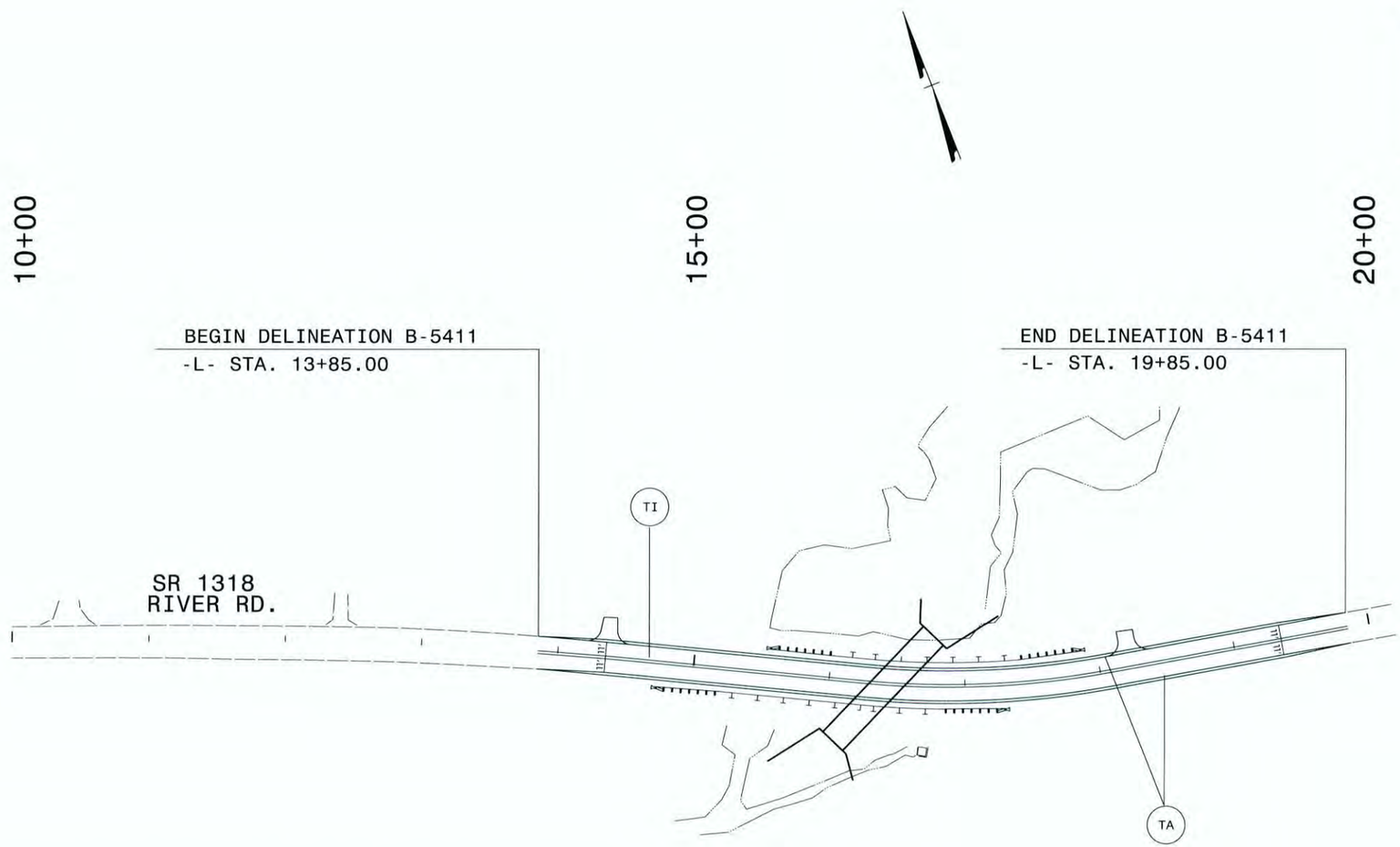
B-5411	PMP-2

APPROVED: [signature]

DATE: 6/9/14

NORTH CAROLINA PROFESSIONAL SEAL 22998 ENGINEER GREG S. PURVIS 6/9/14



PAVEMENT MARKING SCHEDULE

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

PAVEMENT MARKERS SHALL BE INSTALLED ACCORDING TO ROADWAY STANDARD DRAWING 1250.01.

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PAVEMENT MARKING DETAIL AND MARKING SCHEDULE

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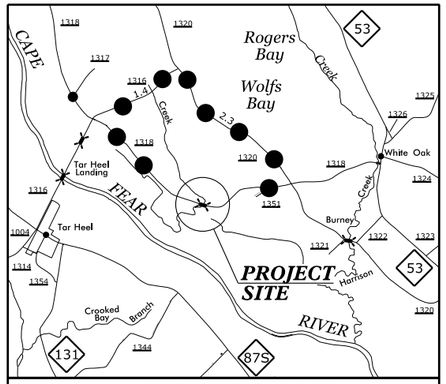
TIP PROJECT: B-5411

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	45427.1.1	EC-1	

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



VICINITY MAP

OFF-SITE DETOUR

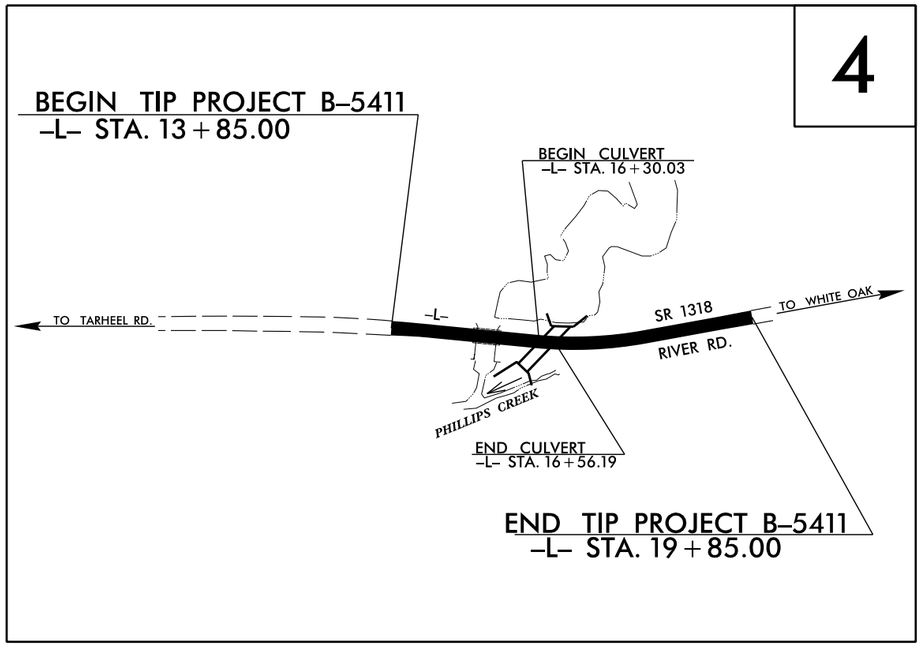
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

BLADEN COUNTY

LOCATION: BRIDGE NO. 124 OVER PHILLIPS CREEK ON SR 1318 (RIVER RD.)

TYPE OF WORK: GRADING, DRAINAGE, PAVING & CULVERT



NAD 83/2007
NSRS

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.

ANNE D. GAMBER, PE, CFM
LEVEL IIIA NAME

3022
LEVEL IIIA CERTIFICATION NO.

GRAPHIC SCALE

0 50
PLANS

0 50
PROFILE (HORIZONTAL)

0 10
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.

WETHERILL ENGINEERING

Prepared for the North Carolina Department of Transportation in the Office of:
559 JONES FRANKLIN ROAD
SUITE 164
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

EDWARD G. WETHERILL, PE
PROJECT ENGINEER

LETTING DATE:

GREG S. PURVIS, PE
PROJECT DESIGN ENGINEER

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

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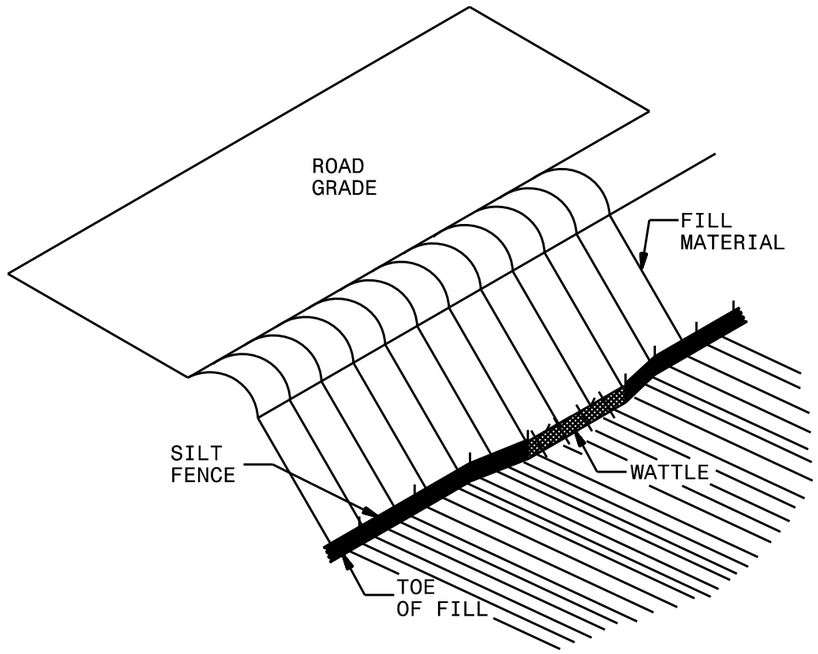
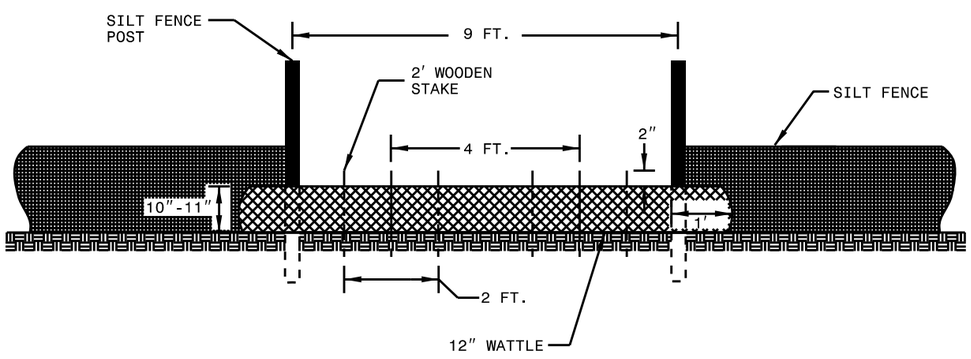
PROJECT REFERENCE NO.	SHEET NO.
45427JJ	EC 2

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.

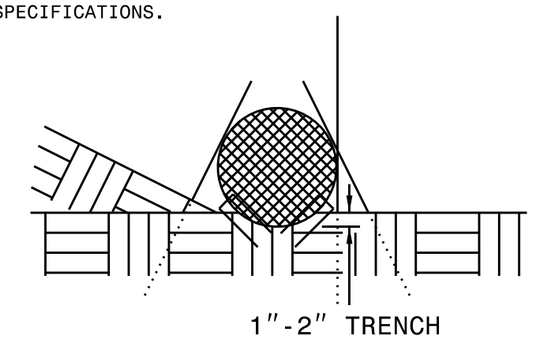
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

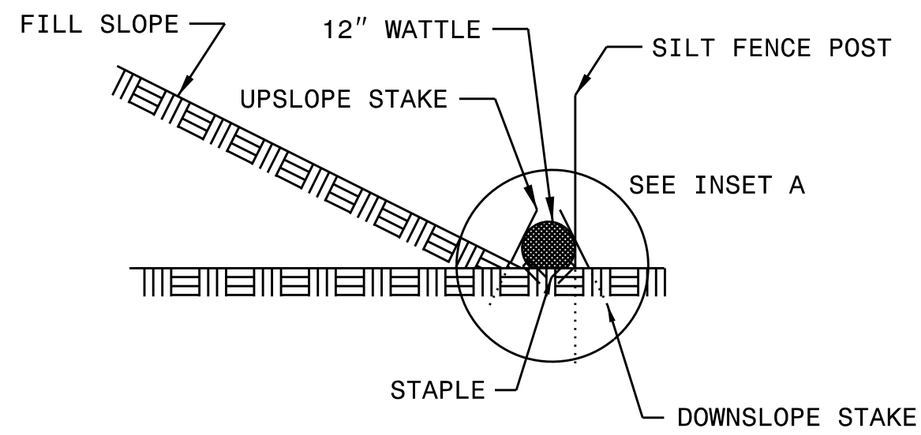
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

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.
45427.11	EC 3

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	15+50	18+00	LT.	520
4	-L-	16+50	17+50	RT.	20
				SUBTOTAL	540
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					54
				TOTAL	594
				SAY	600

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)

PROJECT REFERENCE NO.	SHEET NO.
45427.1.1	EC 3A

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

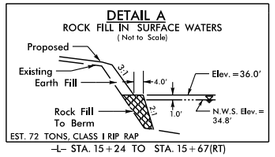
SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	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.
45427.1.1	EC4/CONST 4
R/W SHEET NO.	

PARCEL INDEX

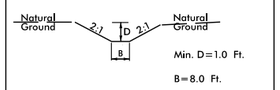
PARCEL NO.	PROPERTY OWNER NAME
1	ROCKING A RANCH, INC
2	ROCKING A RANCH, INC
3	ASTRAKEL INTERNATIONAL,LTD

DETAIL A
ROCK FILL IN SURFACE WATERS
(Not to Scale)



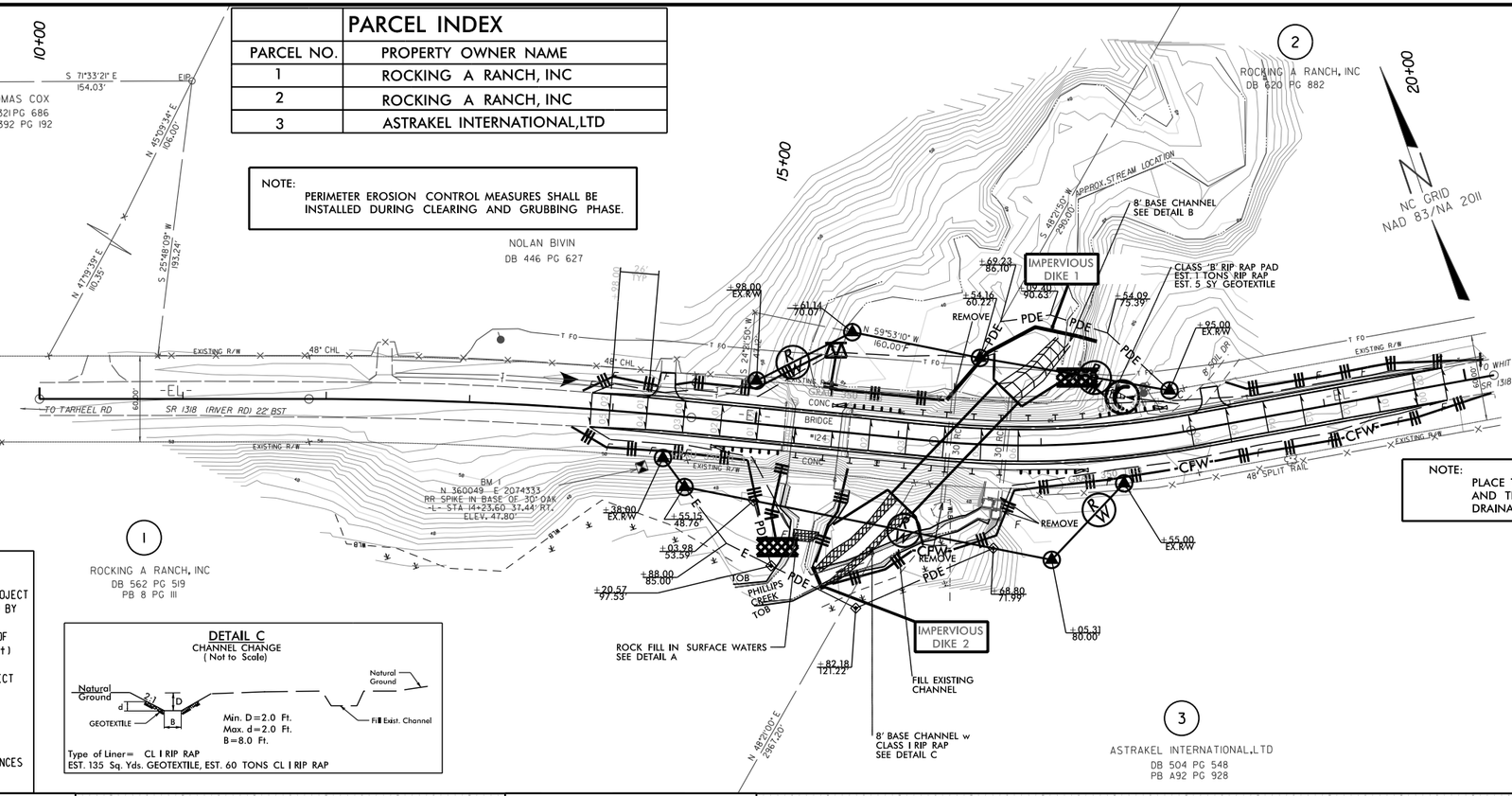
EST. 72 TONS, CLASS I RIP RAP
-L- STA. 15+24 TO STA. 15+67(RT)

DETAIL B
CHANNEL CHANGE
(Not to Scale)



Min. D=1.0 Ft.
B=8.0 Ft.
EST. DDE=56 Cu. Yds.

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



CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4

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

WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
Lasicense No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B5411-2"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 360071.887(ft) EASTING: 2074424.528(ft)
ELEVATION: 50.87(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99991521
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B5411-2" TO -L- STATION 10+00.00 IS
N 85° 9'53"W 78.55'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

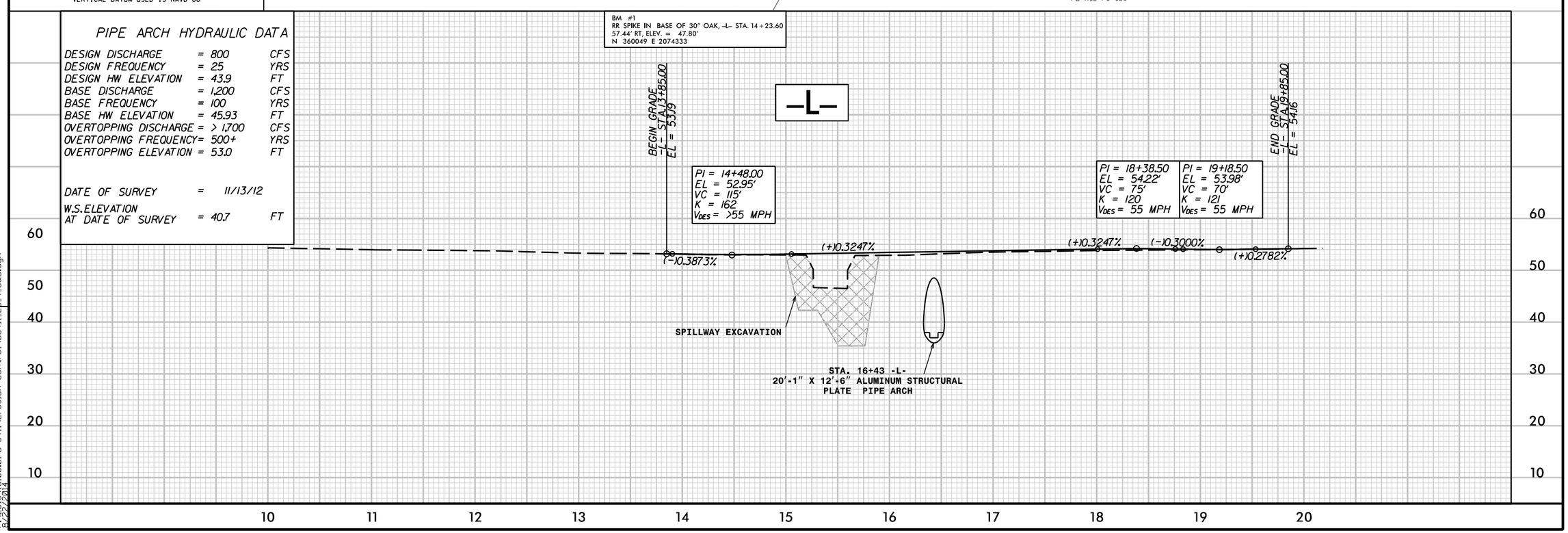
DETAIL C
CHANNEL CHANGE
(Not to Scale)

Min. D=2.0 Ft.
Max. d=2.0 Ft.
B=8.0 Ft.
Type of Liner= CL I RIP RAP
EST. 135 Sq. Yds. GEOTEXTILE, EST. 60 TONS CL I RIP RAP

PIPE ARCH HYDRAULIC DATA

DESIGN DISCHARGE	= 800	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 43.9	FT
BASE DISCHARGE	= 1,200	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 45.93	FT
OVERTOPPING DISCHARGE	= > 1,700	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 53.0	FT
DATE OF SURVEY	= 11/13/12	
W.S. ELEVATION AT DATE OF SURVEY	= 40.7	FT

BM #1
RR SPIKE IN BASE OF 30" OAK, -L- STA. 14+23.60
57.44' RT, ELEV. = 47.80'
N 360049 E 2074333



REVISIONS
8/17/99

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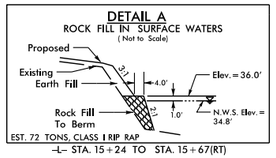
PROJECT REFERENCE NO.	SHEET NO.
45427JJ	EC5/CONST4
R/W SHEET NO.	

PARCEL INDEX

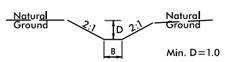
PARCEL NO.	PROPERTY OWNER NAME
1	ROCKING A RANCH, INC
2	ROCKING A RANCH, INC
3	ASTRAKEL INTERNATIONAL,LTD

DETAIL A
ROCK FILL IN SURFACE WATERS
(Not to Scale)

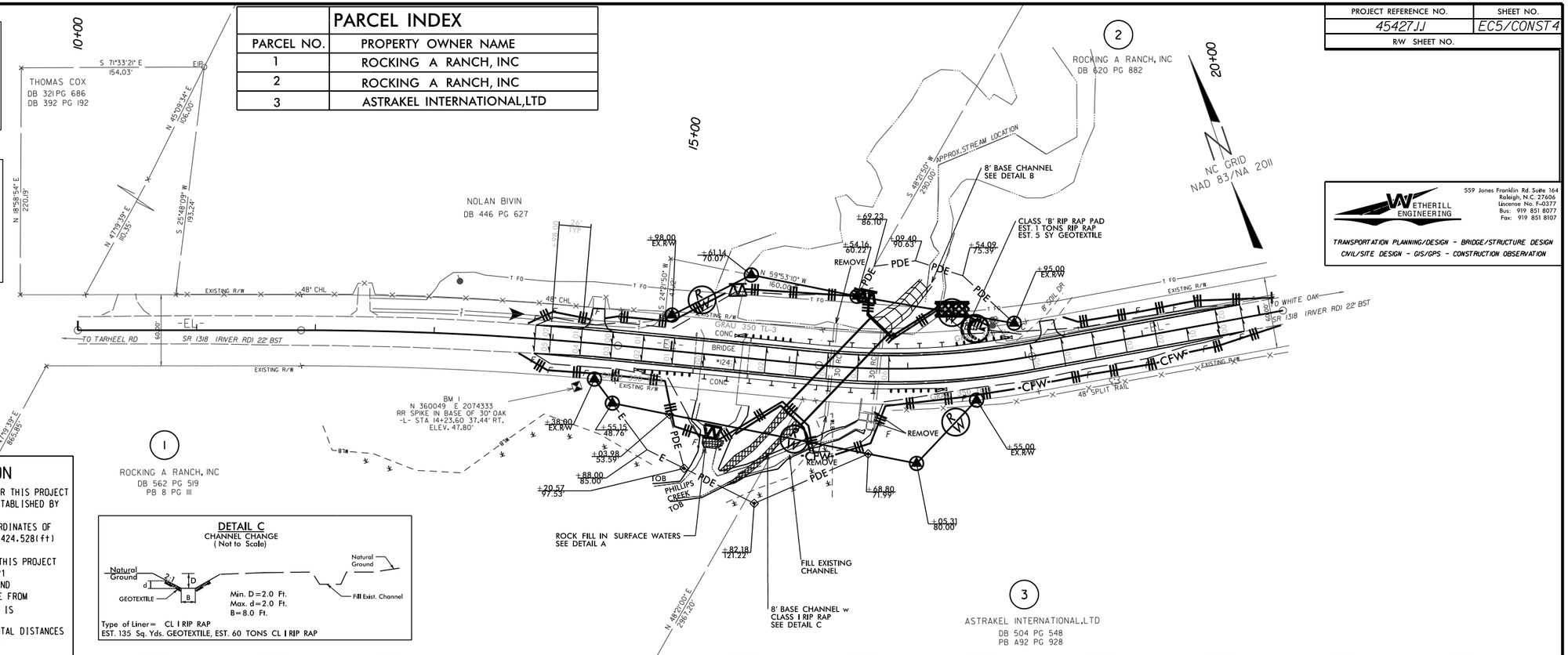


EST. 72 TONS, CLASS I RIP RAP
-L- STA. 15+24 TO STA. 15+67(RT)

DETAIL B
CHANNEL CHANGE
(Not to Scale)



Min. D=1.0 Ft.
B=8.0 Ft.
EST. DDE=56 Cu. Yds.



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ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

DETAIL C
CHANNEL CHANGE
(Not to Scale)

Min. D=2.0 Ft.
Max. d=2.0 Ft.
B=8.0 Ft.
Type of Liner= CL I RIP RAP
EST. 135 Sq. Yds. GEOTEXTILE, EST. 60 TONS CL I RIP RAP

WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
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License No. F-0377
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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PIPE ARCH HYDRAULIC DATA

DESIGN DISCHARGE	= 800	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 43.9	FT
BASE DISCHARGE	= 1,200	CFS
BASE FREQUENCY	= 100	YRS
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OVERTOPPING DISCHARGE	= > 1,700	CFS
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DATE OF SURVEY	= 11/13/12	
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BM #1
RR SPIKE IN BASE OF 30" OAK, -L- STA. 14+23.60
57.44' RT, ELEV. = 47.80'
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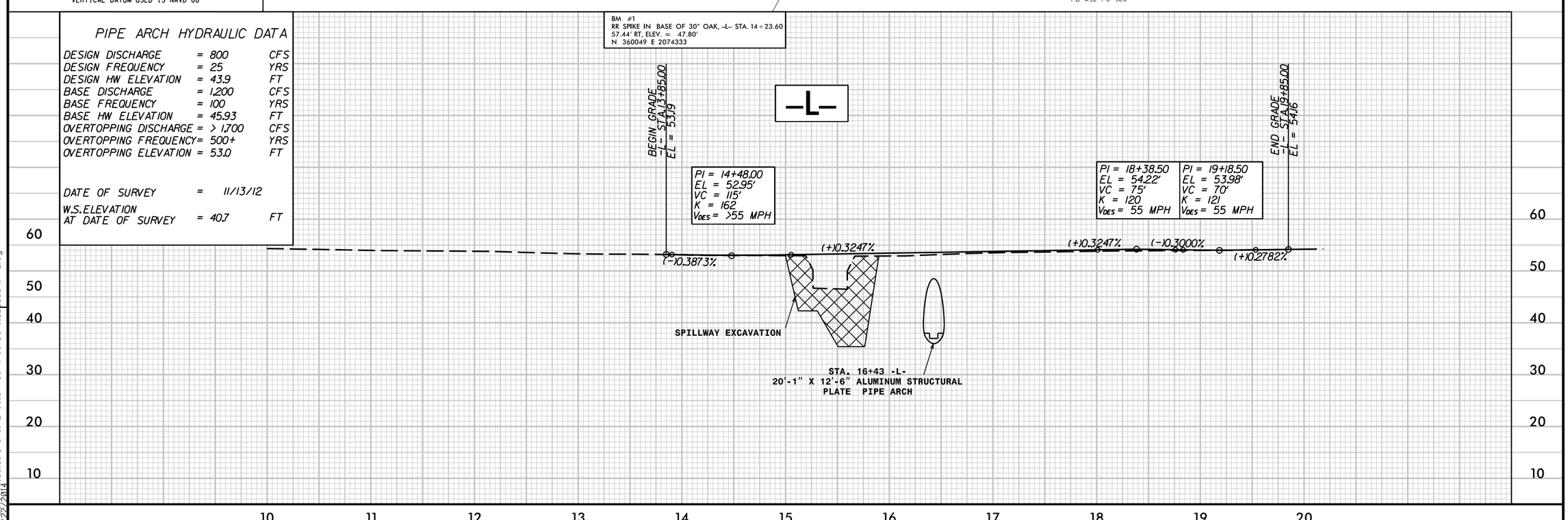

REVISIONS

8/17/99

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8/22/2014
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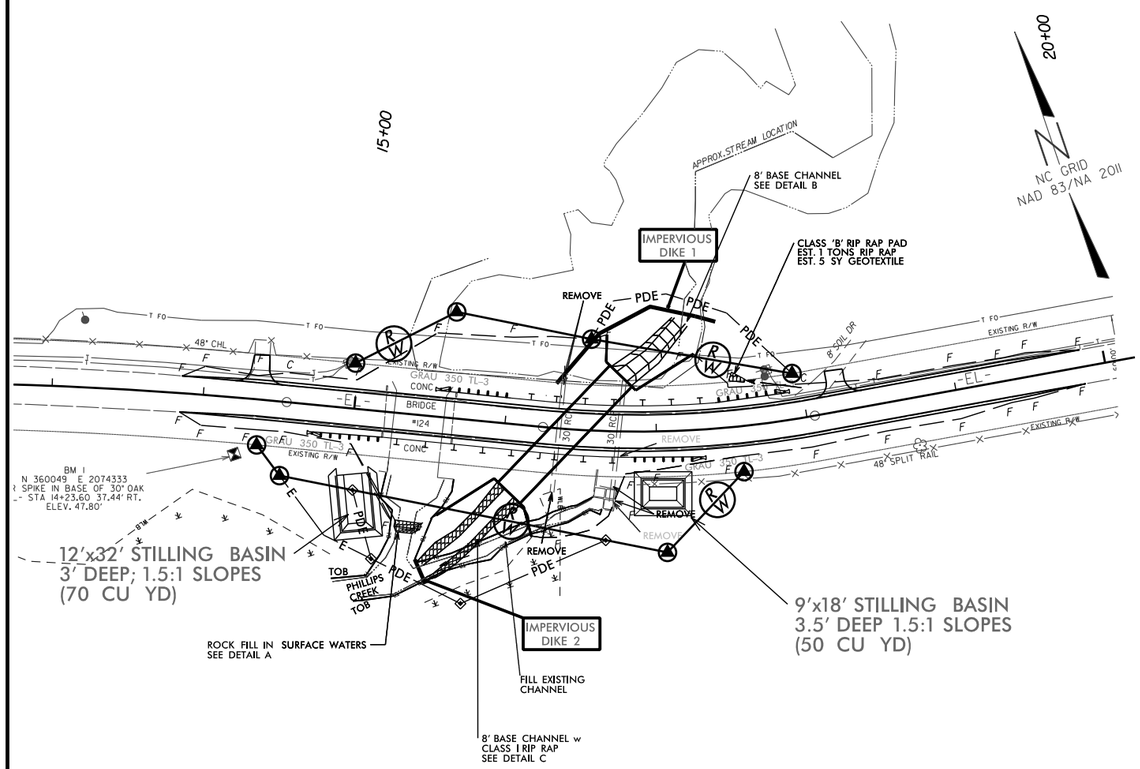
PROJECT REFERENCE NO.	SHEET NO.
45427.1.1	EC 6
R/W SHEET NO.	

CONSTRUCTION SEQUENCE

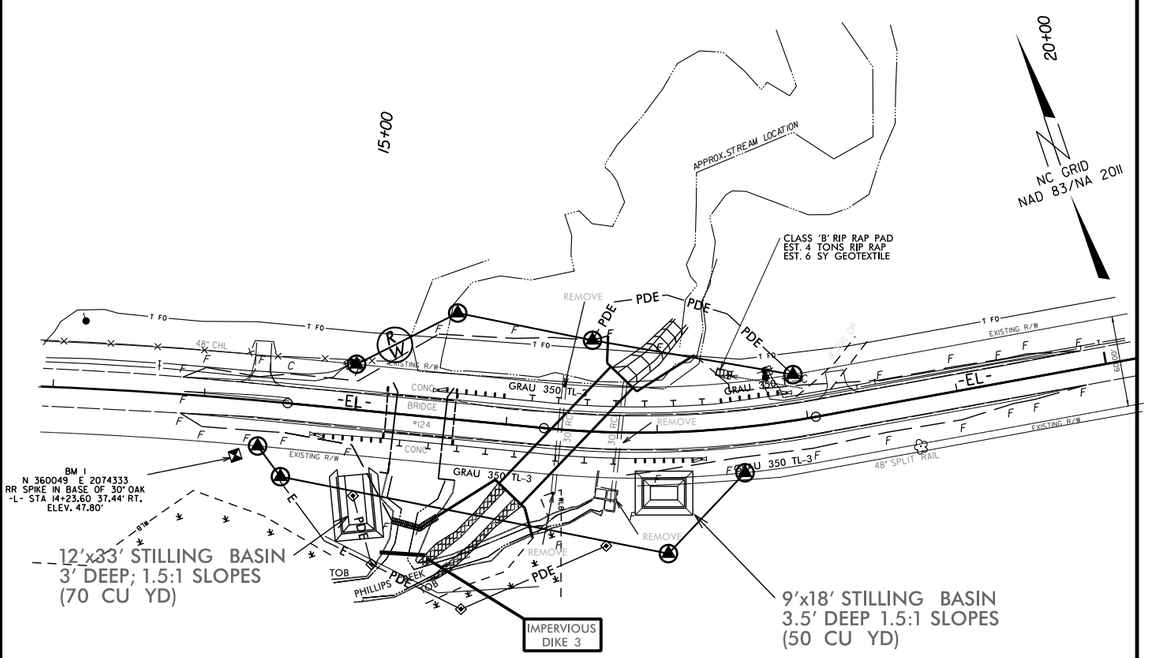
PHASE 1

1. INSTALL IMPERVIOUS DIKES 1 AND 2.
2. INSTALL STILLING BASIN(S) (MIN VOL. 120 cy) USING BERMS.
3. DEWATER AND PUMP AROUND AS REQUIRED FOR CONSTRUCTION USING EXISTING BRIDGE FOR LOW FLOW.
4. PERFORM REQUIRED EXCAVATION FOR CULVERT INCLUDING REMOVAL OF BOTH 30" RCP AND CONCRETE BOXES.
5. CONSTRUCT PROPOSED CULVERT, WING WALLS AND DOWNSTREAM CHANNEL CHANGE (SEE DETAIL C).
6. REMOVE IMPERVIOUS DIKES 1 AND 2.



PHASE 2

7. INSTALL IMPERVIOUS DIKE 3.
8. INSTALL STILLING BASIN(S) (MIN VOL. 93 cy) USING BERMS.
9. DEWATER AND PUMP AROUND AS REQUIRED FOR CONSTRUCTION USING NEWLY CONSTRUCTED CULVERT FOR LOW FLOW.
10. EXCAVATE EXISTING BRIDGE AND UNSUITABLE MATERIAL.
11. BACKFILL AND CONSTRUCT PROPOSED ROADWAY

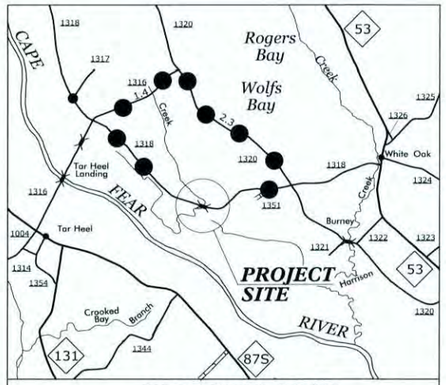


See Sheet 1-A For Index of Sheets

T.I.P. NO.	SHEET NO.
B-5411	UC-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITY CONSTRUCTION PLANS
BLADEN COUNTY



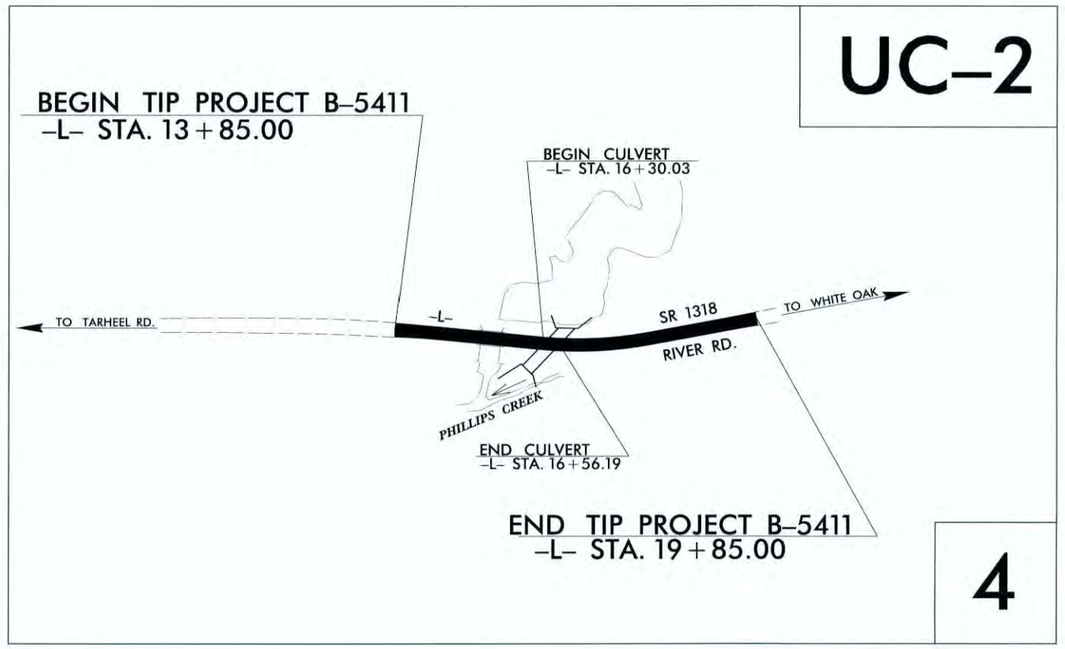
VICINITY MAP

OFF-SITE DETOUR

LOCATION: BRIDGE NO. 124 OVER PHILLIPS CREEK ON SR 1318 (RIVER RD.)

TYPE OF WORK: UTILITIES CONSTRUCTION

UTILITIES CONSTRUCTION



NAD 83/ 2007 NSRS

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

NORTH CAROLINA PROFESSIONAL SEAL 022321 ENGINEER MICHAEL V. ZACCARDO
6/9/14

TIP PROJECT: B-5411

CONTRACT:

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

SHEET NO.	DESCRIPTION
UC-1	TITLE SHEET
UC-2	PLAN & PROFILE SHEET

WATER AND SEWER OWNERS ON PROJECT

(1) WATER - BLADEN COUNTY PUBLIC WORKS

WETHERILL ENGINEERING

Prepared for the North Carolina Department of Transportation in the Office of:
559 JONES FRANKLIN ROAD
SUITE 164
Raleigh, N.C. 27606
License No. F-0377
Bus 919 851 8077
Fax 919 851 8107

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

LETTING DATE:

EDWARD G. WETHERILL, PE
PROJECT ENGINEER

GREG S. PURVIS, PE
PROJECT DESIGN ENGINEER

MICHAEL V. ZACCARDO, PE
UTILITY DESIGN ENGINEER

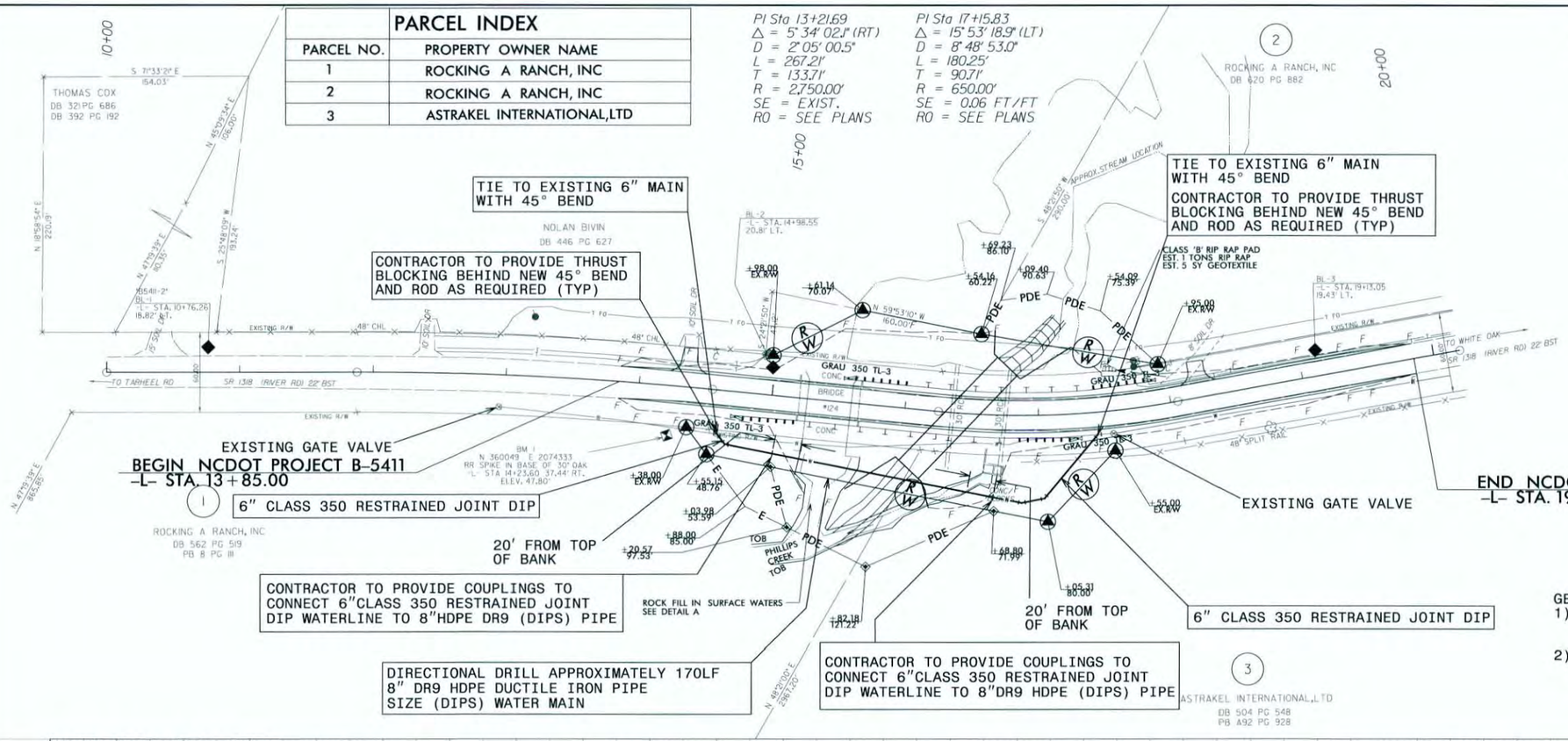
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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

PARCEL INDEX	
PARCEL NO.	PROPERTY OWNER NAME
1	ROCKING A RANCH, INC
2	ROCKING A RANCH, INC
3	ASTRAKEL INTERNATIONAL,LTD

PI Sta 13+21.69
Δ = 5° 34' 02.1" (RT)
D = 2° 05' 00.5"
L = 267.21'
T = 133.71'
R = 2,750.00'
SE = EXIST.
RO = SEE PLANS

PI Sta 17+15.83
Δ = 15° 53' 18.9" (LT)
D = 8° 48' 53.0"
L = 180.25'
T = 90.71'
R = 650.00'
SE = 0.06 FT/FT
RO = SEE PLANS



PROJECT REFERENCE NO.	SHEET NO.
B-5411	UC-2
DESIGNED BY: MVZ	
DRAWN BY: JDS	
CHECKED BY: MVZ	
APPROVED BY: MVZ	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE:(919)707-6690 FAX:(919)250-4151	UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
Liscense No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

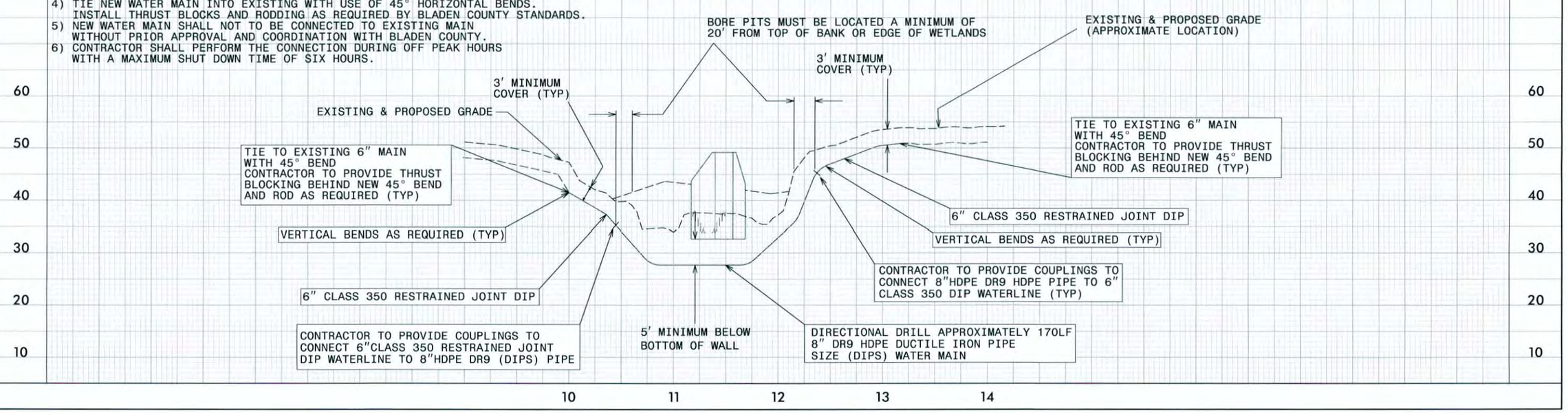
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

NORTH CAROLINA PROFESSIONAL SEAL 042321 ENGINEER MARK V. ZACCARDO
6/9/14

GENERAL INSTALLATION NOTES:
1) ALL WORK SHALL BE IN ACCORDANCE WITH: BLADEN COUNTY PUBLIC WORKS STANDARDS NCDENR DEH PWS SECTION STANDARDS
2) CONTRACTOR SHALL ALLOW HDPE PIPE 24 HOURS TO RELAX AFTER PULLING IS COMPLETE AND BEFORE IT IS CONNECTED VIA TRANSITION COUPLINGS TO THE OTHER DI PIPE

WATER INSTALLATION NOTES:
1) CONTRACTOR SHALL COORDINATE ALL PROPOSED WORK WITH BLADEN COUNTY PUBLIC WORKS DIRECTOR PRIOR TO BEGINNING WORK.
2) CONTRACTOR SHALL FULLY INSTALL, PRESSURE & LEAKAGE TEST, AND CHLORINATE NEW WATER MAIN PRIOR TO CONNECTION TO EXISTING SYSTEM.
3) ONCE NEW WATER MAIN IS PRESSURE TESTED AND CHORINATED, CONTRACTOR SHALL LOCATE NEAREST GATE VALVES ON EACH SIDE OF THIS RELOCATION AND TEMPORARILY SHUT DOWN WATER MAIN.
4) TIE NEW WATER MAIN INTO EXISTING WITH USE OF 45° HORIZONTAL BENDS. INSTALL THRUST BLOCKS AND RODDING AS REQUIRED BY BLADEN COUNTY STANDARDS.
5) NEW WATER MAIN SHALL NOT TO BE CONNECTED TO EXISTING MAIN WITHOUT PRIOR APPROVAL AND COORDINATION WITH BLADEN COUNTY.
6) CONTRACTOR SHALL PERFORM THE CONNECTION DURING OFF PEAK HOURS WITH A MAXIMUM SHUT DOWN TIME OF SIX HOURS.

SCALE: 1"=50' H
1"=10' V



REVISIONS

8/17/09

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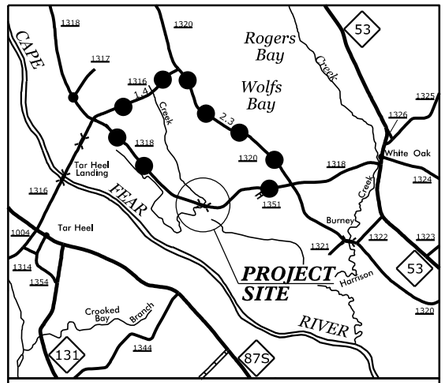
09/08/99

TIP PROJECT: B-5411

CONTRACT:

See Sheet 1-A For Index of Sheets



VICINITY MAP

OFF-SITE DETOUR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

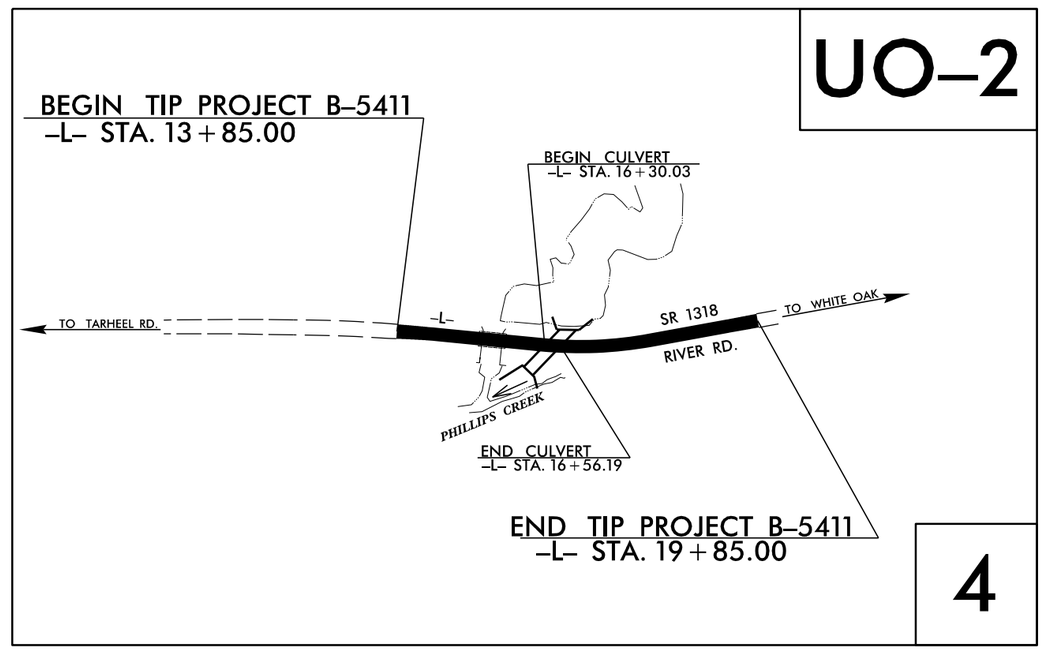
T.I.P. NO.	SHEET NO.
B-5411	UO-1

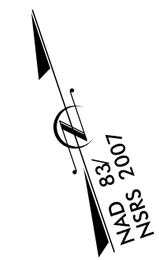
UTILITIES BY OTHERS PLANS
BLADEN COUNTY

LOCATION: BRIDGE NO. 124 OVER PHILLIPS CREEK ON SR 1318 (RIVER RD.)

TYPE OF WORK: UTILITIES RELOCATION

UTILITIES BY OTHERS





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

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

SHEET NO.	*DESCRIPTION*
UO-1	*TITLE SHEET*
UO-2	*UTILITIES BY OTHERS PLAN SHEET*

UTILITY OWNERS ON PROJECT

(A) FOUR COUNTY EMC (POWER TRANSMISSION & DISTRIBUTION)
(B) STAR TELEPHONE (PHONE)

WETHERILL ENGINEERING

Prepared for the North Carolina Department of Transportation in the Office of:
559 JONES FRANKLIN ROAD
SUITE 164
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

LETTING DATE:

EDWARD G. WETHERILL, PE
PROJECT ENGINEER

GREG S. PURVIS, PE
PROJECT DESIGN ENGINEER

JOHN D. SCHRINER, PLS
UTILITY COORDINATOR

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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

PROJECT REFERENCE NO.	SHEET NO.
B-5411	U0-2

UTILITIES BY OTHERS

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

WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
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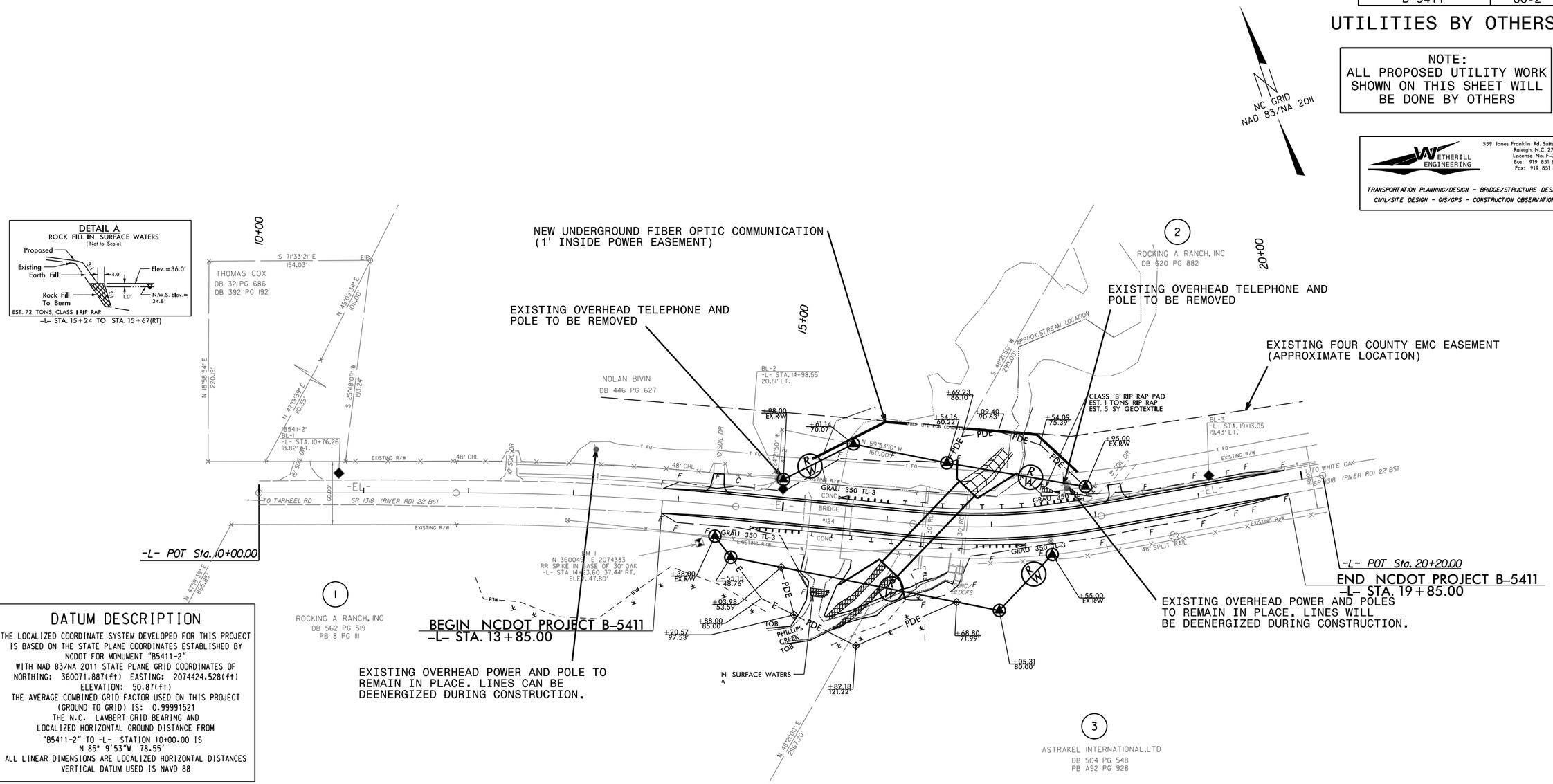
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B5411-2"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 360071.887(ft) EASTING: 2074424.528(ft) ELEVATION: 50.87(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99991521
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B5411-2" TO -L- STATION 10+00.00 IS N 85° 9'53"W 78.55'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: EXISTING OVERHEAD POWER LINES CAN BE TEMPORARILY DEENERGIZED DURING CONSTRUCTION. CONTRACTOR TO NOTIFY FOUR COUNTY EMC 4 WEEKS PRIOR TO BEGINNING CONSTRUCTION.

REVISIONS

5/14/99

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6/10/2014

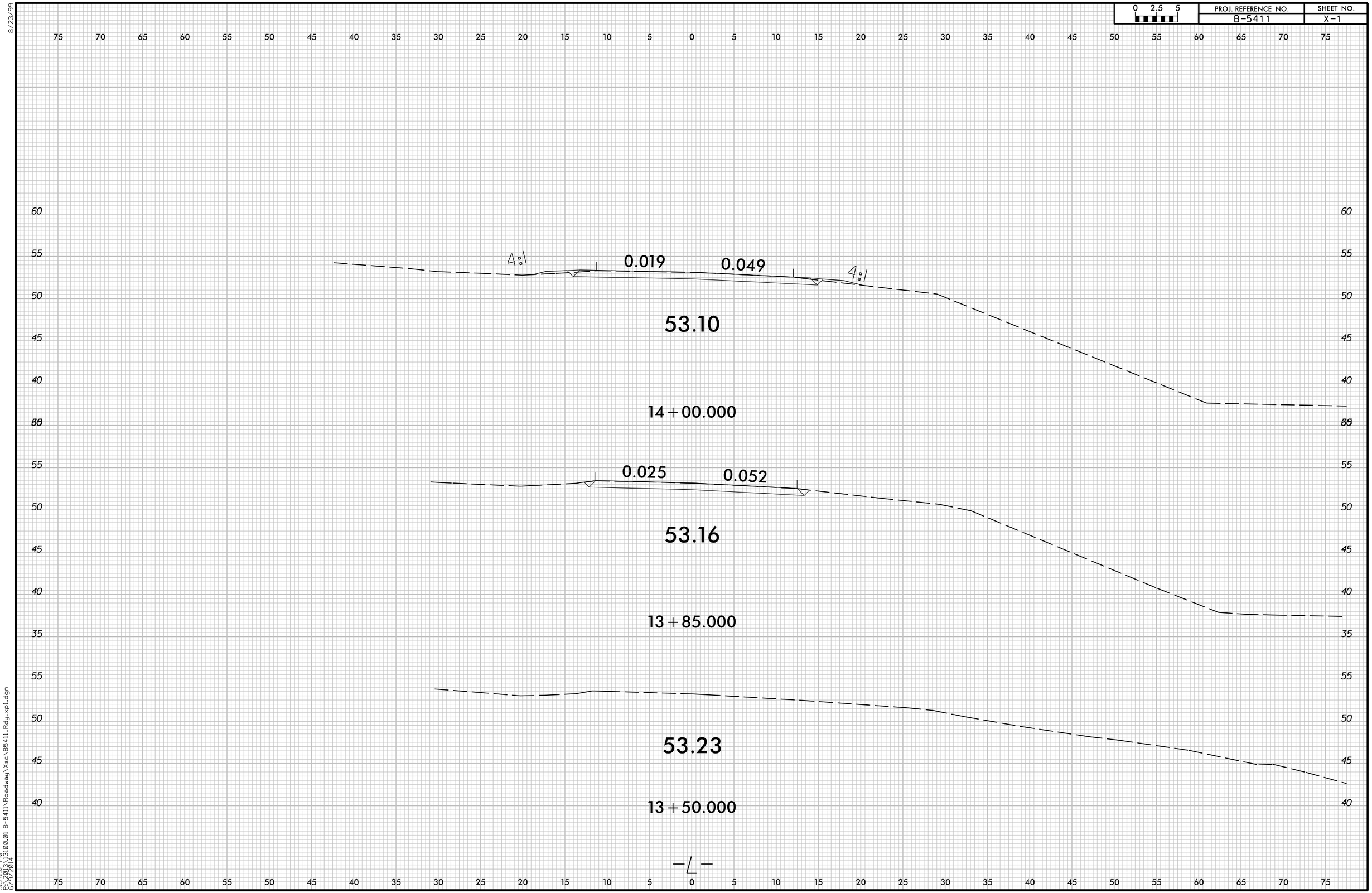
PROJ. REFERENCE NO.	SHEET NO.
B-5411	X-1A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

NOTE: EMBANKMENT COLUMN INCLUDES BACKFILL FOR UNDERCUT

CROSS-SECTION SUMMARY

Station El	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
13+85.00	0	0
14+00.00	12	1
14+35.00	28	2
14+55.19	16	1
15+00.00	32	6
15+50.00	16	789
16+00.00	3	1116
16+25.12	4	372
16+50.00	6	381
17+00.00	17	473
17+50.00	20	128
18+00.00	25	15
18+50.00	27	5
19+00.00	29	2
19+35.00	25	1
19+50.00	12	0
19+85.00	27	0



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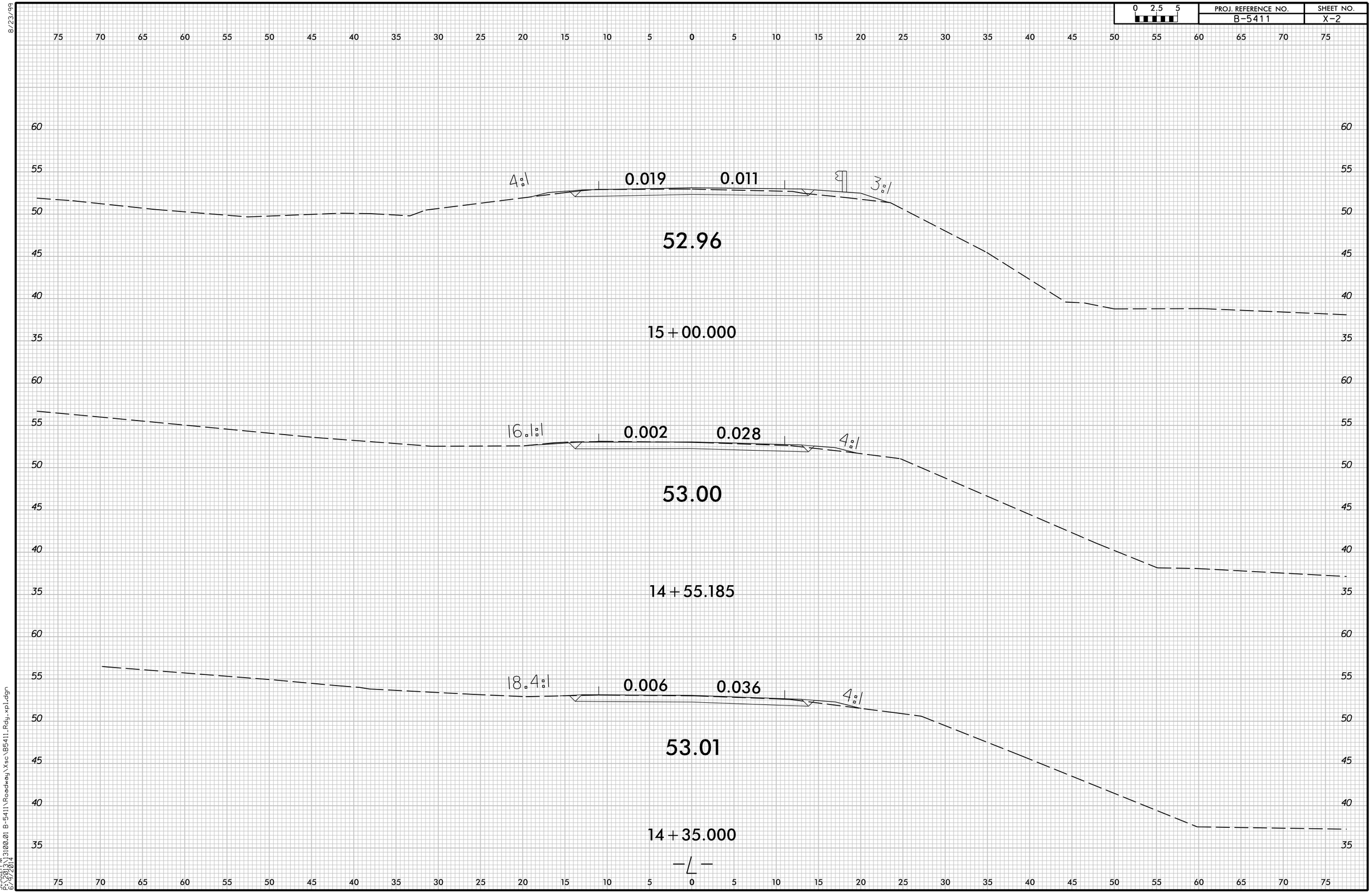
B-5411	X-2



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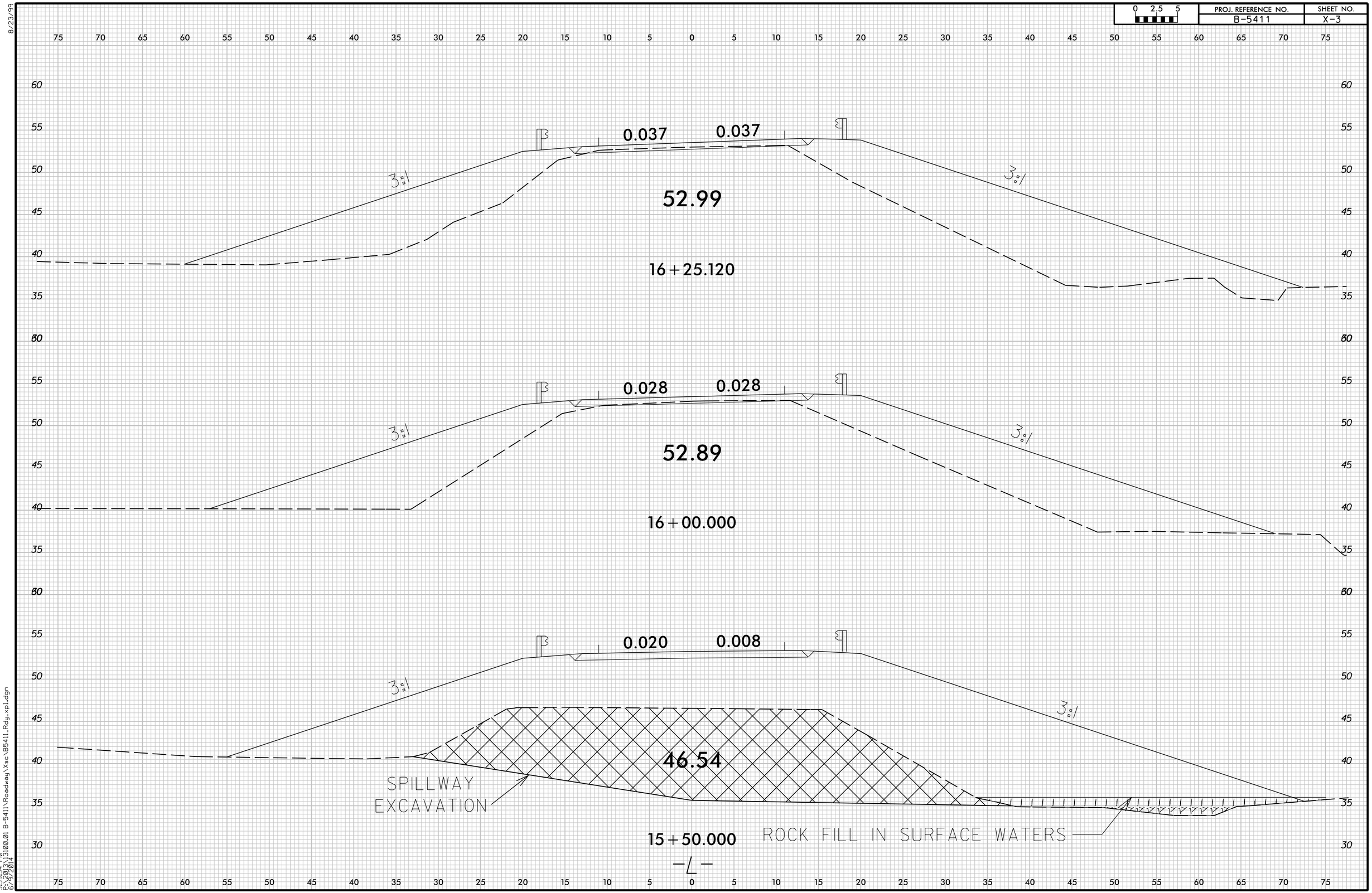

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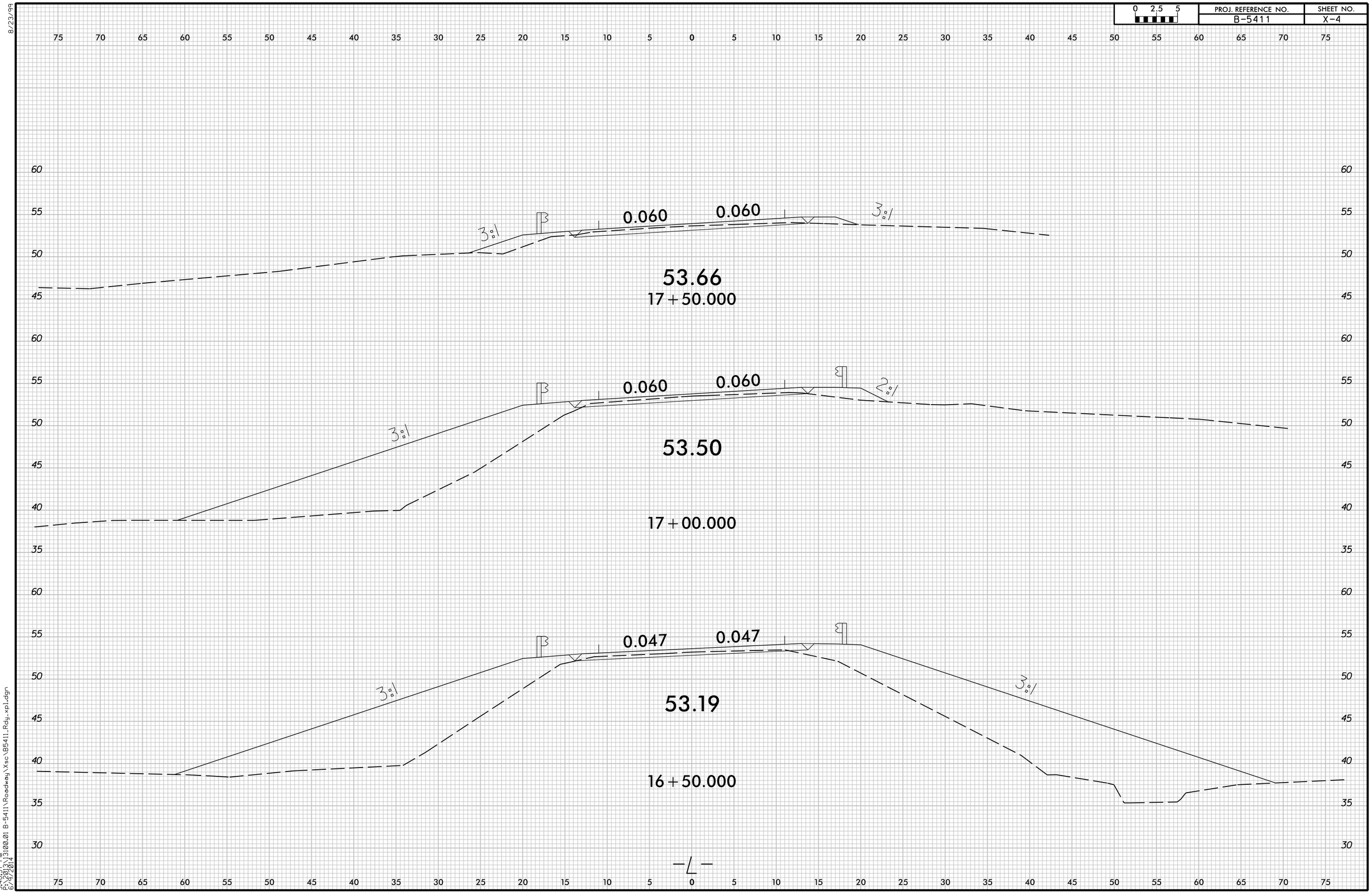

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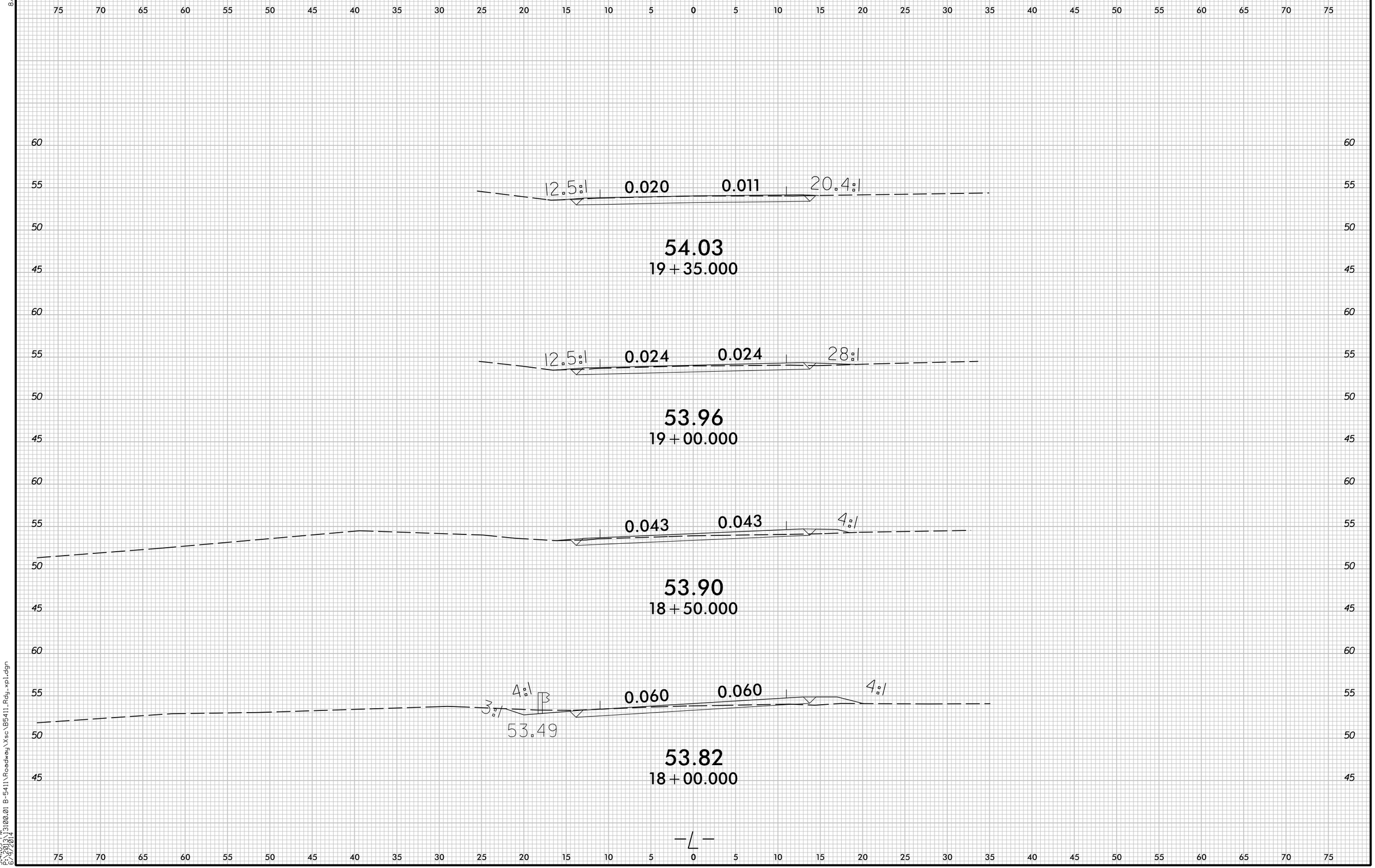
B-5411	X-5



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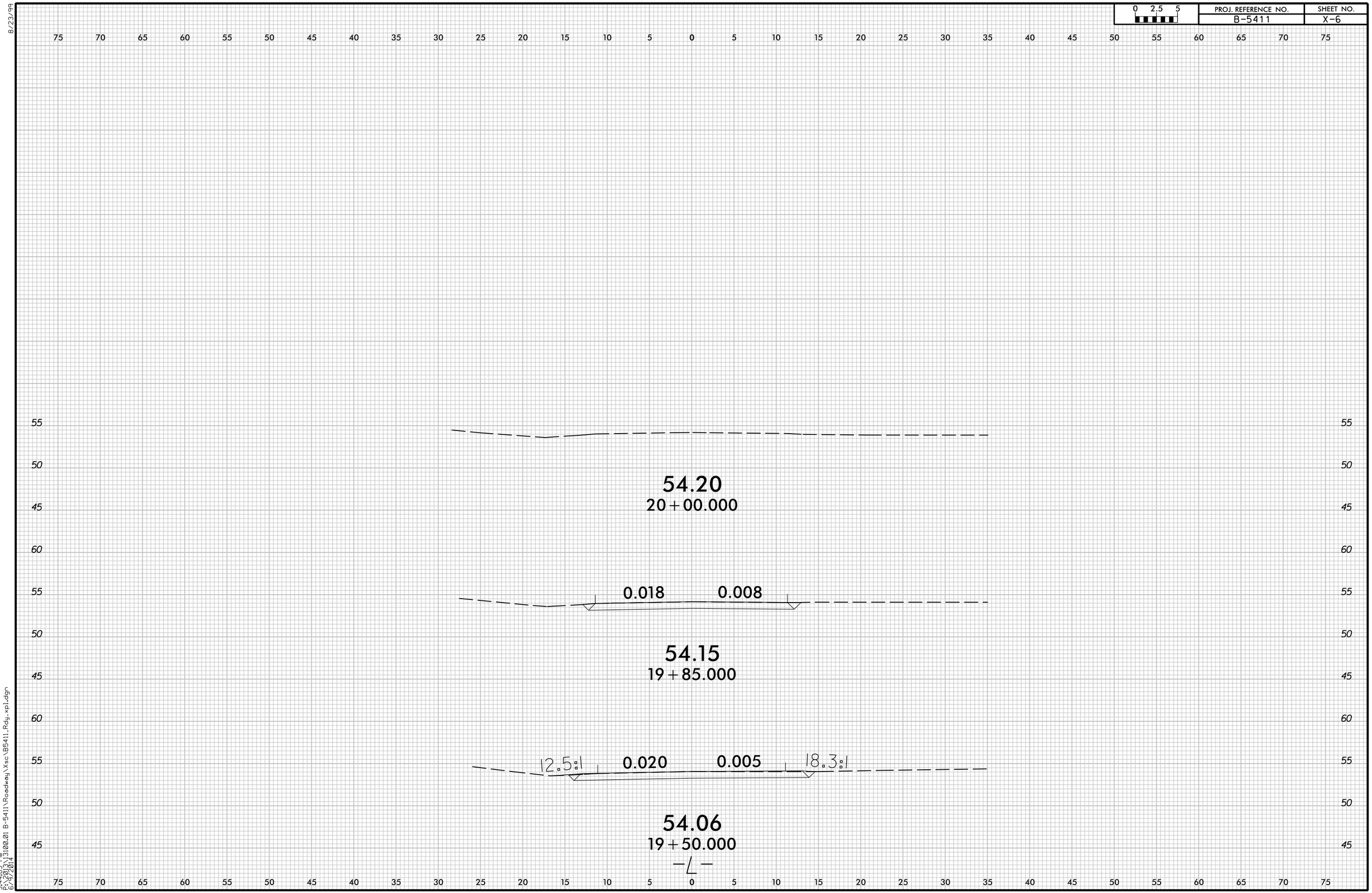

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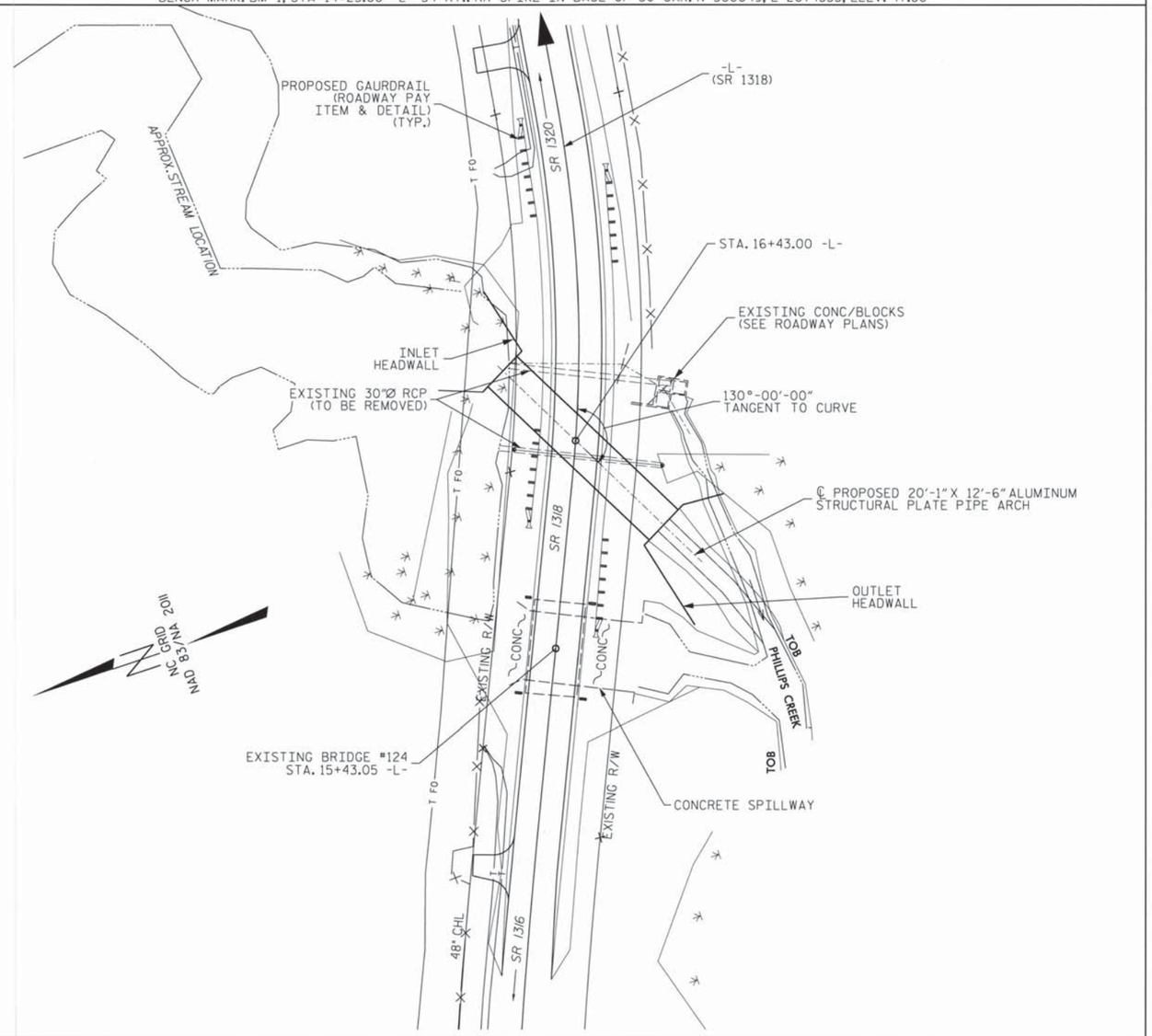
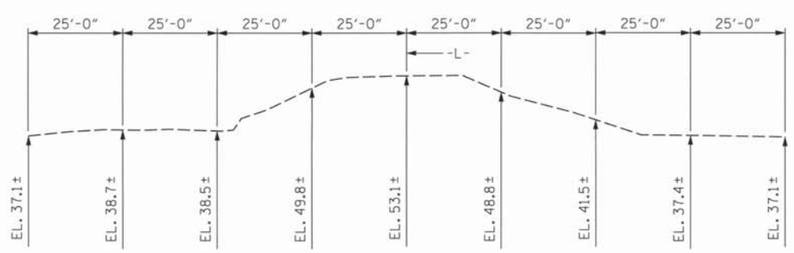
BENCH MARK: BM 1, STA 14+23.60 -L- 54' RT.: RR SPIKE IN BASE OF 30" OAK: N 360049, E 2074333, ELEV. 47.80

F.A. PROJECT NO. BRZ-1318(13)



LOCATION SKETCH

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.



PROFILE ALONG THE ℄ OF CULVERT

NOTES

ASSUMED LIVE LOAD ---------HL-93 OR ALTERNATE LOADING

CULVERT IS TO BE DESIGNED FOR A MINIMUM FILL DEPTH OF 2'-0" AND A MAXIMUM OF 10'-0".

FOR OTHER DESIGN AND GENERAL NOTES, SEE SHEET C-4.

3"Ø WEEP HOLES INDICATED TO BE IN ACCORDANCE WITH THE SPECIFICATIONS.

THE RESIDENT ENGINEER SHALL CHECK THE LENGTH OF THE PIPE BEFORE STAKING IT OUT TO MAKE CERTAIN THAT IT WILL PROPERLY TAKE CARE OF THE FILL.

FOR ALUMINUM STRUCTURAL PLATE PIPE ARCH CULVERT AND FOUNDATIONS, SEE SPECIAL PROVISIONS FOR ALUMINUM STRUCTURAL PLATE PIPE ARCH CULVERT.

ALL MATERIALS SHALL MEET THE REQUIREMENTS OF THE NCDOT STANDARDS SPECIFICATIONS FOR ROADS AND STRUCTURES DATED JANUARY 2012.

THE DETAILS SHOWN ARE FOR GENERAL LAYOUT ONLY. THE SUPPLIER SHALL PROVIDE DETAILS AND DESIGN FOR REVIEW AND APPROVAL THAT MEET THE REQUIREMENTS OF AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12, AND ARE SEALED BY A NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER.

UNLESS OTHERWISE INDICATED, THE SUPPLIER SHALL DETAIL, DESIGN, AND FURNISH ALL STRUCTURAL ELEMENTS AND HARDWARE.

GUARDRAIL POST LOCATIONS SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER TO ENSURE ADEQUATE COVER AND INSTALLATION.

FOR THE PLACEMENT OF SILLS WITHIN THE PIPE SEE DETAIL ON ROADWAY PLANS SHEET NO. 2.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR CONSTRUCTION SEQUENCE SEE EROSION CONTROL PLANS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

THE EXISTING STRUCTURE BRIDGE #124, CONSISTING OF ONE SPAN @ 47'-2" WITH A PRESTRESSED CONCRETE CORED SLAB SUPERSTRUCUTRE AND A CLEAR ROADWAY WIDTH OF 24.8 FT. ON A SUBSTRUCUTRE CONSISTING OF CONCRETE CAPS ON STEEL PILES AND 45' CONCRETE SPILLWAY, LOCATED AT STA. 15+43.05 -L- SHALL BE REMOVED.

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

GRADE DATA

GRADE POINT EL. @ STA. 16+43.00 -L-	= EL. 53.58
BED EL. @ STA 16+43.00 -L-	= EL. 35.50
ROADWAY SLOPE	3:1

TOTAL STRUCTURE QUANTITIES

CULVERT EXCAVATION	LUMP SUM
REMOVAL OF EXISTING STRUCTURE	LUMP SUM
20'-1" X 12'-6", CAA STRUCTURAL PLATE PIPE ARCH W\ ALUMINUM HEADWALLS	LUMP SUM
#57 STONE	3470 TONS
FLOWABLE FILL	62 C.Y.

HYDRAULIC DATA

DESIGN DISCHARGE	= 800 C.F.S.
FREQUENCY OF DESIGN FLOOD	= 25 YRS.
DESIGN HIGH WATER ELEVATION	= 44.00
DRAINAGE AREA	= 7.2 SQ. MI.
BASE DISCHARGE (Q100)	= 1200 C.F.S.
BASE HIGH WATER ELEVATION	= 46.00

OVERTOPPING FLOOD DATA

* OVERTOPPING DISCHARGE	= > 1,700 C.F.S.
FREQUENCY OF OVERTOPPING FLOOD	= 500 YRS. +
OVERTOPPING FLOOD ELEVATION	= 53.0 FT.

* OVER TOPPING OCCURS @ CENTERLINE OF SAG -L- STA. 14+53.00 -L-

PROJECT NO. B-5411

BLADEN COUNTY

STATION: 16+43.00 -L-

SHEET 1 OF 4 REPLACES BRIDGE NO. 124

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SINGLE 20'-1" X 12'-6" ALUMINUM STRUCTURAL PLATE PIPE ARCH CULVERT 130° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 22072 ENGINEER JOHN ARTHUR DILWORTH
8-26-14

PLANS PREPARED BY:

WETHERILL ENGINEERING

559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
License No. F-0377

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

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

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CHECKED BY : JAD DATE : 3-17-14
DESIGN ENGINEER OF RECORD : JAD DATE : 3-17-14

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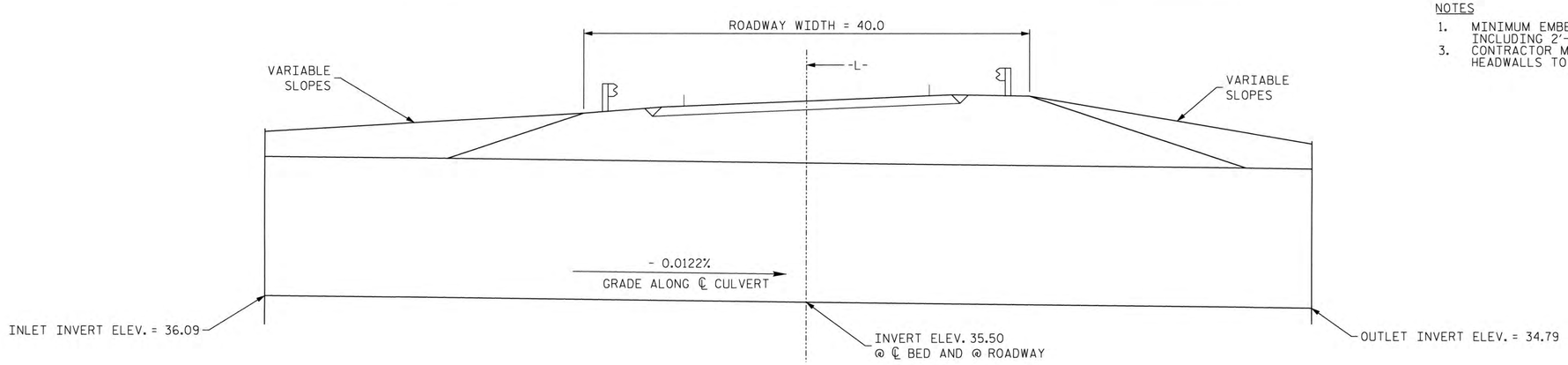
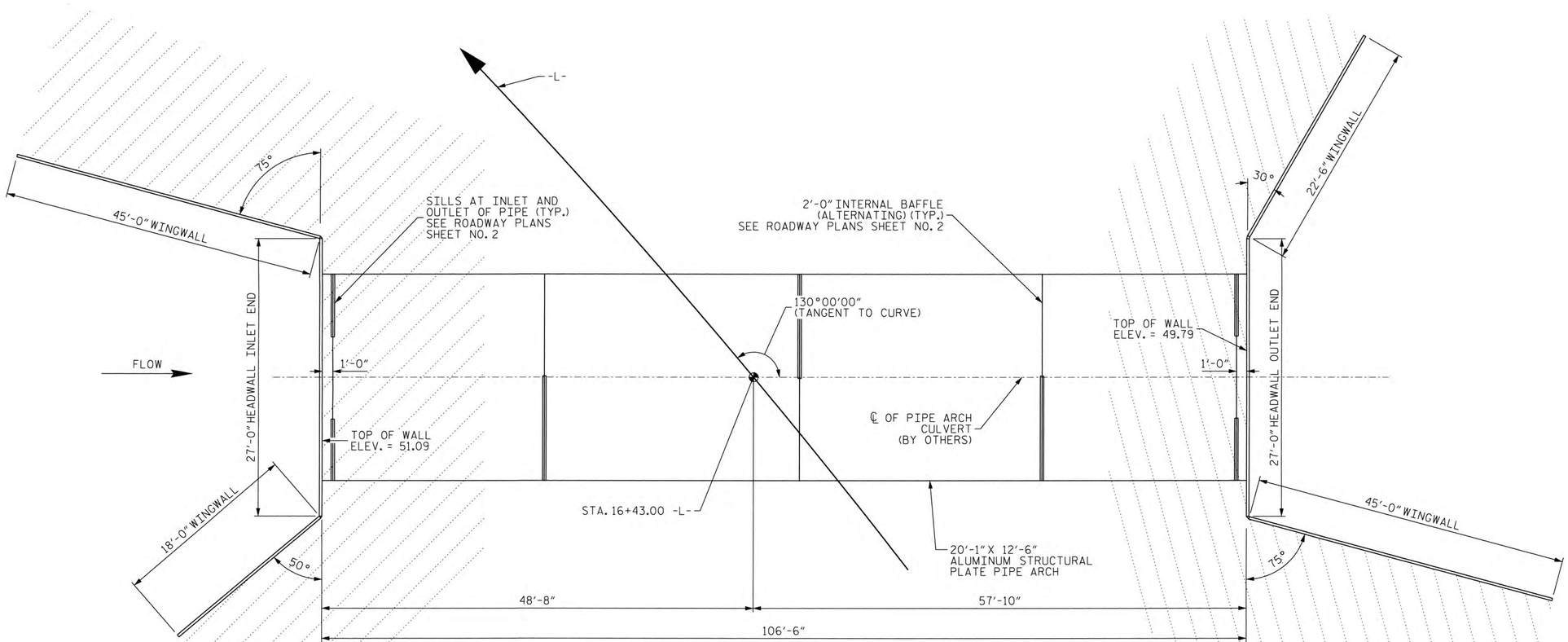
NOTES

1. MINIMUM EMBEDMENT ALONG THE BASE OF WALL SHALL BE 3'-0", INCLUDING 2'-0" OF FLOWABLE FILL SEE DETAIL SHEET C-4.
3. CONTRACTOR MUST SUBMIT SEALED SHOP DRAWINGS FOR PIPE & HEADWALLS TO NCDOT FOR APPROVAL PRIOR TO CONSTRUCTION.



CULVERT SECTION NORMAL TO ROADWAY



PLAN VIEW

DIMENSIONS TO BE VERIFIED BY ENGINEER IN FIELD

BACKFILL #57 STONE

PROJECT NO. B-5411

BLADEN COUNTY

STATION: 16+43.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SINGLE 20'-1" X 12'-6" ALUMINUM STRUCTURAL PLATE PIPE ARCH CULVERT 130° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 22072 ENGINEER JOHN ARTHUR DILWORTH
6-4-14

PLANS PREPARED BY:

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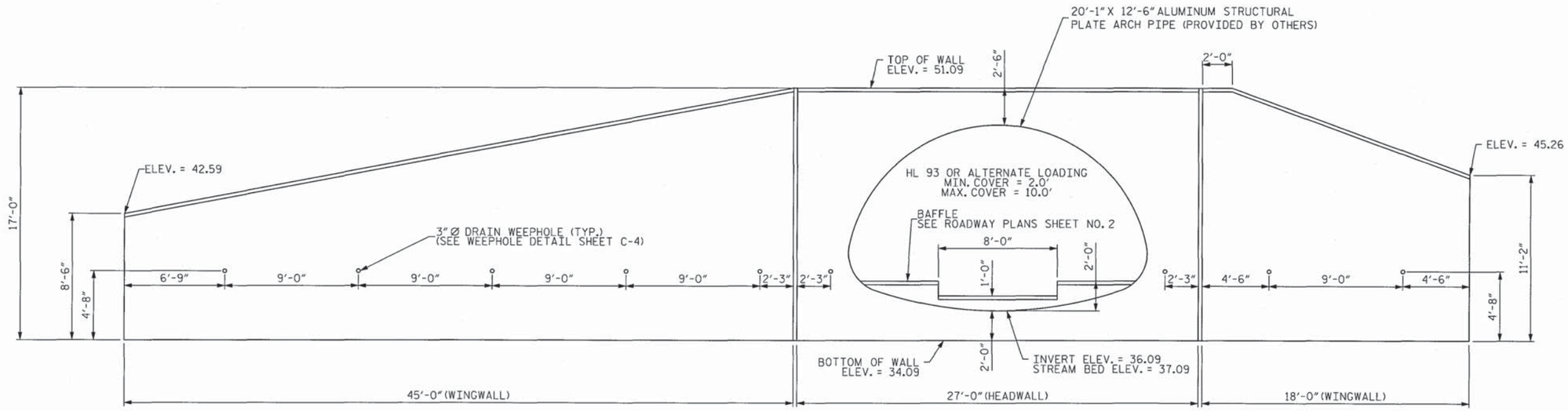
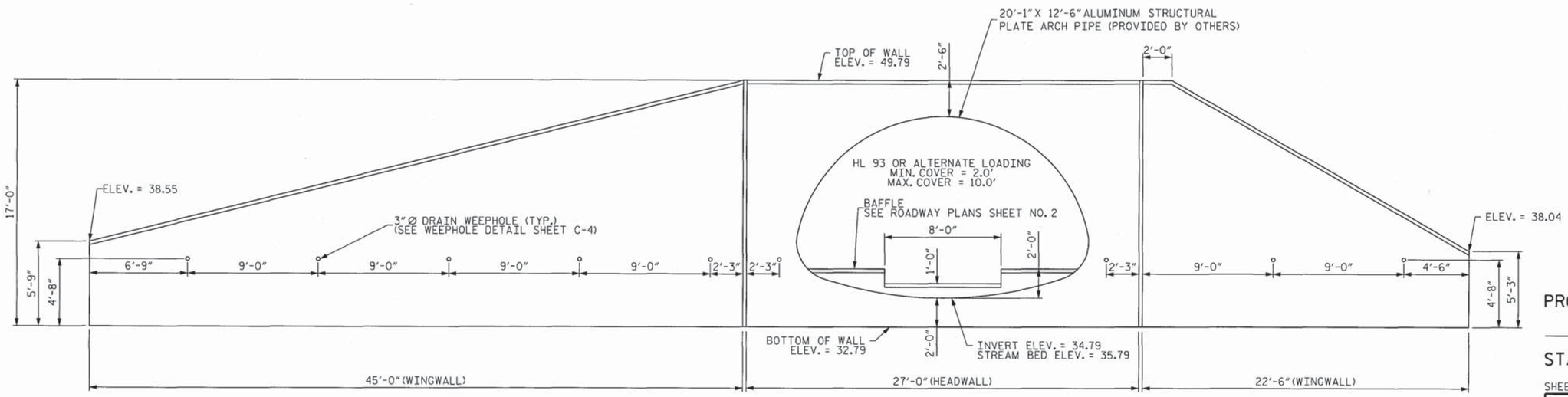


INLET HEADWALL ELEVATION - LOOKING DOWNSTREAM

DIMENSIONS TO BE VERIFIED BY ENGINEER IN THE FIELD.
BOTTOM OF WINGWALLS AND HEADWALL TO BE EMBEDDED AND
CAST IN FLOWABLE FILL. SEE FLOWABLE FILL DETAIL ON SHEET C-4



OUTLET HEADWALL ELEVATION - LOOKING UPSTREAM

DIMENSIONS TO BE VERIFIED BY ENGINEER IN THE FIELD.
BOTTOM OF WINGWALLS AND HEADWALL TO BE EMBEDDED AND
CAST IN FLOWABLE FILL. SEE FLOWABLE FILL DETAIL ON SHEET C-4

PROJECT NO. B-5411
BLADEN COUNTY
STATION: 16+43.00 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SINGLE 20'-1" X 12'-6"
ALUMINUM STRUCTURAL
PLATE PIPE ARCH
CULVERT
130° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 22072 ENGINEER JOHN ARTHUR DILWORTH
6-11-14

PLANS PREPARED BY:
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559 Jones Franklin Rd. Suite 164
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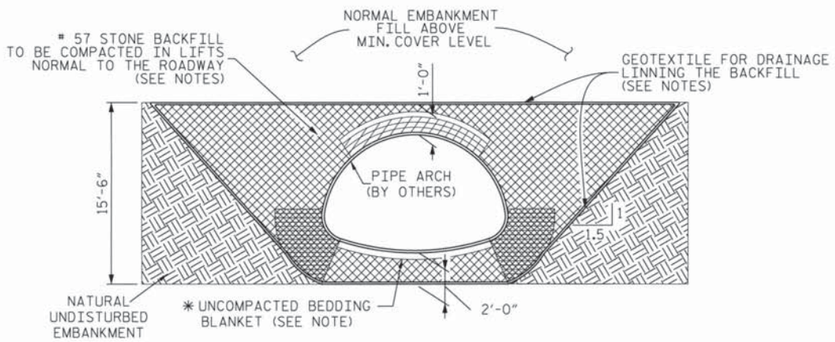
NOTE

CONTRACTOR MUST SUBMIT SEALED SHOP DRAWINGS FOR PIPE & HEADWALLS TO NCDOT FOR APPROVAL PRIOR TO CONSTRUCTION.



CRITICAL BACKFILL ZONE, PRESSURE ON SOIL GREATEST HERE.

INITIAL LIFTS OVER CROWN OF STRUCTURE AS INDICATED BY SHADED AREA TO BE COMPACTED TO REQUIRED DENSITY WITH HAND OPERATED EQUIPMENT OR WITH SMALL TRACTOR (D-4 OR SMALLER) DRAWN EQUIPMENT.

* 57 STONE BACKFILL LIMITS.

NOTES:

ALL BACKFILL TO BE PLACED IN A BALANCED FASHION IN THIN LIFTS (6"-8" LOOSE TYPICALLY) AND COMPACTED TO 90 PERCENT DENSITY PER AASHTO T-180.

GEOTEXTILE FOR DRAINAGE IN FOUNDATION BEDDING AND BACKFILL IS INCIDENTAL TO COST OF PIPE ARCH.

COMPLETE AND REGULAR MONITORING OF THE CSP ARCH SHAPE IS NECESSARY DURING ALL BACKFILLING OF THE STRUCTURE.

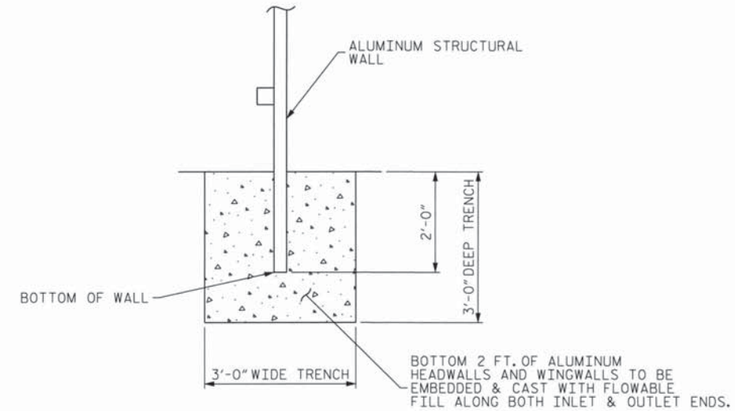
PREVENT EXCESSIVE DISTORTION OF SHAPE AS NECESSARY BY VARYING COMPACTION METHODS AND EQUIPMENT.

✳ SHAPED BED FOR A MINIMUM WIDTH OF SPAN/2. MINIMUM BEDDING THICKNESS IS TWICE THE CORRUGATION DEPTH.

EMBANKMENT SLOPE TO BE 1.5:1 MINIMUM SUCH THAT A STABLE EMBANKMENT CAPABLE OF RESISTING SIDE PRESSURES FROM CSP PIPE-ARCH SHAPE WILL BE MAINTAINED THROUGHOUT THE LIFE OF INSTALLATION.

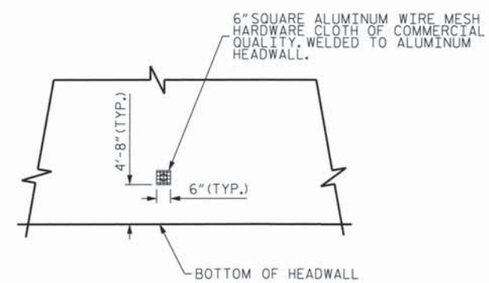
TYPICAL BACKFILL SECTION ALONG PIPE

NTS



FLOWABLE FILL DETAIL

NTS



WEEPHOLE DETAIL

NTS

PROJECT NO. B-5411

BLADEN COUNTY

STATION: 16+43.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SINGLE 20'-1" X 12'-6" ALUMINUM STRUCTURAL PLATE PIPE ARCH CULVERT 130° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 22072 ENGINEER JOHN ARTHUR DILWORTH
8-26-14

PLANS PREPARED BY:

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REVISIONS								SHEET NO.
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