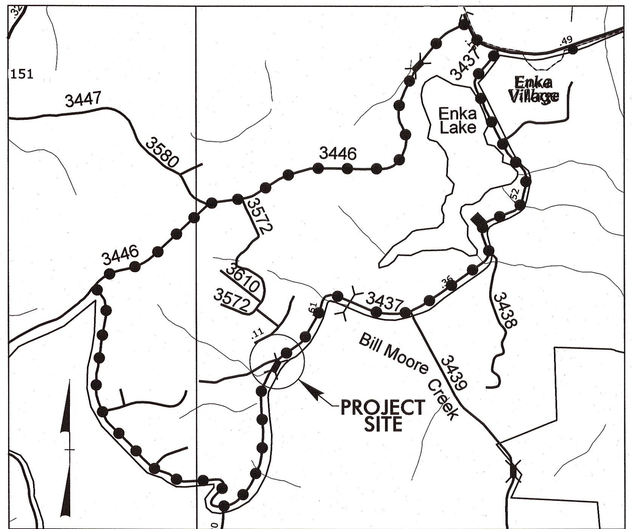
09/08/99

TIP PROJECT:

CONTRACT:

See Sheet 1-A For Index of Sheets
See Sheet 2 For Conventional Symbols



VICINITY MAP

DETOUR ROUTE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BUNCOMBE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.13.R.5	1	

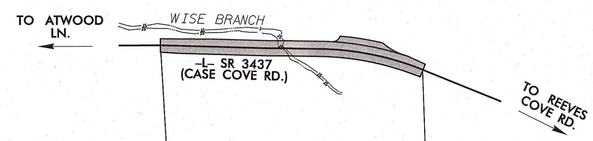
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
		PE
		R/W, UTIL

LOCATION: BRIDGE NO. 100315 OVER WISE BRANCH OF BILL MOORE CREEK ON SR 3437

TYPE OF WORK: GRADING, DRAINAGE, AND PAVING

NAD 83/86

4



-L- STA 10+55.00
BEGIN PROJECT 17BP.13.R.5

-L- STA 14+05.00
END PROJECT 17BP.13.R.5

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

RURAL LOCAL

ADT 2008 = 710
DHV = %
D = %
T = 6 %*
V = 45 MPH

SUB-REGIONAL TIER
* (TTST =3% + DUAL 3%)
** DESIGN EXCEPTION REQUIRED FOR SHLD WIDTH, DES SPEED & SUPER

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT 17BP.13.R.5 = 0.066 MILES

PARSONS
RALEIGH, NORTH CAROLINA

Prepared for the North Carolina Department of Transportation In the office of:
5540 Centerview Drive
Suite 217
Raleigh NC 27606
License No. F-0246
Bus: 919-854-1345
Fax: 919-851-2103

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

LETTING DATE:

TIMOTHY D. GOINS, PE
PROJECT ENGINEER

J. MATTHEW PICKENS, PE
PROJECT DESIGN ENGINEER

NCDOT CONTACT: TROY S. WILSON

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 009334 ENGINEER TIMOTHY WELLS GOINS

4/15/14
SIGNATURE: P.E.

ROADWAY ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 37874 ENGINEER TIMOTHY D. GOINS

4-15-14
SIGNATURE: P.E.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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PLANS PREPARED BY :
PARSONS
RALEIGH, NORTH CAROLINA, (919) 854-1345
NC LICENSE NO. F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.5	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 37874 ENGINEER TIMOTHY D. DAIS

Timothy D. Dais 1-3-14

INDEX OF SHEETS

SHEET NUMBER SHEET

1 TITLE SHEET

1-A INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS

2 CONVENTIONAL SYMBOLS

3 SUMMARY OF DRAINAGE QUANTITIES AND GUARDRAIL EARTHWORK SUMMARY, REMOVAL OF EXISTING ASPHALT PAVEMENT.

4 PLAN/PROFILE SHEET

5 DRAINAGE DETAILS SHEET

TMP-1 THRU TMP-2 TRANSPORTATION MANAGEMENT PLANS

PMP-1 PAVEMENT MARKING PLAN

EC-1 THRU EC-6 EROSION CONTROL PLANS

SGN-1 SIGNING PLAN

UO-1 UTILITY BY OTHERS PLAN

X-0 CROSS-SECTION SUMMARY SHEET

X-1 THRU X-6 CROSS-SECTIONS

S-1 THRU S-2 STRUCTURE PLANS

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	
200.02	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
862.01	Guardrail Placement
862.02	Guardrail Installation

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 II.

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04
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 560.01

SIDE ROADS:

THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED.

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

Duke/Progress Energy - Power

RIGHT-OF-WAY MARKERS:

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

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12/05/11

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.5	2

Note: Not to Scale

S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

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

COMPUTED BY: JMP	DATE: 10-2013
CHECKED BY: TDG	DATE: 10-2013

12/06/07

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLANS PREPARED BY :
PARSONS
RALEIGH, NORTH CAROLINA, (919) 854-1345
NC LICENSE NO. F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.5	3

SUMMARY OF EARTHWORK

STATION	STATION	UNCL. EXCAV.	UNDERCUT	EMBANK.	BORROW	WASTE
10+55.00 -L-	14+05.00 -L-	286		225		61
PROJECT TOTALS:		286		225		61
SHOULDER BORROW				7.1	7.1	
WASTE TO REPLACE BORROW					-7.1	-7.1
LOSS DUE TO CLEARING & GRUBBING PER GEOTECH RECS		-25				-25
GRAND TOTALS:		261		232.1		28.9
SAY:		265				

UNDERCUT FOR SUBGRADE STABILITY CONTINGENCY PER GEOTECH RECS: 75 CY
GEOTEXTILE FOR SOIL STABILIZATION CONTINGENCY PER GEOTECH RECS: 50 SY
SELECT GRANULAR MATERIAL FOR EMBANKMENT/BACKFILL CONTINGENCY PER GEOTECH RECS: 75 CY
SELECT GRANULAR MATERIAL CONTINGENCY PER GEOTECH RECS: 25 CY

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

PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD^2
-L-	11+75	12+13 (BEGIN EX. BRIDGE)	CL	65.30
-L-	12+30 (END EX. BRIDGE)	12+75	CL	90.79
			TOTAL:	156.09
			SAY:	160

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".

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

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
12+05 -L-	RT																		
TOTAL																			
SAY																			

STATION	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	36" .079	42" .109	48" .109	R.C. PIPE (CLASS III) 15"	18"	24"	30"	36"	42"	48"	R.C. PIPE (CLASS IV) 12"	15"	18"	24"	30"	36"	42"	48"
12+05 -L-																						
TOTAL																						
SAY																						

STATION	**" R. C. PIPE (CLASS V)	**" R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	**" R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. *FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	
12+05 -L-															
TOTAL															
SAY															

STATION	CONCRETE TRANSITIONAL SECTION CATCH BASIN	DROP INLET	FRAMES AND NARROW SLOT FLAT GRATES STD. 840.29		T.B.D.I. STD. 840.35				DRAINAGE PIPE 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
12+05 -L-												41	
TOTAL												41	
SAY												41	

ABBREVIATIONS

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

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

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPROACH END	WARRANT POINT TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH APPROACH END	FLARE LENGTH TRAILING END	W APPROACH END	W TRAILING END	ANCHORS XI MOD	XI	GRAU 350 (TL-2)	M-350	III	CAT-1	VI MOD	BIC	AT-1	IMPACT ATTENUATOR TYPE 350 EA	G	NG	SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
-L-	11+61.60	12+94.19	RT	125			12+33.37	12+64.68	4	7	25	25	1	1			2													
-L-	11+60.31	12+79.40	LT	112.5			12+24.50	11+91.72	4	7	25	25	1	1			2													
TOTAL				237.5													4													
		DEDUCT FOR ANCHOR UNITS																												
		GRAU TL-2 4 @ 25' =		-100																										
SAY				137.5			2 EA ADDITIONAL GUARDRAIL POSTS										4													

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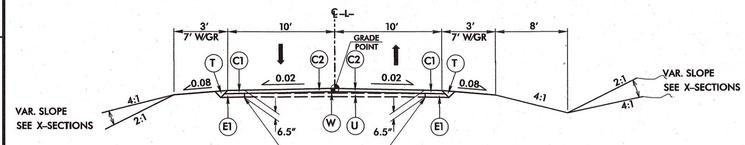
8/17/99

REVISIONS



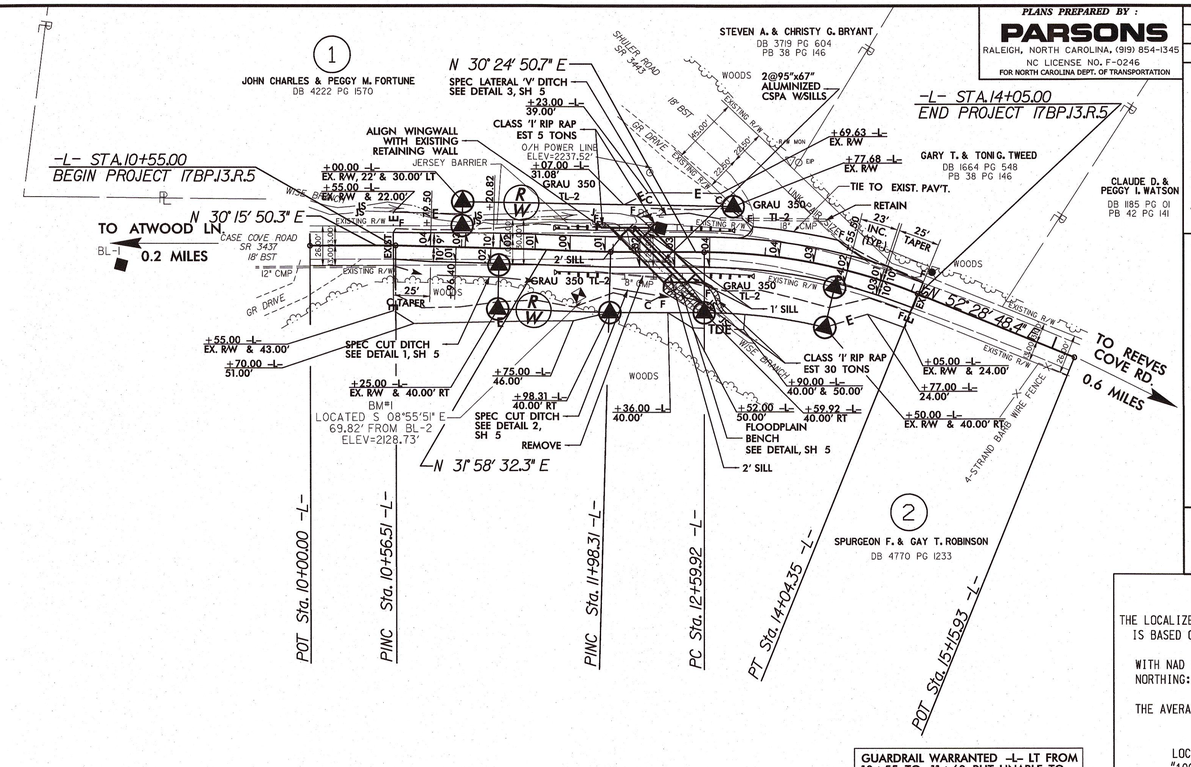
ROADWAY TYPICAL SECTION NO. 1

-L- STA. 10+55 TO STA. 11+75
-L- STA. 11+75 TO STA. 12+75 (FULL DEPTH)
-L- STA. 12+75 TO STA. 14+05

PAVEMENT SCHEDULE	
C1	3" SURFACE COURSE, TYPE S9.5B AT AN AVERAGE RATE OF 168 LBS/SY IN EACH OF TWO LIFTS
C2	3" OVERLAY, TYPE S9.5B AT AN AVERAGE RATE OF 168 LBS/SY IN EACH OF TWO LIFTS
E1	4" BASE COURSE, TYPE B25.0B AT AN AVERAGE RATE OF 456 LBS/SY
U	EXISTING PAVEMENT
T	EARTH MATERIAL
W	WEDGING

-L-

PI Sta 13+33.04
△ = 22° 03' 57.8" (RT)
D = 15° 16' 43.9"
L = 144.42'
T = 73.12'
R = 375.00'
S.E. = SEE PLANS
D.S. = 35 MPH



PLANS PREPARED BY :
PARSONS
RALEIGH, NORTH CAROLINA, (919) 854-1345
NC LICENSE NO. F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

PROJECT REFERENCE NO.	SHEET NO.
17BP.J3.R.5	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 37874 ENGINEER TIMOTHY D. COLLINS
12-31-13

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 009334 ENGINEER WILLIAM M. BAIN, JR.
12/31/13

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

EXISTING SPEED = 40-MPH (POSTED)
REASONABLE BRIDGE SPEED = 35 MPH
DESIGN SPEED = 45-MPH
ADT = 710 (2010)

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "100315 BL-3"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 665536.0810(ft) EASTING: 909209.6440(ft)
ELEVATION: 2123.76(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99978708
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "100315 BL-3" TO -L- STATION 10+55.00 IS
S 40° 26' 08.70" W 558.90'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

GUARDRAIL WARRANTED -L- LT FROM 10+55 TO 11+60 BUT UNABLE TO CONSTRUCT DUE TO PROXIMITY OF WISE BRANCH CREEK

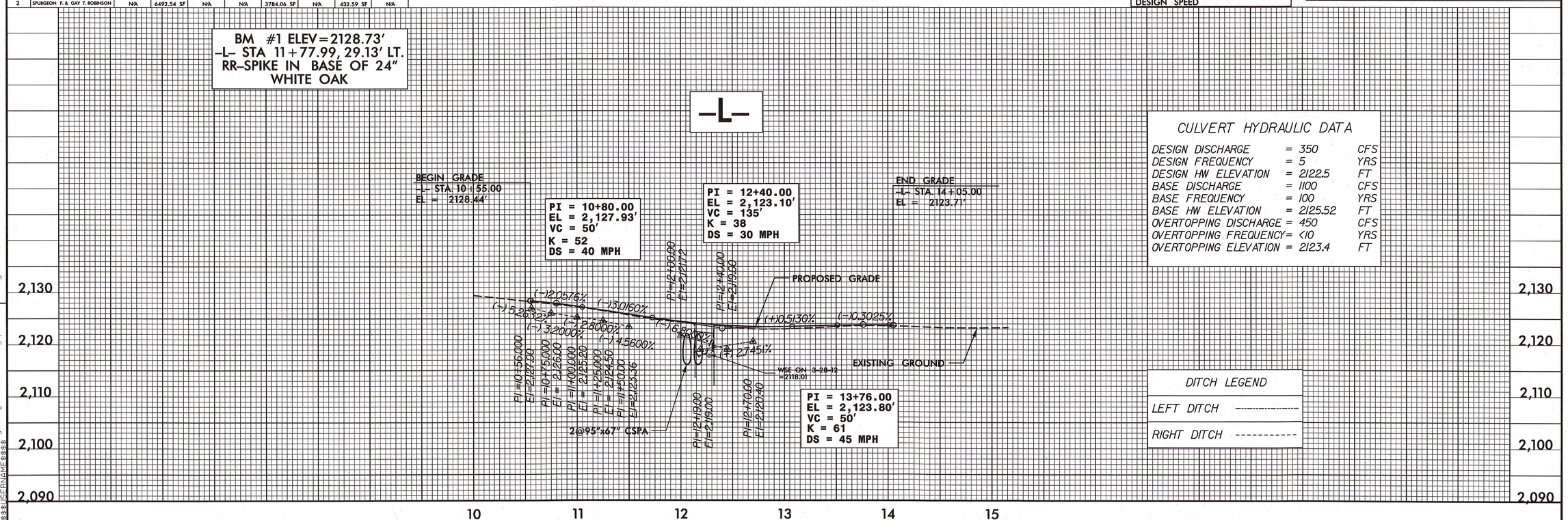
* DESIGN EXCEPTION REQUIRED FOR -L- LT SHLDR , SUPER, & DESIGN SPEED

RIGHT-OF-WAY AREAS

PARCEL #	PROPERTY OWNER	TOTAL AREA	AREA TAKEN	AREA REMAINING RIGHT	AREA REMAINING LEFT	CONST. EASEMENT	PERMANENT DRAINAGE EASEMENT	TEMPORARY DRAINAGE EASEMENT	PERMANENT UTILITY EASEMENT
1	JOHN CHARLES & PEGGY M. FORTUNE	N/A	2275.71 SF	N/A	N/A	879.80 SF	N/A	N/A	N/A
2	SPURGEON F. & GAY T. ROBINSON	N/A	6492.54 SF	N/A	N/A	3784.06 SF	N/A	432.59 SF	N/A

SITE 315

BM #1 ELEV=2128.73'
-L- STA 11+77.99, 29.13' LT.
RR-SPIKE IN BASE OF 24"
WHITE OAK



CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 350	CFS
DESIGN FREQUENCY	= 5	YRS
DESIGN HW ELEVATION	= 2122.5	FT
BASE DISCHARGE	= 1100	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 2125.52	FT
OVERTOPPING DISCHARGE	= 450	CFS
OVERTOPPING FREQUENCY	= <10	YRS
OVERTOPPING ELEVATION	= 2123.4	FT

DITCH LEGEND

LEFT DITCH ----------

RIGHT DITCH ----------

27-DEC-2013 12:30
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PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.5	5
R/W SHEET NO.	
ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 009334 ENGINEER M. HENRY WILLIS, JR.

12/20/13

DETAIL

(NOT TO SCALE)

MULTI-BARREL LOW FLOW CHANNEL,SILLS AND FLOOD PLAIN

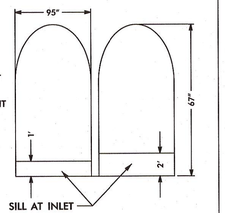
*NOTES:

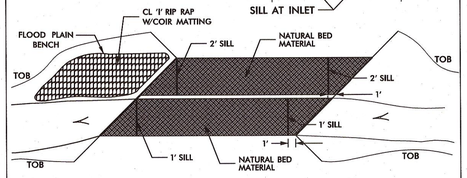
1) BED MATERIAL SHALL BE EXCAVATED AND STOCKPILED DURING INSTALLATION OF THE CULVERTS AND SILLS. THE NATURAL BED MATERIALS SHALL THEN BE PLACED IN THE CULVERT TO THE SPECIFIED ELEVATION.

2) SILLS ARE TO BE MADE OF ALUMINIZED STEEL AND MECHANICALLY ATTACHED TO THE INVERT OF THE CULVERT.

3) CLASS 'I' RIP RAP MAY BE USED TO SUPPLEMENT NATURAL BED MATERIAL.

4) DO NOT SET ELEVATION OF HIGH SILL ABOVE BANK FULL.

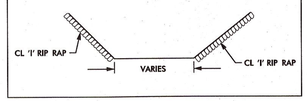




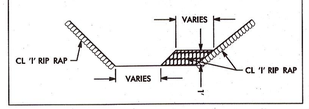
PLAN VIEW

1/12

TYPICAL INLET CHANNEL
(NTS)

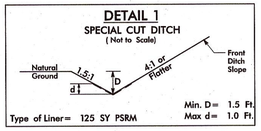


TYPICAL OUTLET CHANNEL
(NTS)



DETAIL 1

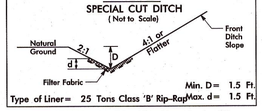
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 10+56 TO STA. 11+50 -L- RT

DETAIL 2

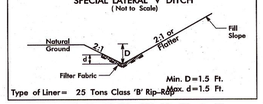
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 12+00 TO STA 12+45 -L- RT

DETAIL 3

SPECIAL LATERAL 'V' DITCH
(Not to Scale)



FROM STA. 12+19 TO STA. 12+70 -L- LT

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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

BUNCOMBE COUNTY

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS 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
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1110.01	BARRICADES

PROJECT PHASING

PHASE 1

STEP 1: USING ROADWAY STANDARD DRAWING NUMBER 1101.04, SHEET 1 OF 1, CONTRACTOR TO INSTALL ALL ADVANCE WARNING SIGNS FOR DETOUR, KEEPING SIGNS COVERED (SEE ROADWAY STANDARD DRAWING NO. 1101.03, SHEETS 1 OF 9 AND 2 OF 9).

WORKING IN A CONTINOUS MANNER, COMPLETE THE FOLLOWING WORK IN PHASE I, STEP 2.

STEP 2: CLOSE SR 3437 (CASE COVE RD) TO TRAFFIC, UNCOVER ALL ADVANCE WARNING SIGNS FOR ROAD CLOSURE AND SHIFT TRAFFIC TO TEMPORARY DETOUR.

STEP 3: DISMANTLE AND REMOVE EXISTING BRIDGE NO. 315 OVER WISE BRANCH.

STEP 4: COMPLETE CONSTRUCTION OF PROPOSED STRUCTURE, APPROACH ROADWAY WIDENING AND PAVING (SEE ROADWAY PLANS).

STEP 5: CONTRACTOR TO PLACE FINAL PAVEMENT MARKINGS (PAINT) ON SR 3437 (CASE COVE RD).

WORKING IN A CONTINOUS MANNER, COMPLETE THE FOLLOWING WORK IN PHASE I, STEP 6.

STEP 6: USING ROADWAY STANDARD DRAWINGS NO. 1101.04, SHEET 1 OF 1, REMOVE ALL ADVANCE WARNING SIGNS FOR ROAD CLOSURE, ALL TRAFFIC CONTROL DEVICES AND OPEN SR 3437 (CASE COVE RD) TO TRAFFIC.

PROJECT NOTES

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. MODIFICATIONS 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 CONSTRUCTION PROJECT EXCEPT WHEN OTHERWISE NOTED IN THE PLANS OR DIRECTED BY THE ENGINEER.

TRAFFIC PATTERN ALTERATIONS

A) NOTIFY THE ENGINEER TWENTY ONE (21) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATIONS.

SIGNING

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

CONTRACTOR WILL PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRAFFIC CONTROL PLANS, UNLESS OTHERWISE NOTED.

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

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

TRAFFIC CONTROL DEVICES

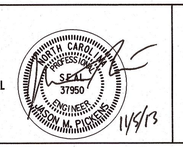
E) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICENT LENGTH TO CLOSE ENTIRE ROADWAY.

LOCAL NOTES

1. CONTRACTOR TO MAINTAIN ACCESS TO ALL DRIVEWAYS WITHIN THE PROJECT LIMITS AT ALL TIMES.

PLANS PREPARED BY :
PARSONS
RALEIGH, NORTH CAROLINA, (919) 854-1345
NC LICENSE NO. F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

SEAL



EDWARD S. ROBBINS, PE *TRAFFIC CONTROL PROJECT ENGINEER*

J. MATTHEW PICKENS, PE *TRAFFIC CONTROL ENGINEER*

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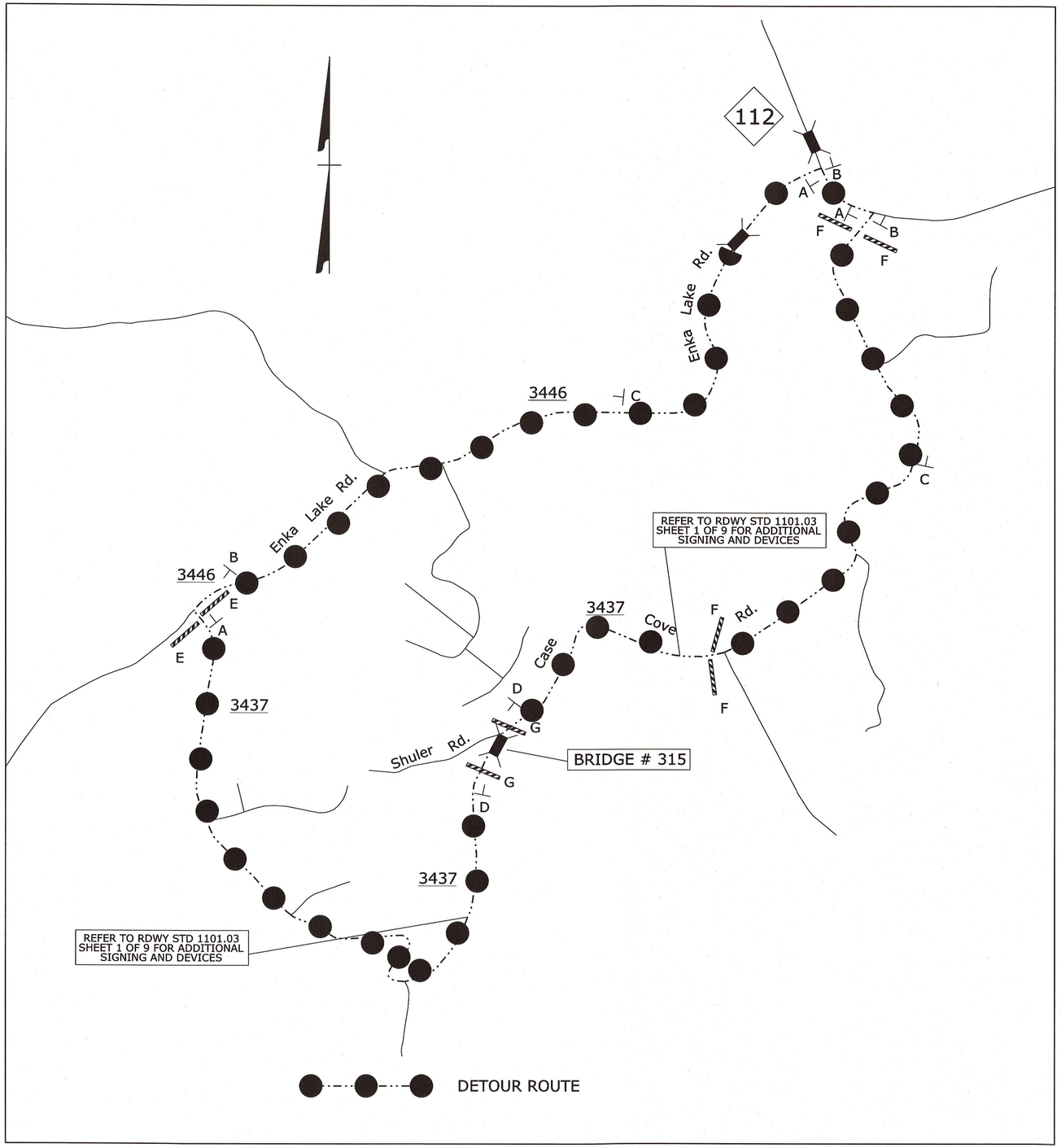
PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.5	TMP-2



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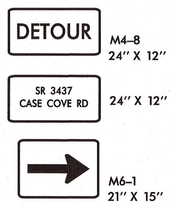

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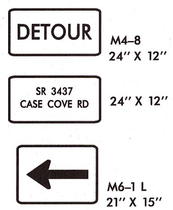

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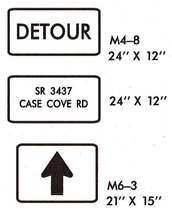

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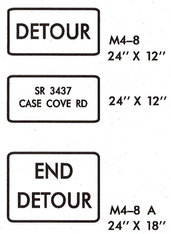

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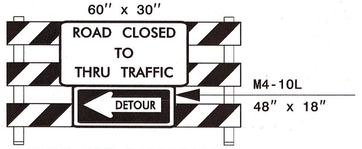
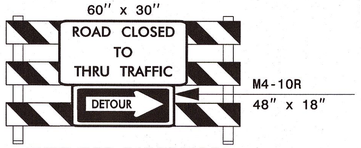


TYPE III BARRICADE

F



TYPE III BARRICADE

G

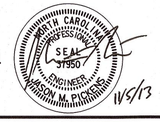
TYPE III BARRICADE

PLANS PREPARED BY :

PARSONS

RALEIGH, NORTH CAROLINA, (919) 854-1345
NC LICENSE NO. F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

SEAL



SR 3437 CASE COVE RD. OFF-SITE DETOUR

SCALE:	NONE
DATE:	10/2012
DWG. BY:	JMP
DESIGN BY:	JMP
REVIEWED BY:	ESR

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

REVISIONS	
CADD FILE	BUNC_315_Rdy_tmp2.dgn

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PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.5	PMP-1

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLAN
BUNCOMBE COUNTY

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
1205.12	PAVEMENT MARKINGS - BRIDGES
1261.01	GUARDRAIL AND BARRIER DELINEATOR SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATOR TYPES
1262.01	GUARDRAIL END DELINEATION

PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION
	FINAL PAVEMENT MARKINGS
	PAINT(4")
PA	WHITE EDGELINE (2X)
PD	WHITE MINISKIP (2X)
PI	YELLOW DOUBLE CENTER (2X)

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.

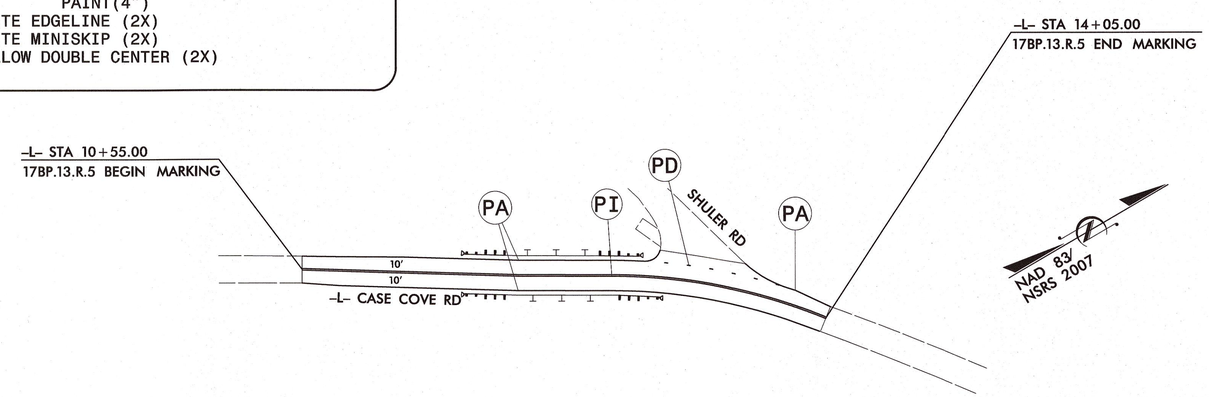
A) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS FOLLOWS:

ROAD NAME	MARKING
SR 3437 (CASE COVE RD)	PAINT

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) REFER TO TRAFFIC CONTROL PLAN FOR PROJECT NOTES CONCERNING PAVEMENT MARKINGS, MARKERS AND DELINEATION.



PLANS REVIEWED BY: N.C.D.O.T. WORK ZONE TRAFFIC CONTROL UNIT

_____ SIGNING & DELINEATION STANDARDS ENGINEER

_____ SIGNING & DELINEATION PROJECT DESIGN ENGINEER

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

PLANS PREPARED BY:

ED ROBBINS, P.E. PROJECT MANAGER

J. MATTHEW PICKENS, P.E. PROJECT ENGINEER

PLANS PREPARED BY :

PARSONS

FOR DIVISION OF HIGHWAYS

5/14/99

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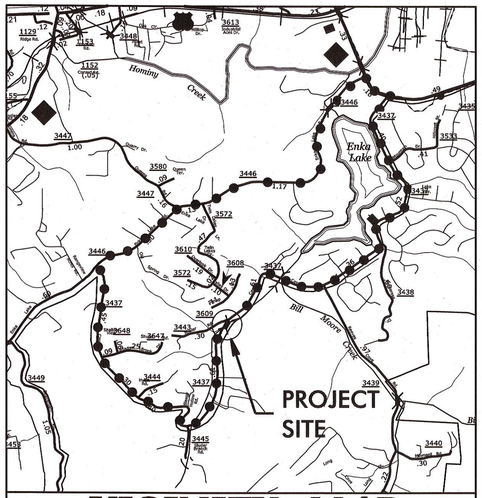
PROJECT: WBS 17BP.13.R.5

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.13.R.5	EC-1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
17BP.13.R.5		



VICINITY MAP

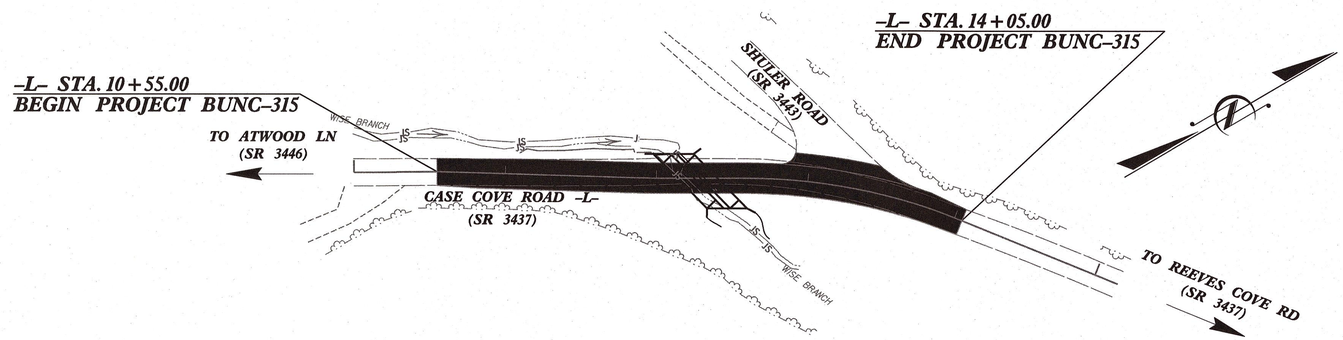
OFF-SITE DETOUR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

BUNCOMBE COUNTY

LOCATION: BRIDGE NO. 315 ON SR 3437 (CASE COVE ROAD)
OVER WISE BRANCH OF BILL MOORE CREEK
0.02 MILES SOUTHWEST OF JUNCTION WITH SR 3443
TYPE OF WORK: GRADING, PAVING, DRAINAGE, AND STRUCTURE



EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TSD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	
1630.02	Silt Basin Type B	
1633.01	Temporary Rock Silt Check Type-A	
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	
1633.02	Temporary Rock Silt Check Type-B	
	Wattle / Coir Fiber Wattle	WW 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.

JOSHUA G. DALTON, PE, CPESC
LEVEL IIIA NAME

307
LEVEL IIIA CERTIFICATION NO.

GRAPHIC SCALES

20 10 0 20 40
PLANS

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:

SUNGATE DESIGN GROUP, P.A.

915 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 FAX (919) 859-6258
ENG FIRM LICENSE NO. C-890

2012 STANDARD SPECIFICATIONS

Roadway Standard Drawings

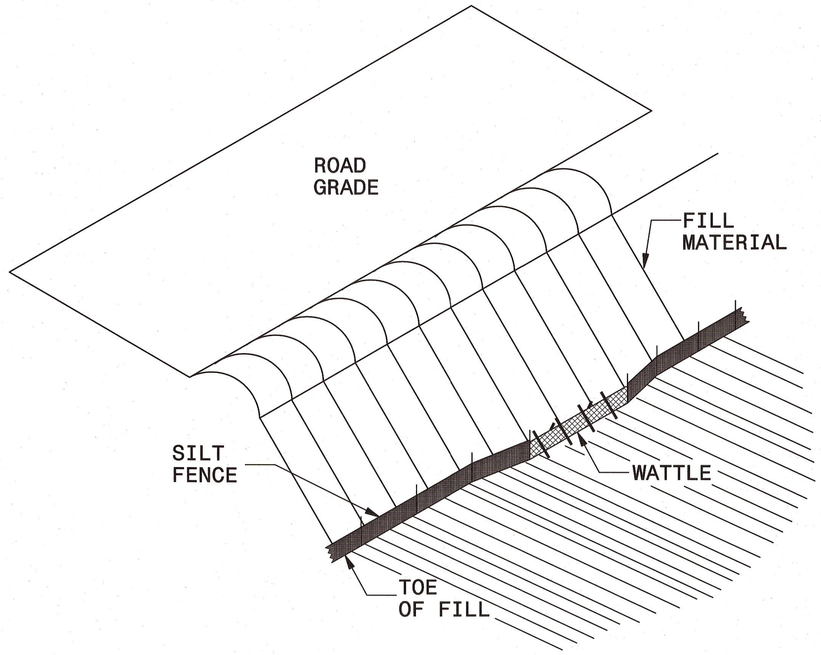
The following roadway english standards as appear in "Roadway Standard Drawings"– Roadway Design Unit – N. C. Department of Transportation – Raleigh, N. C., dated January 2012 and the latest revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

1604.01	Railroad Erosion Control Detail	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		

10/23/2012
100315_EC_dan.tsh
tsmith

PROJECT REFERENCE NO.	SHEET NO.
17BPJ3.R.5	EC-2A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SILT FENCE COIR FIBER WATTLE BREAK DETAIL



ISOMETRIC VIEW

NOTES:

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

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

DO NOT PLACE WATTLE ON TOE OF SLOPE.

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

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

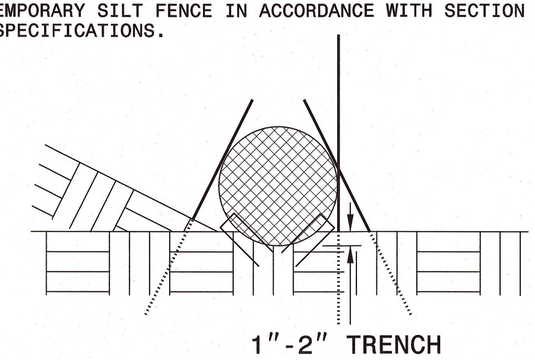
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

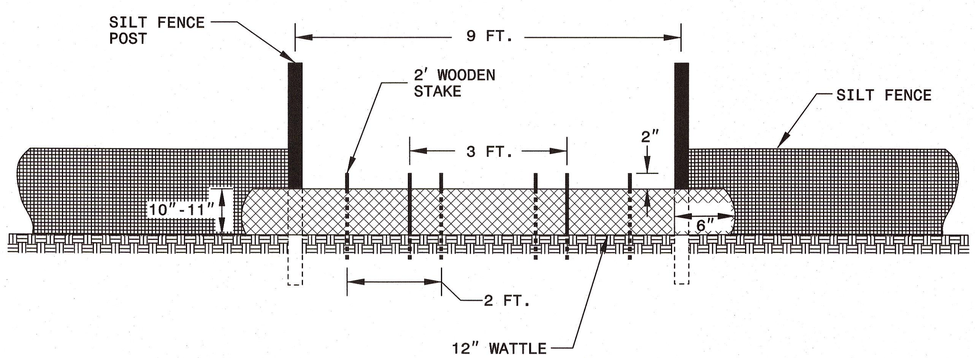
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

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

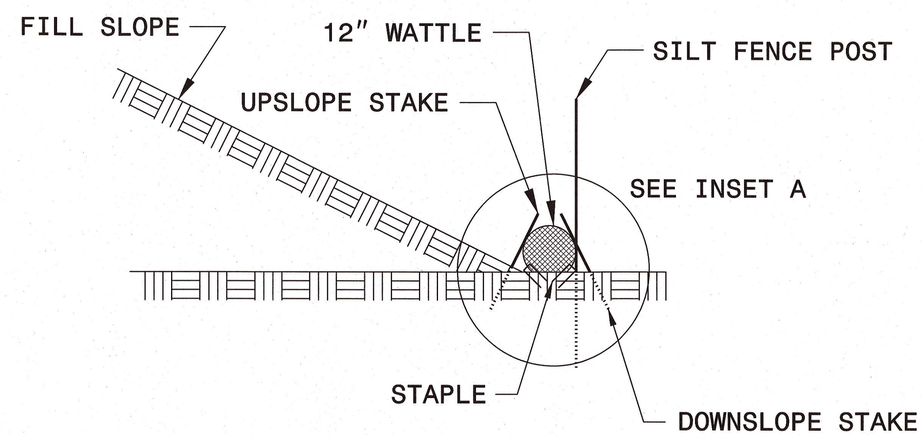
INSTALL TEMPORARY SILT FENCE IN ACCORDANCE WITH SECTION 1605 OF THE STANDARD SPECIFICATIONS.

INSET A





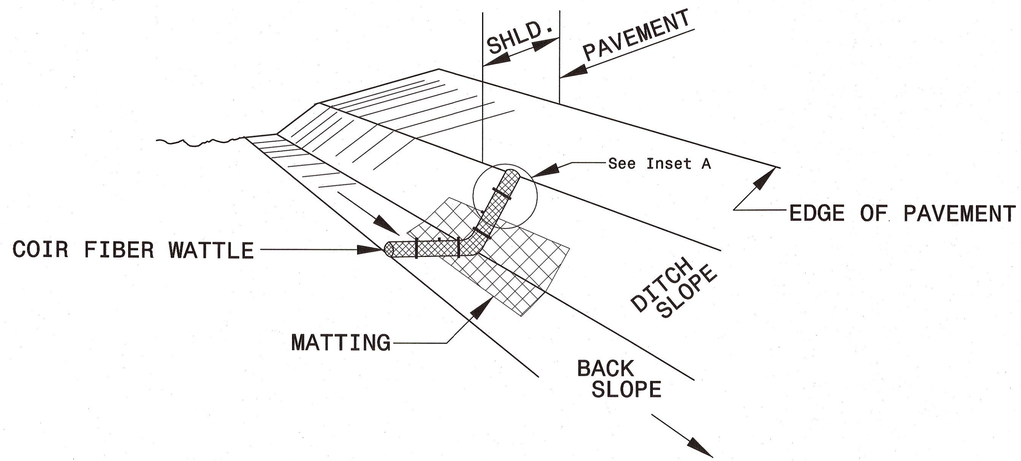
VIEW FROM SLOPE



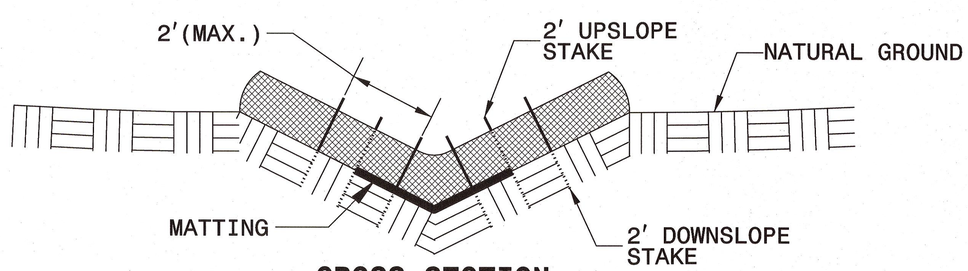
SIDE VIEW

PROJECT REFERENCE NO.	SHEET NO.
17BPJ3.R.5	EC-2B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

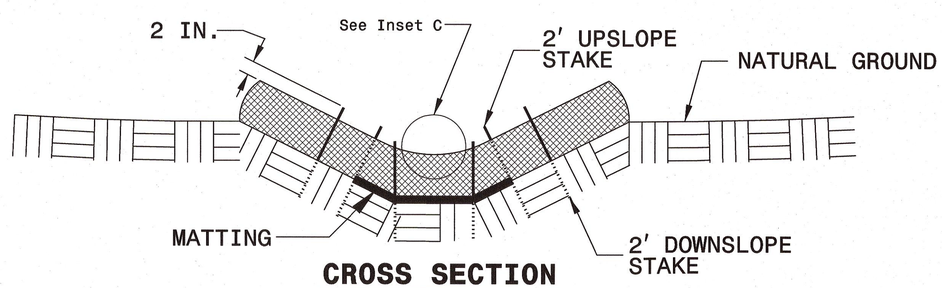
COIR FIBER WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



ISOMETRIC VIEW



CROSS SECTION VEE DITCH



CROSS SECTION TRAPEZOIDAL DITCH

NOTES:

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

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

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

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

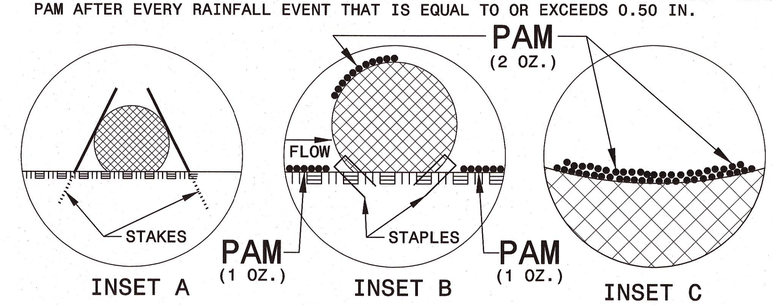
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

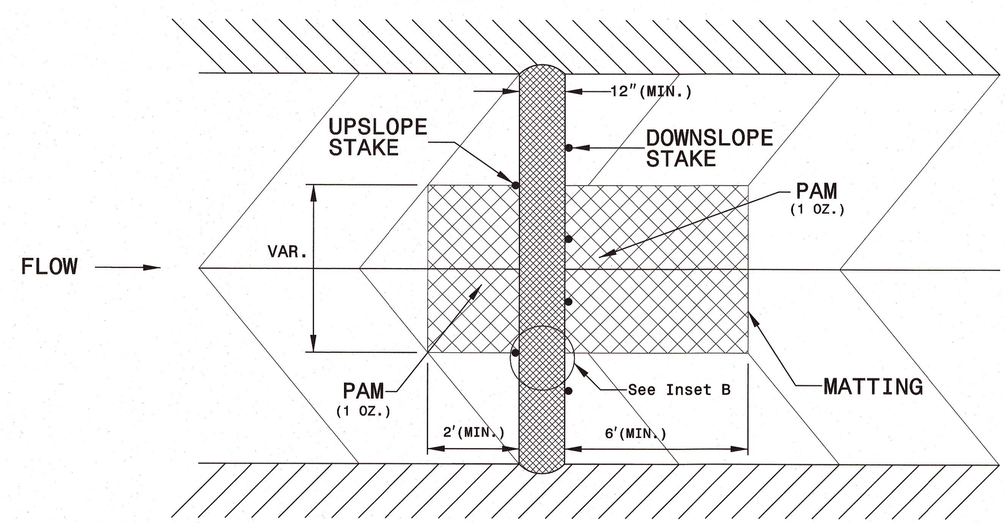
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

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

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

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





TOP VIEW

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.5	EC-3A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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-	10+56	12+40	RIGHT	130
4	-L-	12+19	12+70	LEFT	30
				SUBTOTAL	160
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					1000
				TOTAL	1160

MATTING FOR EROSION CONTROL

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

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.5	EC-3B
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.

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
17BPJ3.R.5	EC-04/CONST.04
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

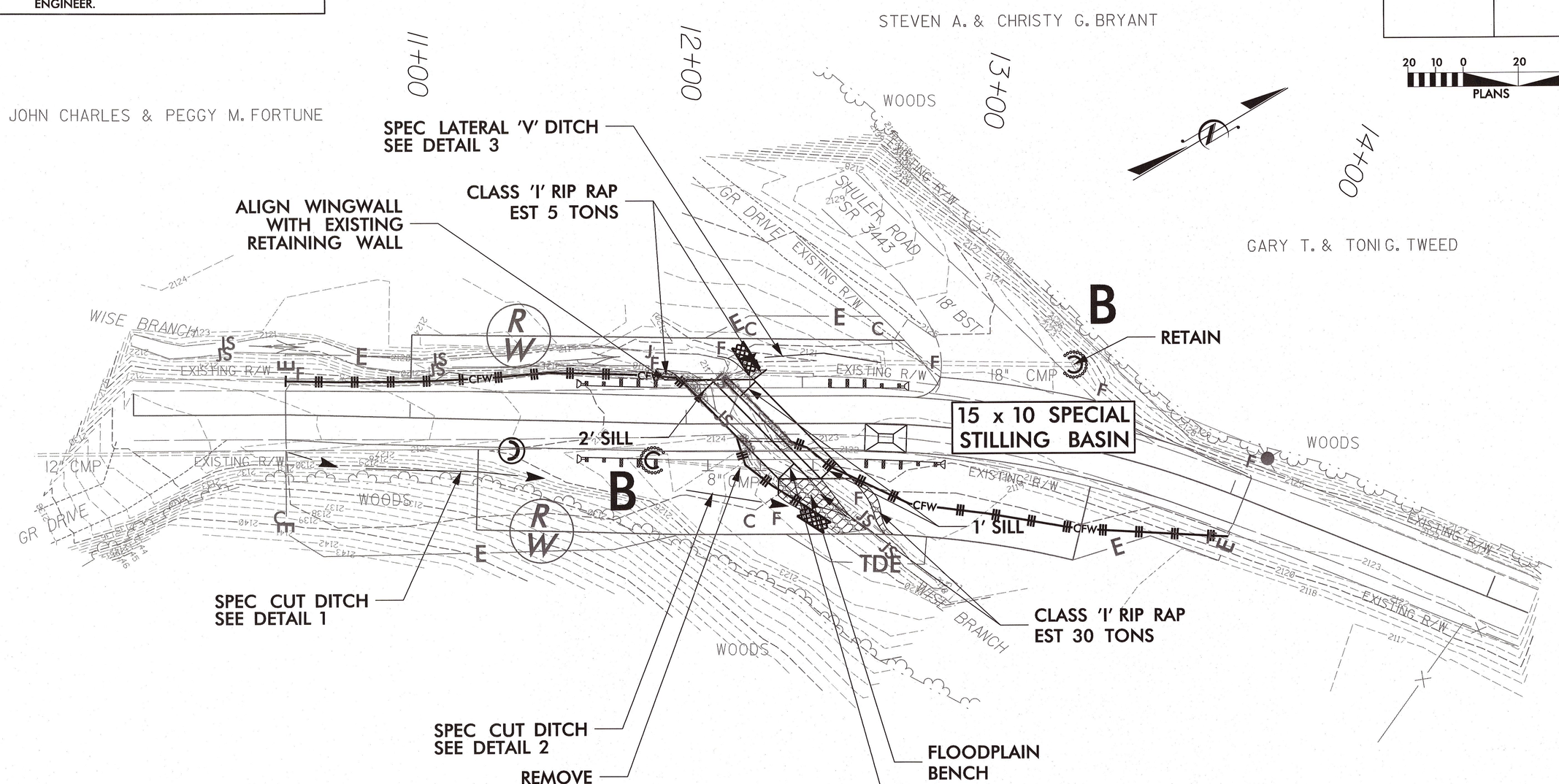
NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

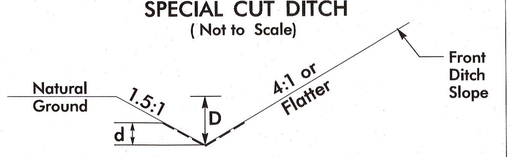
EROSION CONTROL PLAN

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 04

20 10 0 20 40
PLANS



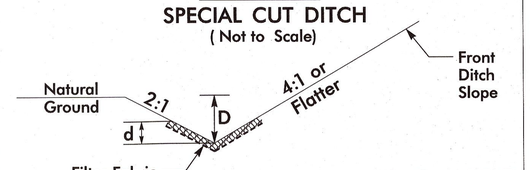
DETAIL 1
SPECIAL CUT DITCH
(Not to Scale)



Min. D = 1.5 Ft.
Max d = 1.0 Ft.
Type of Liner = PSRM

FROM STA. 10+56 TO STA. 11+50 –L– RT

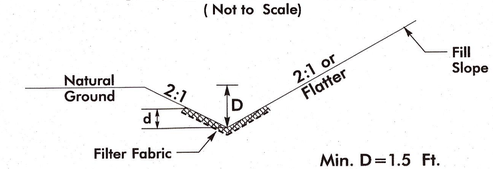
DETAIL 2
SPECIAL CUT DITCH
(Not to Scale)



Min. D = 1.5 Ft.
Max. d = 1.5 Ft.
Type of Liner = Class 'B' Rip–Rap

FROM STA. 12+00 TO STA 12+45 –L– RT

DETAIL 3
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D = 1.5 Ft.
Max. d = 1.5 Ft.
Type of Liner = Class 'B' Rip–Rap

FROM STA. 12+19 TO STA. 12+70 –L– LT

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PROJECT REFERENCE NO.	SHEET NO.
17BPJ3.R.5	EC-05/CONST.04
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

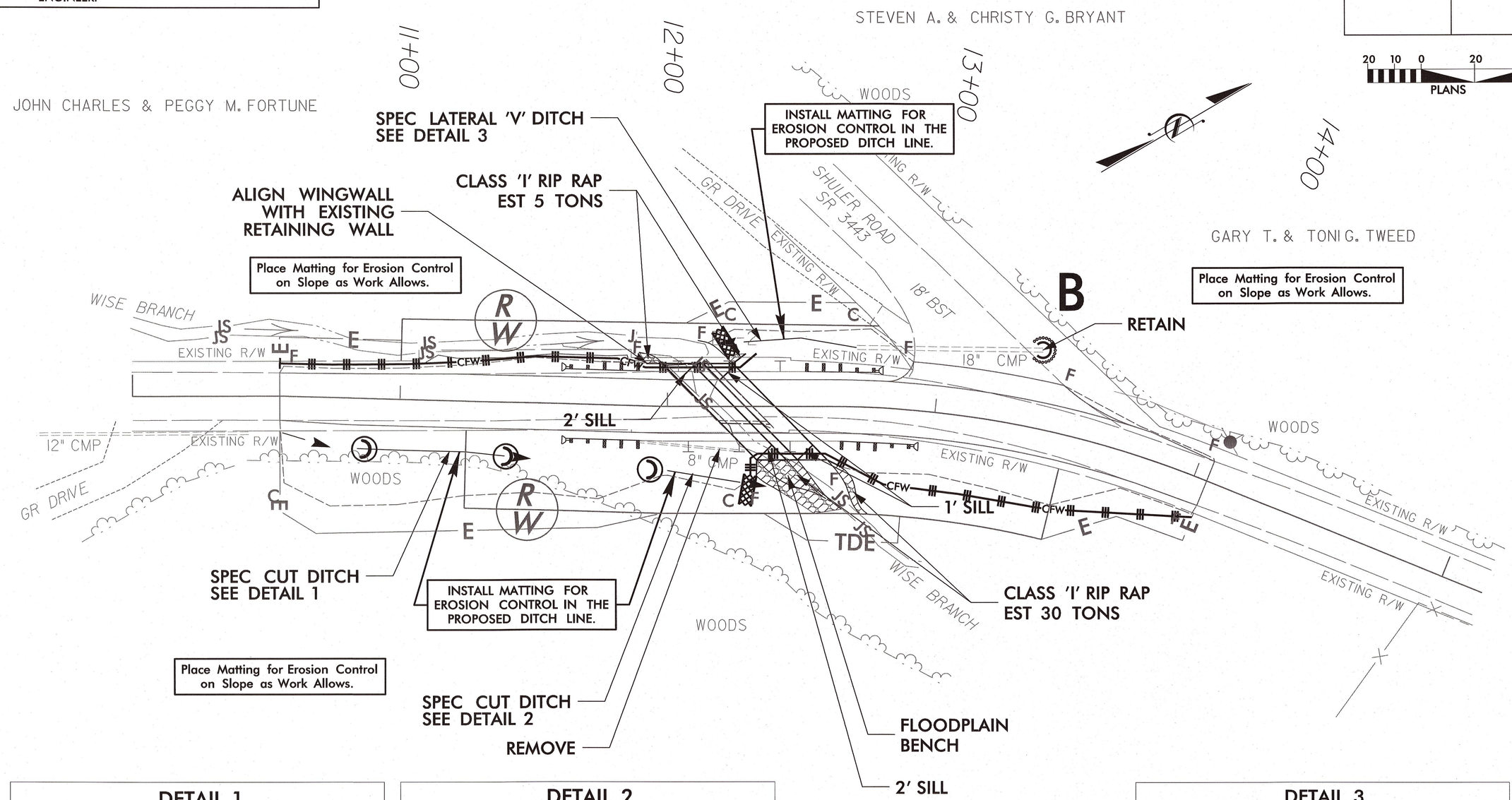
NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

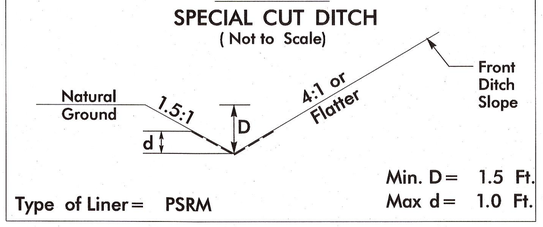
EROSION CONTROL PLAN

FINAL GRADE EROSION CONTROL FOR CONSTRUCTION SHEET 04

20 10 0 20 40
PLANS

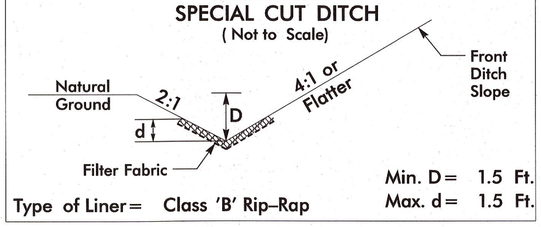


DETAIL 1
SPECIAL CUT DITCH
(Not to Scale)



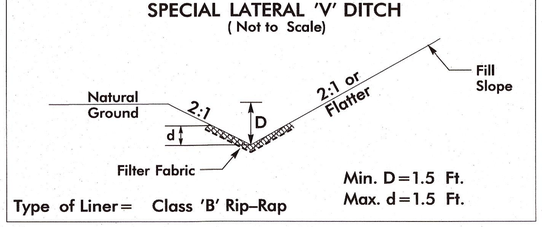
FROM STA. 10+56 TO STA. 11+50 –L– RT

DETAIL 2
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 12+00 TO STA 12+45 –L– RT

DETAIL 3
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



FROM STA. 12+19 TO STA. 12+70 –L– LT

5/14/99

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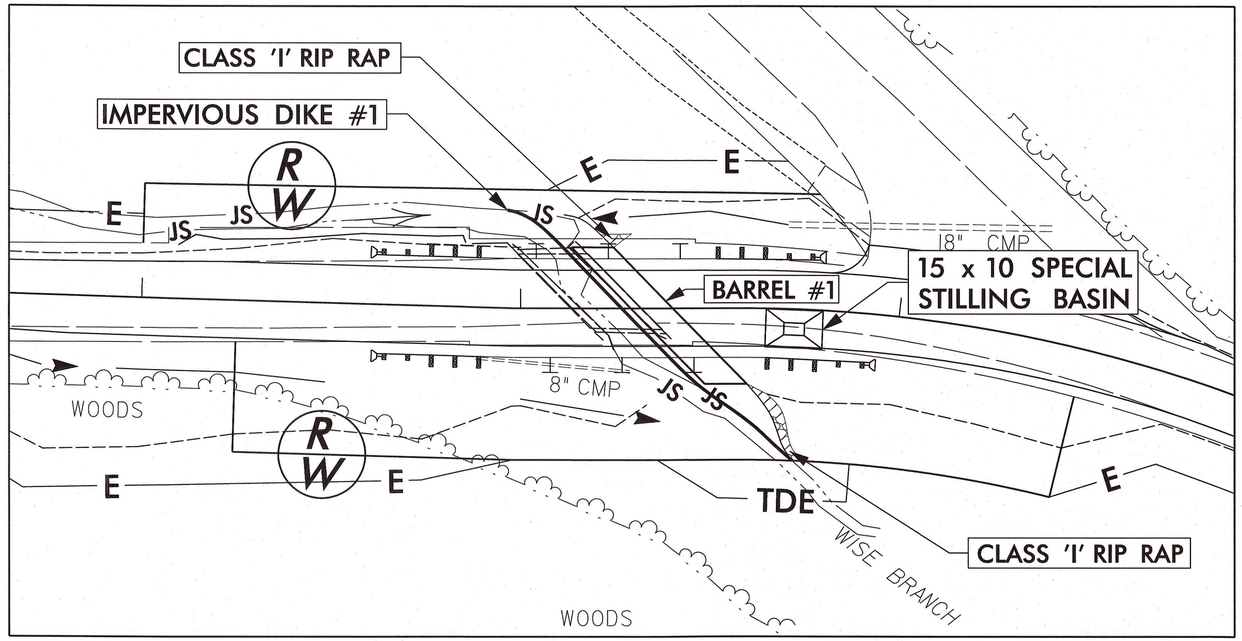
bsmith

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.5	EC-06
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CULVERT INSTALLATION PHASING

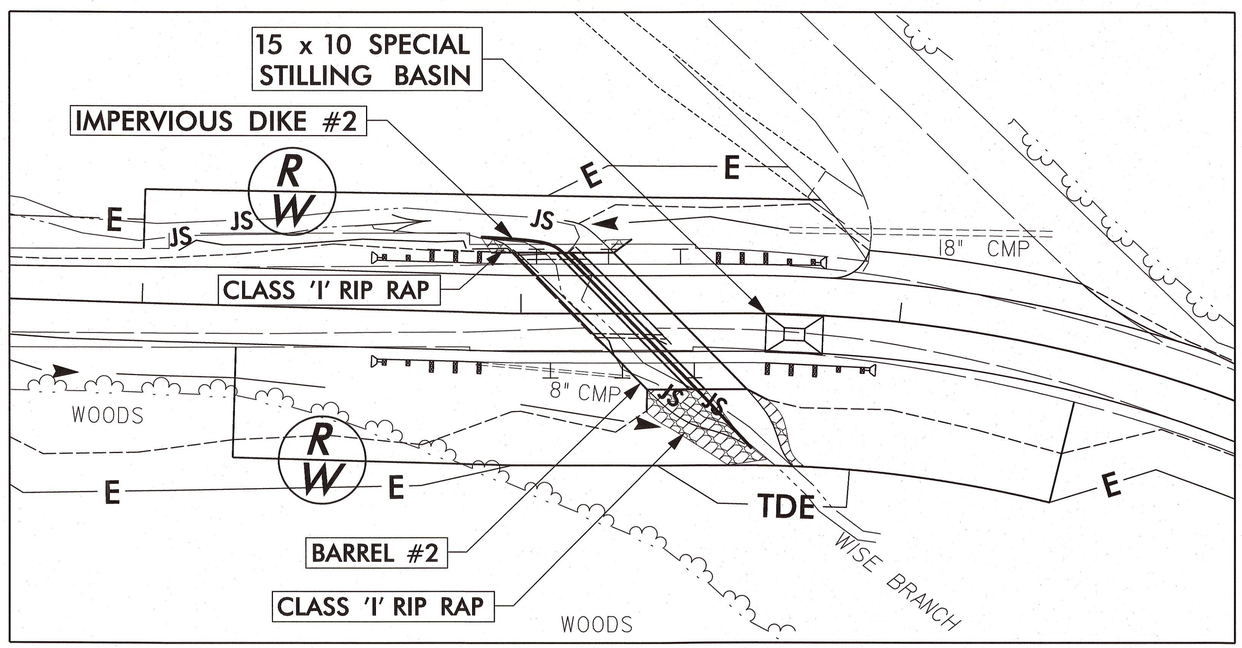
20 10 0 20 40
PLANS



PHASE 1

CONSTRUCTION SEQUENCE:

1) INSTALL SPECIAL STILLING BASIN
2) REMOVE EXISTING BRIDGE
3) CONSTRUCT TEMPORARY IMPERVIOUS DIKE TO DIVERT STREAM FLOW
4) DEWATER CONSTRUCTION AREA AND TREAT EFFLUENT WATER USING A SPECIAL STILLING BASIN
5) INSTALL BARREL #1
6) STABILIZE BANKS WITH CLASS 'I' RIP RAP
7) REMOVE SPECIAL STILLING BASIN AND IMPERVIOUS DIKE



PHASE 2

CONSTRUCTION SEQUENCE:

1) INSTALL SPECIAL STILLING BASIN
2) CONSTRUCT TEMPORARY IMPERVIOUS DIKE #2 TO DIVERT FLOW
3) DEWATER CONSTRUCTION AREA AND TREAT EFFLUENT WATER USING A SPECIAL STILLING BASIN
4) INSTALL BARREL #2, WING WALLS, AND END WALLS
5) STABILIZE BANKS WITH CLASS 'I' RIP RAP
6) REMOVE SPECIAL STILLING BASIN AND IMPERVIOUS DIKE

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.5	SGN-1

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

SIGNING PLAN
BUNCOMBE COUNTY

NORTH CAROLINA PROFESSIONAL SEAL 17960 ENGINEER JASON M. PICKENS

11/5/13

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

GENERAL NOTES

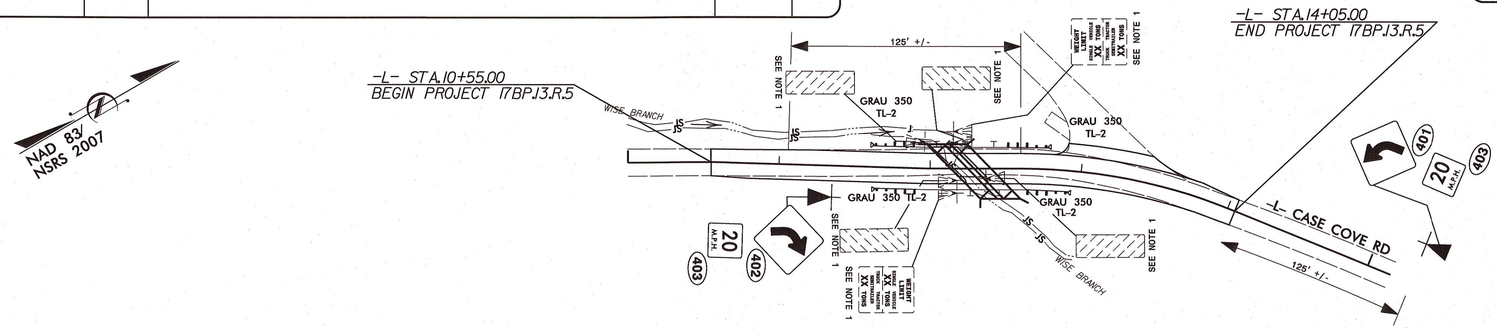
- SIGNS FURNISHED BY CONTRACTOR
- IF REMOVAL OR RELOCATION OF SIGNS ON PRIVATE STREET (NON-STATE MAINTAINED) IS REQUIRED DUE TO CONSTRUCTION, THE CONTRACTOR SHALL INFORM THE ENGINEER. THE WORK WILL BE COMPLETED BY CONTRACTOR.
- WHEN NOT STATIONED OR DIMENSIONED ON PLANS, ALL 'E' AND 'F' SIGNS SHALL BE 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.

SUMMARY OF QUANTITIES

ITEM NO. DESC. NO.	ITEM NO. SECT. NO.	ITEM DESCRIPTION	QUANTITY	UNIT
4025000000	901	CONTRACTOR FURNISHED TYPE E SIGN	17	S.F.
4072000000	903	SUPPORTS, 3 LB STEEL U-CHANNEL	30	L.F.
4102000000	904	SIGN ERECTION, TYPE E	2	EA.
4155000000	907	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	6	EA.

PAY ITEM NOTES

1	DISPOSAL OF SIGN SYSTEM, U-CHANNEL



"E" SIGNS

401 QUANTITY REQ'D _1_

30" X 30"
W1-2L

ONE "U" POST PER SIGN

402 QUANTITY REQ'D _1_

30" X 30"
W1-2R

ONE "U" POST PER SIGN

403 QUANTITY REQ'D _2_

20 M.P.H.

18" X 18"
W13-1P

MOUNTED BELOW 401 & 402

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

_____ SIGNING & DELINEATION REGIONAL ENGINEER

_____ SIGNING & DELINEATION PROJECT DESIGN ENGINEER

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

PLANS PREPARED BY:

ED ROBBINS, P.E. PROJECT MANAGER

J. MATTHEW PICKENS, P.E. PROJECT ENGINEER

PLANS PREPARED BY :

PARSONS

FOR DIVISION OF HIGHWAYS

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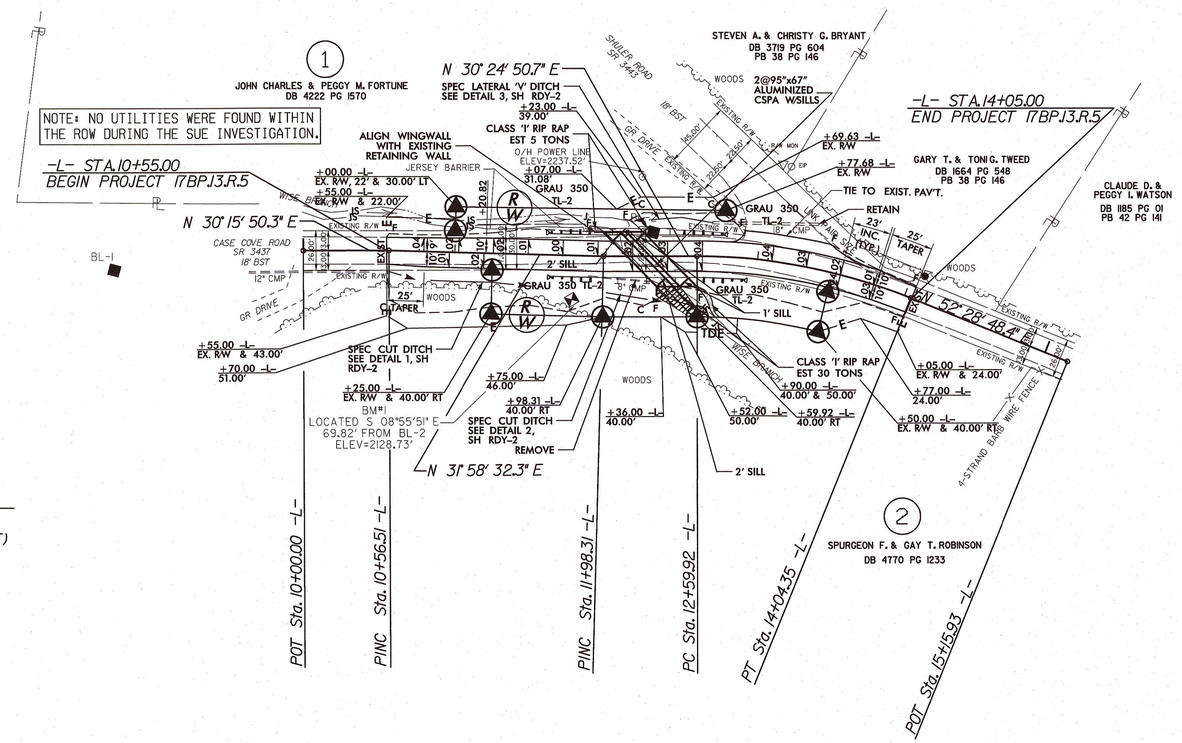
PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.5	U0-1
R/W SHEET NO.	

8/17/99

REVISIONS



-L-

PI Sta 13+33.04
Δ = 22° 03' 57.8" (RT)
D = 15° 16' 43.9"
L = 144.42'
T = 73.12'
R = 375.00'
S.E.= SEE PLANS
D.S.= 35 MPH

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

EXISTING SPEED = 40-MPH (POSTED)
REASONABLE BRIDGE SPEED = 40-MPH
DESIGN SPEED = 45-MPH
ADT = 710 (2010)

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "100315 BL-3"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 665536.0810(ft) EASTING: 909209.6440(ft)
ELEVATION: 2123.76(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99978708
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "100315 BL-3" TO -L- STATION 10+55.00 IS
S 40° 26' 08.70" W 558.90'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

GUARDRAIL WARRANTED -L- LT FROM 10+55 TO 11+60 BUT UNABLE TO CONSTRUCT DUE TO PROXIMITY OF WISE BRANCH CREEK

* DESIGN EXCEPTION REQUIRED FOR -L- LT SHOULDER AND SE

RIGHT-OF-WAY AREAS

PARCEL #	PROPERTY OWNER	TOTAL AREA	AREA TAKEN	AREA REMAINING RIGHT	AREA REMAINING LEFT	CONST. EASEMENT	PERMANENT DRAINAGE EASEMENT	TEMPORARY DRAINAGE EASEMENT	PERMANENT UTILITY EASEMENT
1	JOHN CHARLES & PEGGY M. FORTUNE	N/A	2275.71 SF	N/A	N/A	879.80 SF	N/A	N/A	N/A
2	SPURGEON F. & GAY T. ROBINSON	N/A	6492.54 SF	N/A	N/A	3784.06 SF	N/A	432.59 SF	N/A

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5/14/99

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJ. REFERENCE NO.	SHEET NO.
BP17.13.R.5	X-0

CROSS-SECTION SUMMARY

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)	Station	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)	Station	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)	Station	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)	Station	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)	Station	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
10+55.00	0	0															
10+56.51	1	0															
10+75.00	39	2															
11+00.00	71	2															
11+25.00	60	3															
11+50.00	37	4															
11+75.00	29	7															
11+98.31	19	9															
12+00.00	1	1															
12+25.00	8	42															
12+50.00	5	44															
12+59.92	2	8															
12+75.00	5	13															
13+00.00	6	21															
13+25.00	0	19															
13+50.00	1	15															
13+75.00	1	6															
14+00.00	1	0															
14+04.35	0	0															

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

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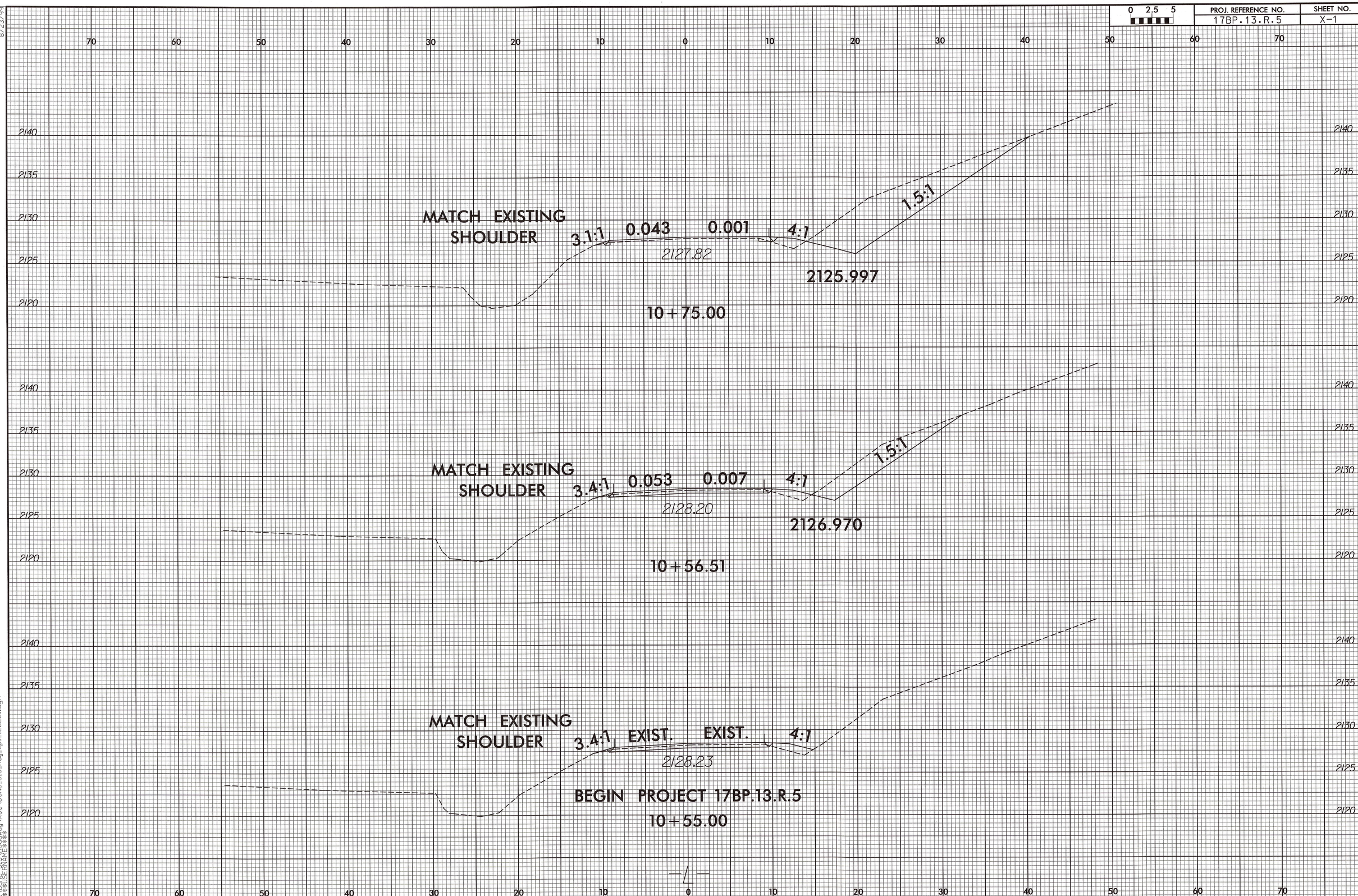
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.13.R.5	X-1



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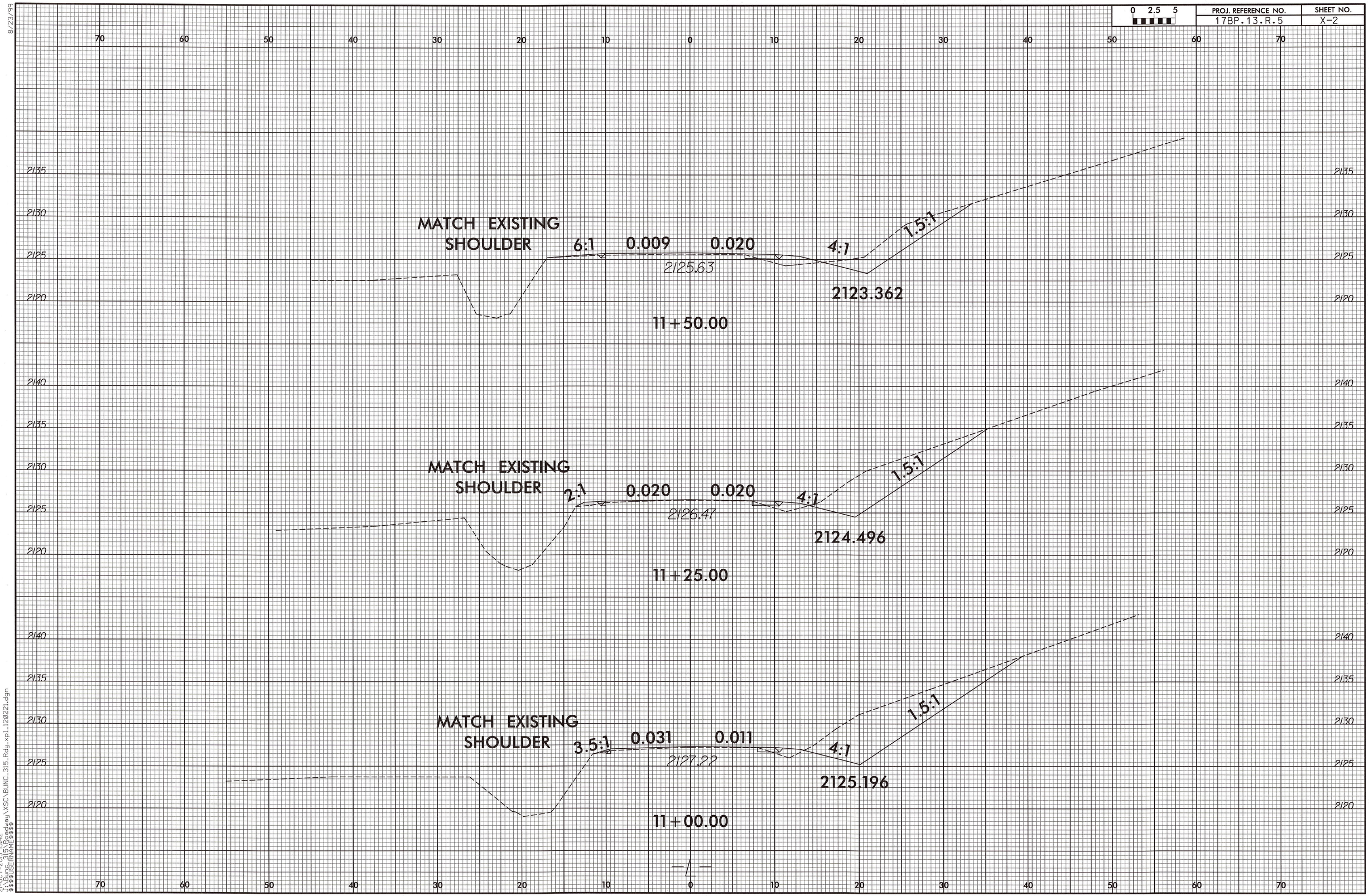

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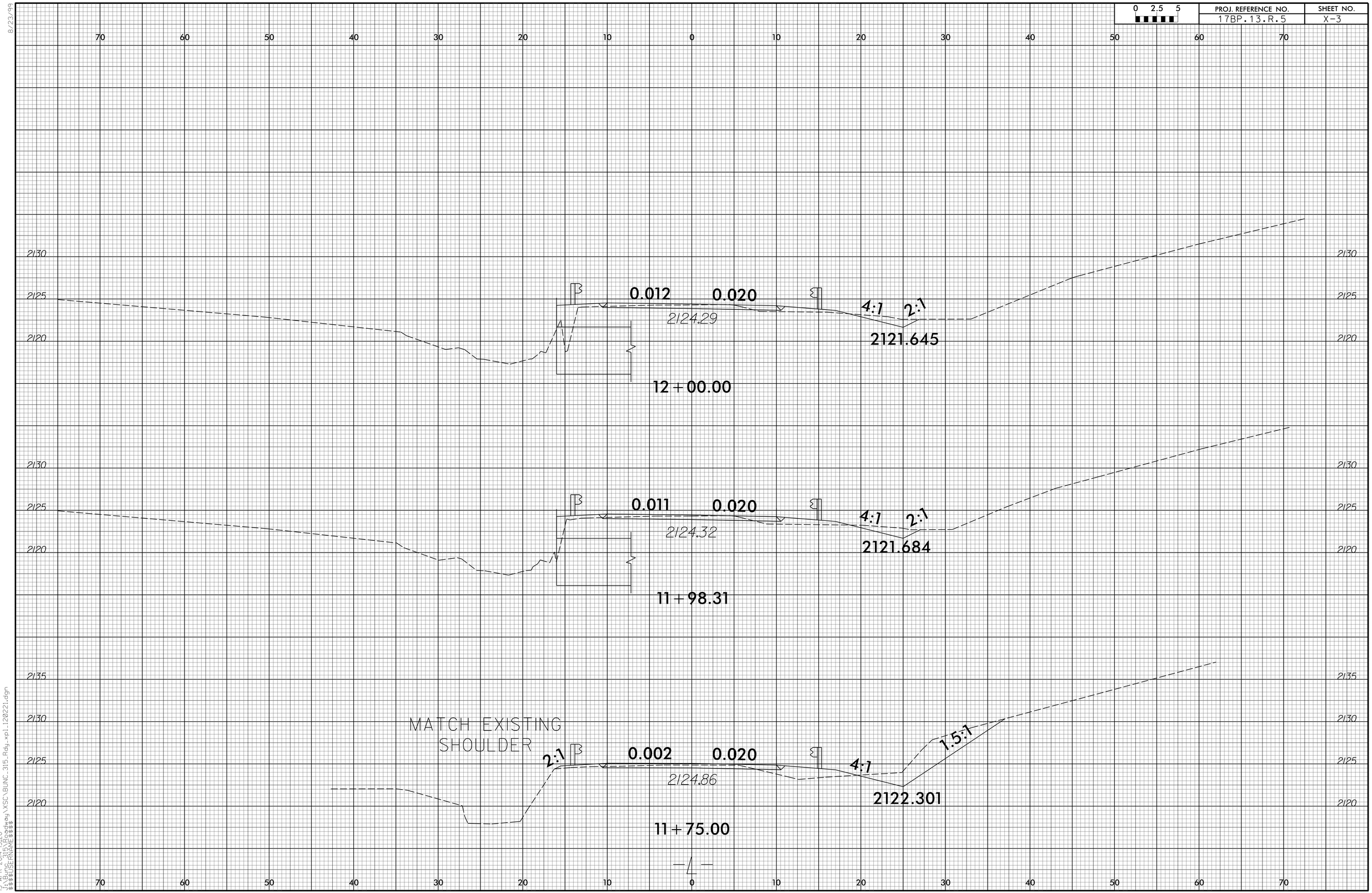

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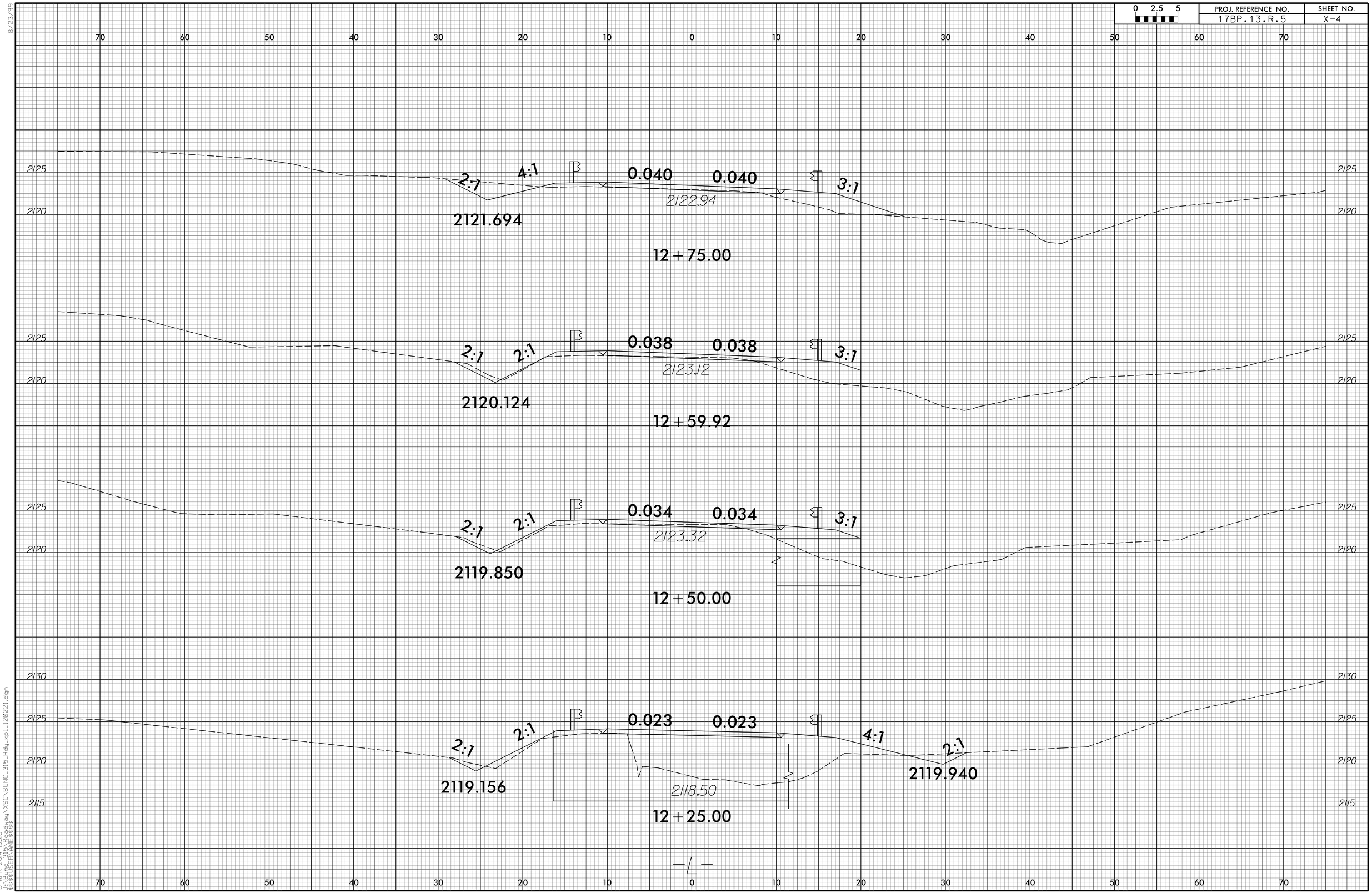
	17BP.13.R.5	X-4



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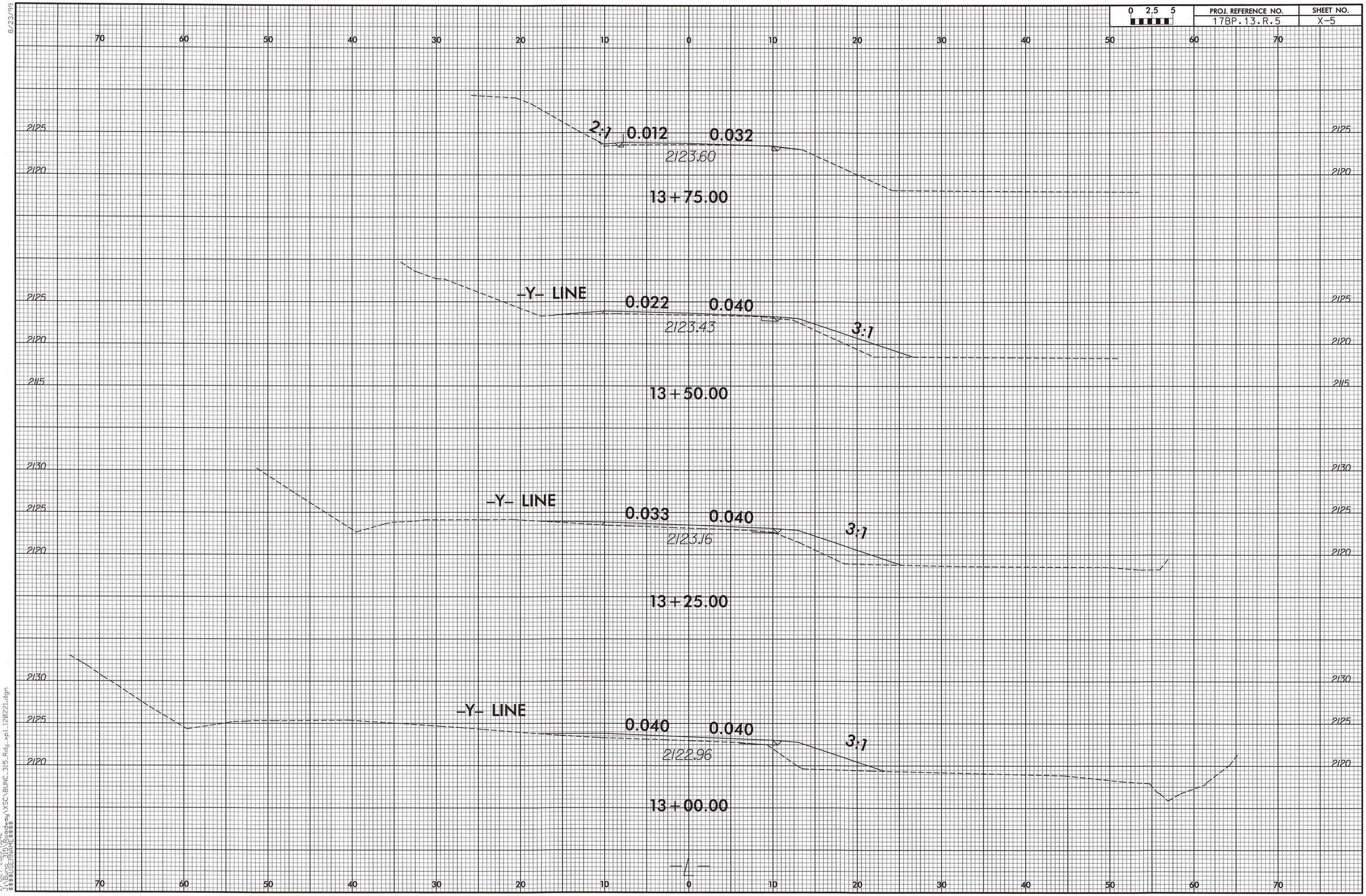

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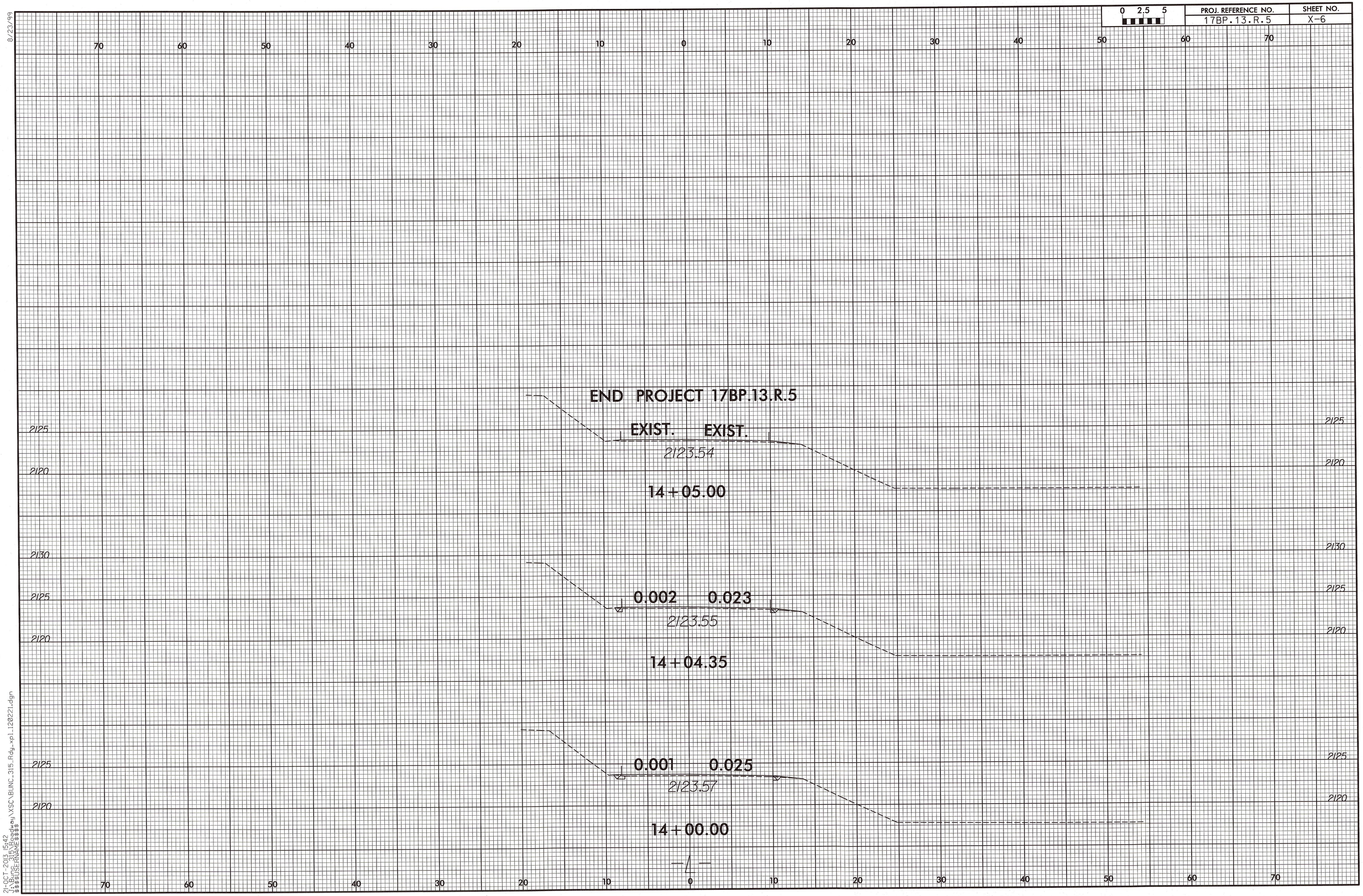
	17BP.13.R.5	X-6



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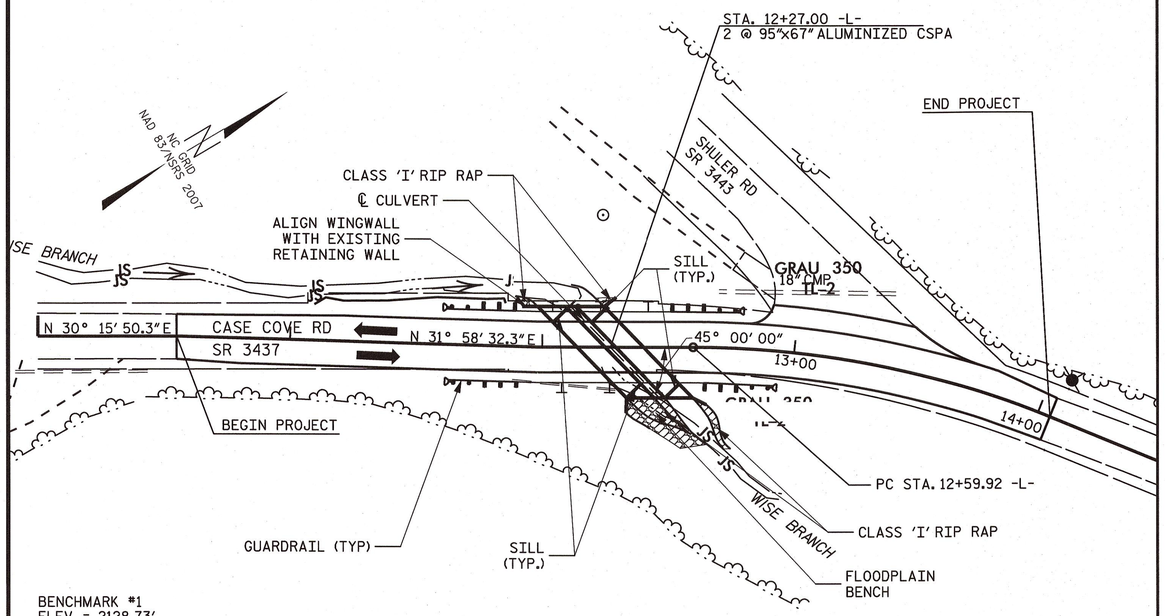


BENCHMARK #1
ELEV = 2128.73'
STA 11+77.99 -L-, 29.13' LT.
RR - SPIKE IN BASE OF 24"
WHITE OAK

LOCATION SKETCH

GRADE DATA

GRADE POINT ELEV. @ STATION 12+27.00 -L- ... = 2123.76

DESCRIPTION OF EXISTING BRIDGE

1 SPAN @ 19'-0"; CONSISTING OF TIMBER FLOOR ON TIMBER JOISTS; TIMBER CAPS AND POSTS WITH CONCRETE SILLS @ VARIOUS CENTERS; 19.8' CLEAR ROADWAY

HYDRAULIC DATA

DESIGN DISCHARGE ..... = 350 CFS
FREQUENCY OF DESIGN FLOOD ..... = 5 YRS.
DESIGN HIGH WATER ELEVATION ..... = 2122.5
DRAINAGE AREA ..... = 0.92 SQ. MI.
BASIC DISCHARGE (Q100) ..... = 1100 CFS
BASIC HIGH WATER ELEVATION ..... = 2125.52

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE ..... = 450 CFS
FREQUENCY OF OVERTOPPING FLOOD ..... = <10 YRS.

HORIZONTAL CURVE DATA

PI Sta 13+33.04
Δ = 22° 03' 57.8" (RT)
D = 15° 16' 43.9"
L = 144.42'
T = 73.12'
R = 375.00'

(-)3.0160% (+)0.5130%

GRADE DATA -L-

PI = 12+40.00
EL = 2,123.10'
VC = 135.00'

NOTES

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

THE CONTRACTOR SHALL CHECK THE LENGTH OF CULVERT BEFORE STAKING IT OUT TO MAKE CERTAIN THAT IT WILL PROPERLY TAKE CARE OF THE FILL.

THE QUANTITY OF RIP RAP TO BE PAID FOR WILL BE THE ACTUAL NUMBER OF TONS OF EACH CLASS OF RIP RAP WHICH HAS BEEN INCORPORATED INTO THE COMPLETED AND ACCEPTED WORK. THE RIP RAP WILL BE MEASURED BY BEING WEIGHED ON TRUCKS ON CERTIFIED PLATFORM SCALES OR OTHER CERTIFIED WEIGHING DEVICES. THE QUANTITY OF RIP RAP WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER TON PLAIN RIP RAP CLASS I (1'-6" THICK).

EXISTING BRIDGE SHALL BE REMOVED BY SAVING AND/OR NON-SHATTERING METHODS SUCH THAT DEBRIS WILL NOT FALL INTO THE WATER.

ALUMINUM HEADWALLS AND WINGWALLS TO BE DESIGNED BY A NORTH CAROLINA REGISTERED ENGINEER IN ACCORDANCE WITH APPLICABLE PORTIONS OF THE CURRENT AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS. CONSTRUCTION SHALL MEET THE APPLICABLE SECTIONS OF THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES.

THE COST FOR ALUMINUM HEADWALLS AND WINGWALLS SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE FOR THE CORRUGATED STEEL PIPE ARCH CULVERTS.

NATIVE MATERIAL REMOVED FROM THE CHANNEL TO ALLOW FOR THE INSTALLATION OF THE CULVERT SHALL BE USED FOR BACKFILLING INSIDE THE CULVERT. SELECT BACKFILL AND COIR FIBER MATTING SHALL BE INCLUDED IN THE CONTRACT PRICE BID FOR "EXCAVATION AND EMBANKMENT".

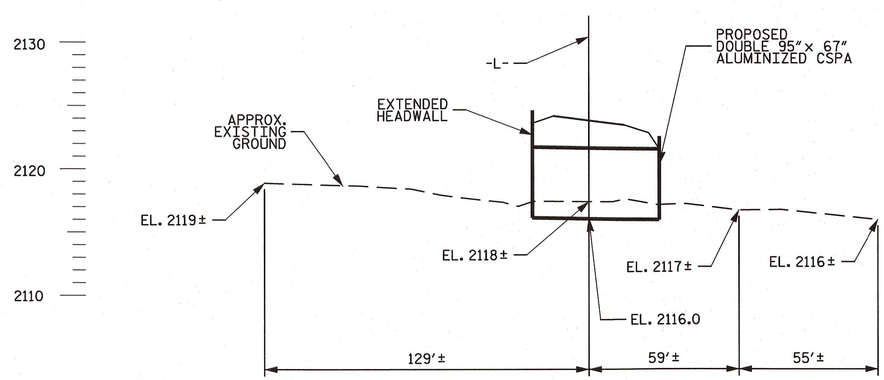
FOR CULVERT DIVERSION DETAILS AND PAY ITEM, SEE EROSION CONTROL PLANS.

EXCAVATE AT LEAST 1 FOOT BELOW BOTTOM OF CULVERT AND FOOTINGS, AND BACKFILL WITH SELECT MATERIAL, CLASS VI MEETING THE REQUIREMENTS OF SECTION 1016 OF THE STANDARD SPECIFICATIONS.

ENVELOPE ALL CLASS VI SELECT MATERIAL OR OTHER OPEN GRADED STONE PLACED IN THE VICINITY OF THE CULVERT WITH TYPE 1 ENGINEERING FABRIC MEETING THE REQUIREMENTS OF SECTION 1056 OF THE STANDARD SPECIFICATIONS, OVERLAPPING THE FABRIC A MINIMUM OF 2 FEET.

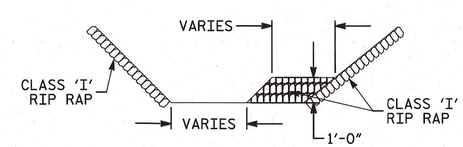
CONTRACTOR SHALL NOTE THE MINIMUM COVER MEASURED FROM THE BOTTOM OF THE FLEXIBLE PAVEMENT IS LESS THAN 18 INCHES. CONTRACTOR SHALL FURNISH AND INSTALL 95"X 67" CORRUGATED STEEL PIPE ARCH CULVERTS WHICH SATISFY THIS MINIMUM COVER CONDITION. PAYMENT SHALL BE MADE UNDER THE PAY ITEM FOR "95"X 67" CORRUGATED STEEL PIPE ARCH CULVERTS, ~~****~~ THICK."

95" x 67" Pipe is to be Corrugated Aluminum Alloy. All references to Aluminized Corrugated Steel Pipe should be disregarded.



PROFILE ALONG ℄ CULVERT

TYPICAL INLET CHANNEL
(LOOKING UPSTREAM)



TYPICAL OUTLET CHANNEL
(LOOKING DOWNSTREAM)

PROJECT NO. 17BP.13.R.5
BUNCOMBE COUNTY
STATION: 12+27.00 -L-
SHEET 1 OF 2 REPLACES BRIDGE NO. 315

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DOUBLE 95"x 67"
ALUMINIZED CSPA
45° SKEW

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

PLANS PREPARED BY :
PARSONS
RALEIGH, NORTH CAROLINA, (919) 854-1345
NC LICENSE NO. F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

NORTH CAROLINA PROFESSIONAL SEAL 29979 ENGINEER HARIRAM D. SHAH
11/06/13

DRAWN BY : ADS DATE : 02/13
CHECKED BY : TMH DATE : 04/13

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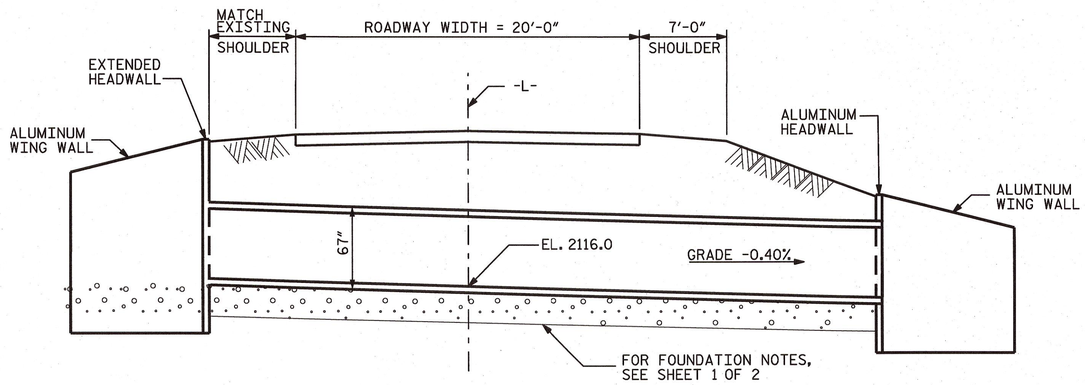
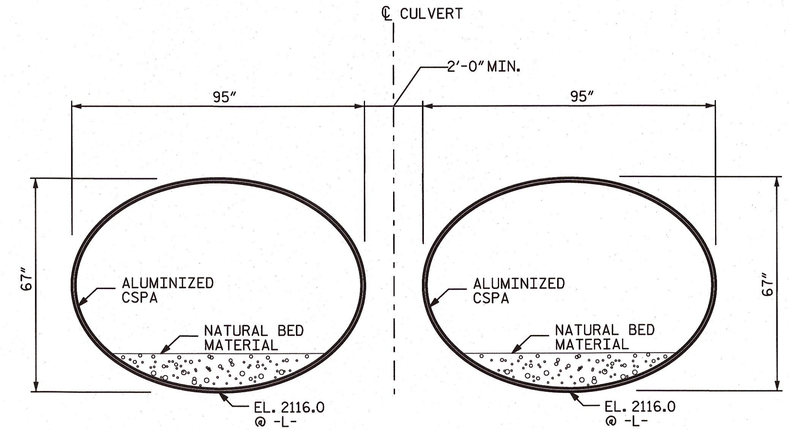
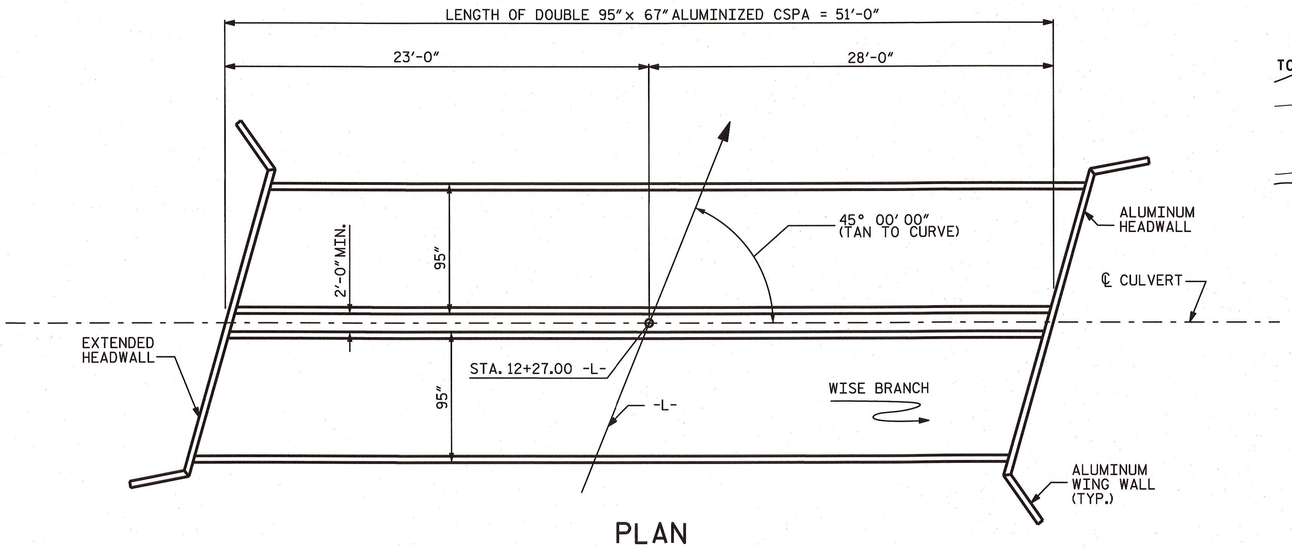


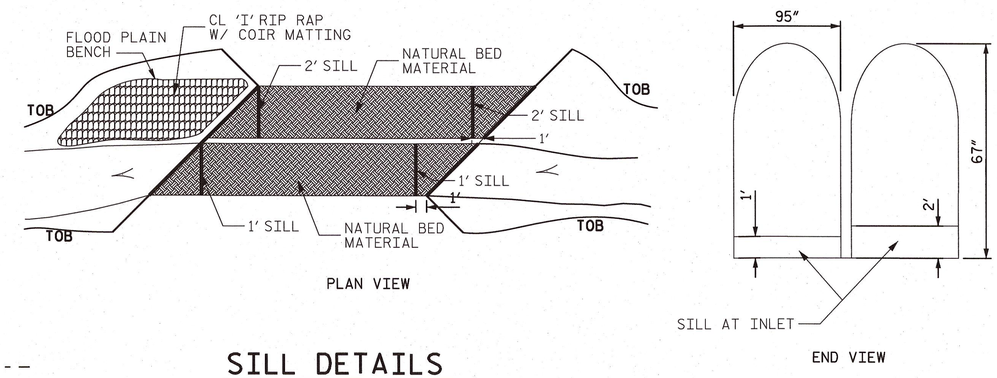
SECTION NORMAL TO ROADWAY



RIGHT ANGLE SECTION OF ALUMINIZED CSPA



PLAN



SILL DETAILS

NOTES:

BED MATERIAL SHALL BE EXCAVATED AND STOCKPILED DURING INSTALLATION OF THE CULVERTS AND SILLS. THE NATURAL BED MATERIALS SHALL THEN BE PLACED IN THE CULVERT TO THE SPECIFIED ELEVATION.

SILLS ARE TO BE MADE OF ALUMINIZED STEEL AND MECHANICALLY ATTACHED TO THE INVERT OF THE CULVERT.

CLASS 'B' RIP RAP MAY BE USED TO SUPPLEMENT NATURAL BED MATERIAL.

DO NOT SET ELEVATION OF HIGH SILL ABOVE BANK FULL.

PROJECT NO. 17BP.13.R.5

BUNCOMBE **COUNTY**

STATION: 12+27.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DOUBLE 95" x 67" ALUMINIZED CSPA 45° SKEW

PLANS PREPARED BY :
PARSONS
RALEIGH, NORTH CAROLINA, (919) 854-1345
NC LICENSE NO. F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

NORTH CAROLINA PROFESSIONAL SEAL 030979 ENGINEER ABRAM D. SHAW
11/20/13

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

DRAWN BY : ADS DATE : 02/13
CHECKED BY : TMH DATE : 04/13

30-OCT-2013 15:07
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