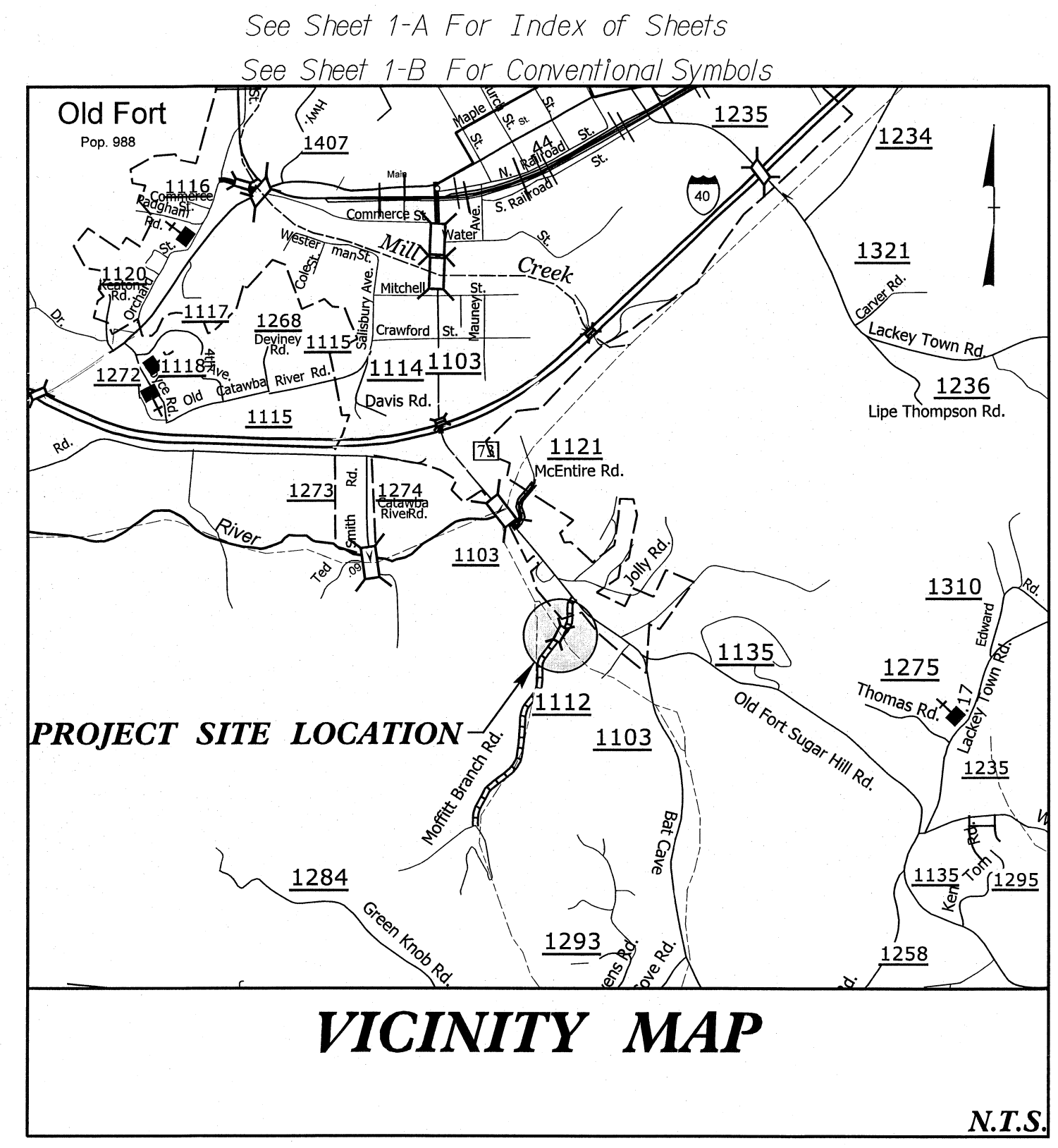


03/05/99

PROJECT: 17BP.13.R.58

CONTRACT:



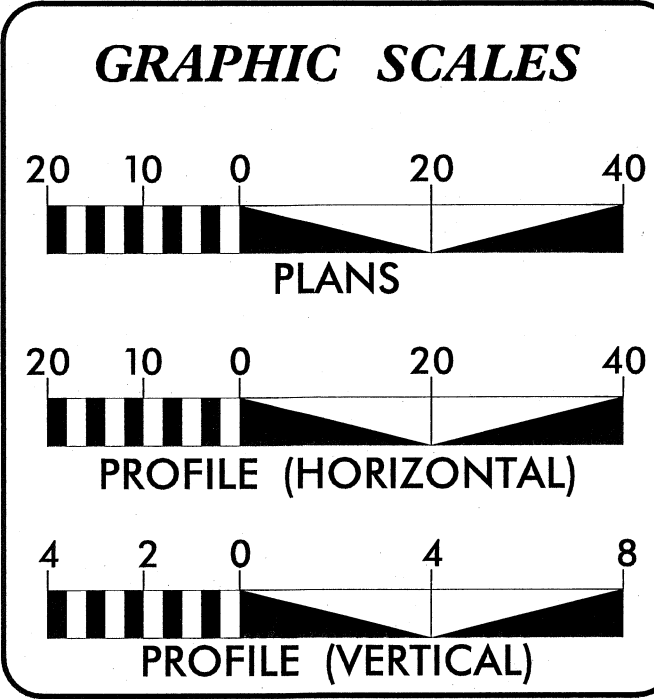
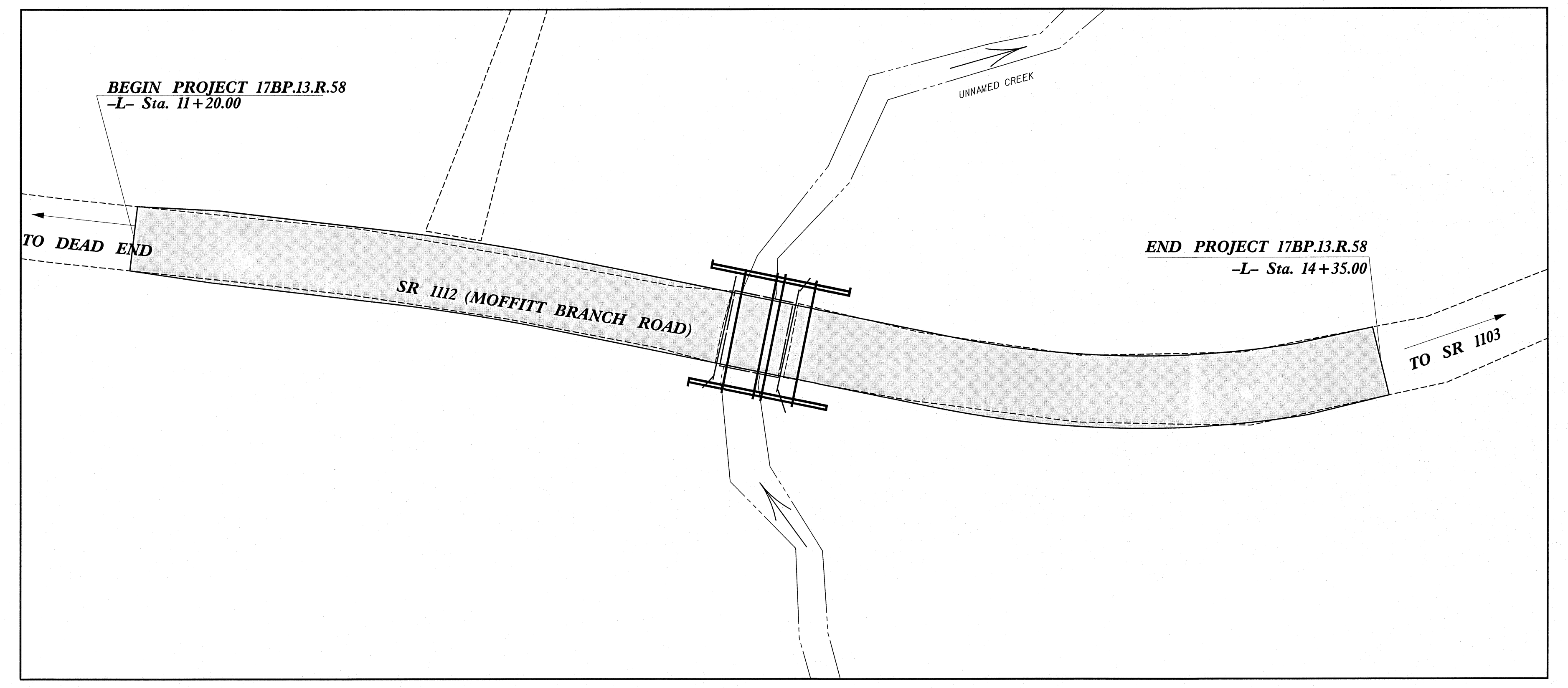
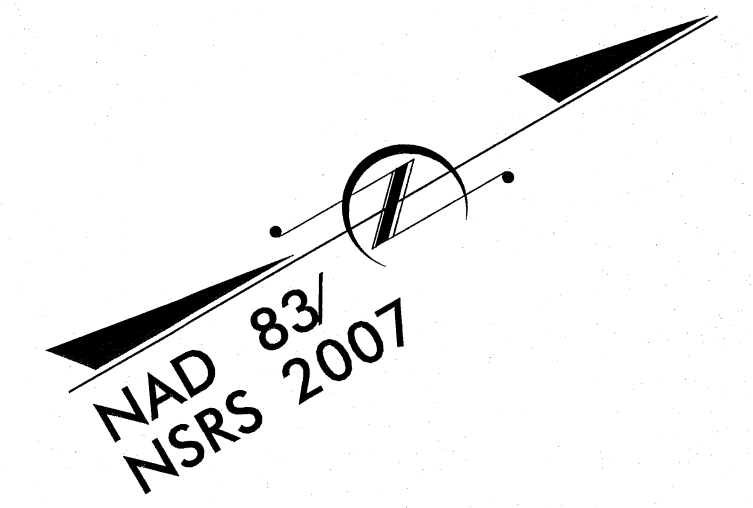
FINAL PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MCDOWELL COUNTY

LOCATION: BRIDGE NO. 580242 OVER UNNAMED TRIBUTARY TO CATAWBA RIVER
ON SR 1112 (MOFFITT BRANCH ROAD)
TYPE OF WORK: GRADING AND DRAINAGE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.13.R.58	1	
MCDOWELL COUNTY #580242			
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.13.R.58		PE	
17BP.13.R.58		RW & UTILITIES	
17BP.13.R.58		CONST.	



DESIGN DATA

ADT 2010	=	120
ADT 2025	=	240
DHV	=	N/A %
D	=	N/A %
T	=	N/A % *
V	=	35 MPH

FUNCTIONAL CLASSIFICATION:
RURAL LOCAL

PROJECT LENGTH

LENGTH ROADWAY PROJECT 17BP.13.R.58	=	0.057 mi
LENGTH STRUCTURE PROJECT 17BP.13.R.58	=	0.003 mi
TOTAL LENGTH OF PROJECT 17BP.13.R.58	=	0.060 mi

PLANS PREPARED BY:
CH ENGINEERING
3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
7-2-12

LETTING DATE:

NCDOT CONTACT:

PLANS PREPARED FOR:
DIVISION OF HIGHWAYS
20 Old 74
Asheville, NC 28803

THOMAS R. HEPLER, PE, PLS
PROJECT ENGINEER

ERIC M. TWEED, PE
PROJECT DESIGN ENGINEER

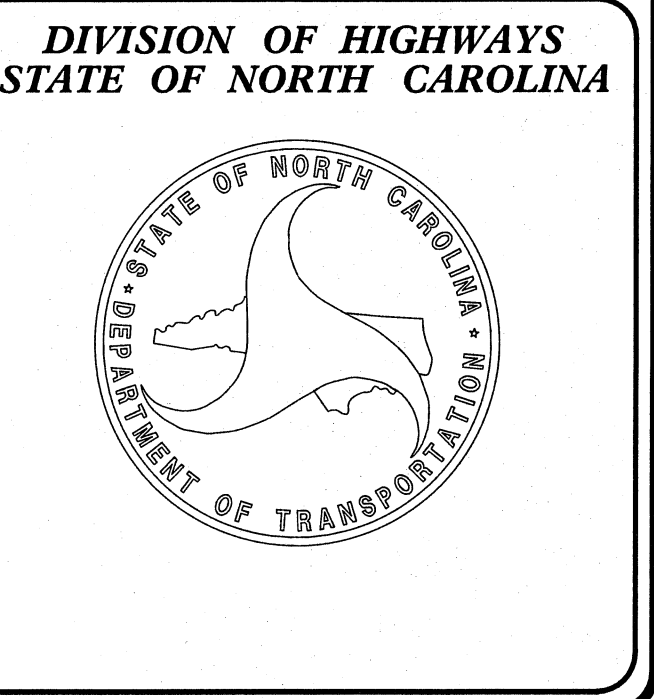
PAUL SPROUSE, PE
DIVISION 13 BRIDGE PROGRAM MANAGER

HYDRAULICS ENGINEER

Signature 2/24/14 P.E.

ROADWAY DESIGN ENGINEER

Signature 2/24/14 P.E.



PROJECT REFERENCE NO.
17BP.13.R.58

SHEET NO.
1-A

ROADWAY DESIGN
ENGINEER

NORTH CAROLINA
PROFESSIONAL
SEAL
10359
JAMES R. HETTLER


2/6/14

INDEX OF SHEETS

1	Title Sheet
1-A	Index of Sheets, Roadway Standards, General Notes
1-B	Conventional Symbols
2	Typical Sections
2-A	Headwall Detail
3	Pipe Data Sheet
3-A	Summary of Quantities
4	-L- Plan and Profile Sheets
5	-DET- Plan and Profile Sheets
TCP-1	Traffic Control Plans
EC-1 thru EC-4	Erosion Control Plans
UO-1 thru UO-2	Utilities by Others Plans
X-1 thru X-3	-L- line Cross Sections
X-4 thru X-6	-DET- line Cross Sections

GENERAL NOTES:

2012 SPECIFICATIONS
EFFECTIVE: 01-17-12

EFF. 01-17-12

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.

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.

UNDERDRAINS:

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

STREET TURNOUT:

STREET RETURNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.04 USING THE RADII NOTED ON PLANS.

GUARDRAIL:

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

TEMPORARY SHORING:

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

END BENTS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT IS DUKE POWER AND FRONTIER COMMUNICATIONS
ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT-OF-WAY MARKERS:

ALL RIGHT OF WAY MARKERS ARE TO BE PLACED BY CONTRACT

2012 ROADWAY STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated Jan 17, 2012 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
862.01	Guardrail Placement
862.02	Guardrail Installation
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap
DIVISION 11 - WORK ZONE TRAFFIC CONTROL	
1101.01	Work Zone Advance Warning Signs
1101.03	Temporary Road Closures
1101.11	Traffic Control Design Tables
1110.01	Stationary Work Zone Signs
1110.02	Portable Work Zone Signs
1130.01	Drum
1135.01	Cones
1145.01	Barriacades - Type III
1150.01	Flagging Devices
1180.01	Skinny Drum

(See Highway Erosion Control Plans for Applicable Standards)

Note: Not to Scale

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.58	1-B

BOUNDARIES AND PROPERTY:

State Line	
County Line	
Township Line	
City Line	
Reservation Line	
Property Line	
Existing Iron Pin	
Property Corner	
Property Monument	
Parcel/Sequence Number	
Existing Fence Line	
Proposed Woven Wire Fence	
Proposed Chain Link Fence	
Proposed Barbed Wire Fence	
Existing Wetland Boundary	
Proposed Wetland Boundary	
Existing High Quality Wetland Boundary	
Existing Endangered Animal Boundary	
Existing Endangered Plant Boundary	

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

Stream or Body of Water	
Hydro, Pool or Reservoir	
River Basin Buffer	
Flow Arrow	
Disappearing Stream	
Spring	
Swamp Marsh	
Proposed Lateral, Tail, Head Ditch	
False Sump	

RAILROADS:

Standard Guage	
RR Signal Milepost	
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	
Proposed Right of Way Line with Iron Pin and Cap Marker	
Proposed Right of Way Line with Concrete or Granite Marker	
Existing Control of Access	
Proposed Control of Access	
Existing Easement Line	
Proposed Temporary Construction Easement	
Proposed Temporary Drainage Easement	
Proposed Permanent Drainage Easement	
Proposed Permanent Utility Easement	

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	
Existing Curb	
Proposed Slope Stakes Cut	
Proposed Slope Stakes Fill	
Proposed Wheel Chair Ramp	
Curb Cut for Future Wheel Chair Ramp	
Existing Metal Guardrail	
Proposed Guardrail	
Existing Cable Guiderail	
Proposed Cable Guiderail	
Equaility Symbol	
Pavement Removal	

VEGETATION:

Single Tree	
Single Shrub	
Hedge	
Woods Line	
Orchard	
Vineyard	

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	
Bridge Wing Wall, Head Wall and End Wall	
MINOR:	
Head and End Wall	
Pipe Culvert	
Footbridge	
Drainage Box: Catch Basin, DI or JB	
Paved Ditch Gutter	
Storm Sewer Manhole	
Storm Sewer	

UTILITIES:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

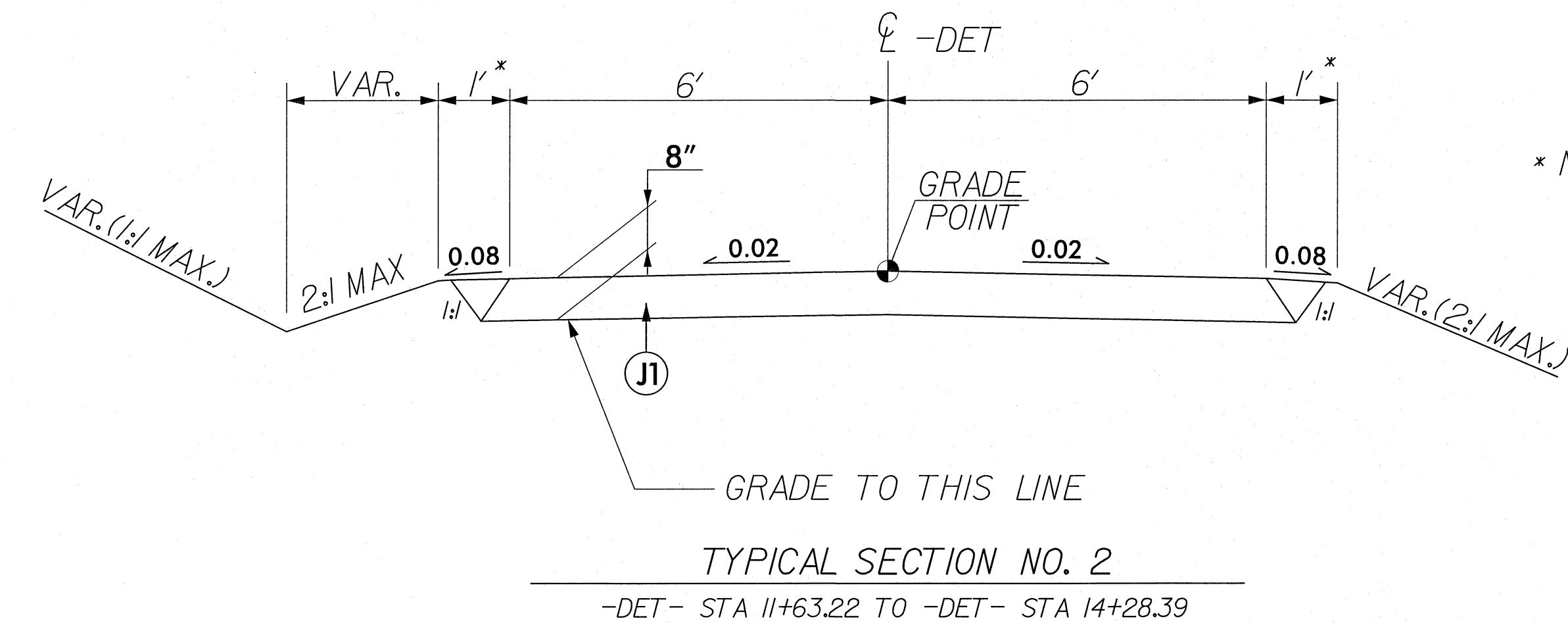
SANITARY SEWER:

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

MISCELLANEOUS:

Utility Pole	
Utility Pole with Base	
Utility Located Object	
Utility Traffic Signal Box	
Utility Unknown U/G Line	
U/G Tank; Water, Gas, Oil	
A/G Tank; Water, Gas, Oil	
U/G Test Hole (S.U.E.*)	
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

 ENGINEERING 3220 GLEN ROYAL RD. RALEIGH, NC 27617 TELE 919.788.0224 FAX 919.788.0232 NC LICENSE #P-01189	PROJECT REFERENCE NO.		SHEET NO.
	17BP.13.R.58		2
	MCDOWELL COUNTY #580242		
	ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER	



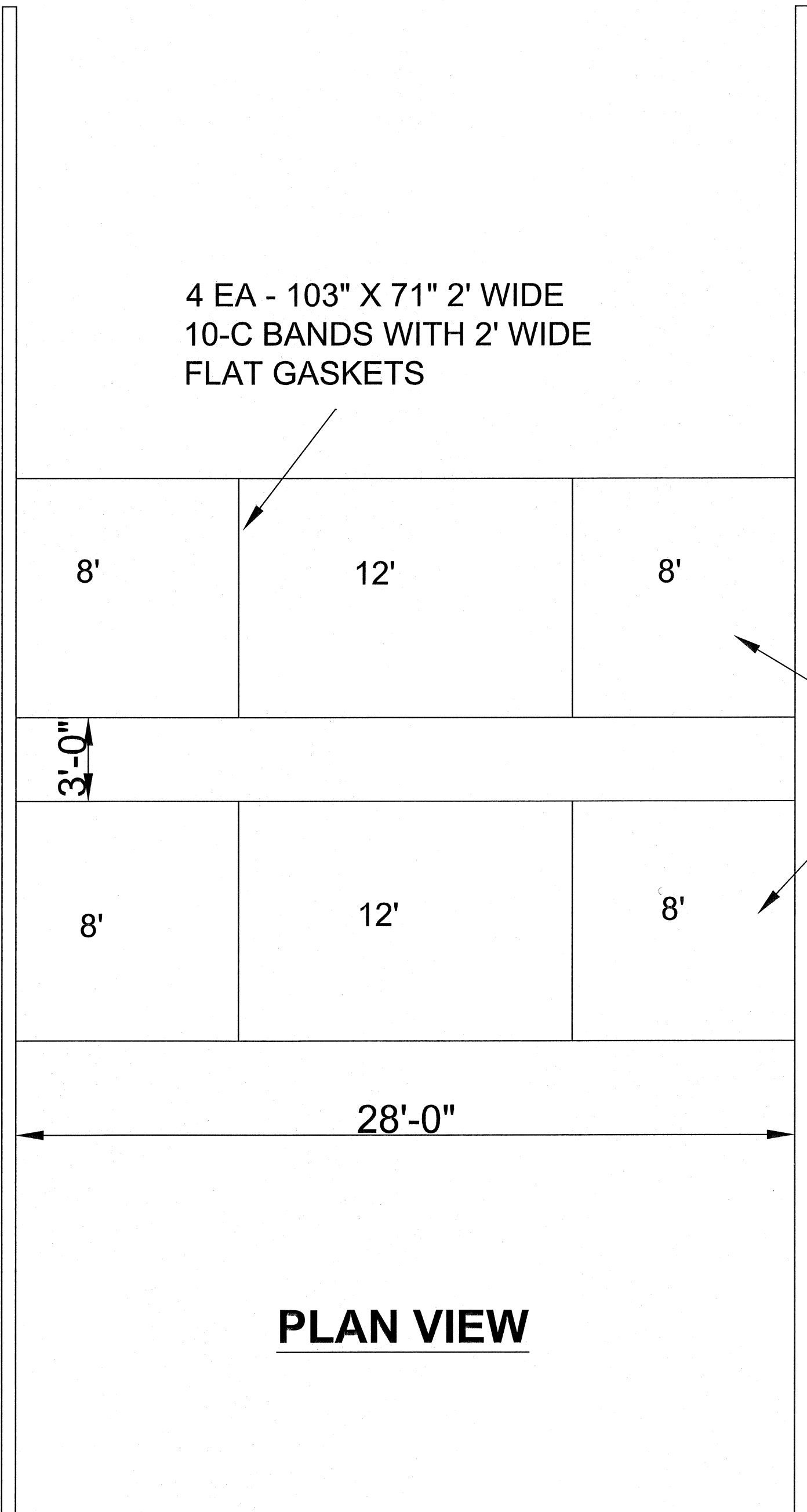
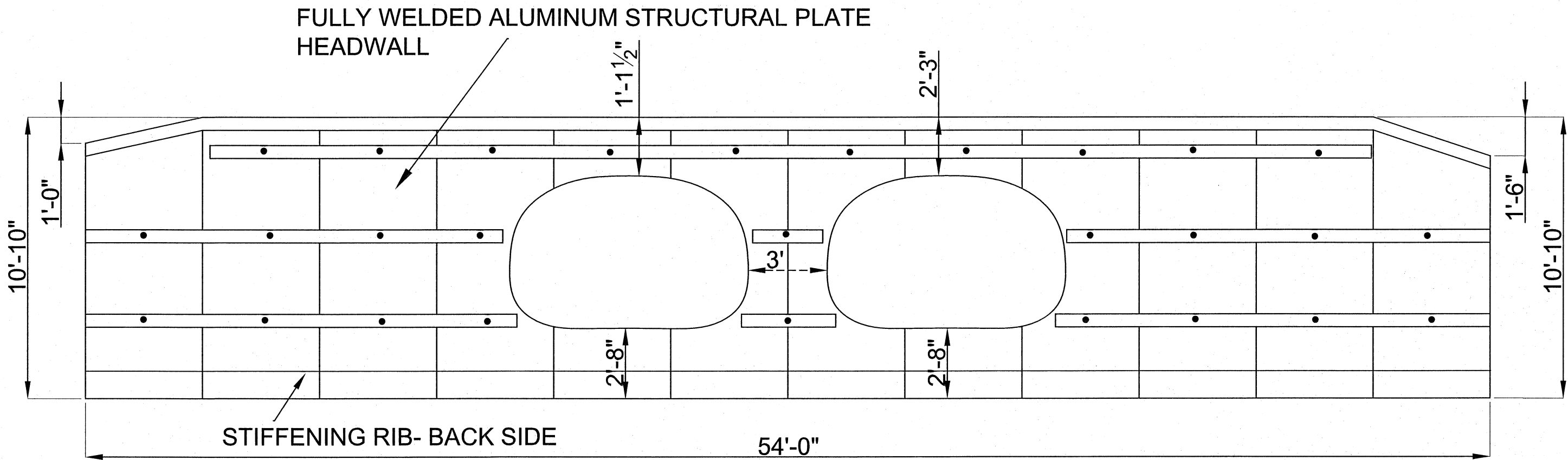
* NOTE: SHOULDER 2.5' WHERE
TEMP. HEADWALL IS USED

PROJECT NO. 17BP.13.R.58 COUNTY: MCDOWELL REPLACES BRIDGE NO. 580242
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH BRIDGE NO. 580242 ON SR 1112, OVER UNNAMED TRIB. TO CATAWBA RIVER

6/2/99

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USER:NAME

END VIEW INLET & OUTLET HEADWALL

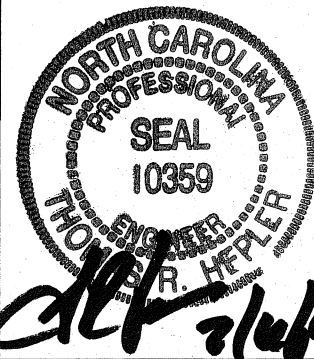


PLAN VIEW



3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

PROJECT REFERENCE NO.		SHEET NO.
17BP.13.R.58		2-A
MCDOWELL COUNTY #580242		
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER	



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

TWIN 103" SPAN X 71" RISE, 8GA ALUMINUM PIPE, 3" X 1" CORR.

PROJECT NO. 17BP.13.R.58
COUNTY: MCDOWELL
REPLACES BRIDGE NO. 580242
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH
BRIDGE NO. 580242 ON SR 1112, OVER UNNAMED TRIB. TO CATAWBA RIVER

COMPUTED BY: TLH DATE: 3-22-13
CHECKED BY: TRH DATE: 3-22-13

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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".

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.58	3
BRIDGE NO. 580242	
	
3220 GLEN ROYAL RD. RALEIGH, NC 27617 TELE 919.788.0224 FAX 919.788.0232 NC LICENSE #P0189	

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

[illegible]

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 54" & OVER)

[illegible]

6/21/20

COMPUTED BY:	TLH	DATE:	3-22-13
CHECKED BY:	TRH	DATE:	8-8-13

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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".

SUMMARY OF EARTHWORK

CHAIN	FROM STATION	TO STATION	SIDE	UNCL. EXCAVATION	UNDERCUT	EMBT + %	BORROW	WASTE
-L-	11 + 20	14 + 20	CENTERLINE	20		100	80	0
SUBTOTAL SUMMARY NO. 1				20		100	80	0
-DET-	11 + 80	13 + 80	CENTERLINE	140		30	0	110
SUBTOTAL SUMMARY NO. 2				140		30	0	110
SUBTOTAL SUMMARY 1-2				160		130	80	110
LOSS DUE TO CLEARING AND GRUBBING								
PROJECT TOTAL				160		130	80	110
WASTE IN LIEU OF BORROW							-80	
ESTIMATE 5% FOR TOPSOIL ON BORROW PITS								
GRAND TOTAL				160		130	0	30
SAY				175				

PROJECT REFERENCE NO.
17BP.13.R.58

SHEET NO.
3-A

BRIDGE NO. 580242

CH

ENGINEERING

3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

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

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS										IMPACT ATTENUATOR TYPE 350			NESTED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	NESTED GR	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	XI	GRAU 350 TL-2	M-350	XIII	CAT-1	VI MOD	BIC	AT-1	EA	G	NG					
-L-	12 + 00.00	13 + 50.00	RIGHT	50		100	12 + 63	12 + 97	2	5	25	25	1	1			2									100.00			RDWY STD. 862.01 SHT 10		
-L-	12 + 12.50	13 + 62.5	LEFT	50		100	12 + 63	12 + 97	2	5	25	25	1	1			2									100.00			RDWY STD. 862.01 SHT 10		
			LESS ANCHOR DEDUCTIONS																												
		GRAU 350 TL-2	4 @ 25'	-100																											
TOTAL				0		200											4									200.00					
SAY				0		200											4									200'					

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1/27/2014
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LITERATURE

CURVE DATA FOR -L-

PI Sta 10+13.28
 $\Delta = 3^\circ 02' 35.4''$ (RT)
 $D = 11^\circ 27' 33.0''$
 $L = 26.56'$
 $T = 13.28'$
 $R = 500.00'$

PI Sta 12+06.09
 $\Delta = 4^\circ 40' 19.7''$ (RT)
 $D = 11^\circ 27' 33.0''$
 $L = 40.77'$
 $T = 20.40'$
 $R = 500.00'$

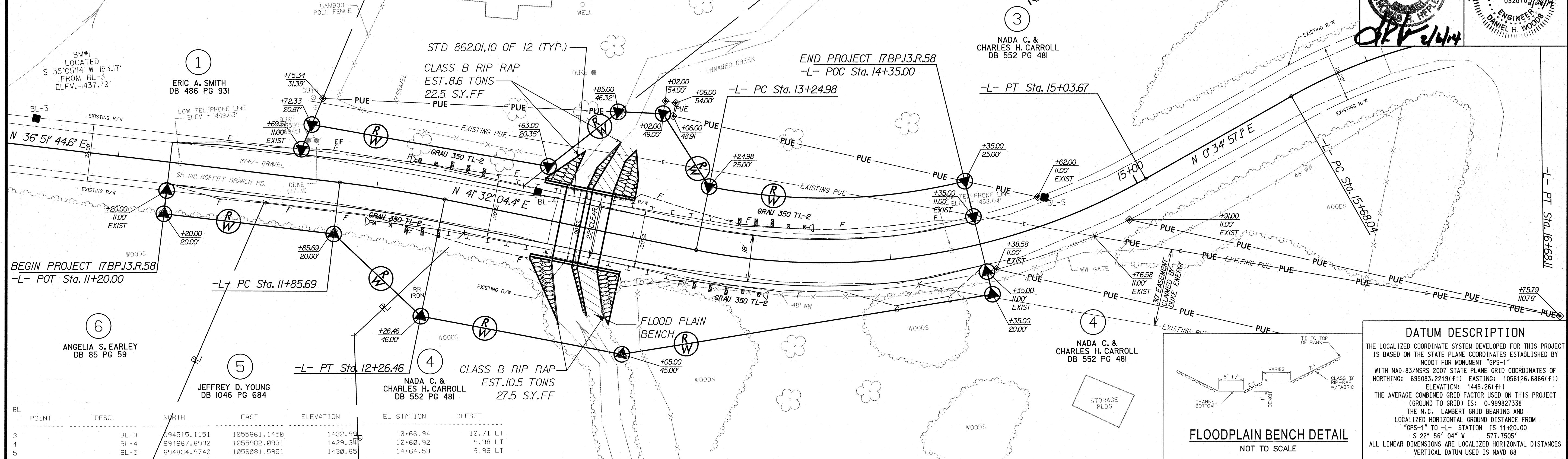
PI Sta 14+18.33
 $\Delta = 40^\circ 57' 07.3''$ (LT)
 $D = 22^\circ 55' 05.9''$
 $L = 178.69'$
 $T = 93.35'$
 $R = 250.00'$

PI Sta 16+19.15
 $\Delta = 28^\circ 40' 05.6''$ (RT)
 $D = 28^\circ 38' 52.4''$ ISFD
 $L = 100.07'$
 $T = 51.11'$
 $R = 200.00'$

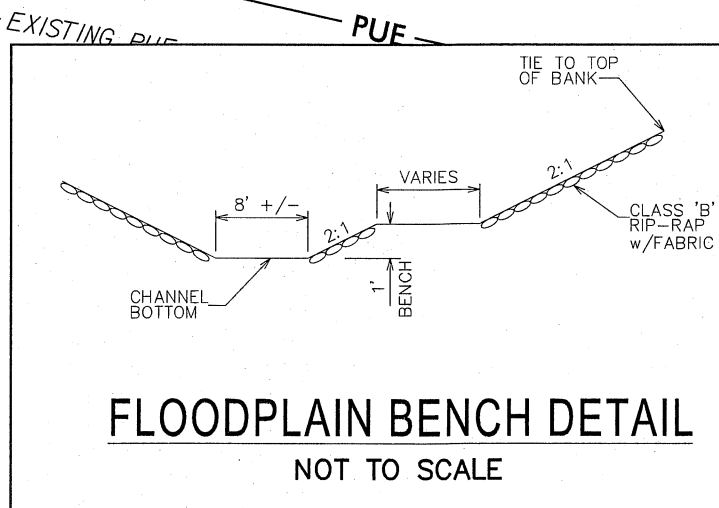
NOTE: EXIST PUE PER
DUKE E. (DEED SEARCH UNDERWAY)

CH ENGINEERING
3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

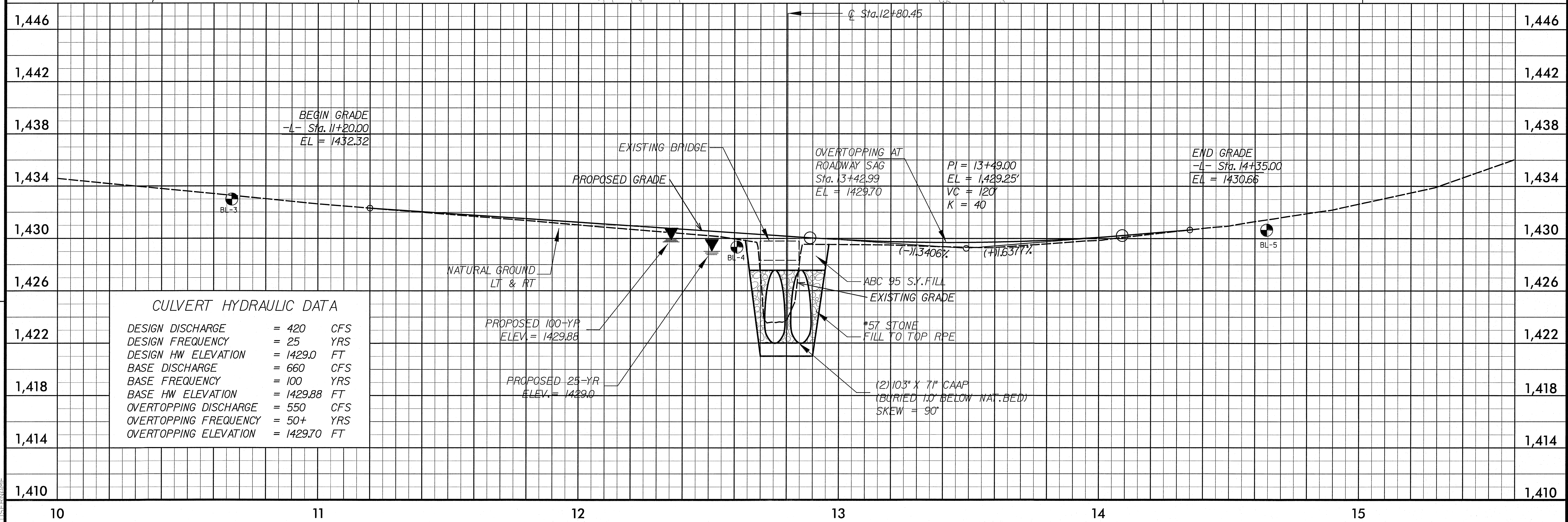
PROJECT REFERENCE NO. 17BP.13.R.58		SHEET NO. 4
BRIDGE NO. 580242		
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 10359 DANIEL H. WOODS	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 10359 DANIEL H. WOODS	



DATUM DESCRIPTION
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NC DOT FOR MONUMENT "GPS-1" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 695083.2219 (ft) EASTING: 1056126.6866 (ft) ELEVATION: 1445.26 (ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999827338 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS-1" TO -L- STATION 15+11+20.00 S 22° 56' 04" W 571.7505' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88



BL	POINT	DESC.	NORTH	EAST	ELEVATION	EL STATION	OFFSET
3	BL-3		694515.1151	1055861.1450	1432.99	10+66.94	10.71 LT
4	BL-4		694667.6992	1055982.0931	1429.36	12+60.92	9.98 LT
5	BL-5		694834.9740	1056091.5951	1430.65	14+64.53	9.98 LT



CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 420	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 1429.0	FT
BASE DISCHARGE	= 660	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 1429.88	FT
OVERTOPPING DISCHARGE	= 550	CFS
OVERTOPPING FREQUENCY	= 50+	YRS
OVERTOPPING ELEVATION	= 1429.70	FT

PROPOSED 100-YR
ELEV. = 1429.88

PROPOSED 25-YR
ELEV. = 1429.0

OVERTOPPING AT
ROADWAY SAG
Sta. 13+42.99
EL = 1429.70

PI = 13+49.00
EL = 1429.25'
VC = 120'
K = 40

END GRADE
-L- Sta. 14+35.00
EL = 1430.66

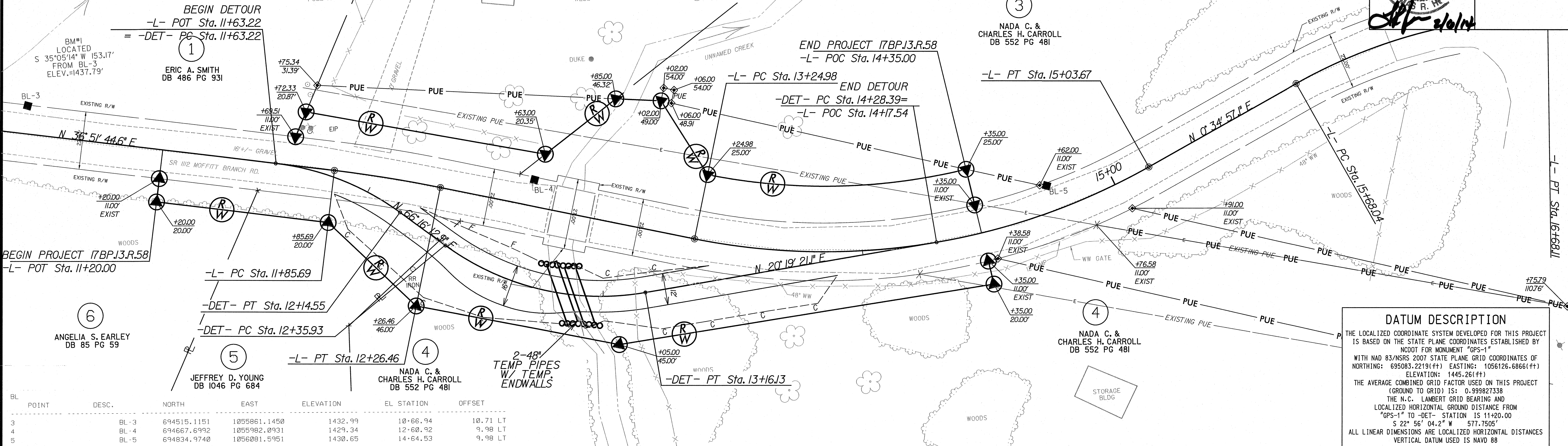
ABC 95 S.Y. FILL
EXISTING GRADE
#57 STONE
FILL TO TOP RPE

(2) 103" X 71" CAAP
(BURIED 1.0' BELOW NAT. BED)
SKEW = 90°

8/17/99

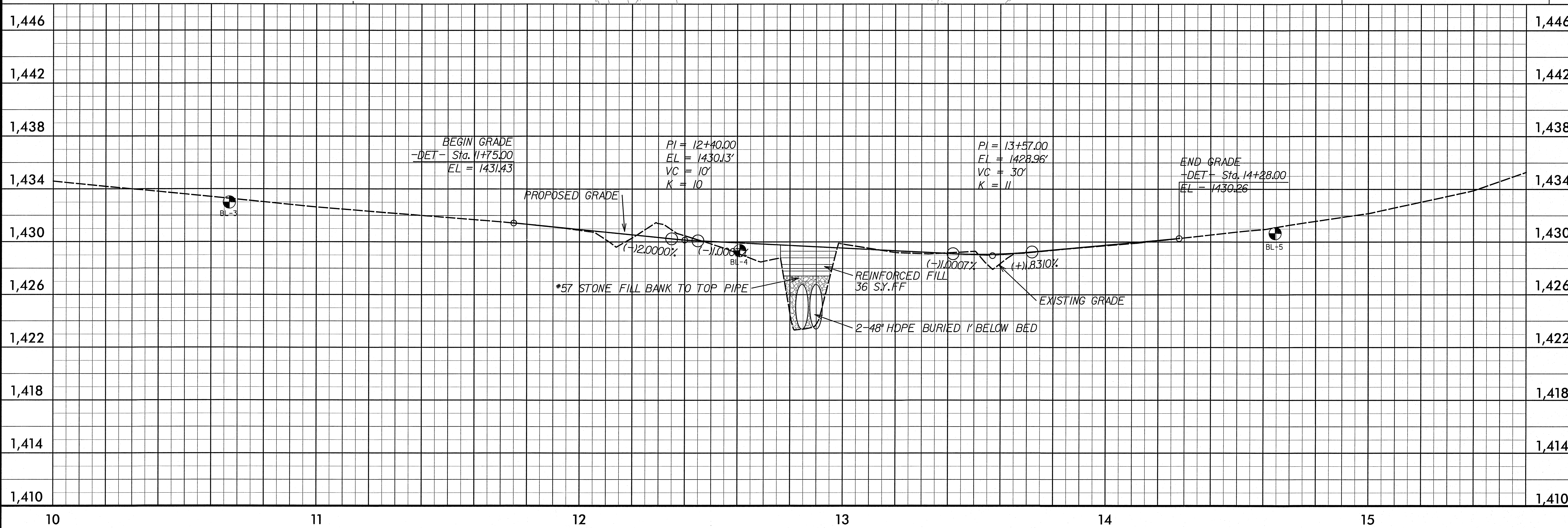
CURVE DATA FOR -DET-

PI Sta 10+13.28 $\Delta = 3^{\circ}02'35.4''$ (RT) $D = 11^{\circ}27'33.0''$ $L = 26.56'$ $T = 13.28'$ $R = 500.00'$	PI Sta 11+89.46 $\Delta = 29^{\circ}24'28.3''$ (RT) $D = 57^{\circ}17'44.8''$ $L = 51.33'$ $T = 26.24'$ $R = 100.00'$	PI Sta 12+78.33 $\Delta = 45^{\circ}56'51.8''$ (LT) $D = 57^{\circ}17'44.8''$ $L = 80.19'$ $T = 42.39'$ $R = 100.00'$	PI Sta 14+71.89 $\Delta = 19^{\circ}44'24.0''$ (LT) $D = 22^{\circ}55'05.9''$ $L = 86.13'$ $T = 43.50'$ $R = 250.00'$	PI Sta 16+30.00 $\Delta = 28^{\circ}40'05.6''$ (RT) $D = 28^{\circ}38'52.4''$ $L = 100.07'$ $T = 51.11'$ $R = 200.00'$
---	--	--	--	---



BL	POINT	DESC.	NORTH	EAST	ELEVATION	EL STATION	OFFSET
3	BL-3		694515.1151	1055861.1450	1432.99	10+66.94	10.71 LT
4	BL-4		694667.6992	1055982.0931	1429.34	12+60.92	9.98 LT
5	BL-5		694834.9740	1056081.5951	1430.65	14+64.53	9.98 LT

DATUM DESCRIPTION
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCOT FOR MONUMENT "GPS-1" WITH NAD 83/NSRS 2011 STATE PLANE GRID COORDINATES OF NORTHING: 695083.2219(±) EASTING: 1056126.6866(±) ELEVATION: 1445.26(±) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999827338 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS-1" TO "DET" STATION IS 11+20.00 S 22° 56' 04.2" W 571.7505' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88



CH ENGINEERING
3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

PROJECT REFERENCE NO. 17BP.13.R.58
SHEET NO. 5
BRIDGE NO. 580242
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 10359
J. R. HOFFER

NAD 83/NSRS 2007

NADA C. & CHARLES H. CARROLL DB 552 PG 481

NADA C. & CHARLES H. CARROLL DB 552 PG 481

REVISIONS

1/27/2014
H:\Projects\17BP13.R.58\17BP13.R.580242.RDY_PSH05.dgn

17BP.13.R.58

TIP PROJECT:

REV. 8-17-12

I:\27\2014
R:\TrafficControl\TrafficControl\TOP\580242_RDY_TCP-1.dgn
USERNAME

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
TRAFFIC CONTROL, MARKING & DELINEATION
MCDOWELL COUNTY

CH ENGINEERING
3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

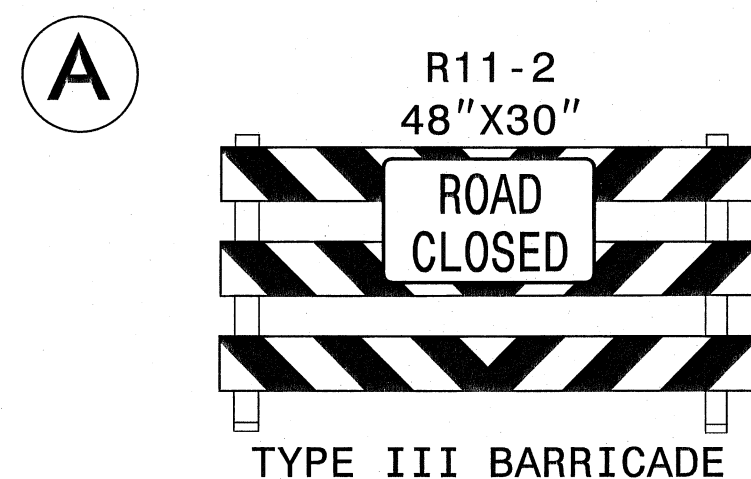
PROJECT REFERENCE NO. 17BP.13.R.58	SHEET NO. TCP-1
BRIDGE NO. 580242	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA
PROFESSIONAL
SEAL
10359
TOMAS R. HAYLER
ENGINEER
2/6/14

ROADWAY STANDARD DRAWINGS

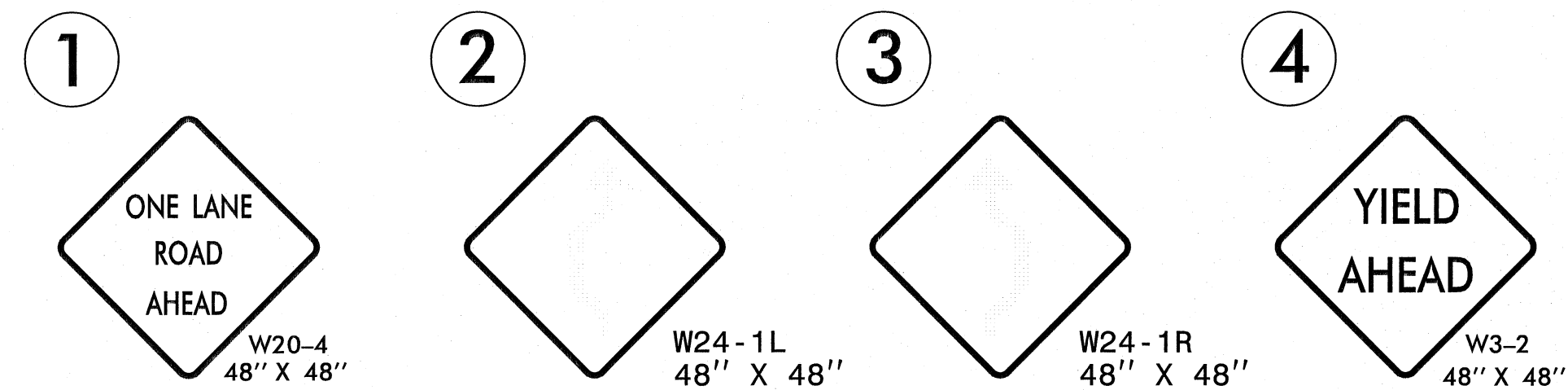
THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.01	WORK ZONE ADVANCED WARNING SIGNS
1101.03	TEMPORARY ROAD CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES - TYPE III
1150.01	FLAGGING DEVICES
1180.01	SKINNY DRUM



PHASING PLAN

- PHASE I: MAINTAINING EXISTING TRAFFIC PATTERN INSTALL ADVANCED WARNING SIGNS. USING RSD 1101.03 CONSTRUCT TEMPORARY DETOUR INCLUSIVE OF TEMP STREAM CROSSING, PROVIDING A ONE-LANE 2-WAY ACCESS ACROSS STREAM.
- PHASE II: INSTALL TRAFFIC CONTROL AS SHOWN ON TCP-1; SHIFT TRAFFIC ONTO TEMP DETOUR IN A ONE-LANE; TWO WAY OPERATION. REMOVE EXISTING BRIDGE, CONSTRUCT NEW CULVERT AND ROADWAY APPROACHES; INSTALL GUARDRAIL.
- PHASE III: SHIFT TRAFFIC TO NEW ROADWAY AND CULVERT USING RSD 1101.03 CONSTRUCT TIES AT EACH END OF PROJECT. USING RSD 1101.03 REMOVE TEMPORARY DETOUR.



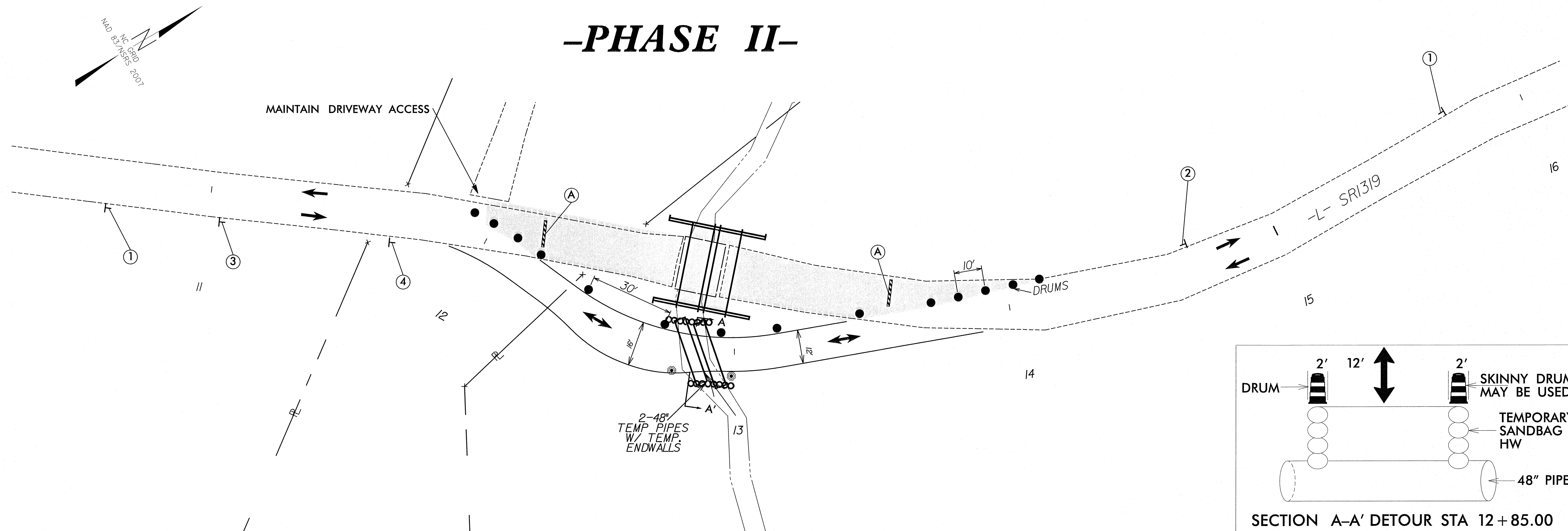
LEGEND

- GENERAL
- DIRECTION OF TRAFFIC FLOW
- NORTH ARROW
- PROPOSED PVMT. ----- EXIST. PVMT.
- WORK AREA
- REMOVAL OF EXISTING PAVEMENT

TRAFFIC CONTROL DEVICES

- TYPE III BARRICADE
- DRUM
- SKINNY DRUM
- STATIONARY SIGN

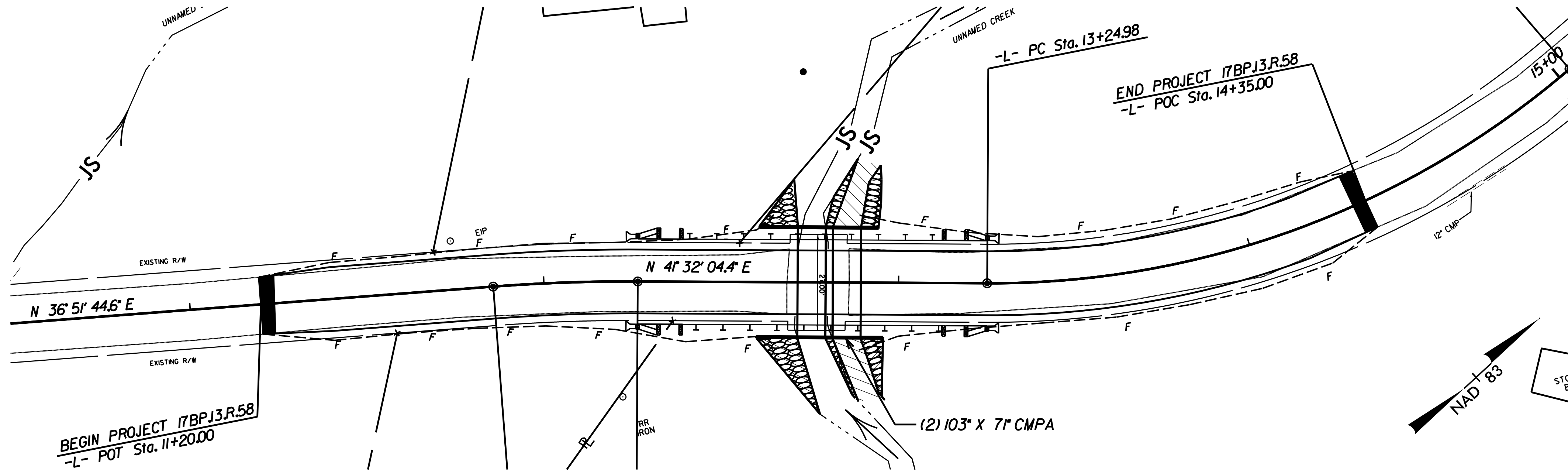
-PHASE II-



TIP PROJECT: 17.BP.13.R.58

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL
McDOWELL COUNTY

CULVERT NO. 580242 ON SR 1112
OVER UNNAMED TRIBUTARY TO CATAWBA
RIVER BETWEEN SR 1103 AND END.



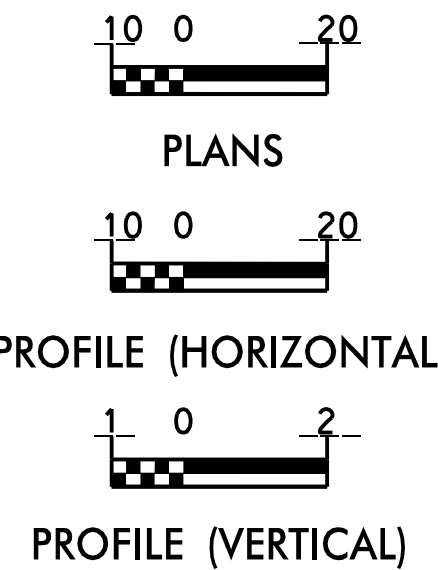
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17.BP.13.R.58	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	

EROSION AND SEDIMENT CONTROL MEASURES

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

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

GRAPHIC SCALE



ROADSIDE ENVIRONMENTAL UNIT
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, NC

JEFFREY D. GOODIN
LEVEL III NAME
3023
LEVEL III CERTIFICATION NO.

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:



ALPHA & OMEGA GROUP
CIVIL & STRUCTURAL ENGINEERS
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A&O PROJECT NO. 2011.040
2012 STANDARD SPECIFICATIONS

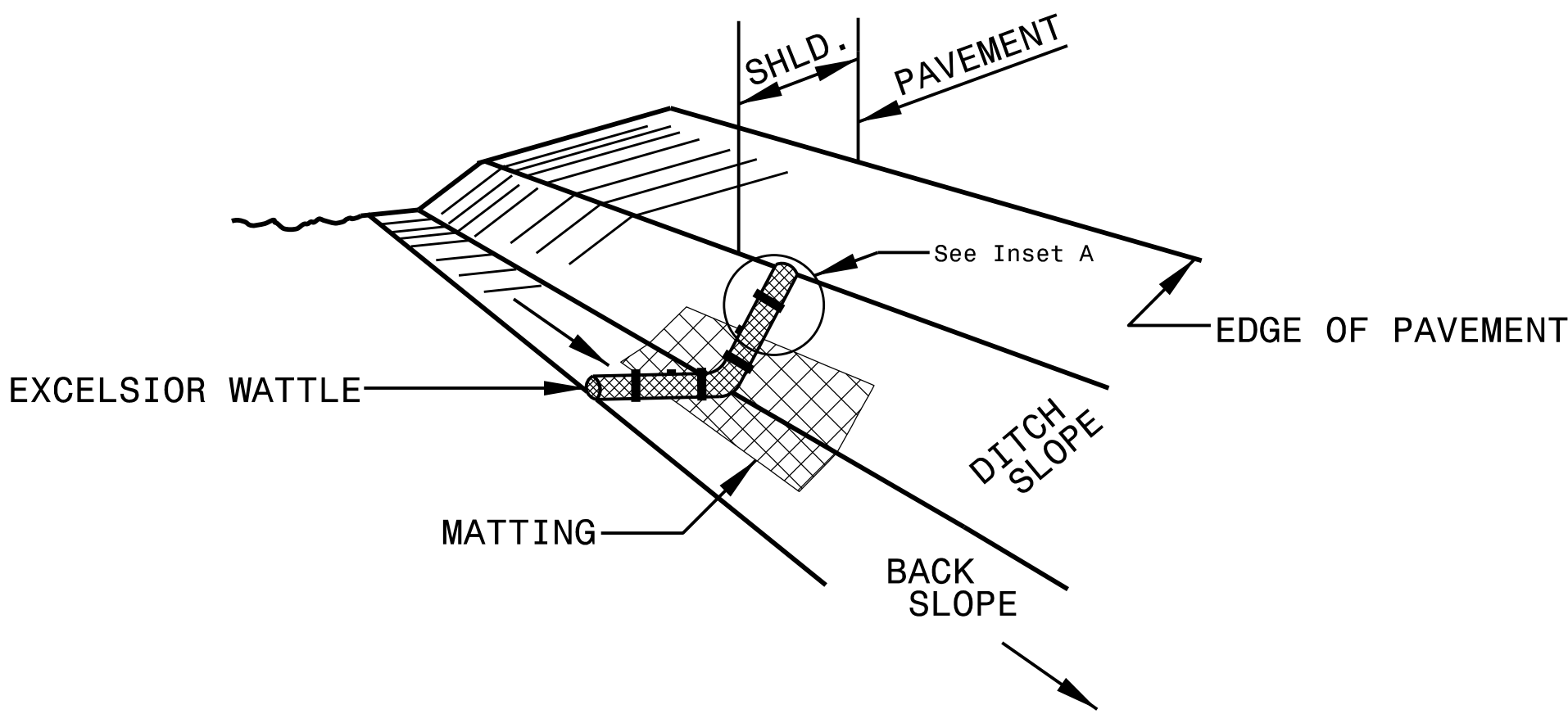
Roadway Standard Drawings

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 revision thereto are applicable to this project and by reference hereby are considered a part of these plans.

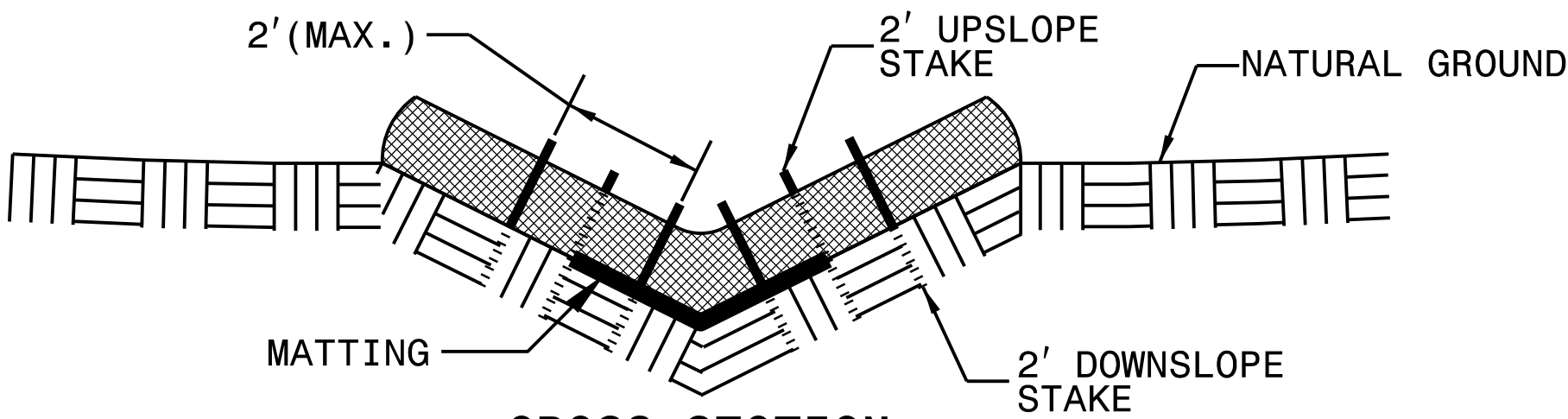
1604.01	Railroad Erosion Control Detail	1632.01	Rock Inlet Sediment Trap Type A
1605.01	Temporary Silt Fence	1632.02	Rock Inlet Sediment Trap Type B
1606.01	Special Sediment Control Fence	1632.03	Rock Inlet Sediment Trap Type C
1607.01	Gravel Construction Entrance	1633.01	Temporary Rock Silt Check Type 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		

PROJECT REFERENCE NO.	SHEET NO.
17BP13.R.58	EC-2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

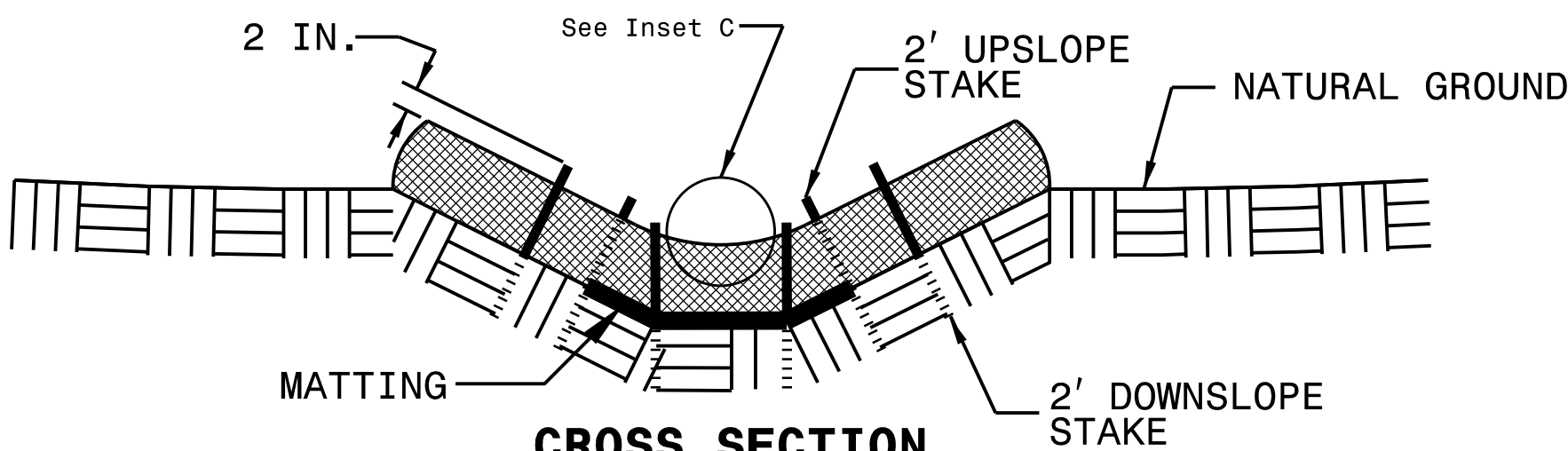
WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



ISOMETRIC VIEW



CROSS SECTION
VEE DITCH



CROSS SECTION
TRAPEZOIDAL DITCH

NOTES:

USE MINIMUM 12 IN. DIAMETER EXCELSIOR 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.

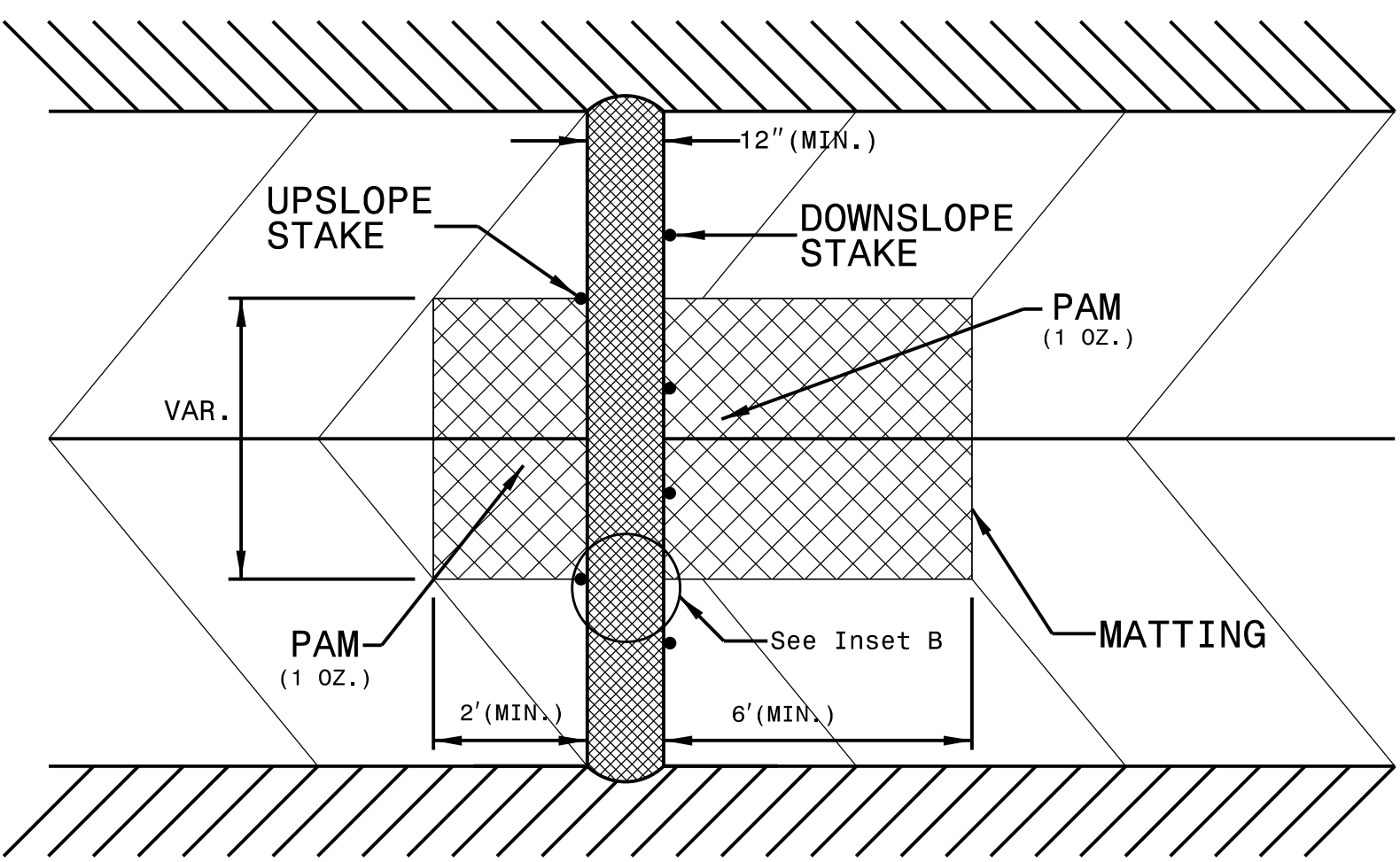
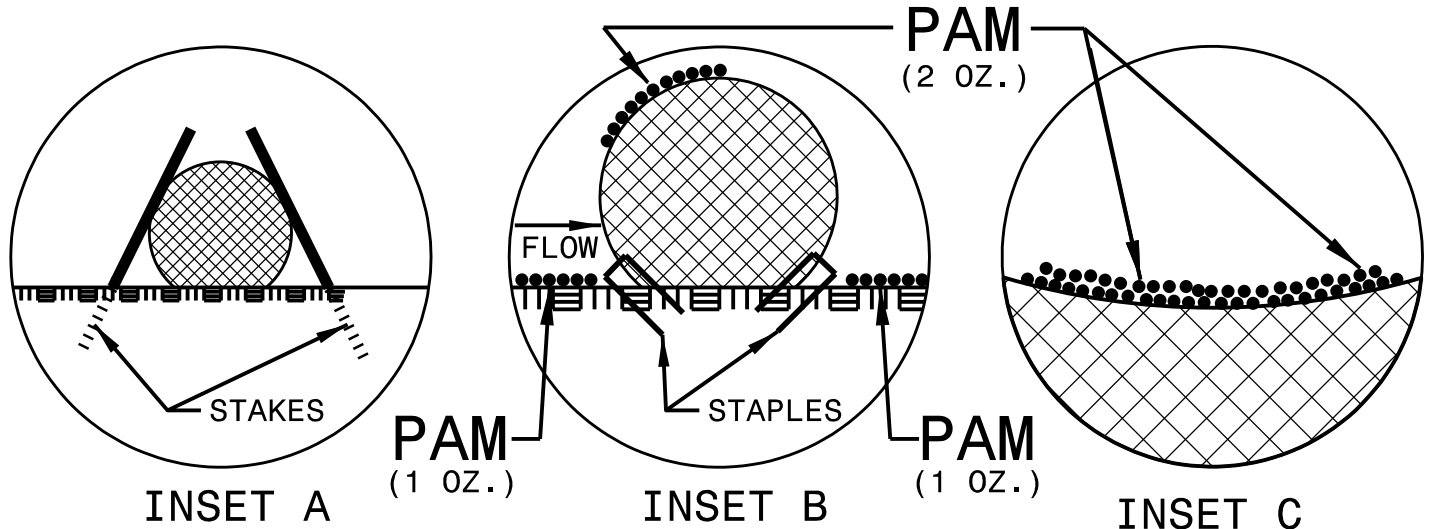
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

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



ALPHA & OMEGA GROUP
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A&O PROJECT NO. 2011.040

PROJECT NO. 17.BP.13.R.58	
MCDOWELL COUNTY	
STATION: 12+88.45 -L-	
SHEET _ OF _	
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH	
CULVERT NO. 580242 ON SR 1112 OVER UNNAMED CREEK	
REVISIONS	
NO.	BY:
1	2
2	3
3	4
4	5
SHEET NO.	
TOTAL SHEETS	

STR. NO. 580242

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

MATTING FOR EROSION CONTROL

[illegible]

MATTING FOR EROSION CONTROL

[illegible]

ALPHA & OMEGA GROUP
CIVIL & STRUCTURAL ENGINEERS

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A&O PROJECT NO. 2011.040

PROJECT NO. 17.BP.13.R.58

 MCDOWELL COUNTY

STATION: 12+88.45 -L-

SHEET _ OF _

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CULVERT NO. 580242
ON SR III2 OVER
UNNAMED CREEK

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

STR. NO. 580242

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
17BP13.R.58	EC-3
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SOIL STABILIZATION TIMEFRAMES

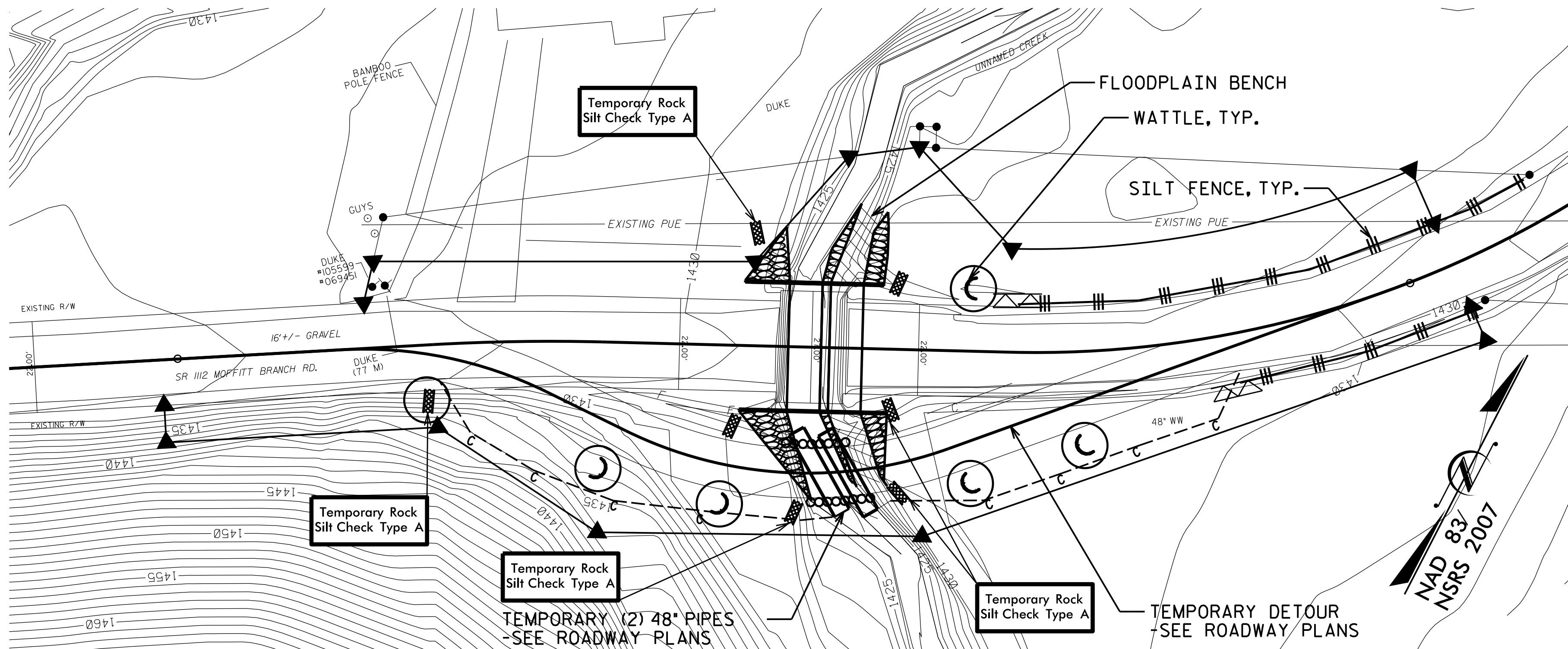
SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS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



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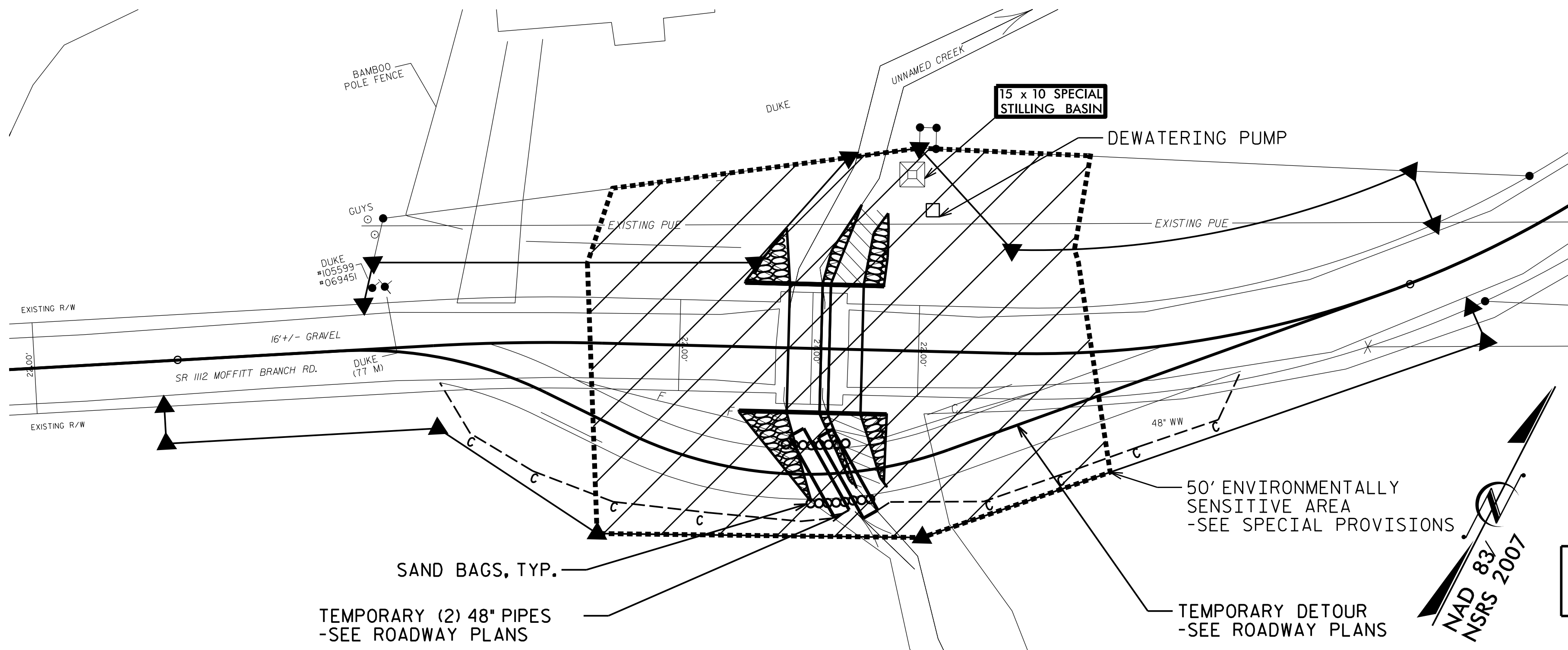
A&O PROJECT NO. 2011.040

PROJECT NO. 17.BP.13.R.58					
MCDOWELL COUNTY					
STATION: 12+80.45 -L-					
SHEET _ OF _					
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
CULVERT NO. 580242 ON SR 1112 OVER UNNAMED CREEK					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					



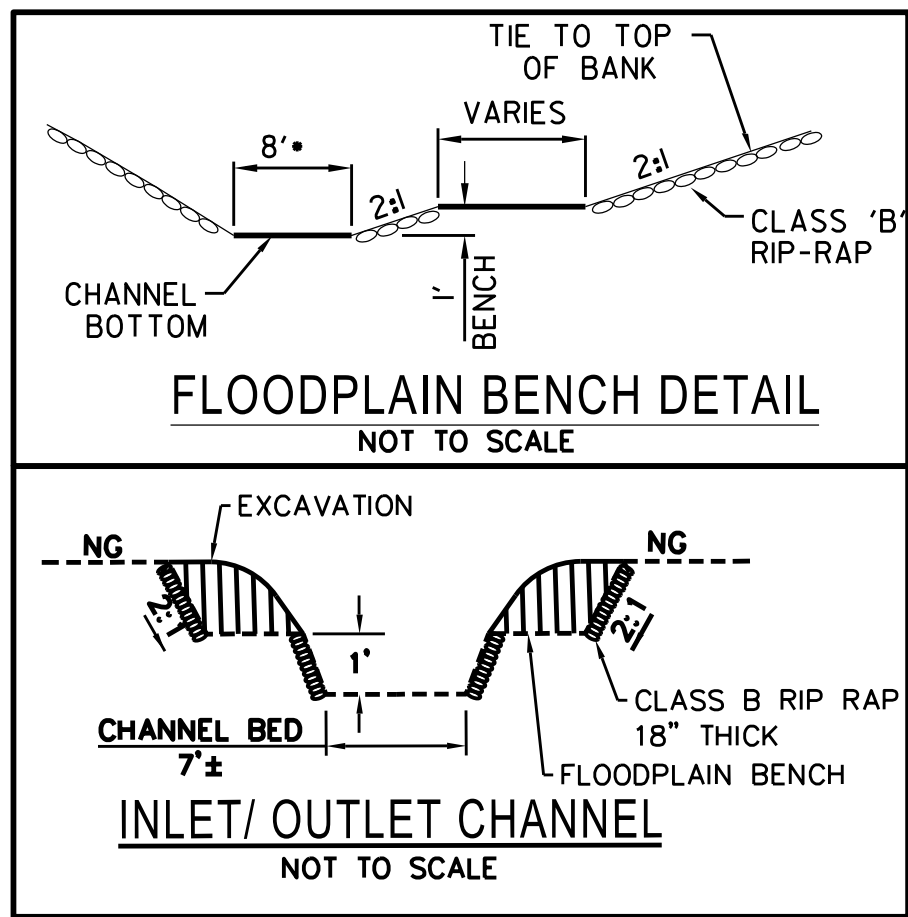
CLEARING AND GRUBBING AND EROSION CONTROL

NOTE: ALL EROSION CONTROL MEASURES SHOWN ARE TO BE PLACED WITHIN EXISTING / PROPOSED RIGHT OF WAY OR EASEMENT.



CONSTRUCTION SEQUENCE

NOTE: THE CONTRACTOR SHALL FILTER ALL SEDIMENT-LADEN WATER THROUGH SPECIAL STILLING BASIN.



NOTES:

1. CULVERT CONSTRUCTION SHALL BE PERFORMED ONLY IN DRY OR ISOLATED SECTIONS OF CHANNEL.
2. ALL GRADED AREAS SHALL BE STABILIZED WITHIN 24 HOURS.
3. MAINTENANCE OF STREAM FLOW OPERATIONS SHALL BE INCIDENTAL TO THE WORK. THIS INCLUDES POLYETHELIENE SHEETING, DIVERSION PIPES, PUMPS, AND HOSES.
4. PUMPS AND HOSES SHALL BE IF SUFFICIENT SIZE TO DEWATER THE WORK AREA.
5. THE CONTRACTOR SHALL NOT PUMP SEDIMENT-LADEN WATER DIRECTLY INTO THE STREAM.
6. AFTER TEMPORARY DETOUR AND 48" PIPES HAVE BEEN REMOVED, IMMEDIATELY INSTALL SILT FENCE ALONG THE TOP OF BANK, BOTH SIDES, AND MAINTAIN UNTIL SITE HAS BEEN STABILIZED. INSTALL SPECIAL SILT FENCE, MIN. 4' LONG, AT ANY LOW POINTS ALONG FENCE.

CULVERT CONSTRUCTION SEQUENCE
STA. 12+80.45

- (ROAD CLOSURE - MAINTENANCE OF TRAFFIC VIA ONSITE DETOUR.)
1. INSTALL EROSION CONTROL MEASURES.
 2. CONSTRUCT STILLING BASIN (10' X 15' MIN.) FOR PUMPED EFFLUENT FROM DEWATERED SITE.
 3. CONSTRUCT TEMPORARY PIPES AND TEMPORARY DETOUR.
 4. PLACE SAND BAGS TO DIVERT FLOW TO THE SOUTHERN SIDE OF THE CHANNEL.
 5. CONTRACTOR TO ISOLATE CONSTRUCTION AREAS WITH SAND BAGS TO CAPTURE SEDIMENT-LADEN EFFLUENT FOR ROUTING TO STILLING BASIN.
 6. REMOVE EXISTING BRIDGE.
 7. CONSTRUCT / INSTALL THE NORTHERN MOST CULVERT.
 8. FILL THE PIPE APPROX. 2'-0" TO FORM THE FINAL 12" BENCH WITH NATIVE STREAM BED LINING.
 9. ADJUST SAND BAGS TO DIVERT FLOW TO NEWLY INSTALLED PIPE.
 10. INSTALL SOUTHERNMOST PIPE.
 11. FILL PIPE TO 12" DEPTH WITH ORIGINAL CHANNEL BED STONE.
 12. REMOVE SAND BAGS AND COMPLETE ROADWAY.
 13. REMOVE TEMPORARY DETOUR, TEMPORARY PIPES, AND COMPLETE ANY UPSTREAM / DOWNSTREAM IMPROVEMENTS.

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4



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A&O PROJECT NO. 2011.040

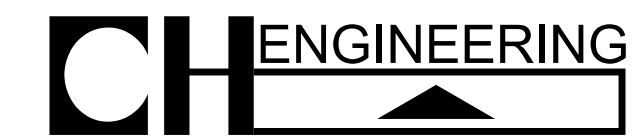
PROJECT NO. 17.BP.13.R.58
MCDOWELL COUNTY
STATION: 12+80.45 -L-
SHEET _ OF _

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
CULVERT NO. 580242
ON SR III2 OVER
UNNAMED CREEK

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

CONTACT INFORMATION FOR UTILITIES

POWER: DUKE POWER; FRED LILES 1-828-323-2773 FRED.LILES@DUKE-ENERGY.COM
PHONE: FRONTIER COMMUNICATIONS; GLONNIE TURBYFILL 828-645-1811 GLONNIETURBYFILL@YAHOO.COM

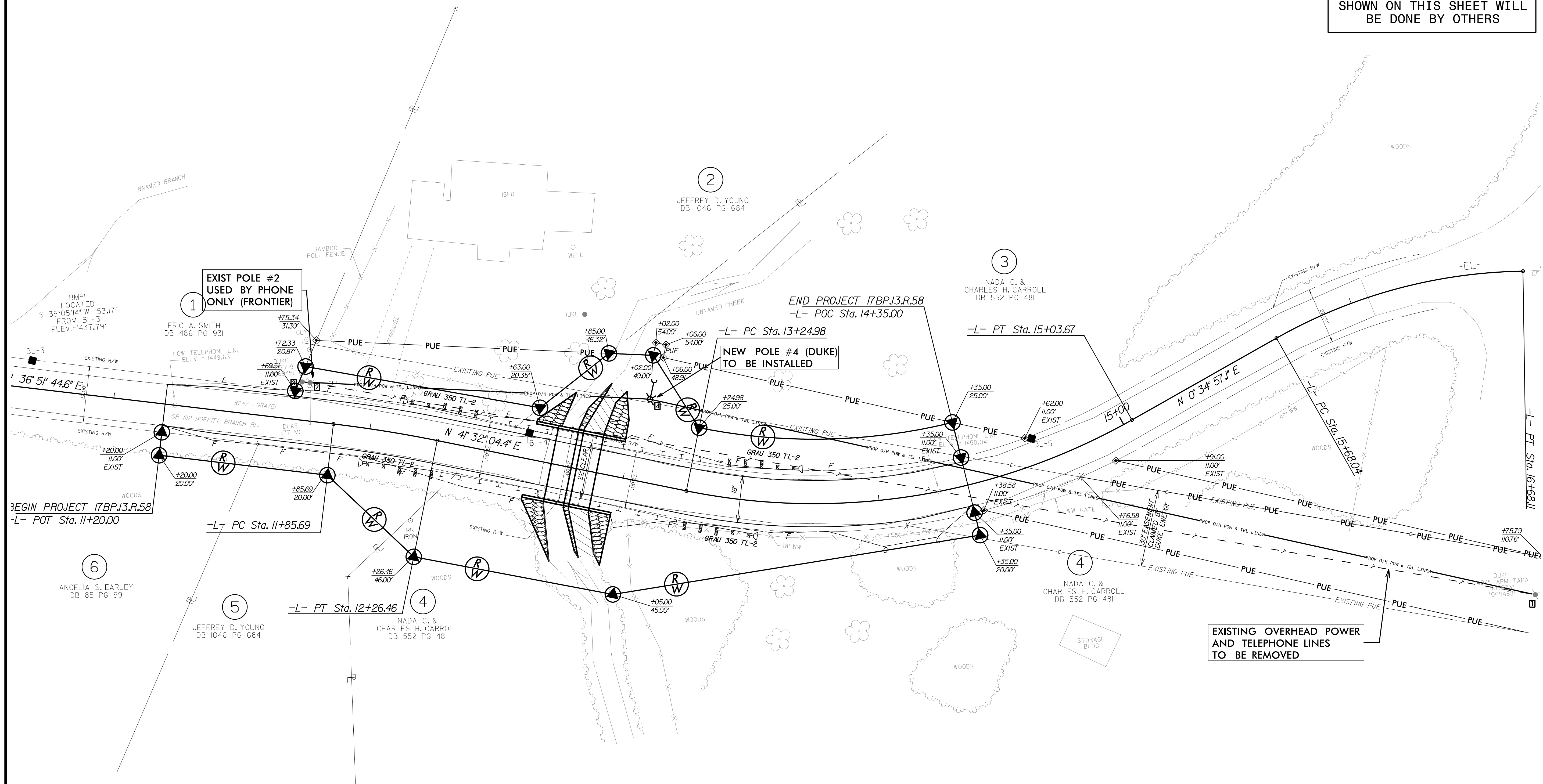


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TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.58	UO-2

UTILITIES BY OTHERS

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

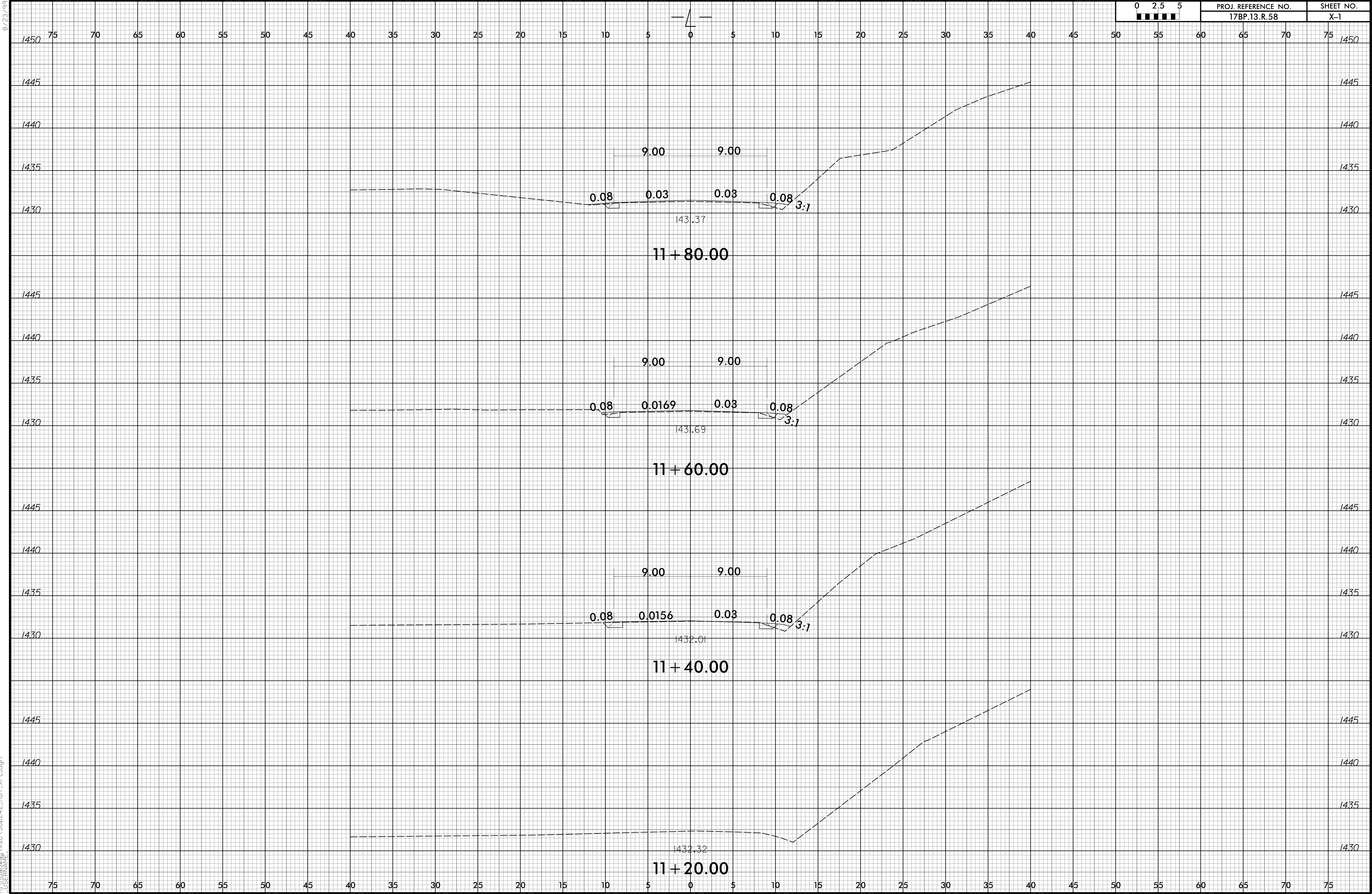


LEGEND

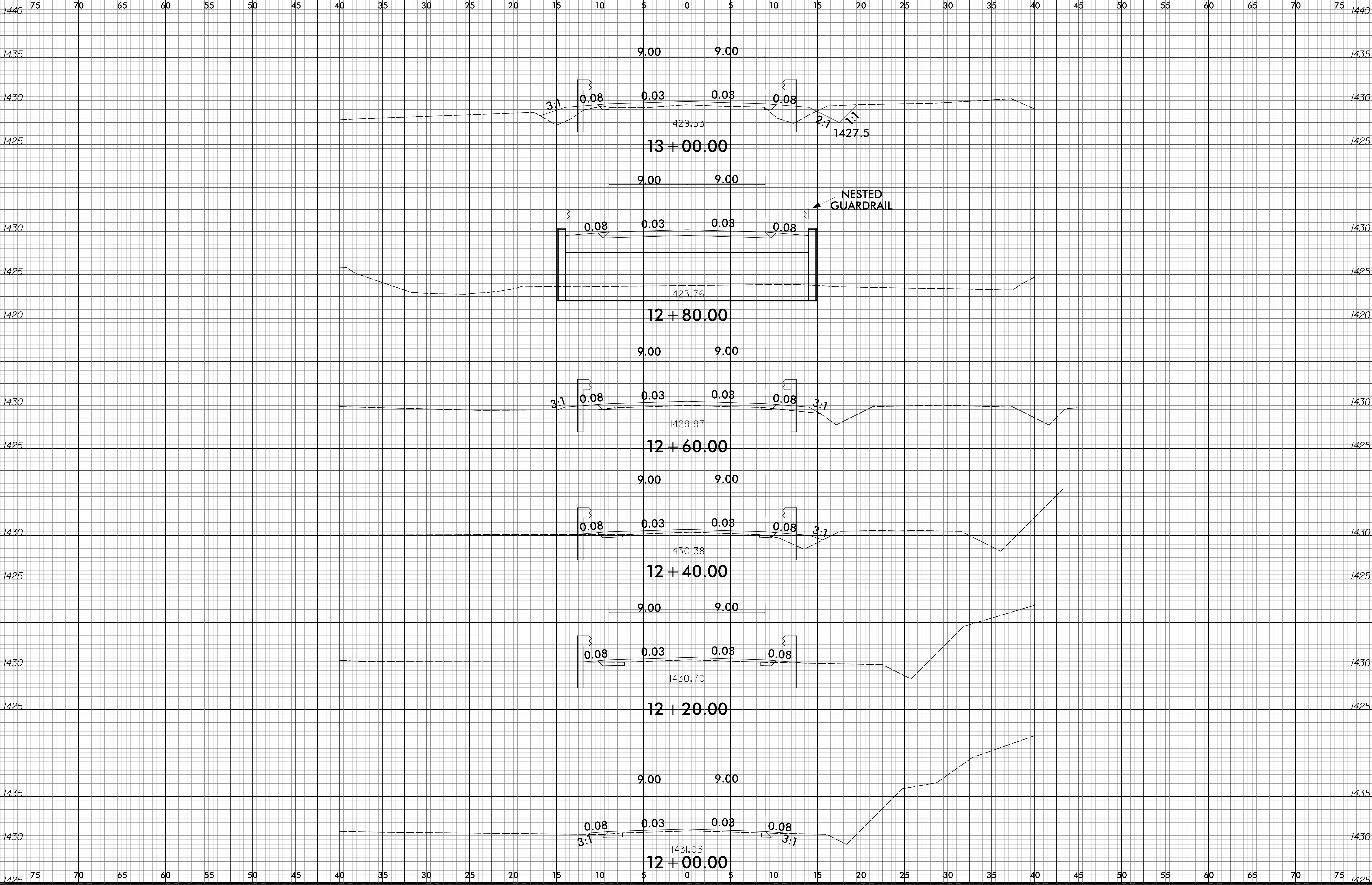
- EXISTING JOINT POWER AND TELEPHONE POLE
- EXISTING POWER POLE
- PROPOSED JOINT POWER AND TELEPHONE POLE
- PROPOSED JOINT POWER AND TELEPHONE LINE
- EXISTING JOINT POWER AND TELEPHONE LINE

Scale 1" = 20'

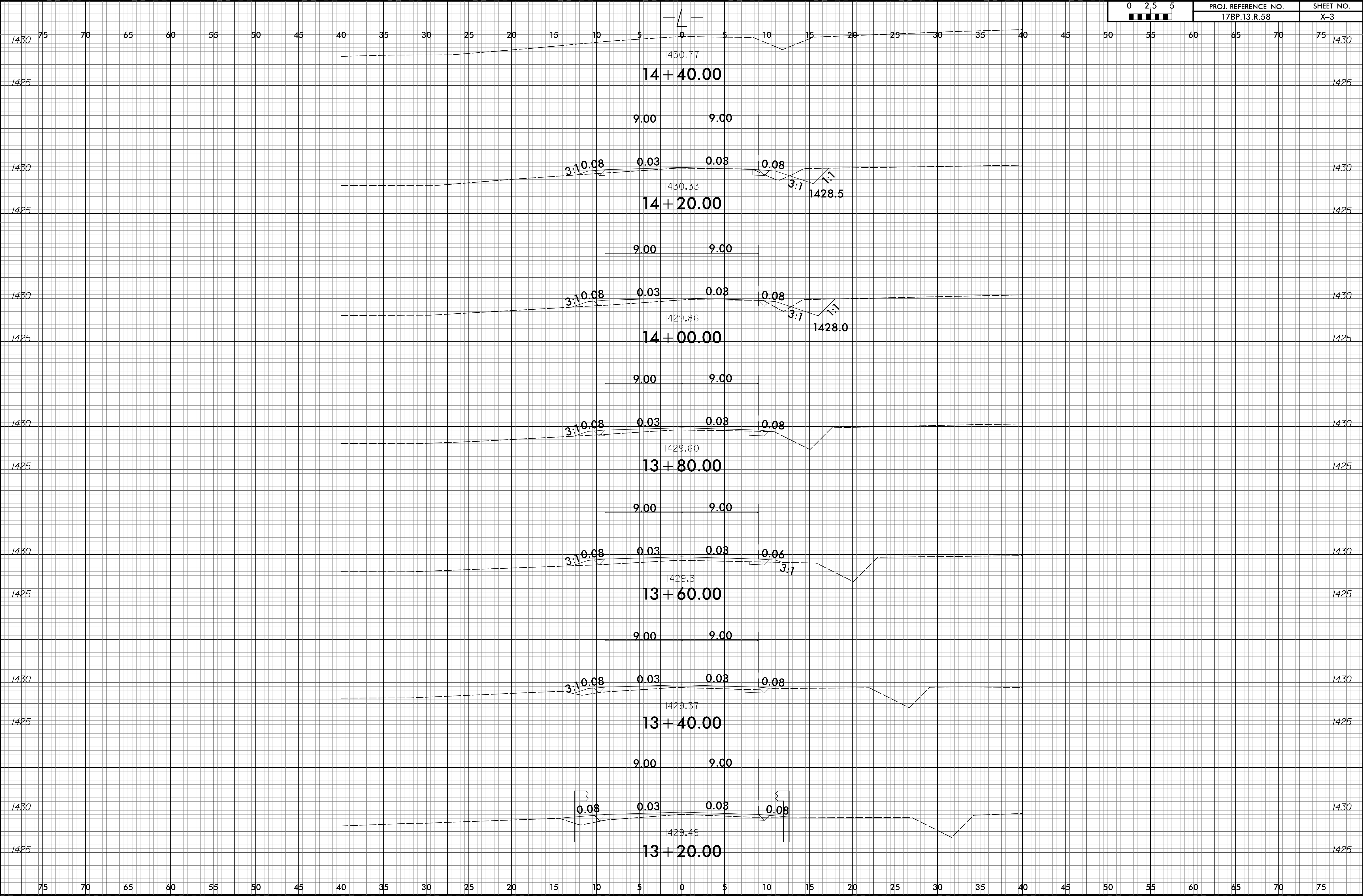
8/23/99



8/23/99



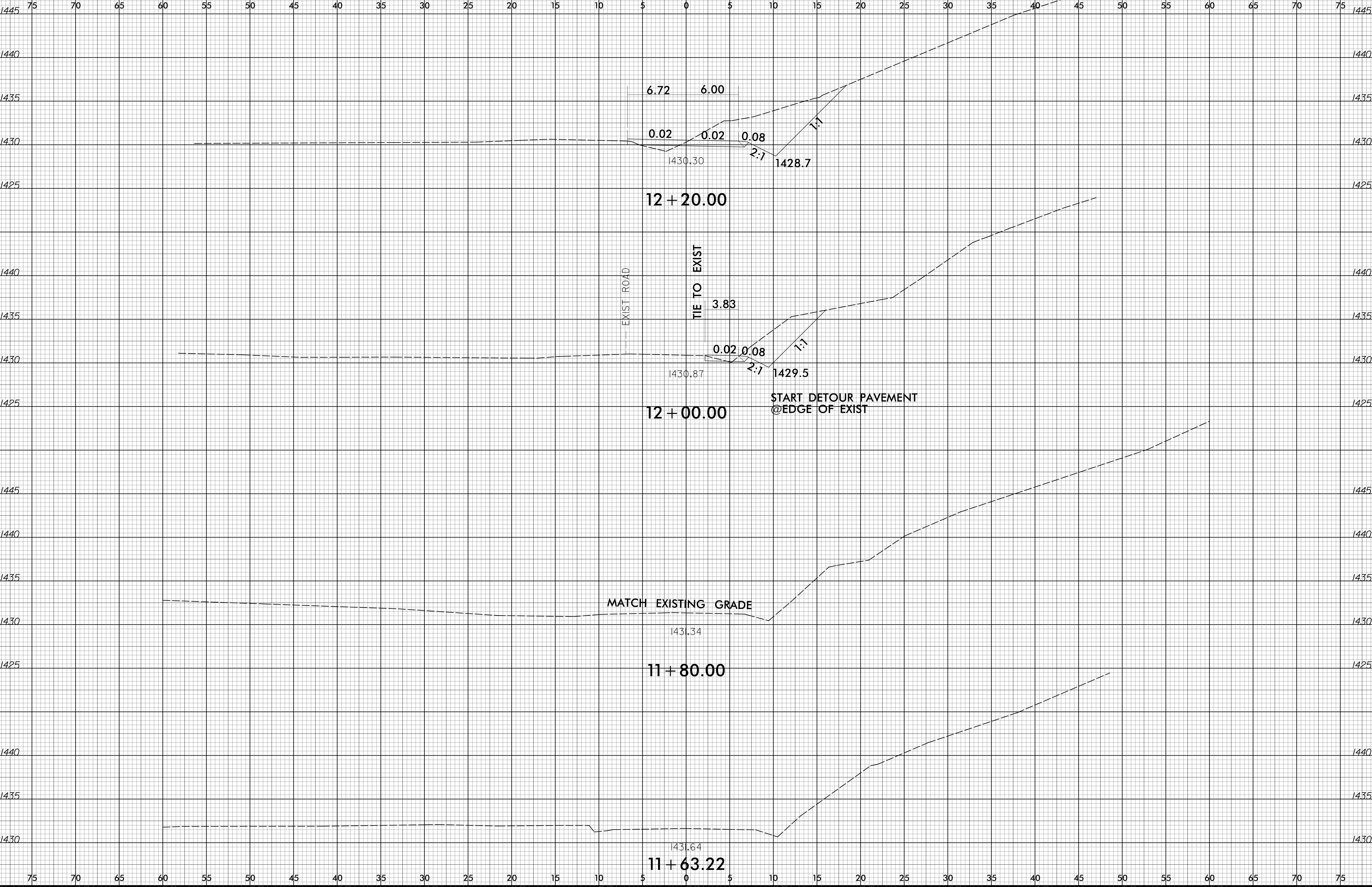
8/23/99



8/23/99

-DET-

0 2.5 5			PROJ. REFERENCE NO.		SHEET NO.	
			17BP.13.R.58		X-4	

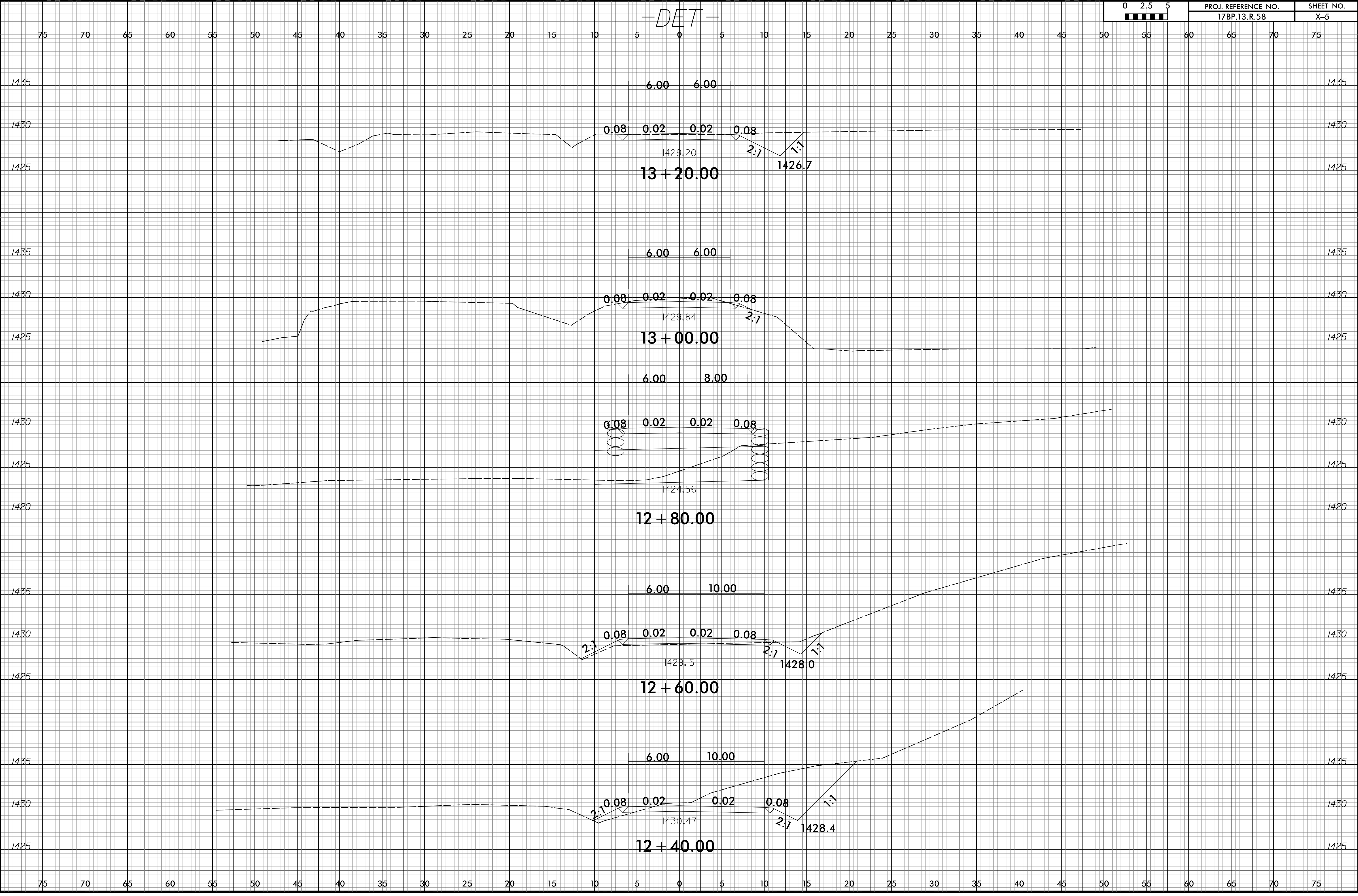


8/23/99

-DET-



PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.58	X-5



8/23/99

-DET-



PROJ. REFERENCE NO.
17BP.13.R.58

SHEET NO.
X-6

