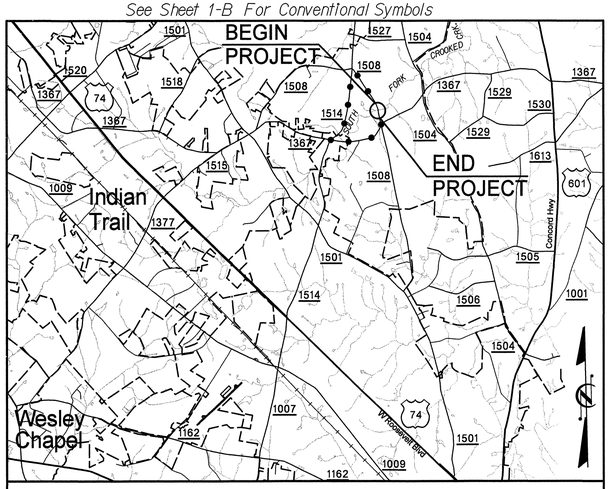
09/08/99

TIP PROJECT: B-4651

CONTRACT: C203426

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



VICINITY MAP

DENOTES OFF-SITE DETOUR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UNION COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4651	1	

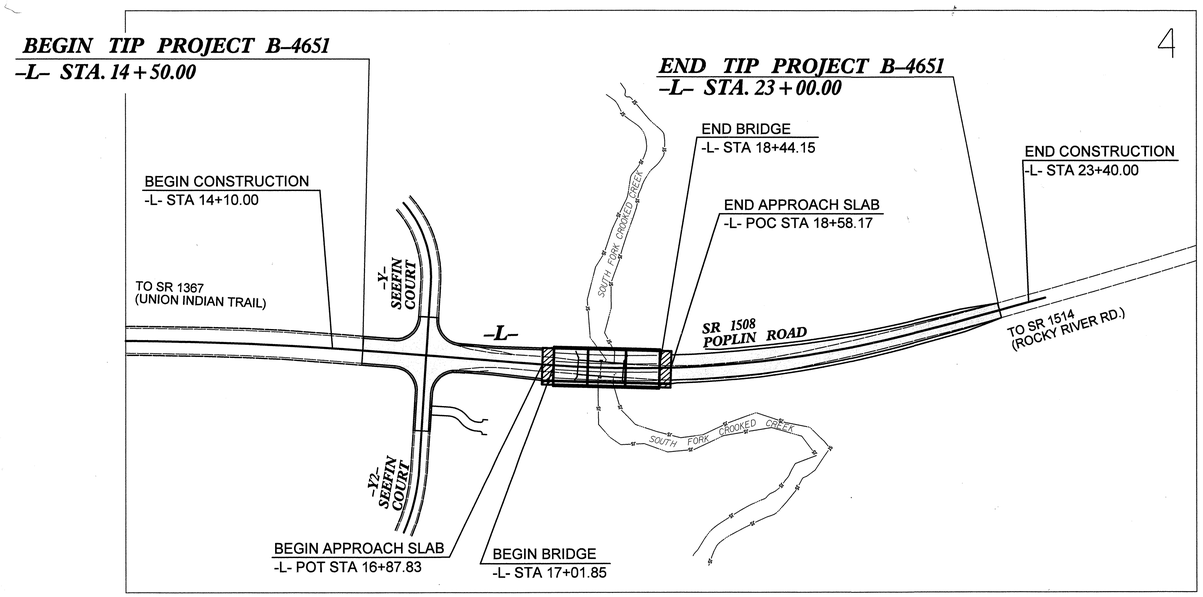
WBS NO.	F.A. PROJ. NO.	DESCRIPTION
33817.1.1	BRZ-1508(5)	P.E.
33817.2.1	BRZ-1508(5)	R /W, UTIL.
33817.3.FD1	BRZ-1508(5)	CONST.

LOCATION: BRIDGE NO. 251 OVER SOUTH FORK CROOKED CREEK ON SR 1508

TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURE

NC GRID
NAD 83/95

4



NCDOT CONTACT: ROY GIROLAMI, PE
STRUCTURES MANAGEMENT UNIT

GRAPHIC SCALES

50 0 50 100
PLANS

50 0 50 100
PROFILE (HORIZONTAL)

10 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT (2008) = 3,535
ADT (2028) = 6,435
DHV = 13 %
D = 60 %
T = 3 %
V = 60 MPH
(TTST = 1% + DUALS = 2%)
FUNC CLASS = RURAL LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4651	=	0.134 MI.
LENGTH STRUCTURES TIP PROJECT B-4651	=	0.027 MI.
TOTAL LENGTH OF TIP PROJECT B-4651	=	0.161 MI.

Prepared In the Office of:
ICA Engineering
5121 Kingdom Way, Suite 100
Raleigh, NC 27607
NC License No: F-0258

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
SEPTEMBER 15, 2006

LETTING DATE:
MARCH 18, 2014

MICHAEL A. YOUNG, PE
PROJECT ENGINEER

DAVID C. WALLER, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 021162 ENGINEER W. HERBERT TURNER, III

SIGNATURE: W. Herbert Turner P.E. 11-13-13

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022982 ENGINEER MICHAEL A. YOUNG

SIGNATURE: P.E. 11-13-13

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

11/11/2013
R:\Roadway\Proj\B4651_Rdy_tsh.dgn
ICA ENGINEERING, INC.

PROJECT REFERENCE NO.	SHEET NO.
B-4651	1-A

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022982 ENGINEER MICHAEL A. YOUNG
11-13-13

INDEX OF SHEETS

SHEET NUMBER	DESCRIPTION
1	Title Sheet
1-A	Index of Sheets
1-B	Conventional Symbols
2 thru 2-A	Typical Sections and Pavement Schedule
~~3~~	~~Summary of Quantities~~
3-A	Earthwork, Pavement Removal, Pavement Breaking, Shoulder Berm Gutter and Guardrail Summary Sheet
3-B	Drainage Summary Sheet
4	Plan Sheet
5	Profile Sheet
TCP-1 thru TCP-2	Traffic Control Plans
EC-1 thru EC-5	Erosion Control Plans
UC-1 thru UC-5	Utility Construction Plans
UO-1 thru UO-4	Utility by Others
X-0	Cross-Section Summary Sheet
X-1 thru X-9	Cross-Sections
S-1 thru S-30	Structure and Retaining Wall Plans

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 STD. 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.

DRIVEWAYS:

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.03 AT LOCATIONS SHOWN ON THE PLANS OR AS 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.

SUBSURFACE PLANS:

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

END BENTS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE CITY OF MONROE, UNION POWER AND FRONTIER COMMUNICATIONS.

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

RIGHT-OF-WAY MARKERS:

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

2012 ROADWAY STANDARD DRAWINGS

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

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 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
DIVISION 4 - MAJOR STRUCTURES	
422.11	Reinforced Bridge Approach Fills - Sub Regional Tier
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
838.01	Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.11	Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.80	Precast Endwalls - 12" thru 72" Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.29	Frames and Narrow Slot Flat Grates
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
848.03	Driveway Turnout - Drop Curb Type
848.04	Street Turnout
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

12/05/11

PROJECT REFERENCE NO.	SHEET NO.
B-4651	1-B

Note: Not to Scale

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

PROJECT REFERENCE NO.	SHEET NO.
B-4651	2
R/W SHEET NO.	

ICA Engineering
5121 Kingdom Way, Suite 100
Raleigh, NC 27607
NC License No: F-0258

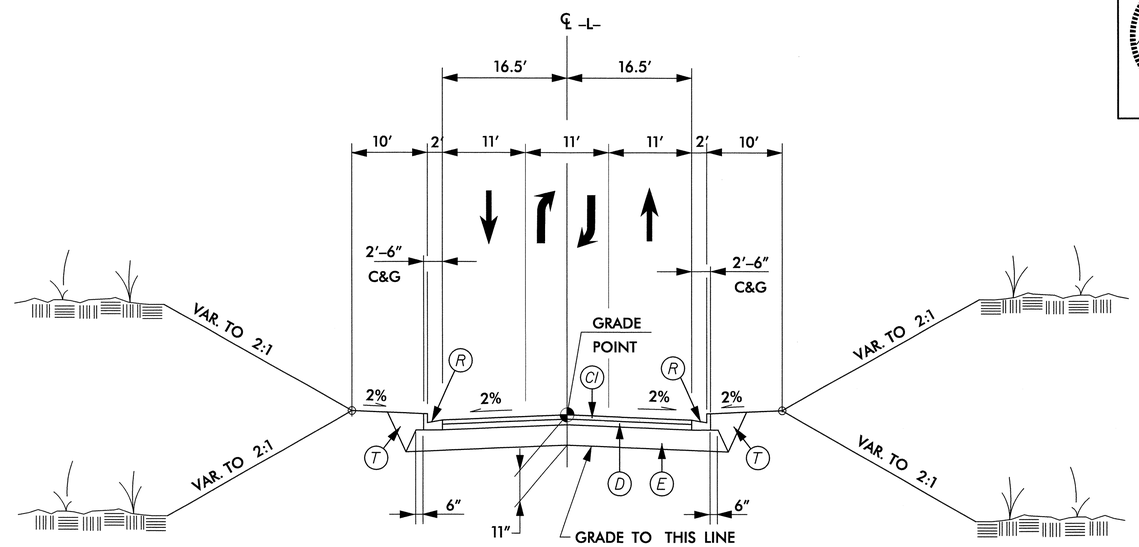
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022982 ENGINEER MICHAEL A. YOUNG
11-1-13

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22996 ENGINEER CLARK S. MORRISON
11/8/13

PAVEMENT SCHEDULE

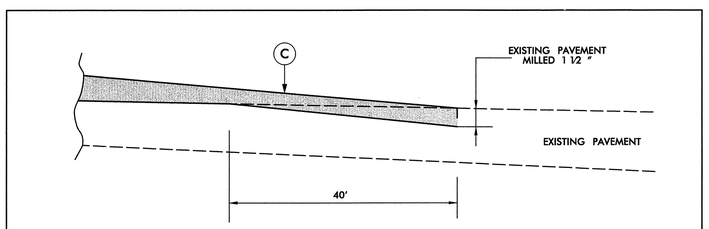
C	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
D	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
R	2'-6" CONCRETE CURB AND GUTTER.
R1	2'-0" CONCRETE CURB AND GUTTER. (SEE DETAIL 'A', SHEET 2-A)
T	EARTH MATERIAL

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

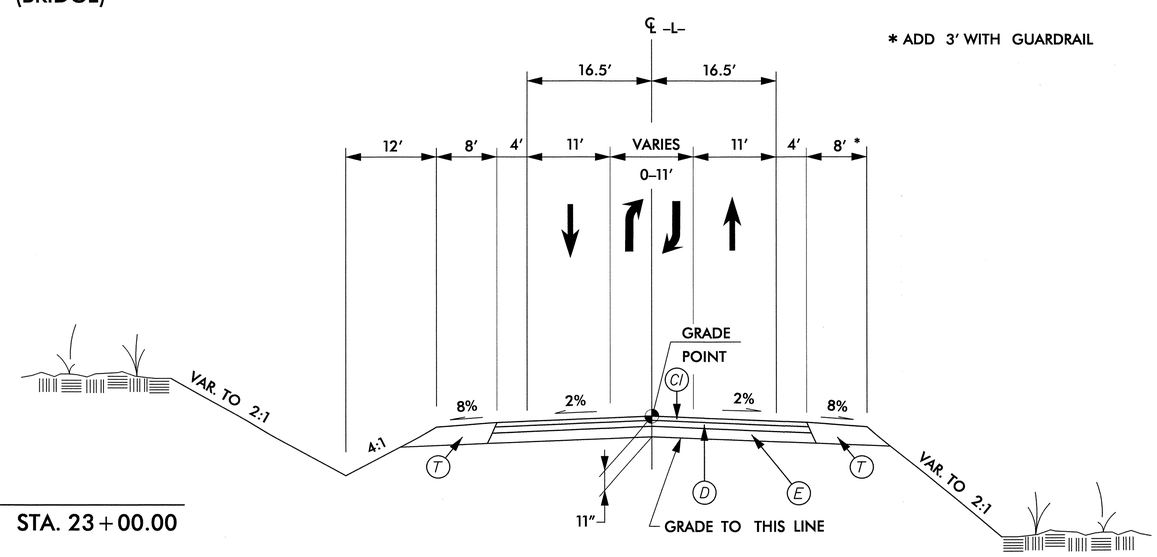


TYPICAL SECTION NO. 1
-L- (SR 1508)

USE TYPICAL SECTION NO. 1
-L- STA. 14+50.00 TO 17+01.85 (BRIDGE)



Incidental Milling Existing Pavement



USE TYPICAL SECTION NO. 2
-L- STA 18+44.15 (BRIDGE) TO STA. 23+00.00

TYPICAL SECTION NO. 2
-L- (SR 1508)

11/1/2013
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jsetzwalter

PROJECT REFERENCE NO.	SHEET NO.
B-4651	2-A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

ICA Engineering
5121 Kingdom Way, Suite 100
Raleigh, NC 27607
NC License No: F-0258

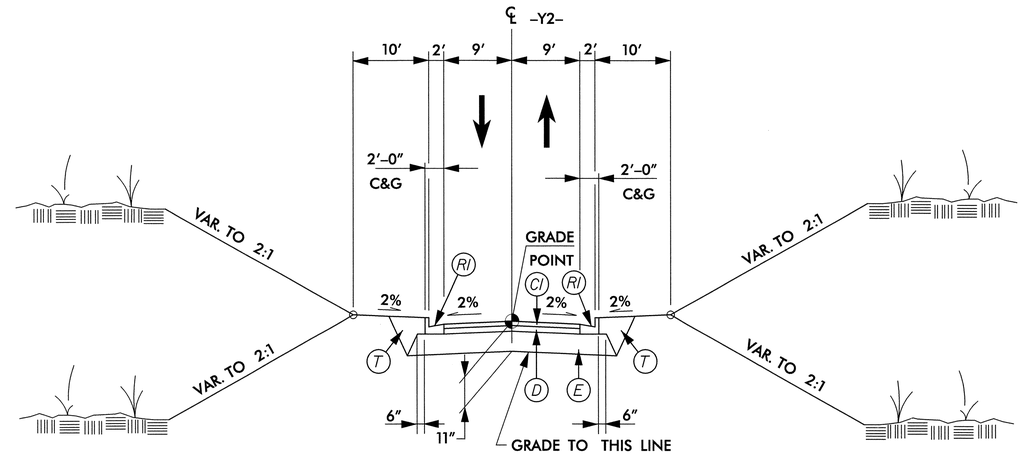
NORTH CAROLINA PROFESSIONAL SEAL 022982 ENGINEER MICHAEL A. YOUNG
11-1-13

NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON
11/8/13

PAVEMENT SCHEDULE

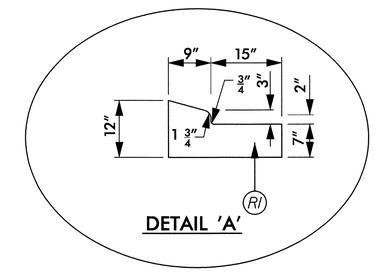
C	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
D	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
R	2'-6" CONCRETE CURB AND GUTTER.
R1	2'-0" CONCRETE CURB AND GUTTER. (SEE DTAIL 'A', THIS SHEET.)
T	EARTH MATERIAL

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



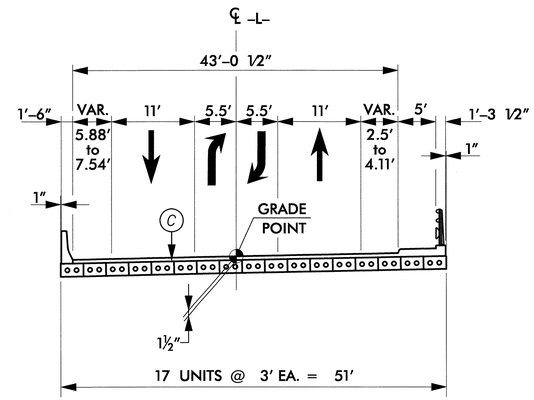
TYPICAL SECTION NO. 3
-Y2- (SR 1508)

USE TYPICAL SECTION NO. 3
-Y2- STA. 10+50.00 TO 11+00.00



DETAIL 'A'

24" CONCRETE CURB AND GUTTER
(SEE GENERAL NOTES STD. 846.01)



TYPICAL SECTION NO. 4
-L- (SR 1508)

USE TYPICAL SECTION NO. 4
-L- STA. 17+01.85 TO 18+44.15

11/1/2013
R:\Roadway\Proj\B4651_Rdy_typ.dgn
USERNAME

COMPUTED BY: DCW DATE: 2-1-2012
CHECKED BY: YTM DATE: 2-2-2012

PROJECT REFERENCE NO.	SHEET NO.
B-4651	3-A

SUMMARY OF EARTHWORK

IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
SUMMARY #1					
-L- 14+50.00 TO 17+01.85	53		1302	1249	
-Y2- 10+00.00 TO 11+00.00	42		13		29
-DR- 10+00.00 TO 11+00.00	76		6		70
TOTAL SUMMARY #1	171		1321	1249	99
SUMMARY #2					
-L- 18+44.15 TO 23+50.00	82		1843	1761	
TOTAL SUMMARY #2	82		1843	1761	
PROJECT SUB-TOTALS	253		3164	3010	99
MATERIAL FOR SHOULDER CONSTRUCTION			260	260	
EST. BORROW IN LIEU OF WASTE				-99	-99
PROJECT TOTALS	253		3424	3171	0
EST. 5% TO REPLACE TOPSOIL ON BORROW PITS				159	
GRAND TOTALS	253		3424	3330	
SAY	300			3350	

EST. DDE = 200 CY
EST. UNDERCUT EXVAVATION = 250 CY
SELECT GRANULAR MATERIAL = 250 CY
GEOTEXTILE FOR SOIL STABILIZATION = 350 CY

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

PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION TO STATION	LOCATION	ASPHALT REMOVAL (SY)
-L-	14+50 TO 15+75	CL	470.6
-L-	19+75 TO 22+50	CL	598.2
	TOTAL		1,068.8
	SAY		1,100

PAVEMENT BREAKING SUMMARY

SURVEY LINE	STATION TO STATION	LOCATION	ASPHALT REMOVAL (SY)
-L-	15+75 TO 17+63	CL	426.6
-L-	17+94 TO 19+75	CL	381.8
	TOTAL		808.3
	SAY		810

SHOULDER BERM GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LENGTH (FT)
-L-	18+43 LT	19+05 LT	62
	TOTAL		62
	SAY		65

"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	BEGIN STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS								IMPACT ATTENUATOR TYPE 350			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	B-77	GRAU 350	M-350	III	CAT-1	VI MOD	BIC	AT-1	EA	G	NG				
-L-	16+14.35	16+89.35	RT	75			16+89.35	16+89.35	7.5	10.0	50	-	1	-			1		1											
-L-	16+26.91	17+01.91	LT	75			17+01.91	17+01.91	2.0	10.0	-	50	-	1		1	1													
-L-	18+44.09	21+50.34	LT	306.25			18+44.09	18+44.09	8.0	11.0	50	-	1	-		1	1													
-L-	18+56.57	19+31.57	RT	75			18+56.57	18+56.57	8.0	11.0	-	50	-	1			1		1											
		SUB TOTALS		531.25							ANCHOR DEDUCTIONS:					2	4		2											
		ANCHOR DEDUCTIONS		275.00							B-77 2 x 18.75' = 37.50'																			
		TOTALS		256.25							TYPE III 2 x 18.75' = 37.50'																			
		SAY		262.50							GRAU-350 4 x 50' = 200.00'																			
				ADDITIONAL POSTS - 5 EA.							TOTAL = 275.00'																			

6/4/99
11/11/2013 R:\Roadway\Proj\B4651_Rdy_3A.dgn
TPA ENGINEERING, INC.

COMPUTED BY: HWB	DATE: 10/28/2013
CHECKED BY: WHT	DATE: 10/29/2013

PROJECT NO.	SHEET NO.
B-4651	3-B

RD261649

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated 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 INCHES & UNDER)

STATION	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
-L- 14+79.5	R	0401		604.9	601.3														
-Y2- 10+52.78	R	0402		602.4	598.5														
-Y2- 10+61.20	L	0403		601.7	598.7														
-Y2- 10+53	L	0404		601.7	598.2														
-Y2- 10+61.20	L	0403	0404		598.7	598.3													
-L- 16+14	R	0405	0406		595.8	595.7			24										
-L- 16+14	R	0406		600.4	595.7														
-L- 15+80	R	0407		600.9	595.5														
-L- 14+80.63	L	0408		605.1	601.8														
-L- 16+14	R	0406	0407		595.7	595.5													
-Y2- 10+53	L	0404	0407		598.2	595.5				48									
-L- 15+20.6	L	0409		603.3	600.6														
-L- 15+46.61	L	0410		603.1	600.0														
-L- 15+80	L	0411		600.9	595.3														
-L- 15+80	R	0407	0411		595.5	595.3													
-L- 16+68	L	0412		598.2	594.0														
-L- 15+80	L	0411	0412		595.3	594.0													
-L- 16+69	L	0413		600.5	593.8														
-L- 16+69	L	0412	0413		594.0	593.8	X			20									
-L- 16+69	L	0413	0414		593.8	585.5				52						X			
-L- 18+63	L	0415		594.2	591.2														
-L- 19+00	L	0416		592.8	588.8														
-L- 18+63	L	0415	0416		591.2	588.8													
-L- 19+00	L	0416	0417		588.8	585.5			24							X			
-L- 20+47	C	0418			585.3	585.0													
-L- 20+52	C	0419			585.3	585.0													
SHEET TOTALS									48	120									

STATION	C.S. PIPE 12" (.064)	15" (.064)	18" (.064)	24" (.064)	30" (.079)	36" (.079)	42" (.109)	48" (.109)	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"
-L- 14+79.5																								
-Y2- 10+52.78																								
-Y2- 10+61.20																								
-Y2- 10+53																								
-Y2- 10+61.20																		8						
-L- 16+14																								
-L- 16+14																								
-L- 15+80																								
-L- 14+80.63																								
-L- 16+14																		36						
-Y2- 10+53																								
-L- 15+20.6																								
-L- 15+46.61																								
-L- 15+80																								
-L- 15+80																			36					
-L- 16+68																								
-L- 15+80																			88					
-L- 16+69																								
-L- 16+69																								
-L- 16+69																								
-L- 18+63																								
-L- 19+00																								
-L- 18+63																		36						
-L- 19+00																								
-L- 20+47																						76		
-L- 20+52																						76		
SHEET TOTALS																		80	124			152		

STATION	** " R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.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	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN
-L- 14+79.5															
-Y2- 10+52.78															
-Y2- 10+61.20							1			1		1			
-Y2- 10+53							1			1	1				
-Y2- 10+61.20															
-L- 16+14															
-L- 16+14							1			1		1			
-L- 15+80							1	0.4		1		1			
-L- 14+80.63															
-L- 16+14															
-Y2- 10+53															
-L- 15+20.6															
-L- 15+46.61															
-L- 15+80							1	0.6		1			1		
-L- 15+80															
-L- 16+68							1			1			1		
-L- 15+80															
-L- 16+69							1	1.7							
-L- 16+69															
-L- 16+69															
-L- 18+63							1								
-L- 19+00							1								
-L- 18+63															
-L- 19+00															
-L- 20+47						4.5									
-L- 20+52															
SHEET TOTALS						4.5	9	2.7		6	1	3	2		

STATION	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	TRAFFIC BEARING G.D.I. STD. 840.35	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	ADJUST CB	M.H. FRAME & COVER STD. 840.54	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29		DRAINAGE PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
-L- 14+79.5											1								
-Y2- 10+52.78											1								
-Y2- 10+61.20																			
-Y2- 10+53																		72	REMOVE EXIST. CB
-Y2- 10+61.20																			
-L- 16+14																			
-L- 16+14																		69	REMOVE EXIST. MH
-L- 15+80																			
-L- 14+80.63											1								
-L- 16+14																			
-Y2- 10+53																			
-L- 15+20.6											1								
-L- 15+46.61											1								
-L- 15+80																		39	REMOVE CB
-L- 15+80																			
-L- 16+68																			
-L- 15+80																			
-L- 16+69										1		1							
-L- 16+69																			
-L- 16+69																			
-L- 18+63				1									1						
-L- 19+00				1									1						
-L- 18+63																			
-L- 19+00																			
-L- 20+47																			HW FOR DOUBLE 36" RC
-L- 20+52																			
SHEET TOTALS				2						1	5	1	2					180	

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.)	(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

PROJECT REFERENCE NO.	SHEET NO.
B-4651	4
R/W SHEET NO.	

ICA Engineering
5121 Kingdom Way, Suite 100
Raleigh, NC 27607
NC License No: F-0258

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 022982 ENGINEER MICHAEL A. YOUNG — 11-1-13

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 021162 ENGINEER W. HERBERT TURNER, III — 11-1-13

REVISIONS

5/14/99

-L-

PI Sta 12+36.18	PI Sta 19+37.24	PI Sta 22+69.34
Δ = 5° 53' 57.1" (RT)	Δ = 18° 24' 04.7" (LT)	Δ = 1° 51' 58.6" (LT)
D = 1° 15' 00.0"	D = 3° 49' 11.0"	D = 1° 00' 00.0"
L = 471.94'	L = 481.74'	L = 186.63'
T = 236.18'	T = 242.96'	T = 93.32'
R = 4,583.66'	R = 1,500.00'	R = 5,729.58'

-Y-

PI Sta 18+22.23	PI Sta 14+29.24	PI Sta 12+54.36
Δ = 75° 36' 44.0" (RT)	Δ = 3° 15' 32.5" (LT)	Δ = 93° 59' 15.9" (LT)
D = 38° 11' 49.9"	D = 22° 55' 05.9"	D = 38° 11' 49.9"
L = 197.95'	L = 14.22'	L = 246.06'
T = 116.38'	T = 7.11'	T = 160.82'
R = 150.00'	R = 250.00'	R = 150.00'

-Y2-

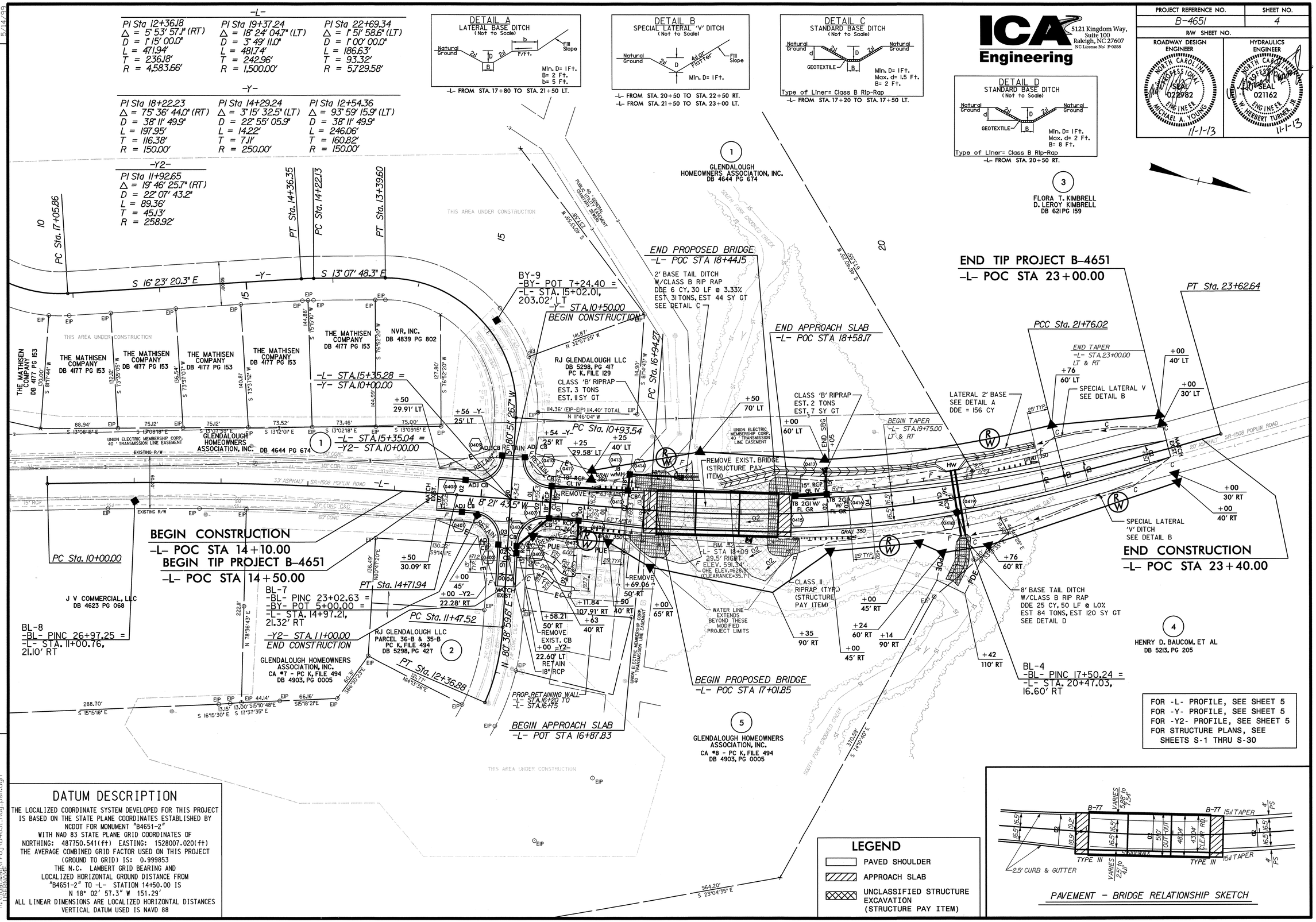
PI Sta 11+92.65
Δ = 19° 46' 25.7" (RT)
D = 22° 07' 43.2"
L = 89.36'
T = 45.13'
R = 258.92'

DETAIL A
LATERAL BASE DITCH
(Not to Scale)
Natural Ground, 2:1, D, 2:1, Fill Slope, B, 1'/Ft.
Min. D= 1Ft.
B= 2 Ft.
b= 5 Ft.
-L- FROM STA. 17+80 TO STA. 21+50 LT.

DETAIL B
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground, 2:1, D, 4:1 or Flatter, Fill Slope
Min. D= 1Ft.
-L- FROM STA. 20+50 TO STA. 22+50 RT.
-L- FROM STA. 21+50 TO STA. 23+00 LT.

DETAIL C
STANDARD BASE DITCH
(Not to Scale)
Natural Ground, d, 2:1, D, 2:1, Natural Ground, GEOTEXTILE, B
Min. D= 1Ft.
Max. d= 1.5 Ft.
B= 2 Ft.
Type of Liner= Class B Rip-Rap
-L- FROM STA. 17+20 TO STA. 17+50 LT.

DETAIL D
STANDARD BASE DITCH
(Not to Scale)
Natural Ground, d, 2:1, D, 2:1, Natural Ground, GEOTEXTILE, B
Min. D= 1Ft.
Max. d= 2 Ft.
B= 8 Ft.
Type of Liner= Class B Rip-Rap
-L- FROM STA. 20+50 RT.



FOR -L- PROFILE, SEE SHEET 5
FOR -Y- PROFILE, SEE SHEET 5
FOR -Y2- PROFILE, SEE SHEET 5
FOR STRUCTURE PLANS, SEE SHEETS S-1 THRU S-30

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4651-2"
WITH NAD 83 STATE PLANE GRID COORDINATES OF
NORTHING: 487750.541(ft) EASTING: 1528007.020(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999853
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4651-2" TO -L- STATION 14+50.00 IS
N 18° 02' 57.3" W 151.29'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

LEGEND

- PAVED SHOULDER
- APPROACH SLAB
- UNCLASSIFIED STRUCTURE EXCAVATION (STRUCTURE PAY ITEM)

PAVEMENT - BRIDGE RELATIONSHIP SKETCH

11/1/2013
R:\Roadway\Proj\B4651_Rdy_psh.dgn

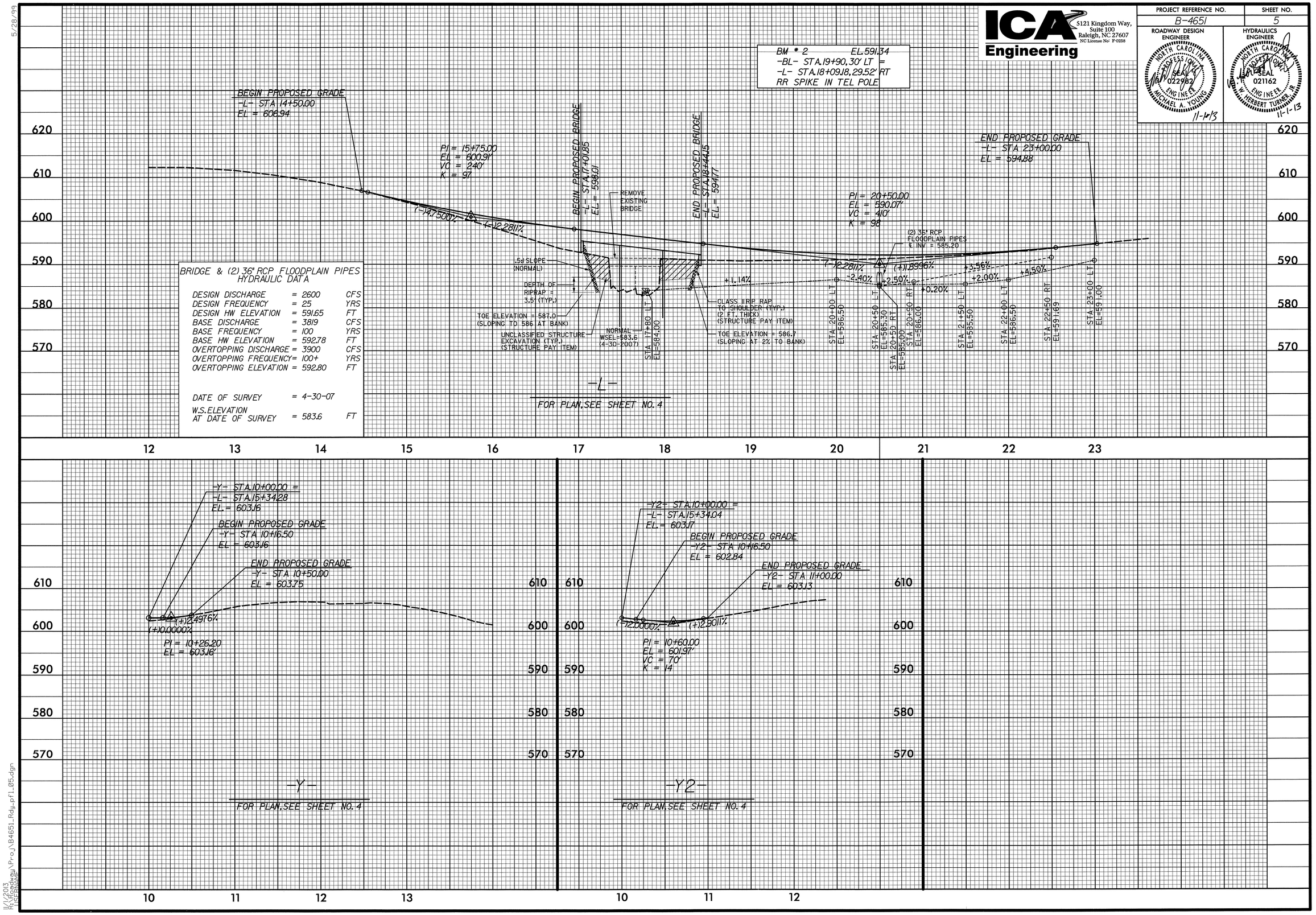
5/28/99

ICA Engineering
5121 Kingdom Way, Suite 100
Raleigh, NC 27607
NC License No: F-0258

PROJECT REFERENCE NO.	SHEET NO.
B-4651	5

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022982 ENGINEER MICHAEL A. YOUNG
11-1-13

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 021162 ENGINEER W. HERBERT TURNER, JR.
11-1-13



11/1/2013
R:\Roadway\Proj\B4651_Rdy_prfl_05.dgn
IRMAWANE

PROJ. REFERENCE NO.	SHEET NO.
B-4651	TCP-1

ICA Engineering
5121 Kingdom Way, Suite 100
Raleigh, NC 27607
NC License No: F-0258

GENERAL NOTES

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

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

LANE AND SHOULDER CLOSURE REQUIREMENTS

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

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

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

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

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

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

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

TRAFFIC CONTROL DEVICES

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

PAVEMENT MARKING AND MARKERS

G) INSTALL PAVEMENT MARKINGS ON THE FINAL SURFACE AS FOLLOWS:

ROAD NAME	MARKING
SR 1508 (POPLIN RD)	THERMOPLASTIC

H) INSTALL PAVEMENT MARKINGS ON THE FINAL SURFACE ACCORDING TO THE ROADWAY STANDARDS.

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

MISCELLANEOUS

J) MAINTAIN ACCESS TO ALL RESIDENCES AND BUSINESSES AT ALL TIMES DURING CONSTRUCTION.

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 WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1110.02	PORTABLE WORK ZONE SIGNS
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1180.01	SKINNY DRUMS
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.12	PAVEMENT MARKINGS - BRIDGES
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - TEMPORARY AND PERMANENT
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

PHASING

STEP 1

USING ROADWAY STANDARD DRAWING NUMBER 1101.04, SHEET 1 OF 1, INSTALL ALL DETOUR SIGNING KEEPING SIGNS COVERED.

INSTALL AND ACTIVATE CMS BOARDS 14 DAYS BEFORE CLOSING SR 1508 (POPLIN RD.). IN STEP 2.

STEP 2

USING ROADWAY STANDARD DRAWING NUMBER 1101.02 (SHEET 1 OF 15), BEGIN CONSTRUCTION OF PROPOSED ROADWAY -L- STA 14+50 TO STA 16+00±, -Y- AND -Y2-.

PRIOR TO CLOSING SR 1508 (POPLIN RD.), UNCOVER ALL DETOUR SIGNING AND OPEN DETOUR TO TRAFFIC.

USING ROADWAY STANDARD DRAWING NUMBER 1101.03, SHEET 1 OF 9, CLOSE SR 1508 (POPLIN RD.).

STEP 3

AWAY FROM TRAFFIC PERFORM THE FOLLOWING:

- REMOVE EXISTING BRIDGE
- CONSTRUCT PROPOSED STRUCTURE
- CONSTRUCT PROPOSED ROADWAY -L- STA 16+00± TO STA 23+00

COMPLETE CONSTRUCTION OF PROPOSED ROADWAY -L- STA 14+50± TO STA 16+00±, -Y- AND -Y2-.

STEP 4

PLACE FINAL PAVEMENT MARKINGS ON -L-, -Y- AND -Y2- AND OPEN TO TRAFFIC.

STEP 5

USING ROADWAY STANDARD DRAWING NUMBER 1101.04, SHEET 1 OF 1, REMOVE ALL DETOUR SIGNING AND ALL TRAFFIC CONTROL DEVICES.

FINAL PAVEMENT MARKING SCHEDULE

DESCRIPTION	PAY ITEM
WHITE EDGELINE	THERMOPLASTIC (4", 90 MILS)
DOUBLE YELLOW CENTER LINE	THERMOPLASTIC (4", 120 MILS)
WHITE STOP BAR	THERMOPLASTIC (24", 120 MILS)
YELLOW/YELLOW	PERMANENT RAISED MARKER

APPROVED: Michael T. Rzepka DATE: 11-1-13

SEAL

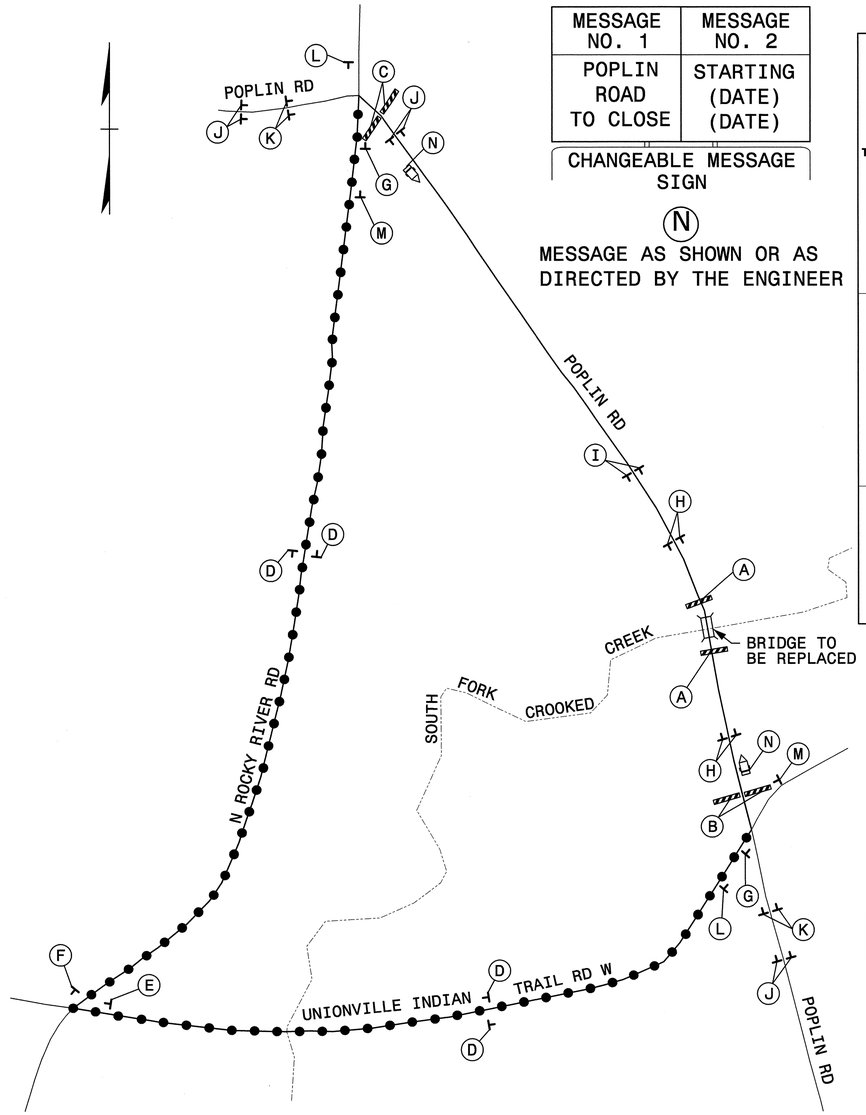
NORTH CAROLINA PROFESSIONAL SEAL 15876 ENGINEER MICHAEL T. RZEPKA

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

ROADWAY STANDARD DRAWINGS, GENERAL NOTES, PHASING AND FINAL PAVEMENT MARKING SCHEDULE

11/1/2013
R:\Traffic\TrafficControl\TCP\TCP1.dgn
ICA ENGINEERING, INC.

PROJ. REFERENCE NO.	SHEET NO.
B-4651	TCP-2



MESSAGE NO. 1	MESSAGE NO. 2
POPLIN ROAD TO CLOSE	STARTING (DATE) (DATE)

CHANGEABLE MESSAGE SIGN

(N)

MESSAGE AS SHOWN OR AS DIRECTED BY THE ENGINEER

SIGN NUMBER: name
TYPE: STATIONARY
QUANTITY: SEE PLANS

SIGN WIDTH: 3'-6"
HEIGHT: 1'-6"
TOTAL AREA: 5.3 Sq.Ft.

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

NO. Z BARS:
LENGTH:

BACKG COLOR: Fluorescent Orange
COPY COLOR: Black

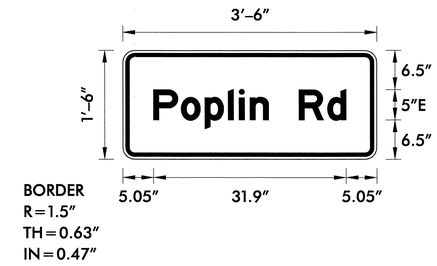
SYMBOL	X	Y	WID	HT

MAT'L: 0.080" (2.0 mm) ALUMINUM

USE NOTES: 1,2

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

DESIGN BY: TAG
PROJECT ID: B-4651
CHECKED BY: ICA
DIV: DIV
DATE: Oct 30, 2013



Spacing Factor is 1 unless specified otherwise

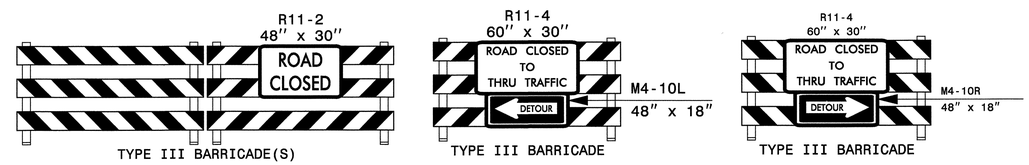
LETTER POSITIONS

Letter spacings are to start of next letter

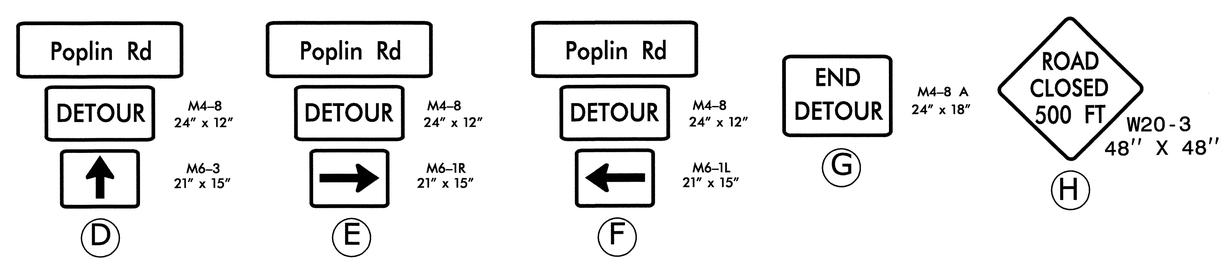
	P	o	p	l	i	n		R	d		Series/Size Text Length
5.1	4.6	3.9	3.9	1.8	1.8	3.1	5	4.7	3.1	5.1	E 2000 31.9

FILENAME: b4651_Sgn_SIGN DESIGN

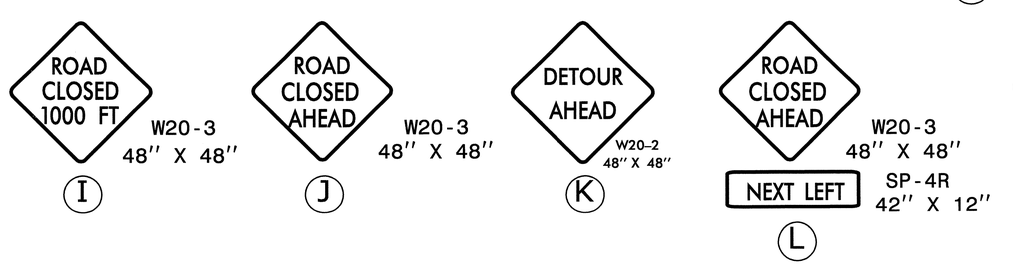
NORTH CAROLINA D.O.T. SIGN DETAIL



(A) (B) (C)



(D) (E) (F) (G) (H)



(I) (J) (K) (L) (M)

ICA Engineering
5121 Kingdom Way, Suite 100
Raleigh, NC 27607
NC License No: P-0258

LEGEND

DETOUR ROUTE

APPROVED: Michael T. Rzepka DATE: 11-1-13

SEAL

OFFSITE DETOUR

10/31/2013
R:\Traffic\TrafficControl\TCP\DETOUR.dgn
USERNAME=

PROJECT: B-4651

TIP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

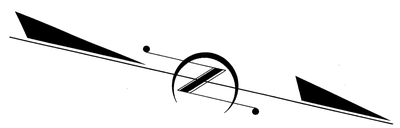
UNION COUNTY

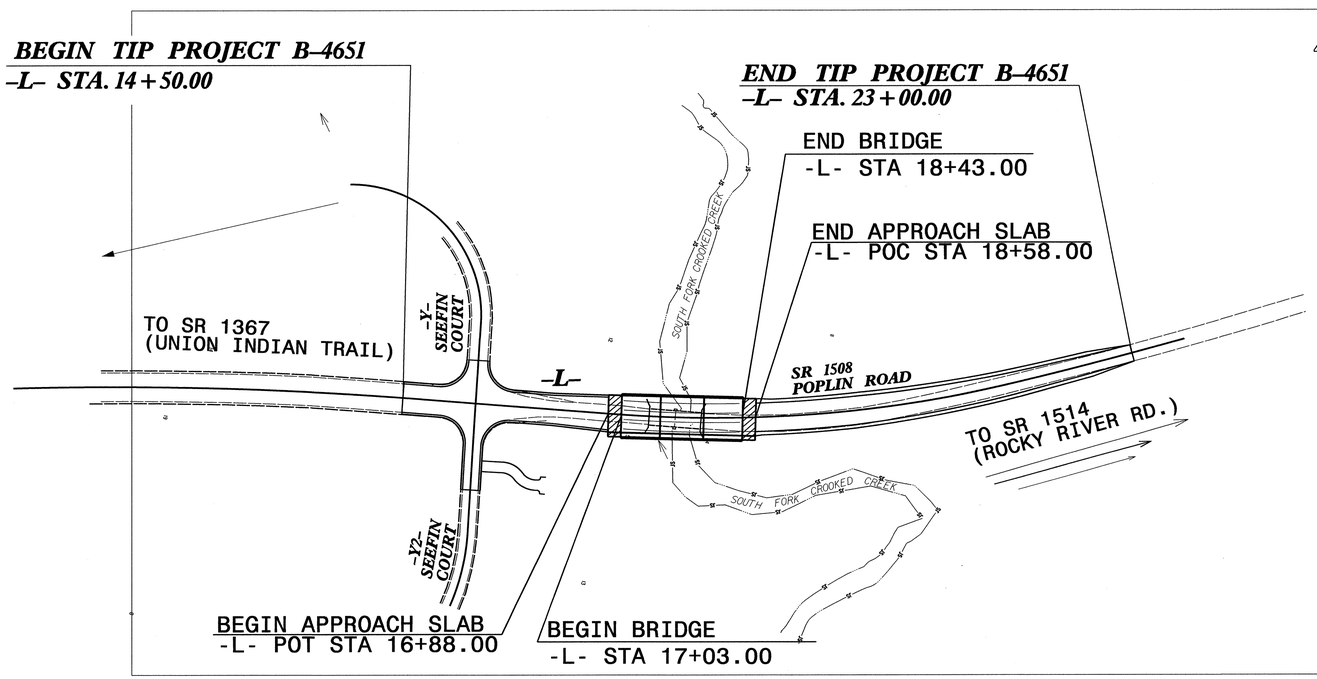
LOCATION: BRIDGE NO. 251 OVER SOUTH FORK CROOKED CREEK ON SR 1508

TYPE OF WORK: GRADING, DRAINAGE, PAVING, & STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4651	EC-1	

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





4

EROSION AND SEDIMENT CONTROL MEASURES

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

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

GRAPHIC SCALE

0
PLANS

0
PROFILE (HORIZONTAL)

0
PROFILE (VERTICAL)

ROADSIDE ENVIRONMENTAL UNIT
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

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

Prepared In the Office of:

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

2012 STANDARD SPECIFICATIONS

Roadway Standard Drawings

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

1604.01	Railroad Erosion Control Detail	1632.01	Rock Inlet Sediment Trap Type A
1605.01	Temporary Silt Fence	1632.02	Rock Inlet Sediment Trap Type B
1606.01	Special Sediment Control Fence	1632.03	Rock Inlet Sediment Trap Type C
1607.01	Gravel Construction Entrance	1633.01	Temporary Rock Silt Check Type A
1622.01	Temporary Berms and Slope Drains	1633.02	Temporary Rock Silt Check Type B
1630.01	Riser Basin	1634.01	Temporary Rock Sediment Dam Type A
1630.02	Silt Basin Type B	1634.02	Temporary Rock Sediment Dam Type B
1630.03	Temporary Silt Ditch	1635.01	Rock Pipe Inlet Sediment Trap Type A
1630.04	Stilling Basin	1635.02	Rock Pipe Inlet Sediment Trap Type B
1630.05	Temporary Diversion	1640.01	Coir Fiber Baffle
1630.06	Special Stilling Basin	1645.01	Temporary Stream Crossing
1631.01	Matting Installation		

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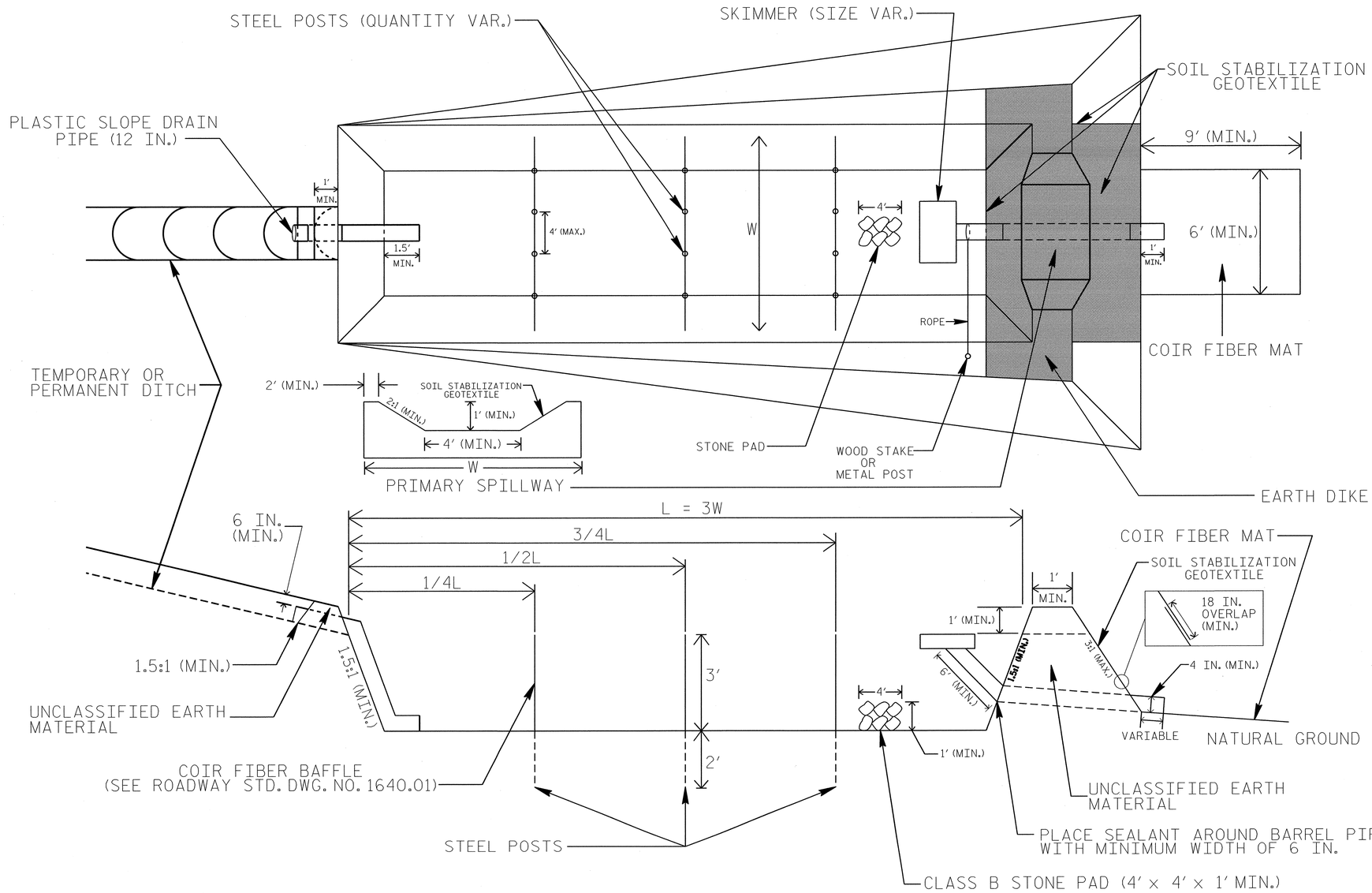
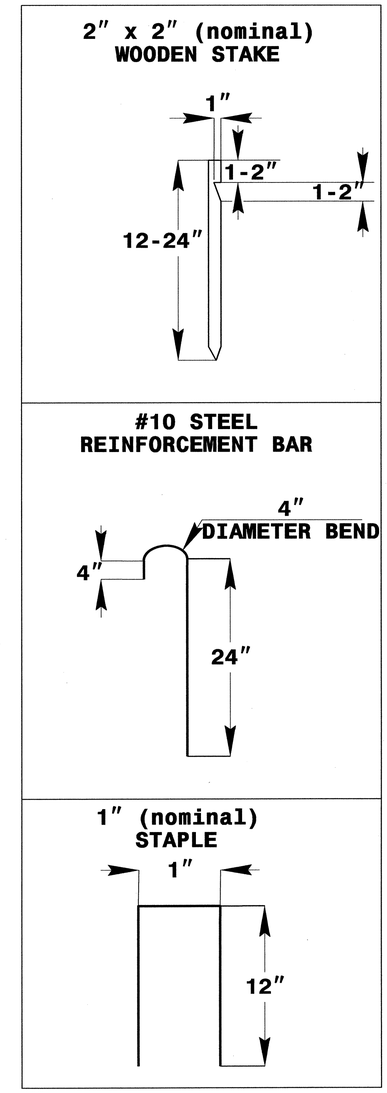
PROJECT REFERENCE NO.	SHEET NO.
B-4651	EC-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SKIMMER BASIN WITH BAFFLES DETAIL





COIR FIBER MAT ANCHOR OPTIONS

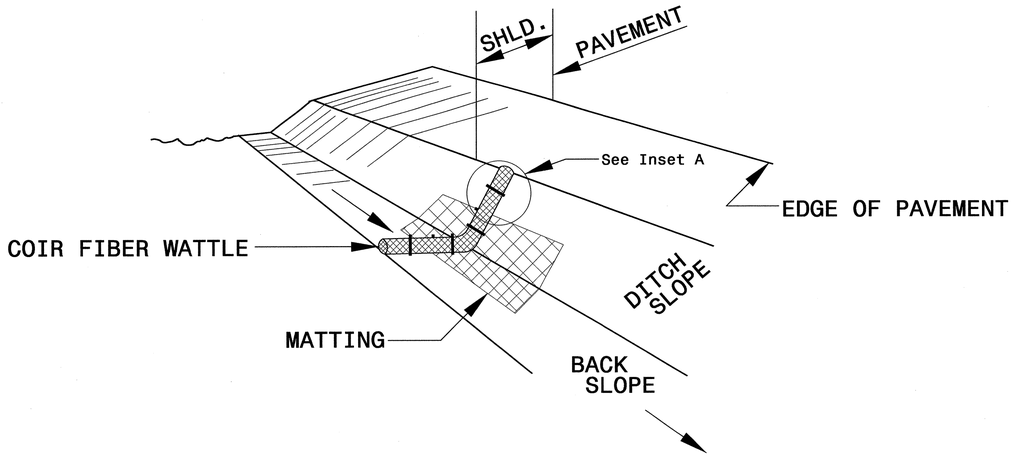
NOTES

1. SEED AND PLACE MATTING FOR EROSION CONTROL ON INTERIOR AND EXTERIOR SIDESLOPES.
2. LIMIT EARTH DIKE HEIGHT TO 5 FT.
3. FOR BASIN DEPTH OF 3 FT., THE MINIMUM BASIN WIDTH SHALL BE 9 FT.
4. DETERMINE PRIMARY SPILLWAY WEIR LENGTH (FT.) USING Q/0.4, WHERE Q IS FLOW RATE (CFS) INTO BASIN.
5. PLASTIC SLOPE DRAIN PIPE AT INLET OF BASIN MAY BE REPLACED BY FILTRATION GEOTEXTILE OR TARP AS DIRECTED.
6. SOIL STABILIZATION GEOTEXTILE FOR PRIMARY SPILLWAY SHALL BE ONE CONTINUOUS PIECE OF MATERIAL OR OVERLAPPED 18 IN. (MIN.).

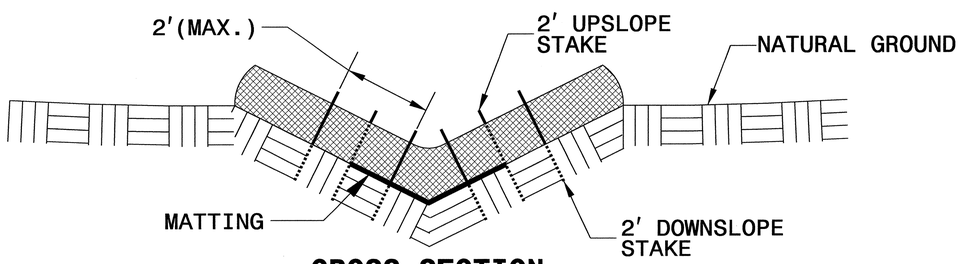
NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
B-4651	EC-2A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

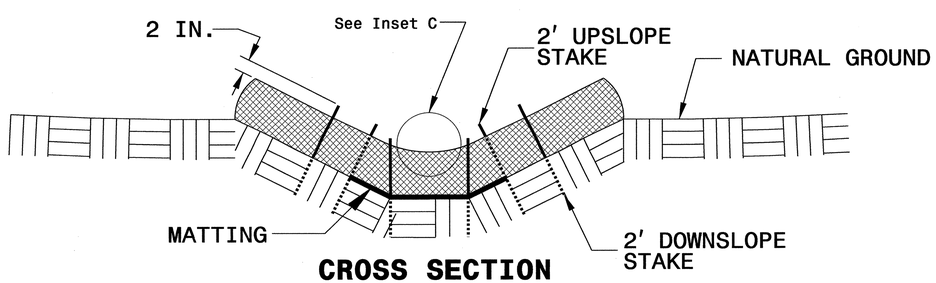
COIR FIBER WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



ISOMETRIC VIEW



CROSS SECTION VEE DITCH



CROSS SECTION TRAPEZOIDAL DITCH

NOTES:

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

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

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

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

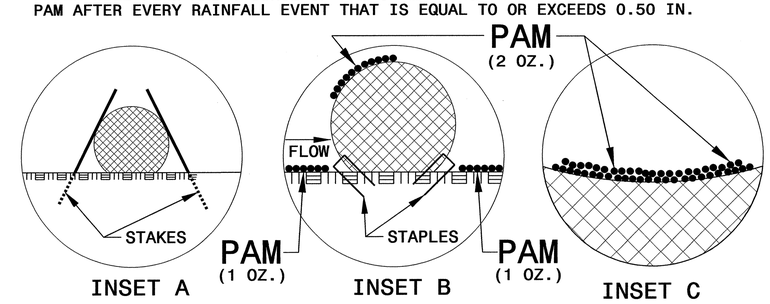
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

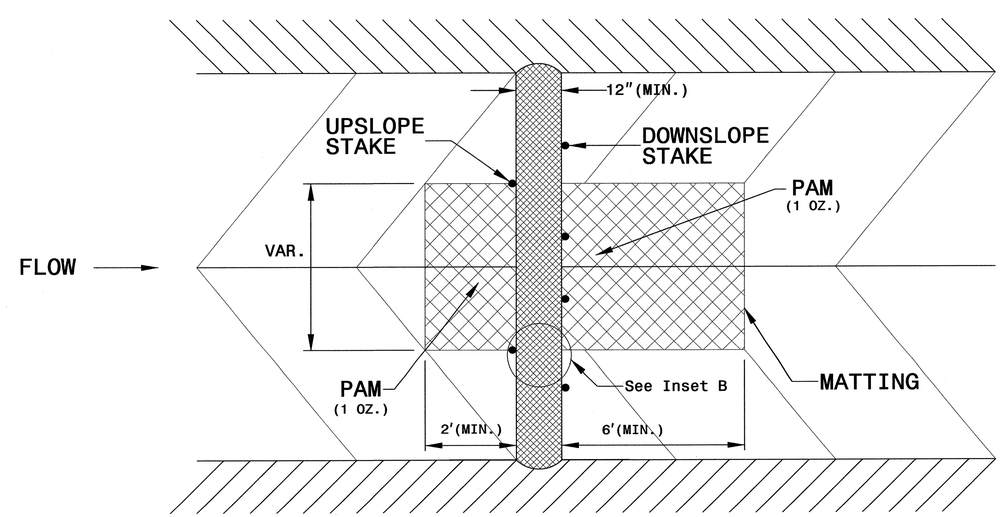
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

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

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

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

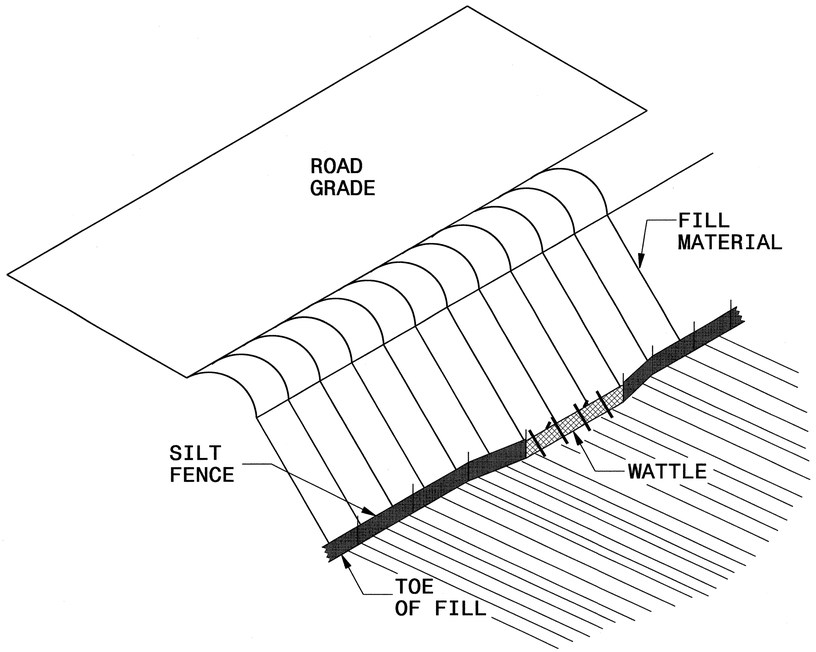




TOP VIEW

PROJECT REFERENCE NO.	SHEET NO.
B-4651	EC-2B
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.

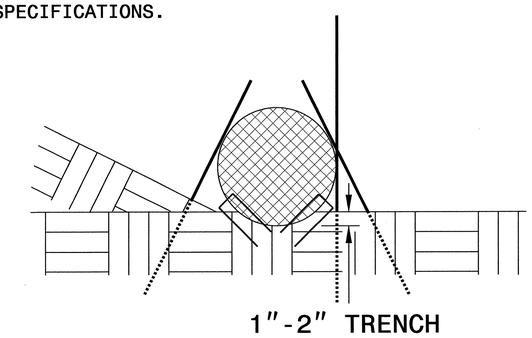
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

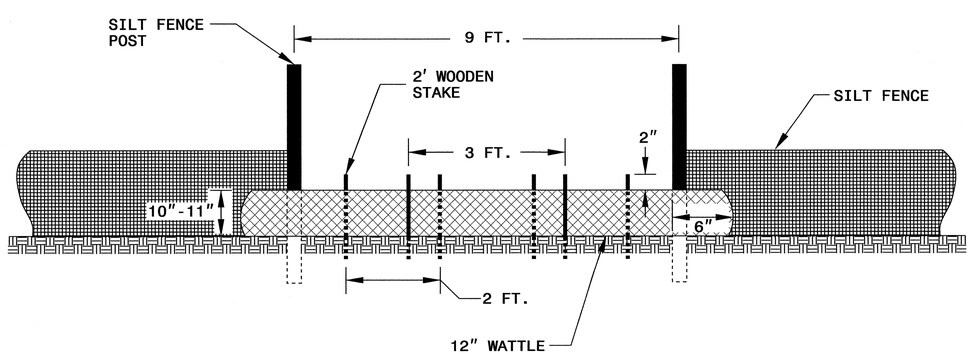
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

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

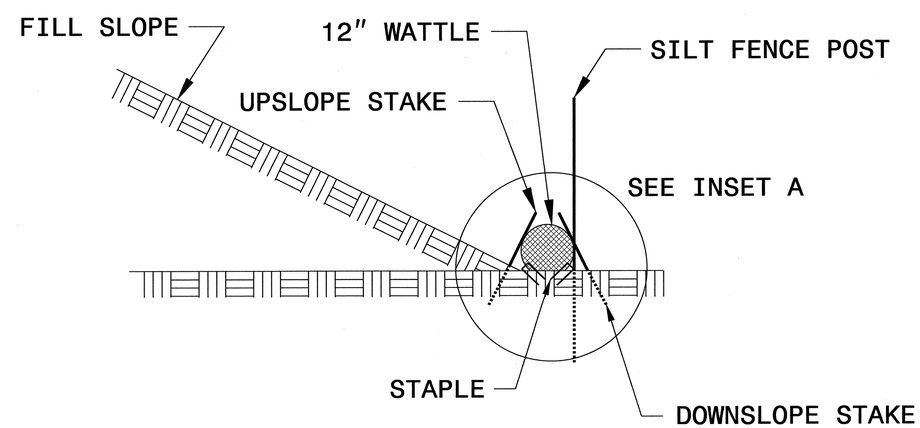
INSTALL TEMPORARY SILT FENCE IN ACCORDANCE WITH SECTION 1605 OF THE STANDARD SPECIFICATIONS.

INSET A





VIEW FROM SLOPE



SIDE VIEW

PROJECT REFERENCE NO.	SHEET NO.
B-4651	EC-3
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	18+00	20+50	RT	185
4	L	21+50	23+00	RT	90
4	L	20+50	22+50	LT	165
				SUBTOTAL	440
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					2500
				TOTAL	2940
				SAY	3000

MATTING FOR EROSION CONTROL

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

PROJECT REFERENCE NO.	SHEET NO.
B-4651	EC-3A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

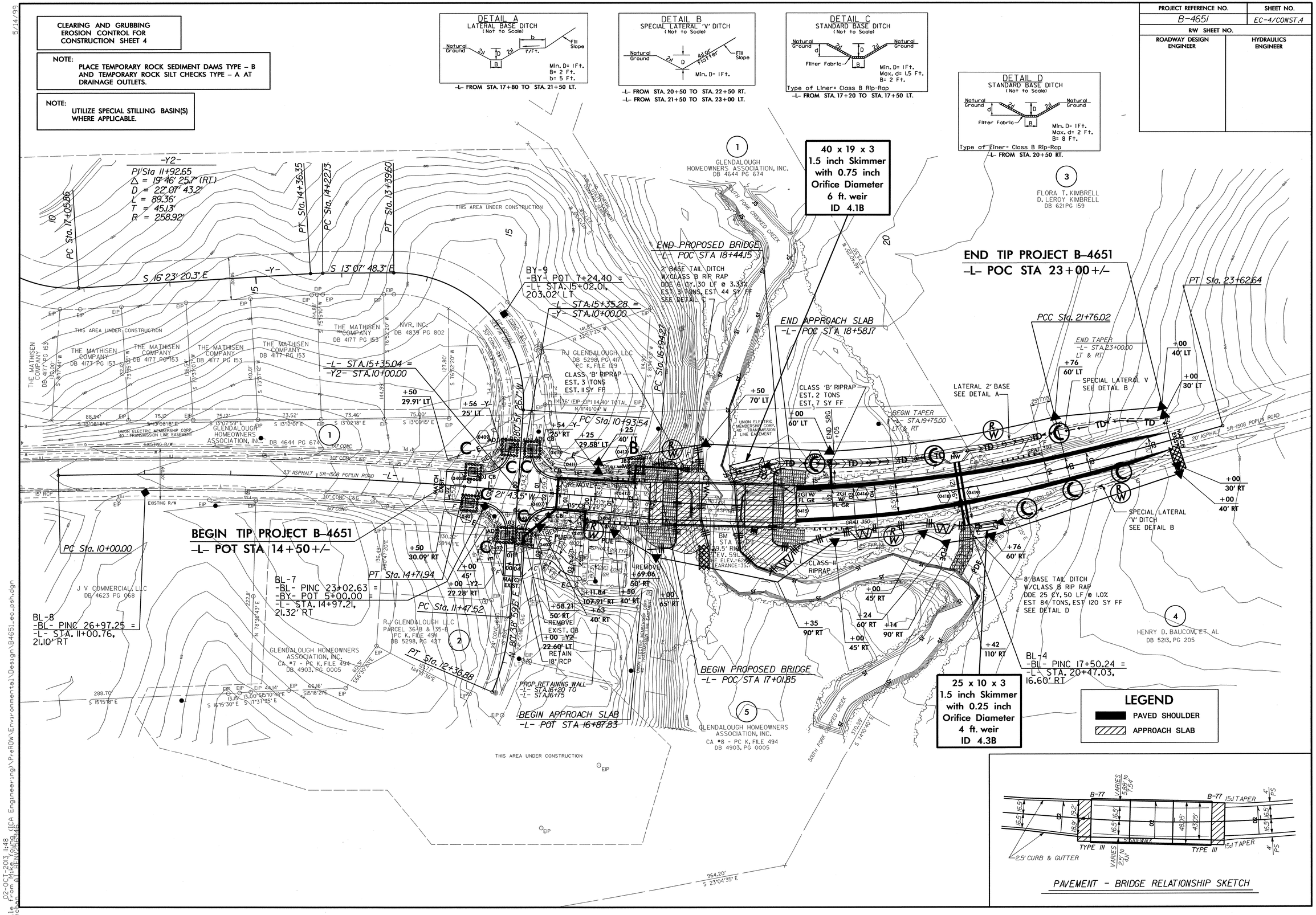
SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.

PROJECT REFERENCE NO.	SHEET NO.
B-4651	EC-4/CONST.4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 4

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

NOTE: UTILIZE SPECIAL STILLING BASIN(S) WHERE APPLICABLE.



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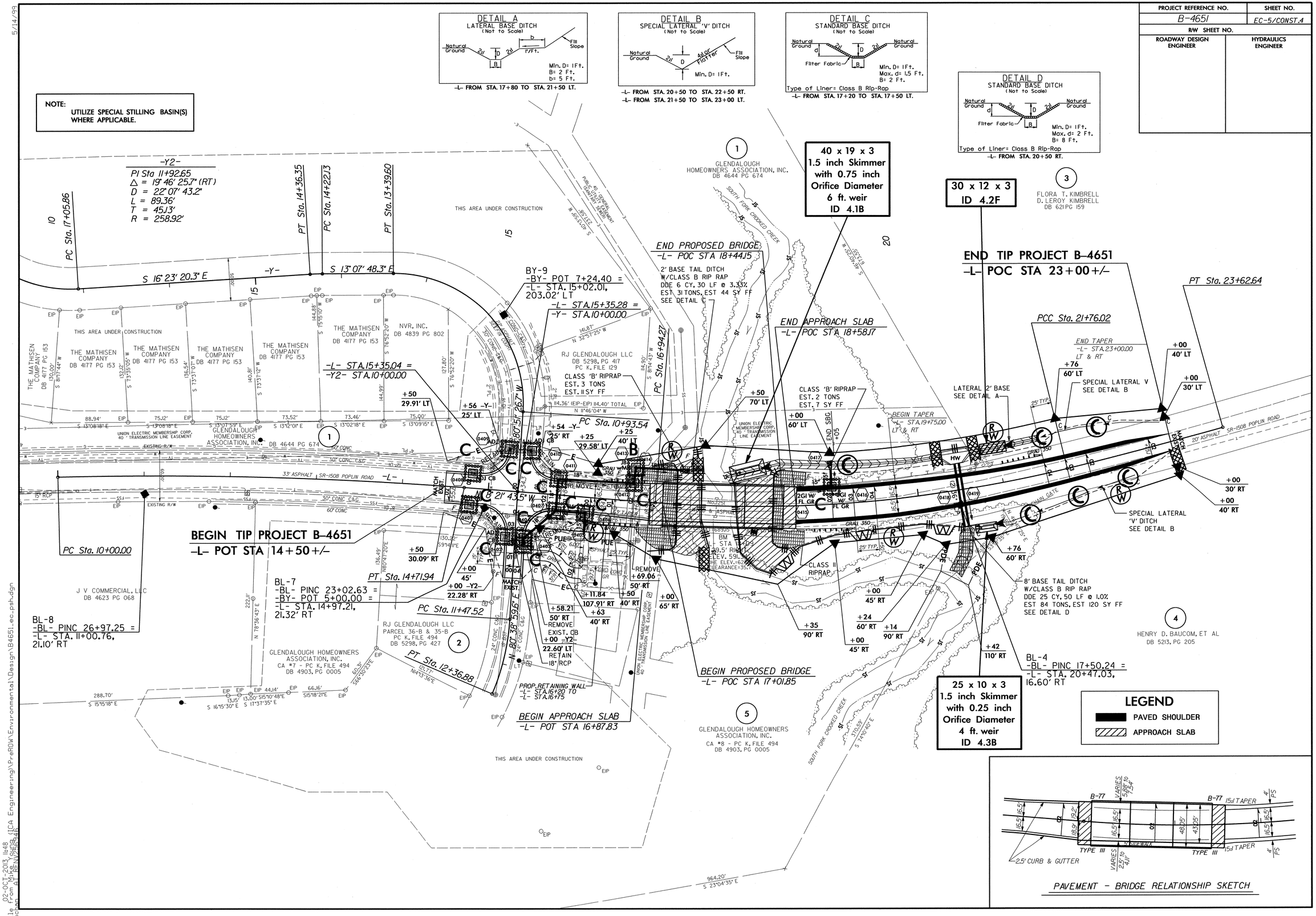
PROJECT REFERENCE NO.	SHEET NO.
B-4651	EC-5/CONST.4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

5/14/99

NOTE:
UTILIZE SPECIAL STILLING BASIN(S) WHERE APPLICABLE.



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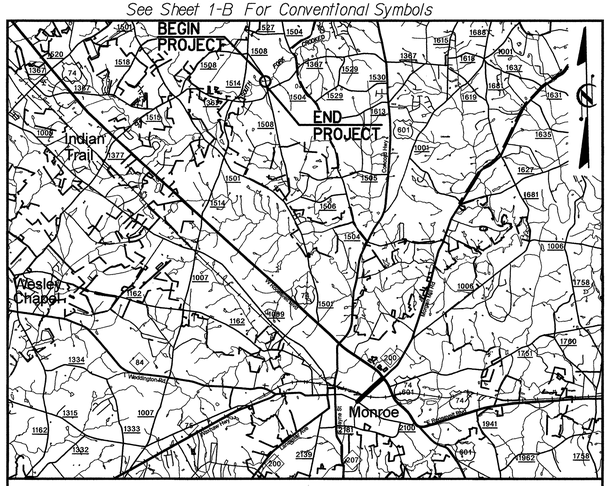
09/08/99

TIP PROJECT: B-4651

CONTRACT:

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



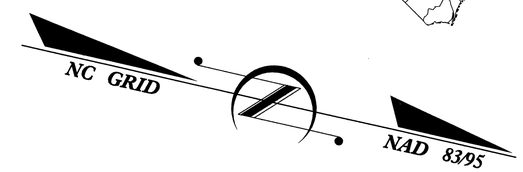
VICINITY MAP

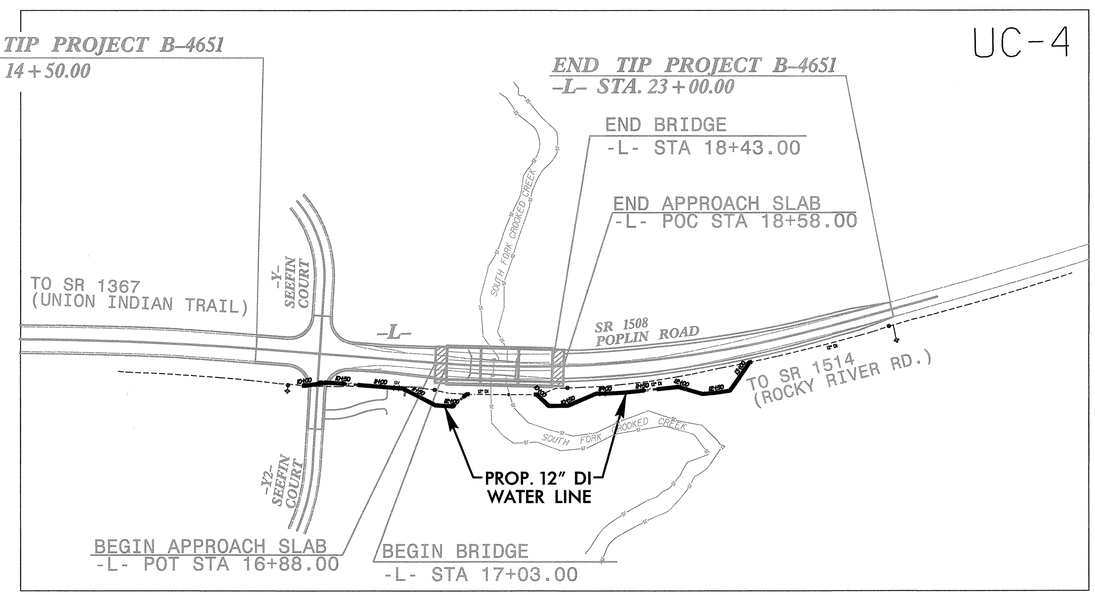
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

T.I.P. NO.	SHEET NO.
B-4651	UC-1

UTILITY CONSTRUCTION PLANS
UNION COUNTY

LOCATION: BRIDGE NO. 251 OVER SOUTH FORK CROOKED CREEK ON SR 1508
TYPE OF WORK: UTILITIES





GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
UC-1	TITLE SHEET
UC-2	UTILITY SYMBOLOGY SHEET
UC-3	GENERAL NOTES SHEET
UC-3A	DETAIL SHEET
UC-4	UTILITY CONSTRUCTION SHEET
UC-5	PROFILE SHEET

WATER AND SEWER OWNERS ON PROJECT

(1) WATER – UNION COUNTY PUBLIC WORKS

NORTH CAROLINA PROFESSIONAL SEAL 029901 ENGINEER KEVIN S. HINDE 9/13/19

HINDE ENGINEERING
License No. C-2639
7520 E. Independence Blvd., Suite 230 Charlotte, NC 28227

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS
UTILITIES UNIT
UTILITIES ENGINEERING

1591 MAIL SERVICES CENTER
RALEIGH NC 27699-1591
PHONE (919) 707-6690
FAX (919) 250-4151

Roger Worthington, P.E. — UTILITIES SECTION ENGINEER
Steve McKee, P.E. — UTILITIES SQUAD LEADER PROJECT ENGINEER
Jamshid Hafshejani — UTILITIES PROJECT DESIGNER

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS

PROJECT REFERENCE NO.	SHEET NO.
B-4651	UC-2
DESIGNED BY: BKA	
DRAWN BY: BKA	
CHECKED BY: KSH	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE:(919)707-6690 FAX:(919)250-4151	UTILITY CONSTRUCTION PLANS ONLY

NORTH CAROLINA PROFESSIONAL SEAL 029901 ENGINEER KEVIN S. HINDE 4/15/13

UTILITY CONSTRUCTION

PROPOSED WATER SYMBOLS

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

PROPOSED SEWER SYMBOLS

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

PROPOSED MISCELLANOUS UTILITIES SYMBOLS

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

EXISTING UTILITIES SYMBOLS

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

*For Existing Utilities

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

NORTH CAROLINA
DEPT. OF TRANSPORTATION
ENGINEERING DIVISION
RALEIGH, NORTH CAROLINA

BRIDGE # 251 OVER SOUTH FORK CROOKED CREEK ON SR 1508

Designed By:	Checked By:	Date:	Sheet:	Of:
BKA	KSH	4-15-13	UC-2	UC-5

HINDE ENGINEERING
License No. C-2639
7520 E. Independence Blvd., Suite 230 Charlotte, NC 28227

PROJECT REFERENCE NO.	SHEET NO.
B-4651	UC-3

DESIGNED BY: BKA
DRAWN BY: BKA
CHECKED BY: KSH
APPROVED BY:
REVISED:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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

NORTH CAROLINA PROFESSIONAL SEAL 029901 ENGINEER KEVIN S. HINDE 4/15/13

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

UTILITY CONSTRUCTION

GENERAL NOTES:

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

2. THE EXISTING 12" WATER LINE TO BE RELOCATED BELONGS TO UNION COUNTY PUBLIC WORKS.

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

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

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

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

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

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

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

PROJECT SPECIFIC NOTES:

1. ALL 12-INCH AND SMALLER DIAMETER PIPE SHALL BE DUCTILE IRON PRESURE CLASS 350, UNLESS OTHERWISE NOTED ON THE UTILITY CONSTRUCTION PLANS.

2. VALVES ON WATER MAINS SMALLER THAN 16-INCH IN DIAMETER SHALL BE DIRECT BURY GATE VALVES, UNLESS OTHERWISE NOTED ON THE UTILITY CONSTRUCTION PLANS.

3. DUCTILE IRON RESTRAINED JOINT PIPE SHALL BE USED IN LIEU OF THRUST BLOCKING ON PROPOSED WATER LINE RELOCATIONS.

4. WALL BLOCKING SHALL BE USED ON EXISTING WATER LINES AT THE PROPOSED RELOCATION TIE-IN POINTS.

5. CONTRACTOR SHALL CONNECT ALL WATER LINES AND SERVICE CONNECTIONS USING NECESSARY FITTINGS.

LIST OF STANDARD DRAWINGS

1515.01 WATER METER

1515.02 FIRE HYDRANT

NORTH CAROLINA
DEPT. OF TRANSPORTATION
ENGINEERING DIVISION
RALEIGH, NORTH CAROLINA

BRIDGE # 251 OVER SOUTH FORK CROOKED CREEK ON SR 1508

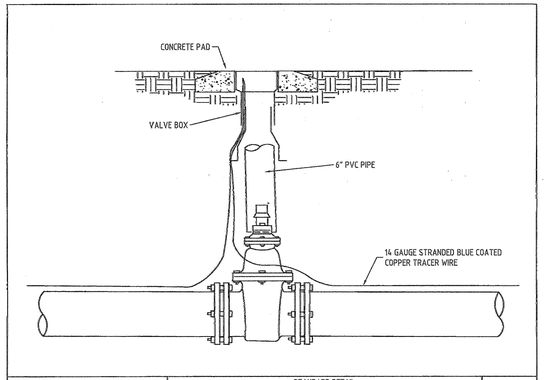
Designed By:	Checked By:	Date:	Sheet:	Of:
BKA	KSH	4-15-13	UC-3	UC-5

HINDE ENGINEERING
License No. C-2639
7520 E. Independence Blvd., Suite 230 Charlotte, NC 28227

PROJECT REFERENCE NO.	SHEET NO.
B-4651	UC-3A
DESIGNED BY: BKA	
DRAWN BY: BKA	
CHECKED BY: KSH	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE:(919)707-6690 FAX:(919)250-4151	UTILITY CONSTRUCTION PLANS ONLY

NORTH CAROLINA PROFESSIONAL SEAL 029901 ENGINEER KEVIN S. HINDE 4/15/13

UTILITY CONSTRUCTION

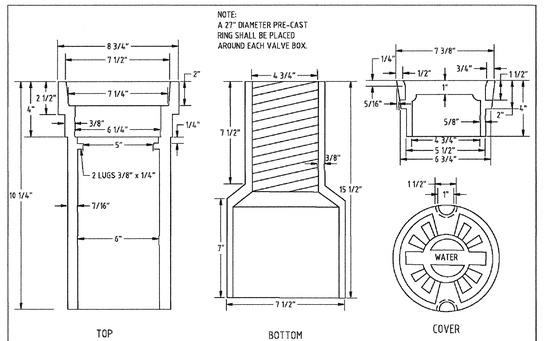


UNION COUNTY PUBLIC WORKS DEPARTMENT
UNION COUNTY, N.C.

STANDARD DETAIL

VALVE BOX INSTALLATION

SCALE: N.T.S. DATE: 10-4-11 — 1A



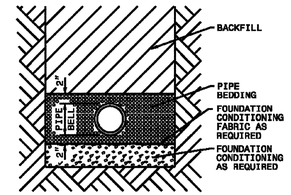
UNION COUNTY PUBLIC WORKS DEPARTMENT
UNION COUNTY, N.C.

STANDARD DETAIL

VALVE BOX

SCALE: N.T.S. DATE: 11-17-96 — 1

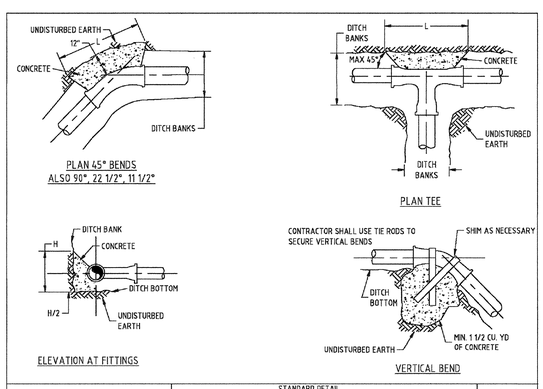
TRENCH DETAIL



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

MAXIMUM TRENCH WIDTH AT TOP OF PIPE

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



UNION COUNTY PUBLIC WORKS DEPARTMENT
UNION COUNTY, N.C.

STANDARD DETAIL

THRUST BLOCK

SCALE: N.T.S. DATE: 11-17-96 — 16

ANCHORAGE SCHEDULE

PIPE SIZE	11 1/4º BEND		22 1/2º BEND		45º BEND		90º BEND		TEE		TEST PRESSURE (P.S.I.)
	L	H	L	H	L	H	L	H	L	H	
6"	1'3"	1'0"	2'3"	1'0"	2'6"	1'6"	2'9"	1'6"	2'0"	1'6"	200
	1'6"	1'3"	2'3"	1'6"	3'0"	1'6"	4'0"	1'6"	3'0"	1'6"	300
8"	1'6"	1'6"	2'6"	1'9"	3'0"	2'0"	3'9"	2'0"	2'6"	2'0"	200
	2'0"	1'6"	3'0"	2'0"	3'9"	2'3"	4'6"	2'6"	3'6"	2'3"	300
12"	2'6"	1'9"	4'0"	2'3"	4'3"	3'0"	5'0"	3'3"	4'0"	3'0"	200
	3'6"	2'0"	5'3"	2'6"	6'0"	3'3"	7'0"	3'6"	5'0"	3'6"	300
14"	3'0"	1'0"	4'0"	3'0"	4'6"	3'9"	6'0"	3'9"	4'6"	3'6"	200
	4'0"	2'6"	5'3"	3'6"	6'0"	4'3"	6'6"	5'0"	5'0"	5'0"	300
16"	3'0"	2'9"	4'6"	3'6"	5'0"	4'6"	7'0"	4'3"	5'0"	4'0"	200
	4'0"	3'0"	6'3"	3'9"	6'5"	5'3"	8'0"	5'3"	7'6"	4'0"	300

THRUST BLOCK DIMENSIONS BASED ON SOIL BEARING CAPACITY OF 2000 P.S.F. AND A WATER TEST PRESSURE OF 150 P.S.I. SIZES OF THRUST BLOCKS MAY BE REVISED BY THE ENGINEER WHERE BEARING CAPACITY OF SOIL VARIES.

PROVIDE TAR PAPER JOINT BETWEEN CONCRETE THRUST BLOCK AND PORTION OF PIPE BEING ANCHORED.

ALL CONCRETE THRUST BLOCKS SHALL BE 2500 P.S.I. CONCRETE.

MAXIMUM VERTICAL DEFLECTION SHALL BE 22 1/2°.

JOINTS SHALL REMAIN FREE OF CONCRETE FOR INSPECTION, REPAIR OR REPLACEMENT OF JOINTS.

UNION COUNTY PUBLIC WORKS DEPARTMENT
UNION COUNTY, N.C.

STANDARD DETAIL

THRUST BLOCK SPECIFICATIONS

SCALE: N/A DATE: 11-17-96 — 17

NORTH CAROLINA
DEPT. OF TRANSPORTATION
ENGINEERING DIVISION
RALEIGH, NORTH CAROLINA

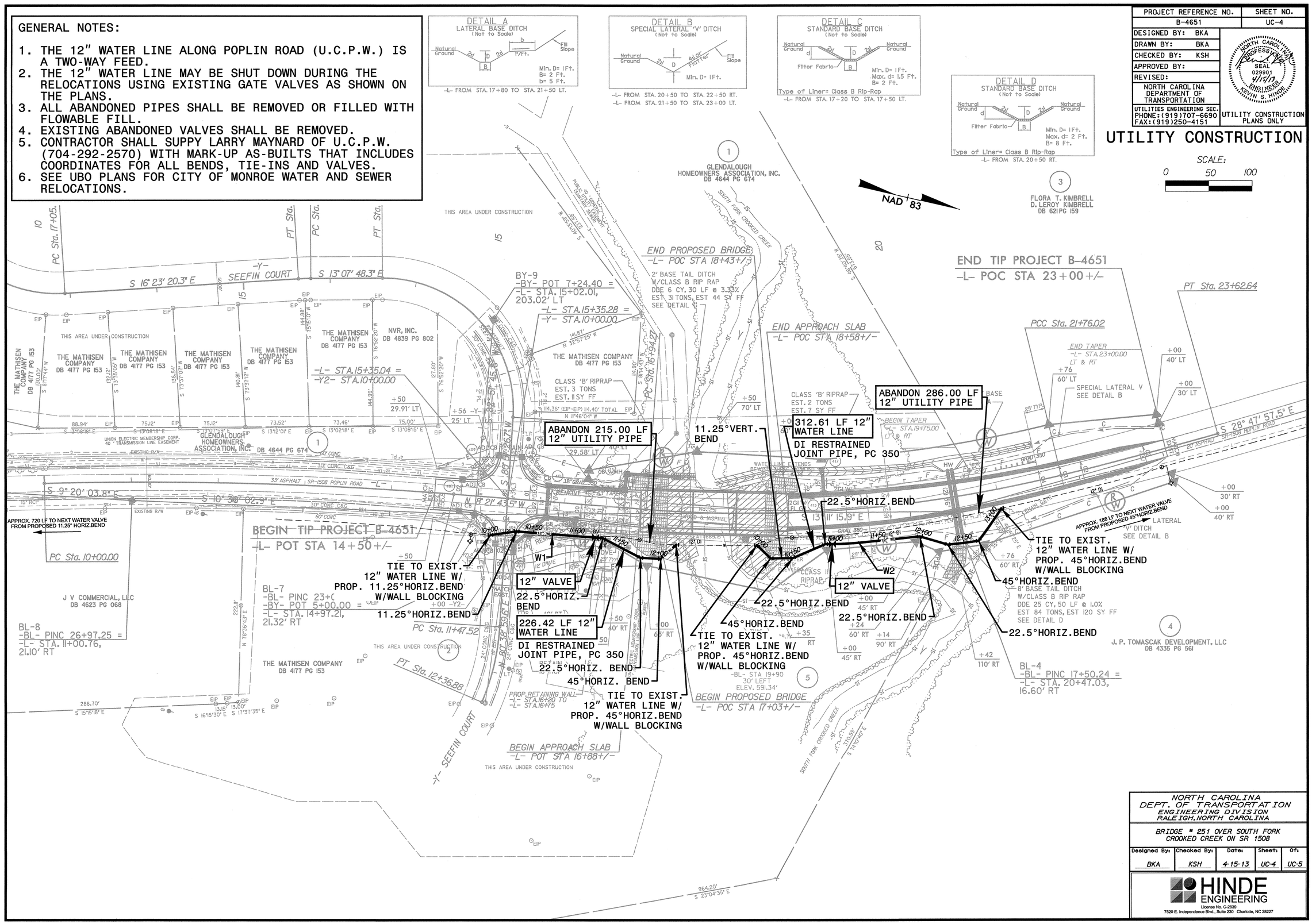
BRIDGE # 251 OVER SOUTH FORK CROOKED CREEK ON SR 1508

Designed By:	Checked By:	Date:	Sheet:	Of:
BKA	KSH	4-15-13	UC-3A	UC-5

HINDE ENGINEERING
License No. C-2639
7520 E. Independence Blvd., Suite 230 Charlotte, NC 28227

GENERAL NOTES:

1. THE 12" WATER LINE ALONG POPLIN ROAD (U.C.P.W.) IS A TWO-WAY FEED.
2. THE 12" WATER LINE MAY BE SHUT DOWN DURING THE RELOCATIONS USING EXISTING GATE VALVES AS SHOWN ON THE PLANS.
3. ALL ABANDONED PIPES SHALL BE REMOVED OR FILLED WITH FLOWABLE FILL.
4. EXISTING ABANDONED VALVES SHALL BE REMOVED.
5. CONTRACTOR SHALL SUPPY LARRY MAYNARD OF U.C.P.W. (704-292-2570) WITH MARK-UP AS-BUILTS THAT INCLUDES COORDINATES FOR ALL BENDS, TIE-INS AND VALVES.
6. SEE UBO PLANS FOR CITY OF MONROE WATER AND SEWER RELOCATIONS.



PROJECT REFERENCE NO.	SHEET NO.
B-4651	UC-4
DESIGNED BY: BKA	
DRAWN BY: BKA	
CHECKED BY: KSH	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE:(919)707-6690 FAX:(919)250-4151	UTILITY CONSTRUCTION PLANS ONLY

NORTH CAROLINA PROFESSIONAL SEAL 029901 ENGINEER KEVIN S. HINDE 4/15/13

UTILITY CONSTRUCTION

SCALE: 0 50 100

NORTH CAROLINA
DEPT. OF TRANSPORTATION
ENGINEERING DIVISION
RALEIGH, NORTH CAROLINA

BRIDGE # 251 OVER SOUTH FORK CROOKED CREEK ON SR 1508

Designed By:	Checked By:	Date:	Sheet:	Of:
BKA	KSH	4-15-13	UC-4	UC-5

HINDE ENGINEERING
License No. C-2639
7520 E. Independence Blvd., Suite 230 Charlotte, NC 28227

PROJECT REFERENCE NO.	SHEET NO.
B-4651	UC-5

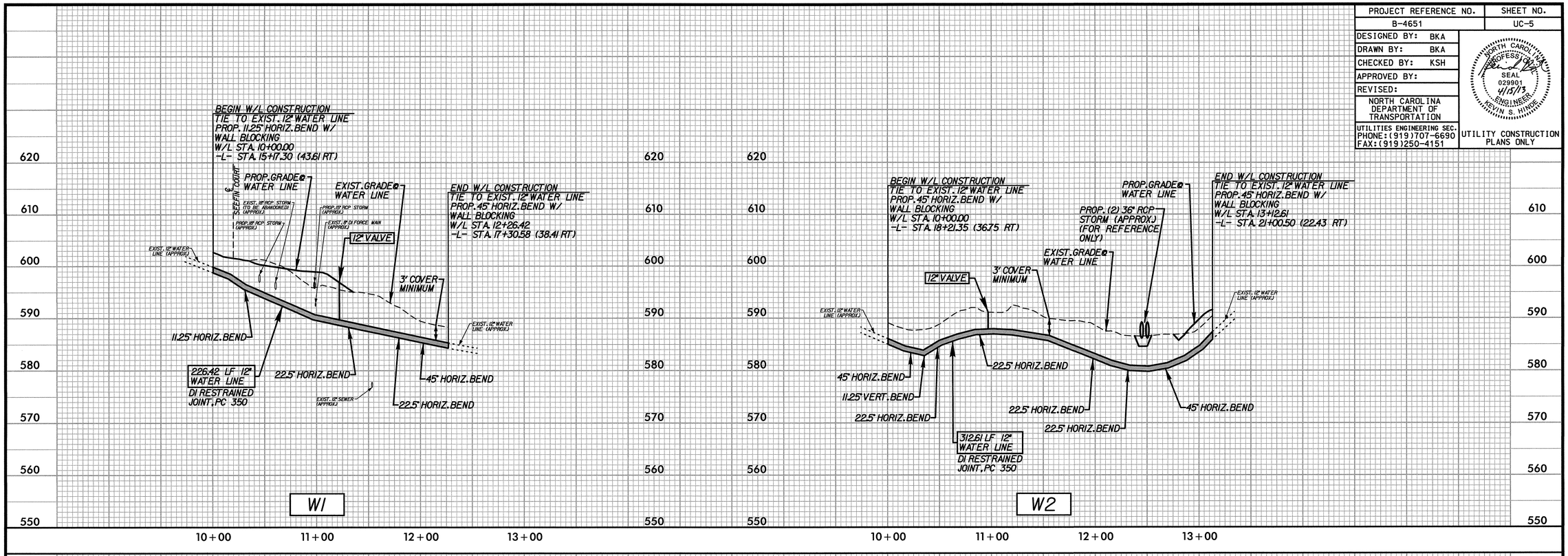
DESIGNED BY: BKA
DRAWN BY: BKA
CHECKED BY: KSH
APPROVED BY:
REVISED:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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

NORTH CAROLINA PROFESSIONAL SEAL 029901 ENGINEER KEVIN S. HINDE 4/15/13

UTILITY CONSTRUCTION PLANS ONLY



NORTH CAROLINA
DEPT. OF TRANSPORTATION
ENGINEERING DIVISION
RALEIGH, NORTH CAROLINA

BRIDGE # 251 OVER SOUTH FORK
CROOKED CREEK ON SR 1508

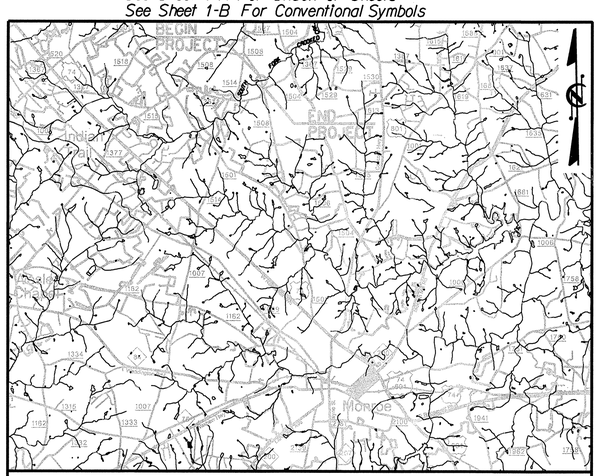
Designed By:	Checked By:	Date:	Sheet:	Of:
BKA	KSH	4-15-13	UC-5	UC-5

HINDE ENGINEERING
License No. C-2639
7520 E. Independence Blvd., Suite 230 Charlotte, NC 28227

TIP PROJECT: UBO B-4651

CONTRACT:

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



VICINITY MAP

DENOTES OFF-SITE DETOUR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

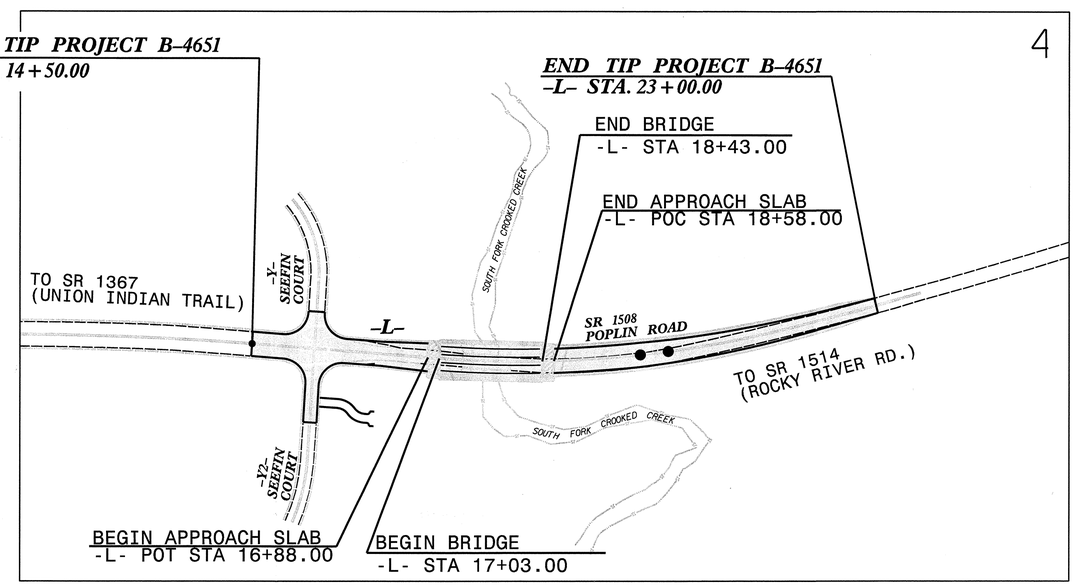
UNION COUNTY

T.I.P. NO.	SHEET NO.
B-4651	UO-1

LOCATION: BRIDGE NO. 251 OVER SOUTH FORK CROOKED CREEK ON SR 1508

UTILITIES BY OTHERS

NC GRID — NAD 83/95



GRAPHIC SCALES

50 25 0 50 100 — PLANS

50 25 0 50 100 — PROFILE (HORIZONTAL)

10 5 0 10 20 — PROFILE (VERTICAL)

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
UO-1	TITLE SHEET
UO-2	GENERAL NOTES
UO-3	CONVENTIONAL PLAN SHEET SYMBOLS
UO-4	UBO PLAN SHEET

UTILITY OWNERS ON PROJECT

(A) UNION POWER - POWER TRANSMISSION & DISTRIBUTION
(B) CITY OF MONROE - GAS
(C) FRONTIER COMMUNICATIONS - TELEPHONE
(D) CITY OF MONROE - WATER & SEWER

KCI ASSOCIATES OF N.C.
CIVIL ENGINEERS
ENVIRONMENTAL - CEI
LAND SURVEYING
SUBSURFACE UTILITY ENGINEERING
SUITE 220, LANDMARK CENTER II, 4601 SIX FORKS ROAD
RALEIGH, NORTH CAROLINA 27609
(919) 783-9214
WWW.KCI.COM

PREPARED IN THE OFFICE OF:
DIVISION OF HIGHWAYS
UTILITIES UNIT
UTILITIES ENGINEERING SECTION
1591 MAIL SERVICES CENTER
RALEIGH NC 27699-1591
PHONE (919) 707-6690
FAX (919) 250-4119

Roger Worthington, P.E. — UTILITIES SECTION ENGINEER
Steve McKee, P.E. — UTILITIES SQUAD LEADER PROJECT ENGINEER
Jamshid Hafshejani — UTILITIES PROJECT DESIGNER

09/08/99
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PROJECT REFERENCE NO.	SHEET NO.
B-4651	UO-2

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4601 SIX FORKS ROAD
RALEIGH, NORTH CAROLINA 27609
(919) 783-9214
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INDEX OF SHEETS

SHEET NUMBER	SHEET
UO-1	TITLE SHEET
UO-2	INDEX OF SHEETS, STANDARD DRAWINGS, GENERAL NOTES
UO-3	COVENTIONAL PLAN SHEET SYMBOLS
UO-4	UBO PLAN SHEET

UTILITY CONTACTS

UTILITY	CONTACT NAME	CONTACT PHONE NUMBER
UNION POWER (TRANSMISSION & POWER DISTRIBUTION)	MARK MCCLAMROCK	(704)-289-3145
CITY OF MONROE (POWER DISTRIBUTION & GAS)	FRED PORTER	(704)-282-4698
FRONTIER COMMUNICATIONS	STEVE FRYE	(704)-283-4446
CITY OF MONROE (STORM DRAIN, WATER & SEWER)	DUANE WINGO	(704)-282-4604

LEGEND

PROP O/H POW LINES	PROPOSED OVERHEAD POWER LINE (DUKE ENERGY)
PROP O/H POW TEL & FO LINES	PROPOSED OVERHEAD POWER/TELEPHONE/FIBER OPTIC LINES (DUKE ENERGY/NORTH STATE COMMUNICATIONS)
PROP O/H POW & TEL LINES	PROPOSED OVERHEAD POWER/TELEPHONE LINES (DUKE ENERGY/AT&T)
PROP U/G GAS LINE	PROPOSED GAS LINE
	EXISTING UTILITY TO BE ABANDONED IN PLACE (BY CORRESPONDING UTILITY COMPANY)
REM	EXISTING UTILITY POLE TO BE REMOVED (BY CORRESPONDING UTILITY COMPANY)
	PROPOSED UTILITY POLE (BY CORRESPONDING UTILITY COMPANY)

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3/15/06

PROJECT REFERENCE NO.	SHEET NO.
B-4651	U0-3

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole — HH
- 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
- 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.

PROJECT REFERENCE NO.	SHEET NO.
B-4651	U0-4
R/W SHEET NO.	

KCI ASSOCIATES OF N.C.
CIVIL ENGINEERS
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LAND SURVEYING
SUBSURFACE UTILITY ENGINEERING
SUITE 210, LANDMARK CENTER II,
4601 SIX FORKS ROAD
RALEIGH, NORTH CAROLINA 27609
(919) 783-9214
WWW.KCI.COM

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

UTILITY CONTACTS

CITY OF MONROE - WATER, SEWER AND PUMP STATION
DUANE WINGO
(704) 282-4604

FRONTIER COMMUNICATIONS
STEVE FRYE
(704) 283-4446

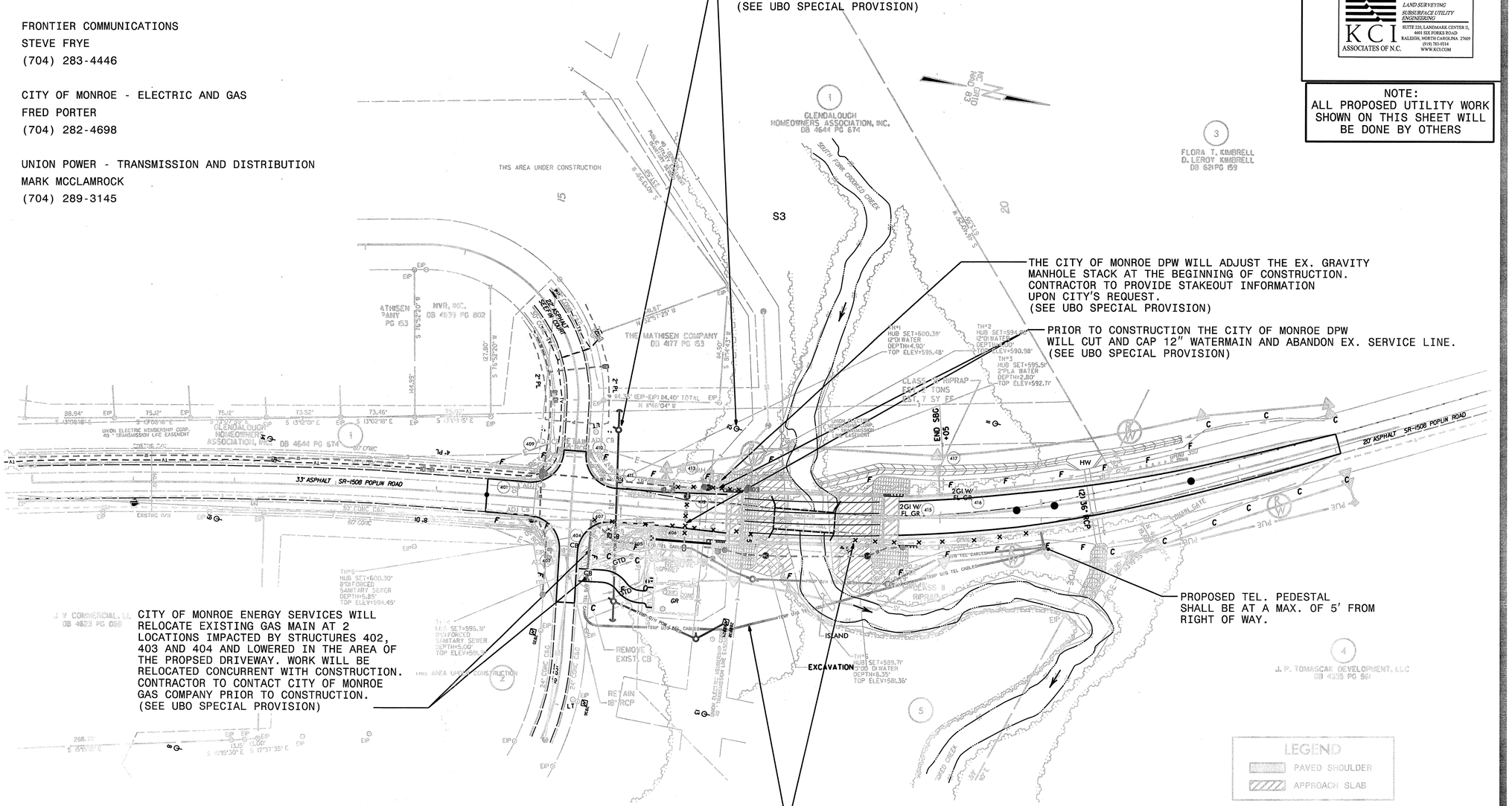
CITY OF MONROE - ELECTRIC AND GAS
FRED PORTER
(704) 282-4698

UNION POWER - TRANSMISSION AND DISTRIBUTION
MARK MCCLAMROCK
(704) 289-3145

PRIOR TO CONSTRUCTION UNION POWER WILL TEMPORARILY RELOCATE THE EXISTING O.H. DISTRIBUTION PRIMARY 100' SOUTH OF PROPOSED BRIDGE. EXISTING O.H. TRANSMISSION LINES WILL BE DE-ENERGIZED DURING CONSTRUCTION. (SEE UBO SPECIAL PROVISION)

THE CITY OF MONROE DPW WILL ADJUST THE EX. GRAVITY MANHOLE STACK AT THE BEGINNING OF CONSTRUCTION. CONTRACTOR TO PROVIDE STAKEOUT INFORMATION UPON CITY'S REQUEST. (SEE UBO SPECIAL PROVISION)

PRIOR TO CONSTRUCTION THE CITY OF MONROE DPW WILL CUT AND CAP 12" WATERMAIN AND ABANDON EX. SERVICE LINE. (SEE UBO SPECIAL PROVISION)



CITY OF MONROE ENERGY SERVICES WILL RELOCATE EXISTING GAS MAIN AT 2 LOCATIONS IMPACTED BY STRUCTURES 402, 403 AND 404 AND LOWERED IN THE AREA OF THE PROPSED DRIVEWAY. WORK WILL BE RELOCATED CONCURRENT WITH CONSTRUCTION. CONTRACTOR TO CONTACT CITY OF MONROE GAS COMPANY PRIOR TO CONSTRUCTION. (SEE UBO SPECIAL PROVISION)

PROPOSED TEL. PEDESTAL SHALL BE AT A MAX. OF 5' FROM RIGHT OF WAY.

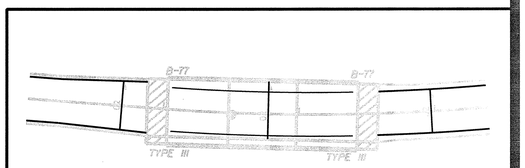
PRIOR TO CONSTRUCTION, FRONTIER COMMUNICATIONS WILL TEMPORARY RELOCATE THE EXISTING CABLE AND POLES TO PRIVATE EASEMENT. (SEE UBO SPECIAL PROVISION)

SANITARY SEWER NOTES

THE GRAVITY AND FORCEMAIN SEWER WILL REMAIN IN PLACE THROUGHOUT CONSTRUCTION. EXCAVATION WILL BE VERY CLOSE TO EXISTING PIPES. THE CONTRACTOR IS REQUIRED TO TAKE ALL MEANS NECESSARY TO PROTECT THE FACILITIES AND CONTACT DUANE WINGO AT 704-282-4604 72 HOURS PRIOR TO EXCAVATION.

UTILITY BY OTHERS

SCALE: 1" = 50'



REVISIONS

6-23-11 MAY REVISED PROPERTY OWNER FOR PARCEL 2, ADDED PARCEL 5.

5-14-99

8:06:01 AM
B4651_Rdy-psb-UBO.dgn

PROJ. REFERENCE NO.	SHEET NO.
B-4651	X-0

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

NOTE: EMBANKMENT COLUMN DOES NOT INCLUDES BACKFILL FOR UNDERCUT

CROSS-SECTION SUMMARY

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
14+50.00	0	0
15+00.00	31	5
15+50.00	18	31
16+00.00	4	146
16+50.00	0	307
17+00.00	0	569
17+01.85	0	28

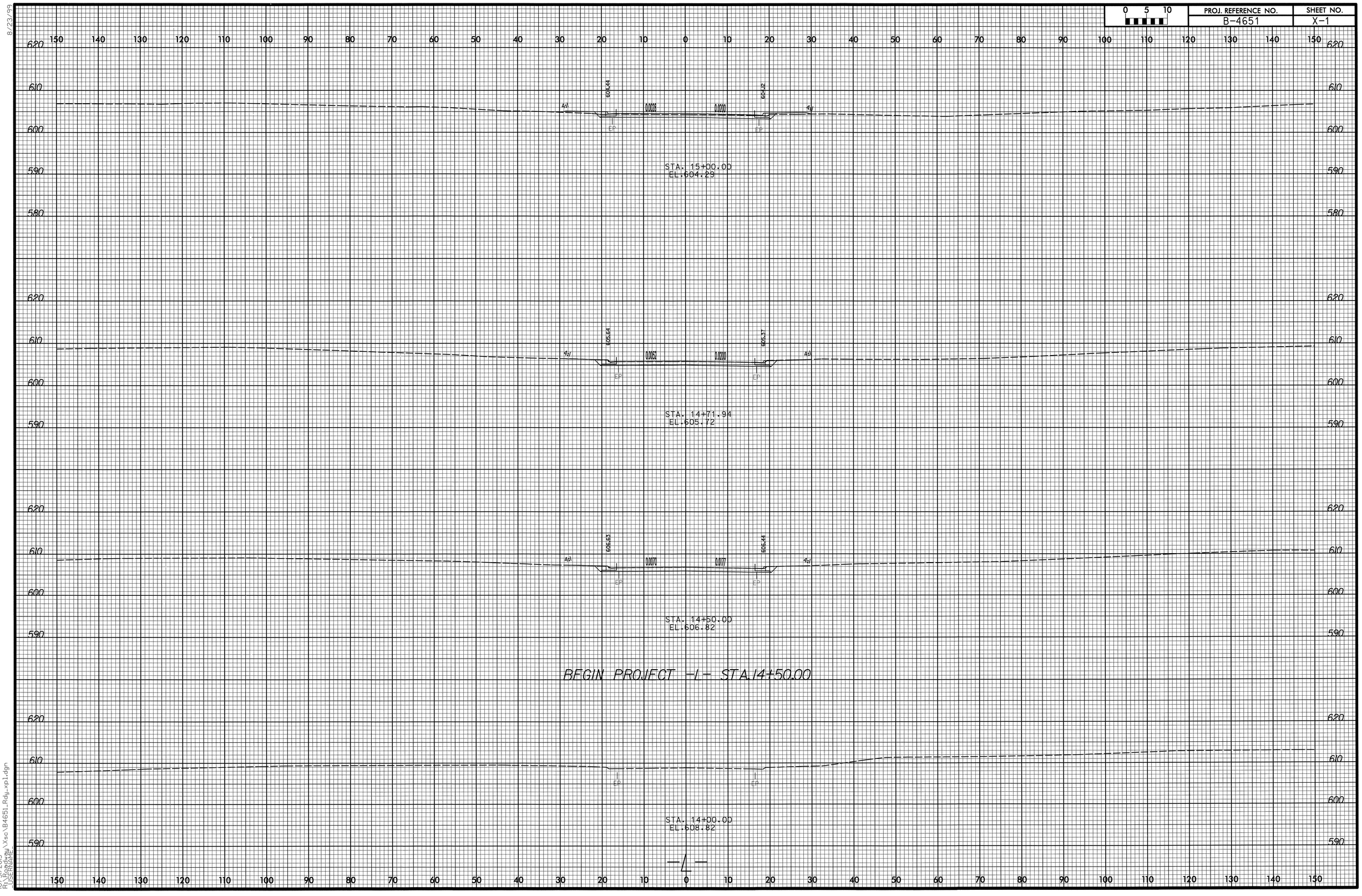
Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
18+44.15	0	0
18+50.00	0	56
19+00.00	0	410
19+50.00	0	294
20+00.00	0	207
20+50.00	10	151
21+00.00	18	126
21+50.00	11	108
22+00.00	10	97
22+50.00	17	68
23+00.00	14	19
23+50.00	3	0

Station -Y2-	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
10+25.00	0	0
10+50.00	11	3
10+75.00	18	6
11+00.00	13	2

Station -DR-	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
10+25.00	27	0
10+50.00	35	2
10+75.00	11	2
11+00.00	3	0

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

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4651	X-1



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10/3/2013
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0 5 10	PROJ. REFERENCE NO.	SHEET NO.
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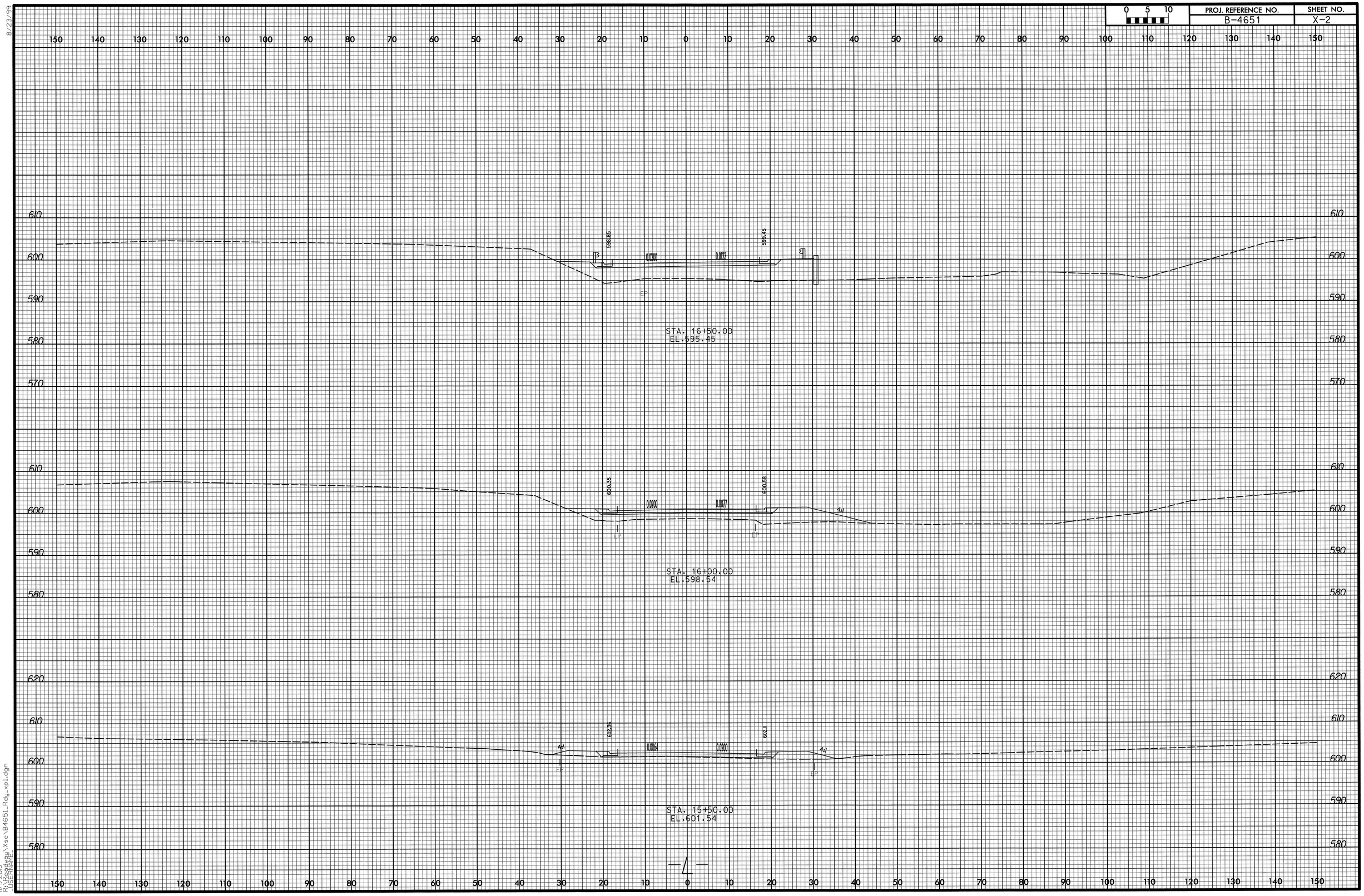

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11/1/2013
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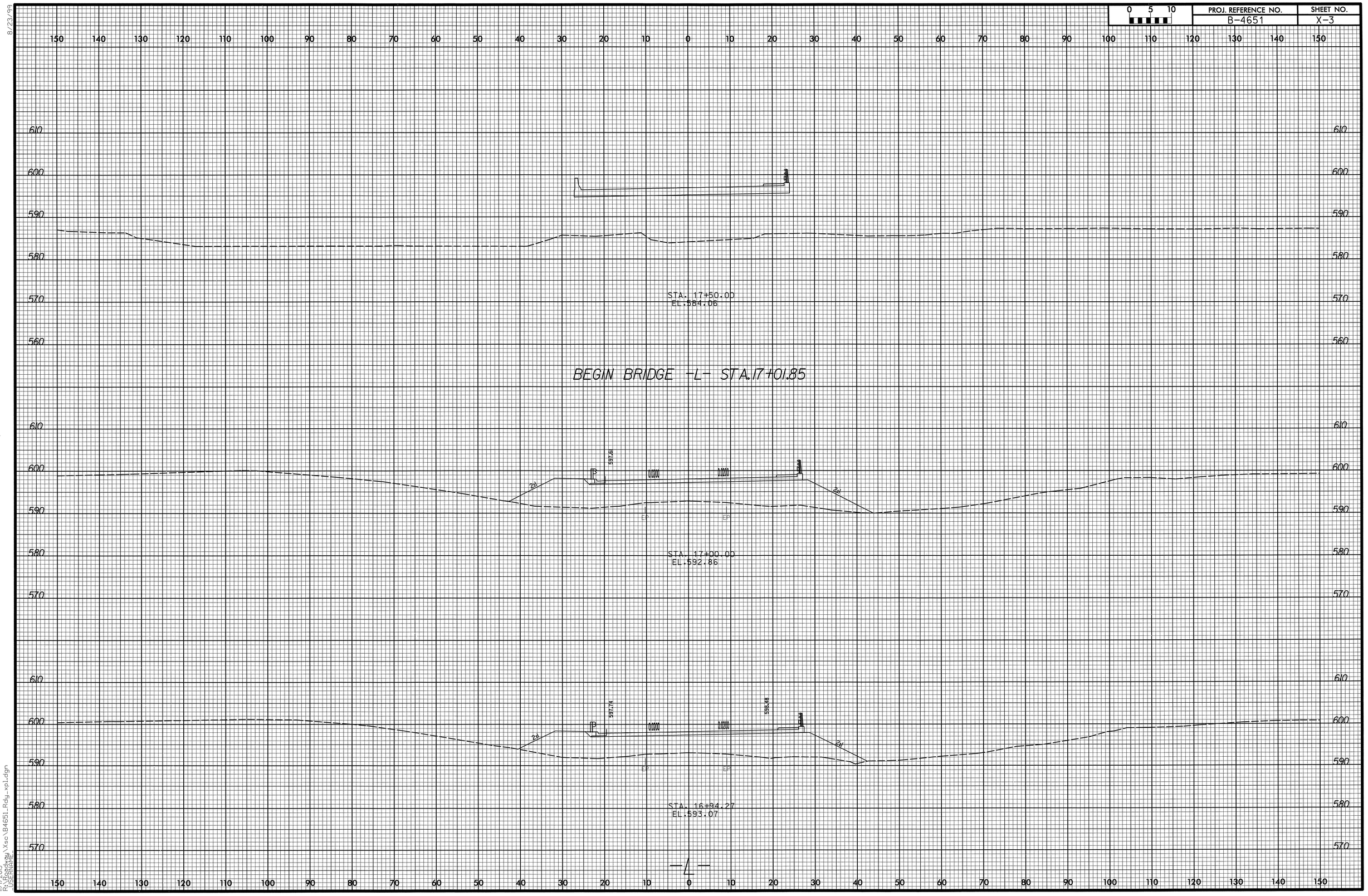

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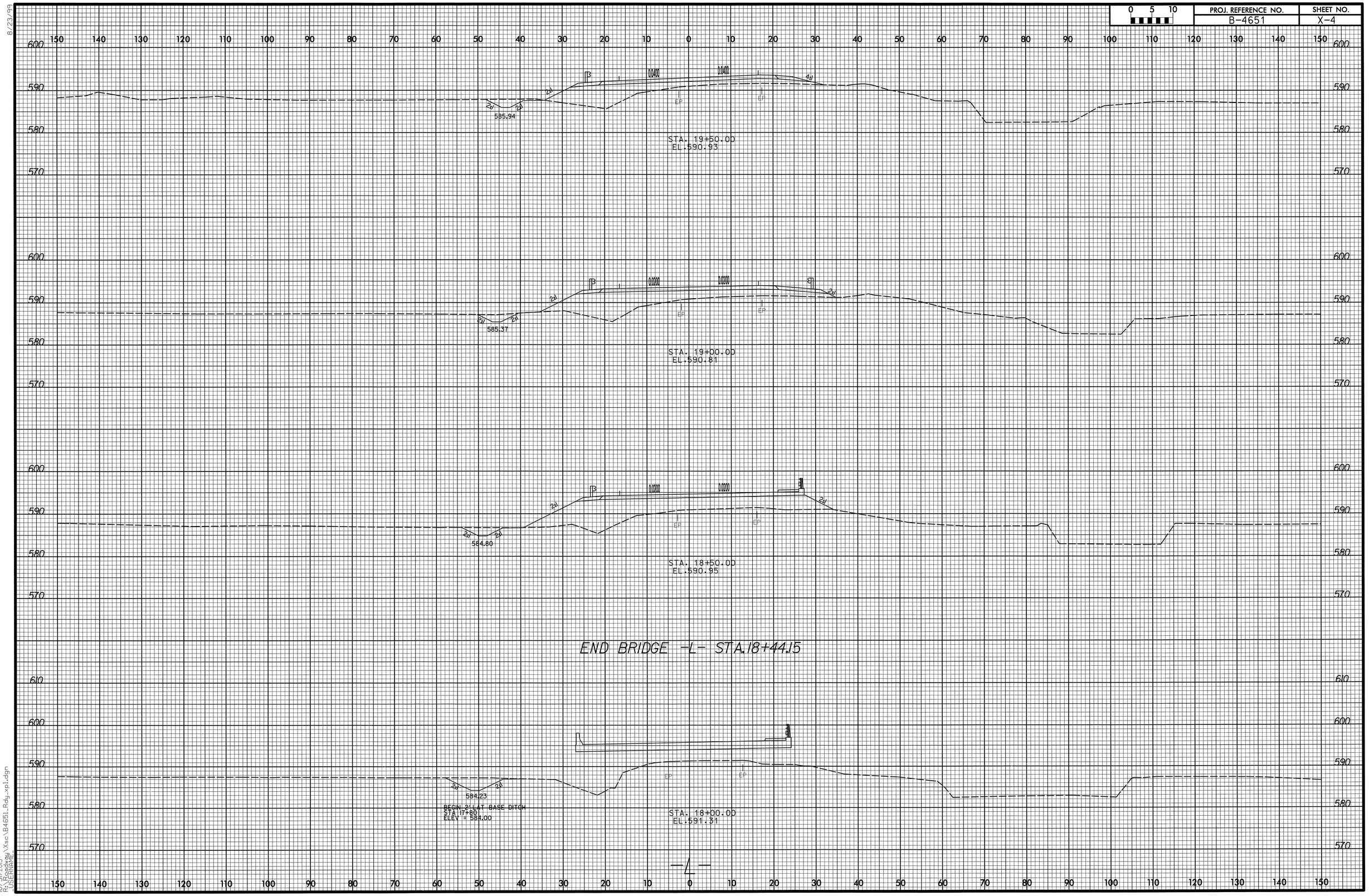

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PROJ. REFERENCE NO.	SHEET NO.
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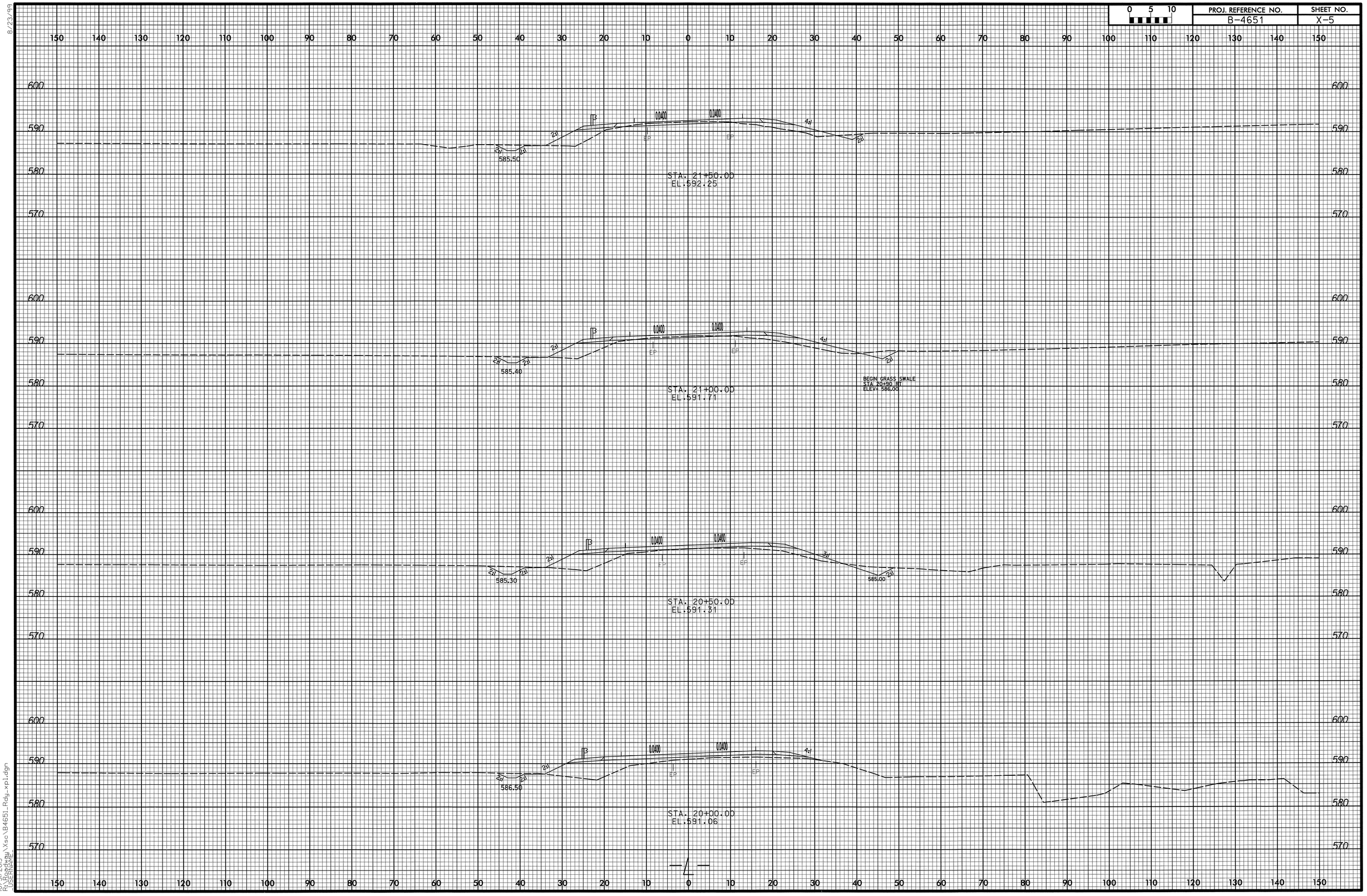

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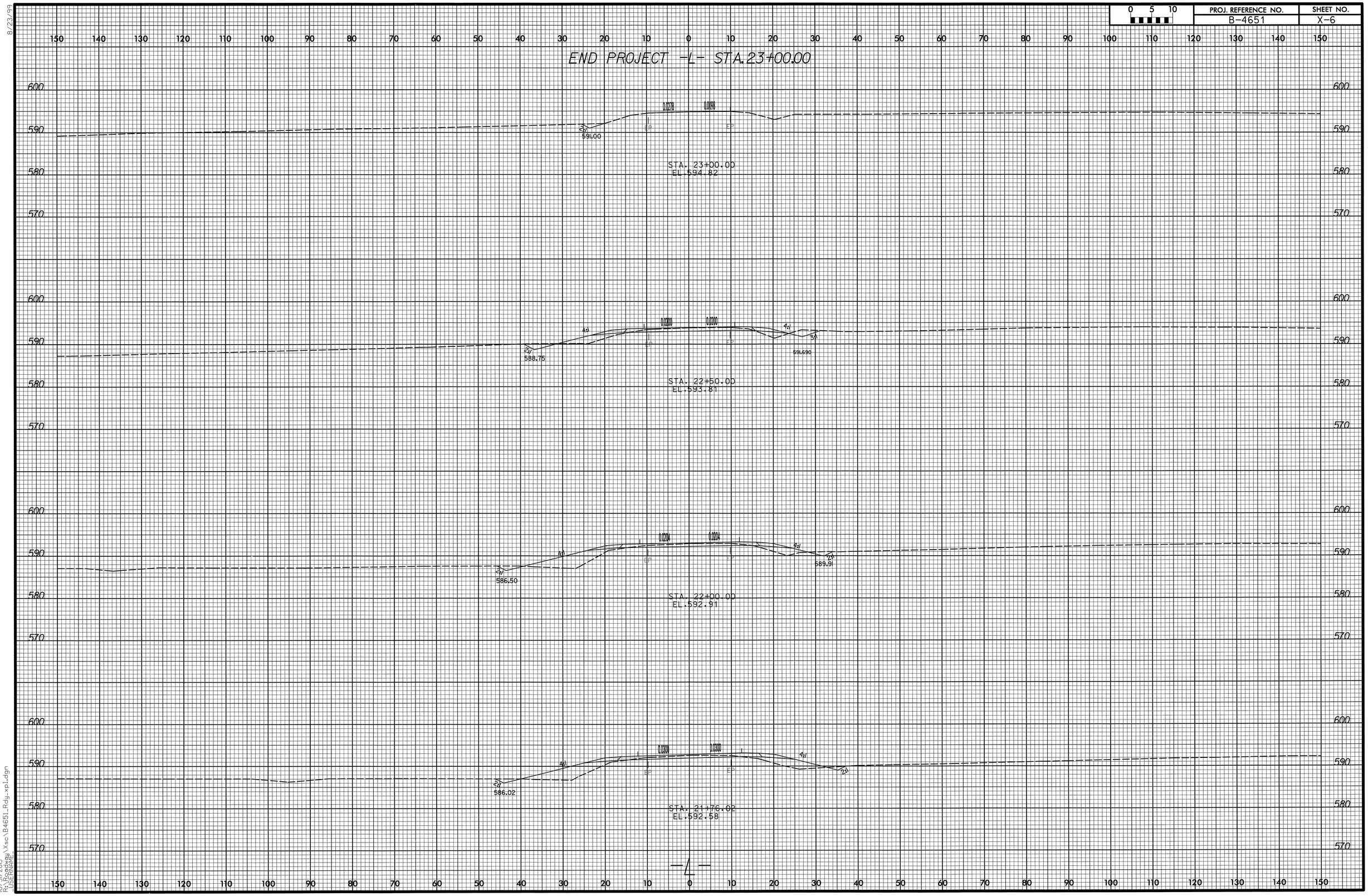
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4651	X-6



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0 5 10	PROJ. REFERENCE NO.	SHEET NO.
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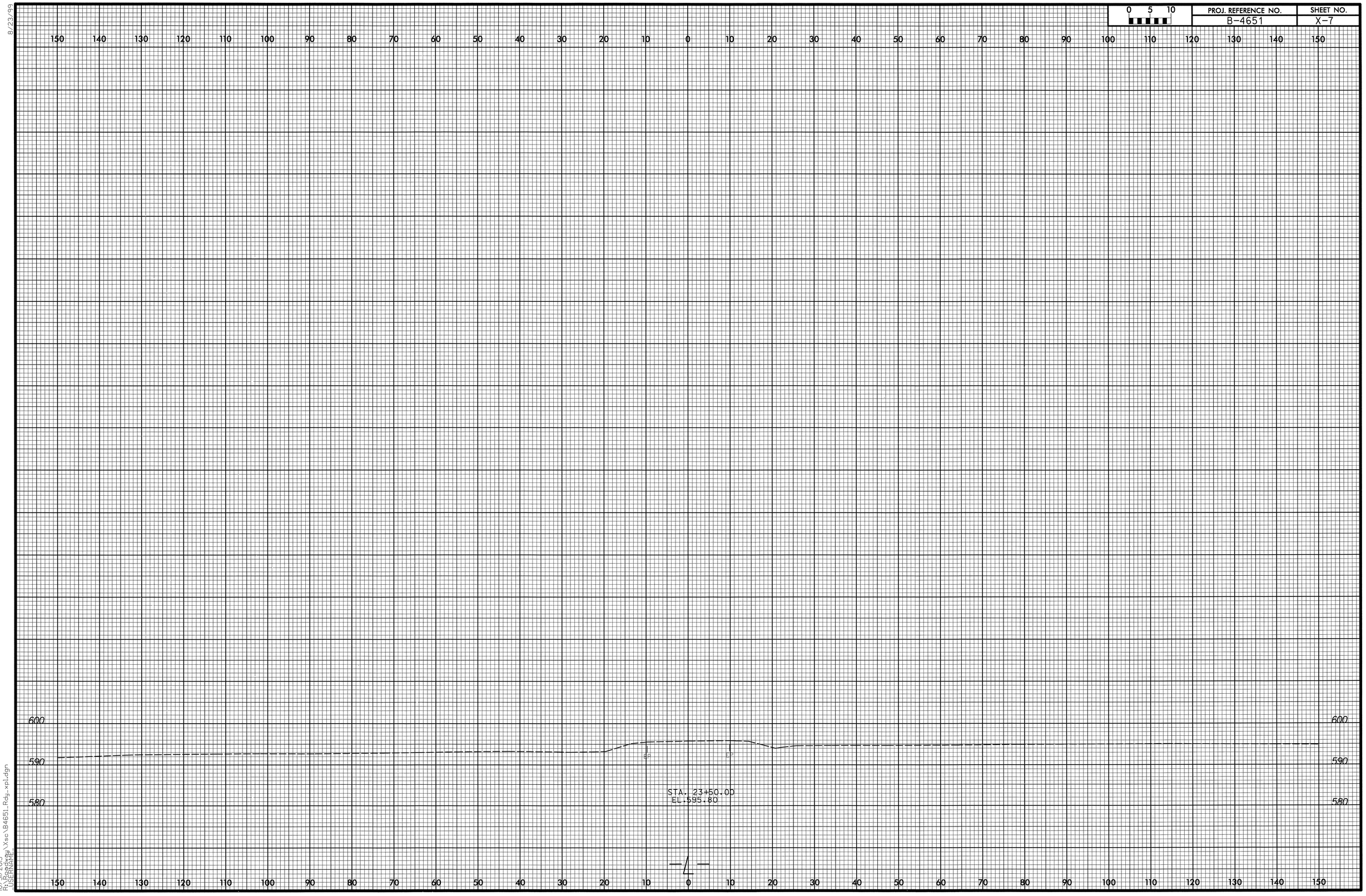

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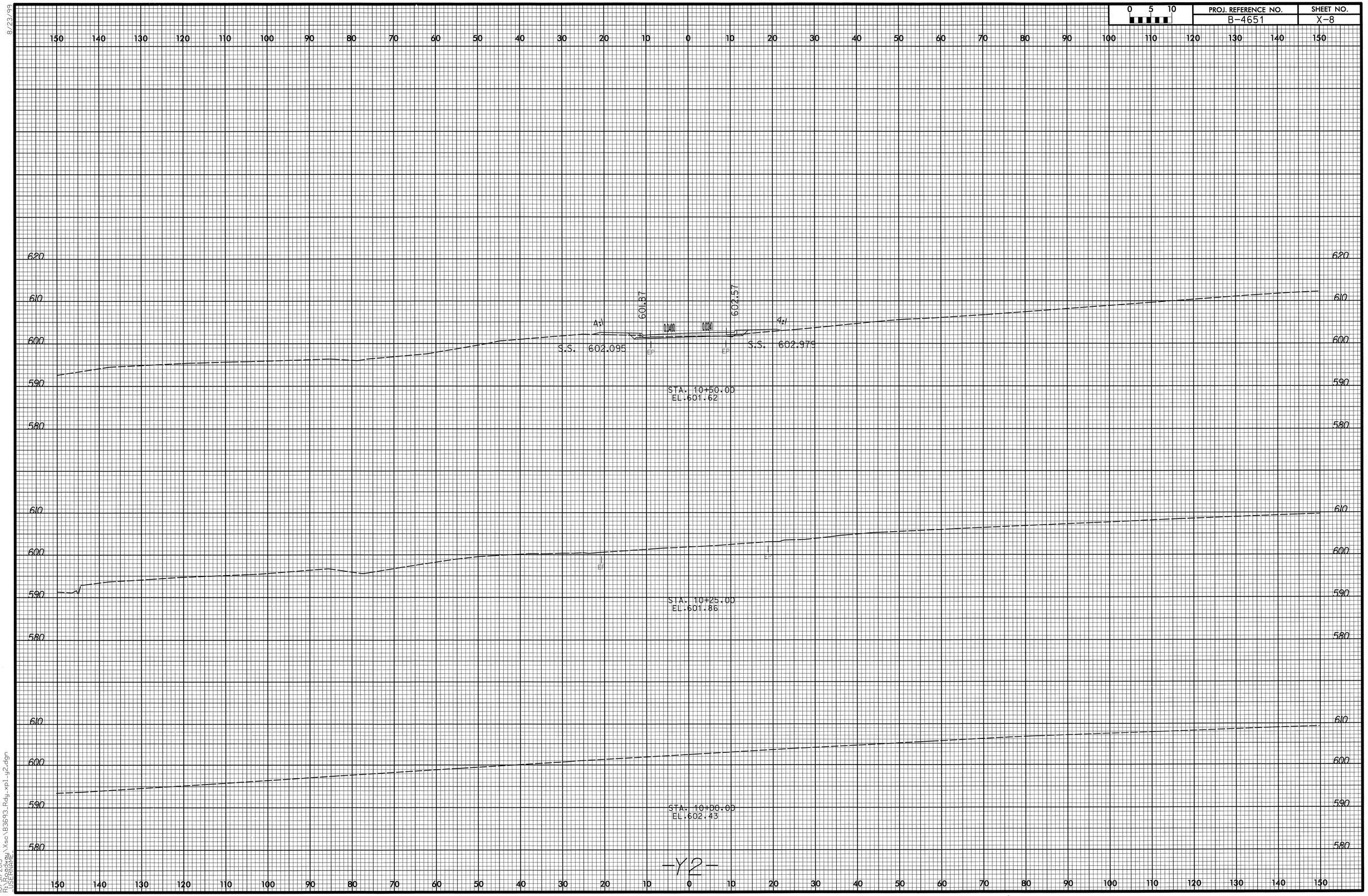
PROJ. REFERENCE NO.	SHEET NO.
B-4651	X-8



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8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
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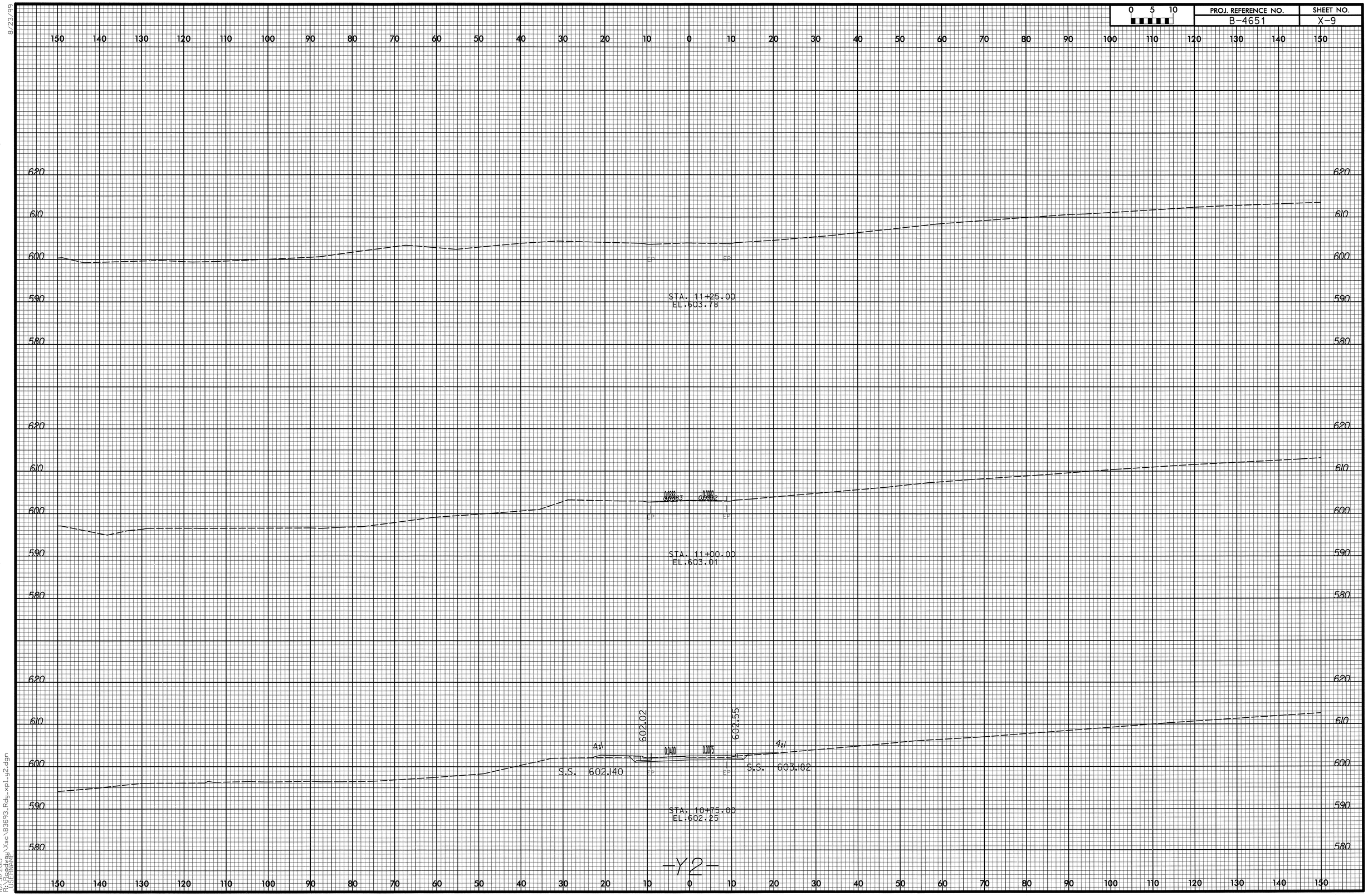

-Y2-

10/31/2013
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