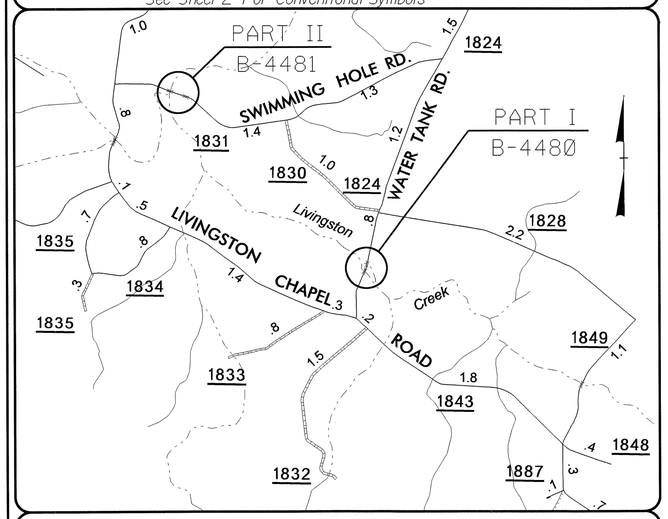
TIP PROJECT: B-4480 /B-4481

CONTRACT: C203155

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

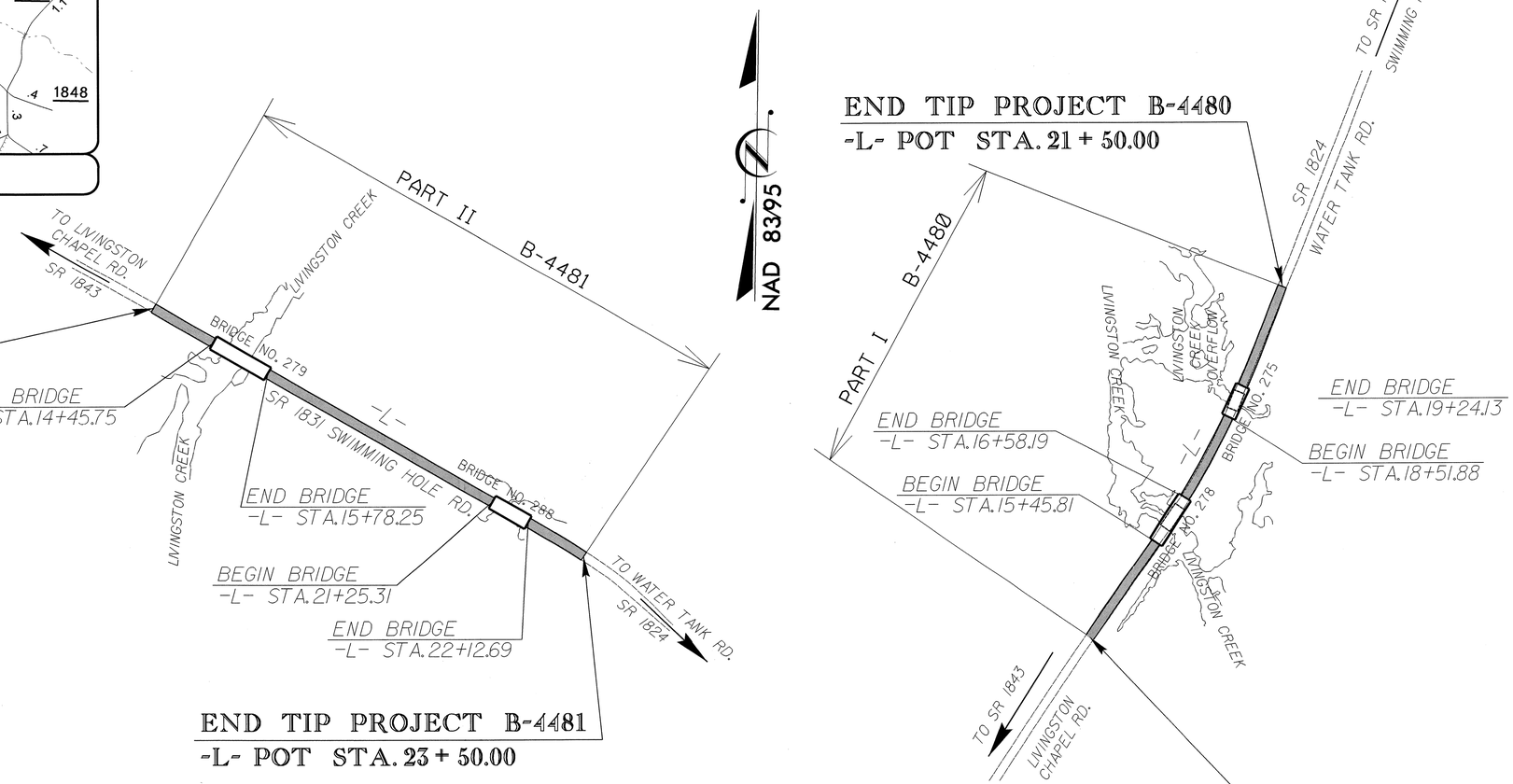
COLUMBUS COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4480 /B-4481	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
38385.1.1	BRZ-1824(1)	B-4480 P.E.
38386.1.1	BRZ-1831(3)	B-4481 P.E.
38385.2.1	BRZ-1824(1)	B-4480 R/W,UTIL.
38386.2.1	BRZ-1831(3)	B-4481 R/W,UTIL.
38385.3.FD1	BRZ-1824(1)	B-4480 CONST.
38385.3.FD1	BRZ-1824(1)	B-4481 CONST.

LOCATION: BRIDGES NO. 275 & 278 OVER LIVINGSTON CREEK ON SR 1824
BRIDGES NO. 279 & 288 OVER LIVINGSTON CREEK ON SR 1831

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURES



PROJECT LENGTH

LENGTH ROADWAY	TIP PROJECTS B-4480 /B-4481	=	0.283 MI.
LENGTH STRUCTURE	TIP PROJECTS B-4480 /B-4481	=	0.077 MI.
TOTAL LENGTH OF	TIP PROJECTS B-4480 /B-4481	=	0.360 MI.

Prepared In the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: B-4480: MAY 7, 2012
RIGHT OF WAY DATE: B-4481: JANUARY 18, 2013
LETTING DATE: SEPTEMBER 17, 2013

PROJECT REFERENCE NO.	SHEET NO.
B-4480 / B-4481	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 16378 ENGINEER REKHA V. PATEL

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET (B-4480 / B-4481)
1-A	INDEX OF SHEETS, GENERAL NOTES AND LIST OF STANDARD DRAWINGS (B-4480 / B-4481)
2	CONVENTIONAL SYMBOLS
3	SUMMARY OF QUANTITIES (B-4480 / B-4481)
PART I	
1	TITLE SHEET (B-4480)
1-A	SURVEY CONTROL SHEET
2	TYPICAL SECTIONS
2-A	STRUCTURE ANCHOR UNITS, GUARDRAIL ANCHOR UNIT TYPE III
3-A	SUMMARIES OF DRAINAGE AND GUARDRAIL
3-B	SUMMARIES OF PAVEMENT REMOVAL, SUBSURFACE DRAINAGE AND EARTHWORK
4	PLAN SHEET
5	PROFILE SHEET
TMP-1 THRU TMP-4	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLAN
EC-1 THRU EC-5	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-2	SIGNING PLANS
UO-1 THRU UO-5	UTILITIES BY OTHERS PLANS
X-1A	CROSS-SECTION SUMMARY SHEET
X-1 THRU X-3	CROSS-SECTIONS
S-1 THRU S-34	STRUCTURE PLANS
PART II	
1	TITLE SHEET (B-4481)
1-A	SURVEY CONTROL SHEET
2	TYPICAL SECTIONS
2-A	SPECIAL ROCK PLATING
2-B	STRUCTURE ANCHOR UNITS, GUARDRAIL ANCHOR UNIT TYPE III
3-A	SUMMARIES OF DRAINAGE, GUARDRAIL, ROCK PLATING, SUBSURFACE DRAINAGE, PAVEMENT REMOVAL AND EARTHWORK
4	PLAN SHEET
5	PROFILE SHEET
TMP-1 THRU TMP-4	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLAN
EC-1 THRU EC-5	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-2	SIGNING PLANS
X-1A	CROSS-SECTION SUMMARY SHEET
X-1 THRU X-7	CROSS-SECTIONS
S-35 THRU S-73	STRUCTURE PLANS

GENERAL NOTES:

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

GRADING AND SURFACING OR RESURFACING AND WIDENING:

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

CLEARING:

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

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04
SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01

SUBSURFACE DRAINS:

SUBSURFACE DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.02 AT LOCATIONS DIRECTED BY THE ENGINEER.

GUARDRAIL:

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

TEMPORARY SHORING:

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

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

AT&T - TELEPHONE

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT-OF-WAY MARKERS:

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

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

2012 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD.NO.	TITLE
	DIVISION 2 - EARTHWORK
200.02	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
422.10	Reinforced Bridge Approach Fills
	DIVISION 5 - SUBGRADE, BASES AND SHOULDERS
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
	DIVISION 6 - ASPHALT BASES AND PAVEMENTS
654.01	Pavement Repairs
	DIVISION 8 - INCIDENTALS
815.02	Subsurface Drain
840.00	Concrete Base Pad for Drainage Structures
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.46	Traffic Bearing Precast Drainage Structure
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
876.02	Guide for Rip Rap at Pipe Outlets

5/28/99

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12/05/11

PROJECT REFERENCE NO.	SHEET NO.
B-4480 / B-4481	2

Note: Not to Scale

S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 23
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Known Soil Contamination: Area or Site
- Potential Soil Contamination: Area or Site

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Booth
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole
- 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.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C203155

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0000400000-N	801	Lump Sum		CONSTRUCTION SURVEYING
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ********** (15+12)
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ********** (16+02)
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ********** (18+88)
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ********** (21+69)
0043000000-N	226	Lump Sum		GRADING
0050000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUBBING
0057000000-E	226	800	CY	UNDERCUT EXCAVATION
0195000000-E	265	800	CY	SELECT GRANULAR MATERIAL
0196000000-E	270	1,100	SY	GEOTEXTILE FOR SOIL STABILIZATION
0241000000-E	SP	3,080	SY	GENERIC GRADING ITEM GEOTEXTILE FOR ROCK PLATING, TYPE 2
0255000000-E	SP	1,880	TON	GENERIC GRADING ITEM PLAIN RIP RAP, CLASS 2
0314000000-E	SP	390	TON	SELECT MATERIAL, CLASS ***** (IV)
0318000000-E	300	30	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRUCTURES
0320000000-E	300	70	SY	FOUNDATION CONDITIONING GEOTEXTILE
0335200000-E	305	188	LF	15" DRAINAGE PIPE
0335850000-E	305	16	EA	** DRAINAGE PIPE ELBOWS (15")
1099500000-E	505	100	CY	SHALLOW UNDERCUT
1099700000-E	505	200	TON	CLASS IV SUBGRADE STABILIZATION
1220000000-E	545	60	TON	INCIDENTAL STONE BASE
1330000000-E	607	500	SY	INCIDENTAL MILLING
1489000000-E	610	900	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1525000000-E	610	1,100	TON	ASPHALT CONC SURFACE COURSE, TYPE SF9.5A
1575000000-E	620	120	TON	ASPHALT BINDER FOR PLANT MIX
1693000000-E	654	40	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR
2022000000-E	815	45	CY	SUBDRAIN EXCAVATION
2026000000-E	815	200	SY	GEOTEXTILE FOR SUBSURFACE DRAINS
2036000000-E	815	33.6	CY	SUBDRAIN COARSE AGGREGATE
2044000000-E	815	200	LF	6" PERFORATED SUBDRAIN PIPE
2070000000-N	815	1	EA	SUBDRAIN PIPE OUTLET
2077000000-E	815	6	LF	6" OUTLET PIPE
2286000000-N	840	8	EA	MASONRY DRAINAGE STRUCTURES
2355000000-N	840	8	EA	FRAME WITH GRATE, STD 840.29
2556000000-E	846	195	LF	SHOULDER BERM GUTTER
2752000000-E	SP	70	LF	GENERIC PAVING ITEM SPECIAL SHOULDER BERM CURB
3030000000-E	862	1,550	LF	STEEL BM GUARDRAIL
3150000000-N	862	10	EA	ADDITIONAL GUARDRAIL POSTS
3215000000-N	862	16	EA	GUARDRAIL ANCHOR UNITS, TYPE III
3270000000-N	SP	8	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3649000000-E	876	20	TON	RIP RAP, CLASS B
3656000000-E	876	1,315	SY	GEOTEXTILE FOR DRAINAGE
4155000000-N	907	24	EA	DISPOSAL OF SIGN SYSTEM, U-CHANNEL
4400000000-E	1110	642	SF	WORK ZONE SIGNS (STATIONARY)
4410000000-E	1110	188	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4445000000-E	1145	160	LF	BARRICADES (TYPE III)
4810000000-E	1205	8,400	LF	PAINT PAVEMENT MARKING LINES (4")
6000000000-E	1605	5,250	LF	TEMPORARY SILT FENCE
6006000000-E	1610	300	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	90	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	315	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	5	ACR	TEMPORARY MULCHING
6018000000-E	1620	200	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	0.75	TON	FERTILIZER FOR TEMPORARY SEEDING
6024000000-E	1622	400	LF	TEMPORARY SLOPE DRAINS
6029000000-E	SP	3,100	LF	SAFETY FENCE
6030000000-E	1630	150	CY	SILT EXCAVATION
6036000000-E	1631	6,400	SY	MATTING FOR EROSION CONTROL
6037000000-E	SP	400	SY	COIR FIBER MAT
6042000000-E	1632	825	LF	1/4" HARDWARE CLOTH
6071010000-E	SP	545	LF	WATTLE
6071020000-E	SP	5	LB	POLYACRYLAMIDE (PAM)
6084000000-E	1660	5	ACR	SEEDING & MULCHING
6087000000-E	1660	2.5	ACR	MOWING
6090000000-E	1661	100	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	0.5	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	150	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	3.25	TON	FERTILIZER TOPDRESSING
6114500000-N	1667	20	MHR	SPECIALIZED HAND MOWING
6117000000-N	SP	36	EA	RESPONSE FOR EROSION CONTROL

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TIP PROJECT: B-4480

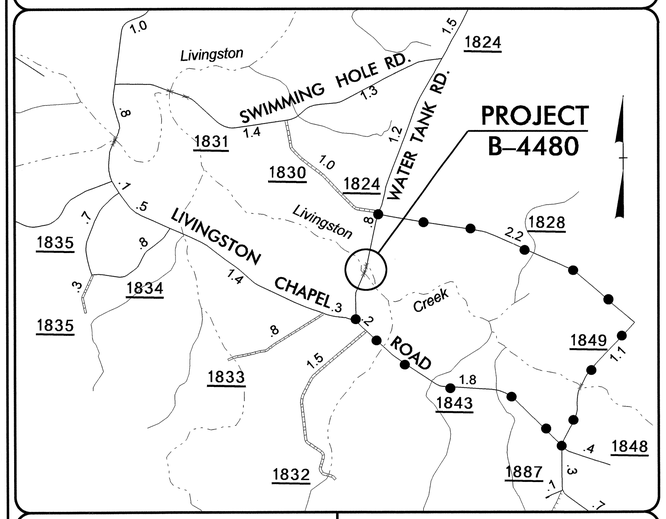
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

COLUMBUS COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4480	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
38385.1.1	BRZ-1824(1)	P.E.
38385.2.1	BRZ-1824(1)	R/W & UTIL.
38385.3.1	BRZ-1824(1)	CONST.

PART I

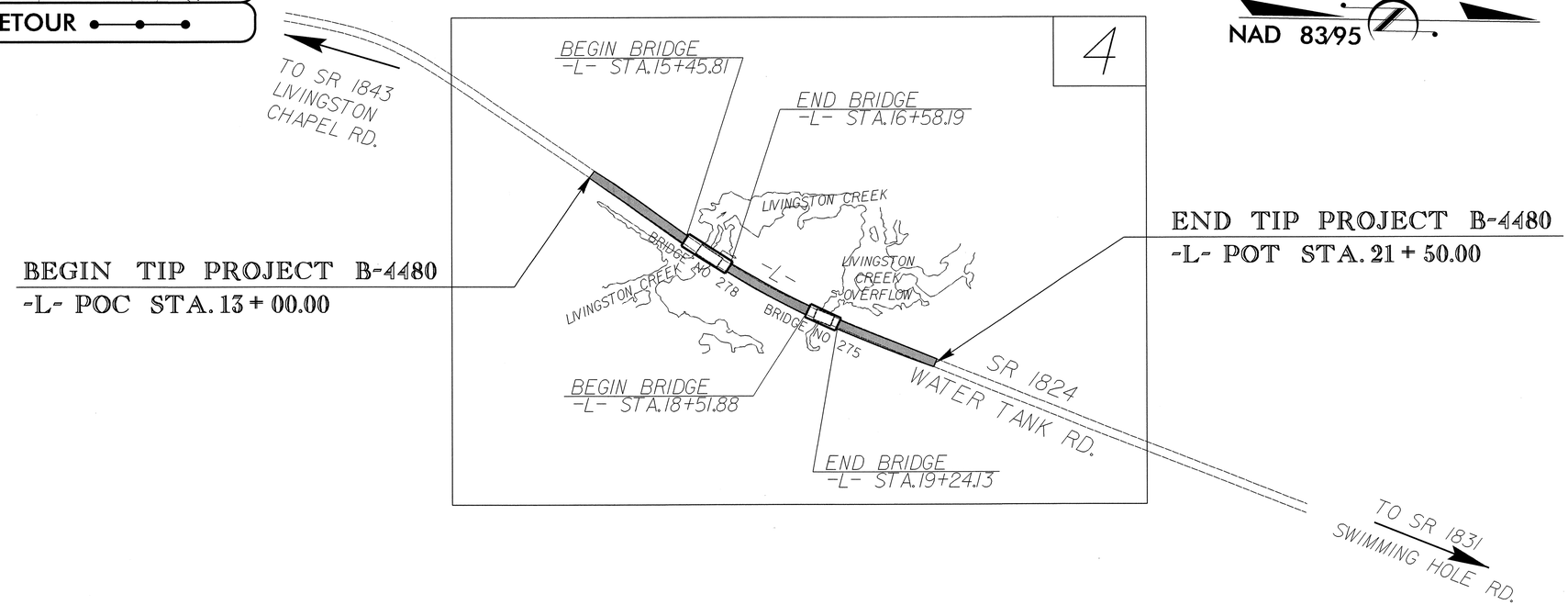


VICINITY MAP | DETOUR

LOCATION: BRIDGES NO. 275 & 278 OVER LIVINGSTON CREEK ON SR 1824

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURES

NAD 83/95



BEGIN TIP PROJECT B-4480
-L- POC STA. 13 + 00.00

END TIP PROJECT B-4480
-L- POT STA. 21 + 50.00

GRAPHIC SCALES

50′ 25′ 0 50′ 100′
PLANS

50′ 25′ 0 50′ 100′
PROFILE (HORIZONTAL)

10′ 5′ 0 10′ 20′
PROFILE (VERTICAL)

DESIGN DATA

ADT 2013 = 475
ADT 2035 = 600
DHV = 10 %
D = 60 %
T = 5 % *
V = 60 MPH
* TTST = 2% DUAL 3%
FUNC CLASS = LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY	TIP PROJECT B-4480 =	0.126 MI.
LENGTH STRUCTURE	TIP PROJECT B-4480 =	0.035 MI.
TOTAL LENGTH OF	TIP PROJECT B-4480 =	0.161 MI.

Prepared in the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MAY 7, 2012

LETTING DATE:
SEPTEMBER 17, 2013

REKHA PATEL, PE
PROJECT ENGINEER

MICHAEL LITTLE, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022000 ENGINEER W. GALEN CAIL
SIGNATURE: W. Galen Cail 6/20/13

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE
SIGNATURE: Michael W. Little P.E. 6/20/13

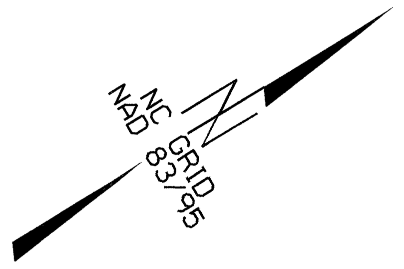
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROJECT REFERENCE NO.	SHEET NO.
B-4480	1-A

Location and Surveys

SURVEY CONTROL SHEET B-4480

6/2/99



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POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	B4480 BL-1	190160.6680	2220053.9970	34.76	10+06.99	18.58 RT
2	B4480 BL-2	190620.8510	2220351.5440	34.54	15+55.22	13.80 RT
3	B4480 BL-3	190953.8950	2220528.7420	34.47	19+30.39	14.30 RT
4	B4480 BL-4	191542.4220	2220753.1360	35.31	25+59.74	16.64 RT

80 ELEVATION=35.10'
N 190153 E 2220080
L STATION 10+15.00 45 RIGHT
RR SPIKE IN BASE OF 22" PINE

81 ELEVATION=34.09'
N 191499 E 2220652
L STATION 24+83.00 63 LEFT
RR SPIKE IN BASE OF 20" GUM

FINAL ROW MARKER IRON PIN AND CAP-E

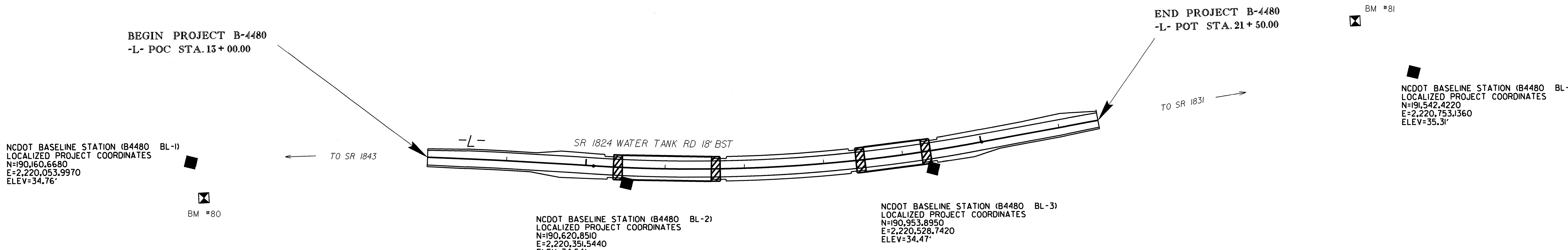
ALIGN	STATION	OFFSET	NORTH	EAST
L	13+00.00	40.00	190394.8520	2220230.6264
L	13+00.00	-40.00	190438.9186	2220163.8571
L	13+00.00	30.00	190400.3603	2220222.2802
L	13+00.00	-30.00	190433.4103	2220172.2033
L	15+09.50	40.00	190567.7880	2220347.3800
L	15+09.50	-40.00	190613.2437	2220281.5485
L	20+01.01	-40.00	191039.0993	2220504.0301
L	20+01.01	40.00	191011.0255	2220578.9425
L	21+50.00	40.00	191150.5393	2220631.2260
L	21+50.00	29.97	191154.0602	2220621.8309
L	21+50.00	-30.03	191175.1156	2220565.6464
L	21+50.00	-40.00	191178.6131	2220556.3136
L	20+01.01	-50.00	191042.6085	2220494.6661
L	20+01.01	50.00	191007.5163	2220588.3065
L	15+09.50	-50.00	190618.9256	2220273.3196
L	15+09.50	50.00	190562.1061	2220355.6089

FINAL ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	13+00.00	-50.00	190444.4269	2220155.5110
L	21+50.00	-50.00	191182.1223	2220546.9496

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	190164.8140	2220034.5810
PC	11+67.94	190306.1849	2220125.2262
PRC	15+09.50	190590.5158	2220314.4643
PT	20+01.01	191025.0624	2220541.4863
POT	25+65.33	191553.4950	2220739.5190



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "B4480-1"
WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF
NORTHING: 192065.843(ft) EASTING: 2220914.273(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.00001974
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4480-1" TO -L- STATION 13+00.00 IS
S 23° 30' 04.6" W 1798.11'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

NOTES:

1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING NCDOT PROJECT CONTROL DATA AT:
HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/PAGES/DEFAULT.ASPX

THE FILES TO BE FOUND ARE AS FOLLOWS:
B4480_LS_CONTROL_110810.TXT

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

◎ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION
SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

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PROJECT REFERENCE NO.	SHEET NO.
B-4480	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

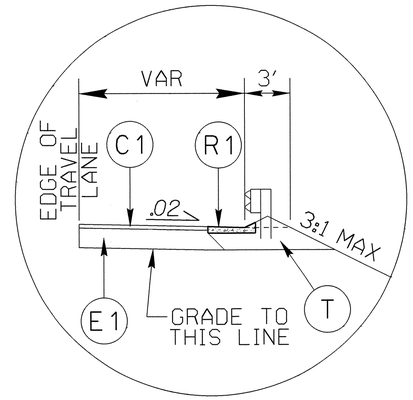
NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE 6/20/13

NORTH CAROLINA PROFESSIONAL SEAL 039849 ENGINEER LEONARD HEYWARD JUNE 28th 2013

PAVEMENT SCHEDULE

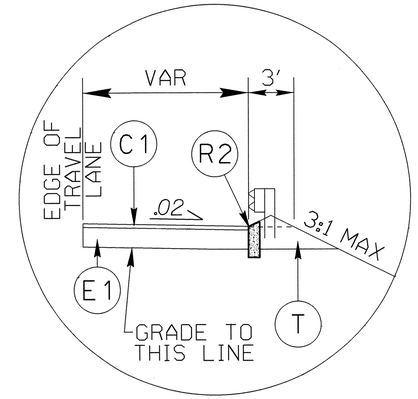
C1	PROP. APPROX. 2½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 1" IN DEPTH OR GREATER THAN 1½" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
R1	SHOULDER BERM GUTTER
R2	SPECIAL SHOULDER BERM CURB
T	EARTH MATERIAL

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



INSET NO. 1

Use with Typical Section No. 1



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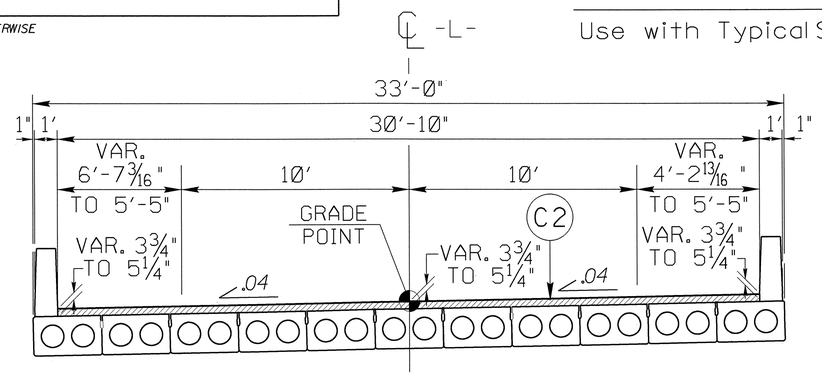
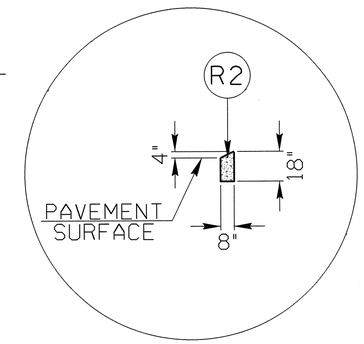


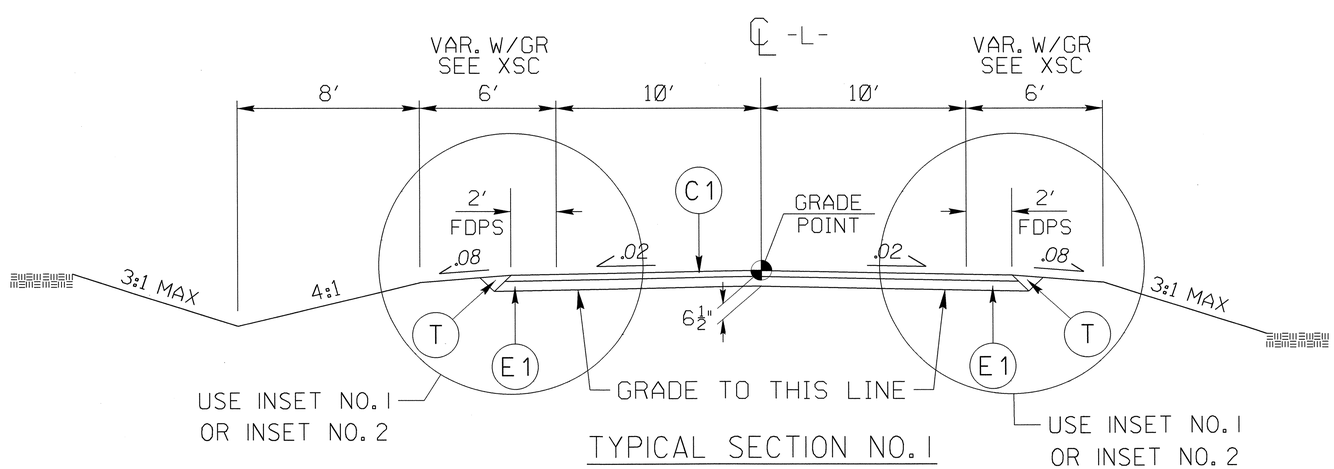
DETAIL SHOWING ASPHALT WEARING SURFACE ON CORED SLAB BRIDGE

-L- STA. 15+45.81 TO -L- STA. 16+58.19

-L- STA. 18+51.88 TO -L- STA. 19+24.13



DIMENSIONS FOR SPECIAL SHOULDER BERM CURB



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1

-L- STA. 13+50.00 TO -L- STA. 15+45.81 (BEGIN BRIDGE)
-L- STA. 16+58.19 (END BRIDGE) TO -L- STA. 18+51.88 (BEGIN BRIDGE)
-L- STA. 19+24.13 (END BRIDGE) TO -L- STA. 21+00.00

USE INSET NO. 1 FOR:

-L- STA. 15+23.00 TO -L- STA. 15+34.81 (LT.) REVERSE
-L- STA. 19+35.13 TO -L- STA. 19+46.00 (LT.) REVERSE

USE INSET NO. 2 FOR:

-L- STA. 15+27.06 TO -L- STA. 15+34.81 (RT.)
-L- STA. 16+69.19 TO -L- STA. 16+76.94 (LT.) REVERSE
-L- STA. 16+69.19 TO -L- STA. 16+76.94 (RT.)
-L- STA. 18+33.13 TO -L- STA. 18+40.88 (LT.) REVERSE
-L- STA. 18+33.13 TO -L- STA. 18+40.88 (RT.)
-L- STA. 19+35.13 TO -L- STA. 19+42.88 (RT.)

NOTES:
(1) TRANSITION FROM EXISTING TO T.S.NO.1
-L- STA.13+00.00 TO -L- STA.13+50.00
(2) TRANSITION FROM T.S.NO.1 TO EXISTING
-L- STA.21+00.00 TO -L- STA.21+50.00

6/2/99

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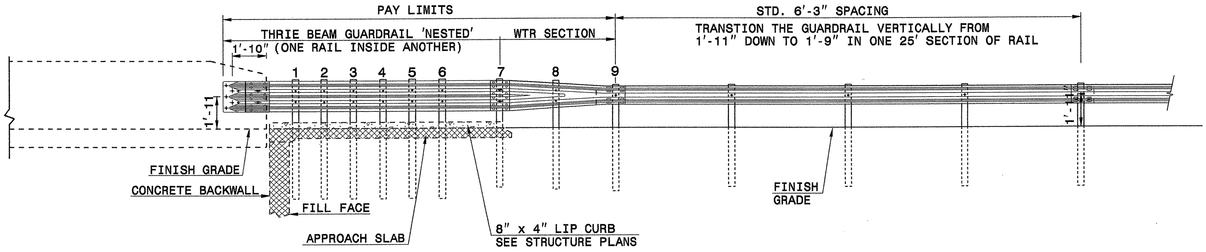
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

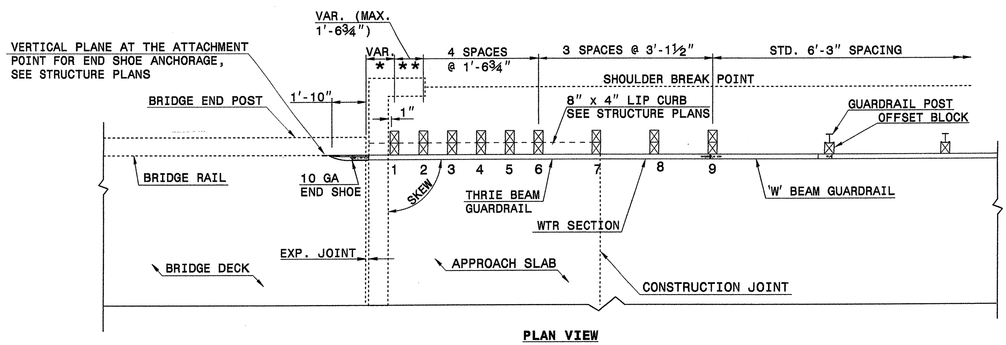
ENGLISH DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7
862d03



ELEVATION

NOTE:
**POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.
-SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
-MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
-LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
-SEE SHEET 5 FOR POST SECTIONS 1 THRU 9.



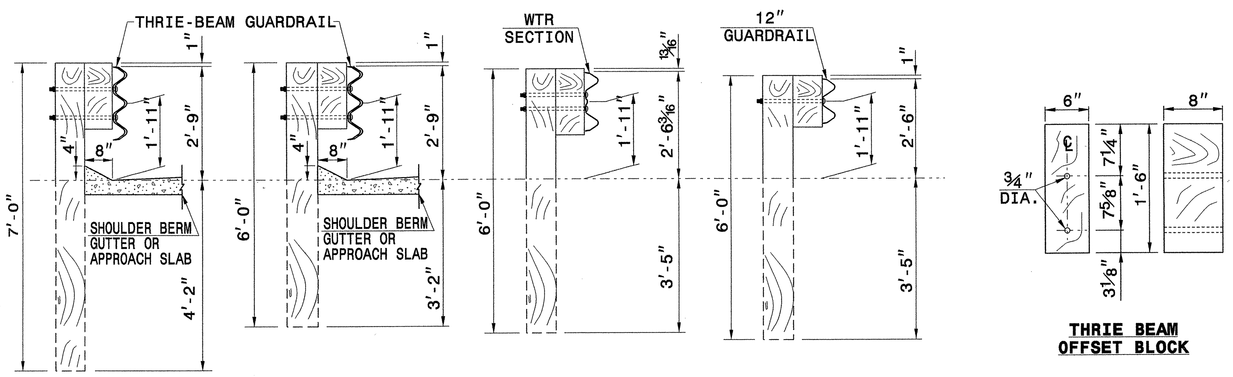
PLAN VIEW

GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7
862d03



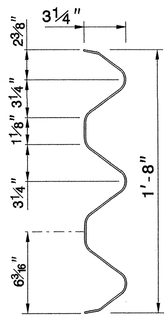
SECTION OF THRIE BEAM POSTS 1 THRU 6

SECTION OF THRIE BEAM POST 7

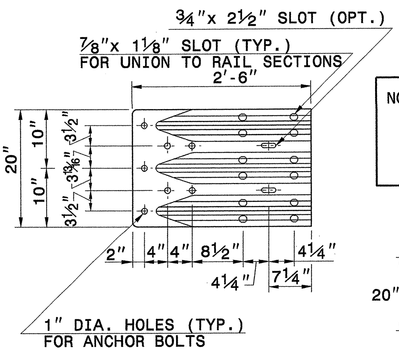
SECTION OF WTR BEAM POST 8

SECTION OF 'W' BEAM POST 9

THRIE BEAM OFFSET BLOCK

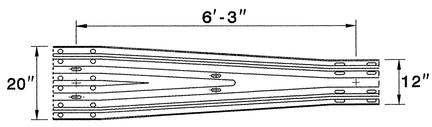


THRIE-BEAM SECTION

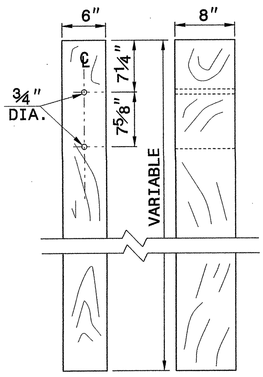


END SHOE

NOTE: THE MID POST AND OFFSET BLOCK OF THE WTR SECTION WILL REQUIRE SPECIAL BOLT HOLE DRILLING IN THE THRIE BEAM OFFSET BLOCK AND LINE POST.



WTR SECTION
ELEVATION VIEW



THRIE BEAM LINE POST

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III

SHEET 3 OF 7
862d03

CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

ORIGINAL BY: J. HOMERTON DATE: 06-22-12
MODIFIED BY: DATE:
CHECKED BY: DATE: 11/3/12
FILE SPEC.:

NORTH CAROLINA PROFESSIONAL SEAL 023866 ENGINEER
JOHN E. BOWMAN
6/25/13

PROJECT REFERENCE NO. B-4480
SHEET NO. 2-A

COMPUTED BY:	PWR	DATE:	05/02/13
CHECKED BY:	MWL	DATE:	06/04/13

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-4480	3-A

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".

SUB-REGIONAL & REGIONAL LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & 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) 15"	DRAINAGE PIPE 18"–48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE 15"–48" (.064, .064, .064, .079, .079, .109, .109)	R.C. PIPE (CLASS III) 15"–48"	R.C. PIPE (CLASS IV) 15"–48"	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. *FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION CATCH BASIN	DROP INLET	D.I. STD. 840.14 OR 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. (N.S.F.G.) FRAME WITH TWO GRATES STD. 840.29	TRAFFIC BEARING D.I. STD. 840.35 OR 840.46	DRAINAGE PIPE ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
-L- 15+28	LT.	410		35.4																	1															1	1					TB 2GI
-L- 15+28	LT.	410	411		32.6	30.0		20'		X	X																											2-15"				15" PIPE W/ELBOWS
-L- 19+41	LT.	412		35.5																	1															1	1					TB 2GI
-L- 19+41	LT.	412	413		32.7	30.0		20'		X	X																											2-15"				15" PIPE W/ELBOWS
B-4480 TOTALS								40'													2															2	2	4-15"				
B-4481 TOTALS								148'													6															6	6	12-15"				
GRAND TOTAL								188'													8															8	8	16-15"				

ABBREVIATIONS

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

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

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH STRAIGHT	SHOP CURVED	DOUBLE FACED	WARRANT POINT APPROACH END	WARRANT POINT TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH APPROACH END	FLARE LENGTH TRAILING END	W APPROACH END	W TRAILING END	ANCHORS GRAU 350 TL-3	ANCHORS TYPE III	IMPACT ATTENUATOR TYPE 350 NO.	PERMITTED G	PERMITTED NG	SINGLE FACED CONCRETE BARRIERS	REMOVE EXISTING GUARDRAIL	REMARKS
-L-	14+64.56	15+45.81	LT	81.25				15+45.81	5.50	9	62.50		1.25		1	1						
-L-	14+64.56	15+45.81	RT	81.25			15+45.81		5.50	9	62.50		1.25		1	1						
-L-	16+58.19	18+51.88	LT	193.69			18+51.88	16+58.19	5.50	9						2						
-L-	16+58.19	18+51.88	RT	193.69			16+58.19	18+51.88	5.50	9						2						
-L-	19+24.13	21+05.38	LT	181.25			20+55.38	19+24.13	5.50	9	50.00	25.00	1.00	0.50	1	1						
-L-	19+24.13	19+92.88	RT	68.75				19+24.13	5.50	9	50.00		1.00		1	1						

	SUBTOTAL	799.88 Ft.
LESS ANCHOR DEDUCTIONS		
GRAU 350 TL-3	4 @ 50.00 Ft.	200.00 Ft.
TYPE III	8 @ 18.75 Ft.	150.00 Ft.
	SUBTOTAL	-350.00 Ft.

B-4480 TOTAL	449.88 Ft.	ADDITIONAL GUARDRAIL POSTS
B-4480 SAY	450.00 Ft.	5 EA.
B-4481 SAY	1,100.00 Ft.	5 EA.
GRAND TOTAL	1,550.00 Ft.	10 EA.

	GRAU 350 TL-3	TYPE III
B-4480 TOTALS	4	8
B-4481 TOTALS	4	8
GRAND TOTALS	8	16

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CHECKED BY: MWL	DATE: 06/04/13

PROJECT REFERENCE NO.	SHEET NO.
B-4480	3-B

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF PAVEMENT REMOVAL
IN SQUARE YARDS

BEGIN STATION	END STATION	LOCATION	ASPHALT REMOVAL
-L- STA. 13+00.00	-L- STA. 15+81.00	LT/RT	565.00
-L- STA. 16+36.00	-L- STA. 18+69.00	LT/RT	480.00
-L- STA. 19+10.00	-L- STA. 21+50.00	LT/RT	488.00
		B-4480 TOTAL	1,533.00
		B-4480 SAY	1,600.00
		B-4481 SAY	890.00
		GRAND TOTAL	2,490.00

SUMMARY OF SUBSURFACE DRAINAGE
IN FEET

BEGIN STATION	END STATION	LOCATION	DRAIN TYPE * UD / BD / SD	LENGTH
		B-4480 CONTINGENCY	SD	100.00
		B-4480 TOTAL	SD	100.00
		B-4481 TOTAL	SD	100.00
		GRAND TOTAL	SD	200.00

* UD = UNDERDRAIN
* BD = BLIND DRAIN
* SD = SUBSURFACE DRAIN

SUMMARY OF EARTHWORK
IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT + %	BORROW	WASTE
-L- STA. 13+00.00 TO -L- STA. 15+45.81	16		156	140	
-L- STA. 16+58.19 TO -L- STA. 18+51.88	0		418	418	
-L- STA. 19+24.13 TO -L- STA. 21+50.00	27		196	169	
B-4480 TOTAL	43		770	727	
EST. 5% TO REPLACE TOPSOIL ON BORROW PIT				36	
B-4480 GRAND TOTAL	43		770	763	
B-4480 SAY	50			800	
B-4481 SAY	70			700	
COMBINED SAY TOTAL	120 CY			1,500 CY	

PER GEOTECH RECOMMENDATION (B-4480), ESTIMATED 400 CUBIC YARDS OF UNDERCUT TO BE USED AT THE DISCRETION OF THE RESIDENT ENGINEER
PER GEOTECH RECOMMENDATION (B-4481), ESTIMATED 400 CUBIC YARDS OF UNDERCUT TO BE USED AT THE DISCRETION OF THE RESIDENT ENGINEER
EST. SHALLOW UNDERCUT (B-4481) = 100 CY

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

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

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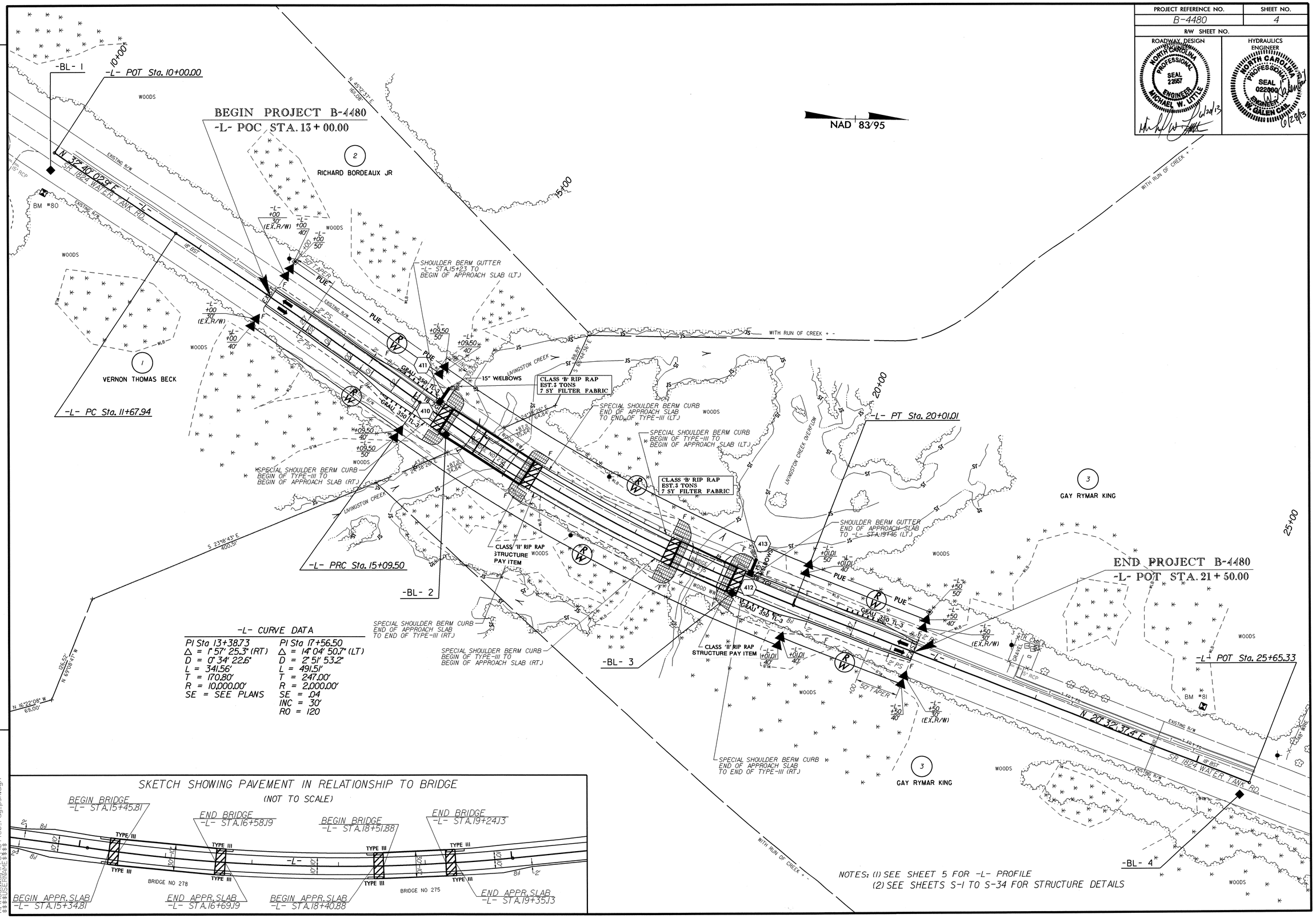
PROJECT REFERENCE NO.	SHEET NO.
B-4480	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 22567 ENGINEER MICHAEL W. LITTLE — 6/20/13

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 022600 ENGINEER W. GALEN CAIN — 6/20/13

REVISIONS



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PROJECT REFERENCE NO.	SHEET NO.
B-4480	5

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22957 ENGINEER MICHAEL W. LITTLE
6/28/13

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022000 ENGINEER GALEN CAIN
6/28/13

BM 80 EL. 35.10
RAILROAD SPIKE IN BASE OF 22 INCH PINE TREE
-BL- STA. 5+08 (26' RT.)
-L- STA. 10+14.54 (44.95' RT.)

-L-

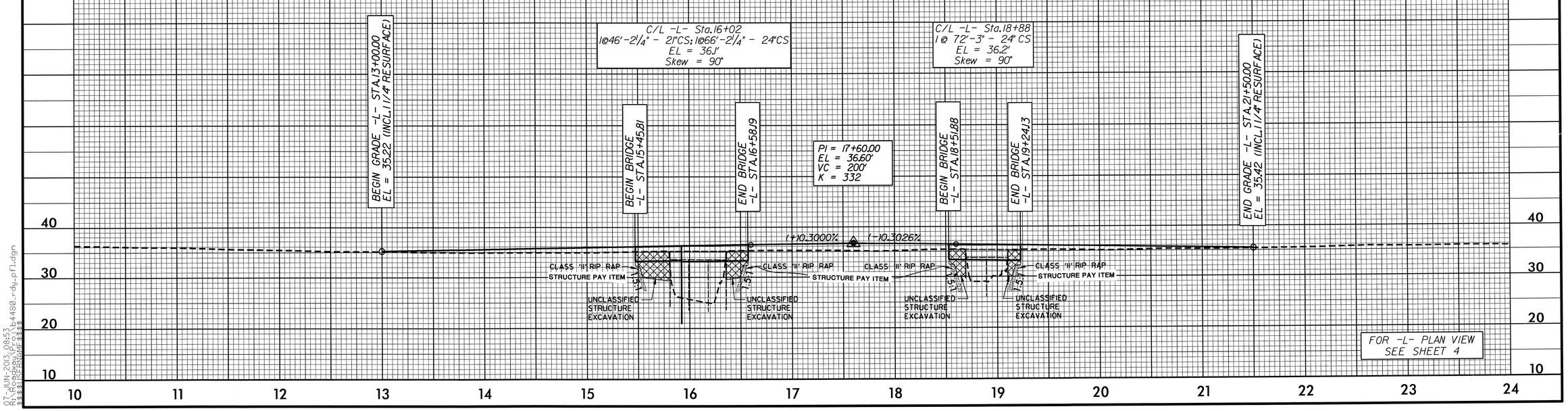
BM 81 EL. 35.31
RAILROAD SPIKE IN BASE OF 20 INCH GUM TREE
-BL- STA. 19+78 (78' LT.)
-L- STA. 24+83.43 (62.59' LT.)

-L- STA. 16+02
BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	2200	CFS
DESIGN FREQUENCY	=	25	YRS
DESIGN HW ELEVATION	=	33.50	FT
BASE DISCHARGE	=	3586	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	35.07	FT
OVERTOPPING DISCHARGE	=	3586	CFS
OVERTOPPING FREQUENCY	=	+100	YRS
OVERTOPPING ELEVATION	=	35.1	FT

-L- STA. 18+88
BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	2200	CFS
DESIGN FREQUENCY	=	25	YRS
DESIGN HW ELEVATION	=	33.5	FT
BASE DISCHARGE	=	3586	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	35.07	FT
OVERTOPPING DISCHARGE	=	3586	CFS
OVERTOPPING FREQUENCY	=	+100	YRS
OVERTOPPING ELEVATION	=	35.1	FT



FOR -L- PLAN VIEW
SEE SHEET 4

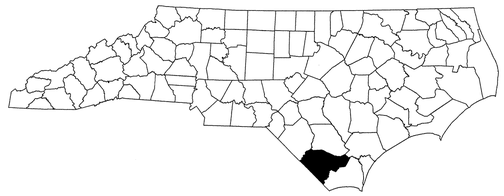
5/14/99

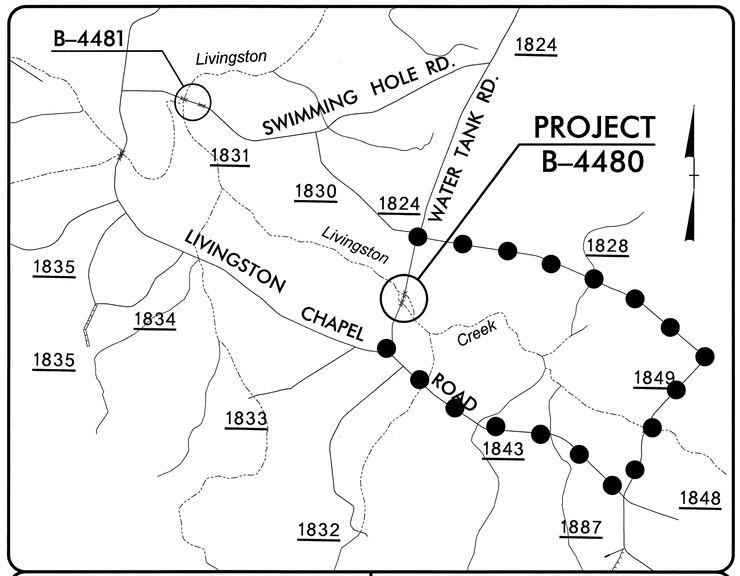
07-JUN-2013 08:53
R:\Roadway\Proj\B4480_rdy_pfl.dgn
$$$$USERNAME$$$$

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

COLUMBUS COUNTY





LOCATION: BRIDGES NO. 275 & 278 OVER LIVINGSTON CREEK ON SR 1824

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

INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS AND LEGEND
TMP-1B	TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES, GENERAL NOTES, LOCAL NOTES, AND PHASING)
TMP-2	SPECIAL SIGN DESIGN
TMP-3	OFF-SITE DETOUR
TMP-4	ROAD CLOSURE

SHEET NO.
TMP-1

TIP PROJECT: B-4480

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

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

J. S. BOURNE, P.E. — STATE TRAFFIC MANAGEMENT ENGINEER
J. S. KITE, P.E — TRAFFIC CONTROL PROJECT ENGINEER
D. W. BISSETTE, P.E — TRAFFIC CONTROL PROJECT DESIGN ENGINEER
_____ — TRAFFIC CONTROL DESIGN ENGINEER

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

SEPI ENGINEERING & CONSTRUCTION
1025 Wade Avenue
Raleigh, NC 27605
Tel:919-789-9977
Fax:919-789-9591
License: C-2197

APPROVED: Steve Miller
DATE: 4-30-13

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 037026 ENGINEER STEVEN D. MILLER

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

PROJ. REFERENCE NO.	SHEET NO.
B-4480	TMP-1A

ROADWAY STANDARD DRAWINGS

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

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

LEGEND

GENERAL

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

SIGNALS

EXISTING PROPOSED TEMPORARY (TEMP)

PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

TRAFFIC CONTROL DEVICES

- BARRICADE (TYPE III)
- CONE
- DRUM SKINNY DRUM TUBULAR MARKER
- TEMPORARY CRASH CUSHION
- FLASHING ARROW BOARD
- FLAGGER
- LAW ENFORCEMENT
- TRUCK MOUNTED ATTENUATOR (TMA)
- CHANGEABLE MESSAGE SIGN

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

PAVEMENT MARKERS

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

PAVEMENT MARKING SYMBOLS

- PAVEMENT MARKING SYMBOLS

APPROVED: [signature] DATE: 4-30-13

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 037026 ENGINEER STEVEN D. MILLER

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

ROADWAY STANDARD DRAWINGS & LEGEND

$$$$$SYSTIME$$$$
$$$$$$$$$$$$$$DON$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

MANAGEMENT STRATEGIES

-CLOSE SR 1824 (WATER TANK ROAD) AND DETOUR TRAFFIC OFF-SITE

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

GENERAL NOTES

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

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

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

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

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

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

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

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

LOCAL NOTES

1) NOTIFY COLUMBUS COUNTY SCHOOLS AT (910) 642-5168 AT LEAST ONE MONTH PRIOR TO ROAD CLOSURE.

2) NOTIFY COLUMBUS COUNTY EMERGENCY SERVICES AT (910) 640-6610 AT LEAST ONE MONTH PRIOR TO ROAD CLOSURE.

3) B-4480 SHALL BE COMPLETED PRIOR TO BEGINNING B-4481.

PHASING

STEP 1 USING RSD 1101.03 SHEET 1 OF 9, CLOSE WATER TANK ROAD. (SR 1824) AND DETOUR TRAFFIC OFF-SITE AS SHOWN ON TMP-3. MAINTAIN ACCESS TO ALL RESIDENCES AND BUSINESSES BETWEEN CLOSURE POINTS.

STEP 2 PERFORM THE FOLLOWING WITHIN THE ROAD CLOSURE:
-REMOVE EXISTING STRUCTURES.
-CONSTRUCT THE PROPOSED STRUCTURES.
-CONSTRUCT THE PROPOSED ROADWAY SECTION -L- FROM STATION 13+00 TO STATION 21+50.

STEP 3 PLACE FINAL PAVEMENT MARKINGS ACCORDING TO THE PAVEMENT MARKING PLANS.

STEP 4 OPEN WATER TANK ROAD (SR 1824) TO TRAFFIC AND REMOVE ALL TRAFFIC CONTROL DEVICES.

APPROVED: *[signature]* DATE: 4-30-13

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 037026 ENGINEER STEVEN D. MILLER

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

TRANSPORTATION OPERATIONS PLAN

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

PROJ. REFERENCE NO.	SHEET NO.
B-4480	TMP-2

SEPI ENGINEERING & CONSTRUCTION
Sepi Engineering Group
1025 Wade Avenue
Raleigh, NC 27605
Phone: (919)-789-9977
Fax: (919)-789-9591
TRANSPORTATION TRAFFIC SURVEYING ENVIRONMENTAL SITE CIVIL INSPECTIONS CONSTRUCTION

SIGN NUMBER: SP-1
TYPE: STATIONARY
QUANTITY: SEE PLANS

BACKG COLOR: Fluorescent Orange
COPY COLOR: Black

SIGN WIDTH: 30″
HEIGHT: 36″
TOTAL AREA: 7.5 Sq.Ft.

BORDER TYPE: RECESSED
RECESS: 0.5″
WIDTH: 0.63″
RADII: 1.5″

MAT'L: 0.125″ (3.2 mm) ALUMINUM
0.079″ COMPOSITE

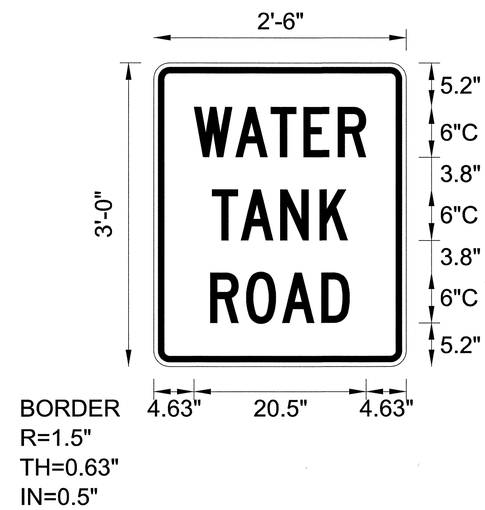
DESIGN BY: R DRAYTON
PROJECT ID: B-4480

CHECKED BY: S MILLER
DIV: 6

DATE: Feb 11, 2013

USE NOTES

1. Legend and border shall be direct applied black non-reflective sheeting.
2. Background shall be Type VII, VIII, or IX (prismatic) fluorescent orange retroreflective sheeting.



Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter locations are panel edge to lower left corner

						Series/Size Text Length
	W	A	T	E	R	C 2000
	4.8	9.7	13.9	17.8	21.9	20.5
	T	A	N	K		C 2000
	6.9	10.4	15	19.7		16.1
	R	O	A	D		C 2000
	6.7	11	15.2	19.9		16.6

FILENAME: B-4480 TMP-2

SEPI ENGINEERING & CONSTRUCTION SIGN DETAIL

APPROVED: [signature] DATE: 4-30-13

SEAL

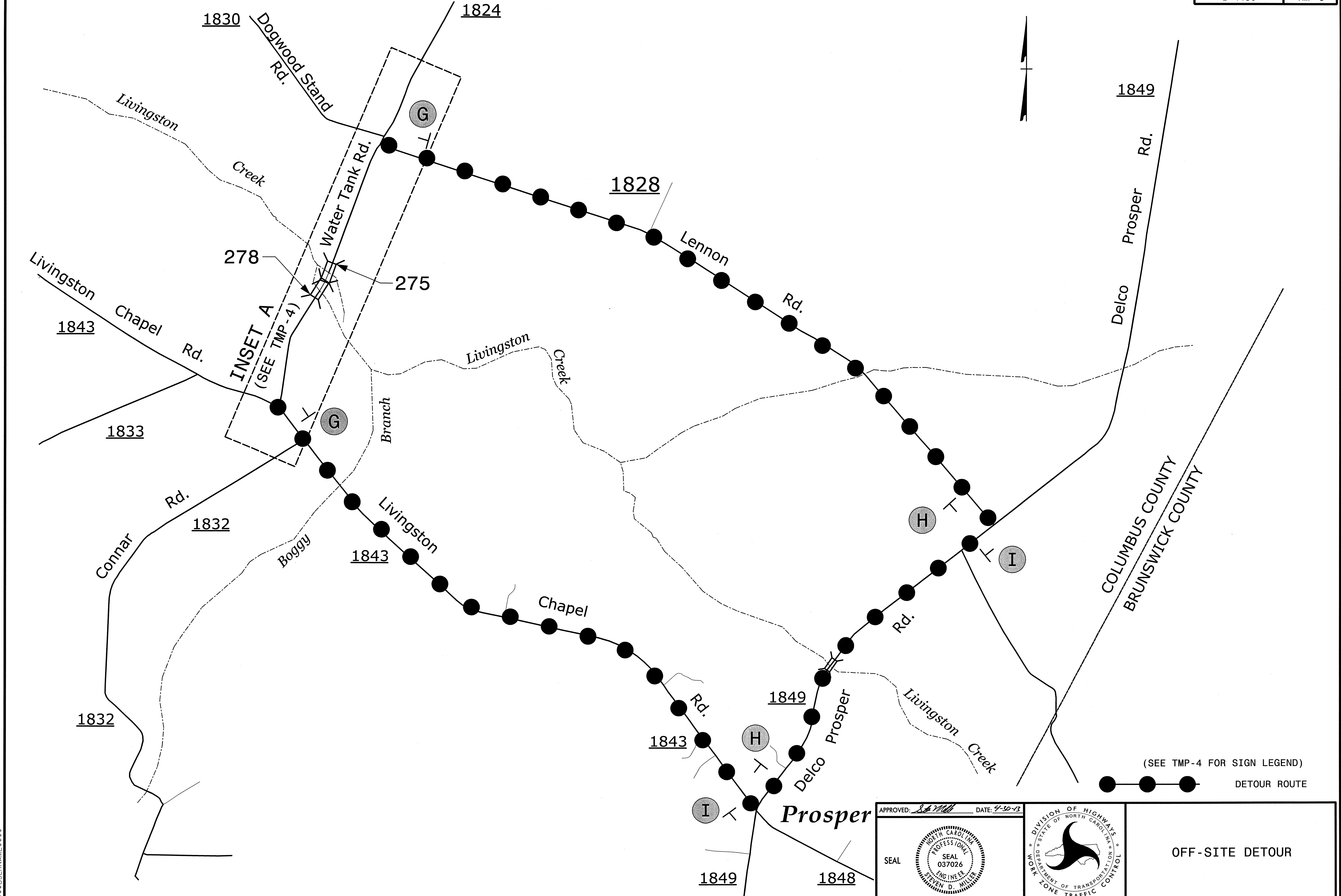
NORTH CAROLINA PROFESSIONAL SEAL 037026 ENGINEER STEVEN D. MILLER

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

SPECIAL SIGN DESIGN

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

PROJ. REFERENCE NO.	SHEET NO.
B-4480	TMP-3



APPROVED: [signature] DATE: 4-30-13

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 037026 ENGINEER STEVEN D. MILLER

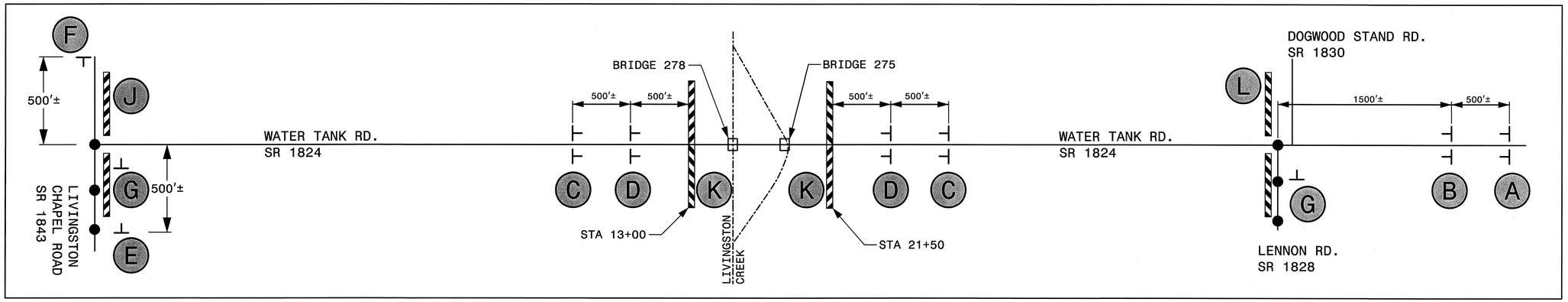
DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

OFF-SITE DETOUR

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

PROJ. REFERENCE NO.	SHEET NO.
B-4480	TMP-4

INSET A



W20-3
48" X 48"

A

W20-2
48" X 48"

B

W20-3
48" X 48"

C

W20-3
48" X 48"

D

W20-3
48" X 48"

NEXT RIGHT

SP-4R
48" X 12"

E

W20-3
48" X 48"

NEXT LEFT

SP-4L
48" X 12"

F

M4-8 A
48" x 18"

G

SP-1
30" x 36"

M4-8
24" x 12"

M6-1
21" x 15"

H

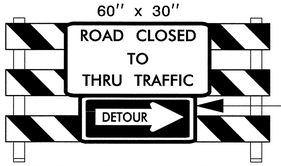
SP-1
30" x 36"

M4-8
24" x 12"

M6-1
21" x 15"

I

R11-4
60" x 30"

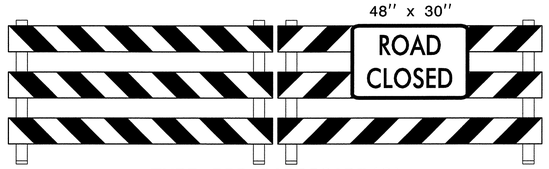


M4-10R
48" x 18"

TYPE III BARRICADE

J

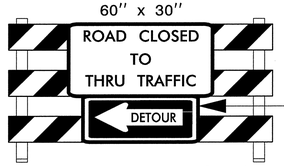
R11-2
48" x 30"



TYPE III BARRICADE(S)

K

R11-4
60" x 30"



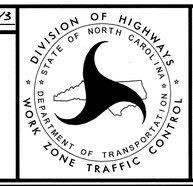
M4-10L
48" x 18"

TYPE III BARRICADE

L

APPROVED: DATE: 4-30-13

SEAL



ROAD CLOSURE

$$$$SYSTIME$$$$
$$$$USERNAME$$$$

T.I.P.: B-4480

CONTRACT: C203155

TIP NO.	SHEET NO.
B-4480	PMP-1

APPROVED: Ayman Alqudwah

DATE: 5/6/13

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 028387 ENGINEER AYMAN I. ALQUDWAH

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLAN
COLUMBUS COUNTY
LOCATION: BRIDGE NO.275 & 278 OVER LIVINGSTON CREEK ON SR 1824

ROADWAY STANDARD DRAWING

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

STD. NO.	TITLE
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - 2 LANE AND MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1261.01	GUARDRAIL AND BARRIER DELINEATOR SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATOR TYPES
1262.01	GUARDRAIL END DELINEATION

GENERAL NOTES

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

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

ROAD NAME	MARKING	MARKER
SR 1824 AND BRIDGE	PAINT	NONE

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

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

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

PAVEMENT MARKING SCHEDULE

SYMBOL		DESCRIPTION
PA	WHITE EDGELINE (2X)	PAINT(4")
PI	YELLOW DOUBLE CENTER (2X)	PAINT(4")

INDEX

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

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

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

ERIC WARD SIGNING & DELINEATION DESIGN ENGINEER

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

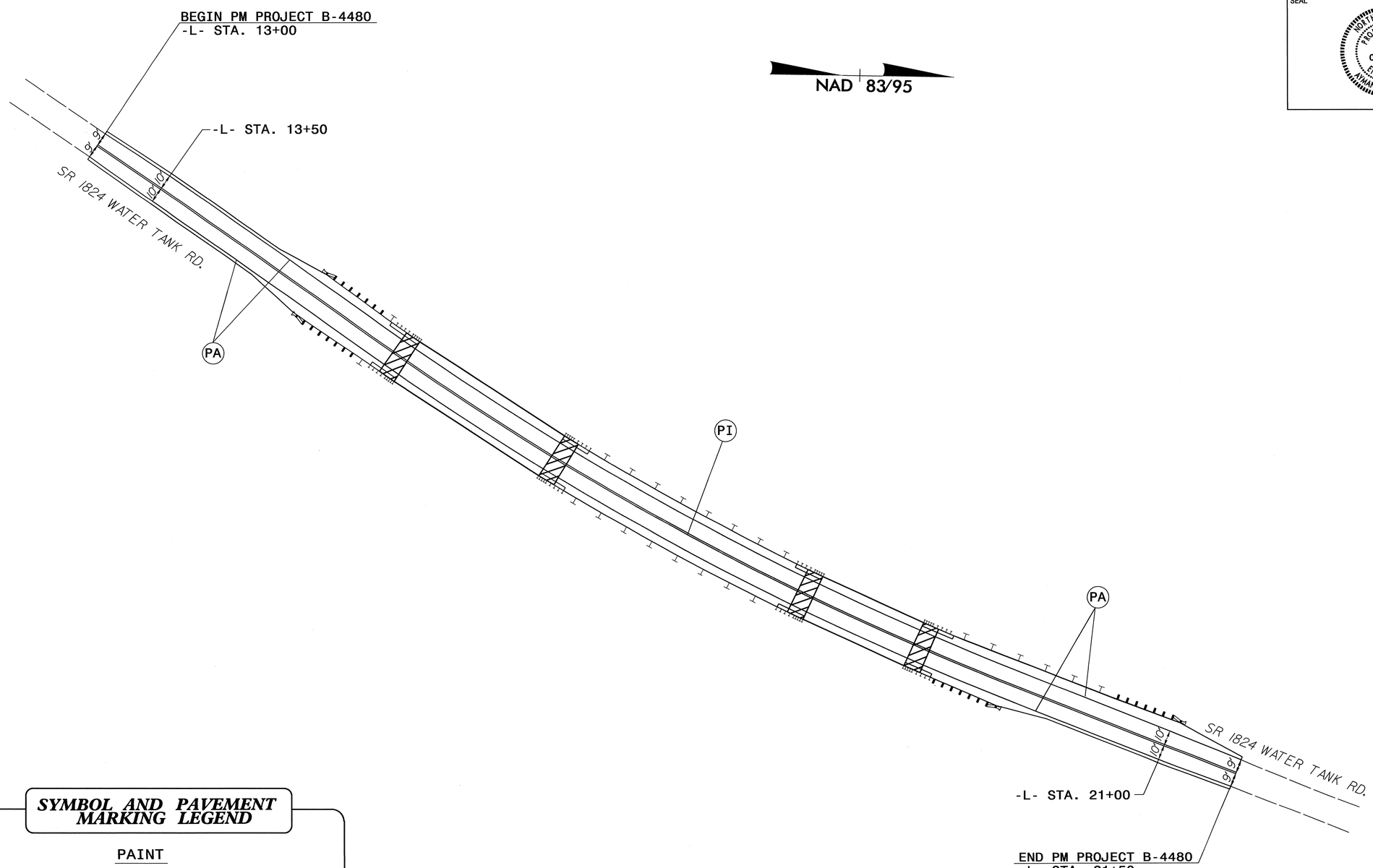
TIP NO.	SHEET NO.
B-4480	PMP-2

APPROVED: Ayman I. Alqudah

DATE: 5/6/13

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 028387 ENGINEER AYMAN I. ALQUDAH



SYMBOL AND PAVEMENT MARKING LEGEND

PAINT

(PA) WHITE EDGELINE 4"

(PI) YELLOW DOUBLE CENTER 4"

PAVEMENT MARKING DETAIL SHEET

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ericward AT TE247905

TIP PROJECT: B-4480

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4480	EC-1	

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

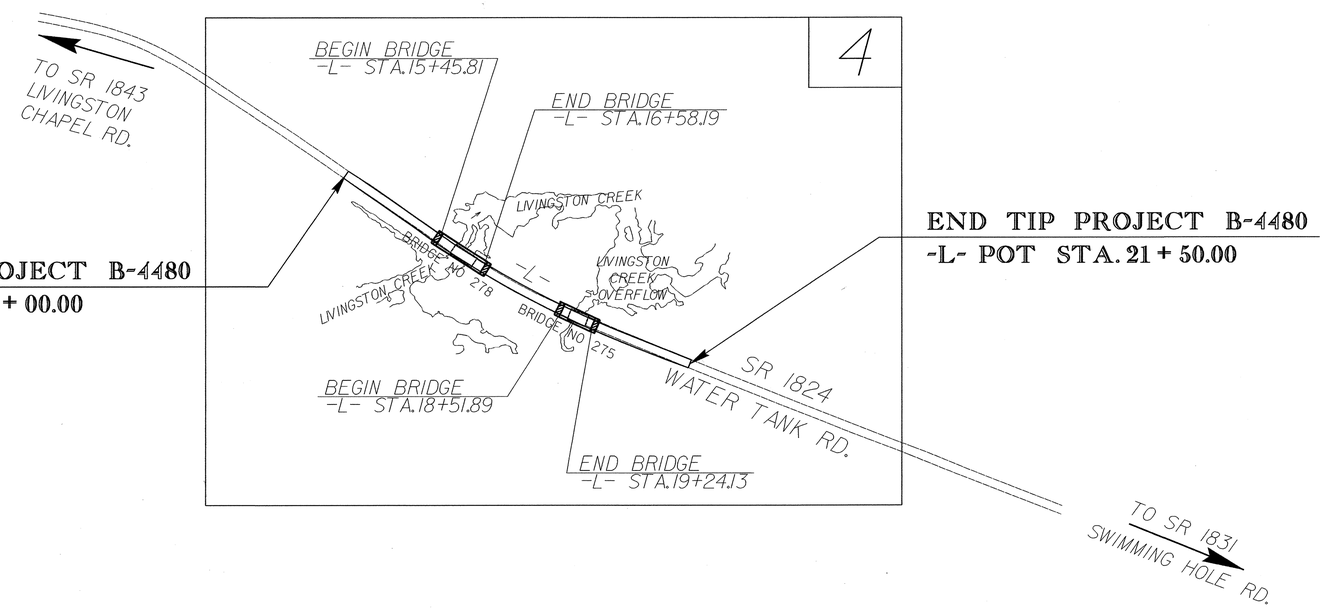
PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

NAD 83/95

COLUMBUS COUNTY

LOCATION: BRIDGES NO. 275 & 278 OVER LIVINGSTON CREEK ON SR 1824

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURES



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

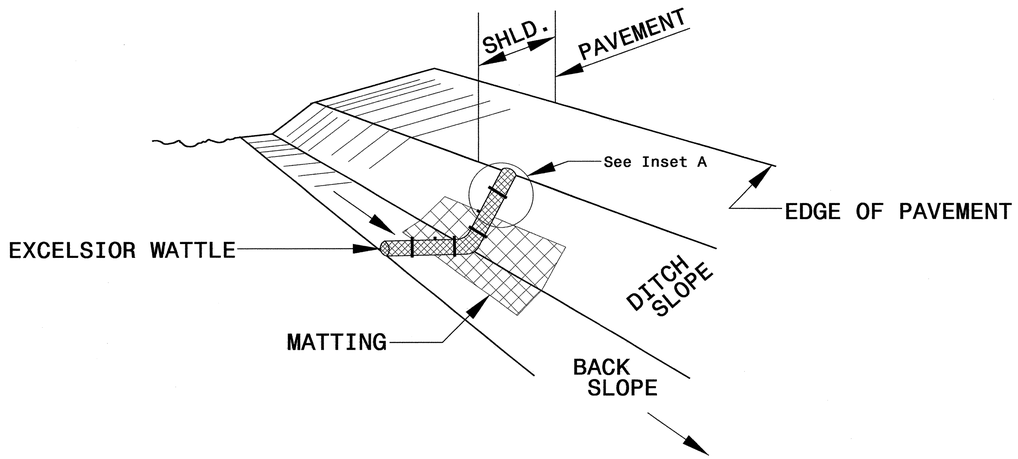
The following roadway english standards as appear in "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 2012 and the latest revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

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		

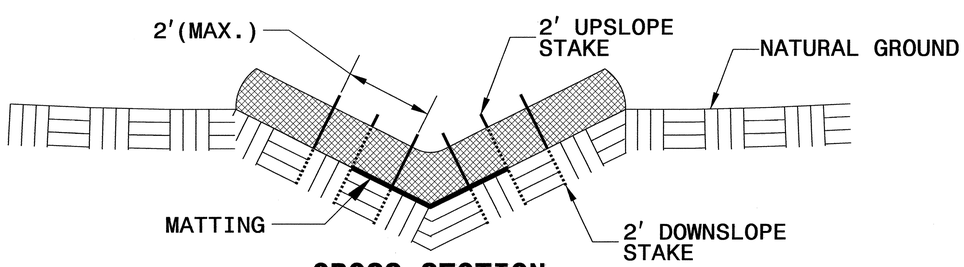
21-MAY-2013 14:28
R:\Environmental\Stormwater\Design\B4480_EC_tsh.dgn
mrtsm

PROJECT REFERENCE NO.	SHEET NO.
B-4480	EC-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

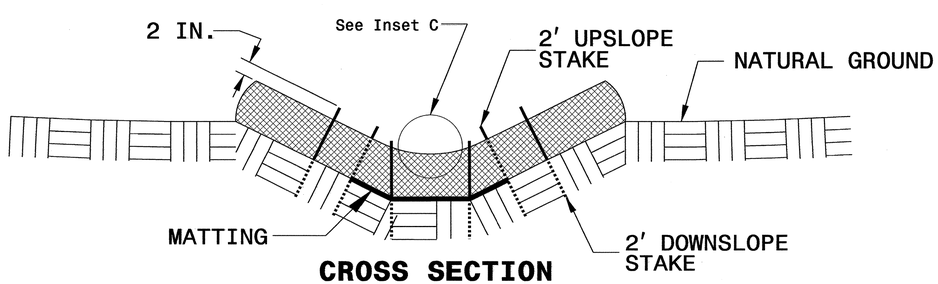
WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



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.

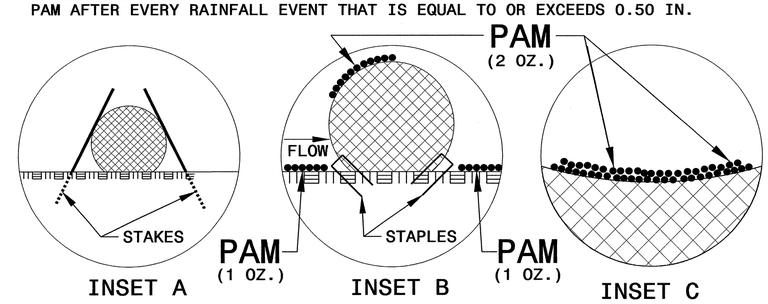
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

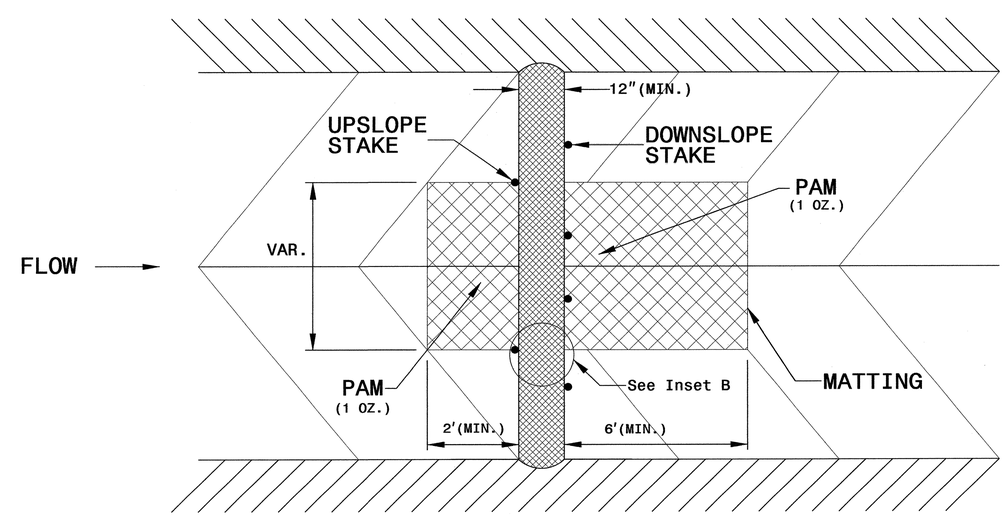
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

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.

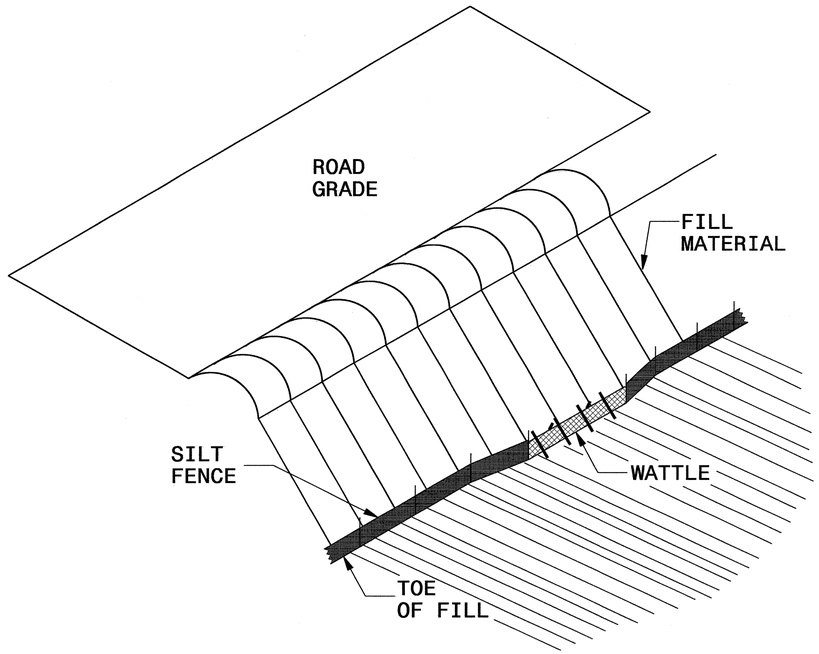




TOP VIEW

PROJECT REFERENCE NO.	SHEET NO.
B-4480	EC-2A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SILT FENCE WATTLE BREAK DETAIL



ISOMETRIC VIEW

NOTES:

USE MINIMUM 12 IN. DIAMETER EXCELSIOR 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.

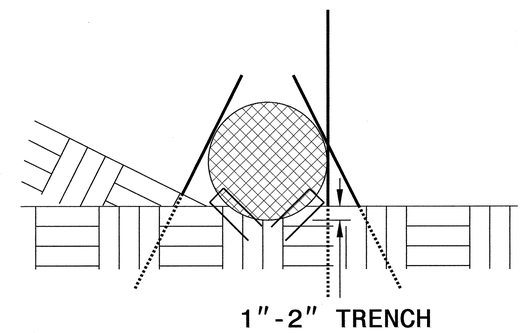
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

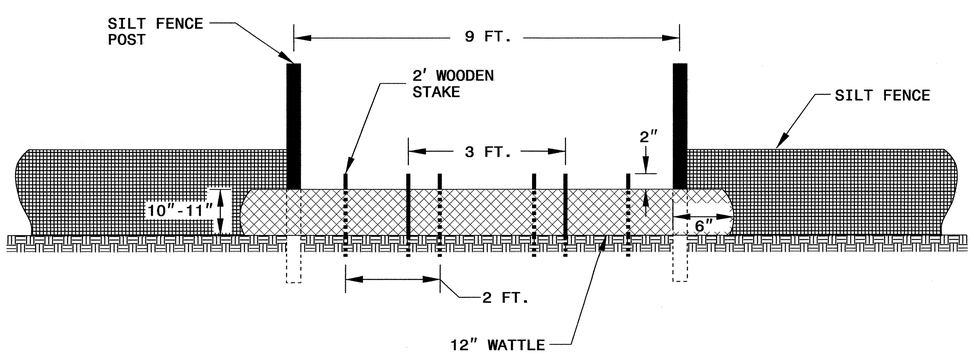
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

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

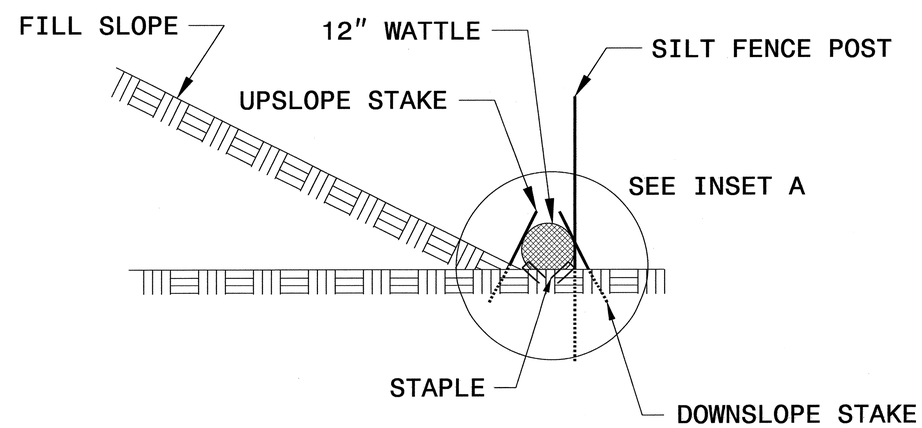
INSTALL TEMPORARY SILT FENCE IN ACCORDANCE WITH SECTION 1605 OF THE STANDARD SPECIFICATIONS.

INSET A





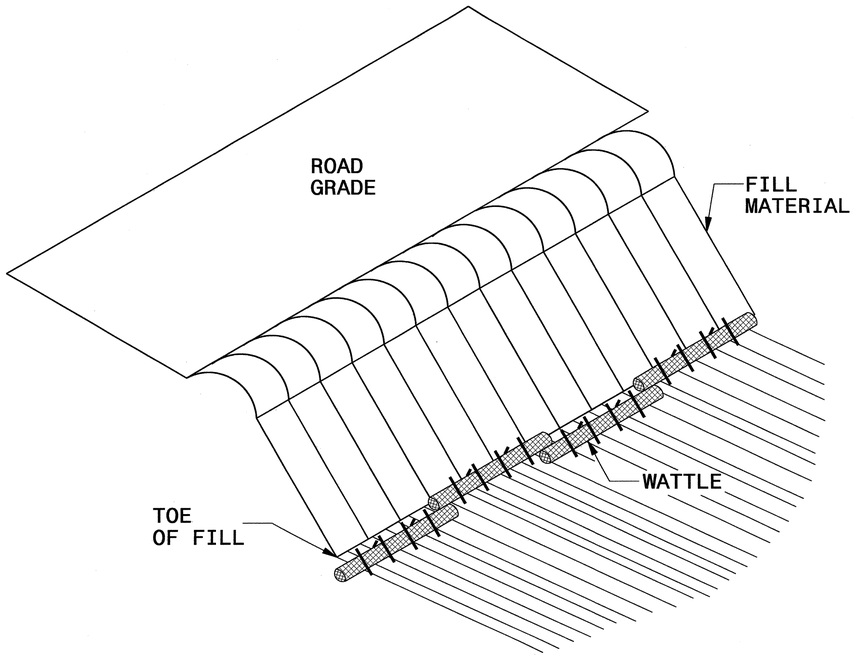
VIEW FROM SLOPE



SIDE VIEW

PROJECT REFERENCE NO.	SHEET NO.
B-4480	EC-2B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

WATTLE BARRIER DETAIL



ISOMETRIC VIEW

NOTES:

USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE AND LENGTH OF 10 FT.

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

DO NOT PLACE WATTLES ON TOE OF SLOPE.

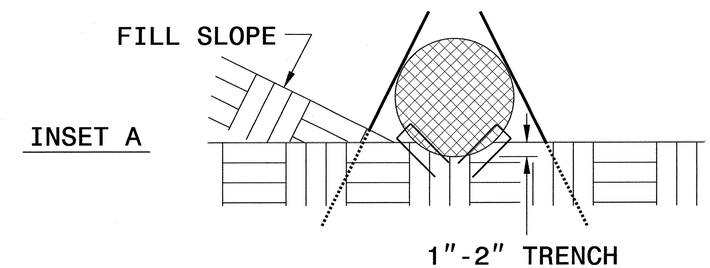
USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

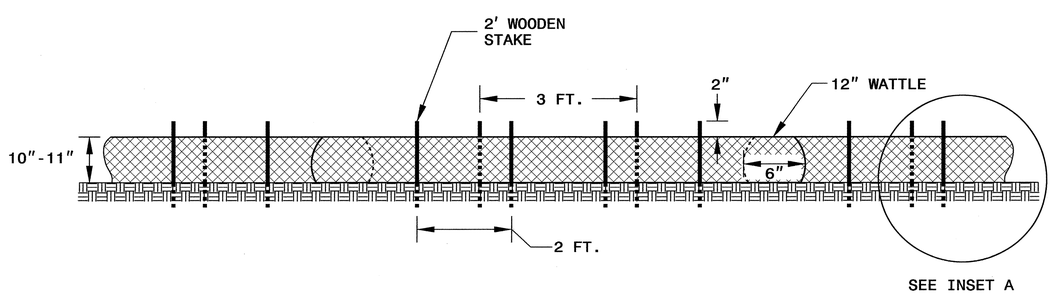
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO GROUND.

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

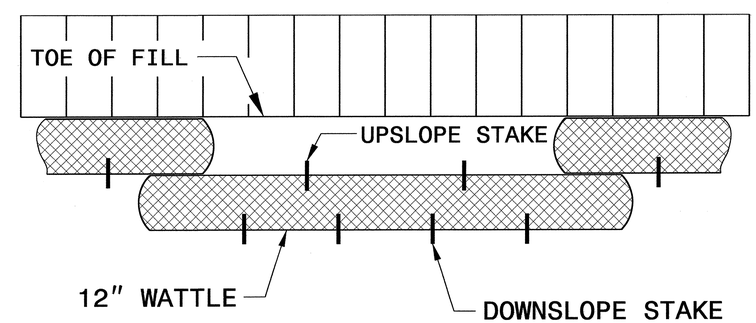
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

FOR BREAKS ALONG LARGE SLOPES, USE MAXIMUM SPACING OF 20 FT.





FRONT VIEW



TOP VIEW

PROJECT REFERENCE NO.	SHEET NO.
B-4480	EC-3
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

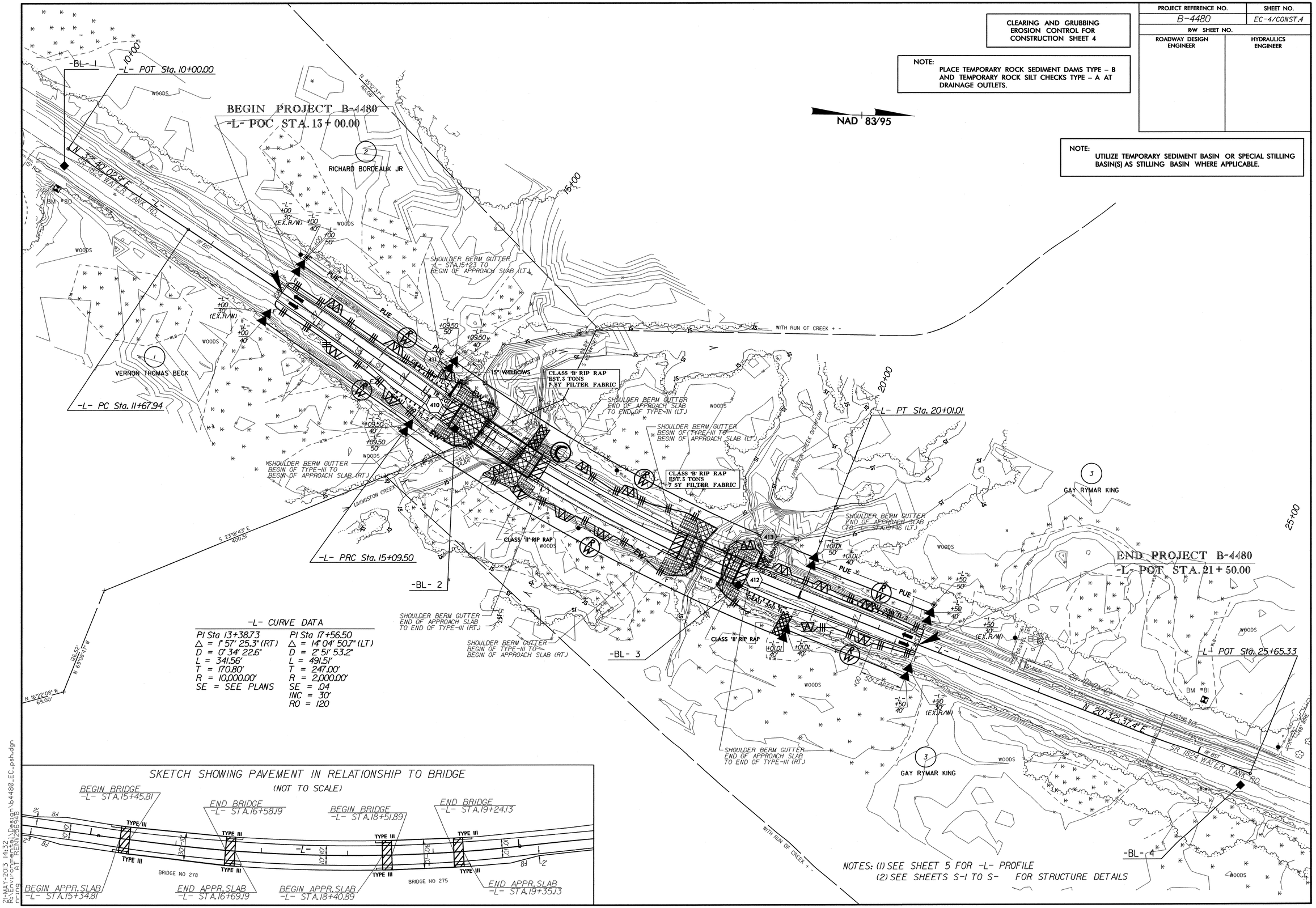
SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	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-4480	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 TEMPORARY SEDIMENT BASIN OR SPECIAL STILLING BASIN(S) AS STILLING BASIN WHERE APPLICABLE.



-L- CURVE DATA

PI Sta 13+38.73	PI Sta 17+56.50
Δ = 1° 57' 25.3" (RT)	Δ = 14° 04' 50.7" (LT)
D = 0° 34' 22.6"	D = 2° 51' 53.2"
L = 341.56'	L = 491.51'
T = 170.80'	T = 247.00'
R = 10,000.00'	R = 2,000.00'
SE = SEE PLANS	SE = .04
	INC = 30'
	RO = 120

SKETCH SHOWING PAVEMENT IN RELATIONSHIP TO BRIDGE
(NOT TO SCALE)

NOTES: (1) SEE SHEET 5 FOR -L- PROFILE
(2) SEE SHEETS S-1 TO S- FOR STRUCTURE DETAILS

21-MAY-2013 14:32
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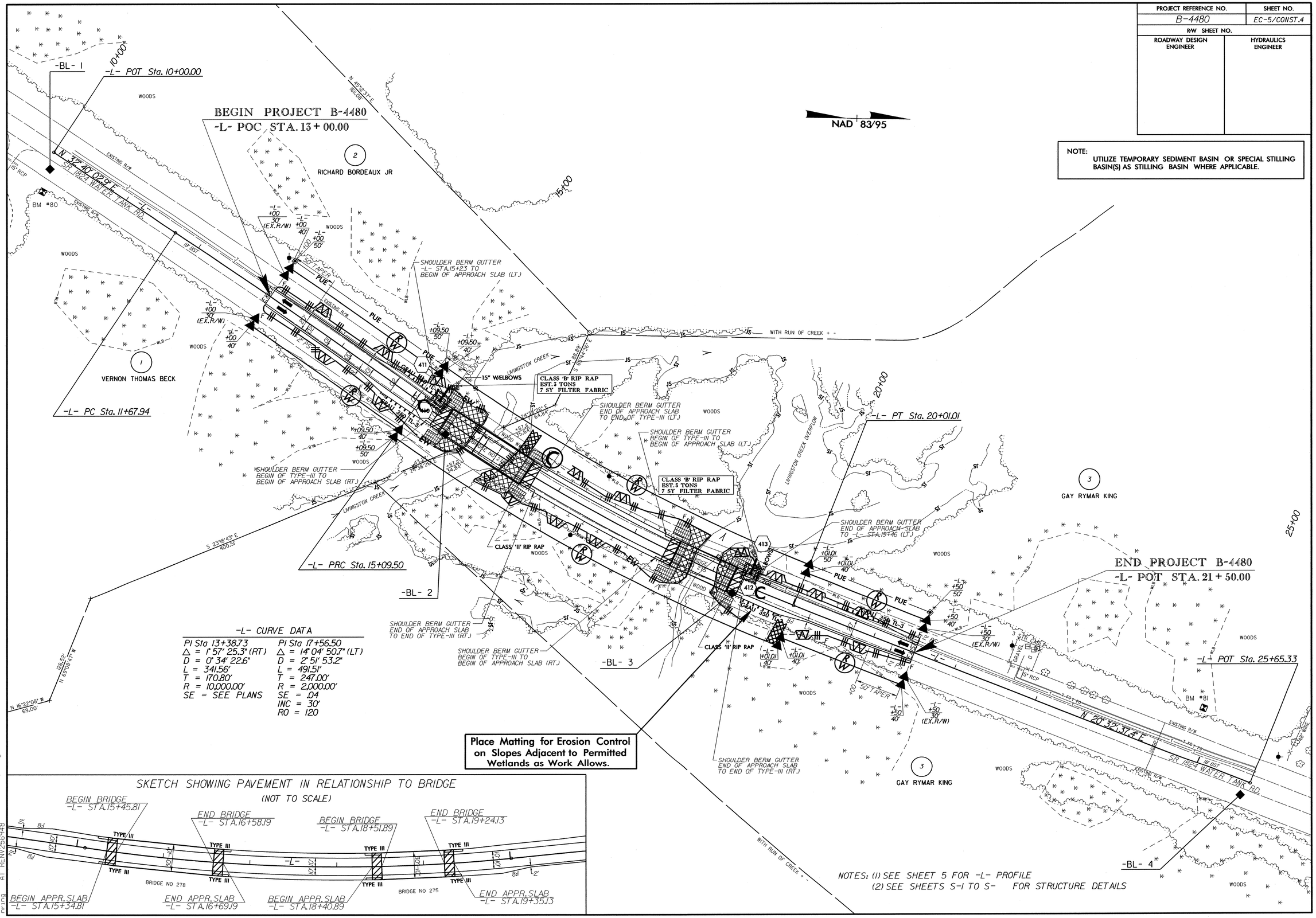
mring AT REN\265948

PROJECT REFERENCE NO.	SHEET NO.
B-4480	EC-5/CONST.4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NOTE:
UTILIZE TEMPORARY SEDIMENT BASIN OR SPECIAL STILLING BASIN(S) AS STILLING BASIN WHERE APPLICABLE.



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△ = 1° 57' 25.3" (RT)	△ = 14° 04' 50.7" (LT)
D = 0° 34' 22.6"	D = 2° 51' 53.2"
L = 341.56'	L = 491.51'
T = 170.80'	T = 247.00'
R = 10,000.00'	R = 2,000.00'
SE = SEE PLANS	SE = .04
	INC = 30'
	RO = 120

Place Matting for Erosion Control on Slopes Adjacent to Permitted Wetlands as Work Allows.

SKETCH SHOWING PAVEMENT IN RELATIONSHIP TO BRIDGE
(NOT TO SCALE)

NOTES: (1) SEE SHEET 5 FOR -L- PROFILE
(2) SEE SHEETS S-1 TO S- FOR STRUCTURE DETAILS

21-MAY-2013 14:31
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nring AT RENV256948

T.I.P.: B-4480

CONTRACT: C203155

TIP NO.	SHEET NO.
B-4480	SIGN-1

APPROVED: Ayman Alqudwah

DATE: 5/20/13

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 028387 ENGINEER AYMAN I. ALQUDWAH

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

SIGNING PLAN
COLUMBUS COUNTY
LOCATION: BRIDGES NO. 275 & 278 OVER LIVINGSTON CREEK ON SR 1824

SUMMARY OF QUANTITIES

ITEM NO.		ITEM DESCRIPTION	QUANTITY	UNIT
DESC. NO.	SECT. NO.			
4155000000	907	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	12	EA.

GENERAL NOTES

- IF REMOVAL OR RELOCATION OF SIGNS ON PRIVATE STREET (NON-STATE MAINTAINED) IS REQUIRED DUE TO CONSTRUCTION, THE CONTRACTOR SHALL INFORM THE ENGINEER. THE WORK WILL BE COMPLETED BY OTHERS.
- SIGNING PLANS DO NOT INCLUDE TEMPORARY CONSTRUCTION SIGNING OR PAVEMENT MARKINGS. SEE TRAFFIC CONTROL PLANS.
- ALL EXISTING SIGNS ON "U" CHANNEL POST WITHIN THE PROJECT LIMITS SHALL BE REMOVED AND DISPOSED OF UNLESS OTHERWISE NOTED ON PLANS.
- SEE ROADWAY PLANS FOR GUARD/GUIDE RAIL DETAILS.

INDEX

SHEET NO.	DESCRIPTION
SIGN-1	TITLE SHEET, QUANTITIES & NOTES
SIGN-2	SIGN DETAIL SHEET

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

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

ERIC WARD SIGNING & DELINEATION DESIGN ENGINEER

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

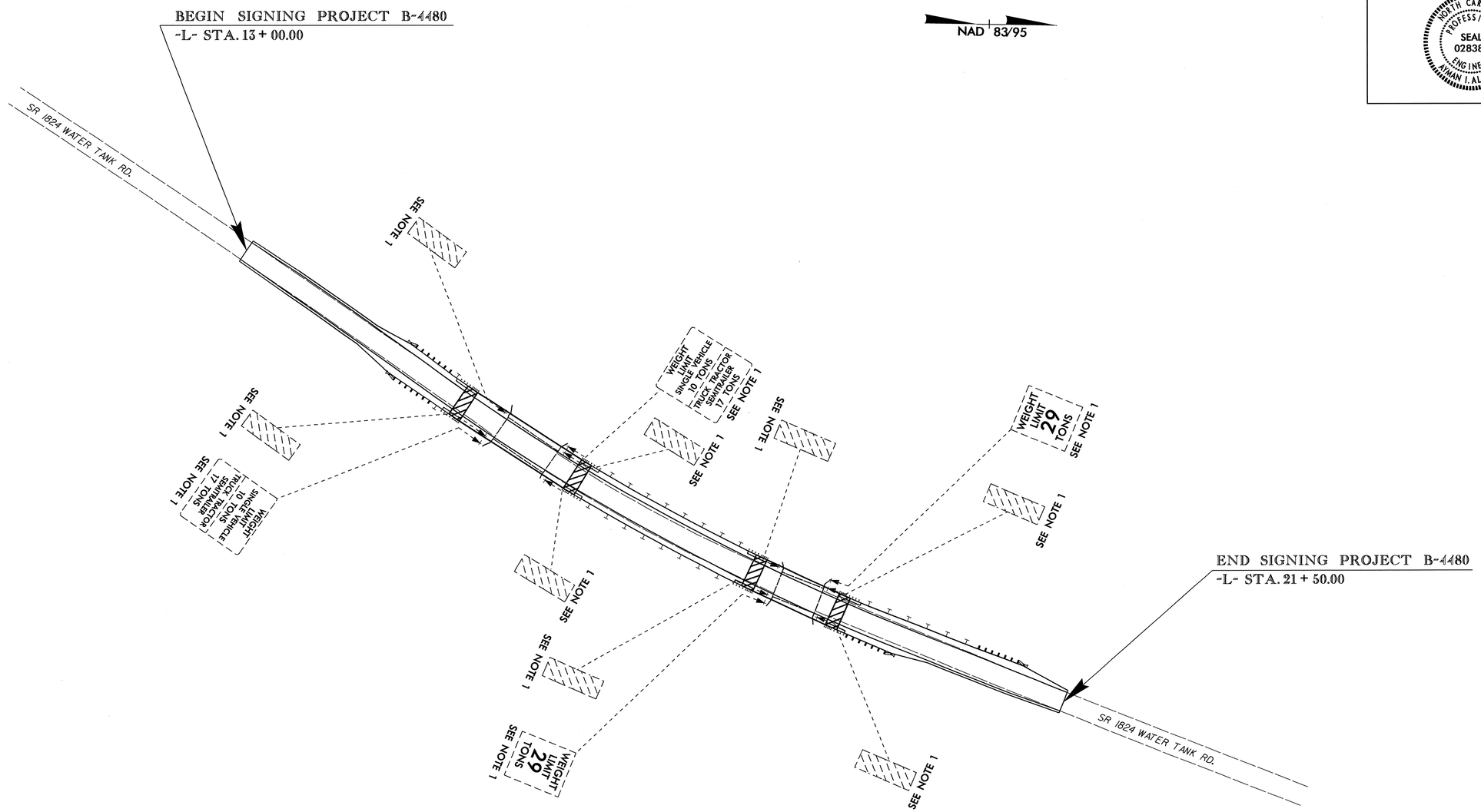
TIP NO.	SHEET NO.
B-4480	SIGN-2

APPROVED: Aman Alqudwah

DATE: 5/6/13

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 028387 ENGINEER AMAN I. ALQUDWAH



PROJECT NOTES

1	DISPOSAL OF SIGN SYSTEM, U-CHANNEL

SIGNING DETAIL SHEET

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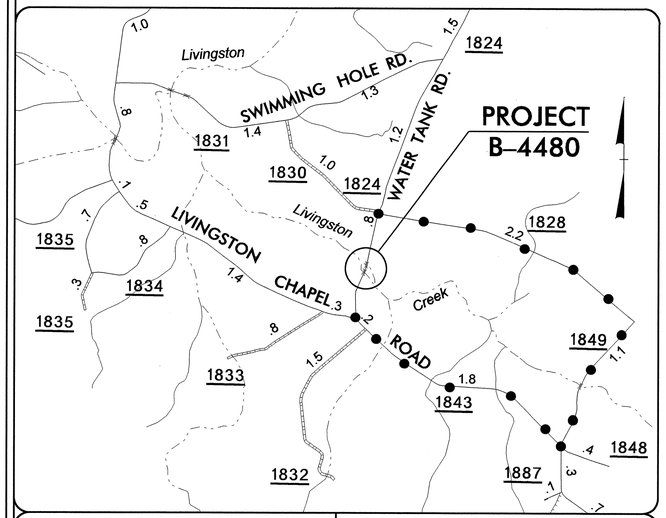
T.I.P. NO.	SHEET NO.
B-4480	UO-1

TIP PROJECT: B-4480



VICINITY MAP | DETOUR

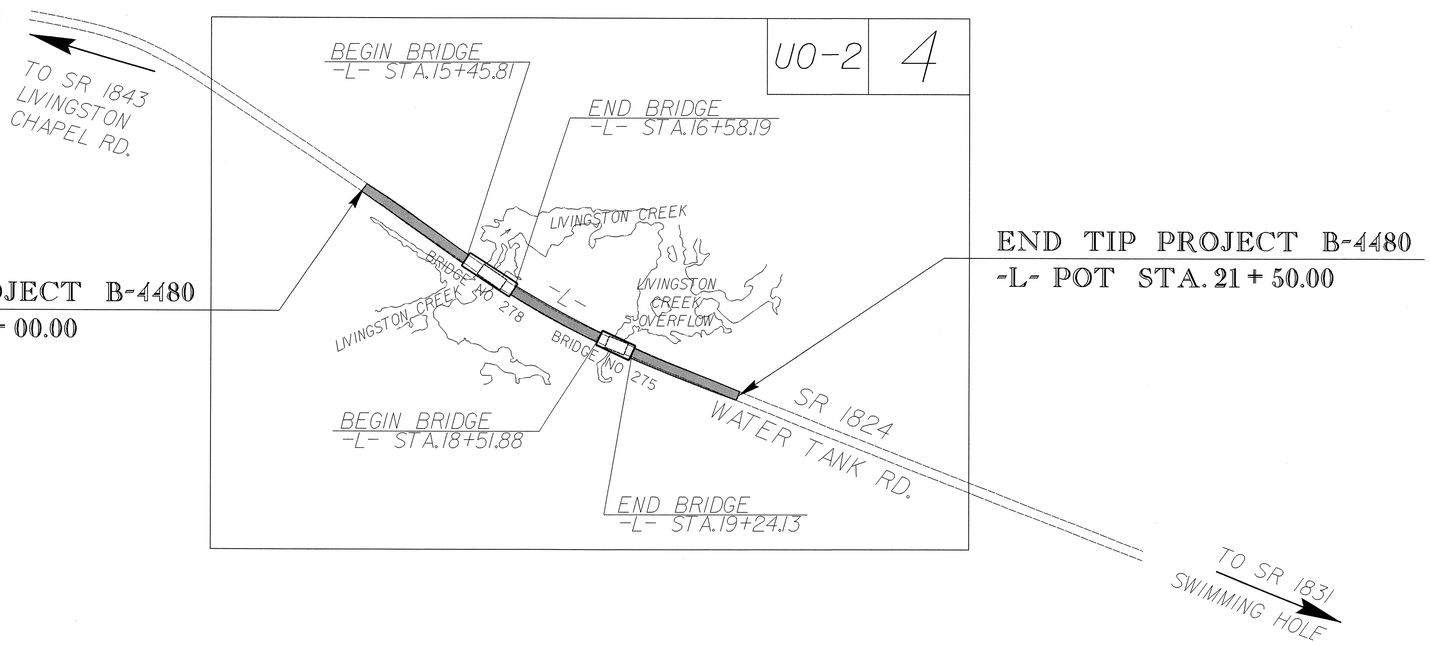
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES BY OTHERS PLANS
COLUMBUS COUNTY

NAD 83/95

LOCATION: BRIDGES 275 & 278 OVER LIVINGSTON CREEK ON SR 1824

TYPE OF WORK: RELOCATION OF TELEPHONE LINES



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	UTILITY BY OTHERS PLAN SHEET
UO-3 THRU UO-5	UTILITY BY OTHERS PROFILE SHEETS

UTILITY OWNERS ON PROJECT

(1) AT&T TELEPHONE

PREPARED IN THE OFFICE OF:

DIVISION OF HIGHWAYS
UTILITIES ENGINEERING SECTION

1591 MAIL SERVICES CENTER
RALEIGH NC 27699-1591
PHONE (919) 250-4128
FAX (919) 250-4119

Roger Worthington, P.E.	UTILITIES SECTION ENGINEER
Corey Bousquet, P.E.	UTILITIES SQUAD LEADER PROJECT ENGINEER
Kelvin Martin	UTILITIES PROJECT DESIGNER

09/08/99
15-JUL-2013 09:52
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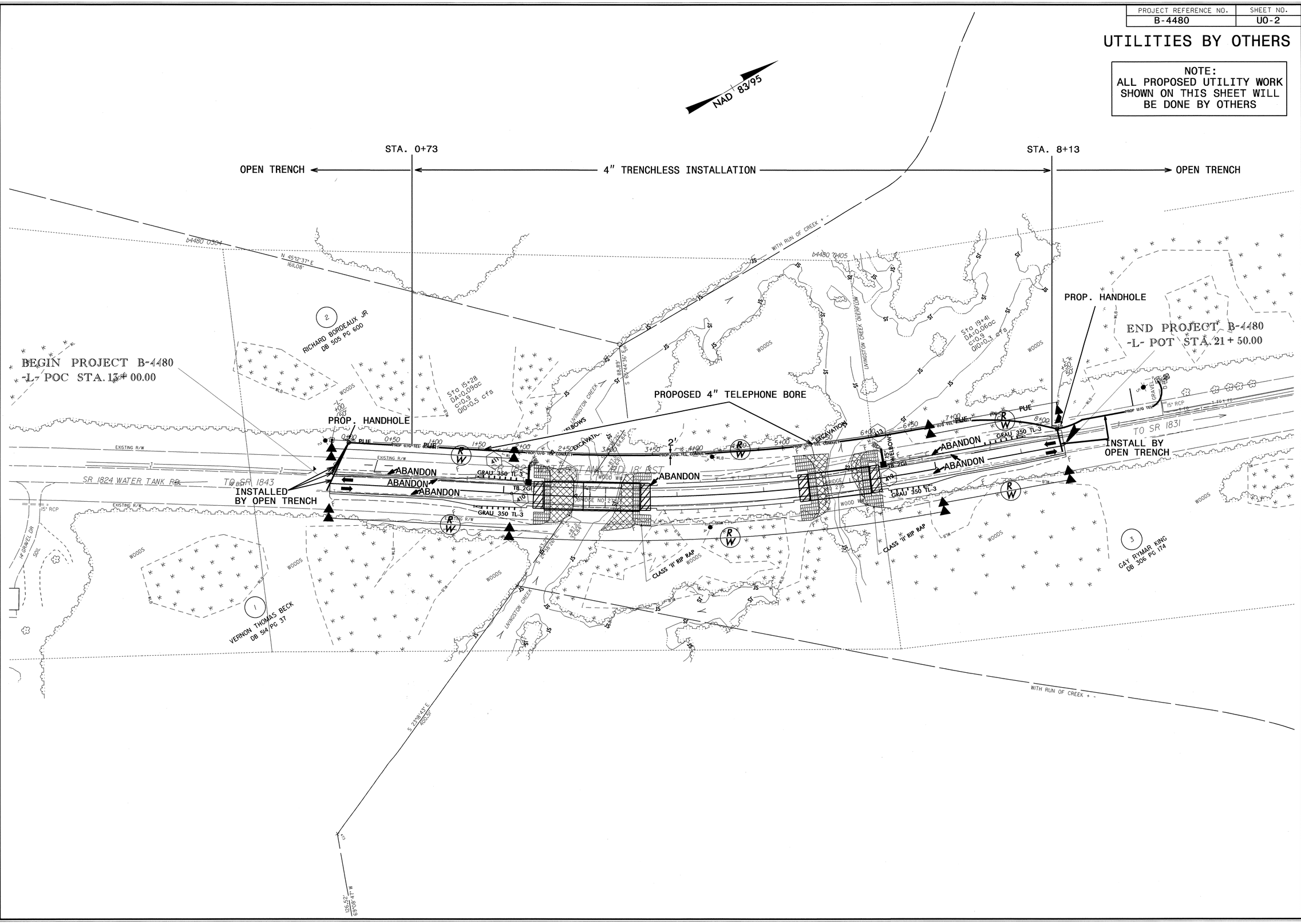
PROJECT REFERENCE NO.	SHEET NO.
B-4480	U0-2

UTILITIES BY OTHERS

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



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PROJECT REFERENCE NO.	SHEET NO.
B-4480	U0-3

UTILITIES BY OTHERS

NOTE:
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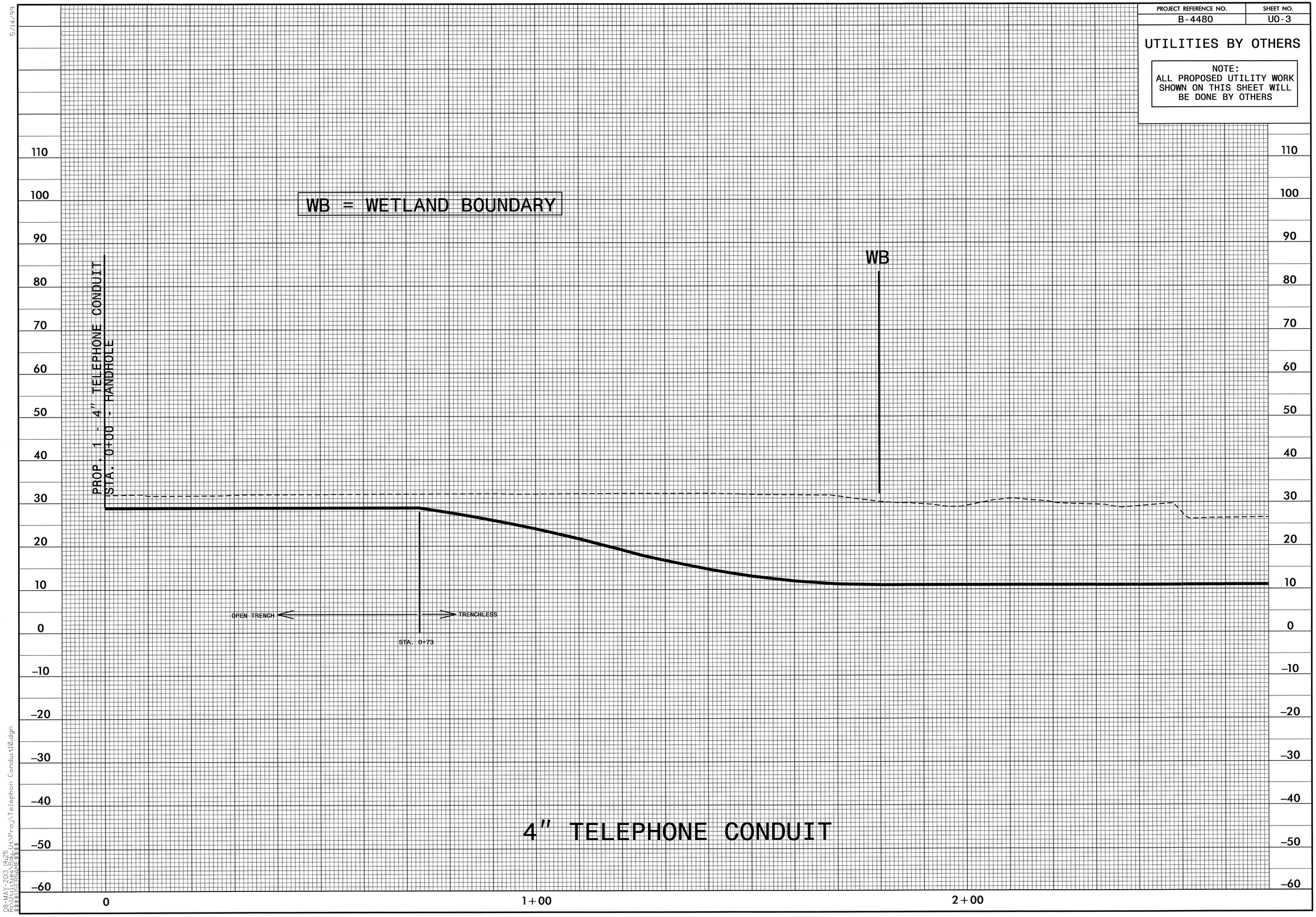

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PROJECT REFERENCE NO.	SHEET NO.
B-4480	U0-4

UTILITIES BY OTHERS

NOTE:
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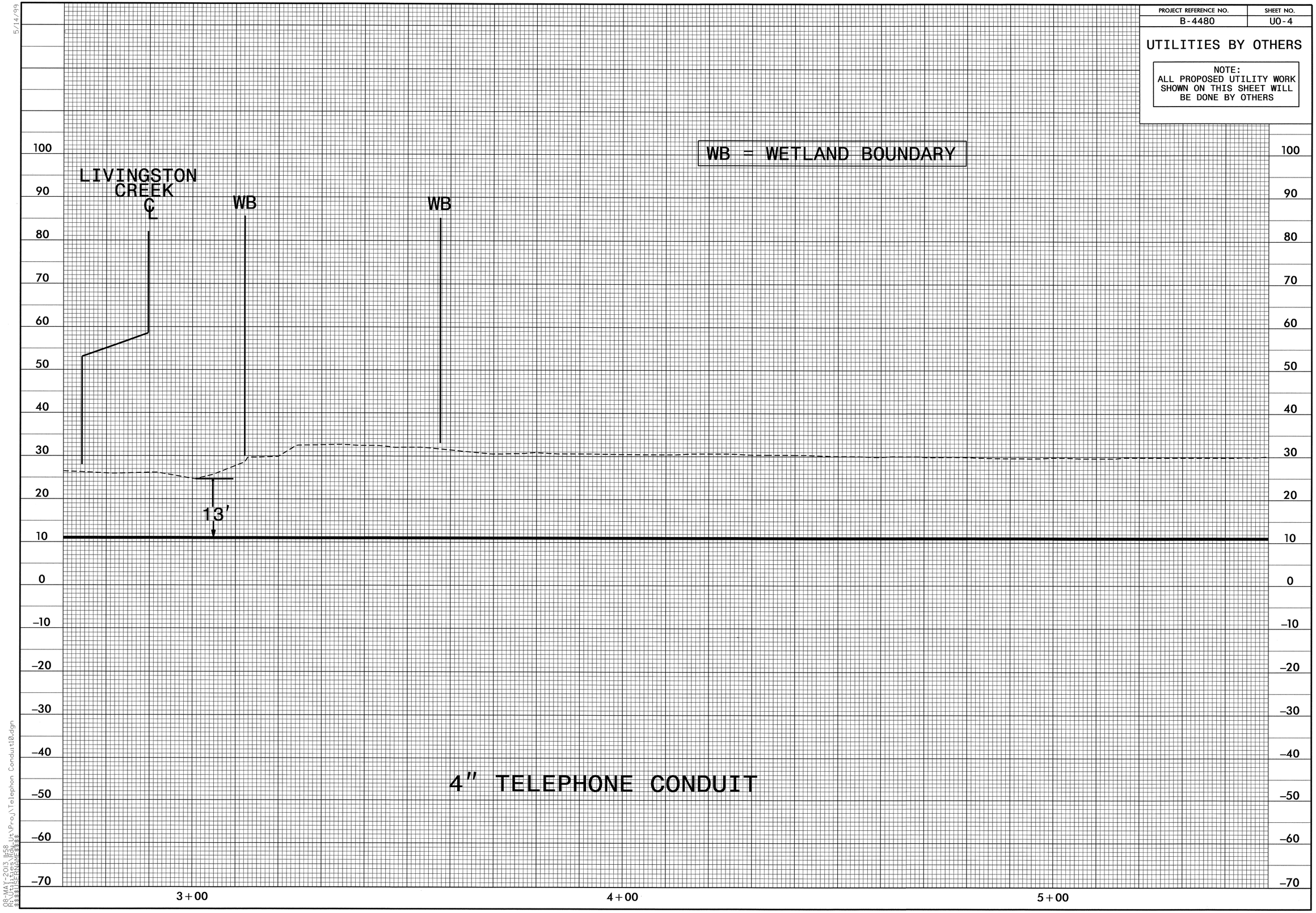

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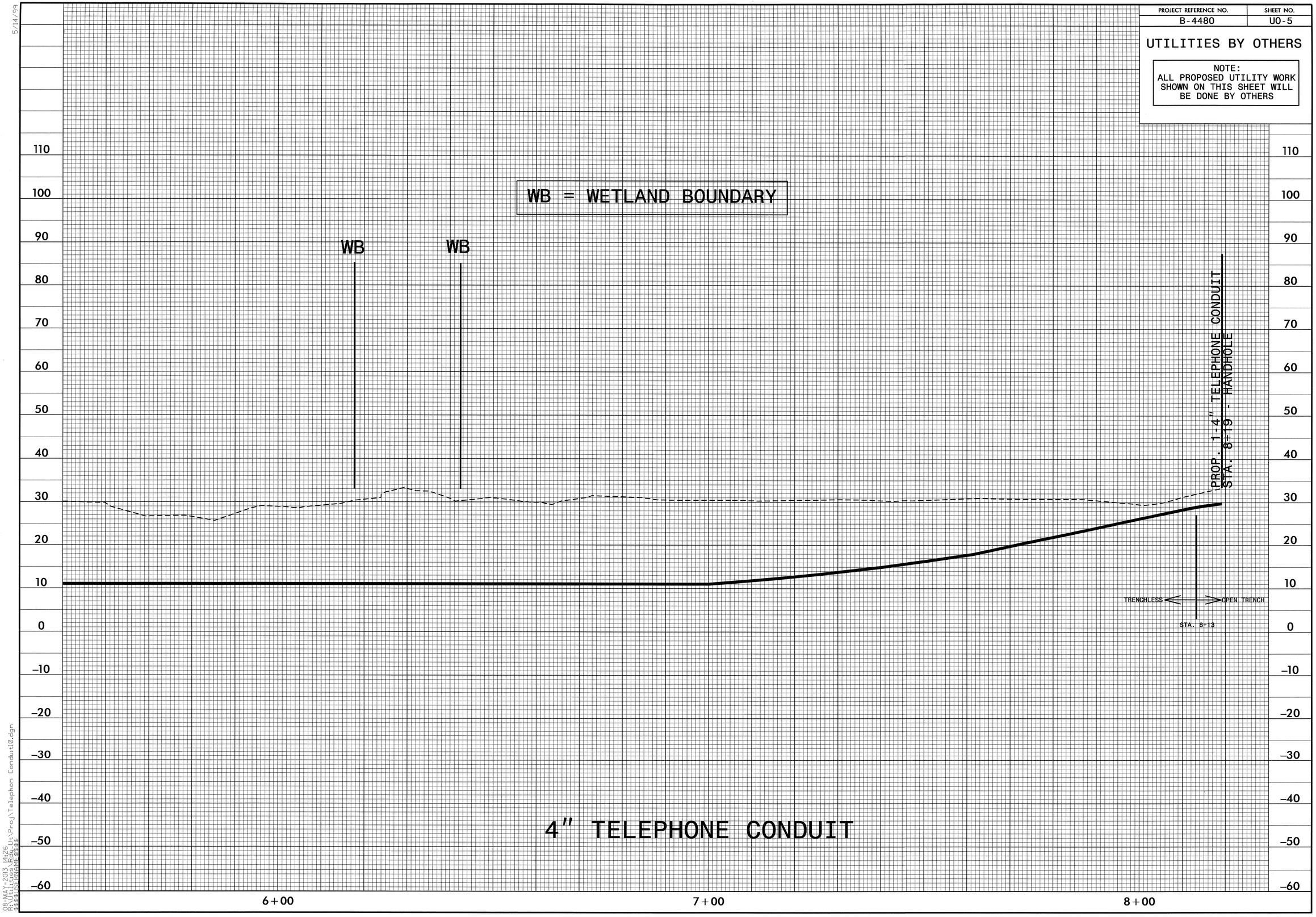
PROJECT REFERENCE NO.	SHEET NO.
B-4480	U0-5

UTILITIES BY OTHERS

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



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PROJ. REFERENCE NO.	SHEET NO.
B-4480	X-1A

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

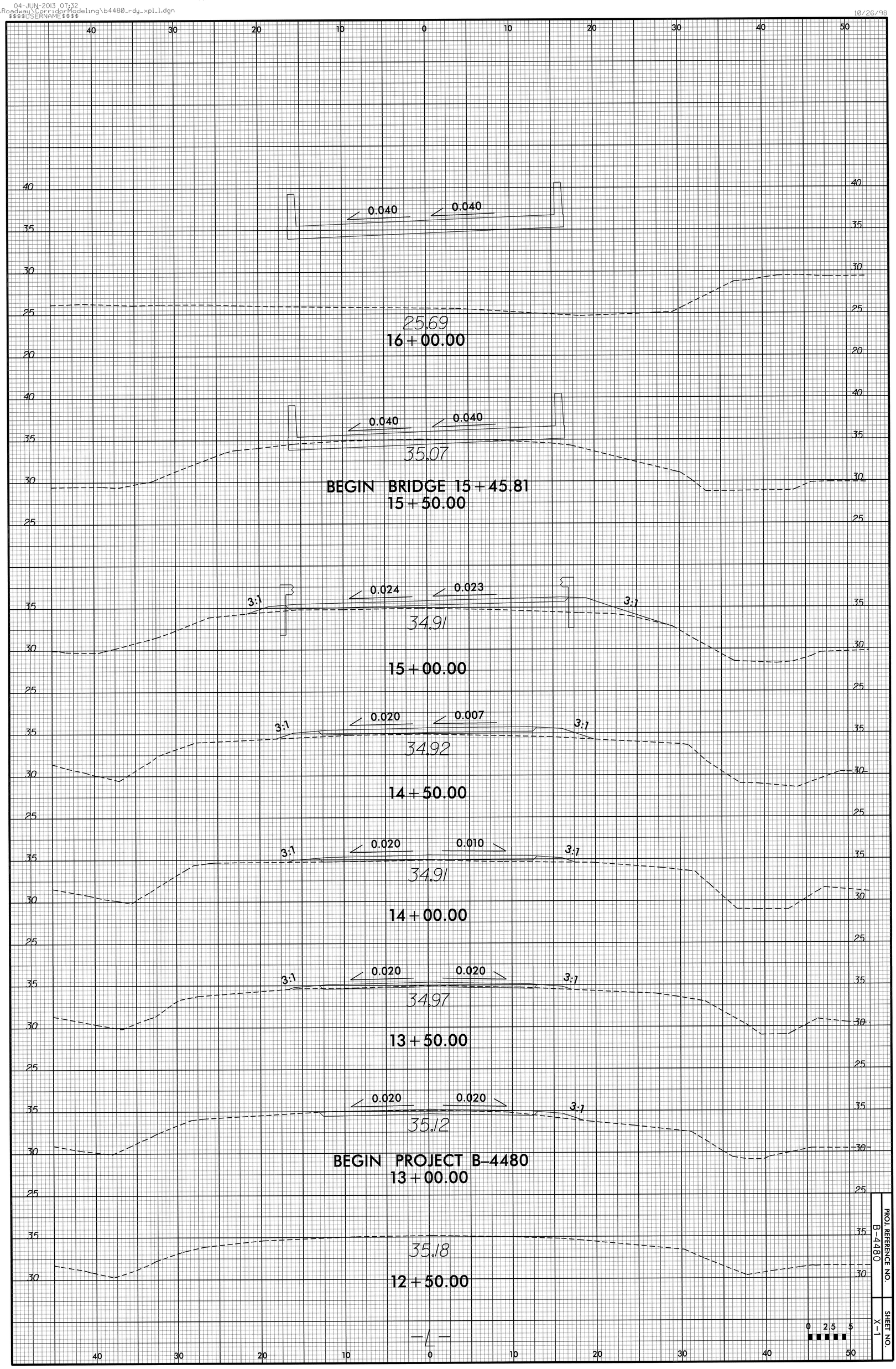
NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT

CROSS-SECTION SUMMARY

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
13+00.00	0	0
13+50.00	13	4
14+00.00	3	7
14+50.00	0	20
15+00.00	0	43
15+45.81	0	51

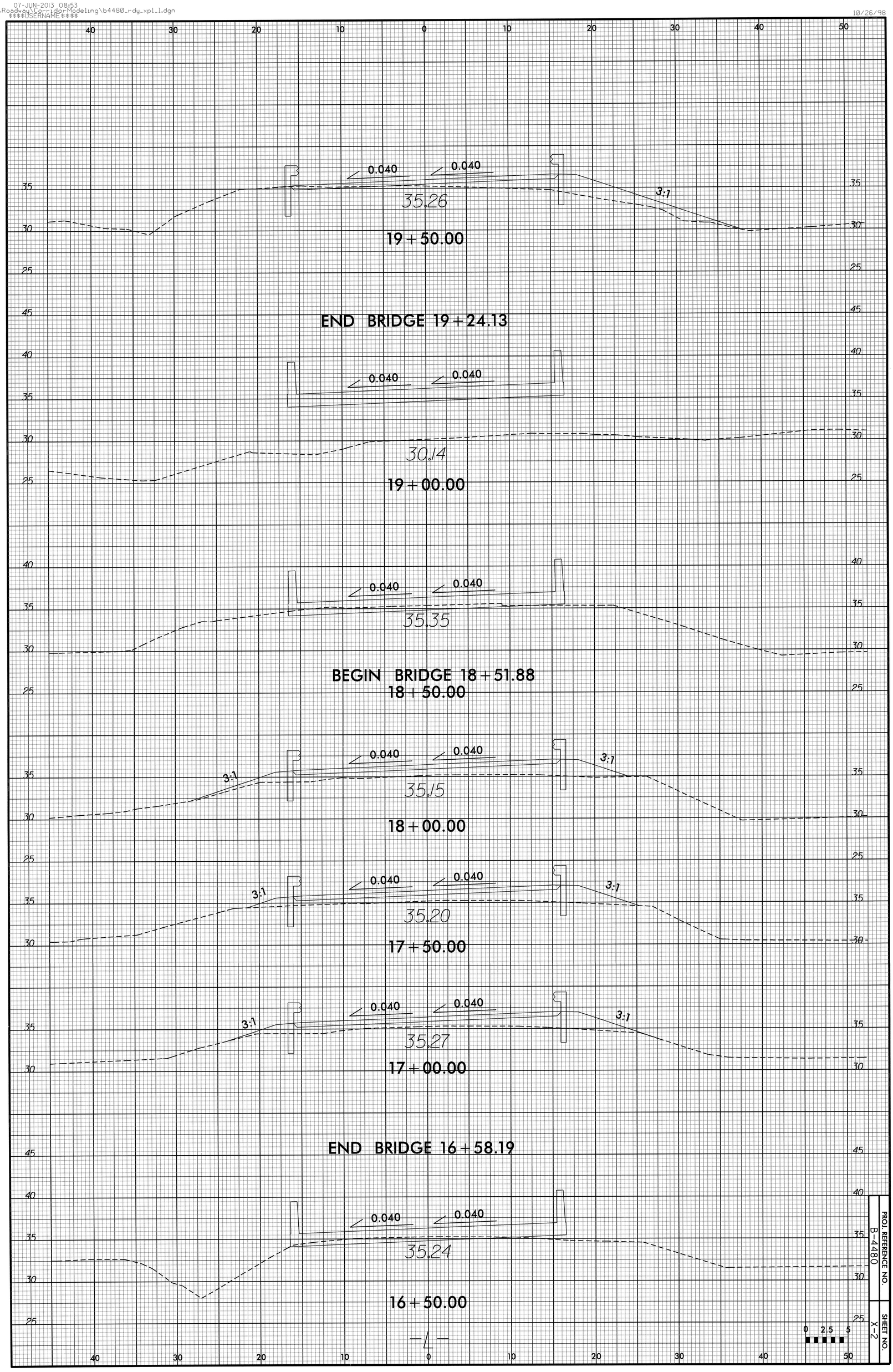
Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
16+58.19	0	0
17+00.00	0	88
17+50.00	0	77
18+00.00	0	81
18+51.80	0	88

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
19+24.13	0	0
19+50.00	2	38
20+00.00	2	65
20+50.00	2	36
21+00.00	6	13
21+50.00	15	5



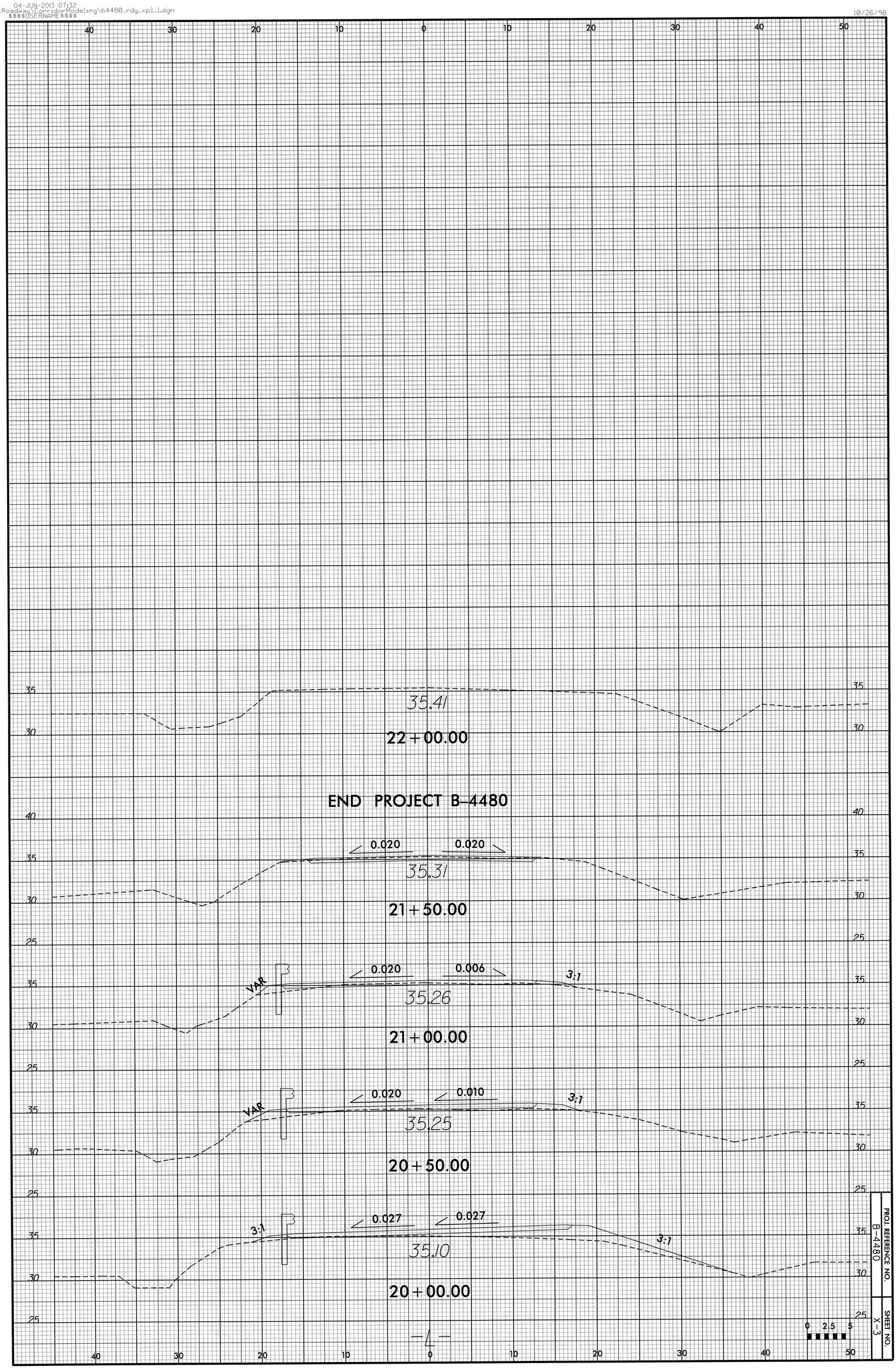
PROJ. REFERENCE NO.
B-4480

SHEET NO.
X-1



PROJ. REFERENCE NO. B-4480

SHEET NO. X-2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22+00.00
END PROJECT B-4480
0.020
0.020
35.31
21+50.00
VAR
0.020
0.006
3:1
35.26
21+00.00
VAR
0.020
0.010
3:1
35.25
20+50.00
3:1
0.027
0.027
3:1
35.10
20+00.00
0 2.5 5
PROJ. REFERENCE NO.
B-4480
SHEET NO.
X-3

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4481	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
38386.1.1	BRZ-1831(3)	PE
38386.2.1	BRZ-1831(3)	R/W & UTIL
38385.3.1	BRZ-1824(1)	CONSTR.

PART II

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

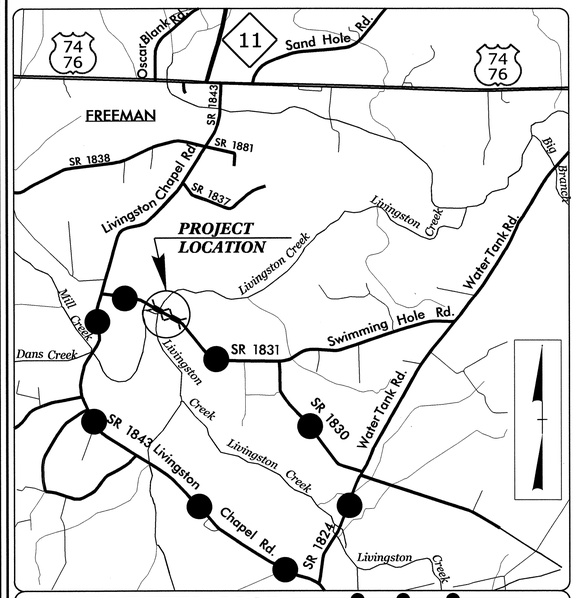
COLUMBUS COUNTY

LOCATION: BRIDGE NO. 279 & NO. 288 OVER LIVINGSTON CREEK ON SR 1831 (SWIMMING HOLE ROAD)

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

NAD 83/95

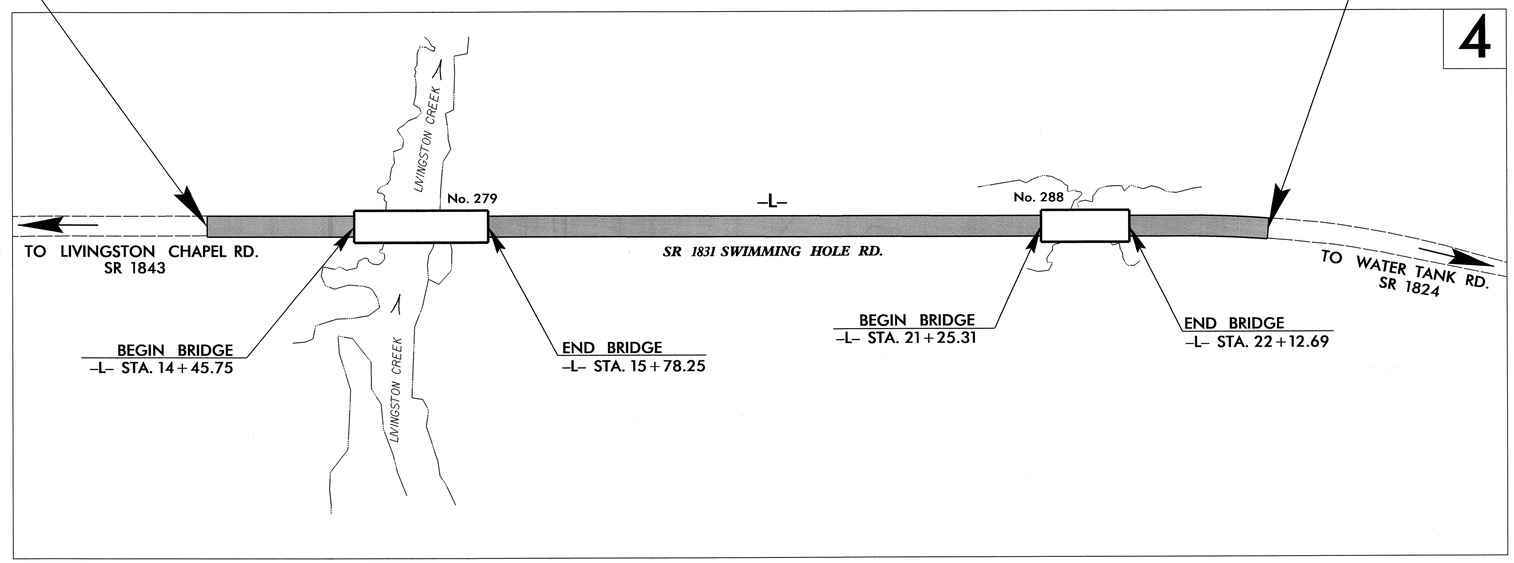
See Sheet 1-A For Survey Control Sheet



VICINITY MAP — DETOUR ROUTE

BEGIN TIP PROJECT B-4481
-L- POT STA 13+00.00

END TIP PROJECT B-4481
-L- POC STA. 23+50.00



TIP PROJECT: B-4481

CONTRACT: C203155

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2013 = 500
ADT 2033 = 740
DHV = 11 %
D = 65 %
T = 3 % *
V = 60 MPH
* TTST = 1% DUAL 2%
FUNC CLASS = RURAL LOCAL
SUB REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4481 = 0.157 MI.
LENGTH STRUCTURES TIP PROJECT B-4481 = 0.042 MI.
TOTAL LENGTH TIP PROJECT B-4481 = 0.199 MI.

Prepared In the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JANUARY 18, 2013

LETTING DATE:
SEPTEMBER 17, 2013

REKHA PATEL, PE
PROJECT ENGINEER

BRIAN P. ROBINSON
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 35666 ENGINEER RYAN M. MULLINS
6-24-13
SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 16373 ENGINEER REKHA V. PATEL
6-20-13
SIGNATURE: P.E.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

10-JUN-2013 09:30
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$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-4481	1-A
Location and Surveys	

SURVEY CONTROL SHEET B-4481

BL

POINT	DESC.		NORTH	EAST	ELEVATION	L STATION	OFFSET
1	B4481	BL-1	199254.2210	2213333.6790	34.97	OUTSIDE PROJECT LIMITS	
2	B4481	BL-2	198972.4590	2213845.1310	32.70	14+57.29	13.49 LT
3	B4481	BL-3	198678.8540	2214377.1630	32.94	20+64.96	12.14 LT
8	B4481	BL-8	198551.5009	2214613.2252	31.75	23+32.32	15.80 LT
9	B4481	BL-9	198410.6746	2214794.7274	29.71	25+58.97	17.03 LT

NC GRID NAD 83/95

****
BM80 ELEVATION = 32.05
N 199117 E 2213491
L STATION 10+77.00 31 RIGHT
RR SPIKE IN BASE OF 18 INCH GUM
****

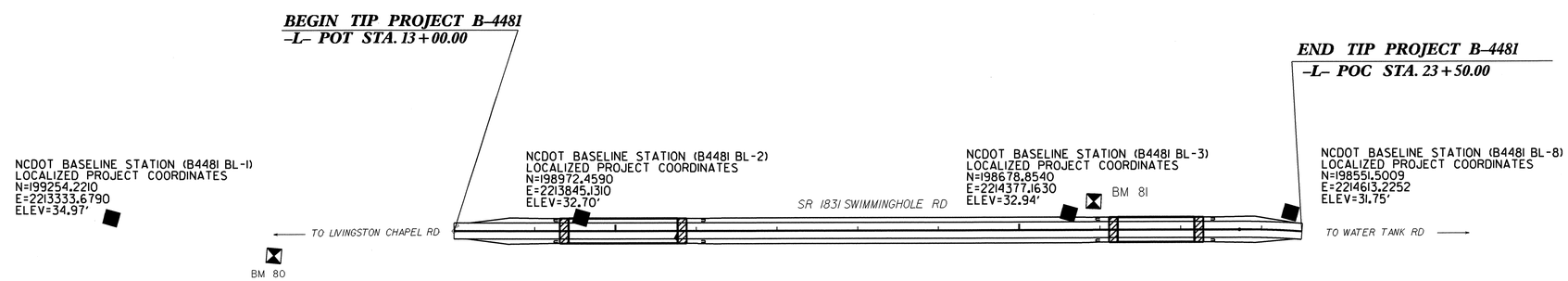
****
BM81 ELEVATION = 29.66
N 198682 E 2214400
L STATION 20+83.00 26 LEFT
RR SPIKE IN BASE OF 15 INCH GUM
****

FINAL ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	13+00.00	-50.00	199080.1549	2213724.8153
L	13+00.00	60.00	198983.7285	2213671.8819
L	23+50.00	60.00	198478.2604	2214587.1420
L	23+50.00	29.63	198503.7474	2214603.6584
L	23+50.00	-30.37	198554.0997	2214636.2882
L	13+00.00	30.00	199010.0266	2213686.3183
L	13+00.00	-30.00	199062.6228	2213715.1911
L	22+72.67	-50.00	198612.0931	2214577.4613
L	22+72.67	60.00	198515.6656	2214524.5299
L	23+50.00	-50.00	198570.5722	2214646.9628

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	199180.6887	2213437.7736
PC	22+72.67	198568.2618	2214553.4027
PT	27+02.67	198291.5613	2214878.6876
POT	27+73.01	198236.1269	2214921.9869



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "B4082-1"
WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF
NORTHING: 197871.603(ft) EASTING: 2211721.197(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.00001518
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4082-1" TO -L- STATION 13+00.00 IS
N 59°31'42.7" E 2296.7858'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

NOTES:

1. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING NCDOT PROJECT CONTROL DATA AT:*
HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/PAGES/DEFAULT.ASPX

THE FILES TO BE FOUND ARE AS FOLLOWS:
B4481_LS_CONTROL.TXT

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

© *INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.*
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION
SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

6/2/99
01-JUL-2013 15:20
R:\Roadway\Proj\B4481_ls_loc.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-4481	2

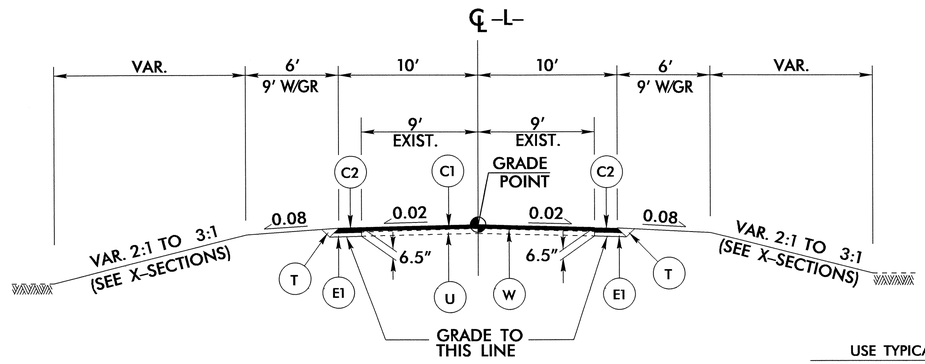
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 16378 ENGINEER RELKHA V. PATIL

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON

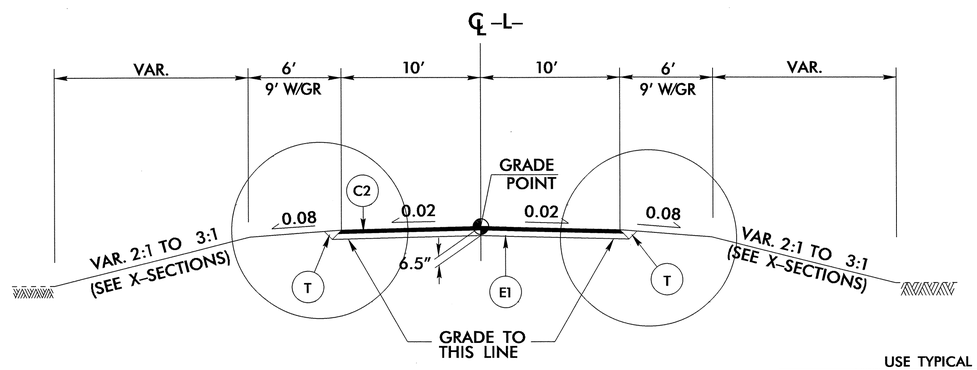
6/24/13



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1

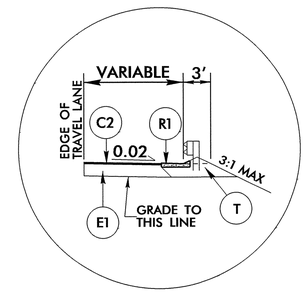
-L- STA. 13+00.00 TO STA. 14+00.00
-L- STA. 16+50.00 TO STA. 20+50.00
-L- STA. 22+75.00 TO STA. 23+50.00



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2

-L- STA. 14+00.00 TO STA. 14+45.75 (BEGIN BRIDGE)
-L- STA. 15+78.25 (END BRIDGE) TO STA. 16+50.00
-L- STA. 20+50.00 TO STA. 21+25.31 (BEGIN BRIDGE)
-L- STA. 22+12.69 (END BRIDGE) TO STA. 22+75.00



INSET NO. 1

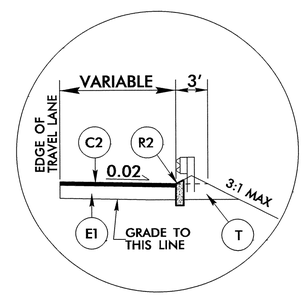
USE WITH TYPICAL SECTION NO. 2

-L- STA. 14+07.00 TO STA. 14+34.75 LT.
-L- STA. 14+07.00 TO STA. 14+34.75 RT.
-L- STA. 15+89.25 TO STA. 16+16.00 LT.
-L- STA. 15+89.25 TO STA. 16+16.00 RT.
-L- STA. 22+23.69 TO STA. 22+50.00 LT.
-L- STA. 22+23.69 TO STA. 22+50.00 RT.

FINAL PAVEMENT SCHEDULE

C1	PROP. APPROX. 1 ¼" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD.
C2	PROP. APPROX. 2 ½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1" IN DEPTH OR GREATER THAN 1 ½" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5 ½" IN DEPTH.
R1	SHOULDER BERM GUTTER.
R2	SPECIAL SHOULDER BERM CURB.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

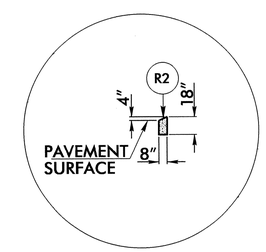
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



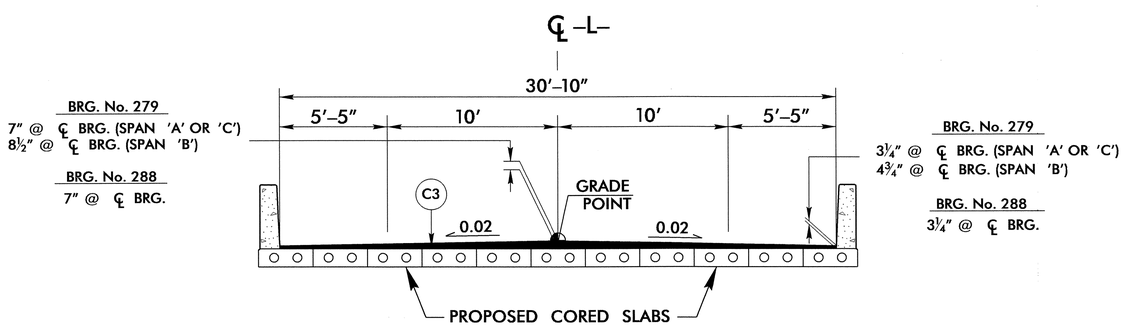
INSET NO. 2

USE WITH TYPICAL SECTION NO. 2

-L- STA. 21+06.56 TO STA. 21+14.31 LT.
-L- STA. 21+06.56 TO STA. 21+14.31 RT.



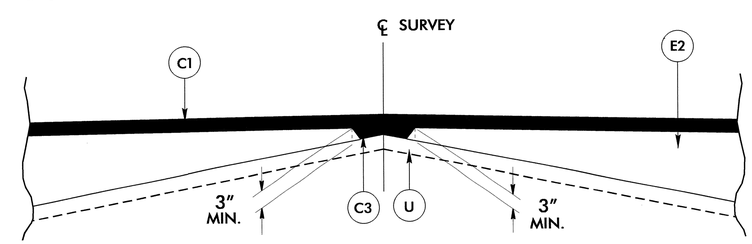
DIMENSIONS FOR SPECIAL SHOULDER BERM CURB



TYPICAL SECTION ON STRUCTURE (SEE STRUCTURE PLANS)

USE TYPICAL ON STRUCTURE

-L- STA. 14+45.75 (BEGIN BRIDGE)
STA. 15+78.25 (END BRIDGE)
-L- STA. 21+25.31 (BEGIN BRIDGE)
STA. 22+12.69 (END BRIDGE)



DETAIL SHOWING METHOD OF WEDGING

6/2/99

19-JUN-2013 14:31
R:\Roadway\Proj\B4481_rdy_typ.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET
B-4481	2-A

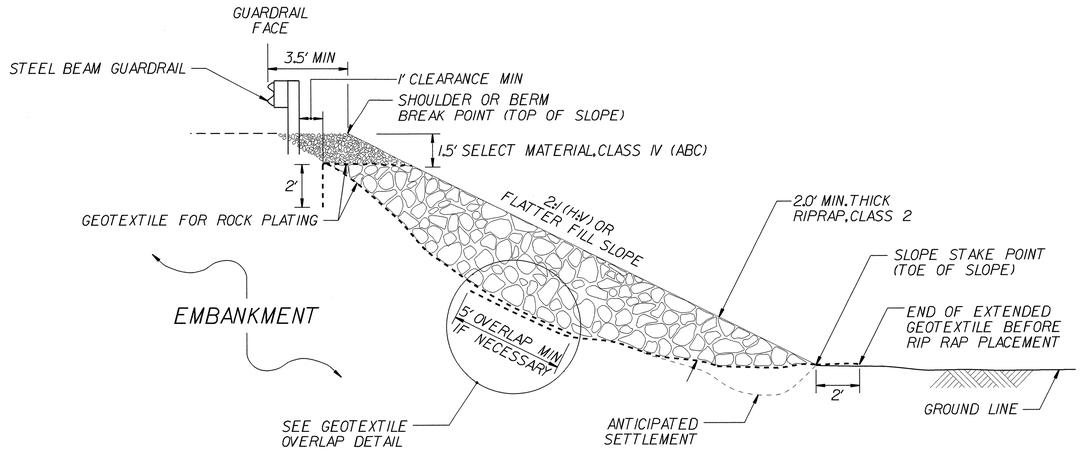
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 32171 ENGINEER JINYOUNG PARK

SIGNATURE DATE

ENGINEER

SIGNATURE DATE

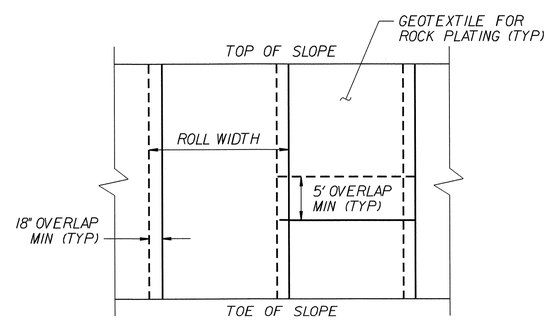


TYPICAL SECTION FOR SPECIAL ROCK PLATING

TOE PROTECTION LOCATIONS		
BEGIN	END	LOCATION
15+88± -L-	21+14± -L-	RT
20+25± -L-	21+14± -L-	LT
22+23± -L-	23+00± -L-	LT, RT

FOR SPECIAL ROCK PLATING, SEE SPECIAL ROCK PLATING SPECIAL PROVISION.

SPECIAL ROCK PLATING SHALL BE TIED INTO THE BRIDGE END BENT RIP RAP SLOPE PROTECTION.



GEOTEXTILE OVERLAP DETAIL

(PLAN VIEW)

ESTIMATED QUANTITIES	
GEOTEXTILE FOR ROCK PLATING, TYPE 2	3,080 SY
PLAIN RIP RAP, CLASS 2	1,880 TONS
SELECT MATERIAL, CLASS IV	390 TONS

PREPARED BY: J. PARK	DATE: 09/2012
REVIEWED BY: J. BATTS	DATE: 09/2012

GEOTECHNICAL ENGINEERING UNIT

- [X] EASTERN REGIONAL OFFICE
- [ ] WESTERN REGIONAL OFFICE
- [ ] CONTRACT OFFICE

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

SPECIAL ROCK PLATING DETAIL

REVISIONS

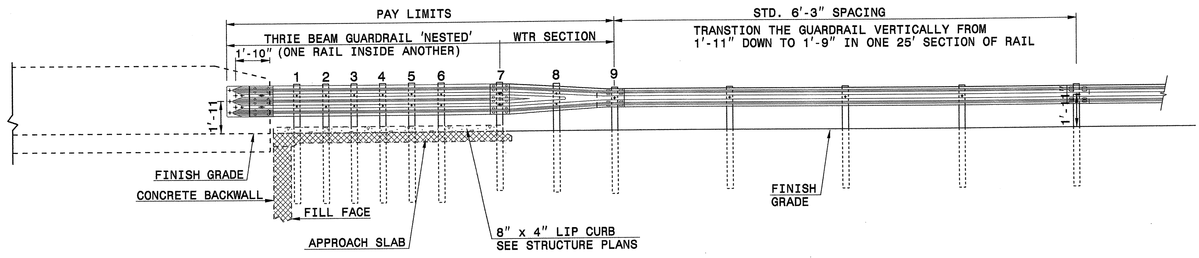
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

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

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

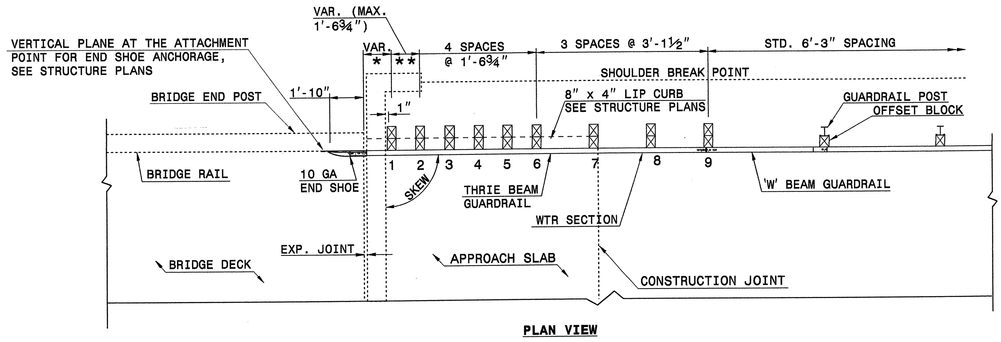
ENGLISH DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7
862d03



ELEVATION

NOTE:
- **POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- *THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.
- -SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
- -MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
- -LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
- -SEE SHEET 5 FOR POST SECTIONS 1 THRU 9.



PLAN VIEW

GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER

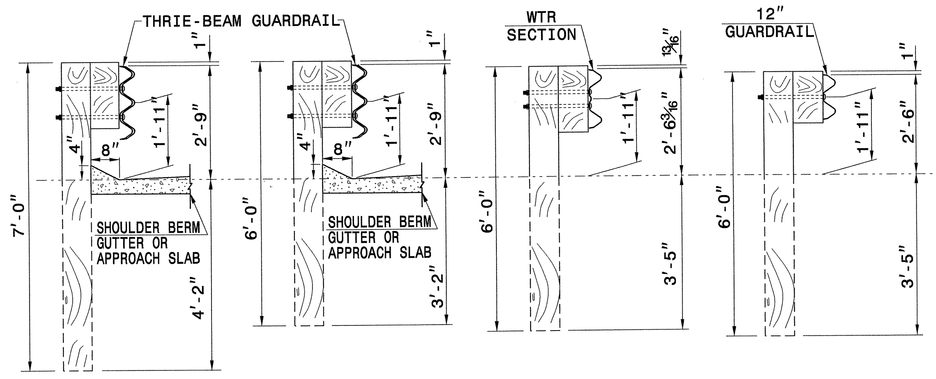
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7
862d03

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III

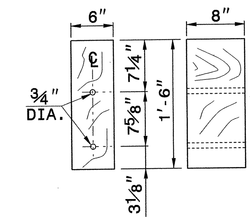


SECTION OF THRIE BEAM POSTS 1 THRU 6

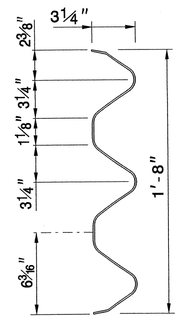
SECTION OF THRIE BEAM POST 7

SECTION OF WTR BEAM POST 8

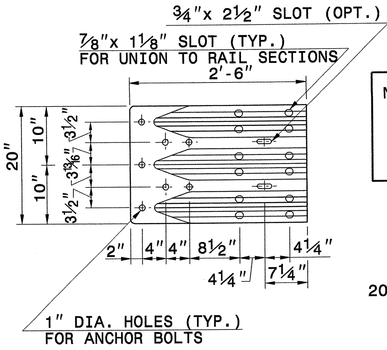
SECTION OF 'W' BEAM POST 9



THRIE BEAM OFFSET BLOCK

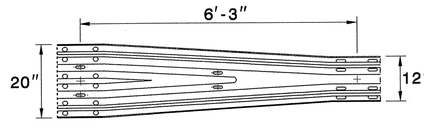


THRIE-BEAM SECTION

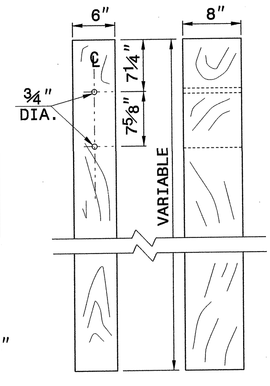


END SHOE

NOTE: THE MID POST AND OFFSET BLOCK OF THE WTR SECTION WILL REQUIRE SPECIAL BOLT HOLE DRILLING IN THE THRIE BEAM OFFSET BLOCK AND LINE POST.



WTR SECTION
ELEVATION VIEW



THRIE BEAM LINE POST

SHEET 3 OF 7
862d03

CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

ORIGINAL BY: J. HOWERTON DATE: 06-22-12
MODIFIED BY: DATE:
CHECKED BY: DATE: 11/13/12
FILE SPEC.:

NORTH CAROLINA PROFESSIONAL SEAL 022868 ENGINEER
6/25/13

PROJECT REFERENCE NO. B-4461
SHEET NO. 2-B

COMPUTED BY: MJD	DATE: 04/23/13
CHECKED BY: SKR	DATE: 05/22/13

PROJECT REFERENCE NO.	SHEET NO.
B-4481	3-A

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".

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

STATION (-L-)	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
14+13.00	LT	0401		33.00															
14+13.00	LT	0401	0410		30.20	25.50			28							X	X		
14+13.00	RT	0402		33.00															
14+13.00	RT	0402	0403		30.20	24.70			28							X	X		
16+10.00	LT	0404		33.00															
16+10.00	LT	0404	0411		30.20	23.00			28							X	X		
16+10.00	RT	0405		33.00															
16+10.00	RT	0405	0406		30.20	25.00			24							X	X		
22+44.00	LT	0407		32.70															
22+44.00	LT	0407	0412		29.90	24.00			20							X	X		
22+44.00	RT	0408		32.54															
22+44.00	RT	0408	0409		29.80	24.00			20							X	X		
PROJECT TOTAL									148										

Additional columns (no entries): C.S. PIPE 12" .064, 15" .064, 18" .064, 24" .064, 36" .079, 42" .109, 48" .109; R.C. PIPE (CLASS III) 15", 18", 24", 30", 36", 42", 48"; R.C. PIPE (CLASS IV) 12", 15", 18", 24", 30", 36", 42", 48"; **" R. C. PIPE (CLASS V); **" R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE; **" R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE; 15" SIDE DRAIN PIPE; 18" SIDE DRAIN PIPE; ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P., C.S.P.; QUANTITIES FOR DRAINAGE STRUCTURES * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. *FT. 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 CATCH BASIN, DROP INLET; J.B. STD. 840.31 OR 840.32; G.D.I. FRAME WITH GRATE STD. 840.22; G.D.I. FRAME WITH TWO GRATES STD. 840.22; G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24; CONC. COLLARS CL. "B" C.Y. STD 840.72; CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71; PIPE REMOVAL LIN.FT.

STATION (-L-)	LOCATION	STRUCTURE NO. FROM	STRUCTURE NO. TO	PER EACH (0' THRU 5.0')	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	T.B.D.I. STD. 840.35 OR 840.46	DRAINAGE PIPE ELBOWS NO. & SIZE	REMARKS
14+13.00	LT	0401		1	1	1		TB 2GI
14+13.00	LT	0401	0410				2@15"	
14+13.00	RT	0402		1	1	1		TB 2GI
14+13.00	RT	0402	0403				2@15"	
16+10.00	LT	0404		1	1	1		TB 2GI
16+10.00	LT	0404	0411				2@15"	
16+10.00	RT	0405		1	1	1		TB 2GI
16+10.00	RT	0405	0406				2@15"	
22+44.00	LT	0407		1	1	1		TB 2GI
22+44.00	LT	0407	0412				2@15"	
22+44.00	RT	0408		1	1	1		TB 2GI
22+44.00	RT	0408	0409				2@15"	
PROJECT TOTAL				6	6	6	12@15"	

ABBREVIATIONS

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

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

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPROACH END	WARRANT POINT TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH APPROACH END	FLARE LENGTH TRAILING END	W APPROACH END	W TRAILING END	ANCHORS XI MOD	TYPE III	GRAU 350 TL-3	M-350	XIII	CAT-1	VI MOD	BIC	AT-1	IMPACT ATTENUATOR TYPE 350 EA	G	NG	SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
-L-	13+58.25	14+45.75	LT	87.5'				BRIDGE	5.42'	9'		68.75'		1.38'		1	1													
-L-	13+58.25	14+45.75	RT	87.5'			BRIDGE		5.42'	9'	68.75'		1.38'			1	1													
-L-	15+78.25	21+25.31	LT	547.06'			BRIDGE	BRIDGE	5.42'	9'	29'	29'	0.58'	0.58'		2														
-L-	15+78.25	21+25.31	RT	547.06'			BRIDGE	BRIDGE	5.42'	9'	29'	29'	0.58'	0.58'		2														
-L-	22+12.69	23+00.19	LT	87.5'			BRIDGE		5.42'	9'	68.75'		1.38'			1	1													
-L-	22+12.69	23+00.19	RT	87.5'				BRIDGE	5.42'	9'		68.75'		1.38'		1	1													
TOTAL				1444.12'												8	4													
DEDUCTION FOR ANCHORS				-350'											DEDUCTION FOR ANCHORS:															
PROJECT TOTAL				1094.12'											(GRAU 350 TL-3) 4 @ 50' = 200'															
SAY				1100'											(TYPE III) 8 @ 18.75' = 150'															
ADDITIONAL GUARDRAIL POST = 5 EACH															TOTAL DEDUCTIONS = 350'															

SUMMARY OF EARTHWORK
IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
-L-					
13+00.00 TO 14+45.75 (BEGIN BRIDGE #279)	21		435	414	
15+78.25 (END BRIDGE #279) TO 21+25.31 (BEGIN BRIDGE #288)	30		210	180	
22+12.69 (END BRIDGE #288) TO 23+50.00	15		54	39	
SUB-TOTAL	66		699	633	
PROJECT TOTAL	66		699	633	
5% TO REPLACE TOP SOIL ON BORROW PIT				32	
GRAND TOTAL	66			664	
SAY	70			700	

EST. UNDERCUT EXCAVATION = 400 CY
EST. SELECT GRANULAR MATERIAL = 400 CY
EST. SHALLOW UNDERCUT = 100 CY

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

REMOVAL OF EXISTING ASPHALT PAVEMENT SUMMARY

LINE	BEGIN STATION	END STATION	LOCATION	SQ. YD.
-L-	14+00.00	14+63.53	LT & RT	127.26
-L-	15+66.65	16+50.00	LT & RT	169.93
-L-	20+50.00	21+34.33	LT & RT	173.15
-L-	22+04.38	22+75.00	LT & RT	143.07
-L-	18+50.00	20+50.00	LT	228.70
			TOTAL	842.11
			SAY	890

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

SUMMARY OF ROCK PLATING

LINE	BEGIN STATION	END STATION	LOCATION	RIP RAP CLASS * 1/2 /B	TON
-L-	15+88.00	21+14.00	RIGHT	2	1,380
-L-	20+25.00	21+14.00	LEFT	2	200
-L-	22+23.00	23+00.00	LEFT & RIGHT	2	300
				TOTAL TONS	1,880

* USE CLASS 1, 2, OR B RIP RAP IF RIP RAP CLASS IS NOT SHOWN FOR ROCK PLATING LOCATION.

SUMMARY OF SUBSURFACE DRAINAGE

LINE	BEGIN STATION	END STATION	LOCATION	DRAIN TYPE * UD /BD /SD	LENGTH (FT.)
	CONTINGENCY			SD	100
				TOTAL	100

* UD = UNDERDRAIN
* BD = BLIND DRAIN
* SD = SUBSURFACE DRAIN

6/21/00
20-JUN-2013 11:10
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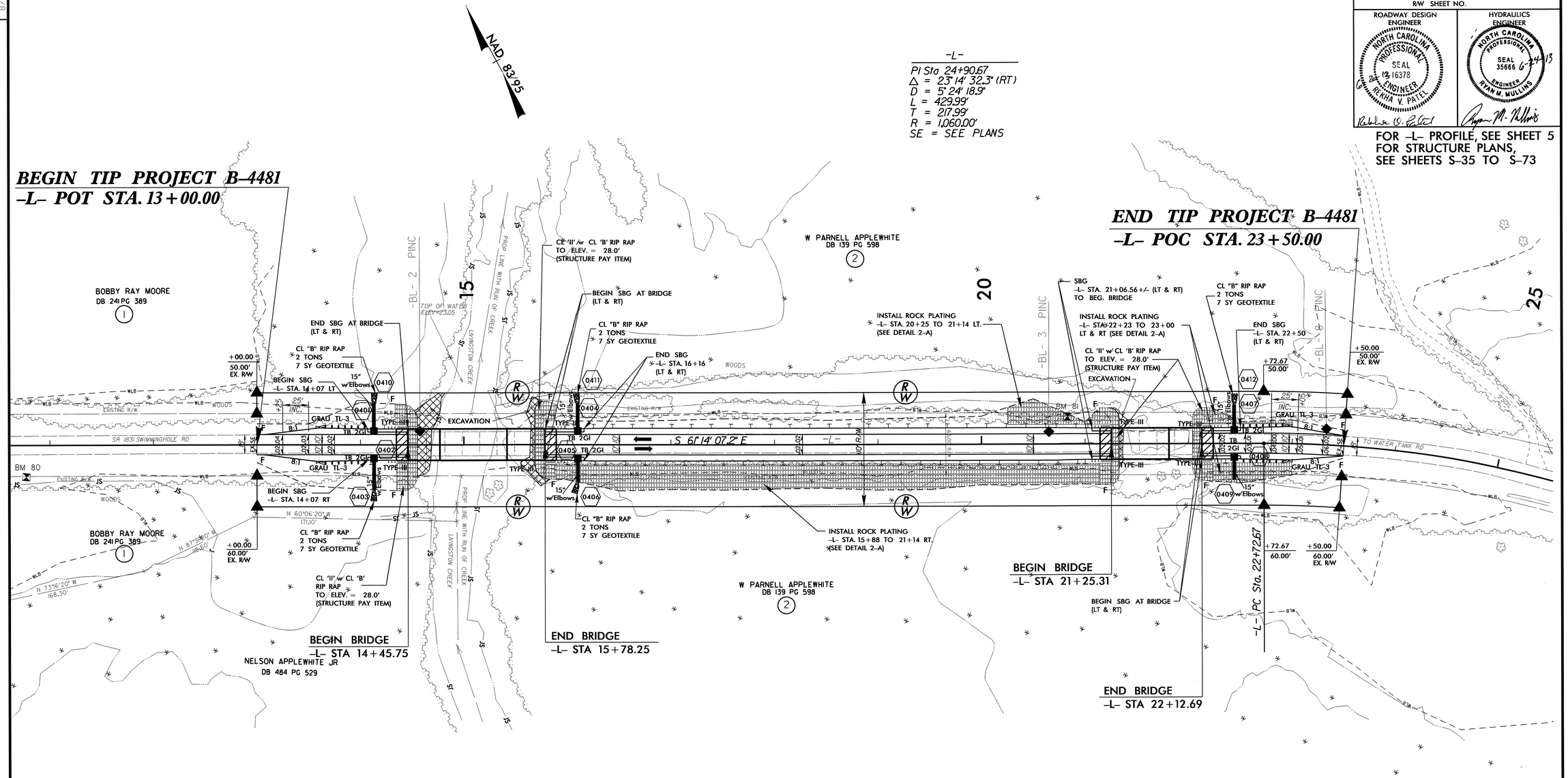
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-4481	4
R/W SHEET NO.	

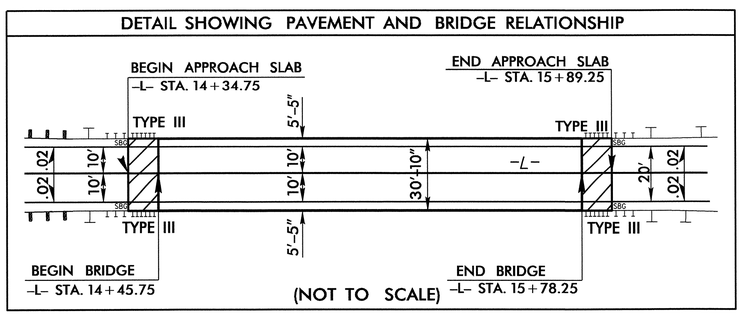
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 16378 ENGINEER RAKHA V. PATEL
6/24/13

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 35666 ENGINEER RYAN M. MULLINS
6/24/13

FOR -L- PROFILE, SEE SHEET 5
FOR STRUCTURE PLANS,
SEE SHEETS S-35 TO S-73



DETAIL SHOWING PAVEMENT AND BRIDGE RELATIONSHIP



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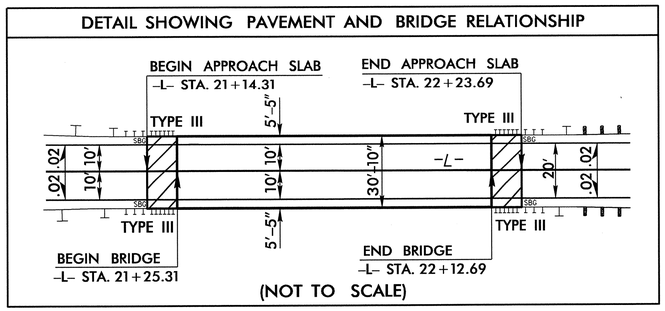
DETAIL SHOWING PAVEMENT AND BRIDGE RELATIONSHIP



(NOT TO SCALE)

REVISIONS

8/17/99

05-JUN-2013 09:38
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PROJECT REFERENCE NO.	SHEET NO.
B-4481	5

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 16378 ENGINEER REKHA V. PATEL
Rekha V. Patel

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 35666 ENGINEER RYAN M. MULLINS
Ryan M. Mullins

-L-

BENCHMARK # 80 EL. = 32.05'
R/R SPIKE IN BASE OF 18" GUM,
-BL- STA. 7+03.96 (44.83' RT) =
-L- STA. 10+77.26 (30.77' RT)
(AS CALCULATED BY ROADWAY)

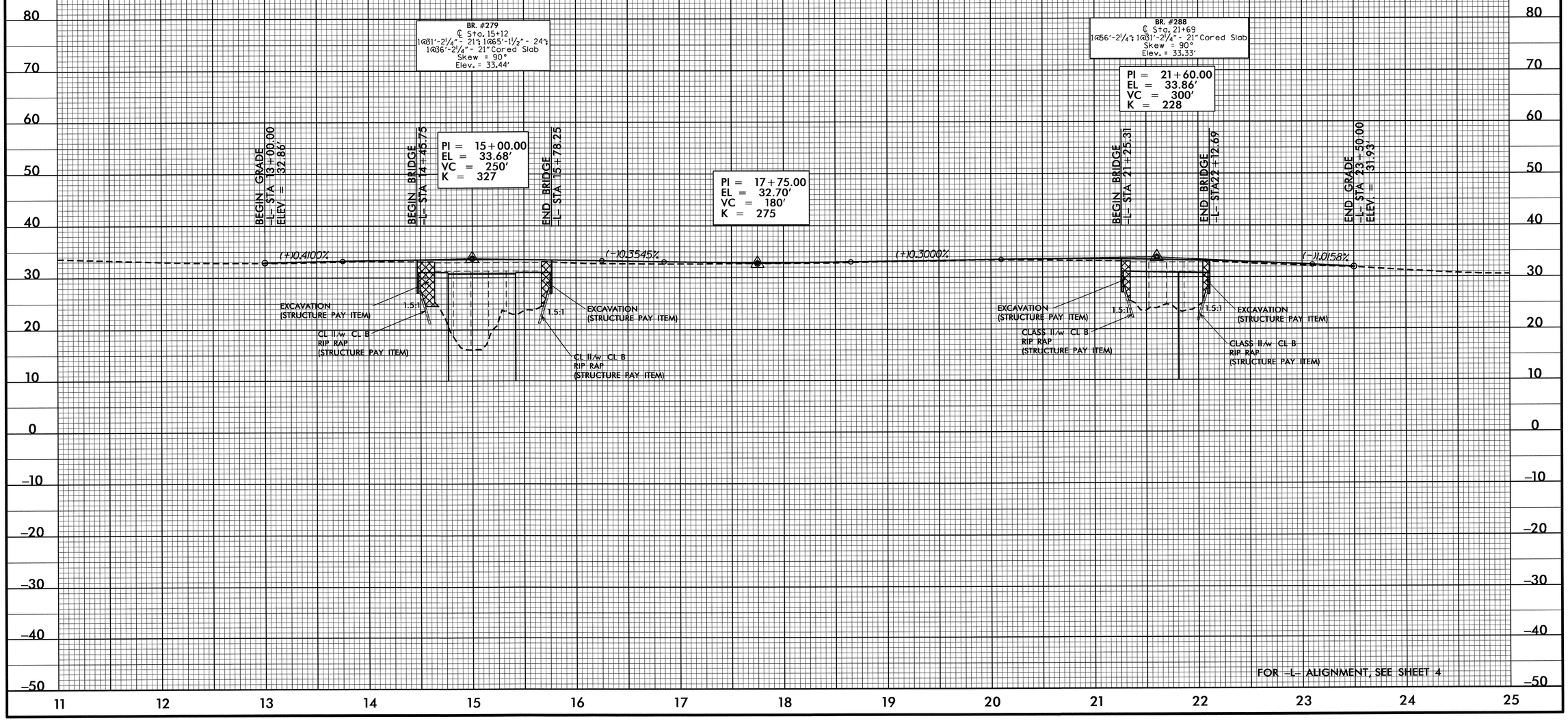
BENCHMARK # 81 EL. = 29.65'
R/R SPIKE IN BASE OF 15" GUM,
-BL- STA. 17+09.90 (13.98' LT) =
-L- STA. 20+83.16 (26.25' LT)
(AS CALCULATED BY ROADWAY)

BRIDGE HYDRAULIC DATA #279

DESIGN DISCHARGE	= 2680	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 27.0	FT
BASE DISCHARGE	= 5143	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 28.89	FT
OVERTOPPING DISCHARGE	= 7590	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 30.7	FT
DATE OF SURVEY	= 2/22/13	
W.S. ELEVATION AT DATE OF SURVEY	= 22.6	FT

BRIDGE HYDRAULIC DATA #288

DESIGN DISCHARGE	= 2680	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 27.0	FT
BASE DISCHARGE	= 5143	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 28.89	FT
OVERTOPPING DISCHARGE	= 7590	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 30.7	FT
DATE OF SURVEY	2/22/13	
W.S. ELEVATION AT DATE OF SURVEY	= N/A	

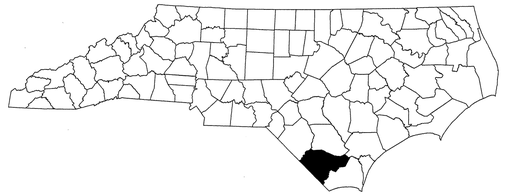


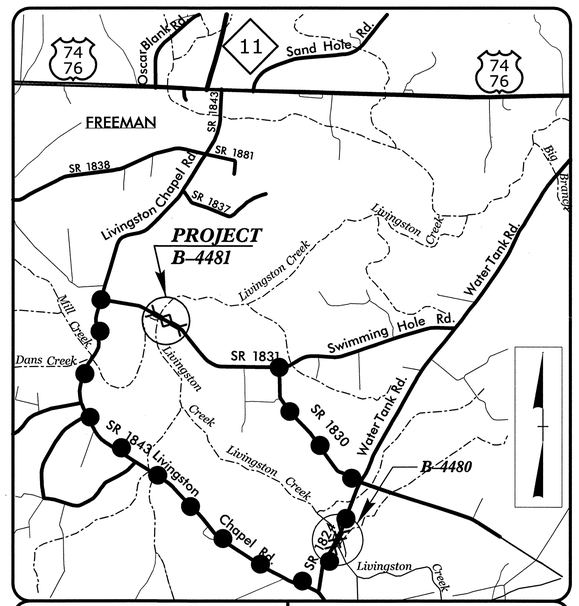
FOR -L- ALIGNMENT, SEE SHEET 4

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

COLUMBUS COUNTY





VICINITY MAP | DETOUR

LOCATION: BRIDGE NO. 279 & NO. 288 OVER LIVINGSTON CREEK ON SR 1831 (SWIMMING HOLE ROAD)

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

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

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

J. S. BOURNE, P.E. — STATE TRAFFIC MANAGEMENT ENGINEER
J. S. KITE, P.E. — TRAFFIC CONTROL PROJECT ENGINEER
D. W. BISSETTE, P.E — TRAFFIC CONTROL PROJECT DESIGN ENGINEER
_____ — TRAFFIC CONTROL DESIGN ENGINEER

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

INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS AND LEGEND
TMP-1B	TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES, GENERAL NOTES, LOCAL NOTES, AND PHASING)
TMP-2	SPECIAL SIGN DESIGN
TMP-3	OFF-SITE DETOUR
TMP-4	ROAD CLOSURE

SEPI ENGINEERING & CONSTRUCTION
1025 Wade Avenue
Raleigh, NC 27605
Tel:919-789-9977
Fax:919-789-9591
License: C-2197

APPROVED: _____
DATE: 5-2-13

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 037026 ENGINEER STEVEN D. MILLER

SHEET NO.
TMP-1

TIP PROJECT: B-4481

$$$$$SYSTIME$$$$$
$$$$$USERNAME$$$$$

PROJ. REFERENCE NO.	SHEET NO.
B-4481	TMP-1A

ROADWAY STANDARD DRAWINGS

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

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

LEGEND

GENERAL

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

SIGNALS

- EXISTING
- PROPOSED
- TEMPORARY

PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

TRAFFIC CONTROL DEVICES

- BARRICADE (TYPE III)
- CONE
- DRUM
- SKINNY DRUM
- TUBULAR MARKER
- TEMPORARY CRASH CUSHION
- FLASHING ARROW BOARD
- FLAGGER
- LAW ENFORCEMENT
- TRUCK MOUNTED ATTENUATOR (TMA)
- CHANGEABLE MESSAGE SIGN

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

PAVEMENT MARKERS

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

PAVEMENT MARKING SYMBOLS

- PAVEMENT MARKING SYMBOLS

APPROVED: [signature] DATE: 5-2-13

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 037026 ENGINEER STEVEN D. MILLER

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

ROADWAY STANDARD DRAWINGS & LEGEND

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

PROJ. REFERENCE NO.	SHEET NO.
B-4481	TMP-1B

MANAGEMENT STRATEGIES

-CONTINUOUS FULL ROADWAY CLOSURE

-OFF-SITE DETOUR

-COORDINATION WITH SCHOOLS AND EMERGENCY SERVICES

GENERAL NOTES

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

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

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

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

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

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

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

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

LOCAL NOTES

1) NOTIFY COLUMBUS COUNTY SCHOOLS AT (910) 642-5168 AT LEAST ONE MONTH PRIOR TO ROAD CLOSURE.

2) NOTIFY COLUMBUS COUNTY EMERGENCY SERVICES AT (910) 640-6610 AT LEAST ONE MONTH PRIOR TO ROAD CLOSURE.

3) B-4480 SHALL BE COMPLETED PRIOR TO BEGINNING B-4481.

PHASING

STEP 1 USING RSD 1101.03 SHEET 1 OF 9, CLOSE SWIMMING HOLE ROAD. (SR 1831) AND DETOUR TRAFFIC OFF-SITE AS SHOWN ON TMP-3. MAINTAIN ACCESS TO ALL RESIDENCES AND BUSINESSES BETWEEN CLOSURE POINTS.

STEP 2 PERFORM THE FOLLOWING WITHIN THE ROAD CLOSURE:
-REMOVE EXISTING STRUCTURES.
-CONSTRUCT THE PROPOSED STRUCTURES.
-CONSTRUCT THE PROPOSED ROADWAY SECTION -L- FROM STATION 13+00 TO STATION 23+50.

STEP 3 PLACE FINAL PAVEMENT MARKINGS ACCORDING TO THE PAVEMENT MARKING PLANS.

STEP 4 OPEN SWIMMING HOLE RD. (SR 1831) TO TRAFFIC AND REMOVE ALL TRAFFIC CONTROL DEVICES.

APPROVED: DATE: 5-2-13

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 037026 ENGINEER STEVEN D. MILLER

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

TRANSPORTATION OPERATIONS PLAN

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

PROJ. REFERENCE NO.	SHEET NO.
B-4481	TMP-2

SEPI ENGINEERING & CONSTRUCTION
Sepi Engineering Group
1025 Wade Avenue
Raleigh, NC 27605
Phone: (919)-789-9977
Fax: (919)-789-9591
TRANSPORTATION TRAFFIC SURVEYING ENVIRONMENTAL SITE CIVIL INSPECTIONS CONSTRUCTION

SIGN NUMBER: SP-1 BACKG COLOR: Fluorescent Orange
TYPE: STATIONARY COPY COLOR: Black
QUANTITY: SEE PLANS

SIGN WIDTH: 42″
HEIGHT: 36″
TOTAL AREA: 10.5 Sq.Ft.

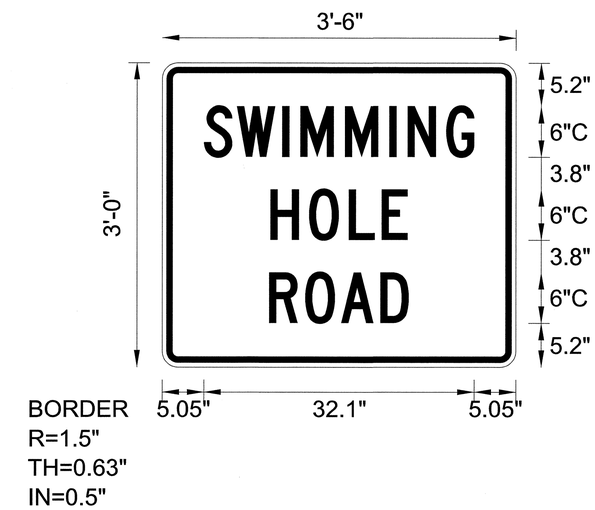
BORDER TYPE: RECESSED
RECESS: 0.5″
WIDTH: 0.63″
RADII: 1.5″

MAT'L: 0.125″ (3.2 mm) ALUMINUM
0.079″ COMPOSITE

DESIGN BY: R DRAYTON CHECKED BY: S MILLER
PROJECT ID: B-4481 DIV: 6 DATE: Feb 11, 2013

USE NOTES

1. Legend and border shall be direct applied black non-reflective sheeting.
2. Background shall be Type VII, VIII, or IX (prismatic) fluorescent orange retroreflective sheeting.



Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter locations are panel edge to lower left corner

									Series/Size Text Length
S	W	I	M	M	I	N	G		C 2000
5	8.9	14.3	16.4	21.7	27	29.1	33.7		32.1
H	O	L	E						C 2000
12.9	17.4	22.2	26.1						16.3
R	O	A	D						C 2000
12.7	17	21.2	25.9						16.6

FILENAME: B-4481 TMP-2

SEPI ENGINEERING & CONSTRUCTION SIGN DETAIL

APPROVED: [signature] DATE: 5-2-13

SEAL

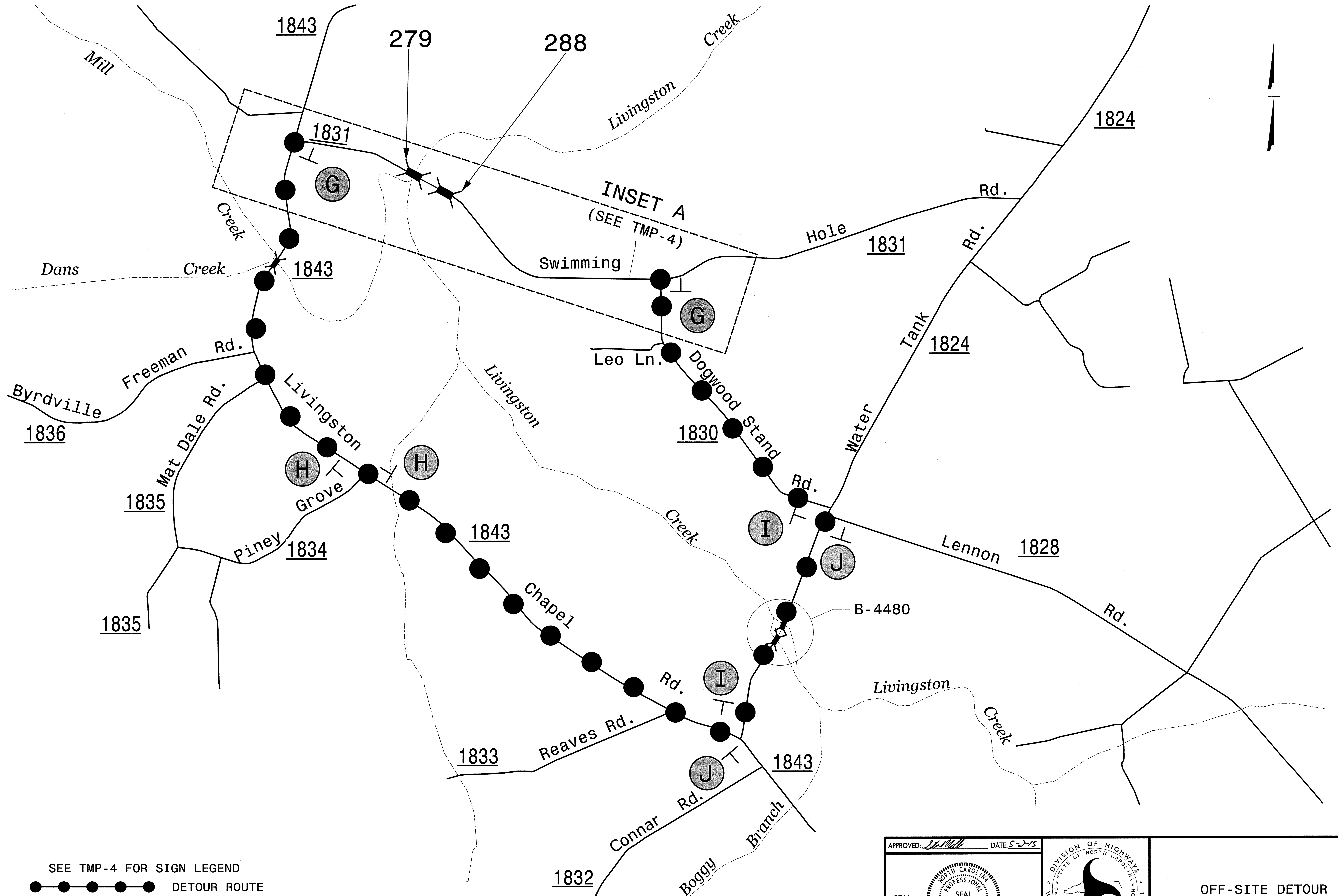
NORTH CAROLINA PROFESSIONAL SEAL 037026 ENGINEER STEVEN D. MILLER

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

SPECIAL SIGN DESIGN

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

PROJ. REFERENCE NO.	SHEET NO.
B-4481	TMP-3



SEE TMP-4 FOR SIGN LEGEND

DETOUR ROUTE

APPROVED: St Mill DATE: 5-2-13

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 037026 ENGINEER STEVEN D. MILLER

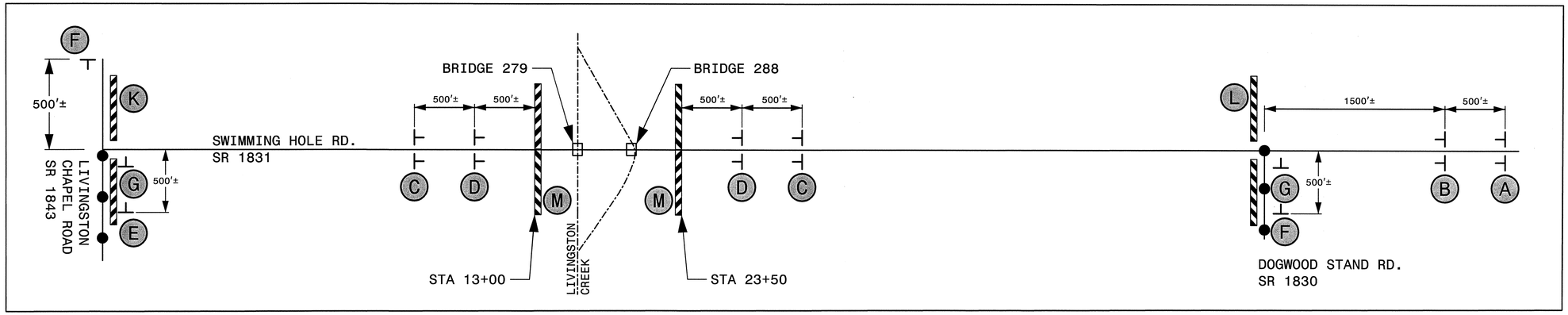
DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

OFF-SITE DETOUR

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

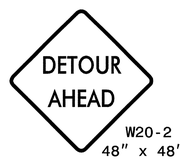
PROJ. REFERENCE NO.	SHEET NO.
B-4481	TMP-4

INSET A



W20-3
48" x 48"

A



W20-2
48" x 48"

B

W20-3
48" x 48"

C

W20-3
48" x 48"

D

W20-3
48" x 48"

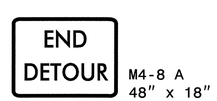
SP-4R
42" X 12"

E

W20-3
48" x 48"

SP-4L
42" X 12"

F



M4-8 A
48" x 18"

G

SP-1
42" x 36"
M4-8
24" x 12"
M6-3
21" x 15"

H

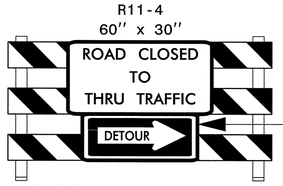
SP-1
42" x 36"
M4-8
24" x 12"
M6-1
21" x 15"

I

SP-1
42" x 36"
M4-8
24" x 12"
M6-1
21" x 15"

J

R11-4
60" x 30"

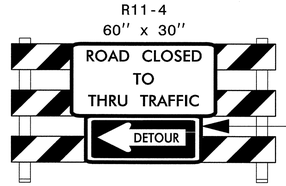


M4-10R
48" x 18"

TYPE III BARRICADE

K

R11-4
60" x 30"

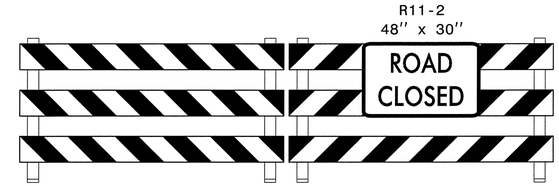


M4-10L
48" x 18"

TYPE III BARRICADE

L

R11-2
48" x 30"

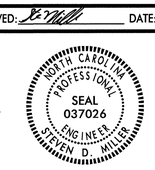


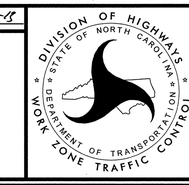
TYPE III BARRICADE(S)

M

APPROVED: S. D. Miller DATE: 5-2-15

SEAL





ROAD CLOSURE

$$$$$$CSTIME$$$$$$
$$$$$$CSERVER$$$$$$
$$$$$$CSERNAME$$$$$$

T.I.P.: B-4481

CONTRACT: C203155

TIP NO.	SHEET NO.
B-4481	PMP-1

APPROVED: Ayman Alqudwah

DATE: 5/6/13

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 028387 ENGINEER AYMAN I. ALQUDWAH

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLAN
COLUMBUS COUNTY
LOCATION: BRIDGE NO.279 & 288 OVER LIVINGSTON CREEK ON SR 1831

ROADWAY STANDARD DRAWING

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

STD. NO.	TITLE
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - 2 LANE AND MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1261.01	GUARDRAIL AND BARRIER DELINEATOR SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATOR TYPES
1262.01	GUARDRAIL END DELINEATION

GENERAL NOTES

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

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

ROAD NAME	MARKING	MARKER
SR 1831 AND BRIDGE	PAINT	NONE

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

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

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

PAVEMENT MARKING SCHEDULE

SYMBOL		DESCRIPTION
PA	WHITE EDGELINE (2X)	PAINT(4")
PI	YELLOW DOUBLE CENTER (2X)	PAINT(4")

INDEX

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

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

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

ERIC WARD SIGNING & DELINEATION DESIGN ENGINEER

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

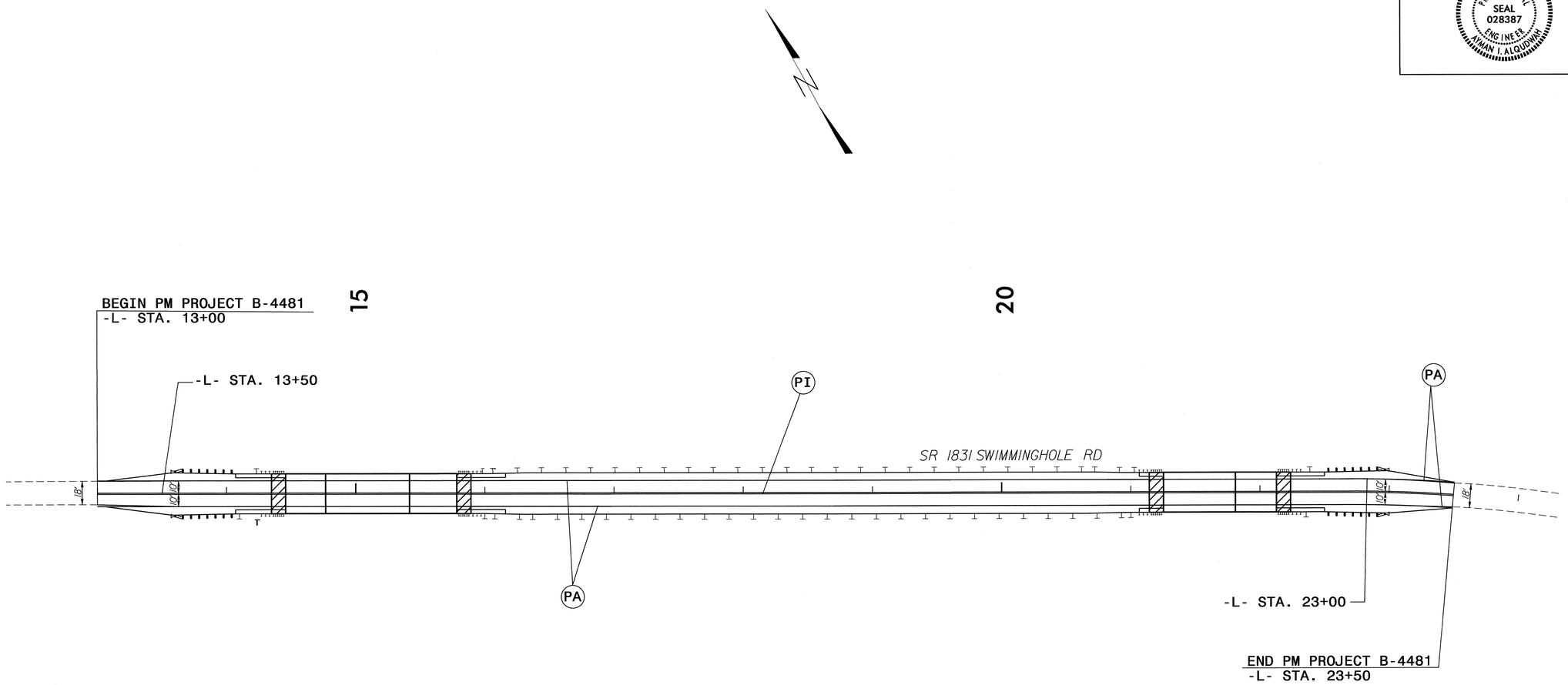
TIP NO.	SHEET NO.
B-4481	PMP-2

APPROVED: Ayman I. Alqudwah

DATE: 5/6/13

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 028387 ENGINEER AYMAN I. ALQUDWAH



SYMBOL AND PAVEMENT MARKING LEGEND

PAINT

(PA) WHITE EDGELINE 4"

(PI) YELLOW DOUBLE CENTER 4"

PAVEMENT MARKING DETAIL SHEET

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ericward AT TE247905

TIP PROJECT: B-4481

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4481	EC-1	

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

COLUMBUS COUNTY

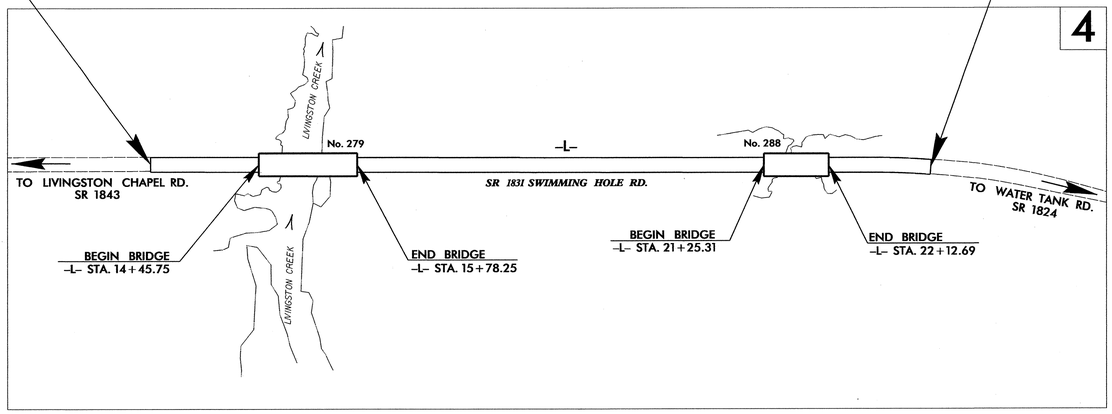
LOCATION: BRIDGE NO. 279 & NO. 288 OVER LIVINGSTON CREEK ON SR 1831 (SWIMMING HOLE ROAD)

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

NAD 83/95

BEGIN TIP PROJECT B-4481
-L- POT STA 13+00.00

END TIP PROJECT B-4481
-L- POC STA. 23+50.00



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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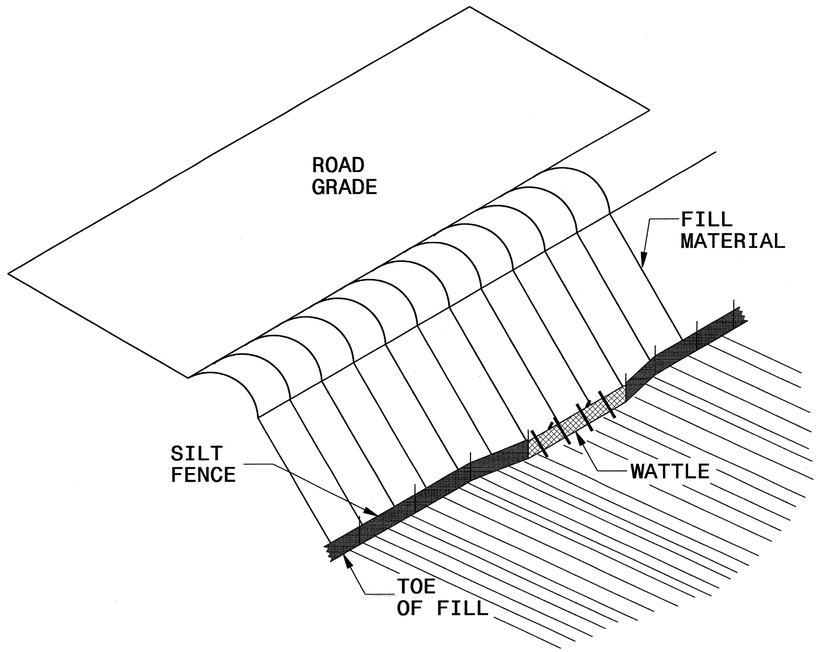
PROJECT REFERENCE NO.	SHEET NO.
B-4481	EC-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SILT FENCE WATTLE BREAK DETAIL



ISOMETRIC VIEW

NOTES:

USE MINIMUM 12 IN. DIAMETER EXCELSIOR 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.

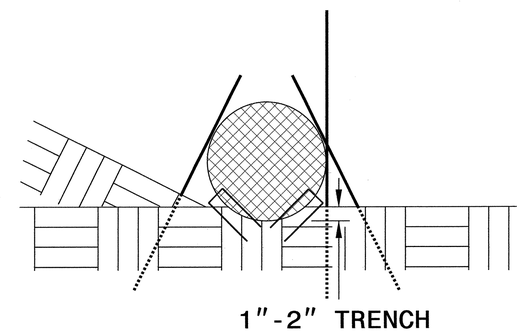
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

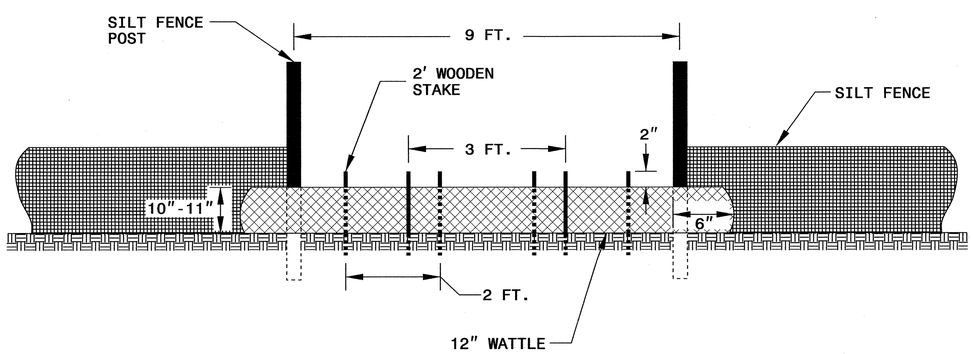
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

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

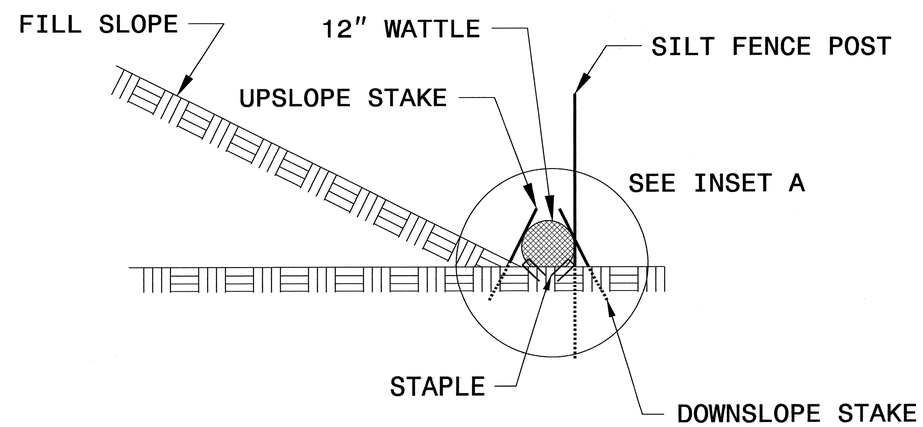
INSTALL TEMPORARY SILT FENCE IN ACCORDANCE WITH SECTION 1605 OF THE STANDARD SPECIFICATIONS.

INSET A





VIEW FROM SLOPE



SIDE VIEW

PROJECT REFERENCE NO.	SHEET NO.
B-4481	EC-3
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.

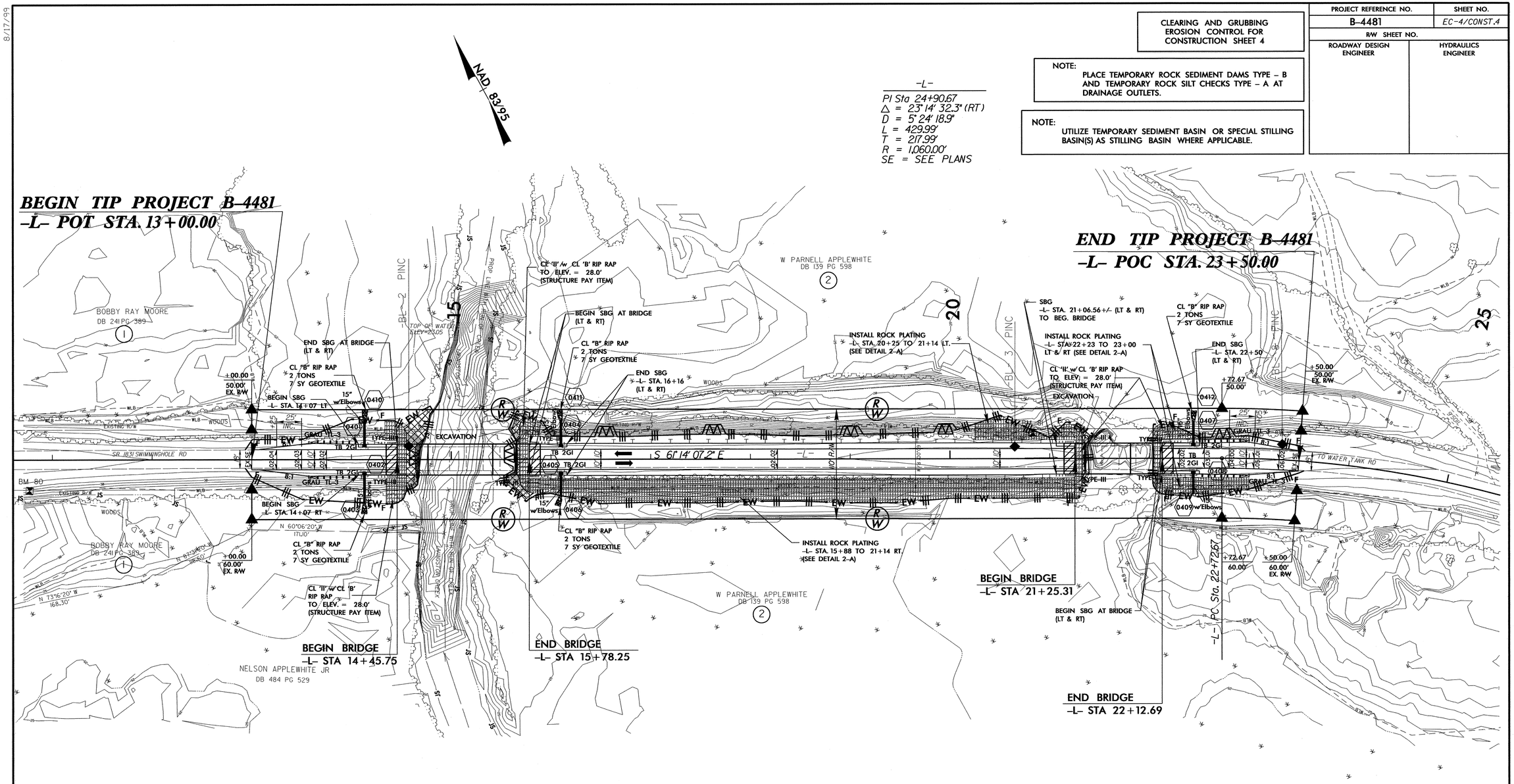
PROJECT REFERENCE NO.	SHEET NO.
B-4481	EC-4/CONST.4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 4

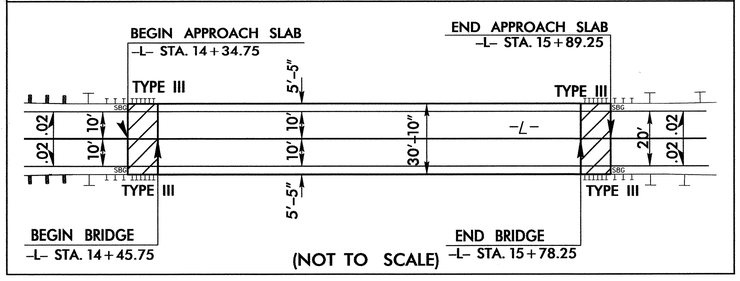
NOTE: PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE – B AND TEMPORARY ROCK SILT CHECKS TYPE – A AT DRAINAGE OUTLETS.

NOTE: UTILIZE TEMPORARY SEDIMENT BASIN OR SPECIAL STILLING BASIN(S) AS STILLING BASIN WHERE APPLICABLE.

-L-
PI Sta 24+90.67
Δ = 23° 14' 32.3" (RT)
D = 5° 24' 18.9"
L = 429.99'
T = 217.99'
R = 1,060.00'
SE = SEE PLANS



DETAIL SHOWING PAVEMENT AND BRIDGE RELATIONSHIP



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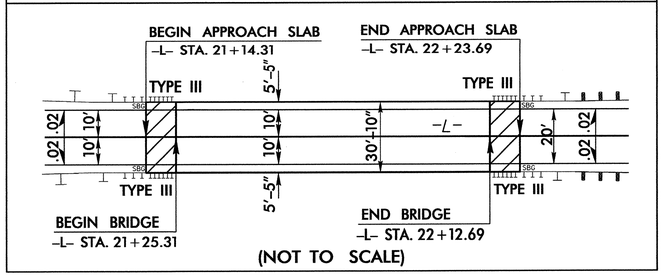
DETAIL SHOWING PAVEMENT AND BRIDGE RELATIONSHIP



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FOR -L- PROFILE, SEE SHEET 5
FOR STRUCTURE PLANS, SEE SHEETS S1 TO S

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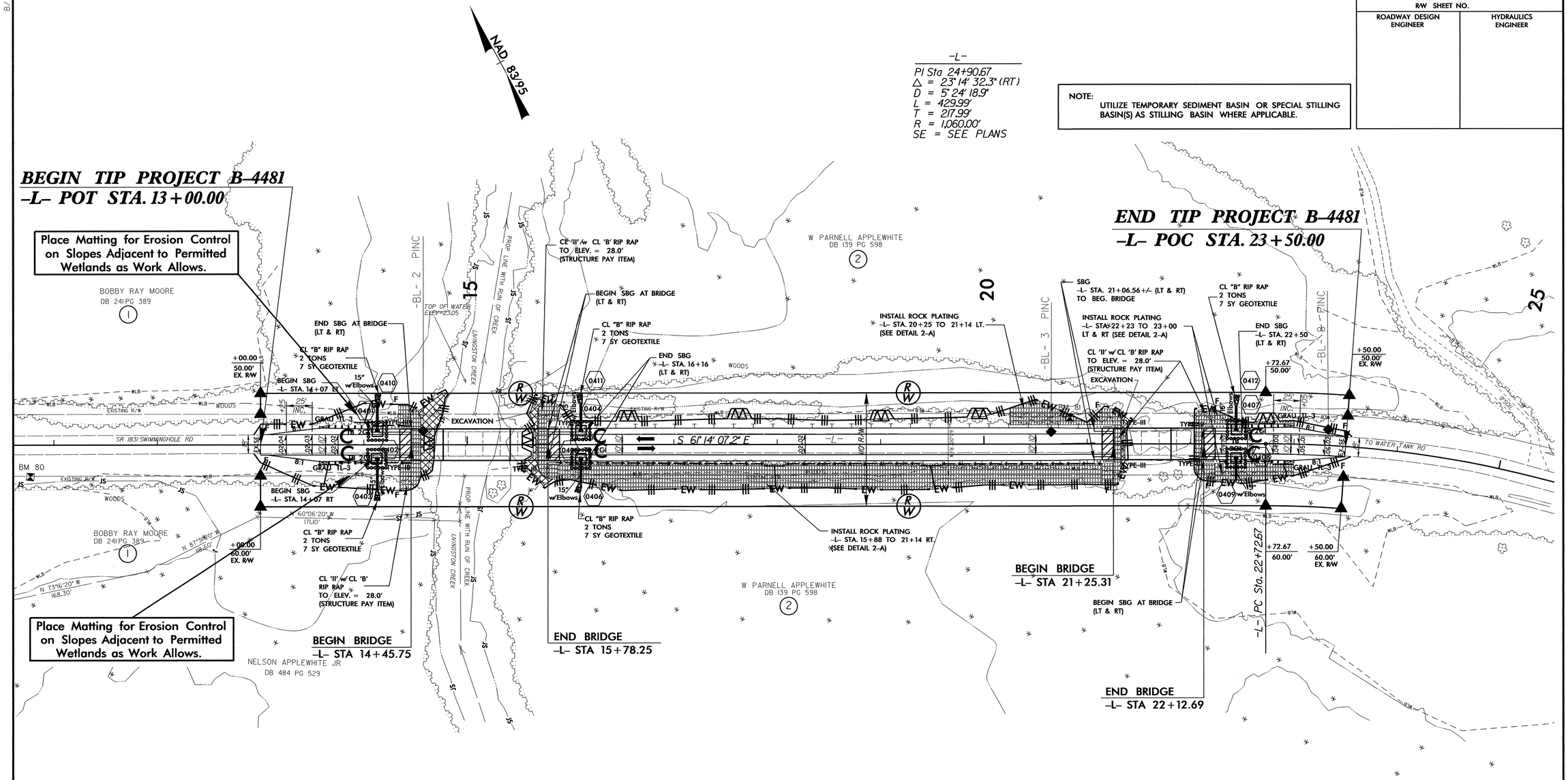
PROJECT REFERENCE NO.	SHEET NO.
B-4481	EC-5/CONST.4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NOTE:
UTILIZE TEMPORARY SEDIMENT BASIN OR SPECIAL STILLING BASIN(S) AS STILLING BASIN WHERE APPLICABLE.

-L-
PI Sta 24+90.67
Δ = 23°14' 32.3" (RT)
D = 5°24' 18.9"
L = 429.99'
T = 217.99'
R = 1,060.00'
SE = SEE PLANS



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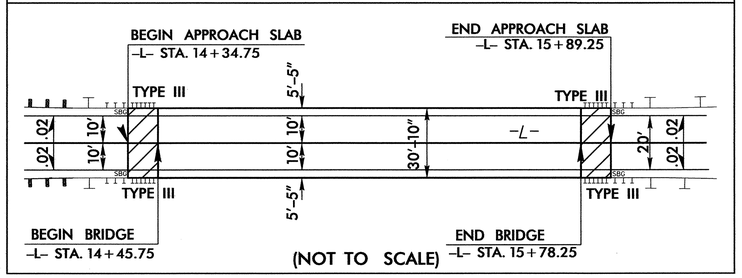

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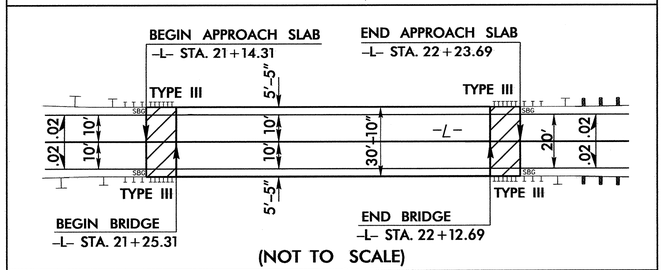
DETAIL SHOWING PAVEMENT AND BRIDGE RELATIONSHIP



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FOR -L- PROFILE, SEE SHEET 5
FOR STRUCTURE PLANS, SEE SHEETS S1 TO S

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DGN

T.I.P.: B-4481

CONTRACT: C203155

TIP NO.	SHEET NO.
B-4481	SIGN-1

APPROVED: [signature]

DATE: 5/6/13

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 028387 ENGINEER AYMAN I. ALQUDWAH

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

SIGNING PLAN
COLUMBUS COUNTY
LOCATION: BRIDGES NO. 279 & 288 OVER LIVINGSTON CREEK ON SR 1831

SUMMARY OF QUANTITIES

ITEM NO.		ITEM DESCRIPTION	QUANTITY	UNIT
DESC. NO.	SECT. NO.			
4155000000	907	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	12	EA.

GENERAL NOTES

- IF REMOVAL OR RELOCATION OF SIGNS ON PRIVATE STREET (NON-STATE MAINTAINED) IS REQUIRED DUE TO CONSTRUCTION, THE CONTRACTOR SHALL INFORM THE ENGINEER. THE WORK WILL BE COMPLETED BY OTHERS.
- SIGNING PLANS DO NOT INCLUDE TEMPORARY CONSTRUCTION SIGNING OR PAVEMENT MARKINGS. SEE TRAFFIC CONTROL PLANS.
- ALL EXISTING SIGNS ON "U" CHANNEL POST WITHIN THE PROJECT LIMITS SHALL BE REMOVED AND DISPOSED OF UNLESS OTHERWISE NOTED ON PLANS.
- SEE ROADWAY PLANS FOR GUARD/GUIDE RAIL DETAILS.

INDEX

SHEET NO.	DESCRIPTION
SIGN-1	TITLE SHEET, QUANTITIES & NOTES
SIGN-2	SIGN DETAIL SHEET

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

AYMAN ALQUDWAH, P.E. — SIGNING & DELINEATION REGIONAL ENGINEER

ERIC WARD — SIGNING & DELINEATION DESIGN ENGINEER

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

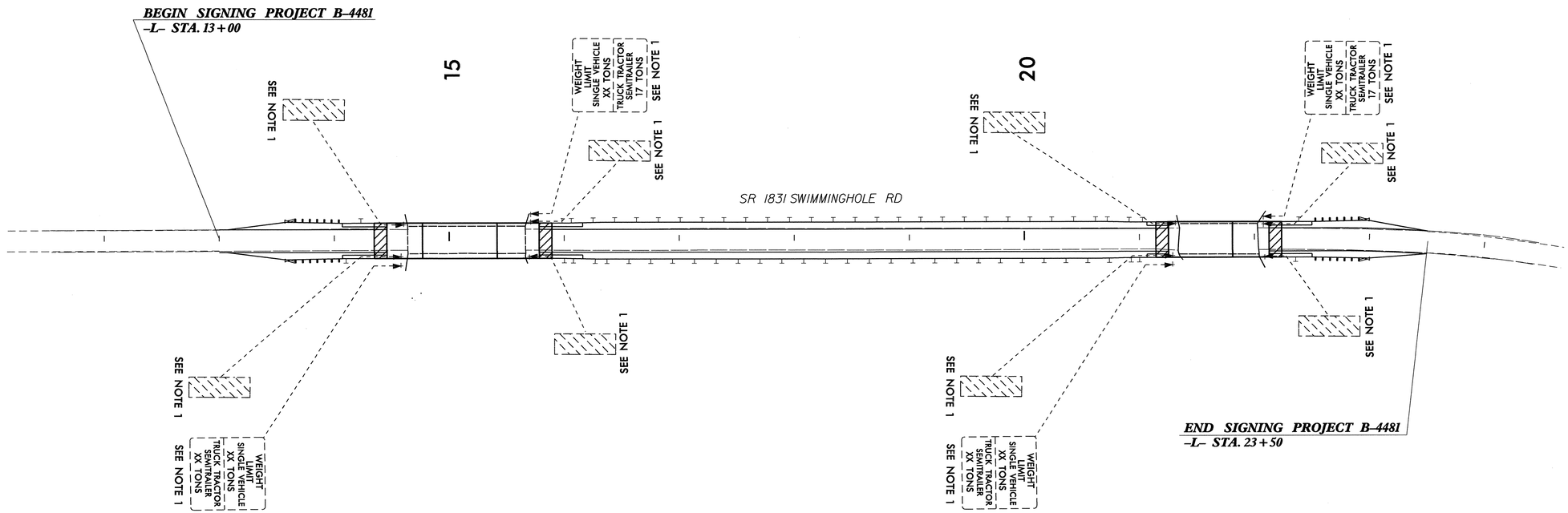
TIP NO.	SHEET NO.
B-4481	SIGN-2

APPROVED: Ayman I. Alqudwah

DATE: 5/6/13

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 028387 ENGINEER AYMAN I. ALQUDWAH



PROJECT NOTES

1	DISPOSAL OF SIGN SYSTEM, U-CHANNEL

SIGNING DETAIL SHEET

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PROJ. REFERENCE NO.	SHEET NO.
B-4481	X-1A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT

CROSS-SECTION SUMMARY

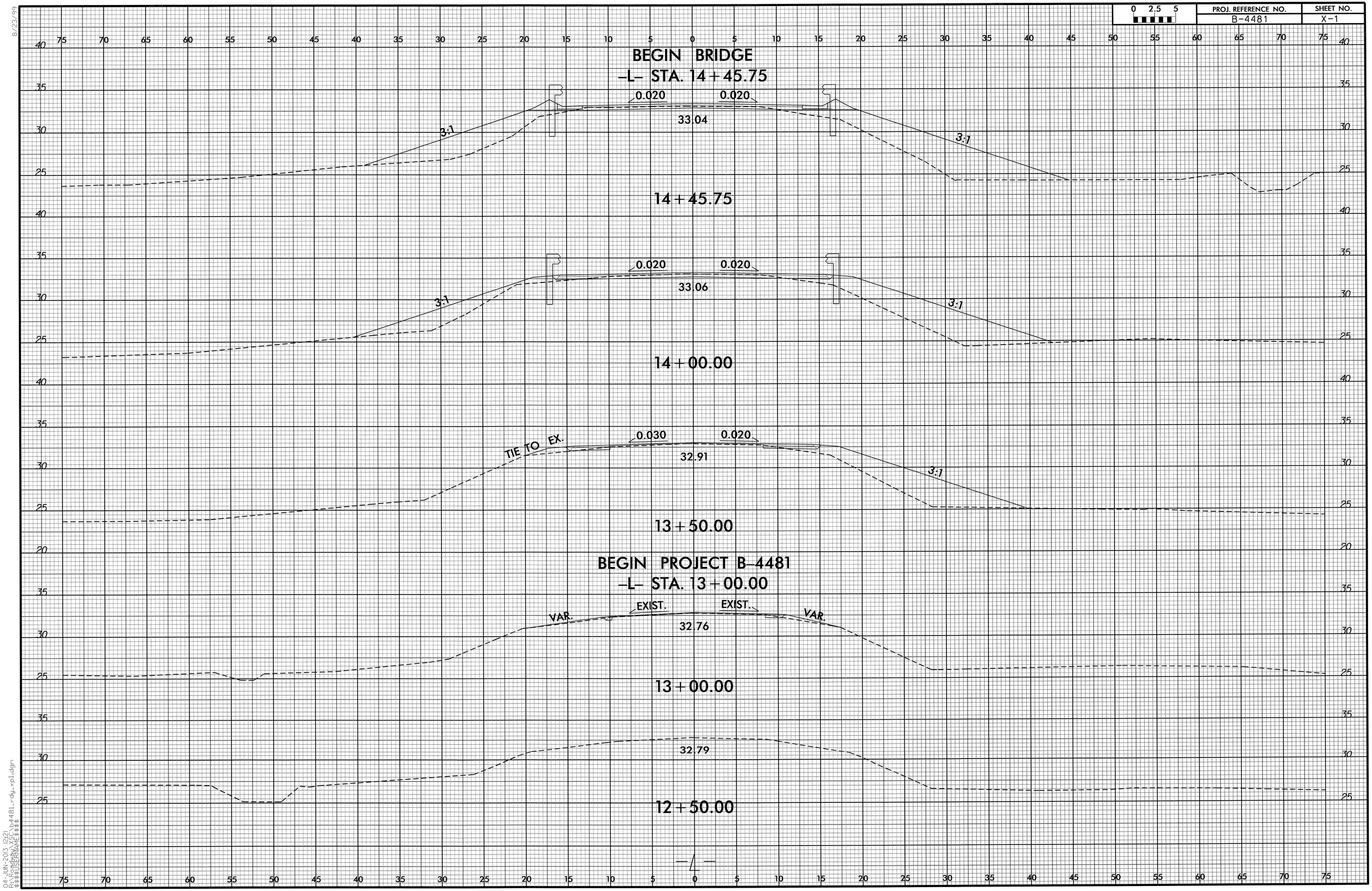
Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
13+00.00	0	0
13+50.00	2	53
14+00.00	7	137
14+45.75	12	158

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

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
15+78.25	0	0
16+00.00	0	9
16+50.00	0	21
17+00.00	0	19
17+50.00	0	17
18+00.00	1	16
18+50.00	2	15
19+00.00	2	15
19+50.00	3	14
20+00.00	4	13
20+50.00	7	10
21+00.00	8	11
21+25.31	3	8

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
22+12.69	0	0
22+50.00	7	10
23+00.00	6	19
23+50.00	2	14

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4481	X-1



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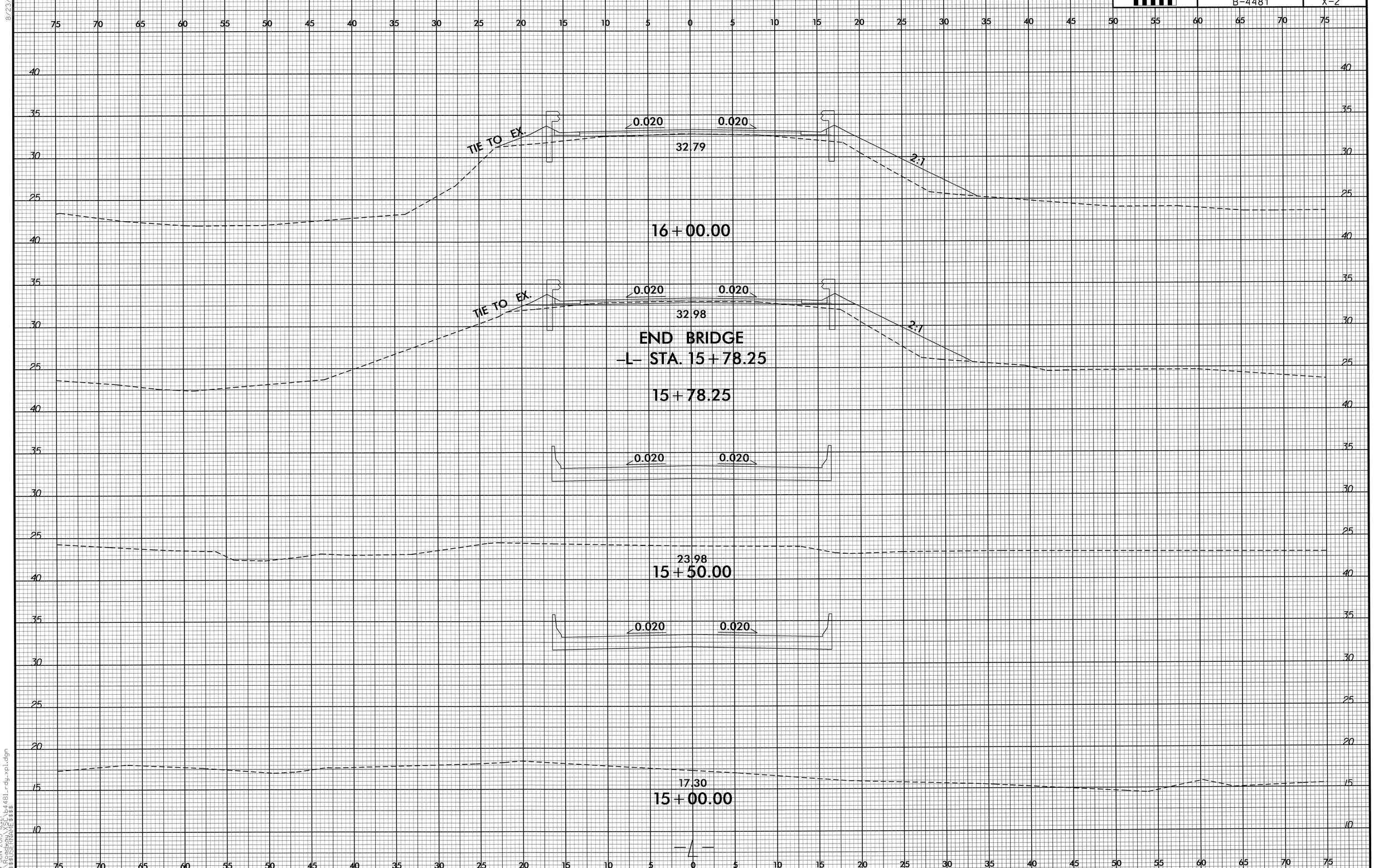

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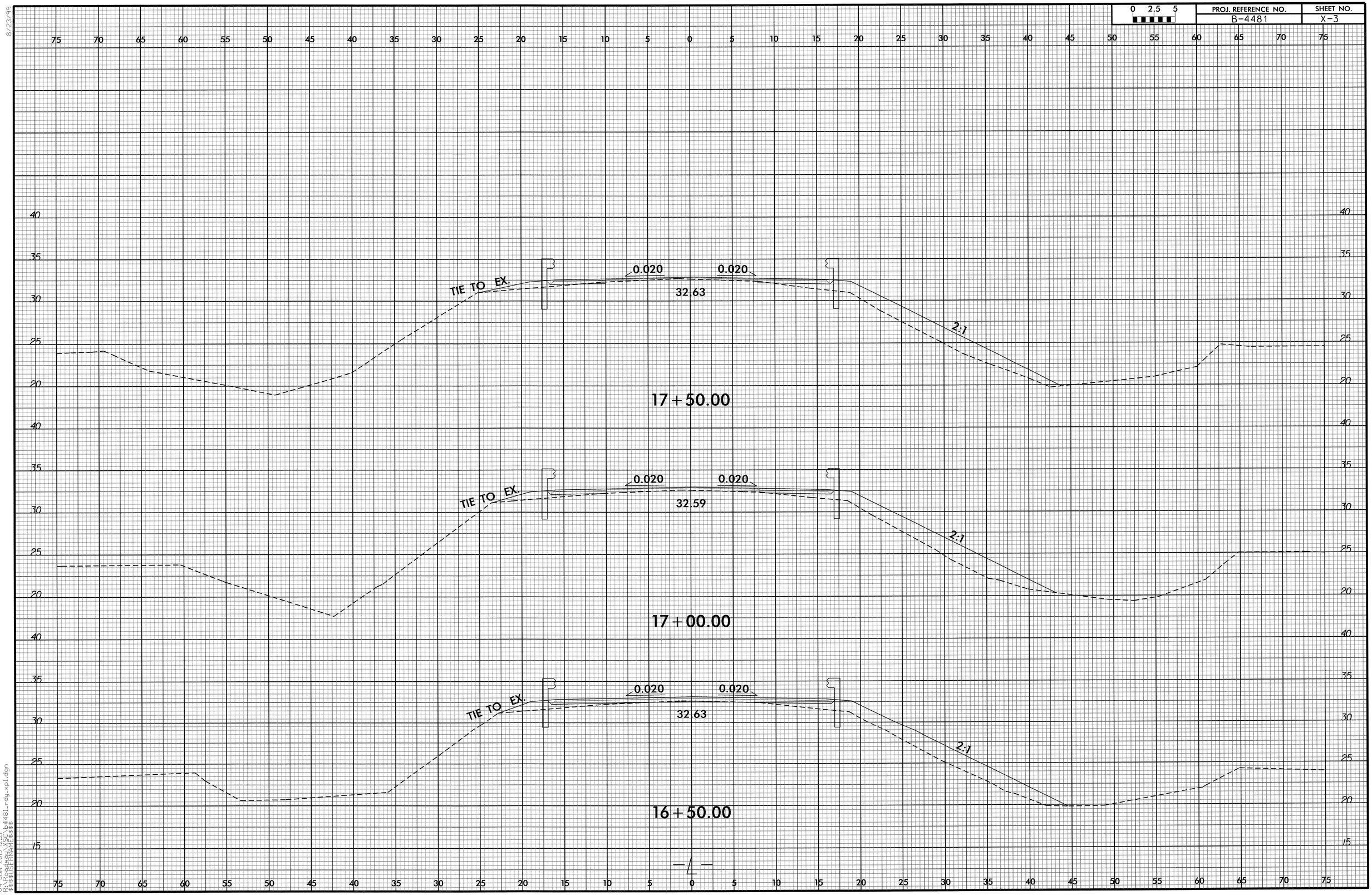

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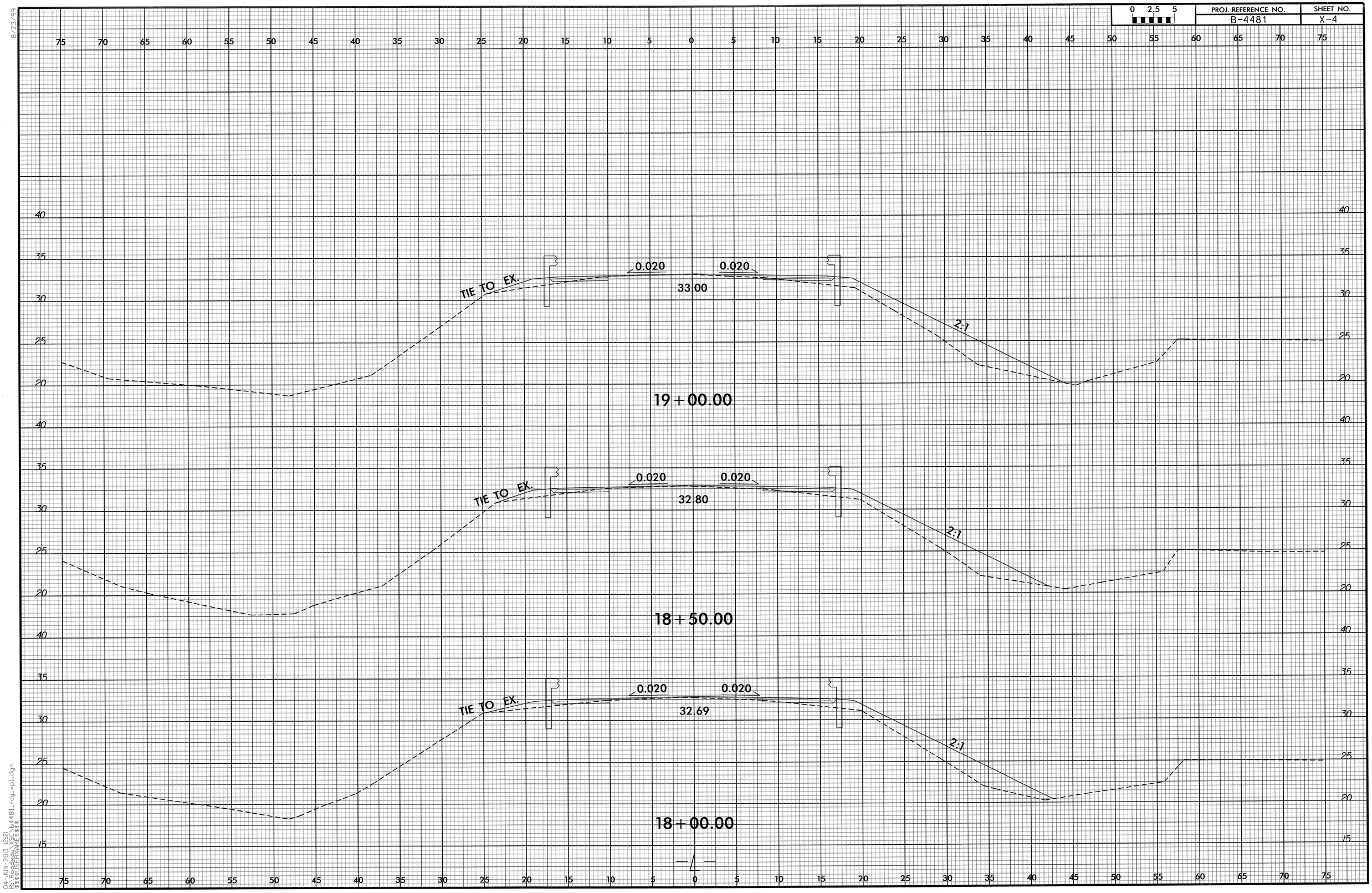

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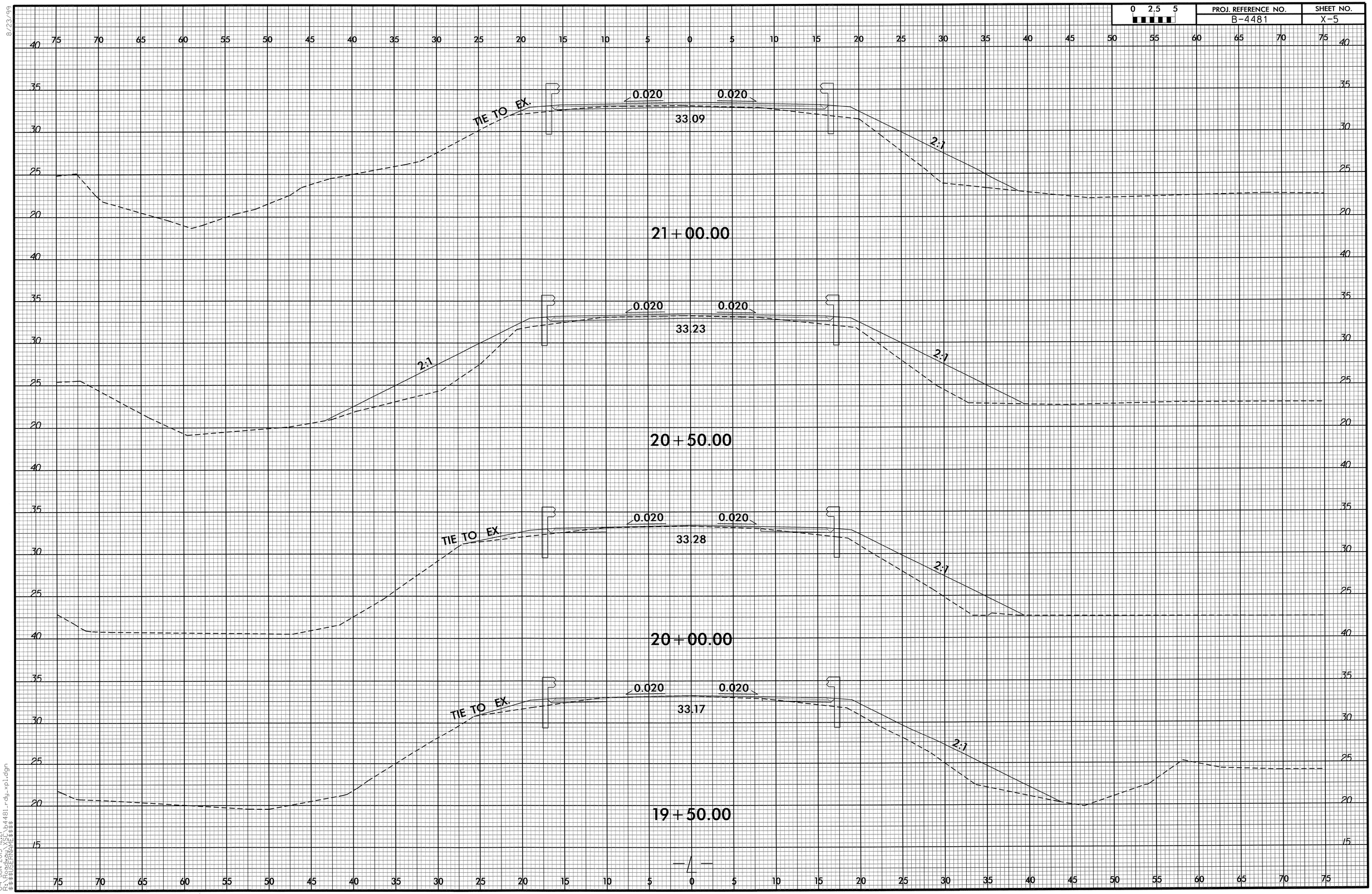

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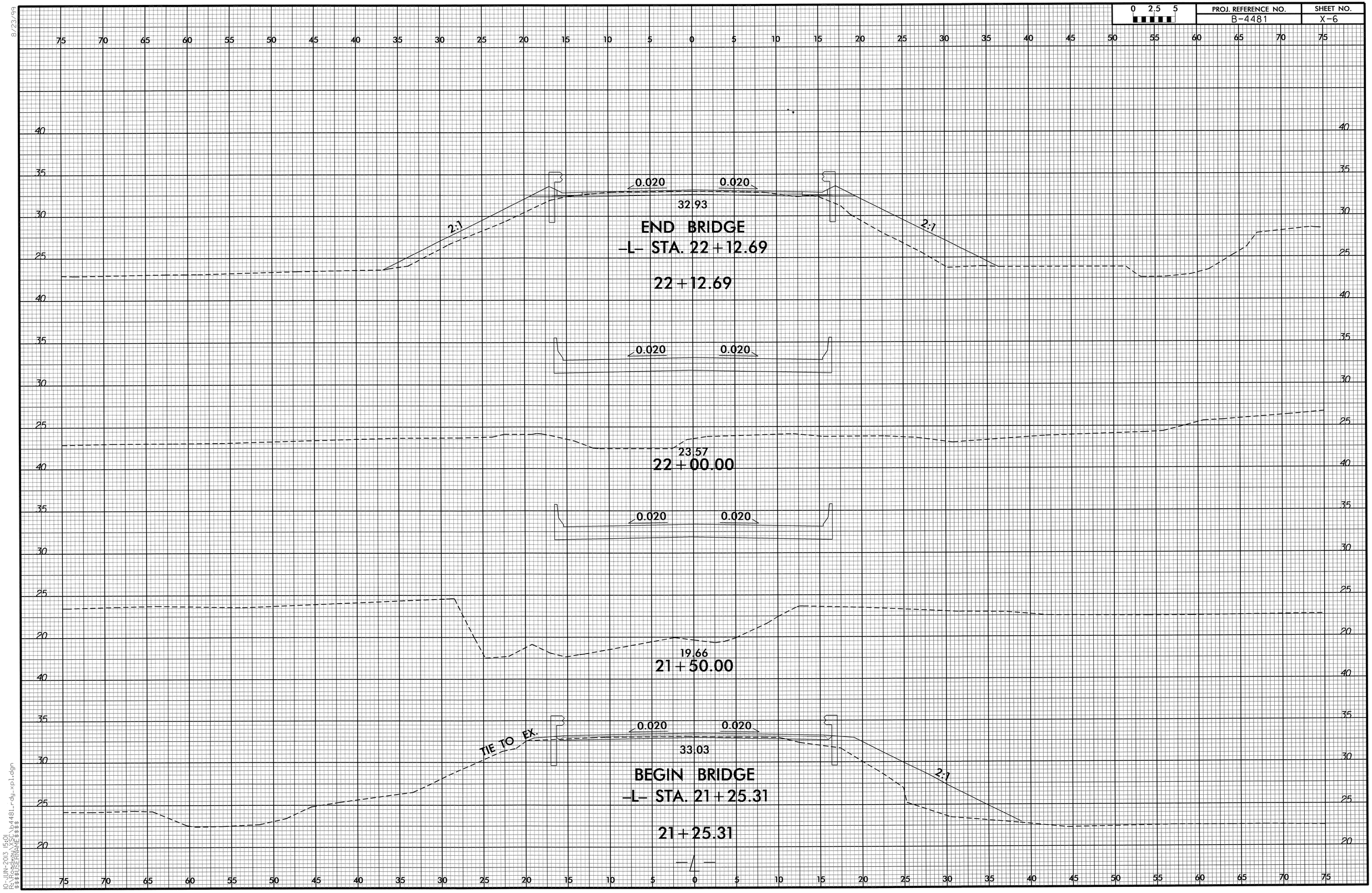

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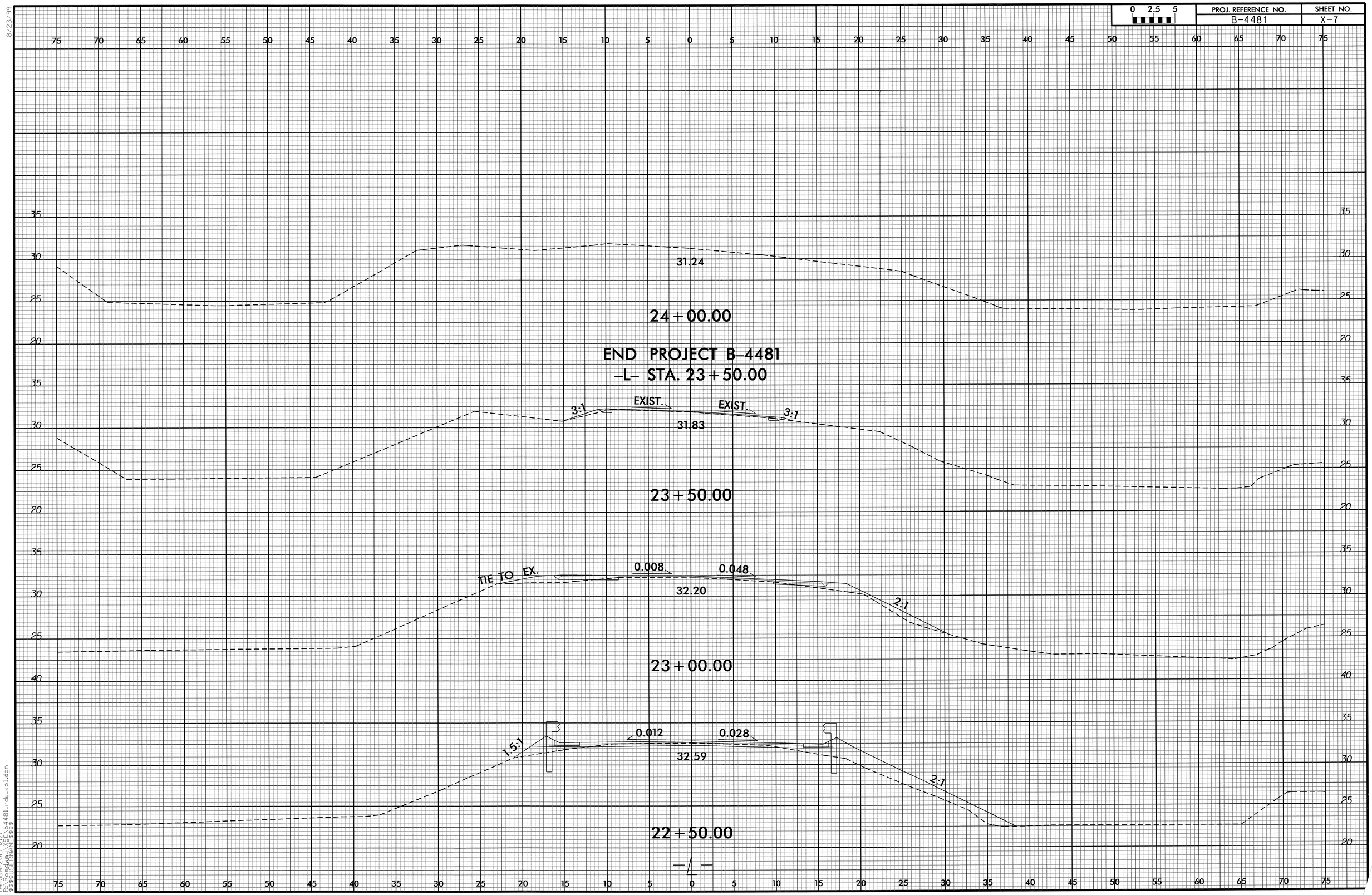

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