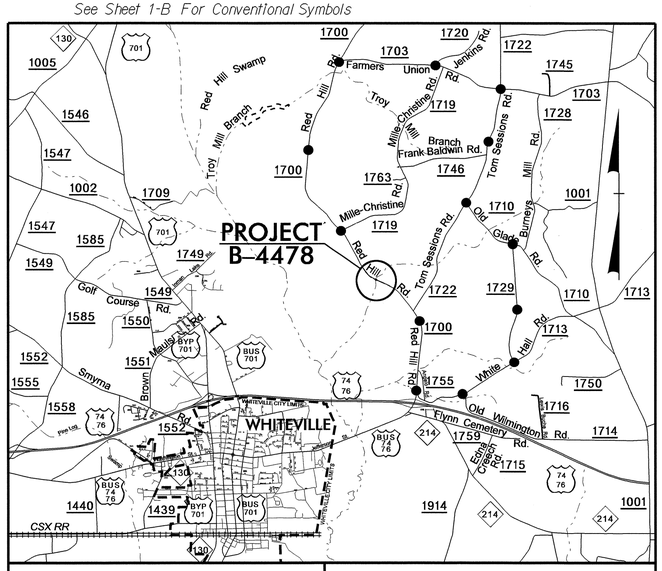
TIP PROJECT: B-4478

CONTRACT: C203293

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



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

COLUMBUS COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4478	1	

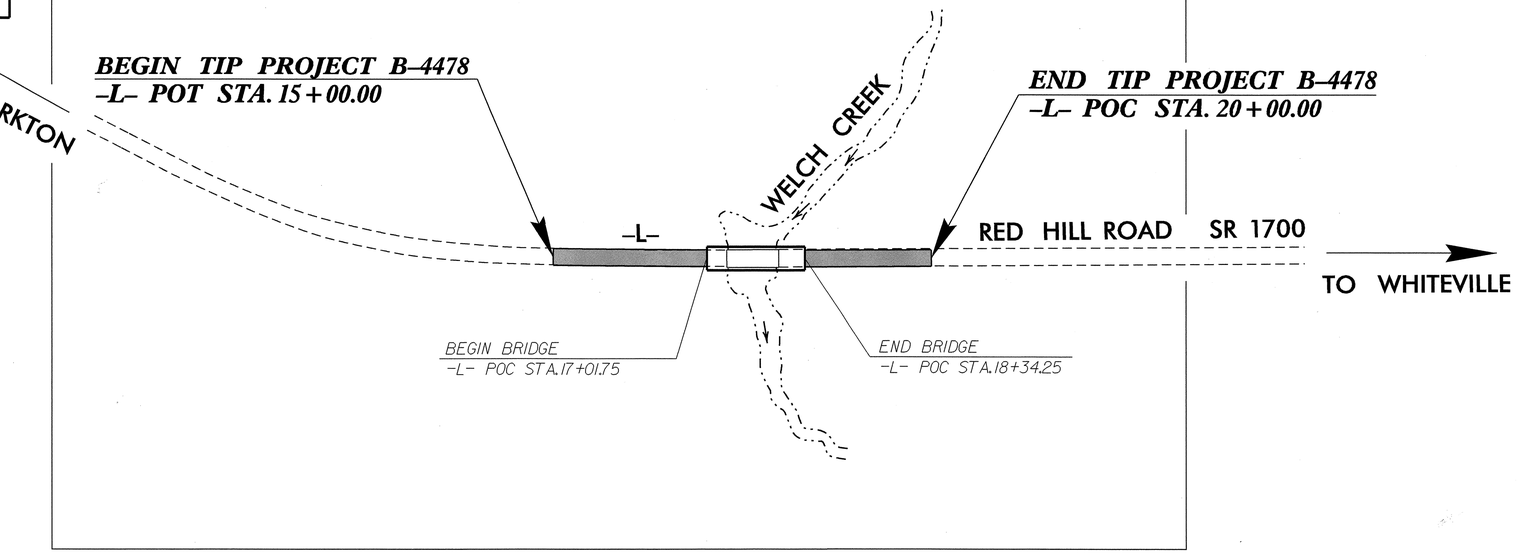
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
38383.1.1	BRZ-1700(9)	PE
38383.2.1	BRZ-1700(9)	R/W & UTIL.
38383.3.FD1	BRZ-1700(9)	CONST.

LOCATION: BRIDGE NO. 216 OVER WELCH CREEK ON SR 1700

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE

4

NAD 83/95



GRAPHIC SCALES

50' 25' 0 50' 100'
PLANS

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

10' 5' 0 10' 20'
PROFILE (VERTICAL)

DESIGN DATA

ADT 2014 = 2,370
ADT 2034 = 3,410
K = 13 %
D = 55 %
T = 5 % *
V = 60 MPH

FUNC. CLASS. = LOCAL
* TTST = 2% DUAL = 3%
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4478 = 0.070 MI.
LENGTH STRUCTURE TIP PROJECT B-4478 = 0.025 MI.
TOTAL LENGTH OF TIP PROJECT B-4478 = 0.095 MI.

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JULY 3, 2012

LETTING DATE:
JANUARY 21, 2014

REKHA PATEL, PE
PROJECT ENGINEER

MICHAEL W. LITTLE, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022000 ENGINEER W. ALLEN CAIL
SIGNATURE: 10/27/2013

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22357 ENGINEER MICHAEL W. LITTLE
SIGNATURE: 10/15/13

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

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PROJECT REFERENCE NO.	SHEET NO.
B-4478	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22567 ENGINEER MICHAEL W. LITTLE

M.W. Little 10/15/13

5/28/99

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL SHEETS
2	TYPICAL SECTIONS
2-A	STANDARD REINFORCED SOIL SLOPE (RSS) DETAIL
2-B	STRUCTURE ANCHOR UNITS, GUARDRAIL ANCHOR UNIT TYPE III
~~3~~	~~SUMMARY OF QUANTITIES~~
3-A	LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER) AND GUARDRAIL SUMMARY
3-B	SUMMARIES OF PAVEMENT REMOVAL, REINFORCED SOIL SLOPES (RSS), SUBSURFACE DRAINAGE AND EARTHWORK
4	PLAN SHEET
5	PROFILE SHEET
TMP-1 THRU TMP-3	TRANSPORTATION MANAGEMENT PLANS
PMP-1	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
SIGN-1	SIGNING PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-1A	CROSS-SECTION SUMMARY SHEET
X-1 THRU X-3	CROSS-SECTIONS
S-1 THRU S-19	STRUCTURE PLANS

GENERAL NOTES:

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

GRADE LINE:
GRADING AND SURFACING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION

ALL 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.

SUBSURFACE PLANS:

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

END BENTS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE

POWER - BRUNSWICK EMC

TELEPHONE - CENTURYLINK

TELEVISION - TIME WARNER CABLE

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.

2012 ROADWAY ENGLISH STANDARD DRAWINGS

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

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

STD.NO.	TITLE
	DIVISION 2 - EARTHWORK
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
	DIVISION 3 - PIPE CULVERTS
300.01	Method of Pipe Installation
	DIVISION 4 - MAJOR STRUCTURES
422.10	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
862.03	Structure Anchor Units (Details in Lieu of Standard Drawing as March 2013 Letting)
876.02	Guide for Rip Rap at Pipe Outlets

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04/16/11

PROJECT REFERENCE NO.	SHEET NO.
B-4478	1-B

Note: Not to Scale

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line

- Orchard
- Vineyard — Vineyard

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- Recorded U/G Water Line — 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.

SURVEY CONTROL SHEET B-4478

BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
3	B-4478 BL-3	227812.8753	2099889.0688	62.16	OUTSIDE PROJECT LIMITS	
2	B-4478 BL-2	227614.5672	2100260.1475	61.88	17+18.11	19.33 RT
1	B-4478 BL-1	227427.4877	2100655.3875	61.69	21+55.13	19.83 RT

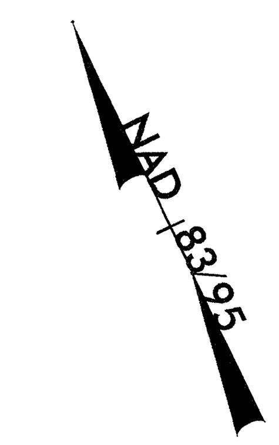
BM1 ELEVATION = 62.08
N 227348 E 2100731
L STATION 22+58.00 59 RIGHT
RR SPIKE IN BASE OF 24" OAK TREE

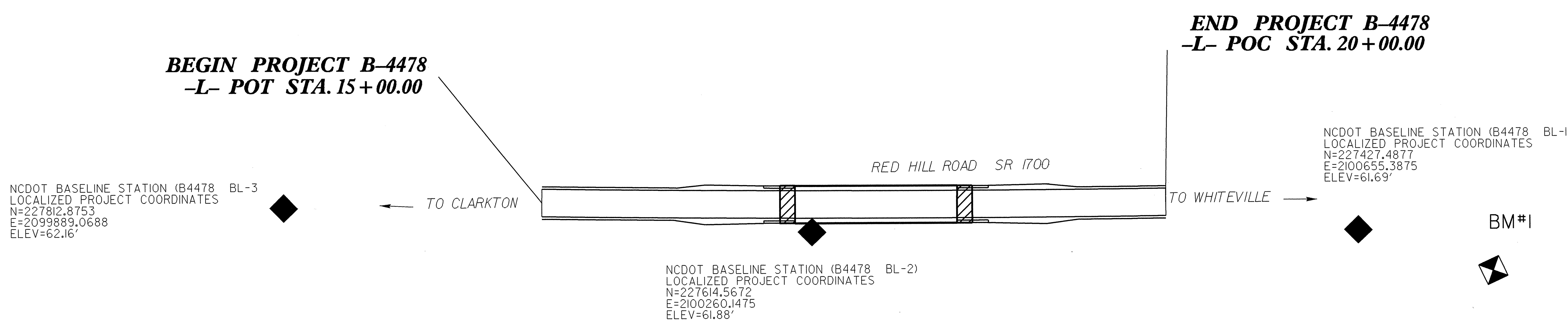
FINAL ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	15+57.48	-30.00	227729.2155	2100137.3585
L	15+57.48	-45.00	227742.6790	2100143.9718
L	15+57.48	30.00	227675.3616	2100110.9055
L	15+57.48	45.00	227661.8982	2100104.2922
L	19+50.00	-45.00	227572.9838	2100497.0500
L	19+50.00	-30.00	227559.4090	2100490.6683
L	19+50.00	30.00	227505.1101	2100465.1413
L	19+50.00	45.00	227491.5354	2100458.7596

L

TYPE	STATION	NORTH	EAST
POT	14+55.86	227747.0930	2100032.9180
PC	15+57.48	227702.2886	2100124.1320
PT	20+20.66	227502.2978	2100541.8934
POT	22+63.64	227399.5991	2100762.1067





DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4478-1"
WITH NAD 83/95 STATE PLANE GRID COORDINATES OF
NORTHING: 227009.592(ft) EASTING: 2101583.199(ft)
ELEVATION: 77.55(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99999084
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4478-1" TO -L- 15+00.00 STATION IS
N 64° 34' 39.2" W 1672.63'
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 PROJECT CONTROL DATA AT:*
   HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/PAGES/DEFAULT.ASPX

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   B4478_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

PROJECT REFERENCE NO.	SHEET NO.
B-4478	2

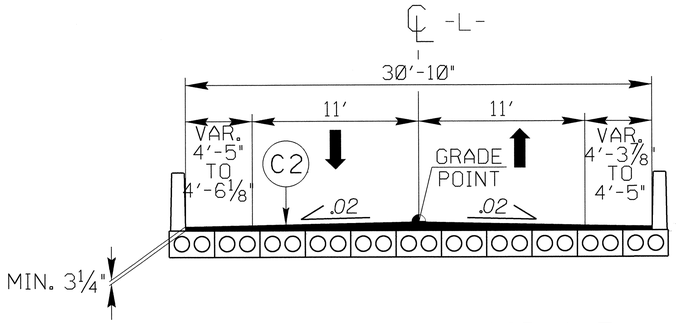
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER MICHAEL W. LITTLE
10/15/13

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON
10/18/13

PAVEMENT SCHEDULE

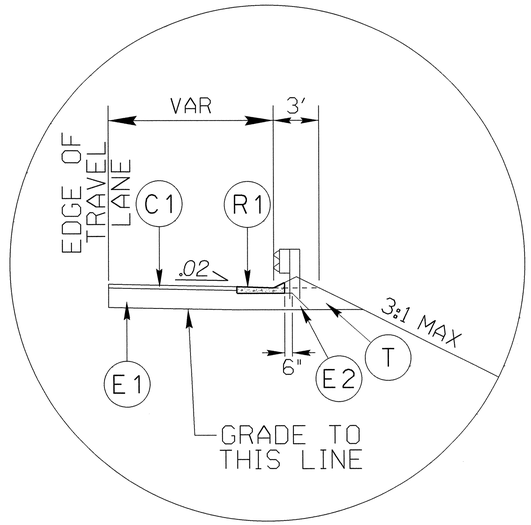
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF 2 LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.
E1	PROP. APPROX. 5½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 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 4" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
R1	SHOULDER BERM GUTTER
T	EARTH MATERIAL

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



DETAIL SHOWING ASPHALT WEARING SURFACE ON CORED SLAB BRIDGE

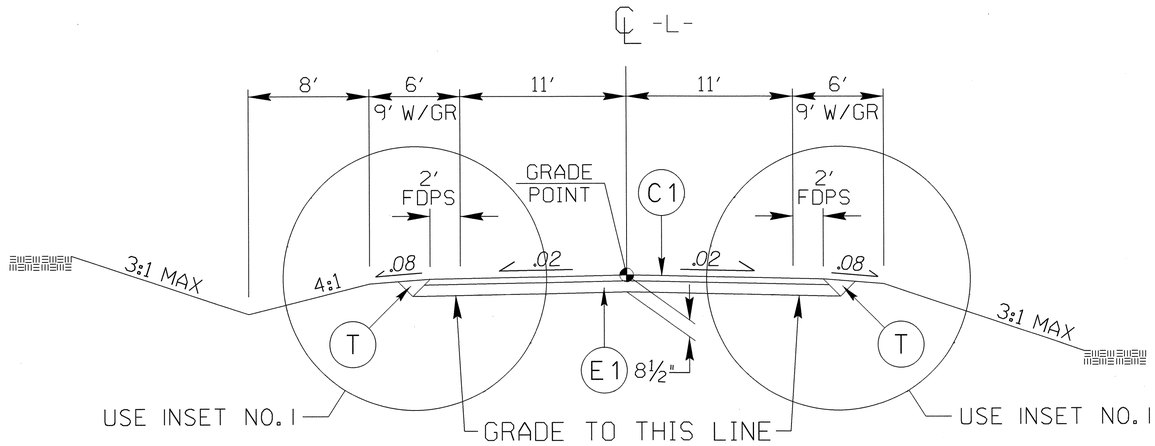
-L- STA. 17+01.75 TO -L- STA. 18+34.25



INSET NO. 1

INSET NO. 1

Use with Typical Section No. 1



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1

-L- STA. 15+50.00 TO -L- STA. 17+01.75 (BEGIN BRIDGE)
-L- STA. 18+34.25 (END BRIDGE) TO -L- STA. 19+50.00

USE INSET NO. 1 FOR:

-L- STA. 16+76.75 TO -L- STA. 16+90.75 (RT.)
-L- STA. 16+76.75 TO -L- STA. 16+90.75 (LT.) REVERSE
-L- STA. 18+45.25 TO -L- STA. 18+59.25 (RT.)
-L- STA. 18+45.25 TO -L- STA. 18+59.25 (LT.) REVERSE

NOTES:
(1) TRANSITION FROM EXISTING TO T.S. NO. 1
-L- STA. 15+00.00 TO -L- STA. 15+50.00
(2) TRANSITION FROM T.S. NO. 1 TO EXISTING
-L- STA. 19+50.00 TO -L- STA. 20+00.00
(3) USE 2:1 REINFORCED SOIL SLOPES WITH SOD (SEE SHEET 2-A)
-L- STA. 15+75.00 TO -L- STA. 16+69.25 +/- LT.
-L- STA. 15+25.00 TO -L- STA. 16+69.25 +/- RT.
(4) SOD ONLY
-L- STA. 18+66.75 +/- TO -L- STA. 19+25.00 +/- LT.

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PROJECT REFERENCE NO.	SHEET
B-4478	2-A

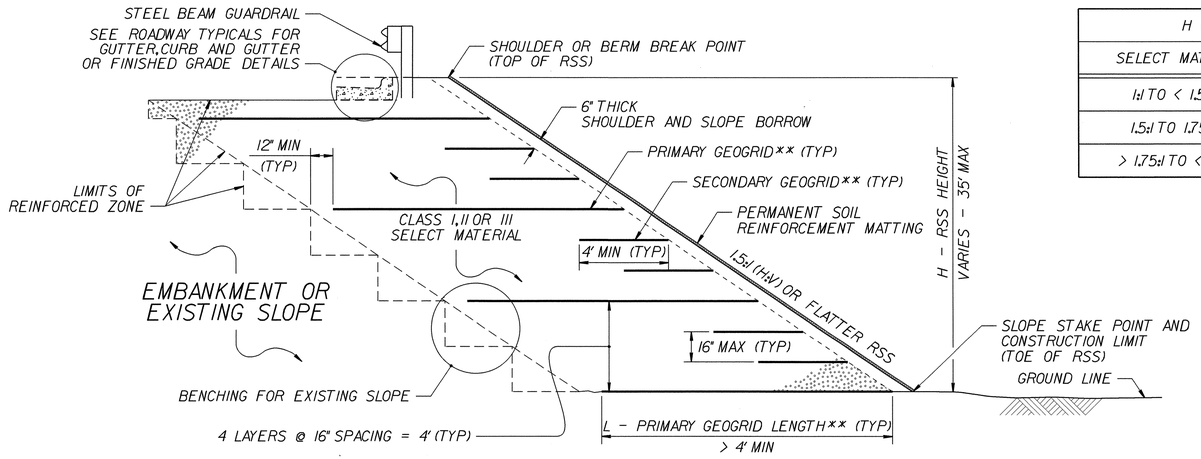
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 30943 ENGINEER THEIN TUN TAN

10/23/13
SIGNATURE DATE

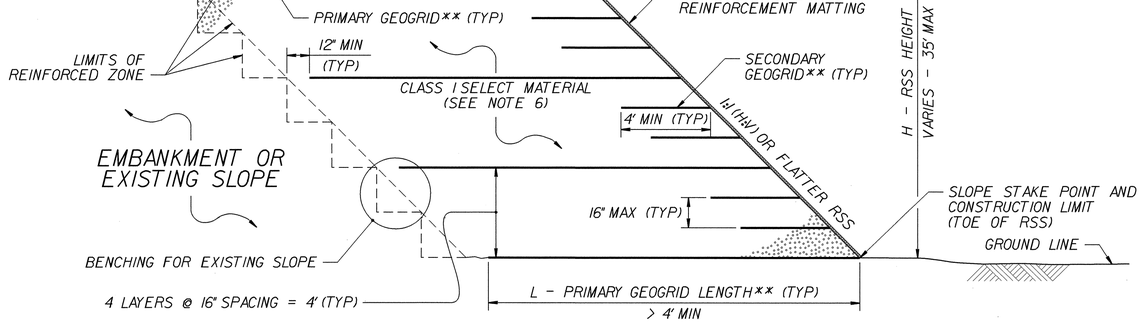
ENGINEER

SIGNATURE DATE



STANDARD RSS WITH SELECT MATERIAL THAT DOES NOT MEET ARTICLE 1019-2 OF THE STANDARD SPECIFICATIONS

**SEE TABLES AND GEOGRID PLACEMENT DETAILS.



STANDARD RSS WITH SELECT MATERIAL THAT MEETS ARTICLE 1019-2 OF THE STANDARD SPECIFICATIONS

**SEE TABLES AND GEOGRID PLACEMENT DETAILS.

H (FT)	0 - < 10		10 - 20		> 20 - 35	
SELECT MATERIAL CLASS	I	II OR III	I	II OR III	I	II OR III
1:1 TO < 1.5:1 (H:V) RSS	1.20	SEE NOTE 6	1.10	SEE NOTE 6	1.00	SEE NOTE 6
1.5:1 TO 1.75:1 (H:V) RSS	1.15	1.00	1.05	0.95	0.95	0.90
> 1.75:1 TO < 2:1 (H:V) RSS	1.10	0.75	1.00	0.70	0.90	0.65

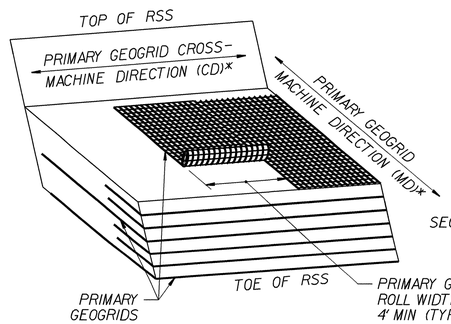
L/H RATIO (L > 4' MIN)

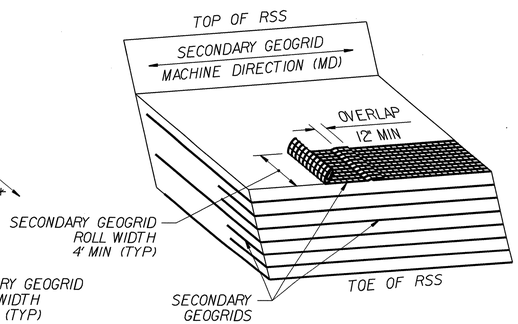
IF L ≤ 4', USE SECONDARY GEOGRID INSTEAD OF PRIMARY GEOGRID.

	H (FT)	0 - < 10		10 - 20		> 20 - 35	
	SELECT MATERIAL CLASS	I	II OR III	I	II OR III	I	II OR III
PRIMARY GEOGRID (SUBSTITUTE SECONDARY GEOGRID FOR PRIMARY GEOGRID FOR > 2:1 (H:V) RSS)	1:1 TO < 1.5:1 (H:V) RSS	2XT SG150 SF20 UX1100HS	SEE NOTE 6	3XT SG200 SF35 UX1400HS	SEE NOTE 6	5XT SG350 SF55 UX1500HS	SEE NOTE 6
	1.5:1 TO 1.75:1 (H:V) RSS	2XT SG150 SF20 UX1100HS	2XT SG150 SF20 UX1100HS	3XT SG200 SF35 UX1400HS	2XT SG150 SF20 UX1100HS	3XT SG200 SF35 UX1400HS	2XT SG150 SF20 UX1100HS
	> 1.75:1 TO < 2:1 (H:V) RSS	2XT SG150 SF20 UX1100HS	2XT SG150 SF20 UX1100HS	2XT SG150 SF20 UX1100HS	2XT SG150 SF20 UX1100HS	2XT SG150 SF20 UX1100HS	2XT SG150 SF20 UX1100HS
SECONDARY GEOGRID	1:1 (H:V) OR FLATTER RSS	2XT SG150 SF11 BX1100					

PRIMARY AND SECONDARY GEOGRIDS

#XT REFERS TO MIRAFI SERIES GEOGRID.
SG### REFERS TO STRATAGRID SERIES GEOGRID.
SF## REFERS TO SYNTEEN SERIES GEOGRID.
UX####HS AND BX#### REFER TO TENSAR SERIES GEOGRID.





GEOGRID PLACEMENT DETAILS

*SEE NOTES 7 AND 8.

NOTES:

1. SEE ROADWAY PLANS FOR REINFORCED SOIL SLOPE (RSS) LOCATIONS.
2. FOR STANDARD REINFORCED SOIL SLOPES, SEE REINFORCED SOIL SLOPES PROVISION. FOR PERMANENT SOIL REINFORCEMENT MATTING, SEE PERMANENT SOIL REINFORCEMENT MAT PROVISION. FOR STEEL BEAM GUARDRAIL, SEE SECTION 862 OF THE STANDARD SPECIFICATIONS.
3. STANDARD RSS ARE BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
   UNIT WEIGHT, γ = 120 LB/CF
   FRICTION ANGLE, ϕ = 30 DEGREES
   COHESION, c = 0 LB/SF
4. DO NOT USE STANDARD RSS IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE OR GROUNDWATER IS ABOVE TOE OF RSS.
5. DO NOT USE STANDARD RSS WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS BELOW RSS.
6. FOR 1:1 TO < 1.5:1 (H:V) RSS, USE CLASS I SELECT MATERIAL IN THE REINFORCED ZONE THAT MEETS ARTICLE 1019-2 OF THE STANDARD SPECIFICATIONS EXCEPT FOR SELECT MATERIAL THAT MEETS AASHTO M 145 FOR SOIL CLASSIFICATIONS A-4 AND A-5. DO NOT USE A-4 OR A-5 SOIL OR CLASS II OR III SELECT MATERIAL FOR 1:1 TO < 1.5:1 (H:V) RSS.
7. EXCEPT FOR TENSAR UX GEOGRIDS, DO NOT SPLICE OR OVERLAP PRIMARY GEOGRIDS IN THE MACHINE DIRECTION (MD) SO SPLICES OR OVERLAPS ARE PARALLEL TO THE TOE OF RSS. TENSAR UX GEOGRIDS MAY BE SPLICED ONCE PER PRIMARY GEOGRID LENGTH IN ACCORDANCE WITH TENSAR'S BODKIN CONNECTION DETAIL. USE TENSAR UX GEOGRID PIECES AT LEAST 4' LONG.
8. EXCEPT FOR TENSAR UX GEOGRIDS, PLACE PRIMARY GEOGRIDS SO GEOGRIDS ARE ADJACENT TO EACH OTHER IN THE CROSS-MACHINE DIRECTION (CD). TENSAR UX GEOGRIDS MAY BE PLACED WITH A MAXIMUM SPACING BETWEEN GEOGRIDS OF 1.64' IN THE CD. STAGGER TENSAR UX GEOGRIDS SO GEOGRIDS ARE CENTERED OVER GAPS IN THE PRIMARY GEOGRID LAYER BELOW.
9. DO NOT PLACE PRIMARY GEOGRIDS UNTIL EXCAVATION DIMENSIONS AND IN-SITU MATERIAL ARE APPROVED.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

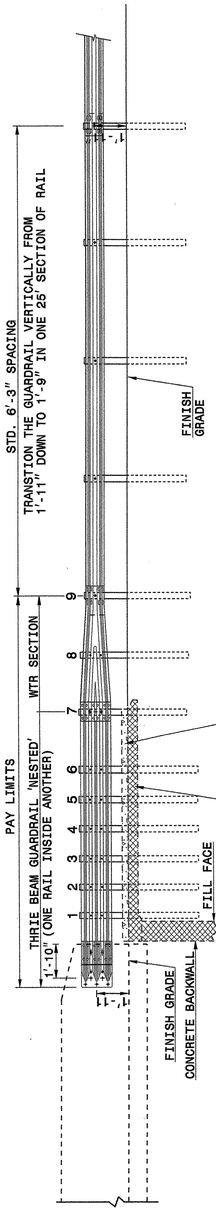
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD DRAWING NO. 1803.01

STANDARD REINFORCED SOIL SLOPE (RSS)

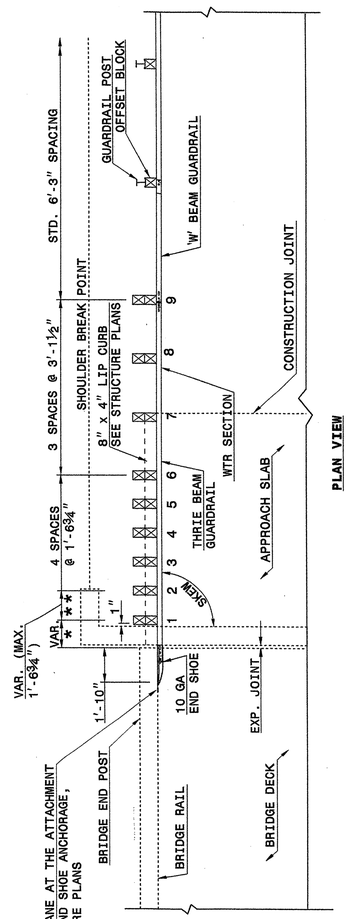
DATE: 1-17-12

PROJECT REFERENCE NO.	SHEET NO.
B-4478	2-B



ELEVATION

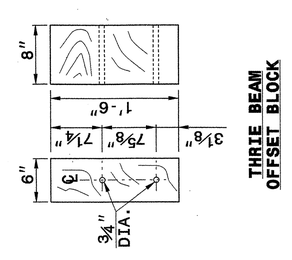
NOTE:
- **POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- **THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.
- SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 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.



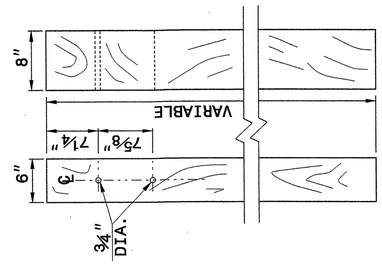
PLAN VIEW

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

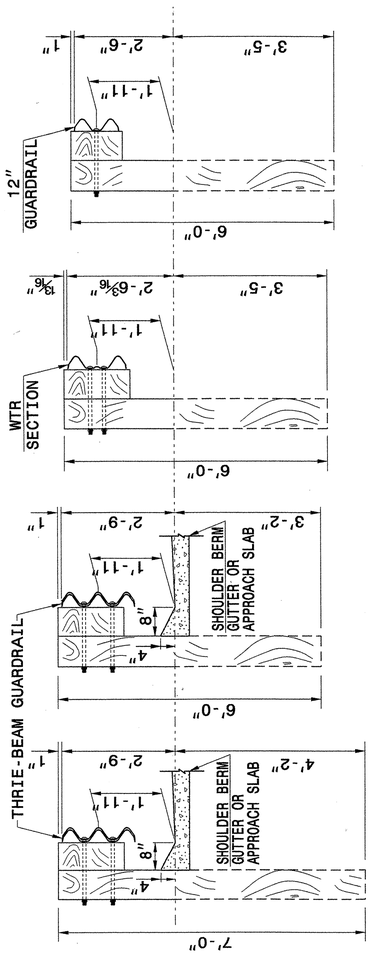
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ENGLISH DETAIL DRAWING FOR **STRUCTURE ANCHOR UNITS** GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER	SHEET 2 OF 7 862d03



THRIE BEAM OFFSET BLOCK



THRIE BEAM LINE POST



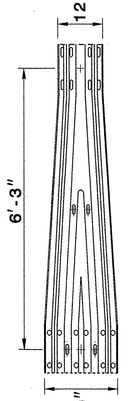
SECTION OF 'W' BEAM POST 9

SECTION OF WTR BEAM POST 8

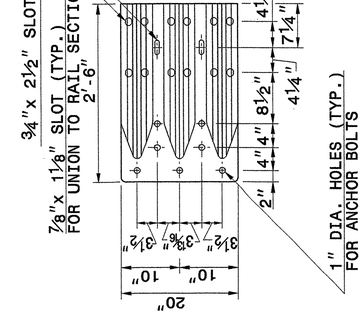
SECTION OF THRIE BEAM POST 7

SECTION OF THRIE BEAM POSTS 1 THRU 6

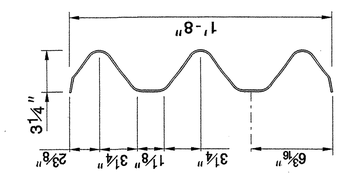
NOTE: THE MID POST AND OFFSET BLOCK OF THE WTR SECTION WILL REQUIRE SPECIAL BOLT HOLE DRILLING IN THE THRIE BEAM OFFSET BLOCK AND LINE POST.



WTR SECTION
ELEVATION VIEW



END SHOE



THRIE-BEAM SECTION

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

COMPUTED BY: PWR	DATE: 09/06/2013
CHECKED BY: MWL	DATE: 09/09/2013

PROJECT REFERENCE NO.	SHEET NO.
B-4478	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	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"	DO NOT USE RCP	DO NOT USE CSP	R.C. PIPE (CLASS III) 15"	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	G.D.I. (N.S.F.G.) FRAME WITH TWO GRATES STD. 840.29	TRAFFIC BEARING D.I. STD. 840.35 OR 840.46	REMARKS
-L- 16+82	LT.	0401		62.8								1	1	1	TB2GI
		0401	0402		59.6	59.5					28'				15" RCP-III
-L- 16+82	RT.	0402		62.8								1	1	1	TB2GI
		0402	0403		59.5	57.9		16'	✓	✓					
-L- 18+53	LT.	0404		62.7								1	1	1	TB2GI
		0404	0405		59.6	59.5					28'				15" RCP-III
-L- 18+53	RT.	0405		62.7								1	1	1	TB2GI
		0405	0406		59.5	59.4		12'		✓					
PROJECT TOTALS								28'			56'	4	4	4	

Other column headings: SIZE; THICKNESS OR GAUGE; DRAINAGE PIPE 18", 24", 30", 36", 42", 48"; DO NOT USE CAAP; DO NOT USE HDPE; DO NOT USE PVC; C.S. PIPE 15" (.064), 18" (.064), 24" (.064), 30" (.079), 36" (.079), 42" (.109), 48" (.109); R.C. PIPE (CLASS III) 18"–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.; * 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; 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.

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 GRAU 350 TL-3	ANCHORS TYPE III	IMPACT ATTENUATOR TYPE 350 NO.	PERMITTED G	PERMITTED NG	SINGLE FACED CONCRETE BARRIERS	REMOVE EXISTING GUARDRAIL
-L-	16+20.56	17+01.81	LT	81.25'				17+01.81	4.42	9		62.50		1.25	1	1					
-L-	16+20.44	17+01.69	RT	81.25'			17+01.69		4.42	9	62.50		1.25		1	1					
-L-	18+34.28	19+15.53	LT	81.25'			18+34.28		4.42	9	62.50		1.25		1	1					
-L-	18+34.22	19+15.47	RT	81.25'				18+34.22	4.42	9		62.50		1.25	1	1					
		SUBTOTAL		325.00 Ft.										TOTALS	4	4					

LESS ANCHOR DEDUCTIONS		
GRAU-350 TL-3	4 @ 50.00 Ft.	200.00 Ft.
TYPE III	4 @ 18.75 Ft.	75.00 Ft.
SUBTOTAL		275.00 Ft.
PROJECT TOTAL		50.00 Ft.
SAY		50.00 Ft.
ADDITIONAL GUARDRAIL POSTS		5 EA.

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COMPUTED BY: PWR	DATE: 09/06/2013
CHECKED BY: MWL	DATE: 09/09/2013

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-4478	3-B

SUMMARY OF PAVEMENT REMOVAL
IN SQUARE YARDS

BEGIN STATION	END STATION	LOCATION	ASPHALT REMOVAL
-L- STA. 15+00.00	-L- STA. 17+29.00		439
-L- STA. 17+98.00	-L- STA. 20+00.00		372
TOTAL			811
SAY			820

SUMMARY OF REINFORCED SOIL SLOPES (RSS)

BEGINNING SLOPE	APPROX. STATION	ENDING SLOPE	APPROX. STATION	LOCATION LT / RT	AREA (SY)
2:1	-L- STA. 15+75.00 +/-	2.5:1	-L- STA. 16+69.25 +/-	LT	-
2:1	-L- STA. 15+25.00 +/-	2.5:1	-L- STA. 16+69.25 +/-	RT	-
				TOTAL	180

SUMMARY OF SUBSURFACE DRAINAGE
IN FEET

BEGIN STATION	END STATION	LOCATION	DRAIN TYPE * UD / BD / SD	LENGTH
CONTINGENCY			SD	100.00
TOTAL			SD	100.00

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

SUMMARY OF EARTHWORK
IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT + %	BORROW	WASTE
-L- STA. 15+00.00 TO -L- STA. 17+01.75	59		145	86	
-L- STA. 18+34.25 TO -L- STA. 20+00.00	62		81	19	
PROJECT SUBTOTAL	121		226	105	
PROJECT TOTAL	121		226	105	
EST 5% TO REPLACE TOP SOIL ON BORROW PIT				5	
GRAND TOTAL	121		226	110	
SAY	130 CY			120 CY	

PER GEOTECH RECOMMENDATION, ESTIMATED 400 CUBIC YARDS OF UNDERCUT TO BE USED AT THE DISCRETION OF THE RESIDENT ENGINEER

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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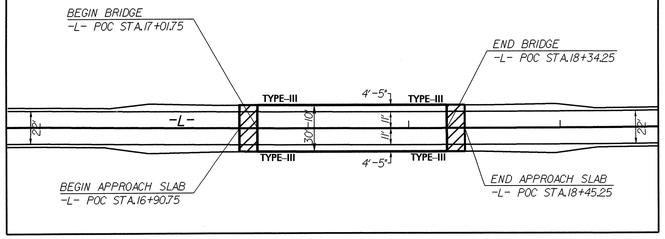
PROJECT REFERENCE NO.	SHEET NO.
B-4478	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 23557 ENGINEER MICHAEL W. LISTER
10/15/13

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022000 ENGINEER K. GALEN CAIN
10/22/13

REVISIONS

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

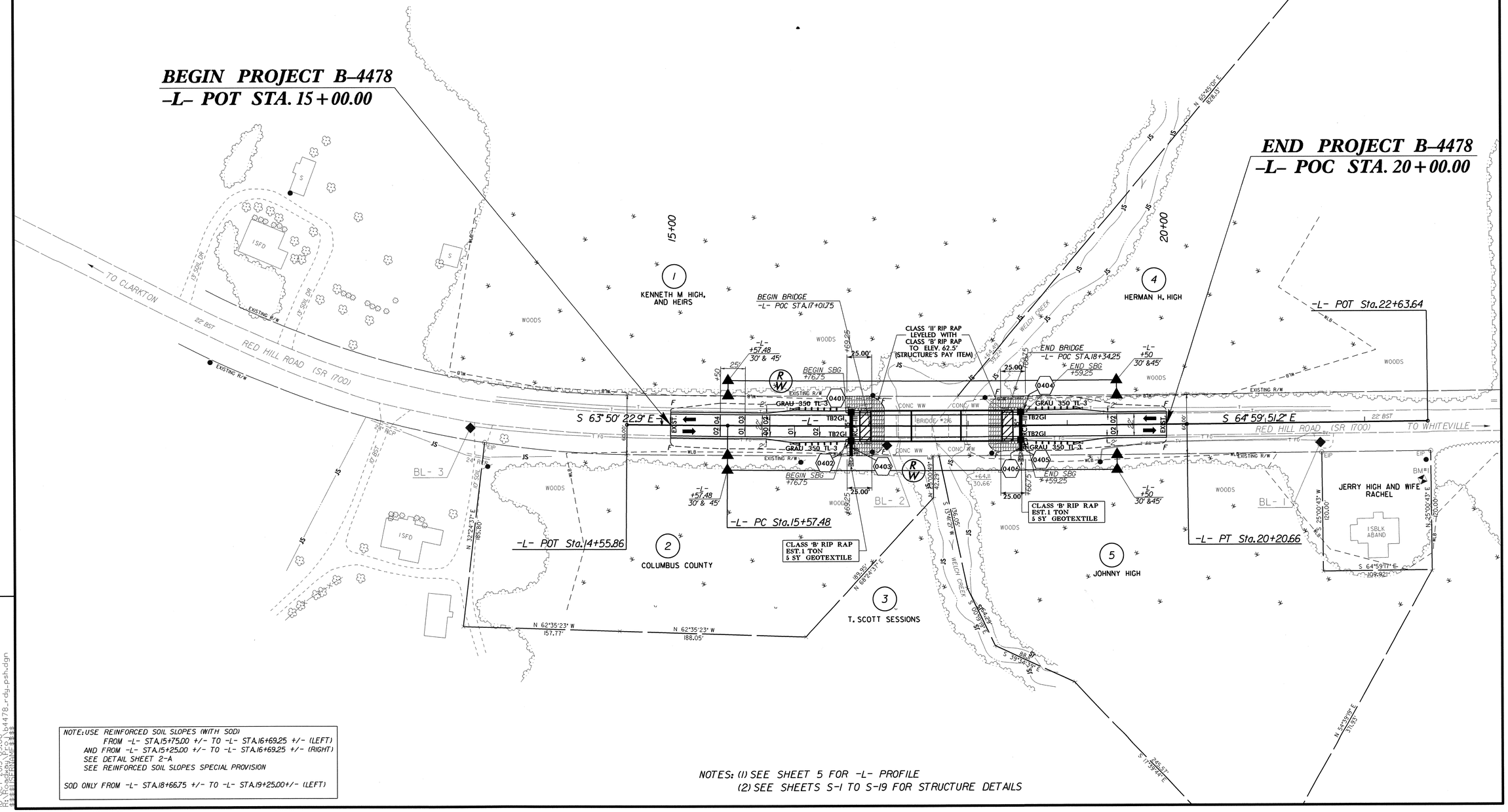


-L- CURVE DATA
PI Sta. 17+89.08
△ = 1° 09' 28.2" (LT)
D = 0° 14' 59.9"
L = 463.17'
T = 231.59'
R = 22,920.00'
S.E. = SEE PLANS

NAD 83/95

BEGIN PROJECT B-4478
-L- POT STA. 15+00.00

END PROJECT B-4478
-L- POC STA. 20+00.00



NOTE: USE REINFORCED SOIL SLOPES (WITH SOD)
FROM -L- STA.15+75.00 +/- TO -L- STA.16+69.25 +/- (LEFT)
AND FROM -L- STA.15+25.00 +/- TO -L- STA.16+69.25 +/- (RIGHT)
SEE DETAIL SHEET 2-A
SEE REINFORCED SOIL SLOPES SPECIAL PROVISION

SOD ONLY FROM -L- STA.18+66.75 +/- TO -L- STA.19+25.00+/- (LEFT)

NOTES: (1) SEE SHEET 5 FOR -L- PROFILE
(2) SEE SHEETS S-1 TO S-19 FOR STRUCTURE DETAILS

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PROJECT REFERENCE NO.	SHEET NO.
B-4478	5

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22557 MICHAEL W. LITTLE — 10/15/13

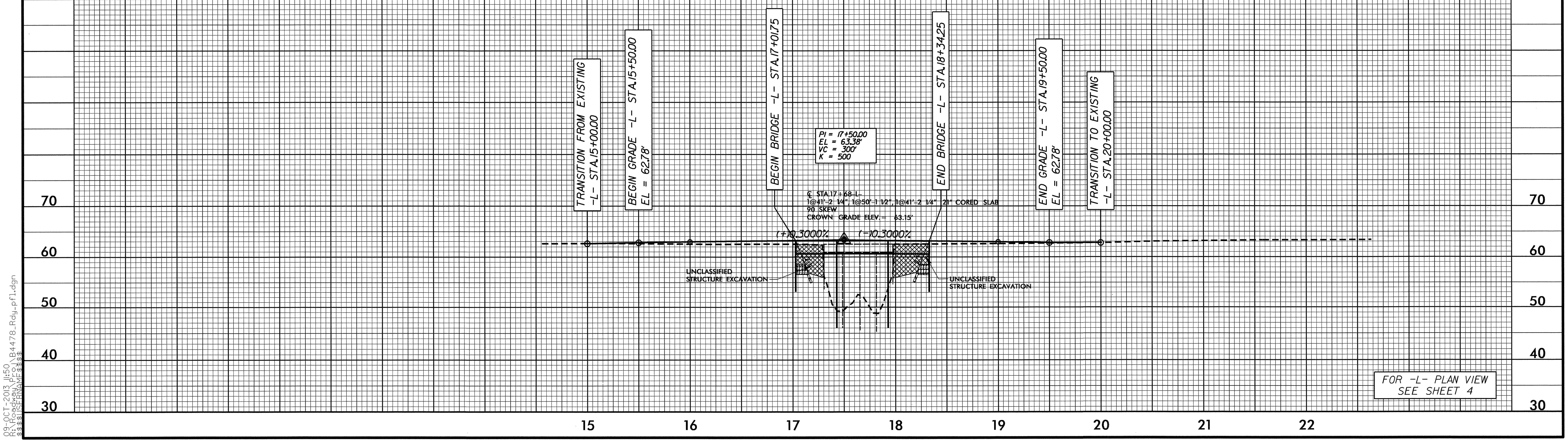
HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022009 W. GALEN CAIL — 10/22/13

-L-

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 900	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 60.7	FT
BASE DISCHARGE	= 1510	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 61.5	FT
OVERTOPPING DISCHARGE	= 2500	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 62.7	FT

BMI ELEVATION = 62.08'
N 227348 E 2100731
-BL- STATION 14+60 Dist 39' RIGHT =
-L- STATION 22+57.51 Dist.59.34 RIGHT
RR SPIKE IN BASE OF 24" OAK TREE

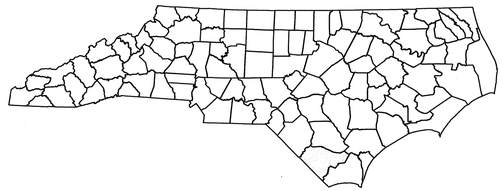


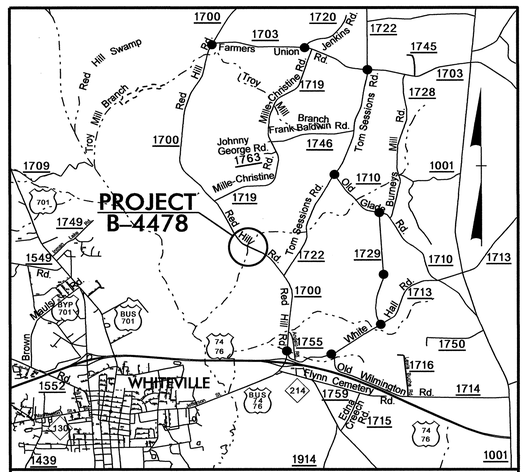
FOR -L- PLAN VIEW
SEE SHEET 4

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

COLUMBUS COUNTY





VICINITY MAP

OFF-SITE DETOUR ROUTE

LOCATION: ***REPLACE BRIDGE NO. 216 OVER WELCH CREEK ON SR 1700 (RED HILL ROAD).***

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*
DON PARKER — *TRAFFIC CONTROL PROJECT DESIGN ENGINEER*
J. C. BOND, EI — *TRAFFIC CONTROL DESIGN ENGINEER*

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

INDEX OF SHEETS

APPROVED: John S Kite
DATE: October 1, 2013

NORTH CAROLINA PROFESSIONAL SEAL 022104 ENGINEER JOHN S KITE JR

SHEET NO.
TMP-1

B-4478

TIP PROJECT:

24-SEP-2013 08:35
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sngreen AT TE26587

PROJ. REFERENCE NO.	SHEET NO.
B-4478	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

LEGEND

GENERAL

- DIRECTION OF TRAFFIC FLOW
- DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.

TRAFFIC CONTROL DEVICES

- BARRICADE (TYPE III)
- CONE
- DRUM SKINNY DRUM TUBULAR MARKER

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

TEMPORARY PAVEMENT MARKING

N/A

APPROVED: _____ DATE: 10/1/13

NORTH CAROLINA PROFESSIONAL SEAL 022104 ENGINEER JOHN S. KITE JR.

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

ROADWAY STANDARD DRAWINGS & LEGEND

24-SEP-2013 08:36
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sngreen AT TE26587

PROJ. REFERENCE NO.	SHEET NO.
B-4478	TMP-1B

TRANSPORTATION OPERATIONS

- DURING REPLACEMENT OF BRIDGE No.216 OVER WELCHES CREEK, SR 1700 (RED HILL ROAD) WILL BE CLOSED TO THROUGH TRAFFIC.

- SR 1700 (RED HILL ROAD) TRAFFIC WILL BE DETOURED OFF-SITE VIA SR 1713, SR 1729, SR 1710, SR 1722, SR 1703. (SEE SHEET TMP-3).

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 THIRTY (30) 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.

TRAFFIC CONTROL DEVICES

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

PAVEMENT MARKINGS AND MARKERS

F) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS SHOWN IN THE PAVEMENT MARKING PLAN

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

APPROVED: [signature] DATE: 10/1/13

NORTH CAROLINA PROFESSIONAL SEAL 022104 ENGINEER JOHN S. KITE JR.

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

TRANSPORTATION OPERATIONS PLAN

PROJ. REFERENCE NO.	SHEET NO.
B-4478	TMP-2

SIGN NUMBER: SP13090
TYPE: STATIONARY
QUANTITY: SEE PLANS

SIGN WIDTH: 4'-0"
HEIGHT: 2'-0"
TOTAL AREA: 8.0 Sq.Ft.

BORDER TYPE: INSET
RECESS: 0.38"
WIDTH: 0.63"
RADII: 1.5"

NO. Z BARS:
LENGTH:

BACKG COLOR: Fluorescent Orange
COPY COLOR: Black

SYMBOL	X	Y	WID	HT

MAT'L: 0.080" (2.0 mm) ALUMINUM

USE NOTES: 1,2

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

DESIGN BY: B. RASHID
PROJECT ID: B-4478

CHECKED BY:
DIV: 6

DATE: Apr 09, 2013

BORDER
R=1.5"
TH=0.63"
IN=0.38"

Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter spacings are to start of next letter

Series/Size Text Length

																											Series/Size Text Length
		R	E	D		H	I	L	L																		D 2000
	5.9	5.1	4.7	4.1	6	5.5	2.4	4.6	3.7	5.9																	36.2
		R	O	A	D																						D 2000
	14	5	5	6	4.1	14																					20.1

FILENAME: SP13xxx_RED HILL ROAD

NORTH CAROLINA D.O.T. SIGN DETAIL

APPROVED: _____ DATE: 9/24/13

NORTH CAROLINA PROFESSIONAL SEAL 028387 ENGINEER AYMAN I. ALQUTNAH

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

SPECIAL SIGN DESIGN

17-SEP-2013 16:33
\\dot\dfsroot\Unpriv\TIPProjects-B\B4478\Traffic\TrafficControl\TCP\B-4478_TC_TMP_2.dgn
sngreen AT TE26587

PROJ. REFERENCE NO.	SHEET NO.
B-4478	TMP-3

PHASING

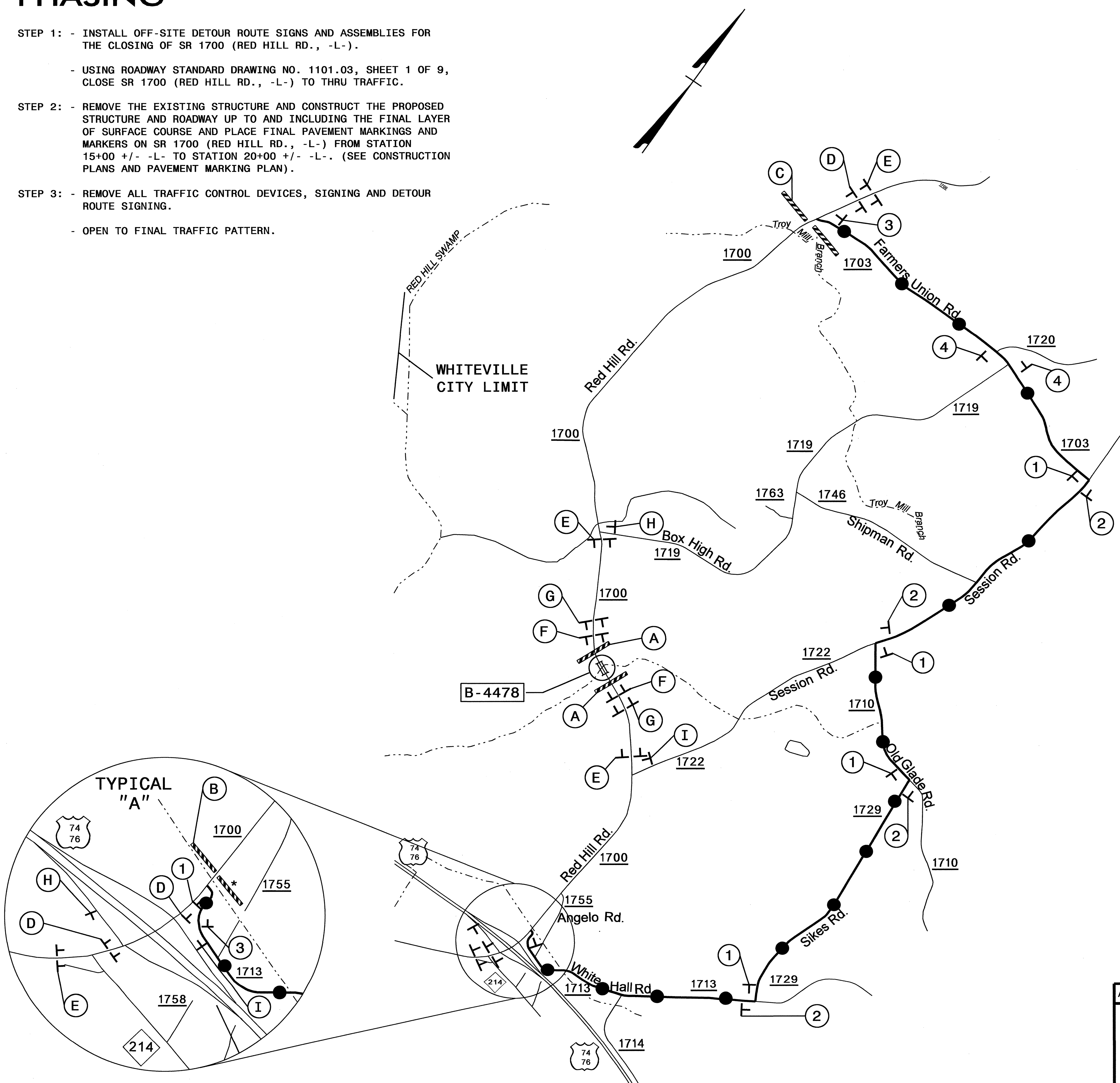
STEP 1: - INSTALL OFF-SITE DETOUR ROUTE SIGNS AND ASSEMBLIES FOR THE CLOSING OF SR 1700 (RED HILL RD., -L-).

- USING ROADWAY STANDARD DRAWING NO. 1101.03, SHEET 1 OF 9, CLOSE SR 1700 (RED HILL RD., -L-) TO THRU TRAFFIC.

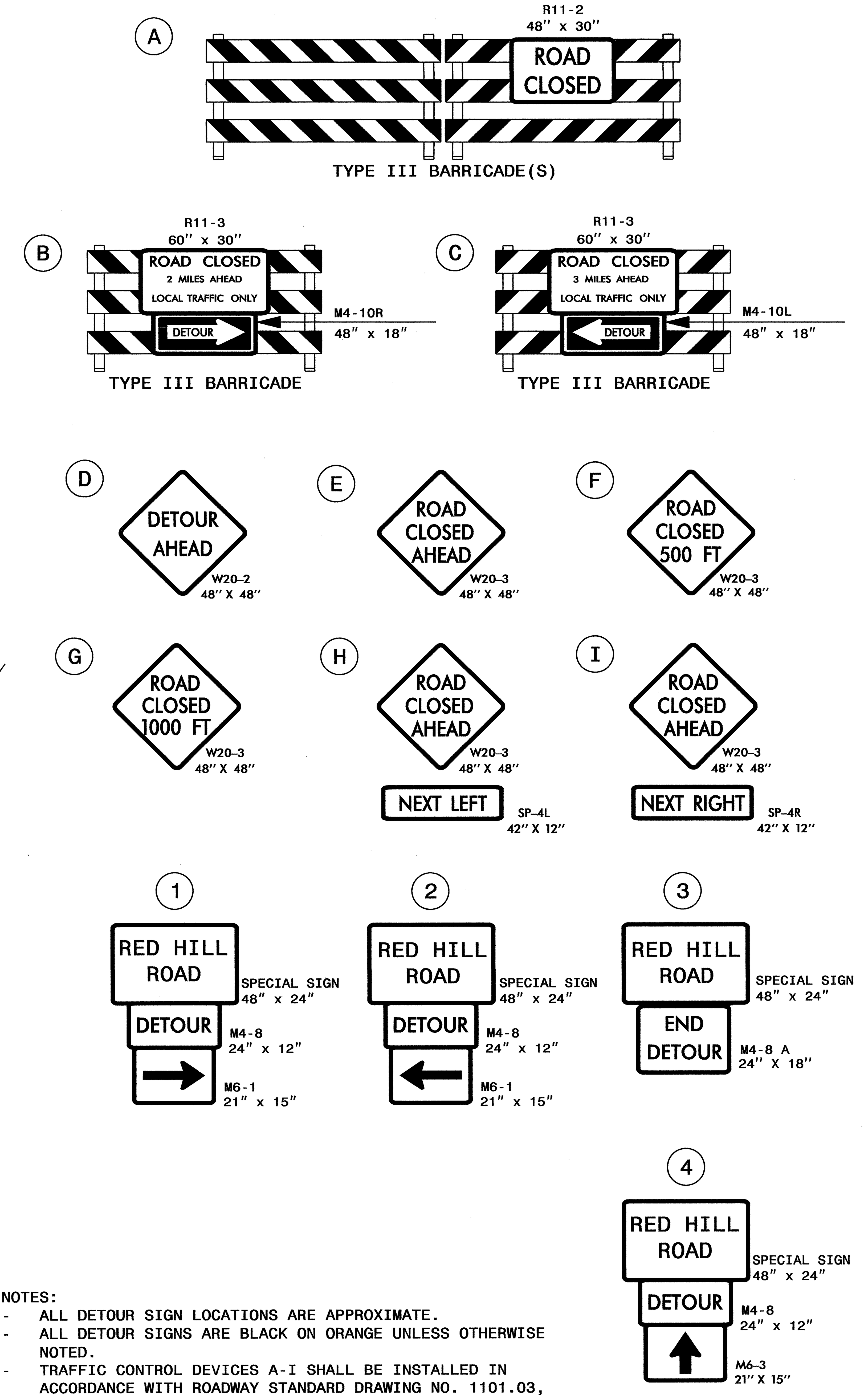
STEP 2: - REMOVE THE EXISTING STRUCTURE AND CONSTRUCT THE PROPOSED STRUCTURE AND ROADWAY UP TO AND INCLUDING THE FINAL LAYER OF SURFACE COURSE AND PLACE FINAL PAVEMENT MARKINGS AND MARKERS ON SR 1700 (RED HILL RD., -L-) FROM STATION 15+00 +/- -L- TO STATION 20+00 +/- -L-. (SEE CONSTRUCTION PLANS AND PAVEMENT MARKING PLAN).

STEP 3: - REMOVE ALL TRAFFIC CONTROL DEVICES, SIGNING AND DETOUR ROUTE SIGNING.

- OPEN TO FINAL TRAFFIC PATTERN.



* SET WING BARRICADE ON SPLITTER ISLAND



NOTES:

- ALL DETOUR SIGN LOCATIONS ARE APPROXIMATE.
- ALL DETOUR SIGNS ARE BLACK ON ORANGE UNLESS OTHERWISE NOTED.
- TRAFFIC CONTROL DEVICES A-I SHALL BE INSTALLED IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1101.03, SHEET 1 OF 9, UNLESS OTHERWISE SHOWN ON THIS SHEET.

** SEE TMP-2 FOR SIGN DESIGN.

APPROVED: [signature] DATE: 10/1/13

NORTH CAROLINA PROFESSIONAL SEAL 022104 ENGINEER JOHN S. KITE JR.

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

TEMPORARY TRAFFIC CONTROL PHASING AND DETAIL

30-SEP-2013 08:52
\\dot\dfsroot01\proj\TIPProjects-B\B4478\Traffic\TrafficControl\TCP\B-4478_TC_TMP_3.dgn
sngreen AT TE265817

T.I.P.: B-4478

CONTRACT: C203293

TIP NO.	SHEET NO.
B-4478	PMP-1

APPROVED: [signature]

DATE: 9-19-13

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. 216 OVER WELCHES CREEK ON SR 1700

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 - TWO-LANE AND MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
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:

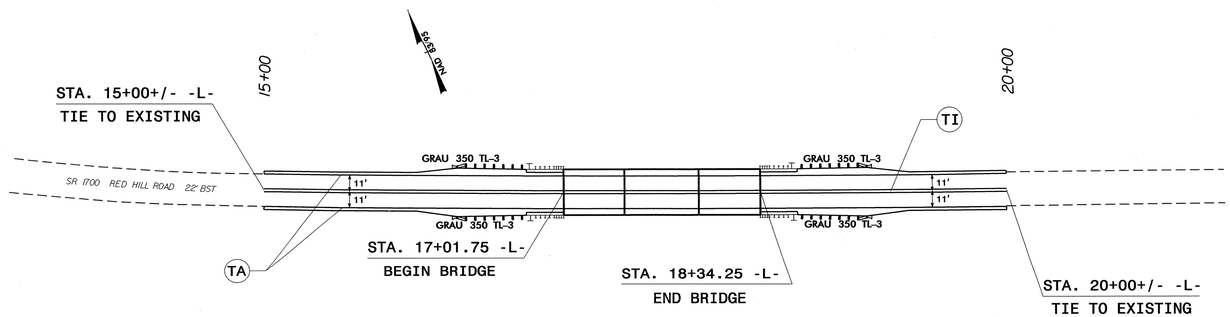
ROAD NAME	MARKING	MARKER
-L- LINE	THERMOPLASTIC	PERMANENT RAISED
BRIDGE DECK	THERMOPLASTIC	PERMANENT RAISED

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 DETAIL



PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION
TA	WHITE EDGELINE (4")
TI	YELLOW DOUBLE CENTER (4")

INDEX

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

A. I. ALQUDWAH, P.E. SIGNING & DELINEATION REGIONAL ENGINEER

D. M. EATON SIGNING & DELINEATION PROJECT DESIGN ENGINEER

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

TIP PROJECT: B-4478

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4478	EC-1	

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

STATE OF NORTH CAROLINA

DIVISION OF HIGHWAYS

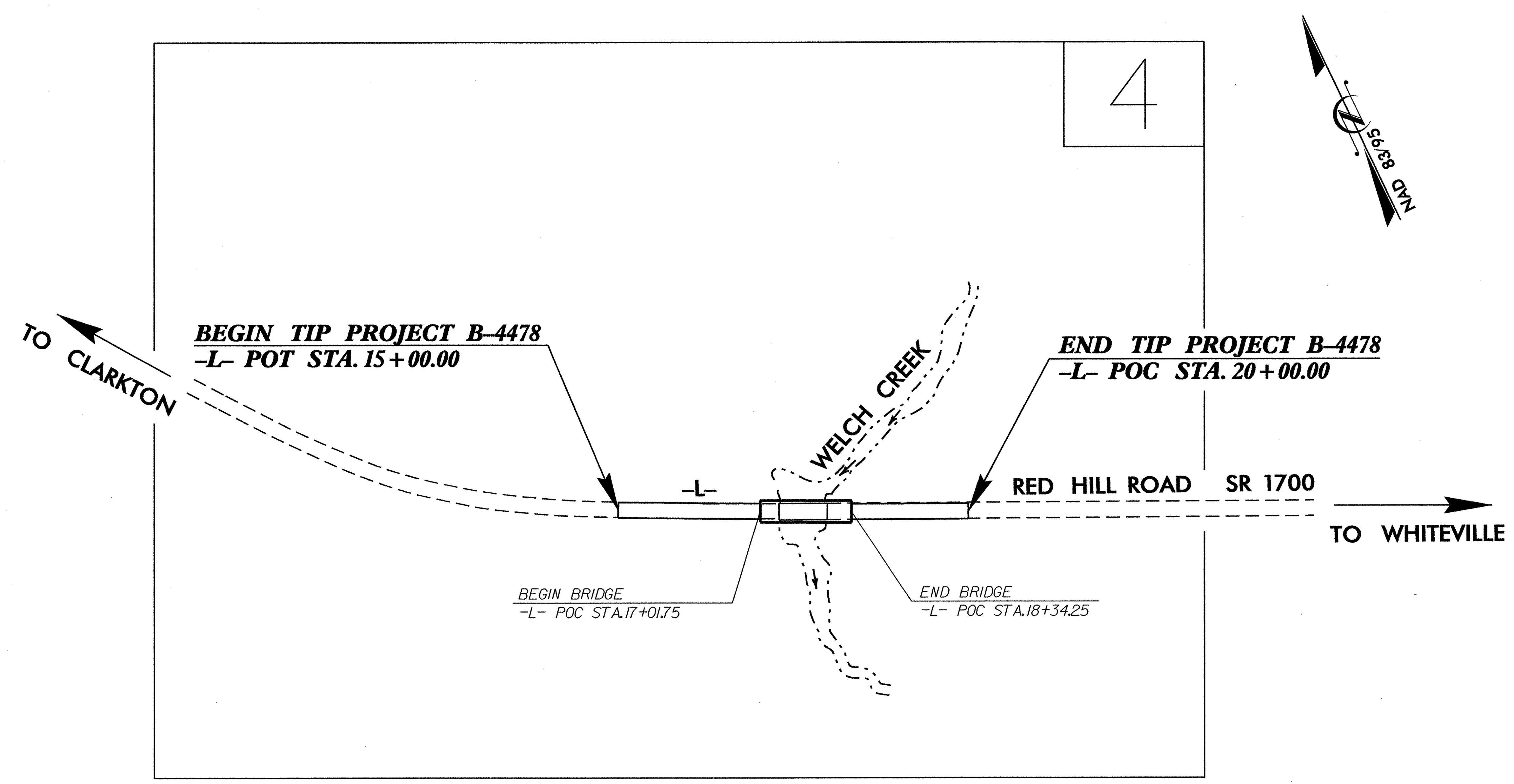
PLAN FOR PROPOSED

HIGHWAY EROSION CONTROL

COLUMBUS COUNTY

LOCATION: BRIDGE NO. 216 OVER WELCH CREEK ON SR 1700

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE



EROSION AND SEDIMENT CONTROL MEASURES

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

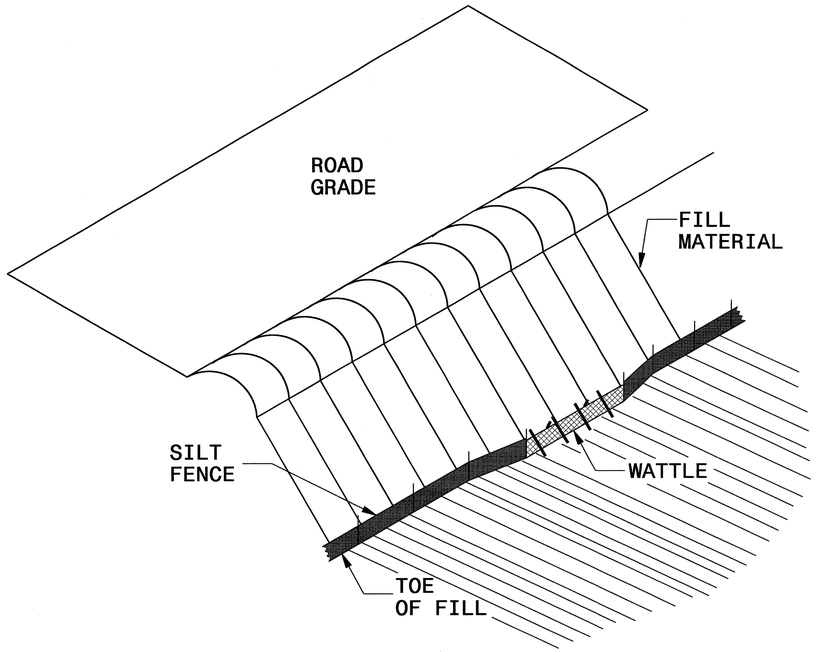
Roadway Standard Drawings

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

SILT FENCE COIR FIBER WATTLE BREAK DETAIL

PROJECT REFERENCE NO.	SHEET NO.
B-4478	EC-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



ISOMETRIC VIEW

NOTES:

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

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

DO NOT PLACE WATTLE ON TOE OF SLOPE.

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

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

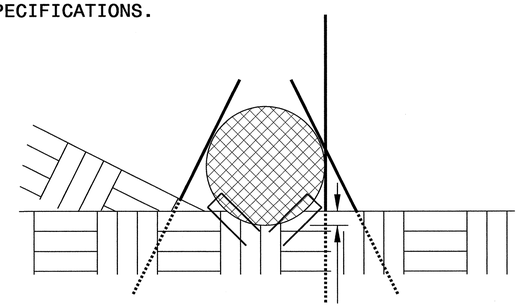
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

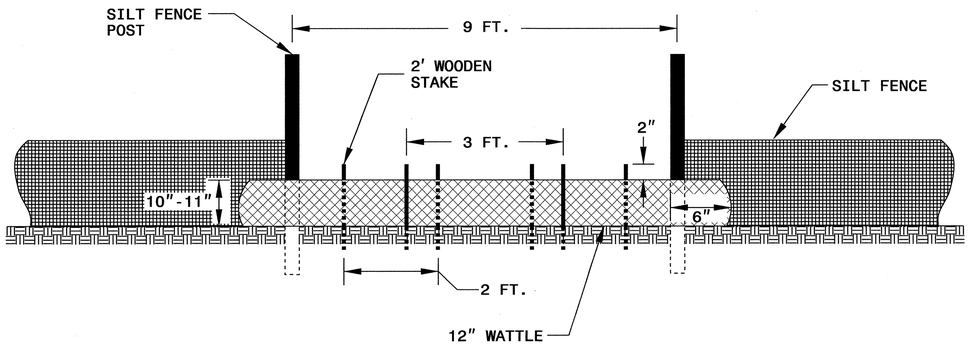
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

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

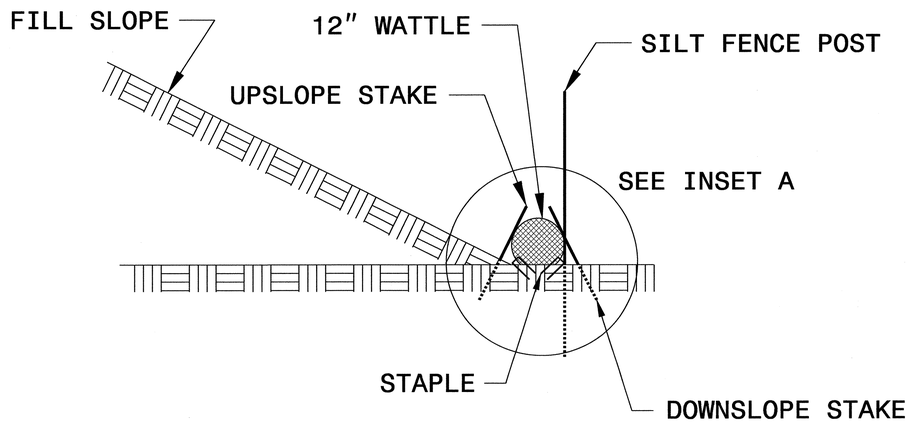
INSTALL TEMPORARY SILT FENCE IN ACCORDANCE WITH SECTION 1605 OF THE STANDARD SPECIFICATIONS.

INSET A





VIEW FROM SLOPE



SIDE VIEW

PROJECT REFERENCE NO.	SHEET NO.
B-4478	EC-3
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

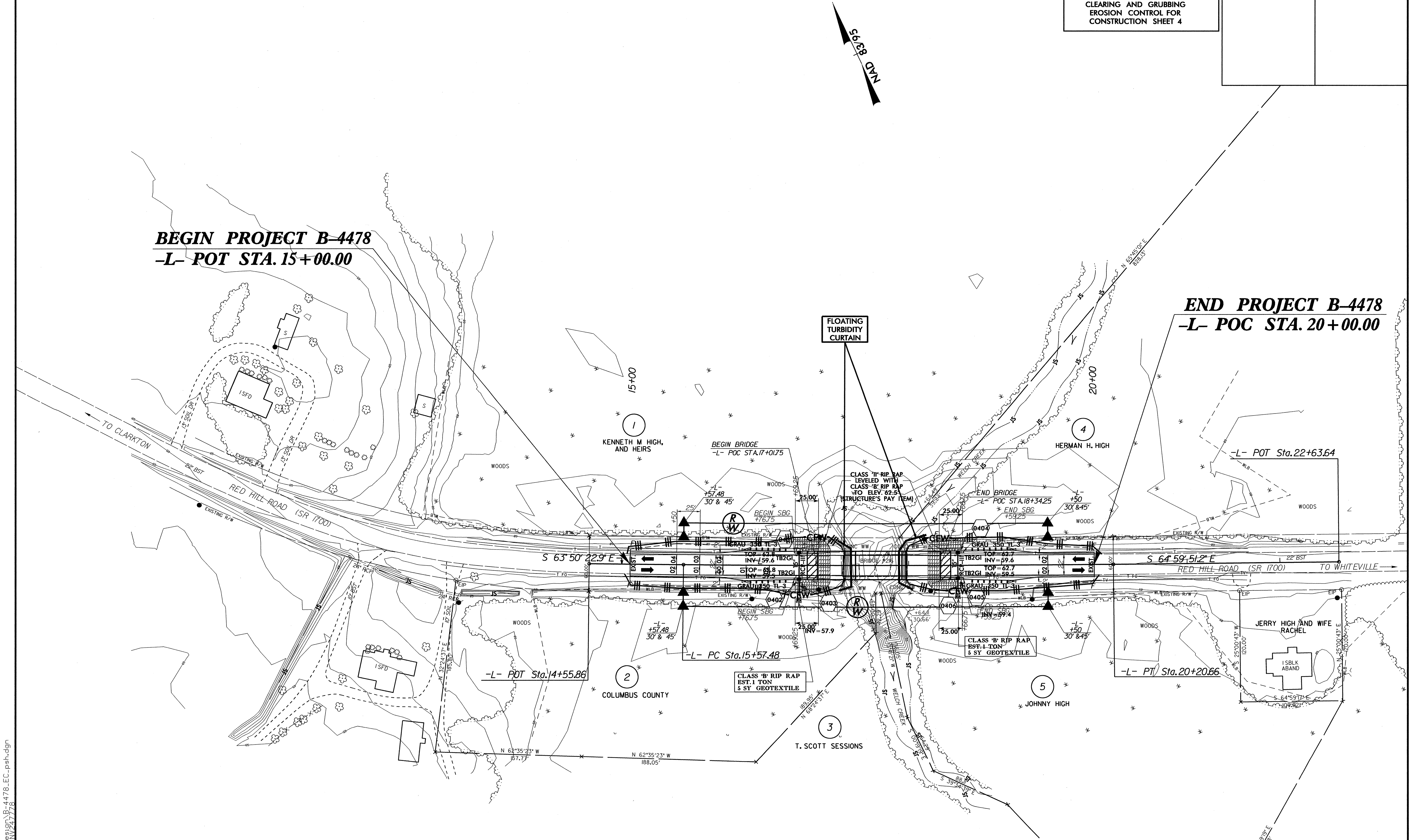
SOIL STABILIZATION TIMEFRAMES

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-4478	EC-4/CONST.4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4



NOTE: USE REINFORCED SOIL SLOPES (WITH SOD)
FROM -L- STA.15+75.00 +/- TO -L- STA.16+69.25 +/- (LEFT)
AND FROM -L- STA.15+25.00 +/- TO -L- STA.16+69.25 +/- (RIGHT)
SEE DETAIL SHEET 2-A
SEE REINFORCED SOIL SLOPES SPECIAL PROVISION

SOD ONLY FROM -L- STA.18+66.75 +/- TO -L- STA.19+25.00+/- (LEFT)

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

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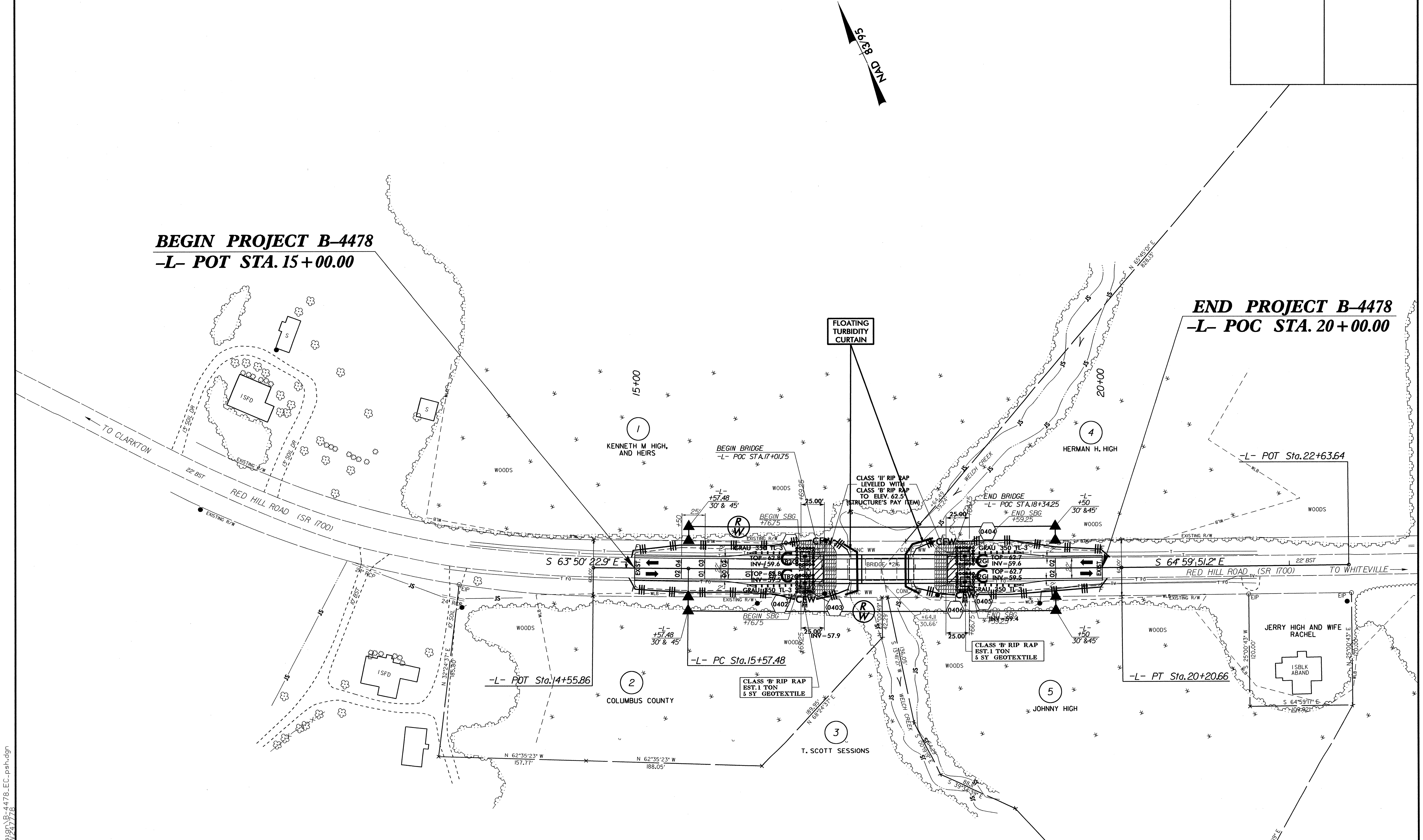
PROJECT REFERENCE NO.	SHEET NO.
B-4478	EC-5/CONST.4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



NOTE: USE REINFORCED SOIL SLOPES (WITH SOD)
FROM -L- STA.15+75.00 +/- TO -L- STA.16+69.25 +/- (LEFT)
AND FROM -L- STA.15+25.00 +/- TO -L- STA.16+69.25 +/- (RIGHT)
SEE DETAIL SHEET 2-A
SEE REINFORCED SOIL SLOPES SPECIAL PROVISION

SOD ONLY FROM -L- STA.18+66.75 +/- TO -L- STA.19+25.00+/- (LEFT)

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

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T.I.P.: B-4478

CONTRACT: C203293

TIP NO.	SHEET NO.
B-4478	SIGN-1

APPROVED: Ayman Alqudwah

DATE: 9-19-13

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 028387 ENGINEER AYMAN I ALQUDWAH

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

SIGNING PLAN
COLUMBUS COUNTY

LOCATION: BRIDGE NO. 216 OVER WELCHES CREEK ON SR 1700

SUMMARY OF QUANTITIES

ITEM NO.		ITEM DESCRIPTION	QUANTITY	UNIT
DESC. NO.	SECT. NO.			
4155000000	907	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	6	EA.

GENERAL NOTES

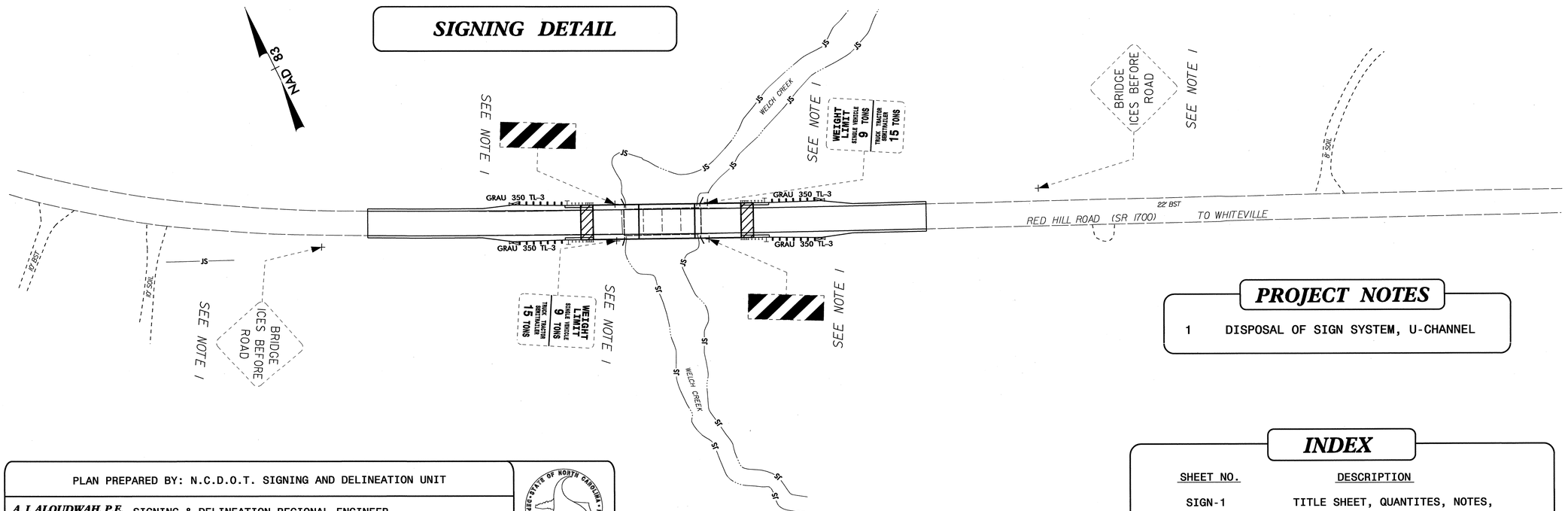
. IF REMOVAL OR RELOCATION OF SIGNS ON PRIVATE STREET (NON-STATE MAINTAINED) IS REQUIRED DUE TO CONSTRUCTION, THE CONTRACTOR SHALL INFORM THE ENGINEER. THE WORK WILL BE COMPLETED BY OTHERS.

. 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.

SIGNING DETAIL



PROJECT NOTES

1 DISPOSAL OF SIGN SYSTEM, U-CHANNEL

INDEX

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

A. I. ALQUDWAH, P.E. SIGNING & DELINEATION REGIONAL ENGINEER

D. M. EATON SIGNING & DELINEATION PROJECT DESIGN ENGINEER

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

TIP PROJECT: B-4478

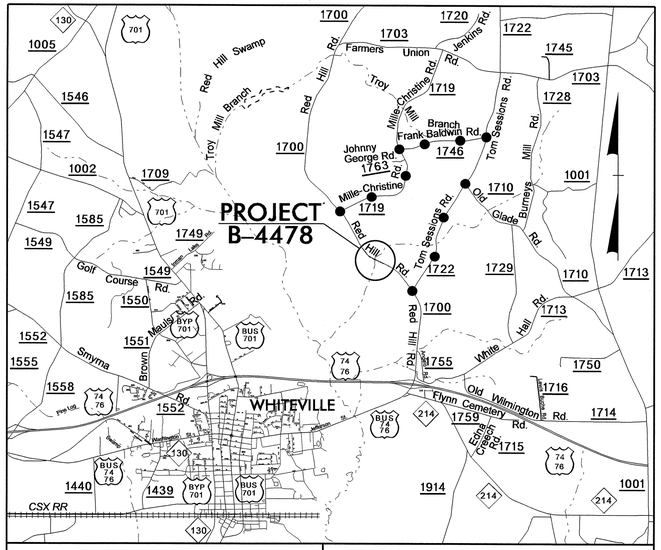
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

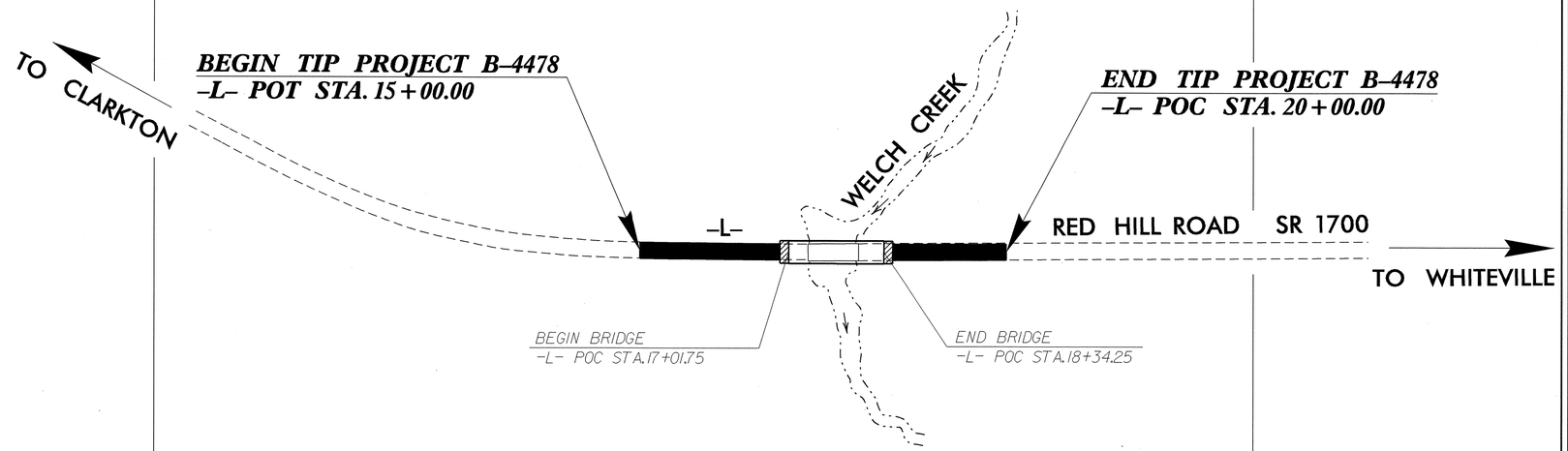
T.I.P. NO.	SHEET NO.
B-4478	UO-1

UTILITIES BY OTHERS PLANS
COLUMBUS COUNTY

LOCATION: BRIDGE NO. 216 ON SR 1700 OVER WELCH CREEK

TYPE OF WORK: UTILITY BY OTHERS RELOCATION





NAD 83/95

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
UO-1	TITLE SHEET
UO-2	PLAN SHEET

UTILITY OWNERS ON PROJECT

(1) POWER – BRUNSWICK EMC – RODNEY SCRUGGS – 910-457-9808

(2) TELEPHONE – CENTURYLINK – ROD MEDLIN – 252-413-7711

(3) TELEVISION – TIME WARNER CABLE – ROBERT JOHN – 910-772-5757

UTILITY DESIGN BY:
MA Engineering CONSULTANTS, INC.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919 297 0220 Fax: 919 297 0221

NCDOT PROJECT ENGINEER:
COREY BOUSQUET, P.E.
PREPARED FOR:
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
UTILITIES UNIT
RALEIGH, NC

PROJECT REFERENCE NO.	SHEET NO.
B-4478	UO-2

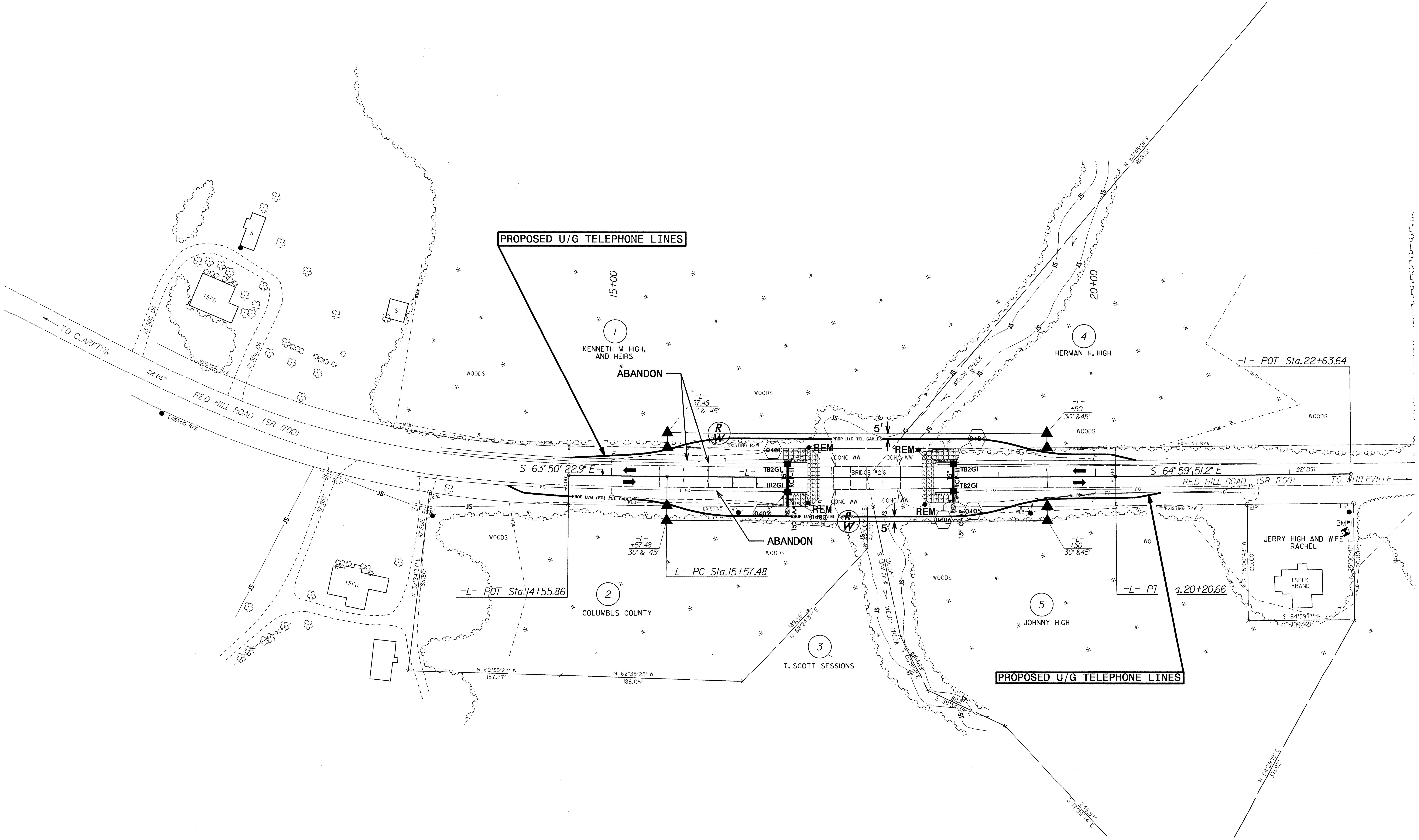
UTILITIES BY OTHERS

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

MA Engineering CONSULTANTS, INC.
598 E. Chatham Street, Suite 137
Cary, N. C. 27511

NOTES:

1. EXISTING POWER SHALL BE BACK FED AND REMAIN IN PLACE.
2. EXISTING CATV LINES SHALL REMAIN IN PLACE.



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8-SEP-2013 15:08

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

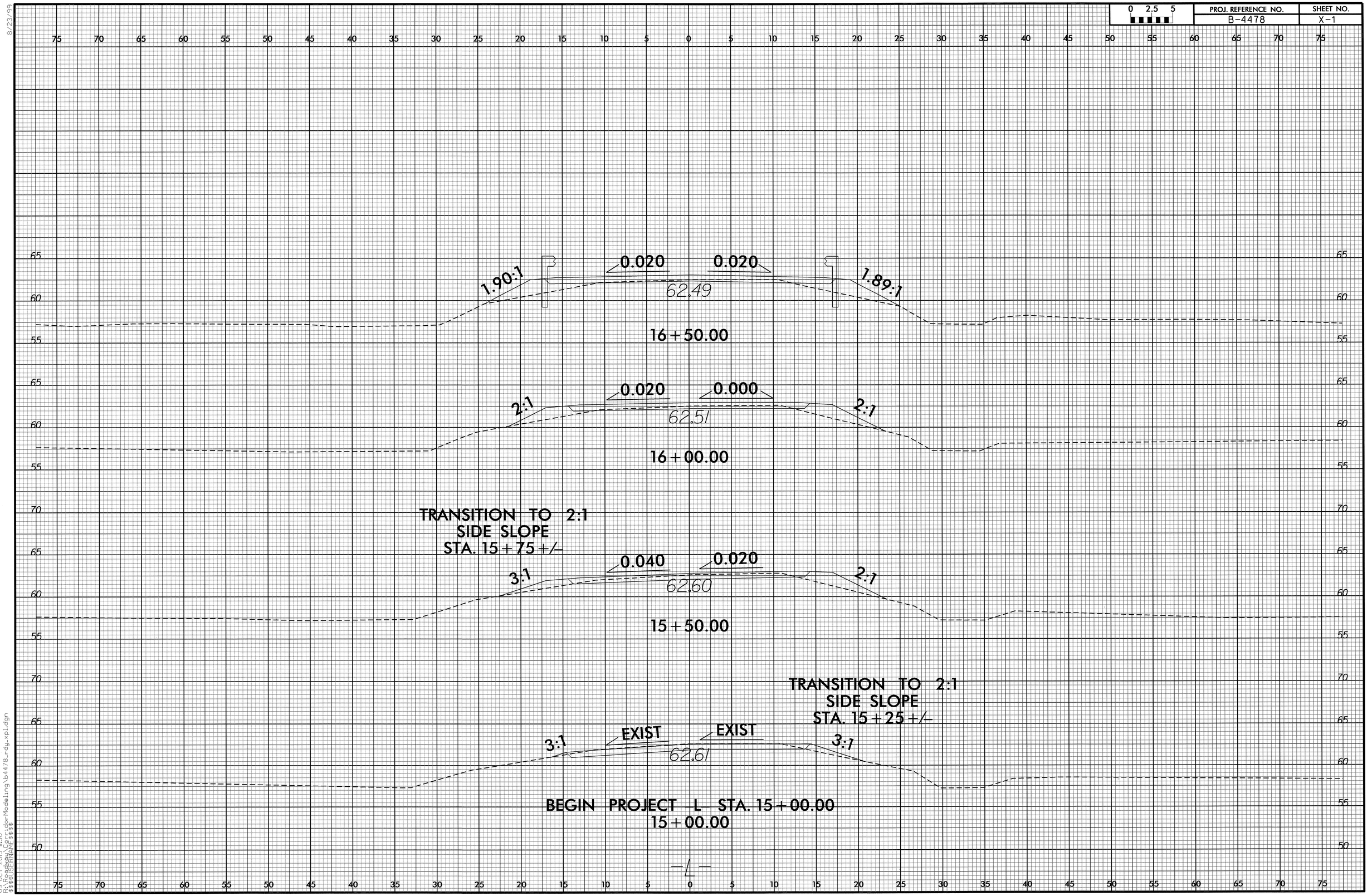
CROSS-SECTION SUMMARY

PROJ. REFERENCE NO.	SHEET NO.
B-4478	X-1A

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
15+00.00	0	0
15+50.00	28	16
16+00.00	16	29
16+50.00	9	37
17+00.00	6	33
17+01.75	0	1

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
18+34.25	0	0
18+50.00	3	11
19+00.00	11	29
19+50.00	19	18
20+00.00	29	7

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4478	X-1



8/22/99

09-OCT-2013 11:50
R:\Roadway\Corridor Modeling\b4478_rdy_xpl.dgn
$$$$USERNAME$$$$

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4478	X-2

0.020 0.020

2:1 3:1

62.55

18+50.00

END BRIDGE –L– STA. 18+34.25

0.020 0.020

62.49

18+00.00

0.020 0.020

50.74

17+50.00

BEGIN BRIDGE –L– STA. 17+01.75

0.020 0.020

2:1 2:1

62.47

17+00.00

–L–

09-OCT-2013 11:50
R:\Roadway\Corridor Modeling\b4478_rdy_xpl.dgn
$$$$USERNAME$$$$

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4478	X-3

62.99

20+50.00

END PROJECT –L– STA. 20+00.00

3:1 EXIST EXIST 3:1

62.76

20+00.00

3:1 0.020 0.020 3:1

62.67

19+50.00

BEGIN TRANSITION TO
3:1 SIDE SLOPE AT
STA. 19+25 +/–

2:1 0.020 0.020 3:1

62.58

19+00.00
–L–

09-OCT-2013 11:50
R:\Roadway\Corridor Modeling\b4478_rdy_xp1.dgn
$$$$USERNAME$$$$