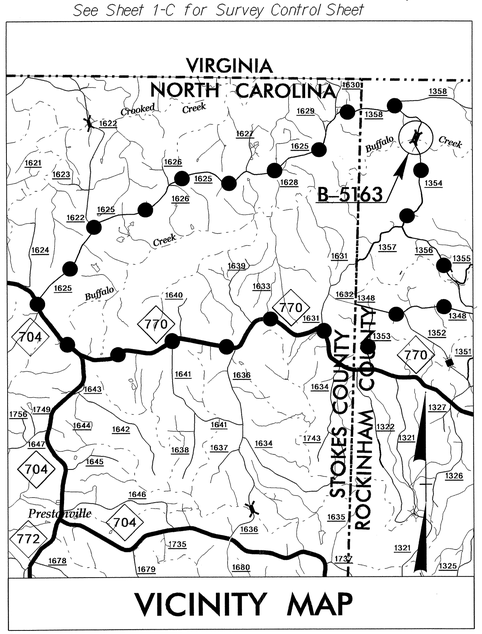
09/08/99

TIP PROJECT: B-5163

CONTRACT: C203307

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Plan Sheet Symbols
See Sheet 1-C for Survey Control Sheet



VICINITY MAP

OFFSITE DETOUR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ROCKINGHAM COUNTY

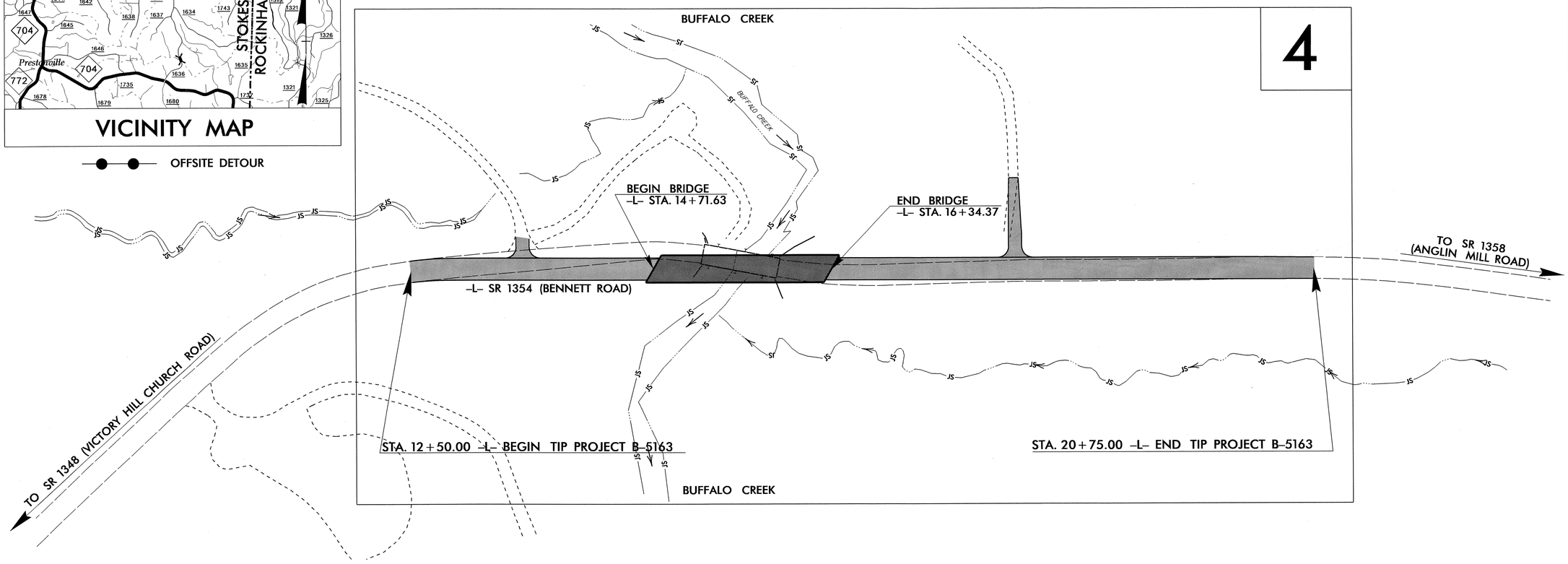
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5163	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
42338.1.1	BRZ-1354(2)	PE
42338.2.1	BRZ-1354(2)	R/W & UTILITIES
42338.3.FD1	BRZ-1354(2)	CONST.

LOCATION: ***BRIDGE NO. 160 ON SR 1354 (BENNETT ROAD) OVER BUFFALO CREEK***

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

NAD 83



4

DESIGN EXCEPTION REQUIRED FOR SAG VERTICAL CURVES AND ASSOCIATED STOPPING SIGHT DISTANCES.

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 = 112
ADT 2035 = 200
DHV = 10 %
D = 60 %
T = 5 % *
V = 55 MPH
* TTST = 2% DUAL = 3%
FUNC CLASS =
RURAL LOCAL
SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-5163 = 0.125 MILES
LENGTH STRUCTURE TIP PROJECT B-5163 = 0.031 MILES
TOTAL LENGTH OF TIP PROJECT B-5163 = 0.156 MILES

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
FEBRUARY 13, 2013

LETTING DATE:
OCTOBER 15, 2013

JAMES A. SPEER, PE
PROJECT ENGINEER

DANIEL W. GARDNER, JR., PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022000 ENGINEER W. GALEN CAIL
SIGNATURE: W. Galen Cail P.E. 7/18/13

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 33871 ENGINEER DANIEL W. GARDNER, JR.
SIGNATURE: Daniel W. Gardner Jr P.E. 7-18-13

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

02-JUL-2013 10:40
R:\Roadway\Proj\B5163_Rdy_tsh.dgn
$$$$USERNAME$$$$

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
B-5163	1-A

ROADWAY DESIGN

ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 33871 ENGINEER DANIEL W. GARDNER

1-18-13

Daniel W. Gardner

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL PLAN SHEET SYMBOLS
1-C	SURVEY CONTROL SHEET
2	PAVEMENT SCHEDULE, WEDGING DETAIL, AND TYPICAL SECTIONS
2-A	STRUCTURE ANCHOR UNIT DETAIL
3	SUMMARY OF QUANTITIES
3-A	DRAINAGE SUMMARY
3-B	EARTHWORK SUMMARY, PAVEMENT REMOVAL SUMMARY, SHOULDER BERM GUTTER SUMMARY, SUBSURFACE DRAINAGE SUMMARY, AND GUARDRAIL SUMMARY
4	PLAN SHEET
5	PROFILE SHEET
TMP-1 THRU TMP-3	TRANSPORTATION MANAGEMENT PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-2	SIGNING PLANS
PMP-1	PAVEMENT MARKING PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-1	CROSS-SECTION SUMMARY
X-2 THRU X-21	CROSS-SECTIONS
S-1 THRU S-24	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

SIDE ROADS:

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

UNDERDRAINS:

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

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

EnergyUnited - Power (Distribution)

CenturyLink - 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 CONTRACT.

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
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
422.11	Reinforced Bridge Approach Fills - Sub Regional Tier
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
815.03	Pipe Underdrain and Blind Drain
840.00	Concrete Base Pad for Drainage Structures
840.29	Anchorage for Frames - Brick or Concrete or Precast
840.66	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

18-JUL-2013 09:30
R:\STRUCTURAL\B5163_Rdy_sum.dgn
$$$$USERNAME$$$$

04/16/11

PROJECT REFERENCE NO.	SHEET NO.
B-5163	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

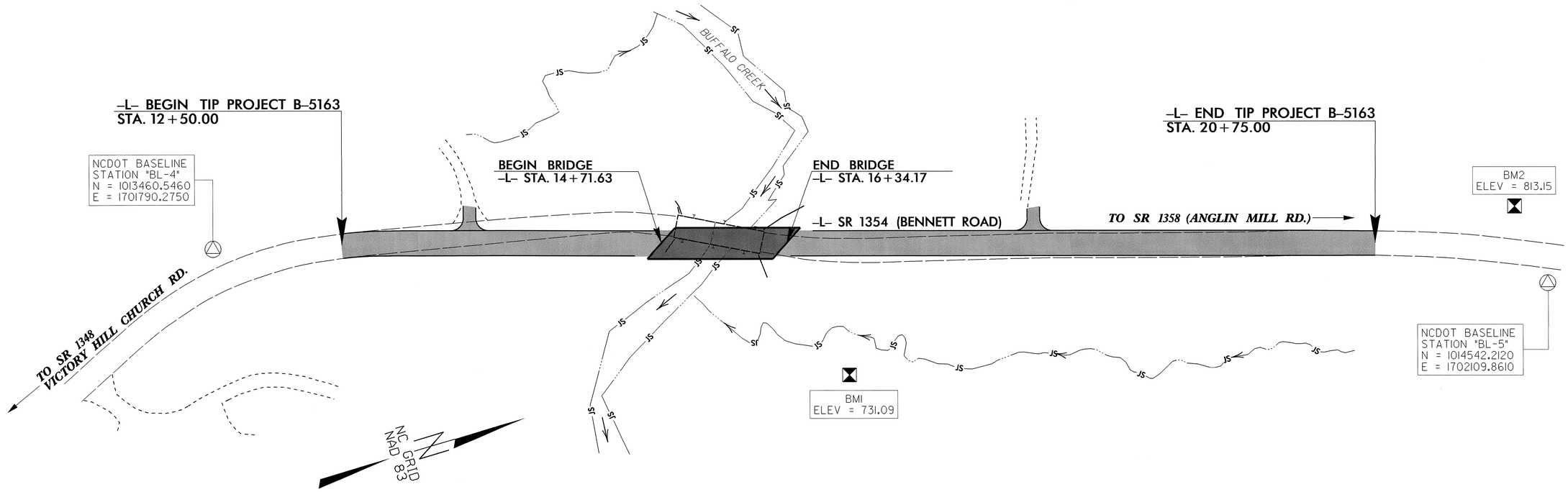
MISCELLANEOUS:

- 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.

12/01/2005

PROJECT REFERENCE NO.	SHEET NO.
B-5163	1-C
Location and Surveys	

B-5163 SURVEY CONTROL SHEET



BASELINE DATA

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	B5163-1	1010771.0850	1702090.5600	938.02	OUTSIDE PROJECT LIMITS	
2	B5163-2	1011548.5080	1702247.2940	884.61	OUTSIDE PROJECT LIMITS	
3	BL-3	1012607.9500	1702213.1230	814.23	OUTSIDE PROJECT LIMITS	
4	BL-4	1013460.5460	1701790.2750	754.13	11+65.10	15.24 LT
5	BL-5	1014542.2120	1702109.8610	806.36	22+89.53	13.33 LT

BENCHMARK DATA

```
*****************************************
BM1       ELEVATION = 731.09
N 1013906      E 1702022
BL STATION 19+44.00 97 RIGHT
BM#1 - RR SPIKE IN 19" OAK
*****************************************
*****************************************
BM2       ELEVATION = 813.15
N 1014593      E 1702105
BL STATION 5+00.00
N 03°06'20.46" W  DIST   1987.99
BM#2 - RR SPIKE IN 14" POPLAR
*****************************************
```

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	1013307.2225	1701859.5628
PC	10+63.38	1013364.5593	1701832.5566
PT	12+82.63	1013578.3765	1701816.2786
PC	20+68.12	1014331.4664	1702039.5516
PT	22+10.36	1014464.6228	1702089.2576
POT	23+03.90	1014549.7867	1702127.9370

FINAL R/W MONUMENTS

ALIGN	STATION	OFFSET	NORTH	EAST
L	14+30.00	-55.00	1013735.3017	1701805.4368
L	14+30.00	-44.39	1013732.2870	1701815.6053
L	16+70.00	-55.00	1013965.4020	1701873.6560
L	16+70.00	-24.24	1013956.6579	1701903.1494
L	13+26.90	25.00	1013613.7193	1701852.8325
L	14+35.00	25.00	1013717.3557	1701883.5582
L	14+35.00	50.00	1013710.2495	1701907.5270
L	16+25.00	34.32	1013896.8681	1701946.5045
L	16+25.00	50.00	1013892.4123	1701961.5338

FINAL DRAINAGE UTILITY EASEMENTS

ALIGN	STATION	OFFSET	NORTH	EAST
L	13+19.00	-34.53	1013623.0629	1701793.5072
L	13+19.00	-49.00	1013627.1748	1701779.6380
L	14+75.00	-80.00	1013785.5516	1701794.2592
L	17+45.00	-65.00	1014040.1508	1701885.3870
L	18+50.00	-28.05	1014130.3163	1701950.6601

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: B5163_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.

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B5163-2" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 1011548.508(ft) EASTING: 1702247.294(ft) ELEVATION: 884.61'(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9999173426 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B5163-2" TO -L- STATION 12+50 IS N12°22'46.90"W 2,045.71' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

25-JUL-2013 07:12
R:\Roadway\Projects\b5163_ls_lc.dgn
$$USERNAME$$

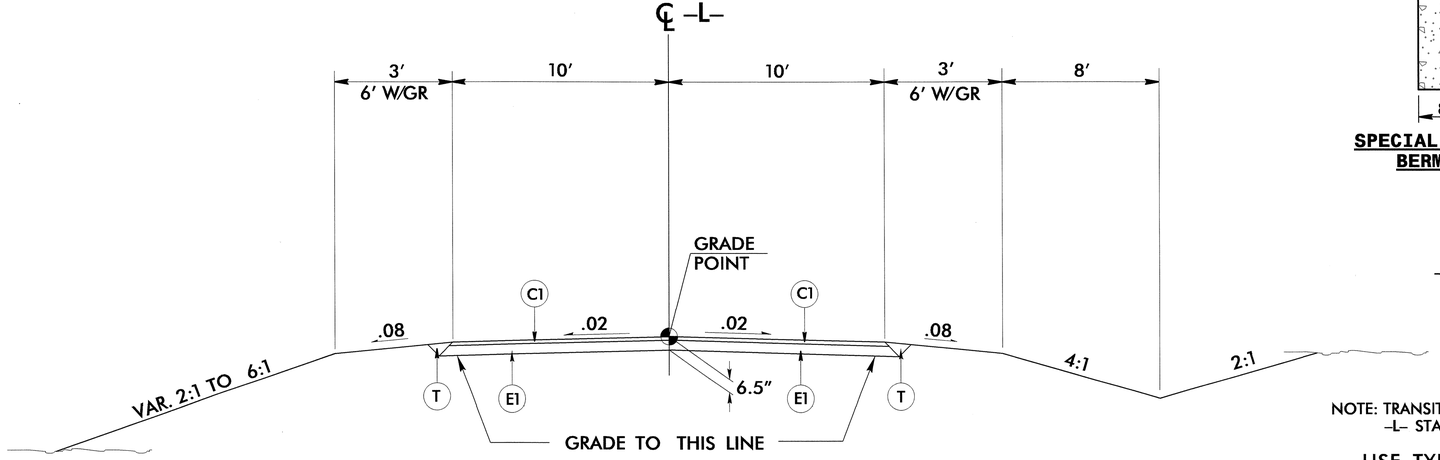
PROJECT REFERENCE NO.	SHEET NO.
B-5163	2

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 33871 ENGINEER DANIEL W. GARDNER, JR.
7-18-13
Daniel W. Gardner Jr.

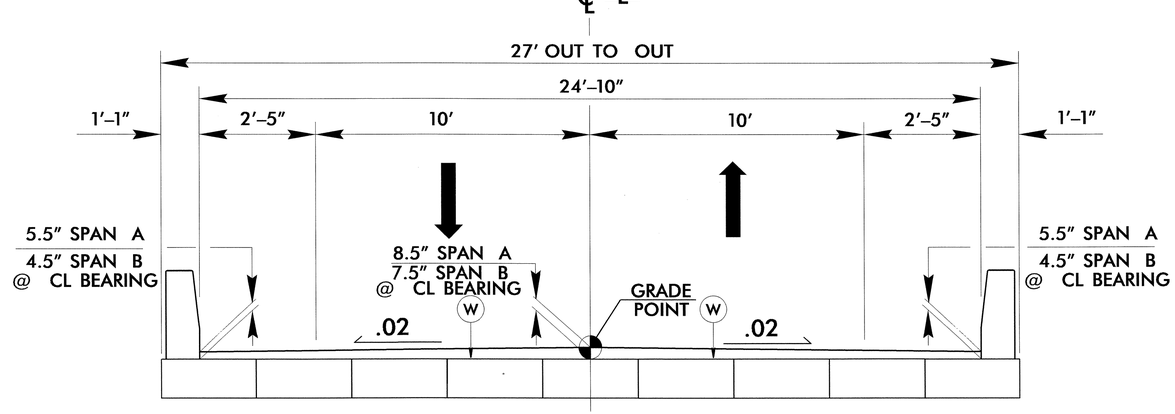
PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 030818 ENGINEER LOUIS A. SHEYWARD
JULY 19th 2013

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 TO EXCEED 1½" 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 5½" IN DEPTH.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL).

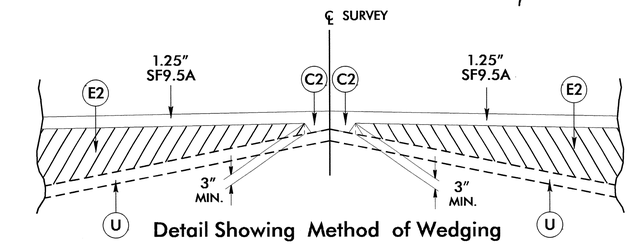
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



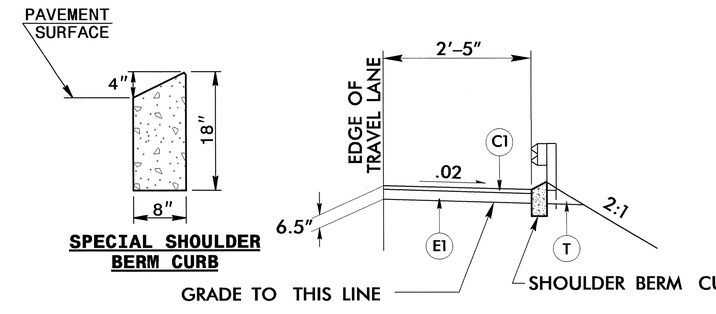
TYPICAL SECTION NO. 1



TYPICAL SECTION NO. 2



Detail Showing Method of Wedging



TYPICAL SECTION OF PAVED SHOULDER AND SPECIAL SHOULDER BERM CURB UNDER TYPE III ANCHORS

-L- (END APPROACH SLAB) TO STA 16+54.04 LT.
-L- (END APPROACH SLAB) TO STA 16+39.07 RT.

NOTE: TRANSITION FROM EXISTING TO TYPICAL SECTION NO. 1
-L- STA. 12+50.00 TO STA. 13+00.00

USE TYPICAL SECTION NO. 1 AS FOLLOWS

-L- STA 13+00.00 TO STA 14+71.63 (BEGIN BRIDGE)
-L- STA 16+34.37 (END BRIDGE) TO STA 20+25.00

NOTE: TRANSITION FROM TYPICAL SECTION NO. 1 TO EXISTING
-L- STA. 20+25.00 TO STA. 20+75.00

USE TYPICAL SECTION NO. 2 AS FOLLOWS

-L- STA 14+71.63 (BEGIN BRIDGE) TO STA 16+34.37 (END BRIDGE)

NOTE: SPAN "A" IS 24" CORED SLAB STUCTURE.
SPAN "B" IS 39" BOX BEAM STRUCTURE.

6/2/99
17-JUL-2013 09:28
R:\Roadway\Proj\B5163_Rdy_typ.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-5163	2-A

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

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.

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
SHEET 3 OF 7 862d03

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.

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: [signature] DATE: 11/13/12
FILE SPEC.:

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C203307

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0030000000-N	SP	Lump Sum		BRIDGE APPROACH FILL - SUB REGIONAL TIER, STATION ******* (15+53.00 -L-)
0043000000-N	226	Lump Sum		GRADING
0050000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUBBING
0057000000-E	226	200	CY	UNDERCUT EXCAVATION
0195000000-E	265	200	CY	SELECT GRANULAR MATERIAL
0196000000-E	270	400	SY	GEOTEXTILE FOR SOIL STABILIZATION
0318000000-E	300	10	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRUCTURES
0320000000-E	300	30	SY	FOUNDATION CONDITIONING GEOTEXTILE
0335200000-E	305	28	LF	15" DRAINAGE PIPE
0335850000-E	305	2	EA	*" DRAINAGE PIPE ELBOWS (15")
0344000000-E	310	20	LF	18" SIDE DRAIN PIPE
0448200000-E	310	24	LF	15" RC PIPE CULVERTS, CLASS IV
0995000000-E	340	27	LF	PIPE REMOVAL
1121000000-E	520	20	TON	AGGREGATE BASE COURSE
1220000000-E	545	100	TON	INCIDENTAL STONE BASE
1275000000-E	600	15	GAL	PRIME COAT
1489000000-E	610	480	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1525000000-E	610	275	TON	ASPHALT CONC SURFACE COURSE, TYPE SF9.5A
1575000000-E	620	40	TON	ASPHALT BINDER FOR PLANT MIX
2000000000-N	806	9	EA	RIGHT OF WAY MARKERS
2022000000-E	815	25	CY	SUBDRAIN EXCAVATION
2033000000-E	815	20	CY	SUBDRAIN FINE AGGREGATE
2044000000-E	815	100	LF	6" PERFORATED SUBDRAIN PIPE
2070000000-N	815	1	EA	SUBDRAIN PIPE OUTLET

SUMMARY OF QUANTITIES - B-5163

ItemNumber	Sec #	Quantity	Unit	Description
2077000000-E	815	6	LF	6" OUTLET PIPE
2286000000-N	840	2	EA	MASONRY DRAINAGE STRUCTURES
2367000000-N	840	2	EA	FRAME WITH TWO GRATES, STD 840.29
2556000000-E	846	52	LF	SHOULDER BERM GUTTER
2752000000-E	SP	4	LF	GENERIC PAVING ITEM SPECIAL SHOULDER BERM CURB
3030000000-E	862	75	LF	STEEL BM GUARDRAIL
3150000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS
3215000000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE III
3270000000-N	SP	4	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3628000000-E	876	9	TON	RIP RAP, CLASS I
3649000000-E	876	1	TON	RIP RAP, CLASS B
3656000000-E	876	990	SY	GEOTEXTILE FOR DRAINAGE
4072000000-E	903	76	LF	SUPPORTS, 3-LB STEEL U-CHANNEL
4096000000-N	904	2	EA	SIGN ERECTION, TYPE D
4102000000-N	904	1	EA	SIGN ERECTION, TYPE E
4155000000-N	907	9	EA	DISPOSAL OF SIGN SYSTEM, U-CHANNEL
4400000000-E	1110	414	SF	WORK ZONE SIGNS (STATIONARY)
4410000000-E	1110	94	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4445000000-E	1145	80	LF	BARRICADES (TYPE III)
4810000000-E	1205	7,800	LF	PAINT PAVEMENT MARKING LINES (4")
4850000000-E	1205	600	LF	REMOVAL OF PAVEMENT MARKING LINES (4")
4905000000-N	1253	67	EA	SNOWPLOWABLE PAVEMENT MARKERS
6000000000-E	1605	1,300	LF	TEMPORARY SILT FENCE
6006000000-E	1610	165	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	445	TON	STONE FOR EROSION CONTROL, CLASS B

ItemNumber	Sec #	Quantity	Unit	Description
6012000000-E	1610	270	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	2	ACR	TEMPORARY MULCHING
6018000000-E	1620	100	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	1.25	TON	FERTILIZER FOR TEMPORARY SEEDING
6024000000-E	1622	200	LF	TEMPORARY SLOPE DRAINS
6029000000-E	SP	100	LF	SAFETY FENCE
6030000000-E	1630	240	CY	SILT EXCAVATION
6036000000-E	1631	4,000	SY	MATTING FOR EROSION CONTROL
6037000000-E	SP	300	SY	COIR FIBER MAT
6038000000-E	SP	550	SY	PERMANENT SOIL REINFORCEMENT MAT
6042000000-E	1632	375	LF	1/4" HARDWARE CLOTH
6070000000-N	1639	4	EA	SPECIAL STILLING BASINS
6071010000-E	SP	50	LF	WATTLE
6071020000-E	SP	135	LB	POLYACRYLAMIDE (PAM)
6071030000-E	1640	40	LF	COIR FIBER BAFFLE
6071050000-E	SP	1	EA	*" SKIMMER (1-1/2")
6084000000-E	1660	2	ACR	SEEDING & MULCHING
6087000000-E	1660	1	ACR	MOWING
6090000000-E	1661	50	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	0.25	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	50	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	1.25	TON	FERTILIZER TOPDRESSING
6114500000-N	1667	10	MHR	SPECIALIZED HAND MOWING
6117000000-N	SP	18	EA	RESPONSE FOR EROSION CONTROL

RD261635

COMPUTED BY: MTP DATE: 08/30/12

CHECKED BY: DWG DATE: 07/02/13

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
"SUB-REGIONAL TIER"

PROJECT NO.	SHEET NO.
B-5163	3-A

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

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

LINE & STATION	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) SIZE: 12	15	18	24	30	36	42	48	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC
								THICKNESS OR GAUGE												
L 14+39	12 RT	0401		738.2																
		0401	0402		735.4	735.3														
L 14+39	12 LT	0402		738.2																
		0402	0403		735.3	729.7			28							X				
L 14+54	30 RT																			
L 18+02	21 LT	0404																		

C. S. PIPE (SE: SHOP ELONGATED) SIZE: 12	15	18	24	30	36	42	48	R. C. PIPE CLASS III SIZE: 12	15	18	24	30	36	42	48	R. C. PIPE CLASS IV SIZE: 12	15	18	24	30	36	42	48
THICKNESS OR GAUGE: .064	.064	.064	.064	.079	.079	.109	.109																
																	24						

15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G	CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	T.B.D.I. STD. 840.35	16" DRAINAGE PIPE ELBOW	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
							1									1	1						
							1									1	1						
																		2					
	20																					27	REMOVE 10" HDPE

SHEET TOTALS		28									24		20			2				2	2	2		27
PROJECT TOTALS		28									24		20			2				2	2	2		27

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

12/06/07

COMPUTED BY: MTP DATE: 08-31-12
CHECKED BY: DWG DATE: 07-01-13

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-5163	3-B

SUMMARY OF EARTHWORK
(VOLUMES IN CUBIC YARDS)

STATION	STATION	UNCL. EXCAV.	EMBANK. +%	BORROW	WASTE
SUMMARY NO. 1					
-L- 12+50	-L- 14+71.63 (BB)	457	134		323
SUMMARY NO. 1 TOTAL		457	134		323
SUMMARY NO. 2					
-L- 16+34.37 (EB)	-L- 20+75	395	420	25	
SUMMARY NO. 2 TOTAL		395	420	25	
SUMMARY TOTALS		852	554	25	323
LOSS DUE TO C&G		-160			-160
WASTE IN LIEU OF BORROW				-25	-25
GRAND TOTALS:		692	554		138
SAY:		750			
EST. UNDERCUT CONTINGENCY = 200 CY					
SELECT GRANULAR MATERIAL = 200 CY					
GEOTEXTILE FOR SOIL STABILIZATION = 200 SY					

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

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.

PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD²
-L-	12+50.00	15+18.14	CL	539.26
-L-	15+83.79	20+75.00	CL	1,041.30
			TOTAL:	1,580.56
			SAY:	1,700

SHOULDER BERM GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT	LENGTH
-L-	14+35.00	14+66.55	LT	31.60
-L-	14+35.00	14+55.01	RT	20.01
			TOTAL:	51.61
			SAY:	52

SUMMARY OF SUBSURFACE DRAINAGE

LINE	STATION	STATION	LOCATION LT/RT/CL	DRAIN TYPE* UD/BD/SD	LF
	CONTINGENCY			UD	100
				TOTAL LF:	100

*UD = Underdrain
*BD = Blind Drain
*SD = Subsurface Drain

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

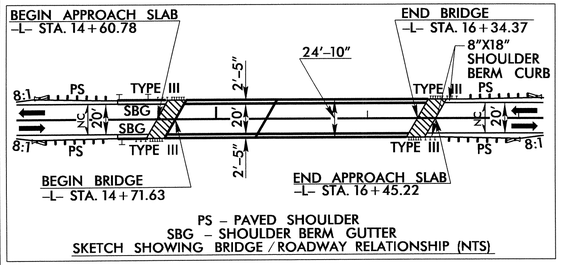
GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS									IMPACT ATTENUATOR TYPE 350			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GRAU 350	TYPE III	M-350	CAT-1	XIII	AT-1	VI MOD	XI	XI MOD	EA	G	NG				
-L-	13+78.80	14+78.80	LT	100				14+78.80	2.4167'	6'		81.25'		1.625'	1	1													
-L-	16+41.54	17+16.54	LT	75			16+41.54		2.4167'	6'	56.25'		1.125'		1	1													
-L-	13+76.96	14+64.46	RT	87.50			14+64.46		2.4167'	6'	68.75'		1.375'		1	1													
-L-	16+27.20	17+02.20	RT	75				16+27.20	2.4167'	6'		56.25'		1.125'	1	1													
			SUB-TOTAL	337.50																									
			LESS DEDUCTIONS FOR ANCHORS																										
			GRAU-350 4 @ 50 =	-200																									
			TYPE III 4 @ 18.75 =	-75																									
ADDITIONAL GUARDRAIL POSTS = 5 EA.			PROJECT TOTAL	62.50											4	4													
			SAY	75																									

03-JUL-2013 10:50
C:\Projects\B5163_Rdy_sum.dgn
$$$$USERNAME$$$$

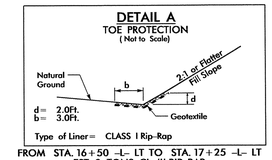
8/17/99

REVISIONS



PS – PAVED SHOULDER
SBG – SHOULDER BERM GUTTER
SKETCH SHOWING BRIDGE / ROADWAY RELATIONSHIP (NTS)

-L-	
PI Sta 11+78.12	PI Sta 21+39.36
△ = 41° 44' 05.0" (RT)	△ = 7° 54' 45.4" (RT)
D = 19° 02' 06.5"	D = 5° 33' 45.7"
L = 219.25'	L = 142.24'
T = 114.74'	T = 71.24'
R = 301.00'	R = 1,030.00'
SE = SEE PLANS	SE = SEE PLANS



FROM STA. 16+50 -L- LT TO STA. 17+25 -L- LT
EST. 9 TONS CL. 1 RIP RAP
EST. 70 SY GEOTEXTILE

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
B-5163	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 33871 ENGINEER DANIEL W. GARDNER, JR.
7-22-13

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032994 ENGINEER GALEN CAIN
7/22/13

-L- STA. 12+50.00
BEGIN STATE PROJECT B-5163

REMOVE EXISTING BRIDGE

STRAIGHTEN DRIVE CONNECTION WITH INCIDENTAL STONE BASE

-L- PT Sta. 12+82.63

-L- PC Sta. 20+68.12

-L- PT Sta. 22+10.36

-L- POT Sta. 23+03.90

-BL-4

-BL-5

-L- PC Sta. 10+63.38

-L- POT Sta. 10+00.00

WILLIAM MARK JOHNSON
DB 1037 PG 595

JOSEPH CARL TROLLINGER & ELIZABETH JENKINS TROLLINGER
DB 812 PG 139

DAVID MARTIN SHELTON
DB 950 PG 693

DAVID MARTIN SHELTON & LENORA ROBERTSON
DB 873 PG 2228

BENNETT RD - SR 1354

TO VICTORY HILL CHURCH RD

TO ANGLIN MILL RD

BUFFALO CREEK

CL B RIP RAP, EST. 1 TON
EST. 5 SY, FILTER FABRIC

GRAU 350 8:1

RETAIN EX. R/W

RETAIN EXISTING R/W

50' TRANS LT/RT

25' INC TYP.

ABUTMENT EXCAVATION (STR. RAY. ITEM)

BM 1
SEE SHEET 1-C

BM 2
SEE SHEET 1-C

NOTE 1: SBG-SHOULDER BERM GUTTER -L- STA. 14+35.00 TO BEGIN APPROACH SLAB LT./RT.
NOTE 2: USE SPECIAL SHOULDER BERM CURB FROM END OF APPROACH SLAB (NORTH SIDE) TO POST NO. 7 IF NEEDED. SEE STD. 862.03
NOTE 3: PAVE DRIVES (-L- STA. 13+51.92 LT./-L- STA. 18+02.26 LT.) TO BACK OF TURNOUT RADIUS WITH 2.5" SF9.5A, PRIME COAT, AND 6" ABC

-L- STA. 20+75.00
END STATE PROJECT B-5163

SEE SHEET 5 FOR -L- LINE PROFILE
SEE SHEETS S-1 THRU S-24 FOR STRUCTURE PLANS

22-JUL-2013 06:47
R:\Roadway Proj\B5163_Rdy_psh.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-5163	5

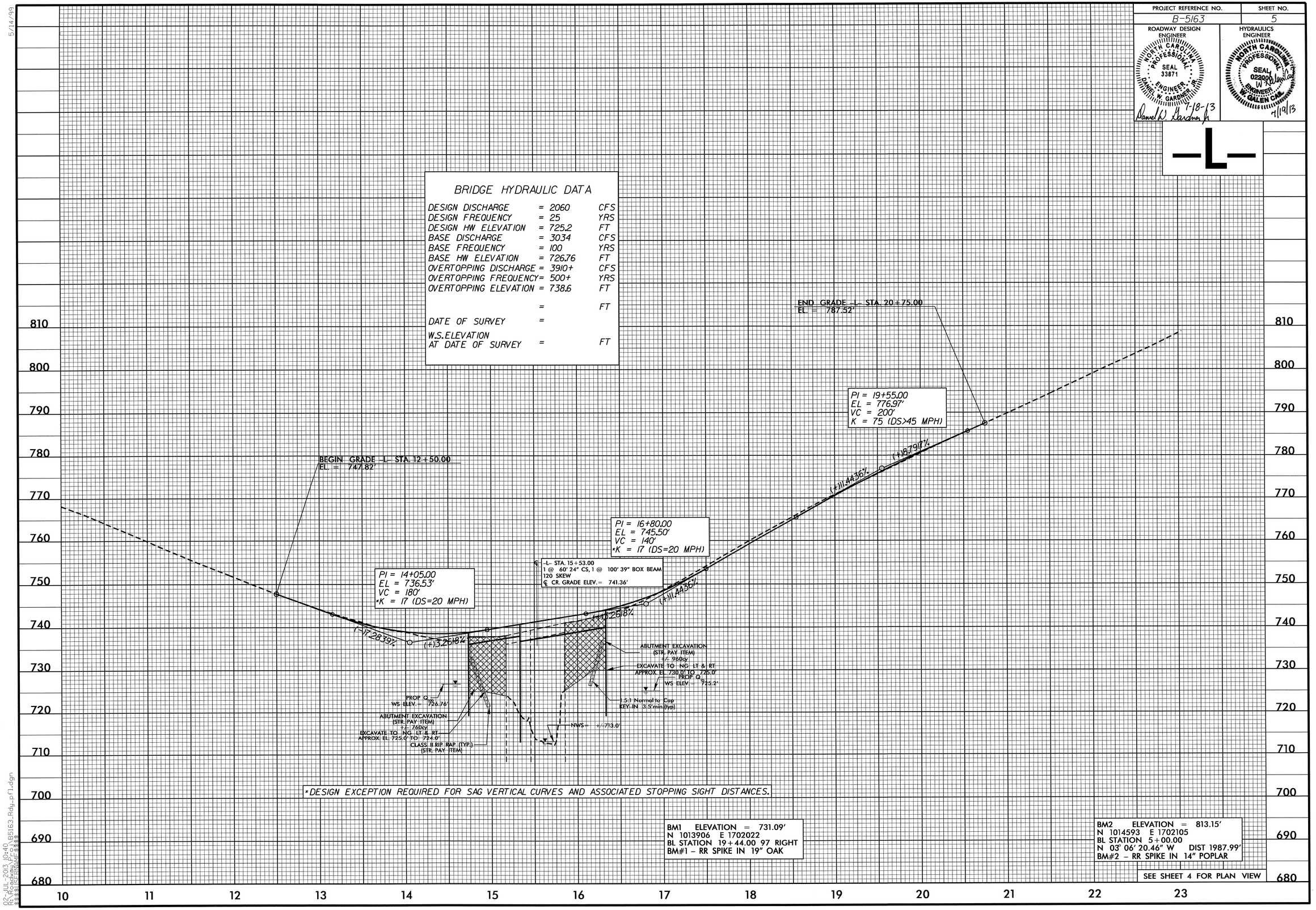
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 33871 ENGINEER DANIEL W. GARDNER, JR.
Daniel W. Gardner Jr. 7-18-13

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022000 ENGINEER W. GALEN CAIL
7/19/13

-L-

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 2060	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 725.2	FT
BASE DISCHARGE	= 3034	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 726.76	FT
OVERTOPPING DISCHARGE	= 3910+	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 738.6	FT
	=	FT
DATE OF SURVEY	=	
W.S. ELEVATION AT DATE OF SURVEY	=	FT



*DESIGN EXCEPTION REQUIRED FOR SAG VERTICAL CURVES AND ASSOCIATED STOPPING SIGHT DISTANCES.

BM1 ELEVATION = 731.09'
N 1013906 E 1702022
BL STATION 19+44.00 97 RIGHT
BM#1 – RR SPIKE IN 19" OAK

BM2 ELEVATION = 813.15'
N 1014593 E 1702105
BL STATION 5+00.00
N 03° 06' 20.46" W DIST 1987.99'
BM#2 – RR SPIKE IN 14" POPLAR

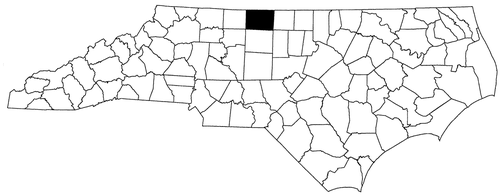
SEE SHEET 4 FOR PLAN VIEW

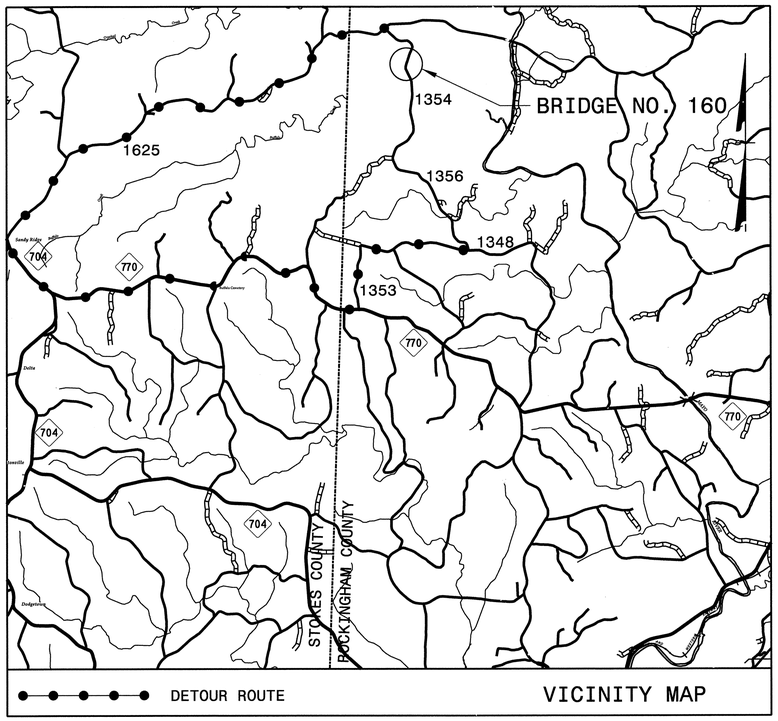
5/14/99
02-JUL-2013 10:40
R:\Roadway\Proj\B5163_Rdy_pfl.dgn
$$$$USERNAME$$$$

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

ROCKINGHAM COUNTY





DETOUR ROUTE

VICINITY MAP

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, TRAFFIC CONTROL PHASING)
TMP-2	SPECIAL SIGN DESIGN
TMP-3	TEMPORARY TRAFFIC CONTROL OFF-SITE DETOUR DETAIL

SHEET NO.
TMP-1

B-5163

TIP PROJECT:

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. ISHAK, PE — TRAFFIC CONTROL PROJECT ENGINEER
B. SCHOENBAUER, PE — TRAFFIC CONTROL PROJECT DESIGN ENGINEER
S. JENNINGS — TRAFFIC CONTROL DESIGN ENGINEER

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

PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 (919) 878-9560

APPROVED:
DATE:

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 21047 ENGINEER KEVIN W. BISBY

MAY 6, 2013

5/8/2013
B5163_TMP_TSH.dgn
kbisby

PROJ. REFERENCE NO.	SHEET NO.
B-5163	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 JANAUARY 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
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1145.01	BARRICADES
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

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

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

PLANS PREPARED BY :

RK&K

RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

APPROVED: _____ DATE: _____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 21047 ENGINEER KEVIN ALBERTSON

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

ROADWAY STANDARD DRAWINGS & LEGEND

5/8/2013
B5163_TMP_RSDLEGEND_PSH.dgn
kbisby

PROJ. REFERENCE NO.	SHEET NO.
B-5163	TMP-1B

MANAGEMENT STRATEGIES

- ERECT OFF-SITE DETOUR SIGNING.
- CLOSE SR 1354 (BENNETT RD) TO THROUGH TRAFFIC.
- DEMOLISH EXISTING BRIDGE
- CONSTRUCT PROPOSED SR 1354 (BENNETT RD) ROADWAY APPROACHES AND BRIDGE NO. 160.
- OPEN SR 1354 (BENNETT RD) TO TRAFFIC.

TRAFFIC CONTROL PHASING

PHASE I

STEP 1:
ERECT OFF-SITE DETOUR SIGNING AS SHOWN ON SHEET TMP-3.

STEP 2:
USING RDWY STD 1101.03 SHEET 1, CLOSE SR 1354 (BENNETT RD).

PHASE II

STEP 1:
REMOVE THE EXISTING STRUCTURE AND CONSTRUCT THE PROPOSED STRUCTURE AND APPROACHES.

STEP 2:
PLACE THE FINAL PAVEMENT MARKINGS AND MARKERS IN ACCORDANCE WITH THE PAVEMENT MARKING PLAN.

PHASE III

REMOVE THE DETOUR SIGNING, TEMPORARY TRAFFIC CONTROL DEVICES, AND OPEN SR 1354 (BENNETT RD) TO TRAFFIC.

GENERAL NOTES / LOCAL 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.

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.

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

PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

APPROVED:_____ DATE:_____

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 21047 KEVIN W. BTSBY

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

TRANSPORTATION OPERATIONS PLAN

5/8/2013
B5163_TMP_TRANSOP_PSH.dgn
kbisby

PROJ. REFERENCE NO.	SHEET NO.
B-5163	TMP-2

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

SIGN WIDTH: 3'-0"
HEIGHT: 2'-0"
TOTAL AREA: 6.0 Sq.Ft.

BORDER TYPE: INSET
RECESS: 0.51"
WIDTH: 0.75"
RADII: 3"

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: K. Bisby
PROJECT ID: B-5163
CHECKED BY: M. Cole
DIV: 7
DATE: Nov 08, 2012

Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter spacings are to start of next letter

																															Series/Size Text Length
		B	E	N	N	E	T	T																							C 2000
	6.4	3.6	3.4	3.9	3.9	3	2.9	2.8	6.4																						23.3
		R	O	A	D																										C 2000
	11.1	3.5	3.6	3.9	2.8	11.1																									13.8

FILENAME: B5163_TMP_SIGN DESIGN_PSH

NORTH CAROLINA D.O.T. SIGN DETAIL

PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

APPROVED:_____ DATE:_____

SEAL

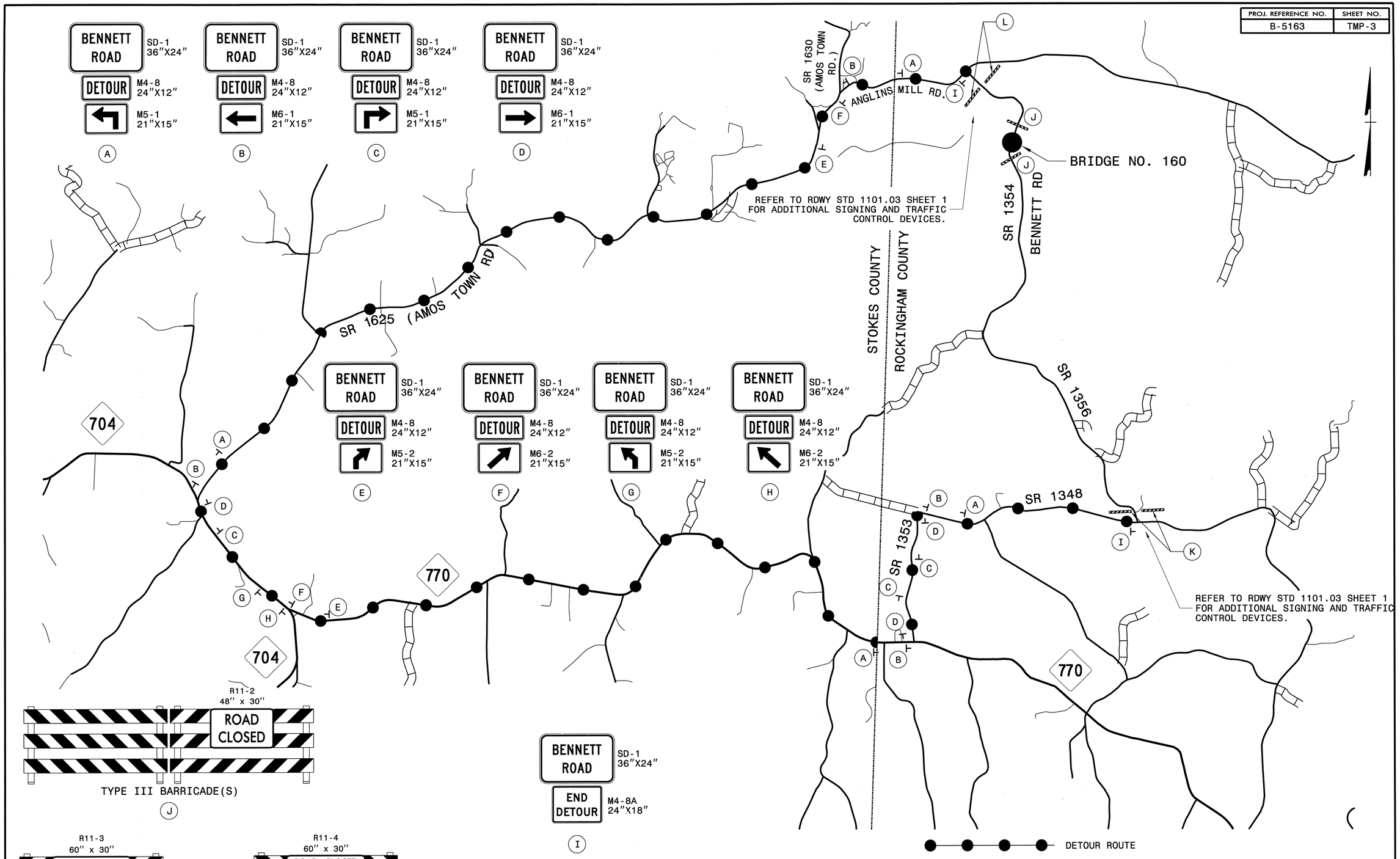
NORTH CAROLINA PROFESSIONAL SEAL 21647 ENGINEER KEVIN W. BISBY

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

SIGN DESIGN

5/8/2013
B5163_TMP_SIGN DESIGN_PSH.dgn
KDISBY

PROJ. REFERENCE NO.	SHEET NO.
B-5163	TMP-3



PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

APPROVED:_____ DATE:_____

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 21047 KEVIN W. BYSBY

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

OFF-SITE DETOUR DETAIL

5/8/2013
B5163_TMP_DETOUR_PSH.dgn
kbisby

TIP PROJECT: B-5163

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5163	EC-1	

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

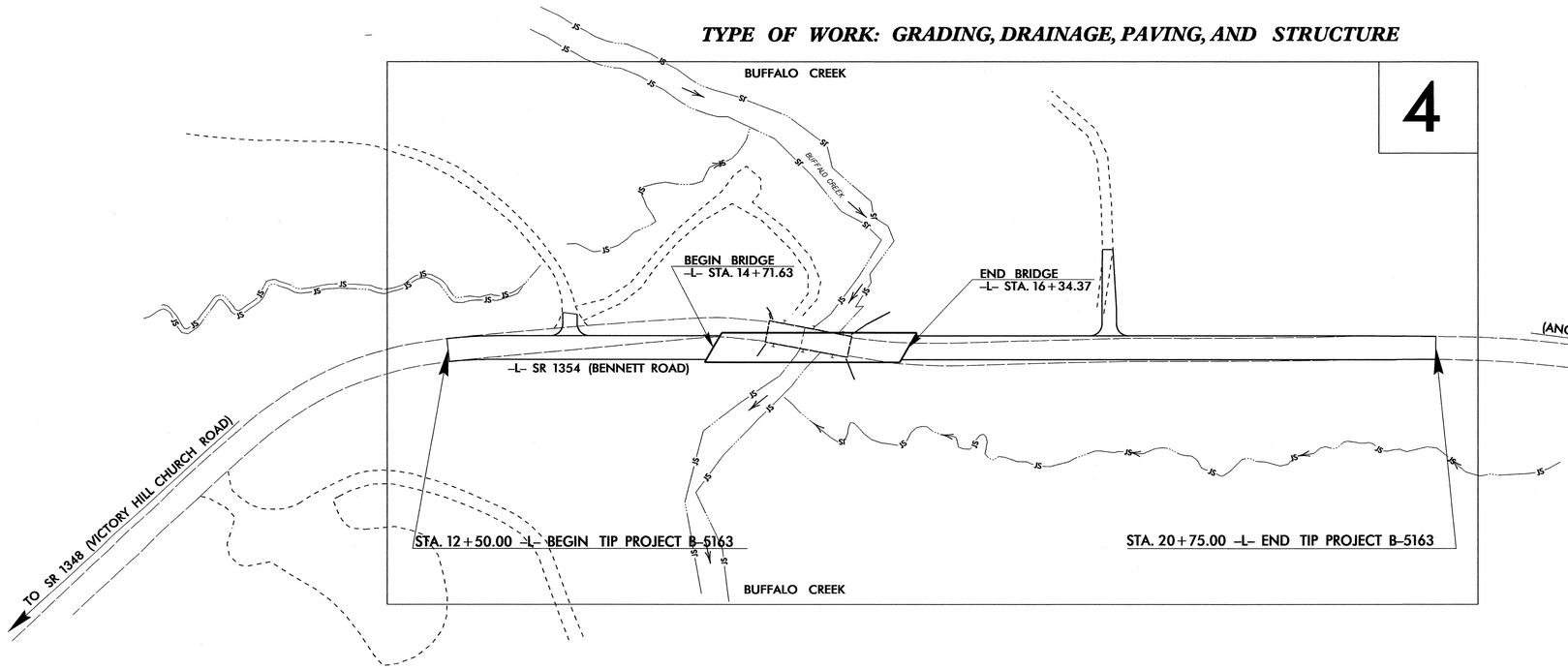
PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

ROCKINGHAM COUNTY

LOCATION: BRIDGE NO. 160 ON SR 1354 (BENNETT ROAD) OVER BUFFALO CREEK

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

NAD 83



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

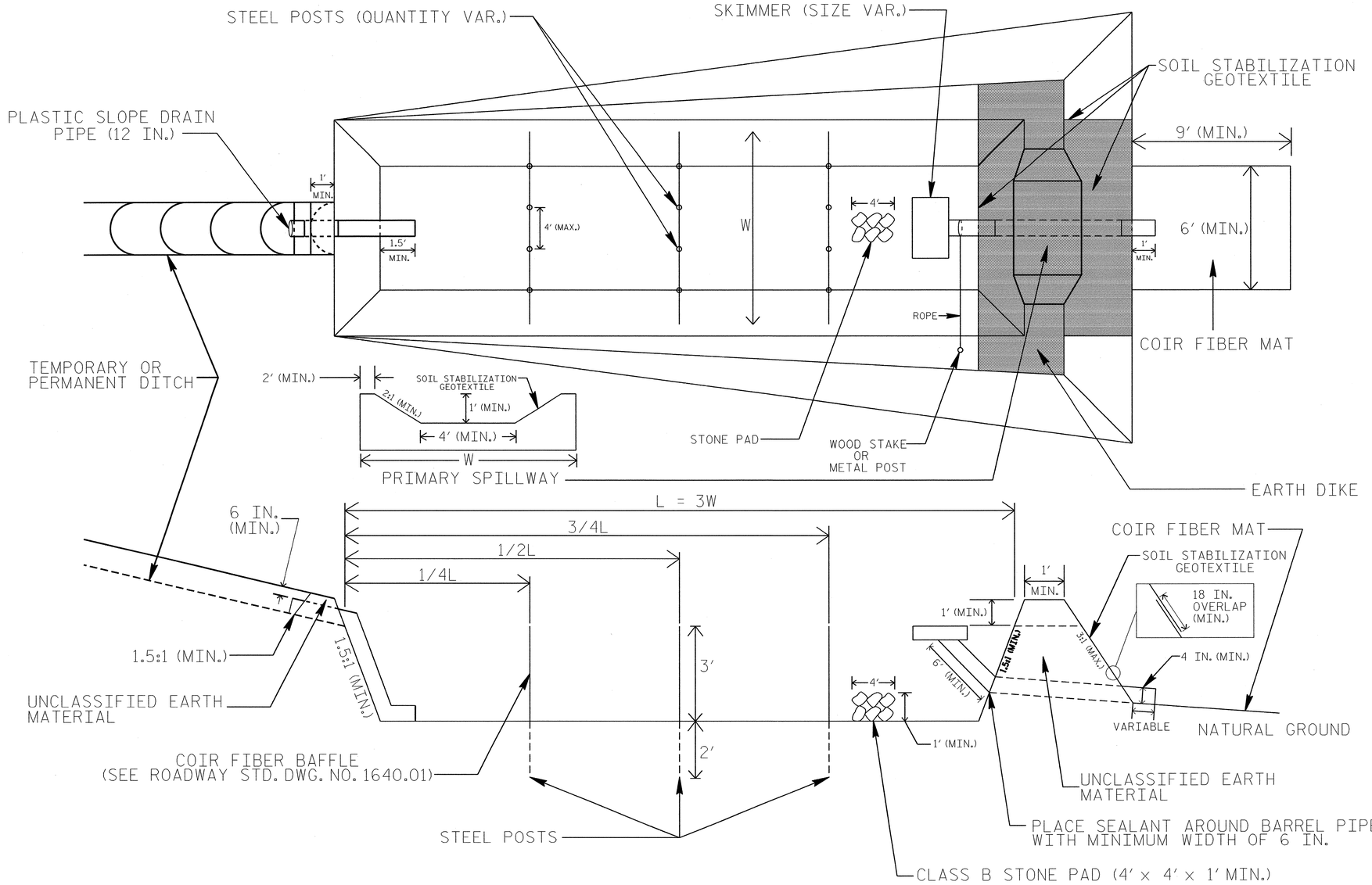
The following roadway english standards as appear in "Roadway Standard Drawings"- Roadway Design Unit – N. C. Department of Transportation – Raleigh, N. C., dated January 2012 and the latest revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

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		

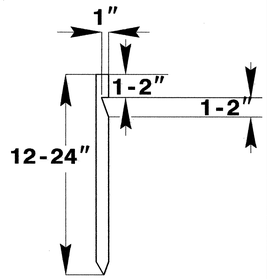
27-JUN-2013 jhb
R:\Projects\Design\B5163_EC_tsh.dgn
ning (V8.2.2.9448)

PROJECT REFERENCE NO.	SHEET NO.
B-5163	EC-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

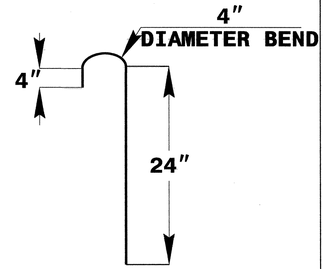
SKIMMER BASIN WITH BAFFLES DETAIL



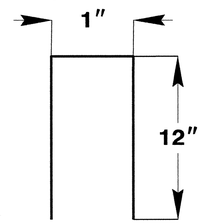
2" x 2" (nominal) WOODEN STAKE



#10 STEEL REINFORCEMENT BAR



1" (nominal) STAPLE



COIR FIBER MAT ANCHOR OPTIONS

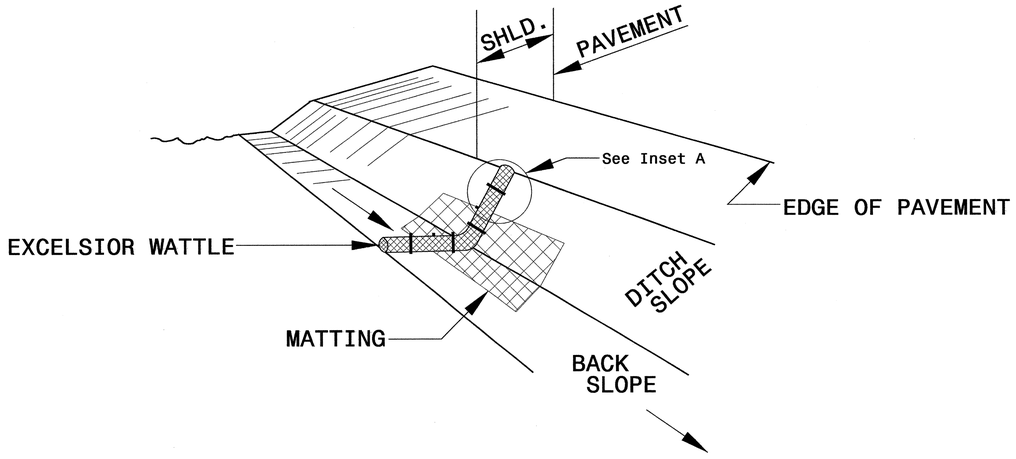
NOTES

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

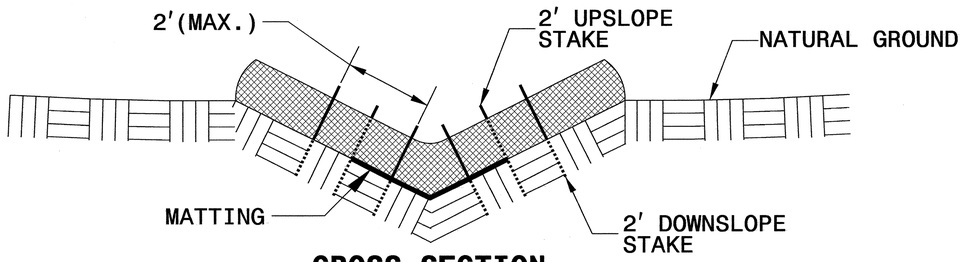
NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
B-5163	EC-2A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

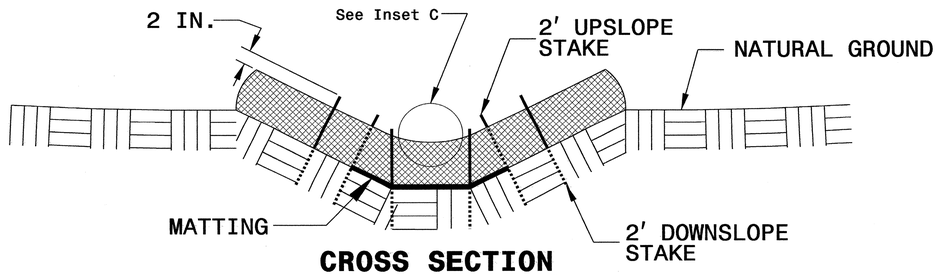
WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



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.

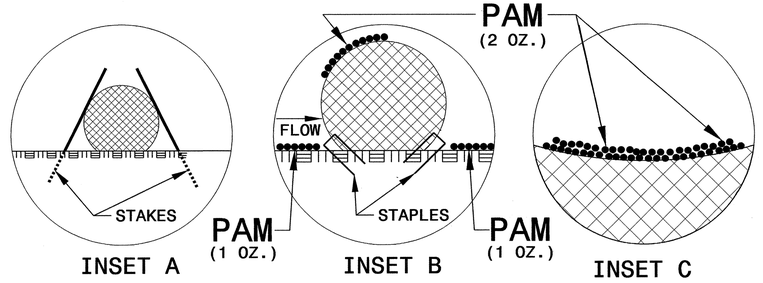
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

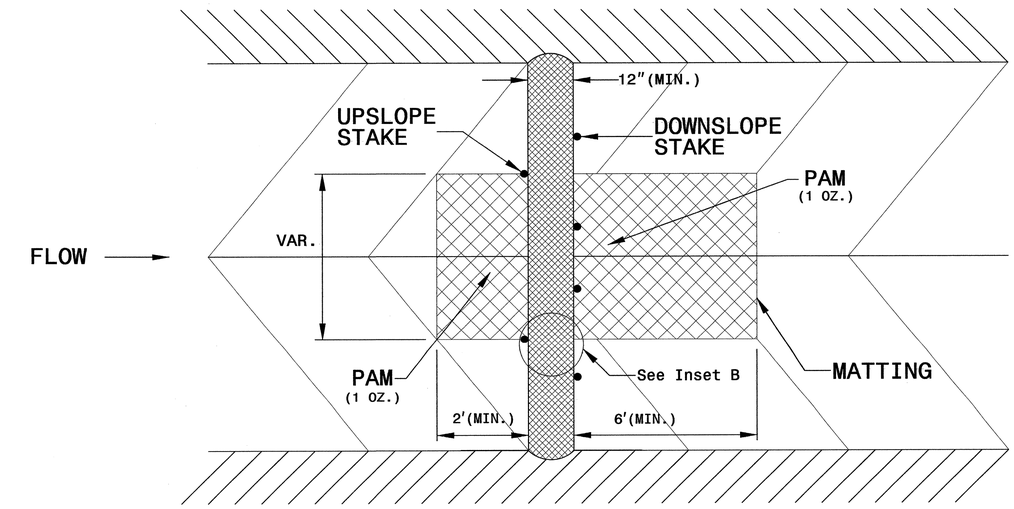
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

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.

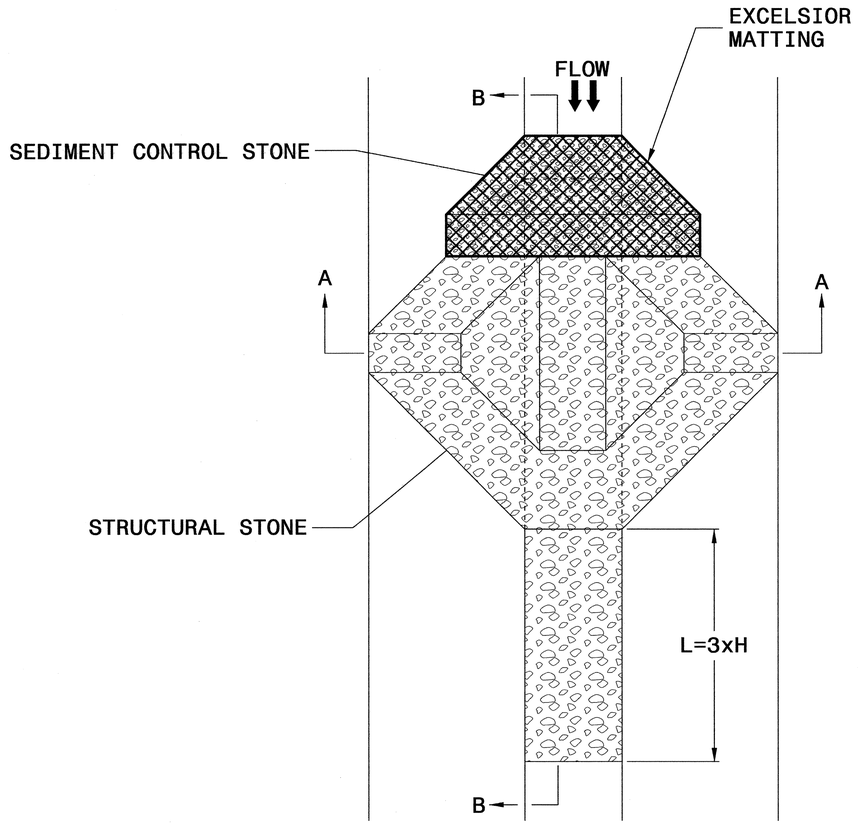




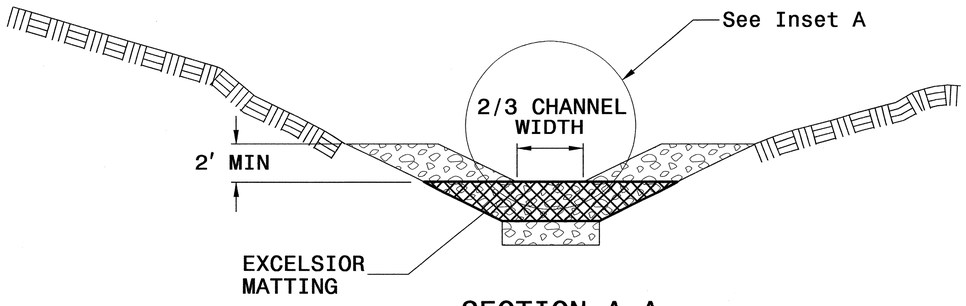
TOP VIEW

PROJECT REFERENCE NO.	SHEET NO.
B-5163	EC-2B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

TEMPORARY ROCK SILT CHECK TYPE 'A' WITH EXCELSIOR MATTING AND POLYACRYLAMIDE (PAM)



PLAN



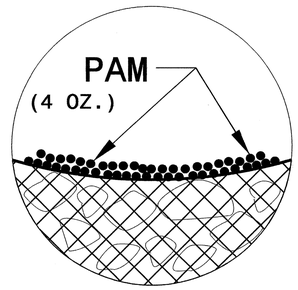
SECTION A-A

NOTES

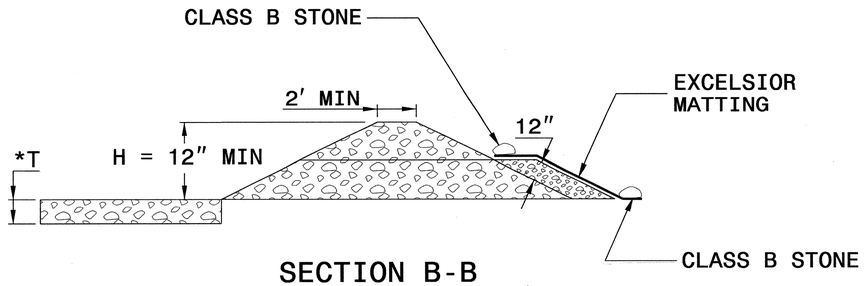
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

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 ROCK SILT CHECK.

INITIALLY APPLY 4 OUNCES OF POLYACRYLAMIDE (PAM) TO TOP OF MATTING SECTION AND AFTER EVERY RAINFALL EVENT THAT EQUALS OR EXCEEDS 0.50 INCHES.



INSET A



SECTION B-B

*T = 12" MIN., 18" MAX.

NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
B-5163	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-5163	EC-3A

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

PERMANENT SOIL REINFORCEMENT MAT

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	12+75	13+75	RT	125
4	-L-	17+50	19+00	RT	135
4	-L-	17+75	18+25	LT	70
4	-L-	18+50	20+50	LT	210
				SUBTOTAL	540
	ADDITIONAL PSRM TO BE INSTALLED				0
				TOTAL	540
				SAY	550

PERMANENT SOIL REINFORCEMENT MAT

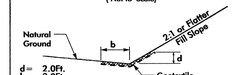
CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)

8/17/99

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

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

DETAIL A
TOE PROTECTION
(Not to Scale)



Type of Liner = CLASS I Rip-Rap

FROM STA. 16+50 –L– LT TO STA. 17+25 –L– LT
EST. 9 TONS CL. 'I' RIP RAP
EST. 70 SY GEOTEXTILE

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
B-5163	EC-4/CONST.4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4

–L– STA. 12+50.00
BEGIN STATE PROJECT B–5163

INSTALL DRIVEWAY PIPE DURING CLEARING & GRUBBING PHASE

STRAIGHTEN DRIVE CONNECTION WITH "22" INCIDENTAL STONE BASE

REMOVE EXISTING BRIDGE

–L– PT Sta. 12+82.63

BL-4 14+51.69 PINC=
–L– STA. 11+65.10 (15.24 LT)

–L– PC Sta. 20+68.12

–L– POT Sta. 23+03.90

–BL-5 25+79.58 POT=
–L– STA. 22+89.53 (13.33 LT)

–L– PT Sta. 22+10.36

–L– PC Sta. 10+63.38

–L– POT Sta. 10+00.00

1 WILLIAM MARK JOHNSON
DB 1037 PG 595

2 DAVID MARTIN SHELTON
& LENORA ROBERTSON
DB 873 PG 2228

3 JOSEPH CARL TROLLINGER &
ELIZABETH JENKINS TROLLINGER
DB 812 PG 139

4 DAVID MARTIN SHELTON
DB 350 PG 693

CL B RIP RAP
EST. 1 TON
EST. 5 SY FILTER FABRIC

SEE DETAIL A
TOE PROTECTION

RETAIN EX R/W

RETAIN

25' INC TYP

50' TRANS. LT/RT

GRAU 350

SBG

2GI

ARMOR STONE (TYP)

REMOVE

CWD

BENNETT RD SR 1594

20Y BST

TO VICTORY HILL CHURCH RD

TO ANGLIN MILL RD

7" GRAVEL

WOODS

DUE

BM 1
SEE SHEET 1-C

BM 2
SEE SHEET 1-C

N 25°13'15.3" W

S 84°39'17" E
215.54'

S 63°21'43" W
67.86'

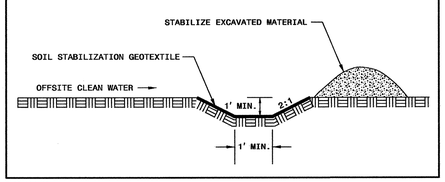
N 16°30'49" E

N 24°25'35.2" E

18 x 9 x 3
1.5 inch Skimmer
with 0.125 inch
Orifice Diameter
4 ft. weir
ID 4.1

CLEAN WATER DIVERSION

(Not to Scale)



–L– STA. 20+75.00
END STATE PROJECT B–5163

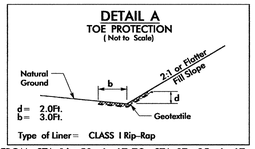
SEE SHEET 5 FOR –L– LINE PROFILE
SEE SHEETS S-1 THRU S- FOR STRUCTURE PLANS

27-JUN-2013 13:29
R:\Environmental\Design\B-5163_EC_psh04.dgn
mpope
ATTENTION!!!

8/17/99

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

DETAIL A
TOE PROTECTION
(Not to Scale)



d = 2.0Ft.
b = 3.0Ft.
Type of Liner = CLASS I Rip-Rap
FROM STA. 16+50 -L- LT TO STA. 17+25 -L- LT
EST. 9 TONS CL. 1 RIP RAP
EST. 70 SY GEOTEXTILE

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
B-5163	EC-5/CONST.4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

-L- STA. 12+50.00
BEGIN STATE PROJECT B-5163

Place Matting for Erosion Control on Slope as Work Allows. Sta. 16+50 to Sta. 17+50

REMOVE EXISTING BRIDGE

STRAIGHTEN DRIVE CONNECTION WITH ??" INCIDENTAL STONE BASE

-L- PT Sta. 12+82.63

-BL-4 14+51.69 PINC=
-L- STA. 11+65.10 (15.24 LT)

-L- PC Sta. 10+63.38

-L- POT Sta. 10+00.00

-L- PC Sta. 20+68.12

-L- POT Sta. 23+03.90

-BL-5 25+79.58 POT=
-L- STA. 22+89.53 (13.33 LT)

-L- PT Sta. 22+10.36

1 WILLIAM MARK JOHNSON
DB 1037 PG 595

2 DAVID MARTIN SHELTON
& LENORA ROBERTSON
DB 873 PG 2228

3 JOSEPH CARL TROLLINGER &
ELIZABETH JENKINS TROLLINGER
DB 812 PG 139

4 DAVID MARTIN SHELTON
DB 950 PG 693

BM 1
SEE SHEET 1-C

BM 2
SEE SHEET 1-C

BENNETT RD - SR 1354

TO VICTORY HILL CHURCH RD

TO ANGLIN MILL RD

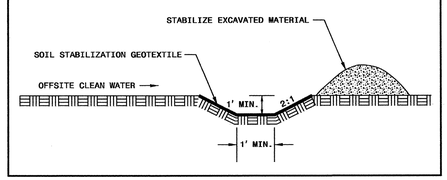
SWIFT CREEK

OLD STAGE RD

OLD SOIL ROAD

18 x 9 x 3
1.5 inch Skimmer
with 0.125 inch
Orifice Diameter
4 ft. weir
ID 4.1

CLEAN WATER DIVERSION
(Not to Scale)



-L- STA. 20+75.00
END STATE PROJECT B-5163

SEE SHEET 5 FOR -L- LINE PROFILE
SEE SHEETS S-1 THRU S- FOR STRUCTURE PLANS

27-JUN-2013 13:28
R:\Environmental\Design\B-5163_EC_psh04.dgn
mrgo ET REVISED 5.2.2

T.I.P.: B-5163

CONTRACT: C203307

TIP NO.	SHEET NO.
B-5163	SIGN-1

APPROVED: _____

DATE: 6/27/13

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 022959 ENGINEER RONALD W. KING

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

SIGNING PLAN
ROCKINGHAM COUNTY

LOCATION: BRIDGE NO. 160 ON SR 1354 (BENNETT ROAD) OVER BUFFALO CREEK.

SUMMARY OF QUANTITIES

ITEM NO. DESC. NO.	ITEM NO. SECT. NO.	ITEM DESCRIPTION	QUANTITY	UNIT
4072000000	903	SUPPORTS, 3 LB STEEL U-CHANNEL	76	L.F.
4096000000	904	SIGN ERECTION, TYPE D	2	EA.
4102000000	904	SIGN ERECTION, TYPE E	1	EA.
4155000000	907	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	9	EA.

ROADWAY STANDARD DRAWING

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

STD. NO.	TITLE
904.10	ORIENTATION OF GROUND MOUNTED SIGNS
904.50	MOUNTING OF TYPE 'D', 'E' AND 'F' SIGNS ON 'U' CHANNEL POSTS

GENERAL NOTES

. SIGNS FURNISHED BY STATE

. ALL TYPE 'D' SIGNS SHALL BE MOUNTED ON TWO U-CHANNEL POSTS UNLESS OTHERWISE INDICATED ON THE PLANS.

. SIGNING PLANS DO NOT INCLUDE TEMPORARY CONSTRUCTION SIGNING. SEE TRAFFIC CONTROL PLANS

. WHEN NOT STATIONED OR DIMENSIONED ON PLANS, ALL 'E' AND 'F' SIGNS SHALL BE FIELD LOCATED BY THE ENGINEER

. ALL EXISTING SIGNS ON "U" CHANNEL POST WITHIN THE PROJECT LIMITS SHALL BE REMOVED AND DISPOSED OF UNLESS OTHERWISE NOTED ON PLANS.

. THE BACKGROUND FOR TYPE E & F SIGNS SHALL BE TYPE C REFLECTIVE SHEETING.

. SEE ROADWAY PLANS FOR GUARD/GUIDE RAIL DETAILS.

SIGN NUMBER: 301,302
TYPE: D
QUANTITY: 2
SIGN WIDTH: 3'-0"
HEIGHT: 2'-0"
TOTAL AREA: 6.0 Sq.Ft.
BORDER TYPE: FLUSH
RECESS: 0"
WIDTH: 1"
RADII: 3"
NO. Z BARS:
LENGTH:

BACKG COLOR: Green
COPY COLOR: White

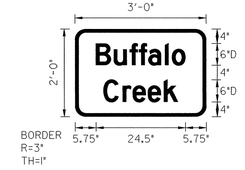
SYMBOL	X	Y	WID	HT

MAT'L: 0.125" (3.2 mm) ALUMINUM

USE NOTES: 1,2

1. Legend and border(except those that are colored black) shall be direct applied Grade C sheeting.
2. Background shall be Grade C reflective sheeting.

DESIGN BY: S.JOHNS CHECKED BY: S.KUNZ DATE: Jun 12, 2013
PROJECT ID: B-5163 DIV: 7



Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter spacings are to start of next letter

										Series/Size Text Length
	B	u	f	f	a	l	o			D 2000
5.7	4.9	4.4	2.5	2.6	4.6	1.9	3.7	5.7		24.5
	C	r	e	e	k					D 2000
7.8	5.3	2.8	4.1	4.4	3.8	7.8				20.4

FILENAME: B-5163_Sgn_SGH — NORTH CAROLINA D.O.T. SIGN DETAIL

"E" SIGNS

(401) QUANTITY REQ'D 1

30 X 30
W1-1L

ONE "U" POST PER SIGN

(402) QUANTITY REQ'D 1

18 X 18
W13-1P

MOUNT BELOW SIGN 401
IN 1 INSTALLATIONS

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

SUSAN B. KUNZ — SIGNING & DELINEATION REGIONAL ENGINEER

STACEY JOHNS — SIGNING & DELINEATION DESIGN ENGINEER

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROJECT NOTES

1	DISPOSAL OF SIGN SYSTEM, U-CHANNEL

INDEX

SHEET NO.	DESCRIPTION
SIGN-1	TITLE SHEET,SIGN DESIGNS, E SIGNS, & NOTES
SIGN-2	SIGN DETAIL SHEET

27-JUN-2013 11:56
P:\TIPProject\B-5163\Traffic\Signing\CADD\Signing Layout Plans\B-5163_Sgn_SGN.dgn
sjohns

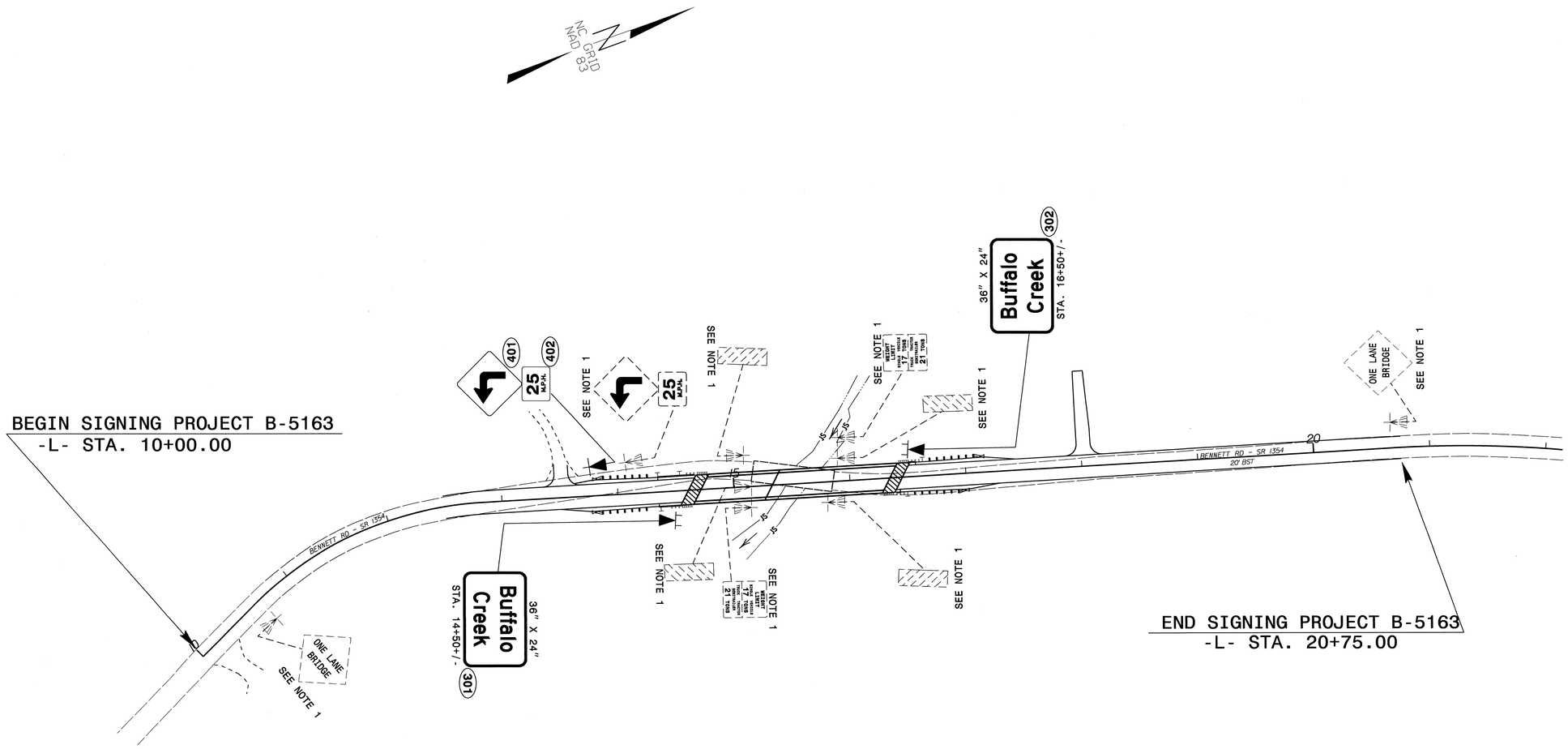
TIP NO.	SHEET NO.
B-5163	SIGN-2

APPROVED: [signature]

DATE: 6/27/13

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 022959 ENGINEER RONALD W. KING



PROJECT NOTES

1	DISPOSAL OF SIGN SYSTEM, U-CHANNEL

SIGN DETAIL SHEET

27-JUN-2013 11:57
P:\TIPProjects-B\B5163\Traffic\Signing\CADD\Signing Layout Plans\B-5163_Sgn_SGN.dgn
sjohns HT TE247957

T.I.P.: B-5163

CONTRACT: C203307

TIP NO.	SHEET NO.
B-5163	PMP-1

APPROVED: _____

DATE: 6/27/13

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 022959 ENGINEER RONALD W KING

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLAN
ROCKINGHAM COUNTY
LOCATION: BRIDGE NO. 160 ON SR 1354(BENNETT RD) OVER BUFFALO CREEK

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
1250.01	PAVEMENT MARKER SPACING
1251.01	RAISED PAVEMENT MARKERS - TEMPORARY AND PERMANENT
1261.01	GUARDRAIL AND BARRIER DELINEATOR SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATOR TYPES
1262.01	GUARDRAIL END DELINEATION

PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION
	PAINT(4")
PI	YELLOW DOUBLE CENTER
PA	WHITE EDGELINE
	MARKERS
	SNOWPLOWABLE PAVEMENT MARKERS
ME	YELLOW & YELLOW
MO	CRYSTAL & CRYSTAL

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 1354	PAINT	NONE
BRIDGE	PAINT	SNOWPLOWABLE

B) PLACE TWO APPLICATIONS OF PAINT PAVEMENT MARKINGS ON THE FINAL WEARING SURFACE. PLACE THE SECOND APPLICATION OF PAINT UPON SUFFICIENT DRYING TIME OF THE FIRST.

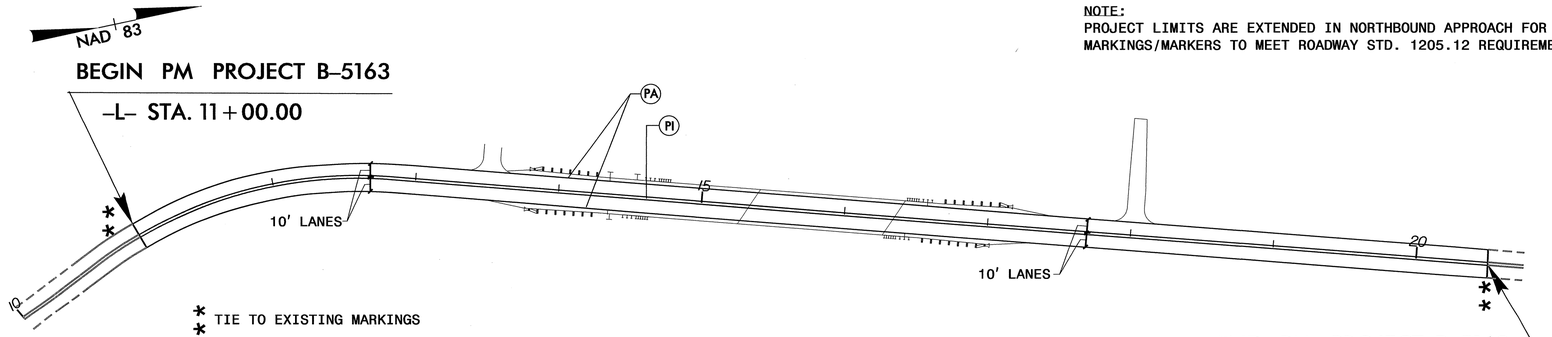
C) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

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

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

F) MARKERS ARE TO BE PLACED ACCORDING TO THE ROADWAY STANDARD DRAWINGS.

PAVEMENT MARKING DETAIL



NOTE:
PROJECT LIMITS ARE EXTENDED IN NORTHBOUND APPROACH FOR PAVEMENT MARKINGS/MARKERS TO MEET ROADWAY STD. 1205.12 REQUIREMENTS.

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

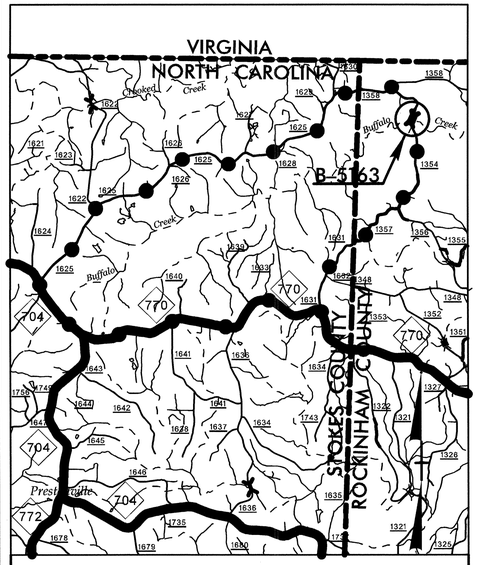
SUSAN B. KUNZ — SIGNING & DELINEATION REGIONAL ENGINEER

STACEY W. JOHNS — SIGNING & DELINEATION DESIGN ENGINEER

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

27-JUN-2013 14:51
P:\TIPProjects\B5163\Traffic\Signing\CADD\Signing Layout Plans\Pavement MarkingB5163.dgn
sjohns

TIP PROJECT: B-5163



VICINITY MAP

OFFSITE DETOUR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

T.I.P. NO.	SHEET NO.
B-5163	UO-1

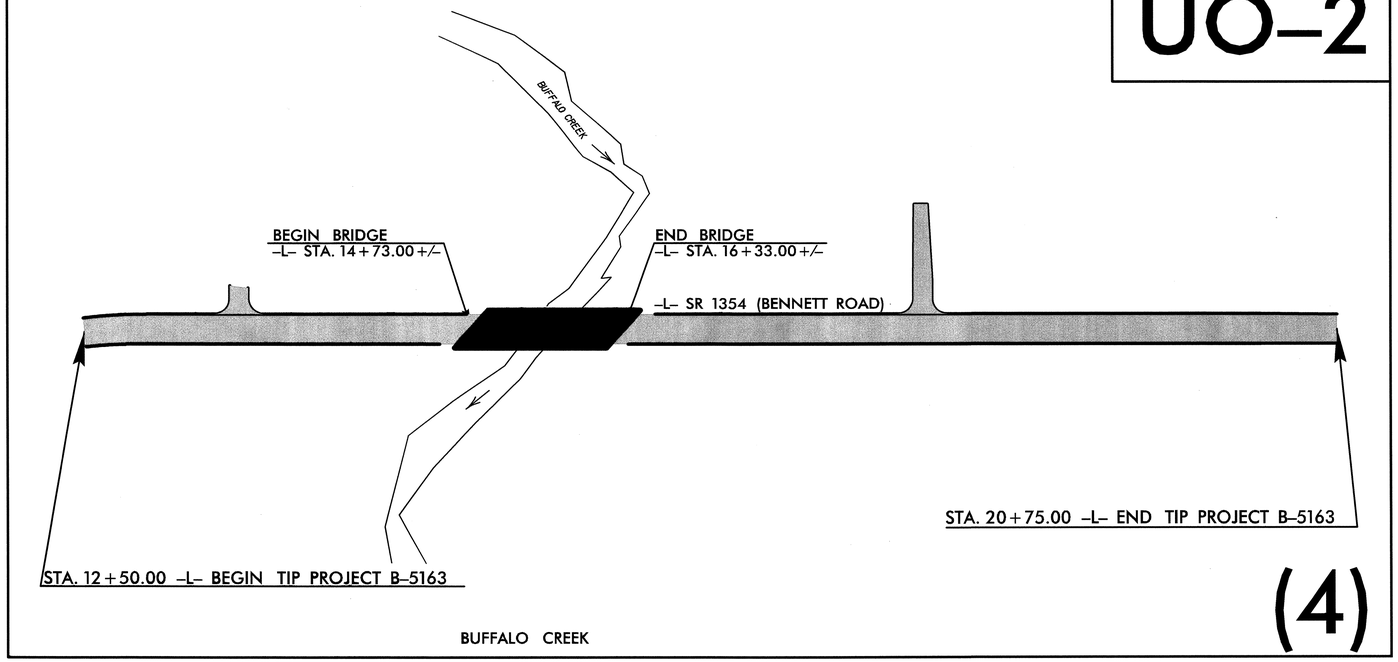
UTILITIES BY OTHERS PLANS
ROCKINGHAM COUNTY

LOCATION: BRIDGE NO. 160 ON SR 1354 (BENNETT ROAD) OVER BUFFALO CREEK

TYPE OF WORK: UTILITY RELOCATIONS

NAD 83

UO-2



(4)

UCC
UtilityCoordinationConsultants
P.O. BOX 450
MINERAL SPRINGS, N.C. 28108
(704) 844-9093

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	*UTILITIES BY OTHERS PLAN SHEET*

UTILITY OWNERS ON PROJECT

(1) CENTURYLINK (CL) – TELEPHONE
(2) ENERGY UNITED (EU) – POWER

PREPARED IN THE OFFICE OF:
DIVISION OF HIGHWAYS
UTILITIES UNIT
UTILITIES ENGINEERING
1591 MAIL SERVICES CENTER
RALEIGH NC 27699-1555
PHONE (919) 707-6690
FAX (919) 250-4151

Roger Worthington, P.E. — *UTILITIES SECTION ENGINEER*
Steve Mckee, P.E. — *UTILITIES SQUAD LEADER PROJECT ENGINEER*
Donald Proper — *UTILITIES PROJECT DESIGN ENGINEER*

PROJECT REFERENCE NO.	SHEET NO.
B-5163	U0-2

UTILITIES BY OTHERS

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

NAD 83

-L-	
PI Sta. 11+78.12	PI Sta. 21+39.36
Δ = 41° 44' 05.0" (RT)	Δ = 7° 54' 45.4" (RT)
D = 19° 02' 06.5"	D = 5° 33' 45.7"
L = 219.25'	L = 142.24'
T = 114.74'	T = 71.24'
R = 301.00'	R = 1,030.00'
SE = SEE PLANS	SE = SEE PLANS

-L- STA. 12+50.00
BEGIN STATE PROJECT B-5163

REMOVE EXISTING BRIDGE

PROPOSED POLE #2
OWNER: EU
ATTACHED: EU, CL
STA: 14+75 - 63' OS

EXISTING POLE #1
OWNER: EU
ATTACHED: EU, CL
NOTE: POLE TO REMAIN & GUYS ADDED

PROP EU 3Ø DISTRIBUTION LINE & CL AERIAL CABLE

PROPOSED POLE #3
OWNER: EU
ATTACHED: EU, CL
STA: 17+39 - 43' OS

STRAIGHTEN DRIVE CONNECTION WITH INCIDENTAL STONE BASE

EX CL UG TO BE ABANDONED

EX CL UG TO REMAIN

EXISTING EU OH 3Ø DISTRIBUTION & CL AERIAL BE REMOVED

EXISTING POLE #4
OWNER: EU
ATTACHED: EU, CL
NOTE: POLE TO BE REMOVED

EXISTING POLE #5
OWNER: EU
ATTACHED: EU

-L- STA. 20+75.00
END STATE PROJECT B-5163

UCC
UTILITY COORDINATION CONSULTANTS
P.O. BOX 450
MINERAL SPRINGS, N.C. 28108
(704) 844-9093

PROJ. REFERENCE NO.	SHEET NO.
B-5163	X-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

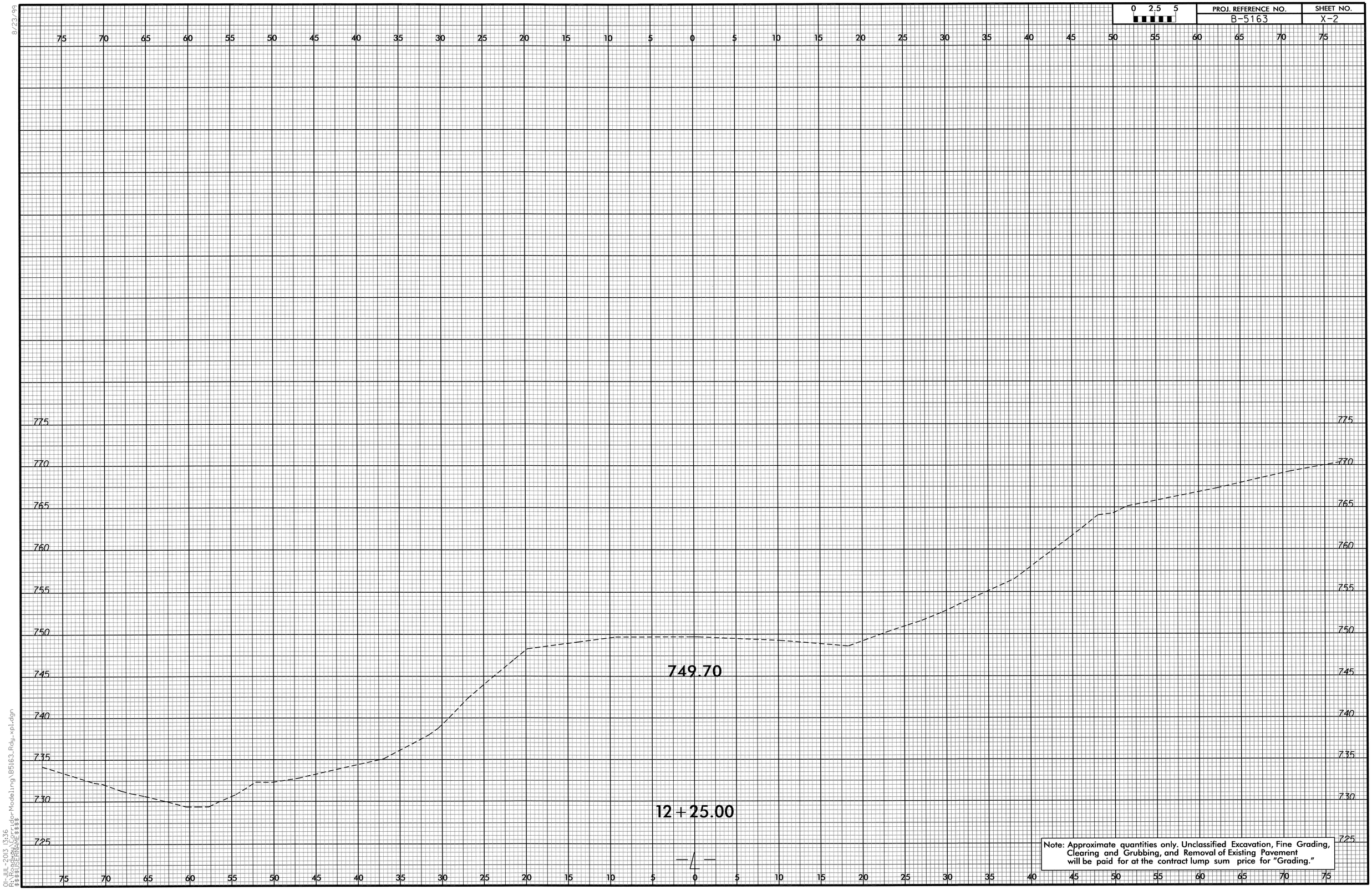
Approximate quantities only. Unclassified excavation, fine grading, clearing and grubbing, and removal of existing pavement will be paid for at the lump sum price for "Grading".

NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT

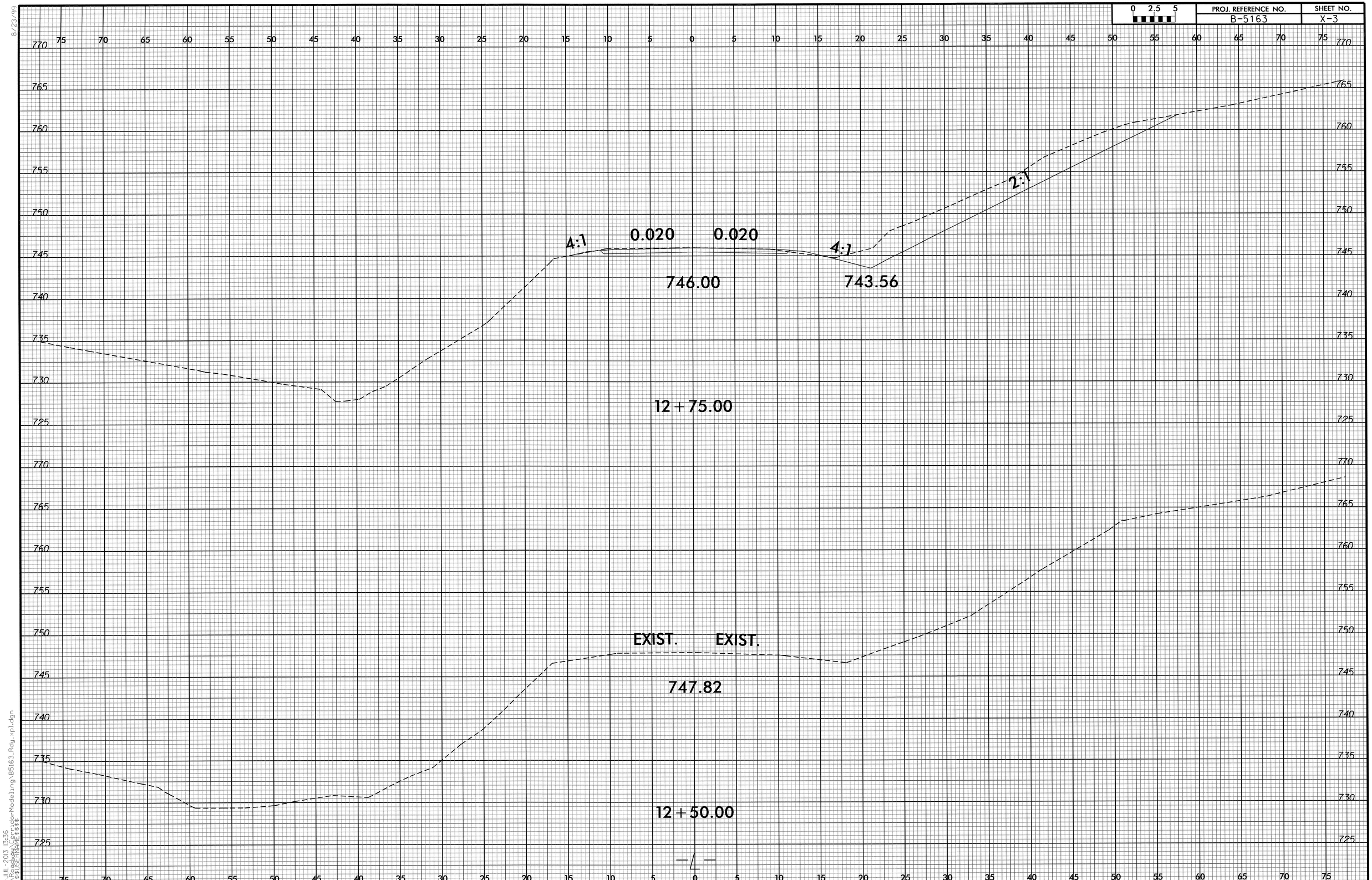
CROSS-SECTION SUMMARY

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
12+50.00	0	0
12+75.00	47	0
13+00.00	99	0
13+25.00	94	0
13+50.00	77	0
13+75.00	46	1
14+00.00	28	2
14+25.00	32	11
14+50.00	25	31
14+65.00	8	41
14+71.63	1	25

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
16+34.37	0	0
16+50.00	0	109
16+75.00	2	143
17+00.00	18	71
17+25.00	32	17
17+50.00	38	2
17+75.00	47	0
18+00.00	50	0
18+25.00	48	0
18+50.00	42	0
18+75.00	33	0
19+00.00	26	0
19+25.00	17	0
19+50.00	8	1
19+75.00	6	1
20+00.00	6	1
20+25.00	7	2
20+50.00	9	2
20+75.00	6	1



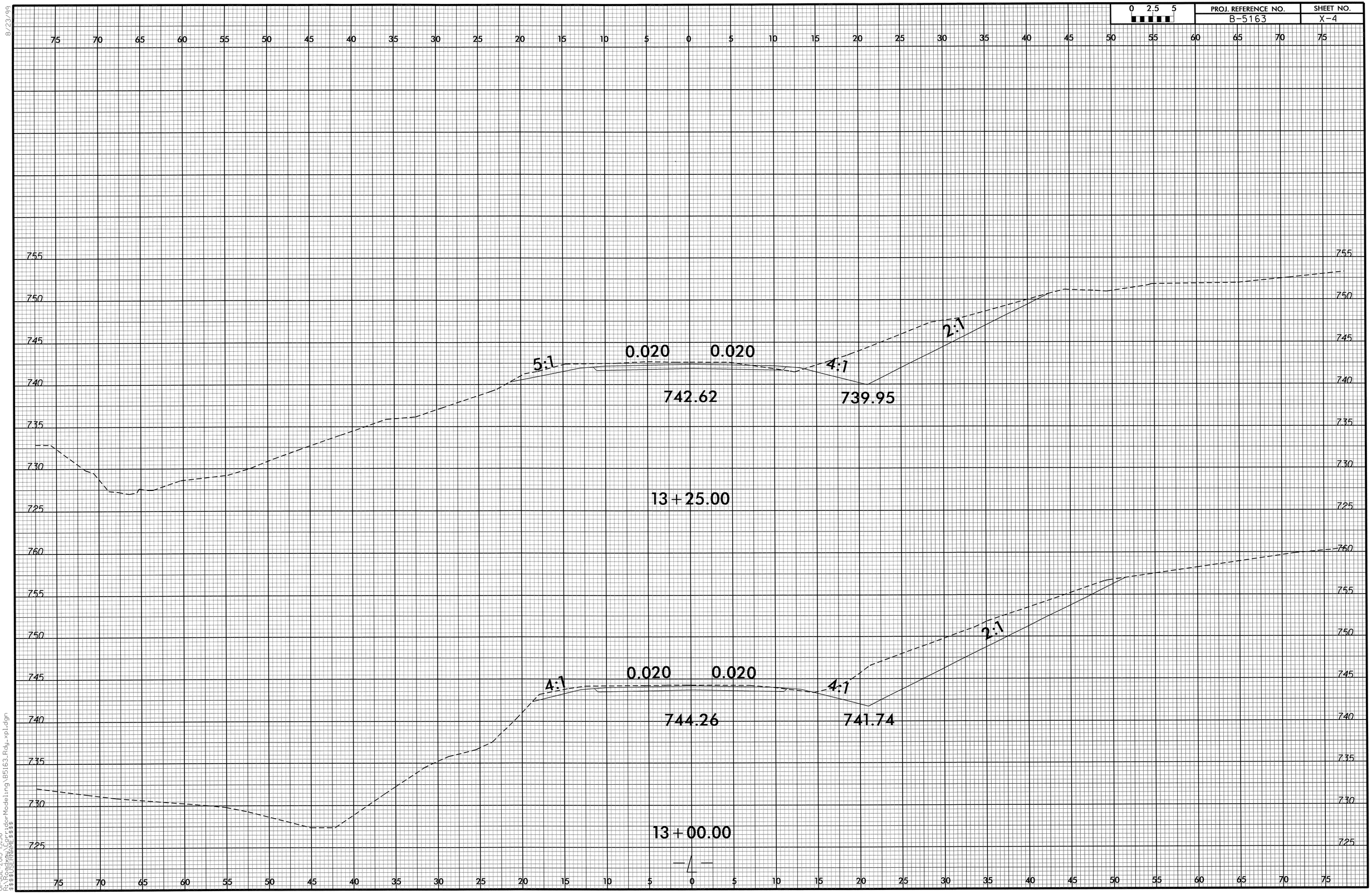
8/23/99
01-JUL-2013 13:36
R:\Roadway\Corridor Modeling\B5163_Rdy_xpl.dgn
$$$$USERNAME$$$$



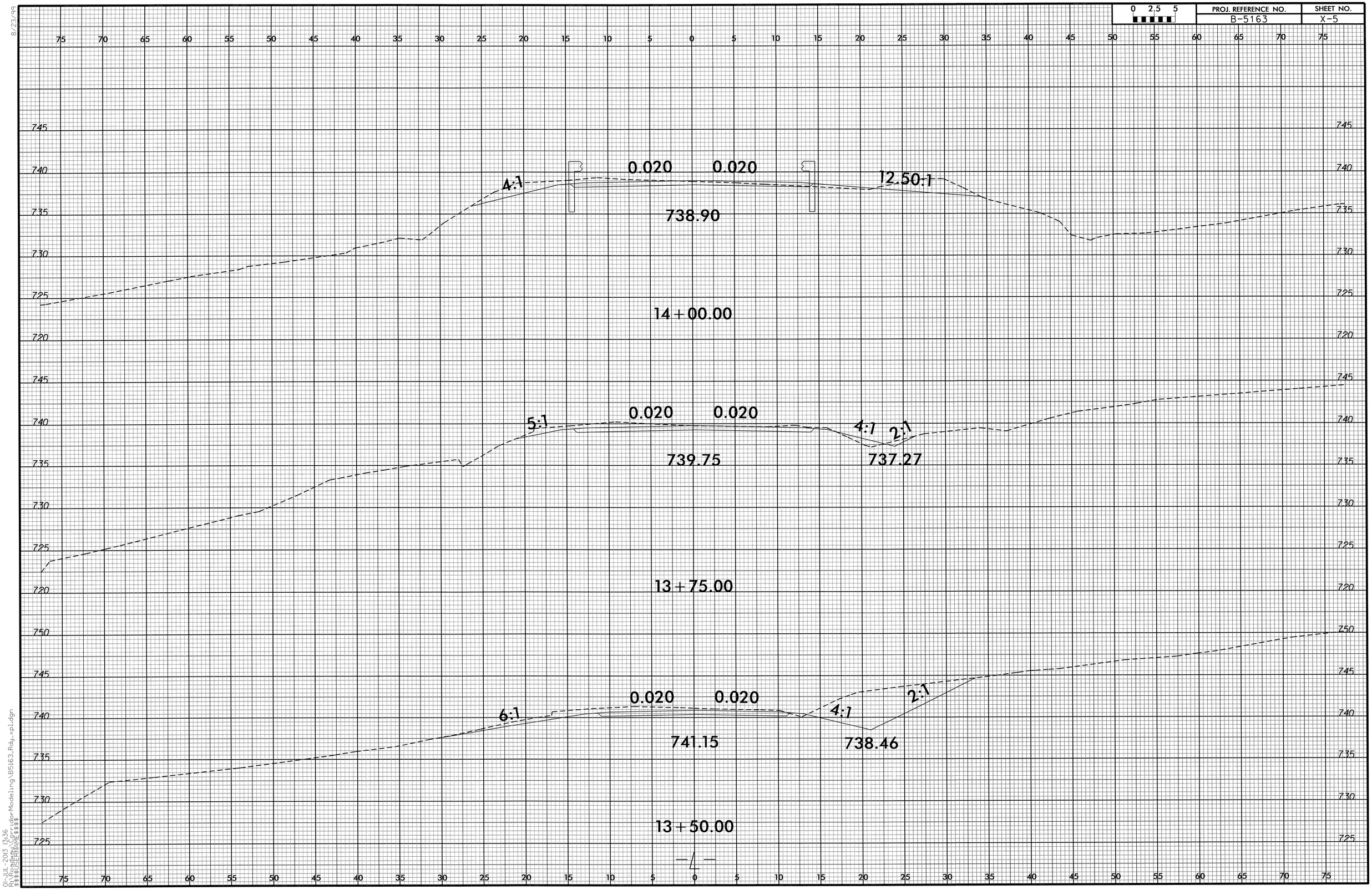
8/23/99
01-JUL-2013 13:36
R:\Roadway\Corridor Modeling\B5163_Rdy_xpl.dgn
$$$$USERNAME$$$$

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-5163	X-4

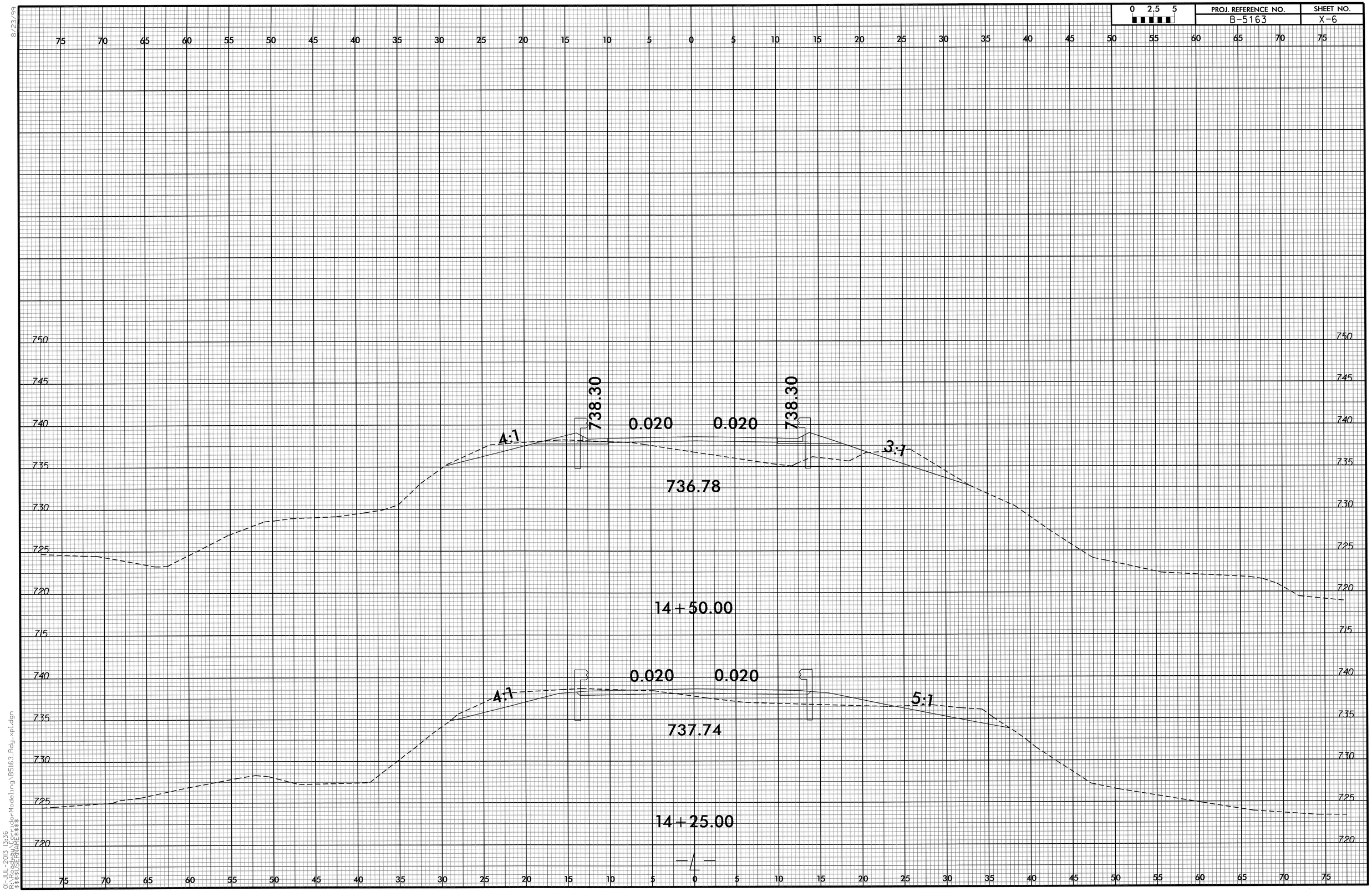


01-JUL-2013 13:36
$$$$USERNAME$$$$

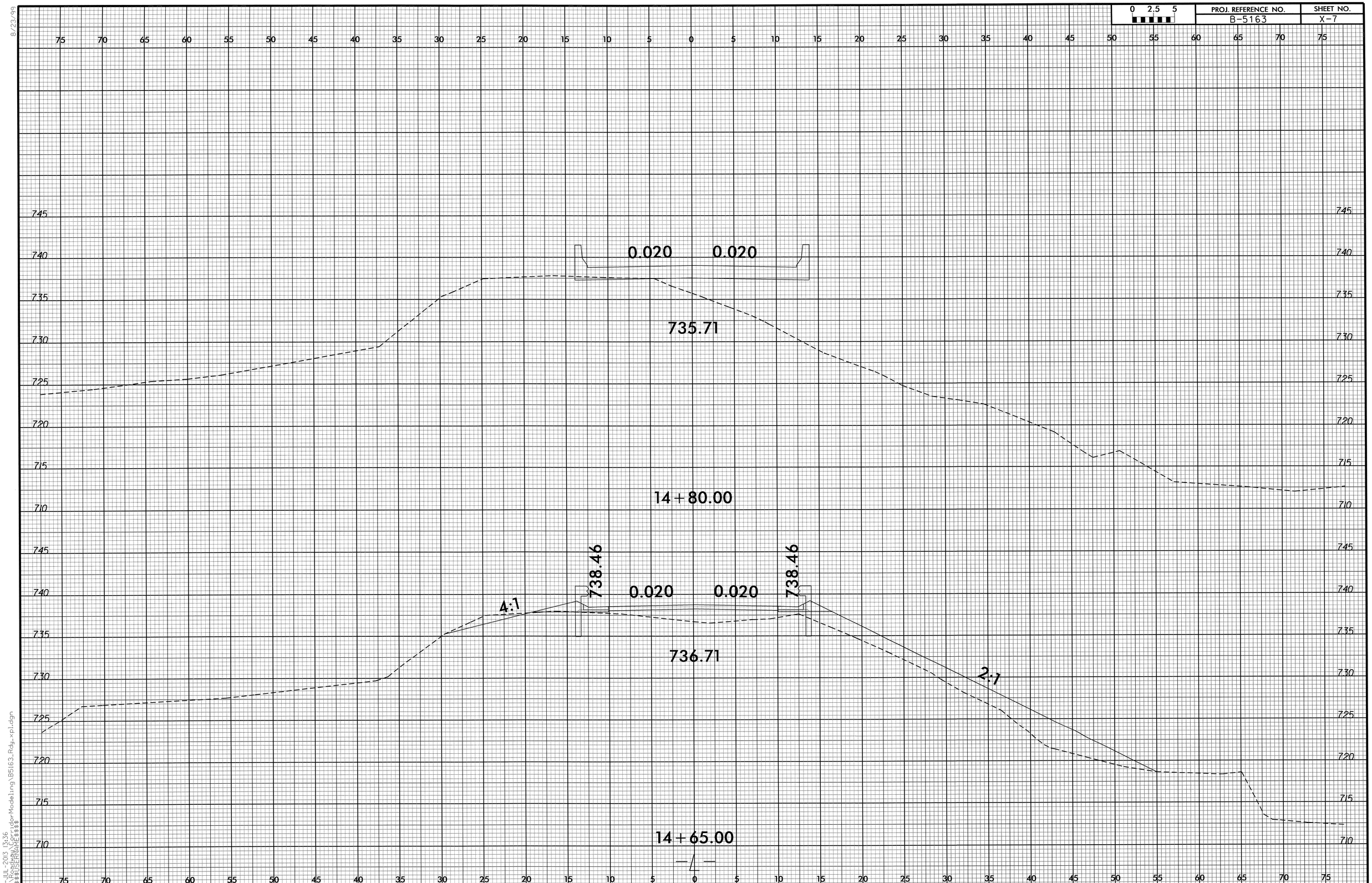


8/23/99

01-JUL-2013 13:36
R:\Roadway\Corridor Modeling\B5163_Rdy_xpl.dgn
$$$$USERNAME$$$$



8/23/99
01-JUL-2013 13:36
R:\Roadway\Corridor Modeling\B5163_Rdy_xpl.dgn
$$$$USERNAME$$$$



8/23/99
01-JUL-2013 13:36
R:\Roadway\CorridorModeling\B5163_Rdy_xpl.dgn
$$$$USERNAME$$$$

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-5163	X-8

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

745
740
735
730
725
720
715
710

0.020 0.020

721.83

15+25.00

0.020 0.020

734.41

15+00.00

745 740 735 730 725 720 715 710

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

01-JUL-2013 13:36
C:\Projects\Corridor Modeling\B5163_Rdy_xpl.dgn
$$USERNAME$$

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-5163	X-9

0.020 0.020

720.17

15+75.00

0.020 0.020

712.42

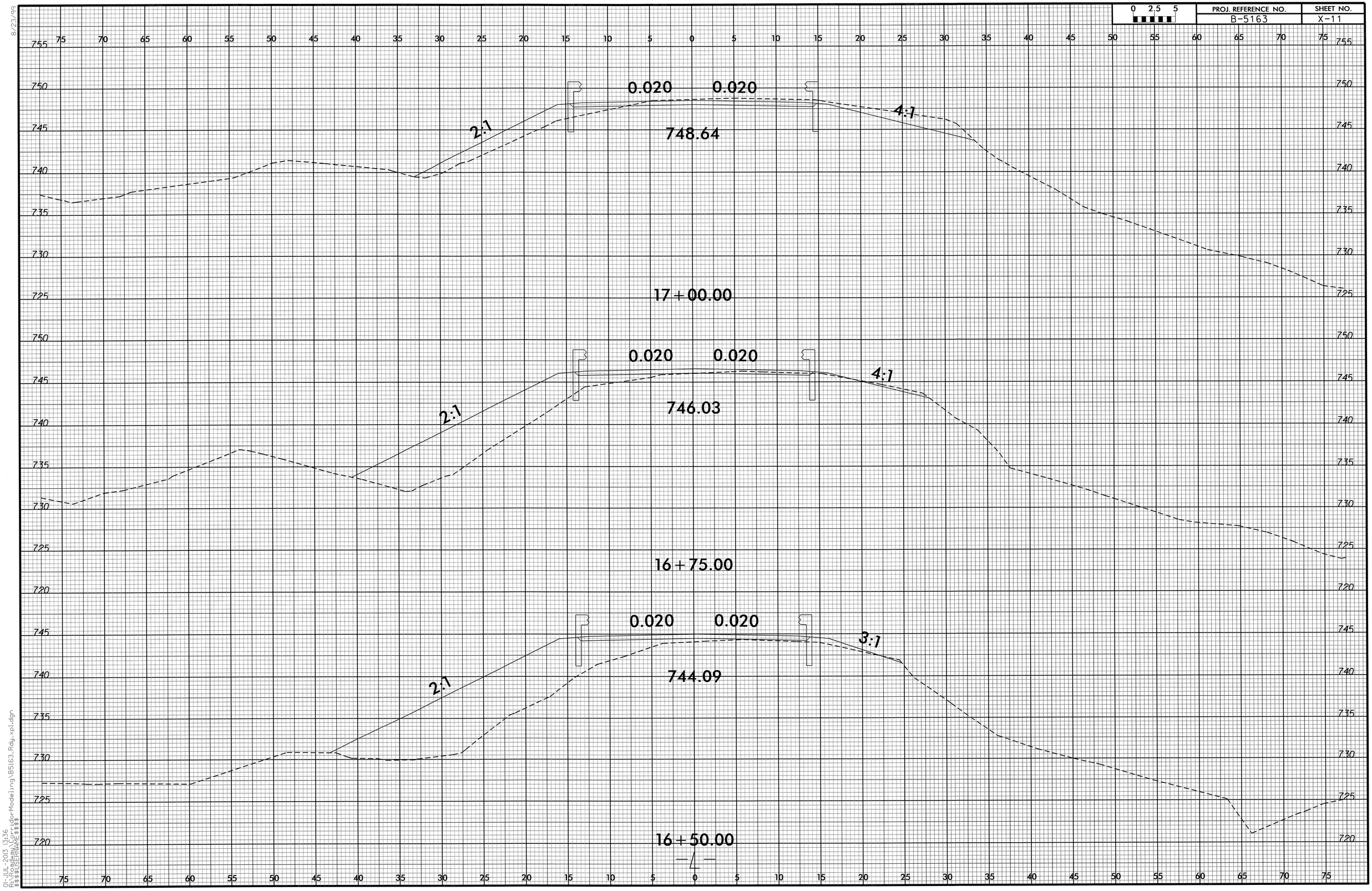
15+50.00

01-JUL-2013 13:36
R:\$\$USERNAME\$\$\Projects\Corridor Models\B5163_Rdy_xpl.dgn
$$USERNAME$$

PROJ. REFERENCE NO.	SHEET NO.
B-5163	X-10

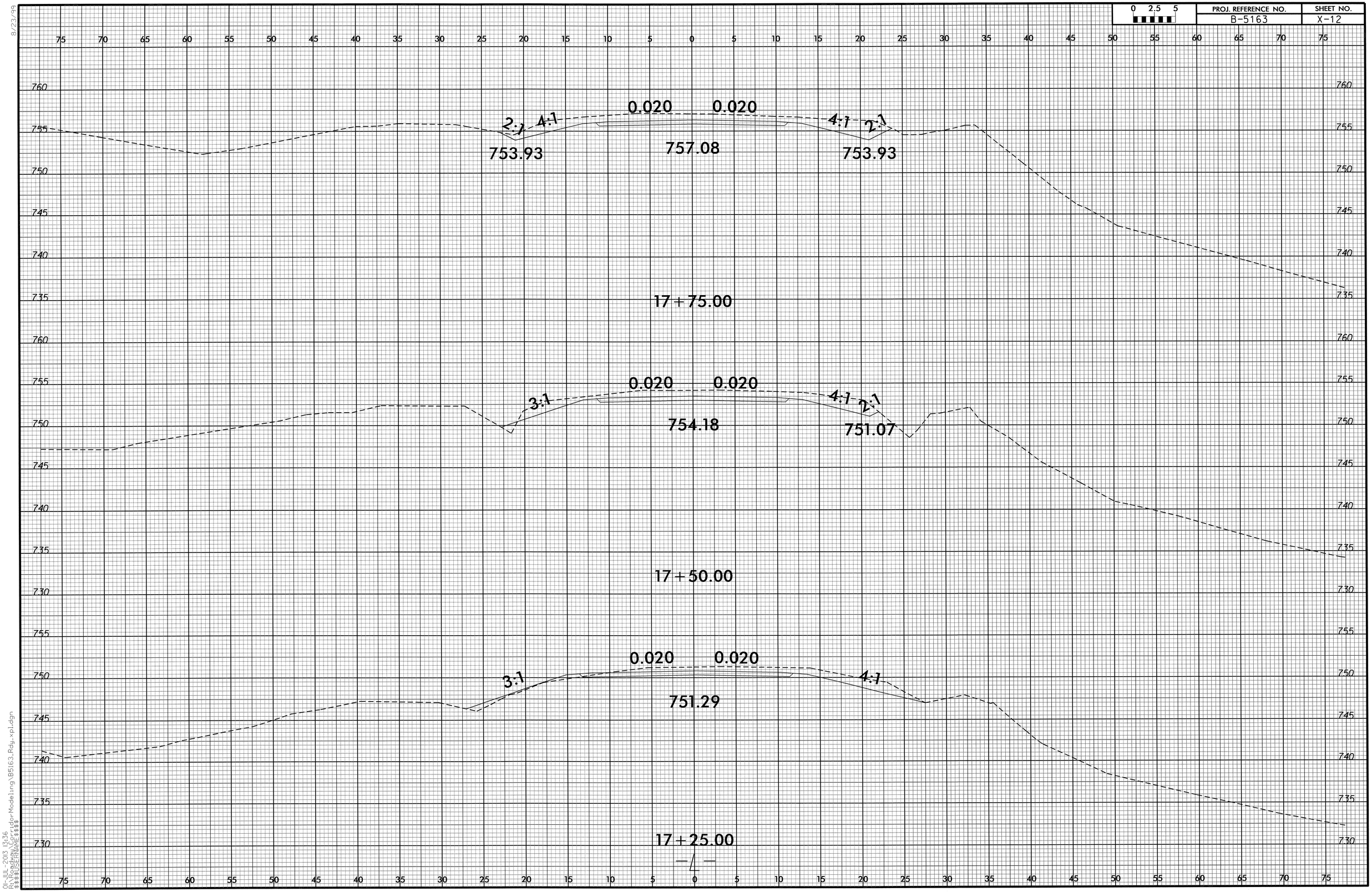
8/23/99

01-JUL-2013 13:36
R:\Roadway\CorridorModeling\B5163_Rdy_xpl.dgn
$$$$USERNAME$$$$



8/23/99

01-JUL-2013 13:36
R:\Roadway\CorridorModeling\B5163_Rdy_xpl.dgn
$$$$USERNAME$$$$



8/23/99

01-JUL-2013 13:36
R:\Roadway\CorridorModeling\B5163_Rdy_xpl.dgn
$$$$USERNAME$$$$

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-5163	X-13

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

770 765 760 755 750 745 740 735

2:1 9:1 0.020 0.020 4:1 2:1

760.76 762.75 759.65

18+25.00

DRIVE TIE @ 1"/FT.

STRAIGHTEN DRIVE CONNECTION WITH INCIDENTAL STONE BASE (SEE LIMITS ON PLAN SHEET)

2:1 6:1 0.020 0.020 4:1 2:1

757.46 759.93 756.79

18+00.00

01-JUL-2013 13:36
R:\Roadway\Corridor Modeling\B5163_Rdy_xpl.dgn
$$$$USERNAME$$$$

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-5163	X-14

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

780 775 770 765 760 755 750 745 740

9.54:1 0.020 0.020 4:1 2:1

766.63 768.26 765.35

18+75.00

11.70:1 0.020 0.020 4:1 2:1

763.90 765.53 762.51

18+50.00

01-JUL-2013 13:36
R:\Roadway_Corridor_Modeling\B5163_Rdy_xp1.dgn
$$$$USERNAME$$$$

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-5163	X-15

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

790 785 780 775 770 765 760 755 750

6.87:1 0.020 0.020 5:1

771.86 773.23

19+25.00

8.79:1 0.020 0.020 4:1 2:1

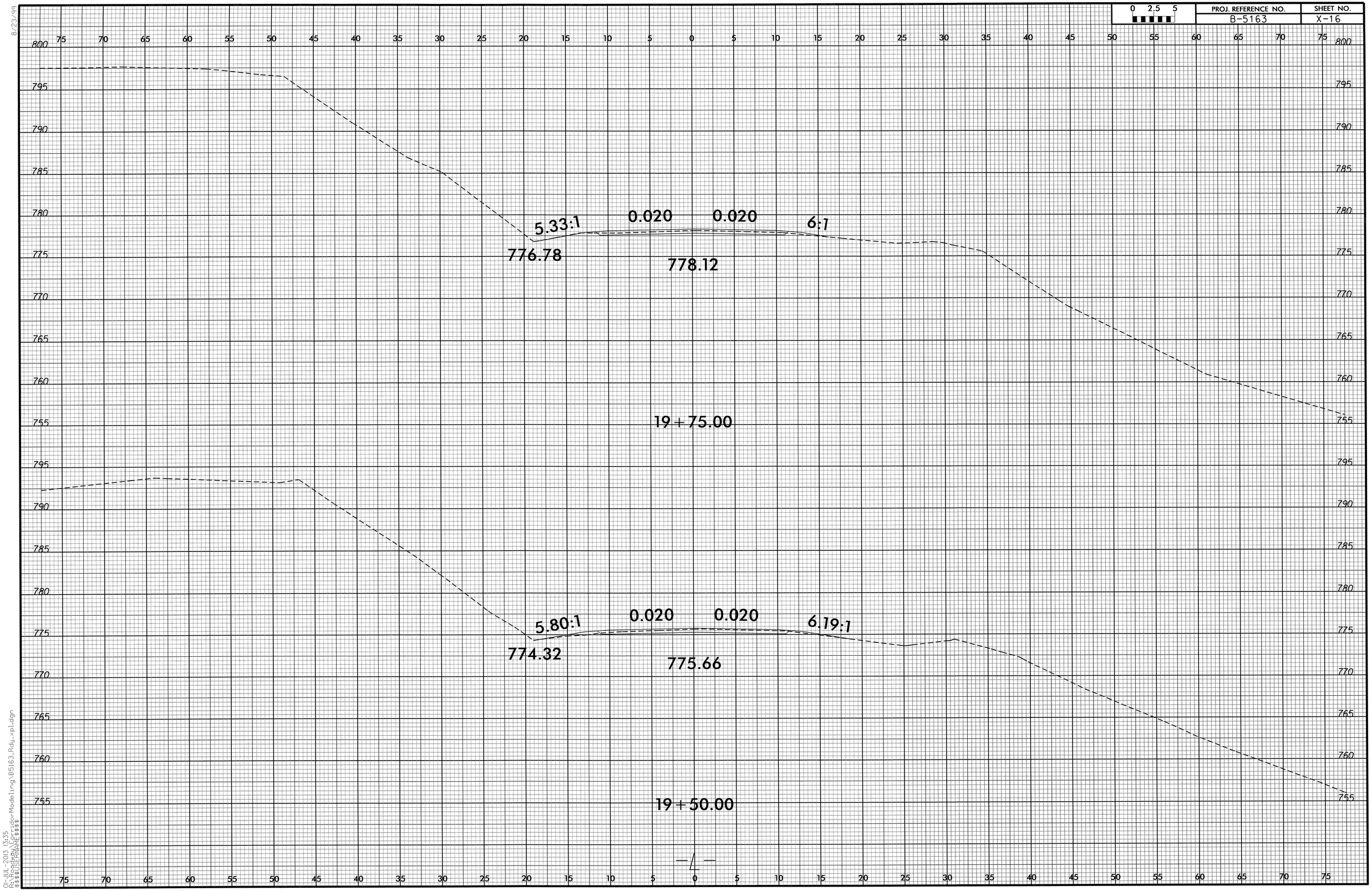
769.36 770.78 768.10

19+00.00

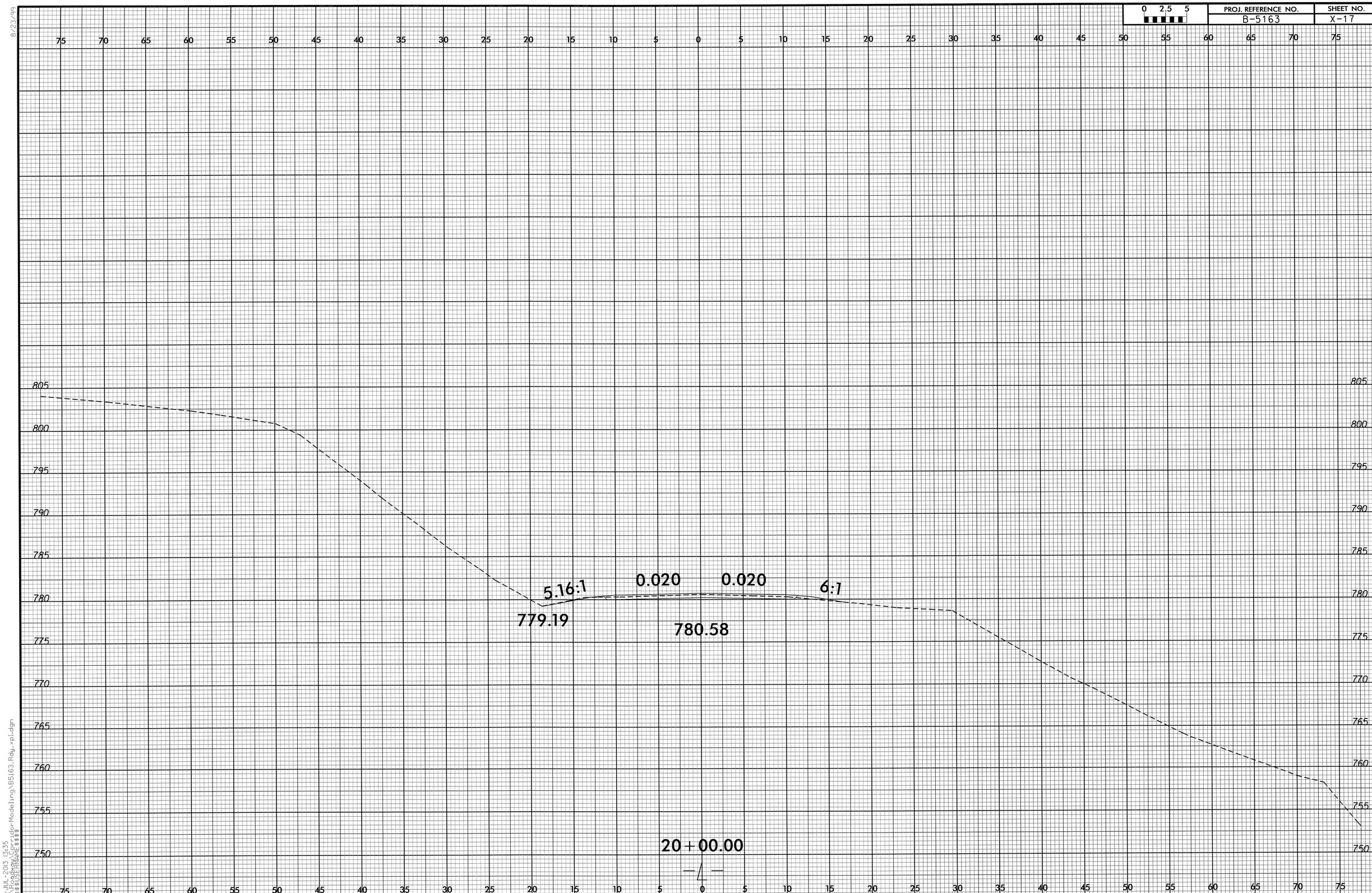
790 785 780 775 770 765 760 755 750

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

01-JUL-2013 13:36
R:\Projects\Corridor Modeling\B5163_Rdy_xpl.dgn
$$$$USERNAME$$$$



8/23/99
01-JUL-2013 13:35
R:\Roadway\Corridor\Modeling\B5163_Rdy_xpl.dgn
$$$$USERNAME$$$$



8/23/99
01-JUL-2013 13:35
R:\Roadway\Corridor Modeling\B5163_Rdy_xpl.dgn
$$$$USERNAME$$$$

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-5163	X-18

4.30:1

0.020

0.020

6:1

781.31

782.97

20+25.00

8/23/99
01-JUL-2013 13:35
R:\Roadway\Corridor Modeling\B5163_Rdy_xpl.dgn
$$$$USERNAME$$$$

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-5163	X-19

7.40:1

0.030

0.020

6:1

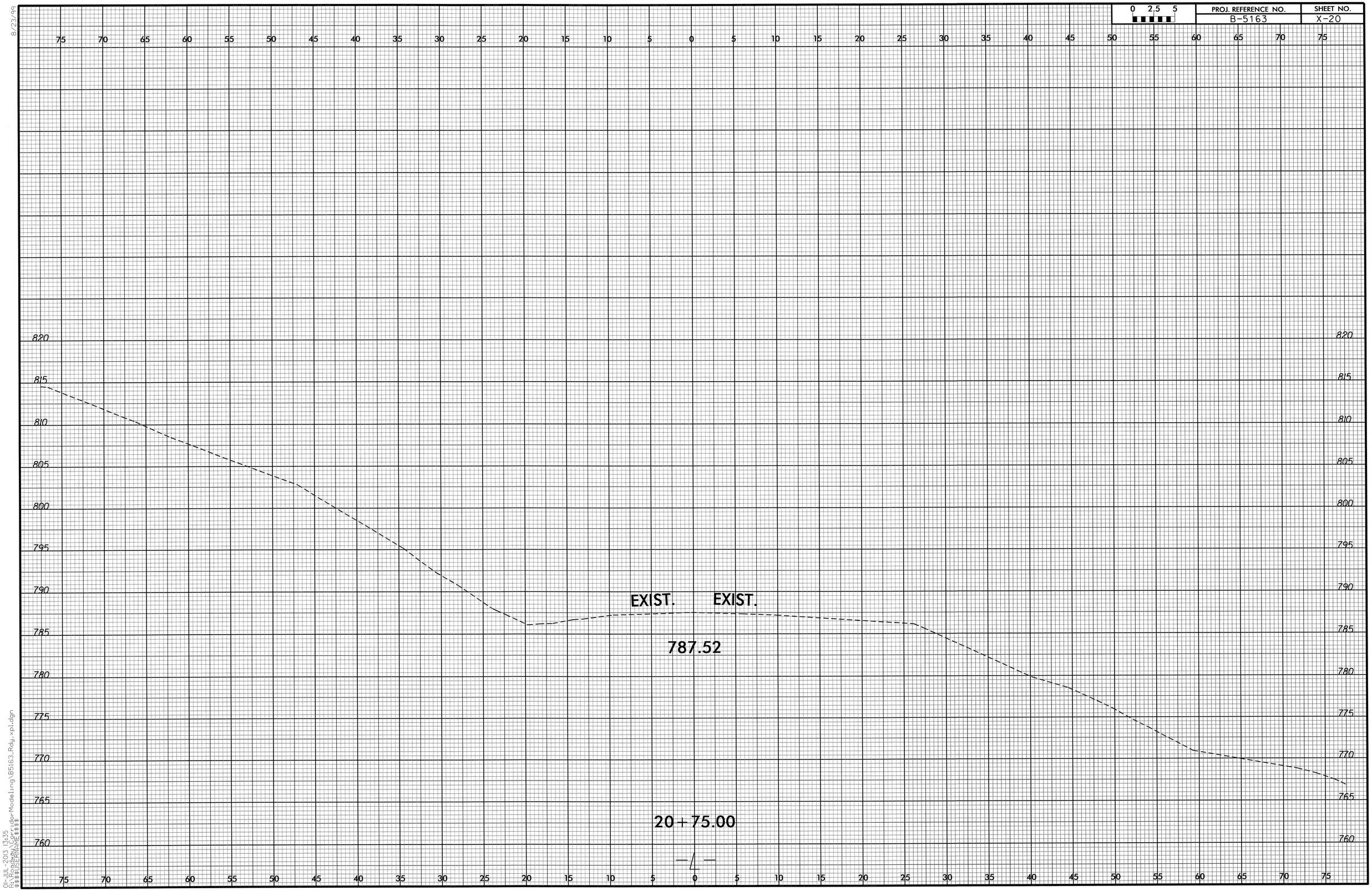
783.83

785.28

20+50.00

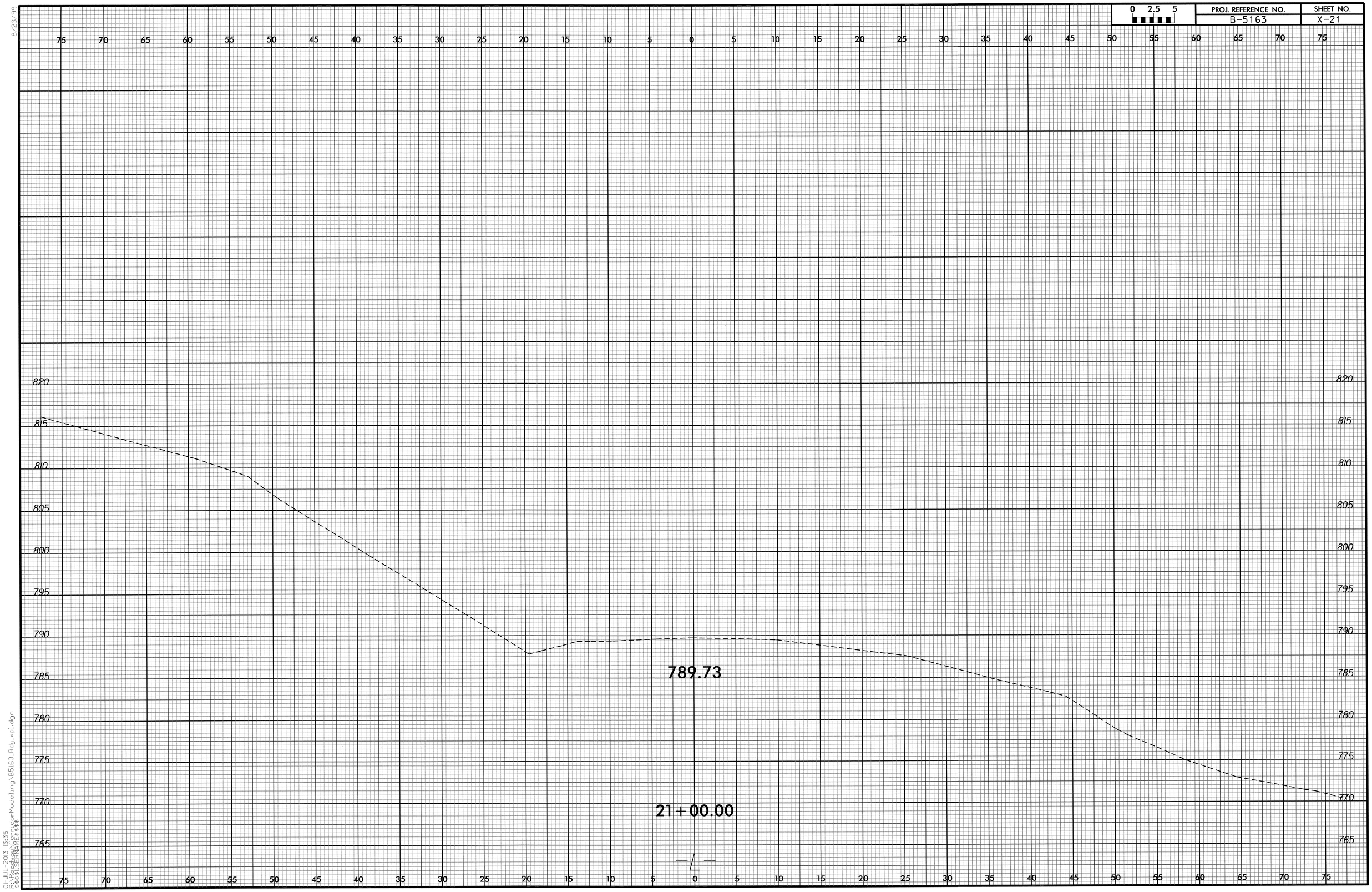
8/23/99

01-JUL-2003 13:35
$$$$USERNAME$$$$
C:\Documents and Settings\rdp\Desktop\Modeling\B5163_Rdy_xpl.dgn



8/23/99

01-JUL-2013 13:35
R:\Roadway\Corridor Modeling\B5163_Rdy_xpl.dgn
$$$$USERNAME$$$$



8/23/99

01-JUL-2013 13:35
R:\Roadway\Corridor\Modeling\B5163_Rdy_xpl.dgn
$$$$USERNAME$$$$