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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

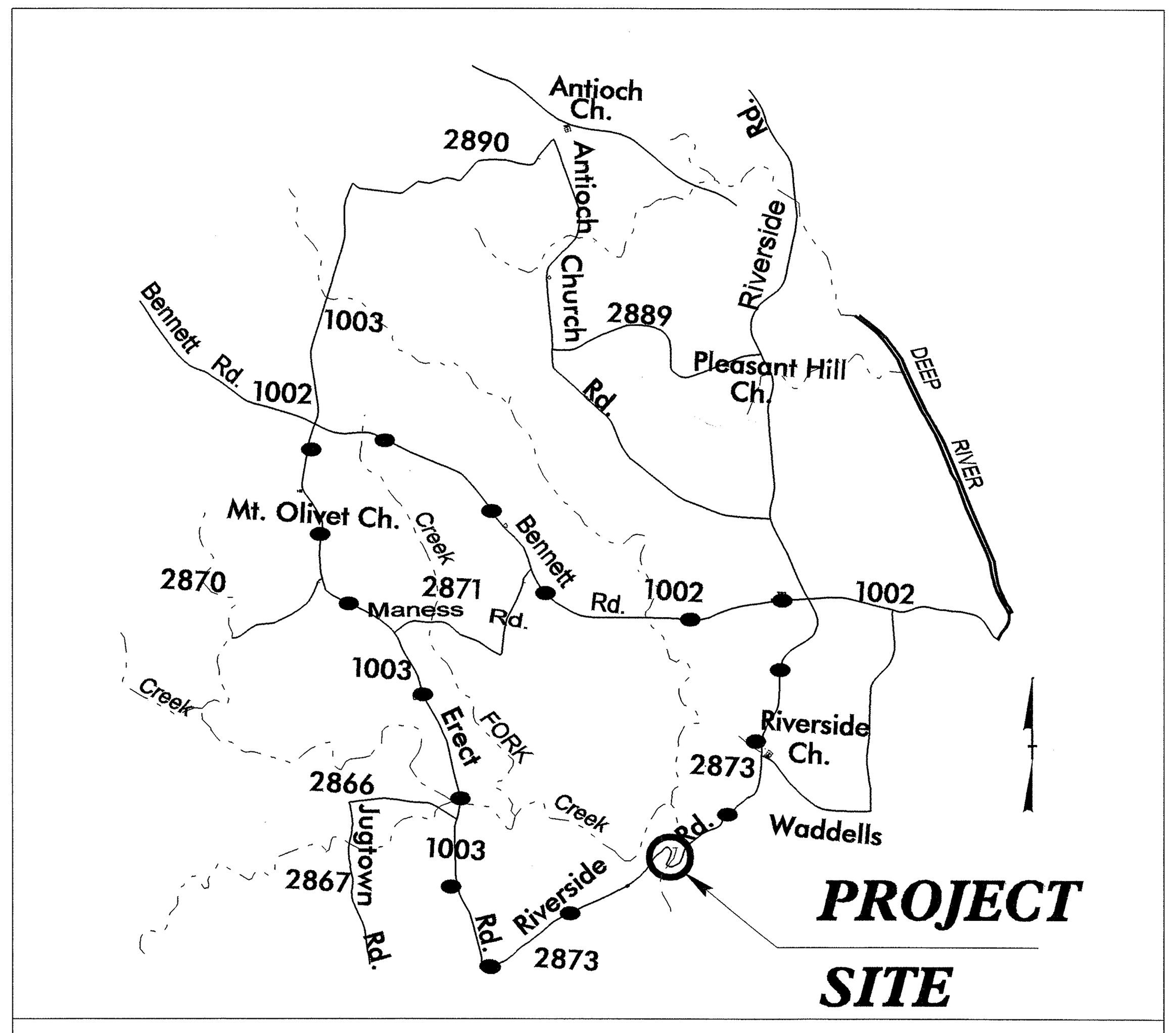
RANDOLPH COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4613	1	

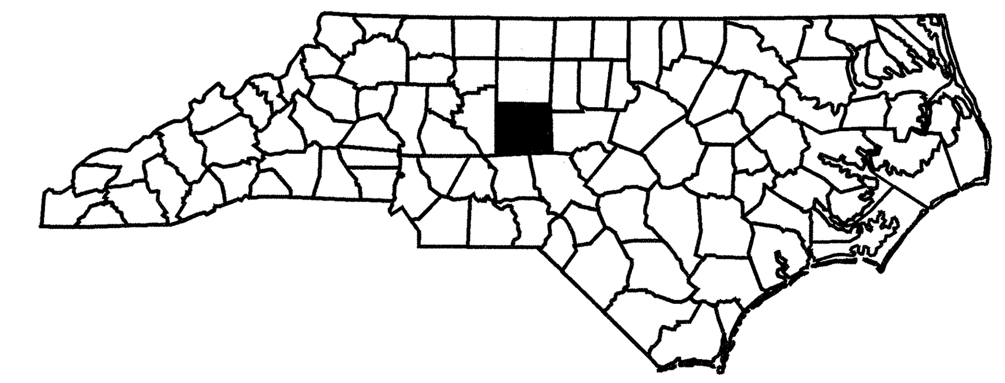
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33796.1.1	BRZ-2873(1)	PE
33796.2.1	BRZ-2873(1)	R/W, UTIL
33796.3.1	BRZ-2873(1)	CONST.

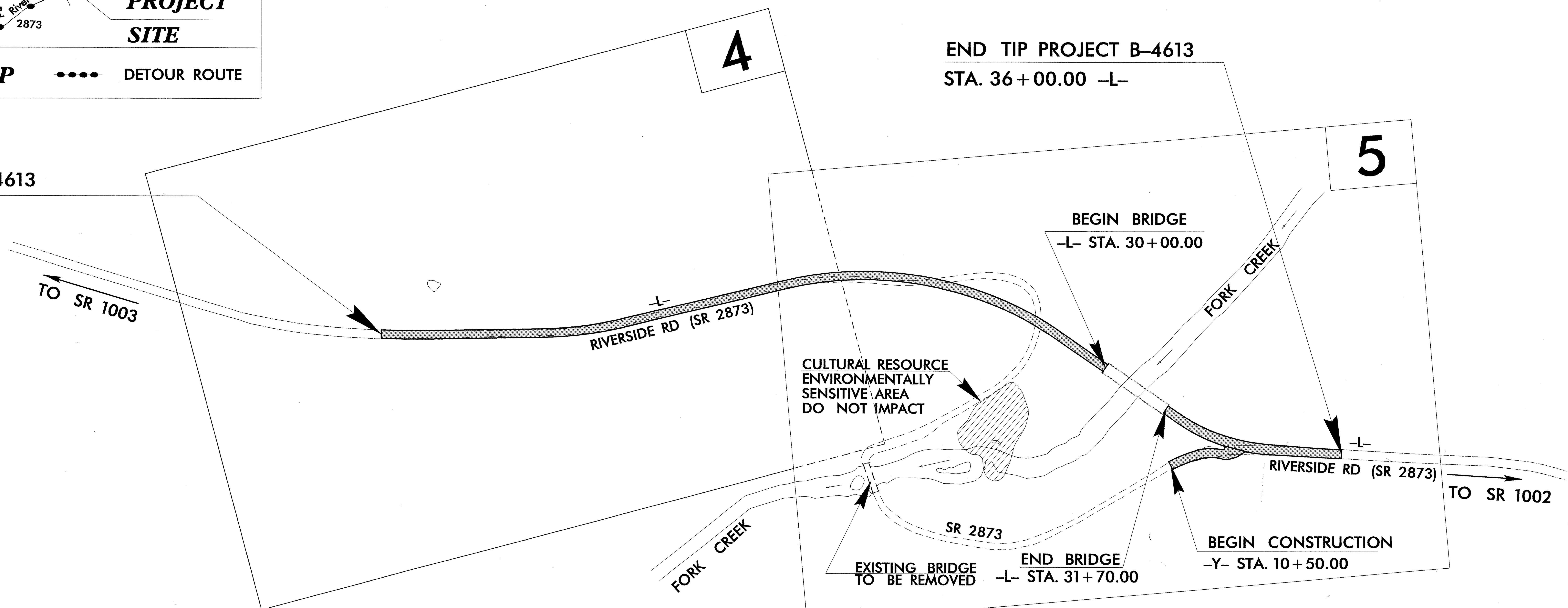
LOCATION: BRIDGE # 415 OVER FORK CREEK ON SR 2873
TYPE OF WORK: GRADING, DRAINAGE, STRUCTURE, AND PAVING

NAD 83



VICINITY MAP ●●●● DETOUR ROUTE





DESIGN EXCEPTION REQUIRED FOR DESIGN SPEED AND VERTICAL CURVE /STOPPING SIGHT DISTANCE (SSD).
THIS IS NOT A CONTROL OF ACCESS PROJECT.

TIP PROJECT: B-4613

CONTRACT: C202046

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 2007 = 115
ADT 2030 = 200
DHV = 11 %
D = 60 %
T = 3 % *
V = 35 MPH
CLASS = LOCAL
* TTST 1 % DUAL 2 %

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4613	=	0.413 MILES
LENGTH STRUCTURE TIP PROJECT B-4613	=	0.032 MILES
TOTAL LENGTH TIP PROJECT B-4613	=	0.445 MILES

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JANUARY 18, 2008

JASON MOORE, PE
PROJECT ENGINEER

LETTING DATE: JANUARY 20, 2009

KEVIN E. MOORE, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 20870 ENGINEER MARC T. SHOWN
10-16-08 P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 24912 ENGINEER KEVIN E. MOORE
Kevin E. Moore P.E. 10/16/08
SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
P.E.
STATE HIGHWAY DESIGN ENGINEER

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PROJECT REFERENCE NO.	SHEET NO.
B-4613	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 24918 ENGINEER KEVIN E. MOORE

1-6-09

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 SHEET
1-D	CENTERLINE COORDINATE LIST
2	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
2-A	DETAIL OF ANCHORAGE FOR FRAMES
2-B	DETAIL OF BRIDGE APPROACH FILLS SUB REGIONAL TIER
3	SUMMARY OF QUANTITIES
3A	SUMMARY OF DRAINAGE QUANTITIES
3B	SUMMARY OF GUARDRAIL, EARTHWORK SUMMARY, ASPHALT PAVEMENT REMOVAL SUMMARY, AND MILLING
3-C	PARCEL INDEX SHEET
4 THRU 5	PLAN SHEET
6	PROFILE SHEET
TCP-1 THRU TCP-3	TRAFFIC CONTROL PLANS
EC-1 THRU EC-7	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-4	SIGNING PLANS
X-1 THRU X-17	CROSS-SECTIONS
S-1 THRU S-34	STRUCTURE PLANS

GENERAL NOTES:

GRADE LINE:
GRADING AND SURFACING:

2006 SPECIFICATIONS
EFFECTIVE: 07-18-06
REVISED: 07-18-06

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 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:

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

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.

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 RANDOLPH EMC AND RANDOLPH 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.

2006 ROADWAY ENGLISH STANDARD DRAWINGS

EFF. 07-18-06
REV. 01-02-07

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated July 18, 2006 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 - Method 'A'
310.10	Driveway Pipe Construction
DIVISION 5 - SUBGRADE, BASES, AND SHOULDERS	
560.01	Method of Shoulder Construction - Method I
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
840.00	Concrete Base Pad for Drainage Structures
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.24	Frames and Narrow Slot Sag Grates
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb and Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

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3/15/06

PROJECT REFERENCE NO.	SHEET NO.
B-4613	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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

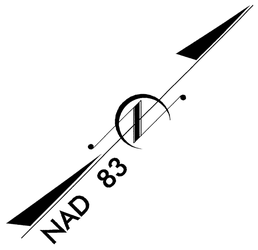
MISCELLANEOUS:

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

6/2/99

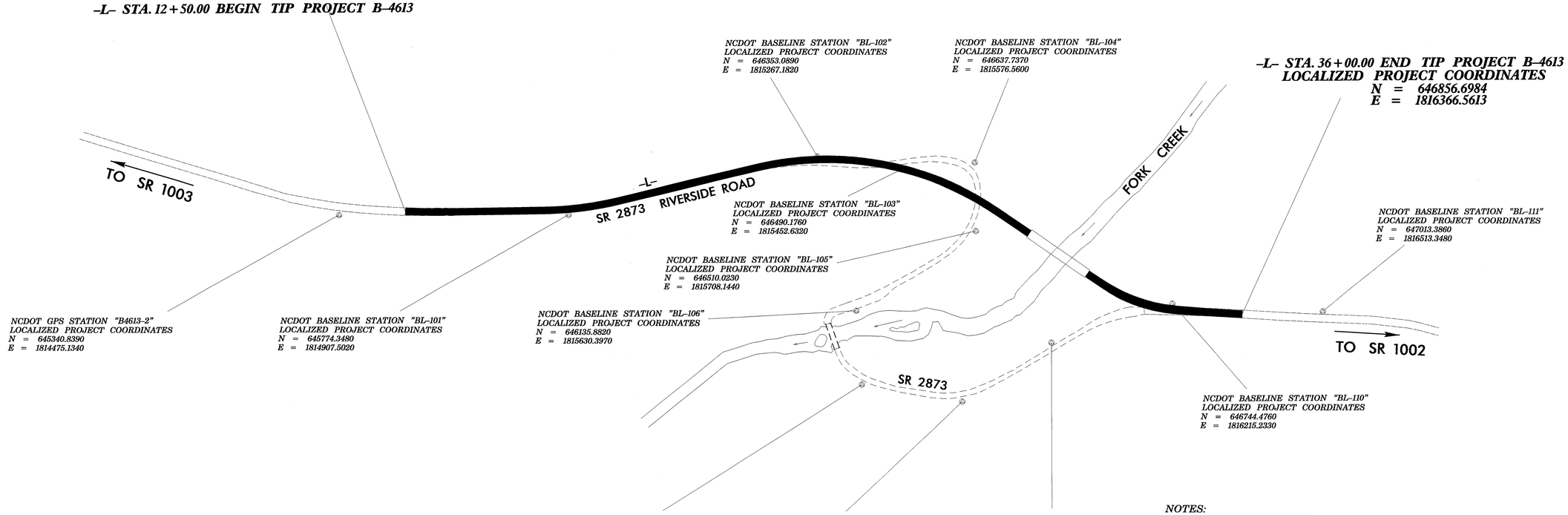
PROJECT REFERENCE NO.	SHEET NO.
B-4613	1-C
Location and Surveys	

SURVEY CONTROL SHEET B-4613



LOCALIZED PROJECT COORDINATES
N = 645472.9558
E = 1814592.9321
–L– STA. 12+50.00 BEGIN TIP PROJECT B-4613

–L– STA. 36+00.00 END TIP PROJECT B-4613
LOCALIZED PROJECT COORDINATES
N = 646856.6984
E = 1816366.5613



NCDOT GPS STATION "B4613-2"
LOCALIZED PROJECT COORDINATES
N = 645340.8390
E = 1814475.1340

NCDOT BASELINE STATION "BL–101"
LOCALIZED PROJECT COORDINATES
N = 645774.3480
E = 1814907.5020

NCDOT BASELINE STATION "BL–102"
LOCALIZED PROJECT COORDINATES
N = 646353.0890
E = 1815267.1820

NCDOT BASELINE STATION "BL–103"
LOCALIZED PROJECT COORDINATES
N = 646490.1760
E = 1815452.6320

NCDOT BASELINE STATION "BL–104"
LOCALIZED PROJECT COORDINATES
N = 646637.7370
E = 1815576.5600

NCDOT BASELINE STATION "BL–105"
LOCALIZED PROJECT COORDINATES
N = 646510.0230
E = 1815708.1440

NCDOT BASELINE STATION "BL–106"
LOCALIZED PROJECT COORDINATES
N = 646135.8820
E = 1815630.3970

NCDOT BASELINE STATION "BL–107"
LOCALIZED PROJECT COORDINATES
N = 646008.0410
E = 1815778.8360

NCDOT BASELINE STATION "BL–108"
LOCALIZED PROJECT COORDINATES
N = 646164.4710
E = 1816001.3460

NCDOT BASELINE STATION "BL–109"
LOCALIZED PROJECT COORDINATES
N = 646442.9940
E = 1816059.5410

NCDOT BASELINE STATION "BL–110"
LOCALIZED PROJECT COORDINATES
N = 646744.4760
E = 1816215.2330

NCDOT BASELINE STATION "BL–111"
LOCALIZED PROJECT COORDINATES
N = 647013.3860
E = 1816513.3480

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
2	B4613-2	645340.8390	1814475.1340	429.50	10+75.64	20.80 RT
101	BL-101	645774.3480	1814907.5020	423.63	16+84.38	15.63 RT
102	BL-102	646353.0890	1815267.1820	409.10	23+63.46	7.91 LT
103	BL-103	646490.1760	1815452.6320	392.66	25+93.67	0.58 RT
104	BL-104	646637.7370	1815576.5600	374.12	27+59.24	83.09 LT
105	BL-105	646510.0230	1815708.1440	357.91	28+52.54	74.79 RT
106	BL-106	646135.8820	1815630.3970	341.73	25+43.45	395.36 RT
107	BL-107	646008.0410	1815778.8360	353.40	27+32.19	578.13 RT
108	BL-108	646164.4710	1816001.3460	366.27	30+79.14	468.54 RT
109	BL-109	646442.9940	1816059.5410	388.66	31+87.33	205.17 RT
110	BL-110	646744.4760	1816215.2330	384.38	34+11.52	16.82 LT
111	BL-111	647013.3860	1816513.3480	389.71	OUTSIDE PROJECT LIMITS	

BM1 ELEVATION - 422.74
N 645510 E 1814682
L STATION 13+39.35 RIGHT
RR SPIKE IN BASE OF 18 INCH GUM TREE

BM2 ELEVATION - 354.36
N 646174 E 1815596
L STATION 25+31.344 RIGHT
RR SPIKE IN BASE OF TRIPLE OAK TREE

BM3 ELEVATION - 384.98
N 646871 E 1816437
L STATION 36+62.36 RIGHT
RR SPIKE IN BASE OF DOUBLE WILLOW OAK TREE

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4613-2" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 645340.839(ft) EASTING: 1814475.134(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9998680204 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4613-2" TO -L- STATION 10+00.00 IS S 69° 53′ 06″ W 79.122′ ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

NOTES:

1. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT: HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAYLOCATION/PROJECT/*

   THE FILES TO BE FOUND ARE AS FOLLOWS: B4613_LS_CONTROL_060518.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 NGS ONLINE POSITIONING SERVICE (OPUS)

NOTE: DRAWING NOT TO SCALE

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PROJ. REFERENCE NO.	SHEET NO.
B-4613	1-D

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CENTERLINE COORDINATE LIST

Point #	Chain	Station	Northing (Y)	Easting (X)
1	L	10+00.00	645313.6287	1814400.8383
2	L	11+00.00	645372.3787	1814481.7211
3	L	12+00.00	645438.5901	1814556.6140
4	L	13+00.00	645507.3227	1814629.2490
5	L	14+00.00	645578.4585	1814699.5177
6	L	15+00.00	645650.3916	1814768.9845
7	L	16+00.00	645722.3247	1814838.4513
8	L	17+00.00	645796.4566	1814905.5078
9	L	18+00.00	645877.3797	1814964.1693
10	L	19+00.00	645962.4495	1815016.7329
11	L	20+00.00	646047.6149	1815069.1433
12	L	21+00.00	646132.7803	1815121.5537
13	L	22+00.00	646217.9457	1815173.9642
14	L	23+00.00	646299.7369	1815231.3855
15	L	24+00.00	646373.7320	1815298.5547
16	L	25+00.00	646438.7755	1815374.4252
17	L	26+00.00	646493.8524	1815457.8130
18	L	27+00.00	646538.1032	1815547.4169
19	L	28+00.00	646570.8373	1815641.8386
20	L	29+00.00	646592.1091	1815739.5069
21	L	30+00.00	646610.4129	1815837.8175
22	L	31+00.00	646628.7167	1815936.1280
23	L	32+00.00	646647.0205	1816034.4386
24	L	33+00.00	646674.3117	1816130.3973
25	L	34+00.00	646724.2800	1816216.7176
26	L	35+00.00	646789.9954	1816292.0583
27	L	36+00.00	646856.6984	1816366.5613
28	L	37+00.00	646923.4015	1816441.0643
29	L	37+67.11	646968.1630	1816491.0600

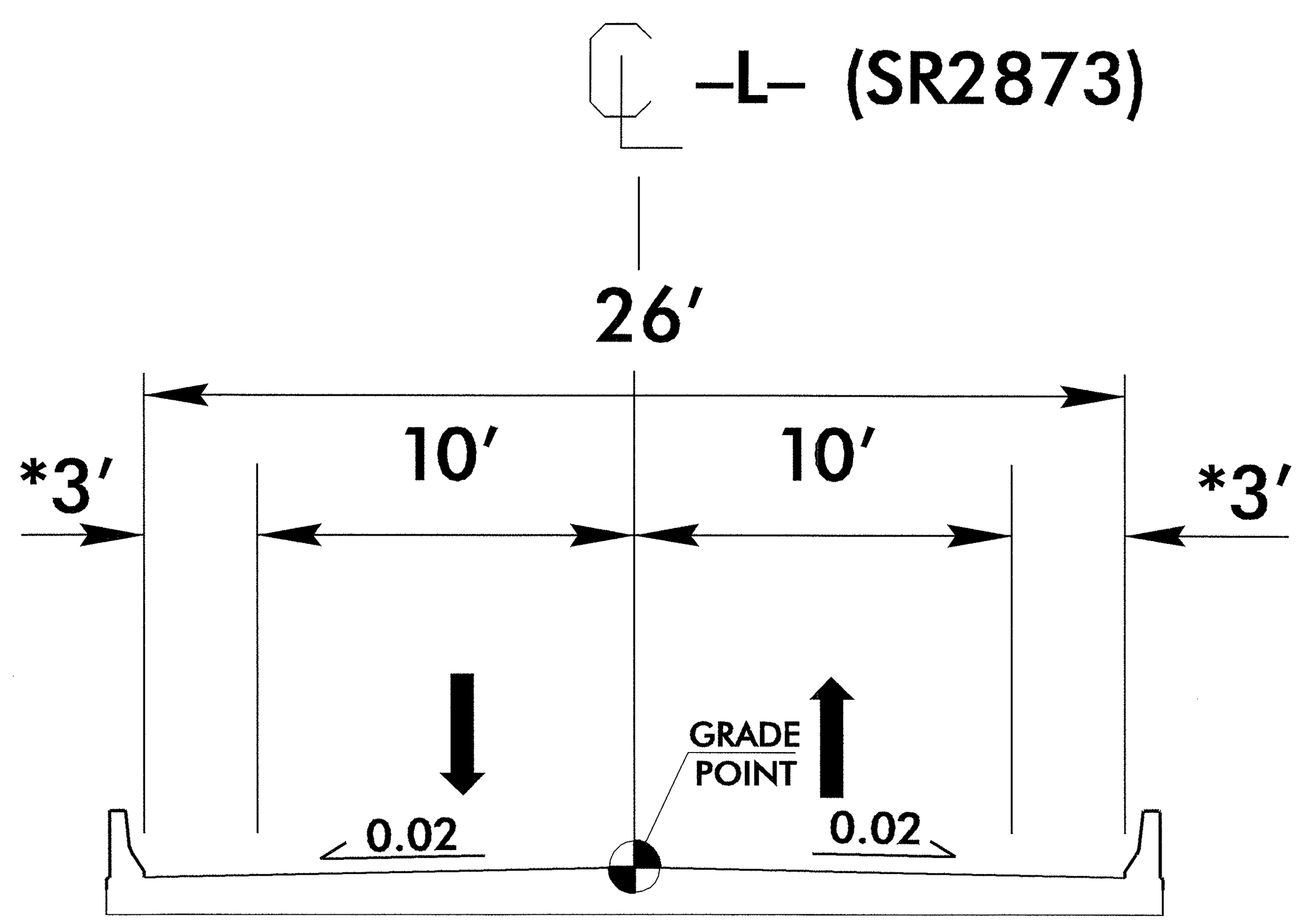
Point #	Chain	Station	Northing (Y)	Easting (X)

Point #	Chain	Station	Northing (Y)	Easting (X)

Point #	Chain	Station	Northing (Y)	Easting (X)

Point #	Chain	Station	Northing (Y)	Easting (X)

PROJECT REFERENCE NO.	SHEET NO.
B-4613	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 24912 KEVIN E. MOORE 10/16/08	NORTH CAROLINA PROFESSIONAL ENGINEER SEAL DA-CHI CHEN 10/16/08



TYPICAL SECTION ON STRUCTURE.

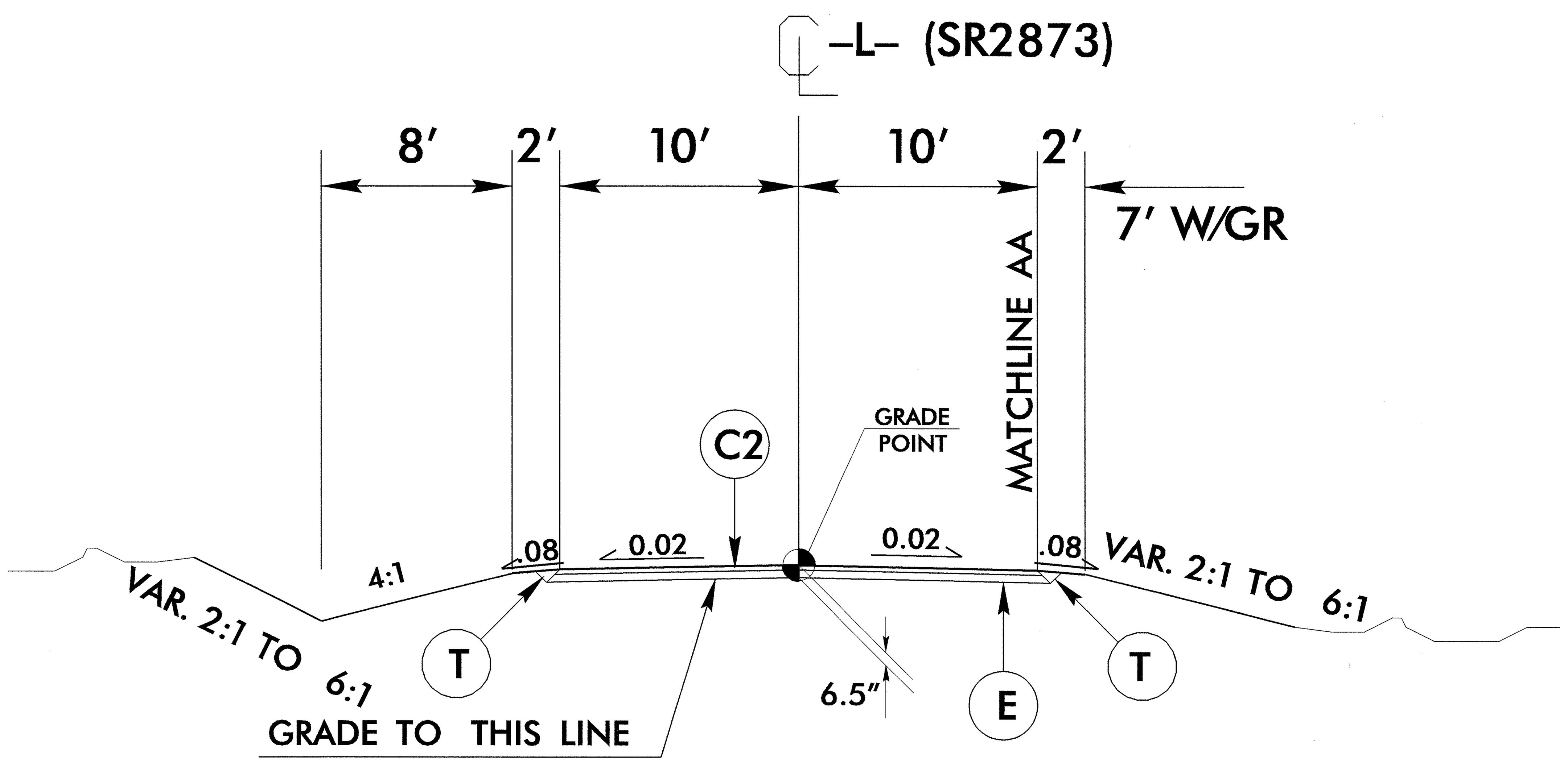
-L- STA. 30+00.00 (BEGIN BRIDGE)
TO STA. 31+70.00 (END BRIDGE)

* WIDTH FOR HYDRAULIC DESIGN SPREAD

PAVEMENT SCHEDULE

C1	PROP. APPROX. 1.25" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD.
C2	PROP. APPROX. 2.5" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
E	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
J	PROP. 8" AGGREGATE BASE COURSE.
R1	SHOULDER BERM GUTTER
T	EARTH MATERIAL

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

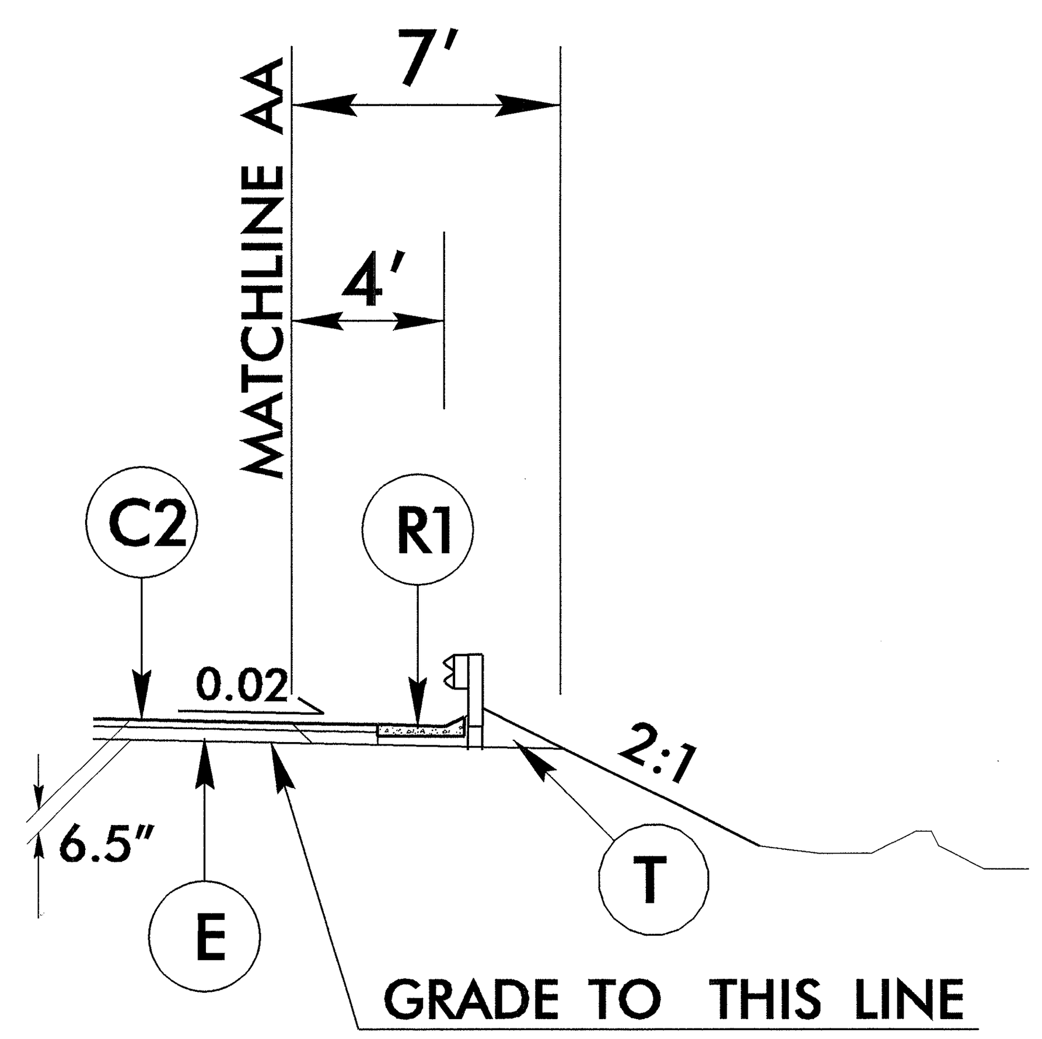


TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1

-L- STA.12+98.00 TO STA. 30+00.00 (BEGIN BRIDGE)
-L- STA. 31+70.00 (END BRIDGE) TO 35+50.00
DRIVEWAY LT. -L- STA.23+50.00

RESURFACE WITH C1 FROM EXISTING TO T.S. NO. 1
-L- STA.12+50.00 TO STA. 12+98.00
RESURFACE WITH C1 FROM T.S. NO. 1 TO EXISTING
-L- STA.35+50.00 TO STA. 36+00.00

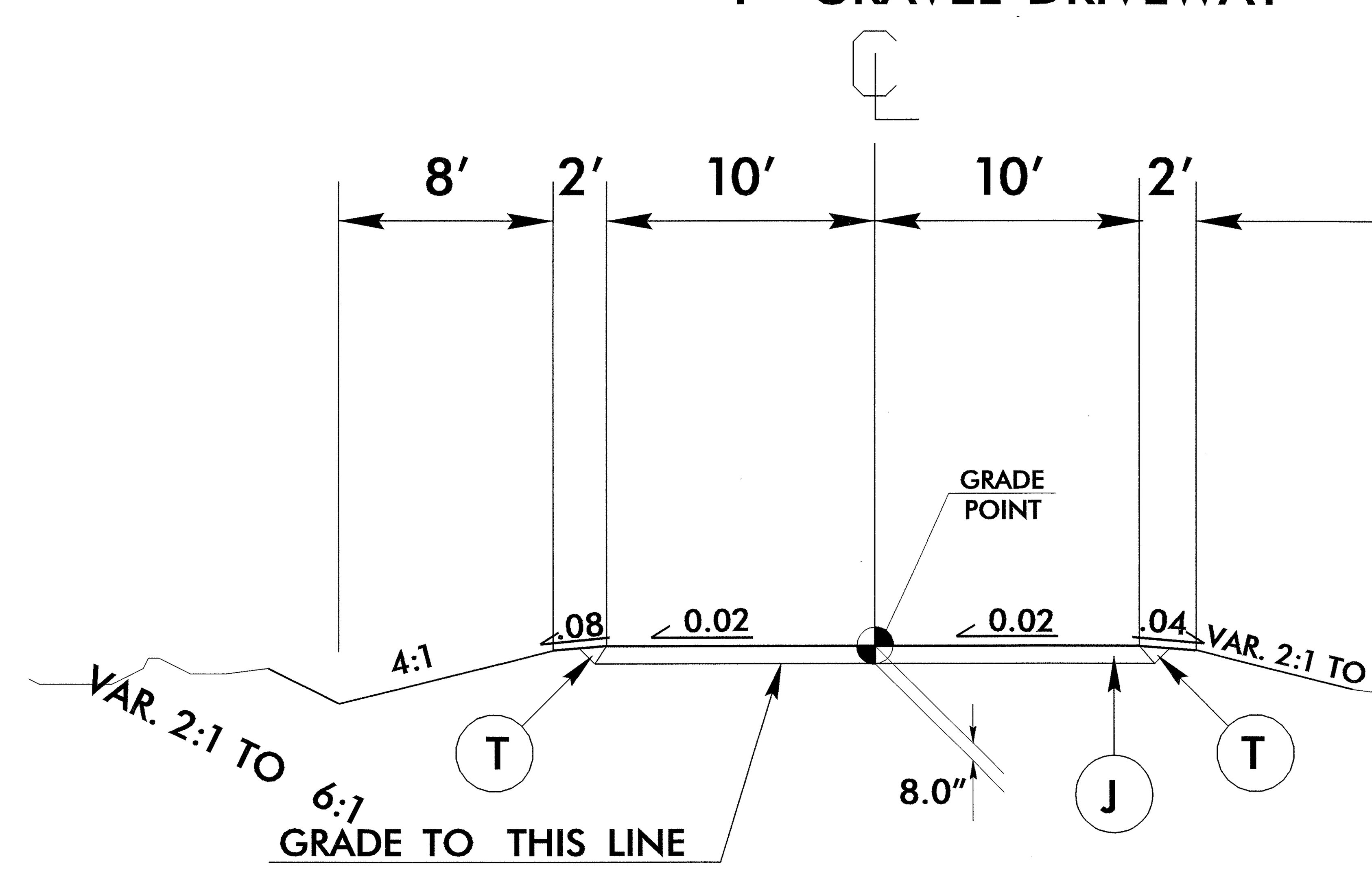


TYPICAL SECTION NO. 1A

USE TYPICAL SECTION NO. 1A

-L- STA.28+25.00 TO 29+87.67 LT
-L- STA.31+86.10 TO 32+65.00 LT
-L- STA.28+25.00 TO 29+83.90 RT
-L- STA.31+82.33 TO 32+30.00 RT

-Y- GRAVEL DRIVEWAY



TYPICAL SECTION NO. 2

-Y- STA. 10+50 TO 12+17.71

16-OCT-2008 11:30
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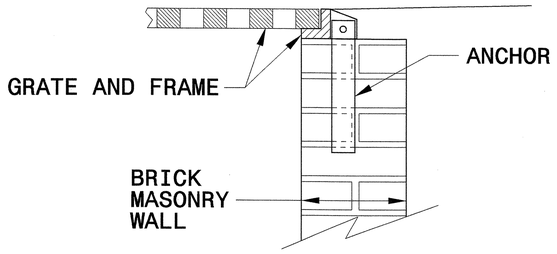
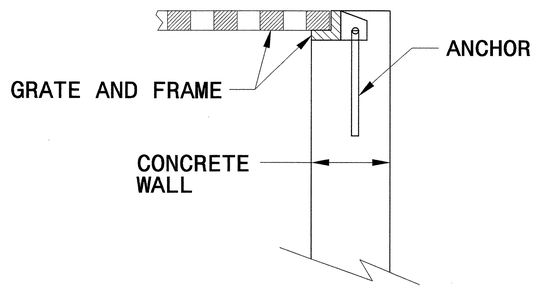
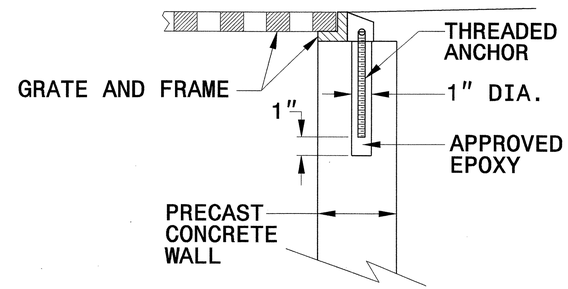
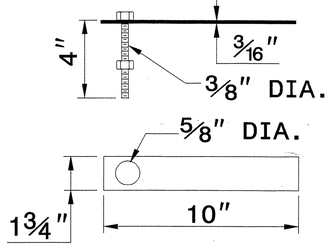
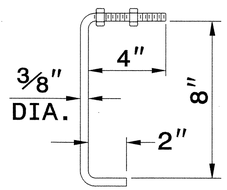
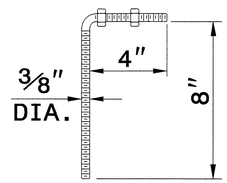


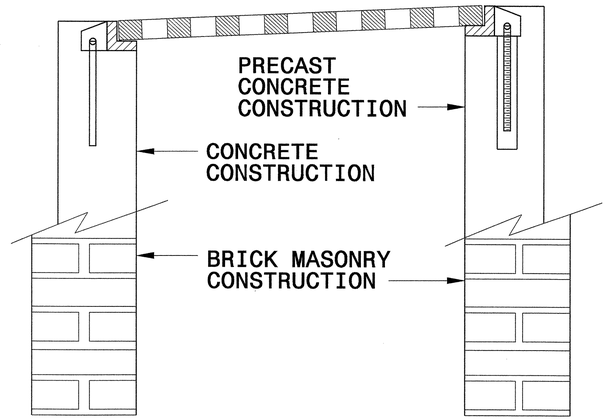












PROJECT REFERENCE NO.	SHEET NO.
B-4613	2-A

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

BRICK MASONRY CONSTRUCTION

CONCRETE CONSTRUCTION

PRECAST CONCRETE CONSTRUCTION

DETAIL SHOWING ANCHORAGE OF FRAME FOR GRATED DROP INLET

NOTE:
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.

MASONRY ANCHOR

3⁄8" DIA. BOLT WITH PLATE

CONCRETE ANCHOR

3⁄8" DIA. BENT BAR

PRECAST CONCRETE ANCHOR

3⁄8" DIA. BENT BAR

FRAME AND GRATE INSTALLATION FOR NORMAL CROWN AND SUPERELEVATED SECTIONS

ENGLISH DETAIL DRAWING FOR
ANCHORAGE FOR FRAMES
BRICK/CONCRETE/PRECAST CONCRETE

SHEET 1 OF 1
840D25

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

ENGLISH DETAIL DRAWING FOR
ANCHORAGE FOR FRAMES
BRICK/CONCRETE/PRECAST CONCRETE

SHEET 1 OF 1
840D25

SEAL 022956
JOEL S. HOWERTON
10/17/08

PROJECT SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

SEE PLATE FOR TITLE

ORIGINAL BY: 2006 STD 840.25 DATE: 07/18/06
MODIFIED BY: E.E. WARD DATE: 9/25/06
CHECKED BY: DATE:
FILE SPEC.:

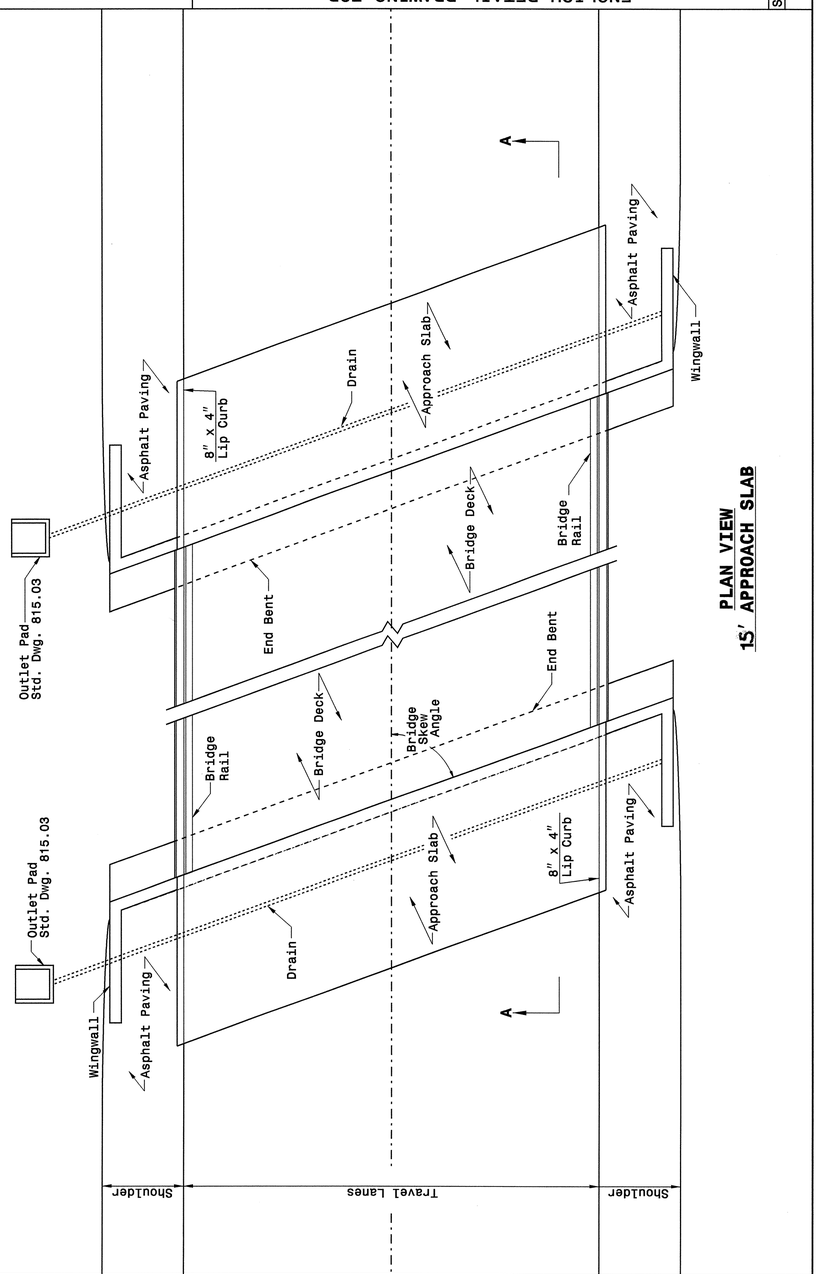
PROJECT REFERENCE NO.	SHEET NO.
B-4613	2-B

ENGLISH DETAIL DRAWING FOR BRIDGE APPROACH FILLS

SUB REGIONAL TIER

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

PLAN VIEW
15' APPROACH SLAB



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

ENGLISH DETAIL DRAWING FOR **BRIDGE APPROACH FILLS**

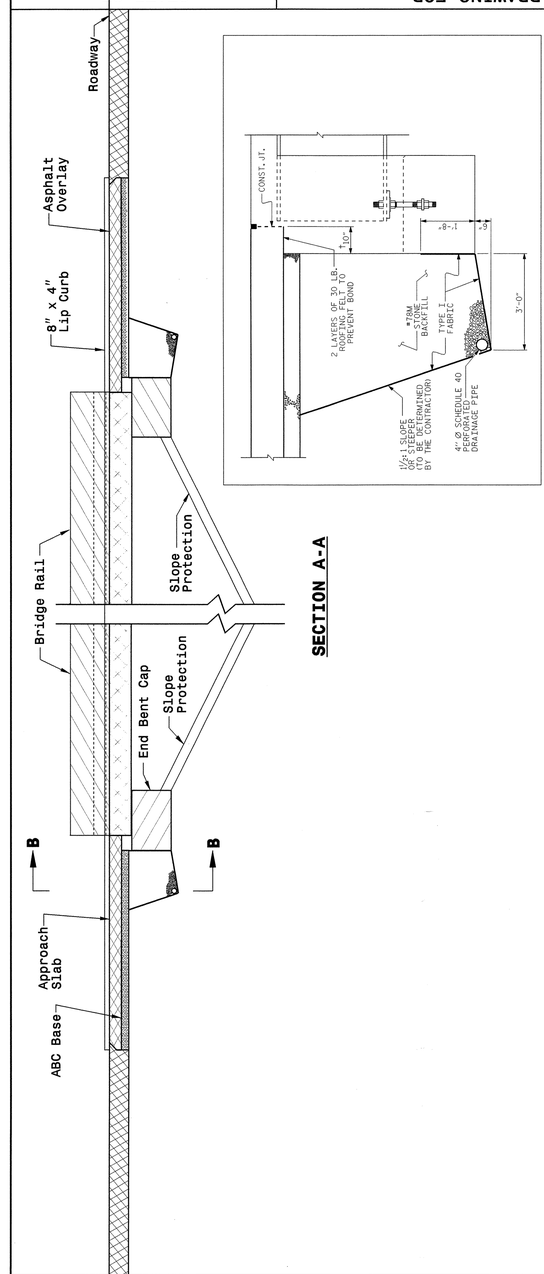
SUB REGIONAL TIER

SHEET 1 OF 2 422D11

ENGLISH DETAIL DRAWING FOR BRIDGE APPROACH FILLS

SUB REGIONAL TIER

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



SECTION A-A

SECTION B-B

15' APPROACH SLAB

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

ENGLISH DETAIL DRAWING FOR **BRIDGE APPROACH FILLS**

SUB REGIONAL TIER

SHEET 2 OF 2 422D11

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOWELTON

1/6/09

PROJECT SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

BRIDGE APPROACH FILLS

SUB REGIONAL TIER

ORIGINAL BY: K. A. Kempf DATE: 6-10-08
MODIFIED BY: DATE:
CHECKED BY: DATE: 1/6/09
FILE SPEC.: K:\kempf\english\bridge approach fills.dgn

$$$$USERNAME$$$$
$$$$SYSTIME$$$$
$$$$DGNFILE$$$$

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
B-4613	3

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202046

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0001000000-E	200	Lump Sum		CLEARING & GRUBBING .. ACRE(S)
0008000000-E	200	1	ACR	SUPPLEMENTARY CLEARING & GRUBBING
0022000000-E	225	16,000	CY	UNCLASSIFIED EXCAVATION
0036000000-E	225	950	CY	UNDERCUT EXCAVATION
0080000000-E	SP	1,500	TON	CLASS IV SUBGRADE STABILIZATION
0134000000-E	240	390	CY	DRAINAGE DITCH EXCAVATION
0156000000-E	250	500	SY	REMOVAL OF EXISTING ASPHALT PAVEMENT
0195000000-E	265	500	CY	SELECT GRANULAR MATERIAL
0196000000-E	270	1,500	SY	FABRIC FOR SOIL STABILIZATION
0248000000-N	SP	Lump Sum		GENERIC GRADING ITEM GRADING OF EXISTING ROAD
0318000000-E	300	60	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRS
0343000000-E	310	52	LF	15" SIDE DRAIN PIPE
0366000000-E	310	44	LF	15" RC PIPE CULVERTS, CLASS III
0372000000-E	310	56	LF	18" RC PIPE CULVERTS, CLASS III
0708000000-E	310	372	LF	15" BIT COAT CS PIPE CULVERTS, TYPE B 0.064" THICK
0806000000-E	310	10	EA	15" BIT COAT CS PIPE ELBOWS, TYPE B 0.064" THICK
0995000000-E	340	84	LF	PIPE REMOVAL
1011000000-N	500	Lump Sum		FINE GRADING
1121000000-E	520	200	TON	AGGREGATE BASE COURSE
1330000000-E	607	225	SY	INCIDENTAL MILLING
1489000000-E	610	1,110	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1525000000-E	610	670	TON	ASPHALT CONC SURFACE COURSE, TYPE SF9.5A
1560000000-E	620	92	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
2000000000-N	806	28	EA	RIGHT OF WAY MARKERS
2286000000-N	840	6	EA	MASONRY DRAINAGE STRUCTURES
2366000000-N	840	2	EA	FRAME WITH TWO GRATES, STD 840.24
2367000000-N	840	4	EA	FRAME WITH TWO GRATES, STD 840.29
2556000000-E	846	450	LF	SHOULDER BERM GUTTER
3030000000-E	862	537.5	LF	STEEL BM GUARDRAIL
3150000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS
3270000000-N	SP	4	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3317000000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE B-77
3649000000-E	876	250	TON	RIP RAP, CLASS B
3656000000-E	876	1,020	SY	FILTER FABRIC FOR DRAINAGE
4072000000-E	903	33	LF	SUPPORTS, 3-LB STEEL U-CHANNEL
4102000000-N	904	4	EA	SIGN ERECTION, TYPE E
4155000000-N	907	6	EA	DISPOSAL OF SIGN SYSTEM, U-CHANNEL
4400000000-E	1110	360	SF	WORK ZONE SIGNS (STATIONARY)
4410000000-E	1110	114	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4430000000-N	1130	20	EA	DRUMS
4445000000-E	1145	48	LF	BARRICADES (TYPE III)
4810000000-E	1205	18,800	LF	PAINT PAVEMENT MARKING LINES (4")
4900000000-N	1251	60	EA	PERMANENT RAISED PAVEMENT MARKERS
6000000000-E	1605	2,900	LF	TEMPORARY SILT FENCE
6006000000-E	1610	225	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	330	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	150	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	8	ACR	TEMPORARY MULCHING
6018000000-E	1620	250	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	2.75	TON	FERTILIZER FOR TEMPORARY SEEDING
6024000000-E	1622	285	LF	TEMPORARY SLOPE DRAINS
6027000000-N	1622	4	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
6029000000-E	SP	355	LF	SAFETY FENCE
6030000000-E	1630	1,300	CY	SILT EXCAVATION
6036000000-E	1631	6,400	SY	MATTING FOR EROSION CONTROL
6037000000-E	SP	20	SY	COIR FIBER MAT
6038000000-E	SP	2,050	SY	PERMANENT SOIL REINFORCEMENT MAT
6042000000-E	1632	80	LF	1/4" HARDWARE CLOTH
6071010000-E	SP	125	LF	WATTLE
6071020000-E	SP	50	LB	POLYACRYLAMIDE (PAM)
6071030000-E	SP	340	LF	COIR FIBER BAFFLES
6071050000-E	SP	3	EA	*** SKIMMER (1-1/2")
6084000000-E	1660	10	ACR	SEEDING & MULCHING
6087000000-E	1660	3.5	ACR	MOWING
6090000000-E	1661	100	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	0.25	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	150	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	4	TON	FERTILIZER TOPDRESSING
6114000000-N	SP	5	HR	SPECIALIZED HAND MOWING
6117000000-N	SP	12	EA	RESPONSE FOR EROSION CONTROL

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HY239382

COMPUTED BY: NNA		DATE:	3/21/2007
CHECKED BY: TRM		DATE:	10/18/2007

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
B-4613	3-A

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

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO.		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE)								BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE)												
SIZE								12"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"		30"		36"		42"		48"	
THICKNESS OR GAUGE		FROM	TO													.064	.064	.064	.064		.079		.079		.109		.109	
L																												
13+59.00	RT	1																										
13+59.00	CL	1	2		416.7	416.5				56																		
22+30.00	CL	3																										
23+51.00	LT	4	5																									
29+35.50	RT	6		363.6																								
	CL	6	7		360.5	360.3			24																			
29+37.50	LT	7		363.6																								
	LT	7	8		360.3	350.0											40											
31+87.00	RT	9		369.3																								
	CL	9	10		366.1	366.0			20																			
31+91	LT	10		369.3																								
	LT	10	12		366.0	347.0											52											
33+00.00	LT	11		372.9																								
	LT	11	12		370.2	347.0											108											
31+88.00	LT	12																										
32+51.00	RT	13		370.8																								
	RT	13	14		368.1	348.0											108											
24+12.00	RT	15																										
30+89.00	RT	16																										
Y																												
11+21.00	CL	IN	13		378.2	368.1											64											
SHEET TOTALS								0	44	56	0	0	0	0	0	0	372	0	0	0	0	0	0	0	0	0	0	0
GRAND TOTALS								0	44	56	0	0	0	0	0	0	372	0	0	0	0	0	0	0	0	0	0	0
SAY									44	56							372											

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO.		15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS		QUANTITIES FOR DRAINAGE STRUCTURES		*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE			D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH TWO GRATE STD. 840.29	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	T.B.G.D.I. STD. 840.35	MANHOLE STD. 840.51	M.H. STD. 840.51 OR 840.53	M.H. FRAME AND COVER STD. 840.54
		FROM	TO				R.C.P.	C.S.P.	PER EACH (0' THRU 5.0')	A 5.0' THRU 10.0'	B 10.0' AND ABOVE		E	F	G														
13+59.00	RT	1																											
13+59.00	CL	1	2																										
22+30.00	CL	3																											
23+51.00	LT	4	5	52																									
29+35.50	RT	6							1														1			1			
	CL	6	7																										
29+37.50	LT	7							1														1			1			
	LT	7	8																										
31+87.00	RT	9							1														1			1			
	CL	9	10																										
31+91	LT	10							1														1			1			
	LT	10	12																										
33+00.00	LT	11							1										1					1					
	LT	11	12																										
31+88.00	LT	12																											
32+51.00	RT	13							1										1					1					
	RT	13	14																										
24+12.00	RT	15																											
30+89.00	RT	16																											
Y																													
11+21.00	CL	IN	13																										
SHEET TOTALS				52	0	0	0	0	6	0	0	0	0	0	0	0	0	0	2	0	0	0	4	2	0	4	0	0	0
GRAND TOTALS				52	0	0	0	0	6	0	0	0	0	0	0	0	0	0	2	0	0	0	4	2	0	4	0	0	0
SAY				52					6														4	2		4			

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO.								CONCRETE APRON FOR CATCH BASIN	CONCRETE APRON FOR DROP INLETS											CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN. FT.	REMARKS
		FROM	TO																							
13+59.00	RT	1																								REMOVE EXISTING 49' 18" RCP
13+59.00	CL	1	2																							
22+30.00	CL	3																							23.4	REMOVE EXISTING 15" RCP
23+51.00	LT	4	5																							
29+35.50	RT	6																								TB2GI
	CL	6	7																							
29+37.50	LT	7																								TB2GI
	LT	7	8																			2 @ 15"				WITH ROD AND LUG CONNECTORS
31+87.00	RT	9																								TB2GI
	CL	9	10																							
31+91	LT	10																								TB2GI
	LT	10	12																			2 @ 15"				WITH ROD AND LUG CONNECTORS
33+00.00	LT	11																								2GI
	LT	11	12																			2 @ 15"				WITH ROD AND LUG CONNECTORS
31+88.00	LT	12																								OUTLET
32+51.00	RT	13																								2GI
	RT	13	14																			2 @ 15"				WITH ROD AND LUG CONNECTORS
24+12.00	RT	15																							36.4	REMOVE EXISTING 15" RCP
30+89.00	RT	16																							23.4	REMOVE EXISTING PIPE
Y																										
11+21.00	CL	IN	13																			2 @ 15"				WITH ROD AND LUG CONNECTORS
SHEET TOTALS				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10 @ 15"	0	0	83.2	
GRAND TOTALS				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10 @ 15"	0	0	83.2	
SAY																						10 @ 15"			84	

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

COMPUTED BY: NNA DATE: 05/11/07
CHECKED BY: KEM DATE: 10/15/08

PROJECT NO.	SHEET NO.
B-4613	3-B

RD223223

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

IN CUBIC YARDS

Station to Station	Uncl. Excav.	Embank. +%	Borrow	Waste
-L- 12+50.00 TO 30+00.00	12,872	7,135	0	5,737
-L- 31+70.00 TO 36+00.00	3,290	3,670	380	0
SUBTOTALS:	16162	10805	380	5737
-Y- 10+50.00 TO 11+00.00	250	0	0	250
SUBTOTALS:	250	0	0	250
PROJECT SUBTOTALS	16,412	10,805	380	5,987
LOSS DUE TO CLEAR. & GRUB	-1,000			-1,000
WASTE IN LIEU OF BORROW			-380	-380
PROJECT TOTALS:	15,412	10,805	0	4,607
GRAND TOTALS:	15,412	10,805	0	4,607
SAY:	16,000		0	

PAVEMENT STRUCTURE VOLUME = 763 YD^3
UNDERCUT EXCAVATION = 200 YD^3
SHALLOW UNDERCUT = 750 YD^3
DRAINAGE DITCH EXCAVATION = 390 YD^3

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

SUMMARY OF EXISTING ASPHALT PAVEMENT REMOVAL

LINE	Station	Station	LOC LT/RT/CL	YD^2
-L-	33+38.15	35+50.00	CL	485.47
			TOTAL:	485.47
			SAY:	500.0

SUMMARY OF INCIDENTAL MILLING

LINE	Station	Station	LOC LT/RT/CL	YD^2
-L-	12+50.00	12+98.00	CL	105.22
-L-	35+50.00	36+00.00	CL	115.33
			TOTAL:	220.55
			SAY	225.0

"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

LINE	BEG. STA.	END STA.	LOC.	LENGTH STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPR. END	WARRANT POINT TRAIL. END	"N" DIST FROM E.O.L.	TOTAL SHLDR WIDTH	FLARE LENGTH APPR. END	FLARE LENGTH TRAIL. END	W APPR. END	W TRAIL. END	ANCHORS XI MOD	ANCHORS XI	ANCHORS GRAU 350	ANCHORS M-350	ANCHORS XII	ANCHORS B-77	ANCHORS VI MOD	IMP. ATTEN. TYPE 350 EA	IMP. ATTEN. TYPE 350 G	IMP. ATTEN. TYPE 350 NG	REMOVE EXISTING GRDRAIL		REMARKS
-L-	27+49.07	29+97.71	RT	248.64					4	7	50		1				1			1							
-L-	27+50.88	30+02.29	LT	251.41					4	7		50		1			1			1							
-L-	31+67.71	33+23.29	RT	155.58					3	7		136.83		2.0			1			1							
-L-	31+72.29	33+23.78	LT	151.49					3	7	132.74		2.0				1			1							
	SUB-TOTALS			807.12													4			4							
	LESS ANCHORS			275.00																							
	PROJECT TOTALS			532.12																							
	SAY			**537.5**													**4**			**4**							

ADDITIONAL GR POST 5

TYPE GRAU 350 4 EA @50.00 FT 200.00
TYPE B-77 4 @ 18.75 FT 75.00

DEDUCTION FOR GR. ANCHOR 275.00

PROJ. REFERENCE NO.	SHEET NO.
B-4613	3-C

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

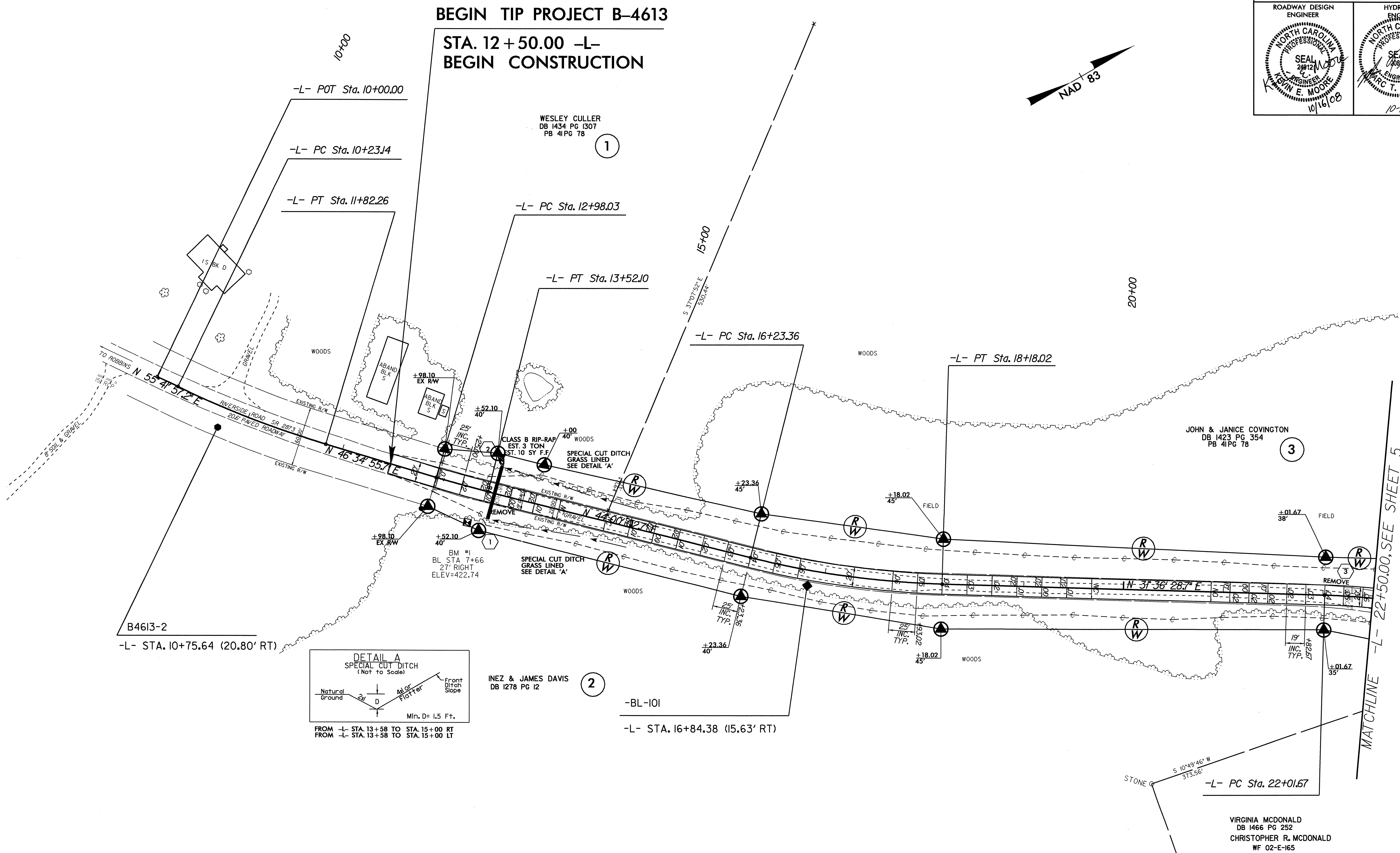
PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	4	WESLEY CULLER
2	4	INEZ & JAMES DAVIS
3	4 & 5	JOHN & JANICE COVINGTON
4	5	LARRY CULLER
5	4 & 5	VIRGINIA MCDONALD, CHRISTOPHER R. MCDONALD.
6	5	DAVID & TONYA RICH
7	5	RICHARD JR. & FRANCES PASCHAL

PARCEL No.	SHEET No.	PROPERTY OWNER NAME

PROJECT REFERENCE NO.	SHEET NO.
B-4613	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 24812 ENGINEER KEVIN E. MOORE 10/16/08

NORTH CAROLINA PROFESSIONAL SEAL 20870 ENGINEER MARC T. SHOWN 10-16-08



BEGIN TIP PROJECT B-4613
STA. 12+50.00 -L-
BEGIN CONSTRUCTION
NAD 83
-L- POT Sta. 10+00.00
-L- PC Sta. 10+23.14
-L- PT Sta. 11+82.26
-L- PC Sta. 12+98.03
-L- PT Sta. 13+52.10
-L- PC Sta. 16+23.36
-L- PT Sta. 18+18.02
-L- PC Sta. 22+01.67
10+00
15+00
20+00
WESLEY CULLER
DB 1434 PG 1307
PB 41 PG 78
1
JOHN & JANICE COVINGTON
DB 1423 PG 354
PB 41 PG 78
3
INEZ & JAMES DAVIS
DB 1278 PG 12
2
VIRGINIA MCDONALD
DB 1466 PG 252
CHRISTOPHER R. MCDONALD
WF 02-E-165
5
WOODS
FIELD
TO ROBBINS
N 55°41'57.2" E
N 46°34'55.7" E
N 44°00'54.2" E
N 31°36'28.7" E
RIVERSIDE ROAD SR 2873
20.6' PAVED ROADWAY
EXISTING R/W
CLASS B RIP-RAP
EST. 3 TON
EST. 10 SY F.F.
SPECIAL CUT DITCH
GRASS LINED
SEE DETAIL 'A'
REMOVE
BM #1
BL STA 7+66
27' RIGHT
ELEV=422.74
B4613-2
-L- STA. 10+75.64 (20.80' RT)
-BL-101
-L- STA. 16+84.38 (15.63' RT)
S 37°07'52" E
530.44'
S 10°49'46" W
373.56'
STONE
MATCHLINE -L- 22+50.00, SEE SHEET 5
DETAIL A
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground
Front Ditch Slope
4:1 or Flatter
Min. D= 1.5 Ft.
FROM -L- STA. 13+58 TO STA. 15+00 RT
FROM -L- STA. 13+58 TO STA. 15+00 LT

DESIGN EXCEPTION REQUIRED FOR DESIGN SPEED AND VERTICAL CURVE /STOPPING SIGHT DISTANCE (SSD)

-L-			
PI Sta 11+02.87	PI Sta 13+25.07	PI Sta 17+21.07	PI Sta 25+56.55
Δ = 9° 07' 01.5" (LT)	Δ = 2° 34' 53.0" (LT)	Δ = 12° 23' 34.0" (LT)	Δ = 47° 50' 42.9" (RT)
D = 5° 43' 46.5"	D = 4° 46' 28.7"	D = 6° 21' 58.3"	D = 7° 09' 43.1"
L = 159.12'	L = 54.06'	L = 194.67'	L = 668.05'
T = 79.73'	T = 27.04'	T = 97.71'	T = 354.89'
R = 1,000.00'	R = 1,200.00'	R = 900.00'	R = 800.00'
SE = N/A	SE = SEE PLANS	SE = 0.06	SE = 0.06
	V = 35 mph	V = 35 mph	V = 35 mph

FOR PROFILE, SEE SHEET 6.

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PROJECT REFERENCE NO.	SHEET NO.
B-4613	5
RW SHEET NO.	

ROADWAY DESIGN ENGINEER — SEAL 24912, NORTH CAROLINA, PROFESSIONAL ENGINEER, KEVIN E. MOORE, 10/16/08

HYDRAULICS ENGINEER — SEAL 20870, NORTH CAROLINA, PROFESSIONAL ENGINEER, MARC T. SHOWN, 10-16-08

SKETCH SHOWING BRIDGE /ROADWAY RELATION
BEGIN BRIDGE STA. -L- 30+00.00
END BRIDGE STA. -L- 31+70.00
TYPE B-77
BEGIN APPROACH SLAB STA -L- 29+85.85
STA. -L- 31+84.15 END APPROACH SLAB
DETAIL B LATERAL BASE DITCH (Not to Scale)
Natural Ground
Fill Slope
Filter Fabric
Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
B= 2 Ft.
b= 5 Ft.
•When B is < 6.0'
Type of Liner= CL 'B' Rip-Rap
FROM -L- STA. 27+60 TO STA. 29+25 LT
DDE = 100 CY, F.F. = 251 SY, RIP RAP = 93 TONS.
FROM -L- STA. 27+60 TO STA. 29+40 RT
DDE = 75 CY, F.F. = 273 SY, RIP RAP = 101 TONS.
DETAIL C LATERAL BASE DITCH (Not to Scale)
Min. D= 1.5 Ft.
B= 2 Ft.
b= 5 Ft.
FROM -L- STA.29+25 TO STA. 30+00 LT, DDE = 28 CY.
FROM -L- STA. 29+40 TO STA. 30+20 RT, DDE = 100 CY.
DETAIL E STANDARD BASE DITCH (Not to Scale)
Filter Fabric
Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
B= 2 Ft.
•When B is < 6.0'
Type of Liner= Class 'B' Rip-Rap
RIP RAP = 25 TONS
F.F. = 55 SY
DDE = 85 CY
DETAIL D SPECIAL CUT DITCH (Not to Scale)
Front Ditch Slope
4:1 or Flatter
Min. D= 1.5 Ft.
Max d= 1.5 Ft.
Type of Liner= PSRM
FROM STA. -L- 23+00 TO STA. 27+50 Lt, PSRM = 477 SY
FROM STA. -L- 23+00 TO STA. 27+50 Rt, PSRM = 477 SY
DETAIL F RIP RAP AT EMBANKMENT (Not to Scale)
Ditch Grade
5 FT.
1 FT.
3.0 Ft.
Type of Liner= Class 'B' Rip-Rap
MATCHLINE -L- 22+50.00, SEE SHEET 4
NAD 83
-BL-103 -L- POC 25+93.67 (0.58' RT)
-BL-102 -L- POC 23+63.46 (7.91' LT)
-BL-104 -L- 27+59.24 (83.09' LT)
-BL-105 -L- POC 28+52.54 (74.79' RT)
-BL-106 ELEV=341.73 REBAR & CAP SET -L- STA. 25+43.45 (395.36' RT)
-BL-107 -L- STA. 27+32.19 (578.13' RT)
-BL-108 -L- STA. 30+79.14 (468.34' RT)
-BL-109 -L- STA. 31+87.33 (205.17' RT)
-BL-110 -L- STA. 34+11.52 (16.82' LT)
-BL-111 -L- POT Sta. 37+67.11
LARRY CULLER DB 1423 PG 356 PB 41 PG 78
VIRGINIA MCDONALD DB 1466 PG 252
CHRISTOPHER R. MCDONALD WF 02-E-165
DAVID & TONYA RICH DB 1285 PG 915 DB 1417 PG 119
RICHARD JR. & FRANCES PASCHAL DB 1325 PG 819 DB 1395 PG 1663
SPECIAL CUT DITCH PSRM LINER SEE DETAIL 'D'
GRADE ROAD TO REMOVE DITCHES AND TO PRODUCE SHEET FLOW AND SEED LT -L- STA. 26+00.00 TO LT -L- STA. 28+00.00
GRADE ROAD TO REMOVE DITCHES AND TO PRODUCE SHEET FLOW AND SEED RT -L- STA. 23+50.00 TO -Y- STA. 10+50.00
2' LATERAL BASE DITCH CLASS 'B' RIP RAP SEE DETAIL 'B'
2' LATERAL BASE DITCH GRASS LINED SEE DETAIL 'C'
2' STANDARD BASE DITCH CLASS 'B' RIP RAP SEE DETAIL 'E'
CLASS B RIP-RAP EST. 2 TON EST. 7 SY F.F
CLASS B RIP-RAP EST. 1 TON EST. 5 SY F.F
CLASS 'B' RIP RAP SEE DETAIL 'F' @ 10 TONS
CLASS 'II' RIP RAP STR. ITEM
BEGIN SBG +25.00
END SBG +65.00
END SBG +30.00
-L- PT Sta. 28+69.71
-L- PC Sta. 32+13.74
-L- PT Sta. 34+32.19
-Y- PC Sta. 10+35.38
-Y- POT Sta. 10+00.00
BEGIN CONST. -Y- STA.10+50.00
-Y- PCC Sta. 11+23.69
-Y- PRC Sta. 11+72.37
-Y- POT Sta. 12+29.83 -L- Sta. 33+71.67
EXISTING BRIDGE TO BE REMOVED (STR.ITEM)
WOOD, STEEL & CONC BRIDGE W/ PAVED DECK
REMOVE
RETAIN
FORK CREEK
BM #2 BL STA 27+52 42' RIGHT ELEV=356.36
BM #3 BL STA 41+24 54' RIGHT ELEV=384.98
CULTURAL RESOURCE ENVIRONMENTALLY SENSITIVE AREA DO NOT IMPACT
4' ROCK WALL OLD MILL DAM
GRADE TO DRAIN
WELBOWS & ROD & LUG CONNECTORS
15" BCCS
N 48° 09' 42" E 20.9' PAVED ROADWAY RIVERSIDE ROAD SR 2873 TO BENNETT
END TIP PROJECT B-4613 -L- STA. 36+00.00
25+00
30+00
35+00
WOODS

-L-	
PI Sta 25+56.55	PI Sta 33+25.76
Δ = 47° 50' 42.9" (RT)	Δ = 31° 17' 29.5" (LT)
D = 7° 09' 43.1"	D = 14° 19' 26.2"
L = 668.05'	L = 218.46'
T = 354.89'	T = 112.03'
R = 800.00'	R = 400.00'
SE = .06	SE = .06
V = 35 mph	V = 35 mph

-Y-		
PI Sta 10+79.86	PI Sta 11+48.52	PI Sta 11+98.23
Δ = 16° 51' 56.5" (RT)	Δ = 27° 53' 27.8" (RT)	Δ = 54° 41' 25.4" (LT)
D = 19° 05' 54.9"	D = 57° 17' 44.8"	L = 47.73'
L = 88.31'	L = 48.68'	D = 114° 35' 29.6"
T = 44.48'	T = 24.83'	T = 25.86'
R = 300.00'	R = 100.00'	R = 50.00'

APPROACH SLAB

DESIGN EXCEPTION REQUIRED FOR DESIGN SPEED AND VERTICAL CURVE /STOPPING SIGHT DISTANCE (SSD)

FOR PROFILE, SEE SHEET 6.
FOR STRUCTURE PLANS, SEE SHEETS S-1 THRU S-34.

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PROJECT REFERENCE NO.	SHEET NO.
B-4613	6

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 24912 ENGINEER KEVIN E. MOORE
KEVIN E. MOORE 10/16/08

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 20870 ENGINEER MARC T. SHOWN
MARC T. SHOWN 10-16-08

BEGIN CONSTRUCTION
-L- STA. 12+50.00
EL. 425.26

BEGIN GRADE
-L- STA. 12+98.00
EL. 423.42

BM #1
-L- STA. 13+39
35' RIGHT
ELEV = 422.74'
RR SPIKE IN 18" GUM TREE

PI = 14+20.00
EL = 418.58'
VC = 240'
K = 49
V= 35 MPH

PI = 16+75.00
EL = 420.90'
VC = 120'
K = 31
V = 35 MPH

PI = 20+75.00
EL = 409.20'
VC = 120'
K = 72
V = 40 MPH

423.42

(-)3.9672%
(+)0.9098%
(+)0.9098%
(-)2.9250%
(-)2.9250%
(-)1.2679%

+0.4225 LT
+0.3803 RT

END DITCH GRADE LT
PI= 15+00.00
EL= 417.10

END DITCH GRADE RT
PI= 15+00.00
EL 417.24

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.1

DRAINAGE AREA	= 1.4	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 3.9	CFS
DESIGN HW ELEVATION	= 417.78	FT
100 YEAR DISCHARGE	= 4.5	CFS
100 YEAR HW ELEVATION	= 417.89	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= N/A	CFS
OVERTOPPING ELEVATION	= 419.5	FT

MIN. RESURF. & WIDENING

18" RCP

BEGIN DITCH GRADE LT
-L- STA 13+58.00
EL 416.50

BEGIN DITCH GRADE RT
-L- STA 13+58.00
EL 416.70

DESIGN EXCEPTION NEEDED FOR DESIGN SPEED

SEE SHEET 4 FOR PLANS

10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00 22+00

460 450 440 430 420 410 400 390 380 370

PI = 23+40.00
EL = 405.84'
VC = 220'
K = 29
V = 35 MPH

BM #2
-L- STA. 25+31
344' RIGHT
ELEV = 354.36'
RR SPIKE IN BASE OF TRIPLE OAK TREE

STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 5600	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 347.3	FT
BASE DISCHARGE	= 8100	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 350.4	FT
OVERTOPPING DISCHARGE	= N/A	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 364.0	FT

*** DESIGN EXCEPTION NEEDED FOR VERTICAL CURVE/SSD**

PI = 29+50.00
EL = 352.00'
ASYMMETRICAL VC
(TOTAL VC = 640')
VC = 260' * K = 28 V = 25 MPH
VC = 380' * K = 60 V = 35 MPH

PI = 34+25.00
EL = 384.45'
VC = 190'
K = 30
V = 35 MPH

END CONSTRUCTION
-L- STA. 36+00.00
EL. 385.50

END GRADE
-L- STA. 35+50.00
EL. 385.30

385.30

(-)4.8667%
(-)8.8262%
(-)4.8920%
(-)8.8262%
(+)6.8316%
(+)6.8316%
(+)0.6800%

ASYMMETRIC VC

-0.2000 LT
-0.6000 LT
3.2000 RT

1.5:1
1.5:1

-Y-

PI = 11+41.43
EL = 379.50'

PI = 11+80.35
EL = 379.13'
VC = 30'
K = 2.3

(-)5.2974%
(-)7.9758%
(-)0.9507%
(+)4.2795%

BEGIN GRADE
-Y- STA. 10+50.00
EL. 386.66

END GRADE
-Y- STA. 12+17.27
EL. 380.71

390 380

10+00 11+00 12+00

BEGIN DITCH GRADE LT
PI= 27+50
EL= 368.90

BEGIN DITCH GRADE RT
PI= 27+50
EL= 367.14

PI= 28+50 LT
EL = 354.00

PI= 29+00 LT
EL= 349.30

PI= 29+00.00 RT
EL= 348.90

PI=29+50 LT
EL 347.50

END DITCH GRADE LT
-L- STA 30+00.00
EL 347.20

END DITCH GRADE RT
-L- STA 30+00.00
EL 345.70

MIN. RESURF. & WIDENING

BM #3
-L- STA. 36+62
36' RIGHT
ELEV = 384.98'
RR SPIKE IN BASE OF DOUBLE WILLOW OAK

DESIGN EXCEPTION NEEDED FOR DESIGN SPEED

SEE SHEET 5 FOR PLANS

420 410 400 390 380 370 360 350 340 330

23+00 24+00 25+00 26+00 27+00 28+00 29+00 30+00 31+00 32+00 33+00 34+00 35+00

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