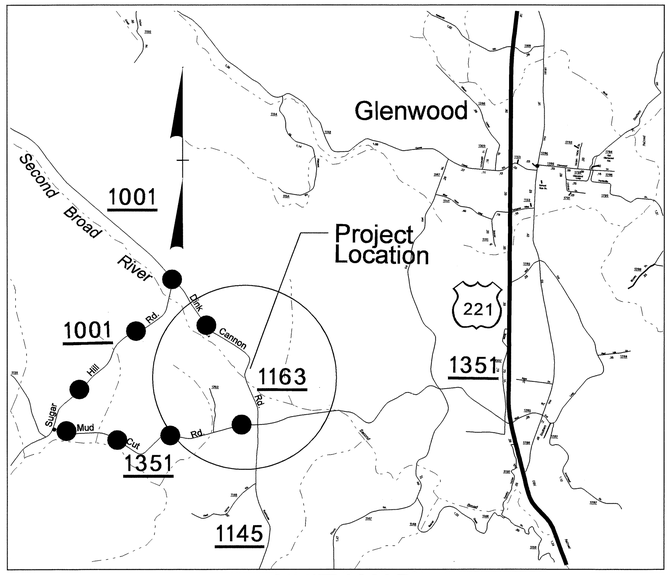
9/09/99

PROJECT: C201926

TIP: B-4195

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



VICINITY MAP

Off Site Detour Route

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

McDOWELL COUNTY

LOCATION: BRIDGE #42 OVER THE SECOND BROAD RIVER ON SR 1163

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

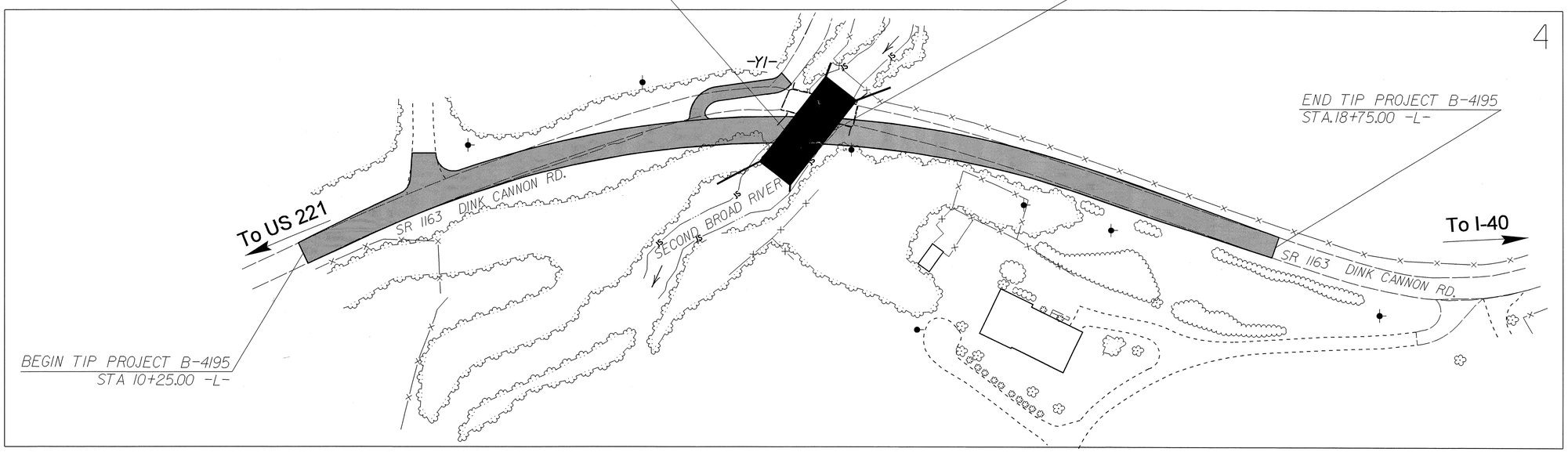
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4195	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33542.1.1	BRZ-1163(3)	P.E.
33542.2.1	BRZ-1163(3)	R/W & UTIL
33542.3.1	BRZ-1163(5)	CONSTRUCTION

NAD 83

BEGIN CULVERT
STA.14+48.00 -L-

END CULVERT
STA.14+87.00 -L-



4

**Design Exception required for 45 mph Design Speed & Horizontal Stopping Sight Distance.

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 2006 = 700 vpd
ADT 2025 = 1100 vpd
DHV = 12 %
D = 65 %
T = 3 %*
**V = 45 MPH

* TTST 1 % * DUAL 2 %

PROJECT LENGTH

Length of Roadway TIP Project B-4195 = 0.154 Mi.
Length of Structure TIP Project B-4195 = 0.007 Mi.
Total Length TIP Project B-4195 = 0.161 Mi.

Prepared In the Office of:

DIVISION OF HIGHWAYS

1000 Birch Ridge Dr., Raleigh, NC 27610

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: APRIL 23, 2007

LETTING DATE: SEPTEMBER 16, 2008

JAMES SPEER, PE
PROJECT ENGINEER

JOHN LANSFORD, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18533 ENGINEER A. T. NOTTINGHAM 6/18/08

SIGNATURE:

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15435 ENGINEER JOHN C. LANSFORD 6/18/08

SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.

STATE HIGHWAY DESIGN ENGINEER

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
B-4195	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15435 ENGINEER JOHN C. LANSFORD

6/18/09

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
2-A	PAVEMENT SCHEDULE, TYPICAL SECTIONS, WEDGING DETAIL, SHOULDER DETAIL, EXPRESSWAY GUTTER DETAIL, AND SHOULDER BERM GUTTER DETAIL
2-B	DETAIL OF ANCHORAGES FOR FRAMES
3	SUMMARY OF QUANTITIES
3-A	LIST OF PIPES, ENDWALLS, ETC (FOR PIPES 48" & UNDER), GUARDRAIL SUMMARY
3-B	SUMMARY OF EARTHWORK, PAVEMENT REMOVAL SUMMARY
4	PLAN SHEET
5	PROFILE SHEET
TCP-1 THRU TCP-3	TRAFFIC CONTROL PLANS
SD-1	SPECIAL SIGN DETAIL
EC-1 THRU EC-6	EROSION CONTROL PLANS
RF-1	REFORESTATION DETAIL SHEET
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-1	CROSS-SECTION INDEX SHEET
X-2 THRU X-27	CROSS-SECTIONS
C-1 THRU C-4	CULVERT PLANS

GENERAL NOTES:

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

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 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.

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.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE Duke Power, Verizon South

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

2006 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 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 - High Side of Superelevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
815.03	Pipe Underdrain and Blind Drain
816.04	Markers for Drainage Structure and Concrete Pad
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
840.29	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 & Gutter
846.02	Drop Inlet Installation in Expressway Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.02	Guide for Rip Rap at Pipe Outlets

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3/15/06

PROJECT REFERENCE NO.	SHEET NO.
B-4195	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
- Proposed Wheel Chair Ramp Curb Cut — WCC
- Curb Cut for Future Wheel Chair Ramp — CCFR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

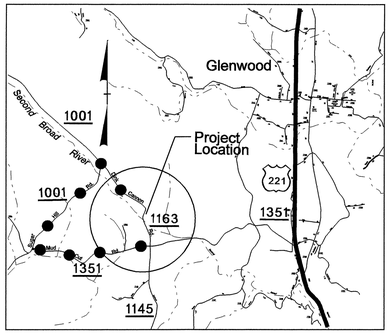
MISCELLANEOUS:

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

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
B-4195	1-C
Location and Surveys	

SURVEY CONTROL SHEET B-4195



BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	BL-1	682160.1905	1103051.1211	1336.92	OUTSIDE PROJECT LIMITS	
2	BL-2	682682.0523	1102763.8887	1335.08	OUTSIDE PROJECT LIMITS	
3	BL-3	683120.6962	1102612.3759	1325.31	14+39.51	40.84 LT
OPS1	GPS STA B4195-1	683702.2612	1102770.7800	1340.69	OUTSIDE PROJECT LIMITS	
5	BL-5	684192.6328	1102266.9297	1342.41	OUTSIDE PROJECT LIMITS	
OPS2	GPS STA B4195-2	684406.5905	1101802.0451	1343.66	OUTSIDE PROJECT LIMITS	

```
*****************************************
BM1       ELEVATION = 1331.12
N 683578      E 1102783
L STATION 19+18 18 RIGHT
SPIKE SET IN 28" RED OAK
*****************************************

*****************************************
BM2       ELEVATION = 1328.57
N 684119      E 1102299
L STATION 20+31
N 49° 03' 24.5" W  DIST    650.97
CHISELED SQUARE ON ROCK & CONC HW
*****************************************
```

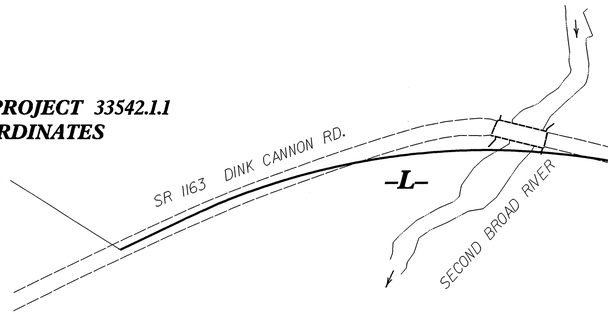
NCDOT GPS STA B4195-2
LOCALIZED PROJECT COORDINATES
N = 684406.5905
E = 1101802.0451

NC GRID NAD 83

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4195-1" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 683702.2612(ft) EASTING: 1102770.7800(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99984497
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4195-1" TO -L- STATION 10+00.00 IS S 0°09'28" W 1000.94'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

-L- STA. 10+00.00 BEGIN STATE PROJECT 33542.1.1
LOCALIZED PROJECT COORDINATES
N = 682701.3215
E = 1102768.0232



NCDOT GPS STA B4195-1
LOCALIZED PROJECT COORDINATES
N = 683702.2612
E = 1102770.7800

-L- STA. 20+30.67 END STATE PROJECT 33542.1.1
LOCALIZED PROJECT COORDINATES
N = 683692.7502
E = 1102790.3542

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/HIGHWAY/LOCATION/PROJECT/

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   B4195_LS_CONTROL_060321.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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10/26/98

PROJECT REFERENCE NO.	SHEET NO.
B-4195	2-A

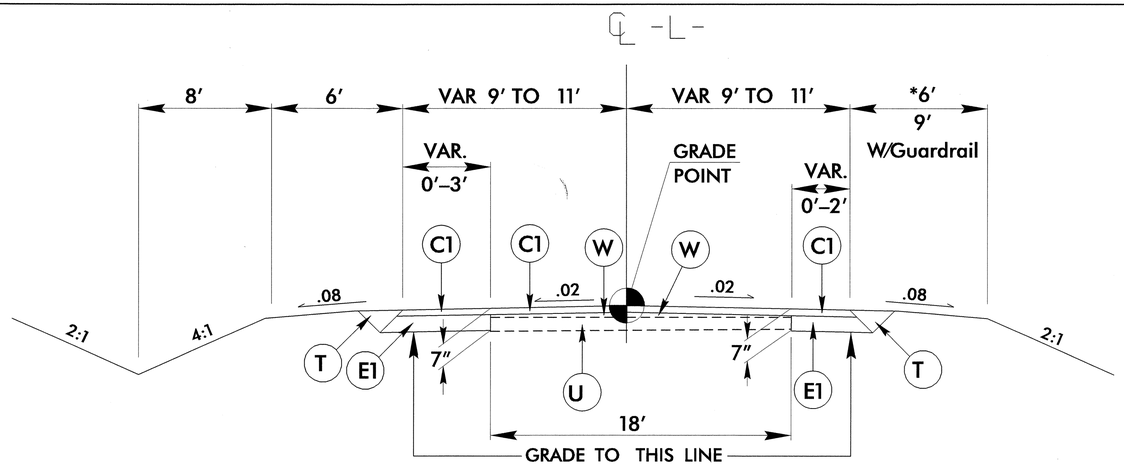
ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 15435 ENGINEER JOHN C. CARPENTER 6/16/08

PAVEMENT DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON 6/16/08

PAVEMENT SCHEDULE

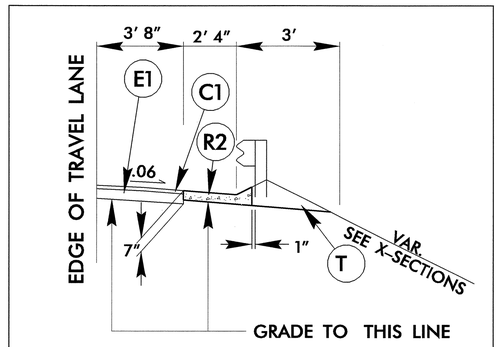
C1	PROP. APPROX. 2½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.50 LBS. PER SQ. YD. IN EA. OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NO LESS THAN 1¼" IN DEPTH.
E1	PROP. APPROX. 4.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 513 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 GREATER THAN 5½" IN DEPTH OR LESS THAN 3" IN DEPTH.
J	PROP. 8" AGGREGATE BASE COURSE.
R1	PROP EXPRESSWAY GUTTER
R2	PROP SHOULDER BERM GUTTER
U	EXISTING PAVEMENT.
T	EARTH MATERIAL.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL)

NOTE: ALL SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



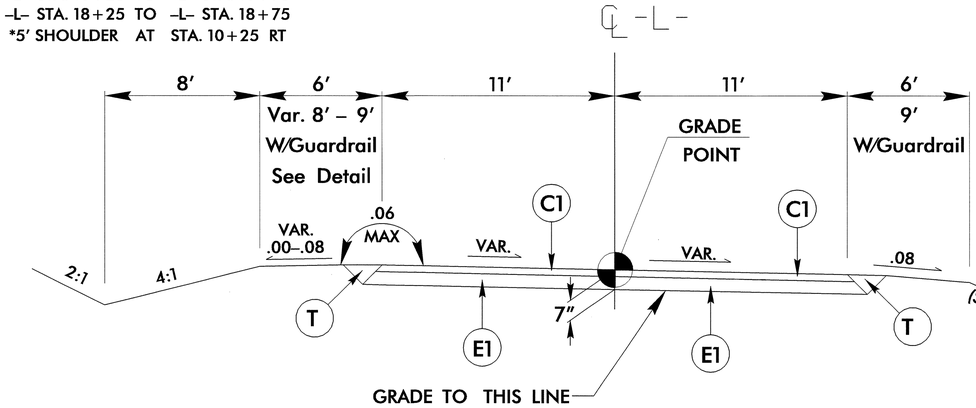
TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1 AT THE FOLLOWING LOCATIONS:
-L- STA. 10+25 TO -L- STA. 10+75
-L- STA. 18+25 TO -L- STA. 18+75
*5' SHOULDER AT STA. 10+25 RT



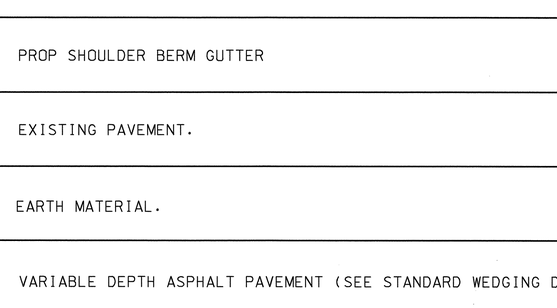
SHOULDER BERM GUTTER DETAIL

USE THIS DETAIL WITH TYPICAL SECTION NO. 2:
-L- STA. 13+60 RT TO -L- STA. 15+20 RT



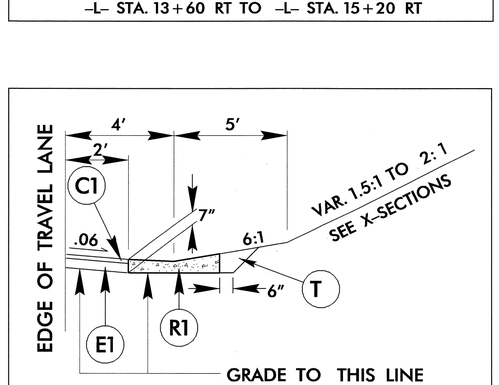
TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2 AT THE FOLLOWING LOCATIONS:
-L- STA. 10+75 TO -L- STA. 18+25



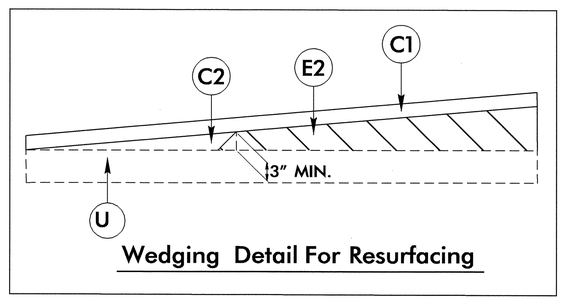
SHOULDER DETAIL

USE THIS DETAIL WITH TYPICAL SECTION NO. 2:
-L- STA. 12+00 LT TO -L- STA. 13+15 LT

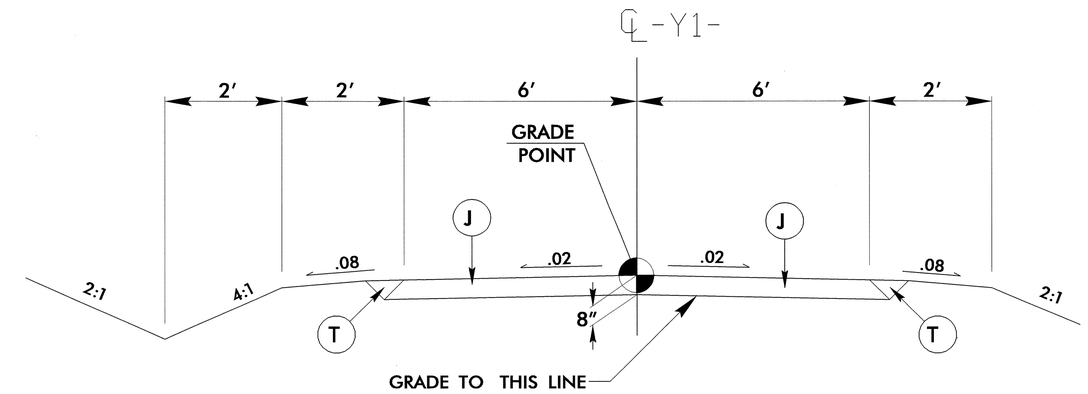


EXPRESSWAY GUTTER DETAIL

USE THIS DETAIL WITH TYPICAL SECTION NO. 2:
-L- STA. 15+75 RT TO -L- STA. 18+00 RT



Wedging Detail For Resurfacing



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3 AT THE FOLLOWING LOCATIONS:
-Y1- STA. 10+21.56 TO -Y1- STA. 11+02.00

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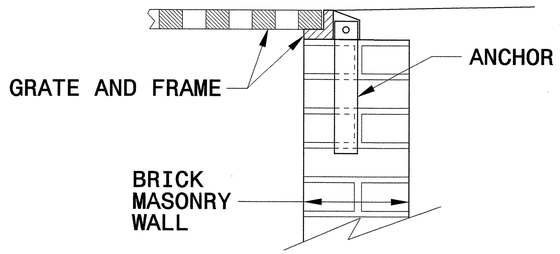
PROJECT REFERENCE NO.	SHEET NO.
8-4195	2-B

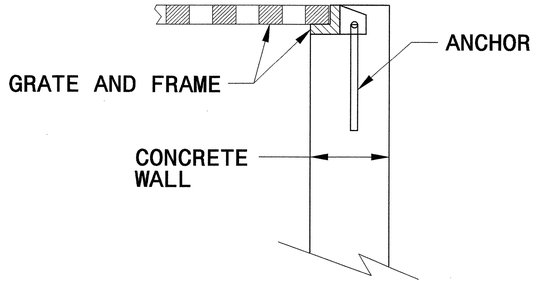
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

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

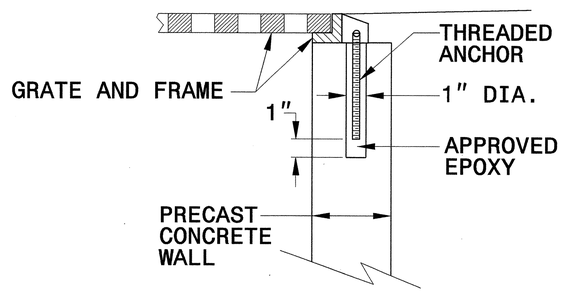
SHEET 1 OF 1
840D25



BRICK MASONRY CONSTRUCTION



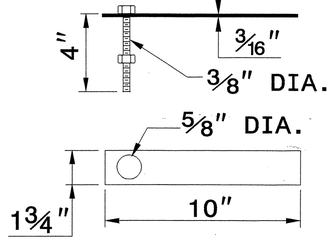
CONCRETE CONSTRUCTION



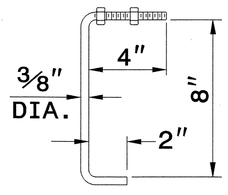
PRECAST CONCRETE CONSTRUCTION

DETAIL SHOWING ANCHORAGE OF FRAME FOR GRATED DROP INLET

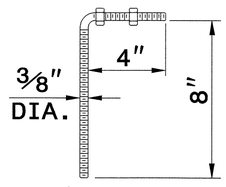
NOTE:
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



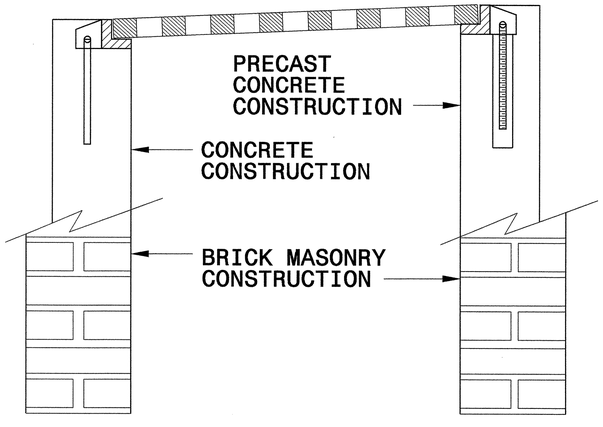
MASONRY ANCHOR
3/8" DIA. BOLT WITH PLATE



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

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

NORTH CAROLINA PROFESSIONAL SEAL 022965 ENGINEER JOEL S. HOWARD
6/6/08

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.:

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

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-4195	3

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C201926

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0043000000-N	226	Lump Sum		GRADING
0050000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUBBING
0057000000-E	226	10	CY	UNDERCUT EXCAVATION
0080000000-E	SP	50	TON	CLASS IV SUBGRADE STABILIZATION
0134000000-E	240	15	CY	DRAINAGE DITCH EXCAVATION
0195000000-E	265	50	CY	SELECT GRANULAR MATERIAL
0196000000-E	270	50	SY	FABRIC FOR SOIL STABILIZATION
0318000000-E	300	58	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRS
0343000000-E	310	56	LF	15" SIDE DRAIN PIPE
0378000000-E	310	68	LF	24" RC PIPE CULVERTS, CLASS III
0995000000-E	340	68	LF	PIPE REMOVAL
1121000000-E	520	64	TON	AGGREGATE BASE COURSE
1220000000-E	545	25	TON	INCIDENTAL STONE BASE
1489000000-E	610	522	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1525000000-E	610	305	TON	ASPHALT CONC SURFACE COURSE, TYPE SF9.5A
1560000000-E	620	43	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
1693000000-E	654	20	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR
2000000000-N	806	20	EA	RIGHT OF WAY MARKERS
2022000000-E	815	12	CY	SUBDRAIN EXCAVATION
2033000000-E	815	9	CY	SUBDRAIN FINE AGGREGATE
2044000000-E	815	50	LF	6" PERFORATED SUBDRAIN PIPE
2055000000-E	815	3	EA	6" SUBDRAIN PIPE WYES, TEES, & ELBOWS
2066000000-N	815	1	EA	CONCRETE PAD FOR SUBDRAIN PIPE OUTLET
2077000000-E	815	6	LF	6" OUTLET PIPE (SUBDRAINS)
2286000000-N	840	5	EA	MASONRY DRAINAGE STRUCTURES
2308000000-E	840	2	LF	MASONRY DRAINAGE STRUCTURES
2366000000-N	840	1	EA	FRAME WITH TWO GRATES, STD 840.24
2367000000-N	840	4	EA	FRAME WITH TWO GRATES, STD 840.29
2556000000-E	846	160	LF	SHOULDER BERM GUTTER
2577000000-E	846	225	LF	CONCRETE EXPRESSWAY GUTTER
3030000000-E	862	325	LF	STEEL BM GUARDRAIL
3150000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS
3270000000-N	SP	4	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3628000000-E	876	4	TON	RIP RAP, CLASS I
3649000000-E	876	5	TON	RIP RAP, CLASS B
3656000000-E	876	205	SY	FILTER FABRIC FOR DRAINAGE
4400000000-E	1110	375	SF	WORK ZONE SIGNS (STATIONARY)
4410000000-E	1110	94	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4430000000-N	1130	20	EA	DRUMS
4445000000-E	1145	64	LF	BARRICADES (TYPE III)
4810000000-E	1205	6,798	LF	PAINT PAVEMENT MARKING LINES (4")
6000000000-E	1605	1,160	LF	TEMPORARY SILT FENCE
6006000000-E	1610	90	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	400	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	220	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	2.5	ACR	TEMPORARY MULCHING
6018000000-E	1620	100	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	1.5	TON	FERTILIZER FOR TEMPORARY SEEDING
6024000000-E	1622	60	LF	TEMPORARY SLOPE DRAINS
6027000000-N	1622	2	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
6029000000-E	SP	1,100	LF	SAFETY FENCE
6030000000-E	1630	920	CY	SILT EXCAVATION
6036000000-E	1631	660	SY	MATTING FOR EROSION CONTROL
6037000000-E	SP	10	SY	COIR FIBER MAT
6038000000-E	SP	40	SY	PERMANENT SOIL REINFORCEMENT MAT
6042000000-E	1632	100	LF	1/4" HARDWARE CLOTH
6070000000-N	SP	3	EA	SPECIAL STILLING BASINS
6071030000-E	SP	260	LF	COIR FIBER BAFFLES
6071050000-E	SP	1	EA	"*" SKIMMER (1-1/2")
6084000000-E	1660	3	ACR	SEEDING & MULCHING
6087000000-E	1660	2	ACR	MOWING
6090000000-E	1661	50	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	0.25	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	80	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	2	TON	FERTILIZER TOPDRESSING
6111000000-E	SP	350	LF	IMPERVIOUS DIKE
6114000000-N	SP	2	HR	SPECIALIZED HAND MOWING
6117000000-N	SP	27	EA	RESPONSE FOR EROSION CONTROL
6123000000-E	1670	0.26	ACR	REFORESTATION
				******* BEGIN SCHEDULE AA *******
				******* (3 ALTERNATES) *******
0366000000-E AA1	310	136	LF	15" RC PIPE CULVERTS, CLASS III
0372000000-E AA1	310	284	LF	18" RC PIPE CULVERTS, CLASS III
				*** OR ***
0366000000-E AA2	310	60	LF	15" RC PIPE CULVERTS, CLASS III
0372000000-E AA2	310	236	LF	18" RC PIPE CULVERTS, CLASS III
0540000000-E AA2	SP	76	LF	"*" ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, "*" THICK (15", 0.064")
0540000000-E AA2	SP	48	LF	"*" ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, "*" THICK (18", 0.064")
				*** OR ***
0366000000-E AA3	310	60	LF	15" RC PIPE CULVERTS, CLASS III
0372000000-E AA3	310	236	LF	18" RC PIPE CULVERTS, CLASS III
0536000000-E AA3	SP	76	LF	"*" HDPE PIPE CULVERTS (15")
0536000000-E AA3	SP	48	LF	"*" HDPE PIPE CULVERTS (18")
				******* END SCHEDULE AA *******

4/24/06

COMPUTED BY: JCL DATE: 3/31/08
CHECKED BY: JGP DATE: 6/9/08

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-4195	3-A

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

STATION	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 12"	15"	18"	24"	30"	36"	42"	48"	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHRWISE) 12"	15"	18"	24"	30"	36"	42"	48"	CLASS III R.C. PIPE OR ALUMINIZED C.S. PIPE, TYPE IR OR HDPE PIPE, TYPE S OR D 12"	15"	18"	24"	30"	36"	42"	48"	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	CU. YDS. C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') LIN. FT. A	LIN. FT. B	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & GRATE 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. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	T.B.D.I. STD. 840.35	M.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	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
SIZE																																																			
THICKNESS OR GAUGE																.064	.064	.064	.064	.079	.079	.079	.109	.109																															
11+50 –L–	LT	1																											56′																								
10+53 –Y1–	LT	2	3		1326.9	1319.1																			76′																												
11+00 –Y1–	LT	3		1325.6	1319.1																																		1	1.5′				1								1					
11+20 –Y1–	℄	3	4		1319.1	1317.0																				48′																												
14+46 –L–	LT	5																																																				24′
15+23 –L–	RT	6																																																		44′
15+18 –L–	RT	7		1328.0	1325.3																																1														1	1		
15+50 –L–	RT	7	8		1325.3	1325.5			60′																																												
15+80 –L–	RT	8		1328.4	1324.9																																1														1	1		
15+82 –L–	℄	8	9	1324.9	1319.2						68′																																											
16+28 –L–	RT	8	10		1325.5	1326.7				92′																																												
16+75 –L–	RT	10		1329.7	1326.7																																1														1	1		
17+25 –L–	RT	10	11		1326.7	1329.8				96′																																												
17+76 –L–	RT	11		1332.8	1329.8																																1														1	1		
18+02 –L–	RT	11	12		1329.8	1334.0				48′																																												
TOTAL									60′	236′	68′															76′	48′									56′								5	1.5′				1				1			4	4					68′	
SAY																																												2′																		

ABBREVIATIONS

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

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

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPROACH END	WARRANT POINT TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH APPROACH END	FLARE LENGTH TRAILING END	W APPROACH END	W TRAILING END	ANCHORS XI MOD	XI	GRAU 350	M-350	XIII	CAT-1	VI MOD	BIC	AT-1	IMPACT ATTENUATOR TYPE 350 EA	G	NG	SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
–L–	14+00.00	16+75.00	LT	175′			13+75.00	15+32.62	6′	9′	50′	50′	1′	1′			2													
–L–	11+50.00	15+75.00	RT	325′			13+75.00	14+75.42	6′	9′	50′	50′	1′	1′			2													
		TOTAL		500′													4													
	DEDUCTION	FOR ANCHOR UNITS																												
		4 GRAU-350 @ 50′		–200′																										
		GRAND TOTAL		300′			ADDITIONAL GUARDRAIL POSTS– 5 EACH										4													
		SAY		325′																										

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-4195	3-B

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

SUMMARY OF EARTHWORK

IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
-L- STA 10+25.00 TO 14+50.00	232		2,153	1,921	
-Y1- STA 10+11.00 TO 11+02.00	2		91	89	
SUBTOTAL	234		2,244	2,010	
-L- STA 14+50 TO 18+75.00	231		3,739	3,501	
SUBTOTAL	231		3,739	3,501	
TOTAL	465		5,983	5,511	
LOSS DUE TO CLEARING & GRUBBING	-325			325	
5% FOR BORROW PIT				292	
ADDITIONAL UNDERCUT		10			
GRAND TOTAL	140	10	5,983	6,128	
SAY	150			6,200	
DDE= 15 CY					

SUMMARY OF PAVEMENT REMOVAL

IN SQUARE YARDS

LOCATION	SIDE	CONCRETE PAVEMENT REMOVAL	CONCRETE PAVEMENT BREAK-UP	ASPHALT PAVEMENT REMOVAL	ASPHALT PAVEMENT BREAK-UP
-L- 10+75.00 TO 14+47.65	℄			745	
-L- 15+06.67 TO 18+25.00	℄			637	
			TOTAL	1,382	
			SAY	1,390	

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

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5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-4195	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

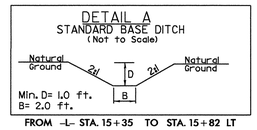
NORTH CAROLINA PROFESSIONAL SEAL 15435 ENGINEER JOHN [illegible] 6/16/08

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18533 ENGINEER T. NOTTINGHAM 6/19/08

NAD 83

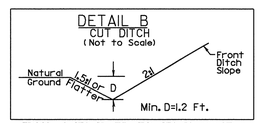
DETAIL A
STANDARD BASE DITCH
(Not to Scale)



Min. D= 1.0 ft.
B= 2.0 ft.

FROM -L- STA. 15+35 TO STA. 15+82 LT

DETAIL B
CUT DITCH
(Not to Scale)



Min. D=1.2 Ft.

FROM -L-STA. 11+75 TO STA. 12+00 LT.

-Y1-

PI Sta 10+30.56
Δ = 86° 53' 12.8" (RT)
D = 286° 28' 44.0"
L = 30.33'
T = 18.94'
R = 20.00'

PI Sta 10+99.53
Δ = 52° 11' 36.1" (LT)
D = 229° 10' 59.2"
L = 22.77'
T = 12.25'
R = 25.00'

-L-

PI Sta 14+12.83
Δ = 45° 02' 14.1" (RT)
D = 7° 09' 43.1"
L = 628.84'
T = 331.68'
R = 800.00'
SE = 0.06
RO = 120'

PI Sta 19+39.19
Δ = 8° 48' 47.5" (LT)
D = 7° 19' 18.6"
L = 120.37'
T = 60.30'
R = 782.53'

* SEE Std.862.01, SHEET 9 of 11, FOR GUARDRAIL PLACEMENT OVER CULVERT

DESIGN EXCEPTION REQUIRED FOR HORIZONTAL STOPPING SIGHT DISTANCE.

SEE SHEET 5 FOR -L- & -Y1- PROFILE.
SEE SHEETS C-1 THRU C-3 FOR CULVERT PLANS.

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5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-4195	5

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15435 ENGINEER ROBERT C. LANSDELL
6/18/08

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 16533 ENGINEER TIMOTHY A. NOTTINGHAM
6/18/08

℄ STA 14+67.00 -L-
52' X 12' BOTTOMLESS CULVERT
0AL = 90° SKEW = 125°

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 1095	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 1319.36	FT
BASE DISCHARGE	= 1670	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 1320.62	FT
OVERTOPPING DISCHARGE	= N/A	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 1329.20	FT

BEGIN GRADE
STA. 10+25.00 -L-
EL. 1335.51'

END GRADE
STA. 18+75.00 -L-
EL. 1336.84'

1335.51

1336.84

PI = 11+60.00
EL = 1,335.67'
VC = 240'
K = 85

PI = 15+75.00
EL = 1,324.49'
VC = 560'
K = 82

(+)0.1198%

(−)2.6926%

(+)4.1156%

(+) 2.5532%

LEFT DITCH

BEGIN LEFT DITCH
-L- STA 15+35.00
ELEV. 1318.00

END LEFT DITCH
-L- STA 15+82.00
ELEV. 1319.20

BMI ELEVATION = 1331.12
N 683578 E 1102783
BL STATION 20+45 44 RIGHT=
L STATION 19+17.30 17.67 RT
SPIKE SET IN 28" RED OAK

BM2 ELEVATION = 1328.57
N 684119 E 1102299
BL STATION 27+92 30 LEFT
CHISELED SQUARE ON ROCK & CONC HW

1,340
1,330
1,320
1,310
1,300

10 11 12 13 14 15 16 17 18 19 20

BEGIN GRADE
STA. 10+11.00 -Y1-
EL. 1330.93

END GRADE
STA. 11+02.00 -Y1-
EL. 1324.95

PI = 10+30.00
EL = 1,330.93'
VC = 25
K = 3

PI = 10+90.00
EL = 1,325.42'
VC = 20
K = 4

(+)0.0000%

(−)9.1833%

(−)3.9167%

1,330
1,320
1,310
1,300

10 11

03-JUN-2008 07:44
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