STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4416	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33692.1.1	BRSTP-0033(5)	PE
33692.2.1	BRSTP-0033(5)	ROW, UTIL
33692.3.1	BRSTP-0033(5)	CONST

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BEAUFORT COUNTY

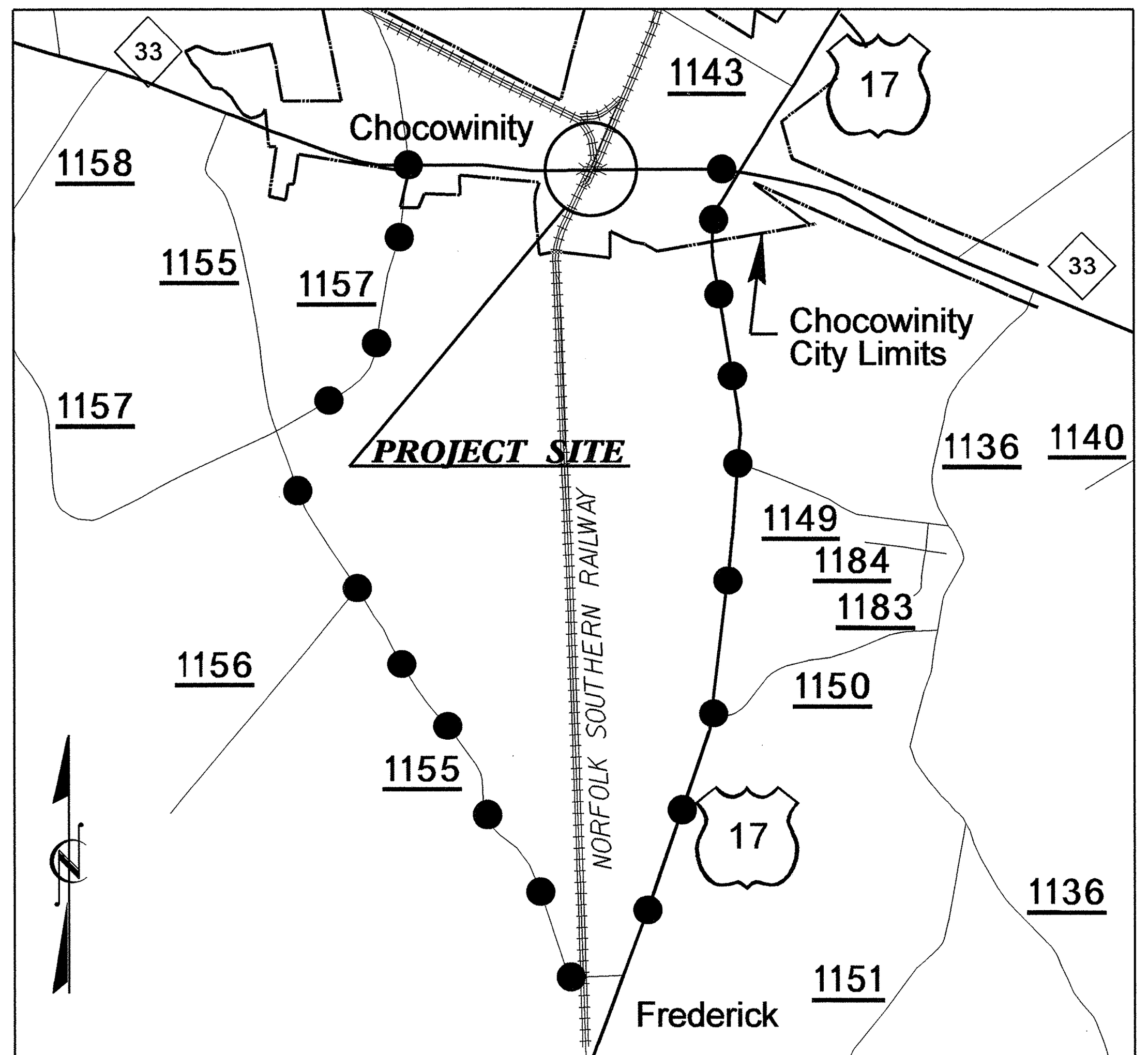
LOCATION: BRIDGE 76 OVER THE NORFOLK SOUTHERN RAILWAY ON NC 33

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

TIP PROJECT: B-4416

CONTRACT: C202728

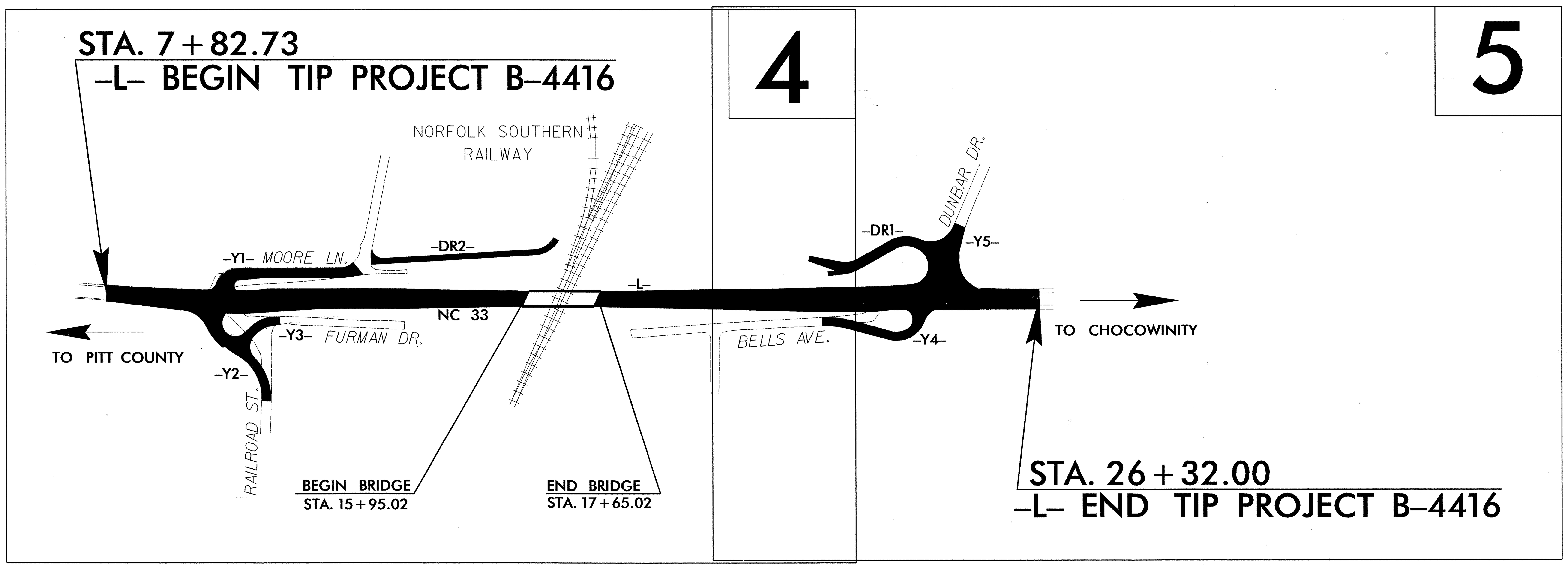
See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols



VICINITY MAP

●—●—●—●—●—● ***OFFSITE DETOUR***

NAD 83/2001



DESIGN EXCEPTION REQUIRED FOR THE SAG & CREST VERTICAL CURVES.

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 2011 = 9,538
ADT 2031 = 15,077
DHV = 10 %
D = 60 %
T = 7 % *
V = 50 MPH
*(TTST 3% + DUAL 4%)
FUNC CLASS = RURAL MAJOR COLLECTOR
CLASS = REGIONAL

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-4416	=	0.318 MILES
LENGTH OF STRUCTURES TIP PROJECT B-4416	=	0.032 MILES
TOTAL LENGTH TIP PROJECT B-4416	=	0.350 MILES

Prepared In the Office of:

DIVISION OF HIGHWAYS

1000 Birch Ridge Dr., Raleigh NC, 27610

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: FEBRUARY 9, 2010

BRENDA MOORE, PE
PROJECT ENGINEER

LETTING DATE: MARCH 20 2012

THAD F. DUNCAN, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 20870 ENGINEER MARC T. SHOWN
8/15/11
SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25477 ENGINEER THAD F. DUNCAN
8/18/11
SIGNATURE: Thad F. Duncan P.E.

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

Art McMillan P.E.
STATE HIGHWAY DESIGN ENGINEER

09/08/99

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PROJECT REFERENCE NO.	SHEET NO.
B-4416	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25477 ENGINEER THAD F. DUNCAN

8/19/11

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 fo	SURVEY CONTROL SHEET
2 THRU 2-B	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
2-C THRU 2-D	METHOD OF PIPE INSTALLATION DETAILS
2-E	ANCHORAGE FOR FRAMES
2-F	STANDARD REINFORCED SOIL SLOPE
3	SUMMARY OF QUANTITIES
3-A	SUMMARY OF DRAINAGE QUANTITIES
3-B	SUMMARY OF EARTHWORK, GUARDRAIL SUMMARY, AND SUMMARY OF EXISTING ASPHALT PAVEMENT REMOVAL
3-C	PARCEL INDEX SHEET
4 THRU 5	PLAN SHEETS
6 THRU 8	PROFILE SHEETS
TMP-1 THRU TMP-2	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-3	PAVEMENT MARKING PLANS
EC-1 THRU EC-7	EROSION CONTROL PLANS
UC-1 THRU UC-6	UTILITY CONSTRUCTION PLANS
UO-1 THRU UO-3	UTILITIES BY OTHERS PLANS
X-1A	CROSS-SECTION SUMMARY
X-1 THRU X-20	CROSS-SECTIONS
S-1 THRU S-28	STRUCTURE PLANS

GENERAL NOTES:

2006 SPECIFICATIONS
EFFECTIVE: 07-18-06
REVISED: 07-30-08

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 III.

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.

DRIVEWAYS:

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.03 AT LOCATIONS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER.

GUARDRAIL:

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

TEMPORARY SHORING:

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

SUBSURFACE PLANS:

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

END BENTS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE Centurylink, Progress Energy,

Suddenlink, and Town of Chocowinity Water and Sewer.

RIGHT-OF-WAY MARKERS:

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

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	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
422.10	Reinforced Bridge Approach Fills
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
815.03	Pipe Underdrain and Blind Drain
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 & Gutter
846.02	Drop Inlet Installation in Expressway Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
848.03	Driveway Turnout - Drop Curb Type
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

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
B-4416	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 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 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.

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
B-4416	1C
Location and Surveys	

SURVEY CONTROL SHEET B-4416

BASELINE DATA

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
100	BL-100	647598.9050	2562012.7420	41.36	7+48.82	24.91 LT
101	BL-101	647424.9750	2562628.6960	57.38	13+88.44	18.68 RT
102	BL-102	647361.5910	2562980.1240	62.79	17+45.53	15.74 RT
103	BL-103	647224.5810	2563636.6300	40.04	24+16.06	28.53 RT

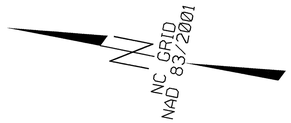
BY

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	GPS B4416-1	647813.6980	2564026.1940	32.32	OUTSIDE PROJECT LIMITS	
A103	BL-103	647224.5810	2563636.6300	40.04	24+16.06	28.53 RT

BENCHMARK DATA

```
**********************************************
200       ELEVATION = 42.43
N 647565      E 2562183
L STATION 9+23  32 LEFT
N 76° 50' 07.6" W  DIST   1493.07
BM #1 RR SPIKE IN BASE OF 18" PECAN TREE
**********************************************

**********************************************
201       ELEVATION = 40.58
N 647375      E 2563530
L STATION 22+83  100 LEFT
BM #2 RR SPIKE IN BASE OF 20" PINE TREE
**********************************************
```



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "GPS B4416-1" WITH NAD 83/2001 STATE PLANE GRID COORDINATES OF NORTHING: 647813.698 (FT) EASTING: 2564026.194 (FT)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99988731
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS B4416-1" TO -L- STATION 9+00.00 IS
S 81°38'19.8 W 1893.21 FT
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.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/*

   THE FILES TO BE FOUND ARE AS FOLLOWS: B4416_LS_CONTROL_090320.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 USER SERVICE (OPUS)

NOTE: DRAWING NOT TO SCALE

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PROJECT REFERENCE NO.	SHEET NO.
B-4416	1D
Location and Surveys	

SURVEY CONTROL SHEET B-4416

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	9+00.00	30.00	647509.1805	2562146.3060
L	9+54.00	50.00	647477.6251	2562194.9452
L	9+80.00	-30.00	647550.2002	2562237.5041
L	10+07.00	-85.00	647598.4146	2562275.1003
L	11+85.00	-75.00	647554.7835	2562446.1734
L	12+78.14	-85.80	647548.1137	2562539.6963
L	13+30.00	-30.00	647483.6530	2562580.3026
L	21+95.00	80.00	647215.0308	2563409.8610
L	21+95.00	30.00	647264.1621	2563419.1404
L	22+39.00	-46.00	647330.6760	2563476.4807
L	22+39.00	-30.00	647314.9540	2563473.5113
L	23+75.00	105.00	647157.0593	2563582.0943
L	24+41.00	47.00	647201.8030	2563657.7118
L	25+18.00	30.00	647204.2195	2563736.5295

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y1	10+30.00	-35.00	647570.0737	2562605.4019
Y1	10+30.00	-11.81	647578.5203	2562583.8069

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y2	12+30.00	30.52	647316.6404	2562282.5405

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y5	10+15.00	30.00	647390.3397	2563692.1380

PERMANENT UTILITY EASEMENT

ALIGN	STATION	OFFSET	NORTH	EAST
Y1	10+30.00	-93.81	647548.6513	2562660.1710

PERMANENT DRAINAGE AND UTILITY EASEMENTS

ALIGN	STATION	OFFSET	NORTH	EAST
L	9+35.00	55.00	647476.9332	2562175.1224
L	11+21.71	46.67	647446.9748	2562361.3984
L	12+25.00	-90.00	647562.0973	2562488.2620
L	13+22.25	-157.89	647610.7577	2562596.4185
L	13+40.00	-155.00	647604.6256	2562613.3274
L	13+99.14	-30.00	647470.8206	2562648.2462
L	14+75.00	70.00	647358.4800	2562704.2249
L	16+17.94	71.04	647330.9277	2562844.4868
L	18+40.00	30.00	647330.0457	2563070.3075
L	18+40.00	75.00	647285.8275	2563061.9561
L	19+80.00	63.00	647271.6367	2563201.7510
L	21+95.00	58.13	647236.5196	2563413.9196
L	23+06.00	95.42	647179.2825	2563516.0691
L	23+18.00	137.00	647136.1937	2563520.1457
L	23+35.00	99.44	647169.9419	2563543.8203
L	23+43.00	130.00	647138.4324	2563546.0105

L

TYPE	STATION	NORTH	EAST
POT	5+00.00	647642.3735	2561766.9144
PC	6+36.97	647604.5435	2561898.5564
PT	11+15.35	647494.0109	2562363.8119
POT	26+58.61	647207.6005	2563880.2656

Y1

TYPE	STATION	NORTH	EAST
POT	10+00.00	647610.7618	2562583.7346
PC	10+64.06	647551.1069	2562560.4011
PT	11+33.26	647520.1840	2562504.5825
PC	13+39.32	647558.3201	2562302.0881
PT	13+85.13	647539.0839	2562264.0636
POT	14+10.53	647516.1920	2562253.0633

Y2

TYPE	STATION	NORTH	EAST
POT	10+00.00	647519.3202	2562238.3956
PC	10+07.33	647512.1509	2562236.8918
PRC	11+24.37	647407.2308	2562274.0294
PT	12+42.49	647301.2705	2562310.9433
PC	12+98.08	647246.9757	2562298.9900
PT	13+33.82	647211.8269	2562292.5592
PC	13+49.32	647196.4905	2562290.3163
PT	14+53.26	647114.6862	2562340.2174
POT	15+46.21	647084.5603	2562428.1447

Y3

TYPE	STATION	NORTH	EAST
POT	10+00.00	647445.9366	2562390.6488
PC	10+28.68	647451.2442	2562362.4666
PT	10+82.30	647441.0121	2562311.1589
POT	11+34.05	647412.6582	2562267.8665

Y4

TYPE	STATION	NORTH	EAST
POT	10+00.00	647253.3822	2563637.8655
PC	10+45.58	647215.3127	2563612.7947
PT	11+17.52	647197.7972	2563549.2738
PC	11+89.76	647229.2404	2563484.2347
PT	12+50.28	647247.0002	2563426.6235
POT	13+29.27	647258.6276	2563348.4928

Y5

TYPE	STATION	NORTH	EAST
POT	10+00.00	647386.3672	2563725.4429
POT	11+59.23	647253.3822	2563637.8655

RREAST

TYPE	STATION	NORTH	EAST
POT	5+00.00	647433.0956	2562963.0458
POT	6+08.80	647343.9913	2562900.6118

RRWEST

TYPE	STATION	NORTH	EAST
POT	5+00.00	647441.1122	2562947.6519
POT	6+22.52	647339.0435	2562879.8838

DR1

TYPE	STATION	NORTH	EAST
POT	10+00.00	647377.1204	2563420.0207
PC	10+57.71	647351.9056	2563471.9345
PT	11+04.94	647349.2107	2563517.8714
PC	11+77.50	647373.0640	2563586.4035
PT	12+34.32	647364.1946	2563640.1737
POT	12+93.53	647327.8054	2563686.8770

DR2

TYPE	STATION	NORTH	EAST
POT	10+00.00	647533.1222	2562548.3284
PC	13+43.34	647489.6288	2562888.9016
PT	13+94.92	647508.3223	2562934.5414
POT	14+11.80	647521.5962	2562944.9778

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "GPS B4416-1" WITH NAD 83/86 STATE PLANE GRID COORDINATES OF NORTHING: 647813.698 (FT) EASTING: 2564026.194 (FT) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99988731 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS B4416-1" TO -L- STATION 9+00.00 IS S 81°38'19.8 W 1893.21 FT 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.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/*

   THE FILES TO BE FOUND ARE AS FOLLOWS: B4416_LS_CONTROL_090320.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 USER SERVICE (OPUS)

NOTE: DRAWING NOT TO SCALE

12-DEC-2011 13:44
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6/2/99

PROJECT REFERENCE NO.	SHEET NO.
B-4416	2

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25477 ENGINEER THAD F. DUNCAN

9/28/11

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22886 ENGINEER CLARK S. MORRISON

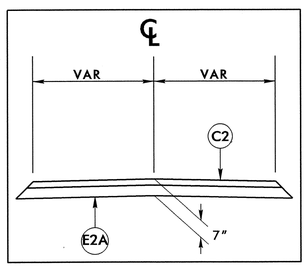
9/26/11

PAVEMENT SCHEDULE

(FINAL PAVEMENT DESIGN)

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. APPROX. 3 " ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C4	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.
D1	PROP. APPROX. 2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
E2	PROP. APPROX. 4½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.
E2A	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E3	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.
J1	PROP. 6" AGGREGATE BASE COURSE.
R1	2'-6" CONCRETE CURB & GUTTER.
R2	4' EXPRESSWAY GUTTER.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL THIS SHEET.)
U	EXISTING PAVEMENT.
T	EARTH MATERIAL.

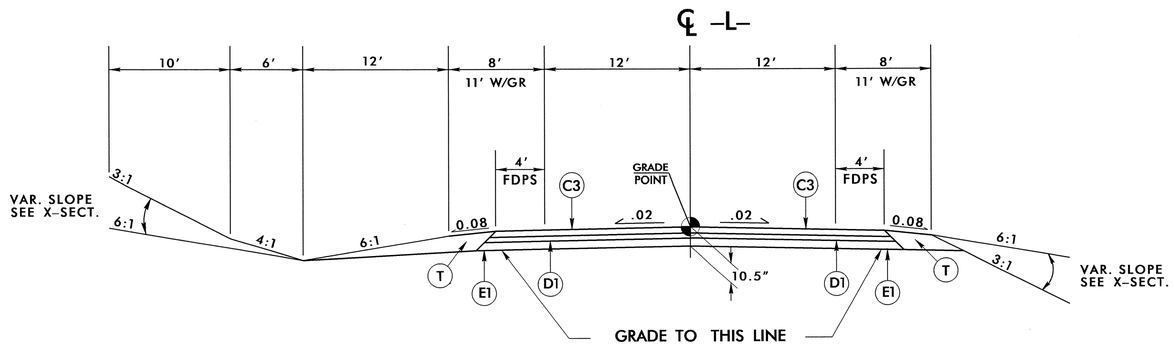
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



FULL DEPTH PAVEMENT REPAIR

USE AT THE FOLLOWING LOCATIONS

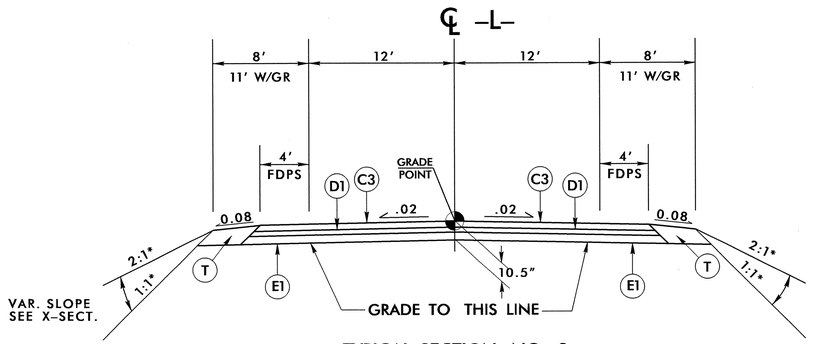
ON SR 1157 NEAR NC 33
ON SR 1155 NEAR SR 1157



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1

–L– STA. 7+82.73 TO –L– STA. 11+00.00
–L– STA. 23+00.00 TO –L– STA. 26+32.00

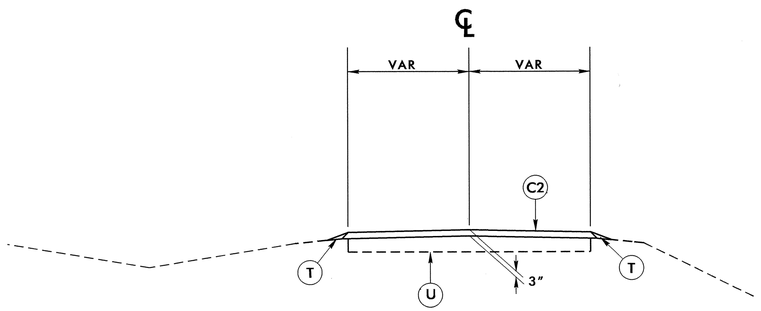


TYPICAL SECTION NO. 2

*REINFORCED SLOPE

USE TYPICAL SECTION NO. 2

–L– STA. 11+00.00 TO –L– STA. 15+95.02 (BEGIN BRIDGE)
–L– STA. 17+65.02 (END BRIDGE) TO –L– STA. 23+00.00



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3

OFFSITE DETOUR
SR 1157 FROM SR 1155 TO NC 33
SR 1155 FROM US 17 TO SR 1157

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6/2/99

PROJECT REFERENCE NO.	SHEET NO.
B-4416	2-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25477 ENGINEER HAD F. DUNCAN

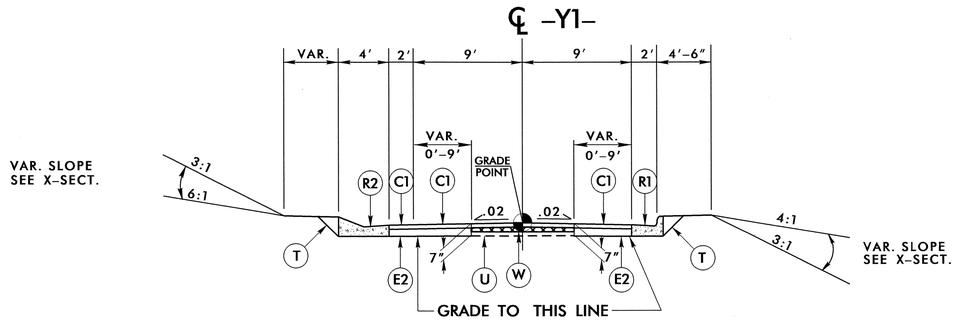
8/18/11

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON

8/18/11

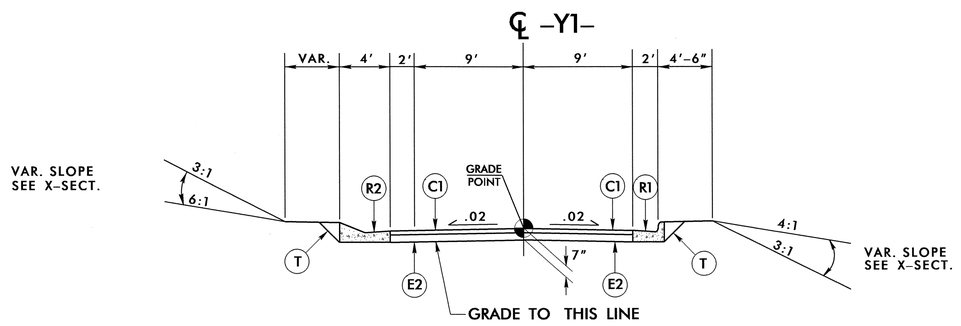
PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)	
C1	2½" SF9.5A.
C4	VAR. SF9.5A.
E1	5" B25.0B.
E2	4½" B25.0B.
E3	VAR. B25.0B.
R1	2'-6" CONC. C & G.
R2	4' EXPRESSWAY GUTTER.
W	WEDGING.
U	EXISTING PAVEMENT.
T	EARTH MATERIAL.



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4

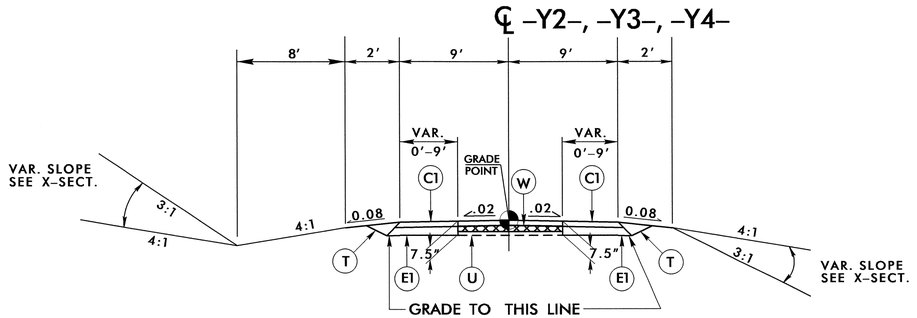
–Y1– STA. 11+00.00 TO –Y1– STA. 12+50.00



TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5

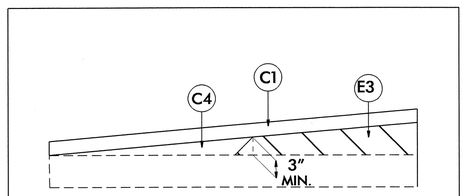
–Y1– STA. 12+50.00 TO –Y1– STA. 13+98.18



TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6

–Y2– STA. 11+78.04 TO –Y2– STA. 12+45.00
–Y3– STA. 10+25.00 TO –Y3– STA. 10+95.72
–Y4– STA. 11+83.29 TO –Y4– STA. 12+55.00



Wedging Detail For Resurfacing

USE WITH TYPICAL SECTION NO. 4 & 6

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6/2/99

PROJECT REFERENCE NO.	SHEET NO.
B-4416	2-B

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25477 ENGINEER THAD F. DUNCAN

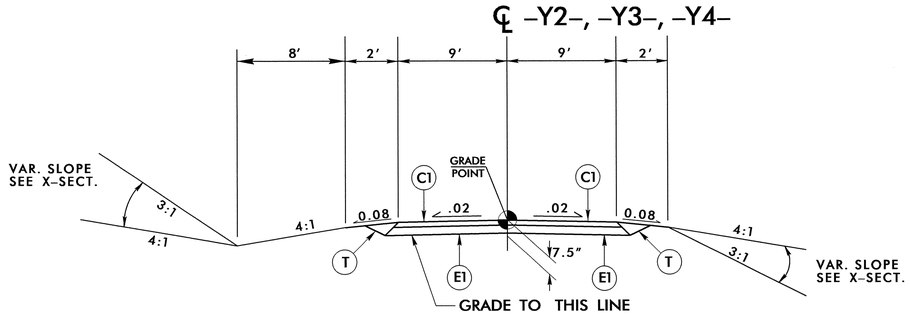
8/18/11

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON

8/17/11

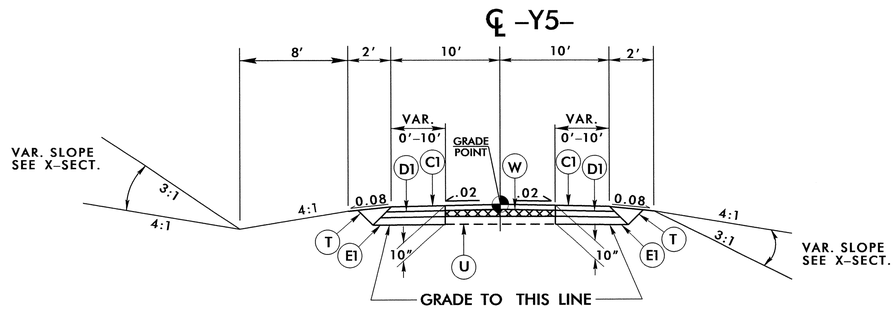
PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)	
C1	2½" SF9.5A.
C4	VAR. SF9.5A.
D1	2½" I19.0B.
D2	VAR. I19.0B.
E1	5" B25.0B.
E3	VAR. B25.0B.
J1	6" ABC.
W	WEDGING.
U	EXISTING PAVEMENT.
T	EARTH MATERIAL.



TYPICAL SECTION NO. 7

USE TYPICAL SECTION NO. 7

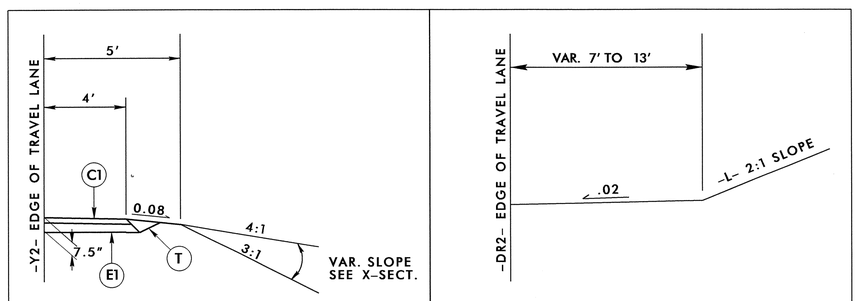
–Y2– STA. 10+22.05 TO –Y2– STA. 11+78.04
–Y3– STA. 10+95.72 TO –Y3– STA. 11+24.78
–Y4– STA. 10+18.97 TO –Y4– STA. 11+83.29



TYPICAL SECTION NO. 8

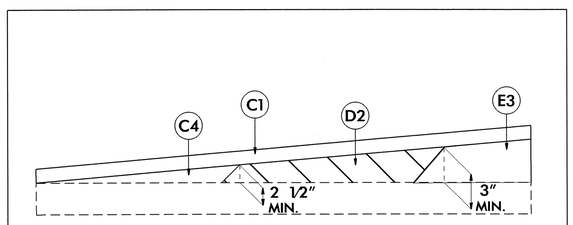
USE TYPICAL SECTION NO. 8

–Y5– STA. 10+00.00 TO –Y5– STA. 11+46.23



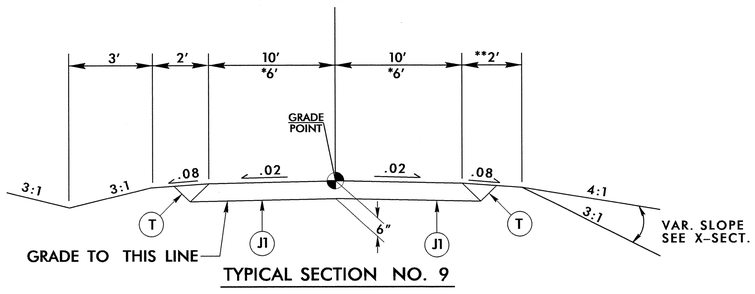
–Y2– SHOULDER DETAIL
–Y2– STA. 10+22.05
TO –Y2– STA. 10+98.00 RT

–DR2– RIGHT SHOULDER DETAIL
–DR2– STA. 10+11.06
TO –DR2– STA. 13+50+/– RT



Wedging Detail For Resurfacing

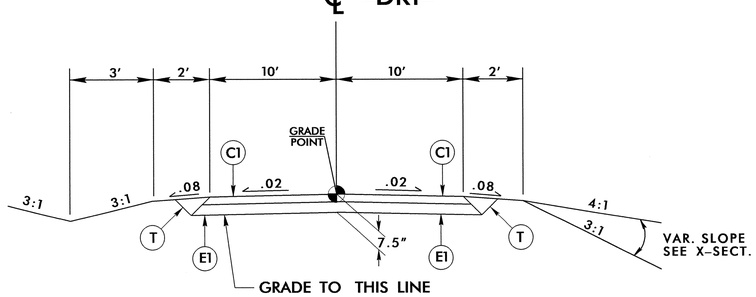
USE WITH TYPICAL SECTION NO. 8



TYPICAL SECTION NO. 9

USE TYPICAL SECTION NO. 9

–DR1– STA. 10+00.00 TO –DR1– STA. 12+50.00
–DR2– STA. 10+11.06 TO –DR2– STA. 13+94.92
* USE WITH –DR2–
** SEE –DR2– RIGHT SHOULDER DETAIL



TYPICAL SECTION NO. 10

USE TYPICAL SECTION NO. 10

–DR1– STA. 12+50.00 TO –DR1– STA. 12+83.50

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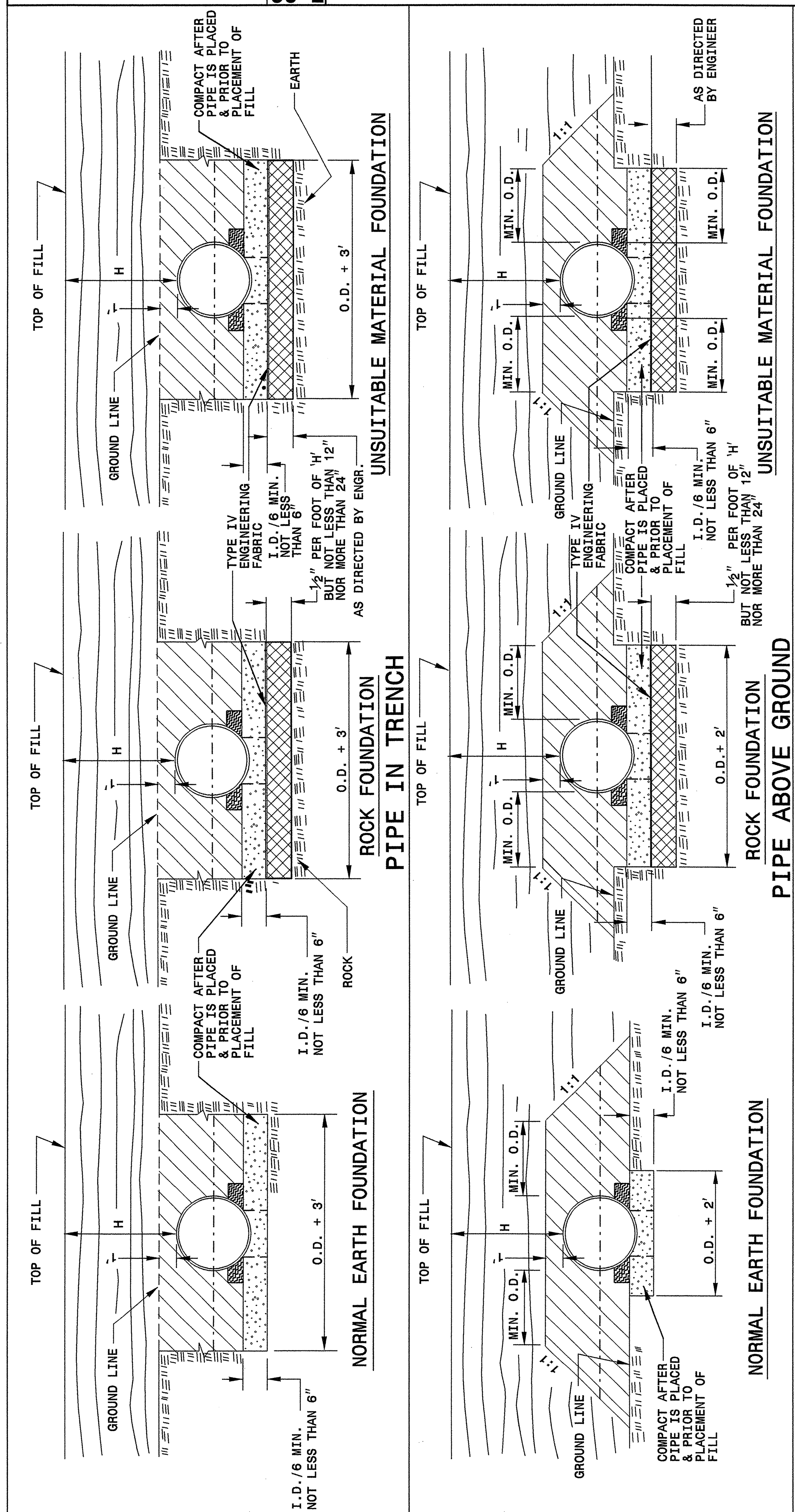
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. 7-06 ENGLISH DETAIL DRAWING FOR METHOD OF PIPE INSTALLATION FLEXIBLE PIPE SHEET 1 OF 3 300D01

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. 7-06 ENGLISH DETAIL DRAWING FOR METHOD OF PIPE INSTALLATION RIGID PIPE SHEET 2 OF 3 300D01



GENERAL NOTES:

I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.

O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.

H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

SPRINGLINE OF PIPE

SELECT BACKFILL MATERIAL CLASS III OR CLASS II, TYPE 1 ABOVE AND BELOW SPRINGLINE.

APPROVED SUITABLE LOCAL MATERIAL.

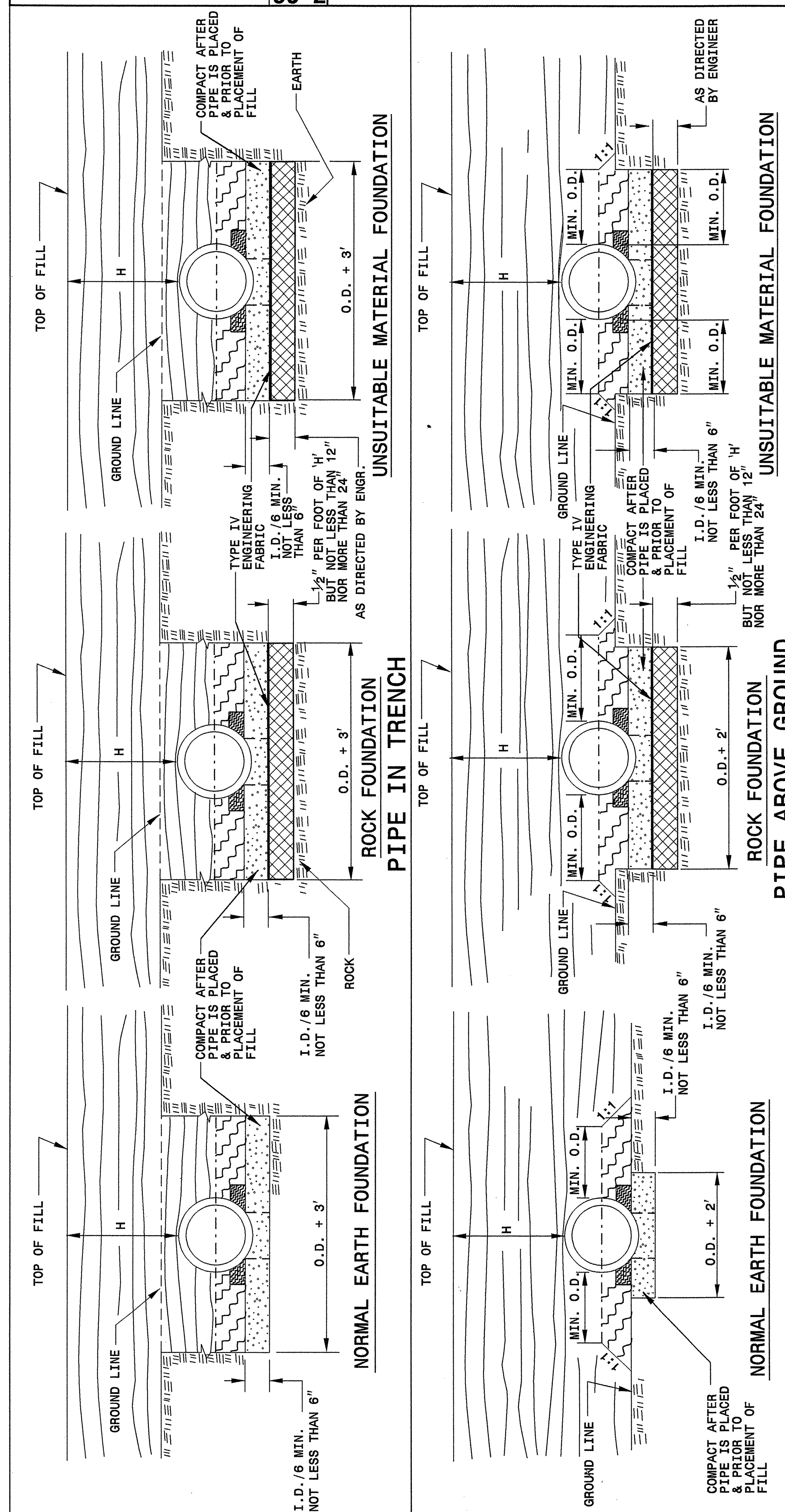
UNDISTURBED EARTH MATERIAL

SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH ENGINEERING FABRIC AS DIRECTED BY THE ENGINEER.

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. | 7-06

ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
FLEXIBLE PIPE

SHEET 1 OF 3 **300D01**



GENERAL NOTES:

I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.

O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.

H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

SPRINGLINE OF PIPE

SELECT BACKFILL MATERIAL CLASS III OR CLASS II, BELOW SPRINGLINE.

APPROVED SUITABLE LOCAL MATERIAL ABOVE SPRINGLINE.

UNDISTURBED EARTH MATERIAL

SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH ENGINEERING FABRIC AS DIRECTED BY THE ENGINEER.

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. | 7-06

ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
RIGID PIPE

SHEET 2 OF 3 **300D01**

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER
8/18/11

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

SEE PLATE FOR TITLE

ORIGINAL BY: KKempf DATE: 5-15-09
MODIFIED BY: DATE:
CHECKED BY: DATE: 7/30/09
FILE SPEC: ericward/stds/stdstodetails/30001/0300d01.dgn

30-JUL-2009 08:49
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jhowerton AT PS237501

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-4416	2-D

FLEXIBLE PIPE

Round Corrugated Steel Pipe
2 2/3 x ½ corrugation **

Diameter (inches)	Minimum cover (inches)	Maximum Height of Cover (feet) (Ga) 16	14	12	10	8
12	12	204	256			
15	12	162	204			
18	12	135	169	239		
21	12	115	145	204		
24	12	100	126	178		
30	12	79	100	142		
36	12	65	83	117	152	
42	12	55	70	100	130	160
48	12	48	61	87	113	139
54	12		54	77	100	123
60	12			69	90	111
66	12				81	100
72	12				74	91
78	12					81
84	12					69

Round Corrugated Aluminum Pipe
2 2/3 x ½ corrugation **

Diameter (inches)	Minimum cover (inches)	Maximum Height of Cover (feet) (Ga) 16	14	12	10	8
12	12	123	155	218	281	344
15	12	98	123	174	224	275
18	12	81	102	144	187	228
21	12	69	87	123	160	195
24	12	60	76	108	139	171
27	12		67	95	123	151
30	12		60	85	111	136
36	12		50	71	92	113
42	12			60	78	96
48	12			52	68	84
54	12			46	50	74
60	12				50	62
66	12					51
72	12					41

** FOR DIFFERENT CORRUGATIONS AND ARCH PIPES REFER TO ROADWAY DESIGN MANUAL OR MANUFACTURERS SPECIFICATION.

REFER TO THE FOLLOWING FOR PIPE SPECIFICATIONS

CSP - AASHTO M36
CAAP - AASHTO M196
HDPE - AASHTO M294
PVC - ASTM F949 or AASHTO M304

HDPE - * (Minimum fill) 2' for pipe diameters ≥ 12" and ≤ 60"
* (Maximum fill) 20' for pipe diameters ≤ 24"
17' for pipe diameters ≥ 30" and ≤ 60"

PVC - * (Minimum fill) 2' for pipe diameters ≥ 12" and ≤ 36"
* (Maximum fill) 30' for pipe diameters ≥ 12" and ≤ 36"

* FILL HEIGHT IS MEASURED FROM THE TOP OF THE PIPE TO THE BOTTOM OF THE PAVEMENT STRUCTURE

NOTES: FILL HEIGHTS SHOWN WERE CALCULATED USING AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

1' MINIMUM COVER FOR ALL SIDE DRAIN PIPE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS

RIGID PIPE

RCP - * (Minimum fill) 1' for Class IV & CLASS V
2' for Class III & Class II

* (Maximum fill) 10' - Class II pipe
20' - Class III pipe
30' - Class IV pipe
40' - Class V pipe

(For fills > 40' & < 80' use LRFD Direct Design Method)

* FILL HEIGHT IS MEASURED FROM THE TOP OF THE PIPE TO THE BOTTOM OF THE PAVEMENT STRUCTURE

REFER TO THE FOLLOWING FOR PIPE SPECIFICATIONS

RCP - AASHTO M170

NOTES: FILL HEIGHTS SHOWN WERE CALCULATED USING AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

1' MINIMUM COVER FOR ALL SIDE DRAIN PIPE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS

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

7-06

ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
FILL HEIGHT TABLES

SHEET 3 OF 3
300D01

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

7-06

ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
FILL HEIGHT TABLES

SHEET 3 OF 3
300D01

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER
8/18/11

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

SEE PLATE FOR TITLE

ORIGINAL BY: KKempf DATE: 5-15-09
MODIFIED BY: DATE:
CHECKED BY: DATE: 7/30/09
FILE SPEC: c:/ericward/stds/stdstodetails/30001/0300d01.dgn

PROJECT REFERENCE NO.	SHEET NO.
B-4416	2-E

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

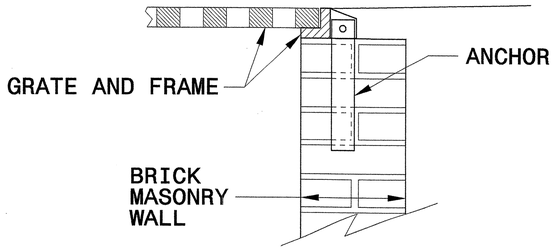
ENGLISH DETAIL DRAWING FOR

ANCHORAGE FOR FRAMES

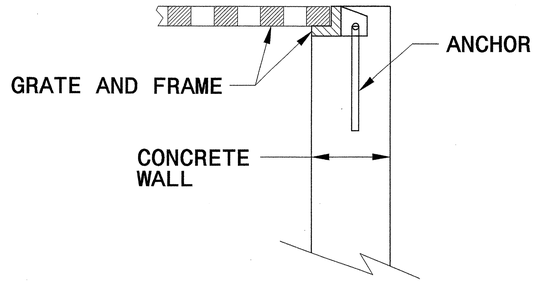
BRICK/CONCRETE/PRECAST CONCRETE

SHEET 1 OF 1

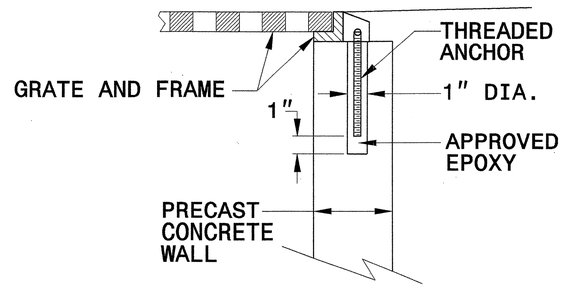
840D25



BRICK MASONRY CONSTRUCTION



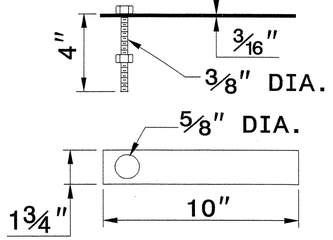
CONCRETE CONSTRUCTION



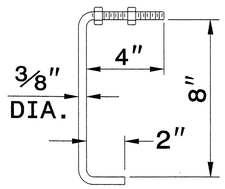
PRECAST CONCRETE CONSTRUCTION

DETAIL SHOWING ANCHORAGE OF FRAME FOR GRATED DROP INLET

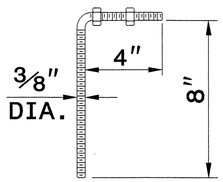
NOTE:
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



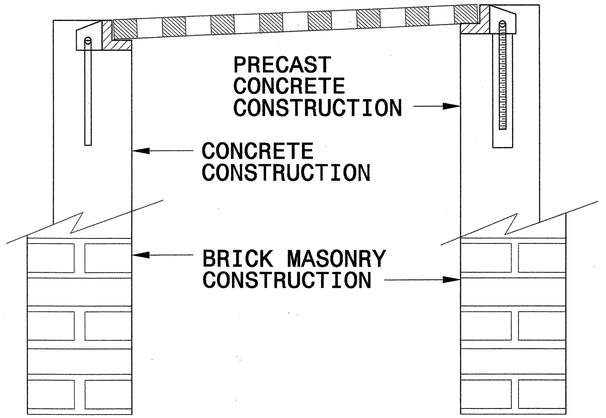
MASONRY ANCHOR
3/8" DIA. BOLT WITH PLATE



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 022966 ENGINEER JOEL HOMEWOOD 8/18/11

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: 11/1/08
FILE SPEC.:		

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

PROJECT REFERENCE NO.	SHEET
B-4416	2-F

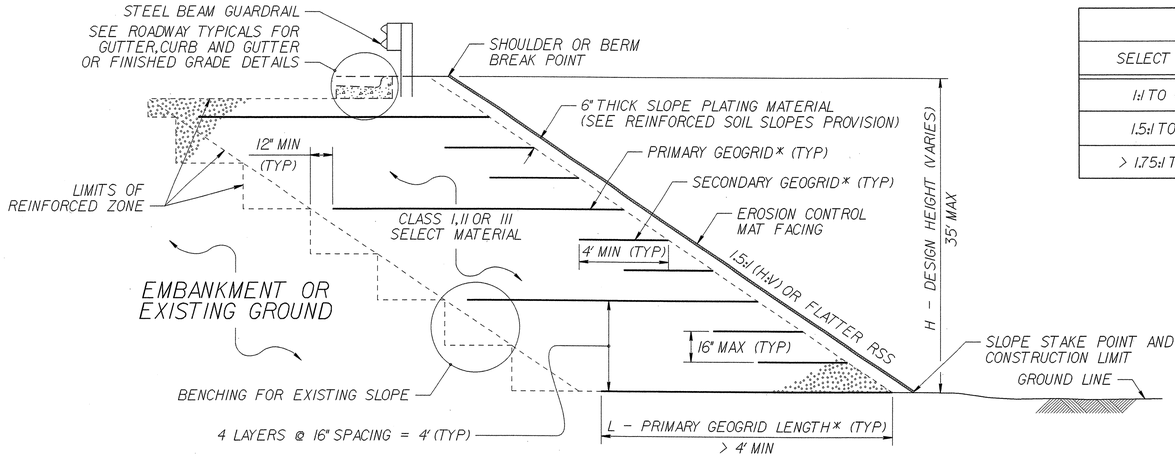
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A HIDDEN

scott a. hiddon 3/4/11
SIGNATURE DATE

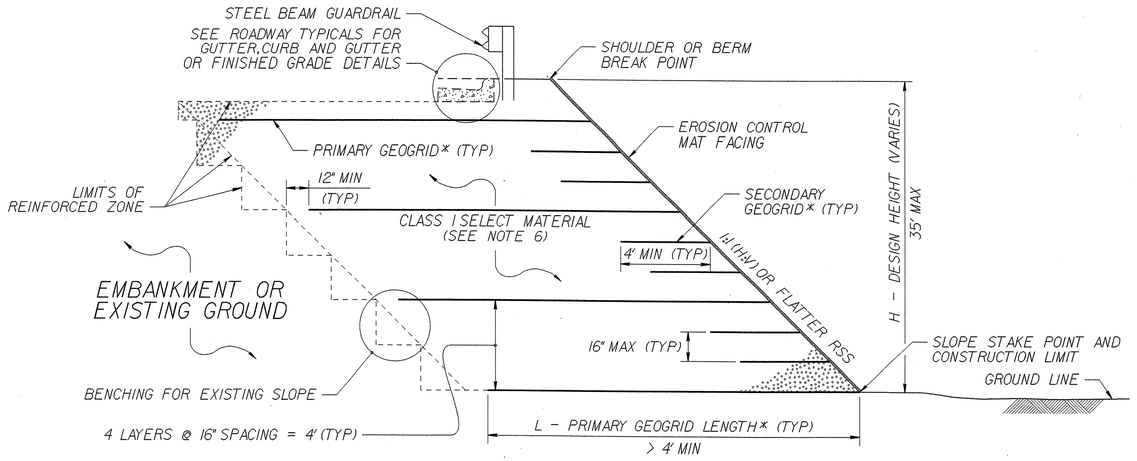
ENGINEER

SIGNATURE DATE



STANDARD RSS WITH SELECT MATERIAL THAT DOES NOT MEET ARTICLE 560-2 OF THE STANDARD SPECIFICATIONS

***SEE TABLES AND GEOGRID LAYOUT DETAILS.**



STANDARD RSS WITH SELECT MATERIAL THAT MEETS ARTICLE 560-2 OF THE STANDARD SPECIFICATIONS

***SEE TABLES AND GEOGRID LAYOUT DETAILS.**

NOTES:

1. SEE ROADWAY PLANS FOR REINFORCED SOIL SLOPE (RSS) LOCATIONS.
2. FOR STANDARD REINFORCED SOIL SLOPES, SEE REINFORCED SOIL SLOPES PROVISION. FOR EROSION CONTROL MAT FACING, SEE PERMANENT SOIL REINFORCEMENT MAT PROVISION.
3. STANDARD RSS ARE BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
   UNIT WEIGHT, γ = 120 PCF
   FRICTION ANGLE, ϕ = 30 DEGREES
   COHESION, c = 0 PSF
4. DO NOT USE STANDARD RSS IF THE ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE OR GROUNDWATER IS ABOVE EXISTING GROUND OR TOE OF SLOPE.
5. DO NOT USE STANDARD RSS WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS BELOW RSS.
6. FOR 1:1 TO < 1.5:1 (H:V) RSS, USE CLASS I SELECT MATERIAL IN THE REINFORCED ZONE THAT MEETS ARTICLE 560-2 OF THE STANDARD SPECIFICATIONS EXCEPT FOR SELECT MATERIAL THAT MEETS AASHTO M 145 FOR SOIL CLASSIFICATIONS A-4 AND A-5. DO NOT USE A-4 OR A-5 SOIL OR CLASS II OR III SELECT MATERIAL FOR 1:1 TO < 1.5:1 (H:V) RSS.
7. EXCEPT FOR TENSAR UX GEOGRIDS, DO NOT SPLICE OR OVERLAP PRIMARY GEOGRIDS IN THE MACHINE DIRECTION (MD) SO THAT SPLICES OR OVERLAPS ARE PARALLEL TO THE TOE OF SLOPE. TENSAR UX GEOGRIDS MAY BE SPLICED ONCE PER PRIMARY GEOGRID LENGTH IN ACCORDANCE WITH TENSAR'S RECOMMENDED CONNECTION DETAIL. A LENGTH OF AT LEAST 4' IS REQUIRED FOR EACH TENSAR UX GEOGRID PIECE.
8. EXCEPT FOR TENSAR UX GEOGRIDS, PLACE PRIMARY GEOGRIDS SO THAT GEOGRIDS ARE ADJACENT TO EACH OTHER IN THE CROSS-MACHINE DIRECTION (CD). TENSAR UX GEOGRIDS MAY BE PLACED WITH A MAXIMUM SPACING BETWEEN GEOGRIDS OF 1.64' IN THE CD. STAGGER TENSAR UX GEOGRIDS SO THAT GEOGRIDS ARE CENTERED OVER GAPS IN THE PRIMARY GEOGRID LAYER BELOW.
9. DO NOT PLACE FIRST PRIMARY GEOGRID LAYER UNTIL EXCAVATION DIMENSIONS AND IN-SITU MATERIAL ARE APPROVED.

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

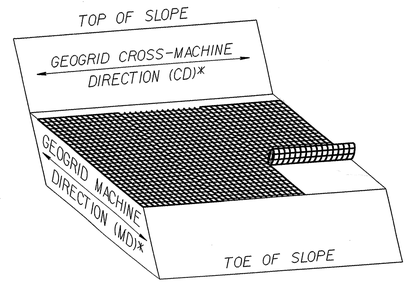
L/H RATIO (L > 4' MIN)

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

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

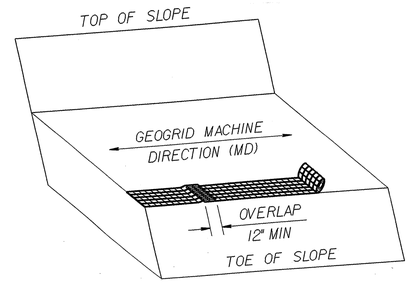
PRIMARY AND SECONDARY GEOGRIDS

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



PRIMARY GEOGRID LAYOUT

***SEE NOTES 7 AND 8.**



SECONDARY GEOGRID LAYOUT

GEOGRID LAYOUT DETAILS

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

STANDARD DRAWING NO. 1803.01

STANDARD
REINFORCED SOIL SLOPE (RSS)

DATE: 6-21-11

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
B-4416	3

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0000400000-N	801	Lump Sum		CONSTRUCTION SURVEYING
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ********** (16+92.27)
0043000000-N	226	Lump Sum		GRADING
0050000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUBBING
0057000000-E	226	1,300	CY	UNDERCUT EXCAVATION
0134000000-E	240	180	CY	DRAINAGE DITCH EXCAVATION
0195000000-E	SP	300	CY	SELECT GRANULAR MATERIAL
0196000000-E	270	400	SY	FABRIC FOR SOIL STABILIZATION
0241000000-E	SP	7,050	SY	GENERIC GRADING ITEM REINFORCED SOIL SLOPE
0318000000-E	SP	70	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRS
0320000000-E	SP	200	SY	FOUNDATION CONDITIONING FABRIC
0335200000-E	SP	140	LF	15" DRAINAGE PIPE
0335300000-E	SP	96	LF	18" DRAINAGE PIPE
0335850000-E	SP	4	EA	**" DRAINAGE PIPE ELBOWS (15")
0448200000-E	SP	280	LF	15" RC PIPE CULVERTS, CLASS IV
0582000000-E	SP	68	LF	15" CS PIPE CULVERTS, 0.064" THICK
0636000000-E	SP	2	EA	**" CS PIPE ELBOWS, *****" THICK (15", 0.064")
0995000000-E	340	32	LF	PIPE REMOVAL
1121000000-E	520	415	TON	AGGREGATE BASE COURSE
1220000000-E	545	1,000	TON	INCIDENTAL STONE BASE
1489000000-E	610	2,860	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1498000000-E	610	1,140	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B
1519000000-E	610	1,270	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
1525000000-E	610	6,350	TON	ASPHALT CONC SURFACE COURSE, TYPE SF9.5A
1575000000-E	SP	685	TON	ASPHALT BINDER FOR PLANT MIX
1693000000-E	654	500	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR
2022000000-E	SP	22.4	CY	SUBDRAIN EXCAVATION
2033000000-E	SP	16.8	CY	SUBDRAIN FINE AGGREGATE
2044000000-E	SP	100	LF	6" PERFORATED SUBDRAIN PIPE
2070000000-N	SP	1	EA	SUBDRAIN PIPE OUTLETS
2077000000-E	SP	6	LF	6" OUTLET PIPE (SUBDRAINS)
2286000000-N	840	11	EA	MASONRY DRAINAGE STRUCTURES
2366000000-N	840	1	EA	FRAME WITH TWO GRATES, STD 840.24
2367000000-N	840	10	EA	FRAME WITH TWO GRATES, STD 840.29
2549000000-E	846	220	LF	2'-6" CONCRETE CURB & GUTTER
2556000000-E	846	2,015	LF	SHOULDER BERM GUTTER
2577000000-E	846	240	LF	CONCRETE EXPRESSWAY GUTTER
2612000000-E	848	50	SY	6" CONCRETE DRIVEWAY
3030000000-E	862	1,975	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
3360000000-E	863	2,218	LF	REMOVE EXISTING GUARDRAIL
3649000000-E	876	6	TON	RIP RAP, CLASS B
3656000000-E	876	950	SY	FILTER FABRIC FOR DRAINAGE
4025000000-E	901	3	SF	CONTRACTOR FURNISHED, TYPE *** SIGN (7)
4072000000-E	903	20	LF	SUPPORTS, 3-LB STEEL U-CHANNEL
4400000000-E	1110	359	SF	WORK ZONE SIGNS (STATIONARY)
4410000000-E	1110	94	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4430000000-N	1130	80	EA	DRUMS
4445000000-E	1145	80	LF	BARRICADES (TYPE III)
4685000000-E	1205	5,733	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)
4686000000-E	1205	5,988	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)
4695000000-E	1205	220	LF	THERMOPLASTIC PAVEMENT MARKING LINES (8", 90 MILS)
4710000000-E	1205	123	LF	THERMOPLASTIC PAVEMENT MARKING LINES (24", 120 MILS)
4810000000-E	1205	133,500	LF	PAINT PAVEMENT MARKING LINES (4")
4847000000-E	1205	680	LF	POLYUREA PAVEMENT MARKING LINES (4", *********) (HIGHLY REFLECTIVE ELEMENTS)
4900000000-N	1251	1723	EA	PERMANENT RAISED PAVEMENT MARKERS
5325200000-E	1510	150	LF	2" WATER LINE
5325400000-E	1510	10	LF	4" WATER LINE
5325600000-E	1510	505	LF	6" WATER LINE
5325800000-E	1510	1,840	LF	8" WATER LINE
5326000000-E	1510	410	LF	10" WATER LINE
5536000000-E	1515	1	EA	2" VALVE
5540000000-E	1515	5	EA	6" VALVE
5546000000-E	1515	7	EA	8" VALVE
5648000000-N	1515	4	EA	RELOCATE WATER METER
5649000000-N	1515	5	EA	RECONNECT WATER METER
5666000000-E	1515	2	EA	FIRE HYDRANT
5709100000-E	1520	460	LF	2" FORCE MAIN SEWER
5800000000-E	1530	1,800	LF	ABANDON 6" UTILITY PIPE
5801000000-E	1530	240	LF	ABANDON 8" UTILITY PIPE
5802000000-E	1530	190	LF	ABANDON 10" UTILITY PIPE
5815000000-N	1530	3	EA	REMOVE WATER METER
5815500000-N	1530	2	EA	REMOVE FIRE HYDRANT
5871500000-E	1550	125	LF	TRENCHLESS INSTALLATION OF 8" IN SOIL
5882000000-N	SP	1	EA	GENERIC UTILITY ITEM RECONNECT EXISTING SEWER SERVICE
5882000000-N	SP	5	EA	GENERIC UTILITY ITEM SEWER VALVE ASSEMBLY
6000000000-E	1605	5,900	LF	TEMPORARY SILT FENCE
6006000000-E	1610	520	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	530	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	395	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	7.5	ACR	TEMPORARY MULCHING
6018000000-E	1620	250	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	2	TON	FERTILIZER FOR TEMPORARY SEEDING
6024000000-E	1622	1,000	LF	TEMPORARY SLOPE DRAINS
6027000000-N	1622	20	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
6030000000-E	1630	970	CY	SILT EXCAVATION
6036000000-E	1631	9,650	SY	MATTING FOR EROSION CONTROL
6037000000-E	SP	30	SY	COIR FIBER MAT
6038000000-E	SP	7,050	SY	PERMANENT SOIL REINFORCEMENT MAT
6042000000-E	1632	870	LF	1/4" HARDWARE CLOTH
6071010000-E	SP	800	LF	WATTLE
6071020000-E	SP	220	LB	POLYACRYLAMIDE (PAM)
6071030000-E	SP	305	LF	COIR FIBER BAFFLE
6071050000-E	SP	3	EA	**" SKIMMER (1-1/2")
6084000000-E	1660	6	ACR	SEEDING & MULCHING
6087000000-E	1660	6	ACR	MOWING
6090000000-E	1661	100	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	0.25	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	200	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	5.5	TON	FERTILIZER TOPDRESSING
6114500000-N	SP	25	MHR	SPECIALIZED HAND MOWING
6117000000-N	SP	18	EA	RESPONSE FOR EROSION CONTROL

COMPUTED BY:	GSB	DATE:	2/2/2010
CHECKED BY:	TFD	DATE:	7/28/2011

PROJECT NO.	SHEET NO.
B-4416	3-A

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
SUB-REGIONAL & REGIONAL
LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

HY2

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".

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

Table part 1: structures, elevations and drainage pipe (RCP, CSP, CAAP, HDPE, or PVC)

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
-L- 11+23	RT	401		46.3'	43.1'														
-L- 11+02	RT	402		45.5'	42.3'														
	RT	401	402		43.1'	42.3'			20'								X		
-L- 11+18	LT	403		46.2'	43.1'														
-L- 11+02	LT	404		45.7'	42.2'														
	CL	402	404		42.3'	42.2'													
	LT	403	404		43.1'	42.5'			16'								X		
-Y1- 12+80	LT	405		40.7'	37.5'														
	LT	404	405		42.2'	37.5'			20'							X	X		
-Y1- 11+02	LT	406		38.9'	35.7'														
	LT	405	406		37.5'	35.7'													
-DR2- 10+25	RT	407		39.2'	35.5'														
	LT	406	407		35.7'	35.5'			32'								X	X	
	LT	407	408		35.5'	35.2'													
-L- 22+25	LT	501		47.3'	44.1'														
-L- 22+47	LT	502		46.5'	43.3'														
	LT	501	502		44.1'	43.3'			20'								X		
	LT	502	503		43.3'	38.6'			16'							X	X		
-DR1- 12+48	CL	504								96'							X		
-L- 22+86	RT	505		45.1'	41.9'														
-L- 23+02	RT	506		44.6'	41.5'														
	RT	505	506		41.9'	41.5'			16'								X		
	RT	506	507		41.5'	37.6'													
PROJ. TOTAL									**140'**	**96'**									
SHEET TOTALS																			

SIZE / THICKNESS OR GAUGE

Table part 2: C.S. pipe, R.C. pipe (Class III) and R.C. pipe (Class IV)

STATION	STRUCTURE NO. FROM	TO	C.S. PIPE 12" (.064)	15" (.064)	18" (.064)	24" (.064)	30" (.079)	36" (.079)	42" (.109)	48" (.109)	R.C. PIPE (CLASS III) 15"	18"	24"	30"	36"	42"	48"	R.C. PIPE (CLASS IV) 12"	15"	18"	24"	30"	36"	42"	48"
	402	404																	48'						
	405	406																	188'						
	407	408																	44'						
	506	507		68'																					
PROJ. TOTAL				**68'**															**280'**						

Table part 3: special pipes, endwalls, drainage structures, frames and grates

STATION	STRUCTURE NO. FROM	TO	** " R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	G.D.I. (N.S.) FRAME AND GRATES STD. 840.29	2 G.I. STD. 840.27 OR STD. 840.18	T.B.D.I. STD. 840.35	G.D.I. (N.S.) FRAME AND GRATES STD. 840.24
-L- 11+23	401									1									1	1		
-L- 11+02	402									1									1	1		
-L- 11+18	403									1									1	1		
-L- 11+02	404									1									1	1		
-Y1- 12+80	405									1									1		1	
-Y1- 11+02	406									1									1		1	
-DR2- 10+25	407									1										1		1
-L- 22+25	501									1									1	1		
-L- 22+47	502									1									1	1		
-L- 22+86	505									1									1	1		
-L- 23+02	506									1									1	1		
PROJ. TOTAL										**11**									**10**	**9**	**2**	**1**

Table part 4: elbows, plugs, pipe removal and remarks

STATION	STRUCTURE NO. FROM	TO	DRAINAGE PIPE ELBOWS NO. & SIZE	C.S. PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN. FT.	REMARKS
	404	405	2 @ 15"				
	502	503	2 @ 15"				
	506	507		2 @ 15"		32'	REMOVE 18" RCP
PROJ. TOTAL			**4 @ 15"**	**2 @ 15"**		**32'**	

COMPUTED BY: rwb	DATE: 4-7-09
CHECKED BY: TFD	DATE: 4-14-09

PROJECT NO.	SHEET NO.
B-4416	3-B

RD226355

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

IN CUBIC YARDS

Station	Station	Uncl. Excav.	Embank. +%	Borrow	Waste
-L-					
7+82.73	15+92.02(BEG BR)	136	9,539	9,403	
17+65.02 (END BR)	25+15.00	36	7,227	7,191	
-Y- LINES/DRIVE					
-Y1- 11+00.00	-Y1- 13+98.18	70	316	246	
-Y2- 10+22.05	12+45.00	158	87		71
-Y3- 10+25.00	-Y3- 11+24.78	71	9		62
-Y4- 10+18.97	12+55.00	86	226	140	
-Y5- 10+25.00	-Y5- 11+46.23	188	1		187
-DR1- 10+40.00	-DR1- 12+68.22	17	59	42	
-DR2- 10+11.06	-DR2- 13+94.92	10	254	244	
TOTALS:		772	17,718	17,266	320
WASTE IN LIEU OF BORROW				-320	-320
EST. SHIOULDER MATERIAL			254	254	
PROJECT TOTALS:		772	17,972	17,200	
EST. 5% TO REPL. BORROW PIT				860	
GRAND TOTALS:		772	17,972	18,060	
SAY:		800 CY		18,100 CY	

DDE = 180 CUBIC YARDS
UNDERCUT EXCAVATION = 1,300 CUBIC YARDS PER GEOTECH

SUMMARY OF EXISTING ASPHALT PAVEMENT REMOVAL

IN SQUARE YARDS

LINE	Station	Station	LOC LT/RT/CL	AREA SY
REMOVAL OF EXISTING ASPHALT PAVEMENT				
-L-	7+82.73	16+21	CL	2293
-L-	17+46	26+32	CL	2644
-Y1-	11+48	13+98	CL	377
-Y2-	10+15	12+45	CL	502
-Y4-	11+38	12+55	RT	142
-Y5-	10+51	11+46	CL	378
-DR1-	10+40	12+35	RT	469
-DR2-	10+11.06	10+87.75	RT	92
			TOTAL:	6,897
			SAY:	7,000 SY

APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, FINE GRADING, CLEARING AND GRUBBING, AND REMOVAL OF EXISTING ASHPALT PAVEMENT WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR "GRADING."

NOTE: EARTHWORK QUANTITIES ARE CALCULATED BY THE ROADWAY DESIGN UNIT. THESE EARTHWORK QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY THE GEOTECHNICAL ENGINEERING UNIT.

"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				WARRANT POINT		"N" DIST.	TOTAL	FLARE LENGTH		W		ANCHORS							ADDITIONAL	REMARKS
				STRAIGHT	TEMP STRAIGHT	SHOP CURVED	TEMP SHOP CURVED	APPR. END	TRAIL. END	FROM E.O.L.	SHLDR WIDTH	APPR. END	TRAIL. END	APPR. END	TRAIL. END	TYPE B-77	GRAU-350					REMOVE EXIST. GUARDRAIL	GUARDRAIL POSTS	
-L-	10+46.22	16+02.47	LEFT	556.25				16+02.47	10+50.00	8'	11'	200'	50'	4'	1'	1	1					583		
-L-	10+37.57	15+87.57	RIGHT	550.00				10+50.00	15+87.57	8'	11'	50'	200'	1'	4'	1	1					560		
-L-	17+57.57	23+57.57	RIGHT	600.00				17+57.57	23+50.00	8'	11'	200'	50'	4'	1'	1	1					540		
-L-	17+72.47	23+09.97	LEFT	537.50				23+00.00	17+72.47	8'	11'	50'	200'	1'	4'	1	1					535		
SUBTOTAL:				2,243.75												4	4					2,218	5	
ADDITIONS:																								
LESS ANCHORS DEDUCTIONS:																								
TYPE B-77	4 @ 18.75 = 75			-75.00																				
TYPE GRAU -350	4 @ 50 = 200			-200.0																				
ANCHOR TOTALS:				-275.00																				
GRAND TOTAL:				1,968.75												4	4					2,218	5	
SAY:				1,975 LF												4	4					2,218 LF	5	

PROJ. REFERENCE NO.	SHEET NO.
B-4416	3-C

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	4	SPENCER ERMON JR.
2	4	SPENCER ERMON JR.
3	4	BRIGHT BONNIE MAE
4	4	ALTON M. WRIGHT
5	4	MILFORD L. DUNBAR
6	4	SPENCER ERMON JR.
7	4	KENNY F. JONES
8	4	MILFORD L. DUNBAR
9	4	JOHN FURMAN SR.
10	4	ANGE MAGGIE HEIRS
11	4,5	NORFOLK SOUTHERN RAILROAD
12	4	JOHN FURMAN SR.
13	4	JOHN CURTIS JENKINS
14	4	MARION R. EDWARDS
15	4,5	ELIZABETH PAUL SLOAN
16	4	JOHN H. FURMAN SR.

PARCEL No.	SHEET No.	PROPERTY OWNER NAME

PROJECT REFERENCE NO.	SHEET NO.
B-4416	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
SEAL 25477 NORTH CAROLINA PROFESSIONAL ENGINEER THAD F. DUNCAN 9/28/11	SEAL 20870 NORTH CAROLINA PROFESSIONAL ENGINEER MARC T. SHOWN 9/28/11

-L-

PI Sta 8+76.33
Δ = 5° 20' 15.7" (LT)
D = 1° 06' 56.8"
L = 478.38'
T = 239.36'
R = 5,135.00'
SE = NC
RO = SEE PLANS

-Y1-

PI Sta 13+66.17	PI Sta 11+05.50
Δ = 75° 00' 00.0" (LT)	Δ = 79° 18' 11.5" (RT)
D = 163° 42' 08.0"	D = 114° 35' 29.6"
L = 45.81'	L = 69.21'
T = 26.86'	T = 41.44'
R = 35.00'	R = 50.00'
SE = SEE PLANS	SE = SEE PLANS
RO = SEE PLANS	RO = SEE PLANS

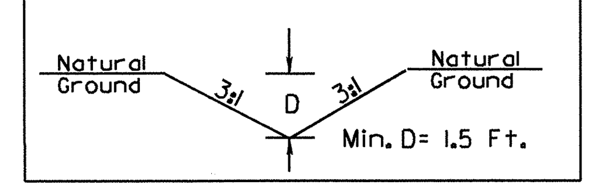
-DR2-

PI Sta 13+71.69
Δ = 59° 06' 07.2" (LT)
D = 114° 35' 29.6"
L = 51.58'
T = 28.35'
R = 50.00'
SE = SEE PLANS
RO = SEE PLANS

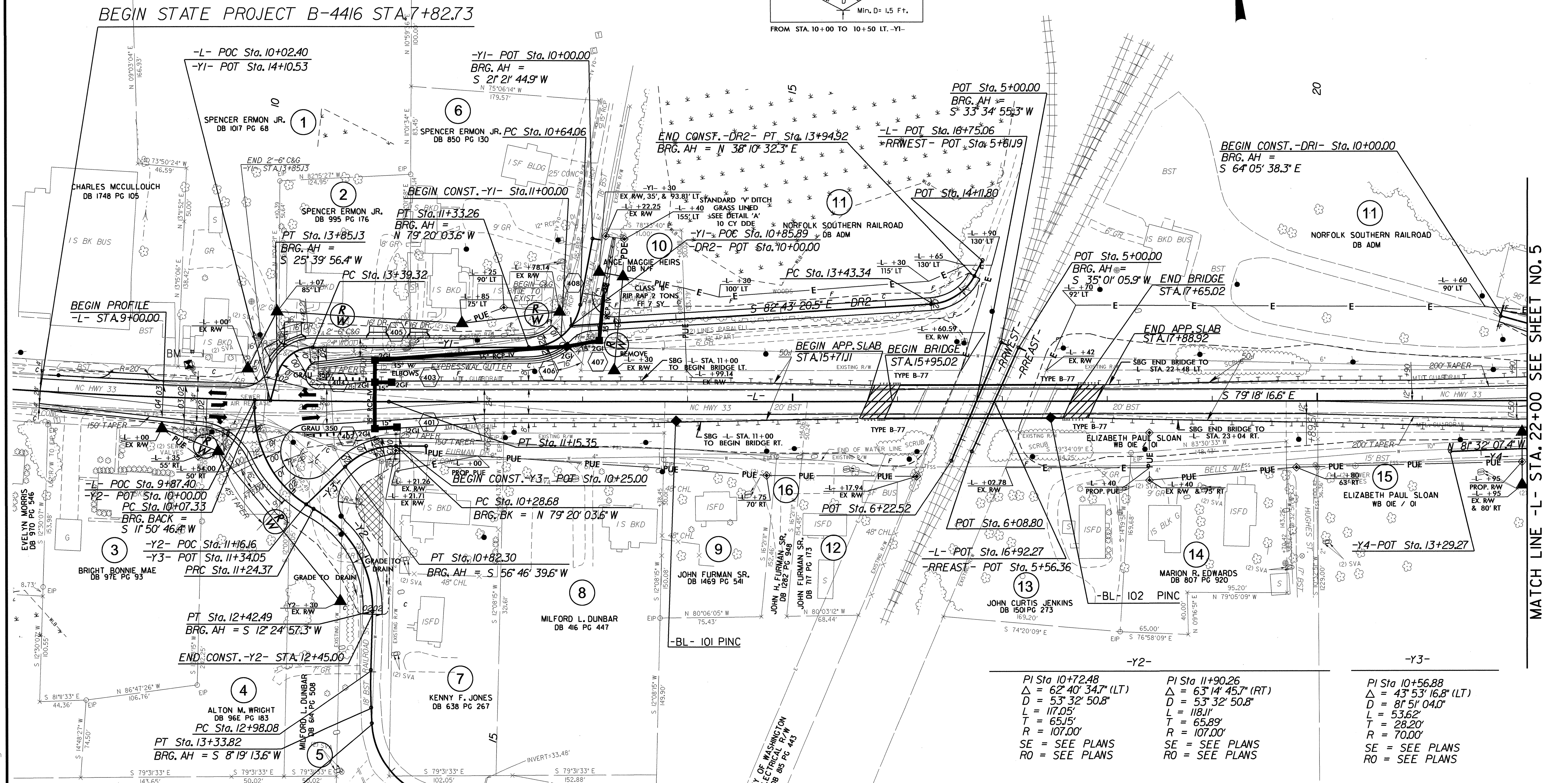
A REINFORCED SOIL SLOPE SHALL BE PLACED FROM STA. 10+50 +/- TO STA. 15+95.47 +/- -L- (LEFT), FROM STA. 10+50 +/- TO STA. 15+76.25 +/- -L- (RIGHT), FROM STA. 17+83.75 +/- TO STA. 23+00.00 +/- -L- (LEFT), AND FROM STA. 17+64.58 +/- TO STA. 23+50.00 +/- -L- (RIGHT). SEE REINFORCED SOIL SLOPE SPECIAL PROVISION.

NAD 83/2001

DETAIL 'A'
STANDARD 'V' DITCH
(Not to Scale)



FROM STA. 10+00 TO 10+50 LT. -Y1-



BEGIN STATE PROJECT B-4416 STA. 7+82.73
-L- POC Sta. 10+02.40
-Y1- POT Sta. 14+10.53
-Y1- POT Sta. 10+00.00
BRG. AH = S 21° 21' 44.9" W
SPENCER ERMON JR. DB 1017 PG 68
SPENCER ERMON JR. DB 850 PG 130
PC Sta. 10+64.06
SPENCER ERMON JR. DB 995 PG 176
CHARLES MCCULLOUCH DB 1748 PG 105
BEGIN CONST. -Y1- Sta. 11+00.00
PT Sta. 11+33.26
BRG. AH = N 79° 20' 03.6" W
PT Sta. 13+85.13
BRG. AH = S 25° 39' 56.4" W
PC Sta. 13+39.32
BEGIN PROFILE -L- STA. 9+00.00
END CONST. -DR2- PT Sta. 13+94.92
BRG. AH = N 38° 10' 32.3" E
POT Sta. 5+00.00
BRG. AH = S 33° 34' 55.3" W
-L- POT Sta. 16+75.06
-RRWEST- POT Sta. 5+61.19
POT Sta. 14+11.80
-Y1- POC Sta. 10+85.89
-DR2- POT Sta. 10+00.00
PC Sta. 13+43.34
NORFOLK SOUTHERN RAILROAD DB ADM
ANCE MAGGIE HEIRS DB N/F
S 82° 43' 20.5" E -DR2
BEGIN APP. SLAB STA. 15+71.11
BEGIN BRIDGE STA. 15+95.02
POT Sta. 5+00.00
BRG. AH = S 35° 01' 05.9" W
END BRIDGE STA. 17+65.02
END APP. SLAB STA. 17+88.92
BEGIN CONST. -DR1- Sta. 10+00.00
BRG. AH = S 64° 05' 38.3" E
NC HWY 33
-L-
S 79° 18' 16.6" E
-L- POC Sta. 9+87.40
-Y2- POT Sta. 10+00.00
PC Sta. 10+07.33
BRG. BACK = S 11° 50' 46.4" W
-Y2- POC Sta. 11+16.16
-Y3- POT Sta. 11+34.05
PRC Sta. 11+24.37
BRIGHT BONNIE MAE DB 97E PG 93
EVELYN MORRIS DB 970 PG 546
PT Sta. 11+15.35
BEGIN CONST. -Y3- POT Sta. 10+25.00
PC Sta. 10+28.68
BRG. BK = N 79° 20' 03.6" W
PT Sta. 10+82.30
BRG. AH = S 56° 46' 39.6" W
MILFORD L. DUNBAR DB 416 PG 447
JOHN FURMAN SR. DB 1469 PG 541
JOHN H. FURMAN SR. DB 1282 PG 946
JOHN FURMAN SR. DB 717 PG 173
POT Sta. 6+22.52
POT Sta. 6+08.80
-L- POT Sta. 16+92.27
-RREAST- POT Sta. 5+56.36
JOHN CURTIS JENKINS DB 1501 PG 273
MARION R. EDWARDS DB 807 PG 920
ELIZABETH PAUL SLOAN WB OIE / 01
-BL- 102 PINC
-BL- 101 PINC
-Y4- POT Sta. 13+29.27
PT Sta. 12+42.49
BRG. AH = S 12° 24' 57.3" W
END CONST. -Y2- STA. 12+45.00
ALTON M. WRIGHT DB 96E PG 183
PC Sta. 12+98.08
PT Sta. 13+33.82
BRG. AH = S 8° 19' 13.6" W
MILFORD L. DUNBAR DB 614 PG 508
KENNY F. JONES DB 638 PG 267
PC Sta. 13+49.32
PT Sta. 14+53.26
S 71° 05' 14.5" E
POT Sta. 15+46.21
CITY OF WASHINGTON ELECTRICAL R/W DB 815 PG 443
MATCH LINE -L- STA. 22+00 SEE SHEET NO. 5

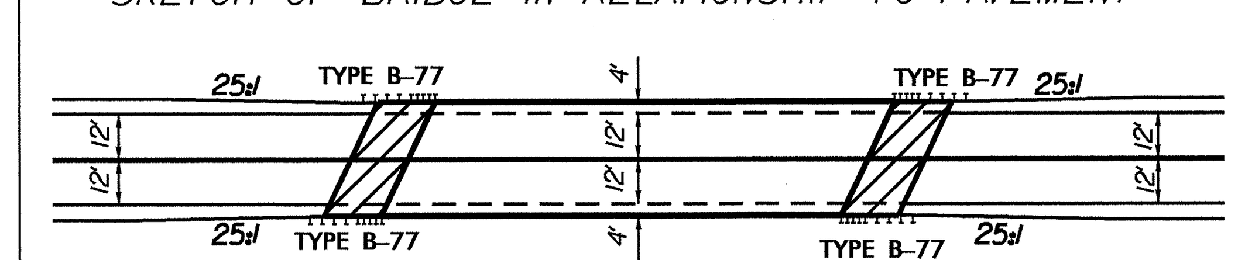
-Y2-

PI Sta 10+72.48	PI Sta 11+90.26
Δ = 62° 40' 34.7" (LT)	Δ = 63° 14' 45.7" (RT)
D = 53° 32' 50.8"	D = 53° 32' 50.8"
L = 117.05'	L = 118.11'
T = 65.15'	T = 65.89'
R = 107.00'	R = 107.00'
SE = SEE PLANS	SE = SEE PLANS
RO = SEE PLANS	RO = SEE PLANS

-Y3-

PI Sta 10+56.88
Δ = 43° 53' 16.8" (LT)
D = 81° 51' 04.0"
L = 53.62'
T = 28.20'
R = 70.00'
SE = SEE PLANS
RO = SEE PLANS

SKETCH OF BRIDGE IN RELATIONSHIP TO PAVEMENT



SBG: SHOULDER BERM GUTTER
FOR -L- PROFILE SEE SHEET 6
FOR -Y1-, -Y2-, & -Y3- PROFILES SEE SHEET 7
FOR -DR2- PROFILE SEE SHEET 8
FOR STRUCTURE SEE SHEET S1 TO S28

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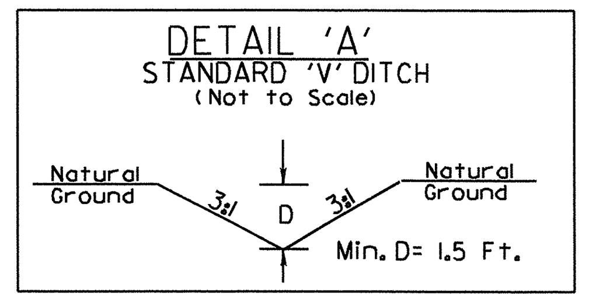
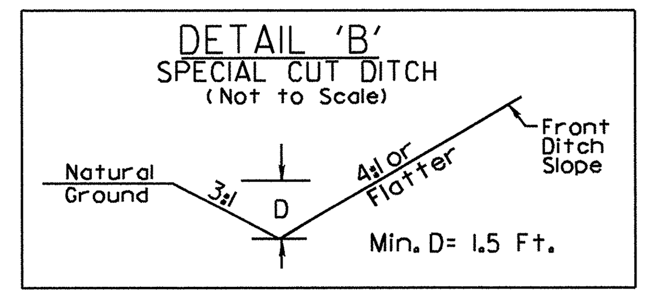
PROJECT REFERENCE NO.	SHEET NO.
B-4416	5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 25477 ENGINEER THAD F. DUNCAN 8/18/11	NORTH CAROLINA PROFESSIONAL SEAL 26870 ENGINEER MARC T. SHOWN 8/15/11

NAD 83/2001



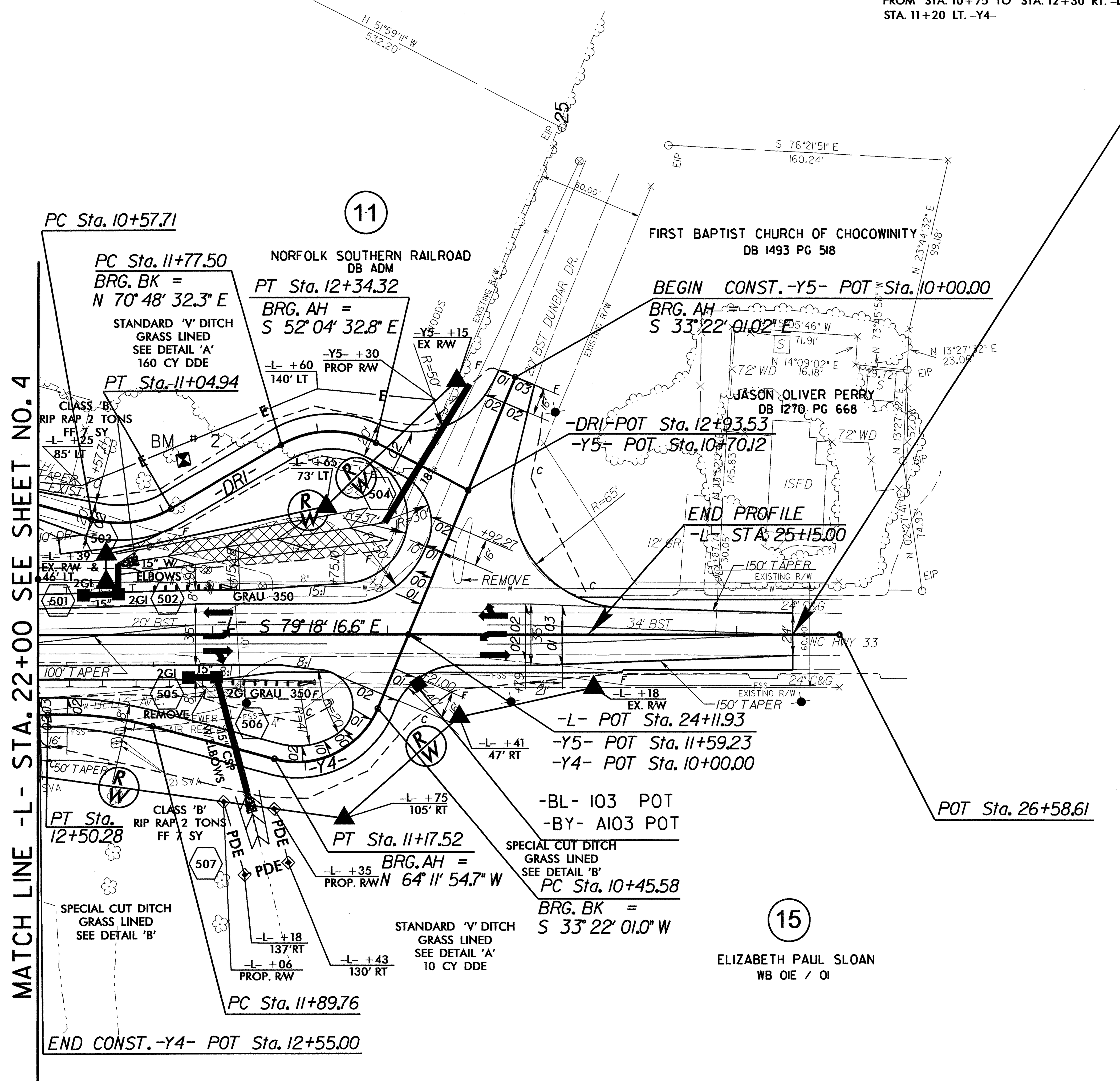
FROM STA. 10+75 TO STA. 12+30 RT. -DR1-
STA. 11+20 LT. -Y4-



FROM STA. 11+00 TO STA. 11+30 LT. -Y4-
FROM STA. 11+30 TO STA. 11+50 LT. -Y4-

END STATE PROJECT B-4416 STA. 26+32.00

A REINFORCED SOIL SLOPE SHALL BE PLACED FROM STA. 10+50+/- TO STA. 15+95.47 +/- -L- (LEFT), FROM STA. 10+50 +/- TO STA. 15+76.25 +/- -L- (RIGHT), FROM STA. 17+83.75 +/- TO STA. 23+00.00 +/- -L- (LEFT), AND FROM STA. 17+64.58 +/- TO STA. 23+50.00 +/- -L- (RIGHT). SEE REINFORCED SOIL SLOPE SPECIAL PROVISION.



-DR1-

PI Sta 10+82.63	PI Sta 12+08.53
Δ = 45° 05' 49.4" (LT)	Δ = 57° 06' 54.9" (RT)
D = 95° 29' 34.7"	D = 100° 31' 08.1"
L = 47.23'	L = 56.82'
T = 24.91'	T = 31.02'
R = 60.00'	R = 57.00'
SE = SEE PLANS	SE = SEE PLANS
RO = SEE PLANS	RO = SEE PLANS

-Y4-

PI Sta 10+89.38	PI Sta 12+20.25
Δ = 82° 26' 04.2" (RT)	Δ = 17° 20' 12.7" (LT)
D = 114° 35' 29.6"	D = 28° 38' 52.4"
L = 71.94'	L = 60.52'
T = 43.80'	T = 30.49'
R = 50.00'	R = 200.00'
SE = SEE PLANS	SE = SEE PLANS
RO = SEE PLANS	RO = SEE PLANS

FOR -L- PROFILE SEE SHEET 6
FOR -Y4-, -Y5- & -DR1- PROFILES SEE SHEET 7

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PROJECT REFERENCE NO.	SHEET NO.
B-4416	6

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 25477 THAD F. DUNCAN 8/18/11

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL MARC T. SHOWN 8/15/11

-L-

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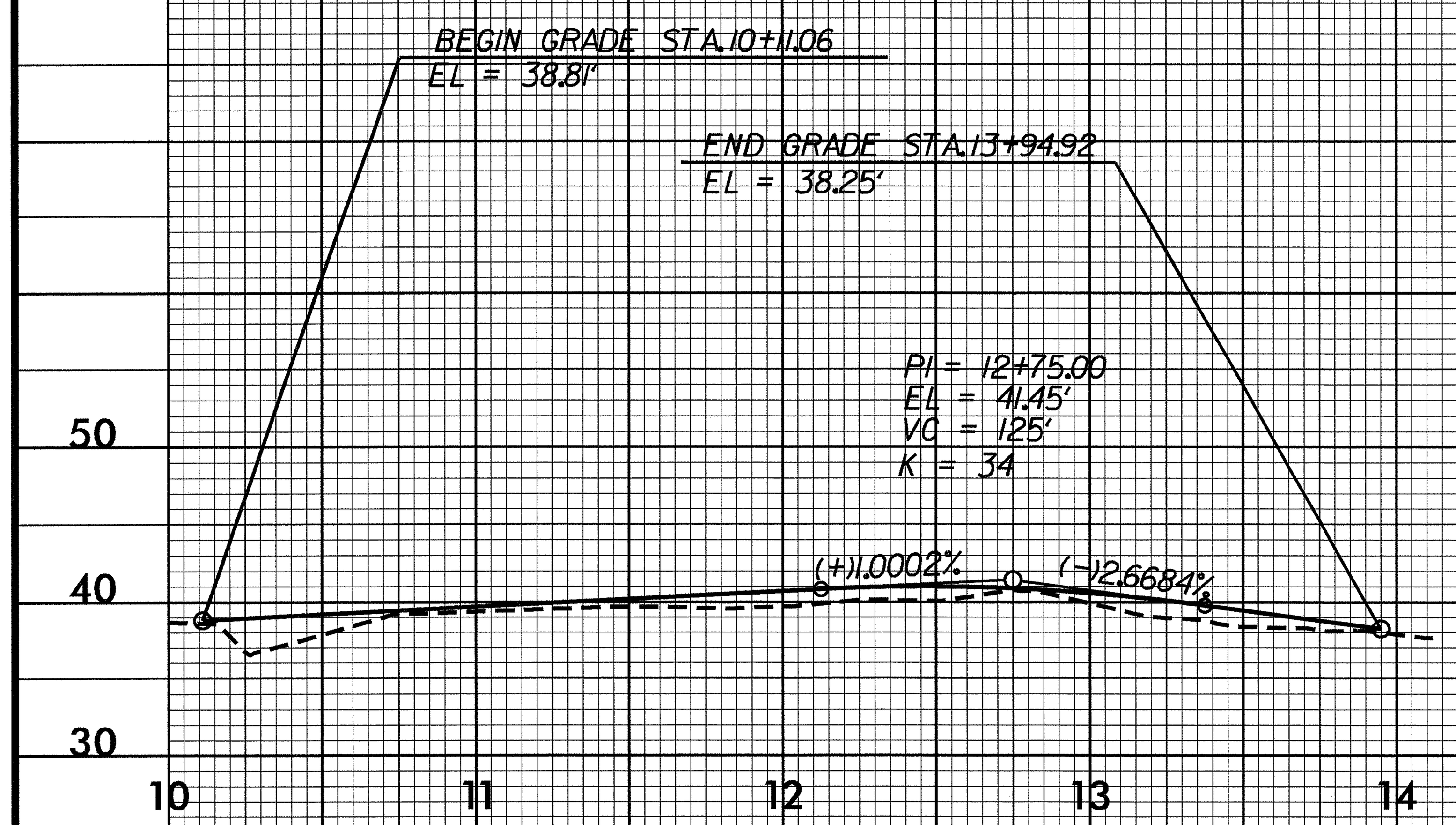
PROJECT REFERENCE NO.	SHEET NO.
B-4416	7

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 25477 THAD F. DUNCAN 8/18/11	NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 20870 MARC T. SHOWN 8/15/11

PROJECT REFERENCE NO.	SHEET NO.
B-4416	8
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 25477 ENGINEER THAD F. DUNCAN 8/18/11	NORTH CAROLINA PROFESSIONAL SEAL 20870 ENGINEER MARC T. SHOWN 8/15/11

-DR2-



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