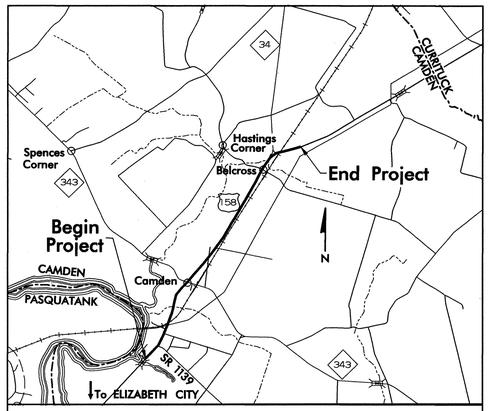
CONTRACT: C202760 TIP PROJECT: R-2414B

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CAMDEN COUNTY

LOCATION: US 158 FROM SOUTH OF SR 1139 (COUNTRY CLUB RD.) TO EAST OF NC 34 IN BELCROSS

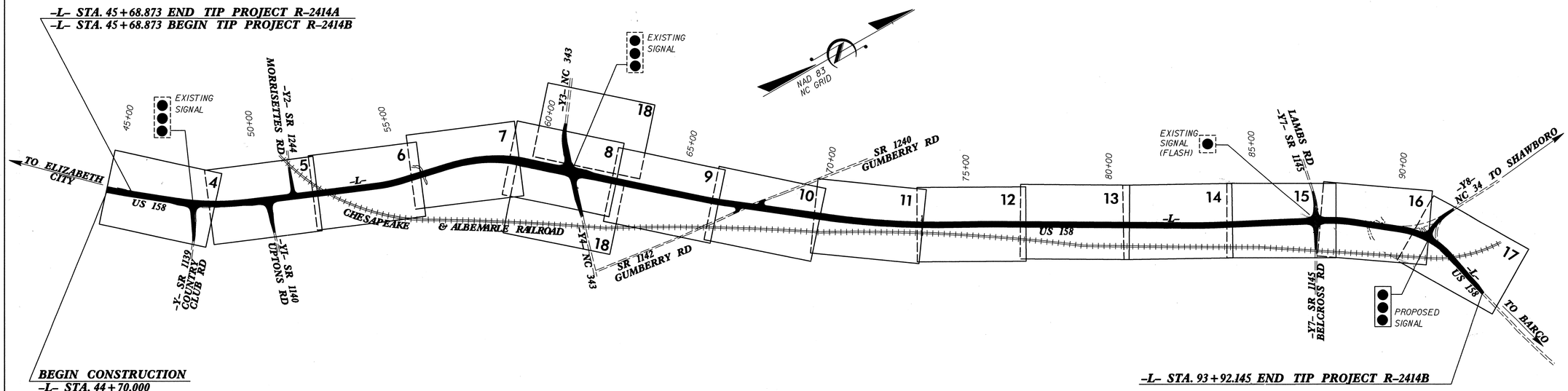
TYPE OF WORK: WIDENING, GRADING, DRAINAGE, PAVING, CURB & GUTTER, SIGNALS & CULVERTS

ALL DIMENSIONS IN THESE PLANS ARE IN METERS UNLESS OTHERWISE SHOWN

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2414B	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34430.1.1	STP-158(2)	PE
34430.2.5		ROW & UTILITIES
34430.3.3		CONST.

-L- STA. 45+68.873 END TIP PROJECT R-2414A
-L- STA. 45+68.873 BEGIN TIP PROJECT R-2414B



BEGIN CONSTRUCTION
-L- STA. 44+70.000

-L- STA. 93+92.145 END TIP PROJECT R-2414B

TRANSITE CONSULTING ENGINEERS, INCORPORATED
1300 Paddock Drive, Suite G-10
Raleigh, N.C. 27609

GRAPHIC SCALES

PLANS 5 0 10

PROFILE (HORIZONTAL) 5 0 10

PROFILE (VERTICAL) 1 0 2

DESIGN DATA

ADT (2009) = 26,000
ADT (2029) = 41,500
DHV = 12%
D = 60%
T = 6% *
V = 80 km/h

* (TTST 2%+ DUAL 4%)

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2414B = 4.823 Km
TOTAL LENGTH TIP PROJECT R-2414B = 4.823 Km

Prepared for the North Carolina Department of Transportation in the Office of:

WETHERILL ENGINEERING
559 JONES FRANKLIN ROAD
SUITE 164
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: NOVEMBER 15, 2006

LETTING DATE: JUNE 21, 2011

EDWARD G, WETHERILL, PE
PROJECT ENGINEER

BOB A. MAY, PE
PROJECT DESIGN ENGINEER

NCDOT CONTACT: B. DOUG TAYLOR, PE
ROADWAY DESIGN: ENGINEERING COORDINATION SECTION ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18442 ENGINEER RICHARD LEON BOLLINGER, JR.

SIGNATURE: 10/7/10

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY P.E.

SIGNATURE: 10/7/10

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

P.E.
STATE HIGHWAY DESIGN ENGINEER

2:29:01 PM
R-2414B\Roadway\Proj\r-2414b_rdy_tsh.dgn
10/7/2010

WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
License No. P-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 037161 ENGINEER BOB A MAY 10/25/10

EFF. 08-01-08
REV. 07-16-06

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 THRU 2-E	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
2-F THRU 2-I	DETAILS OF INTERSECTIONS
2-J	DETOUR -DET1- SHEET FOR R.C. BOX CULVERT CONSTRUCTION
2-K	DETOUR -DET2- SHEET FOR R.C. BOX CULVERT CONSTRUCTION
2-L	DETOUR -DET3- SHEET FOR R.C. BOX CULVERT CONSTRUCTION
2-M	DETAILS OF TEMPORARY SHORING
2-N THRU 2-O	METOD OF PIPE INSTALLATION
2-P	EMBANKMENT MONITORING DETAIL
2-Q	DETAIL FOR MONOLITHIC CONCRETE ISLAND
2-R	DETAIL FOR CSAP COLLAR
2-S THRU 2-T	DETAIL FOR WHEELCHAIR RAMPS
2-U TO 2-X	DETAILS FOR MASS SOIL MIXING
2-Y	DETAIL FOR CONCRETE STEPS
3 (2 SHEETS)	SUMMARY OF QUANTITIES
3-A THRU 3-M	SUMMARY OF DRAINAGE QUANTITIES (PIPES 1200mm & UNDER)
3-N	SUMMARY OF GUARDRAIL & DRAINAGE QUANTITIES (PIPES 1200mm & OVER)
3-O	SUMMARIES OF EARTHWORK, PAVEMENT REMOVAL & UNDERDRAINS
3-P	PARCEL INDEX SHEET
4 THRU 18	PLAN SHEETS
19 THRU 28	PROFILE SHEETS
TCP-1 THRU TCP-32	TRAFFIC CONTROL PLANS
PM-1 THRU PM-11	PAVEMENT MARKING PLANS
EC-1 THRU EC-39	EROSION CONTROL PLANS
RF-1	REFORESTATION PLANS
SIGN-1 THRU SIGN-11	SIGNING PLANS
SIG-1 THRU SIG-51	SIGNAL PLANS
UC-1 THRU UC-18	UTILITY CONSTRUCTION PLANS
UO-1 THRU UO-16	UTILITY BY OTHERS PLANS
X-INDEX	CROSS-SECTION INDEX OF SHEETS
X-1A THRU X-1B	CROSS-SECTION SUMMARY SHEETS
X-1 THRU X-97	CROSS-SECTIONS
C-1 THRU C-26	CULVERT 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. 848.02 USING 900 MM RADII OR RADII AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

STREET TURNOUT:

STREET RETURNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.04 USING THE RADII NOTED ON PLANS.

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 NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING".

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE CTT, SPRINT & CITY OF ELIZABETH CITY.

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

RIGHT-OF-WAY MARKERS:

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

WHEELCHAIR RAMPS:

WHEELCHAIR RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS. THE CONSTRUCTION OF ALL WHEELCHAIR RAMPS SHALL BE IN ACCORDANCE WITH DETAIL SHEET 2-S THRU 2-T IN THE PLANS.

2006 ROADWAY METRIC 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
225.06	Method of Grading Sight Distance at Intersections
DIVISION 3 - PIPE CULVERTS	
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	
815.03	Pipe Underdrain and Blind Drain
838.07	Conc. Endwall for Single & Double Pipe Culvrts - 1016mm x 787mm thru 1676mm x 1295mm Arch 90 Skew
838.17	Brick Endwall for Single & Double Pipe Culverts - 1016mm x 787mm thru 1676mm x 1295mm Arch 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 300mm thru 1350mm Pipe
840.02	Concrete Catch Basin - 300mm thru 1350mm Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.14	Concrete Drop Inlet - 300mm thru 750mm Pipe
840.15	Brick Drop Inlet - 300mm thru 750mm Pipe
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.18	Concrete Grated Drop Inlet Type 'B' - 300mm thru 900mm Pipe
840.24	Frames and Narrow Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete
840.27	Brick Grated Drop Inlet Type 'B' - 300mm thru 900mm Pipe
840.45	Precast Drainage Structure
840.66	Drainage Structure Steps
840.71	Concrete and Brick Pipe Plug
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
848.01	Concrete Sidewalk
848.02	Driveway Turnout - Radius Type
848.04	Street Turnout
852.06	Method for Placement of Drop Inlets in Concrete Islands
862.01	Guardrail Placement
862.02	Guardrail Installation
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

8/17/99

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3/15/06

Note: Not to Scale

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

PROJ. REFERENCE NO.	SHEET NO.
R-2414B	1 - B

METRIC

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 Aerial Utility Easement — AUE
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- 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 Wheel Chair Ramp — WCR
- Proposed Wheel Chair Ramp Curb Cut — WCC

- 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.

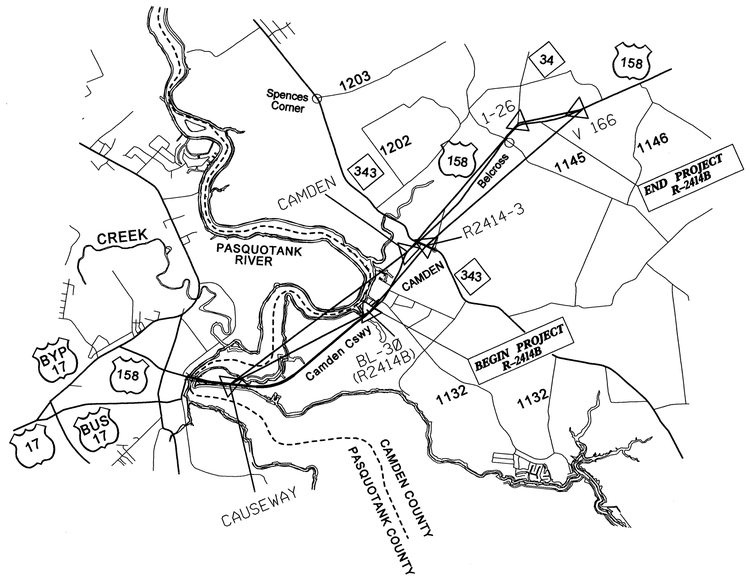
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6/2/99

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	1C
Location and Surveys	

METRIC

SURVEY CONTROL SHEET R-2414B



GPS CONTROL NETWORK

BY4

POINT	DESC.	NORTH	EAST	ELEVATION	Y4 STATION	OFFSET
EQ35	BL-35	289613.1780	863523.0680	2.787	10+05.116	14.101 RT
3	GPS 2414-3	289581.3940	863697.6660	2.782	OUTSIDE PROJECT LIMITS	

BY6

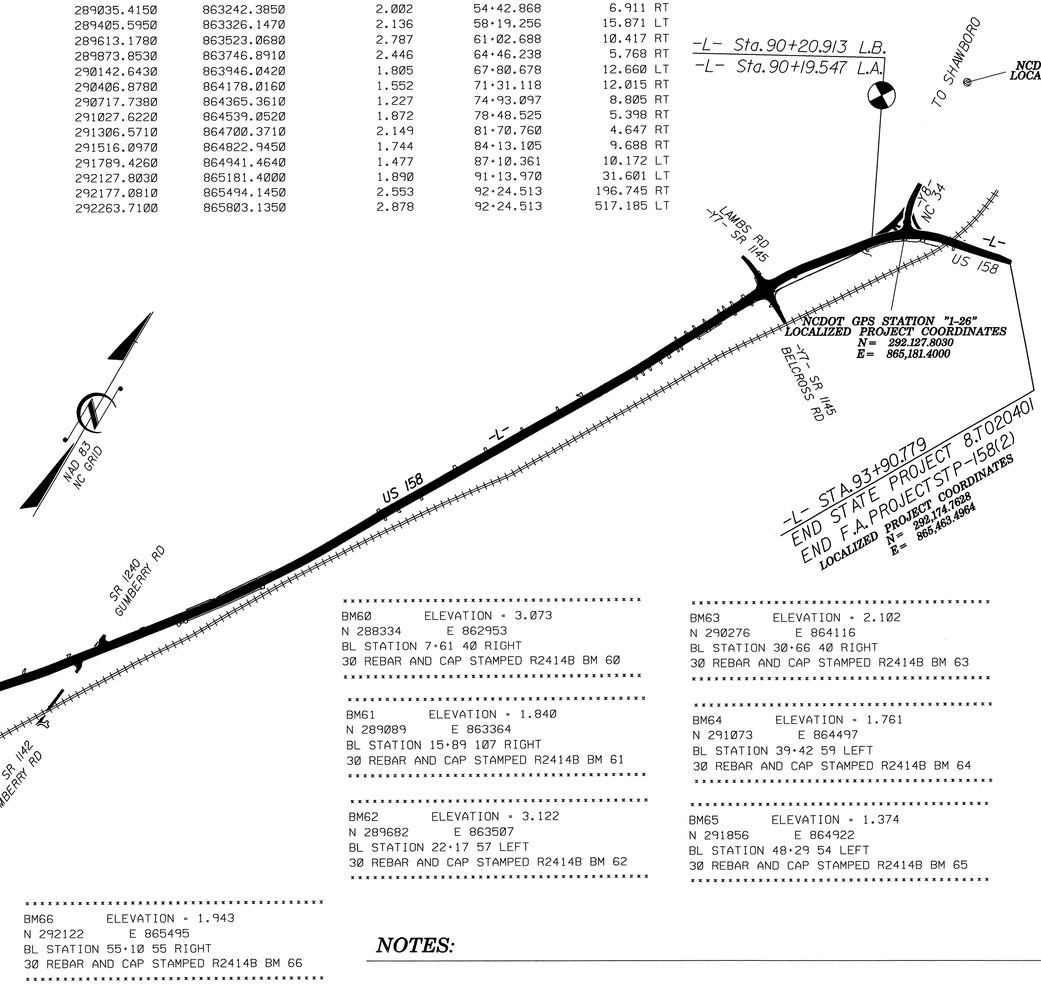
POINT	DESC.	NORTH	EAST	ELEVATION	Y6 STATION	OFFSET
EQ37	BL-37	290142.6430	863946.0420	1.805	OUTSIDE PROJECT LIMITS	
50	BL-50	289868.9840	863899.1200	2.853	OUTSIDE PROJECT LIMITS	

BY8

POINT	DESC.	NORTH	EAST	ELEVATION	Y8 STATION	OFFSET
27	GPS 1-27	292517.9090	865130.5850	2.164	OUTSIDE PROJECT LIMITS	
EQ26	GPS 1-26	292127.8030	865181.4000	1.890	12+05.432	0.698 RT

BL

POINT	DESC.	NORTH	EAST	ELEVATION	-L- STATION	OFFSET
30	BL-30	288168.7190	862747.6600	2.274	44+36.581	2.858 LT
31	BL-31	288402.1300	862962.6990	2.271	47+52.776	15.559 RT
70	BL-70	288734.5570	863118.4520	2.512	51+17.813	6.749 RT
71	BL-71	289035.4150	863242.3850	2.002	54+42.868	6.911 RT
72	BL-72	289405.5950	863326.1470	2.136	58+19.256	15.871 LT
35	BL-35	289613.1780	863523.0680	2.787	61+02.688	10.417 RT
36	BL-36	289873.8530	863746.8910	2.446	64+46.238	5.768 RT
37	BL-37	290142.6430	863946.0420	1.805	67+80.678	12.660 LT
38	BL-38	290406.8780	864178.0160	1.552	71+31.118	12.015 RT
39	BL-39	290717.7380	864365.3610	1.227	74+93.097	8.805 RT
40	BL-40	291027.6220	864539.0520	1.872	78+48.525	5.398 RT
41	BL-41	291306.5710	864700.3710	2.149	81+70.760	4.647 RT
42	BL-42	291516.0970	864822.9450	1.744	84+13.105	9.688 RT
43	BL-43	291789.4260	864941.4640	1.477	87+10.361	10.172 LT
26	GPS 1-26	292127.8030	865181.4000	1.890	91+13.970	31.601 LT
44	BL-44	292177.0810	865494.1450	2.553	92+24.513	196.745 RT
45	BL-45	292263.7100	865803.1350	2.878	92+24.513	517.185 LT



****
BM60 ELEVATION = 3.073
N 288334 E 862953
BL STATION 7+61 40 RIGHT
30 REBAR AND CAP STAMPED R2414B BM 60
****

****
BM61 ELEVATION = 1.840
N 289089 E 863364
BL STATION 15+89 107 RIGHT
30 REBAR AND CAP STAMPED R2414B BM 61
****

****
BM62 ELEVATION = 3.122
N 289682 E 863507
BL STATION 22+17 57 LEFT
30 REBAR AND CAP STAMPED R2414B BM 62
****

****
BM63 ELEVATION = 2.102
N 290276 E 864116
BL STATION 30+66 40 RIGHT
30 REBAR AND CAP STAMPED R2414B BM 63
****

****
BM64 ELEVATION = 1.761
N 291073 E 864497
BL STATION 39+42 59 LEFT
30 REBAR AND CAP STAMPED R2414B BM 64
****

****
BM65 ELEVATION = 1.374
N 291856 E 864922
BL STATION 48+29 54 LEFT
30 REBAR AND CAP STAMPED R2414B BM 65
****

****
BM66 ELEVATION = 1.943
N 292122 E 865495
BL STATION 55+10 55 RIGHT
30 REBAR AND CAP STAMPED R2414B BM 66
****

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R2414-1" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 286521.540(m) EASTING: 859732.336(m) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.0000523 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R2414-1" TO -L- STATION 45+68.873 IS N 60°38'06.4" E 3,560.642m ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NGVD 29

CONTROL NETWORK STATIONS (STATE PLANE GRID COORDINATES)

NAME	NORTH	EAST	ELEVATION
NCGS "CAUSEWAY"	286490.077	860256.333	1.788
BL-30 (R2414B)	288168.805	862747.818	2.274
NCGS "CAMDEN"	289416.757	863350.573	2.430
NCDOT GPS (R2414-3)	289581.554	863697.873	2.780
NCDOT GPS "1-26"	292128.096	865181.685	1.890
CGS "V 166"	292507.581	866305.684	3.451

NOTE: DRAWING NOT TO SCALE

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: R-2414B_LS_CONTROL_061204.DGN

   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.

8:55:53 AM
C:\R-2414B\Roadway\Proj\r-2414b_ls_lc_061204.dgn
10/6/2010

WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
Licenses No. P-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

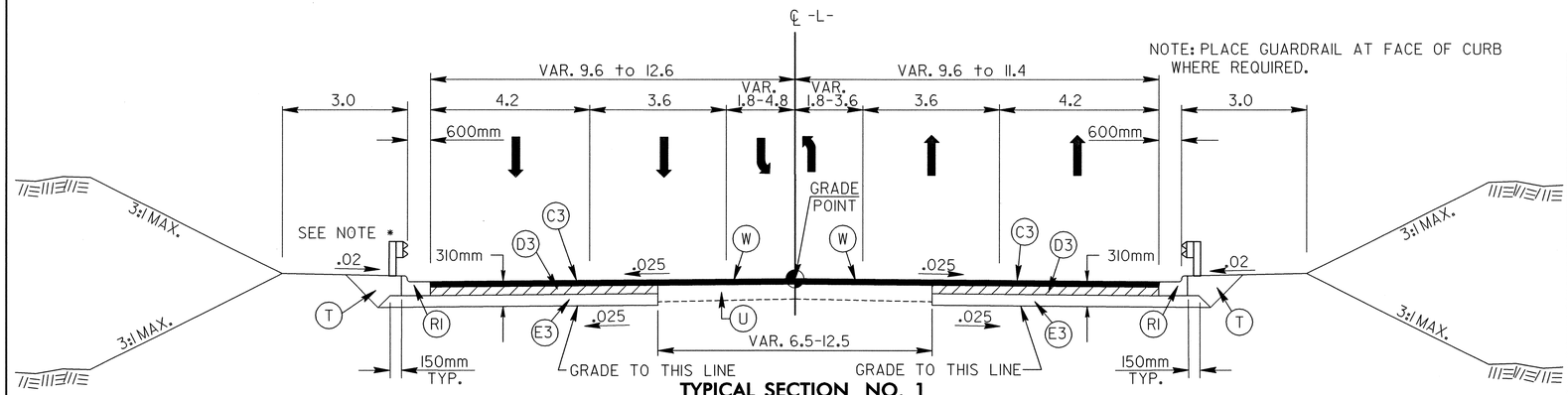
METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	2

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL ENGINEER BOB A. MAY
10/7/10

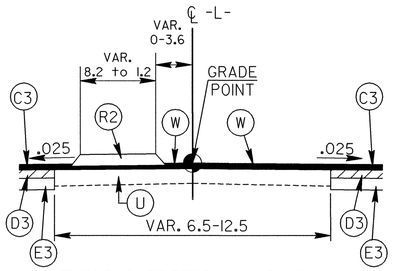
PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON
10/6/10

NOTE: PLACE FINAL LAYER OF SURFACE COURSE FROM
-L- STA. 44+70+/- TO -L- STA. 45+68.873 LT
-L- STA. 44+70+/- TO -L- STA. 46+50.000 RT



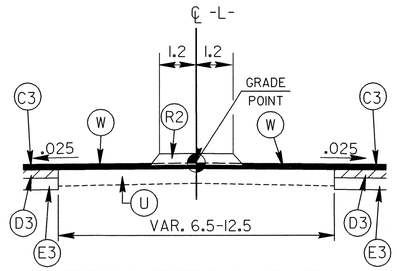
TYPICAL SECTION NO. 1

STA. 45+68.873 -L- LT. TO STA. 52+30.000 -L- LT.
STA. 46+50.000 -L- RT. TO STA. 52+30.000 -L- RT.
STA. 53+00.000 -L- TO STA. 55+33.000 -L-
STA. 56+34.000 -L- TO STA. 72+50.00 -L-
STA. 74+12.000 -L- TO STA. 88+55.000 -L-
STA. 89+18.000 -L- TO STA. 90+80.000 -L-



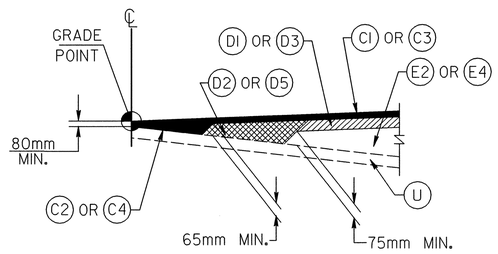
TYPICAL SECTION NO. 1A

USE IN CONJUNCTION WITH T.S. 1
STA. 58+45.707 -L- LT. TO STA. 60+71.153 -L- LT.



TYPICAL SECTION NO. 1B

USE IN CONJUNCTION WITH T.S. 1 & T.S. 2
STA. 52+09.199 -L- TO STA. 52+39.199 -L-



*NOTE: SEE TYPICAL SECTIONS AND PAVEMENT SCHEDULE FOR MINIMUM DEPTH FOR -Y- LINES.

DETAIL SHOWING METHOD OF WEDGING (W)

PAVEMENT SCHEDULE

C1	PROP. APPROX. 80 mm ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 96 kg PER SQ. METER IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 2.40 kg PER SQ. METER PER 1 mm DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 50 mm IN DEPTH.
C3	PROP. APPROX. 80 mm ASPHALT CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 96 kg PER SQ. METER IN EACH OF TWO LAYERS.
C4	PROP. VAR. DEPTH ASPHALT CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 2.40 kg PER SQ. METER PER 1 mm DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 50 MM IN DEPTH.
D1	PROP. APPROX. 65 mm ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 159.25 kg PER SQ. METER.
D2	PROP. VAR. DEPTH CONC. INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 2.45 kg PER SQ. METER PER 1 mm DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 65 mm OR GREATER THAN 110 mm IN DEPTH.
D3	PROP. APPROX. 100 mm ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 245 kg PER SQ. METER.
D4	PROP. APPROX. 65 mm ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 159.25 kg PER SQ. METER.
D5	PROP. VAR. DEPTH CONC. INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 2.45 kg PER SQ. METER PER 1 mm DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 65 mm OR GREATER THAN 110 mm IN DEPTH.
E1	PROP. APPROX. 130 mm ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 318.5 kg PER SQ. METER.
E2	PROP. VAR. DEPTH ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 2.45 kg PER SQ. METER PER 1 mm DEPTH, TO BE PLACED IN LAYERS NOT GREATER THAN 140 mm OR LESS THAN 75 mm IN DEPTH.
E3	PROP. APPROX. 130 mm ASPHALT CONC. BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 318.5 kg PER SQ. METER.
E4	PROP. VAR. DEPTH ASPHALT CONC. BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 2.45 kg PER SQ. METER PER 1 mm DEPTH, TO BE PLACED IN LAYERS NOT GREATER THAN 140 mm OR LESS THAN 75 mm IN DEPTH.
J	PROP. 150 mm AGGREGATE BASE COURSE.
L	CLASS IV SUBGRADE STABILIZATION
N	FABRIC STABILIZATION
R1	750 mm CONCRETE CURB AND GUTTER
R2	125 mm MONOLITHIC CONCRETE ISLAND (KEYED-IN)
S	100 mm CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING (SEE DETAIL THIS SHEET)

NOTE: ALL PAVEMENT SLOPES ARE 1:1 UNLESS OTHERWISE NOTED.

6/18/99
6/10/99

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10/7/2010 9:23:15 AM

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559 Jones Franklin Rd. Suite 164
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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

METRIC

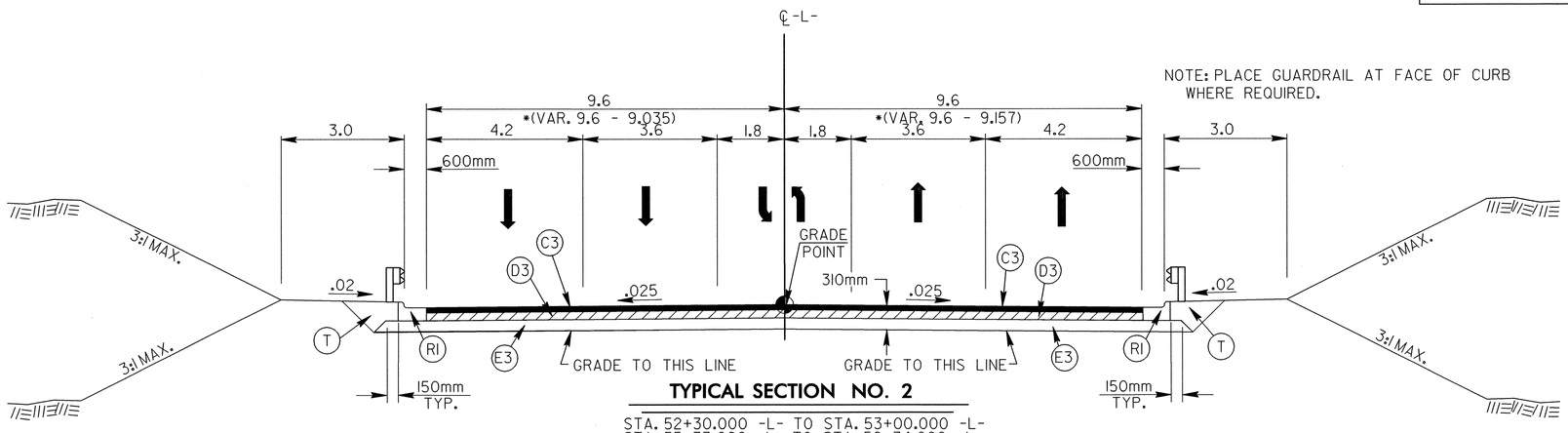
PROJECT REFERENCE NO.	SHEET NO.
R-2414B	2-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 21 ENGINEER BRIAN A. MAY
10/7/10

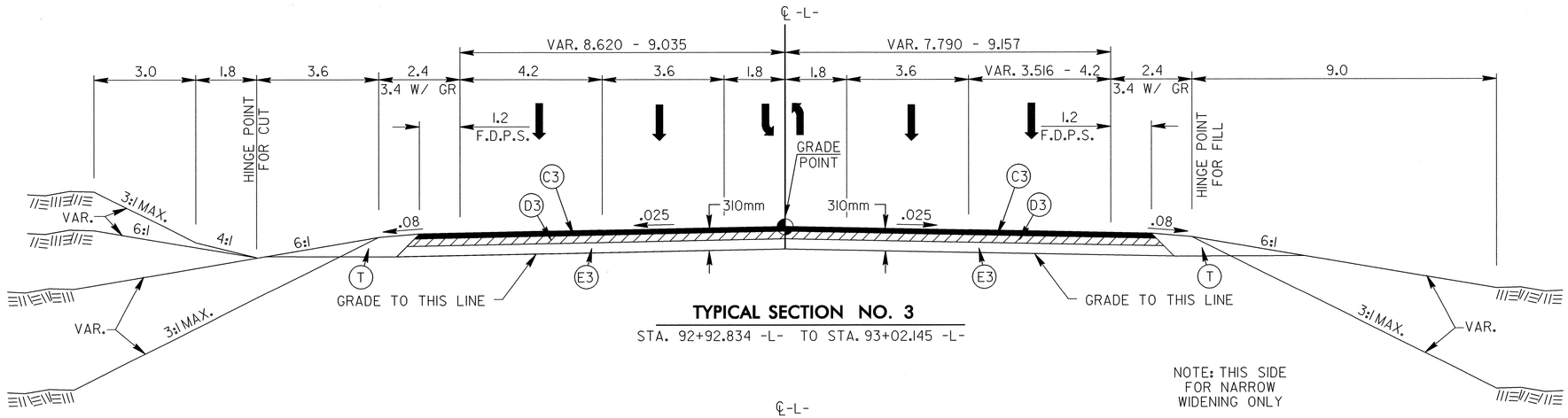
PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON
10/14/10



TYPICAL SECTION NO. 2

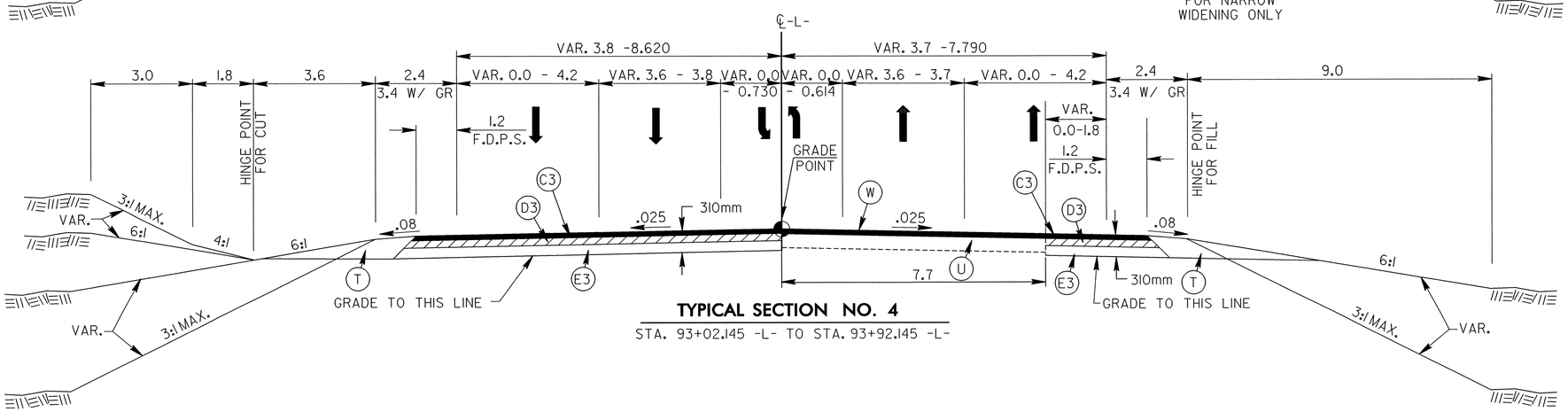
STA. 52+30.000 -L- TO STA. 53+00.000 -L-
STA. 55+33.000 -L- TO STA. 56+34.000 -L-
STA. 72+50.000 -L- TO STA. 74+12.000 -L-
STA. 88+55.000 -L- TO STA. 89+18.000 -L-
STA. 90+80.000 -L- TO STA. 92+92.834 -L-



TYPICAL SECTION NO. 3

STA. 92+92.834 -L- TO STA. 93+02.145 -L-

NOTE: THIS SIDE FOR NARROW WIDENING ONLY



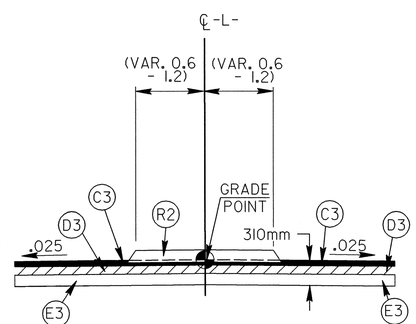
TYPICAL SECTION NO. 4

STA. 93+02.145 -L- TO STA. 93+92.145 -L-

PAVEMENT SCHEDULE

C1	80 mm S9.5B
C2	VAR. S9.5B
C3	80 mm S9.5C
C4	VAR. S9.5C
D1	65 mm I19.0B
D2	VAR. I19.0B
D3	100 mm I19.0C
D4	65 mm I19.0C
D5	VAR. I19.0C
E1	130 mm B25.0B
E2	VAR. B25.0B
E3	130 mm B25.0C
E4	VAR. B25.0C
J	150 mm ABC
L	CLASS IV SUBGRADE STABILIZATION
N	FABRIC STABILIZATION
R1	750 mm CONCRETE CURB & GUTTER
R2	125 mm MONOLITHIC CONC. ISLAND
S	100 mm CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING (SEE SHEET 2 FOR DETAIL)

NOTE: ALL PAVEMENT SLOPES ARE 1:1 UNLESS OTHERWISE NOTED.



TYPICAL SECTION NO. 2A

USE IN CONJUNCTION WITH T.S. 2 & T.S. 3
STA. 52+51.893 -L- TO STA. 52+94.000 -L-
STA. 91+99.980 -L- TO STA. 92+29.980 -L-
STA. 92+40.970 -L- TO STA. 92+70.970 -L-

6/16/99

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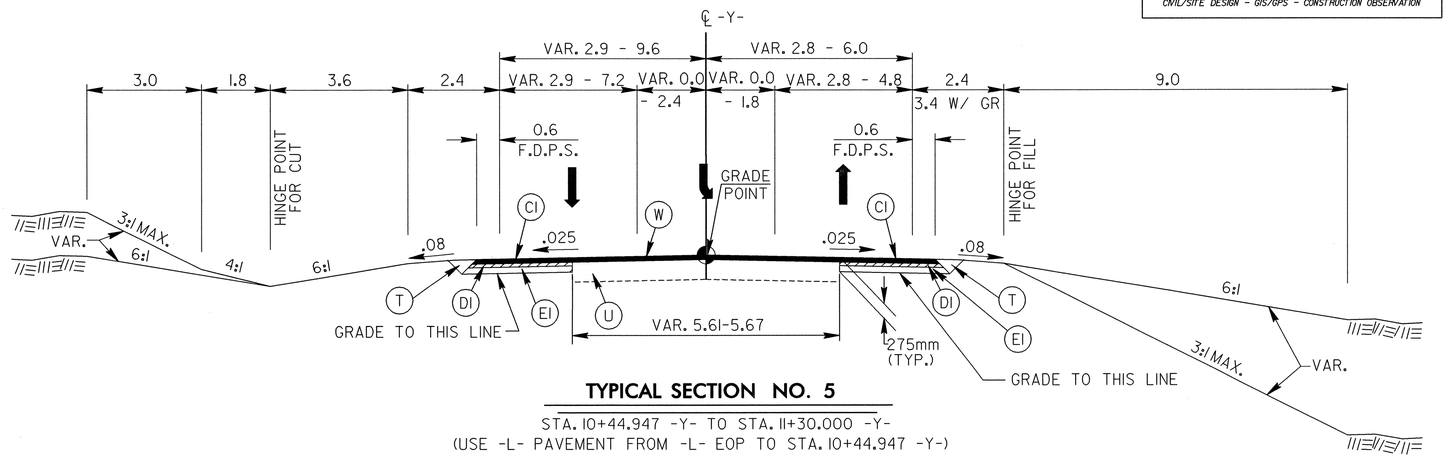
WETHERILL ENGINEERING
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Raleigh, N.C. 27606
License No. F-0377
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METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	2-B

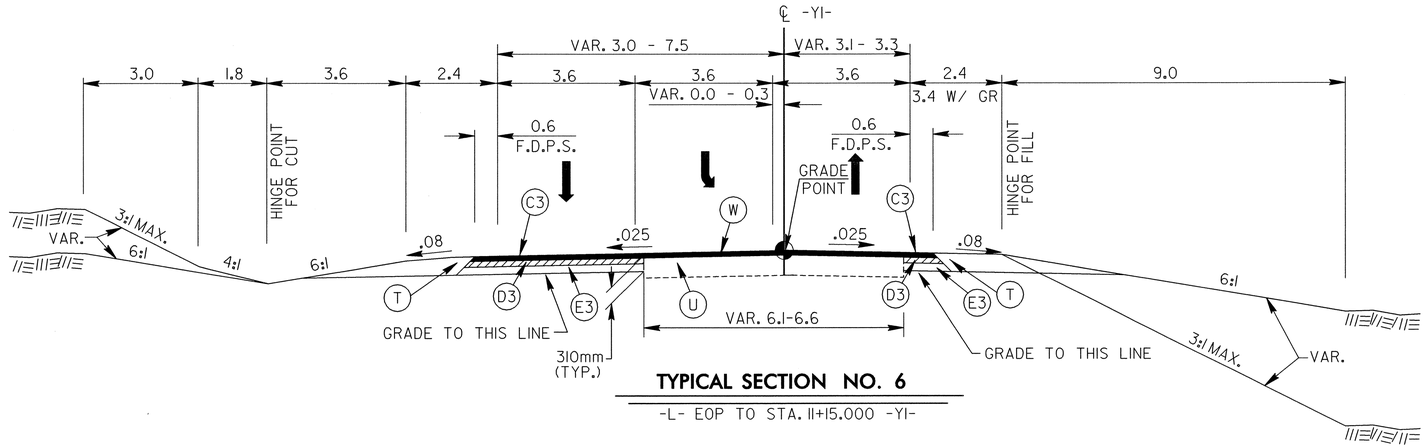
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 21760 ENGINEER BOB A. MAY
10/7/10

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON
10/11/10



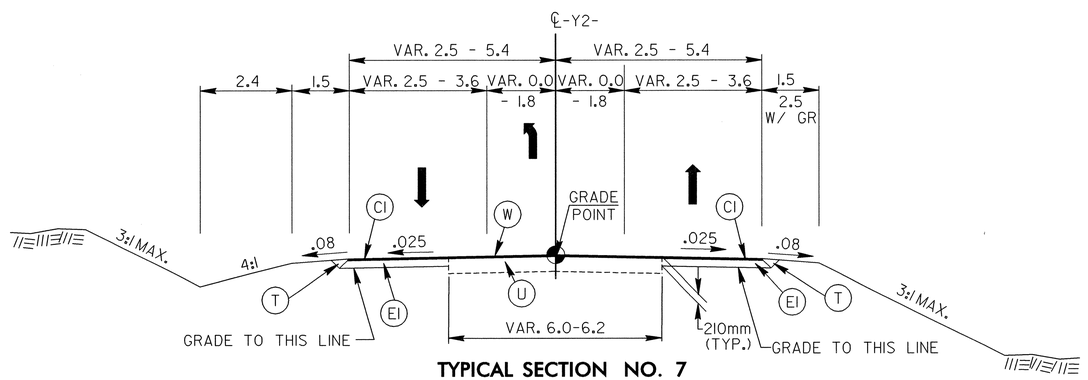
TYPICAL SECTION NO. 5

STA. 10+44.947 -Y- TO STA. 11+30.000 -Y-
(USE -L- PAVEMENT FROM -L- EOP TO STA. 10+44.947 -Y-)



TYPICAL SECTION NO. 6

-L- EOP TO STA. 11+15.000 -YI-



TYPICAL SECTION NO. 7

STA. 10+12.000 -Y2- TO 10+91.134 -Y2-
(USE -L- PAVEMENT STA. 10+90.134 -Y2- TO -L- EOP)

PAVEMENT SCHEDULE

C1	80 mm S9.5B
C2	VAR. S9.5B
C3	80 mm S9.5C
C4	VAR. S9.5C
D1	65 mm I19.0B
D2	VAR. I19.0B
D3	100 mm I19.0C
D4	65 mm I19.0C
D5	VAR. I19.0C
E1	130 mm B25.0B
E2	VAR. B25.0B
E3	130 mm B25.0C
E4	VAR. B25.0C
J	150 mm ABC
L	CLASS IV SUBGRADE STABILIZATION
N	FABRIC STABILIZATION
R1	750 mm CONCRETE CURB & GUTTER
R2	125 mm MONOLITHIC CONC. ISLAND
S	100 mm CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING (SEE SHEET 2 FOR DETAIL)

NOTE: ALL PAVEMENT SLOPES ARE 1:1 UNLESS OTHERWISE NOTED.

9/28/29
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10/7/2010

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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

METRIC

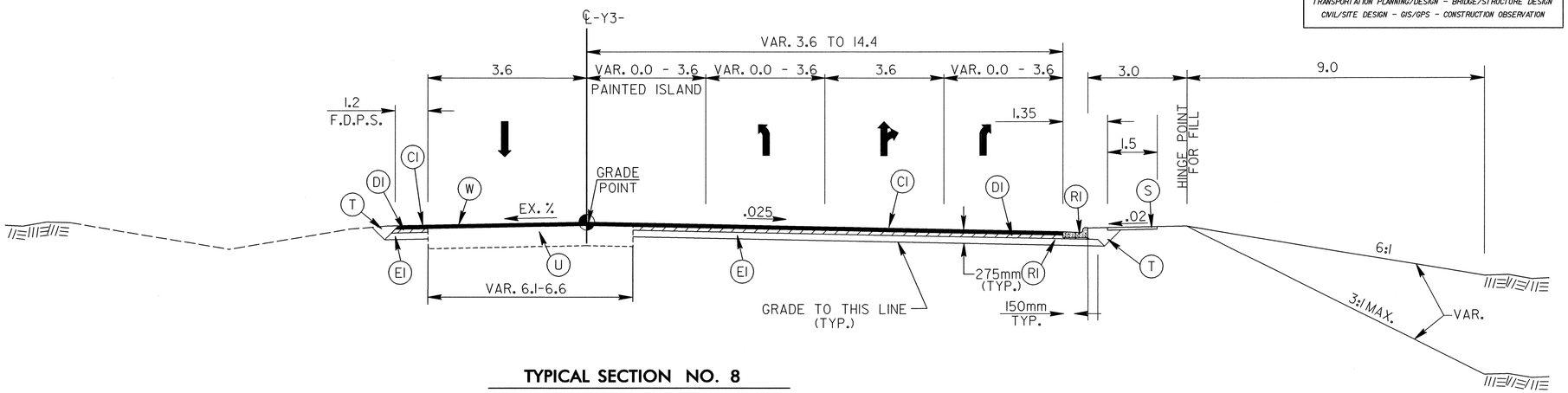
PROJECT REFERENCE NO.	SHEET NO.
R-2414B	2-C

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 21716 ENGINEER BOB A MAY
10/7/10

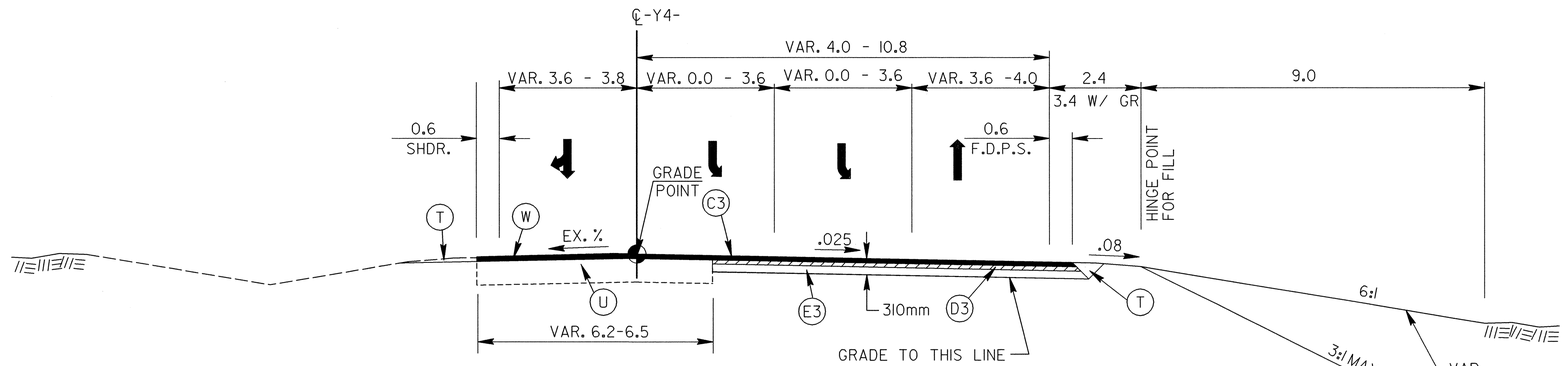
PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON
10/11/10



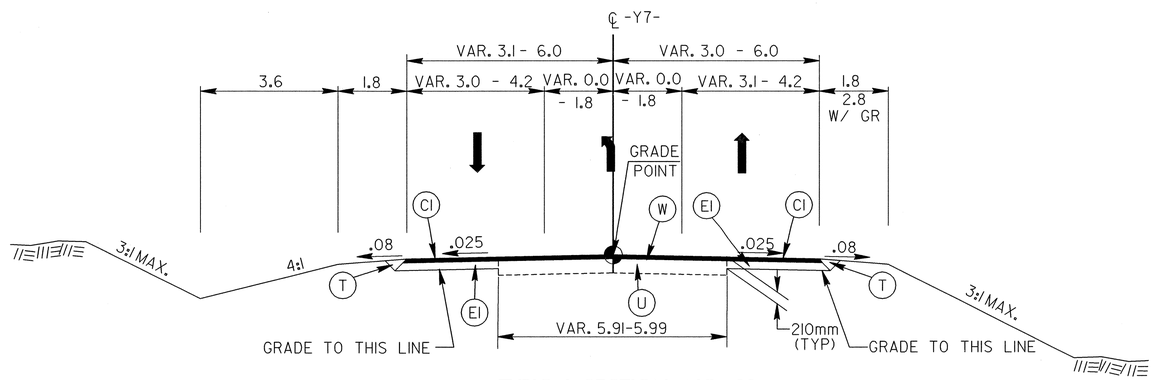
TYPICAL SECTION NO. 8

STA. 9+48.030 -Y3- TO STA. 11+12.321-Y3-
(USE -L- PAVEMENT STA. 11+12.321-Y3- TO -L- EOP)



TYPICAL SECTION NO. 9

-L- EOP TO STA. 11+63.200 -Y4-



TYPICAL SECTION NO. 10

SR 1145 (NORTH OF -L-)
STA. 10+10.000 -Y7- TO STA. 10+71.129 -Y7-
(USE -L- PAVEMENT, -Y7- STA. 10+71.129 TO -L- EOP)

PAVEMENT SCHEDULE

C1	80 mm S9.5B
C2	VAR. S9.5B
C3	80 mm S9.5C
C4	VAR. S9.5C
D1	65 mm I19.0B
D2	VAR. I19.0B
D3	100 mm I19.0C
D4	65 mm I19.0C
D5	VAR. I19.0C
E1	130 mm B25.0B
E2	VAR. B25.0B
E3	130 mm B25.0C
E4	VAR. B25.0C
J	150 mm ABC
L	CLASS IV SUBGRADE STABILIZATION
N	FABRIC STABILIZATION
R1	750 mm CONCRETE CURB & GUTTER
R2	125 mm MONOLITHIC CONC. ISLAND
S	100 mm CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING (SEE SHEET 2 FOR DETAIL)

NOTE: ALL PAVEMENT SLOPES ARE 1:1 UNLESS OTHERWISE NOTED.

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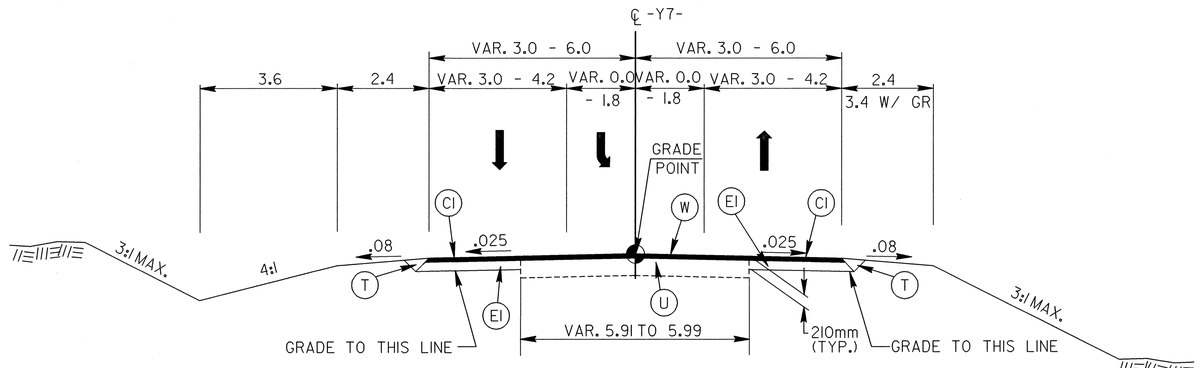
WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	2-D

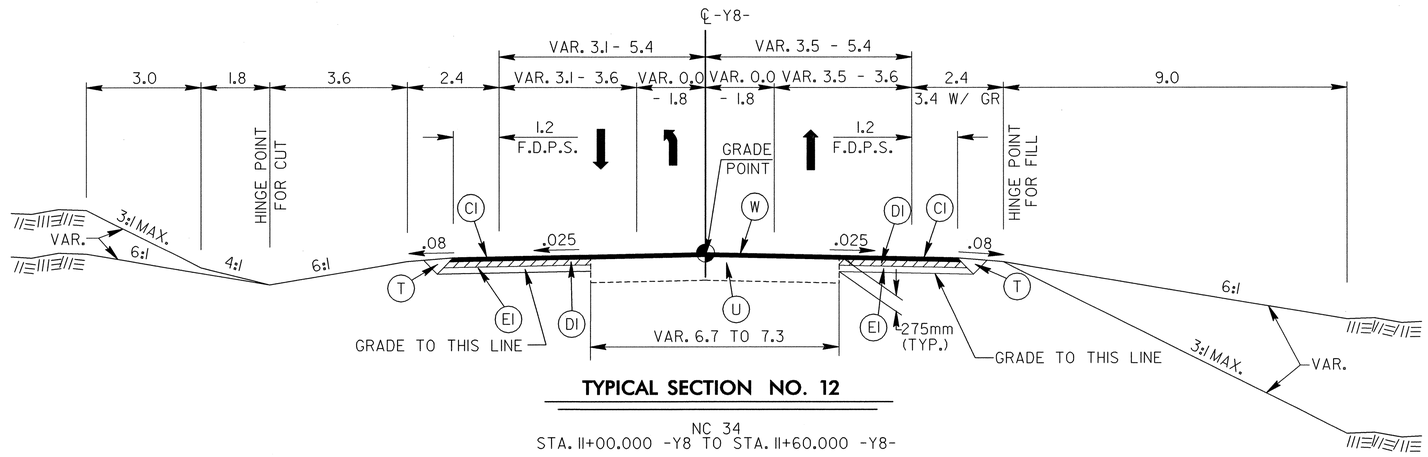
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 21 ENGINEER BOB A. MAY
10/7/10

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON
10/11/10



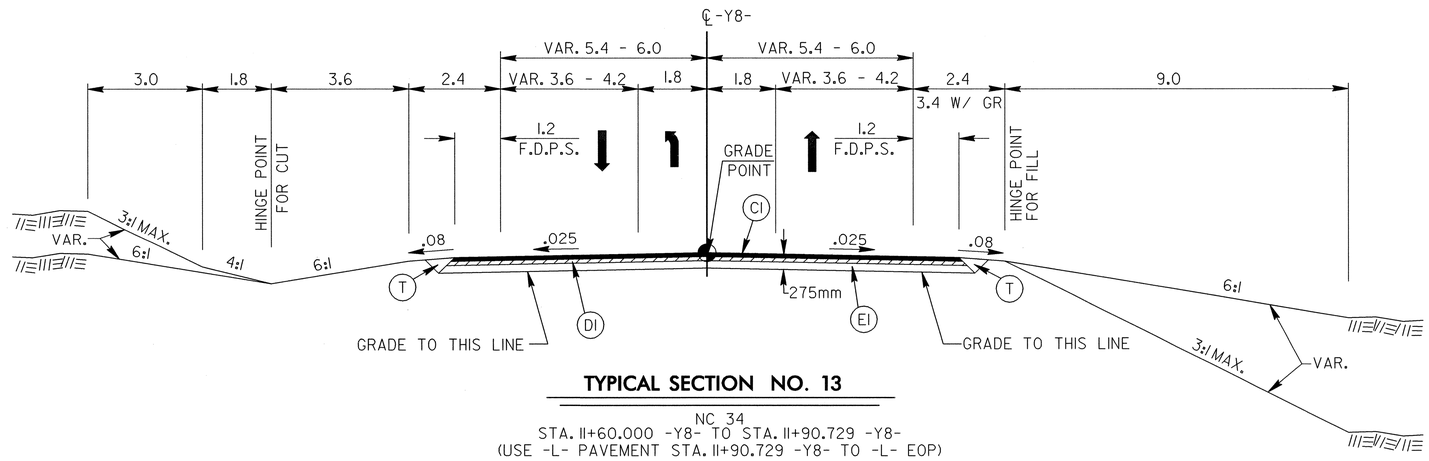
TYPICAL SECTION NO. 11

SR 1145 (SOUTH OF -L-)
STA. 11+56.547 -Y7- TO STA. 12+12.000 -Y7-
(USE -L- PAVEMENT, -L- EOP TO -Y7- STA. 11+56.547)



TYPICAL SECTION NO. 12

NC 34
STA. 11+00.000 -Y8 TO STA. 11+60.000 -Y8-



TYPICAL SECTION NO. 13

NC 34
STA. 11+60.000 -Y8- TO STA. 11+90.729 -Y8-
(USE -L- PAVEMENT STA. 11+90.729 -Y8- TO -L- EOP)

PAVEMENT SCHEDULE

C1	80 mm S9.5B
C2	VAR. S9.5B
C3	80 mm S9.5C
C4	VAR. S9.5C
D1	65 mm I19.0B
D2	VAR. I19.0B
D3	100 mm I19.0C
D4	65 mm I19.0C
D5	VAR. I19.0C
E1	130 mm B25.0B
E2	VAR. B25.0B
E3	130 mm B25.0C
E4	VAR. B25.0C
J	150 mm ABC
L	CLASS IV SUBGRADE STABILIZATION
N	FABRIC STABILIZATION
R1	750 mm CONCRETE CURB & GUTTER
R2	125 mm MONOLITHIC CONC. ISLAND
S	100 mm CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING (SEE SHEET 2 FOR DETAIL)

NOTE: ALL PAVEMENT SLOPES ARE 1:1 UNLESS OTHERWISE NOTED.

6/16/99
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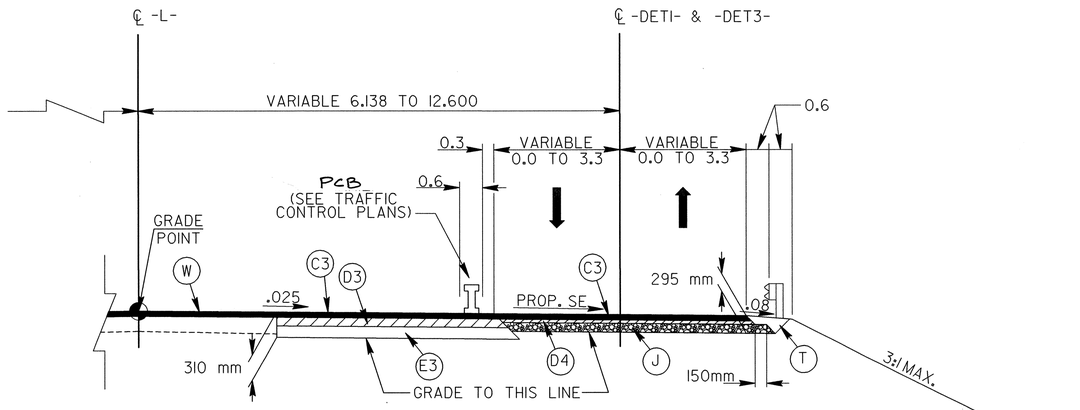
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Fax: 919 851 8107
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CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	2-E

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 027160 ENGINEER BOB A. MAY
10/7/10

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22889 ENGINEER CLARK S. MORRISON
10/11/10

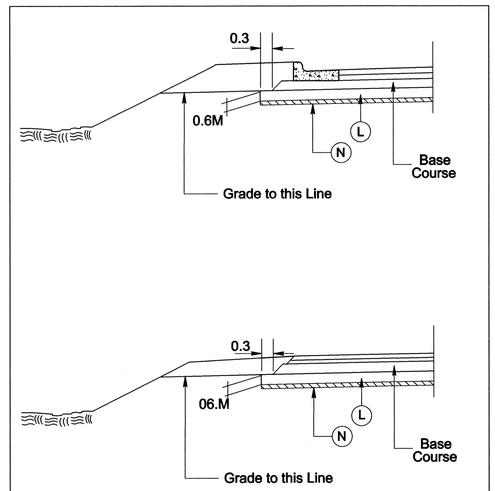


TYPICAL SECTION NO. 14

STA. 10+38.392 -DETI- TO STA. 11+60.739 -DETI-
STA. 10+44.002 -DET3- TO STA. 11+48.309 -DET3-

TYPICAL SECTION NO. 15

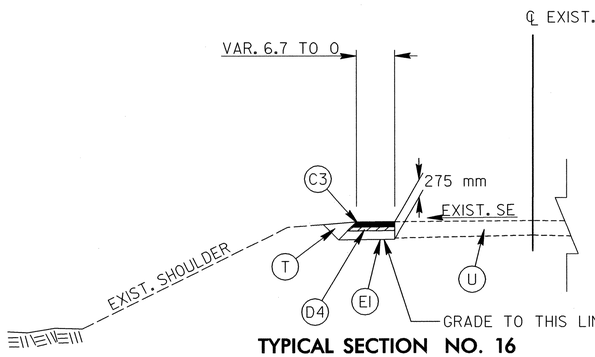
STA. 10+60.342 -DET2- TO STA. 11+68.939 -DET2-



DETAIL OF AGGREGATE-SUBGADE-STABILIZATION

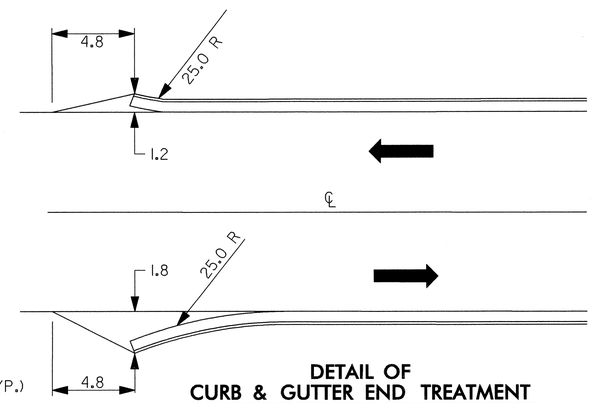
PAVEMENT SCHEDULE	
C1	80 mm S9.5B
C2	VAR. S9.5B
C3	80 mm S9.5C
C4	VAR. S9.5C
D1	65 mm I19.0B
D2	VAR. I19.0B
D3	100 mm I19.0C
D4	65 mm I19.0C
D5	VAR. I19.0C
E1	130 mm B25.0B
E2	VAR. B25.0B
E3	130 mm B25.0C
E4	VAR. B25.0C
J	150 mm ABC
L	CLASS IV SUBGRADE STABILIZATION
N	FABRIC STABILIZATION
R1	750 mm CONCRETE CURB & GUTTER
R2	125 mm MONOLITHIC CONC. ISLAND
S	100 mm CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING (SEE SHEET 2 FOR DETAIL)

NOTE: ALL PAVEMENT SLOPES ARE 1:1 UNLESS OTHERWISE NOTED.

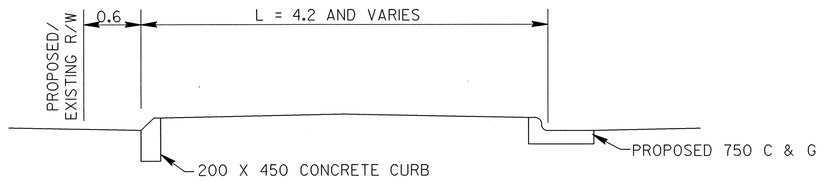


TYPICAL SECTION NO. 16

TEMPORARY WIDENING FOR TRAFFIC CONTROL
STA. 54+70+/- -L- TO STA. 56+95+/- -L- LT.
STA. 72+00+/- -L- TO STA. 74+75+/- -L- RT. (INVERT TYP.)
STA. 88+20+/- -L- TO STA. 90+30+/- -L- LT.
STA. 89+75+/- -L- LT. TO STA. 11+20+/- -Y8- RT.
STA. 91+42+/- -L- TO STA. 91+73+/- -L- LT.



DETAIL OF CURB & GUTTER END TREATMENT



DETAIL FOR PROPOSED CHANNELIZATION

200 X 450 CONCRETE CURB

6/18/99
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9:26:43 AM
10/7/2010

REVISIONS

ETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
License No. P-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

METRIC

5 0 10

CONST.REV.

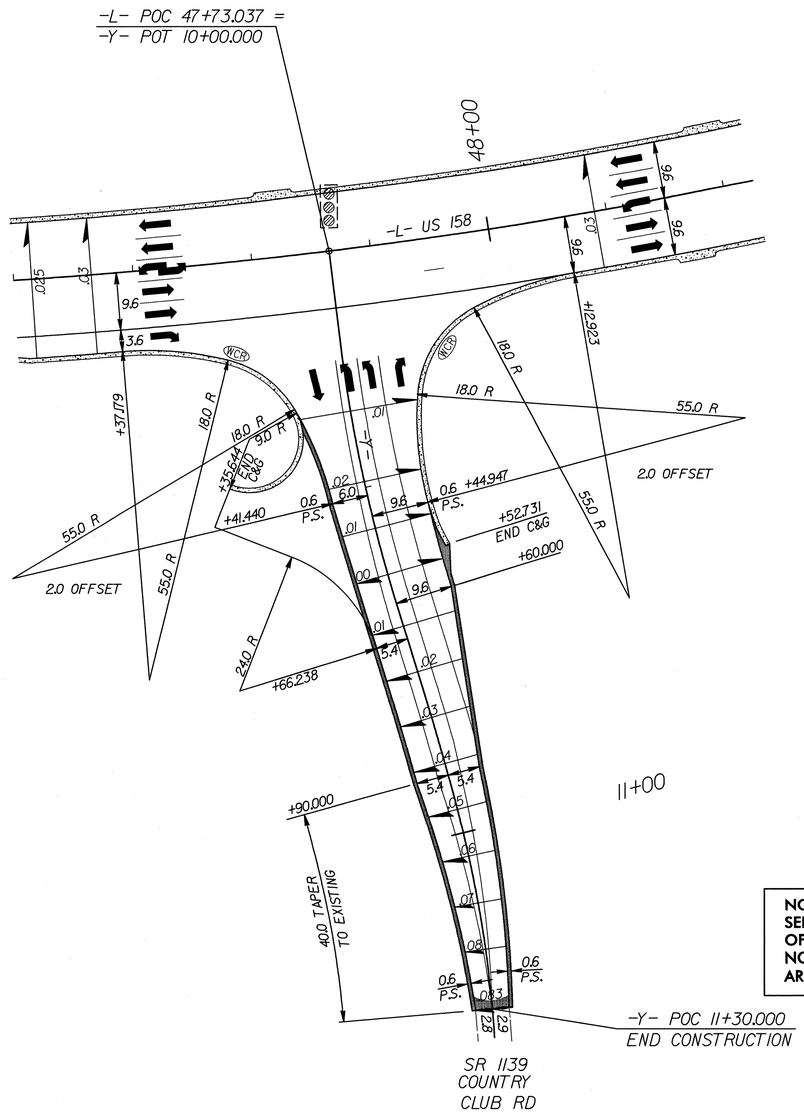
R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	2-F
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 21176 ENGINEER BOB A. MAY
10/15/10

NAD 83 NC GRID

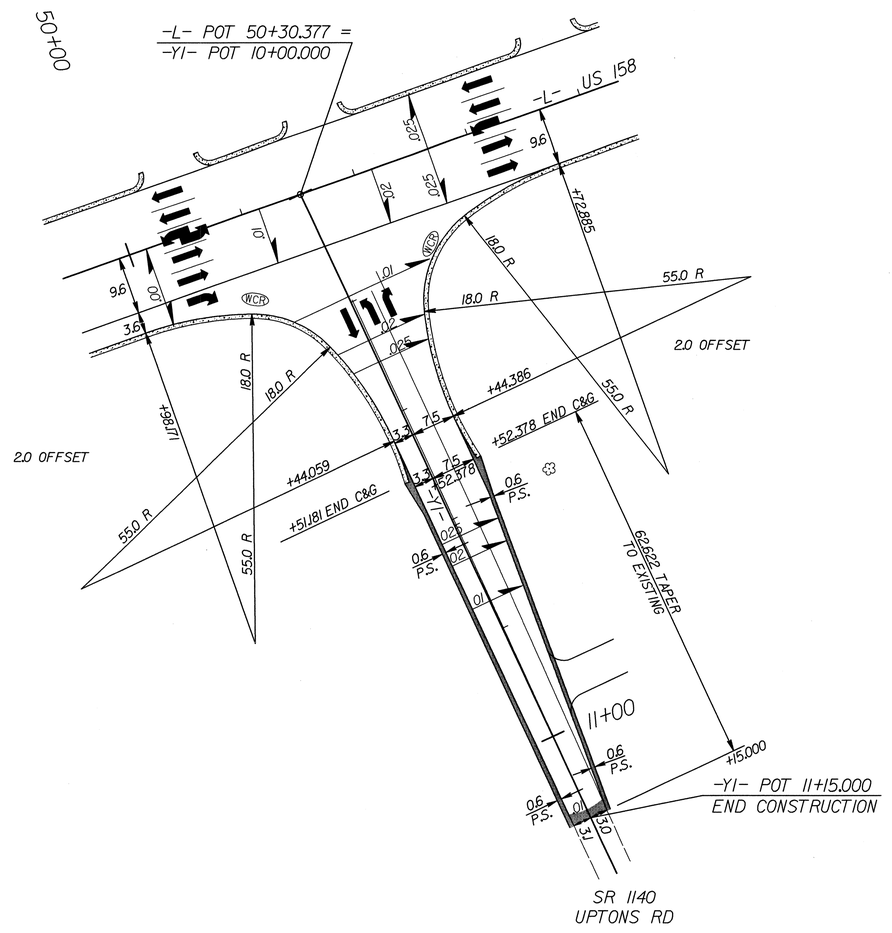
INTERSECTION DETAIL FOR –L– AND –Y–
SEE PLAN SHEET No. 4



NOTE:
SEE SHEET 2–E FOR DETAIL OF CURB & GUTTER END TREATMENT. NON–STANDARD CURB & GUTTER RADII ARE SHOWN ON PLAN SHEETS.

NAD 83 NC GRID

INTERSECTION DETAIL FOR –L– AND –Y1–
SEE PLAN SHEET No. 5



125mm MONOLITHIC CONCRETE ISLAND,
750mm CONCRETE CURB AND GUTTER,
REINFORCED CONCRETE BOX CULVERT

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10/27/2010

REVISIONS

ETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
Licenses No. P-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

METRIC

5 0 10

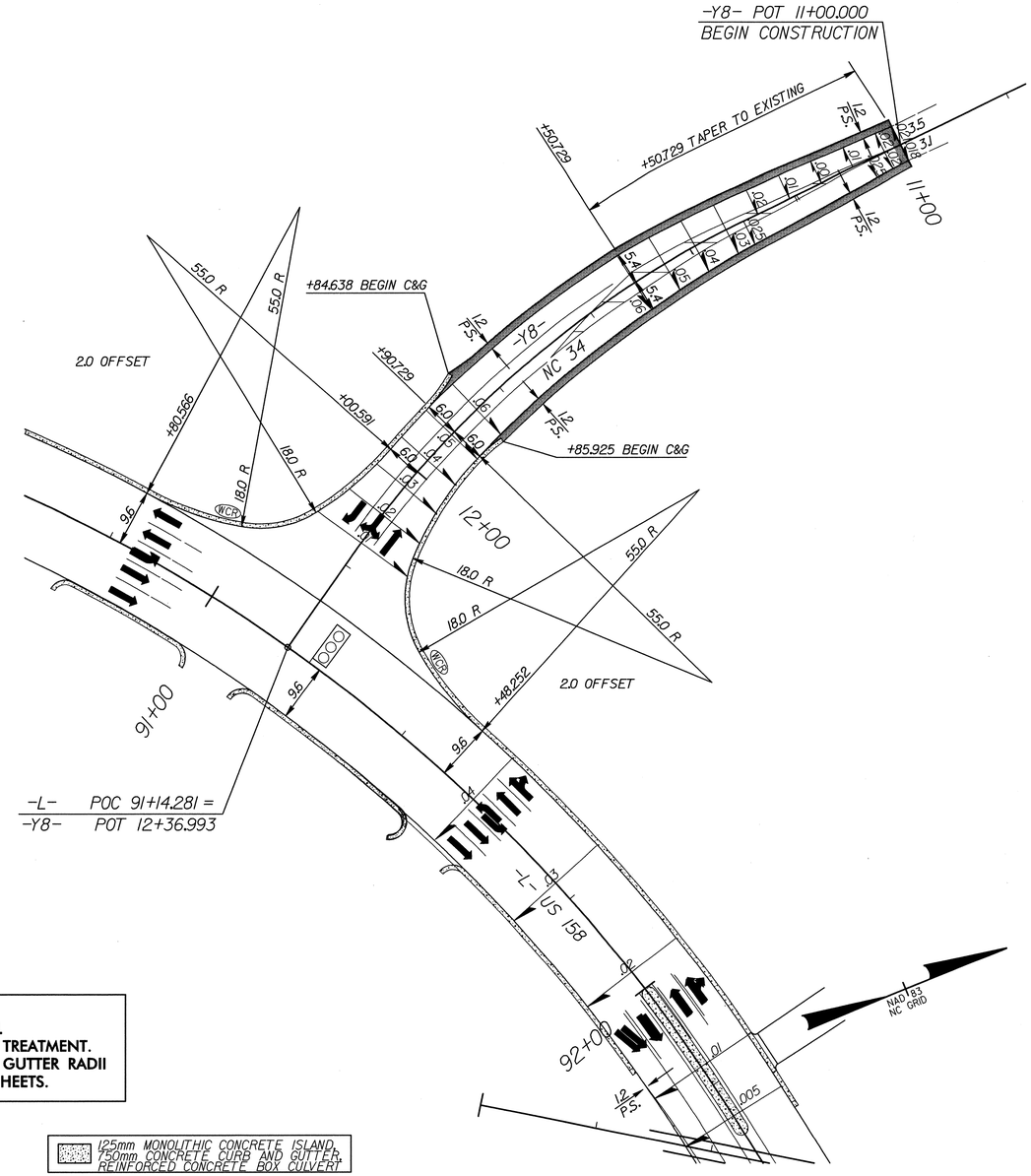
CONST.REV.

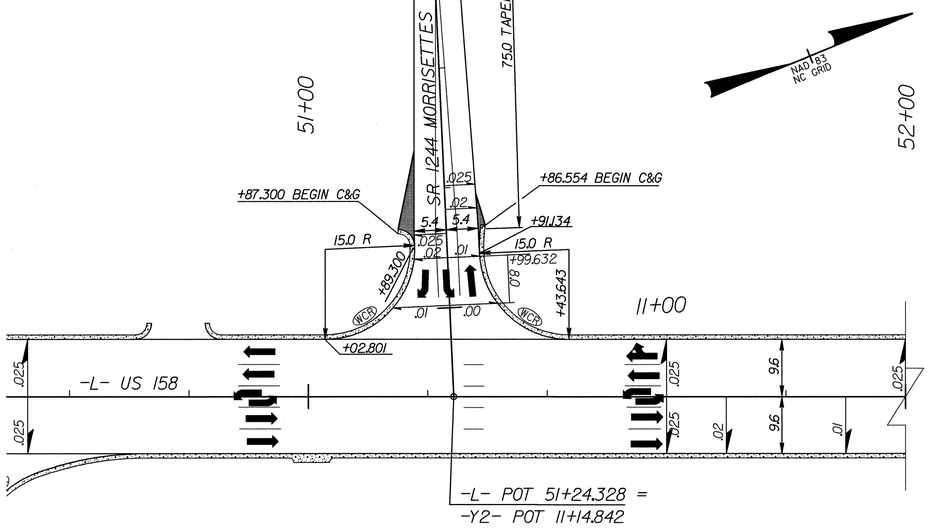
R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	2-G
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY
10/12/10

INTERSECTION DETAIL FOR -L- AND -Y8- SEE PLAN SHEET No. 17





NOTE:
SEE SHEET 2-E FOR DETAIL OF CURB & GUTTER END TREATMENT. NON-STANDARD CURB & GUTTER RADII ARE SHOWN ON PLAN SHEETS.

125mm MONOLITHIC CONCRETE ISLAND, 750mm CONCRETE CURB AND GUTTER, REINFORCED CONCRETE BOX CULVERT

INTERSECTION DETAIL FOR -L- AND -Y2- SEE PLAN SHEET No. 5

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6/10/99

REVISIONS

WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 9077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

METRIC

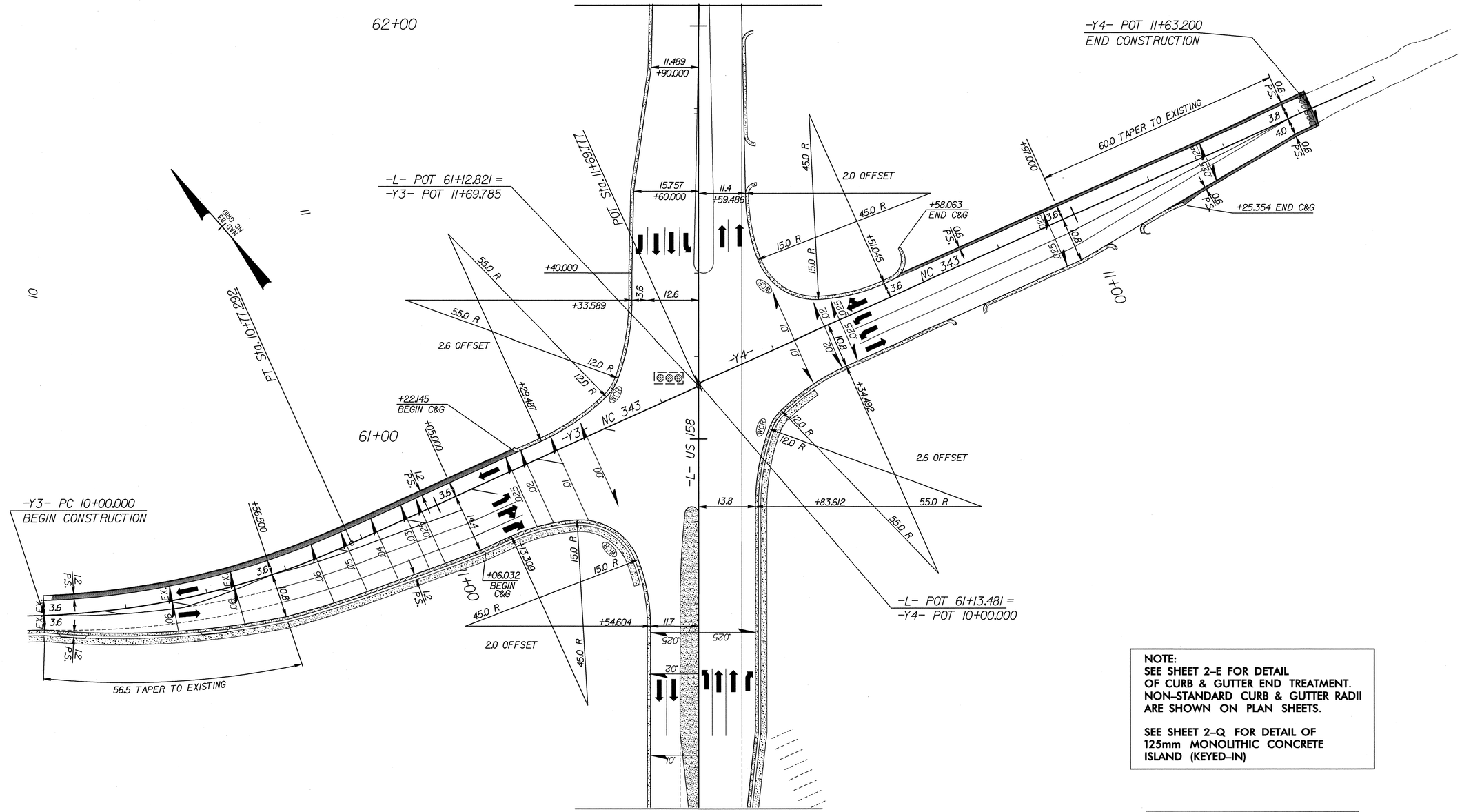
5 0 10

CONST.REV.

R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	2-H
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 21418 ENGINEER BOB A. MAY 10/12/10



INTERSECTION DETAIL FOR -L- AND -Y3-, -Y4-

SEE PLAN SHEET No. 8

NOTE:
SEE SHEET 2-E FOR DETAIL OF CURB & GUTTER END TREATMENT. NON-STANDARD CURB & GUTTER RADII ARE SHOWN ON PLAN SHEETS.

SEE SHEET 2-Q FOR DETAIL OF 125mm MONOLITHIC CONCRETE ISLAND (KEYED-IN)

125mm MONOLITHIC CONCRETE ISLAND
750mm CONCRETE CURB AND GUTTER
REINFORCED CONCRETE BOX CULVERT

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10/27/2010

REVISIONS

ETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
License No. P-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

METRIC

5 0 10

CONST.REV.

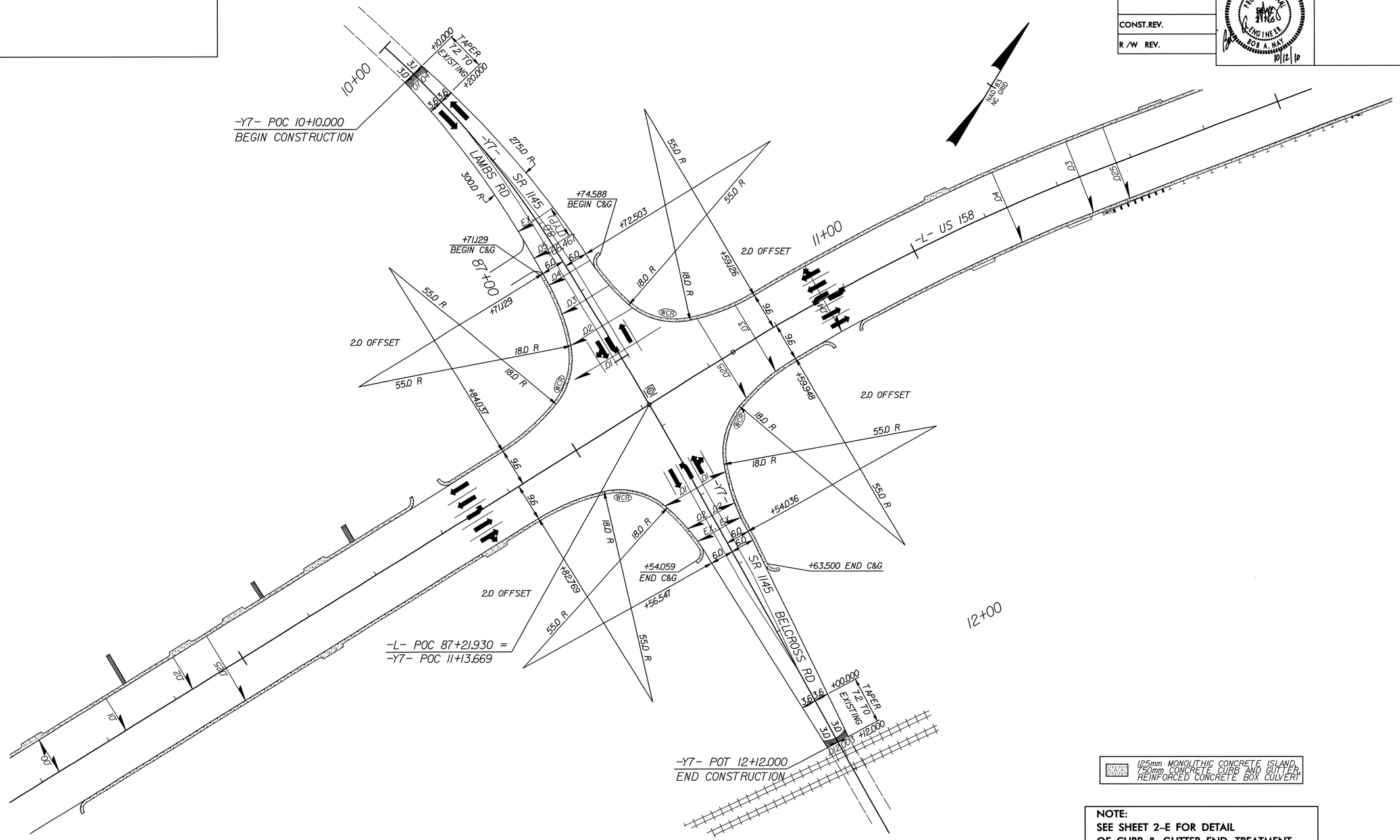
R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	2-1
R /W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 21760 ENGINEER BOB A. MAY 10/12/10

HYDRAULICS ENGINEER



125mm MONOLITHIC CONCRETE ISLAND, 750mm CONCRETE CURB AND GUTTER, REINFORCED CONCRETE BOX CULVERT

NOTE:
SEE SHEET 2-E FOR DETAIL OF CURB & GUTTER END TREATMENT NON-STANDARD CURB & GUTTER RADII ARE SHOWN ON PLAN SHEETS.

INTERSECTION DETAIL FOR -L- AND -Y7-
SEE PLAN SHEET No. 15

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10/12/2010

6/10/09

REVISIONS

DETOUR –DET1– SHEET

TRANSITE CONSULTING
ENGINEERS, INCORPORATED
1300 Paddock Drive, Suite G-10
Raleigh, N.C. 27609
License No. C-1628

ETHERIL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

METRIC

5 0 10

CONST.REV. _____

R/W REV. _____

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	2-J
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY
12/7/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD
12/7/10

FOR CULVERT DESIGN
Alternate Rec.
NORTH CAROLINA PROFESSIONAL SEAL 22587 ENGINEER RANDALL A. BOYD
12/7/10

Note:
Alternate Recommendation based on Equal Area of conveyance. Office Review Only

MADI83
NC GRID

LIMITS OF TEMPORARY PAVEMENT FOR CONSTRUCTION OF PROPOSED CULVERTS

NOTE: WIDENING FOR TEMPORARY TRAFFIC CONTROL MEASURES WILL MATCH THE CROSS SLOPE OF THE PROPOSED PAVEMENT AND BE CONSTRUCTED UP TO BUT NOT INCLUDING THE SURFACE COURSE LAYER.

-DET1-

PI Sta 10+18.718	PI Sta 10+58.421	PI Sta 11+40.701	PI Sta 11+82.106
Δ = 15° 47' 17.1" (RT)	Δ = 17° 51' 59.4" (LT)	Δ = 17° 34' 22.7" (LT)	Δ = 17° 34' 22.6" (RT)
L = 37.200	L = 42.097	L = 41.405	L = 41.405
T = 18.718	T = 21.221	T = 20.866	T = 20.866
R = 135.000	R = 135.000	R = 135.000	R = 135.000

125mm MONOLITHIC CONCRETE ISLAND, 150mm CONCRETE CURB AND GUTTER, REINFORCED CONCRETE BOX CULVERT

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12/7/2010

6/10/2010

REVISIONS

DETOUR –DET2– SHEET

NAD 83
NC GRID

ETHERIDGE ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
License No. P-0277
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN – BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN – GIS/GPS – CONSTRUCTION OBSERVATION

TRANSITE CONSULTING
ENGINEERS, INCORPORATED
1300 Paddock Drive, Suite G-10
Raleigh, N.C. 27609
License No. C-1628

METRIC
5 0 10

CONST.REV.

R/W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	2-K
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER ROB A. MAY 12/7/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 015764 ENGINEER JAMES A. BYRD 12/7/10

FOR CULVERT DESIGN
Alternate Rec.
NORTH CAROLINA PROFESSIONAL SEAL 029881 ENGINEER RANDALL A. BOYD 12/7/10

12/7/10

Note:
Alternate Recommendation based on Equal Area of Conveyance Office Review Only!!

-DET2- PRC Sta.10+48.623
-DET2- PT Sta.10+90.817
-DET2- PC Sta.11+25.817
-DET2- PRC Sta.11+68.687

BEGIN DETOUR
-DET2- PC Sta.10+00.000
-L- POT Sta.72+41.607
OFFSET = 6.704 LT.

END DETOUR
-DET2- PT Sta.12+11.558
-L- POT Sta.74+50.053
OFFSET = 0.000

BEGIN TEMPORARY WIDENING
-DET2- STA.10+60.342

END TEMPORARY WIDENING
-DET2- STA.11+68.939

TEMPORARY SHORING
SEE TCP PLANS FOR LIMITS

SLOPE STAKE LINE

SOUTHLAND, LLC.
DB 174, PG 355

BROWN FARMS, INC (44)
DB 64, PG 191
DB 54, PG 175 (MAP)
DB 70, PG 230

NORFOLK SOUTHERN RAILWAY CO
(LEASED TO CHESAPEAKE & ALBEMARLE R/R

1@ 5.66m x 1.63m ALUM. BOX CULVERT
CONSTRUCT APPROX. 11.0m

2- 2.2 X 1.1 CONC
1.2 CONC WW'S
1.8 CONC WW'S
4.5 CONC HW
6.7 CONC HW'S
4 STEEL I-BEAMS

US 158 67 BST
-L-
-DET2- R/W
EXIST R/W
375 mm CMP
1000mm U/G
375 mm CONC
SOIL
GRAU 350
13.1m
6.4m
3.3m
N 28°49' 35.3" E
S57°09'23"E 53.817
S57°09'23"E 202.123
S57°09'23"E 166.002
S57°09'23"E 10.520
S15°55'46"E 36.415
N61°34'06"W 15.566
N25°43'19"W 22.680

72+00 73+00 74+00 75+00

NOTE: WIDENING FOR TEMPORARY TRAFFIC CONTROL MEASURES WILL MATCH THE CROSS SLOPE OF THE PROPOSED PAVEMENT AND BE CONSTRUCTED UP TO BUT NOT INCLUDING THE SURFACE COURSE LAYER.

-DET2-

PI Sta 10+24.578	PI Sta 10+69.893	PI Sta 11+47.434	PI Sta 11+90.304
△ = 20° 38' 10.0" (LT)	△ = 17° 54' 27.4" (RT)	△ = 18° 11' 41.5" (RT)	△ = 18° 11' 41.5" (LT)
L = 48.623	L = 42.194	L = 42.871	L = 42.871
T = 24.578	T = 21.270	T = 21.617	T = 21.617
R = 135.000	R = 135.000	R = 135.000	R = 135.000

LIMITS OF TEMPORARY PAVEMENT FOR CONSTRUCTION OF PROPOSED CULVETS

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12/7/2010 10:56:14 AM

6/10/99

REVISIONS

DETOUR –DET3– SHEET

WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
License No. F-0277
Bus: 919 851 6077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

TRANSITE CONSULTING
ENGINEERS, INCORPORATED
1300 Paddock Drive, Suite G-10
Raleigh, N.C. 27609
License No. C-1628

METRIC

5 0 10

CONST.REV.

R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	2-L

R /W SHEET NO.

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 21616 ENGINEER BOB A. MAY
11/7/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD
11/7/10

FOR CULVERT DESIGN
Alternate Rec.
NORTH CAROLINA PROFESSIONAL SEAL 32583 ENGINEER RANDALL A. BOYD
12/7/10

12/7/10

Note:
Alternate Recommendation based on Equal Area of Convergance Office Review Only.

NAD 83 NC GRID

10+00

40.154
S63°32'35"W

71A
IRVIN R. LANCASTER
DB 146, PG 392

71
JOSEPH O. SAWYER, ET UX
DB 95, PG 360
PC 1, PG 12A

2SFD

BEGIN TEMPORARY WIDENING
-DET3- STA.10+44.002

N50°40'24"W 262.213

S81°33'16"W 420

75
LINDA S. DEMUTH, ET AL
DB 119, PG 930

N39°35'51"W 554.835

11+00

12+00

76
HORACE MELVILLE CUTHRELL, JR., ET UX
DB 78, PG 809
PC 1, 163A

TEMPORARY SHORING
(SEE TCP PLANS FOR LIMITS)

-DET3- PRC Sta.11+58.466

SWAMP

ISFD

VEGETABLE STAND

SOIL & GR

EXIST R/W

450mm CONC

US 158 121 BST

3.3m
4.3m
3.3m

1000 mm U/G

3.7 CONC HW

3.4 X 1.4 CONC

1ø 4.98m x 1.80m
ALUM. BOX CULVERT
CONSTRUCT APPROX. 14.0m

-L-

-DET3-

US 158 6.8 BST

3.3m
4.0m
3.3m

BST CURB

5J BST

1200 mm CONC

GRAU 350

SLOPE STAKE LINE

END TEMPORARY WIDENING
-DET3- STA.11+48.309

END DETOUR
-DET3- PT Sta.12+15.65
-L- POC Sta.90+22.748
OFFSET = 4.048 RT.

4 ISL'S
12 FUEL PUMPS
U/MTL CANOPY

TANK CAPS

ISF BUS

ISBLK BUS

2SF BUS

DORIS H. HARRIS
DB 33, PG 604
PC 1, SL 15A

VINCENT R. RAGAN, ET UX
DB 88, PG 822

BROWN FARMS, INC.
DB 76 PG 310

WALLACE G. CAHOON
DB 79, PG 413
PC 1, SL 1A

W. W. OWENS & SONS MOVING & STORAGE, INC
DB 81, PG 700

BEGIN DETOUR
-DET3- PC Sta.10+00.000
-L- POC Sta.88+09.829
OFFSET = 0.627 LT.

-DET3- PRC Sta.10+46.750

-DET3- PT Sta.10+89.399

-DET3- PC Sta.11+17.399

S 63°14'33" W 41.403

S 77°14'33" W 30.480

S 70°10'27" E 10.178

S 31°09'33" E 17.653

88+00

89+00

90+00

91+00

SR 1145 BELLCROSS RD

EXIST R/W

CONC LOADING DOCK

NORFOLK SOUTHERN RAILWAY CO

(LEASED TO CHESAPEAKE & ALBEMARLE R/R CO)

SIGNAL
RR

LIMITS OF TEMPORARY PAVEMENT FOR CONSTRUCTION OF PROPOSED CULVERTS

-DET3-

PI Sta 10+23.611	PI Sta 10+68.253	PI Sta 11+38.092	PI Sta 11+87.493
Δ = 19° 50' 28.9" (RT)	Δ = 18° 06' 01.9" (LT)	Δ = 17° 25' 45.8" (RT)	Δ = 24° 16' 12.5" (RT)
L = 46.750	L = 42.648	L = 41.067	L = 57.185
T = 23.611	T = 21.503	T = 20.693	T = 29.028
R = 135.000	R = 135.000	R = 135.000	R = 135.000

NOTE: WIDENING FOR TEMPORARY TRAFFIC CONTROL MEASURES WILL MATCH THE CROSS SLOPE OF THE PROPOSED PAVEMENT AND BE CONSTRUCTED UP TO BUT NOT INCLUDING THE SURFACE COURSE LAYER.

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12/7/2010

6/10/99

WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

METRIC

CONST.REV.

R /W REV.

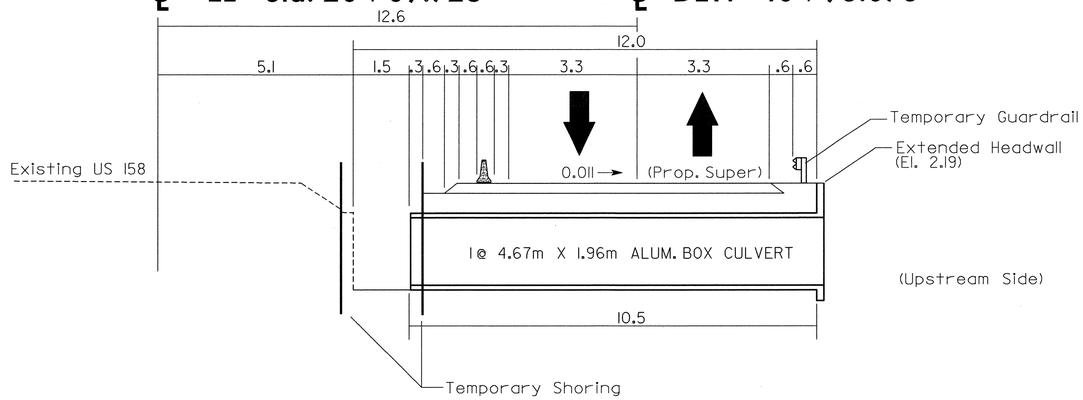
PROJECT REFERENCE NO.	SHEET NO.
R-2414B	2-M

ROADWAY DESIGN ENGINEER

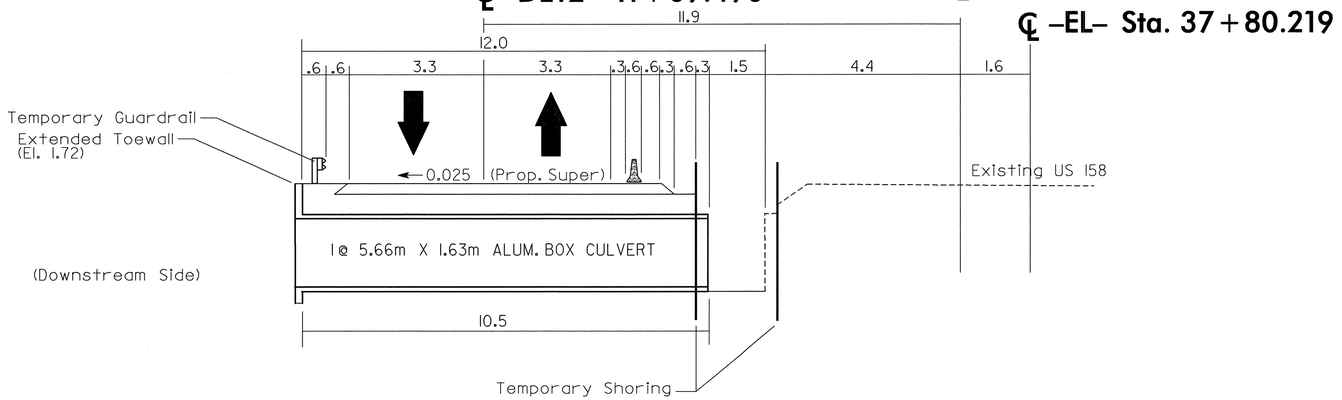
PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY 12/7/12

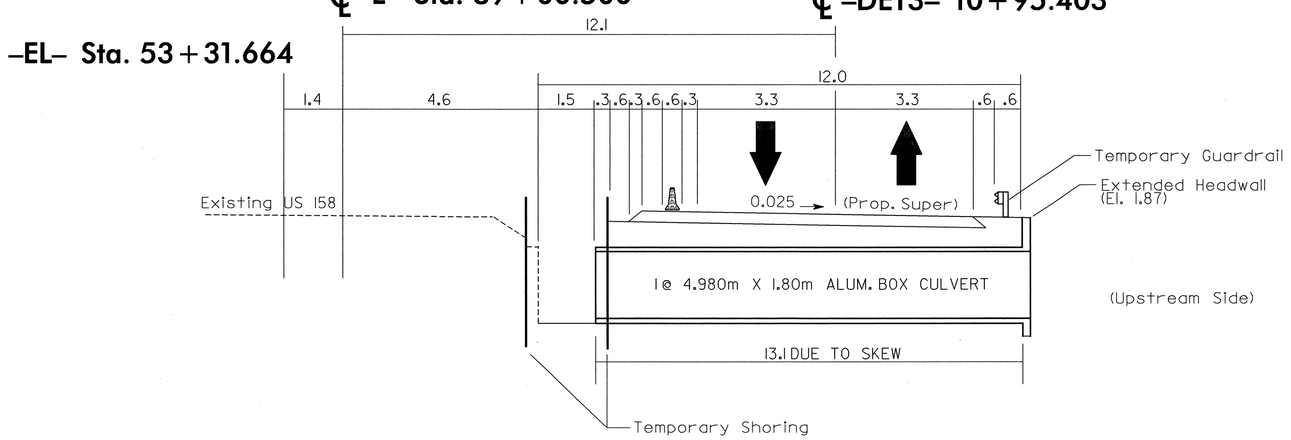
℄ –L– Sta. 55+81.000
℄ –EL– Sta. 20+09.723
℄ –DET1– 10+96.076



℄ –DET2– 11+09.490
℄ –L– Sta. 73+49.000
℄ –EL– Sta. 37+80.219

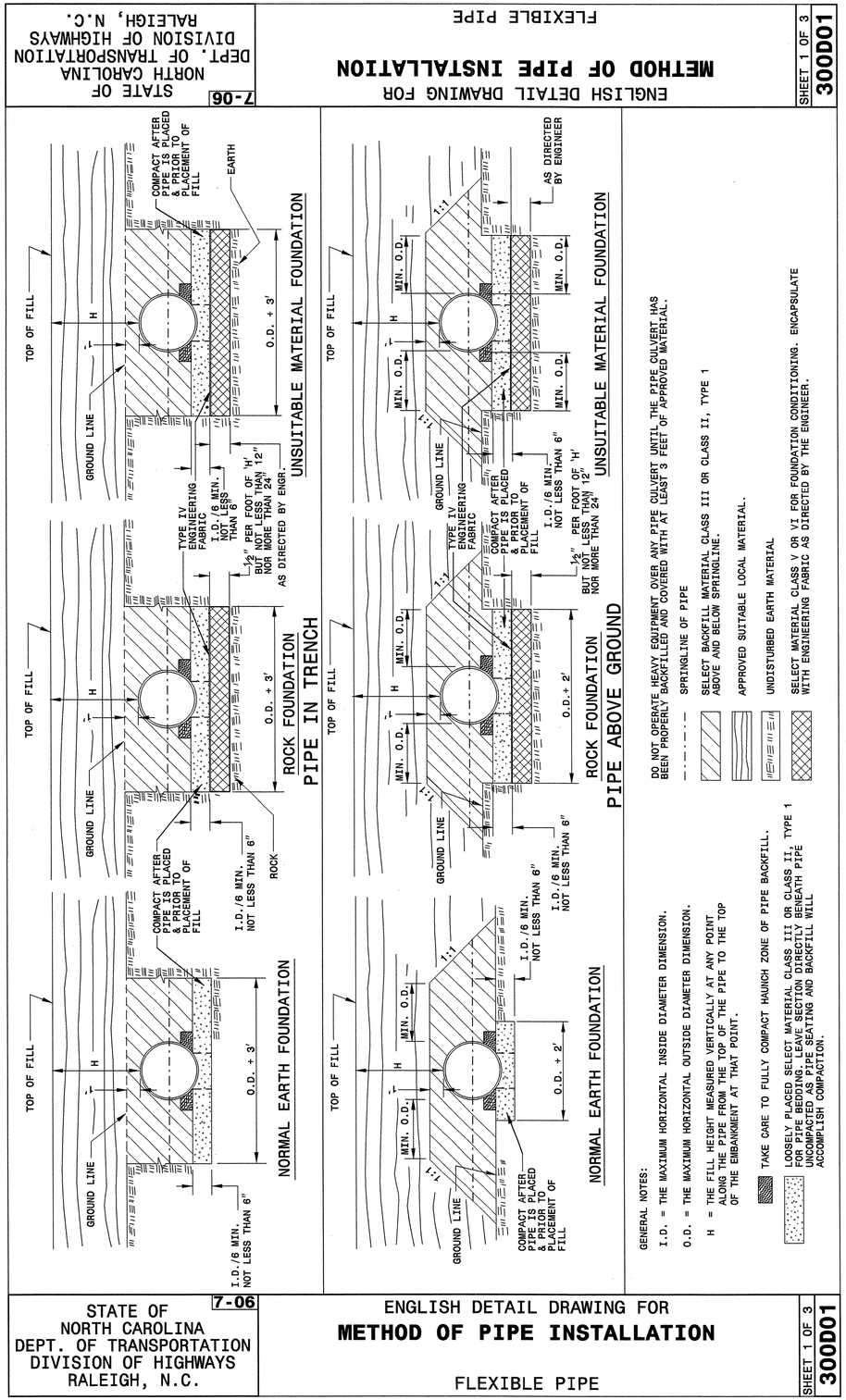


℄ –L– Sta. 89+00.500
℄ –DET3– 10+95.403
–EL– Sta. 53+31.664



PROJECT REFERENCE NO.	SHEET NO.
R-2414 B	2-N

5/14/93



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

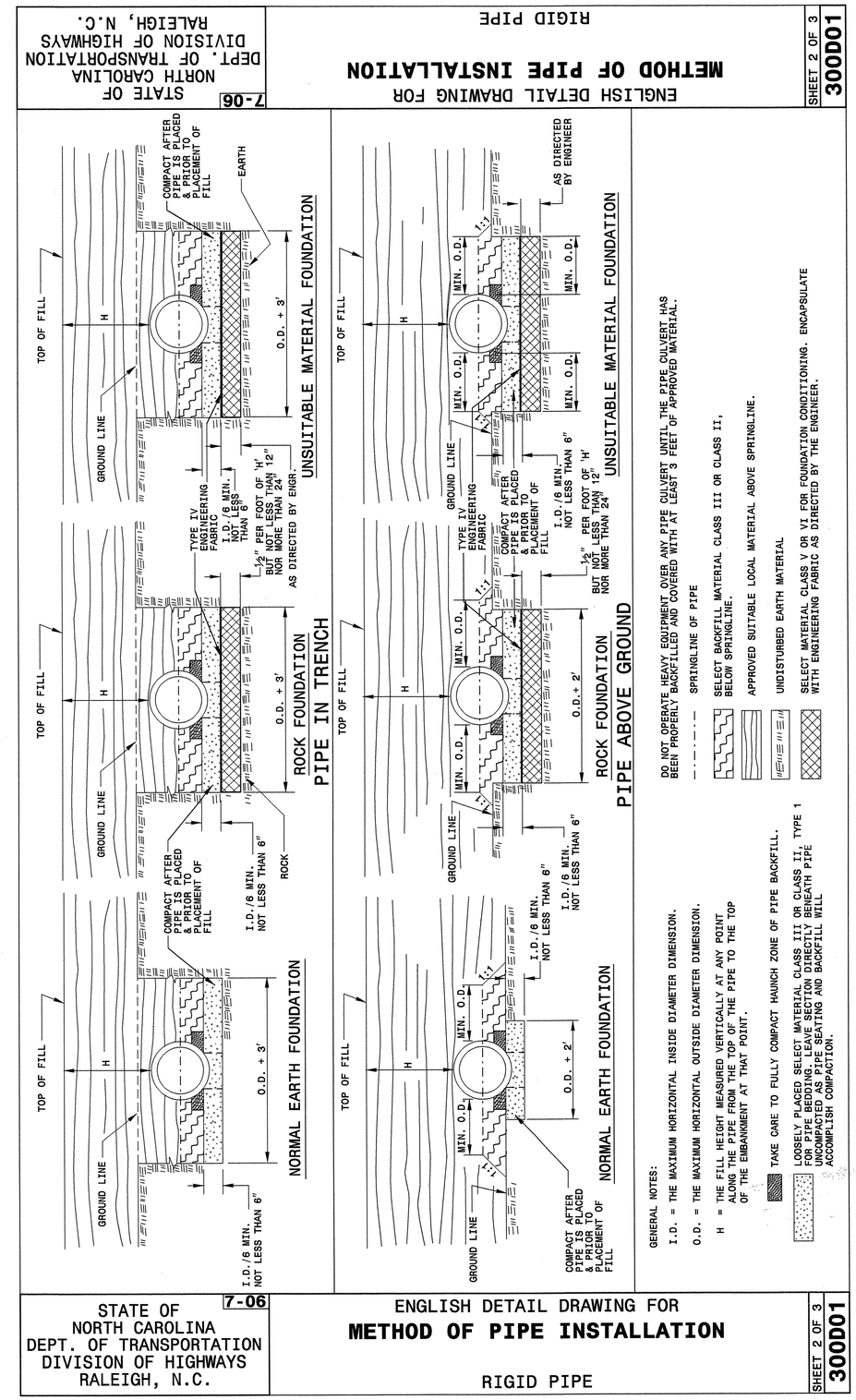
ENGLISH DETAIL DRAWING FOR

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

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jhowerton AT PS23750I

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

SEAL 022966 NORTH CAROLINA PROFESSIONAL ENGINEER JOEL S. HOWERTON

10/4/10

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

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jhowerton AT PS237501

5/14/99

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

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

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

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

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

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: 7/5/10
FILE SPEC: /projects/stds/stdsroot/stds/3000/0300d01.dgn

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 025266 JOHN S. LAMPE 10/1/10

PROJECT REFERENCE NO. R-2414B
SHEET NO. 2-0

PROJECT REFERENCE NO.	SHEET
34430.1.1 (R-2414B)	2-F

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 8211 JOSEPH KINTOUNG PARK

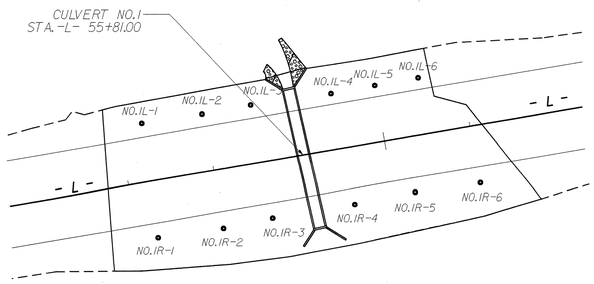
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

SETTLEMENT GAUGE LOCATIONS, NTS.

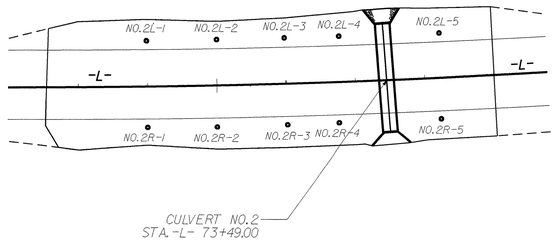
FROM STA. 55+33± -L- TO STA. 56+34± -L-



SETTLEMENT GAUGE LOCATIONS			
PHASE I		PHASE II	
GAUGE NO.	STATION & OFFSET	GAUGE NO.	STATION & OFFSET
1R-1	55 + 45 ± -L- 12M ± RT	1L-1	55 + 45 ± -L- 11M ± LT
1R-2	55 + 60 ± -L- 13M ± RT	1L-2	55 + 60 ± -L- 11M ± LT
1R-3	55 + 70 ± -L- 13M ± RT	1L-3	55 + 70 ± -L- 11M ± LT
1R-4	55 + 90 ± -L- 13M ± RT	1L-4	55 + 90 ± -L- 11M ± LT
1R-5	56 + 05 ± -L- 13M ± RT	1L-5	56 + 00 ± -L- 11M ± LT
1R-6	56 + 20 ± -L- 12M ± RT	1L-6	56 + 10 ± -L- 11M ± LT

SETTLEMENT GAUGE LOCATIONS, NTS.

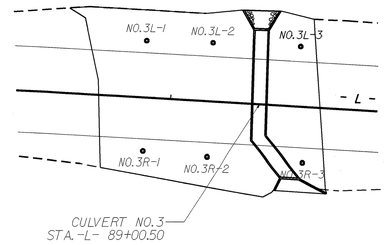
FROM STA. 72+50± -L- TO STA. 73+80± -L-



SETTLEMENT GAUGE LOCATIONS			
PHASE I		PHASE II	
GAUGE NO.	STATION & OFFSET	GAUGE NO.	STATION & OFFSET
2L-1	72 + 80 ± -L- 9M ± LT	2R-1	72 + 80 ± -L- 12M ± RT
2L-2	73 + 00 ± -L- 10M ± LT	2R-2	73 + 00 ± -L- 12M ± RT
2L-3	73 + 20 ± -L- 10M ± LT	2R-3	73 + 20 ± -L- 12M ± RT
2L-4	73 + 35 ± -L- 10M ± LT	2R-4	73 + 35 ± -L- 12M ± RT
2L-5	73 + 65 ± -L- 10M ± LT	2R-5	73 + 65 ± -L- 12M ± RT

SETTLEMENT GAUGE LOCATIONS, NTS.

FROM STA. 88+55 -L- TO STA. 89+18± -L-

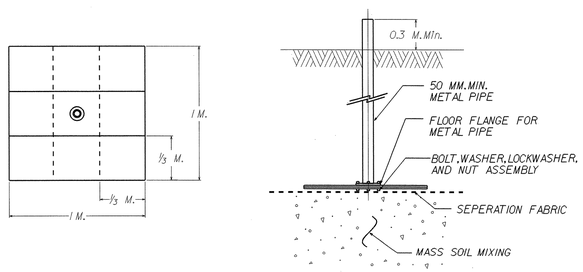


SETTLEMENT GAUGE LOCATIONS			
PHASE I		PHASE II	
GAUGE NO.	STATION & OFFSET	GAUGE NO.	STATION & OFFSET
3R-1	88 + 75 ± -L- 11M ± RT	3L-1	88 + 75 ± -L- 12M ± LT
3R-2	88 + 90 ± -L- 11M ± RT	3L-2	88 + 90 ± -L- 12M ± LT
3R-3	89 + 10 ± -L- 11M ± RT	3L-3	89 + 10 ± -L- 12M ± LT

NOTES

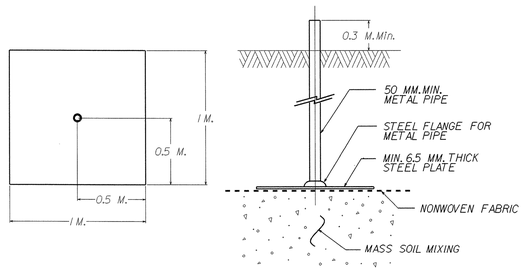
1. THE USE OF EITHER THE WOOD BASE OR THE STEEL BASE SETTLEMENT GAUGE SHALL BE THE CONTRACTOR'S OPTION.
2. SETTLEMENT GAUGES SHALL BE INSTALLED ON THE NONWOVEN FABRIC AFTER THE MASS SOIL MIXING IS ACCEPTED BY THE ENGINEER.
3. SETTLEMENT GAUGE ELEVATIONS ARE TO BE DETERMINED AND RECORDED WEEKLY BY THE RESIDENT ENGINEER.
4. THE INITIAL ELEVATION OF THE SETTLEMENT GAUGE PLATE (AT TOP OF PLATE) SHALL BE DETERMINED AT THE TIME OF INSTALLATION ALONG WITH THE EMBANKMENT ELEVATION. WHEN NEW SECTIONS OF THE PIPE ARE ADDED, ELEVATIONS SHALL BE RECORDED AT THE TOP OF EXISTING PIPE AND AT THE TOP OF THE NEW PIPE. THIS IS TO TAKE INTO ACCOUNT INTERIM SETTLEMENT, VARIABLE PIPE LENGTHS, AND THREAD LENGTHS IN COUPLING.
5. RESULTS OF SETTLEMENT GAUGE READINGS SHALL BE FORWARDED TO MR. K.J. KIM, EASTERN REGIONAL GEOTECHNICAL MANAGER, WITHIN THREE DAYS.

SETTLEMENT GUAGE QUANTITIES	
EMBANKMENT SETTLEMENT GAUGES	28 EA.



DETAIL OF WOOD BASE

SIX - 25 MM. X 1/3 M. X 1M. PLANKS OF LUMBER OR TWO PIECES 25 MM. X 1 M. X 1 M. EXTERIOR GRADE PLYWOOD, SECURELY FASTENED AND THEN COATED WITH WOOD PRESERVATIVE



DETAIL OF STEEL BASE

PREPARED BY: J. PARK	DATE: 02/2011
REVIEWED BY: K. J. KIM	DATE: 02/2011

GEOTECHNICAL ENGINEERING UNIT

[X] EASTERN REGIONAL OFFICE

[ ] WESTERN REGIONAL OFFICE

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

Embankment Monitoring Detail

REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

GEJ248334 2/25/2011 R2414B_GEO_RDWY_Add_Mass Soil Mixing_Rev_02_25 jpark RD-Oce860-34

8/17/99

DETAIL FOR 125mm MONOLITHIC CONCRETE ISLAND (KEYED-IN)

WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

TRANSITE CONSULTING
ENGINEERS, INCORPORATED
1300 Paddock Drive, Suite G-10
Raleigh, N.C. 27609
Liscense No. C-1628

METRIC
5 0 10

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	2-Q
R /W SHEET NO.	

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 21740 ENGINEER BOB A. MAY 10/7/10

PC CONST.REV.

R /W REV.

MAG & NC GRID

59+00 60+00 61+00

PT 10+77.299

-Y3-

-L- POT 61+13.481 =
-Y4- POT 10+00.000

POT Sta. 11+69.777

S 72° 54' 56.2" E

N 41° 25' 32.4" E

S 72° 36' 55.0" E

-Y4-

100.000 LT. STORAGE (TO SCHOOL) | 30.000 TAPER | 40.000

+98.753 +90.000 +12.500 +42.500 +59.252 +68.753

125mm MONOLITHIC CONC. ISLAND (KEYED-IN)

R=2.680 R=9.9 R=0.6 R=30 R=0.6 R=215 R=1.500

7.2 12 7.2 3.3 3.3 3.9 3.3 3.3 3.9 3.3 3.3 3.9

3.10 1.65 8.85

+45.702 +48.351 +70.500 +12.500 +86.000 +88.753

30.000 TAPER | 130.000 LT. STORAGE

PT 59+50.276

-L- POT 61+12.821 =
-Y3- POT 11+69.785

-L-	-Y3-
PI Sta 58+15.159	PI Sta 10+39.147
Δ = 28° 46' 17.6" (RT)	Δ = 22° 21' 27.9" (LT)
L = 276.187	L = 17.299
T = 141.071	T = 39.147
R = 550.000	R = 198.093
SE = 0.04	R'OFF = 48.000
R'OFF = 81.000	SE = 0.06
DS = 80 KM/H	

-Y3- NC 343

2009 ADT
2029 ADT

4050 / 6120	5840 / 9040	1050 / 1150
20000 / 31760		14650 / 23360
2800 / 4800	3990 / 6740	450 / 770

-L-

-Y4- NC 343

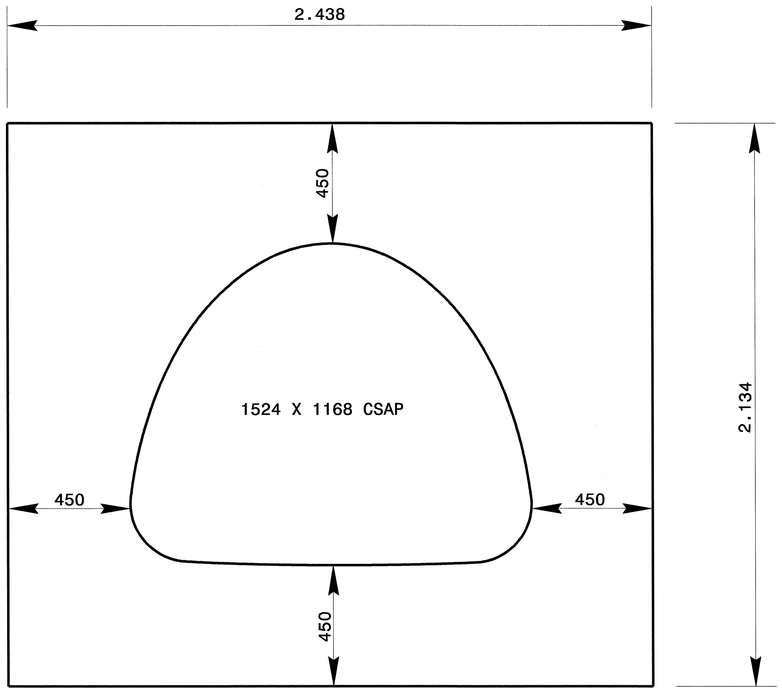
SEE SHEET NO. 7 & 8 FOR PLAN VIEW.

125mm MONOLITHIC CONCRETE ISLAND
750mm CONCRETE CURB AND GUTTER
REINFORCED CONCRETE BOX CULVERT

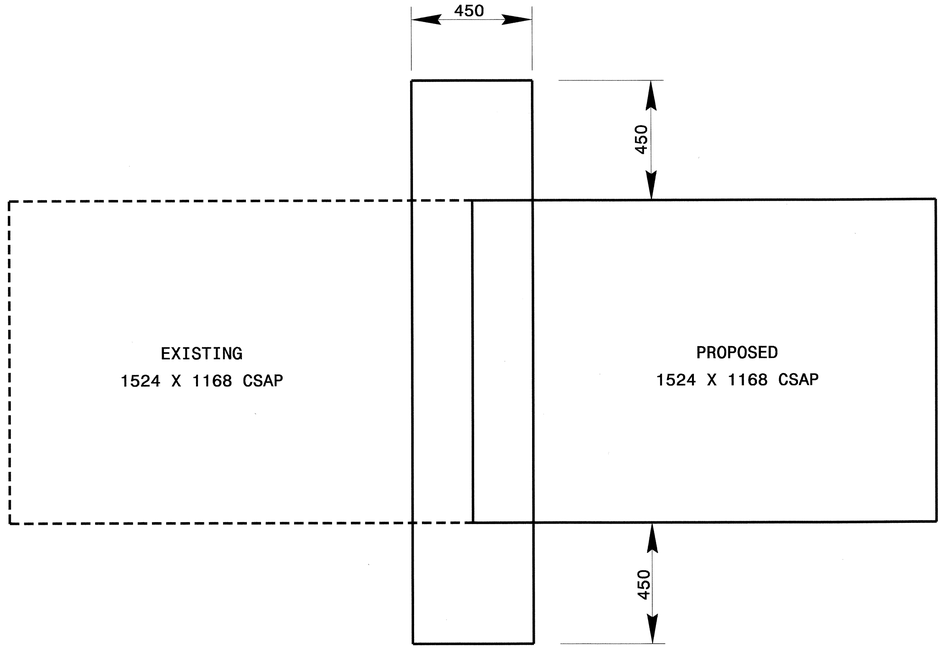
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10/7/2010

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	2-R

METRIC



ELEVATION



SIDE ELEVATION

NOTES:

USE PIPE COLLAR FOR EXTENDING CSAP AT LOCATIONS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER

CONSTRUCT THE PIPE COLLAR WITH CLASS "B" OR BETTER CONCRETE.

OBSERVE ALL REQUIREMENTS OF SECTION 840 OF THE STANDARD SPECIFICATIONS.

QUANTITIES:

CLASS "B" CONCRETE	1.72 CM.

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOWERTON
10/14/10

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

DETAIL OF CSAP COLLAR
FOR 1.524m X 1.168m (Pipe Arch)-90°

ORIGINAL BY: _____ DATE: _____
MODIFIED BY: rnbritt DATE: 3-22-10
CHECKED BY: [signature] DATE: 3/22/10
FILE SPEC.: c:\projects\rnbritt\metric\mhydro\r2414b 1.524m x 1.168m CSAP sk90.dgn

22-MAR-2010 10:54
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$$$$USERNAME$$$$

PS2445402/22/2010r2414b 1.524m x 1.168m csap sk90 rnbritt PS Qoo860 24dtbond

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	2-5

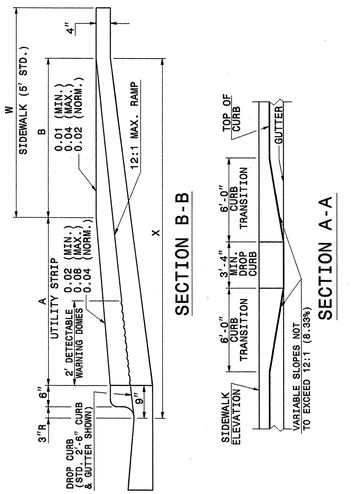
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR

WHEELCHAIR RAMP

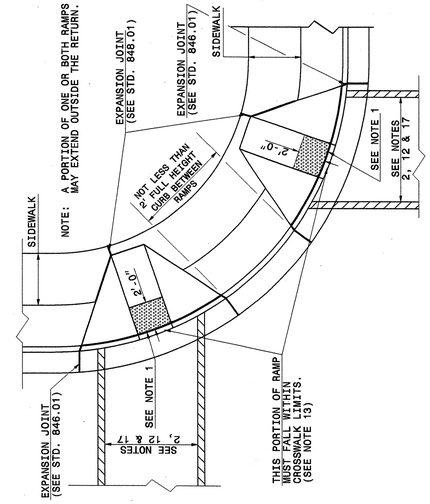
PROPOSED CURB AND GUTTER

SHEET 1 OF 3 **848D05**



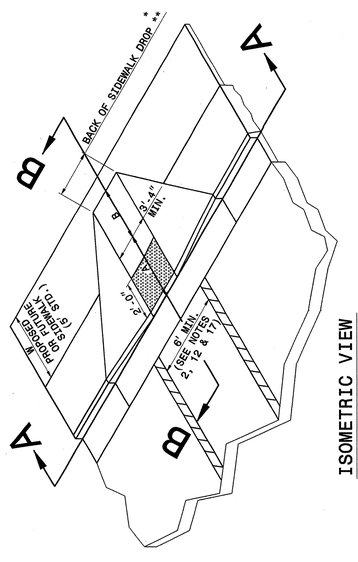
SECTION B-B

SECTION A-A



PLAN VIEW

DUAL RAMPS
ANY RADII
(40" MIN. FLOOR WIDTH)

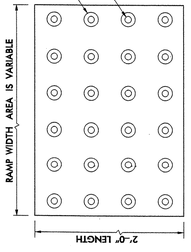


ISOMETRIC VIEW

W	A	W-A+9"	X	B
5'	0.0'	5.8'	5.8'	5.0'*
6'	0.0'	6.8'	6.8'	6.0'**
7'	0.0'	7.8'	7.3'	6.5'**
8'	0.0'	8.8'	7.3'	6.5'**
5'	2.0'	7.8'	7.8'	5.0'
5'	2.5'	8.3'	8.1'	4.8'
5'	3.0'	8.8'	8.3'	4.4'
5'	3.5'	9.3'	8.4'	4.1'
5'	4.0'	9.8'	8.6'	3.8'
5'	4.5'	10.3'	8.7'	3.4'
5'	5.0'	10.8'	8.9'	3.1'

B = X-(A+9")
B = DISTANCE FROM FRONT EDGE OF SIDEWALK TO BACK POINT OF 12:1 (8.33%) SLOPE.
* BACK OF SIDEWALK DROP REQUIRED FOR SIDEWALK SLOPES.
** BACK OF SIDEWALK DROP REQUIRED FOR ALL SIDEWALK SLOPES 0.04.

NOTES:
1. DETECTABLE WARNING DOMES SHALL COVER 2'-0" LENGTH AND FULL WIDTH OF THE RAMP FLOOR AS SHOWN ON THE DETAILS.
2. OBTAIN 70% CONTRAST VISIBILITY WITH ADJOINTING SURFACE, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT SEGUENCE COVERING THE ENTIRE RAMP.



DETECTABLE WARNING DOMES

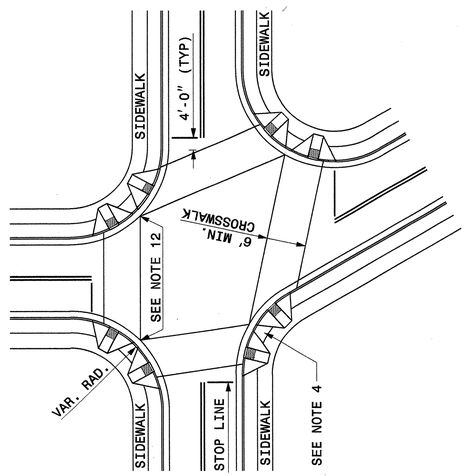
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR

WHEELCHAIR RAMP

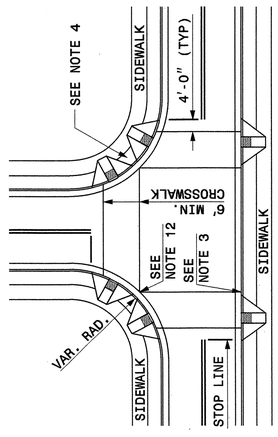
PROPOSED CURB AND GUTTER

SHEET 2 OF 3 **848D05**



DETAIL SHOWING TYPICAL LOCATION OF WHEELCHAIR RAMPS, PEDESTRIAN CROSSWALKS AND STOP LINES

ALLOWABLE LOCATIONS
DUAL RAMP RADII.....ANY



DETAIL SHOWING TYPICAL LOCATION OF WHEELCHAIR RAMPS, PEDESTRIAN CROSSWALKS AND STOP LINES FOR TEE INTERSECTIONS

ROADWAY PLAN SYMBOL (WCR) FOR PROPOSED WHEELCHAIR RAMP

PROPOSED WHEELCHAIR RAMP
PROPOSED OR FUTURE SIDEWALK

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOHN C. HUNSUCKER
10/14/10

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

SEE PLATE FOR TITLE

ORIGINAL BY: STD.NO.848.05 DATE: 4-22-10
MODIFIED BY: DATE:
CHECKED BY: DATE: 4/22/10
FILE SPEC.: SpecialDetails/EricWard/STDS/848d05.dgn

22-APR-2010 09:59
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.tspell AT PS244552

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

ENGLISH DETAIL DRAWING FOR

WHEELCHAIR RAMP

PROPOSED CURB AND GUTTER

SHEET 3 OF 3

848D05

NOTES:

1. CONSTRUCT THE WALKING SURFACE WITH SLIP RESISTANTANCE AND A 70% CONTRASTING COLOR TO THE SIDEWALK.
2. CROSSWALK WIDTHS AND CONFIGURATION VARY BUT MUST CONFORM TO TRAFFIC DESIGN STANDARDS.
3. NORTH CAROLINA GENERAL STATUTE 136-44.14 REQUIRES THAT ALL STREET CURBS BEING CONSTRUCTED OR RECONSTRUCTED FOR MAINTENANCE PROCEDURES, TRAFFIC OPERATIONS, REPAIRS, CORRECTION OF UTILTIES OR ALTERED FOR ANY REASON AFTER SEPTEMBER 1, 1973 SHALL PROVIDE WHEELCHAIR RAMPS FOR THE PHYSICALLY DISABLED AT ALL INTERSECTIONS WHERE BOTH CURB AND GUTTER AND SIDEWALKS ARE PROVIDED AND AT OTHER POINTS OF PEDESTRIAN FLOW.

   IN ADDITION, SECTION 228 OF THE 1973 FEDERAL AID HIGHWAY SAFETY ACT REQUIRES PROVISION OF CURB RAMPS ON ANY CURB CONSTRUCTION AFTER JULY 1,1976 WHETHER A SIDEWALK IS PROPOSED INITIALLY OR IS PLANNED FOR A FUTURE DATE.

   THE AMERICANS WITH DISABILITIES ACT (ADA) OF 1990 EXTENDS TO INDIVIDUALS WITH DISABILITIES. COMPREHENSIVE CIVIL RIGHTS PROTECTIONS SIMILIAR TO THOSE PROVIDED TO PERSONS ON THE BASIS OF RACE, SEX, NATIONAL ORIGIN AND RELIGION UNDER THE CIVIL RIGHTS ACT OF 1964. THESE CURB RAMPS HAVE BEEN DESIGNED TO COMPLY WITH THE CURRENT ADA STANDARDS.

4. PROVIDE WHEELCHAIR RAMPS AT LOCATIONS AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER. LOCATE WHEELCHAIR RAMPS AS DIRECTED BY THE ENGINEER WHERE EXISTING LIGHT POLES, FIRE HYDRANTS, DROP INLETS, ETC. AFFECT PLACEMENT. WHERE TWO RAMPS ARE INSTALLED PLACE NOT LESS THAN 2 FEET OF FULL HEIGHT CURB BETWEEN THE RAMPS. PLACE DUAL RAMPS AS NEAR PERPENDICULAR TO THE TRAVEL LANE BEING CROSSED AS POSSIBLE.
5. DO NOT EXCEED 0.08 (12:1) SLOPE ON THE WHEELCHAIR RAMP IN RELATIONSHIP TO THE GRADE OF THE STREET.
6. CONSTRUCT WHEELCHAIR RAMPS 40" (3'-4") OR GREATER FOR DUAL RAMPS.
7. USE CLASS "B" CONCRETE WITH A SIDEWALK FINISH IN ORDER TO OBTAIN A ROUGH NON-SKID TYPE SURFACE.
8. PLACE A ½" EXPANSION JOINT WHERE THE CONCRETE WHEELCHAIR RAMP JOINS THE CURB AND AS SHOWN ON STD. DWG. 848.01.
9. PLACE THE INSIDE PEDESTRIAN CROSSWALK LINES NO CLOSER IN THE INTERSECTION BY BISECTING THE INTERSECTION RADII, WITH ALLOWANCE OF A 4' CLEAR ZONE IN THE VEHICULAR TRAVELWAY WHEN ONE RAMP IS INSTALLED. (SEE NOTE 17)
10. COORDINATE THE CURB CUT AND THE PEDESTRIAN CROSSWALK LINES SO THE FLOOR OF THE WHEELCHAIR RAMP WILL FALL WITHIN THE PEDESTRIAN CROSSWALK LINES. PLACE DIAGONAL RAMPS WITH FLARED SIDES SO 24" OF FULL HEIGHT CURB FALLS WITHIN THE CROSSWALK MARKINGS ON EACH SIDE OF THE FLARES.
11. CONSTRUCT THE PEDESTRIAN CROSSWALK A MINIMUM OF 6 FEET. A CROSSWALK WIDTH OF 10 FEET OR GREATER IS DESIRABLE.
12. USE STOP LINES, NORMALLY PERPENDICULAR TO THE LANE LINES, WHERE IT IS IMPORTANT TO INDICATE THE POINT BEHIND WHICH VEHICLES ARE REQUIRED TO STOP IN COMPLIANCE WITH A TRAFFIC SIGNAL, STOP SIGN OR OTHER LEGAL REQUIREMENT. AN UNUSUAL APPROACH SKEW MAY REQUIRE THE PLACEMENT OF THE STOP LINE TO BE PARALLEL TO THE INTERSECTING ROADWAY.
13. TERMINATE PARKING A MINIMUM OF 20 FEET BACK OF PEDESTRIAN CROSSWALK.
14. PLACE ALL PAVEMENT MARKINGS IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION AND THE NORTH CAROLINA SUPPLEMENT TO THE MUTCD.

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

ENGLISH DETAIL DRAWING FOR

WHEELCHAIR RAMP

PROPOSED CURB AND GUTTER

SHEET 3 OF 3

848D05

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

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 02256 JOEL E. LAMBERT 4/21/10

ORIGINAL BY: STD. NO. 848.05 DATE: 4-22-10
MODIFIED BY: DATE:
CHECKED BY: DATE: 4/22/10
FILE SPEC: S:\Contracts\Contracts\Special Details\ericward\stds\848d05.dgn

SEE PLATE FOR TITLE

PROJECT REFERENCE NO. R-2414B
SHEET NO. 2-T

PROJECT REFERENCE NO.	SHEET
34430.1.1 (R-2414B)	2-U

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 32171 ENGINEER JINYOUNG PARK

SIGNATURE DATE

ENGINEER

SIGNATURE DATE

MASS SOIL MIXING AND SURCHARGE			
BEGIN STATION	END STATION	ESTIMATED WAITING PERIOD	
		PHASE I	PHASE II
55 + 33 ± -L-	56 + 34 ± -L-	3 MONTH	3 MONTH
72 + 50 ± -L-	73 + 80 ± -L-	3 MONTH	3 MONTH
88 + 55 ± -L-	89 + 18 ± -L-	3 MONTH	3 MONTH

CONSTRUCTION SEQUENCE

1. PERFORM CLEARING AND GRUBBING. REMOVE ALL STUMPS AND DEBRIS WITHIN THE LIMITS OF MASS SOIL MIXING AND THE AREA WHERE IMPERVIOUS DIKE IS TO BE INSTALLED.
2. INSTALL TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC AND IMPERVIOUS DIKE FOR MASS SOIL MIXING AS SHOWN IN THE PLANS. INSTALL TEMPORARY PIPES AS SHOWN IN THE EROSION CONTROL PLANS TO MAINTAIN WATER FLOW THROUGH THE EXISTING CULVERTS.
3. PERFORM TEST SOIL MIXING AT THE LOCATION SHOWN IN THE PLANS AND AS DIRECTED BY THE ENGINEER. WAIT FOR A MINIMUM OF SEVEN DAYS FOR THE TEST AREA TO CURE AND ACHIEVE THE REQUIRED STRENGTH.
4. PERFORM THE FIELD AND LABORATORY TESTS AS REQUIRED BY THE MASS SOIL MIXING SPECIAL PROVISION TO VERIFY THAT THE MIXED SOIL MEETS THE DESIGN REQUIREMENTS.
5. IF THE TEST SOIL MIXING AREA IS REJECTED BY THE ENGINEER, SUBMIT REVISED MIX DESIGN AND/OR CONSTRUCTION METHODS FOR ENGINEER'S REVIEW AND APPROVAL. NO SOIL MIXING WORK SHALL BE PERFORMED UNTIL APPROVAL OF THE REVISED SUBMITTAL BY THE ENGINEER. UPON APPROVAL OF THE REVISED SUBMITTAL, PERFORM TEST SOIL MIXING FOLLOWING THE REVISED SUBMITTAL AT A LOCATION DESIGNED BY THE ENGINEER.
6. UPON ACCEPTANCE OF THE TEST SOIL MIXING AREA BY THE ENGINEER, PERFORM THE PHASE I MASS SOIL MIXING.
7. PLACE SEPARATION FABRIC ON THE SURFACE OF THE MASS SOIL MIXING.
8. PLACE 0.6 METERS OF EMBANKMENT FILL MATERIAL ON THE SEPARATION FABRIC USING A LIGHT WEIGHT EQUIPMENT EQUIVALENT TO D-6 DOZER OR SMALLER. DO NOT COMPACT THIS FILL UNTIL THE MASS SOIL MIXING GAINS THE REQUIRED STRENGTH.
9. PERFORM THE FIELD AND LABORARY TESTS AS REQUIRED BY THE MASS SOIL MIXING SPECIAL PROVISION TO VERIFY THAT THE MIXED SOIL MEETS THE DESIGN REQUIREMENTS.
10. IF THE MASS SOIL MIXING FAILS TO MEET THE DESIGN REQUIREMENTS, STOP THE OPERATION IMMEDIATELY AND SUBMIT REMEDIAL MEASURES FOR THE ENGINEER'S REVIEW AND APPROVAL.
11. UPON ACCEPTANCE OF THE MASS SOIL MIXING BY THE ENGINEER, IMPERVIOUS DIKE FOR MASS SOIL MIXING MAY BE REMOVED. INSTALL EMBANKMENT SETTLEMENT GAUGES AS SHOWN IN THE EMBANKMENT MONITORING DETAIL AND SPECIAL PROVISION AND CONSTRUCT THE EMBANKMENT INCLUDING 0.6 METERS OF SURCHARGE AS SHOWN IN THE PLANS. ALSO, PROVIDE ACCESS AND MAKE NECESSARY ARRANGEMENTS FOR THE DEPARTMENT'S PERSONNEL TO INSTALL THE PIEZOMETERS.
12. WAIT FOR THE EMBANKMENT AND THE UNDERLYING SOILS TO UNDERGO SETTLEMENT FOR THREE MONTHS UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
13. REMOVE THE EMBANKMENT FILL MATERIAL AND SURCHARGE FROM THE CULVERT AREAS FOR CULVERT CONSTRUCTION.
14. COMPLETE THE CONSTRUCTION OF PHASE I EMBANKMENT, CULVERT, AND PAVEMENT AND SHIFT THE TRAFFIC AS SHOWN IN THE TRAFFIC PHASING PLANS.
15. PERFORM PHASE II MASS SOIL MIXING FOLLOWING THE SAME CONSTRUCTION SEQUENCE AS PHASE I.

NOTES

1. FOR MASS SOIL MIXING, SEE MASS SOIL MIXING SPECIAL PROVISION.
2. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY MEANS AND METHODS (TEMPORARY EMBANKMENT AND SLOPE STABILIZATION MEASURES) TO ENSURE THE STABILITY OF BOTH EXISTING AND WIDENED EMBANKMENTS PRIOR TO MASS SOIL MIXING WORK INCLUDING TEST SOIL MIXING.
3. PERFORM MASS SOIL MIXING TO THE LIMITS SHOWN ON THE PLANS. THE ENGINEER MAY REVISE THE LIMITS AND DEPTHS OF MASS SOIL MIXING BASED ON THE FIELD CONDITIONS.
4. FOR TRAFFIC PHASE INFORMATION AND TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE PLANS FOR TEMPORARY TRAFFIC CONTROL, MARKING & DELINEATION (TCP). TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC SHALL BE INSTALLED AND REMAIN IN PLACE AS REQUIRED FOR TRAFFIC PHASING.
5. FOR IMPERVIOUS DIKE FOR MASS SOIL MIXING, SEE IMPERVIOUS DIKE FOR MASS SOIL MIXING SPECIAL PROVISION. DO NOT REMOVE IMPERVIOUS DIKE FOR MASS SOIL MIXING UNTIL MASS MIXED SOIL IS ACCEPTED BY THE ENGINEER.
6. FOR SETTLEMENT GAUGES AND PIEZOMETER INSTALLATION, SEE EMBANKMENT MONITORING SPECIAL PROVISION.
7. NONWOVEN FABRIC FOR SOIL SEPARATION SHALL BE PLACED ON THE SURFACE OF MASS SOIL MIXING AND BE COVERED WITH 0.6 METER THICKNESS OF THE COMMON BORROW MATERIAL. FOR NONWOVEN FABRIC, SEE NONWOVEN FABRIC FOR SOIL SEPARATION SPECIAL PROVISION.
8. WAITING PERIOD BEGINS AFTER CONSTRUCTING THE EMBANKMENT TO 0.6 METERS ABOVE THE FINAL GRADE ELEVATION. THE FINAL GRADE ELEVATION IS THE TOP OF PAVEMENT ELEVATION SHOWN IN THE ROADWAY PLANS. MAINTAIN THE EMBANKMENT TO 0.6 METERS ABOVE THE FINAL GRADE ELEVATION THROUGHOUT THE WAITING PERIOD.
9. SEE OBSTRUCTION REMOVAL FOR MASS SOIL MIXING SPECIAL PROVISION FOR REMOVAL OF UNDERGROUND OBSTRUCTIONS INCLUDING TREE STUMPS.

ESTIMATED QUANTITIES						
LOCATIONS	MASS SOIL MIXING (CUBIC METER)		NONWOVEN FABRIC (SQUARE METER)		IMPERVIOUS DIKE (METER)	
	PHASE I	PHASE II	PHASE I	PHASE II	PHASE I	PHASE II
55+33 ± -L- TO 56+34 ± -L-	9,100	14,850	1,600	1,940	105	80
72+50 ± -L- TO 73+80 ± -L-	6,050	10,700	2,320	2,520	130	130
88+55 ± -L- TO 89+18 ± -L-	1,300	3,250	800	1,270	55	60
TOTALS	45,250		10,450		560	

PREPARED BY: J. PARK	DATE: 04/2011
REVIEWED BY: K. J. KIM	DATE: 04/2011

GEOTECHNICAL ENGINEERING UNIT

☒ EASTERN REGIONAL OFFICE
☐ WESTERN REGIONAL OFFICE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

Mass Soil Mixing
Sheet 1 of 4

REVISIONS

NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

RD248630 4/25/2011 R2414B_GEO_RDWY_Add_Mass Soil Mixing_Rev_042111 btkyle RD-Oce860-34

PROJECT REFERENCE NO.	SHEET
34430.1.1 (R-2414B)	2-V

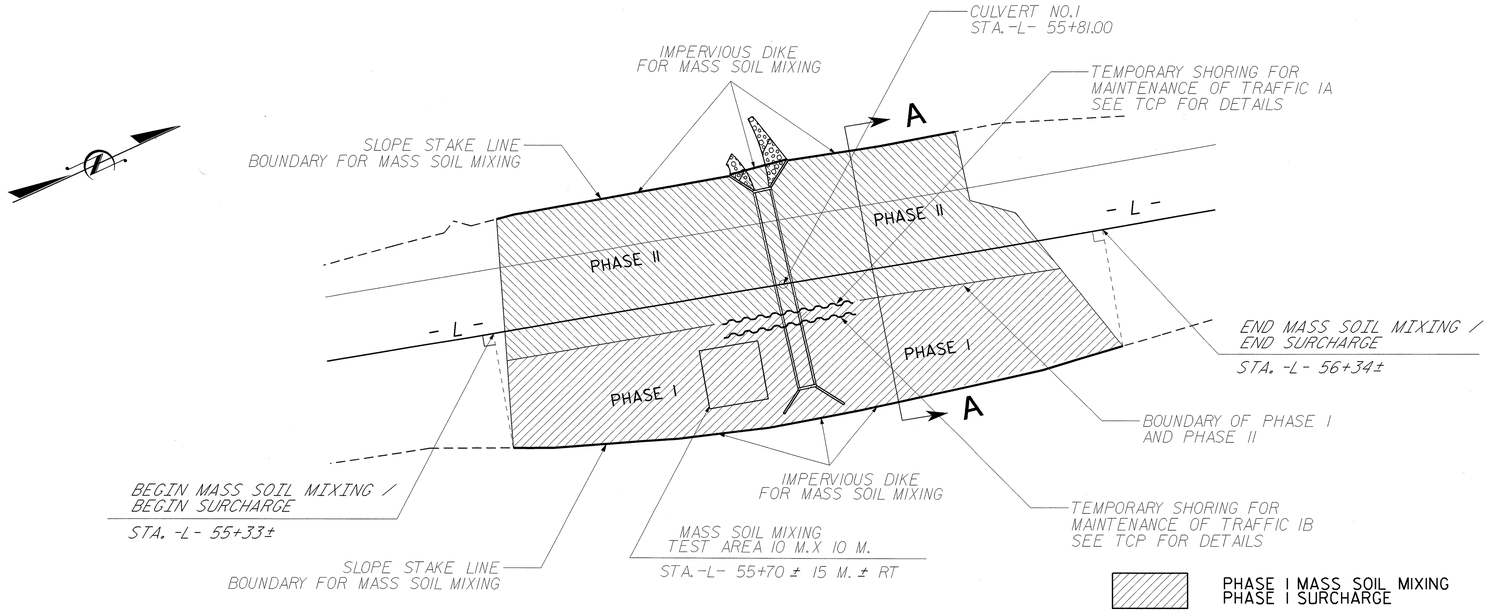
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 32171 ENGINEER JINYOUNG PARK

SIGNATURE DATE

ENGINEER

SIGNATURE DATE



MASS SOIL MIXING NO. 1 PLAN VIEW

Not To Scale

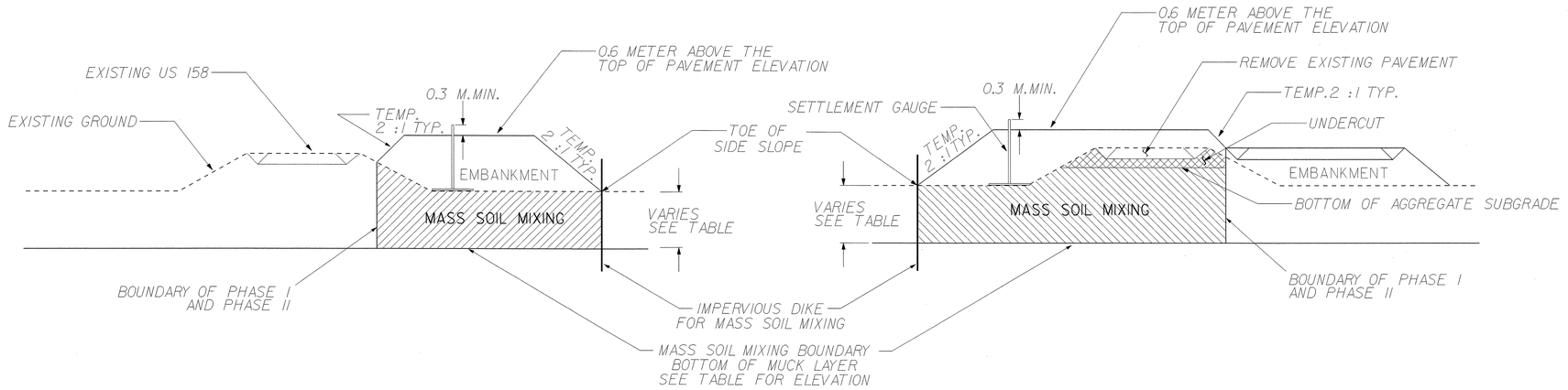
PHASE I MASS SOIL MIXING
PHASE I SURCHARGE

PHASE II MASS SOIL MIXING
PHASE II SURCHARGE

MASS SOIL MIXING BOTTOM ELEVATIONS

STATION	ELEVATION* (PHASE I)	ELEVATION* (PHASE II)
-L- 55+33.00	-5.5 M	-5.5 M
-L- 55+40.00	-5.5 M	-5.5 M
-L- 55+60.00	-5.5 M	-5.5 M
-L- 55+80.00	-5.5 M	-5.5 M
-L- 56+00.00	-6.0 M	-7.5 M
-L- 56+20.00	-4.5 M	-3.0 M
-L- 56+34.00	-4.5 M	-

* USE A LINEAR INTERPOLATION OF THE ELEVATION BETWEEN THE STATIONS



TRAFFIC PHASE I
A-A CROSS SECTION TYP.

Not To Scale

TRAFFIC PHASE II
A-A CROSS SECTION TYP.

Not To Scale

PREPARED BY: J. PARK	DATE: 04/2011
REVIEWED BY: K. J. KIM	DATE: 04/2011

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

Mass Soil Mixing
Sheet 2 of 4

REVISIONS

NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

RD248630 4/25/2011 R2414B_GEO_RDWY_Add_Mass Soil Mixing_Rev_042111 btkyle RD-Oce860-34

PROJECT REFERENCE NO.	SHEET
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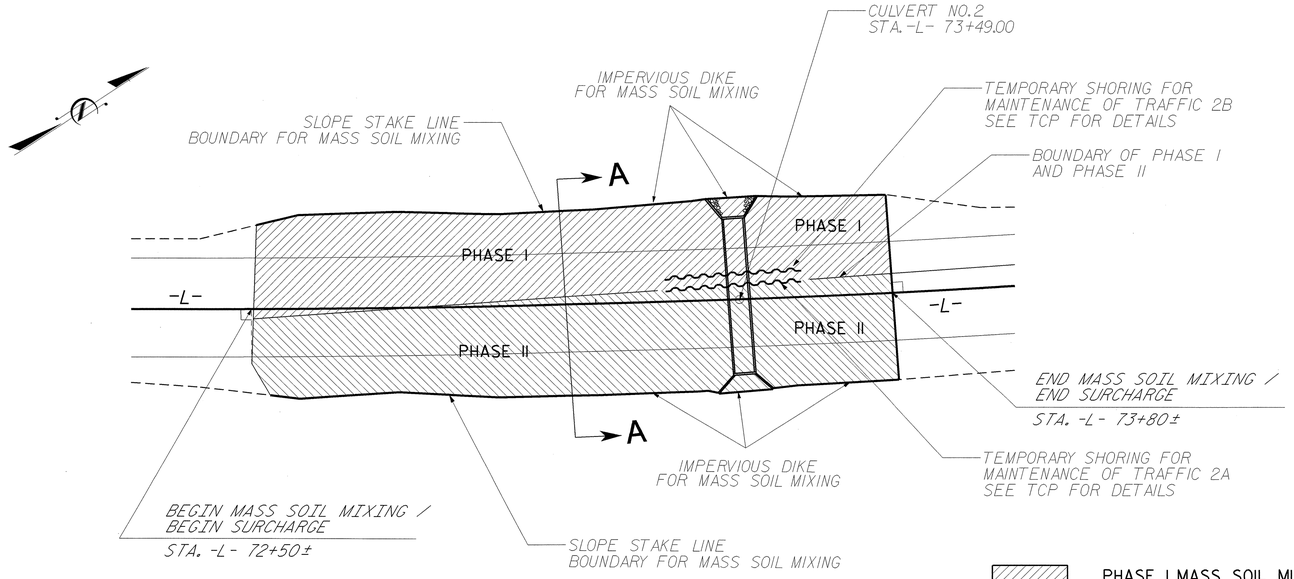
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 32171 ENGINEER IN YOUNG PARK

SIGNATURE DATE

ENGINEER

SIGNATURE DATE



MASS SOIL MIXING NO. 2 PLAN VIEW

Not To Scale

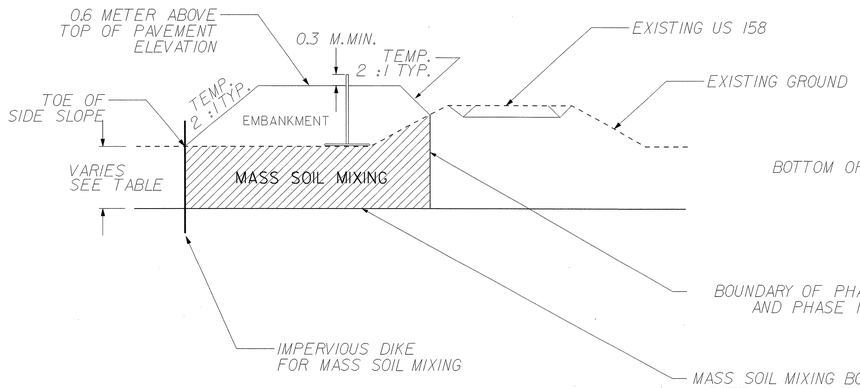
PHASE I MASS SOIL MIXING
PHASE I SURCHARGE

PHASE II MASS SOIL MIXING
PHASE II SURCHARGE

MASS SOIL MIXING BOTTOM ELEVATIONS

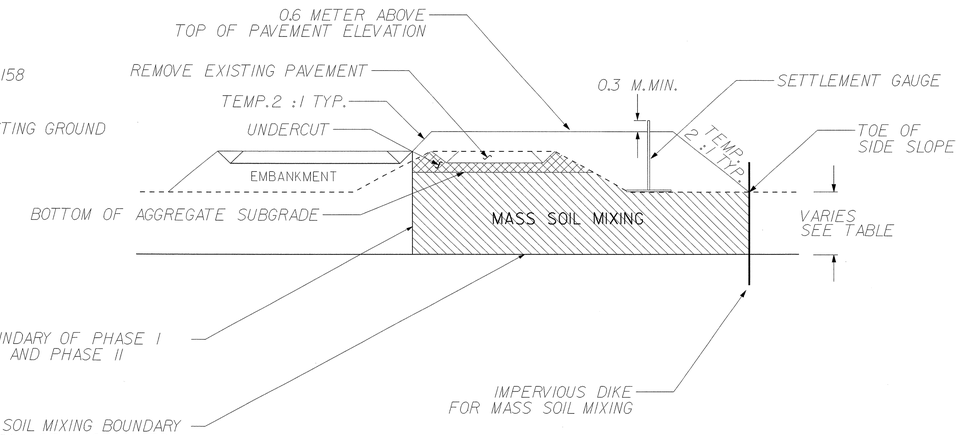
STATION	ELEVATION* (PHASE I)	ELEVATION* (PHASE II)
-L- 72+50.00	-1.5 M	-1.0 M
-L- 72+60.00	-1.5 M	-1.0 M
-L- 72+80.00	-2.5 M	-1.5 M
-L- 73+00.00	-4.0 M	-3.0 M
-L- 73+20.00	-5.0 M	-5.0 M
-L- 73+40.00	-5.0 M	-4.0 M
-L- 73+60.00	-3.0 M	-4.0 M
-L- 73+80.00	-1.0 M	-1.0 M

* USE A LINEAR INTERPOLATION OF THE ELEVATION BETWEEN THE STATIONS



TRAFFIC PHASE I
A-A CROSS SECTION TYP.

Not To Scale



TRAFFIC PHASE II
A-A CROSS SECTION TYP.

Not To Scale

PREPARED BY: J. PARK	DATE: 04/2011
REVIEWED BY: K. J. KIM	DATE: 04/2011

GEOTECHNICAL ENGINEERING UNIT

[X] EASTERN REGIONAL OFFICE
[ ] WESTERN REGIONAL OFFICE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

Mass Soil Mixing
Sheet 3 of 4

REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

RD248630 4/25/2011 R2414B_GEO_RDWY_Add_Mass Soil Mixing_Rev_042111 btkyle RD-Oce860-34

PROJECT REFERENCE NO.	SHEET
34430.1.1 (R-2414B)	2-X

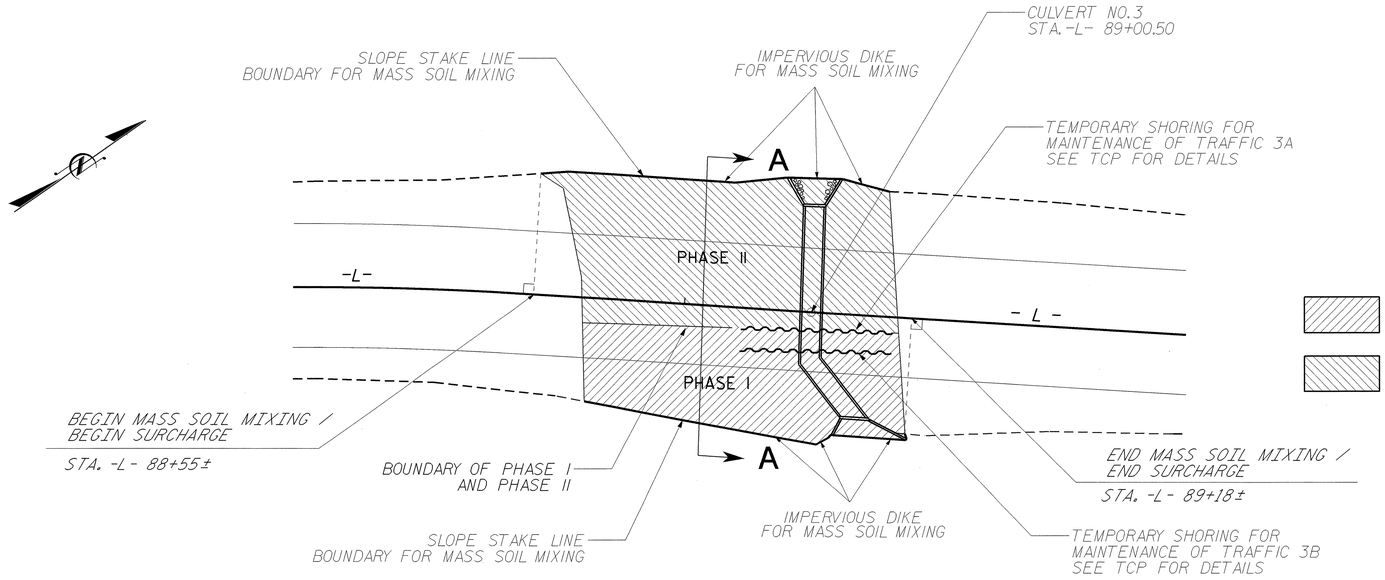
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 32171 ENGINEER JINYOUNG PARK

SIGNATURE DATE

ENGINEER

SIGNATURE DATE



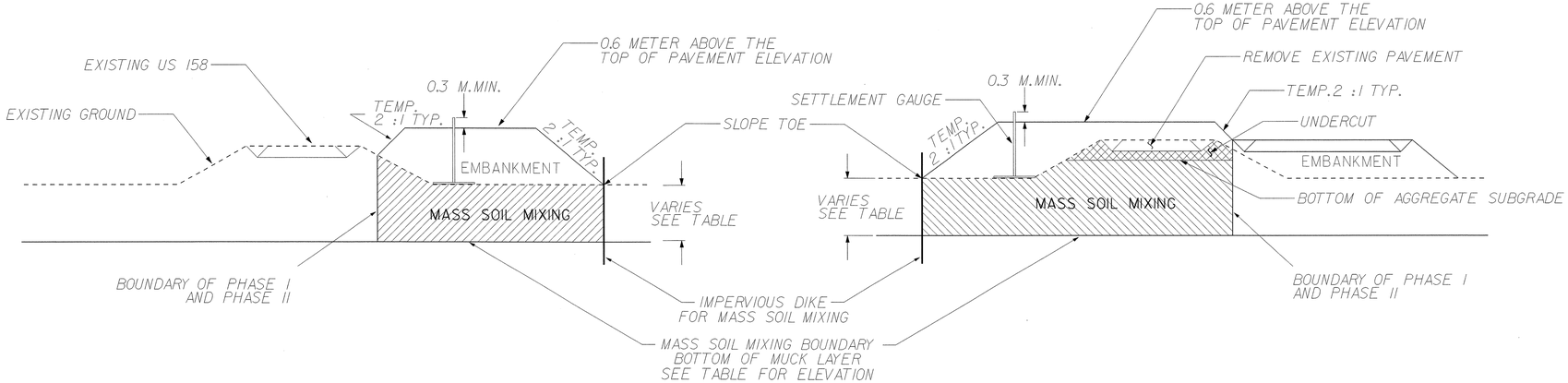
MASS SOIL MIXING NO. 3 PLAN VIEW

Not To Scale

MASS SOIL MIXING BOTTOM ELEVATIONS

STATION	ELEVATION* (PHASE I)	ELEVATION* (PHASE II)
-L- 88+55.00	-	-1.0 M
-L- 88+80.00	-1.5 M	-1.5 M
-L- 89+00.00	-2.5 M	-2.5 M
-L- 89+18.00	1.0 M	-

* USE A LINEAR INTERPOLATION OF THE ELEVATION BETWEEN THE STATIONS



TRAFFIC PHASE I
A-A CROSS SECTION TYP.

Not To Scale

TRAFFIC PHASE II
A-A CROSS SECTION TYP.

Not To Scale

PREPARED BY: J. PARK	DATE: 04/2011
REVIEWED BY: K. J. KIM	DATE: 04/2011

GEOTECHNICAL ENGINEERING UNIT

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

Mass Soil Mixing
Sheet 4 of 4

REVISIONS

NO.	BY	DATE	NO.	BY	DATE
1			3		
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RD248630 4/25/2011 R2414B_GEO_RDWY_Add_Mass Soil Mixing_Rev_042111 btkyle RD-Oce860-34

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	2-Y

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

ENGLISH DETAIL DRAWING FOR

CONCRETE STEPS WITH HANDRAIL

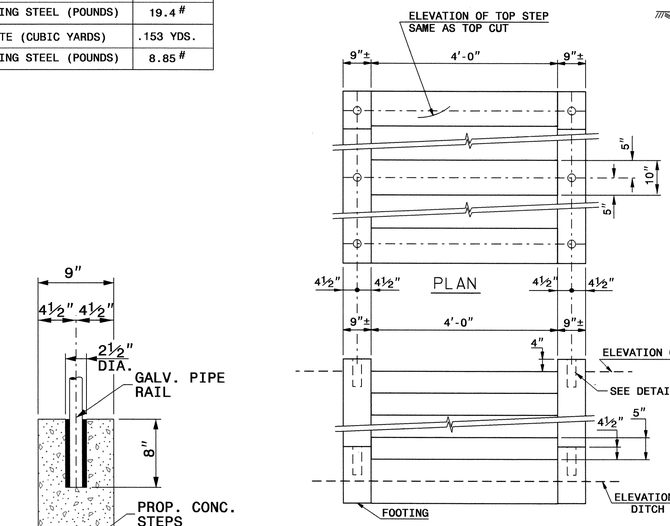
SHEET 1 OF 1

844D01

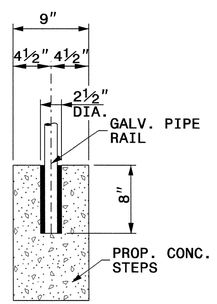
GENERAL NOTES :

1- CONSTRUCT PROPOSED STEEL PIPE RAIL OF 1½" DIAMETER SCHEDULE 40 PLAIN END GALVANIZED STEEL PIPE MEETING THE REQUIREMENTS OF ASTM A53. EMBED PIPE RAIL 8" INTO PROPOSED STEPS WITH CHEMICAL OR CONCRETE GROUT ANCHORING SYSTEM AS DIRECTED BY THE ENGINEER.
2- USE A ROTARY DRILL FOR DRILLING THE HOLES FOR THE PIPE RAIL. NO IMPACT DRILLS ALLOWED.
3- USE CLASS "B" CONCRETE THROUGHOUT FOR CONCRETE STEPS.
4- LOCATION AND QUANTIES SHOWN ARE APPROXIMATE ONLY. EXACT LOCATION AND QUANTIES WILL BE DETERMINED BY THE ENGINEER.
5- ALL WORK AS DIRECTED BY THE ENGINEER.
6- REPAIR OF GALVANIZING IN ACCORDANCE WITH SCT.1076 OF THE STANDARD SPECIFICATIONS.
7- WELD IN ACCORDANCE WITH ARTICLE 1072-20 OF THE STANDARD SPECIFICATIONS.
8- 2" CLEAR SPACING ON ALL REINFORCING BARS.
9- EXTEND HORIZONTAL REINFORCING BARS UPWARD INTO SIDE WALLS.

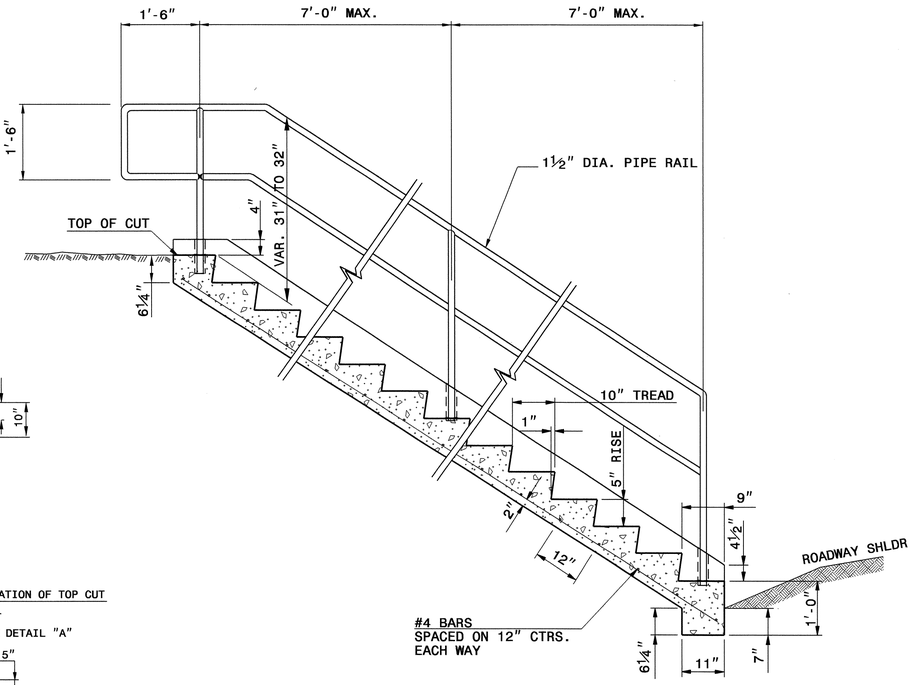
BILL OF MATERIALS		
2 STEPS	CONCRETE (CUBIC YARDS)	.347 YDS.
	REINFORCING STEEL (POUNDS)	19.4 #
EACH ADDITIONAL STEPS	CONCRETE (CUBIC YARDS)	.153 YDS.
	REINFORCING STEEL (POUNDS)	8.85 #



FRONT ELEVATION



DETAIL "A"



SECTION
CONCRETE STEPS

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

ENGLISH DETAIL DRAWING FOR

CONCRETE STEPS WITH HANDRAIL

SHEET 1 OF 1

844D01

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL HOWERTON 11/1/10

CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-250-4128 FAX 919-250-4119

SEE PLATE FOR TITLE

ORIGINAL BY: T.Spell DATE: Oct.7,1998
MODIFIED BY: DATE:
CHECKED BY: DATE: 11/1/10
FILE SPEC.: $\usr\details\stand\844d01e.dgn

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6/10/99

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	3

Sheet 1 of 2

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202760

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0001000000-M	200	Lump Sum		CLEARING & GRUBBING .. HECTARE(S)
0008000000-M	200	0.4	HA	SUPPLEMENTARY CLEARING & GRUBBING
0022000000-M	225	14,500	M3	UNCLASSIFIED EXCAVATION
0036000000-M	225	9,150	M3	UNDERCUT EXCAVATION
0038000000-M	SP	29,100	M3	SHALLOW UNDERCUT
0080000000-M	SP	116,100	MTN	CLASS IV SUBGRADE STABILIZATION
0106000000-M	230	95,000	M3	BORROW EXCAVATION
0127000000-N	SP	28	EA	EMBANKMENT SETTLEMENT GAUGES
0134000000-M	240	2,400	M3	DRAINAGE DITCH EXCAVATION
0156000000-M	250	9,300	M2	REMOVAL OF EXISTING ASPHALT PAVEMENT
0194000000-M	SP	11,525	M3	SELECT GRANULAR MATERIAL, CLASS III
0196000000-M	270	70,600	M2	FABRIC FOR SOIL STABILIZATION
0199000000-M	SP	304	M2	TEMPORARY SHORING
0234000000-M	SP	45,250	M3	GENERIC GRADING ITEM MASS SOIL MIXING
0234000000-M	SP	5,000	M3	GENERIC GRADING ITEM OBSTRUCTION REMOVAL FOR MASS SOIL MIXING
0241000000-M	SP	10,450	M2	GENERIC GRADING ITEM NONWOVEN FABRIC FOR SOIL SEPARATION
0255000000-M	SP	100	MTN	GENERIC GRADING ITEM EXCAVATION AND STOCKPILING CONTAMINATED SOIL
0257000000-M	SP	560	M	GENERIC GRADING ITEM IMPERVIOUS DIKE FOR MASS SOIL MIXING
0262000000-N	SP	5	EA	GENERIC GRADING ITEM CONTAMINATED WATER STORAGE VESSEL DAILY RENTAL
0318000000-M	SP	2,340	MTN	FOUNDATION CONDITIONING MATERIAL, MINOR STRS
0320000000-M	SP	5,120	M2	FOUNDATION CONDITIONING FABRIC
0962000000-M	320	18	M	*** X ***MM CAA STRUCTURAL PLATE PIPE ARCH, ****MM THICK (1524MM X 1168MM , 2.77MM)
0986000000-M	SP	24	M	GENERIC PIPE ITEM 375MM DI PIPE
0987000000-M	310	9.6	M	GENERIC PIPE ITEM 1500MM RC PIPE CULVERTS, CLASS III
0987000000-M	310	14.4	M	GENERIC PIPE ITEM 300MM SIDE DRAIN PIPE
0987000000-M	310	78.4	M	GENERIC PIPE ITEM 375MM SIDE DRAIN PIPE
0987000000-M	310	24	M	GENERIC PIPE ITEM 600MM SIDE DRAIN PIPE
0988000000-M	310	3	EA	GENERIC PIPE ITEM 375MM X 375MM X 375MM RC PIPE TEES, CLASS III
0988000000-M	310	2	EA	GENERIC PIPE ITEM 450MM X 450MM X 375MM RC PIPE TEES, CLASS III
0988000000-M	310	1	EA	GENERIC PIPE ITEM 600MM X 600MM X 375MM RC PIPE TEES, CLASS III
0995000000-M	340	1,500	M	PIPE REMOVAL
1011000000-N	500	Lump Sum		FINE GRADING
1121000000-M	520	625	MTN	AGGREGATE BASE COURSE
1220000000-M	545	1,000	MTN	INCIDENTAL STONE BASE
1489000000-M	610	2,250	MTN	ASPHALT CONC BASE COURSE, TYPE B25.0B
1491000000-M	610	26,500	MTN	ASPHALT CONC BASE COURSE, TYPE B25.0C
1498000000-M	610	440	MTN	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B
1503000000-M	610	23,150	MTN	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C
1519000000-M	610	1,720	MTN	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
1523000000-M	610	21,100	MTN	ASPHALT CONC SURFACE COURSE, TYPE S9.5C
1560000000-M	620	2,449	MTN	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
1565000000-M	620	1,266	MTN	ASPHALT BINDER FOR PLANT MIX, GRADE PG 70-22
1693000000-M	654	490	MTN	ASPHALT PLANT MIX, PAVEMENT REPAIR

ItemNumber	Sec #	Quantity	Unit	Description
2022000000-M	SP	9,650	M3	SUBDRAIN EXCAVATION
2033000000-M	SP	4,830	M3	SUBDRAIN FINE AGGREGATE
2044000000-M	SP	11,648	M	150MM PERFORATED SUBDRAIN PIPE
2070000000-N	SP	78	EA	SUBDRAIN PIPE OUTLETS
2077000000-M	SP	156	M	150MM OUTLET PIPE (SUBDRAINS)
2209000000-M	838	4	M3	ENDWALLS
2253000000-M	840	2	M3	PIPE COLLARS
2264000000-M	840	1	M3	PIPE PLUGS
2286000000-N	840	192	EA	MASONRY DRAINAGE STRUCTURES
2308000000-M	840	10	M	MASONRY DRAINAGE STRUCTURES
2364000000-N	840	39	EA	FRAME WITH TWO GRATES, STD 840.16
2366000000-N	840	1	EA	FRAME WITH TWO GRATES, STD 840.24
2374000000-N	840	33	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (E)
2374000000-N	840	48	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (F)
2374000000-N	840	71	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G)
2451000000-N	852	5	EA	CONCRETE TRANSITIONAL SECTION FOR DROP INLETS
2533000000-M	846	30	M	*** X ***MM CONCRETE CURB (200MM X 400MM)
2533000000-M	846	1,400	M	*** X ***MM CONCRETE CURB (200MM X 450MM)
2549000000-M	846	9,160	M	750MM CONCRETE CURB & GUTTER
2591000000-M	848	580	M2	100MM CONCRETE SIDEWALK
2605000000-N	848	29	EA	CONCRETE WHEELCHAIR RAMPS
2612000000-M	848	600	M2	150MM CONCRETE DRIVEWAY
2655000000-M	852	1,200	M2	125MM MONOLITHIC CONCRETE ISLANDS (KEYED IN)
3030000000-M	862	434.34	M	STEEL BM GUARDRAIL
3150000000-N	862	10	EA	ADDITIONAL GUARDRAIL POSTS
3210000000-N	862	6	EA	GUARDRAIL ANCHOR UNITS, TYPE CAT-1
3270000000-N	SP	6	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3360000000-M	863	42	M	REMOVE EXISTING GUARDRAIL
3380000000-M	862	87.63	M	TEMPORARY STEEL BM GUARDRAIL
3389100000-N	SP	6	EA	GUARDRAIL ANCHOR UNITS, TYPE 350 TEMPORARY
3572000000-M	867	230	M	CHAIN LINK FENCE RESET
3574000000-M	867	23	M	GENERIC FENCING ITEM WOOD FENCE RESET
3628000000-M	876	185	MTN	RIP RAP, CLASS I
3649000000-M	876	125	MTN	RIP RAP, CLASS B
3656000000-M	876	5,250	M2	FILTER FABRIC FOR DRAINAGE
3659000000-N	SP	1	EA	PREFORMED SCOUR HOLES WITH LEVEL SPREADER APRON
4082000000-M	903	610	M	SUPPORTS, WOOD
4096000000-N	904	7	EA	SIGN ERECTION, TYPE D
4102000000-N	904	52	EA	SIGN ERECTION, TYPE E
4108000000-N	904	21	EA	SIGN ERECTION, TYPE F
4158000000-N	907	75	EA	DISPOSAL OF SIGN SYSTEM, WOOD
4400000000-M	1110	57	M2	WORK ZONE SIGNS (STATIONARY)
4405000000-M	1110	39	M2	WORK ZONE SIGNS (PORTABLE)
4410000000-M	1110	13	M2	WORK ZONE SIGNS (BARRICADE MOUNTED)
4415000000-N	1115	2	EA	FLASHING ARROW PANELS, TYPE C
4422000000-N	1120	60	DAY	CHANGEABLE MESSAGE SIGN (SHORT TERM)
4430000000-N	1130	482	EA	DRUMS
4435000000-N	1135	482	EA	CONES
4445000000-M	1145	30	M	BARRICADES (TYPE III)
4455000000-N	1150	540	MD	FLAGGER

ItemNumber	Sec #	Quantity	Unit	Description
4465000000-N	1160	5	EA	TEMPORARY CRASH CUSHIONS
4470000000-N	1160	4	EA	RESET TEMPORARY CRASH CUSHIONS
4480000000-N	1165	2	EA	TMIA
4485000000-M	1170	772	M	PORTABLE CONCRETE BARRIER
4510000000-N	SP	16	HR	LAW ENFORCEMENT
4650000000-N	1251	272	EA	TEMPORARY RAISED PAVEMENT MARKERS
4685000000-M	1205	2,135	M	THERMOPLASTIC PAVEMENT MARKING LINES (100MM, 2.3MM)
4686000000-M	1205	15,813	M	THERMOPLASTIC PAVEMENT MARKING LINES (100MM, 3.1MM)
4695000000-M	1205	500	M	THERMOPLASTIC PAVEMENT MARKING LINES (200MM, 2.3MM)
4705000000-M	1205	80	M	THERMOPLASTIC PAVEMENT MARKING LINES (400MM, 3.1MM)
4710000000-M	1205	362	M	THERMOPLASTIC PAVEMENT MARKING LINES (600MM, 3.1MM)
4721000000-M	1205	23	EA	THERMOPLASTIC PAVEMENT MARKING CHARACTER (3.1MM)
4725000000-M	1205	219	EA	THERMOPLASTIC PAVEMENT MARKING SYMBOL (2.3MM)
4770000000-M	1205	305	M	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (100MM) (IV)
4810000000-M	1205	15,112	M	PAINT PAVEMENT MARKING LINES (100MM)
4820000000-M	1205	80	M	PAINT PAVEMENT MARKING LINES (200MM)
4825000000-M	1205	100	M	PAINT PAVEMENT MARKING LINES (300MM)
4830000000-M	1205	30	M	PAINT PAVEMENT MARKING LINES (400MM)
4835000000-M	1205	246	M	PAINT PAVEMENT MARKING LINES (600MM)
4840000000-N	1205	4	EA	PAINT PAVEMENT MARKING CHARACTER
4845000000-N	1205	29	EA	PAINT PAVEMENT MARKING SYMBOL
4850000000-M	1205	3,061	M	REMOVAL OF PAVEMENT MARKING LINES (100MM)
4870000000-M	1205	18	M	REMOVAL OF PAVEMENT MARKING LINES (600MM)
4875000000-N	1205	11	EA	REMOVAL OF PAVEMENT MARKING SYMBOLS & CHARACTERS
4900000000-N	1251	989	EA	PERMANENT RAISED PAVEMENT MARKERS
5325200000-M	1510	95	M	50MM WATER LINE
5325600000-M	1510	112	M	150MM WATER LINE
5325800000-M	1510	228	M	200MM WATER LINE
5326000000-M	1510	716	M	250MM WATER LINE
5326200000-M	1510	993	M	300MM WATER LINE
5536000000-M	1515	1	EA	50MM VALVE
5540000000-M	1515	2	EA	150MM VALVE
5546000000-M	1515	1	EA	200MM VALVE
5552000000-M	1515	4	EA	250MM VALVE
5558000000-M	1515	3	EA	300MM VALVE
5648000000-N	1515	54	EA	RELOCATE WATER METER
5649000000-N	1515	1	EA	RECONNECT WATER METER
5672000000-N	1515	10	EA	RELOCATE FIRE HYDRANT
5709000000-M	1520	19	M	***MM FORCE MAIN SEWER (40MM)
5709000000-M	1520	268	M	***MM FORCE MAIN SEWER (75MM)
5709100000-M	1520	30	M	50MM FORCE MAIN SEWER
5709200000-M	1520	29	M	100MM FORCE MAIN SEWER
5798000000-M	1530	112	M	ABANDON ***MM UTILITY PIPE (50MM)
5800000000-M	1530	101	M	ABANDON 150MM UTILITY PIPE
5801000000-M	1530	188	M	ABANDON 200MM UTILITY PIPE
5802000000-M	1530	667	M	ABANDON 250MM UTILITY PIPE
5804000000-M	1530	899	M	ABANDON 300MM UTILITY PIPE

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STATE OF NORTH CAROLINA
SUMMARY OF QUANTITIES

PROJECT REFERENCE No.	SHEET No.
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ItemNumber	Sec #	Quantity	Unit	Description
5871200000-M	1550	63	M	TRENCHLESS INSTALLATION OF 75MM IN SOIL
5871210000-M	1550	62	M	TRENCHLESS INSTALLATION OF 75MM NOT IN SOIL
5871600000-M	1550	64	M	TRENCHLESS INSTALLATION OF 250MM IN SOIL
5871610000-M	1550	64	M	TRENCHLESS INSTALLATION OF 250MM NOT IN SOIL
5871700000-M	1550	148	M	TRENCHLESS INSTALLATION OF 300MM IN SOIL
5871710000-M	1550	147	M	TRENCHLESS INSTALLATION OF 300MM NOT IN SOIL
6000000000-M	1605	15,000	M	TEMPORARY SILT FENCE
6006000000-M	1610	4,070	MTN	STONE FOR EROSION CONTROL, CLASS A
6009000000-M	1610	7,780	MTN	STONE FOR EROSION CONTROL, CLASS B
6012000000-M	1610	6,080	MTN	SEDIMENT CONTROL STONE
6015000000-M	1615	50	HA	TEMPORARY MULCHING
6018000000-M	1620	825	KG	SEED FOR TEMPORARY SEEDING
6021000000-M	1620	6.75	MTN	FERTILIZER FOR TEMPORARY SEEDING
6024000000-M	1622	1,000	M	TEMPORARY SLOPE DRAINS
6027000000-N	1622	50	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
6029000000-M	SP	300	M	SAFETY FENCE
6030000000-M	1630	10,800	M3	SILT EXCAVATION
6036000000-M	1631	12,900	M2	MATTING FOR EROSION CONTROL
6037000000-M	SP	200	M2	COIR FIBER MAT
6042000000-M	1632	4,200	M	6.4MM HARDWARE CLOTH
6045000000-M	SP	160	M	***MM TEMPORARY PIPE (450MM)
6048000000-M	SP	50	M2	FLOATING TURBIDITY CURTAIN
6069000000-M	1638	275	M3	STILLING BASINS
6070000000-N	SP	15	EA	SPECIAL STILLING BASINS
6071010000-M	SP	100	M	WATTLE
6071020000-M	SP	50	KG	POLYACRYLAMIDE (PAM)
6071030000-M	SP	2,000	M	COIR FIBER BAFFLES
6071050000-M	SP	16	EA	***MM SKIMMER (38MM)
6084000000-M	1660	30	HA	SEEDING & MULCHING
6087000000-M	1660	30	HA	MOWING
6090000000-M	1661	1,550	KG	SEED FOR REPAIR SEEDING
6093000000-M	1661	5.25	MTN	FERTILIZER FOR REPAIR SEEDING
6096000000-M	1662	1,300	KG	SEED FOR SUPPLEMENTAL SEEDING
6108000000-M	1665	77	MTN	FERTILIZER TOPDRESSING
6111000000-M	SP	460	M	IMPERVIOUS DIKE
6114500000-N	SP	20	MHR	SPECIALIZED HAND MOWING
6117000000-N	SP	75	EA	RESPONSE FOR EROSION CONTROL
6123000000-M	1670	5	HA	REFORESTATION
6138000000-M	SP	8,000	M3	GENERIC EROSION CONTROL ITEM BORROW PIT DEWATERING BASIN
6147000000-M	SP	200	M	GENERIC EROSION CONTROL ITEM 1500MM TEMPORARY PIPE (AT MASS SOIL MIXING AREA)
6890000000-M	SP	3	M3	CONCRETE STEPS
7000000000-M	1705	2	EA	PEDESTRIAN SIGNAL HEAD (***MM, ** SECTION) (400MM, 1 SECTION W/COUNTDOWN)
7060000000-M	1705	2,268	M	SIGNAL CABLE
7108000000-M	1705	16	EA	VEHICLE SIGNAL HEAD (300MM, 1 SECTION)
7120000000-M	1705	30	EA	VEHICLE SIGNAL HEAD (300MM, 3 SECTION)
7132000000-M	1705	9	EA	VEHICLE SIGNAL HEAD (300MM, 4 SECTION)
7144000000-M	1705	9	EA	VEHICLE SIGNAL HEAD (300MM, 5 SECTION)
7264000000-M	1710	516	M	MESSENGER CABLE (9.52MM)
7300000000-M	1715	628	M	UNPAVED TRENCHING (**********) (1, 50MM)
7300000000-M	1715	32	M	UNPAVED TRENCHING (**********) (2, 50MM)
7301000000-M	1715	138	M	DIRECTIONAL DRILL (**********) (2, 50MM)
7301000000-M	1715	177	M	DIRECTIONAL DRILL (**********) (3, 50MM)
7324000000-N	1716	16	EA	JUNCTION BOX (STANDARD SIZE)
7348000000-N	1716	10	EA	JUNCTION BOX (OVER-SIZED, HEAVY DUTY)
7360000000-N	1720	14	EA	WOOD POLE
7372000000-N	1721	26	EA	GUY ASSEMBLY
7408000000-M	1722	3	EA	25MM RISER WITH WEATHERHEAD
7420000000-M	1722	11	EA	50MM RISER WITH WEATHERHEAD
7444000000-M	1725	1,459	M	INDUCTIVE LOOP SAWCUT
7456000000-M	1726	3,848	M	LEAD-IN CABLE (**********) (14-2)
7588000000-N	SP	6	EA	METAL POLE WITH SINGLE MAST ARM
7590000000-N	SP	2	EA	METAL POLE WITH DUAL MAST ARM
7613000000-N	SP	8	EA	SOIL TEST
7614100000-M	SP	43	M3	DRILLED PIER FOUNDATION
7631000000-N	SP	8	EA	MAST ARM WITH METAL POLE DESIGN
7636000000-N	1745	6	EA	SIGN FOR SIGNALS
7684000000-N	1750	3	EA	SIGNAL CABINET FOUNDATION
7756000000-N	1751	3	EA	CONTROLLER WITH CABINET (TYPE 2070L, BASE MOUNTED)
7780000000-N	1751	16	EA	DETECTOR CARD (TYPE 2070L)
7901000000-N	1753	3	EA	CABINET BASE EXTENDER
7912000000-N	1755	1	EA	BEACON CONTROLLER ASSEMBLY & CABINET (********) (F1)
7980000000-N	SP	10	EA	GENERIC SIGNAL ITEM OPTICAL PREEMPTION DETECTOR
7980000000-N	SP	3	EA	GENERIC SIGNAL ITEM OPTICAL PREEMPTION PHASE SELECTOR
				******* BEGIN SCHEDULE AA ******* ******* (2 ALTERNATES) *******
0987000000-M AA1	310	2,931.6	M	GENERIC PIPE ITEM 375MM RC PIPE CULVERTS, CLASS III
0987000000-M AA1	310	1,353.6	M	GENERIC PIPE ITEM 450MM RC PIPE CULVERTS, CLASS III
0987000000-M AA1	310	740.4	M	GENERIC PIPE ITEM 600MM RC PIPE CULVERTS, CLASS III
0987000000-M AA1	310	224.4	M	GENERIC PIPE ITEM 750MM RC PIPE CULVERTS, CLASS III
0987000000-M AA1	310	25.2	M	GENERIC PIPE ITEM 900MM RC PIPE CULVERTS, CLASS III
				*** OR ***
0536000000-M AA2	SP	376.8	M	****MM HDPE PIPE CULVERTS (375MM)
0536000000-M AA2	SP	240	M	****MM HDPE PIPE CULVERTS (450MM)
0536000000-M AA2	SP	118.8	M	****MM HDPE PIPE CULVERTS (600MM)
0536000000-M AA2	SP	63.6	M	****MM HDPE PIPE CULVERTS (750MM)
0536000000-M AA2	SP	25.2	M	****MM HDPE PIPE CULVERTS (900MM)
0987000000-M AA2	310	2,554.8	M	GENERIC PIPE ITEM 375MM RC PIPE CULVERTS, CLASS III
0987000000-M AA2	310	1,113.6	M	GENERIC PIPE ITEM 450MM RC PIPE CULVERTS, CLASS III
0987000000-M AA2	310	621.6	M	GENERIC PIPE ITEM 600MM RC PIPE CULVERTS, CLASS III
0987000000-M AA2	310	160.8	M	GENERIC PIPE ITEM 750MM RC PIPE CULVERTS, CLASS III
				******* END SCHEDULE AA *******

COMPUTED BY: TCE DATE: 12/5/2006

CHECKED BY: LHM DATE: 4/22/2009

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

METRIC

PROJECT NO.	SHEET NO.
R-2414B	3-A

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

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 1200mm & UNDER)

| STATION | LOCATION (LT, RT, IM, OR CL)' | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | SLOPE CRITICAL | CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) SIZE | 300 | 375 | 450 | 450 CLASS IV | 600 | 600 CLASS IV | 750 | 750 CLASS IV | 900 | BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) SIZE | 400 | 450 | 600 | 800 | 900 | 1000 | 1200 | CLASS III R.C. PIPE OR HDPE PIPE, TYPE S OR D SIZE | 375 | 400 | 450 | 600 | 750 | 900 | 1000 | 300mm SIDE DRAIN PIPE | 375mm SIDE DRAIN PIPE | 450mm SIDE DRAIN PIPE | 600mm SIDE DRAIN PIPE | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. METERS R.C.P. | C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES "TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') METERS A | B | PER EACH (0 THRU 1.50) | 1.5 THRU 3.00 | 3.00 AND ABOVE | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME W/ TWO GRATES STD. 840.16 | D.I. FRAME W/ TWO GRATES STD. 840.17 OR 840.26 | M.D.I. TYPE "A" STD. 840.26 | M.D.I. TYPE "B" STD. 840.18 OR 840.27 | M.D.I. TYPE "D" STD. 840.19 OR 840.28 | M.D.I. FRAME WITH GRATE STD. 840.22 | M.D.I. FRAME WITH TWO GRATES STD. 840.22 | M.D.I. (N.S.) FRAME WITH GRATE STD. 840.24 | M.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24 | J.B. STD. 840.31 OR 840.32 | M.D.I. FRAME WITH TWO GRATES STD. 840.29 | MANHOLE STD. 840.51 | M.H. STD. 840.51 OR 840.53 | M.H. FRAME AND COVER STD. 840.54 | DRY DETENTION DRAWDOWN STRUCTURE | 375 X 375 X 375 RC PIPE TEES, CLASS III | 450 X 450 X 375 RC PIPE TEES, CLASS III | 600 X 600 X 375 RC PIPE TEES, CLASS III | 375mm DUCTILE IRON | CONCRETE TRANSITIONAL SECTION CATCH BASIN | DROP INLET | CORR. STEEL ELBOWS NO. & SIZE | CONC. COLLARS CL. "B" M^3 STD. 840.72 | CONC. & BRICK PIPE PLUG, M^3 STD. 840.71 | PIPE REMOVAL (METERS) | REMARKS |
|---|---|---

COMPUTED BY: TCE DATE: 12/5/2006
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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

METRIC

PROJECT NO.	SHEET NO.
R-2414B	3-B

600mm SIDE DRAIN PIPE

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 1200mm & UNDER)

| STATION | | STRUCTURE NO. | | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | SLOPE CRITICAL | CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) | | | | | | | | BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) | | | | | | | | CLASS III R.C. PIPE OR HDPE PIPE, TYPE S OR D | | | | | | | 300mm SIDE DRAIN PIPE | 375mm SIDE DRAIN PIPE | 450mm SIDE DRAIN PIPE | 600mm SIDE DRAIN PIPE | ENDWALLS STD. 838.01 OR STD. 838.11 | | QUANTITIES FOR DRAINAGE STRUCTURES | | | FRAME, GRATES, AND HOOD STANDARD 840.03 | | | C.B. STD. 840.01 OR STD. 840.02 | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME W/ TWO GRATES STD. 840.16 | M.D.I. TYPE "A" STD. 840.17 OR 840.26 | M.D.I. TYPE "B" STD. 840.18 OR 840.27 | M.D.I. TYPE "D" STD. 840.19 OR 840.28 | M.D.I. FRAME WITH GRATE STD. 840.22 | M.D.I. FRAME WITH TWO GRATES STD. 840.22 | M.D.I. (N.S.) FRAME WITH GRATE STD. 840.24 | M.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24 | J.B. STD. 840.31 OR 840.32 | M.D.I. FRAME WITH TWO GRATES STD. 840.29 | MANHOLE STD. 840.51 | M.H. STD. 840.51 OR 840.53 | M.H. FRAME AND COVER STD. 840.54 | DRY DETENTION DRAWDOWN STRUCTURE | 375 X 375 X 375 RC PIPE TEES, CLASS III | 450 X 450 X 375 RC PIPE TEES, CLASS III | 600 X 600 X 375 RC PIPE TEES, CLASS III | 375mm DUCTILE IRON | CONCRETE TRANSITIONAL SECTION | | CORR. STEEL ELBOWS NO. & SIZE | CONC. COLLARS CL. "B" M³ STD. 840.72 | CONC. & BRICK PIPE PLUG, M³ STD. 840.71 | PIPE REMOVAL (METERS) | REMARKS |
|---|---|---

COMPUTED BY: TCE DATE: 12/5/2006

CHECKED BY: LHM DATE: 4/22/2009

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

METRIC

PROJECT NO.	SHEET NO.
R-2414B	3-C

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

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 1200mm & UNDER)

| STATION | LOCATION (LT, RT, M, OR CL) | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | SLOPE CRITICAL | CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) SIZE | 300 | 375 | 450 | 450 CLASS IV | 600 | 600 CLASS IV | 750 | 750 CLASS IV | 900 | BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) SIZE | 400 | 450 | 600 | 800 | 900 | 1000 | 1200 | CLASS III R.C. PIPE OR HDPE PIPE, TYPE S OR D SIZE | 375 | 400 | 450 | 600 | 750 | 900 | 1000 | 300mm SIDE DRAIN PIPE | 375mm SIDE DRAIN PIPE | 450mm SIDE DRAIN PIPE | 600mm SIDE DRAIN PIPE | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. METERS R.C.P. | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. METERS C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0 THRU 1.50) | QUANTITIES FOR DRAINAGE STRUCTURES *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' x (1.3 X COL. 'B') METERS 1.5 THRU 3.00 A | METERS 3.00 AND ABOVE B | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME W/ TWO GRATES STD. 840.16 | M.D.I. TYPE "A" STD. 840.17 OR 840.25 | M.D.I. TYPE "S" STD. 840.18 OR 840.27 | M.D.I. TYPE "D" STD. 840.19 OR 840.28 | M.D.I. FRAME WITH GRATE STD. 840.22 | M.D.I. FRAME WITH TWO GRATES STD. 840.22 | M.D.I. (N.S.) FRAME WITH GRATE STD. 840.24 | M.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24 | J.B. STD. 840.31 OR 840.32 | M.D.I. FRAME WITH TWO GRATES STD. 840.29 | MANHOLE STD. 840.51 | M.H. STD. 840.51 OR 840.53 | M.H. FRAME AND COVER STD. 840.54 | DRY DETENTION DRAWDOWN STRUCTURE | 375 X 375 X 375 RC PIPE TEES, CLASS III | 450 X 450 X 375 RC PIPE TEES, CLASS III | 600 X 600 X 375 RC PIPE TEES, CLASS III | 375mm DUCTILE IRON | CONCRETE TRANSITIONAL SECTION CATCH BASIN | CONCRETE TRANSITIONAL SECTION DROP INLET | CORR. STEEL ELBOWS NO. & SIZE | CONC. COLLARS CL. "B" M^3 STD. 840.72 | CONC. & BRICK PIPE PLUG, M^3 STD. 840.71 | PIPE REMOVAL (METERS) | REMARKS |
|---|---|---

COMPUTED BY: TCE DATE: 12/5/2006

CHECKED BY: LHM DATE: 4/22/2009

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

METRIC

PROJECT NO.	SHEET NO.
R-2414B	3-D

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

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 1200mm & UNDER)

| STATION | LOCATION (LT, RT, M, OR CL)* | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | SLOPE CRITICAL | CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 300 | 375 | 450 | 450 CLASS IV | 600 | 600 CLASS IV | 750 | 750 CLASS IV | 900 | BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) 400 | 450 1.63 | 600 1.63 | 800 2.01 | 900 2.01 | 1000 2.01 | 1200 2.01 | CLASS III R.C. PIPE OR HDPE PIPE, TYPE S OR D 375 | 400 | 450 | 600 | 750 | 900 | 1000 | 300mm SIDE DRAIN PIPE | 375mm SIDE DRAIN PIPE | 450mm SIDE DRAIN PIPE | 600mm SIDE DRAIN PIPE | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. METERS R.C.P. | C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0 THRU 1.50) | METERS A 1.5 THRU 3.00 | METERS B 3.00 AND ABOVE | *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME W/ TWO GRATES STD. 840.16 | M.D.I. TYPE "A" STD. 840.17 OR 840.26 | M.D.I. TYPE "B" STD. 840.18 OR 840.27 | M.D.I. TYPE "D" STD. 840.19 OR 840.28 | M.D.I. FRAME WITH GRATE STD. 840.22 | M.D.I. FRAME WITH TWO GRATES STD. 840.22 | M.D.I. (N.S.) FRAME WITH GRATE STD. 840.24 | M.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24 | J.B. STD. 840.31 OR 840.32 | M.D.I. FRAME WITH TWO GRATES STD. 840.29 | MANHOLE STD. 840.51 | M.H. STD. 840.51 OR 840.53 | M.H. FRAME AND COVER STD. 840.54 | DRY DETENTION DRAWDOWN STRUCTURE | 375 X 375 X 375 RC PIPE TEES, CLASS III | 450 X 450 X 375 RC PIPE TEES, CLASS III | 600 X 600 X 375 RC PIPE TEES, CLASS III | 375mm DUCTILE IRON | CONCRETE TRANSITIONAL SECTION CATCH BASIN | DROP INLET | CORR. STEEL ELBOWS NO. & SIZE | CONC. COLLARS CL. "B" M³ STD. 840.72 | CONC. & BRICK PIPE PLUG, M³ STD. 840.71 | PIPE REMOVAL (METERS) | REMARKS |
|---|---|---

COMPUTED BY: TCE DATE: 12/5/2006

CHECKED BY: LHM DATE: 4/22/2009

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2414B	3-E

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

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 1200mm & UNDER)

| STATION | LOCATION (LT, RT, M, OR CL)' | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | SLOPE CRITICAL | CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 300 | 375 | 450 | 450 CLASS IV | 600 | 600 CLASS IV | 750 | 750 CLASS IV | 900 | BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) 400 1.63 | 450 1.63 | 600 1.63 | 800 2.01 | 900 2.01 | 1000 2.01 | 1200 2.01 | CLASS III R.C. PIPE OR HDPE PIPE, TYPE S OR D 375 | 400 | 450 | 600 | 750 | 900 | 1000 | 300mm SIDE DRAIN PIPE | 375mm SIDE DRAIN PIPE | 450mm SIDE DRAIN PIPE | 600mm SIDE DRAIN PIPE | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. METERS R.C.P. | C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') PER EACH (0 THRU 1.50) | METERS 1.5 THRU 3.00 A | 3.00 AND ABOVE B | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME W/ TWO GRATES STD. 840.16 | M.D.I. TYPE "A" STD. 840.17 OR 840.26 | M.D.I. TYPE "S" STD. 840.18 OR 840.27 | M.D.I. TYPE "D" STD. 840.19 OR 840.28 | M.D.I. FRAME WITH TWO GRATES STD. 840.22 | M.D.I. FRAME WITH GRATE STD. 840.22 | M.D.I. (N.S.) FRAME WITH GRATE STD. 840.24 | M.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24 | J.B. STD. 840.31 OR 840.32 | M.D.I. FRAME WITH TWO GRATES STD. 840.29 | MANHOLE STD. 840.51 | M.H. STD. 840.51 OR 840.53 | M.H. FRAME AND COVER STD. 840.54 | DRY DETENTION DRAWDOWN STRUCTURE | 375 X 375 X 375 RC PIPE TEES, CLASS III | 450 X 450 X 375 RC PIPE TEES, CLASS III | 600 X 600 X 375 RC PIPE TEES, CLASS III | 375mm DUCTILE IRON | CONCRETE TRANSITIONAL SECTION CATCH BASIN | DROP INLET | CORR. STEEL ELBOWS NO. & SIZE | CONC. COLLARS CL. "B" M³ STD. 840.72 | CONC. & BRICK PIPE PLUG, M³ STD. 840.71 | PIPE REMOVAL (METERS) | REMARKS |
|---|---|---

COMPUTED BY: TCE DATE: 12/5/2006

CHECKED BY: LHM DATE: 4/22/2009

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

METRIC

PROJECT NO.	SHEET NO.
R-2414B	3-F

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

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 1200mm & UNDER)

| STATION | LOCATION (LT, RT, M, OR CL)' | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | SLOPE CRITICAL | CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 300 | 375 | 450 | BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) 450 CLASS IV | 600 CLASS IV | 600 | 750 CLASS IV | 750 | 900 | 400 1.63 | 450 1.63 | 600 1.63 | 800 2.01 | 900 2.01 | 1000 2.01 | 1200 2.01 | CLASS III R.C. PIPE OR HDPE PIPE, TYPE S OR D 375 | 400 | 450 | 600 | 750 | 900 | 1000 | 300mm SIDE DRAIN PIPE | 375mm SIDE DRAIN PIPE | 450mm SIDE DRAIN PIPE | 600mm SIDE DRAIN PIPE | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. METERS R.C.P. | C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES 'TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') METERS A | B | PER EACH (0 THRU 1.50) | 1.5 THRU 3.00 | 3.00 AND ABOVE | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME W/ TWO GRATES STD. 840.16 | M.D.I. TYPE "A" STD. 840.17 OR 840.26 | M.D.I. TYPE "B" STD. 840.18 OR 840.27 | M.D.I. TYPE "D" STD. 840.19 OR 840.28 | M.D.I. FRAME WITH GRATE STD. 840.22 | M.D.I. FRAME WITH TWO GRATES STD. 840.22 | M.D.I. (N.S.) FRAME WITH GRATE STD. 840.24 | M.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24 | J.B. STD. 840.31 OR 840.32 | M.D.I. FRAME WITH TWO GRATES STD. 840.29 | MANHOLE STD. 840.51 | M.H. STD. 840.51 OR 840.53 | M.H. FRAME AND COVER STD. 840.54 | DRY DETENTION DRAWDOWN STRUCTURE | 375 X 375 X 375 RC PIPE TEES, CLASS III | 450 X 450 X 375 RC PIPE TEES, CLASS III | 600 X 600 X 375 RC PIPE TEES, CLASS III | 375mm DUCTILE IRON | CONCRETE TRANSITIONAL SECTION CATCH BASIN | DROP INLET | CORR. STEEL ELBOWS NO. & SIZE | CONC. COLLARS CL. "B" M² STD. 840.72 | CONC. & BRICK PIPE PLUG, M³ STD. 840.71 | PIPE REMOVAL (METERS) | REMARKS |
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RAL-WS018

COMPUTED BY: TCE DATE: 12/5/2006

CHECKED BY: LHM DATE: 4/22/2009

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

METRIC

PROJECT NO.	SHEET NO.
R-2414B	3-G

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

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 1200mm & UNDER)

| STATION | LOCATION (LT, RT, M, OR CL)' | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | SLOPE CRITICAL | CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) SIZE 300 | 375 | 450 | BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) SIZE 450 | 600 | 600 | 750 | 750 | 900 | 400 | 450 | 600 | 800 | 900 | 1000 | 1200 | CLASS III R.C. PIPE OR HDPE PIPE, TYPE S OR D SIZE 375 | 400 | 450 | 600 | 750 | 900 | 1000 | 300mm SIDE DRAIN PIPE | 375mm SIDE DRAIN PIPE | 450mm SIDE DRAIN PIPE | 600mm SIDE DRAIN PIPE | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. METERS R.C.P. | C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES 'TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') METERS A | B | PER EACH (0 THRU 1.50) | 1.5 THRU 3.00 | 3.00 AND ABOVE | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME W/ TWO GRATES STD. 840.16 | M.D.I. TYPE "A" STD. 840.17 OR 840.26 | M.D.I. TYPE "B" STD. 840.18 OR 840.27 | M.D.I. TYPE "D" STD. 840.19 OR 840.28 | M.D.I. FRAME WITH GRATE STD. 840.22 | M.D.I. FRAME WITH TWO GRATES STD. 840.22 | M.D.I. (N.S.) FRAME WITH GRATE STD. 840.24 | M.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24 | J.B. STD. 840.31 OR 840.32 | M.D.I. FRAME WITH TWO GRATES STD. 840.29 | MANHOLE STD. 840.51 | M.H. STD. 840.51 OR 840.53 | M.H. FRAME AND COVER STD. 840.54 | DRY DETENTION DRAWDOWN STRUCTURE | 375 X 375 X 375 RC PIPE TEES, CLASS III | 450 X 450 X 375 RC PIPE TEES, CLASS III | 600 X 600 X 375 RC PIPE TEES, CLASS III | 375mm DUCTILE IRON | CONCRETE TRANSITIONAL SECTION CATCH BASIN | DROP INLET | CORR. STEEL ELBOWS NO. & SIZE | CONC. COLLARS CL. "B" M^3 STD. 840.72 | CONC. & BRICK PIPE PLUG, M^3 STD. 840.71 | PIPE REMOVAL (METERS) | REMARKS |
|---|---|---

RAL-WS018

COMPUTED BY: TCE DATE: 12/5/2006

CHECKED BY: LHM DATE: 4/22/2009

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

METRIC

PROJECT NO.	SHEET NO.
R-2414B	3-H

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

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 1200mm & UNDER)

| STATION | LOCATION (LT, RT, IM, OR CL)* | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | SLOPE CRITICAL | CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) SIZE 300 | 375 | 450 | 450 CLASS IV | 600 | 600 CLASS IV | 750 | 750 CLASS IV | 900 | BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) SIZE 400 | 450 | 600 | 800 | 900 | 1000 | 1200 | CLASS III R.C. PIPE OR HDPE PIPE, TYPE S OR D SIZE 375 | 400 | 450 | 600 | 750 | 900 | 1000 | 300mm SIDE DRAIN PIPE | 375mm SIDE DRAIN PIPE | 450mm SIDE DRAIN PIPE | 600mm SIDE DRAIN PIPE | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. METERS R.C.P. | C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES 'TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') METERS A | B | PER EACH (0 THRU 1.50) | 1.5 THRU 3.00 | 3.00 AND ABOVE | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME W/ TWO GRATES STD. 840.16 | M.D.I. TYPE "A" STD. 840.17 OR 840.26 | M.D.I. TYPE "B" STD. 840.18 OR 840.27 | M.D.I. TYPE "D" STD. 840.19 OR 840.28 | M.D.I. FRAME WITH GRATE STD. 840.22 | M.D.I. FRAME WITH TWO GRATES STD. 840.22 | M.D.I. (N.S.) FRAME WITH GRATE STD. 840.24 | M.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24 | J.B. STD. 840.31 OR 840.32 | M.D.I. FRAME WITH TWO GRATES STD. 840.29 | MANHOLE STD. 840.51 | M.H. STD. 840.51 OR 840.53 | M.H. FRAME AND COVER STD. 840.54 | DRY DETENTION DRAWDOWN STRUCTURE | 375 X 375 X 375 RC PIPE TEES, CLASS III | 450 X 450 X 375 RC PIPE TEES, CLASS III | 600 X 600 X 375 RC PIPE TEES, CLASS III | 375mm DUCTILE IRON | CONCRETE TRANSITIONAL SECTION CATCH BASIN | DROP INLET | CORR. STEEL ELBOWS NO. & SIZE | CONC. COLLARS CL. "B" M² STD. 840.72 | CONC. & BRICK PIPE PLUG, M² STD. 840.71 | PIPE REMOVAL (METERS) | REMARKS |
|---|---|---

RAL-WS018

COMPUTED BY: TCE DATE: 12/5/2006

CHECKED BY: LHM DATE: 4/22/2009

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

METRIC

PROJECT NO.	SHEET NO.
R-2414B	3-I

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

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 1200mm & UNDER)

STATION	LOCATION (LT, RT, IN, OR CL)*	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) SIZE	300	375	450	450 CLASS IV	600	600 CLASS IV	750	750 CLASS IV	900
								THICKNESS OR GAUGE									
SHEET 12																	
L 76+00	LT	192		1.628													
L 76+00	LT	192	193		0.688	0.526				54							
L 76+55	LT	193		1.696													
L 76+55	LT	193	194		0.526	0.411											
L 76+74	LT	195															
L 76+74	RT	196															
L 76+00	RT	197		1.628													
L 76+00	RT	197	198		0.868	0.655				73.2							
L 76+73	RT	198		1.670													
L 76+73	RT	198	199		0.655	0.580											
L 76+80	RT	200		1.634													
L 76+80	RT	200	198		0.730	0.655							6.0				
L 76+84	LT	201		1.634													
L 76+84	LT	201	200		0.874	0.730				22.8							
SHEET 13																	
L 77+18	RT	202		1.718													
L 77+18	RT	202	200		0.895	0.730							38.4				
L 77+18	LT	203		1.718													
L 77+18	LT	203	202		0.958	0.895				20.4							
L 78+06	RT	204		1.999													
L 78+06	RT	204	202		1.182	0.895					88.8						
L 78+06	LT	205		1.999													
L 78+06	LT	205	204		1.239	1.182				20.4							
L 79+50	RT	206		2.144													
L 79+50	RT	206	204		1.326	0.894	X			144.0							
L 79+50	LT	207		2.144													
L 79+50	LT	207	206		1.384	1.326				20.4							
L 80+60	LT	208		2.167													
L 80+60	LT	208	209		1.227	1.170				20.4							
L 80+60	RT	209		2.167													
L 80+60	LT	209	210		1.170	1.150											
SHEET 14																	
L 81+37	CL	215	212		0.825	0.791							21.6				
L 81+37	LT	212		2.306													
L 81+37	LT	212	213		0.791	0.766											
SHEET TOTAL										321.6	88.8		66.0				

CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) SIZE	1000	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE)	1.63	1.63	1.63	2.01	2.01	2.01	2.01	CLASS III R.C. PIPE OR HDPE PIPE, TYPE S OR D	375	400	450	600	750	900	1000
THICKNESS OR GAUGE																	
SHEET 12																	
L 76+00																	
L 76+00																	
L 76+55																	
L 76+55											6						
L 76+74																	
L 76+74																	
L 76+00																	
L 76+00																	
L 76+73																	
L 76+73															6		
L 76+80																	
L 76+80																	
L 76+84																	
L 76+84																	
SHEET 13																	
L 77+18																	
L 77+18																	
L 77+18																	
L 77+18																	
L 78+06																	
L 78+06																	
L 78+06																	
L 78+06																	
L 79+50																	
L 79+50																	
L 79+50																	
L 79+50																	
L 80+60																	
L 80+60																	
L 80+60											6						
SHEET 14																	
L 81+37																	
L 81+37																	
L 81+37															7.2		
SHEET TOTAL											12				13.2		

300mm SIDE DRAIN PIPE	375mm SIDE DRAIN PIPE	450mm SIDE DRAIN PIPE	600mm SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. METERS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') METERS A	B	PER EACH @ THRU 1.50)	1.5 THRU 3.00	3.00 AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME W/ TWO GRATES STD. 840.16	M.D.I. TYPE "A" STD. 840.17 OR 840.26	M.D.I. TYPE "B" STD. 840.18 OR 840.27	M.D.I. TYPE "D" STD. 840.19 OR 840.28	M.D.I. FRAME WITH GRATE STD. 840.22	M.D.I. FRAME WITH TWO GRATES STD. 840.22	M.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	M.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	M.D.I. FRAME WITH TWO GRATES STD. 840.29	MANHOLE STD. 840.51	M.H. STD. 840.51 OR 840.53	M.H. FRAME AND COVER STD. 840.54	DRY DETENTION DRAWDOWN STRUCTURE	375 X 375 X 375 RC PIPE TEES, CLASS III	450 X 450 X 375 RC PIPE TEES, CLASS III	600 X 600 X 375 RC PIPE TEES, CLASS III	375mm DUCTILE IRON	CONCRETE TRANSITIONAL SECTION CATCH BASIN	DROP INLET	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" M³ STD. 840.72	CONC. & BRICK PIPE PLUG, M³ STD. 840.71	PIPE REMOVAL (METERS)	REMARKS
								1			1																													
								1			1			1																											
																																					0.05			
																																					0.05			
								1			1			1																											
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								1			1			1																											
								1	0.02		1			1																											
								15	0.02		15	6		5																								0.1		40.3	

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
M.D.I.	MEDIAN DROP INLET
M.D.I.(N.S.)	MEDIAN 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

RAL-WS018

COMPUTED BY: TCE DATE: 12/5/2006

CHECKED BY: LHM DATE: 4/22/2009

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

METRIC

PROJECT NO.	SHEET NO.
R-2414B	3-J

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

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 1200mm & UNDER)

STATION	LOCATION (LT, RT, M, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) SIZE	300	375	450	450	600	600	750	750	900
								THICKNESS OR GAUGE				CLASS IV		CLASS IV		CLASS IV	
SHEET 14																	
L 81+37	RT	214	215		0.920	0.831											
L 81+37	RT	215		2.306													
L 81+95	RT	217		2.320													
L 81+95	RT	217	218		1.380	0.867				31.2							
L 82+27	RT	218		2.428													
L 82+27	CL	218	221		0.867	0.794						20.4					
L 82+27	RT	221		2.274													
L 82+27	LT	221	222		0.794	0.760					8.4						
L 82+18	LT	222		2.293													
L 82+18	LT	222	223		0.760	0.730											
L 82+70	LT	224		2.159													
L 82+70	LT	224	225		0.926	0.794											
L 83+10	RT	226		2.039													
L 83+10	RT	226	224		1.044	0.926				39.6							
L 83+50	RT	227		1.922													
L 83+50	RT	227	226		1.162	1.044				39.6							
L 83+18	RT	228															
L 83+39	RT	229															
L 83+61	RT	230															
L 83+92	RT	231															
L 83+71	LT	232		1.900													
L 83+71	LT	232	233		1.140	0.989				51.6							
SHEET 15																	
L 84+23	LT	233		2.002													
L 84+23	LT	233	234		0.989	0.931				21.6							
L 84+23	RT	235	234		1.310	0.931											
L 84+23	RT	236	234		1.162	0.931											
L 84+23	RT	234		2.156													
L 84+23	RT	234	237		0.931	0.782					27.6						
L 84+50	RT	238		1.500													
L 84+50	RT	238	237		0.800	0.782											
L 84+50	RT	237		2.040													
L 84+50	RT	237	239		0.782	0.696	X				30.0						
L 84+80	RT	240		1.530													
L 84+80	RT	240	239		0.830	0.696											
SHEET TOTAL										183.6	66.0	20.4					

STATION	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) SIZE	400	450	600	800	900	1000	1200	CLASS III R.C. PIPE OR HDPE PIPE, TYPE S OR D SIZE	375	400	450	600	750	900	1000
	THICKNESS OR GAUGE	1.63	1.63	1.63	2.01	2.01	2.01	2.01								
SHEET 14																
L 81+37													7.2			
L 81+37																
L 81+95																
L 81+95																
L 82+27																
L 82+27																
L 82+27																
L 82+27																
L 82+18																
L 82+18												8.4				
L 82+70																
L 82+70										7.2						
L 83+10																
L 83+10																
L 83+50																
L 83+50																
L 83+18																
L 83+39																
L 83+61																
L 83+92																
L 83+71																
L 83+71																
SHEET 15																
L 84+23																
L 84+23																
L 84+23												12				
L 84+23												4.8				
L 84+23																
L 84+23																
L 84+50																
L 84+50										4.8						
L 84+50																
L 84+50																
L 84+80																
L 84+80										4.8						
SHEET TOTAL										16.8		25.2	7.2			

STATION	300mm SIDE DRAIN PIPE	375mm SIDE DRAIN PIPE	450mm SIDE DRAIN PIPE	600mm SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. METERS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES 'TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') METERS A	B	PER EACH (0 THRU 1.50)	1.5 THRU 3.00	3.00 AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME W/ TWO GRATES STD. 840.16	M.D.I. TYPE "A" STD. 840.17 OR 840.26	M.D.I. TYPE "B" STD. 840.18 OR 840.27	M.D.I. TYPE "D" STD. 840.19 OR 840.28	M.D.I. FRAME WITH GRATE STD. 840.22	M.D.I. FRAME WITH TWO GRATES STD. 840.22	M.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	M.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	M.D.I. FRAME WITH TWO GRATES STD. 840.29	MANHOLE STD. 840.51	M.H. STD. 840.51 OR 840.53	M.H. FRAME AND COVER STD. 840.54	DRY DETENTION DRAWDOWN STRUCTURE	375 X 375 X 375 RC PIPE TEES, CLASS III	450 X 450 X 375 RC PIPE TEES, CLASS III	600 X 600 X 375 RC PIPE TEES, CLASS III	375mm DUCTILE IRON	CONCRETE TRANSITIONAL SECTION CATCH BASIN	DROP INLET	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" M³ STD. 840.72	CONC. & BRICK PIPE PLUG, M³ STD. 840.71	PIPE REMOVAL (METERS)	REMARKS
SHEET 14																																								
L 81+37									1			1			1																										
L 81+37																																								
L 81+95									1			1			1																										
L 81+95									1	0.06		1			1																									16.1	
L 82+27																																								
L 82+27									1			1			1																									13.3	
L 82+27									1			1			1																										
L 82+27									1			1			1																										
L 82+18									1	0.03		1			1																										
L 82+18																																								
L 82+70									1			1			1																										
L 82+70									1			1			1																										
L 83+10									1			1			1																										
L 83+10																																								
L 83+50									1			1			1																										
L 83+50																																								
L 83+18								6																															3.9	
L 83+39								6																																
L 83+61								6																															5.7	
L 83+92								6																															6.2	
L 83+71									1			1	1																										
L 83+71																																								
SHEET 15																																								
L 84+23									1			1			1																										
L 84+23																																								
L 84+23																																								
L 84+23																																								
L 84+23									1			1			1																									7.5	
L 84+23																																							6.2	
L 84+50									1							1	1																							
L 84+50																																								
L 84+50									1			1			1																										
L 84+50																																							22.6	
L 84+80									1							1	1																							
L 84+80																																								
SHEET TOTAL								24.0	14	0.09		12	1	4	7	2	2																					1.06		81.5	

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
M.D.I.	MEDIAN DROP INLET
M.D.I.(N.S.)	MEDIAN 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

RAL-WS018

COMPUTED BY: TCE DATE: 12/5/2006

CHECKED BY: LHM DATE: 4/22/2009

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

METRIC

PROJECT NO.	SHEET NO.
R-2414B	3-K

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

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 1200mm & UNDER)

| STATION | LOCATION (LT, RT, IM, OR CL)' | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | SLOPE CRITICAL | CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) SIZE 300 | 375 | 450 | 450 | 600 | 600 | 750 | 750 | 900 | BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) SIZE 400 | 450 | 600 | 800 | 900 | 1000 | 1200 | CLASS III R.C. PIPE OR HDPE PIPE, TYPE S OR D SIZE 375 | 400 | 450 | 600 | 750 | 900 | 1000 | 300mm SIDE DRAIN PIPE | 375mm SIDE DRAIN PIPE | 450mm SIDE DRAIN PIPE | 600mm SIDE DRAIN PIPE | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. METERS R.C.P. | C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0 THRU 1.50) | *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') METERS 1.5 THRU 3.00 A | 3.00 AND ABOVE B | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME W/ TWO GRATES STD. 840.16 | M.D.I. TYPE "A" STD. 840.17 OR 840.26 | M.D.I. TYPE "B" STD. 840.18 OR 840.27 | M.D.I. TYPE "D" STD. 840.19 OR 840.28 | M.D.I. FRAME WITH GRATE STD. 840.22 | M.D.I. FRAME WITH TWO GRATES STD. 840.22 | M.D.I. (N.S.) FRAME WITH GRATE STD. 840.24 | M.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24 | J.B. STD. 840.31 OR 840.32 | M.D.I. FRAME WITH TWO GRATES STD. 840.29 | MANHOLE STD. 840.51 | M.H. STD. 840.51 OR 840.53 | M.H. FRAME AND COVER STD. 840.54 | DRY DETENTION DRAWDOWN STRUCTURE | 375 X 375 X 375 RC PIPE TEES, CLASS III | 450 X 450 X 375 RC PIPE TEES, CLASS III | 600 X 600 X 375 RC PIPE TEES, CLASS III | 375mm DUCTILE IRON | CONCRETE TRANSITIONAL SECTION CATCH BASIN | DROP INLET | CORR. STEEL ELBOWS NO. & SIZE | CONC. COLLARS CL. "B" M³ STD. 840.72 | CONC. & BRICK PIPE PLUG, M³ STD. 840.71 | PIPE REMOVAL (METERS) | REMARKS |
|---|---|---

RAL-WS018

COMPUTED BY: TCE DATE: 12/5/2006

CHECKED BY: LHM DATE: 4/22/2009

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

METRIC

PROJECT NO.	SHEET NO.
R-2414B	3-L

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

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 1200mm & UNDER)

| STATION | LOCATION (LT, RT, M, OR CL)* | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | SLOPE CRITICAL | CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) SIZE | 300 | 375 | 450 | 450 CLASS IV | 600 | 600 CLASS IV | 750 | 750 CLASS IV | 900 | BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) SIZE | 400 | 450 | 600 | 800 | 900 | 1000 | 1200 | CLASS III R.C. PIPE OR HDPE PIPE, TYPE S OR D SIZE | 375 | 400 | 450 | 600 | 750 | 900 | 1000 | 300mm SIDE DRAIN PIPE | 375mm SIDE DRAIN PIPE | 450mm SIDE DRAIN PIPE | 600mm SIDE DRAIN PIPE | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. METERS R.C.P. | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. METERS C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES "TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" + (1.3 X COL. "B") METERS A 1.5 THRU 3.00 | METERS B 3.00 AND ABOVE | PER EACH (0 THRU 1.50) | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME W/ TWO GRATES STD. 840.16 | M.D.I. TYPE "A" STD. 840.17 OR 840.26 | M.D.I. TYPE "B" STD. 840.18 OR 840.27 | M.D.I. TYPE "D" STD. 840.19 OR 840.28 | M.D.I. FRAME WITH GRATE STD. 840.22 | M.D.I. FRAME WITH TWO GRATES STD. 840.22 | M.D.I. (N.S.) FRAME WITH GRATE STD. 840.24 | M.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24 | J.B. STD. 840.31 OR 840.32 | M.D.I. FRAME WITH TWO GRATES STD. 840.29 | MANHOLE STD. 840.51 | M.H. STD. 840.51 OR 840.53 | M.H. FRAME AND COVER STD. 840.54 | DRY DETENTION DRAWDOWN STRUCTURE | 375 X 375 X 375 RC PIPE TEES, CLASS III | 450 X 450 X 375 RC PIPE TEES, CLASS III | 600 X 600 X 375 RC PIPE TEES, CLASS III | 375mm DUCTILE IRON | CONCRETE TRANSITIONAL SECTION CATCH BASIN | CONCRETE TRANSITIONAL SECTION DROP INLET | CORR. STEEL ELBOWS NO. & SIZE | CONC. COLLARS CL. "B" M³ STD. 840.72 | CONC. & BRICK PIPE PLUG, M³ STD. 840.71 | PIPE REMOVAL (METERS) | REMARKS |
|---|---|---

COMPUTED BY: TCE DATE: 12/5/2006

CHECKED BY: LHM DATE: 4/22/2009

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

METRIC

PROJECT NO.	SHEET NO.
R-2414B	3-M

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

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 1200mm & UNDER)

| STATION | LOCATION (LT, RT, M, OR CL)* | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | SLOPE CRITICAL | CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) SIZE | 300 | 375 | 450 | 450 CLASS IV | 600 | 600 CLASS IV | 750 | 750 CLASS IV | 900 | BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) SIZE | 400 | 450 | 600 | 800 | 900 | 1000 | 1200 | CLASS III R.C. PIPE OR HDPE PIPE, TYPE S OR D SIZE | 375 | 400 | 450 | 600 | 750 | 900 | 1000 | 300mm SIDE DRAIN PIPE | 375mm SIDE DRAIN PIPE | 450mm SIDE DRAIN PIPE | 600mm SIDE DRAIN PIPE | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. METERS R.C.P. | C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" + (1.3 X COL."B") METERS A | B | PER EACH (0 THRU 1.50) | 1.5 THRU 3.00 | 3.00 AND ABOVE | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME W/ TWO GRATES STD. 840.16 | M.D.I. TYPE "A" STD. 840.17 OR 840.26 | M.D.I. TYPE "B" STD. 840.18 OR 840.27 | M.D.I. TYPE "D" STD. 840.19 OR 840.28 | M.D.I. FRAME WITH GRATE STD. 840.22 | M.D.I. FRAME WITH TWO GRATES STD. 840.22 | M.D.I. (N.S.) FRAME WITH GRATE STD. 840.24 | M.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24 | J.B. STD. 840.31 OR 840.32 | M.D.I. FRAME WITH TWO GRATES STD. 840.29 | MANHOLE STD. 840.51 | M.H. STD. 840.51 OR 840.53 | M.H. FRAME AND COVER STD. 840.54 | DRY DETENTION DRAWDOWN STRUCTURE | 375 X 375 X 375 RC PIPE TEES, CLASS III | 450 X 450 X 375 RC PIPE TEES, CLASS III | 600 X 600 X 375 RC PIPE TEES, CLASS III | 375mm DUCTILE IRON | CONCRETE TRANSITIONAL SECTION CATCH BASIN | DROP INLET | CORR. STEEL ELBOWS NO. & SIZE | CONC. COLLARS CL. "B" M³ STD. 840.72 | CONC. & BRICK PIPE PLUG, M³ STD. 840.71 | PIPE REMOVAL (METERS) | REMARKS |
|---|---|---

6/22/00

COMPUTED BY: BAM DATE:
CHECKED BY: LHM DATE:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	3-N

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 1350 mm & OVER)

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 SIZE 1350	1500	1650	1800	1950	2100	BITUMINOUS COATED C.S. PIPE TYPE B SIZE 1400	1500	1650	1800	SHOP ELONGATED	STRUCTURAL PLATE PIPE SIZE 1500	1650	1800	ENDWALLS STD. 838.07 & 838.17 CLASS "B" CONC. WITH R.C. cu. m.	WITH C.S. cu. m.	MASONRY DRAINAGE STRUCTURES CUBIC METERS	C.B. STD. 840.01 OR 840.02	FRAME, GRATES & HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	1524x1168mm CAA STRUCTURAL PLATE PIPE ARCH, 2.77mm THICK	REINF. CONC. FLARED END SECTION NO. & SIZE	CORR. STEEL FLARED END SECTIONS NO. & SIZE	REINF. CONC. ELBOWS NO. & SIZE	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS, CL. "B" m^3 STD. 840.72	PIPE REMOVAL (meters)	REMARKS
THICKNESS OR GAUGE														2.77 3.51 4.27	2.77 3.51				2.77 3.51 4.27	2.77 3.51 4.27	2.77 3.51 4.27															
–L– 92+20	LT	305							9.6																											
–L– 92+07	CL	303	304		0.806	1.008																	3.856						18					1.72		SEE DETAIL OF CSAP COLLAR
TOTAL									9.6														3.856						18					1.72		
SAY																							4.000											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

TEMPORARY 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 GRAU 350	CAT-1	M-350	XIII	VI MOD	XI	VI	BIC	IMPACT ATTENUATOR TYPE 350 EA	G	NG	SINGLE FACED CONCRETE BARRIERS	REMOVE EXISTING GUARDRAIL	REMARKS
DET1	10+63.000	11+23.960	RT	60.960			10+92.432	11+02.504	0.600	1.200	15.240		0.300		2			GUARDRAIL ANCHOR DEDUCTIONS										
DET2	10+84.040	11+45.000	LT	60.960			11+13.172	11+04.956	0.600	1.200	15.240		0.300		2			6 @ 15.24 = 91.440										
DET3	10+68.850	11+26.000	RT	57.150			10+95.623	11+07.844	0.600	1.200	15.240		0.300		2					= 91.440									
PROJECT SUBTOTAL				179.070											6													
LESS ANCHOR DEDUCTIONS				91.440																								
PROJECT TOTAL				87.630																								
SAY				87.630																								

"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 GRAU 350	CAT-1	M-350	XIII	VI MOD	XI	VI	BIC	IMPACT ATTENUATOR TYPE 350 EA	G	NG	SINGLE FACED CONCRETE BARRIERS	REMOVE EXISTING GUARDRAIL	REMARKS
L	55+18.990	55+87.570	RT	68.580			55+79.650	55+82.350	0.600	3.000	15.240		0.300		1	1		GUARDRAIL ANCHOR DEDUCTIONS										
L	55+75.122	56+74.182	LT	99.060			55+82.350	55+79.650	0.600	3.000	15.240		0.300		1	1		6 @ 15.24 = 91.440										
L	72+54.574	73+57.444	RT	102.870			73+47.050	73+50.950	0.600	3.000	15.240		0.300		1	1		6 @ 1.905 = 11.430										
L	73+45.968	74+41.218	LT	95.250			73+50.950	73+47.050	0.600	3.000	15.240		0.300		1	1				= 102.870									
L	88+45.806	89+18.196	RT	72.390			89+03.350	89+06.650	0.600	3.000	15.240		0.300		1	1													
L	88+94.421	89+93.481	LT	99.060			89+11.024	89+03.350	0.600	3.000	15.240		0.300		1	1											42.000		
PROJECT SUBTOTAL				537.210											6	6													
LESS ANCHOR DEDUCTIONS				102.870																									
PROJECT TOTAL				434.340																									
SAY				434.340		ADDITIONAL GUARDRAIL POSTS = 10 EA.																									
	REMOVAL OF EXISITNG GUARDRAIL																												
L	91+92.92	92+18.000	RT	26																									
L	92+41.000	92+57.000	LT	16																									
	PROJECT TOTAL			42																									

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PROJECT REFERENCE NO.	SHEET NO.
R-2414B	3-0

SUMMARY OF EARTHWORK
IN CUBIC METERS

LOCATION	UNCL. EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
–L– LT. STA. 45+68.873 to 52+40.000	912		3327	3327	912
–Y2– STA. 10+12.000 TO 11+05.532	2		590	590	2
SUMMARY 1 SUB TOTAL	914		3917	3917	914
–L– RT. STA. 52+60.000 TO 58+80.000	99		8191	8191	99
–L– RT 55+33.000 TO 56+34.000 (SURCHARGE)			1953	1953	
–L– RT 55+33.000 TO 56+34.000 (SURCHARGE REM.)	1365				1365
SUMMARY 2 SUB TOTAL	1464		10144	10144	1464
–L– LT. STA. 58+80.000 TO 68+80.000	128		8553	8553	128
–Y3– STA. 9+48.03.000 TO 11+55.955	128		798	798	128
SUMMARY 3 SUB TOTAL	256		9351	9351	256
–L– LT. STA. 68+80.000 TO 78+80.000	299		6837	6837	299
–L– LT 72+50.000 TO 73+80.000 (SURCHARGE)			2730	2730	
–L– LT 72+50.000 TO 73+80.000 (SURCHARGE REM.)	1909				1909
SUMMARY 4 SUB TOTAL	2208		9567	9567	2208
–L– LT. STA. 78+80.000 TO 87+60.000	178		4853	4853	178
–Y7– STA 10+00.000 TO 11+04.067	218		810	810	218
SUMMARY 5 SUB TOTAL	396		5663	5663	396
–L– RT. STA. 87+60.000 TO 93+92.145	1163		2714	2714	1163
–L– RT 88+55.000 TO 89+18.000 (SURCHARGE)			1041	1041	
–L– RT 88+55.000 TO 89+18.000 (SURCHARGE REM)	728				728
SUMMARY 6 SUB TOTAL	1891		3755	3755	1891
–L– RT. STA. 45+68.873 TO 52+60.000	202		3927	3927	202
–Y– STA. 10+09.600 TO 11+30.000	878		482	482	878
–Y1– STA. 10+00.000 TO 11+05.780	336		226	226	336
SUMMARY 7 SUB TOTAL	1416		4635	4635	1416

SUMMARY OF EARTHWORK
IN CUBIC METERS

LOCATION	UNCL. EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
–L– LT. STA. 52+40.000 TO 58+80.000	302		5287	5287	302
–L– LT 55+33.000 TO 56+34.000 (SURCHARGE)			2534	2534	
–L– LT 55+33.000 TO 56+34.000 (SURCHARGE REM.)	1771				1771
SUMMARY 8 SUB TOTAL	2073		7821	7821	2073
–L– RT. STA. 58+80.000 TO 68+80.000	50		8593	8593	50
–Y4– STA. 10+12.483 TO 11+63.200	77		374	374	77
SUMMARY 9 SUB TOTAL	127		8967	8967	127
–L– RT. STA. 68+80.000 TO 78+80.000	256		4811	4811	256
–L– RT 72+50.000 TO 73+80.000 (SURCHARGE)			3238	3238	
–L– RT 72+50.000 TO 73+80.000 (SURCHARGE REM.)	2264				2264
SUMMARY 10 SUB TOTAL	2520		8049	8049	2520
–L– RT. STA. 78+80.000 TO 87+60.000	395		3735	3735	395
–Y7– STA. 11+23.273 TO 12+12.000	348		1166	1166	348
SUMMARY 11 SUB TOTAL	743		4901	4901	743
–L– LT. STA. 87+60.000 TO 93+92.145	245		6683	6683	245
–Y8– STA. 11+00.000 TO 12+27.393	21		1606	1606	21
–L– LT 88+55.000 TO 89+18.000 (SURCHARGE)				1602	1602	
–L– LT 88+55.000 TO 89+18.000 (SURCHARGE REM.)	1120				1120
SUMMARY 12 SUB TOTAL	1386		9891	9891	1386
PROJECT SUBTOTAL	15394		86661	86661	15394
MATERIAL FOR SHOULDER CONSTRUCTION			533	533	
LOSS DUE TO CLEARING & GRUBBING	–1000			1000	
SELECT MATERIAL, CLASS III			–195	–195	
WASTE IN LIEU OF BORROW				–4002	–4002
BORROW EXCAVATION FOR MASS SOIL MIXING				5000	
PROJECT TOTAL	14394		86999	88997	11392
5% TO REPLACE TOPSOIL ON BORROW PITS				4450	
GRAND TOTAL	14394			93447	
SAY	14500			95000	

FABRIC FOR SOIL STABILIZATION = 70,250 SM (GEOTECH MEMO DATED 3/12/07)
CL 'IV' SUBGRADE STABILIZATION MATERIAL = EST. 111,100 MTON COMPUTED & 5,000 MTN CONTINGENCY (GEOTECH MEMO OF 10/10/08)
SHALLOW UNDERCUT = EST. 26,600CM COMPUTED & 2,500CM CONTINGENCY (GEOTECH MEMOS OF 10/10/08)
UNDERCUT EXCAVATION = 2,000CM CONTINGENCY & 150CM ADDITIONAL (GEOTECH MEMO OF 7/28/10)
= 7,000CM CONTINGENCY FOR MASS SOIL MIXING (GEOTECH MEMO OF 4/21/11)
SELECT GRANULAR MATERIAL, CL 'III' = EST. 150CM COMPUTED & 3,000CM CONTINGENCY (GEOTECH MEMOS OF 10/10/08 & 7/28/10)
= 7,000CM CONTINGENCY FOR MASS SOIL MIXING (GEOTECH MEMO OF 4/21/11)
= 1,375CM COMPUTED (PER EMAIL FROM GEOPTECH 12/1/2010)
OBSTRUCTION REMOVAL FOR MASS SOIL MIXING = 5,000CM CONTINGENCY (GEOTECH MEMO OF 4/21/11)
MASS SOIL MIXING = 45,250CM (GEOTECH MEMO OF 9/13/10)

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.

SUMMARY OF PAVEMENT REMOVAL
IN SQUARE METERS

ALIGNMENT	STATION TO STATION	LOCATION	AREA (m2)
–L–	52+30.000 TO 53+00.000	CL	611.194
–L–	90+04.000 TO 93+00.000	LT	4319.326
–DET1–	10+38.392 TO 11+60.739	CL	603.64
–DET2–	10+60.342 TO 11+68.939	CL	477.19
–DET3–	10+44.002 TO 11+48.309	CL	437.86
–L–	89+75.000 TO 11+20.000 –Y8–	LT	454.87
–L–	55+33.000 TO 56+34.000	CL	689.688
–L–	72+50.000 TO 73+80.000	CL	1075.579
–L–	88+55.000 TO 89+18.000	CL	493.880
	PROJECT TOTAL		9163.227
	SAY		9300.00

SUMMARY OF UNDERDRAINS
IN LINEAR METERS

ALIGNMENT	STATION TO STATION	LOCATION	LENGTH (M)
–L–	45+68.00 TO 93+92.00	LT	4824.00
–L–	45+68.00 TO 93+92.00	RT	4824.00
	PROJECT TOTAL		9648.00
	CONTINGENCY		2000
	GRAND TOTAL		11648.00
	SAY		11648.00

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PROJ. REFERENCE NO.	SHEET NO.
R-2414B	3-P

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

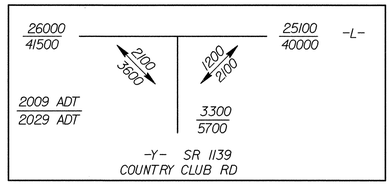
PARCEL INDEX SHEET

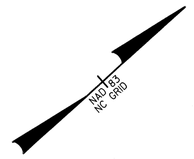
PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	4	JAMIE H. WOOTON, ET AL
2	4	QUALITY OIL COMPANY
3	4	GEORGE T. GRIFFIN, ET UX
4	4,5	O.C. ABBOTT
5	4,5	C. E. HURDLE, HEIRS
5A	4	PECAN FARMS, LLC
6	5	THE BANK OF CURRITUCK
7	5	TERRY CHAMBERLAIN
7A	5	ROBERT & BRENDA ALBURY
8	5	BONNEY, OWNES, TWIFORD, LLC.
9	5	DORIS RODGERS & HILDA GARRETT
9A	5	DORIS RODGERS & HILDA GARRETT
10	5	KEITH DANIEL WARD, ET UX
11	5	ROBERT F. ALBURY, ET UX
12	5	ANTHONY WOODDISSE, ET UX
13	5,6	FRED E. UPTON, HEIRS
14	5	FRED E. UPTON, JR., et ux
15	5	CAMDEN SALES & SERVICE
16	5,6	LINDA SUE LAMB HINTON
16A	5,6,17	NORFOLK SOUTHERN RAILWAY CO.
17	5,6	LARRY LAMB
17A	6	LINDA SUE LAMB HINTON
18	6	G. MATT WOOD, JR.
19	6	ARNOLD & THORNLEY, INC
20	6	WINNER'S CIRCLE CONDOS
21	6	RITA W. GREGORY
22	6,7	RICKY L. EDWARDS & SHEILA R. EDWARDS
23	6,7	A & S PROPERTIES, LLC
24	7	BLUE SKY DEVELOPMENT, LLC
24A	7,8,18	CAMDEN REALTY GROUP, LLC.
25	7,8,18	CAMDEN COUNTY
26	7	CHARLES B. STEVENS
26A	7	HOWARD S. STEVENS C/O F.W. STEVENS
27	7,8	JAMES B. SEYMOUR, JR.,ET AL
28	8	C. RUSSELL HASTINGS, ET UX
29	8	CHARLES H. HODGES, SR., ET AL
31	18	CAMDEN REALTY GROUP, LLC
32	8,9,10	MARY M. GORDON
34	8,9,18	GLEN D. GORDON, ET UX
34	9,10	GLEN & SHEILA GORDON
36	9,10,11	GEORGE WOOD FARMS, INC
36A	11,12	SOUTHLAND, LLC.
37	10	DORIS S. BERRY
38	10	TIDEWATER AGRONOMICS
39	10	MATTHEW HARRELL
40	10	H & R INVESTMENT
41	10,11	NORTHEASTERN COMMUNITY DEVELOPMENT CORP, INC
42	11	JAMES ROEBUCK & ELLIOT W. JACOBS
43	11	ALBEMARLE HOSPITAL, ET AL
44	11,12,13,14	BROWN FARMS, INC
45	12	BELCROSS PROPERTIES LLC
46	12,13	SOUTHLAND, LLC
44A	12, 13,14	BROWN FARMS, INC
47	13,14	RUSSELL E. TWIFORD
48	14	W. CLARENCE OWENS, ET UX

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
49	14	WILLIAM C. LEE
50	14	CHARLES H. BOWSER
51	14	ED SIVELLIS, HEIRS C/O ELIJAH ETHERIDGE
52	14	B. F. ETHERIDGE, HEIRS C/O ELIJAH ETHERIDGE
53	14,15	DORIS H. HARRIS
54	14	CONNIE M. TRAFTON, ET AL
55	14	CLARA L. FREEMAN
56	14	CAROL L. LEE
57	14,15	REX MATTHEWS & RHONDA SAWYER
58	15	MARY WYNN
59	15	MICHAEL L. MATTERA
60	15	PHYILLIS G. MINTON
61	15	DANIEL R. McDOUGALD
62	15	THOMAS M. NOBLITT
63Z	15	SHEILA R. EDWARDS
64	15	EFFIE L. CREEKMORE
65	15	EFFIE L. CREEKMORE
66	15	ROBERT A. & KATIE W. KRANIAK
67	15	GARY D. FILARECKI
68Z	15	ROY GODFREY
69	15	DORIS H. HARRIS
70	15	WILLIAM C. & JUDITH NORTON
71	15,16	JOSEPH O. SAWYER, ET UX
71A	16	IRVIN R. LANCASTER
72	15,16	W. W. OWENS & SONS MOVING & STORAGE
73	15,16	DORIS H. HARRIS
74	16	VINCENT R. RAGAN, ET UX
75	16	LINDA S. DEMUTH, ET AL
76	16,17	HORACE MELVILLE CUTHRELL, JR.,ET UX
77	16,17	WALLACE G. CAHOON
78	17	C. RUSSELL HASTINGS & CALVIN LAMB
79	16,17	BROWN FARMS, INC.
80	17	CAMDEN CHURCH OF CHRIST
8A	5	THE TRESTLES TOWNHOMES
047A	13	LAMB BROS., LLC
047B	13	STATE EMPLOYEES CREDIT UNION

6/10/09

REVISIONS





ETHERIDGE ENGINEERING
509 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

TRANSITE CONSULTING
ENGINEERS, INCORPORATED
1300 Paddock Drive, Suite G-10
Raleigh, N.C. 27609
Liscense No. C-1628

METRIC

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CONST.REV.

R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	4
R /W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 21118 ENGINEER BOB A. MAY
10/5/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18442 ENGINEER VICTOR LEON BOLLINGER, JR.
10/08/10

ROBERT F. MASSIELLO, ET UX
DB 111, PG 705
DB 46, PG 260 (MAP)

ROSALYN J. FAIRCLOTH
ISBKD
DB 80, PG 392
DB 46, PG 260 (MAP)

JAMIE H. WOOTON, ET AL
ISBKD
DB 106, PG 689
DB 46, PG 260 (MAP)

3 GEORGE T. GRIFFIN, ET UX
DB 52, PG 687
DB 46, PG 260 (MAP)

4 O.C. ABBOTT
DB 54, PG 429

45+00 46+00 47+00 48+00

NOTE: SELECT TREES WITHIN CONSTRUCTION EASEMENT FROM -L- STA 46+50 LT TO -L- STA 47+80 MAY BE FLAGGED TO BE PRESERVED.

PC 47+13.146

-L- POC 47+73.037 =
-Y- POT 10+00.000

CL. 'B' RIP RAP
EST 10 MTN
EST 23.4 SM FF

EXISTING TRAFFIC SIGNAL

MATCHLINE -L- STA. 48+40.000
SEE -L- SHEET NO. 5

TIE TO EXIST. C&G

375mm 750 CURB & GUTTER

750 CURB & GUTTER

750 C&G

EXIST R/W

EXIST R/W ACQUIRED UNDER NCDOT PROJECT R-2414A

EXISTING PERMANENT UTILITY EASEMENT ACQUIRED UNDER NCDOT PROECT R-2414A

EXIST PDE ACQUIRED UNDER NCDOT PROJECT R-2414A 20.00 (TYP)

PECAN FARMS, LLC
DB 237, PG 728

2 QUALITY OIL COMPANY
DB 54, PG 546

NOTES:
1. ALL RESIDENTIAL DRIVEWAY RADII ARE 1.5m UNLESS OTHERWISE NOTED.
2. COMMERCIAL DRIVEWAY RADII ARE AS SHOWN ON PLANS.
3. ALL CHANNELIZATION CURBING IS 200 x 450.

-L- PT 45+68.873 (R-2414A) LB=
-L- PT 45+68.873 (R-2414B) LA
END TIP PROJECT R-2414A
BEGIN TIP PROJECT R-2414B

NOTE: R/W AND EASEMENTS ON THE PECAN FARMS,LLC TRACT TO BE ACQUIRED UNDER THE R-2414A PROJECT.

BEGIN CONSTRUCTION
-L- POC STA 44+70.000

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 3:1, D, 4:1 or Flatter, Front Ditch Slope
Min. D = 0.3 m

-Y- 10+50 to 11+20 (LT.)
-Y- 10+55 to 11+00 (RT.)

DETAIL B
LATERAL 'V' DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1, .08m/m, Fill Slope
Min. D = 0.3 m
b = 1.5 m

-Y- 10+19 to 10+50 (LT.)

NOTE: ALL DRIVES ARE 6.0 METERS UNLESS OTHERWISE DENOTED

SEE SHEET NO. 19 FOR -L- GRADE AND PROFILE.
SEE SHEET NO. 26 FOR -Y- GRADE AND PROFILE.
SEE SHEET NO. 2-F FOR -Y- INTERSECTION DETAIL.

125mm MONOLITHIC CONCRETE ISLAND.
750mm CONCRETE CURB AND GUTTER.
REINFORCED CONCRETE BOX CULVERT

R-2414A	-L-	-Y-	-Y-	-Y-
PI Sta 45+33.809	PI Sta 48+39.173	PI Sta 10+37.521	PI Sta 10+85.741	PI Sta 11+15.669
Δ = 8° 05' 01.5" (LT)	Δ = 16° 23' 31.2" (LT)	Δ = 10° 10' 10.1" (LT)	Δ = 2° 32' 38.4" (RT)	Δ = 11° 00' 32.5" (RT)
L = 352.720	L = 250.332	L = 44.373	L = 21.313	L = 38.429
T = 176.653	T = 126.027	T = 22.245	T = 10.658	T = 19.274
R = 2,500.000	R = 875.000	R = 250.000	R = 480.000	R = 200.000
SE = .025	SE = 0.03		AH = S 62° 41' 13" E	BK = S 62° 41' 13" E
DS = 80 KM/H	R'OFF = 60.750			AH = S 51° 40' 40.5" E
	DS = 80 KM/H			

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WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
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Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

TRANSITE CONSULTING
ENGINEERS, INCORPORATED
1300 Paddock Drive, Suite G-10
Raleigh, N.C. 27609
License No. C-1628

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
SEAL 21116 ENGINEER BOB A. MAY	SEAL 18421 ENGINEER RICHARD LEON BOLLINGER JR.
10/8/10	10/08/10
CONST.REV.	
R/W REV.	

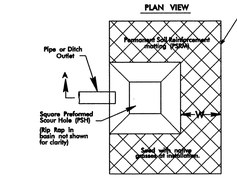
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REVISIONS

6/10/09

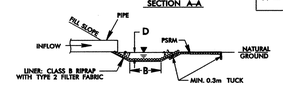
DETAIL AA
PREFORMED SCOUR HOLE

PLAN VIEW



B= 1.5 m
D= 0.6 m
W= 1.5 m

SECTION A-A



*NOT TO SCALE

-L- 51+46 (LT.)

-Y2- SR 1244
MORRISETTES RD

2009 ADT
2029 ADT
22700
36200

180/340
110/220
70/120
22660
36100
-L-

NAD 83 / NC GRID

-Y2- POT 10+00.000
-Y2- PC 10+12.000
BEGIN CONSTRUCTION

-L- POT 50+30.377 =
-Y1- POT 10+00.000

PT 49+63.478

PT 10+34.866

-Y2- POT 51+24.328 =
-Y2- POT 11+14.842

-Y1- POT 11+15.000
END CONSTRUCTION

SEE SHEET NO. 4

SEE SHEET NO. 6

MATCHLINE -L- STA. 48+40.000

MATCHLINE -L- STA. 52+00.000

49+00

50+00

51+00

52+00

10+00

11+00

(4) O.C. ABBOTT
DB 54, PG 429

(6) THE BANK OF CURRITUCK
DB 66, PG 105

(8) BONNEY, OWNES, & TWIFORD, LLC
DB 229, PG 22

(8A) THE TRESTLES TOWNHOMES
DB 131, PG 894

(12) ANTHONY WOODDISSE, ET UX
DB 91, PG 928
DB 92, PG 223
DB 89, PG 239 (MAP)

(15) CAMDEN SALES & SERVICE
DB 85, PG 520

(17) LARRY LAMB
WB 99E, PG 22

(16) LINDA SUE LAMB HINTON
WB 99E, PG 22

POWER LINE EASEMENT
NORTH CAROLINA POWER
(VEPCO)
DB 31, PG 439
DB 59, PG 677

POWER LINE EASEMENT
NC POWER (VEPCO)
DB 31, PG 439, DB 59, PG 677

(7) TERRY CHAMBERLAIN
DB 239, PG 578
DB 161, PG 402 (PLAT)

DORIS R. RODGERS, ET AL
DB 111, PG 659

(7A) ROBERT & BRENDA ALBURY
DB 161, PG 396
DB 161, PG 398 (PLAT)

(9A) DORIS RODGERS & HILDA GARRETT
DB 35, PG 230
DB 28, PG 549

DORIS RODGERS & HILDA GARRETT
DB 130, PG 317
DB 130, PG 319 (PLAT)

(10) KEITH DANIEL WARD, ET UX
DB 111, PG 385
DB 23, PG 425 (MAP)

(11) ROBERT F. ALBURY, ET UX
DB 87, PG 003

(13) FRED E. UPTON, HEIRS
DB 22, PG 468
DB 111, PG 401

(14) FRED E. UPTON, JR., et ux
DB 42, PG 615
DB 111, PG 278

(13) FRED E. UPTON, I
DB 22, PG 468
DB 111, PG 401

C. E. HURDLE, HEIRS (5)
DB 26, PG 517
DB 28, PG 224
DB 23, PG 425 (MAP)
DB 105, PG 761

THE TRESTLES TOWNHOMES (PRIVATE ROAD)
DB 131, PG 894

CHESAPEAKE & ALBEMARLE R/R CO (LEASED TO NORFOLK SOUTHERN RAILWAY CO)

CL. 'B' RIP RAP
EST 1.5MTN
EST 5.9 SM FF

CL. 'B' RR
EST 4.5 MTN
EST 14 SM FF

CL. 'B' RIP RAP
EST 4.5 MTN
EST 11.7 SM FF

0.45m BASE DITCH
SEE DETAIL C
EST 5 CM DDE
So = 4.31%

0.6m LAT. BASE DITCH
SEE DETAIL N
EST 70 CM DDE

LAT. 'V' DITCH
SEE DETAIL B
EST 70 CM DDE

'V' DITCH
SEE DETAIL E
EST 5 CM DDE
So=0.300%

PROP 750 C&G
PROP. 200x450 CURB
375x375x375 TEE
REMOVE
REMOVE EX. SD DRIVE
REMOVE SR 1244 MORRISETTES RD
REMOVE TH#18
REMOVE TH#17
REMOVE H.W.
PLUG
PSH SEE DETAIL AA
GRADE TO DRAIN
DO NOT DISTURB
DO NOT DISTURB FIG TREE
DO NOT DISTURB SEPTIC FIELD
SPEC. CUT DITCH SEE DETAIL A
TIE TO EXISTING
PROP. 6.0 DRIVE
PROP. 9.0 DRIVE
PROP. 10.0 BST DRIVE
PROP. 8.8 DRIVE
PROP. 7.0 DRIVE
PROP. 8.7 DRIVE
PROP. 9.5 CONC DRIVE
PROP. 2.8 R
PROP. 3.8 R
PROP. 2.7 R
PROP. 12.0R
PROP. 1.2m SW
PROP. 1.8m SW
PROP. 1.5m SW

REVISIONS

TRANSITE CONSULTING
ENGINEERS, INCORPORATED
1300 Paddock Drive, Suite G-10
Raleigh, N.C. 27609
License No. C-1628

WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
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License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

METRIC
5 0 10

CONST.REV.
R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	6
R /W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 21176 ENGINEER BOB A. MAY
11/1/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18442 ENGINEER STEPHEN BOLDENGREEN
11/1/10

NAD 83 NC GRID

SEE SHEET NO. 5

MATCHLINE -L- STA. 52+00.000

MATCHLINE -L- STA. 55+60.000

SEE SHEET NO. 7

RR*1 PC 10+00.000

RR*1 PT 11+32.492

-L- POT 52+45.517 = RR*1 POC 10+57.969

-L- PI Sta 54+61.452
Δ = 9° 48' 50.9" (LT)
L = 86.501
T = 43.357
R = 505.000
SE = 0.04
R'OFF = 81.000
DS = 80 KM/H

RR *1
PI Sta 10+66.452
Δ = 11° 02' 25.1" (LT)
L = 132.492
T = 66.452
R = 687.593

PC 54+18.095

PT 55+04.596

N 22° 28' 05.7" E

N 12° 39' 14.8" E

AAR\DOT* 465 370N
RR MP. 41.5

CLASS 'B' RIP RAP
EST 0.9 MTN
EST 4.2 SM FF

CL. 'B' RIP RAP
EST 2.7 TON
EST 8.4 SM FF

CL. 'B' RIP RAP
SEE DETAIL M
EST 1 TON
EST 3 SM FF

LAT. 'V' DITCH
SEE DETAIL B
EST 300 CM DDE

LAT. 'V' DITCH
SEE DETAIL B
EST 2 CM DDE

DO NOT DISTURB SIGN

CONCRETE PAD (PROVIDED BY OTHERS)

ISFBUS

ISFD

SEALED SYSTEM

WALKING BY FAITH FOUNDATION CHURCH

MTL CANOPY

NOTE: ALL DRIVES ARE 6.0 METERS UNLESS OTHERWISE DENOTED

DITCH END DETAIL M
(Not to Scale)
Ditch Slope
3:1
0.3 Min.
NG
End Ditch Grade
Filter Fabric
Type of Liner= CL. 'B'
-L- 55+32 (RT.)

DETAIL B
LATERAL 'V' DITCH
(Not to Scale)
Natural Ground
3:1
D
3:1
b
.08m/m
Fill Slope
Min. D = 0.3 m
b = 0.9 m
-L- 54+47 to 54+52 (RT.)
-L- 54+67 to 55+32 (RT.)

SEE SHEET NO. 20 FOR -L- GRADE AND PROFILE.

NOTES:
1. ALL RESIDENTIAL DRIVEWAY RADII ARE 1.5m UNLESS OTHERWISE NOTED.
2. COMMERCIAL DRIVEWAY RADII ARE AS SHOWN ON PLANS.
3. ALL CHANNELIZATION CURBING IS 200 x 450.

125mm MONOLITHIC CONCRETE ISLAND, 150mm CONCRETE CURB AND GUTTER, REINFORCED CONCRETE BOX CULVERT

(16A) SOIL SPOIL PILE

(16) NORFOLK SOUTHERN RAILWAY CO
CHESAPEAKE & ALBEMARLE RR

(17) LARRY LAMB
WB 99E, PG 22

(17A) LINDA SUE LAMB HINTON
WB 99E, PG 22

(18) G. MATT WOOD, JR.
DB 135, PG 7

(19) ARNOLD & THORNLEY, INC
DB 109, PG 279

(20) WINNER'S CIRCLE CONDOS
JON R. MERRITT
DB 118, PG 535
(LOT & UNIT 143)
PC 3, SL 10-B
CAMDEN CO FARM BUREAU, INC
DB 121,PG 830 (UNIT 141B)
RICKY R. SMITHSON, ET UX
DB 121, PG 558 (UNIT 141A)
TRUSTEES OF VINEYARD CHRISTIAN FELLOWSHIP OF THE ALBEMARLE
DB 120, PG 525 (UNIT 145)

(21) RITA W. GREGORY
DB 128, PG 847

RITA WHITE GREGORY, ET VIR
DB 93, PG 24
DB 69, PG 392

(22) RICKY L. EDWARDS
& SHEILA R. EDWARDS
DB 142, PG 536

(23) A & S PROPERTIES, LLC
DB 157, PG 769

(13) FRED E. UPTON, HEIRS
DB 22, PG 468
DB 111, PG 401

POWER LINE EASEMENT
NORTH CAROLINA POWER
(VEPCO)
DB 31, PG 529
DB 40, PG 413
DB 62, PG 275

(LEASED TO CHESAPEAKE & ALBEMARLE R/R CO)

BL- 33

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11/1/2010

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REVISIONS

FOR CULVERT DESIGN
Alternate Rec.
NORTH CAROLINA PROFESSIONAL SEAL 29587 ENGINEER RANDALL A. BOYD
12/7/10

Note:
Alternate recommendation based on Equal Area of conveyance
Offline Review Only!!
NAD 83 NC GRID
12/3/10

ETHERILL ENGINEERING
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TRANSITE CONSULTING
ENGINEERS, INCORPORATED
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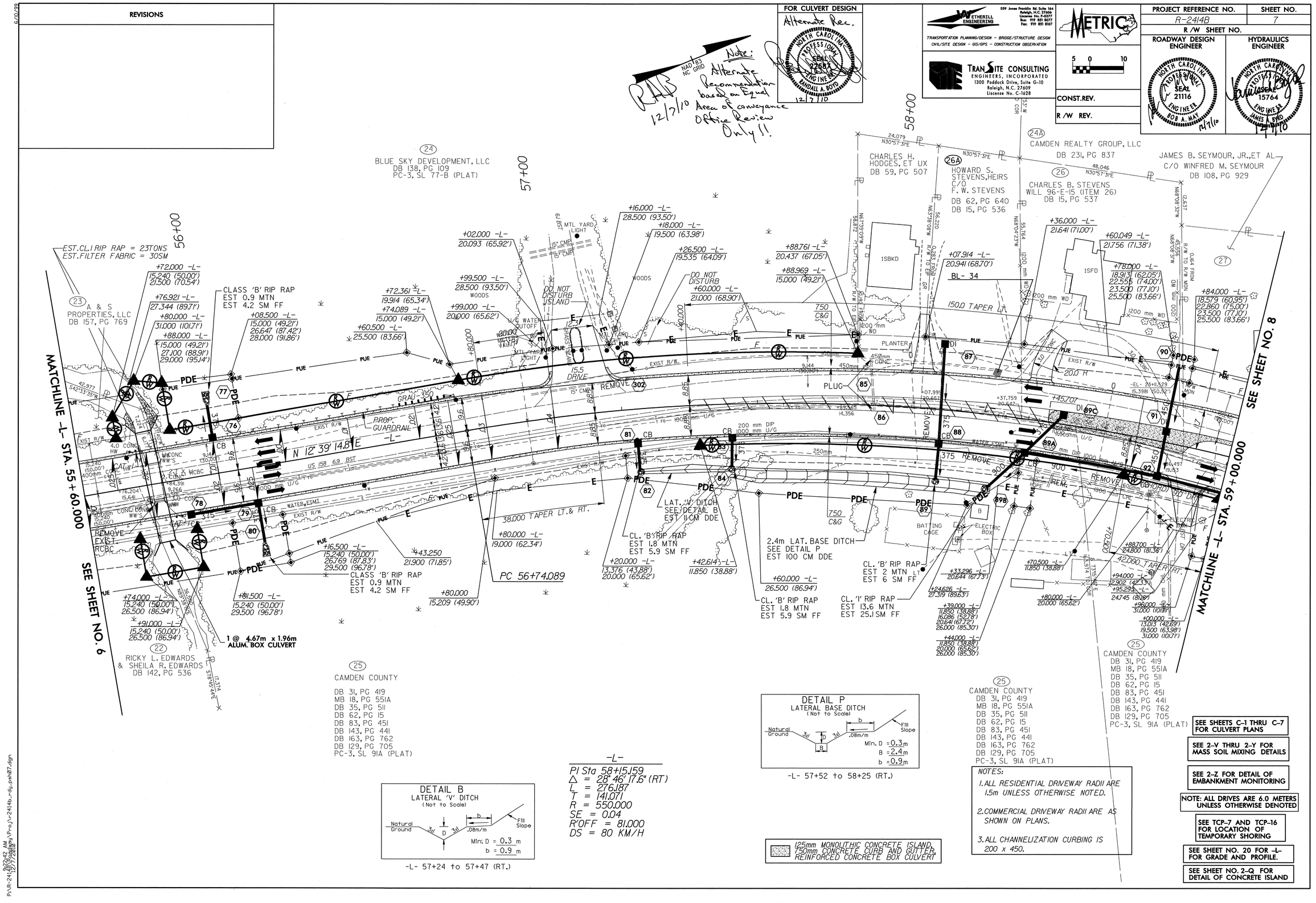
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CONST.REV.
R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	7
R /W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY
12/7/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD
12/7/10



22
RICKY L. EDWARDS
& SHEILA R. EDWARDS
DB 142, PG 536

23
A & S PROPERTIES, LLC
DB 157, PG 769

24
BLUE SKY DEVELOPMENT, LLC
DB 138, PG 109
PC-3, SL 77-B (PLAT)

25
CAMDEN COUNTY
DB 31, PG 419
MB 18, PG 551A
DB 35, PG 511
DB 62, PG 15
DB 83, PG 451
DB 143, PG 441
DB 163, PG 762
DB 129, PG 705
PC-3, SL 91A (PLAT)

26
CHARLES B. STEVENS
WILL 96-E-15 (ITEM 26)
DB 15, PG 537

26A
HOWARD S. STEVENS, HEIRS
C/O
F. W. STEVENS
DB 62, PG 640
DB 15, PG 536

24A
CAMDEN REALTY GROUP, LLC
DB 231, PG 837

CHARLES H. HODGES, ET UX
DB 59, PG 507

JAMES B. SEYMOUR, JR., ET AL
C/O WINFRED M. SEYMOUR
DB 108, PG 929

27

DETAIL B
LATERAL 'V' DITCH
(Not to Scale)
Natural Ground
3:1
D
3:1
b
.08m/m
Fill Slope
Min. D = 0.3 m
b = 0.9 m
-L- 57+24 to 57+47 (RT.)

DETAIL P
LATERAL BASE DITCH
(Not to Scale)
Natural Ground
3:1
D
3:1
b
.08m/m
Fill Slope
B
Min. D = 0.3m
B = 2.4m
b = 0.9m
-L- 57+52 to 58+25 (RT.)

125mm MONOLITHIC CONCRETE ISLAND.
750mm CONCRETE CURB AND GUTTER.
REINFORCED CONCRETE BOX CULVERT

NOTES:
1. ALL RESIDENTIAL DRIVEWAY RADII ARE 1.5m UNLESS OTHERWISE NOTED.
2. COMMERCIAL DRIVEWAY RADII ARE AS SHOWN ON PLANS.
3. ALL CHANNELIZATION CURBING IS 200 x 450.

SEE SHEETS C-1 THRU C-7 FOR CULVERT PLANS
SEE 2-V THRU 2-Y FOR MASS SOIL MIXING DETAILS
SEE 2-Z FOR DETAIL OF EMBANKMENT MONITORING
NOTE: ALL DRIVES ARE 6.0 METERS UNLESS OTHERWISE DENOTED
SEE TCP-7 AND TCP-16 FOR LOCATION OF TEMPORARY SHORING
SEE SHEET NO. 20 FOR -L- FOR GRADE AND PROFILE.
SEE SHEET NO. 2-Q FOR DETAIL OF CONCRETE ISLAND

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6/10/99

REVISIONS

WETHERILL ENGINEERING
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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
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TRANSITE CONSULTING ENGINEERS, INCORPORATED
1300 Paddock Drive, Suite G-10
Raleigh, N.C. 27609
License No. C-1628

METRIC

5 0 10

CONST.REV.

R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	8
R /W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY
5/6/11

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. RIND
5/6/11

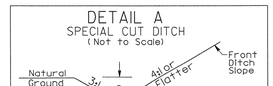
MATCHLINE -Y3- STA. 10+40.000

SEE SHEET NO. 18

PT Sta. 10+77.292

11+00 W
N40°48'E
NE 4AD

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)



-Y3- 10+43 to 10+60 (RT.)

DETAIL B
LATERAL 'V' DITCH
(Not to Scale)



-L- 59+88 to 60+42 (LT.)
-Y3- 11+25 to 11+36 (LT.)

JAMES B. SEYMOUR, JR., ET AL
C/O WINFRED M. SEYMOUR
DB 108, PG 929

CAMDEN REALTY GROUP, LLC
DB 252, PG 694
PC 5, SLIDE 87A

C. RUSSELL HASTINGS, ET UX
DB 93, PG 745
DB 56, PG 406
DB 56, PG 408
DB 35, PG 292
DB 35, PG 293

CHARLES H. HODGES, SR., ET AL
DB 91, PG 43
DB 25, PG 423

MARY M. GORDON
DB 57, PG 381

MARY M. GORDON
DB 95, PG 491
DB 116, PG 890

MARY M. GORDON
DB 89, PG 275
DB 116, PG 890

CAMDEN COUNTY
DB 31, PG 419
MB 18, PG 551A
DB 35, PG 511
DB 62, PG 15
DB 83, PG 451
DB 143, PG 441
DB 163, PG 762
DB 129, PG 705
PC 3, SL 91A (PLAT)

GLEN D. GORDON, ET UX
DB 94, PG 280
DB 128, PG 504
DB 83, PG 679
DB 87, PG 181
(POST OFFICE LEASE)
DB 132, PG 160 (STORE LEASE)

BESSIE E. SANDERS
DB 94, PG 528
DB 93, PG 767 (MAP)

LENNON A. GODFREY
MINNIE ROUSE SWILLS
DB 89, PG 475

SEE SHEET NO. 9

MATCHLINE -L- STA. 59+00.000

SEE SHEET NO. 7

MATCHLINE -L- STA. 62+60.000

MATCHLINE -Y4- STA. 11+10.000

SEE SHEET NO. 18

-Y3- NC 343

5840 / 9040	2009 ADT / 2029 ADT
4050 / 6120	1050 / 1750
20000 / 31760	14650 / 23360
2800 / 4800	450 / 770
3990 / 6740	

-Y4- NC 343

-L- POT 61+12.821 =
-Y3- POT 11+69.785

-L-	-Y3-
PI Sta 58+15.159	PI Sta 10+39.147
Δ = 28°46'17.6" (RT)	Δ = 22°21'27.9" (LT)
L = 276.187	L = 77.299
T = 141.071	T = 39.147
R = 550.000	R = 198.093
SE = 0.04	R'OFF = 48.000
R'OFF = 81.000	SE = 0.06
DS = 80 KM/H	

NOTE: ALL DRIVES ARE 6.0 METERS UNLESS OTHERWISE DENOTED

NOTES:
1. ALL RESIDENTIAL DRIVEWAY RADII ARE 1.5m UNLESS OTHERWISE NOTED.
2. COMMERCIAL DRIVEWAY RADII ARE AS SHOWN ON PLANS.
3. ALL CHANNELIZATION CURBING IS 200 x 450.

SEE SHEET NO. 21 FOR -L- GRADE AND PROFILE.
SEE SHEET NO. 27 FOR -Y3- GRADE AND PROFILE.
SEE SHEET NO. 27 FOR -Y4- GRADE AND PROFILE.
SEE SHEET NO. 2-H FOR -Y3 & -Y4- INTERSECTION DETAIL.
SEE SHEET NO. 2-Q FOR DETAIL OF CONCRETE ISLAND
SEE SHEET NO. PMP-7 FOR LOCATIONS OF WHEELCHAIR RAMPS

125mm MONOLITHIC CONCRETE ISLAND, 750mm CONCRETE CURB AND GUTTER, REINFORCED CONCRETE BOX CULVERT

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6/10/09

REVISIONS

NOTES:
1. ALL RESIDENTIAL DRIVEWAY RADII ARE 1.5m UNLESS OTHERWISE NOTED.
2. COMMERCIAL DRIVEWAY RADII ARE AS SHOWN ON PLANS.
3. ALL CHANNELIZATION CURBING IS 200 x 450.

WETHERILL ENGINEERING
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TRANSITE CONSULTING
ENGINEERS, INCORPORATED
1300 Paddock Drive, Suite G-10
Raleigh, N.C. 27609
License No. C-1628

METRIC
5 0 10

CONST.REV.
R/W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	9
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 21170 ENGINEER BOB A. MAY
10/7/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18442 ENGINEER RICHARD ANDREW BOLLINGER JR.
10/7/10

SEE SHEET NO. 8

MATCHLINE -L- STA. 62+60.000

MATCHLINE -L- STA. 66+20.000

SEE SHEET NO. 10

63+00 64+00 65+00

NAD 83 N.C. GRID

+83.000 -L- 28.000 (91.86')
+75.064 -L- 15.000 (49.21')
+72.769 -L- 19.799 (64.96')
+71.000 -L- 23.500 (77.10')
CL. 'B' RIP RAP EST 4.5 MTN EST 11.7 SM FF
CL. 'B' RIP RAP SEE DETAIL M EST 2 MTN EST 4 SM FF
LAT. 'V' DITCH SEE DETAIL B EST 135 CM DDE
+83.000 -L- 15.000 (49.21') 20.000 (65.62')
+04.500 -L- 24.500 (80.38')
CL. 'B' RIP RAP EST 1.8 MTN EST 5.9 SM FF
+53.000 -L- 15.000 (49.21') 20.000 (65.62') 24.000 (78.74')
CL. 'B' RIP RAP EST 1.8 MTN EST 5.9 SM FF
+78.000 -L- 15.000 (49.21') 19.819 (65.02') 22.000 (72.18')
+70.000 -L- 15.000 (49.21') 19.825 (65.04') 22.000 (72.18')
CL. 'B' RIP RAP EST 2.7 MTN EST 8.4 SM FF
+86.527 -L- 19.812 (65.00')
+86.527 -L- 15.000 (49.21')

(32) MARY M. GORDON DB 95, PG 491 DB 116, PG 890

(35) (36) (37) (38) (39) (40) (41) (42) (43) (44) (45) (46) (47) (48) (49) (50) (51) (52) (53) (54) (55) (56) (57) (58) (59) (60) (61) (62) (63) (64) (65) (66) (67) (68) (69) (70) (71) (72) (73) (74) (75) (76) (77) (78) (79) (80) (81) (82) (83) (84) (85) (86) (87) (88) (89) (90) (91) (92) (93) (94) (95) (96) (97) (98) (99) (100) (101) (102) (103) (104) (105) (106) (107) (108) (109) (110) (111) (112) (113) (114) (115) (116) (117) (118) (119) (120) (121) (122) (123) (124) (125) (126) (127) (128) (129) (130) (131) (132) (133) (134) (135) (136) (137) (138) (139) (140) (141) (142) (143) (144) (145) (146) (147) (148)

PDE PUE F E S CB EXIST R/W WATER ESMT 200mm W 300mm W 600mm CONC 750 C&G 450 375 REMOVE H.W. 1.9 CONC HW PLUG 10.0 R 6.0 DRIVE

135.0 UNIFORM TAPER
+75.000 REMOVE +73.052 10.074
US 158 11.4 BST
US 158 6.8 BST
N 41° 25' 32.4" E
+97.130 15.838
BL- 36
-L- 1315

+62.000 -L- 15.063 (49.41')
+66.360 -L- 23.204 (76.13')
+70.000 -L- 30.000 (98.42')
+74.000 -L- 28.000 (91.86')
+70.000 -L- 15.060 (49.41') 28.000 (91.86')
+76.000 -L- 27.000 (88.58')
CL 'B' RIP RAP EST 1.8 MTN EST 5.9 SM FF
CL. 'B' RIP RAP SEE DETAIL. M EST 2 MTN EST 4 SM FF
LAT. 'V' DITCH SEE DETAIL B EST 35 CM DDE
+98.000 -L- 15.049 (49.37') 24.000 (78.74') 28.000 (91.86')
DO NOT DISTURB SIGN
+17.000 -L- 20.000 (65.62')
+60.000 -L- 18.500 (60.70')
+91.000 -L- 15.087 (49.50') 20.000 (65.62') 22.000 (72.18')
+20.000 -L- 22.000 (72.18')
LAT 'V' DITCH SEE DETAIL B EST 55 CM DDE
CL. 'B' RIP RAP EST 1.8 MTN EST 5.9 SM FF
+45.000 20.25 (TYP)
+78.000 -L- 15.186 (49.82') 22.000 (72.18') 24.000 (78.74')
+18.000 -L- 20.000 (65.62')
PC 65+86.527

(34) GLEN D. GORDON, ET UX DB 94, PG 280 DB 83, PG 679 DB 128, PG 504 DB 87, PG 181 (POST OFFICE LEASE) DB 132, PG 160 (STORE LEASE)

S 38° 48' 35" W 1089.39

(34) GLEN & SHEILA GORDON DB 140, PG 778

S31°21'21"W CHESAPEAKE & ALBEMARLE RR RR SWITCH (LEASED TO CHESAPEAKE & ALBEMARLE R/R CO)

EXIST R/W 10.058 (33.000') 23.16 (66.00') SOU EIR BY6- 50 RETAIN

JARED & STEPHANIE DALTON DB 208, PG 545
N80°25'50"W 21.359
0.087 TYP RW TO EIR

EXIST R/W 9.464 (31.050') 18.288 (60.000') SR 1142 5.4 BST GUMBERRY RD
1850 mm CHL 1850mm CHL 1850 mm CHL
GR

G. MATTHEW WOOD, JR et ux DB 183 PG 230

NOTE: ALL DRIVES ARE 6.0 METERS UNLESS OTHERWISE DENOTED

SEE SHEET NO. 21 FOR -L- GRADE AND PROFILE.

125mm MONOLITHIC CONCRETE ISLAND, 150mm CONCRETE CURB AND GUTTER, REINFORCED CONCRETE BOX CULVERT

DETAIL B
LATERAL 'V' DITCH
(Not to Scale)
Natural Ground 3:1 D 3:1 b .08m/m Fill Slope
Min. D = 0.6m
b = 0.9m

-L- 62+84 to 63+50 (LT.)
-L- 62+75 to 62+88 (RT.)
-L- 64+94 to 65+73 (RT.)

DITCH END DETAIL M
(Not to Scale)
Ditch Slope 3:1 NG 0.3 Min. End Ditch Grade Filter Fabric
Type of Liner= CL. 'B'

-L- 62+88 (LT.)
-L- 62+88 (RT.)

-L-
PI Sta 66+25.744
Δ = 3° 44' 37.0" (LT)
L = 78.406
T = 39.217
R = 1,200.000
SE = 0.03
R'OFF = 60.750
DS = 80 KM/H

-Y6-
PI Sta 10+19.890
Δ = 2° 55' 37.3" (LT)
L = 39.770
T = 19.890
R = 778.495
SE = EX.
BK = N 6°28'25.4" E

-Y6-
PI Sta 10+59.540
Δ = 2° 26' 50.5" (RT)
L = 39.533
T = 19.769
R = 925.512
SE = EX.
AH = N 5°59'38.6" E

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REVISIONS

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Liscense No. C-1628

METRIC

5 0 10

CONST.REV.

R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	10
R /W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 27116 ENGINEER ROB A. MAY
10/8/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18442 ENGINEER RICHARD LEON BOLLINGER, JR.
10/08/10

SEE SHEET NO. 9

MATCHLINE -L- STA. 66+20.000

MATCHLINE -L- STA. 69+80.000

SEE SHEET NO. 11

NAD 83 NC GRID

MARY M. GORDON
DB 46, PG 316A

MATTHEW HARRELL
DB 246, PG 540

M. W. GODWIN, HEIRS
C/O JOYCE GODWIN
DB 36, PG 656
MB 2, PG 23

MARY GODWIN HARRIS
DB 52, PG 659
MB 2, PG 23

DORIS S. BERRY
DB 65, PG 187
DB 46, PG 316A
DB 117, PG 179

H & R INVESTMENT
DB 167, PG 39

NORTHEASTERN COMMUNITY DEVELOPMENT CORP, INC
DB 111, PG 217
DB 116, PG 742
RC 2, SL 87A

GLEN & SHEILA GORDON
DB 140, PG 778

TRACIE & CHARLIE CARTWRIGHT
DB 232, PG 668

TIDEWATER AGRONOMICS
DB 229, PG 62

GEORGE WOOD FARMS, INC
DB 115, PG 607
DB 115, PG 621

NORFOLK SOUTHERN RAILWAY CO
(LEASED TO CHESAPEAKE & ALBEMARLE R/R CO)

SR 1240 GUMBERRY RD

SR 1142 GUMBERRY RD

DO NOT DISTURB UNDERGROUND WELL & BARN

DO NOT DISTURB SIGN

CL. 'I' RIP RAP
EST 6.4 MTN
EST 14.2 SM FF

TOE PROTECTION
SEE DETAIL G
EST 3 MTN
EST 5 SM FF

'V' DITCH
SEE DETAIL F
So = 0.3000%
EST 5 CM DDE

LAT. 'V' DITCH
SEE DETAIL B
EST 12 CM DDE

ROCK FILL IN POND
SEE DETAIL H
CL 'I' RIP RAP
EST 90 MTN

LAT. 'V' DITCH
SEE DETAIL B
EST 150 CM DDE

CL. 'B' RIP RAP
EST 2.7 MTN
EST 8.4 SM FF

N 37° 40' 55.4" E

PT 66+64.933

NOTES:
1. ALL RESIDENTIAL DRIVEWAY RADII ARE 1.5m UNLESS OTHERWISE NOTED.
2. COMMERCIAL DRIVEWAY RADII ARE AS SHOWN ON PLANS.
3. ALL CHANNELIZATION CURBING IS 200 x 450.

SEE SHEET NO. 22 FOR -L- GRADE AND PROFILE.

NOTE: ALL DRIVES ARE 6.0 METERS UNLESS OTHERWISE DENOTED

-L-
PI Sta 66+25.744
Δ = 3° 44' 37.0" (LT)
L = 78.406
T = 39.217
R = 1,200.000
SE = 0.03
R'OFF = 60.750
DS = 80 KM/H

PAVEMENT REMOVAL

125mm MONOLITHIC CONCRETE ISLAND, 750mm CONCRETE CURB AND GUTTER, REINFORCED CONCRETE BOX CULVERT

DETAIL F
'V' DITCH
(Not to Scale)
Natural Ground — 3:1 — D — 3:1 — Natural Ground
Min. D = 0.3 m
-L- 66+87 (RT.)
-L- 67+06 (RT.)

DETAIL B
LATERAL 'V' DITCH
(Not to Scale)
Natural Ground — 3:1 — D — 3:1 — Fill Slope
b = .08m/m
Min. D = 0.3 m
b = 0.9 m
-L- 67+23 to 67+41 (RT.)
-L- 67+80 to 68+60 (RT.)

DETAIL G
TOE PROTECTION
(Not to Scale)
Natural Ground — 3:1 — d — 3:1 — Fill Slope
Filter Fabric
d = 0.3 m
Type of Liner = CL. 'B'
-L- 67+40 to 67+50 (LT.)

DETAIL H
ROCK FILL IN POND
(Not to Scale)
Proposed
Existing
Earth Fill — 3:1 — .3m — Elev.= 1.0
Rock Fill To Berm (CL I RIp Rap) — 3:1 — .3m — N.W.S. Elev.= 0.70
-L- 67+41 to 67+69 (RT.)

6/10/09

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6/10/2010

REVISIONS

NOTES:
1. ALL RESIDENTIAL DRIVEWAY RADII ARE 1.5m UNLESS OTHERWISE NOTED.
2. COMMERCIAL DRIVEWAY RADII ARE AS SHOWN ON PLANS.
3. ALL CHANNELIZATION CURBING IS 200 x 450.

ETHERRILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

TRANSITE CONSULTING
ENGINEERS, INCORPORATED
1300 Paddock Drive, Suite G-10
Raleigh, N.C. 27609
License No. C-1628

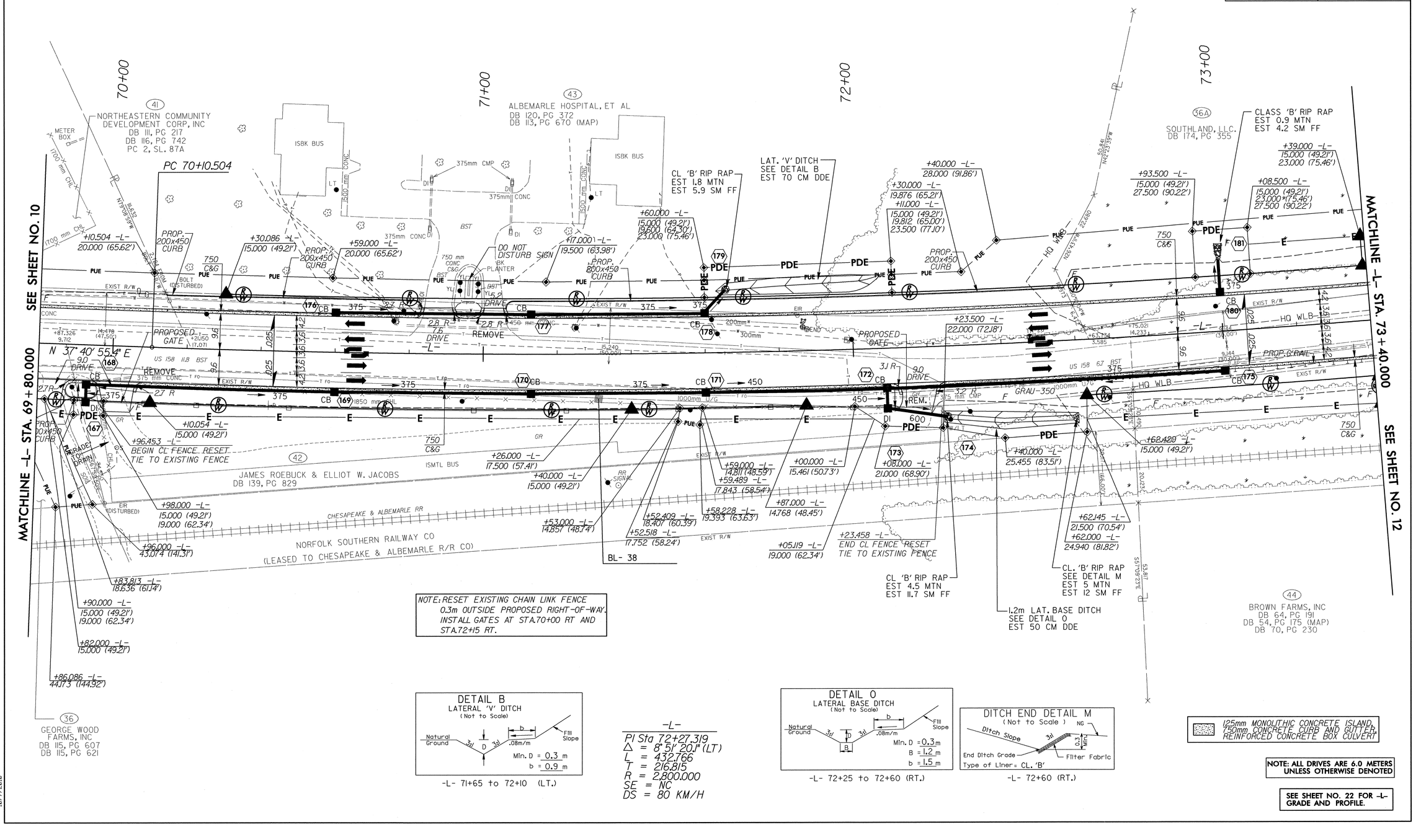
METRIC
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CONST.REV.
R/W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	11
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 24160 ENGINEER BOB A. MAY
10/7/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18142 ENGINEER JASON BOLLINGER
10/7/10



DETAIL B
LATERAL 'V' DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1, b, .08m/m, Fill Slope
Min. D = 0.3 m
b = 0.9 m
-L- 71+65 to 72+10 (LT.)

-L-
PI Sta 72+27.319
Δ = 8° 51' 20.1" (LT)
L = 432.766
T = 216.815
R = 2,800.000
SE = NC
DS = 80 KM/H

DETAIL O
LATERAL BASE DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1, b, .08m/m, Fill Slope, B
Min. D = 0.3m
B = 1.2 m
b = 1.5 m
-L- 72+25 to 72+60 (RT.)

DITCH END DETAIL M
(Not to Scale)
Ditch Slope, NG, 3:1, 0.3 Min., End Ditch Grade, Filter Fabric
Type of Liner = CL. 'B'
-L- 72+60 (RT.)

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6/10/99

REVISIONS

NOTES:
1. ALL RESIDENTIAL DRIVEWAY RADII ARE 1.5m UNLESS OTHERWISE NOTED.
2. COMMERCIAL DRIVEWAY RADII ARE AS SHOWN ON PLANS.
3. ALL CHANNELIZATION CURBING IS 200 x 450.

NAD 83 NC GRID

ETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164, Raleigh, N.C. 27606
License No. F-0277
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

TRANSITE CONSULTING
ENGINEERS, INCORPORATED
1300 Paddock Drive, Suite G-10
Raleigh, N.C. 27609
Liscense No. C-1628

METRIC
5 0 10

CONST.REV.

R/W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	12
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 021116 ENGINEER ROB A. MAY
12/17/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A BYRD
12/17/10

FOR CULVERT DESIGN
Alternate Rec.
NORTH CAROLINA PROFESSIONAL SEAL 22587 ENGINEER RANDALL A. BOYD
12/17/10

12/17/10
Note: Alternate Recommendation based on Equal Area of Conveyance Office Review Only!!

74+00 75+00 76+00 77+00

SOUTHLAND, LLC. DB 174, PG 355 (36A)

SOUTHLAND, LLC DB 174, PG 355 (46)

EST.CL.I RIP RAP = 19TONS
EST.FILTER FABRIC = 22SM

CLASS 'B' RIP RAP EST 0.9 MTN EST 4.2 SM FF

+58.000 -L- 15.000 (49.21') 23.000 (75.46') 29.000(95.14')

+76.500 -L- 15.000 (49.21') 29.000 (95.14')

+41.500 -L- 28.500 (93.50')

PT 74+43.271

+43.271 -L- 15.000 (49.21')

+60.000 -L- 19.507 (64.00')

PC 75+57.192

+57.192 -L- 19.507 (64.00')

+57.192 -L- 15.000 (49.21')

PT 76+16.024

+16.024 -L- 19.507 (64.00')

+16.024 -L- 15.000 (49.21')

+51.000 -L- 15.000 (49.21') 20.500 (67.26') 20.500 (67.26')

CL. 'B' RIP RAP EST 1.8 MTN EST 5.9 SM FF

+58.000 -L- 15.000 (49.21') 20.500 (67.26') 20.500 (67.26')

SEE SHEET NO. 11

MATCHLINE -L- STA. 73+40.000

SEE SHEET NO. 13

MATCHLINE -L- STA. 77+00.000

1 @ 5.66m x 1.63m ALUM. BOX CULVERT

REMOVE EXIST RCBC

N 28°49' 35.3" E

N 30° 10' 29.3" E

-L-

US 158 67 BST

EXIST R/W

REMOVE 375 mm CONC SOIL

REMOVE 1000mm U/D

REMOVE 450 mm CONC

PLUG

BROWN FARMS, INC (44) DB 64, PG 191 DB 54, PG 175 (MAP)

4 STEEL I BEAMS

BL- 39

NORFOLK SOUTHERN RAILWAY CO

(LEASED TO CHESAPEAKE & ALBEMARLE R/R CO)

CHESAPEAKE & ALBEMARLE RR

R/R SPIKE C/L OF TRACKS

+43.271 -L- 15.000 (49.21')

+44.500 -L- 25.500 (83.66')

+77.000 -L- 15.000 (49.21') 22.000 (72.18') 25.088 (82.31')

+29.500 -L- 15.000 (49.21') 21.000 (68.90') 25.500 (83.66')

+41.000 -L- 15.000 (49.21') 22.500 (73.82')

+62.000 -L- 24.799 (81.36')

CLASS 'B' RIP RAP EST 0.9 MTN EST 4.2 SM FF

CLASS 'B' RIP RAP EST 0.9 MTN EST 4.2 SM FF

LATERAL 'V' DITCH SEE DETAIL B EST 340 CM DDE

+57.192 -L- 15.000 (49.21')

CL. 'B' RIP RAP EST 1.8 MTN EST 5.9 SM FF

+74.000 -L- 15.133 (49.65') 17.500 (57.41') 23.000 (75.46')

+14.000 -L- 15.000 (49.21')

BELCROSS PROPERTIES LLC DB 233 PG 814 (45)

IS MTL BUS

BST PARKING

NOTE: EXISTING SEPTIC SYSTEM "DO NOT DISTURB"

+64.000 -L- 15.000 (49.21')

+62.612 -L- 18.469 (60.59')

+62.000 -L- 20.000 (65.62')

+68.000 -L- 15.000 (49.21')

+67.000 -L- 18.500 (60.70')

+66.413 -L- 21.697 (71.18')

CL. 'B' RIP RAP EST 4.5 MTN EST 11.7 SM FF

+62.500 -L- 43.000 (141.08')

0.6m BASE DITCH SEE DETAIL I So = 0.3000% EST 18 CM DDE

+80.000 -L- 15.000 (49.21')

+79.000 -L- 19.000 (62.34')

+71.000 -L- 15.000 (49.21')

+68.500 -L- 22.500 (73.82')

+75.000 -L- 43.000 (141.08')

BROWN FARMS, INC DB 64, PG 191 DB 54, PG 175 (MAP)

DETAIL B
LATERAL 'V' DITCH
(Not to Scale)

Natural Ground, 3:1, D, 3:1, b, .08m/m, Fill Slope

Min. D = 0.3 m
b = 0.9 m

-L- 74+40 to 75+70 (RT.)

DETAIL I
BASE DITCH
(Not to Scale)

Natural Ground, 3:1, D, 3:1, Natural Ground, B

Min. D =0.3m
B =0.6m

-L- 76+72 (RT.)

-L-
PI Sta 72+27.319
Δ = 8° 51' 20.1" (LT)
L = 432.766
T = 216.815
R = 2,800.000
SE = NC
DS = 80 KM/H

-L-
PI Sta 75+86.610
Δ = 1° 20' 54.0" (RT)
L = 58.832
T = 29.418
R = 2,500.000
SE = NC
DS = 80 KM/H

NOTE: ALL DRIVES ARE 6.0 METERS UNLESS OTHERWISE DENOTED

125mm MONOLITHIC CONCRETE ISLAND, 750mm CONCRETE CURB AND GUTTER, REINFORCED CONCRETE BOX CULVERT

SEE SHEETS C-8 THRU C-14 FOR CULVERT PLANS

SEE 2-V THRU 2-Y FOR MASS SOIL MIXING DETAILS

SEE 2-Z FOR DETAIL OF EMBANKMENT MONITORING

SEE TCP-8 AND TCP-17 FOR LOCATION OF TEMPORARY SHORING

SEE SHEET NO. 23 FOR -L- GRADE AND PROFILE.

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6/10/99

REVISIONS

NOTES:
1. ALL RESIDENTIAL DRIVEWAY RADII ARE 1.5m UNLESS OTHERWISE NOTED.
2. COMMERCIAL DRIVEWAY RADII ARE AS SHOWN ON PLANS.
3. ALL CHANNELIZATION CURBING IS 200 x 450.

NAD 83
NC GRID

ETHERIDGE ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
License No. F-0377
Bus. 919 851 8077
Fax. 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

TRANSITE CONSULTING
ENGINEERS, INCORPORATED
1300 Paddock Drive, Suite G-10
Raleigh, N.C. 27609
License No. C-1628

METRIC
5 0 10

CONST.REV.
R/W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	13
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 21110 ENGINEER ROY A. MAY
10/7/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18412 ENGINEER RICHARD KEITH BOLLING
10/7/10

77+00 | 78+00 | 79+00 | 80+00

LAMB BROS., LLC

(46) SOUTHLAND, LLC.
DB 174, PG 355

LAMB BROS., LLC
DB 228, PG 45

30.480
N24°30'40"E
45.720
N56°21'15"W
46.104
N75°21'41"W
N71°17'33"W
44.41
N23°30'29"E
82.710
15.246
N23°30'29"E
2SFD
GR
EIP

(047A) LAMB BROS., LLC
DB 268 PG 653
PC 6 SLIDE 111

(047B) STATE EMPLOYEES CREDIT UNION
DB 270 PG 534
PC 6 SLIDE 117

ROSABELLE COURT (PRIVATE 50' R/W)
DB 270 PG 536
PC 6 SL 117

(47) RUSSELL E. TWIFORD
DB 161, PG 409

MATCHLINE -L- STA. 77+00.000
SEE SHEET NO. 12

MATCHLINE -L- STA. 80+60.000
SEE SHEET NO. 14

750 C&G
GRADE TO DRAIN
PUE
F
E
RW
CB 203
CB 204
CB 205
CB 206
CB 207
CB 208
CB 209
202
210
PDE
9.0 DRIVE
375 mm CONC
REMOVE
1000 mm U/G
SOIL
EXIST R/W
-L-
N 30° 10' 29.3" E
US 158 6.7 BST
US 158 6.8 BST
+85.262
9.496
+86.864
35.079
9.144 (30.00')
450
375
600
BST
+00.000 -L-
15.000 (49.21')
+27.000 -L-
17.500 (57.41')
+54.000 -L-
15.000 (49.21')
18.000 (59.06')
23.000 (75.46')
BL- 40

(44A) BROWN FARMS, INC
DB 64, PG 191
DB 54, PG 175 (MAP)

EXIST R/W
NORFOLK SOUTHERN RAILWAY CO
(LEASED TO CHESAPEAKE & ALBEMARLE R/R CO)
EXIST R/W

PI4
1,849

(44) BROWN FARMS, INC
DB 64, PG 191
DB 54, PG 175 (MAP)

NOTE: ALL DRIVES ARE 6.0 METERS UNLESS OTHERWISE DENOTED

125mm MONOLITHIC CONCRETE ISLAND, 750mm CONCRETE CURB AND GUTTER, REINFORCED CONCRETE BOX CULVERT

SEE SHEET NO. 23 FOR -L- GRADE AND PROFILE.

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REVISIONS

NOTES:
1. ALL RESIDENTIAL DRIVEWAY RADII ARE 1.5m UNLESS OTHERWISE NOTED.
2. COMMERCIAL DRIVEWAY RADII ARE AS SHOWN ON PLANS.
3. ALL CHANNELIZATION CURBING IS 200 x 450.

NAD 83/NC GRID

ETHERIDGE ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
License No. F-0377
Phone: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

TRANSITE CONSULTING
ENGINEERS, INCORPORATED
1300 Paddock Drive, Suite G-10
Raleigh, N.C. 27609
License No. C-1628

METRIC
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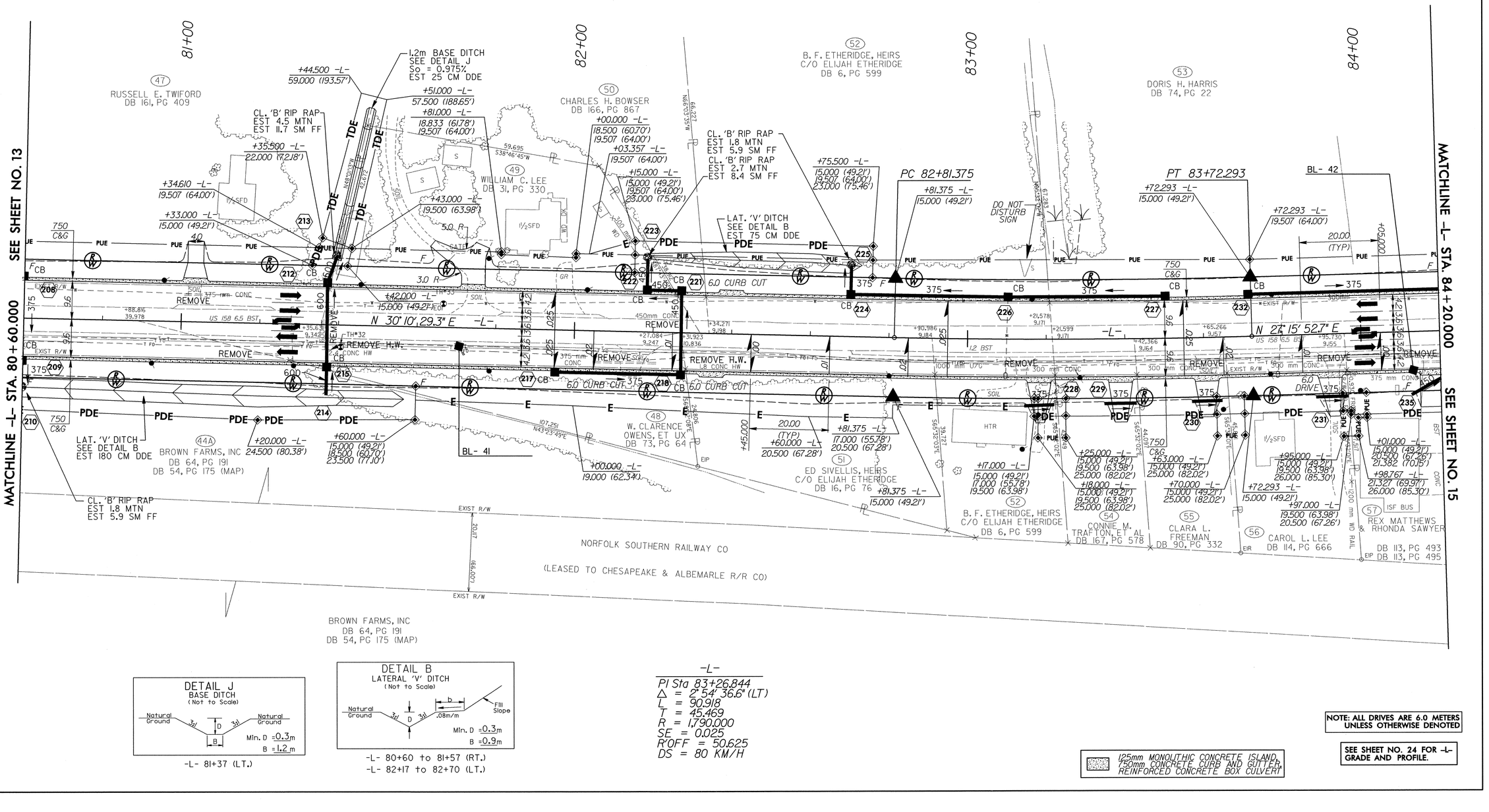
CONST.REV.

R/W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	14
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 21407 ENGINEER BOB A. MAY
10/7/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18442 ENGINEER RICHARD SIMON BOLLINGER
10/7/10



DETAIL J
BASE DITCH
(Not to Scale)

-L- 8l+37 (LT.)

DETAIL B
LATERAL 'V' DITCH
(Not to Scale)

-L- 80+60 to 8l+57 (RT.)
-L- 82+17 to 82+70 (LT.)

125mm MONOLITHIC CONCRETE ISLAND, 750mm CONCRETE CURB AND GUTTER, REINFORCED CONCRETE BOX CULVERT

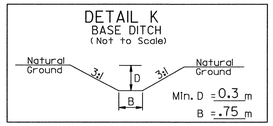
NOTE: ALL DRIVES ARE 6.0 METERS UNLESS OTHERWISE DENOTED

SEE SHEET NO. 24 FOR -L- GRADE AND PROFILE.

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REVISIONS
6/10/08

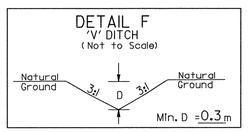
DETAIL K
BASE DITCH
(Not to Scale)



Min. D = 0.3 m
B = .75 m

-Y7- 11+63 (LT.)

DETAIL F
'V' DITCH
(Not to Scale)

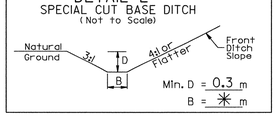


Min. D = 0.3 m

-L- 84+62 (LT.)

125mm MONOLITHIC CONCRETE ISLAND, 750mm CONCRETE CURB AND GUTTER, REINFORCED CONCRETE BOX CULVERT

DETAIL L
SPECIAL CUT BASE DITCH
(Not to Scale)



Min. D = 0.3 m
B = ✳ m

-Y7- 10+20 to 10+60 (RT.)
✳(VARIES 3m to 0m)

DITCH CLEANOUT
So = 0.15%
EST 5 CM DDE
MAINTAIN EXIST. CHANNEL X-SECTION

NOTES:
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2. COMMERCIAL DRIVEWAY RADII ARE AS SHOWN ON PLANS.
3. ALL CHANNELIZATION CURBING IS 200 x 450.

TRANSITE CONSULTING
ENGINEERS, INCORPORATED
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Raleigh, N.C. 27609
License No. C-1628

WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
License No. F-0277
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	15
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 27180 ENGINEER BOB A. MAY
10/8/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18443 ENGINEER KENNETH LEON BOLLINGER, JR.
10/8/10

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CONST.REV.

R/W REV.

MATCHLINE -L- STA. 84+20.000
SEE SHEET NO. 14

MATCHLINE -L- STA. 87+80.000
SEE SHEET NO. 16

-Y7- PC 10+00.000
10+00
-Y7- POC 10+10.000
BEGIN CONSTRUCTION
0.086 FROM R/W TO EIR
-Y7-
-Y7- POT 10+87.930 = -L- POT 87+21.930
-Y7- POC 11+13.669
-Y7- PT 10+72.758
-Y7- PC 11+01.031
-Y7- POT 12+12.000
END CONSTRUCTION
-Y7- POT 12+40.000
-L- PC 87+47.071
-L- POT 87+80.000
S 59° 58' 146" E
S 25° 45' 9" E
N 27° 15' 52.7" E
PT 11+38.126
12+00
HISTORIC PROPERTY
RETAINING WALL #36
EXISTING SIGNAL (FLASH) TO REMAIN
PROP. 200x450 CURB
BASE DITCH SEE DETAIL K So = 0.27% EST 3 CM DDE
CL. 'B' RIP RAP EST 2.7 MTN EST 8.4 SM FF
SPEC. CUT BASE DITCH SEE DETAIL L
CL. 'B' RIP RAP EST 1.8 MTN EST 5.9 SM FF
'V' DITCH, SEE DETAIL F So = 0.14% EST 5 CM DDE
DO NOT DISTURB SEPTIC LINE
VEGETABLE STAND
VINEYARD
OUT HOUSE
SOIL
CONC LOADING DOCK
ISF BUS
ISBLK BUS
ISFBUS
2SFD
ISFD
PROP. 0.7m SW
PROP. 0.9m SW
PROP. 1.2m SW
PROP. 0.7m SW
PROP. 200x450 CURB
PROP. 200x450 CURB
PROP. 200x450 CURB

6/10/99

REVISIONS

NOTES:
1. ALL RESIDENTIAL DRIVEWAY RADII ARE 1.5m UNLESS OTHERWISE NOTED.
2. COMMERCIAL DRIVEWAY RADII ARE AS SHOWN ON PLANS.
3. ALL CHANNELIZATION CURBING IS 200 x 450.

NAD 83 NC GRID

WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164 Raleigh, N.C. 27606
License No. P-0277
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

TRANSITE CONSULTING ENGINEERS, INCORPORATED
1300 Paddock Drive, Suite G-10
Raleigh, N.C. 27609
License No. C-1628

METRIC
5 0 10

CONST.REV.

R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	16
R /W SHEET NO.	

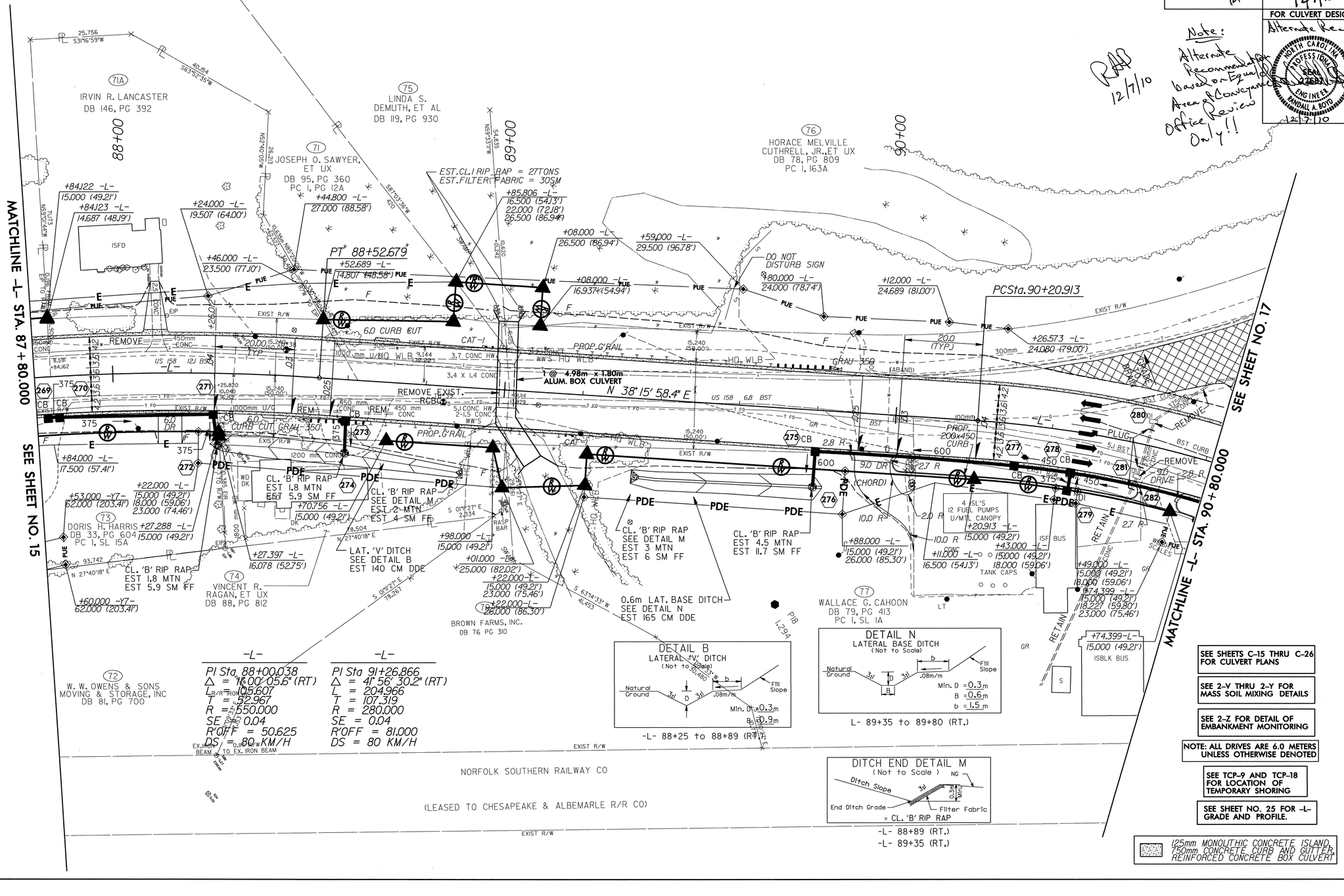
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY
12/7/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD
12/7/10

FOR CULVERT DESIGN
Alternate Rec.
NORTH CAROLINA PROFESSIONAL SEAL 23837 ENGINEER RANDALL A. BOYD
12/7/10

RAB 12/7/10

Note: Alternate Recommended based on Equal Area of Conveyance Office Review Only!!



SEE SHEETS C-15 THRU C-26 FOR CULVERT PLANS

SEE 2-V THRU 2-Y FOR MASS SOIL MIXING DETAILS

SEE 2-Z FOR DETAIL OF EMBANKMENT MONITORING

NOTE: ALL DRIVES ARE 6.0 METERS UNLESS OTHERWISE DENOTED

SEE TCP-9 AND TCP-18 FOR LOCATION OF TEMPORARY SHORING

SEE SHEET NO. 25 FOR -L- GRADE AND PROFILE.

125mm MONOLITHIC CONCRETE ISLAND, 750mm CONCRETE CURB AND GUTTER, REINFORCED CONCRETE BOX CULVERT

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6/10/09

ETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
Electronic No. F-0277
Bus: 919 851 8277
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

TRANSITE CONSULTING
ENGINEERS, INCORPORATED
1300 Paddock Drive, Suite G-10
Raleigh, N.C. 27609
Liscense No. C-1628

METRIC

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CONST.REV.

R/W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	17
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY
10/8/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18447 ENGINEER RICHARDSON BOLLINGER JR.
10/08/10

(76) HORACE MELVILLE CUTHRELL, JR., ET UX
DB 78, PG 809
PC 1, 163A

(78) C. RUSSELL HASTINGS AND CALVIN LAMB
DB 119, PG 94
PC 2, SL 55A

(77) WALLACE G. CAHOON
DB 79, PG 413
PC 1, SL 1A

(79) BROWN FARMS, INC
DB 76, PG 310

(80) CAMDEN CHURCH OF CHRIST
DB 151, PG 415

-Y8- POT 11+00.000
BEGIN CONSTRUCTION

PC 11+29.691

PT 12+17.715

-L- POC 91+15.523 =
-Y8- POT 12+36.993

RR*2 POT 10+00.000

-L- POC 92+35.469 =
RR*2 POT 10+48.857

RR*2 POT 10+87.810

-L- PT 93+92.145
END TIP PROJECT R-2414B

SEE SHEET NO. 16

MATCHLINE -L- STA. 90+80.000

I-26 (GPS)
BL- 26
BY8-

BL- 44

N 33° 49' 40.9" E

N 76° 07' 09.9" E

S 32° 16' 11.3" E

S 33° 46' 14" W

N 33° 46' 14" E

ALBEMARLE RR

NORFOLK SOUTHERN RAILWAY CO (LEASED TO CHESAPEAKE & ALBEMARLE R/R CO)

EXIST R/W

PROPOSED TRAFFIC SIGNAL

GRADE TO DRAIN

PROP. 200x450 CURB

REMOVE 600mm CONC

REMOVE 450mm CONC

REMOVE 1200mm CMP

REMOVE 1524mm CMP

REMOVE 1524mm X 1016mm CMP

REMOVE 1200mm CONC

REMOVE 1200mm CONC HW

REMOVE 600mm CONC

REMOVE 450mm CONC

REMOVE 350 mm CONC

REMOVE 1200mm CMP

REMOVE 1524mm CMP

REMOVE 1524mm X 1016mm CMP

REMOVE 1200mm CONC HW

REMOVE 600mm CONC

REMOVE 450mm CONC

REMOVE 350 mm CONC

1524x1168 CAAP

COLLAR & EXTEND 1524x1168 CAAP SEE DETAIL SHEET

375x375x375 TEE

DO NOT DISTURB SIGN

DO NOT DISTURB FENCE

RESET FENCE

CONCRETE PAD (PROVIDED BY OTHERS)

DISSIPATE CURB IN 1.0

2.0m LAT. BASE DITCH SEE DETAIL Q EST 245 CM DDE

SPEC. LAT. 'V' DITCH SEE DETAIL R

TIE TO EXISTING

90.0 UNIFORM TAPER LT. & RT.

30.000 UNIFORM TAPER

JUNK YARD

2SF BUS

1SBLK BUS

5SBLK BUS

5J BST

US 158 7J BST

NC 34 7J BST

SR 1251 (OLD NC 34) 7J BST

SR 1251 (OLD NC 34) 7J CPL

US 158 7J CPL

US 158 7J BST

US 158 7J CPL

NC 34 7J CPL

SR 1251 (OLD NC 34) 7J CPL

SR 1251 (OLD NC 34) 7J BST

REVISIONS

WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
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Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

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ENGINEERS, INCORPORATED
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METRIC

5 0 10

CONST.REV.

R/W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	18
R/W SHEET NO.	

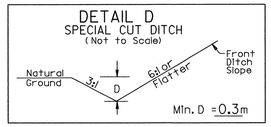
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY
10/7/10

HYDRAULICS ENGINEER

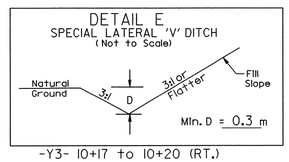
NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD
10-7-10

DETAIL D
SPECIAL CUT DITCH
(Not to Scale)

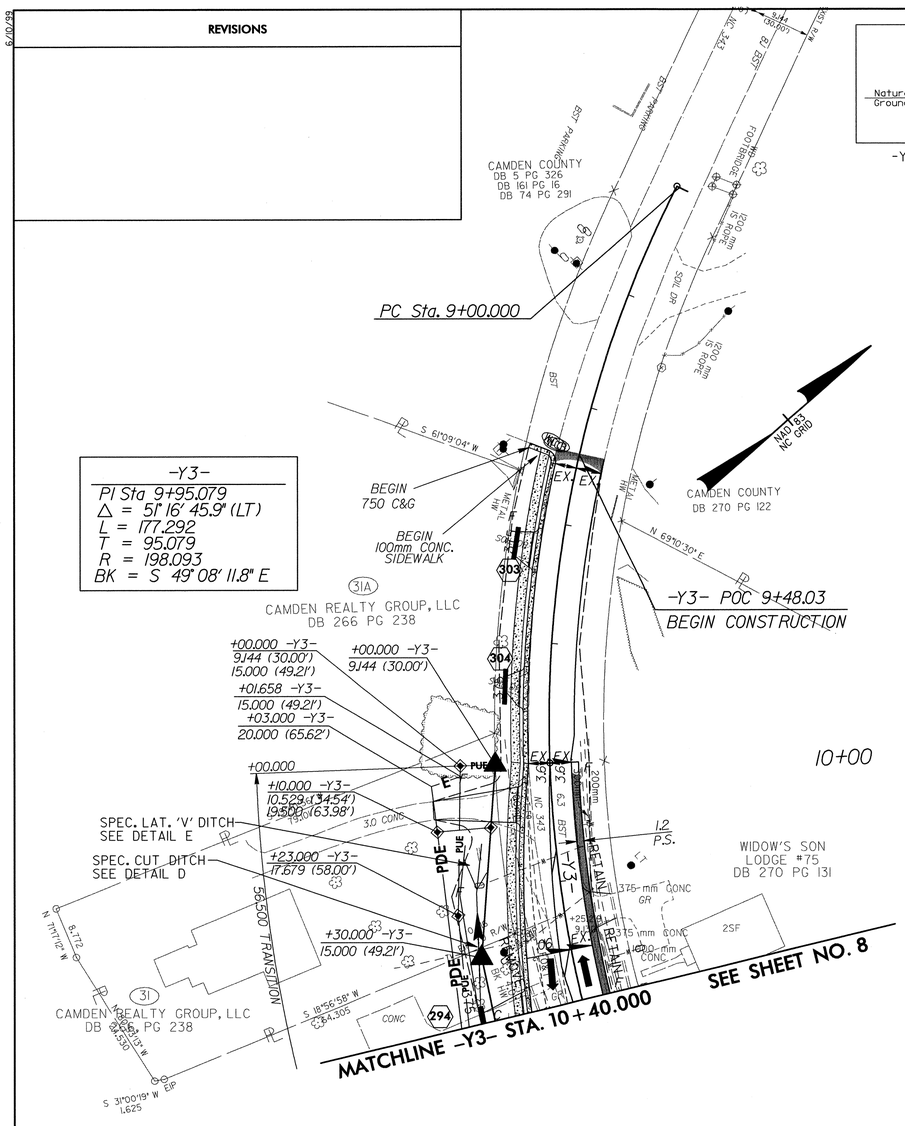


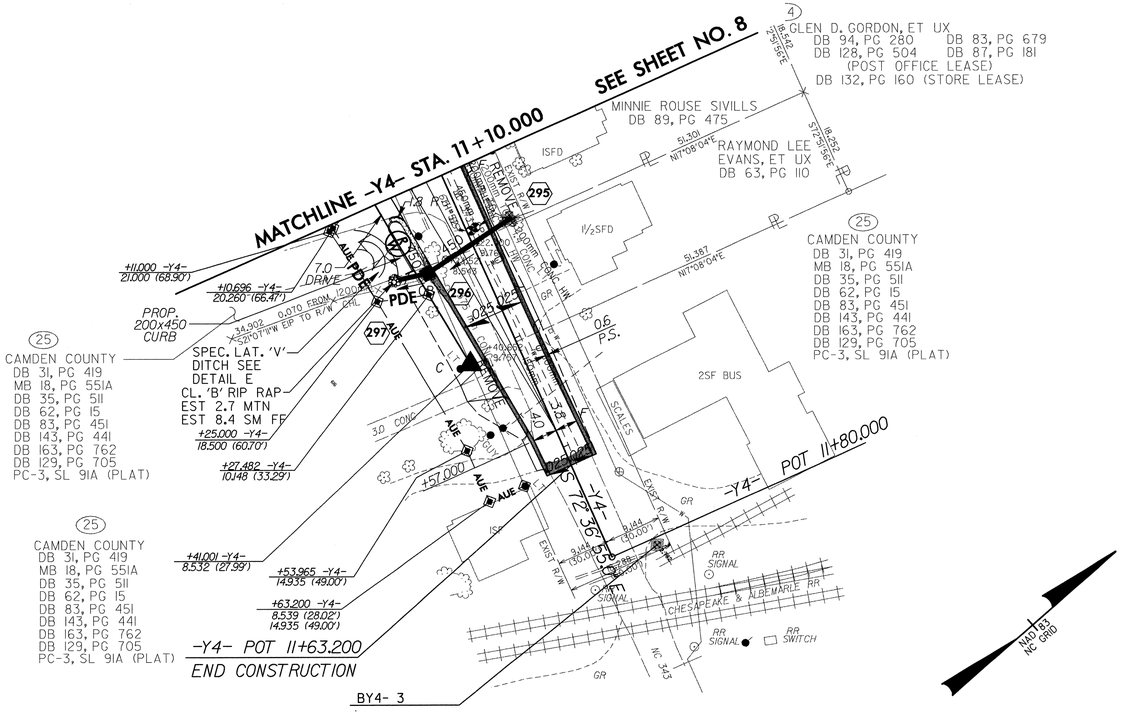
-Y3- 10+20 to 10+36 (RT.)

DETAIL E
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

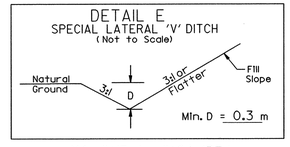


-Y3- 10+17 to 10+20 (RT.)





DETAIL E
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



-Y4- 11+13 to 11+23 (RT.)

NOTES:
1. ALL RESIDENTIAL DRIVEWAY RADII ARE 1.5m UNLESS OTHERWISE NOTED.
2. COMMERCIAL DRIVEWAY RADII ARE AS SHOWN ON PLANS.
3. ALL CHANNELIZATION CURBING IS 200 x 450.

125mm MONOLITHIC CONCRETE ISLAND, 750mm CONCRETE CURB AND GUTTER, REINFORCED CONCRETE BOX CULVERT

NOTE: ALL DRIVES ARE 6.0 METERS UNLESS OTHERWISE DENOTED

SEE SHEET NO. 27 FOR -Y3- GRADE AND PROFILE.
SEE SHEET NO. 27 FOR -Y4- GRADE AND PROFILE.
SEE SHEET NO. 2-H FOR -Y3- & -Y4- INTERSECTION DETAIL.

6/10/09

10/07/2010 10:02:00 AM
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6/03/09

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METRIC

5 0 10

CONST.REV.

R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	19

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 21106 ENGINEER BOB A. MAY
10/7/10

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18442 ENGINEER RICHARD ALLEN BOLLINGER
10/7/10

BM#60 EL. 3.073
30" REBAR & CAP STAMPED R-2414B BM#60
50.402m RT. -L- STA. 46+94.269

(R-2414A)
PI = 45+00.000
EL = 3.330
L = 60.000
K = 175
DS = 100 KM/H

-L- STA 45+68.873 (R-2414A) L.B. =
-L- STA 45+68.873 (R-2414B) L.A.
EL 3.123
BEGIN GRADE

PROP. GRADE LINE

(-)0.3000%

EXIST. GROUND LINE

PI = 47+30.000
EL = 2.640
L = 50.000
K = 143
DS = 120 KM/H

-Y- STA. 10+00.000

VPC 47+05.000 EL 2.715

(-)0.3000%

VPC 47+67.000 EL 2.399

(-)0.6500%

VPT 47+55.000 EL 2.477

(-)0.6500%

PI = 47+90.000
EL = 2.250
L = 46.000
K = 30
DS = 80 KM/H

VPT /VPC 48+13.000
EL 2.443

PI = 48+40.000
EL = 2.670
L = 54.000
K = 100
DS = 100 KM/H

(+)0.8400%

(+)0.8400%

SEE SHEET NO. 4 FOR -L- PLAN.

45+00 46+00 47+00 48+00 48+40

4 2 0

BM#60 EL. 3.073
30" REBAR & CAP STAMPED R-2414B BM#60
50.402m RT. -L- STA. 46+94.269

-Y1- STA. 10+00.000

-Y2- STA. 11+14.842

PI = 48+40.000
EL = 2.670
L = 54.000
K = 100
DS = 100 KM/H

(+)0.3000%

PROP. GRADE LINE

(+)0.3000%

VPT 48+67.000 EL 2.751

EXIST. GROUND LINE

VPC 51+92.624 EL 3.608

(+)0.2000%

STA 51+26.000 EL 1.618
BEGIN 0.6m LAT. BASE DITCH RT.

0.6m LAT. BASE DITCH RT.

PI = 51+92.624
EL = 3.728
L = 80.000
K = 64
DS = 100 KM/H

(+)0.3000%

STA 51+85.000 EL 1.500
END 0.6m LAT. BASE DITCH RT.

SEE SHEET NO. 5 FOR -L- PLAN.

48+40 49+00 50+00 51+00 52+00

4 2 0

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10/7/2010

BM#61 EL. 1.840
30" REBAR & CAP STAMPED R-2414B BM#61
110.057m RT. -L- STA. 55+20.909

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METRIC

5 0 10

CONST.REV.

R/W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	20

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY
12/7/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD
12/7/10

PI = 51+92.624
EL = 3.728
L = 80.000
K = 64
DS = 100 KM/H

-RR#1- 10+57.969

PI = 52+44.265
EL = 3.238

PI = 52+46.689
EL = 3.215

VPT 52+32.624 EL 3.348

VPC 52+52.000 EL 3.165

PI = 52+75.000
EL = 2.946
L = 46.000
K = 71
DS = 120 KM/H

VPT/VPC 52+98.000 EL 2.817

PI = 53+22.000
EL = 2.805
L = 48.000
K = 67
DS = 100 KM/H

VPT/APC 53+46.000 EL 2.556

PI = 53+70.000
EL = 2.317
L = 48.000
K = 36
DS = 80 KM/H

PROP. GRADE LINE

VPT 53+94.000 EL 2.369

VPC 54+00.000 EL 2.407

PI = 54+35.000
EL = 2.512
L = 70.000
K = 82
DS = 100 KM/H

VPT 54+70.000 EL 2.318

VPC 54+95.000 EL 2.179

PI = 55+25.000
EL = 2.013
L = 60.000
K = 61
DS = 110 KM/H

VPT 55+55.000
EL 2.140

(-)0.488%
(-)0.488%
(-)0.300%
(-)0.300%
(-)1.017%
(-)1.017%
(+)0.300%
(+)0.300%
(-)0.554%
(-)0.554%
(+)0.424%
(-)0.274%

EXIST. GROUND LINE

LAT. V DITCH RT.

(-)1.000%

STA 54+52.000 EL 0.950
END LAT. V DITCH RT.

STA 54+67.000 EL 0.748
BEGIN LAT. V DITCH RT.

STA 54+67.000 EL 1.000
BEGIN LAT. V DITCH RT.

STA 55+32.000 EL 0.240
END LAT. V DITCH RT.

SEE SHEET NO. 6 FOR -L- PLAN.

52+00 53+00 54+00 55+00 55+60

4 2 0

BM#61 EL. 1.840
30" REBAR & CAP STAMPED R-2414B BM#61
110.057m RT. -L- STA. 55+20.909

FOR CULVERT DESIGN
Alternate Rec.
NORTH CAROLINA PROFESSIONAL SEAL 22587 ENGINEER RANDALL A. BOYD
12/7/10

Note
Alternate Recommendation based on Energy Analysis
Office Review Only!!
12/7/10

PI = 56+70.000
EL = 2.628
L = 60.000
K = 83
DS = 110 KM/H

PI = 57+25.000
EL = 2.463
L = 50.000
K = 79
DS = 130 KM/H

VPT/APC 57+00.000 EL 2.536

VPT 57+50.000 EL 2.546

PROP. GRADE LINE

(+)0.424%
(-)0.300%
(-)0.300%
(+)0.335%
(-)0.304%
0.000%
(+)0.10%

EXIST. GROUND LINE

1 @ 4.67m x 1.96 m
ALUM. BOX CULV.

VPC 56+40.000
EL 2.50

STA 57+24.000 EL 0.75
BEGIN LAT. V DITCH RT.

LAT. V DITCH RT.

STA 57+41.000 EL 0.68
END LAT. V DITCH RT.

STA 57+52.00 EL 0.408
BEGIN 2.4m LAT. BASE DITCH RT.

STA 57+80.000 EL 0.408

2.4m LAT. BASE DITCH RT.

STA 58+25.000 EL 0.453
END 2.4m LAT. BASE DITCH RT.

SEE SHEET NO. 7 FOR -L- PLAN.

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	=	11.7	CMS
DESIGN FREQUENCY	=	50	YRS
DESIGN HW ELEVATION	=	1.58	M
BASE DISCHARGE	=	14.9	CMS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	2.01	M
OVERTOPPING DISCHARGE	=	16.2	CMS
OVERTOPPING FREQUENCY	=	100 (+)	YRS
OVERTOPPING ELEVATION	=	2.232	M

55+60 56+00 57+00 58+00 59+00

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P:\R-2414B Hickory (Prel)\2414b_rdy_pat20.dgn
12/7/2010

6/09/99

BM#62 EL. 3.122
30" REBAR & CAP STAMPED R-2414B BM#62
47.325m LT. -L- STA. 61+43.387

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METRIC

5 0 10

CONST.REV.

R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	21

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY
10/7/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD
10-7-10

PI = 62+00.000
EL = 4.035
L = 100.000
K = 158
DS = 130 KM/H

-Y3- STA 61+69.785
-Y4- STA 10+00.000

PROP GRADE LINE
EXIST GROUND LINE
(+)0.3315%
(+)0.3000%
(-)0.3000%
LAT. 'V' DITCH LT.

STA 59+98.000 EL 1.663
BEGIN LAT. 'V' DITCH LT.

STA 60+92.000 EL 1.825
END LAT. 'V' DITCH LT.

VPC 61+50.000 EL 3.872

VPT 62+50.000 EL 3.887

SEE SHEET NO. 8 FOR -L- PLAN.

59+00 60+00 61+00 62+00 62+60

4 2 0

BM#62 EL. 3.122
30" REBAR & CAP STAMPED R-2414B BM#62
47.325m LT. -L- STA. 61+43.387

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18442 ENGINEER JOHN C. BOLLINGER
10/7/10

STA 62+75.000 EL 1.313
BEGIN LAT. 'V' DITCH RT.

STA 62+84.000 EL 1.300
BEGIN LAT. 'V' DITCH LT.

STA 62+88.000 EL 1.274
END LAT. 'V' DITCH RT.

STA 63+50.000 EL 2.000
END LAT. 'V' DITCH LT.

(+)0.3000%
(+)0.0606%
(-)0.300%
LAT. 'V' DITCH RT. 600 RGT
LAT. 'V' DITCH LT.

PIPE HYDRAULIC DATA

DRAINAGE AREA	=	6.25	HA
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	0.59	CMS
DESIGN HW ELEVATION	=	1.972	M
100 YR DISCHARGE	=	0.69	CMS
100 YR HW ELEVATION	=	2.201	M
OVERTOPPING FREQUENCY	=	>500(+)	YRS
OVERTOPPING DISCHARGE	=	1.01	CMS
OVERTOPPING ELEVATION	=	3.190	M

PROP GRADE LINE
(-)0.3000%
(-)0.300%
EXIST GROUND LINE
LAT. 'V' DITCH RT.

STA 64+94.000 EL 1.816
BEGIN LAT. 'V' DITCH RT.

STA 65+73.000 EL 1.579
END LAT. 'V' DITCH RT.

SEE SHEET NO. 9 FOR -L- PLAN.

62+60 63+00 64+00 65+00 66+00 66+20

4 2 0

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10/7/2010

6/09/09

BM#63 EL. 2.102
30" REBAR & CAP STAMPED R-2414B BM#63
40.383m RT. -L- STA. 69+90.531

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METRIC

5 0 10

CONST.REV.

R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	22

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 24780 ENGINEER BOB A MAY
10/7/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18943 ENGINEER LEON BOLLINGER
10/7/10

PI = 67+30.000
EL = 2.500
L = 70.000
K = 117
DS = 130 KM/H

VPC 66+95.000 EL 2.552

PROP GRADE LINE

EXIST GROUND LINE

(-)0.3000%

STA 67+23.000 EL 1.490
BEGIN LAT. 'V' DITCH RT.

(-)2.7222%

STA 67+41.000 EL 1.000
END LAT. 'V' DITCH RT.
LAT. 'V' DITCH RT.

(+)0.3000%

VPT/VPC 67+65.000 EL 2.552

PI = 68+00.000
EL = 2.657
L = 70.000
K = 104
DS = 120 KM/H

(+)0.3000%

STA 67+80.000 EL 1.000
BEGIN LAT. 'V' DITCH RT.

(-)0.3750%

LAT. 'V' DITCH RT.

VPC/VPT 68+35.000 EL 2.526

PI = 68+80.000
EL = 2.3575
L = 90.000
K = 133
DS = 130 KM/H

(+)0.350%

(-)0.3750%

STA 68+60.000 EL 1.280
END LAT. 'V' DITCH RT.

(-)0.3666%

VPT/VPC 69+25.000
EL. 2.493

PI = 69+80.000
EL = 2.658
L = 110.000
K = 169
DS = 130 KM/H

(+)0.3000%

SEE SHEET NO. 10 FOR -L- PLAN.

66+20 67+00 68+00 69+00 69+80

4 2 0

PI = 69+80.000
EL = 2.658
L = 110.000
K = 169
DS = 120 KM/H

(-)0.3500%

VPT 70+35.000 EL 2.465

VPC 70+86.000 EL 2.286

PI = 71+11.000
EL = 2.199
L = 50.000
K = 77
DS = 130 KM/H

(-)0.3500%

VPT 71+36.000 EL 2.274

(+)0.3000%

STA 71+65.000 EL 0.865
BEGIN LAT. 'V' DITCH LT.

VPC 71+84.000 EL 2.418

(+)0.3000%

LAT. 'V' DITCH LT.

(-)0.3222%

STA 72+10.000 EL 0.720
END LAT. 'V' DITCH LT.

PI = 72+14.000
EL = 2.508
L = 60.000
K = 100
DS = 120 KM/H

STA 72+25.000 EL 0.477
BEGIN 12m LAT. BASE DITCH RT.

(-)0.3000%

VPT 72+44.000 EL 2.418

PROP GRADE LINE

(-)0.5057%

STA 72+60.000 EL 0.300
END 12m LAT. BASE DITCH RT.

LAT. BASE DITCH RT.

EXIST GROUND LINE

SEE SHEET NO. 11 FOR -L- PLAN.

69+80 70+00 71+00 72+00 73+00 73+40

4 2 0

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10/7/2010

6/09/98

BM#64 EL. 1.761
30" REBAR & CAP STAMPED R-2414B BM#64
53.728m LT. -L- STA. 78+66.753

Note: Alternate Recommendation based on Ease of Construction Area of Concern Office Review Only!!

RAB 12/7/10

FOR CULVERT DESIGN
Alternate Rec.
NORTH CAROLINA PROFESSIONAL SEAL 23980 ENGINEER RANDALL A. BOYD
12/7/10

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Liscense No. C-1628

METRIC
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CONST.REV.

R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	23

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 27116 ENGINEER ROB A. MAY
12/7/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. PRID
12/7/10

PROP. GRADE LINE
EXIST. GROUND LINE
1 @ 5.66m X 1.63m ALUM. BOX CULV.

VPC 74+13.000 EL 1.911
PI = 74+38.000
EL = 1.836
L = 50.000
K = 83
DS = 130 KM/H
VPT/VPC 74+63.000 EL 1.911
PI = 74+93.000
EL = 2.001
L = 60.000
K = 100
DS = 120 KM/H
VPC 75+24.000 EL 1.908
PI = 75+70.000
EL = 1.770
L = 92.000
K = 153
DS = 130 KM/H
VPT/VPC 76+16.000 EL 1.908
PI = 76+40.000
EL = 1.980
L = 48.000
K = 78
DS = 110 KM/H
VPT/VPC 76+164.000 EL 1.904
PI = 76+87.000
EL = 1.832
L = 46.000
K = 63
DS = 120 KM/H

(-)0.3000% (+)0.3000% (-)0.3000% (+)0.3000% (-)0.3000% (+)0.3000% (-)0.3150% (-)0.3150% (+)0.4105%
(+)0.1677%

STA. 74+40.000 EL 0.500 BEGIN LAT. 'V' DITCH RT.
LAT. 'V' DITCH RT.
STA. 75+23.000 EL 1.911
STA. 75+70.000 EL 0.728 END LAT. 'V' DITCH RT.

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	=	12.5	CMS
DESIGN FREQUENCY	=	50	YRS
DESIGN HW ELEVATION	=	1.27	M
BASE DISCHARGE	=	16.0	CMS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	1.55	M
OVERTOPPING DISCHARGE	=	18.3	CMS
OVERTOPPING FREQUENCY	=	100 (+)	YRS
OVERTOPPING ELEVATION	=	1.820	M

SEE SHEET NO. 12 FOR -L- PLAN.

73+40 74+00 75+00 76+00 77+00

4 2 0

BM#64 EL. 1.761
30" REBAR & CAP STAMPED R-2414B BM#64
53.728m LT. -L- STA. 78+66.753

VPT/VPC 77+10.000 EL 1.926
PI = 77+35.000
EL = 2.029
L = 50.000
K = 452
DS = 130 KM/H
VPT 77+60.000 EL 2.104
PI = 78+94.167
EL = 2.506
L = 48.000
K = 80
DS = 110 KM/H
VPC 78+70.167 EL 2.434
VPT 79+18.167 EL 2.434
VPC 79+20.000 EL 2.429
PI = 79+50.000
EL = 2.339
L = 60.000
K = 100
DS = 130 KM/H
VPT 79+80.000 EL 2.429
VPC 79+85.000 EL 2.444
PI = 80+10.000
EL = 2.519
L = 50.000
K = 83
DS = 110 KM/H
VPT/VPC 80+35.000 EL 2.444
PI = 80+60.000
EL = 2.369
L = 50.000
K = 83
DS = 130 KM/H

(+)0.4105% (+)0.3000% (+)0.3000% (-)0.3000% (-)0.3000% (+)0.3000% (+)0.3000% (-)0.3000% (-)0.3000%

PROP. GRADE LINE
EXIST. GROUND LINE

SEE SHEET NO. 13 FOR -L- PLAN.

77+00 78+00 79+00 80+00 80+60

4 2 0

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R/W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	24

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 018421 ENGINEER BOB A MAY
10/7/10

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18421 ENGINEER RICHARD DAMON BOLLINGER
10/7/10

BM#65 EL. 1.374
30" REBAR & CAP STAMPED R-2414B BM#65
67.625m LT. -L- STA. 87+53.831

PI = 80+60.000
EL = 2.369
L = 50.000
K = 83
DS = 130 KM/H

VPT/VPC 80+85.000 EL 2.444

PI = 81+70.000
EL = 2.699
L = 170.000
K = 283
DS = 130 KM/H

VPT 82+55.000 EL 2.444

PI = 83+71.500
EL = 2.094
L = 60.000
K = 100
DS = 130 KM/H

VPC 83+41.500 EL 2.184

VPT 84+01.500 EL 2.184

VPC 84+10.000 EL 2.220

PROP GRADE LINE

EXIST GROUND LINE

(+)0.3000%

(-)0.3000%

(+)2.700%

(+)0.321%

STA. 80+60.000 EL. 1.150
BEGIN LAT. 'V' DITCH RT.

LAT. 'V' DITCH RT.

STA. 81+37.000 EL. 0.920

LAT. 'V' DITCH RT.

STA. 81+57.000 EL. 1.460
END LAT. 'V' DITCH RT.

STA. 82+17.000 EL. 0.175
BEGIN LAT. 'V' DITCH LT.

LAT. 'V' DITCH LT.

STA. 82+70.000 EL. 0.240
BEGIN LAT. 'V' DITCH LT.

SEE SHEET NO. 14 FOR -L- PLAN.

80+60 81+00 82+00 83+00 84+00 84+20

BM#65 EL. 1.374
30" REBAR & CAP STAMPED R-2414B BM#65
67.625m LT. -L- STA. 87+53.831

PI = 84+60.000
EL = 2.360
L = 100.000
K = 117
DS = 120 KM/H

PROP GRADE LINE

VPC 85+25.000 EL 1.998

PI = 85+50.000
EL = 1.859
L = 50.000
K = 58
DS = 110 KM/H

VPT/VPC 85+75.000 EL 1.934

PI = 86+00.000
EL = 2.009
L = 50.000
K = 83
DS = 110 KM/H

VPC 86+35.000 EL 1.974

VPT 86+85.000 EL 1.990

-VT- STA. 11+13.669

PI = 87+30.000
EL = 2.281
L = 46.000
K = 40
DS = 90 KM/H

VPC 87+45.000 EL 2.246

PI = 87+80.000
EL = 2.031
L = 46.000
K = 58
DS = 110 KM/H

EXIST GROUND LINE

(+)0.3000%

(-)0.5565%

(+)0.3000%

(-)0.3000%

(+)0.6450%

(-)0.5000%

(-)0.5000%

PI = 86+60.000
EL = 1.829
L = 50.000
K = 53
DS = 100 KM/H

VPT 85+10.000 EL 2.082

VPT 86+25.000 EL 1.934

VPT 87+07.000 EL 2.138

VPT 87+53.000 EL 2.166

SEE SHEET NO. 15 FOR -L- PLAN.

84+20 85+00 86+00 87+00 87+80

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BM#65 EL. 1.374
30" REBAR & CAP STAMPED R-2414B BM#65
67.625m LT. -L- STA. 87+53.831

CULVERT HYDRAULIC DATA			
DESIGN DISCHARGE	=	8.18	CMS
DESIGN FREQUENCY	=	50	YRS
DESIGN HW ELEVATION	=	1.28	M
BASE DISCHARGE	=	10.5	CMS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	1.53	M
OVERTOPPING DISCHARGE	=	12.7	CMS
OVERTOPPING FREQUENCY	=	200(+-)	YRS
OVERTOPPING ELEVATION	=	1.77	M

PI = 87+80.000
EL = 2.031
L = 46.000
K = 58
DS = 110 KM/H

VPT 88+03.000 EL 2.100

PI = 88+90.965
EL = 2.364
L = 100.000
K = 167
DS = 130 KM/H

VPT 89+40.965 EL 2.214

PI = 90+60.000
EL = 1.852
L = 74.000
K = 73
DS = 130 KM/H

(+)0.3000%
(-)0.3024%
(+)0.7093%
(-)0.3000%
(+)0.3000%

STA 88+25.000 EL 0.592
BEGIN LAT. 'V' DITCH RT.

VPC 88+40.965 EL 2.214

LAT. 'V' DITCH RT.

STA 88+89.000 EL 0.400
END LAT. 'V' DITCH RT.

1 @ 4.98m x 1.80m
ALUM. BOX CULV.

STA 89+35.000 EL 0.240
BEGIN .06 LAT. BASE DITCH RT.

.06 LAT. BASE DITCH RT.

STA 89+80.000 EL 0.375
END .06 LAT. BASE DITCH RT.

VPC 90+23.000 EL 1.964

SEE SHEET NO. 16 FOR -L- PLAN.

87+80 88+00 89+00 90+00 90+80

BM#65 EL. 1.374
30" REBAR & CAP STAMPED R-2414B BM#65
67.625m LT. -L- STA. 87+53.831

PIPE HYDRAULIC DATA			
DRAINAGE AREA	=	0.28	HA
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	0.09	CMS
DESIGN HW ELEVATION	=	1.842	M
100 YR DISCHARGE	=	0.10	CMS
100 YR HW ELEVATION	=	1.856	M
OVERTOPPING FREQUENCY	=	>500(+)	YRS
OVERTOPPING DISCHARGE	=	0.50	CMS
OVERTOPPING ELEVATION	=	2.802	M

-Y8- STA. 12+36.993

VPT 90+97.000 EL 2.115

VPC 91+92.500 EL 2.792

-RP#2- 10+48.857 EL 2.882

VPT/VPC 92+37.500

450 RCP

PI = 92+15.000
EL = 2.952
L = 45.000
K = 44
DS = 90 KM/H

PI = 92+60.000
EL = 2.812
L = 45.000
K = 73
DS = 130 KM/H

VPT 92+82.500 EL 2.880

PI = 93+20.000
EL = 2.995
L = 70.000
K = 116
DS = 120 KM/H

VPT 93+55.000 EL 2.889

PROP GRADE LINE

STA 93+80.000 EL 1.400
END SPECIAL LAT. 'V' DITCH LT.

PINC 93+80.000
EL 2.865

(+)0.7093%
(-)0.3100%
(+)0.3040%
(-)0.3000%
(-)0.3763%
(-)0.2625%
(-)1.0900%

(-)0.3313%

2.0 LAT. BASE DITCH LT.

450 RCP

EXIST GROUND LINE

SPECIAL LAT. 'V' DITCH LT.

-L- STA 93+90.719
EL 2.697
END GRADE
(TAPER TO EXIST.)

PIPE HYDRAULIC DATA			
DRAINAGE AREA	=	1.98	HA
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	0.31	CMS
DESIGN HW ELEVATION	=	1.805	M
100 YR DISCHARGE	=	0.34	CMS
100 YR HW ELEVATION	=	1.958	M
OVERTOPPING FREQUENCY	=	>500	YRS
OVERTOPPING DISCHARGE	=	0.50	CMS
OVERTOPPING ELEVATION	=	2.926	M

STA. 91+60.000 EL 1.164
BEGIN 2.0 LAT. BASE DITCH LT.

STA. 92+40.000 EL 0.899
END 2.0 LAT. BASE DITCH LT.

VPC 92+85.000 EL 2.898

STA 93+00.000 EL 1.701
BEGIN SPECIAL LAT. 'V' DITCH LT.

STA 93+00.000 EL 1.540
BEGIN SPECIAL LAT. 'V' DITCH RT.

SPECIAL LAT. 'V' DITCH RT.

STA 93+60.000 LT. EL 1.164

STA 93+60.000 EL 1.420
END SPECIAL LAT. 'V' DITCH RT.

SEE SHEET NO. 17 FOR -L- PLAN.

90+80 91+00 92+00 93+00 94+00

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R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	25

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER ROB A. MAY 4/11/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD 12/7/10

FOR CULVERT DESIGN
Alternate Rec.
NORTH CAROLINA PROFESSIONAL SEAL 22587 ENGINEER RANDALL A. BOYD 12/7/10

Note: Alternate Recommendation based on Engineering Office Review

RAB 12/7/10

On 4/1!

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R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	26

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18442 ENGINEER BOB A. MAY
10/7/10

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18442 ENGINEER RICHARD DAMON BOLLINGER
10/07/10

BM#60 EL. 3.073
30" REBAR & CAP STAMPED R-2414B BM#60
50.402m RT. -L- STA. 46+94.269

-L- STA 47+73.037 =
-Y- STA 10+00.000
EL 2.366

EOP 10+09.600
EL 2.854

PI = 10+25.000
EL = 2.808 m
VC = 20 m
K = 4

PI = 10+45.000
EL = 2.095 m
VC = 20 m
K = 6

VPT /VPC 10+35.000 EL 2.459

PROP GRADE LINE

VPT 10+55.000 EL 2.075

VPC 10+81.000
EL 2.024

PI = 11+01.000
EL = 1.985 m
VC = 40 m
K = 102

VPT 11+21.000
EL 2.024

END GRADE
-Y- STA 11+25.000
EL = 2.032

+1.0000%

-1.5650%

SPECIAL CUT DITCH RT.

EXIST GROUND LINE

+0.1956%

-0.1964%

(+)0.3000%

(+)0.2667%

(-)2.2400%

(+)2.2381%

PC 10+15.000 EL 2.708

STA 10+19.000 EL 1.226
BEGIN LAT. 'V' DITCH LT.

STA 10+49.000 EL 1.092

LAT. 'V' DITCH LT.

STA 10+50.000 EL 1.472
END LAT. 'V' DITCH LT.
BEGIN SPECIAL CUT DITCH LT.

STA 10+55.000 EL 0.848
BEGIN SPECIAL CUT DITCH RT.

STA 11+00.000 EL 0.968
END SPECIAL CUT DITCH RT.

SPECIAL CUT DITCH LT.

STA 11+20.000 EL 1.682
END SPECIAL CUT DITCH

-Y-

SEE SHEET NO. 4 FOR -Y- PLAN.

BM#60 EL. 3.073
30" REBAR & CAP STAMPED R-2414B BM#60
50.402m RT. -L- STA. 46+94.269

-L- STA 50+30.377 =
-Y1- STA 10+00.000
EL 3.241

EOP 10+09.644
EL 3.108

PROP GRADE LINE

SPECIAL CUT DITCH RT.

VPC 10+37.000
EL = 3.032

PI = 10+57.000
EL = 2.976 m
VC = 40 m
K = 107

VPC 10+77.000
EL = 2.895

EXIST GROUND LINE

END GRADE
-Y1- STA 11+05.780
EL = 3.022

-1.3797%

-0.2787%

+0.0943%

(+)0.3000%

(+)0.3000%

SPECIAL CUT DITCH LT.

STA 10+60.000 EL 2.954
BEGIN SPECIAL CUT DITCH RT.

STA 10+60.000 EL 2.135
BEGIN SPECIAL CUT DITCH LT.

STA 11+00.000 EL 2.384
END SPECIAL CUT DITCH RT.

STA 11+00.000 EL 2.265
END SPECIAL CUT DITCH LT.

-Y1-

SEE SHEET NO. 5 FOR -Y1- PLAN.

BM#61 EL. 1.840
30" REBAR & CAP STAMPED R-2414B BM#61
110.057m RT. -L- STA. 55+20.909

-Y2- VPC 10+12.000
EL 2.439
BEGIN GRADE

PROP GRADE LINE

PI = 10+40.000
EL = 1.944
L = 56.000
K = 21

VPT /VPC 10+68.000
EL 2.205

PI = 10+85.000
EL = 2.364
L = 34.000
K = 9

VPT 11+02.000 EL 3.035

(+)2.5018%

(+)4.5378%

(-)1.7679%

(+)0.9333%

(+)0.7500%

45° ROP

EXIST GROUND LINE

LAT. 'V' DITCH RT.

STA 10+40.000 EL 1.200
BEGIN LAT. 'V' DITCH RT.

STA 10+80.000 EL 1.500
END LAT. 'V' DITCH RT.

EOP 11+05.252
EL 3.282

-Y2- STA 11+14.842 =
-L- STA 51+24.328
EL 3.523

-Y2-

SEE SHEET NO. 5 FOR -Y2- PLAN.

PIPE HYDRAULIC DATA

DRAINAGE AREA	=	1.49	HA
DESIGN FREQUENCY	=	25	YRS
DESIGN DISCHARGE	=	0.22	CMS
DESIGN HW ELEVATION	=	1.435	M
100 YR DISCHARGE	=	0.25	CMS
100 YR HW ELEVATION	=	1.511	M
OVERTOPPING FREQUENCY	=	>500	YRS
OVERTOPPING DISCHARGE	=	0.39	CMS
OVERTOPPING ELEVATION	=	1.89	M

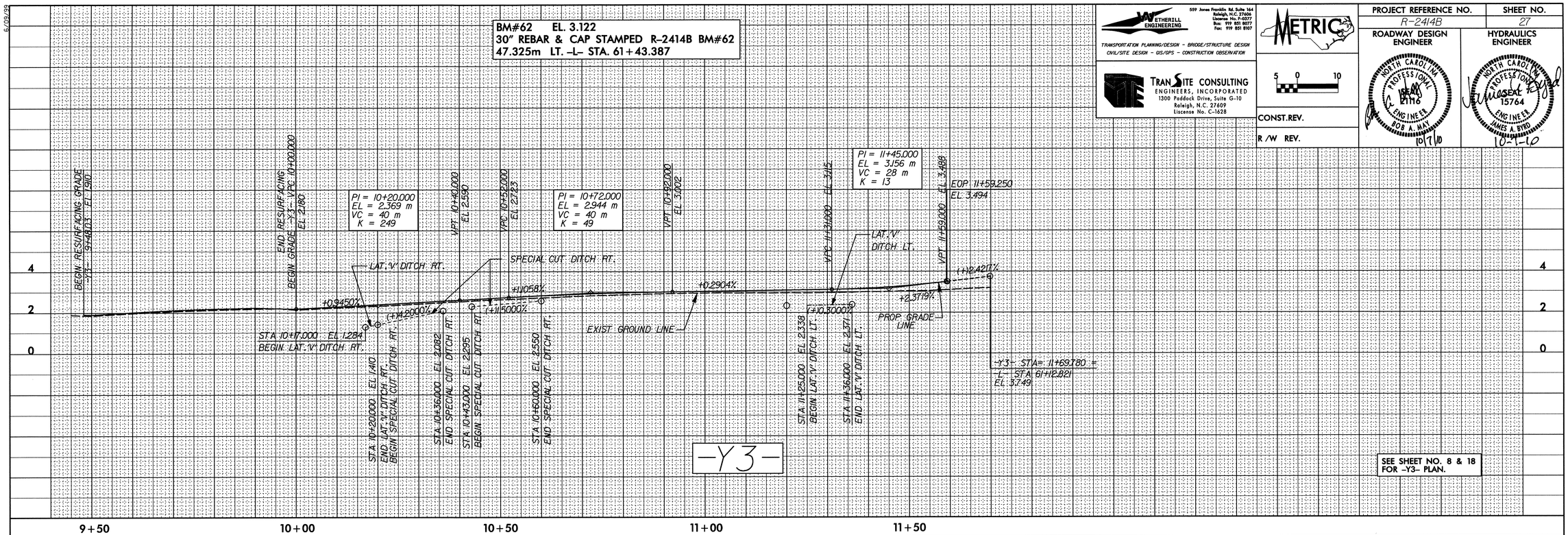
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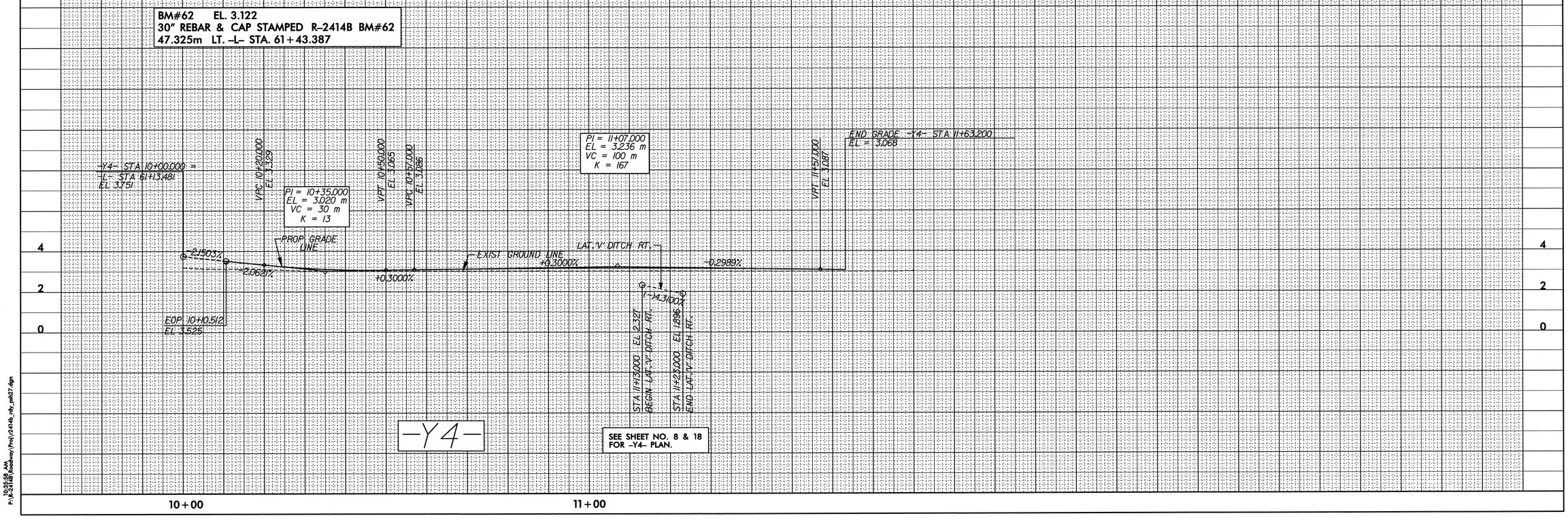
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SEE SHEET NO. 8 & 18 FOR -Y3- PLAN.



SEE SHEET NO. 8 & 18 FOR -Y4- PLAN.

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R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	27

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 031116 ENGINEER BOB A. MAY
10/7/10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD
10-1-10

10-06-06 ahh
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5 0 10

CONST.REV.

R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	28

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 21116 ENGINEER BOB A. MAY 10/7/10

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19442 ENGINEER RICHARD KEITH BOLLINGER JR. 10/07/10

BM#65 EL. 1.374
30" REBAR & CAP STAMPED R-2414B BM#65
67.625m LT. -L- STA. 87+53.831

-Y7- STA. 10+10.000
BEGIN GRADE
EL. = 1.353

EXIST. GROUND LINE

PI = 10+59.000
EL = 1.565 m
VC = 40 m
K = 16

VPC 10+39.000 EL. 1.481

+0.4204%

(+)0.3000%

STA. 10+20.000 EL. 0.174
BEGIN LAT. VAR. WIDTH
BASE DITCH RT.

LAT. VAR. WIDTH
BASE DITCH RT.

STA. 10+60.000 EL. 0.294
END LAT. VAR. WIDTH
BASE DITCH RT.

+2.9781%

VPT 10+79.000 EL. 2.161

VPC 10+80.000 EL. 2.190

PI = 10+91.000
EL = 2.518 m
VC = 22 m
K = 6

-Y7- STA. 11+13.670 =
-L- STA. 87+21.930
EL. 2.201

-0.5891%

EOP = 11+04.070
EL. = 2.441

VPT 11+02.000 EL. 2.463

-2.5000%

-2.5000%

EOF = 11+23.270
EL. = 1.960

VPC 11+32.000 EL. 1.867

PI = 11+45.000
EL = 1.730 m
VC = 26 m
K = 11

PROP. GRADE LINE

-1.0584%

VPT 11+58.000 EL. 1.893

VPC 11+65.000 EL. 1.981

PI = 11+80.000
EL = 2.169 m
VC = 30 m
K = 48

+1.2543%

VPT 11+95.000 EL. 2.264

+0.6350%

END GRADE -Y7- STA. 12+00.000
EL. = 2.296

EXIST. GROUND LINE

-Y7-

SEE SHEET NO. 15 FOR -Y7- PLAN.

10+00 11+00 12+00

4 2 0

BM#65 EL. 1.374
30" REBAR & CAP STAMPED R-2414B BM#65
67.625m LT. -L- STA. 87+53.831

-Y8- STA. 11+00.000
EL. 2.629
BEGIN GRADE

EXIST. GROUND LINE

(+)0.3000%

PROP. GRADE LINE

(+)0.3000%

PI = 12+15.000
EL = 2.974
L = 20.000
K = 7

(-)2.7764%

EOP 12+27.390
EL. 2.630

VPT 12+25.000 EL. 2.669

VPC 12+05.000 EL. 2.944

-Y8- STA. 12+36.990 =
-L- STA. 91+15.523
EL. 2.246

-1.4000%

-Y8-

SEE SHEET NO. 17 FOR -Y8- PLAN.

10+00 11+00 12+00

4 2 0

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