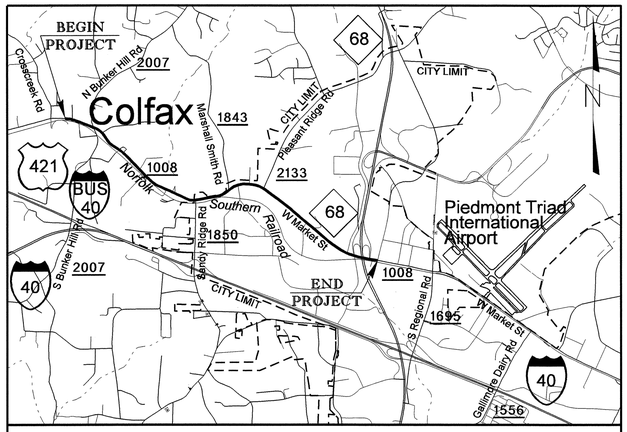
09/08/99

TIP PROJECT: R-2611

CONTRACT: C202648

See Sheet 1-A For Index of Sheets



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2611	1	

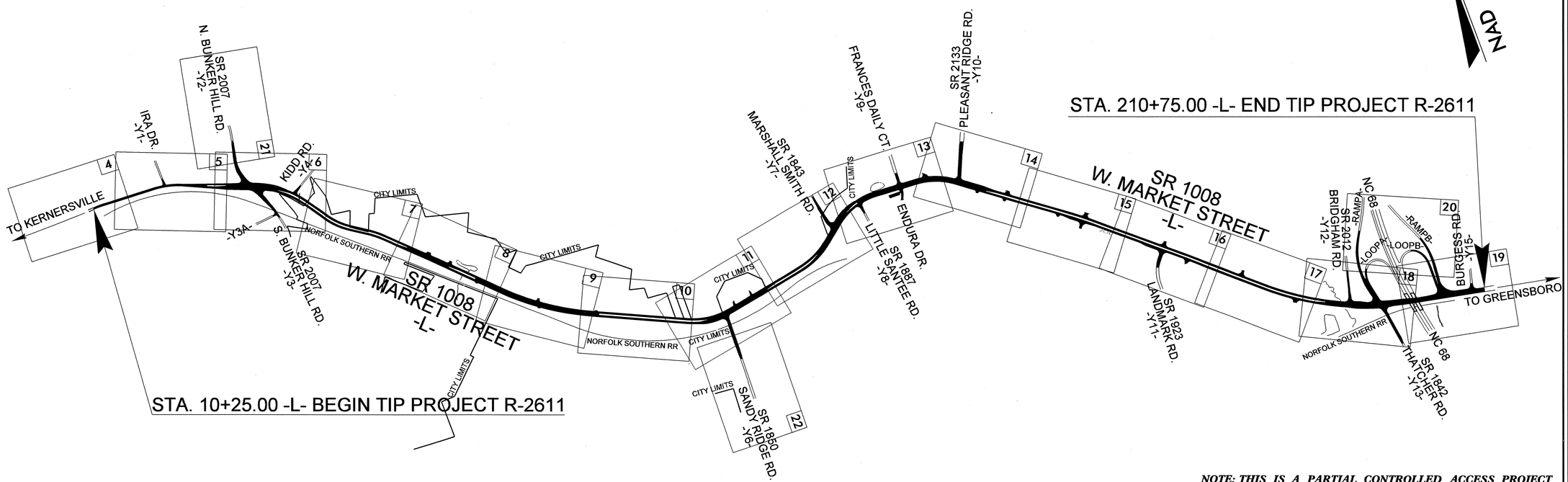
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34482.1.1	STP-1008(9)	PE
34482.2.2	STPDA-1008(19)	R/W & UTIL
34482.3.1	STPDA-1008(22)	CONST

GUILFORD COUNTY

LOCATION: SR 1008 (WEST MARKET STREET) FROM WEST OF SR 2007 (BUNKER HILL RD.) AT COLFAX TO NC 68 IN GREENSBORO

TYPE OF WORK: GRADING, DRAINAGE, PAVING, CULVERT, RETAINING WALLS, AND SIGNALS

NAD 83/95



NOTE: THIS IS A PARTIAL CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO THE INTERCHANGE

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2011 = 24,000
ADT 2030 = 29,500
DHV = 9 %
D = 55 %
T = 6 % *
V = 50 MPH
* TTST 2% DUAL 4%
SUB-REGIONAL TIER
RURAL MAJOR COLLECTOR

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2611 = 3.797 MILES
TOTAL LENGTH TIP PROJECT R-2611 = 3.797 MILES

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
NOVEMBER 21, 2008

LETTING DATE:
AUGUST 16, 2011

G. E. BREW, PE
PROJECT ENGINEER

WAYNE BEST
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 16600 ENGINEER RANDALL C. HENEGAR
SIGNATURE: R C Henegar 6-27-11

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW
6-24-11
SIGNATURE: Gregory E. Brew

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

24-JUN-2011 16:19
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See Sheet 1-A For Index of Sheets

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2611	1	

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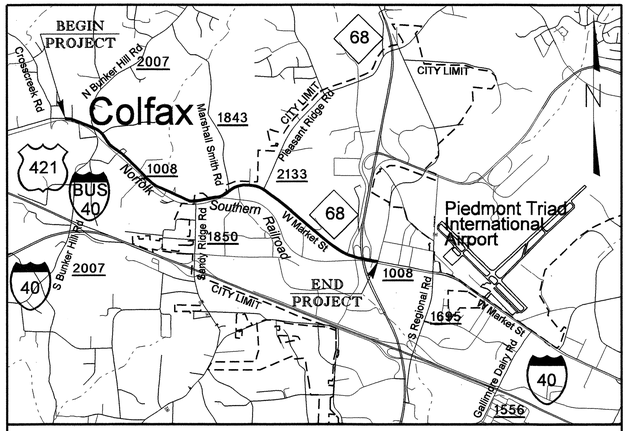
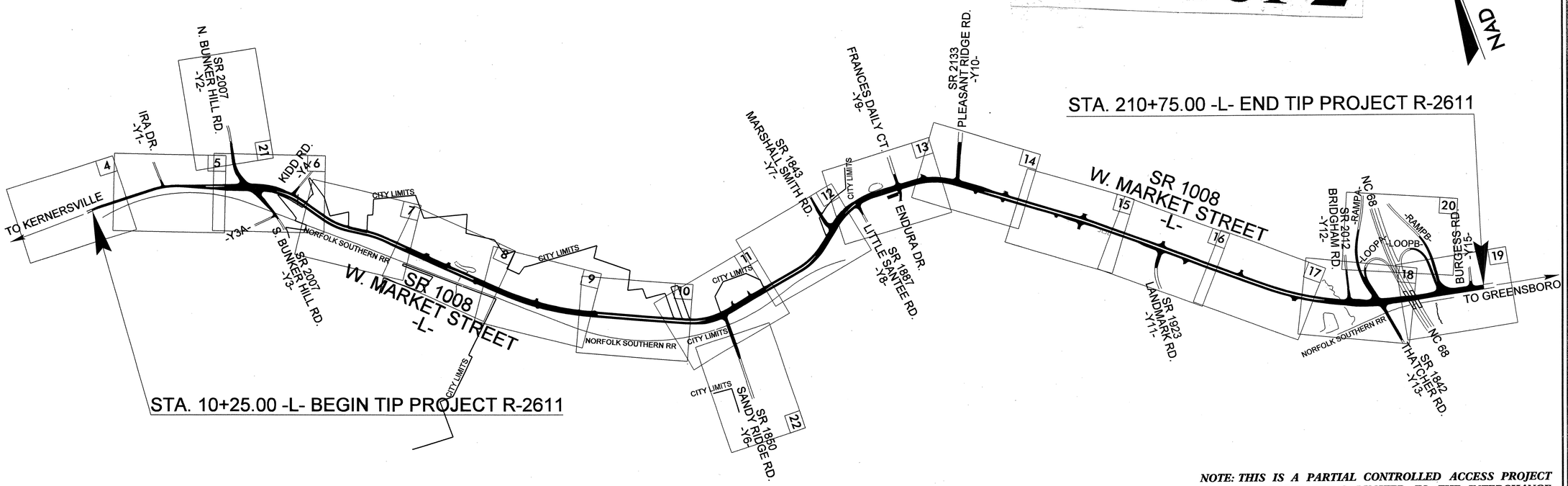


VICINITY MAP

Part 1 of 2

NAD 83/95



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GRAPHIC SCALES

50 25 0 50 100 PLANS

50 25 0 50 100 PROFILE (HORIZONTAL)

10 5 0 10 20 PROFILE (VERTICAL)

DESIGN DATA

ADT 2011	=	24,000
ADT 2030	=	29,500
DHV	=	9 %
D	=	55 %
T	=	6 % *
V	=	50 MPH

* TTST 2% DUAL 4%
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LETTING DATE: AUGUST 16, 2011

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6-24-11
SIGNATURE: Gregory E. Brew P.E.

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

TIP PROJECT: R-2611

CONTRACT: C202648

09/08/99

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PROJECT REFERENCE NO.	SHEET NO.
R-2611	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW

7-8-11

INDEX OF SHEETS

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 THRU 1-E	SURVEY CONTROL SHEET
2 THRU 2-F	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
2-G THRU 2-M	INTERSECTION DETAILS
2-N	DETAIL OF CONVERTING EXISTING D.I. TO J.B.
2-O	DETAIL OF ANCHORAGE FOR FRAMES - BRICK/ CONCRETE/PRECAST CONCRETE
2-P	DETAIL OF 2'-9" CONCRETE CURB & GUTTER
2-Q	DETAIL OF CONCRETE CATCH BASIN (3 OR 4 SIDE OPEN THROAT)
2-R THRU 2-S	DETAIL METHOD OF PIPE INSTALLATION
2-T THRU 2-U	DETAIL METHOD OF CURB RAMP INSTALLATION
2-V	DETAIL OF 2'-9" TO 2'-6" CURB & GUTTER TRANSITION SECTION
2-W	DETAIL OF CROSSWALK/CURB RAMP THRU MONOLITHIC ISLAND
2-X THRU 2-AA	RETAINING WALL PLANS
2-AB	DETAIL FOR TEMPORARY CONTAINMENT OF PETROLEUM CONTAMINATED SOIL
3 (2 SHEETS)	SUMMARY OF QUANTITIES
3-A THRU 3-O	SUMMARY OF DRAINAGE QUANTITIES
3-P	SUMMARY OF GUARDRAIL QUANTITIES, WOVEN WIRE FENCE SUMMARY AND ASPHALT PAVEMENT REMOVAL SUMMARY
3-Q	SUMMARY OF EARTHWORK
3-R	PARCEL INDEX SHEET
4 THRU 22	PLAN SHEET
23 THRU 36	PROFILE SHEET
TMP-1 THRU TMP-80	TRANSPORTATION MANAGEMENT PLANS
SD-1	SPECIAL SIGN DESIGN
PMP-1 THRU PMP-17	PAVEMENT MARKING PLANS
EC-1 THRU EC-43	EROSION CONTROL PLANS
RF-1	REFORESTATION PLANS
SIGN-1 THRU SIGN-17	SIGNING PLANS
SIG-1 THRU SIG-129	SIGNAL PLANS
UC-1 THRU UC-18	UTILITIES CONSTRUCTION PLANS
UO-1 THRU UO-19	UTILITIES CONFLICT PLANS (UTILITIES BY OTHERS)
X-1A THRU X-158	CROSS-SECTIONS
C-1 THRU C-8	CULVERT PLANS

GENERAL NOTES

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 II.

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NOS. 225.04 AND 225.05 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 3' 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 WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE City of Greensboro Public Utilities

Department and Guilford County Schools, Duke Power, AT&T, Time Warner, Piedmont

Natural Gas, and Century Link.

RIGHT-OF-WAY MARKERS:

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

WHEELCHAIR RAMPS:

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

LIST OF STANDARDS

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

2006 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated July 18, 2006 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
200.02	Method of Clearing - Method II
225.01	Guide for Grading Subgrade - Interstate and Freeway
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
225.05	Method of Obtaining Superelevation - Divided Highways
310.10	Driveway Pipe Construction
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
654.01	Pavement Repairs
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
815.03	Pipe Underdrain and Blind Drain
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" 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' - 12" thru 36" Pipe
840.24	Frames and Narrow Slot Sag Grates
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.34	Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.54	Manhole Frame and Cover
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
852.01	Concrete Islands
852.05	Median Curb for Catch Basin - for Use with 1'-6" Curb and Gutter
852.06	Method for Placement of Drop Inlets in Concrete Islands
852.10	Median Construction - with Curb and Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
866.01	Chain Link Fence - 4', 5', and 6' high Fence
866.02	Woven Wire Fence - with Wood Post
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

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04/16/11

PROJECT REFERENCE NO.	SHEET NO.
R-2611	1-B

Note: Not to Scale

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Known Soil Contamination: Boundary or Site
- Potential Soil Contamination: Boundary or Site

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY:

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

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Curb Ramp — CR
- Curb Cut Future Ramp — CCFR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

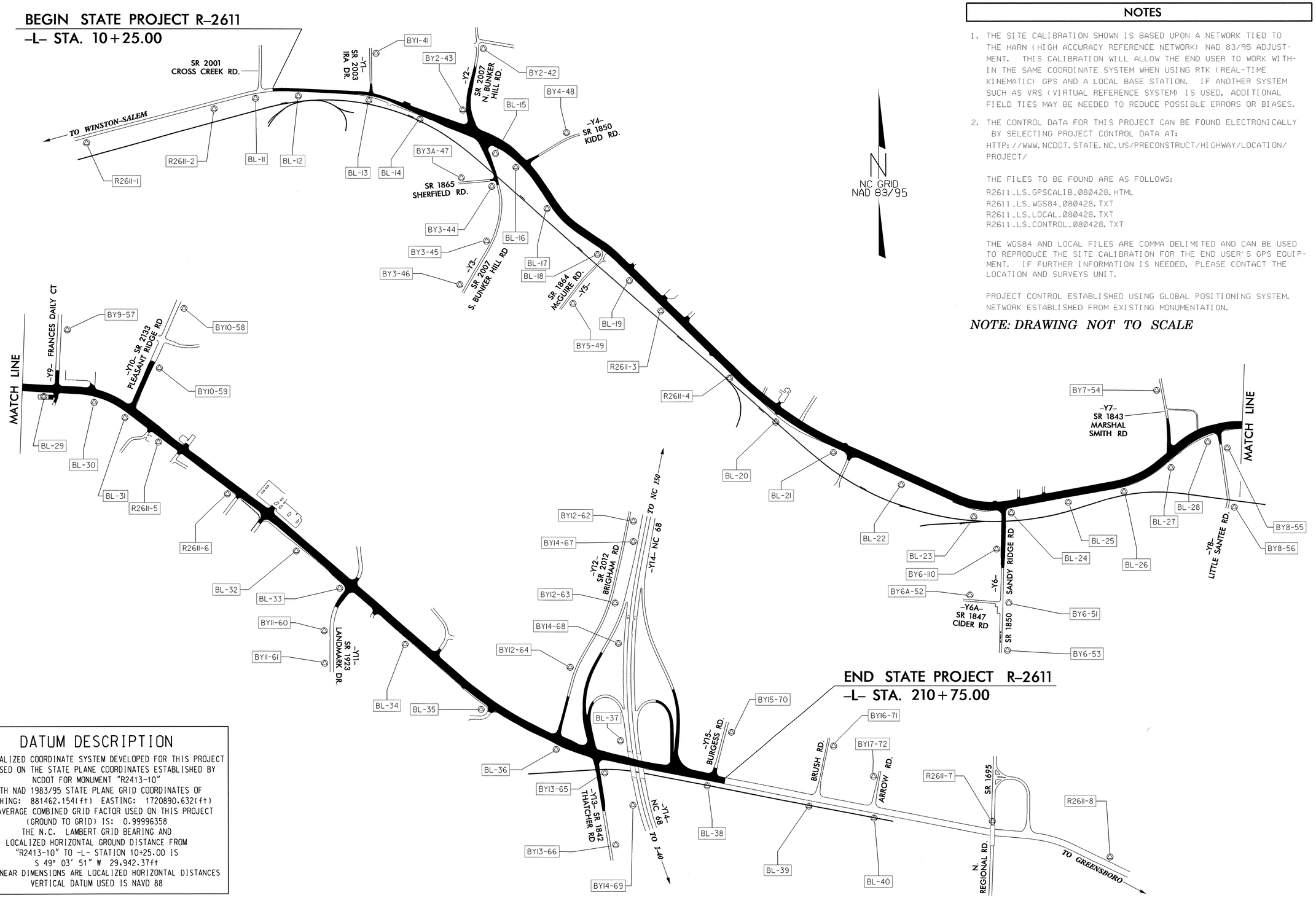
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

MISCELLANEOUS:

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

PROJECT REFERENCE NO.	SHEET NO.
R-2611	1C
Location and Surveys	

R-2611 SURVEY CONTROL SHEET



NOTES

1. THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 83/95 ADJUSTMENT. THIS CALIBRATION WILL ALLOW THE END USER TO WORK WITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL-TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE SYSTEM) IS USED, ADDITIONAL FIELD TIES MAY BE NEEDED TO REDUCE POSSIBLE ERRORS OR BIASES.

2. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
HTTP://WWW.NCDOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

THE FILES TO BE FOUND ARE AS FOLLOWS:
R2611_LS_GPSCALIB_080428.HTML
R2611_LS_WGS84_080428.TXT
R2611_LS_LOCAL_080428.TXT
R2611_LS_CONTROL_080428.TXT

THE WGS84 AND LOCAL FILES ARE COMMA DELIMITED AND CAN BE USED TO REPRODUCE THE SITE CALIBRATION FOR THE END USER'S GPS EQUIPMENT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM. NETWORK ESTABLISHED FROM EXISTING MONUMENTATION.

NOTE: DRAWING NOT TO SCALE

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R2413-10"
WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF
NORTHING: 881462.154(ft) EASTING: 1720890.632(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99996358
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R2413-10" TO -L- STATION 10+25.00 IS
S 49° 03' 51" W 29,942.37ft
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

12/01/2005

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R-2611 SURVEY CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
R-2611	1D
Location and Surveys	

GPS Calibration Report

Project : R2611 Static Site Cal

TIP Number	R-2611
User name	khudson
Date & Time	4:28:14 PM 5/10/2005
Coordinate System	Site(at ground)
Zone	North Carolina 3200(3)
Horizontal Datum	NAD 1983 (Conus)
Vertical Datum	NAVD88
Geoid Model	Geoid03 (Conus) NC Sub Grid(2)
Coordinate Units	US survey feet
Distance Units	US survey feet
Height Units	US survey feet

LOCAL SITE INFORMATION

Localized around	R2413-10
Latitude	36°, 10'05.55757"N
Longitude	79°, 56'44.02392"W
Site Scale Factor	1.0000364200
Height	781.389sft

The North Carolina Department of Transportation uses a Localized Coordinate System which is very similar to North Carolina Zone 3200 from which it is derived. Please take care in utilizing these coordinates to eliminate confusion of the two systems. This file is to aid in the use of Real Time Kinematic (RTK) GPS during construction layout.

Datum Transformation Parameters

Datum Transformation computation not requested

Updated Default Projection (Transverse Mercator) Definition

Updated default projection not requested

Horizontal Adjustment Parameters

Northing coordinate of rotation center	857189.035sft
Easting coordinate of rotation center	1708610.862sft
Rotation about the center point	0 °00'00"
Translation north	-0.012sft
Translation east	-0.026sft
Scale factor	1.00000005

Vertical Adjustment Parameters

Northing coordinate of origin point	861338.289sft
Easting coordinate of origin point	1696348.844sft
Vertical separation at origin	-0.031sft
Slope north	-0.831ppm
Slope east	0.621ppm

Geoid Model Definition

Geoid03 (Conus) NC Sub Grid(2)

Residual Differences Between GPS (WGS84) And Local Coordinates

Summary

	Maximum error	Root Mean Square error	Point
Horizontal	0.003sft	0.001	R2611-3_GPS
Vertical	0.000sft	0.000	R2611-1_GPS
Three-dimensional	0.003sft	0.001	R2611-3_GPS

Point Residuals

Point R2611-1_GPS WGS84 Coordinates
Latitude: 36°06'44.15922"N
Longitude: 80°01'40.76297"W
Height: 862.827sft

Calculated point FOR DISPLAY ONLY
Northing: 861338.289sft
Easting: 1696348.844sft
Elevation: 967.883sft
Horz error: 0.002sft
Vert error: 0.000sft
3D error: 0.002sft

Point R2611-1 Local Coordinates
Northing: 861338.286sft
Easting: 1696348.845sft
Elevation: 967.883sft
Utilized: Horz and Vert
Quality: Adjusted quality

Point R2611-2_GPS WGS84 Coordinates
Latitude: 36°06'47.74378"N
Longitude: 80°01'24.94105"W
Height: 865.137sft

Calculated point FOR DISPLAY ONLY
Northing: 861687.346sft
Easting: 1697650.782sft
Elevation: 970.154sft
Horz error: 0.002sft
Vert error: 0.000sft
3D error: 0.002sft

Point R2611-2 Local Coordinates
Northing: 861687.346sft
Easting: 1697650.784sft
Elevation: 970.154sft
Utilized: Horz and Vert
Quality: Adjusted quality

Point R2611-3_GPS WGS84 Coordinates
Latitude: 36°06'27.90610"N
Longitude: 80°00'28.08554"W
Height: 857.707sft

Calculated point FOR DISPLAY ONLY
Northing: 859633.619sft
Easting: 1702295.403sft
Elevation: 962.441sft
Horz error: 0.003sft
Vert erro: 0.000sft
3D error: 0.003sft

Point R2611-3 Local Coordinates
Northing: 859633.622sft
Easting: 1702295.402sft
Elevation: 962.441sft
Utilized: Horz and Vert
Quality: Adjusted quality

Point R2611-4_GPS WGS84 Coordinates
Latitude: 36°06'21.01982"N
Longitude: 80°00'19.51330"W
Height: 849.175sft

Calculated point FOR DISPLAY ONLY
Northing: 858930.143sft
Easting: 1702991.751sft
Elevation: 953.849sft
Horz error: 0.001sft
Vert error: 0.000sft
3D error: 0.001sft

Point R2611-4 Local Coordinates
Northing: 858930.143sft
Easting: 1702991.750sft
Elevation: 953.849sft
Utilized: Horz and Vert
Quality: Adjusted quality

Point R2611-5_GPS WGS84 Coordinates
Latitude: 36°06'11.26032"N
Longitude: 79°58'58.42713"W
Height: 839.900sft

Calculated point FOR DISPLAY ONLY
Northing: 857876.621sft
Easting: 1709635.716sft
Elevation: 944.235sft
Horz error: 0.002sft
Vert error: 0.000sft
3D error: 0.002sft

Point R2611-5 Local Coordinates
Northing: 857876.624sft
Easting: 1709635.715sft
Elevation: 944.235sft
Utilized: Horz and Vert
Quality: Adjusted quality

Point R2611-6_GPS WGS84 Coordinates
Latitude: 36°06'06.00285"N
Longitude: 79°58'49.85524"W
Height: 831.933sft

Calculated point FOR DISPLAY ONLY
Northing: 857338.028sft
Easting: 1710333.878sft
Elevation: 936.213sft
Horz error: 0.001sft
Vert error: 0.000sft
3D error: 0.001sft

Point R2611-6 Local Coordinates
Northing: 857338.028sft
Easting: 1710333.877sft
Elevation: 936.213sft
Utilized: Horz and Vert
Quality: Adjusted quality

Point R2413-2_GPS WGS84 Coordinates
Latitude: 36°05'37.01434"N
Longitude: 79°57'58.36226"W
Height: 791.818sft

Calculated point FOR DISPLAY ONLY
Northing: 854365.266sft
Easting: 1714530.965sft
Elevation: 895.772sft
Horz error: 0.001sft
Vert error: 0.000sft
3D error: 0.001sft

Point R2413-2 Local Coordinates
Northing: 854365.267sft
Easting: 1714530.964sft
Elevation: 895.772sft
Utilized: Horz and Vert
Quality: Adjusted quality

Point R2413-1_GPS WGS84 Coordinates
Latitude: 36°05'26.28972"N
Longitude: 79°57'54.51566"W
Height: 766.841sft

Calculated point FOR DISPLAY ONLY
Northing: 853277.721sft
Easting: 1714836.113sft
Elevation: 870.729sft
Horz error: 0.002sft
Vert error: 0.000sft
3D error: 0.002sft

Point R2413-1 Local Coordinates
Northing: 853277.719sft
Easting: 1714836.112sft
Elevation: 870.729sft
Utilized: Horz and Vert
Quality: Adjusted quality

Point R2611-7_GPS WGS84 Coordinates
Latitude: 36°05'32.84984"N
Longitude: 79°57'14.19872"W
Height: 816.321sft

Calculated Point FOR DISPLAY ONLY
Northing: 853909.097sft
Easting: 1718151.435sft
Elevation: 920.084sft
Horz error: 0.001sft
Vert error: 0.000sft
3D error: 0.001sft

Point R2611-7 Local Coordinates
Northing: 853909.096sft
Easting: 1718151.436sft
Elevation: 920.084sft
Utilized: Horz and Vert
Quality: Adjusted quality

Point R2611-8_GPS WGS84 Coordinates
Latitude: 36°05'29.25384"N
Longitude: 79°56'59.75371"W
Height: 790.986sft

Calculated point FOR DISPLAY ONLY
Northing: 853534.099sft
Easting: 1719333.479sft
Elevation: 894.674sft
Horz error: 0.002sft
Vert error: 0.000sft
3D error: 0.002sft

Point R2611-8 Local Coordinates
Northing: 853534.098sft
Easting: 1719333.481sft
Elevation: 894.674sft
Utilized: Horz and Vert
Quality: Adjusted quality

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R2413-10"
WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF
NORTHING: 881462.154(ft) EASTING: 1720890.632(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99996358
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R2413-10" TO -L- STATION 10+25.00 IS
S 49° 03' 51" W 29,942.37ft
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTES

1. THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 83/95 ADJUSTMENT. THIS CALIBRATION WILL ALLOW THE END USER TO WORK WITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL-TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE SYSTEM) IS USED, ADDITIONAL FIELD TIES MAY BE NEEDED TO REDUCE POSSIBLE ERRORS OR BIASES.

2. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
HTTP://WWW.NCDOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

THE FILES TO BE FOUND ARE AS FOLLOWS:
R2611_LS_GPSCALIB_080428.HTML
R2611_LS_WGS84_080428.TXT
R2611_LS_LOCAL_080428.TXT
R2611_LS_CONTROL_080428.TXT

THE WGS84 AND LOCAL FILES ARE COMMA DELIMITED AND CAN BE USED TO REPRODUCE THE SITE CALIBRATION FOR THE END USER'S GPS EQUIPMENT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM. NETWORK ESTABLISHED FROM EXISTING MONUMENTATION.

NOTE: DRAWING NOT TO SCALE

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R–2611 SURVEY CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
R–2611	1E
Location and Surveys	

BASELINE DATA

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	R2611-1	861338.2860	1696348.8450	967.88	OUTSIDE PROJECT LIMITS	
2	R2611-2	861687.3460	1697650.7840	970.15	OUTSIDE PROJECT LIMITS	
11	BL-11	861791.1550	1698088.7550	972.88	OUTSIDE PROJECT LIMITS	
12	BL-12	861823.9580	1698533.1870	966.36	12+88.29	18.12 RT
13	BL-13	861769.6760	1699265.6000	966.50	20+27.01	31.75 RT
14	BL-14	861575.3820	1699788.2310	968.92	25+92.22	42.11 RT
15	BL-15	861306.0000	1700473.6350	959.70	33+30.87	39.82 RT
16	BL-16	861085.0780	1700800.5150	965.04	37+40.48	37.26 RT
17	BL-17	860659.3650	1701115.3250	973.23	42+78.66	40.03 RT
18	BL-18	860194.4290	1701636.2820	970.40	49+68.11	54.71 RT
19	BL-19	859948.0510	1701982.8200	969.36	53+96.59	0.74 LT
3	R2611-3	859633.6220	1702295.4020	962.44	58+39.94	3.41 RT
4	R2611-4	858930.1430	1702991.7500	953.85	68+29.72	14.80 RT
20	BL-20	858470.8340	1703452.7040	956.20	74+72.16	66.89 RT
21	BL-21	858161.5250	1704035.4970	967.52	81+22.52	42.43 RT
22	BL-22	857846.6670	1704727.2350	968.14	88+82.25	41.94 RT
23	BL-23	857504.3340	1705473.0120	969.89	96+85.93	77.01 RT
24	BL-24	857534.5620	1705838.0800	971.97	100+30.48	51.15 RT
25	BL-25	857651.2450	1706411.6980	972.92	106+15.76	41.45 RT
26	BL-26	857756.5460	1706985.1320	969.70	111+95.88	45.16 RT
27	BL-27	858001.7760	1707451.3110	972.44	117+06.31	52.28 RT
28	BL-28	858271.3880	1707840.6970	973.12	121+98.43	56.33 RT
29	BL-29	858339.3980	1708532.4840	967.26	129+24.50	37.25 RT
30	BL-30	858291.4340	1708960.9940	963.89	133+64.89	41.34 RT
31	BL-31	858131.2610	1709285.5560	955.35	137+44.21	37.48 RT
5	R2611-5	857876.6240	1709635.7150	944.23	141+77.13	31.68 RT
6	R2611-6	857338.0280	1710333.8770	936.21	150+58.80	44.85 RT
32	BL-32	856752.8280	1711047.6800	931.04	159+85.61	55.06 RT
33	BL-33	856353.0770	1711514.9640	929.35	166+00.55	52.95 RT
34	BL-34	855798.8480	1712158.9410	920.18	174+50.45	45.80 RT
35	BL-35	855119.6930	1712945.0140	877.20	184+83.87	61.25 RT
36	BL-36	854725.4220	1713699.8010	863.00	193+25.74	39.48 RT
37	BL-37	854768.1480	1714389.6040	901.05	199+85.63	212.06 LT
38	BL-38	854342.8160	1715247.1100	871.28	209+15.08	38.54 RT
39	BL-39	854139.7290	1716290.9980	868.72	219+78.53	36.57 RT
40	BL-40	854011.4640	1716948.2480	868.77	226+48.18	35.71 RT
7	R2611-7	853909.0960	1718151.4360	920.08	OUTSIDE PROJECT LIMITS	
8	R2611-8	853534.0980	1719333.4810	894.67	OUTSIDE PROJECT LIMITS	

BY1

POINT	DESC.	NORTH	EAST	ELEVATION	Y1 STATION	OFFSET
41	BY1-41	862223.3490	1699287.0500	967.40	OUTSIDE PROJECT LIMITS	
75	BL-13	861769.6760	1699265.6000	966.50	OUTSIDE PROJECT LIMITS	

BY2

POINT	DESC.	NORTH	EAST	ELEVATION	Y2 STATION	OFFSET
42	BY2-42	862295.2540	1700391.1040	975.18	11+68.23	18.15 LT
43	BY2-43	861635.5360	1700271.4270	968.49	18+32.26	21.86 RT
76	BL-15	861306.0000	1700473.6350	959.70	OUTSIDE PROJECT LIMITS	

BY3

POINT	DESC.	NORTH	EAST	ELEVATION	Y3 STATION	OFFSET
77	BL-15	861306.0000	1700473.6350	959.70	11+29.35	66.38 LT
44	BY3-44	860887.6560	1700546.6860	970.35	15+44.73	25.51 RT
45	BY3-45	860271.1520	1700496.4660	965.36	OUTSIDE PROJECT LIMITS	
46	BY3-46	859814.2680	1700234.8540	959.86	OUTSIDE PROJECT LIMITS	

BY3A

POINT	DESC.	NORTH	EAST	ELEVATION	Y3A STATION	OFFSET
78	BY3-44	860887.6560	1700546.6860	970.35	12+91.85	30.38 RT
47	BY3A-47	860897.8890	1700208.9220	967.03	OUTSIDE PROJECT LIMITS	

BY4

POINT	DESC.	NORTH	EAST	ELEVATION	Y4 STATION	OFFSET
48	BY4-48	861369.4390	1701315.2840	965.07	OUTSIDE PROJECT LIMITS	
79	BL-16	861085.0780	1700800.5150	965.04	OUTSIDE PROJECT LIMITS	

BY5

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
80	BL-18	860194.4290	1701636.2820	970.40	49+68.11	54.71 RT
49	BY5-49	859679.4580	1701304.4040	961.06	50+47.23	665.18 RT

BY6

POINT	DESC.	NORTH	EAST	ELEVATION	Y6 STATION	OFFSET
81	BL-24	857534.5620	1705838.0800	971.97	10+12.78	73.12 LT
50	BY6-50	857119.2020	1705731.3480	972.29	14+30.66	23.29 RT
51	BY6-51	856570.0210	1705762.5570	966.20	19+78.90	21.51 LT
53	BY6-53	856089.5470	1705745.1720	963.20	OUTSIDE PROJECT LIMITS	

BY6A

POINT	DESC.	NORTH	EAST	ELEVATION	Y6A STATION	OFFSET
82	BY6-51	856570.0210	1705762.5570	966.20	OUTSIDE PROJECT LIMITS	
52	BY6A-52	856603.8080	1705412.1270	965.44	13+30.91	12.32 RT

BY7

POINT	DESC.	NORTH	EAST	ELEVATION	Y7 STATION	OFFSET
54	BY7-54	858761.0380	1707375.1870	965.55	OUTSIDE PROJECT LIMITS	
83	BL-27	858001.7760	1707451.3110	972.44	OUTSIDE PROJECT LIMITS	

BY8

POINT	DESC.	NORTH	EAST	ELEVATION	Y8 STATION	OFFSET
84	BL-28	858271.3880	1707840.6970	973.12	10+81.46	136.63 RT
55	BY8-55	858154.2420	1708008.8720	970.52	12+20.71	13.75 LT
56	BY8-56	857556.9340	1708082.0730	944.06	OUTSIDE PROJECT LIMITS	

BY9

POINT	DESC.	NORTH	EAST	ELEVATION	Y9 STATION	OFFSET
57	BY9-57	858995.5390	1708622.6690	969.98	10+70.34	31.28 LT
85	BL-29	858339.3980	1708532.4840	967.26	OUTSIDE PROJECT LIMITS	

BY10

POINT	DESC.	NORTH	EAST	ELEVATION	Y10 STATION	OFFSET
58	BY10-58	859225.1590	1709820.5210	956.38	OUTSIDE PROJECT LIMITS	
59	BY10-59	858609.1230	1709558.3400	964.97	14+94.03	32.26 LT
86	BL-31	858131.2610	1709285.5560	955.35	OUTSIDE PROJECT LIMITS	

BY11

POINT	DESC.	NORTH	EAST	ELEVATION	Y11 STATION	OFFSET
87	BL-33	856353.0770	1711514.9640	929.35	10+28.75	49.81 RT
60	BY11-60	855894.4940	1711358.1960	932.13	15+01.44	22.53 RT
61	BY11-61	855560.3990	1711355.0330	922.30	OUTSIDE PROJECT LIMITS	

BY12

POINT	DESC.	NORTH	EAST	ELEVATION	Y12 STATION	OFFSET
62	BY12-62	857027.7190	1714434.8350	918.59	OUTSIDE PROJECT LIMITS	
63	BY12-63	856194.4160	1714247.3410	891.71	14+53.11	14.38 LT
64	BY12-64	855507.1650	1713874.0390	871.69	22+33.07	15.20 RT
88	BL-36	854725.4220	1713699.8010	863.00	OUTSIDE PROJECT LIMITS	

BY13

POINT	DESC.	NORTH	EAST	ELEVATION	Y13 STATION	OFFSET
89	BL-37	854768.1480	1714389.6040	901.05	OUTSIDE PROJECT LIMITS	
65	BY13-65	854427.9260	1714122.6890	868.48	12+09.40	15.02 LT
66	BY13-66	853677.0700	1714245.0950	851.99	19+70.16	17.10 LT

BY14

POINT	DESC.	NORTH	EAST	ELEVATION	Y14 STATION	OFFSET
67	BY14-67	856808.9270	1714510.8000	912.33	OUTSIDE PROJECT LIMITS	
68	BY14-68	855772.1320	1714366.3100	906.39	18+85.03	67.60 RT
90	BL-37	854768.1480	1714389.6040	901.05	28+78.15	75.02 RT
69	BY14-69	854116.2440	1714511.5520	892.42	35+33.51	68.03 RT

BY15

POINT	DESC.	NORTH	EAST	ELEVATION	Y15 STATION	OFFSET
70	BY15-70	854858.1840	1715429.9900	887.61	OUTSIDE PROJECT LIMITS	
91	BL-38	854342.8160	1715247.1100	871.28	OUTSIDE PROJECT LIMITS	

BY16

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
71	BY16-71	854719.9440	1716475.9440	884.27	OUTSIDE PROJECT LIMITS	
92	BL-39	854139.7290	1716290.9980	868.72	13+64.82	1029.20 LT

BY17

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
72	BY17-72	854384.6950	1716977.4580	865.68	OUTSIDE PROJECT LIMITS	
93	BL-40	854011.4640	1716948.2480	868.77	13+24.96	1697.66 LT

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R2413-10"
WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF
NORTHING: 881462.154(ft) EASTING: 1720890.632(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99996358
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R2413-10" TO -L- STATION 10+25.00 IS
S 49° 03′ 51″ W 29,942.37ft
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

BENCHMARK DATA

BM1 ELEVATION = 976.16
N 861866 E 1698207
L STATION 5+00
N 68° 16′ 09.7" W DIST 20206.44
BENCH TIE SET IN POWER POLE

BM2 ELEVATION = 967.22
N 860862 E 1700166
Y3A STATION 10+00
S 72° 06′ 26.0" W DIST 91.14
BENCH TIE SET IN POWER POLE

BM3 ELEVATION = 962.66
N 859673 E 1701324
L STATION 50+90 657 RIGHT
BENCH TIE SET IN POWER POLE

BM4 ELEVATION = 951.93
N 858911 E 1703533
L STATION 72+64 333 LEFT
BENCH TIE SET IN POWER POLE

BM5 ELEVATION = 962.57
N 856301 E 1705766
Y6 STATION 21+68
S 20° 12′ 42.0" E DIST 85.76
BENCH TIE SET IN POWER POLE

BM6 ELEVATION = 963.23
N 858934 E 1707316
Y7 STATION 10+32
N 18° 49′ 57.9" W DIST 271.46
BENCH TIE SET IN POWER POLE

BM7 ELEVATION = 951.57
N 858293 E 1709727
Y10 STATION 17+16 313 LEFT
BENCH TIE SET IN 11 INCH OAK

BM8 ELEVATION = 932.58
N 856837 E 1711768
L STATION 164+76 479 LEFT
BENCH TIE SET IN LIGHT POLE

BM9 ELEVATION = 849.97
N 855184 E 1713407
L STATION 188+47 242 LEFT
BENCH TIE SET IN 36 INCH DOUBLE MAPLE

BM10 ELEVATION = 887.65
N 854851 E 1715450
Y15 STATION 10+00
N 32° 33′ 39.2" E DIST 119.94
BENCH TIE SET IN POWER POLE

BM10 ELEVATION = 887.65
N 854851 E 1715450
Y15 STATION 10+00
N 32° 33′ 39.2" E DIST 119.94
BENCH TIE SET IN POWER POLE

BM11 ELEVATION = 867.76
N 854439 E 1716780
L STATION 224+01 351 LEFT
BENCH TIE SET IN 10 INCH OAK

BM12 ELEVATION = 875.01
N 854052 E 1717126
L STATION 228+15 38 LEFT
BENCH TIE SET IN POWER POLE

BM13 ELEVATION = 851.90
N 853727 E 1714177
Y13 STATION 19+10 42 RIGHT
BENCH TIE SET IN POWER POLE

BM14 ELEVATION = 968.46
N 862657 E 1700367
Y2 STATION 10+00
N 1° 07′ 02.9" E DIST 193.85
BENCH TIE SET IN POWER POLE

NOTES

1. THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 83/95 ADJUSTMENT. THIS CALIBRATION WILL ALLOW THE END USER TO WORK WITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL-TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE SYSTEM) IS USED, ADDITIONAL FIELD TIES MAY BE NEEDED TO REDUCE POSSIBLE ERRORS OR BIASES.

2. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
HTTP://WWW.NCDOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   R2611_LS_GPSCALIB_080428.HTML
   R2611_LS_WGS84_080428.TXT
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   R2611_LS_CONTROL_080428.TXT

   THE WGS84 AND LOCAL FILES ARE COMMA DELIMITED AND CAN BE USED TO REPRODUCE THE SITE CALIBRATION FOR THE END USER'S GPS EQUIPMENT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

   PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM. NETWORK ESTABLISHED FROM EXISTING MONUMENTATION.

NOTE: DRAWING NOT TO SCALE

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PROJECT REFERENCE NO.	SHEET NO.
R-2611	2

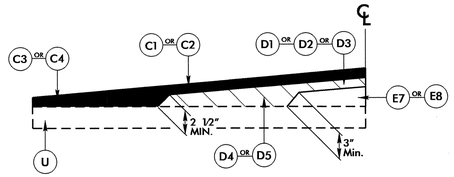
ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW — 6-22-11

PAVEMENT DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER DON-CHI CHEN — 6/23/11

PAVEMENT SCHEDULE

C1	PROP. APPROX. 3" ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	E7	PROP. VAR. DEPTH ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT TO EXCEED 5½" IN DEPTH.
C2	PROP. APPROX. 3" ASPHALT CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	E8	PROP. VAR. DEPTH ASPHALT CONC. BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT TO EXCEED 5½" IN DEPTH.
C3	PROP. VAR. DEPTH ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.	J1	PROP. APPROX. 8" AGGREGATE BASE COURSE.
C4	PROP. VAR. DEPTH ASPHALT CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.	L2	PROP. APPROX. 8" CLASS IV SUBGRADE STABILIZATION.
D1	PROP. APPROX. 2½" ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	N2	FABRIC FOR SOIL STABILIZATION.
D2	PROP. APPROX. 4" ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R1	1'-6" CONCRETE CURB AND GUTTER.
D3	PROP. APPROX. 4" ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R2	2'-6" CONCRETE CURB AND GUTTER.
D4	PROP. VAR. DEPTH ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT TO EXCEED 4" IN DEPTH.	R3	2'-9" CONCRETE CURB AND GUTTER.
D5	PROP. VAR. DEPTH ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT TO EXCEED 4" IN DEPTH.	R4	5" MONOLITHIC CONCRETE ISLAND (KEYED IN).
E1	PROP. APPROX. 4" ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R5	8" X 18" CONCRETE CURB
E2	PROP. APPROX. 5" ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.	S	CONCRETE 4" SIDEWALK.
E3	PROP. APPROX. 5½" ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.	T	EARTH MATERIAL.
E4	PROP. APPROX. 3" ASPHALT CONC. BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.	U	EXISTING PAVEMENT.
E5	PROP. APPROX. 5" ASPHALT CONC. BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.	V	1½" MILLING BITUMINOUS PAVEMENT.
E6	PROP. APPROX. 5½" ASPHALT CONC. BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.	W	VARIABLE DEPTH ASPHALT PAVEMENT. (SEE WEDGING DETAIL)

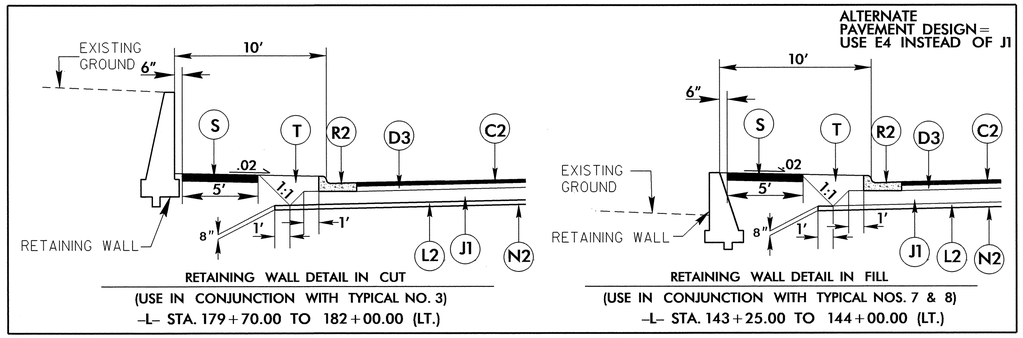
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



LINE	SURFACE C1	C2	C3	C4	INTERMEDIATE D1	D2	D3	D4	D5	BASE E7	E8
-L- (USE WITH TYP. SECTIONS 1 THRU 8)		X		X			X		X		X
-Y1-, -Y4-, -Y8- & -Y15- (USE WITH TYP. SECTION 9)		X		X			X		X		X
-Y9-, -ENDURA DR- & -ENDURA DR1- (USE WITH TYP. SECTION 10)		X		X			X		X		X
-Y2-, -Y10- & -Y11- (USE WITH TYP. SECTION 11)	X		X			X		X		X	
-Y3-, -Y3A- & -Y7- (USE WITH TYP. SECTION 12)	X		X			X		X		X	
-Y6- (USE WITH TYP. SECTION 13)	X		X			X		X		X	
-Y12- (USE WITH TYP. SECTION 14)	X		X							X	
-Y13- (USE WITH TYP. SECTION 15)	X		X		X			X		X	
-RAMPA- (USE WITH TYP. SECTION 16)	X		X			X		X		X	
-RAMPB- (USE WITH TYP. SECTION 17)	X		X			X		X		X	
-LOOPA- & -LOOPB- (USE WITH TYP. SECTIONS 18 & 19)	X		X			X		X		X	

DETAIL SHOWING METHOD OF WEDGING

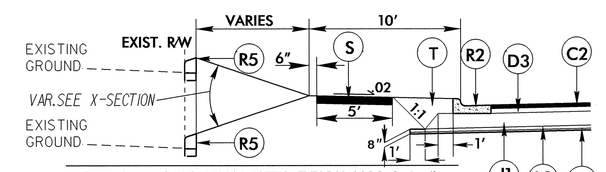
DETAIL SHOWING RETAINING WALL CONSTRUCTION



RETAINING WALL DETAIL IN CUT
(USE IN CONJUNCTION WITH TYPICAL NO. 3)
-L- STA. 179+70.00 TO 182+00.00 (LT.)

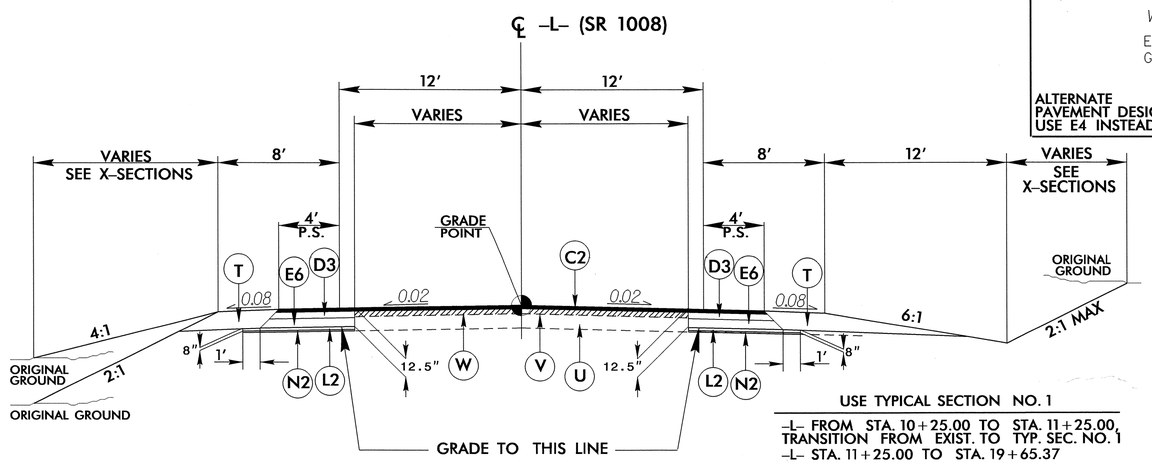
RETAINING WALL DETAIL IN FILL
(USE IN CONJUNCTION WITH TYPICAL NOS. 7 & 8)
-L- STA. 143+25.00 TO 144+00.00 (LT.)

DETAIL SHOWING CHANNELIZATION CONSTRUCTION



ALTERNATE PAVEMENT DESIGN = USE E4 INSTEAD OF J1

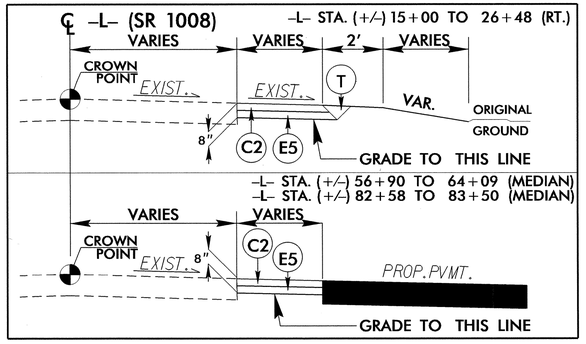
(USE IN CONJUNCTION WITH TYPICAL NOS. 3 & 4)
-L- STA. 115+06.95 TO 118+64.27 (RT.)
-L- STA. 157+65.29 TO 159+37.70 (RT.)



USE TYPICAL SECTION NO. 1
-L- FROM STA. 10+25.00 TO STA. 11+25.00, TRANSITION FROM EXIST. TO TYP. SEC. NO. 1
-L- STA. 11+25.00 TO STA. 19+65.37

TYPICAL SECTION NO. 1

DETAIL SHOWING TEMPORARY WIDENING



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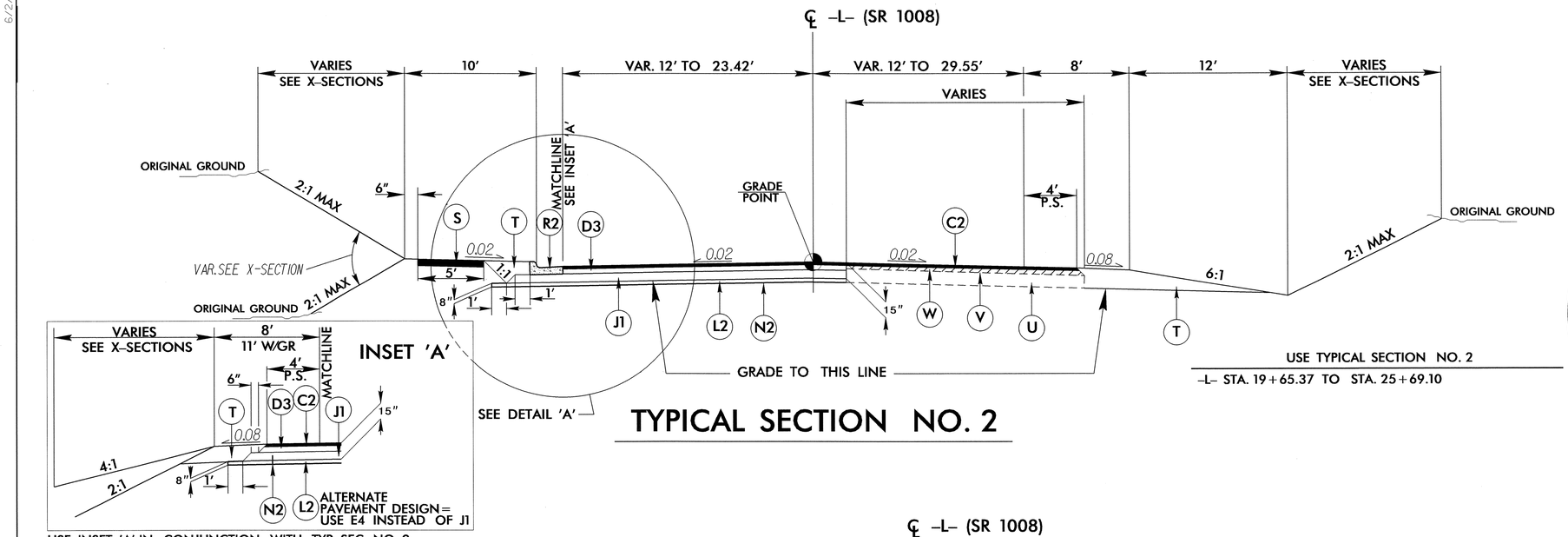
PROJECT REFERENCE NO.	SHEET NO.
R-2611	2-A

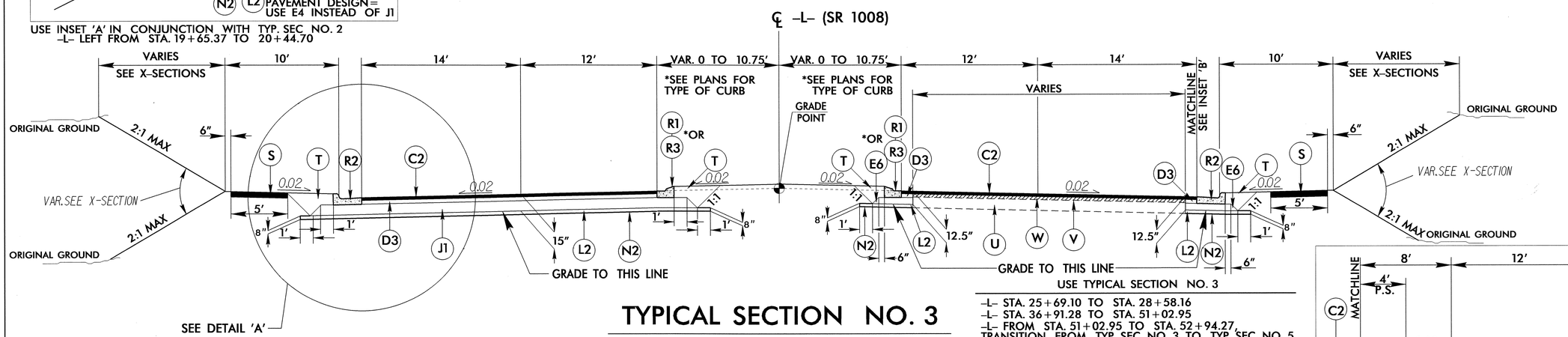
ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BRIEN — 6-14-11

PAVEMENT DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER DON CHI CHEN — 6/23/11

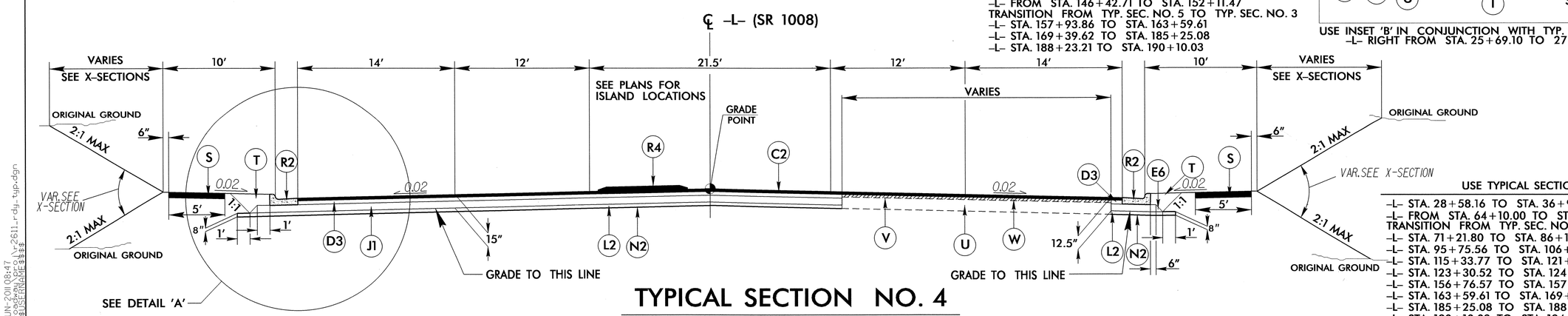
PAVEMENT SCHEDULE	
C2	3" S9.5C
D3	4" I19.0C
E4	3" B25.0C
E6	5.5" B25.0C
J1	8" ABC
L2	8" CLASS IV
N2	FABRIC STABIL.
R1	1'-6" C&G
R2	2'-6" C&G
R3	2'-9" C&G
R4	5" MONO. ISLAND
S	4" CONC. SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	1½" MILLING
W	WEDGING



TYPICAL SECTION NO. 2



TYPICAL SECTION NO. 3



TYPICAL SECTION NO. 4

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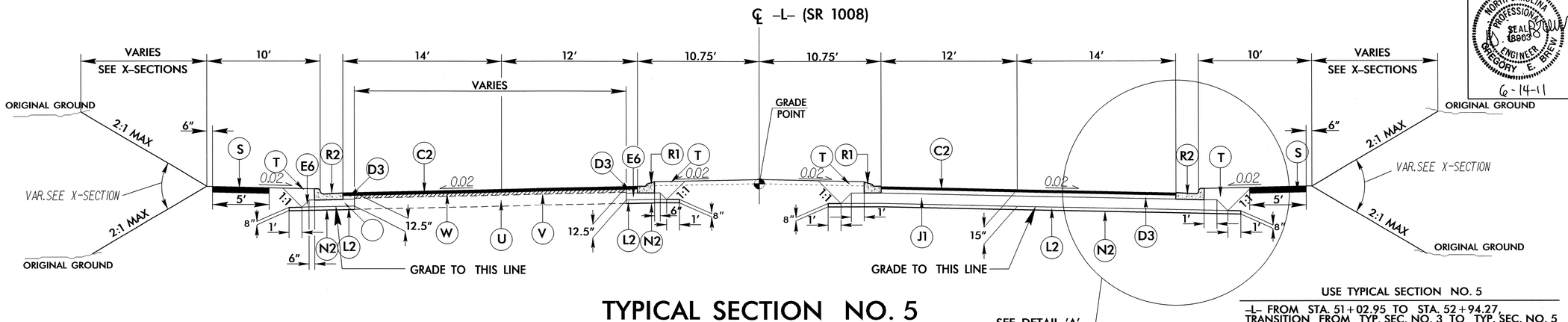
PROJECT REFERENCE NO.	SHEET NO.
R-2611	2-B

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW
6-14-11

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER DUNG-CHI CHEN
6/23/11

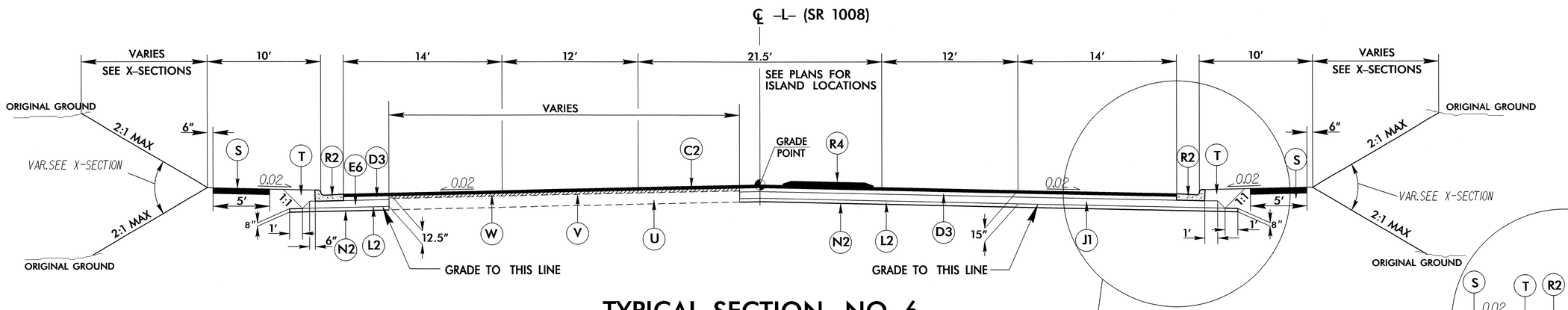
PAVEMENT SCHEDULE	
C2	3" S9.5C
D3	4" I19.0C
E4	3" B25.0C
E6	5.5" B25.0C
J1	8" ABC
L2	8" CLASS IV
N2	FABRIC STABIL.
R1	1'-6" C&G
R2	2'-6" C&G
R4	5" MONO. ISLAND
S	4" CONC. SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	1½" MILLING
W	WEDGING



TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5

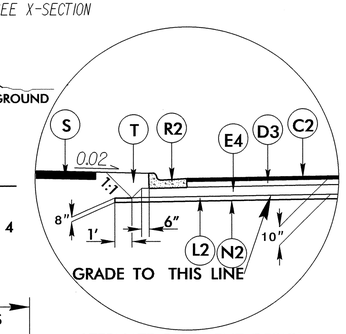
-L- FROM STA. 51+02.95 TO STA. 52+94.27,
TRANSITION FROM TYP. SEC. NO. 3 TO TYP. SEC. NO. 5
-L- STA. 52+94.27 TO STA. 57+96.00
-L- FROM STA. 142+37.30 TO STA. 143+37.30
TRANSITION FROM TYP. SEC. NO. 5 TO TYP. SEC. NO. 3
-L- FROM STA. 146+42.71 TO STA. 152+11.47
TRANSITION FROM TYP. SEC. NO. 5 TO TYP. SEC. NO. 3



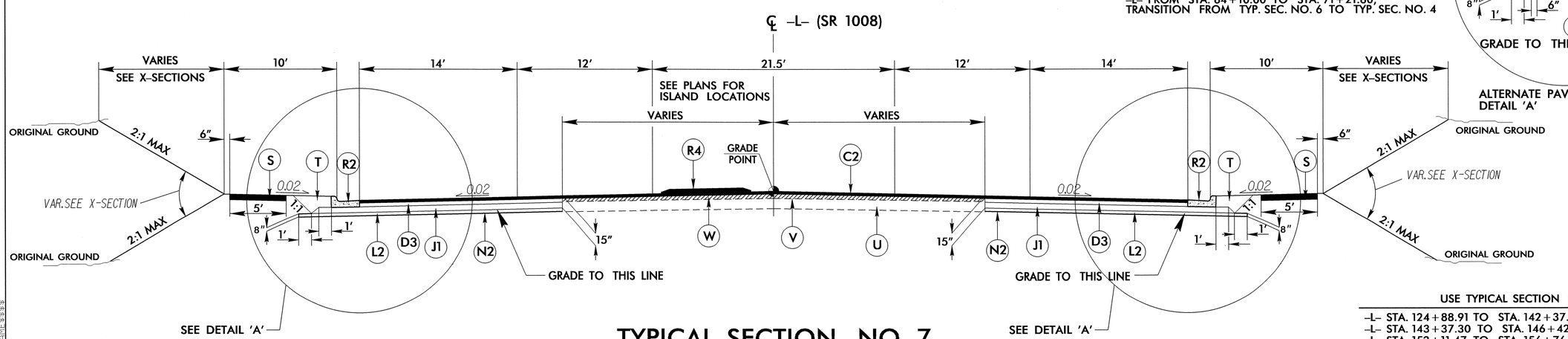
TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6

-L- STA. 57+96.00 TO 64+10.00
-L- FROM STA. 64+10.00 TO STA. 71+21.80,
TRANSITION FROM TYP. SEC. NO. 6 TO TYP. SEC. NO. 4



ALTERNATE PAVEMENT DESIGN DETAIL 'A'



TYPICAL SECTION NO. 7

USE TYPICAL SECTION NO. 7

-L- STA. 124+88.91 TO STA. 142+37.30
-L- STA. 143+37.30 TO STA. 146+42.71
-L- STA. 152+11.47 TO STA. 156+76.57
-L- STA. 194+84.17 TO STA. 210+75.00

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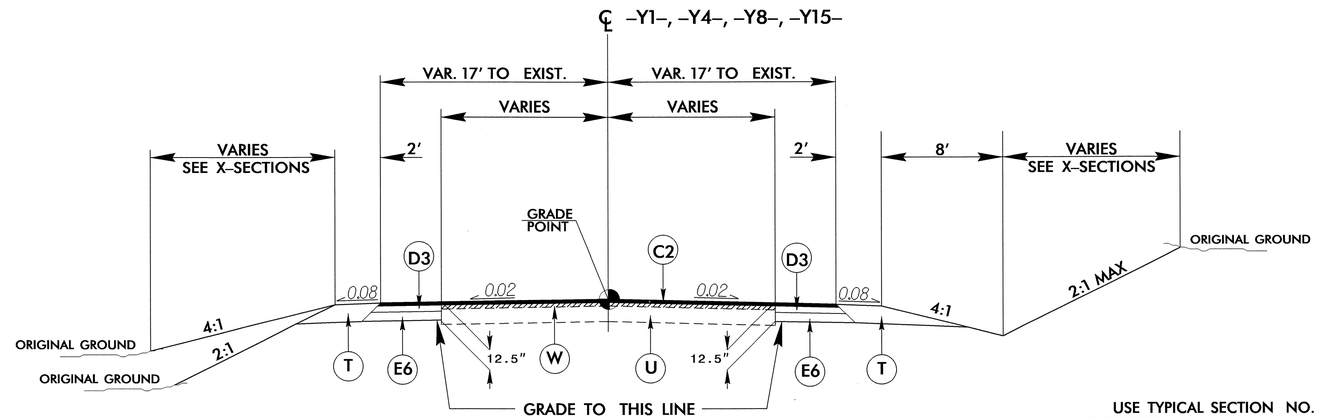
PROJECT REFERENCE NO.	SHEET NO.
R-2611	2-C

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREWER
6-14-11

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER DOUGLAS CHI CHEN
6/23/11

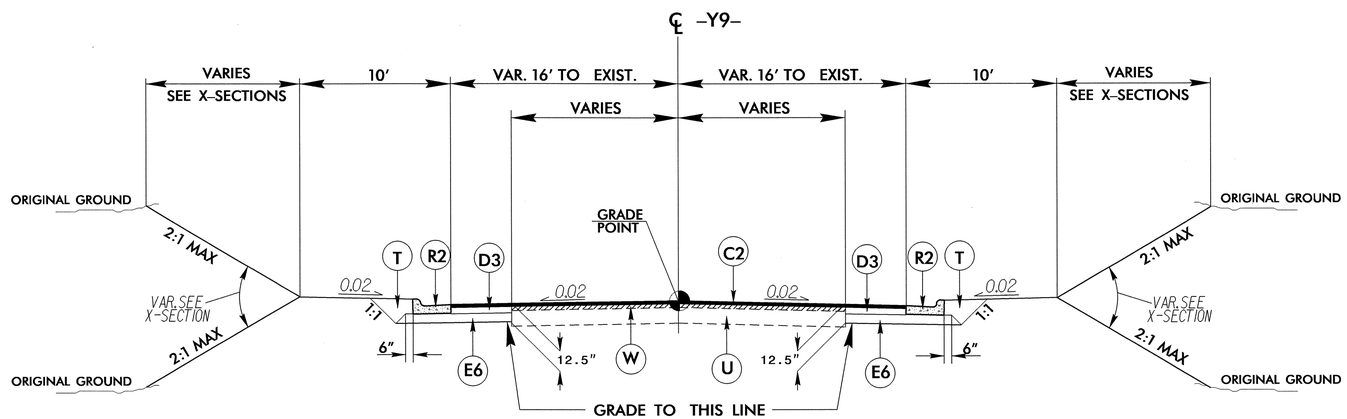
PAVEMENT SCHEDULE	
C2	3" S9.5C
D3	4" I19.0C
E6	5.5" B25.0C
R2	2'-6" C&G
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING



TYPICAL SECTION NO. 8

USE TYPICAL SECTION NO. 8

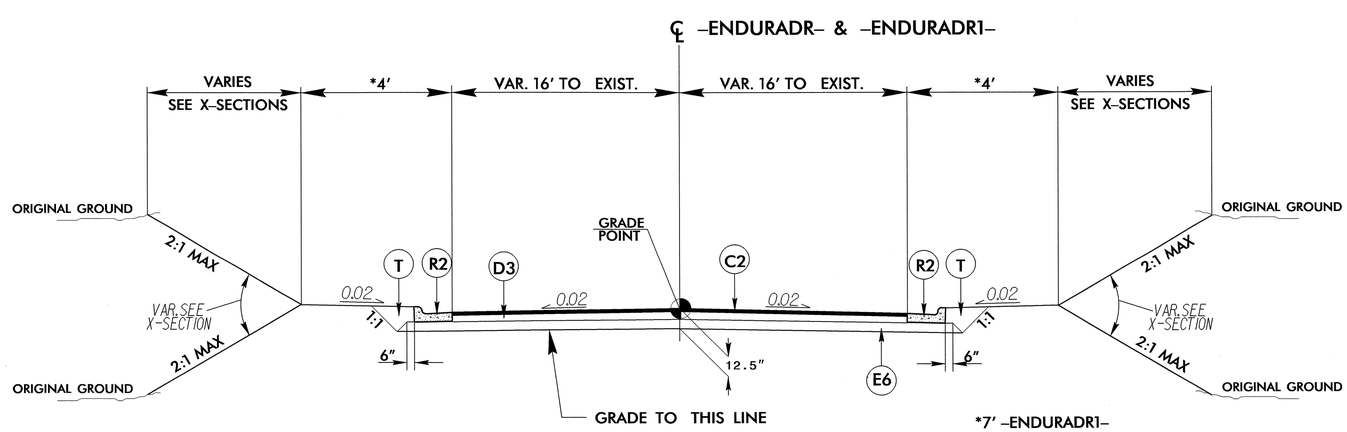
-Y1- STA. 12+00.00 TO STA. 12+64.85
-Y4- STA. 13+25.00 TO STA. 14+16.21
-Y8- STA. 10+96.89 TO STA. 11+75.00
-Y15- STA. 12+75.00 TO STA. 13+03.51



TYPICAL SECTION NO. 9

USE TYPICAL SECTION NO. 9

-Y9- STA. 15+00.00 TO STA. 16+15.72



*7' -ENDURADR1-

TYPICAL SECTION NO. 10

USE TYPICAL SECTION NO. 10

-ENDURADR- STA. 10+67.53 TO STA. 11+40.00
-ENDURADR1- STA. 10+32.10 TO STA. 10+85.00

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PROJECT REFERENCE NO.	SHEET NO.
R-2611	2-D

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW

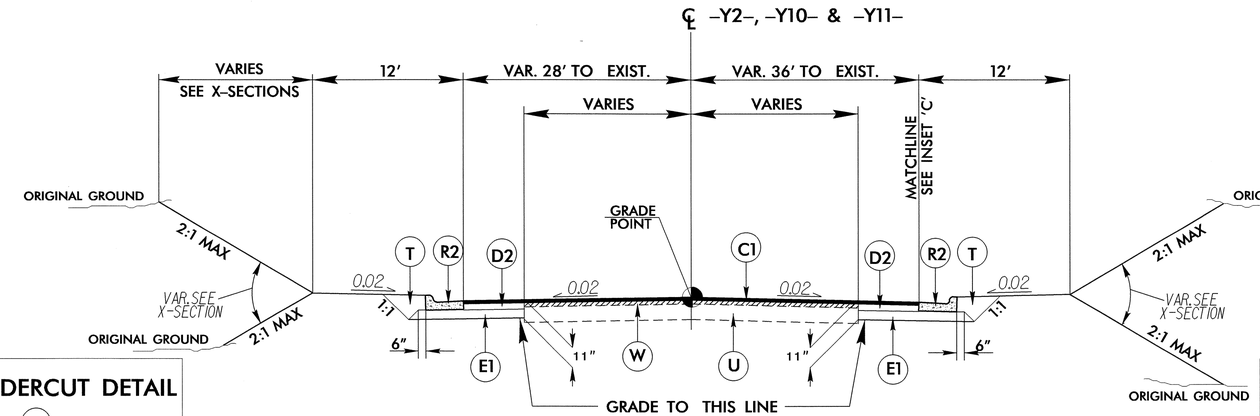
6-14-11

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER DON-CHI CHEN

6/23/11

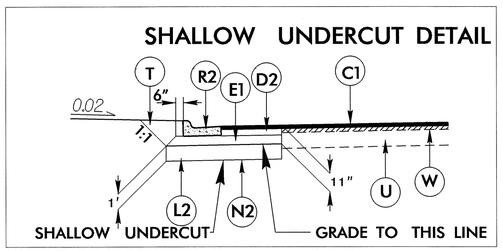
PAVEMENT SCHEDULE	
C1	3" S9.5B
D2	4" I19.0B
E1	4" B25.0B
E3	5½" B25.0B
L2	8" CLASS IV
N2	FABRIC STABIL.
R2	2'-6" C&G
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING



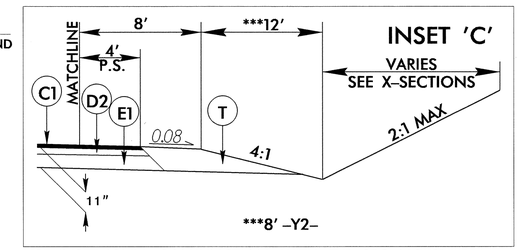
TYPICAL SECTION NO. 11

USE TYPICAL SECTION NO. 11

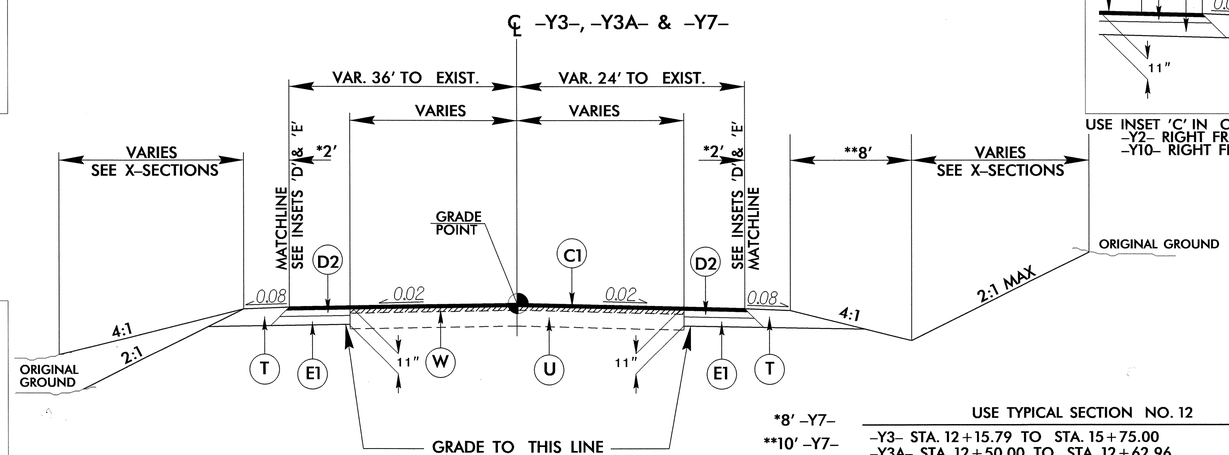
-Y2- STA. 13+64.00 TO STA. 19+21.19
-Y10- STA. 14+50.00 TO STA. 19+04.13
-Y11- STA. 10+84.17 TO STA. 12+50.00



USE DETAIL IN CONJUNCTION WITH TYP. SEC NO. 11
-Y11- FROM STA. 10+25.25 TO 12+50.00



USE INSET 'C' IN CONJUNCTION WITH TYP. SEC NO. 11
-Y2- RIGHT FROM STA. 13+64.00 TO 18+25.00
-Y10- RIGHT FROM STA. 14+50.00 TO 19+04.13

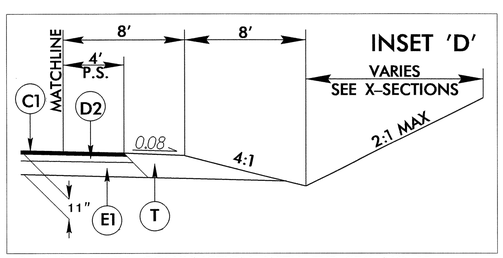


TYPICAL SECTION NO. 12

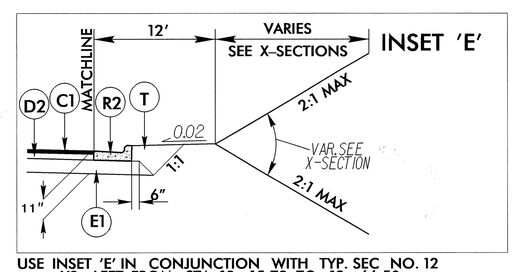
*8' -Y7-
**10' -Y7-

USE TYPICAL SECTION NO. 12

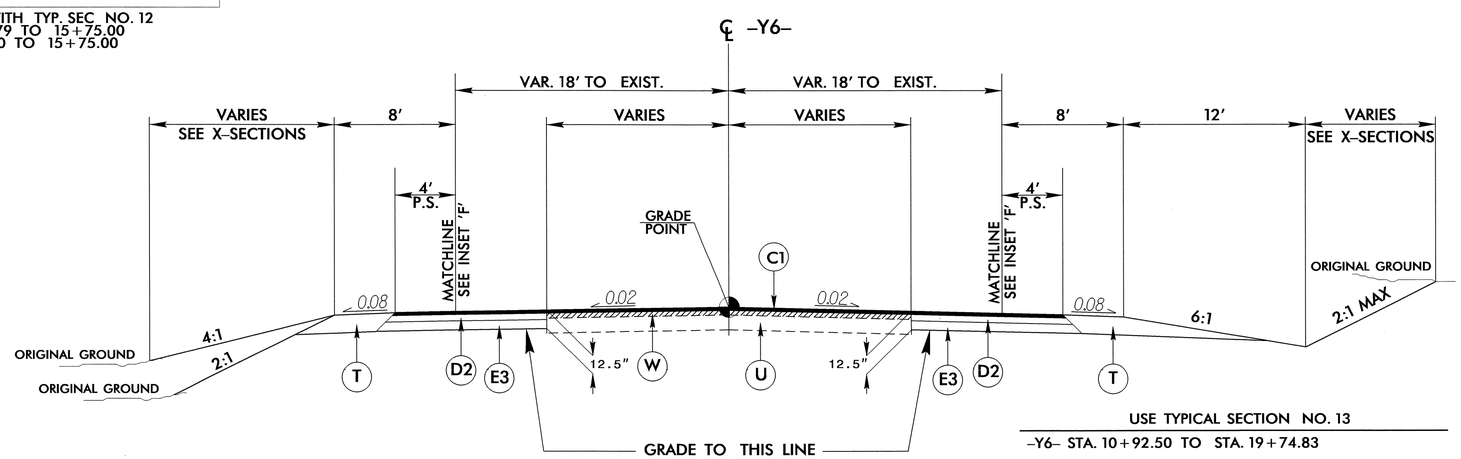
-Y3- STA. 12+15.79 TO STA. 15+75.00
-Y3A- STA. 12+50.00 TO STA. 12+62.96
-Y7- STA. 10+25.00 TO STA. 14+24.06



USE INSET 'D' IN CONJUNCTION WITH TYP. SEC NO. 12
-Y3- RIGHT FROM STA. 12+15.79 TO 15+75.00
AND LEFT FROM STA. 12+66.50 TO 15+75.00



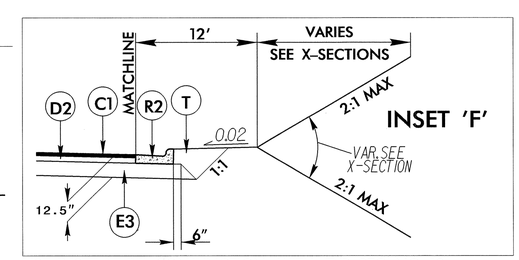
USE INSET 'E' IN CONJUNCTION WITH TYP. SEC NO. 12
-Y3- LEFT FROM STA. 12+15.79 TO 12+66.50
-Y7- FROM STA. 11+97.32 TO 14+24.06



TYPICAL SECTION NO. 13

USE TYPICAL SECTION NO. 13

-Y6- STA. 10+92.50 TO STA. 19+74.83



USE INSET 'F' IN CONJUNCTION WITH TYP. SEC NO. 13
-Y6- FROM STA. 10+92.50 TO 11+30.00

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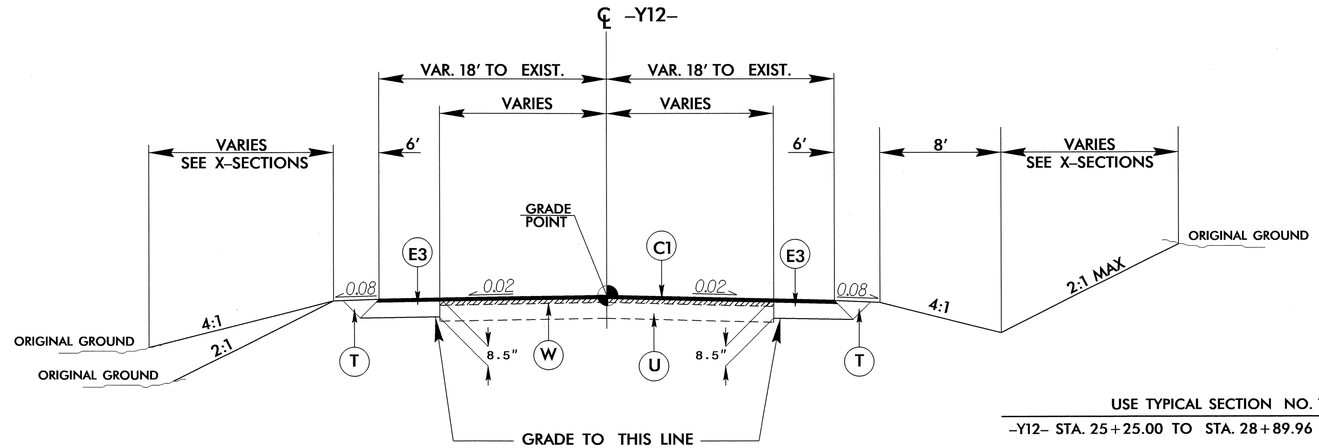
PROJECT REFERENCE NO.	SHEET NO.
R-2611	2-E

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW
6-14-11

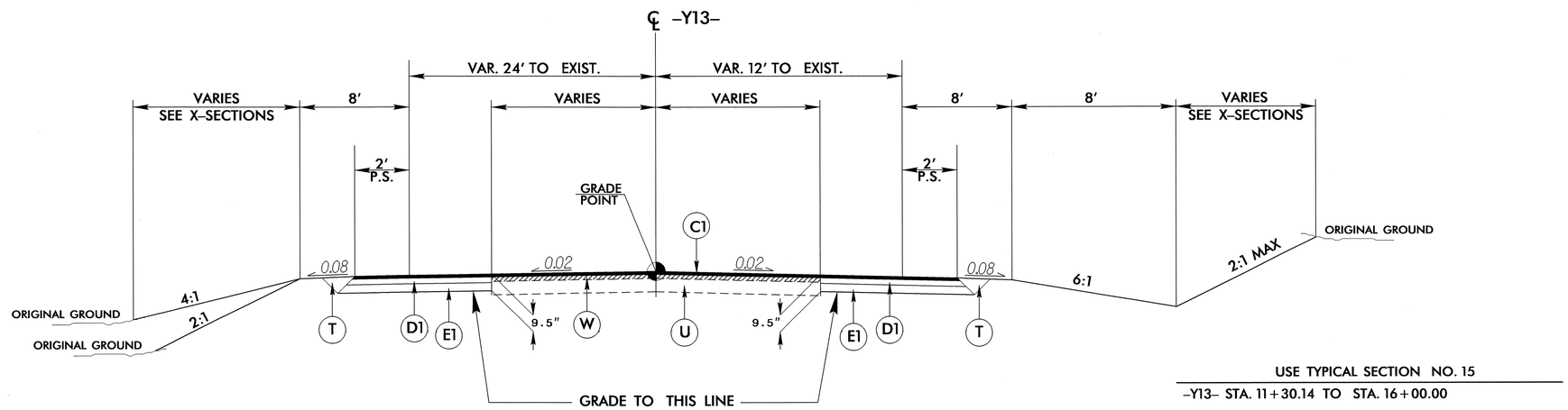
PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER DUN-CHI CHEN
6/23/11

PAVEMENT SCHEDULE	
C1	3" S9.5B
D1	2½" I19.0B
D2	4" I19.0B
E1	4" B25.0B
E2	5" B25.0B
E3	5½" B25.0B
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING



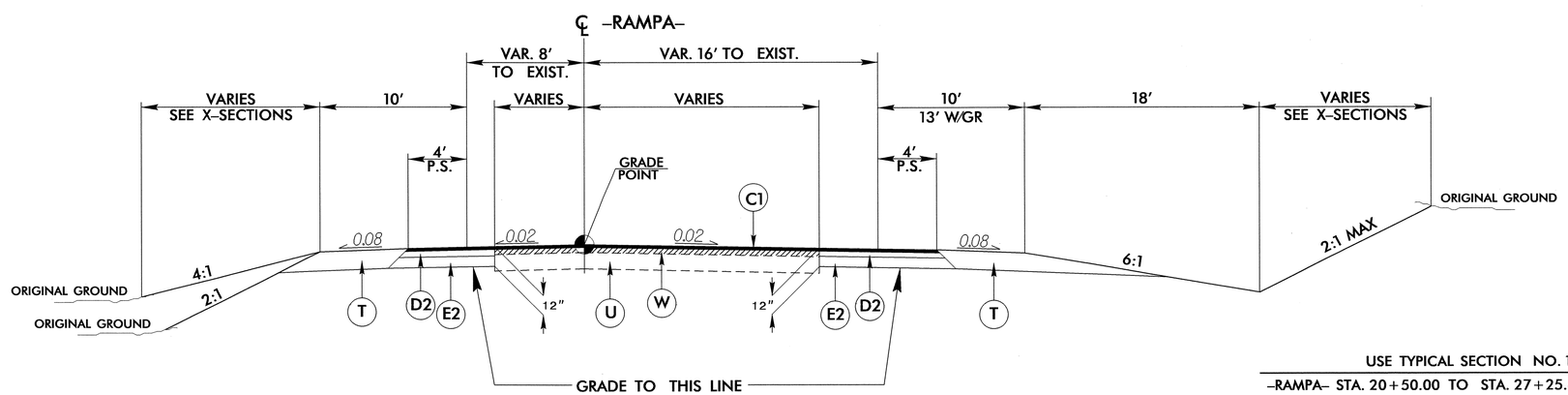
USE TYPICAL SECTION NO. 14
-Y12- STA. 25+25.00 TO STA. 28+89.96

TYPICAL SECTION NO. 14



USE TYPICAL SECTION NO. 15
-Y13- STA. 11+30.14 TO STA. 16+00.00

TYPICAL SECTION NO. 15



USE TYPICAL SECTION NO. 16
-RAMPA- STA. 20+50.00 TO STA. 27+25.65

TYPICAL SECTION NO. 16

6/2/99

07-JUN-2011 15:59
r:\roadway\proj\r2611_rdy_typ.dgn
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PROJECT REFERENCE NO.	SHEET NO.
R-2611	2-F

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19903 ENGINEER GREGORY E. BREWER

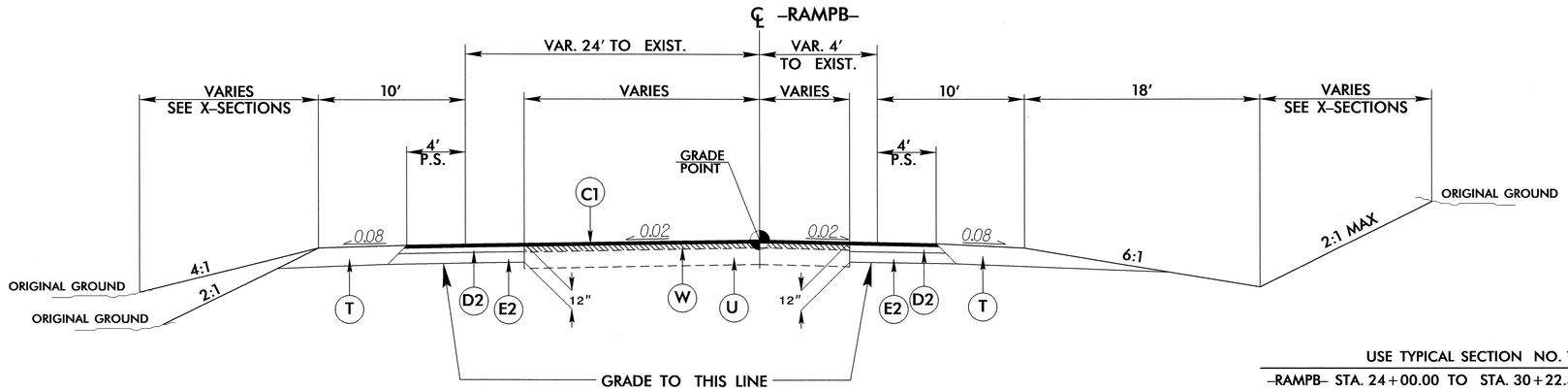
6-14-11

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER DONG-CHI CHEN

6/23/11

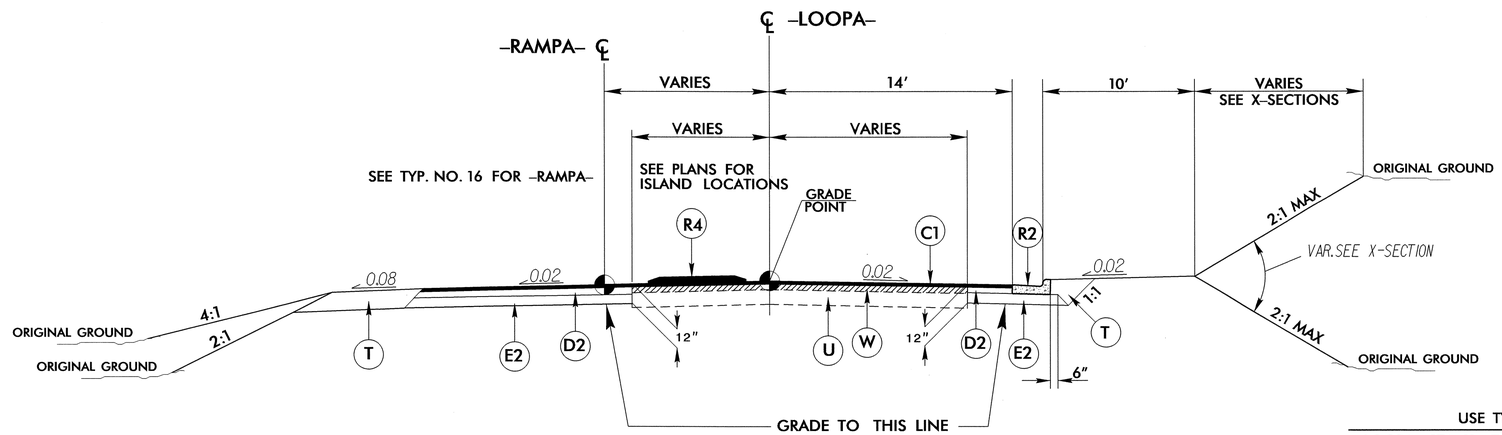
PAVEMENT SCHEDULE	
C1	3" S9.5B
D2	4" I19.0B
E2	5" B25.0B
R2	2'-6" C&G
R4	5" MONO. ISLAND
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING



USE TYPICAL SECTION NO. 17

-RAMPB- STA. 24+00.00 TO STA. 30+22.31

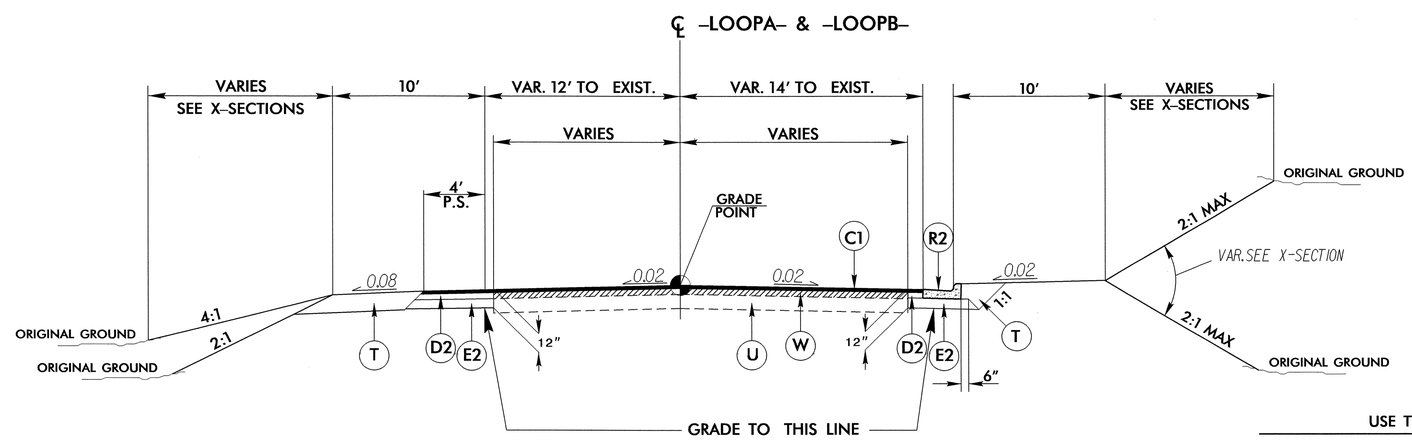
TYPICAL SECTION NO. 17



USE TYPICAL SECTION NO. 18

-LOOPA- STA. 11+72.32 TO STA. 14+22.96

TYPICAL SECTION NO. 18



USE TYPICAL SECTION NO. 19

-LOOPA- STA. 14+22.96 TO STA. 15+73.74
-LOOPB- STA. 14+75.00 TO STA. 20+35.86

TYPICAL SECTION NO. 19

6/2/99

07-JUN-2011 15:59
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PROJECT REFERENCE NO.	SHEET NO.
R-2611	2-G

ROADWAY DESIGN ENGINEER

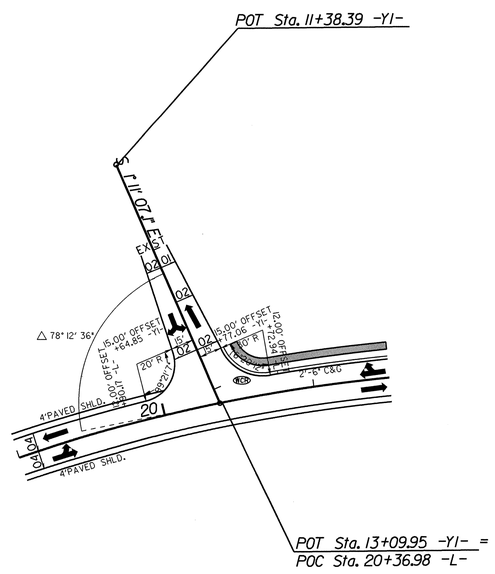
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW

6-22-11

50' 0' 50' 100'
25'
(ENGLISH)

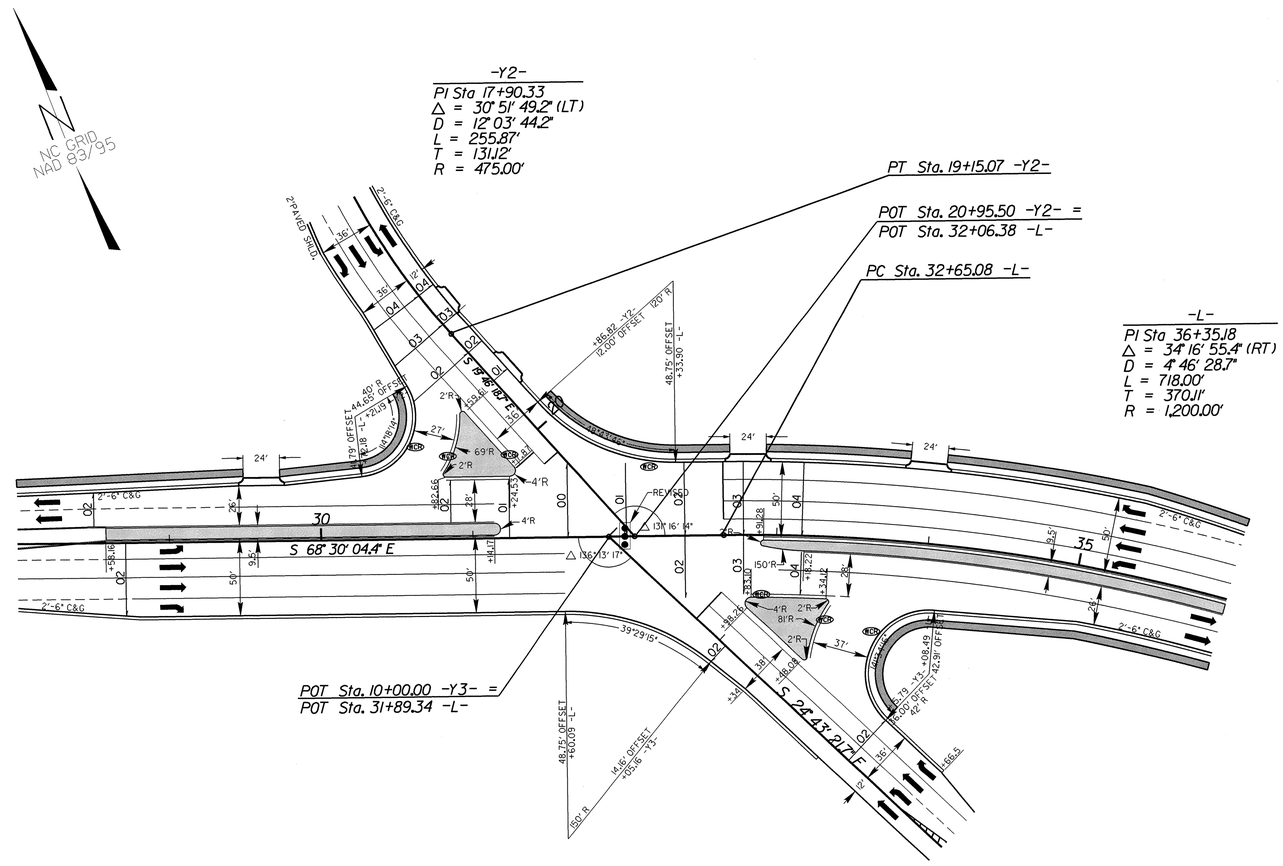
INTERSECTION DETAIL

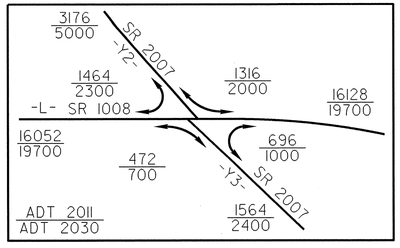
-L- SR 1008 & -Y1- IRA DR.



-L-
PI Sta 20+64.81
△ = 19° 03' 58.6" (RT)
D = 5° 12' 31.3"
L = 366.05'
T = 184.73'
R = 1,100.00'

-L- SR 1008 & -Y2- SR 2007 & -Y3- SR 2007 W. MARKET ST. & N. BUNKER HILL RD. & S. BUNKER HILL RD.





WCR WHEELCHAIR RAMP
MONOLITHIC CONCRETE ISLAND
4" CONCRETE SIDEWALK

6/2/99

22-JUN-2011 09:20
R:\Roadway\Proj\r2611_rdy_intersectiondetails_final.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2611	2-H

ROADWAY DESIGN ENGINEER

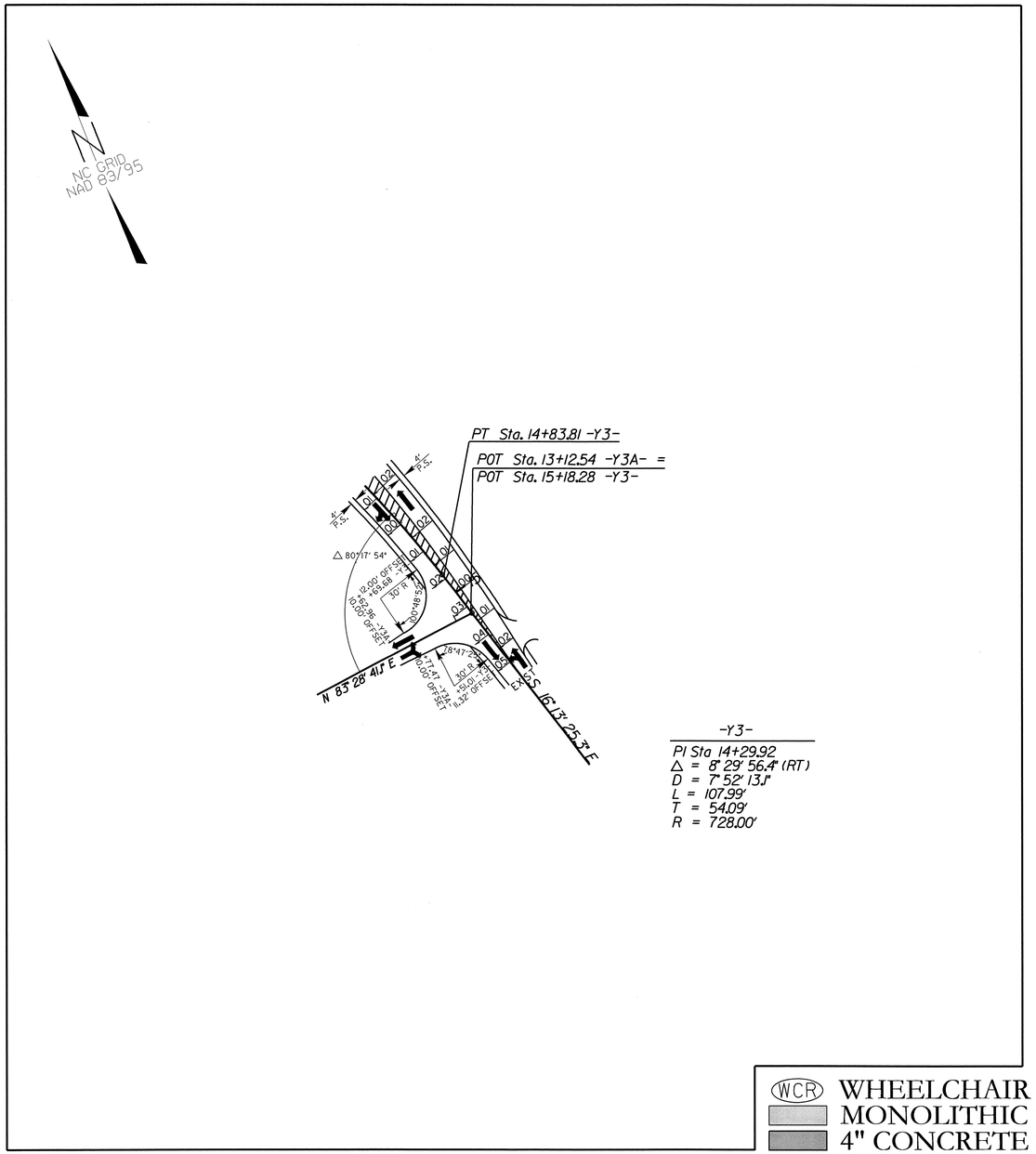
NORTH CAROLINA PROFESSIONAL SEAL 18803 ENGINEER GREGORY E. BREW

6-22-11

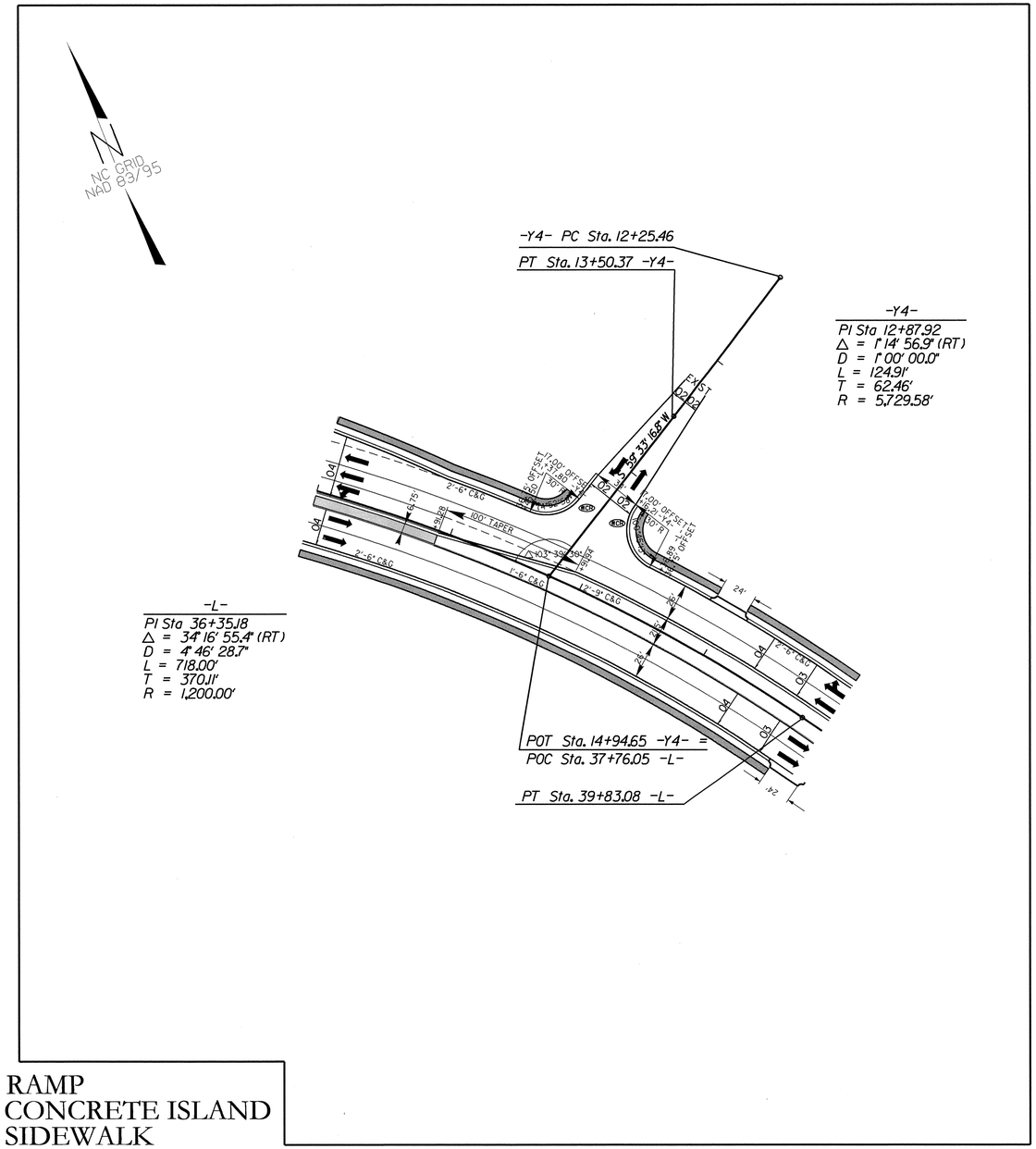
INTERSECTION DETAIL

50' 0' 50' 100'
25'
(ENGLISH)

-Y3- SR 2007 & -Y3A- S. BUNKER HILL RD & SHERFIELD



-L- SR 1008 & -Y4- KIDD RD.



WCR WHEELCHAIR RAMP
MONOLITHIC CONCRETE ISLAND
4" CONCRETE SIDEWALK

6/2/99

22-JUN-2011 09:20
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$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2611	2-1

ROADWAY DESIGN ENGINEER

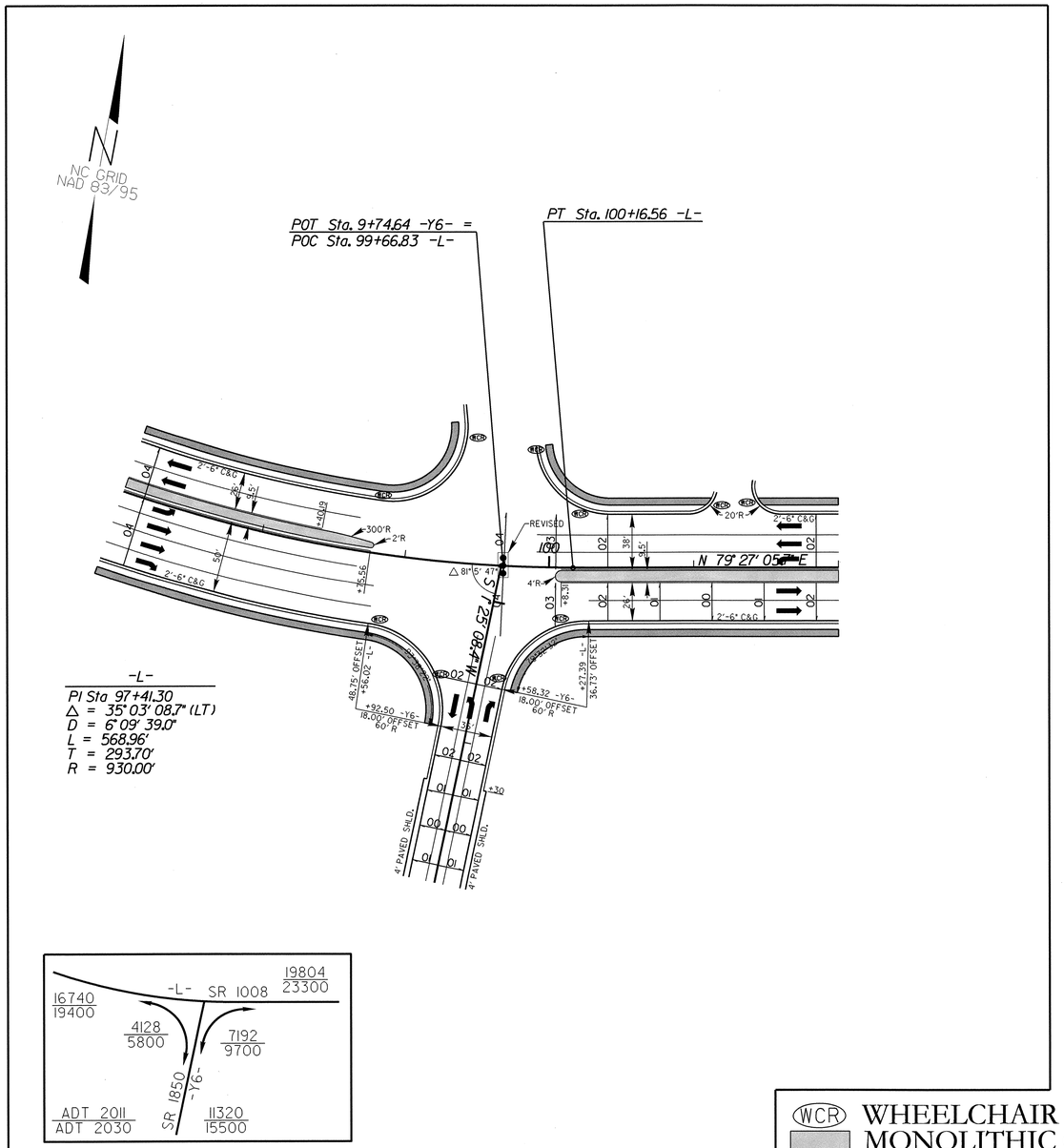
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW

6-22-11

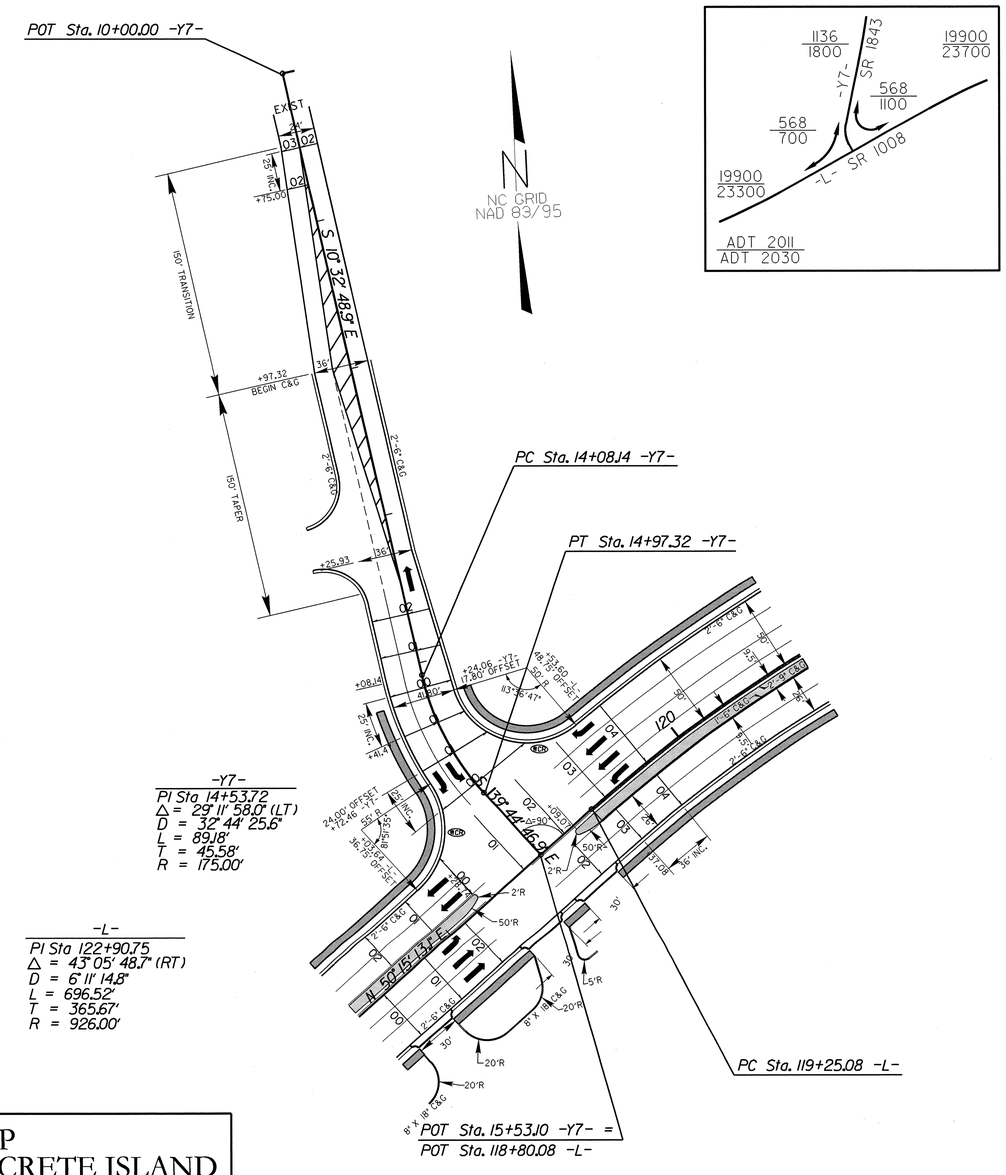
50' 0' 50' 100'
25'
(ENGLISH)

INTERSECTION DETAIL

-L- SR 1008 & -Y6- SR 1850 SANDY RIDGE RD.



-L- SR 1008 & -Y7- SR 1843 MARSHALL SMITH RD.



WCR WHEELCHAIR RAMP
MONOLITHIC CONCRETE ISLAND
4" CONCRETE SIDEWALK

6/2/99
22-JUN-2011 09:58
R:\Roadway\Proj\r2611_rdy_intersectiondetails_final.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2611	2-J

ROADWAY DESIGN ENGINEER

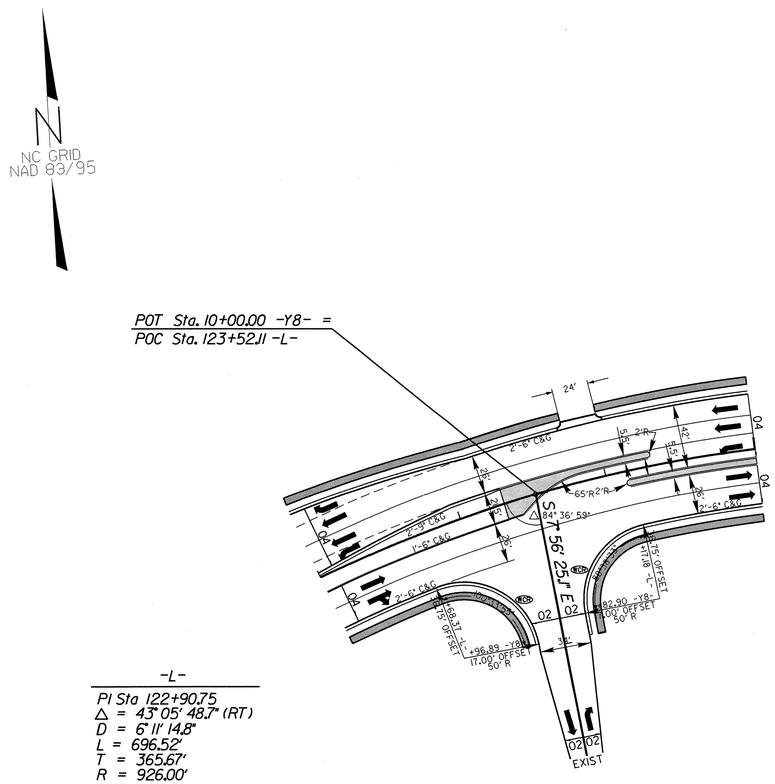
NORTH CAROLINA PROFESSIONAL SEAL 19803 ENGINEER GREGORY E. BREW

6-22-11

INTERSECTION DETAIL

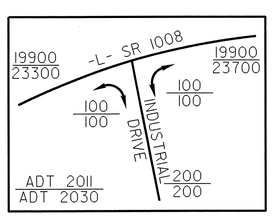
50' 0' 50' 100'
25'
(ENGLISH)

-L- SR 1008 & -Y8- INDUSTRIAL DR.

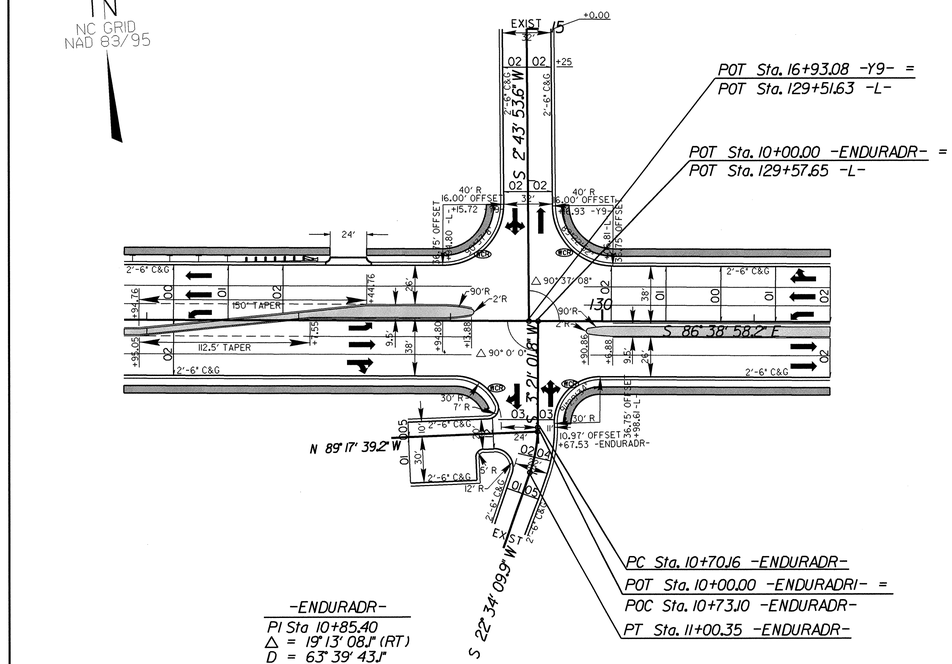


-L-

PI Sta 122+90.75
Δ = 43° 05' 48.7" (RT)
D = 6° 11' 14.8"
L = 696.52'
T = 365.67'
R = 926.00'



-L- SR 1008 & -Y9- FRANCES DAILY CT.



-ENDURADR-

PI Sta 10+85.40
Δ = 19° 13' 08.1" (RT)
D = 6° 39' 43.1"
L = 30.19'
T = 15.24'
R = 90.00'

WCR WHEELCHAIR RAMP
MONOLITHIC CONCRETE ISLAND
4" CONCRETE SIDEWALK

6/2/99

22-JUN-2011 09:20
R:\Roadway\Proj\r2611_rdy_intersectiondetails_final.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2611	2-K

ROADWAY DESIGN ENGINEER

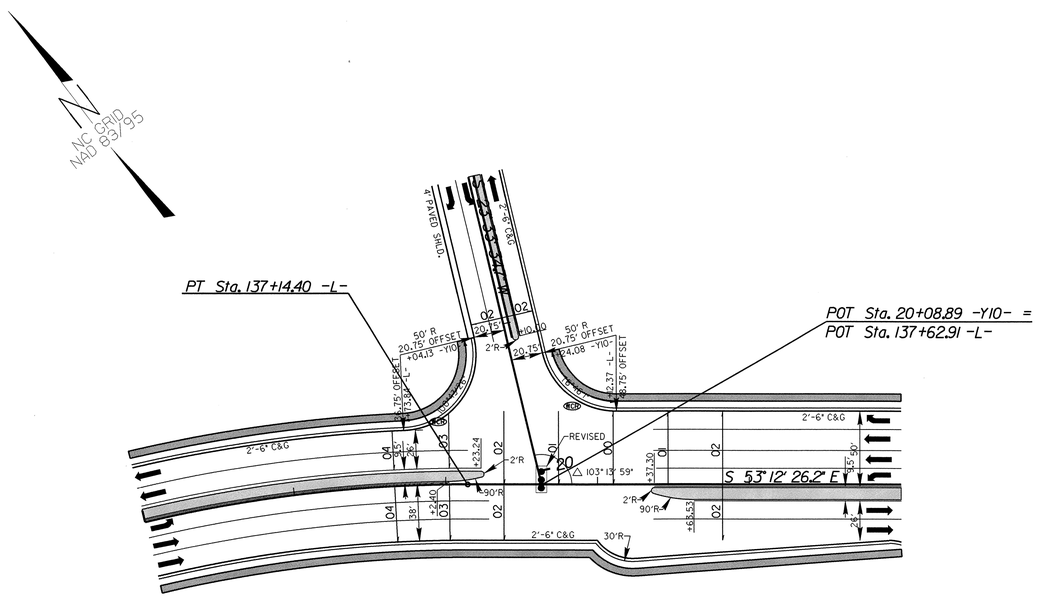
NORTH CAROLINA PROFESSIONAL SEAL 18803 ENGINEER GREGORY E. BREW

6-22-11

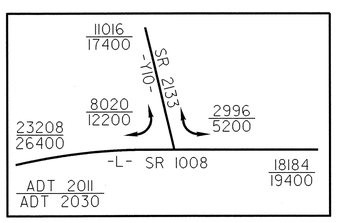
50' 0' 50' 100'
25'
(ENGLISH)

INTERSECTION DETAIL

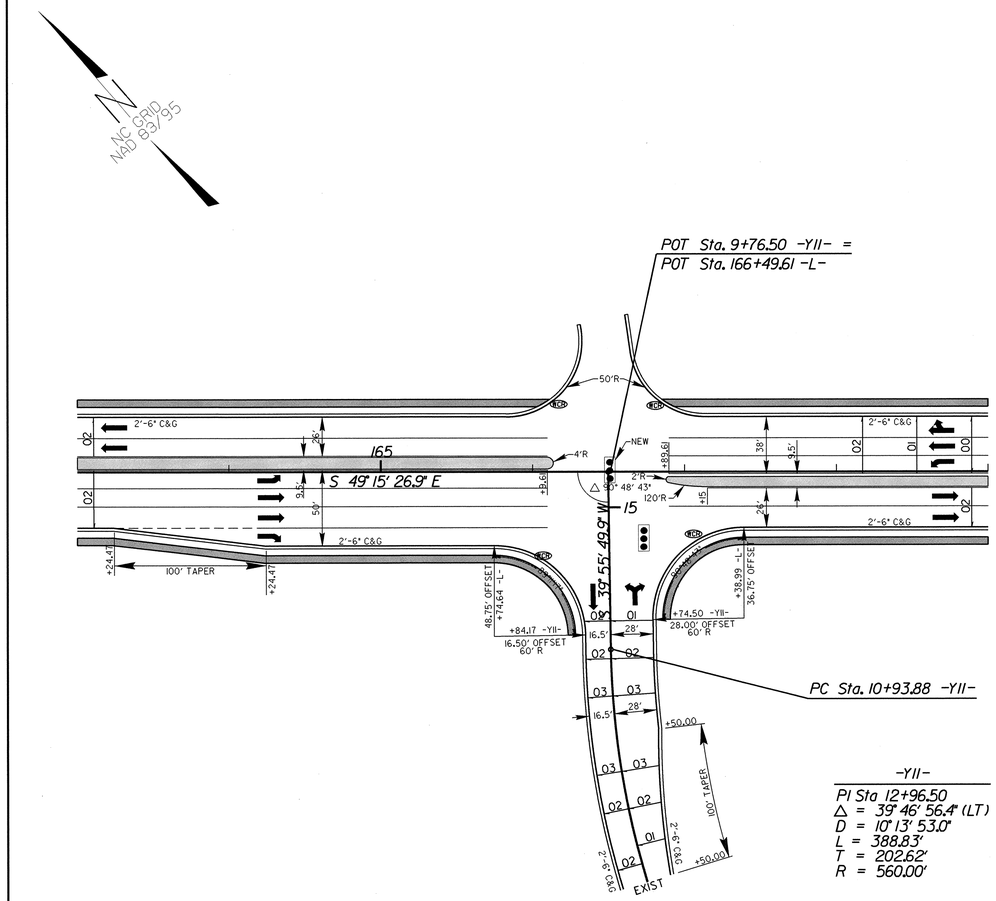
-L- SR 1008 & -Y10- SR 2133 PLESANT RIDGE RD.



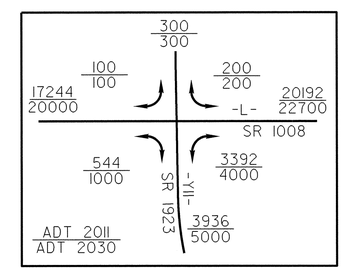
-L-
PI Sta 134+52.10
△ = 33° 26' 31.9" (RT)
D = 6° 11' 14.8"
L = 540.48'
T = 278.19'
R = 926.00'



-L- SR 1008 & -Y11- SR 1923 LANDMARK RD.



-Y11-
PI Sta 12+96.50
△ = 39° 46' 56.4" (LT)
D = 10° 13' 53.0"
L = 388.83'
T = 202.62'
R = 560.00'



WCR WHEELCHAIR RAMP
MONOLITHIC CONCRETE ISLAND
4" CONCRETE SIDEWALK

6/2/99
22-JUN-2011 09:20
R:\Roadway\Proj\r2611_rdy_intersectiondetails_final.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2611	2-L

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18003 ENGINEER GREGORY E. BREW

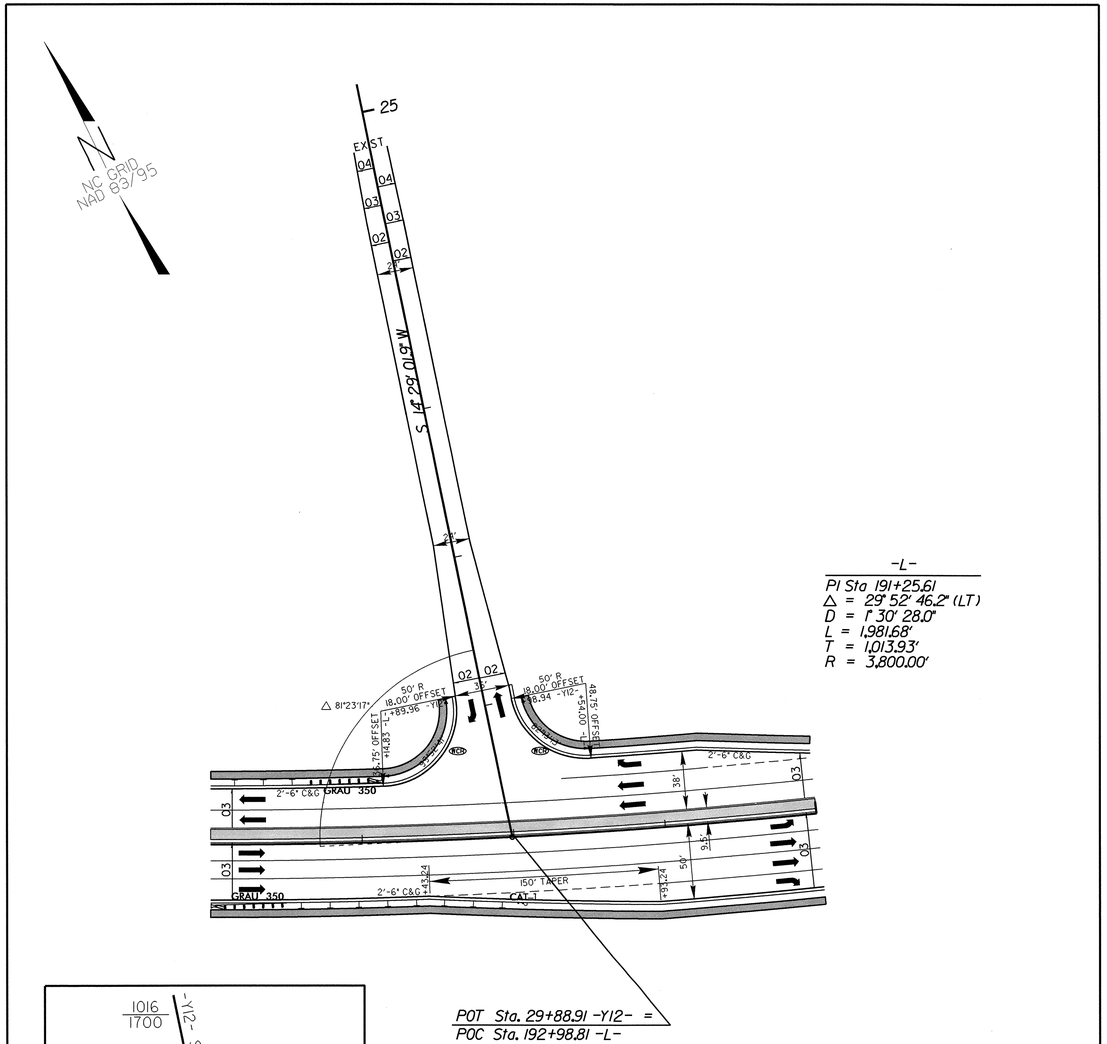
6-22-11

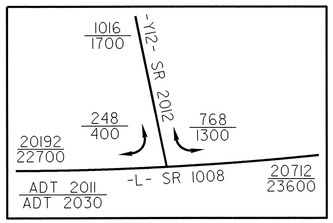
INTERSECTION DETAIL

50' 0' 50' 100'

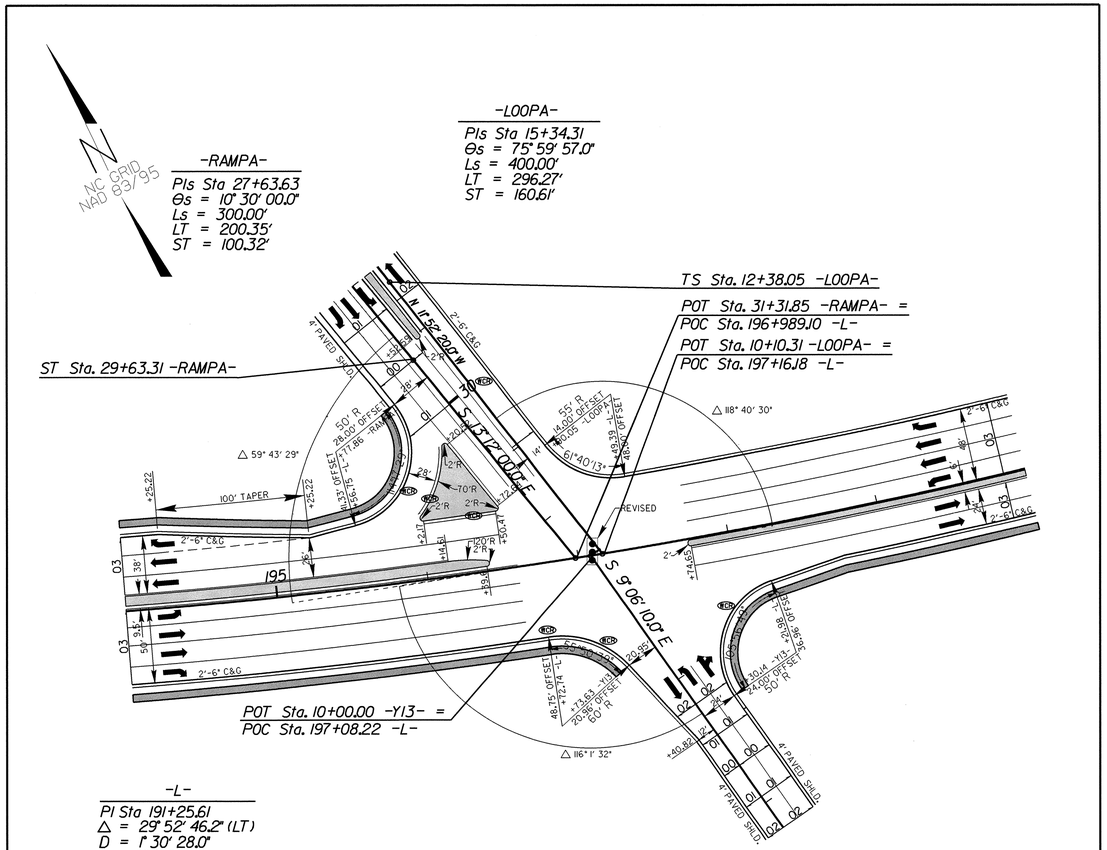
25' (ENGLISH)

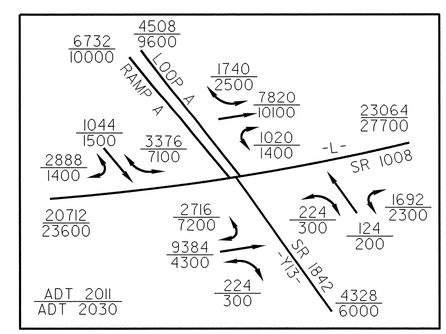
-L- SR 1008 & -Y12- SR 2012 BRIDGHAM RD.





-L- SR 1008 & -Y13- SR 1842 THATCHER RD. & -RAMP A- & -LOOP A-





WCR WHEELCHAIR RAMP

MONOLITHIC CONCRETE ISLAND

4" CONCRETE SIDEWALK

6/2/99

22-JUN-2011 09:20
R:\Roadway\Proj\r2611_rdy_intersectiondetails_final.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2611	2-M

ROADWAY DESIGN ENGINEER

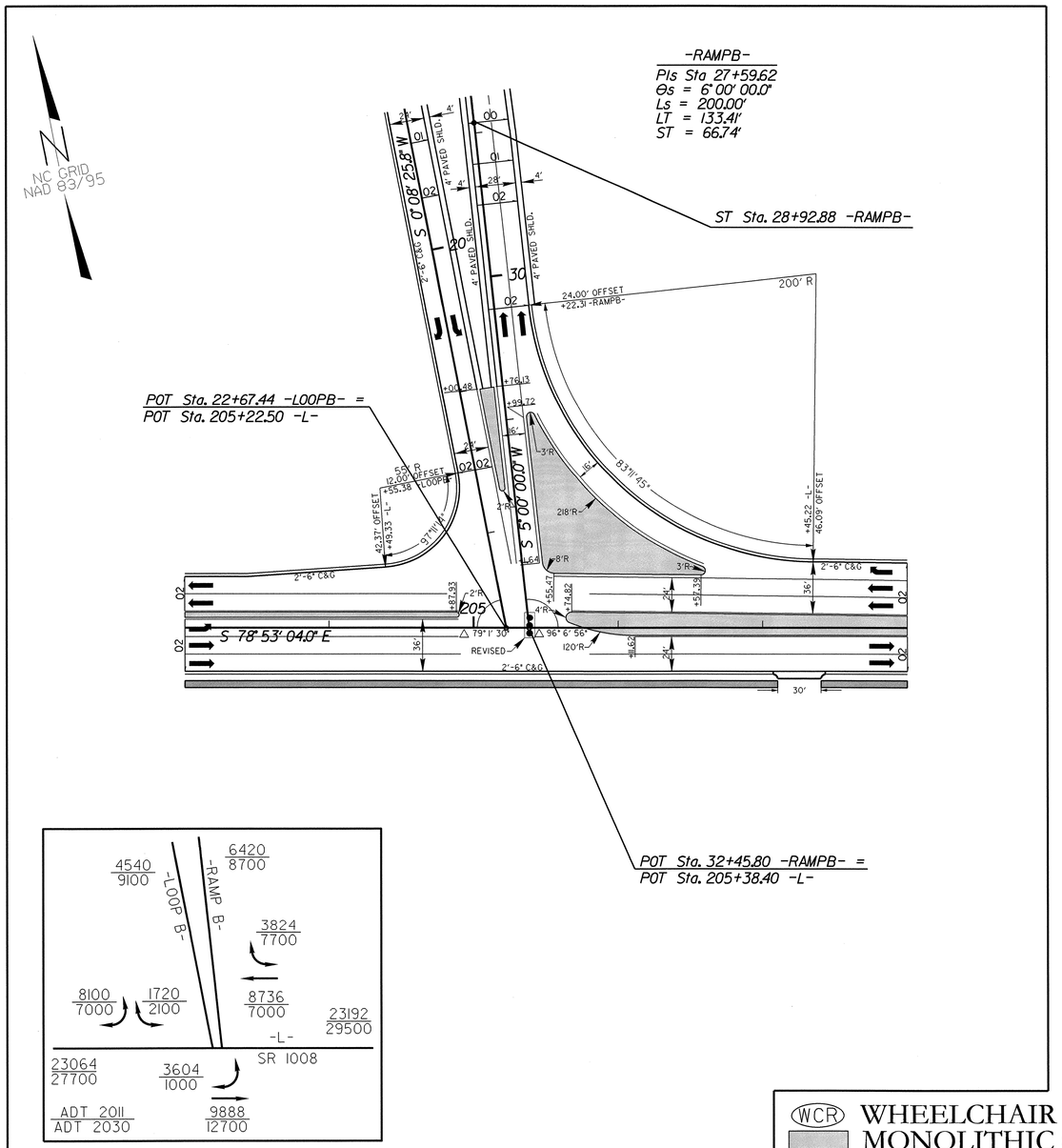
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW

6-22-11

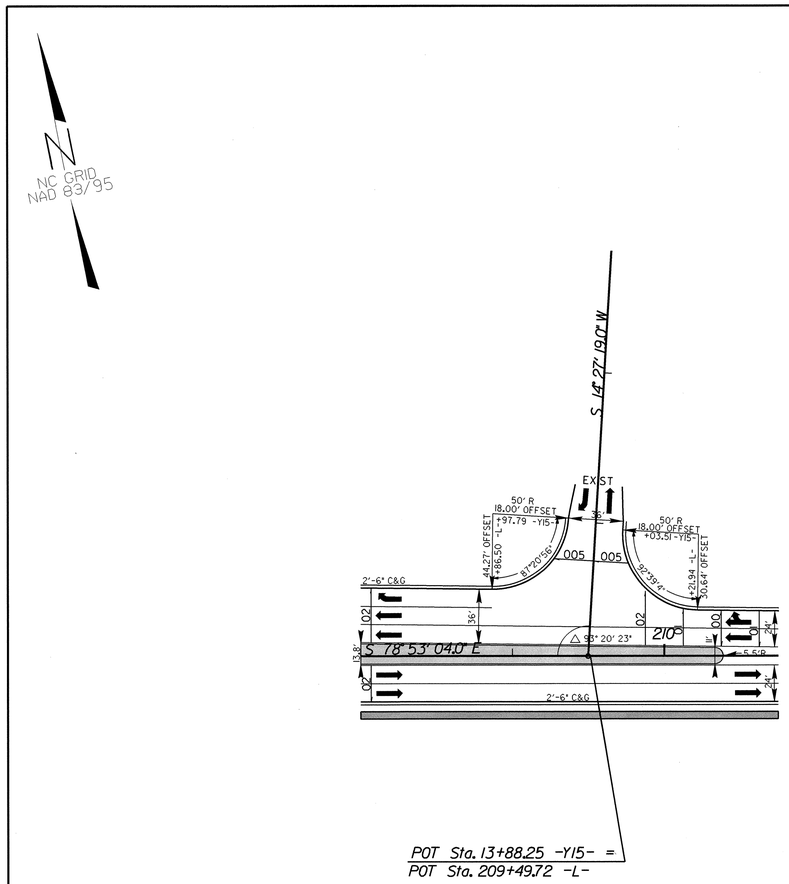
INTERSECTION DETAIL

50' 0' 50' 100'
25'

-L- SR 1008 & -LOOP B- & -RAMP B-



-L- SR 1008 & -Y15- BURGESS RD. (ENGLISH)



WCR WHEELCHAIR RAMP

MONOLITHIC CONCRETE ISLAND

6/2/99

22-JUN-2011 09:20
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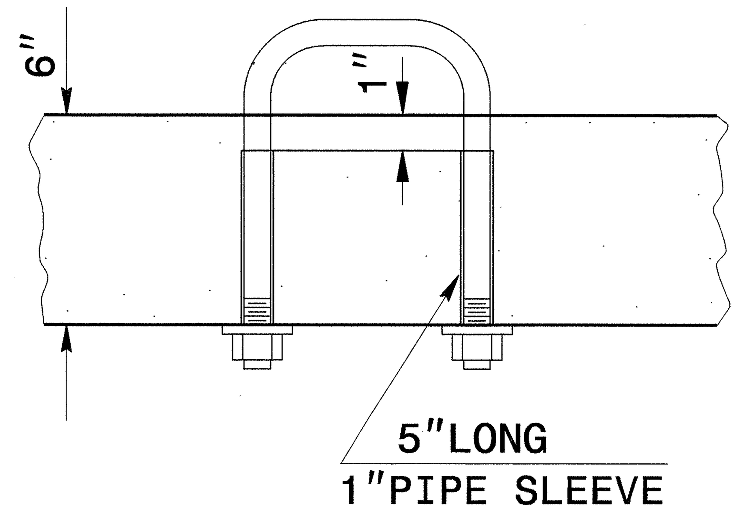
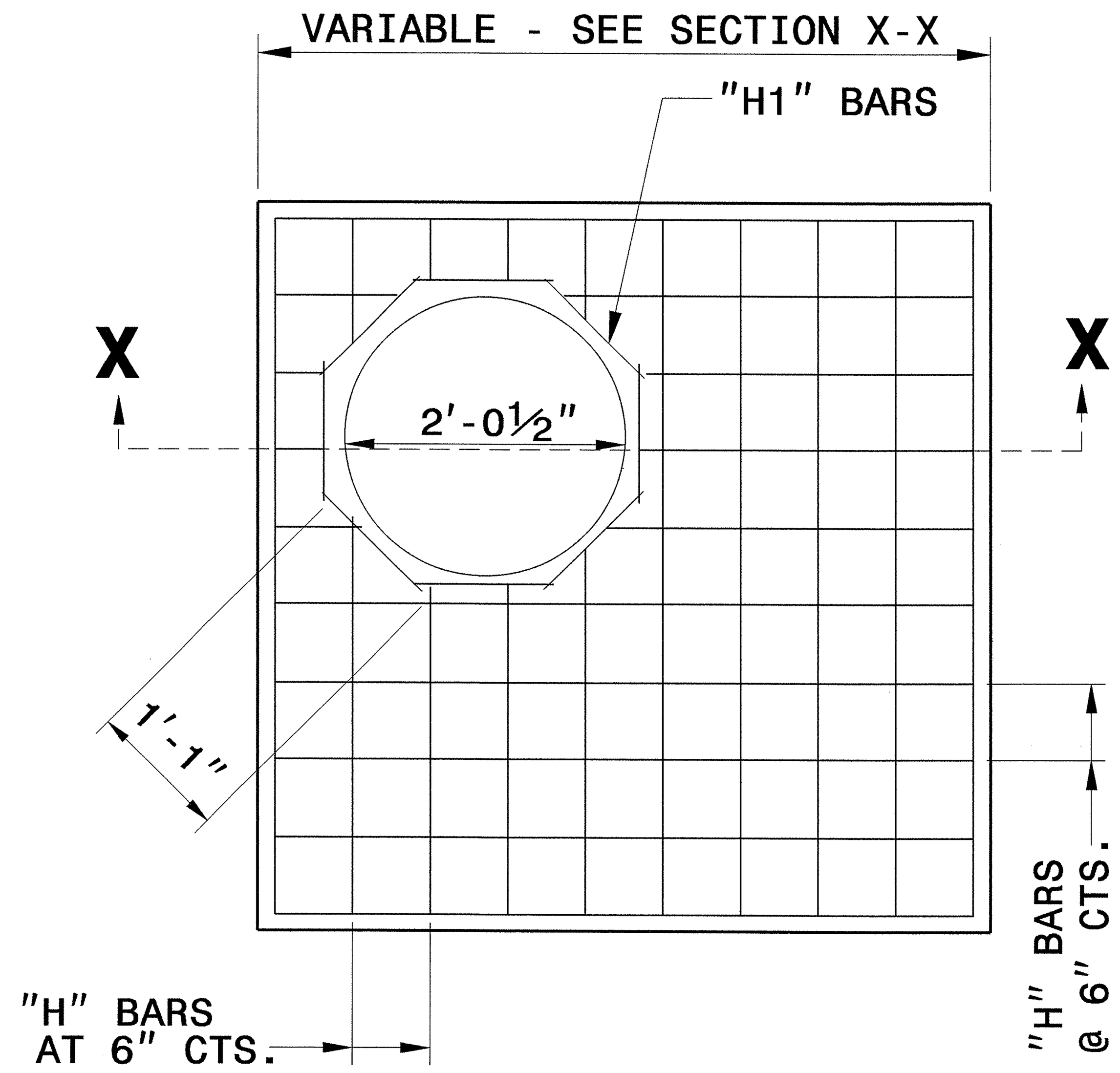
PROJECT REFERENCE NO.	SHEET NO.
R-2611	2-N

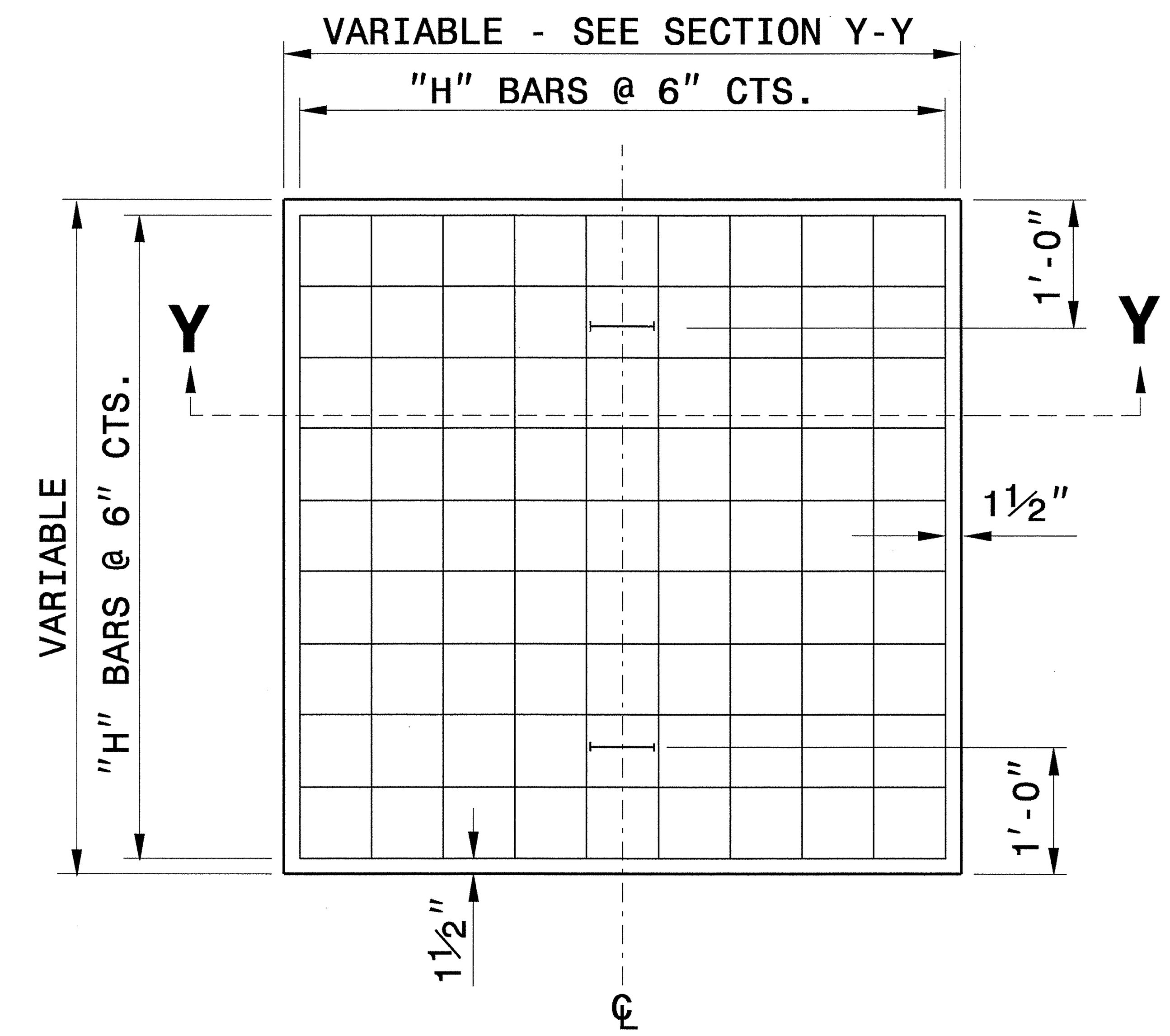
5/14/99



PARTIAL SECTION



PLAN



PLAN

GENERAL NOTES:

CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.

THE DIMENSIONS FOR THE EXISTING BOXES ARE APPROXIMATE AND MAY VARY SLIGHTLY.

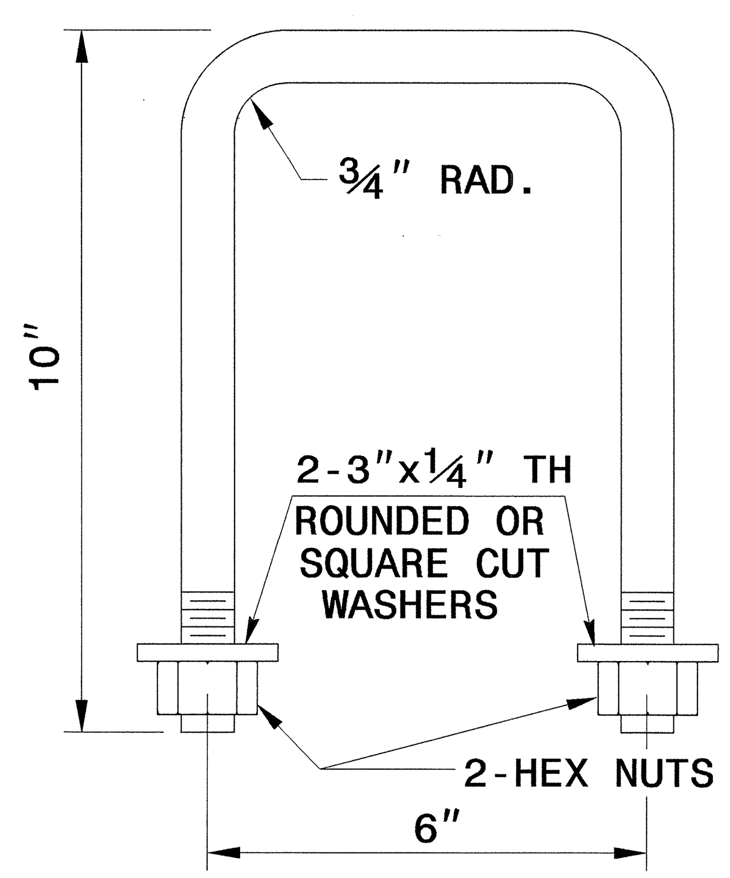
DETAIL INTENDED FOR NON-TRAFFIC BEARING DRAINAGE STRUCTURES.

BILL OF MATERIALS

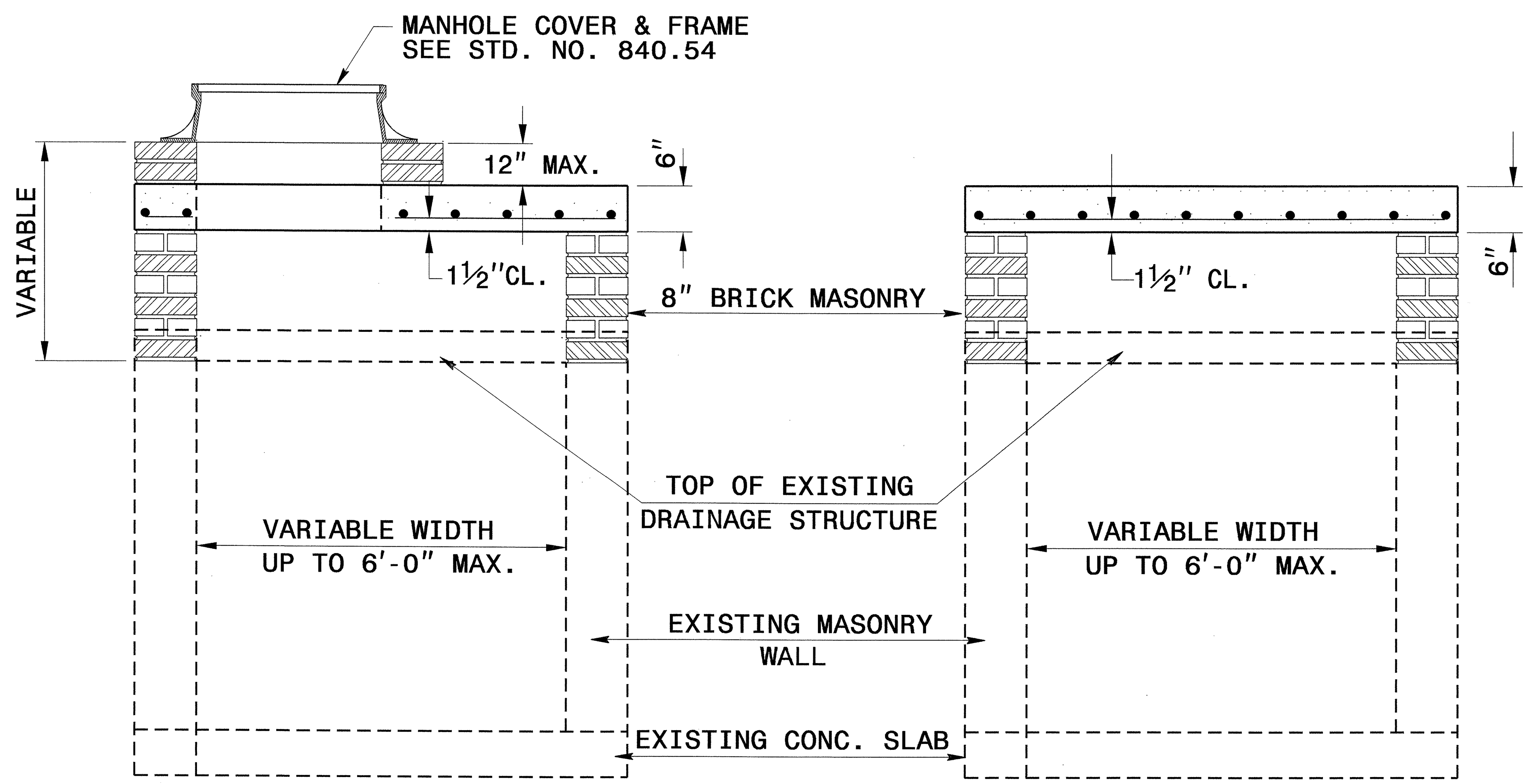
REINFORCING STEEL				
CODE	SIZE	QTY.	LENGTH	REINF. STEEL LBS.
H	#4	20	4'-6"	60.12
H1	#4	8	1'-1"	5.79
TOTAL				65.91 *

MASONRY	CU YDS
TOP SLAB CONCRETE CLASS "B"	0.43 *
BRICK MASONRY PER FT HT (MIN)	0.41

* NOTE:
QUANTITIES BASED ON 3'-6" X 3'-6" DRAINAGE STRUCTURE. ADJUST QUANTITIES FOR LARGER STRUCTURES AND MANHOLE CONSTRUCTION.

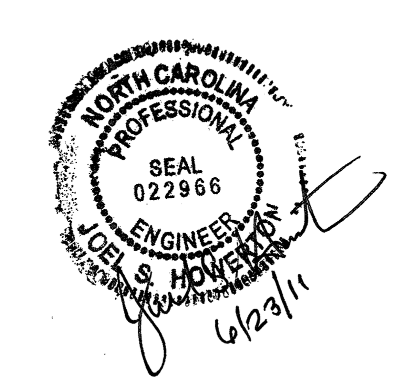


DETAIL OF HANDLE



SECTION X-X

SECTION Y-Y



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

DETAIL TO CONVERT EXISTING DROP INLET OR CATCH BASIN TO JUNCTION BOX (MANHOLE OPTIONAL)

ORIGINAL BY: DATE:
MODIFIED BY: rnbritt DATE: 05/10/06
CHECKED BY: [signature] DATE: 5/10/11
FILE SPEC.: details/nbritt/english/hydro/boxconversion

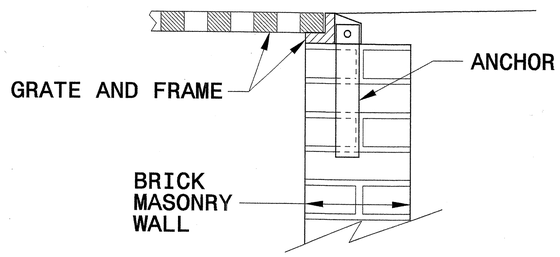
$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$
$$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2611	2-0

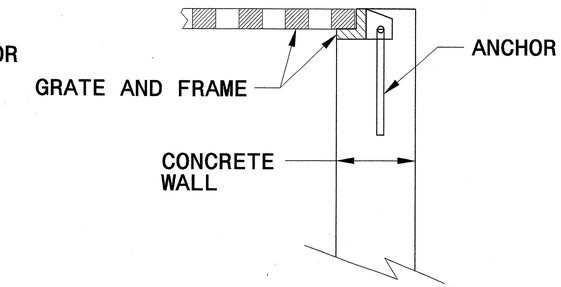
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

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

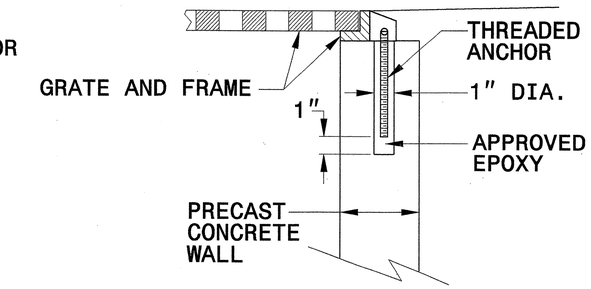
SHEET 1 OF 1
840D25



BRICK MASONRY CONSTRUCTION



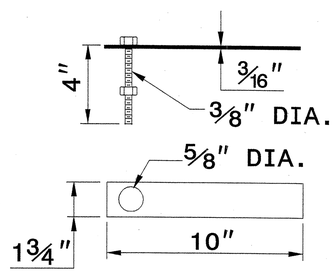
CONCRETE CONSTRUCTION



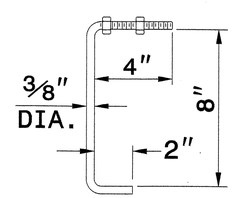
PRECAST CONCRETE CONSTRUCTION

DETAIL SHOWING ANCHORAGE OF FRAME FOR GRATED DROP INLET

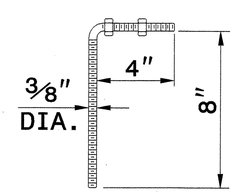
NOTE:
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



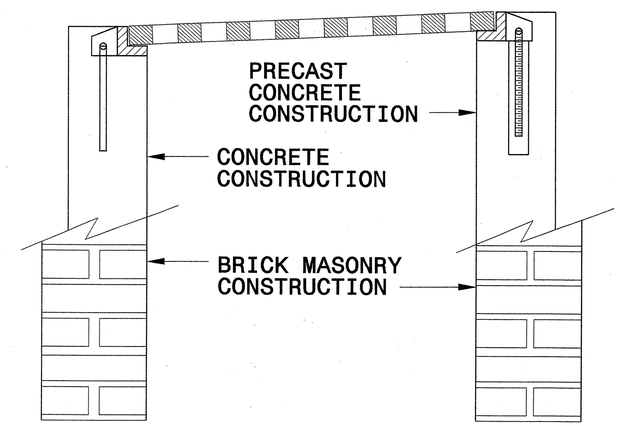
MASONRY ANCHOR
3/8" DIA. BOLT WITH PLATE



CONCRETE ANCHOR
3/8" DIA. BENT BAR



PRECAST CONCRETE ANCHOR
3/8" DIA. BENT BAR



FRAME AND GRATE INSTALLATION FOR NORMAL CROWN AND SUPERELEVATED SECTIONS

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

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

SHEET 1 OF 1
840D25

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOHN S. HOWERTON
4/23/11

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

SEE PLATE FOR TITLE

ORIGINAL BY: 2006 STD 840.25 DATE: 07/18/06
MODIFIED BY: E.E. WARD DATE: 9/25/06
CHECKED BY: DATE: 11/13/06
FILE SPEC.:

$$$$SYSTIME$$$$
$$$$DGNS$$$$
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2611	2-P

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

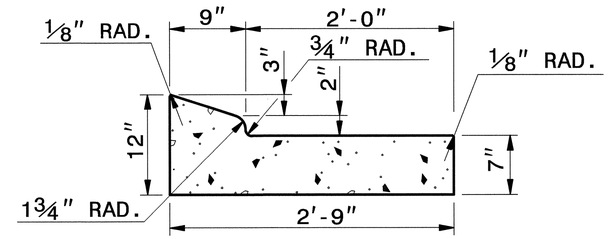
ENGLISH DETAIL DRAWING FOR

2'-9" CONCRETE CURB & GUTTER

SHEET 1 OF 1

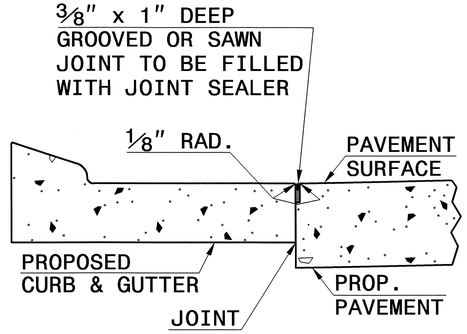
846D01

GENERAL NOTES:
- PLACE CONTRACTION JOINTS AT 10' INTERVALS, EXCEPT THAT A 15' SPACING MAY BE USED WHEN A MACHINE IS USED OR WHEN SATISFACTORY SUPPORT FOR THE FACE FORM CAN BE OBTAINED WITHOUT THE USE OF TEMPLATES AT 10' INTERVALS.
- JOINT SPACING MAY BE ALTERED IF REQUIRED BY THE ENGINEER.
- CONTRACTION JOINTS MAY BE INSTALLED WITH THE USE OF TEMPLATES OR FORMED BY OTHER APPROVED METHODS. MAKE NON-TEMPLATE FORMED JOINTS A MIN. OF 1½" DEEP.
- FILL ALL CONSTRUCTION JOINTS WITH JOINT FILLER AND SEALER.
- SPACE EXPANSION JOINTS AT 90' INTERVALS AND ADJACENT TO ALL RIGID OBJECTS.

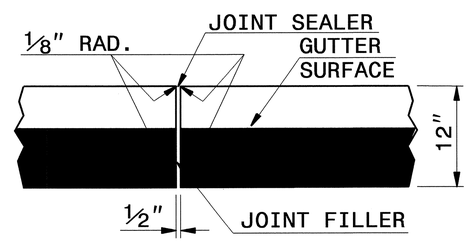


2'-9" CURB AND GUTTER

SECTION VIEW OF CURB AND GUTTER



LONGITUDINAL JOINT



TRANSVERSE EXPANSION JOINT IN CURB AND GUTTER

SECTION VIEW OF JOINTS

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RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR

2'-9" CONCRETE CURB & GUTTER

SHEET 1 OF 1

846D01

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOWERTON
4/23/11

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ORIGINAL BY: STD. 846.01 DATE:
MODIFIED BY: E.E. WARD DATE: 8-15-00
CHECKED BY: DATE:
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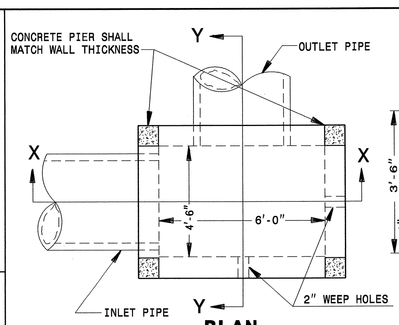
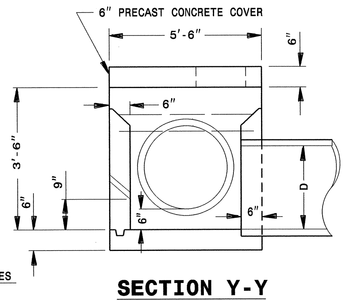
5/14/99

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

ENGLISH DETAIL DRAWING FOR
CONCRETE CATCH BASIN
(3 OR 4 SIDE OPEN THROAT)



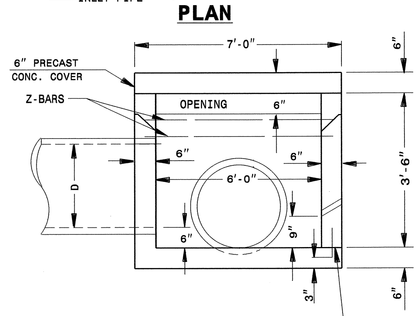
PLAN



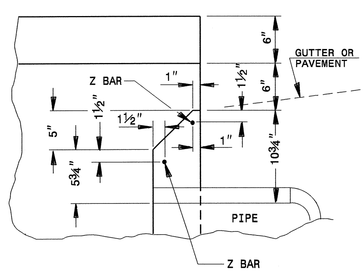
SECTION Y-Y

GENERAL NOTES:

ALL CATCH BASINS OVER 3'-6" IN DEPTH TO BE PROVIDED WITH STEPS 12" ON CENTERS. STEPS SHALL BE IN ACCORDANCE WITH STD. 840.66.
ALL EXPOSED CORNERS TO BE CHAMFERED 1".
CLASS "B" CONCRETE TO BE USED THROUGHOUT.
2" PIPE WEEPHOLES TO BE PLACED AS DIRECTED BY ENGINEER.
THE 6" OPENING SHOWN MAY BE INCREASED TO 8" MAXIMUM IF DEEMED TO BE NECESSARY BY THE ENGINEER.
OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #5 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.
FORMS ARE TO BE USED FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
IF REINFORCED CONCRETE PIPE IS SET IN BASE SLAB OF BOX, ADD TO BASE AS SHOWN ON STD. DWG. 840.00.
A STONE DRAIN CONSISTING OF 1 CUBIC FOOT OF NO. 78M STONE CONTAINED IN A BAG OF POROUS FABRIC SHALL BE PLACED AT EACH WEEP HOLE.
FOR 8' IN HEIGHT OR LESS USE 6" WALLS AND BOTTOM SLAB.
OVER 8' IN HEIGHT USE 8" WALLS AND BOTTOM SLAB. QUANTITIES TO BE ADJUSTED ACCORDINGLY.

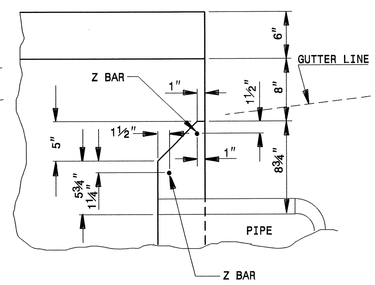


SECTION X-X



PART SECTION Y-Y

SHOWING METHOD OF CONSTRUCTION FOR 6" OPENING



PART SECTION Y-Y

SHOWING METHOD OF CONSTRUCTION IF INCREASED OPENING IS USED

BILL OF MATERIALS

REINFORCING STEEL					MASONRY	
CODE	SIZE	QTY.	LENGTH	REINF. STEEL LBS.	CONCRETE CLASS "B"	FT³
X	#4	13	5'-2"	44.87	TOTAL	2.66
Y	#4	9	6'-8"	40.08	NO DEDUCTIONS HAVE BEEN MADE FOR PIPES OR MANHOLES	
Z1	#4	4	6'-8"	17.81		
Z2	#4	4	5'-2"	13.81		
TOTAL				116.57		

SHEET 1 OF 2
840D04

STATE OF
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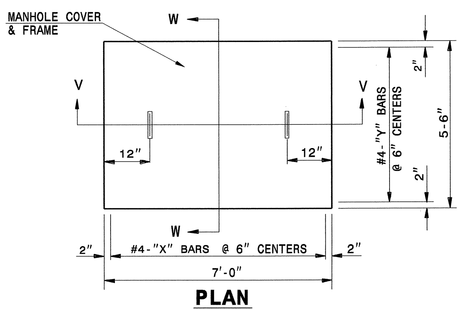
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
CONCRETE CATCH BASIN
(3 OR 4 SIDE OPEN THROAT)

SHEET 1 OF 2
840D04

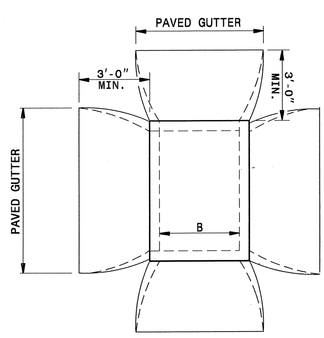
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
CONCRETE CATCH BASIN
(3 OR 4 SIDE OPEN THROAT)

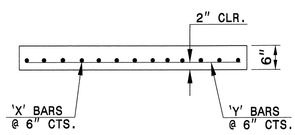


PLAN

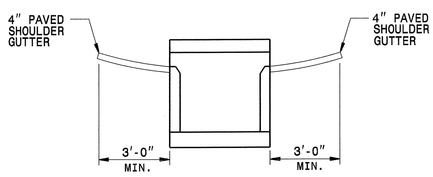
PLAN OF PRECAST COVER



PLAN OF CATCH BASIN IN MEDIAN STRIP

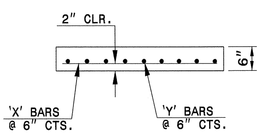


SECTION V-V

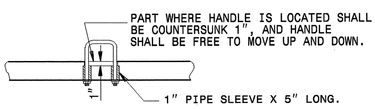


SECTION OF CATCH BASIN MEDIAN STRIP

DETAIL SHOWING METHOD OF PLACING CATCH BASIN AND PAVED SHOULDER GUTTER

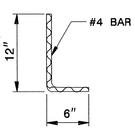


SECTION W-W

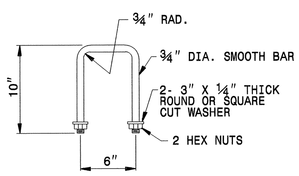


PART SECTION

THRU COVER SHOWING HANDLE



DOWEL



DETAIL OF HANDLE

SHEET 2 OF 2
840D04

STATE OF
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RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
CONCRETE CATCH BASIN
(3 OR 4 SIDE OPEN THROAT)

SHEET 2 OF 2
840D04

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ORIGINAL BY: E. E. WARD DATE: 8-21-03
MODIFIED BY: L. L. CLARK DATE: 5-10-11
CHECKED BY: J. HAWARD
FILE SPEC.: /jaward/detail/metric/stnd/840d04.dgn

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NORTH CAROLINA PROFESSIONAL SEAL 021896 ENGINEER
DOT
4/29/11

PROJECT REFERENCE NO. R-2611
SHEET NO. 2-Q

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5/14/99

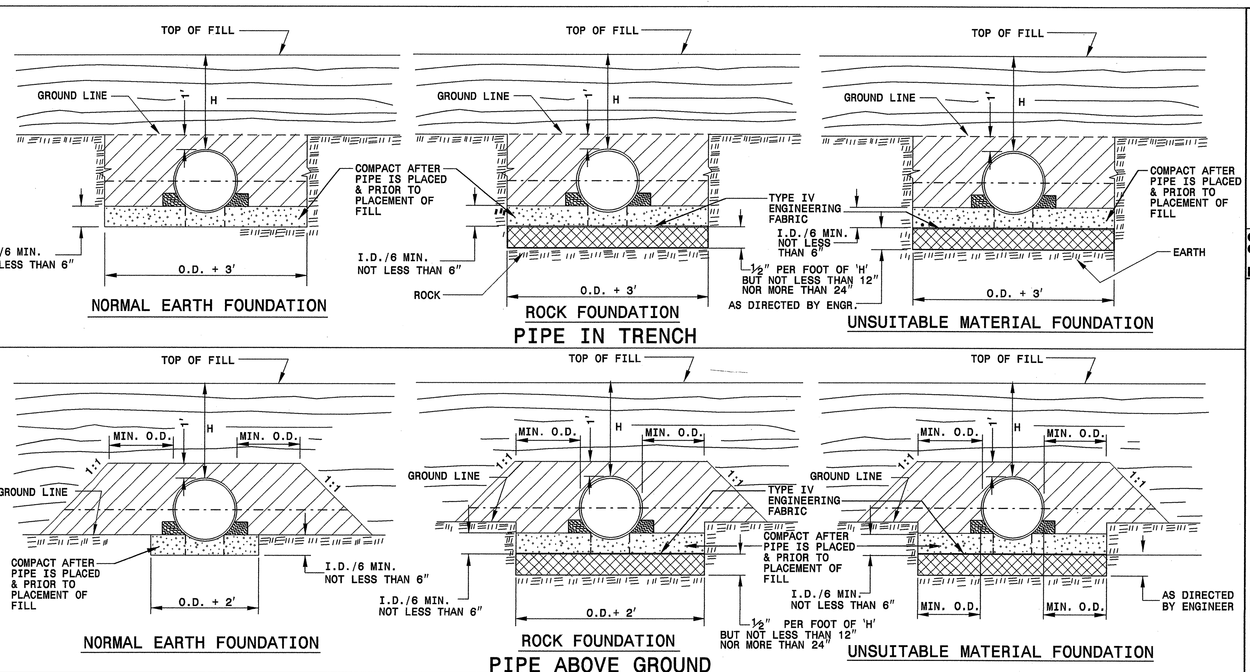
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

7-06

ENGLISH DETAIL DRAWING FOR

METHOD OF PIPE INSTALLATION

FLEXIBLE PIPE



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.

SHEET 1 OF 3

300D01

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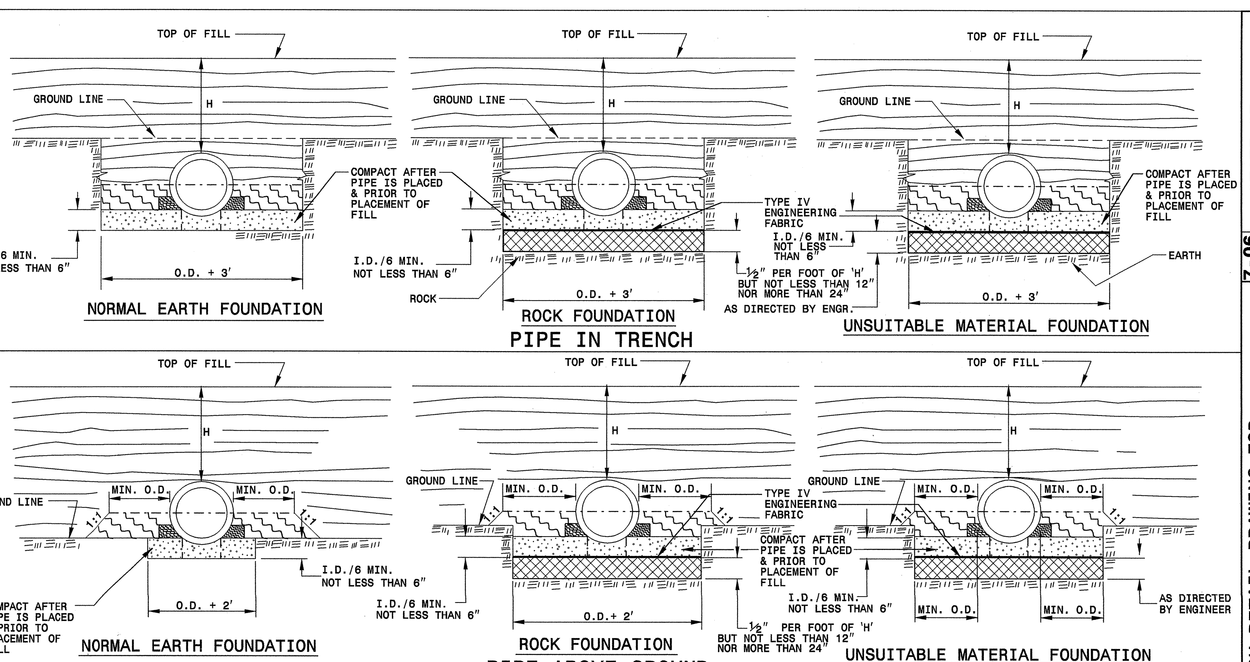
RALEIGH, N.C.

7-06

ENGLISH DETAIL DRAWING FOR

METHOD OF PIPE INSTALLATION

RIGID PIPE



GENERAL NOTES:

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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.

SHEET 2 OF 3

300D01

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ORIGINAL BY: KKempf DATE: 5-15-09
MODIFIED BY: DATE:
CHECKED BY: DATE: 7/31/09
FILE: SPE6/ericward/stds/stdstodetails/30001/0300d01.dgn

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022456 JOSEPH E. HOWERTON

PROJECT REFERENCE NO. R-2611

SHEET NO. 2-R

STATE OF NORTH CAROLINA
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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
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RALEIGH, N.C.

7-06

ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION

FILL HEIGHT TABLES

SHEET 3 OF 3
300D01

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ORIGINAL BY: KKempf DATE: 5-15-09
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NORTH CAROLINA PROFESSIONAL SEAL 022986 ENGINEER JOHN C. HOWERTON
7/30/09

PROJECT REFERENCE NO. R-2611
SHEET NO. 2-S

PROJECT REFERENCE NO.	SHEET NO.
R-2611	2-T

STATE OF
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DEPT. OF TRANSPORTATION
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RALEIGH, N.C.

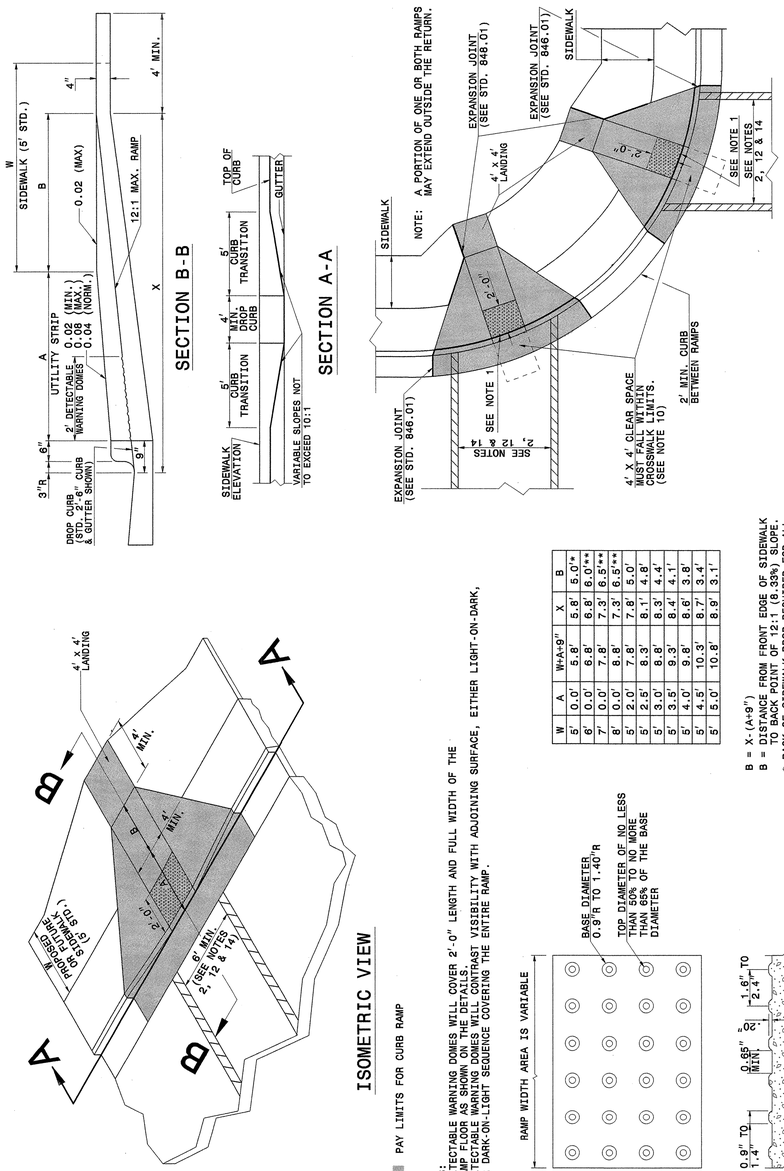
ENGLISH DETAIL DRAWING FOR

CURB RAMP

PROPOSED CURB AND GUTTER

SHEET 1 OF 3

848D05



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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'

NOTES:
1. DETECTABLE WARNING DOMES WILL COVER 2'-0" LENGTH AND FULL WIDTH OF THE RAMP FOR CURB RAMPS ON THE DETAILS.
2. DETECTABLE WARNING DOMES WILL CONTRAST VISIBILITY WITH ADJOINING SURFACE, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT SEQUENCE COVERING THE ENTIRE RAMP.

DETECTABLE WARNING DOMES

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RALEIGH, N.C.

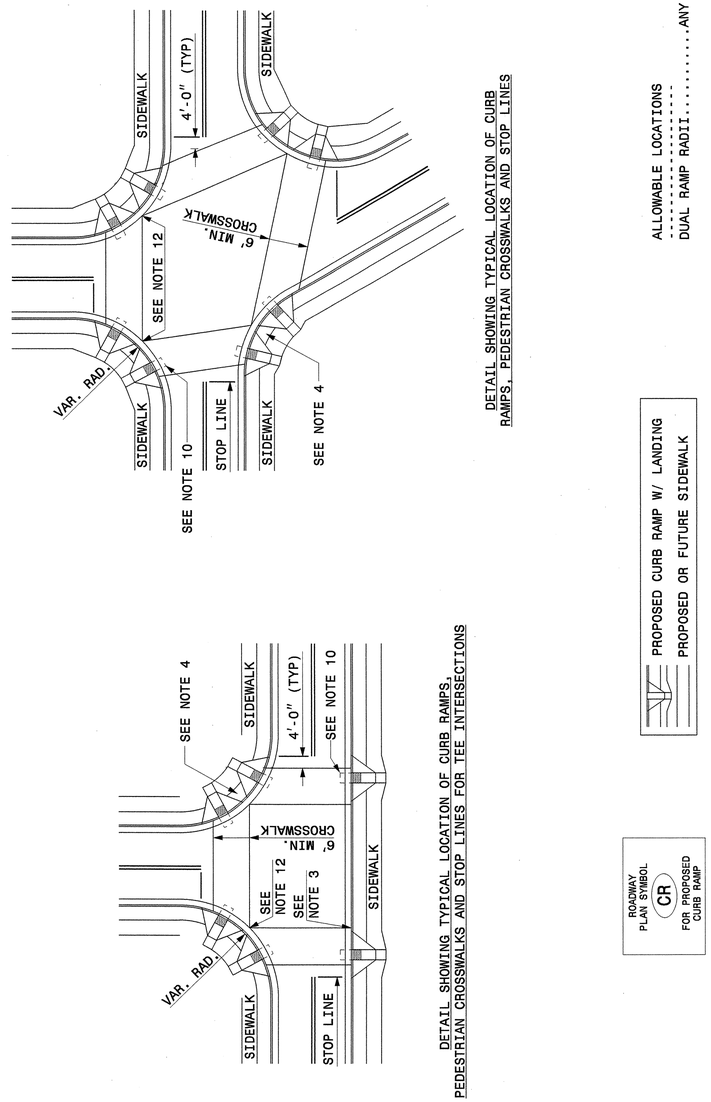
ENGLISH DETAIL DRAWING FOR

CURB RAMP

PROPOSED CURB AND GUTTER

SHEET 2 OF 3

848D05



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

ENGLISH DETAIL DRAWING FOR

CURB RAMP

PROPOSED CURB AND GUTTER

SHEET 1 OF 3

848D05

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

ENGLISH DETAIL DRAWING FOR

CURB RAMP

PROPOSED CURB AND GUTTER

SHEET 2 OF 3

848D05

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOHN S. HOVEKEMPER 6/23/11

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

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ORIGINAL BY: STD.NO.848.05 DATE: 4-22-10
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STATE OF NORTH CAROLINA
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ENGLISH DETAILS DRAWING FOR

CURB RAMPS

NOTES

SHEET 3 OF 3

848D05

NOTES:

1. CONSTRUCT THE RAMP SURFACE TO BE STABLE, FIRM, AND SLIP RESISTANT. CONSTRUCT THE CURB RAMP TYPE AS SHOWN IN THE PAVEMENT MARKING PLANS OR AS DIRECTED BY THE ENGINEER.
2. LOCATE CURB RAMPS AND PLACE PEDESTRIAN CROSSWALK MARKINGS AS SHOWN IN THE PAVEMENT MARKING PLANS. WHEN FIELD ADJUSTMENTS REQUIRE MOVING CURB RAMPS OR MARKINGS AS SHOWN, CONTACT THE SIGNING AND DELINEATION UNIT OR LOCATE AS DIRECTED BY THE ENGINEER.
3. COORDINATE THE CURB RAMP AND THE PEDESTRIAN CROSSWALK MARKINGS SO A 4'x4' CLEAR SPACE AT THE BASE OF THE CURB RAMP WILL FALL WITHIN THE PEDESTRIAN CROSSWALK LINES.
4. SET BACK DISTANCE FROM INSIDE CROSSWALK MARKING TO NEAREST EDGE OF TRAVEL LANE IS 4' MINIMUM.
5. REFER TO THE PAVEMENT MARKING PLANS FOR STOP BAR LOCATIONS AT SIGNALIZED INTERSECTIONS. IF A PAVEMENT MARKING PLAN IS NOT PROVIDED, CONTACT THE SIGNAL DESIGN SECTION FOR THE STOP BAR LOCATIONS OR LOCATE AS DIRECTED BY THE ENGINEER.
6. TERMINATE PARKING A MINIMUM OF 20' BACK OF A PEDESTRIAN CROSSWALK.
7. CONSTRUCT CURB RAMPS A MINIMUM OF 4' WIDE.
8. CONSTRUCT THE RUNNING SLOPE OF THE RAMP 8.33% MAXIMUM.
9. ALLOWABLE CROSS SLOPE ON SIDEWALKS AND CURB RAMPS WILL BE 2% MAXIMUM.
10. CONSTRUCT THE SIDE FLARE SLOPE A MAXIMUM OF 10% MEASURED ALONG THE CURB LINE.
11. CONSTRUCT THE COUNTER SLOPE OF THE GUTTER OR STREET AT THE BASE OF THE CURB RAMP A MAXIMUM OF 5% AND MAINTAIN A SMOOTH TRANSITION.
12. CONSTRUCT LANDINGS FOR SIDEWALK A MINIMUM OF 4'x4' WITH A MAXIMUM SLOPE OF 2% IN ANY DIRECTION. CONSTRUCT LANDINGS FOR MEDIAN ISLANDS A MINIMUM OF 5'x5' WITH A MAXIMUM SLOPE OF 2% IN ANY DIRECTION.
13. TO USE A MEDIAN ISLAND AS A PEDESTRIAN REFUGE AREA, MEDIAN ISLANDS WILL BE A MINIMUM OF 6' WIDE. CONSTRUCT MEDIAN ISLANDS TO PROVIDE PASSAGE OVER OR THROUGHT THE ISLAND.
14. SMALL CHANNELIZATION ISLANDS THAT CAN NOT PROVIDE A 5'X5' LANDING AT THE TOP OF A RAMPS, WILL BE CUT THROUGH LEVEL WITH THE SURFACE STREET.
15. CURB RAMPS WITH RETURNED CURBS MAY BE USED ONLY WHERE PEDESTRIANS WOULD NOT NORMALLY WALK ACROSS THE RAMP. THE ADJACENT SURFACE IS PLANTING OR OTHER NON-WALKING SURFACE OR THE SIDE APPROACH IS SUBSTANTIALLY OBSTRUCTED.
16. PLACE A ½" EXPANSION JOINT WHERE THE CONCRETE CURB RAMP JOINS THE CURB AS SHOWN IN ROADWAY STANDARD DRAWING 848.01
17. PLACE ALL PEDESTRIAN PUSH BUTTON ACTUATORS AND CROSSING SIGNALS AS SHOWN IN THE PLANS OR AS SHOWN IN THE MUTCD.
18. CURB RAMPS THROUGH MEDIAN ISLANDS, SINGLE RAMPS AT DUAL CROSSWALKS OR LIMITED R/W SITUATIONS, WILL BE HANDLED BY SPECIAL DETAILS. CONTACT THE CONTRACT STANDARDS AND DEVELOPMENT UNIT FOR THE DETAILS OR FOR A SPECIAL DESIGN.

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

ENGLISH DETAIL DRAWING FOR

CURB RAMPS

NOTES

SHEET 3 OF 3

848D05

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

SEE PLATE FOR TITLE

ORIGINAL BY: STD.NO.848.05 DATE: 4-22-11
MODIFIED BY: DATE:
CHECKED BY: DATE: 5/31/11
FILE SPEC.: SpecialDetails/EricWard/STDS/848d05.dgn

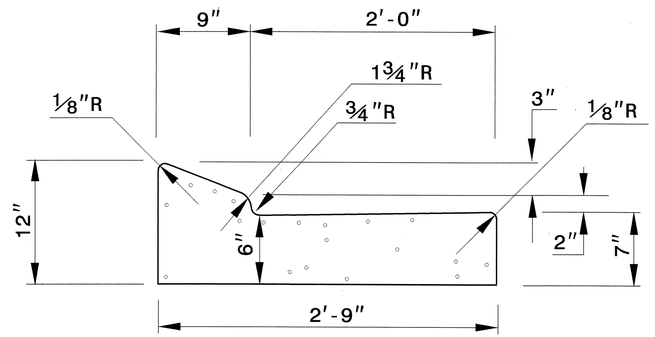
NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. MOWERY
6/23/11

PROJECT REFERENCE NO. R-2611

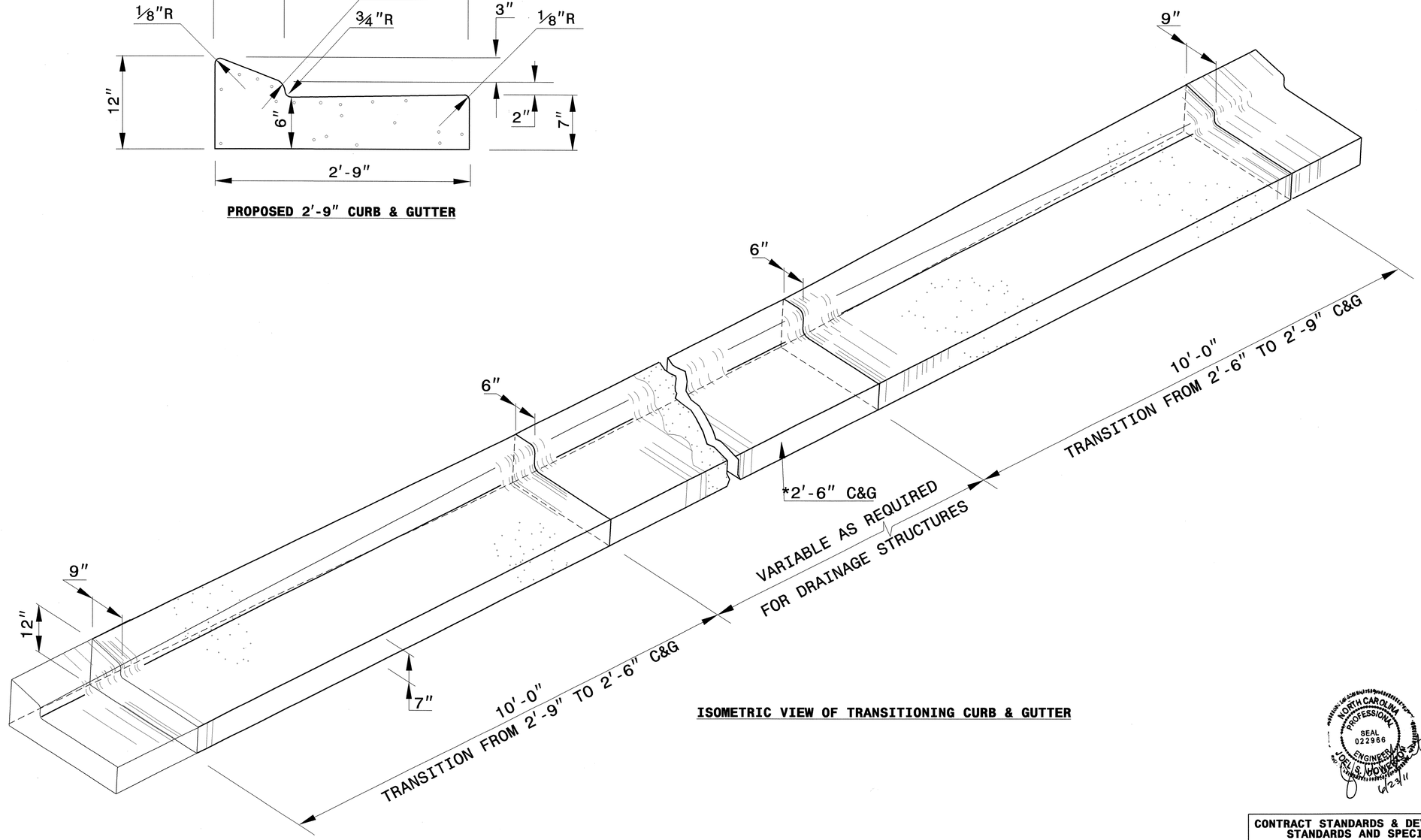
SHEET NO. 2-U

PROJECT REFERENCE NO.	SHEET NO.
R-2611	2-V

*NOTE: SEE STD. DWG. 846.01 FOR 2'-6" CURB AND GUTTER INFORMATION.



PROPOSED 2'-9" CURB & GUTTER



ISOMETRIC VIEW OF TRANSITIONING CURB & GUTTER

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HUNTER
6/23/11

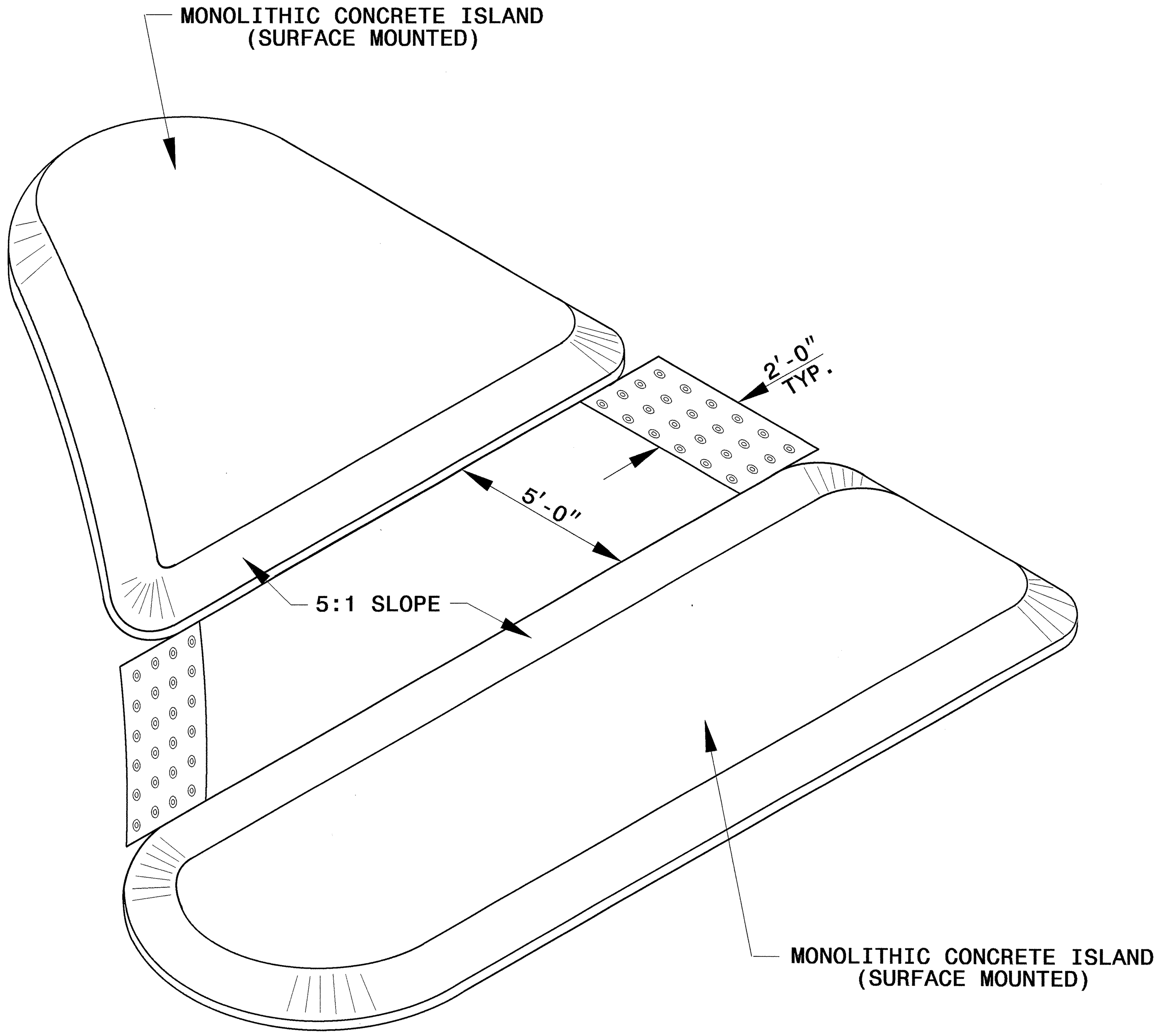
CONTRACT STANDARDS & DEVELOPMENT UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

DETAIL OF 2'-9" TO 2'-6" CURB & GUTTER TRANSITION SECTION

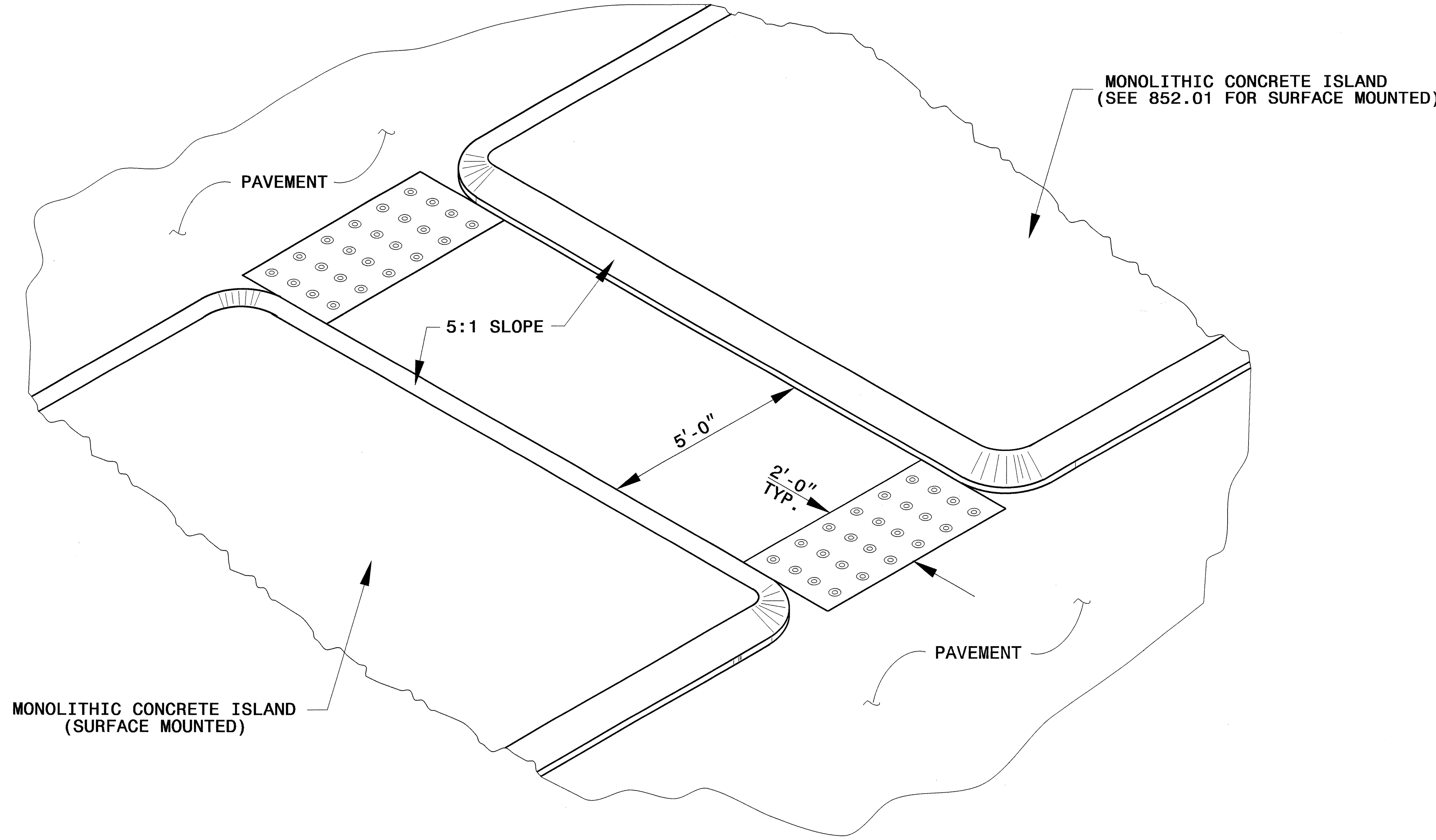
ORIGINAL BY: DATE:
MODIFIED BY: rnbritt DATE: 04-29-04
CHECKED BY: DATE: 6/7/11
FILE SPEC.: details/nbritt/english/misc/curbguttertrans.dgn

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-2611	2-W



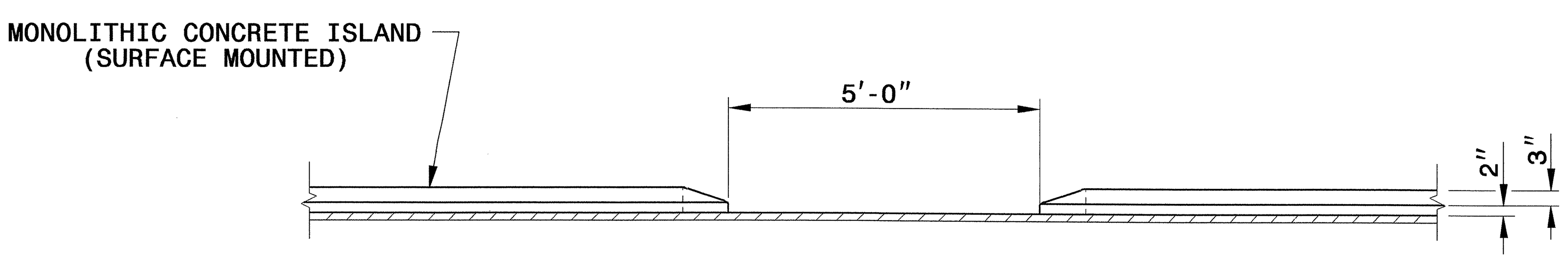
ISOMETRIC VIEW



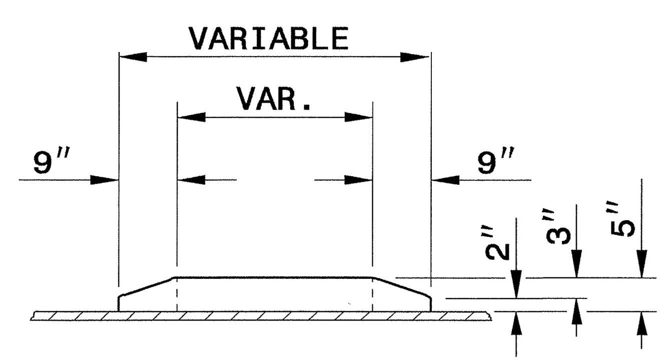
ISOMETRIC VIEW

NOTES:

- REFER TO DETAIL 848D05 FOR DETECTABLE WARNINGS.
- PLACE DETECTABLE WARNINGS IN PAVEMENT AND SECURE WITH AN APPROVED BONDING METHOD.
- IF CONCRETE ISLANDS ARE LESS THAN 6' IN WIDTH, DETECTABLE WARNINGS SHOULD NOT BE PLACED.



ELEVATION



MONOLITHIC CONCRETE ISLAND
REFER TO STD.852.01
(SURFACE MOUNTED)

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOWERTON 6/23/11

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

CROSSWALK/CURB RAMP THRU MONOLITHIC ISLAND

ORIGINAL BY: T.Spell DATE: 1-23-11
MODIFIED BY: DATE:
CHECKED BY: [signature] DATE: 6/15/11
FILE SPEC.: s:details\stand\island whchramp.dgn

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

PROJECT REFERENCE NO.	SHEET
34482.1.1 (R-2611)	2-X

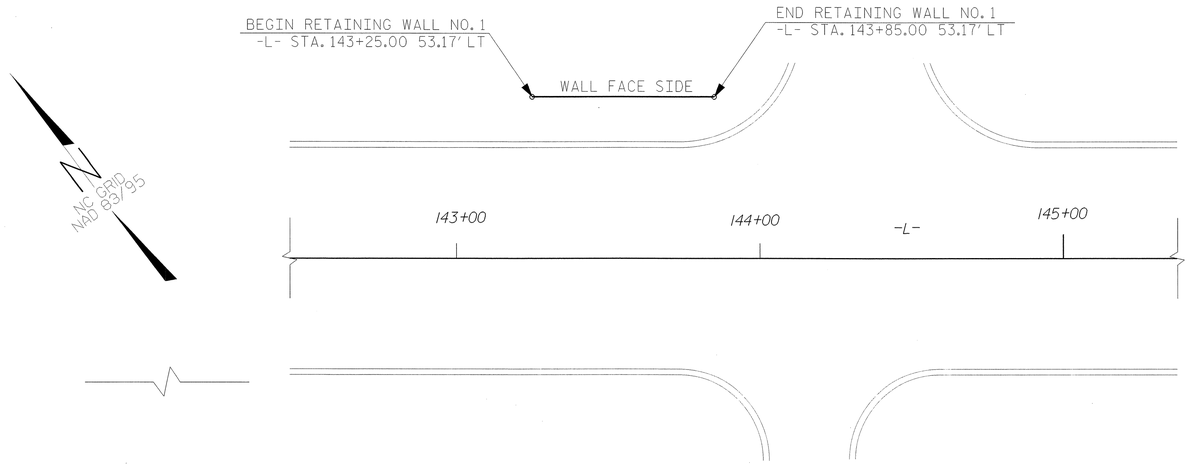
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 32171 ENGINEER JINYOUNG PARK 5-27-11

SIGNATURE DATE

ENGINEER

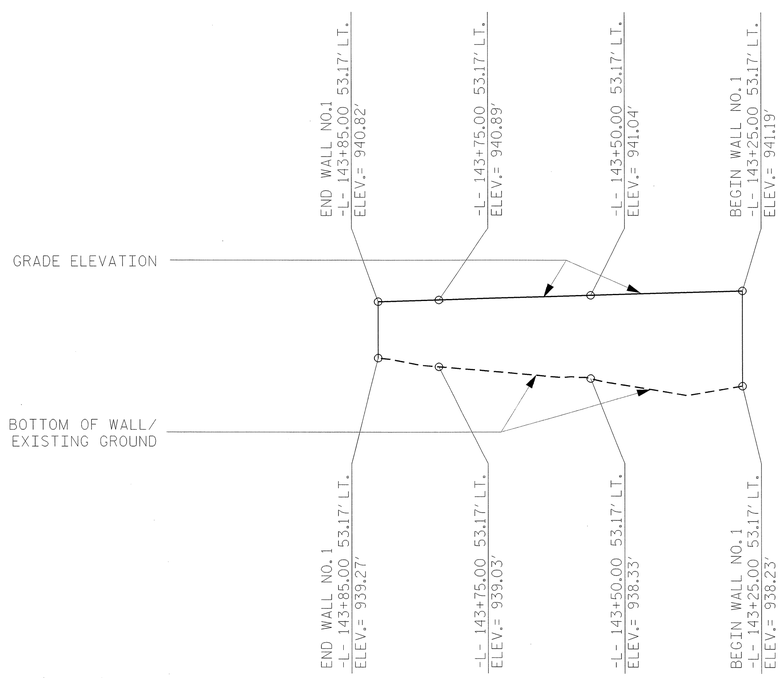
SIGNATURE DATE



WALL NO. 1 PLAN VIEW

NOT TO SCALE

RETAINING WALL TYPICAL SECTION			
STATION AND OFFSET	BOTTOM OF WALL EL.	GRADE EL.	DESIGN HEIGHT
-L- 143+25.00 53.17' LT.	938.23'	941.19'	2.96'
-L- 143+50.00 53.17' LT.	938.33'	941.04'	2.71'
-L- 143+75.00 53.17' LT.	939.03'	940.89'	1.86'
-L- 143+85.00 53.17' LT.	939.27'	940.82'	1.55'



WALL NO. 1 ENVELOPE

EXPOSED WALL FACE

TOTAL BILL OF MATERIAL	
SEGMENTAL GRAVITY RETAINING WALLS	165 SQUARE FEET

GEOTECHNICAL ENGINEERING UNIT

- [X] EASTERN REGIONAL OFFICE
- [ ] WESTERN REGIONAL OFFICE
- [ ] CONTRACT OFFICE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RETAINING WALL NO. 1
PLANS

REVISIONS

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

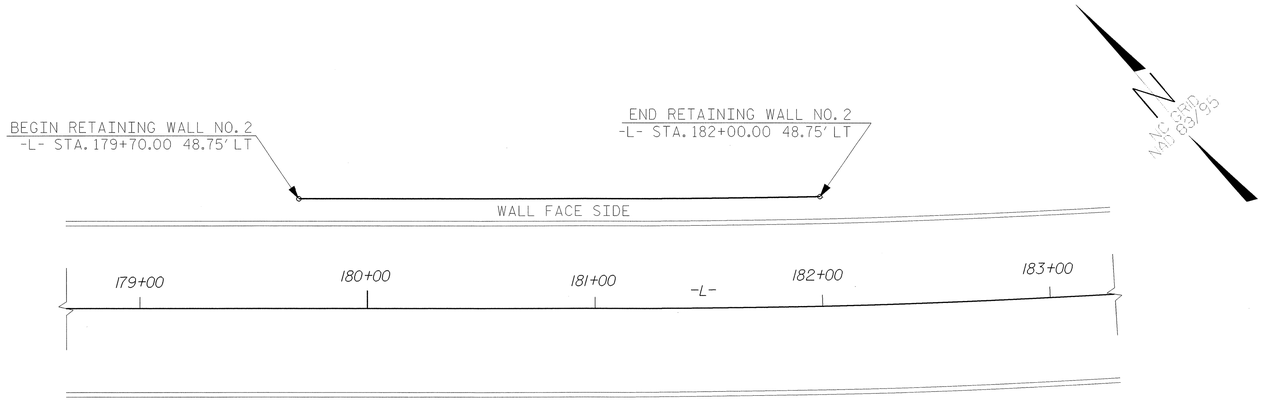
PREPARED BY: JINYOUNG PARK	DATE: 06/2011
REVIEWED BY: JAMES R. BATTS	DATE: 06/2011

PROJECT REFERENCE NO.	SHEET
34482.1.1 (R-2611)	2_Y

GEOTECHNICAL ENGINEER

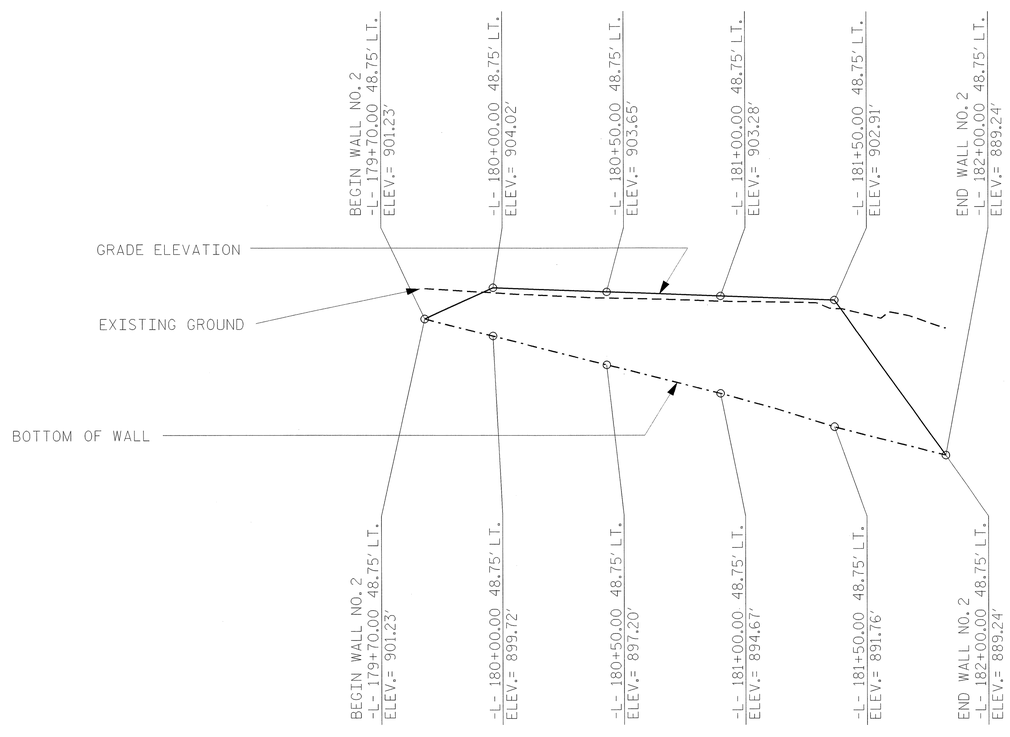
ENGINEER

SIGNATURE DATE SIGNATURE DATE



WALL NO. 1 PLAN VIEW

NOT TO SCALE



WALL NO. 2 ENVELOPE

EXPOSED WALL FACE

RETAINING WALL TYPICAL SECTION

STATION AND OFFSET	BOTTOM OF WALL EL.	GRADE EL.	DESIGN HEIGHT
-L- 179+70.00 48.75' LT.	901.23'	901.23'	0.00'
-L- 180+00.00 48.75' LT.	899.72'	904.02'	4.30'
-L- 180+50.00 48.75' LT.	897.20'	903.65'	6.45'
-L- 181+00.00 48.75' LT.	894.67'	903.28'	8.61'
-L- 181+50.00 48.75' LT.	891.76'	902.91'	11.15'
-L- 182+00.00 48.75' LT.	889.24'	889.24'	0.00'

TOTAL BILL OF MATERIAL

SOLDIER PILE RETAINING WALLS	1,480 SQUARE FEET

PREPARED BY: JINYOUNG PARK	DATE: 06/2011
REVIEWED BY: JAMES R. BATTS	DATE: 06/2011

GEOTECHNICAL ENGINEERING UNIT

[X] EASTERN REGIONAL OFFICE
[ ] WESTERN REGIONAL OFFICE
[ ] CONTRACT OFFICE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RETAINING WALL NO. 2
PLANS

REVISIONS

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

GEJ248334 6/29/2011 R2611_GEO_RWall_Plans jpark RD-Oce860-34

PROJECT REFERENCE NO.	SHEET
34482.1.1 (R-2611)	2 _ 7

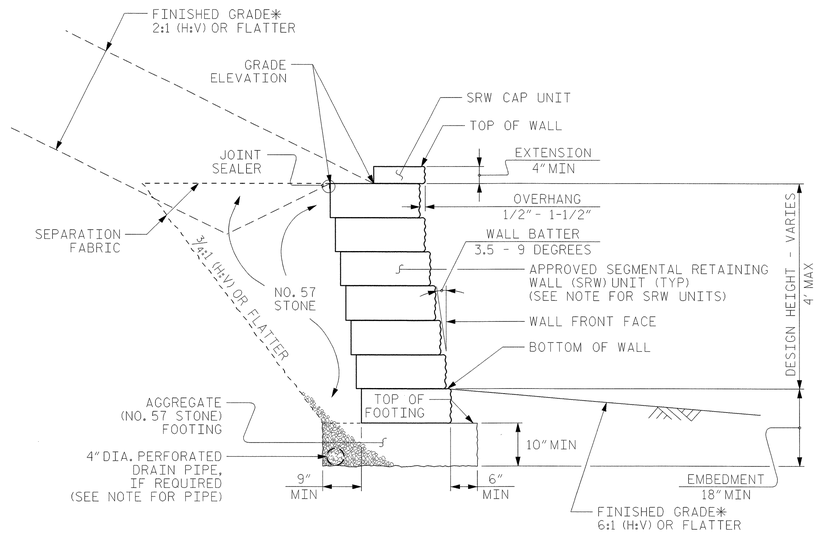
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 32171 ENGINEER JINYOUNG PARK

SIGNATURE DATE

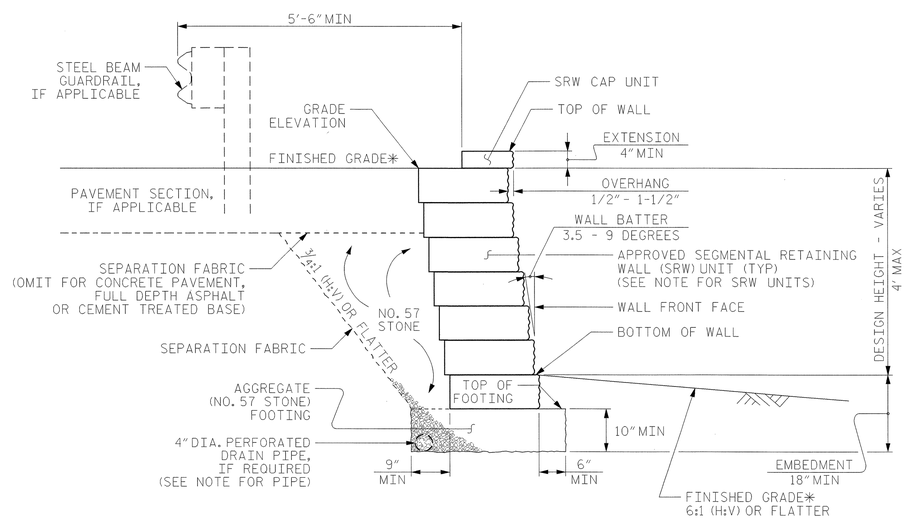
ENGINEER

SIGNATURE DATE



STANDARD SEGMENTAL GRAVITY WALL WITH BACK SLOPE

*SEE ROADWAY PLANS FOR FINISHED GRADE AND DITCH DETAILS.



STANDARD SEGMENTAL GRAVITY WALL WITHOUT BACK SLOPE

*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.

NOTES:

FOR STANDARD SEGMENTAL GRAVITY RETAINING WALLS, SEE SEGMENTAL GRAVITY RETAINING WALLS PROVISION.

FOR STEEL BEAM GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.

DO NOT ATTACH FENCES OR HANDRAILS TO STANDARD SEGMENTAL GRAVITY WALLS.

DO NOT USE STANDARD SEGMENTAL GRAVITY WALLS WHEN SURCHARGE LOADS WILL BE LOCATED CLOSER THAN 5'-6" FROM THE BACK OF WALLS.

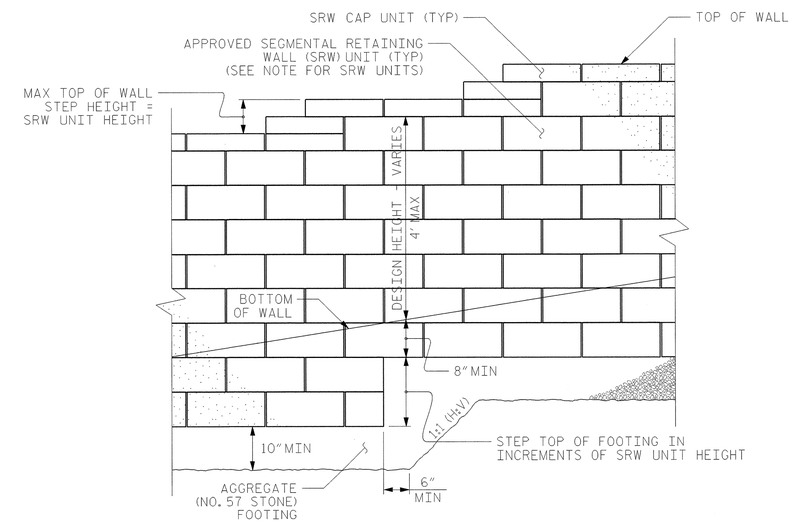
SRW UNITS ARE APPROVED FOR EITHER 2' OR 4' MAXIMUM DESIGN HEIGHTS. FOR DETAILS AND DIMENSIONS OF APPROVED SRW UNITS AND MAXIMUM DESIGN HEIGHTS, SEE www.ncdot.org/doh/preconstruct/highway/geotech/seggravwalls

DO NOT MIX APPROVED SRW UNITS FROM DIFFERENT VENDORS ON THE SAME STANDARD SEGMENTAL GRAVITY WALL. USE THE SAME SIZE APPROVED SRW UNITS FOR EACH WALL SECTION.

BEFORE BEGINNING STANDARD SEGMENTAL GRAVITY WALL CONSTRUCTION, SURVEY WALL LOCATIONS AND SUBMIT WALL PROFILE VIEWS (WALL ENVELOPES) FOR REVIEW. FOR WALL ENVELOPES, INCLUDE BOTTOM OF WALL, EXISTING GROUND AND GRADE ELEVATIONS AND OTHER ELEVATIONS AS NEEDED AT INTERVALS OF 25' OR LESS ALONG WALLS. DO NOT START WALL CONSTRUCTION UNTIL WALL ENVELOPES ARE ACCEPTED.

A DRAIN PIPE IS REQUIRED IF GROUNDWATER IS ABOVE BOTTOM OF FOOTINGS.

DO NOT PLACE NO. 57 STONE FOR FOOTINGS UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.



STANDARD SEGMENTAL GRAVITY WALL - PARTIAL ELEVATION

PREPARED BY:	JINYOUNG PARK	DATE:	06/2011
REVIEWED BY:	JAMES R. BATTS	DATE:	06/2011

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

[X] EASTERN REGIONAL OFFICE
[ ] WESTERN REGIONAL OFFICE
[ ] CONTRACT OFFICE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RETAINING WALL NO. 1
SEGMENTAL GRAVITY WALL
NOTES AND DETAILS

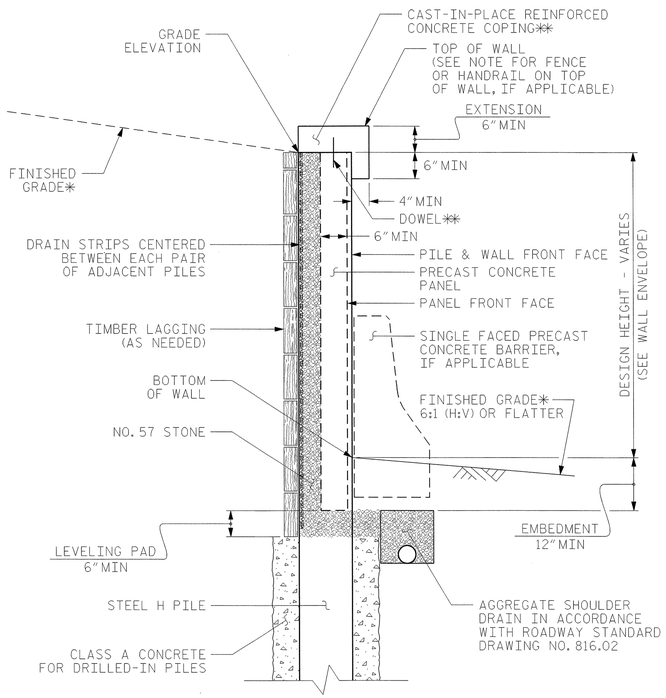
REVISIONS

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

PROJECT REFERENCE NO.	SHEET
34482.1.1 (R-2611)	2-AA

GEOTECHNICAL ENGINEER

ENGINEER



SOLDIER PILE WALL WITH PRECAST PANEL - TYPICAL SECTION

*SEE ROADWAY PLANS FOR FINISHED GRADE AND DITCH DETAILS.
**AT THE CONTRACTOR'S OPTION, EXTEND COPING DOWN BACK OF PANELS A MINIMUM OF 6" IN LIEU OF USING DOWELS.

NOTES:

FOR SOLDIER PILE RETAINING WALLS, SEE SOLDIER PILE RETAINING WALLS PROVISION.

FOR SINGLE FACED PRECAST CONCRETE BARRIER, SEE ROADWAY PLANS AND SECTION 857 OF THE STANDARD SPECIFICATIONS.

AT THE CONTRACTOR'S OPTION, USE DRIVEN PILES FOR RETAINING WALL NO. 2.

USE A SOLDIER PILE RETAINING WALL WITH PRECAST CONCRETE PANELS FOR RETAINING WALL NO. 2.

PAINT PILES GRAY FOR RETAINING WALL NO. 2.

BEFORE BEGINNING SOLDIER PILE WALL DESIGN FOR RETAINING WALL NO. 2, SURVEY WALL LOCATION AND SUBMIT A REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.

DESIGN RETAINING WALL NO. 2 FOR WALL HEIGHTS EQUAL TO THE DESIGN HEIGHT (DIFFERENCE BETWEEN GRADE ELEVATION AND BOTTOM OF WALL ELEVATION) PLUS EMBEDMENT (DIFFERENCE BETWEEN BOTTOM OF WALL ELEVATION AND TOP OF LEVELING PAD ELEVATION).

DESIGN RETAINING WALL NO. 2 FOR THE FOLLOWING:
1) MINIMUM DESIGN LIFE = 75 YEARS
2) IN-SITU ASSUMED MATERIAL PARAMETERS
   UNIT WEIGHT, γ = 120 PCF
   FRICTION ANGLE, ϕ = 30 DEGREES
   COHESION, c = 0 PSF

DESIGN RETAINING WALL NO. 2 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

A MINIMUM EMBEDMENT OF 1 FOOT BELOW THE BOTTOM OF WALL IS REQUIRED.

PREPARED BY:	JINYOUNG PARK	DATE: 06/2011	
REVIEWED BY:	JAMES R. BATTS	DATE: 06/2011	

GEOTECHNICAL ENGINEERING UNIT

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[ ] WESTERN REGIONAL OFFICE
[ ] CONTRACT OFFICE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RETAINING WALL NO. 2
SOLDIER PILE WALL
NOTES AND DETAILS

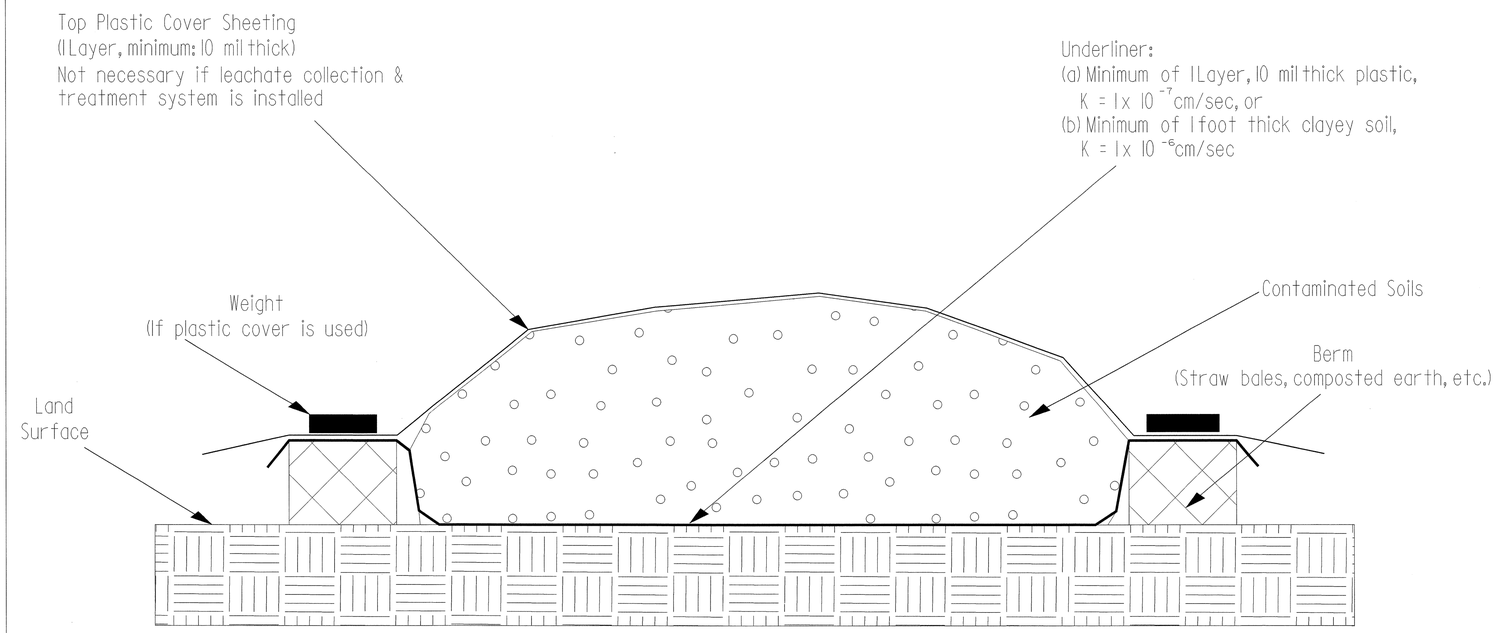
REVISIONS

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

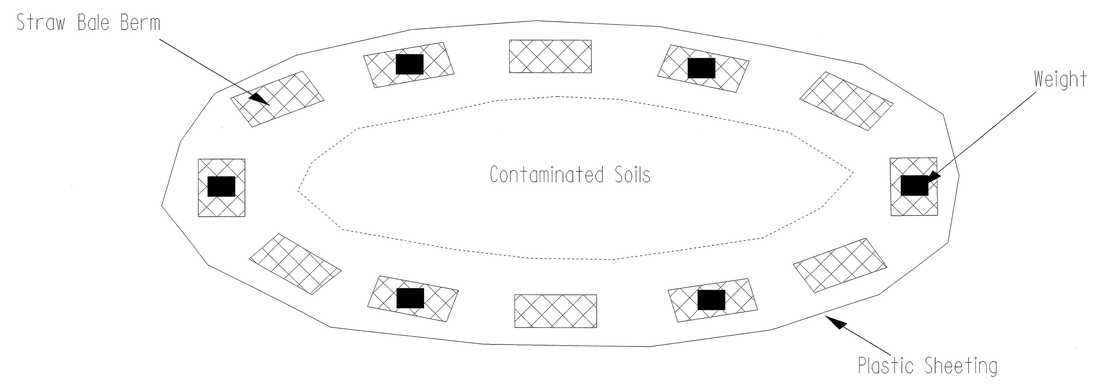
PROJECT REFERENCE NO.	SHEET
R-2611	2-AB

Detail for Temporary Containment of Petroleum Contaminated Soil

Cross-Section View



Map View



PROJECT REFERENCE NO.	SHEET NO.
R-2611	3 (1 of 2)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202648

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0000400000-N	801	Lump Sum		CONSTRUCTION SURVEYING
0001000000-E	200	Lump Sum		CLEARING & GRUBBING .. ACRE(S)
0008000000-E	200	1	ACR	SUPPLEMENTARY CLEARING & GRUBBING
0036000000-E	225	915	CY	UNDERCUT EXCAVATION
0134000000-E	240	25	CY	DRAINAGE DITCH EXCAVATION
0156000000-E	250	670	SY	REMOVAL OF EXISTING ASPHALT PAVEMENT
0192000000-N	260	220	HR	PROOF ROLLING
0195000000-E	SP	500	CY	SELECT GRANULAR MATERIAL
0255000000-E	SP	350	TON	GENERIC GRADING ITEM EXCAVATION, HAULING, AND DISPOSAL OF CONTAMINATED SOIL
0318000000-E	SP	2,880	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRS
0320000000-E	SP	7,540	SY	FOUNDATION CONDITIONING FABRIC
0335200000-E	SP	1,800	LF	15" DRAINAGE PIPE
0335300000-E	SP	516	LF	18" DRAINAGE PIPE
0335400000-E	SP	364	LF	24" DRAINAGE PIPE
0335500000-E	SP	92	LF	30" DRAINAGE PIPE
0335600000-E	SP	92	LF	36" DRAINAGE PIPE
0335850000-E	SP	4	EA	**" DRAINAGE PIPE ELBOWS (15")
0335850000-E	SP	2	EA	**" DRAINAGE PIPE ELBOWS (30")
0448000000-E	SP	12	LF	*****" RC PIPE CULVERTS, CLASS IV (48")
0448200000-E	SP	14,432	LF	15" RC PIPE CULVERTS, CLASS IV
0448300000-E	SP	3,104	LF	18" RC PIPE CULVERTS, CLASS IV
0448400000-E	SP	1,636	LF	24" RC PIPE CULVERTS, CLASS IV
0448500000-E	SP	104	LF	30" RC PIPE CULVERTS, CLASS IV
0448700000-E	SP	128	LF	42" RC PIPE CULVERTS, CLASS IV
0576000000-E	SP	116	LF	**" CS PIPE CULVERTS, *****" THICK (30", 0.109")
0576000000-E	SP	36	LF	**" CS PIPE CULVERTS, *****" THICK (36", 0.109")
0576000000-E	SP	12	LF	**" CS PIPE CULVERTS, *****" THICK (54", 0.109")
0588000000-E	SP	48	LF	18" CS PIPE CULVERTS, 0.064" THICK
0636000000-E	SP	2	EA	**" CS PIPE ELBOWS, *****" THICK (30", 0.109")
0636000000-E	SP	2	EA	**" CS PIPE ELBOWS, *****" THICK (36", 0.109")
0973100000-E	SP	96	LF	**" WELDED STEEL PIPE, ****" THICK, GRADE ** IN SOIL (15", 0.5", B)
0973300000-E	SP	32	LF	**" WELDED STEEL PIPE, ****" THICK, GRADE ** NOT IN SOIL (15", 0.5", B)
0995000000-E	340	6,350	LF	PIPE REMOVAL
1011000000-N	500	Lump Sum		FINE GRADING
1110000000-E	510	500	TON	STABILIZER AGGREGATE
1220000000-E	545	5,000	TON	INCIDENTAL STONE BASE
1297000000-E	607	70,550	SY	MILLING ASPHALT PAVEMENT, ***" DEPTH (1-1/2")
1489000000-E	610	3,750	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1498000000-E	610	3,450	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B
1503000000-E	610	29,160	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C
1519000000-E	610	5,240	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
1523000000-E	610	29,700	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5C
1693000000-E	654	500	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR
2000000000-N	806	135	EA	RIGHT OF WAY MARKERS

ItemNumber	Sec #	Quantity	Unit	Description
2022000000-E	SP	171	CY	SUBDRAIN EXCAVATION
2033000000-E	SP	85	CY	SUBDRAIN FINE AGGREGATE
2044000000-E	SP	500	LF	6" PERFORATED SUBDRAIN PIPE
2070000000-N	SP	1	EA	SUBDRAIN PIPE OUTLETS
2077000000-E	SP	6	LF	6" OUTLET PIPE (SUBDRAINS)
2253000000-E	840	7	CY	PIPE COLLARS
2264000000-E	840	2	CY	PIPE PLUGS
2275000000-E	SP	80	CY	FLOWABLE FILL
2286000000-N	840	241	EA	MASONRY DRAINAGE STRUCTURES
2297000000-E	840	4	CY	MASONRY DRAINAGE STRUCTURES
2308000000-E	840	88	LF	MASONRY DRAINAGE STRUCTURES
2364000000-N	840	48	EA	FRAME WITH TWO GRATES, STD 840.16
2366000000-N	840	2	EA	FRAME WITH TWO GRATES, STD 840.24
2367000000-N	840	10	EA	FRAME WITH TWO GRATES, STD 840.29
2374000000-N	840	17	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (E)
2374000000-N	840	79	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (F)
2374000000-N	840	75	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G)
2396000000-N	840	7	EA	FRAME WITH COVER, STD 840.54
2451000000-N	852	36	EA	CONCRETE TRANSITIONAL SECTION FOR DROP INLETS
2535000000-E	846	580	LF	**"X **" CONCRETE CURB (8" X 18")
2538000000-E	846	3,600	LF	**'-**" CONCRETE CURB & GUTTER (2'-9")
2542000000-E	846	12,130	LF	1'-6" CONCRETE CURB & GUTTER
2549000000-E	846	38,850	LF	2'-6" CONCRETE CURB & GUTTER
2591000000-E	848	17,850	SY	4" CONCRETE SIDEWALK
2612000000-E	848	2,570	SY	6" CONCRETE DRIVEWAY
2655000000-E	852	8,810	SY	5" MONOLITHIC CONCRETE ISLANDS (KEYED IN)
2759000000-N	SP	116	EA	GENERIC PAVING ITEM CONCRETE CURB RAMPS
2800000000-N	858	3	EA	ADJUSTMENT OF CATCH BASINS
2905000000-N	859	2	EA	CONVERT EXISTING DROP INLET TO JUNCTION BOX
3030000000-E	862	1,350	LF	STEEL BM GUARDRAIL
3150000000-N	862	10	EA	ADDITIONAL GUARDRAIL POSTS
3210000000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE CAT-1
3270000000-N	SP	3	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3360000000-E	863	909	LF	REMOVE EXISTING GUARDRAIL
3380000000-E	862	100	LF	TEMPORARY STEEL BM GUARDRAIL
3389100000-N	SP	2	EA	GUARDRAIL ANCHOR UNITS, TYPE 350 TEMPORARY
3503000000-E	866	1,000	LF	WOVEN WIRE FENCE, 47" FABRIC
3509000000-E	866	50	EA	4" TIMBER FENCE POSTS, 7'-6" LONG
3515000000-E	866	50	EA	5" TIMBER FENCE POSTS, 8'-0" LONG
3536000000-E	866	240	LF	CHAIN LINK FENCE, 48" FABRIC
3542000000-E	866	20	EA	METAL LINE POSTS FOR 48" CHAIN LINK FENCE
3548000000-E	866	4	EA	METAL TERMINAL POSTS FOR 48" CHAIN LINK FENCE
3628000000-E	876	80	TON	RIP RAP, CLASS I
3649000000-E	876	430	TON	RIP RAP, CLASS B
3656000000-E	876	4,285	SY	FILTER FABRIC FOR DRAINAGE
3659000000-N	SP	7	EA	PREFORMED SCOUR HOLES WITH LEVEL SPREADER APRON
4072000000-E	903	4,517	LF	SUPPORTS, 3-LB STEEL U-CHANNEL
4096000000-N	904	8	EA	SIGN ERECTION, TYPE D
4102000000-N	904	159	EA	SIGN ERECTION, TYPE E

ItemNumber	Sec #	Quantity	Unit	Description
4108000000-N	904	9	EA	SIGN ERECTION, TYPE F
4116100000-N	904	9	EA	SIGN ERECTION, RELOCATE, TYPE **** (GROUND MOUNTED) (D)
4116100000-N	904	11	EA	SIGN ERECTION, RELOCATE, TYPE **** (GROUND MOUNTED) (E)
4155000000-N	907	122	EA	DISPOSAL OF SIGN SYSTEM, U-CHANNEL
4192000000-N	907	20	EA	DISPOSAL OF SUPPORT, U-CHANNEL
4400000000-E	1110	1,913	SF	WORK ZONE SIGNS (STATIONARY)
4405000000-E	1110	1,887	SF	WORK ZONE SIGNS (PORTABLE)
4410000000-E	1110	790	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4415000000-N	1115	4	EA	FLASHING ARROW PANELS, TYPE C
4420000000-N	1120	4	EA	CHANGEABLE MESSAGE SIGN
4422000000-N	1120	36	DAY	CHANGEABLE MESSAGE SIGN (SHORT TERM)
4430000000-N	1130	990	EA	DRUMS
4435000000-N	1135	50	EA	CONES
4445000000-E	1145	1,420	LF	BARRICADES (TYPE III)
4450000000-N	1150	2,500	HR	FLAGGER
4465000000-N	1160	1	EA	TEMPORARY CRASH CUSHIONS
4480000000-N	1165	2	EA	TMIA
4485000000-E	1170	670	LF	PORTABLE CONCRETE BARRIER
4507000000-E	SP	670	LF	WATER FILLED BARRIER
4516000000-N	1180	450	EA	SKINNY DRUM
4520000000-N	1266	15	EA	TUBULAR MARKERS (FIXED)
4600000000-N	SP	14	EA	GENERIC TRAFFIC CONTROL ITEM WARNING FLAGS
4650000000-N	1251	981	EA	TEMPORARY RAISED PAVEMENT MARKERS
4685000000-E	1205	33,930	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)
4686000000-E	1205	35,048	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)
4695000000-E	1205	6,226	LF	THERMOPLASTIC PAVEMENT MARKING LINES (8", 90 MILS)
4697000000-E	1205	2,380	LF	THERMOPLASTIC PAVEMENT MARKING LINES (8", 120 MILS)
4705000000-E	1205	400	LF	THERMOPLASTIC PAVEMENT MARKING LINES (16", 120 MILS)
4710000000-E	1205	1,433	LF	THERMOPLASTIC PAVEMENT MARKING LINES (24", 120 MILS)
4721000000-E	1205	49	EA	THERMOPLASTIC PAVEMENT MARKING CHARACTER (120 MILS)
4725000000-E	1205	264	EA	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)
4810000000-E	1205	432,649	LF	PAINT PAVEMENT MARKING LINES (4")
4815000000-E	1205	1,500	LF	PAINT PAVEMENT MARKING LINES (6")
4820000000-E	1205	1,490	LF	PAINT PAVEMENT MARKING LINES (8")
4825000000-E	1205	7,130	LF	PAINT PAVEMENT MARKING LINES (12")
4830000000-E	1205	260	LF	PAINT PAVEMENT MARKING LINES (16")
4835000000-E	1205	3,343	LF	PAINT PAVEMENT MARKING LINES (24")
4840000000-N	1205	52	EA	PAINT PAVEMENT MARKING CHARACTER
4845000000-N	1205	783	EA	PAINT PAVEMENT MARKING SYMBOL
4850000000-E	1205	46,981	LF	REMOVAL OF PAVEMENT MARKING LINES (4")
4860000000-E	1205	1,812	LF	REMOVAL OF PAVEMENT MARKING LINES (8")
4865000000-E	1205	40	LF	REMOVAL OF PAVEMENT MARKING LINES (12")
4870000000-E	1205	798	LF	REMOVAL OF PAVEMENT MARKING LINES (24")
4875000000-N	1205	126	EA	REMOVAL OF PAVEMENT MARKING SYMBOLS & CHARACTERS
4900000000-N	1251	1,244	EA	PERMANENT RAISED PAVEMENT MARKERS

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STATE OF NORTH CAROLINA
SUMMARY OF QUANTITIES

PROJECT REFERENCE No.	SHEET No.
R-2611	3 (2 of 2)

ItemNumber	Sec #	Quantity	Unit	Description
5325600000-E	1510	95	LF	6" WATER LINE
5325800000-E	1510	216	LF	8" WATER LINE
5326200000-E	1510	2,074	LF	12" WATER LINE
5326600000-E	1510	346	LF	16" WATER LINE
5546000000-E	1515	1	EA	8" VALVE
5558000000-E	1515	7	EA	12" VALVE
5558600000-E	1515	2	EA	16" VALVE
5606000000-E	1515	1	EA	2" BLOW OFF
5648000000-N	1515	6	EA	RELOCATE WATER METER
5653000000-E	1515	1	EA	**" DCV BACK-FLOW PREVENTOR (3/4")
5666000000-E	1515	3	EA	FIRE HYDRANT
5672000000-N	1515	29	EA	RELOCATE FIRE HYDRANT
5709300000-E	1520	1,729	LF	6" FORCE MAIN SEWER
5768000000-N	1520	2	EA	SANITARY SEWER CLEAN-OUT
5775000000-E	1525	1	EA	4' DIA UTILITY MANHOLE
5804000000-E	1530	1,155	LF	ABANDON 12" UTILITY PIPE
5835600000-E	1540	41	LF	12" ENCASEMENT PIPE
5882000000-N	SP	1	EA	GENERIC UTILITY ITEM BREAKDOWN AND CAP MANHOLE
6000000000-E	1605	75,000	LF	TEMPORARY SILT FENCE
6006000000-E	1610	4,000	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	1,665	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	5,070	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	33	ACR	TEMPORARY MULCHING
6018000000-E	1620	1,100	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	5.5	TON	FERTILIZER FOR TEMPORARY SEEDING
6024000000-E	1622	500	LF	TEMPORARY SLOPE DRAINS
6027000000-N	1622	10	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
6029000000-E	SP	1,600	LF	SAFETY FENCE
6030000000-E	1630	3,400	CY	SILT EXCAVATION
6036000000-E	1631	59,000	SY	MATTING FOR EROSION CONTROL
6037000000-E	SP	15	SY	COIR FIBER MAT
6042000000-E	1632	21,000	LF	1/4" HARDWARE CLOTH
6070000000-N	SP	5	EA	SPECIAL STILLING BASINS
6071012000-E	SP	2,750	LF	COIR FIBER WATTLE
6071020000-E	SP	2,200	LB	POLYACRYLAMIDE (PAM)
6071030000-E	SP	400	LF	COIR FIBER BAFFLE
6071050000-E	SP	1	EA	**" SKIMMER (1-1/2")
6084000000-E	1660	33	ACR	SEEDING & MULCHING
6087000000-E	1660	33	ACR	MOWING
6090000000-E	1661	600	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	1.75	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	775	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	23	TON	FERTILIZER TOPDRESSING
6111000000-E	SP	430	LF	IMPERVIOUS DIKE
6114500000-N	SP	25	MHR	SPECIALIZED HAND MOWING
6117000000-N	SP	150	EA	RESPONSE FOR EROSION CONTROL
6123000000-E	1670	0.25	ACR	REFORESTATION
7060000000-E	1705	12,950	LF	SIGNAL CABLE
7108000000-E	1705	8	EA	VEHICLE SIGNAL HEAD (12", 1 SECTION)
7120000000-E	1705	67	EA	VEHICLE SIGNAL HEAD (12", 3 SECTION)
7132000000-E	1705	17	EA	VEHICLE SIGNAL HEAD (12", 4 SECTION)
7144000000-E	1705	13	EA	VEHICLE SIGNAL HEAD (12", 5 SECTION)

ItemNumber	Sec #	Quantity	Unit	Description
7252000000-E	1710	10,320	LF	MESSENGER CABLE (1/4")
7264000000-E	1710	5,780	LF	MESSENGER CABLE (3/8")
7279000000-E	1715	2,700	LF	TRACER WIRE
7288000000-E	1715	220	LF	PAVED TRENCHING (**********) (1, 2")
7300000000-E	1715	5,720	LF	UNPAVED TRENCHING (**********) (1, 2")
7301000000-E	1715	1,400	LF	DIRECTIONAL DRILL (**********) (1, 2")
7324000000-N	1716	46	EA	JUNCTION BOX (STANDARD SIZE)
7348000000-N	1716	12	EA	JUNCTION BOX (OVER-SIZED, HEAVY DUTY)
7360000000-N	1720	22	EA	WOOD POLE
7372000000-N	1721	50	EA	GUY ASSEMBLY
7408000000-E	1722	14	EA	1" RISER WITH WEATHERHEAD
7420000000-E	1722	52	EA	2" RISER WITH WEATHERHEAD
7432000000-E	1722	5	EA	2" RISER WITH HEAT SHRINK TUBING
7444000000-E	1725	12,500	LF	INDUCTIVE LOOP SAWCUT
7456000000-E	1726	28,040	LF	LEAD-IN CABLE (**********) (14-2)
7516000000-E	1730	13,500	LF	COMMUNICATIONS CABLE (**FIBER) (24)
7528000000-E	1730	3,400	LF	DROP CABLE
7540000000-N	1731	6	EA	SPLICE ENCLOSURE
7552000000-N	1731	5	EA	INTERCONNECT CENTER
7566000000-N	1733	10	EA	DELINEATOR MARKER
7575160000-E	1734	8,250	LF	REMOVE EXISTING COMMUNICATIONS CABLE
7575180000-N	1735	5	EA	CABLE TRANSFER
7576000000-N	SP	28	EA	METAL STRAIN SIGNAL POLE
7613000000-N	SP	28	EA	SOIL TEST
7614100000-E	SP	224	CY	DRILLED PIER FOUNDATION
7636000000-N	1745	22	EA	SIGN FOR SIGNALS
7675000000-N	SP	4	EA	LED BLANKOUT SIGN
7684000000-N	1750	6	EA	SIGNAL CABINET FOUNDATION
7756000000-N	1751	6	EA	CONTROLLER WITH CABINET (TYPE 2070L, BASE MOUNTED)
7780000000-N	1751	36	EA	DETECTOR CARD (TYPE 2070L)
7901000000-N	1753	6	EA	CABINET BASE EXTENDER
7912000000-N	1755	2	EA	BEACON CONTROLLER ASSEMBLY & CABINET (********) (TYPE F1)
7912000000-N	1755	1	EA	BEACON CONTROLLER ASSEMBLY & CABINET (********) (TYPE F2)
7948000000-N	SP	3	EA	TRAFFIC SIGNAL REMOVAL
7980000000-N	SP	1	EA	GENERIC SIGNAL ITEM MODIFY RADIO INSTALLATION
8802014000-E	SP	1,480	SF	SOLDIER PILE RETAINING WALLS
8802030000-E	SP	165	SF	SEGMENTAL GRAVITY RETAINING WALLS

******* BEGIN SCHEDULE AB *******
******* (2 ALTERNATES) *******

0022000000-E AB1	225	29,650	CY	UNCLASSIFIED EXCAVATION
0038000000-E AB1	SP	17,000	CY	SHALLOW UNDERCUT
0080000000-E AB1	SP	45,700	TON	CLASS IV SUBGRADE STABILIZATION
0106000000-E AB1	230	75,100	CY	BORROW EXCAVATION
0196000000-E AB1	270	87,950	SY	FABRIC FOR SOIL STABILIZATION
1121000000-E AB1	520	40,100	TON	AGGREGATE BASE COURSE
1491000000-E AB1	610	6,950	TON	ASPHALT CONC BASE COURSE, TYPE B25.0C
1575000000-E AB1	SP	4,075	TON	ASPHALT BINDER FOR PLANT MIX

*** OR ***

0022000000-E AB2	225	27,500	CY	UNCLASSIFIED EXCAVATION
0038000000-E AB2	SP	16,710	CY	SHALLOW UNDERCUT
0080000000-E AB2	SP	44,500	TON	CLASS IV SUBGRADE STABILIZATION
0106000000-E AB2	230	82,100	CY	BORROW EXCAVATION
0196000000-E AB2	270	85,260	SY	FABRIC FOR SOIL STABILIZATION
1491000000-E AB2	610	21,310	TON	ASPHALT CONC BASE COURSE, TYPE B25.0C
1575000000-E AB2	SP	4,740	TON	ASPHALT BINDER FOR PLANT MIX

******* END SCHEDULE AB *******

RD238340

COMPUTED BY:	JBT	DATE:	4/5/2011
CHECKED BY:	NBS	DATE:	5/4/2011

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2611	3-A

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

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

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
-L-																			
10+98.00	LT	400							16										
10+98.36	LT																		
12+28.69	LT	401							48										
12+33.81	LT																		
14+24.46	LT	402							44										
14+26.82	LT																		
16+31.04	LT	500			958.9	958.7				8									
16+92.20	LT	501							24										
17+84.27	RT	502			960.9	960.7				8									
17+86.40	LT	503			960.3	960.2				12									
19+30.81	LT	504							16										
19+35.45	LT																		
21+82.49	LT	505							40										
22+48.86	RT	506							72										
23+48.07	LT	507		971.2															
		507	508		968.2	967.6	X												
23+51.22	LT																		
24+65.46	RT																		
24+75.00	LT	508		970.6															
		508	509		967.6	966.9													
25+75.00	LT	509		969.9															
		509	510		966.9	965.6													
27+00.00	LT	510		968.6															
		510	600		965.6	963.6													
28+50.00	LT	600		966.6															
		600	601		963.3	962													
29+50.00	LT	601		965.3															
		601	602		962	961													
29+72.77	RT																		
30+25.00	LT	602		964.3															
		602	603		961	960.3	X												
30+40.00	LT	603		965.2															
		603	604		960.3	958.6													
30+48.47	RT																		
31+75.26	LT	604		963.7															
		604	605		958.6	955.3	X												
34+15.00	LT	605		963.6															
		605	606		955.3	941.2	X												
35+18.33	LT	606		945.4															
		606	607		940.7	934													
35+31.10	LT	616																	
		616	606		941.9	941.2													
35+25.54	LT																		
28+50.00	RT	609		966.3															
SHEET TOTALS									260	28									

STATION	FROM	TO	C.S. PIPE *WELDED STEEL PIPE **WELDED STEEL PIPE NOT IN SOIL 12" .064	*15" 0.5	**15" 0.5	18" .064	30" 0.109	36" 0.109	42" .109	48" .109	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"
	507	508		96	32																					
	508	509																		100						
	509	510																		128						
	510	600																		152						
	600	601																			100					
	601	602																			76					
	602	603																			32					
	603	604																				136				
	604	605																				248				
	605	606					116																			
	606	607						36																		
	616	606																					52			
SHEET TOTALS				96	32		116	36												380	208	384	52			

STATION	FROM	TO	** " R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	***" RC PIPE CULVERTS, CONTRACTOR DESIGN			ENDWALLS STD. 838.01 OR STD. 838.11 OR STD 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS 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 5.0')	LIN. FT. A 5.0' THRU 10.0'	LIN. FT. B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN
23+48.07	507									1			1		1			
24+75.00	508									1			1			1		
25+75.00	509									1			1			1		
27+00.00	510									1			1			1		
28+50.00	600									1			1			1		
29+50.00	601									1			1			1		
30+25.00	602									1			1			1		
30+40.00	603									1								
31+75.26	604									1	0.1		1			1		
34+15.00	605									1	3.3		1			1		
35+18.33	606									1								
28+50.00	609									1			1		1			
SHEET TOTALS										12	3.4		10		2	8		

STATION	FROM	TO	OPEN THROAT CATCH BASIN (SEE DETAIL 2-Q)	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "B" STD. 840.18 OR 840.27		G.D.I. (N.S.) FRAME WITH GRATES STD. 840.24	FRAME & N. S. FLAT GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.34	M.H. FRAME AND COVEFR STD. 840.54	ADJUST EXIST. CB	CONVERT D.I. TO J.B. (SEE SHEET 2-N)	SLAB LID	DRAINAGE PIPE ELBOWS NO. & SIZE	CS PIPE ELBOWS MO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
10+98.36																				20.00	REMOVE EXIST. 15" CONC
12+33.81																				48.00	REMOVE EXIST. 12" CONC
14+26.82																				48.00	REMOVE EXIST. 12" CONC
16+31.04	500																		0.447		COLLAR & EXTEND 18"
17+84.27	502																		0.447		COLLAR & EXTEND 18"
17+86.40	503																		0.447		REMOVE EXIST. HW COLLAR & EXTEND 18"
19+35.45																				16.00	REMOVE EXIST. PIPE TYPE & SIZE UNK.
23+51.22																				20.00	REMOVE PART OF 10" HDPE & TIE TO CB
24+65.46																				144.00	REMOVE EXIST DI & 15" CONC
29+72.77																				24.00	REMOVE EXIST. PIPE TYPE & SIZE UNK.
30+40.00	603					1			1												
30+48.47																				156.00	REMOVE EXIST. PIPE SYSTEM
	605	606															2 @ 30"				
35+18.33	606									1					X						
	606	607															2 @ 36"				
35+31.10	616																		0.656		REMOVE EXIST. DI & COLLAR & ESTEND 30"
35+25.54																				92.00	REMOVE EXIST. 36" CMP
																	2 @ 30"				
SHEET TOTALS						1			1	1					X		2 @ 36"		2.00	568.00	

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.) — (NARROW SLOT)
- J.B. — JUNCTION BOX
- M.H. — MANHOLE
- T.B.D.I. — TRAFFIC BEARING DROP INLET
- T.B.J.B. — TRAFFIC BEARING JUNCTION BOX

COMPUTED BY:	JBT	DATE:	4/5/2011
CHECKED BY:	NBS	DATE:	5/5/2011

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2611	3-B

R0208340

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

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

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE	THICKNESS OR GAUGE	C.S. PIPE *WELDED STEEL PIPE **WELDED STEEL PIPE NOT IN SOIL SIZE	THICKNESS OR GAUGE	R.C. PIPE CLASS III SIZE	R.C. PIPE CLASS IV SIZE	** " R.C. PIPE (CLASS V)	**** RC PIPE CULVERTS, CONTRACTOR DESIGN	**** RC PIPE CULVERTS, CONTRACTOR DESIGN	ENDWALLS STD. 838.01 OR STD. 838.11 OR STD 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	ENDWALLS CU. YARDS 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 5.0')	LIN. FT. A 5.0' THRU 10.0'	LIN. FT. B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	OPEN THROAT CATCH BASIN (SEE DETAIL 2-Q)	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. (N.S.) FRAME WITH GRATES STD. 840.24	FRAME & N. S. FLAT GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.34	M.H. FRAME AND COVERR STD. 840.54	ADJUST EXIST. CB	CONVERT D.I. TO J.B. (SEE SHEET 2-N)	SLAB LID	DRAINAGE PIPE ELBOWS NO. & SIZE	CS PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
		609	610		963.3	961.1																																														
30+25.00	RT	610		964.1																1			1		1																									
		610	611		961.1	959.5																																													
31+75.00	RT	611		962.5																1			1		1																									
		611	612		959.5	958.6																																													
32+35.56	RT																																																	100	REMOVE EXIST. 24" CMP
32+50.05	RT	612		961.6																1			1		1																									
		612	613		958.7	956.6																																													
33+71.73	RT	614		962.7																1			1		1																									
		614	613		959.7	956.6			72																																									
34+15.00	RT	613		959.6																1			1		1																									
		613	615		956.6	956	X																																												
34+15.00	RT	615		961.5																1	0.5							1			1	1																		
		615	605		956	955.3	X																																												
35+62.59	RT	617		951.1																	0.6																									1				
		617	618		943.5	948.7					52																																					2 @ 30"				
36+06.00	RT	618		952.1																1												1																			
		619	618		959.8	948.7			72																																							2 @ 15"				
36+49.83	RT	620		964.3																1								1			1	1																			
		620	619		961.2	959.8																																													
36+50.00	RT	619		962.8																1			1			1																									
		621	619		968.7	959.8																																													
39+50.00	RT	621		971.7																1			1			1																									
38+93.76	RT																																																	20	REMOVE EXIST. 12" CONC
39+40.14	RT																																																	40	REMOVE EXIST 12" CONC
39+50.00	LT	622		973.4																1			1		1																									
		622	621		970.4	968.7																																													
42+00.00	RT	700		974																1			1		1																									
		700	701		971	970.9	X																																												
42+00.00	RT	701		974.1																1			1		1																									
		701	703		970.9	968.5																																													
44+00.00	LT	702		969.6																1			1		1																									
		702	703		966.6	966																																													
44+00.00	RT	703		971.5																1	0.5		1		1																									
		703	705		966	965.4	X																																												
45+30.42	RT																																																	48	REMOVE EXIST. 18" CONC & HWs
45+40.00	LT	704		968.8																1			1			1																									
		704	705		965.8	965.4	X																																												
45+40.00	RT	705		970.7																1	0.3		1		1																									
		705	706		965.4	965.2	X																																												
45+95.20	CL																																																	24	REMOVE EXIST. 12" CONC
46+45.92	CL																																																	24	REMOVE EXIST. 15" CONC
46+66.00	RT	708		970.9																1			1	1																									
		708	705		966.5	965.4																																													
46+66.00	LT	707		969.7																1			1		1																									
		707	708		966.7	966.5	X																																												
																																																	2 @ 15"				
SHEET TOTALS									144		52									19	1.9		16	1	12	3	2		1	2	2														1	2 @ 30"				256	

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.)	(NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

COMPUTED BY: JBT DATE: 4/5/2011

CHECKED BY: NBS DATE: 5/5/2011

PROJECT NO.	SHEET NO.
R-2611	3-C

RD238340

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

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.) (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

STATION	LOCATION (LT, RT, OR CL)'	STRUCTURE NO.		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC)								DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE *WELDED STEEL PIPE **WELDED STEEL PIPE NOT IN SOIL								R.C. PIPE CLASS III								R.C. PIPE CLASS IV								** " R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	***" RC PIPE CULVERTS, CONTRACTOR DESIGN			ENDWALLS STD. 838.01 OR STD. 838.11 OR STD 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS		QUANTITIES FOR DRAINAGE STRUCTURES	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT.		C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE			CONCRETE TRANSITIONAL SECTION		OPEN THROAT CATCH BASIN (SEE DETAIL 2-Q)	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "B" STD. 840.18 OR 840.27		G.D.I. (N.S.) FRAME WITH GRATES STD. 840.24	FRAME & N. S. FLAT GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.34	M.H. FRAME AND COVEFR STD. 840.54	ADJUST EXIST. CB	CONVERT D.I. TO J.B. (SEE SHEET 2-N)	SLAB LID	DRAINAGE PIPE ELBOWS NO. & SIZE	CS PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
SIZE / THICKNESS OR GAUGE		FROM	TO					12"	15"	18"	24"	30"	36"	42"	48"					12" .064	*15" 0.5	**15" 0.5	18" .064	30" 0.109	36" 0.109	42" .109	48" .109	12"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"	42"	48"						R.C.P.	C.S.P.	PER EACH (0' THRU 5.0')	A 5.0' THRU 10.0'	B 10.0' AND ABOVE		E	F	G	DROP INLET	CATCH BASIN																			
46+88.21	CL																																																																												20	REMOVE EXIST. 12" CONC
47+94.58	RT																																																																												20	REMOVE EXIST. 12" CONC
48+15.00	RT	710		971.6																																															1			1			1																					
		710	708		968	966.5																															152																																												
48+15.00	RT	709		971.1																																															1			1			1																					
		709	710		968.1	968	X																														28																																												
48+75.00	RT	713		972.4																																															1			1			1																					
		713	710		969.4	968.6																															60																																												
48+75.00	RT	712		972.6																																															1			1			1																					
		712	713		969.6	969.4																															20																																												
48+94.04	LT	711	712		969.9	969.6																															60																																												
52+00.00	LT	714		971.9																																															1			1			1																					
		714	715		968.9	968.8	X																														48																																												
52+00.00	RT	715		972.3																																															1			1		1																						
		715	801		968.8	967.1																															300																																												
53+32.47	RT																																																																													24	REMOVE EXIST. 12" CONC
55+00.00	LT	800		970.1																																															1			1			1																					
		800	801		967.1	966.9	X																														80																																												
55+00.00	RT	801		970.1																																															1			1		1																						
		801	803		966.9	963.4																															228'																																												
57+25.00	LT	802		966.4																																															1			1			1																					
		802	803		963.4	963.2	X																														80																																												
57+25.00	RT	803		966.4																																															1			1		1																						
		803	806		963.2	954.5																															316																																												
60+40.02	LT	804		957																																															1			1			1																					
		804	805		954	953.9	X																														44																																												
57+44.51	LT																																																																												12	REMOVE EXIST. DI & PART OF 15" CONC
57+74.81	LT																																																																												96	REMOVE EXIST. 15" CONC
57+38.99	LT	808		965.3																																															1										1	1																
		808	809		961.7	961.2			76																																																																						
59+39.22	RT																																																																												48	REMOVE EXIST. 15" CONC
60+40.00	CL	805		958.5																																															1							1			1	1																
		805	806		953.9	953.8																															40																																												
60+50.00	RT	806		957.5																																															1			1		1																						
		806	807		953.8	950.8	X			68																																																																					
61+12.55	LT																																																																												180	REMOVE EXIST. DI & 18" CONC
60+36.87	LT	810	811		954.3	951				96																																																																					
61+33.65	LT	811		954.3																																															1			1		1																						
		811	812		951	947				72																																																																				
63+16.68	LT										48	TEMPORARY PIPE																																																															0.232			REMOVE EXSIT. HW PLUG & FILL 24" DIP
																																																																														EXTEND EXIST. TEMPORARY PIPE
63+77.00	LT	813		948.8																																															1									1																		
		813	814		944.3	943.8	X																																				128																																										
63+80.00	LT	815		951.8																																															1			1	1																							
		815	816		948.8	948.8	X																														8																																												
63+85.00	LT	816		951.8																																															1			1	1																							
SHEET TOTALS									76	236	48																										1464					128									18			15	2	5	8	1		1	2	2														0.232		400	

COMPUTED BY:	JBT	DATE:	4/5/2011
CHECKED BY:	NBS	DATE:	5/5/2011

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2611	3-D

R0208340

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

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

STATION	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE	THICKNESS OR GAUGE	C.S. PIPE *WELDED STEEL PIPE **WELDED STEEL PIPE NOT IN SOIL SIZE	THICKNESS OR GAUGE	R.C. PIPE CLASS III SIZE	R.C. PIPE CLASS IV SIZE	* * * R.C. PIPE (CLASS V)	**** RC PIPE CULVERTS, CONTRACTOR DESIGN	***** RC PIPE CULVERTS, CONTRACTOR DESIGN	ENDWALLS STD. 838.01 OR STD. 838.11 OR STD 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	LIN. FT. A 5.0' THRU 10.0'	LIN. FT. B 10.0' 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	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	OPEN THROAT CATCH BASIN (SEE DETAIL 2-Q)	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. (N.S.) FRAME WITH GRATES STD. 840.24	FRAME & N. S. FLAT GRATES STD. 840.29	I.JB. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.34	M.H. FRAME AND COVERR STD. 840.54	ADJUST EXIST. CB	CONVERT D.I. TO J.B. (SEE SHEET 2-N)	SLAB LID	DRAINAGE PIPE ELBOWS NO. & SIZE	CS PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
		816	817		948.8	948.7	X							40																																					
63+85.00	CL	817		952.8																1								1			1	1																		
		817	819		948.7	948.5	X							40																																					
63+85.00	RT	818		951.8																1				1	1																										
		818	819		948.8	948.7								8																																					
63+80.00	RT	819		951.8																1				1	1																										
		819	820		947.3	946.5				32																																									
65+24.03	LT	821		952.6																1											1	1																			
		821	822		950.4	950			32																																										
65+39.59	LT																																																	40	REMOVE EXIST. PIPE TYPE & SIZE UNK.
65+56.36	LT	822		953																1											1	1																			
		822	823		950	949.1			28																																										
65+75.00	LT	823		953																1				1		1																									
		823	824		949.1	948.6	X							80																																					
65+75.00	RT	824		953																1				1			1																								
		824	819		948.6	947.3	X								192																																				
67+20.25	LT																																																	56	REMOVE EXIST. PIPE TYPE & SIZE UNK.
67+30.98	RT																																																	32	REMOVE EXIST. PIPE TYPE & SIZE UNK.
68+50.31	LT																																																	24	REMOVE EXIST. PIPE TYPE & SIZE UNK.
68+60.00	RT	902		955.9																1				1			1																								
		902	824		951.3	950	X							288																																					
68+60.00	RT	901		955.5																1				1		1																									
		901	902		951.4	951.3	X							28																																					
68+65.00	LT	900		954.6																1				1		1																									
		900	901		951.6	951.4	X							52																																					
70+78.16	RT																																																	72	REMOVE EXIST. PIPE TYPE & SIZE UNK.
72+89.20	RT																																																	28	REMOVE EXIST. 12" CONC
73+10.26	LT	903		954																1											1	1																			
		903	904		951.8	951.1			40																																										
73+49.69	LT	904		954.1																1				1			1																								
		904	906		951.1	951	X							32																																					
73+50.13	LT	906		955.3																1								1			1	1																			
		906	905		951	950.9								12																																					
73+65.20	LT	905		955.2																1								1			1	1																			
		905	907		950.9	950.8	X								20																																				
73+66.68	RT																																																	64	REMOVE EXIST. HW, 18" CONC & CB
73+75.07	RT	907		955.7																1								1			1	1																			
		907	908		950.8	950.6	X									56																																			
74+25.01	RT																																																	56	REMOVE EXIST. 12" CONC
74+49.55	LT	909		954.3																1				1		1																									
		909	910		951.3	951.1	X							48																																					
74+51.84	RT	910		956																1								1			1	1																			
		910	907		951.1	950.8	X								76																																				
76+66.19	RT																																																	48	REMOVE EXIST. 15" CONC
77+00.11	RT	912		960.3																1								1			1	1																			
SHEET TOTALS									100		32			628	288	56				18				9	2	4	3	6			9	9																			420	

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.)	(NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

COMPUTED BY: JBT DATE: 4/5/2011

CHECKED BY: NBS DATE: 5/5/2011

PROJECT NO.	SHEET NO.
R-2611	3-E

RD238340

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE *WELDED STEEL PIPE **WELDED STEEL PIPE NOT IN SOIL 12" .064	*15" 0.5	**15" 0.5	18" .064	30" 0.109	36" 0.109	42" .109	48" .109
		912	910		955.4	952.8																					
77+01.26	LT	911		958.6																							
		911	912		955.6	955.4	X																				
79+24.83	CL	914		965.6																							
		914	912		961.1	957.1																					
79+25.38	LT	913		964.3																							
		913	914		961.3	961.1																					
80+08.63	RT																										
81+52.32	RT																										
81+60.73	RT	1000									28																
82+44.82	CL																										
84+90.00	LT	1001		965.7																							
		1001	1002		962.7	962.3	X																				
84+90.00	RT	1002		965.7																							
		1002	1003		962.3	962	X																				
85+00.00	LT	1003		965.8																							
		1003	1004		962	961.7			28																		
85+17.18	RT																										
85+50.00	LT	1005		965.9																							
		1005	1001		962.9	962.7	X																				
85+32.52	LT																										
85+00.00	LT	1006		966.3																							
		1006	1001		964.1	962.7			16																		
86+05.36	CL																										
86+80.47	RT																										
87+46.97	CL																										
91+25.00	RT	1007		967.2																							
		1007	1008		964.2	963.5																					
91+48.29	CL																										
91+58.30	RT																										
93+00.00	RT	1008		966.7																							
		1008	1009		963.5	963.2			32																		
93+78.01	RT	1011		967.5																							
		1011	1008		964.1	963.5																					
93+77.98	RT	1010		967.3																							
		1010	1011		964.3	964.1	X																				
93+94.54	RT																										
91+25.00	LT	1012		967.2																							
		1012	1013		964.2	963.7	X																				
92+35.10	LT	1013		966.7																							
		1013	1014		958.8	950.5				156																	
93+78.06	LT	1015		966.4																							
		1015	1013		960.9	958.8	X																				
95+99.27	LT	1101		966.3																							
		1101	1015		963.1	960.9	X																				
SHEET TOTALS									76	156	28																

STATION	LOCATION	FROM	TO	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	** " R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	***" RC PIPE CULVERTS, CONTRACTOR DESIGN			ENDWALLS STD. 838.01 OR STD. 838.11 OR STD 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.
		912	910										252													
77+01.26	LT	911																								
		911	912										48													
79+24.83	CL	914																								
		914	912										224													
79+25.38	LT	913																								
		913	914										36													
80+08.63	RT																									
81+52.32	RT																									
81+60.73	RT	1000																								
82+44.82	CL																									
84+90.00	LT	1001																								
		1001	1002										76													
84+90.00	RT	1002																								
		1002	1003										32													
85+00.00	LT	1003																								
		1003	1004																							
85+17.18	RT																									
85+50.00	LT	1005																								
		1005	1001										60													
85+32.52	LT																									
85+00.00	LT	1006																								
		1006	1001																							
86+05.36	CL																									
86+80.47	RT																									
87+46.97	CL																									
91+25.00	RT	1007																								
		1007	1008										176													
91+48.29	CL																									
91+58.30	RT																									
93+00.00	RT	1008																								
		1008	1009																							
93+78.01	RT	1011																								
		1011	1008										80													
93+77.98	RT	1010																								
		1010	1011										44													
93+94.54	RT																									
91+25.00	LT	1012																								
		1012	1013										112													
92+35.10	LT	1013																								
		1013	1014																							
93+78.06	LT	1015																								
		1015	1013											144												
95+99.27	LT	1101																								
		1101	1015											216												
SHEET TOTALS													1140	360												

STATION	LOCATION	FROM	TO	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	OPEN THROAT CATCH BASIN (SEE DETAIL 2-Q)	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "B" STD. 840.18 OR 840.27		G.D.I. (N.S.) FRAME WITH GRATES STD. 840.24	FRAME & N. S. FLAT GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.34	M.H. FRAME AND COVEFR STD. 840.54	ADJUST EXIST. CB	CONVERT D.I. TO J.B. (SEE SHEET 2-N)	SLAB LID	DRAINAGE PIPE ELBOWS NO. & SIZE	CS PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
		912	910																												
77+01.26	LT	911		1			1		1																						
		911	912																												
79+24.83	CL	914		1							1			1	1																
		914	912																												
79+25.38	LT	913		1			1		1																						
		913	914																												
80+08.63	RT																													28	REMOVE EXIST. 12" CONC
81+52.32	RT																													32	REMOVE EXIST. PIPE TYPE & SIZE UNK.
81+60.73	RT	1000																													
82+44.82	CL																													20	REMOVE EXIST. 15" CONC
84+90.00	LT	1001		1			1	1																							
		1001	1002																												
84+90.00	RT	1002		1			1	1																							
		1002	1003																												
85+00.00	LT	1003		1			1		1																						
		1003	1004																												
85+17.18	RT																													48	REMOVE EXIST. HWs & 18" CONC
85+50.00	LT	1005		1			1		1																						
		1005	1001																												
85+32.52	LT																													20	REMOVE EXIST. 15" CONC
85+00.00	LT	1006		1										1	1																
		1006	1001																												
86+05.36	CL																													20	REMOVE EXIST. 12" CLAY
86+80.47	RT																													44	REMOVE EXIST. PIPE TYPE & SIZE UNK.
87+46.97	CL																													20	REMOVE EXIST. 12" CLAY
91+25.00	RT	1007		1			1		1																						
		1007	1008																												
91+48.29	CL																													28	REMOVE EXIST. 12" CONC
91+58.30	RT																													40	REMOVE EXIST. PIPE TYPE & SIZE UNK.
93+00.00	RT	1008		1			1		1																						
		1008	1009																												
93+78.01	RT	1011		1			1		1																						
		1011	1008																												
93+77.98	RT	1010		1			1	1																							
		1010	1011																												
93+94.54	RT																													68	REMOVE EXIST. 12" CONC
91+25.00	LT	1012		1			1			1																					
		1012	1013																												
92+35.10	LT	1013		1	2.9		1			1																					
		1013	1014																												
93+78.06	LT	1015		1	0.5		1	1																							
		1015	1013																												
95+99.27	LT	1101		1			1		1																						
		1101	1015																												
SHEET TOTALS				16	3.4		14	4	8	2	1			2	2															368	

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.)	(NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

COMPUTED BY: JBT DATE: 4/5/2011

CHECKED BY: NBS DATE: 5/5/2011

PROJECT NO.	SHEET NO.
R-2611	3-F

RD238340

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE *WELDED STEEL PIPE **WELDED STEEL PIPE NOT IN SOIL 12" .064	*15" 0.5	**15" 0.5	18" .064	30" 0.109	36" 0.109	42" .109	48" .109	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	** " R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	***" RC PIPE CULVERTS, CONTRACTOR DESIGN			ENDWALLS STD. 838.01 OR STD. 838.11 OR STD 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	OPEN THROAT CATCH BASIN (SEE DETAIL 2-Q)	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "B" STD. 840.18 OR 840.27		G.D.I. (N.S.) FRAME WITH GRATES STD. 840.24	FRAME & N. S. FLAT GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.34	M.H. FRAME AND COVEFR STD. 840.54	ADJUST EXIST. CB	CONVERT D.I. TO J.B. (SEE SHEET 2-N)	SLAB LID	DRAINAGE PIPE ELBOWS NO. & SIZE	CS PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
95+99.56	LT	1100		967.8																																																			1								1			1	1															
		1100	1101		964.6	963.3																																			36																																						
97+52.72	RT																																																																												36	REMOVE EXIST. 12" CONC
98+25.00	LT	1103		968.3																																																			1			1		1																						
		1103	1101		965.3	963.3																																			216																																						
98+24.87	LT	1102		969.8																																																			1								1			1	1															
		1102	1103		966.7	965.3																																			36																																						
99+07.51	CL																																																																												16	REMOVE EXIST. 12" CONC
99+84.47	RT																																																																												76	REMOVE EXIST. HW & 18" CONC
100+25.45	LT	1104		971.6																																																			1			1		1																						
		1104	1105		968.6	968.4	X																																		64																																						
100+25.17	RT	1105		973.1																																																			1								1			1	1															
		1105	1106		968.4	968.3	X																																		32																																						
100+25.00	RT	1106		974																																																			1	0.7		1			1																				
		1106	1107		968.3	968.1	X				48																																																																								
101+19.78	LT																																																																												64	REMOVE EXIST. 18" CONC
101+41.95	LT																																																																												112	REMOVE EXIST. 18" CONC
101+60.52	LT																																																																												108	REMOVE EXIST. 15" CONC
101+74.30	LT	1110	1109		974.2	970.4				64																																																																									
101+74.91	RT	1109		973.6																																																			1			1		1																						
		1109	1108		969.9	969.4	X																																				88																																				
101+75.00	RT	1108		973.9																																																			1			1			1																				
		1108	1106		969.4	968.5	X																																				152																																				
103+78.52	LT																																																																												40	REMOVE EXIST. 12" CONC
104+43.67	LT																																																																												20	REMOVE EXIST. 12" CONC
104+84.34	RT																																																																												20	REMOVE EXIST. 12" CONC
106+38.76	RT	1111							24																																																																													
106+40.64	RT																																																																												20	REMOVE EXIST. 12" CONC
106+21.14	LT																																																																												20	REMOVE EXIST. 15" CONC
106+75.00	RT	1113		972.7																																																			1			1		1																						
		1113	1112		969.7	969.5	X																																		76																																						
106+75.00	RT	1112		972.7																																																			1			1			1																				
		1112	1201		969.5	966.7																																			300																																						
107+22.83	RT																																																																												24	REMOVE EXIST. PIPE TYPE & SIZE UNK.
107+22.83	RT	1200							24																																																																													
108+43.87	RT																																																																												20	REMOVE EXIST. 12" CONC
108+67.88	LT																																																																												20	REMOVE EXIST. 15" CONC
108+97.05	RT	1202		969.8																																																			1											1	1															
		1202	1203		967.6	966.8				80																																																																									
109+75.00	RT	1203		969.8																																																			1			1		1																						
		1203	1201		966.8	966.5	X																																		76																																						
109+75.00	LT	1201		969.7																																																			1			1			1																				
		1201	1204		966.4	964																																				220																																					
111+95.00	LT	1204		967.2																																																			1			1			1																				
		1204	1205		963.2	963					24																																																																								
SHEET TOTALS										128	64	72																													836	220	240														14	0.7		10		5	5	3			4	4																596	

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.)	(NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

COMPUTED BY: JBT DATE: 4/5/2011

CHECKED BY: NBS DATE: 5/5/2011

RD238340

PROJECT NO.	SHEET NO.
R-2611	3-G

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
112+77.67	LT	1207		966.8															
		1207	1204		963.6	963.2	X												
112+77.55	RT	1206		967.8															
		1206	1207		964.8	963.8													
115+00.00	LT	1209		968.5															
		1209	1207		965.2	965.6	X												
115+00.26	CL	1208		970															
		1208	1209		967	965.5													
116+90.50	LT																		
117+50.00	LT	1210		973.8															
		1210	1209		970.8	965.5													
117+75.00	RT	1211		974.7															
		1211	1210		971.7	970.8													
119+25.00	RT	1212		976															
		1212	1211		973	971.7													
119+25.00	CL	1213		977															
		1213	1212		973.9	973													
121+50.05	LT	1300							24										
122+50.00	RT	1301		974.5															
		1301	1302		971.5	971.3	X												
122+50.00	LT	1302		976.3															
		1302	1303		971.3	970.6	X												
123+10.13	RT	1327	1328		971.2	969.4			16										
123+75.23	LT	1303		975.4															
		1303	1305		970.6	969.4	X												
123+80.13	RT	1325	1326		969.3	969.2	X		20										
123+81.60	CL																		
123+73.00	LT	1304		975.2															
		1304	1303		973	972.4													
125+00.00	LT	1306		974.2															
		1306	1305		971	970.2													
124+99.98	RT	1305		973.2															
		1305	1323		969.4	968.5													
125+00.00	RT	1323		971.8															
		1323	1307		968.5	966.8	X												
125+38.78	LT																		
126+75.00	RT	1308		972.1															
		1308	1307		968.1	966.8													
126+75.00	RT	1307		970.7															
		1307	1329		966.8	958.2					44								
126+79.08	RT																		
126+89.85	RT																		
126+91.27	RT	1329		962.5	957.7														
127+25.00	LT	1309		971.5															
		1309	1308		969.1	968.1													
128+17.07	LT	1310		971.2															
		1310	1311		969	968			48										
SHEET TOTALS									108		44								

STATION	FROM	TO	C.S. PIPE (*WELDED STEEL PIPE, **WELDED STEEL PIPE NOT IN SOIL) 12" .064	*15" 0.5	**15" 0.5	18" .064	30" 0.109	36" 0.109	42" .109	48" .109	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	** " R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	***" RC PIPE CULVERTS, CONTRACTOR DESIGN		
112+77.67	1207																													
	1207	1204																			80									
112+77.55	1206																													
	1206	1207																		48										
115+00.00	1209																													
	1209	1207																			212									
115+00.26	1208																													
	1208	1209																		40										
116+90.50																														
117+50.00	1210																													
	1210	1209																		244										
117+75.00	1211																													
	1211	1210																		80										
119+25.00	1212																													
	1212	1211																		152										
119+25.00	1213																													
	1213	1212																		36										
121+50.05	1300																													
122+50.00	1301																													
	1301	1302																		48										
122+50.00	1302																													
	1302	1303																		128										
123+10.13	1327	1328																												
123+75.23	1303																													
	1303	1305																		124										
123+80.13	1325	1326																												
123+81.60																														
123+73.00	1304																													
	1304	1303																		52										
125+00.00	1306																													
	1306	1305																		68										
124+99.98	1305																													
	1305	1323																			32									
125+00.00	1323																													
	1323	1307																			168									
125+38.78																														
126+75.00	1308																													
	1308	1307																				32								
126+75.00	1307																													
	1307	1329																												
126+79.08																														
126+89.85																														
126+91.27	1329																													
127+25.00	1309																													
	1309	1308																			80									
128+17.07	1310																													
	1310	1311																												
SHEET TOTALS																				1020	572	32								

STATION	FROM	TO	ENDWALLS STD. 838.01 OR STD. 838.11 OR STD 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	OPEN THROAT CATCH BASIN (SEE DETAIL 2-Q)	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "B" STD. 840.18 OR 840.27		G.D.I. (N.S.) FRAME WITH GRATES STD. 840.24	FRAME & N. S. FLAT GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.34	M.H. FRAME AND COVEFR STD. 840.54	ADJUST EXIST. CB	CONVERT D.I. TO J.B. (SEE SHEET 2-N)	SLAB LID
112+77.67	1207				1			1	1																	
	1207	1204																								
112+77.55	1206				1			1	1																	
	1206	1207																								
115+00.00	1209				1			1		1																
	1209	1207																								
115+00.26	1208				1			1		1																
	1208	1209																								
116+90.50																										
117+50.00	1210				1			1		1																
	1210	1209																								
117+75.00	1211				1			1			1															
	1211	1210																								
119+25.00	1212				1			1			1															
	1212	1211																								
119+25.00	1213				1							1			1	1										
	1213	1212																								
121+50.05	1300																									
122+50.00	1301				1			1		1																
	1301	1302																								
122+50.00	1302				1			1			1															
	1302	1303																								
123+10.13	1327	1328																								
123+75.23	1303				1							1			1	1										
	1303	1305																								
123+80.13	1325	1326																								
123+81.60																										
123+73.00	1304				1										1	1										
	1304	1303																								
125+00.00	1306				1												1			1						
	1306	1305																								
124+99.98	1305				1							1			1	1										
	1305	1323																								
125+00.00	1323				1			1		1																
	1323	1307																								
125+38.78																										
126+75.00	1308				1							1			1	1										
	1308	1307																								
126+75.00	1307				1			1		1																
	1307	1329																								
126+79.08																										
126+89.85																										
126+91.27	1329				1												1			1						
127+25.00	1309				1									1												
	1309	1308																								
128+17.07	1310				1										1	1										
	1310	1311																								
SHEET TOTALS					20			11	2	6	3	4		1	6	6	2			2						

STATION	FROM	TO	DRAINAGE PIPE ELBOWS NO. & SIZE	CS PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
112+77.67	1207							
	1207	1204						
112+77.55	1206							
	1206	1207						
115+00.00	1209							
	1209	1207						
115+00.26	1208							
	1208	1209						
116+90.50							120	REMOVE EXIST. 18" CONC
117+50.00	1210							
	1210	1209						
117+75.00	1211							
	1211	1210						
119+25.00	1212							
	1212	1211						
119+25.00	1213							
	1213	1212						
121+50.05	1300							
122+50.00	1301							
	1301	1302						
122+50.00	1302							
	1302	1303						
123+10.13	1327	1328				0.399		COLLAR/EXTEND EXIST. 15" PIPE
123+75.23	1303							
	1303	1305						
123+80.13	1325	1326				0.399		COLLAR/EXTEND EXIST. 15" PIPE
123+81.60							20	REMOVE EXIST. 12" CONC
123+73.00	1304							
	1304	1303						
125+00.00	1306							
	1306	1305						
124+99.98	1305							
	1305	1323						
125+00.00	1323							
	1323	1307						
125+38.78							208	REMOVE EXIST. 15" CONC
126+75.00	1308							
	1308	1307						
126+75.00	1307							
	1307	1329						
126+79.08							12	REMOVE EXIST. 15" CONC
126+89.85							6	REMOVE EXIST. CB, DI, & 18" CONC
126+91.27	1329							
127+25.00	1309							
	1309	1308						
128+17.07	1310							
	1310	1311						
SHEET TOTALS						0.798	366	

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.)	(NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

COMPUTED BY:	JBT	DATE:	4/5/2011
CHECKED BY:	NBS	DATE:	5/5/2011

PROJECT NO.	SHEET NO.
R-2611	3-H

RD238340

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
128+65.72	LT	1311		971.4															
		1311	1312		968	966.4			44										
129+00.00	LT	1312		969.4															
		1312	1313		963.5	962.4	X												
129+00.00	RT	1313		969.4															
		1313	1314		962.4	958.7	X												
129+31.70	LT	1315		969.7															
		1315	1312		964.3	963.5			44										
129+70.15	LT	1316		969.6															
		1316	1315		964.8	964.3													
130+15.28	LT																		
130+25.00	LT	1317		968.9															
		1317	1316		965.9	964.8	X		64										
131+38.71	CL																		
131+45.00	RT	1314		967.9															
		1314	1318		958.5	955.3				32									
131+42.88	RT	1318		964.6	955.3														
131+85.00	LT	1319		969															
		1319	1314		966.8	964.9													
132+99.91	RT	1321		967.7															
		1321	1320		964.7	963.2													
133+00.00	RT	1320		966.2															
		1320	1400		963.2	954.4													
134+14.17	RT																		
134+18.06	RT	1322							20										
137+00.00	RT	1400		957.4															
		1400	1404		953.6	946.1													
138+05.82	RT																		
139+75.00	RT	1404		949.9															
		1404	1405		945.6	940.5													
140+00.53	CL																		
140+96.63	CL																		
136+80.00	LT	1402		959.8															
		1402	1401		955.4	954.6													
136+99.80	LT	1401		958.9															
		1401	1400		954.6	954	X												
137+48.03	LT																		
139+75.00	LT	1407		949.7															
		1407	1404		946.7	945.6													
141+85.00	LT	1408		944.2															
		1408	1405		941.2	940.3													
141+85.00	RT	1405		944.3															
		1405	1406		940.3	939.5					16								
143+75.00	RT	1409		941.9															
		1409	1410		938.9	938.6	X												
SHEET TOTALS									172	32	16								

STATION	FROM	TO	C.S. PIPE *WELDED STEEL PIPE **WELDED STEEL PIPE NOT IN SOIL 12" .064	*15" 0.5	**15" 0.5	18" .064	30" 0.109	36" 0.109	42" .109	48" .109	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	** " R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	***" RC PIPE CULVERTS, CONTRACTOR DESIGN
128+65.72	1311																												
	1311	1312																											
129+00.00	1312																												
	1312	1313																		76									
129+00.00	1313																												
	1313	1314																			244								
129+31.70	1315																												
	1315	1312																											
129+70.15	1316																												
	1316	1315																		40									
130+15.28																													
130+25.00	1317																												
	1317	1316																											
131+38.71																													
131+45.00	1314																												
	1314	1318																											
131+42.88	1318																												
131+85.00	1319																												
	1319	1314																		104									
132+99.91	1321																												
	1321	1320																		36									
133+00.00	1320																												
	1320	1400																		384									
134+14.17																													
134+18.06	1322																												
137+00.00	1400																												
	1400	1404																				276							
138+05.82																													
139+75.00	1404																												
	1404	1405																				212							
140+00.53																													
140+96.63																													
136+80.00	1402																												
	1402	1401																			60								
136+99.80	1401																												
	1401	1400																			48								
137+48.03																													
139+75.00	1407																												
	1407	1404																		88									
141+85.00	1408																												
	1408	1405																		84									
141+85.00	1405																												
	1405	1406																											
143+75.00	1409																												
	1409	1410																		76									
SHEET TOTALS																				888	352	488							

STATION	FROM	TO	ENDWALLS STD. 838.01 OR STD. 838.11 OR STD 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	OPEN THROAT CATCH BASIN (SEE DETAIL 2-Q)	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. (N.S.) FRAME WITH GRATES STD. 840.24	FRAME & N. S. FLAT GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.34	M.H. FRAME AND COVEFR STD. 840.54	ADJUST EXIST. CB	CONVERT D.I. TO J.B. (SEE SHEET 2-N)	SLAB LID
128+65.72	1311				1										1	1									
	1311	1312																							
129+00.00	1312				1	0.9		1			1														
	1312	1313																							
129+00.00	1313				1	2.0		1		1															
	1313	1314																							
129+31.70	1315				1	0.4		1		1															
	1315	1312																							
129+70.15	1316				1			1			1														
	1316	1315																							
130+15.28																									
130+25.00	1317				1			1			1														
	1317	1316																							
131+38.71																									
131+45.00	1314				1	4.4		1		1															
	1314	1318																							
131+42.88	1318				1	4.3														1		1			
131+85.00	1319				1										1	1									
	1319	1314																							
132+99.91	1321				1							1			1	1									
	1321	1320																							
133+00.00	1320				1			1		1															
	1320	1400																							
134+14.17																									
134+18.06	1322																								
137+00.00	1400				1			1		1															
	1400	1404																							
138+05.82																									
139+75.00	1404				1			1		1															
	1404	1405																							
140+00.53																									
140+96.63																									
136+80.00	1402				1												1		1						
	1402	1401																							
136+99.80	1401				1							1			1	1									
	1401	1400																							
137+48.03																									
139+75.00	1407				1			1			1														
	1407	1404																							
141+85.00	1408				1			1			1														
	1408	1405																							
141+85.00	1405				1			1		1															
	1405	1406																							
143+75.00	1409				1			1		1															
	1409	1410																							
SHEET TOTALS					19	12.0		13		8	5	2			4	4	1		1	1		1			

STATION	FROM	TO	DRAINAGE PIPE ELBOWS NO. & SIZE	CS PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
128+65.72	1311							
	1311	1312						
129+00.00	1312							
	1312	1313						
129+00.00	1313							
	1313	1314						
129+31.70	1315							
	1315	1312						
129+70.15	1316							
	1316	1315						
130+15.28							244	REMOVE EXIST. 2 CBs & 15" RCP
130+25.00	1317							
	1317	1316						
131+38.71					0.130			PLUG & FILL EXIST. 18" RCP
131+45.00	1314							
	1314	1318						
131+42.88	1318						16	REMOVE PART EXIST. 18" RCP
131+85.00	1319							
	1319	1314						
132+99.91	1321							
	1321	1320						
133+00.00	1320							
	1320	1400						
134+14.17							28	REMOVE EXIST. 12" CONC
134+18.06	1322							
137+00.00	1400							
	1400	1404						
138+05.82					0.182		452	REMOVE EXIST. 30" CONC & PLUG ONE END
139+75.00	1404							
	1404	1405						
140+00.53							116	REMOVE EXIST. PIPE TYPE & SIZE UNK.
140+96.63					0.130			PLUG & FILL EXIST. 18" RCP
136+80.00	1402							
	1402	1401						
136+99.80	1401							
	1401	1400						
137+48.03							80	REMOVE EXIST. 15" CMP
139+75.00	1407							
	1407	1404						
141+85.00	1408							
	1408	1405						
141+85.00	1405							
	1405	1406						
143+75.00	1409							
	1409	1410						
SHEET TOTALS					0.442		936	

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.)	(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

RD238340

COMPUTED BY: JBT DATE: 4/5/2011

CHECKED BY: NBS DATE: 5/5/2011

PROJECT NO.	SHEET NO.
R-2611	3-I

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO.		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC)												C.S. PIPE *WELDED STEEL PIPE **WELDED STEEL PIPE NOT IN SOIL								R.C. PIPE CLASS III								R.C. PIPE CLASS IV								** " R.C. PIPE (CLASS V)	*** RC PIPE CULVERTS, CONTRACTOR DESIGN	*** RC PIPE CULVERTS, CONTRACTOR DESIGN			ENDWALLS STD. 838.01 OR STD. 838.11 OR STD 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS		QUANTITIES FOR DRAINAGE STRUCTURES *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			CONCRETE TRANSITIONAL SECTION		OPEN THROAT CATCH BASIN (SEE DETAIL 2-Q)	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "B" STD. 840.18 OR 840.27		G.D.I. (N.S.) FRAME WITH GRATES STD. 840.24	FRAME & N. S. FLAT GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.34	M.H. FRAME AND COVEFR STD. 840.54	ADJUST EXIST. CB	CONVERT D.I. TO J.B. (SEE SHEET 2-N)	SLAB LID	DRAINAGE PIPE ELBOWS NO. & SIZE	CS PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
SIZE								12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	12"	*15"	**15"	18"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"	42"	48"						R.C.P.	C.S.P.	PER EACH (0' THRU 5.0')	LIN. FT. A 5.0' THRU 10.0'	LIN. FT. B 10.0' AND ABOVE		E	F	G	DROP INLET	CATCH BASIN																			
THICKNESS OR GAUGE		FROM	TO																	.064	0.5	0.5	.064	0.109	0.109	.109	.109																																																					
143+75.00	LT	1410		941.9																																															1			1			1																					
		1410	1411		938.6	936.4																															264																																										
144+13.39	RT																																																																												48	REMOVE EXIST. 12" CONC
144+17.96	LT																																																																											104	REMOVE EXIST. 15" CONC
146+38.00	RT	1412		940.3																																															1							1			1	1																	
		1412	1411		937.1	936.4																															44																																										
146+38.00	LT	1411		939.4																																															1			1			1																					
		1411	1501		936.4	934.9																															136																																										
147+02.25	CL																																																																									0.090			REMOVE EXIST. HW, PLUG & FILL 15" RCP
147+32.61	LT																																																																											64	REMOVE EXIST. DI & 18" RCP
147+75.00	RT	1500		938.1																																															1			1		1																					
		1500	1501		935.1	934.9	X																														76																																											
147+75.00	LT	1501		938.1																																															1			1			1																					
		1501	1502		934.9	929			60																																																																							
149+94.28	LT																																																																											20	REMOVE EXIST. 12" CONC
150+40.06	LT	1503		936.7																																															1			1			1																					
		1503	1504		933.7	933.4	X																														72																																										
150+41.63	RT	1504		936.7																																															1			1		1																					
		1504	1505		933.4	932.7																															56																																										
		1506	1505		934.5	932.7			16																																																																								
150+97.71	RT	1505		935.7																																															1			1		1																2 @ 15"					
151+05.45	RT																																																																									0.090		44	REMOVE PART EXSIT. 15" CONC & PLUG
		1505	1508		932.7	930.6																															116																																										
152+16.64	RT	1508		933.6																																															1			1		1																					
152+16.43	LT	1507		933.6																																															1			1			1																					
		1507	1508		930.6	930.4	X																														72																																										
		1508	1511		930.4	926.6																															204																																										
153+91.29	LT																																																																											172	REMOVE EXSIT. CB & 15" RCP
154+45.93	LT	1510		930.6																																															1							1			1	1																	
		1510	1509		927.4	927.3	X																														20																																										
154+26.53	LT	1509		930.9																																															1							1			1	1																	
		1509	1511		927.3	926.6																															48																																										
154+25.15	RT	1511		929.6																																															1			1		1																					
		1511	1512		926.6	925.6			28																																																																								
154+18.05	RT	1512		928.8	922.2																																														1	1.6											1			1												REMOVE EXIST. CB
154+92.28	LT																																																																											108	REMOVE EXIST. 15" RCP
155+62.60	RT	1515		928.5																																															1			1	1																						
		1515	1516		925.5	925.4	X																														52																																										
156+16.20	RT	1516		928.8	922.6																																														1	1.2		1			1																					
155+63.21	CL	1513		929.7																																															1							1			1	1																	
		1513	1514		926.5	926.4	X																														48																																										
156+12.45	CL	1514		929.8	923.1																																														1	1.7						1			1	1																	
155+74.02	LT																																																																											48	REMOVE EXIST. CBs & 15" CONC
156+14.90	RT	1517		927.8	922.1																																														1	0.7											1			1												REMOVE EXIST. CB
158+52.45	LT	1518		931.5																																															1			1		1																					
																																																																										2 @ 15"					
SHEET TOTALS									104																												1208														20	5.2		13	1	6	6	5			5	5	2			2									0.180		608	

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.)	(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

RD238340

COMPUTED BY:	JBT	DATE:	4/5/2011
CHECKED BY:	NBS	DATE:	5/5/2011

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2611	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 48 INCHES & UNDER)

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
		1518	1519		928.5	928.2	X												
158+52.69	RT	1519		931.5															
		1519	1516		928.2	925.8													
161+75.00	LT	1600		930.1															
		1600	1601		927.1	926.9	X												
161+75.00	RT	1601		930.1															
		1601	1602		926.9	924.5													
163+53.41	RT																		
163+54.93	LT																		
164+01.01	CL																		
164+15.00	RT	1602		928.5															
		1602	1603		924.5	923.7	X				56								
164+15.00	LT	1604		928.7															
		1604	1602		925	924.5	X												
165+42.76	CL																		
165+47.90	LT	1606		929.4															
		1606	1605		927.2	926.4			52										
165+86.57	LT																		
165+97.63	LT	1605		929.8															
		1605	1604		926.4	925													
165+75.00	RT	1607		929.4															
		1607	1602		926.4	924.5													
166+31.84	RT	1608		930.7															
		1608	1607		927.7	926.4			76										
166+41.33	LT																		
166+50.16	RT																		
168+50.00	LT	1609		930.6															
		1609	1610		927.6	925.8													
169+65.00	RT	1611		928.3															
		1611	1612		925.6	925.2			28										
169+50.00	RT	1612		929.2															
		1612	1613		925.2	923.9													
169+99.54	RT																		
170+90.00	RT	1613		926.9															
		1613	1614		923.9	923.2													
170+60.00	LT	1614		928.4															
		1614	1610		923.2	922.9													
170+60.00	LT	1610		928.8															
		1610	1616		922.9	919.9													
173+10.00	RT	1615		923.9															
		1615	1616		920.9	920													
173+10.00	LT	1616		923															
		1616	1701		919.9	917.1													
174+80.00	RT	1700		920.1															
		1700	1701		917.1	916.9	X												
SHEET TOTALS									156		56								

STATION	FROM	TO	C.S. PIPE *WELDED STEEL PIPE **WELDED STEEL PIPE NOT IN SOIL 12" (.064)	*15" (0.5)	**15" (0.5)	18" (.064)	30" (0.109)	36" (0.109)	42" (.109)	48" (.109)	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	** " R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	***" RC PIPE CULVERTS, CONTRACTOR DESIGN		
	1518	1519																		72											
158+52.69	1519																														
	1519	1516																		236											
161+75.00	1600																														
	1600	1601																		76											
161+75.00	1601																														
	1601	1602																		240											
163+53.41																															
163+54.93																															
164+01.01																															
164+15.00	1602																														
	1602	1603																													
164+15.00	1604																														
	1604	1602																			88										
165+42.76																															
165+47.90	1606																														
	1606	1605																													
165+86.57																															
165+97.63	1605																														
	1605	1604																		184											
165+75.00	1607																														
	1607	1602																		160											
166+31.84	1608																														
	1608	1607																													
166+41.33																															
166+50.16																															
168+50.00	1609																														
	1609	1610																		212											
169+65.00	1611																														
	1611	1612																													
169+50.00	1612																														
	1612	1613																		140											
169+99.54																															
170+90.00	1613																														
	1613	1614																		56											
170+60.00	1614																														
	1614	1610																		32											
170+60.00	1610																														
	1610	1616																		248											
173+10.00	1615																														
	1615	1616																		48											
173+10.00	1616																														
	1616	1701																		172											
174+80.00	1700																														
	1700	1701																		76											
SHEET TOTALS																				1952	88										

STATION	FROM	TO	ENDWALLS STD. 838.01 OR STD. 838.11 OR STD 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	OPEN THROAT CATCH BASIN (SEE DETAIL 2-Q)	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "B" STD. 840.18 OR 840.27		G.D.I. (N.S.) FRAME WITH GRATES STD. 840.24	FRAME & N. S. FLAT GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.34	M.H. FRAME AND COVEFR STD. 840.54	ADJUST EXIST. CB	CONVERT D.I. TO J.B. (SEE SHEET 2-N)	SLAB LID	DRAINAGE PIPE ELBOWS NO. & SIZE	CS PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
	1518	1519																														
158+52.69	1519				1			1			1																					
	1519	1516																														
161+75.00	1600				1			1			1																					
	1600	1601																														
161+75.00	1601				1			1		1																						
	1601	1602																														
163+53.41																													0.130			PLUG & FILL EXIST. 18" RCP
163+54.93																															20	REMOVE EXIST. CB & 18" RCP
164+01.01																															72	REMOVE EXIST. CB & 15" RCP
164+15.00	1602				1			1			1																					
	1602	1603																														
164+15.00	1604				1			1	1																							
	1604	1602																														
165+42.76																															144	REMOVE EXIST. CB & 15" RCP
165+47.90	1606				1										1	1																
	1606	1605																														
165+86.57																															40	REMOVE PART EXSIT. 15" RCP
165+97.63	1605				1			1		1																						
	1605	1604																														
165+75.00	1607				1			1			1																					
	1607	1602																														
166+31.84	1608				1			1			1																					
	1608	1607																														
166+41.33																															136	REMOVE EXIST. CB & 15" RCP
166+50.16																															88	REMOVE EXIST. DI & 18" RCP
168+50.00	1609				1			1			1																					
	1609	1610																														
169+65.00	1611				1												1			1												
	1611	1612																														
169+50.00	1612				1			1		1																						
	1612	1613																														
169+99.54																															92	REMOVE EXIST. 12" CONC
170+90.00	1613				1			1		1																						
	1613	1614																														
170+60.00	1614				1	0.2		1		1																						
	1614	1610																														
170+60.00	1610				1	0.9		1			1																					
	1610	1616																														
173+10.00	1615				1			1		1																						
	1615	1616																														
173+10.00	1616				1			1			1																					
	1616	1701																														
174+80.00	1700				1			1		1																						
	1700	1701																														
SHEET TOTALS					18	1.1		16	1	7	8				1	1	1			1									0.130		592	

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.)	(NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

COMPUTED BY: JBT DATE: 4/5/2011

CHECKED BY: NBS DATE: 5/5/2011

PROJECT NO.	SHEET NO.
R-2611	3-K

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

RD238340

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

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

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL
174+80.00	LT	1701		920.1			
		1701	1705		916.9	910.6	
174+91.69	RT						
174+92.60	RT	1702					
176+50.00	RT	1703		914.2			
		1703	1704		912	910.6	
176+87.70	LT						
177+00.00	RT	1704		913.6			
		1704	1705		910.6	909.9	
177+00.00	LT	1705		913.6			
		1705	1707		909.9	896.9	
177+63.25	LT						
179+75.00	RT	1706		900.2			
		1706	1707		897.2	897	X
179+75.00	LT	1707		900.1			
		1707	1710		896.4	884.4	
181+75.00	RT	1708		891.7			
		1708	1709		889	886.5	
182+05.00	RT	1709		889.5			
		1709	1710		886.5	885.1	
182+05.00	LT	1710		888.1			
		1710	1712		884.4	876.1	
183+54.75	RT	1711		882.1	876.1		
		1711	1712		876.1	875.3	
183+54.75	RT						
183+75.00	LT	1712		879.5			
		1712	1713		874.8	871.3	
185+15.00	RT	1714		873.9			
		1714	1715		870.9	860	
188+00.00	RT	1715		863.2			
		1715	1716		860	858.5	
188+00.00	LT	1716		861.5			
		1716	1803		858.5	856.8	
186+24.00	RT	1717		870.5			
		1717	1800		867.5	852.3	
189+75.09	LT	1802		859.8			
		1802	1803		856.8	856.6	
189+75.00	LT	1803		859.8			
		1803	1804		855.2	846.4	
190+47.00	LT	1806		858.4			
		1806	1803		855.4	855.2	
190+47.19	LT	1805		859.6			
		1805	1806		856.6	855.4	
189+80.04	RT	1800		855.3			
		1800	1801		852.3	842	
SHEET TOTALS							

STATION	FROM	TO	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE *WELDED STEEL PIPE **WELDED STEEL PIPE NOT IN SOIL 12" .064	*15" 0.5	**15" 0.5	18" .064	30" 0.109	36" 0.109	42" .109	48" .109	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"
174+80.00	1701																																					
	1701	1705																														220						
174+91.69																																						
174+92.60	1702			32																																		
176+50.00	1703																																					
	1703	1704		52																																		
176+87.70																																						
177+00.00	1704																																					
	1704	1705																														76						
177+00.00	1705																																					
	1705	1707																															276					
177+63.25																																						
179+75.00	1706																																					
	1706	1707																														76						
179+75.00	1707																																					
	1707	1710																																228				
181+75.00	1708																																					
	1708	1709																														56						
182+05.00	1709																																					
	1709	1710																														48						
182+05.00	1710																																					
	1710	1712																																168				
183+54.75	1711																																					
	1711	1712																																	52			
183+54.75																																						
183+75.00	1712																																					
	1712	1713						92																														
185+15.00	1714																																					
	1714	1715																														284						
188+00.00	1715																																					
	1715	1716																														48						
188+00.00	1716																																					
	1716	1803																														172						
186+24.00	1717																																					
	1717	1800																															364					
189+75.09	1802																																					
	1802	1803																														36						
189+75.00	1803																																					
	1803	1804																48																				
190+47.00	1806																																					
	1806	1803																														72						
190+47.19	1805																																					
	1805	1806																														36						
189+80.04	1800																																					
	1800	1801																															256					
SHEET TOTALS				84				92										48														1124	896	396	52			

STATION	FROM	TO	** " R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	ENDWALLS STD. 838.01 OR STD. 838.11 OR STD 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	OPEN THROAT CATCH BASIN (SEE DETAIL 2-Q)	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. (N.S.) FRAME WITH GRATES STD. 840.24	FRAME & N. S. FLAT GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.34	M.H. FRAME AND COVEFR STD. 840.54	ADJUST EXIST. CB	CONVERT D.I. TO J.B. (SEE SHEET 2-N)	SLAB LID	DRAINAGE PIPE ELBOWS NO. & SIZE	CS PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
174+80.00	1701							1			1			1																				
	1701	1705																																
174+91.69																																	40	REMOVE EXIST. 15" HDPE
174+92.60	1702																																	
176+50.00	1703							1												1	1													
	1703	1704																																
176+87.70																																	100	REMOVE EXIST. 24" RCP
177+00.00	1704							1			1		1																					
	1704	1705																																
177+00.00	1705							1			1			1																				
	1705	1707																																
177+63.25																																	88	REMOVE EXIST. DI & 24" RCP
179+75.00	1706							1			1		1																					
	1706	1707																																
179+75.00	1707							1			1			1																				
	1707	1710																																
181+75.00	1708							1												1		1												
	1708	1709																																
182+05.00	1709							1			1			1																				
	1709	1710																																
182+05.00	1710							1			1			1																				
	1710	1712																																
183+54.75	1711							1	1.0									1	1															
	1711	1712																																
183+54.75																																	24	REMOVE EXIST. HW & PART 30" RCP
183+75.00	1712							1			1			1																				
	1712	1713																																
185+15.00	1714							1			1			1																				
	1714	1715																																
188+00.00	1715							1			1			1																				
	1715	1716																																
188+00.00	1716							1			1			1																				
	1716	1803																																
186+24.00	1717							1												1		1												
	1717	1800																																
189+75.09	1802							1							1			1	1															
	1802	1803																																
189+75.00	1803							1			1			1																				
	1803	1804																																
190+47.00	1806							1			1	1																						
	1806	1803																																
190+47.19	1805							1							1			1	1															
	1805	1806																																
189+80.04	1800							1												1		1												
	1800	1801																																
SHEET TOTALS								20	1.0		13	1	2	10	2			3	3	4	1	3											252	

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.)	(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

RD238340

COMPUTED BY: JBT DATE: 4/5/2011

CHECKED BY: NBS DATE: 5/5/2011

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2611	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 48 INCHES & UNDER)

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
190+10.38	RT																		
192+05.00	LT	1807		857															
		1807	1808		843.7	842.7													
193+50.00	LT	1809		860.1															
		1809	1810		857.1	856.9	X												
193+49.88	LT	1810		861.6															
		1810	1811		856.9	854.6													
	LT	1812		858.8	852.6														
195+40.42	LT	1813		862.8	854.6														
195+45.05	LT	1814		864.2	855.6														
197+49.40	LT	1815		867.7	860.4														
197+79.84	CL	1816		868.9	864.5														
200+00.00	LT	1817		867.9															
		1817	1902		864.9	864.3	X												
197+08.35	RT	1820			864.1							8							
199+99.96	RT	1818		869.8															
		1818	1817		866.7	869.9													
197+32.80	RT	1821		869.8	864.3														
197+84.46	RT	1822		869.8	864.7														
		1822	1823		864.7	867.3						32							
202+25.00	RT	1900		869.3															
		1900	1901		866.3	866.2	X												
202+25.07	LT	1901		869.9															
		1901	1902		866.2	866.1	X												
202+25.00	LT	1902		869.1															
		1902	1903		864.3	863.6	X												
203+43.37	RT																		
203+44.99	LT	1903		869.2															
		1903	1904		863.6	863.4	X		32										
204+40.11	RT	1905		869.4															
		1905	1906		866.4	866.3	X												
204+76.35	RT	1906		869.5	857.6														
204+51.68	LT	1907		869.1															
		1907	1908		866.1	865.5													
204+87.36	LT	1908		868.7															
		1908	1909		864.8	864.5	X		36										
205+61.21	LT	1910		869.8															
		1910	1917		866.6	865.4													
207+66.15	RT	1911		870.3	865.6														
207+66.80	LT	1912			866.2														
207+66.78	LT	1913		870															
		1913	1912		866.3	866.2													
208+33.24	LT																		
208+90.14	LT																		
208+92.77	LT	1914		870.6															
SHEET TOTALS									68			40							

STATION	FROM	TO	C.S. PIPE (*WELDED STEEL PIPE, **WELDED STEEL PIPE NOT IN SOIL) 12" .064	*15" 0.5	**15" 0.5	18" .064	30" 0.109	36" 0.109	42" .109	48" .109	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	** " R.C. PIPE (CLASS V)	*** RC PIPE CULVERTS, CONTRACTOR DESIGN	*** RC PIPE CULVERTS, CONTRACTOR DESIGN		
	1807	1808																								12					
	1809	1810																		48											
	1810	1811																		104											
	1817	1902																		224											
	1818	1817																		52											
	1900	1901																		40											
	1901	1902																		28											
	1902	1903																		116											
	1905	1906																		36											
	1907	1908																		52											
	1910	1917																		72											
	1913	1912																		16											
SHEET TOTALS																				788						12					

STATION	FROM	ENDWALLS STD. 838.01 OR STD. 838.11 OR STD 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	OPEN THROAT CATCH BASIN (SEE DETAIL 2-Q)	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "B" STD. 840.18 OR 840.27		G.D.I. (N.S.) FRAME WITH GRATES STD. 840.24	FRAME & N. S. FLAT GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.34	M.H. FRAME AND COVER STD. 840.54	ADJUST EXIST. CB	CONVERT D.I. TO J.B. (SEE SHEET 2-N)	SLAB LID	DRAINAGE PIPE ELBOWS NO. & SIZE	CS PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
190+10.38																															56	REMOVE EXIST. 15" CONC
192+05.00	1807			1	5.0	3.3															1	1										
193+50.00	1809			1			1		1																							
193+49.88	1810			1							1			1	1																	
	1812			1	1.2																1	1										REMOVE EXIST DI
195+40.42	1813			1	3.2																1	1										REMOVE EXIST DI
195+45.05	1814			1	3.6		1		1																							
197+49.40	1815			1	2.3		1		1																							
197+79.84	1816			1							1			1	1																	REMOVE EXIST BOX
200+00.00	1817			1			1		1																							
197+08.35	1820																													0.656		COLLAR & EXTEND 30"
199+99.96	1818			1							1			1	1																	
197+32.80	1821			1	0.5		1			1																						
197+84.46	1822			1	0.1		1		1																						16	REMOVE PART EXIST. 30" CONC
202+25.00	1900			1			1			1																						
202+25.07	1901			1							1			1	1																	
202+25.00	1902			1			1		1																							
203+43.37																															180	REMOVE EXIST. CB & 15" RCP
203+44.99	1903			1	0.6		1		1																							
204+40.11	1905			1			1			1																						
204+76.35	1906			1	5.0	1.9	1			1																						
204+51.68	1907			1			1		1																							
204+87.36	1908			1			1	1																								
205+61.21	1910			1							1			1	1																	
207+66.15	1911																						1									
207+66.80	1912																													0.399		COLLAR & EXTEND 15"
207+66.78	1913			1			1			1																						
208+33.24																															112	REMOVE EXIST. 15" RCP
208+90.14																															68	REMOVE EXIST. CB & 15" RCP
208+92.77	1914			1			1			1																						
SHEET TOTALS				23	21.5	5.2	15	1	8	6	5			5	5						3	3	1							1.055	432	

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.)	(NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

COMPUTED BY: JBT	DATE: 4/5/2011
CHECKED BY: NBS	DATE: 5/5/2011

PROJECT NO.	SHEET NO.
R-2611	3-M

RD238340

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE *WELDED STEEL PIPE **WELDED STEEL PIPE NOT IN SOIL 12" .064	*15" 0.5	**15" 0.5	18" .064	30" 0.109	36" 0.109	42" .109	48" .109	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	** " R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	***" RC PIPE CULVERTS, CONTRACTOR DESIGN			ENDWALLS STD. 838.01 OR STD. 838.11 OR STD 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	OPEN THROAT CATCH BASIN (SEE DETAIL 2-Q)	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "B" STD. 840.18 OR 840.27		G.D.I. (N.S.) FRAME WITH GRATES STD. 840.24	FRAME & N. S. FLAT GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.34	M.H. FRAME AND COVEFR STD. 840.54	ADJUST EXIST. CB	CONVERT D.I. TO J.B. (SEE SHEET 2-N)	SLAB LID	DRAINAGE PIPE ELBOWS NO. & SIZE	CS PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
		1914	1913		866.6	866.3	X																														128																																											
210+24.17	LT	1915		872.3																																																0.3																			1								
		1915	1914		867	866.6	X																														132																																												
210+23.87	CL																																																																										0.090			PLUG & FILL EXIST. 15" RCP
210+26.47	RT																																																																										0.045			REMOVE EXIST CB & PLUG 15" RCP
-Y2-																																																																														
17+00.00	LT	623		972.4																																															1			1			1																					
		623	626		969.4	962.7																															176																																												
17+29.04	LT																																																																												16	REMOVE EXIST. 12" RCP
17+57.13	LT																																																																													24	REMOVE EXIST. 12" RCP
17+65.35	RT																																																																														20	REMOVE EXIST. 12" RCP
17+67.87	RT	624							24																																																																					
18+20.65	RT																																																																														48	REMOVE EXIST. 15" RCP
18+50.00	RT	625							20																																																																						
18+55.64	RT																																																																															24	REMOVE EXIST. 15" RCP
18+83.02	LT	626		965.7																																															1			1			1																					
		626	627		962.7	961.8																															56																																												
18+92.86	LT																																																																															16	REMOVE EXIST. PIPE TYPE & SIZE UNK.
19+36.54	RT																																																																															56	REMOVE EXIST. 12" CONC
19+41.63	LT	627		965																																															1			1			1																					
		627	604		961.8	958.8																															84																																												
19+60.29	LT																																																																															24	REMOVE EXIST. PIPE TYPE & SIZE UNK.
20+15.46	RT																																																																															60	REMOVE EXIST. DI & 15" CONC
-Y3-																																																																														
12+87.98	LT																																																																															24	REMOVE EXIST. 12" CONC
14+65.35	RT	628			966.1	966			12																																																																			0.399		COLLAR & EXTEND 15"
14+87.41	RT	629			965.6	965.5			12																																																																		0.399		COLLAR & EXTEND 15"
15+32.09	RT	630			967.5	967.4			20																																																																		0.399		COLLAR & EXTEND 15"
15+67.09	LT	631			968.5	968			12																																																																	0.399		COLLAR & EXTEND 15"
-Y6-																																																																													
11+33.96	RT	1114	1115		965.7	964.3					20																																																																			
11+25.00	RT	1115		968.1																																															1			1		1																						
		1115	1116		964.3	964.1	X																																40																																									
11+25.00	LT	1116		968.1																																															1			1			1																					
		1116	1117		964.1	964	X				32																																																																				
11+31.91	CL																																																																															40	REMOVE EXIST. 24" CMP
12+19.92	LT	1118							24																																																																						
12+22.78	LT																																																																															60	REMOVE EXIST. 15" CONC
13+28.61	LT	1119							16																																																																						
13+28.64	LT																																																																															20	REMOVE EXIST. 12" CONC
14+17.10	LT																																																																															16	REMOVE EXIST. 12" CONC
14+18.26	LT	2200							16																																																																						
15+03.01	LT	2201							16																																																																							
15+04.64	LT																																																																															16	REMOVE EXIST. 8" HDPE
17+56.13	LT	2202							20																																																																						
17+56.62	LT																																																																															20	REMOVE EXIT. 12" CONC
18+55.58	LT	2203							36																																																																						
18+59.16	LT																																																																															32	REMOVE EXIT. 12" CONC
SHEET TOTALS									228		52																										576		40												5	0.3		5		1	4													1					0.135	1.596	516	

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.)	(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

RD238340

COMPUTED BY: JBT DATE: 4/5/2011

CHECKED BY: NBS DATE: 5/5/2011

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2611	3-N

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

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

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE *WELDED STEEL PIPE **WELDED STEEL PIPE NOT IN SOIL 12" .064	*15" 0.5	**15" 0.5	18" .064	30" 0.109	36" 0.109	42" .109	48" .109	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	** " R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	***" RC PIPE CULVERTS, CONTRACTOR DESIGN			ENDWALLS STD. 838.01 OR STD. 838.11 OR STD 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	OPEN THROAT CATCH BASIN (SEE DETAIL 2-Q)	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "B" STD. 840.18 OR 840.27		G.D.I. (N.S.) FRAME WITH GRATES STD. 840.24	FRAME & N. S. FLAT GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.34	M.H. FRAME AND COVEFR STD. 840.54	ADJUST EXIST. CB	CONVERT D.I. TO J.B. (SEE SHEET 2-N)	SLAB LID	DRAINAGE PIPE ELBOWS NO. & SIZE	CS PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
-Y7-																																																																														
11+29.13	LT																																																																											24	REMOVE EXIST. 12" CONC
11+30.38	LT	1214							28																																																																					
12+00.00	RT	1216		973.1																																															1			1		1																							
		1216	1215		970.1	970	X																														40																																										
12+00.00	LT	1215		973.9																																															1			1		1																							
		1215	1217		970	969.8			32																																																																							
14+50.00	LT	1218		976.5																																															1			1		1																							
		1218	1215		973.5	970.9																															244																																										
-Y10-																																																																															
17+25.00	LT	1414		963																																															1			1			1																						
		1414	1413		960	956.2																															176																																										
19+00.00	LT	1413		959.2																																															1			1			1																						
		1413	1402		956.2	955.4																															96																																										
-Y12-																																																																															
28+15.11	LT	1819							4																																																																		0.399		COLLAR & EXTEND 15"
-RAMPA-																																																																															
29+00.00	LT	1831		871.4	865.5																																														1	0.9						1										1	1									
26+94.05	LT	1824		881.5	875																																														1	1.5		1			1																						
28+75.04	LT	1825		872.1																																															1							1			1	1																		
		1825	1831		869	867.2																															20																																										
29+19.94	LT	1826		867.8	864.1																																														1																	1	1									
30+32.00	RT	1827		865.6																																															1							1			1	1																		
		1827	1828		862.4	862.4																															12																																										
30+45.00	RT	1828		865.6	855.8																																														1	4.8						1			1	1																		
30+32.63	LT	1829		865.3																																															1			1	1																								
		1829	1830		862.3	862.2	X																														24																																										
30+55.11	LT	1830		865.3	856.4																																														1	3.9		1			1																						
-RAMPB-																																																																															
28+74.52	RT																																																																											16	REMOVE EXIST. DI & 15" RCP
31+51.18	LT	1917		868.4																																															1			1		1																							
		1917	1918		865.4	865.1																															28																																										
31+26.14	LT	1918		868.1																																															1			1	1																								
		1918	1919		865.1	865	X																														40																																										
31+25.87	LT	1919		868.7																																															1										1	1																		
		1919	1916		865	864.9	X																														28																																										
31+43.28	RT	1916		868.9																																															1							1			1	1																		
		1916	1908		864.9	864.8	X																														32																																										
-LOOPB-																																																																															
19+25.00	RT	1920		876.4																																															1			1		1																							
		1920	1921		873.4	869.3																															48																																										
19+49.64	LT	1921		872.1																																															1	0.1											1		1															
		1921	1922		867	865			32																																																																							
19+81.67	LT	1922		873.5	852.1																																															5.0	11.4																1		1							
16+80.38	RT	2000		885.4	881.7																																																																	1								
-Y13-																																																																															
12+05.00	LT	1832									16																																																																	0.553		COLLAR & EXTEND 24"
SHEET TOTALS									96		16																										788														19	16.20	11.40	11	2	5	4	5			5	5	1		1			2	3	1	1					0.952	40	
PROJECT TOTALS									1800	516	364	92	92								96	32	48	116	36												14432	3104	1636	104		128	12								241	66.70	16.6	171	17	79	75	36		3	48	48	12		2	10	2	5	7	3	2	X	4 @ 15"	2 @ 30"	1.119	6.401	6350	PROJECT TOTALS
SAY																																																			88																							2 @ 30"	2 @ 36"	2.000	7.000		SAY

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.)	(NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

COMPUTED BY: JBT DATE: 4/6/2011

CHECKED BY: NBS DATE: 5/5/2011

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2611	3-O

RD238340

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 54" & OVER)

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

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 54"	60"	66"	72"	78"	84"			C.S. PIPE (UNLESS NOTED OTHERWISE) 54" .109	54" .138	54" .168	54" SHOP ELONGATED .138	54" SHOP ELONGATED .168	60" .138	60" .168	66" .138	66" .168	72" .139	72" .168		STRUCTURAL PLATE PIPE 60" 12	60" 10		66" 12	66" 10		72" 12	72" 10					REINFORCED ENDWALLS WITH R.C. - C.Y.	REINFORCED ENDWALLS WITH C.S. - C.Y.	MASONRY DRAINAGE STRUCTURES CUBIC YARDS	C.B. STD. 840.01 OR 840.02	FRAMES, GRATES & HOOD STANDARD 840.03 TYPE OF GRATE E	F	G		DROP INLET	CATCH BASIN	J.B. W/SLAB LID STD. 840.31 OR 840.32												REINF. CONC. FLARED END SECTIONS NO. & SIZE	CORR. STEEL FLARED END SECTIONS NO. & Size	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72		PIPE REMOVAL LIN. FT.	REMARKS
35+21.96	LT	607		938.8																																						4								1																		
		607	608		928	928										12'																																																				
SHEET TOTALS																																																																				

WOVEN WIRE FENCE SUMMARY

SURVEY LINE	STATION	STATION	LOCATION	FABRIC LN. FT.	4" POST EA.	5" POST EA.
-L-	188+06.91	190+86.22	LT.	293.77	16	10
-L- /-RAMPA-	191+32.03	27+10.78	LT.	238.45	10	13
-L-	191+94.78	192+49.88	RT.	93.46	1	10
-L-	192+94.58	195+97.25	RT.	366.46	17	10
			TOTAL:	992.14	44	49
			SAY:	1000.00	50	50

48" CHAIN LINK FENCE SUMMARY

SURVEY LINE	STATION	STATION	LOCATION	FABRIC LN. FT.	4" POST EA.	5" POST EA.
-L-	179+70.00	182+00.00	LT.	236.00	19	3
			TOTAL:	236.00	19	3
			SAY:	240.00	20	4

PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD^2
-L-	74+47.91	78+27.18	RT.	406.13
-L-	152+81.43	154+79.59	RT.	136.77
-L-	155+36.42	157+55.08	RT.	120.55
			TOTAL:	663.45
			SAY:	670.00

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

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS									IMPACT ATTENUATOR TYPE 350			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	XI	GRAU 350	M-350	XIII	CAT-1	VI MOD	BIC	AT-1	EA	G	NG				
-L-	50+77.68	52+76.11	LT.																									213.0		
-L-	125+75.00	128+12.50	LT.	237.5			127+25.00	125+75.00	2	12	50		1				1			1										
-L-	188+39.83	192+14.83	LT.	375.0			192+00.00	188+50.00	2	12	50		1				1			1										
-L-	190+25.00	193+25.00	RT.	300.0			190+75.00	193+25.00	2	12	50		1				1			1										
-RAMPA-	20+50.00	27+00.00	RT.	650.0			20+50.00	27+00.00	10	13										1								696.0		TIE TO EXISTING GUARDRAIL AT STA. 20+50.00
			SUB-TOTAL	1562.5													3			4								909.0		
	LESS ANCHOR DEDUCTIONS																													
	GRAU 350 (50.00') X 3		=	-150.0																										
	CAT-1 (18.75') X 4		=	-75.0																										
			TOTAL	1337.5	ADDITIONAL GUARDRAIL POSTS = 10																									
			SAY	1350.00																										
	TEMPORARY GUARDRAIL																													
-L-	190+62.50	192+50.00	LT.	187.5													2													
			SUB-TOTAL	187.5																										
	LESS ANCHOR DEDUCTIONS																													
	GRAU 350 (50.00') X 2		=	-100.0																										
			TOTAL	87.5																										
			SAY	100.00																										

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COMPUTED BY: W. T. Best DATE: May. 27, 2011
CHECKED BY: W. A. Smith DATE: May. 27, 2011

ADDITIONAL SHALLOW UNDERCUT CONTINGENCY = 500 CY
ESTIMATED SHALLOW UNDERCUT BY STATIONS = 16,500 CY
TOTAL SHALLOW UNDERCUT = 17,000 CY
CLASS IV SUBGRADE STABILIZATION = 45,700 TONS
ADDITIONAL UNDERCUT CONTINGENCY = 915 CY

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

IN CUBIC YARDS

PROJECT REFERENCE NO.	SHEET NO.
R-2611	3-Q

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
SUMMARY NO. 1					
10+00 TO 40+00 –L– LT.	2819		6008	3391	202
12+00 TO 12+75 –Y1–	62				62
14+00 TO 20+50 –Y2–	960		552		408
SUMMARY TOTAL NO. 1	3841		6560	3391	672
SUMMARY NO. 2					
10+00 TO 40+00 –L– RT.	855		3138	2513	230
10+50 TO 16+00 –Y3–	154		546	392	
12+50 TO 13+00 –Y3A–	13		4		9
13+25 TO 14+25 –Y4–	49		49		
SUMMARY TOTAL NO. 2	1071		3737	2905	239
SUMMARY NO. 3					
40+00 TO 70+00 –L– LT.	1878		7201	5323	
SUMMARY TOTAL NO. 3	1878		7201	5323	
SUMMARY NO. 4					
40+00 TO 70+00 –L– RT.	1746		8839	7093	
SUMMARY TOTAL NO. 4	1746		8839	7093	
SUMMARY NO. 5					
70+00 TO 100+00 –L– LT.	11030		5453		5577
SUMMARY TOTAL NO. 5	11030		5453		5577
SUMMARY NO. 6					
70+00 TO 100+00 –L– RT.	1010		5922	4912	
10+50 TO 19+50 –Y6–	2218		384		1834
SUMMARY NO. 6	3228		6306	4912	1834
SUMMARY NO. 7					
100+00 TO 130+00 –LT.–	5027		6257	1230	
SUMMARY TOTAL NO. 7	5027		6257	1230	
SUMMARY NO. 8					
100+00 TO 130+00 –RT.–	706		5160	4454	
SUMMARY TOTAL NO. 8	706		5160	4454	
SUMMARY NO. 9					
130+00 TO 160+00 –LT.–	2355		5724	3369	
10+00 TO 14+50 –Y7–	214		1174	960	
15+25 TO 16+00 –Y9–	31		7		24
14+50 TO 19+00 –Y10–	399		455	56	
SUMMARY TOTAL NO. 9	2999		7360	4384	24
SUMMARY NO. 10					
130+00 TO 160+00 –RT.–	627		4164	3537	
10+50 TO 11+50 –Y8–	50		22		28
10+40 TO 11+20 –ENDURA DR–	11		143	132	

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
SUMMARY NO. 10 (CONT.)					
10+20 TO 10+80 –ENDURA DR1–	58		22		36
SUMMARY TOTAL NO. 10	746		4351	3669	64
SUMMARY NO. 11					
160+00 TO 190+00 –L– LT.	13309		9019		4290
SUMMARY TOTAL NO. 11	13309		9019		4290
SUMMARY NO. 12					
160+00 TO 190+00 –L– RT.	400		5248	4969	121
10+00 TO 14+50 –Y11–	64		264	264	64
SUMMARY TOTAL NO. 12	464		5512	5233	185
SUMMARY NO. 13					
190+00 TO 211+00 –L– LT.	706		8600	7894	
25+00 TO 29+00 –Y12–	39		169	130	
20+50 TO 30+50 RP A & LP A	400		1831	1431	
14+50 TO 16+00 –LP B–	32		688	636	
23+50 TO 30+50 RP B & LP B	870		3592	2722	
12+50 TO 13+25 –Y15–	13		11		
SUMMARY TOTAL NO. 13	2060		14872	12813	
SUMMARY NO. 14					
190+00 TO 211+00 –L– RT.	259		5164	4905	
10+50 TO 15+50 –Y13–	80		436	356	
SUMMARY TOTAL NO. 14	339		5599	5260	
SUMMARY TOTALS	48444		96224	60667	12887
LOSS DUE TO CLEARING AND GRUBBING	–18900			18900	
EST. SHOULDER MATERIAL			2663	2663	
WASTE IN LIEU OF BORROW				–10776	–10776
PROJECT TOTAL	29544		98887	71454	2111
EST. 5% TO REPLACE TOP SOIL					
ON BORROW PIT				3573	
GRAND TOTAL	29544		98887	75027	2111
SAY	29650			75100	
EARTHWORK TOTALS FOR ALTERNATE PVMT. DESIGN					
SUMMARY TOTALS	48444		96224	60667	12887
ADJ. FOR ALT. PVMT. DESIGN	–2162		4512	3734	–2940
LOSS DUE TO CLEARING AND GRUBBING	–18900			18900	
EST. SHOULDER MATERIAL			2663	2663	
WASTE IN LIEU OF BORROW				–7836	–7836
PROJECT TOTAL	27382		103399	78128	2111
EST. 5% TO REPLACE TOP SOIL					
ON BORROW PIT				3906	
GRAND TOTAL	27382		103399	82034	2111
SAY	27500			82100	

ALT. PVMT. DESIGN

ADDITIONAL SHALLOW UNDERCUT CONTINGENCY = 500 CY
ESTIMATED SHALLOW UNDERCUT BY STATIONS = 16,202 CY
TOTAL SHALLOW UNDERCUT = 16,710 CY
CLASS IV SUBGRADE STABILIZATION = 44,500 TONS
ADDITIONAL UNDERCUT CONTINGENCY = 915 CY

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.

5/9/06

$$$$$SYSTIME$$$$$
$$$$$DGN$$$$$
$$$$$SELENAME$$$$$

PROJ. REFERENCE NO.	SHEET NO.
R-2611	3-R

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

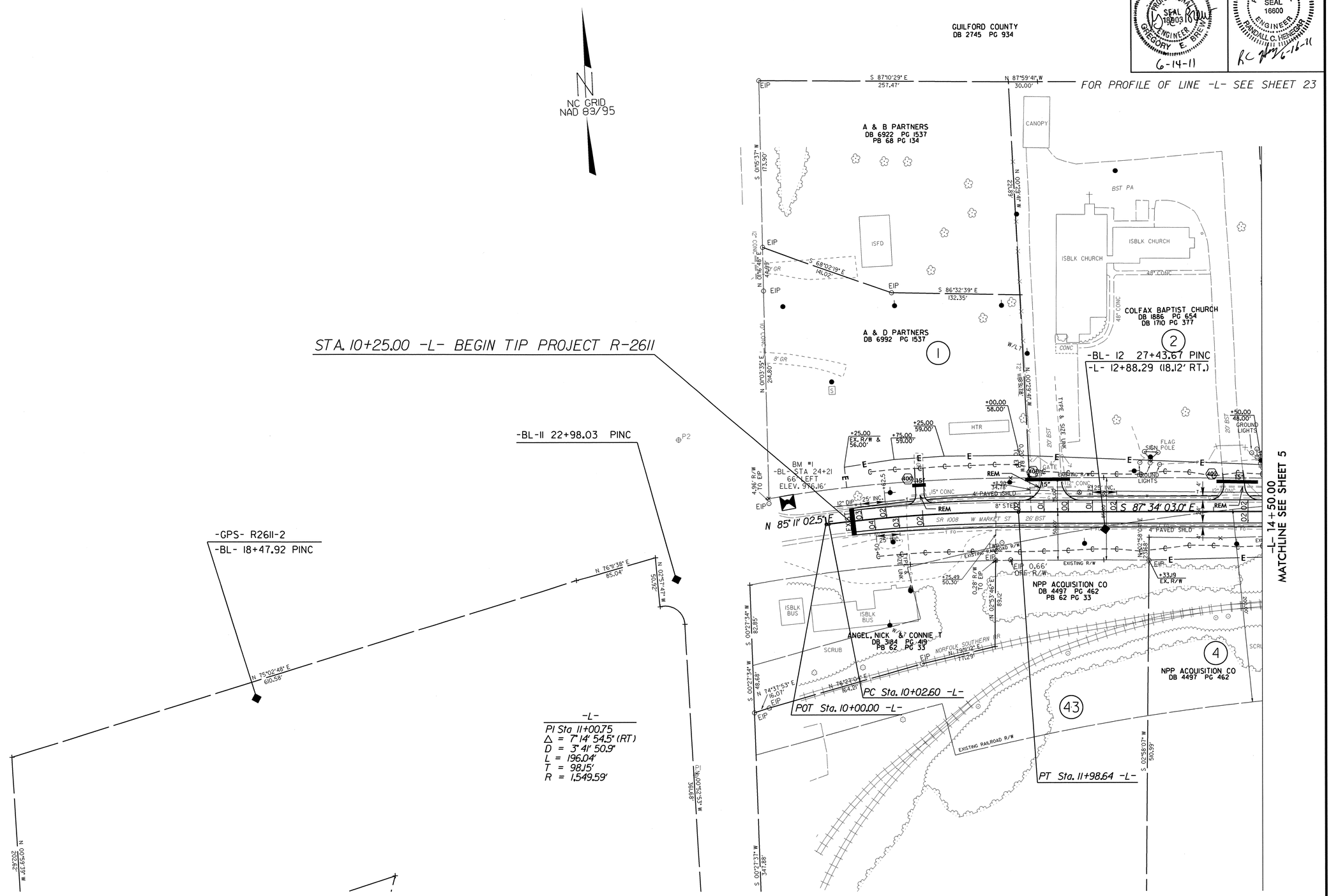
PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	4	PAGE GEORGE C. & MORREL B. SIMPSON JR., JANE
2	4,5	COLFAX BAPTIST CHURCH
3	5	SECHREST JR., GILMER
4	4,5	NPP ACQUISITION CO.
6	5	MOORE, MARCUS ANTHONY & TANYA MARIE W.
7	5	RAMCO FABRICATORS INC.
8	5	BENITEZ, SANTIAGO CRUZ & SUSANAA
9	5	BENITEZ, SANTIAGO CRUZ
10	5	HARDIN OIL CO. INC.
11	5	COLFAX VOLUNTEER FIRE
12	5,6,21	SHADY GROVE METHODIST
13	5,6	NOT LISTED
14	6	NOT LISTED
15	6	HARLAN, BILL & ANN
16	6	LAURENCE GRAY WATSON JR. & KENNETH LEE TICKLE
17	6	KIRKPATRICK, CHRISTOPHER L. & CHERYL B.
18	6	WOLFE III & ARVILL COLLINS, JOHN G.
21	6	BOWMAN, MISS DALLAS
24	6	WEAVIL, BRENDA M.
25	6	WELL SR., WILLIAM HOWARD
26	6	PARRISH, ARMERIA B.
27	6	MURPHY, DANIEL HAROLD THOMAS & DARLA F.
28	6	MALLOY, JEANETTE MCKINNEY
29	6,21	PRICE JR., BOBBY JOE
30	6	WELLS JR., WILLIAM H.
31	6	POTTS & NANCY P. TRUSTEE, JOHN T.
32	6	GRAY, STEVEN PAUL & MARY G.
33	6	POTTS & NANCY P. TRUSTEE, JOHN T.
33A	6	POTTS & NANCY P. TRUSTEE, JOHN T.
34	6,7	BUTLER, JAMES
35	6,7	THOMPSON, JULIA K.
36	7	SEIFRIED, HOWARD R.
37	7	HOWARD, JESSIE LEE
38	7	DILLON, FAYE F.
39	7	ATKINS, BRIAN K. & NATALIE L.
40	7	KIDD JR., HENRY L.
40A	6	KIDD JR., HENRY L.
41	7	BUCHANAN, WILLIAM B. & NANCY I.
42	7	GRAY, ROSCOE W. & KIMBERLY A.
43	4-12,18,19	NORFOLK SOUTHERN RAILWAY CO.
44	7,8	GUILFORD COUNTY BOARD OF EDUCATION
45	7	CREWS JR., HANSELL WILSON
46	7,8	ABERNATHY, JOHN MICHAEL & TERRY W.
47	8,9	BROWN, SAM PAGE III & GLORIA J.
48	9	CRM MID ATLANTIC PROPERTIES, LLC
49	9	SIMPSON, DONALD R. & BARBARA H.
50	9	COLFAX DEVELOPMENT COMPANY
51	9,10	WATSON, LAWRENCE G., JR. & KENNETH L. & TONI M. TICKLE
52	10	ATKINS, MELBA G.
53	10	ATTAYEK, JOSEPH E. & EVELYN L.
54	10	NEEDHAM, RUDY DARNELL & SHEILA S.
55	10	ATKINS, JON CURTIS
56	10	PARRISH, LARRY T. & MARIE A.
57	10	PARRISH, LARRY T. & MARIE A.
58	10,11	SANDY RIDGE ASSOC. LLC.
59	10,11	PARRISH, LARRY T. & MARIE A.
60	11	BESSEMER IMP CO.
61	11,22	RMC CAROLINA MATERIALS INC.
62	11	EASTER, S. LOWELL
63	11	SOUTHERN SECURITIES LTD.

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
64	11	WORTH JR., ALEXANDER M.
65	11,22	WORTH JR., ALEXANDER M.
66	22	SOUTHERN SECURITIES LTD.
67	22	MCGEE, JANE S.
68	22	PATTERSON, REZ D. & BARBARA B.
69	22	PENDRY, MABEL
70	22	LONG, JOHN H. & DOROTHY M.
71	11	CORP OF PRESIDING BISHOP OF CHURCH OF JESUS CHRIST
72	11	BROWN, CLARENCE W.
73	11	DEAN, EVON WELCH
74	11,12	WELCH, RICHARD LEE & MARY O.
75	12	SPILLERS, WILLIAM J.
76	12	RIZOS, DINO NICK & BILL NICK
77	12,13	ENDURA PRODUCTS INC.
78	12,13	DICKERSON, RICHARD E. & CAROL M.
79	13	ENDURA PRODUCTS INC.
80	13	ENDURA PRODUCTS INC.
82	13	FOWLER, MICHAEL A. & SUSAN Y.
83	13	BROWN, HENRY D.
84	13	INGOLD, SHIRLEY S.
85	13	AVERITT PROPERTIES INC.
86	13	AVERITT PROPERTIES INC.
87	13,14	DUKE POWER
88	14,15	CAFFEY IH DIST. CO. INC.
89	14	YORK, GARY THOMAS
90	14	UNITED STATES POSTAL SERVICE
91	14,15	XTRA LEASE INC.
92	15	DEAN, WILLARD
93	15	WEST MARKET STREET DEVELOPMENT CO.
94	15	DDC PROPERTIES LLC.
95	15,16	CAMPBELL, DONALD RAY
96	15	C/O TRIANGLE RENT A CAR, TRAC LIMITED PARTNERSHIP
97	15,16	SMITH, JOSEPHINE COX
98	16	LANDMARK EJG LLC.
99	16	D. D. R. LTD.
100	16,17,18	REGIONAL CENTER VENTURES
101	17,18	CAINE FAMILY LLC.
103	19	PIEDMONT TRIAD AIRPORT AUTHORITY
104	19	FABRISTEEL CORPORATION
105	18	IRVIN JR., JOHN L.
106	12	ATKINS, LARRY G.
107	21	ROGERS, ROY CARL & SANDRA KAYE
107	21	ROGERS, ROY CARL & SANDRA KAYE
108	10	CAROLINA STEEL CORPORATION
108	10	CAROLINA STEEL CORPORATION
109	22	WORTH JR., ALEXANDER M.
109	22	WORTH JR., ALEXANDER M.
910	7	GRAY, ROSCOE W. & KIMBERLY A.
910	7	GRAY, ROSCOE W. & KIMBERLY A.

PROJECT REFERENCE NO.	SHEET NO.
R-2611	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 16803 ENGINEER GREGORY E. BREWER
6-14-11

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 16600 ENGINEER RANDALL C. HENSON
6-16-11



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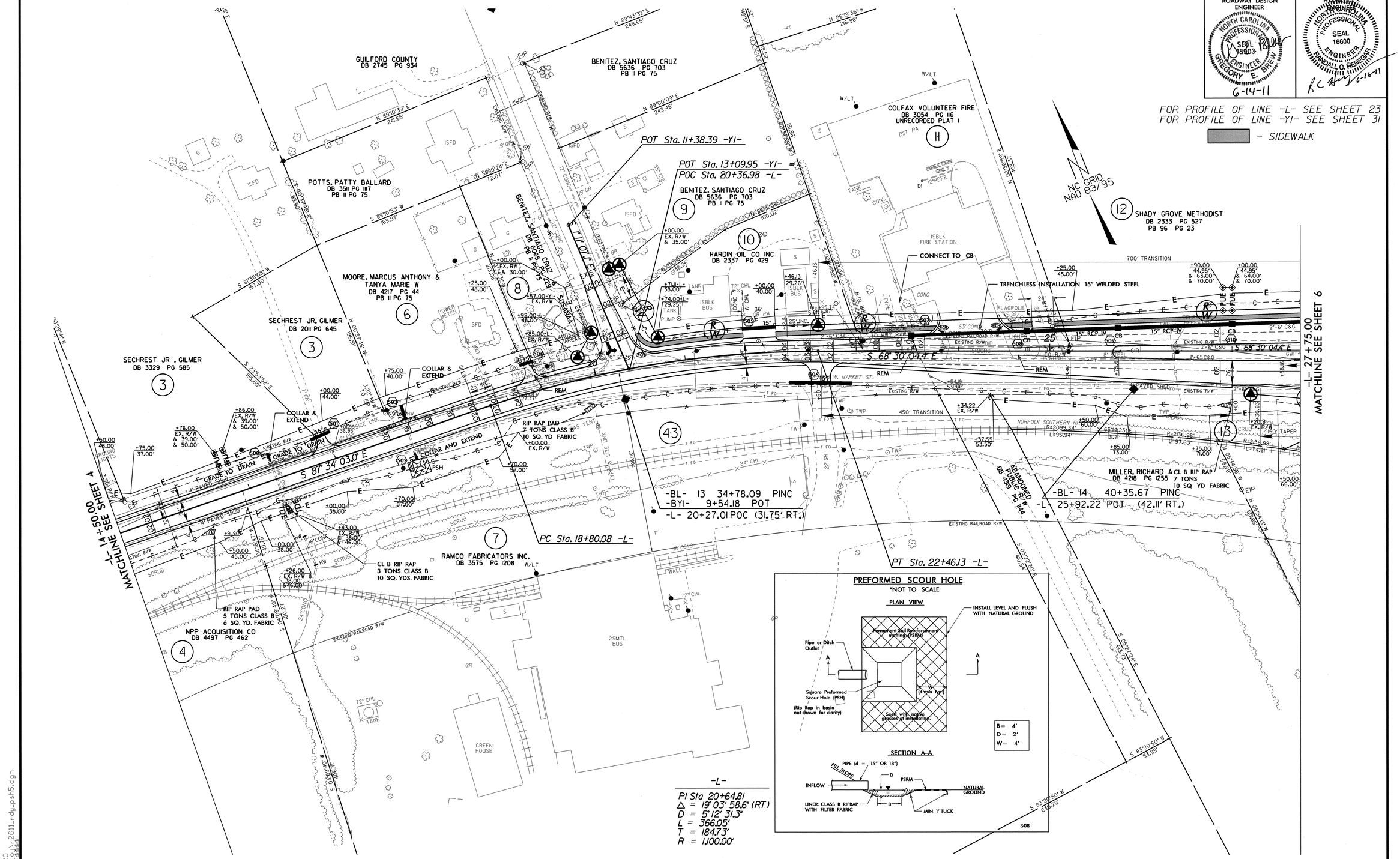
PROJECT REFERENCE NO.	SHEET NO.
R-2611	5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18603 ENGINEER GREGORY E. BREW
6-14-11

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 16600 ENGINEER RANDALL C. HEMEDAR
6-14-11

FOR PROFILE OF LINE -L- SEE SHEET 23
FOR PROFILE OF LINE -Y1- SEE SHEET 31

- SIDEWALK



PREFORMED SCOUR HOLE

*NOT TO SCALE

PLAN VIEW

B = 4'
D = 2'
W = 4'

SECTION A-A

308

-L-

PI Sta 20+64.81
△ = 19° 03' 58.6" (RT)
D = 5° 12' 31.3"
L = 366.05'
T = 184.73'
R = 1,100.00'

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PROJECT REFERENCE NO.	SHEET NO.
R-2611	6
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 18603 ENGINEER GREGORY E. BREW — 6-14-11

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 16600 ENGINEER RANDALL C. HENEGAR — 06-16-11

PLEASE NOTE:
DUE TO VERY LITTLE RECOVERED FIELD EVIDENCE AND AMBIGUOUS DEEDS FOR THE PROPERTIES ADJACENT TO AND NORTH OF WEST MARKET STREET BETWEEN BUNKER HILL ROAD AND KIDD ROAD THESE PROPERTIES ARE APPROXIMATE LOCATIONS.

FOR PROFILE OF LINE -L- SEE SHEETS 23 & 24
FOR PROFILE OF LINE -Y2-, -Y3-, & -Y3A- SEE SHEET 31
FOR PROFILE OF LINE -Y4- SEE SHEET 32

- SIDEWALK

-Y2- 16+50.00
MATCHLINE SEE SHEET 21

-L- 27+75.00
MATCHLINE SEE SHEET 5

-L- 41+90.00
MATCHLINE SEE SHEET 7

-Y2-
PI Sta 17+90.33
Δ = 30° 51' 49.2" (LT)
D = 12° 03' 44.2"
L = 255.87'
T = 131.12'
R = 475.00'

-L-
PI Sta 36+35.18
Δ = 34° 16' 55.4" (RT)
D = 4° 46' 28.7"
L = 718.00'
T = 370.11'
R = 1,200.00'

-Y4-
PI Sta 12+87.92
Δ = 1° 14' 56.9" (RT)
D = 1° 00' 00.0"
L = 124.91'
T = 62.46'
R = 5,729.58'

-Y3A-
PI Sta 12+05.14
Δ = 1° 29' 32.8" (LT)
D = 3° 49' 11.0"
L = 39.07'
T = 19.54'
R = 1,500.00'

-Y3-

PI Sta 14+29.92	PI Sta 16+76.44
Δ = 8° 29' 56.4" (RT)	Δ = 15° 29' 43.2" (RT)
D = 7° 52' 13.1"	D = 9° 06' 32.5"
L = 107.99'	L = 170.11'
T = 54.09'	T = 85.58'
R = 728.00'	R = 629.00'

-BY2-43 11+70.49 PINC
-Y2- 18+32.26 POC (21.86' RT.)

POT Sta. 20+95.50 -Y2- =
POT Sta. 32+06.38 -L-

PC Sta. 32+65.08 -L-

-BL- 16 51+66.64 PINC
-BY4- 10+88.09 POT
-L- 37+40.48 POC (37.26' RT.)

-Y4- PC Sta. 12+25.46

PT Sta. 13+50.37 -Y4-

POT Sta. 10+91.83 -Y4-

POT Sta. 10+00.00 -Y3- =
POT Sta. 31+89.34 -L-

-BL- 15 47+72.11 PINC
-BY2- 15+57.11 POT
-BY3- 5+00.00 POT
-L- 33+30.87 POC (39.82' RT.)

PC Sta. 13+75.83 -Y3-

PT Sta. 14+83.81 -Y3-

PT Sta. 12+24.67 -Y3A-

PC Sta. 11+85.60 -Y3A-

POT Sta. 10+00.00 -Y3A-

-BY3-44 9+24.67 PINC
-BY3A- 5+00.00 POT
-Y3- 15+44.73 POT (25.51' RT.)

PC Sta. 15+90.86 -Y3-

POT Sta. 14+94.65 -Y4- =
POC Sta. 37+76.05 -L-

POT Sta. 13+12.54 -Y3A- =
POT Sta. 15+18.28 -Y3-

PT Sta. 39+83.08 -L-

DROP BOX DETAIL
*NOT TO SCALE
TOP EL. 938.78
INV. 934.02'
54" CSP (12 GAGE)
36" CSP (12 GAGE)
Q10 = 38 CFS
S = 0.002
V10 = 3.3 FT/SEC
2 TONS CLASS 1' RIP RAP
INV 926.52'
INV. 928.02'
35+22 LT. -L-

NC GRID NAD 83/95

33 TONS CLASS 1' RIP RAP
62 SY FILTER FABRIC

CL-B RIP RAP
7 TONS
10 SQ YD FABRIC

RIP RAP PAD
7 TONS CLASS B
10 SQ.YD FABRIC

PROPERTY LINE FOLLOWS RR CENTERLINE

PROPERTY LINE FOLLOWS RR R/W

PRICE JR. BOBBY JOE DB 4063 PG 1133
JEANETTE McKINNEY MALLOY PT Sta. 19+65.07 -Y2-
DANIEL HAROLD THOMAS MURPHY & DARLA F. MURPHY DB 6797 PG 2514
PARRISH, ARMERIA B DB 1294 PG 329
WELLS SR. WILLIAM HOWARD DB 3438 PG 569
SHADY GROVE METHODIST DB 2333 PG 527 PB 96 PG 23
HARLAN, BILL & ANN DB 1975 PG 677
LAURENCE WATSON JR & KENNETH LEE TINKLE, DB 5412 PG 1148
WELLS JR. WILLIAM H DB 2906 PG 341
POTTS, ALONZO & MINNIE DB 1730 PG 516
POTTS & NANCY P TRUSTEE, JOHN T DB 6055 PG 1322 DB 715 PG 218
JOHN T. POTTS & NANCY P., TRUSTEES, POTTS LIVING TRUST DB 6055 PG 1322 DB 715 PG 218 PB 96 PG 127
KIDD JR. HENRY L PB 96 PG 127
THOMPSON, JULIA K DB 1100 PG 299
KIRKPATRICK, CHRISTOPHER L. & CHERYL B. DB 6844 PG 2188
WEAVIL BRENDA M DB 4097 PG 1899 DB 4402 PG 1402
GRAY, STEVEN PAUL & MARY G DB 4410 PG 1404
GRAY, STEVEN PAUL & MARY G DB 4282 PG 1729
WOLFE III & ARVILL COLLINS, JOHN G DB 3490 PG 932
LAWSON, CHARLES AND ELIZABETH DB 6035 PG 3038
GUILFORD COUNTY DB 2345 PG 934
DONATHAN, BERNICE J DB 1493 PG 171
DONATHAN, BERNICE J DB 2179 PG 735
JAMES BUTLER DB 7051 PG 1706
NORFOLK SOUTHERN RAILWAY CO.
BOWMAN, MISS DALLAS DB 753 PG 197
DEVANE & MARSHA B, DAVID DWAYNE DB 3356 PG 708
BARNARD, JOAN WELLS

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PROJECT REFERENCE NO.	SHEET NO.
R-2611	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19903 ENGINEER GREGORY E. BREW 6-14-11

NORTH CAROLINA PROFESSIONAL SEAL 16600 ENGINEER RANDALL C. HENEGAR 6-16-11

FOR PROFILE OF LINE -L- SEE SHEET 24

- SIDEWALK

-L-

PI Sta 44+86.34	PI Sta 50+34.19
Δ = 21° 56' 26.7" (LT)	Δ = 10° 47' 32.7" (RT)
D = 6° 09' 39.0"	D = 4° 46' 28.7"
L = 356.13'	L = 226.04'
T = 180.27'	T = 113.35'
R = 930.00'	R = 1,200.00'

NC GRID NAD 83/95

-BL- 17 56+96.11 PINC
-L- 42+78.66 POT (40.03' RT.)

PC Sta. 43+06.07 -L-

PT Sta. 46+62.20 -L-

-L- 41+90.00 MATCHLINE SEE SHEET 6

-L- 54+50.00 MATCHLINE SEE SHEET 8

-BL- 18 63+94.37 PINC
-BY5- 5+00.00' POT
-L- 49+68.11 POC (54.71' LT.)

-BL- 19 68+19.56 PINC
-L- 53+96.59 POT (0.74' LT.)

PC Sta. 49+20.84 -L-

PT Sta. 51+46.87 -L-

S 56°09'35.7" E

S 45°22'03.0" E

THOMPSON, JULIA K
DB 1100 PG 299

ATKINS, BRIAN K & NATALIE L
DB 4949 PG 166

KIDD JR, HENRY L
DB 3725 PG 1359

GRAY, ROSCOE WIII & KIMBERLY A
DB 6131 PG 1270
UNRECORDED PLAT 5

GUILFORD COUNTY BOARD OF EDUCATION
DB 4560 PG 443
PB 99 PG 75

SEIFRIED, HOWARD R
DB 3409 PG 598

DILLON, FAYE F
DB 4699 PG 780

BUCHANAN, WILLIAM B & NANCY
DB 4185 PG 1514
UNRECORDED PLAT 4

JAMES BUTLER
DB 7051 PG 1706

HOWARD, JESSIE LEE
DB 3609 PG 1931

SPENCER, JAMES WARREN
DB 5616 PG 27

NORFOLK SOUTHERN RAILWAY CO.

NORFOLK SOUTHERN RAILWAY CO.
NO DEED

CREWS JR, HANSELL WILSON
DB 4044 PG 1039

ABERNATHY, JOHN MICHAEL & TERRY W
DB 3467 PG 1425

BLACKBURN, CARL WAYNE & BYNUM EARL
DB 3814 PG 1247
PB 90 PG 149

HEDGECOCK, STEVEN DALE & DEBORAH D
DB 3848 PG 101
UNRECORDED PLAT 6

CRUM, BRUCE DANIEL & LINDA SUE
DB 3919 PG 1394
PB 90 PG 149

BALL, HERMAN

PREFORMED SCOUR HOLE

*NOT TO SCALE

PLAN VIEW

SECTION A-A

B = 4'
D = 2'
W = 4'

08-JUN-2011 14:20
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$$$$USERNAME$$$$

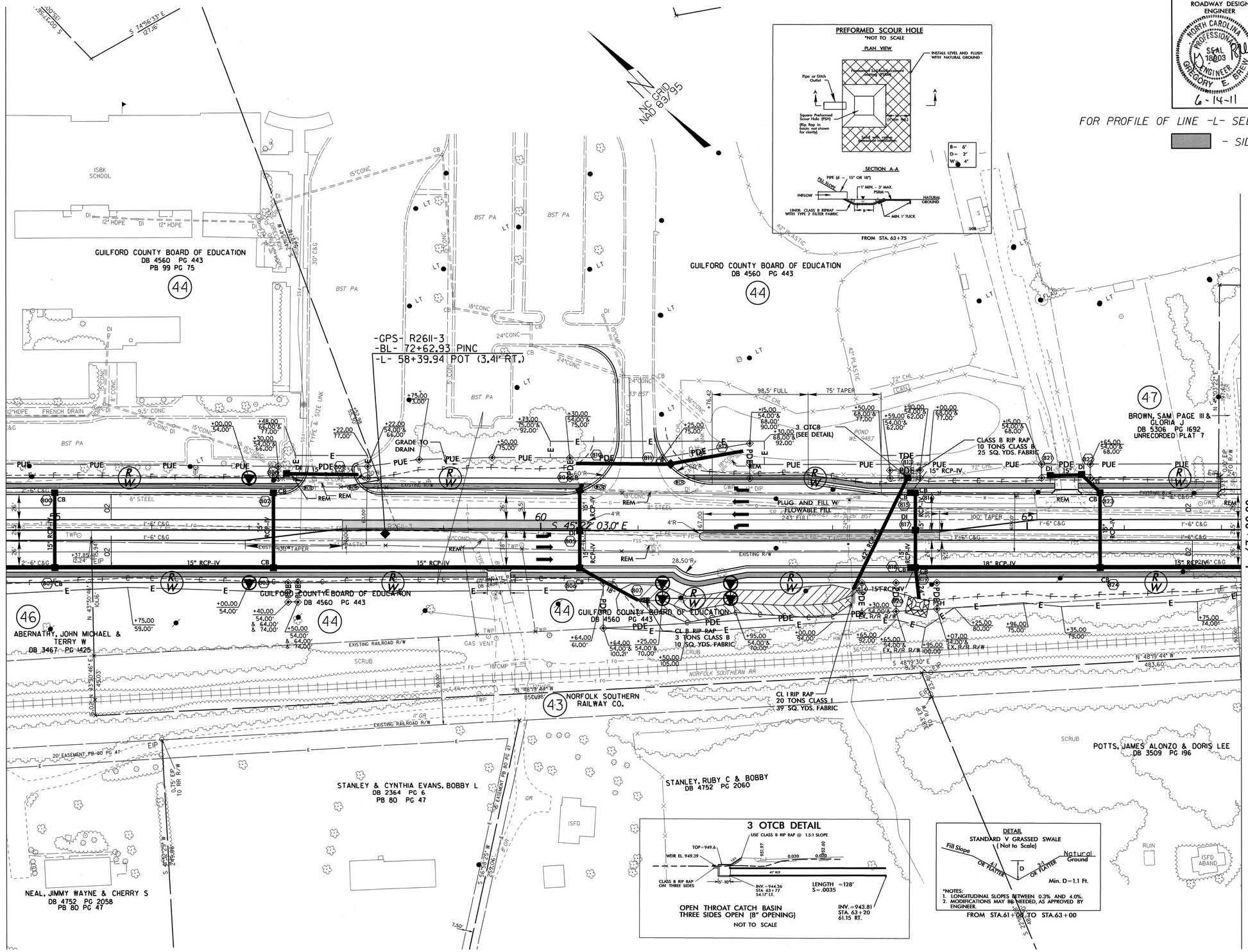
PROJECT REFERENCE NO.	SHEET NO.
R-2611	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	

NORTH CAROLINA PROFESSIONAL SEAL 18803 ENGINEER GREGORY E. BREW
6-14-11

NORTH CAROLINA PROFESSIONAL SEAL 16600 ENGINEER RANDALL C. HENEGAR
KC 6-16-11

FOR PROFILE OF LINE -L- SEE SHEETS 24 & 25

- SIDEWALK



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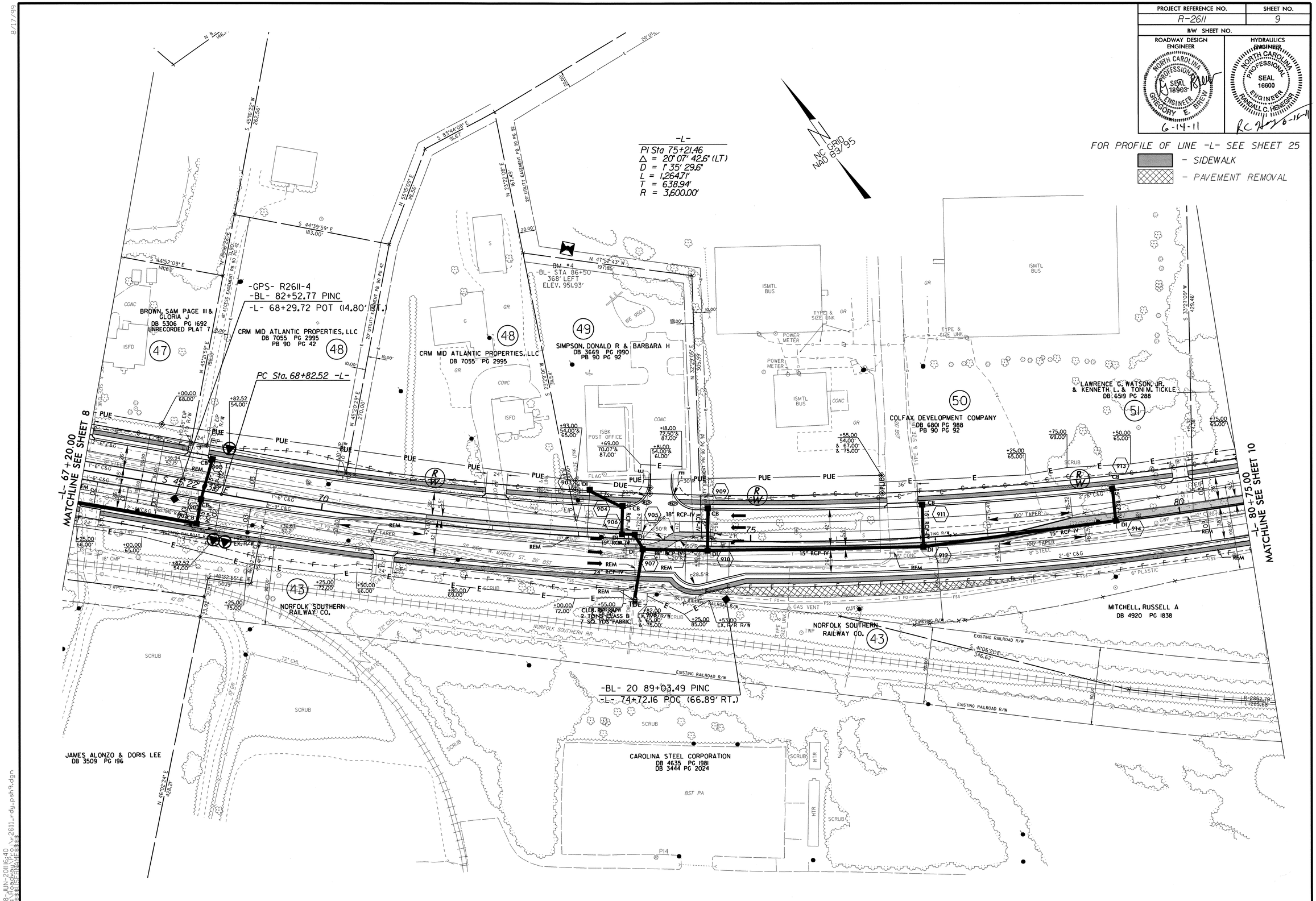
PROJECT REFERENCE NO.	SHEET NO.
R-2611	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW 6-14-11

NORTH CAROLINA PROFESSIONAL SEAL 16600 ENGINEER RANDALL C. HENEGAR 6-15-11

FOR PROFILE OF LINE -L- SEE SHEET 25

- SIDEWALK
- PAVEMENT REMOVAL



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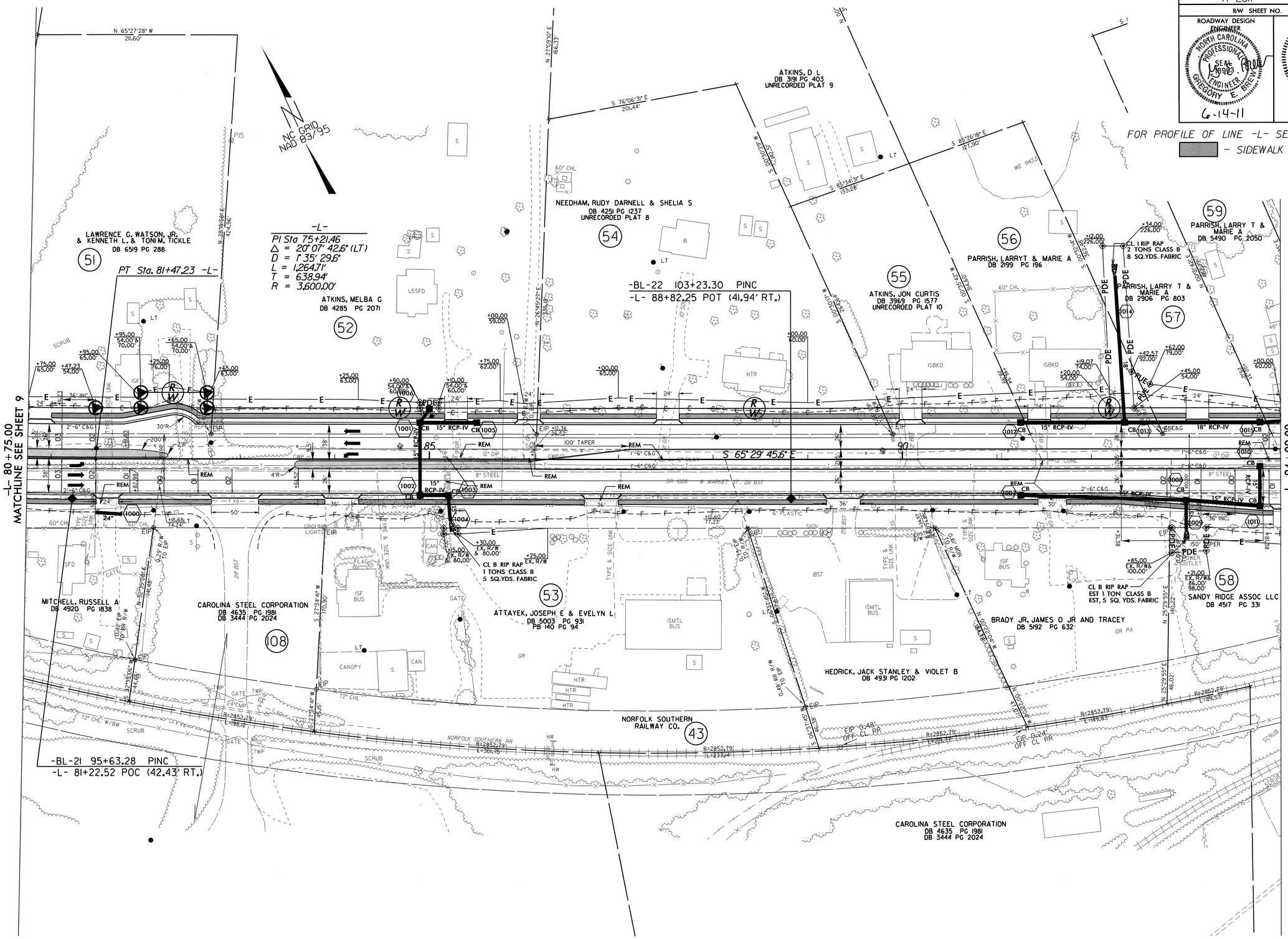
PROJECT REFERENCE NO.	SHEET NO.
R-2611	10
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 16993 ENGINEER GREGORY E. BREWER
6-14-11

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 16600 ENGINEER RANDALL C. HENEGAR
6-14-11

FOR PROFILE OF LINE -L- SEE SHEET 25

- SIDEWALK



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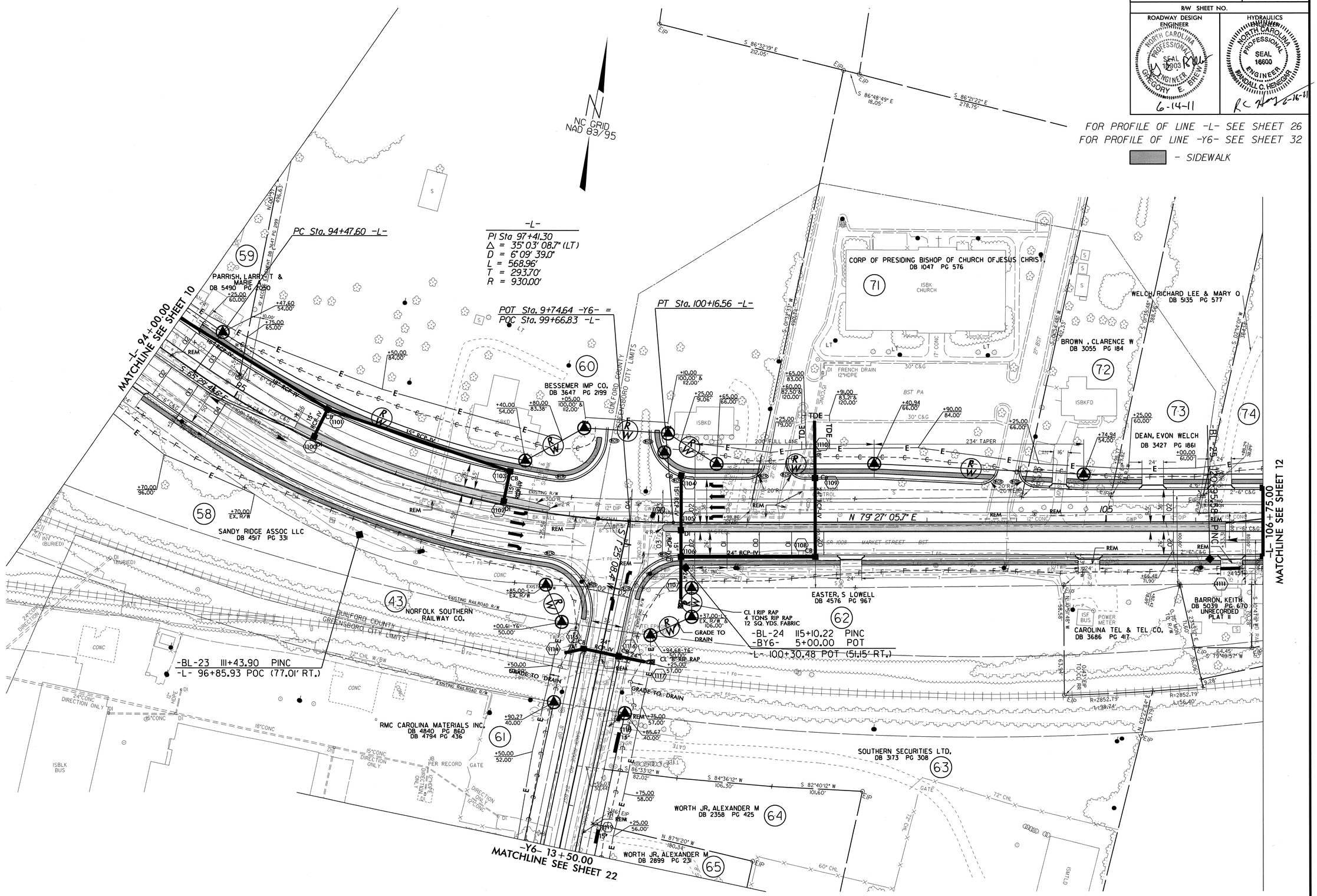
PROJECT REFERENCE NO.	SHEET NO.
R-2611	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12903 ENGINEER GREGORY E. BREW
6-14-11

NORTH CAROLINA PROFESSIONAL SEAL 16600 ENGINEER RANDALL C. HERBORN
6-16-11

FOR PROFILE OF LINE -L- SEE SHEET 26
FOR PROFILE OF LINE -Y6- SEE SHEET 32
- SIDEWALK



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PROJECT REFERENCE NO.	SHEET NO.
R-2611	12
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18003 ENGINEER GREGORY E. BUTLER
6-22-11

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 16600 ENGINEER RANDALL C. REMEDIAS
RC 6-23-11

FOR PROFILE OF LINE -L- SEE SHEET 26
FOR PROFILE OF LINE -Y7- SEE SHEET 32

- SIDEWALK
- PAVEMENT REMOVAL

DETAIL TAIL DITCH
STANDARD 3:1 SIDE DITCH
(Not To Scale)
Natural Ground, 3:1, D, B, 3:1, Natural Ground
Min. D= 1 Ft.
B= 3 Ft.

DETAIL
SPECIAL CUT DITCH
(Not To Scale)
Natural Ground, 3:1, D, Major Flatter, Front Ditch Slope
Min. D= 1.5 Ft.
STA. 10+75 LT. TO STA. 11+75 LT. -Y7-

-L-
PI Sta 113+92.88
Δ = 29° 11' 52.6" (LT)
D = 5° 40' 22.3"
L = 514.70'
T = 263.07'
R = 1,010.00'

PI Sta 122+90.75
Δ = 43° 05' 48.7" (RT)
D = 6° 11' 14.8"
L = 696.52'
T = 365.67'
R = 926.00'

-Y7-
PI Sta 14+53.72
Δ = 29° 11' 58.0" (LT)
D = 32° 44' 25.6"
L = 89.18'
T = 45.58'
R = 175.00'

POT Sta. 10+00.00 -Y7-
PC Sta. 14+08.14 -Y7-
PT Sta. 14+97.32 -Y7-
PT Sta. 116+44.52 -L-
PC Sta. 111+29.82 -L-
POT Sta. 15+53.10 -Y7- =
POT Sta. 118+80.08 -L-
PC Sta. 119+25.08 -L-

-BL-27 132+05.35 PINC
-BY7- 12+63.07 POT
-L- 117+06.31 POT (52.28' RT.)

-BL-26 126+78.60 PINC
-L- 111+95.88 POC (45.16' RT.)

-L- 106+75.00
MATCHLINE SEE SHEET 11

-L- 121+00.00
MATCHLINE SEE SHEET 13

N 86°10'04" W
802.23'

N 86°10'04" W BEGIN C&G
216.86'

N 79°27'05" E
1,1+

N 09°44'48" W
535.19'

S 39°44'48" E

ATKINS, LARRY G
DB 1105 PG 407
(106)

ATKINS, LARRY G
DB 4842 PG 1155
(78)

DICKERSON, RICHARD E & CAROL M
DB 3511 PG 635
(78)

DINO NICK RIZOS
& BILL NICK RIZOS
DB 6370 PG 677
(76)

WELCH, RICHARD LEE & MARY O
DB 5135 PG 577
(74)

ENDURA PRODUCTS INC.
DB 3959 PG 1895
PB 80 PG 83
PB 107 PG 13
(77)

SPILLERS, WILLIAM J
DB 3599 PG 29
DB 2561 PG 731
PB 62 PG 46
(75)

HALL, RONALD GRAHAM
DB 3842 PG 612
DB 5135 PG 577

NORFOLK SOUTHERN RAILWAY CO.
(43)

TUCKER, LARRY EUGENE
DB 3485 PG 1750

HARMSTON, JAMES AND JEAN
DB 4613 PG 961

CL I RIP RAP
7 TONS RIP RAP
15 SQ. YDS. FABRIC
15 CU. YDS. DDE

SEE TAIL DITCH DETAIL

SPECIAL CUT
GRASS LINED
SEE DETAIL

GUILFORD COUNTY
GREENSBORO CITY LIMITS

SR 1008 W. MARKET ST.

DETENTION POND

150' TRANSITION
150' TAPER
100' TAPER
30' C&G
2'-6" C&G
2'-9" C&G
24' C&G
18" RCP-IV
15" RCP-IV
36" INC.
48" CONC

ISMTL/BK BUS
IS BK BUS
ISBKD
ISFD
TANK
POND
CONC

8/17/99

22-JUN-2011 11:32
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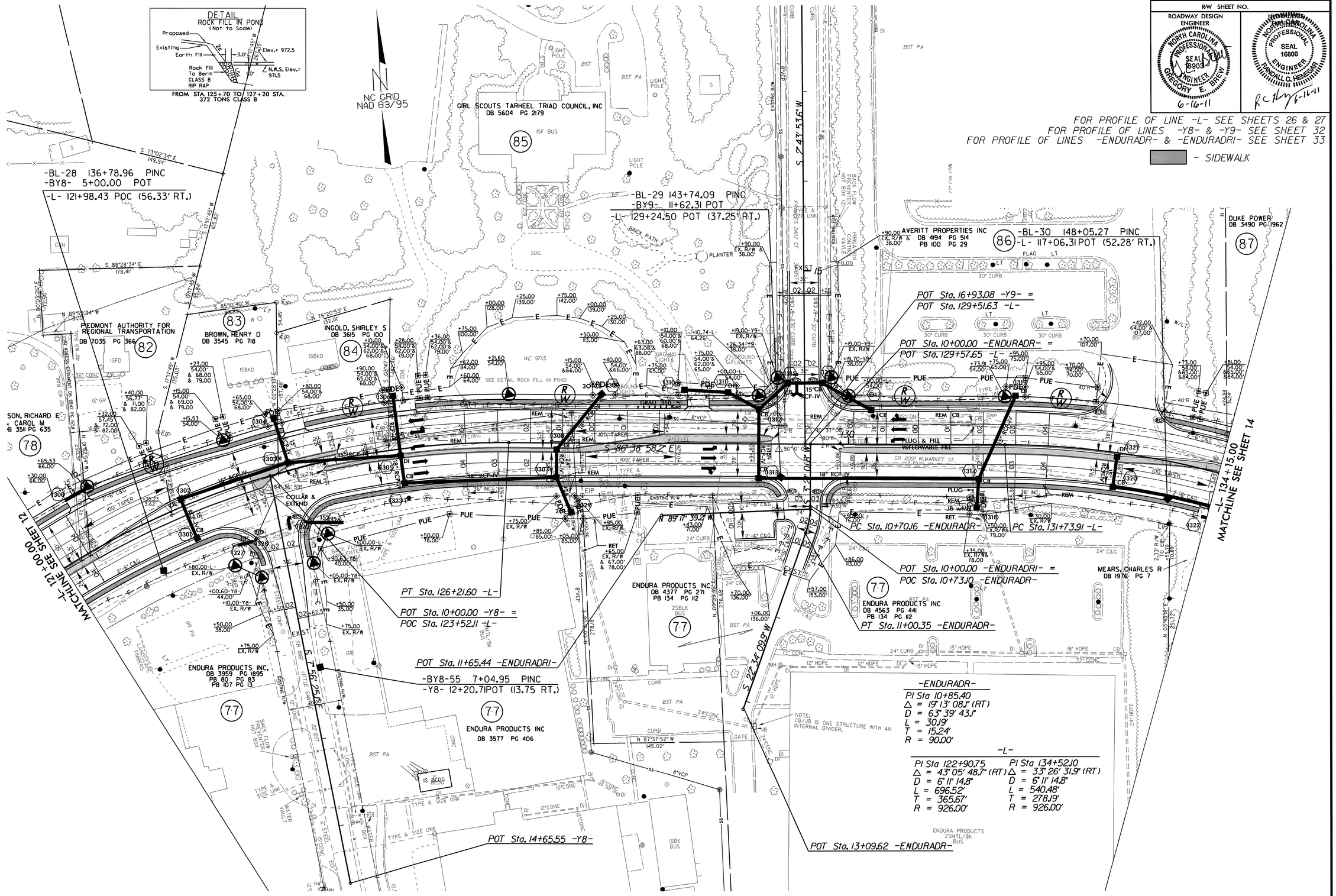
PROJECT REFERENCE NO.	SHEET NO.
R-2611	13
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW
6-16-11

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 16800 ENGINEER RANDALL C. HENEGAR
6-16-11

FOR PROFILE OF LINE -L- SEE SHEETS 26 & 27
FOR PROFILE OF LINES -Y8- & -Y9- SEE SHEET 32
FOR PROFILE OF LINES -ENDURADR- & -ENDURADRI- SEE SHEET 33

- SIDEWALK



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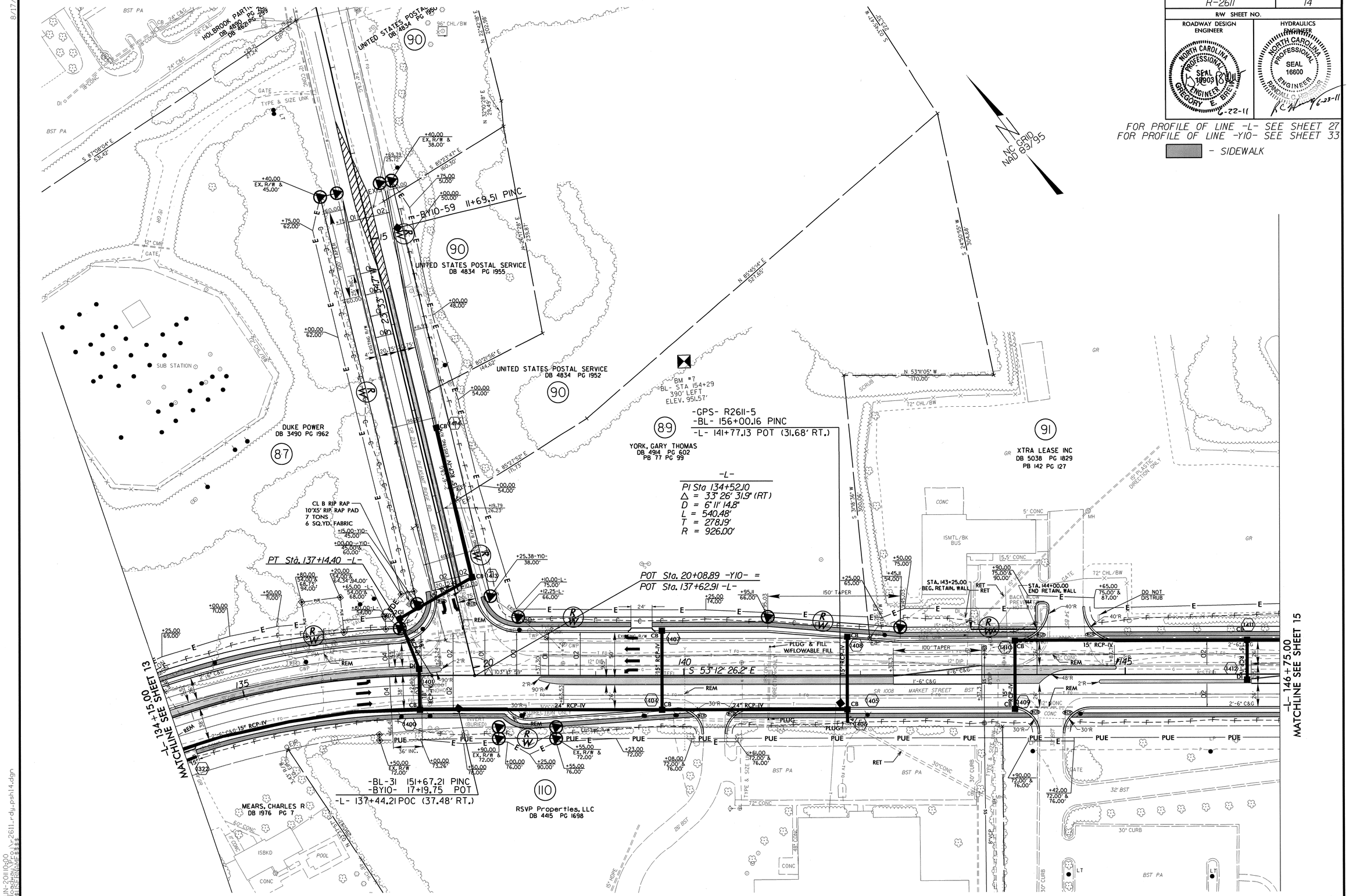
PROJECT REFERENCE NO.	SHEET NO.
R-2611	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW 6-22-11

NORTH CAROLINA PROFESSIONAL SEAL 16600 ENGINEER RANDALL G. WEBB 6-23-11

FOR PROFILE OF LINE -L- SEE SHEET 27
FOR PROFILE OF LINE -Y10- SEE SHEET 33

- SIDEWALK



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21-JUN-2011 10:00
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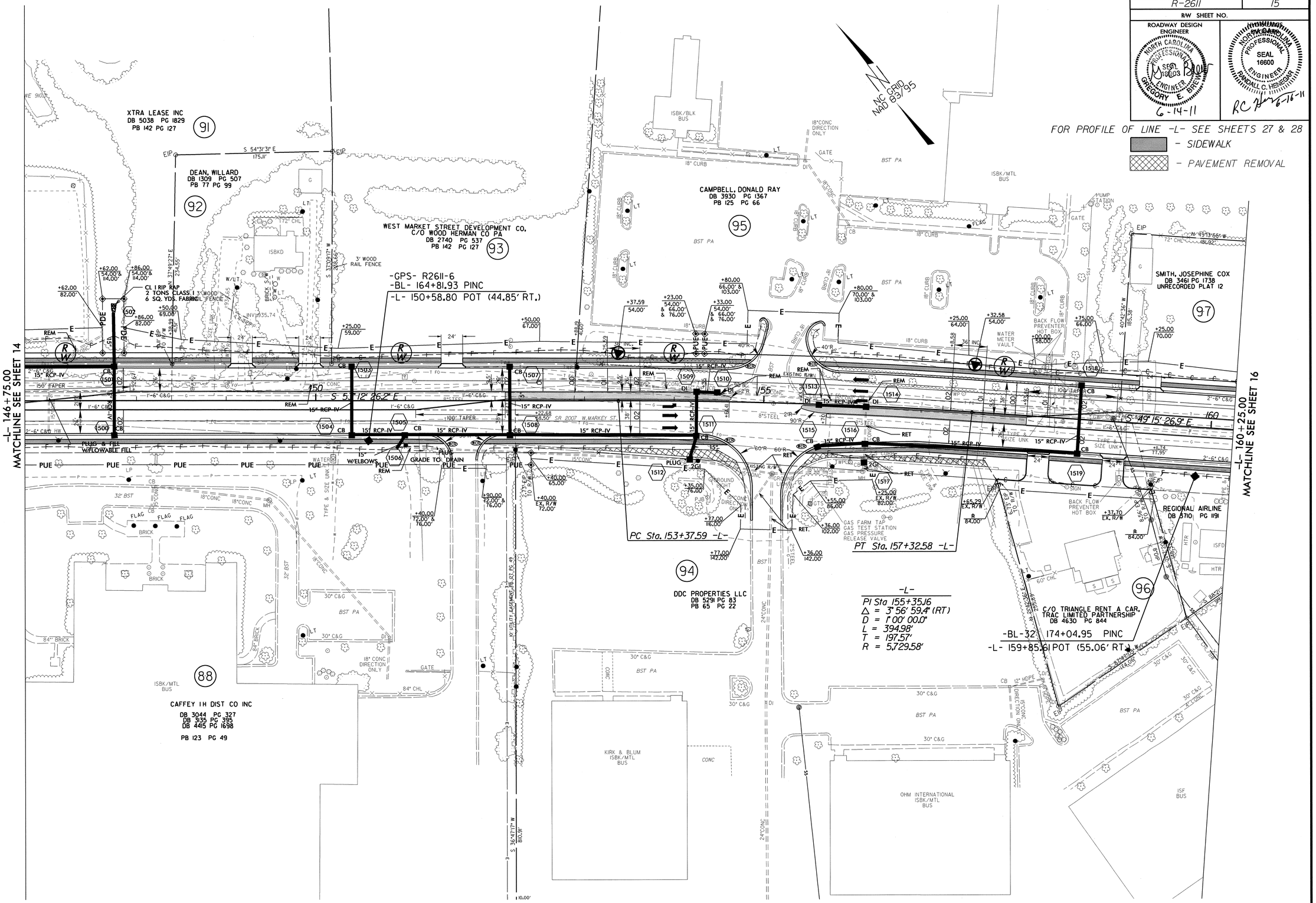
PROJECT REFERENCE NO.	SHEET NO.
R-2611	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	

NORTH CAROLINA PROFESSIONAL SEAL 19603 ENGINEER GREGORY E. BREWER
6-14-11

NORTH CAROLINA PROFESSIONAL SEAL 16600 ENGINEER RANDALL C. HEMBERGER
RC 6-16-11

FOR PROFILE OF LINE -L- SEE SHEETS 27 & 28

- SIDEWALK
- PAVEMENT REMOVAL



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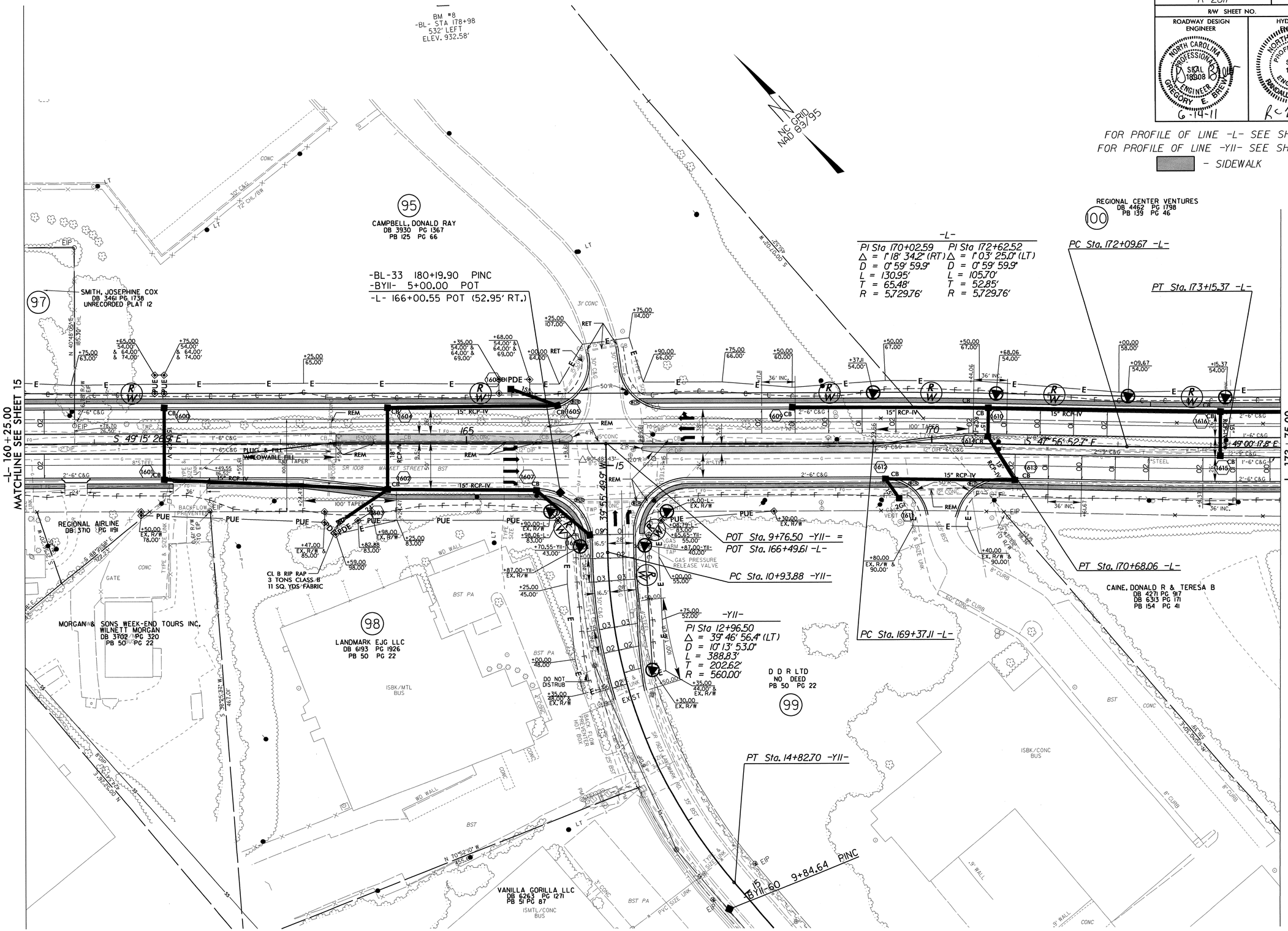
PROJECT REFERENCE NO.	SHEET NO.
R-2611	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18908 ENGINEER GREGORY E. BREWER 6-14-11

NORTH CAROLINA PROFESSIONAL SEAL 16600 ENGINEER RANDALL C. HENEGAR 6-14-11

FOR PROFILE OF LINE -L- SEE SHEET 28
FOR PROFILE OF LINE -Y11- SEE SHEET 33
- SIDEWALK



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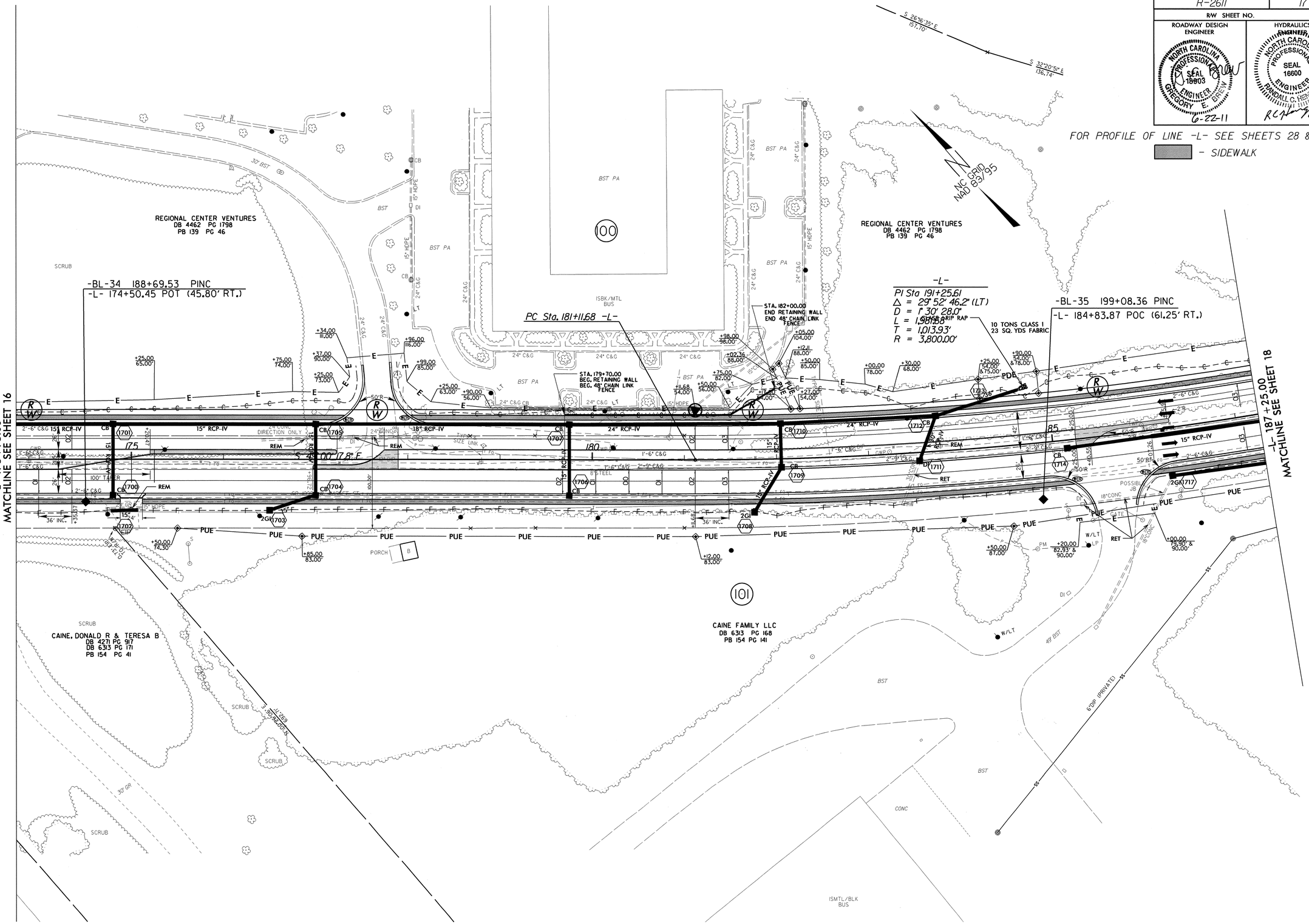
PROJECT REFERENCE NO.	SHEET NO.
R-2611	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW 6-22-11

NORTH CAROLINA PROFESSIONAL SEAL 16600 ENGINEER RANDALL C. HERGER 6-23-11

FOR PROFILE OF LINE -L- SEE SHEETS 28 & 29

- SIDEWALK



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21-JUN-2011 09:00
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$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2611	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18603 ENGINEER GREGORY E. BREW 6-14-11

NORTH CAROLINA PROFESSIONAL SEAL 16600 ENGINEER RANDALL C. HENEGAR 6-16-11

- SIDEWALK

FOR PROFILE OF LINE -L- SEE SHEET 29
FOR PROFILE OF LINE -Y12- SEE SHEET 33
FOR PROFILE OF LINES -Y13- & -RAMPA- SEE SHEET 34
FOR PROFILE OF LINES -Y13- & -RAMPA- SEE SHEET 35

-RAMPA- 25+50 MATCHLINE SEE SHEET 20

-L- 187+25.00 MATCHLINE SEE SHEET 17

-L- 200+35.00 MATCHLINE SEE SHEET 19

NC GRID NAD 83/95

-RAMPA-
PI Sta 25+08.13
Δ = 22° 00' 00.0" (LT)
D = 7° 00' 00.0"
L = 314.29'
T = 159.10'
R = 818.51'

PIs Sta 27+63.63
Θs = 10° 30' 00.0"
Ls = 300.00'
LT = 200.35'
ST = 100.32'

-L-
PI Sta 191+25.61
Δ = 29° 52' 46.2" (LT)
D = 1° 30' 28.0"
L = 1,981.68'
T = 1,013.93'
R = 3,800.00'

-L00PA-
PIs Sta 15+34.31
Θs = 75° 59' 57.0"
Ls = 400.00'
LT = 296.27'
ST = 160.61'

PIs Sta 18+84.46
Θs = 75° 59' 57.0"
Ls = 400.00'
LT = 296.27'
ST = 160.61'

ST Sta. 21+23.85 -L00PA-

CS Sta. 26+63.31 -RAMPA-

ST Sta. 29+63.31 -RAMPA-

POT Sta. 29+88.91 -Y12- =
POC Sta. 192+98.81 -L-

TS Sta. 12+38.05 -L00PA-

-BL-37 214+51.04 PINC
-BY13- 5+00.00 POT
-BY14- 25+51.07 PINC
-Y14- 28+78.15 POC (75.02' LT.)

POT Sta. 23+23.85 -L00PA-

POT Sta. 31+31.85 -RAMPA- =
POC Sta. 196+989.10 -L-
POT Sta. 10+10.31 -L00PA- =
POC Sta. 197+16.18 -L-

POT Sta. 10+00.00 -Y13- =
POC Sta. 197+08.22 -L-

-BY13-65 9+32.43 PINC
-Y13- 12+09.40 POT (15.02

-BL-36 207+59.92 PINC
-BY12- 29+37.15 POT
-L- 193+25.74 POC (39.48' RT.)

IRVIN JR. JOHN L
DB 1574 PG 178

REGIONAL CENTER VENTURES
DB 4462 PG 1798
PB 139 PG 46

DEDICATED AS OPEN SPACE TO THE CITY OF GREENSBORO

CAINE FAMILY LLC
DB 6313 PG 168
PB 154 PG 141
DEDICATED TO
THE CITY OF GREENSBORO
AND THE PUBLIC FOR
DRAINAGEWAY AND OPEN SPACE

NORFOLK SOUTHERN RAILWAY CO.

9 TONS CLASS 'I' RIP RAP TO BE BENCHED 1' ABOVE BED ELEVATION

40 TONS CLASS 'I' RIP RAP TO BE BENCHED 1' ABOVE BED ELEVATION

SEE CULVERT PLANS C-1 THRU C-8

PREFORMED SCOUR HOLE
*NOT TO SCALE

PLAN VIEW

SECTION A-A

B = 4'
D = 2'
W = 4'

3/08

08-JUN-2011 16:24
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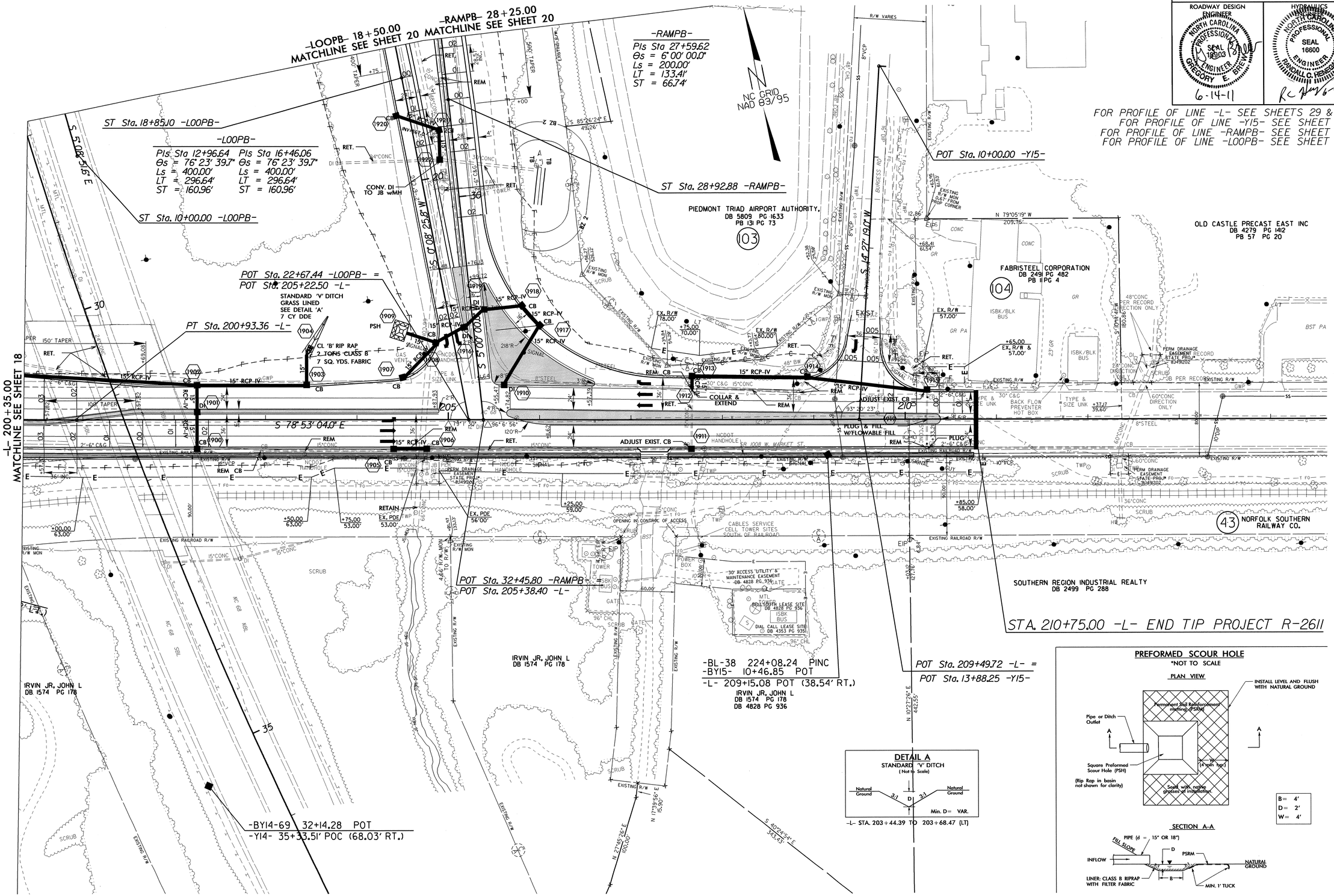
PROJECT REFERENCE NO.	SHEET NO.
R-2611	19
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BRICKHOUSE
6-14-11

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 16600 ENGINEER RANDALL G. HENSDEN
6-16-11

FOR PROFILE OF LINE -L- SEE SHEETS 29 & 30
FOR PROFILE OF LINE -Y15- SEE SHEET 34
FOR PROFILE OF LINE -RAMPB- SEE SHEET 35
FOR PROFILE OF LINE -LOOPB- SEE SHEET 36



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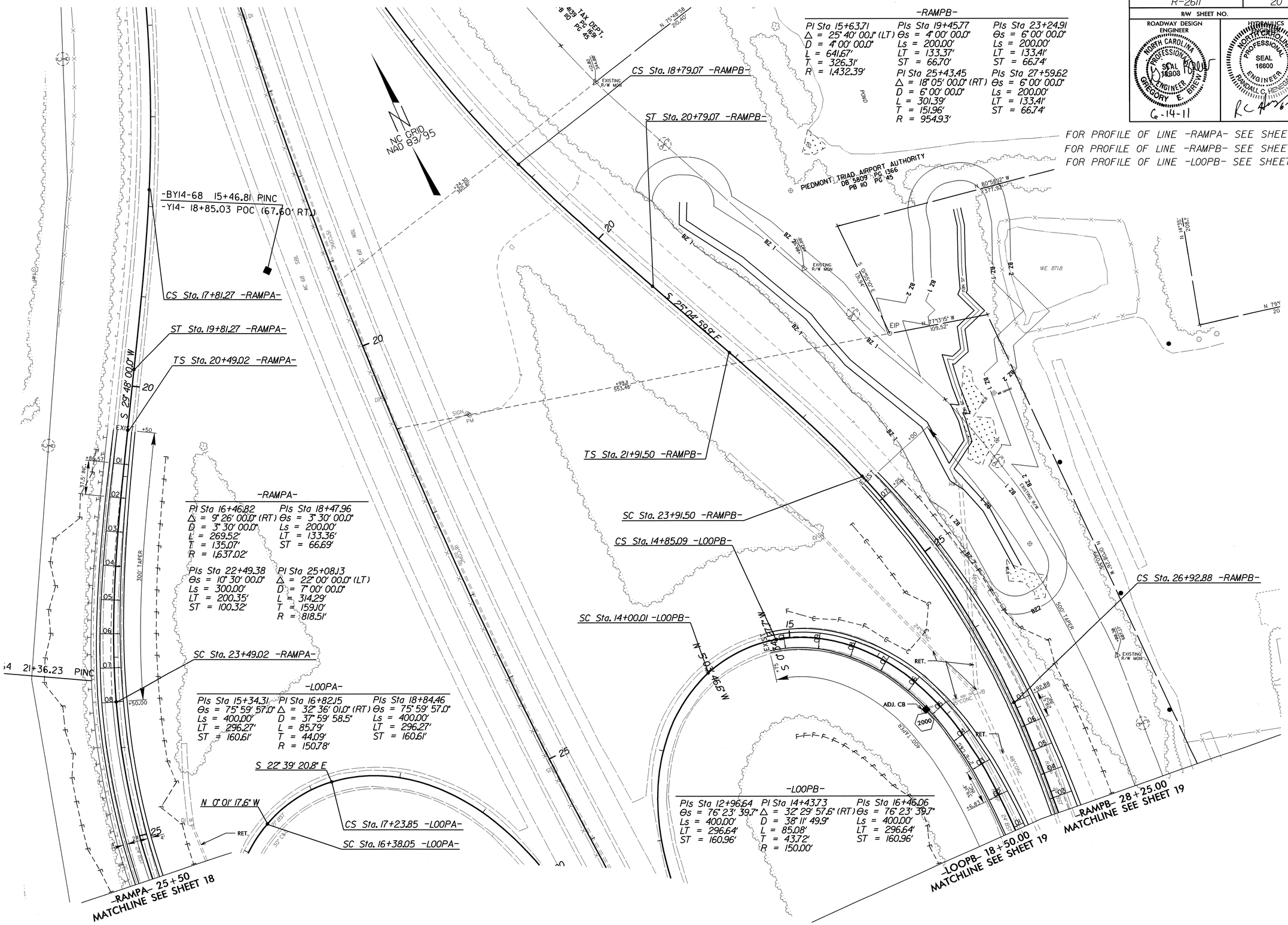
PROJECT REFERENCE NO.	SHEET NO.
R-2611	20
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW
6-14-11

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 16600 ENGINEER RANDALL C. HENEGAR
6-16-11



-RAMPA-

PI Sta 16+46.82	PIs Sta 18+47.96
Δ = 9° 26' 00.0" (RT)	Θs = 3° 30' 00.0"
D = 3° 30' 00.0"	Ls = 200.00'
L = 269.52'	LT = 133.36'
T = 135.07'	ST = 66.69'
R = 1,637.02'	
PIs Sta 22+49.38	PI Sta 25+08.13
Θs = 10° 30' 00.0"	Δ = 22° 00' 00.0" (LT)
Ls = 300.00'	D = 7° 00' 00.0"
LT = 200.35'	L = 314.29'
ST = 100.32'	T = 159.10'
	R = 818.51'

-LOOPA-

PIs Sta 15+34.31	PI Sta 16+82.15	PIs Sta 18+84.46
Θs = 75° 59' 57.0"	Δ = 32° 36' 01.0" (RT)	Θs = 75° 59' 57.0"
Ls = 400.00'	D = 37° 59' 58.5"	Ls = 400.00'
LT = 296.27'	L = 85.79'	LT = 296.27'
ST = 160.61'	T = 44.09'	ST = 160.61'
	R = 150.78'	

-LOOPB-

PIs Sta 12+96.64	PI Sta 14+43.73	PIs Sta 16+46.06
Θs = 76° 23' 39.7"	Δ = 32° 29' 57.6" (RT)	Θs = 76° 23' 39.7"
Ls = 400.00'	D = 38° 11' 49.9"	Ls = 400.00'
LT = 296.64'	L = 85.08'	LT = 296.64'
ST = 160.96'	T = 43.72'	ST = 160.96'
	R = 150.00'	

8/17/99

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$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2611	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	

NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREWER
6-14-11

NORTH CAROLINA PROFESSIONAL SEAL 16600 ENGINEER RANDALL C. HENEGAR
6-14-11

FOR PROFILE OF LINE -Y2- SEE SHEET 31

8/17/99

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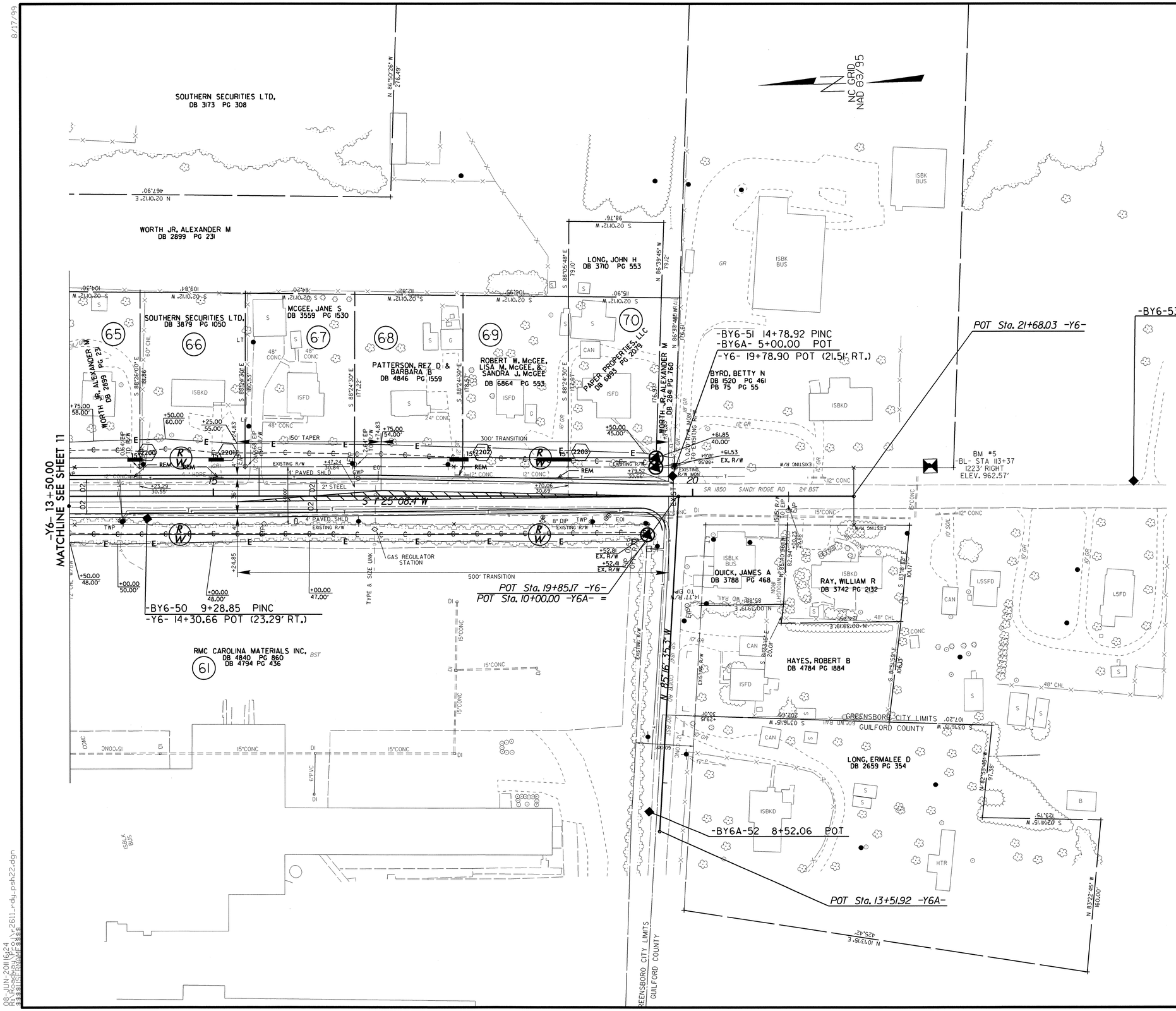
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2611	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18803 ENGINEER GREGORY E. BREWER
6-14-11

NORTH CAROLINA PROFESSIONAL SEAL 16800 ENGINEER RANDALL G. HENGERER
6-16-11



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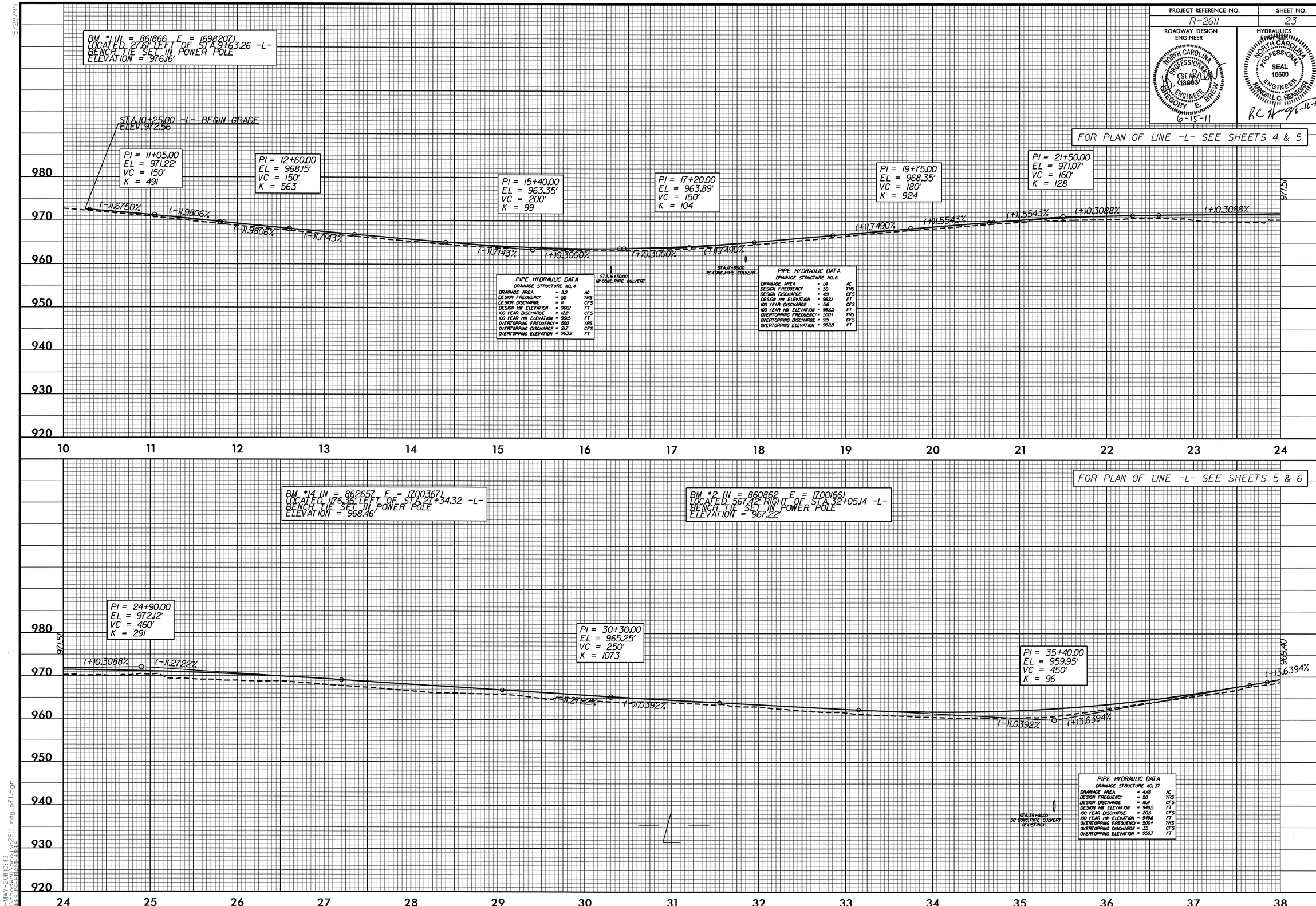
PROJECT REFERENCE NO.	SHEET NO.
R-2611	23

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW 6-15-11

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 16600 ENGINEER RANDALL C. HENEGAR 6-16-11



5/28/99

10-MAY-2011 10:43
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PROJECT REFERENCE NO.	SHEET NO.
R-2611	24

ROADWAY DESIGN ENGINEER

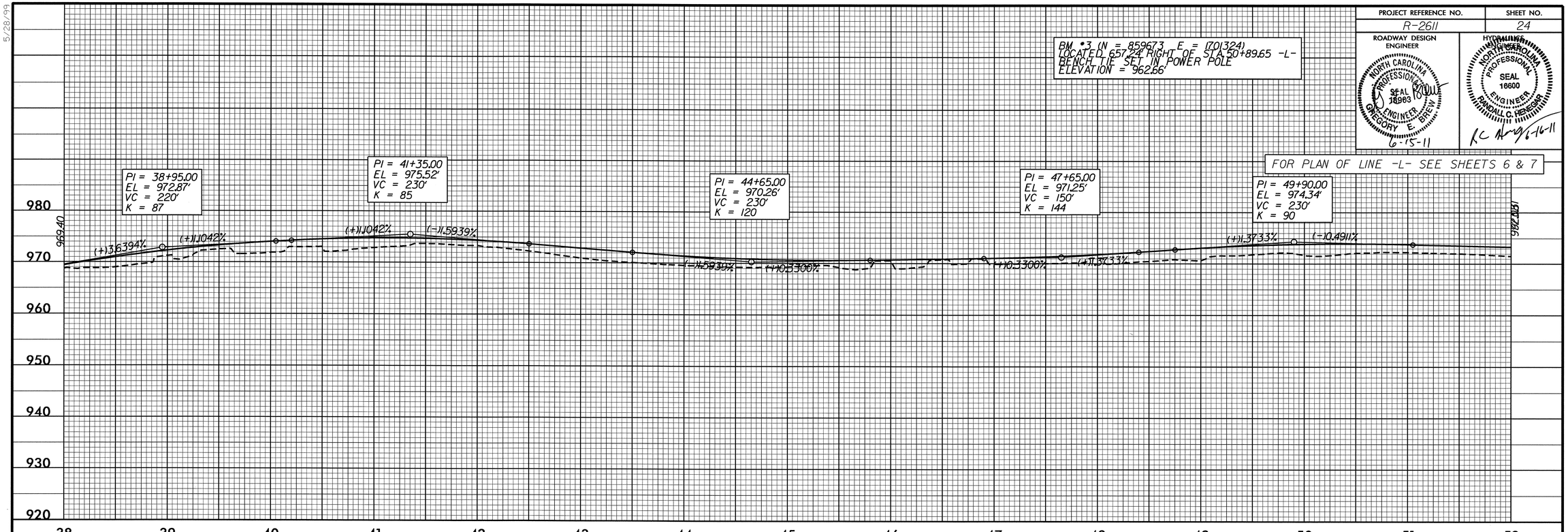
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW
6-15-11

HYDRAULICS ENGINEER

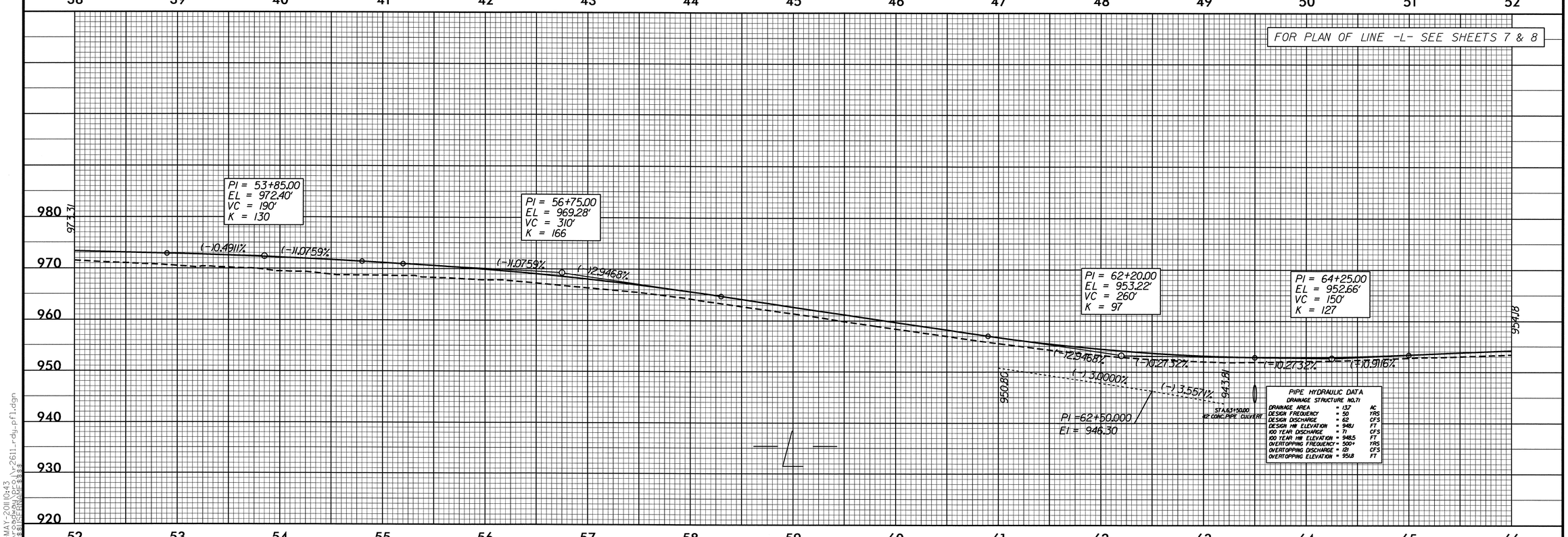
NORTH CAROLINA PROFESSIONAL SEAL 18600 ENGINEER RANDALL C. HENSON
6-16-11

BM #3 (N = 859673 E = 1701324)
LOCATED 657.24' RIGHT OF STA 50+89.65 -L-
BENCH TIE SET IN POWER POLE
ELEVATION = 962.66'

FOR PLAN OF LINE -L- SEE SHEETS 6 & 7



FOR PLAN OF LINE -L- SEE SHEETS 7 & 8



PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.71

DRAINAGE AREA	= 137	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 62	CFS
DESIGN HW ELEVATION	= 948.1	FT
100 YEAR DISCHARGE	= 71	CFS
100 YEAR HW ELEVATION	= 948.5	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 121	CFS
OVERTOPPING ELEVATION	= 951.8	FT

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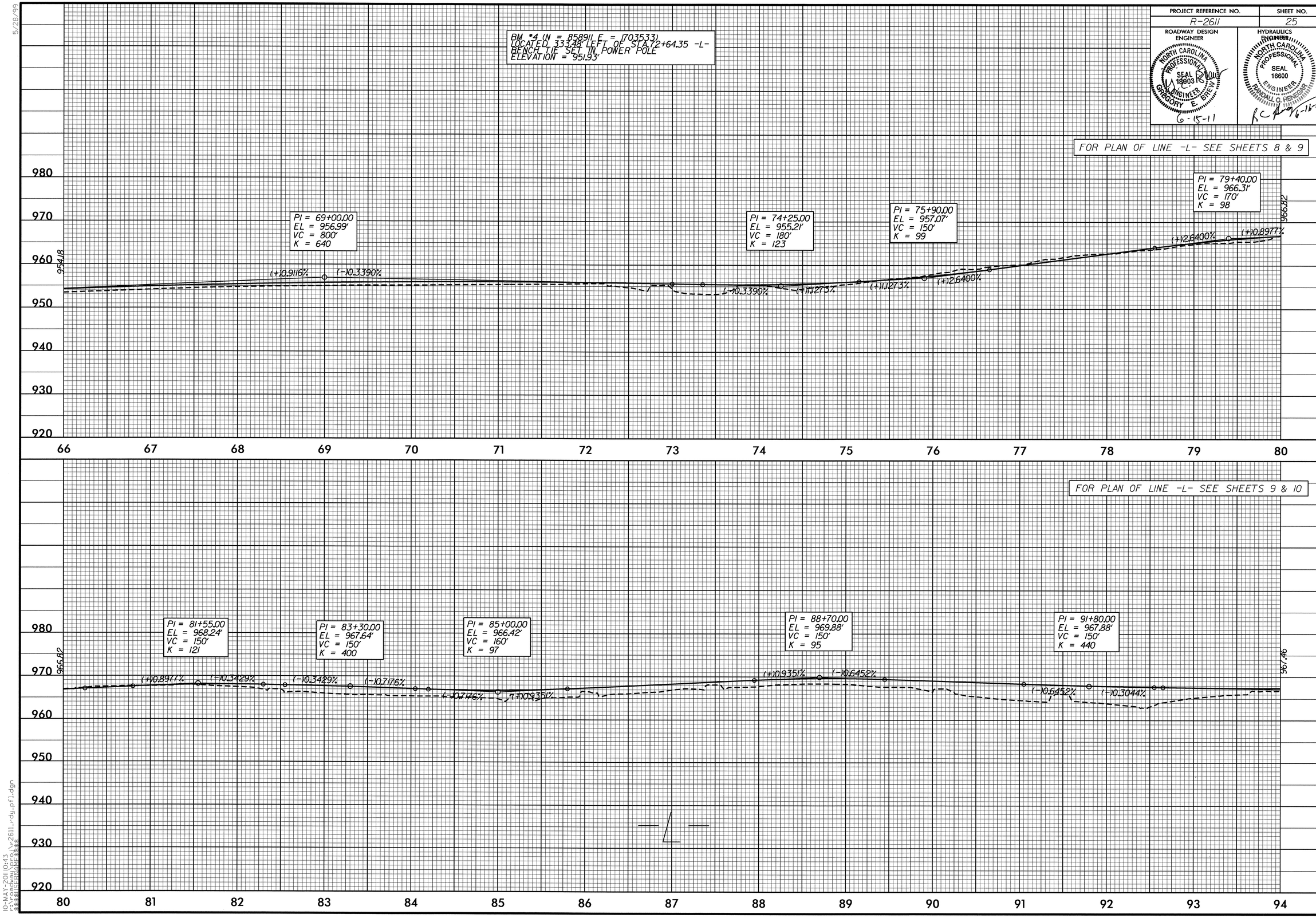
PROJECT REFERENCE NO.	SHEET NO.
R-2611	25

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW
6-15-11

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 16600 ENGINEER RANDALL C. HENEGAR
RC Henegar 6-16-11



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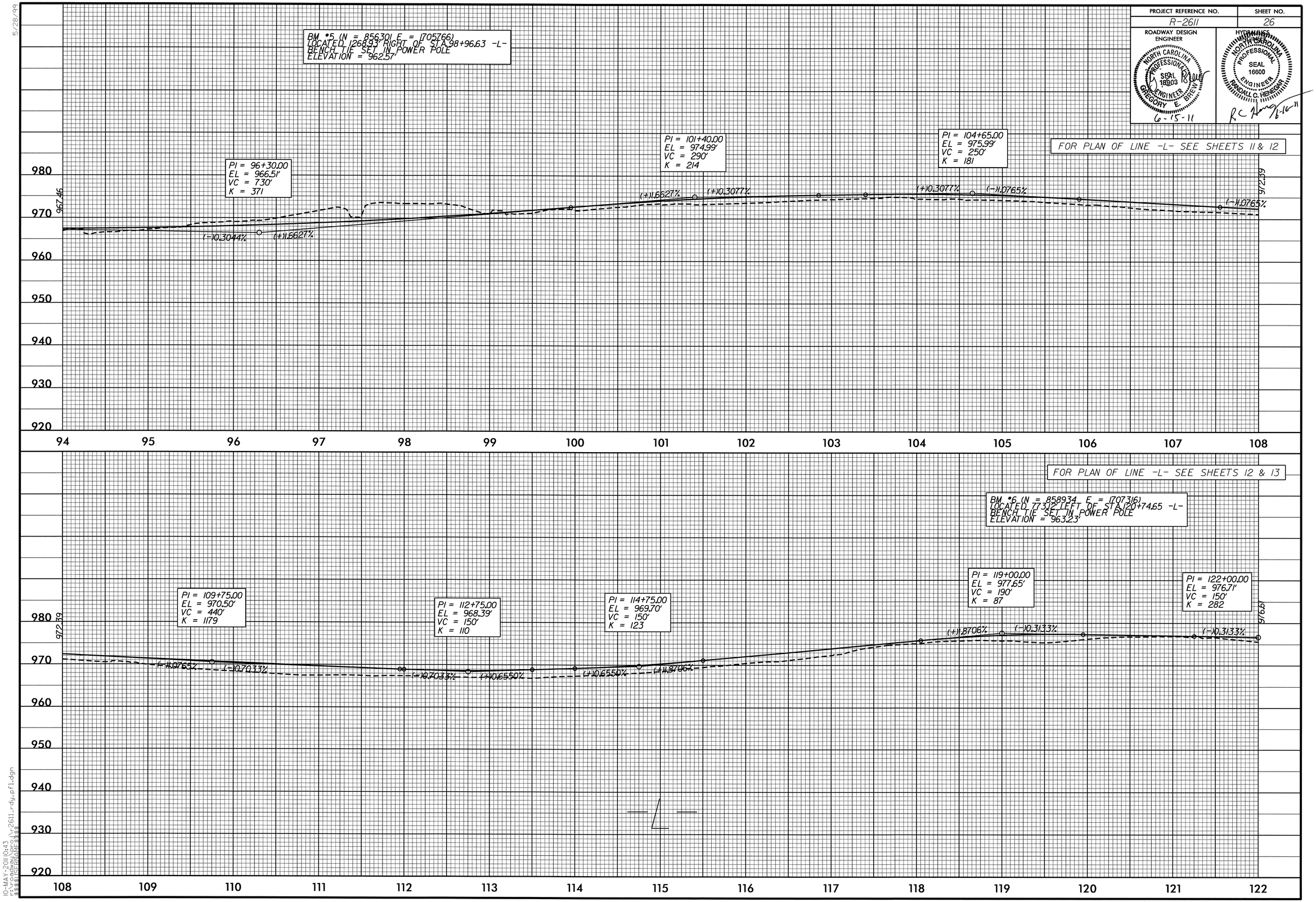
PROJECT REFERENCE NO.	SHEET NO.
R-2611	26

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BRIEN
6-15-11

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 16600 ENGINEER RANDALL C. HENEGAR
6-16-11



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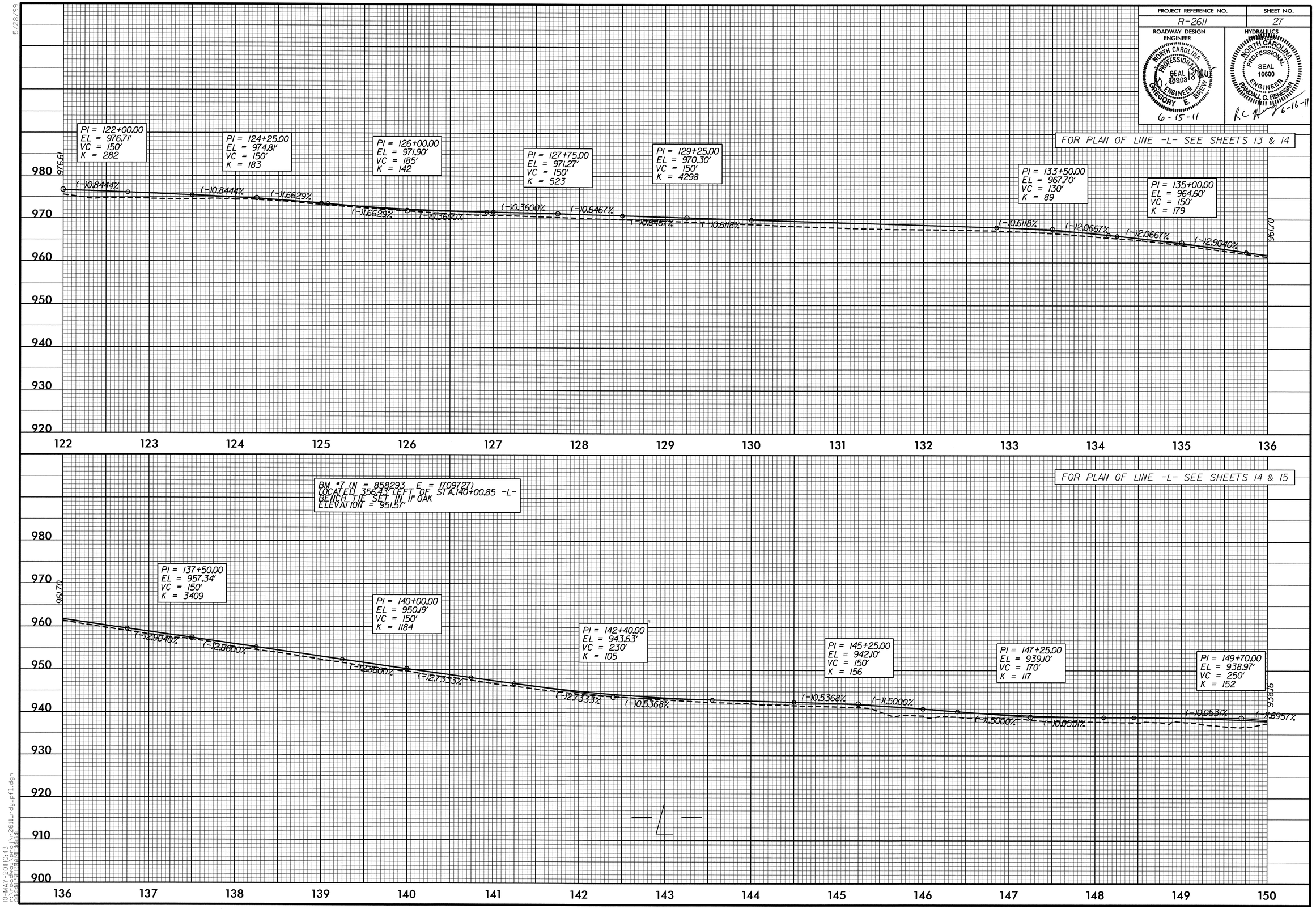

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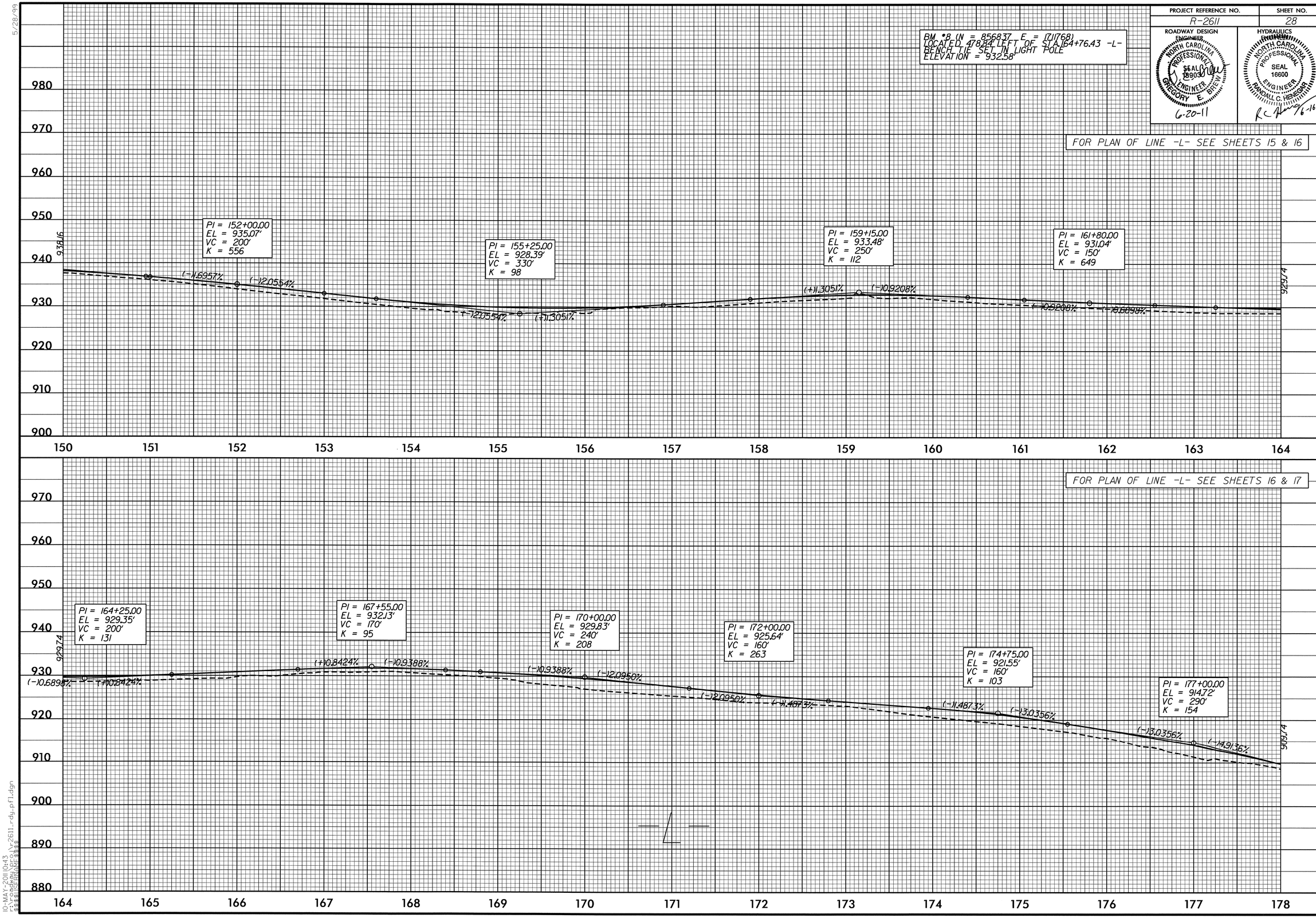
PROJECT REFERENCE NO.	SHEET NO.
R-2611	28

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW — 6-20-11

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 16600 ENGINEER RANDALL C. HENEGAR — 6-16-11



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PROJECT REFERENCE NO.	SHEET NO.
R-2611	29

ROADWAY DESIGN ENGINEER

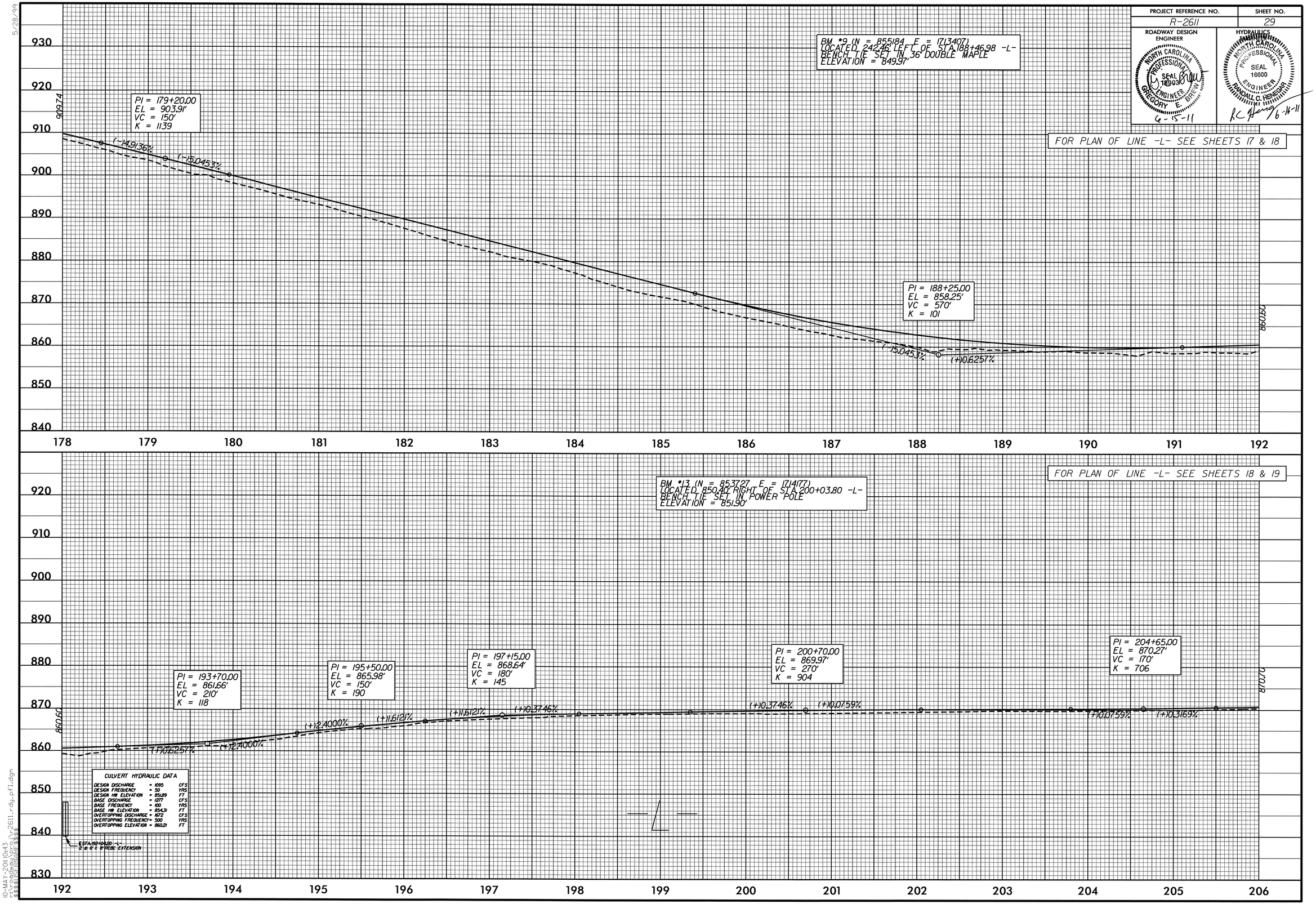
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BRIEW

6-15-11

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 16600 ENGINEER RANDALL C. HENEGAR

6-16-11



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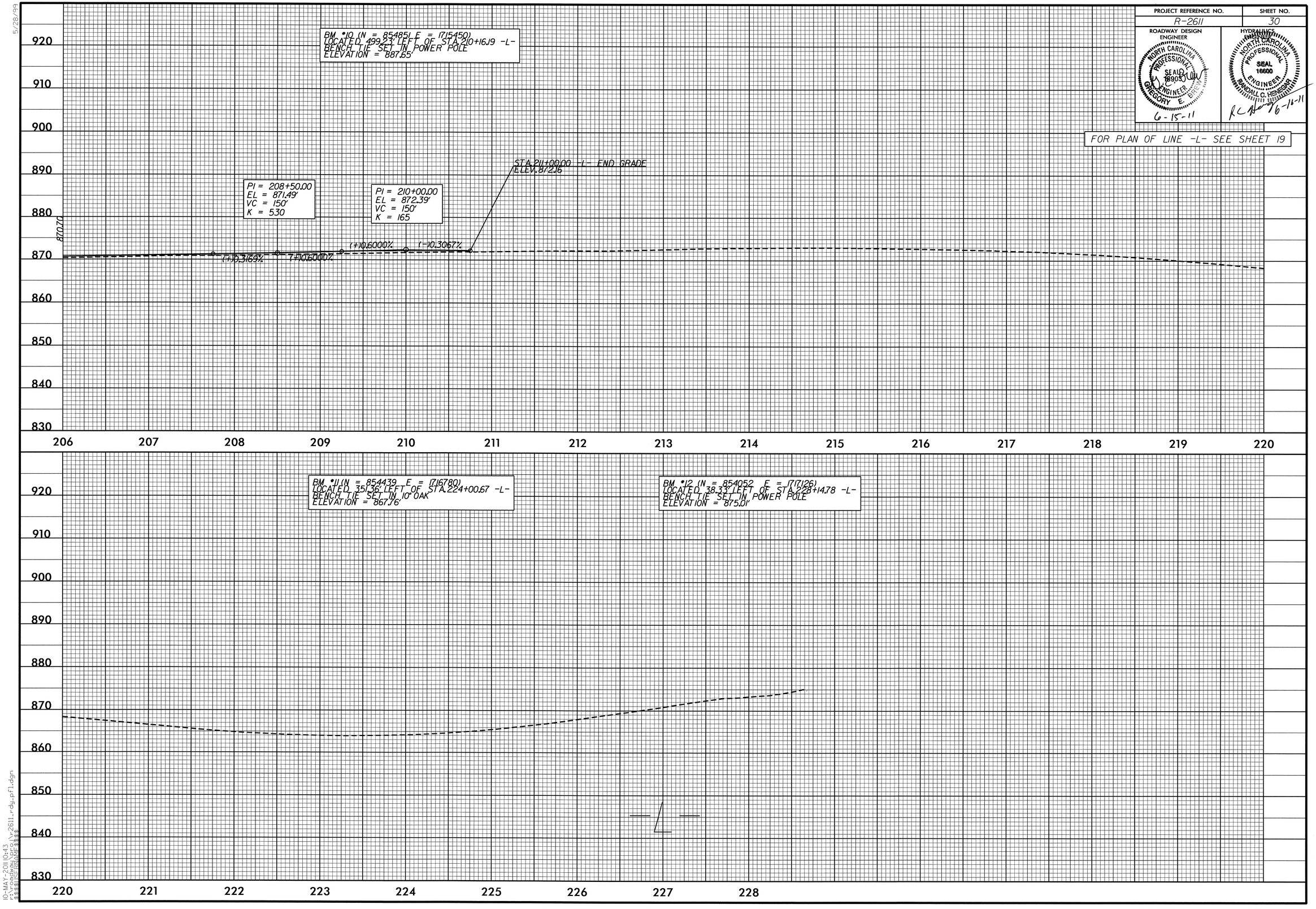
PROJECT REFERENCE NO.	SHEET NO.
R-2611	30

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW
6-15-11

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 16600 ENGINEER RANDALL C. HENEGAR
6-16-11



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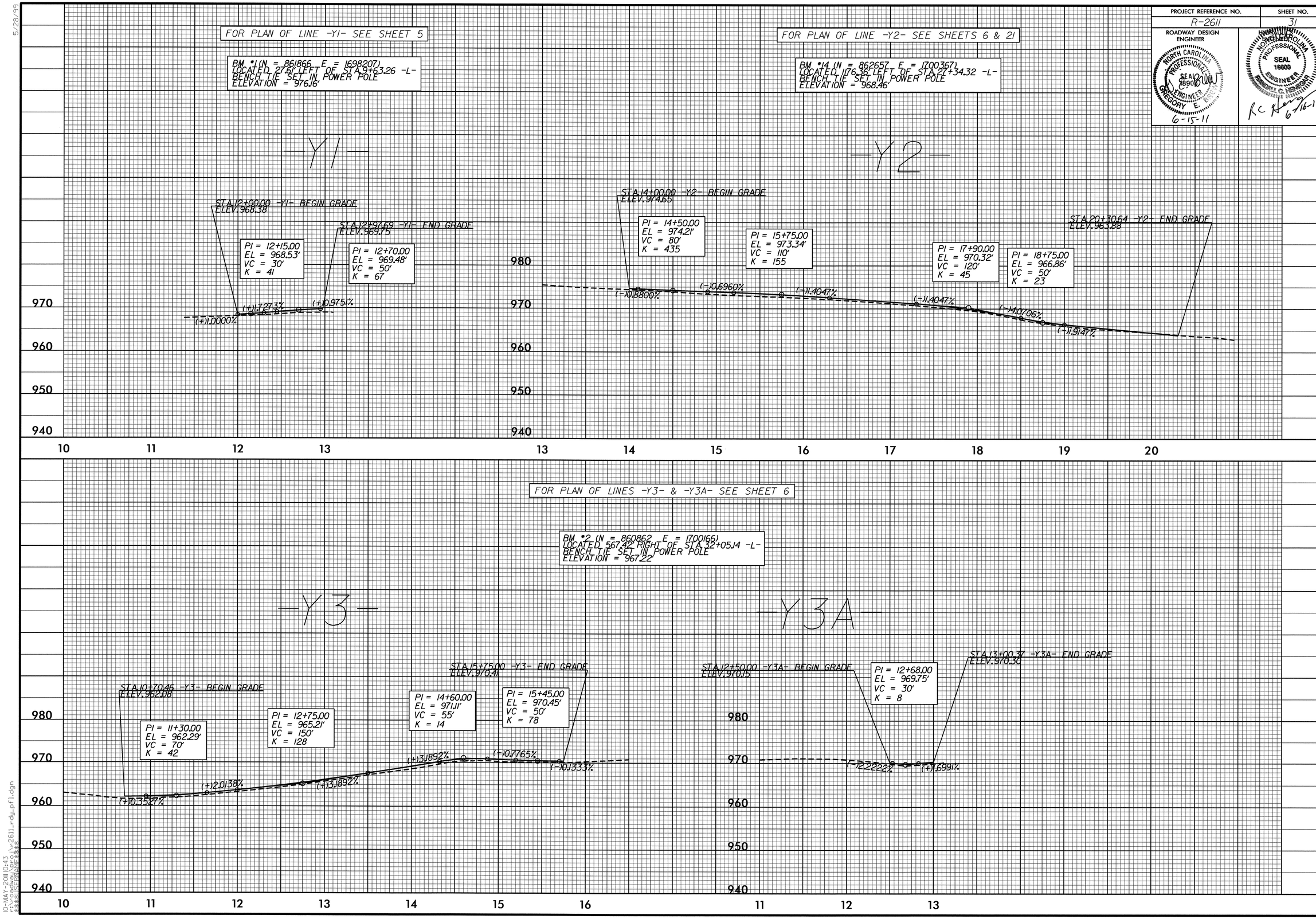
PROJECT REFERENCE NO.	SHEET NO.
R-2611	31

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18908 ENGINEER GREGORY E. BREW
6-15-11

NORTH CAROLINA PROFESSIONAL SEAL 16600 ENGINEER RANDALL C. HENEGAR
RC Heng 6-16-11



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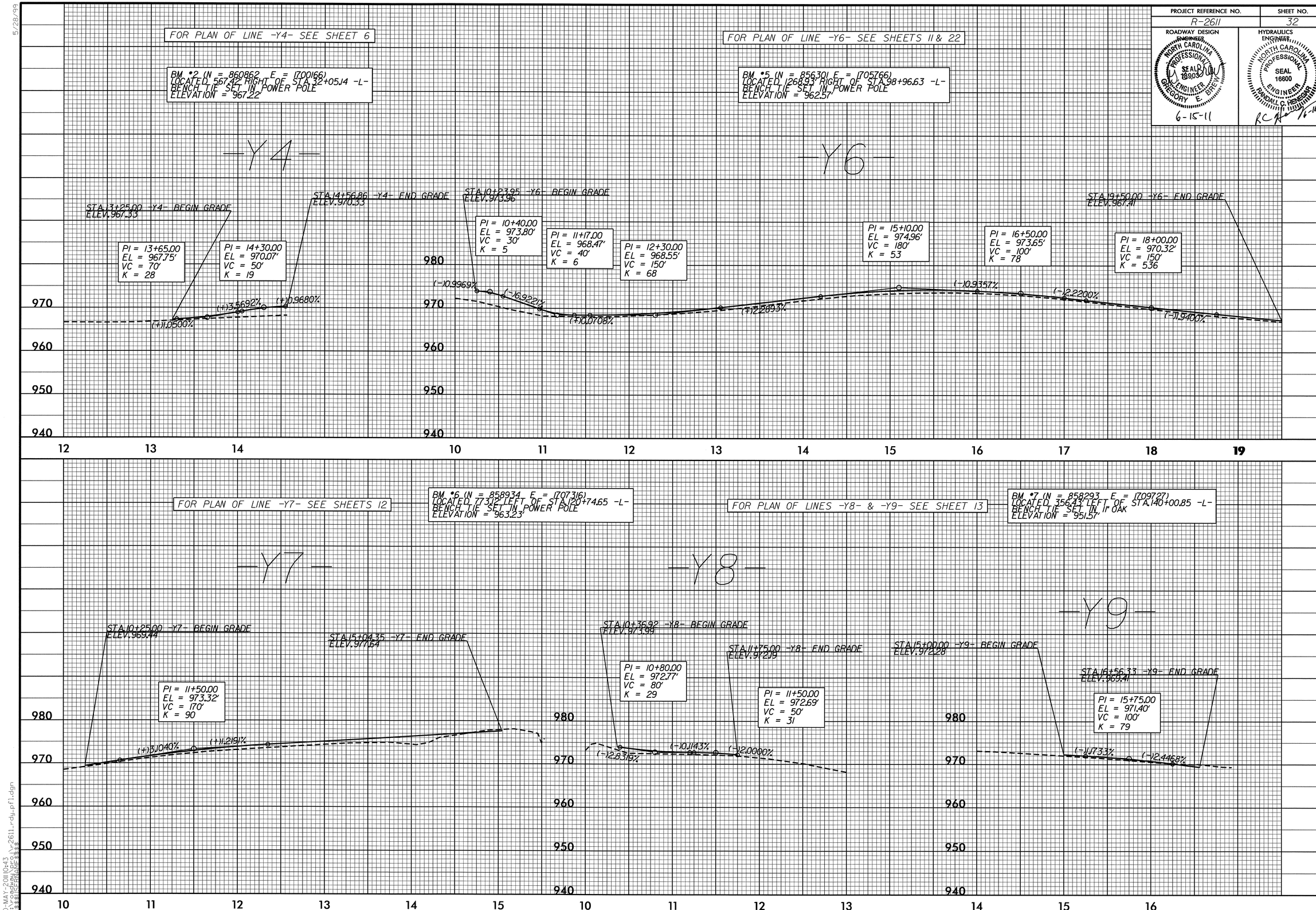
PROJECT REFERENCE NO.	SHEET NO.
R-2611	32

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW — 6-15-11

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 16600 ENGINEER RANDALL C. HENEGAR — 6-16-11



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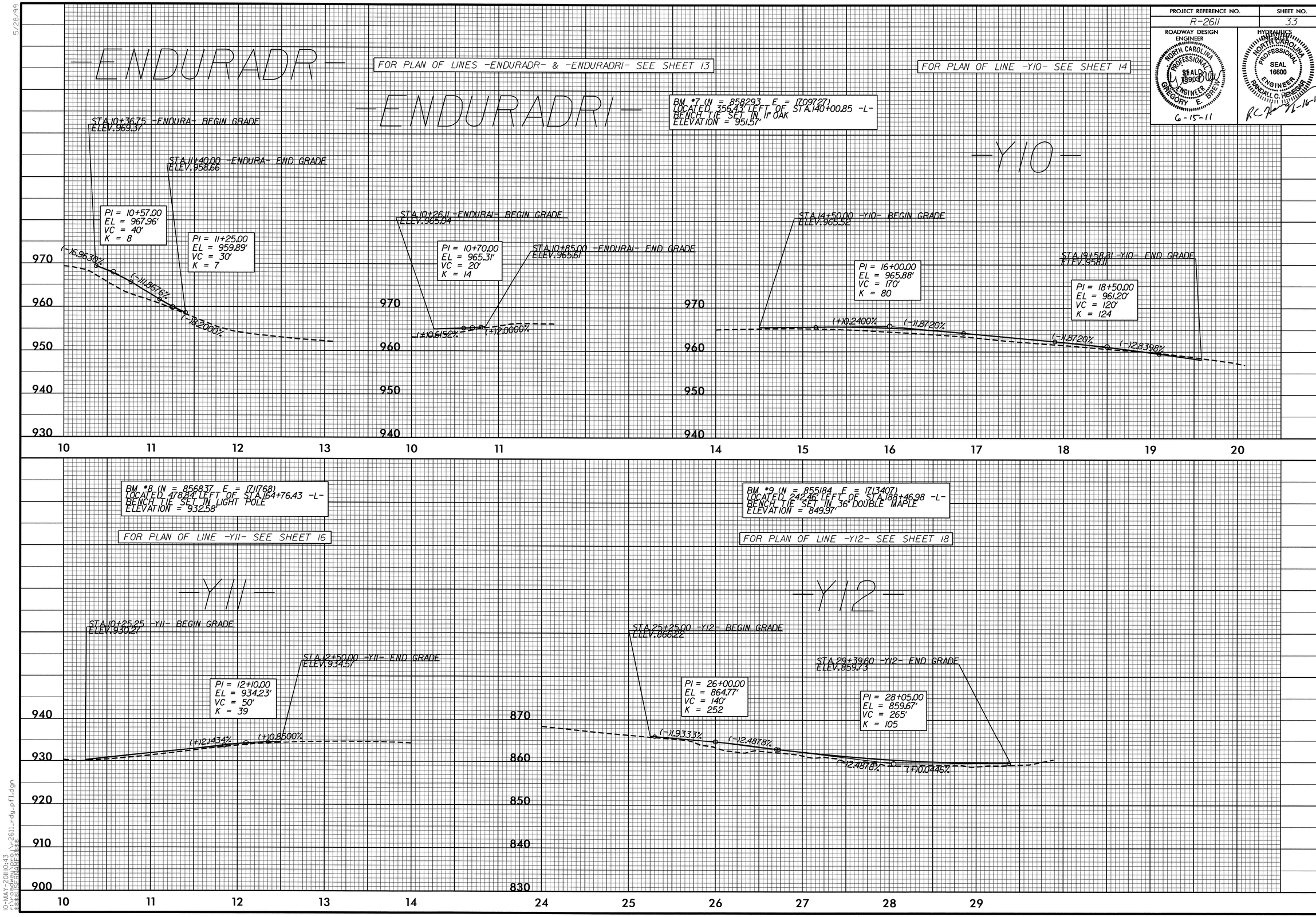
PROJECT REFERENCE NO.	SHEET NO.
R-2611	33

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BRENN
6-15-11

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 16600 ENGINEER RANDALL G. HENEGAR
RG Henegar 6-16-11



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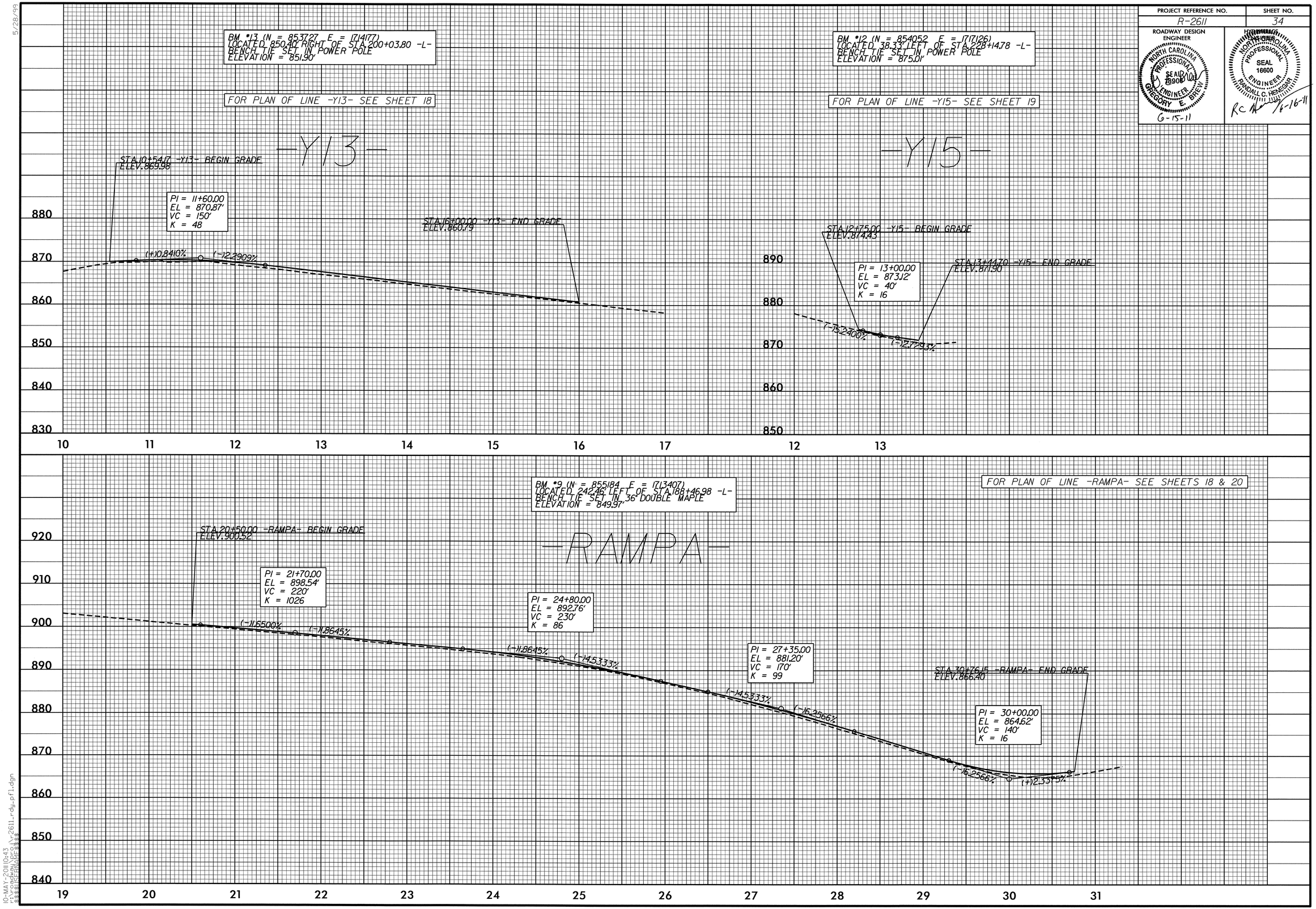
PROJECT REFERENCE NO.	SHEET NO.
R-2611	34

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18900 ENGINEER GREGORY E. BREW
6-15-11

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18600 ENGINEER RANDALL C. HENEGAR
6-16-11



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PROJECT REFERENCE NO.	SHEET NO.
R-2611	35

ROADWAY DESIGN ENGINEER

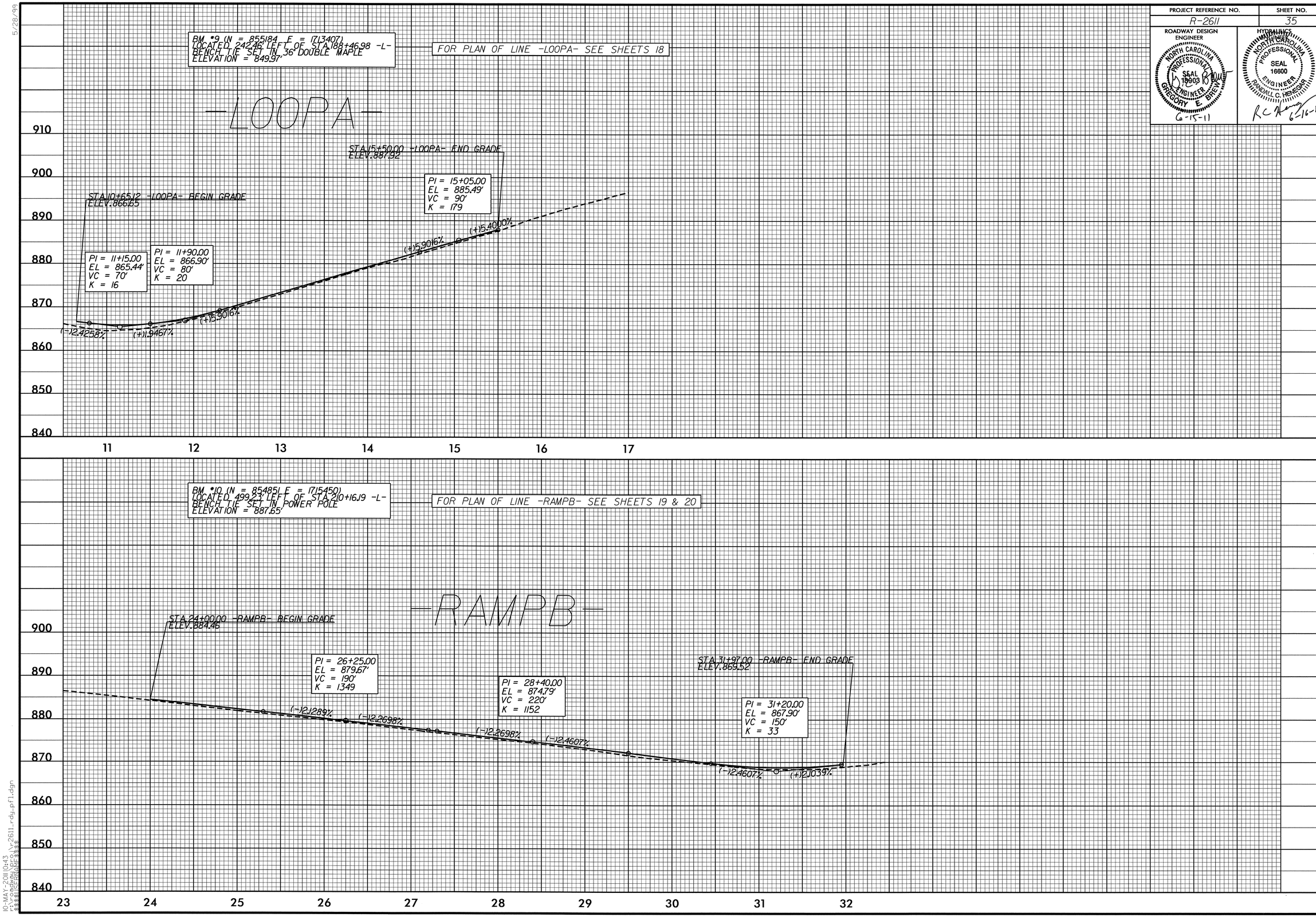
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW

6-15-11

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 16600 ENGINEER RANDALL C. HENEGAR

6-16-11



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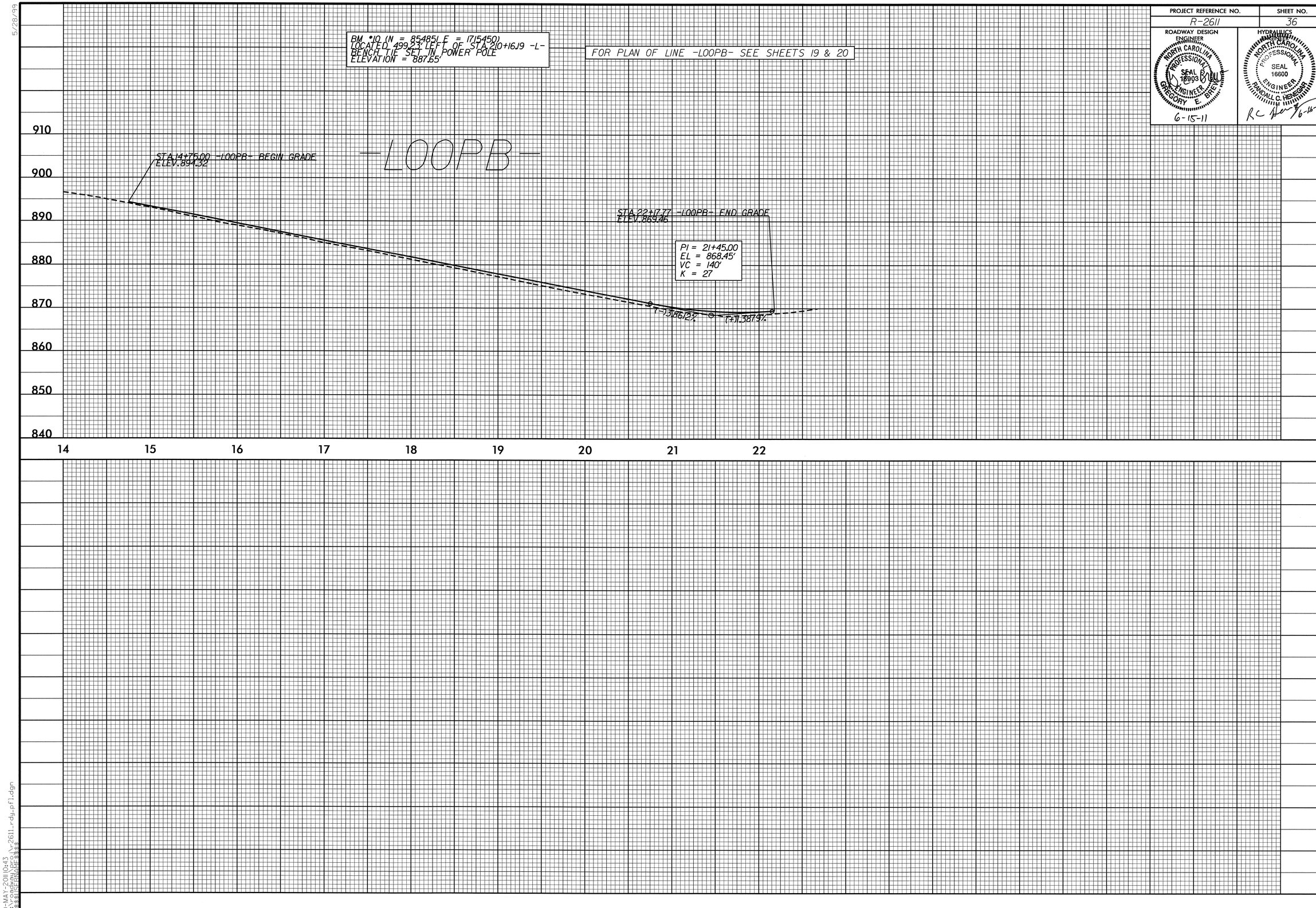

PROJECT REFERENCE NO.	SHEET NO.
R-2611	36

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREWER
6-15-11

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 16600 ENGINEER RANDALL C. HENEGAR
6-16-11

5/28/99

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