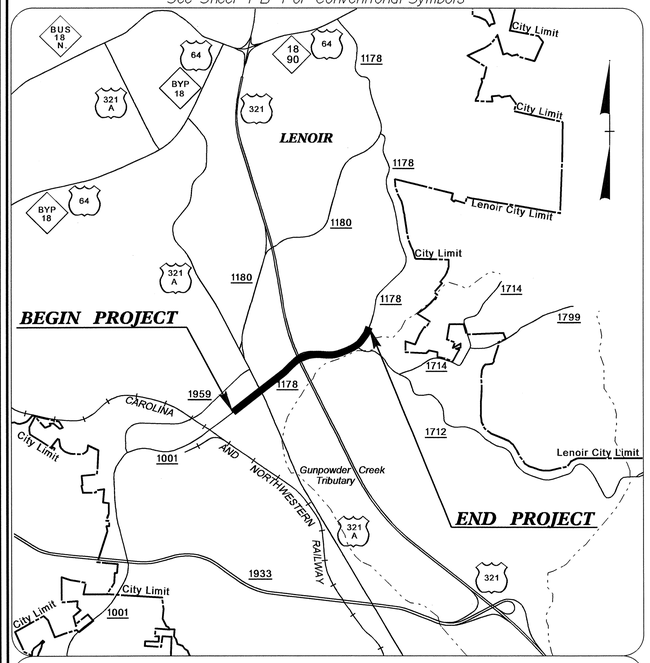
09/08/99

TIP PROJECT: U-2211B

CONTRACT: C202820

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



VICINITY MAP

FOR OFFSITE DETOUR ROUTES SEE TRAFFIC MANAGEMENT PLANS.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CALDWELL COUNTY

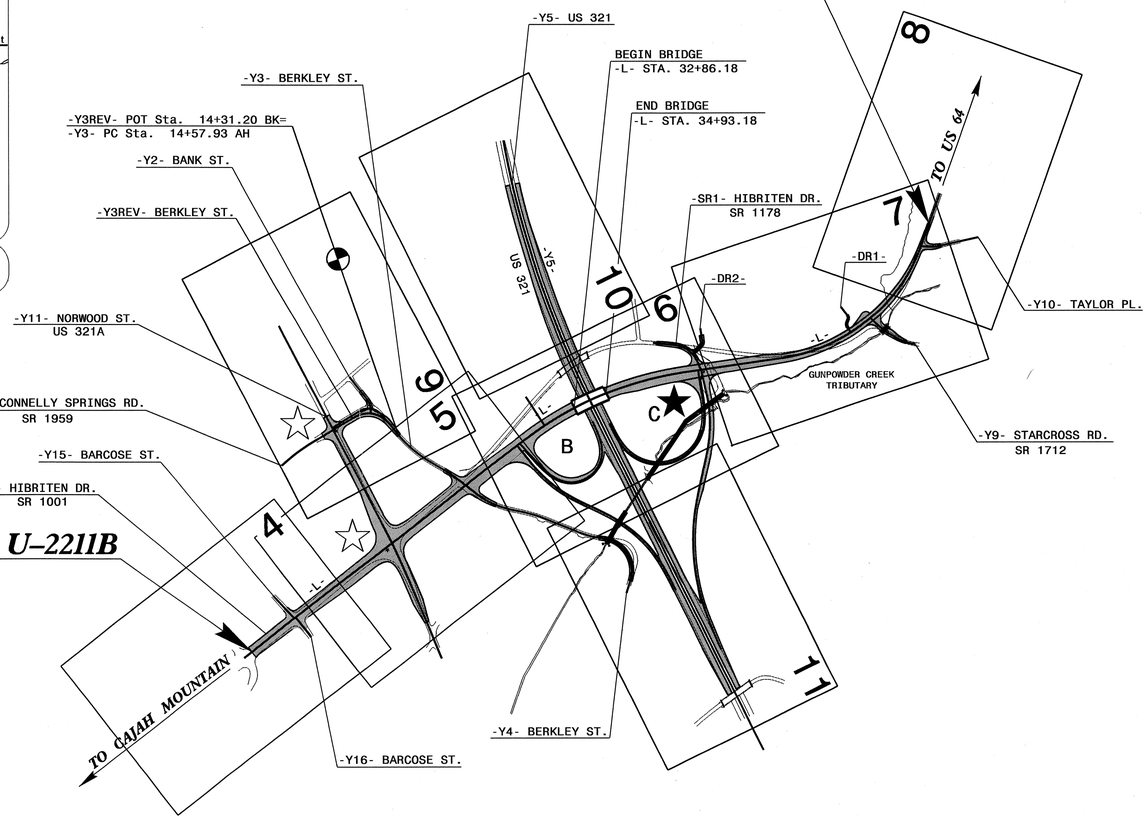
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-2211B	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34783.1.1	MA-STP-7533(2)	P.E.
34783.2.3	STP-1001(38)	R/W, UTIL.
34783.3.3	STP-1001(50)	CONST.

LOCATION: ***LENOIR – SR 1001 (HIBRITEN DRIVE) FROM US 321A (NORWOOD STREET) TO SR 1712 (STARCROSS ROAD) EAST OF US 321***

TYPE OF WORK: GRADING, PAVING, DRAINAGE, STRUCTURES, AND SIGNALS

STA. 56+50 –L– END TIP PROJECT U-2211B



STA. 10+55 –L– BEGIN TIP PROJECT U-2211B

★ PROPOSED SIGNAL
☆ SIGNAL UPGRADE

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 2012 = 9,267
ADT 2032 = 15,193
DHV = 10 %
D = 60 %
T = 4 % *
V = 50 MPH
FUNC. CLASS. = URBAN COLLECTOR
* TTST 1% DUAL 3%
STATEWIDE TIER ROUTE

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-2211B = 0.831 MILES
LENGTH STRUCTURE TIP PROJECT U-2211B = 0.039 MILES

TOTAL LENGTH OF TIP PROJECT U-2211B = 0.870 MILES

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: SEPTEMBER 18, 2008

LETTING DATE: MAY 15, 2012

GARY LOVERING, PE
PROJECT ENGINEER

KEVIN E. MOORE, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029984 ENGINEER DAVID P. BOCKER 2-24-2012

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY L. LOVERING

SIGNATURE: P.E.

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION

17-FEB-2012 14:20
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$$$$USERNAME$$$$

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-2211B	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY LOWERING

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	Title Sheet
1-A	Index of Sheets, General Notes and Standards
1-B	Conventional Symbols
1-C THRU 1-G	Survey Control Sheets
2 THRU 2-E	Typical Sections and Pavement Schedule
2-F	Structure Typical Sections
2-G	Sketch Showing Pavement Width to Bridge Width Relationship
2-H THRU 2-I	Undercut Details
2-J	Horizontal Alignment Curve Data
2-K	Shear Point Diagram
2-L	Ditch Details
2-M	Detail of Special Catch Basin (Str. No. 183)
2-N	Detail to Convert Existing Drop Inlet or Catch Basin to Junction Box (Str. 12A, 154, 156)
2-O	Detail for Structure No. 88 (Special Junction Box)
2-P	Detail for Structure No. 168 (Special Junction Box)
2-Q	Standard Temporary Shoring
3	Summary of Quantities
3-A	Summaries of Expressway Gutter, Shoulder Berm Gutter, Guardrail,and Asphalt Pavement Removal
3-B	Summary of Earthwork
3-C THRU 3-J	Pipe Summaries for 48" and Under
3-K	Pipe Summary for 54" and Over
3-L	Summary of Hydraulic Rip Rap and DDE Quantities
3-M	Parcel Index Sheet
4 THRU 11	Plan Sheets
12 THRU 13	-L- Profile Sheets
14	-L- & -LPB- Profile Sheet
15	-RPB- & -LPC- Profile Sheet
16	-RPC- & -Y2- Profile Sheet
17	-Y3- & -Y4- Profile Sheet
18 THRU 20	-Y5- NBL & -Y5- SBL Profile Sheets
21	-Y9-, -Y10- & -Y11- Profile Sheet
22	-Y11-, -SR1-, -DR1- & -DR2- Profile Sheet
TMP-1 THRU TMP-36	Transportation Management Plans
SD-1	Special Sign Designs
PMP-1 THRU PMP-8	Pavement Marking Plans
EC-1 THRU EC-24	Erosion Control Plans
RF-1	Reforestation Plan
SIGN-1 THRU SIGN-9	Signing Plans
SIG.1 THRU SIG.28	Signal Plans
UC-1 THRU UC-28	Utility Construction Plans
UO-1 THRU UO-9	Utilities by Others Plans
X-1A	Index of Cross Sections
X-1B THRU X-1E	Cross Section Summary Sheet
X-1 THRU X-84	Cross Sections
S-1 THRU S-40	Structure Plans
C-1 THRU C-16	Culvert Plans

GENERAL NOTES:

2012 SPECIFICATIONS
EFFECTIVE: 01-17-12
REVISED: 11/01/11

GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 & 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 & 560.02.

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.

BERM DITCHES:

BERM DITCHES SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 240.01 AT LOCATIONS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

UNDERDRAINS:

UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.03 AT LOCATIONS DIRECTED BY THE ENGINEER.

DRIVEWAYS:

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

STREET TURNOUT:

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

GUARDRAIL:

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

TEMPORARY SHORING:

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

END BENTS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE Duke Power Company, Charter Communications,

Piedmont Natural Gas, AT&T, and City of Lenoir

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

RIGHT-OF-WAY MARKERS:

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

ROCK

ROCK IS ANTICIPATED LEFT OF -Y5- STATIONS 12+47 TO 14+75. BLASTING MAY BE REQUIRED FOR EXCAVATION ON THE PROJECT. SEE SECTION 220 OF THE STANDARD SPECIFICATIONS.

2012 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 January, 2012 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.01	Guide for Grading Subgrade - Interstate and Freeway
225.02	Guide for Grading Subgrade - Secondary and Local
225.03	Deceleration and Acceleration Lanes
225.04	Method of Obtaining Superelevation - Two Lane Pavement
225.05	Method of Obtaining Superelevation - Divided Highways
240.01	Guide for Berm Ditch Construction
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
422.10	Reinforced Bridge Approach Fills
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
560.02	Method of Shoulder Construction - High Side of Superelevated Curve - Method II
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
610.03	Guide for Paving Shoulders Under Bridges - Method III
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
815.03	Pipe Underdrain and Blind Drain
838.01	Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.11	Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.21	Reinforced Concrete Endwall - for Single 54" Pipe 90 Skew
838.45	Notes for Reinforced Concrete Endwall - Std. Dwg 838.21 thru 838.40
838.51	Reinforced Brick Endwall - for Single 54" Pipe 90 Skew
838.75	Notes for Reinforced Brick Endwall - Std. Dwg 838.51 thru 838.70
838.80	Precast Endwalls - 12" thru 72" Pipe 90 Skew
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
840.04	Concrete Open Throat Catch Basin - 12" thru 48" Pipe
840.05	Brick Open Throat Catch Basin - 12" thru 48" Pipe
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
840.17	Concrete Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.19	Concrete Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.22	Frames and Wide Slot Sag Grates
840.24	Frames and Narrow Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.26	Brick Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.28	Brick Grated Drop Inlet Type 'D' - 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
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.54	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
846.02	Drop Inlet Installation in Expressway Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
848.03	Driveway Turnout - Drop Curb Type
848.04	Street Turnout
850.01	Concrete Paved Ditches
850.10	Guide for Berm Drainage Outlet - 15" and 18" Pipe
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
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.
U-2211B	1-B

Note: Not to Scale

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

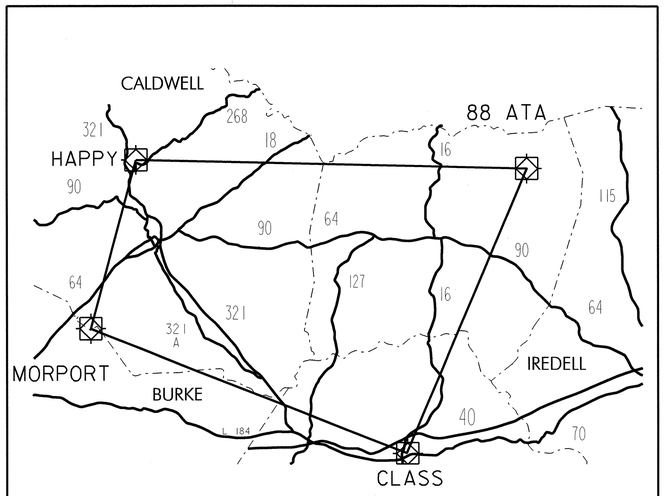
MISCELLANEOUS:

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

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
U-2211B	1-C
Location and Surveys	

SURVEY CONTROL SHEET U-2211B



GPS NETWORK CONTROL

NAD 83/95

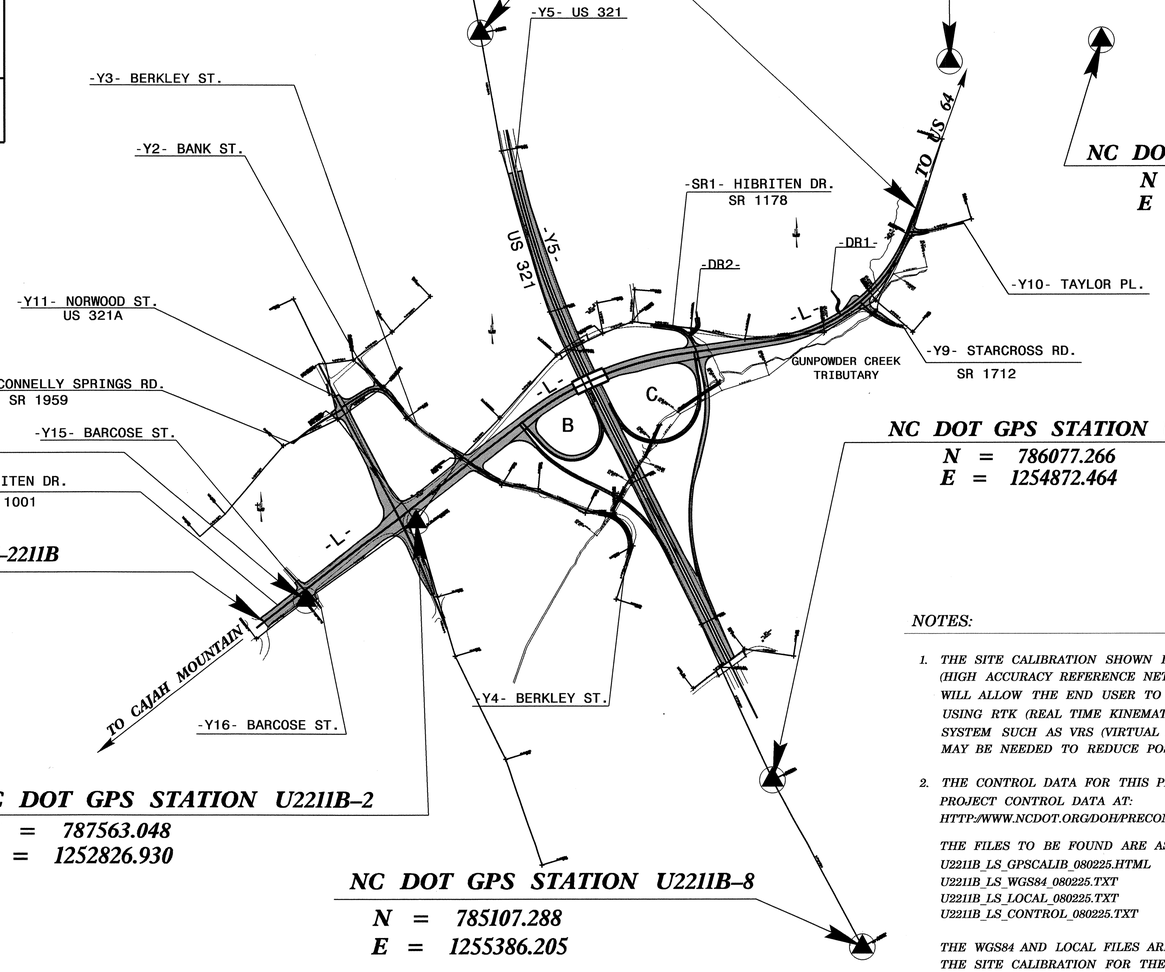
NC DOT GPS STATION U2211B-5
N = 791463.295
E = 1252989.046

STA. 56+50 -L- END TIP PROJECT U-2211B
N = 789350.3563
E = 1255704.3459

NC DOT GPS STATION U2211B-3
N = 790205.717
E = 1255894.038

NC DOT GPS STATION U2211B-6
N = 790371.094
E = 1253200.828

NC DOT GPS STATION U2211B-4
N = 790327.943
E = 1256766.155



NC DOT GPS STATION U2211B-1
N = 787110.281
E = 1252194.354

STA. 10+55 -L- BEGIN TIP PROJECT U-2211B
N = 786984.0013
E = 1251954.5656

NC DOT GPS STATION U2211B-2
N = 787563.048
E = 1252826.930

NC DOT GPS STATION U2211B-7
N = 786077.266
E = 1254872.464

NC DOT GPS STATION U2211B-8
N = 785107.288
E = 1255386.205

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "U2211B-1" WITH NAD 83/95 STATE PLANE GRID COORDINATES OF NORTHING: 787110.281(ft) EASTING: 1252194.354(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: .99987799 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "U2211B-1" TO -L- STATION 10+55 IS S 62°13'39" W 271.01 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

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 WORKWITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE STATION) 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.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   U2211B_LS_GPSCALIB_080225.HTML
   U2211B_LS_WGS84_080225.TXT
   U2211B_LS_LOCAL_080225.TXT
   U2211B_LS_CONTROL_080225.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.

▲ *INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.*
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION
SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

05-JAN-2012 14:34
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6/2/99

PROJECT REFERENCE NO.	SHEET NO.
U-2211B	1-D
Location and Surveys	

SURVEY CONTROL SHEET U-2211B

GPS CALIBRATION REPORT

PROJECT : U2211BENG

TIP NUMBER	U-2211B		
USER NAME	RGMILLER	DATE & TIME	2:02:38 PM 10/6/2004
COORDINATE SYSTEM	US STATE PLANE 1983(AT GROUND)	ZONE	NORTH CAROLINA 3200
HORIZONTAL DATUM	NAD 1983 (CONUS)		
VERTICAL DATUM	NAVD 88	GEOID MODEL	GEO99NC.GGF
COORDINATE UNITS	US SURVEY FEET		
DISTANCE UNITS	US SURVEY FEET		
HEIGHT UNITS	US SURVEY FEET		

LOCAL SITE INFORMATION
LOCALIZED AROUND

LATITUDE	35°53'11.57181"N
LONGITUDE	81°31'29.29517"W
SITE SCALE FACTOR	1.0001220224
HEIGHT	1198.537SFT

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	788528.236SFT
EASTING COORDINATE OF ROTATION CENTER	1254266.257SFT
ROTATION ABOUT THE CENTER POINT	0°00'00"
TRANSLATION NORTH	0.005SFT
TRANSLATION EAST	-0.004SFT
SCALE FACTOR	1.00000006

VERTICAL ADJUSTMENT PARAMETERS

NORTHING COORDINATE OF ORIGIN POINT	787110.281SFT
EASTING COORDINATE OF ORIGIN POINT	1252194.355SFT
VERTICAL SEPARATION AT ORIGIN	-0.064SFT
SLOPE NORTH	-0.656PPM
SLOPE EAST	1.295PPM

GEOID MODEL DEFINITION

GEO99NC.GGF

RESIDUAL DIFFERENCES BETWEEN GPS (WGS84) AND LOCAL COORDINATES

SUMMARY

	MAXIMUM ERROR	ROOT MEAN SQUARE ERROR	POINT
HORIZONTAL	0.001SFT	0.000	U2211B-2 GPS
VERTICAL	0.000SFT	0.000	U2211B-1 GPS
THREE-DIMENSIONAL	0.001SFT	0.000	U2211B-2 GPS

POINT RESIDUALS

WGS84 COORDINATES	CALCULATED POINT FOR DISPLAY ONLY		LOCAL COORDINATES	
POINT U2211B-1 GPS	NORTHING	787110.281SFT	POINT	U2211B-1
LATITUDE 35°53'11.57177"N	EASTING	1252194.355SFT	NORTHING	787110.281SFT
LONGITUDE 81°31'29.29514"W	ELEVATION	1304.697SFT	EASTING	1252194.354SFT
HEIGHT 1198.538SFT	HORZ ERROR	0.000SFT	ELEVATION	1304.697SFT
	VERT ERROR	0.000SFT	UTILIZED	HORZ AND VERT
	3D ERROR	0.000SFT		ADJUSTED
			QUALITY	QUALITY
POINT U2211B-2 GPS	NORTHING	787563.049SFT	POINT	U2211B-2
LATITUDE 35°53'16.20663"N	EASTING	1252826.929SFT	NORTHING	787563.048SFT
LONGITUDE 81°31'21.75049"W	ELEVATION	1287.719SFT	EASTING	1252826.930SFT
HEIGHT 1181.555SFT	HORZ ERROR	0.001SFT	ELEVATION	1287.719SFT
	VERT ERROR	0.000SFT	UTILIZED	HORZ AND VERT
	3D ERROR	0.001SFT		ADJUSTED
			QUALITY	QUALITY
POINT U2211B-3 GPS	NORTHING	790205.717SFT	POINT	U2211B-3
LATITUDE 35°53'43.09988"N	EASTING	1255894.038SFT	NORTHING	790205.717SFT
LONGITUDE 81°30'45.30358"W	ELEVATION	1331.186SFT	EASTING	1255894.038SFT
HEIGHT 1224.998SFT	HORZ ERROR	0.001SFT	ELEVATION	1331.186SFT
	VERT ERROR	0.000SFT	UTILIZED	HORZ AND VERT
	3D ERROR	0.001SFT		ADJUSTED
			QUALITY	QUALITY
POINT U2211B-4 GPS	NORTHING	790327.942SFT	POINT	U2211B-4
LATITUDE 35°53'44.52627"N	EASTING	1256766.154SFT	NORTHING	790327.943SFT
LONGITUDE 81°30'34.74556"W	ELEVATION	1358.283SFT	EASTING	1256766.155SFT
HEIGHT 1252.091SFT	HORZ ERROR	0.001SFT	ELEVATION	1358.283SFT
	VERT ERROR	0.000SFT	UTILIZED	HORZ AND VERT
	3D ERROR	0.001SFT		ADJUSTED
			QUALITY	QUALITY
POINT U2211B-5 GPS	NORTHING	791463.295SFT	POINT	U2211B-5
LATITUDE 35°53'54.80323"N	EASTING	1252989.046SFT	NORTHING	791463.295SFT
LONGITUDE 81°31'20.98529"W	ELEVATION	1218.791SFT	EASTING	1252989.046SFT
HEIGHT 1112.610SFT	HORZ ERROR	0.000SFT	ELEVATION	1218.791SFT
	VERT ERROR	0.000SFT	UTILIZED	HORZ AND VERT
	3D ERROR	0.000SFT		ADJUSTED
			QUALITY	QUALITY
POINT U2211B-6 GPS	NORTHING	790371.094SFT	POINT	U2211B-6
LATITUDE 35°53'44.05949"N	EASTING	1253200.828SFT	NORTHING	790371.094SFT
LONGITUDE 81°31'18.07505"W	ELEVATION	1271.441SFT	EASTING	1253200.828SFT
HEIGHT 1165.263SFT	HORZ ERROR	0.000SFT	ELEVATION	1271.441SFT
	VERT ERROR	0.000SFT	UTILIZED	HORZ AND VERT
	3D ERROR	0.000SFT		ADJUSTED
			QUALITY	QUALITY
POINT U2211B-7 GPS	NORTHING	786077.266SFT	POINT	U2211B-7
LATITUDE 35°53'02.03213"N	EASTING	1254872.464SFT	NORTHING	786077.266SFT
LONGITUDE 81°30'56.44358"W	ELEVATION	1315.212SFT	EASTING	1254872.464SFT
HEIGHT 1209.045SFT	HORZ ERROR	0.000SFT	ELEVATION	1315.212SFT
	VERT ERROR	0.000SFT	UTILIZED	HORZ AND VERT
	3D ERROR	0.000SFT		ADJUSTED
			QUALITY	QUALITY
POINT U2211B-8 GPS	NORTHING	785107.288SFT	POINT	U2211B-8
LATITUDE 35°52'52.57205"N	EASTING	1255386.206SFT	NORTHING	785107.288SFT
LONGITUDE 81°30'49.90444"W	ELEVATION	1257.443SFT	EASTING	1255386.205SFT
HEIGHT 1151.278SFT	HORZ ERROR	0.000SFT	ELEVATION	1257.443SFT
	VERT ERROR	0.000SFT	UTILIZED	HORZ AND VERT
	3D ERROR	0.000SFT		ADJUSTED
			QUALITY	QUALITY

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "U2211B-1"
WITH NAD 83/95 STATE PLANE GRID COORDINATES OF
NORTHING: 787110.281(ft) EASTING: 1252194.354(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: .99987799
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "U2211B-1" TO -L- STATION 10+55 IS
S 62°13'39" W 271.01
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 WORKWITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE STATION) 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.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

THE FILES TO BE FOUND ARE AS FOLLOWS:
U2211B_LS_GPSCALIB_080225.HTML
U2211B_LS_WGS84_080225.TXT
U2211B_LS_LOCAL_080225.TXT
U2211B_LS_CONTROL_080225.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.

INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION
SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

NOTE: DRAWING NOT TO SCALE

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PROJECT REFERENCE NO.	SHEET NO.
U-2211B	1-E
Location and Surveys	

SURVEY CONTROL SHEET U-2211B

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
BL9	(BL-9)	786890.9446	1251910.8235	1303.95'	OUTSIDE PROJECT LIMITS	
U22111	(GPS U2211B-1)	787110.2810	1252194.3540	1304.70'	13+21.70	48.13' RT
U22112	(GPS U2211B-2)	787563.0480	1252826.9300	1287.71'	20+99.12	74.42' RT
BL10	(BL-10)	787923.0052	1253082.2384	1293.54'	25+21.70	52.78' LT
BL11	(BL-11)	788159.7670	1253309.6033	1304.75'	28+46.55	99.94' LT
BL12	(BL-12)	788520.9507	1253638.2984	1306.55'	32+90.60	218.12' LT
BL13	(BL-13)	788647.5488	1253901.5043	1306.88'	35+52.72	228.13' LT
BL14	(BL-14)	788714.1462	1254070.8154	1306.09'	37+14.79	240.75' LT
BL15	(BL-15)	788677.3625	1254408.4145	1282.77'	40+15.69	140.06' LT
BL16	(BL-16)	788610.7658	1254716.9511	1288.48'	43+11.25	29.27' LT
BL17	(BL-17)	788651.4653	1255173.0571	1281.83'	47+61.41	38.28' RT
BL18	(BL-18)	788836.1408	1255467.3019	1280.63'	50+94.49	53.55' RT
BL19	(BL-19)	789199.4334	1255675.2113	1294.39'	54+98.98	24.08' RT
BL20	(BL-20)	789756.7524	1255850.4036	1318.02'	OUTSIDE PROJECT LIMITS	

BY

POINT	DESC.	NORTH	EAST	ELEVATION	Y11 STATION	OFFSET
BY60	(BY-60)	788846.5560	1252126.7194	1305.12'	OUTSIDE PROJECT LIMITS	
BY21	(BY-21)	788472.2389	1252309.9307	1302.50'	13+73.97	36.45' LT
BY22	(BY-22)	788151.5626	1252378.6172	1298.47'	16+90.16	50.60' RT
BY23	(GPS U2211B-2)	787563.0480	1252826.9300	1287.71'	24+16.27	79.01' LT
BY24	(BY-24)	787130.2567	1252949.3367	1271.91'	28+59.15	19.82' LT
BY25	(BY-25)	786791.2439	1253051.0874	1256.04'	OUTSIDE PROJECT LIMITS	
BY61	(BY-61)	786197.5002	1253340.5257	1242.38'	OUTSIDE PROJECT LIMITS	
BY62	(BY-62)	785581.2972	1253547.9070	1233.90'	OUTSIDE PROJECT LIMITS	

BY1

POINT	DESC.	NORTH	EAST	ELEVATION	Y1 STATION	OFFSET
BY126	(BY1-26)	788472.2389	1252309.9307	1302.50'	OUTSIDE PROJECT LIMITS	
BY127	(BY1-27)	788494.6740	1252468.7858	1301.11'	OUTSIDE PROJECT LIMITS	
BY128	(BY1-28)	788656.4981	1252692.1475	1317.41'	OUTSIDE PROJECT LIMITS	
BY129	(BY1-29)	788861.6059	1252911.8516	1328.29'	OUTSIDE PROJECT LIMITS	

BY2

POINT	DESC.	NORTH	EAST	ELEVATION	Y2 STATION	OFFSET
BY230	(BY2-30)	788494.6740	1252468.7858	1301.11'	OUTSIDE PROJECT LIMITS	
BY231	(BY2-31)	788338.6944	1252644.3644	1299.88'	12+20.66	17.77' LT

BY3

POINT	DESC.	NORTH	EAST	ELEVATION	Y3 STATION	OFFSET
BY332	(BY3-32)	788151.5626	1252378.6172	1298.47'	OUTSIDE PROJECT LIMITS	
BY333	(BY3-33)	788338.6944	1252644.3644	1299.88'	12+65.75	21.51' LT
BY334	(BY3-34)	788156.3130	1252769.7740	1300.64'	14+77.43	14.72' RT
BY335	(BY3-35)	787923.0052	1253082.2384	1293.54'	18+66.66	16.14' RT

BY4

POINT	DESC.	NORTH	EAST	ELEVATION	Y4 STATION	OFFSET
BY436	(BY4-36)	787923.0052	1253082.2384	1293.54'	OUTSIDE PROJECT LIMITS	
BY437	(BY4-37)	787771.8839	1253318.5981	1287.84'	12+18.16	16.09' RT
BY438	(BY4-38)	787751.0231	1253529.4490	1279.60'	14+25.98	15.24' LT
BY439	(BY4-39)	787610.7098	1253798.9313	1259.46'	17+25.34	18.68' RT
BY440	(BY4-40)	787613.7787	1253967.6438	1256.52'	18+82.00	25.92' LT
BY441	(BY4-41)	787420.2361	1254072.8619	1263.23'	20+89.96	17.27' LT
BY442	(BY4-42)	787115.7914	1253976.4431	1287.30'	OUTSIDE PROJECT LIMITS	

DATUM DESCRIPTION

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BY5

POINT	DESC.	NORTH	EAST	ELEVATION	Y5 STATION	OFFSET
U22115	(GPS U2211B-5)	791463.2950	1252989.0460	1218.79'	OUTSIDE PROJECT LIMITS	
U22116	(GPS U2211B-6)	790371.0940	1253200.8280	1271.44'	OUTSIDE PROJECT LIMITS	
BY543	(BY5-43)	789693.3022	1253320.7721	1293.28'	11+13.03	50.68' RT
BY544	(BY5-44)	788770.0633	1253596.0260	1291.62'	20+68.60	49.86' RT
BY546	(BY5-46)	787781.9348	1254063.0399	1285.40'	31+57.66	48.58' RT
BY547	(BY5-47)	786969.4979	1254464.3142	1307.32'	40+63.79	49.64' RT
U22117	(GPS U2211B-7)	786077.2660	1254872.4640	1315.21'	OUTSIDE PROJECT LIMITS	
U22118	(GPS U2211B-8)	785107.2880	1255386.2050	1257.44'	OUTSIDE PROJECT LIMITS	

BY6

POINT	DESC.	NORTH	EAST	ELEVATION	Y5 STATION	OFFSET
BY648	(BY6-48)	786605.8605	1254418.2974	1317.70'	43+30.92	57.90' RT
BY650	(BY6-50)	786832.3145	1254713.4712	1333.41'	42+97.32	112.73' LT
BY651	(BY6-51)	786790.1196	1254995.1915	1341.68'	44+60.18	346.44' LT

BY7

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
BY752	(BY7-52)	788822.5175	1253867.8252	1310.87'	35+75.76	404.29' LT
BY753	(BY7-53)	788647.5488	1253901.5043	1306.88'	35+52.72	228.13' LT

BY8

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
BY854	(BY8-54)	788900.1719	1254085.4732	1316.89'	37+66.41	417.35' LT
BY855	(BY8-55)	788714.1462	1254070.8154	1306.09'	37+14.79	240.75' LT

BY9

POINT	DESC.	NORTH	EAST	ELEVATION	Y9 STATION	OFFSET
BY956	(BY9-56)	788836.1408	1255467.3019	1280.63'	10+60.94	68.18' LT
BY957	(BY9-57)	788651.3921	1255681.1678	1299.03'	OUTSIDE PROJECT LIMITS	

BY10

POINT	DESC.	NORTH	EAST	ELEVATION	Y10 STATION	OFFSET
BY1058	(BY10-58)	789199.4334	1255675.2113	1294.39'	10+18.13	24.67' RT
BY1059	(BY10-59)	789299.6470	1256018.5594	1244.63'	OUTSIDE PROJECT LIMITS	

BY11

POINT	DESC.	NORTH	EAST	ELEVATION	Y11 STATION	OFFSET
BY1163	(BY11-63)	787475.5274	1251586.4704	1312.59'	19+24.34	1065.33' RT
BY1164	(BY11-64)	787605.7029	1251732.6200	1309.93'	18+76.30	875.60' RT
BY1165	(BY11-65)	787997.7555	1252067.0056	1302.65'	16+82.81	398.03' RT
BY1166	(BY11-66)	788151.5626	1252378.6172	1298.47'	16+90.16	50.60' RT

****
BM#1 ELEVATION = 1291.15'
N 787712 E 1252804
L STATION 21+72 58' LEFT
CONC. R/W MON. ON NORTH SIDE OF
HIBRITEN DRIVE
****
****
BM#2 ELEVATION = 1311.60'
N 788813 E 1253849
L STATION 35+58 401' LEFT
8" SPIKE IN THE BASE OF POWER
POLE#WMD2 ACROSS FROM BY7-52
****
****
BM#3 ELEVATION = 1290.73'
N 789235 E 1255553
L STATION 54+85 102' LEFT
8" SPIKE IN THE ROOT OF 24" POPLAR
TREE WEST SIDE OF HIBRITEN DRIVE
****
****
BM#4 ELEVATION = 1340.29'
N 786879 E 1254818
Y5 STATION 43+02 227' LEFT
8" SPIKE IN THE ROOT OF 14" WHITE
PINE
****

NOTES:

1. *THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 8395 ADJUSTMENT. THIS CALIBRATION WILL ALLOW THE END USER TO WORKWITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE STATION) IS USED, ADDITIONAL FIELD TIES MAY BE NEEDED TO REDUCE POSSIBLE ERRORS, OR BIASES.*

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U2211B_LS_WGS84_080225.TXT
U2211B_LS_LOCAL_080225.TXT
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NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION
SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

NOTE: DRAWING NOT TO SCALE

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PROJECT REFERENCE NO.	SHEET NO.
U2211B	1-F
Location and Surveys	

SURVEY CONTROL SHEET U_2211B

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	786950.1380	1251911.2265
PC	16+44.15	787346.7384	1252418.8059
PRC	18+70.34	787483.4670	1252598.9881
PT	20+82.26	787611.4160	1252767.9132
PC	29+39.30	788137.8862	1253444.1873
PT	39+44.37	788528.4126	1254358.2316
PC	44+81.65	788606.6138	1254889.7975
PT	55+36.10	789243.1029	1255666.0147
POT	58+31.50	789521.2677	1255765.4277

Y2

TYPE	STATION	NORTH	EAST
POT	10+00.00	788502.7439	1252495.7280
PC	11+58.96	788376.7569	1252592.6557
PT	12+33.45	788306.8736	1252613.0004
POT	12+41.79	788298.5747	1252612.2583

Y3REV

TYPE	STATION	NORTH	EAST
POT	10+00.00	788210.0485	1252405.2313
PC	11+36.80	788278.8306	1252523.4775
PT	13+46.81	788245.5230	1252713.8608
POT	14+31.20	788180.8438	1252768.0697

Y3

TYPE	STATION	NORTH	EAST
PC	14+57.93	788180.8438	1252768.0697
PT	16+98.77	788025.4890	1252950.6144
PC	17+97.77	787974.8472	1253035.6815
PT	18+64.75	787936.8330	1253090.7777
POT	19+24.90	787899.4367	1253137.8886

Y4

TYPE	STATION	NORTH	EAST
POT	10+00.00	787900.1554	1253138.8117
PC	10+74.32	787855.3271	1253198.0859
PT	12+86.39	787768.5205	1253389.6668
PC	13+51.77	787755.3160	1253453.7015
PT	13+69.85	787751.1066	1253471.2891
PC	14+26.38	787736.2199	1253525.8218
PT	14+58.30	787726.1189	1253556.0795
PC	16+63.32	787650.4720	1253746.6354
PT	16+70.82	787647.6817	1253753.5979
PC	16+89.31	787640.7483	1253770.7353
PT	17+98.63	787611.6560	1253875.8684
PC	18+26.78	787607.2969	1253903.6785
PT	21+36.21	787375.6283	1254047.5639
POT	22+06.80	787308.2731	1254026.4506

RPB

TYPE	STATION	NORTH	EAST
TS	10+00.00	787322.6077	1254301.2655
SC	12+00.00	787497.3735	1254204.3717
CS	14+81.44	787693.3524	1254004.8826
TS	16+81.44	787787.1287	1253828.4245
SC	18+81.44	787881.7647	1253652.4701
PT	20+85.07	788020.3954	1253504.4560
POT	22+14.80	788122.7646	1253424.7630

Y5

TYPE	STATION	NORTH	EAST
PC	10+00.00	789814.2970	1253350.3214
PCC	12+47.56	789571.5755	1253398.7992
PT	25+60.87	788338.2683	1253841.6536
POT	46+85.98	786434.0047	1254784.9820

RPC

TYPE	STATION	NORTH	EAST
POT	10+00.00	786995.2161	1254550.4938
TS	10+40.00	787031.9209	1254534.5954
SC	12+40.00	787217.5245	1254460.2541
CS	18+06.06	787776.0993	1254410.0962
SRS	20+06.06	787971.9780	1254450.1817
SC	22+06.06	788168.4028	1254486.9804
PT	24+40.19	788401.1721	1254473.0466
POT	25+83.14	788540.7989	1254442.4267

SR1

TYPE	STATION	NORTH	EAST
PC	10+00.00	788690.8585	1254174.7474
PCC	11+28.92	788678.2786	1254303.0112
PT	12+81.95	788589.3025	1254419.3640
POT	13+35.10	788540.5078	1254440.4480

Y9

TYPE	STATION	NORTH	EAST
POT	10+00.00	788827.1766	1255377.9734
PC	10+43.55	788796.9305	1255409.3038
PT	11+40.41	788738.4877	1255486.2696
PC	11+78.84	788719.0267	1255519.4003
PT	12+94.76	788681.8511	1255628.3681

Y10

TYPE	STATION	NORTH	EAST
POT	10+00.00	789225.7973	1255659.6447
PC	10+32.01	789222.5899	1255691.4966
PT	10+97.52	789226.7229	1255756.5823
POT	13+22.69	789277.4390	1255975.9623

Y11

TYPE	STATION	NORTH	EAST
POT	10+00.00	788787.1885	1252105.0107
PC	22+31.17	787694.9605	1252673.1732
PT	26+57.81	787308.5274	1252853.6850
POT	30+49.11	786947.2570	1253004.0220

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "U2211B-1" WITH NAD 83/95 STATE PLANE GRID COORDINATES OF NORTHING: 787110.281(ft) EASTING: 1252194.354(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: .99987799 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "U2211B-1" TO -L- STATION 10+55 IS S 62°13'39" W 271.01 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

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 WORKWITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE STATION) 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.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   U2211B_LS_GPSCALIB_080225.HTML
   U2211B_LS_WGS84_080225.TXT
   U2211B_LS_LOCAL_080225.TXT
   U2211B_LS_CONTROL_080225.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.

▲ *INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.*
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION
SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

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PROJECT REFERENCE NO.	SHEET NO.
U2211B	1-G
Location and Surveys	

SURVEY CONTROL SHEET U_2211B

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y11	15+68.54	-32.30	788297.7157	1252396.0418
Y11	15+80.00	-32.30	788287.5480	1252401.3258
Y11	17+15.00	-47.00	788174.5667	1252476.6671
Y11	22+12.74	-47.00	787732.9972	1252706.3657
Y11	25+27.34	49.67	787408.0450	1252756.6533
Y11	25+95.27	-47.00	787384.7112	1252872.4618
Y11	26+57.81	-47.00	787326.5846	1252897.0778
Y11	26+88.71	41.00	787264.2436	1252827.7047
Y11	26+89.26	47.00	787261.4317	1252822.3760
Y11	28+35.00	-32.00	787157.2330	1252951.3081
Y11	28+35.00	-47.00	787162.9945	1252965.1533
Y11	28+35.00	47.00	787126.8800	1252878.3676
Y11	28+35.00	23.26	787135.9992	1252900.2817

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y3	17+80.00	28.00	787959.8778	1253006.0908
Y3	17+80.00	-28.00	788007.9966	1253034.7367
Y3	17+80.00	15.00	787971.0483	1253012.7407
Y3	17+80.00	-15.00	787996.8262	1253028.0867
Y3	17+97.77	-28.00	787998.9066	1253050.0044
Y3	17+97.77	28.00	787950.7869	1253021.3616
Y3	18+50.00	-42.00	787979.4883	1253104.2167

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y3REV	10+50.00	-37.00	788267.1716	1252429.8473
Y3REV	10+80.00	33.00	788221.7480	1252490.9758
Y3REV	10+85.00	-27.98	788276.9721	1252464.6371
Y3REV	11+36.80	33.00	788250.3055	1252540.0702
Y3REV	11+90.00	-39.82	788336.1894	1252566.3797
Y3REV	12+85.38	-50.23	788328.2587	1252688.4548
Y3REV	13+46.81	-33.00	788266.7204	1252739.1524
Y3REV	13+46.81	33.00	788224.3255	1252688.5691
Y3REV	14+31.20	15.00	788171.2086	1252756.5735
Y3REV	14+31.20	33.00	788159.6463	1252742.7781
Y3REV	14+31.20	-33.00	788202.0412	1252793.3614
Y3REV	14+31.20	-15.00	788190.4790	1252779.5660

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y4	10+75.00	32.00	787829.3651	1253179.3650
Y4	11+98.04	32.00	787764.6264	1253293.1622
Y4	11+98.04	15.00	787780.3602	1253299.6000
Y4	11+98.04	-15.00	787808.1259	1253310.9609
Y4	11+98.04	-50.00	787840.5191	1253324.2153
Y4	16+68.00	-15.00	787662.6576	1253756.5731
Y4	16+68.00	15.00	787634.8178	1253745.3896
Y4	16+68.00	-28.00	787674.7206	1253761.4190
Y4	16+68.00	28.00	787622.7547	1253740.5437
Y4	16+70.82	28.00	787621.7255	1253743.0967
Y4	16+89.31	28.00	787614.7921	1253760.2340
Y4	17+98.63	28.00	787583.9937	1253871.5325
Y4	17+98.63	-28.00	787639.3182	1253880.2044
Y4	18+26.78	28.00	787579.6346	1253899.3425
Y4	18+26.78	-28.00	787634.9591	1253908.0144
Y4	20+72.24	-28.00	787440.2090	1254083.5270
Y4	21+36.21	-28.00	787367.2532	1254074.2820
Y4	21+36.21	28.00	787384.0034	1254020.8458
Y4	21+36.21	-15.00	787371.1416	1254061.8771
Y4	21+36.21	15.00	787380.1149	1254033.2506

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y5	12+47.56	-128.30	789600.7672	1253523.7340
Y5	13+00.00	131.84	789489.3874	1253282.8618
Y5	20+74.11	-126.06	788829.2545	1253761.7733
Y5	22+00.00	-150.00	788724.4351	1253830.1601
Y5	23+22.18	134.62	788499.6576	1253617.1863
Y5	24+52.10	-150.00	788500.1979	1253929.9612
Y5	40+70.00	-140.00	787048.1153	1254637.0045
Y5	43+02.16	-140.00	786840.0848	1254740.0557
Y5	43+44.66	130.43	786681.9545	1254516.5973

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "U2211B-1"
WITH NAD 83/95 STATE PLANE GRID COORDINATES OF
NORTHING: 787110.281(ft) EASTING: 1252194.354(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: .99987799
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "U2211B-1" TO -L- STATION 10+55 IS
S 62°13'39" W 271.01
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 WORKWITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE STATION) IS USED, ADDITIONAL FIELD TIES MAY BE NEEDED TO REDUCE POSSIBLE ERRORS, OR BIASES.*
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U2211B_LS_GPSCALIB_080225.HTML
U2211B_LS_WGS84_080225.TXT
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PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION
SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y2	10+13.08	-24.95	788507.5925	1252523.4803
Y2	11+39.02	-33.89	788413.2255	1252607.3580
Y2	11+45.00	15.00	788378.6733	1252572.2556

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
RPB	12+25.00	-81.94	787469.2651	1254123.8863
RPB	16+96.86	-80.00	787721.4605	1253780.1866
RPB	18+81.44	-80.00	787815.5594	1253607.5607
RPB	20+55.00	-80.00	787945.0969	1253462.6806

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
RPC	10+40.00	160.00	787095.5153	1254681.4165
RPC	12+40.00	160.00	787268.6765	1254611.8571
RPC	14+00.00	245.00	787418.8544	1254659.8398
RPC	17+30.00	198.00	787684.1566	1254598.7215
RPC	19+50.00	200.00	787873.1187	1254632.5871
RPC	20+45.00	150.00	787976.5100	1254605.2176
RPC	22+06.06	150.00	788153.9850	1254636.2859
RPC	24+40.19	150.00	788433.3052	1254619.5641

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
SR1	10+14.76	-15.00	788704.9745	1254190.4260
SR1	10+16.37	-33.00	788722.8341	1254193.2014
SR1	10+20.00	15.00	788674.6977	1254193.7114
SR1	10+20.00	50.00	788639.7777	1254191.3779
SR1	11+00.00	50.00	788632.4816	1254268.2288
SR1	11+00.00	-57.00	788738.6789	1254281.3127
SR1	11+50.00	-73.00	788743.9166	1254343.9993
SR1	12+50.00	-119.83	788686.7733	1254501.1449

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y9	11+40.41	50.00	788695.3753	1255460.9453
Y9	11+40.41	-60.00	788790.2226	1255516.6587
Y9	12+40.41	50.00	788646.2425	1255559.8750
Y9	12+40.41	30.00	788665.2511	1255566.0937
Y9	12+40.41	-30.00	788722.2770	1255584.7498

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y10	10+97.52	-20.75	789246.9414	1255751.9082
Y10	10+97.52	-40.00	789265.6945	1255747.5707

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	21+56.21	60.75	787608.9072	1252863.5854
L	21+63.99	-67.75	787715.0836	1252790.7887
L	24+50.00	-67.75	787890.7738	1253016.4705
L	25+06.00	60.75	787823.7770	1253139.5952
L	26+25.00	-55.75	787988.8070	1253161.9299
L	26+26.09	80.00	787882.3568	1253246.1805
L	26+38.62	-55.48	787996.9564	1253172.8414
L	27+20.00	80.00	787940.0451	1253320.2836
L	27+90.83	-52.43	788088.0550	1253294.8207
L	31+20.93	-161.38	788378.6375	1253505.6338
L	31+29.00	-132.66	788359.0532	1253528.3594
L	37+40.00	-80.00	788565.6324	1254138.1097
L	41+93.81	-90.00	788653.7626	1254591.9213
L	42+30.00	90.00	788480.9446	1254653.9237
L	43+50.00	-90.00	788676.4936	1254746.4471
L	44+81.65	90.00	788517.5718	1254902.8939
L	44+81.65	-90.00	788695.6575	1254876.6978
L	45+60.00	90.00	788533.4147	1254986.9733
L	46+15.00	-100.00	788730.9962	1254992.0807
L	46+15.00	-90.00	788721.3935	1254994.8715
L	46+75.00	90.00	788568.7618	1255107.4370
L	46+75.00	65.00	788592.2920	1255098.9976
L	49+83.50	65.00	788750.1411	1255386.1755
L	50+50.00	-65.00	788892.5098	1255354.0508
L	50+50.00	-100.00	788918.6146	1255330.7368
L	51+40.00	65.00	788862.7084	1255509.1970
L	54+00.00	-65.00	789148.7267	1255553.8570
L	54+00.00	-55.00	789144.0838	1255562.7138
L	54+00.00	65.00	789088.3688	1255668.9957
L	54+00.00	55.00	789093.0117	1255660.1389
L	55+07.27	55.00	789196.0669	1255707.1333
L	55+36.10	-55.00	789261.6127	1255614.2229
L	55+79.35	60.00	789263.6344	1255737.0672
L	56+50.00	29.88	789340.3001	1255732.4836
L	56+50.00	-55.00	789368.8668	1255652.5521
L	56+50.00	-15.00	789355.4051	1255690.2188

NOTE: DRAWING NOT TO SCALE

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	21+41.03	-95.00	787722.4803	1252755.9298
L	21+45.34	70.75	787594.3346	1252861.1453
L	23+60.00	-85.00	787849.0994	1252934.8567
L	23+60.00	-67.75	787835.4878	1252945.4532
L	23+91.00	-84.00	787867.3533	1252959.9325
L	23+91.00	-67.75	787854.5308	1252969.9147
L	24+61.30	-80.00	787907.3791	1253017.8590
L	25+06.00	70.75	787815.8862	1253145.7381
L	56+50.00	41.00	789336.5577	1255742.9553

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y11	15+62.00	-32.97	788303.8253	1252393.6123
Y11	15+62.00	-41.00	788307.5316	1252400.7373
Y11	17+50.00	-67.00	788152.7461	1252510.5620
Y11	20+04.00	-57.00	787922.7955	1252618.9072
Y11	20+04.00	-47.00	787918.1806	1252610.0357
Y11	20+04.00	-67.00	787927.4103	1252627.7787
Y11	20+24.00	-57.00	787905.0525	1252628.1369
Y11	20+24.00	-47.00	787900.4376	1252619.2654
Y11	22+00.00	-47.00	787744.2994	1252700.4864
Y11	22+00.00	-57.00	787748.9143	1252709.3579
Y11	22+20.97	-57.00	787730.3086	1252719.0363
Y11	24+83.25	-67.00	787496.3716	1252844.7419
Y11	25+55.00	-57.00	787426.0114	1252865.3763
Y11	27+22.00	-57.00	787271.1638	1252930.9716
Y11	27+22.00	-47.00	787267.3219	1252921.7391
Y11	27+42.00	-57.00	787252.6988	1252938.6555
Y11	27+42.00	-47.00	787248.8568	1252929.4230
Y11	28+35.00	-57.00	787166.8364	1252974.3858

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y2	11+00.00	23.00	788409.4613	1252538.4755
Y2	11+00.00	15.00	788414.3394	1252544.8161

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y3REV	10+65.00	-50.00	788285.9509	1252436.2768
Y3REV	11+05.00	53.00	788217.0302	1252522.6419
Y3REV	11+10.00	-28.64	788290.1169	1252485.9128
Y3REV	11+10.00	-44.00	788303.3909	1252478.1915
Y3REV	11+30.00	-29.18	788300.6329	1252502.9333
Y3REV	11+30.00	-44.00	788313.4470	1252495.4795
Y3REV	11+36.80	53.00	788233.0175	1252550.1263
Y3REV	11+55.00	-46.00	788329.2775	1252521.5838
Y3REV	11+55.00	-31.27	788315.7450	1252527.3929
Y3REV	11+75.00	-50.00	788341.8099	1252545.1379
Y3REV	11+75.00	-35.63	788327.9661	1252549.0014
Y3REV	11+95.59	-65.00	788362.2171	1252569.9796
Y3REV	13+46.81	53.00	788211.4785	1252673.2408
Y3REV	13+88.00	33.00	788192.7558	1252715.0283

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y4	10+75.00	42.00	787821.3806	1253173.3444
Y4	11+00.00	47.00	787801.4366	1253192.6829
Y4	18+09.00	28.00	787582.3881	1253881.7763
Y4	18+09.00	77.00	787533.9791	1253874.1884
Y4	18+82.00	77.00	787521.6582	1253921.7392
Y4	18+82.00	28.00	787565.5157	1253943.5916

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y9	10+80.00	50.00	788733.8946	1255405.2312
Y9	10+80.00	60.00	788726.1108	1255398.9532
Y9	11+05.00	50.00	788716.9598	1255427.5922
Y9	11+05.00	60.00	788708.8073	1255421.8011

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
SR1	11+20.00	-61.50	788740.4517	1254302.5469
SR1	11+20.00	-95.00	788773.6365	1254307.1063
SR1	11+45.00	-100.00	788772.0359	1254343.5075

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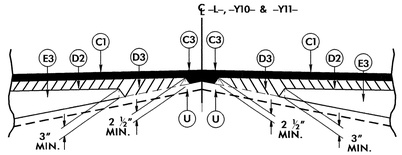
PAVEMENT SCHEDULE

(FINAL PAVEMENT DESIGN)

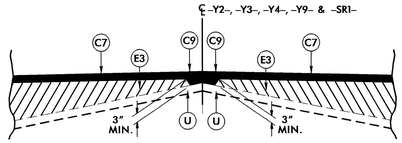
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
C4	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C5	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C6	PROP. VAR. DEPTH ASPHALT CONCRETE 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.
C7	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C8	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C9	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.
D1	PROP. APPROX. 2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D2	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D3	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.
D4	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D5	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
E3	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
E4	PROP. APPROX. 8" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
E5	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.

J1	PROP. 6" AGGREGATE BASE COURSE.
J2	PROP. 8" AGGREGATE BASE COURSE.
K	SUBGRADE TO BE STABILIZED WITH LIME TO A DEPTH OF 8" AT A RATE OF 20 LBS./SQ. YD. AS DIRECTED BY THE ENGINEER OR SUBGRADE TO BE STABILIZED WITH CEMENT TO A DEPTH OF 7" AT A RATE OF 55 LBS./SQ. YD. AS DIRECTED BY THE ENGINEER
R2	2'-6" CONCRETE CURB AND GUTTER.
R3	5" MONOLITHIC CONCRETE ISLAND (KEYED IN).
R4	EXPRESSWAY GUTTER.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V	MILLING BITUMINOUS PAVEMENT 0" TO 1.5" DEPTH.
V1	MILLING BITUMINOUS PAVEMENT 1.5" DEPTH.
W	VARIABLE DEPTH ASPHALT PAVEMENT (See Detail Showing Method of Wedging)

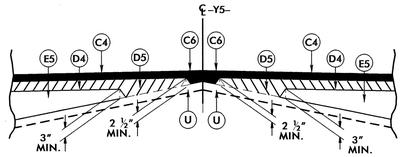
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



Detail Showing Method of Wedging



Detail Showing Method of Wedging



Detail Showing Method of Wedging

PROJECT REFERENCE NO.	SHEET NO.
U-2211B	2

ROADWAY DESIGN ENGINEER

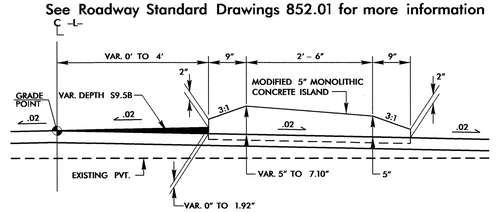
NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY VEARING

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER JIAN-CHI CHEN

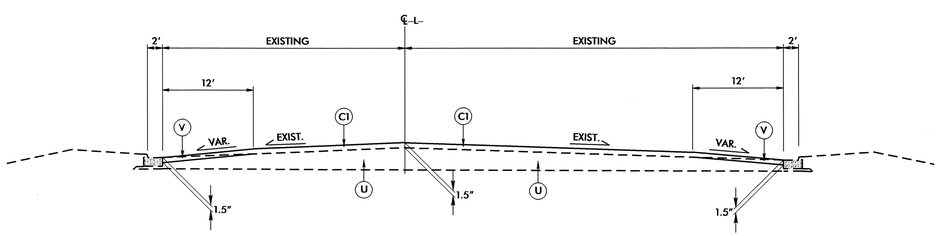
02/20/12

See Roadway Standard Drawings 852.01 for more information



Detail Showing Modified 5" Monolithic Conc. Island

–L– STA. 40+88.00 TO STA. 44+14.99



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1

–L– STA. 10+55.00 TO –L– STA. 20+03.80

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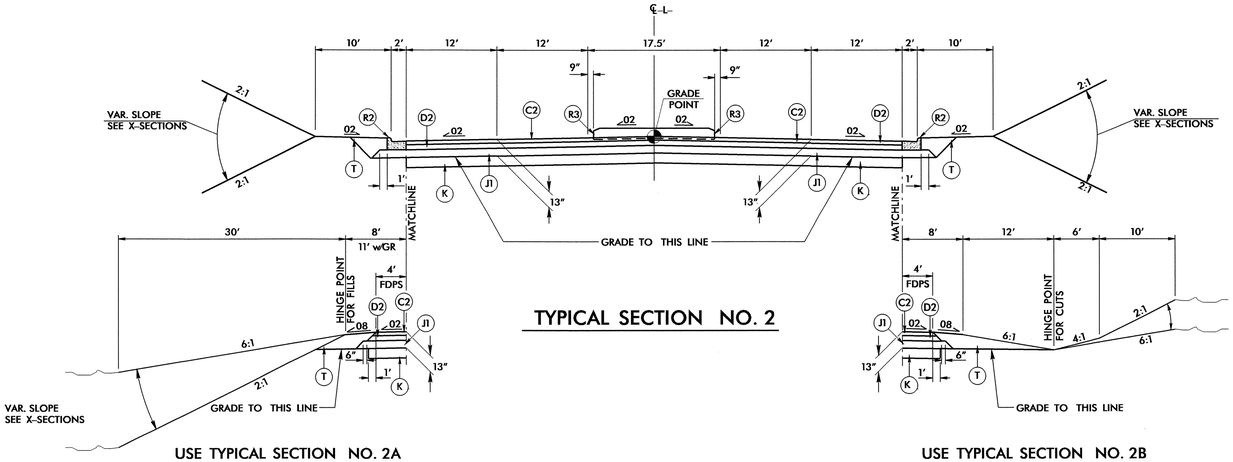
PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)	
C1	1½" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
C4	1½" S9.5C
C5	3" S9.5C
C6	VAR. S9.5C
C7	1½" SF9.5A
C8	3" SF9.5A
C9	VAR. SF9.5A
D1	2½" I19.0B
D2	4" I19.0B
D3	VAR. I19.0B
D4	4" I19.0C
D5	VAR. I19.0C
E1	4" B25.0B
E2	5" B25.0B
E3	VAR. B25.0B
E4	8" B25.0C
E5	VAR. B25.0C
J1	6" ABC
J2	8" ABC
K	8" LTBC OR 7" CTBC
R2	2'-6" C & G
R3	5" MCI
R4	EXPRESSWAY GUTTER
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	MILLING 0"-1.5"
V1	MILLING 1.5"
W	WEDGING

PROJECT REFERENCE NO.	SHEET NO.
U-2211B	2-A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY A. PETERING

NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER DON-CHI CHEN 02/20/12



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2

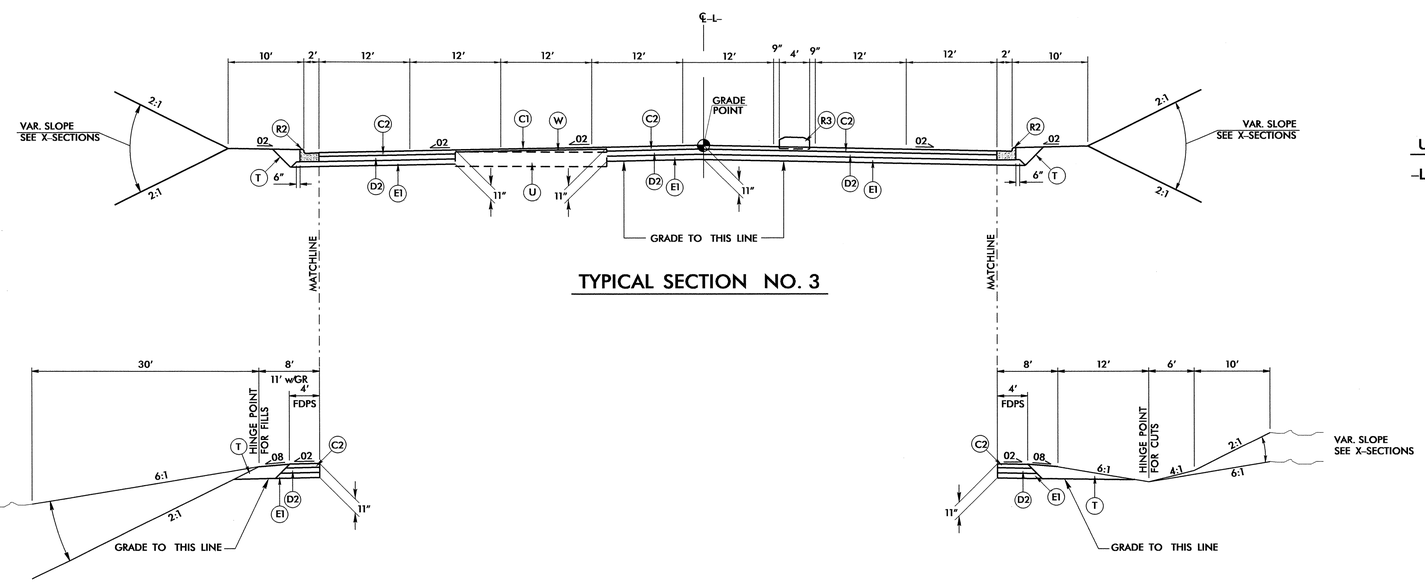
-L- STA. 23+25.00 TO -L- STA. 32+86.18 (BEGIN BRIDGE)
-L- STA. 34+93.18 (END BRIDGE) TO -L- STA. 40+00.00

USE TYPICAL SECTION NO. 2A

-L- STA. 40+00.00 TO -L- STA. 43+25.00
-L- STA. 47+75.00 TO -L- STA. 53+75.00

USE TYPICAL SECTION NO. 2B

-L- STA. 40+00.00 TO -L- STA. 43+25.00
-L- STA. 47+75.00 TO -L- STA. 53+75.00



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3

-L- STA. 20+65.03 TO -L- STA. 23+25.00

USE TYPICAL SECTION NO. 3A

-L- STA. 43+25.00 TO -L- STA. 47+75.00
-L- STA. 53+75.00 TO -L- STA. 56+50.00

USE TYPICAL SECTION NO. 3B

-L- STA. 43+25.00 TO -L- STA. 47+75.00
-L- STA. 53+75.00 TO -L- STA. 56+50.00

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PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)	
C1	1½" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
C4	1½" S9.5C
C5	3" S9.5C
C6	VAR. S9.5C
C7	1½" SF9.5A
C8	3" SF9.5A
C9	VAR. SF9.5A
D1	2½" I19.0B
D2	4" I19.0B
D3	VAR. I19.0B
D4	4" I19.0C
D5	VAR. I19.0C
E1	4" B25.0B
E2	5" B25.0B
E3	VAR. B25.0B
E4	8" B25.0C
E5	VAR. B25.0C
J1	6" ABC
J2	8" ABC
K	8" LTBC OR 7" CTBC
R2	2'-6" C & G
R3	5" MCI
R4	EXPRESSWAY GUTTER
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	MILLING 0"-1.5"
V1	MILLING 1.5"
W	WEDGING

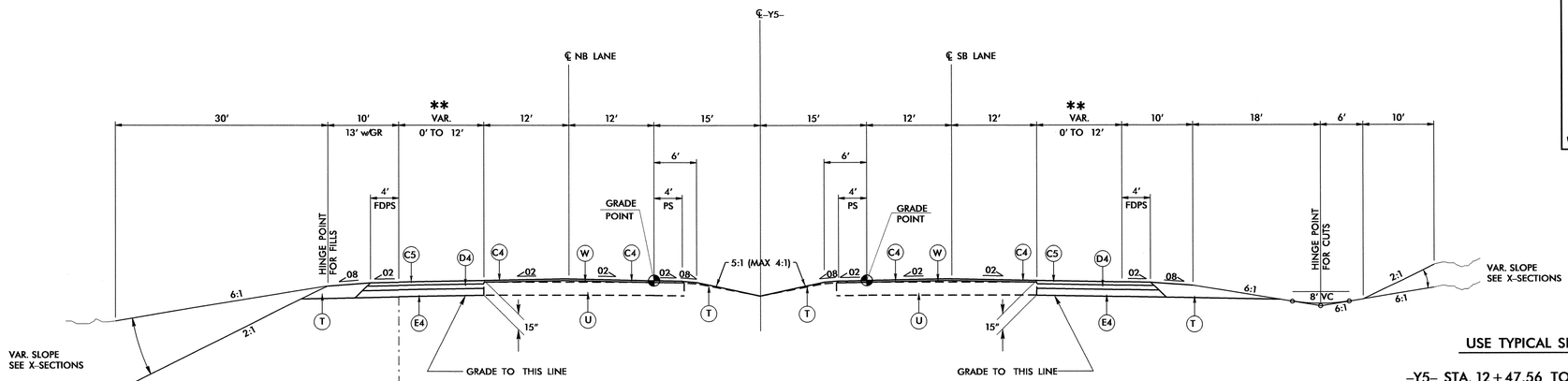
PROJECT REFERENCE NO.	SHEET NO.
U-2211B	2-B

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY W. BURDETTE

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER DENG-CHI CHEN 02/10/12



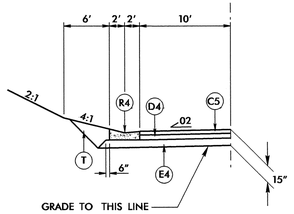
TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4

–Y5– STA. 12+47.56 TO –Y5– STA. 43+00.00 (NB LANE)

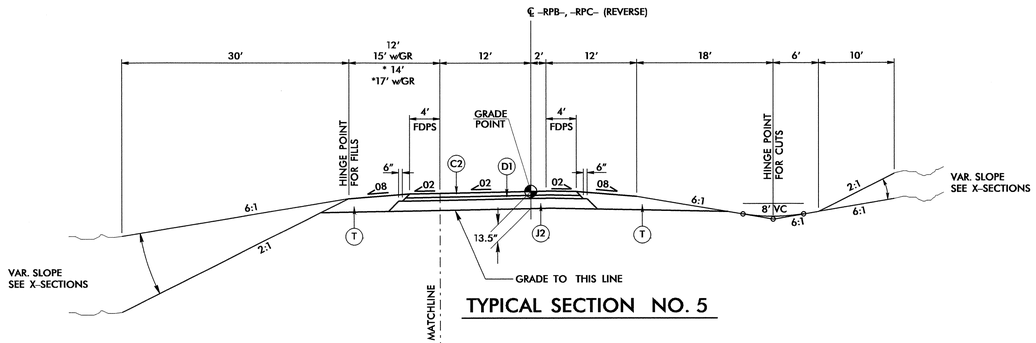
–Y5– STA. 12+47.56 TO –Y5– STA. 43+25.00 (SB LANE)

** REMOVE AND REPLACE Y5 SB AND Y5 NB OUTSIDE 4' PAVED SHOULDERS WITH FULL DEPTH PAVEMENT



TYPICAL SECTION NO. 4A

–Y5– STA. 40+79.00 TO –Y5– STA. 42+61.48 LT.



TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5

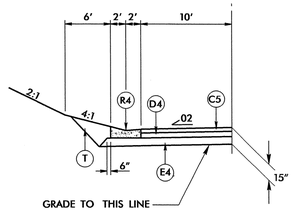
–RPB– STA. 12+68.06 (GORE) TO –RPB– STA. 21+81.84

*–RPC– STA. 13+28.92 (GORE) TO –RPC– STA. 25+50.31

USE –Y5– PAVEMENT DESIGN (C5 D4 E4)

–RPB– STA. 10+00.00 TO –RPB– STA. 12+68.06 (GORE)

–RPC– STA. 10+00.00 TO –RPC– STA. 13+28.92 (GORE)



TYPICAL SECTION NO. 5A

(–Y5– PAVEMENT DESIGN)

–RPC– STA. 10+00.00 TO –RPC– STA. 12+94.35 RT.

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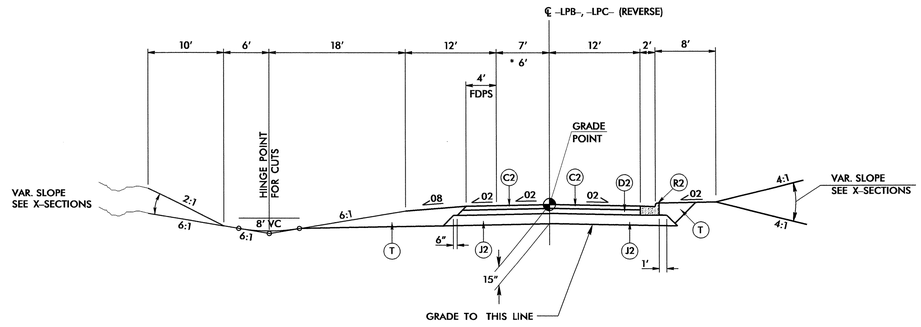
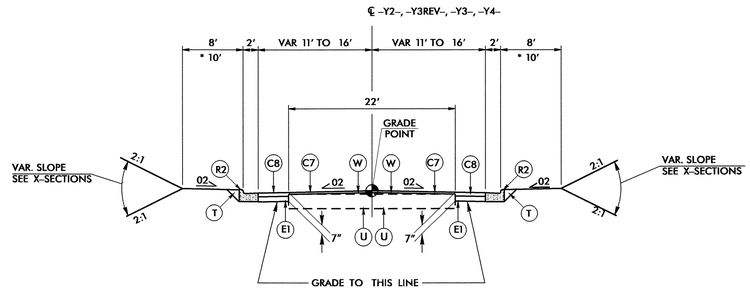
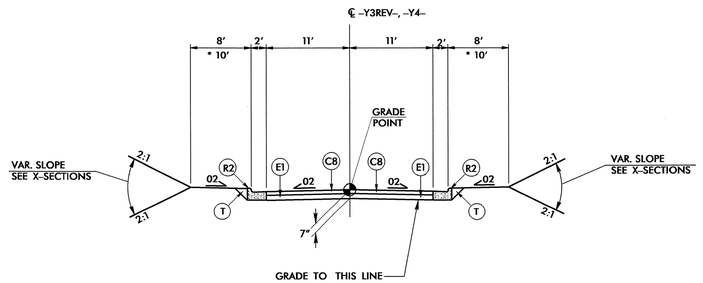
PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)	
C1	1½" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
C4	1½" S9.5C
C5	3" S9.5C
C6	VAR. S9.5C
C7	1½" SF9.5A
C8	3" SF9.5A
C9	VAR. SF9.5A
D1	2½" I19.0B
D2	4" I19.0B
D3	VAR. I19.0B
D4	4" I19.0C
D5	VAR. I19.0C
E1	4" B25.0B
E2	5" B25.0B
E3	VAR. B25.0B
E4	8" B25.0C
E5	VAR. B25.0C
J1	6" ABC
J2	8" ABC
K	8" LTBC OR 7" CTBC
R2	2'-6" C & G
R3	5" MCI
R4	EXPRESSWAY GUTTER
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	MILLING 0"-1.5"
V1	MILLING 1.5"
W	WEDGING



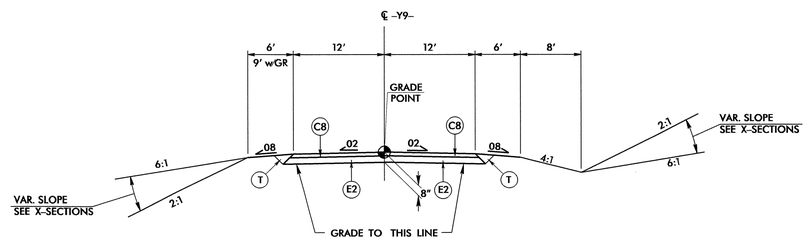
TYPICAL SECTION NO. 6



TYPICAL SECTION NO. 7



TYPICAL SECTION NO. 8



TYPICAL SECTION NO. 9

PROJECT REFERENCE NO.	SHEET NO.
U-2211B	2-C

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY CHI CHEN

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 13868 ENGINEER GARY CHI CHEN 02/20/12

USE TYPICAL SECTION NO. 6

–LPB– STA. 11+97.96 (GORE) TO –LPB– STA. 17+81.18
*–LPC– STA. 11+97.08 (GORE) TO –LPC– STA. 20+10.60

USE –Y5– PAVEMENT DESIGN (C5 D4 E4)

–LPB– STA. 10+00.00 TO –LPB– STA. 11+97.96 (GORE)
–LPC– STA. 10+00.00 TO –LPC– STA. 11+97.08 (GORE)

USE TYPICAL SECTION NO. 7

–Y2– STA. 11+00.00 TO –Y2– STA. 12+25.78
–Y3REV– STA. 10+30.03 TO –Y3REV– STA. 12+00.00
–Y3REV– STA. 12+55.00 TO –Y3REV– STA. 14+31.20
–Y3– STA. 17+80.00 TO –Y3– STA. 18+85.03
*–Y4– STA. 11+00.00 TO –Y4– STA. 11+98.04
–Y4– STA. 16+68.00 TO –Y4– STA. 17+25.00
–Y4– STA. 20+75.00 TO –Y4– STA. 21+36.21

USE TYPICAL SECTION NO. 8

–Y3REV– STA. 12+00.00 TO –Y3REV– STA. 12+55.00
*–Y4– STA. 10+52.54 TO –Y4– STA. 11+00.00
–Y4– STA. 17+25.00 TO –Y4– STA. 20+75.00

USE TYPICAL SECTION NO. 9

–Y9– STA. 10+20.85 TO –Y9– STA. 11+25.00

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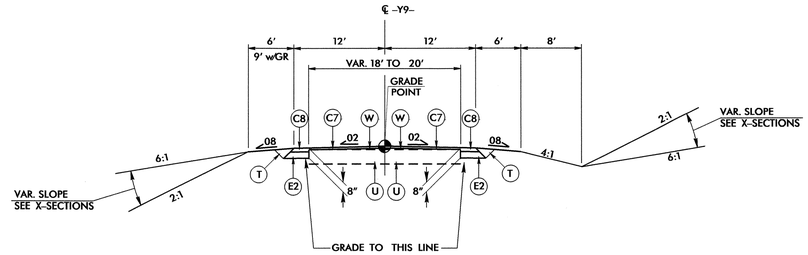
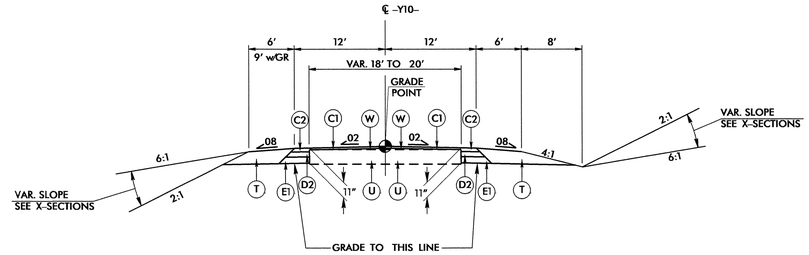
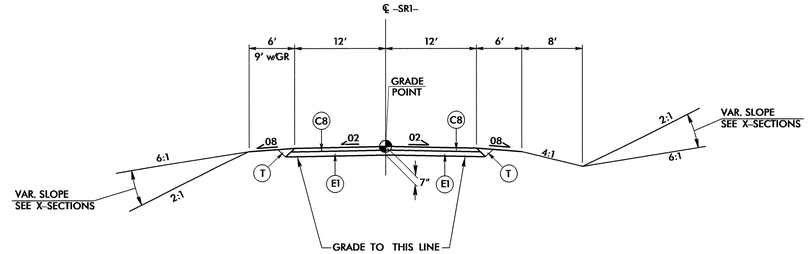
PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)	
C1	1½" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
C4	1½" S9.5C
C5	3" S9.5C
C6	VAR. S9.5C
C7	1½" SF9.5A
C8	3" SF9.5A
C9	VAR. SF9.5A
D1	2½" I19.0B
D2	4" I19.0B
D3	VAR. I19.0B
D4	4" I19.0C
D5	VAR. I19.0C
E1	4" B25.0B
E2	5" B25.0B
E3	VAR. B25.0B
E4	8" B25.0C
E5	VAR. B25.0C
J1	6" ABC
J2	8" ABC
K	8" LTBC OR 7" CTBC
R2	2'-6" C & G
R3	5" MCI
R4	EXPRESSWAY GUTTER
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	MILLING 0"-1.5"
V1	MILLING 1.5"
W	WEDGING



TYPICAL SECTION NO. 10



TYPICAL SECTION NO. 11



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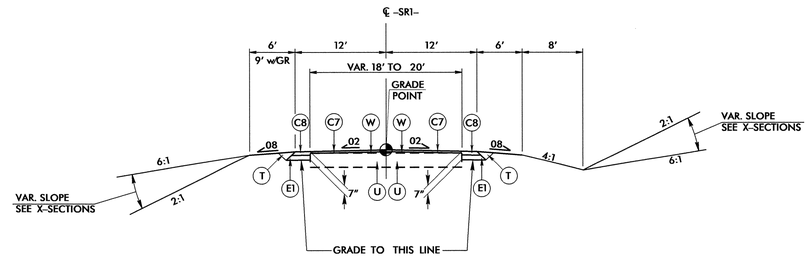
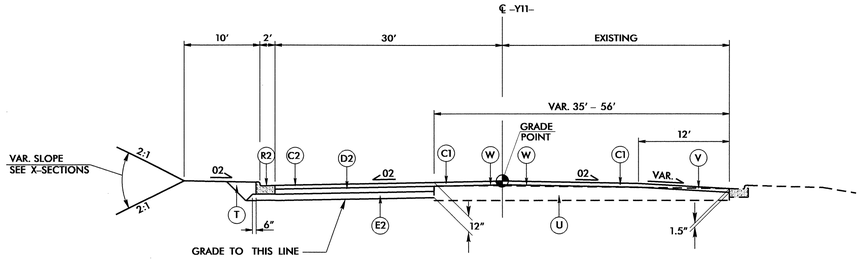


TYPICAL SECTION NO. 13



TYPICAL SECTION NO. 14

PROJECT REFERENCE NO.	SHEET NO.
U-2211B	2-D

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY W. BURLESON

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER JOHN-CHI CHEN 02/20/12

USE TYPICAL SECTION NO. 10

–Y9– STA. 11+25.00 TO –Y9– STA. 12+40.41

USE TYPICAL SECTION NO. 11

–Y10– STA. 10+12.06 TO –Y10– STA. 10+97.52

USE TYPICAL SECTION NO. 12

–SR1– STA. 10+75.00 TO –SR1– STA. 13+01.20

USE TYPICAL SECTION NO. 13

–SR1– STA. 10+20.00 TO –SR1– STA. 10+75.00

USE TYPICAL SECTION NO. 14

–Y11– STA. 15+68.54 TO –Y11– STA. 17+15.00
–Y11– STA. 20+45.00 TO –Y11– STA. 23+50.00

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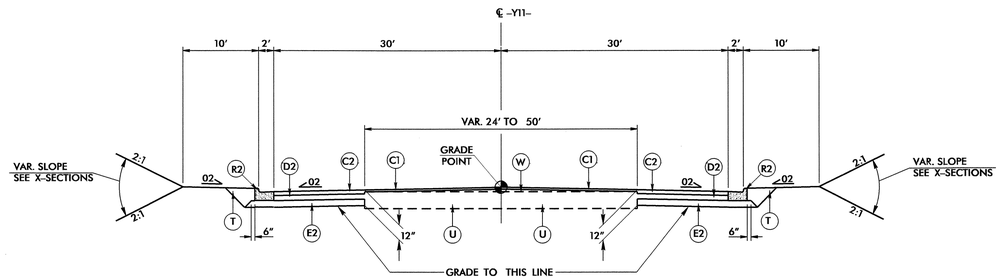
PROJECT REFERENCE NO.	SHEET NO.
U-2211B	2-E
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. LOVERING

NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER DON-CHI CHEN 02/20/12

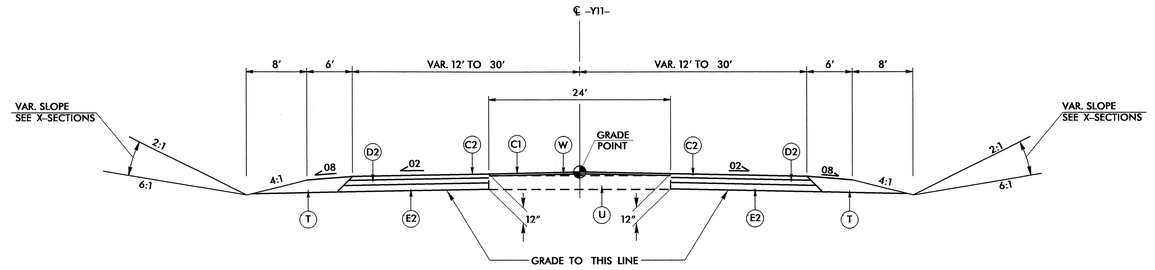
PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)	
C1	1½" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
C4	1½" S9.5C
C5	3" S9.5C
C6	VAR. S9.5C
C7	1½" SF9.5A
C8	3" SF9.5A
C9	VAR. SF9.5A
D1	2½" I19.0B
D2	4" I19.0B
D3	VAR. I19.0B
D4	4" I19.0C
D5	VAR. I19.0C
E1	4" B25.0B
E2	5" B25.0B
E3	VAR. B25.0B
E4	8" B25.0C
E5	VAR. B25.0C
J1	6" ABC
J2	8" ABC
K	8" LTBC OR 7" CTBC
R2	2'-6" C & G
R3	5" MCI
R4	EXPRESSWAY GUTTER
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	MILLING 0"-1.5"
V1	MILLING 1.5"
W	WEDGING



TYPICAL SECTION NO. 15

USE TYPICAL SECTION NO. 15

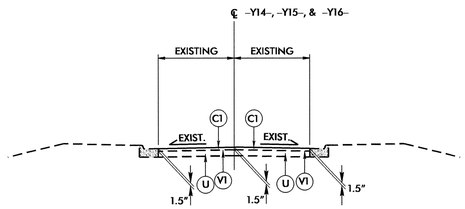
-Y11- STA. 17+15.00 TO -Y11- STA. 20+45.00
-Y11- STA. 23+50.00 TO -Y11- STA. 27+10.00



TYPICAL SECTION NO. 16

USE TYPICAL SECTION NO. 16

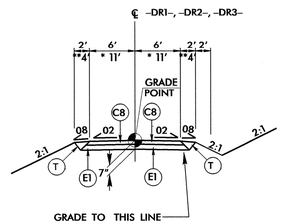
-Y11- STA. 27+10.00 TO -Y11- STA. 28+35.00



TYPICAL SECTION NO. 17

USE TYPICAL SECTION NO. 17

-Y14- STA. 10+17.95 TO -Y14- STA. 10+64.00
-Y15- STA. 11+00.35 TO -Y15- STA. 11+41.65
-Y16- STA. 10+36.15 TO -Y16- STA. 10+81.88



TYPICAL SECTION NO. 18

USE TYPICAL SECTION NO. 18

-DR1- STA. 10+60.50 TO -DR1- STA. 11+39.36
*-DR2- STA. 10+50.00 TO -DR2- STA. 11+53.90
**-DR3- STA. 10+60.61 TO -DR3- STA. 11+45.25

6/2/99

16-FEB-2012 07:18
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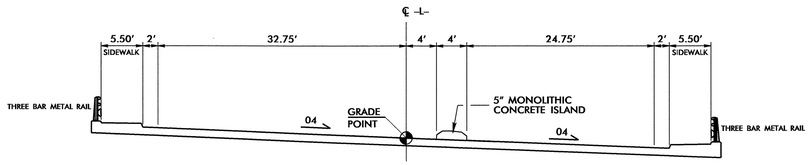
PROJECT REFERENCE NO.	SHEET NO.
U-2211B	2-F

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. VOYERING

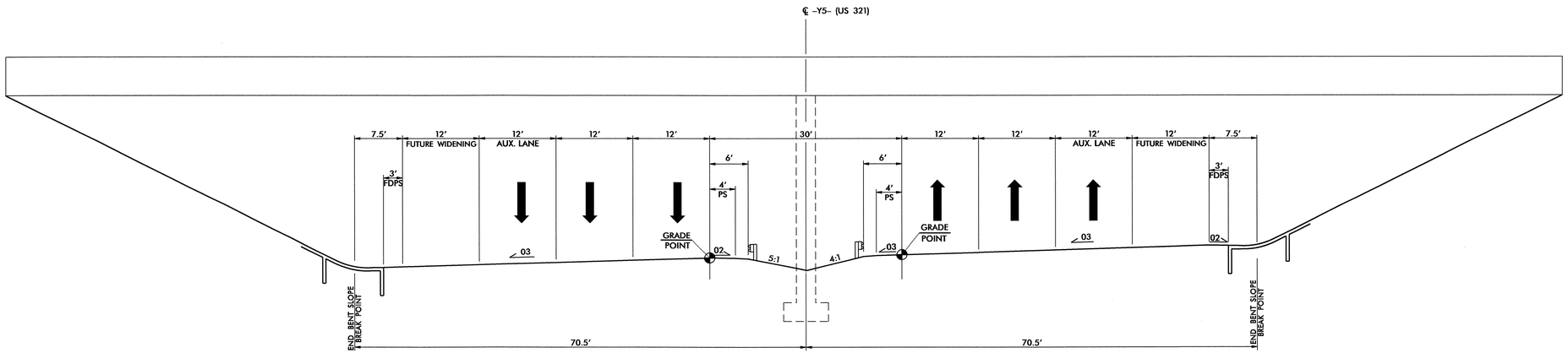
STRUCTURE TYPICAL SECTIONS



TYPICAL SECTION ON STRUCTURE

USE TYPICAL SECTION ON STRUCTURE

-L- STA. 32+86.18 TO -L- STA. 34+93.18



TYPICAL SECTION ON ROADWAY UNDER STRUCTURE

6/2/99

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PROJECT REFERENCE NO.	SHEET NO.
U-2211B	2-G

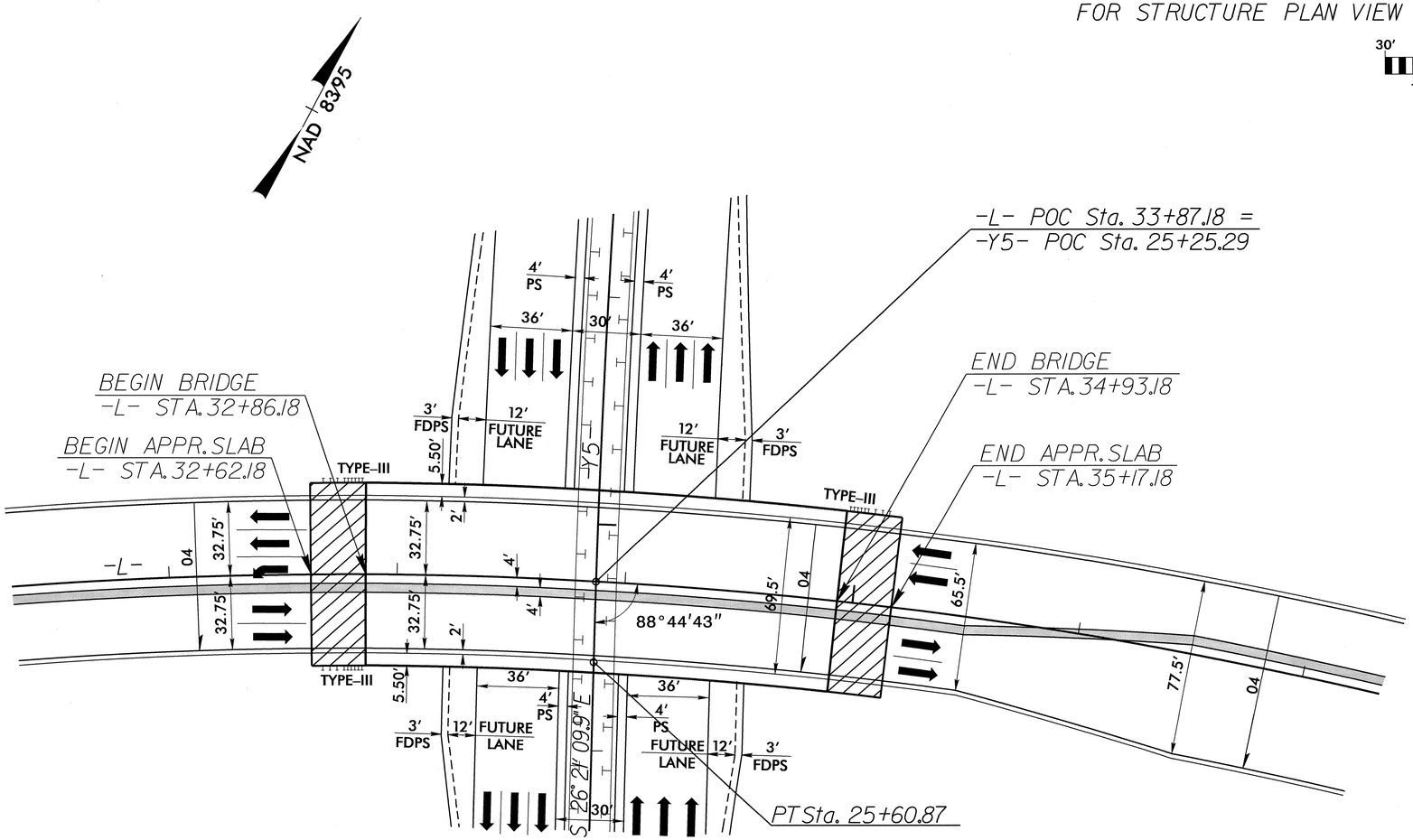
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER

SKETCH SHOWING PAVEMENT WIDTH TO BRIDGE WIDTH RELATIONSHIP

FOR STRUCTURE PLAN VIEW SEE SHEET 6

30′ 0′ 30′ 60′
15′



17-FEB-2012 14:20
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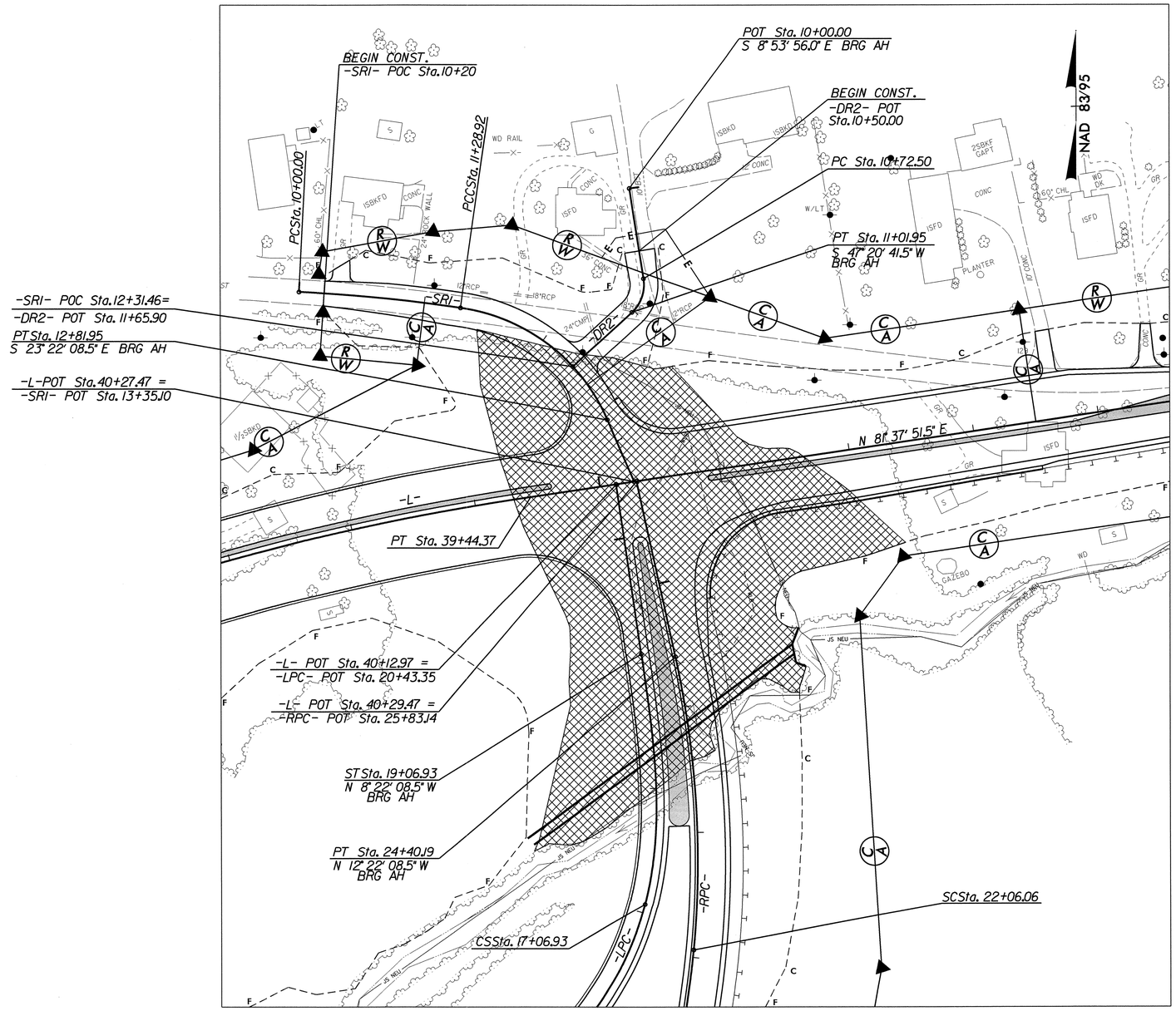
PROJECT REFERENCE NO.	SHEET NO.
U-2211B	2-H
R/W SHEET NO.	

UNDERCUT DETAIL



DENOTES UNDERCUT
SEE SHEET 2-I

USE UNDERCUT DETAIL FOR:

-L- STA. 39+28 TO -L- STA 42+28 +/-
-RPC- STA. 23+00 +/- TO -RPC- STA. 25+50
-SR1- STA. 12+00 TO -SR1- STA. 13+35

REVISIONS

8/17/99

23-FEB-2012 15:46
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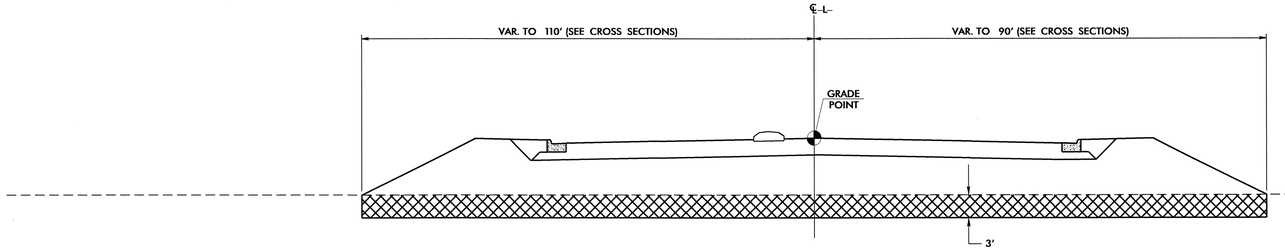
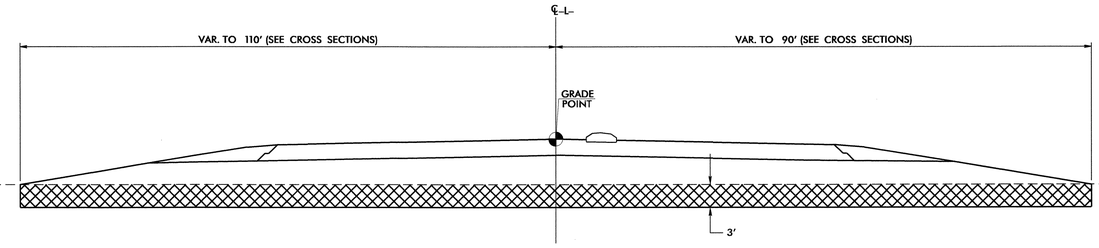
$$$$DATE/TIME$$$$



UNDERCUT DETAIL NO. 1

USE UNDERCUT DETAIL NO. 1

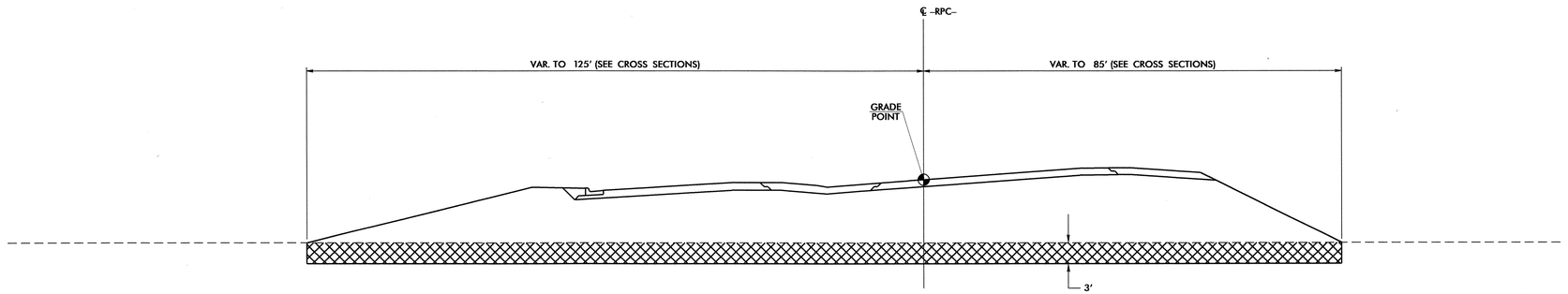
–L– STA. 39+28 TO –L– STA. 40+00



UNDERCUT DETAIL NO. 2

USE UNDERCUT DETAIL NO. 2

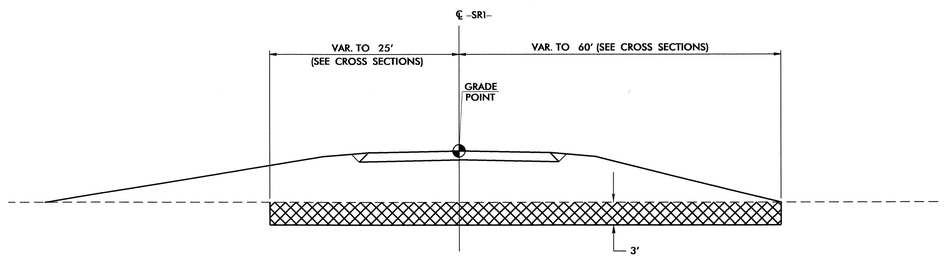
–L– STA. 40+00 TO –L– STA. 42+28 +/–



UNDERCUT DETAIL NO. 3

USE UNDERCUT DETAIL NO. 3

–RPC– STA. 23+00 +/– TO –RPC– STA. 25+50



UNDERCUT DETAIL NO. 4

USE UNDERCUT DETAIL NO. 4

–SR1– STA. 12+00 TO –SR1– STA. 13+35

DENOTES UNDERCUT

6/2/99

23-FEB-2012 15:46
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$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-2211B	2-J
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER

HORIZONTAL ALIGNMENT CURVE DATA

-L-

PI Sta 17+57.25
△ = 1° 37' 12.0" (RT)
D = 0° 42' 58.3"
L = 226.19'
T = 113.10'
R = 8,000.00'

PI Sta 19+76.31
△ = 1° 31' 03.9" (LT)
D = 0° 42' 58.3"
L = 211.92'
T = 105.97'
R = 8,000.00'

PI Sta 34+53.26
△ = 29° 31' 52.5" (RT)
D = 2° 56' 17.7"
L = 1,005.06'
T = 513.96'
R = 1,950.00'
SE = .04 (SEE PLANS)

PI Sta 50+67.08
△ = 6° 57' 52.7" (LT)
D = 5° 52' 35.4"
L = 1,054.45'
T = 585.43'
R = 975.00'
SE = .04 (SEE PLANS)

-Y2-

PI Sta 11+98.03
△ = 42° 40' 57.2" (RT)
D = 57° 17' 44.8"
L = 74.50'
T = 39.07'
R = 100.00'

-Y3REV-

PI Sta 12+63.15
△ = 80° 13' 07.9" (RT)
D = 38° 11' 49.9"
L = 210.01'
T = 126.35'
R = 150.00'

-Y3-

PI Sta 12+59.70
△ = 81° 44' 32.2" (RT)
D = 57° 17' 44.8"
L = 142.67'
T = 86.53'
R = 100.00'

PI Sta 15+79.50
△ = 19° 16' 00.9" (LT)
D = 8° 00' 00.0"
L = 240.84'
T = 121.57'
R = 716.20'

PI Sta 18+31.31
△ = 7° 40' 34.5" (RT)
D = 11° 27' 33.0"
L = 66.99'
T = 33.54'
R = 500.00'
SE = SEE PLANS

-Y4-

PI Sta 11+82.13
△ = 25° 26' 53.7" (LT)
D = 12° 00' 00.0"
L = 212.07'
T = 107.81'
R = 477.46'
SE = SEE PLANS

PI Sta 13+60.81
△ = 3° 37' 02.9" (RT)
D = 20° 00' 00.0"
L = 18.09'
T = 9.05'
R = 286.48'

PI Sta 14+42.36
△ = 6° 22' 59.3" (RT)
D = 20° 00' 00.0"
L = 31.92'
T = 15.97'
R = 286.48'

PI Sta 16+67.07
△ = 0° 22' 30.2" (RT)
D = 5° 00' 00.0"
L = 7.50'
T = 3.75'
R = 1,145.92'

PI Sta 17+44.21
△ = 13° 07' 07.4" (LT)
D = 12° 00' 00.0"
L = 109.32'
T = 54.90'
R = 477.46'

PI Sta 20+35.67
△ = 98° 29' 44.8" (RT)
D = 31° 49' 51.6"
L = 309.43'
T = 208.88'
R = 180.00'
SE = SEE PLANS

-Y5-

PI Sta 11+23.82
△ = 3° 42' 48.2" (LT)
D = 1° 30' 00.0"
L = 247.56'
T = 123.82'
R = 3,819.72'

PI Sta 19+07.13
△ = 13° 12' 04.5" (LT)
D = 1° 00' 18.7"
L = 1,313.31'
T = 659.58'
R = 5,700.00'
SE = .03 (SEE PLANS)

-Y9-

PI Sta 10+92.21
△ = 13° 33' 40.5" (LT)
D = 14° 00' 00.0"
L = 96.87'
T = 48.66'
R = 409.26'
SE = SEE PLANS

PI Sta 12+37.60
△ = 23° 11' 05.3" (LT)
D = 20° 00' 00.0"
L = 115.92'
T = 58.77'
R = 286.48'
SE = SEE PLANS

-Y10-

PI Sta 10+65.06
△ = 18° 46' 01.2" (LT)
D = 28° 38' 52.4"
L = 65.51'
T = 33.05'
R = 200.00'
SE = SEE PLANS

-Y11-

PI Sta 24+44.62
△ = 4° 53' 20.3" (RT)
D = 1° 08' 45.3"
L = 426.64'
T = 213.45'
R = 5,000.00'
SE = NC

-Y14-

PI Sta 12+22.65
△ = 12° 32' 43.8" (LT)
D = 5° 00' 00.0"
L = 250.91'
T = 125.96'
R = 1,145.92'

-Y16-

PI Sta 11+12.48
△ = 4° 47' 16.7" (RT)
D = 10° 00' 00.0"
L = 47.88'
T = 23.95'
R = 572.96'

-SR1-

PI Sta 10+64.50
△ = 5° 09' 24.9" (RT)
D = 4° 00' 00.0"
L = 128.92'
T = 64.50'
R = 1,432.39'
SE = .02 (SEE PLANS)

PI Sta 12+12.84
△ = 58° 27' 03.5" (RT)
D = 38° 11' 49.9"
L = 153.02'
T = 83.92'
R = 150.00'
SE = .02 (SEE PLANS)

-RPB-

PIs Sta 11+33.47
θs = 7° 57' 27.9"
Ls = 200.00'
LT = 133.47'
ST = 66.79'

PI Sta 13+42.54
△ = 22° 23' 45.9" (LT)
D = 7° 57' 27.9"
L = 281.44'
T = 142.54'
R = 720.00'
SE = .07 (SEE PLANS)

PIs Sta 15+48.23
θs = 7° 57' 27.9"
Ls = 200.00'
LT = 133.47'
ST = 66.79'

PIs Sta 18+14.94
θs = 8° 48' 53.0"
Ls = 200.00'
LT = 133.50'
ST = 66.82'

PI Sta 19+84.09
△ = 17° 56' 57.6" (RT)
D = 8° 48' 53.0"
L = 203.63'
T = 102.66'
R = 650.00'
SE = .08 (SEE PLANS)

-LPB-

PIs Sta 11+35.83
θs = 33° 42' 12.2"
Ls = 200.00'
LT = 135.83'
ST = 68.94'

PI Sta 13+92.30
△ = 91° 02' 44.5" (RT)
D = 33° 42' 12.2"
L = 287.94'
T = 192.30'
R = 170.00'
SE = .08 (SEE PLANS)

PIs Sta 15+56.89
θs = 33° 42' 12.2"
Ls = 200.00'
LT = 135.83'
ST = 68.94'

-RPC-

PIs Sta 11+73.38
θs = 4° 46' 28.7"
Ls = 200.00'
LT = 133.38'
ST = 66.71'

PI Sta 15+28.40
△ = 27° 01' 37.8" (RT)
D = 4° 46' 28.7"
L = 566.06'
T = 288.40'
R = 1,200.00'
SE = .07 (SEE PLANS)

PIs Sta 18+72.77
θs = 4° 46' 28.7"
Ls = 200.00'
LT = 133.38'
ST = 66.71'

PIs Sta 21+39.51
θs = 7° 38' 22.0"
Ls = 200.00'
LT = 133.46'
ST = 66.78'

PI Sta 23+24.08
△ = 17° 53' 11.9" (LT)
D = 7° 38' 22.0"
L = 234.14'
T = 118.03'
R = 750.00'
SE = .08 (SEE PLANS)

-LPC-

PIs Sta 11+34.47
θs = 22° 55' 05.9"
Ls = 200.00'
LT = 134.47'
ST = 67.70'

PI Sta 16+01.48
△ = 116° 10' 46.7" (LT)
D = 22° 55' 05.9"
L = 506.93'
T = 401.48'
R = 250.00'
SE = .08 (SEE PLANS)

PIs Sta 17+74.63
θs = 22° 55' 05.9"
Ls = 200.00'
LT = 134.47'
ST = 67.70'

-DR1-

PI Sta 10+75.99
△ = 54° 37' 19.6" (RT)
D = 190° 59' 09.4"
L = 28.60'
T = 15.49'
R = 30.00'

PI Sta 11+19.09
△ = 50° 48' 48.0" (LT)
D = 190° 59' 09.4"
L = 26.61'
T = 14.25'
R = 30.00'

-DR2-

PI Sta 10+88.54
△ = 56° 14' 37.6" (RT)
D = 190° 59' 09.4"
L = 29.45'
T = 16.03'
R = 30.00'

REVISIONS

8/17/99

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SHEAR POINT DIAGRAM FOR SR 1178 (HIBRITEN ST.) AND US 321

PROJECT REFERENCE NO.	SHEET NO.
U-2211B	2-K

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY W. TAYLOR

NAD 83/95

50' 0' 50' 100'
25'

REVISIONS

8/17/99

16-FEB-2012 07:18
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PT Sta. 16+98.77
PC Sta. 17+97.77
PT Sta. 18+64.75
-L- POT Sta. 25+51.13= -Y3- POT Sta. 19+24.90
-L- POT Sta. 25+52.30= -Y4- POT Sta. 10+00.00
PT Sta. 20+82.26
PT Sta. 12+86.39
PC Sta. 13+51.77
PT Sta. 13+69.85
PC Sta. 14+26.38
PT Sta. 14+58.30
POT Sta. 30+49.11
PT Sta. 25+60.87
-L- POT Sta. 29+14.69= -RPB- POT Sta. 22+14.80
-L- POT Sta. 29+32.19= -LPB- POT Sta. 18+14.01
PC Sta. 29+39.30
-Y5- POT Sta. 26+35.10, 39' RT = -LPB- ST Sta. 10+00.00
ST Sta. 16+87.94
PT Sta. 20+85.07
PC Sta. 10+74.32
SC Sta. 18+81.44
SRS Sta. 16+81.44
CS Sta. 14+81.44
PC Sta. 16+63.32
PT Sta. 16+70.82
PC Sta. 16+89.31
PT Sta. 17+98.63
PC Sta. 18+26.78
PT Sta. 21+36.21
POT Sta. 22+06.80
SC Sta. 12+00.00
-Y5- POT Sta. 36+75.00, 39' RT = -RPB- ST Sta. 10+00.00
PCC Sta. 11+28.92
PC Sta. 10+00.00
PT Sta. 39+44.37
-Y5- POT Sta. 26+86.63, 39' LT = -LPC- ST Sta. 10+00.00
-L- POT Sta. 40+12.97 = -LPC- POT Sta. 20+43.35
ST Sta. 19+06.93
SC Sta. 12+00.00
CS Sta. 17+06.93
SC Sta. 22+06.06
SRS Sta. 20+06.06
CS Sta. 18+06.06
SC Sta. 12+40.00
TS Sta. 10+40.00
-Y5- POT Sta. 40+79.00, 39' LT = -RPC- POT Sta. 10+00.00
-SRI- POC Sta. 12+31.46= -DR2- POT Sta. 11+65.90
POT Sta. 10+00.00
PC Sta. 10+72.50
PT Sta. 11+01.95
PT Sta. 12+81.95
-L- POT Sta. 40+27.47 = -SRI- POT Sta. 13+35.10
-L- POT Sta. 40+29.47 = -RPC- POT Sta. 25+83.14
PT Sta. 24+40.19
POT Sta. 10+00.00
PC Sta. 10+60.50
PC Sta. 44+81.65
PT Sta. 10+89.10
PC Sta. 11+04.84
PT Sta. 11+31.45
-L- POC Sta. 48+90.00= -DRI- POT Sta. 11+64.11

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C
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5/14/99

PROJECT REFERENCE NO.	SHEET NO.
U-2211B	2-L
R/W SHEET NO.	

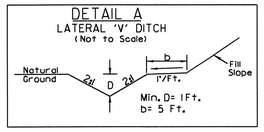
HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029984 ENGINEER DAVID D. DOYLE

2-24-2012

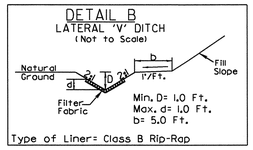
DITCH DETAILS

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



FROM STA. 30+00 TO STA. 31+50 -L- LT
FROM STA. 52+75 TO STA. 53+50 -L- RT

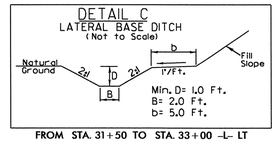
DETAIL B
LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= Class B Rip-Rap

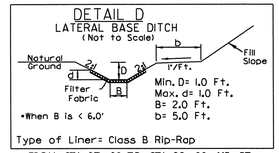
FROM STA. 16+00 TO STA. 17+90 -RPB- RT
FROM STA. 14+00 TO STA. 15+50 -LPC- RT
FROM STA. 17+64.07 TO STA. 18+85 -LPC- LT

DETAIL C
LATERAL BASE DITCH
(Not to Scale)



FROM STA. 31+50 TO STA. 33+00 -L- LT

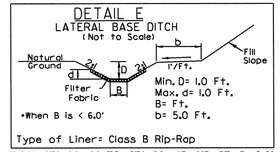
DETAIL D
LATERAL BASE DITCH
(Not to Scale)



Type of Liner= Class B Rip-Rap

FROM STA. 27+00 TO STA. 28+00 -Y5- RT
FROM STA. 31+18 TO STA. 33+50 -Y5- LT

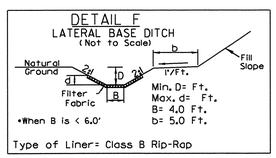
DETAIL E
LATERAL BASE DITCH
(Not to Scale)



Type of Liner= Class B Rip-Rap

FROM STA. 29+00 TO STA. 30+45 -Y5- RT B=2.0'
FROM STA. 11+65 TO STA. 12+56 -LPC- LT B=3.0'
FROM STA. 10+85 TO STA. 11+10 -DR2- LT B=2.0'

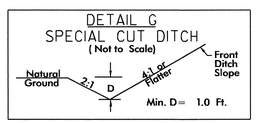
DETAIL F
LATERAL BASE DITCH
(Not to Scale)



Type of Liner= Class B Rip-Rap

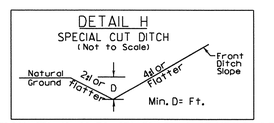
FROM STA. 40+63 TO STA. 41+30 -L- LT. D=3.0', d=3.0'
FROM STA. 21+70 TO STA. 24+20 -RPC- RT. D=2.0', d=1.0'

DETAIL G
SPECIAL CUT DITCH
(Not to Scale)



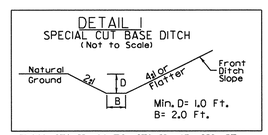
FROM STA. 29+50 TO STA. 30+00 -L- LT
FROM STA. 13+00 TO STA. 15+10 -Y5- LT
FROM STA. 21+50 TO STA. 24+00 -Y5- LT
FROM STA. 26+00 TO STA.28+00 -Y5- LT
FROM STA. 33+50 TO STA.34+50 -Y5- LT

DETAIL H
SPECIAL CUT DITCH
(Not to Scale)



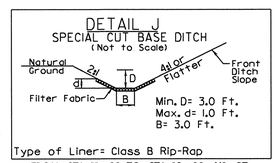
FROM STA. 49+10 TO STA. 50+00 -L- LT MIN D=1.5'
FROM STA. 52+10 TO STA. 53+50 -L- LT MIN D=1.0'
FROM STA. 55+60 TO STA. 56+00 -L- RT MIN D=1.0'

DETAIL I
SPECIAL CUT BASE DITCH
(Not to Scale)



FROM STA. 11+00 TO STA. 11+45 -SR1- RT

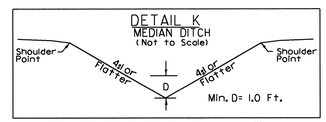
DETAIL J
SPECIAL CUT BASE DITCH
(Not to Scale)



Type of Liner= Class B Rip-Rap

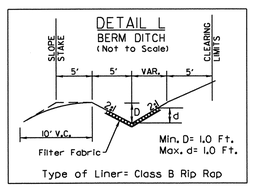
FROM STA. 11+00 TO STA. 12+00 -Y9- RT

DETAIL K
MEDIAN DITCH
(Not to Scale)



FROM STA. 18+00 TO STA. 18+35 -Y5- MED
FROM STA. 23+00 TO STA. 23+26 -Y5- MED
FROM STA. 27+50 TO STA. 28+19 -Y5- MED
FROM STA. 28+19 TO STA. 28+50 -Y5- MED
FROM STA. 30+33 TO STA. 30+50 -Y5- MED
FROM STA. 35+66 TO STA. 36+00 -Y5- MED
FROM STA. 39+29 TO STA. 39+50 -Y5- MED

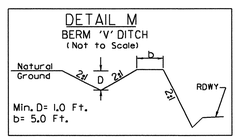
DETAIL L
BERM DITCH
(Not to Scale)



Type of Liner= Class B Rip Rap

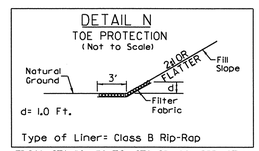
FROM STA. 15+71 TO STA. 18+00 -RPC- RT (USE DETAIL)
FROM STA. 18+00 TO STA. 19+50 -RPC- RT (USE DITCH GRADE)

DETAIL M
BERM 'V' DITCH
(Not to Scale)



FROM STA. 37+00 TO STA. 37+50 -L- LT
FROM STA. 46+50 TO STA. 48+39 -L- LT
FROM STA. 39+00 TO STA. 40+53 -Y5- LT

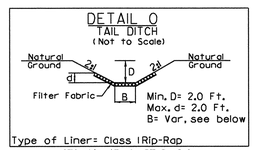
DETAIL N
TOE PROTECTION
(Not to Scale)



Type of Liner= Class B Rip-Rap

FROM STA. 19+50 TO STA. 21+00 -RPB- LT

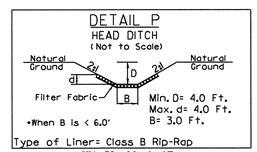
DETAIL O
TAIL DITCH
(Not to Scale)



Type of Liner= Class I Rip-Rap

STA. 46+45 -L- RT, B=2.0
STA 41+36 -L- RT, B=4.0

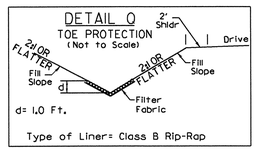
DETAIL P
HEAD DITCH
(Not to Scale)



Type of Liner= Class B Rip-Rap

STA. 52+00 -L- LT

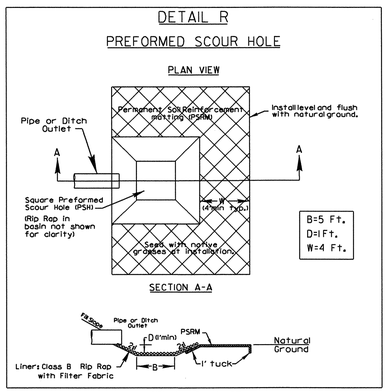
DETAIL Q
TOE PROTECTION
(Not to Scale)



Type of Liner= Class B Rip-Rap

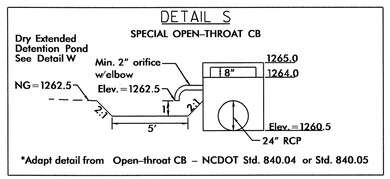
FROM STA. 10+70 TO STA. 11+30 -DR1- LT /RT
FROM STA. 30+51 TO STA. 33+50 -Y5- RT

DETAIL R
PREFORMED SCOUR HOLE



STA. 43+50 -L- RT
STA. 45+25 -L- RT

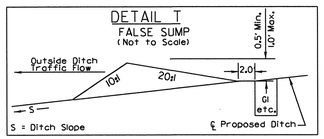
DETAIL S
SPECIAL OPEN-THROAT CB



*Adapt detail from Open-throat CB - NCDOT Std. 840.04 or Std. 840.05

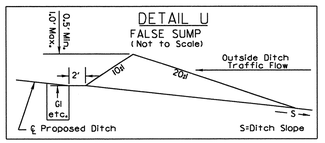
STA. 13+98.45 -LPC- LT

DETAIL T
FALSE SUMP
(Not to Scale)



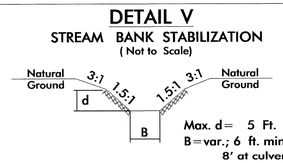
STA. 16+70 -RPC- (44' RT)
STA. 19+64 -RPC- (54' RT)
STA. 20+76 -RPC- (58' RT)
STA. 19+66 -RPC- (32' LT)

DETAIL U
FALSE SUMP
(Not to Scale)



STA. 45+41 -L- (41' LT)
STA. 46+17 -L- (41' LT)
STA. 12+21 -RPB- (42' LT)
STA. 11+33 -LPC- (30' LT)
STA. 18+50 -Y5- (79' LT)
STA. 31+88 -Y5- (87' RT)
STA. 33+36 -Y5- (59' RT)

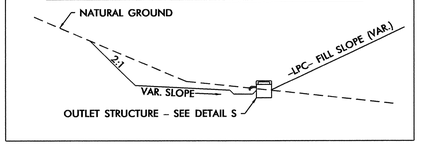
DETAIL V
STREAM BANK STABILIZATION
(Not to Scale)



Type of Liner= Class I Rip-Rap

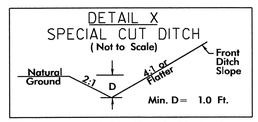
FROM STA. 49+95 TO 51+48 -L- RT.

DETAIL W - DRY-EXTENDED DETENTION POND



MIN. DEPTH =1.5'
MIN. VOLUME = 16,750 CF
EXCAVATE TO ELEV 1262.5

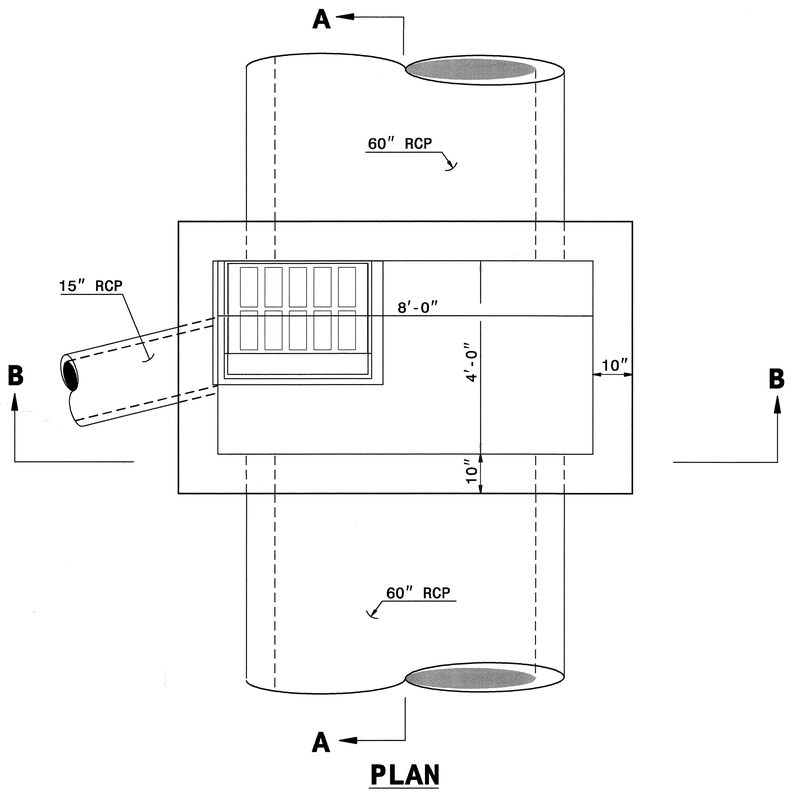
DETAIL X
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 44+50 TO STA. 46+50 -L- LT

16-FEB-2012 07:18
K:\TPD\projects\2011\U-2211B\rdy_psh_ditch details.dgn
$$$$SHEETNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-2211B	2-M



PLAN

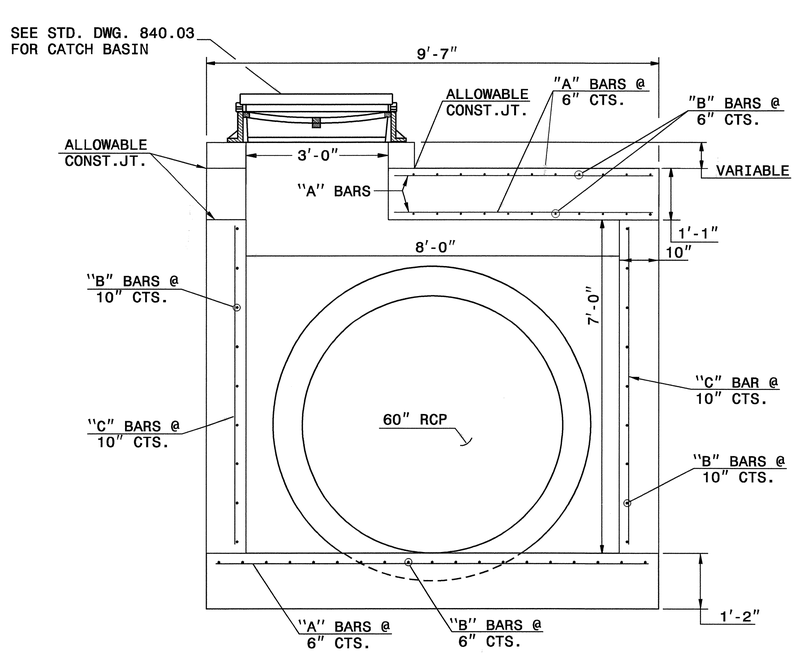
GENERAL NOTES:

1. USE CLASS "B" CONCRETE THROUGHOUT.
2. CONSTRUCT CONCRETE BOX IN ACCORDANCE WITH SECTION 825 OF THE STANDARD SPECIFICATIONS.
3. USE FORMS TO CONSTRUCT THE BOTTOM SLAB.
4. ADJUST LENGTH OF STEEL BARS AS NEEDED TO COMPENSATE FOR PIPES AND FRAME AND GRATE OPENINGS.
5. REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 400.
6. CUT OR BEND STEEL BARS AS NEEDED TO PROVIDE 2" CLEARANCE.
7. LOCATE FRAME AND GRATE AS FIELD CONDITIONS DICTATE AND AS DIRECTED BY THE ENGINEER.
8. HEIGHT OF CATCH BASIN MAY BE ADJUSTED IN THE FIELD AS DIRECTED BY THE ENGINEER.

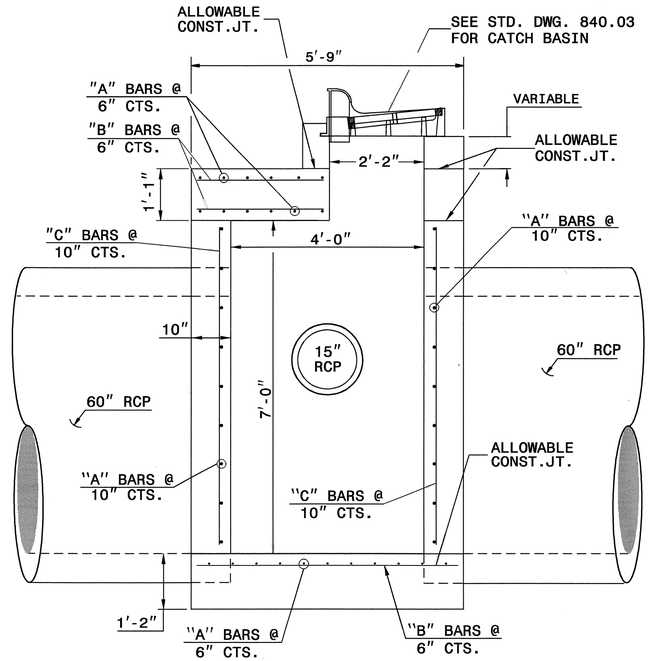
BILL OF MATERIALS

BAR	QTY	SIZE	LENGTH	WEIGHT
A	51	#5	9'-4"	496
B	75	#5	5'-4"	418
C	38	#5	6'-6"	258
TOTAL REINF. STEEL (lbs.)				1172
TOTAL CONC. CU. YDS.				10.2
DEDUCTIONS FOR ONE PIPE				
60" RCP				0.9
15" RCP				0.2

NO DEDUCTIONS HAVE BEEN MADE TO ACCOMMODATE PIPES OR CATCH BASIN OPENING.



SECTION B-B



SECTION A-A

STRUCTURE NO. 183

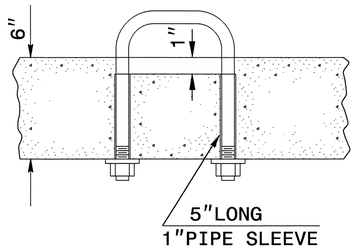
PROJECT SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

DETAIL OF SPECIAL CATCH BASIN

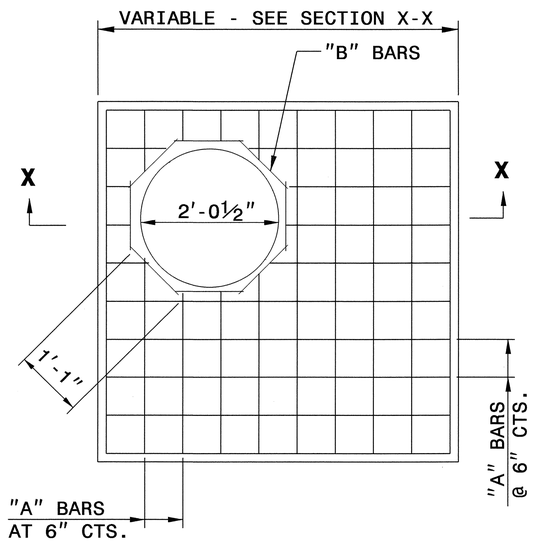
ORIGINAL BY: T.Stephenson DATE: Aug.1996
MODIFIED BY: K.Kempf DATE: July 15,2009
CHECKED BY: DATE: 7/15/09
FILE SPEC.: c:/details/kkempf/english/cb60rcp_u2211b.dgn

15-JUL-2009 14:04
s:\contracts\contracts\special details\kkempf\english\cb60rcp_u2211b.dgn
kkempf AT PS237489

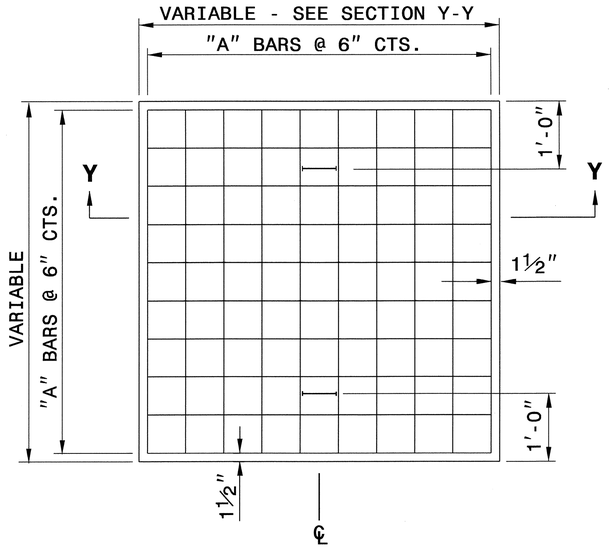
PROJECT REFERENCE NO.	SHEET NO.
U-2211B	2-N



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.

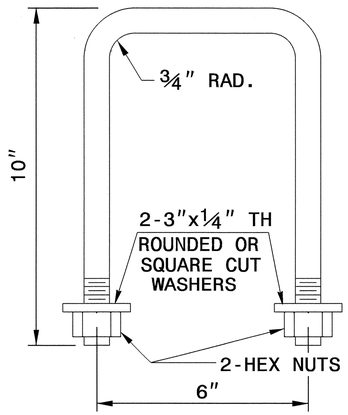
BILL OF MATERIALS

REINFORCING STEEL

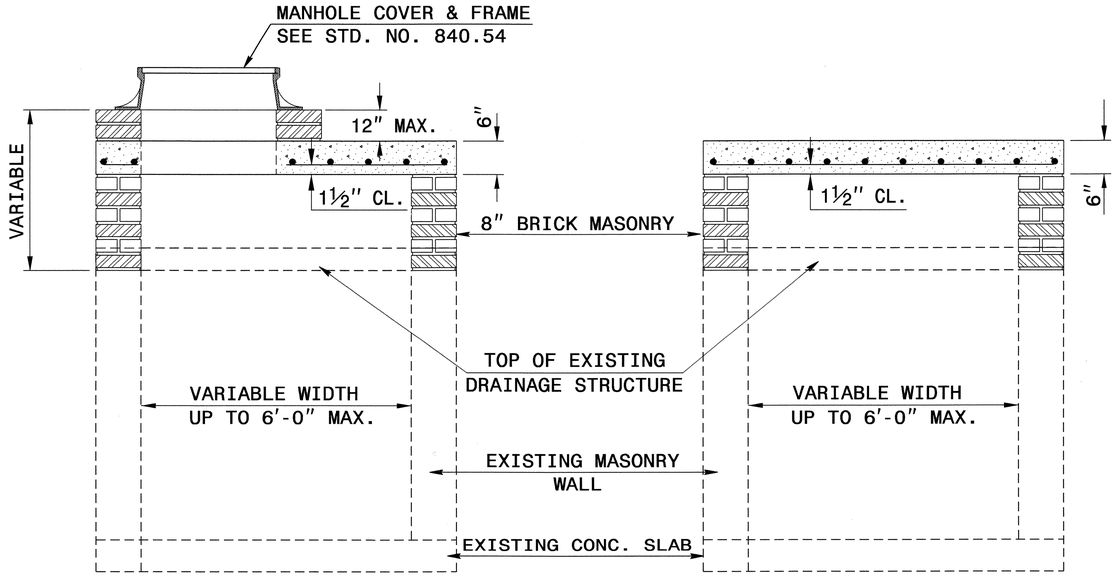
CODE	SIZE	QTY.	LENGTH	REINF. STEEL LBS.
A	#4	20	4'-6"	60.12
B	#4	8	1'-1"	5.79
TOTAL				65.91 *

MASONRY	CU YDS
TOP SLAB CONCRETE CLASS "B"	.4326 *
BRICK MASONRY PER FT HT (MIN)	.4111

* 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**

STRUCTURE NO. 12A, 154, 156

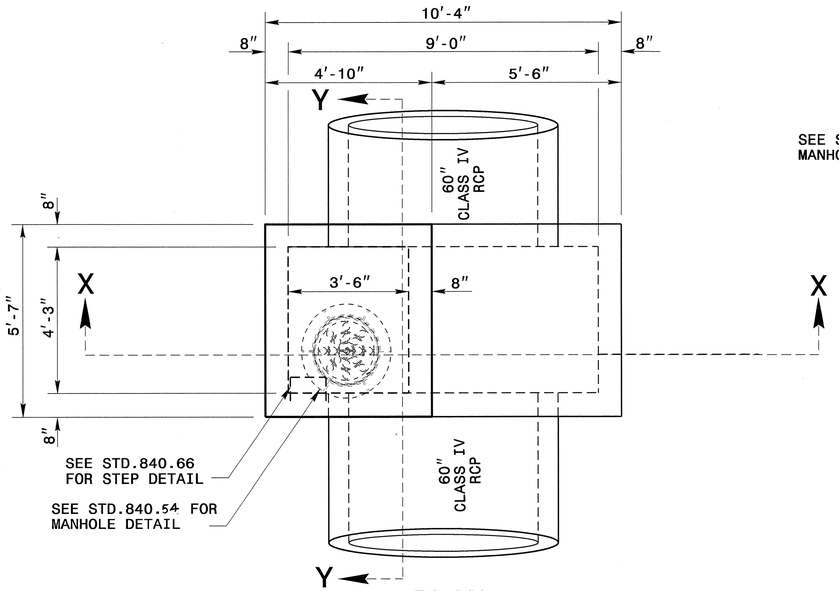
CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

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

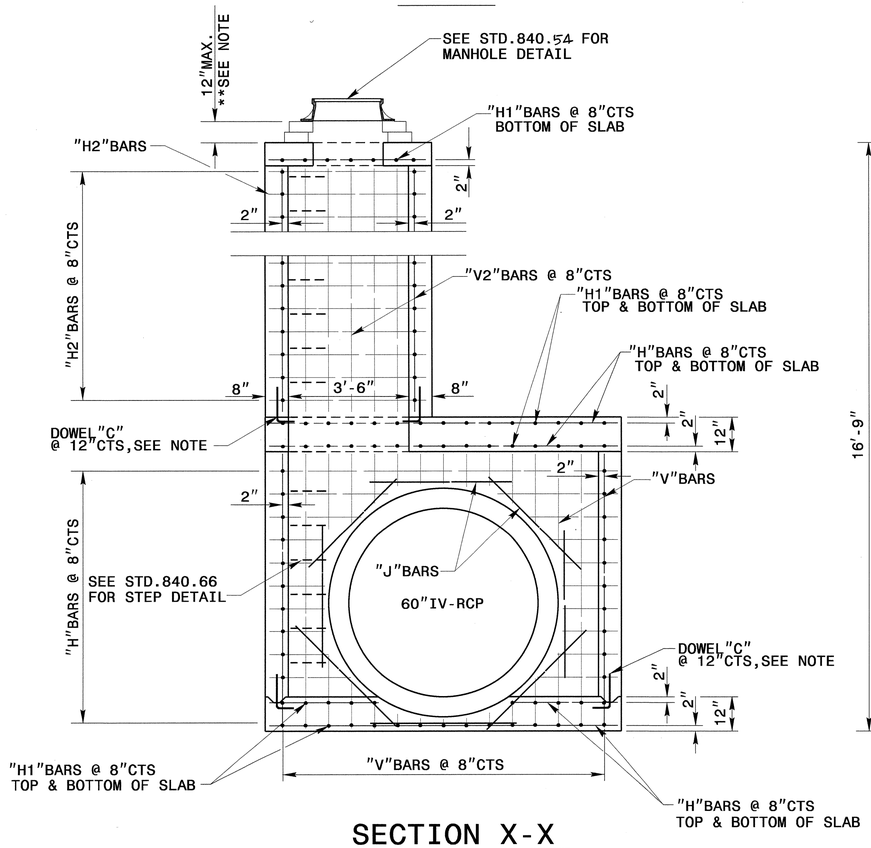
ORIGINAL BY: T.S.S. DATE: NOV.1997
MODIFIED BY: T.S.S. DATE: FEB.2000
CHECKED BY: DATE: 1/3/12
FILE SPEC.: da174:/usr/details/stand/boxtojbe.dgn

28-DEC-2011 08:41
S:\Contracts\Special Details\ericward\usr\details\stand\boxtojbe.dgn
$$$$USERNAME$$$$

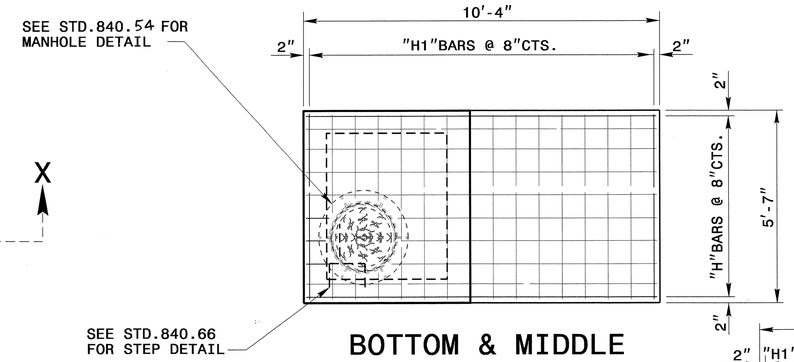
PROJ. REFERENCE NO.	SHEET NO.
U-2211 B	2-0



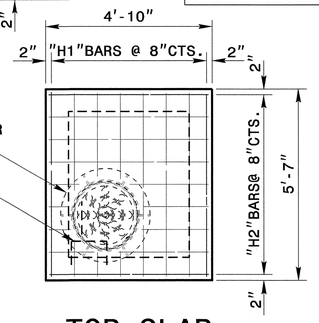
PLAN



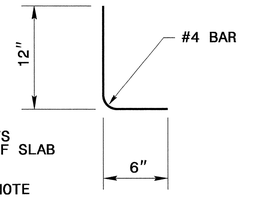
SECTION X-X



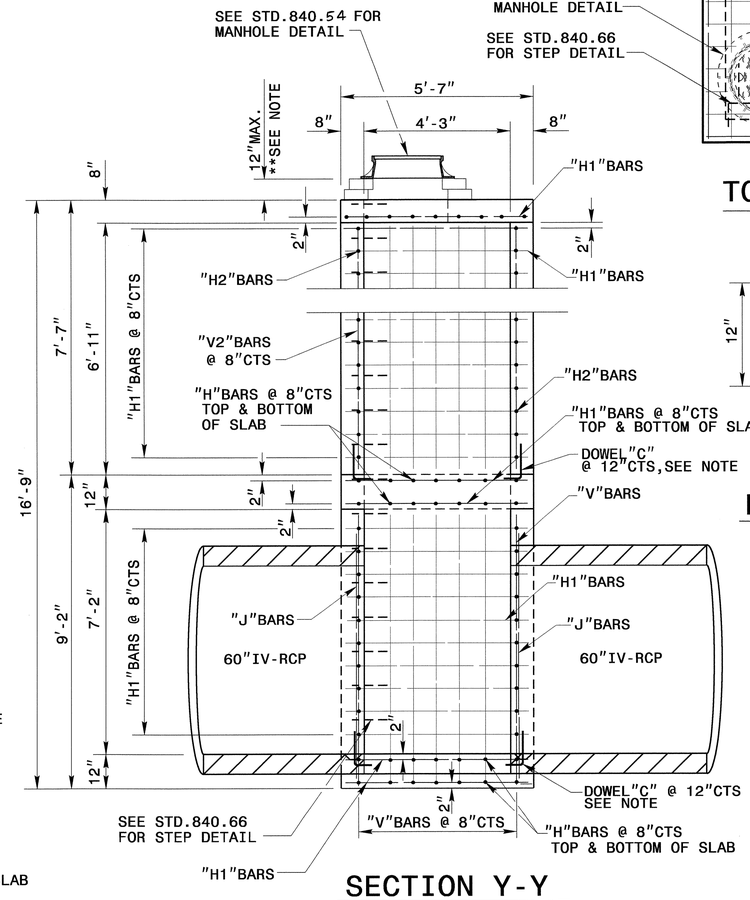
BOTTOM & MIDDLE SLABS



TOP SLAB



DOWEL "C"



SECTION Y-Y

GENERAL NOTES:

-THE BASE SLAB TO BE CONSTRUCTED BY FORMING.

-SEE STD. DWG. 840.00 FOR CONSTRUCTION OF BASE SLAB

-CLASS 'B' CONCRETE TO BE USED THROUGHOUT.

-CONSTRUCTION OPTIONS: MONOLITHIC POUR; 2" KEYWAY OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.

-REINFORCING STEEL TO BE CUT, BENT OR RELOCATED TO POSITION PIPE AS DIRECTED BY THE ENGINEER.

-ALL EXPOSED CORNERS TO BE CHAMFERED 1".

-SEE STD. DRAWING 840.34 FOR CONSTRUCTION OF RISER AND MANHOLE.

-JUNCTION BOXES OVER 3'-6" IN DEPTH WITH MANHOLES WILL REQUIRE STEPS TO BE PLACED ON 12" CTRS. REFERENCE STD. NO. 840.66.

-MAINTAIN 2" MINIMUM CONCRETE COVERAGE ON ALL STEEL.

BILL OF MATERIAL

CODE	BAR#	LENGTH	LBS/FT.	QTY.	LBS
H	4	10'-0"	0.668	48	321
H1	4	5'-3"	0.668	50	176
H2	4	4'-6"	0.668	22	67
V	4	7'-10"	0.668	44	231
V2	4	6'-7"	0.668	28	124
J	4	4'-3"	0.668	16	46
C	4	1'-6"	0.668	46	47
		TOTAL WEIGHT STEEL			1012
		MASONARY QUANTITIES			
CLASS "B" CONCRETE					13.2 CU.YDS.
PIPE DEDUCTIONS					
2-60" RCP IV					-1.4 CU.YD.
TOTAL CLASS "B" CONCRETE					11.8 CU.YDS.

** 0.30 CU.YD. PER FOOT OF RISER HEIGHT.

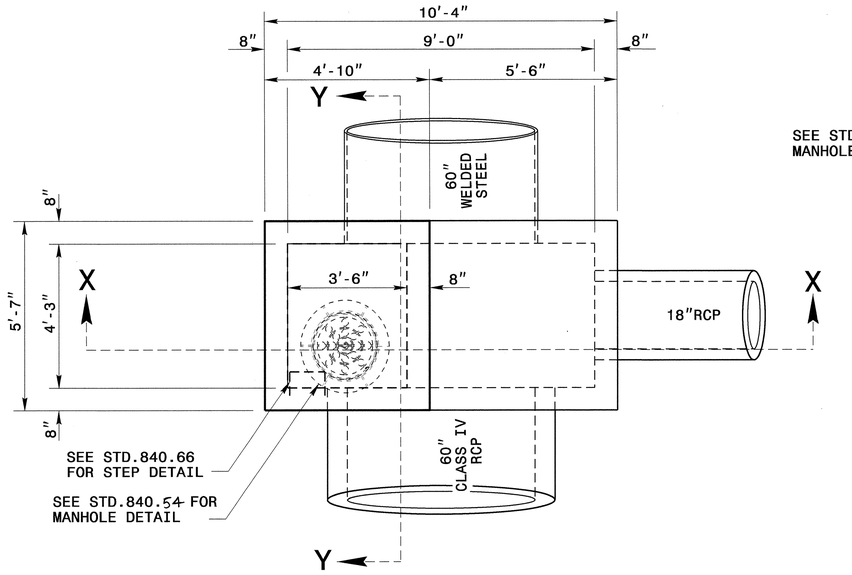
NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOHN S. HOLLOWELL 2/27/12

CONTRACT STANDARDS & DEVELOPMENT UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-707-6900 FAX 919-250-4119

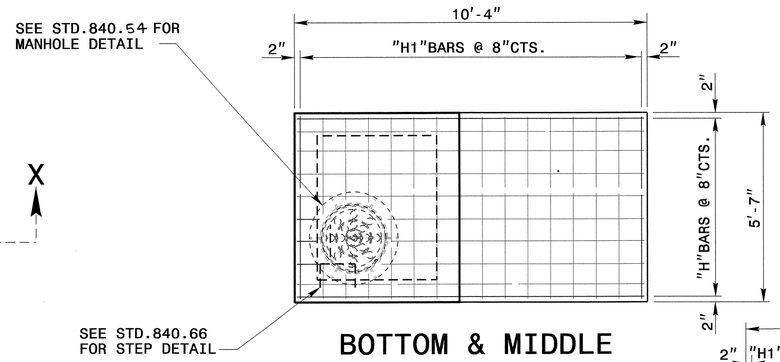
STRUCTURE #88

ORIGINAL BY: rnbritt DATE: 01-11-12
MODIFIED BY: DATE:
CHECKED BY: DATE: 1/11/12
FILE SPEC.: c:\details\rnbritt\english\urban\u2211b_jb.dgn

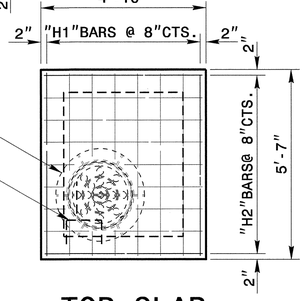
PROJ. REFERENCE NO.	SHEET NO.
U-2211 B	2-P



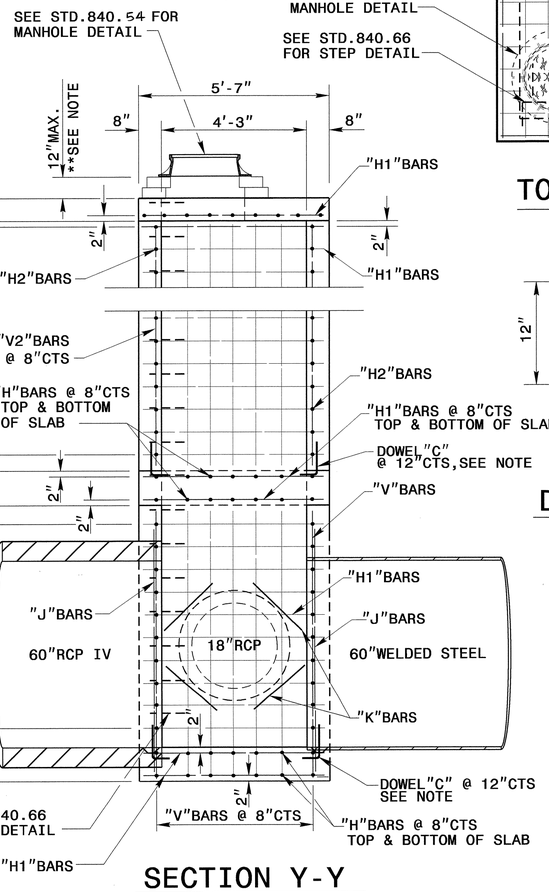
PLAN



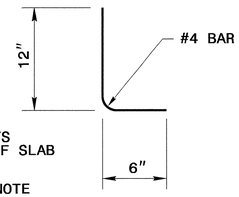
BOTTOM & MIDDLE SLABS



TOP SLAB



SECTION Y-Y



DOWEL "C"

GENERAL NOTES:

-THE BASE SLAB TO BE CONSTRUCTED BY FORMING.

-SEE STD. DWG. 840.00 FOR CONSTRUCTION OF BASE SLAB

-CLASS 'B' CONCRETE TO BE USED THROUGHOUT.

-CONSTRUCTION OPTIONS: MONOLITHIC POUR; 2" KEYWAY OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.

-REINFORCING STEEL TO BE CUT, BENT OR RELOCATED TO POSITION PIPE AS DIRECTED BY THE ENGINEER.

-ALL EXPOSED CORNERS TO BE CHAMFERED 1".

-SEE STD. DRAWING 840.34 FOR CONSTRUCTION OF RISER AND MANHOLE.

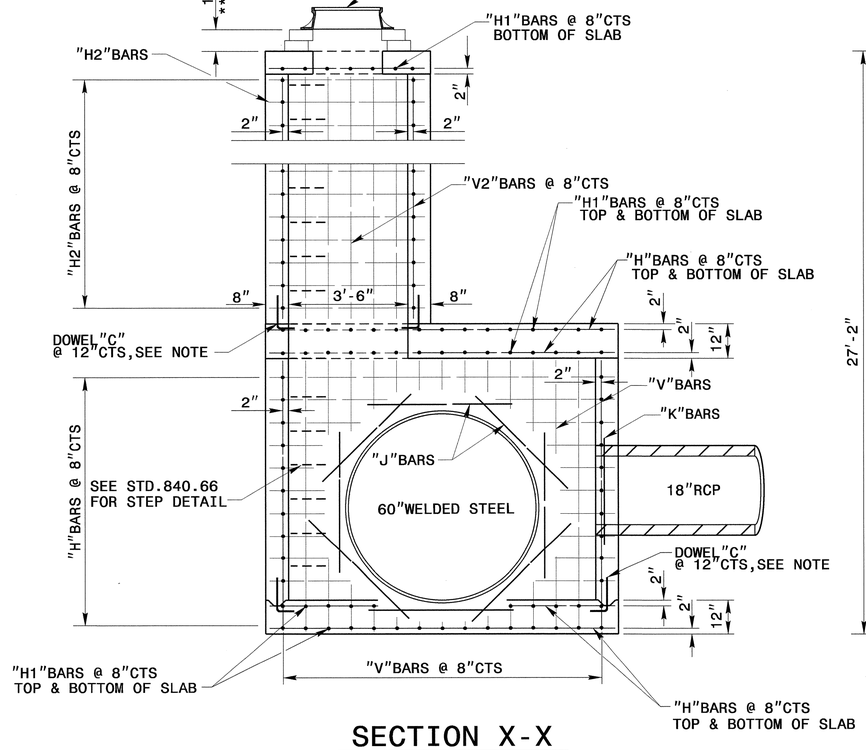
-JUNCTION BOXES OVER 3'-6" IN DEPTH WITH MANHOLES WILL REQUIRE STEPS TO BE PLACED ON 12" CTRS. REFERENCE STD. NO. 840.66.

-MAINTAIN 2" MINIMUM CONCRETE COVERAGE ON ALL STEEL.

BILL OF MATERIAL

CODE	BAR#	LENGTH	LBS/FT.	QTY.	LBS
H	4	10'-0"	0.668	48	321
H1	4	5'-3"	0.668	136	477
H2	4	4'-6"	0.668	63	190
V	4	7'-10"	0.668	44	231
V2	4	16'-7"	0.668	28	311
J	4	4'-3"	0.668	16	46
K	4	2'-0"	0.668	10	14
C	4	1'-6"	0.668	46	47
		TOTAL WEIGHT STEEL			1637
		MASONARY QUANTITIES			
CLASS "B" CONCRETE					17.9 CU.YDS.
PIPE DEDUCTIONS					
1-18" RCP					-0.1 CU.YD.
1-60" WELDED STEEL					-0.6 CU.YD.
1-60" RCP IV					-0.7 CU.YDS.
TOTAL CLASS "B" CONCRETE					16.5 CU.YDS.

** 0.30 CU.YD. PER FOOT OF RISER HEIGHT.



SECTION X-X

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL R. HOWARD 2/27/12

CONTRACT STANDARDS & DEVELOPMENT UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-707-6900 FAX 919-250-4119

STRUCTURE #168

ORIGINAL BY: rnbritt DATE: 01-11-12
MODIFIED BY: DATE:
CHECKED BY: DATE: 1/11/12
FILE SPEC.: details/rnbritt/english/urban/u2211b_jb.dgn

PROJECT REFERENCE NO.	SHEET
U-2211B	2-Q

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A HIDDEN

Scott A. Hidden 11/18/11
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

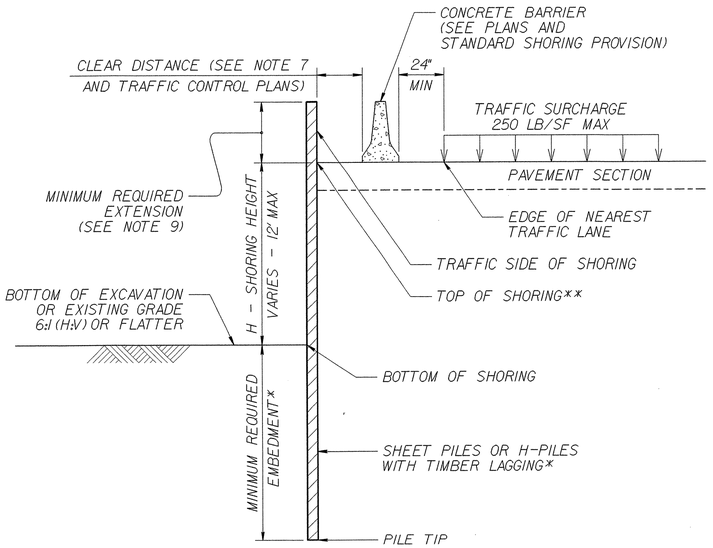
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)			MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)		
				HP 10x42	HP 12x53	HP 14x73			HP 10x42	HP 12x53	HP 14x73
GROUNDWATER ELEVATION BEWTEEN BOTTOM OF SHORING AND PILE TIP	< 6	11.5	4.5	11.5	11.5	11.5	16.0	12.0	13.0	13.0	13.0
	7	13.0	7.0	13.0	13.0	13.0	17.0	14.5	14.5	14.5	14.5
	8	15.0	10.0	--	15.0	15.0	18.0	17.0	--	15.5	15.5
	9	17.0	14.0	--	17.0	17.0	19.0	20.0	--	17.0	17.0
	10	18.5	19.5	--	--	18.5	20.0	23.5	--	--	18.5
	11	20.5	26.0	--	--	--	21.0	28.0	--	--	20.0
	12	22.5	33.0	--	--	--	22.0	33.0	--	--	21.5
GROUNDWATER ELEVATION BELOW PILE TIP	< 6	7.5	3.0	8.0	8.0	8.0	11.0	10.0	9.5	9.5	9.5
	7	8.5	4.5	9.5	9.5	9.5	12.0	12.0	10.5	10.5	10.5
	8	10.0	6.5	10.5	10.5	10.5	12.5	14.0	11.5	11.5	11.5
	9	11.0	9.5	--	12.0	12.0	13.5	16.5	--	12.5	12.5
	10	12.5	13.0	--	--	13.5	14.0	19.5	--	13.5	13.5
	11	13.5	17.0	--	--	14.5	15.0	22.5	--	--	14.5
	12	15.0	21.5	--	--	16.0	16.0	25.5	--	--	15.5

MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS

***DO NOT USE H-PILES WITH TIMBER LAGGING FOR GROUNDWATER CONDITION, SHORING HEIGHT AND H-PILE SIZE SHOWN IF MINIMUM REQUIRED EMBEDMENT IS "--".**

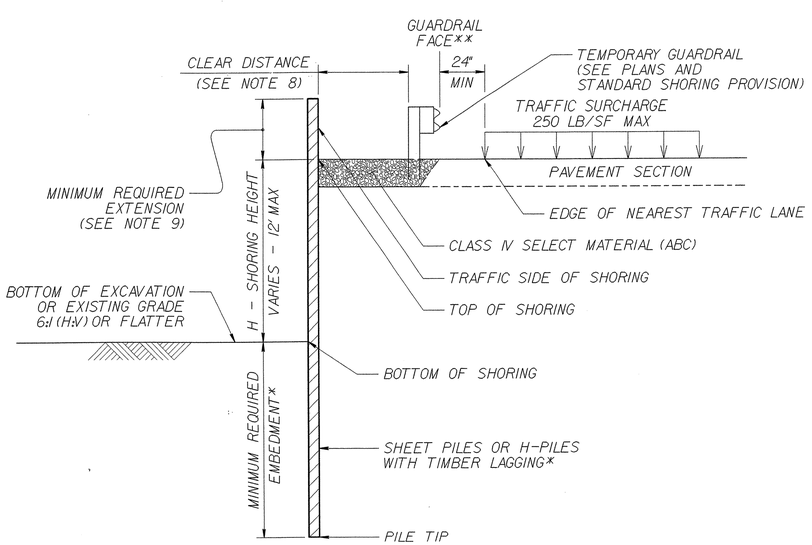
NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY SHORING, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
   UNIT WEIGHT, γ = 120 LB/CF
   FRICTION ANGLE, ϕ = 30 DEGREES
   COHESION, c = 0 LB/SF
4. DO NOT USE STANDARD TEMPORARY SHORING IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS WITHIN THE EMBEDMENT DEPTH.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, USE "GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND PILE TIP" FOR GROUNDWATER CONDITION. DO NOT USE STANDARD TEMPORARY SHORING IF GROUNDWATER IS ABOVE BOTTOM OF SHORING.
7. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN THE MINIMUM REQUIRED FOR CONCRETE BARRIER, SET BARRIER NEXT TO AND UP AGAINST TRAFFIC SIDE OF PILES AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
8. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN 4' FOR TEMPORARY GUARDRAIL, ATTACH GUARDRAIL TO TRAFFIC SIDE OF PILES AS SHOWN IN THE PLANS AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
9. MINIMUM REQUIRED EXTENSION IS 6" FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32" FOR "SURCHARGE CASE WITH TRAFFIC IMPACT".
10. MINIMUM REQUIRED EMBEDMENT FOR H-PILES WITH TIMBER LAGGING IS BASED ON DRIVEN H-PILES AT MAXIMUM 6' SPACING. AT THE CONTRACTOR'S OPTION, EMBEDMENT DEPTHS MAY BE REDUCED BY 25% FOR DRILLED-IN H-PILES.
11. SUBMIT A "STANDARD TEMPORARY SHORING SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY SHORING CONSTRUCTION. UP TO 3 SHORING LOCATIONS MAY BE INCLUDED ON EACH FORM.
12. CONTACT THE ENGINEER IF PILES DO NOT ATTAIN THE MINIMUM REQUIRED EMBEDMENT.



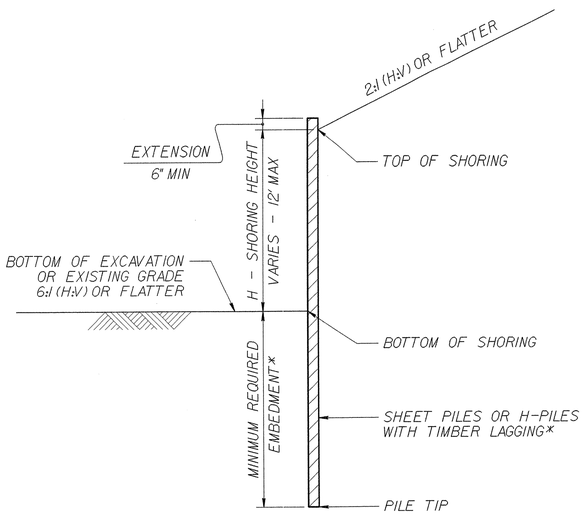
CONCRETE BARRIER

****TOP OF SHORING = EDGE OF PAVEMENT**



TEMPORARY GUARDRAIL

****GUARDRAIL FACE = EDGE OF PAVEMENT**



STANDARD TEMPORARY SHORING

(SLOPE CASE)
***SEE TABLE ABOVE.**

STANDARD TEMPORARY SHORING

(SURCHARGE CASE)
***SEE TABLE ABOVE.**

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD DRAWING NO. 1801.01

STANDARD TEMPORARY SHORING

DATE: 1-17-12

5/9/06

PROJECT REFERENCE NO.	SHEET NO.
U-2211B	3 (1 of 2)

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SUMMARY OF QUANTITIES

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202820

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0001000000-E	200	Lump Sum		CLEARING & GRUBBING .. ACRE(S)
0008000000-E	200	2	ACR	SUPPLEMENTARY CLEARING & GRUBBING
0022000000-E	225	201,000	CY	UNCLASSIFIED EXCAVATION
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ********** (33+87.18-L-)
0036000000-E	225	10,300	CY	UNDERCUT EXCAVATION
0106000000-E	230	94,800	CY	BORROW EXCAVATION
0134000000-E	240	2,869	CY	DRAINAGE DITCH EXCAVATION
0141000000-E	240	930	LF	BERM DITCH CONSTRUCTION
0156000000-E	250	10,900	SY	REMOVAL OF EXISTING ASPHALT PAVEMENT
0192000000-N	260	3	HR	PROOF ROLLING
0195000000-E	265	10,500	CY	SELECT GRANULAR MATERIAL
0196000000-E	270	4,000	SY	GEOTEXTILE FOR SOIL STABILIZATION
0199000000-E	SP	1,480	SF	TEMPORARY SHORING
0255000000-E	SP	300	TON	GENERIC GRADING ITEM EXCAVATION, HAULING, AND DISPOSAL OF CONTAMINATED SOIL
0318000000-E	300	1,742	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRUCTURES
0320000000-E	300	7,127	SY	FOUNDATION CONDITIONING GEOTEXTILE
0342000000-E	310	28	LF	**" SIDE DRAIN PIPE (30")
0342000000-E	310	68	LF	**" SIDE DRAIN PIPE (36")
0342000000-E	310	160	LF	**" SIDE DRAIN PIPE (42")
0343000000-E	310	1,132	LF	15" SIDE DRAIN PIPE
0344000000-E	310	864	LF	18" SIDE DRAIN PIPE
0345000000-E	310	1,280	LF	24" SIDE DRAIN PIPE
0372000000-E	310	36	LF	18" RC PIPE CULVERTS, CLASS III
0378000000-E	310	20	LF	24" RC PIPE CULVERTS, CLASS III
0448000000-E	310	312	LF	****" RC PIPE CULVERTS, CLASS IV (54")
0448000000-E	310	816	LF	****" RC PIPE CULVERTS, CLASS IV (60")
0448200000-E	310	3,452	LF	15" RC PIPE CULVERTS, CLASS IV
0448300000-E	310	756	LF	18" RC PIPE CULVERTS, CLASS IV
0448400000-E	310	892	LF	24" RC PIPE CULVERTS, CLASS IV
0448500000-E	310	56	LF	30" RC PIPE CULVERTS, CLASS IV
0448600000-E	310	344	LF	36" RC PIPE CULVERTS, CLASS IV
0448700000-E	310	280	LF	42" RC PIPE CULVERTS, CLASS IV
0576000000-E	310	12	LF	**" CS PIPE CULVERTS, *****" THICK (42", 0.109")
0582000000-E	310	708	LF	15" CS PIPE CULVERTS, 0.064" THICK
0588000000-E	310	120	LF	18" CS PIPE CULVERTS, 0.064" THICK
0636000000-E	310	20	EA	**" CS PIPE ELBOWS, *****" THICK (15", 0.064")
0973100000-E	330	177	LF	**" WELDED STEEL PIPE, ****" THICK, GRADE B IN SOIL (60", 0.875")
0973300000-E	330	75	LF	**" WELDED STEEL PIPE, ****" THICK, GRADE B NOT IN SOIL (60", 0.875")
0995000000-E	340	1,514	LF	PIPE REMOVAL
1000000000-E	462	230	SY	6" SLOPE PROTECTION
1011000000-N	500	Lump Sum		FINE GRADING
1044000000-E	501	8,990	SY	LIME TREATED SOIL (SLURRY METHOD)
1066000000-E	501	90	TON	LIME FOR LIME TREATED SOIL
1099500000-E	505	2,000	CY	SHALLOW UNDERCUT
1099700000-E	505	3,000	TON	CLASS IV SUBGRADE STABILIZATION
1110000000-E	510	1,000	TON	STABILIZER AGGREGATE
1121000000-E	520	12,900	TON	AGGREGATE BASE COURSE
1176000000-E	542	8,990	SY	SOIL CEMENT BASE
1187000000-E	542	248	TON	PORTLAND CEMENT FOR SOIL CEMENT BASE
1209000000-E	543	2,700	GAL	ASPHALT CURING SEAL
1220000000-E	545	300	TON	INCIDENTAL STONE BASE
1297000000-E	607	690	SY	MILLING ASPHALT PAVEMENT, ***" DEPTH (1-1/2")
1308000000-E	607	3,300	SY	MILLING ASPHALT PAVEMENT, ***" TO ******" (0" TO 1-1/2")
1489000000-E	610	3,280	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1491000000-E	610	4,560	TON	ASPHALT CONC BASE COURSE, TYPE B25.0C
1498000000-E	610	8,720	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B
1503000000-E	610	2,210	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C
1519000000-E	610	8,230	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
1523000000-E	610	3,880	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5C
1525000000-E	610	1,110	TON	ASPHALT CONC SURFACE COURSE, TYPE SF9.5A
1575000000-E	620	1,670	TON	ASPHALT BINDER FOR PLANT MIX
1693000000-E	654	870	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR
2022000000-E	815	336	CY	SUBDRAIN EXCAVATION
2033000000-E	815	168	CY	SUBDRAIN FINE AGGREGATE
2044000000-E	815	1,000	LF	6" PERFORATED SUBDRAIN PIPE
2070000000-N	815	2	EA	SUBDRAIN PIPE OUTLET
2077000000-E	815	12	LF	6" OUTLET PIPE
2143000000-E	818	20	TON	BLOTTING SAND
2209000000-E	838	3.8	CY	ENDWALLS
2220000000-E	838	10	CY	REINFORCED ENDWALLS
2253000000-E	840	4.983	CY	PIPE COLLARS
2264000000-E	840	0.246	CY	PIPE PLUGS
2275000000-E	SP	14	CY	FLOWABLE FILL
2286000000-N	840	137	EA	MASONRY DRAINAGE STRUCTURES
2297000000-E	840	46.6	CY	MASONRY DRAINAGE STRUCTURES
2308000000-E	840	60	LF	MASONRY DRAINAGE STRUCTURES
2364000000-N	840	20	EA	FRAME WITH TWO GRATES, STD 840.16
2365000000-N	840	5	EA	FRAME WITH TWO GRATES, STD 840.22
2366000000-N	840	16	EA	FRAME WITH TWO GRATES, STD 840.24
2367000000-N	840	19	EA	FRAME WITH TWO GRATES, STD 840.29
2374000000-N	840	9	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (E)
2374000000-N	840	25	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (F)
2374000000-N	840	30	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G)
2396000000-N	840	17	EA	FRAME WITH COVER, STD 840.54
2440000000-N	852	2	EA	CONCRETE TRANSITIONAL SECTION FOR CATCH BASIN
2451000000-N	852	15	EA	CONCRETE TRANSITIONAL SECTION FOR DROP INLET
2535000000-E	846	960	LF	**"X **" CONCRETE CURB (8" X 12")
2549000000-E	846	8,620	LF	2'-6" CONCRETE CURB & GUTTER
2556000000-E	846	760	LF	SHOULDER BERM GUTTER
2577000000-E	846	480	LF	CONCRETE EXPRESSWAY GUTTER
2612000000-E	848	260	SY	6" CONCRETE DRIVEWAY
2619000000-E	850	60	SY	4" CONCRETE PAVED DITCH
2655000000-E	852	2,650	SY	5" MONOLITHIC CONCRETE ISLANDS (KEYED IN)
2815000000-N	858	5	EA	ADJUSTMENT OF DROP INLETS
2938000000-N	859	3	EA	CONVERT EXISTING DROP INLET TO JUNCTION BOX WITH MANHOLE
3030000000-E	862	3,700	LF	STEEL BM GUARDRAIL
3045000000-E	862	237.5	LF	STEEL BM GUARDRAIL, SHOP CURVED
3105000000-N	862	4	EA	STEEL BM GUARDRAIL TERMINAL SECTIONS
3150000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS
3210000000-N	862	6	EA	GUARDRAIL ANCHOR UNITS, TYPE CAT-1
3215000000-N	862	3	EA	GUARDRAIL ANCHOR UNITS, TYPE III
3270000000-N	SP	13	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3360000000-E	863	2,575	LF	REMOVE EXISTING GUARDRAIL
3503000000-E	866	7,170	LF	WOVEN WIRE FENCE, 47" FABRIC
3509000000-E	866	450	EA	4" TIMBER FENCE POSTS, 7'-6" LONG
3515000000-E	866	130	EA	5" TIMBER FENCE POSTS, 8'-0" LONG
3536000000-E	866	720	LF	CHAIN LINK FENCE, 48" FABRIC
3542000000-E	866	59	EA	METAL LINE POSTS FOR 48" CHAIN LINK FENCE
3548000000-E	866	6	EA	METAL TERMINAL POSTS FOR 48" CHAIN LINK FENCE
3554000000-E	866	2	EA	METAL GATE POSTS FOR **" CHAIN LINK FENCE, DOUBLE GATE (48")
3557000000-E	866	800	LF	ADDITIONAL BARBED WIRE
3565000000-E	866	1	EA	DOUBLE GATES, **" HIGH, **' WIDE, **' OPENING (48", 10', 20')
3628000000-E	876	256	TON	RIP RAP, CLASS I
3649000000-E	876	1,109	TON	RIP RAP, CLASS B
3656000000-E	876	5,664	SY	GEOTEXTILE FOR DRAINAGE
3659000000-N	SP	2	EA	PREFORMED SCOUR HOLES WITH LEVEL SPREADER APRON
4048000000-E	902	9	CY	REINFORCED CONCRETE SIGN FOUNDATIONS
4054000000-E	902	1	CY	PLAIN CONCRETE SIGN FOUNDATIONS
4060000000-E	903	5,008	LB	SUPPORTS, BREAKAWAY STEEL BEAM
4066000000-E	903	3,331	LB	SUPPORTS, SIMPLE STEEL BEAM
4072000000-E	903	1,926	LF	SUPPORTS, 3-LB STEEL U-CHANNEL
4096000000-N	904	2	EA	SIGN ERECTION, TYPE D
4102000000-N	904	74	EA	SIGN ERECTION, TYPE E
4108000000-N	904	10	EA	SIGN ERECTION, TYPE F
4110000000-N	904	11	EA	SIGN ERECTION, TYPE *** (GROUND MOUNTED) (A)
4152000000-N	907	1	EA	DISPOSAL OF SIGN SYSTEM, STEEL BEAM
4155000000-N	907	58	EA	DISPOSAL OF SIGN SYSTEM, U-CHANNEL
4158000000-N	907	1	EA	DISPOSAL OF SIGN SYSTEM, WOOD
4400000000-E	1110	1,581	SF	WORK ZONE SIGNS (STATIONARY)
4405000000-E	1110	882	SF	WORK ZONE SIGNS (PORTABLE)
4410000000-E	1110	620	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4415000000-N	1115	2	EA	FLASHING ARROW BOARD
4420000000-N	1120	2	EA	PORTABLE CHANGEABLE MESSAGE SIGN
4422000000-N	1120	120	DAY	PORTABLE CHANGEABLE MESSAGE SIGN (SHORT TERM)
4430000000-N	1130	400	EA	DRUMS
4435000000-N	1135	50	EA	CONES
4445000000-E	1145	400	LF	BARRICADES (TYPE III)
4450000000-N	1150	720	HR	FLAGGER
4465000000-N	1160	2	EA	TEMPORARY CRASH CUSHIONS

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STATE OF NORTH CAROLINA
SUMMARY OF QUANTITIES

PROJECT REFERENCE No.	SHEET No.
U-2211B	3 (2 of 2)

ItemNumber	Sec #	Quantity	Unit	Description
4470000000-N	1160	2	EA	RESET TEMPORARY CRASH CUSHION
4480000000-N	1165	2	EA	TMA
4485000000-E	1170	6,420	LF	PORTABLE CONCRETE BARRIER
4500000000-E	1170	6,410	LF	RESET PORTABLE CONCRETE BARRIER
4650000000-N	1251	1,727	EA	TEMPORARY RAISED PAVEMENT MARKERS
4695000000-E	1205	1,186	LF	THERMOPLASTIC PAVEMENT MARKING LINES (8", 90 MILS)
4710000000-E	1205	714	LF	THERMOPLASTIC PAVEMENT MARKING LINES (24", 120 MILS)
4721000000-E	1205	20	EA	THERMOPLASTIC PAVEMENT MARKING CHARACTER (120 MILS)
4725000000-E	1205	118	EA	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)
4770000000-E	1205	3,350	LF	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (IV)
4805000000-N	1205	4	EA	COLD APPLIED PLASTIC PAVEMENT MARKING SYMBOL, TYPE ** (IV)
4810000000-E	1205	182,596	LF	PAINT PAVEMENT MARKING LINES (4")
4820000000-E	1205	4,510	LF	PAINT PAVEMENT MARKING LINES (8")
4835000000-E	1205	2,232	LF	PAINT PAVEMENT MARKING LINES (24")
4840000000-N	1205	64	EA	PAINT PAVEMENT MARKING CHARACTER
4845000000-N	1205	256	EA	PAINT PAVEMENT MARKING SYMBOL
4847000000-E	1205	47,271	LF	POLYUREA PAVEMENT MARKING LINES (4", **********) (HIGHLY REFLECTIVE ELEMENTS)
4847110000-E	1205	4,569	LF	POLYUREA PAVEMENT MARKING LINES (8", **********) (HIGHLY REFLECTIVE ELEMENTS)
4850000000-E	1205	39,232	LF	REMOVAL OF PAVEMENT MARKING LINES (4")
4855000000-E	1205	8,872	LF	REMOVAL OF PAVEMENT MARKING LINES (6")
4860000000-E	1205	649	LF	REMOVAL OF PAVEMENT MARKING LINES (8")
4870000000-E	1205	215	LF	REMOVAL OF PAVEMENT MARKING LINES (24")
4875000000-N	1205	47	EA	REMOVAL OF PAVEMENT MARKING SYMBOLS & CHARACTERS
4905000000-N	1253	455	EA	SNOWPLOWABLE PAVEMENT MARKERS
5325600000-E	1510	2,227	LF	6" WATER LINE
5326200000-E	1510	3,458	LF	12" WATER LINE
5540000000-E	1515	11	EA	6" VALVE
5558000000-E	1515	12	EA	12" VALVE
5589200000-E	1515	3	EA	2" AIR RELEASE VALVE
5643100000-E	1515	29	EA	3/4" WATER METER
5649000000-N	1515	5	EA	RECONNECT WATER METER
5666000000-E	1515	8	EA	FIRE HYDRANT
5691300000-E	1520	3,848	LF	8" SANITARY GRAVITY SEWER
5691500000-E	1520	1,875	LF	12" SANITARY GRAVITY SEWER
5768000000-N	1520	20	EA	SANITARY SEWER CLEAN-OUT
5775000000-E	1525	38	EA	4' DIA UTILITY MANHOLE
5776000000-E	1525	5	EA	5' DIA UTILITY MANHOLE
5781000000-E	1525	128	LF	UTILITY MANHOLE WALL, 4' DIA
5782000000-E	1525	64	LF	UTILITY MANHOLE WALL, 5' DIA
5798000000-E	1530	505	LF	ABANDON **" UTILITY PIPE (4")
5800000000-E	1530	2,839	LF	ABANDON 6" UTILITY PIPE
5801000000-E	1530	3,248	LF	ABANDON 8" UTILITY PIPE
5804000000-E	1530	5,213	LF	ABANDON 12" UTILITY PIPE
5815000000-N	1530	34	EA	REMOVE WATER METER
5815500000-N	1530	7	EA	REMOVE FIRE HYDRANT
5816000000-N	1530	24	EA	ABANDON UTILITY MANHOLE
5836000000-E	1540	270	LF	24" ENCASEMENT PIPE
5872200000-E	1550	135	LF	TRENCHLESS INSTALLATION OF 24" IN SOIL
5872210000-E	1550	135	LF	TRENCHLESS INSTALLATION OF 24" NOT IN SOIL
6000000000-E	1605	15,500	LF	TEMPORARY SILT FENCE
6006000000-E	1610	1,200	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	4,610	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	3,310	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	62	ACR	TEMPORARY MULCHING
6018000000-E	1620	2,000	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	10.25	TON	FERTILIZER FOR TEMPORARY SEEDING
6024000000-E	1622	2,000	LF	TEMPORARY SLOPE DRAINS
6029000000-E	SP	3,800	LF	SAFETY FENCE
6030000000-E	1630	21,300	CY	SILT EXCAVATION
6036000000-E	1631	24,500	SY	MATTING FOR EROSION CONTROL
6037000000-E	SP	240	SY	COIR FIBER MAT
6038000000-E	SP	1,550	SY	PERMANENT SOIL REINFORCEMENT MAT
6042000000-E	1632	8,000	LF	1/4" HARDWARE CLOTH
6045000000-E	SP	485	LF	**" TEMPORARY PIPE (24")
6069000000-E	1638	440	CY	STILLING BASINS
6070000000-N	1639	4	EA	SPECIAL STILLING BASINS
6071020000-E	SP	550	LB	POLYACRYLAMIDE (PAM)
6071030000-E	1640	3,160	LF	COIR FIBER BAFFLE
6071050000-E	SP	21	EA	**" SKIMMER (1-1/2")
6071050000-E	SP	1	EA	**" SKIMMER (2")
6084000000-E	1660	45	ACR	SEEDING & MULCHING
6087000000-E	1660	30	ACR	MOWING
6090000000-E	1661	650	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	2	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	1,325	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	40	TON	FERTILIZER TOPDRESSING
6111000000-E	SP	235	LF	IMPERVIOUS DIKE
6114500000-N	1667	40	MHR	SPECIALIZED HAND MOWING
6117000000-N	SP	75	EA	RESPONSE FOR EROSION CONTROL
6120000000-E	SP	430	CY	CULVERT DIVERSION CHANNEL
6123000000-E	1670	0.25	ACR	REFORESTATION
7060000000-E	1705	8,140	LF	SIGNAL CABLE
7120000000-E	1705	32	EA	VEHICLE SIGNAL HEAD (12", 3 SECTION)
7132000000-E	1705	7	EA	VEHICLE SIGNAL HEAD (12", 4 SECTION)
7144000000-E	1705	9	EA	VEHICLE SIGNAL HEAD (12", 5 SECTION)
7264000000-E	1710	2,080	LF	MESSENGER CABLE (3/8")
7300000000-E	1715	1,530	LF	UNPAVED TRENCHING (**********) (1, 2")
7300100000-E	1715	1,655	LF	UNPAVED TRENCHING FOR TEMPORARY LEAD-IN
7324000000-N	1716	19	EA	JUNCTION BOX (STANDARD SIZE)
7360000000-N	1720	3	EA	WOOD POLE
7372000000-N	1721	8	EA	GUY ASSEMBLY
7408000000-E	1722	1	EA	1" RISER WITH WEATHERHEAD
7420000000-E	1722	3	EA	2" RISER WITH WEATHERHEAD
7444000000-E	1725	7,230	LF	INDUCTIVE LOOP SAWCUT
7456000000-E	1726	18,605	LF	LEAD-IN CABLE (**********) (14-2)
7576000000-N	SP	8	EA	METAL STRAIN SIGNAL POLE
7613000000-N	SP	8	EA	SOIL TEST
7614100000-E	SP	48	CY	DRILLED PIER FOUNDATION
7636000000-N	1745	2	EA	SIGN FOR SIGNALS
7684000000-N	1750	3	EA	SIGNAL CABINET FOUNDATION
7756000000-N	1751	3	EA	CONTROLLER WITH CABINET (TYPE 2070L, BASE MOUNTED)
7780000000-N	1751	24	EA	DETECTOR CARD (TYPE 2070L)
7901000000-N	1753	3	EA	CABINET BASE EXTENDER

SUMMARY OF EXPRESSWAY GUTTER

LINE	STATION TO STATION	LOCATION	LENGTH FT.
-RPC-/-Y5-	-RPC- 12+94.37 TO -Y5- 42+61.48	RT./LT.	476.85'
	TOTAL		476.85'
	SAY		480'

SUMMARY OF SHOULDER BERM GUTTER

LINE	STATION TO STATION	LOCATION	LENGTH FT.
-RPC-/-L-	-RPC- 24+80 TO -L- 43+50	RT./RT.	312.19'
-RPB-	-RPB- 12+40 TO 16+81.44	LT.	441.44'
	TOTAL		753.63'
	SAY		760'

SUMMARY OF REMOVAL OF EXISTING ASPHALT PAVEMENT
IN SQUARE YARDS

LINE	STATION TO STATION	LOCATION	ASPHALT REMOVAL
-L-, -Y4-	23+25 TO 27+68	LT.	1352.11
-Y3REV-	10+45 TO 12+14	LT.	236.22
-Y3REV-	12+32 TO 13+10	LT.	133.98
-Y2-	11+68 TO 11+90	RT.	10.86
-Y2-	11+58 TO 12+03	LT.	17.88
-Y4-	17+25 TO 21+36	CL/LT	1083.43
-SR1-, -L-	10+75 TO 45+95	CL/LT	1294.99
-L-	31+24 TO EXIST. BRIDGE	LT.	425.85
-L-	EXIST. BRIDGE TO 35+21	LT.	133.65
-L-, -Y9-	47+75 TO 53+75	RT.	1680.85
-Y5- EXISTING CROSS-OVERS			
-Y5-	13+98 TO 19+30	CL MED	871.14
-Y5-	31+83 TO 37+02	CL MED	842.20
-Y5- EXISTING OUTSIDE 4' PS			
-Y5- NBL	12+47.56 TO 43+00.00	OUTSIDE 4' PS	1356.64
-Y5- SBL	12+47.56 TO 43+25.00	OUTSIDE 4' PS	1367.75
		TOTAL	10807.55
		SAY	10,900

"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 SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS								IMPACT ATTENUATOR TYPE 350					REMOVE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	CAT-1	GRAU 350	TYPE III	TES					PERMITTED NO.	PERMITTED G	PERMITTED NG				
-L-	31+29.93	32+86.18	RT.	156.25'			32+86.18 BRIDGE		7.5'	10' BERM	137.50'		2.75'			1	1											
-L-	31+48.68	32+86.18	LT.	137.50'				31+50 FILL	7.5'	10' BERM					1		1											
-L-	34+93.18	36+49.43	LT.	156.25'			34+93.18 BRIDGE		7.5'	10' BERM	137.50'		2.75'			1	1											
-L-/-Y9-	-L- 49+25.70	-Y9- 11+32.65	RT.	125.00'	57.99'		-Y9- 11+00 FILL		8'- 6'	11'- 9'	50'	50'	1	1		2												
-Y9-/-L-	-Y9- 11+36.58	-L- 51+44.18	LT./RT.	93.75'	72.35'		-Y9- 11+00 FILL	-L- 51+40 FILL	6' - 8'	9' - 11'	50'		1		1	1												
-RPB-	12+31.75	20+88.00	LT.	856.25'			RPB 20+13 FILL	RPB 12+31.75 FILL	12'	15'	50'		1		1	1												
-RPC-/-L-	-RPC- 20+45.07	-L- 47+19.36	RT.	1006.25'	106.64'		RPC 21+50 FILL	-L- 47+00 FILL	14' - 8'	17' - 11'	50'		1		1	1												
-Y5-	15+75.00	18+81.25	RT. (OUTSIDE SBL)	306.25'			17+00 FILL		10'	13'	50'		1		1	1											2268'	REMOVE EXIST GUARDRAIL OUTSIDE SBL & NBL TOTAL
-Y5-	21+60.87	27+85.87	MED. RT.	625'			24+85 BRIDGE PIER		6'	6'	50'	50'	1	1		2											141'	
-Y5-	21+98.37	28+23.37	MED. LT.	625'			25+64 BRIDGE PIER		6'	6'	50'	50'	1	1		2											155'	
-Y5-	40+55.00	43+30.00	RT. (OUTSIDE SBL)	275'			43+30.00		10'	13'	50'		1			1												TIE TO EXISTING GUARDRAIL
-Y5-	42+93.75	43+00.00	LT. (OUTSIDE NBL)	6.25'											1													TIE TO EXISTING GUARDRAIL
-Y5-	22+71	22+97	155' LT.	25'														2										AT DEAD END OF HIBRITEN DRIVE EAST SIDE OF US 321
-Y5-	23+31	23+53	140' RT.	25'														2										AT DEAD END OF HIBRITEN DRIVE WEST SIDE OF US 321
			SUBTOTAL	4418.75'	236.98'										6	13	3	4									2564'	
			LESS ANCHOR DEDUCTIONS																								SAY	2575'	
			CAT-1	6 @ 6.25' =	-37.50'																								
			GRAU 350	13 @ 50.00' =	-650.00'																								
			TYPE III	3 @ 18.75' =	-56.25'																								
			TOTAL	3675.00'	236.98'																								
			SAY	3700'	237.50'																								
			ADDITIONAL GUARDRAIL POSTS =	5																									

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5/9/06

COMPUTED BY: T. SNELL DATE: 5/15/08
CHECKED BY: R. A. SHILLINGLAW DATE: DEC. 14, 2011

PROJECT REFERENCE NO.	SHEET NO.
U-2211B	3-B

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SUMMARY OF EARTHWORK

IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
–Y4– LT 16+68.00 –17+25.00	36		1		35
–Y4– RT. 16+68.00 –17+25.00	14				14
–Y4– FULL. 17+25.00 –20+50.00	54		2,605	2,551	
–Y4– LT. 20+50.00 – 21+36.21	1		46	45	
–Y4– RT. 20+50.00 – 21+36.21	5		70	65	
–Y3REV.– FULL 10+30.08 – 11+50.00	198		84		114
–Y3REV.– RT 11+50.00 –14+30.00	114		101		13
–Y3REV.– LT 11+50.00 –14+30.00	60		81	21	
–Y11– LT. 15+68.54 – 23+12.68	641		71		570
–Y11– LT. 24+01.37 28+35.00	254		143		111
–Y11– RT. 15+68.54 – 23+12.68	155				155
–Y11– RT. 24+01.37 28+35.00	116		99		17
–L– RT. 20+65.03 – 23+25.00	235		385	150	
–L– FULL 23+25.00 – 32+86.18 (BEG. BRIDGE)	1,465		32,758	31,293	
–L– FULL 34+93.18 (END BRIDGE) – 43+25.00	515	4,666	54,633	54,118	4,666
–L– RT. 43+25.00 – 47+75.00	50		4,883	4,833	
–L– LT. 43+25.00 – 47+75.00	3,178		246		2,932
–DR3– FULL 10+60.61 – 11+45.25	3		689	686	
–LPB– FULL 10+00.00 – 17+81.18	624		8,628	8,004	
–RPB– FULL 10+00.00 – 21+81.84	690		61,081	60,391	
–LPC– FULL 10+00.00 – 20+10.60	432	2,220	68,299	67,867	2,220
–RPC– FULL 10+00.00 – 25+50.31	148,833	1,335	32,201		117,967
–Y5– MED. 12+47.56 – 43+25.00	3,172		2		3,170
–Y5– LT. 12+47.56 – 26+86.63	19,338		32		19,306
–Y5– LT. 29+00.00 – 36+00.00	3,350		5,599	2,049	
–Y5– LT. 40+79.00 – 43+00.00	3,173		12		3,161
–Y5– RT. 12+47.56 – 26+35.10	3,713		345		3,368
–Y5– RT. 28+50.00 – 33+50.00	242		5,043	4,801	
–Y5– RT. 36+75.00 – 43+25.00	6,328		2		6,326
–Y4– FULL. 10+52.54 –11+00.00	130		68		62
–Y4– LT. 11+00.00 – 11+98.04	260		45		215
–Y4– RT. 11+00.00 11+98.04	5		35	30	
PHASE I SUBTOTAL	197,384	8,221	278,286	237,103	164,421
ROCK WASTE TO REPLACE BORROW				–1,555	–1,555
ADJUST FOR ROCK SWELL			–389	–389	
ADJUST SHRINKAGE FOR ROCK MATERIAL			–292	–292	
USE SUITABLE WASTE IN LIEU OF BORROW				–154,368	–154,368
PHASE I TOTAL	197,384	8,221	277,606	80,500	8,498

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
–L– FULL 47+75.00 – 53+75.00	5,870		1,279		4,591
–L– LT. 53+75.00 – 56+50.00	45		176	131	
–L– RT. 53+75.00 – 56+50.00	127		44		83
–DR1– 10+60.50 –11+39.36	627				627
–Y10– 10+12.06 – 10+97.52	119				119
–Y9– FULL 10+20.85 – 12+40.41	251		868	617	
–SR1– FULL 10+20.00 – 13+01.20	163	410	8,786	8,623	410
–DR2– 10+50.00 –11+53.90			1,503	1,503	
–L– LT. 20+65.03 – 23+25.00	746		60		686
–Y3– LT 17+80.00 – 18+85.03	16		9		7
–Y3– RT 17+80.00 – 18+85.03	9		40	31	
PHASE II SUBTOTAL	7,973	410	12,765	10,905	6,523
USE SUITABLE WASTE IN LIEU OF BORROW				–6,113	–6,113
PHASE II TOTAL	7,973	410	12,765	4,792	410
PROJECT SUBTOTAL (PHASE I + PHASE II)	205,357	8,631	290,371	85,292	8,908
MATERIAL FOR SHOULDER CONSTRUCTION			5,520	5,520	
LOSS DUE TO CLEARING & GRUBBING	–4,500			4,500	
ADDT'L UNDERCUT FOR EMBANKMENT STABILITY		1,000	1,150	1,150	1,000
ADDITIONAL UNDERCUT GRADE POINTS		650	748	748	650
SELECT GRANULAR IN LIEU OF BORROW			–7,000	–7,000	
PROJECT SUBTOTALS	200,857	10,281	290,788	90,209	10,558
EST. 5% TO REPLACE TOPSOIL ON BORROW PIT				4,510	
GRAND TOTAL	200,857	10,281	290,788	94,719	10,558
SAY	201,000	10,300		94,800	

SHALLOW UNDERCUT CONTINGENCY 2,000 CY

–L–, –Y5–, –LPB–, –LPC–, –RPB–, AND –RPC– PAVEMENT STRUCTURE VOLUME = 15,907 CY

SEE SHEET 3-L FOR DDE QUANTITIES

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.

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RD238314

COMPUTED BY: T. SNELL DATE: 4/30/2008

CHECKED BY: R. SHILLINGLAW DATE: 9/22/2011

PROJECT NO.	SHEET NO.
U-2211B	3-C

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	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	SIDE DRAIN 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 12"	15"	18"	24"	30"	36"	42"	48"	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"	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION STD'S 852.04, 852.05, 852.06 DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME WITH TWO GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. FRAME AND COVER STD. 840.54	OPEN THROAT CATCH BASIN STD. 840.04 OR 840.05	MODIFIED OPEN THROAT CATCH BASIN (SP)	BERM DRAINAGE OUTLET, STD. 850.10	PREFORMED SCOUR HOLE	FLOWABLE FILL (CY)	ADJUSTMENT OF DROP INLETS	CONVERT EXISTING DROP INLET TO JUNCTION BOX	CORR. STEEL 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
THICKNESS OR GAUGE																				.064	.064	.064	.064	.079	.079	.109	.109																																																				
-Y11- 20+15	LT.	1		1288.93																																										1	0.25		1			1																										
		2	1		1285.38	1285.18					16																																																																			50	
-Y11- 20+15	LT.	2		1290.6																																										1	0.22																1			1														
	LT.	1	3		1283.68	1281.01																																				196																																					158	
-Y11- 22+10	LT.	3		1286.26																																										1	0.25		1			1																										
		4	3		1284	1283.36			16																																																																							
-Y11- 22+10	LT.	4		1289																																										1																	1			1														
		3	5		1281.01	1278.91																																				28																																					32	
-Y11- 22+40	LT.	5		1286.15																																										1	2.24		1	1																														
-Y11- 22+70	LT.	6		1285.76																																										1			1	1																														
		5	7		1278.91	1276.12																																				40																																					33	
		6	7		1281.73	1280.73																																		20																																									
-Y11- 22+80	LT.	7		1286.35																																										1	5.0	0.23																		1		1												
-L- 21+05.04	RT.	8		1287.03																																										1							1		1	1																								
		8	9		1283.95	1283.69																																	52																																										
-L- 20+95	RT.	9		1291.16																																										1	5.0	2.13							1	1																							
		9	11		1279.03	1277.35			40																																																																							32	
		10	11		1275.62	1275.08																																				16																																			0.8856	12	
-Y11- 24+35	LT.	11		1287.9																																										1	5.0	2.82																	1			1													USE STD. 840.31 or 840.32
-Y11- 25+63	LT.	12		1285.4	1282.4																																									1			1			1																										
-Y11- 25+70	LT.	12	12A		1282.4	1282.0																																	8																																										
-Y11- 25+74	LT.	12A		1285.8																																																															1							1					SEE SPECIAL DETAIL SHT. 2-N
-Y11- 27+08	LT.	13		1279.66																																										1			1			1																										
-Y11- 27+10	RT.	14A		1279.66																																										1			1		1																											
		14A	14		1276.66	1276.26																																	52																																										
		13	14		1276.66	1276.26																																	8																																										
-Y11- 27+12	LT.	14		1279.87																																										1																			1		1												
		15	13		1277.33	1276.66			32																																																																						
-Y11- 27+33	LT.	15		1280.5																																										1																	1			1														
-L- 21+45	LT.	16		1285.57																																										1			1			1																										
		16	6		1281.97	1281.73	X																																	40																																									
-L- 21+50	RT.	17		1287.08																																										1							1		1	1																								
		17	8		1284.87	1283.95																																	44																																										
-L- 21+95	LT.	18		1285.94																																										1			1			1																										
		18	16		1282.21	1281.97	X																																	48																																									
-L- 22+20	RT.	19		1287.01																																										1	1.58		1			1																										
		20	19		1284.12	1280.43																																	36																																								24	
-L- 22+55	RT.	20		1287.12																																										1			1			1																										
		21	20		1284.56	1284.12																																	48																																										
-L- 23+05	RT.	21		1287.56																																										1			1			1																										
		22	21		1286.17	1284.56																																	28																																										
-L- 23+05	RT.	22		1288.42																																										1							1		1	1																								
SHEET TOTALS									88		16																										276	108				280				22	19.54	5.18	12	2	1	9	3		4	4							3	1	2	3	4							1			0.8856	341	

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: T. SNELL DATE: 4/30/2008

CHECKED BY: R. SHILLINGLAW DATE: 9/19/2011

RD238314

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-2211B	3-D

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

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 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	SIDE DRAIN 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 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	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"	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION STD'S 852.04, 852.05, 852.06 DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME WITH TWO GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. FRAME AND COVER STD. 840.54	OPEN THROAT CATCH BASIN STD. 840.04 OR 840.05	MODIFIED OPEN THROAT CATCH BASIN (SP)	BERM DRAINAGE OUTLET, STD. 850.10	PREFORMED SCOUR HOLE	FLOWABLE FILL (CY)	ADJUSTMENT OF DROP INLETS	CONVERT EXISTING DROP INLET TO JUNCTION BOX	CORR. STEEL 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
		23	18		1283.20	1282.21	X																														144																																										
-L- 23+40	LT.	23		1287.97																																										1			1		1																												
		24	23		1283.42	1283.20	X		48																																																																							
-L- 23+83	LT.	24		1285.50																																										1																								1												
-L- 23+85	LT.	25		1288.96																																										1			1		1																												
-L- 23+85	LT.	25	26		1283.96	1283.60																																		8																																					0.6560	7	
-L- 23+91	RT.	26A																																																																												0.6560		
		27	25		1287.59	1283.96																																	80																																									56	
-L- 24+70	LT.	27		1291.34																																										1			1		1																												
		28	27		1290.33	1287.59					32																																																																						
-Y3- 18+45	RT.	28		1294.73																																										1																				1			1													
-Y3- 17+85	RT.	29		1295.28																																										1			1		1																												
		29	30		1292.28	1291.82																															12																																											
-Y3- 17+98	RT.	30		1294.82																																										1			1	1																													
-Y3- 17+85	LT.	31		1295.37																																										1			1			1																											
		31	32		1292.37	1291.95																															12																																											
-Y3- 17+98	LT.	32		1294.95																																										1			1	1																													
		32	30		1291.95	1291.82																															24																																											
		30	28		1291.82	1290.33			52																																																																						
		33	28		1291.09	1290.33																																	76																																									55	
-Y3- 18+60	LT.	33		1295.49																																										1									1	1																							24	
		34	33		1292.83	1291.09			32																																																																						
-L- 25+95	LT.	34		1296.80																																										1									1	1																								
		35	34		1292.89	1292.83	X		12																																																																							
-L- 25+95	LT.	35		1295.89																																										1			1		1																												
		36	35		1293.69	1292.89																															96																																											
-L- 26+25	RT.	36		1296.69																																										1			1			1																											
-L- 26+50	RT.	37		1297.52																																										1			1			1																											
		37	36		1294.52	1293.69																															24																																											
-L- 30+00	CL.	38		1306.71																																										1							1		1	1																								
		38	39		1303.54	1303.28	X																														48																																											
-L- 30+50	CL.	39		1307.50																																										1							1		1	1																								
		39	40		1303.28	1303.05																															28																																											
		39A							48																																																																						
-L- 30+50	RT.	40		1306.05																																										1			1			1																											
		40	41		1303.05	1297.17			112																																																																						
-LPB- 17+00	RT.	41		1300.57																																										1			1			1																											
		42	41		1297.37	1297.17	X																														36																																											
-LPB- 17+00	LT.	42		1300.54																																										1							1		1	1																								
		41	43		1297.17	1288.86																															128																																											
-LPB- 15+67	RT.	43		1291.86																																										1			1			1																											
		44	43		1290.53	1288.86																															52																																											
SHEET TOTALS									304		32																										604		156	8						20			13	2	5	6	3		5	5									1			1	1										1.3120	142	

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

RD238314

COMPUTED BY: T. SNELL DATE: 4/30/2008

CHECKED BY: R. SHILLINGLAW DATE: 9/19/2011

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-2211B	3-E

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

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

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	SIDE DRAIN 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								R.C. PIPE CLASS III								R.C. PIPE CLASS IV							
SIZE								12"	15"	18"	24"	30"	36"	42"	48"					12"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"	42"	48"
THICKNESS OR GAUGE																				.064	.064	.064	.064	.079	.079	.109	.109																
-RPB- 19+60	RT.	44		1293.70																																							
		43	45		1288.86	1281.63																															100						
-LPB- 14+50	RT.	45		1284.63																																							
		45	46		1281.63	1281.17																															72						
		47	48		1303.50	1284.84															48																						
-Y5- 23+00	RT.	48		1287.84																																							
		48	49		1284.84	1281.60				48																																	
-Y5- 23+50	RT.	49		1284.35																																							
		49	51		1281.60	1281.36	X			92																																	
		50	51		1291.05	1281.36															20																						
-Y5- 24+43	RT.	51		1286.15																																							
		51	52		1281.36	1279.78					32																																
-Y5- 24+75	RT.	52		1285.79																																							
		52	53		1279.78	1278.96	X				100																																
-Y5- 25+75	RT.	53		1283.96																																							
		53	54		1278.96	1277.97					124																																
		55	56		1275.14	1274.14					44																																
-LPB- 12+33	RT.	56		1278.27																																							
		56	57		1274.14	1273.00																																	28				
-LPB- 12+65	RT.	57		1278.43																																							
		57	58		1273.00	1269.80																																	88				
-RPB- 15+66	LT.	59		1286.11																																							
		59	60		1283.36	1283.22	X																														28						
-RPB- 15+97	LT.	60		1286.20																																							
		60	61		1283.22	1259.00															132																						
		62	167		1258.00	1255.00					120																																
-Y5- 22+51	LT.	63	64		1281.11	1280.59																								28													
-Y5- 23+26	CL	65		1284.17																																							
		65	66		1279.65	1278.08					148																																
-Y5- 24+75	CL	66		1281.76																																							
		66	67		1278.08	1277.97																																	12				
-Y5- 24+75	LT.	67		1283.27																																							
		67	68		1277.97	1277.08																																	100				
-Y5- 25+75	LT.	68		1281.98																																							
		68	69		1277.08	1276.94																																	12				
-Y5- 25+75	CL.	69		1280.44																																							
		69	70		1276.94	1274.35					240																																
-Y5- 28+19	CL.	70		1278.81																																							
		70	72		1274.35	1266.07																																	128				
-Y5- 28+00	LT.	71		1278.18																																							
		71	72		1275.43	1266.07															68																						
SHEET TOTALS										140	808										268									28							200		368				

STATION	STRUCTURE NO. FROM	STRUCTURE NO. TO	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION STD'S 852.04, 852.05, 852.06 DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME WITH TWO GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. FRAME AND COVER STD. 840.54	OPEN THROAT CATCH BASIN STD. 840.04 OR 840.05	MODIFIED OPEN THROAT CATCH BASIN (SP)	BERM DRAINAGE OUTLET, STD. 850.10	PREFORMED SCOUR HOLE	FLOWABLE FILL (CY)	ADJUSTMENT OF DROP INLETS	CONVERT EXISTING DROP INLET TO JUNCTION BOX	CORR. STEEL 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
-RPB- 19+60	44				1							1		1	1																							
	43	45																																				
-LPB- 14+50	45				1			1			1																											
	45	46																																				
	47	48																												1					2-15"			16	ROD & LUG CONNECTORS
-Y5- 23+00	48				1												1				1																	
	48	49																																				
-Y5- 23+50	49				1												1				1																	
	49	51																																				
	50	51																												1					2-15"				
-Y5- 24+43	51				1												1				1																	
	51	52																																				
-Y5- 24+75	52				1	1.01																		1		1												
	52	53																																				
-Y5- 25+75	53				1																			1		1												
	53	54																																				
	55	56																																				
-LPB- 12+33	56				1			1	1																													
	56	57																																				
-LPB- 12+65	57				1	0.43		1			1																											
	57	58																																				
-RPB- 15+66	59				1												1					1																SEE STD. 846.04
	59	60																																				
-RPB- 15+97	60				1												1					1																SEE STD. 846.04
	60	61																																	2-15"				ROD & LUG CONNECTORS
	62	167																																					INTO SIDE OF RCBC
-Y5- 22+51	63	64																																			0.4465		
-Y5- 23+26	65																																1						
	65	66																																					
-Y5- 24+75	66				1												1		1																				
	66	67																																					
-Y5- 24+75	67				1	0.30																		1		1												
	67	68																																				100	
-Y5- 25+75	68				1																			1		1												
	68	69																																					
-Y5- 25+75	69				1												1		1																				
	69	70																																				240	
-Y5- 28+19	70																																1						
	70	72																																				83	
-Y5- 28+00	71				1												1		1																			25	
	71	72																																	2-15"				ROD & LUG CONNECTORS
SHEET TOTALS					16	1.74		3	1		2	1		1	1		8		3		3	2		4		4			2			2		8-15"		0.4465	464	

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

RD238314

COMPUTED BY: T. SNELL DATE: 4/30/2008

CHECKED BY: R. SHILLINGLAW DATE: 9/20/2011

PROJECT NO.	SHEET NO.
U-2211B	3-F

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	Side Drain 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 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109
-Y5- 30+33	CL.	73		1281.18																							
-L- 35+20	RT.	74		1307.01																							
		74	75		1303.84	1302.71																					
-L- 35+20	RT.	75		1305.71																							
		75	76		1302.71	1300.08																					
-L- 36+50	RT.	76		1303.08																							
		76	78		1300.08	1297.91																					
-L- 37+50	LT.	77		1303.71																							
		77	78		1300.00	1297.91																					
-L- 37+50	RT.	78		1300.91																							
		78	80		1297.91	1293.73																					
-L- 39+50	LT.	79		1298.62																							
		79	80		1295.45	1293.73																					
		80		1296.90																							
		80	81		1293.73	1274.50															112						
-Y5- 30+30	LT.	82	83		1259.52	1257.74																20					
-Y5- 30+30	LT.	83		1266.36																							
		83	84		1257.74	1257.70				12																	
-LPC- 14+00	LT.	85		1264.00																							
		85	86		1260.50	1259.20																					
-LPC- 13+00	LT.	90		1278.01																							
		90	91		1275.01	1273.89																					
-LPC- 14+40	LT.	91		1276.89																							
		91	96		1273.89	1273.56																					
-RPC- 23+15	LT.	92		1286.35																							
		92	93		1283.18	1282.08																					
-LPC- 17+82	LT.	93		1285.08																							
		93	94		1282.08	1277.85																					
-LPC- 16+80	LT.	94		1280.85																							
		94	95		1277.85	1273.93																					
-LPC- 15+50	LT.	95		1276.93																							
		95	96		1273.93	1273.56																					
-LPC- 14+96	LT.	96		1276.56																							
		96	97		1273.56	1262.33																					
-SR1- 10+57	LT.	98	99		1294.0	1284.50																88					
-SR1- 11+00	LT.	99		1288.0																							
		99	205		1284.5	1280.05				44																	
-SR1- 12+00	LT.	100		1283.4																							
-SR1- 12+00	LT.	100	205		1277.15	1278.05								80													
-SR1- 11+40	LT.	205		1284.3																							
		205	206		1278.05	1278.15																				12	
-DR2- 11+09	LT/RT	100	101		1277.15	1279.00								80													
-L- 38+95	LT.	102		1283.87																							
		102	103		1281.12	1279.00																					
		104	105		1281.00	1280.00					44																
-DR2- 10+50	CL	104			1284.50																						
SHEET TOTALS										56	44			160							112	108				12	

Station	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"	Endwalls Std. 838.01 or Std. 838.11 (Unless Noted Otherwise) Cu. Yards R.C.P.	C.S.P.	Quantities for Drainage Structures Per Each (0' thru 5.0')	*Total L.F. for Pay Quantity shall be Col. 'A' + (1.3 X Col. 'B') Lin. Ft. A 5.0' thru 10.0'	B 10.0' and above	C.B. Std. 840.01 or Std. 840.02	Frame, Grates, and Hood Standard 840.03 Type of Grate E	F	G	Concrete Transitional Section Std's 852.04, 852.05, 852.06 Drop Inlet	Catch Basin
-Y5- 30+33	73																												
-L- 35+20	74																				1							1	
	74	75										28																	
-L- 35+20	75																				1			1		1			
	75	76										128																	
-L- 36+50	76																				1			1		1			
	76	78										96																	
-L- 37+50	77																				1							1	
	77	78										52																	
-L- 37+50	78																				1			1		1			
	78	80										176																	
-L- 39+50	79																				1							1	
	79	80										56																	
	80																				1			1		1			
	80	81																											
-Y5- 30+30	82	83																											
-Y5- 30+30	83																				1	3.62							
	83	84																											
-LPC- 14+00	85																				1								
	85	86												48															
-LPC- 13+00	90																				1			1			1		
	90	91										132																	
-LPC- 14+40	91																				1			1			1		
	91	96										52																	
-RPC- 23+15	92																				1							1	
	92	93										36																	
-LPC- 17+82	93																				1			1		1			
	93	94										96																	
-LPC- 16+80	94																				1			1		1			
	94	95										120																	
-LPC- 15+50	95																				1			1		1			
	95	96										52																	
-LPC- 14+96	96																				1			1	1				
	96	97										128																	
-SR1- 10+57	98	99																											
-SR1- 11+00	99																				1								
	99	205																											
-SR1- 12+00	100																				1	1.25							
-SR1- 12+00	100	205																											
-SR1- 11+40	205																				1	1.25							
	205	206																		3.8									
-DR2- 11+09	100	101																											
-L- 38+95	102																				1								
	102	103										172																	
	104	105																											
-DR2- 10+50	104																				1								
SHEET TOTALS												1324		48						3.8	21	6.12		10	1	7	2	4	

Station	From	To	D.I. Std. 840.14 or Std. 840.15	D.I. Frame with Two Grates Std. 840.16	G.D.I. Type "A" Std. 840.17 or 840.26	G.D.I. Type "B" Std. 840.18 or 840.27	G.D.I. Type "D" Std. 840.19 or 840.28	G.D.I. Frame with Two Grates Std. 840.22	G.D.I. (N.S.) Frame with Grate Std. 840.24	G.D.I. (N.S.) Frame with Two Grates Std. 840.24	G.D.I. (N.S.) Frame with Two Grates Std. 840.29	J.B. Std. 840.31 or 840.32	T.B.J.B. Std. 840.34	T.B.D.I. Std. 840.35	M.H. Frame and Cover Std. 840.54	Open Throat Catch Basin Std. 840.04 or 840.05	Modified Open Throat Catch Basin (SP)	Berm Drainage Outlet, Std. 850.10	Preformed Scour Hole	Flowable Fill (CY)	Adjustment of Drop Inlets	Convert Existing Drop Inlet to Junction Box	Corr. Steel 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
-Y5- 30+33	73																				1						
-L- 35+20	74		1	1																							
	74	75																									
-L- 35+20	75																										
	75	76																									
-L- 36+50	76																										
	76	78																									
-L- 37+50	77		1	1																							
	77	78																									
-L- 37+50	78																										
	78	80																									
-L- 39+50	79		1	1																							
	79	80																									
	80																										
	80	81																					2-15"				ROD & LUG CONNECTORS
-Y5- 30+30	82	83																							0.4465		
-Y5- 30+30	83					1		1																			
	83	84																									INTO SIDE OF RCBC
-LPC- 14+00	85																1										MODIFY STD. 840.04 or 840.05 WITH OVERFLOW
																											INCIDENTAL ORIFICE PER DITCH DETAIL "S"
	85	86																									
-LPC- 13+00	90																										
	90	91																									
-LPC- 14+40	91																										
	91	96																									
-RPC- 23+15	92		1	1																							
	92	93																									
-LPC- 17+82	93																										
	93	94																									
-LPC- 16+80	94																										
	94	95																									
-LPC- 15+50	95																										
	95	96																									
-LPC- 14+96	96																										
	96	97																									
-SR1- 10+57	98	99																									
-SR1- 11+00	99					1					1																
	99	205																									
-SR1- 12+00	100				1						1																
-SR1- 12+00	100	205																									
-SR1- 11+40	205				1						1																
	205	206																									
-DR2- 11+09	100	101																								98	REMOVE 5 PIPES
-L- 38+95	102					1				1																	
	102	103																									
	104	105																									
-DR2- 10+50	104															1											
SHEET TOTALS			4	4	2	3		1		1	3					1	1				1		2-15"		0.4465	98	

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

RD238314

COMPUTED BY: T. SNELL DATE: 4/30/2008

CHECKED BY: R. SHILLINGLAW DATE: 9/21/2011

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-2211B	3-G

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

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

STATION	LOCATION (LT, RT, OR CL')	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	SIDE DRAIN 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
-LPC- 19+32	RT.	108		1292.80															
		108	109		1289.63	1289.51	X												
-LPC- 19+60	RT.	109		1293.86															
		109	110		1289.51	1289.25	X												
-RPC- 24+80	RT.	110		1292.83															
		110	111		1289.25	1265.30													
RPC- 20+60	RT.	112		1279.76															
		112	113		1274.10	1271.00					116								
-L- 43+65	LT.	114							28										
-L- 43+50	RT.	115		1289.50															
		115	116		1286.33	1275.81													
-L- 44+47	LT.	117							28										
-L- 45+25	LT.	118		1282.57															
-L- 46+00	LT.	118B		1280.80															
		118	119		1277.83	1277.69													
-L- 45+25	RT.	119		1285.87															
		119	120		1277.69	1274.00													
		118B	118		1278.05	1277.83	X		68										
-L- 46+52	RT.	121		1283.29															
		121	122		1271.62	1266.40													
-L- 46+45	RT.	122		1274.00															
		122	122A		1266.40	1266.00					16								
		121	125		1271.62	1273.44													
		123	124		1291.40	1274.47													
-L- 48+38	LT.	124		1278.39															
-L- 48+38	LT.	125		1281.36															
		124	125		1273.72	1273.44													
		124	126		1273.97	1277.65					68								
-L- 49+00	LT.	127		1281.49															
		125	127		1274.19	1278.32													
-Y9- 11+56	RT.	129										28							
-Y9- 11+80	LT.	131		1280.49															
		132	131		1282.88	1277.07				56									
		131	130		1277.07	1274.00				76									
-Y10- 10+31	LT/RT	136	135		1292.64	1292.89					56								
-Y2- 11+20	LT.	137		1300.02															
		137	138		1297.02	1296.50													
-Y2- 11+20	RT.	138		1299.50															
-Y3- 11+71	LT.	139		1298.30															
		139	141		1295.13	1295.05	X		32										
		138	140		1296.50	1295.05													
-Y2- 11+77	RT.	140		1299.11															
		140	141		1294.80	1293.94			48										
-Y3- 11+95	RT.	141		1297.19															
		142	145		1296.79	1294.19													
SHEET TOTALS									204	132	256	28							

STATION	FROM	TO	C.S. PIPE 12" .064	C.S. 15" .064	C.S. 18" .064	C.S. 24" .064	C.S. 30" .079	C.S. 36" .079	C.S. 42" .109	C.S. 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"	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.
	108	109																		28								
	109	110																		52								
	110	111		64																								
	115	116		32																								
	118	119																		52								
	119	120																		52								
	121	122																				44						
	121	125																				184						
	123	124		36																								
	124	125																				36						
	125	127																		60								
	137	138																		24								
	138	140																		52								
	142	145																		52								
SHEET TOTALS				132																372		264						

STATION	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 STD'S 852.04, 852.05, 852.06 DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME WITH TWO GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. FRAME AND COVER STD. 840.54	OPEN THROAT CATCH BASIN STD. 840.04 OR 840.05	MODIFIED OPEN THROAT CATCH BASIN (SP)	BERM DRAINAGE OUTLET, STD. 850.10	PREFORMED SCOUR HOLE	FLOWABLE FILL (CY)	ADJUSTMENT OF DROP INLETS	CONVERT EXISTING DROP INLET TO JUNCTION BOX	CORR. STEEL 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
-LPC- 19+32	108		1							1		1	1																							
-LPC- 19+60	109		1							1		1	1																							
-RPC- 24+80	110		1												1					1																SEE STD. 846.04
	110	111																														2-15"				ROD & LUG CONNECTORS
RPC- 20+60	112		1	0.66										1			1																			
-L- 43+50	115		1												1					1																SEE STD. 846.04
	115	116																										1				2-15"				ROD & LUG CONNECTORS
-L- 45+25	118		1												1				1																	
-L- 46+00	118B		1												1				1																	
-L- 45+25	119		1	3.18		1			1		1																									
	119	120																										1								
-L- 46+52	121		1	5.00	1.67	1			1		1																									
	121	122																																	28	
-L- 46+45	122		1	2.60																	1			1												
	123	124																									1					2-15"				
-L- 48+38	124		1												1				1																	
-L- 48+38	125		1	2.92						1		1	1																							
-L- 49+00	127		1							1		1	1																							
-Y9- 11+56	129																																		26	
-Y9- 11+80	131		1																	1			1												125	REMOVE 2 PIPES
-Y10- 10+31	136	135																																	60	
-Y2- 11+20	137		1			1			1																											
-Y2- 11+20	138		1			1		1																												
-Y3- 11+71	139		1																	1			1													
-Y2- 11+77	140		1			1		1																												
-Y3- 11+95	141		1			1			1																											
SHEET TOTALS			19	14.36	1.67	6		2	4	4	2	4	4	1	5		1		3	4	1		2	1			1	2				6-15"			239	

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

RD238314

COMPUTED BY: T. SNELL DATE: 4/30/2008

CHECKED BY: R. SHILLINGLAW DATE: 9/21/2011

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-2211B	3-H

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

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 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	SIDE DRAIN 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 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	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"	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION STD'S 852.04, 852.05, 852.06 DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME WITH TOW GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. FRAME AND COVER STD. 840.54	OPEN THROAT CATCH BASIN STD. 840.04 OR 840.05	MODIFIED OPEN THROAT CATCH BASIN (SP)	BERM DRAINAGE OUTLET, STD. 850.10	PREFORMED SCOUR HOLE	FLOWABLE FILL (CY)	ADJUSTMENT OF DROP INLETS	CONVERT EXISTING DROP INLET TO JUNCTION BOX	CORR. STEEL 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
-Y3- 12+79	RT.	142		1299.79																																										1			1			1																										
		143	142		1299.44	1296.79																															68																																											
-Y3- 13+59	RT.	143		1302.44																																										1			1			1																										
		144	143		1300.00	1299.44																															40																																										
-Y3- 13+55	LT.	144		1304.73																																										1																		1			1													
-Y3- 11+86	RT.	145		1296.66																																										1			1			1																										
		145	141		1292.91	1293.44																																36																																									
-Y3- 11+51	RT.	146		1296.53																																										1			1	1																												
		146	149		1292.78	1291.94																																	28																																						
		146	145		1292.78	1292.91																																	28																																						
-Y3- 12+65	LT.	147		1296.50																																										1									1	1																								
		147	141		1293.33	1292.78																															76																																											
-Y3- 11+20	LT.	148		1298.30																																										1	0.48																1			1															
-Y3- 11+22	RT.	149		1296.69																																										1			1		1																										0.116			
		148	149		1292.82	1291.94																																		48																																					
-Y3- 10+77	RT.	150		1297.75																																										1	1.19		1		1																												
		149	150		1291.94	1291.56																																			44																																				
-Y11- 17+14	LT.	151		1298.07																																										1	2.02		1			1																										
		150	151		1291.56	1291.05							68																																																																			
		151	1		1291.05	1284.18																																			300																																				
-Y5- 17+00	LT.	154		1292.00																																																																1							1					SEE SPECIAL DETAIL SHT. 2-N
-Y5- 17+00	LT.	153		1290.70																																										1	0.95											1				1																		
		153	154		1284.75	1283.13				8																																																																						
Y5- 18+35	LT.	155		1289.43																																										1													1			1																	
		155	156		1287.26	1286.75			4																																																																						
-Y5- 18+35	LT.	156		1290.70																																																															1							1					SEE SPECIAL DETAIL SHT. 2-N
		158	157		1289.17	1288.74																									8																																															0.4465		
-Y5- 18+35	LT.	158		1292.17																																										1									1	1																								
		160	161		1256.60	1260.00					16																																																																			
-RPC- 19+50	LT.	163		1280.78																																										1												1				1																		
		163	164		1278.03	1276.15																															84																																												
-RPC- 19+50	RT.	164		1280.15																																										1											1					1																		
		165	164		1334.90	1276.15															124																																																1					2-15"				BDO & ROD & LUG CONNECTORS
		164	112		1275.40	1274.10					108																																																																			
-RPC- 16+50	RT.	189		1287.23																																										1												1				1																		
		189	164		1284.23	1275.65				288																																																																						
-RPC- 12+90	RT.	190		1300.44																																										1												1					1																	SEE STD. 846.02
		190	189		1297.69	1284.48			348																																																																							
-Y5- 33+42	LT.	165	166		1283.24	1281.67																										20																																															0.5526		
SHEET TOTALS									352	296	124		68								124									8	20						268	36	56	48	344					17	4.64		7	1	2	4			2	2	1	4	1			5	2	1		1	3			1				2	2-15"	0.116	0.9991		

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: T. SNELL	DATE: 4/30/2008
CHECKED BY: R. SHILLINGLAW	DATE: 9/21/2011

PROJECT NO.	SHEET NO.
U-2211B	3-I

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

RD238314

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	Side Drain 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
		169	168		1275.08	1274.75				28									
-Y5- 32+00	RT.	169		1278.08															
		171	169		1287.50	1275.08				152									
-Y5- 33+50	RT.	171		1290.30															
		172	171		1288.13	1287.50													
-Y5- 34+75	RT.	172		1291.13															
		191	172		1294.25	1288.38			172										
-Y5- 36+50	RT.	191		1297.00															
		194	195		1339.02	1303.93													
-Y5- 40+50	LT.	195		1306.68															
		195	196		1303.93	1299.55													
-RPC- 11+32	RT.	196		1304.95															
		196	197		1299.30	1298.98													
-Y5- 39+29	CL	198		1303.78															
-Y5- 35+66	CL	199		1295.75															
-RPB- 15+26	LT.	170		1286.32															
		170	59		1283.57	1283.36													
-Y4- 17+50	LT.	173		1259.18															
		173	174		1256.10	1255.85													
-Y4- 17+70	LT.	174		1259.15															
		174	175		1255.60	1255.26													
-Y4- 17+90	LT.	175		1259.26															
		175	177		1255.26	1253.50													
-Y4- 18+47	LT.	176		1256.00															
		176	178		1252.00	1251.90			12										
-Y4- 17+50	RT.	179		1259.27															
		179	180		1256.20	1256.10													
-Y4- 17+70	RT.	180		1259.15															
		180	181		1255.85	1255.75	X												
-Y4- 17+90	RT.	181		1259.26															
		181	182		1255.75	1253.70													
-Y4- 18+30	RT.	182		1259.82															
		182			1253.70	1253.50													
		185	183		1254.90	1252.05													
-Y4- 19+00	LT.	185		1261.40															
		186	185		1255.40	1254.90													
SHEET TOTALS									184	180									

Station	From	To	C.S. Pipe 12"	15"	18"	24"	30"	36"	42"	48"	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"
Thickness or Gauge			.064	.064	.064	.064	.079	.079	.109	.109																
	172	171																			128					
	194	195		72																						
	195	196																		100						
	196	197			12																					
	170	59																		36						
	173	174																		20						
	174	175																			20					
	175	177																			68					
	179	180																		20						
	180	181																			20					
	181	182																			40					
	182																				16					
	185	183																		36						
	186	185																		52						
SHEET TOTALS				72	12															264	292					

Station	From	To	Endwalls Std. 838.01 or Std. 838.11 (Unless Noted Otherwise) Cu. Yards R.C.P.	C.S.P.	Quantities for Drainage Structures Per Each (0' thru 5.0')	*Total L.F. for Pay Quantity Shall Be Col. 'A' + (1.3 X Col.'B') Lin. Ft. A 5.0' thru 10.0'	B 10.0' and Above	C.B. Std. 840.01 or Std. 840.02	Frame, Grates, and Hood Standard 840.03 Type of Grate E	F	G	Concrete Transitional Section Std's 852.04, 852.05, 852.06 Drop Inlet	Catch Basin	D.I. Std. 840.14 or Std. 840.15	D.I. Frame with Two Grates Std. 840.16
-Y5- 32+00	169				1										
-Y5- 33+50	171				1										
-Y5- 34+75	172				1										
-Y5- 36+50	191				1										
-Y5- 40+50	195				1										
-RPC- 11+32	196				1	0.65									
-RPB- 15+26	170				1										
-Y4- 17+50	173				1			1		1					
-Y4- 17+70	174				1			1	1						
-Y4- 17+90	175				1			1			1				
-Y4- 18+47	176				1										
-Y4- 17+50	179				1			1		1					
-Y4- 17+70	180				1			1	1						
-Y4- 17+90	181				1			1			1				
-Y4- 18+30	182				1	1.12		1			1				
-Y4- 19+00	185				1	1.50									
SHEET TOTALS					16	3.27		7	2	2	3				

Station	From	To	G.D.I. Type "A" Std. 840.17 or 840.26	G.D.I. Type "B" Std. 840.18 or 840.27	G.D.I. Type "D" Std. 840.19 or 840.28	G.D.I. Frame with Two Grates Std. 840.22	G.D.I. (N.S.) Frame with Grate Std. 840.24	G.D.I. (N.S.) Frame with Two Grates Std. 840.24	G.D.I. (N.S.) Frame with Two Grates Std. 840.29	J.B. Std. 840.31 or 840.32	T.B.J.B. Std. 840.34	T.B.D.I. Std. 840.35	M.H. Frame and Cover Std. 840.54	Open Throat Catch Basin Std. 840.04 or 840.05	Modified Open Throat Catch Basin (SP)	Berm Drainage Outlet, Std. 850.10	Preformed Scour Hole	Flowable Fill (CY)	Adjustment of Drop Inlets	Convert Existing Drop Inlet to Junction Box
-Y5- 32+00	169			1				1												
-Y5- 33+50	171			1				1												
-Y5- 34+75	172			1				1												
-Y5- 36+50	191			1				1												
	194	195														1				
-Y5- 40+50	195			1					1											
-RPC- 11+32	196			1					1											
-Y5- 39+29	198																		1	
-Y5- 35+66	199																		1	
-RPB- 15+26	170			1					1											
-Y4- 18+47	176			1					1											
-Y4- 19+00	185									1			1							
SHEET TOTALS				8				4	4	1			1			1			2	

Station	From	To	Corr. Steel 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
	194	195	2-15"			41	ROD & LUG CONNECTORS
-Y5- 40+50	195						SEE STD. 846.02
-RPC- 11+32	196						SEE STD. 846.02
	196	197			0.4465		
-RPB- 15+26	170						SEE STD. 846.04
	175	177					INTO SIDE OF RCBC
	176	178					INTO SIDE OF RCBC
	182						INTO SIDE OF RCBC
SHEET TOTALS			2-15"		0.4465	41	

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: T. SNELL DATE: 4/30/2008

CHECKED BY: R. SHILLINGLAW DATE: 9/21/2011

PROJECT NO.	SHEET NO.
U-2211B	3-J

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

RD238314

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	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 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
								THICKNESS OR GAUGE												
-Y4- 19+50	LT.	186		1261.51																
		187	186		1255.86	1255.40														
-Y4- 19+90	LT.	187		1258.60																
		188	187		1260.00	1255.86														
-Y4- 20+75	LT.	188		1263.53																
		200	201		1295.22	1293.70					60									
-Y11- 17+40	RT.	201		1296.92																
		201	202		1293.70	1288.40														
-Y11- 19+15	RT.	202		1291.67																
		202	203		1288.40	1285.60														
-Y11- 20+20	RT.	203		1288.84																
		203	204		1285.60	1285.20														
-Y11- 20+60	RT.	204																		
SHEET TOTALS											60									
PROJECT TOTALS										1132	864	1280	28	68	160					

STATION	C.S. PIPE 12"	15"	18"	24"	30"	36"	42"	48"	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"	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.
	THICKNESS OR GAUGE																									
-Y4- 19+50																			48							
-Y4- 19+90																			96							
-Y4- 20+75																										
-Y11- 17+40																			176							
-Y11- 19+15																			100							
-Y11- 20+20																			44							
-Y11- 20+60																										
SHEET TOTALS																			144	320						
PROJECT TOTALS		708	120			12					36	20							3452	756	892	56	344	280		

STATION	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 STD'S 852.04, 852.05, 852.06 DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME WITH TWO GRATES STD. 840.16	D.I. FRAME WITH TWO GRATES STD. 840.17 OR 840.26	G.D.I. TYPE "A" STD. 840.18 OR 840.27	G.D.I. TYPE "B" STD. 840.19 OR 840.28	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. FRAME AND COVER STD. 840.54	OPEN THROAT CATCH BASIN STD. 840.04 OR 840.05	MODIFIED OPEN THROAT CATCH BASIN (SP)	BERM DRAINAGE OUTLET, STD. 850.10	PREFORMED SCOUR HOLE	FLOWABLE FILL (CY)	ADJUSTMENT OF DROP INLETS	CONVERT EXISTING DROP INLET TO JUNCTION BOX	CORR. STEEL 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
-Y4- 19+50	1	1.11		1			1																			
-Y4- 19+90	1												1						1							
-Y4- 20+75	1			1			1																			
-Y11- 17+40	1			1			1																			22	2 - 18" PLUGS, FILL WITH 14 CY FLOWABLE FILL
-Y11- 19+15	1			1			1																			45	
-Y11- 20+20	1			1			1																				
-Y11- 20+60																											
SHEET TOTALS	6	1.11		5			5						1				1						14			67	
PROJECT TOTALS	137	50.78	6.85	63	9	24	30	15	2	20	20	4	29	1	5	16	19	5	6	6	14	2	1	5	2	14	5	3	20-15"	0.2460	4.9827	1392	

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

SHEET TOTALS

COMPUTED BY: T. SNELL DATE: 4/30/2008

CHECKED BY: R. SHILLINGLAW DATE: 9/20/2011

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-2211B	3-K

RD228314

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)

STATION	LOCATION (LT. RT. OR CL)*	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) SIZE	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) THICKNESS OR GAUGE	CLASS IV R.C. PIPE SIZE	CLASS IV R.C. PIPE THICKNESS OR GAUGE	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) SIZE	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) THICKNESS OR GAUGE	STRUCTURAL PLATE PIPE SIZE	STRUCTURAL PLATE PIPE THICKNESS OR GAUGE	REINFORCED ENDWALLS WITH R.C. - C.Y.	REINFORCED ENDWALLS WITH C.S. - C.Y.	MASONRY DRAINAGE STRUCTURES CUBIC YARDS	C.B. (SEE SPECIAL DETAIL)	FRAMES, GRATES & HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION STD'S 852.04, 852.05, 852.06 DROP INLET	CATCH BASIN	J.B. STD. 840.31 OR 840.32	J.B. GREATER THAN 12' DEPTH (SEE SPECIAL DETAIL)	M.H. FRAME AND COVER, STD. 840.54		60" WELDED STEEL PIPE IN SOIL, 0.875" THICK, TYPE A139 GRADE B STEEL	60" WELDED STEEL PIPE NOT IN SOIL, 0.875" THICK, TYPE A139 GRADE B STEEL						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
-LPC- 17+37	LT.	88		1276.00														11.8																							SEE SPECIAL DETAIL SHT. 2-O
-LPC- 17+37	LT.	88	89		1259.10	1261.95					252																																
		88	160		1259.10	1254.10					376																																
-L- 41+30	LT/R	106	107		1278.67	1265.60					196							5																								
-L- 51+65	LT/R	133	134		1276.83	1274.30					116							5																								122	PIPE REMOVAL FOR 4 PIPES
-Y5- 31+13	LT.	160		1265.00															8.1																							WALL HEIGHT 10.90'
-Y5- 31+13	LT.	160	168		1254.10	1252.80																																			TRENCHLESS INSTALLATION
-Y5- 31+85	RT.	168		1280.00															16.5																							SEE SPECIAL DETAIL SHT. 2-P
-Y5- 31+85	RT.	168	183		1252.80	1252.05	X				144																														
-Y4- 18+66	LT.	183		1260.34															10.2	1		1																			SEE SPECIAL DETAIL SHT 2-M
		183	184		1252.05	1251.83	X				44																														
SHEET TOTALS											312	816						10	46.6	1		1					1	2	3		177	75								122	

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

PROJ. REFERENCE NO.	SHEET NO.
U-2211B	3-L

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF HYDRAULIC RIP RAP & DDE QUANTITIES

CHAIN	STATION	STATION	LOC	RIP RAP CLASS				FF	PSRM	DDE	DETAIL	COMMENT
				I	II	A	B	(SY)	(SY)	(CY)		
L	30+00	31+50	LT							139	A	PROP. LATERAL 'V' DITCH
L	31+50	33+00	LT							36	C	PROP. LATERAL BASE DITCH
L	39+07		RT				2	7				AT OUTLET, 15" PIPE
L	40+63	41+30	LT				67	167		350	F	PROP. LATERAL BASE DITCH
L	41+32		RT	33				62				AT OUTLET, 54" PIPE
L	46+45		RT	12				21		6	O	TAIL DITCH
L	52+00		LT				87	213		121	P	PROP. HEAD DITCH
L	52+75	53+50	RT							7	A	PROP. LATERAL 'V' DITCH
L	55+00		RT				5	14				AT OUTLET, 24" PIPE
LPC	11+65	12+56	LT				46	126		16	E	PROP. LATERAL BASE DITCH
LPC	12+55.60	17+69.92	LT							970	W	DRY-EXTENDED DETENTION POND
LPC	14+00	15+50	RT				53	157		238	B	PROP. LATERAL 'V' DITCH
LPC	15+00		LT				1	5				AT OUTLET, 15" PIPE
LPC	17+64	18+85	LT				43	127		55	B	PROP. LATERAL 'V' DITCH
RPB	16+00	17+90	RT				67	199		119	B	PROP. LATERAL 'V' DITCH
RPB	19+50	21+00	LT				49	129			N	TOE PROTECTION
RPC	15+71	19+50	RT				132	397			L	PROP. BERM DITCH
RPC	21+70	24+20	RT				137	373		264	F	PROP. LATERAL BASE DITCH
RPC	24+20		RT	18				27		70		AT INLET, 7' X 7' CULV./60" PIPE
DR1	10+70	11+30	LT/RT				42	126			Q	TOE PROTECTION
DR2	10+85	11+10	LT				12	32		25	E	PROP. LATERAL BASE DITCH
Y4	18+45		RT	47				63		55		AT OUTLET, 7' X 7' CULV/60" PIPE
Y5	27+00	28+00	RT				45	127		31	D	PROP. LATERAL BASE DITCH
Y5	29+00	30+45	RT				65	184		58	E	PROP. LATERAL BASE DITCH
Y5	30+51	33+50	RT				97	291			Q	TOE PROTECTION
Y5	31+18	33+50	LT				104	295		194	D	PROP. LATERAL BASE DITCH
Y5	33+35		LT				5	14				AT OUTLET, 24" PIPE
L	49+95	51+48	RT	130				150		100	V	AT INLET, 8' X 8' CULVERT
L	49+95	51+48	RT	16				20		15	V	AT OUTLET, 8' X 8' CULVERT
Y9	11+00	12+00	RT				50	138			J	PROP. SPECIAL CUT BASE DITCH

CHAIN	STATION	STATION	LOC	RIP RAP CLASS				FF	PSRM	DDE	DETAIL	COMMENT
				I	II	A	B	(SY)	(SY)	(CY)		
		TOTAL:		256			1109	3464		2869		

ABBREVIATION

CY	CUBIC YARD
DDE	DRAINAGE DITCH EXCAVATION
FF	FILTER FABRIC
LOC	LOCATION
PSRM	PERMANENT SOIL REINFORCEMENT MAT
RR	RIP RAP
SY	SQUARE YARD

PROJ. REFERENCE NO.	SHEET NO.
U-2211B	3-M

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	5	STEPHEN & DEWEY ICENHOUR
2	5	JIMMY RAY MINTON, et al
3	5	SOUTHERN STATES COOP INC
4	5, 9	MARK & LISA FORTE
5	5	PARTLAND LLC
6	5	ANN C. KOBERLING, WIDOW
7	5	RICHARD & CELESTE PRICE
8	5, 6, 9, 10	CALDWELL COUNTY BOARD OF EDUCATION
9	5, 6, 11	SYBIL SHUFORD BUFF & THOMAS W. SHUFORD, III
10	5	FAIRWAY SHOPPING CENTER
11	5	JOHN BUTLER & JAN BRYANT
14	5, 6	R. JASON RIGGS
15	6	IRIS BENFIELD
19	6, 10	OPAL KIZER
20	6, 10	MARY ANTHA THOMAS, WIDOW
21	6, 10	ANNA LEE PEARSON
22	6, 7, 11	EDWARD BLAIR, JR., et al
23	6	MABEL COVINGTON, WIDOW
24	6	FRANCES COLVARD TREXLER
25	6, 7	STUART & FREIDA RAYLE
26	7	SHIRLEY I. SANDERS
27	7	RICHARD P. MEADE
28	7	EDNA M. LEDEE
29	7	KAREN R. TELLER
30	7	LILLIAN WALDROP
31	7	ELIZABETH CRAVEN
32	7, 8	BILLY RAY FOSTER
33	7	RICHARD & KRISTY PALERMO
34	7	MARGARET C. PHIPPS
35	7	CAROLE K. SWEAT ET AL
36	7	JOSEPH A. GOMEZ A/W ANDREA H. GOMEZ
37	7	RENEE TRIPLETT
38	7	EDWIN DUARD PRICE
39	7, 8	DAVID & DORIS WILLIAMS
40	8	BENJAMIN D. GRIFFIN
42	9	BANK OF GRANITE
43	9	MARTHA SUE OXFORD
44	9	BUEL & JANET PEARSON
45	9	LOLA A. STEVENS
45A	9	LOLA A. STEVENS
46	9	BILLIE LOGAN
47	9	KELLIE INGRAM
48	9	JOSEPH & DEBORAH CERMINARO
49	9	MONTE C. CABLE
50	10	THOMAS L. ISABELL
51	10	DAVID & CYNTHIA HAMBY
52	10	FLOYD CLARK, JR ET AL
53	10	ANDREW HALL & THELMA CHESTER
54	10	JON R. NELSON & WIFE DONNA S. NELSON
54A	10	JON R. NELSON & WIFE DONNA S. NELSON
54B	10	JON R. NELSON & WIFE DONNA S. NELSON
56	11	THOMAS W. SHUFORD, III AND SYBIL SHUFORD BUFF
57	11	FRED W. PRICE JR. AND DEBRA PRICE PENNELL
58	11	DANIEL M. AND KATHLEEN SANDERS
59	11	LENOIR N.C. CONGREGATION OF JEHOVAH'S WITNESS INC.
60	6, 11	CALDWELL GARDENS HOUSING INC
61	11	BARBARA REESE CALL
62	11	STALLINGS FAMILY LIMITED PARTNERSHIP
63	11	JERRY BEVINS

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
64	11	DAVID H. HAMBY
65	11	HILDA WARREN WINKLER
66	11	DAVID H. HAMBY
67	9	CENTRAL BAPTIST CHURCH
901	5,6	NCDOT
902	5	NCDOT

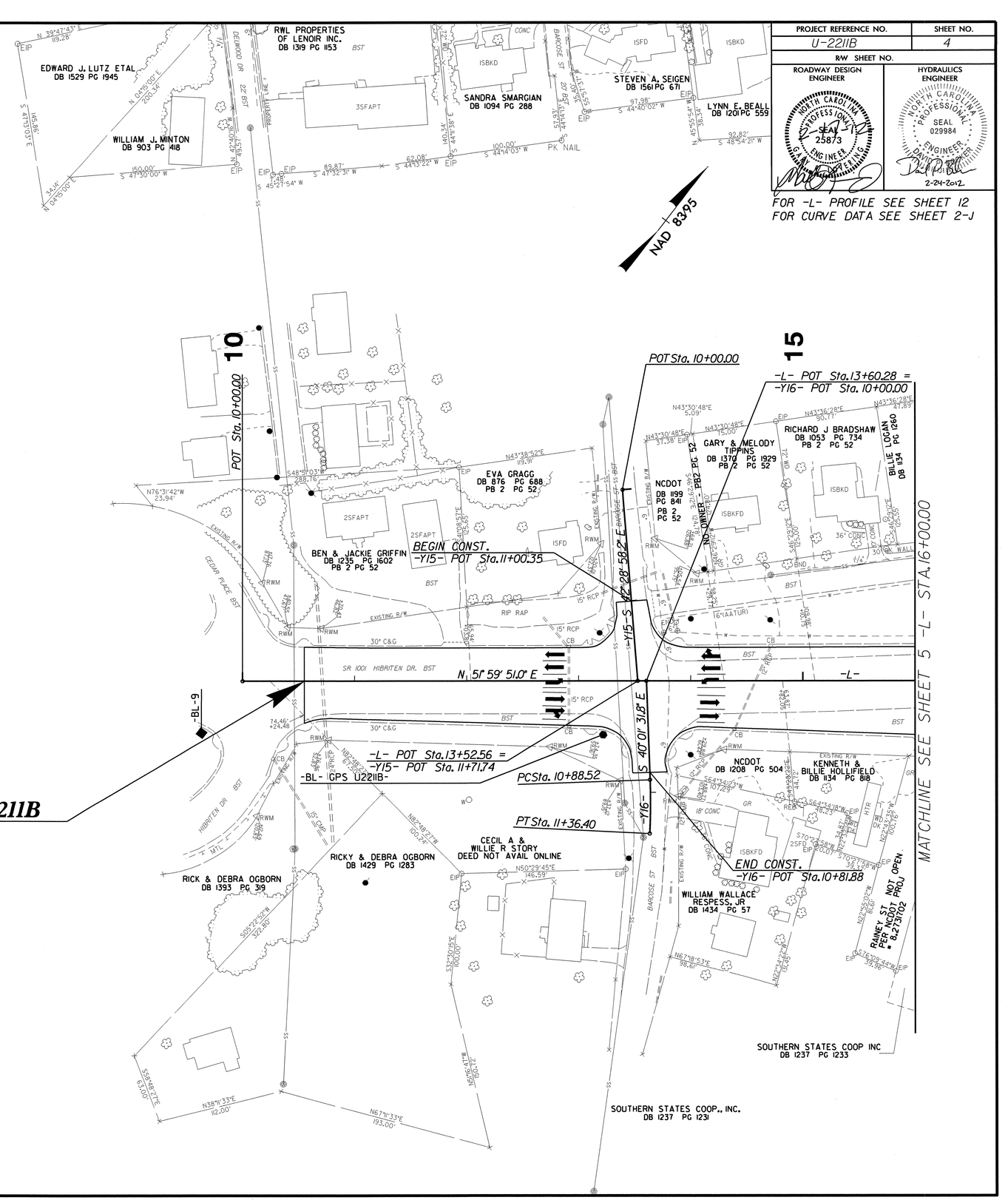
PROJECT REFERENCE NO.	SHEET NO.
U-2211B	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY W. POTTERING

NORTH CAROLINA PROFESSIONAL SEAL 029984 ENGINEER DAVID L. PARKER

2-24-2012

FOR -L- PROFILE SEE SHEET 12
FOR CURVE DATA SEE SHEET 2-J



STA. 10+55 -L- BEGIN TIP PROJECT U-2211B

REVISIONS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
U-2211B	5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY W. LOVELACE

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 029984 ENGINEER DAVID M. ROGER

2-24-2012

US 321A		2012 ADT
	16400 / 24844	2032 ADT
5733 / 9585	2933 / 3674	
9267 / 15193		9000 / 13445
SR 1001		SR 1178
867 / 1459	3400 / 5622	
	12001 / 18666	
US 321A		

FOR -L- PROFILE SEE SHEET 12
FOR -Y11- PROFILE SEE SHEETS 21 & 22
FOR -Y3- PROFILE SEE SHEET 17
FOR -Y4- PROFILE SEE SHEET 17
FOR CURVE DATA SEE SHEET 2-J

☆ SIGNAL UPGRADE

MONOLITHIC CONCRETE ISLAND

NAD 83/95

MATCHLINE SEE SHEET 9 -Y11- STA.19+50.00

MATCHLINE SEE SHEET 9 -Y3- STA.15+00.00

MATCHLINE SEE SHEET 4 -L- STA.16+00.00

MATCHLINE SEE SHEET 6 -L- STA.28+00.00

-Y4- STA.13+50.00

CENTRAL BAPTIST CHURCH OF LENIOR INC
DB 177 PG 256
DB 411 PG 653
DB 861 PG 717
DB 888 PG 1034

DANIEL & MELODY HAIGLER
DB 967 PG 348

BILLIE LOGAN
DB 1134 PG 1260

PARTLAND LLC
DB 1268 PG 339

NED ERNEST & ANNIE HEDRICK
DB 645 PG 594

LUTHER CABLE
DB 731 PG 322

CHUN LUN & YIN PING FU
DB 1187 PG 370

JACKIE EDWARD & NELLIE HUGHES
DB 456 PG 493

CALDWELL COUNTY BOARD OF EDUCATION
DB 205 PG 372

ANN C. KOBBERLING, WIDOW
DB 1249 PG 994

RICHARD & CELESTE PRICE
DB 674 PG 894

SYBIL SHUFORD BLUFF & THOMAS W. SHUFORD, III
DB 1731 PG 400

NCDOT
DB 1544 PG 1535

NCDOT
DB 1674 PG 1817

NCDOT
DB 1198 PG 825
PB 2 PG 52

SOUTHERN STATES COOP INC
DB 1237 PG 1233

SOUTHERN STATES COOP INC
DB 885 PG 537

RAINEY ST NOT OPEN PER NCDOT PROJ # 8.2731702

JIMMY RAY MINTON, et al
DB 1646 PG 727

HERBERT & MOZELLE MINTON
DB 1068 PG 13
PB 2 PG 52

GREG HERNANDEZ
DB 1347 PG 277

STEPHEN & DEWEY ICENHOUR
DB 1519 PG

FAIRWAY SHOPPING CENTER
DB 887 PG 198

NORMA JEAN CLARK
DB 654 PG 851
DB 654 PG 854
DB 704 PG 1187

WHITNEL OUTDOORSMAN AND PAWN, INC.
DB 1564 PG 948

EDWIN PRICE
DB 297 PG 234

CALDWELL GARDENS HOUSING INC
DB 1195 PG 606

JOHN BUTLER & JAN BRYANT
DB 1314 PG 443

R. JASON RIGGS
DB 1132 PG 559

AFTER CONSTRUCTION, ABANDON -R/W -L- Sta. 26+38.62 TO Sta. 31+29.00

-L- POC Sta. 20+34.41 = -Y11- POC Sta. 23+57.53

PC Sta. 16+44.15

PCSta. 22+31.17

PRC Sta. 18+70.34

PT Sta. 26+57.81

END CONST. -Y11- POT Sta. 28+35

PT Sta. 20+82.26

-BL- GPS U22IIB-2 = -BY-23

-BY-24

-L- POT Sta. 25+51.13 = -Y3- POT Sta. 19+24.90

-L- POT Sta. 25+52.30 = -Y4- POT Sta. 10+00.00
S 52° 54' 01.0" E BRG AH

END CONST. -Y4- POC Sta. 11+98.04

-BY4-37

PT Sta. 16+98.77
S 59° 14' 02.3" E BRG AH

BEGIN CONST. 17+80.00

PCSta. 17+97.77

PT Sta. 18+64.75
S 51° 33' 27.8" E

PT Sta. 12+86.39
S 78° 20' 54.6" E BRG AH

PCSta. 10+74.32

-BL- POC Sta. 20+34.41 = -BY3-35 = -BY4-36

N 51° 59' 51.0" E

N 52° 05' 59.0" E

S 22° 35' 37.6" E

S 59° 14' 02.3" E

REMOVE 90 LF - 18"

REMOVE 50 LF - 24" CMP

8" X 12" CONCRETE CURB

REMOVE EX. CB & 30" STUB

REMOVE CB & 24LF-15" RCP

REMOVE 32 LF - 15" COLLAR

REMOVE DI

REMOVE 12 LF - 12"

REMOVE 24 LF - 24"

RETAIN DI

RETAIN 6" CONC CURB

CONVERT DI TO JB W/MH

DO NOT DISTURB SIGN

BEG. 8" X 12" CURB

BEG. CL FENCE -Y3-

BEG. FENCE

200'-50'-200' OS 8'

300' TAPER

100' TAPER

165' LANE TAPER

125' LT. & RT. EP TAPER

50' INCR.

SR 1001 HIBRITEN DR. BST

FRANCES PL BST

ISMTLBUS

ISBKBUS

ISBKAPT

ISMBUS

ISBKFD

ISFD

MTL G

MTL S

BK ELEM SCHOOL

GR PLAYGROUND

LIME PIT

GAZEBO

1½SFD

24" ROCK WALL

48" BK WALL

36" BK WALL

48" WD WALL

36" WD

36" VINYL

84" CHL

TV FO

TIMBERS

PLANTER

EXISTING R/W

W/LT

RWM

SIG LT

JB W/MH

TBJB W/MH

TBDI

CB

DI

PDE

OTCB

COLLAR & EXTEND

ISMTLBUS

PROJECT REFERENCE NO.	SHEET NO.
U-2211B	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

REVISIONS

8/17/99

FOR -L- PROFILE SEE SHEET 13
FOR -Y5- PROFILE SEE SHEET 19
FOR -RPB- PROFILE SEE SHEET 15
FOR -LPB- PROFILE SEE SHEET 14

FOR PAVEMENT WIDTH TO BRIDGE WIDTH SKETCH SEE SHEET 2-G
FOR -RPC- PROFILE SEE SHEET 16
FOR -LPC- PROFILE SEE SHEET 15
FOR -SRI- PROFILE SEE SHEET 22
FOR -DR2- PROFILE SEE SHEET 22

FOR CURVE DATA SEE SHEET 2-J
FOR DITCH DETAILS SEE SHEET 2-L
FOR CULVERT PLANS SEE SHEETS C-1 - C-16
FOR STRUCTURE PLANS SEE SHEETS S-1 - S-40

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PROJECT REFERENCE NO.	SHEET NO.
U-2211B	7
RW SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. OVERING

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029984 ENGINEER DAVID S. BOCKER

2-24-2012

2012 ADT / 2032 ADT		
6933 / 12119		7400 / 13179
SR 1178	800 / 1244	SR 1178
	1267 / 2304	
	2067 / 3548	
	SR 1712	

NAD 83/95

FOR -L- PROFILE SEE SHEET 13
FOR -Y9- PROFILE SEE SHEET 21
FOR -DRI- PROFILE SEE SHEET 22
FOR CURVE DATA SEE SHEET 2-J
FOR DITCH DETAILS SEE SHEET 2-L
FOR CULVERT PLANS SEE SHEET C-1 - C-16

MONOLITHIC CONCRETE ISLAND

REVISIONS

8/17/99

STUART & FREIDA RAYLE
DB 1387 PG 152
25

SHIRLEY I SANDERS
DB 112 PG 531
26

RICHARD P. MEADE
DB 1588 PG 868
27

EDNA M LEDEE
DB 1502 PG 1451
28

KAREN R TELLER
DB 1274 PG 766
29

BILLY RAY FOSTER
DB 599 PG 266
32

ELIZABETH CRAVEN
DB 433 PG 11
31

LILLIAN WALDROP
DB 1498 PG 373
30

DAVID & DORIS WILLIAMS
DB 1171 PG 628
39

EDWIN DUARD PRICE
DB 617 PG 86
38

EDWARD BLAIR, JR., et al
DB 1100 PG 1663
22

RICHARD & KRISTY PALERMO
DB 1589 PG 140
33

MARGARET C. PHIPPS
DB 1166 PG 1353
34

CAROLE K. SWEAT ET AL
DB 1434 PG 1055
35

JOSEPH A. GOMEZ A/W ANDREA H. GOMEZ
DB 1523 PG 43
36

RENEE TRIPLETT
DB 1444 PG 1818
37

BETTY H. BEANE ET AL
DB 1280 PG 724

MATCHLINE SEE SHEET 6 -L- STA.42+00.00

MATCHLINE SEE SHEET 8 -L- STA.54+50.00

APPROXIMATE LOCATION OF LeDee TUNNELS ARCHAEOLOGICAL SITES TO BE INVESTIGATED DURING UTILITY RELOCATION OR CONSTRUCTION

POT Sta. 10+00.00
S 36° 10' 27.5" E
BRG AH

PC Sta. 10+60.50

PT Sta. 10+89.10
S 18° 26' 52.1" W
BRG AH

PC Sta. 11+04.84

PT Sta. 11+31.45
S 32° 21' 55.8" E
BRG AH

-L- POC Sta. 50+24.32 =
-Y9- POT Sta. 10+00.00
S 46° 00' 31.4" E BRG AH

BEGIN CONST.
-DRI- PC
Sta.10+60.50

-L- POC Sta.48+90.00=
-DRI- POT Sta. 11+64.11

PC Sta. 44+81.65

PCSta. 10+43.55

PTSta. 11+40.41
S 59° 34' 11.9" E BRG AH

PCSta. 11+78.84

END CONST.
-Y9- POC Sta.12+40.41

PTSta. 12+94.76

-BL-16

-BL-17

-BL-18 =
-BY9-56

-B19-57

-Y9-

-DRI-

-L-

SR 1712

STARCROSS RD

GAS SERVICE NOT FOUND FOR THIS RESIDENCE

END FENCE +50 90'

BERM DITCH SEE DETAIL M

TOE PROTECTION SEE DETAIL Q

SPECIAL CUT DITCH SEE DETAIL H

HEAD DITCH SEE DETAIL P

SPECIAL CUT DITCH SEE DETAIL H

LATERAL 'V' DITCH SEE DETAIL A

CLASS I RIP RAP SEE DETAIL V

SPECIAL CUT BASE DITCH SEE DETAIL J

TAIL DITCH SEE DETAIL O

GRADE TO DRAIN STA. 47+50 TO STA. 49+50 -L- RT

REMOVE FOOT BRIDGE

REMOVE 36" CMP

REMOVE

RETAIN

RETAIN DI

REMOVE DI

600' TAPER

100' TAPER

8:1 TAPER

w/ELBS. & ROD & LUG CONNECTORS

END SHLDR. BERM GUTTER +50 INCR.

JB w/HH

PSH

CB

2GI

2SBKF

2SFD

ISFD

ISBK BUS

ISBK CHURCH

GAZEBO

PLANTER

HTR

CONC

WD DK

WD

GR

BST

TBDI

HW

SS

EIP

EIP-P/K

EIP-R/W

EIP-TO CL

CMP

RCP

RCPIV

CSP

W/ELBS

N 81° 37' 51.5" E

S 63°43'16"W 151.38'

N80°52'03"E 152.12'

N80°42'27"E 79.37'

N82°05'09"E 125.00'

N81°33'21"E 308.92'

S74°26'10"W 320.16'

S 08°57'10" E 538.43'

S 09°27'11" E 579.64'

N 08°56'58" W 573.98'

N 08°54'24" W 575.34'

S 11°19'09" E 332.23'

N 20°09'24" W 403.62'

N 20°00'16" W 336.53'

S 19°34'09" W 283.18'

S 10°25'10" W 467.38'

S 03°35'56" W 170.52'

N 61°29'19" E 121.00'

N 74°29'19" E 221.05'

N 83°17'13" E 149.58'

N 65°25'51" E 134.44'

N 61°33'22" E 74.02'

N 73°03'08" E 60.00'

N 74°33'08" E 75.00'

N 67°27'22" E 71.46'

S 75°25'19" W 97.75'

N 76°18'19" E 264.67'

S 75°25'19" W 10.95'

N 58°57'37" E 100.00'

S 02°53'10" W 36.28'

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PROJECT REFERENCE NO.	SHEET NO.
U-2211B	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

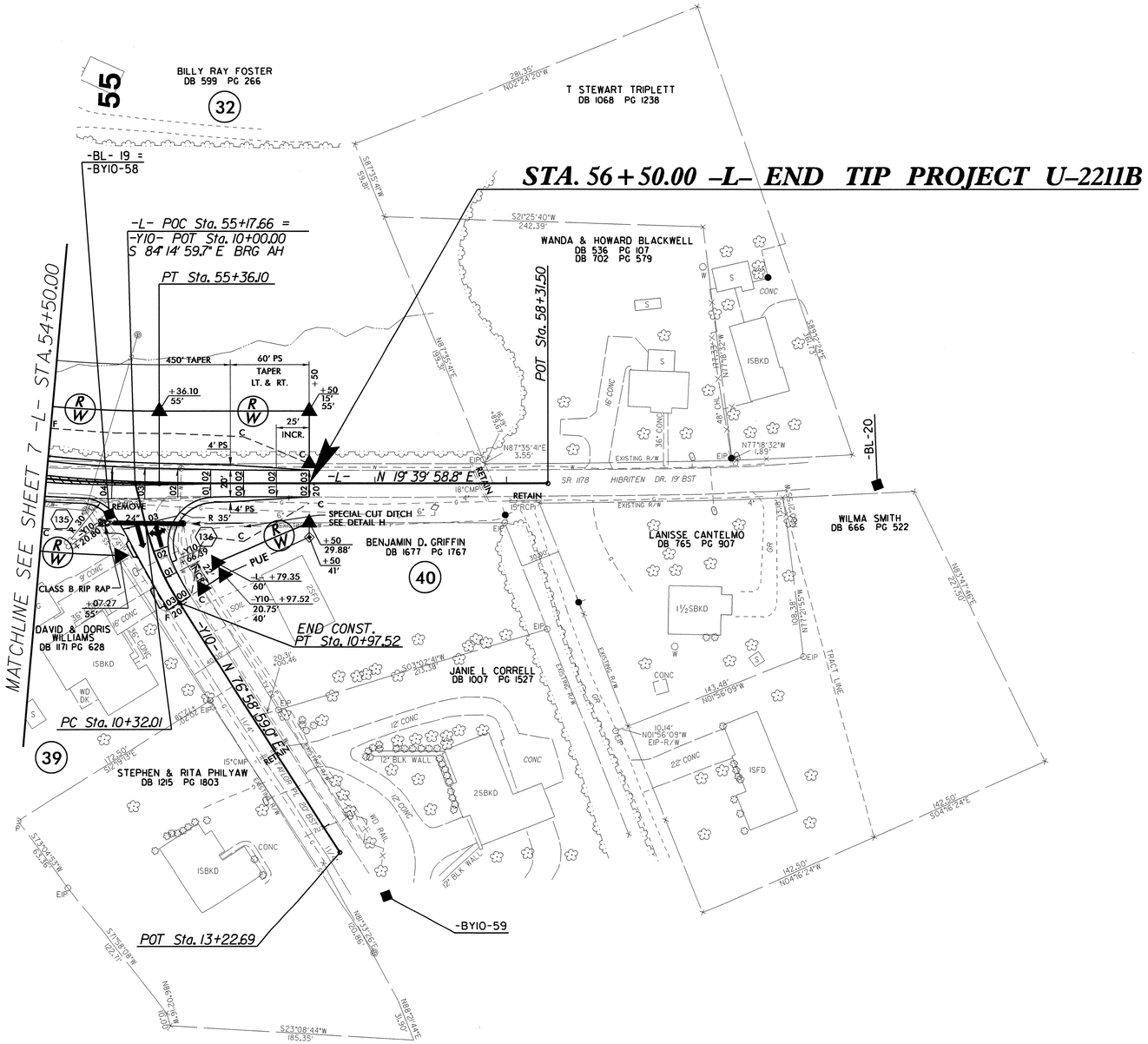
NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY ROBERTSON

NORTH CAROLINA PROFESSIONAL SEAL 029984 ENGINEER DAVID P. BOCKER

2-24-2012

FOR -L- PROFILE SEE SHEET 14
FOR -Y10- PROFILE SEE SHEET 21
FOR CURVE DATA SEE SHEET 2-J
FOR DITCH DETAILS SEE SHEET 2-L

NAD 83/95



REVISIONS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
U-2211B	9
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY L. PEARCE

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029984 ENGINEER Daniel P. Britt

2-24-2012

FOR -Y11- PROFILE SEE SHEET 21
FOR -Y2- PROFILE SEE SHEET 16
FOR -Y3REV- PROFILE SEE SHEET 17
FOR -Y3- PROFILE SEE SHEET 17
FOR CURVE DATA SEE SHEET 2-J

☆ SIGNAL UPGRADE

REVISIONS 8/17/99

NAD 83\95

J M CECIL BOWLIN DB 852 PG 442

REBECCA H ASBURY DB 1158 PG 602

NORMAN & VONNA YOUNG DB 1307 PG 1192

GREGORY DALE & DEBORAH MALTBA DB 1524 PG 431

VIOLA P GOBLE (TRUST) PB 19 PG 92

LARRY & PATSY SUDDRETH ROGER POARCH DB 991 PG 190

CALDWELL COUNTY BOARD OF EDUCATION DB 205 PG 372

CHARLES G COFFEY DB 1268 PG 256

OWEN & CAROLYN WILSON, JR DB 376 PG 355

BENJAMIN & JACKIE GRIFFIN DB 1232 PG 941

O.C. WILSON DB 250 PG 29

ROBERT M & SHELIA BRADY DB 1462 PG 930

FAIRWAY TIRE & APPLIANCE CO, INC DB 584 PG 241

NO OWNER

DFI INVESTMENTS LLC DB 1533 PG 59

SHEELA S. SHOEMAKER DB 118 PG 387

OWEN C. WILSON JR. DB 1551 PG 1841

OWEN C. WILSON JR. DB 1551 PG 1845

YIN PING & MING FAI YU DB 1428 PG 608

TIME SAVE STORES INC DB 1392 PG 1398

BANK OF GRANITE DB 767 PG 372

OWEN C. WILSON JR. DB 1551 PG 1853 PARCEL B

JACKIE E. & NELLIE HUGHES DB 1080 PG 577

DULATOWN OUTREACH CENTER, INC. DB 1039 PG 329

YUEN FAI & YAN QING LIU DB 1143 PG 1420

JOAN H. LIVINGSTON TRUST DB 1844 PG 1641

ROBERT & ELAINE HADLEY DB 929 PG 442

GARON'S JEWELERY DB 1134 PG 1591

CENTRAL BAPTIST CHURCH DB 177 PG 256 DB 411 PG 653 DB 1546 PG 674

CENTRAL BAPTIST CHURCH OF LENIOR INC DB 177 PG 256 DB 411 PG 653 DB 861 PG 717 DB 888 PG 1034

AILEEN MINTON, JOAN LOWE MARTHA OXFORD, KATHLEEN MILLER A NORTH CAROLINA PARTNERSHIP DB 1058 PG 421

LOWES FOODS STORES DB 670 PG 523

MONTE C CABLE DB 1420 PG 747

MARTHA LOLA A STEVENS SUE OXFORD DB 675 PG 708

BILLIE LOGAN DB 1134 PG 1260

BUEL & JANET PEARSON DB 712 PG 1097

MARK & LISA FORTE DB 1493 PG 601

VADA RAINEY DB 175 PG 33

-Y2- POT Sta. 12+41.79 = -Y3REV- POC Sta.12+29.20

-Y2- PT Sta.12+33.45 BRG AH = S 5° 06' 35.2" W

PT Sta. 13+46.81 BRG AH = S 39° 58' 01.5" E

-Y3REV- POT Sta. 14+31.20 BK= -Y3- PC Sta. 14+57.93 AH

-BY1-28

-BY2-30 = -BY1-27

-BY2-33 = -BY2-31

-BY1-34

-BY2-29

-BY2-32

-BY1-33

-BY1-35

-BY1-36

-BY1-37

-BY1-38

-BY1-39

-BY1-40

-BY1-41

-BY1-42

-BY1-43

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-BY1-68

-BY1-69

-BY1-70

-BY1-71

-BY1-72

-BY1-73

-BY1-74

PROJECT REFERENCE NO.	SHEET NO.
U-2211B	10
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER — 2-24-2012

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 029984 ENGINEER — 2-24-2012

FOR -Y5- PROFILE SEE SHEET 18
FOR CURVE DATA SEE SHEET 2-J
FOR DITCH DETAILS SEE SHEET 2-L

NAD 83/95

REVISIONS

8/17/99

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P B REALTY
DB 1131 PG 1290

DUKE POWER 200' R/W
DB 669 PG 566

P B REALTY
DB 1131 PG 1290

10

15

20

PCSta. 10+00.00

BEGIN CONST. -Y5- PCSta. 12+47.56

N14°47'33"W 323.64'

CLIFFSIDE PL

N78°41'42"E 23.72' TO REB

TREE 16 WHT OAK

N78°45'23"E 131.70'

EXISTING R/W

EIP

N78°45'23"E 4.80'

BEG. FENCE +47.56 128.30'

50

THOMAS L. ISABELL
DB 298 PG 464

ISBKD

+50 135'

MTL

GR

ISFD

PL EXIST. R/W

S73°04'45"W 109.56'

15" RCP RETAIN

N14°03'14"W 295.82'

CONC

ISMBUS

DAVID & CYNTHIA HAMBY
DB 811 PG 299
DB 748 PG 816
DB 748 PG 816

ISMTLBUS

51

52

ANDREW HALL & THELMA CHESTER
DB 338 PG 185

53

FLOYD CLARK, JR ET AL
DB 982 PG 90

ANNA LEE PEARSON
DB 1351 PG 1168
TRACT I

-BY7-52

+74.11 126.06'

+00 150

1½SFD

21

SPECIAL CUT DITCH SEE DETAIL G

S63°45'44"W 4.35' EIP-R/W

S12°00'44"E 13.69'

S14°08'48"E 179.79'

S16°56'03"E 109.95'

S63°39'44"E 109.93'

S63°45'44"W 4.46' EIP-R/W

RETAIN DI

SPECIAL CUT DITCH SEE DETAIL G

EXIST. 04

03

24"

15"

4' PS

-Y5-

-BY5-43

140' RT. PS: TAPER

300' TAPER

GRAU 350

REM. CONC

REMOVE EXIST. PAVT

REMOVE EXIST. PAVT

COLLAR AND EXTEND

REMOVE DI

MEDIAN DITCH SEE DETAIL K

CAT-1

-BY5-44

DAVID BARLOW
DB 1111 PG 877
DB 880 PG 354
PB 4 PG 24
PB 15 PG 101

ISBKBUS

WD RAIL

BST

EXISTING R/W

6" BST CURB

60' CONC

DUKE POWER 200' R/W
DB 669 PG 566

+00 131.84' BEG. FENCE

ROBERT & PATRICIA HUNTLEY
DB 1157 PG 1181

GAS SERVICE NOT FOUND FOR THIS BUSINESS

GREENHOUSES

NURSERY

S78°41'29"W 217.97'

DAVID BARLOW
DB 1111 PG 877
DB 880 PG 354
PB 4 PG 24
PB 15 PG 101

54

JON R. NELSON & WIFE
DONNA S. NELSON
DB 1726 PG 1299

N78°42'21"E 298.73'

S09°48'34"E 409.87'

S78°56'00"W 106.83'

S44°18'56"E 179.32'

ROCK

EIP

N41°17'15"W 110.81'

N60°50'20"W 100.00'

N35°50'20"W 28.00'

O C WILSON
DB 514 PG 160
DB 679 PG 126

N62°04'47"E 207.19'

54A

JON R. NELSON & WIFE
DONNA S. NELSON
DB 1726 PG 1305

N 61°26'17" E 66.94'

N 42°43'47" E 182.72'

S 42°43'47" W 281.98'

N 39°50'20" W 12.50'

54B

JON R. NELSON & WIFE
DONNA S. NELSON
DB 1726 PG 1305
DB 1726 PG 1299

S 22°00'00" E 251.93'

N 45°58'31" W 40.60'

CALDWELL COUNTY BOARD OF EDUCATION
DB 205 PG 372

8

MARY ANTHA THOMAS, WIDOW
DB 250 PG 512

20

N22°18'16"W 342.11'

N41°41'44"E 100.00'

OPAL KIZER
DB 222 PG 39

19

N22°03'44"W 325.45'

S41°08'37"E 63.76'

REUBEN EUGENE & MARTHA LYNN CLARK
DB 1339 PG 725

KENDRA W TURNER
DB 1380 PG 1457

PAUL EDWARD & JOAN MARSHALL
DB 1157 PG 317
DB 659 PG 402

BLUE RIDGE REAL ESTATE NC LLC
DB 1372 PG 487

N39°50'20"W 61.58'

N40°05'34"E 91.34'

S40°48'53"E 154.30'

TERESA & RICHARD PILKENTON
DB 1128 PG 265

N43°20'26"W 358.42'

N44°19'24"E 143.26'

ELEM SCHOOL

BLK WALL

CONC

W/L

MATCHLINE SEE SHEET 6 -Y5- STA.22+00.00

8/17/99

REVISIONS

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$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-2211B	12

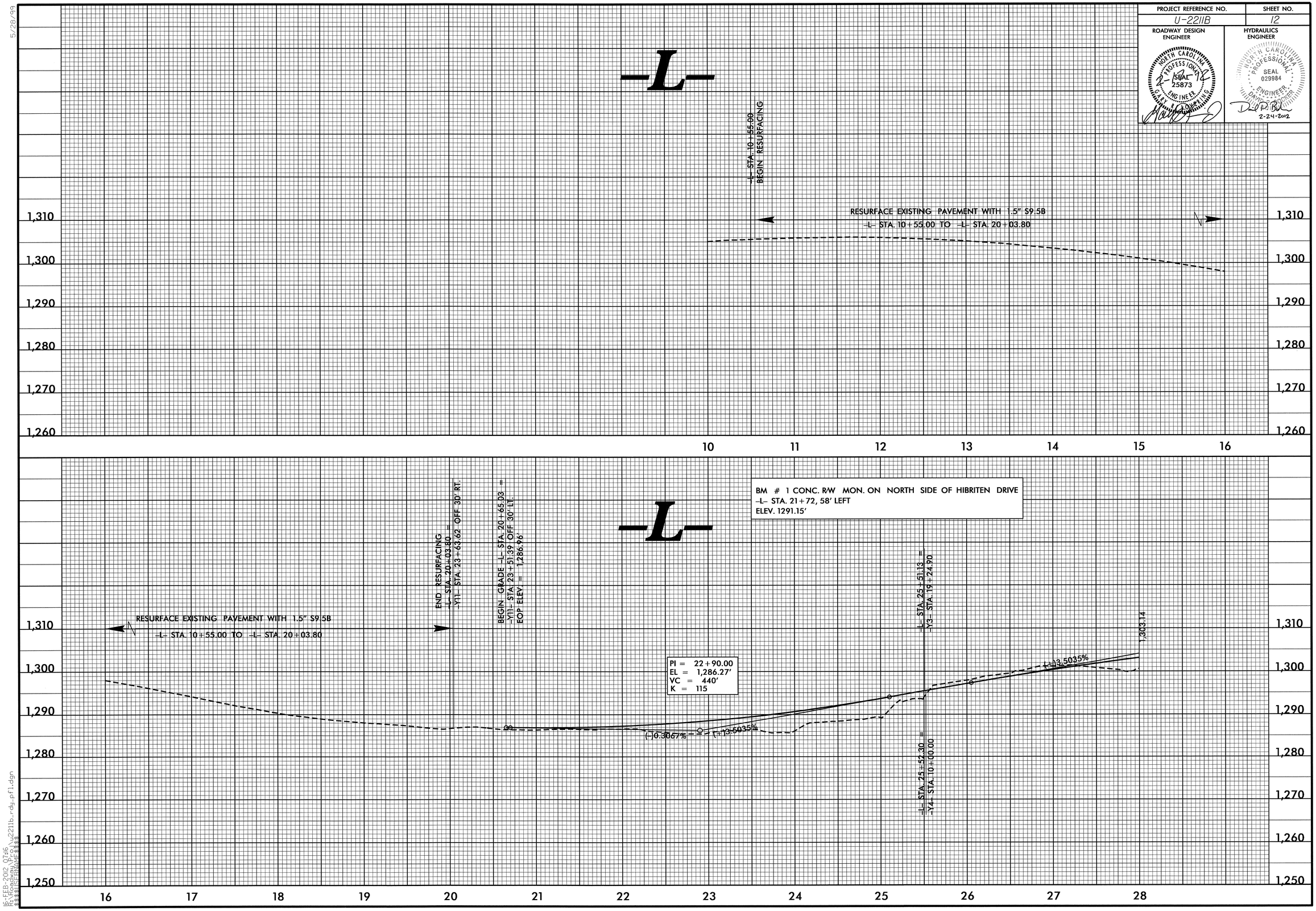
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. LOVERING

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029984 ENGINEER DAVID P. BOCKER

2-24-2012



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PROJECT REFERENCE NO.	SHEET NO.
U-2211B	13

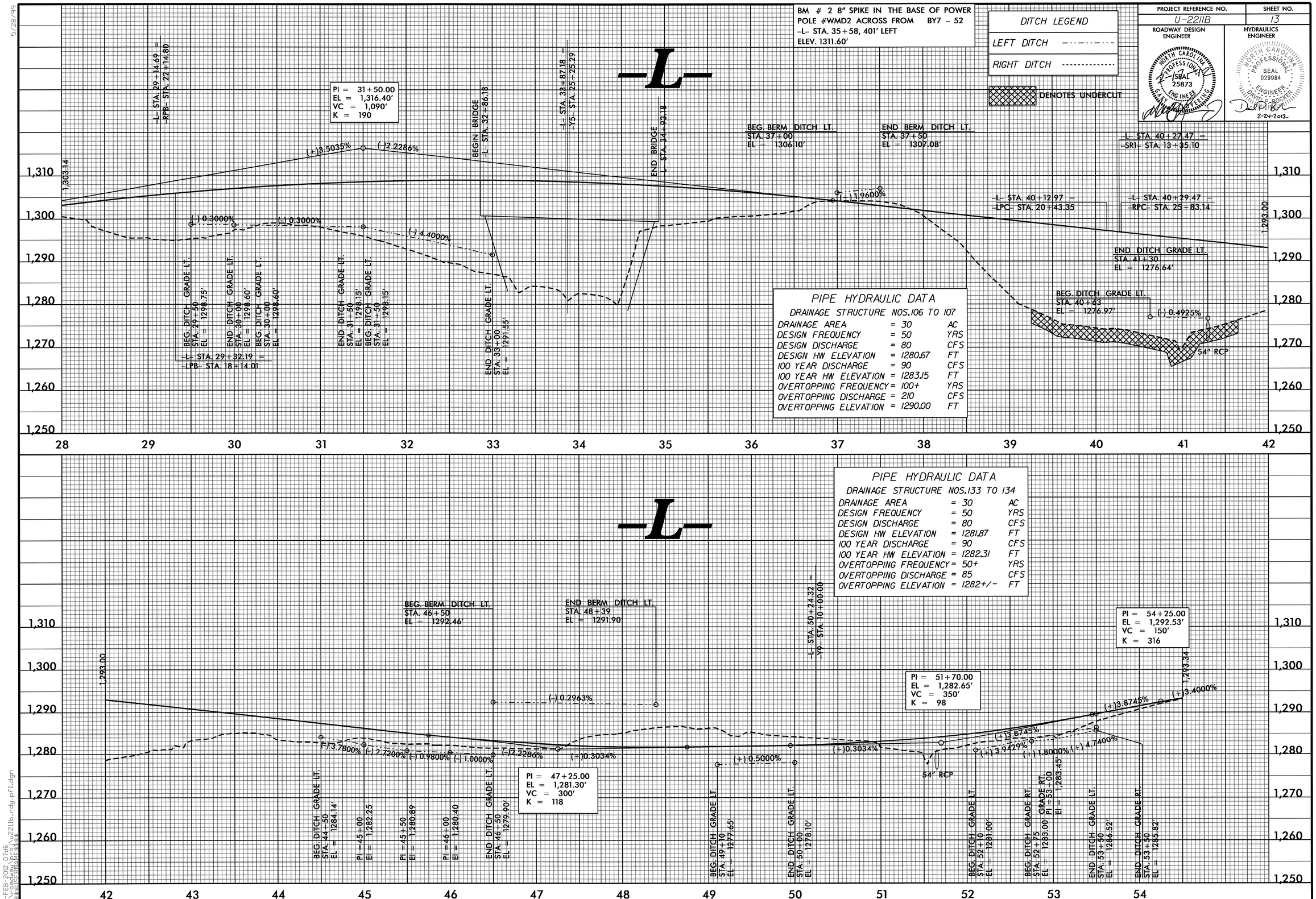
ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. GOVERING

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 029984 ENGINEER DAVID P. BOCKER — 2-24-2012

BM # 2 8" SPIKE IN THE BASE OF POWER POLE #WMD2 ACROSS FROM BY7 - 52
-L- STA. 35+58, 401' LEFT
ELEV. 1311.60'

DITCH LEGEND
LEFT DITCH
RIGHT DITCH

DENOTES UNDERCUT



PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NOS.106 TO 107

DRAINAGE AREA	= 30	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 80	CFS
DESIGN HW ELEVATION	= 1280.67	FT
100 YEAR DISCHARGE	= 90	CFS
100 YEAR HW ELEVATION	= 1283.15	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 210	CFS
OVERTOPPING ELEVATION	= 1290.00	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NOS.133 TO 134

DRAINAGE AREA	= 30	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 80	CFS
DESIGN HW ELEVATION	= 1281.87	FT
100 YEAR DISCHARGE	= 90	CFS
100 YEAR HW ELEVATION	= 1282.31	FT
OVERTOPPING FREQUENCY	= 50+	YRS
OVERTOPPING DISCHARGE	= 85	CFS
OVERTOPPING ELEVATION	= 1282+/-	FT

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PROJECT REFERENCE NO.	SHEET NO.
U-2211B	14

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

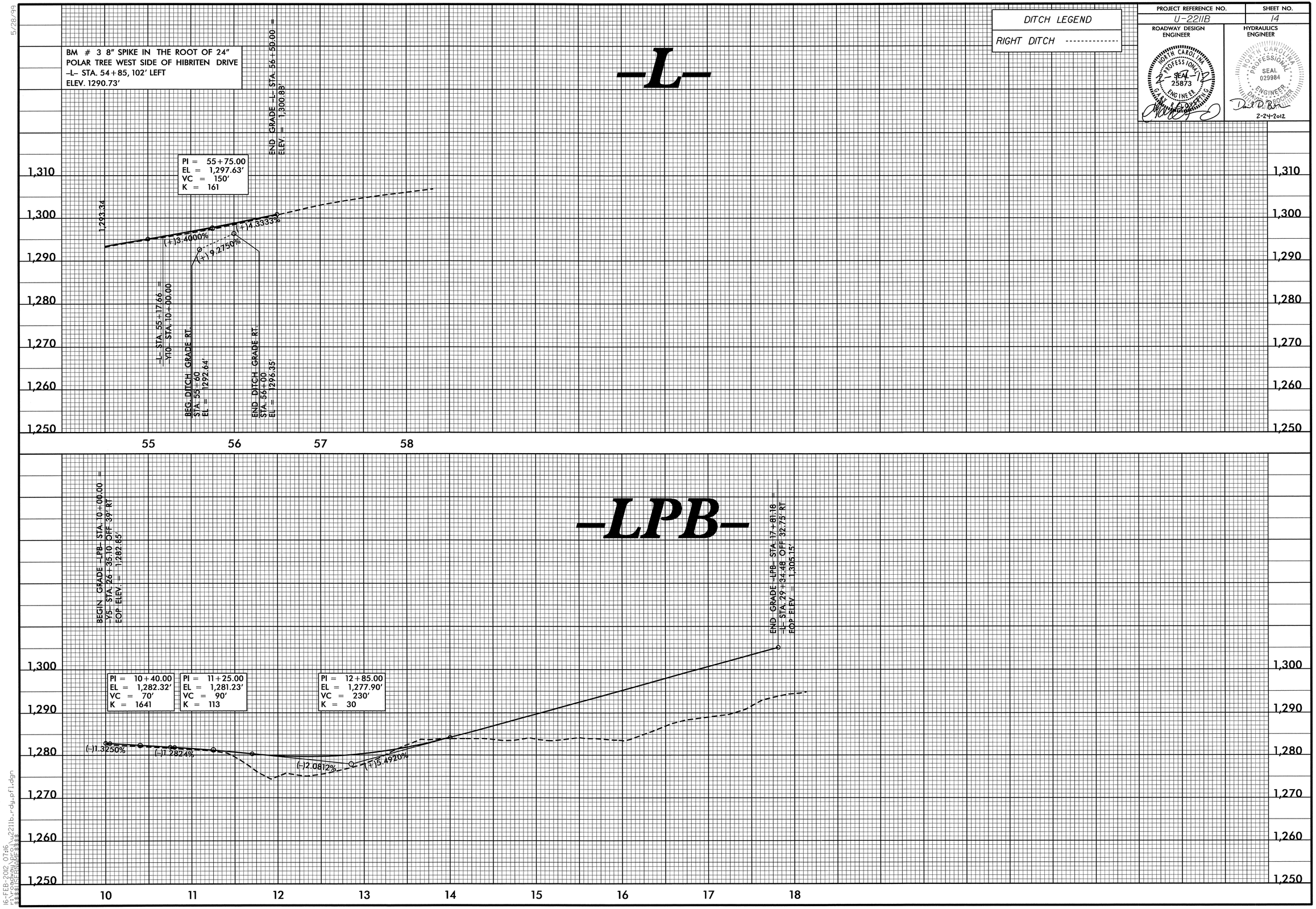
NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY S. ROVERTING

NORTH CAROLINA PROFESSIONAL SEAL 029984 ENGINEER DAVID P. BROCKER

2-24-2012

DITCH LEGEND

RIGHT DITCH ----------



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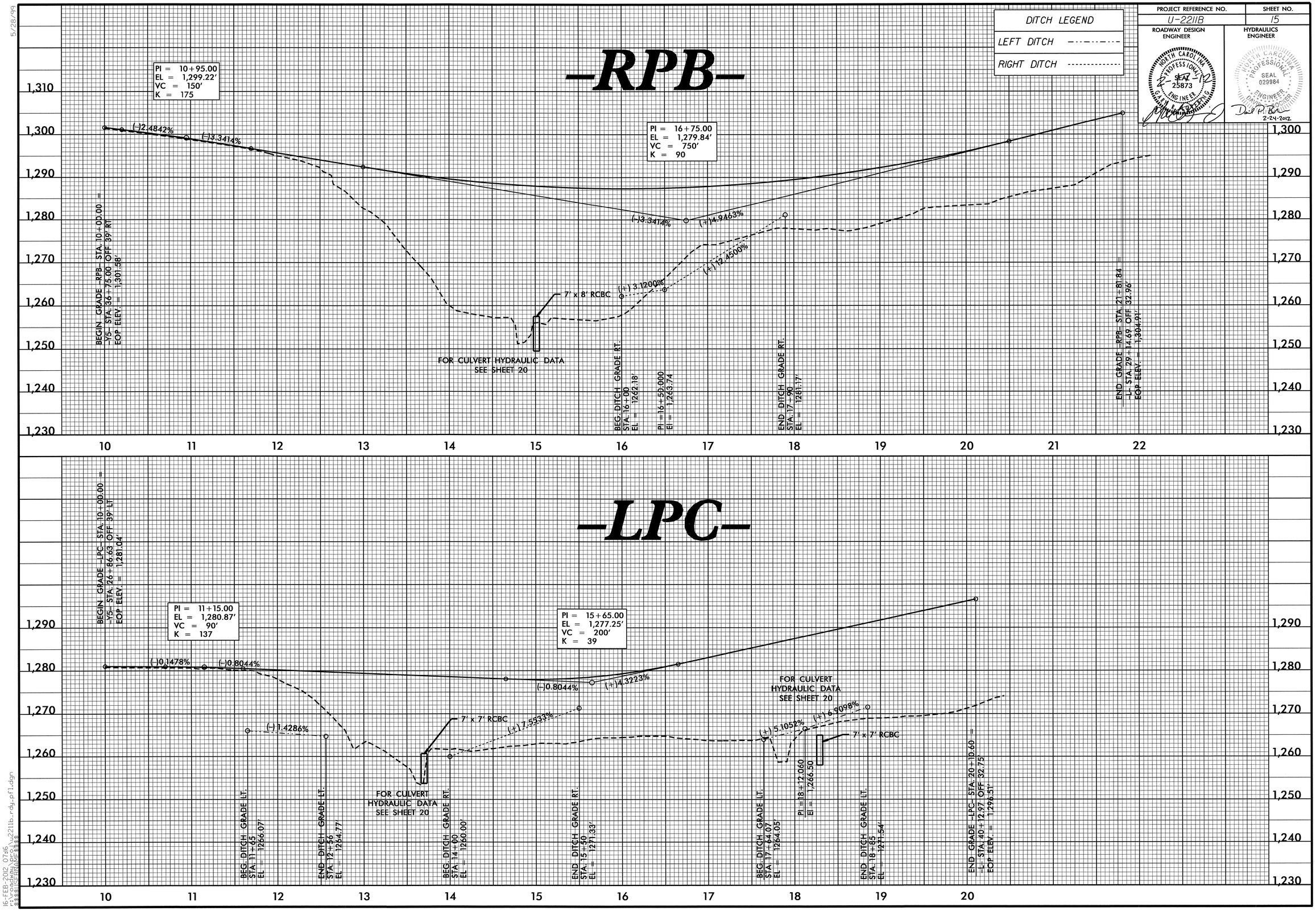
PROJECT REFERENCE NO.	SHEET NO.
U-2211B	15

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER



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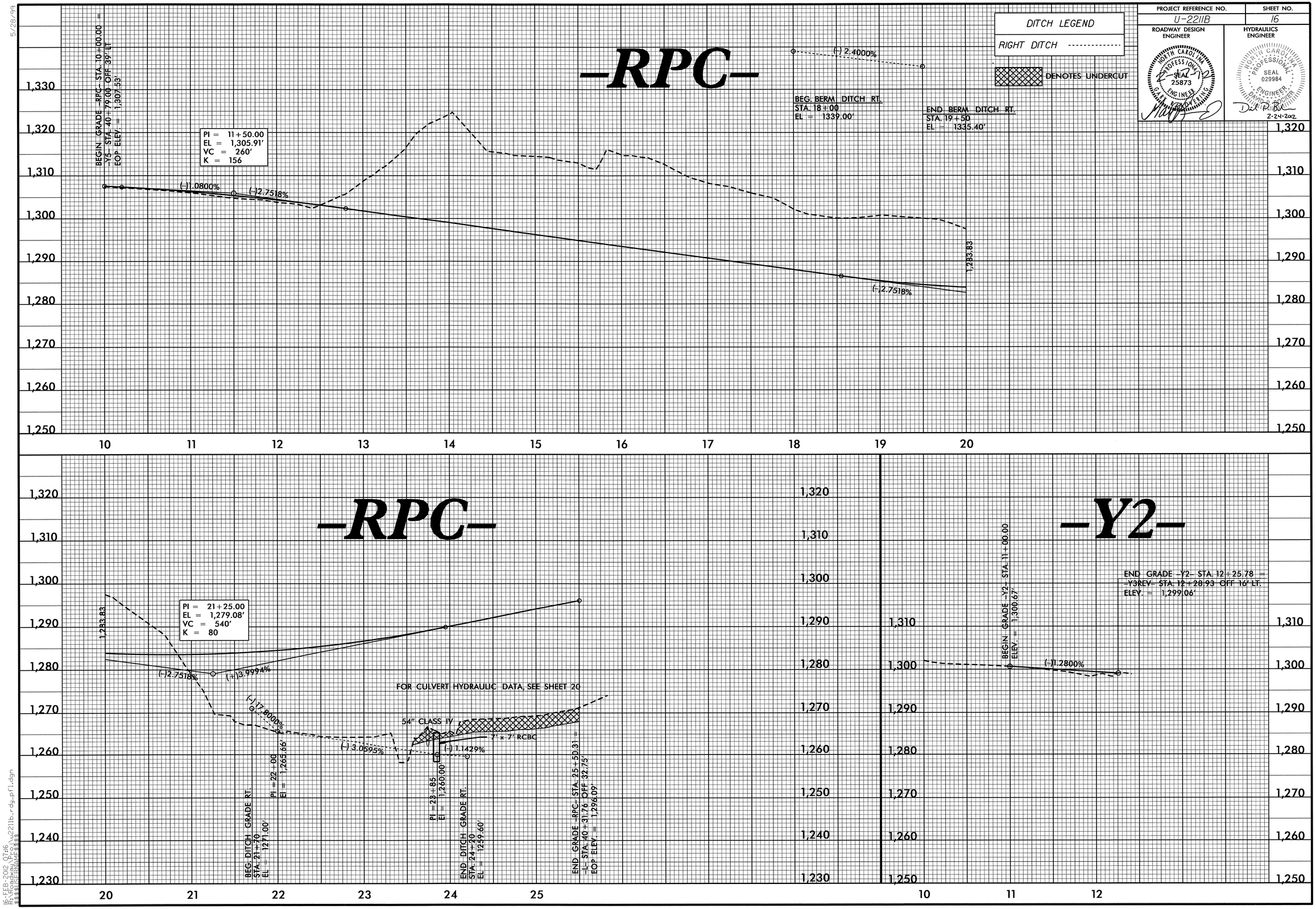

PROJECT REFERENCE NO.
U-2211B
SHEET NO.
16
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DITCH LEGEND
RIGHT DITCH
DENOTES UNDERCUT
-RPC-
BEGIN GRADE -RPC- STA. 10+00.00 = -Y5- STA. 40+79.00 OFF 39' LT EOP ELEV. = 1,307.53'
PI = 11+50.00
EL = 1,305.91'
VC = 260'
K = 156
(-)1.0800%
(-)2.7518%
(-) 2.4000%
BEG. BERM DITCH RT.
STA. 18+00
EL = 1339.00'
END BERM DITCH RT.
STA. 19+50
EL = 1335.40'
1,283.83
(-)2.7518%
-RPC-
PI = 21+25.00
EL = 1,279.08'
VC = 540'
K = 80
1,283.83
(-)2.7518%
(+)3.9994%
(-)17.8000%
(-) 3.0595%
FOR CULVERT HYDRAULIC DATA, SEE SHEET 20
54" CLASS IV
7' x 7' RCBC
(-) 1.1429%
BEG. DITCH GRADE RT.
STA. 21+70
EL = 1271.00'
PI = 22+00
EL = 1,265.66'
PI = 23+85
EL = 1,260.00'
END DITCH GRADE RT.
STA. 24+20
EL = 1259.60'
END GRADE -RPC- STA. 25+50.31 = -L- STA. 40+31.76 OFF 32.75' EOP ELEV. = 1,296.09'
-Y2-
BEGIN GRADE -Y2- STA. 11+00.00
ELEV. = 1,300.67'
(-)1.2800%
END GRADE -Y2- STA. 12+25.78 = -Y3REV- STA. 12+28.93 OFF 16' LT.
ELEV. = 1,299.06'

PROJECT REFERENCE NO.	SHEET NO.
U-2211B	17

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029984 ENGINEER

2-24-2012

5/28/99

-Y3REV-

BEGIN GRADE -Y3REV- STA. 10+30.03 =
-Y1- STA. 16+49.14 OFF 30' LT.
ELEV. = 1,299.67'

PI = 11+45.00
EL = 1,294.15'
VC = 170'
K = 17

(-)4.8013%

(+)5.0872%

-Y3REV- STA. 12+29.20 =
-Y2- STA. 12+41.79

PI = 13+40.00
EL = 1,304.07'
VC = 110'
K = 13

(+)5.0872%

(-)3.1908%

END GRADE
-Y3REV- STA. 14+31.20
ELEV. 1,301.16'

-Y3REV- STA. 14+31.20 BK =
-Y3- STA. 14+57.93 AH

-Y3-

BEGIN GRADE -Y3- STA. 17+80.00
ELEV. = 1,295.77'

PI = 18+40.00
EL = 1,295.20'
VC = 60'
K = 59

(-)0.9500%

(-)1.9765%

END GRADE -Y3- STA. 18+85.03 =
-L- STA. 25+41.71 OFF 38.75'
EOP ELEV. = 1,294.31'

-Y4-

BEGIN GRADE -Y4- STA. 10+52.54 =
-L- STA. 25+65.90 OFF 50.72'
EOP ELEV. = 1,294.92'

PI = 11+20.00
EL = 1,290.67'
VC = 130'
K = 40

(-)16.3900%

(-)3.0241%

END GRADE -Y4- STA. 11+98.04
ELEV. = 1,288.31'

BEGIN GRADE -Y4- STA. 16+68.00
ELEV. = 1,262.63'

PI = 17+35.00
EL = 1,258.99'
VC = 120'
K = 18

(-)5.4328%

(+)1.4085%

7' x 8' RCBC

FOR CULVERT HYDRAULIC DATA, SEE SHEET 20

PI = 20+90.00
EL = 1,263.99'
VC = 90'
K = 17

(+)6.6219%

END GRADE -Y4- STA. 21+36.21
ELEV. = 1,267.05'

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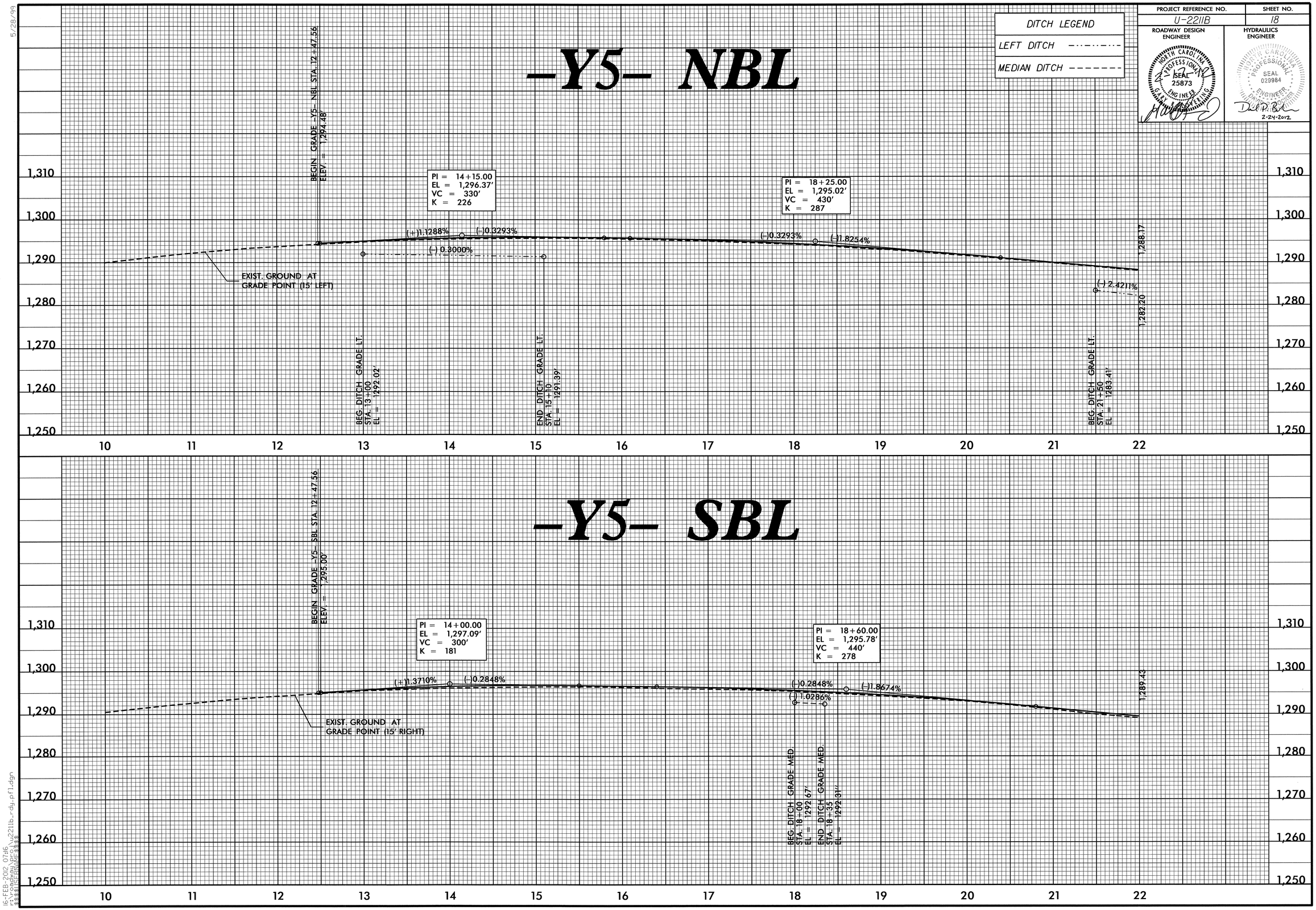
PROJECT REFERENCE NO.	SHEET NO.
U-2211B	18

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER



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PROJECT REFERENCE NO.	SHEET NO.
U-2211B	19

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

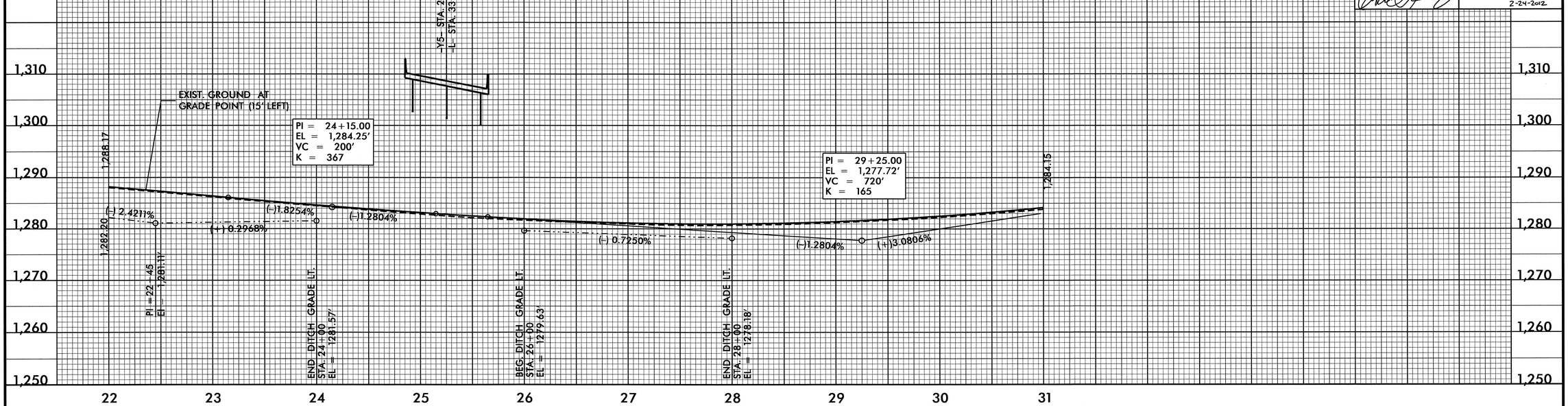
NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. LEDFORD

NORTH CAROLINA PROFESSIONAL SEAL 029984 ENGINEER DAVID P. BROOKER

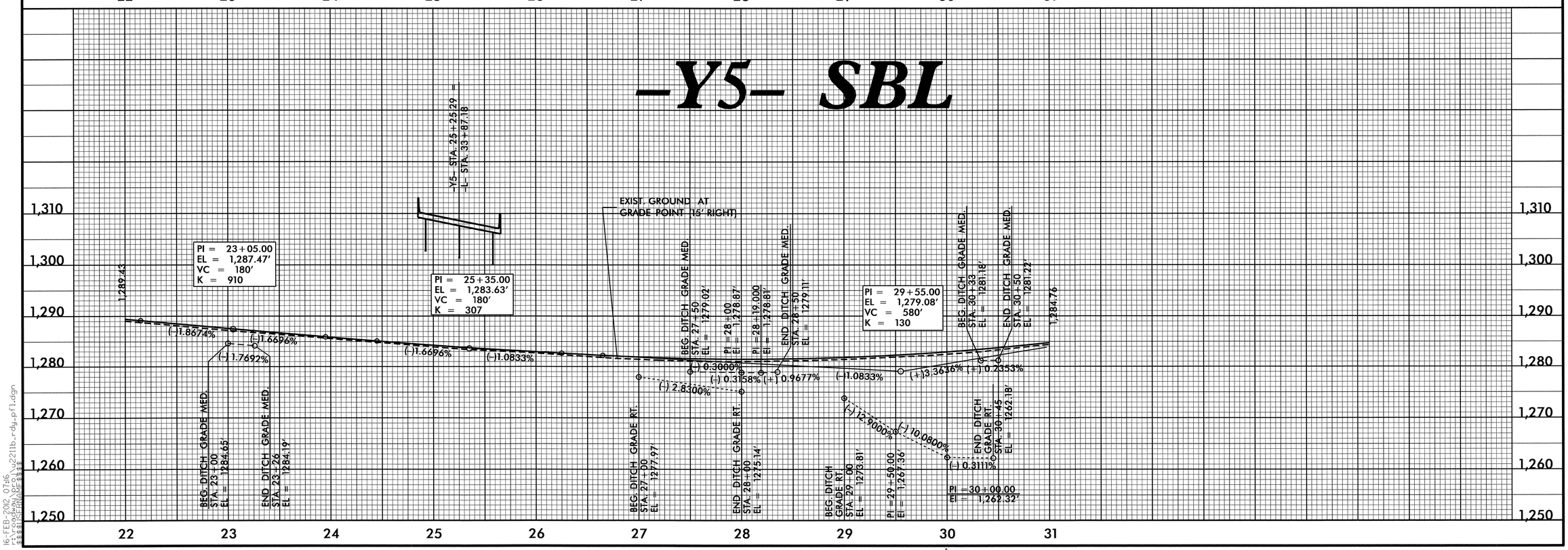
2-24-2012

DITCH LEGEND	
LEFT DITCH	-·-·-·-
RIGHT DITCH	----------
MEDIAN DITCH	- - - - - -

-Y5- NBL



-Y5- SBL



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PROJECT REFERENCE NO.	SHEET NO.
U-2211B	20

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GLENN S. JERNIGAN

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029984 ENGINEER DAVID P. BEAL

2-24-2012

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 755	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 1269.20	FT
BASE DISCHARGE	= 874	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 1271.10	FT
OVERTOPPING DISCHARGE	= 1260.00	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 1283.50	FT

DITCH LEGEND

LEFT DITCH

MEDIAN DITCH

–Y5– NBL

BEG. BERM DITCH LT.
STA. 39+00
EL = 1348.47'

(-)5.8301%

END BERM DITCH LT.
STA. 40+53
EL = 1339.55'

PI = 39+85.00
EL = 1,307.99'
VC = 540'
K = 241

PI = 36+20.00
EL = 1,299.13'
VC = 190'
K = 291

EXIST. GROUND AT GRADE POINT (15' LEFT)

1,284.15

BEG. DITCH GRADE LT.
STA. 33+50
EL = 1281.95'

END DITCH GRADE LT.
STA. 34+50
EL = 1283.95'

(+)3.0806%

(+)2.4274%

(+)2.4274%

(+)0.1905%

(-)1.8667%

(+)2.0000%

BEG. DITCH GRADE LT.
STA. 31+18
EL = 1260.00'

PI = 32+00
EL = 1,262.50'

(+)14.1259%

(+)3.1707%

PI = 33+35.000
EL = 1,281.67

END DITCH GRADE LT.
STA. 33+50
EL = 1281.95'

EXISTING 7'x7' RCBC

END GRADE –Y5– NBL STA. 43+00.00
ELEV. = 1,308.59'

31 32 33 34 35 36 37 38 39 40 41 42 43 44

1,340 1,330 1,320 1,310 1,300 1,290 1,280 1,270 1,260 1,250

–Y5– SBL

PI = 40+70.00
EL = 1,309.17'
VC = 440'
K = 228

PI = 37+00.00
EL = 1,302.45'
VC = 220'
K = 221

PI = 33+95.00
EL = 1,293.88'
VC = 260'
K = 469

1,284.76

(+)3.3636%

(+)2.8098%

(+)2.8098%

(+)2.8529%

(+)1.8162%

(+)1.8162%

(+)1.5238%

(-)0.1176%

EXIST. GROUND AT GRADE POINT (15' RIGHT)

BEG. DITCH GRADE MED.
STA. 35+66
EL = 1295.75'

END DITCH GRADE MED.
STA. 36+00
EL = 1296.72'

BEG. DITCH GRADE MED.
STA. 39+29
EL = 1303.78'

END DITCH GRADE MED.
STA. 39+50
EL = 1304.10'

END GRADE –Y5– SBL STA. 43+25.00
ELEV. = 1,308.87'

BM # 4 8" SPIKE IN THE ROOT OF 14" WHITE PINE
–Y5– STA. 43+02, 227' LEFT
ELEV. 1340.29'

31 32 33 34 35 36 37 38 39 40 41 42 43 44

1,310 1,300 1,290 1,280 1,270 1,260 1,250

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PROJECT REFERENCE NO.	SHEET NO.
U-2211B	21

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029984 ENGINEER

2-24-2012

-Y9-

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 577	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 1278.60	FT
BASE DISCHARGE	= 874	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 1282.60	FT
OVERTOPPING DISCHARGE	= 775	CFS
OVERTOPPING FREQUENCY	= 50+	YRS
OVERTOPPING ELEVATION	= 1282.40	FT

PI = 11+55.00
EL = 1,281.75'
VC = 150'
K = 19

BEGIN GRADE -Y9- STA. 10+20.85 =
-L- STA. 50+26.37 OFF 20.75'
EOP ELEV. = 1,283.09'

END GRADE -Y9- STA. 12+40.41 =
ELEV. = 1,287.51'

0.9989%
(+)6.7439%
(+)10.2400%
(+) 4.0000%

PROP. 8'x8' RCBC

BEG. DITCH GRADE RT.
STA. 11+00
EL. = 1273.88'

PI = 11+50
EL = 1,279.00'

END DITCH GRADE RT.
STA. 12+00
EL. = 1281.00'

-Y10-

PI = 10+60.00
EL = 1,295.30'
VC = 60'
K = 86

(-)1.8148%
(-)1.1194%

24" RCP

BEGIN GRADE -Y10- STA. 10+12.05 =
-L- STA. 55+20.75 OFF 11.65'
EOP ELEV. = 1,296.17'

END GRADE -Y10- STA. 10+97.52 =
ELEV. = 1,294.88'

DITCH LEGEND

RIGHT DITCH ----------

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NOS.136 TO 135

DRAINAGE AREA	= 0.31	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 1.2	CFS
DESIGN HW ELEVATION	= 1293.68	FT
100 YEAR DISCHARGE	= 1.4	CFS
100 YEAR HW ELEVATION	= 1293.71	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	=	CFS
OVERTOPPING ELEVATION	= 1292.90	FT

-Y11-

PI = 16+50.00
EL = 1,300.58'
VC = 120'
K = 79

-Y11- STA. 16+50.56 =
-Y14- STA. 10+00.00

(-)1.4486%
(-)2.9654%

BEGIN GRADE -Y11- STA. 15+68.54
ELEV. 1,301.76'

-Y11- STA. 16+39.82 =
-Y3- STA. 10+00.00

PI = 21+42.00
EL = 1,285.99'
VC = 380'
K = 101

(-)2.9654%
(+)0.8113%

1,287.33

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PROJECT REFERENCE NO.	SHEET NO.
U-2211B	22

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. POLLETING

NORTH CAROLINA PROFESSIONAL SEAL 029984 ENGINEER DAVID P. BOCHER

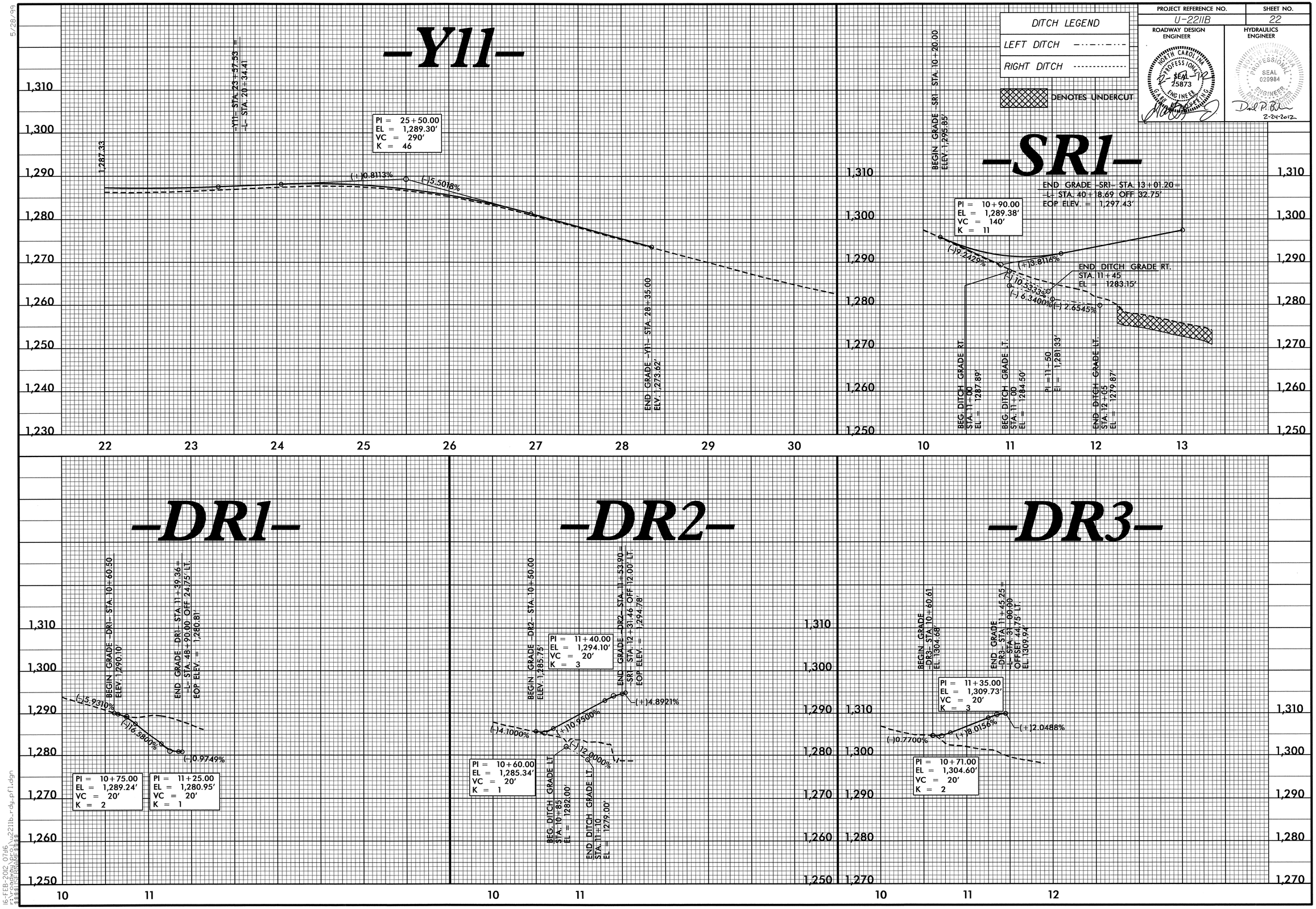
2-24-2012

DITCH LEGEND

LEFT DITCH

RIGHT DITCH

DENOTES UNDERCUT



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